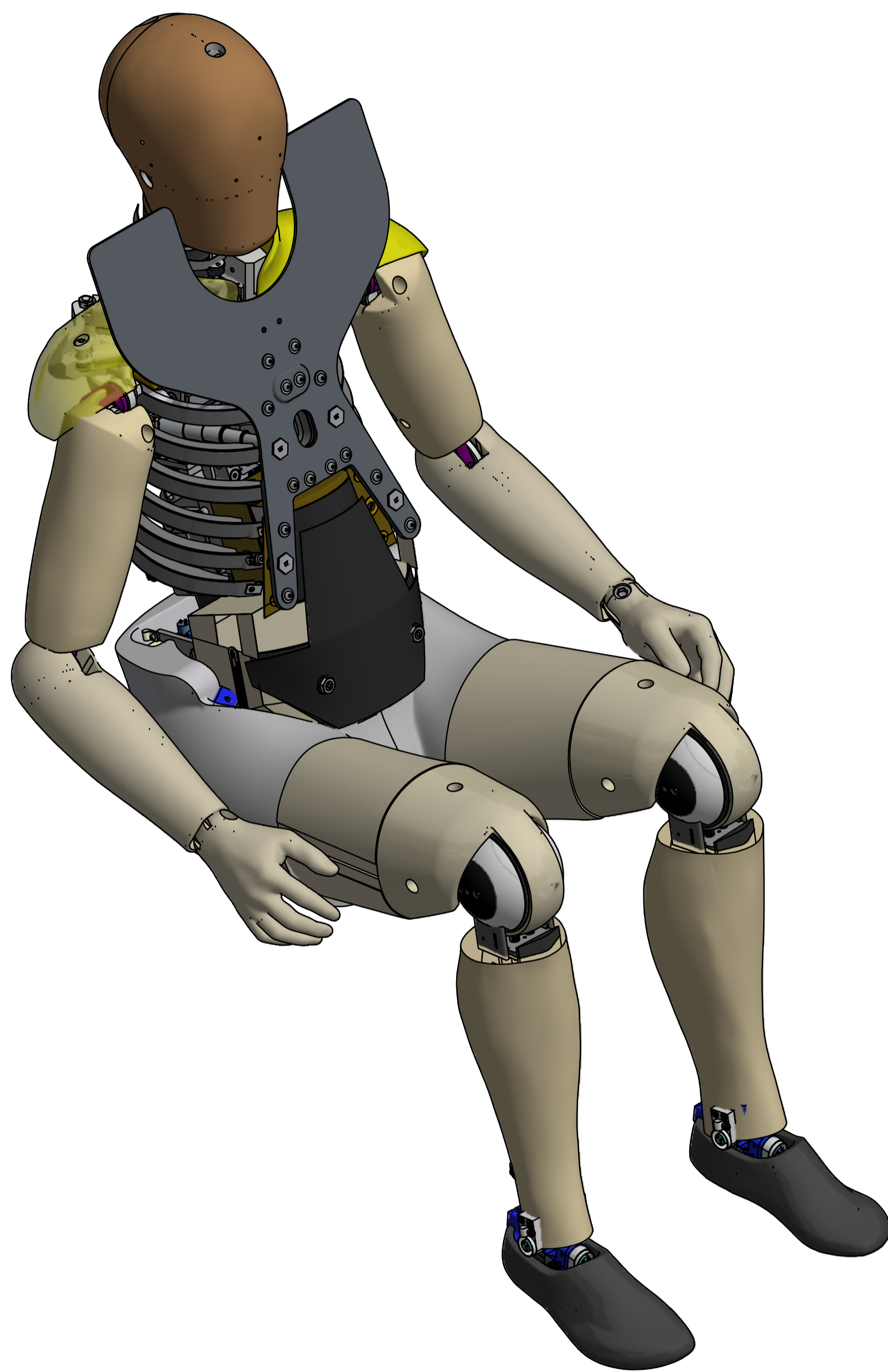


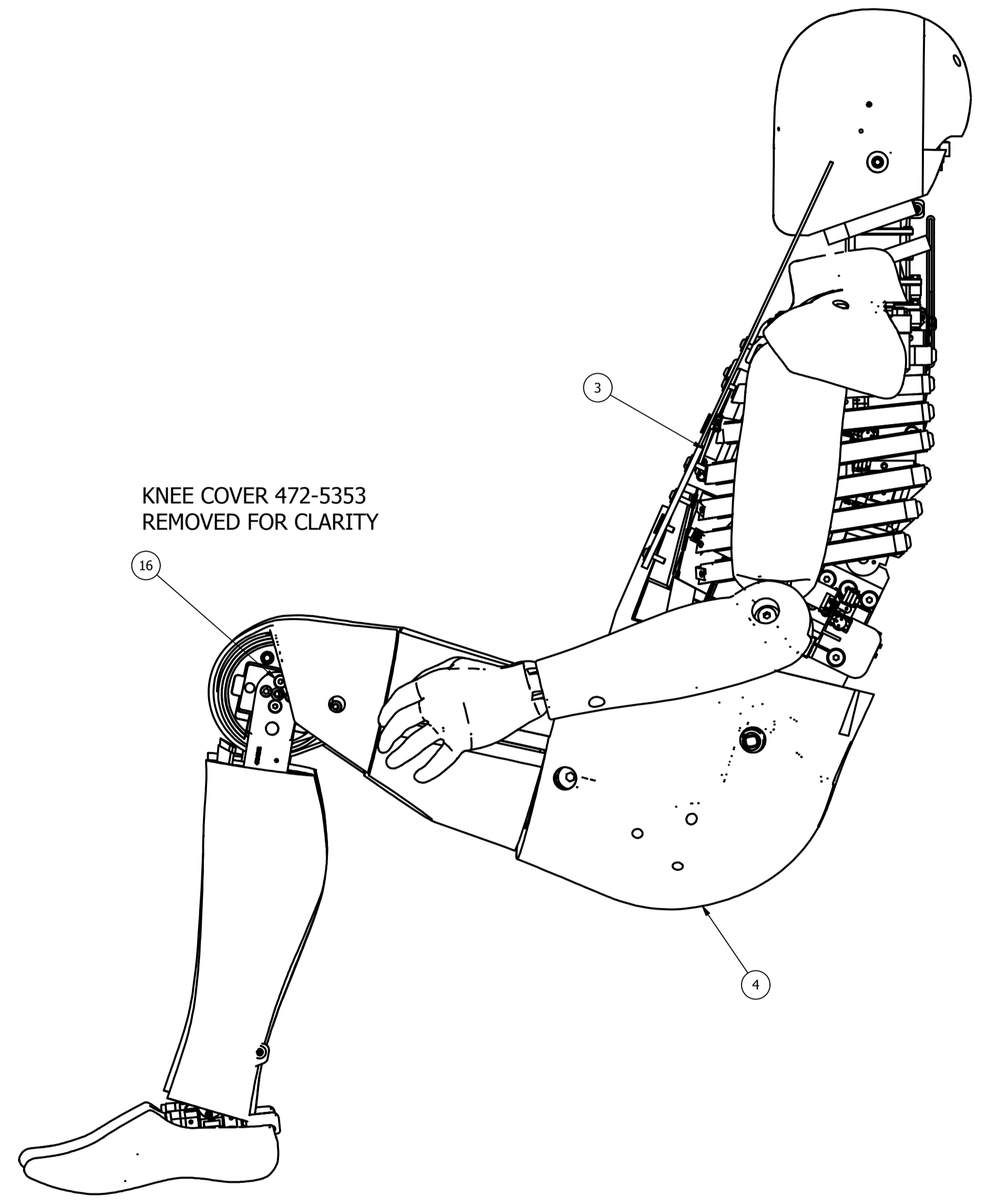
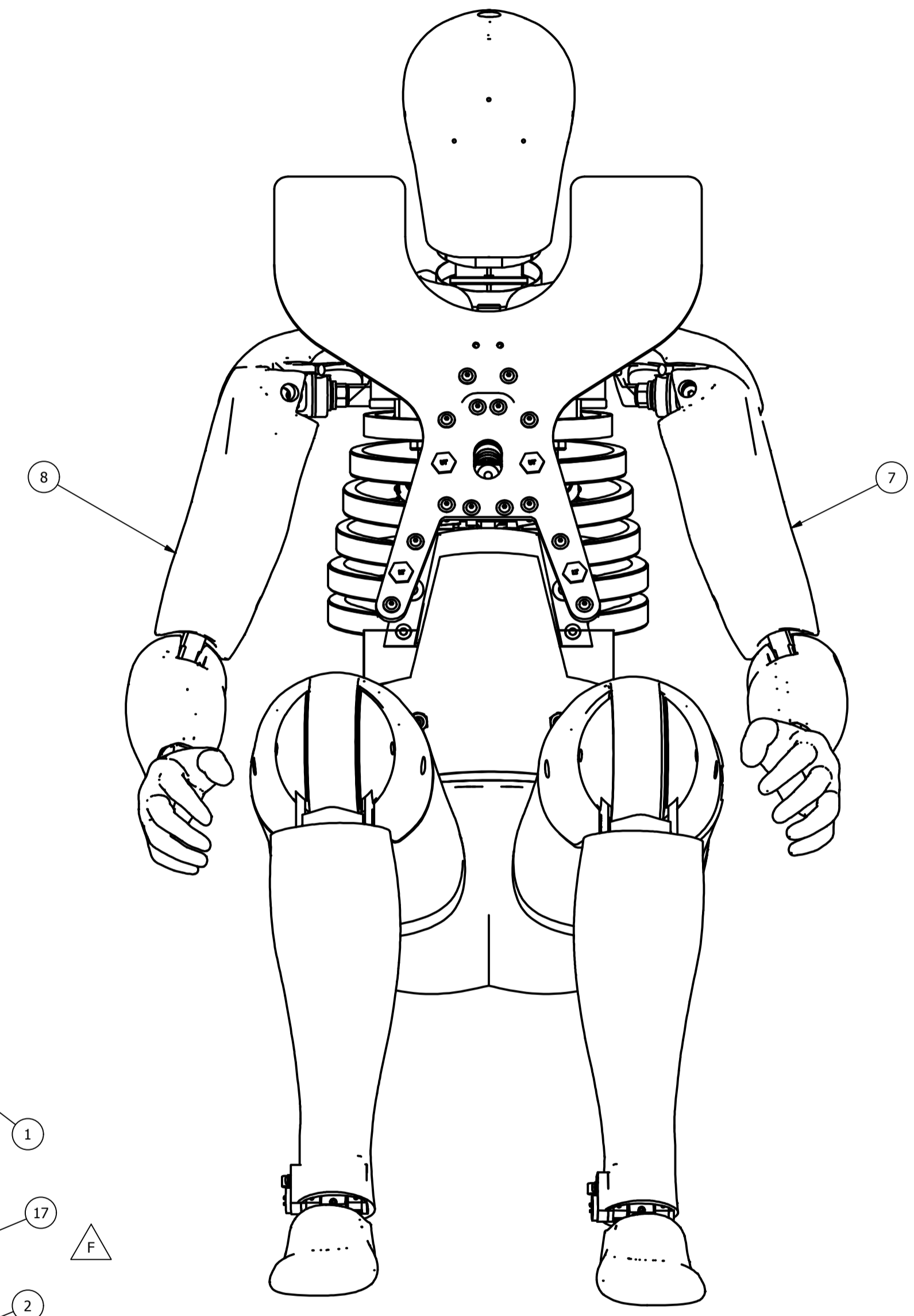
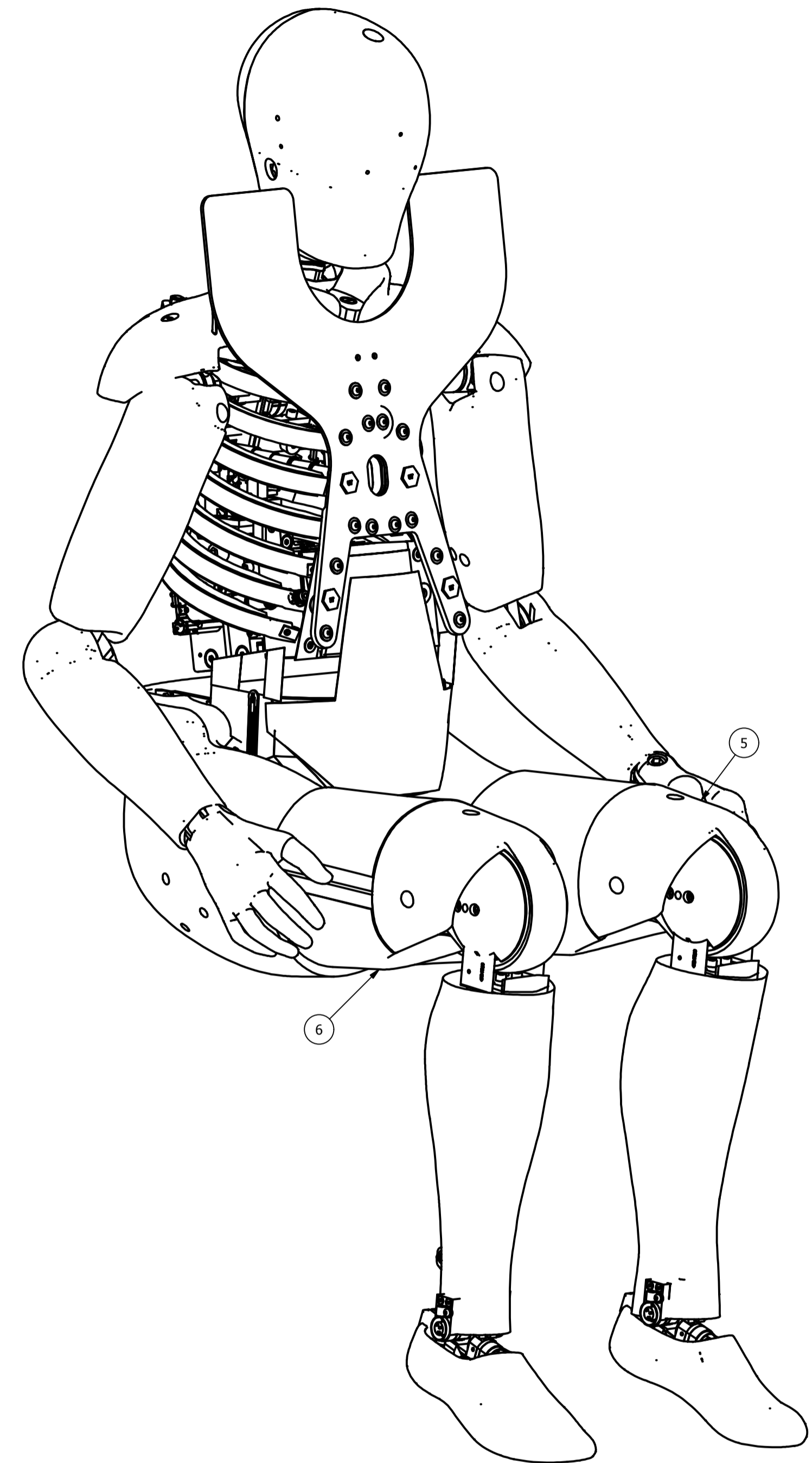
Parts List and Drawings  
THOR-M Advanced Frontal Crash Test  
Dummy  
THOR-M 50% Male



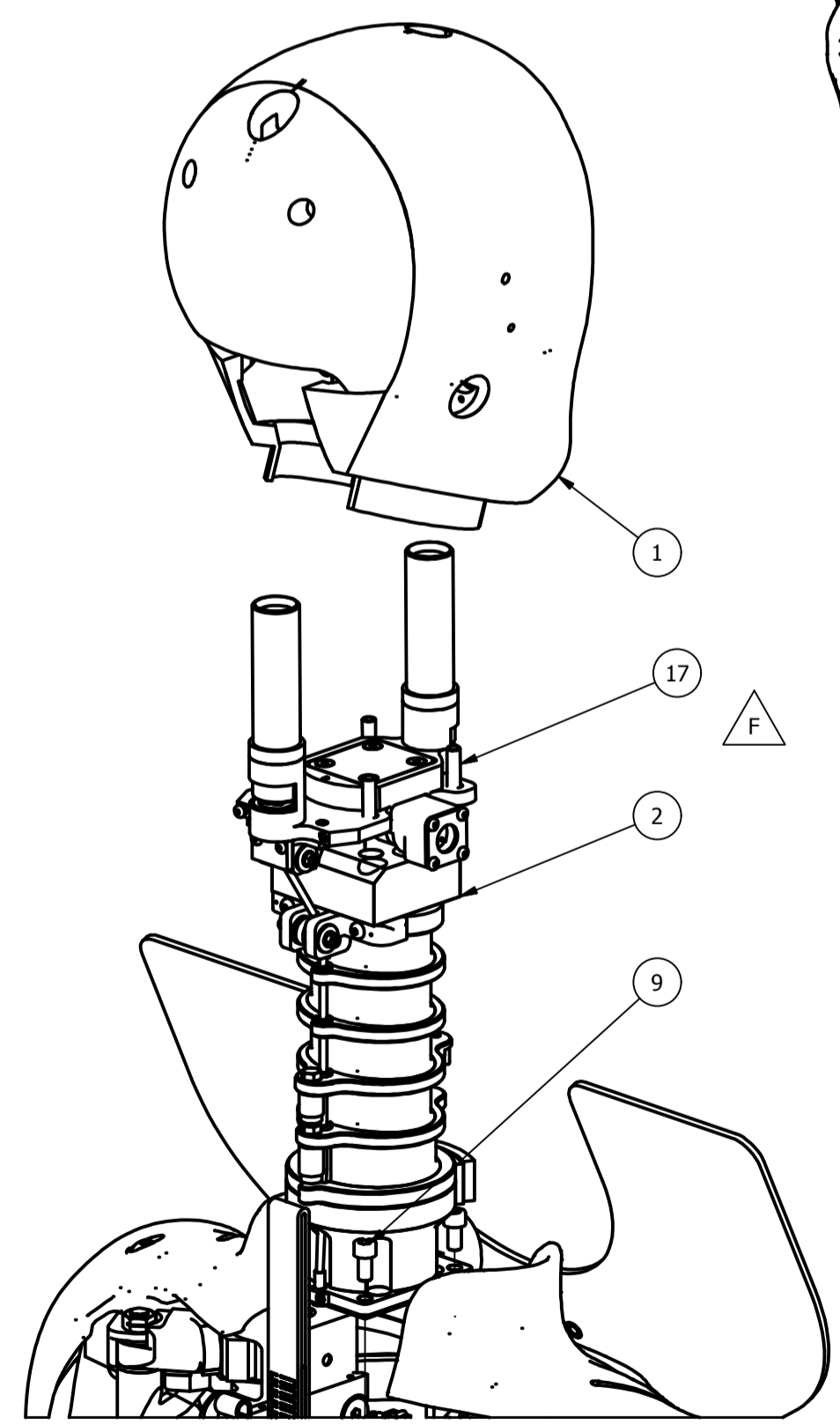
September 2015 - DRAFT

Prepared by:  
OFFICE OF CRASHWORTHINESS STANDARDS  
and  
VEHICLE RESEARCH and TEST CENTER  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FDM000 R10 FOR THOR-M	4/2/2012	BK
	B	5000604 WAS 5000300	4/25/2012	BK
	C	ADD 472-2900, 472-2901, 6004278; 472-5100-1 WAS 472-5000-1,-2	12/18/2012	BK
	D	REVISED ITEM #1 PART NUMBER 472-3000 - THORAX MECHANICAL ASSEMBLY AND ITEM #6 PART NUMBER 472-1000 - HEAD ASSEMBLY, THOR-M	5/20/2014	DW
	E	ADDED ITEM NUMBER 14 & 15, ITEM #5 TO SHT. 2 OF 3 REMOVED (NOT SHOWN) FROM DESCRIPTION OF ITEMS 14 & 15, ADDED LOWER LEGS TO VIEWS; ADDED PART #5000206V - SCREW, FHCS M6-1 X 8 & PART #5000135 - SCREW, FHCS M6-1 X 25; ON SHEET 3 REMOVED PART #SA572-S115 - CLAVICLE LOAD CELL (LEFT), SA572-S116 - CLAVICLE LOAD CELL (RIGHT) & SA572-S124 - FACE LOAD CELL ADDED PART #SA5742-S32 - FIVE CHANNEL UPPER TIBIA LOAD CELL & PART #SA5742-S33 - FIVE CHANNEL LOWER TIBIA LOAD CELL; ON PAGE 2 ADDED ITEM #7 PART #472-8706 - INSTRUMENT GROUND STRAP, MAIN GROUND, AND ITEM #8 PART #5000357V - SCREW, BHCS M6-1 X 6; ADDED NOTE 6 ON SHEET 2; REMOVED ITEM #1 PART #472-1101 - BIAXIAL ACCEL. ASSY., HEAD FROM SHT. 3; REORDERED PARTS LIST	9/15/2014	DW
	F		8/7/2015	DW



KNEE COVER 472-5353  
REMOVED FOR CLARITY



HEAD AND NECK ASSEMBLY  
SCALE 1/3

ITEM	QTY	PART NUMBER	DESCRIPTION
17	4	5000135	SCREW, FHCS M6-1 x 25
16	8	5000206V	SCREW, FHCS M6-1 x 8
15	1	472-2901	NECK SKIN ASSEMBLY (NOT SHOWN)
14	1	472-2900	NECK FOAM ASSEMBLY (NOT SHOWN)
13	1	6004278	PANTS, THERMAL, LARGE (NOT SHOWN)
12	1	472-3900	THOR JACKET (NOT SHOWN)
11	1	472-7000-2	LOWER LEG ASSEMBLY, COMPLETE - RIGHT
10	1	472-7000-1	LOWER LEG ASSEMBLY, COMPLETE - LEFT
9	4	5000604	SCREW, SHCS M6-1 x 14
8	1	472-6000-2	RIGHT ARM ASSEMBLY
7	1	472-6000-1	LEFT ARM ASSEMBLY
6	1	472-5100-2	RIGHT UPPER LEG ASSY.
5	1	472-5100-1	LEFT UPPER LEG ASSY.
4	1	472-4000	PELVIS ASSEMBLY
3	1	472-3000	THORAX MECHANICAL ASSEMBLY
2	1	472-2000	MECHANICAL ASSEMBLY, NECK
1	1	472-1000	HEAD ASSEMBLY, THOR-M

DO NOT SCALE DRAWING

TOLERANCES  
UNLESS OTHERWISE SPECIFIED:  
FRACTIONS DECIMALS ANGLES  
X.X .01 1/16 1.575  
X.XX .005 1/32 1.575  
X.XXX .001 1/64 1.575

SHOW HIDDEN & BREAK SHARP EDGES

THIRD ANGLE PROJECTION

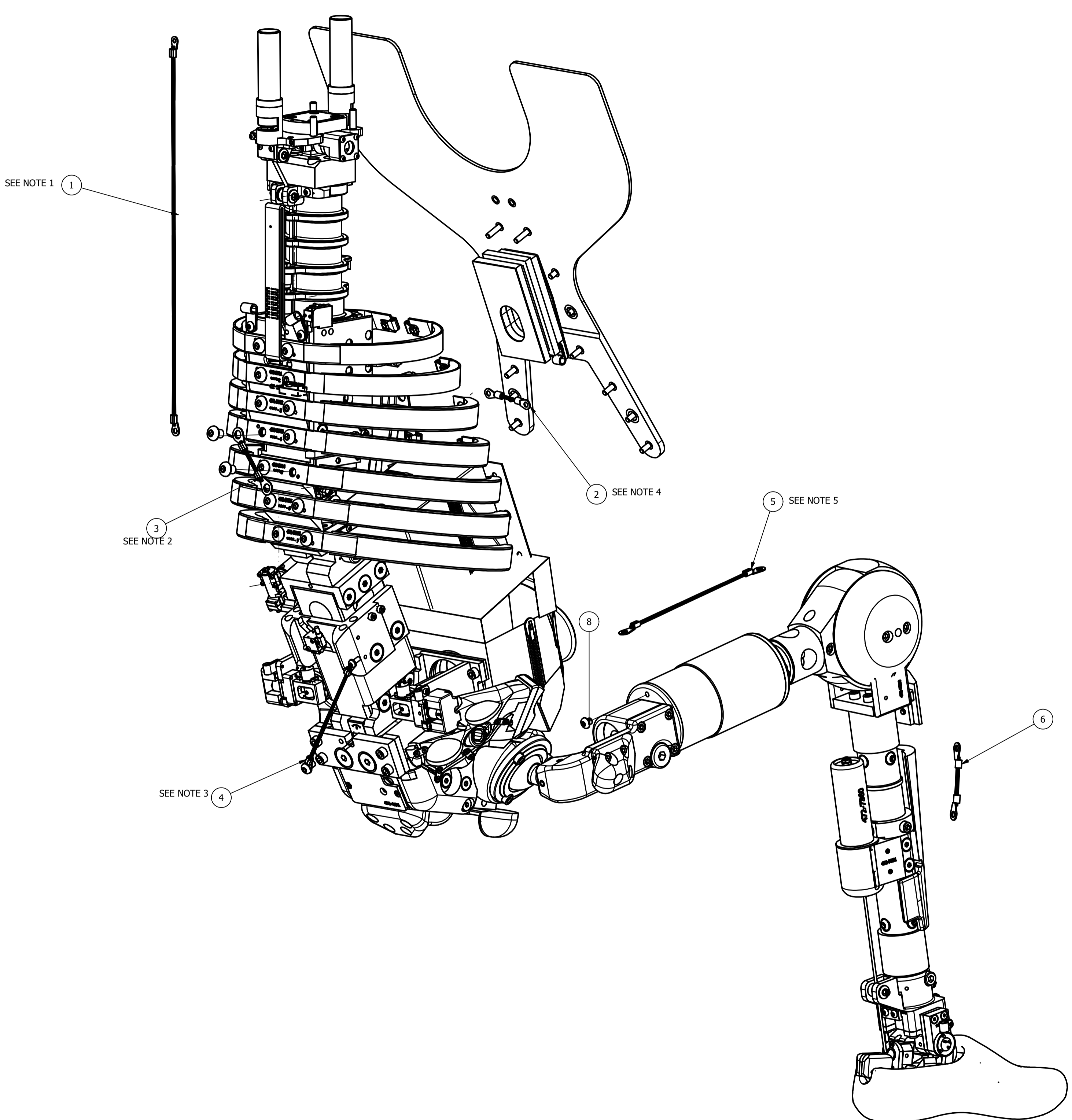
REVISIONS

REV	DATE	BY
A	10/19/2011	B. KIMES
B	3/1/2012	J. WANG

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
MECHANICAL ASSEMBLY, THOR-M

DATE: 10/19/2011  
DRAWN BY: B. KIMES  
CHECKED BY: J. WANG  
DATE: 3/1/2012

11 OF 3  
472-0000  
1/4

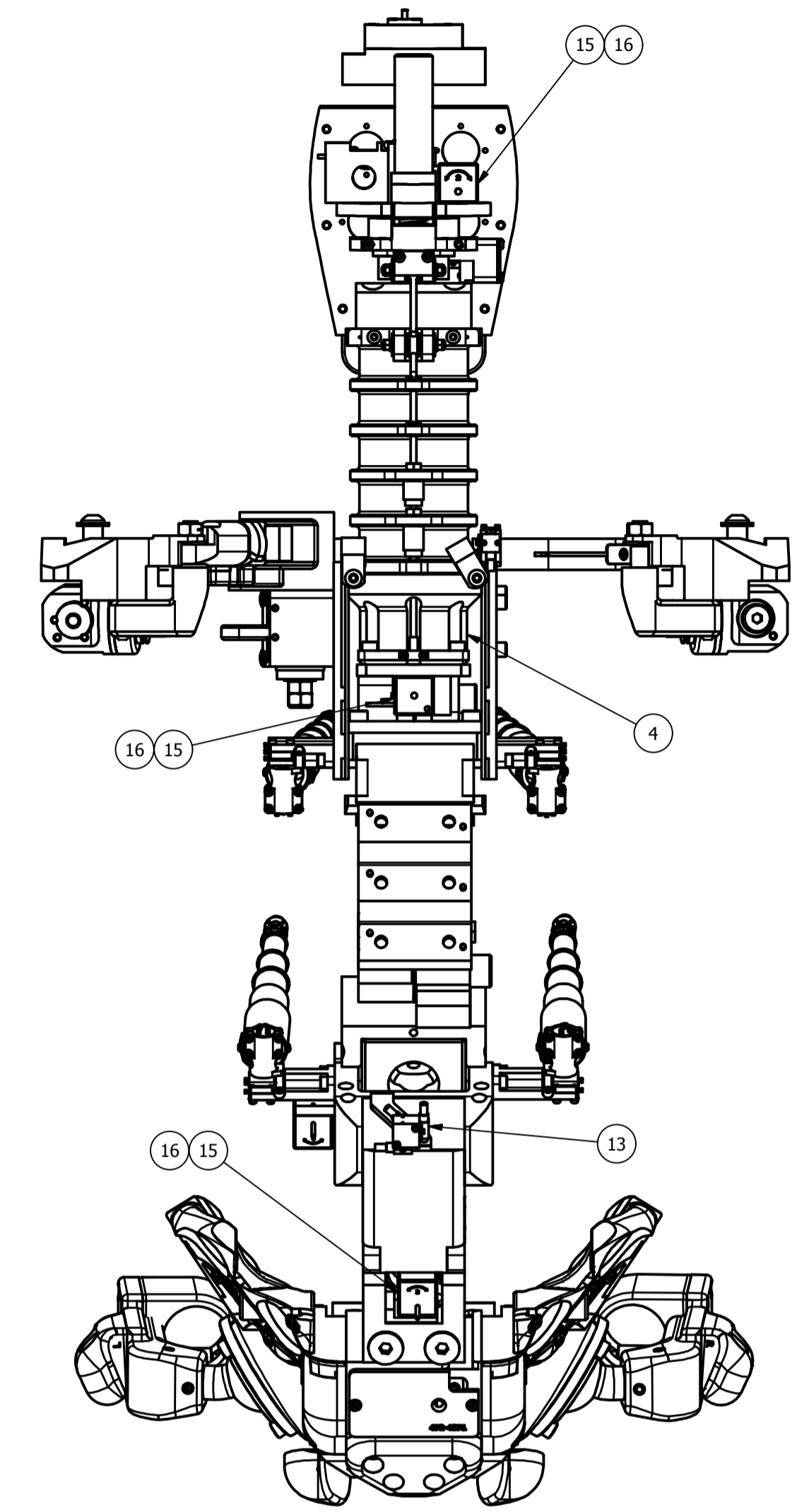
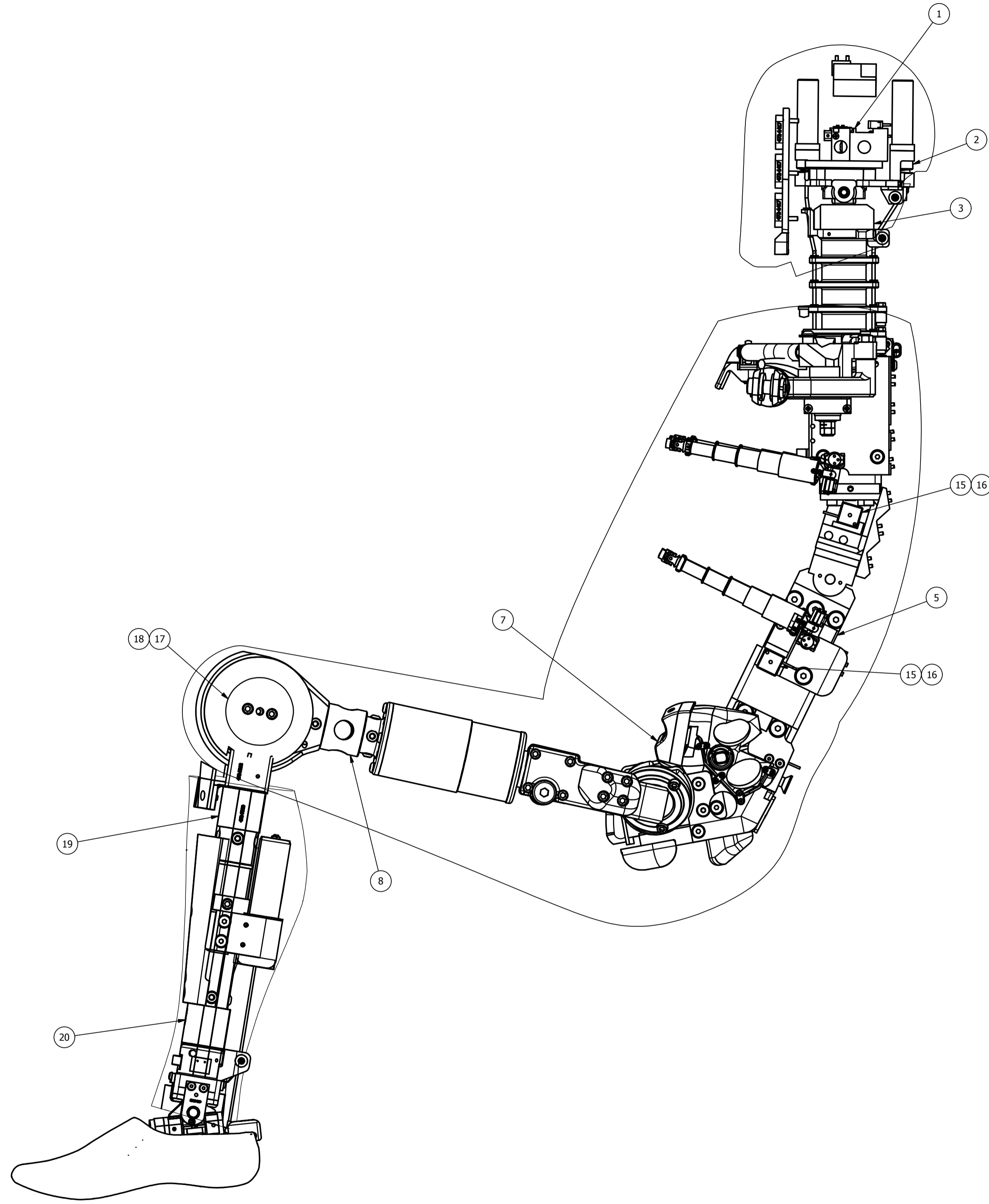
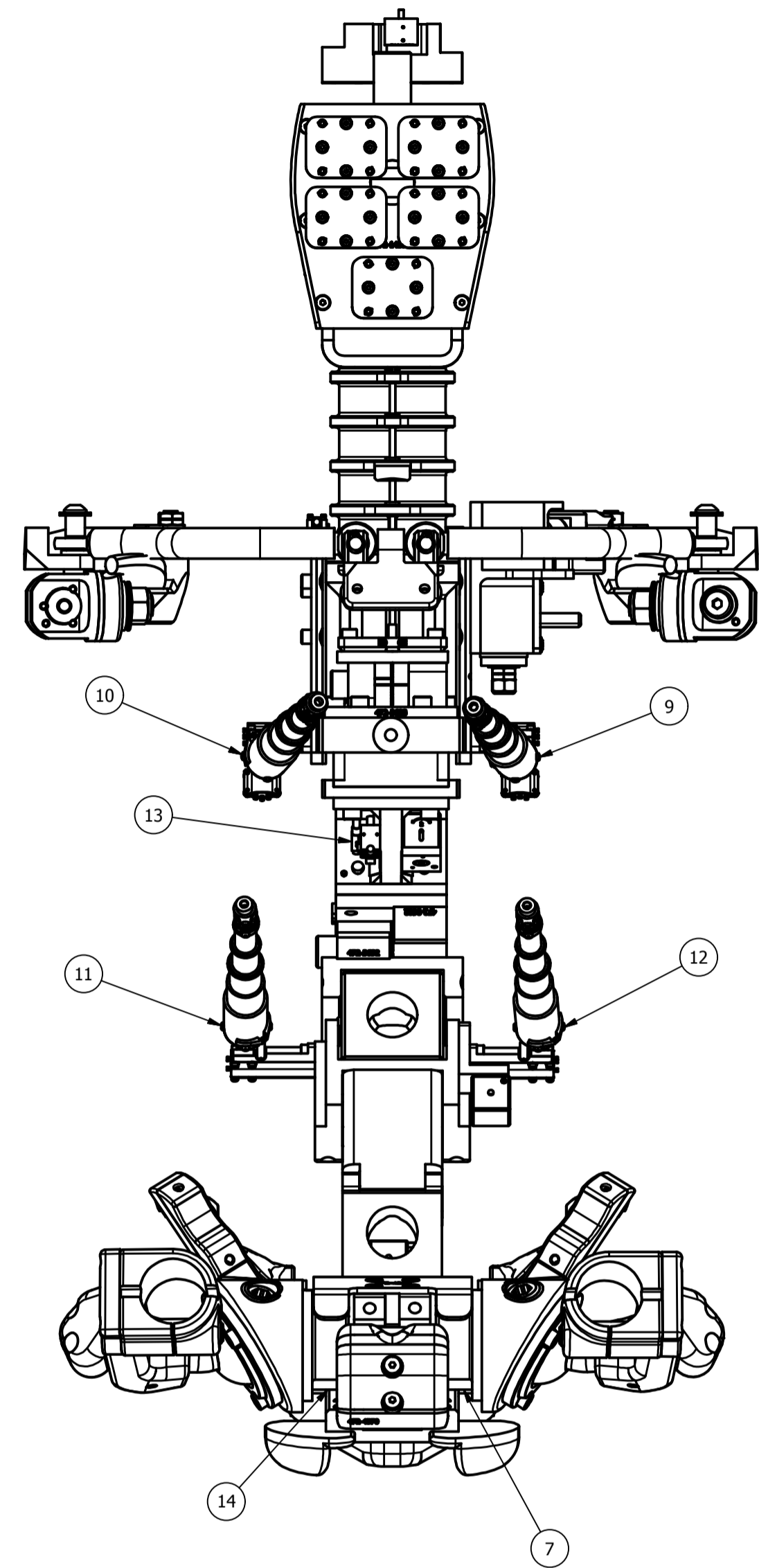


- NOTES:
- 472-8700 ATTACHES TO THE SPINE AT THE UPPER THORACIC SPINE BACK PLATE AND TO THE NECK MOUNTING PLATFORM WITH THE HARDWARE PROVIDED.
  - 472-8702 ATTACHES TO RIB #4 AND RIB #5 USING THE EXISTING RIB MOUNTING HARDWARE.
  - 472-8703 ATTACHES TO THE THORACIC SPINE FLEX JOINT ADAPTOR PLATE AND THE LOWER ABDOMEN REAR ATTACHMENT PLATE USING THE M4 x 10 AND M6 x 10 SCREWS PROVIDED IN THE TOOL KIT.
  - 472-8701 ATTACHES TO THE MID-STERNUM ASSEMBLY AND RIB #4 USING THE EXISTING RIB MOUNTING HARDWARE AND CABLE CLAMP MOUNTING HARDWARE.
  - 472-8704 ATTACHES TO THE FEMUR LOAD CELL WHEN THE LOAD CELL IS INSTALLED.
  - 472-8706 ATTACHES TO THE DUMMY AT THE LOWER ABDOMEN REAR ATTACHMENT PLATE USING THE SAME M6 SCREW THAT ATTCHES 472-8703.

ITEM	QTY	PART NUMBER	DESCRIPTION
8	1	5000357V	SCREW, BHCS M6-1 x 6
7	1	472-8706	INSTRUMENT GROUND STRAP, MAIN GROUND (NOT SHOWN) SEE NOTE 6
6	2	472-8705	INSTRUMENT GROUND STRAP, TIBIA
5	2	472-8704	INSTRUMENT GROUND STRAP, FEMUR
4	1	472-8703	INSTRUMENT GROUND STRAP, LUMBAR SPINE
3	1	472-8702	INSTRUMENT GROUND STRAP, THORACIC SPINE
2	1	472-8701	INSTRUMENT GROUND STRAP, MID STERNUM
1	1	472-8700	INSTRUMENT GROUND STRAP, HEAD/NECK

**PARTS LIST**

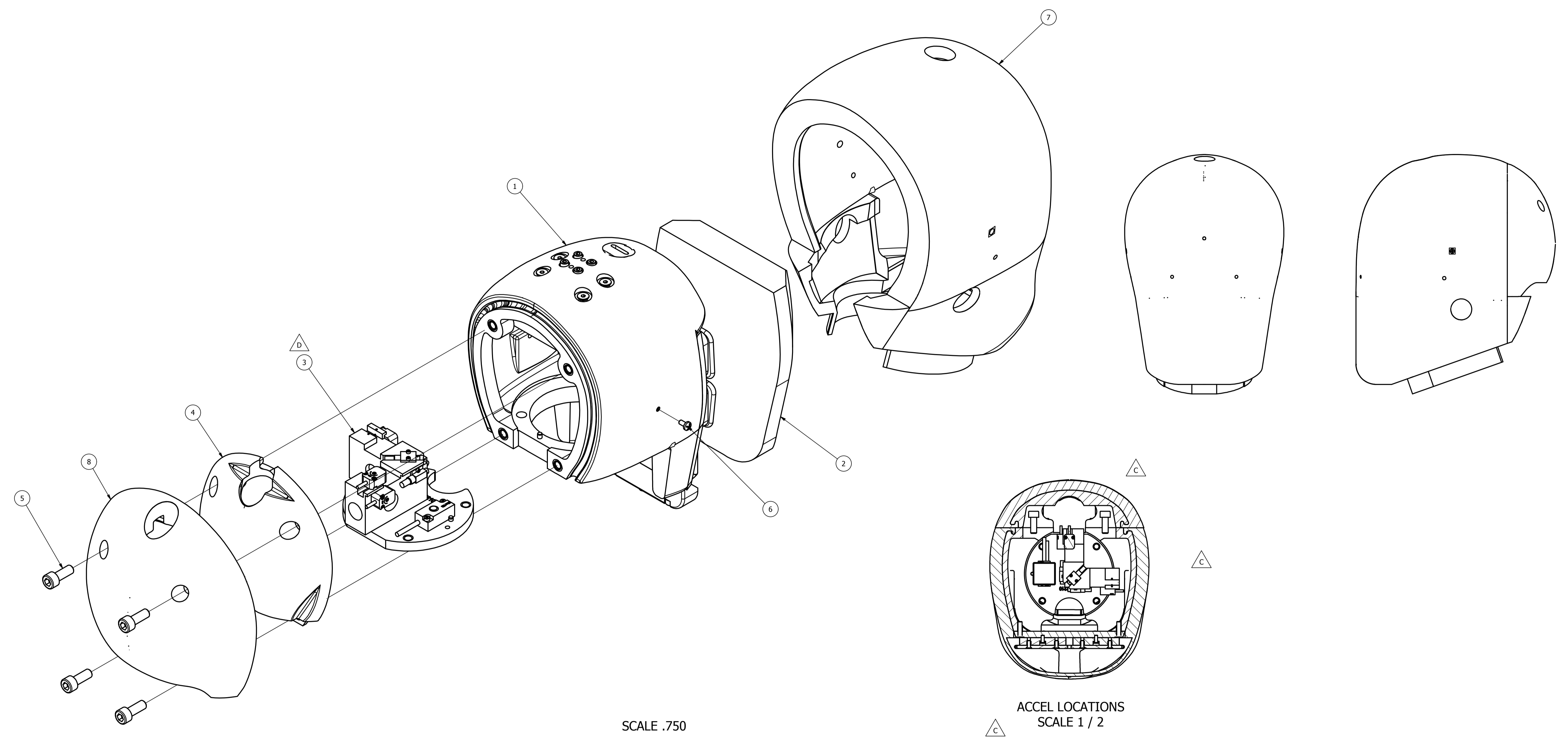
TOLERANCES DIMENSIONS ARE AS SHOWN UNLESS OTHERWISE SPECIFIED FRACTIONS 1/16" 1/8" 1/4" 3/8" 1/2" DECIMALS .0005" .001" .002" .005" .010" .015" .030" .045" .060" .075" .150" .300" HOLE DRILLS & REAMER SHARP EDGES FINISHES B. KIMES 10/19/2011 J. WANG 4/2/2012	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION GROUND STRAP LOCATIONS 12 OF 3 1/4 472-0000
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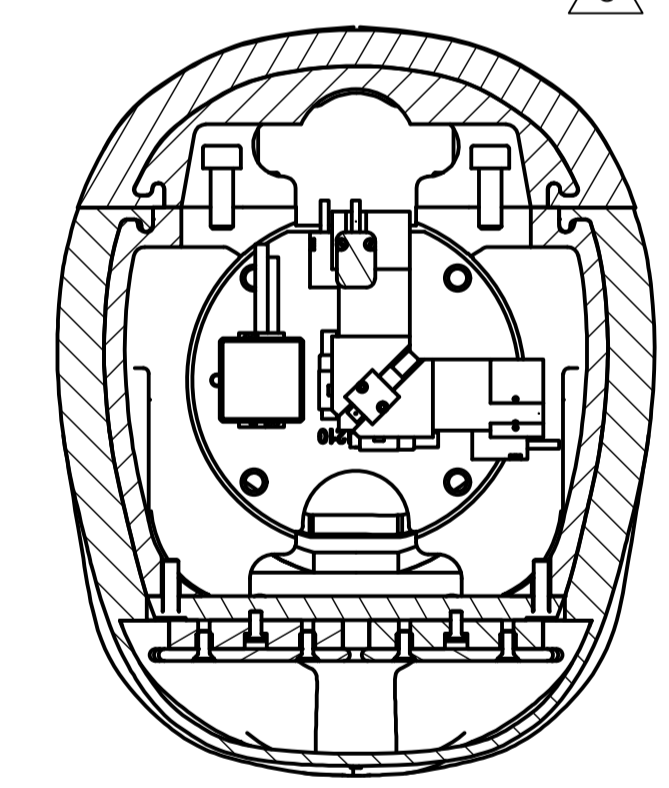
ITEM	QTY	PART NUMBER	DESCRIPTION
20	2	SAS72-S33	FIVE CHANNEL LOWER TIBIA LOAD CELL
19	2	SAS72-S32	FIVE CHANNEL UPPER TIBIA LOAD CELL
18	1	SAS72-S90-R	STRING POT, MINI (RIGHT)
17	1	SAS72-S90-L	STRING POT, MINI (LEFT)
16	1	SAS72-S44	TILT SENSOR, DUAL AXIS
15	1	SAS72-S113	TILT SENSOR, DUAL AXIS
14	1	SAS72-S129	ACETABULUM LOAD CELL, RIGHT
13	1	472-4203	TRI PACK ACCEL ASSY
12	1	472-3580	IRTRACC ASSY, LOWER LEFT
11	1	472-3570	IRTRACC ASSY, LOWER RIGHT
10	1	472-3560	IRTRACC ASSY, UPPER RIGHT
9	1	472-3550	IRTRACC ASSY, UPPER LEFT
8	2	SAS72-S120	FEMUR LOAD CELL
7	2	SAS72-S119	A.S.I.S. LOAD CELL
6	1	SAS72-S128	ACETABULUM LOAD CELL (LEFT)
5	1	SAS72-S127	THORACIC SPINE LOAD CELL
4	1	SAS72-S111	LOWER NECK LOAD CELL
3	1	SAS72-S110	UPPER NECK LOAD CELL
2	2	SAS72-S112	SKULL SPRING LOAD CELL
1	1	472-1200	ACCEL. MOUNTING PLATE, HEAD
ITEM	QTY	PART NUMBER	DESCRIPTION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 SENSOR/LOAD CELL LOCATIONS  
 472-0000  
 1/4

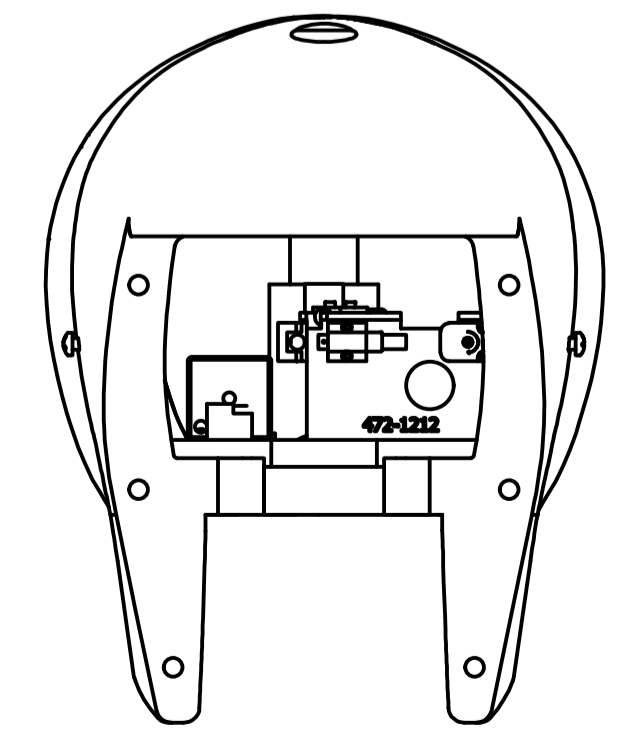
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM000 R12 AND CONVERTED TO METRIC FOR THOR-M	8/31/2011	BK
	B	REMOVE 472-1400, ADD 472-1401	11/5/2012	BK
	C	ADD ACCEL LOCATION VIEWS & DIMENSIONS	1/31/2013	BK
	D	ADDED ARS'S TO ACCELEROMETER MOUNTING PLATE ASSEMBLY, HEAD - 4721200	5/19/2014	DW
	E	REMOVED PART #5000135 - M6 X 1 X 25 LG. FHCS	8/10/2015	DW



SCALE .750



ACCEL LOCATIONS  
SCALE 1 / 2

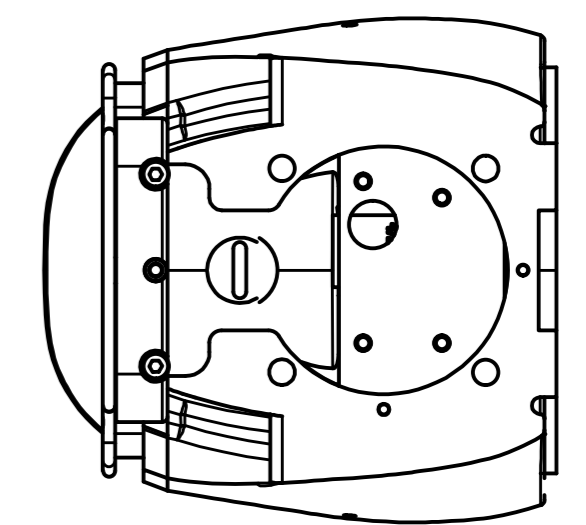
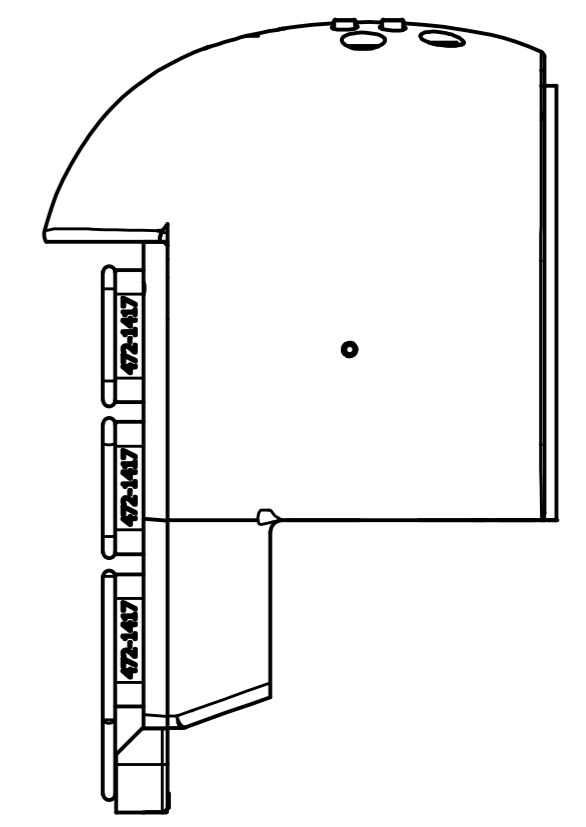
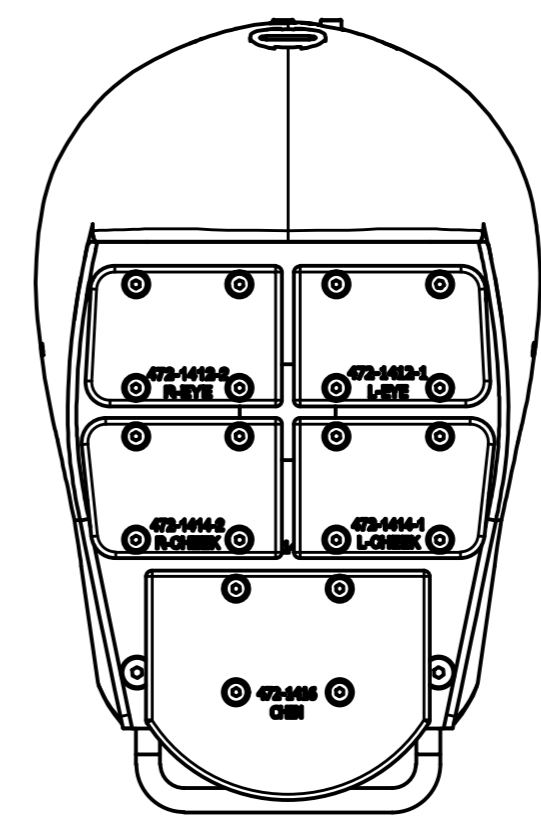
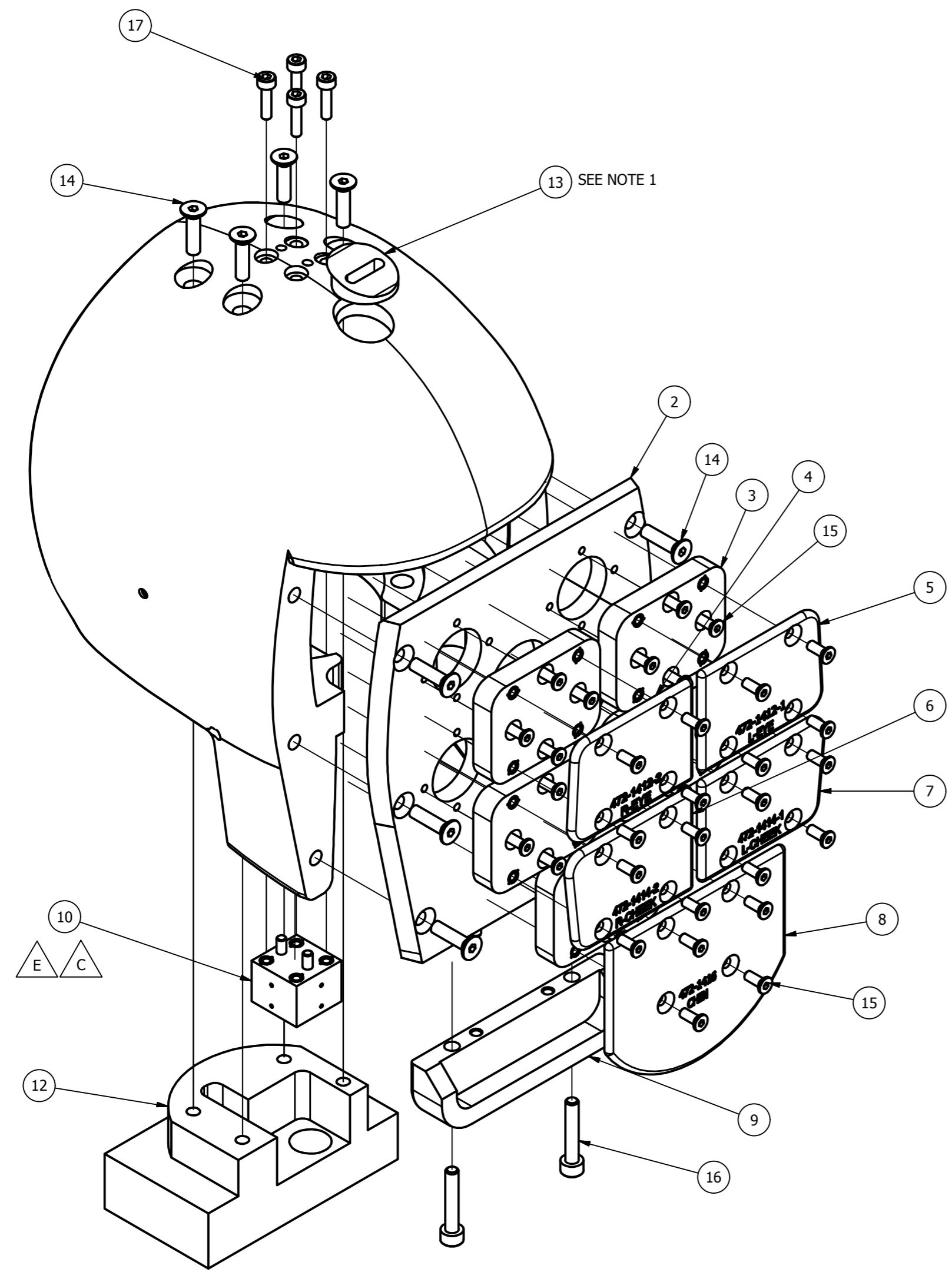


- NOTES:
1. THE HEAD IS ATTACHED TO THE HEAD MOUNTING PLATE ON THE NECK ASSEMBLY, AND IS SECURED WITH FOUR M6 X 1 X 25 FHCS WHICH ARE INSERTED THROUGH THE BOTTOM OF THE HEAD MOUNTING PLATE, THE BASE OF THE SKULL, AND THREAD INTO THE HEAD ACCELEROMETER MOUNTING PLATE.
  2. ITEM 7 (M3 X .5 X 6 NYLON SCREW) IS USED TO MARK THE LOCATION OF THE HEAD C.G.
  3. REFER TO CERTIFICATION MANUAL FOR PERFORMANCE SPECIFICATIONS FOR THIS ASSEMBLY.

ITEM	QTY	PART NUMBER	DESCRIPTION
8	1	472-1310	CAP SKIN
7	1	472-1320	SKIN ASSEMBLY
6	2	5001116	SCREW, PHILLIPS NYLON M3 X .5 X 6
5	4	5000081	M6 X 1 X 16 LG. SHCS
4	1	472-1110	HEAD CAP
3	1	472-1200	ACCELEROMETER MOUNTING PLATE ASSEMBLY, HEAD
2	1	472-1401	CONFOR FOAM, FACE
1	1	472-1100	SKULL ASSEMBLY

PARTS LIST		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-0000	1	THOR-M	8/31/2011	HEAD ASSEMBLY, THOR-M	
NEXT ASSEMBLY	QTY	DESIGNED BY	DATE	DRAWN BY	
TOTAL QTY IN DUMMY	1	B. KIMES	8/31/2011	J. WANG	
		CHECKED BY		DATE	
		J. WANG		11/10/2012	
		SCALE		.500	
		SHEET		11 OF 1	
		PART NO.		472-1000	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM100 R17 AND CONVERTED TO METRIC FOR THOR-M	8/31/2011	BK
	B	5000203 (M3) QTY 20 WAS 5000023 (M4)	5/25/2012	BK
	C	UPDATE VIEWS TO SHOW CHANGE TO 472-1101	6/14/2012	BK
	D	5000388 WAS 5000119; 5000116 WAS 5000203	12/20/2012	BK
	E	UPDATED VIEWS TO SHOW CHANGE TO 472-1101	5/20/2014	DW
	F	ADDED PART #472-1115 - HEAD C.G PART GROUP FOR BALLAST WEIGHT	8/4/2015	DW

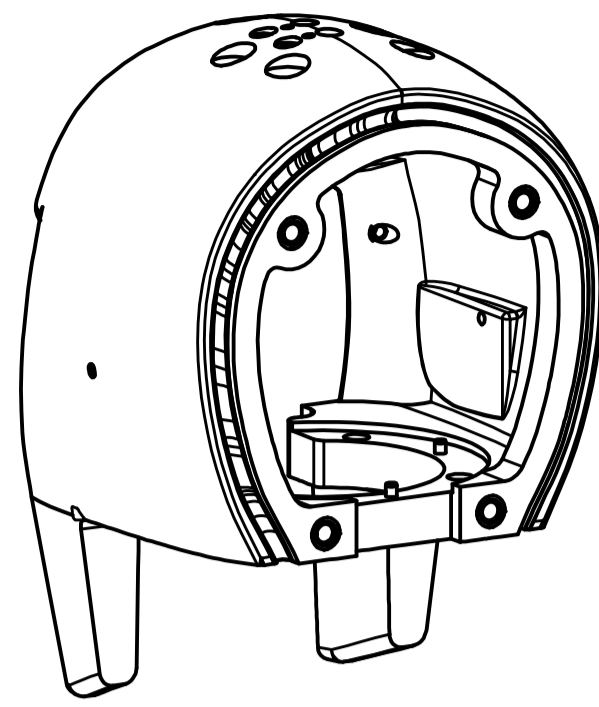


SCALE .750

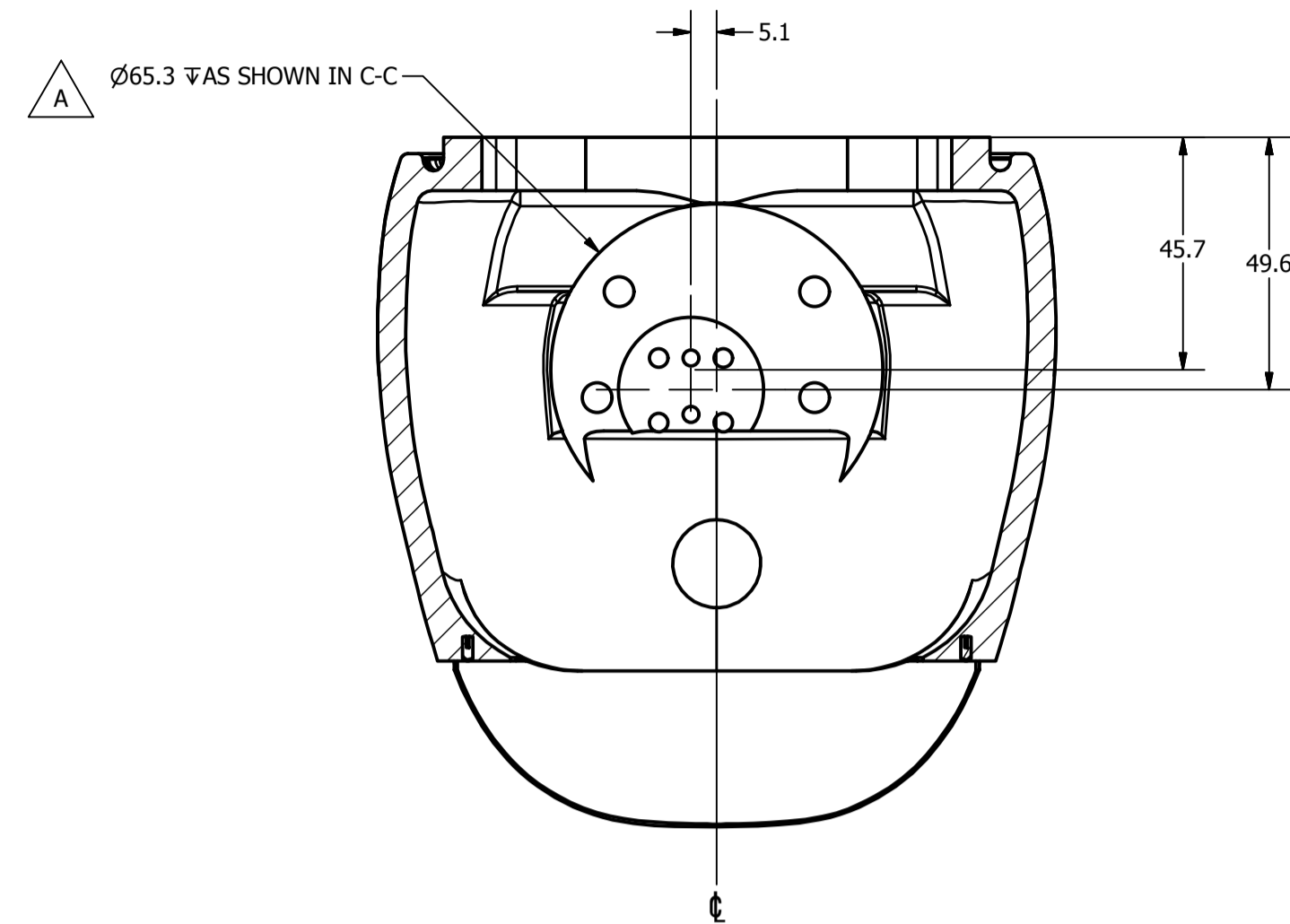
NOTES:  
1. TIGHTEN HEAD PLUG THEN GRIND FLUSH WITH SKULL OUTER SURFACE.

ITEM	QTY	PART NUMBER	DESCRIPTION
17	4	5001103	M3 X 0.5 X 12 LG. SHCS
16	2	5001117	SCREW, SHCS M4 X 0.7 X 22
15	40	5000116	SCREW, FHCS M3-0.5 X 8
14	10	5000025	SCREW, FHCS M4-0.7 X 16
13	1	472-1116	PLUG, HEAD
12	1	472-1120	HEAD BALLAST
11	1	472-1115	HEAD C.G. PART GROUP FOR BALLAST WEIGHT DESIGN
10	1	472-1101	BIAXIAL ACCELEROMETER ASSEMBLY, HEAD
9	1	472-1411	CHIN GUARD
8	1	472-1416	CHIN LOAD CELL PLATE
7	1	472-1414-1	LEFT CHEEK LOAD CELL PLATE
6	1	472-1414-2	RIGHT CHEEK LOAD CELL PLATE
5	1	472-1412-1	LEFT EYE LOAD CELL PLATE
4	1	472-1412-2	RIGHT EYE LOAD CELL PLATE
3	5	472-1417	FACE LOAD CELL, MOCK
2	1	472-1410	FACE PLATE
1	1	472-1111	HEAD, MACHINED

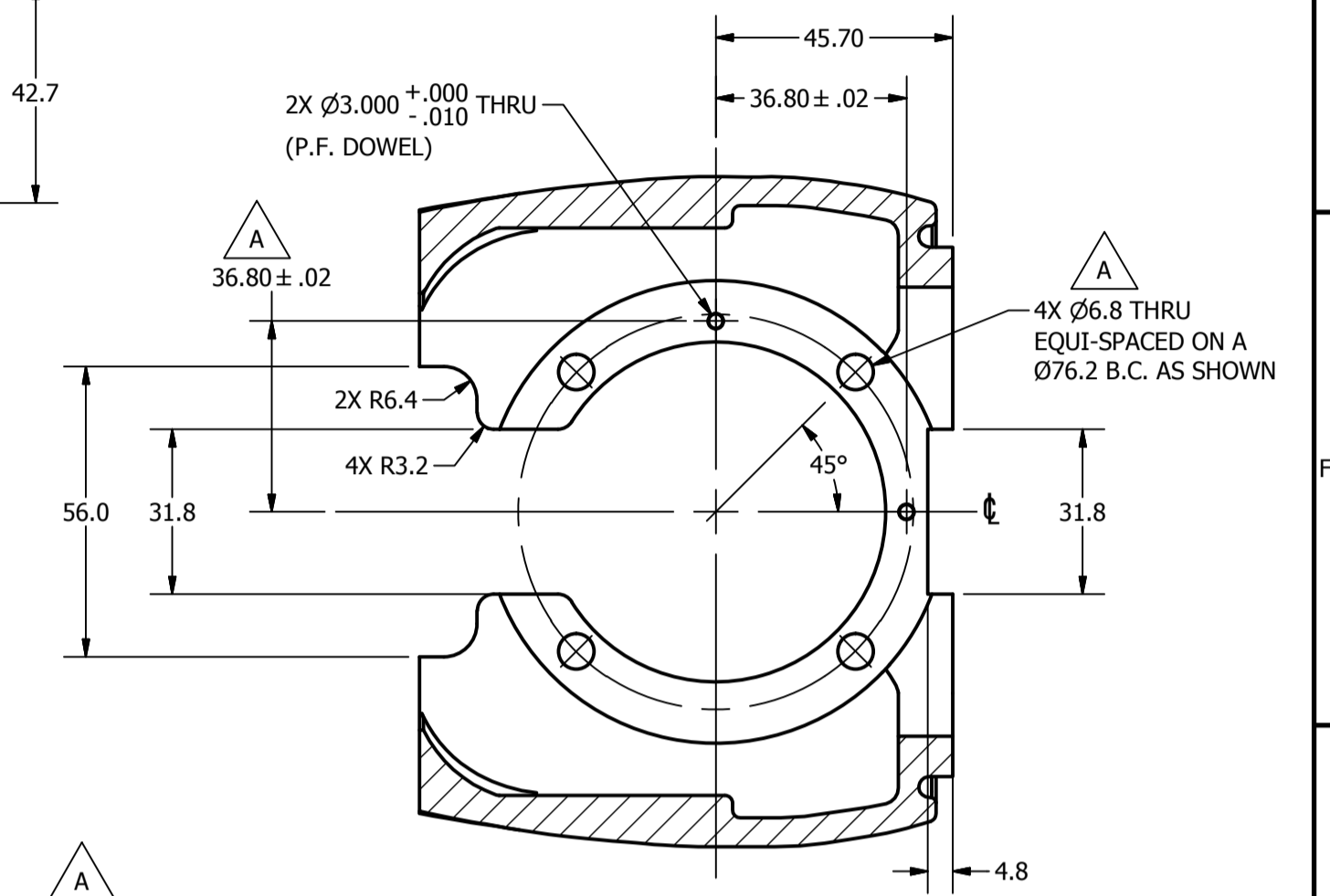
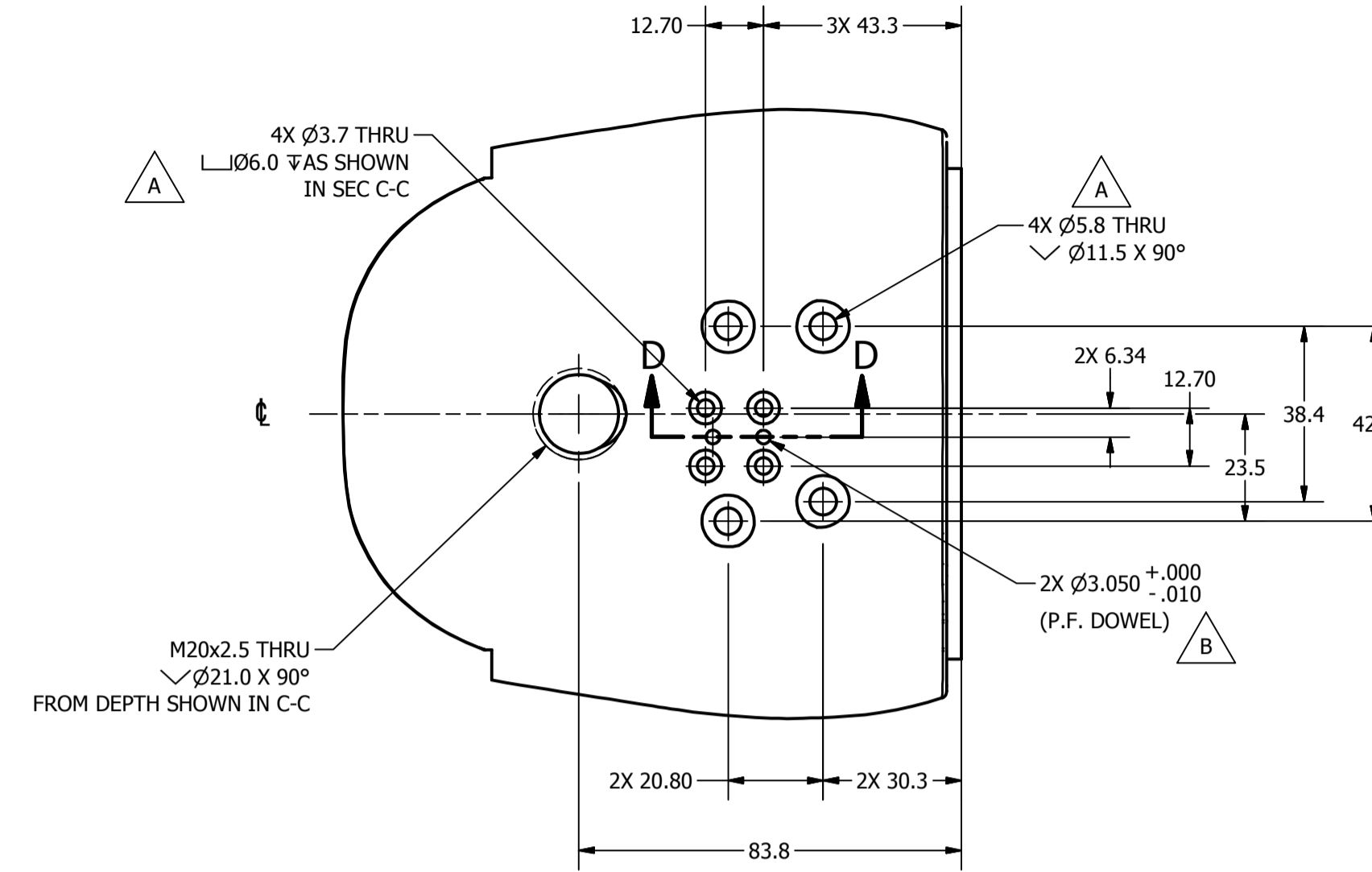
PARTS LIST	
DO NOT SCALE DRAWING	TOLERANCES
THIRD ANGLE PROJECTION	(UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH
PROJECT NO: THOR-M	DATE: 8/25/2011
MATERIAL: 472-1000	DESIGNED BY: B. KIMES
CHECKED BY:	DATE:
ENGINEER: J. WANG	DATE: 1/10/2012
FINISH:	SCALE: .500
REMOVED BURS & BREAK SHARP EDGES	DESCRIPTION: SKULL ASSEMBLY
SIZE: SHEET A21 OF 1	DRAWING NO: 472-1100
TOTAL QTY IN DUMMY: 1	REV: F



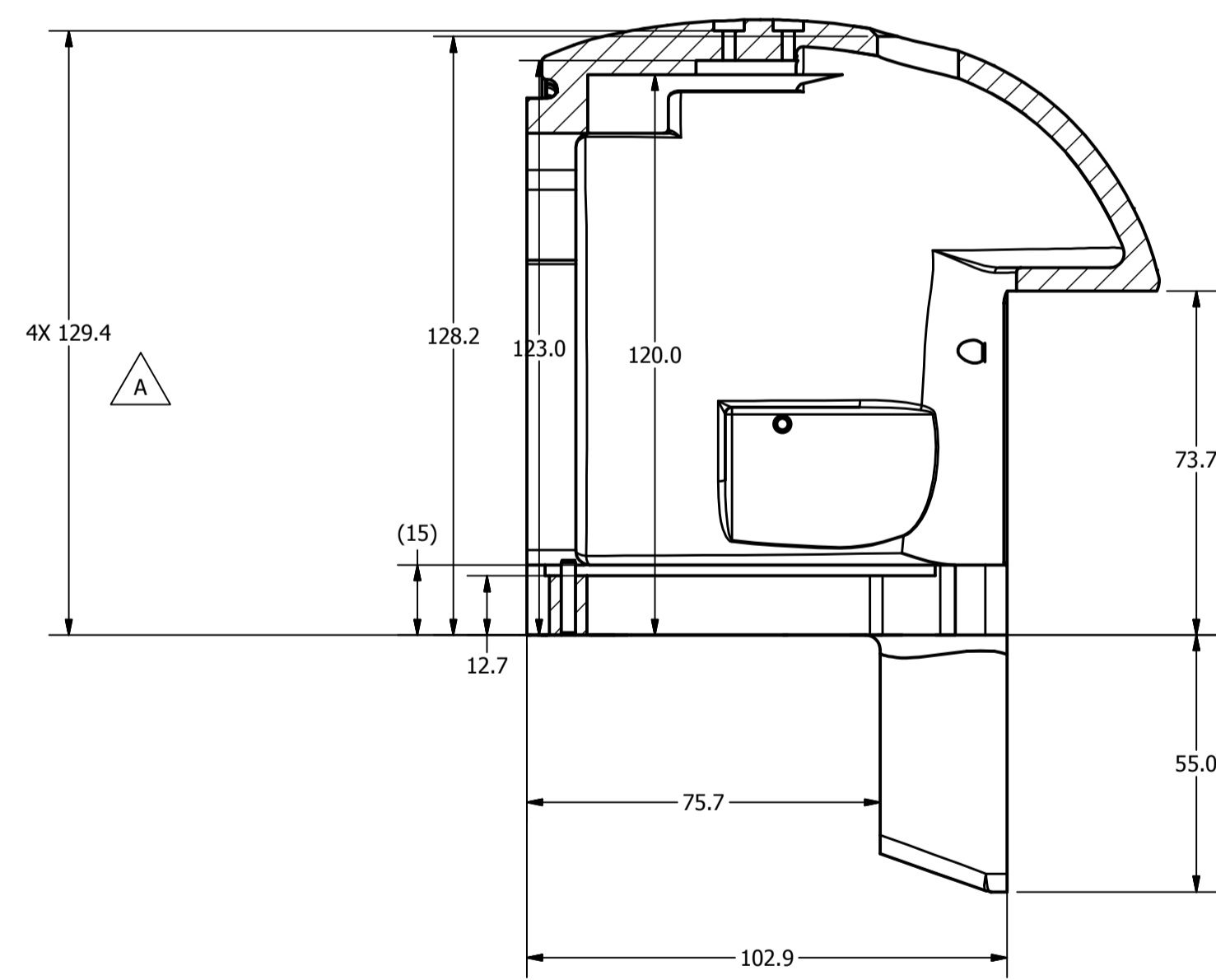
SCALE .500



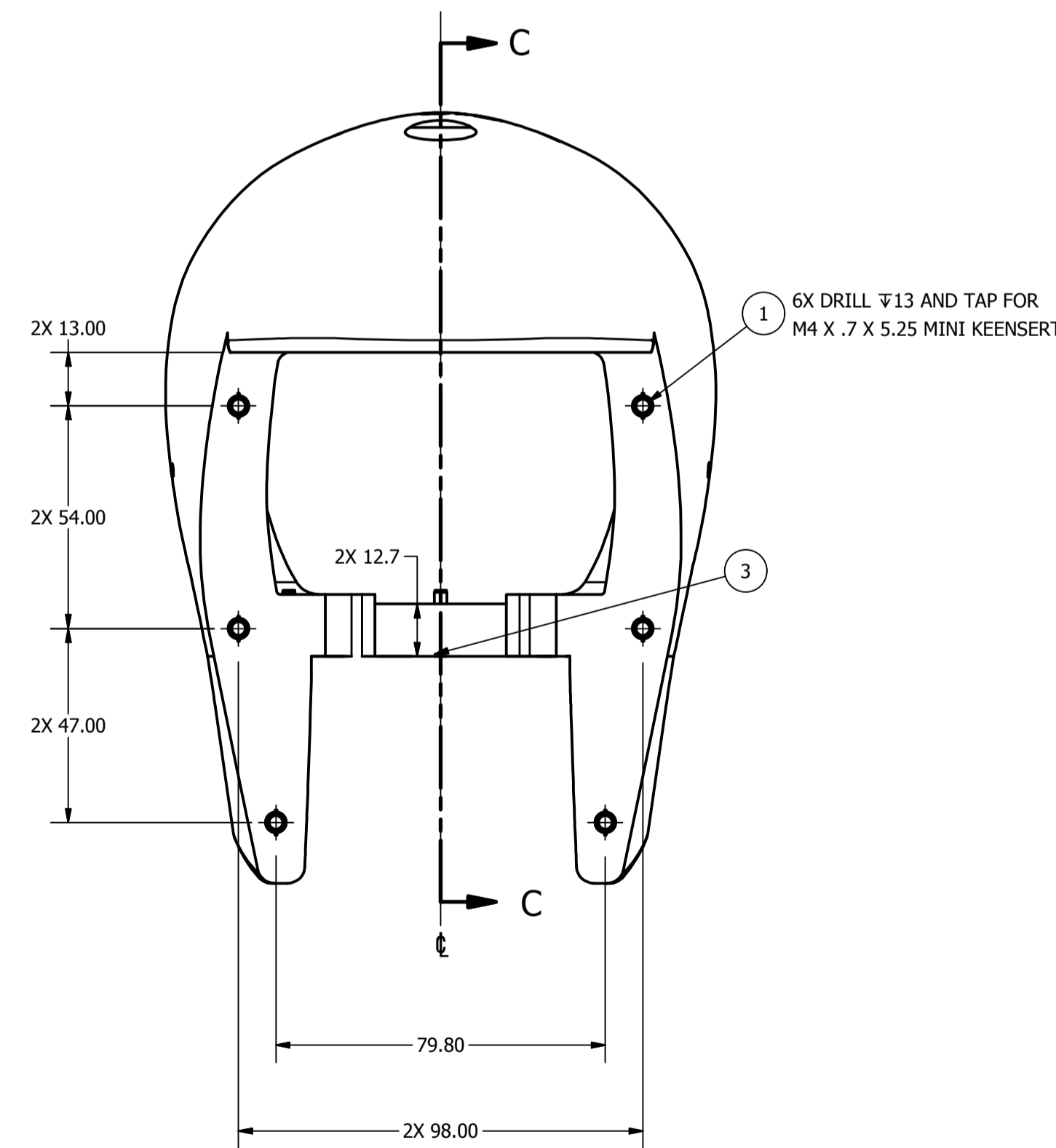
SECTION A-A  
SCALE .750



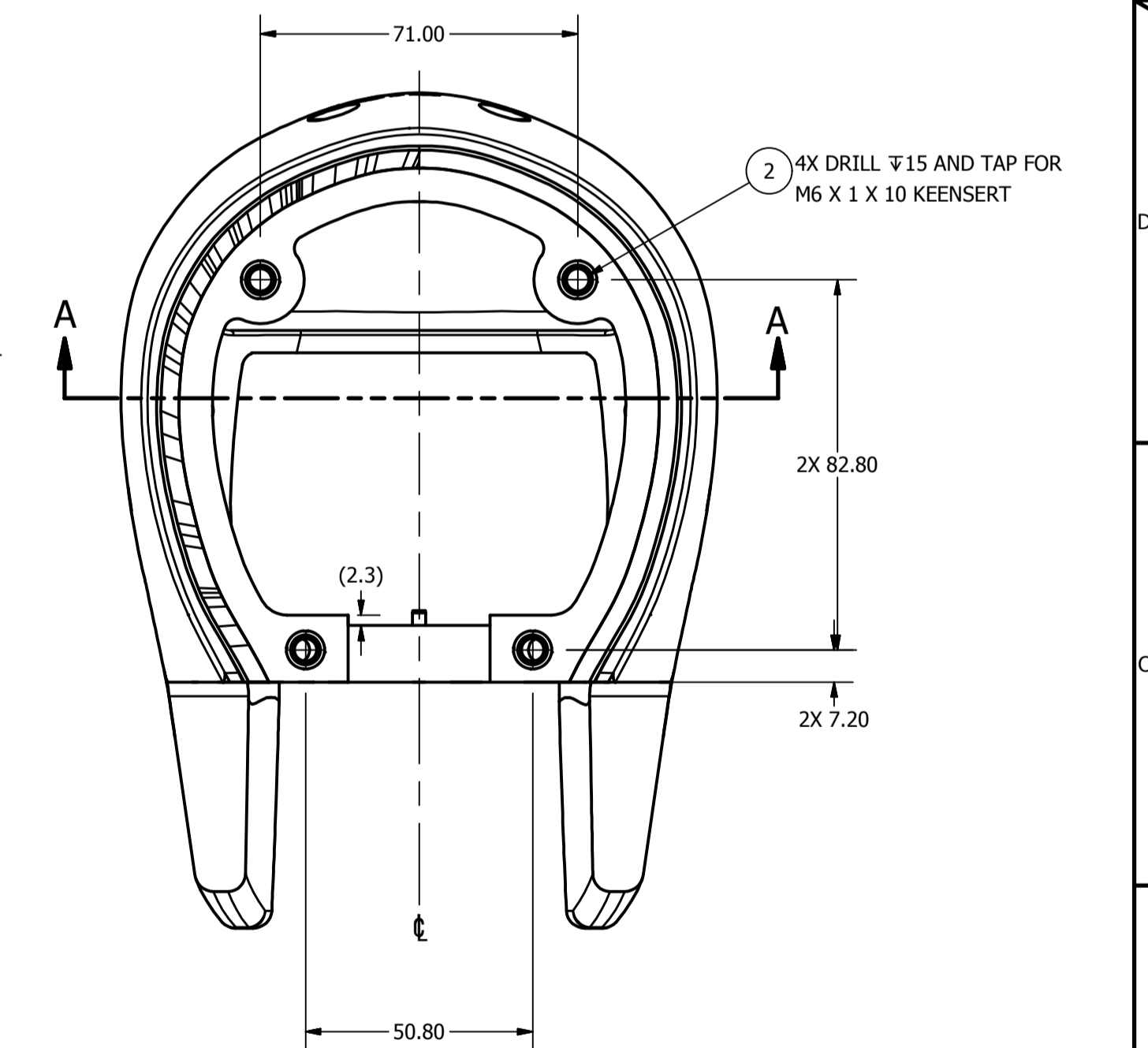
SECTION B-B  
SCALE .750



SECTION C-C  
SCALE .750



SECTION D-D  
SCALE .750



ITEM	QTY	PART NUMBER	DESCRIPTION
4	2	5000333	HELI-COIL, M3x0.5 X 6 LG SST
3	2	5000592	M3 X 16 LG. DOWEL PIN
2	4	5001108	M6 X 1 X 10 LG. LIGHTWEIGHT KEENSERT
1	6	5000724	M4 X 0.7 X 5.25 LG. MINI KEENSERT

PARTS LIST

DO NOT SCALE DRAWING  
TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ARE TO THE NEAREST THOUSAND  
FRACTIONS ARE TO THE NEAREST SIXTEENTH  
HOLE DIMENSIONS & BREAK SHARP EDGES  
THIRD ANGLE PROJECTION



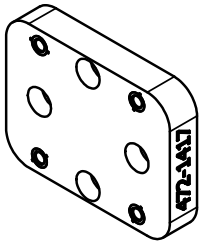
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

REV	DESCRIPTION	DATE	BY
4	REMOVED 5000934, SLIP FIT HOLES WERE PRESS FIT IN TOP OF HEAD, ADDED M3 HELICOILS (5000333)	9/17/2012	TMV
A	RENUMBERED FROM T1HDM111 Rev A AND CONVERTED TO METRIC FOR THOR-M; DIMENSION ø65.3 □ AS SHOWN IN C-C WAS ø65.3 +0.00/-0.12 TO DEPTH SHOWN; 4X ø3.5 THRU C'BORE ø6.0 □ AS SHOWN IN SEC. C-C WAS (4X) ø4.8 □ DEPTH SHOWN ø3.3 THRU; 4X ø5.5 THRU C'SINK ø10.5 X 90° WAS 4X ø5.1 THRU C'SINK ø9.8 X 82.0°; 2X ø2.998 +.000/-0.010 (P.F. DOWEL) WAS 2X ø3.2 THRU SLIP FIT DOWEL; 36.08 ±.02 WAS 36.08 ±.03; ø89.40 □ AS SHOWN WAS ø89.04 +0.05/-0.00 TO DEPTH SHOWN; 4X ø6.4 THRU EQUI-SPACED ON A ø76.2 B.C. AS SHOWN WAS 4X ø17/64 THRU EQUALLY SPACED ON B.C. ø76.2; ø89.40 □ AS SHOWN WAS ø89.4 +0.05/-0.00 TO DEPTH SHOWN; 128.2 WAS 128.0	8/26/2011	BK

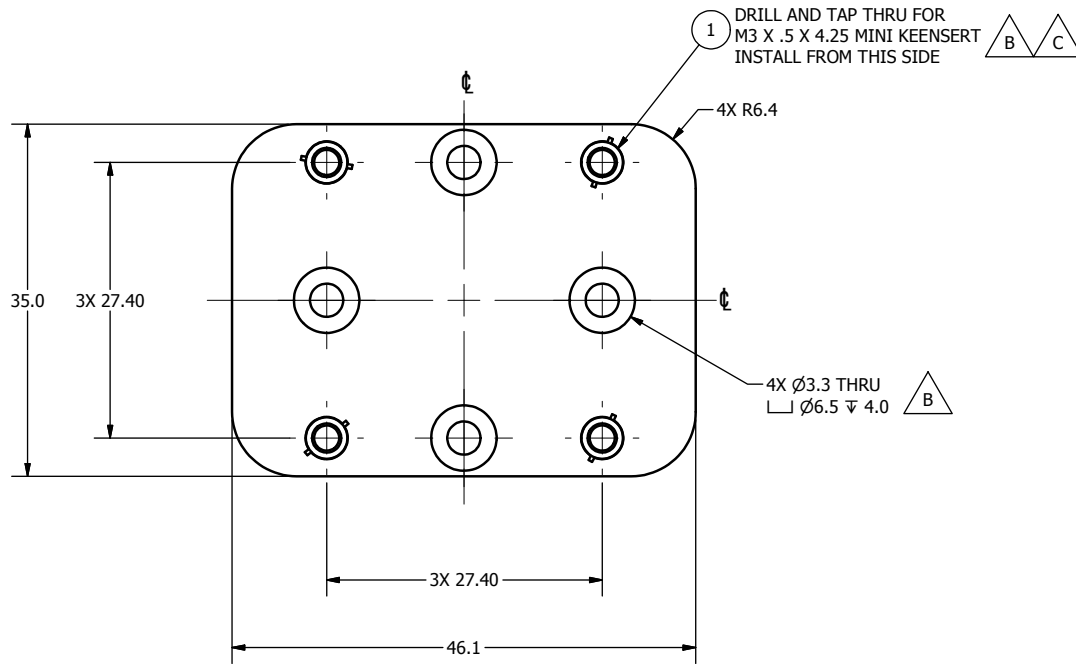
NOTES:  
1. DIMENSIONS SYMMETRIC ABOUT  $\epsilon$ , UNLESS OTHERWISE NOTED.



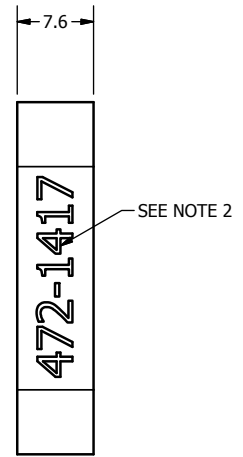




SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM117 R03 AND CONVERTED TO METRIC FOR THOR-M;	8/24/11	BK
	B	5000724 WAS 5001107; Ø3.3 THRU C'BORE Ø6.5 WAS Ø3.8 THRU C'BORE Ø7.1	3/16/2012	BK
	C	M3 X.5 KEENSERT WAS M4 X .7	5/25/2012	BK



- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	5001107	M3 X 0.5 X 4.25 LG. MINI KEENSERT

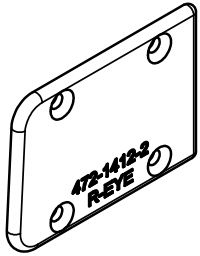
DO NOT SCALE DRAWING		TOLERANCES	
		UNLESS OTHERWISE SPECIFIED:	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X .05 ±0.5 1.6	
		X.X ±0.2	
		X.XX ±0.3	
		X.XXX ±0.01	

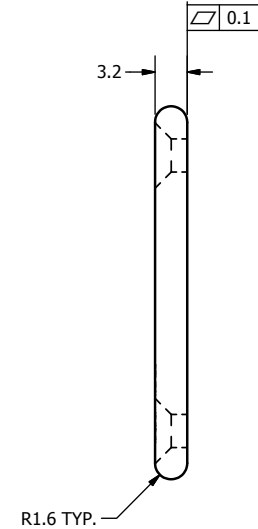
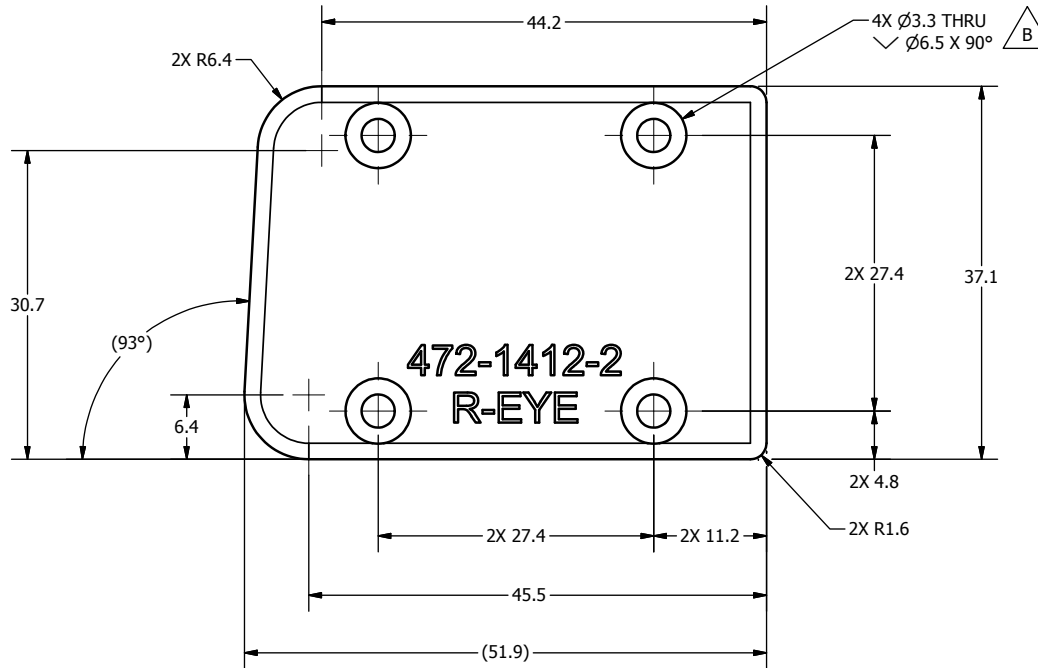
PROJECT NO.:	472-1100	1	7075-T6 ALUMINUM	CHECKED BY:	B. KIMES	DATE:	8/25/2011
NEXT ASSEMBLY	QTY	1	CLEAR ANODIZE	ENGINEER:	J. WANG	DATE:	1/10/2012
TOTAL QTY IN DUMMY	1						

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION		FACE LOAD CELL, MOCK	
SIZE	SHEET	DRAWING NO.	REV.
A3	1 OF 1	472-1417	C
SCALE:	2.000		



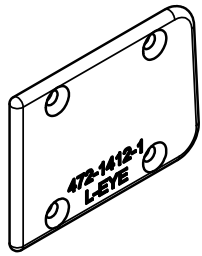
SCALE 1.000



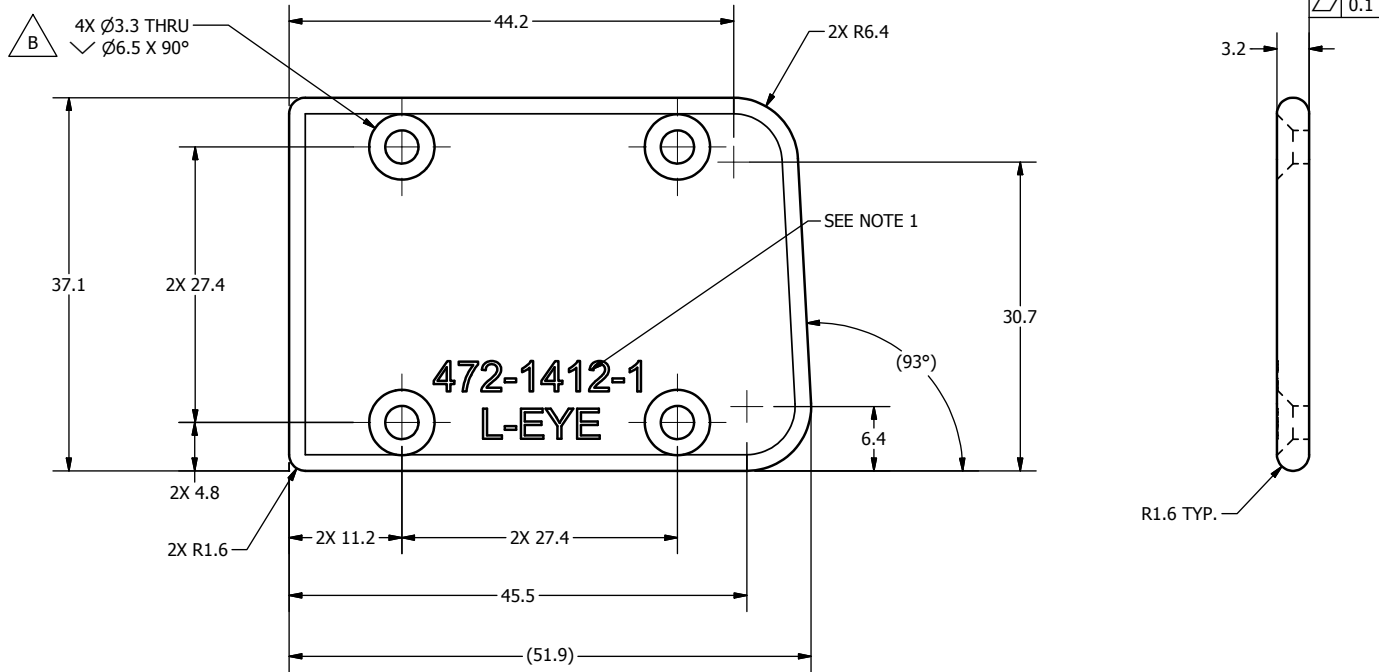
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM112 R06 AND CONVERTED TO METRIC FOR THOR-M	8/25/2011	BK
	B	Ø3.3 C'SINK Ø6.5 X 90° WAS Ø3.8 C'SINK Ø7.1 X 82'	5/25/2012	BK

NOTES:  
1. STAMP OR ETCH PART NUMBER AND "R-EYE" (3mm CHARACTERS) AS SHOWN. (OPTIONAL)

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.07 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-1100	MATERIAL:	440C STAINLESS STEEL	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	8/25/2011	RIGHT EYE LOAD CELL PLATE
CHECKED BY:		HEAT TREAT:	Rc 55-59	SIZE: A3
ENGINEER:	J. WANG	DATE:	1/10/2012	SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	FINISH:		SCALE: 2.000
				DRAWING NO.:
				472-1412-2
				REV.:
				B



SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM113 R05 AND CONVERTED TO METRIC FOR THOR-M	8/25/2011	BK
	B	Ø3.3 C'SINK Ø6.5 X 90° WAS Ø3.8 C'SINK Ø7.1 X 82'	5/25/2012	BK

NOTES:

1. STAMP OR ETCH PART NUMBER AND "L-EYE" (3mm CHARACTERS) AS SHOWN. (OPTIONAL)

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5° ✓ X.X ± 0.2 ✓ X.XX ± 0.3 ✓ X.XXX ± 0.01 ✓ REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-1100	MATERIAL:	440C STAINLESS STEEL	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	8/25/2011	LEFT EYE LOAD CELL PLATE
HEAT TREAT:	Rc 55-59	ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/10/2012	SCALE:
TOTAL QTY IN DUMMY	1	FINISH:		SCALE: 2.000



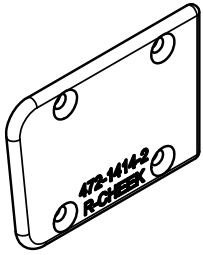
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LEFT EYE LOAD CELL PLATE

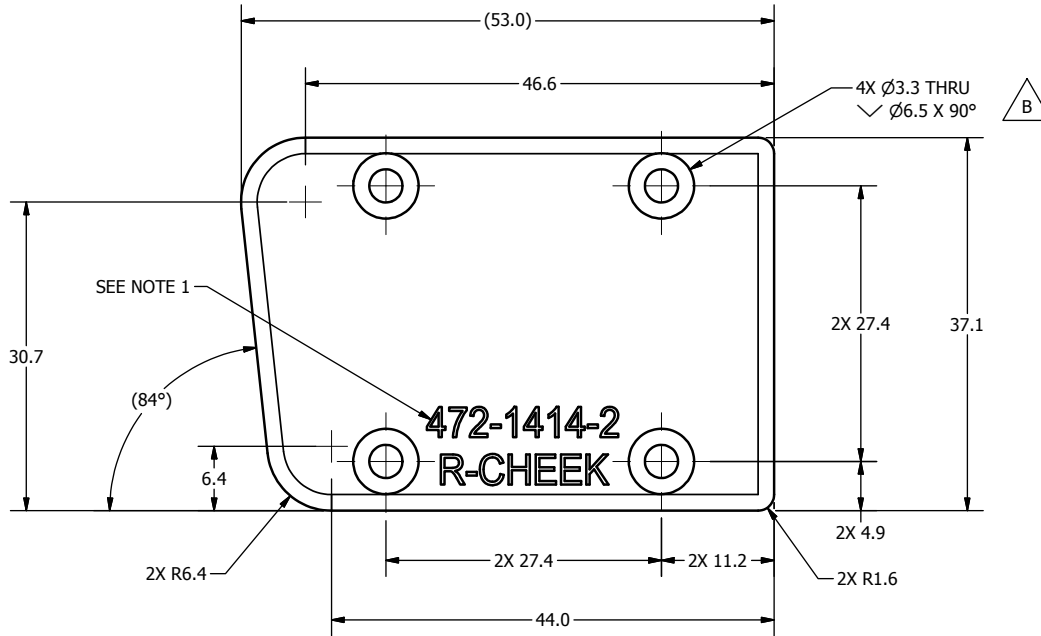
A3 1 OF 1

472-1412-1

B



SCALE 1.000

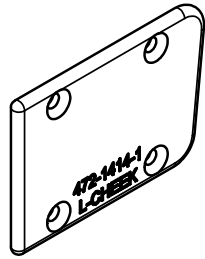


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM114 R05 AND CONVERTED TO METRIC FOR THOR-M	8/25/2011	BK
	B	Ø3.3 C'SINK Ø6.5 X 90° WAS Ø3.8 C'SINK Ø7.1 X 82°	5/25/2012	BK

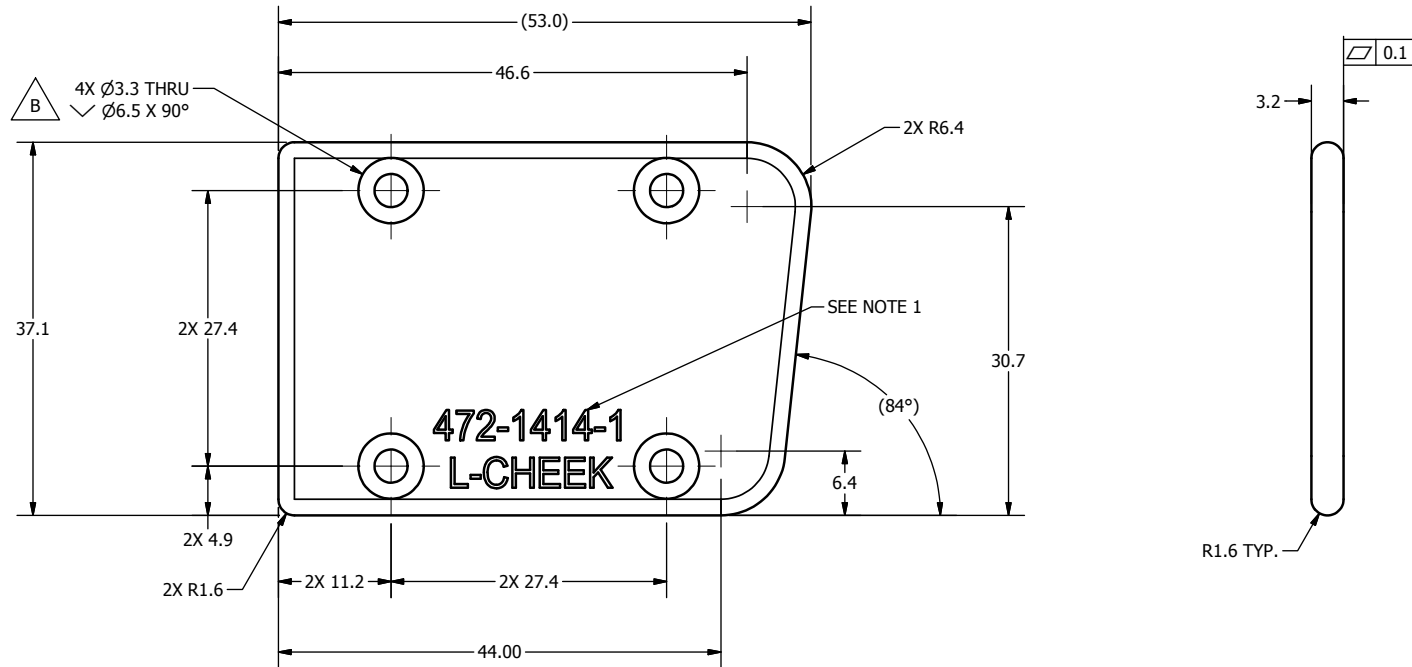
NOTES:

1. STAMP OR ETCH PART NUMBER AND "R-CHEEK" (3mm CHARACTERS) AS SHOWN. (OPTIONAL)

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.05 1.6 X X ± 0.2 X XX ± 0.3 X XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-1100	MATERIAL:	440C STAINLESS STEEL	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	8/25/2011	RIGHT CHEEK LOAD CELL PLATE
CHECKED BY:		DATE:		
HEAT TREAT:	Rc 55-59	ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/10/2012	SCALE:
TOTAL QTY IN DUMMY	1	FINISH:		SCALE:
				SIZE: A3
				SHEET: 1 OF 1
				DRAWING NO.: 472-1414-2
				REV: B



SCALE 1.000



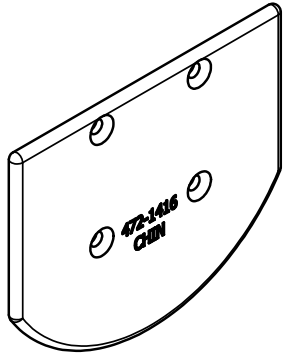
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM115 R05 AND CONVERTED TO METRIC FOR THOR-M	8/25/2011	BK
	B	Ø3.3 C'SINK Ø6.5 X 90° WAS Ø3.8 C'SINK Ø7.1 X 82°	5/25/2012	BK

NOTES:

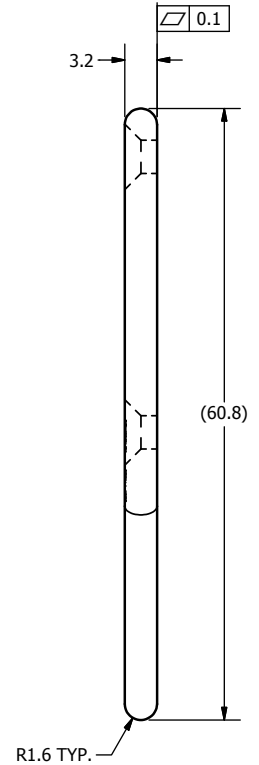
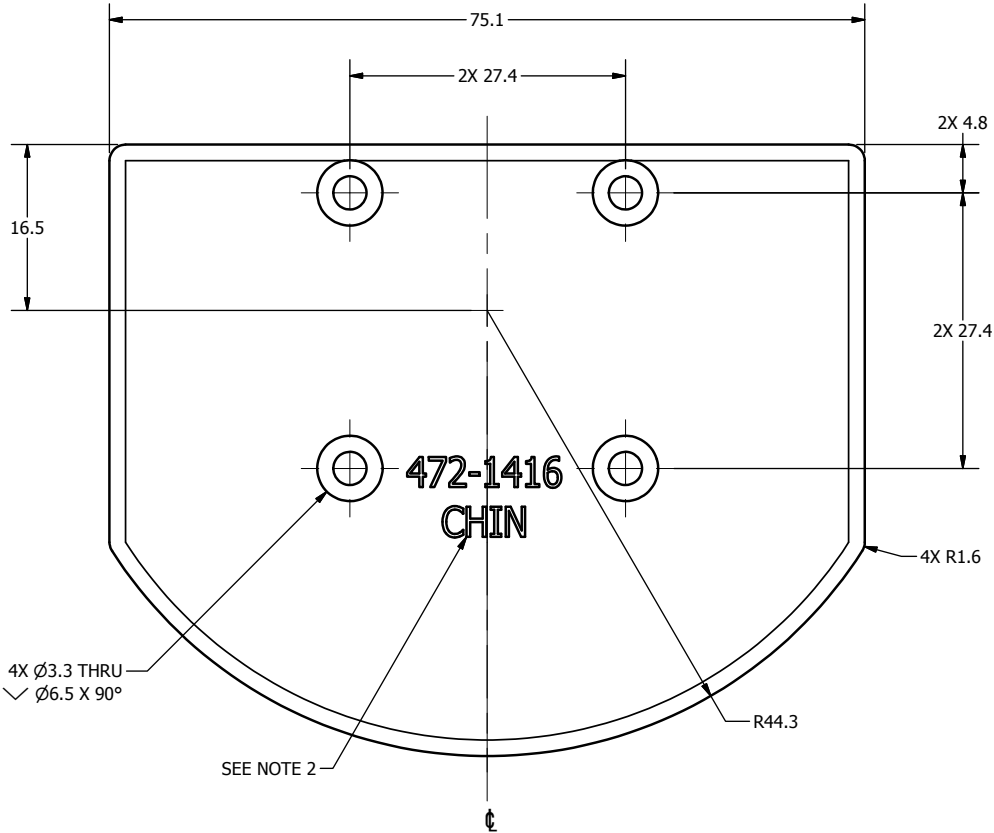
1. STAMP OR ETCH PART NUMBER AND "L-CHEEK" (3mm CHARACTERS) AS SHOWN. (OPTIONAL)

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-1100	MATERIAL:	440C STAINLESS STEEL	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	8/25/2011	LEFT CHEEK LOAD CELL PLATE
HEAT TREAT:	Rc 55-59	ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/10/2012	SCALE:
TOTAL QTY IN DUMMY	1	FINISH:		SCALE:
				SIZE: SHEET: DRAWING NO.: REV:
				A3 1 OF 1 472-1414-1 B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM116 R04 AND CONVERTED TO METRIC FOR THOR-M	8/25/2011	BK
	B	Ø3.3 C'SINK Ø6.5 X 90° WAS Ø3.8 C'SINK Ø7.1 X 82'	5/25/2012	BK

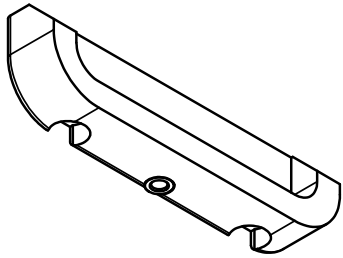


SCALE 1.000

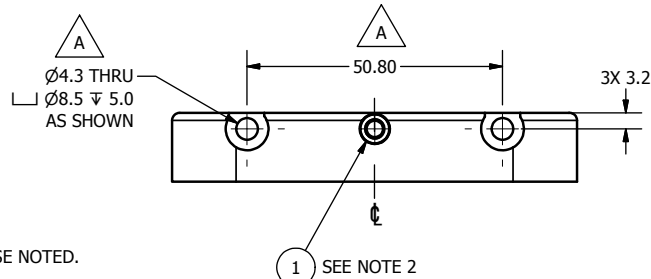
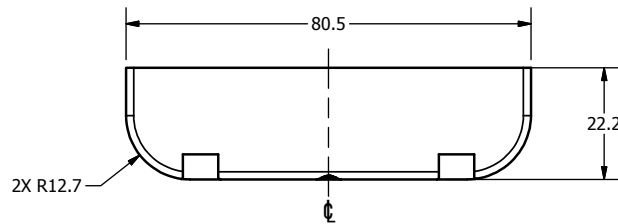
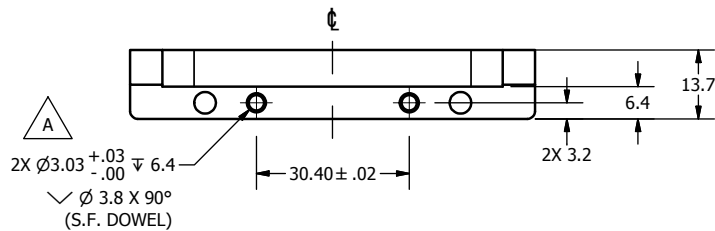
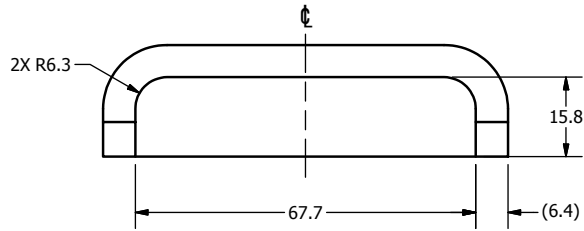


- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\epsilon$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PART NUMBER AND "CHIN" (3mm CHARACTERS) AS SHOWN. (OPTIONAL)

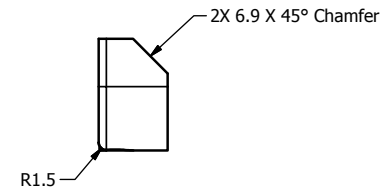
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.57 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-1100	MATERIAL:	440C STAINLESS STEEL	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	8/25/2011	CHIN LOAD CELL PLATE
HEAT TREAT:	Rc 55-59	ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/10/2012	SCALE:
TOTAL QTY IN DUMMY	1	FINISH:		SCALE: 2.000
				SIZE: A3
				SHEET: 1 OF 1
				DRAWING NO: 472-1416
				REV: B



SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM111 R04 AND CONVERTED TO METRIC FOR THOR-M; Ø3.03+.03/-00 WAS Ø3.20+.03/-00; 90° WAS 82°; Ø4.3 C'BORE Ø8.5 WAS Ø4.0 C'BORE Ø7.0; 50.80 WAS 50.9	8/25/2011	BK



NOTES:

- DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
- DRILL  $\phi 5.94 - \phi 5.74$  TAPERED HOLE  $\nabla 9.0$ , HEAT INSERT WITH SOLDER IRON AND INSERT FLUSH WITH SURFACE. (SEE MANUFACTURER INSTRUCTIONS)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5001114	INSERT, M4 X .7 X 4.7 (THERMOSET)

DO NOT SCALE DRAWING		TOLERANCES	
$\phi$	$\nabla$	UNLESS OTHERWISE SPECIFIED	
THIRD ANGLE PROJECTION		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		F F F	
		X .02 ± 0.5° 1.6	
		X .03 ± 0.3	
		X .01 ± 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	

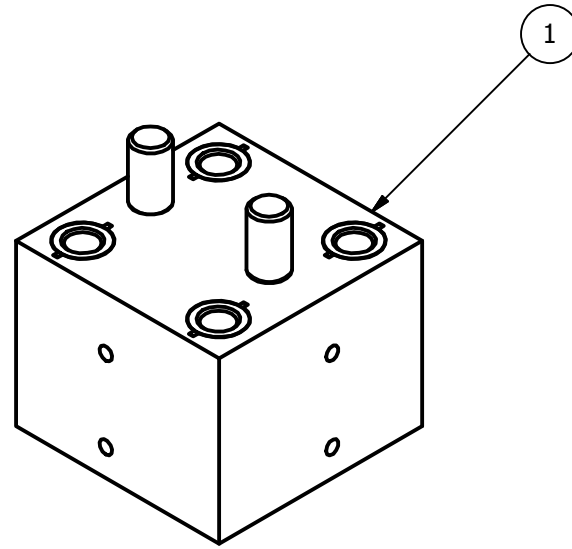
  

PROJECT NO:	472-1100	DATE:	8/25/2011
MATERIAL:	ACETAL, BLACK	CHECKED BY:	B. KIMES
HEAT TREAT:		DATE:	8/25/2011
ENGINEER:	J. WANG	DATE:	1/10/2012

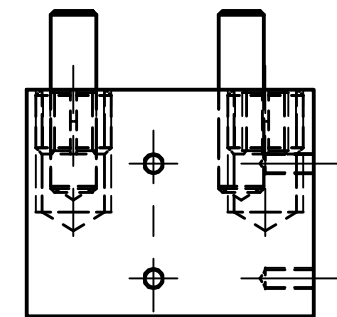
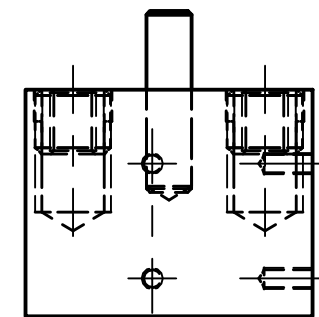
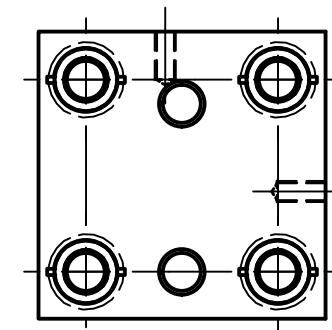
  

DESCRIPTION:	CHIN GUARD
SIZE:	A3
SHEET:	1 OF 1
DRAWING NO.:	472-1411
REV.:	A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM101 R01 AND CONVERTED TO METRIC FOR THOR-M	8/30/2011	BK
	B	UPDATE VIEWS TO SHOW CHANGE TO 472-1119	6/12/2012	BK
	C	REMOVED SA572-S4, ACCELEROMETERS	5/20/2014	DW



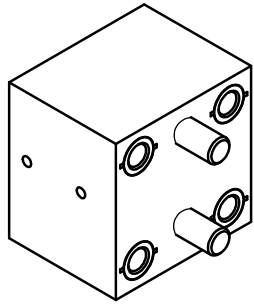
SCALE 2.000



1	1	472-1119	TOP BI-AXIAL ACCEL MOUNT, HEAD
ITEM	QTY	PART NUMBER	DESCRIPTION

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
PROJECT NO.: THOR-M		DATE: 8/25/2011		BIAXIAL ACCELEROMETER ASSEMBLY, HEAD
DRAWN BY: B. KIMES		CHECKED BY: J. WANG		
MATERIAL:		HEAT TREAT:		SIZE: A3 SHEET: 1 OF 1 SCALE: 2.000
NEXT ASSEMBLY QTY		ENGINEER: J. WANG		DRAWING NO.: 472-1101
TOTAL QTY IN DUMMY 1		DATE: 1/10/2012		REV: C

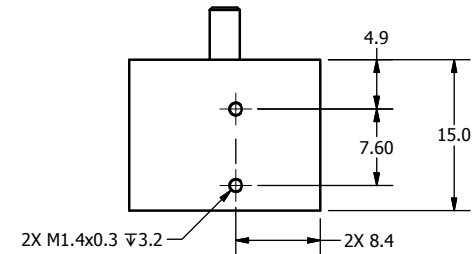
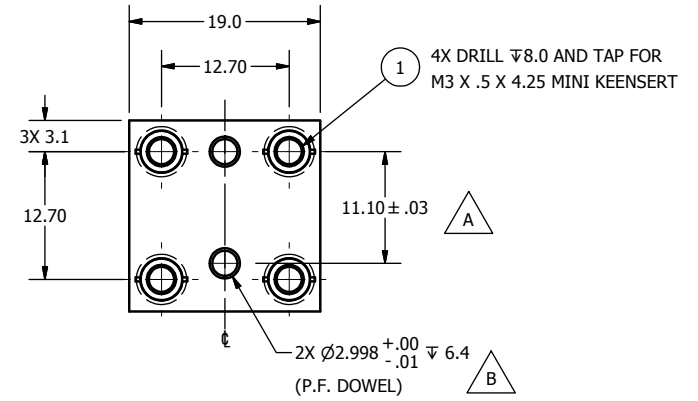
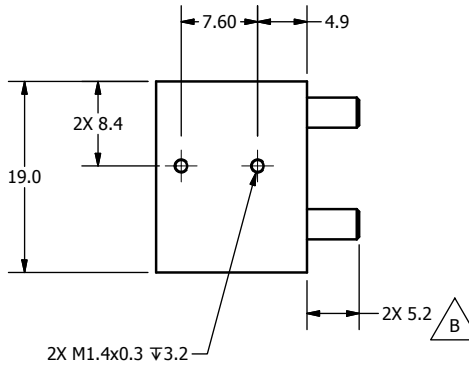




SCALE 2.000

472-1119

SEE NOTE 2



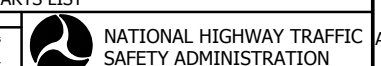
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM119 R02 AND CONVERTED TO METRIC FOR THOR-M; 11.10±.03 WAS 11.10	8/25/2011	BK
	B	ADD 5000183; Ø2.998+ .00/- .01 ↓ 6.4 (P.F. DOWEL) WAS Ø3.20+ .03/- .00 ↓ 6.4 (S.F. DOWEL); ADD 2X 5.2	5/21/2012	TMV

NOTES:

1. DIMENSIONS SYMMETRIC ACROSS  $\updownarrow$ , UNLESS OTHERWISE NOTED.
2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	5000183	PIN, DOWEL M3 X 12 mm
1	4	5001107	M3 X 0.5 X 4.25 LG. MINI KEENSERT

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X .05 16	
		X.X ±0.2	
		X.XX ±0.3	
		X.XXX ±0.01	
REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO:	DATE:	DRAWN BY:	
472-1101	8/25/2011	B. KIMES	
NEXT ASSEMBLY	QTY	HEAT TREAT:	SCALE:
TOTAL QTY IN DUMMY	1	FINISH:	SCALE: 2.000
		CLEAR ANODIZE	



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

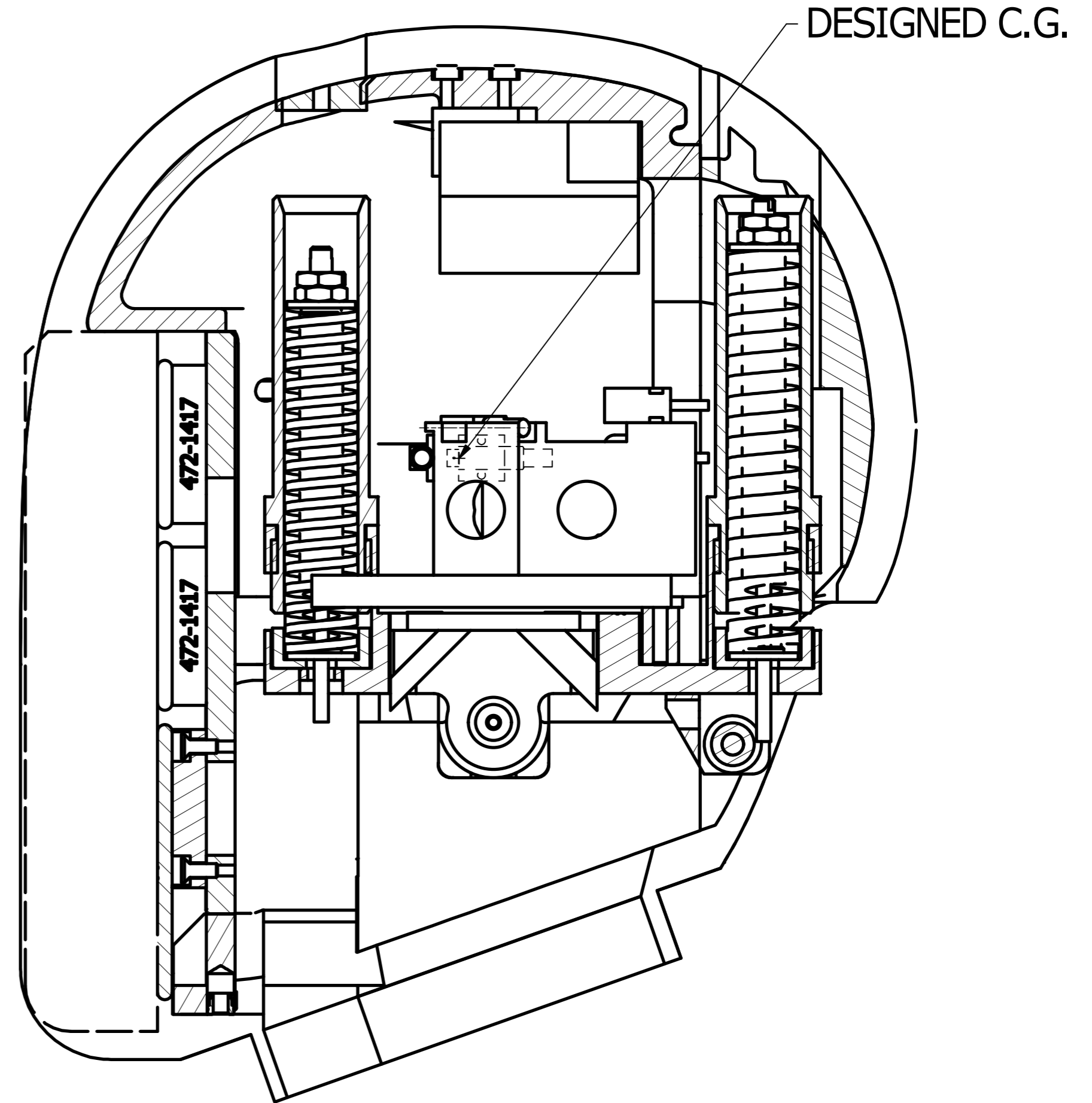
TOP BI-AXIAL ACCEL MOUNT, HEAD

SIZE: A3 1 OF 1  
DRAWING NO: 472-1119

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM118 R3, AND CONVERTED TO METRIC FOR THOR-M	7/30/2015	DW

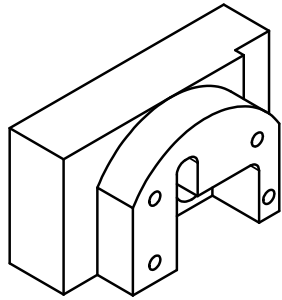
### HEAD BALLASTING NOTES:

- DESIGN AND INSTALL THE BALLAST WEIGHT, 472-1120, IN THE HEAD SO THAT THE FOLLOWING DESIGN HEAD WEIGHT AND CG REQUIERMENTS ARE ACHIEVED.
- ALL OF THE PARTS AND ASSEMBLIES LISTED ARE TO BE INCLUDED IN THE WEIGHT AND CG LOCATION DETERMINATION.
- NON ACTIVE INSTRUMENTS (WITHOUT WIRES) ARE TO BE USED IN PLACE OF ACTUAL INSTRUMENTATION.
- THE FRONT AND REAR CABLES WERE SHORTENED SO THAT THE CABLE WOULD NOT EXTEND BELOW THE OCCIPITAL CONDYLE LOCATION.
- THE DESIGN CG LOCATION IS IDENTIFIED BY A SMALL HOLE IN THE SKULL AND SKIN ON EACH SIDE OF THE HEAD.
- THE HEAD WEIGHT IS  $4.54 \pm 0.05$  kg.
- THE DESIGN HEAD CG LOCATION RELATIVE TO THE OCCIPITAL CONDYLE IS AS FOLLOWS  $X = 7.6$   $Y = 0.0$   $Z = 58.4$

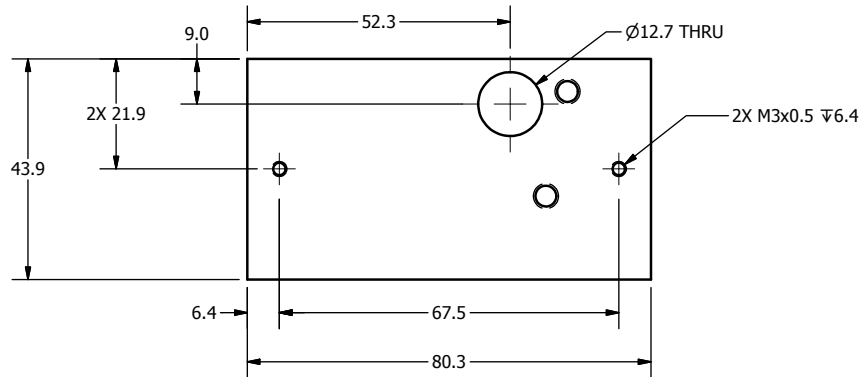
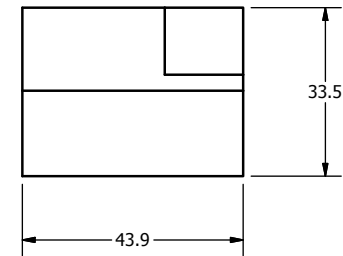
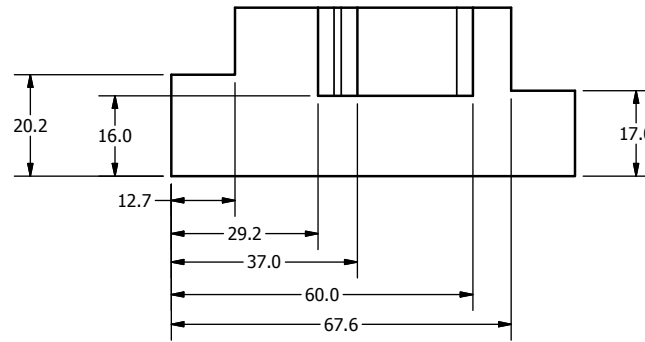
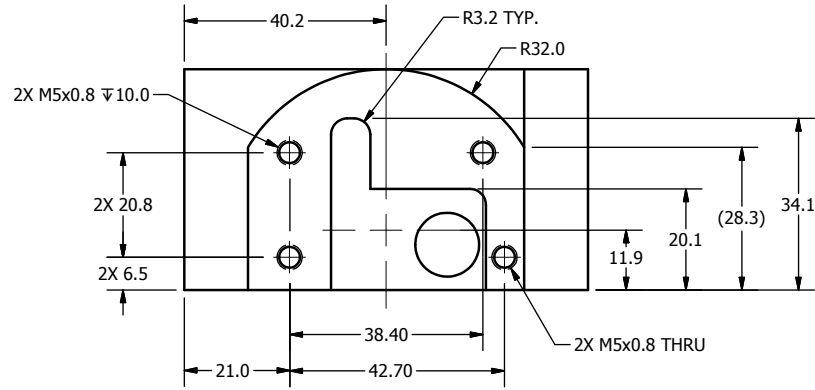


5000749	472-2000	SCREW, BHCS M3-0.5 x 5	2
5000674	472-2000	SCREW, BHCS M3-0.5 x 5	2
5000135	472-1000	SCREW, FHCS M6-1 x 25	4
SA572-S114	472-2000	ROTARY POTENTIOMETER	1
472-2130	472-2100	REAR CABLE ASSEMBLY, NECK SEE NOTE4	1
5000144V	472-2000	NUT, HEX JAM M6-1	4
4772-2150	472-2100	FRONT CABLE ASSEMBLY, NECK SEE NOTE4	1
5000674	472-2000	SCREW, BHCS M3-0.5 x 5	2
5000749	472-2000	SCREW, BHCS M3-0.5 x 30	2
472-2014	472-2000	ROTARY POTENTIOMETER COVER, NECK	1
5000082	472-2000	SCREW, SHCS M2-0.4 x 6	4
472-2020	472-2000	ROTARY POTENTIOMETER CLAMP, NECK	2
472-2021	472-2000	ROTARY POTENTIOMETER WASHER, NECK	1
472-2013	472-2000	ROTARY POTENTIOMETER HOUSING, NECK	1
472-2200	472-2000	MOUNTING PLATFORM ASSEMBLY, NECK	1
472-1310	472-1000	CAP SKIN	1
472-1320	472-1000	SKIN ASSEMBLY	1
5001116	472-1000	SCREW, PHILLIPS NYLON M3 X .5 X 6	2
5000081	472-1000	M6 X 1 X 16 LG. SHCS	4
472-1110	472-1000	HEAD CAP	1
472-1200	472-1000	ACCELEROMETER MOUNTING PLATE ASSEMBLY, HEAD	1
472-1401	472-1000	CONFOR FOAM, FACE	1
472-1100	472-1000	SKULL ASSEMBLY	1
PART NUMBER	ASSEMBLY	DESCRIPTION	QTY

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL: X ±.5, XX ±.2, XXX ±.1 <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small> MACHINED ANGLES ±.5°	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN: Dave Walker CHECKED:	DATE 7/30/2015	<b>HEAD C.G. PART GROUP FOR BALLAST WEIGHT DESIGN THOR-M</b>	
MATERIAL: HEAT TREAT: FINISH:	ENG: APPROVED:	THIRD ANGLE PROJECTION	SIZE: A2 SCALE:	DRAWING NUMBER: 472-1115 REV: A SHEET: 1 OF 1



SCALE .750



NOTES:

1. POWDER OR BEAD BLAST.
2. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
3. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM120 R05 AND CONVERTED TO METRIC FOR THOR-M	8/25/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.07 16 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-1100	MATERIAL:	1018 STEEL	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	8/25/2011	HEAD BALLAST
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
DATE:		DATE:	1/10/2012	SCALE:
QTY	1	SEE NOTES		1.000
TOTAL QTY IN DUMMY	1			



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

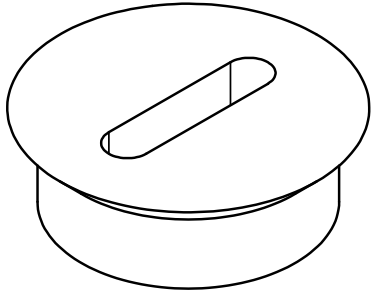
HEAD BALLAST

A31 OF 1

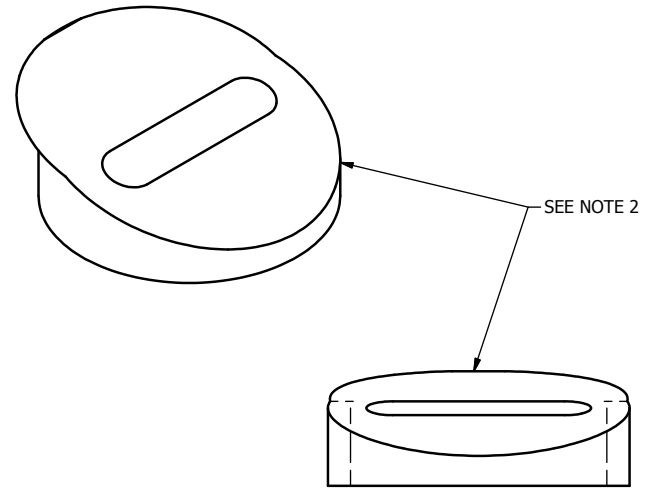
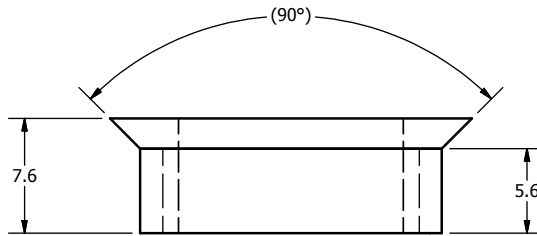
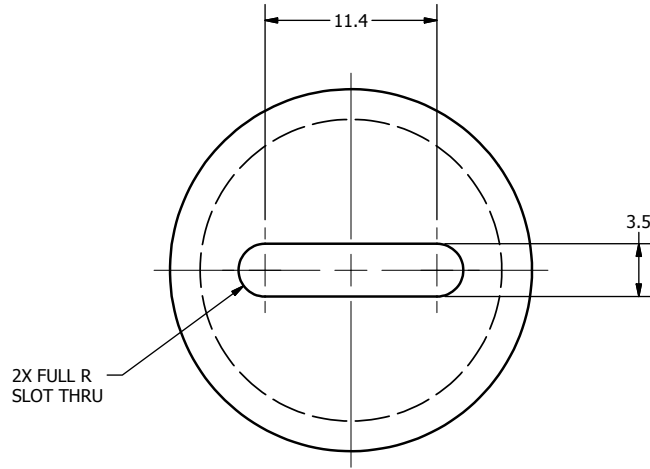
472-1120

A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM116 R04 AND CONVERTED TO METRIC FOR THOR-M	8/26/2011	BK



SCALE 3.000

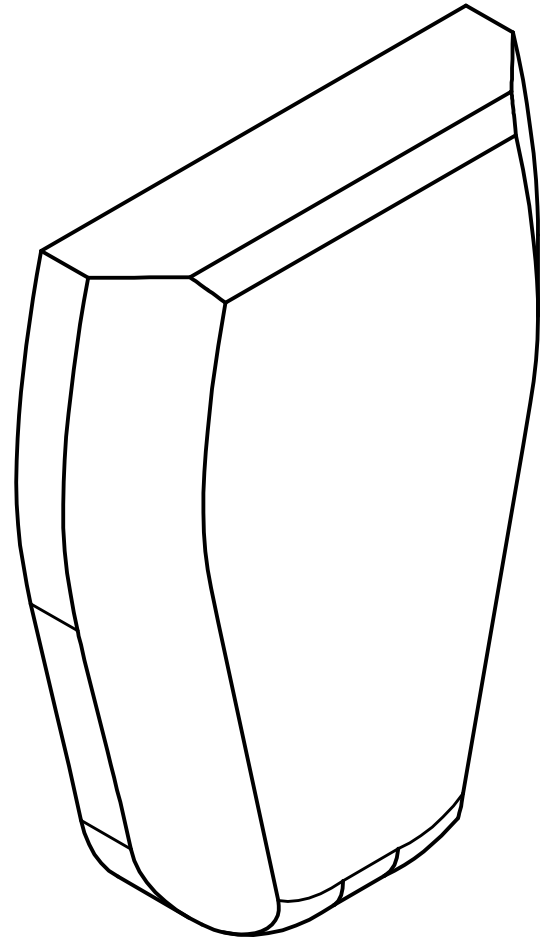


NOTES:

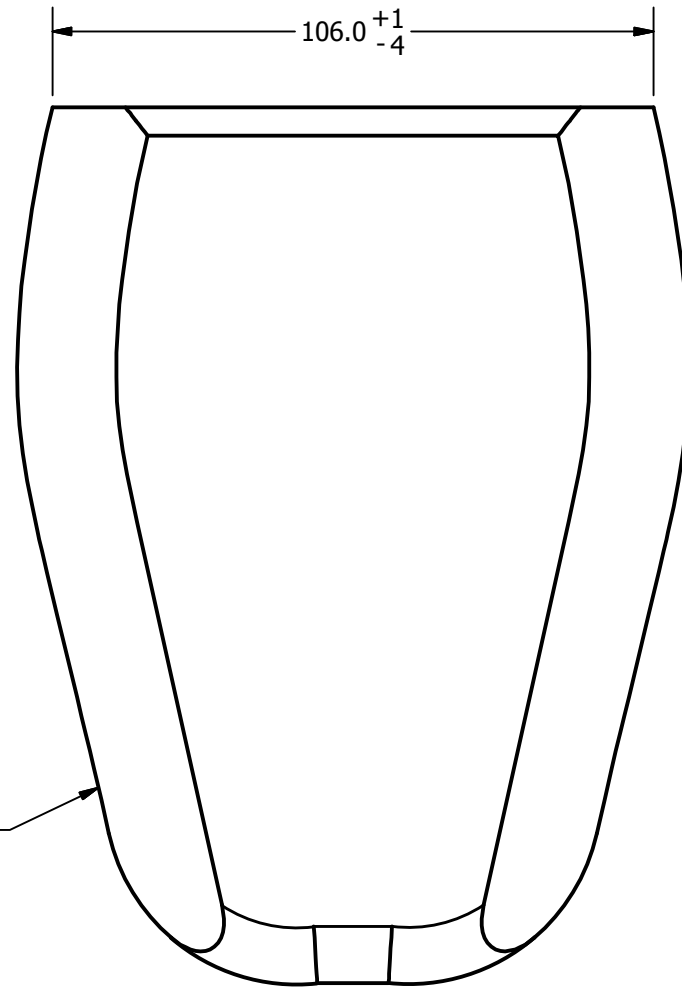
1. MAKE FROM M20 X 2.5 X 40 FHCS (5001115), MODIFY AS SHOWN.
2. PART IS MANUALLY MODIFIED AFTER ASSEMBLING IN SKULL, PROFILE IS GROUND FLUSH WITH OUTER SKULL SURFACE.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-1100	MATERIAL:	SEE NOTES	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	8/25/2011	PLUG, HEAD
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/10/2012	SCALE:
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:
TOTAL QTY IN DUMMY:	1	SCALE:	3.000	472-1116

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FCM061 R03 FOR THOR-M	8/30/2011	BK
	B	MATERIAL WAS CF45 CONFOR FOAM (BLUE)	11/5/2012	BK

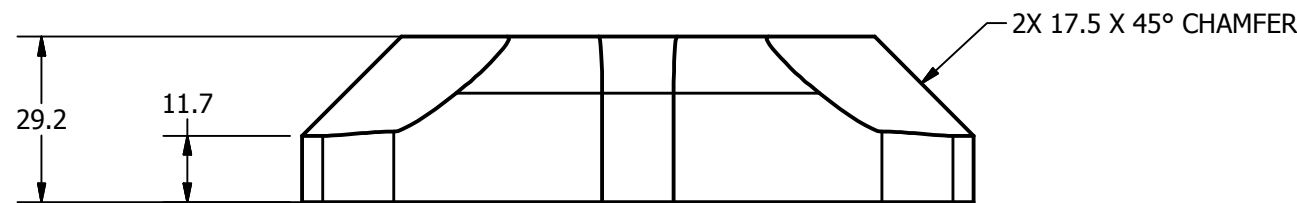
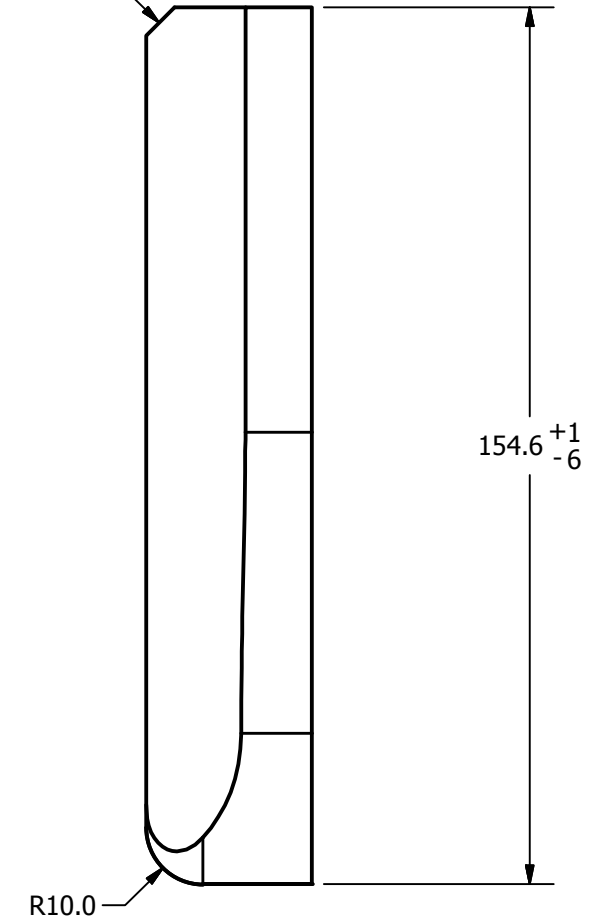


SCALE .750



CUT PROFILE FROM CAD DATA

5.0 x 45° CHAMFER

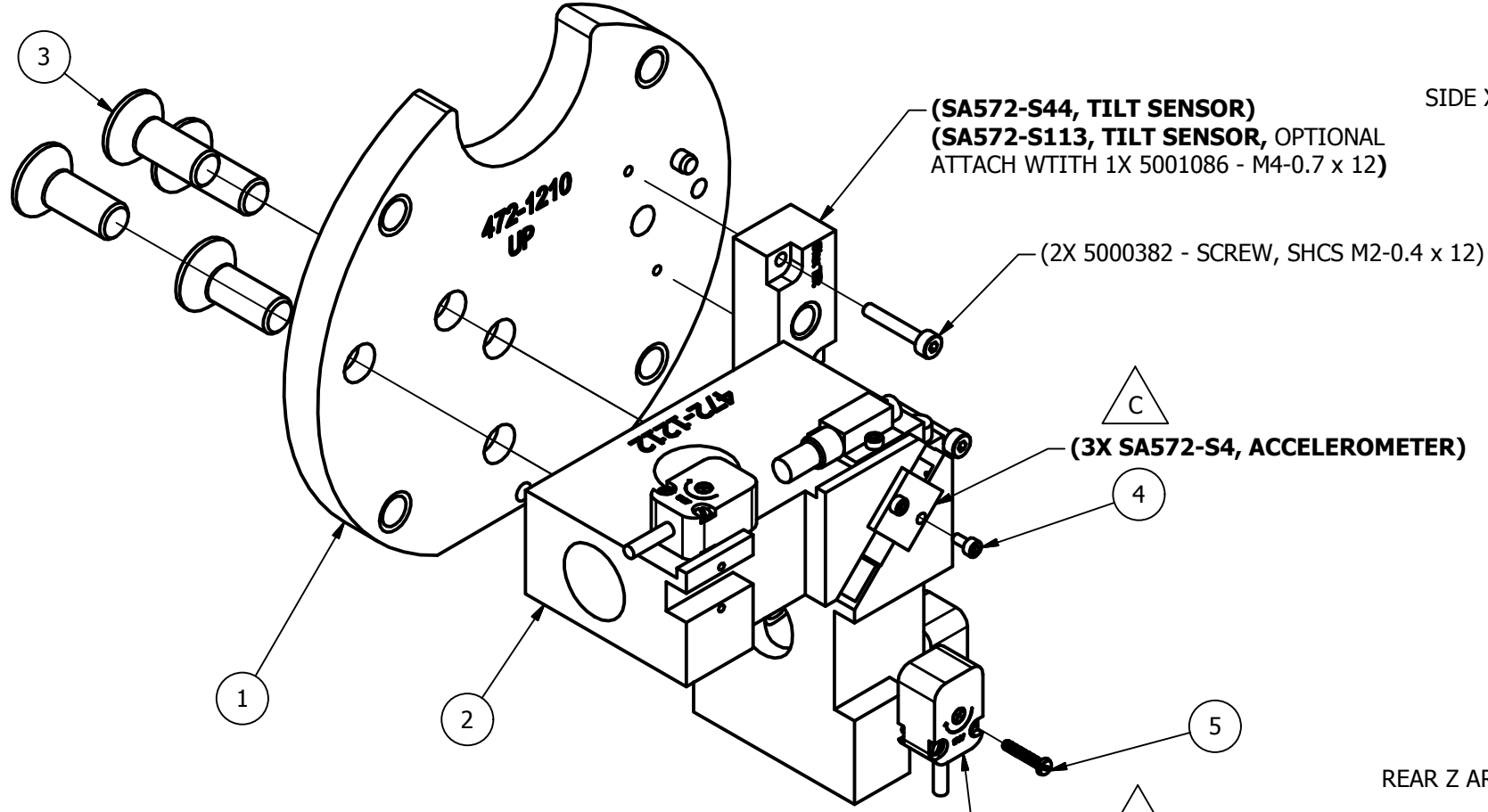


NOTES:

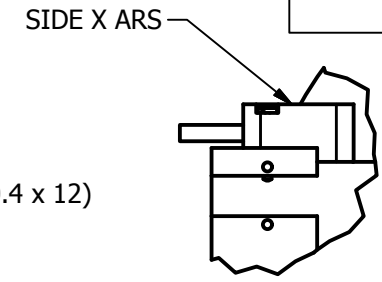
1. FOAM TOLERANCE ±1mm, UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO.:		MATERIAL:	CF47 CONFOR FOAM (GREEN)	DESCRIPTION:
472-1400	1	HEAT TREAT:		CONFOR FOAM, FACE
NEXT ASSEMBLY	QTY	CHECKED BY:	B. KIMES	DATE:
TOTAL QTY IN DUMMY	1	ENGINEER:	J. WANG	DATE:
				1/10/2012
		SIZE:	A3	SHEET
		SCALE:	1 OF 1	DRAWING NO.:
			.750	472-1401
				REV:
				B

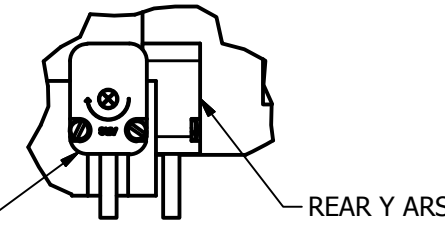
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM200 R12 AND CONVERTED TO METRIC FOR THOR-M	8/31/2011	BK
	B	REORIENT ACCELEROMETERS PER NHTSA PRINT	12/20/2012	BK
	C	CHANGED QUANTITY OF SA572-S4, ACCELEROMETERS TO 3; ADDED ANGULAR RATE SENSORS; CHANGED DEFAULT TILT SENSOR TO SA572-S44; REMOVED PART #5001086 - SCREW, FHCS M4x0.7 x 12 LG FROM PARTS LIST	9/22/2014	DW



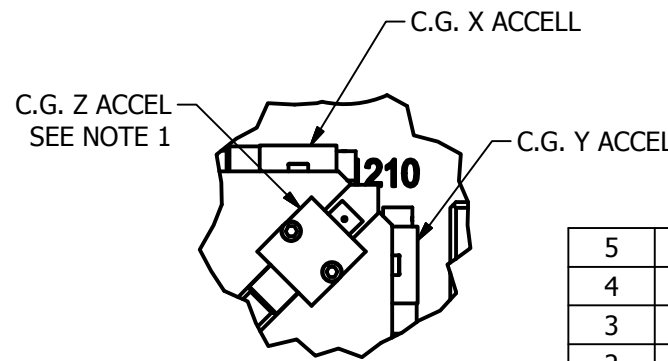
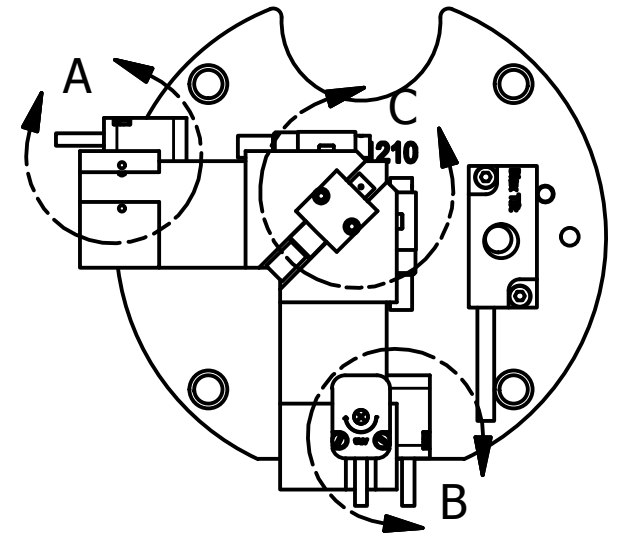
SCALE 1.000



DETAIL A  
SCALE 1.000



DETAIL B  
SCALE 1.000

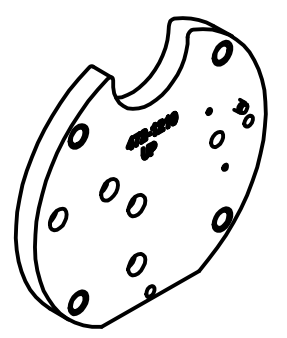


DETAIL C  
SCALE 1.000

- NOTES:
- Z AXIS ACCELEROMETERS ARE MOUNTED UPSIDE DOWN ON THE FIXTURE IN ORDER TO HAVE THE SIGN CONVENTION MATCH SAE J211.
  - ORIENTATION OF THE ACCELEROMETERS CORRESPONDS TO SAE J211.

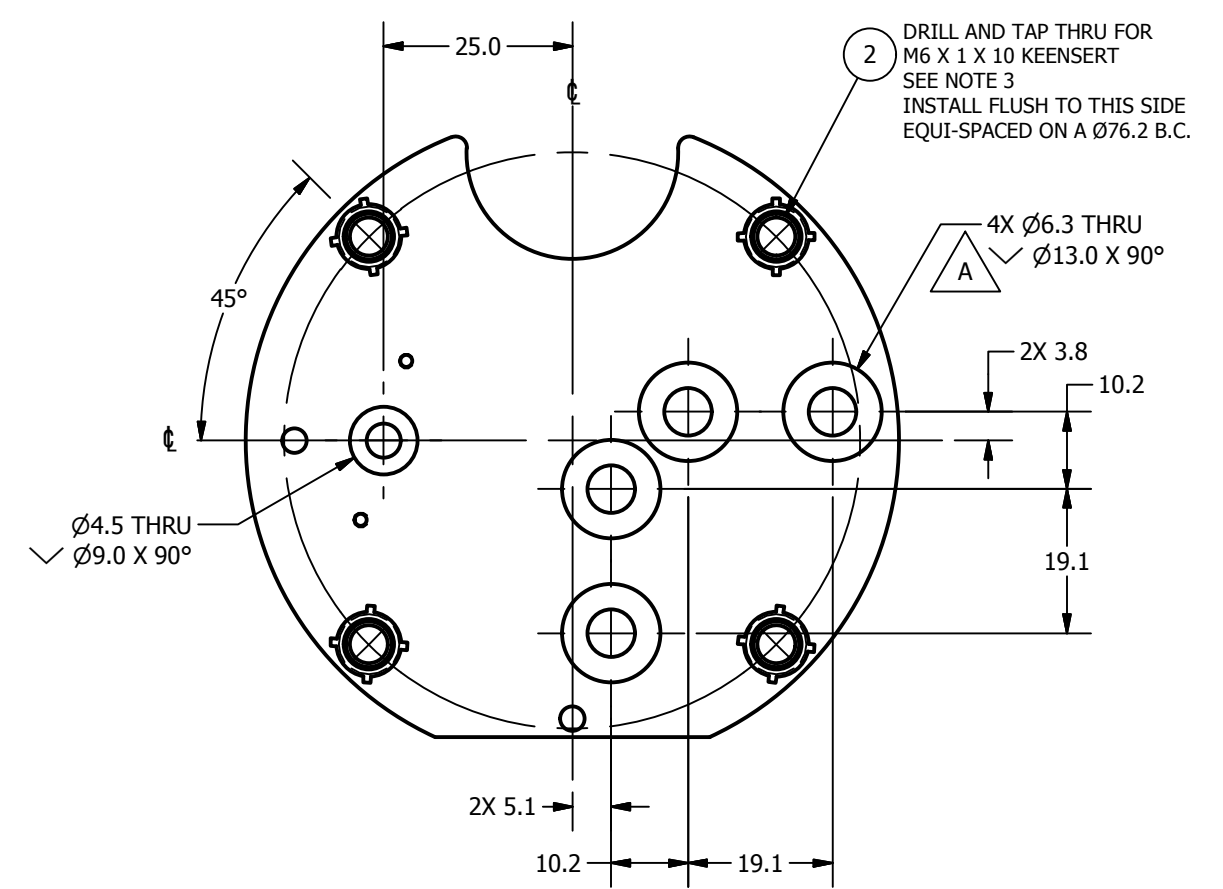
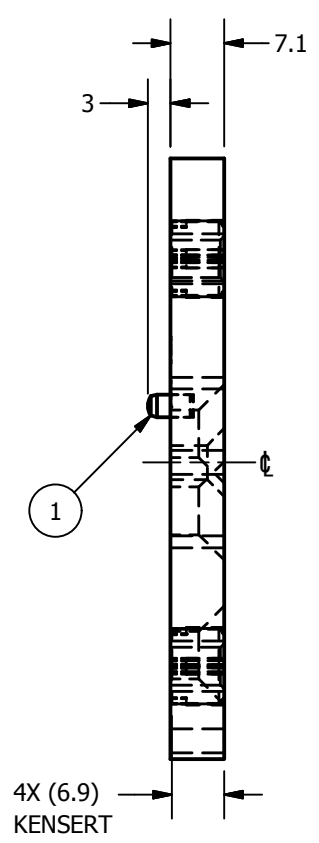
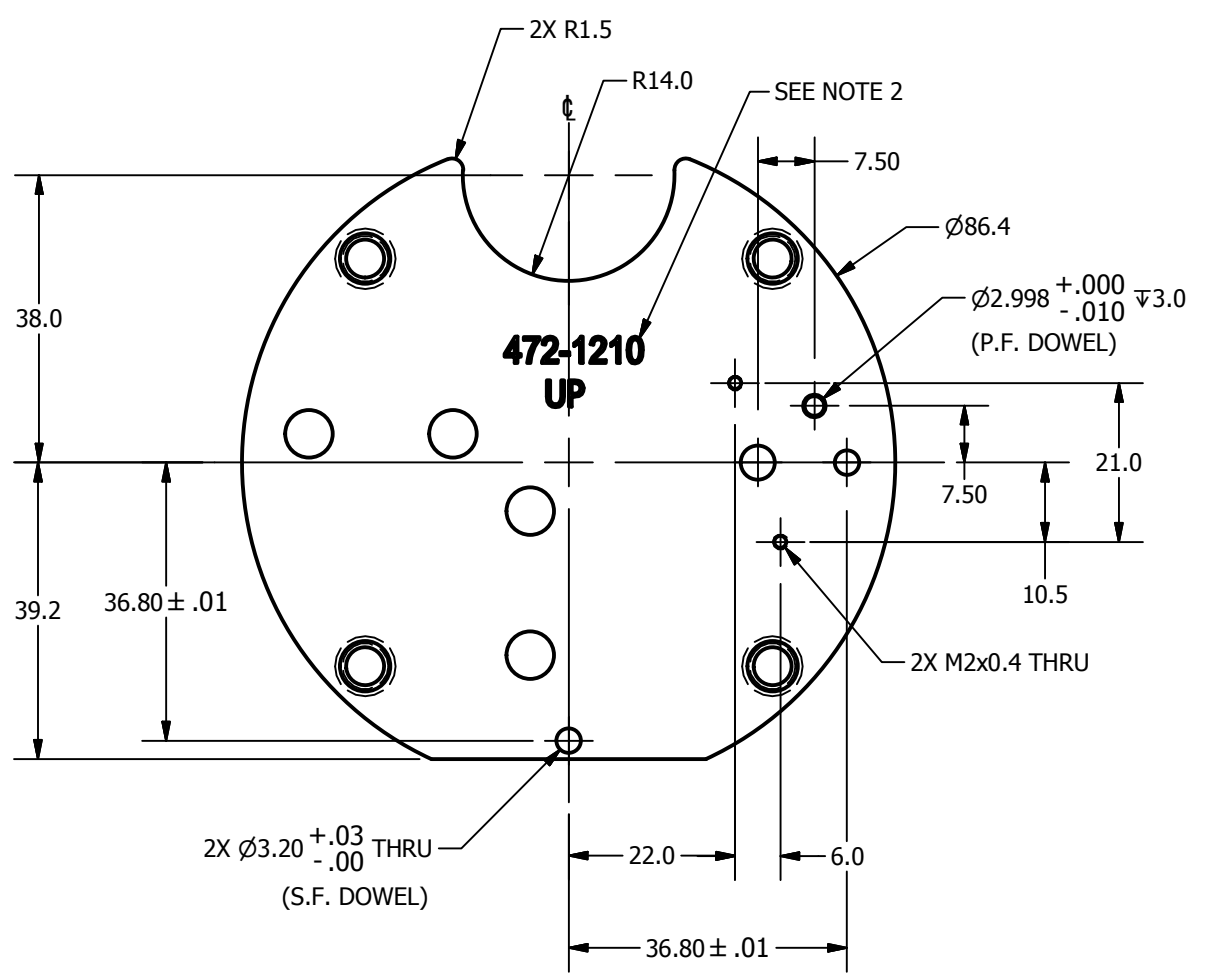
ITEM	QTY	PART NUMBER	DESCRIPTION
5	6	6000000	SCREW, CHESSE HEAD M1.4-0.3 x 8
4	6	5000068	SCREW, SHCS M1.4 - 0.3 X 3 LG.
3	4	9000826	SCREW, FHCS M6 x 1.0 x 16mm
2	1	472-1212	7 ACCELEROMETER ARRAY FIXTURE
1	1	472-1210	ACCELEROMETER MOUNTING PLATE, HEAD

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ° ±0.5 1.6 XX ±0.2 ° ±0.5 1.6 XXX ±0.1 ° ±0.5 1.6 XXXX ±0.01 ° ±0.5 1.6		
PROJECT NO.: THOR-M	DRAWN BY: B. KIMES	DATE: 8/31/2011	REMOVE BURRS & BREAK SHARP EDGES	
MATERIAL:	HEAT TREAT:	CHECKED BY: J. WANG	DATE: 1/10/2012	DESCRIPTION: ACCELEROMETER MOUNTING PLATE ASSEMBLY, HEAD
NEXT ASSEMBLY	QTY	ENGINEER: J. WANG	DATE: 1/10/2012	SIZE: SHEET A3 1 OF 1
TOTAL QTY IN DUMMY	1	FINISH:	SCALE: .750	DRAWING NO.: 472-1200



SCALE .500

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM210 R10 AND CONVERTED TO METRIC FOR THOR-M; Ø6.3 THRU C'SINK Ø13.0 X 90° WAS Ø6.8 THRU C'SINK Ø13.5 X 82°; ADD NOTE 3	8/30/2011	BK

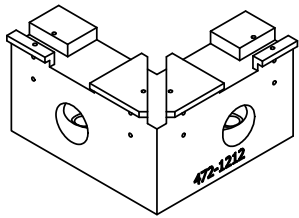


- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PART NUMBER AND "UP" (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
  3. (4X) GRIND KEENSERT HEIGHT TO 6.9mm BEFORE INSTALLING.
  4. INSTALL KEENSERTS AND DOWEL PINS AFTER FINISH.

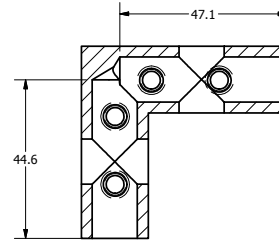
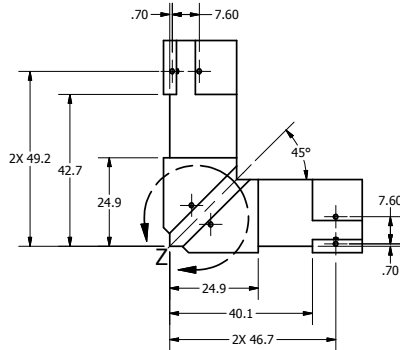


ITEM	QTY	PART NUMBER	DESCRIPTION
2	4	5001108	M6 X 1 X 10 LG. LIGHTWEIGHT KEENSERT
1	1	5000385	M3 X 6 LG. DOWEL

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION: ACCELEROMETER MOUNTING PLATE, HEAD
MATERIAL: 7075-T6 ALUMINUM		DRAWN BY: B. KIMES		DATE: 8/30/2011
NEXT ASSEMBLY QTY		CHECKED BY:		DATE:
TOTAL QTY IN DUMMY 1		FINISH: CLEAR ANODIZE		ENGINEER: J. WANG
				DATE: 1/10/2012
				SIZE: A3 1 OF 1
				SCALE: 1.000
				DRAWING NO.: 472-1210
				REV: A

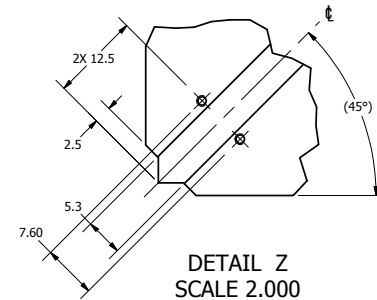
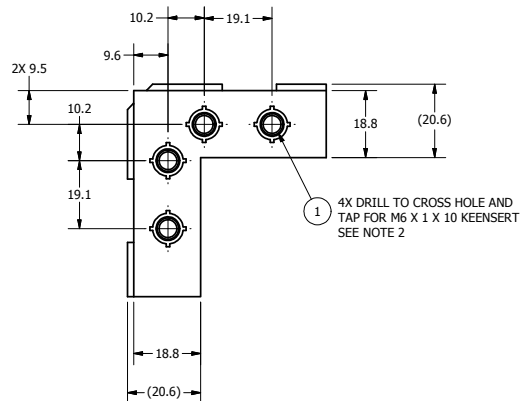
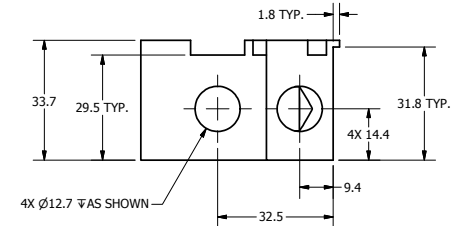
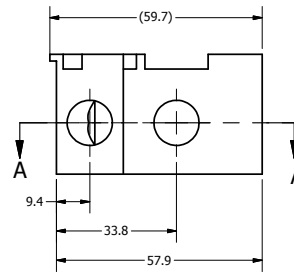
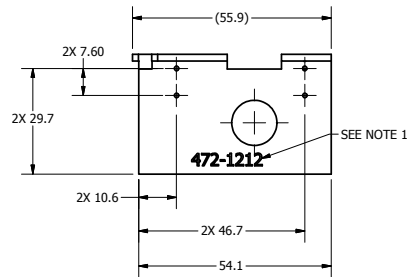
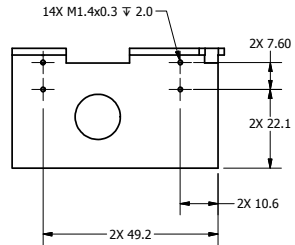


SCALE 1.000



SECTION A-A  
SCALE 1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM212 R14 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	8/31/2011	BK



DETAIL Z  
SCALE 2.000  
DIMENSIONS SYMMETRIC ABOUT t

NOTES:

1. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)

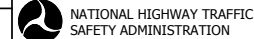
2. (4X) GRIND KEENSERT HEIGHT TO 8.0mm BEFORE INSTALLING. INSTALL AFTER ANODIZE.

ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	5001108	M6 X 1 X 10 LG. LIGHTWEIGHT KEENSERT

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
472-1200	1	7075-T6 ALUMINUM	7 ACCELEROMETER ARRAY FIXTURE
NEXT ASSEMBLY	QTY		
TOTAL QTY IN DUMMY	1	CLEAR ANODIZE	

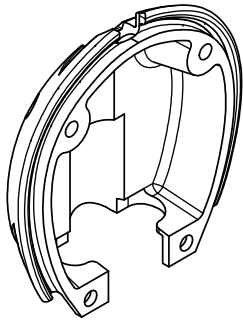
<p>DO NOT SCALE DRAWING</p> <p>THIRD ANGLE PROJECTION</p>	<p>TOLERANCES</p> <p>UNLESS OTHERWISE SPECIFIED</p> <p>DIMENSIONS ARE IN MILLIMETERS</p> <p>DECIMALS ARE AS SHOWN</p> <p>FRACTIONS ARE AS SHOWN</p> <p>ANGLES ARE AS SHOWN</p> <p>UNLESS OTHERWISE SPECIFIED</p> <p>FINISHES ARE AS SHOWN</p> <p>UNLESS OTHERWISE SPECIFIED</p>	<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>
<p>DATE: 8/31/2011</p> <p>DESIGNED BY: B. KIMES</p> <p>DRAWN BY: J. WANG</p>	<p>DATE: 11/10/2012</p> <p>DESIGNED BY: J. WANG</p> <p>DRAWN BY: J. WANG</p>	<p>7 ACCELEROMETER ARRAY FIXTURE</p> <p>472-1212</p>



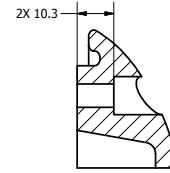
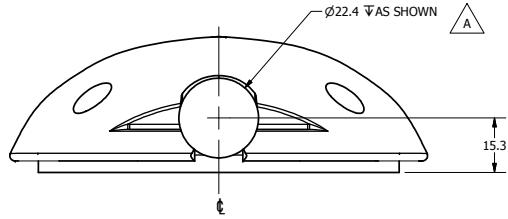
7 ACCELEROMETER ARRAY FIXTURE

472-1212

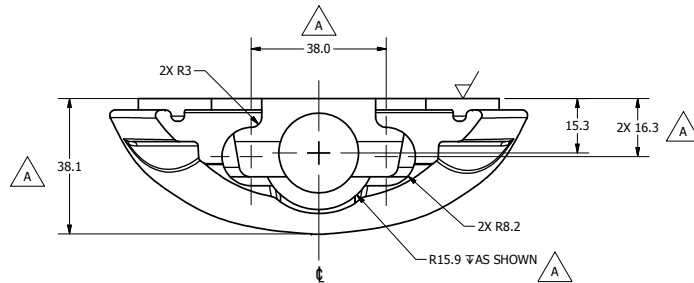
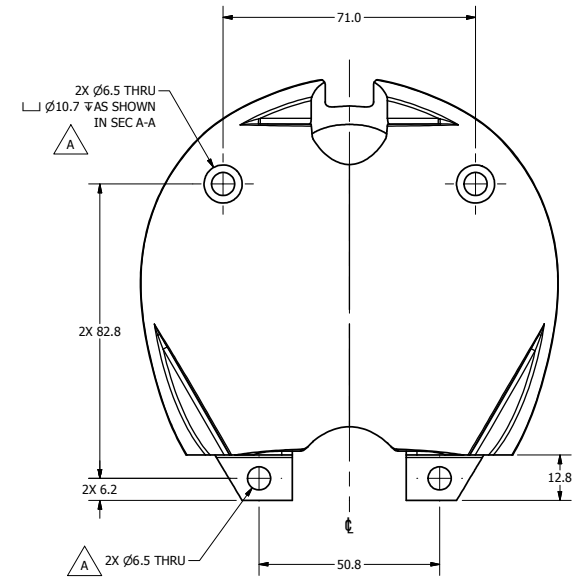
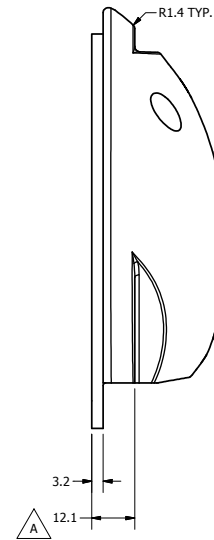
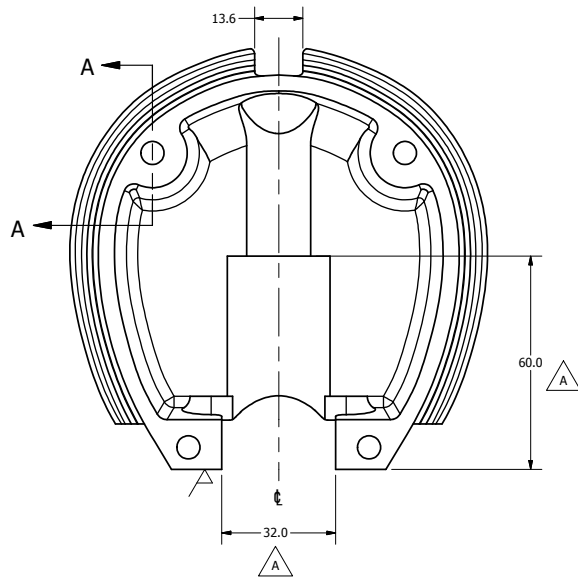




SCALE .750



SECTION A-A  
SCALE 1.000



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\epsilon$ , UNLESS OTHERWISE NOTED.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDM110 R09 AND CONVERTED TO METRIC FOR THOR-M; DIMENSION Ø22.4 AS SHOWN WAS Ø22.4 THRU; 32.0 WAS 32.1; 38.0 WAS 38.1; 2X 16.3 WAS 2X 16.2; R15.9 $\downarrow$ AS SHOWN WAS Ø30.1 $\downarrow$ 60.7; 2X Ø6.5 THRU WAS 2X Ø6.8 THRU; 2X Ø6.5 THRU C'BORE Ø10.7 $\downarrow$ AS SHOWN IN SEC. A-A WAS 2X Ø6.8 THRU C'BORE Ø10.7 $\downarrow$ 16.3 FROM DATUM A; ADDED DIMENSIONS 60.0, 38.1, 12.0 AND SECTION A-A	8/30/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
357 CAST ALUMINUM		B. KIMES		HEAD CAP	
472-1000	1	8/30/2011			
NEXT ASSEMBLY	QTY	DATE			
TOTAL QTY IN DUMMY	1	11/10/2012	A21 of 1		
		3. WANG		472-1110	

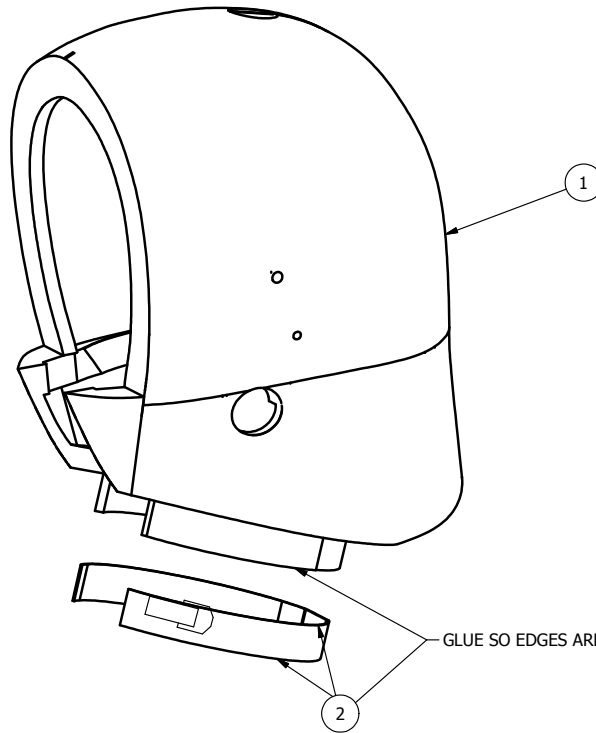
4

3

2

1

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDS020 R10 FOR THOR-M	11/13/2012	BK
	B	REMOVE 472-1322, 472-1323	2/21/2013	BK



GLUE SO EDGES ARE FLUSH

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-1324	HEAD/NECK SKIN ZIPPER
1	1	472-1321	HEAD SKIN, MOLDED

Parts List

<b>DO NOT SCALE DRAWING</b>		<b>TOLERANCES</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
 <small>THIRD ANGLE PROJECTION</small>		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DIGITALS    DECIMALS    ANGLES    FINISH</small> X    0.2    0.5    1.6 XX   0.1 XXX 0.08 REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO:	S3744	DRAWN BY:	SPice	DATE:	4/12/2012
MATERIAL:		CHECKED BY:	TMV	DATE:	4/13/2012
HEAT TREAT:	N/A	ENGINEER:	J. WANG	DATE:	1/23/2012
FINISH:	N/A			SIZE:	B
				SHEET:	1 OF 1
				SECRET:	N/A
				DRAWING NO.:	472-1320

472-1000	1		
NEXT ASSEMBLY	QTY	N/A	
TOTAL QTY IN DUMMY	1	N/A	

4

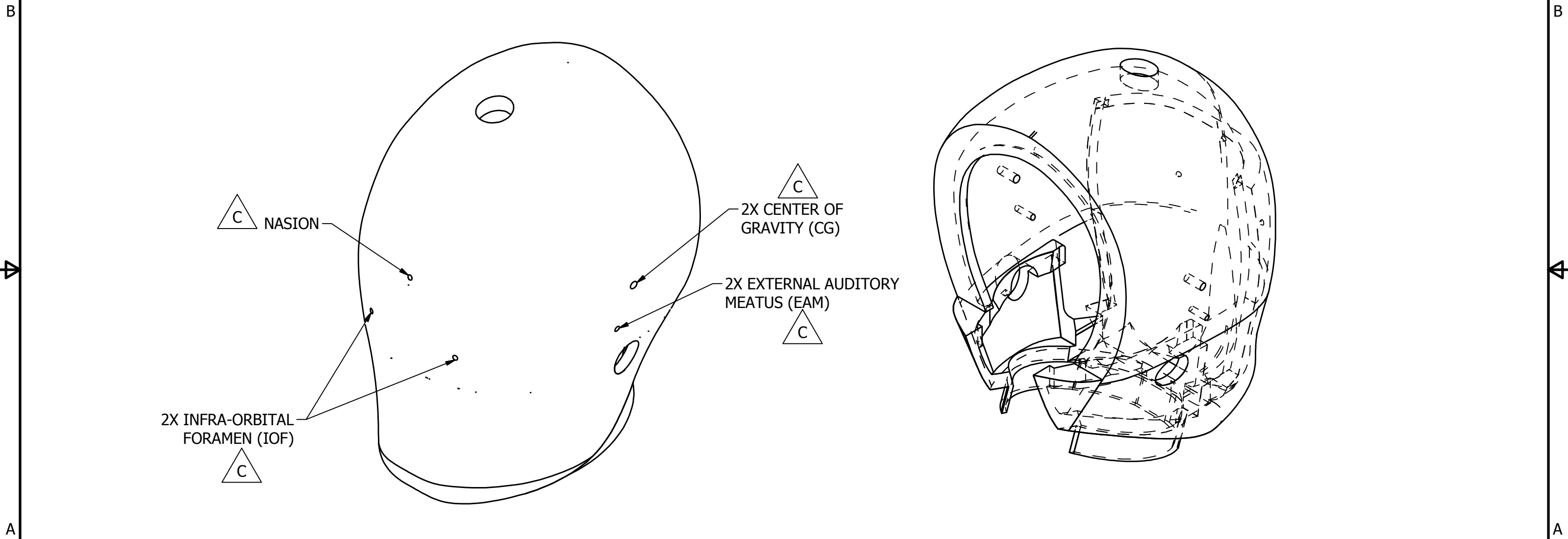
3

2

1

B

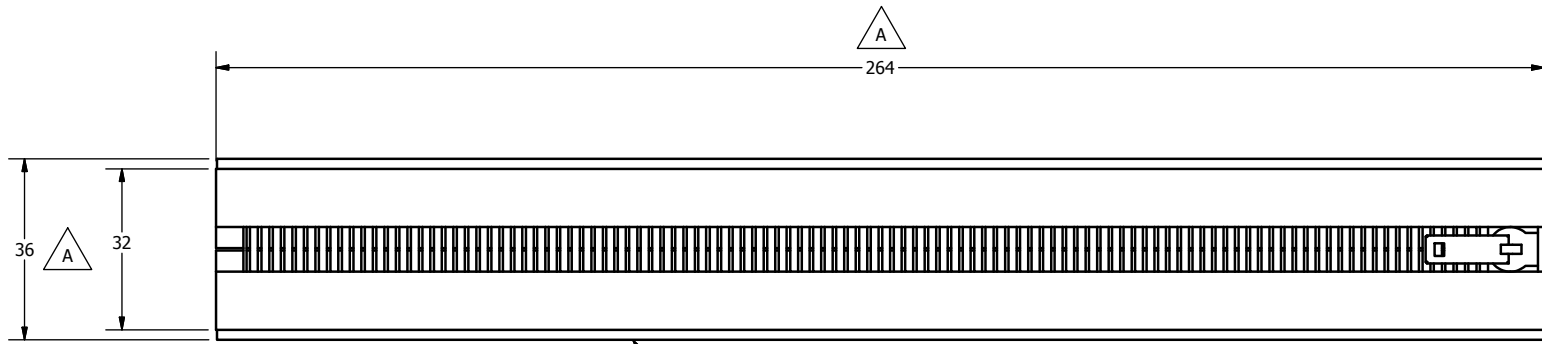
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	8	CONVERTED FROM ENGLISH TO METRIC REMOVED VIEWS NOT USED	2/8/10	C. SPADE
	A	RENUMBERED FROM TIHDS021 R9 FOR THOR-M	11/27/2012	BK
	B	ADDED MATERIAL	4/16/2013	KHS
	C	ADDED HEAD LANDMARKS, CENTER OF GRAVITY (CG), EXTERNAL AUDITORY MEATUS (EAM), INFR-ORBITAL FORAMEN (IOF), & NASION	7/10/2015	DW



DO NOT SCALE DRAWING		TOLERANCES		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		REMOVE BURRS & BREAK SHARP EDGES		DECIMALS ANGLES FINISH		DESCRIPTION: HEAD SKIN, MOLDED THOR	
PROJECT NO.: 472-1320		MATERIAL: URTHANE 67±5 "A"		X ±0.5 ±0.5 1.6		DRAWN BY: srice DATE: 4/12/2012	
NEXT ASSEMBLY QTY		HEAT TREAT:		X.X ±0.2 ±0.5 1.6		CHECKED BY: TMV DATE: 4/24/2013	
TOTAL QTY IN DUMMY 1		FINISH:		X.XX ±0.1		ENGINEER: J. WANG DATE: 1/23/2012	
				X.XXX ±0.01		SCALE: B 1 OF 1 DRAWING NO.: 472-1321 REV: C	



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
70706	A	264 WAS 10.4", 36 WAS 1.40"; ADD 32 DIMENSION; ADD MATERIAL AND TOLERANCE SPEC	12/20/2012	BK



VINYL FLAP STITCHED ON UNDERSIDE OF ZIPPER

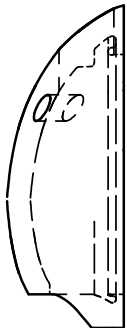
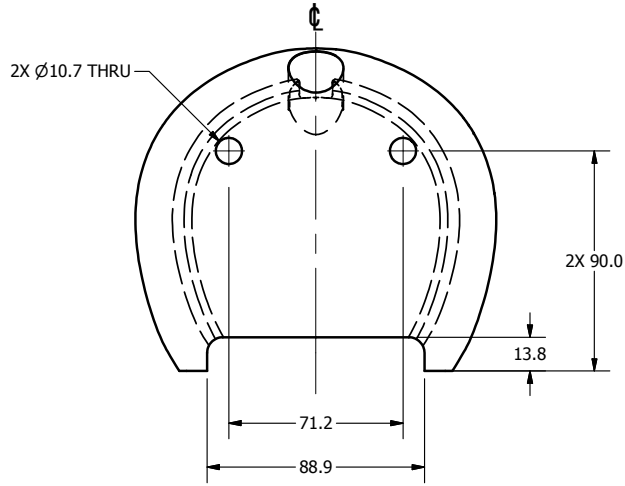
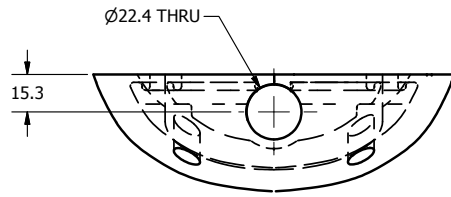
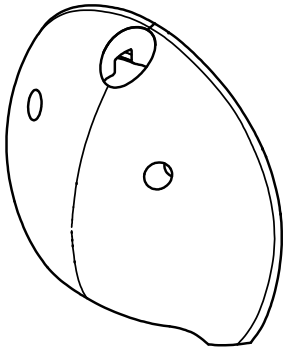
NOTES:

- #5 BLACK OXIDE BRASS ZIPPER  
STANDARD AUTOLOCK SLIDER  
TOP AND BOTTOM SEPERATING  
COLOR: BLACK  
(LENZIP)
- TOLERANCE: ±2mm



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 1.6 XX 0.2 XXX 0.3 XXXX 0.01		
PROJECT NO.:	472-1320	MATERIAL:	SEE NOTES	REMOVE BURRS & BREAK SHARP EDGES DRAWN BY: B. Kimes DATE: 7/10/2012
NEXT ASSEMBLY	QTY	CHECKED BY:	J. WANG	DATE: 1/26/2012 SIZE: A3 SHEET: 1 OF 1 SCALE: 1.000
TOTAL QTY IN DUMMY	1	FINISH:		DRAWING NO.: 472-1324 REV: A

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1HDS010 R8 FOR THOR-M; ADD NOTE 1	11/13/2012	BK



NOTES:  
 1. DIMENSIONS SYMMETRIC ABOUT  $\text{C}$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X.XX ±0.2	° ±0.5
		X.X ±0.1	° ±0.1
		X.XX ±0.05	° ±0.05
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:	MATERIAL:	DRAWN BY:	DATE:
472-1000		Spice	4/13/2012
NEXT ASSEMBLY	HEAT TREAT:	CHECKED BY:	DATE:
TOTAL QTY IN DUMMY	FENSR:	ENGINEER:	DATE:
1		J.WANG	1/23/2012

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

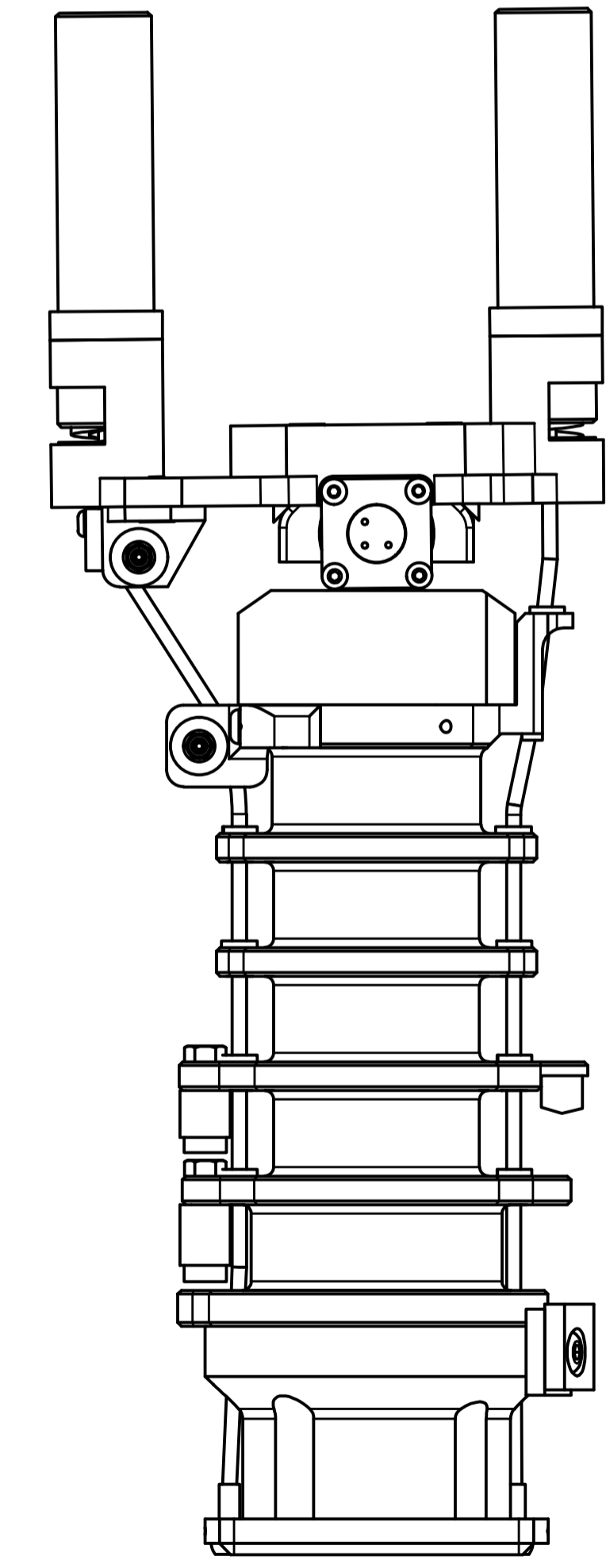
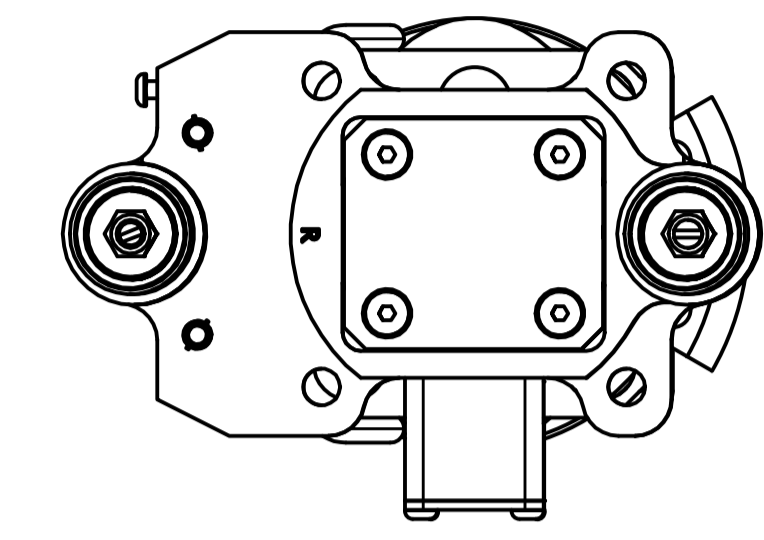
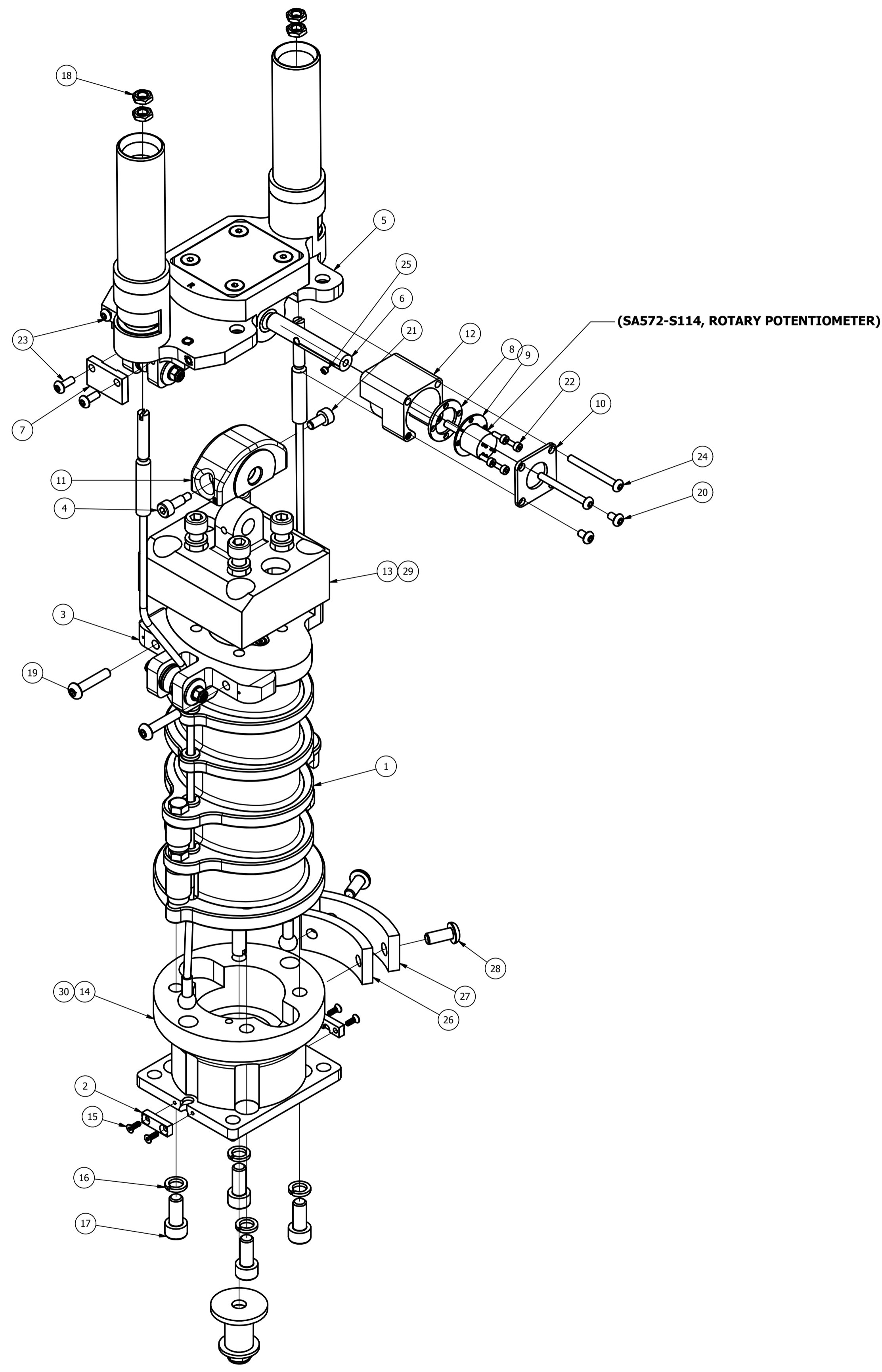
DESCRIPTION: CAP SKIN THOR

SIZE: B SHEET 1 OF 1 DRAWING NO.: 472-1310

SCALE: N/A

PROJECT NO:	472-1000
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM000 R12 AND CONVERTED TO METRIC FOR THOR-M	8/23/2011	BK
	B	5000469 WAS 5000763	6/14/2012	BK
	C	ITEM #17 PART #5000604 - SCREW, SHCS M6-1 x 14mm WAS PART #5000081 - M6-1 x 16 LG. SHCS; ITEM #18 PART #5000380V - NUT, HEX JAM M5 WAS PART # 5000156 - M5 X 0.8 HEX LOCK NUT SS; ADDED PART #SA572-S110 - UPPER NECK LOAD CELL (OPTIONAL), AND PART #SA572-S111 - LOWER NECK LOAD CELL (OPTIONAL)	9/2/2015	DW



SCALE .750

- NOTES:
1. A M3 X .5 X 8 BHCS IS USED TO ATTACH THE HEAD-SPINE GROUND STRAP TO THE HEAD/NECK MOUNTING PLATFORM.
  2. FOUR M6 X 1 X 16 SCHS WITH NYLON PELLET ARE USED TO FASTEN THE LOWER NECK LOAD CELL TO THE UPPER THORACIC SPINE NECK PITCH CHANGE MECHANISM.

ITEM	QTY	PART NUMBER	DESCRIPTION
30	1	SA572-S111	LOWER NECK LOAD CELL (OPTIONAL)
29	1	SA572-S110	UPPER NECK LOAD CELL (OPTIONAL)
28	2	5000654	M5 X 0.8 X 12 LG. BHCS
27	1	472-2001	LOWER NECK LOAD CELL BUMPER COVER
26	1	472-2002	LOWER NECK LOAD CELL BUMPER
25	1	5001112	M3 X 0.5 X 3 LG. SSS CONE PT.
24	2	5000749	M3 X 0.5 X 30 LG. BHCS SS
23	3	5000410	M3 X 0.5 X 8 LG. BHCS
22	4	5000082	M2 X 0.4 X 6 LG. SHCS
21	1	5000989	M4 X 0.7 X 8 LG. SHCS
20	2	5000674	M3 X 0.5 X 5 LG. BHCS
19	2	5000007	M4 X 0.7 X 20 LG. BHCS
18	4	5000380V	NUT, HEX JAM M5
17	8	5000604	SCREW, SHCS M6-1 x 14 mm
16	8	5001110	M6 HI-COLLAR LOCK WASHER S.S.
15	4	5000469	SCREW, FHCS M4-0.4 x 6
14	1	472-2600	LOWER NECK LOAD CELL STRUCTURAL REPLACEMENT
13	1	472-2700	UPPER NECK LOAD CELL STRUCTURAL REPLACEMENT
12	1	472-2013	ROTARY POTENTIOMETER HOUSING, NECK
11	1	472-2019	OCCIPITAL CONDYLE CAM, NECK
10	1	472-2014	ROTARY POTENTIOMETER COVER, NECK
9	2	472-2020	ROTARY POTENTIOMETER CLAMP, NECK
8	1	472-2021	ROTARY POTENTIOMETER WASHER, NECK
7	1	472-2012	NECK PULLEY PLATE
6	1	472-2011	OCCIPITAL CONDYLE PIN, NECK
5	1	472-2200	MOUNTING PLATFORM ASSEMBLY, NECK
4	1	472-2016	OCCIPITAL CONDYLE SCREW
3	1	472-2300	NECK PULLEY BRACKET ASSEMBLY
2	2	472-2015	CABLE SEAT COVER, NECK
1	1	472-2100	CABLE ASSEMBLY, NECK

Parts List

DO NOT SCALE DRAWING

TOLERANCES UNLESS OTHERWISE SPECIFIED: FRACTIONS DECIMALS ANGLES DIMENSIONS

ASSEMBLY BY: B. KIMES 7/28/2011

DESIGNED BY: J. WANG 1/9/12

DATE: 7/28/2011

DATE: 1/9/12

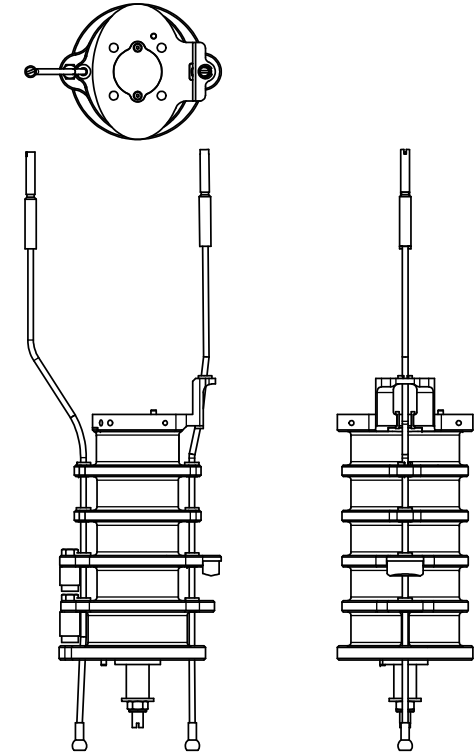
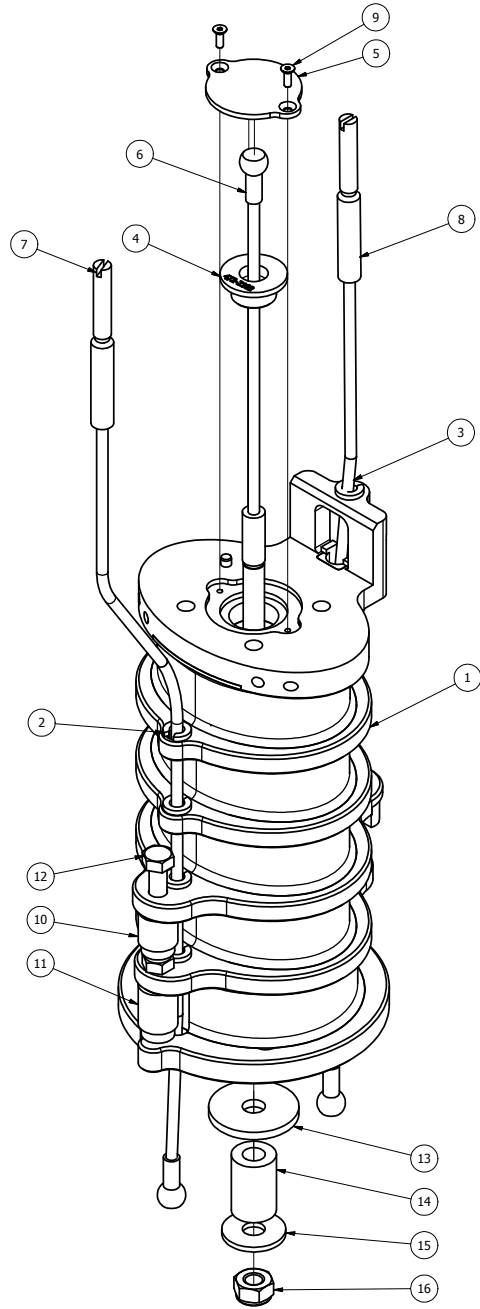
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11 OF 1

MECHANICAL ASSEMBLY, NECK

472-2000

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NK100 R11 AND CONVERTED TO METRIC FOR THOR-M	8/12/2011	BK



ITEM	QTY	PART NUMBER	DESCRIPTION
16	1	5000503	M6 X 1 HEX LOCK NUT SS
15	1	5001113	M6 FENDER WASHER S.S.
14	1	472-2018	NECK NEOPRENE SPACER
13	1	472-2017	CENTER CABLE WASHER, NECK
12	2	5001109	M5 x.8 x 12 HHCS
11	1	472-2520	LOWER NECK STOP ASSEMBLY
10	1	472-2500	UPPER NECK STOP ASSEMBLY
9	2	5000469	M2 X 0.4 X 6 LG. FHCS
8	1	472-2150	FRONT CABLE ASSEMBLY, NECK
7	1	472-2130	REAR CABLE ASSEMBLY, NECK
6	1	472-2140	CENTER CABLE ASSEMBLY, NECK
5	1	472-2103	CABLE COVER, NECK
4	1	472-2102	CENTER CABLE FIXTURE, NECK
3	1	472-2106	CABLE GUIDE, NECK
2	8	472-2105	NECK CABLE GUIDE
1	1	472-2110	FRONT STOP ASSEMBLY, NECK

**PARTS LIST**

**TOLERANCES**

UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ARE TO NEAREST 0.01 MM  
 FRACTIONS ARE TO NEAREST 1/32 MM  
 HOLE DIMENSIONS ARE TO NEAREST 0.01 MM  
 HOLE DIMENSIONS ARE TO NEAREST 0.01 MM  
 HOLE DIMENSIONS ARE TO NEAREST 0.01 MM

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

CABLE ASSEMBLY, NECK

**NOTES:**

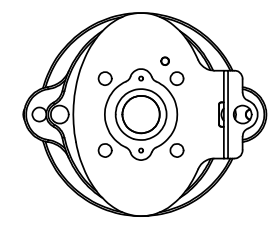
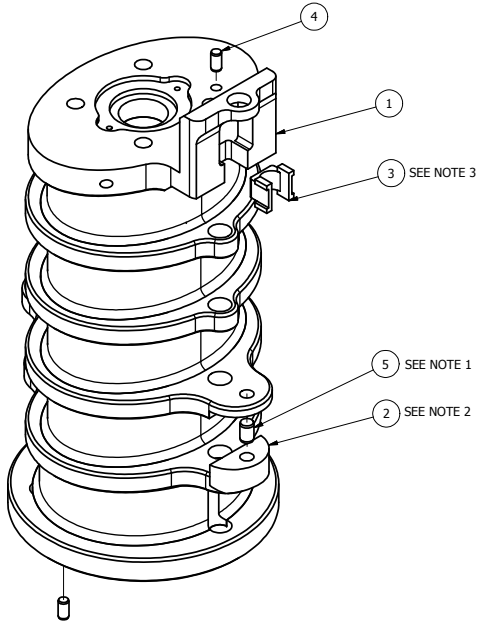
1. AFTER THE FRONT AND REAR CABLES ARE ASSEMBLED INTO THE BONDED NECK ASSEMBLY, CLIP THE CABLE GUIDES OVER THE CABLES AND PRESS THEM INTO THE CORRESPONDING NECK PLATES. IF NECESSARY, USE LOCTITE SUPER BONDER 495 OR EQUIVALENT TO SECURE GUIDES INTO PLACE.

SCALE 1.000

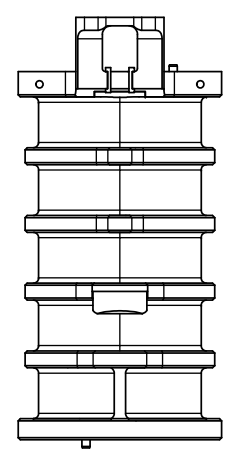
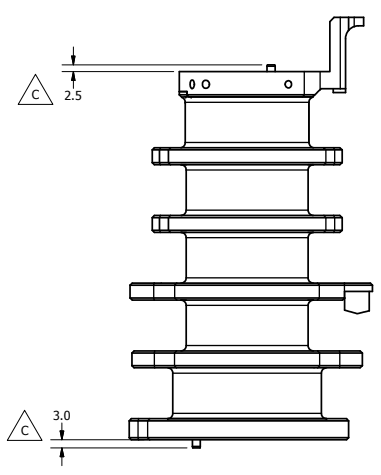
472-2000	1	DATE:	7/28/2011	BY:	B. KIMES
NEXT ASSEMBLY	QTY:	DESIGNED BY:		CHECKED BY:	
TOTAL QTY IN DUMMY	1	DATE:	1/9/2012	BY:	J. WANG

Sheet 1 of 1  
472-2100

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM104 R03 AND CONVERTED TO METRIC FOR THOR-M	8/22/11	BK
	B	ADD LOCATING DOWELS	12/19/2011	BK
	C	5000680 WAS 5000524; ADD DOWEL DEPTH DIMENSIONS	11/28/2012	BK



SCALE 1.000



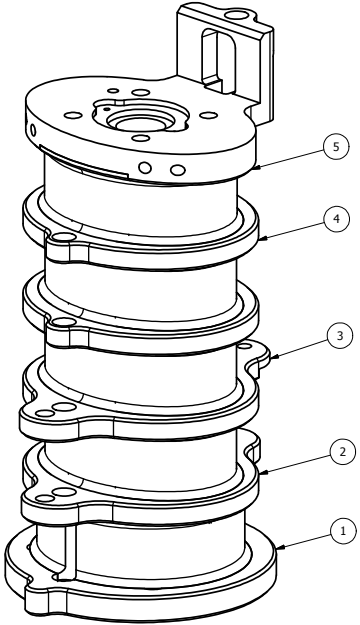
- NOTES:
1. PRESS 5000524 INTO PART UNTIL PIN IS FLUSH WITH THE TOP SURFACE OF THE PLATE.
  2. BOND 472-2101 TO 472-2120 AND 5000524 AS SHOWN, USING A HIGH STRENGTH, FLEXIBLE, TWO PART EPOXY.
  3. SECURE INTO PLACE USING LOCTITE SUPER BONDER 495 OR EQUIVALENT.

△ C △ B

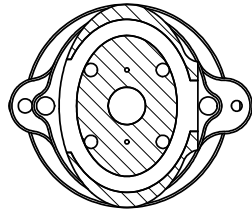
ITEM	QTY	PART NUMBER	DESCRIPTION
5	1	5000680	M4 X 6 LG. DOWEL PIN SS
4	2	5000385	M3 X 6 LG. DOWEL PIN
3	1	472-2104	TOP PLATE CABLE GUIDE, NECK
2	1	472-2101	FRONT STOP, NECK
1	1	472-2120	MOLDED ASSEMBLY, NECK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
DIMENSIONS ARE IN MILLIMETERS DIMENSIONS ARE IN INCHES DECIMALS    FRACTIONS    DECIMALS    FRACTIONS 0.1    1/16    0.01    1/32 0.2    1/8    0.02    1/64 0.5    1/4    0.05    1/16 1.0    1/2    0.10    1/8 2.0    1    0.20    1/4 5.0    1/2"    0.50    1/2 10.0    1"    1.00    1"		SHOW DIMENSIONS & BREAK SHARP EDGES DATE: 7/28/2011 BY: B. KIMES CHECKED BY: J. WANG DATE: 1/9/2012		
472-2100	1	FRONT STOP ASSEMBLY, NECK	FRONT STOP ASSEMBLY, NECK	
NEXT ASSEMBLY	QTY	DATE	DRAWING NO.	
TOTAL QTY IN DUMMY	1	DATE	DRAWING NO.	
		A21 of 1		472-2110

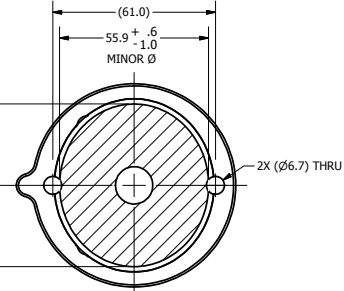
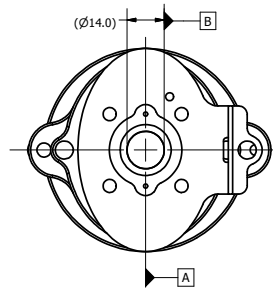




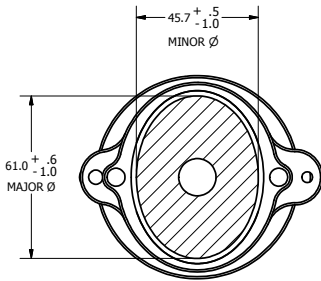
SCALE 1.000



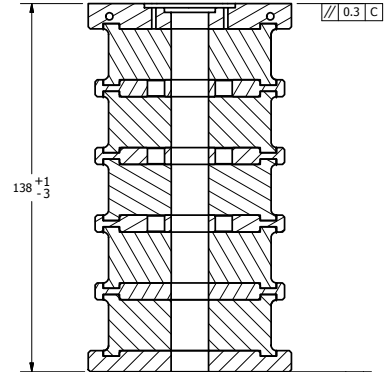
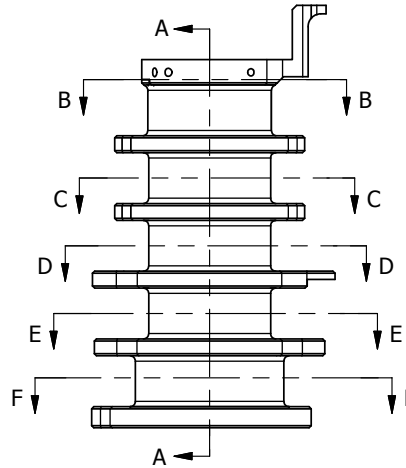
SECTION B-B  
SCALE .750



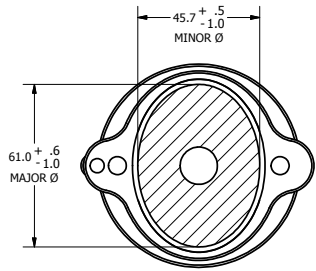
SECTION F-F  
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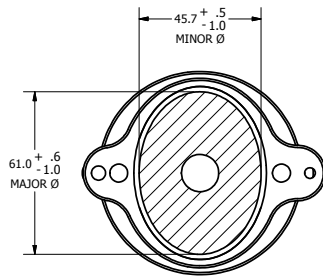
SECTION C-C  
SCALE .750



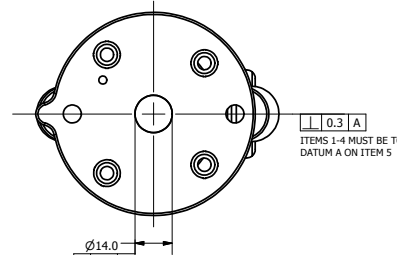
SECTION A-A  
SCALE .750



SECTION E-E  
SCALE .750



SECTION D-D  
SCALE .750



0.3 A  
ITEMS 1-4 MUST BE TO DATUM A ON ITEM 5

ø14.0  
0.1 B  
ITEMS 1-4 MUST COINCIDE WITH THE AXIS OF DATUM B ON ITEM 5

- NOTES:
1. MATERIAL: INJECTION MOLDED BUTYL RUBBER SHORE A 75±2.
  2. PERFORMANCE SPEC TAKES PRECEDENCE OVER DUROMETER.
  3. PLUG ALL HOLES PRIOR TO MOLDING.

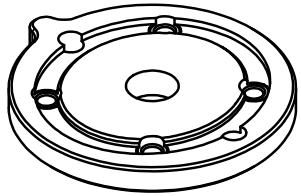
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM10S R02 AND CONVERTED TO METRIC FOR THOR-M	8/22/11	BK

ITEM	QTY	PART NUMBER	DESCRIPTION
5	1	472-2125	TOP PLATE, NECK
4	2	472-2124	NECK PLATE 3
3	1	472-2123	NECK PLATE 2
2	1	472-2122	NECK PLATE 1
1	1	472-2121	NECK BASE

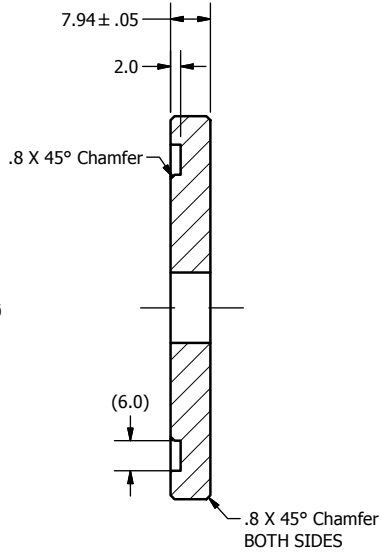
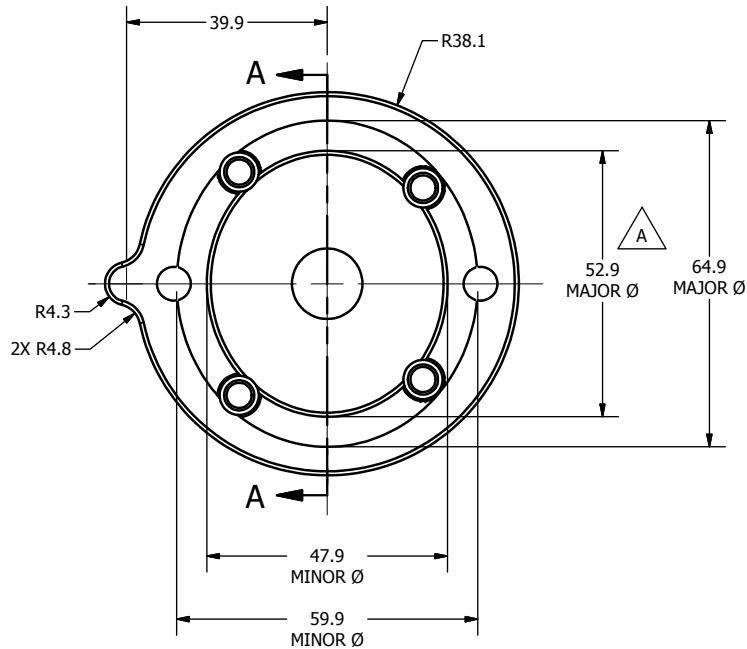
PARTS LIST

DO NOT SCALE DRAWING				TOLERANCES				 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ARE TO 0.10 mm</small> <small>FRACTIONS ARE TO 1/32" (0.03125 mm)</small> <small>ANGLES TO NEAREST DEGREE</small> <small>UNLESS SPECIFIED</small>				<small>SHOW HIDDEN &amp; BREAK DIMENSIONS</small> <small>ALL DIMENSIONS TO DATUM UNLESS OTHERWISE SPECIFIED</small> <small>UNLESS OTHERWISE SPECIFIED</small>				
472-2110	1	SEE NOTES	DATE: 7/28/2011	DESIGNED BY:	B. KIMES	CHECKED BY:	7/28/2011	MOLDED ASSEMBLY, NECK DRAWING NO: 472-2110 SCALE: .750 SHEET: A21 OF 1
NEXT ASSEMBLY	QTY		DATE:	DESIGNED BY:	J. WANG	CHECKED BY:	1/9/2012	
TOTAL QTY IN DUMMY	1		DATE:					

472-2110	1	SEE NOTES	DATE: 7/28/2011	DESIGNED BY:	B. KIMES	CHECKED BY:	7/28/2011
NEXT ASSEMBLY	QTY		DATE:	DESIGNED BY:	J. WANG	CHECKED BY:	1/9/2012
TOTAL QTY IN DUMMY	1		DATE:				

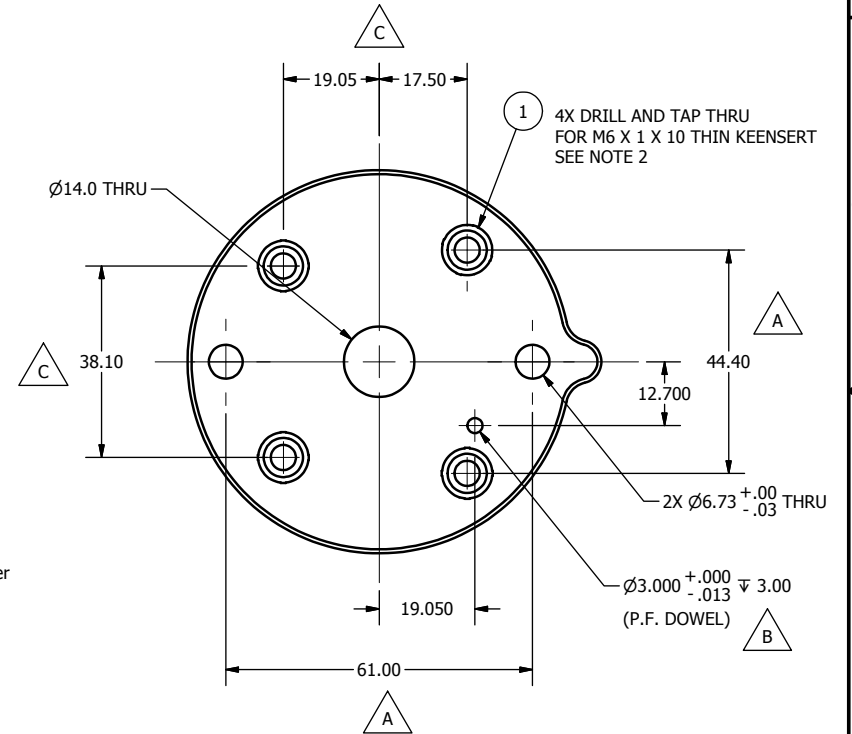


SCALE .750



SECTION A-A  
SCALE 1.000

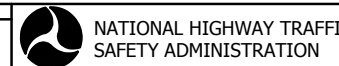
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM110 R11 AND CONVERTED TO METRIC FOR THOR-M; 61.00 WAS 61.0, 52.9 MAJORØ WAS 52.8, 44.40 WAS 44.4	8/22/2011	BK
	B	ADD DOWEL HOLE	12/19/2011	BK
	C	17.50 WAS 17.5; 19.05 WAS 19.0; 38.10 WAS 38.20	3/16/2012	BK



NOTES:

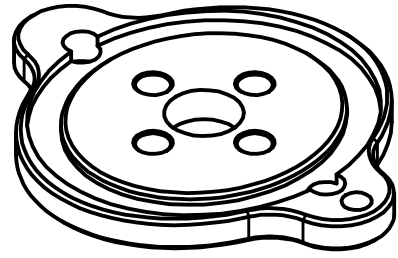
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. GRIND KEENSERTS TO 5.9+0/-1 BEFORE INSTALLING.

1	4	5001108	M6 X 1 X 10 LG. LIGHTWEIGHT KEENSERT
ITEM	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 X X ± 0.2 X XX ± 0.3 X XXX ± 0.01	
PROJECT NO.: 472-2120		DATE: 7/28/2011	
MATERIAL: 6061-T6 ALUMINUM		DRAWN BY: B. KIMES	
HEAT TREAT:		CHECKED BY: J. WANG	
DATE: 1/9/2012		DATE: 1/9/2012	
TOTAL QTY IN DUMMY: 1		SCALE: 1.000	
DESCRIPTION: NECK BASE			SIZE: SHEET: DRAWING NO.: 472-2121
			SCALE: 1.000



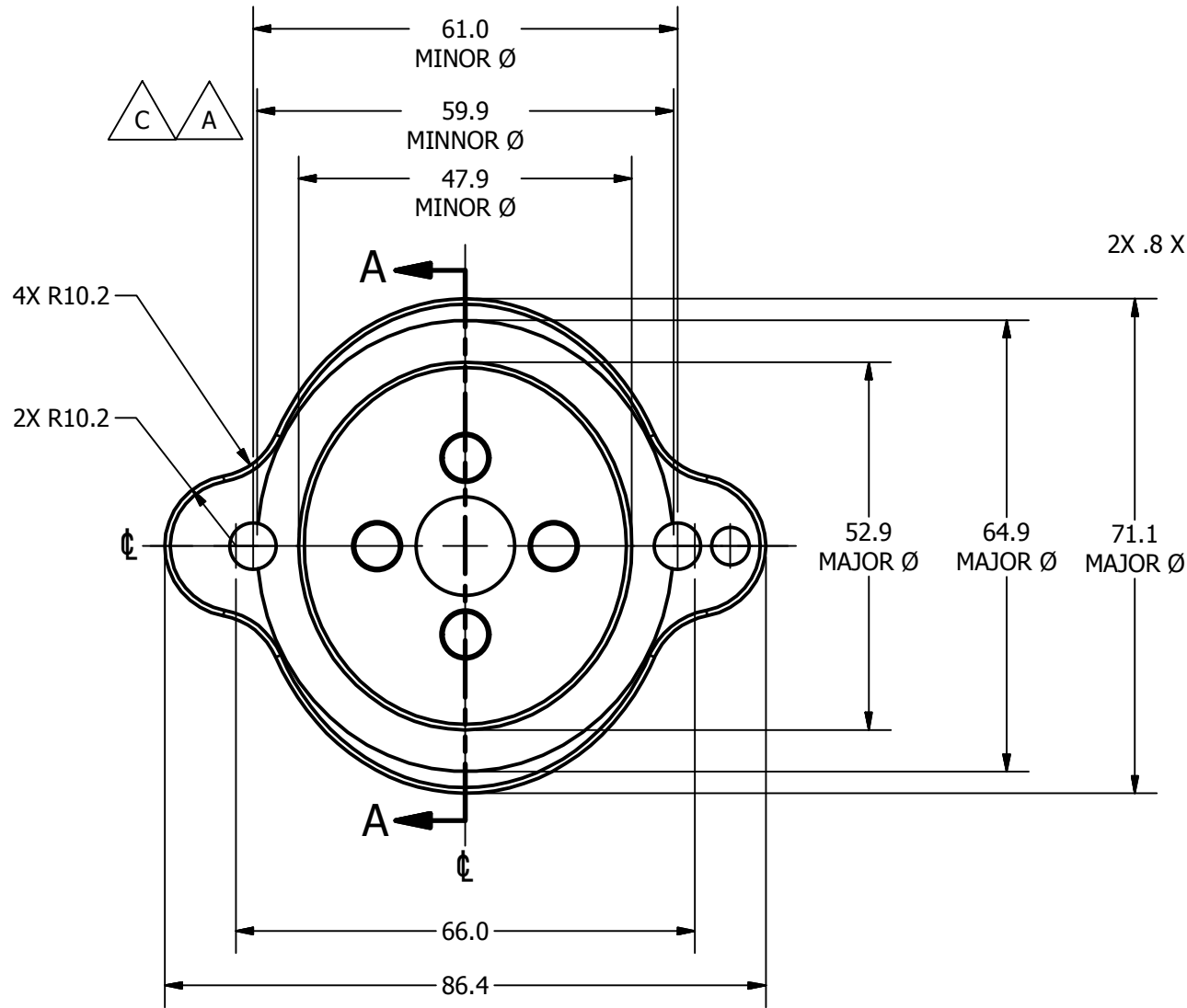
472-2121

C

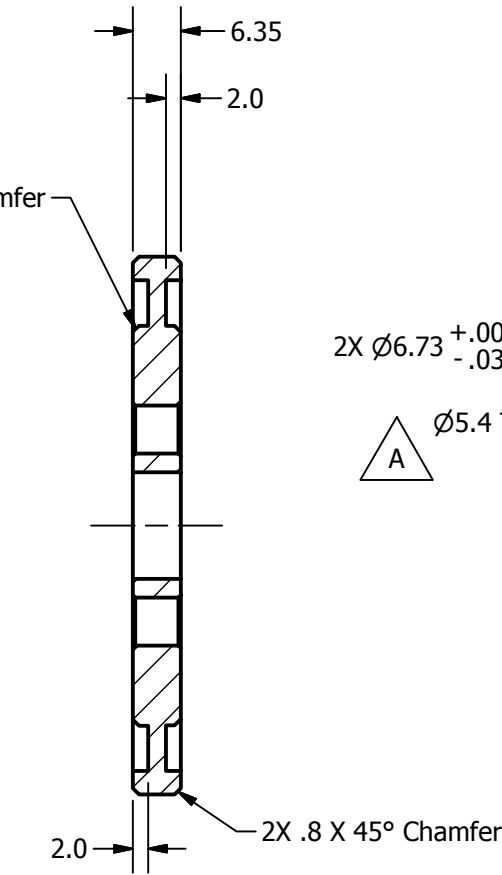


SCALE .750

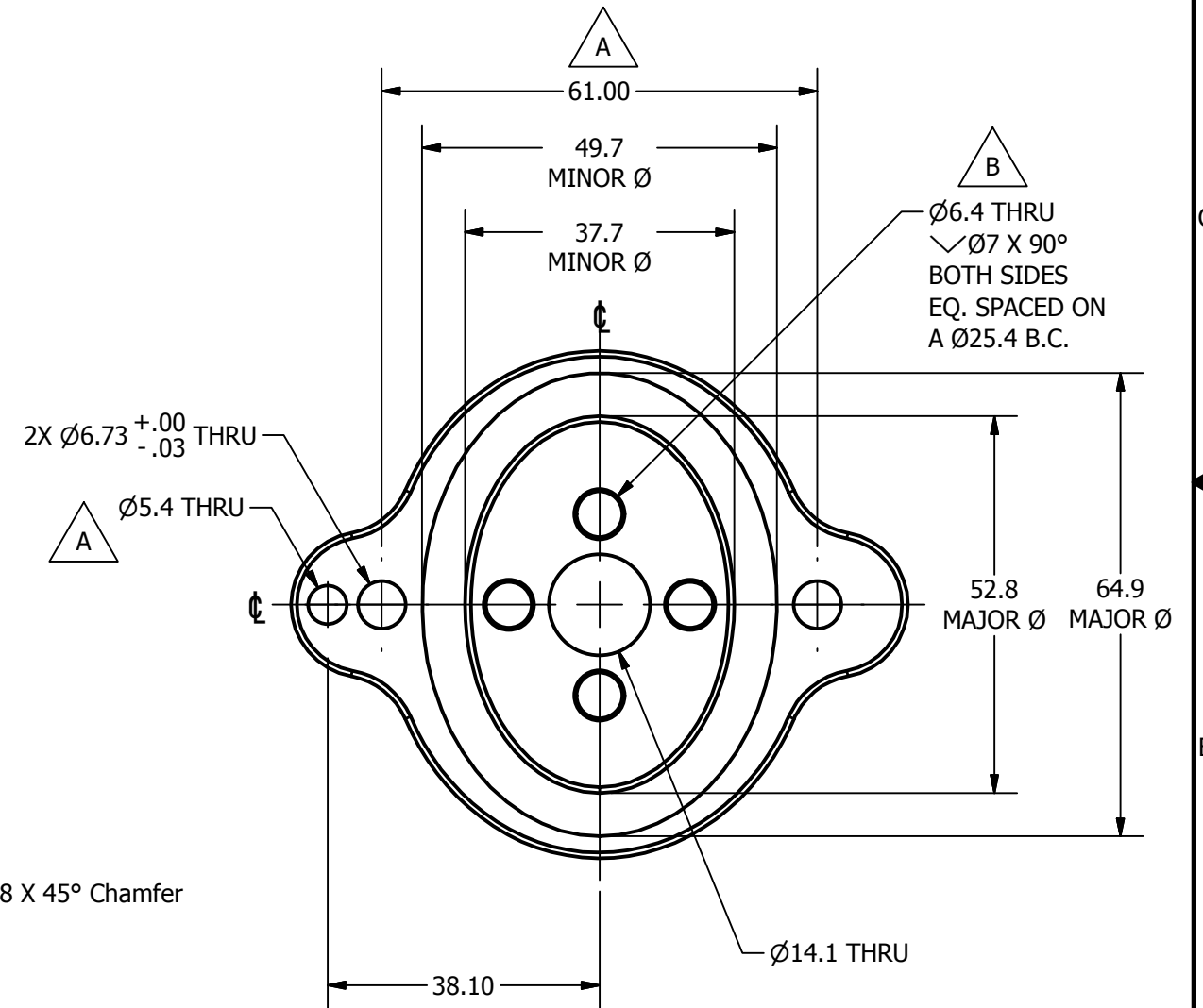
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM112 R07 AND CONVERTED TO METRIC FOR THOR-M; 59.5 MINOR Ø WAS 59.9; .8 X 45° CHAMFER WAS R.8; Ø5.3 WAS Ø5.1; 61.00 WAS 61.0	7/30/2011	BK
	B	ADDED VENT HOLES FOR MOLDING	6/12/2012	TMV
	C	DIM. 59.9 MINOR Ø WAS 59.5 MINOR Ø	8/31/15	DW



2X .8 X 45° Chamfer

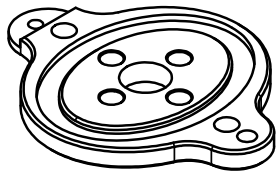


SECTION A-A  
SCALE 1.000



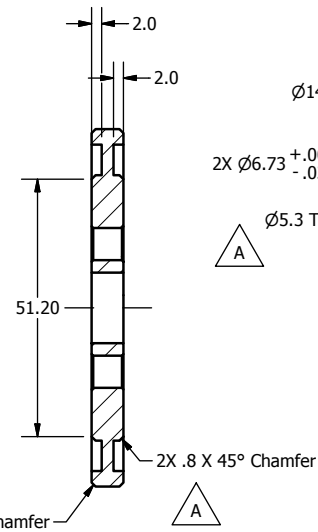
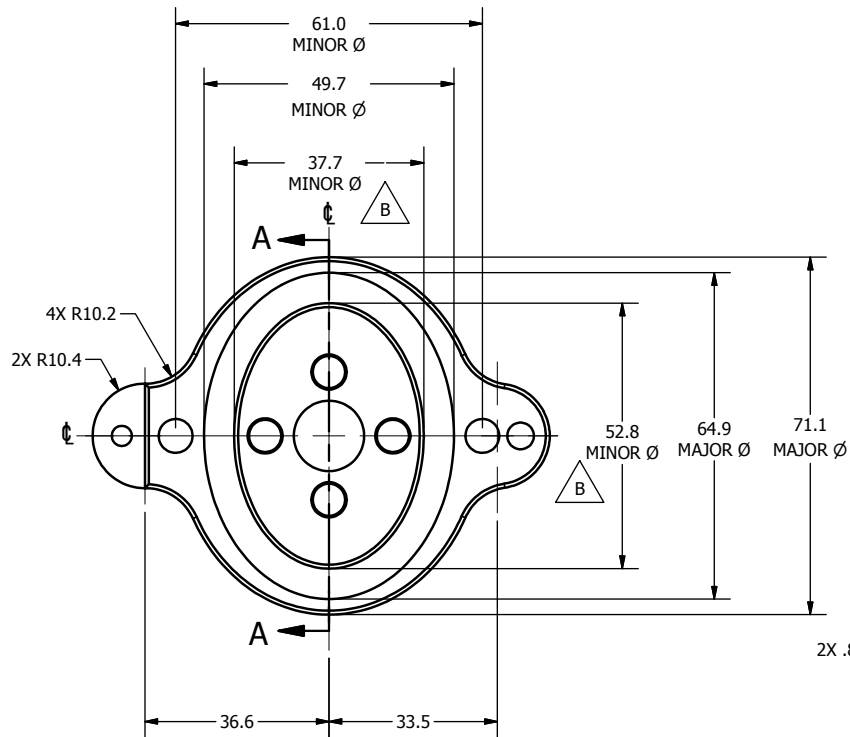
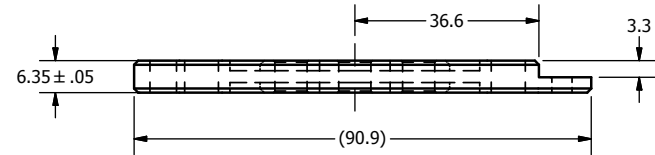
- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		DESCRIPTION: NECK PLATE 1	
PROJECT NO.: 472-2120		MATERIAL: 6061-T6 ALUMINUM		DRAWING NO.: 472-2122	
NEXT ASSEMBLY QTY		HEAT TREAT:		DRAWN BY: B. KIMES	
TOTAL QTY IN DUMMY 1		FINISH:		DATE: 7/28/2011	
		ENGINEER: J. WANG		DATE: 1/9/2012	
				SIZE: A3 1 OF 1	
				SCALE: 1.000	

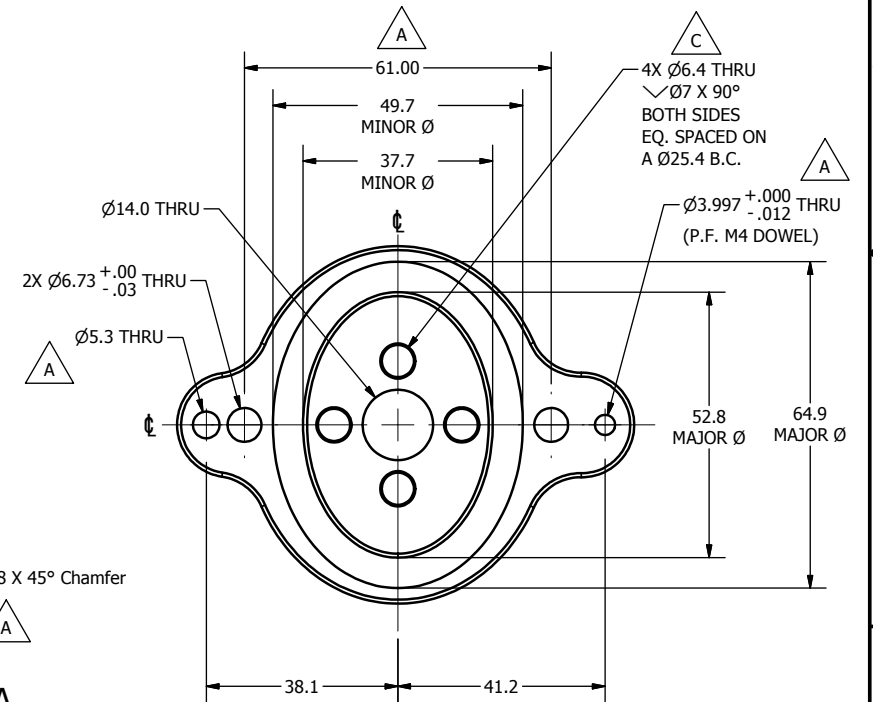


SCALE .750

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM114 R08 AND CONVERTED TO METRIC FOR THOR-M; .8 X 45° CHAMFER WAS R.8; Ø5.3 WAS Ø5.1; 61.00 WAS 61.0; Ø3.997+.000/-0.012 WAS Ø4.758+.000/-0.013	8/22/2011	BK
	B	ADD MISSING MAJOR, MINOR Ø	4/11/2012	BK
	C	ADDED VENT HOLES FOR MOLDING	6/12/2012	TMV



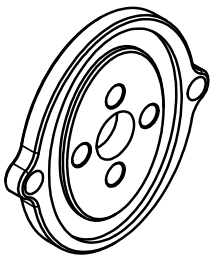
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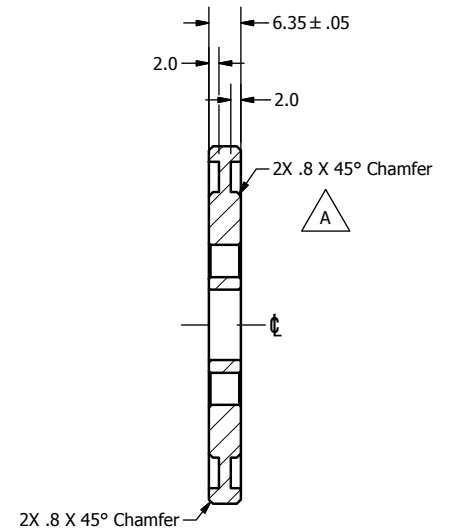
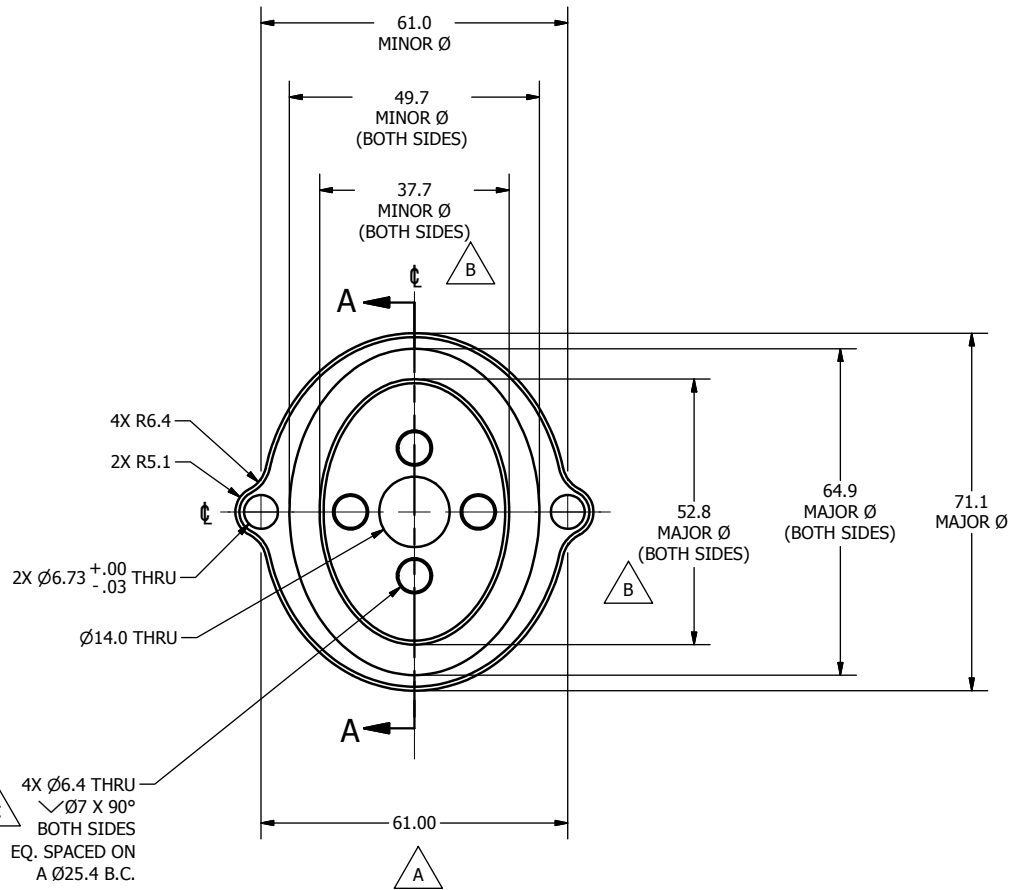
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 0.05 16 XX .02 0.05 16 XXX .03 0.05 16 XXXX 0.01		
PROJECT NO.:	472-2120	MATERIAL:	6061-T6 ALUMINUM	DESCRIPTION:
DATE:	7/28/2011	DESIGNED BY:	B. KIMES	NECK PLATE 2
CHECKED BY:		DATE:	1/9/2012	SIZE: SHEET: DRAWING NO.:
ENGINEER:	J. WANG	DATE:	1/9/2012	A31 OF 1 SCALE: 1.000
TOTAL QTY IN DUMMY:	1	FINISH:		472-2123



SCALE .750



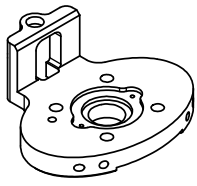
SECTION A-A  
SCALE 1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM115 R07 FOR THOR-M; 61.00 WAS 61.0, .8 X 45° CHAMFER WAS R.8	7/30/2011	BK
	B	ADD MISSING MAJOR, MONOR Ø	4/11/2012	BK
	C	ADD VENT HOLES FOR MOLDING	6/13/2012	TMV

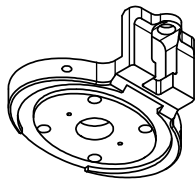
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-2120	MATERIAL:	6061-T6 ALUMINUM	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	7/28/2011	NECK PLATE 3
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
DATE:	1/9/2012	SCALE:	1.000	SIZE: SHEET
TOTAL QTY IN DUMMY	2	FINISH:		A31 OF 1
				472-2124

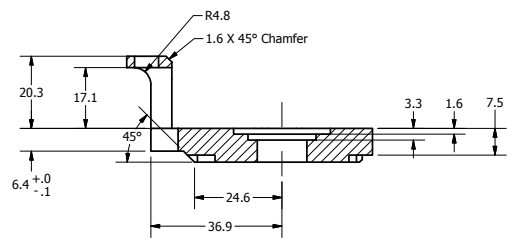
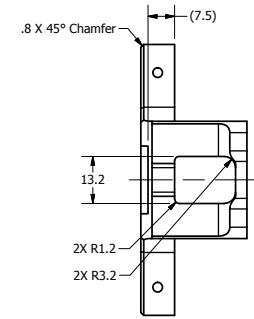
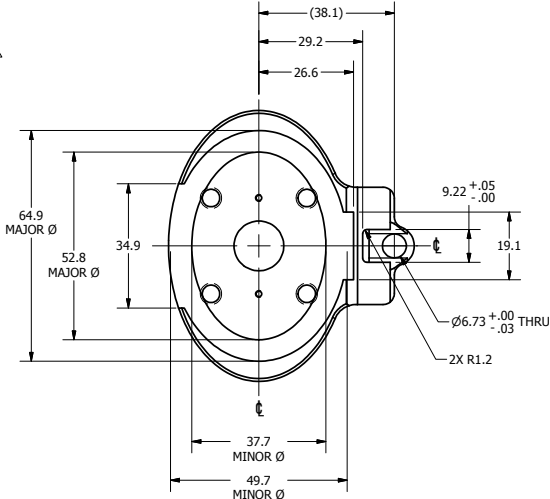
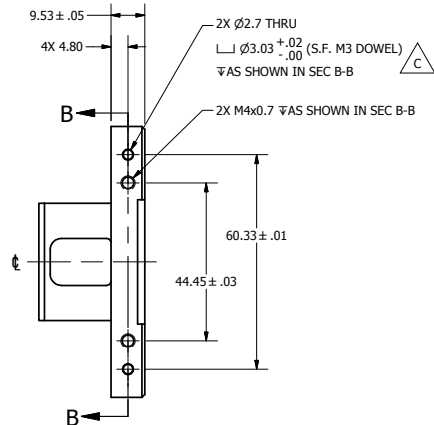
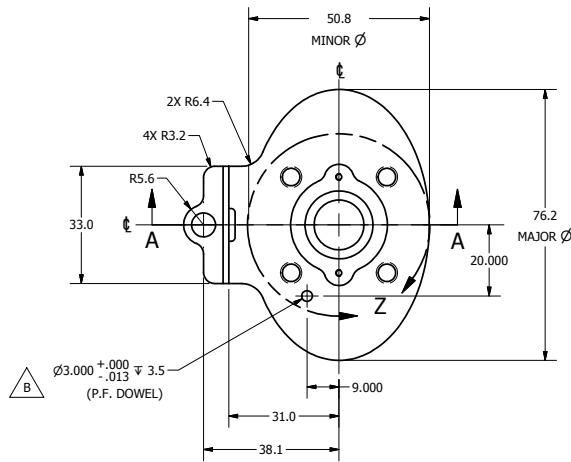


SCALE .750

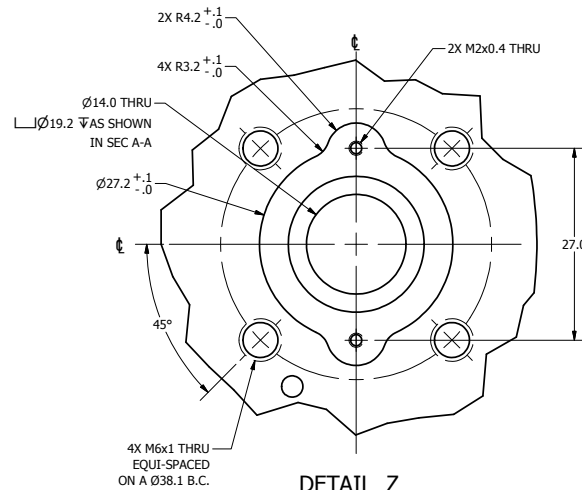


SCALE .750

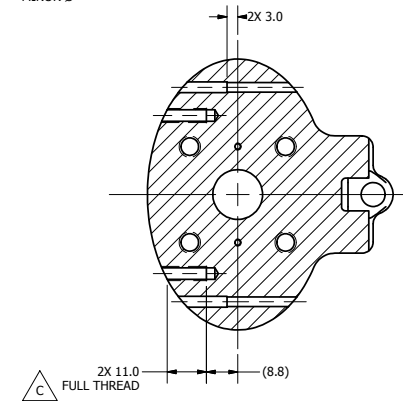
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TINKM116 R17 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTES 2, 3, 4	8/16/2011	BK
	B	ADD LOCATION DOWEL HOLE	12/19/2011	BK
	C	Ø3.03+0.02/-0.00 WAS Ø3.174 +0/-0.013, S.F. DOWEL WAS P.F.; CHANGE THREAD DEPTH, (8.8) WAS 3.1; ADD 2X 11.0 FULL THREAD	4/24/2012	BK



SECTION A-A  
SCALE 1.000



DETAIL Z  
SCALE 2.000

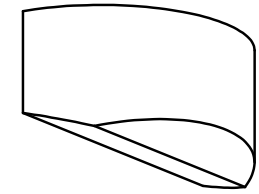


SECTION B-B  
SCALE 1.000

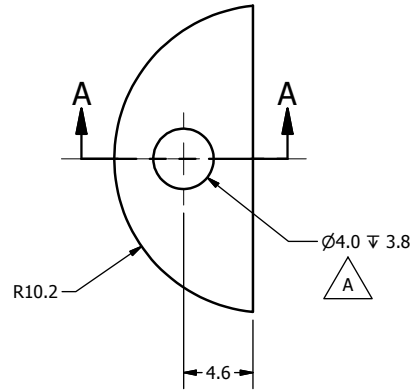
- NOTES:
- DIMENSIONS SYMMETRIC ABOUT  $\epsilon$ , UNLESS OTHERWISE NOTED.
  - POWDER OR BEAD BLAST.
  - NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  - DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		SHOW HIDDEN & BREAK SHARP EDGES		TOP PLATE, NECK	
472-2120	1	1018 STEEL	B. KIMES	7/28/2011	A21 OF 1 1.000
NEXT ASSEMBLY	QTY		3. WANG	1/9/2012	
TOTAL QTY IN DUMMY	1	SEE NOTES			

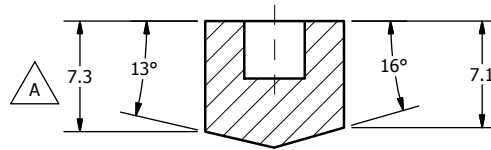
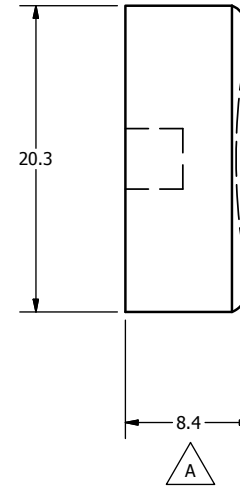
472-2125



SCALE 3.000



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM123 R02 AND CONVERTED TO METRIC FOR THOR-M; Ø4.0 WAS Ø3.8; 8.4 WAS 8.3; 7.3 WAS 7.1	8/22/2011	BK
	B	MATERAIL WAS SBR RUBBER	3/02/2012	TMV

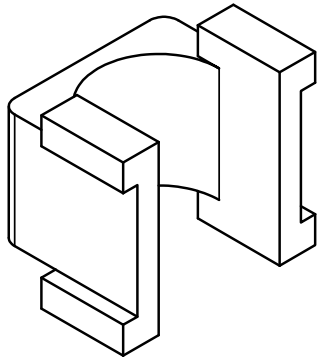


SECTION A-A  
SCALE 3.000

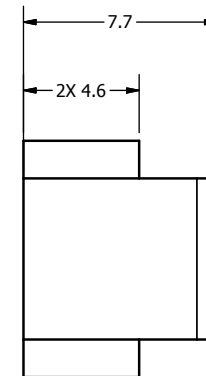
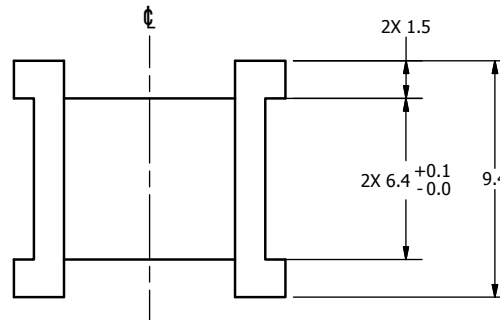
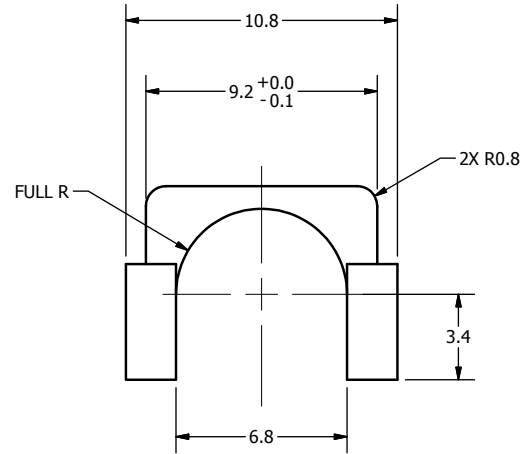
NOTES:

1. RUBBER TOLERANCE ±.5mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION									
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.05 1.6 XX 0.02 ± 0.02 1.6 XXX 0.01 ± 0.01 1.6 REMOVE BURRS & BREAK SHARP EDGES											
PROJECT NO.:	472-2110	DATE:	7/28/2011	DESCRIPTION: FRONT STOP, NECK									
MATERIAL:	NATURAL RUBBER 75±5 SHORE A	DESIGNED BY:	B. KIMES										
CHECKED BY:		DATE:											
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/9/2012	SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:	472-2101	REV.:	B
TOTAL QTY IN DUMMY	1	FINISH:		SCALE:	3.000								



SCALE 5.000

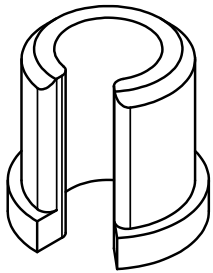


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM125 R03 FOR THOR-M	7/30/2011	BK

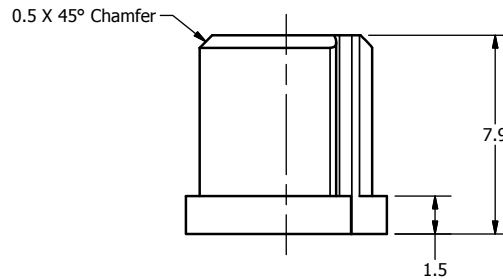
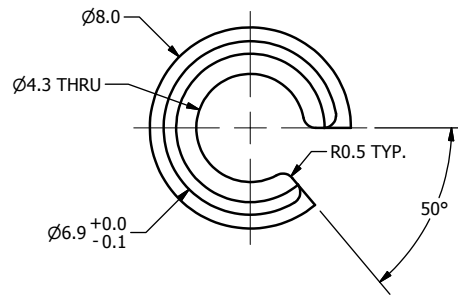
NOTES:  
1. DIMENSIONS ARE SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 16 X 0.2 0.2 XX 0.3 0.3 XXX 0.01		
PROJECT NO:	472-2110	MATERIAL:	Acetal Resin, Black	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	7/28/2011	TOP PLATE CABLE GUIDE, NECK
CHECKED BY:		DATE:		SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
TOTAL QTY IN DUMMY	1	FINISH:		SCALE: 5.000
				DRAWING NO. 472-2104





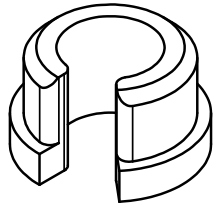
SCALE 5.000



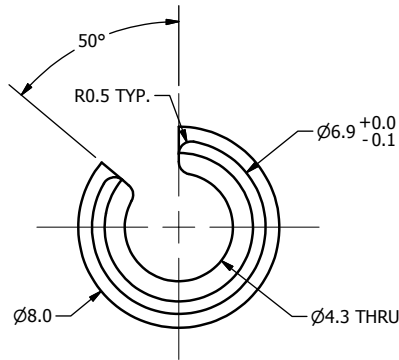
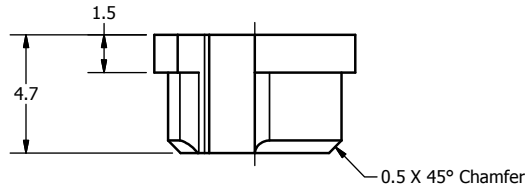
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM129 R01 FOR THOR-M	7/30/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.05 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
PROJECT NO.	472-2100	MATERIAL	Acetal Resin, Black	DESCRIPTION
DESIGNER	B. KIMES	DATE	7/28/2011	NECK CABLE GUIDE
CHECKED BY		DATE		SIZE SHEET
ENGINEER	J. WANG	DATE	1/9/2012	A3 1 OF 1
FINISH		SCALE	5.000	DRAWING NO.
TOTAL QTY IN DUMMY	8			472-2105

A

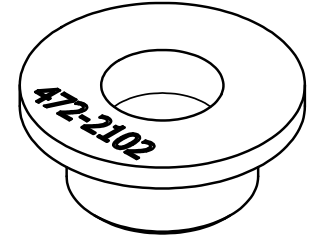


SCALE 5.000

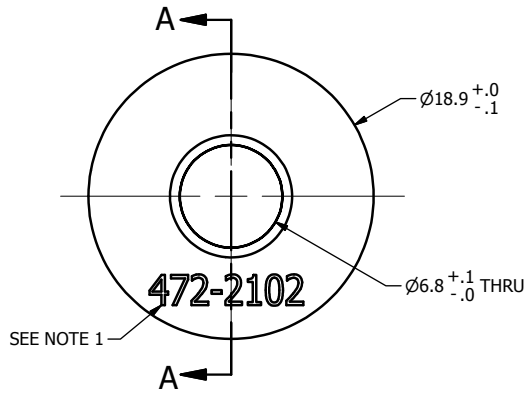


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM130 R01 FOR THOR-M	7/30/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.07 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
PROJECT NO:	472-2100	MATERIAL:	Acetal Resin, Black	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	7/28/2011	CABLE GUIDE, NECK
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
TOTAL QTY IN DUMMY	1	FINISH:		DATE:
				SCALE: 5.000
				SIZE: A3
				SHEET: 1 OF 1
				DRAWING NO.: 472-2106
				REV: A

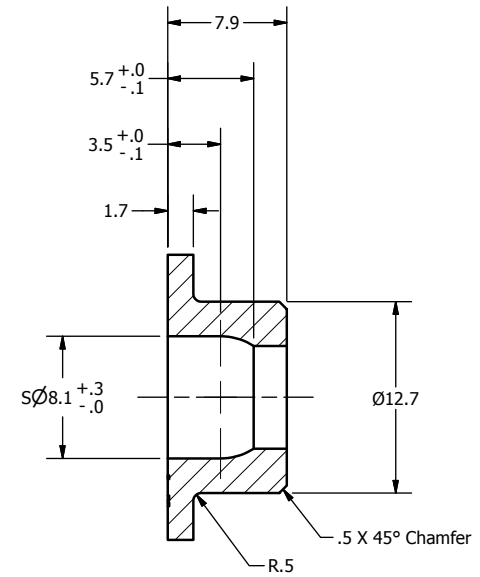


SCALE 3.000



SEE NOTE 1

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM120 R06 AND CONVERTED TO METRIC FOR THOR-M	7/30/2011	BK

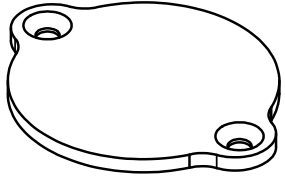


SECTION A-A  
SCALE 3.000

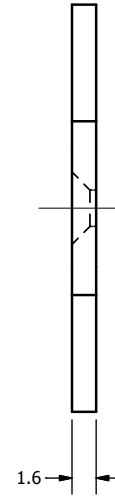
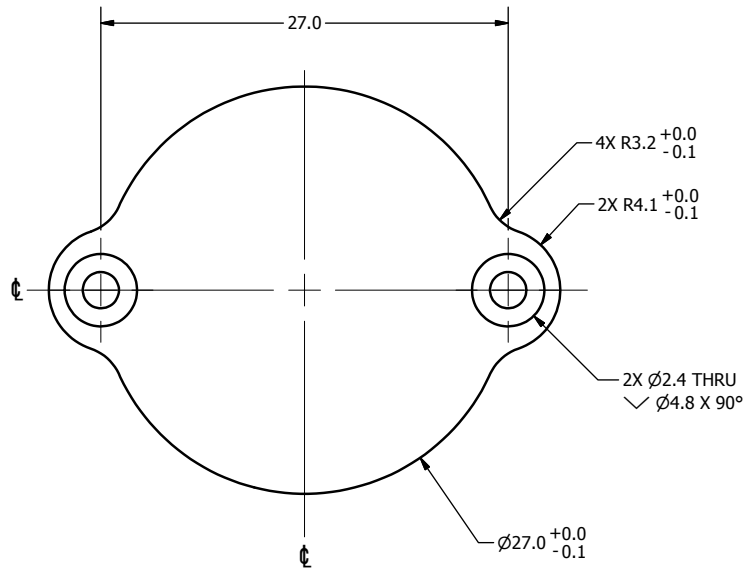
NOTES:

1. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		DESCRIPTION: CENTER CABLE FIXTURE, NECK	
PROJECT NO.: 472-2100		MATERIAL: 7075-T6 ALUMINUM		DRAWN BY: B. KIMES	
NEXT ASSEMBLY QTY		HEAT TREAT:		DATE: 7/28/2011	
TOTAL QTY IN DUMMY 1		FINISH: CLEAR ANODIZE		ENGINEER: J. WANG	
				DATE: 1/9/2012	
				SCALE: 3.000	
				SIZE: A3	
				SHEET: 1 OF 1	
				DRAWING NO.: 472-2102	
				REV: A	



SCALE 2.000

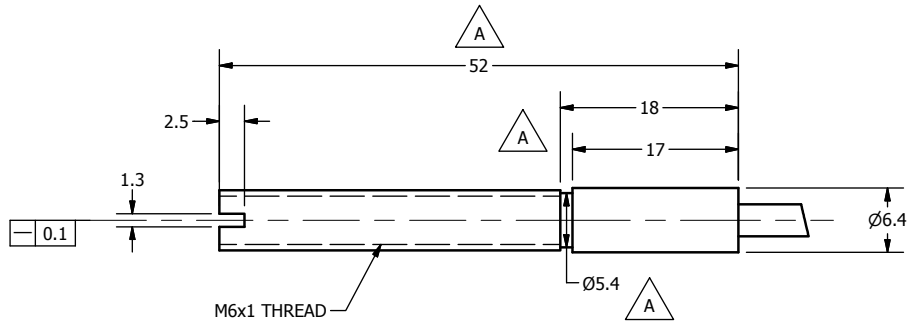


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM124 R03 AND CONVERTED TO METRIC FOR THOR-M	7/30/2011	BK

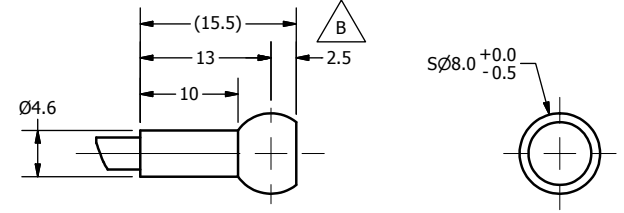
NOTE:  
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 16 X 0.2 XX 0.3 XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-2100	MATERIAL:	Acetal Resin, Black	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	7/28/2011	CABLE COVER, NECK
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	
DATE:		DATE:	1/9/2012	
FINISH:		FINISH:		
TOTAL QTY IN DUMMY		QTY	1	SIZE: SHEET: DRAWING NO.: REV:
				A3 1 OF 1 SCALE: 3.000 472-2103 A

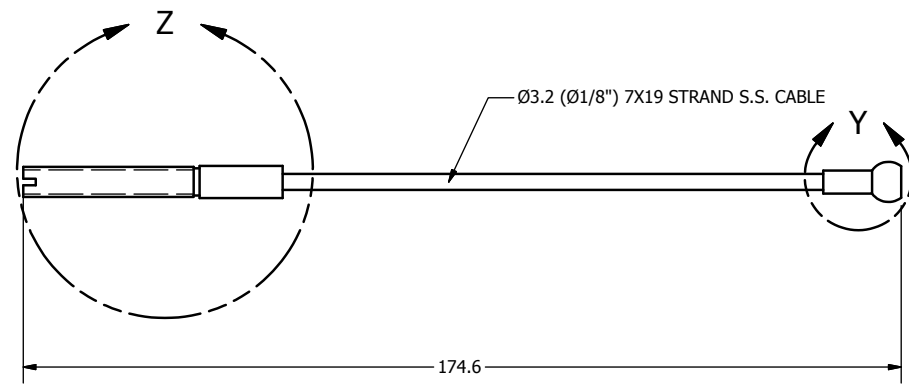
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM119 R04 AND CONVERTED TO METRIC FOR THOR-M; 52 WAS 54; 18 WAS 31; 17 WAS 28; Ø5.4 WAS Ø4	8/1/2011	BK
	B	ADD 2.5 DIMENSION; (15.5) WAS 15.5	6/25/2012	BK



DETAIL Z  
THREADED END  
SCALE 2.000



DETAIL Y  
BALL END  
SCALE 2.000



SCALE .500

- NOTES:
- TENSIL STRENGTH OF CABLE ASSEMBLY: 1000 LBS.
  - DIMENSIONS SHOWN ARE AFTER SWAGING AND MACHINING.

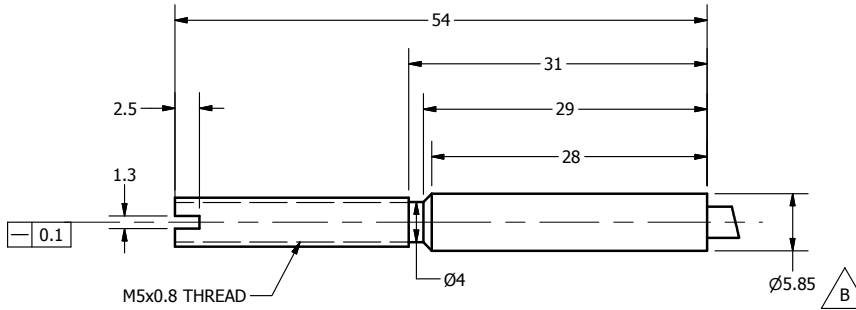
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-2100	QTY	1	DESCRIPTION: CENTER CABLE ASSEMBLY, NECK
MATERIAL:		TOTAL QTY IN DUMMY	1	
CHECKED BY:	B. KIMES	DATE:	7/28/2011	
HEAT TREAT:		ENGINEER:	J. WANG	DATE: 1/9/2012 SCALE: 1.000 SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-2140 REV: B

4 3 2 1

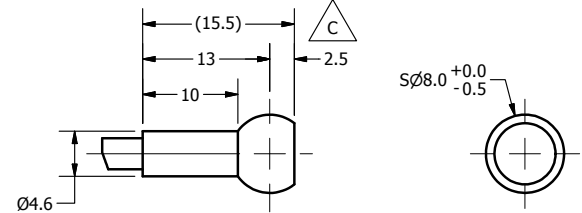
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1NKM117 R11 AND CONVERTED TO METRIC FOR THOR-M	7/30/2011	BK
	B	Ø5.85 WAS Ø6.4	6/13/2012	BK
	C	ADD 2.5 DIMENSION; (15.5) WAS 15.5	6/25/2012	BK



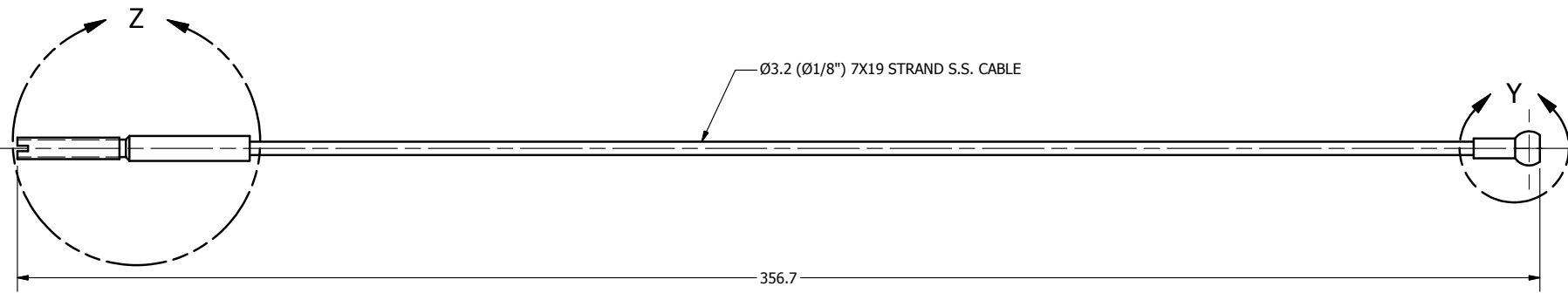
SCALE .250



DETAIL Z  
THREADED END  
SCALE 2.000



DETAIL Y  
BALL END  
SCALE 2.000



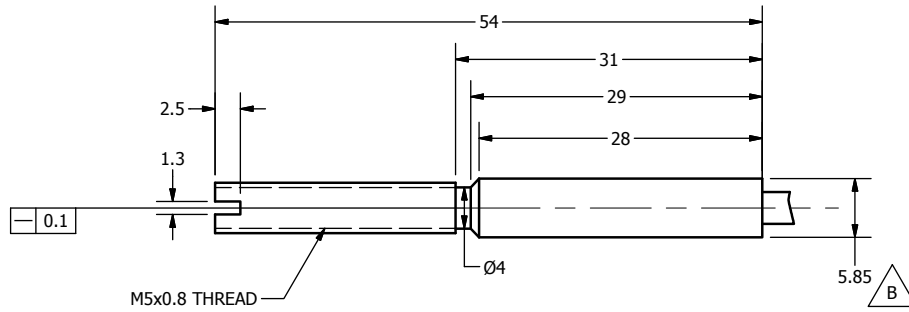
- NOTES:
- TENSIL STRENGTH OF CABLE ASSEMBLY: 1700 LBS.
  - DIMENSIONS SHOWN ARE AFTER SWAGING AND MACHINING.

DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X.X 0.0 1.6 X.XX 0.1 X.XXX 0.05 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.	MATERIAL:	DRAWN BY:	DATE:	DESCRIPTION:
472-2100	1	B. KIMES	7/28/2011	REAR CABLE ASSEMBLY, NECK
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	SIZE: SHEET
TOTAL QTY IN DUMMY	1	ENGINEER:	DATE:	B 1 OF 1
		J. WANG	1/9/2012	SCALE: 1.000
				DRAWING NO.: 472-2130

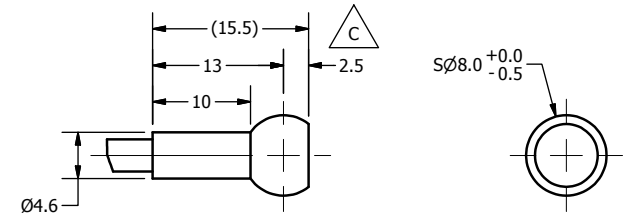
4 3 2 1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM122 R12 AND CONVERTED TO METRIC FOR THOR-M	8/1/2011	BK
	B	Ø5.85 WAS Ø6.4	6/13/2012	BK
	C	ADD 2.5 DIMENSION; (15.5) WAS 15.5	6/25/2012	BK

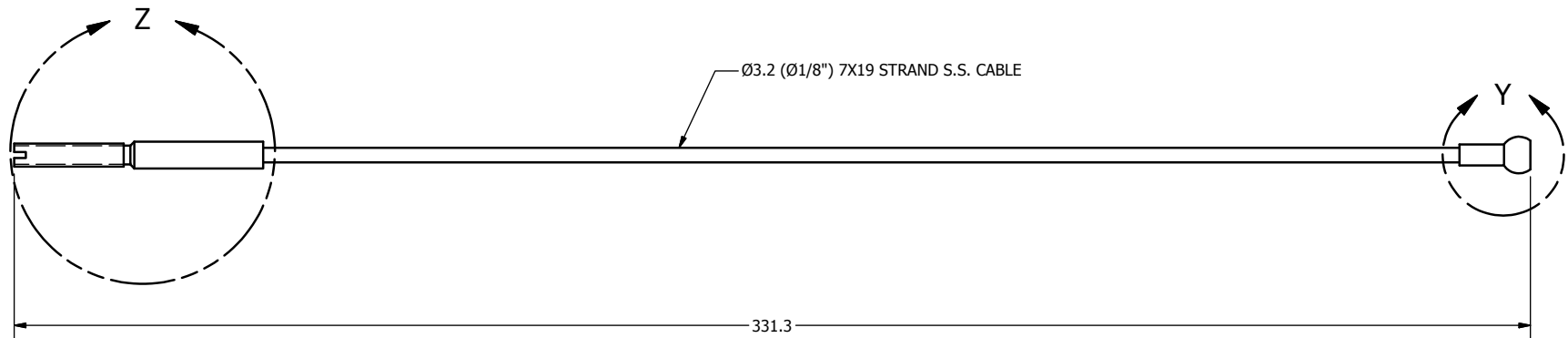
SCALE .250



DETAIL Z  
THREADED END  
SCALE 2.000



DETAIL Y  
BALL END  
SCALE 2.000

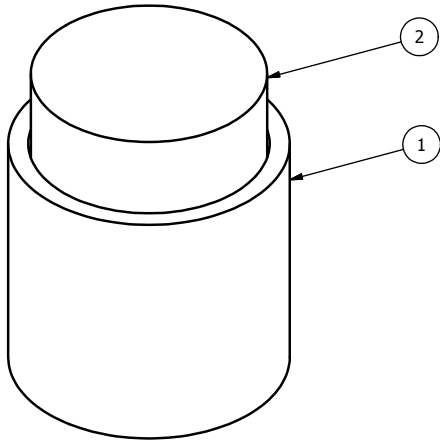


NOTES:

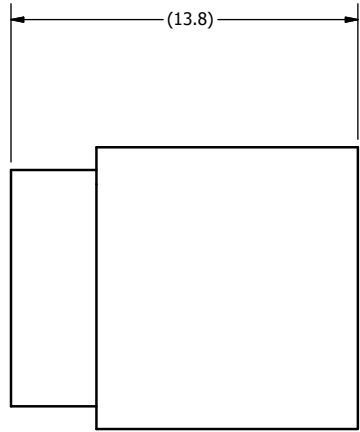
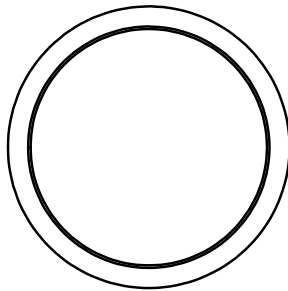
- TENSIL STRENGTH OF CABLE ASSEMBLY: 1700 LBS.
- DIMENSIONS SHOWN ARE AFTER SWAGING AND MACHINING.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>F ±0.2 ±0.5 1.6</small> <small>XX ±0.2 ±0.5</small> <small>XXX ±0.3 ±0.5</small> <small>XXX ±0.01</small>		
PROJECT NO:	472-2100	1	DATE:	7/28/2011
MATERIAL:	NEXT ASSEMBLY		QTY	1
HEAT TREAT:	TOTAL QTY IN DUMMY		1	1
DESIGNED BY:	CHECKED BY:		B. KIMES	
ENGINEER:	DATE:		1/9/2012	
SCALE:		A3 1 OF 1		DRAWING NO: 472-2150
				REV: C

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM500 R05 FOR THOR-M	8/19/11	BK



SCALE 5.000



- NOTES:
1. BOND 472-2511 TO 472-2510 USING A FLEXIBLE, HIGH STRENGTH, TWO PART RUBBER EPOXY.

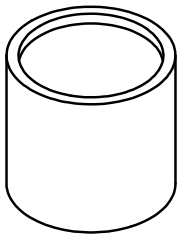
ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-2511	NECK SOFT STOP 2
1	1	472-2510	NECK STOP 2

PARTS LIST

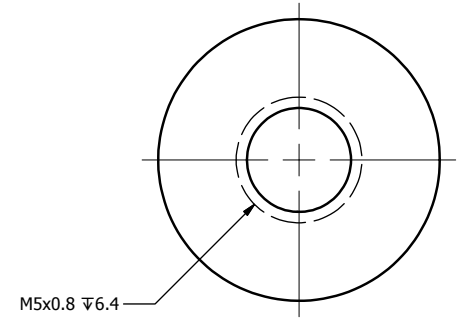
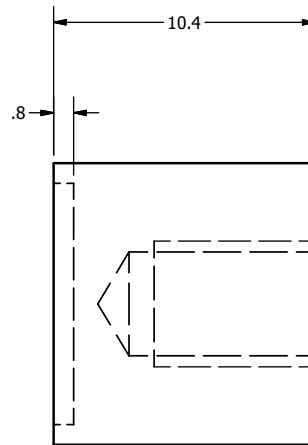
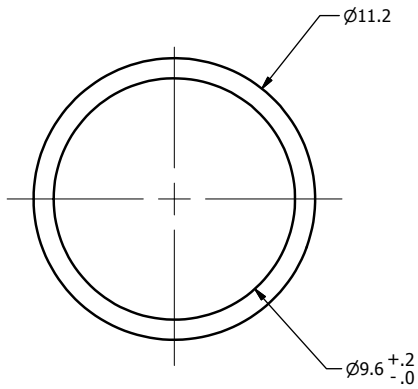
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.2 ±0.5° 16 XX ±0.2 ±0.5° 16 XXX ±0.2 ±0.5° 16 XXXX ±0.01		
PROJECT NO:		DATE:		REMOVE BURRS & BREAK SHARP EDGES DESCRIPTION: UPPER NECK STOP ASSEMBLY
MATERIAL:		BY: B. KIMES		
CHECKED BY:		DATE: 7/28/2011		SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-2500 REV: A
NEXT ASSEMBLY		DATE: 1/10/2012		
TOTAL QTY IN DUMMY		ENGINEER: J. WANG		

472-2100	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1





SCALE 3.000

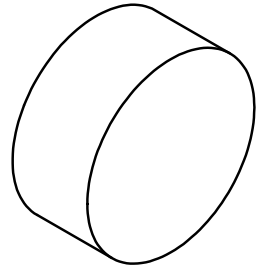


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM510 R06 AND CONVERTED TO METRIC FOR THOR-M $\varnothing 9.6^{+2}_{-0}$ WAS 9.5	8/19/11	BK

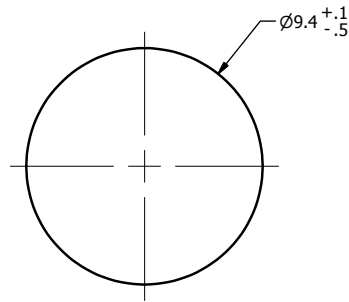
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 16 XX .02 XXX .01 XXXX 0.01		
PROJECT NO:	472-2500	MATERIAL:	303 STAINLESS STEEL	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	7/28/2011	NECK STOP 2
CHECKED BY:		HEAT TREAT:		SIZE: A3
ENGINEER:	J. WANG	DATE:	1/10/2012	SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	FINISH:		DRAWING NO.: 472-2510
				SCALE: 5.000

REVISION HISTORY

ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM511 R03 FOR THOR-M	8/19/11	BK



SCALE 5.000



NOTES:

1. RUBBER TOLERANCE  $\pm 0.5$  AND DUROMETER  $\pm 5$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		PROJECT NO.: 472-2500		
THIRD ANGLE PROJECTION		DRAWN BY: B. KIMES		DESCRIPTION: NECK SOFT STOP 2
MATERIAL: SBR RUBBER 75A		DATE: 7/28/2011		SIZE SHEET A3 1 OF 1
NEXT ASSEMBLY QTY TOTAL QTY IN DUMMY 1		CHECKED BY: J. WANG		DRAWING NO.: 472-2511
FINISH:		DATE: 1/10/2012		SCALE: 5.000

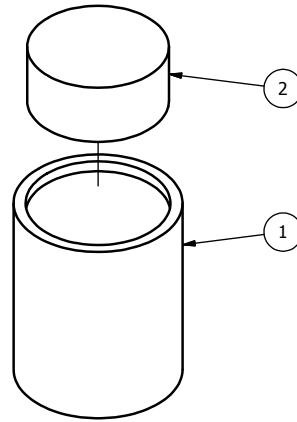
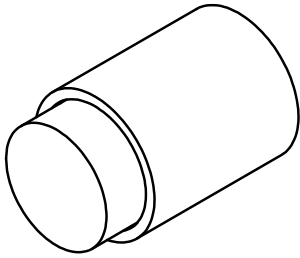
6 5 4 3 2 1

6 5 4 3 2 1

D  
C  
B  
A

D  
C  
B  
A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM500 R05 AND CONVERTED TO METRIC FOR THOR-M	11/22/2011	SKK



SCALE 3.000

NOTES:

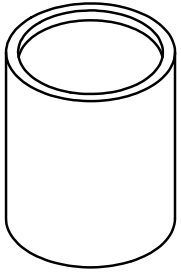
1. BOND TWO PARTS TOGETHER WITH HIGH STRENGTH, FLEXIBLE RUBBER EPOXY.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-2513	NECK SOFT STOP 1
1	1	472-2512	NECK STOP 1

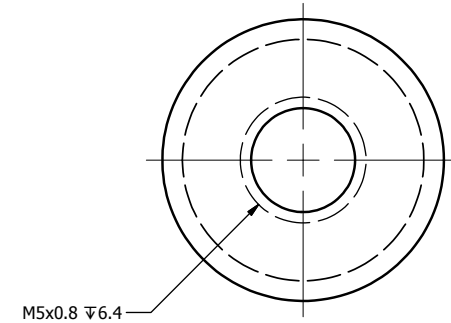
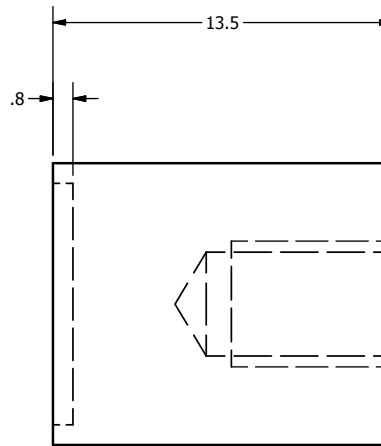
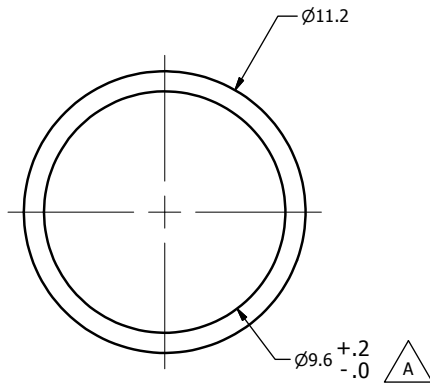
PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 16 X 0.2 XX 0.3 XXX 0.51 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-2100	DATE:	11/22/2011	DESCRIPTION: LOWER NECK STOP ASSEMBLY SCALE: 3.000
MATERIAL:		DESIGNED BY:	skantola	
CHECKED BY:		DATE:	1/10/2012	
ENGINEER:	J. WANG	SCALE:	3.000	SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-2520 REV: A

ITEM	QTY	TOTAL QTY IN DUMMY
472-2100	1	
NEXT ASSEMBLY	QTY	
TOTAL QTY IN DUMMY	1	



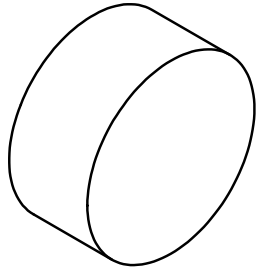
SCALE 3.000



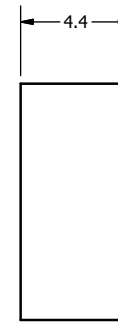
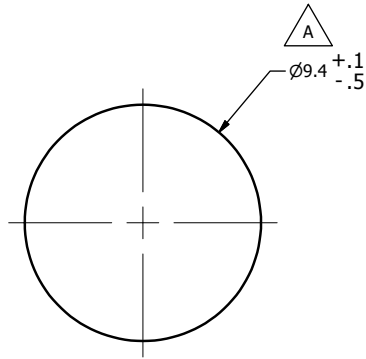
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM512 R06 AND CONVERTED TO METRIC FOR THOR-M; $\varnothing 9.6^{+.2}_{-.0}$ WAS $\varnothing 9.5$	8/19/11	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
PROJECT NO.:	472-2501	MATERIAL:	303 STAINLESS STEEL	DESCRIPTION:
DESIGN BY:	B. KIMES	DATE:	7/28/2011	NECK STOP 1
CHECKED BY:		HEAT TREAT:		SIZE: A3
ENGINEER:	J. WANG	DATE:	1/10/2012	SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	FINISH:		DRAWING NO.:
				472-2512

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM513 R02 FOR THOR-M; Ø9.4+.1/-0 WAS Ø9.5	8/19/11	BK



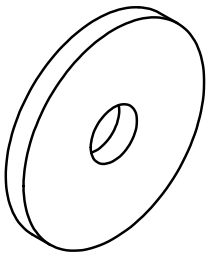
SCALE 5.000



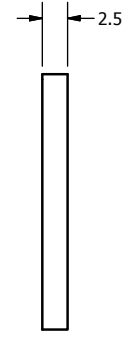
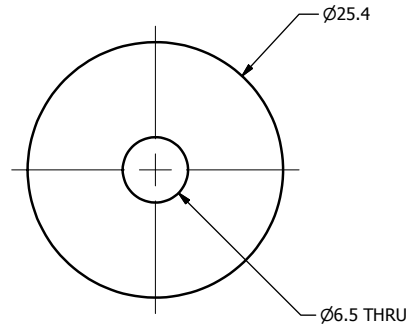
NOTES:

1. RUBBER TOLERANCE ±0.5 AND DUROMETER ±5, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5° 1.6 XX ±0.2 XXX ±0.3 XXXX ±0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-2501	MATERIAL:	SBR RUBBER 75A	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	7/28/2011	NECK SOFT STOP 1
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	
DATE:		DATE:	1/10/2012	
TOTAL QTY IN DUMMY	1	FINISH:		
		SIZE: A3 SHEET: 1 OF 1 SCALE: 5.000		DRAWING NO.: 472-2513 REV: A



SCALE 2.000



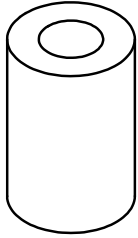
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM029 R01 FOR THOR-M	7/29/11	BK

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DECIMALS	ANGLES FINISH
		X ±0.2	1/8
		XX ±0.2	
		XXX ±0.3	
		XXX ±0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO.:	472-2100	DATE:	7/28/2011
MATERIAL:	Acetal Resin, Black	DESIGNED BY:	B. KIMES
CHECKED BY:		DATE:	
HEAT TREAT:		ENGINEER:	J. WANG
DATE:		DATE:	1/9/2012
FINISH:		SCALE:	2.000

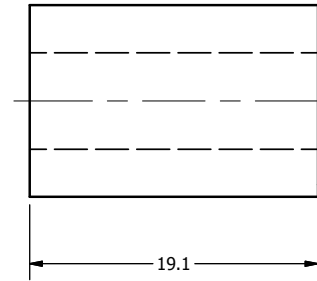
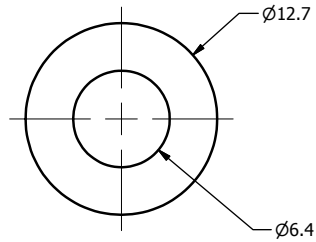

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**  
 DESCRIPTION: CENTER CABLE WASHER, NECK  
 SIZE: A3  
 SHEET: 1 OF 1  
 DRAWING NO.: 472-2017  
 SCALE: 2.000  
 REV: A

472-2100	1	Acetal Resin, Black
NEXT ASSEMBLY	QTY	
TOTAL QTY IN DUMMY	1	

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM032 R01 FOR THOR-M	7/29/11	BK



SCALE 2.000



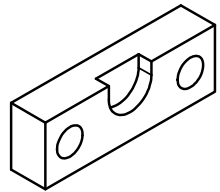
NOTES:

1. RUBBER TOLERANCE  $\pm 0.5$  AND DUROMETER  $\pm 5$ , UNLESS OTHERWISE NOTED.

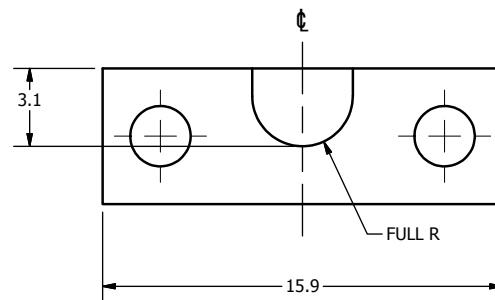
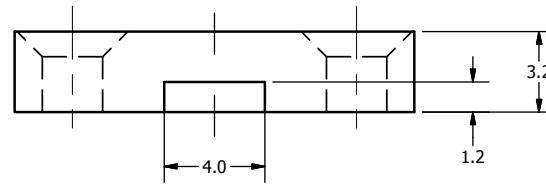
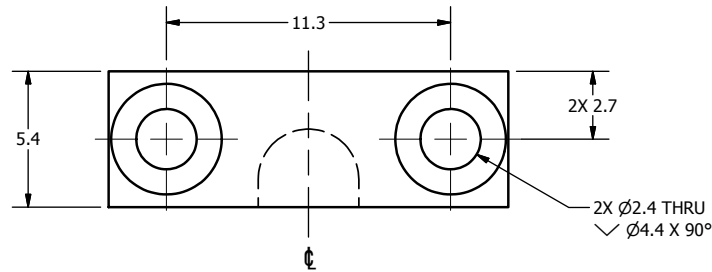
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	427-2100	MATERIAL:	NEOPRENE 75A	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	7/28/2011	NECK NEOPRENE SPACER
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/9/2012	SCALE:
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:
SCALE:	3.000			472-2018

PROJECT NO.	QTY	DESCRIPTION
427-2100	1	NECK NEOPRENE SPACER
TOTAL QTY IN DUMMY	1	

A



SCALE 3.000



NOTES:

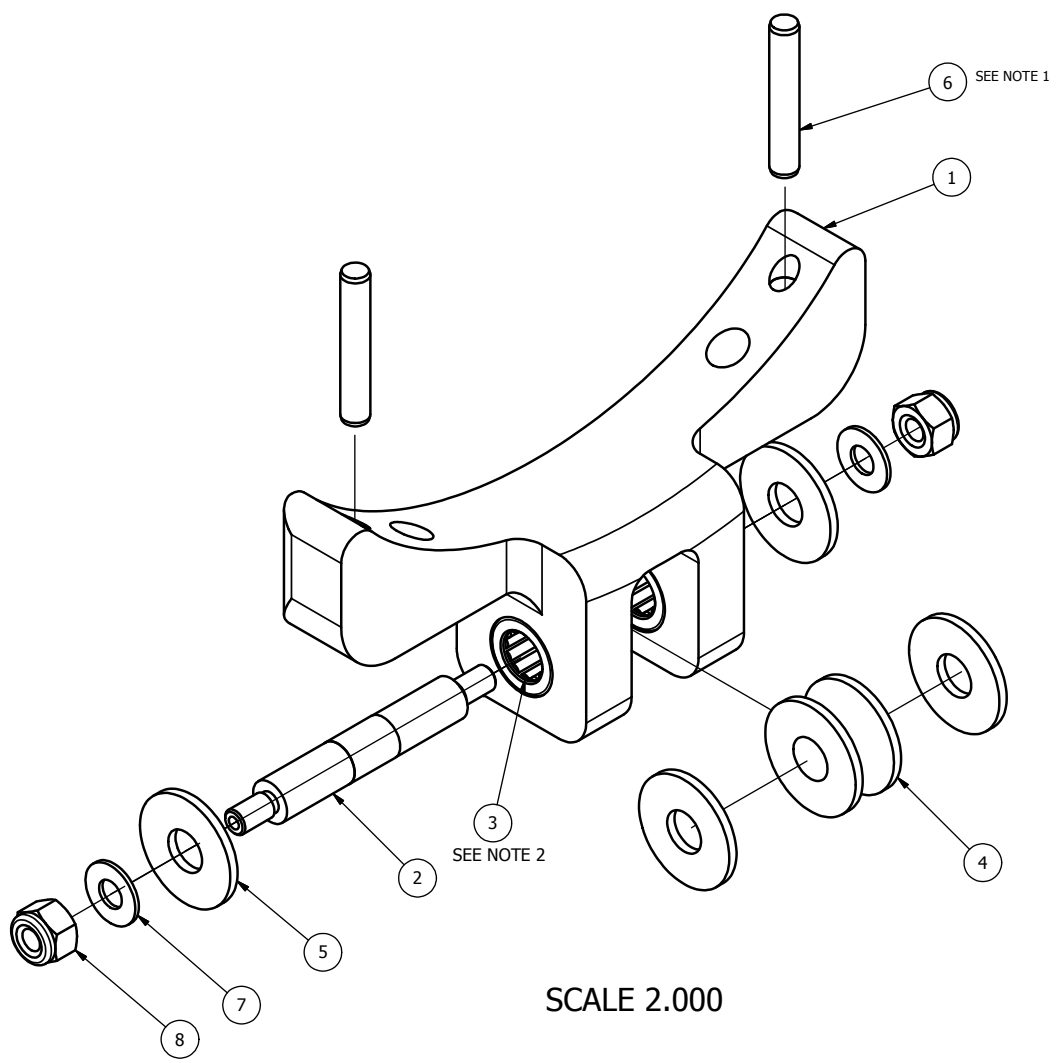
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM022 R05 AND CONVERTED TO METRIC FOR THOR-M	8/22/2011	BK

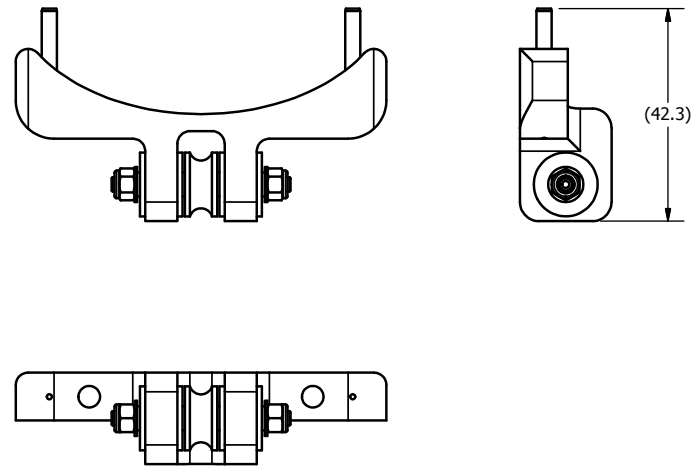
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-2000	MATERIAL:	Acetal Resin, Black	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	7/28/2011	CABLE SEAT COVER, NECK
CHECKED BY:		DATE:		SIZE: SHEET
HEAT TREAT:		DATE:	1/9/2012	A31 OF 1
FINISH:		ENGINEER:	J. WANG	SCALE: 5.000
NEXT ASSEMBLY	QTY	TOTAL QTY IN DUMMY	2	DRAWING NO.:
				472-2015
				REV.:
				A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM300 R05 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	8/18/2011	BK



SCALE 2.000

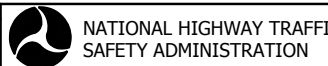


- NOTES:
- PRESS FIT DOWEL PINS AS SHOWN.
  - PRESS THE BEARINGS (9002597) INTO PLACE, FLUSH WITH OUTSIDE SURFACE OF 472-2310.

ITEM	QTY	PART NUMBER	DESCRIPTION
8	2	5001106	M3 X 0.3 HEX LOCK NUT SS
7	2	5001095	M3 FLAT WASHER PLAIN ZINC
6	2	5000391	M3 X 18 LG. DOWEL PIN SS
5	4	9002595	WASHER, TEFLON .187 X .50 X .04 THK.
4	1	472-2312	NECK REAR CABLE PULLEY
3	2	9002597	BEARING, NEEDLE ROLLER (3/16 BORE)
2	1	472-2311	REAR CABLE PULLEY SHAFT, NECK
1	1	472-2310	REAR PULLEY BRACKET, NECK

PARTS LIST	
DO NOT SCALE DRAWING	TOLERANCES
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH S.S. ±0.2 16 X.X ±0.2 X.XX ±0.3 X.XXX ±0.01
PROJECT NO.: 472-2000	DATE: 7/28/2011
MATERIAL: 1	DESIGNED BY: B. KIMES
CHECKED BY:	DATE:
HEAT TREAT:	DATE: 1/10/2012
FINISH:	DATE:
DRUMMER: J. WANG	SCALE: 1.000

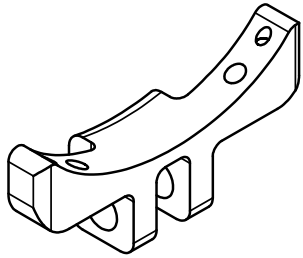
NEXT ASSEMBLY QTY		TOTAL QTY IN DUMMY 1		DRAWING NO. 472-2300		REV. A	
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

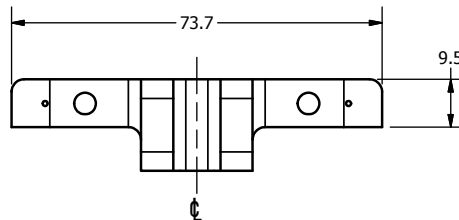
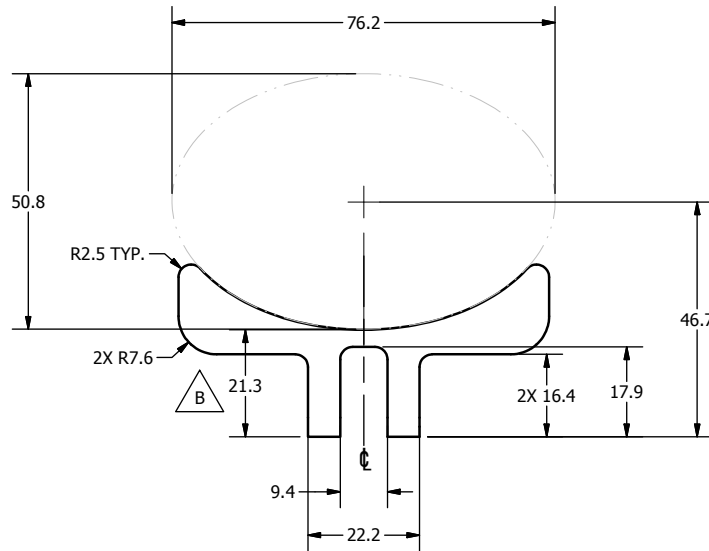
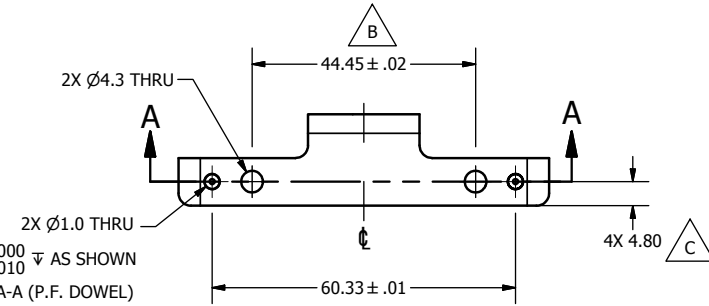
DESCRIPTION: NECK PULLEY BRACKET ASSEMBLY

SIZE: A31 OF 1 SHEET SCALE: 1.000

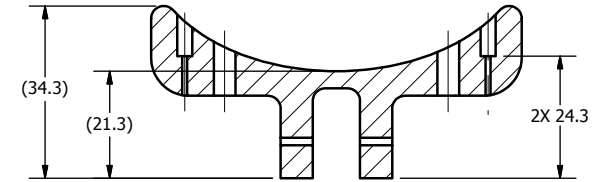


SCALE 1.000

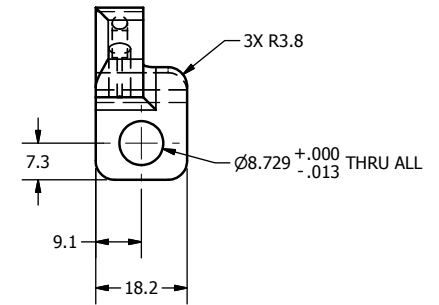
$\triangle A$   $\perp$   $\varnothing 2.998^{+.000}_{-.010}$  AS SHOWN  
IN SEC A-A (P.F. DOWEL)



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM310 R07 AND CONVERTED TO METRIC FOR THOR-M; REMOVE NOTE 3, RENUMBER NOTES; C'BORE $\varnothing 2.998^{+.000}_{-.010}$ WAS $\varnothing 3.175^{+.000}_{-.013}$	8/18/2011	BK
	B	ADD TOLERANCE; 21.3 WAS 21.4	4/26/2012	BK
	C	ADD DIMENSION	11/27/2012	BK



SECTION A-A  
SCALE 1.000

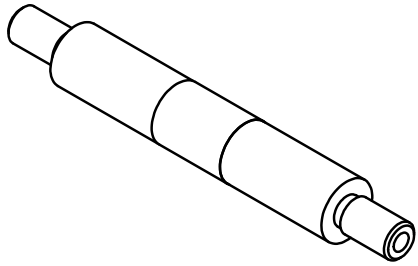


NOTES:

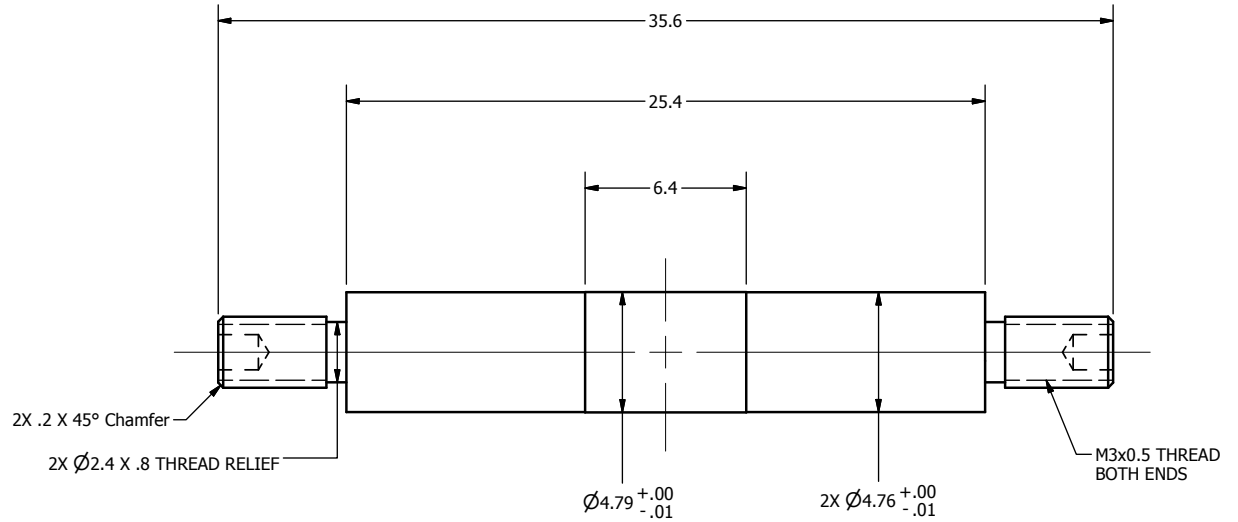
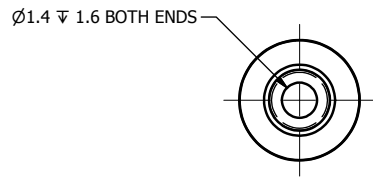
1. REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
2. DIMENSIONS SYMMETRIC ABOUT  $\perp$ , UNLESS OTHERWISE NOTED.
3. POWDER OR BEAD BLAST.
4. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
5. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 0.5° 1.6 XX 0.2 0.5° 1.6 XXX 0.3 0.5° 1.6 XXXX 0.01		
PROJECT NO.:	472-2300	MATERIAL:	1018 STEEL	DESCRIPTION: REAR PULLEY BRACKET, NECK
CHECKED BY:	B. KIMES	DATE:	7/28/2011	
HEAT TREAT:		ENGINEER:	J. WANG	SIZE: A3 SHEET: 1 OF 1 SCALE: 1.000
TOTAL QTY IN DUMMY	1	FRSH:	SEE NOTES	DRAWING NO.: 472-2310 REV: C

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM311 R05 AND CONVERTED TO METRIC FOR THOR-M; REMOVE NOTE 1, RENUMBER NOTES	8/18/2011	BK



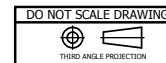
SCALE 3.000



NOTES:



1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.



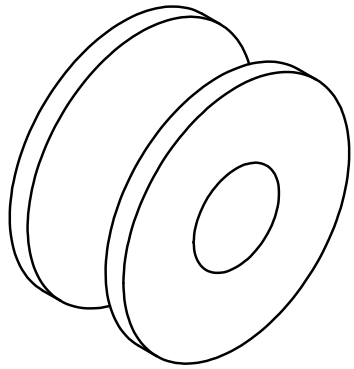
TOLERANCES		
UNLESS OTHERWISE SPECIFIED	DECIMALS	ANGLES
DIMENSIONS ARE IN MILLIMETERS	$\pm 0.1$	$\pm 0.5^\circ$
	$\pm 0.2$	1.6
	$\pm 0.3$	
	$\pm 0.01$	

REMOVE BURRS & BREAK SHARP EDGES

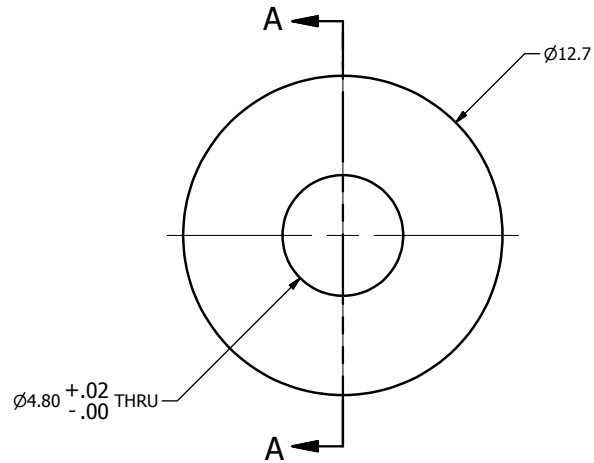


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

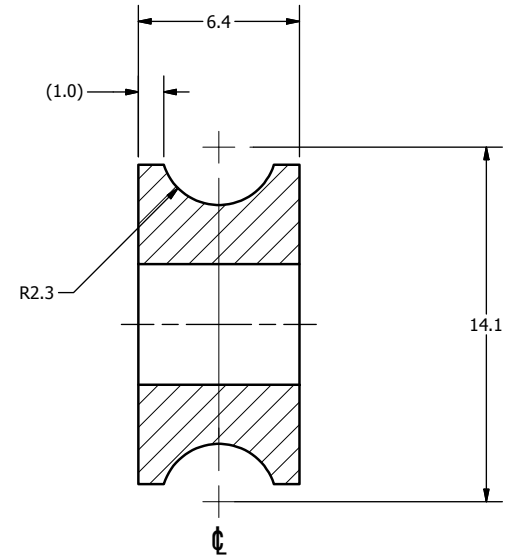
472-2400	1	PROJECT NO.:	DATE:	DESCRIPTION: REAR CABLE PULLEY SHAFT, NECK	SIZE: A3	SHEET: 1 OF 1	DRAWING NO.:	REV.:
472-2300	1	MATERIAL: ETD-150 STEEL	7/28/2011					
NEXT ASSEMBLY	QTY	CHECKED BY: B. KIMES	DATE:					
TOTAL QTY IN DUMMY	2	HEAT TREAT:	DATE:					
		FINISH:	DATE: 1/10/2012					
		ENGINEER: J. WANG	DATE:					
							472-2311	A



SCALE 5.000

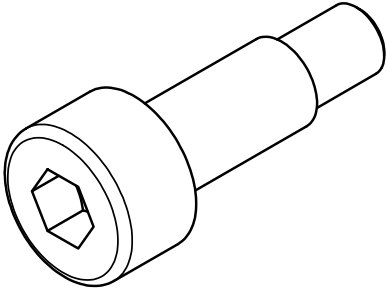


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM312 R04 FOR THOR-M	8/19/11	BK

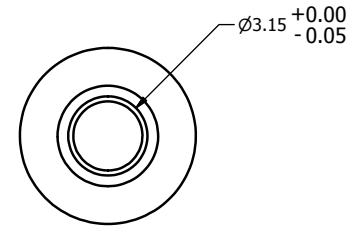
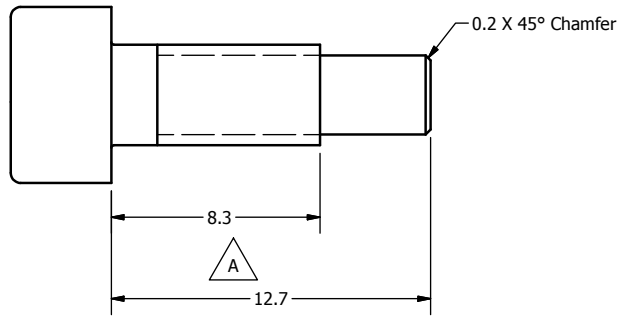


SECTION A-A  
SCALE 5.000

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.05 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
472-2400	1	PROJECT NO.:	DATE:	DESCRIPTION: NECK REAR CABLE PULLEY
472-2300	1	MATERIAL: OILITE BRONZE (SAE 841)	BY: B. KIMES	
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	
TOTAL QTY IN DUMMY	2	FINISH:	DATE: 1/10/2012	
		REMOVE BURRS & BREAK SHARP EDGES		SIZE: A3 SHEET: 1 OF 1 SCALE: 5.000
				DRAWING NO.: 472-2312
				REV: A



SCALE 5.000



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM027 R05 AND CONVERTED TO METRIC FOR THOR-M; 8.3 WAS 8.6, 12.7 WAS (12.7); ADD (5000459) TO NOTE	7/28/2011	BK

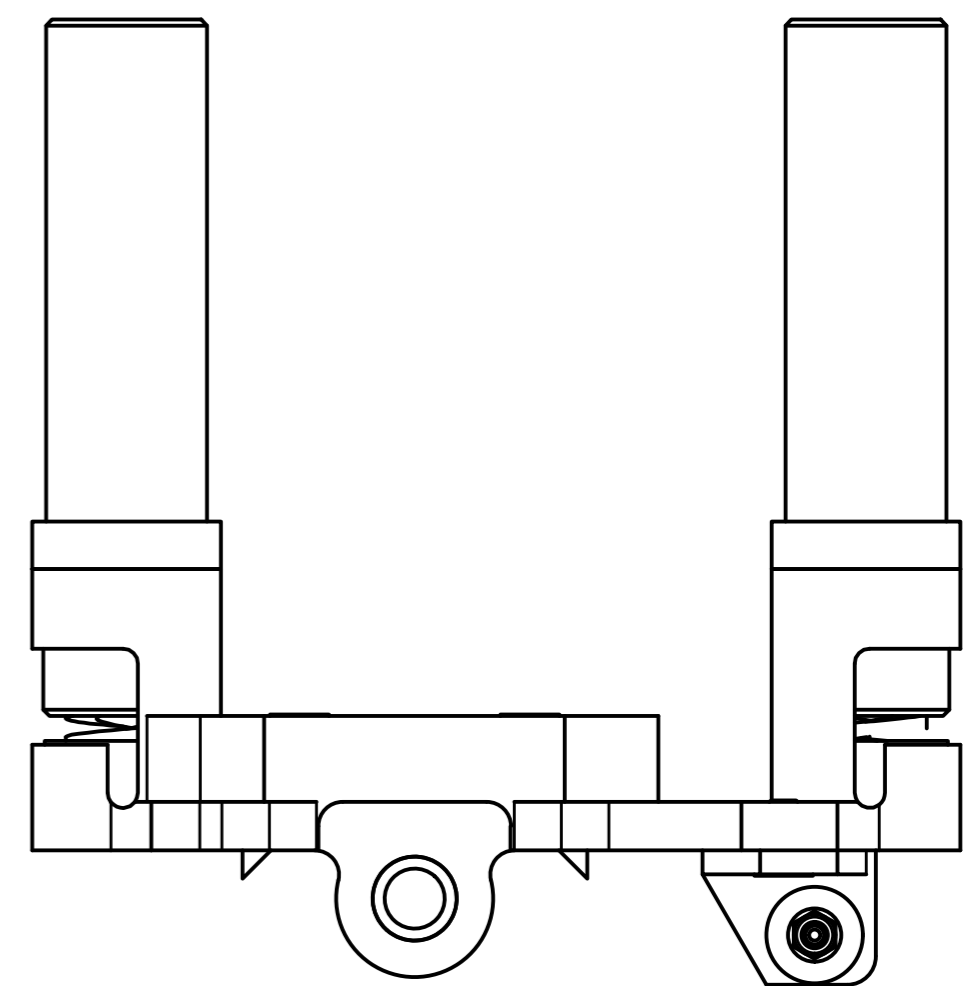
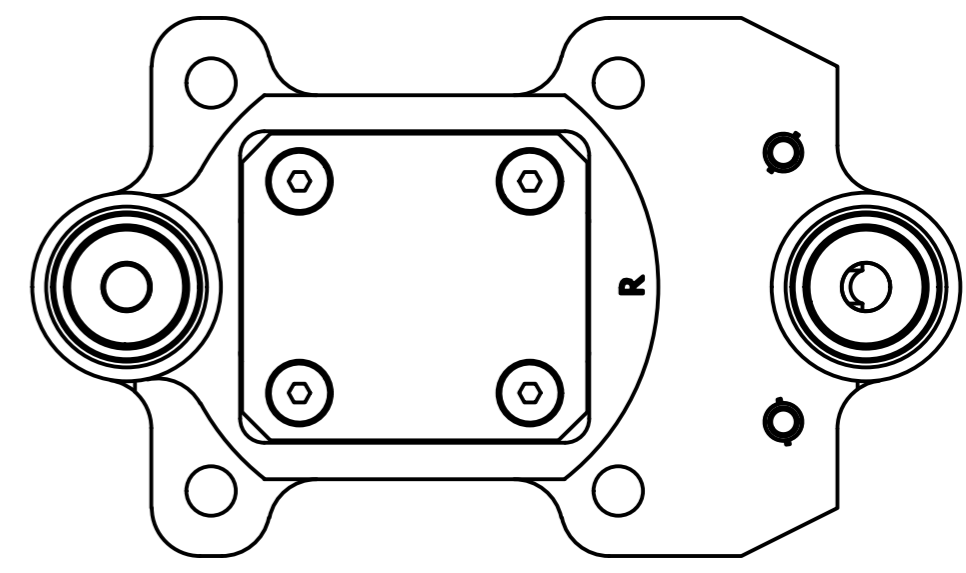
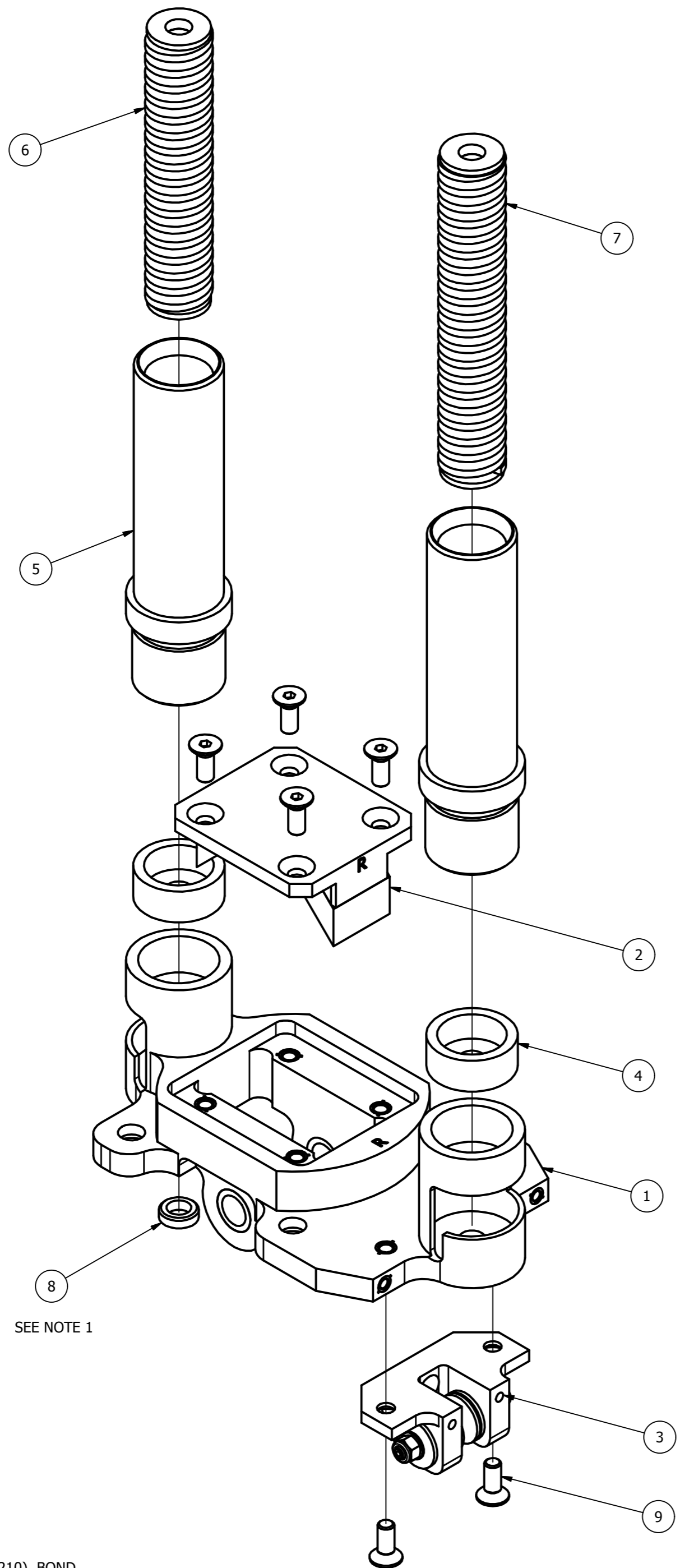
NOTES:



1. MAKE FROM M4 X0.7 X 14 SHCS (5000459), MODIFY AS SHOWN.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 ± 0.1 16 XX 0.2 ± 0.1 16 XXX 0.3 ± 0.1 16 XXXX 0.01		
PROJECT NO:	472-2000	MATERIAL:	1	REMOVE BURRS & BREAK SHARP EDGES DESCRIPTION: OCCIPITAL CONDYLE SCREW
CHECKED BY:	B. KIMES	DATE:	7/28/2011	SIZE: A3 SHEET: 1 OF 1 SCALE: 5.000
ENGINEER:	J. WANG	DATE:	1/9/2012	DRAWING NO: 472-2016
TOTAL QTY IN DUMMY:	1	FINISH:		REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM200 R13 AND CONVERTED TO METRIC FOR THOR-M	8/19/11	BK
	B	ADDED PART #SA572-S112 - Ø.850 SKULL SPRING LOAD CELL (OPTIONAL)	9/2/2015	DW



SEE NOTE 1

SCALE 1.000

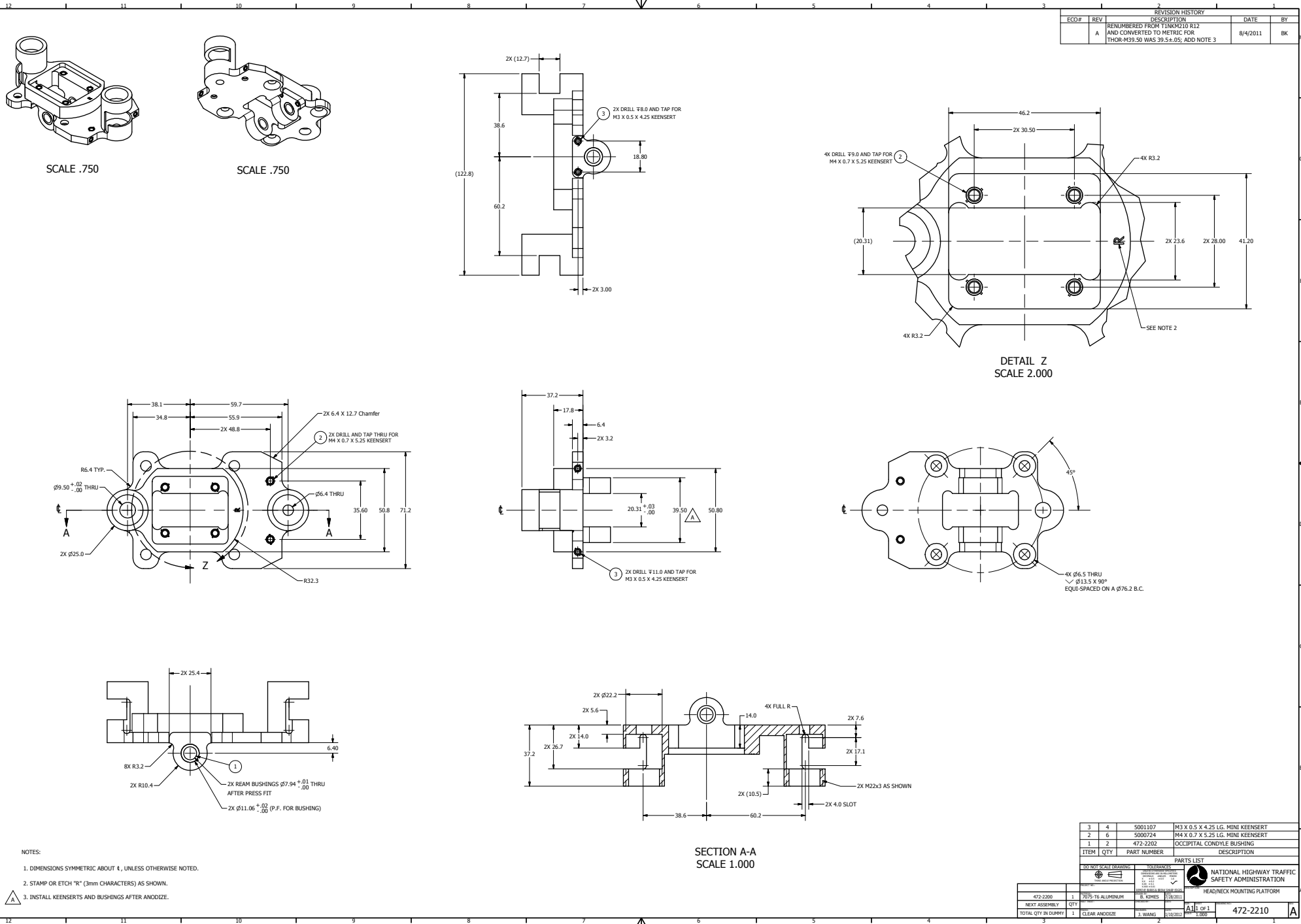
- NOTES:
- CHEMICALLY CLEAN THE PART AND ITS MATING PART (472-2210). BOND WITH CYANOACRYLATE, MAKING SURE THE BOTTOM SURFACE IS FLUSH WITH ITS MATING PART.
  - SPRING LOAD CELL, SA572-S112, CAN BE USED INSTEAD OF 472-2201.

ITEM	QTY	PART NUMBER	DESCRIPTION
10	2	SA572-S112	Ø.850 SKULL SPRING LOAD CELL (OPTIONAL)
9	6	9001459	SCREW, FHCS M4 x 10
8	1	472-2204	FRONT CABLE BUSHING, NECK
7	1	472-2240	REAR SPRING ASSEMBLY
6	1	472-2220	FRONT SPRING ASSEMBLY
5	2	472-2203	NECK FRONT/REAR SPRING TUBE
4	2	472-2201	NECK SPRING LOAD CELL STRUCTURAL REPLACEMENT
3	1	472-2400	HEAD/NECK PULLEY BRACKET ASSEMBLY
2	1	472-2230	OC STOP ASSEMBLY
1	1	472-2210	HEAD/NECK MOUNTING PLATFORM

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		X ± 0.5 1.0 XX ± 0.2 0.5 XXX ± 0.1 XXXX ± 0.05		
PROJECT NO:	DATE:	DESIGNED BY:	DATE:	DESCRIPTION:
472-2000	7/28/2011	B. KIMES	7/28/2011	MOUNTING PLATFORM ASSEMBLY, NECK
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	SCALE:
TOTAL QTY IN DUMMY	1	J. WANG	1/10/2012	1:1.000

472-2000	1	472-2000	1	472-2000	1
472-2000	1	472-2000	1	472-2000	1
472-2000	1	472-2000	1	472-2000	1



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM210 R12 AND CONVERTED TO METRIC FOR THOR-M39.50 WAS 39.5±.05; ADD NOTE 3	8/4/2011	BK

- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT A, UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH "R" (3mm CHARACTERS) AS SHOWN.
  3. INSTALL KEENSERTS AND BUSHINGS AFTER ANODIZE.

ITEM	QTY	PART NUMBER	DESCRIPTION
3	4	5001107	M3 X 0.5 X 4.25 LG. MINI KEENSERT
2	6	5000724	M4 X 0.7 X 5.25 LG. MINI KEENSERT
1	2	472-2202	OCCIPITAL CONDYLE BUSHING

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
472-2200	1	7075-T6 ALUMINUM	B. KIMES 7/28/2011
NEXT ASSEMBLY	QTY		
TOTAL QTY IN SUPPLY	1	CLEAR ANODIZE	J. WANG 12/20/2012

DO NOT SCALE DRAWING

ISSUES

DATE: 12/11/2012

DESIGNED BY: B. KIMES

CHECKED BY: J. WANG

APPROVED BY: J. WANG

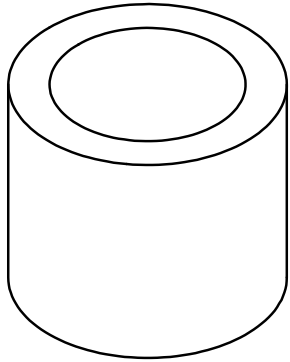
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

HEAD/NECK MOUNTING PLATFORM

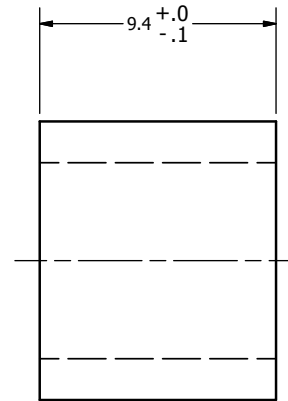
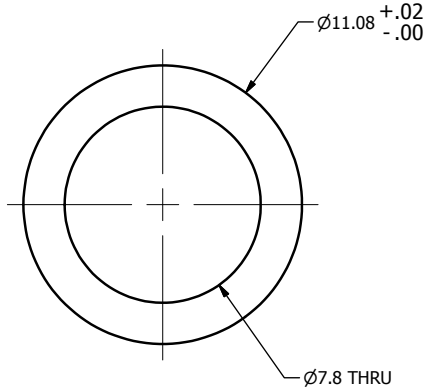
472-2210 of 1

472-2210

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM216 R04 FOR THOR-M	8/1/2011	BK



SCALE 5.000



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
0.05 ± 0.05 16  
X ± 0.2  
XX ± 0.3  
XXX ± 0.51  
REMOVE BURRS & BREAK SHARP EDGES



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO.: 472-2210	QTY: 2	MATERIAL: OILITE BRONZE (SAE841)	DATE: 7/28/2011	DESIGNER: B. KIMES	SCALE: 5.000	SIZE SHEET: A3 1 OF 1	DRAWING NO.:	REV.:
NEXT ASSEMBLY	TOTAL QTY IN DUMMY	HEAT TREAT:	FINISH:	ENGINEER: J. WANG	DATE: 1/10/2012		472-2202	A

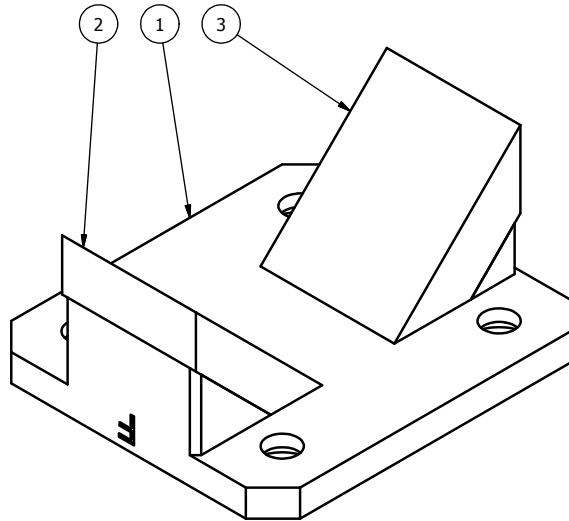
DESCRIPTION: OCCIPITAL CONDYLE BUSHING

472-2202

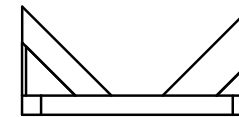
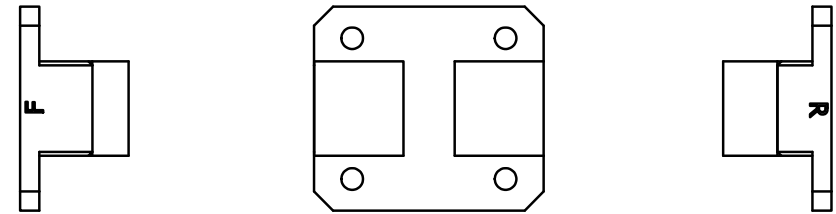
A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM045 R02 FOR THOR-M	8/4/11	BK



SCALE 2.000




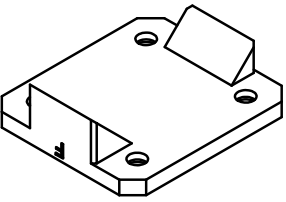
NOTES:

1. BOND PARTS 472-2232 AND 472-2233 TO 472-2231 USING HIGH STRENGTH, FLEXIBLE, TWO PART RUBBER EPOXY.

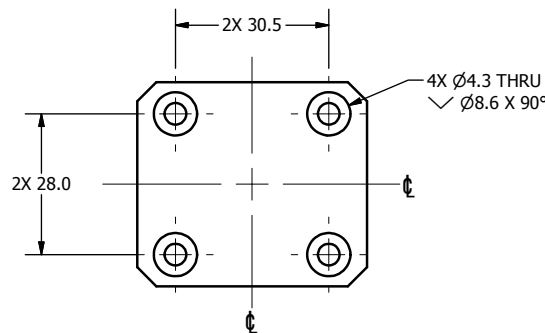
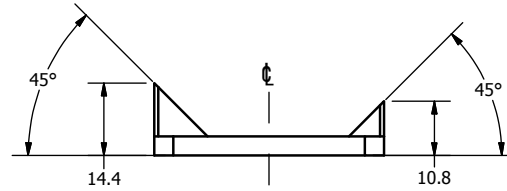
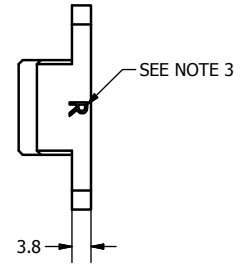
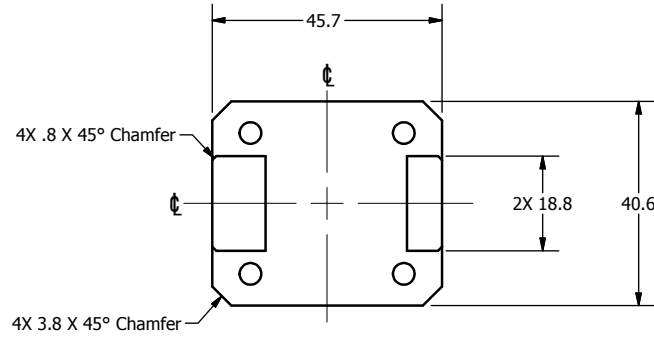
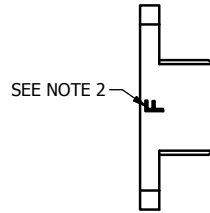
ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-2233	NECK REAR OC STOP
2	1	472-2232	NECK FRONT OC STOP
1	1	472-2231	FLEXION-EXTENSION STOP PLATE, NECK

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED:</small> DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 1.6 XX .02 1.6 XXX .01 1.6 XXXX 0.01 1.6		
PROJECT NO:	472-2220	MATERIAL:	1	DESCRIPTION: OC STOP ASSEMBLY SCALE: 1.000 SHEET: 1 OF 1 DRAWING NO: 472-2230
CHECKED BY:	B. KIMES	DATE:	7/28/2011	
HEAT TREAT:		ENGINEER:	J. WANG	
DATE:	1/10/2012	SCALE:	1.000	REV: A
TOTAL QTY IN DUMMY	1	FINISH:		



SCALE 1.000

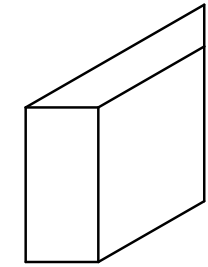


NOTES:

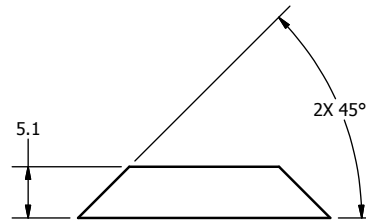
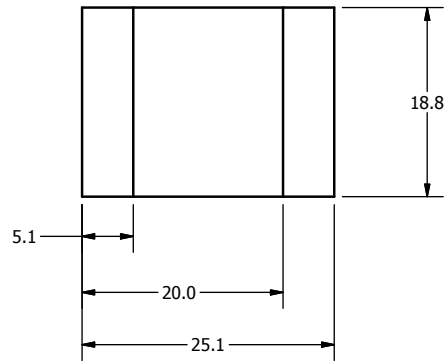
1. DIMENSIONS SYMMETRIC ABOUT  $\text{C}$ , UNLESS OTHERWISE NOTED.
2. STAMP OR ETCH "F" (3mm CHARACTERS) AT LOCATION SHOWN TO REPRESENT FRONT.
3. STAMP OR ETCH "R" (3mm CHARACTERS) AT LOCATION SHOWN TO REPRESENT REAR.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM046 R02 AND CONVERTED TO METRIC FOR THOR-M	8/22/11	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>F 0.05 0.05 1.6</small> <small>X X 0.02 0.05</small> <small>XX 0.03 0.05</small> <small>XXX 0.01</small> <small>REMOVE BURRS &amp; BREAK SHARP EDGES</small>		
PROJECT NO:	472-2230	MATERIAL:	7075-T6 ALUMINUM	DESIGNER:
CHECKED BY:	B. KIMES	DATE:	7/28/2011	SCALE:
HEAT TREAT:		FINISH:	CLEAR ANODIZE	DATE:
ENGINEER:	J. WANG	DATE:	1/10/12	SCALE:
TOTAL QTY IN DUMMY		1		SIZE SHEET
				A3 1 OF 1
				DRAWING NO.
				472-2231
				REV.
				A



SCALE 2.000



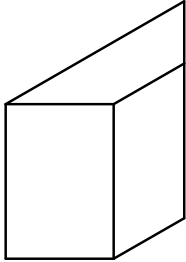
NOTES:

1. NEOPRENE TOLERANCE  $\pm .5$  AND DUROMETER  $\pm 5$ , UNLESS OTHERWISE SPECIFIED.

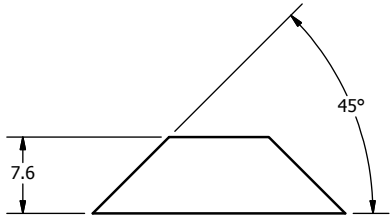
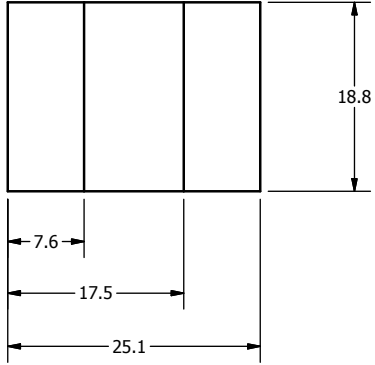
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM047 R03 FOR THOR-M	8/4/11	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-2230	MATERIAL:	NEOPRENE 65A	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	7/28/2011	NECK FRONT OC STOP
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/10/2012	SCALE:
TOTAL QTY IN DUMMY		QTY	1	SIZE SHEET
				A3 1 OF 1
				DRAWING NO. 472-2232
				REV. A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM048 R03 FOR THOR-M	8/4/11	BK



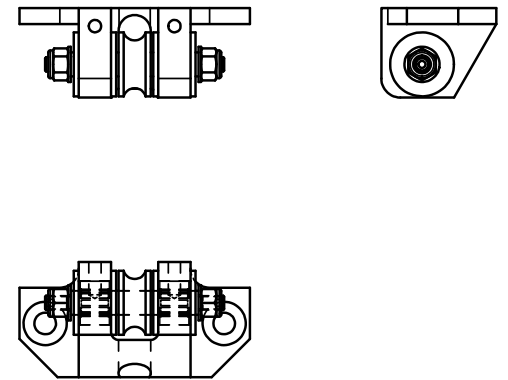
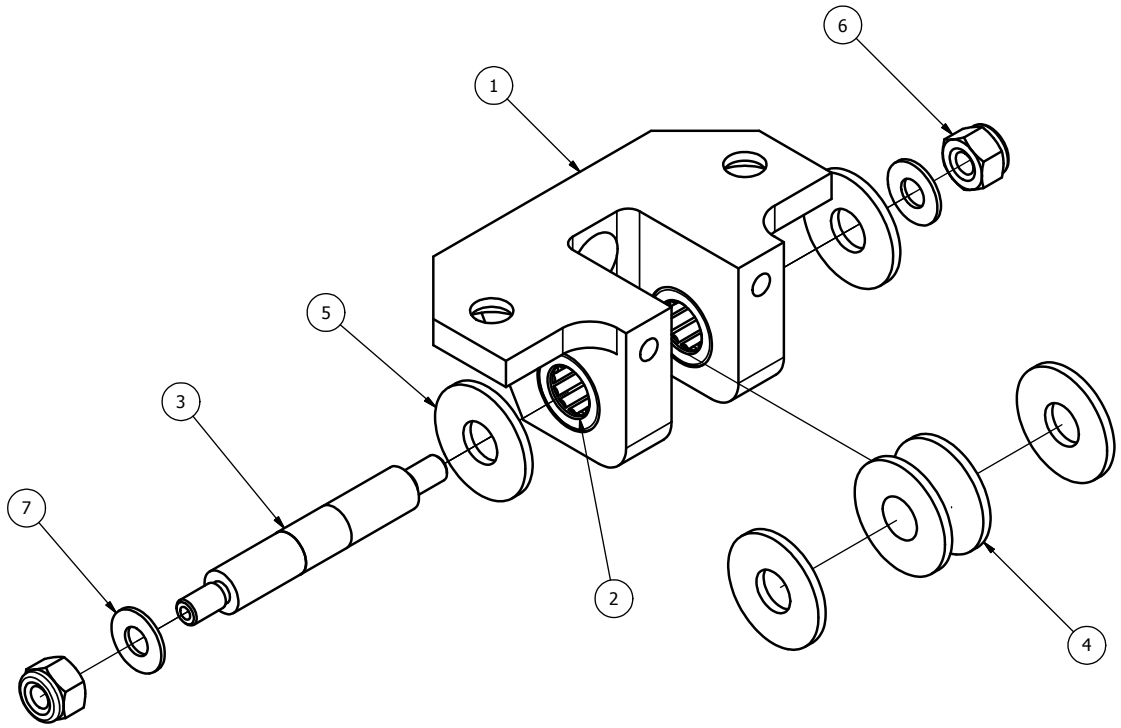
SCALE 2.000



NOTES:  
 1. NEOPRENE TOLERANCE  $\pm 0.5$  AND DUROMETER  $\pm 5$ , UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-2230	MATERIAL:	NEOPRENE 65A	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	7/28/2011	NECK REAR OC STOP
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
DATE:	1/10/2012	SCALE:	2.000	SIZE: SHEET
TOTAL QTY IN DUMMY	1	FINISH:		A3 1 OF 1
				DRAWING NO. 472-2233

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM400 R08 AND CONVERTED TO METRIC FOR THOR-M	8/19/11	BK



SCALE 2.000

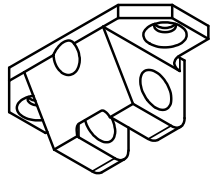
NOTES:

1. PRESS THE BEARINGS (9002597) INTO PLACE, FLUSH WITH OUTSIDE SURFACE OF 472-2410.

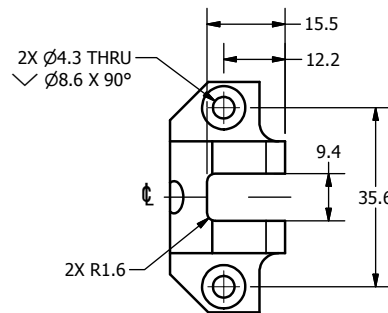
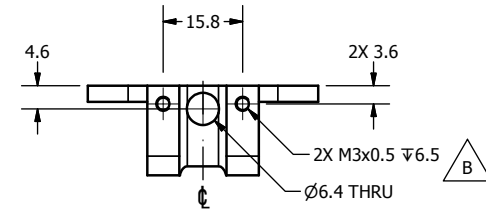
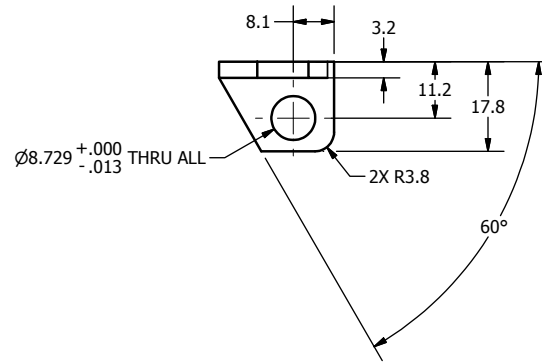
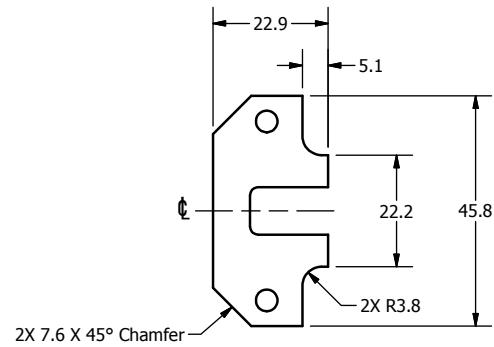
ITEM	QTY	PART NUMBER	DESCRIPTION
7	2	5001095	M3 FLAT WASHER PLAIN ZINC
6	2	5001106	M3 X 0.3 HEX LOCK NUT SS
5	4	9002595	WASHER, TEFLON .187 X .50 X .04 THK
4	1	472-2312	NECK REAR CABLE PULLEY
3	1	472-2311	REAR CABLE PULLEY SHAFT, NECK
2	2	9002597	BEARING, NEEDLE ROLLER
1	1	472-2410	HEAD/NECK PULLEY BRACKET, NECK

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>									
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>X .0.2 ± 0.07 1.6</small> <small>XX ± 0.2</small> <small>XXX ± 0.3</small> <small>XXX ± 0.01</small> <small>REMOVE BURRS &amp; BREAK SHARP EDGES</small>											
PROJECT NO:	472-2000	DATE:	7/28/2011	<b>HEAD/NECK PULLEY BRACKET ASSEMBLY</b>									
MATERIAL:		DESIGNED BY:	B. KIMES										
CHECKED BY:		DATE:											
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/10/2012	SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:	472-2400	REV.:	A
TOTAL QTY IN DUMMY	1	FINISH:		SCALE:	1.000								



SCALE 1.000



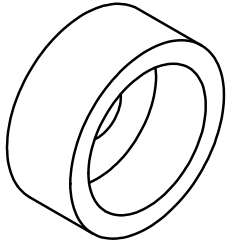
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

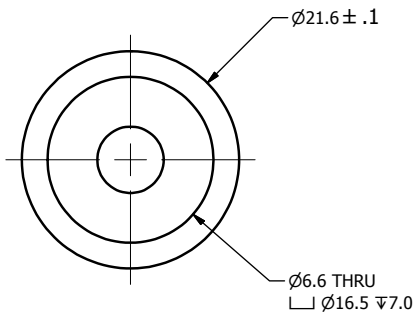
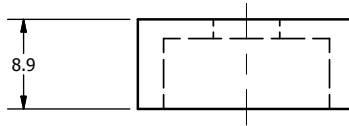
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM410 R11 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	BK
	B	M3 x .5 6.5 DP WAS M4 x .7 6.40 DP	6/14/2012	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.07 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-2400	MATERIAL:	1018 STEEL	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	8/19/2011	HEAD/NECK PULLEY BRACKET, NECK
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FRESH:	SEE NOTES	DATE:	1/10/2012	SCALE:
TOTAL QTY IN DUMMY	1	SIZE:	A3	SHEET:
		SCALE:	1.000	DRAWING NO.:
				472-2410
				REV.:
				B

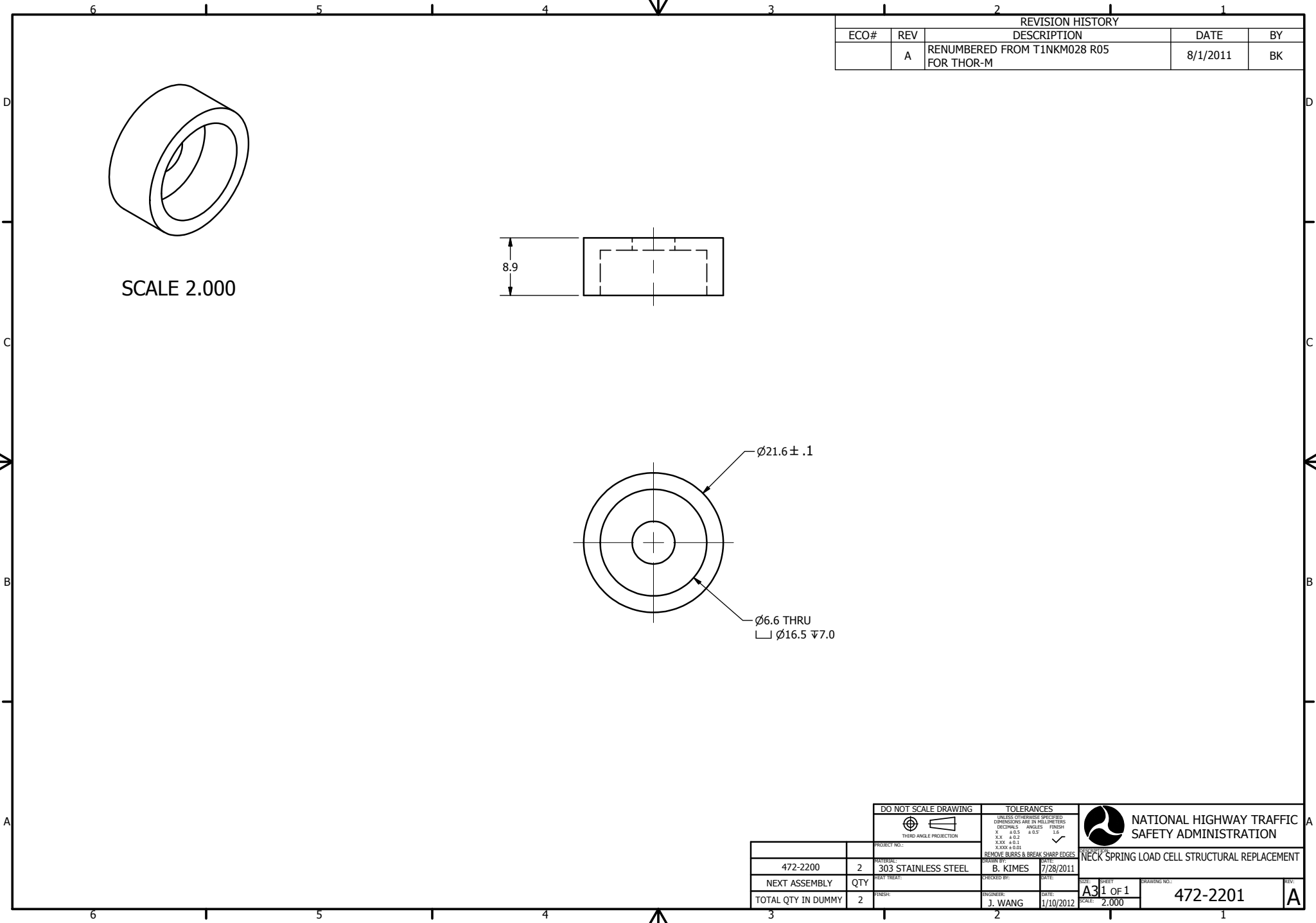
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM028 R05 FOR THOR-M	8/1/2011	BK

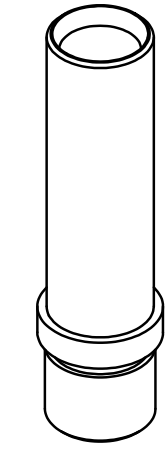


SCALE 2.000

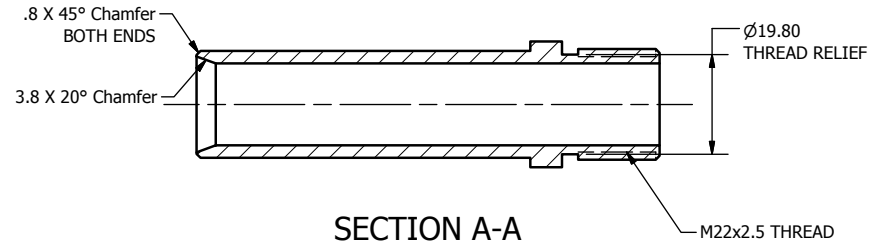
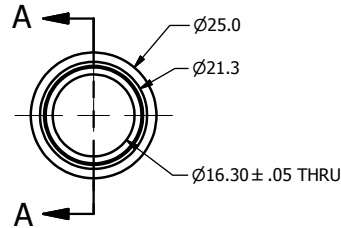
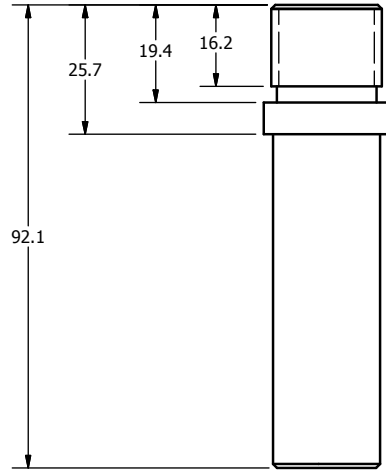


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01		
PROJECT NO:	472-2200	MATERIAL:	303 STAINLESS STEEL	DESCRIPTION: NECK SPRING LOAD CELL STRUCTURAL REPLACEMENT
CHECKED BY:	B. KIMES	DATE:	7/28/2011	
HEAT TREAT:		ENGINEER:	J. WANG	SIZE: A3 SHEET: 1 OF 1 SCALE: 2.000
TOTAL QTY IN DUMMY:	2	DATE:	1/10/2012	DRAWING NO.: 472-2201





SCALE 1.000



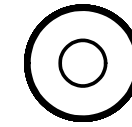
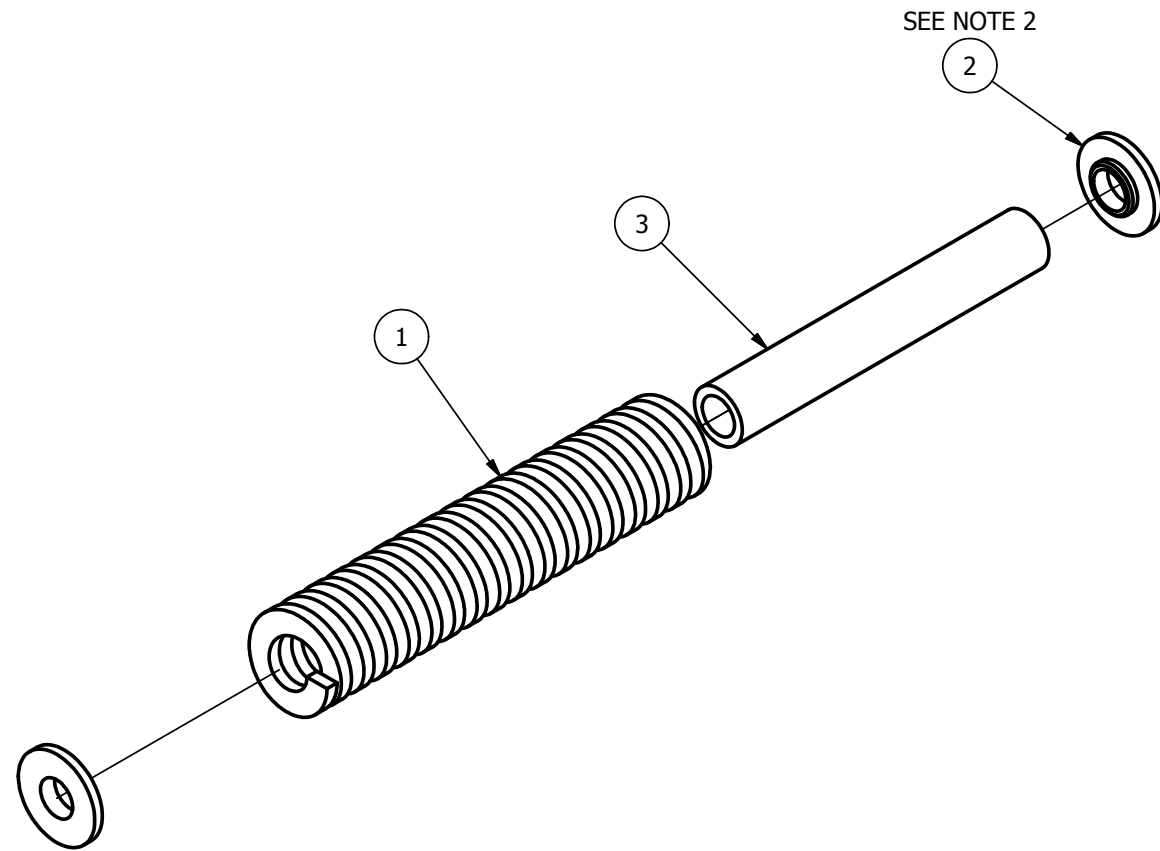
SECTION A-A  
SCALE 1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM211 R07 AND CONVERTED TO METRIC FOR THOR-M	8/4/11	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 1.6 XX ± 0.2 1.6 XXX ± 0.3 1.6 XXXX ± 0.01		
PROJECT NO.:	472-2200	MATERIAL:	Acetal Resin, Black	DESCRIPTION:
DRIVEN BY:	B. KIMES	DATE:	7/28/2011	NECK FRONT/REAR SPRING TUBE
CHECKED BY:	J. WANG	DATE:	1/10/2012	SIZE: SHEET
HEAT TREAT:		FINISH:		A31 OF 1
TOTAL QTY IN DUMMY	2	SCALE:	1.000	DRAWING NO.:
				472-2203



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM030 R04 AND CONVERTED TO METRIC FOR THOR-M	8/4/11	BK
	B	MOD NOTE 3 TO CUT 8005531 TO LENGTH AFTER INSERTION INTO SPRING, CHANGED ITEM 3	6/22/2012	TMV
	C	710N TO 790N WAS 830 TO 920 M	11/28/2012	BK



SCALE 1.000

NOTES:

- NOMINAL SPRING RATE IS SUPERSEDED BY STATIC TESTING REQUIREMENTS:  
 SPRING RATE  $17.8 \pm 0.9$  N/mm.  
 MAXIMUM DEFLECTION TO SOLID HEIGHT MUST EXCEED 36mm.
- NECK SPRING BUSHING: CHEMICALLY CLEAN THE MATING SURFACE AND JOIN WITH 5 MINUTE EPOXY UNDER LIGHT PRESSURE.
- INSERT THE ELASTOMETRIC SPRING ELEMENT MATERIAL INTO THE COMPRESSION SPRING AND CUT TO LENGTH SPECIFIED ABOVE. THIS ASSEMBLY MUST BE STATICALLY TESTED TO MEET THE FOLLOWING REQUIREMENTS:  
 DEFLECTION: AT 30mm, FORCE TO BE 710N TO 790N.  
 SPRING CAP MUST BE IN PLACE AT EITHER END DURING THIS TEST.  
 TEMPERATURE RANGE: 18-27°C 1 HOUR RECOVERY BETWEEN TESTS.



ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-2222	NECK FRONT SPRING DAMPING TUBE
2	2	472-2221	NECK SPRING BUSHING
1	1	5000517	SPRING, 16 X 8 I.D. X 76

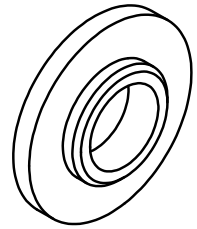
PARTS LIST

DO NOT SCALE DRAWING  
 THIRD ANGLE PROJECTION

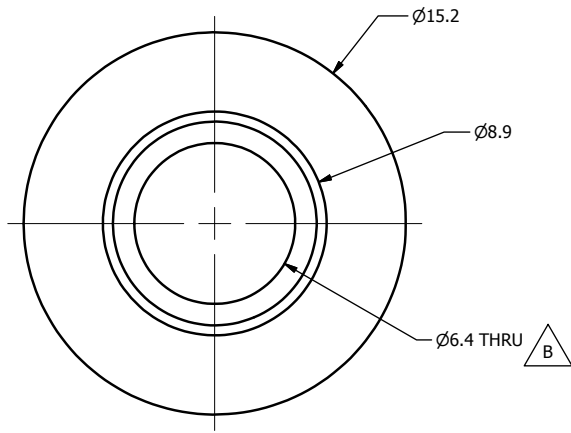
TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ANGLES FINISH  
 X ±0.5 ±0.5 1.6  
 XX ±0.2  
 XXX ±0.1  
 XXXX ±0.01

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 DESCRIPTION: FRONT SPRING ASSEMBLY

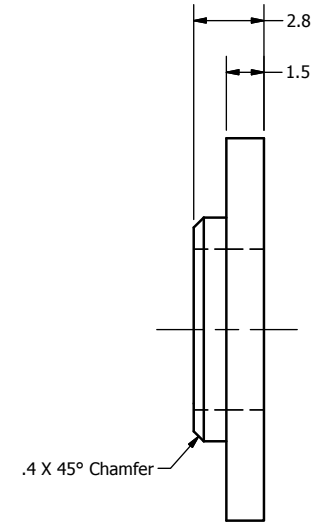
PROJECT NO.:		DRAWN BY:	B. KIMES	DATE:	7/28/2011	SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:	472-2220	REV:	C
MATERIAL:	472-2200	QTY:	1	CHECKED BY:		SCALE:	1.000						
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/10/2012								
FINISH:		TOTAL QTY IN DUMMY:	1										



SCALE 3.000



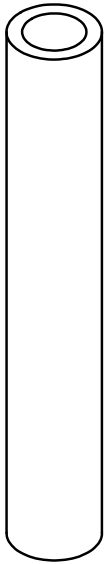
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM023 R06 FOR THOR-M	8/4/11	BK
	B	Ø6.4 WAS Ø5.8	6/13/2012	BK



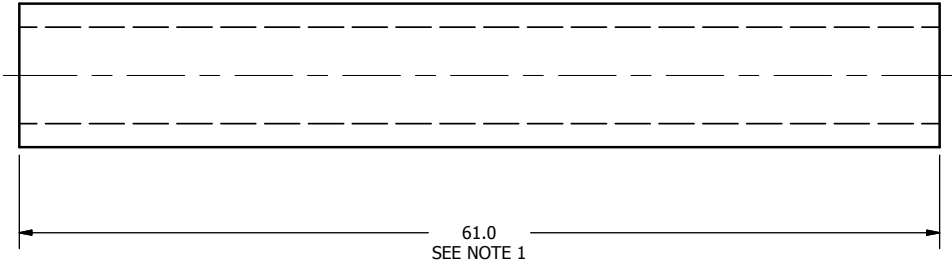
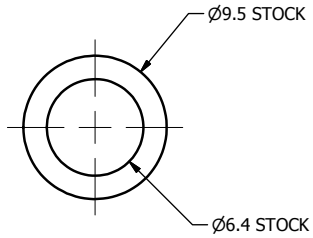
- NOTES:
1. POWDER OR BEAD BLAST.
  2. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  3. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.2 ±0.5° 16' XX ±0.2 ±0.5° 16' XXX ±0.01 REMOVE BURRS & BREAK SHARP EDGES		
472-2240	2	PROJECT NO.:	DATE:	DESCRIPTION: NECK SPRING BUSHING
472-2220	2	MATERIAL: 4140 STEEL	DESIGNED BY: B. KIMES	
NEXT ASSEMBLY	QTY	HEAT TREAT:	CHECKED BY:	
TOTAL QTY IN DUMMY	4	FRESH: SEE NOTES	ENGINEER: J. WANG	
		DATE: 7/28/2011		SIZE: A3
		DATE: 1/10/2012		SHEET: 1 OF 1
				DRAWING NO.: 472-2221
				REV: B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM031 R04 FOR THOR-M	8/4/11	BK



SCALE 2.000

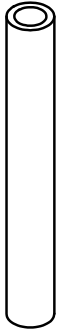


NOTES:  
1. FINAL LENGTH TO BE DETERMINED DURING SPRING ASSEMBLY CERTIFICATION.

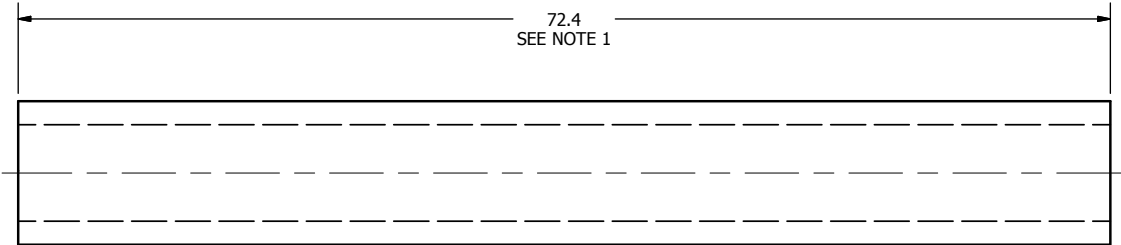
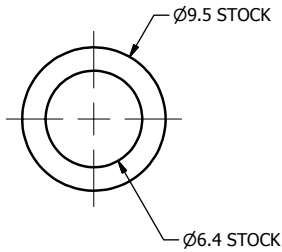
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X 0.2 XX 0.3 XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-2220	MATERIAL:	TYGON SE-200	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	7/28/2011	NECK FRONT SPRING DAMPING TUBE
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/10/2012	SCALE:
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:
SCALE:	3.000			472-2222



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM051 R04 FOR THOR-M	8/4/2011	BK
	B	VITON 75A WAS VITON 90A	6/12/2012	BK



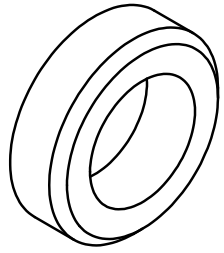
SCALE 1.000



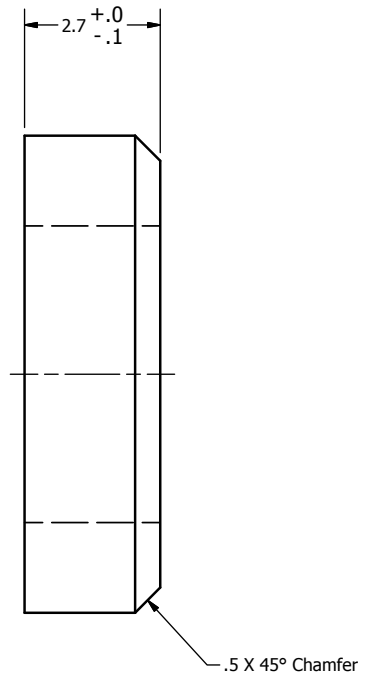
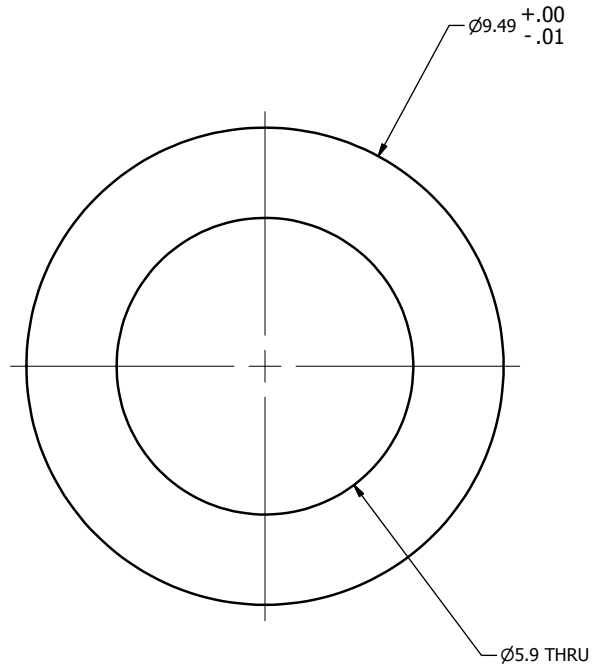
NOTES:

1. FINAL LENGTH WILL BE DETERMINED DURING SPRING ASSEMBLY CERTIFICATION.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 16 XX ±0.2 XXX ±0.3 XXXX ±0.01		
PROJECT NO:	472-2240	MATERIAL:	VITON 75A	DESCRIPTION: NECK REAR SPRING DAMPING TUBE
CHECKED BY:	B. KIMES	DATE:	7/28/2011	
HEAT TREAT:		ENGINEER:	J. WANG	
DATE:	1/10/2012	SCALE:	3.000	SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-2241 REV: B
NEXT ASSEMBLY	QTY	TOTAL QTY IN DUMMY	1	



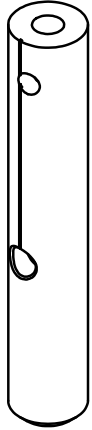
SCALE 5.000



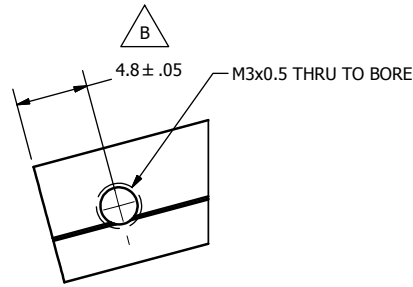
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM214 R07 FOR THOR-M	8/4/11	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.05 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-2200	MATERIAL:	Acetal Resin, Black	DESCRIPTION:
DESIGN BY:	B. KIMES	DATE:	7/28/2011	FRONT CABLE BUSHING, NECK
CHECKED BY:		DATE:		SIZE: SHEET
ENGINEER:	J. WANG	DATE:	1/10/2012	A31 OF 1
TOTAL QTY IN DUMMY	1	FINISH:		SCALE: 10.000
				DRAWING NO. 472-2204
				REV. A

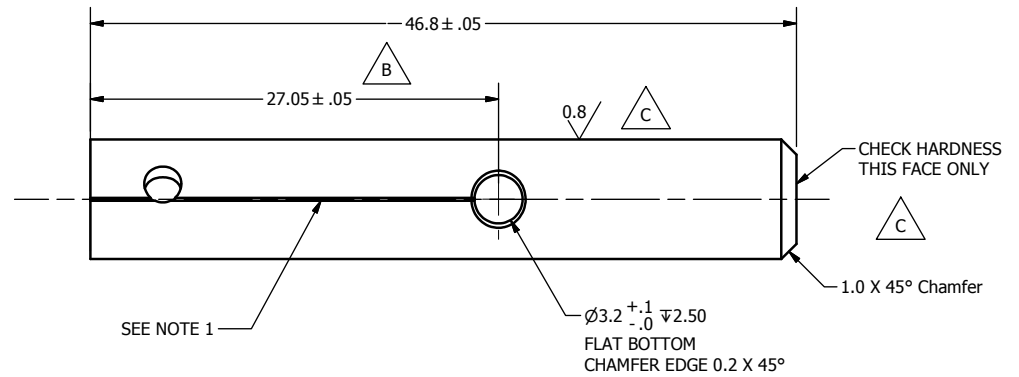
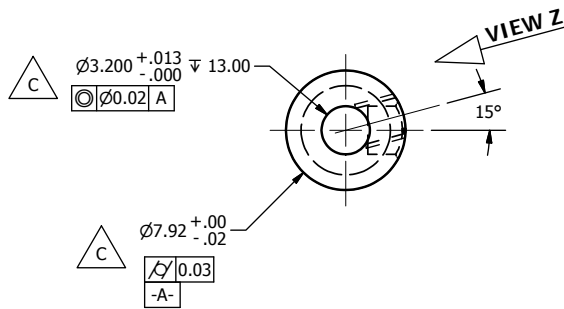
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM013 R01 AND CONVERTED TO METRIC FOR THOR-M	7/29/2011	BK
	B	46.8 WAS 48.8; 27.05 WAS 29.05; 4.80 WAS 6.80	2/7/2012	BK
	C	ADD FINISH MARK, HARDNESS NOTE, FEATURE CONTROL BOXES, DATUM A; Ø3.200+0.013/-0 WAS Ø3.20+0.1/-0; ADD CHAMFER	2/13/2013	BK



SCALE 2.000



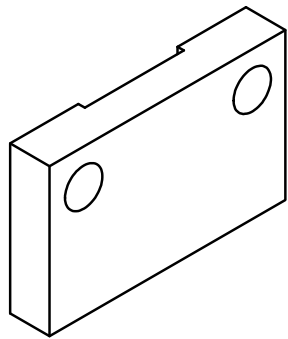
PARTIAL VIEW Z  
SCALE 3.000



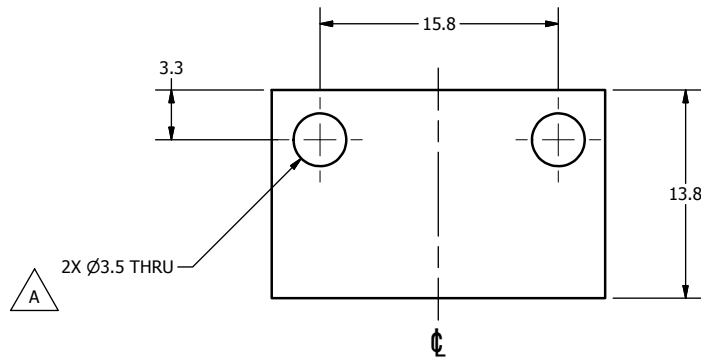
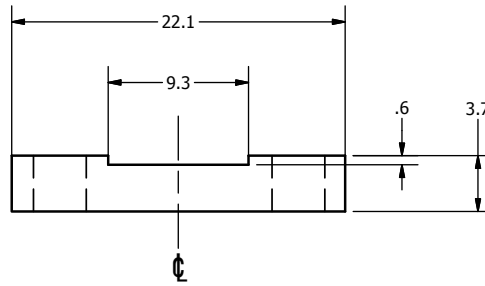
NOTES:

- ENGRAVE A 0.2mm DEEP LINE THRU THE CENTER OF HOLE TO END AS SHOWN.
- POWDER OR BEAD BLAST.
- NICKEL PLATE 0.003mm-0.008mm MAX. AFTER MACHINING AND HEAT TREAT.
- DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION DESCRIPTION: OCCIPITAL CONDYLE PIN, NECK	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X 0.2 0.2 XX 0.3 0.3 XXX 0.01			
PROJECT NO:	472-2000	MATERIAL:	S7 TOOL STEEL	DESIGNED BY:	B. KIMES
DATE:	7/28/2011	HEAT TREAT:	Rc 55-57	CHECKED BY:	J. WANG
REVISION:	SEE NOTES	DATE:	1/9/2012	DATE:	1/9/2012
SIZE:	A3	SHEET:	1 OF 1	SCALE:	3.000
TOTAL QTY IN DUMMY					1
DRAWING NO.:					472-2011



SCALE 3.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM014 R05 AND CONVERTED TO METRIC FOR THOR-M; Ø3.5 WAS Ø4.0; REMOVE NOTE 1, RENUMBER NOTES	8/23/2011	BK

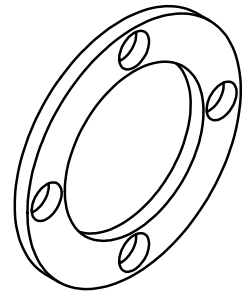
NOTES:



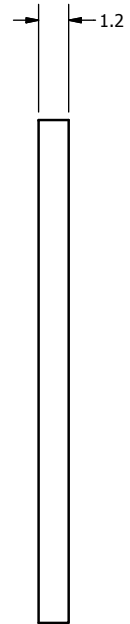
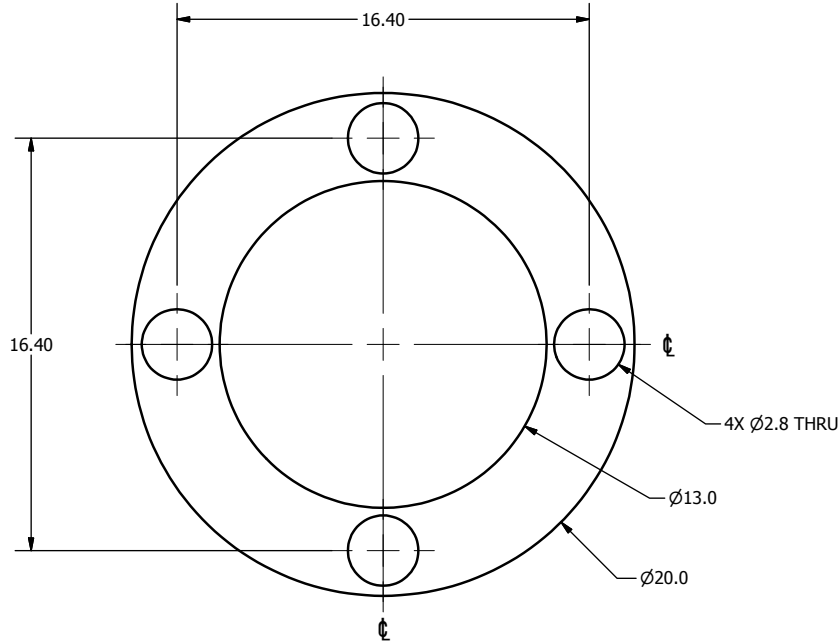
1. DIMENSION SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.07 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		PROJECT NO.: 472-2000		
MATERIAL: Acetal Resin, Black		DRAWN BY: B. KIMES		DATE: 7/28/2011
NEXT ASSEMBLY QTY		CHECKED BY: J. WANG		DATE: 1/9/2012
TOTAL QTY IN DUMMY 1		FINISH:		DATE: 1/9/2012
		SIZE: SHEET A3 1 OF 1		DRAWING NO.: 472-2012
		SCALE: 3.000		REV: A





SCALE 3.000

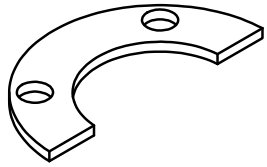


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM053 R01 AND CONVERTED TO METRIC FOR THOR-M	7/30/2011	BK

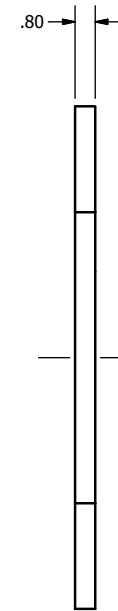
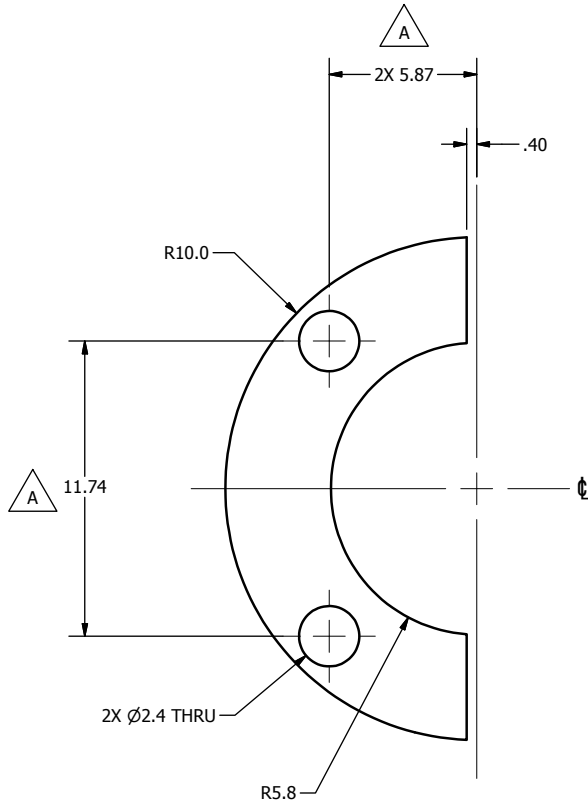
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.57 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-2000	MATERIAL:	6061-T6 ALUMINUM	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	7/28/2011	ROTARY POTENTIOMETER WASHER, NECK
CHECKED BY:		DATE:		SIZE: SHEET
HEAT TREAT:		FINISH:	CLEAR ANODIZE	A31 OF 1
ENGINEER:	J. WANG	DATE:	1/9/2012	SCALE: 5.000
TOTAL QTY IN DUMMY	1			DRAWING NO. 472-2021



SCALE 3.000

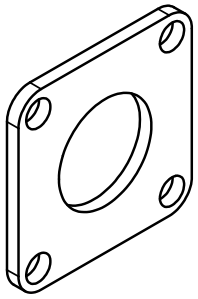


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM052 R01 AND CONVERTED TO METRIC FOR THOR-M; 5.87 WAS 5.80; 11.74 WAS 11.60	8/23/2011	BK

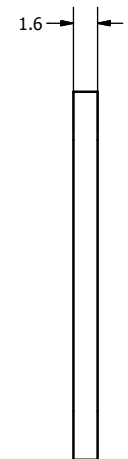
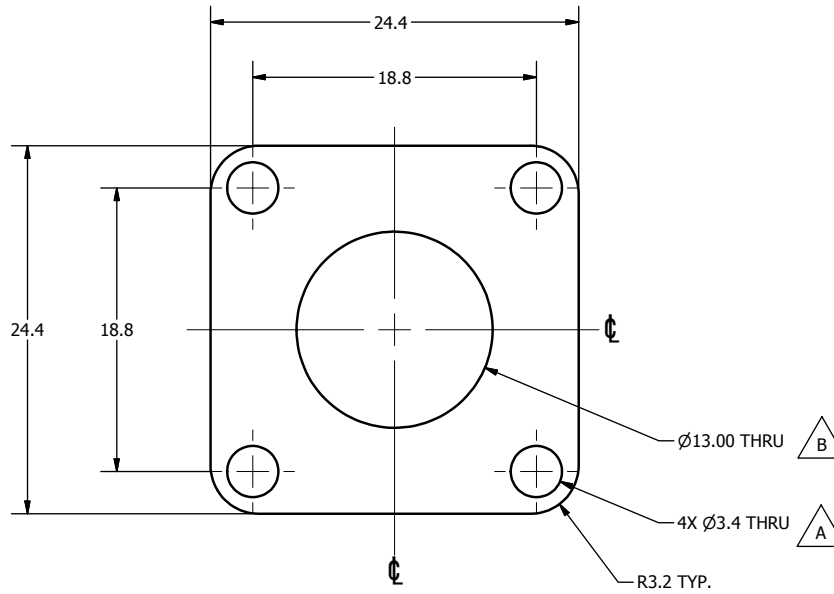
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.	472-2000	MATERIAL:	6061-T6 ALUMINUM	DESCRIPTION:
DATE:	7/28/2011	DESIGNED BY:	B. KIMES	ROTARY POTENTIOMETER CLAMP, NECK
CHECKED BY:		HEAT TREAT:		DATE:
FINISH:	CLEAR ANODIZE	ENGINEER:	J. WANG	DATE:
QTY	2	DATE:	1/9/2012	SIZE: SHEET
TOTAL QTY IN DUMMY	2	SCALE:	5.000	A3 1 OF 1
				DRAWING NO. 472-2020
				REV. A




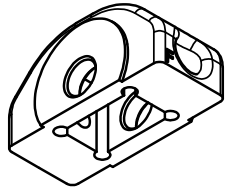
SCALE 2.000



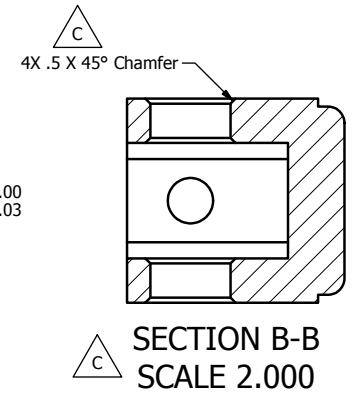
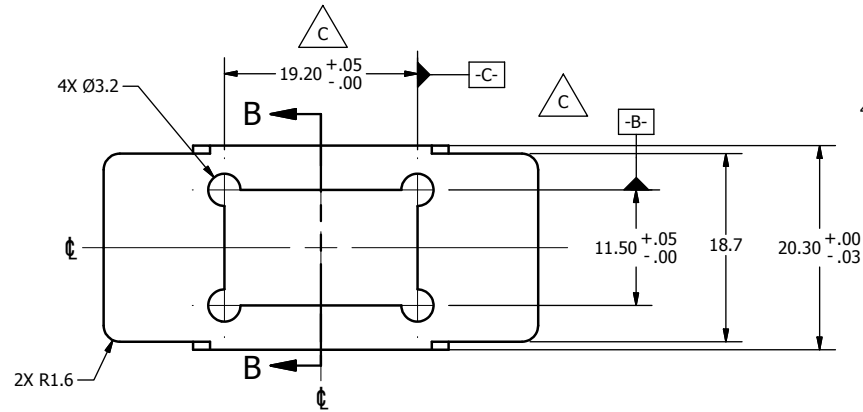
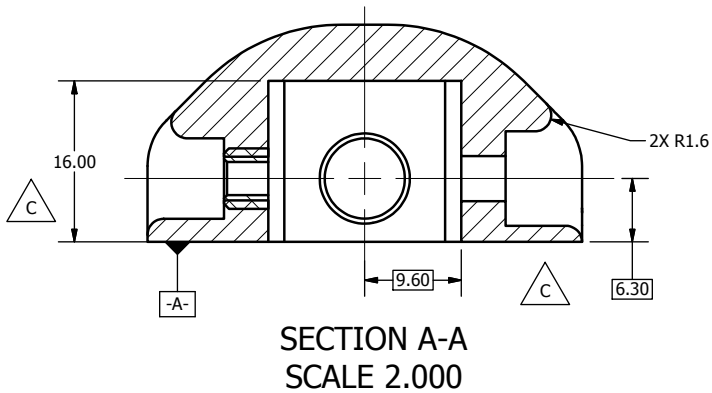
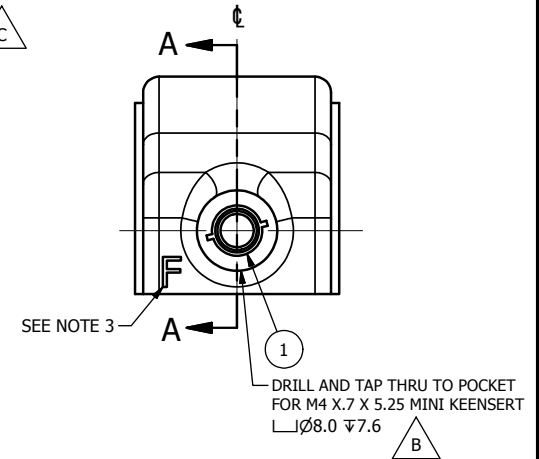
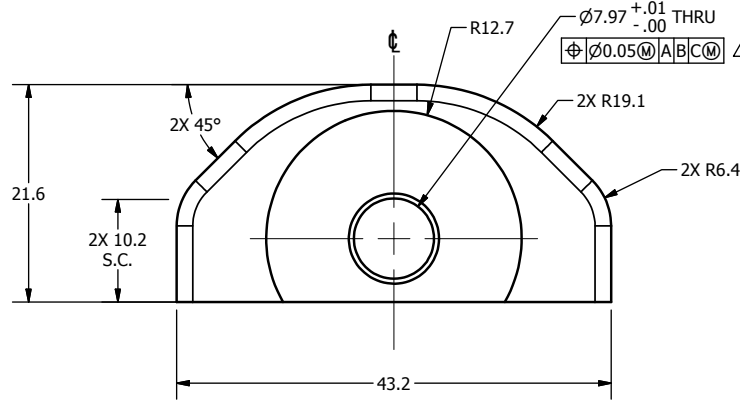
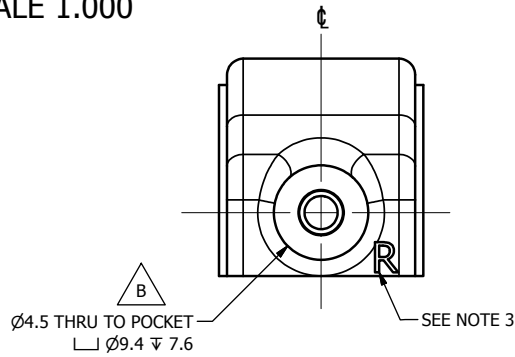
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM018 R12 AND CONVERTED TO METRIC FOR THOR-M; Ø3.4 WAS Ø3.2	7/29/2011	BK
	B	13.00 DIA WAS 6.4	2/8/2012	BK

NOTES:  
1. DIMENSIONS SYMMETRIC ABOUT  $\text{C}$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION ROTARY POTENTIOMETER COVER, NECK	
		DECIMALS ANGLES FINISH .X .0.1 ± 0.5° 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO.:	472-2000	MATERIAL:	6061-T6 ALUMINUM	DESIGNED BY:	B. KIMES
DATE:	7/28/2011	HEAT TREAT:		CHECKED BY:	J. WANG
FINISH:	CLEAR ANODIZE	DATE:	1/9/2012	SCALE:	3.000
TOTAL QTY IN DUMMY		QTY	1	SIZE	A3
				SHEET	1 OF 1
				DRAWING NO.	472-2014
				REV.	B



SCALE 1.000

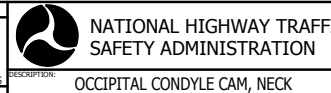


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM043 R04 AND CONVERTED TO METRIC FOR THOR-M	8/22/2011	BK
	B	POCKET WAS THRU TO Ø; ADD C'BORE DIMENSION	4/3/2012	BK
	C	16.00 WAS 16.0; 19.20+0.05/0 WAS 19.2+0.1/0; 6.30 WAS 6.30 +0/-0.03; ADD DATUMS A, B, C; ADD FEATURE CONTROL BOX; Ø7.97+0.01/0 WAS Ø8.1; ADD 4X CHAMFER, SEC B-B, 9.60	2/13/2013	BK

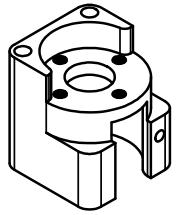
NOTES:

- GRIND KEENSERT TO 4.2mm BEFORE INSTALLING.
- DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
- STAMP OR ETCH (3mm CHARACTERS) AS SHOWN.

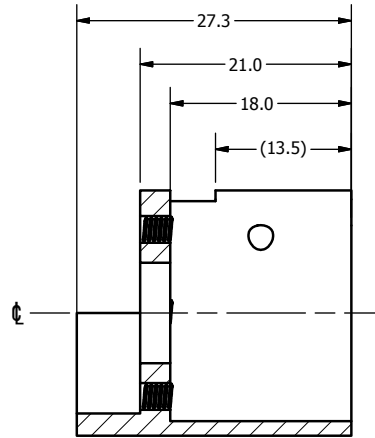
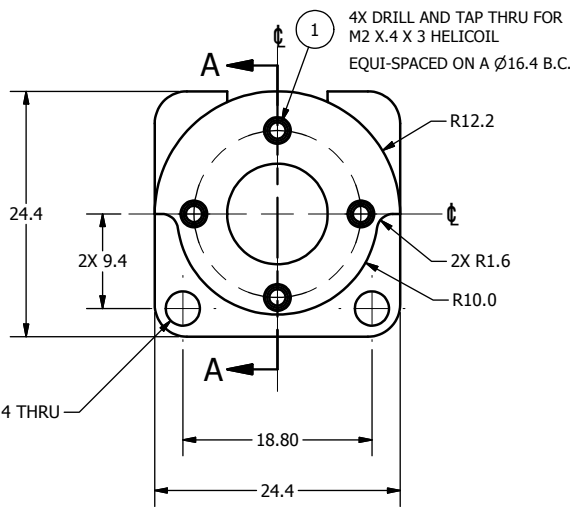
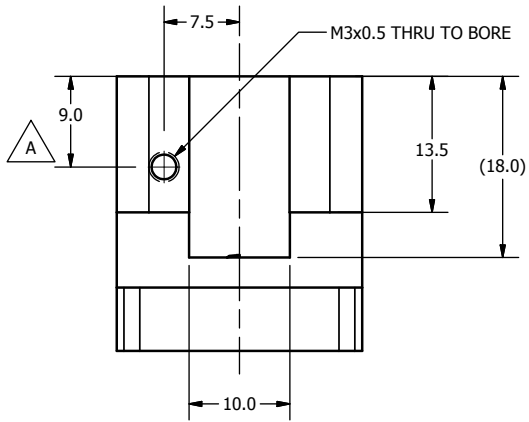
1	1	5000724	M4 X 0.7 X 5.25 LG. MINI KEENSERT
ITEM	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH S.D.S ±0.1 16 X.X ±0.2 X.XX ±0.3 X.XXX ±0.01	
PROJECT NO.: 472-2000		MATERIAL: BRASS	
DRAWN BY: NEXT ASSEMBLY		DATE: 7/28/2011	
CHECKED BY: TOTAL QTY IN DUMMY		DATE: 1/9/2012	
ENGINEER: J. WANG		SCALE: 2.000	
SIZE SHEET A3 1 OF 1			DRAWING NO.: 472-2019



REV: C

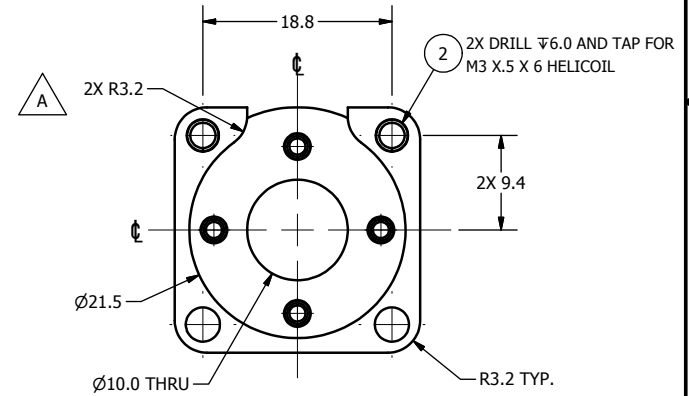


SCALE 1.000



SECTION A-A

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM017 R06 AND CONVERTED TO METRIC FOR THOR-M9.0 WAS 7.5, Ø3.4 WAS Ø3.2; ADD 2X R3.2	7/29/2011	BK



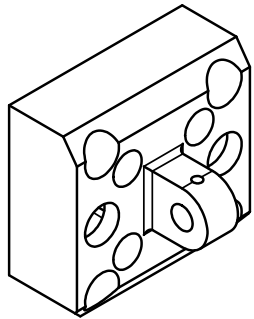
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. INSTALL HELICOILS AFTER FINISH.

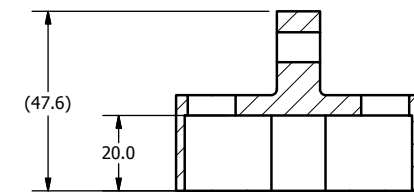
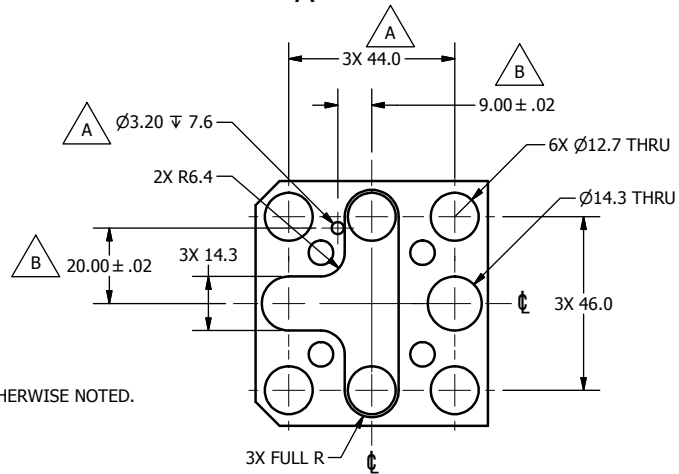
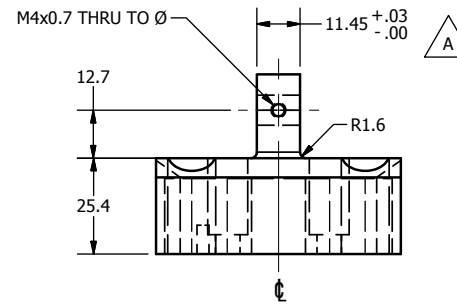
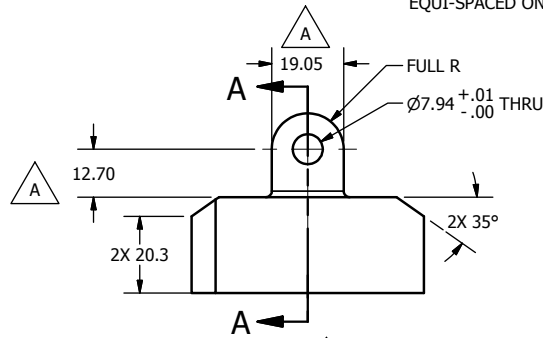
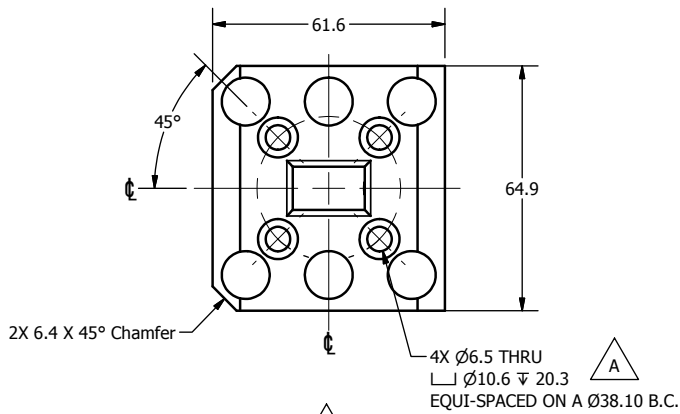
ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	5000333	M3 X 0.5 X 6 LG. HELI-COIL
1	4	5001111	M2 X 0.4 X 3 LG. HELI-COIL

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION ROTARY POTENTIOMETER HOUSING, NECK	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 X .05 16 X .1 X .1 16 X .2 X .2 16 X .3 X .3 16 X .5 X .5 16 X .75 X .75 16 X 1.0 X 1.0 16 X 1.5 X 1.5 16 X 2.0 X 2.0 16 X 3.0 X 3.0 16 X 4.0 X 4.0 16 X 5.0 X 5.0 16 X 6.0 X 6.0 16 X 8.0 X 8.0 16 X 10.0 X 10.0 16 X 12.0 X 12.0 16 X 15.0 X 15.0 16 X 20.0 X 20.0 16 X 25.0 X 25.0 16 X 30.0 X 30.0 16 X 40.0 X 40.0 16 X 50.0 X 50.0 16 X 60.0 X 60.0 16 X 80.0 X 80.0 16 X 100.0 X 100.0 16 REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO:	472-2000	MATERIAL:	7075-T6 ALUMINUM	DATE:	7/28/2011
DRAWN BY:	B. KIMES	CHECKED BY:	J. WANG	DATE:	1/9/2012
HEAT TREAT:		FINISH:	CLEAR ANODIZE	SCALE:	2.000
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:	472-2013
TOTAL QTY IN DUMMY:	1	REVISION:		REV.:	A



SCALE .750



SECTION A-A  
SCALE .750

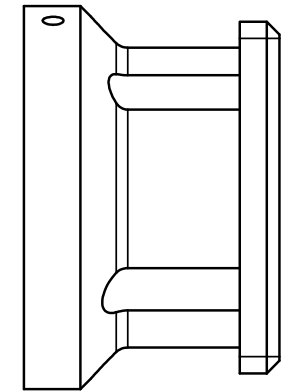
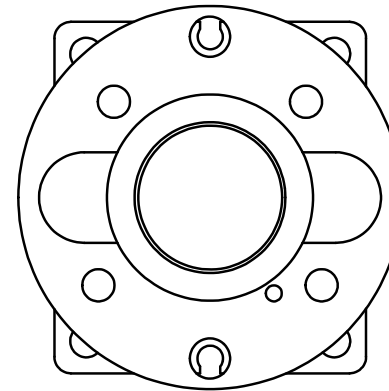
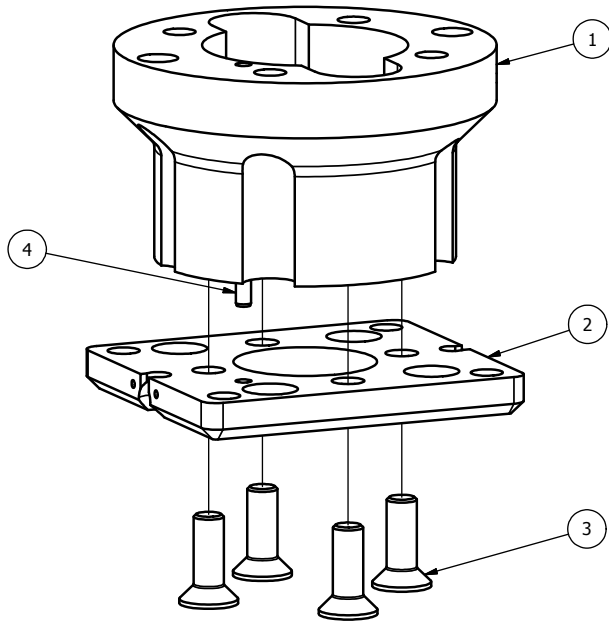
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.
5. WEIGHT: .426± 0.03 kg

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM700 R02 AND CONVERTED TO METRIC FOR THOR-M; Ø6.5 THRU C'BORE Ø10.6 ± 0.03 EQUI-SPACED ON A Ø38.10 B.C. WAS Ø6.7 THRU C'BORE Ø10.3 ± 0.03 EQUI-SPACED ON A Ø38.1 B.C.; 19.05 WAS 19.10±.00±.03; 12.70 WAS 12.7±.1/-0; 44.0 WAS 43.0; 11.45±.03/-0.00 WAS 11.40±.05; WEIGHT .426±.03 WAS .435±.01	7/29/2011	BK
	B	ADD LOACTING DOWEL HOLE	7/28/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION UPPER NECK LOAD CELL STRUCTURAL REPLACEMENT
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.05 1.6 X .01 ± 0.2 X .03 ± 0.3 X .05 ± 0.01		
PROJECT NO:	472-2000	MATERIAL:	1018 STEEL	DATE:
CHECKED BY:	B. KIMES	DATE:	7/28/2011	SCALE:
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FRESH:	SEE NOTES	DATE:	1/10/2012	SCALE:
TOTAL QTY IN DUMMY	1	SEE NOTES		
SIZE: SHEET: DRAWING NO.:			REV:	
A31 OF 1			472-2700	
SCALE: 0.750			B	

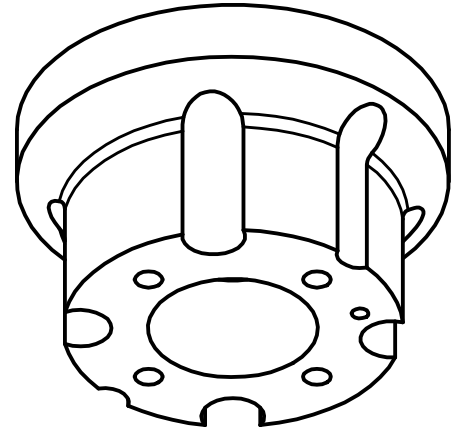
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM600 R03 AND CONVERTED TO METRIC FOR THOR-M; ADD DOWEL, ITEM 4	7/29/2011	BK
	B	5000934 WAS 5000592	7/25/2012	BK



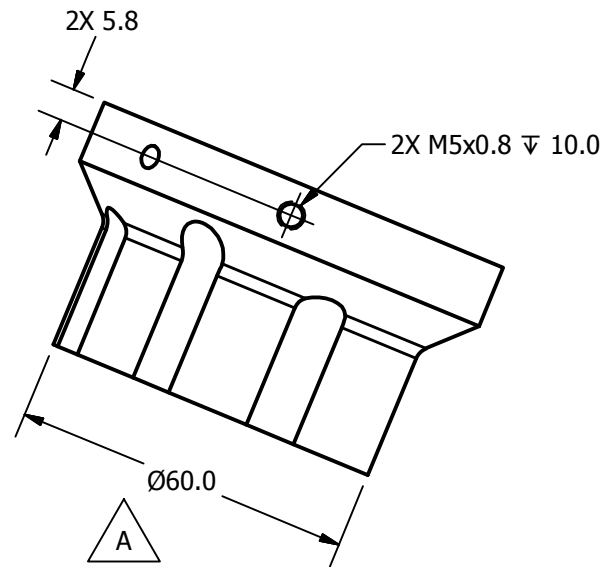
ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	5000934	M3 X 12 LG. DOWEL PIN
3	4	5000108	M6 X 1 X 18 LG. FHCS
2	1	472-2612	BOTTOM PLATE, LOWER NECK LOAD CELL STRUCTURAL REPLACEMENT
1	1	472-2610	TOP, LOWER NECK LOAD CELL STRUCTURAL REPLACEMENT

Parts List

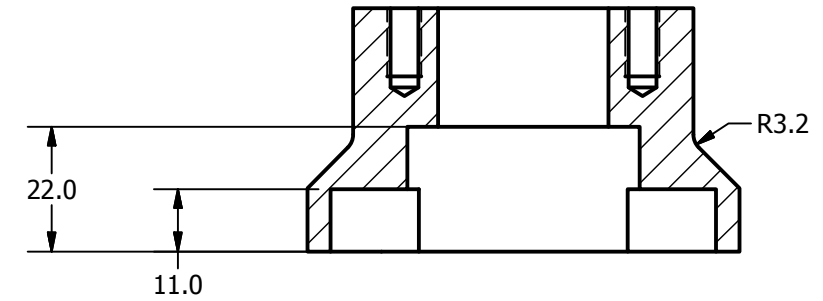
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-2000	DATE:	7/29/2011	DESCRIPTION: LOWER NECK LOAD CELL STRUCTURAL REPLACEMENT
MATERIAL:		DESIGNED BY:	B. KIMES	
CHECKED BY:		DATE:		
DATE:		ENGINEER:	J. WANG	
FINISH:		DATE:	1/10/2012	SIZE: A3 SHEET: 1 OF 1 SCALE: 1.000
NEXT ASSEMBLY	QTY	DRAWING NO:		472-2600
TOTAL QTY IN DUMMY	1	REV:		B



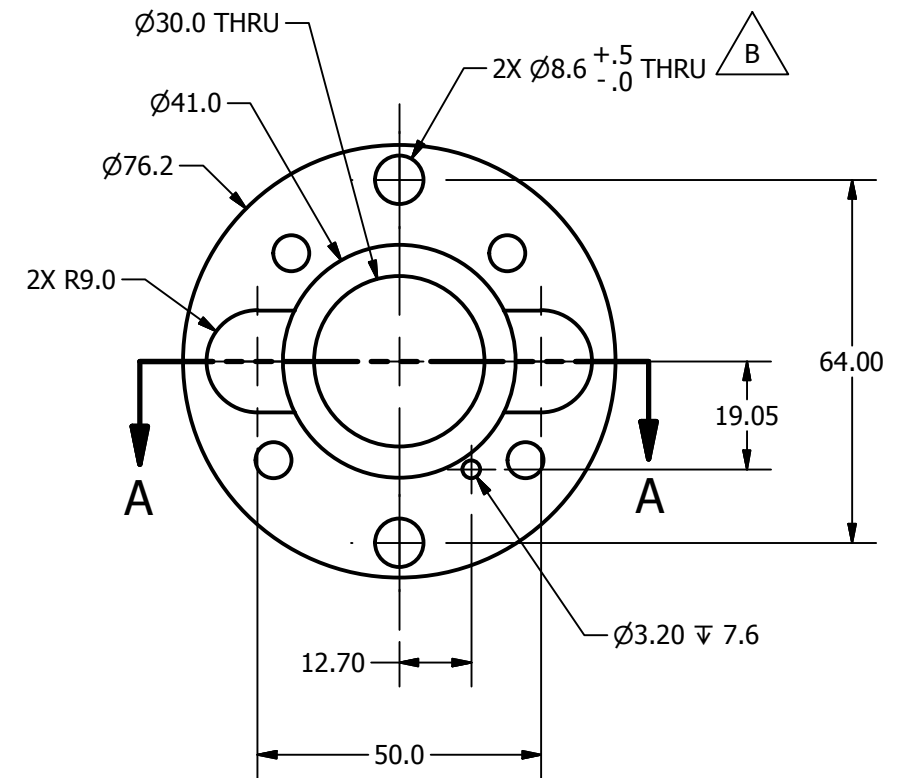
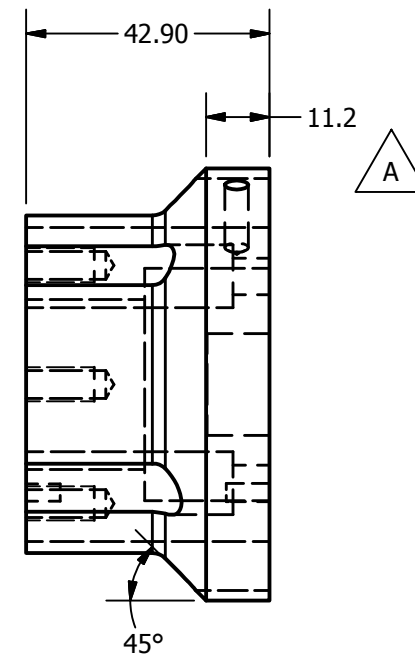
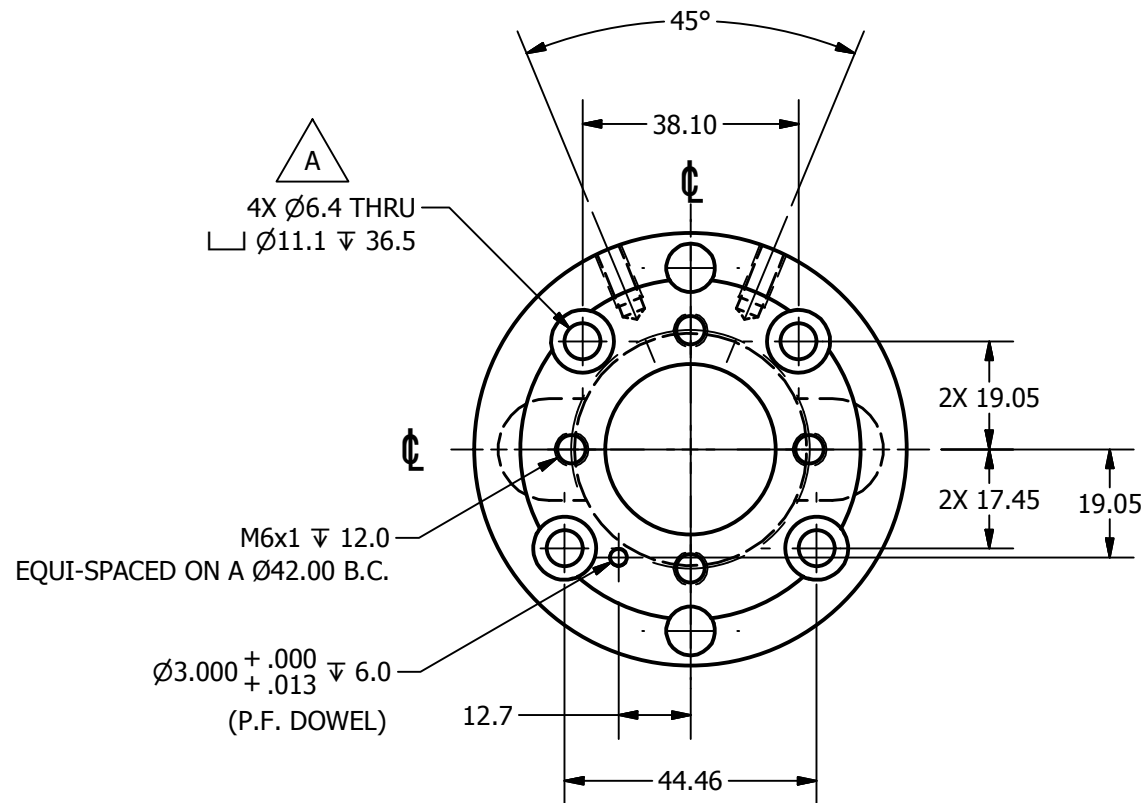
SCALE .750



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM600 R05 AND CONVERTED TO METRIC FOR THOR-M; Ø60.0 WAS Ø62.0; 11.0 WAS 11.4; Ø6.4 WAS Ø6.8	7/29/2011	BK
	B	DIM. 2X Ø8.6 +.5/-0 THRU WAS 2X Ø8.0 THRU	8/27/2015	DW



SECTION A-A  
SCALE .750

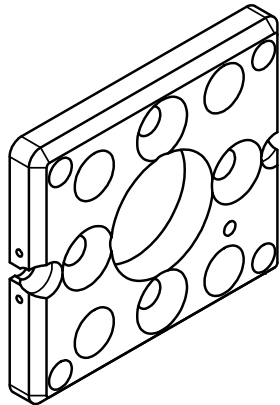


NOTES:

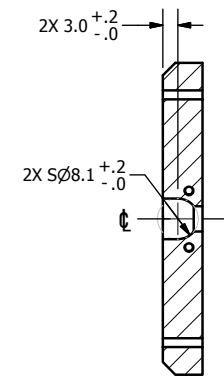
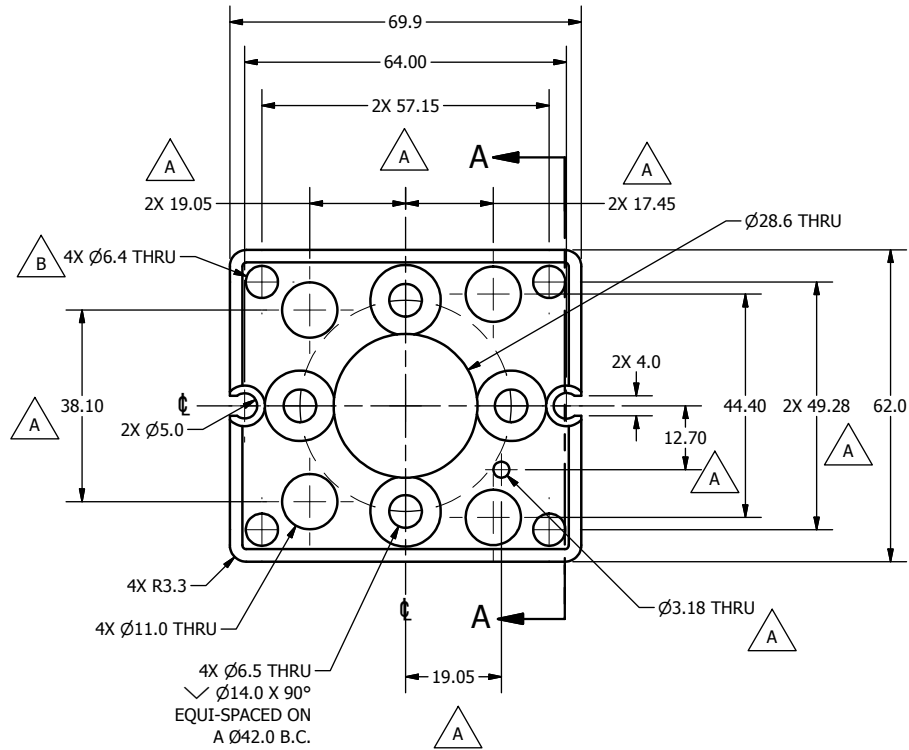
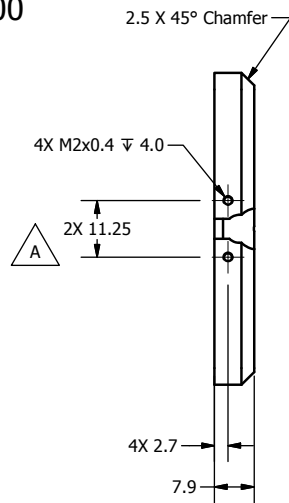
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 .XX ±0.2 .XXX ±0.1 .XXX ±0.01		
PROJECT NO.:	472-2600	MATERIAL:	1018 STEEL	DESCRIPTION:
DATE:	7/28/2011	HEAT TREAT:		TOP, LOWER NECK LOAD CELL STRUCTURAL REPLACEMENT
DRAWN BY:	B. KIMES	CHECKED BY:	J. WANG	SIZE: SHEET
DATE:	1/10/2012	ENGINEER:	J. WANG	A31 of 1
FINISH:	SEE NOTES	DATE:	1/10/2012	SCALE: .750
TOTAL QTY IN DUMMY	1	SEE NOTES		DRAWING NO.: 472-2610





SCALE 1.000



SECTION A-A  
SCALE 1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM612 R03 AND CONVERTED TO METRIC FOR THOR-M; 57.15 WAS 57.2; 19.05 WAS 19.0; 17.45 WAS 17.5; 38.10 WAS 38.2; 49.28 WAS 49.3; 11.25 WAS 11.3; ADD LOCATING DOWEL PIN HOLE	7/29/2011	BK
	B	4X $\phi$ 6.4 WAS $\phi$ 5.4	4/25/2012	BK

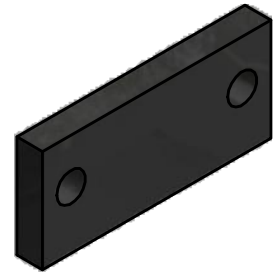
NOTES:

- DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
- POWDER OR BEAD BLAST.
- NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING AND HEAT TREAT.
- DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

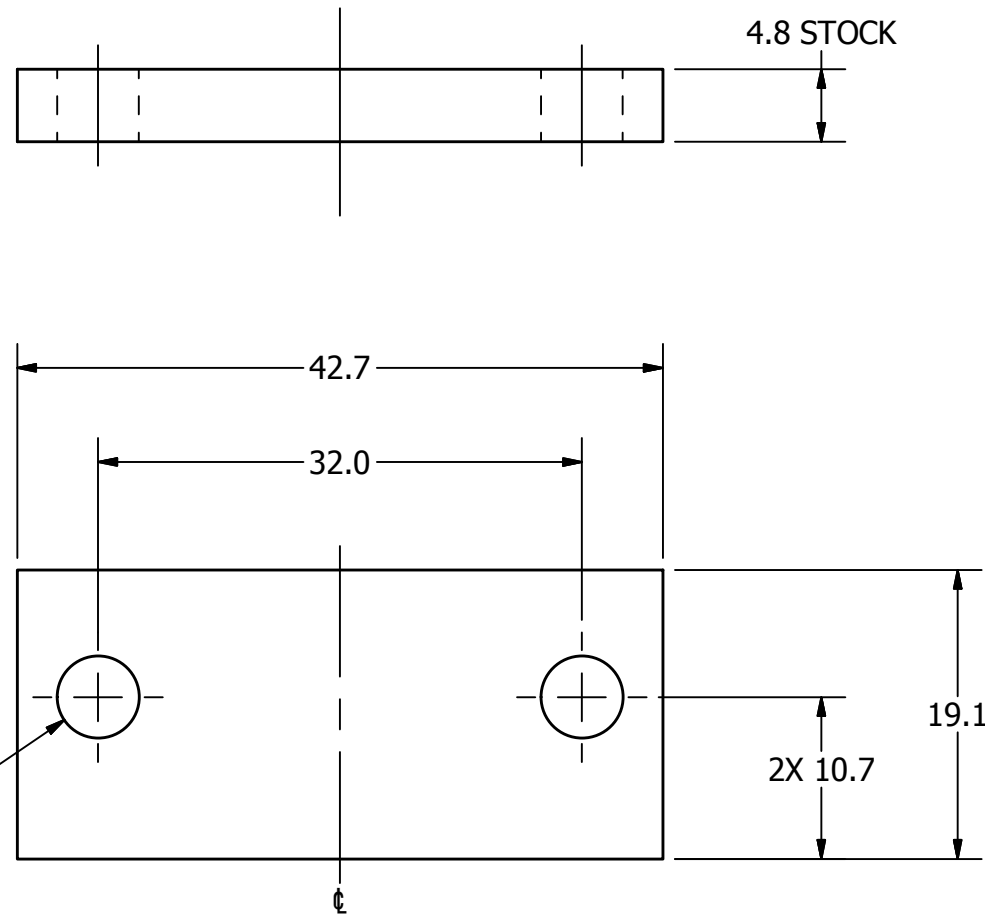
DO NOT SCALE DRAWING		TOLERANCES		<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 1.6 X.X 0.2 0.5 X.XX 0.3 0.5 X.XXX 0.01			
PROJECT NO:	472-2600	MATERIAL:	4140 STEEL	DESCRIPTION: BOTTOM PLATE, LOWER NECK LOAD CELL STRUCTURAL REPLACEMENT	
CHECKED BY:	B. KIMES	HEAT TREAT:	Rc 35-45		
DATE:	7/28/2011	FINISH:	SEE NOTES		
ENGINEER:	J. WANG	DATE:	1/10/2012		
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO:	472-2612
TOTAL QTY IN DUMMY:	1	SCALE:	1.000	REV:	B

REVISION HISTORY

ECO#	REV	DESCRIPTION	DATE	DBY
	A	RENUMBER FROM T1NKM025 R05 AND CONVERTED TO METRIC FOR THOR-M	9/7/2011	BK
	B	MATERIAL WAS BUNA-N RUBBER	3/2/2012	TMV
	C	ADDED NOTES 2 & 3; MATERIAL WAS NATURAL RUBBER	7/27/2015	DW



SCALE 1.000



NOTES:

1. DIMENSIONS SYMMETRICAL ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. RUBBER DIMENSIONAL TOLERANCE  $\pm 0.5$  UNLESS OTHERWISE SPECIFIED.
3. MATERIAL: BUNA-N RUBBER, 50  $\pm 5$  SHORE A DURAMETER.

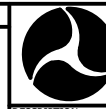
DO NOT SCALE DRAWING



TOLERANCES

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ANGLES FINISH  
 X  $\pm 0.5$   $\pm 0.5$  1.6  
 XX  $\pm 0.2$   
 XXX  $\pm 0.1$   
 XXXX  $\pm 0.01$

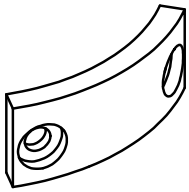
REMOVE BURRS & BREAK SHARP EDGES



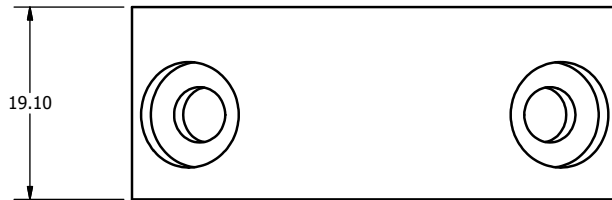
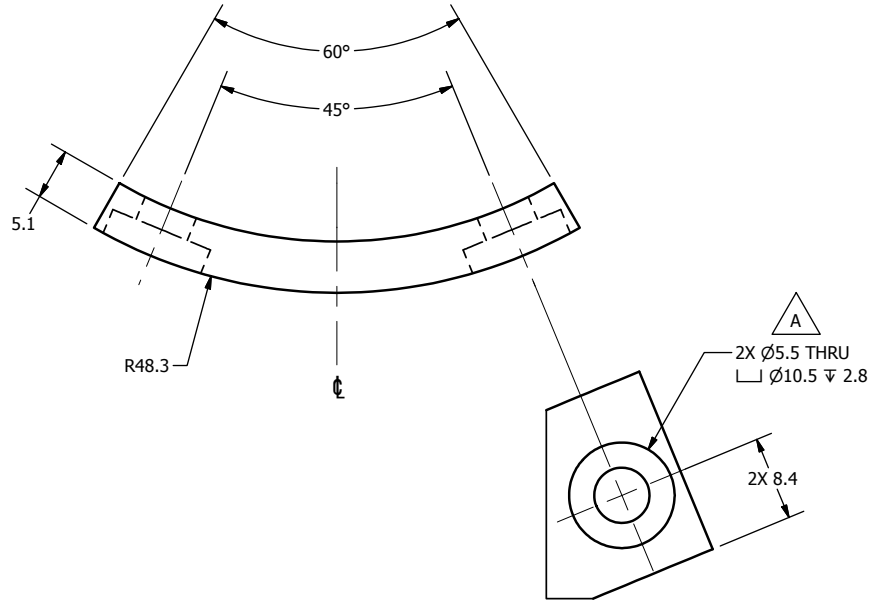
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: LOWER NECK LOAD CELL BUMPER

PROJECT NO.: 472-2000	QTY: 1	DATE: 9/7/2011	SIZE: A3	SHEET: 1 of 1	DRAWING NO.: 472-2002	REV: C
MATERIAL: SEE NOTES	HEAT TREAT:	CHECKED BY: B. KIMES	DATE: 3/2/2012	SCALE: 2:1		
TOTAL QTY IN DUMMY: 1	FINISH:	ENGINEER: J. WANG	DATE: 1/23/2012			



SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKM024 R03 AND CONVERTED TO METRIC FOR THOR-M; Ø5.5 THRU C'BORE Ø10.5 WAS Ø5.2 THRU C'BORE Ø9.3	9/7/2011	BK

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
Ø .05 ± 0.07 1.6  
X .02 ± 0.2  
X.X ± 0.3  
X.XX ± 0.01  
X.XXX ± 0.01

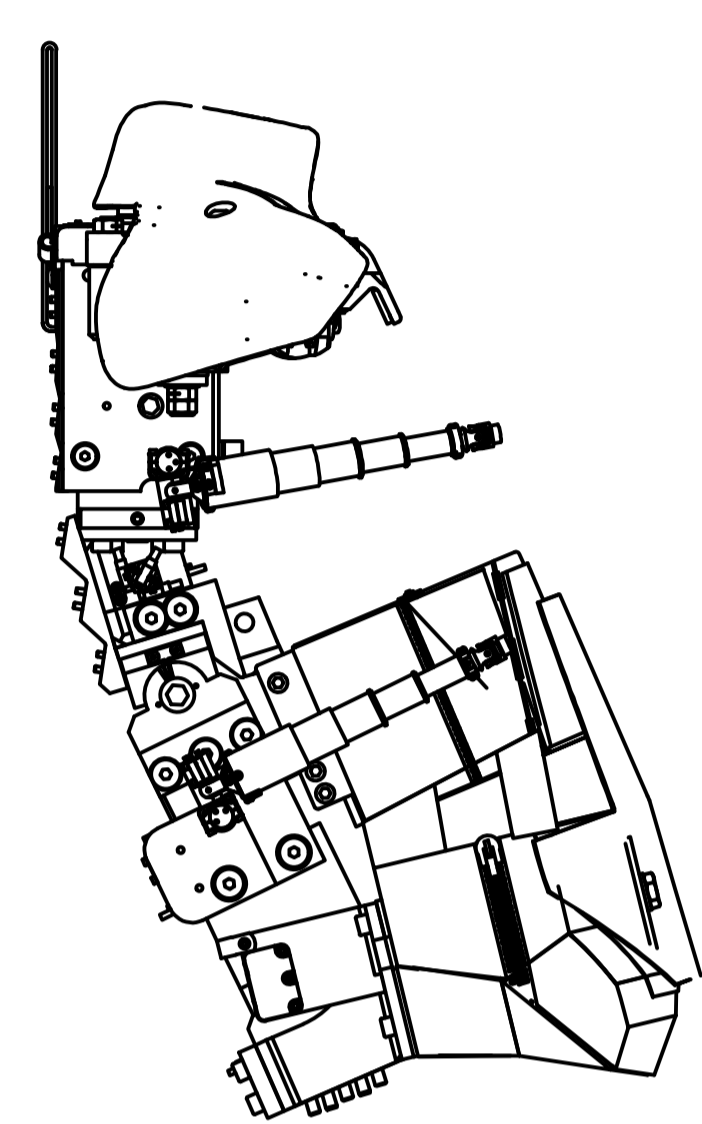
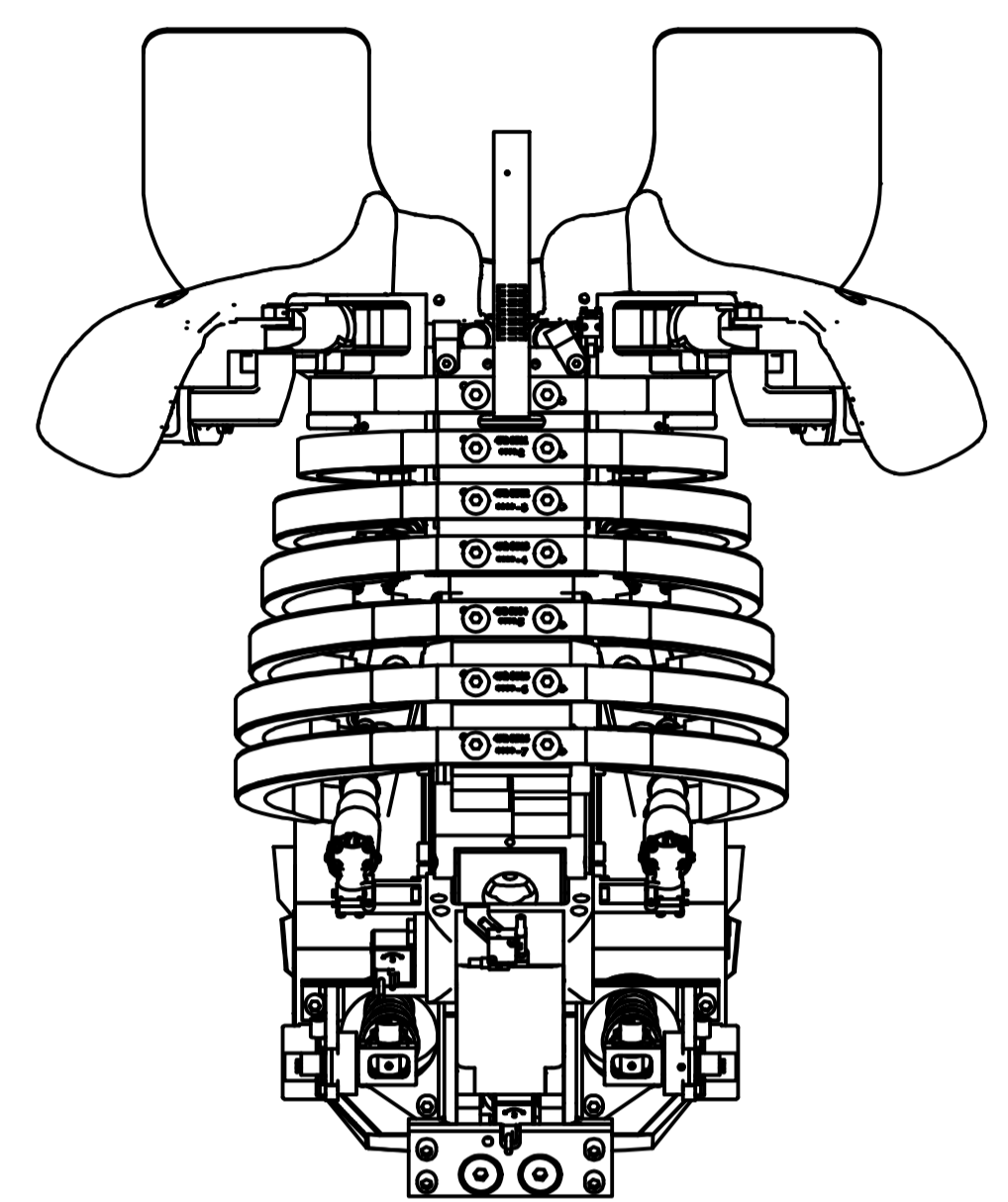
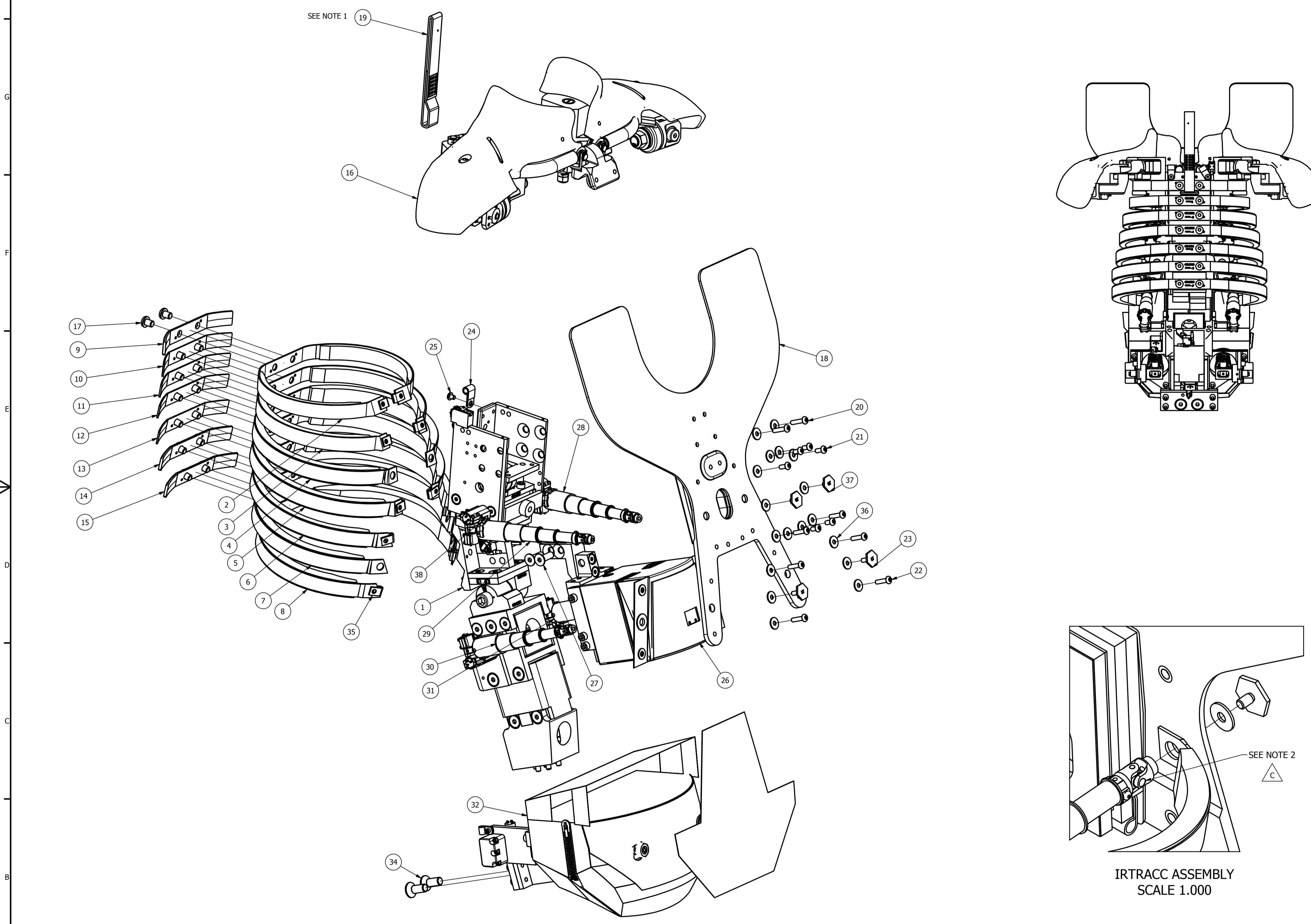


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

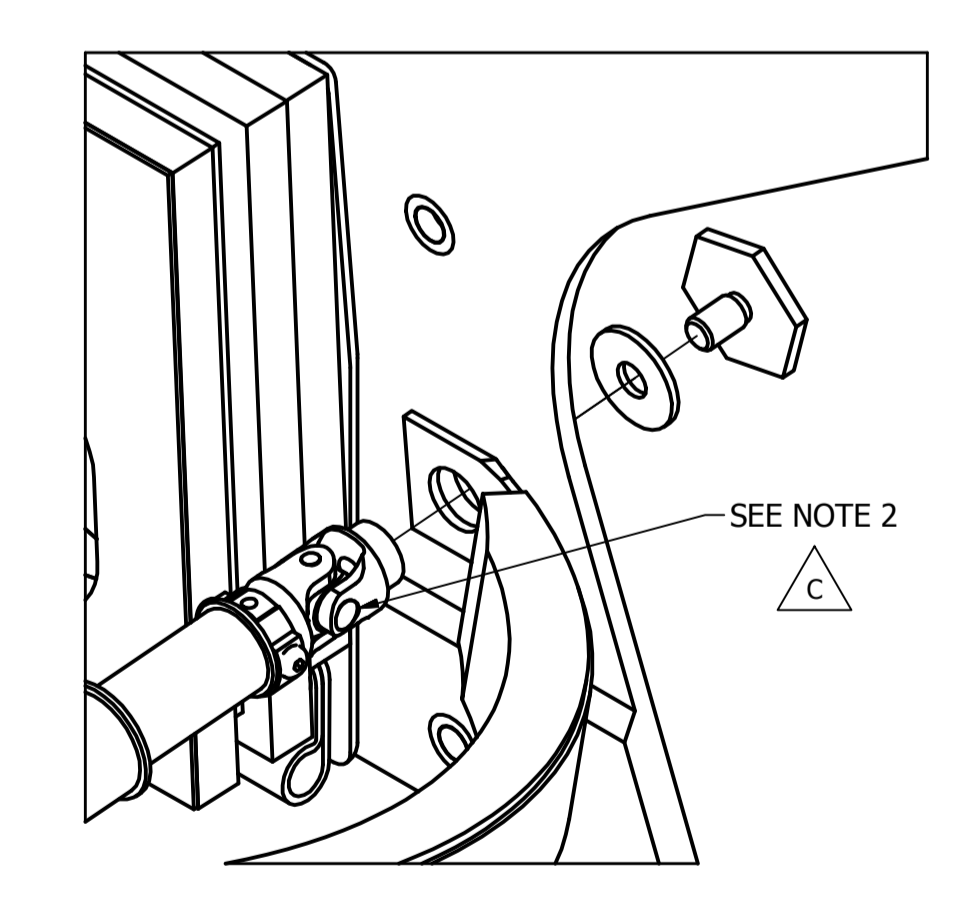
PROJECT NO.: 472-2000	QTY: 1	MATERIAL: Acetal Resin, Black	DATE: 9/7/2011	DRIVER BY: B. KIMES	REVISION: A	DESCRIPTION: LOWER NECK LOAD CELL BUMPER COVER
CHECKED BY:	HEAT TREAT:	FINISH:	DATE: 1/9/2012	ENGINEER: J. WANG	SCALE: 2.000	SIZE: SHEET A3 1 OF 1
TOTAL QTY IN DUMMY:	1					DRAWING NO.: 472-2001

REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1TXM000 R01 FOR THOR-M;	10/17/2011	BK
	B	5000989 QTY 8 WAS 5000151; ADD 472-3520 QTY 2, 472-3518 QTY 2 WAS 4; REMOVE 5000614 QTY 10, 5000454 QTY 14 WAS 4	7/20/2012	BK
	C	ADD 5000151 QTY 4; 5000989 QTY 4 WAS 8; UPDATE TO SHOW SPINEBOX CHANGES	10/12/2012	BK
	D	ADDED NOTE 3 AND SEE NOTE 3 TO VIEW; UPDATE BOM TO NEW PART DESCRIPTIONS FOR 472-3520, 472-3518	7/11/2012	BK
	E	ITEM NUMBER 16 WAS PART #472-3100 - SHOULDER MECHANICAL ASSEMBLY, REMOVED NOTE 1, PART NUMBERS 19 - 9003743 - WASHER, 1/4 x 3/4 x 1/8 REINFORCED RUBBER AND PART NUMBER 22 - PART #5000003 - M5 x 0.8 x 10 LG. BHCS.; REVISED ITEM #28 472-3550 - ITRACC ASSEMBLY, UPPER LEFT, ITEM #29 472-3560 - ITRACC ASSEMBLY, UPPER RIGHT, ITEM #30 472-3570 - ITRACC ASSEMBLY, LOWER RIGHT & ITEM #31 472-3580 - ITRACC ASSEMBLY, LOWER LEFT	6/2/2014	DW



RIBS AND BIB REMOVED TO SHOW INTERIOR ASSEMBLIES

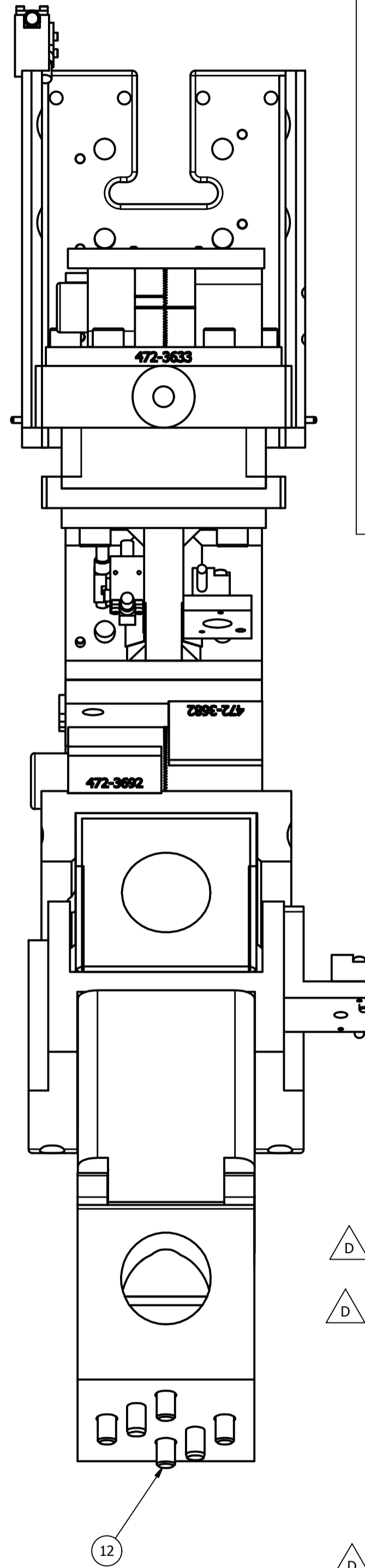
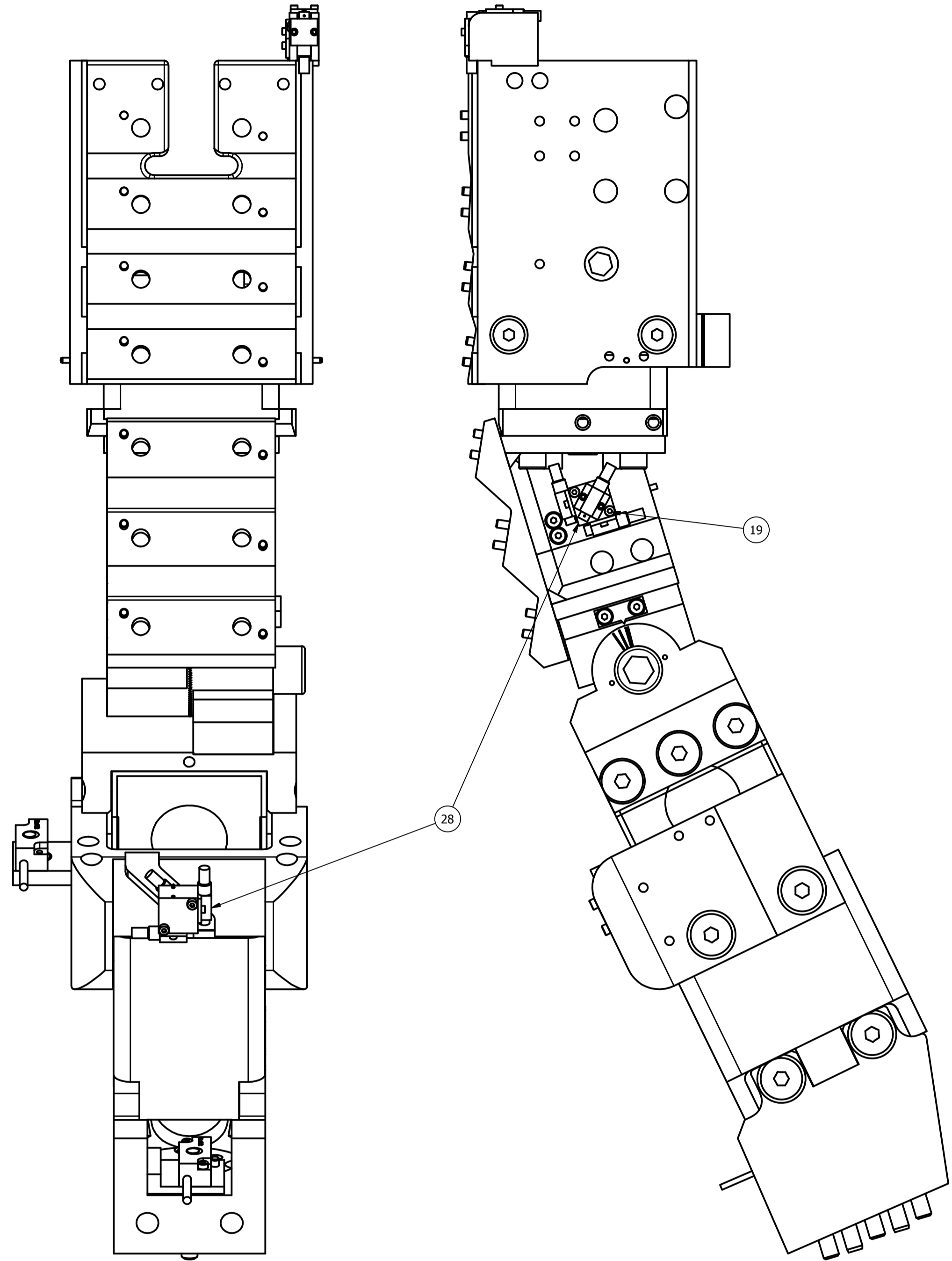
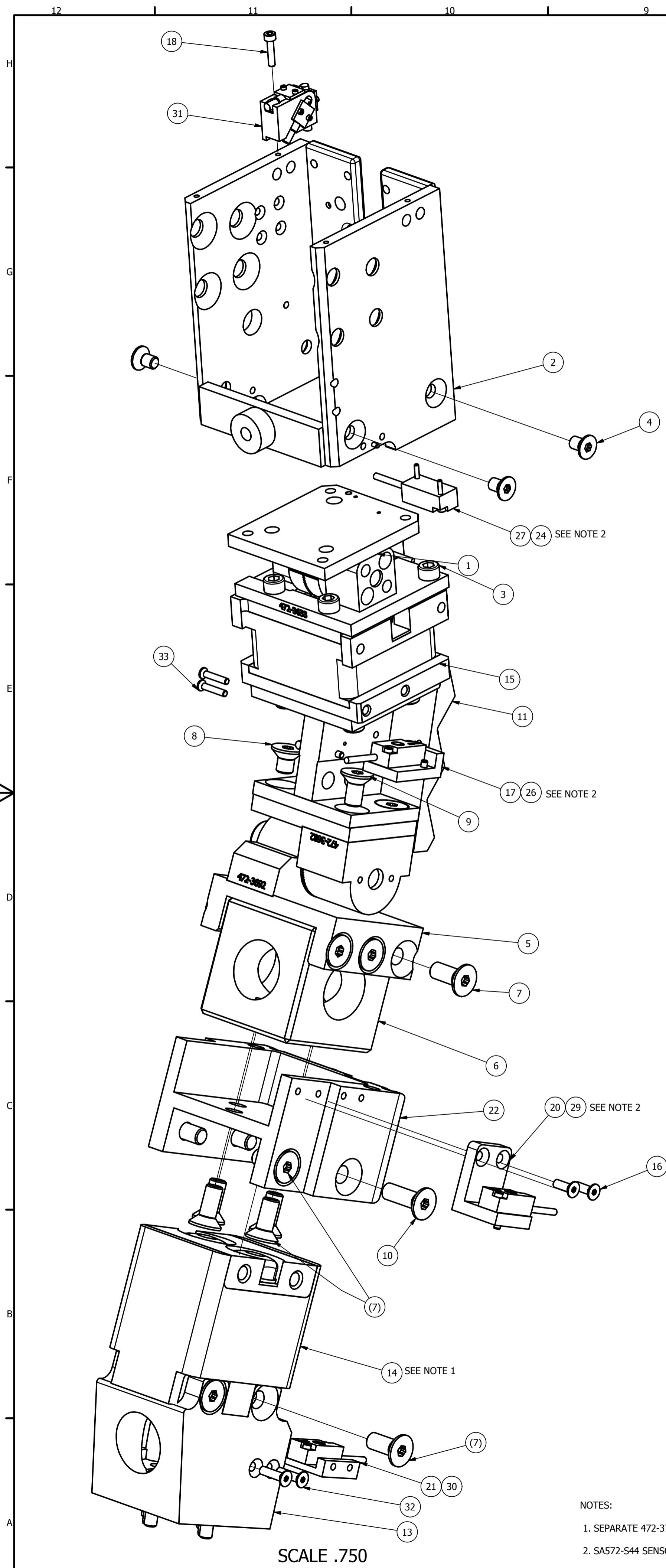


ITRACC ASSEMBLY SCALE 1.000

ITEM	QTY	PART NUMBER	DESCRIPTION
38	4	5000151	M4 X 0.7 X 10 LG. SHCS
37	2	472-3518	ITRACC CONNECTING BOLT, UPPER THORAX
36	14	5001126	M5 FLAT WASHER LARGE OD SS
35	10	5000513	CLIP NUT, M5 (MONADNOCK #130300-M5-1)
34	2	5001127	M10 X 1.5 X 25 LG. FHCS
33	4	5000989	M4 X 0.7 X 8 LG. SHCS
32	1	472-4700	LOWER ABDOMEN MECHANICAL ASSY
31	1	472-3580	ITRACC ASSEMBLY, LOWER LEFT
30	1	472-3570	ITRACC ASSEMBLY, LOWER RIGHT
29	1	472-3560	ITRACC ASSEMBLY, UPPER RIGHT
28	1	472-3550	ITRACC ASSEMBLY, UPPER LEFT
27	2	5000117	M8 X 1.25 X 25 LG. FHCS
26	1	472-4600	UPPER ABDOMEN ASSEMBLY
25	2	5000214	M5 X 0.8 X 6 LG. BHCS
24	2	9003723	1/4 COATED CABLE CLAMP
23	2	472-3520	ITRACC CONNECTING BOLT, LOWER THORAX
22	6	5000210	M5 X 0.8 X 20 LG. BHCS
21	2	5000654	M5 X 0.8 X 12 LG. BHCS
20	2	5000571	M5 X 0.8 X 22 LG. BHCS
19	1	472-3517	THORAX RIB #1 DUMMY LIFT STRAP
18	1	472-3400	THORAX BIB ASSEMBLY
17	14	5000454	M8 X 1.25 X 10 LG. BHCS
16	1	472-3800	SHOULDER ASSEMBLY
15	1	472-3516	THORAX ELLIPTICAL RIB STIFFENER #7
14	1	472-3515	THORAX ELLIPTICAL RIB STIFFENER #6
13	1	472-3514	THORAX ELLIPTICAL RIB STIFFENER #5
12	1	472-3513	THORAX ELLIPTICAL RIB STIFFENER #4
11	1	472-3512	THORAX ELLIPTICAL RIB STIFFENER #3
10	1	472-3511	THORAX ELLIPTICAL RIB STIFFENER #2
9	1	472-3510	THORAX ELLIPTICAL RIB STIFFENER #1
8	1	472-3370	THORAX ELLIPTICAL RIB #7 - ASSEMBLY
7	1	472-3360	THORAX ELLIPTICAL RIB #6 - ASSEMBLY
6	1	472-3350	THORAX ELLIPTICAL RIB #5 - ASSEMBLY
5	1	472-3340	THORAX ELLIPTICAL RIB #4 - ASSEMBLY
4	1	472-3330	THORAX ELLIPTICAL RIB #3 - ASSEMBLY
3	1	472-3320	THORAX ELLIPTICAL RIB #2 - ASSEMBLY
2	1	472-3310	THORAX ELLIPTICAL RIB #1 - ASSEMBLY
1	1	472-3600	SPINE MECHANICAL ASSEMBLY

- NOTES:
- 1. INSERT THE THORAX ELLIPTICAL RIB #1 ASSEMBLY (472-3110) AND THORAX ELLIPTICAL RIB STIFFENER (472-3510) THROUGH STRAP BEFORE ASSEMBLING.
  - 2. ORIENT THE U-JOINT AS SHOWN, WITH THE PIVOT PINS IN THE VERTICAL AND HORIZONTAL DIRECTION.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-0000	1	REVISED BY	B. KIMES	DATE	10/17/2011
NEXT ASSEMBLY	QTY	DESIGNED BY	J. WANG	DATE	11/17/2012
TOTAL QTY IN DUMMY	1	THORAX MECHANICAL ASSEMBLY		472-3000	1 of 1



NOTES:  
 1. SEPARATE 472-3760 FROM 472-3740 AND ASSEMBLE THE M6 X 20 SHCS TO MOUNT THE SPINE ASSEMBLY TO THE PELVIS.  
 2. SA572-544 SENSORS ARE SHOWN, SA572-5113 SENORS CAN BE MOUNTED INSTEAD.

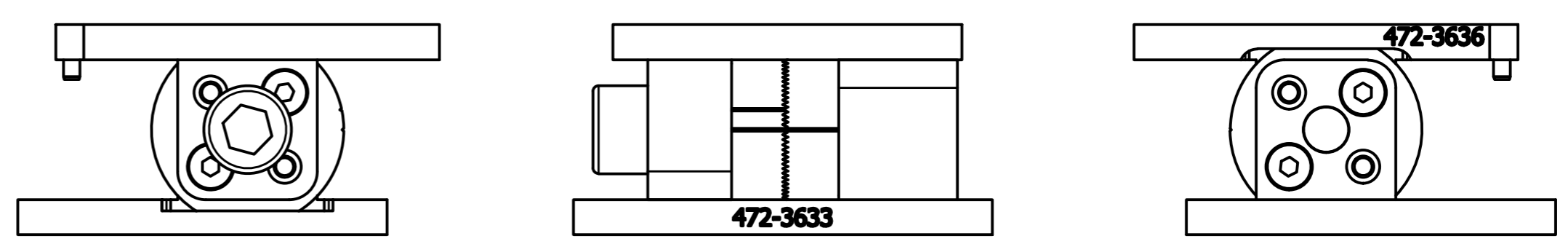
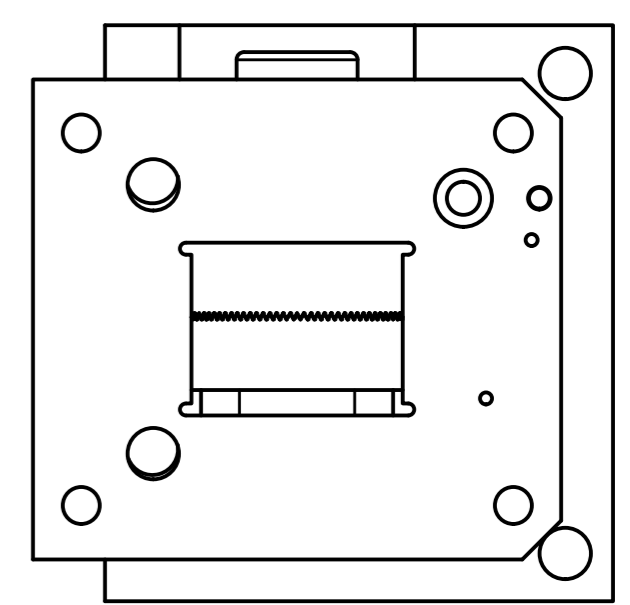
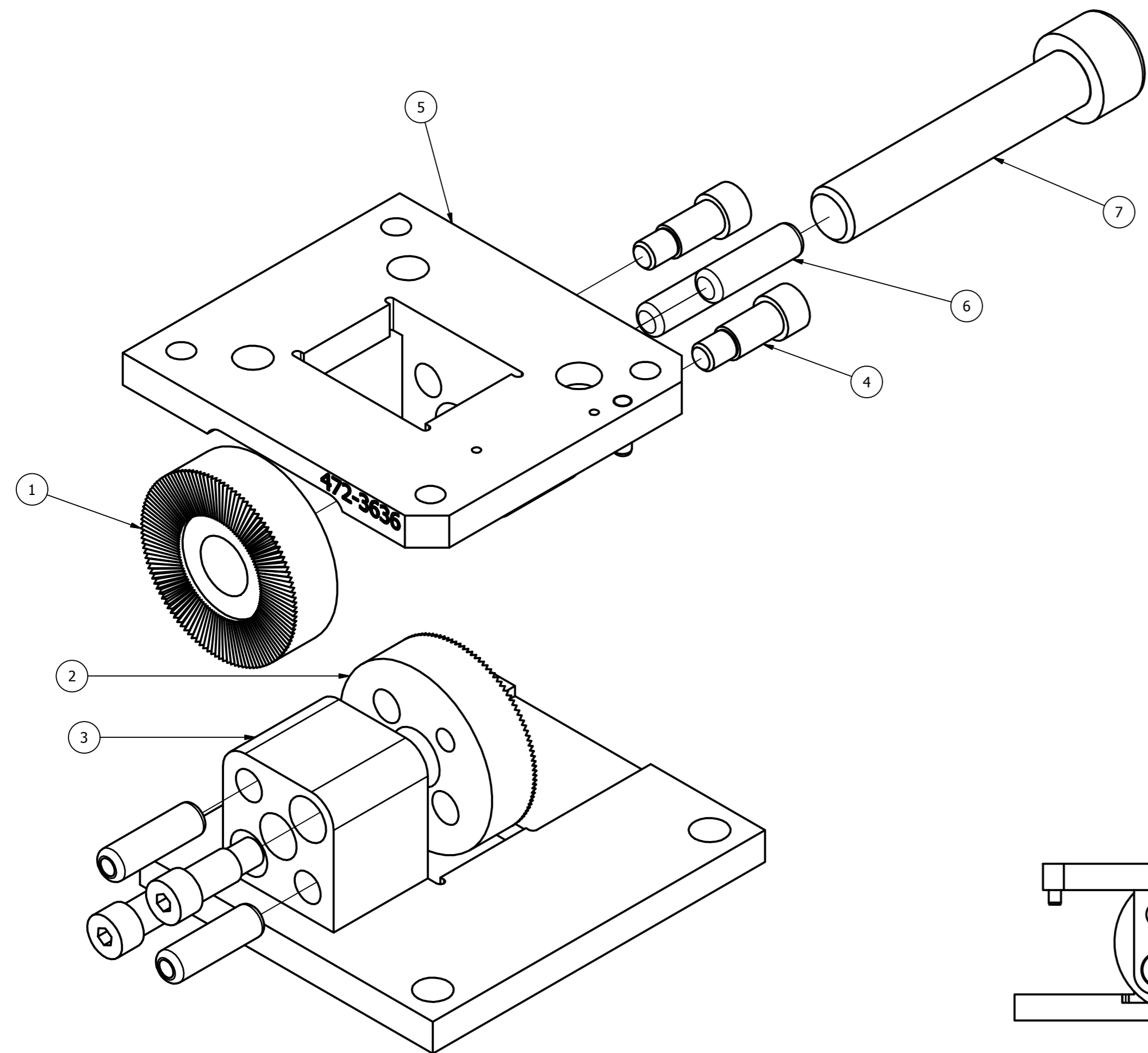
SCALE .750

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM000 R6 AND CONVERTED TO METRIC FOR THOR-M	9/29/2011	BK
	B	UPDATE TO SHOW SPINEBOX CHANGES	10/12/2012	BK
	C	ADDED ITEM #33, T1 ACCEL. MOUNT, PART NUMBER 472-3857	9/9/2014	DW
	D	ITEM #16 PART # 5000326 - SCREW, FHCS M4-0.7 x 12 WAS PART #5000152 - M4 x 0.7 x 12 LG. SHCS; QTY. OF ITEM #18 PART #5000252 - SCREW, SHCS M3-0.5 x 14LG WAS 3, QTY. OF ITEM 24 PART #5000151 - M4 x 0.7 X 10 LG. SHCS WAS 3; QTY OF ITEM #28 PART #SA572-5113 - TILT SENSOR AND ITEM #29 PART #SA572-544 - TILT SENSOR WAS 3; ITEM #31 DESCRIPTION WAS TILT SENSOR ASSY, REAR THORACIC (SA572-5123), ITEM 32 DESCRIPTION WAS TILT SENSOR ASSY, THORACIC SPINE (SA572-5123); ADDED ITEM #34 PART# 5000023 - SCREW, FHCSM4-0.7 x 10, AND ITEM #35 Part #5000378V - SCREW, FHCS M3-0.5 x 14; PART #5000447 - SCREW, FHCS M4-0.7 x 16 WAS PART #5000646 - SCREW, FHCS M4-0.7 x 8; PART #5000354V - SCREW, FHCS M3-0.5 x 16 WAS PART #5000378V - SCREW, FHCS M3-0.5 x 14; PART #472-3778 - LOWER NECK TILT SENSOR ASSY. WAS PART #472-3635 - LOWER NECK TILT SENSOR MOUNT; REMOVED PART #SA572-5113 - TILT SENSOR; IN NOTE 2 SA572-544 WAS SA572-5123; DESCRIPTION OF PART #472-3775-1 WAS TILT SENSOR ASSEMBLY, T6, SA572-5113 & SA572-544, PART #472-3776-1 WAS TILT SENSOR ASSY., T12, SA572-5113 & SA572-544, PART #472-3777-1 WAS TILT SENSOR ASSY., PELVIS, SA572-5113 & SA572-544, PART #472-3775-2 WAS TILT SENSOR ASSEMBLY, T6, SA572-544; ADDED PART #SA572-127 - THORACIC SPINE LOAD CELL (OPTIONAL); SHOW TILT SENSORS SA572-544 AS DEFAULT AND SA572-5113 AS OPTIONAL	9/14/2015	DW

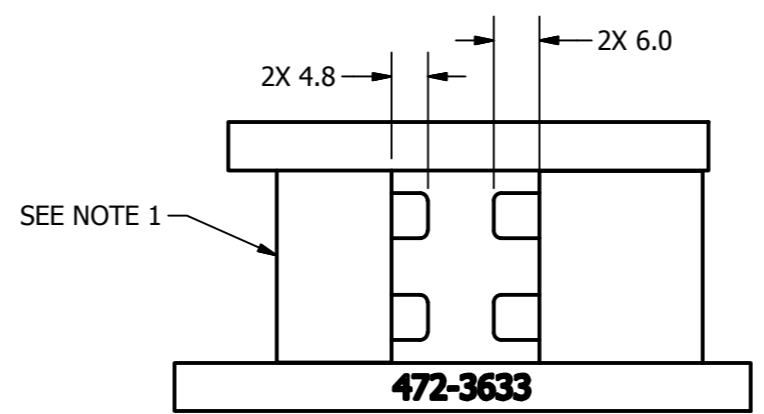
ITEM	QTY	PART NUMBER	DESCRIPTION
34	1	SA572-5127	THORACIC SPINE LOAD CELL (OPTIONAL)
33	2	5000354V	SCREW, FHCS M3-0.5 x 16
32	2	5000447	SCREW, FHCS M4-0.7 x 16
31	1	472-3857	T1 ACCEL. MOUNT ASSEMBLY
30	1	472-3777-2	TILT SENSOR ASSY., PELVIS, SA572-544
29	1	472-3776-2	TILT SENSOR ASSY., T12, SA572-544
28	2	472-4203	TRI-PACK ACCEL ASSY
27	1	SA572-544	TILT SENSOR, DUAL AXIS
26	1	472-3775-2	TILT SENSOR ASSEMBLY, T6, SA572-544
25	2	5001137	M2 X 0.4 X 14 LG. SHCS
24	1	472-3778	LOWER NECK TILT SENSOR ASSY.
23	1	5000151	M4 X 0.7 X 10 LG. SHCS
22	1	472-3731	THORACIC SPINE LOAD CELL FLEX JOINT ADAPTOR PLATE
21	1	472-3777-1	TILT SENSOR ASSY., PELVIS, SA572-5113
20	1	472-3776-1	TILT SENSOR ASSY., T12, SA572-5113
19	4	5000985	M2 X 0.4 X 16 LG. SHCS
18	1	5000252	SCREW, SHCS M3-0.5 x 14 LG.
17	1	472-3775-1	TILT SENSOR ASSEMBLY, T6, SA572-5113
16	2	5000326	SCREW, FHCS M4-0.7 x 12
15	1	472-3646	UPPER THORACIC SPINE FLEX JOINT ASSEMBLY
14	1	472-3746	LUMBAR SPINE FLEX JOINT ASSEMBLY
13	1	472-3760	PELVIS/LUMBAR MOUNTING BLOCK ASSEMBLY
12	4	5000001	M6 X 1 X 20 LG. SHCS
11	1	472-3650	LOWER THORACIC SPINE ASSEMBLY
10	2	5000117	SCREW, FHCS M8-1.25 x 25 LG.
9	2	5001091	SCREW, FHCS M8-1.25 x 16
8	2	5001090	SCREW, FHCS M8-1.25 x 12
7	16	5000868	SCREW, FHCS M8-1.25 x 20
6	1	472-3720	THORACIC SPINE LOAD CELL STRUCTURAL REPLACEMENT
5	1	472-3670	LUMBAR SPINE PITCH CHANGE ASSEMBLY
4	4	5000204	SCREW, FHCS M6-1 x 10
3	8	5000281	SCREW, SHCS M6-1 x 12
2	1	472-3620	UPPER THORACIC SPINEBOX WELDMENT
1	1	472-3630	NECK PITCH CHANGE MECHANISM ASSEMBLY

PARTS LIST		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-0000	1	DATE	9/29/2011	PROJECT	SPINE MECHANICAL ASSEMBLY
NEXT ASSEMBLY	QTY	DESIGNED BY	B. KIMES	DRAWN BY	J. WANG
TOTAL QTY IN DUMMY	1	CHECKED BY		DATE	11/16/2012

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM200 R10 AND CONVERTED TO METRIC FOR THOR-M	9/27/2011	BK
	B	REVISED OART #472-3636 - NECK PITCH CHANGE MECHANISM TOP PLATE	9/14/2015	DW



SCALE 1.500

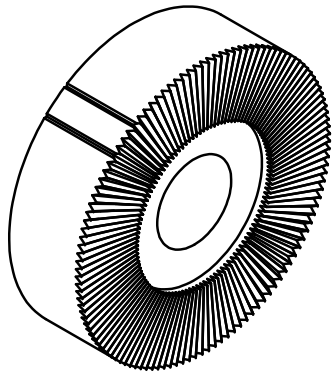


STAR PATTERN MECHANISMS AND BOLTS HIDDEN TO SHOW DOWELS  
SCALE 1.000

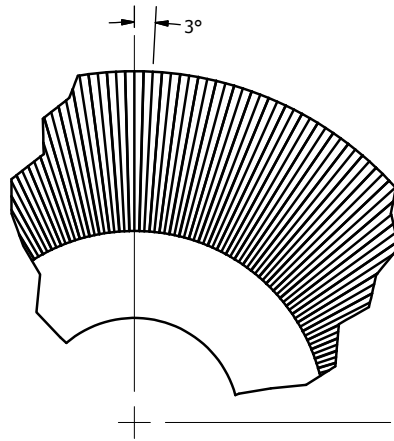
- NOTES:
- INSTALL THESE DOWELS (2X) FLUSH OR BELOW SURFACE.
  - THREADED END OF DOWELS SHOULD FACE OUT, AS SHOWN.

ITEM	QTY	PART NUMBER	DESCRIPTION
7	1	5001132	M10 X 1.5 X 55 LG. SHCS
6	4	5000445	DOWEL PIN, PULL OUT M6 X 20
5	1	472-3636	NECK PITCH CHANGE MECHANISM TOP PLATE
4	4	472-3634	NECK PITCH CHANGE MECHANISM BOLT
3	1	472-3633	NECK PITCH CHANGE MECHANISM BASE PLATE
2	1	472-3631	NECK PITCH CHANGE MECHANISM, STAR PATTERN 2
1	1	472-3632	NECK PITCH CHANGE MECHANISM, STAR PATTERN 1

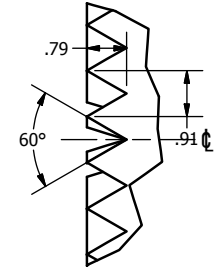
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH	
PROJECT NO: THOR-M		MATERIAL: 304 SS	
DRAWN BY: B. KIMES		DATE: 9/27/2011	
CHECKED BY: J. WANG		DATE: 1/16/2012	
REMOVED BURS & BREAK SHARP EDGES		DESCRIPTION: NECK PITCH CHANGE MECHANISM ASSEMBLY	
462-3600	1	SIZE: A2	1 OF 1
NEXT ASSEMBLY	QTY	SCALE: 1.000	DRAWING NO: 472-3630
TOTAL QTY IN DUMMY	1		REV: B



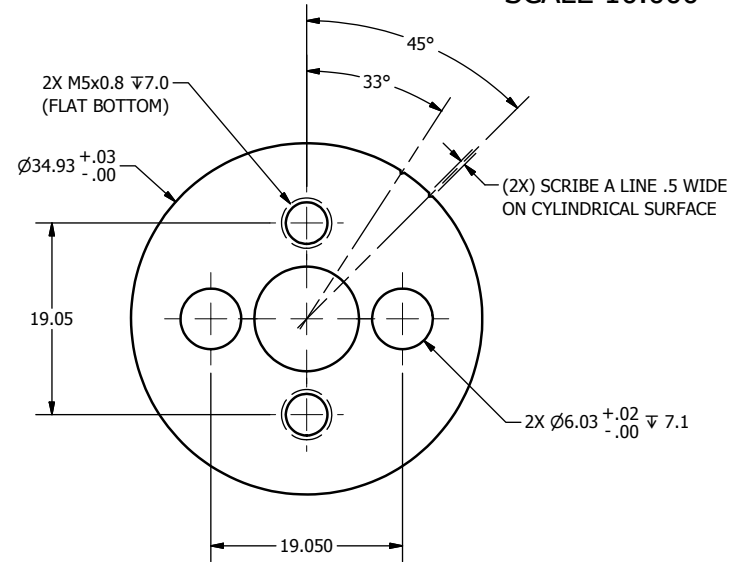
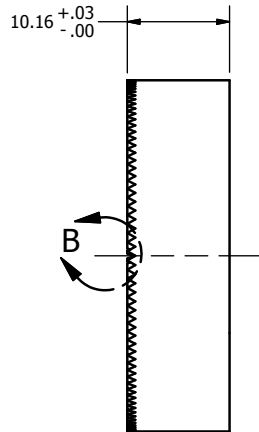
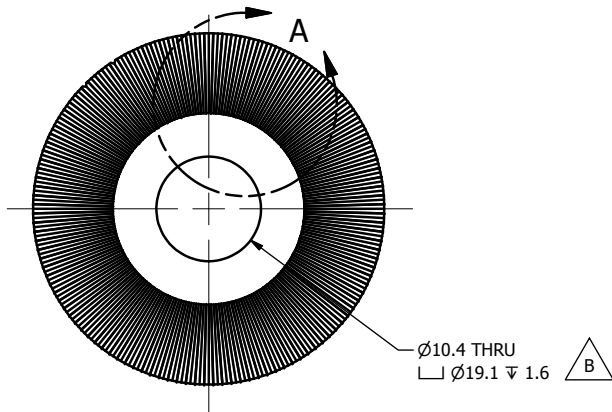
SCALE 2.000



DETAIL A  
SCALE 4.000



DETAIL B  
TOOTH PATTERN  
SCALE 10.000

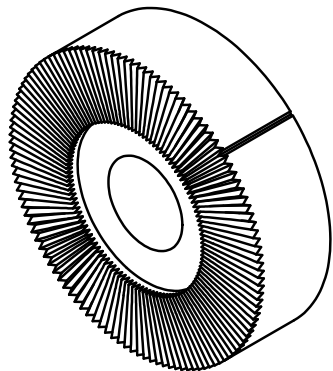


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM210 R4 AND CONVERTED TO METRIC FOR THOR-M;	9/26/2011	BK
	B	Ø10.4 WAS Ø9.53+.03/-0	3/15/2012	BK

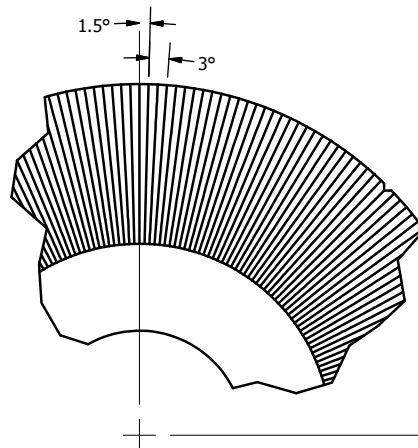
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\downarrow$ , UNLESS OTHERWISE NOTED.
2. FIRST CUT OF STAR PATTERN IS ALIGNED WITH VERTICLE; TOTAL OF 120 RADIAL LINES ARE REQUIRED FOR THE STAR PATTERN.

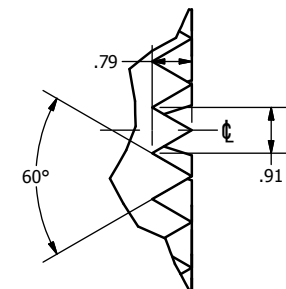
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 ✓ X.X ± 0.2 ✓ X.XX ± 0.3 ✓ X.XXX ± 0.01 ✓		
PROJECT NO:	473-3630	MATERIAL:	Stainless Steel, 440C	DESCRIPTION:
REVISED BY:	1	HEAT TREAT:	Rc 56-59	NECK PITCH CHANGE MECHANISM, STAR PATTERN 1
CHECKED BY:	B. KIMES	DATE:	9/26/2011	SIZE: SHEET
ENGINEER:	J. WANG	DATE:	1/16/2012	A3 1 OF 1
TOTAL QTY IN DUMMY	1	FINISH:		SCALE: 1.000
				DRAWING NO:
				472-3632
				REV:
				B



SCALE 2.000

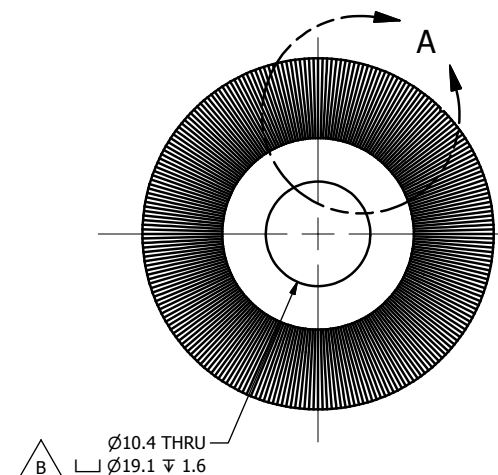
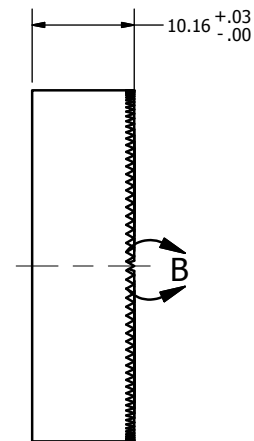
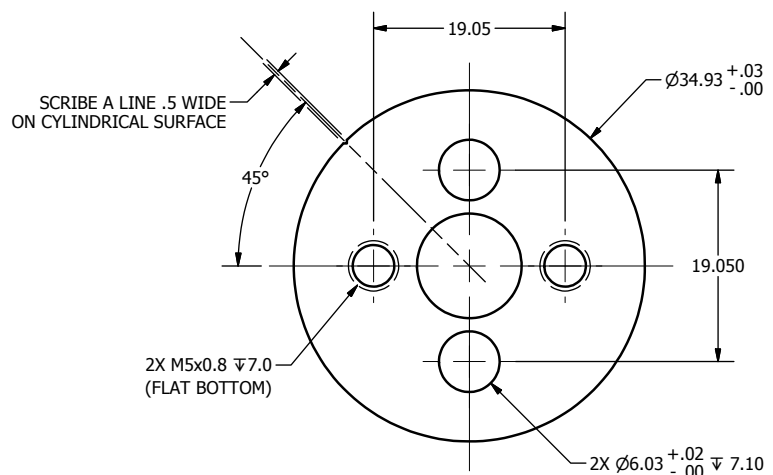


DETAIL A  
SCALE 4.000



DETAIL B  
TOOTH PATTERN  
SCALE 10.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM211 R3 AND CONVERTED TO METRIC FOR THOR-M	9/26/2011	BK
	B	Ø10.4 WAS Ø9.53+.03/-0	3/15/2012	BK

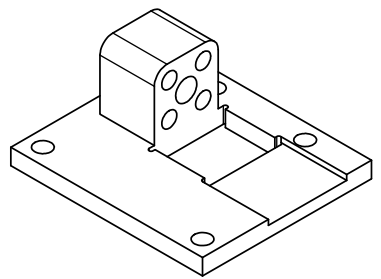


- NOTES:
- DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  - FIRST CUT OF STAR PATTERN IS OFFSET 1.5° FROM VERTICLE; TOTAL OF 120 RADIAL LINES ARE REQUIRED FOR THE STAR PATTERN.

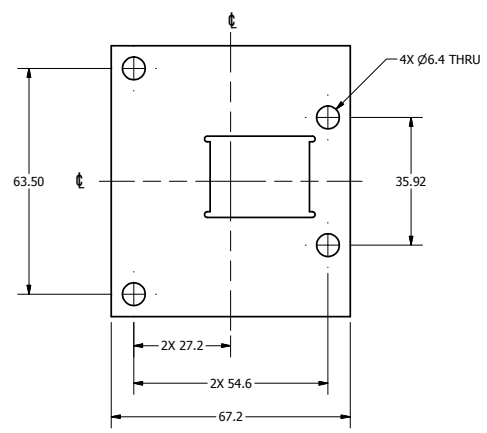
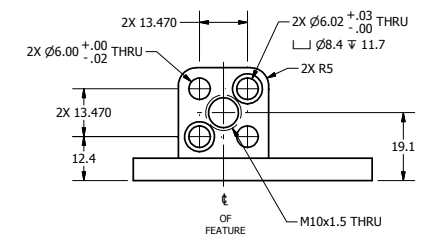
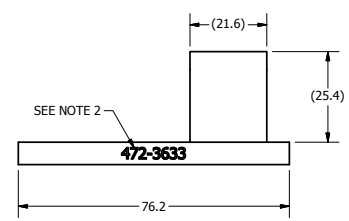
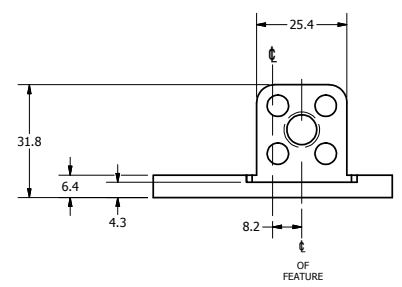
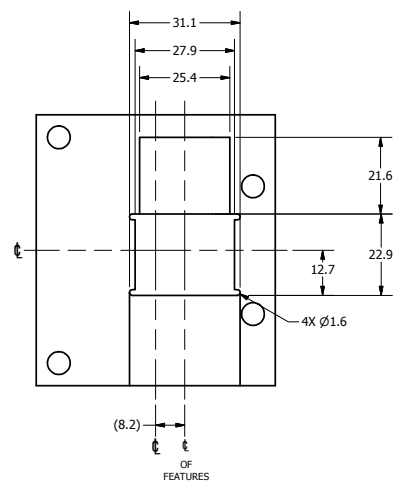
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X ±0.1 16 ✓ X.X ±0.2 ✓ X.XX ±0.3 ✓ X.XXX ±0.01 ✓		
PROJECT NO:	472-3630	MATERIAL:	Stainless Steel, 440C	DESCRIPTION:
QTY	1	HEAT TREAT:	Rc 56-59	NECK PITCH CHANGE MECHANISM, STAR PATTERN 2
TOTAL QTY IN DUMMY	1	CHECKED BY:	B. KIMES	DATE:
		ENGINEER:	J. WANG	DATE:
		FINISH:		DATE:
				SCALE: 1.000
				SIZE: A3
				SHEET: 1 OF 1
				DRAWING NO.: 472-3631
				REV: B



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM213 R10 AND CONVERTED TO METRIC FOR THOR-M	9/26/2011	BK



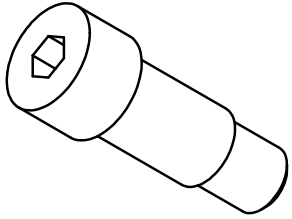
SCALE 1.000



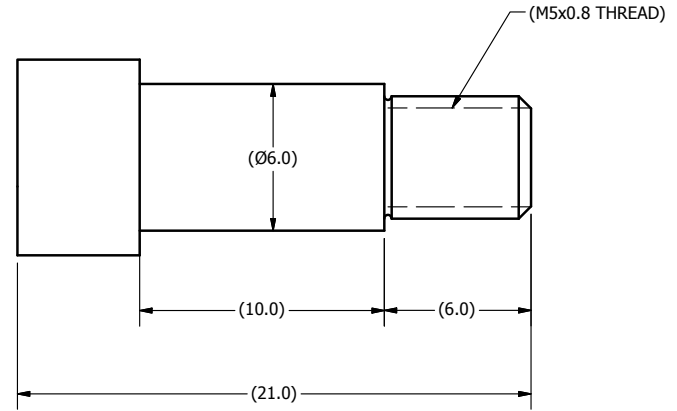
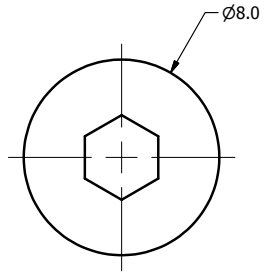
- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
  3. POWDER OR BEAD BLAST.
  4. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  5. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE 0.001mm FRACTIONS ARE 1/16" UNLESS NOTED OTHERWISE		SHOW HIDDEN & BREAK DIMB END		NECK PITCH CHANGE MECHANISM BASE PLATE	
472-3630	1	1018 STEEL	B. KIMES	9/26/2011	
NEXT ASSEMBLY	QTY	PREPARED BY	DATE	SCALE	
TOTAL QTY IN DUMMY	1	SEE NOTES	J. WANG	1/16/2012	1.000
					472-3633

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM220 R01 AND CONVERTED TO METRIC FOR THOR-M	11/16/2011	BK



SCALE 3.000



NOTES:

1. MAKE FROM M6 x 10 SHOULDER SCREW (5001122), MODIFY AS SHOWN.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X.X 0.05 0.5 F  
X.XX 0.1 0.5 F  
X.XXX 0.01 0.5 F



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: NECK PITCH CHANGE MECHANISM BOLT

PROJECT NO.	472-3630	MATERIAL:	4	DRAWN BY:	B. KIMES	DATE:	11/16/2011
NEXT ASSEMBLY	QTY	HEAT TREAT:		CHECKED BY:		DATE:	
TOTAL QTY IN DUMMY	4	FINISH:		ENGINEER:	J. WANG	DATE:	1/16/2012

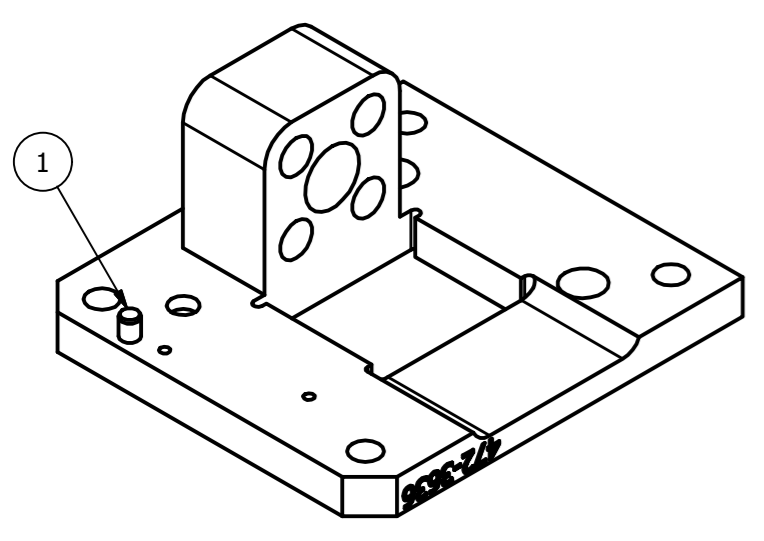
REMOVE BURRS & BREAK SHARP EDGES

SIZE: B SHEET 1 OF 1  
SCALE: 5.000

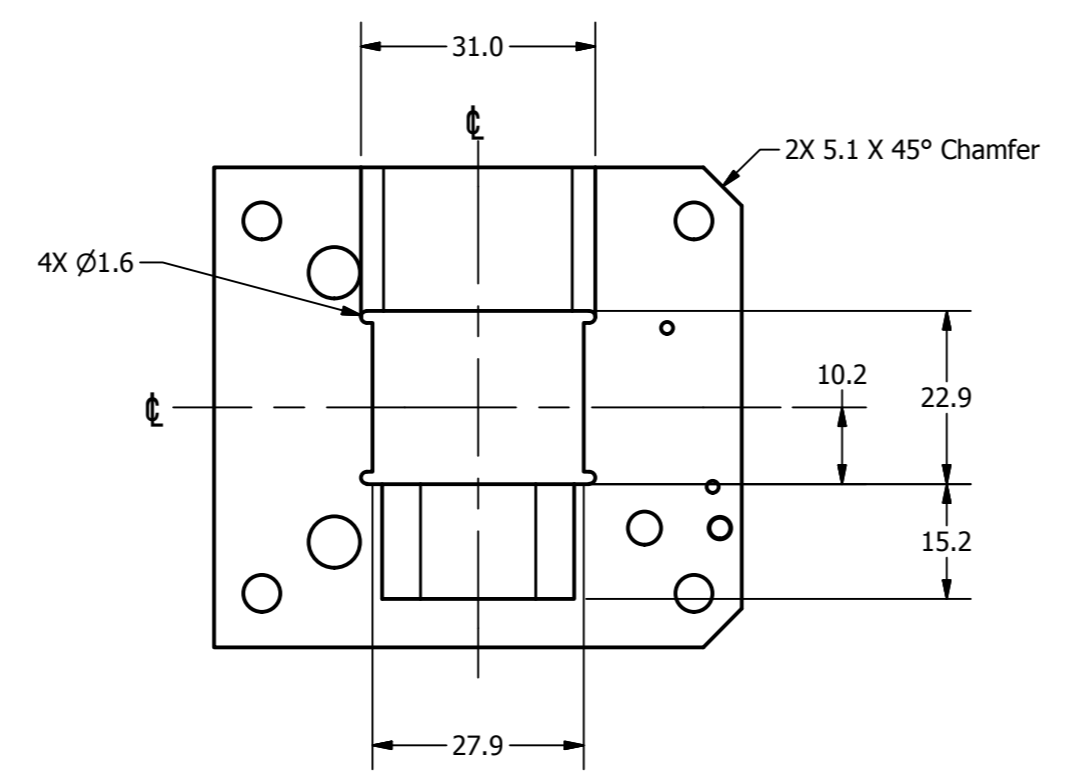
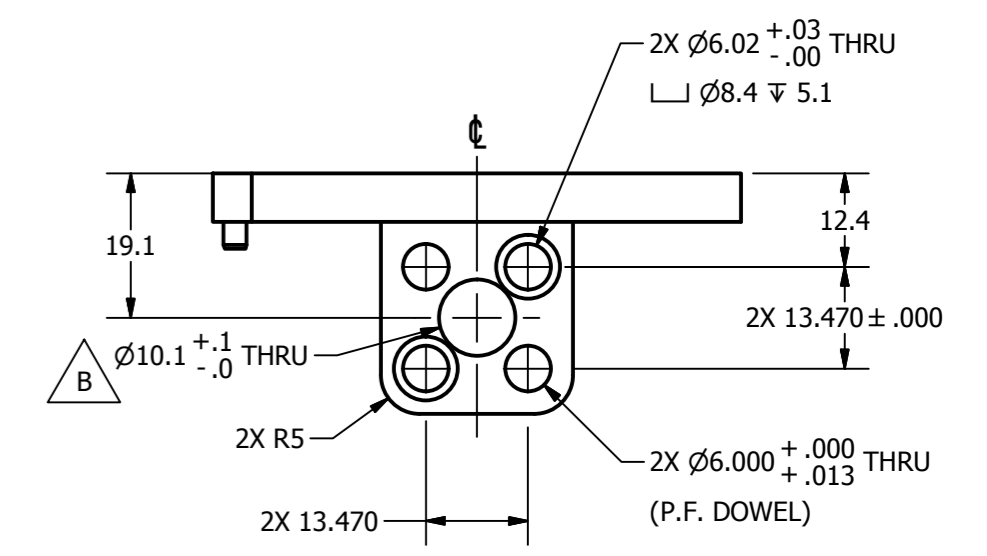
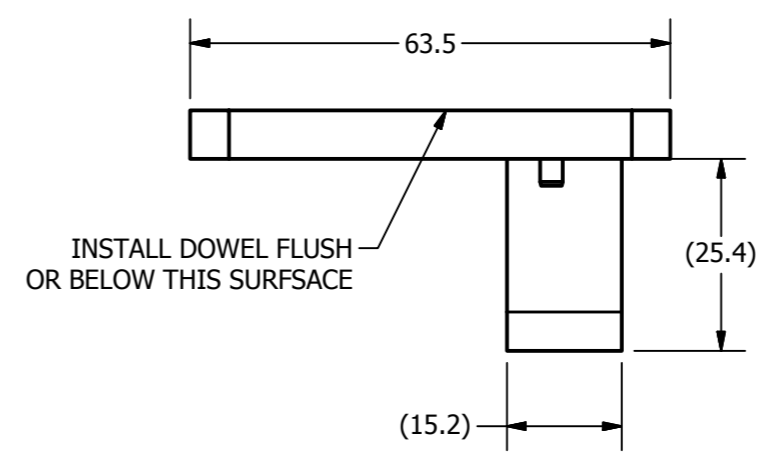
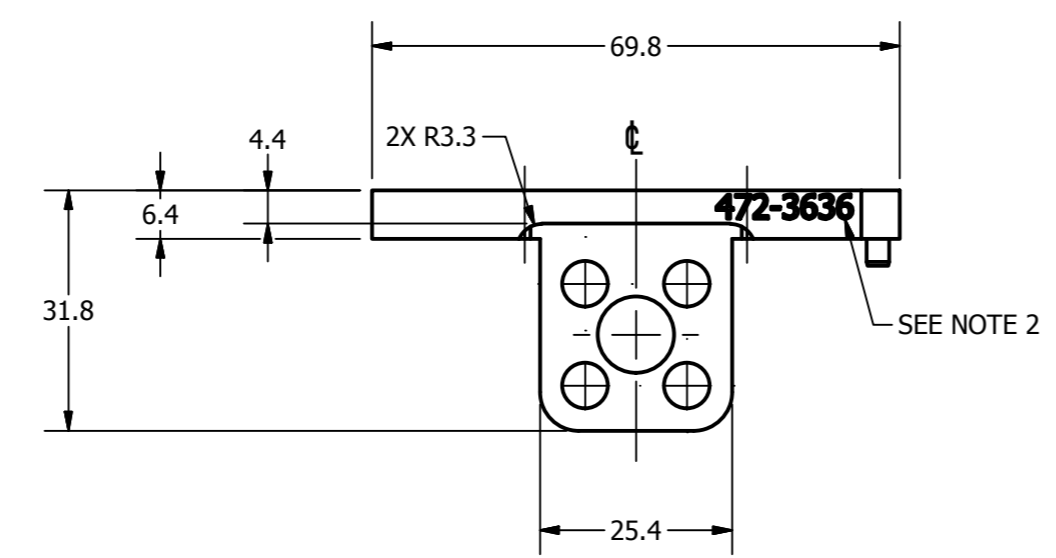
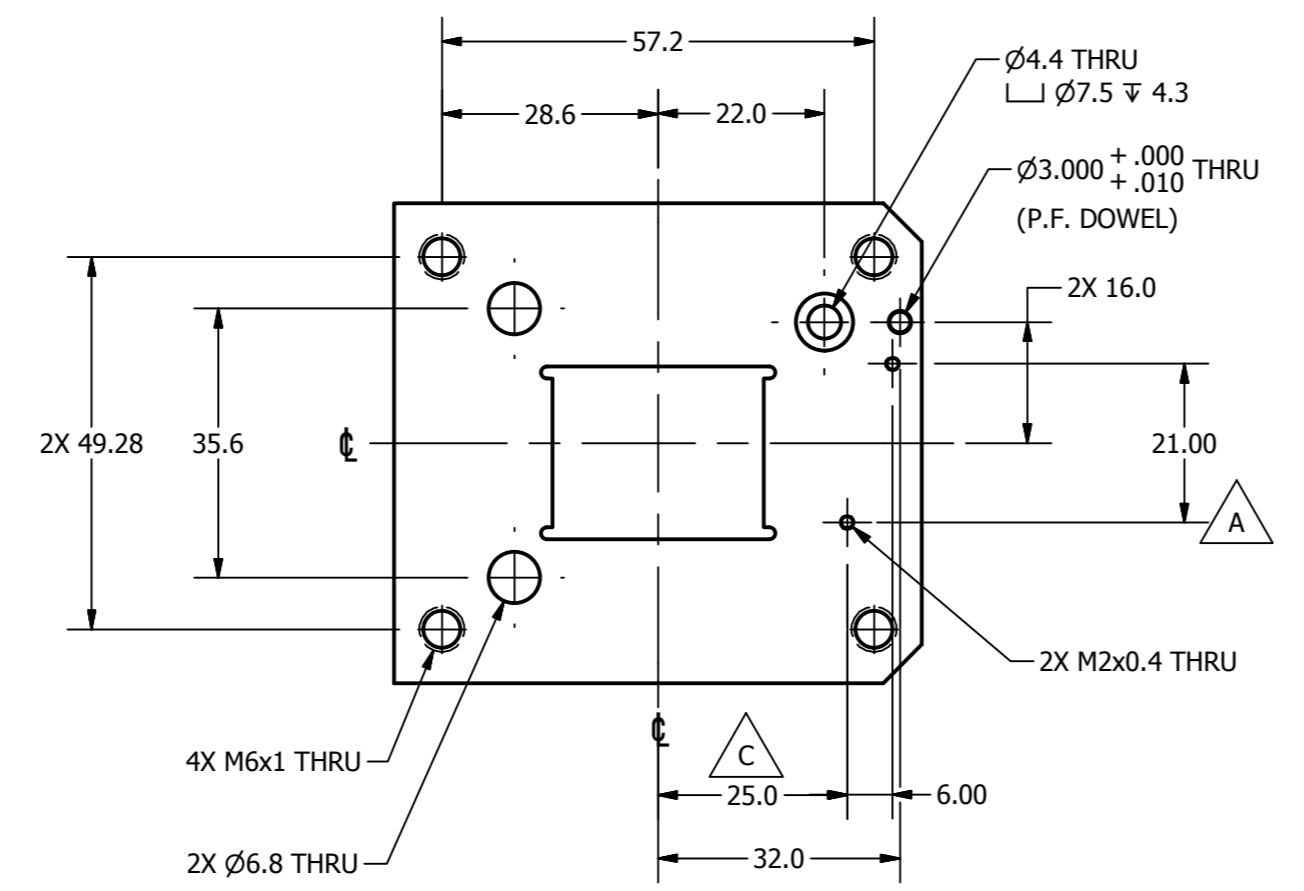
DRAWING NO.: 472-3634

REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM216 R15 AND CONVERTED TO METRIC FOR THOR-M; REORIENT IES SENSOR HOLES (M2)	9/26/2011	BK
	B	Ø10.1+0.1/-0 WAS Ø9.5	3/15/2012	BK
	C	DIMENSION 25.0 WAS 31.0	9/14/2015	DW



SCALE 1.000



- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
  3. POWDER OR BEAD BLAST.
  4. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  5. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.
  6. INSTALL DOWEL PIN AFTER PLATING.

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5000284	M3 X 10 LG. DOWEL PIN

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X ± 0.5 ± 0.5 1.6	
		XX ± 0.2 ± 0.2 1.6	
		XXX ± 0.1 ± 0.1 1.6	
		XXXX ± 0.0 ± 0.0 1.6	

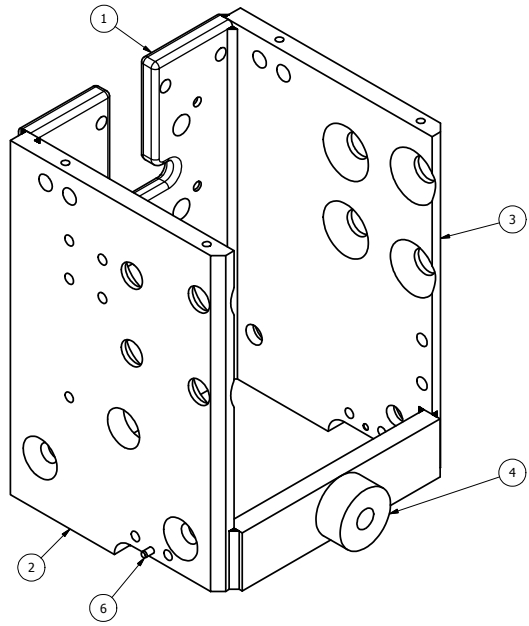
PROJECT NO:	THOR-M	DESIGNER:	B. KIMES	DATE:	9/26/2011
WORKSHEET:	1018 CRS	CHECKED BY:	J. WANG	DATE:	1/16/2012
NEXT ASSEMBLY:	QTY	ENGINEER:	J. WANG	DATE:	1/16/2012
TOTAL QTY IN DUMMY:	1	FINISH:	SEE NOTES	SCALE:	1.000

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

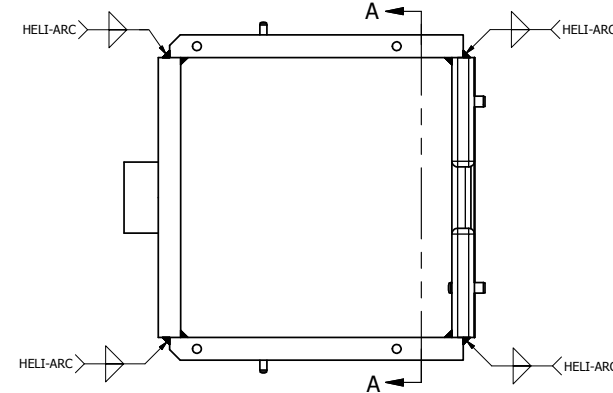
NECK PITCH CHANGE MECHANISM TOP PLATE

SIZE: A2 1 OF 1  
DRAWING NO: 472-3636

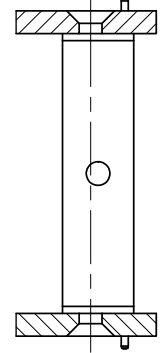
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T15PW120 R3; ADD FRONT PLATE, NICKEL PLATE WAS TEFLON COAT	9/28/2011	BK
	B	78.72 +.3/-0 WAS 78.7	6/25/2012	BK
	C	UPDATE TO SHOW SIDE PLATE CHANGES	10/12/2012	BK



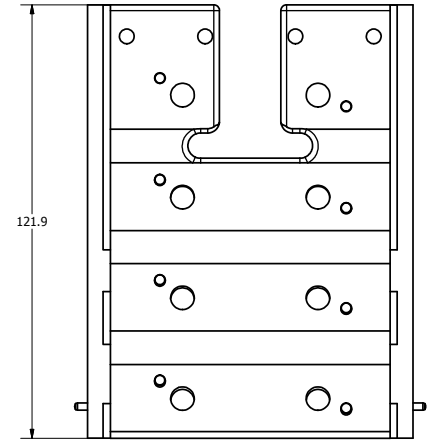
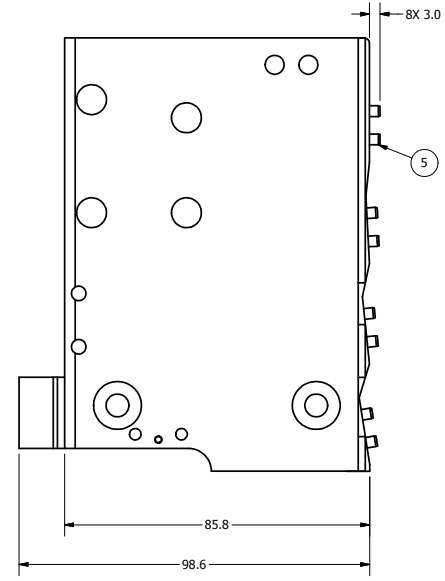
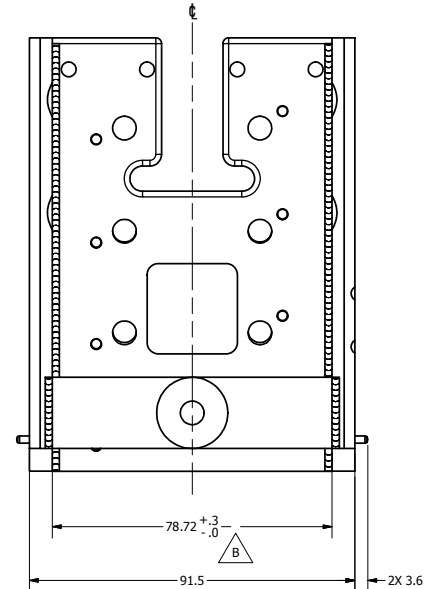
SCALE 1.000



HOLE  $\phi$ 'S PARALLEL WITHIN 0.10mm TOTAL



SECTION A-A  
SCALE 1.000



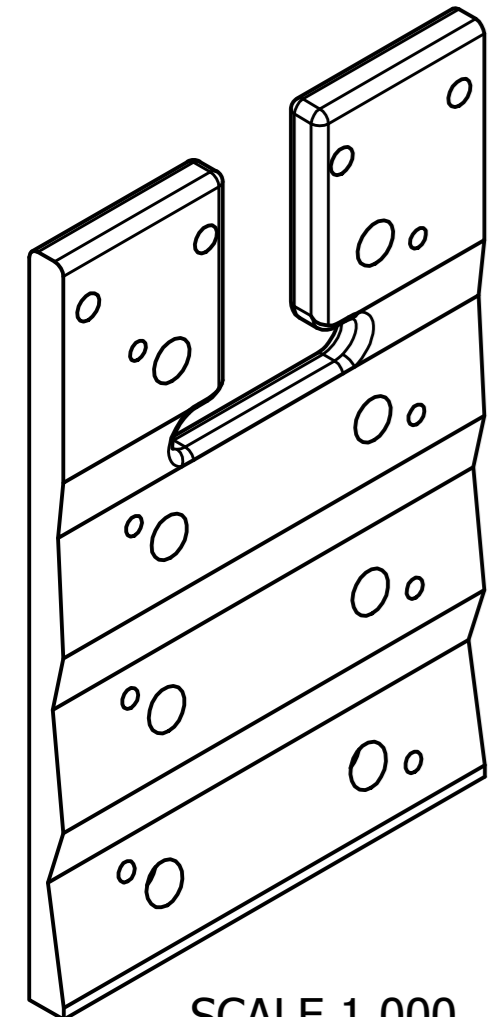
- NOTES:
- DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  - WELDMENT TOLERANCE  $\pm 0.5$ mm, UNLESS OTHERWISE NOTED.
  - POWDER OR BEAD BLAST.
  - NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER WELDING.
  - DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.
  - INSTALL DOWEL PINS AFTER NICKEL PLATE.

ITEM	QTY	PART NUMBER	DESCRIPTION
6	2	5000933	M2 X 10 LG. DOWEL PIN
5	8	5000384	M3 X 8 LG. DOWEL PIN
4	1	472-3624	UPPER THORACIC SPINE FRONT PLATE
3	1	472-3622	UPPER THORACIC SPINE SIDE PLATE, LEFT
2	1	472-3621	UPPER THORACIC SPINE SIDE PLATE, RIGHT
1	1	472-3623	UPPER THORACIC SPINE BACK PLATE

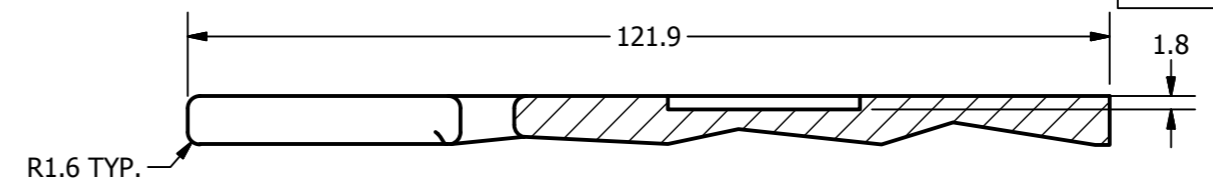
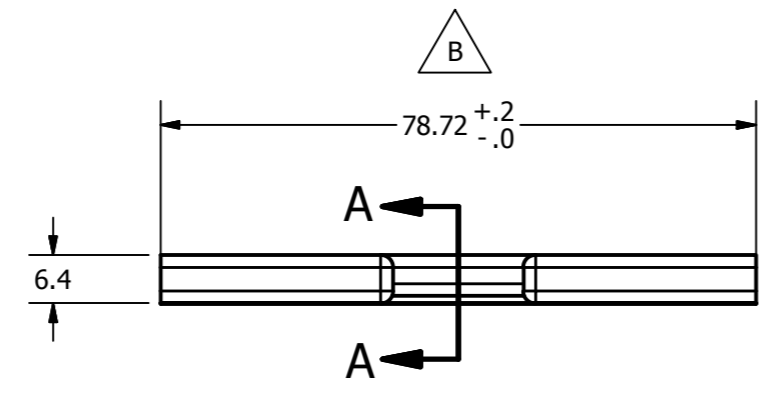
PARTS LIST  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
DIMENSIONS ARE IN MILLIMETERS DIMENSIONS ARE IN INCHES DECIMALS ARE IN THIRDS FRACTIONS ARE IN SIXTEENTHS UNLESS OTHERWISE SPECIFIED		DIMENSIONS ARE IN MILLIMETERS DIMENSIONS ARE IN INCHES DECIMALS ARE IN THIRDS FRACTIONS ARE IN SIXTEENTHS UNLESS OTHERWISE SPECIFIED		
472-3600	1	DATE	9/28/2011	UPPER THORACIC SPINEBOX WELDMENT SCALE 1.000
NEXT ASSEMBLY	QTY	DESIGNED BY	B. KIMES	
TOTAL QTY IN DUMMY	1	DATE	1/16/2012	
SEE NOTES		PREPARED BY	J. WANG	472-3620 1 OF 1

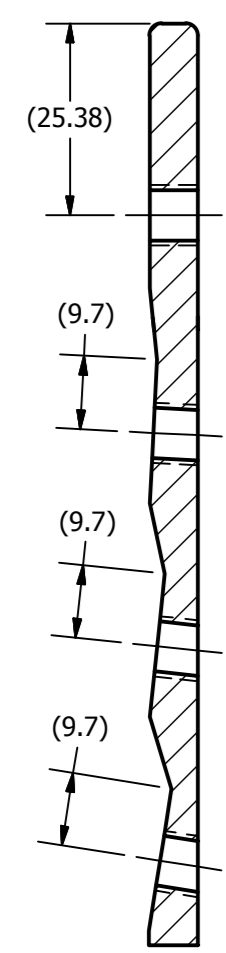
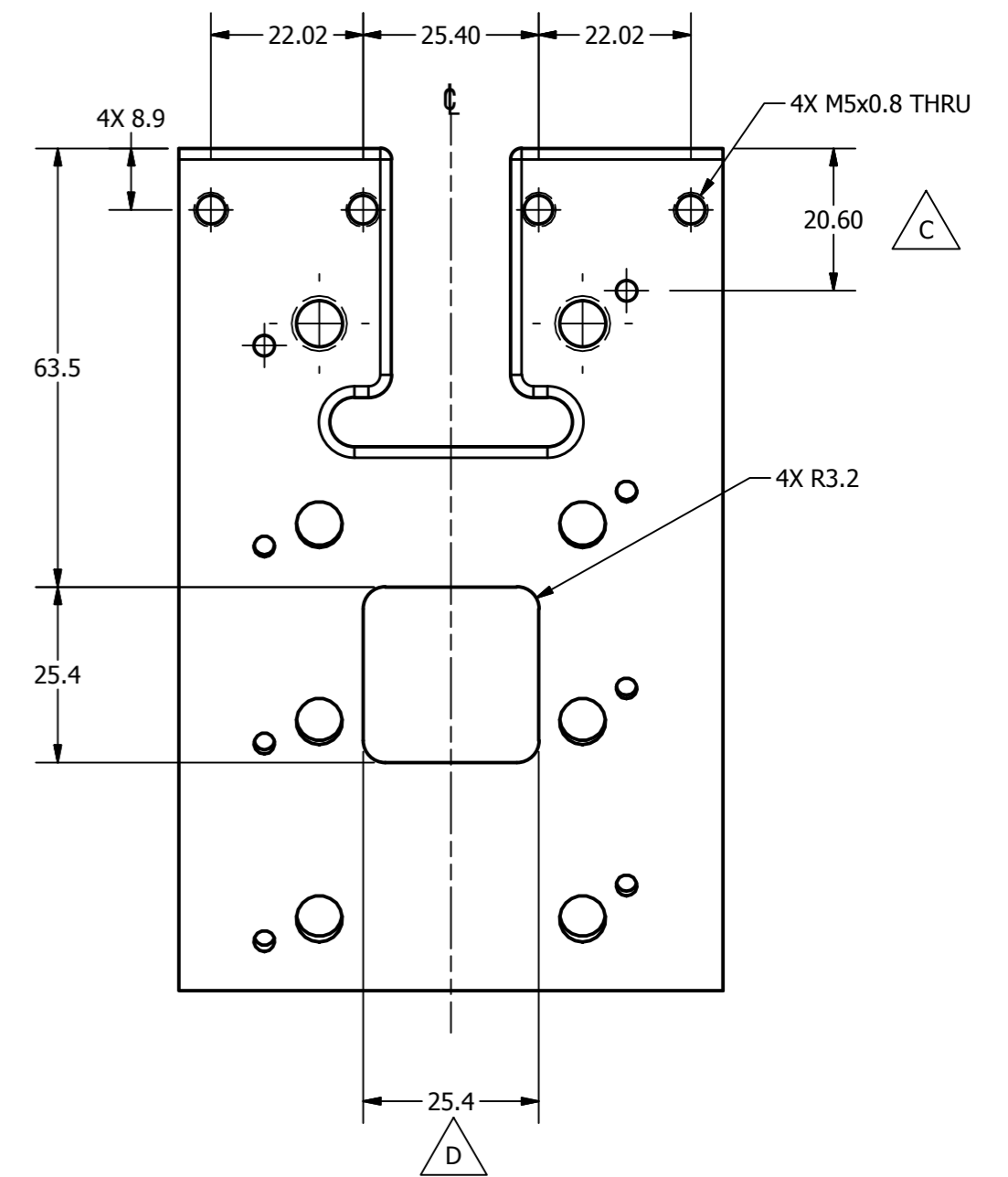
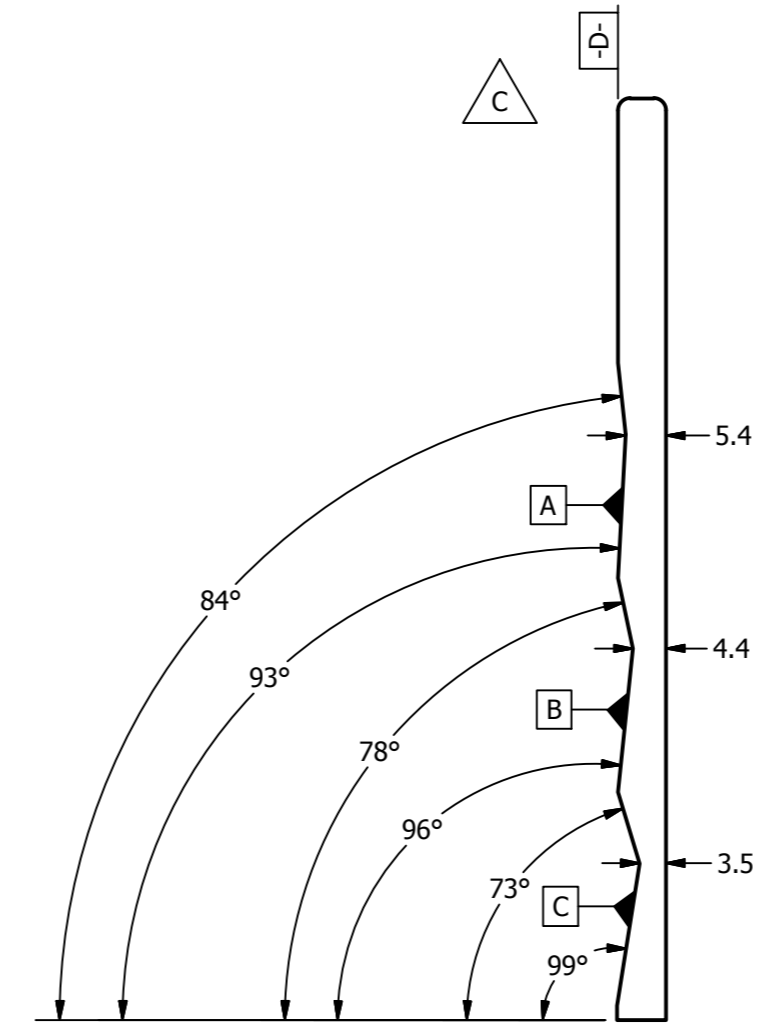
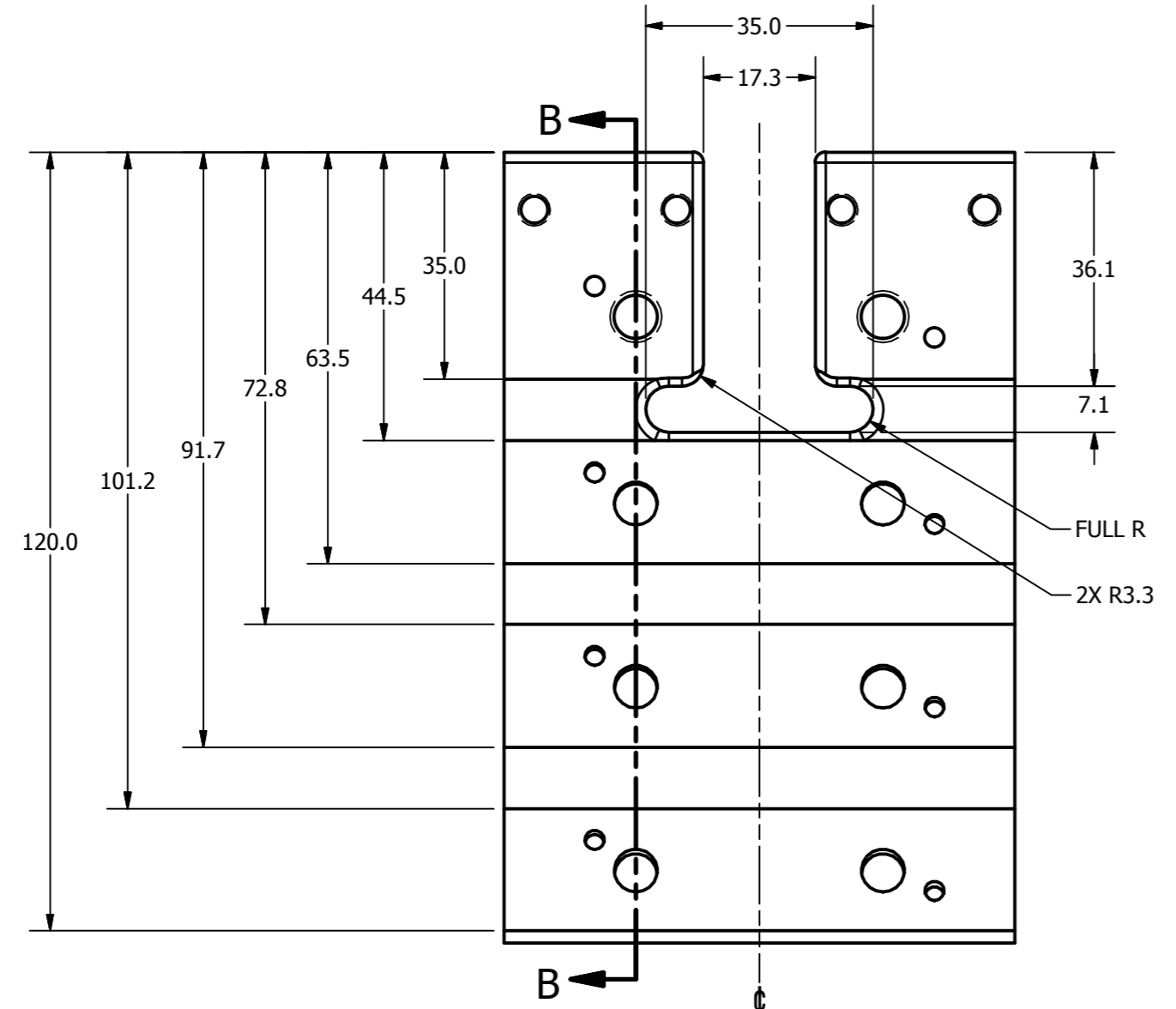
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM123 R8 AND CONVERTED TO METRIC FOR THOR-M	9/27/2011	BK
	B	78.72+/-2/-0 WAS 78.7	6/25/2012	BK
	C	ADD DATUMS D, E, BASIC DIMENSIONS, AND POSITIONAL TOLERANCING; DIMENSION HOLES FROM DATUM E; 38.10, [52.40] WAS (38.10), (52.40); ADD 20.62, NOTE TO DOWEL HOLE	10/1/2012	BK
	D	ADDED DIMENSION 25.4	5/27/2014	DW



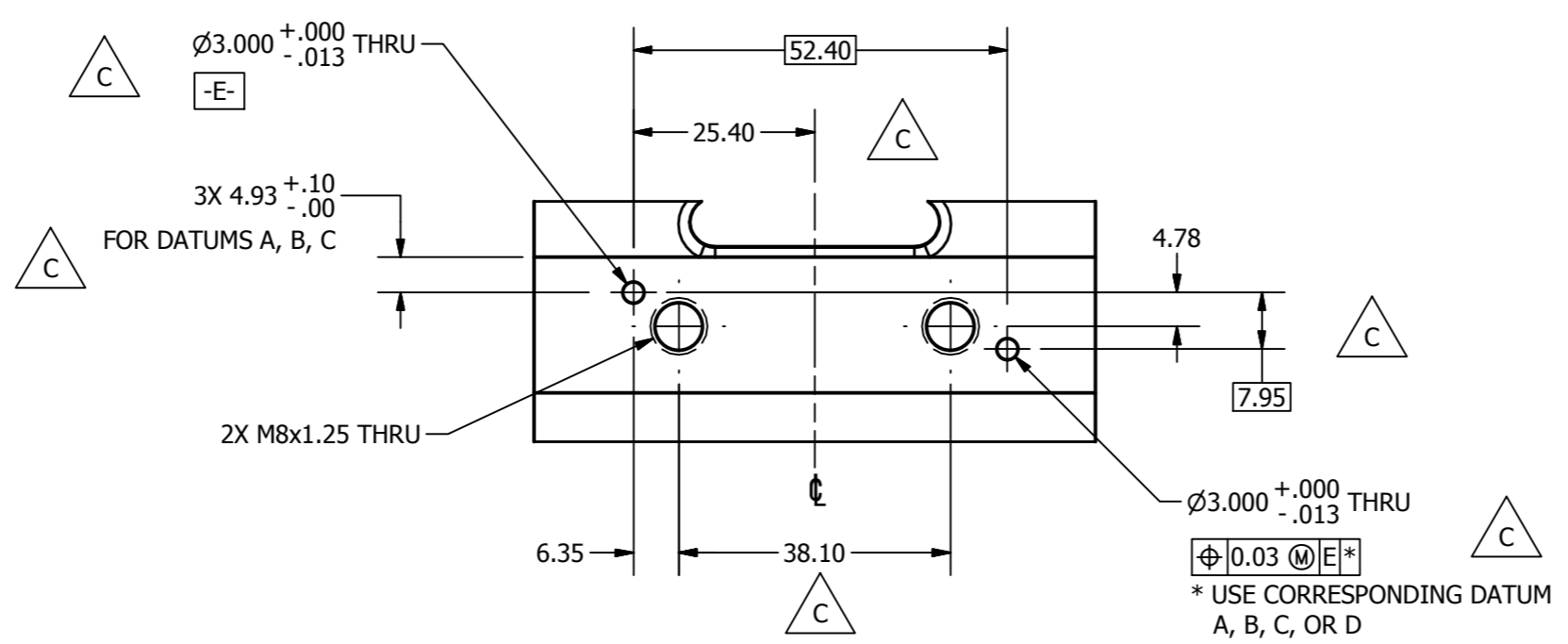
SCALE 1.000



SECTION A-A  
SCALE 1.000



SECTION B-B  
SCALE 1.000

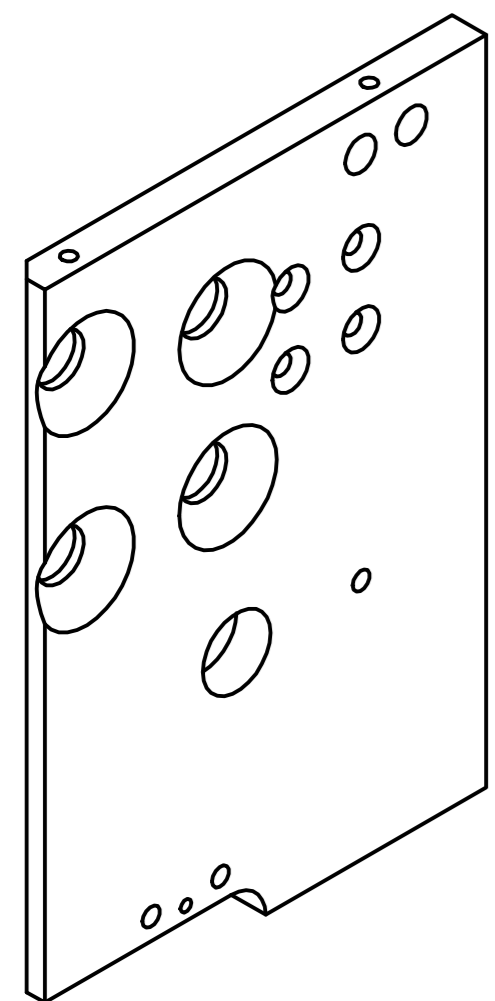


VIEW PERPENDICULAR TO  
DATUMS A, B, & C  
HOLE PATTERNS TYP. 3 PLACES  
SCALE 1.000

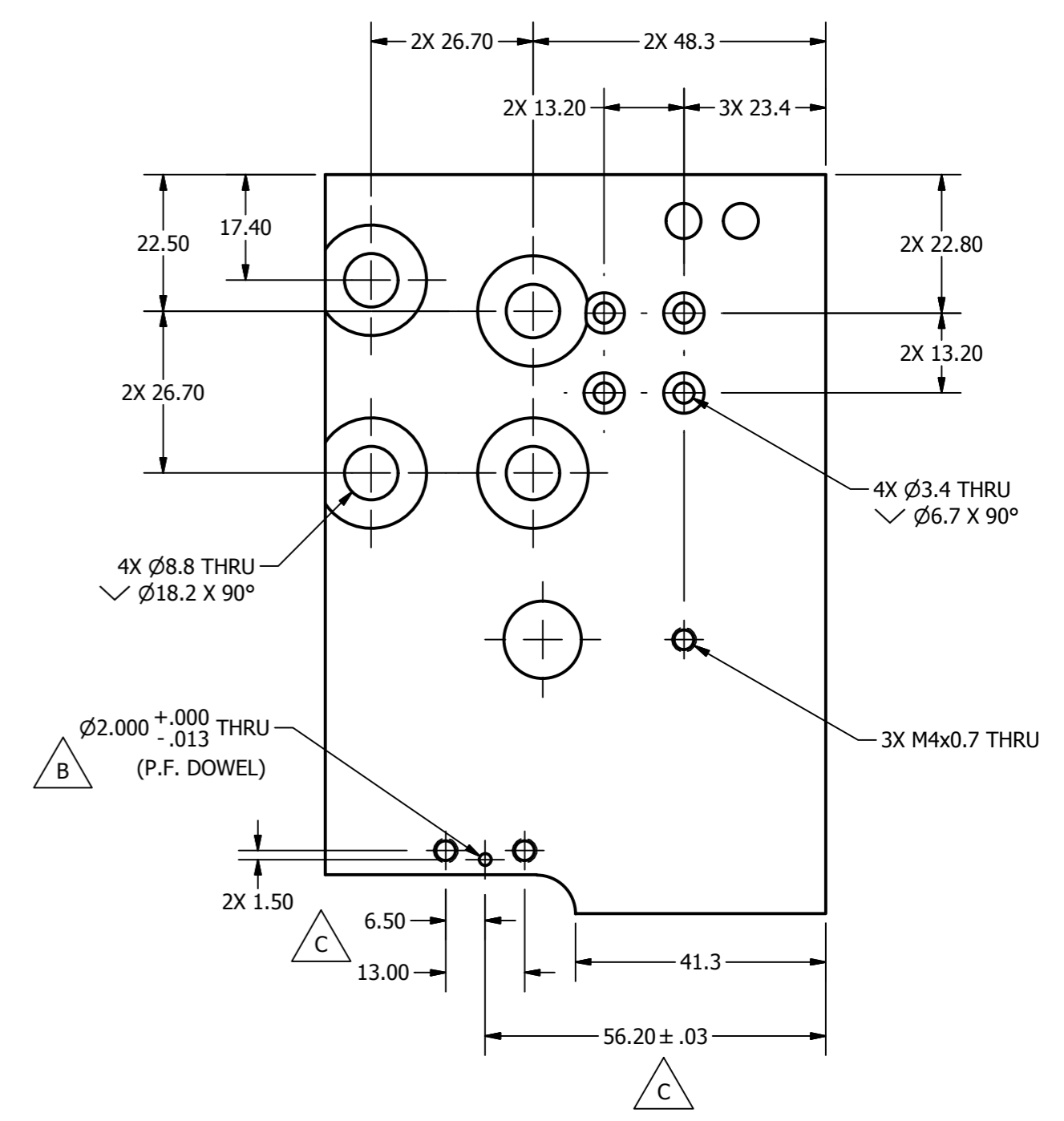
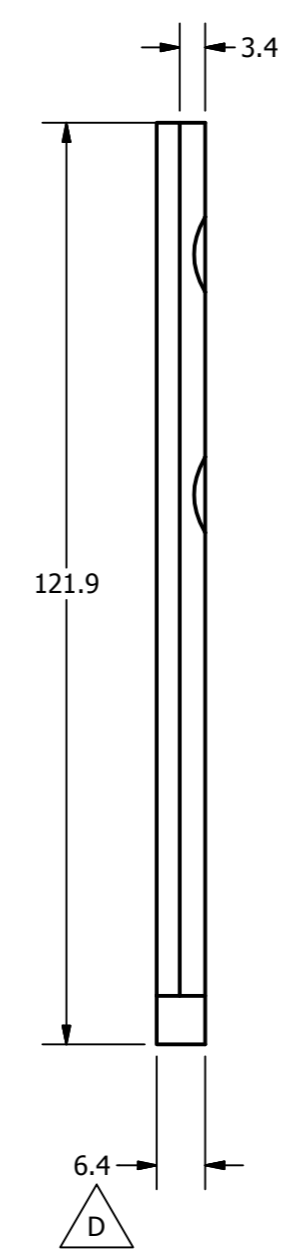
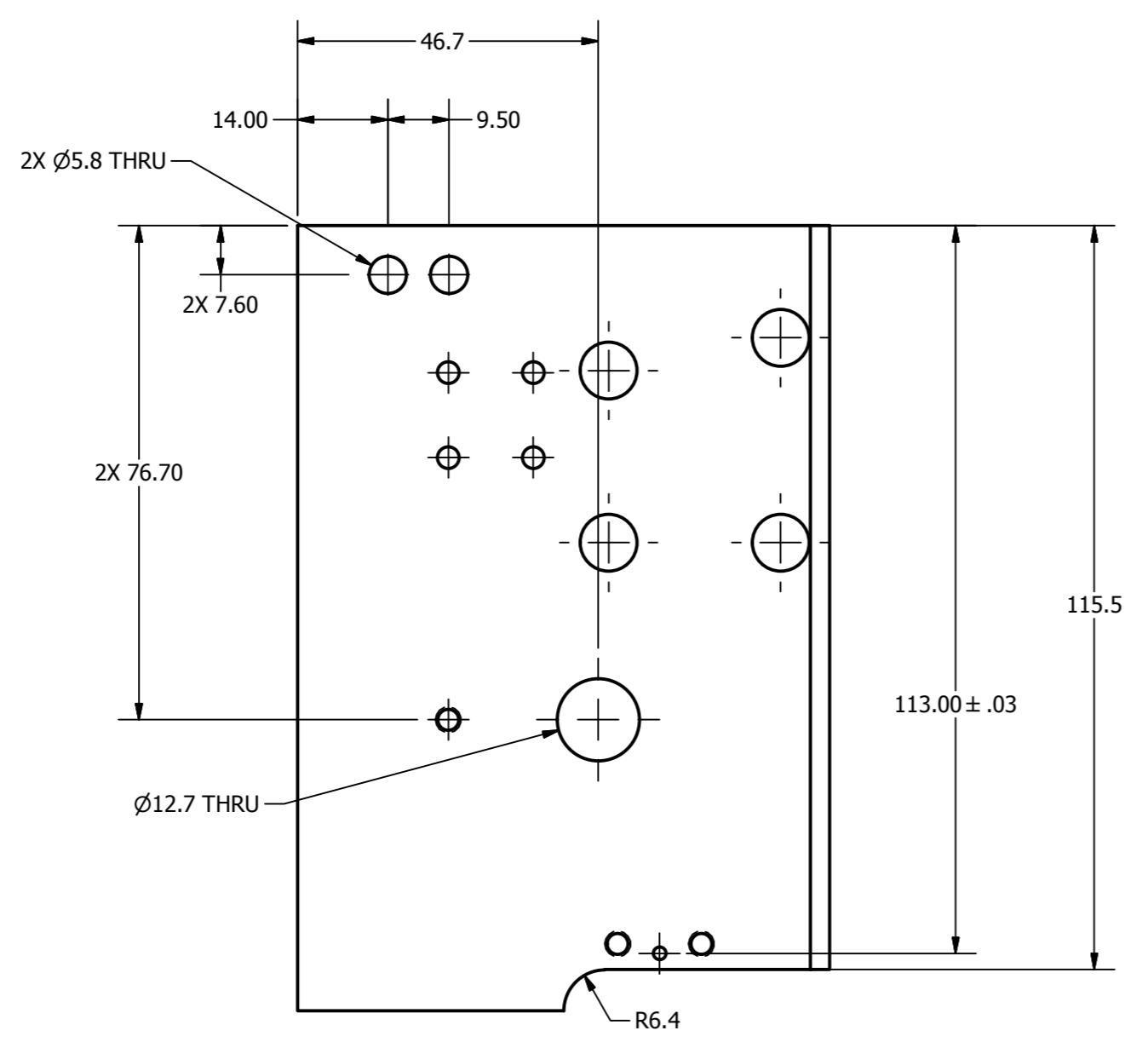
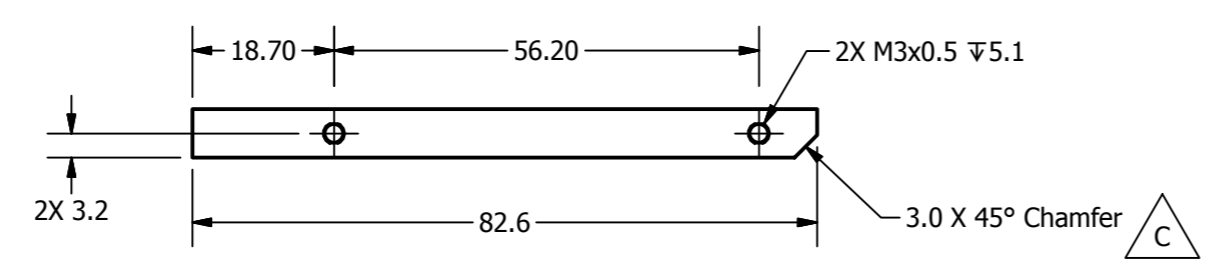
NOTES:  
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3620	MATERIAL:	1018 STEEL	DESCRIPTION: UPPER THORACIC SPINE BACK PLATE
DATE:	9/27/2011	DESIGNED BY:	B. KIMES	
HEAT TREAT:		CHECKED BY:		DATE:
ENGINEER:	J. WANG	DATE:	1/16/2012	SCALE:
TOTAL QTY IN DUMMY:	1	SIZE:	A2	SHEET:
			1 OF 1	DRAWING NO:
			1.000	472-3623

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM121 R5 AND CONVERTED TO METRIC FOR THOR-M	9/27/2011	BK
	B	CORRECT TYPO, -.013 WAS +.013	5/15/2012	BK
	C	ADD CHAMFER; MOVE HOLE PATTERN, 56.20 WAS 63.30; REMOVE 2X 111.5; ADD 2X 1.50	10/11/2012	BK
	D	ADDED DIMENSION 6.4	5/27/2014	DW

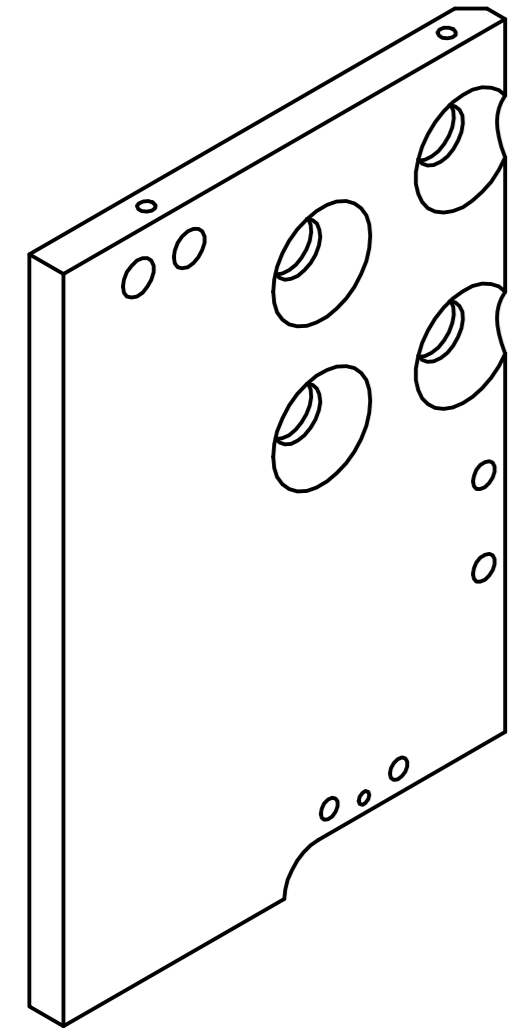


SCALE 1.000

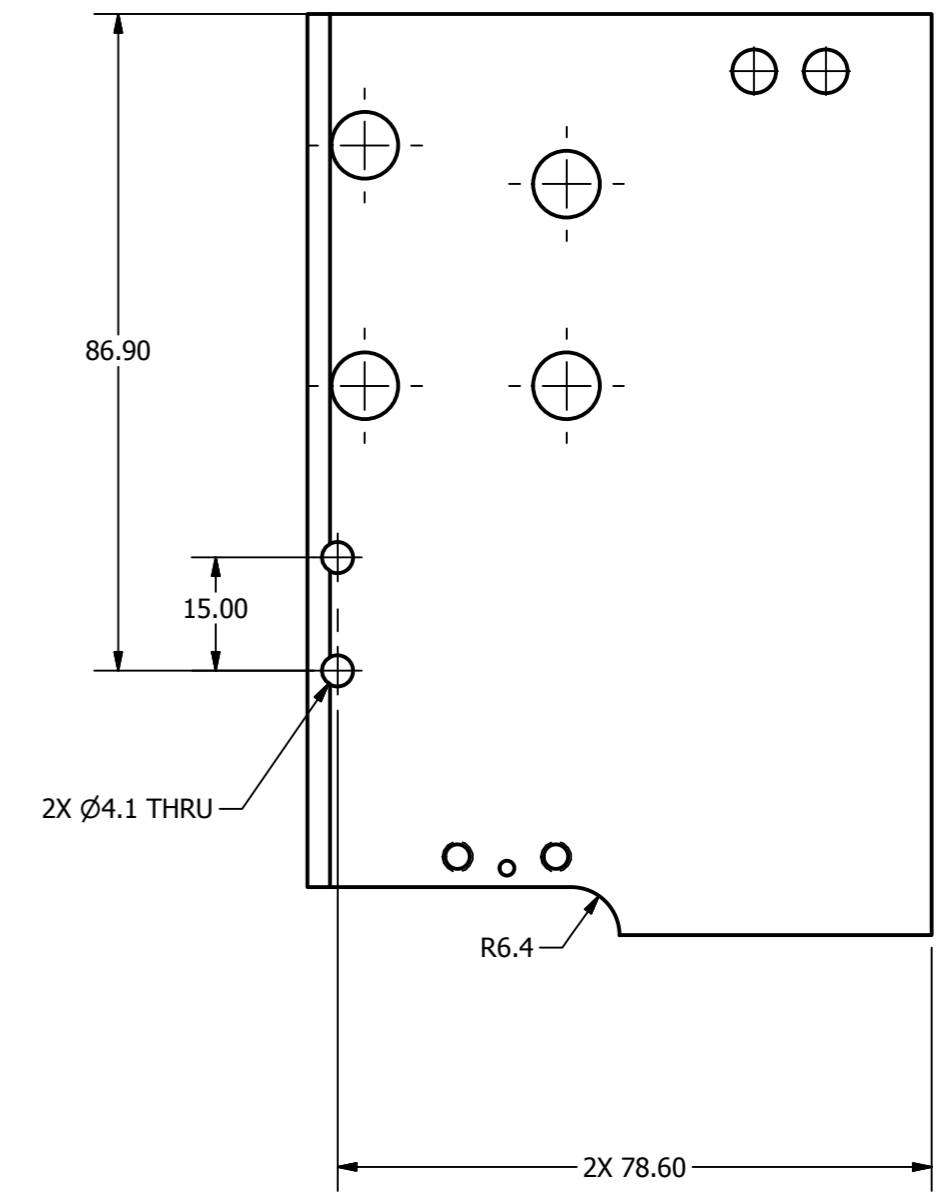
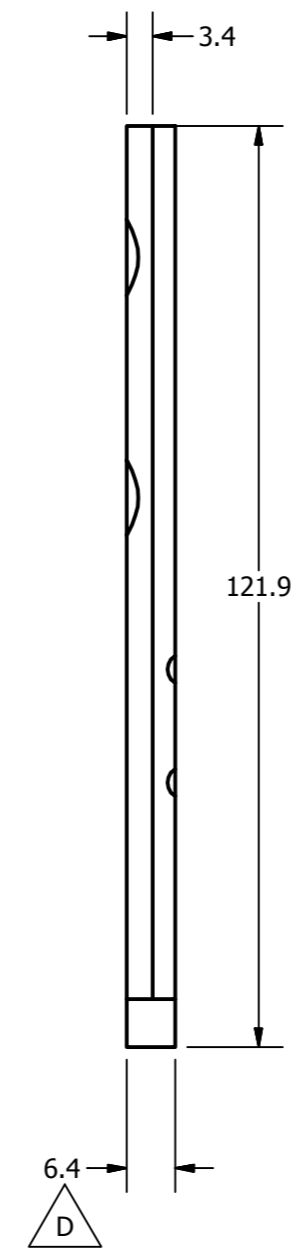
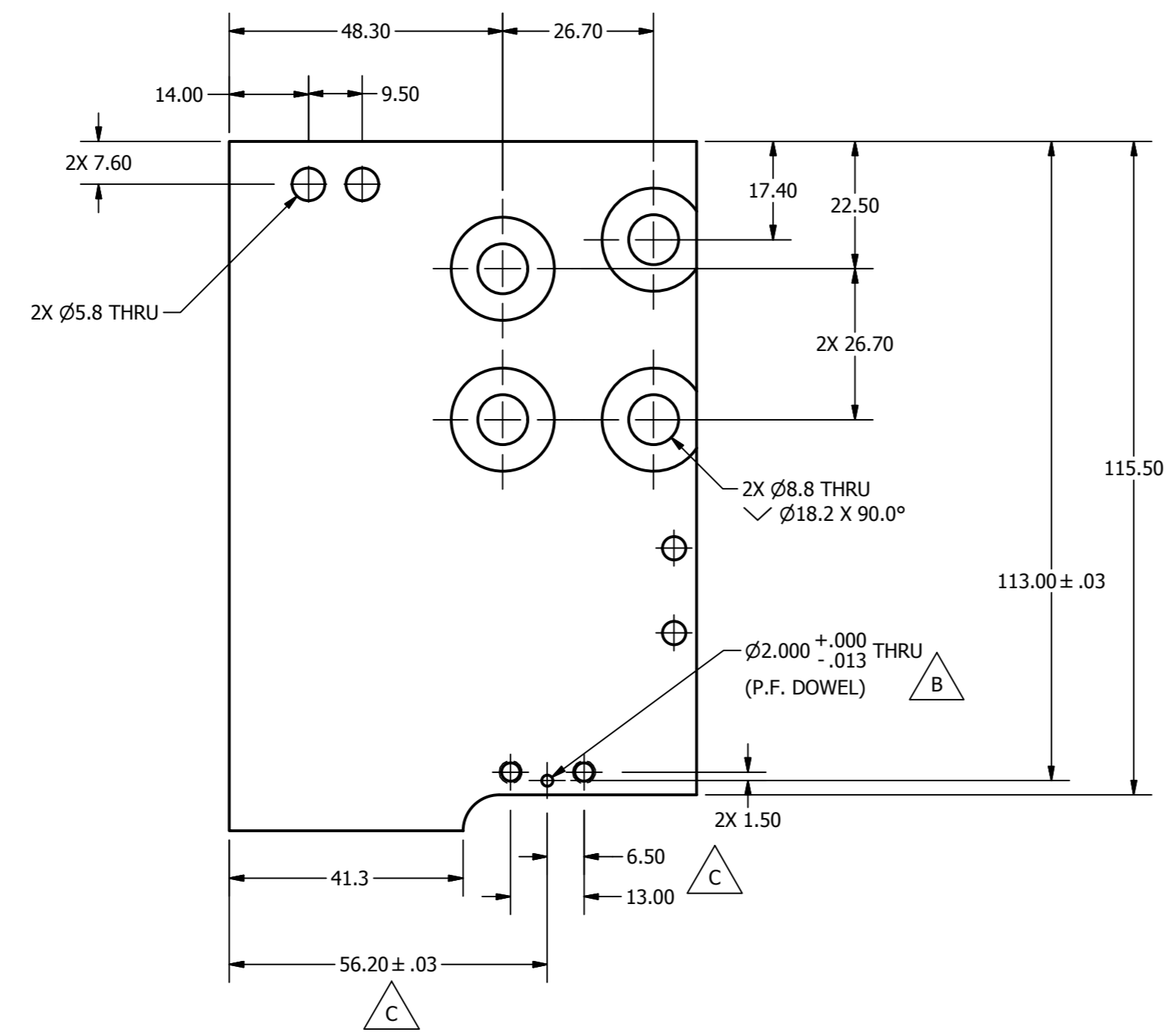
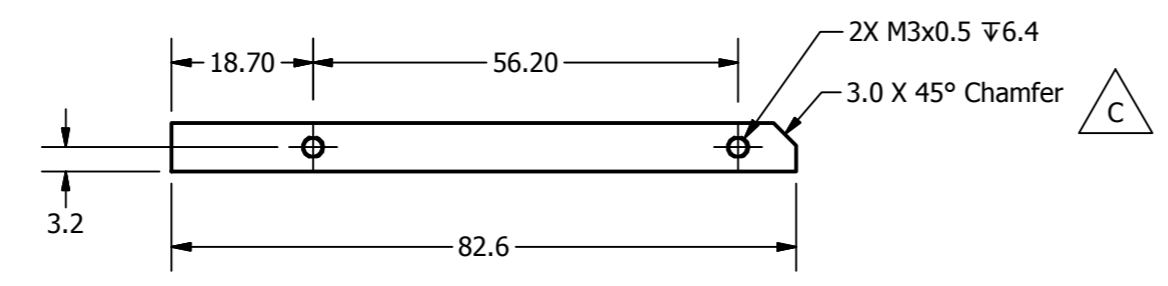


DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH		DESCRIPTION: UPPER THORACIC SPINE SIDE PLATE, RIGHT	
PROJECT NO:	472-3620	DATE:	9/27/2011	SIZE:	A2 1 OF 1
WORKSHEET:	1018 STEEL	DESIGNED BY:	B. KIMES	DRAWING NO.:	472-3621
NEXT ASSEMBLY:	QTY	CHECKED BY:	J. WANG	DATE:	1/16/2012
TOTAL QTY IN DUMMY:	1	FINISH:		SCALE:	1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM122 R2 AND CONVERTED TO METRIC FOR THOR-M	9/27/2011	BK
	B	CORRECT TYPO, -.013 WAS +.013	5/15/2012	BK
	C	ADD CHAMFER; MOVE HOLE PATTERN, 56.20 WAS 63.30; REMOVE 2X 111.5; ADD 2X 1.50	10/12/2012	BK
	D	ADDED DIMENSION 6.4	5/27/2014	DW

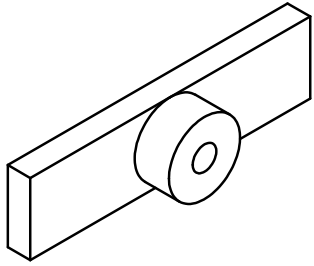


SCALE 1.000

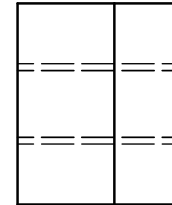
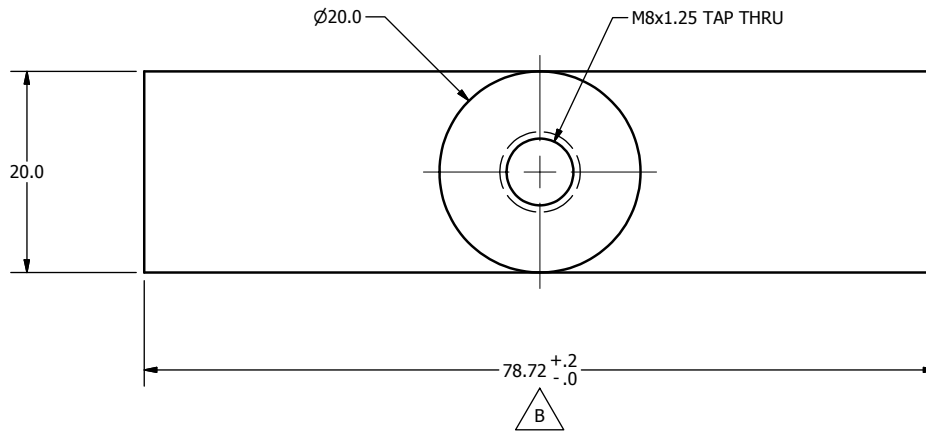
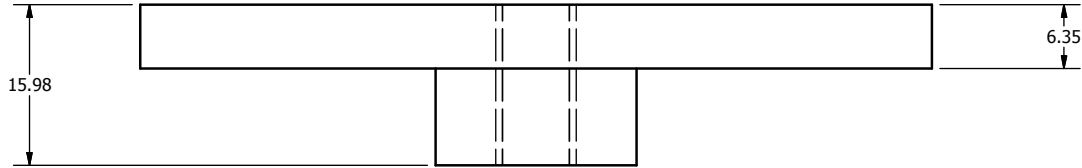


DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION UPPER THORACIC SPINE SIDE PLATE, LEFT
PROJECT NO:	DATE:	DESIGNED BY:	DATE:	
472-3620	10/16/2012	B. KIMES	9/27/2011	
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	
TOTAL QTY IN DUMMY	1	ENGINEER:	DATE:	
		J. WANG	1/16/2012	
SCALE: 1 OF 1		DRAWING NO: 472-3622		REV: D

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	9/23/2011	DW
	B	78.72+.2/-0 WAS 78.74	6/25/2012	BK



SCALE 1.000



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\epsilon$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X .05 ± 0.07 16  
X.X ± 0.2  
X.XX ± 0.3  
X.XXX ± 0.01  
REMOVE BURRS & BREAK SHARP EDGES



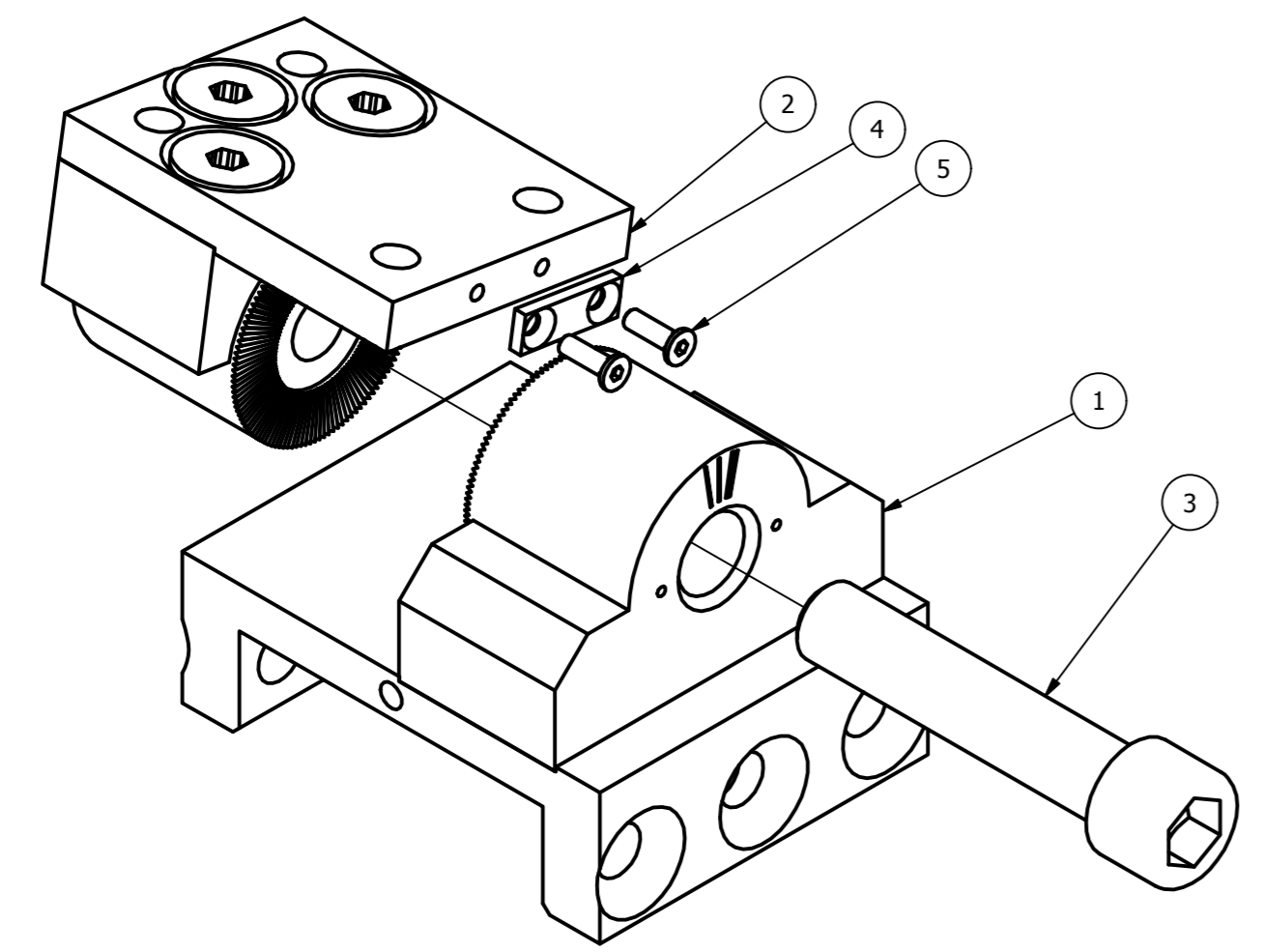
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: UPPER THORACIC SPINE FRONT PLATE

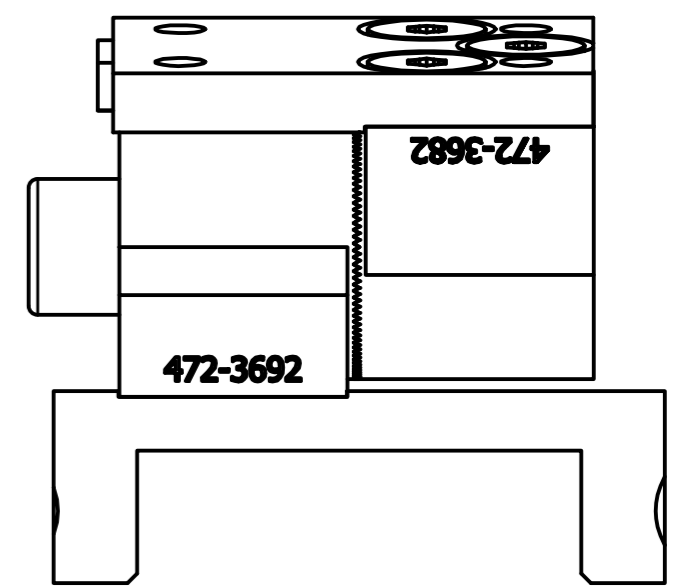
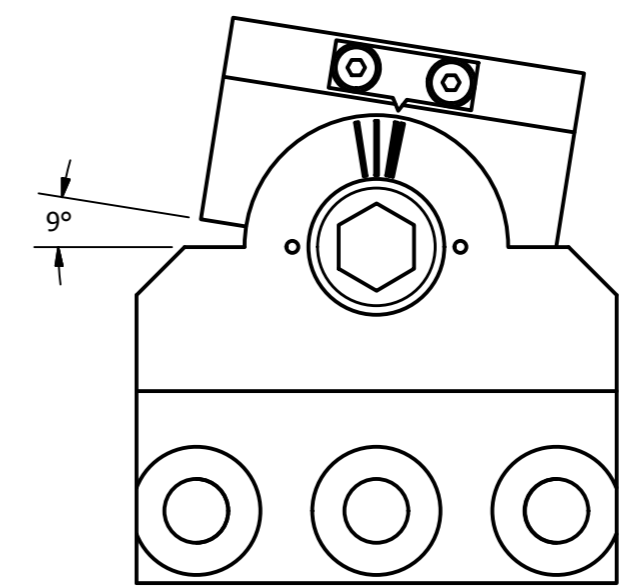
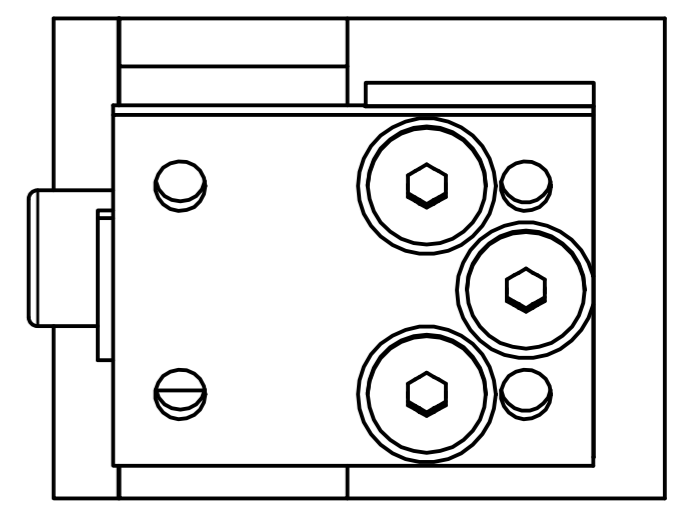
PROJECT NO.: 472-3620	QTY: 1	MATERIAL: 1018 STEEL	DATE: 9/23/2011	SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-3624	REV: B
CHECKED BY: dwashenko	HEAT TREAT:	FINISH:	DATE: 1/16/2012	SCALE: 2.000			
TOTAL QTY IN DUMMY: 1							



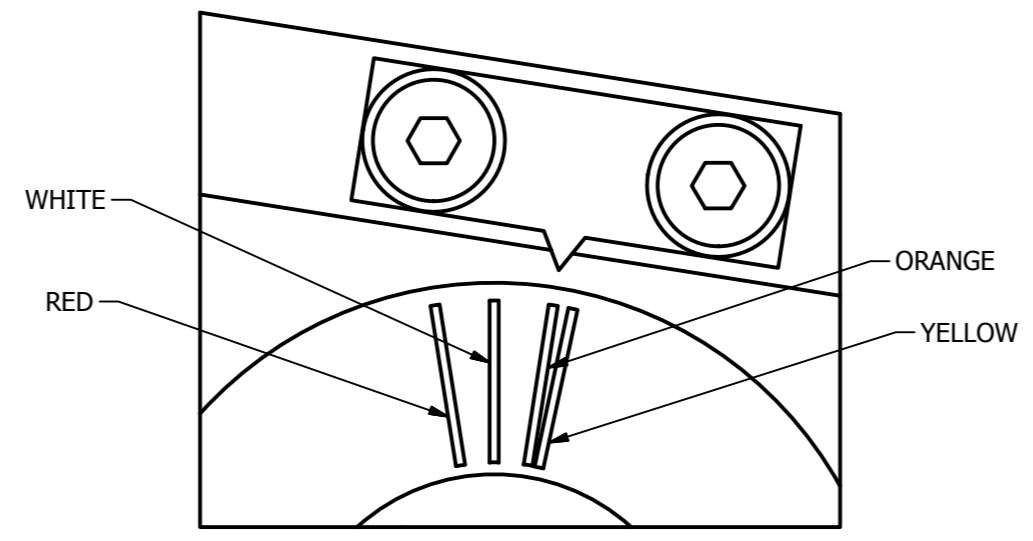
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM500 R04 AND CONVERTED TO METRIC FOR THOR-M	9/23/2011	BK
	B	PART #5000203 SCREW, FHCS M3-0.5 x 10 WAS 5001074 M3 X 0.5 X 10 LG. BHCS; REVISED PART 3 472-3713 LUMBAR SPINE PITCH CHANGE INDICATOR	8/25/2015	DW



SCALE 1.000



POSTURE	COLOR	ANGLE
ERECT	RED	-9°
NEUTRAL	WHITE	0°
SLOUCHED	ORANGE	9°
SUPER SLOUCHED	YELLOW	12°



POSTURE SETTINGS  
SCALE 3.000

NOTES:

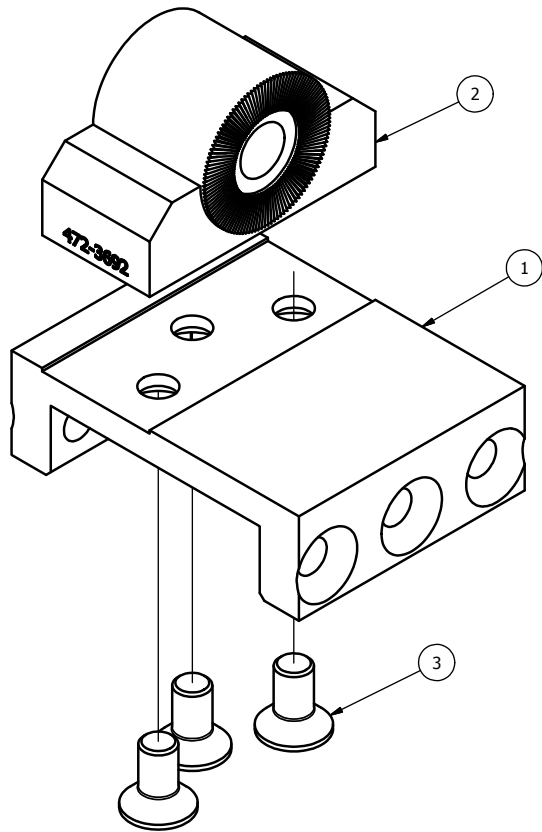
- USE LOCTITE ANTISEIZE LUBRICANT OR EQUIVALENT ON THE M12 X 16 S.H.C.S. PRIOR TO INSERTION. TORQUE BOLT TO 50 FT-LB TO TIGHTEN PITCH CHANGE MECHANISM.
- TO ADJUST THE SPINE POSTURE, LOOSEN THE M8 S.H.C.S. AND ROTATE THE UPPER HALF OF THE SPINE WITH RESPECT TO THE LOWER HALF. ALIGN THE INDICATOR WITH THE PROPER COLOR OF THE POSTURE DESIRED. REFERENCE THE COLOR CHART FOR POSTURE SETTINGS.

ITEM	QTY	PART NUMBER	DESCRIPTION
5	2	5000203	SCREW, FHCS M3-0.5 x 10
4	1	472-3713	LUMBAR SPINE PITCH CHANGE INDICATOR
3	1	5000442	M12 X 1.75 X 60 LG. SHCS
2	1	472-3680	LUMBAR SPINE PITCH CHANGE UPPER HALF ASSEMBLY
1	1	472-3690	LUMBAR SPINE PITCH CHANGE LOWER HALF ASSEMBLY

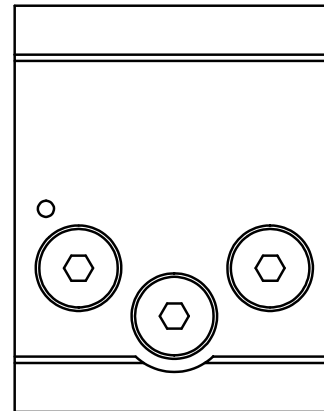
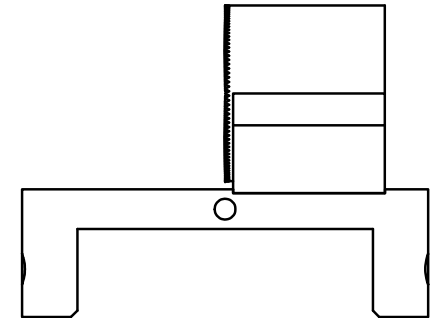
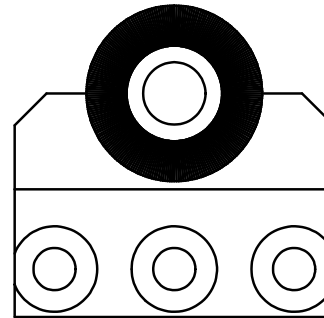
  

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH	
		X ±0.5 1.0 1.5 XX ±0.2 XXX ±0.1 XXXX ±0.05	
PROJECT NO.: THOR-M		DATE: 9/23/2011	
DRAWN BY: B. KIMES		CHECKED BY: J. WANG	
MATERIAL:		REMOVED BURS & BREAK SHARP EDGES	
HEAT TREAT:		DATE: 1/12/2012	
FINISH:		SIZE: A2	
TOTAL QTY IN DUMMY: 1		SHEET: 1 OF 1	
		SCALE: 2.000	
		DRAWING NO.: 472-3670	
		REV: B	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM520 R04 AND CONVERTED TO METRIC FOR THOR-M	9/23/2011	BK



SCALE 1.000



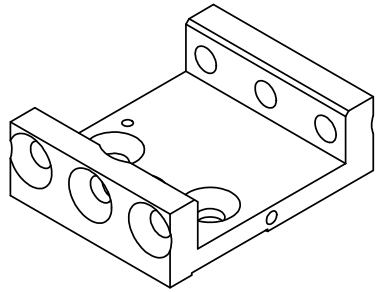
NOTES:

1. ASSEMBLE SCREWS USING LOCTITE 271 THREADLOCKER OR EQUIVALENT.

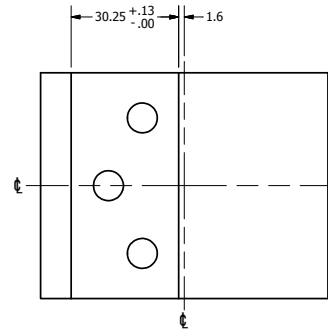
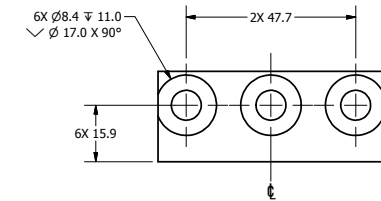
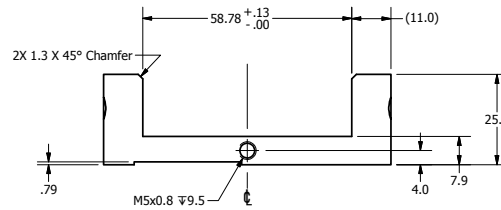
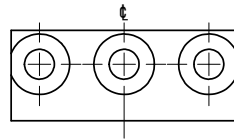
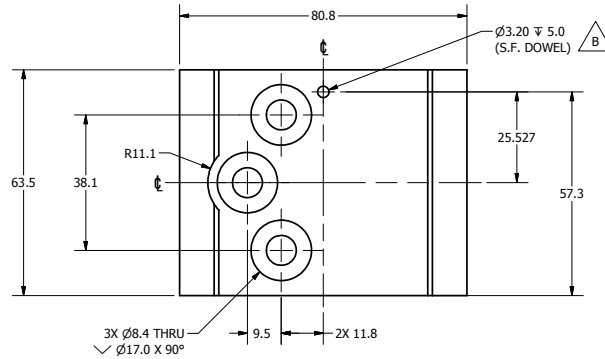
ITEM	QTY	PART NUMBER	DESCRIPTION
3	3	5001091	M8 X 1.25 X 16 LG. FHCS
2	1	472-3692	LUMBAR SPINE PITCH CHANGE STAR WHEEL, RIGHT SIDE
1	1	472-3691	LUMBAR SPINE PITCH CHANGE BOTTOM PLATE

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X ±0.2 X.XX ±0.3 X.XXX ±0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	473-3670	MATERIAL:	1	DESCRIPTION: LUMBAR SPINE PITCH CHANGE LOWER HALF ASSEMBLY
CHECKED BY:	B. KIMES	DATE:	9/23/2011	
ENGINEER:	J. WANG	DATE:	1/16/2012	
HEAT TREAT:		SCALE:	1.000	SIZE: A3
TOTAL QTY IN DUMMY	1	SCALE:	1.000	SHEET: 1 OF 1
			472-3690	REV: A



SCALE 1.000

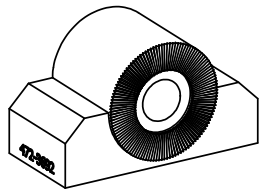


- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. POWDER OR BEAD BLAST.
  3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

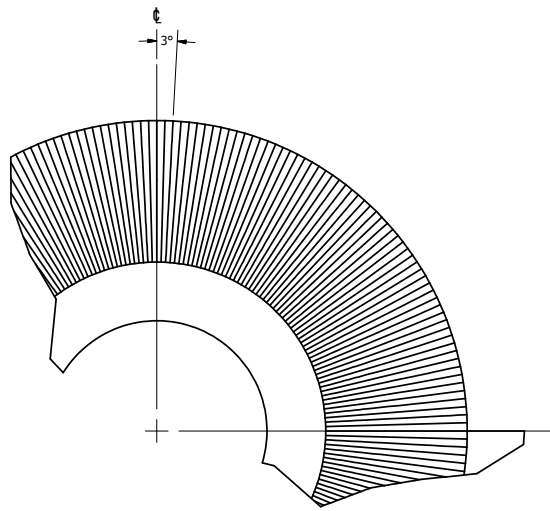
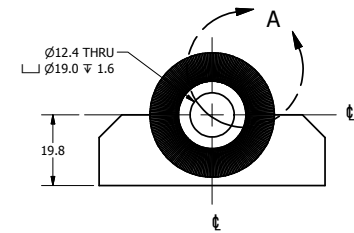
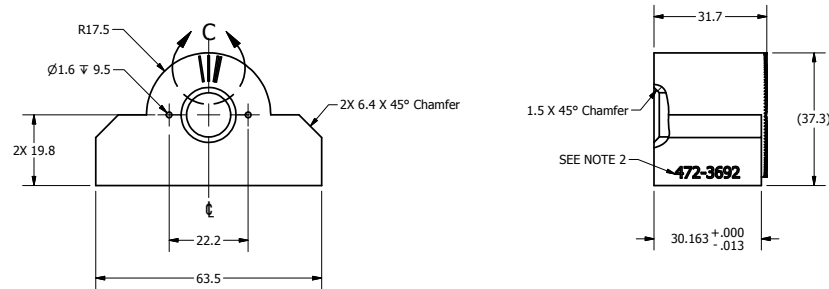
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM521 R06 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	BK
	B	ADD DOWEL LOCATION HOLE	12/19/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
DIMENSIONS ARE IN MILLIMETERS DIMENSIONS ARE IN INCHES DECIMALS    FRACTIONS    FRACTIONS .1    .001    1/16"    1/32"    1/64"    1/8"    1/4"    3/8"    1/2"    5/8"    3/4"    7/8"    1"		SHOW HIDDEN & BREAK SHARP EDGES DIMENSIONS ARE IN MILLIMETERS DIMENSIONS ARE IN INCHES DECIMALS    FRACTIONS    FRACTIONS .1    .001    1/16"    1/32"    1/64"    1/8"    1/4"    3/8"    1/2"    5/8"    3/4"    7/8"    1"		
472-3690	1	1018 STEEL	B. KIMES	9/22/2011
NEXT ASSEMBLY	QTY	BY	DATE	DATE
TOTAL QTY IN DUMMY	1	SEE NOTES	J. WANG	1/16/2012
LUMBAR SPINE PITCH CHANGE BOTTOM PLATE			A2	1 of 1
			1.000	472-3691

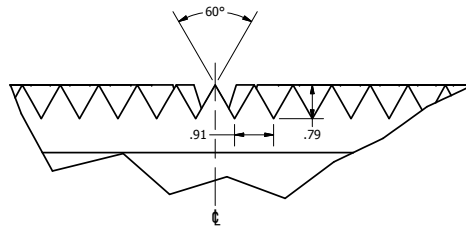
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM523 R0 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	BK



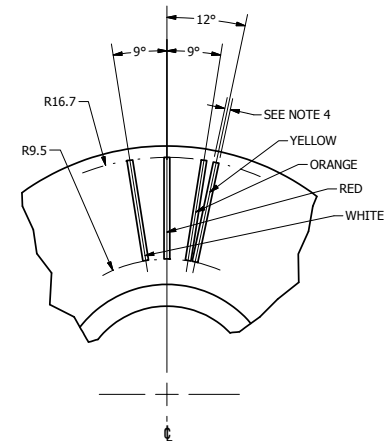
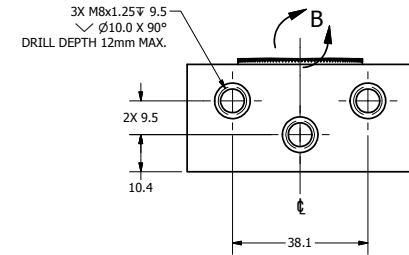
SCALE 1.000



DETAIL A  
SCALE 5.000



DETAIL B  
TOOTH PATTERN  
SCALE 12.000

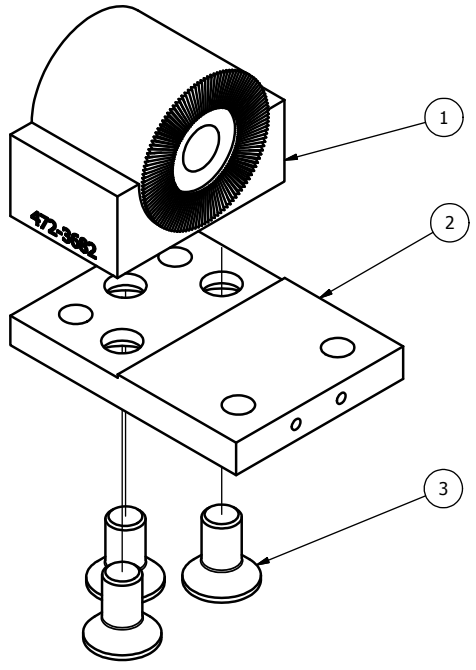


DETAIL C  
SCALE 4.000

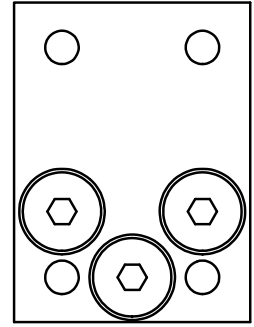
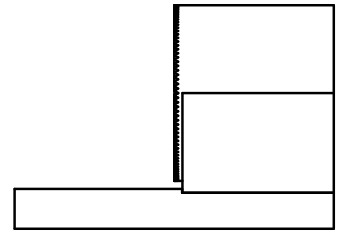
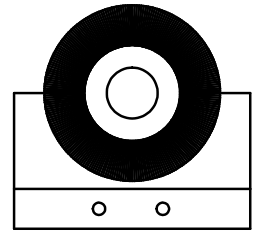
- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PAT NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
  3. FIRST CUT OF STAR PATTERN OFFSET 1.5° FROM VERTICLE, TOTAL OF 120 RADIAL LINES ARE REQUIRED.
  4. ENGRAVE LINES WITH MAXIMUM THICKNES OF 0.5mm, PAINT IN LINE AS SHOWN.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
FINISH: 32 DIMENSIONS ARE IN MILLIMETERS DECIMALS FRACTIONS .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0 1.25 1.5 2.0 2.5 3.0 4.0 5.0 6.0 8.0 10.0 .005 .010 .015 .020 .030 .040 .050 .060 .070 .080 .090 .100 .125 .150 .200 .250 .300 .400 .500 .600 .800 1.000 .005 .010 .015 .020 .030 .040 .050 .060 .070 .080 .090 .100 .125 .150 .200 .250 .300 .400 .500 .600 .800 1.000		SHOW DIMENSIONS & SURFACE FINISH SYMBOLS DESIGNED BY: B. KIMES DATE: 9/22/2011 DRAWN BY: J. WANG DATE: 1/16/2012		
472-3690	1	Stainless Steel, 440C	9/22/2011	LUMBAR SPINE PITCH CHANGE STAR WHEEL, RIGHT SIDE 472-3692
NEXT ASSEMBLY	QTY	Rc: 56-60		
TOTAL QTY IN DUMMY	1			

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM510 R03 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	BK



SCALE 1.000



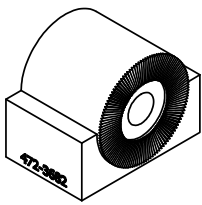
NOTES:  
1. ASSEMBLE SCREWS USING LOCTITE 271 THREADLOCKER OR EQUIVALENT.

ITEM	QTY	PART NUMBER	DESCRIPTION
3	3	5001091	M8 X 1.25 X 16 LG. FHCS
2	1	472-3681	LUMBAR SPINE PITCH CHANGE TOP PLATE
1	1	472-3682	LUMBAR SPINE PITCH CHANGE STAR WHEEL, LEFT SIDE

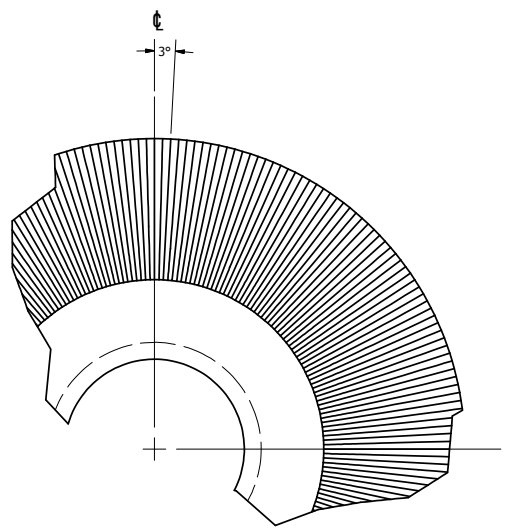
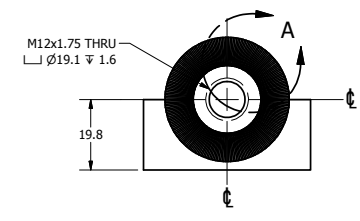
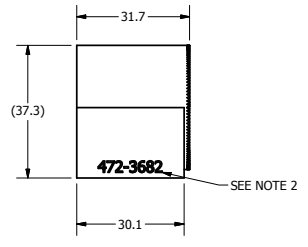
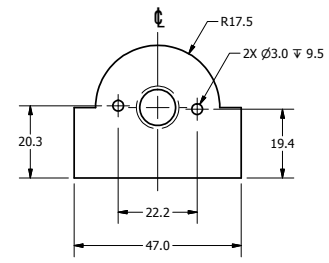
PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
PROJECT NO.:	472-3670	QUANTITY:	1	DESCRIPTION: LUMBAR SPINE PITCH CHANGE UPPER HALF ASSEMBLY
MATERIAL:		DESIGNED BY:	B. KIMES	
HEAT TREAT:		CHECKED BY:	J. WANG	
TOTAL QTY IN DUMMY:	1	DATE:	9/22/2011	SCALE: 1.000 SHEET: 1 OF 1 DRAWING NO.: 472-3680 REV: A

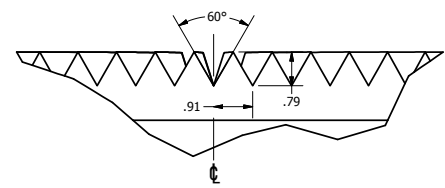
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM523 R0 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	BK



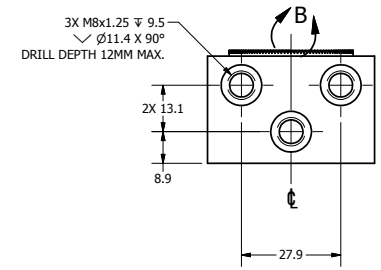
SCALE 1.000



DETAIL A  
SCALE 5.000



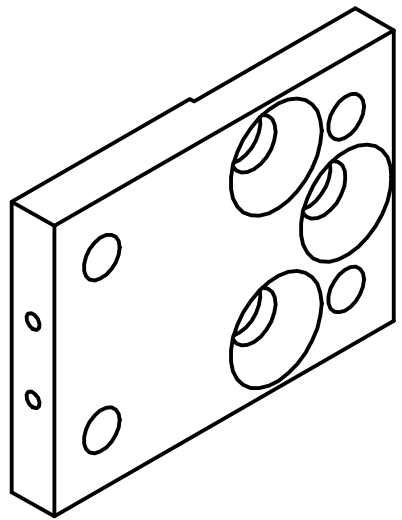
DETAIL B  
TOOTH PATTERN  
SCALE 12.000



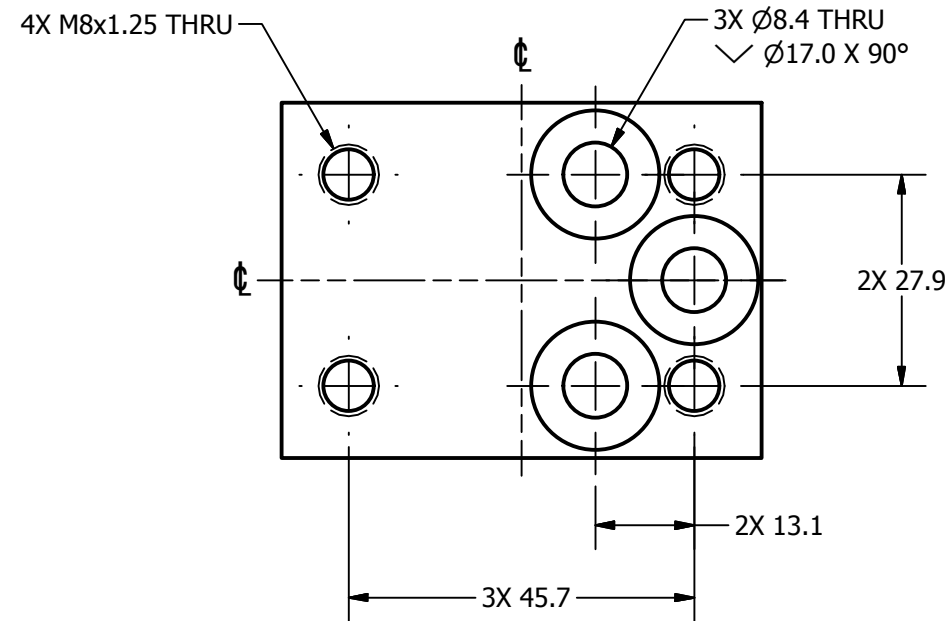
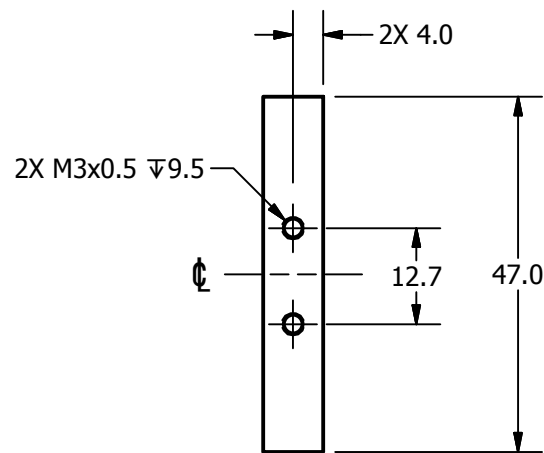
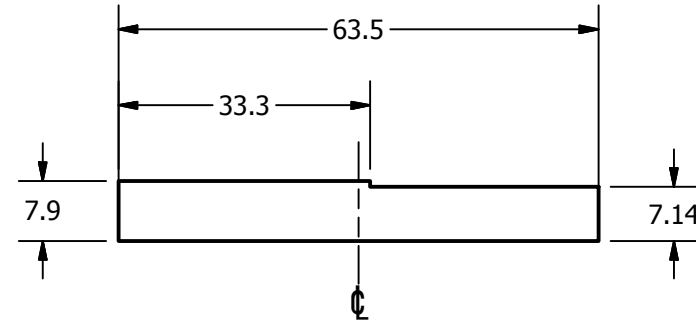
- NOTES:
- DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  - STAMP OR ETCH PAT NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
  - FIRST CUT OF STAR PATTERN OFFSET 1.5° FROM VERTICLE, TOTAL OF 120 RADIAL LINES ARE REQUIRED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
FINISH: THREES ANGLE PROJECTION DIMENSIONS: UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    DECIMALS    FRACTIONS .1    .015    .005    .0005 .2    .030    .010    .0010 .5    .075    .025    .0025 1.0    .150    .050    .0050 2.0    .300    .100    .0100 5.0    .750    .250    .0250 10.0    1.500    .500    .0500 25.0    3.750    1.250    .1250 50.0    7.500    2.500    .2500 100.0    15.000    5.000    .5000 250.0    37.500    12.500    1.2500 500.0    75.000    25.000    2.5000 1000.0    150.000    50.000    5.0000		SHOW DIMENSIONS & BREAK SHARP EDGES DESIGNED BY: B. KIMES DATE: 9/22/2011 DRAWN BY: J. WANG DATE: 1/16/2012		
472-3680	1	Stainless Steel, 440C		
NEXT ASSEMBLY	QTY	REVISION	DATE	
TOTAL QTY IN DUMMY	1			

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM511 R05 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	BK



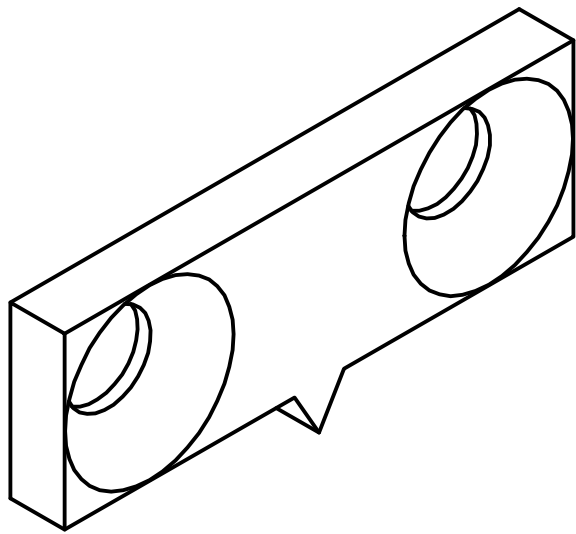
SCALE 1.000



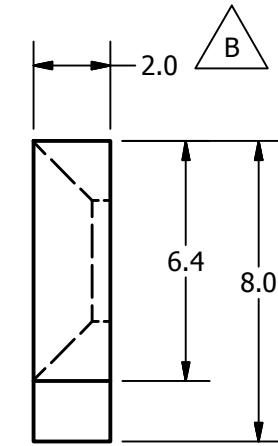
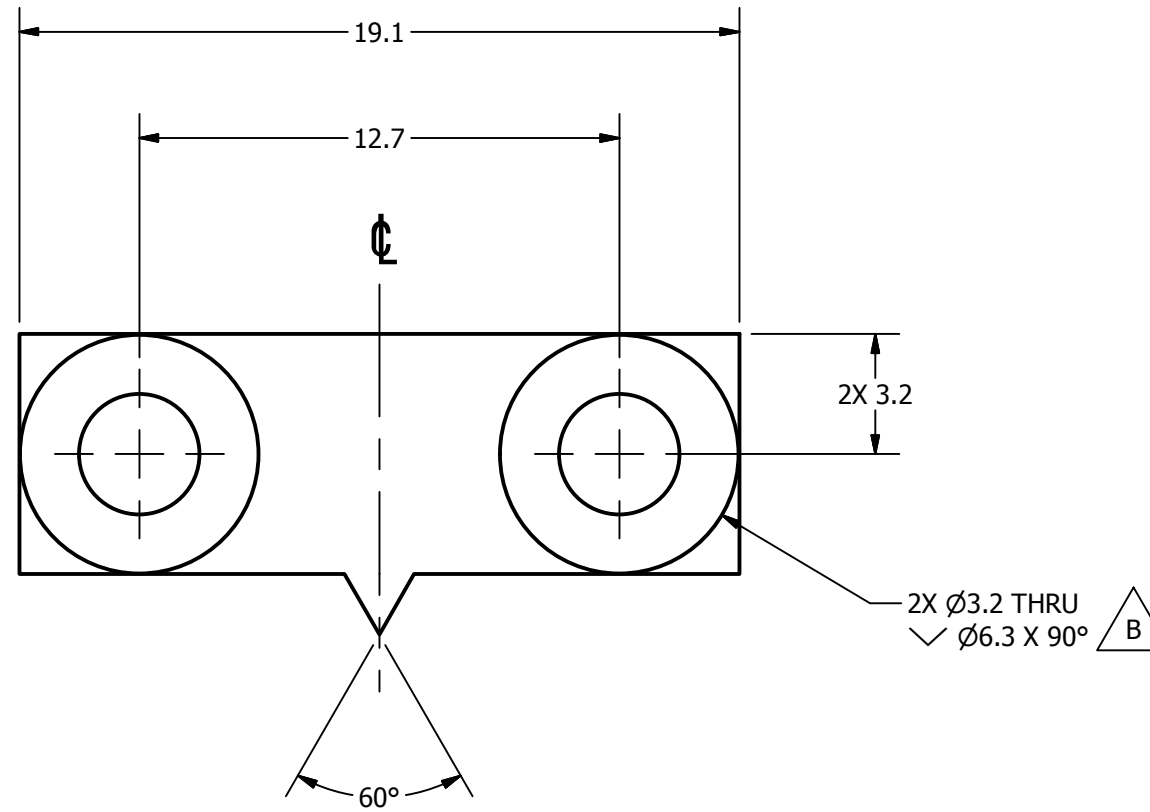
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\Phi$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION DESCRIPTION: LUMBAR SPINE PITCH CHANGE TOP PLATE
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ° ±0.5 1.6 XX ±0.2 ° ±0.5 1.6 XXX ±0.1 ° ±0.5 1.6 XXXX ±0.01 ° ±0.5 1.6		
PROJECT NO:	472-3680	MATERIAL:	1018 STEEL	DATE:
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:	SEE NOTES	CHECKED BY:	B. KIMES	DATE:
TOTAL QTY IN DUMMY	1	REMOVED BURRS & BREAK SHARP EDGES		DATE:
NEXT ASSEMBLY QTY		DRAWING NO.:		SIZE: A3
		DRAWING NO.:		SCALE: 1.000
		DRAWING NO.:		1 OF 1
		DRAWING NO.:		472-3681
		DRAWING NO.:		A



SCALE 5.000

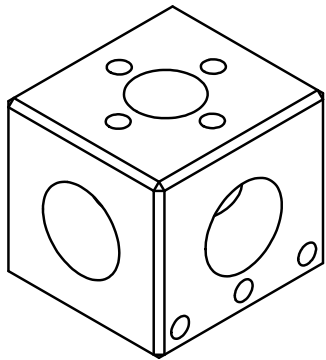


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM523 R0 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	BK
	B	DIM. 2.0 WAS 1.6, AND HOLE DIM 2X Ø3.2 THRU √ Ø6.3 X 90 WAS 2X Ø3.3 THRU	8/26/2015	DW

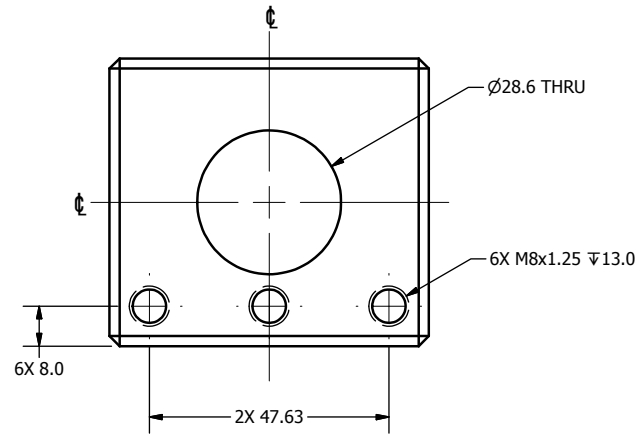
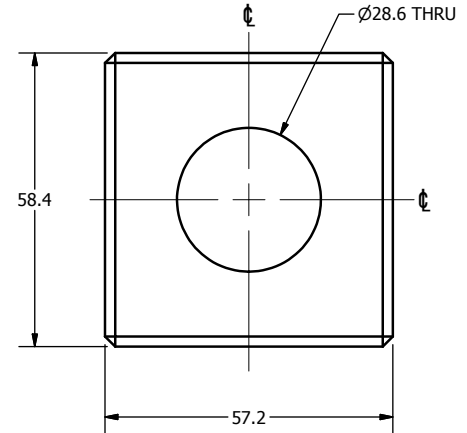
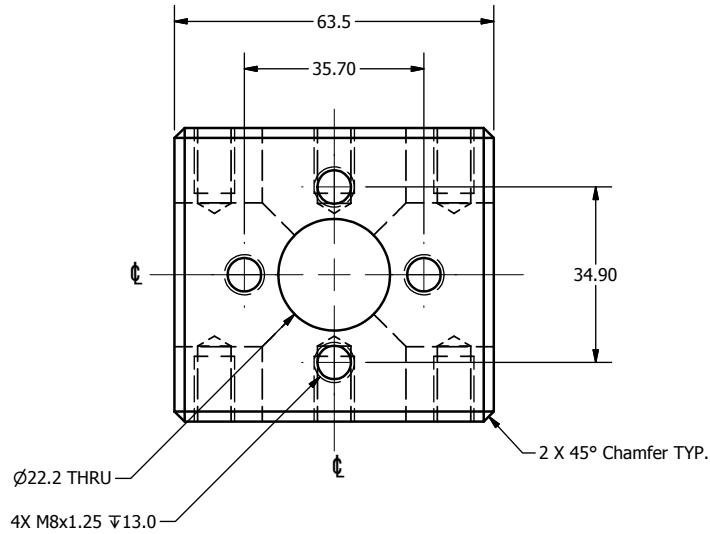
NOTES:  
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO:	THOR-M	REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION: LUMBAR SPINE PITCH CHANGE INDICATOR
472-3670	1	Brass, Soft Yellow	B. KIMES 9/21/2011	
NEXT ASSEMBLY	QTY	HEAT TREAT:	CHECKED BY:	SIZE: SHEET
TOTAL QTY IN DUMMY	1	FINISH:	J. WANG 1/16/2012	A3 1 of 1
			SCALE: 5.000	DRAWING NO.: 472-3713





SCALE .750



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\varnothing$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.
5. PART WEIGHT: 1.03  $\pm$ 0.01 kg (2.27  $\pm$ 0.02 LBS).



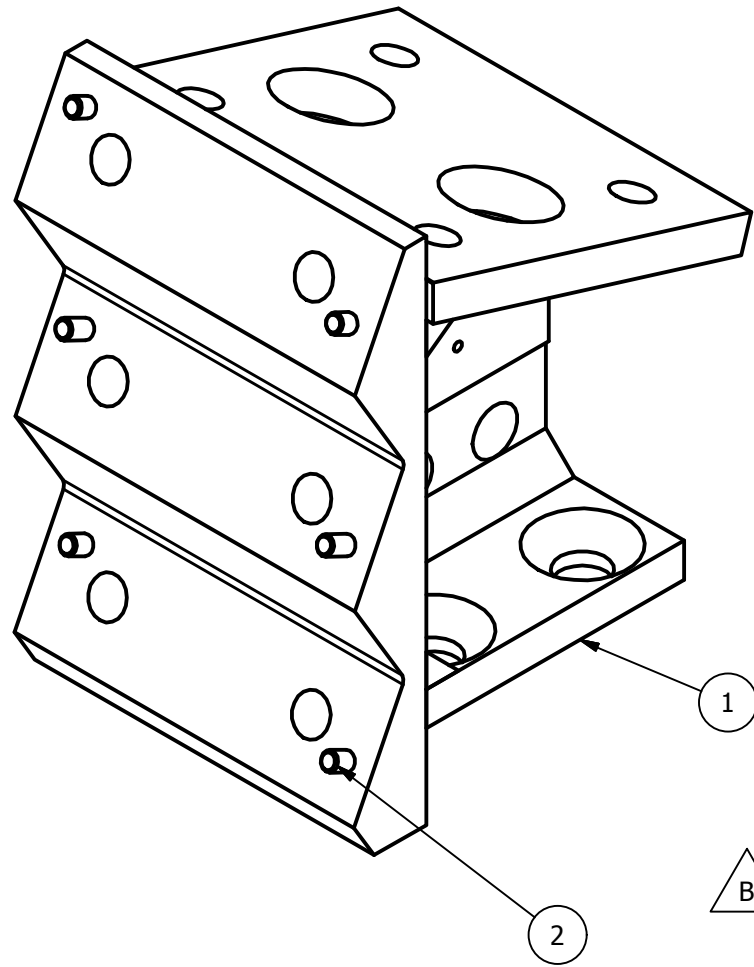
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REDESIGNED TO ONE PIECE FROM TWO PIECES FROM T1SPM620 R01; ADD WEIGHT SPEC	9/21/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION THORACIC SPINE LOAD CELL STRUCTURAL REPLACEMENT
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 0.5° 1.6 X .02 0.5° 1.6 X .03 0.5° 1.6 X .01 0.5° 1.6		
PROJECT NO:	472-3600	MATERIAL:	1018 STEEL	DATE:
CHECKED BY:	B. KIMES	DATE:	9/21/2011	SCALE:
ENGINEER:	J. WANG	DATE:	1/16/2012	SCALE:
SEE NOTES				

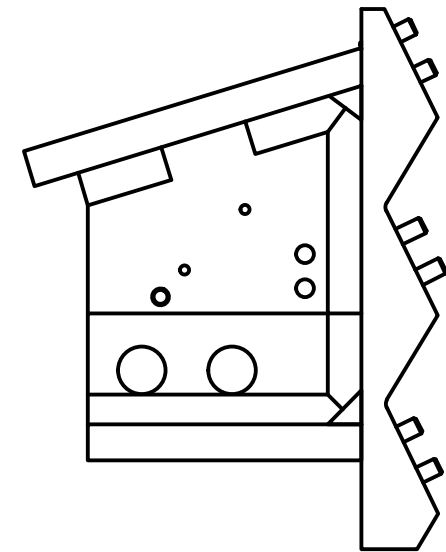
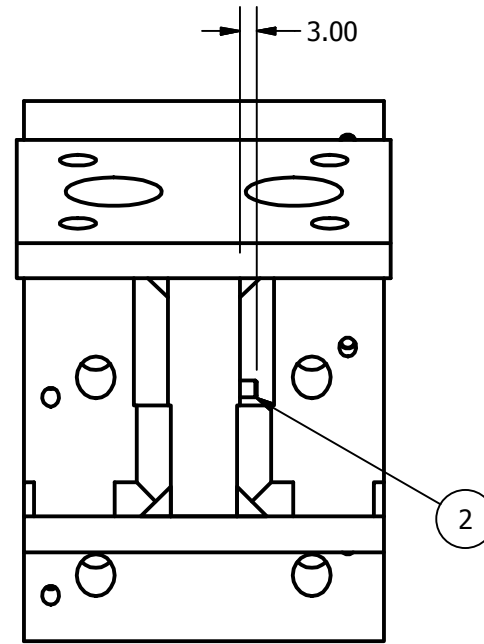
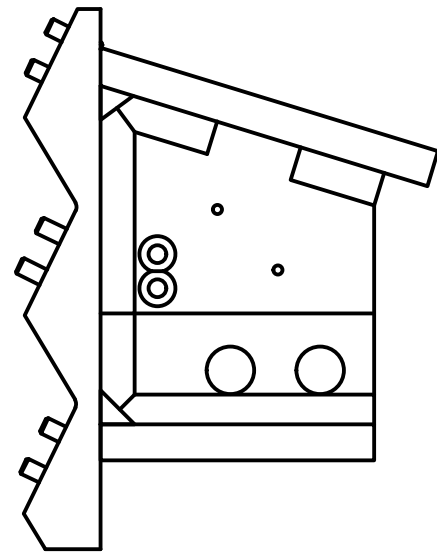
MATERIAL:	1018 STEEL
HEAT TREAT:	
FINISH:	SEE NOTES
QTY	1
TOTAL QTY IN DUMMY	1

SIZE	A3	SHEET	1 OF 1	DRAWING NO.	472-3720	REV.	A
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REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM400 R3 AND CONVERTED TO METRIC FOR THOR-M	9/28/2011	BK
	B	ADDED COUNTERSINK TO HOLES IN ITEM #1 PART #472-3660; QTY. OF ITEM #2 PART #5000284 WAS 6; REVISED COUNTERSINK HOLES IN ITEM #1 PART #472-3660 - LOWER THORACIC SPINE WELDED ASSEMBLY	6/10/2015	DW



SCALE 1.000

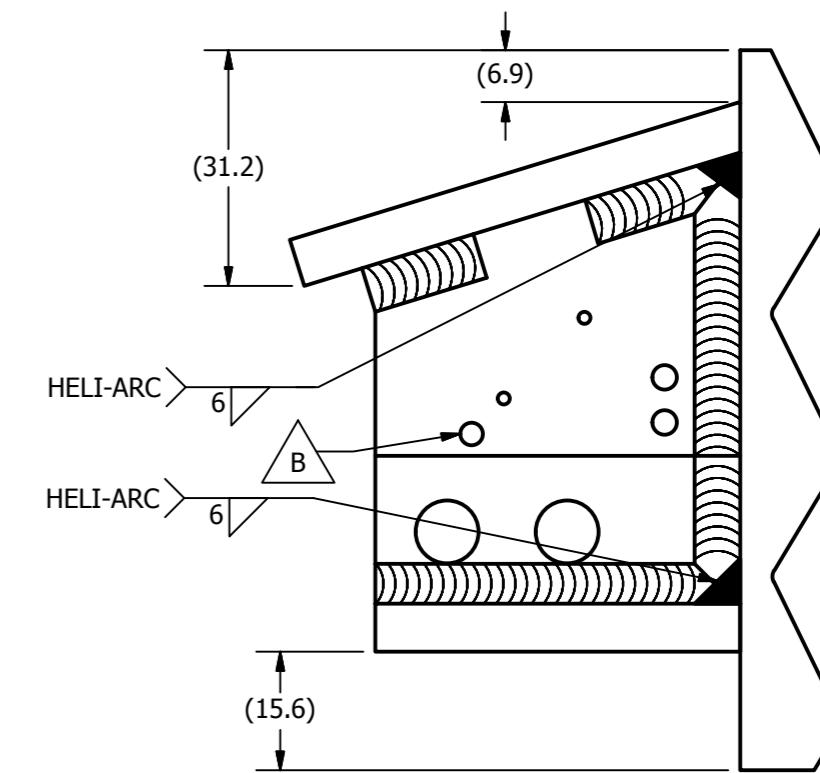
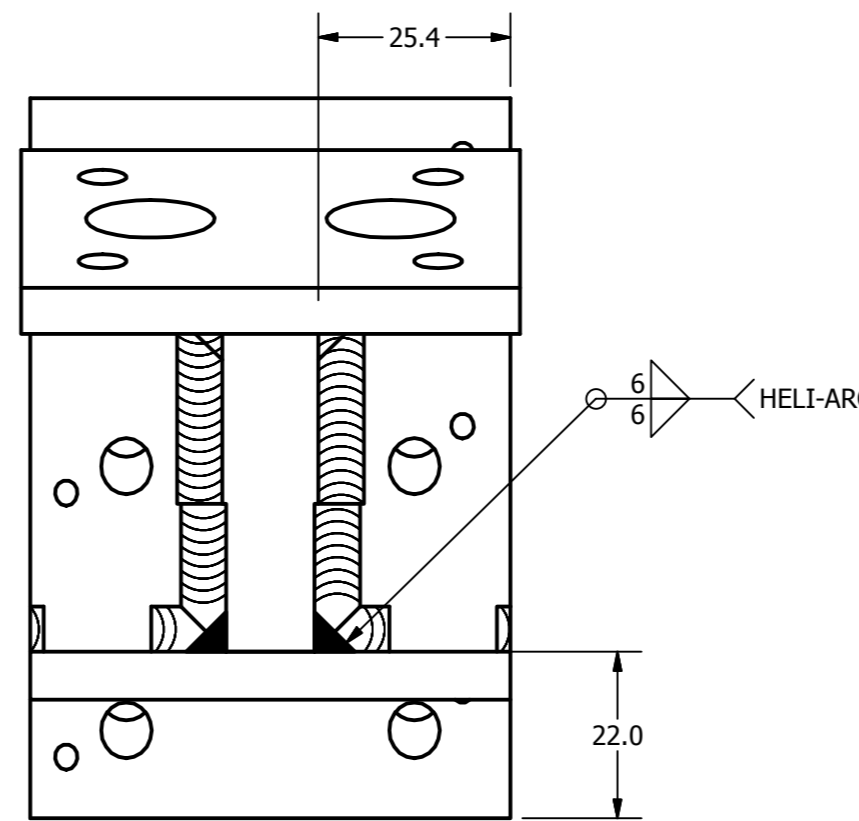
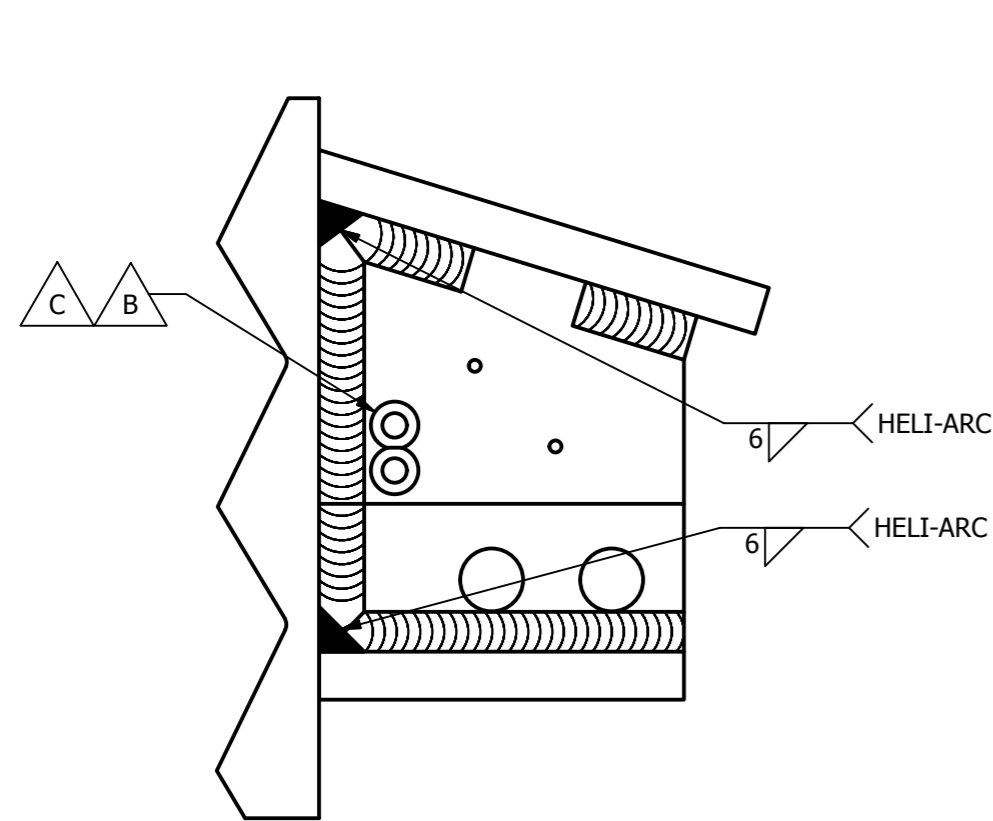
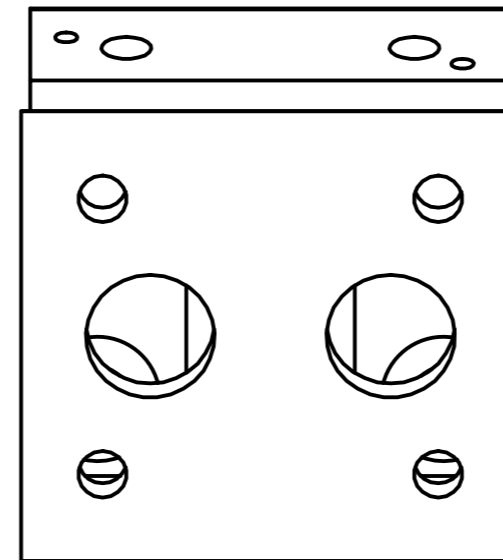
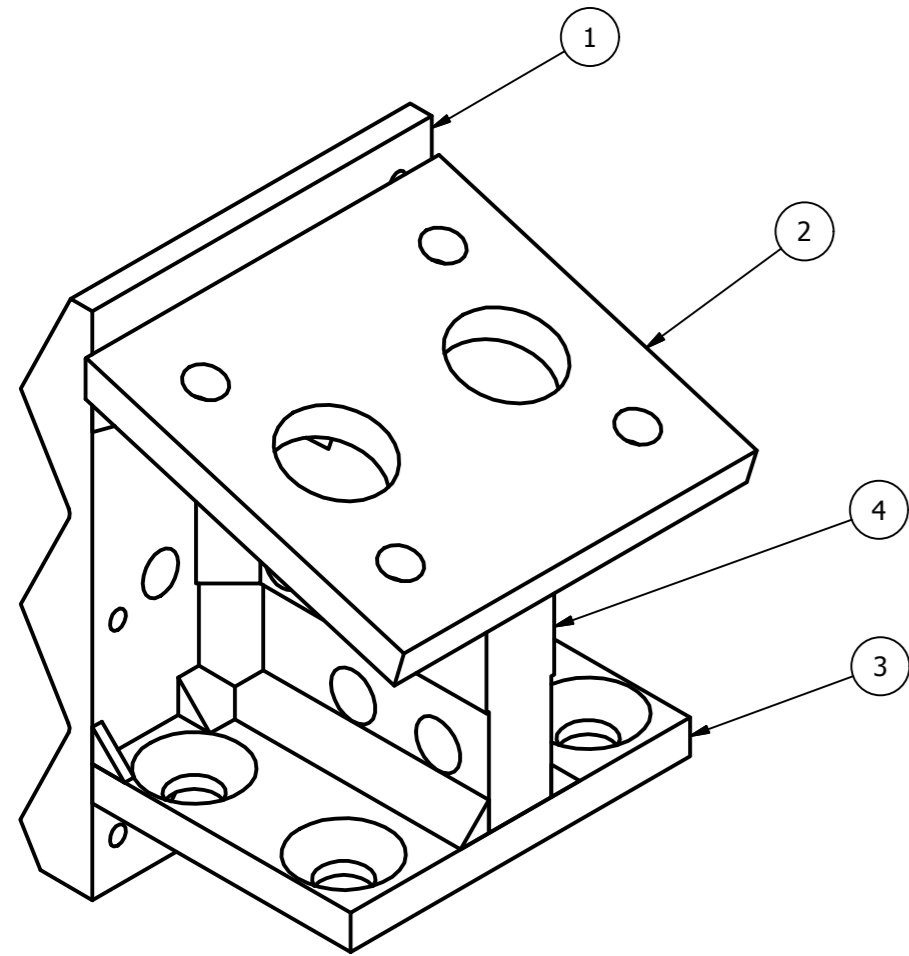


ITEM	QTY	PART NUMBER	DESCRIPTION
2	7	5000284	PIN, DOWEL M3 x 10 LG.
1	1	472-3660	LOWER THORACIC SPINE WELDED ASSEMBLY

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION: LOWER THORACIC SPINE ASSEMBLY
MATERIAL:		DRAWN BY:	B. KIMES 9/28/2011	
HEAT TREAT:		CHECKED BY:		
FINISH:		ENGINEER:	J. WANG 1/16/2012	SIZE: SHEET A3 1 of 1 SCALE: .750
TOTAL QTY IN DUMMY		1		DRAWING NO.: 472-3650

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPW400 R7 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	BK
	B	ADDED COUNTERSINK TO HOLES IN LEFT SIDE VIEW AND HOLE IN RIGHT SIDE VIEW IN ITEM #4 PART #472-3662 - CENTRAL PLATE, LOWER THORACIC SPINE	6/9/2015	DW
	C	REVISED COUNTERSINK HOLES IN ITEM #4 PART #472-3662 - CENTRAL PLATE, LOWER THORACIC SPINE	6/10/2015	DW

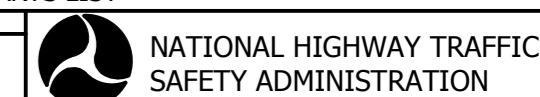


NOTES:

- BEFORE PLATING, CHECK FIT WITH 472-4611 .
- POWDER OR BEAD BLAST.
- NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER WELDING.
- DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

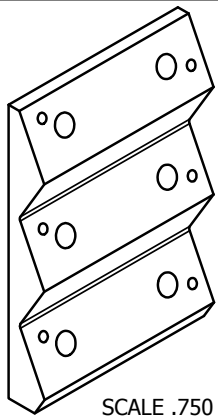
ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	472-3662	CENTRAL PLATE, LOWER THORACIC SPINE
3	1	472-3663	LOWER THORACIC SPINE BOTTOM PLATE
2	1	472-3661	TOP PLATE, LOWER THORACIC SPINE
1	1	472-3664	RIB MOUNTING PLATE, LOWER THORACIC SPINE

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01	
THIRD ANGLE PROJECTION		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:	DATE:	DESIGNER:	DESCRIPTION:
472-3650	9/20/2011	B. KIMES	LOWER THORACIC SPINE WELDED ASSEMBLY
NEXT ASSEMBLY	DATE:	CHECKED BY:	SCALE:
TOTAL QTY IN DUMMY	1	ENGINEER:	1:1
SEE NOTES	1/16/2012	J. WANG	1.000



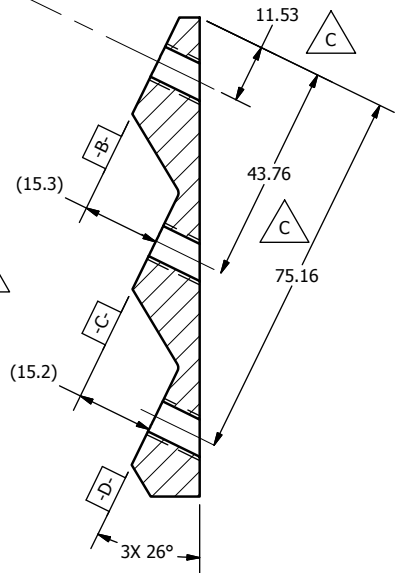
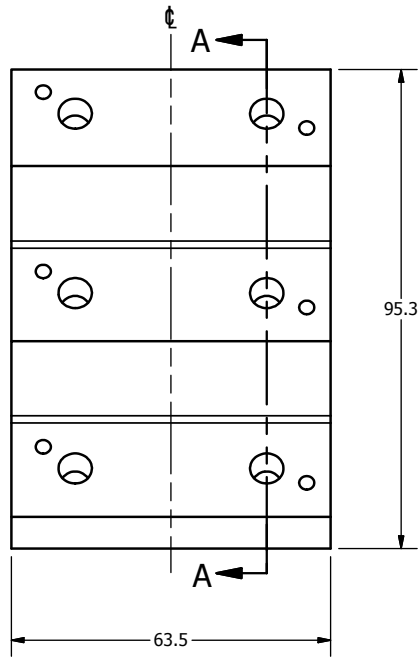
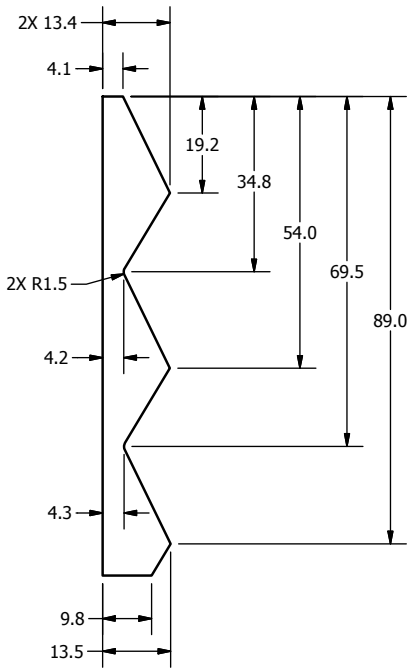
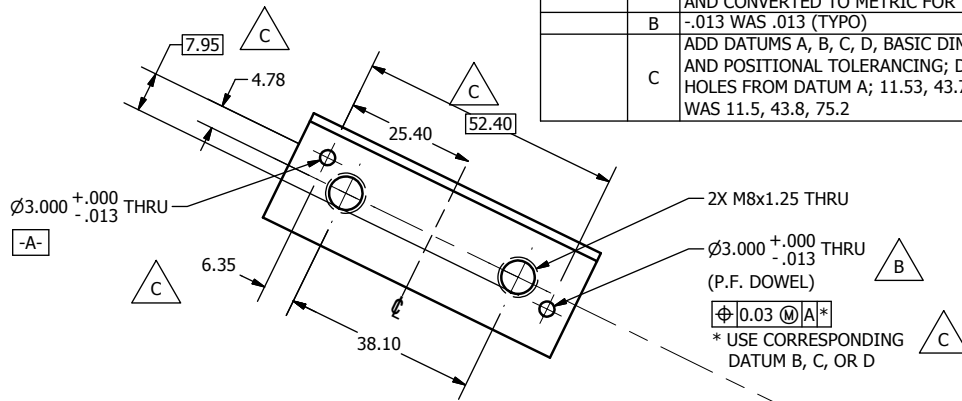
472-3650	1	Welded Steel Mild	DATE:	9/20/2011	DESIGNER:	B. KIMES	DESCRIPTION:	LOWER THORACIC SPINE WELDED ASSEMBLY
NEXT ASSEMBLY	QTY		DATE:		CHECKED BY:		SCALE:	A2 1 OF 1
TOTAL QTY IN DUMMY	1	SEE NOTES	ENGINEER:	J. WANG	DATE:	1/16/2012	SCALE:	1.000

472-3660



SCALE .750

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM410 R04 AND CONVERTED TO METRIC FOR THOR-M	9/19/2011	BK
	B	-.013 WAS .013 (TYPO)	6/15/2012	BK
	C	ADD DATUMS A, B, C, D, BASIC DIMENSIONS, AND POSITIONAL TOLERANCING; DIMENSION HOLES FROM DATUM A; 11.53, 43.76, 75.16 WAS 11.5, 43.8, 75.2	10/3/2012	BK



SECTION A-A  
SCALE 1.000

NOTES:

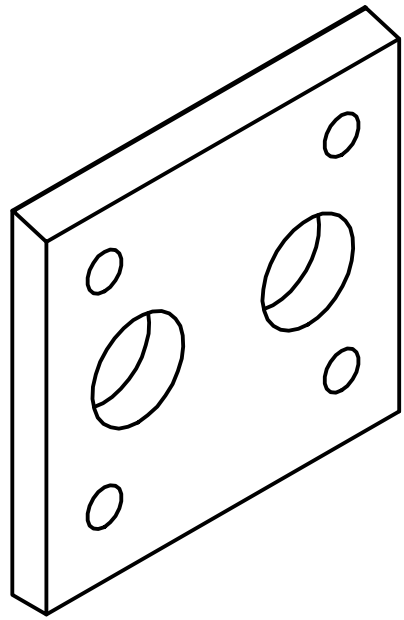
DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 X .05 16 XX .012 X .05 16 XXX .013 X .05 16 XXXX .015 X .05 16		
PROJECT NO:	472-3660	MATERIAL:	1018 STEEL	DESCRIPTION:
DATE:	9/19/2011	HEAT TREAT:		RIB MOUNTING PLATE, LOWER THORACIC SPINE
CHECKED BY:	B. KIMES	ENGINEER:	J. WANG	DATE:
DATE:	9/19/2011	DATE:	1/16/2012	SCALE:
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:
SCALE:	1:000			472-3664

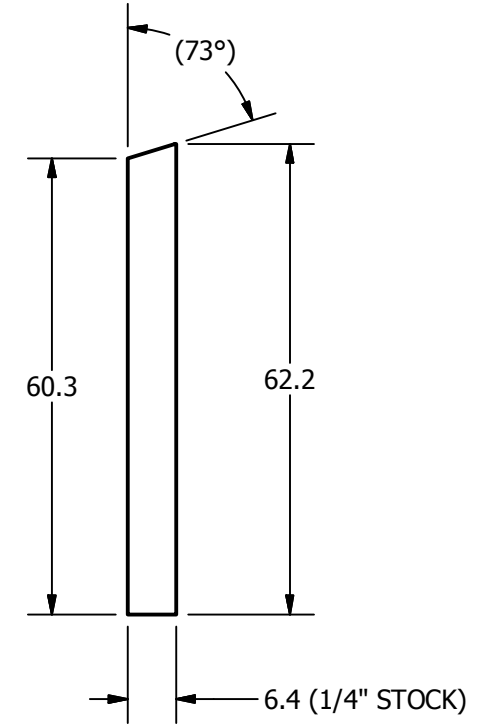
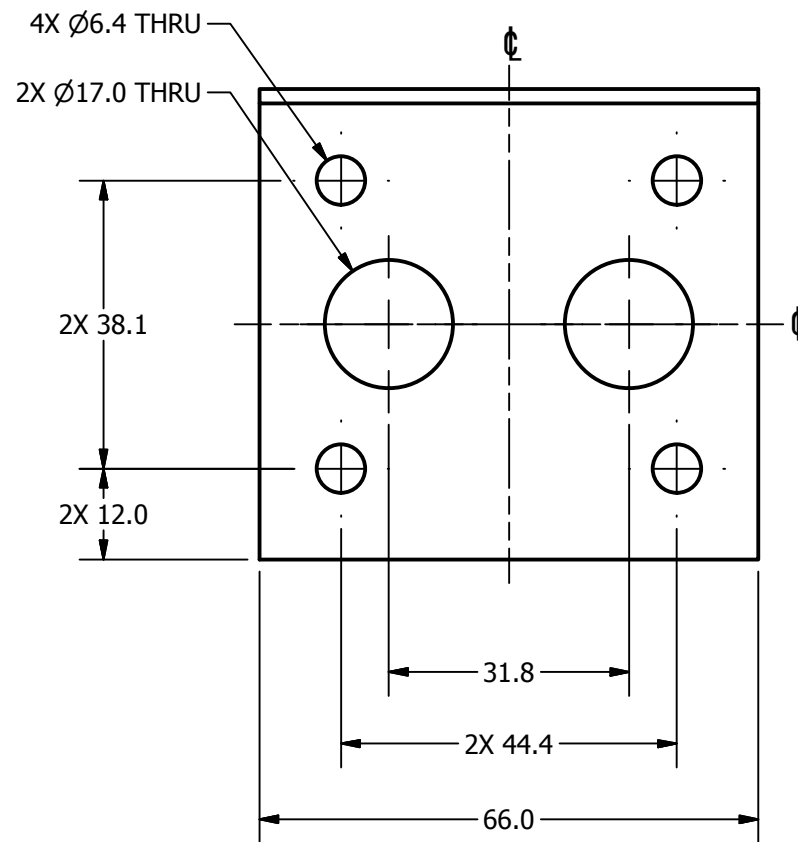
472-3660	1	1018 STEEL	9/19/2011
NEXT ASSEMBLY	QTY		
TOTAL QTY IN DUMMY	1		

C

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM411 R1 AND CONVERTED TO METRIC FOR THOR-M	9/19/2011	BK



SCALE 1.000



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES

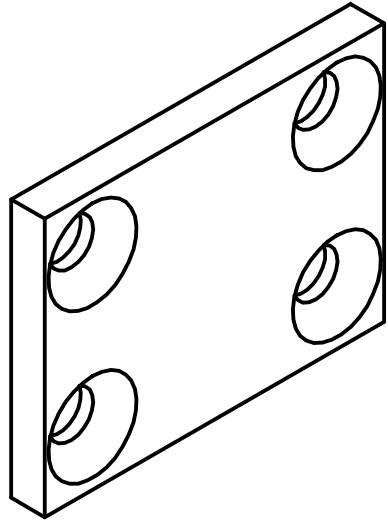
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ± 0.5 ± 0.5 1.6  
.XX ± 0.2 ± 0.2 1.6  
.XXX ± 0.1 ± 0.1 1.6  
XXX ± 0.01 ± 0.01 1.6



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

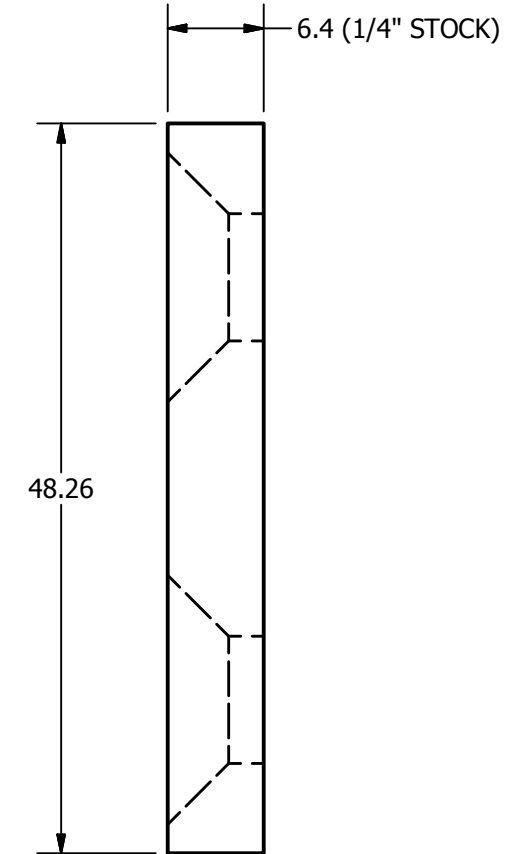
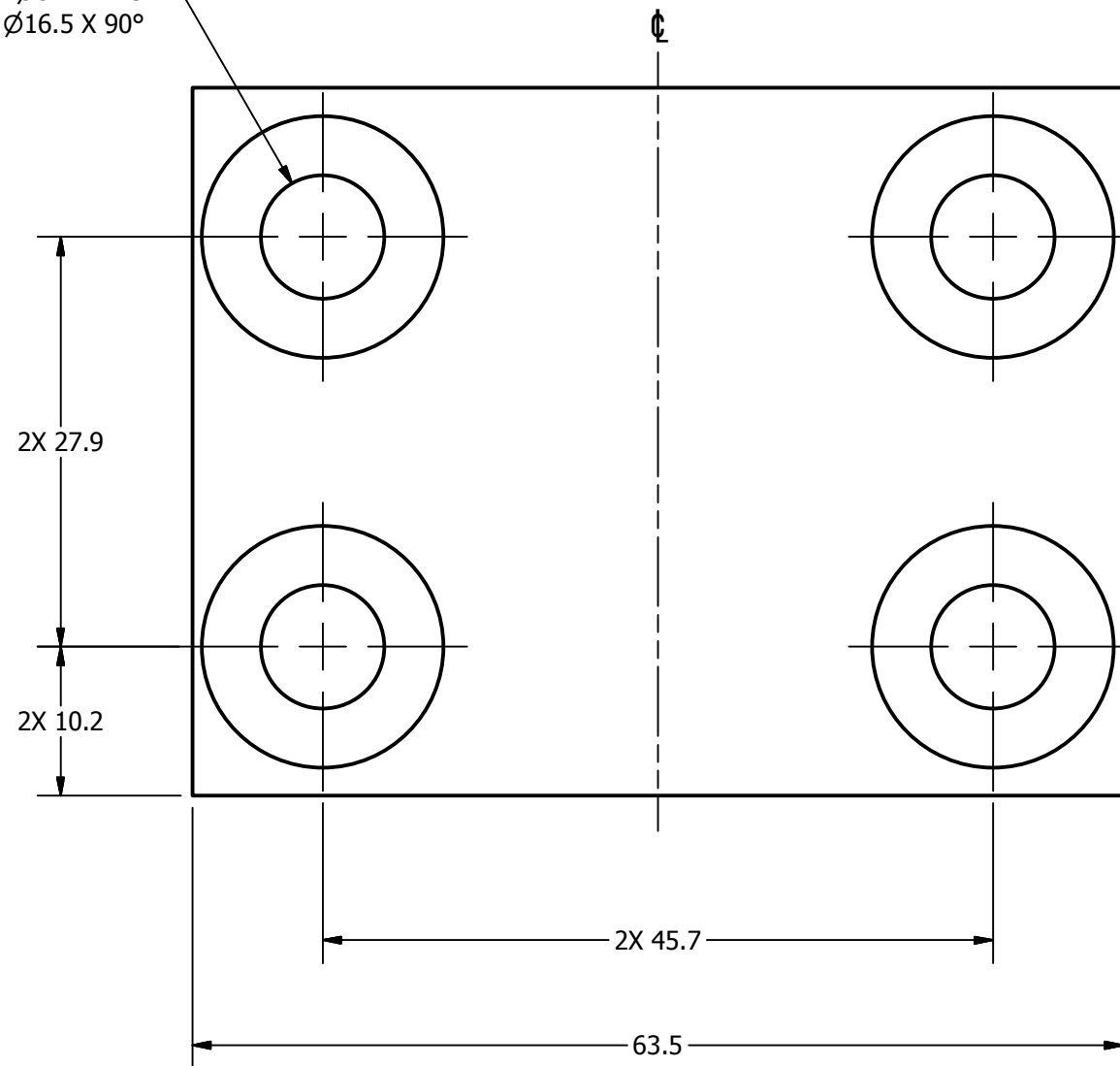
PROJECT NO.: 472-3660	QTY 1	MATERIAL: 1018 STEEL	HEAT TREAT:	ENGINEER: J. WANG	DATE: 1/16/2012	DESCRIPTION: TOP PLATE, LOWER THORACIC SPINE	SIZE: SHEET A3 1 OF 1	DRAWING NO.: 472-3661	REV: A
NEXT ASSEMBLY	TOTAL QTY IN DUMMY	HEAT TREAT:	FINISH:	CHECKED BY:	DATE:	SCALE: 1.000			

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM413 R01 AND CONVERTED TO METRIC FOR THOR-M	9/19/2011	BK



SCALE 1.000

4X Ø8.4 THRU  
✓ Ø16.5 X 90°



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ±0.5 ±0.5 1.6  
XX ±0.2  
XXX ±0.1  
XXX ±0.1

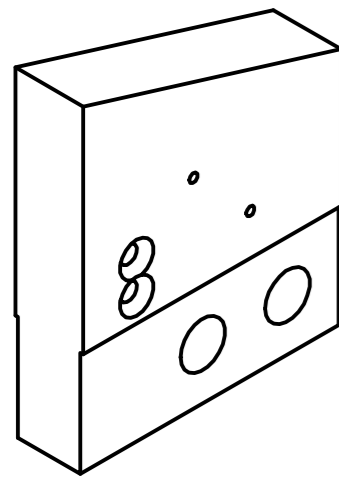


NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

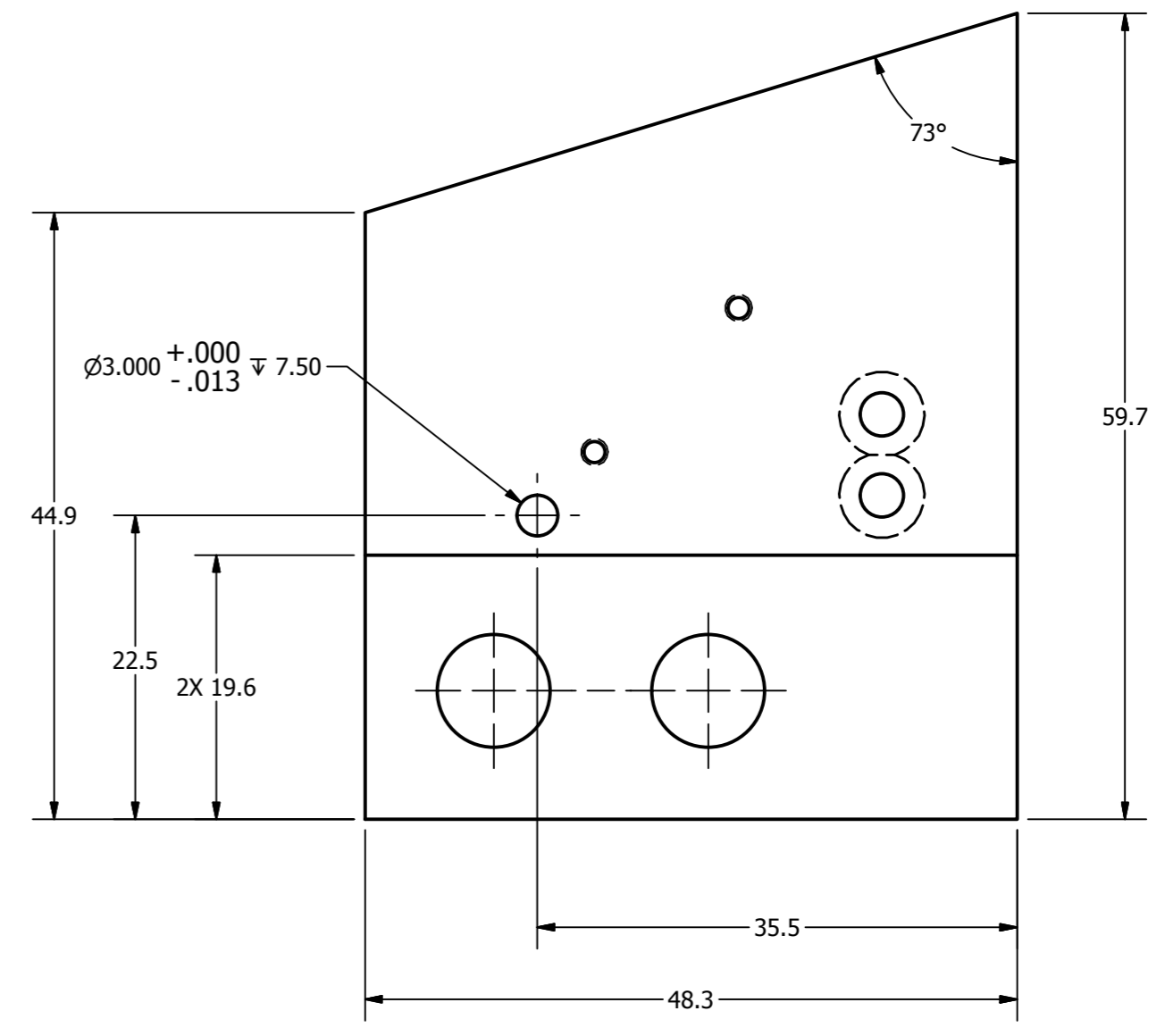
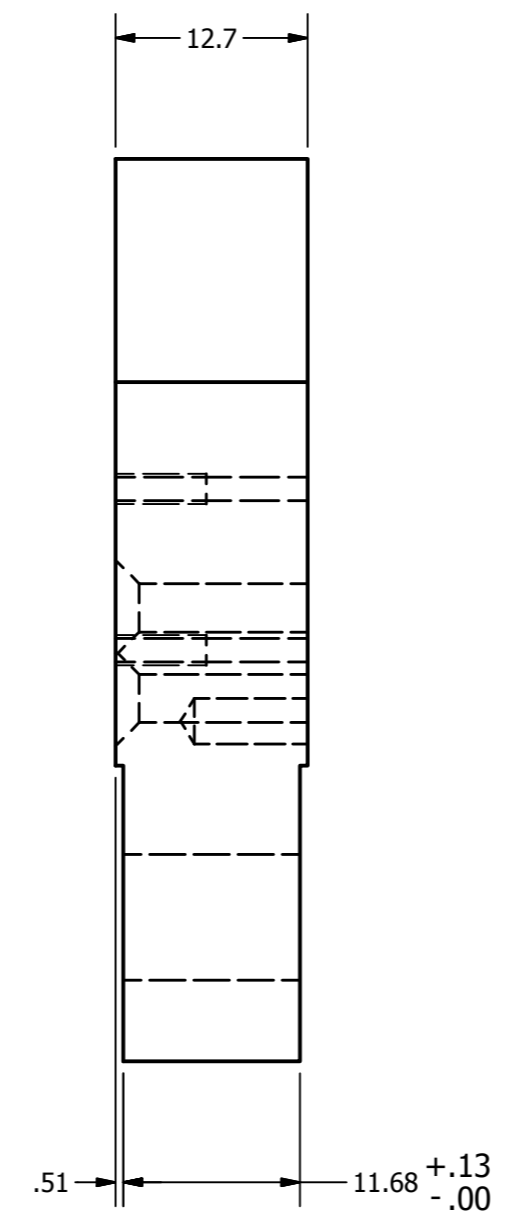
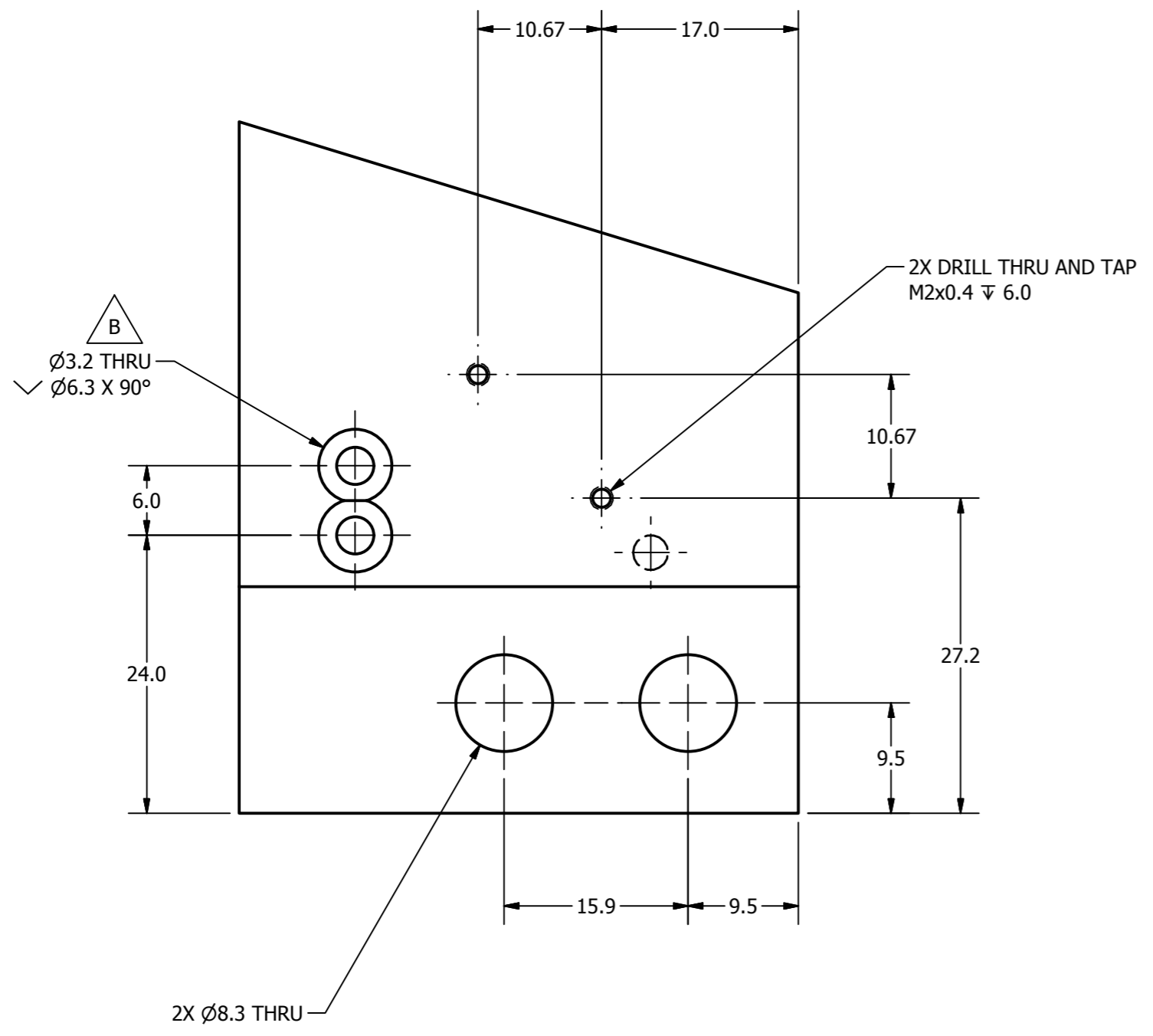
DESCRIPTION:  
LOWER THORACIC SPINE BOTTOM PLATE

PROJECT NO:	472-3660	QTY	1	MATERIAL:	1018 STEEL	HEAT TREAT:		CHECKED BY:	B. KIMES	DATE:	9/19/2011	SIZE:	A3	SHEET	1 OF 1	DRAWING NO.:	472-3663	REV:	A
NEXT ASSEMBLY		TOTAL QTY IN DUMMY	1	FINISH:		ENGINEER:	J. WANG	DATE:	1/16/2012	SCALE:	2.000								

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM413 R01 AND CONVERTED TO METRIC FOR THOR-M	9/19/2011	BK
	B	HOLE NOTE Ø3.3 THRU CUTOUT AS SHOWN √4.0 √Ø6.0 X 90° WAS Ø3.3 THRU CUTOUT AS SHOWN √4.0; ADDED HOLE - Ø3.000 +.000/-0.013 √7.5; HOLE NOTE Ø3.2 THRU √Ø6.3 X 90° WAS Ø3.0 THRU CUTOUT AS SHOWN √4.0 √Ø6.3 X 90°	6/10/2015	DW

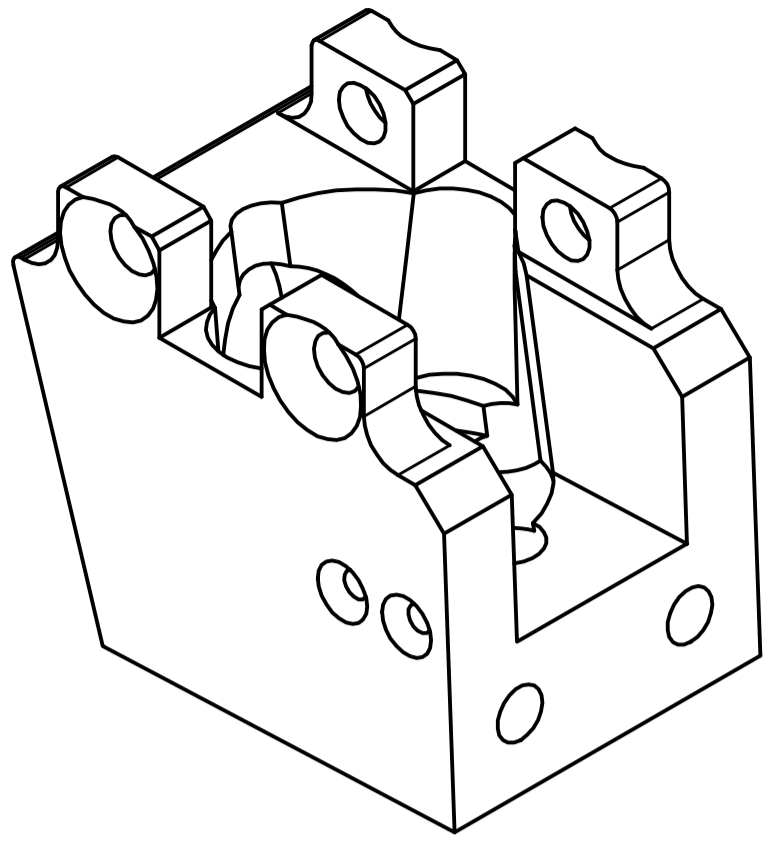


SCALE 1.000

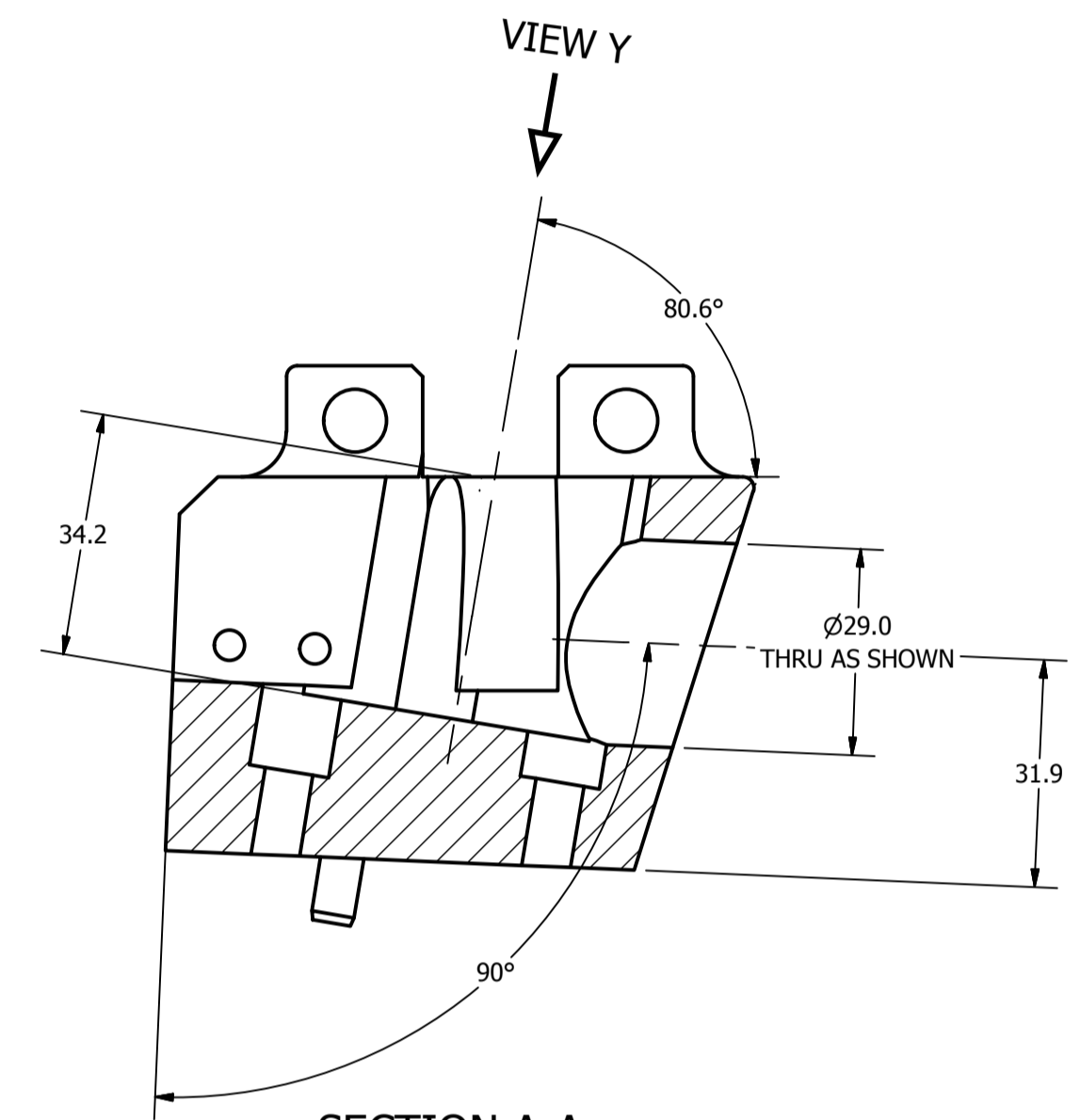
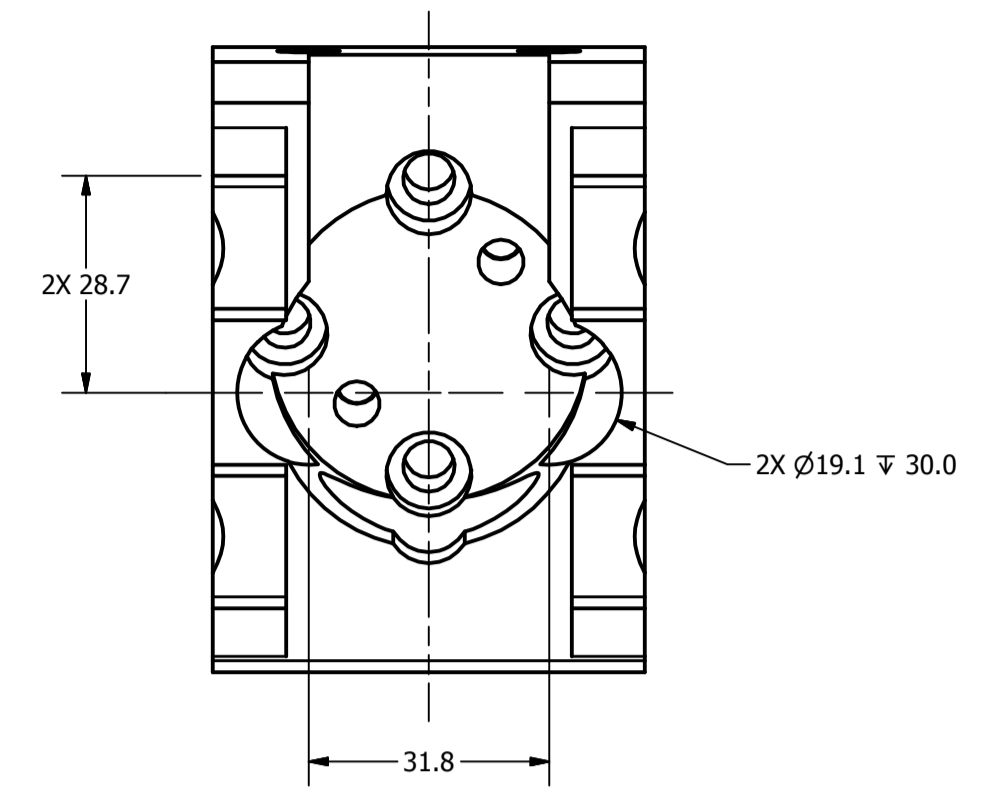


DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH		DESCRIPTION: CENTRAL PLATE, LOWER THORACIC SPINE	
PROJECT NO:	DATE:	DESIGNED BY:	DATE:	SIZE:	DRAWING NO:
472-3660	9/19/2011	B. KIMES	9/19/2011	A2	1 OF 1
MATERIAL:	FINISH:	CHECKED BY:	DATE:	SCALE:	DRAWING NO:
1018 STEEL		J. WANG	1/16/2012	2.000	472-3662
QTY:	FINISH:	ENGINEER:	DATE:	SCALE:	DRAWING NO:
1		J. WANG	1/16/2012	2.000	472-3662

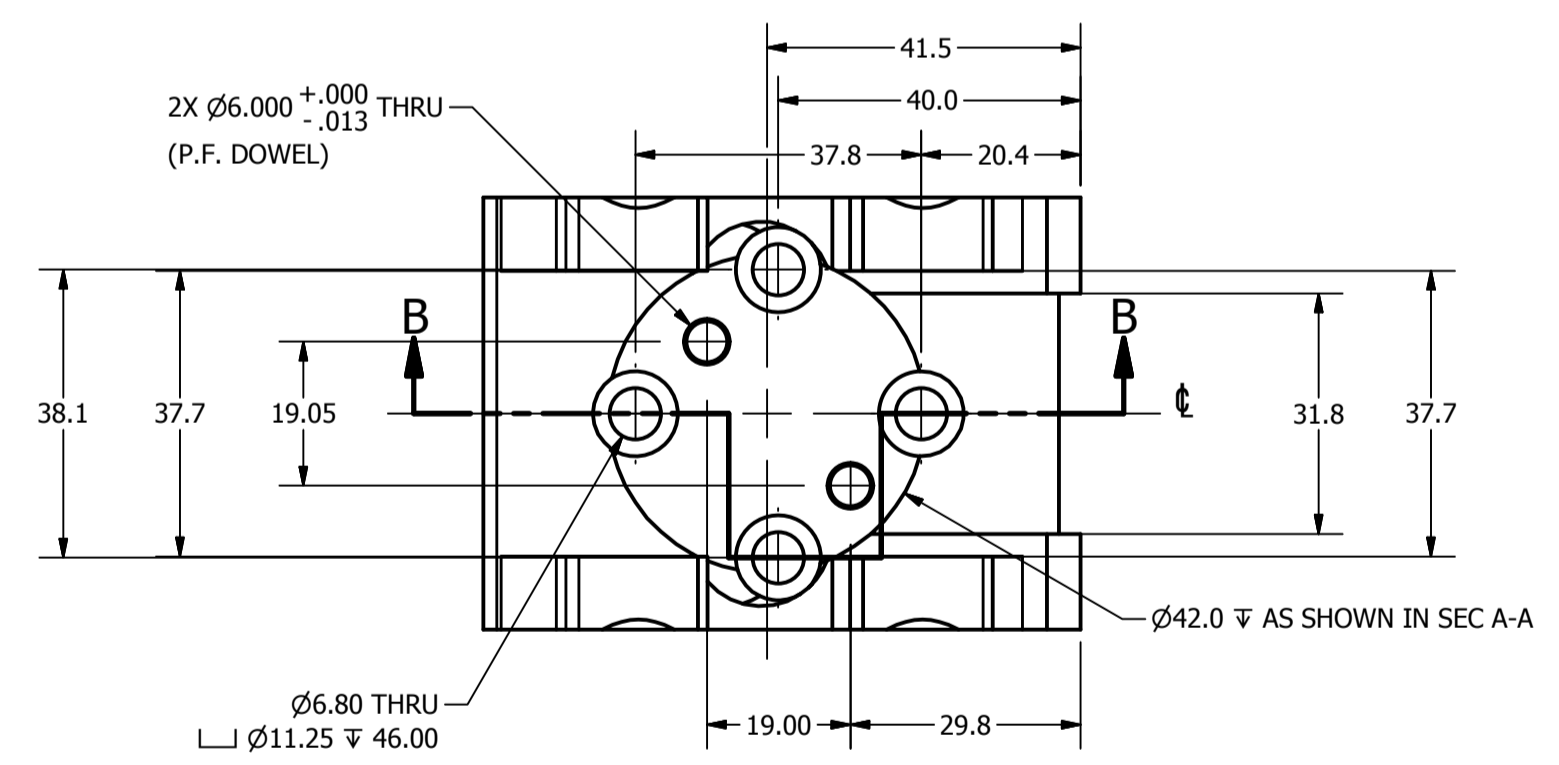
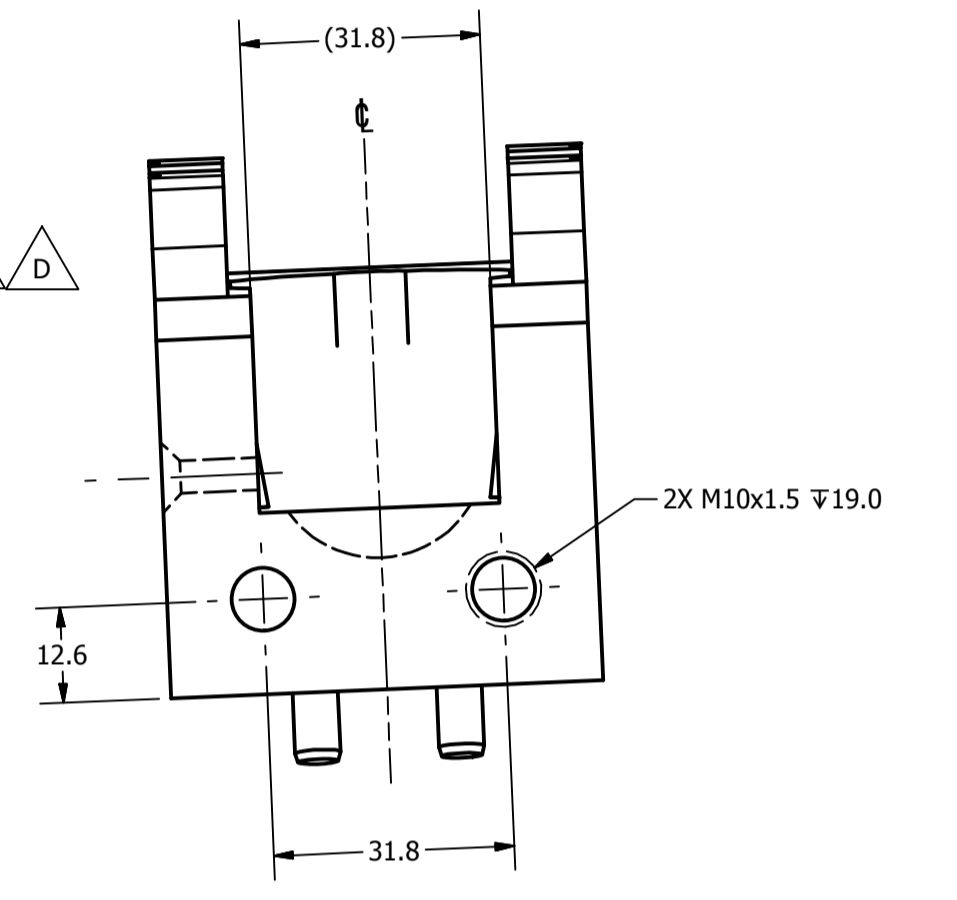
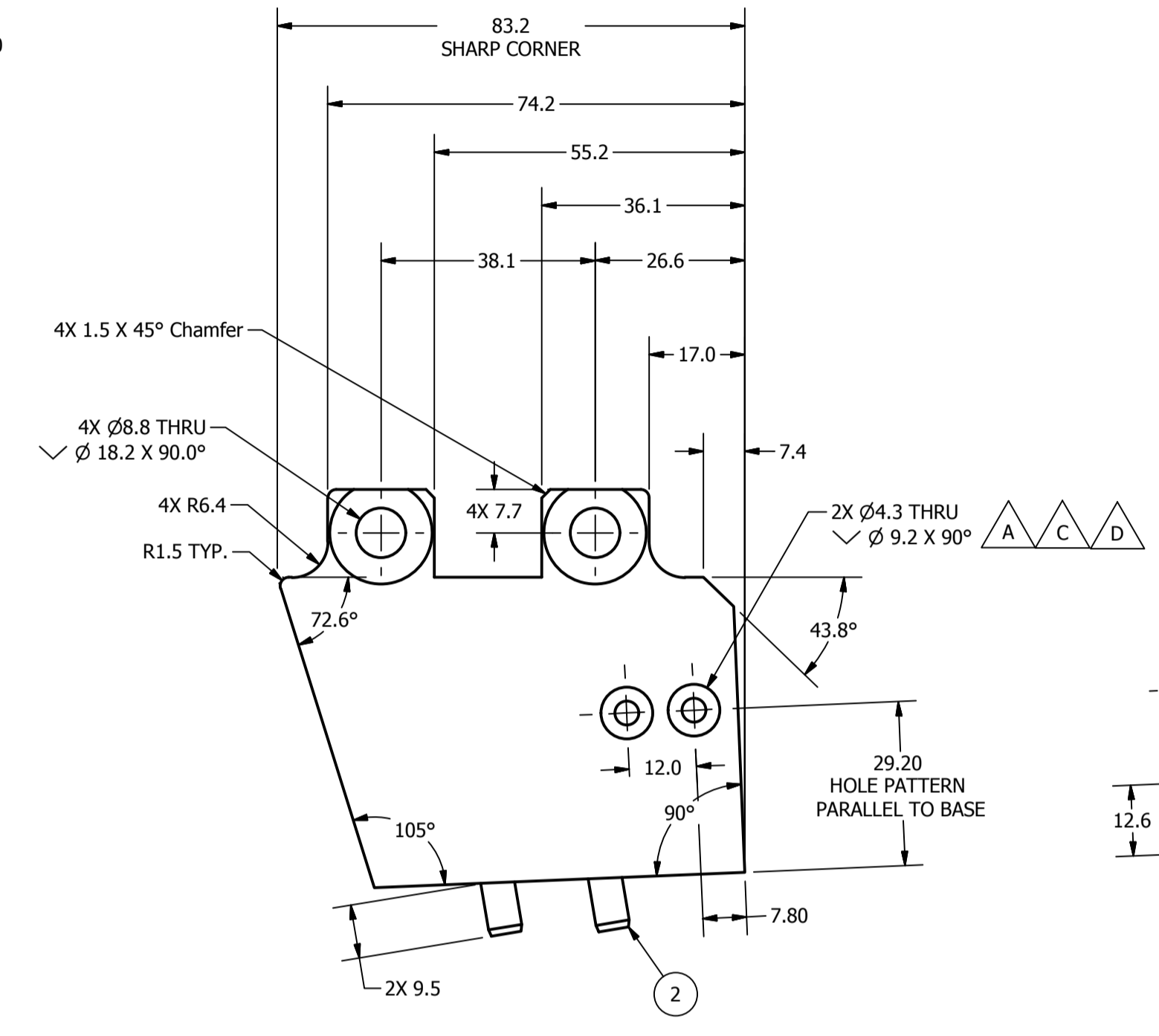
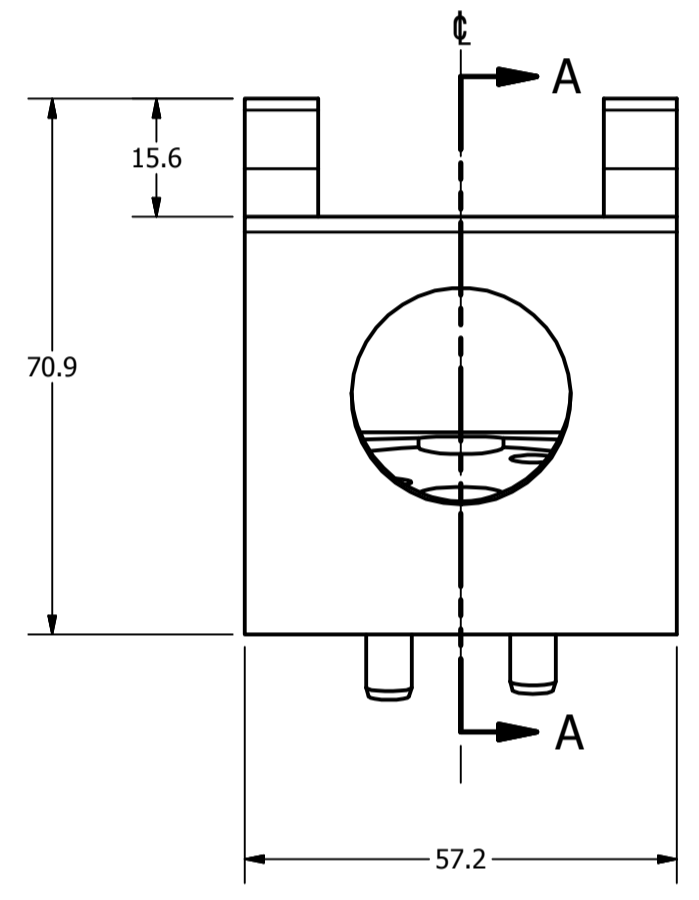
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM805 R0 AND CONVERTED TO METRIC FOR THOR-M. REDESIGNED TILT SENSOR ORIENTATION; 2X 19.1 DIA 30 DEEP WAS 2X R11.01 19 DEEP; 24.3 WAS 27.3	9/16/2011	BK
	B	24.3 WAS 27.3; 31.8, (31.8) WAS 30.3, (30.3)	2/14/2012	BK
	C	HOLE NOTE 2X Ø4.3 THRU L Ø8.0 F 4.0 V Ø8.2 x 90° WAS 2X Ø4.3 THRU L Ø8.00 F 8.0	6/1/2015	DW
	D	HOLE NOTE 2X Ø4.3 THRU V Ø9.2 X 90° WAS Ø4.3 THRU L Ø8.0 F 4.0 V Ø8.2 x 90°	6/9/2015	DW



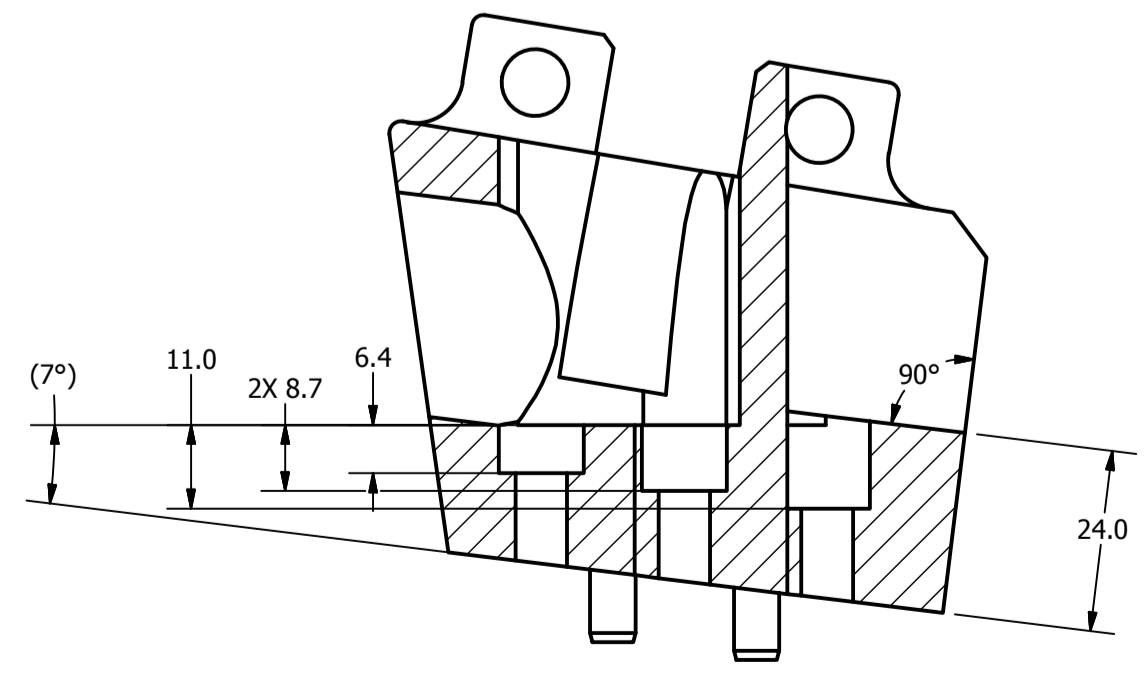
SCALE 1.000



SECTION A-A  
SCALE 1.000



VIEW Y



SECTION B-B  
SCALE 1.000

- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. POWDER OR BEAD BLAST.
  3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.
  5. INSTALL DOWEL PINS AFTER PLATING.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	5000433	M6 X 12 LG. DOWEL PIN

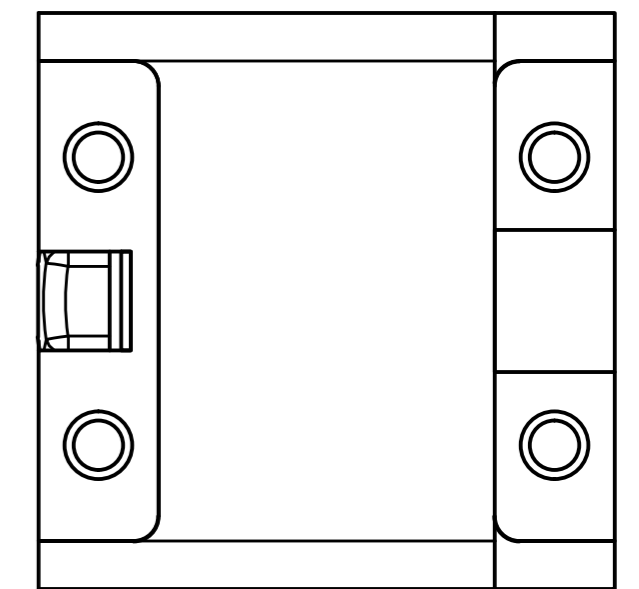
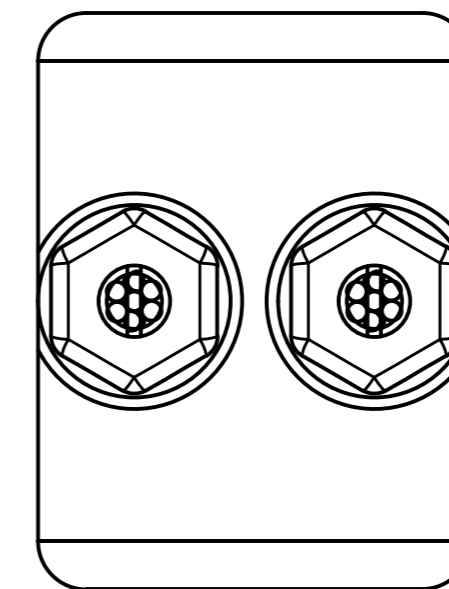
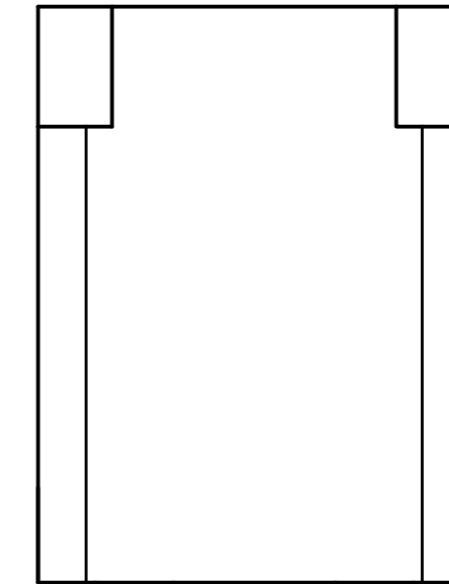
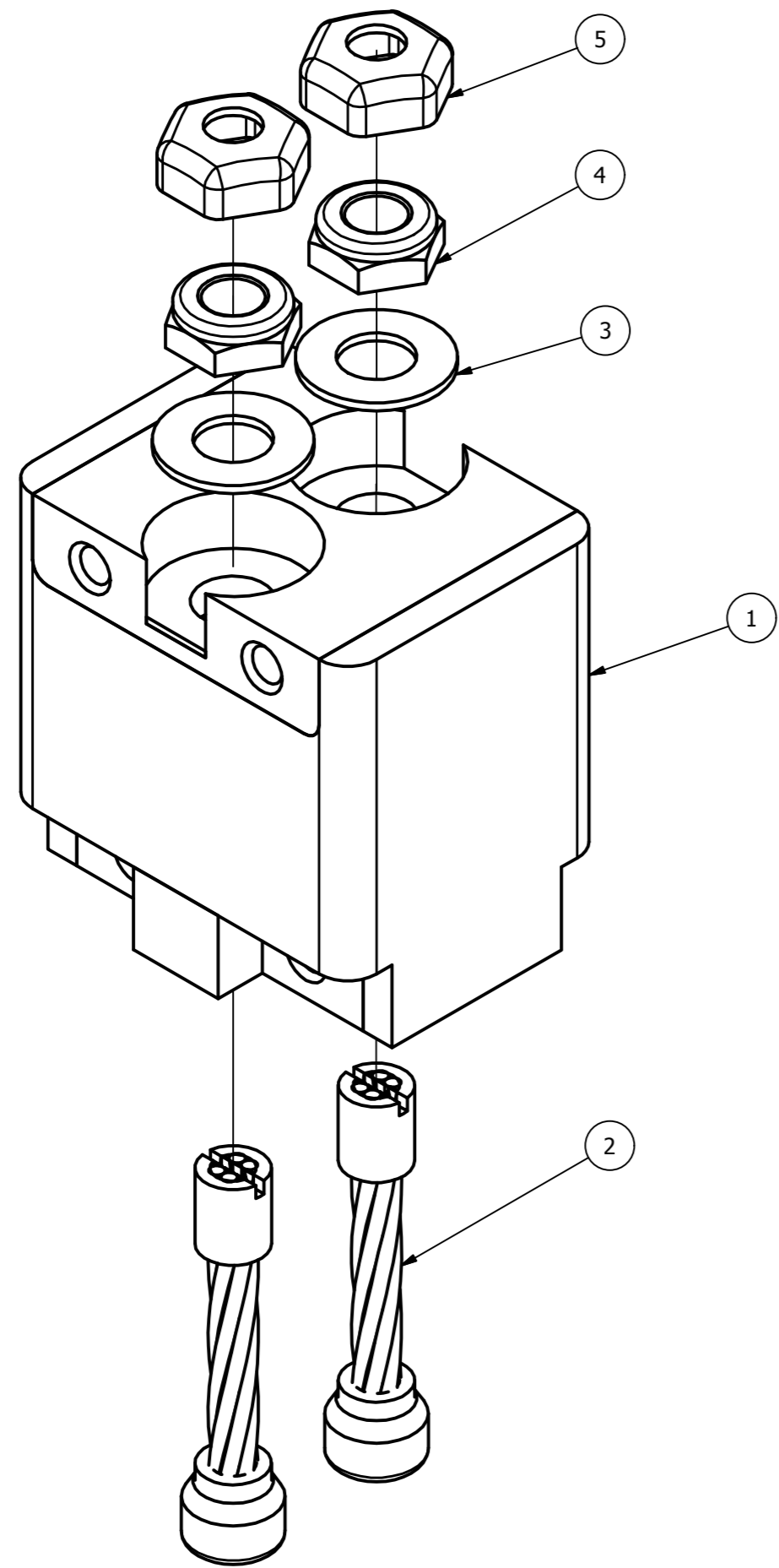
PARTS LIST			
472-3600	1	1018 STEEL	PELVIS/LUMBAR MOUNTING BLOCK ASSEMBLY
TOTAL QTY IN DUMMY	1	SEE NOTES	

DESIGNED BY: B. KIMES	DATE: 9/16/2011	APPROVED BY: J. WANG	DATE: 1/17/2012
DRAWING NO: 472-3760		REV: A	
PROJECT: NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION		SHEET: 1 OF 1	
TOTAL QTY IN DUMMY: 1		PART NO: 472-3760	



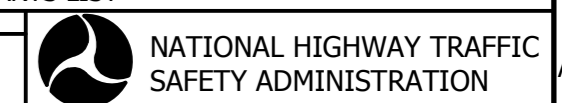
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	10/25/2011	BK



SCALE 1.000

ITEM	QTY	PART NUMBER	DESCRIPTION
5	2	472-3647	M12 VINYL NUT COVER
4	2	472-3747	M12x1.75 LOCKNUT, MODIFIED
3	2	9000135	WASHER FLAT 1/2 PTFE
2	2	472-3745	LUMBAR SPINE FLEX JOINT CABLE ASSEMBLY
1	1	472-3740	LUMBAR SPINE FLEX JOINT MOLDED ASSEMBLY

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH	
THIRD ANGLE PROJECTION		X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.05	
PROJECT NO:	DATE:	REMOVED BURRS & BREAK SHARP EDGES	
472-3600	10/25/2011	B. KIMES	
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:
TOTAL QTY IN DUMMY	1	ENGINEER:	DATE:
		J. WANG	1/17/2012

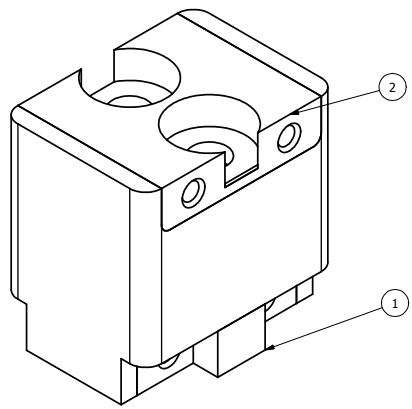


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

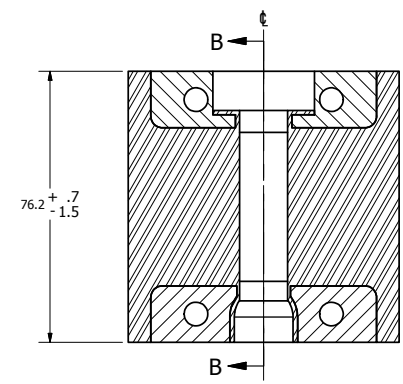
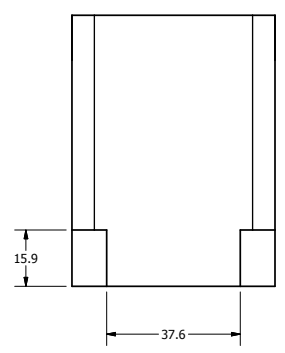
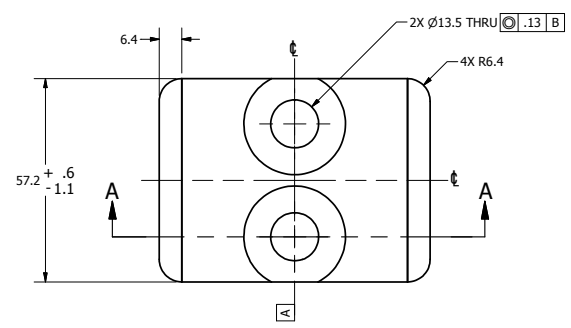
DESCRIPTION: LUMBAR SPINE FLEX JOINT ASSEMBLY

SIZE: A2	SHEET: 1 OF 1	DRAWING NO: 472-3746	REV: A
SCALE: 1.000			

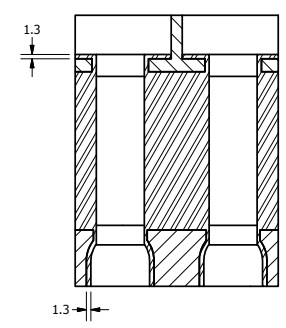
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM710 RB0 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	BK



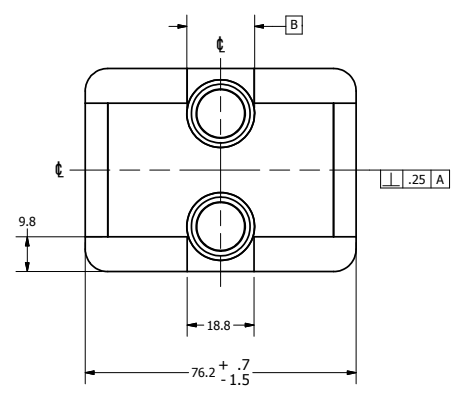
SCALE 1.000



SECTION A-A  
SCALE 1.000



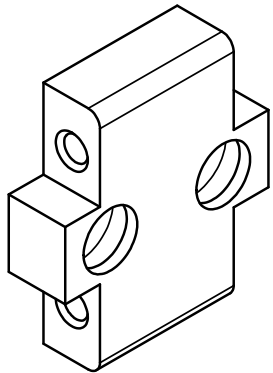
SECTION B-B  
SCALE 1.000



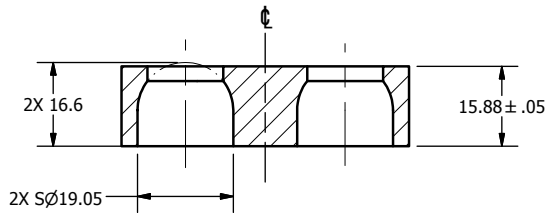
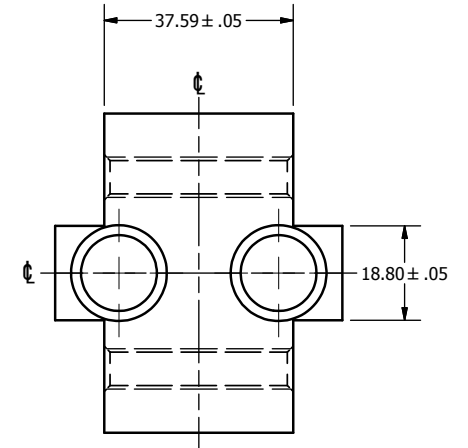
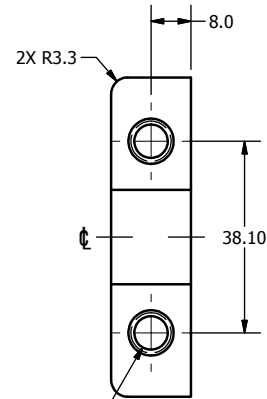
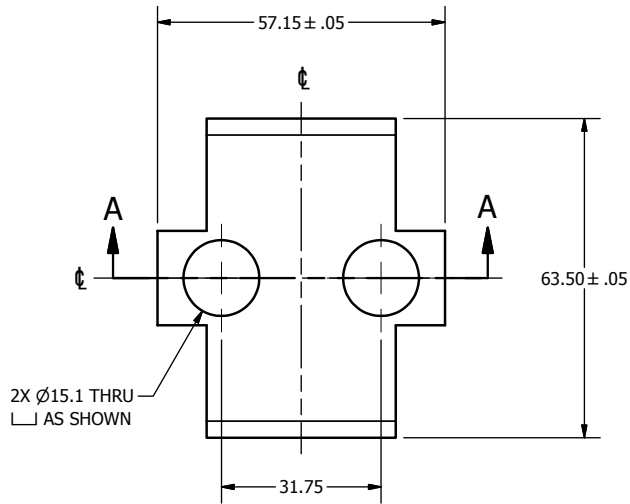
- NOTES:
- DIMENSIONS REPRESENT PART SIZE AFTER MOLDING.
  - RUBBER TOLERANCE ±0.5, UNLESS OTHERWISE SPECIFIED.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-3741	LUMBAR SPINE FLEX JOINT TOP PLATE
1	1	472-3742	LUMBAR SPINE FLEX JOINT BOTTOM PLATE

PARTS LIST				
DO NOT SCALE DRAWING		TOLERANCES		
		DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO BE PRECISE FRACTIONS ARE TO BE IN 16ths UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED		
BUTYL RUBBER SHORE A 75±5 B. KIMES 9/20/2011		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION		
472-3746 1 NEXT ASSEMBLY		LUMBAR SPINE FLEX JOINT MOLDED ASSEMBLY 1 TOTAL QTY IN DUMMY		
J. WANG 1/16/2012		A21 of 1 1.000 472-3740		



SCALE 1.000



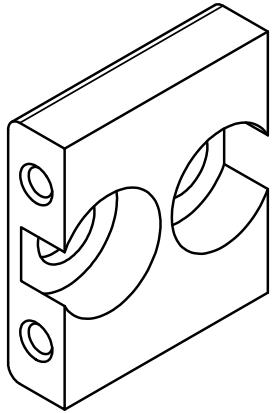
SECTION A-A  
SCALE 1.000

NOTES:

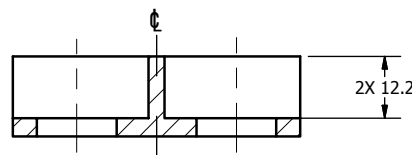
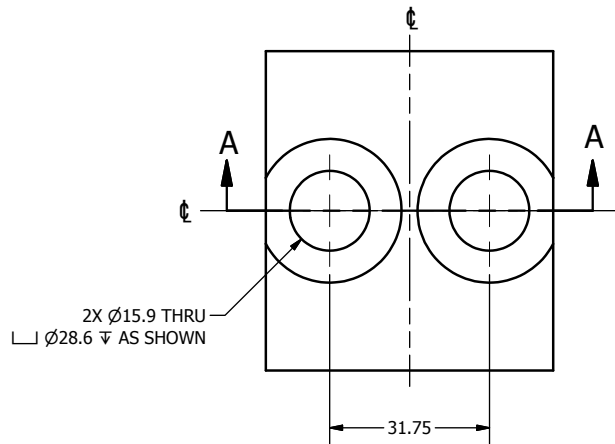
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. SATIN FLASH CHROME PLATE 0.008mm MAX. AFTER MACHINING.
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM712 R80 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	BK
	B	2X M8 x 1.25 HOLES WERE Ø6.6	6/15/2012	BK
	C	CHANGED NICKEL PLATE TO SATIN FLASH CHROME	7/23/2012	CEF
	D	FINISH .008mm MAX. WAS .0003 MAX.	11/9/2012	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.07 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3740	MATERIAL:	1018 STEEL	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	9/20/2011	LUMBAR SPINE FLEX JOINT BOTTOM PLATE
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FRESH:	SEE NOTES	DATE:	1/17/2012	SCALE: 1.000
TOTAL QTY IN DUMMY	1	SIZE:	A3	SHEET: 1 OF 1
		DRAWING NO.:	472-3742	REV.:



SCALE 1.000

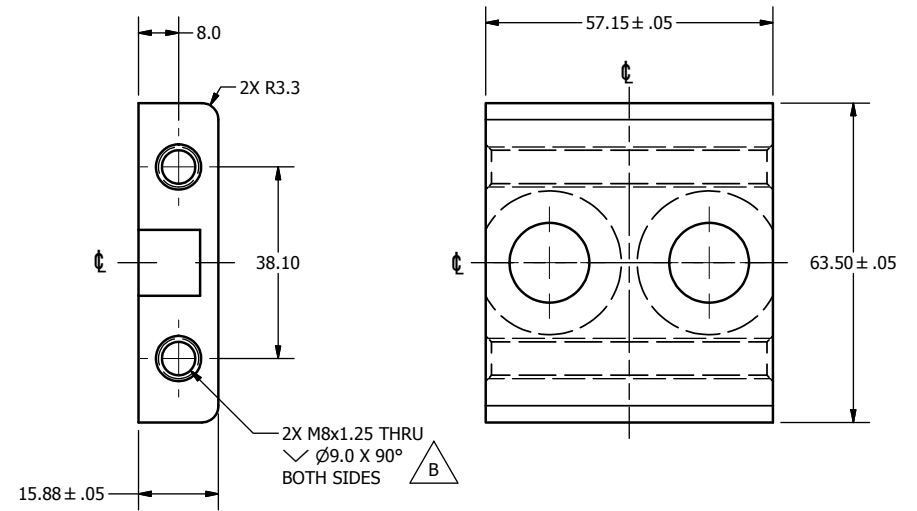


SECTION A-A  
 SCALE 1.000

NOTES:

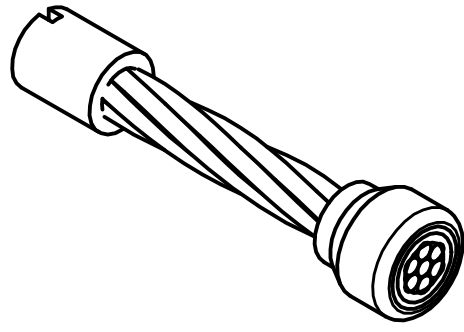
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. SATIN FLASH CHROME PLATE 0.008mm MAX. AFTER MACHINING.  $\triangle$
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM711 R80 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	BK
	B	2X M8 x 1.25 HOLES WERE $\varnothing 6.6$	6/15/2012	BK
	C	CHANGED NICKEL PLATE TO SATIN FLASH CHROME	7/23/2012	CEF
	D	FINISH .008mm MAX. WAS .0003 MAX.	11/9/2012	BK

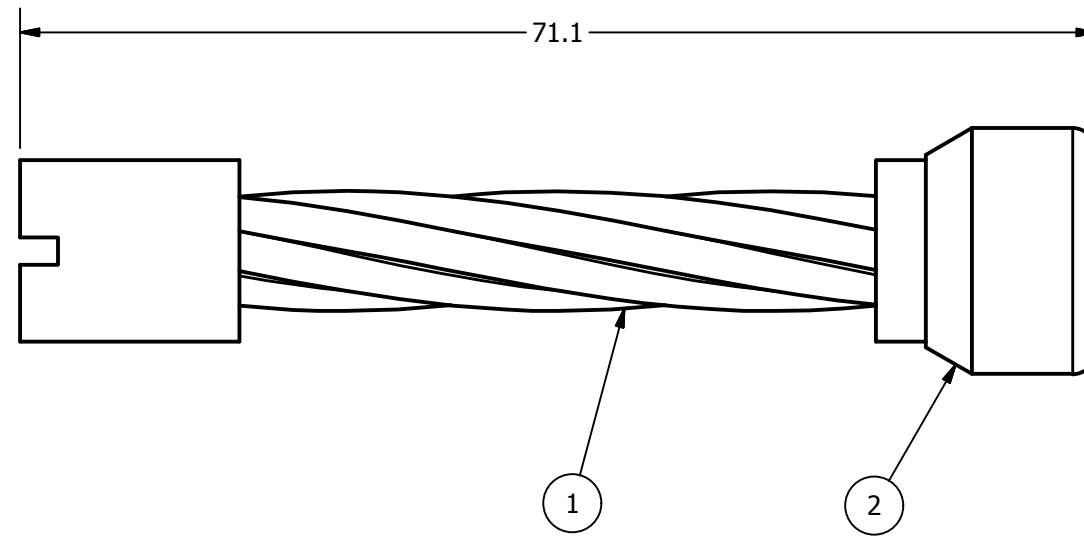
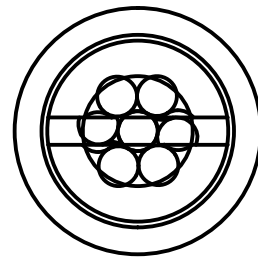


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.0 1.6 X.X 0.2 1.6 X.XX 0.3 1.6 X.XXX 0.01		
PROJECT NO.:	472-3740	MATERIAL:	1018 STEEL	DESCRIPTION: LUMBAR SPINE FLEX JOINT TOP PLATE
DRIVEN BY:	B. KIMES	DATE:	9/20/2011	
CHECKED BY:	J. WANG	DATE:	1/17/2012	
FINISH:	SEE NOTES	SCALE:	1.000	
NEXT ASSEMBLY	QTY	TOTAL QTY IN DUMMY	1	SIZE: SHEET <b>A3</b> 1 OF 1 DRAWING NO.: 472-3741

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM720 R7 AND CONVERTED TO METRIC FOR THOR-M	10/25/2011	BK



SCALE 1.000



NOTES:

1. USE LOCTITE 271 OR EQUIVALANT TO LOCK 472-3743 IN PLACE AS SHOWN.
2. ONE SAMPLE FROM EACH ASSEMBLY BATCH NEEDS TO BE TESTED TO INSURE NO SLIPPAGE OF THE BALL OR THREADED SLEEVE ON THE CABLE SHALL OCCUR UNDER 1,700 LBS OF TENSILE LOAD.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-3743	THREADED BALL END
1	1	472-3744	LUMBAR SPINE FLEX JOINT CABLE

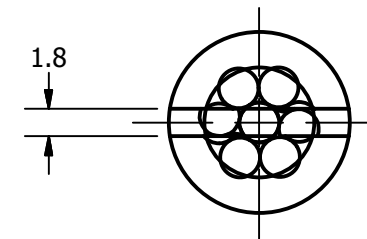
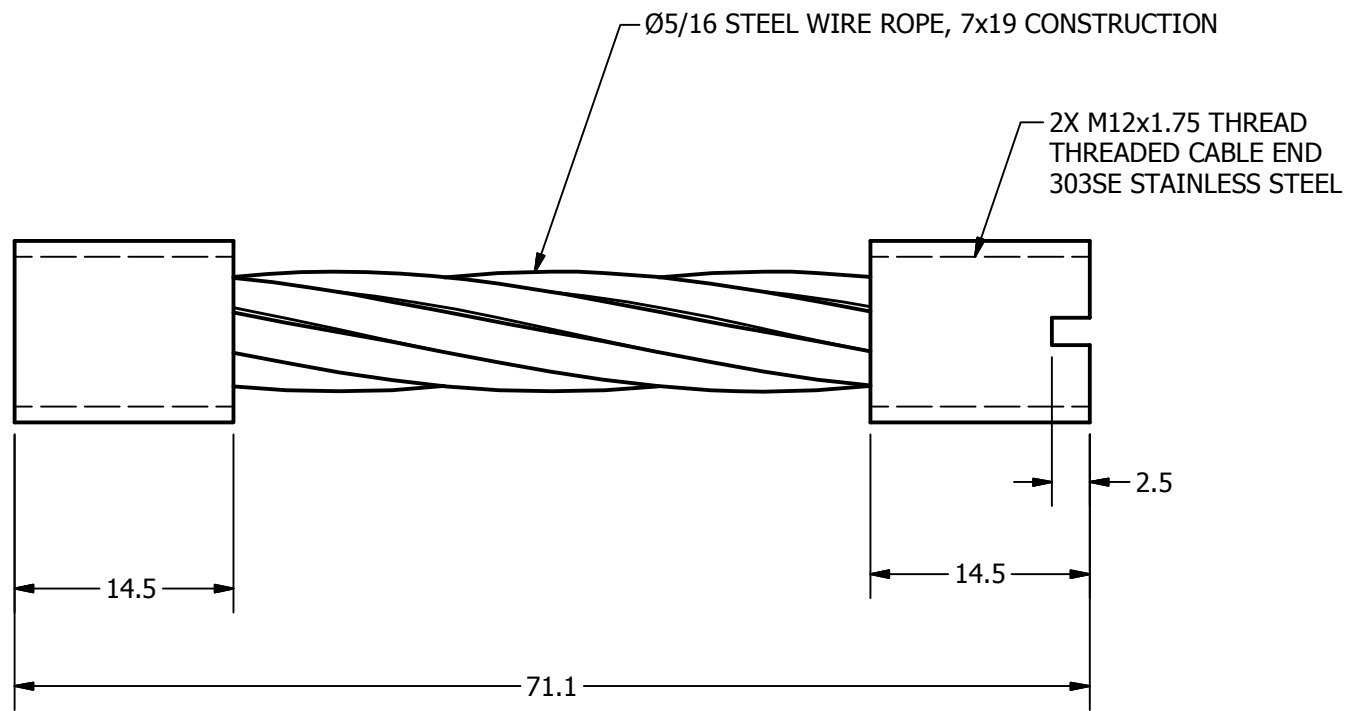
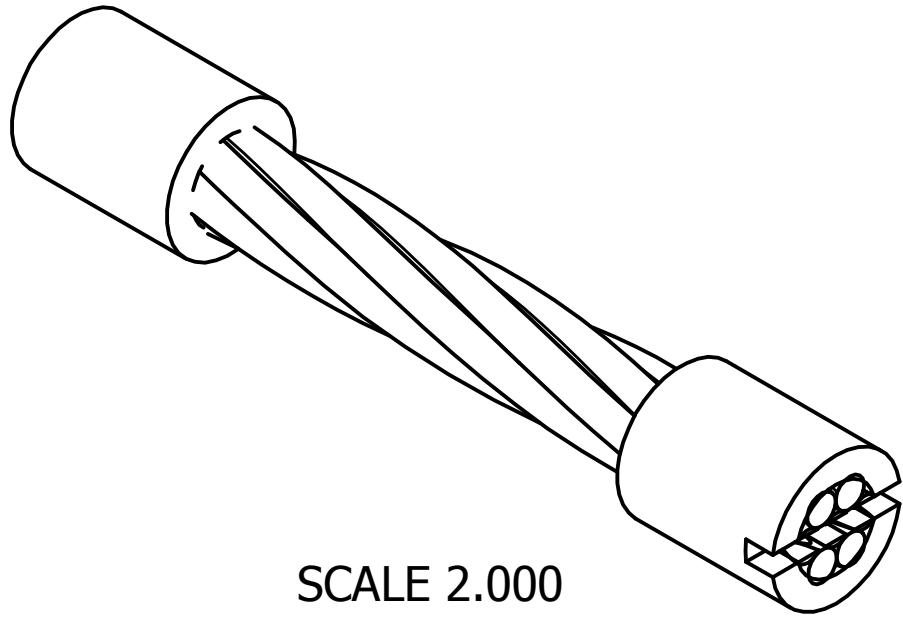
PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ° ± 0.5 1.6 XX ± 0.2 ° ± 0.5 1.6 XXX ± 0.1 ° ± 0.5 1.6 XXXX ± 0.01 ° ± 0.5 1.6		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION: LUMBAR SPINE FLEX JOINT CABLE ASSEMBLY
MATERIAL:		DRAWN BY: B. KIMES		DATE: 10/25/2011
NEXT ASSEMBLY		CHECKED BY:		DATE:
TOTAL QTY IN DUMMY		ENGINEER: J. WANG		DATE: 1/17/2012
		SIZE: A3		SHEET: 1 OF 1
		SCALE: 2.000		DRAWING NO.: 472-3745

472-3746	2
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	2

A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM721 R2 AND CONVERTED TO METRIC FOR THOR-M	10/25/2011	BK

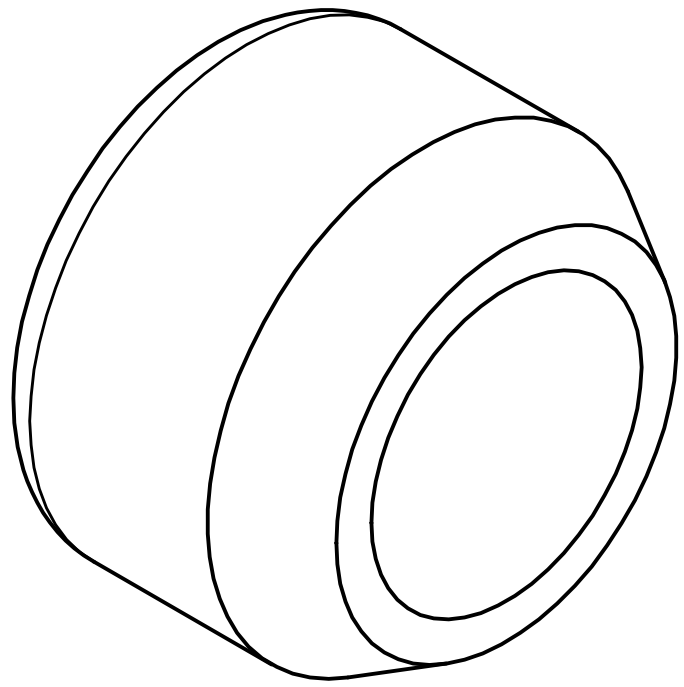


NOTES:

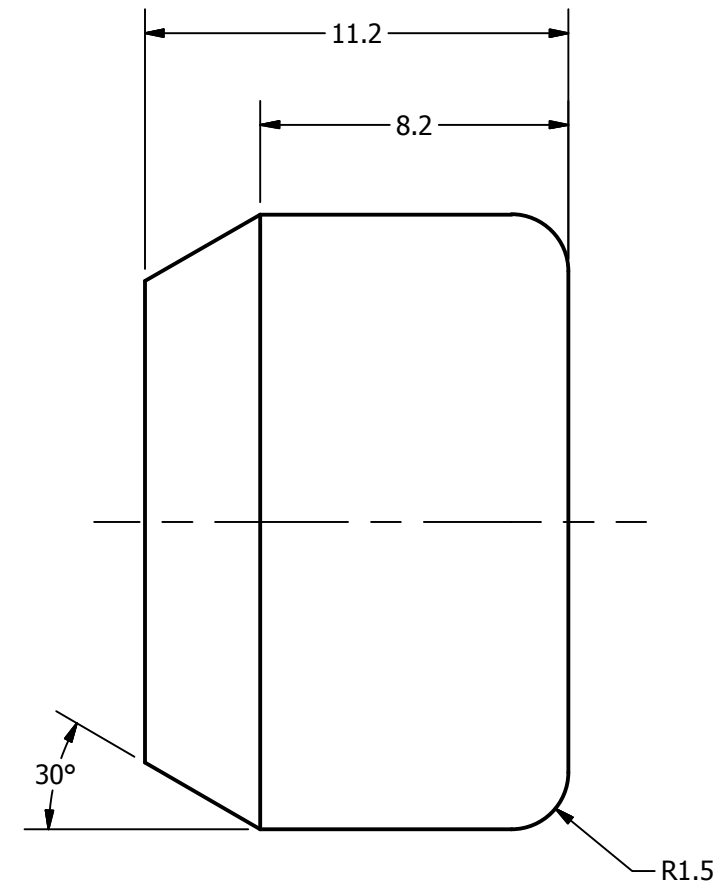
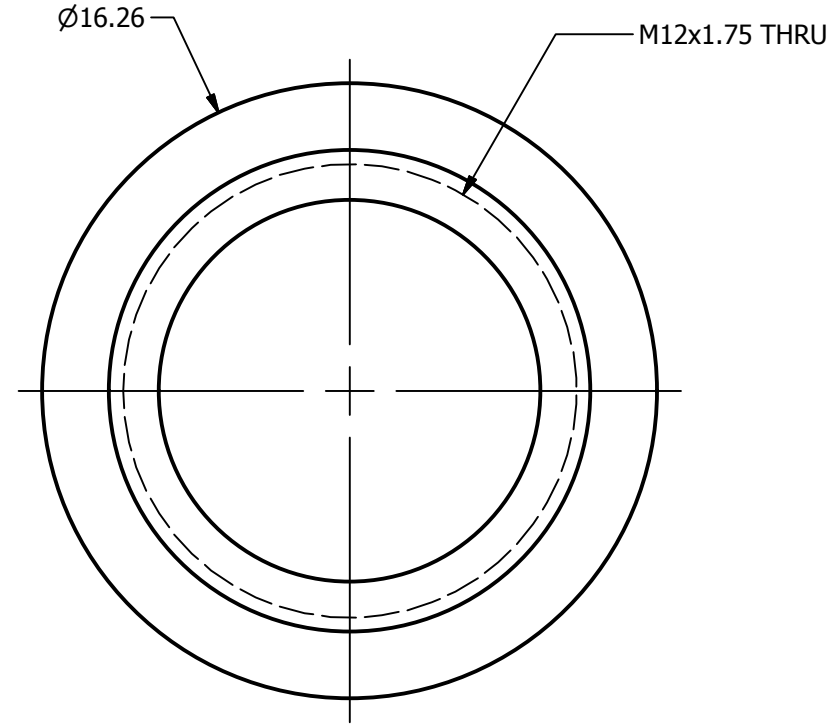
1. DIMENSIONS SHOWN ARE FINAL DIMENSIONS AFTER SWAGING.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO.:	472-3745	MATERIAL:	1	DESCRIPTION: LUMBAR SPINE FLEX JOINT CABLE
HEAT TREAT:		CHECKED BY:	B. KIMES	
FINISH:		ENGINEER:	J. WANG	
DATE:	10/25/2011	DATE:	1/17/2012	SIZE: A3 SHEET: 1 OF 1 SCALE: 2.000
TOTAL QTY IN DUMMY			2	DRAWING NO.: 472-3744

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM321 R9 AND CONVERTED TO METRIC FOR THOR-M	10/25/2011	BK

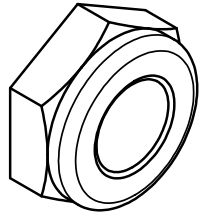


SCALE 5.000

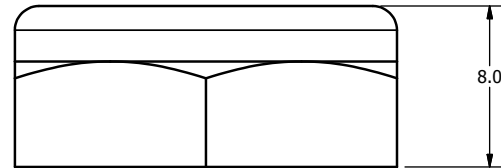
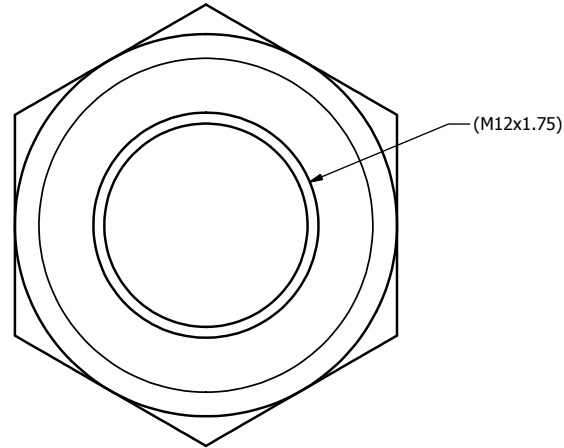


472-3745		1	PROJECT NO.:	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-3645		1	MATERIAL: 304 STAINLESS STEEL	 THIRD ANGLE PROJECTION	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.1 1.6 XXXX ±0.01 ±0.01 1.6		
NEXT ASSEMBLY		QTY	HEAT TREAT:	CHECKED BY: B. KIMES	DATE: 10/25/2011	REMOVE BURRS & BREAK SHARP EDGES	SIZE: A3 SHEET: 1 OF 1 SCALE: 5.000
TOTAL QTY IN DUMMY		2	FINISH:	ENGINEER: J. WANG	DATE: 1/17/2012		DRAWING NO.: 472-3743 REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	10/25/2011	BK



SCALE 2.000

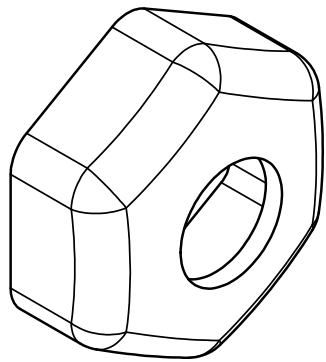


NOTES:

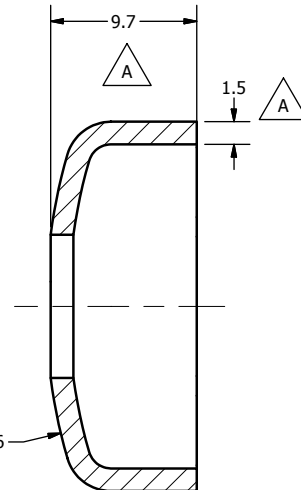
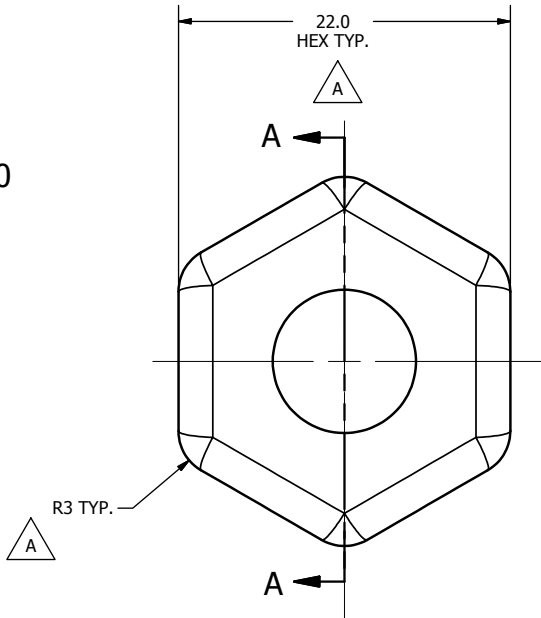
1. MAKE FROM 5000462 (M12x1.75 HEX HEAD LOCKNUT), MODIFY AS SHOWN.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5° 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3746	2	DATE:	10/25/2011
MATERIAL:	472-3646	2	CHECKED BY:	B. KIMES
NEXT ASSEMBLY	QTY	4	ENGINEER:	J. WANG
TOTAL QTY IN DUMMY	4	4	DATE:	1/17/2012
SIZE: A3 SHEET: 1 OF 1 SCALE: 4.000				DRAWING NO.: 472-3747 REV: A

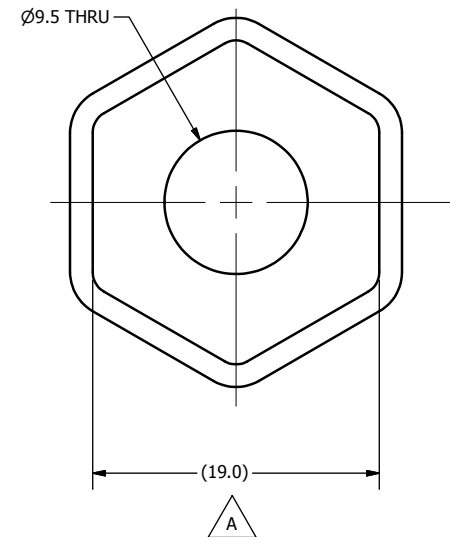




SCALE 3.000



SECTION A-A  
SCALE 3.000



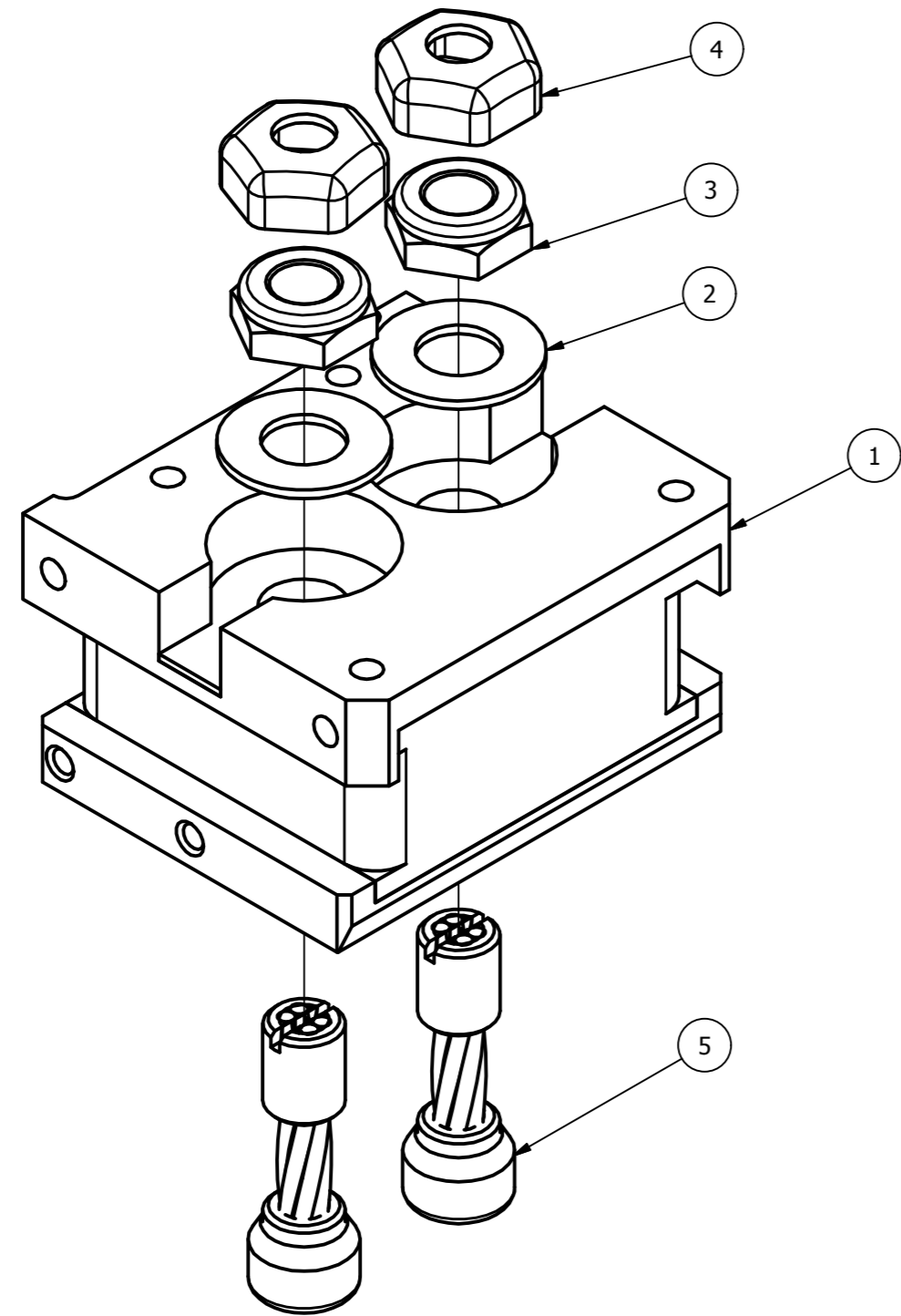
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM313 AND CONVERTED TO METRIC FOR THOR-M; 9.7 WAS 7.6; ADD 1.5, (19.0), R36, R3 TYP., 22.0 HEX TYP.	12/15/2011	BK

NOTES:

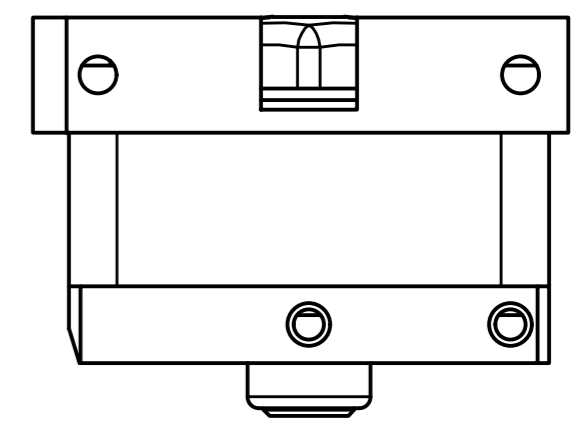
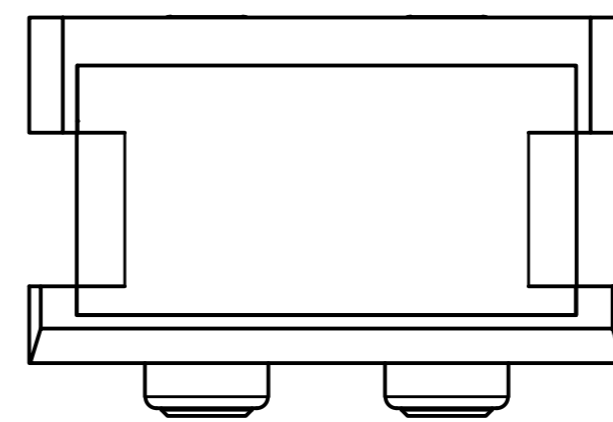
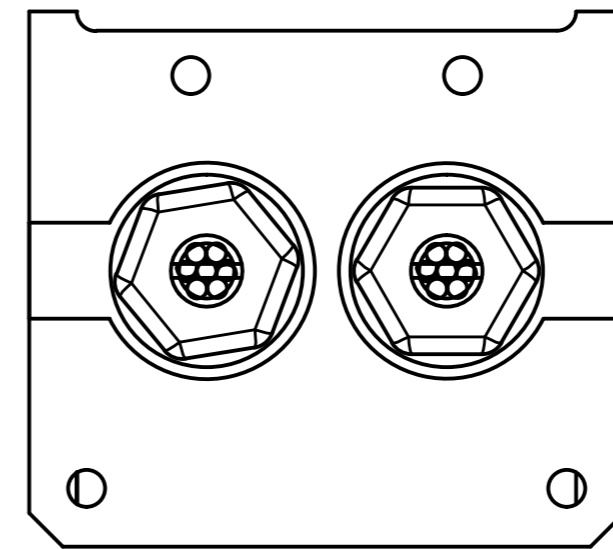
1. MATERIAL: POLYURETHANE OR EQUIVALENT, DUROMETER 50±5 SHORE A.
2. MUST COVER THE TOP OF A STANDARD METRIC LOCK NUT (REF #5000462).

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .001 ° 0.5° ✓ XX ± 0.2 ° 1.6 XXX ± 0.3 ° 3.0 XXXX ± 0.51 ° 4.0		
472-3746	2	PROJECT NO.:	DATE:	DESCRIPTION: M12 VINYL NUT COVER
472-3646	2	MATERIAL: SEE NOTES	BY: B. KIMES	
NEXT ASSEMBLY	QTY	HEAT TREAT:	DATE:	
TOTAL QTY IN DUMMY	4	FINISH:	DATE: 1/16/2012	
		ENGINEER: J. WANG	SCALE: 3.000	SIZE SHEET <b>A3</b> 1 OF 1 DRAWING NO. 472-3647

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	10/25/2011	BK

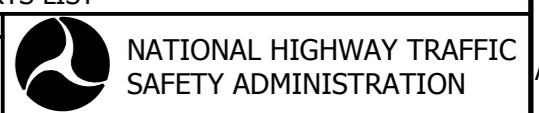


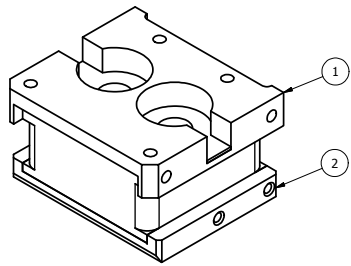
SCALE 1.000



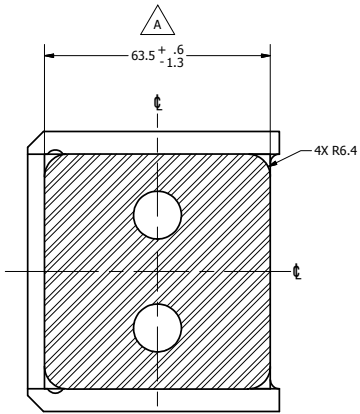
ITEM	QTY	PART NUMBER	DESCRIPTION
5	2	472-3645	UPPER THORACIC SPINE FLEX JOINT CABLE ASS'Y.
4	2	472-3647	M12 VINYL NUT COVER
3	2	472-3747	M12x1.75 LOCKNUT, MODIFIED
2	2	9000135	WASHER FLAT 1/2 PTFE
1	1	472-3640	UPPER THORACIC SPINE FLEX JOINT MOLDED ASSEMBLY

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH	
PROJECT NO.: THOR-M		DATE: 10/25/2011	
DESIGN BY: B. KIMES		CHECKED BY: J. WANG	
MATERIAL:		DATE: 1/16/2012	
HEAT TREAT:		SCALE: 1.000	
FINISH:		DRAWING NO.: 472-3646	
TOTAL QTY IN DUMMY: 1		SIZE: A2 1 OF 1	

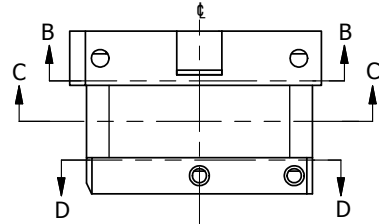
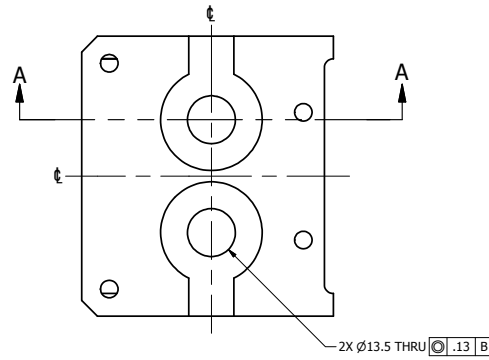




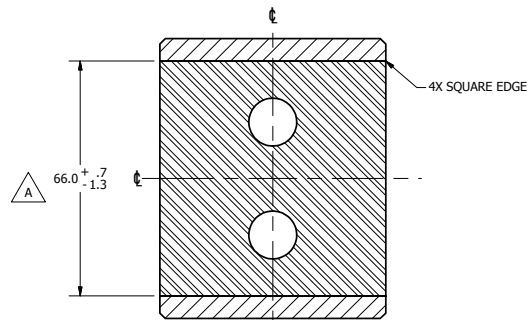
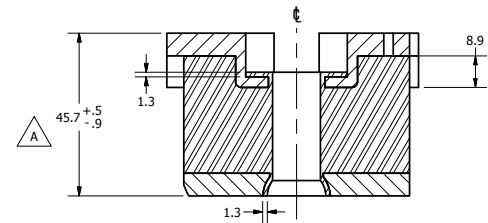
SCALE .750



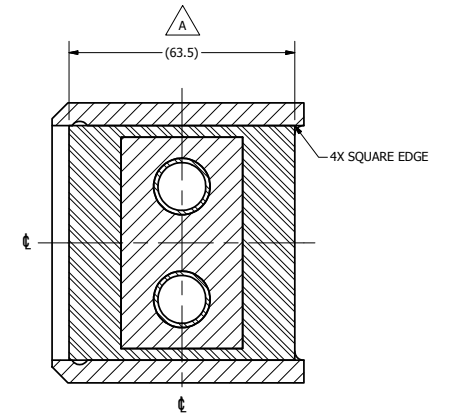
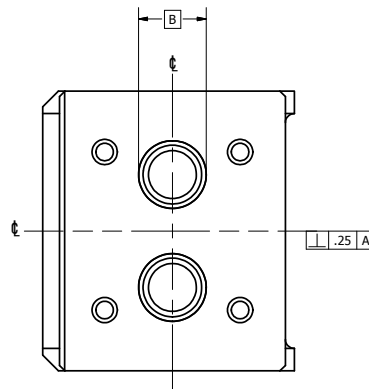
SECTION C-C  
SCALE 1.000



SECTION A-A  
SCALE 1.000



SECTION D-D  
SCALE 1.000



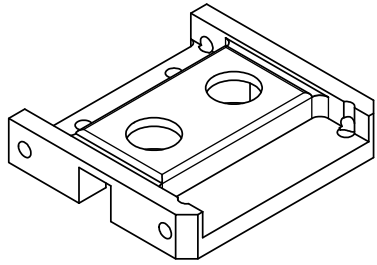
SECTION B-B  
SCALE 1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM310 RBO AND CONVERTED TO METRIC FOR THOR-M; 63.5 +.6/-1.3 WAS 63.5; 45.7 +.5/- .9 WAS 45.7; 66.0 +.7/-1.3 WAS 66.0; ADD (63.5)	9/20/2011	BK

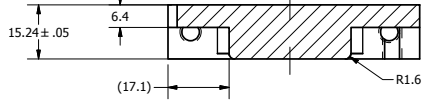
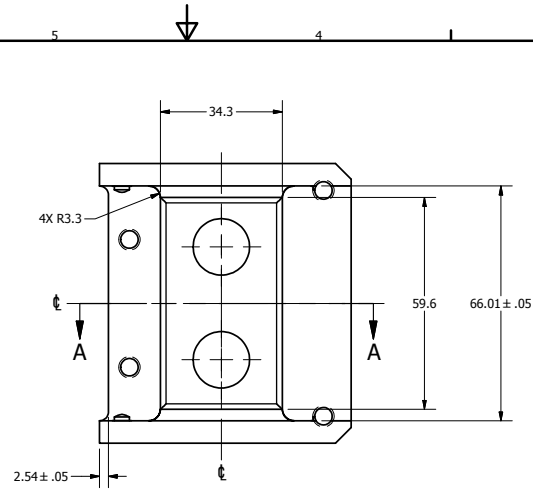
- NOTES:
- DIMENSIONS REPRESENT PART SIZE AFTER MOLDING.
  - RUBBER TOLERANCE ±0.5, UNLESS OTHERWISE SPECIFIED.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-3642	UPPER THORACIC SPINE FLEX JOINT BOTTOM PLATE
1	1	472-3641	UPPER THORACIC SPINE FLEX JOINT TOP PLATE

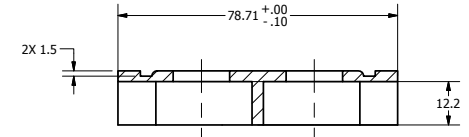
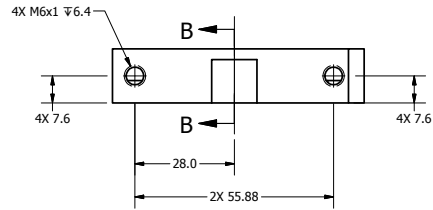
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
		DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO BE USED UNLESS OTHERWISE SPECIFIED FRACTIONS ARE TO BE USED UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED	
DRAWN BY: B. KIMES	CHECKED BY: J. WANG	DATE: 9/20/2011	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION UPPER THORACIC SPINE FLEX JOINT MOLDED ASSEMBLY
NEXT ASSEMBLY QTY: 1	TOTAL QTY IN DUMMY QTY: 1	DRAWING NO.: 472-3640	SHEET NO.: A21 of 1



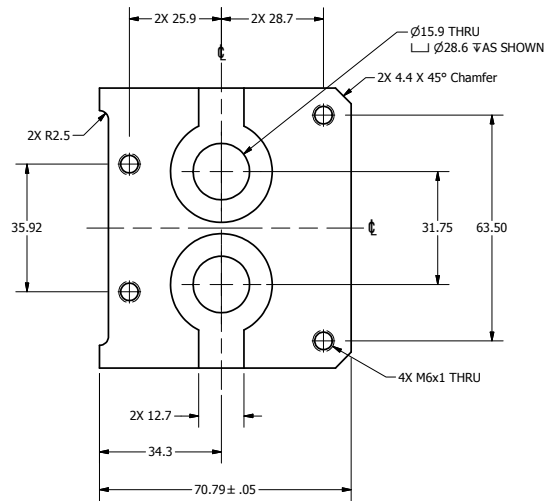
SCALE 1.000



SECTION A-A  
SCALE 1.000



SECTION B-B  
SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM311 RBO AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	BK
	B	CHANGED NICKEL PLATE TO SATIN FLASH CHROME	7/23/2012	CEF
	C	FINISH .008mm MAX. WAS .0003 MAX.	1/9/2012	BK

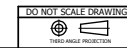
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\text{C}$ , UNLESS OTHERWISE NOTED.

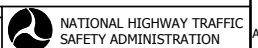
2. POWDER OR BEAD BLAST.

3. SATIN FLASH CHROME PLATE 0.008mm MAX. AFTER MACHINING.

4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

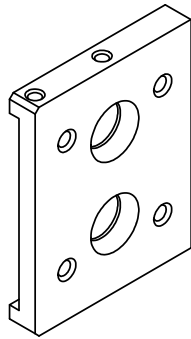


TOLERANCES	
FRAMES	±0.00
OTHER	±0.00
FINISH	±0.00
ASSEMBLY	±0.00
WELD	±0.00
DRILL	±0.00
REAM	±0.00
TURN	±0.00
GRIND	±0.00
ETCH	±0.00
OTHER	±0.00

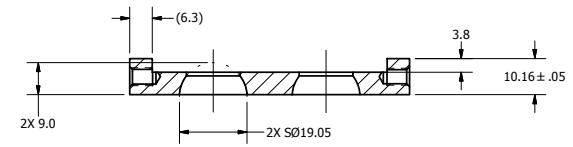
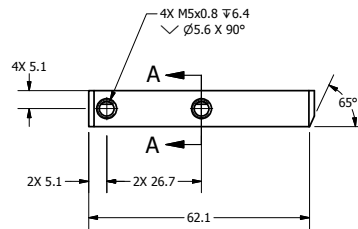
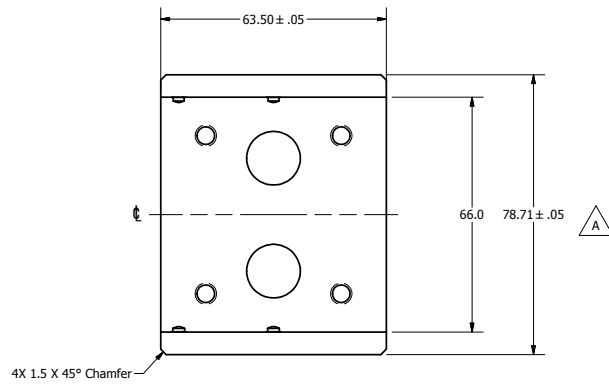


472-3640	1	1018 STEEL	9/20/2011	B. KIMES	1	UPPER THORACIC SPINE FLEX JOINT TOP PLATE
NEXT ASSEMBLY	QTY	REF	DATE	DESIGNED BY	REV	DESCRIPTION
TOTAL QTY IN DUMMY	1	SEE NOTES		J. WANG	1/16/2012	

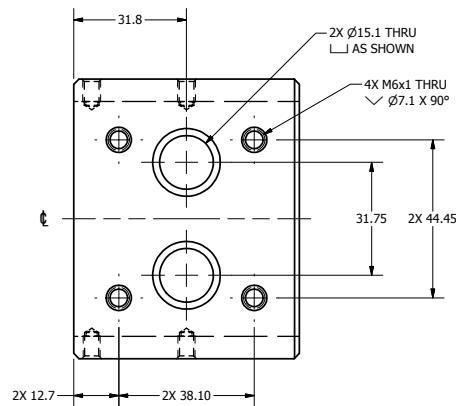
AS21 of 1	472-3641
SCALE 1.000	



SCALE 1.000



SECTION A-A  
SCALE 1.000



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\epsilon$ , UNLESS OTHERWISE NOTED.
2. POWDER OR BEAD BLAST.
3. SATIN FLASH CHROME PLATE 0.008mm MAX. AFTER MACHINING.  $\triangle$
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T15PM312 RB0 AND CONVERTED TO METRIC FOR THOR-M; 78.71 +/- .05 WAS 78.71 +0/- .05	9/20/2011	BK
	B	CHANGED NICKEL PLATE TO SATIN FLASH CHROME	9/20/2011	
	C	FINISH .008mm MAX. WAS .0003 MAX.	11/9/2012	BK

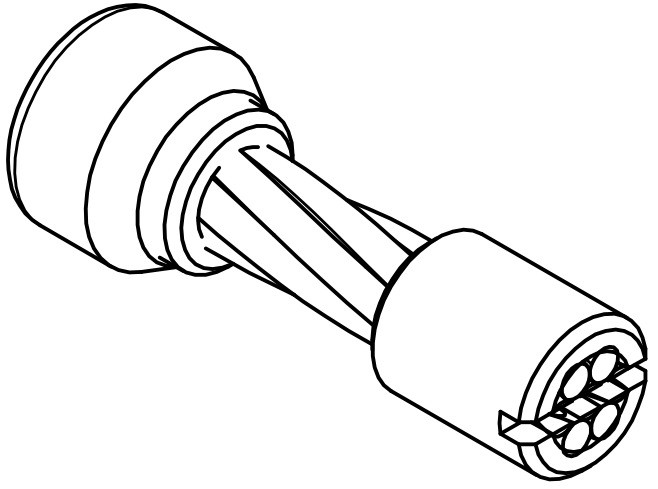
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
DIMENSIONS SHOWN IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY		DIMENSIONS SHOWN IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY		
472-3640	1	1018 STEEL	B. KIMES	9/20/2011
NEXT ASSEMBLY	QTY	SEE NOTES	J. WANG	1/16/2012
TOTAL QTY IN DUMMY	1	SEE NOTES		

UPPER THORACIC SPINE FLEX JOINT BOTTOM PLATE

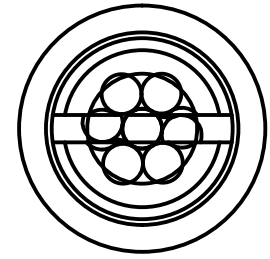
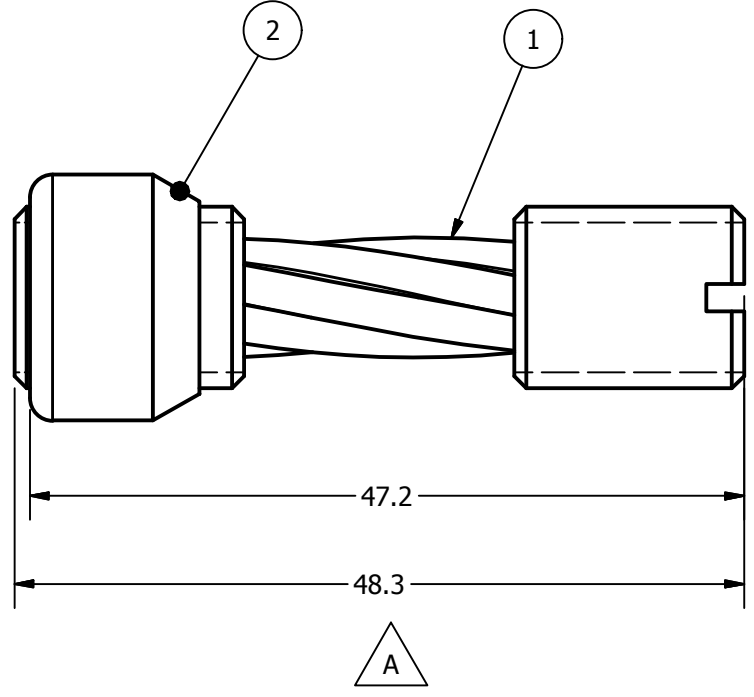
21 of 1

472-3642

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM320 R7 AND CONVERTED TO METRIC FOR THOR-M; ADD 48.3	10/25/2011	BK



SCALE 2.000



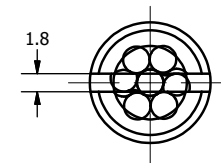
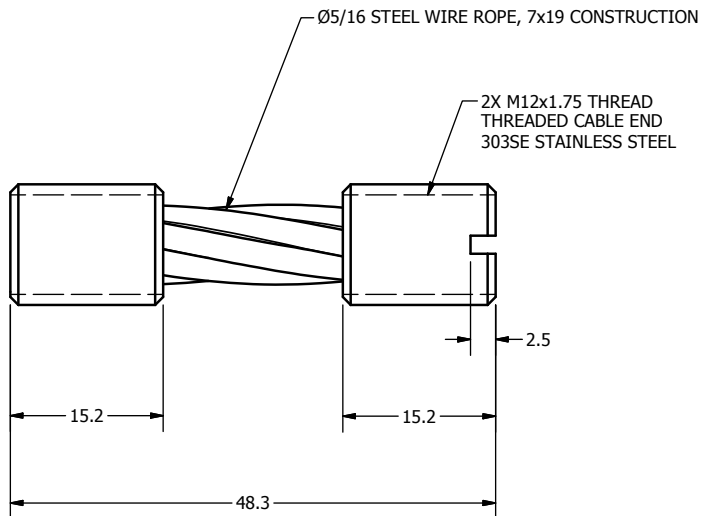
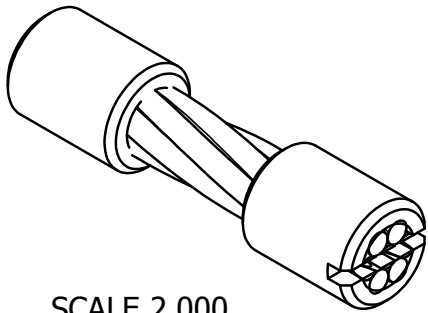
NOTES:

1. USE LOCTITE 271 OR EQUIVALANT TO LOCK 472-3743 IN PLACE AS SHOWN.
2. ONE SAMPLE FROM EACH ASSEMBLY BATCH NEEDS TO BE TESTED TO INSURE NO SLIPPAGE OF THE BALL OR THREADED SLEEVE ON THE CABLE SHALL OCCUR UNDER 1,700 LBS OF TENSILE LOAD.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-3743	THREADED BALL END
1	1	472-3644	UPPER THORACIC SPINE FLEX JOINT CABLE

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
PROJECT NO.: THOR-M	DRAWN BY: B. KIMES	DATE: 10/25/2011	DESCRIPTION: UPPER THORACIC SPINE FLEX JOINT CABLE ASS'Y.	
MATERIAL:	HEAT TREAT:	CHECKED BY: J. WANG	DATE: 1/16/2012	SIZE: A3
NEXT ASSEMBLY	QTY	FINISH:	ENGINEER: J. WANG	DATE: 1/16/2012
TOTAL QTY IN DUMMY	2			SCALE: 2.000
			1 OF 1	DRAWING NO.: 472-3645

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM325 R1 AND CONVERTED TO METRIC FOR THOR-M	10/25/2011	BK

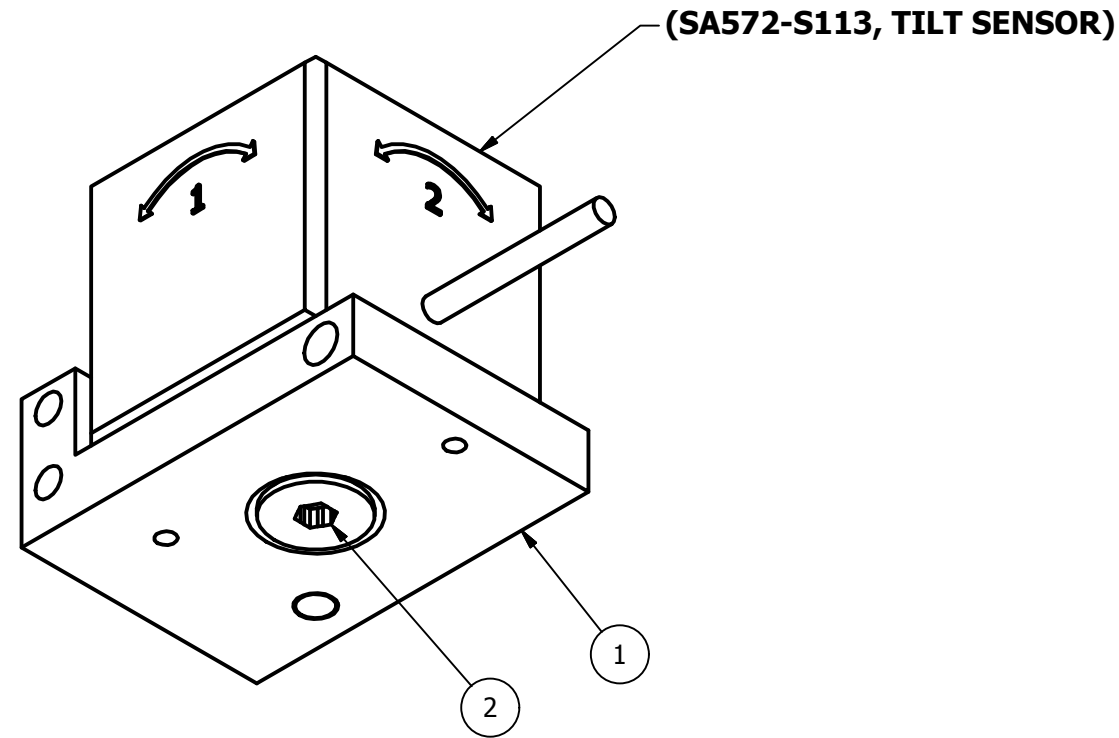


NOTES:

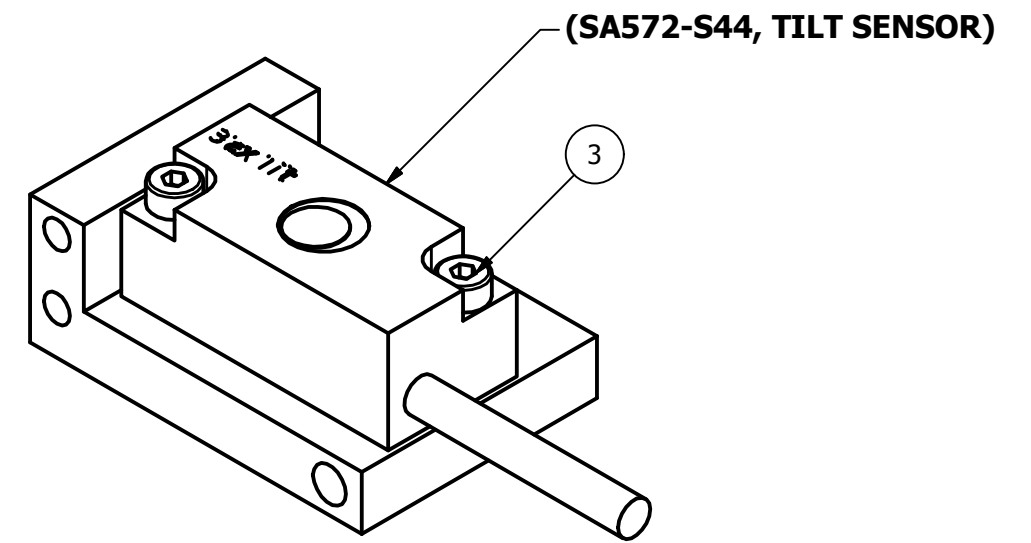
1. DIMENSIONS SHOWN ARE FINAL DIMENSIONS AFTER SWAGING.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.2 ±0.5° 1.6 XX ±0.2 XXX ±0.3 XXXX ±0.01		
PROJECT NO.:	472-3645	1	1	UPPER THORACIC SPINE FLEX JOINT CABLE DRAWING NO. 472-3644
MATERIAL:		1	1	
CHECKED BY:	B. KIMES	10/25/2011	1	
HEAT TREAT:				REMOVE BLURS & BREAK SHARP EDGES DATE: 1/16/2012 ENGINEER: J. WANG
TOTAL QTY IN DUMMY	2	2	2	SCALE: 2.000 SIZE: A3 SHEET: 1 OF 1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/10/2011	BK
	B	DESCRIPTION OF ITEM #1 PART #472-3773 WAS "TILT SENSOR MT, UPPER SPINE" AND REVISED ITEM #1 PART #472-3773; DRAWING TITLE WAS TILT SENSOR ASSEMBLY SA572-S113 & SA572-S44	7/6/2015	DW



472-3775-1



472-3775-2

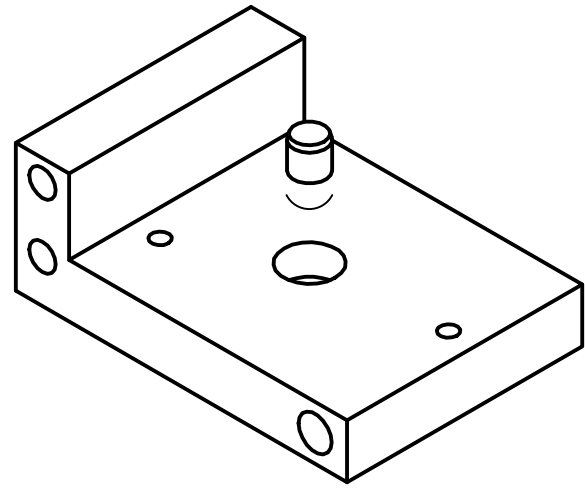
ITEM	QTY	PART NUMBER	DESCRIPTION
3	2	5000215	M2 X 0.4 X 10 LG. SHCS
2	1	5000646	M4 X 0.7 X 8 LG. FHCS
1	1	472-3773	TILT SENSOR MOUNT, T6 SA572-S113 & SA572-S44

PARTS LIST

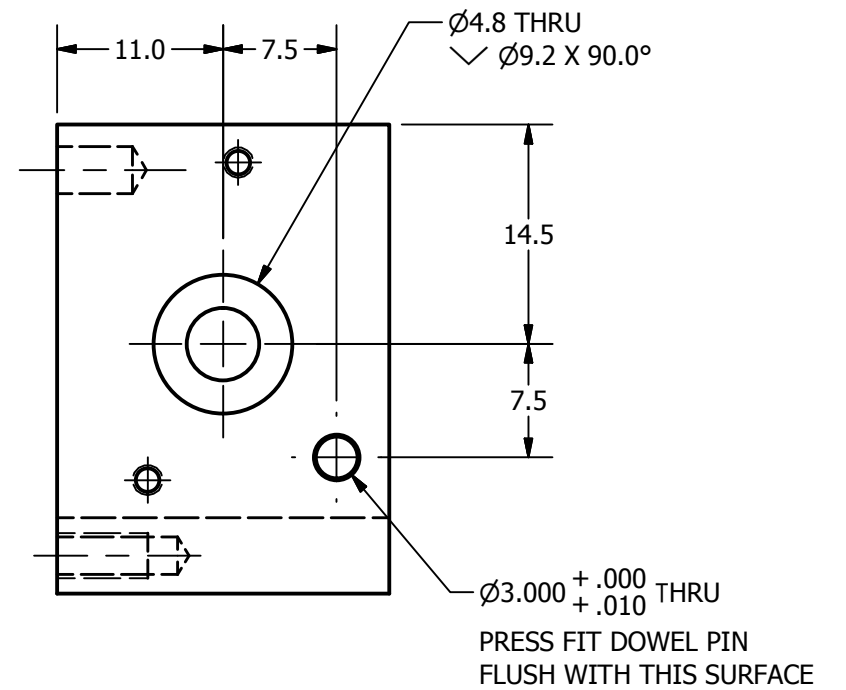
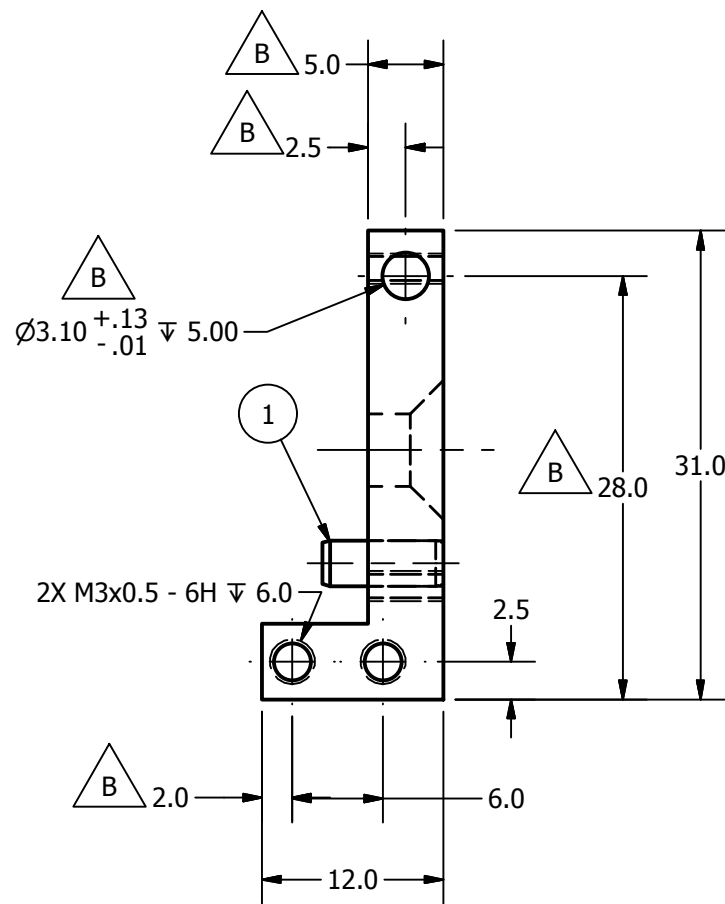
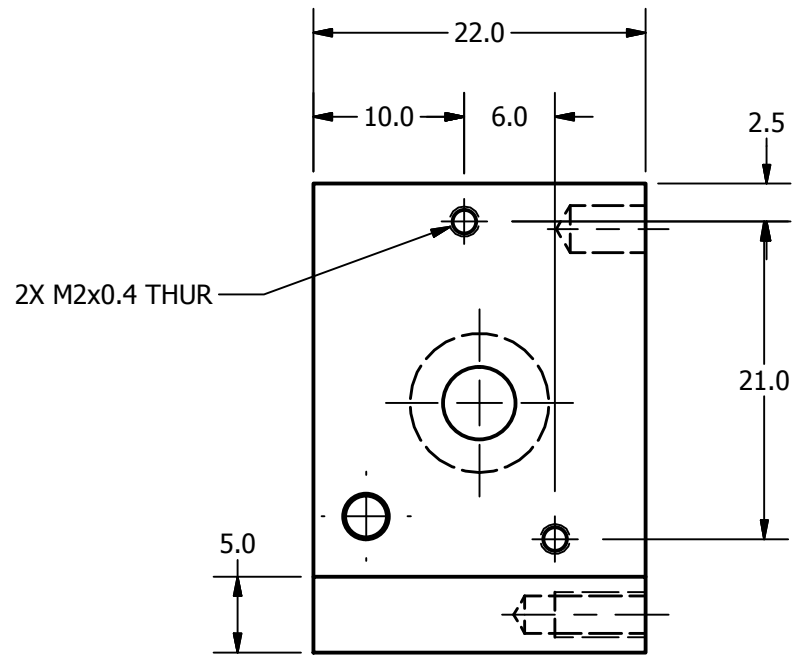
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01		
PROJECT NO.: THOR-M	DRAWN BY: B. KIMES	DATE: 11/10/2011	DESCRIPTION: TILT SENSOR ASSEMBLY, T6, SA572-S113 & SA572-S44	
MATERIAL:	HEAT TREAT:	CHECKED BY: J. WANG	DATE: 1/17/2012	SIZE: A3 1 OF 1
TOTAL QTY IN DUMMY	1	FINISH:	SCALE: 2.000	DRAWING NO.: 472-3775-1 & 2

472-3600	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1





SCALE 2.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	NEW DESIGN TO CORRECT SA572-S44 TILT SENSOR ORIENTATION	10/7/2011	JW
	B	DIMENSION 5.0 WAS 3.0 AND 2.0 WAS 3.0; ADDED HOLE $\varnothing 3.10^{+.13}_{-.01}$ THRU; ITEM #1 PART NUMBER 5000384 WAS 5000385 AND DESCRIPTION WAS M3 X 6 LG. DOWEL PIN; DRAWING TITLE WAS TILT SENSOR MT, UPPER SPINE SA572-S113 & SA572-S44	7/6/2015	DW

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5000384	PIN, DOWEL M3 x 8

PARTS LIST

DO NOT SCALE DRAWING	TOLERANCES	 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6	
PROJECT NO.: 472-3775-2	DATE: 10/7/2011	TILT SENSOR MOUNT, T6 SA572-S113 & SA572-S44
MATERIAL: 6061-T6 ALUMINUM	DRAWN BY: J. WANG	
NEXT ASSEMBLY QTY	CHECKED BY:	
TOTAL QTY IN DUMMY 1	FINISH: CLEAR ANODIZE	
ENGINEER: J. WANG DATE: 1/17/2012		SIZE: A3 SHEET: 1 OF 1 SCALE: 2.000
DRAWING NO.: 472-3773		REV: B

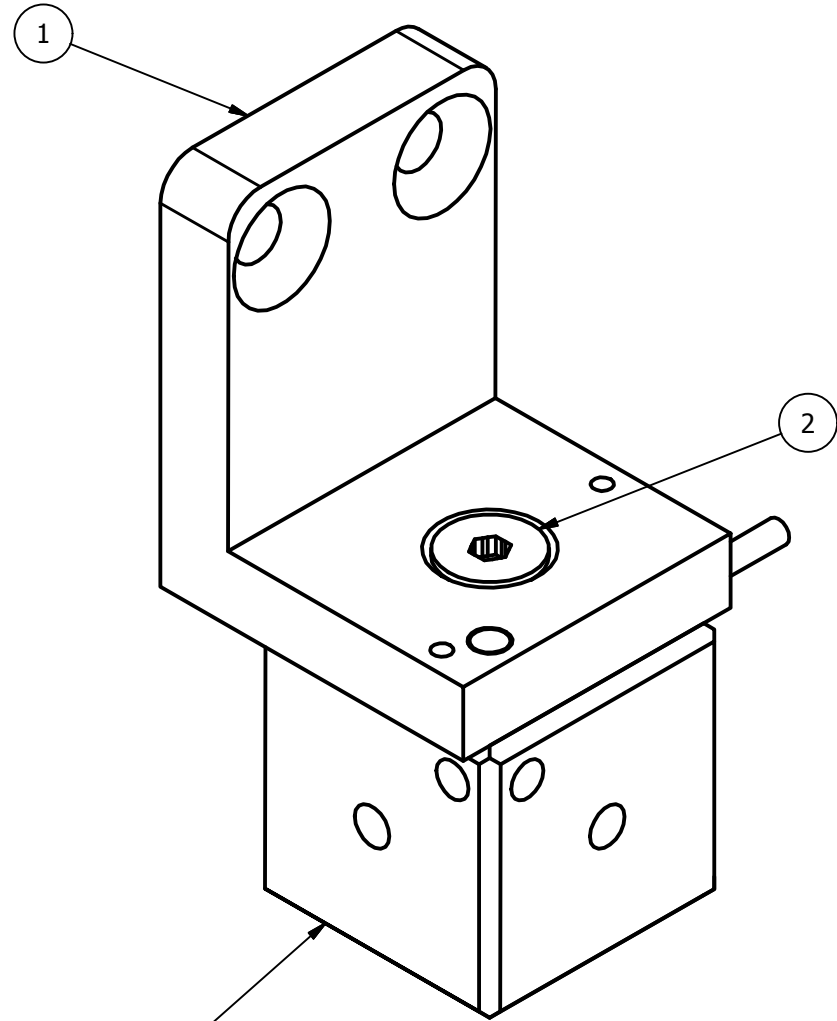
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3

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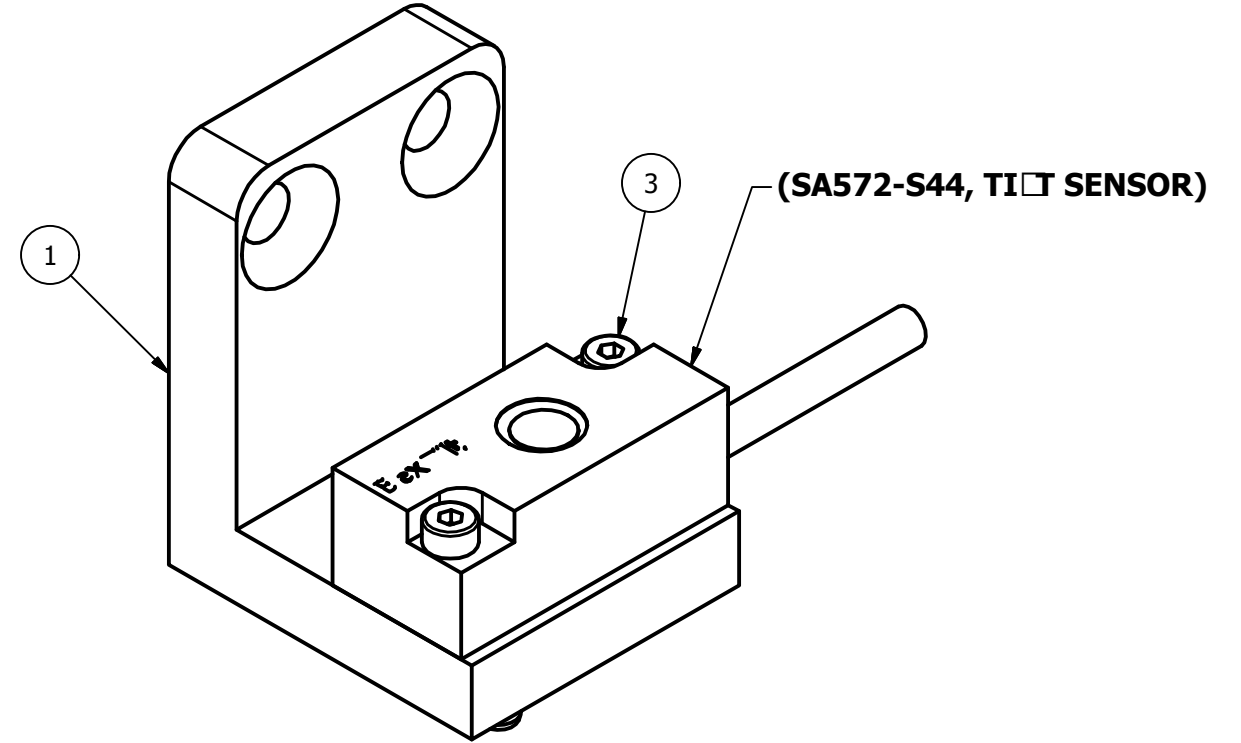
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REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/11/2011	BK
	B	DRAWING TITLE WAS TILT SENSOR ASS'Y. THORACIC SPINE SA572-S113 & SA572-S44; REVISED ITEM #1 PART #472-3771 - TILT SENSOR MOUNT, T12, SA572-S44 & SA572-S113; MOVED TILT SENSOR, SA572-S113 TO UNDERSIDE OF BRACKET IN PART #472-3776-1	6/1/2015	DW



(SA572-S113 TILT SENSOR)

472-3776-1



(SA572-S44, TILT SENSOR)

472-3776-2

3	2	5000215	M2 X 0.4 X 10 LG. SHCS
2	1	5000646	M4 X 0.7 X 8 LG. FHCS
1	1	472-3771	TILT SENSOR MOUNT T12, SA572-S44 & SA572-S113
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

DO NOT SCALE DRAWING	TOLERANCES
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
	DECIMALS ANGLES FINISH
	X ±0.5 ±0.5 1.6
	XX ±0.2 ±0.2
	XXX ±0.1 ±0.1
	X.XXX ±0.01 ±0.01

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: TILT SENSOR ASS'Y., T12, SA572-S113 & SA572-S44

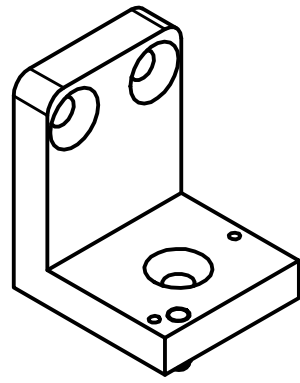
472-3600	1	MATERIAL:	DRAWN BY:	DATE:	SCALE:	SHEET	DRAWING NO.:	REV:
NEXT ASSEMBLY	QTY	HEAT TREAT:	B. KIMES	11/11/2011	2.000	1 OF 1	472-3776-1 & 2	B
TOTAL QTY IN DUMMY	1	FINISH:	J. WANG	1/17/2012				

4

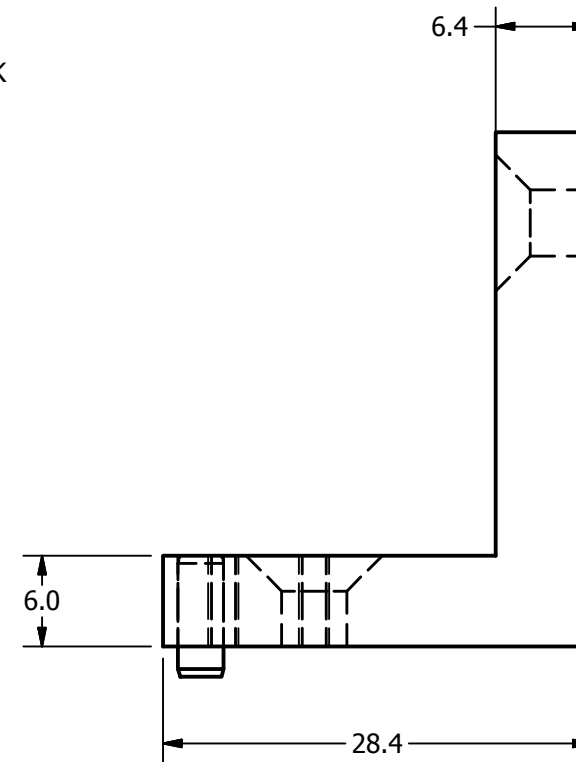
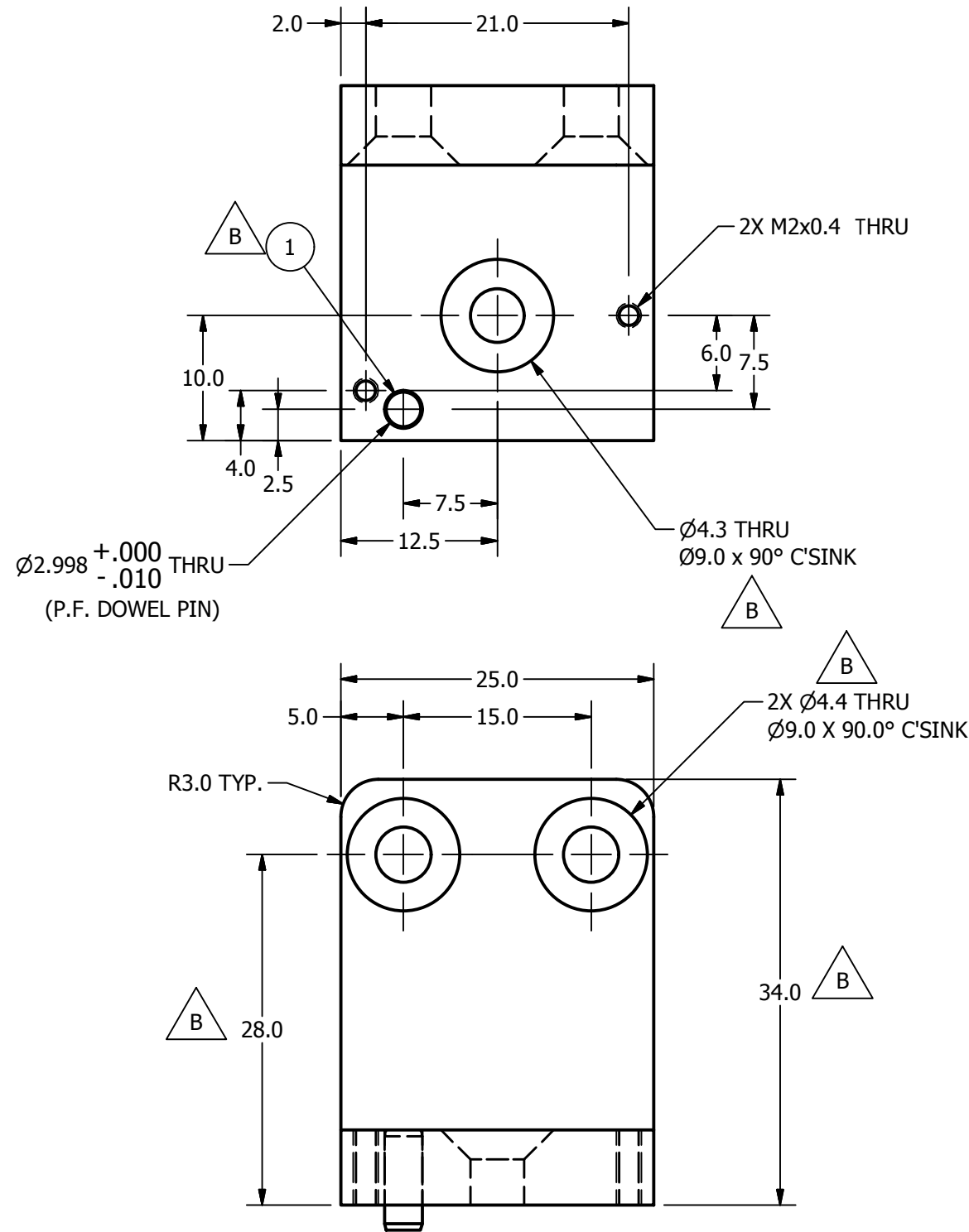
3

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1



SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1SPM612-00. REDESIGN TO CORRECT SA572-S44 TILT SENSOR MOUNTING ORIENTATION	10/5/2011	J.WANG
	B	HOLE DIMENSION 2X Ø4.4 THRU Ø9.0 X 90° C'SINK WAS 2X Ø4.4 THRU, DIM. 34.0 WAS 38.0, AND 28.0 WAS 32.0; RELOCATED DOWEL PIN AND CHANGE PROTRUSION FROM TOP SIDE TO BOTTOM SIDE; MOVED C'SINK OF HOLE - Ø4.3 THRU Ø9.0 X 90° C'SINK - TO TOP SIDE; ADDED MATERIAL - 6061-T6 ALUM.; DRAWING TITLE WAS TILT SENSOR MOUNT, THORACIC SPINE SA572-S44 & SA572-S44	7/6/2015	DW

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5000384	M3 X 8 LG. DOWEL PIN

**PARTS LIST**

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X ± 0.5	± 0.5 1.6
		.XX ± 0.2	
		.XXX ± 0.1	
		.XXX ± 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	

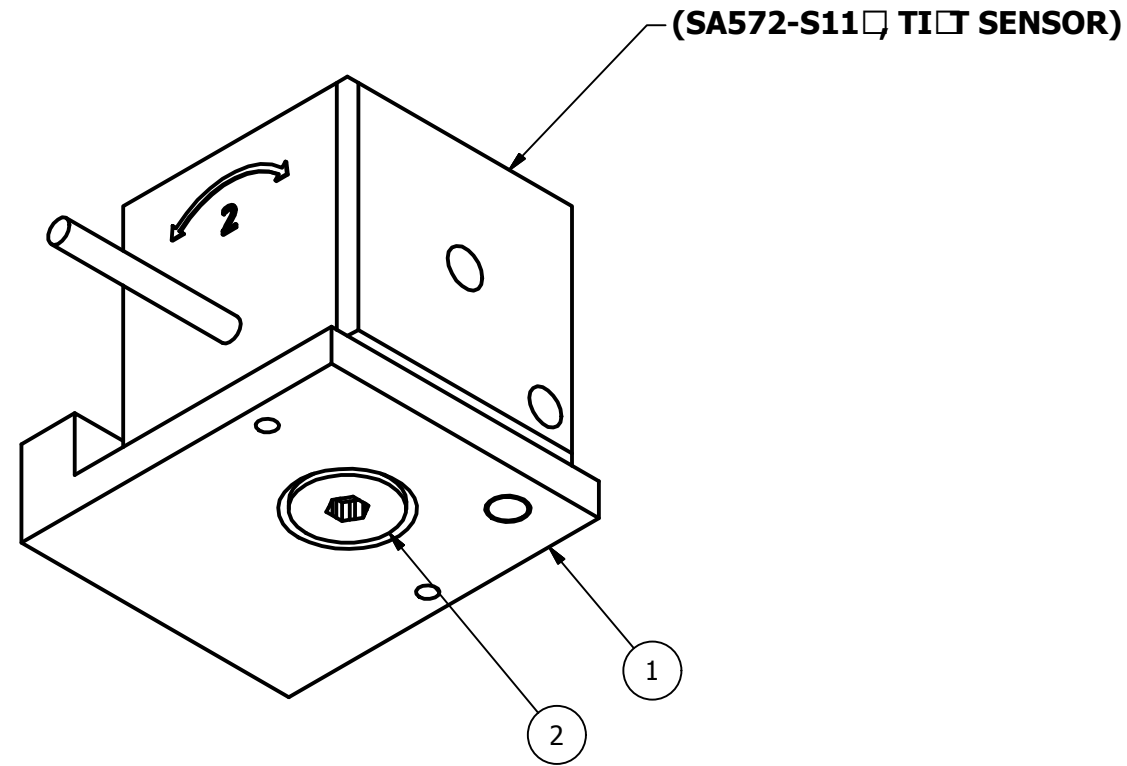
PROJECT NO.:	DATE:	10/5/2011
DRAWN BY:	ENGINEER:	J. WANG
CHECKED BY:	DATE:	1/17/2012
FINISH:	ENGINEER:	J. WANG

SIZE:	SHEET	DRAWING NO.:	REV:
A3	1 of 1	472-3771	B
SCALE:	2.000		

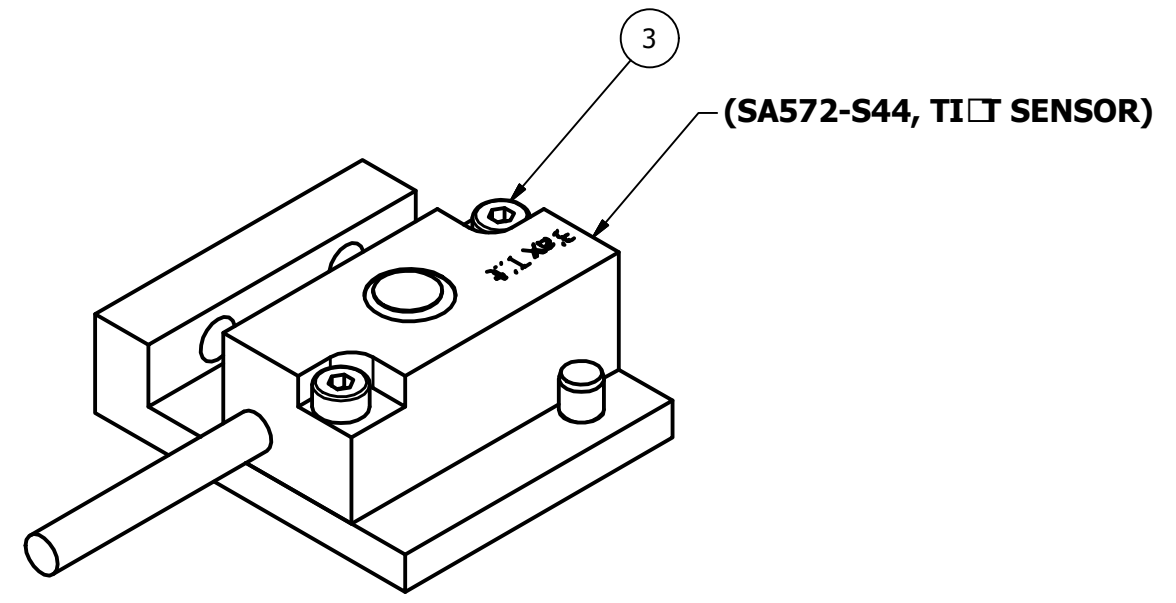
**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: TILT SENSOR MOUNT T12, SA572-S44 & SA572-S113 THOR-M

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/11/2011	BK
	B	DRAWING TITLE WAS TILT SENSOR ASSY, REAR THORACIC SA572-S113 & SA572-S44	7/6/2015	DW



472-3777-1



472-3777-2

ITEM	QTY	PART NUMBER	DESCRIPTION
3	2	5000215	SCREW, SHCS M2-0.4 x 10
2	1	5000646	M4 X 0.7 X 8 LG. FHCS
1	1	472-3772	TILT SENSOR MOUNT, REAR THORACIC

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X ±0.5	±0.5 1.6
		XX ±0.2	
		XXX ±0.1	
		XXXX ±0.01	
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	
MATERIAL:		DRAWN BY:	DATE:
HEAT TREAT:		CHECKED BY:	DATE:
FINISH:		ENGINEER:	DATE:

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: TILT SENSOR ASSY., PELVIS, SA572-S113 & SA572-S44

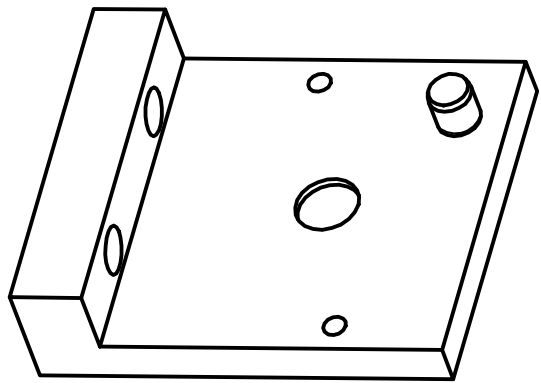
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SIZE: SHEET B 1 OF 1

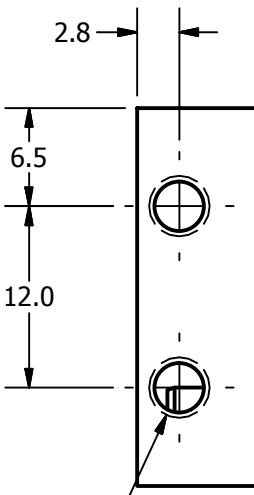
DRAWING NO.: 472-3777-1 & 2

REV: B

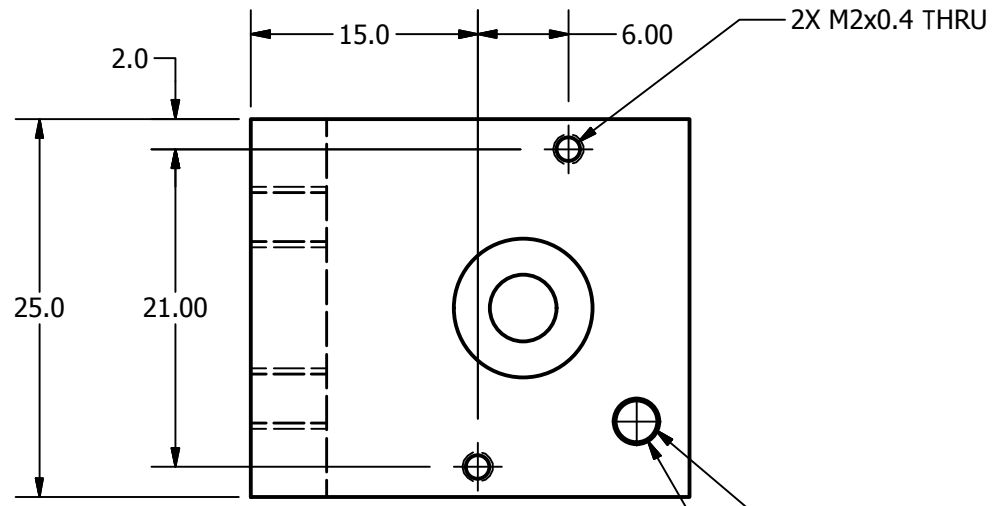
472-3600	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1



SCALE 2.000

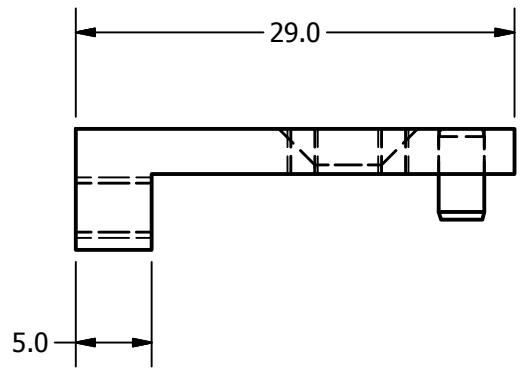
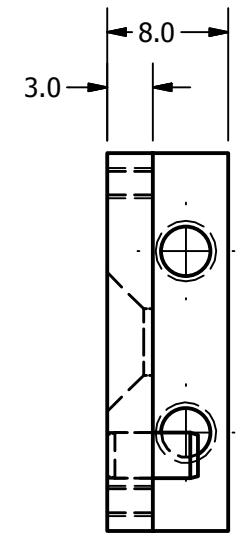


2X M4x0.7 THRU ALL



2X M2x0.4 THRU

1  
 $\varnothing 3.000^{+0.000}_{-0.010}$  THRU  
 THEN PRESS FIT DOWEL PIN AS SHOWN



- NOTES:
1. POWDER OR BEAD BLAST.
  2. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  3. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	NEW DESIGN TO CORRECT SA572-S44 TILT SENSOR ORIENTATION	10/7/2011	JW
	B	MATERIAL WAS 1018 STEEL; DRAWING TITLE WAS TILT SENSOR MOUNT, REAR THORACIC SA572-S44 & SA572-S113	7/6/2015	DW

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5000385	M3 X 6 LG. DOWEL PIN

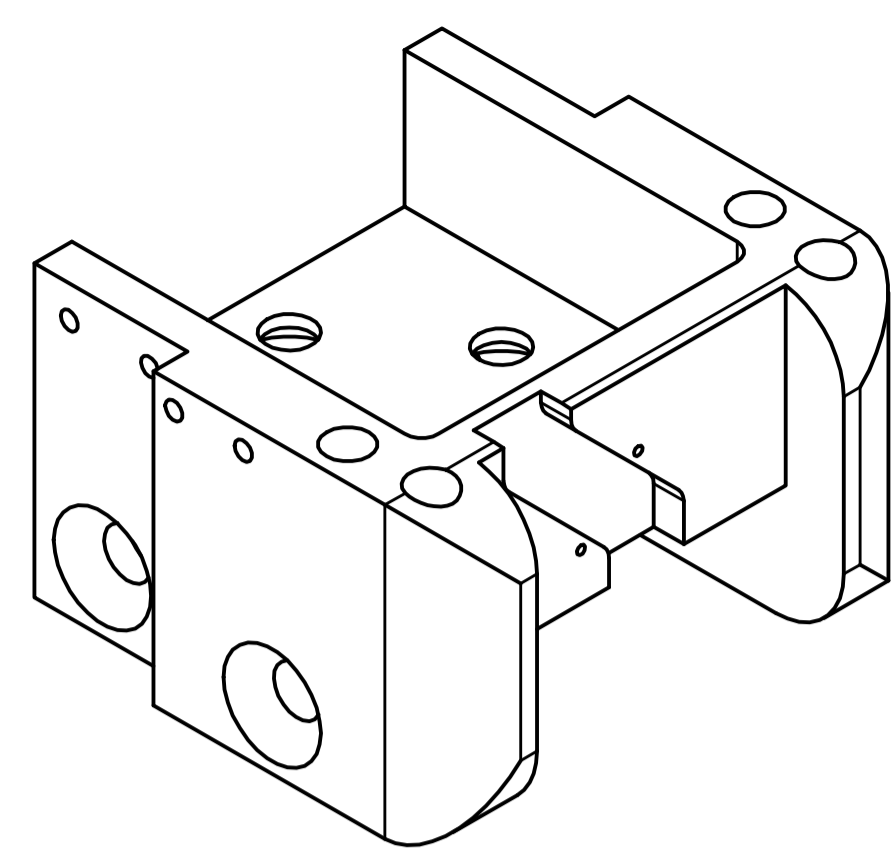
PARTS LIST

DO NOT SCALE DRAWING	TOLERANCES	 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
 <small>THIRD ANGLE PROJECTION</small>	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>X ±0.5 ±0.5 1.6</small> <small>.XX ±0.2</small> <small>.XXX ±0.1</small> <small>XXXX ±0.01</small>	
<small>PROJECT NO.:</small> <b>THOR-M</b>	<small>REMOVE BURRS &amp; BREAK SHARP EDGES</small> <small>DRAWN BY:</small> <b>J. WANG</b>	<small>DATE:</small> <b>10/7/2011</b>
<small>MATERIAL:</small> <b>6061-T6 ALUM.</b>	<small>CHECKED BY:</small>  	<small>DATE:</small>  
<small>HEAT TREAT:</small>  	<small>ENGINEER:</small> <b>J. WANG</b>	<small>DATE:</small> <b>1/17/2012</b>
<small>FINISH:</small> <b>SEE NOTES</b>	<small>SCALE:</small> <b>2.000</b>	<small>DRAWING NO.:</small> <b>472-3772</b>

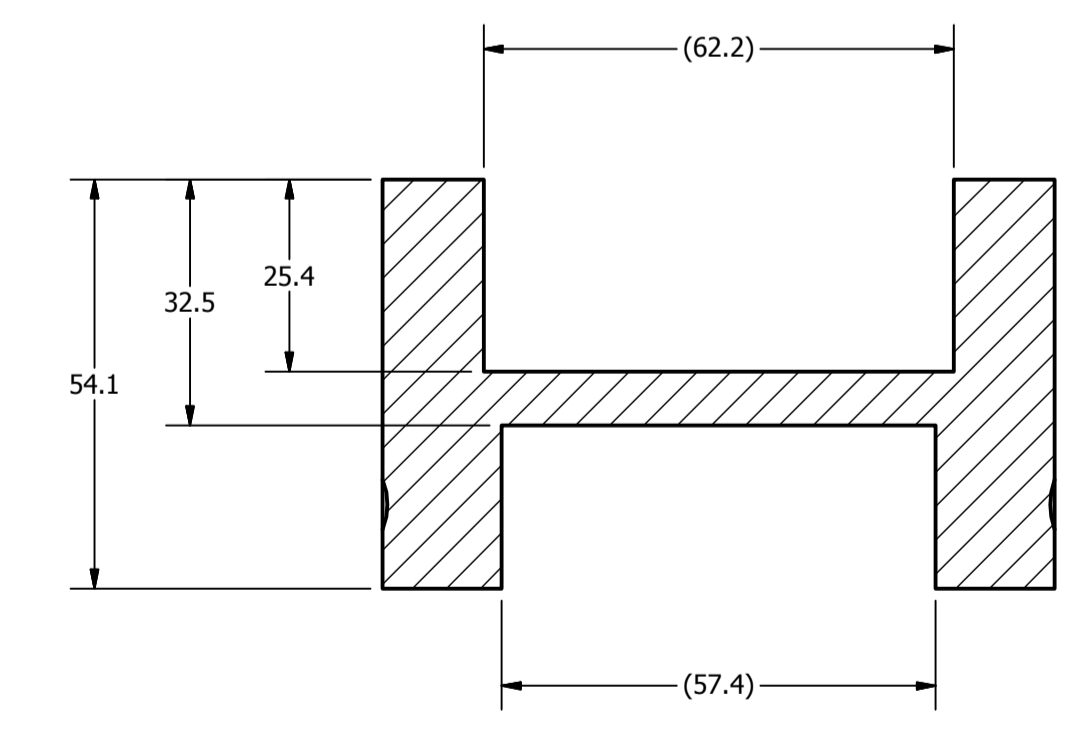
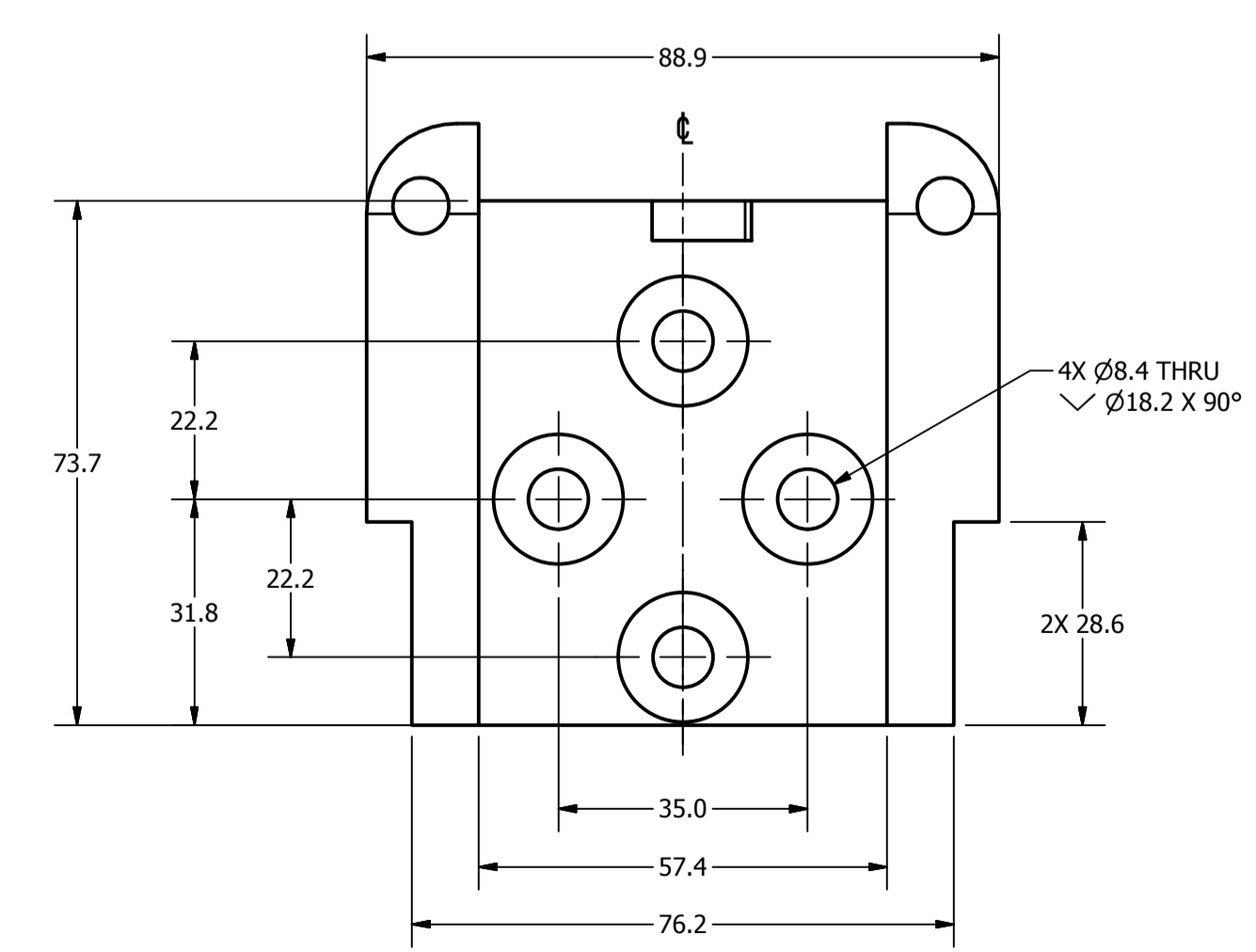
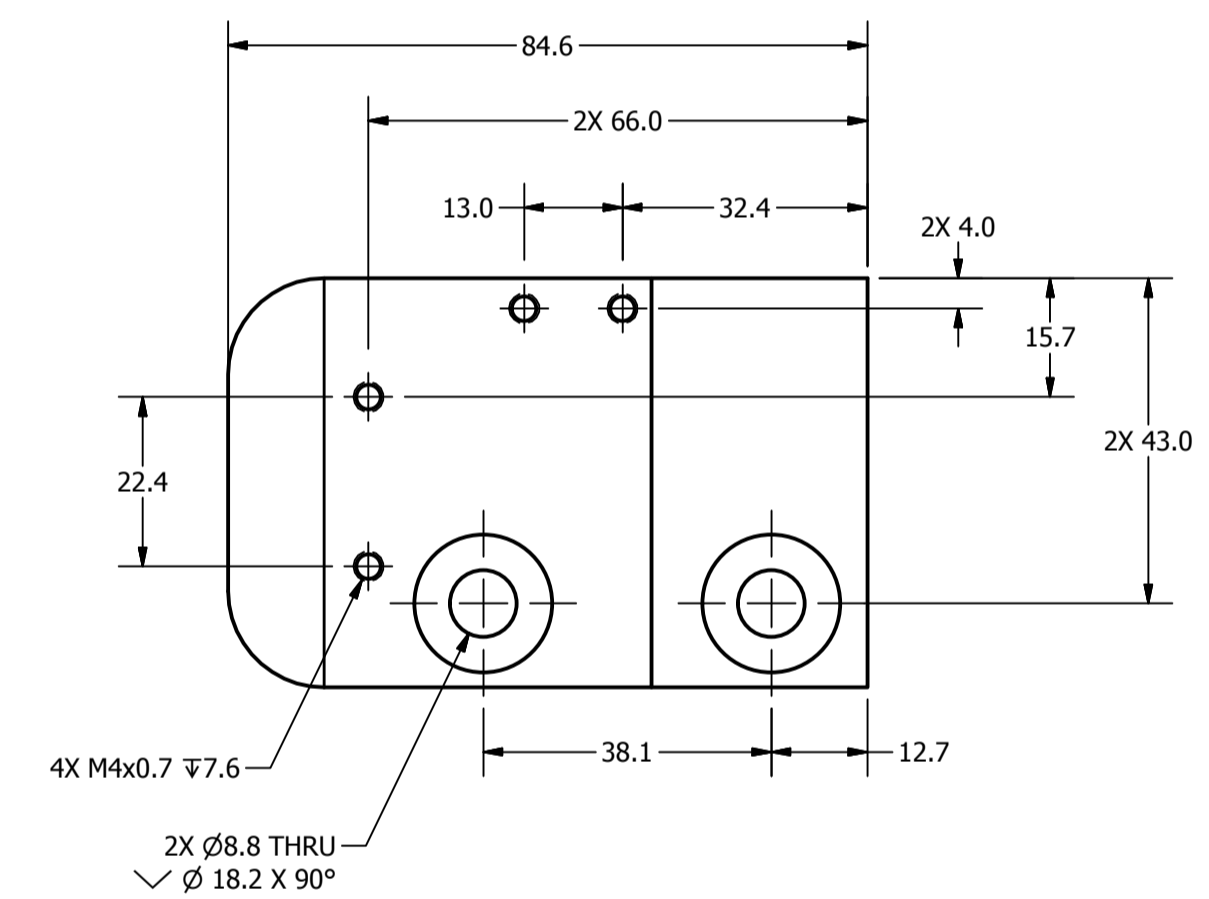
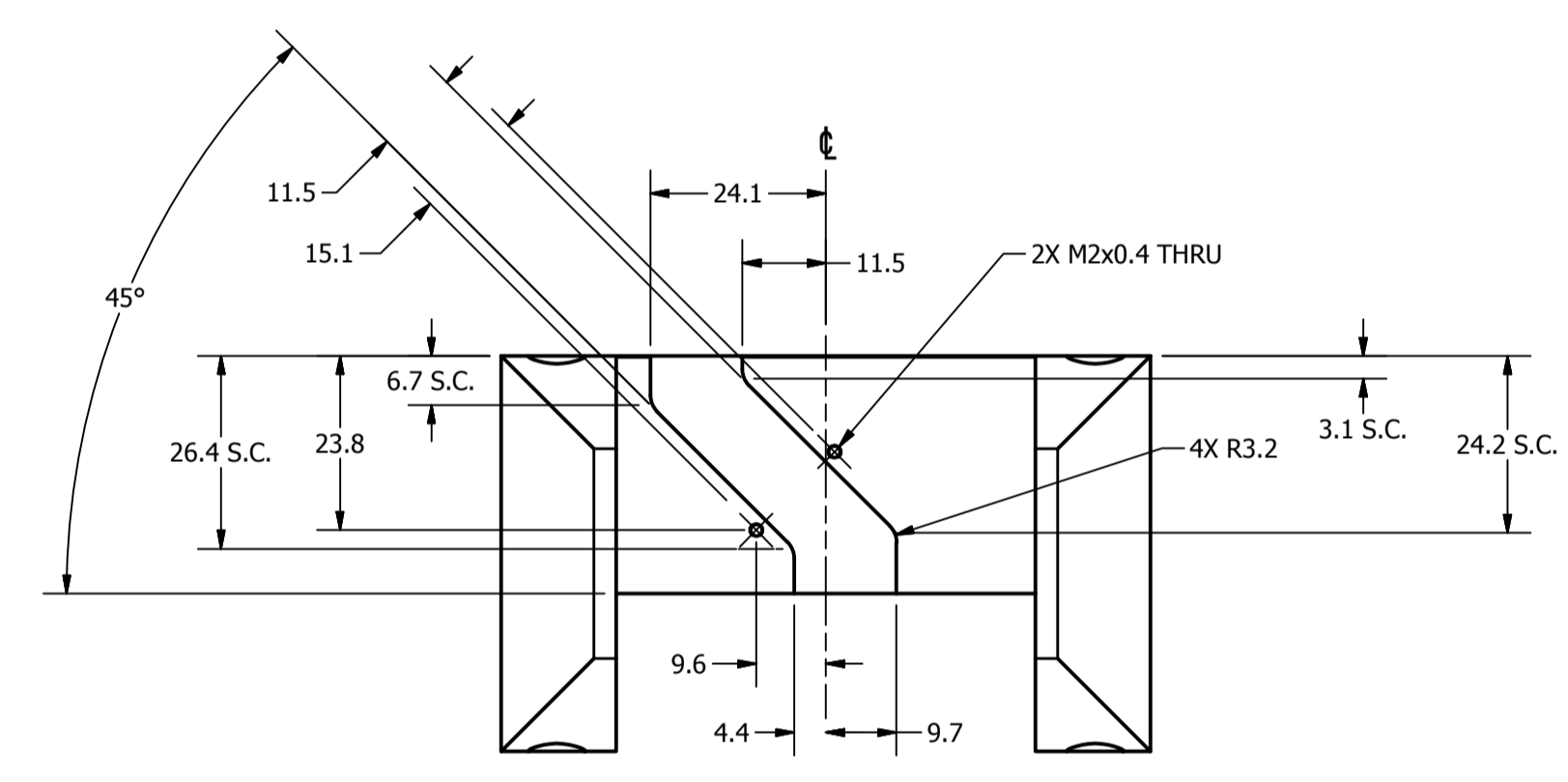
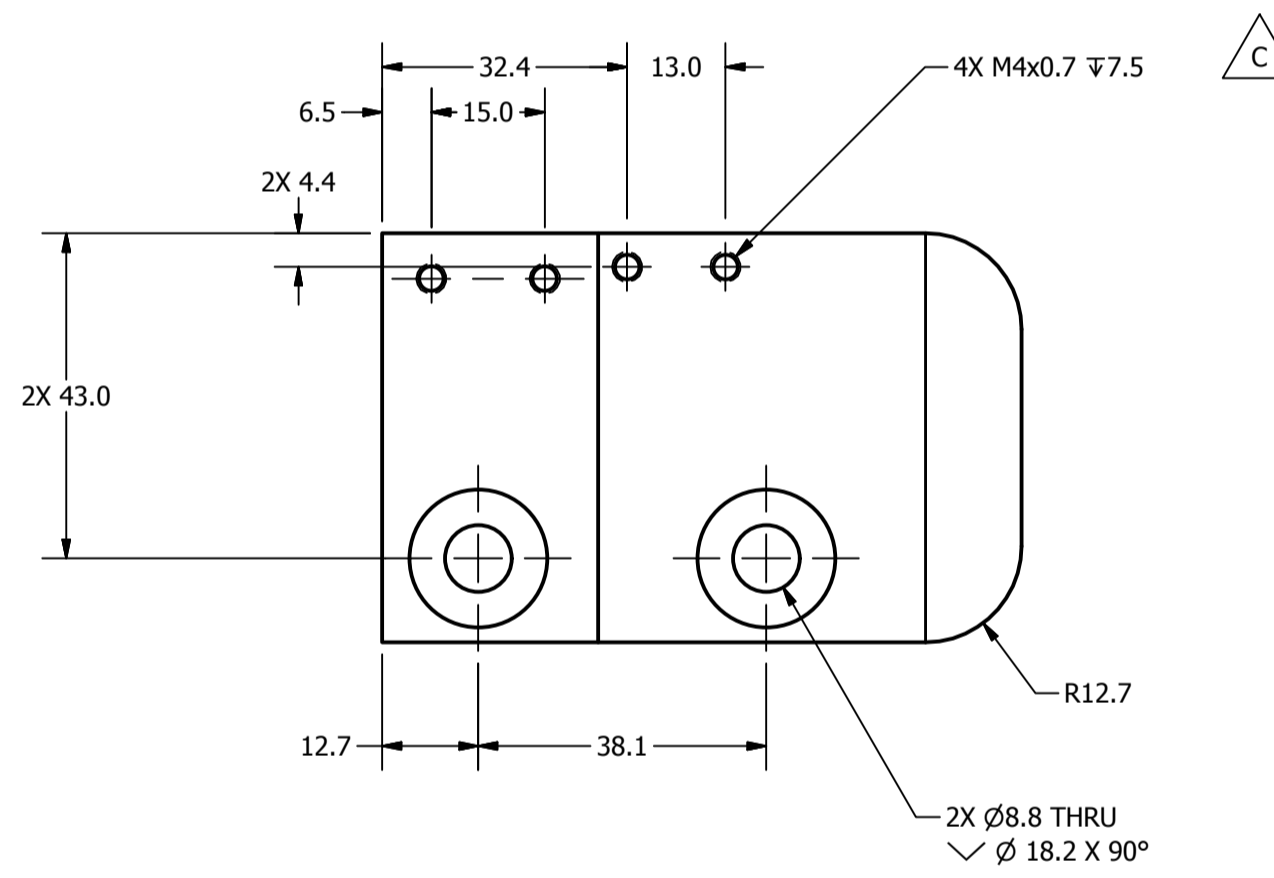
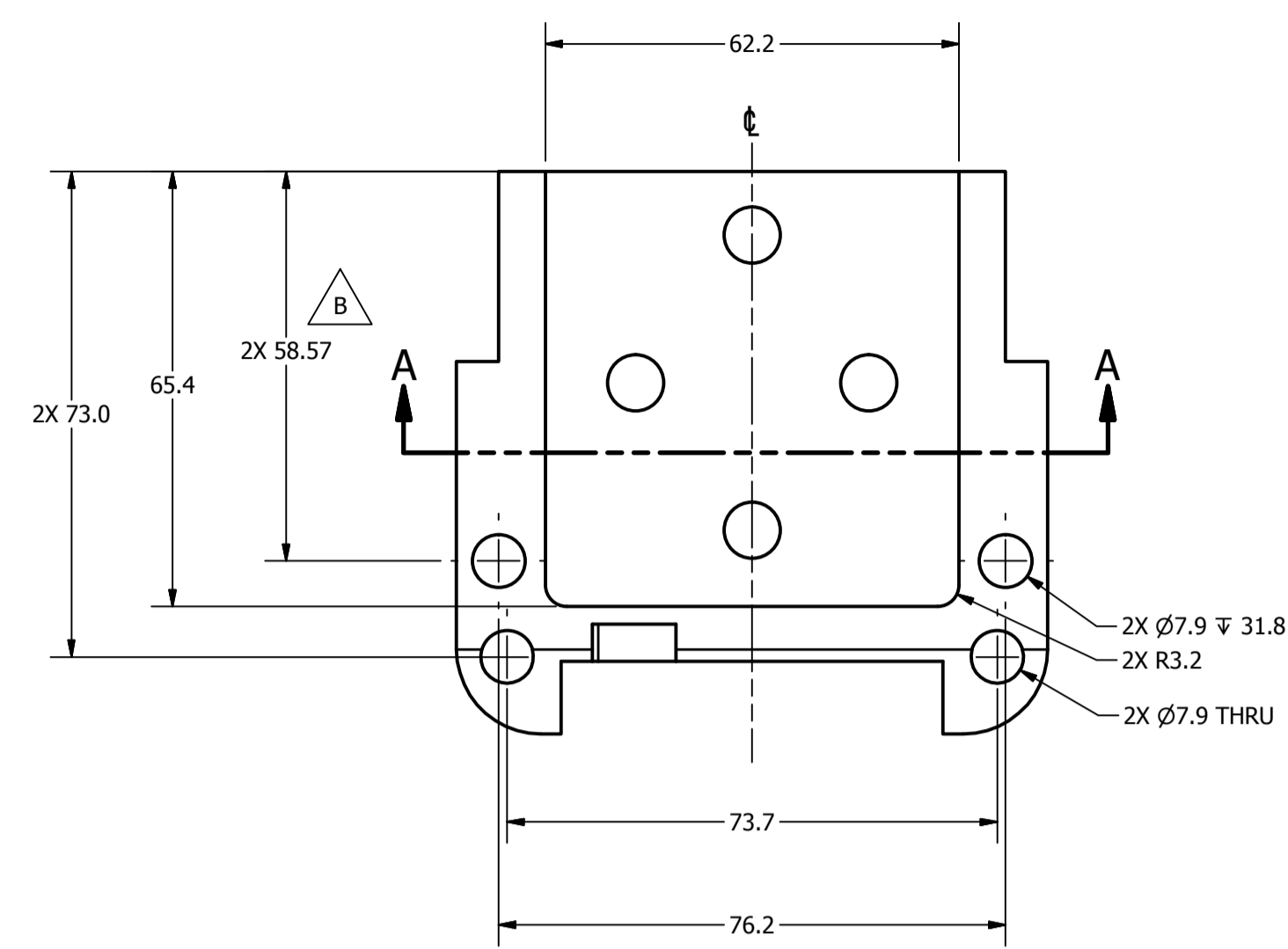
472-3777-2	1	THOR-M
472-3777-1	1	6061-T6 ALUM.
NEXT ASSEMBLY	QTY	
TOTAL QTY IN DUMMY	1	SEE NOTES

12 11 10 9 8 7 6 5 4 3 2 1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM610 R11 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	BK
	B	2X 58.57 WAS 2X 54.0	2/20/2012	BK
	C	ADDED M4-0.7 HOLES TO LEFT SIDE VIEW; HOLE NOTE 6X M4x0.7 $\nabla$ 7.5 WAS 8X M4x0.7 $\nabla$ 7.5; AND HOLE NOTE 4X M4x0.7 $\nabla$ 7.6 WAS 2X M4x0.7 $\nabla$ 7.6; HOLE NOTE 4X M4x0.7 $\nabla$ 7.5 WAS 6X M4x0.7 $\nabla$ 7.5	6/3/2015	DW



SCALE 1.000

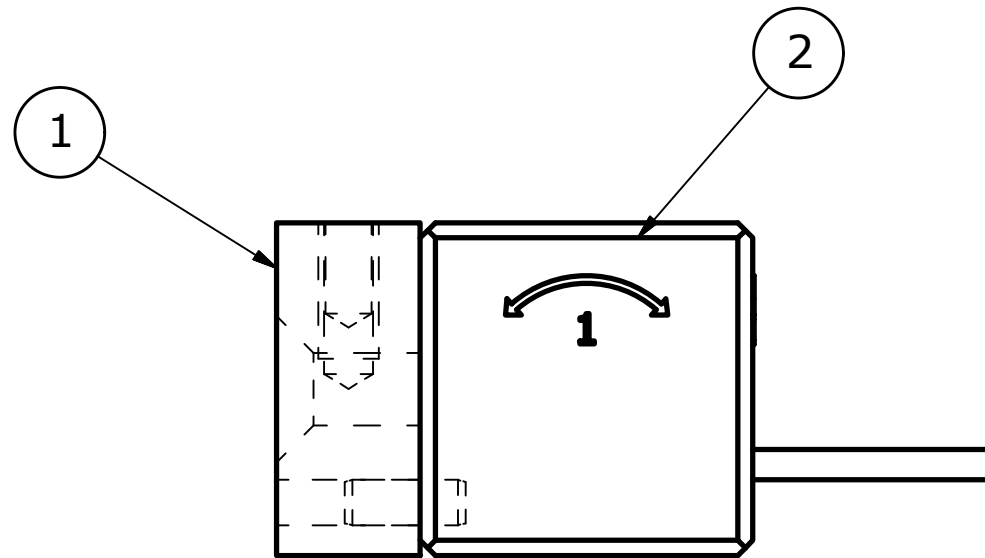
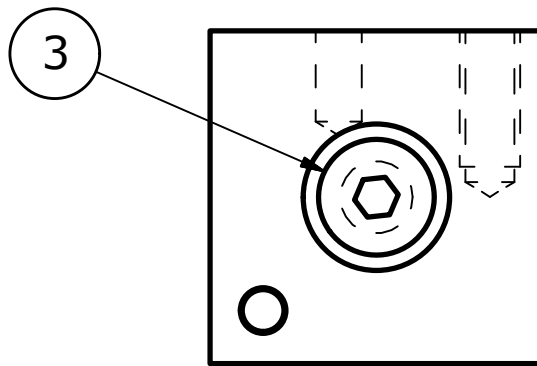
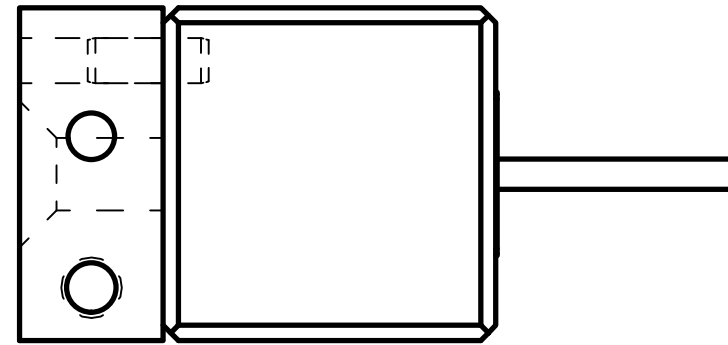
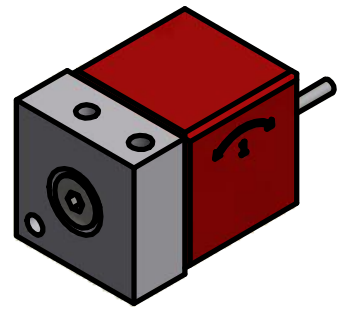


SECTION A-A  
SCALE 1.000

- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. POWDER OR BEAD BLAST.
  3. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
PROJECT NO:	1018 STEEL	DATE:	9/21/2011	THORACIC SPINE LOAD CELL FLEX JOINT ADAPTOR PLATE	
QTY:	1	DESIGNED BY:	B. KIMES	SCALE:	1:1
NEXT ASSEMBLY:	SEE NOTES	CHECKED BY:	J. WANG	DATE:	1/16/2012
TOTAL QTY IN DUMMY:	1			472-3731	C

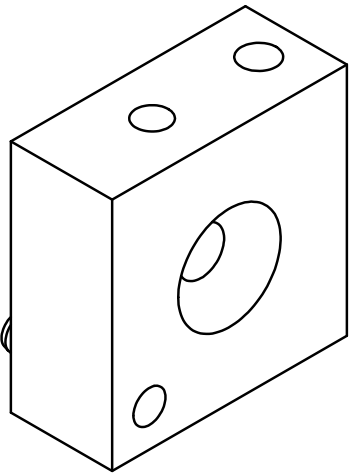
12 11 10 9 8 7 6 5 4 3 2 1



3	1	5001086	SCREW, FHCS M4-0.7 x 12
2	1	SA572-S113	TILT SENSOR, DUAL AXIS
1	1	472-3635	LOWER NECK TILT SENSOR MOUNT
ITEM	QTY	PART NUMBER	DESCRIPTION

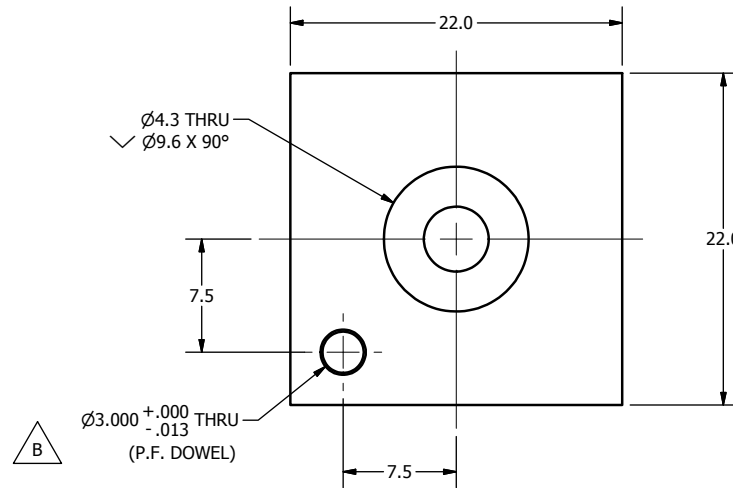
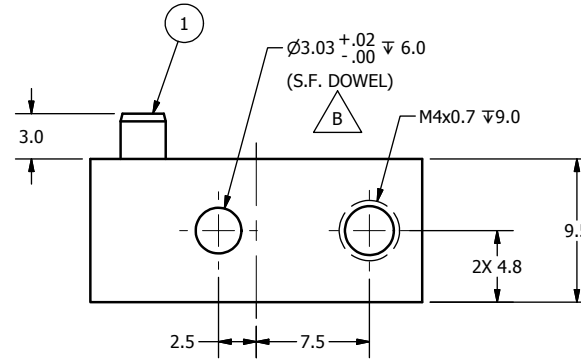
PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.5 X.X ±.2      ANGLS X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN Dave Walker	DATE 7/6/2015	
MATERIAL  HEAT TREAT  FINISH	CHECKED  ENG  APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE: <b>2:1</b>
		DRAWING NUMBER <b>472-3778</b>	REV SHEET <b>1 OF 1</b>



SCALE 3.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1SPM225 R00 AND CONVERTED TO METRIC FOR THOR-M	9/27/2011	BK
	B	ADD PARTS LIST; ADD PARTS LIST; Ø3.000+0.000/-0.013 WAS +.000/+0.013 (TYPO) AND WAS +.00/-0.02; Ø3.03 +.02/-0 WAS Ø3.05	2/6/2012	FINK



NOTES:

1. INSTALL DOWEL PIN AFTER ANODIZE.

1	1	5000384	M3 X 8 LG. DOWEL PIN
ITEM	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X 0.5 ± 0.5 1.6	
		X.X ± 0.2	
		X.XX ± 0.3	
		X.XXX ± 0.01	
REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO:		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3630		1	
MATERIAL:		7075-T6 ALUMINUM	
NEXT ASSEMBLY		QTY	
TOTAL QTY IN DUMMY		1	
FINISH:		CLEAR ANODIZE	
CHECKED BY:		B. KIMES	
DATE:		9/27/2011	
ENGINEER:		J. WANG	
DATE:		1/16/2012	
SIZE:		A3	
SHEET:		1 OF 1	
DRAWING NO.:		472-3635	
SCALE:		3.000	
REV:		B	



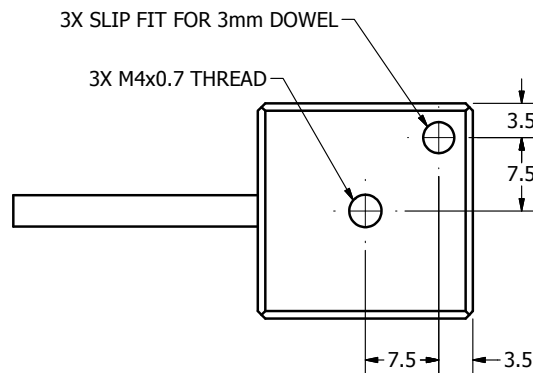
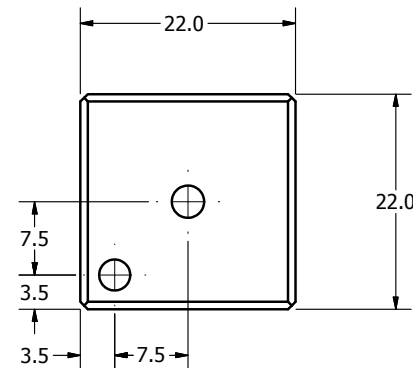
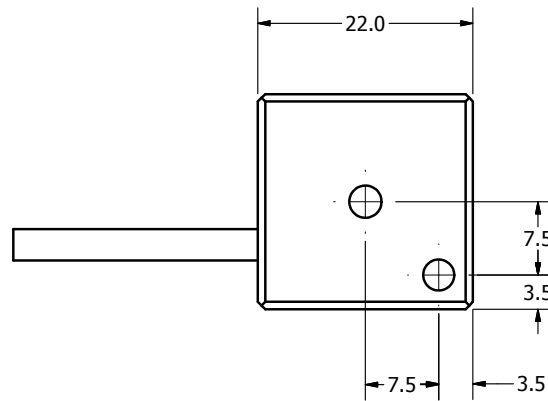
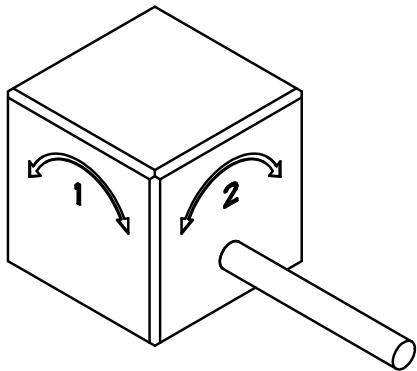
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1

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENGR.	DATE
	A	SPEC RELEASE	BK	JW	5/13/2013



TILT SENSOR SPECIFICATIONS:

MASS: 20g  
 RANGE: ±80°  
 RESOLUTION: 0.1°  
 ACCURACY: ±0.5°  
 SUPPLY VOLTAGE: 6-7 V  
 POWER CONSUMPTION: 15 mA

DO NOT SCALE DRAWING THIRD ANGLE PROJECTION	TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	PROJECT NO.:	DECIMALS: X ANGLES: X.X FINISH: X.XX ± 0.01 REMOVE ALL BURRS & SHARP EDGES	
MATERIAL:	DRAWN BY: B. Kimes	DATE: 11/29/2012	DRAWING NO.: SA572-S113
HEAT TREAT:	CHECKED BY:	DATE:	
FINISH:	SIZE: B 1 OF 1 SCALE: 2.000		SHEET: 1 SCALE: 2.000

4

3

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1

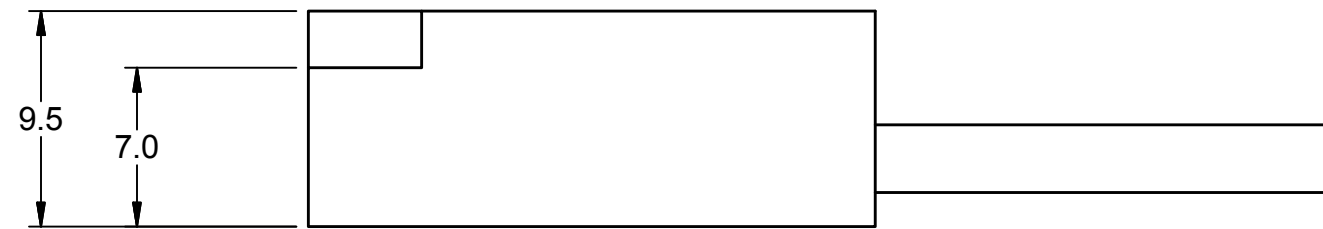
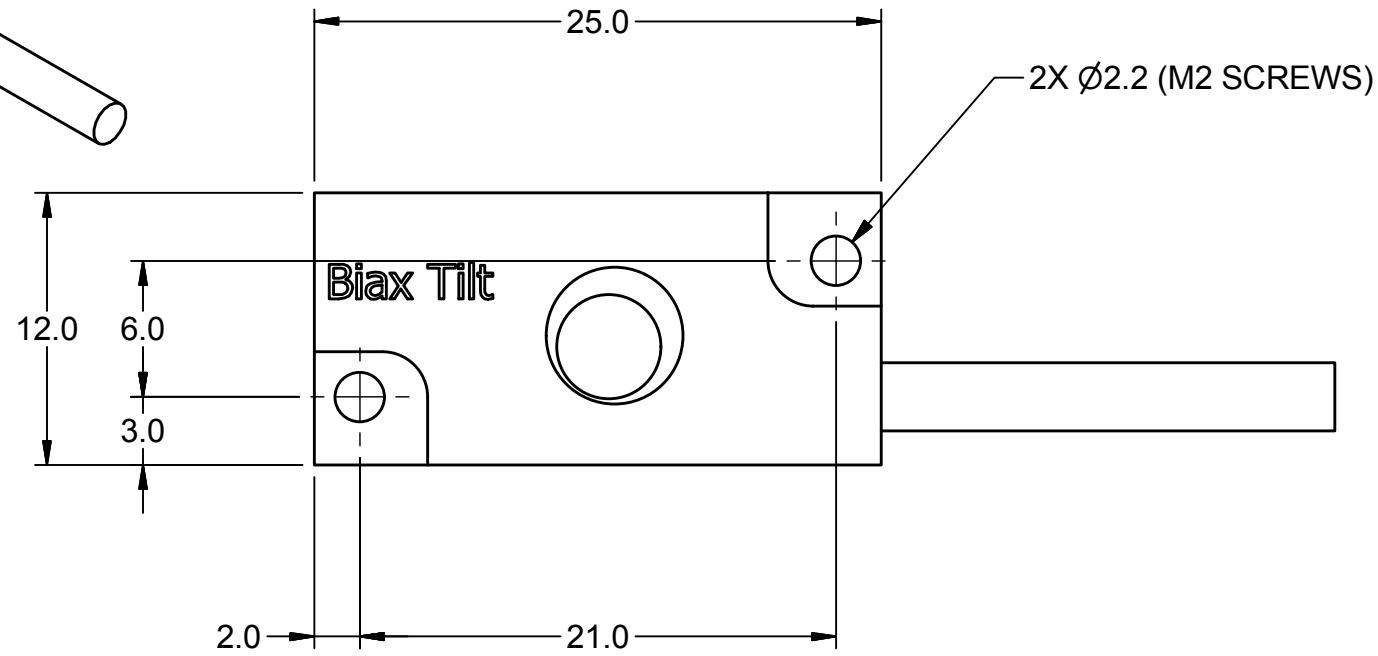
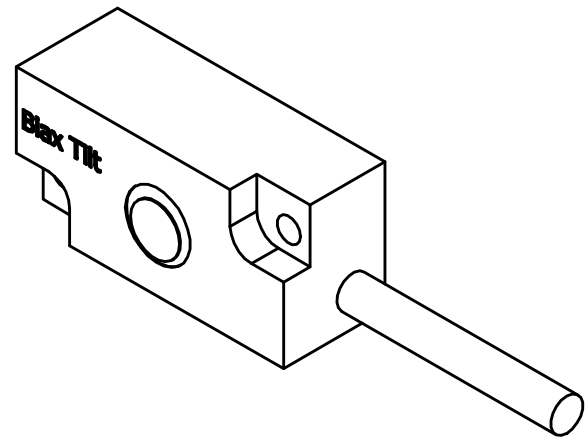
B

B

A



A

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
	A	SPEC RELEASE	BK	JW	5/13/2013



TILT SENSOR SPECIFICATION:

- MASS: 5g
- RANGE:  $\pm 80^\circ$
- RESOLUTION: 0.1°
- ACCURACY:  $\pm 0.5^\circ$
- SUPPLY VOLTAGE 5 V
- POWER CONSUMPTION: 6 mA

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION: TILT SENSOR, DUAL AXIS
MATERIAL:		DRAWN BY: B. KIMES	DATE: 11/29/2012	
HEAT TREAT:		CHECKED BY:	DATE:	
FINISH:		SCALE: 3.000		SIZE: SHEET B 1 OF 1 DRAWING NO.: SA572-S44 REV: A

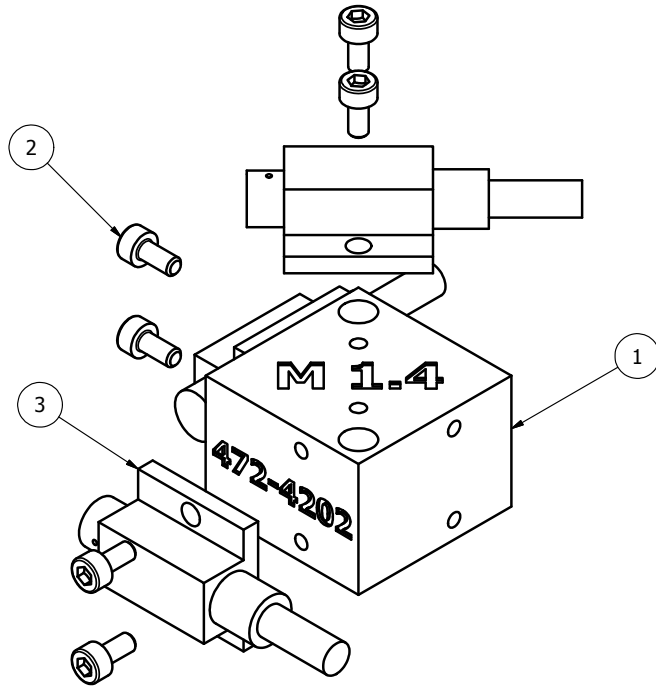
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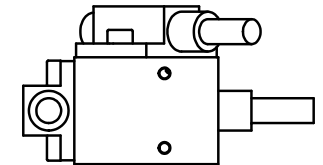
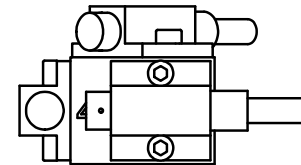
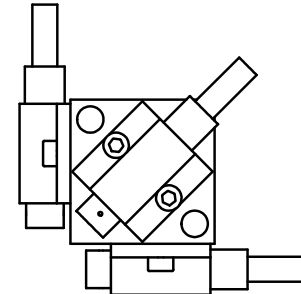
2

1

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1INM100 AND CONVERTED TO METRIC FOR THOR-M	9/1/2011	KHS



SCALE 3.000



ITEM	QTY	PART NUMBER	DESCRIPTION
3	3	SA572-S4	UNIAXIAL ACCELEROMETER
2	6	5000068	M1.4 X 0.3 X 3 LG. SHCS
1	1	SA572-S80M	TRI-PACK BLOCK

Parts List

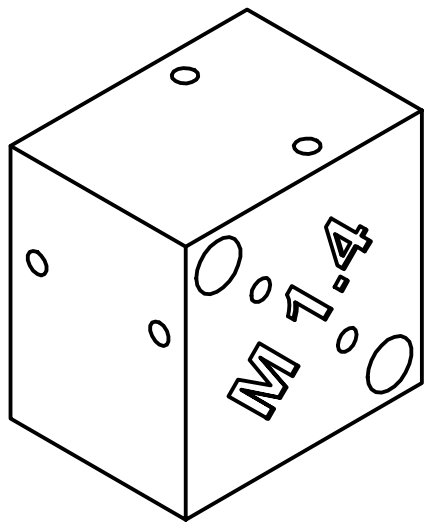
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION TRI-PACK ACCEL. ASSY.	
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X 0.0 0.0 1.6 X.XX 0.1 X.XXX 0.05			
PROJECT NO.		DRAWN BY:	KHS	DATE:	9/1/2011
472-4360	1	MATERIAL:		CHECKED BY:	TMV
NEXT ASSEMBLY	QTY	HEAT TREAT:		ENGINEER:	J. WANG
TOTAL QTY IN DUMMY	1	FINISH:		DATE:	1/18/2012
		SIZE: B		SHEET: 1 OF 1	
		DRAWING NO.:		472-4203	
		SCALE: 3:1		REV: A	

4

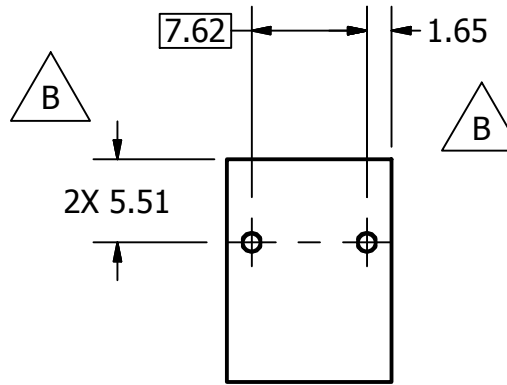
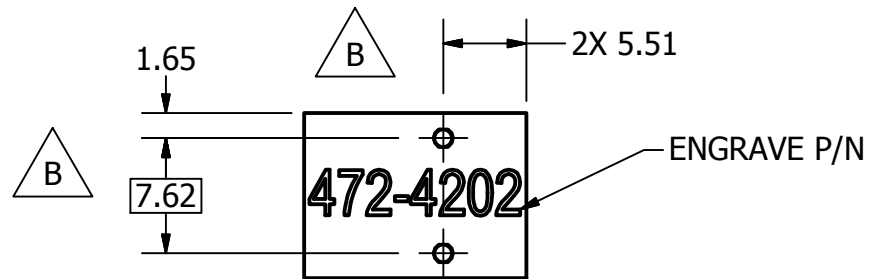
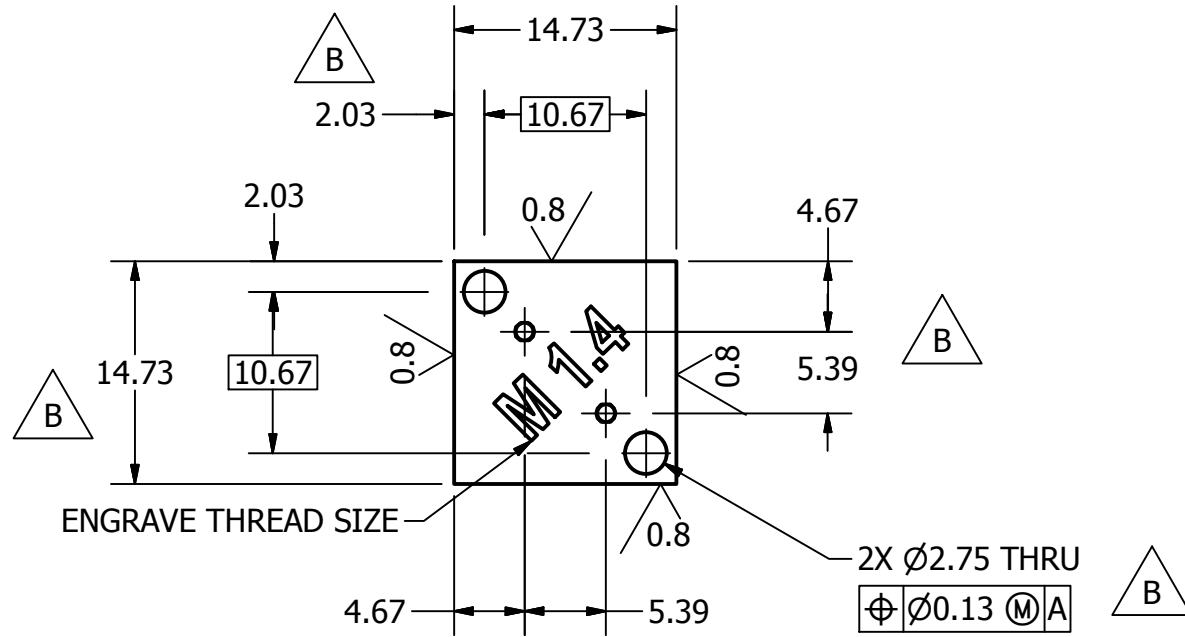
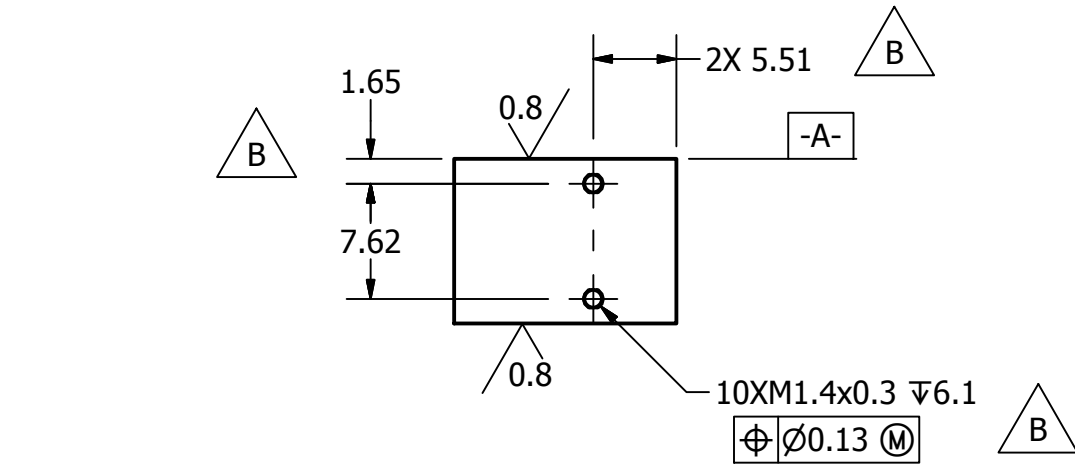
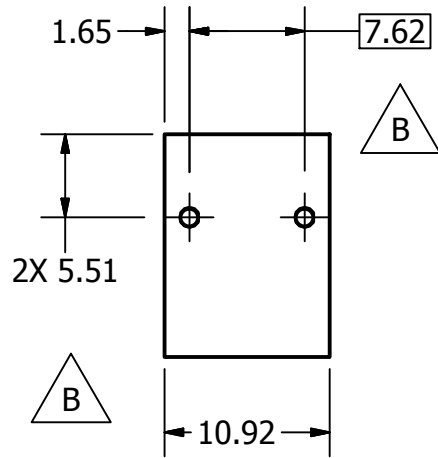
3

2

1



SCALE 3.000

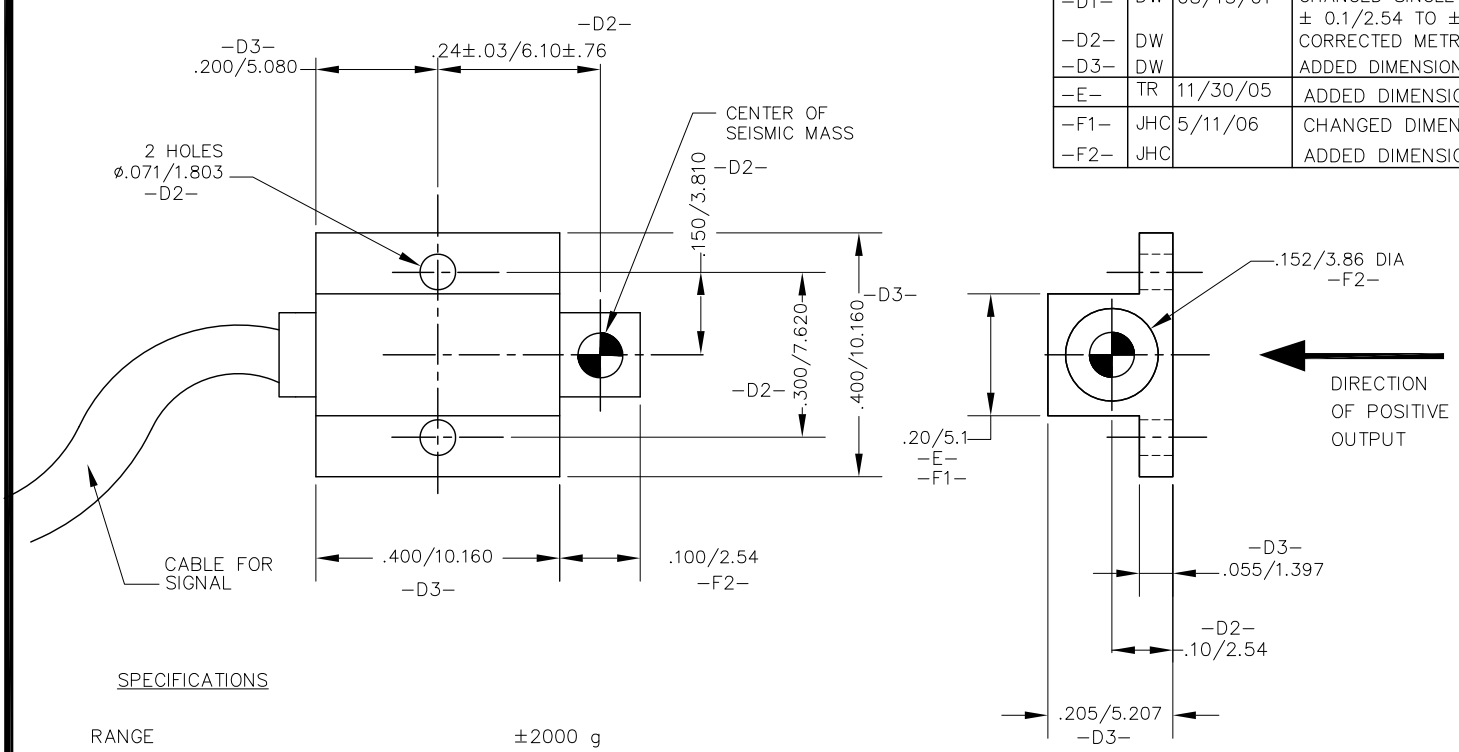


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1INM130 AND CONVERTED TO METRIC FOR THOR-M	9/1/2011	KHS
	B	ADD TOLERANCE TO HOLES; ADD DATUM A; 10.92 WAS 10.9, 14.73 WAS 14.7, 2.03 WAS 2.0. 1.65 WAS 1.7, 4.67 WAS 4.7; ADD BASIC DIMENSION FOR HOLE SPANS; ADD FINISH MARKS; M1.4 TAP WAS THRU, ADD VIEWS AND DIMENSIONS FOR HOLES	12/21/2012	BK

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION S4 TRIAXIAL ACCELEROMETER MOUNTING BLOCK METRIC	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 ±0.2 XXX ±0.1 XXXX ±0.01			
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DRAWN BY: KHS DATE: 9/1/2011	
MATERIAL: Aluminum-7075-T6		CHECKED BY: TMV DATE: 9/9/2011		SIZE: SHEET B 1 OF 1 DRAWING NO. SA572-S80M REV: B	
HEAT TREAT:		ENGINEER: J. WANG DATE: 1/18/2012		SCALE: 2:1	
FINISH: CLEAR ANODIZE					

REVISION RECORD

ITEM NO.	BY	DATE	DESCRIPTION
-A-	HP	01/09/99	TOLERANCES
-B1-	DW	09/27/99	UPDATED NOTE
-B2-			CHANGE TRANSVERSE SENSITIVITY TO 1%
-B3-			REVISED FORMAT, ENLARGED TOLERANCES
-C1-	DW	02/8/00	REVISED TOLERANCE
-D1-	DW	08/15/01	CHANGED SINGLE DECIMAL PLACE TOLERANCE FROM ± 0.1/2.54 TO ± 0.1/2.5
-D2-	DW		CORRECTED METRIC EQUIVALENTS
-D3-	DW		ADDED DIMENSIONS
-E-	TR	11/30/05	ADDED DIMENSION
-F1-	JHC	5/11/06	CHANGED DIMENSION, WAS .150/3.810
-F2-	JHC		ADDED DIMENSIONS



SPECIFICATIONS

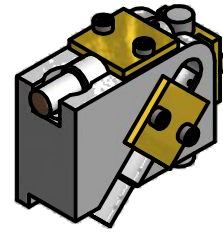
RANGE	±2000 g
SENSITIVITY	.20 mV/g MIN
MOUNTED RESONANCE FREQUENCY	22,000 Hz MIN

-B1- SIGNAL OUTPUT MUST BE COMPATIBLE WITH AND RECORDABLE IN A DATA CHANNEL AS DEFINED BY SAE J211

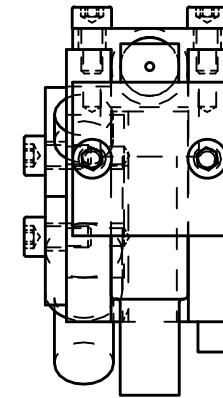
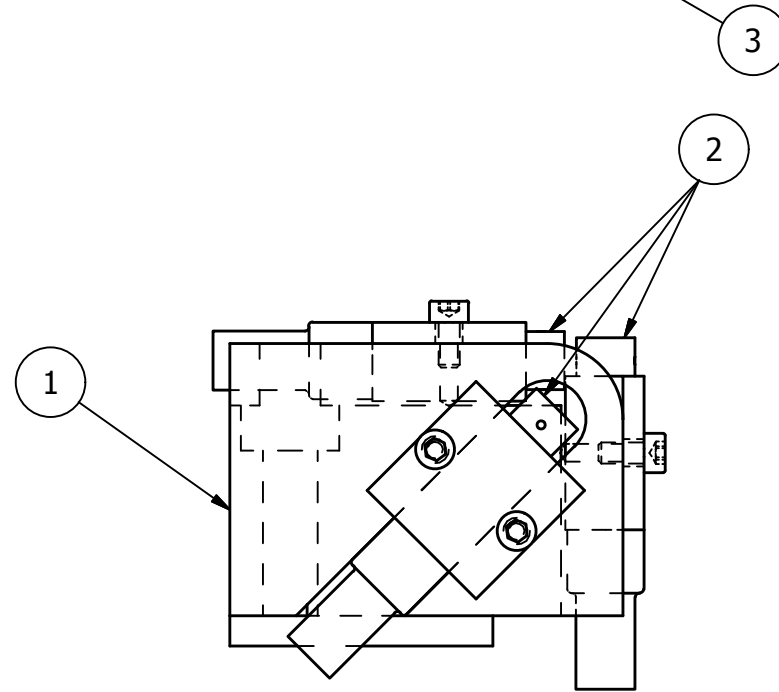
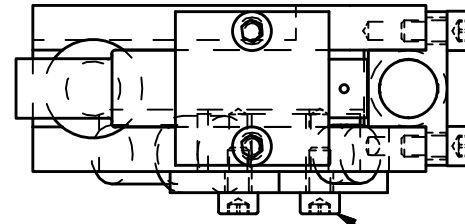
DAMPING RATIO	UNDAMPED (.005)
-B2- TRANSVERSE SENSITIVITY	±1% MAX
NON-LINEARITY & HYSTERESIS	±2% MAX
ZERO OFFSET	±25 mV
EXCITATION	10V DC
THERMAL SENSITIVITY	-5% Typ AT 0°F TO 150°F -D1-
TEMPERATURE EXPOSURE LIMITS	0°/+200°F WITHOUT DAMAGE -C1-
WEIGHT	1 gram (WITHOUT CABLE) -B3-
HUMIDITY	SEALED

**RELEASED**  
Sept. 15, 2006  
**NHTSA**

UNITS ARE in/mm		MATERIAL:		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
TOLERANCES ARE: *		SCALE NONE		
DECIMALS	ANGLES	APPROVALS	DATE	UNIAXIAL PIEZORESISTIVE ACCELEROMETER
.X ±0.1/2.5	+ 0.5°			
.XX ±0.01/.25		DRAWN	3/5/98	HYBRID III DUMMY FAMILY
.XXX ±0.005/.127		CHECKED		
* unless otherwise noted		ENG		SIZE
		J McF H.P.		A
				DRAWING NUMBER
				SA572-S4
				REV
				F



SCALE 1 : 1

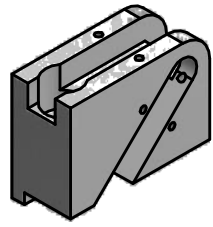


3	6	5000068	SCREW, SHCS M1.4 - 0.3 X 3 LG.
2	3	SA572-S4	UNIAXIAL PIEZORESISTIVE ACCELEROMETER
1	1	472-3858	T1 ACCEL. MOUNT
ITE	QTY	PART NUMBER	DESCRIPTION

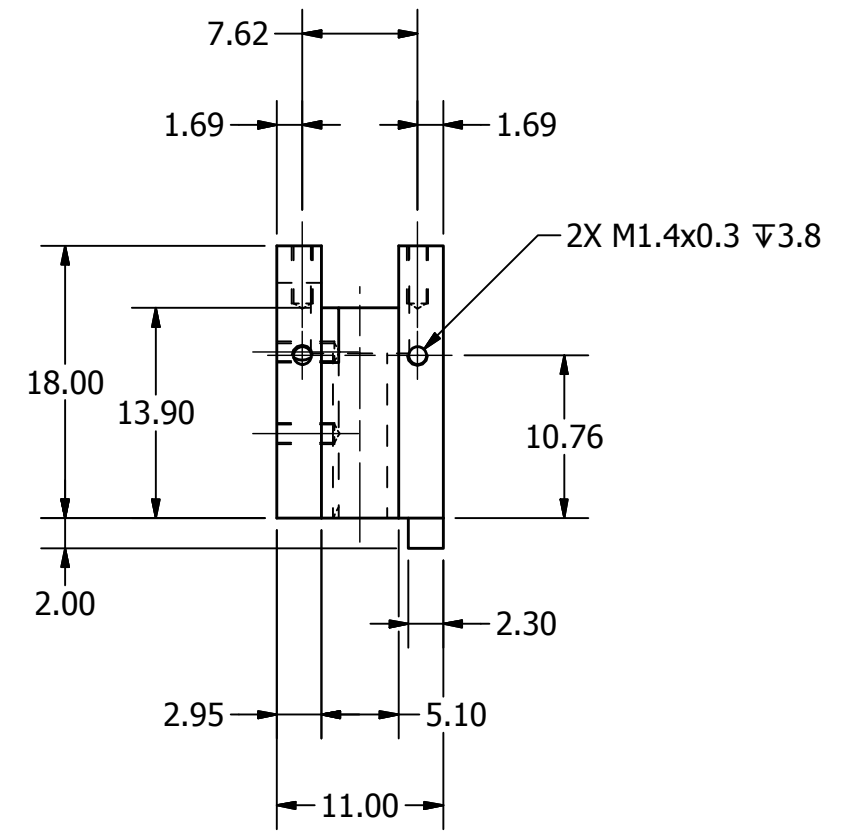
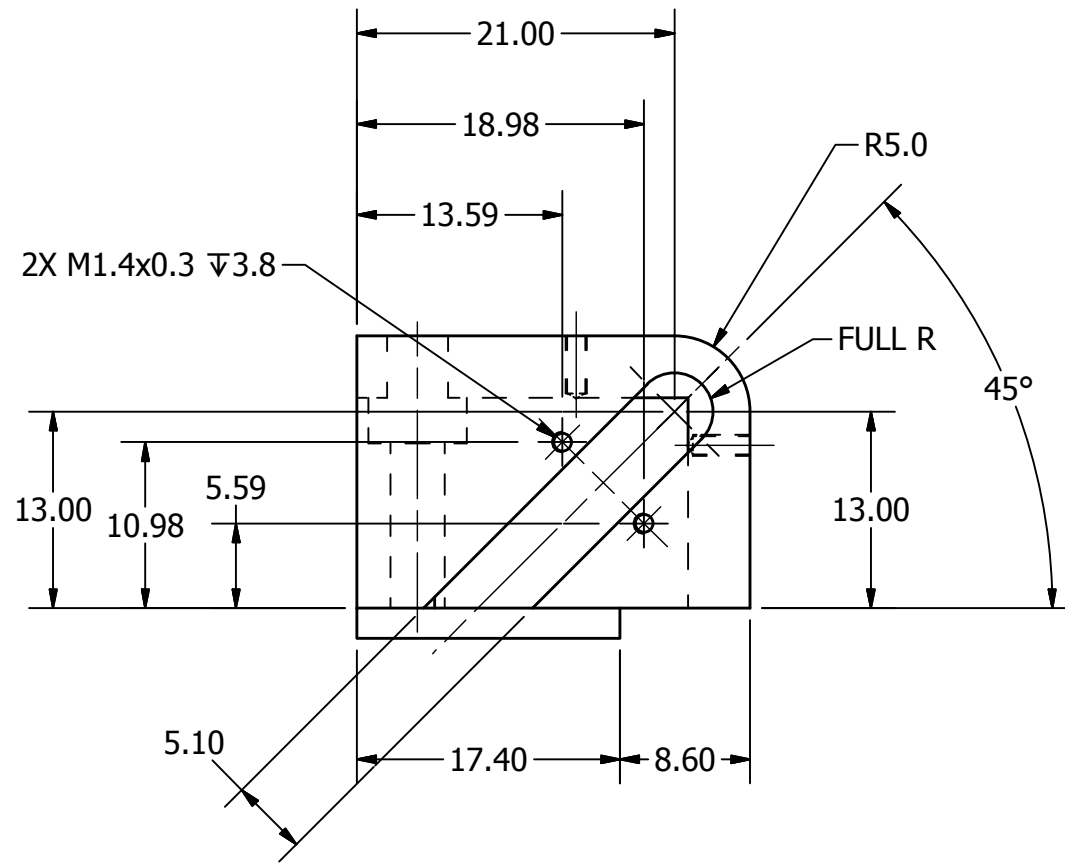
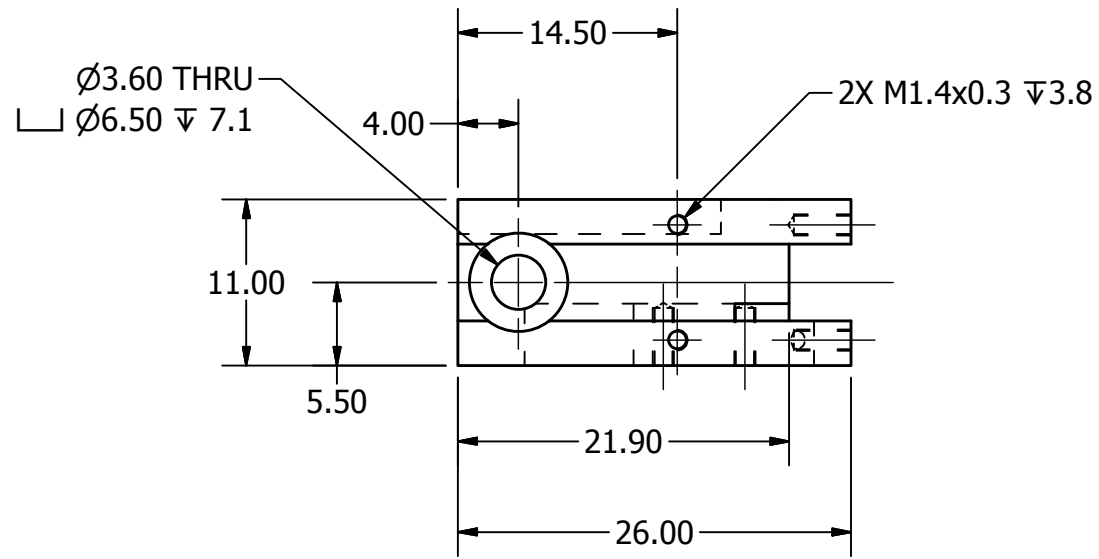
DO NOT SCALE DRAWING  
 THIRD ANGLE PROJECTION  
 TOLERANCES  
 UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ANGLES FINISH  
 X ± 0.5 ± 0.5 1.6  
 X.X ± 0.2 ± 0.5 1.6  
 X.XX ± 0.1 ± 0.5 1.6  
 X.XXX ± 0.01 ± 0.5 1.6



472-3600	1	PROJECT NO.:	REMOVE BURRS & BREAK CHAMP EDGES	DATE:	9/9/2014	DESCRIPTION:	T1 ACCEL. MOUNT ASSEMBLY
NEXT ASSEMBLY	QTY	MATERIAL:	DAVE WALKER	CHECKED BY:	DATE:	SIZE: SHEET	DRAWING NO.:
TOTAL QTY IN DUMMY	1	HEAT TREAT:	ENGINEER:	DATE:	DATE:	A3 1 of 1	472-3857
		FINISH:				SCALE: 2:1	

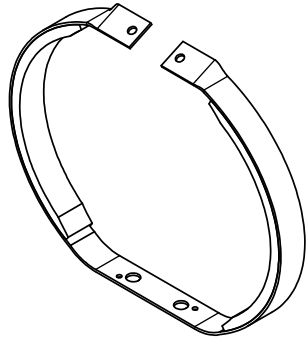


SCALE 1 : 1

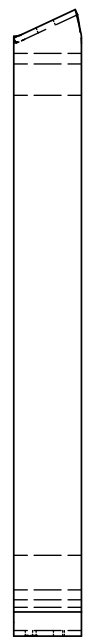
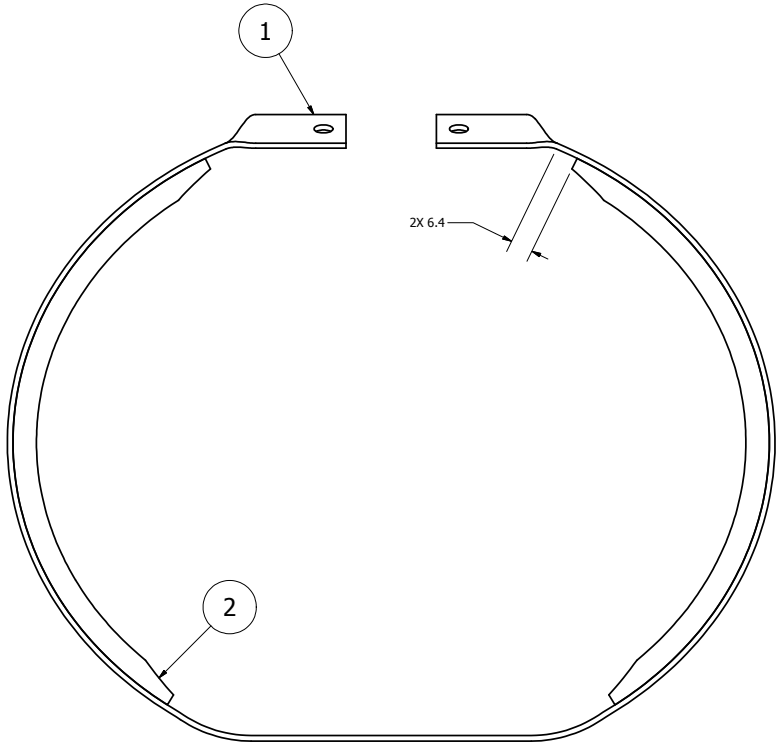


		DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
		THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		DESCRIPTION: T1 ACCEL. MOUNT	
PROJECT NO.: 472-3857		MATERIAL: Aluminum 6061		DRAWN BY: Dave Walker		DATE: 9/9/2014	
NEXT ASSEMBLY		QTY		CHECKED BY:		DATE:	
TOTAL QTY IN DUMMY		1		ENGINEER:		DATE:	
				REMOVE BURRS & BREAK CHAMP EDGES		SIZE: A3	
						SHEET 1 of 1	
						DRAWING NO.: 472-3858	
						SCALE: 2:1	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM310 R2 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	TKN



ISO VIEW  
SCALE 1:2



NOTES:  
1. THE RIB IS ASSEMBLED BY VACUUM BONDING THE SPRING STEEL TO THE DAMPING MATERIAL USING HYSOL 9430 EPOXY ADHESIVE.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-3312	THORAX ELLIPTICAL RIB #1 - DAMPING MATERIAL
1	1	472-3311	THORAX ELLIPTICAL RIB #1 - STEEL

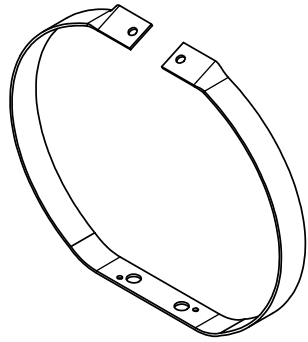
Parts List  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

472-3000		1	THORAX ELLIPTICAL RIB #1 - ASSEMBLY
NEXT ASSEMBLY	QTY	1	
TOTAL QTY IN DUMMY	1		

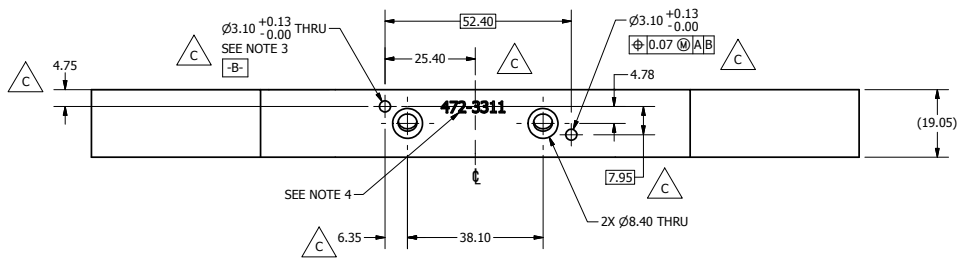
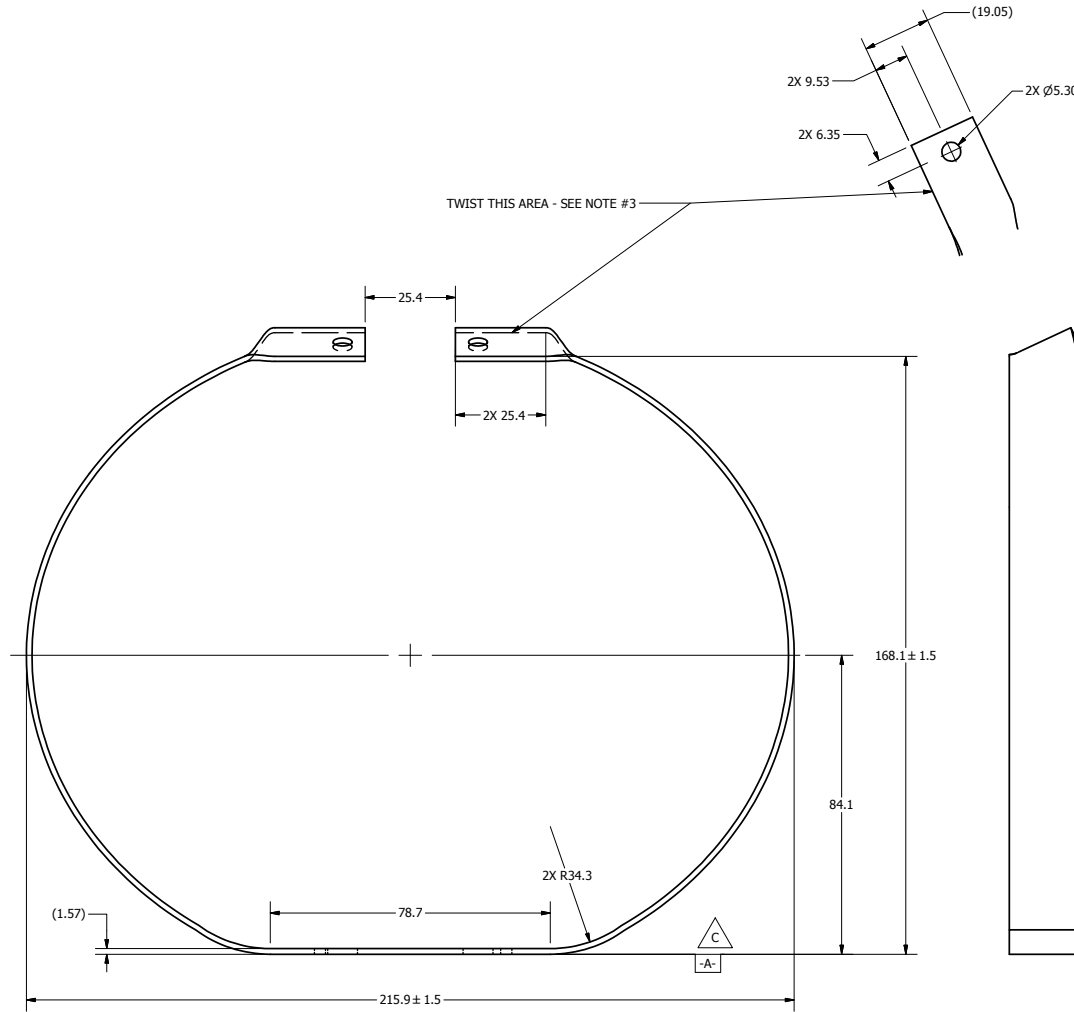
DATE: 9/20/2011	BY: Thanh	DATE: 11/17/2012	BY: J. WANG
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SCALE: FULL	FIG. NO: A2	TOTAL FIGS: 1
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ISO VIEW  
SCALE 1 : 2

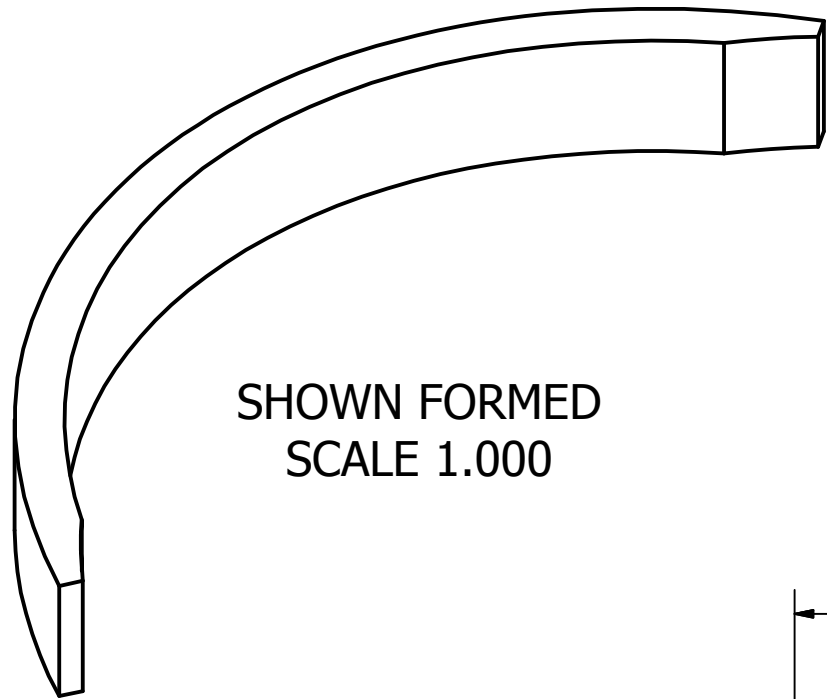


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RUNNUMBER FROM T1TXM311 R3 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	FINISH E-COAT WAS BLK. OXIDE; REMOVE NOTES 6,7; ADD HEAT TREAT TO TITLE BLOCK	5/8/2012	BK
	C	3.10 WAS 3.03; REMOVE NOTE 5; ADD DATUM A,B, BASIC DIMENSIONS, AND POSITIONAL TOLERANCE; DIMENSION HOLES FROM DATUM B; ADD 4.75, 25.40	8/14/2012	BK

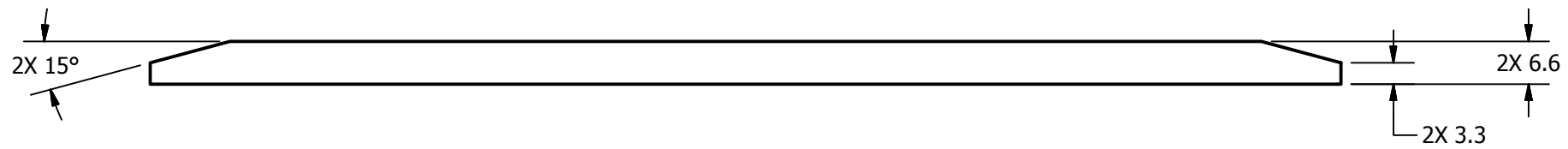
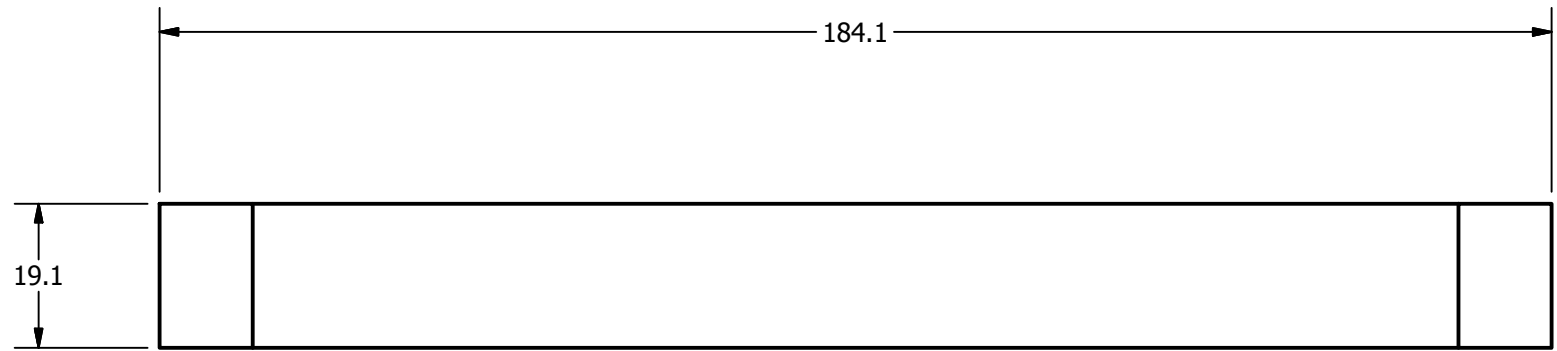
- NOTES: C
1. MAKE RIB FROM 1070 ANNEALED SPRING STEEL 1.57MM THICK X 19.05MM WIDE.
  2. ELLIPTICAL SHAPE SEMI-AXIS OUTSIDE DIMENSIONS ARE: X:107.95MM Y:93.22MM
  3. AFTER RIB IS FORMED - PRIOR TO HEAT-TREAT, ORIENT THE RIB SO THAT THE HOLE PATTERN IS AS SHOWN. THEN TWIST THE RIB AT THE 25.4MM FLAT AREA BY BENDING THE BOTTOM OUTWARD BY 25°.
  4. ENGRAVE DWG. #472-3311 AT THE LOCATION SPECIFIED.


DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE 0.001 INCHES		THORAX ELLIPTICAL RIB #1 - STEEL	
QTY	DESCRIPTION	DATE	BY	DATE	BY
1	1070 SPRING STEEL	9/21/2011	Thanh		
1	E-COAT	11/17/2012	J. WANG		
TOTAL QTY IN DUMMY		DATE		DRAWING NO.	
1		11/17/2012		472-3311	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM312 R2 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	TKN

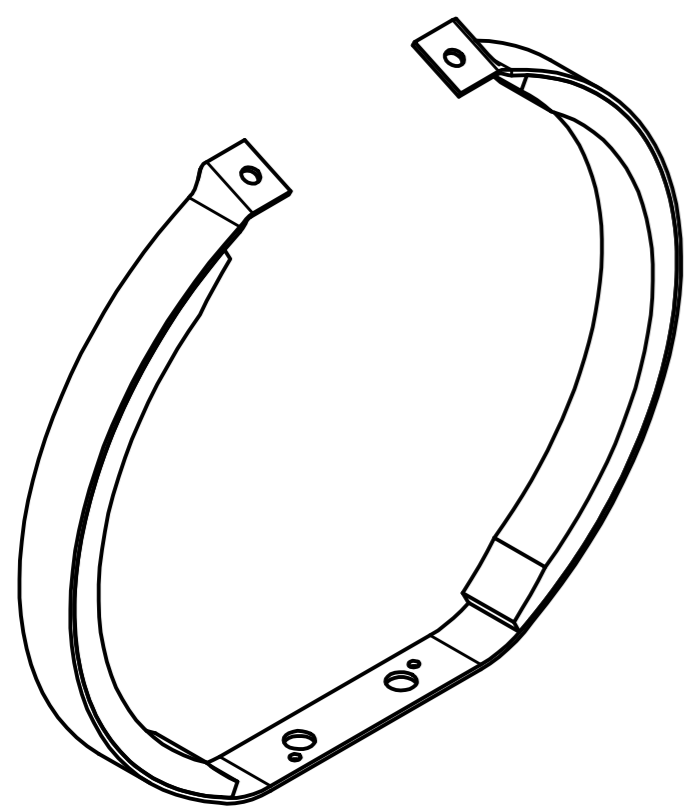


SHOWN FORMED  
SCALE 1.000

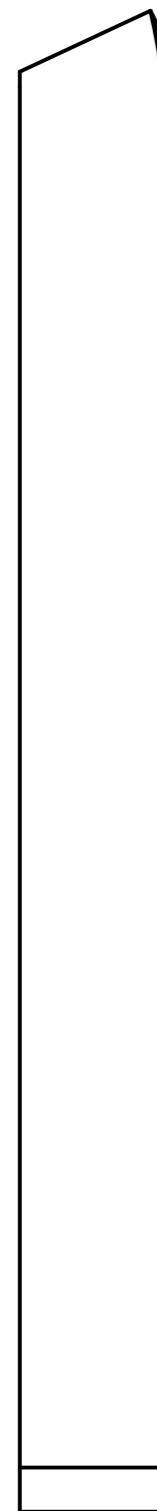
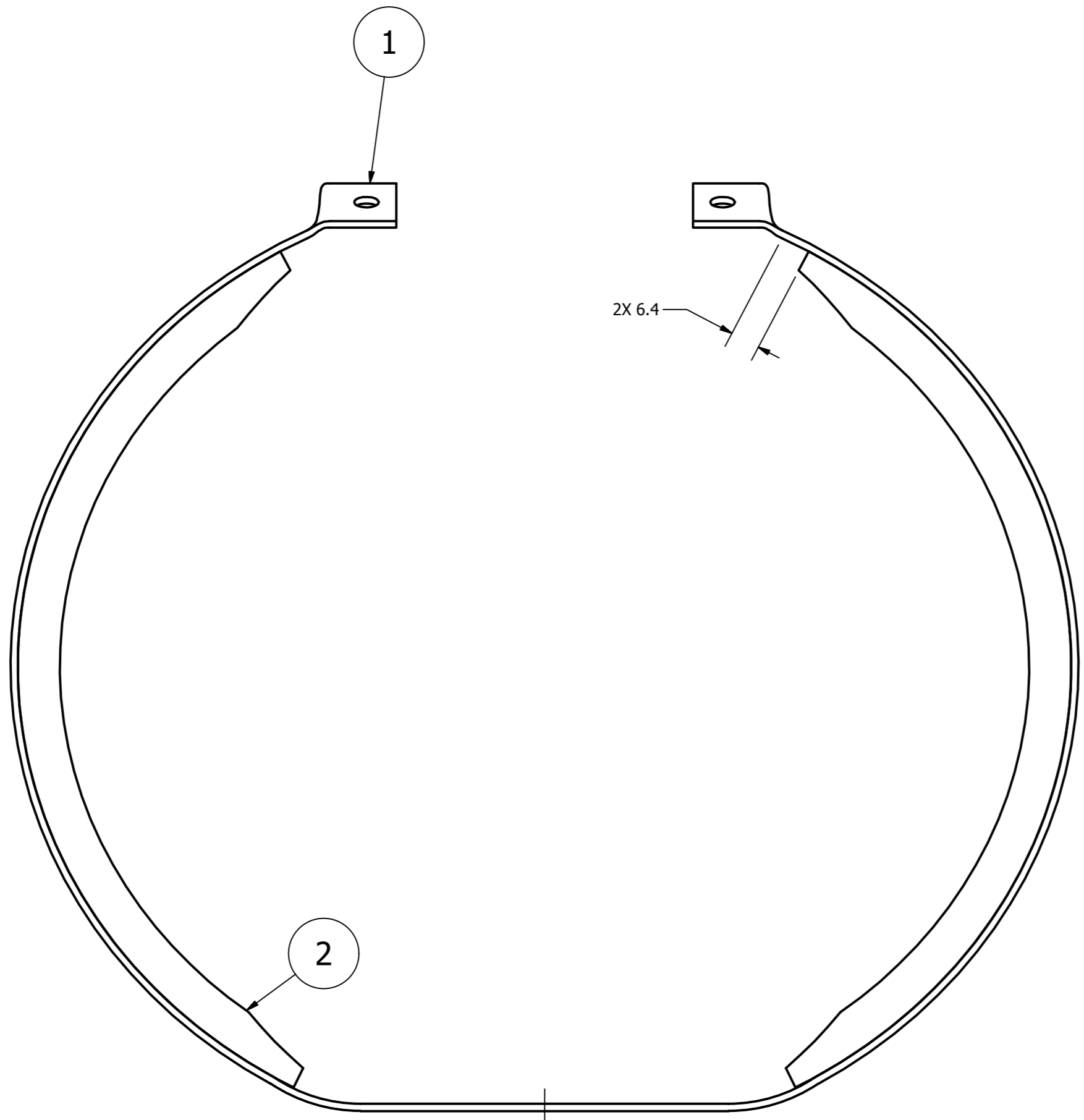


DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> <small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.5 1.6 XXX ±0.01 ±0.5 1.6	
THIRD ANGLE PROJECTION		<small>REMOVE BURRS &amp; BREAK SHARP EDGES</small> <small>DATE: 9/20/2011</small>			
PROJECT NO.:		DRAWN BY:	Thanh	DATE:	9/20/2011
MATERIAL:	ISODAMP CN-62	CHECKED BY:	J. WANG	DATE:	1/17/2012
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/17/2012
FINISH:					
DESCRIPTION:	THORAX ELLIPTICAL RIB #1 - DAMPING MATERIAL				
SIZE:	A3	SHEET:	1 of 1	DRAWING NO.:	472-3312
SCALE:	FULL				

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM320 R1 AND CONVERTED TO METRIC FOR THOR-M. MODIFY DAMPING COMPONENT BY INCREASE THE LENGTH FROM 209.6 TO 214.1 (TO MAINTAIN THE SAME SPACING BETWEEN LEFT AND RIGHT DAMPING MATERIAL) & REDUCE THICKNESS FROM 13.2 TO 9.0	9/20/2011	TKN



ISO VIEW  
SCALE 1 : 2



NOTES:  
1. THE RIB IS ASSEMBLED BY VACUUM BONDING THE SPRING STEEL TO THE DAMPING MATERIAL USING HYSOL 9430 EPOXY ADHESIVE.

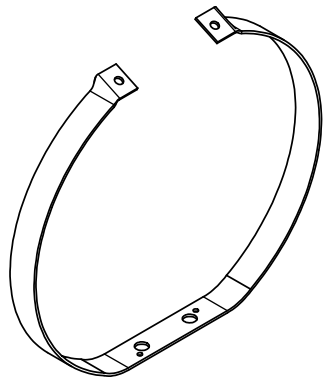
ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-3322	THORAX ELLIPTICAL RIB #2 - DAMPING MATERIAL
1	1	472-3321	THORAX ELLIPTICAL RIB #2 - STEEL

Parts List

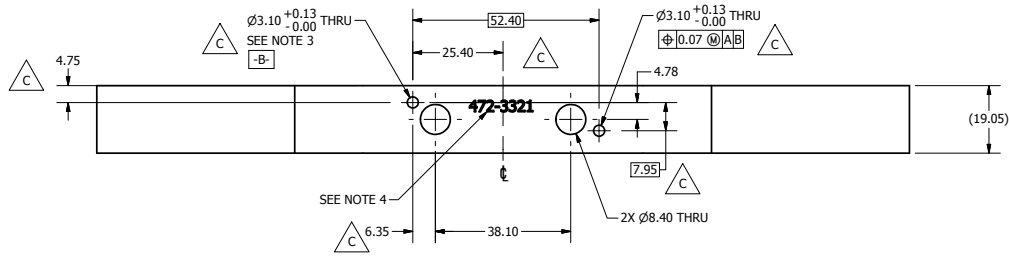
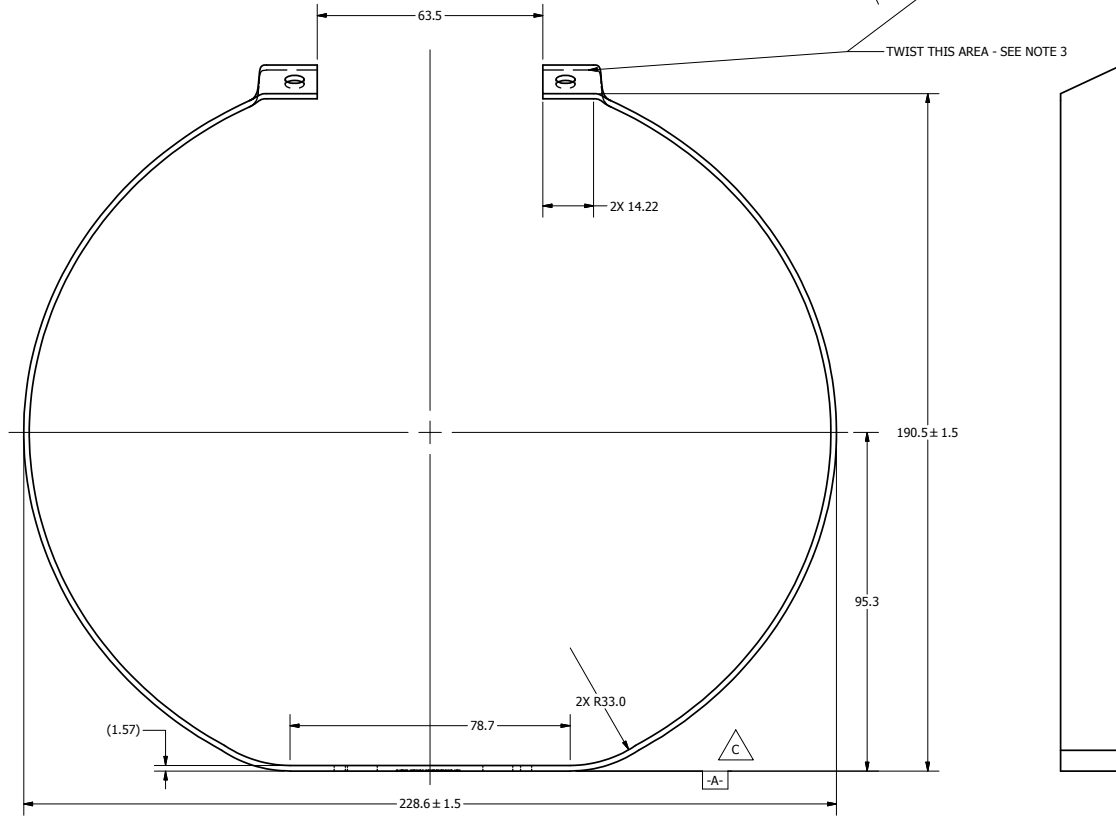
DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.05		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	MATERIAL:	DATE:	DESCRIPTION:	THORAX ELLIPTICAL RIB #2 - ASSEMBLY 472-3320
472-3000	1	9/20/2011	THANH	
NEXT ASSEMBLY	QTY	DATE:	SCALE:	
TOTAL QTY IN DUMMY	1	1/17/2012	A2 1 OF 1 FULL	

472-3000	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

472-3320



ISO VIEW  
SCALE 1 : 2

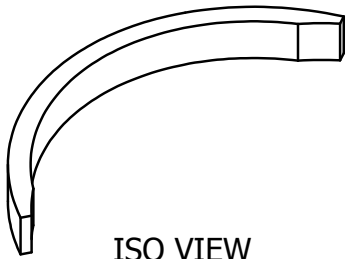


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM321 R3 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	FINISH E-COAT WAS BLK. OXIDE; REMOVE NOTES 6,7; ADD HEAT TREAT TO TITLE BLOCK	5/8/2012	BK
	C	3.10 WAS 3.03; REMOVE NOTE 5; ADD DATUM A,B, BASIC DIMENSIONS, AND POSITIONAL TOLERANCE; DIMENSION HOLES FROM DATUM B; ADD 4.75, 25.40	8/14/2012	BK

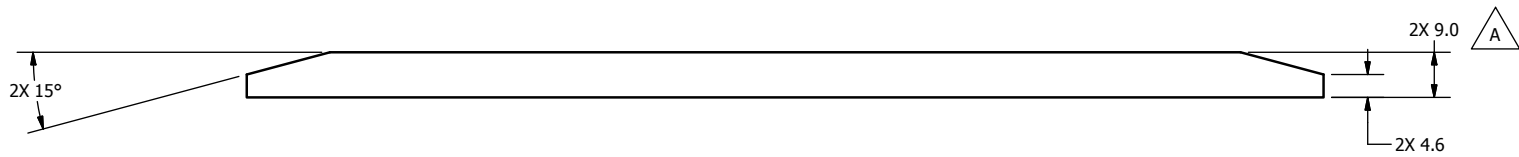
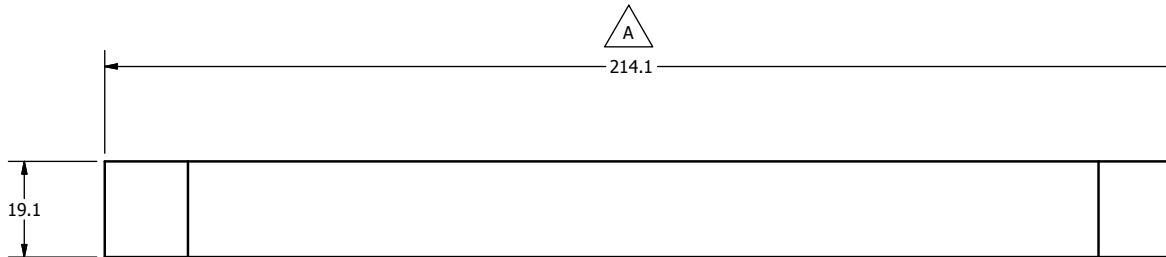
- NOTES: C
- MAKE RIB FROM 1070 ANNEALED SPRING STEEL 1.57MM THICK X 19.05MM WIDE.
  - ELLIPTICAL SHAPE SEMI-AXIS OUTSIDE DIMENSIONS ARE: X:114.30MM Y:104.14MM
  - AFTER RIB IS FORMED - PRIOR TO HEAT-TREAT, ORIENT THE RIB SO THAT THE HOLE PATTERN IS AS SHOWN. THEN TWIST THE RIB AT THE 14.2MM FLAT AREA BY BENDING THE BOTTOM OUTWARD BY 25°.
  - ENGRAVE DWG. #472-3321 AT THE LOCATION SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE IN MILLIMETERS FRACTIONS ARE IN 16THS OF AN INCH UNLESS OTHERWISE SPECIFIED			
DRAWN BY: [Signature]		CHECKED BY: [Signature]		THORAX ELLIPTICAL RIB #2 - STEEL	
472-3320	1	1070 SPRING STEEL	Thanh	9/21/2011	
NEXT ASSEMBLY	QTY	Rc: 43-47			
TOTAL QTY IN DUMMY	1	E-COAT	J. WANG	11/17/2012	472-3321

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM322 R1 AND CONVERTED TO METRIC FOR THOR-M. INCREASE THE LENGTH FROM 209.6 TO 214.1 TO MAINTAIN THE SAME SPACING BETWEEN LEFT AND RIGHT DAMPING MATERIAL & REDUCE THICKNESS FROM 13.2 TO 9.0	9/20/2011	TKN

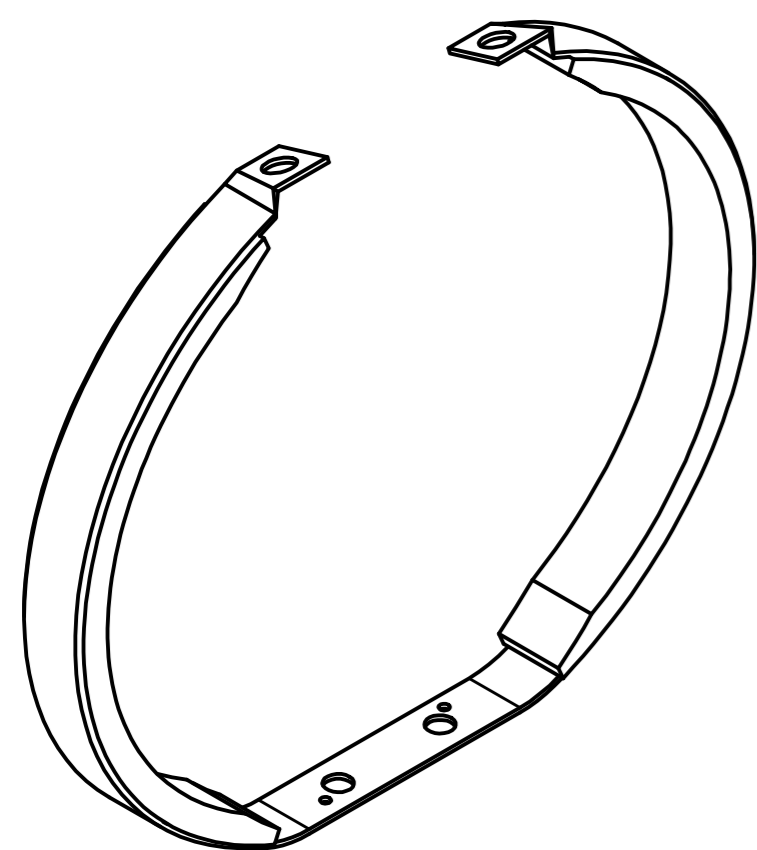


ISO VIEW  
SCALE 1 : 2

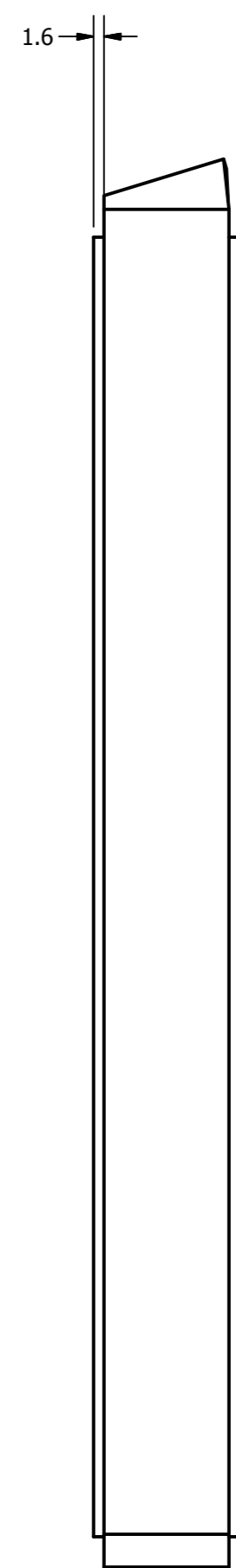
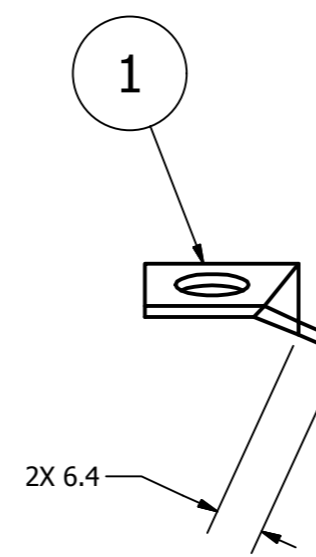
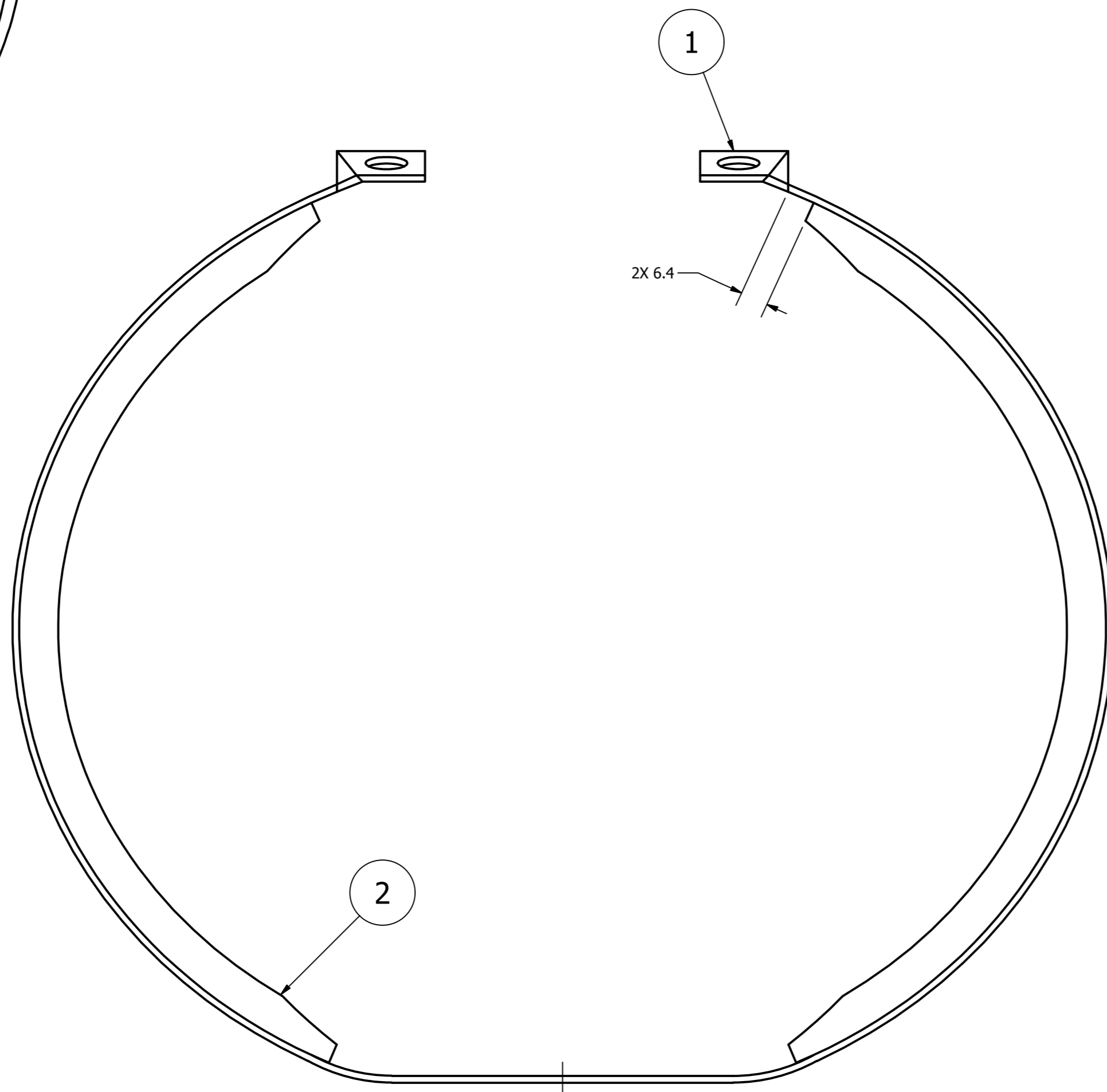


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-3320	MATERIAL:	ISODAMP CN-62	DESCRIPTION: THORAX ELLIPTICAL RIB #2 - DAMPING MATERIAL
DRAWN BY:	Thanh	DATE:	9/20/2011	
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-3322 SCALE: FULL
TOTAL QTY IN DUMMY	2	FINISH:		REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER T1TXM330 RBO AND CONVERTED TO METRIC FOR THOR-M. MODIFY DAMPING COMPONENT BY INCREASE THE LENGTH FROM 241.3 TO 246.1 (TO MAINTAIN THE SAME SPACING BETWEEN LEFT AND RIGHT DAMPING MATERIAL) & REDUCE THICKNESS FROM 13.2 TO 9.0	9/20/2011	TKN



ISO VIEW  
SCALE 1 : 2



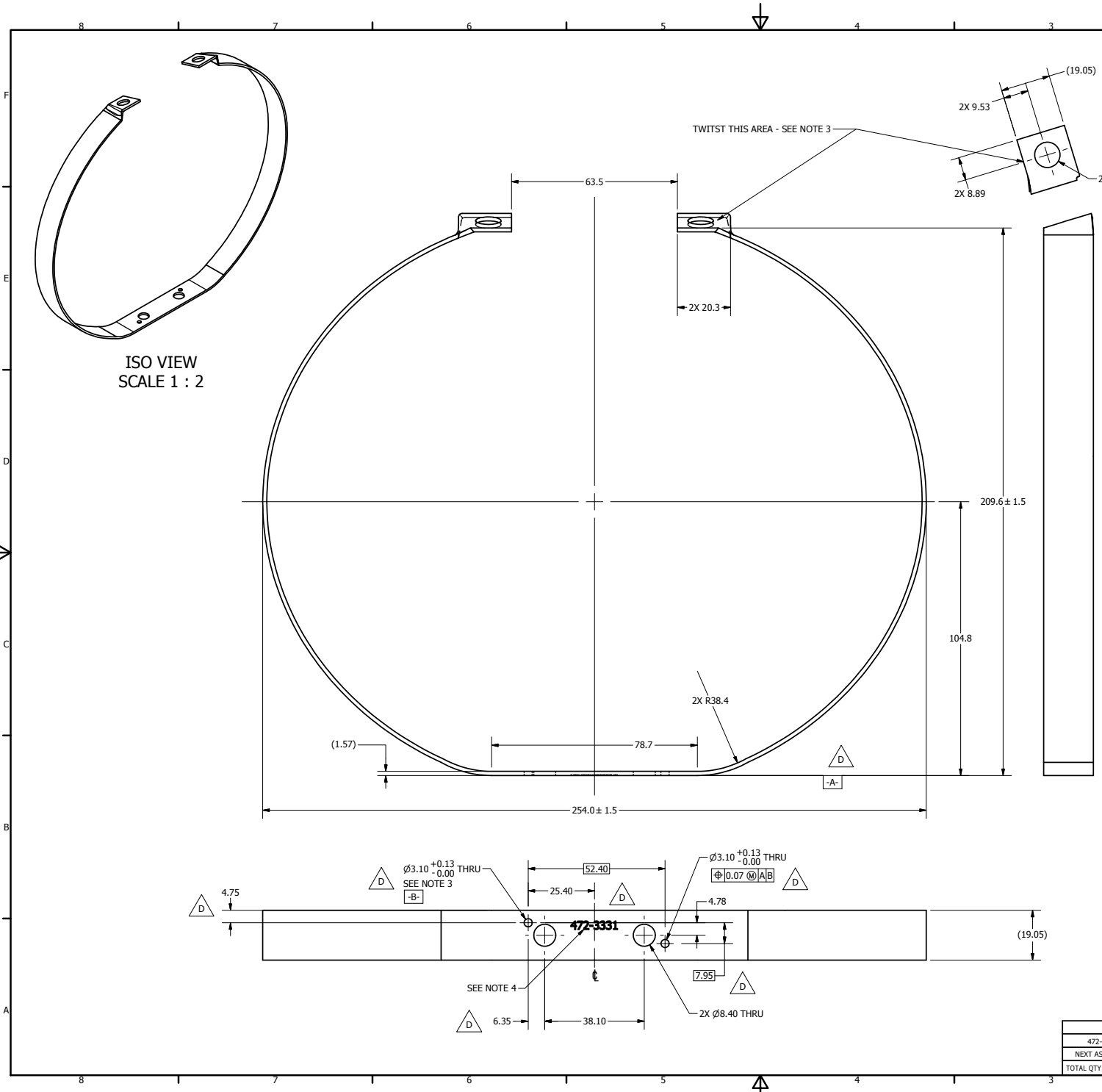
NOTES:

1. THE RIB IS ASSEMBLED BY VACUUM BONDING THE SPRING STEEL TO THE DAMPING MATERIAL USING HYSOL 9430 EPOXY ADHESIVE.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-3332	THORAX ELLIPTICAL RIB #3 - DAMPING MATERIAL
1	1	472-3331	THORAX ELLIPTICAL RIB #3 - STEEL

Parts List

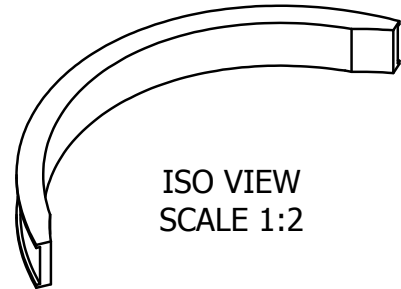
DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.05		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:		DATE:	9/20/2011	DESCRIPTION: THORAX ELLIPTICAL RIB #3 - ASSEMBLY SIZE: A2 SHEET: 1 OF 1 SCALE: FULL
MATERIAL:		DRAWN BY:	Thanh	
HEAT TREAT:		CHECKED BY:		
FINISH:		ENGINEER:	J. WANG	
472-3000	1	DATE:	1/17/2012	DRAWING NO:
NEXT ASSEMBLY	QTY			472-3330
TOTAL QTY IN DUMMY	1			A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T11XM331 R4 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	112.52 WAS 125.52	4/26/2012	BK
	C	FINISH E-COAT WAS BLK. OXIDE; REMOVE NOTES 6,7; ADD HEAT TREAT TO TITLE BLOCK	5/8/2012	BK
	D	3.10 WAS 3.03; REMOVE NOTE 5; ADD DATUM A,B, BASIC DIMENSIONS, AND POSITIONAL TOLERANCE; DIMENSION HOLES FROM DATUM B; ADD 4.75, 25.40	8/14/2012	BK

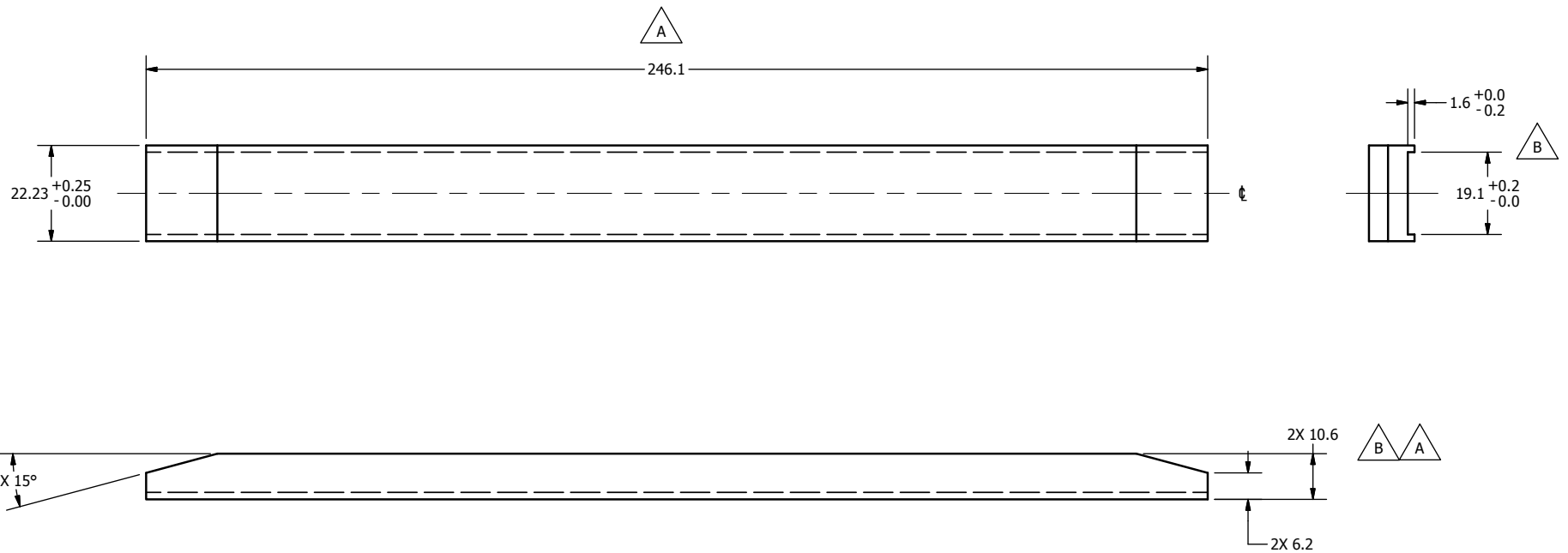
- NOTES:  $\triangle D$
1. MAKE RIB FROM 1070 ANNEALED SPRING STEEL 1.57MM THICK X 19.05MM WIDE.
  2. ELLIPTICAL SHAPE SEMI-AXIS OUTSIDE DIMENSIONS ARE: X:127.00MM Y:112.52MM  $\triangle B$
  3. AFTER RIB IS FORMED - PRIOR TO HEAT-TREAT, ORIENT THE RIB SO THAT THE HOLE PATTERN IS AS SHOWN. THEN TWIST THE RIB AT THE 20.3MM FLAT AREA BY BENDING THE BOTTOM OUTWARD BY 17°.
  4. ENGRAVE DWG. #472-3331 AT THE LOCATION SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO 0.01mm FRACTIONS ARE TO 1/32" UNLESS NOTED OTHERWISE		THORAX ELLIPTICAL RIB #3 - STEEL	
QTY	1	DATE	9/21/2011	REV	1
DESCRIPTION	1070 SPRING STEEL	DESIGNED BY	Thanh	DATE	11/17/2012
QTY	1	REV	Rc 43-47	DATE	11/17/2012
QTY	1	DESCRIPTION	E-COAT	DATE	11/17/2012
TOTAL QTY IN DUMMY				472-3331	



ISO VIEW  
SCALE 1:2

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER T1TXM332 RBO AND CONVERTED TO METRIC FOR THOR-M. INCREASE THE LENGTH FROM 241.3 TO 246.1 TO MAINTAIN THE SAME SPACING BETWEEN LEFT AND RIGHT DAMPING MATERIAL & REDUCE THICKNESS FROM 13.2 TO 9.0	9/20/2011	TKN
	B	ADD 1.6 X 19.1 GROOVE, CHANGE 9.0 TO 10.6 TO COMPENSATE DAMPING THICKNESS.	1/30/2011	ZJW



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .0 .05 16 X.X .0.2 X.XX .0.3 X.XXX .0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3330	MATERIAL:	ISODAMP CN-62	DESCRIPTION: THORAX ELLIPTICAL RIB #3 - DAMPING MATERIAL
DATE:	9/20/2011	CHECKED BY:	Thanh	
DATE:	1/17/2012	ENGINEER:	J. WANG	SIZE: A3 SHEET: 1 OF 1 SCALE: FULL
NEXT ASSEMBLY QTY TOTAL QTY IN DUMMY	2 2	HEAT TREAT: FINISH:	DATE: ENGINEER:	DRAWING NO.: 472-3332



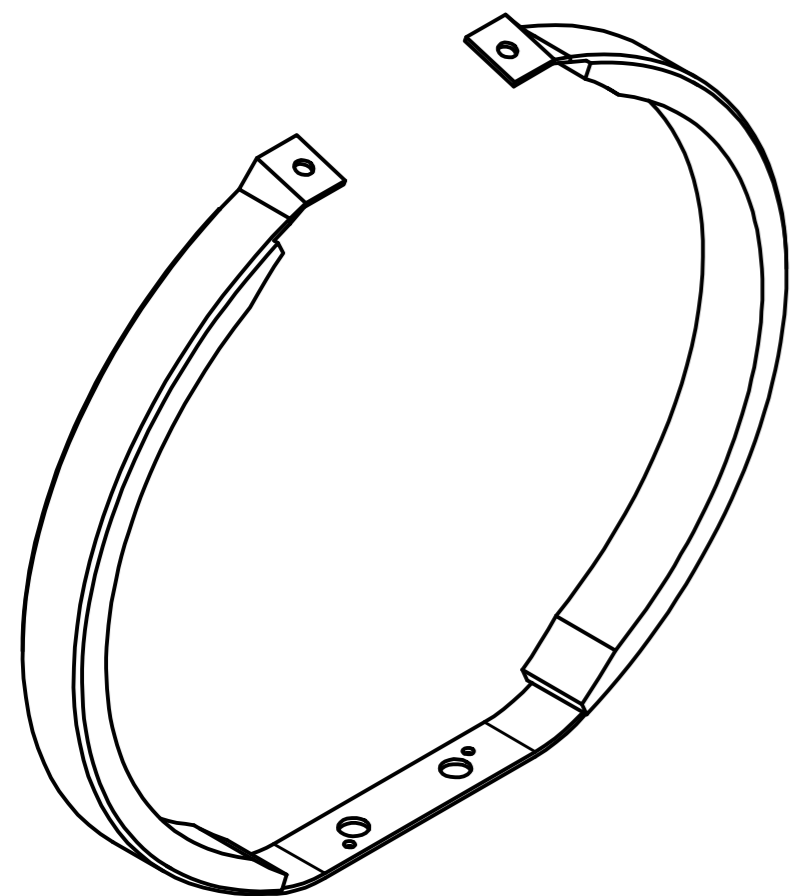
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION:  
THORAX ELLIPTICAL RIB #3 - DAMPING MATERIAL

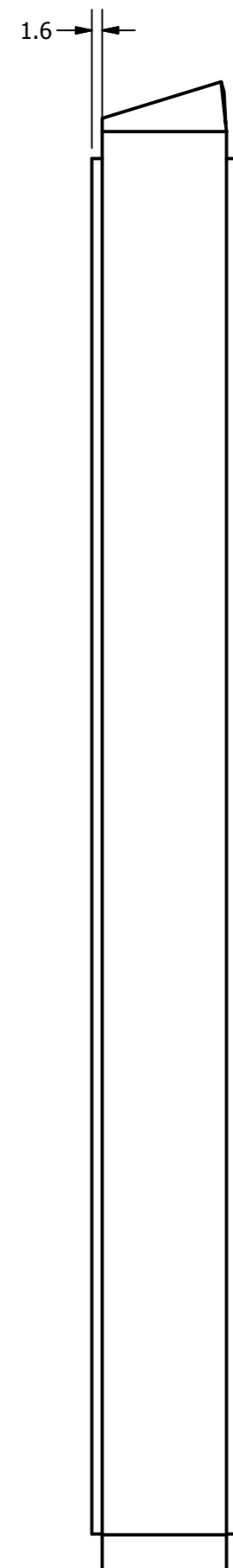
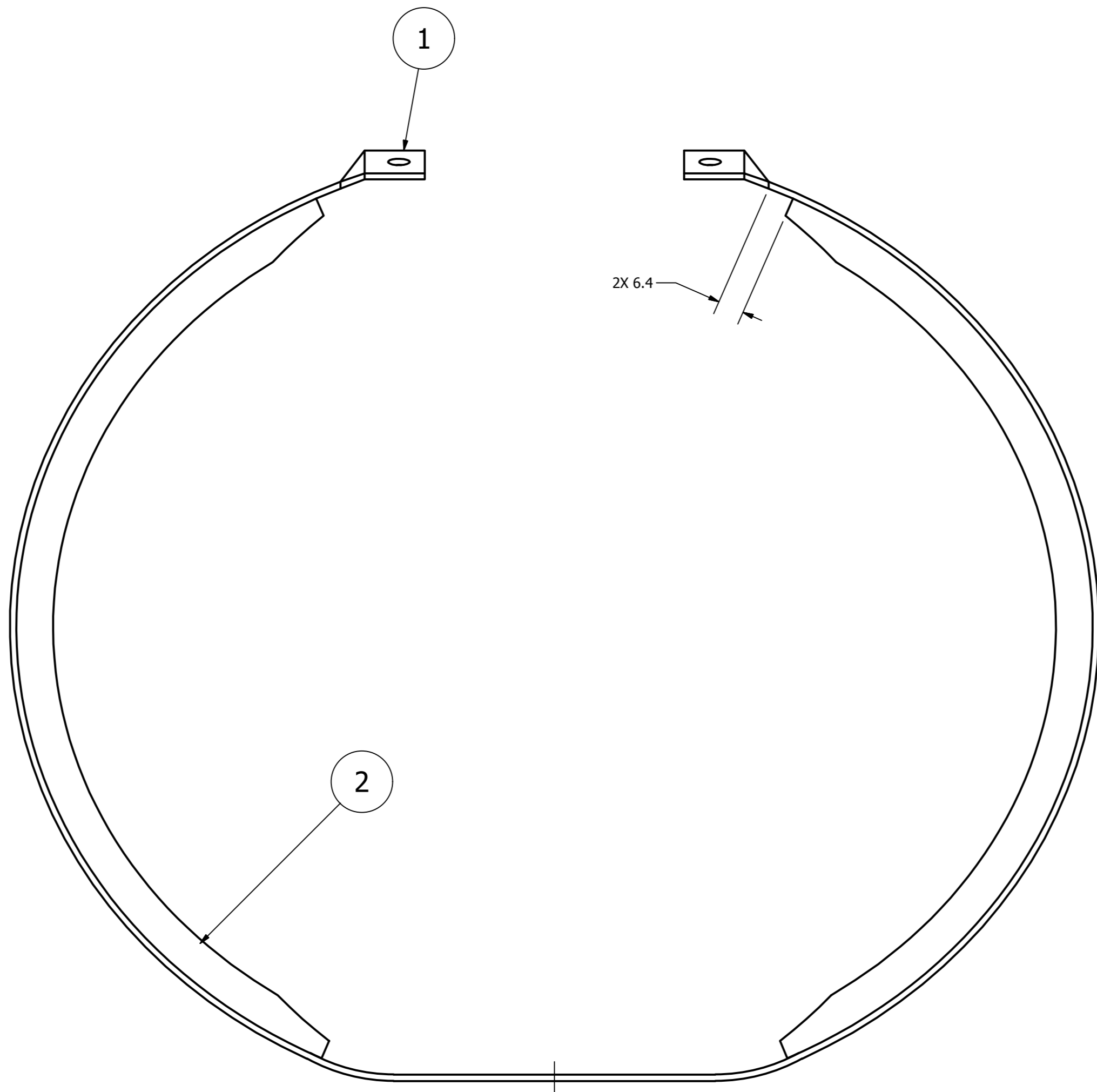
SIZE: A3  
SHEET: 1 OF 1  
SCALE: FULL  
DRAWING NO.: 472-3332  
REV: B



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM340 RBO AND CONVERTED TO METRIC FOR THOR-M. MODIFY DAMPING COMPONENT BY INCREASE THE LENGTH FROM 257.3 TO 262.1 (TO MAINTAIN THE SAME SPACING BETWEEN LEFT AND RIGHT DAMPING MATERIAL) & REDUCE THICKNESS FROM 13.2 TO 9.0	9/20/2011	TKN



ISO VIEW  
SCALE 1 : 2



NOTES:

1. THE RIB IS ASSEMBLED BY VACUUM BONDING THE SPRING STEEL TO THE DAMPING MATERIAL USING HYSOL 9430 EPOXY ADHESIVE.

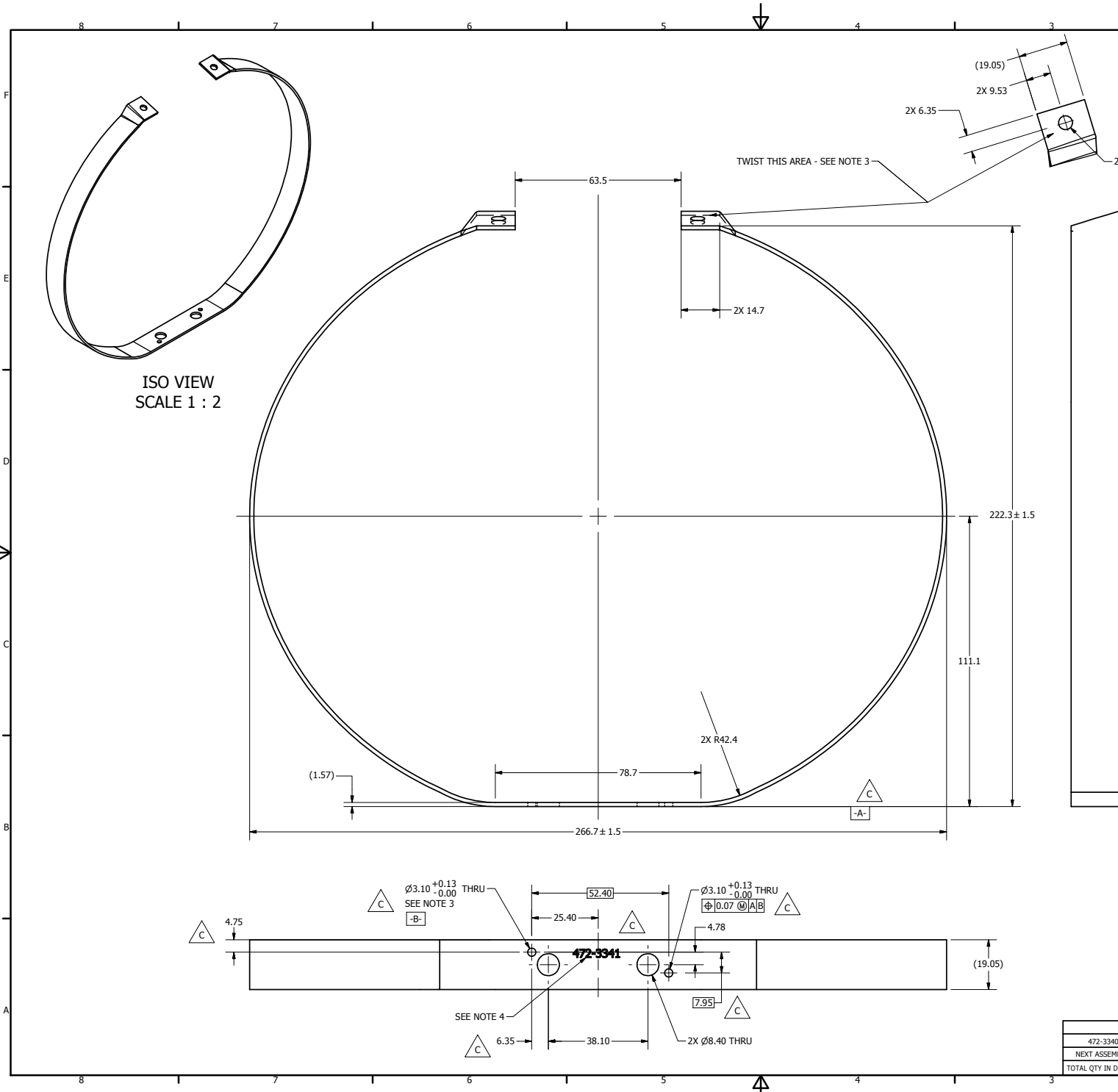
ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-3342	THORAX ELLIPTICAL RIB #4 - DAMPING MATERIAL
1	1	472-3341	THORAX ELLIPTICAL RIB #4 - STEEL

Parts List

DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		X ± 0.5    ± 0.5    1:5 XX ± 0.2    ± 0.2    1:5 XXX ± 0.1    ± 0.1    1:5 XXXX ± 0.05    ± 0.05    1:5		
PROJECT NO:	MATERIAL:	DATE:	DESCRIPTION:	
472-3000		9/20/2011	THORAX ELLIPTICAL RIB #4 - ASSEMBLY	
NEXT ASSEMBLY	QTY	DATE:	SCALE:	
TOTAL QTY IN DUMMY	1	1/17/2013	A2 1 OF 1	
		ENGINEER:	DRAWING NO:	
		J. WANG	472-3340	

472-3000	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

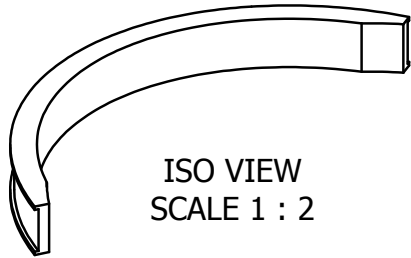
A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM341 R3 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	FINISH E-COAT WAS BLK. OXIDE; REMOVE NOTES 6,7; ADD HEAT TREAT TO TITLE BLOCK	5/8/2012	BK
	C	3.10 WAS 3.03; REMOVE NOTE 5; ADD DATUM A,B, BASIC DIMENSIONS, AND POSITIONAL TOLERANCE; DIMENSION HOLES FROM DATUM B; ADD 4.75, 25.40	8/14/2012	BK

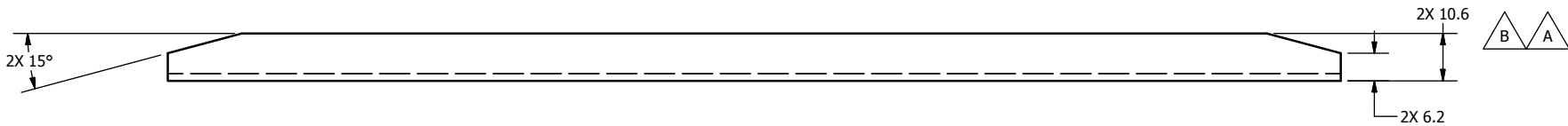
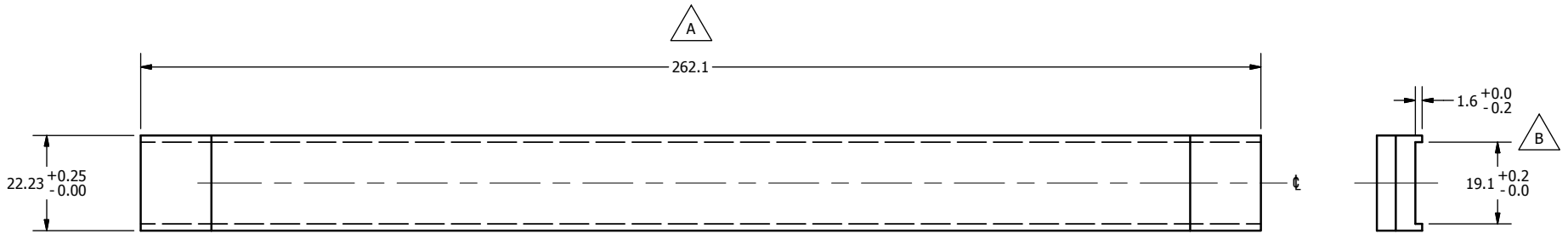
- NOTES:
- MAKE RIB FROM 1070 ANNEALED SPRING STEEL 1.57MM THICK X 19.05MM WIDE.
  - ELLIPTICAL SHAPE SEMI-AXIS OUTSIDE DIMENSIONS ARE: X:133.35MM Y:118.62MM
  - AFTER RIB IS FORMED - PRIOR TO HEAT-TREAT, ORIENT THE RIB SO THAT THE HOLE PATTERN IS AS SHOWN. THEN TWIST THE RIB AT THE 14.7MM FLAT AREA BY BENDING THE BOTTOM OUTWARD BY 17°.
  - ENGRAVE DWG. #472-3341 AT THE LOCATION SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE 0.05mm FRACTIONS ARE 1/32" UNLESS NOTED OTHERWISE		THORAX ELLIPTICAL RIB #4 - STEEL	
QTY	1	DATE	9/21/2011	REV	1
DESCRIPTION	1070 SPRING STEEL	DESIGNED BY	Thanh	DATE	9/21/2011
NEXT ASSEMBLY	Rc 43-47	CHECKED BY		DATE	
TOTAL QTY IN DUMMY	1	ENGR	J. WANG	DATE	11/17/2012
		FINISH	E-COAT	DATE	



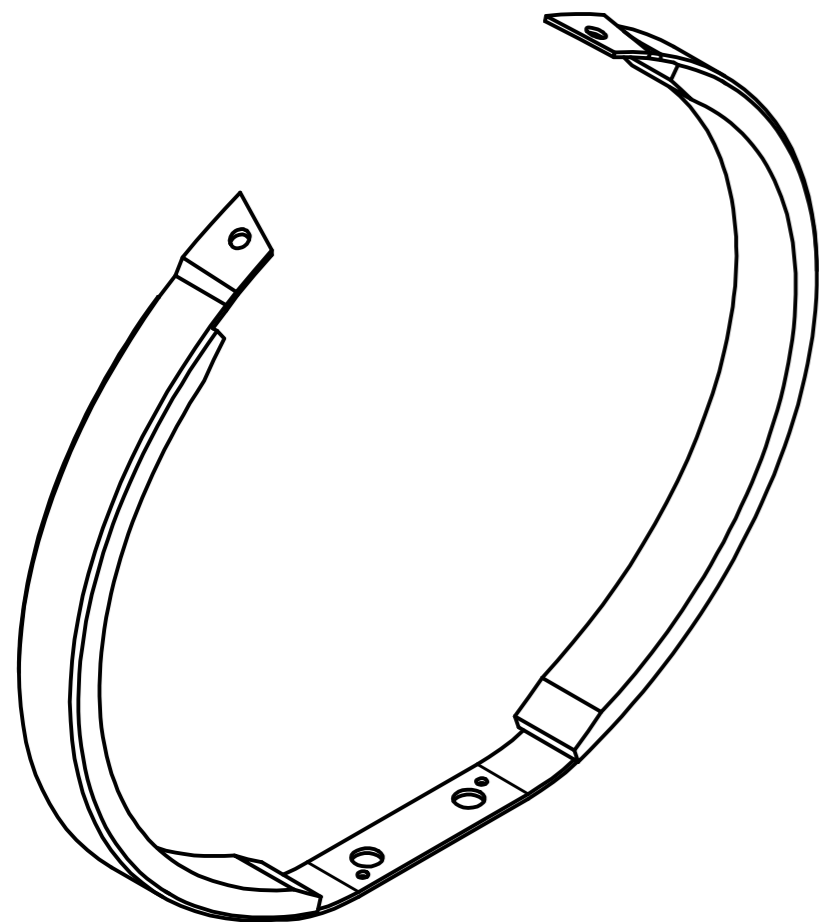
ISO VIEW  
SCALE 1 : 2

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM342 R BO AND CONVERTED TO METRIC FOR THOR-M. INCREASE THE LENGTH FROM 257.3 TO 262.1 TO MAINTAIN THE SAME SPACING BETWEEN LEFT AND RIGHT DAMPING MATERIAL & REDUCE THICKNESS FROM 13.2 TO 9.0	9/20/2011	TKN
	B	ADD 1.6 X 19.1 GROOVE, CHANGE 9.0 TO 10.6 TO COMPENSATE DAMPING THICKNESS.	1/30/2012	ZJW

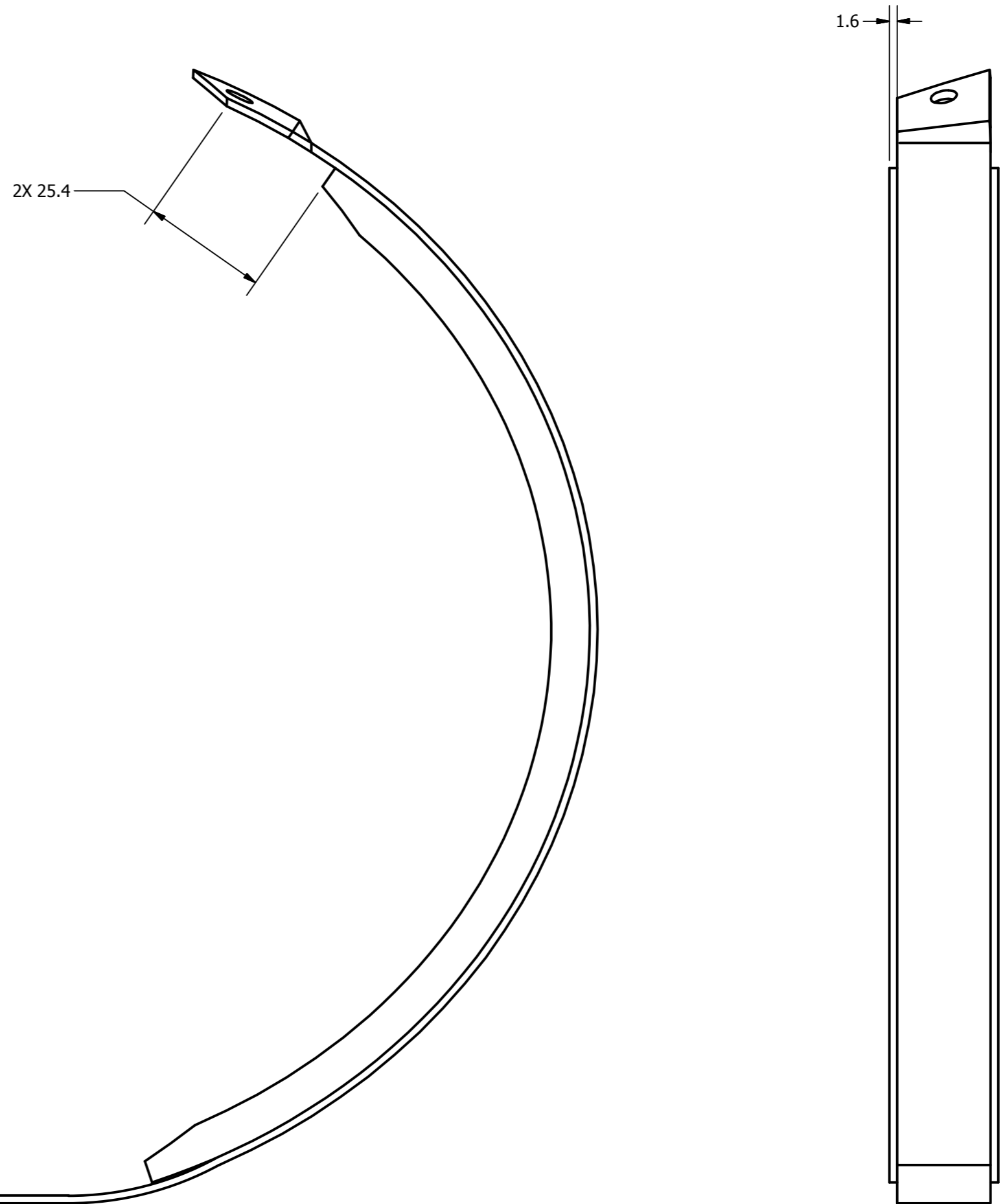
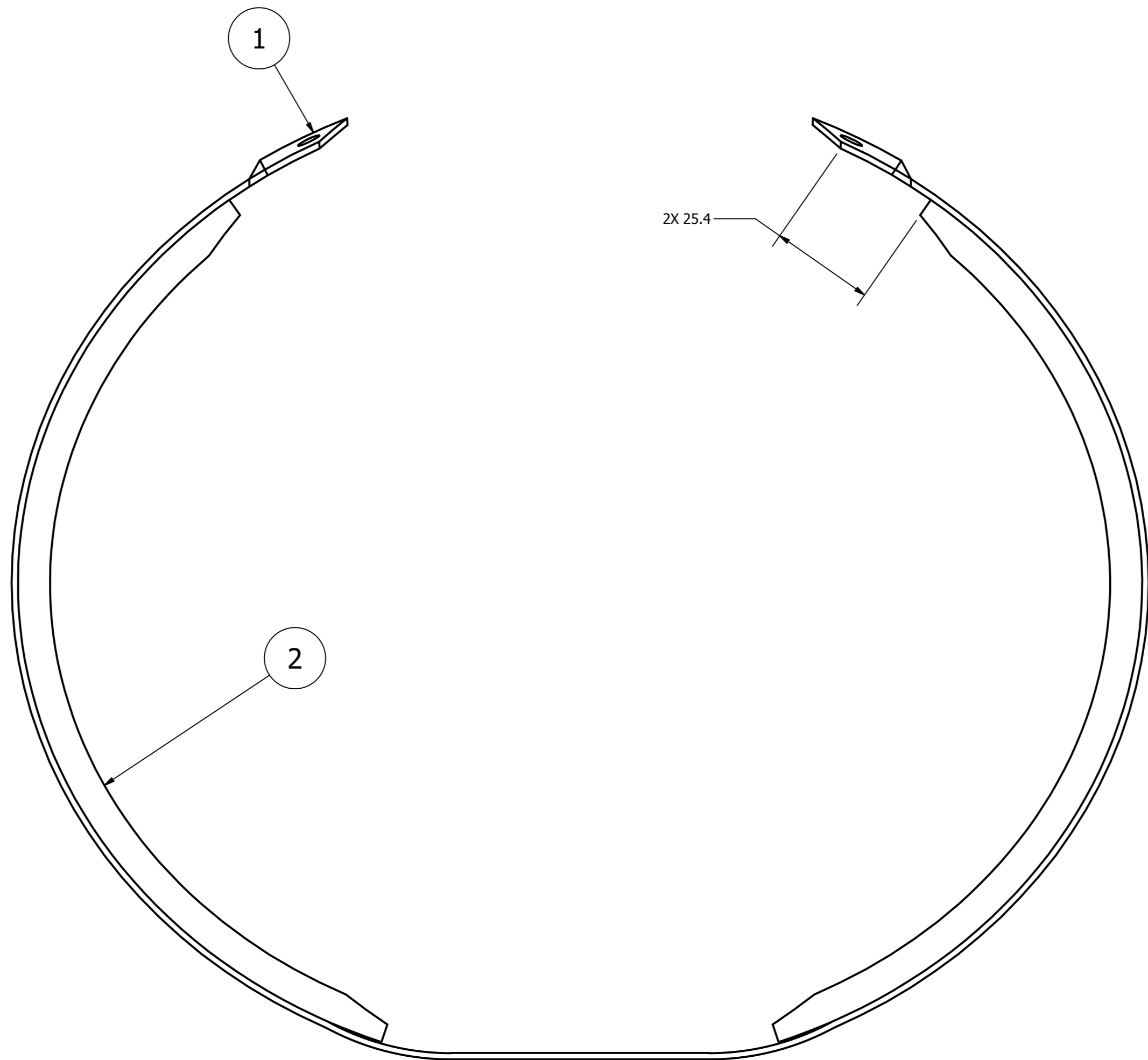


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01		
PROJECT NO.:	472-3340	MATERIAL:	ISODAMP CN-62	DESCRIPTION: THORAX ELLIPTICAL RIB #4 - DAMPING MATERIAL
QTY	2	DATE:	9/20/2011	
HEAT TREAT:		ENGINEER:	J. WANG	
TOTAL QTY IN DUMMY	2	DATE:	1/17/2012	SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-3342 SCALE: FULL

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM350 RB0 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	TKN



ISO VIEW  
SCALE 1 : 2

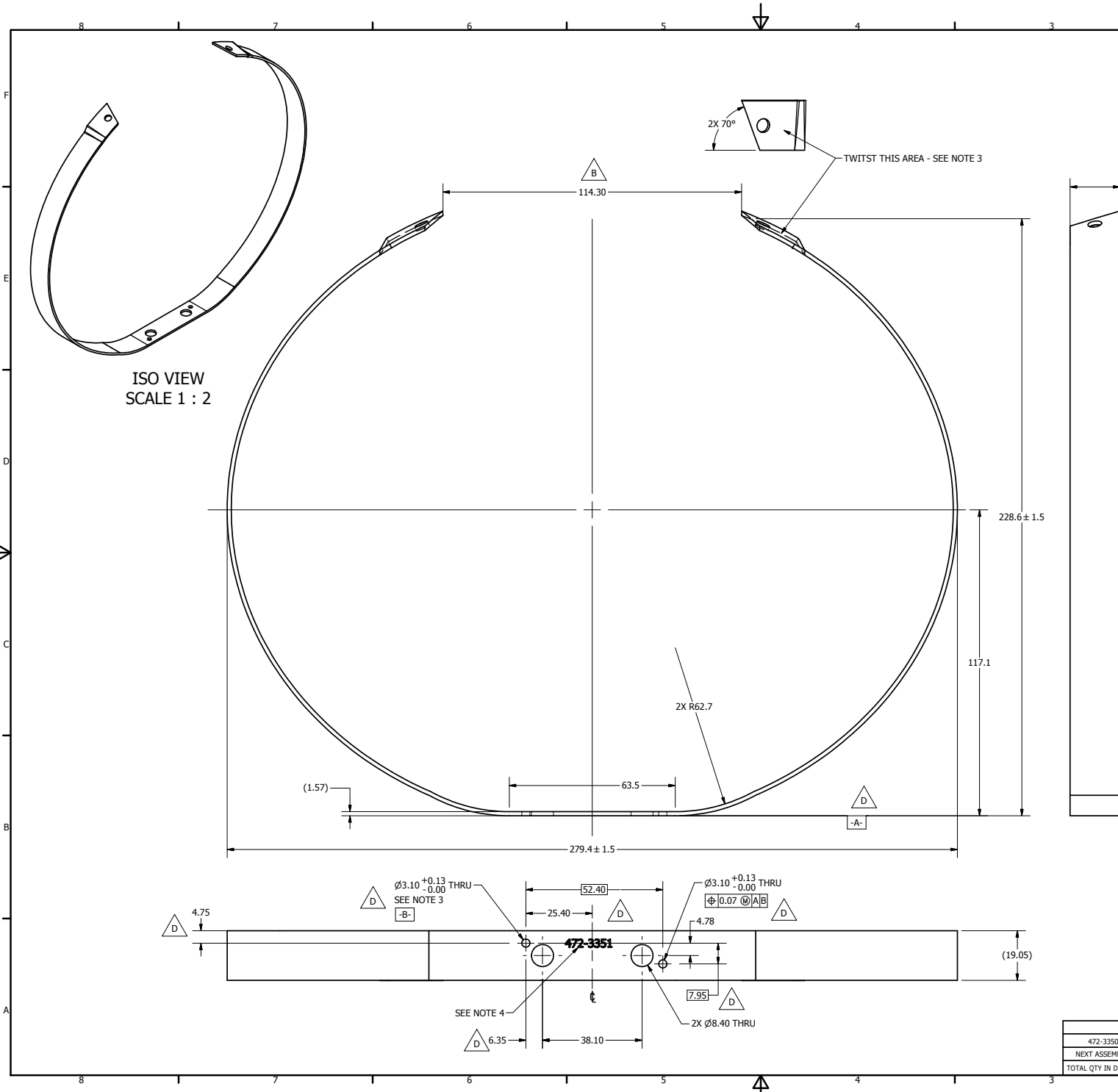


NOTES:  
1. THE RIB IS ASSEMBLED BY VACUUM BONDING THE SPRING STEEL TO THE DAMPING MATERIAL USING HYSOL 9430 EPOXY ADHESIVE.

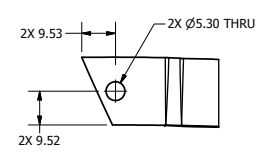
ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-3352	THORAX ELLIPTICAL RIB #5 - DAMPING MATERIAL
1	1	472-3351	THORAX ELLIPTICAL RIB #5 - STEEL

Parts List			
DO NOT SCALE DRAWING	TOLERANCES	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION	(UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01	THORAX ELLIPTICAL RIB #5 - ASSEMBLY	
PROJECT NO:	DATE	SIZE	DRAWING NO:
472-3000	9/20/2011	A2	1 OF 1
NEXT ASSEMBLY	DATE	SCALE	472-3350
TOTAL QTY IN DUMMY	1	FULL	A

MATERIAL:	DRAWN BY:	DATE:
	Thanh	9/20/2011
HEAT TREAT:	CHECKED BY:	DATE:
	J. WANG	1/17/2012
FINISH:	ENGINEER:	DATE:



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM351 R3 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	FINISH E-COAT WAS BLK. OXIDE; REMOVE NOTES 6,7; ADD HEAT TREAT TO TITLE BLOCK; ADD 114.3	5/8/2012	BK
	C	ADD VIEW TO SHOW HOLES	7/11/2012	BK
	D	3.10 WAS 3.03; REMOVE NOTE 5; ADD DATUM A,B, BASIC DIMENSIONS, AND POSITIONAL TOLERANCE; DIMENSION HOLES FROM DATUM B; ADD 4.75, 25.40	8/14/2012	BK

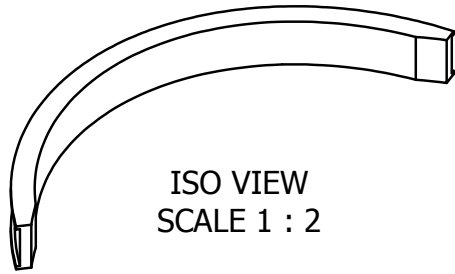


VIEW PERPENDICULAR TO HOLE AXIS  
SCALE 1.000

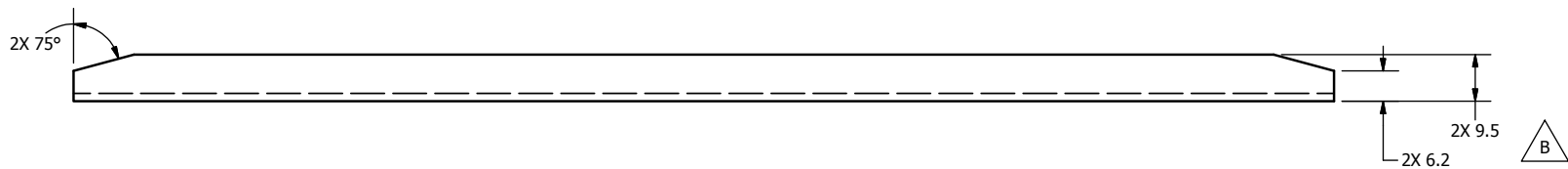
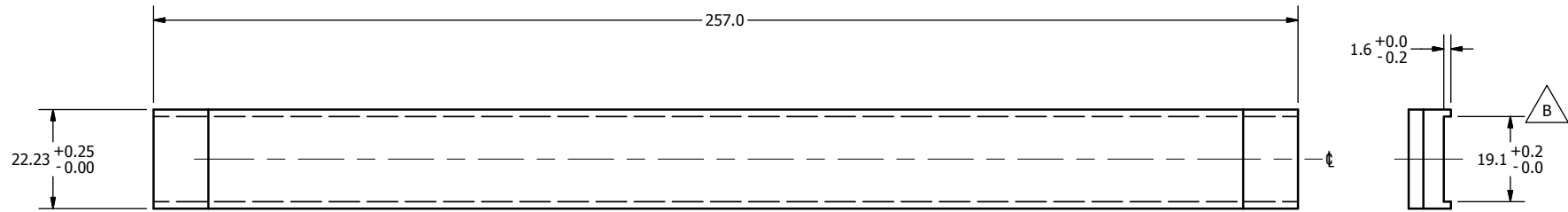
- NOTES:
1. MAKE RIB FROM 1070 ANNEALED SPRING STEEL 1.57MM THICK X 19.05MM WIDE.
  2. ELLIPTICAL SHAPE SEMI-AXIS OUTSIDE DIMENSIONS ARE: X:139.70MM Y:122.17MM
  3. AFTER RIB IS FORMED - PRIOR TO HEAT-TREAT, ORIENT THE RIB SO THAT THE HOLE PATTERN IS AS SHOWN. THEN TWIST THE RIB AT THE 20.3MM FLAT AREA BY BENDING THE BOTTOM OUTWARD BY 8°.
  4. ENGRAVE DWG. #472-3351 AT THE LOCATION SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THORAX ELLIPTICAL RIB #5 - STEEL		THORAX ELLIPTICAL RIB #5 - STEEL		THORAX ELLIPTICAL RIB #5 - STEEL	
472-3350	1	1070 SPRING STEEL	Thanh	9/21/2011	
NEXT ASSEMBLY	QTY	Rc: 43-47			
TOTAL QTY IN DUMMY	1	E-COAT	J. WANG	1/14/2012	472-3351

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER T1TXM352 RBO AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	TKN
	B	ADD 1.6 X 19.1 GROOVE, CHANGE 7.9 TO 9.5 TO COMPENSATE DAMPING THICKNESS.	1/30/2011	ZJW

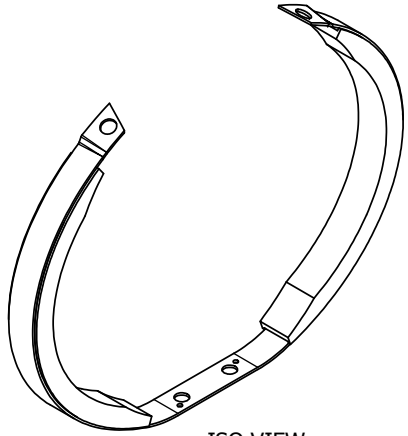


ISO VIEW  
SCALE 1 : 2

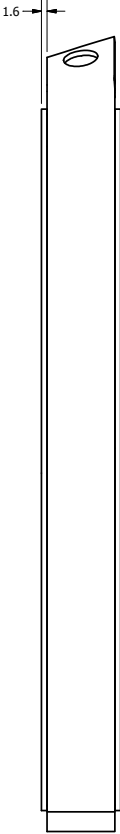
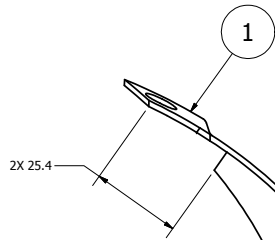
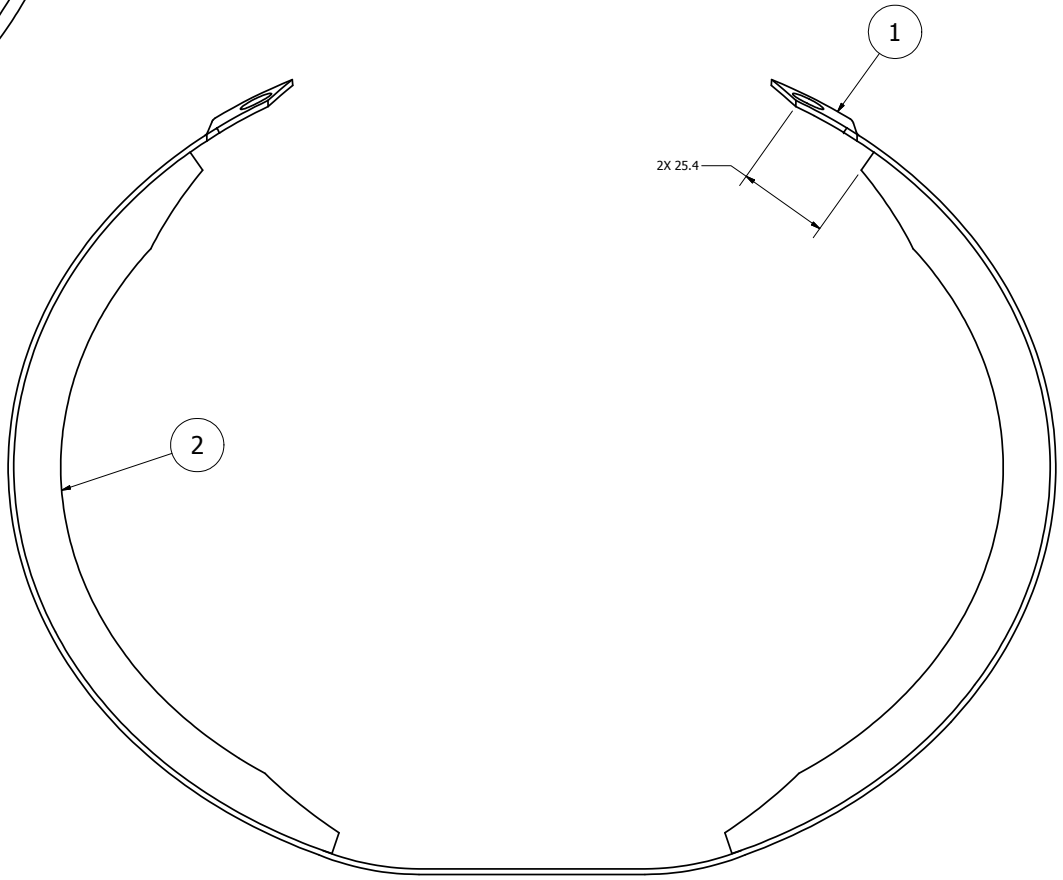


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION			
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 1.6 X 0.2 0.05 XX 0.2 XXX 0.01 XXXX 0.01					
PROJECT NO:	472-3350	MATERIAL:	ISODAMP CN-62	DESCRIPTION: THORAX ELLIPTICAL RIB #5 - DAMPING MATERIAL			
DATE:	9/20/2011	DRAWN BY:	Thanh				
CHECKED BY:		DATE:					
HEAT TREAT:		ENGINEER:	J. WANG				
FINISH:		DATE:	1/14/2012	SIZE: A3 SHEET: 1 OF 1 SCALE: FULL			
NEXT ASSEMBLY	QTY	TOTAL QTY IN DUMMY	2	DRAWING NO:	472-3352	REV:	B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM360 RB0 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN



ISO VIEW  
SCALE 1 : 2



NOTES:

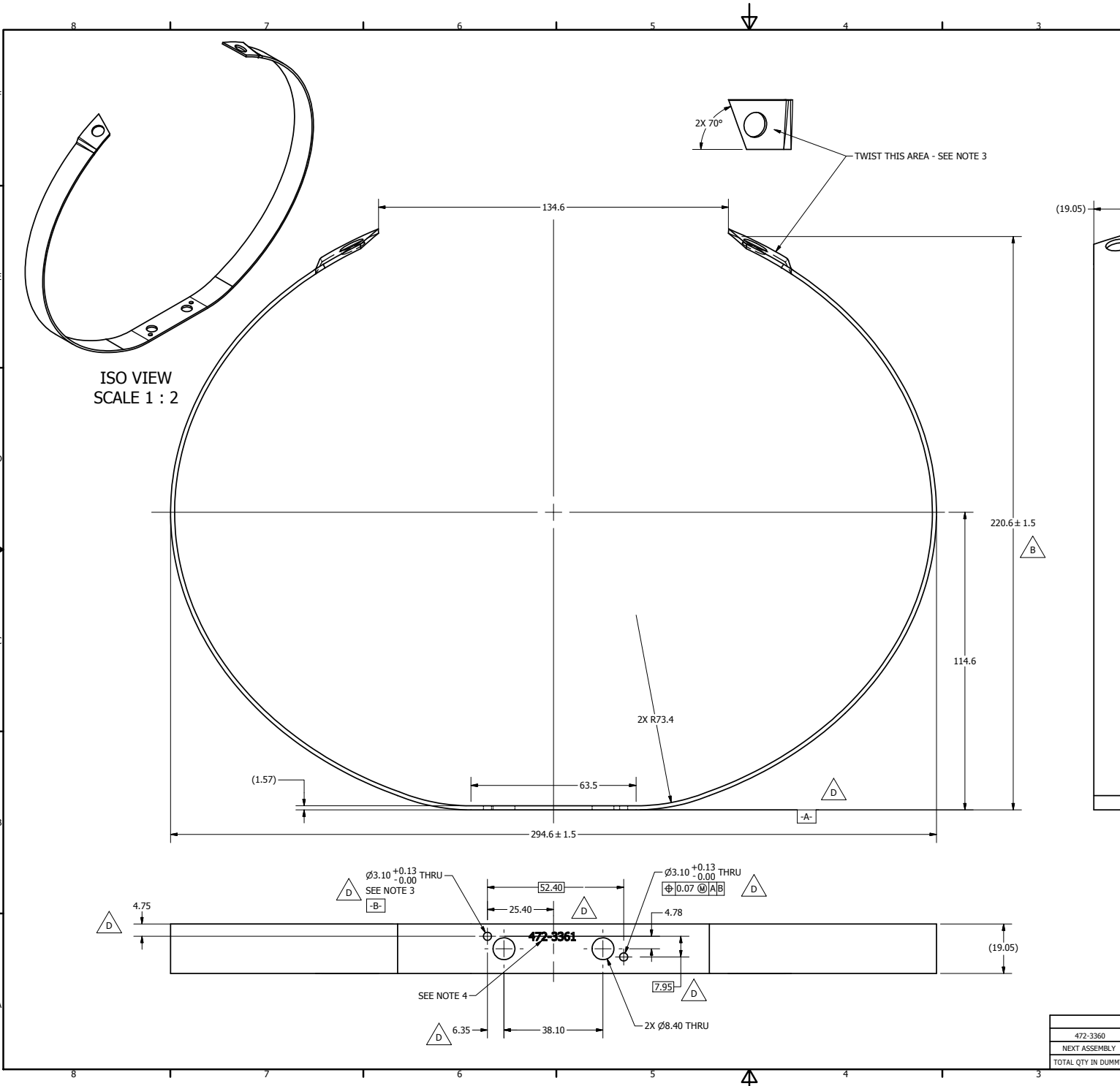
1. THE RIB IS ASSEMBLED BY VACUUM BONDING THE SPRING STEEL TO THE DAMPING MATERIAL USING HYSOL 9430 EPOXY ADHESIVE.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-3362	THORAX ELLIPTICAL RIB #6 - DAMPING MATERIAL
1	1	472-3361	THORAX ELLIPTICAL RIB #6 - STEEL

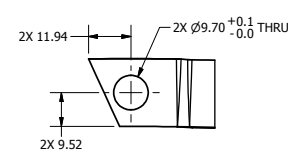
Parts List	
472-3000	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

DO NOT SCALE DRAWING 	<b>TOLERANCES</b> UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    Holes F.3    F.3    F.3 0.1    1/32    0.1 0.2    1/16    0.2 0.5    1/8    0.5 1.0    1/4    1.0 2.0    1/2    2.0 5.0    1/2    5.0 10.0    1    10.0 SHOW DIMENSIONS & HATCH CROSS SECTIONS	 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> THORAX ELLIPTICAL RIB #6 - ASSEMBLY
DRAWN BY: Thanh DATE: 9/21/2011	CHECKED BY: J. WANG DATE: 1/18/2012	SHEET NO. 1 of 1 TOTAL SHEETS 1 FULL

472-3360



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM361 R3 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	FINISH E-COAT WAS BLK. OXIDE; REMOVE NOTES 6,7; ADD HEAT TREAT TO TITLE BLOCK; ADD 220.6 +/-1.5	5/8/2012	BK
	C	ADD VIEW TO SHOW HOLES	7/11/2012	BK
	D	3.10 WAS 3.03; REMOVE NOTE 5; ADD DATUM A,B, BASIC DIMENSIONS, AND POSITIONAL TOLERANCE; DIMENSION HOLES FROM DATUM B; ADD 4.75, 25.40	8/14/2012	BK



VIEW PERPENDICULAR TO HOLE AXIS  
SCALE 1.000

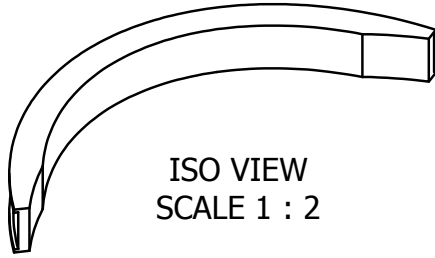
- NOTES: D
- MAKE RIB FROM 1070 ANNEALED SPRING STEEL 1.57MM THICK X 19.05MM WIDE.
  - ELLIPTICAL SHAPE SEMI-AXIS OUTSIDE DIMENSIONS ARE: X:147.32MM Y:119.38MM
  - AFTER RIB IS FORMED - PRIOR TO HEAT-TREAT, ORIENT THE RIB SO THAT THE HOLE PATTERN IS AS SHOWN. THEN TWIST THE RIB AT THE 20.3MM FLAT AREA BY BENDING THE BOTTOM OUTWARD BY 8°.
  - ENGRAVE DWG. #472-3361 AT THE LOCATION SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THREE ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE 0.05 0.10 0.25 0.50 1.00 2.00 5.00 10.00 20.00 50.00 100.00		THORAX ELLIPTICAL RIB #6 - STEEL	
472-3360	1	1070 SPRING STEEL	Thanh	9/21/2011	
NEXT ASSEMBLY	QTY	REF	DATE	DATE	
	1	Rc 43-47	J. WANG	1/18/2012	
TOTAL QTY IN DUMMY	1	E-COAT			
				A21 OF 1	472-3361
				FULL	D

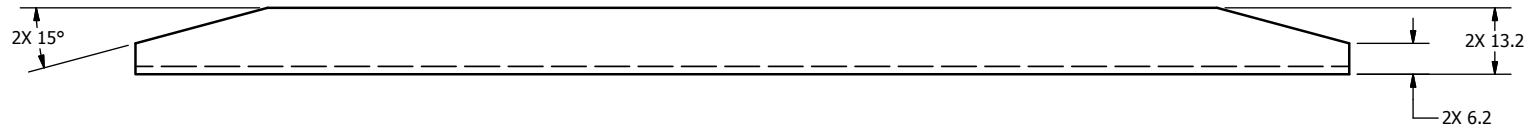
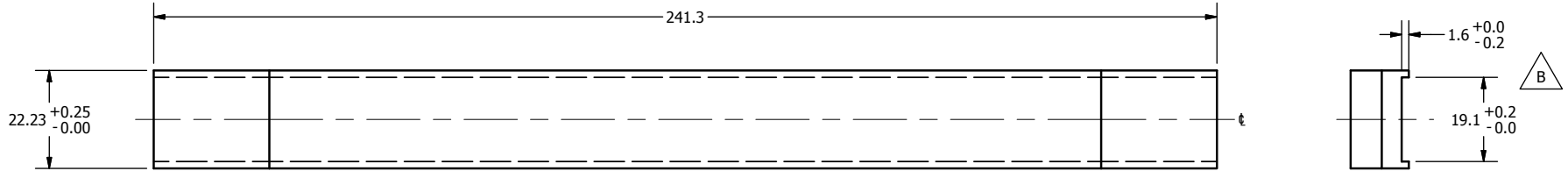




REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM362 RB0 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	ADD GROOVE 1.6 X 19.1 FOR BONDING ALIGNMENT, CHANGE FROM 11.6 TO 13.2 TO COMPENSATE THICKNESS	1/30/2012	ZJW



ISO VIEW  
SCALE 1 : 2



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 16 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-3360	MATERIAL:	ISODAMP CN-62	THORAX ELLIPTICAL RIB #6 - DAMPING MATERIAL SIZE: SHEET: DRAWING NO.: A31 OF 1 472-3362
DRAWN BY:	Thanh	DATE:	9/21/2011	
CHECKED BY:	J. WANG	DATE:	1/18/2012	
HEAT TREAT:		FINISH:		SCALE: FULL
REVISION:		ENGINEER:		REV: B
TOTAL QTY IN DUMMY	2			

6

5

4

3

2

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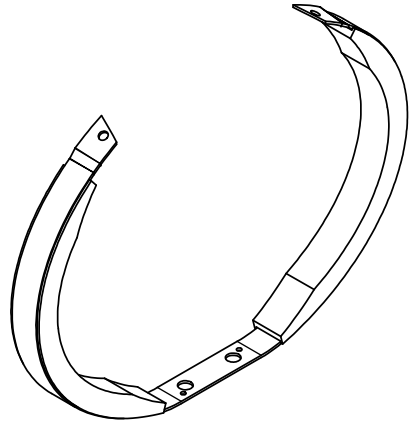
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3

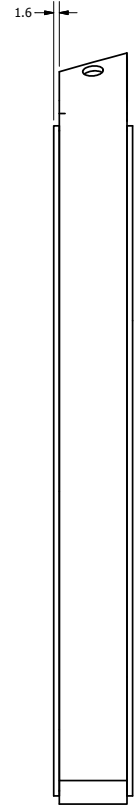
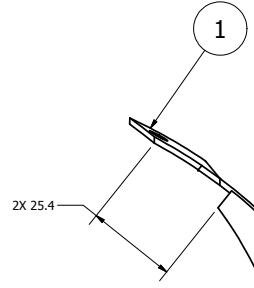
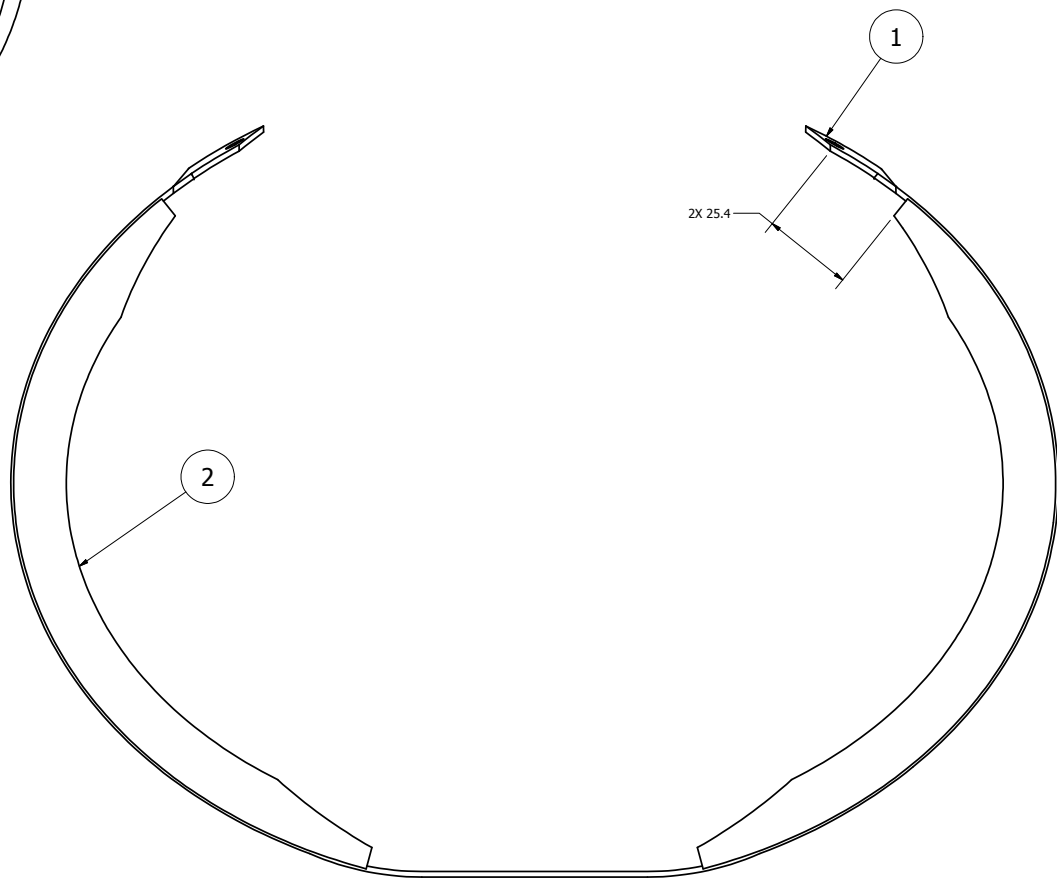
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1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TSM370 RB0 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN



ISO VIEW  
SCALE 1 : 2



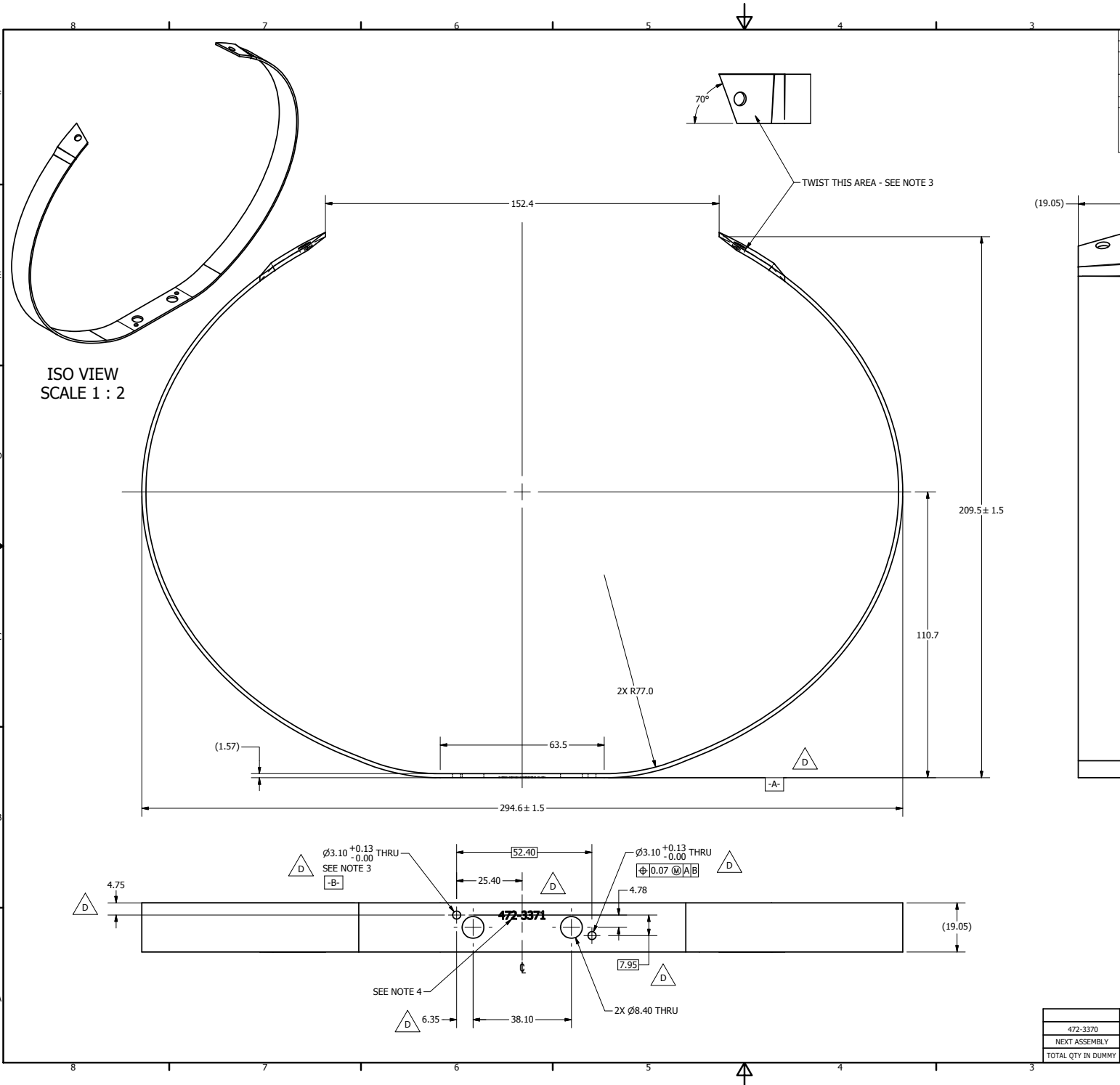
NOTES:  
1. THE RIB IS ASSEMBLED BY VACUUM BONDING THE SPRING STEEL TO THE DAMPING MATERIAL USING HYSOL 9430 EPOXY ADHESIVE.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-3372	THORAX ELLIPTICAL RIB #7 - DAMPING MATERIAL
1	1	472-3371	THORAX ELLIPTICAL RIB #7 - STEEL

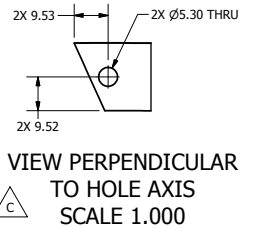
Parts List  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

472-3000	1	THORAX ELLIPTICAL RIB #7 - ASSEMBLY	DATE: 9/21/2011
NEXT ASSEMBLY	QTY	DATE: 1/18/2012	DATE: 9/21/2011
TOTAL QTY IN DUMMY	1	DATE: 1/18/2012	DATE: 9/21/2011

472-3370  
A



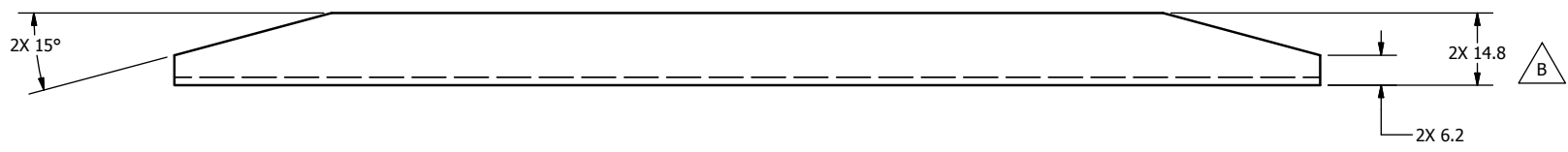
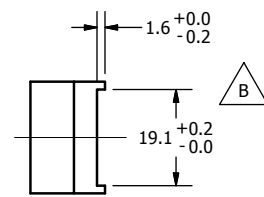
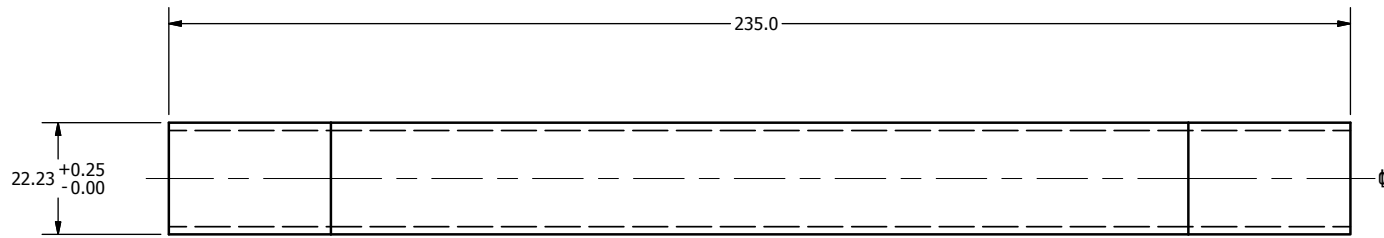
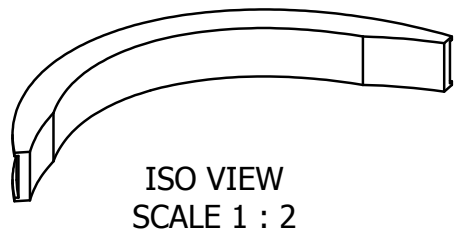
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM371 R4 AND CONVERTED TO METRIC FOR THOR-M0	9/21/2011	TKN
	B	FINISH E-COAT WAS BLK. OXIDE; REMOVE NOTES 6,7; ADD HEAT TREAT TO TITLE BLOCK	5/8/2012	BK
	C	ADD VIEW TO SHOW HOLES	7/11/2012	BK
	D	3.10 WAS 3.03; REMOVE NOTE 5; ADD DATUM A,B, BASIC DIMENSIONS, AND POSITIONAL TOLERANCE; DIMENSION HOLES FROM DATUM B; ADD 4.75, 25.40	8/14/2012	BK



- NOTES:  $\triangle D$
- MAKE RIB FROM 1070 ANNEALED SPRING STEEL 1.57MM THICK X 19.05MM WIDE.
  - ELLIPTICAL SHAPE SEMI-AXIS OUTSIDE DIMENSIONS ARE: X:147.32MM Y:115.32MM
  - AFTER RIB IS FORMED - PRIOR TO HEAT-TREAT, ORIENT THE RIB SO THAT THE HOLE PATTERN IS AS SHOWN. THEN TWIST THE RIB AT THE 20.3MM FLAT AREA BY BENDING THE BOTTOM OUTWARD BY 5°.
  - ENGRAVE DWG. #472-3371 AT THE LOCATION SPECIFIED.

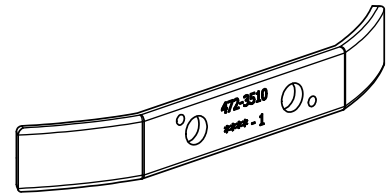
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE 0.001 INCHES		THORAX ELLIPTICAL RIB #7 - STEEL	
PART NO: 472-3370		DRAWN BY: Thanh		DATE: 9/21/2011	
NEXT ASSEMBLY QTY: 1		CHECKED BY: Rc		DATE: 4/3-47	
TOTAL QTY IN DUMMY: 1		DRAWN BY: J. WANG		DATE: 1/18/2012	
A21 of 1				472-3371	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM372 RB0 AND CONVERTED TO METRIC FOR THOR-M	9/21/2011	TKN
	B	ADD 1.6 X 19.1 GROOVE, CHANGE FROM 13.2 TO 14.8 TO COMPENSATE DAMPING THICKNESS.	1/30/2012	ZJW

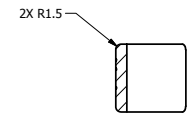
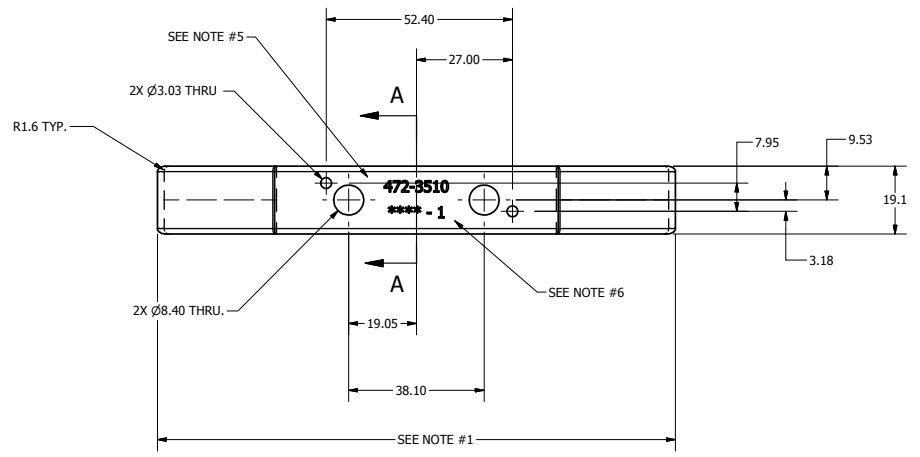
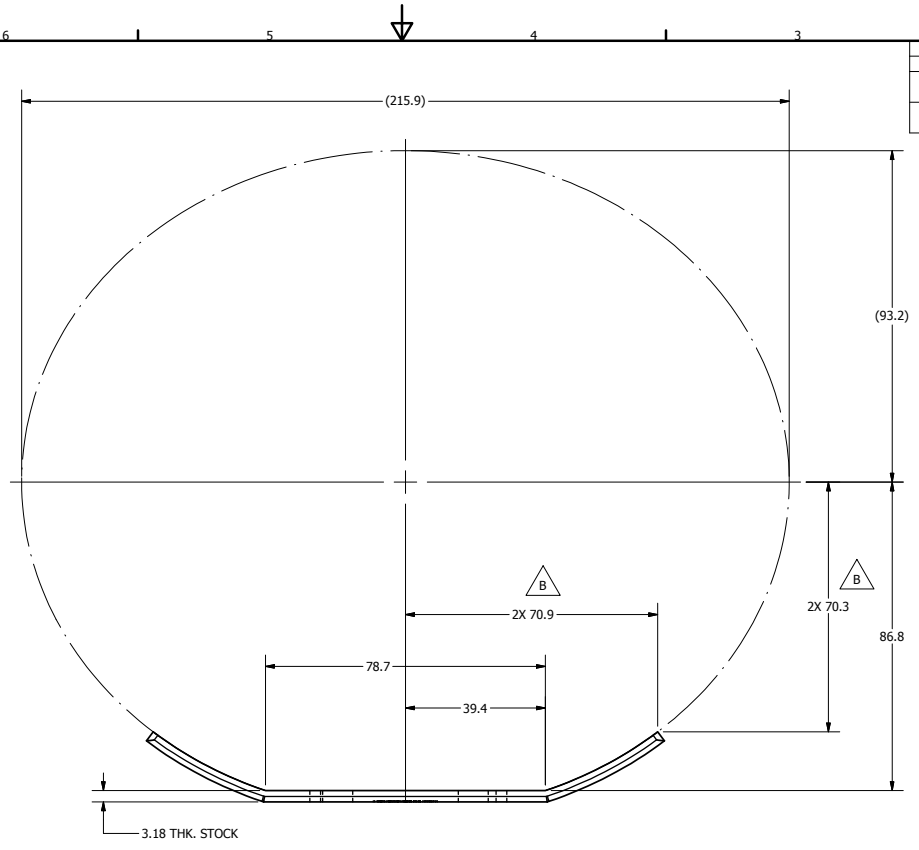


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.07 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01		
PROJECT NO.:	472-3370	MATERIAL:	ISODAMP CN-62	DESCRIPTION: THORAX ELLIPTICAL RIB #7 - DAMPING MATERIAL
DRAWN BY:	Thanh	DATE:	9/21/2011	
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	
DATE:	1/18/2012	SCALE:	FULL	SIZE: SHEET
TOTAL QTY IN DUMMY	2	FINISH:		A31 OF 1
			472-3372	REV: B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM010 R5 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	TKN
	B	REMOVE FIT NOTES (4 & 5), ADD FINISH E-COAT; ADD 2X 70.3, 2X 70.9	3/22/2012	BK



ISO VIEW  
SCALE 1 : 1



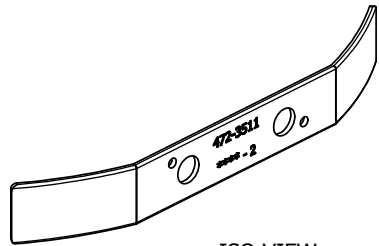
SECTION A-A  
SCALE 1 : 1



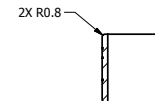
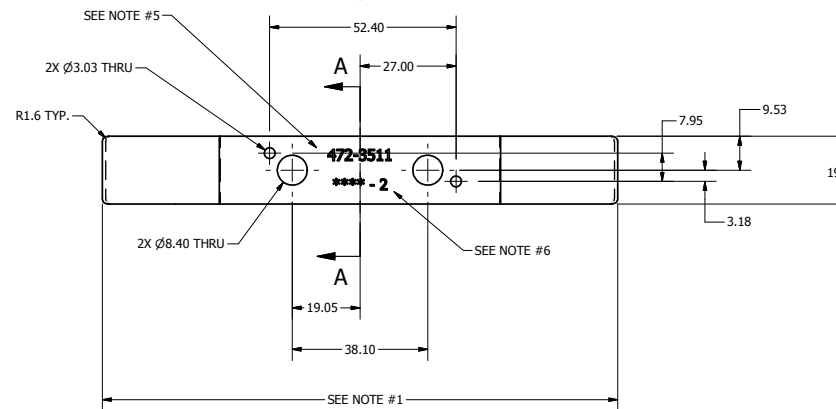
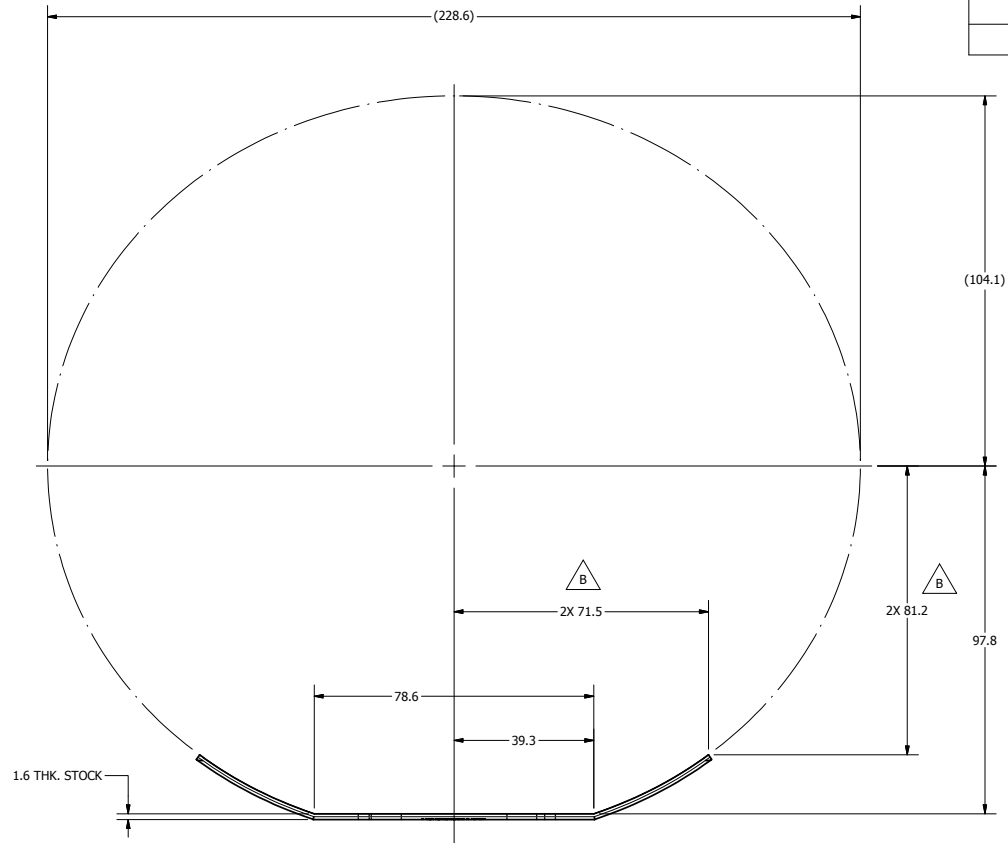
- NOTES:
1. LENGTH PRIOR TO BENDING IS 152.4MM
  2. BENT ENDS FOLLOW THE ELLIPTICAL CURVES SHOWN.
  3. SEMI-AXES ARE X=107.9MM, Y=93.2MM
  4. HEAT TREAT TO Rc 50 +/- 2
  5. ENGRAVE DWG. # 472-3510 AT THE LOCATION SPECIFIED.
  6. ENGRAVE SERIAL NUMBER \*\*\*\*-# AT THE LOCATION SPECIFIED, WHERE \*\*\*\* IS A FOUR DIGIT SERIAL NUMBER FOR THE RIB SET AND # IS THE NUMBER OF THE RIB (1-7)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		DECIMAL FRACTIONS: FRACTIONS DIMENSIONS ARE IN MILLIMETERS DIMENSIONS ARE IN INCHES DECIMALS: .00125 .0025 .005 .010 FRACTIONS: 1/64 1/32 1/16 1/8 1/4 1/2 1		THORAX ELLIPTICAL RIB STIFFENER #1	
REVISED BY:	DATE:	DESIGNED BY:	DATE:	DRAWN BY:	DATE:
472-3000	1	01 TOOL STEEL	Thanh	9/22/2011	
NEXT ASSEMBLY	QTY	SEE NOTES			
TOTAL QTY IN DUMMY	1	E-COAT	J. WANG	1/18/2012	
A21 of 1				472-3510	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM011 R6 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	TKN
	B	REMOVE FIT NOTES (4 & 5), ADD FINISH E-COAT; ADD 2X 81.2, 2X 71.5	3/22/2012	BK



ISO VIEW  
SCALE 1 : 1



SECTION A-A  
SCALE 1 : 1

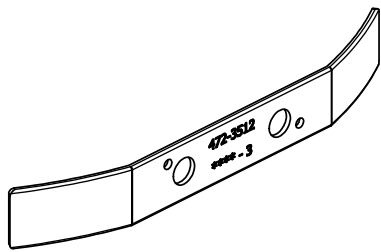


NOTES:

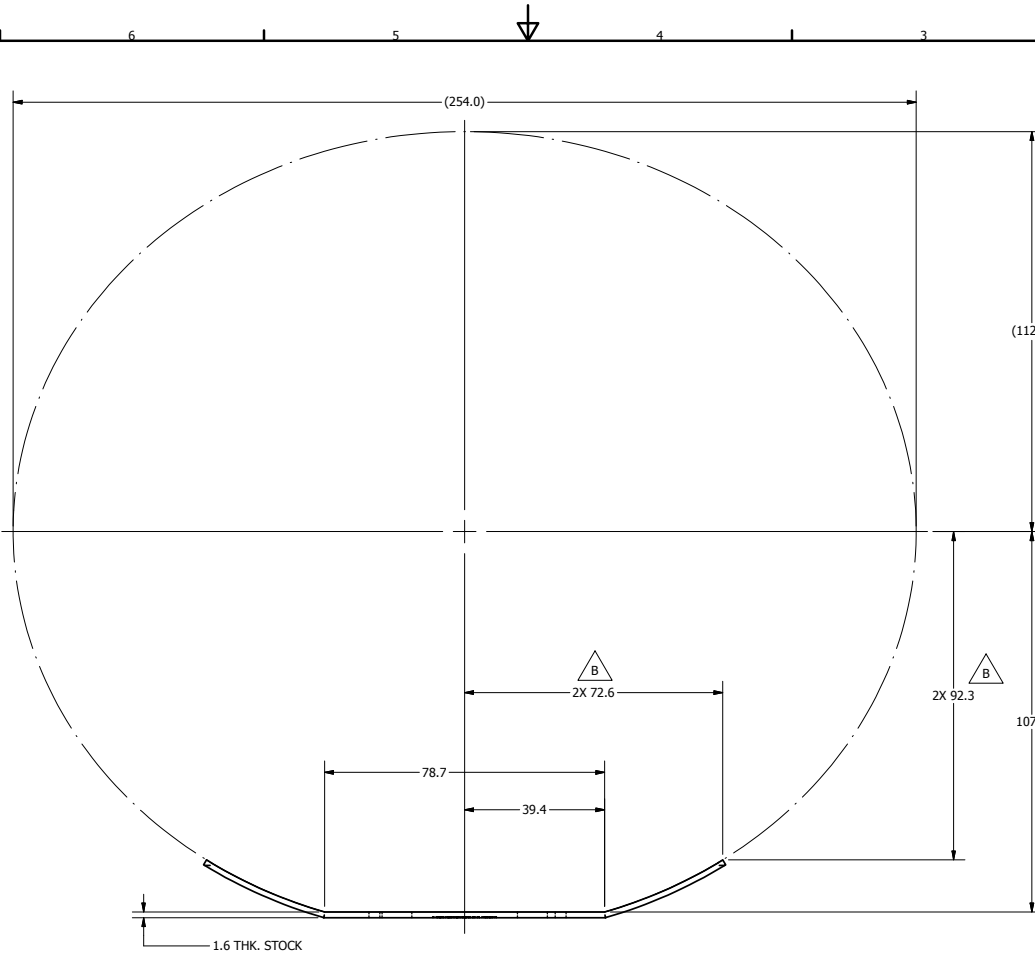
1. LENGTH PRIOR TO BENDING IS 152.4MM
2. BENT ENDS FOLLOW THE ELLIPTICAL CURVES SHOWN.
3. SEMI-AXES ARE X=114.3MM, Y=104.1MM
4. HEAT TREAT TO Rc 50 +/- 2
5. ENGRAVE DWG. # 472-3511 AT THE LOCATION SPECIFIED.
6. ENGRAVE SERIAL NUMBER \*\*\*\*-# AT THE LOCATION SPECIFIED. WHERE \*\*\*\* IS A FOUR DIGIT SERIAL NUMBER FOR THE RIB SET AND # IS THE NUMBER OF THE RIB (1-7)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THORAX ELLIPTICAL RIB STIFFENER		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO 0.01mm ANGLES TO 1 DEGREE		THORAX ELLIPTICAL RIB STIFFENER #2	
ECO#	REV	DATE	BY	ECO#	REV
472-3000	01	9/22/2011	Thanh	A2	1 of 1
NEXT ASSEMBLY	QTY	SEE NOTES	PREPARED BY	DATE	APPROVED BY
TOTAL QTY IN DUMMY	1	E-COAT	J. WANG	1/18/2012	FULL

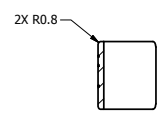
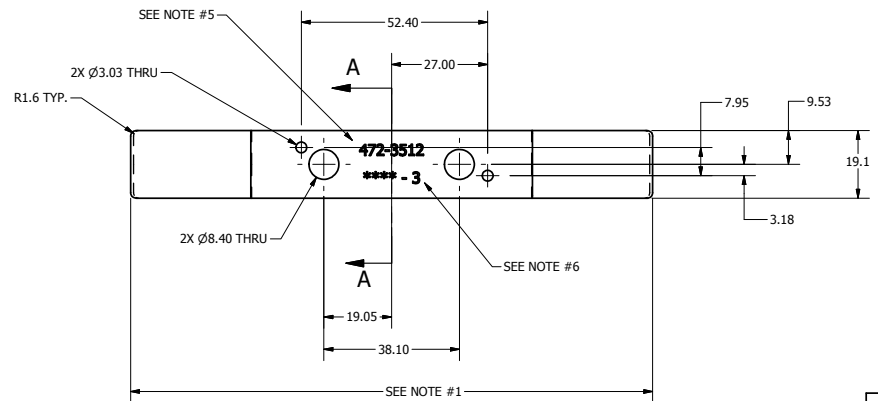
472-3511



ISO VIEW  
SCALE 1 : 1



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TYM012 R6 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	TKN
	B	REMOVE FIT NOTES (4 & 5), ADD FINISH E-COAT; ADD 2X 92.3, 2X 72.6	3/22/2012	BK

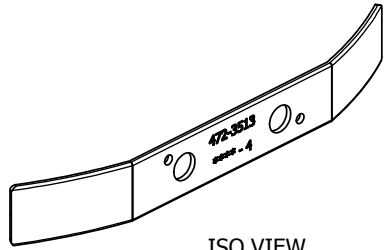


SECTION A-A  
SCALE 1 : 1

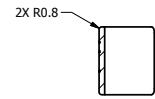
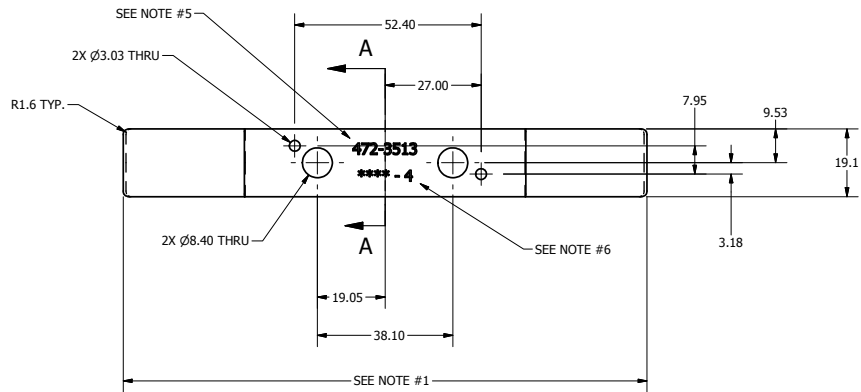
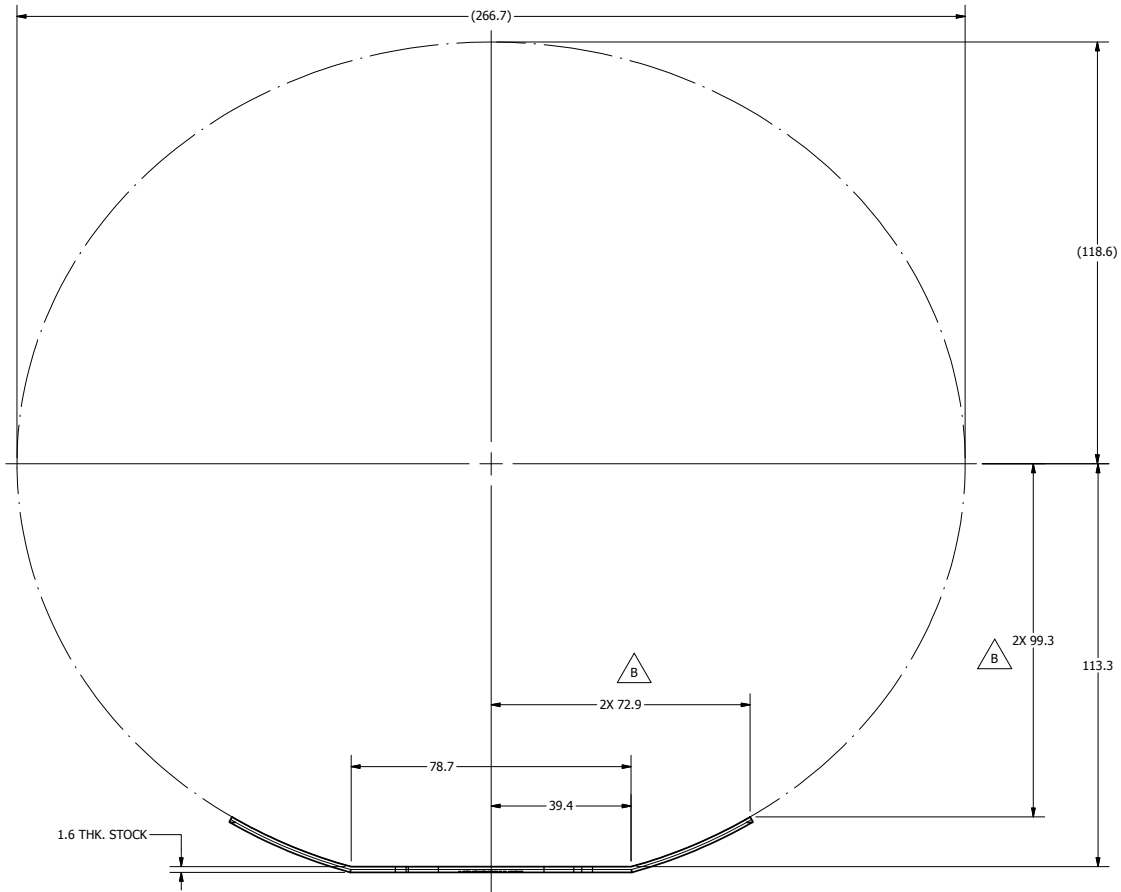
- NOTES:
1. LENGTH PRIOR TO BENDING IS 152.4MM
  2. BENT ENDS FOLLOW THE ELLIPTICAL CURVES SHOWN.
  3. SEMI-AXES ARE X=127.0MM, Y=112.5MM
  4. HEAT TREAT TO Rc 50 +/- 2
  5. ENGRAVE DWG. # 472-3512 AT THE LOCATION SPECIFIED.
  6. ENGRAVE SERIAL NUMBER \*\*\*\*-# AT THE LOCATION SPECIFIED. WHERE \*\*\*\* IS A FOUR DIGIT SERIAL NUMBER FOR THE RIB SET AND # IS THE NUMBER OF THE RIB (1-7)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3000		THORAX ELLIPTICAL RIB STIFFENER #3		A21 of 1	
QTY	1	DATE	9/22/2011	DATE	1/18/2012
DESCRIPTION	01 TOOL STEEL	DESIGNED BY	Thanh	DATE	1/18/2012
PREPARED BY	J. WANG	DATE	1/18/2012	DATE	1/18/2012
TOTAL QTY IN DUMMY	1	FINISH	E-COAT	DATE	1/18/2012

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM013 R6 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	TKN
	B	REMOVE FIT NOTES (4 & 5), ADD FINISH E-COAT; ADD 2X 99.3, 2X 72.9	3/22/2012	BK



ISO VIEW  
SCALE 1 : 1

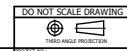


SECTION A-A  
SCALE 1 : 1

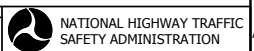


NOTES:

1. LENGTH PRIOR TO BENDING IS 152.4MM
2. BENT ENDS FOLLOW THE ELLIPTICAL CURVES SHOWN.
3. SEMI-AXES ARE X=133.4MM, Y=118.6MM
4. HEAT TREAT TO Rc 50 +/- 2
5. ENGRAVE DWG. # 472-3513 AT THE LOCATION SPECIFIED.
6. ENGRAVE SERIAL NUMBER \*\*\*\*.# AT THE LOCATION SPECIFIED, WHERE \*\*\*\* IS A FOUR DIGIT SERIAL NUMBER FOR THE RIB SET AND # IS THE NUMBER OF THE RIB (1-7)



TOLERANCES	
UNLESS OTHERWISE SPECIFIED	DECIMAL DIMENSIONS
FRACTIONS	FRACTIONS
± 0.13	± 0.13
± 0.25	± 0.25
± 0.51	± 0.51
± 1.27	± 1.27

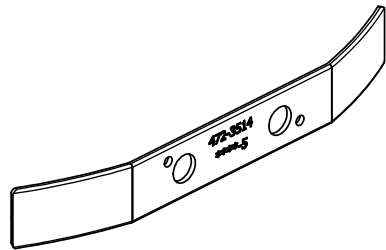


NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

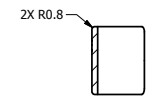
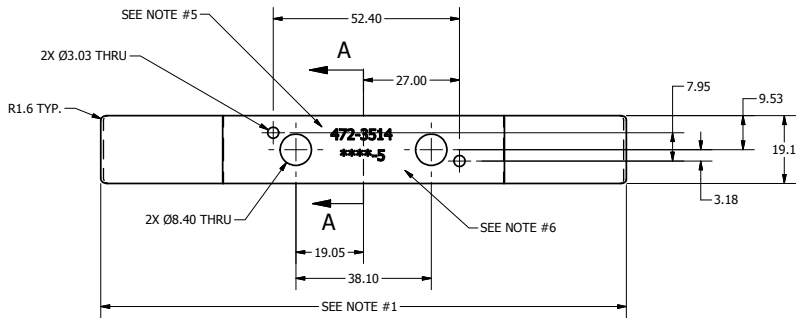
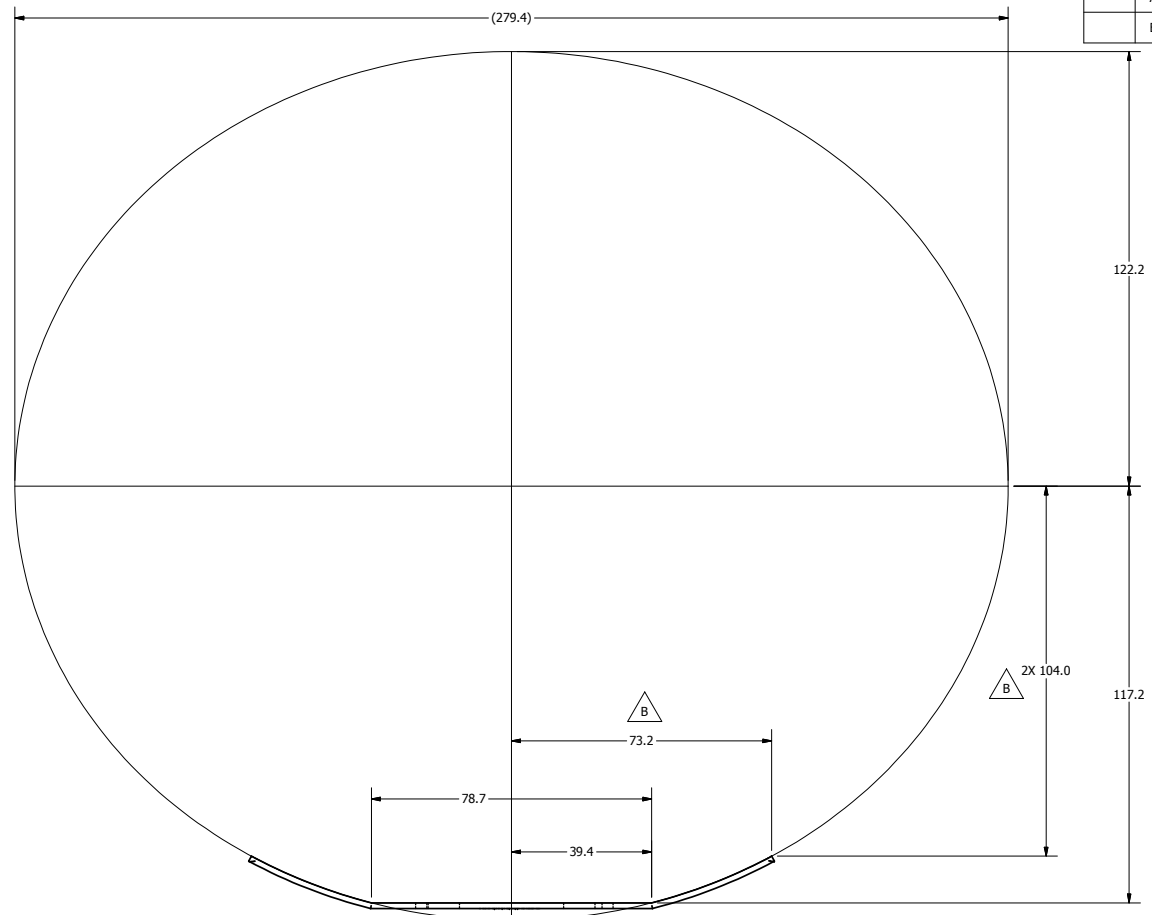
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3000	1	01 TOOL STEEL	Thanh	9/22/2011	THORAX ELLIPTICAL RIB STIFFENER #4
NEXT ASSEMBLY	QTY	SEE NOTES	PREPARED BY	DATE	REV
TOTAL QTY IN DUMMY	1	E-COAT	J. WANG	1/18/2012	A21 of 1
					FULL
					472-3513



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM014 R6 AND CONVERTED TO METRIC FOR THOR-M	9/22/2011	TKN
	B	REMOVE FIT NOTES (4 & 5), ADD FINISH E-COAT; ADD 2X 104.0, 2X 73.2	3/22/2012	BK



ISO VIEW  
SCALE 1 : 1



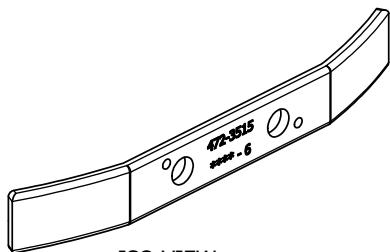
SECTION A-A  
SCALE 1 : 1



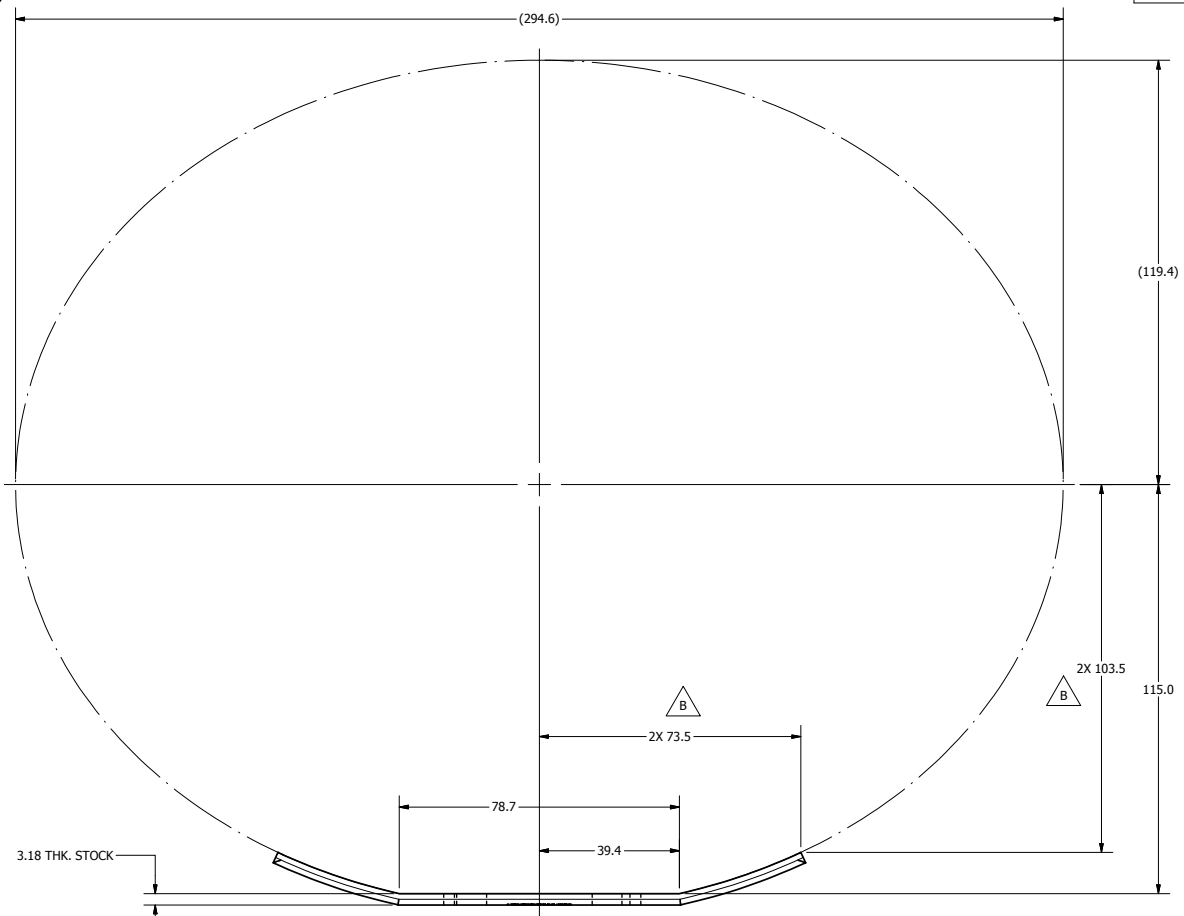
- NOTES:
1. LENGTH PRIOR TO BENDING IS 152.4MM
  2. BENT ENDS FOLLOW THE ELLIPTICAL CURVES SHOWN.
  3. SEMI-AXES ARE X=139.7MM, Y=122.2MM
  4. HEAT TREAT TO Rc 50 +/- 2
  5. ENGRAVE DWG. # 472-3514 AT THE LOCATION SPECIFIED.
  6. ENGRAVE SERIAL NUMBER \*\*\*\*-# AT THE LOCATION SPECIFIED. WHERE \*\*\*\* IS A FOUR DIGIT SERIAL NUMBER FOR THE RIB SET AND # IS THE NUMBER OF THE RIB (1-7)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3000	1	01 TOOL STEEL	Thanh	9/22/2011	THORAX ELLIPTICAL RIB STIFFENER #5
NEXT ASSEMBLY	QTY	SEE NOTES	PREPARED BY	DATE	REV
TOTAL QTY IN DUMMY	1	E-COAT	J. WANG	1/18/2012	A21 of 1 FULL
					472-3514

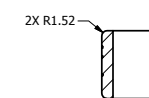
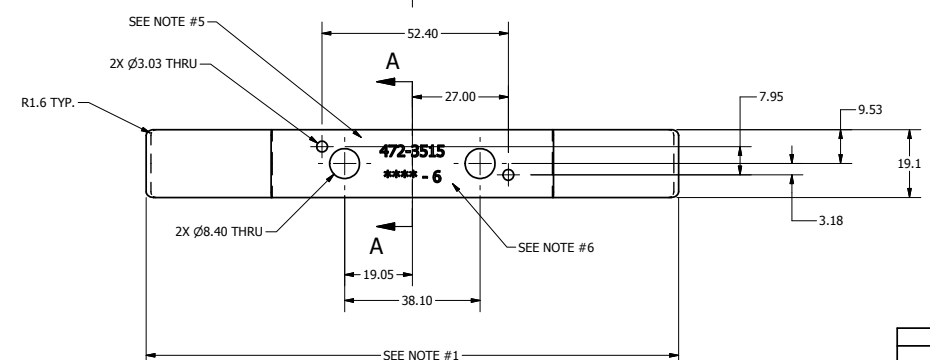
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM015 R5 AND CONVERTED TO METRIC FOR THOR-M	9/23/2011	TKN
	B	REMOVE FIT NOTES (4 & 5), ADD FINISH E-COAT; ADD 2X 103.5, 2X 73.5	3/22/2012	BK



ISO VIEW  
SCALE 1 : 1



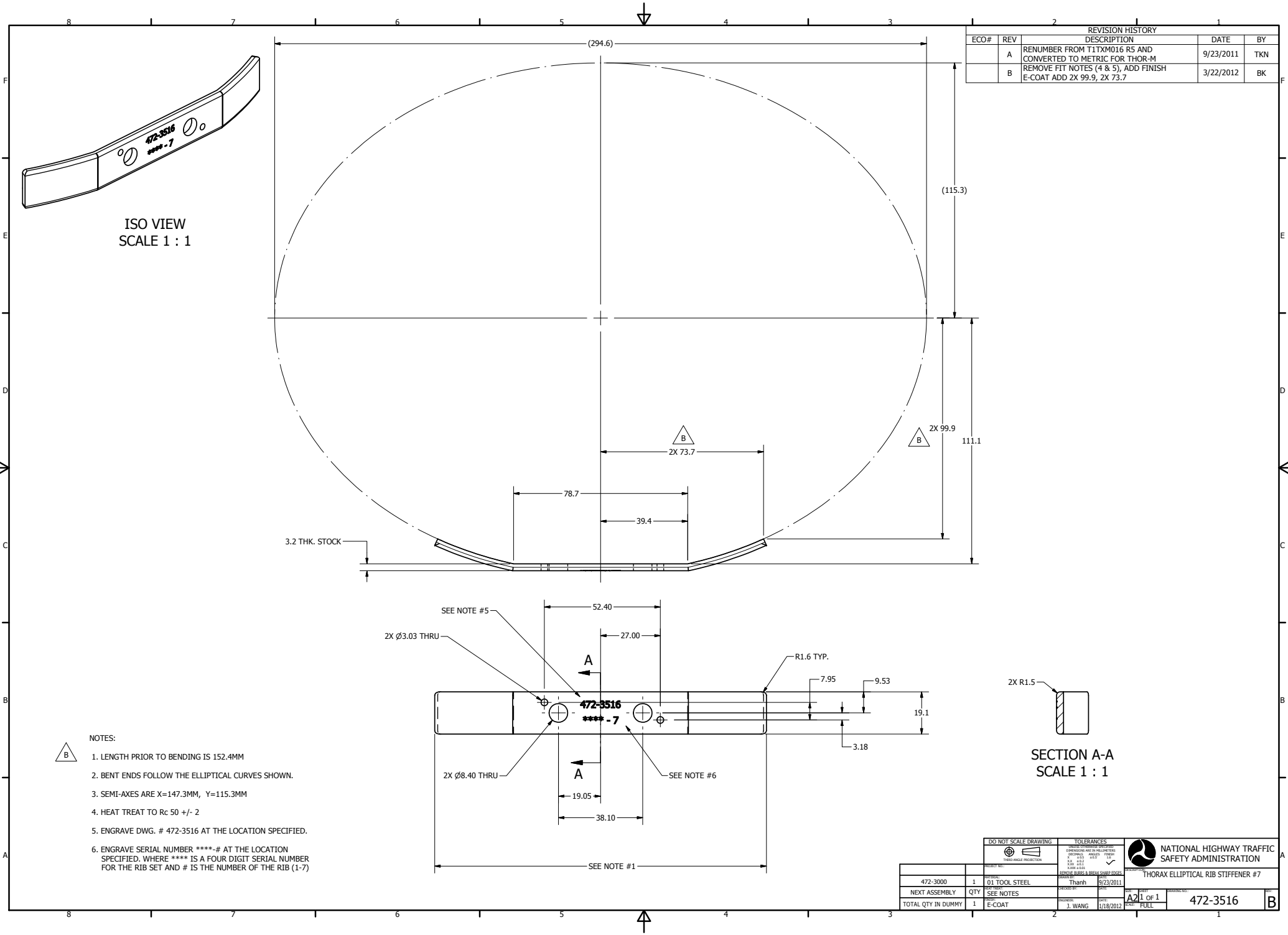
3.18 THK. STOCK



SECTION A-A  
SCALE 1 : 1

- NOTES:
1. LENGTH PRIOR TO BENDING IS 152.4MM
  2. BENT ENDS FOLLOW THE ELLIPTICAL CURVES SHOWN.
  3. SEMI-AXES ARE X=147.3MM, Y=119.4MM
  4. HEAT TREAT TO Rc 50 +/- 2
  5. ENGRAVE DWG. # 472-3515 AT THE LOCATION SPECIFIED.
  6. ENGRAVE SERIAL NUMBER \*\*\*\*-# AT THE LOCATION SPECIFIED. WHERE \*\*\*\* IS A FOUR DIGIT SERIAL NUMBER FOR THE RIB SET AND # IS THE NUMBER OF THE RIB (1-7)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3000	1	01 TOOL STEEL	Thanh	9/23/2011	THORAX ELLIPTICAL RIB STIFFENER #6
NEXT ASSEMBLY	QTY	SEE NOTES	J. WANG	1/18/2012	472-3515
TOTAL QTY IN DUMMY	1	E-COAT			



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1TXM016 R5 AND CONVERTED TO METRIC FOR THOR-M	9/23/2011	TKN
	B	REMOVE FIT NOTES (4 & 5), ADD FINISH E-COAT ADD 2X 99.9, 2X 73.7	3/22/2012	BK

- NOTES:
1. LENGTH PRIOR TO BENDING IS 152.4MM
  2. BENT ENDS FOLLOW THE ELLIPTICAL CURVES SHOWN.
  3. SEMI-AXES ARE X=147.3MM, Y=115.3MM
  4. HEAT TREAT TO Rc 50 +/- 2
  5. ENGRAVE DWG. # 472-3516 AT THE LOCATION SPECIFIED.
  6. ENGRAVE SERIAL NUMBER \*\*\*\*-# AT THE LOCATION SPECIFIED. WHERE \*\*\*\* IS A FOUR DIGIT SERIAL NUMBER FOR THE RIB SET AND # IS THE NUMBER OF THE RIB (1-7)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THORAX ELLIPTICAL RIB STIFFENER		THORAX ELLIPTICAL RIB STIFFENER		THORAX ELLIPTICAL RIB STIFFENER #7	
QTY	DESCRIPTION	DATE	DATE	DATE	DATE
1	01 TOOL STEEL	9/23/2011			
1	E-COAT				
TOTAL QTY IN DUMMY		DATE		DATE	
1		1/18/2012		1/18/2012	

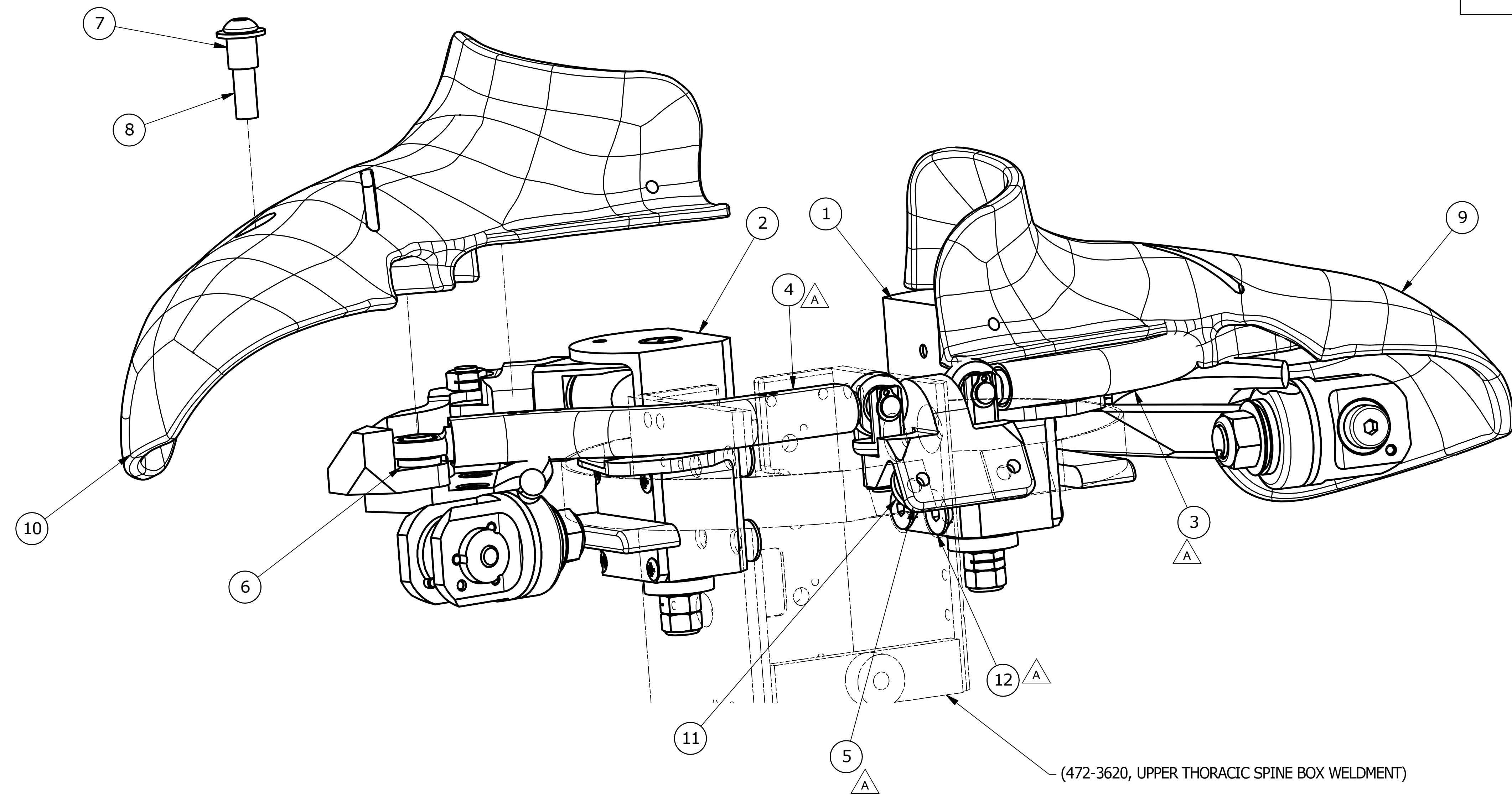
4

3

2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	REVISED ITEMS 3, 4, 5. ADDED ITEM 12	2/10/2014	JHC
	B	DRAWING NUMBER WAS AXSDM000M; REMOVED SD3 UPPER HUMERUS ASSEMBLY - AXAMM000; TITLE WAS SD3 SHOULDER AND ARMS ASSEMBLY; 472-3810 WAS AXSDM300, 472-3840 WAS AXSDM400, 472-3850 WAS AXSDM100B, 472-3860 WAS AXSDM200B, 472-3870 WAS AXSDM040C, 472-3880 WAS AXSDM038, 472-3890 WAS AXSDM037A, 472-3891 WAS AXSDM037B, 472-3895-1 WAS AXSDM035, 472-3895-2 WAS AXSDM036 & 472-3898 WAS AXSDM033	9/9/2014	DW



12	8	5001090	SCREW, FHCS M8-1.25 x 12
11	2	472-3898	RUBBER SPACER WASHER
10	1	472-3895-2	SHOULDER COVER, RIGHT
9	1	472-3895-1	SHOULDER COVER, LEFT
8	2	472-3891	MODIFIED M8 BOLT
7	2	472-3890	SHOULDER COVER BUSHING
6	2	472-3880	ROD END SPACER ASSY
5	1	472-3870	STERNUM BRACKET
4	1	472-3860	RIGHT CLAVICLE ASSEMBLY
3	1	472-3850	LEFT CLAVICLE ASSEMBLY
2	1	472-3840	RIGHT SHOULDER ASSEMBLY
1	1	472-3810	LEFT SHOULDER ASSEMBLY

ITEM	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: X ±0.5 XX ±2 XXX ±1 DECIMAL ANGLES: MACHINED: X ±0.5 XX ±2 XXX ±1 DO NOT SCALE DRAWING</small>		<b>VEHICLE RESEARCH and TEST CENTER</b>	
<small>MATERIAL</small> <small>HEAT TREAT</small> <small>FINISH</small>		<small>APPROVALS</small> <small>DRAWN</small> <small>CHECKED</small> <small>ENG</small> <small>APPROVED</small>	<small>DATE</small> <small>8/5/2013</small> <small>SHOULDER ASSEMBLY THOR-M</small> <small>DRAWING NUMBER</small> <b>472-3800</b>
		<small>SCALE:</small> 1:1	<small>REV</small> <b>B</b> <small>SHEET</small> 1 OF 1

4

3

2

1

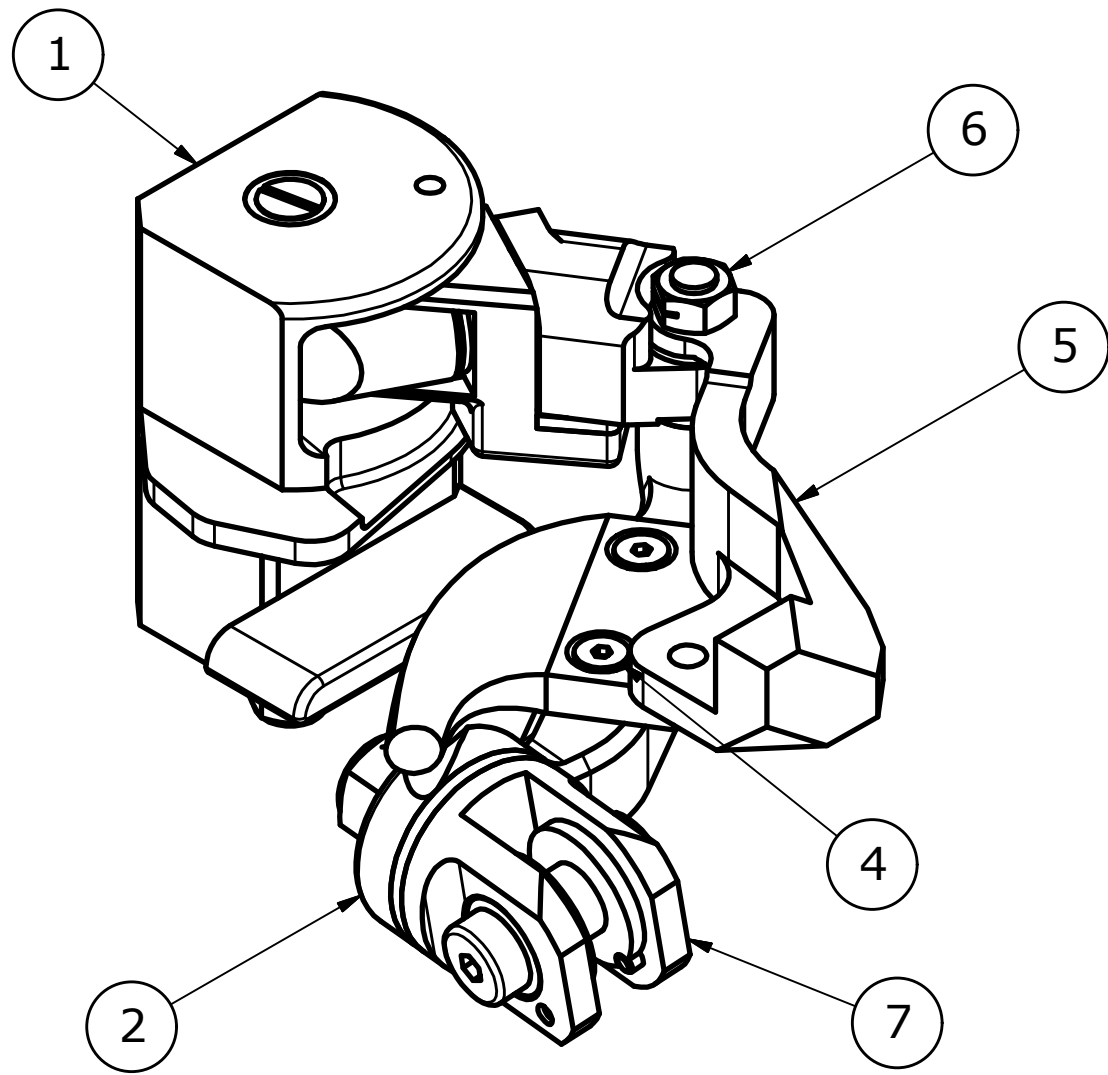
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3

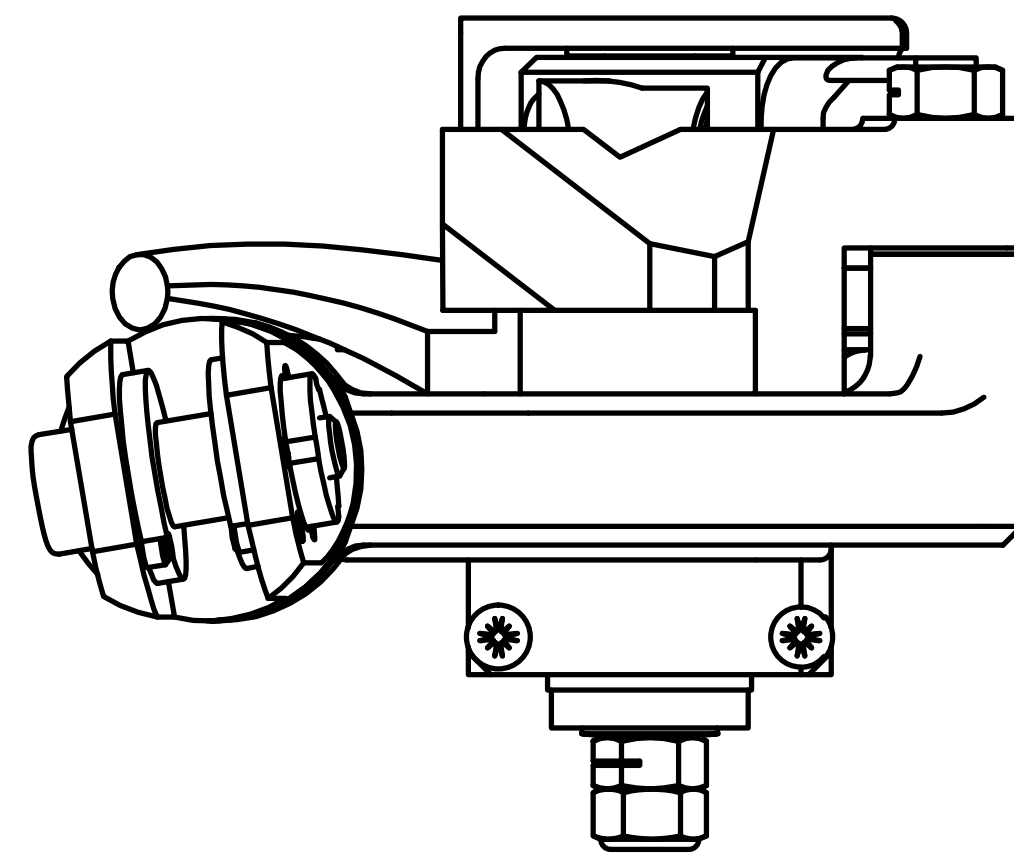
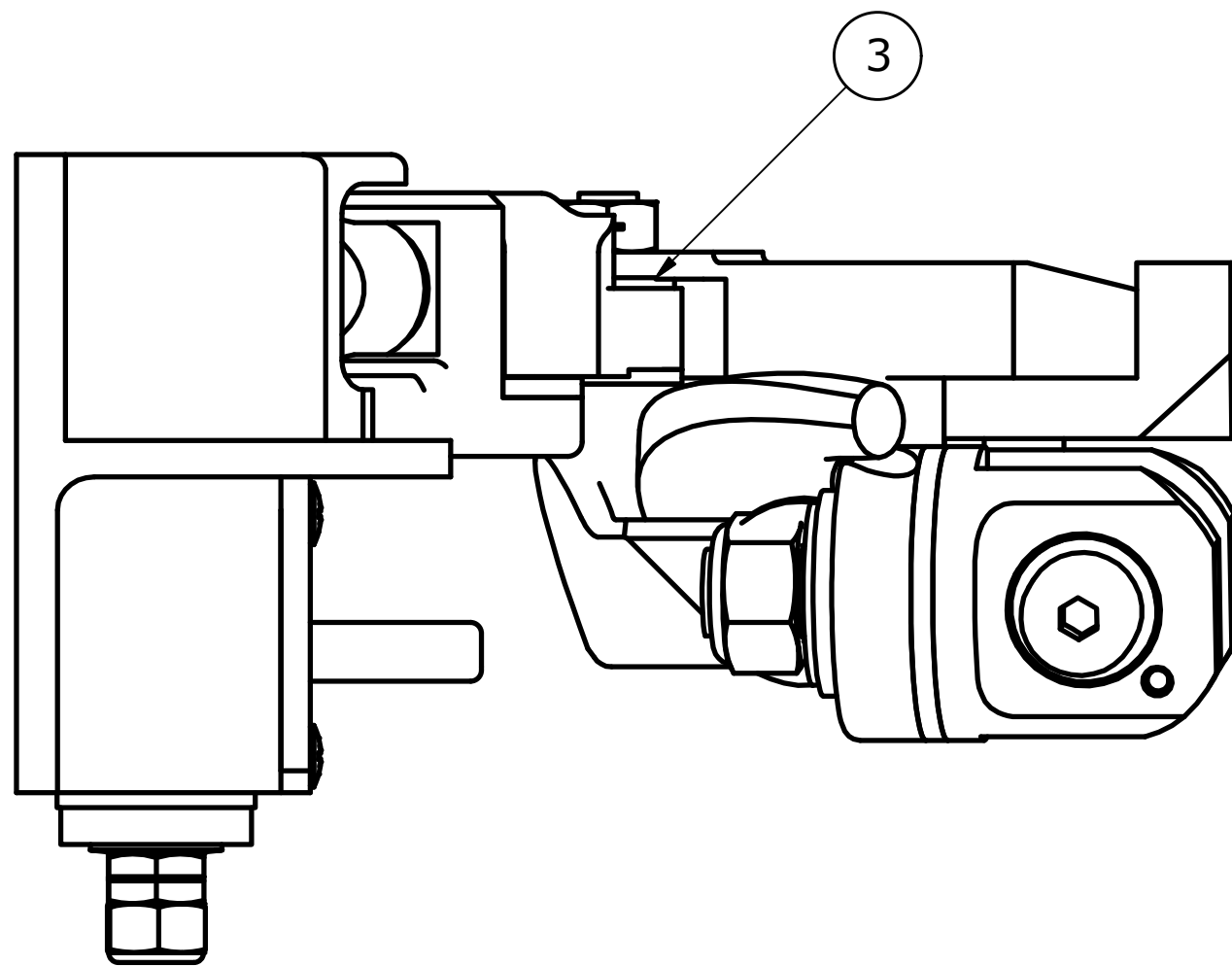
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1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM300; 472-3811 WAS AXSDM600, 472-3829-1 WAS AXSDM012B, 472-3818 WAS AXSDM030B, 472-3830-1 WAS AXSDM010B & 472-3831 WAS AXSDM500	9/9/2014	DW



SCALE 0.750



7	1	472-3831	ARM CLEVIS ASSEMBLY
6	1	5001164V	LOCKNUT, M8 x 1.25, SNEP #ESN H100
5	1	472-3830-1	SCAPULA, LH
4	2	5000467	SCREW, FHCS M5 x 0.8 x 16
3	1	472-3818	WASHER LINK, 18 x 8 x 1.5
2	1	472-3829-1	ARM LINK, LH
1	1	472-3811	LEFT SHOULDER PIVOT ASSEMBLY
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		APPROVALS	DATE	LEFT SHOULDER ASSEMBLY	
		DRAWN JIM CLEVENGER	8/5/2013		
		CHECKED			
MATERIAL	ENG			SIZE	DRAWING NUMBER
HEAT TREAT	APPROVED			C	472-3810
FINISH				SCALE: 1:1	REV A
				SHEET	1 OF 1

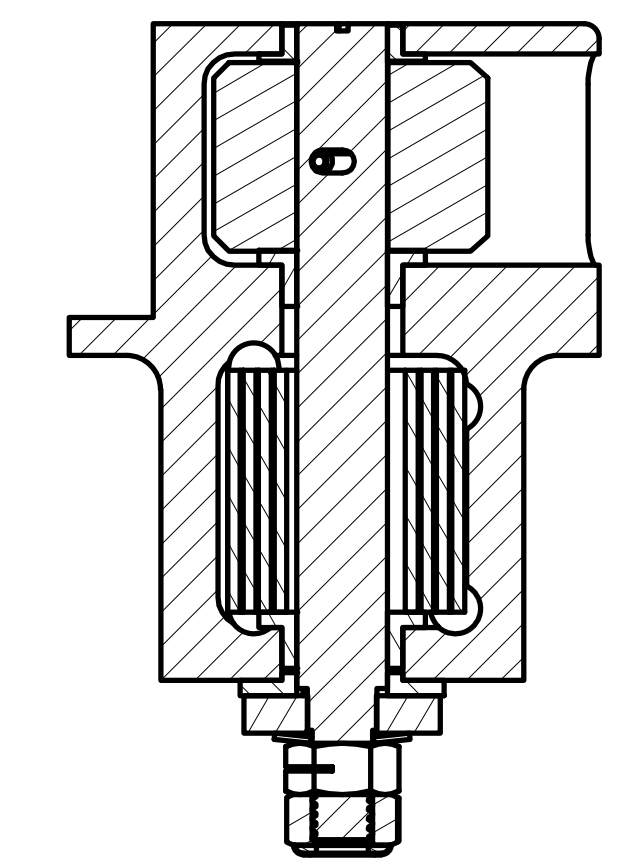
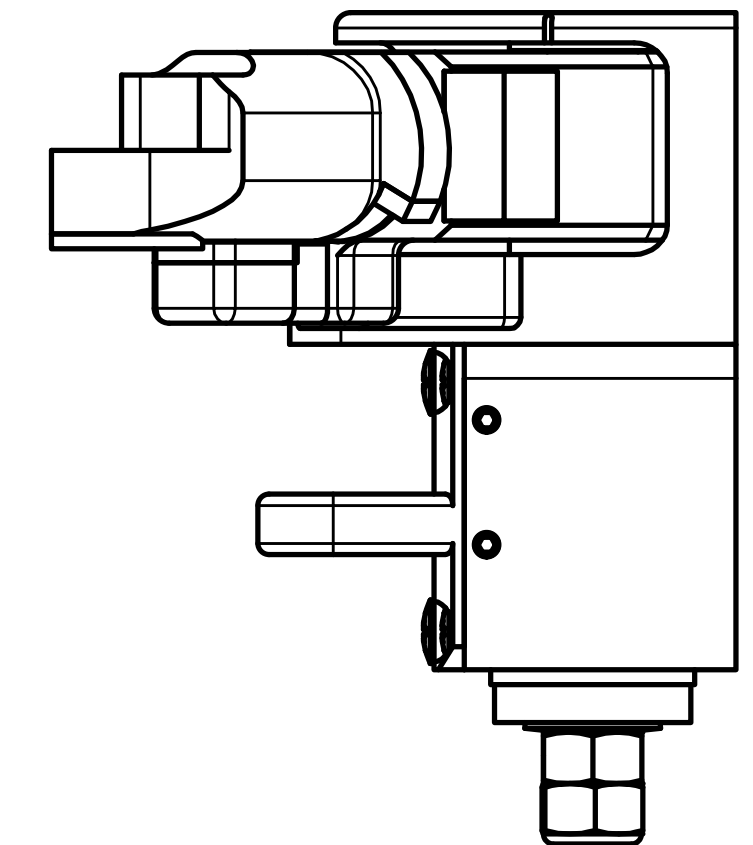
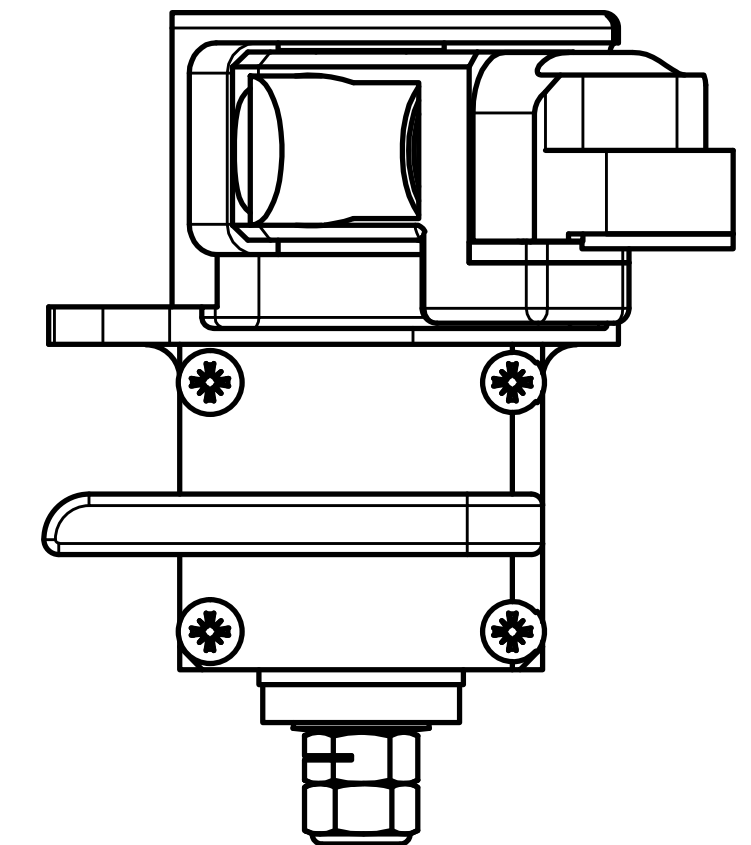
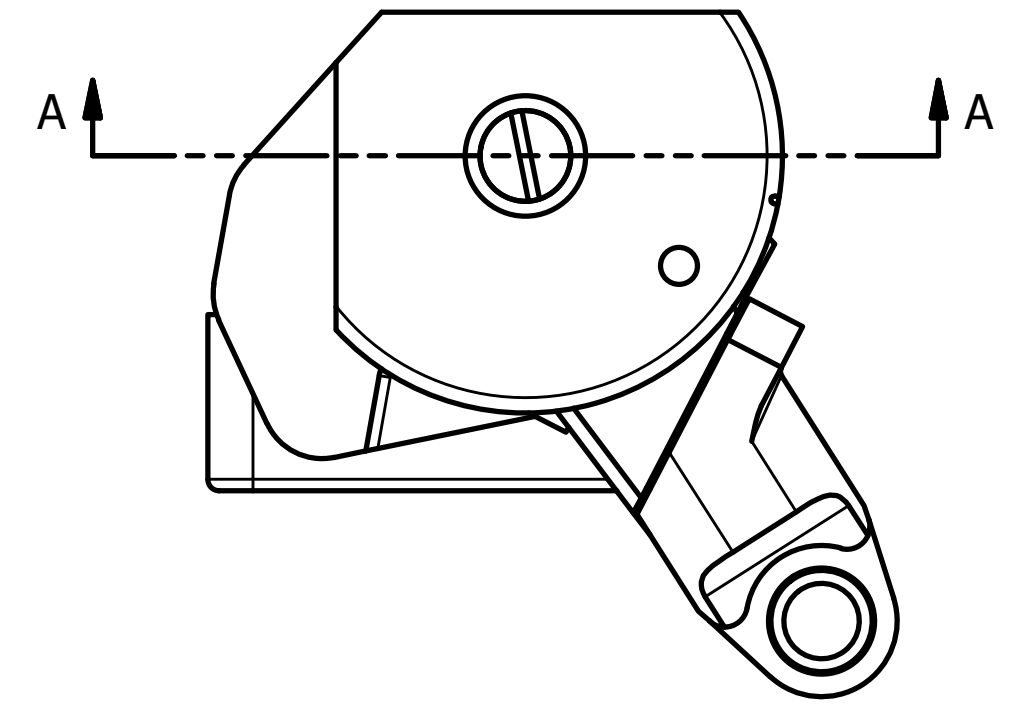
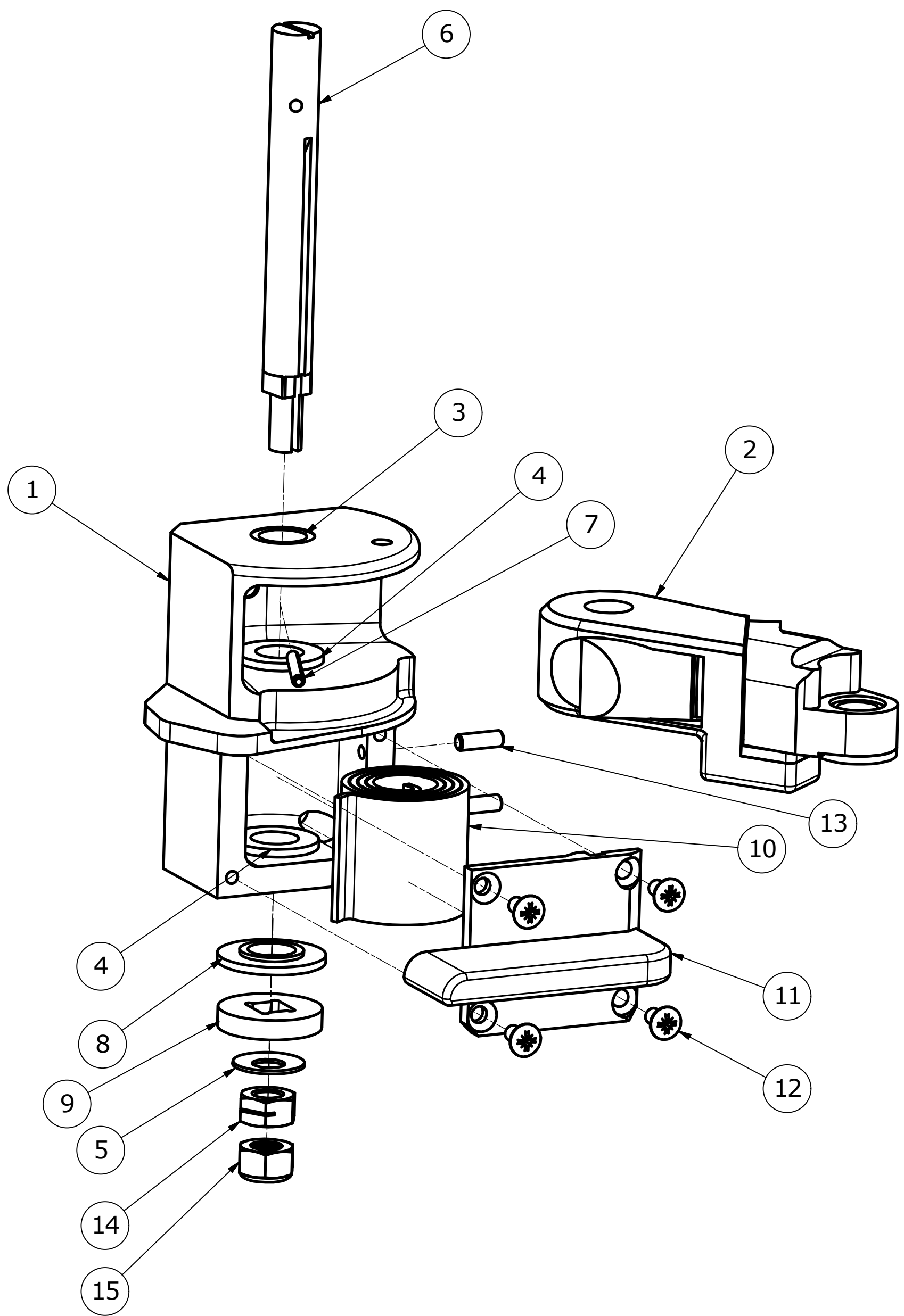
4

3

2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM600; IN PARTS LIST, 472-3812-1 WAS AXSDM002B, 472-3813-1 WAS AXSDM700, 472-3822 WAS AXSDFM020B, 472-3823 WAS AXSDM019B, 472-3824 WAS AXSDM001B, 472-3825 WAS AXSDM005C, 472-3826 WAS AXSDM004B, 472-3827 WAS AXSDM018 & 472-3828-1 WAS AXSDM014B	9/10/2014	DW
	B	MOVED BALLOON CALLOUTS TO EXPLODED VIEW	7/27/2015	DW

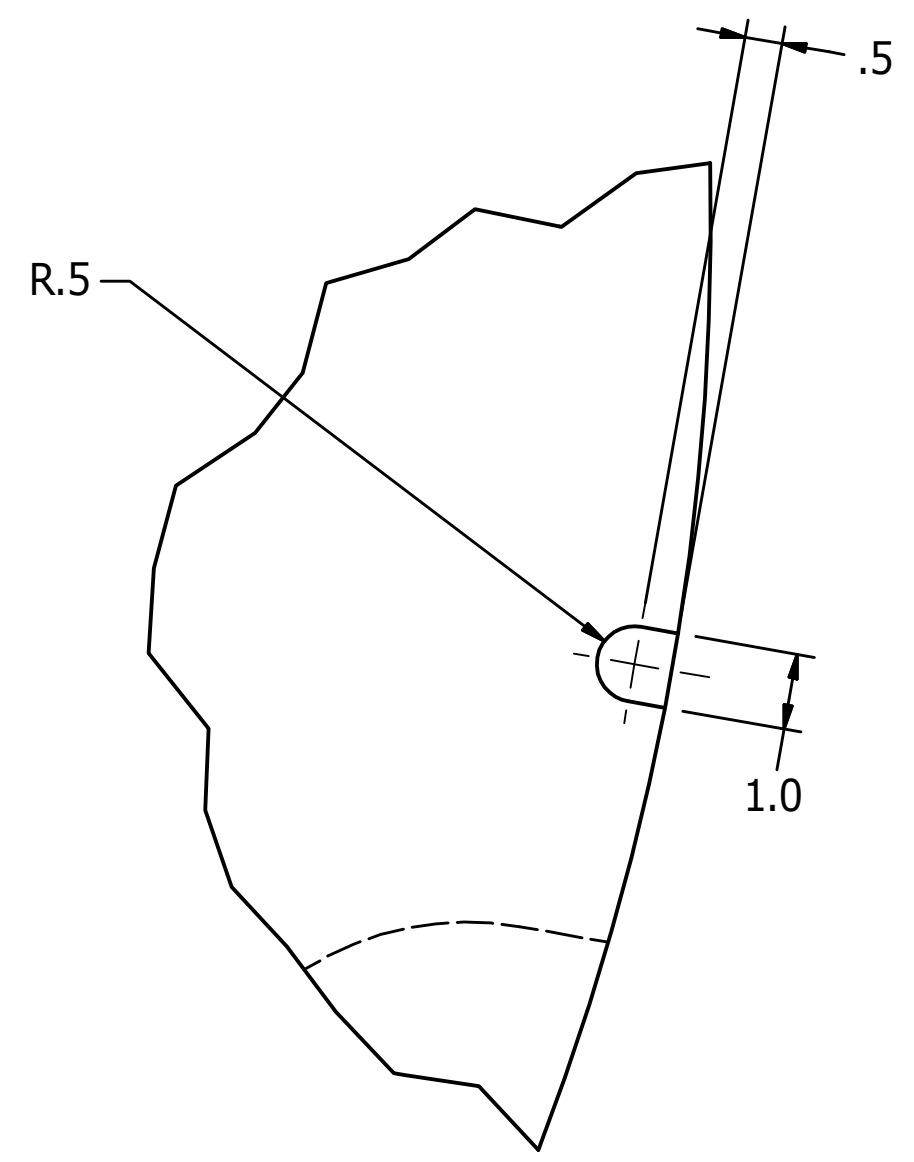
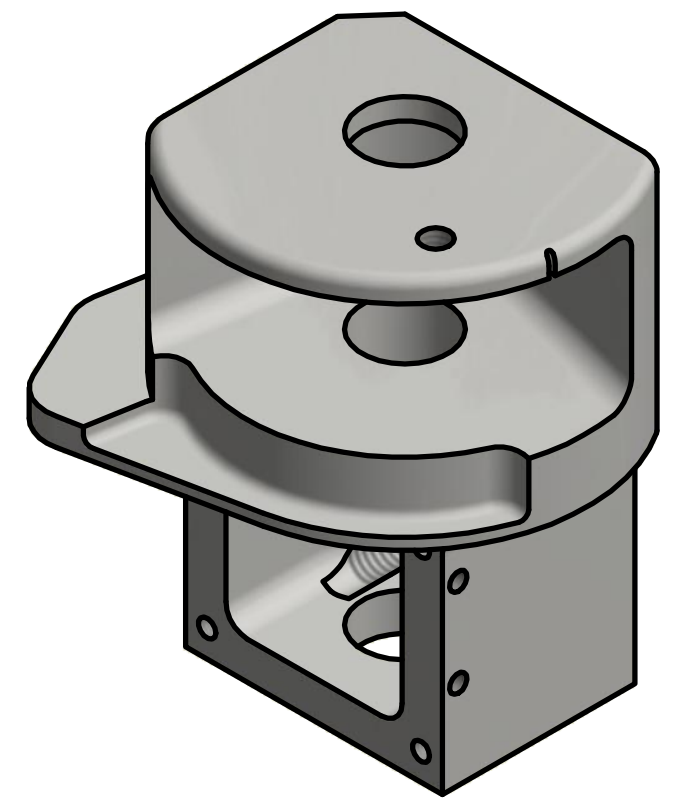


SECTION A-A  
SCALE 1:1

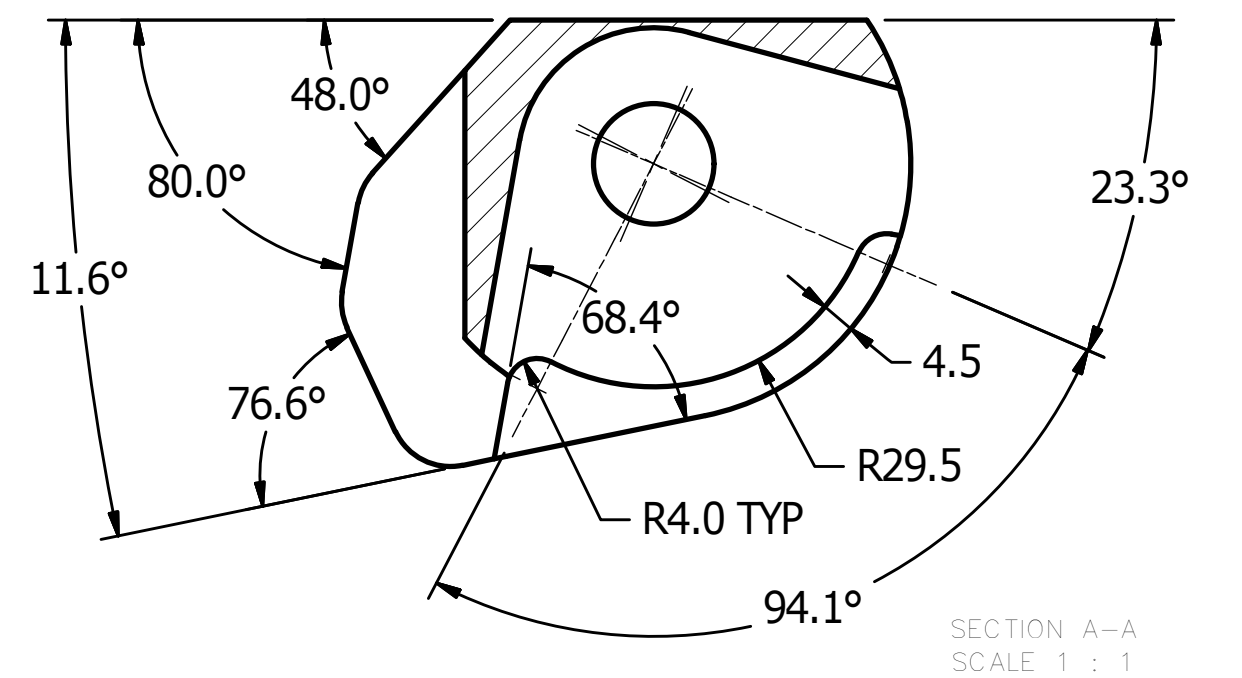
QTY	PART NUMBER	DESCRIPTION
15	5001165V	NYLOCK, M8 x 1.25
14	5001164V	LOCKNUT, M8 x 1.25, SNEP #ESN H100
13	5000292V	SCREW, SSFP M4 x 12
12	5000699	SCREW, FHMS M4 x .7 x 8 PHILLIPS
11	472-3828-1	RIB GUIDE LOWER, LH
10	472-3827	SPRING
9	472-3826	WASHER
8	472-3825	SPRING HOUSING WASHER, LOWER
7	5000140	ROLL PIN, M3 x 24
6	472-3824	SPRING SHAFT
5	5001170V	SPRING DISC WASHER, 20 x 8.2 x 1.0
4	472-3823	SPRING HOUSING BUSHING, LOWER
3	472-3822	SPRING HOUSING BUSHING, UPPER
2	472-3813-1	SHOULDER SUPPORT ASSEMBLY, LH
1	472-3812-1	SPRING HOUSING COVER, LH

PARTS LIST		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS	DATE	APPROVALS	DATE	APPROVALS	DATE
DRAWN JIM CLEVENGER	8/8/2013				
CHECKED					
MATERIAL	ENG	SIZE	D	DRAWING NUMBER	472-3811
HEAT TREAT	APPROVED	SCALE	1:1	REV	B
FINISH				SHEET	1 OF 1

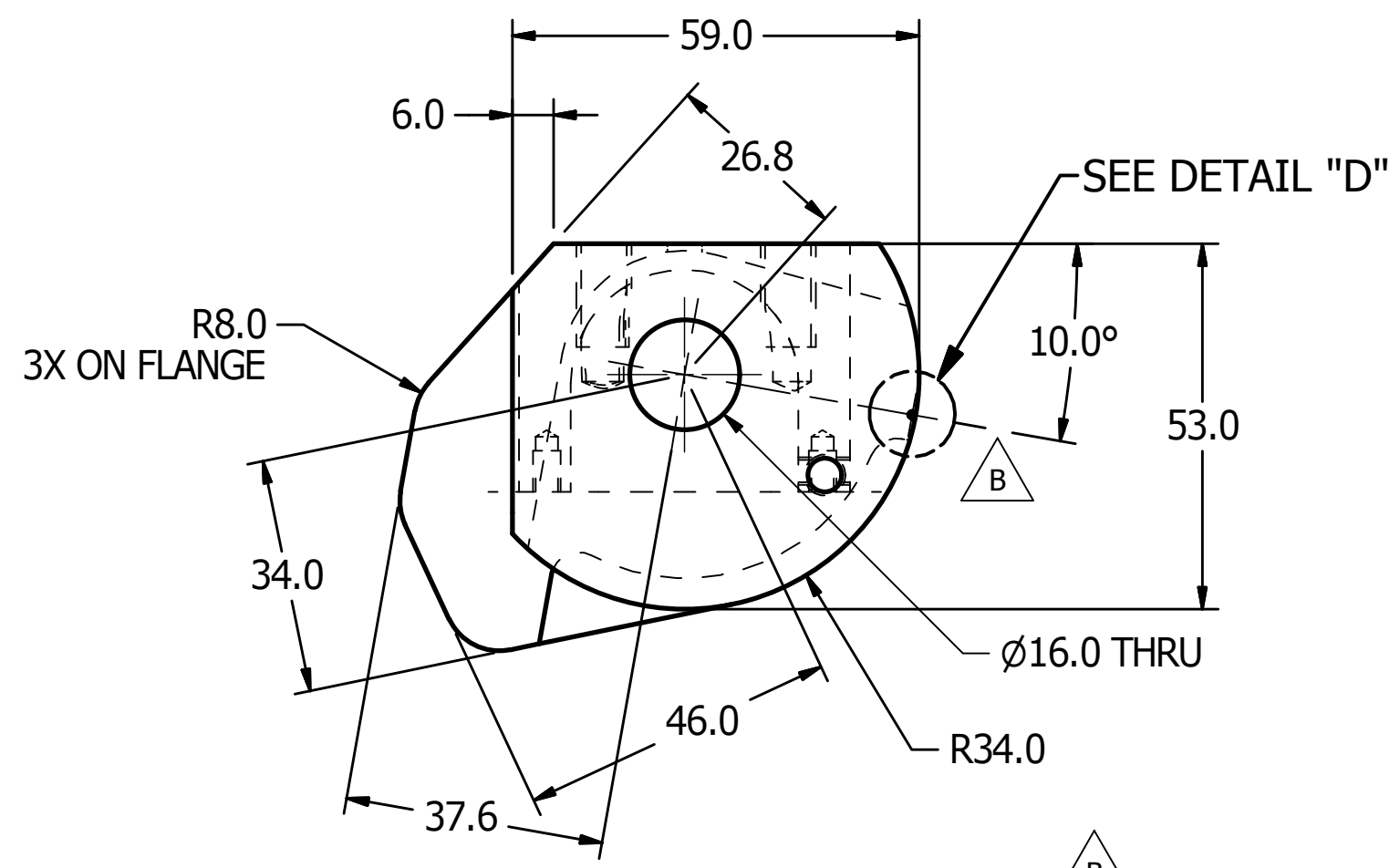
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM002B	9/10/2014	
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.; ADDED DIMENSION R2.0; ADDED ALIGNMENT NOTCH AND DETAIL "D"	9/14/2015	DW



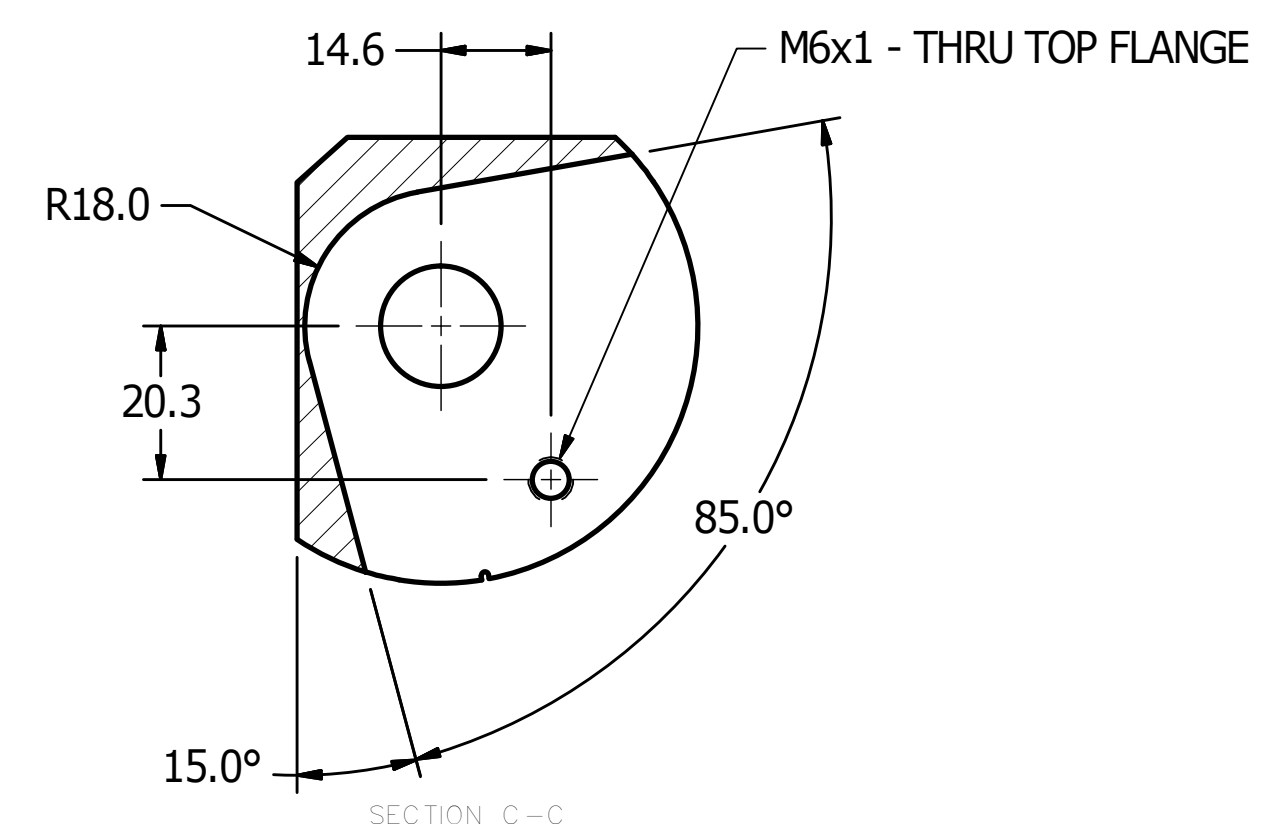
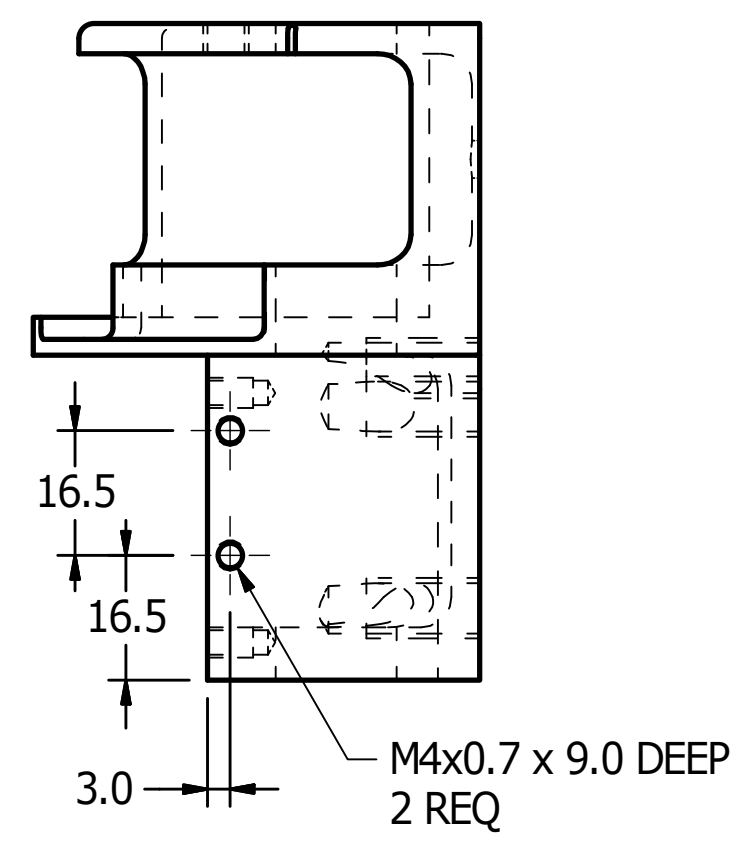
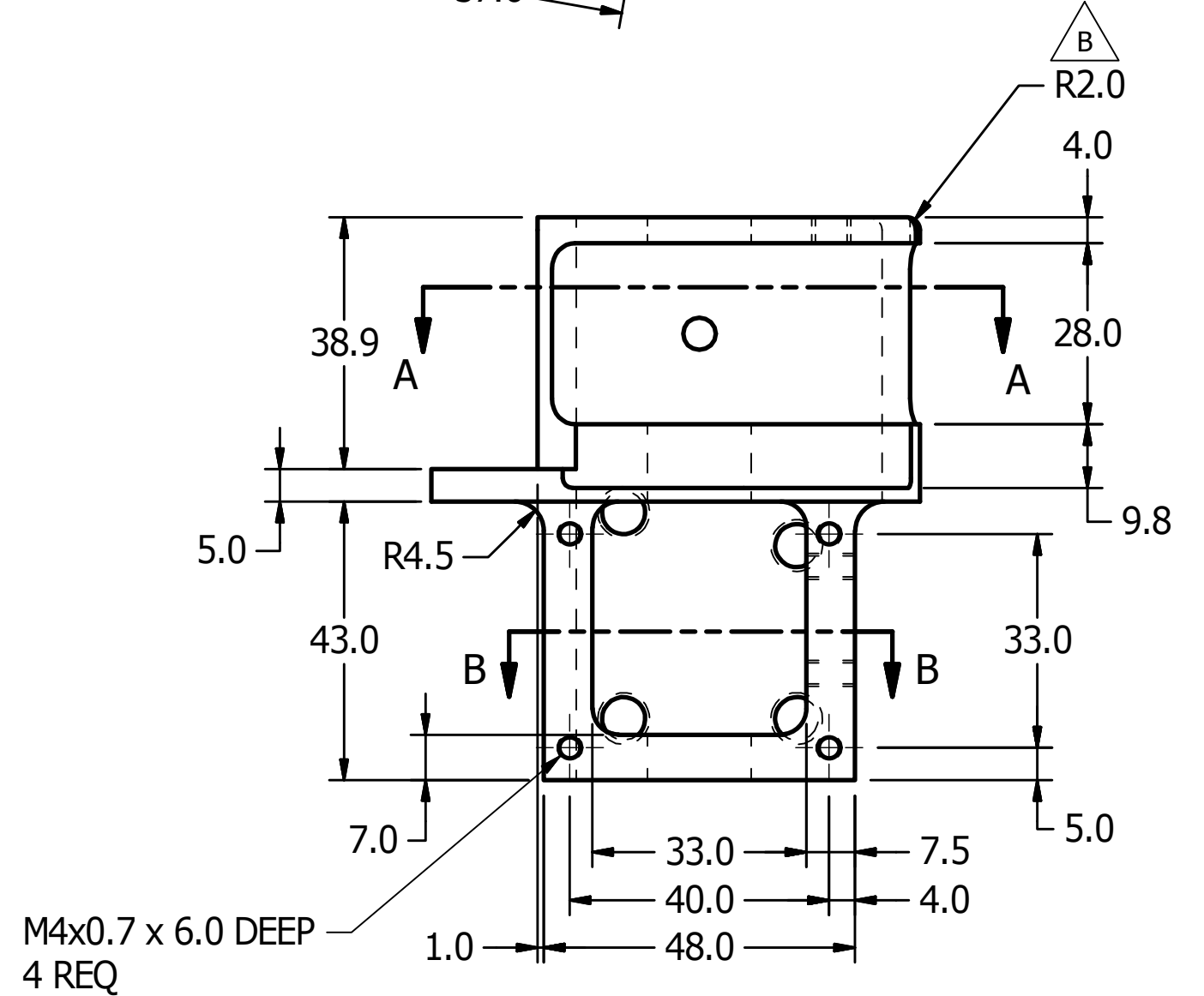
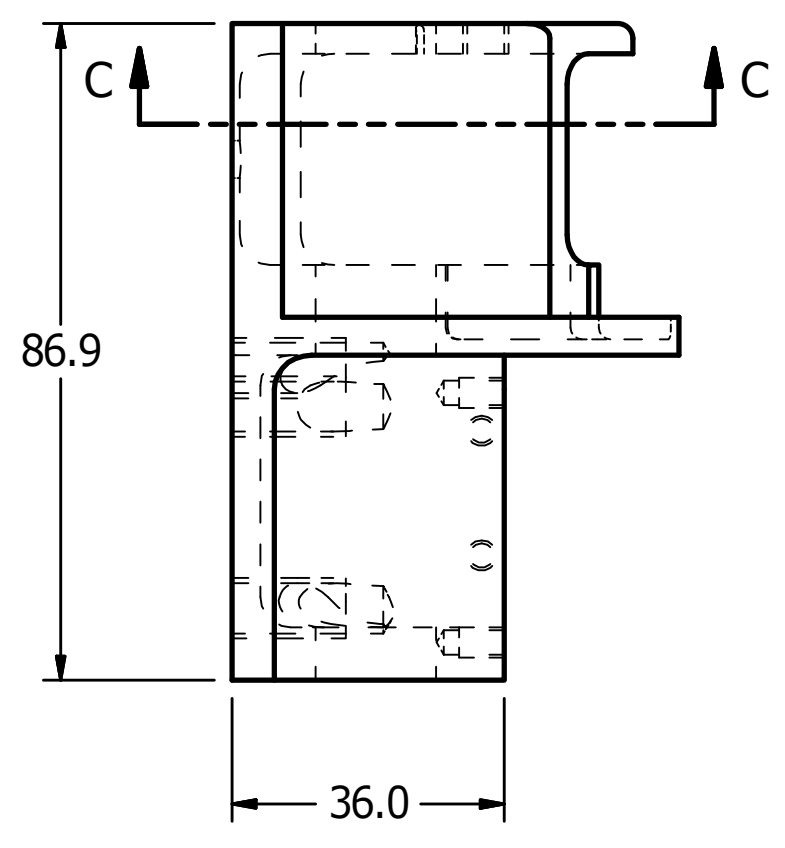
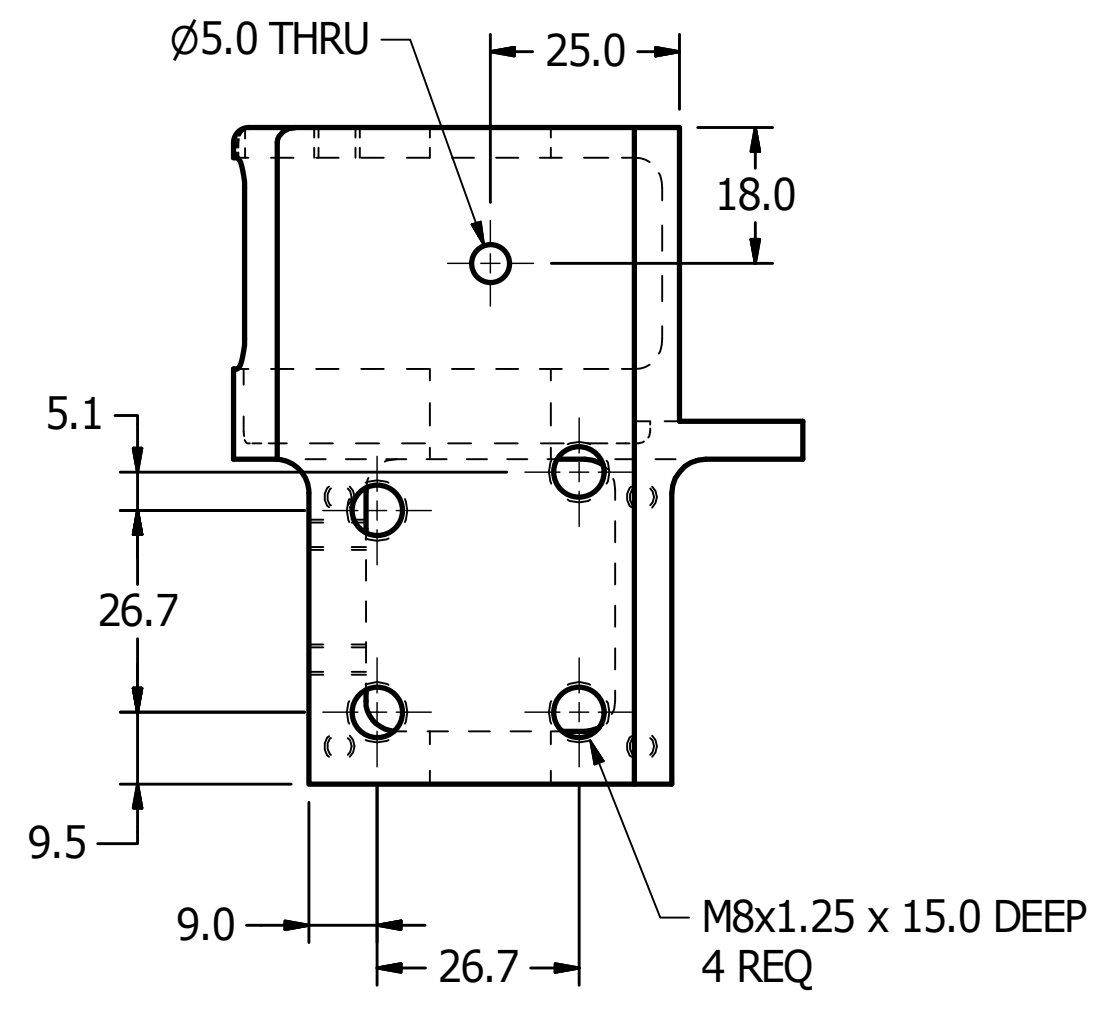
DETAIL D  
SCALE 10 : 1



SECTION A-A  
SCALE 1 : 1



SECTION B-B  
SCALE 1 : 1



SECTION C-C  
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: X ±.5 XX ±.2 XXX ±.1	VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
APPROVED	JIM CLEVELAND	8/15/2013	SPRING HOUSING COVER, LH
CHECKED			
MATERIAL: Steel	ENG		SIZE: D
HEAT TREAT	APPROVED		DRAWING NUMBER: 472-3812-1
FINISH: ELECTROLESS NICKEL .008 MAX.			SCALE: 1:1
			SHEET: 1 OF 1

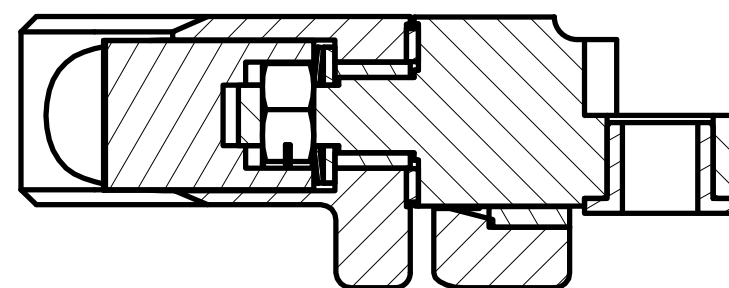
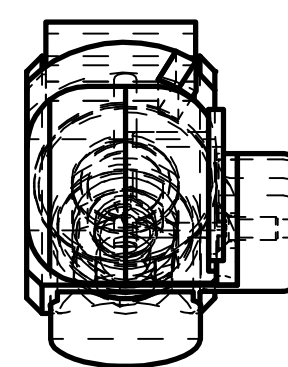
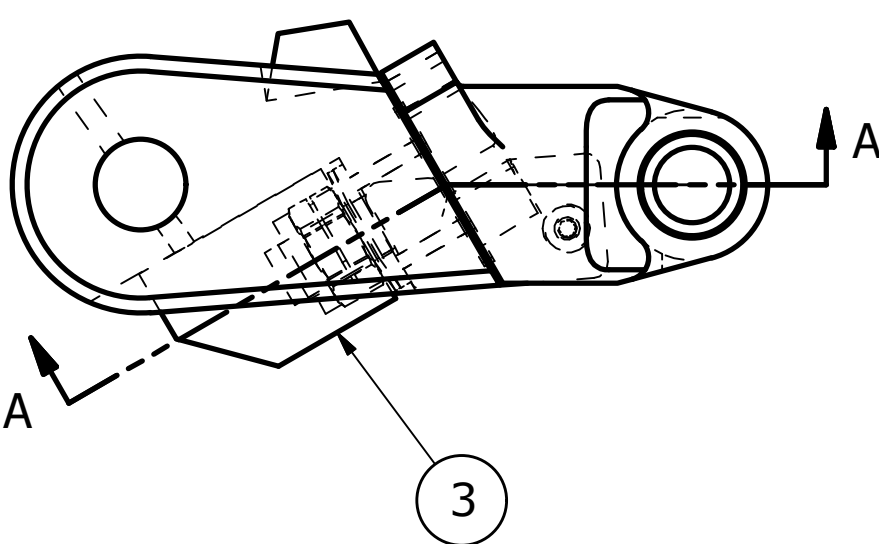
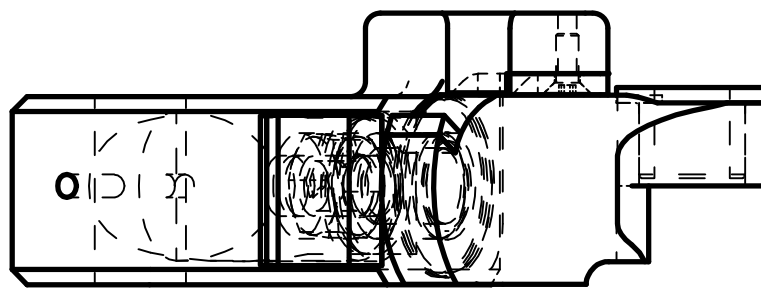
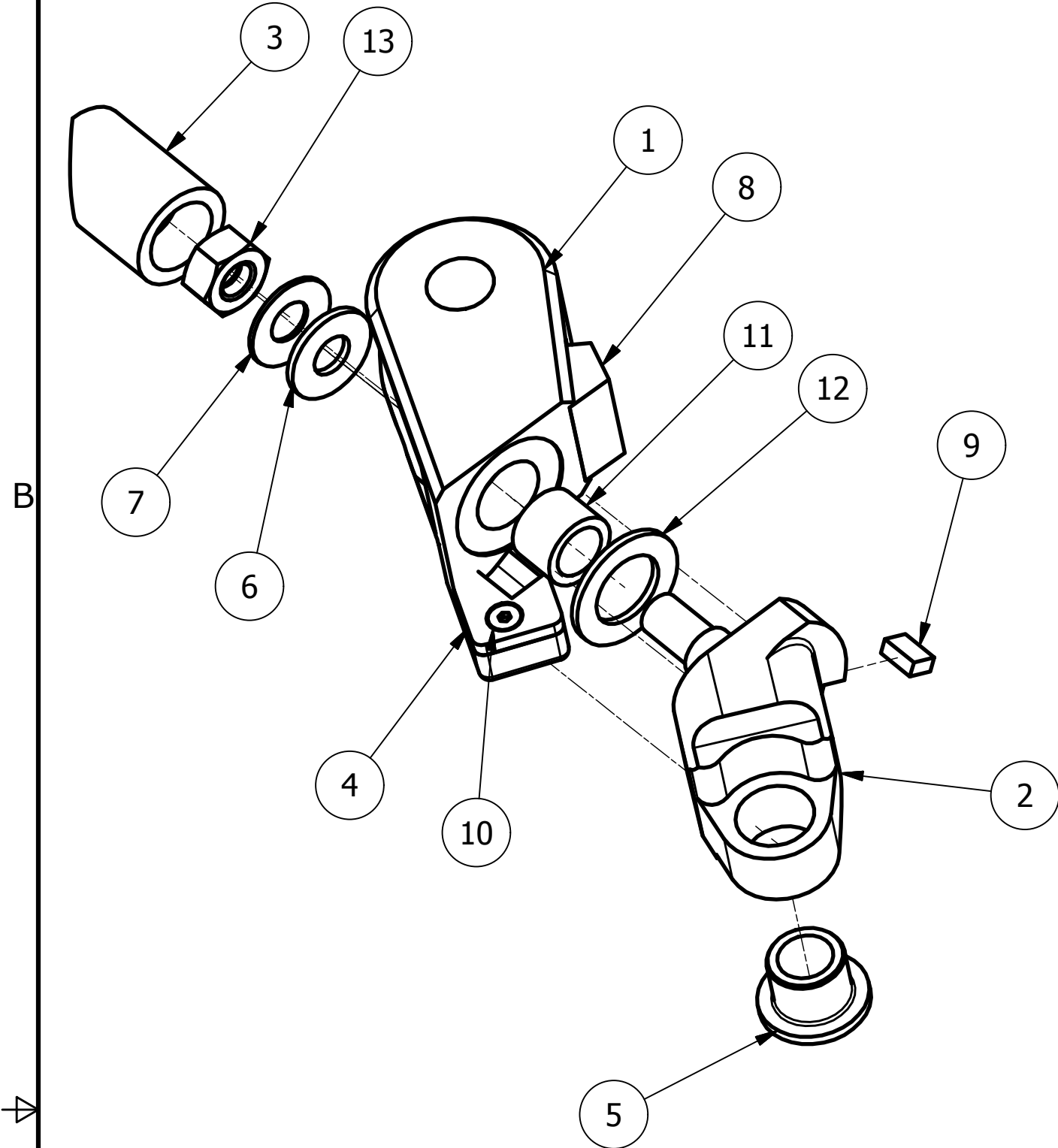
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3

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1

REVISION HISTORY				
ZON	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM700; IN PARTS LIST 472-3814 WAS AXSDM006B, 472-3815-1 WAS AXSDM008B, 47-3816 WAS AXSDM016C, 472-3817-1 WAS AXSDM025B, 472-3818 WAS AXSDM030B, 472-3819 WAS AXSDM017B, 472-3820 WAS AXSDM024B & 472-3821 WAS AXSDM031B	9/10/2014	DW
	B	MOVED BALLOON CALLOUTS TO EXPLODED VIEW	7/13/2015	DW



SECTION A-A  
SCALE 1 : 1

A	13	1	5001164V	LOCKNUT, M8 x 1.25, SNEP #ESN H100
A	12	1	472-3821	LINK WASHER, 23 x 14.2 x 1.5
A	11	1	5001169V	BEARING, IGLIDUR 14 x 10 X 10 LG
A	10	1	5000116	SCREW, FHCS, M3 x .5 x 8
A	9	1	472-3820	BUFFER, VERTICAL
A	8	1	472-3819	REAR ROM BUFFER
A	7	1	5001170V	SPRING DISC WASHER, 20 x 8.2 x 1.0
A	6	1	472-3818	WASHER LINK, 18 x 8 x 1.5
A	5	1	5001168V	FLANGE BEARING, 14OD x 20 FL x 10ID x 12LG
A	4	1	472-3817-1	BUFFER, LOWER LEFT
A	3	1	472-3816	FORWARD ROM BUFFER
A	2	1	472-3815-1	SHOULDER SUPPORT PIVOT, LH
A	1	1	472-3814-1	SHOULDER SUPPORT, LH
ITEM	QTY	PART NUMBER	DESCRIPTION	

PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b> APPROVALS: _____ DATE: _____ DRAWN: JIM CLEVENGER CHECKED: _____		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
MATERIAL: ENG			SHOULDER SUPPORT ASSEMBLY, LH	
HEAT TREAT: APPROVED			SIZE: C	DRAWING NUMBER: 472-3813-1
FINISH:			SCALE: 1:1	REV: B
			SHEET: 1	OF 1

4

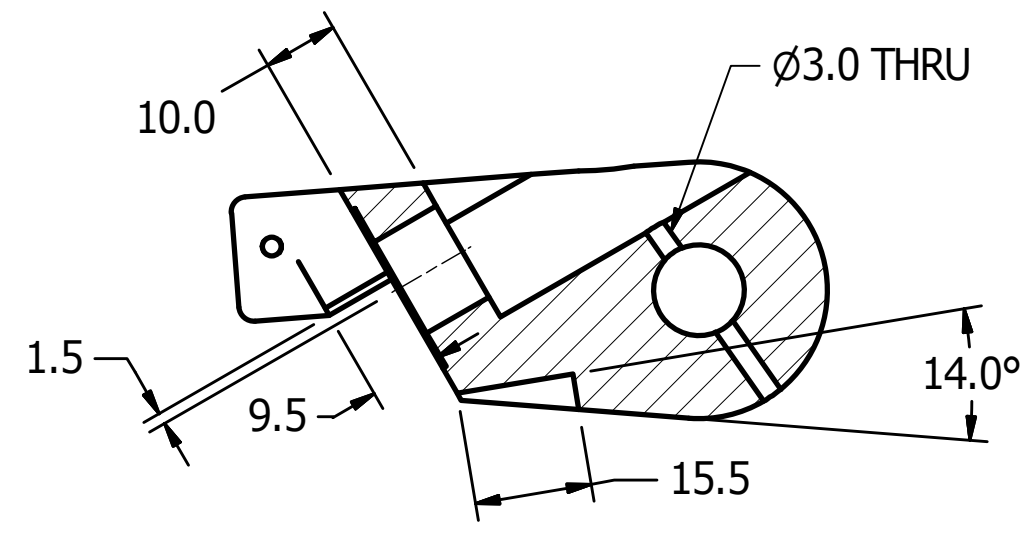
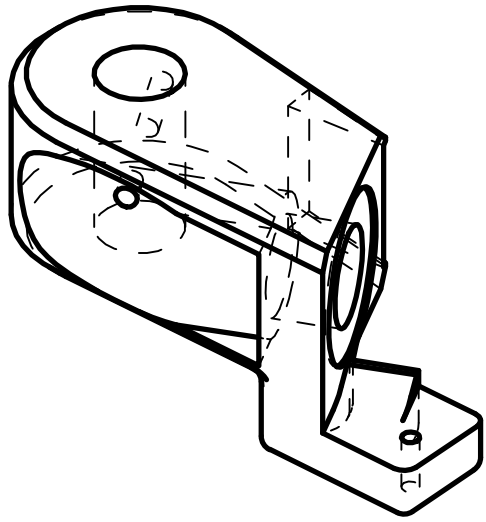
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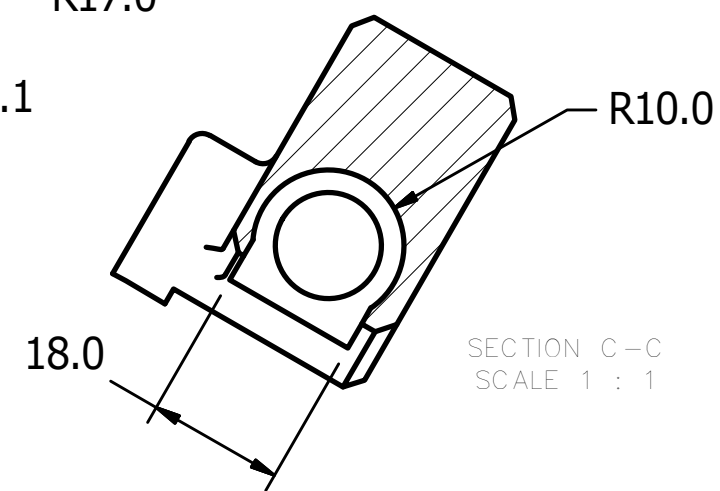
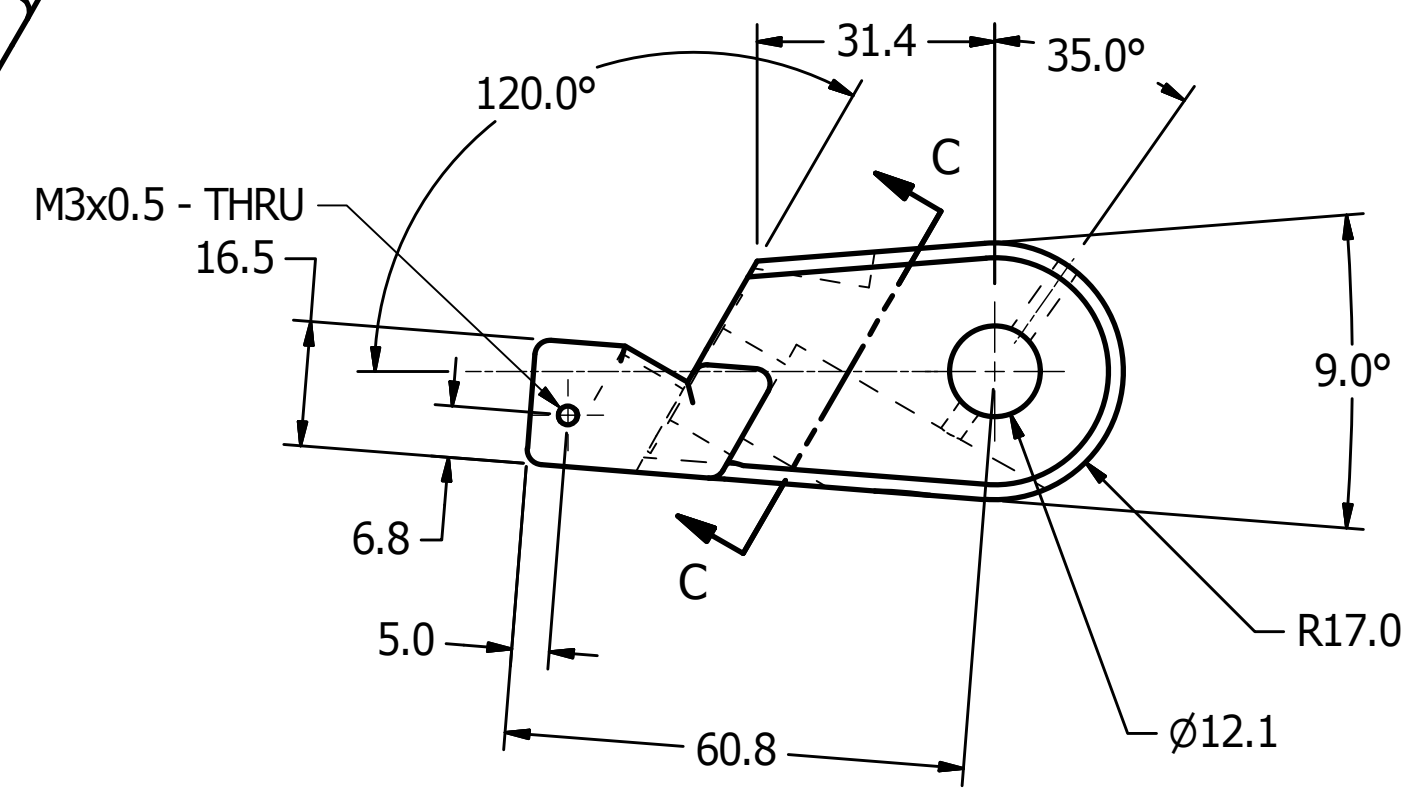
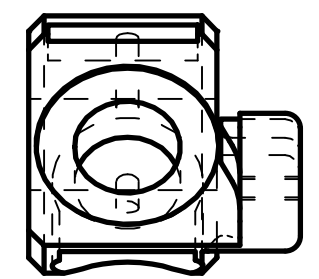
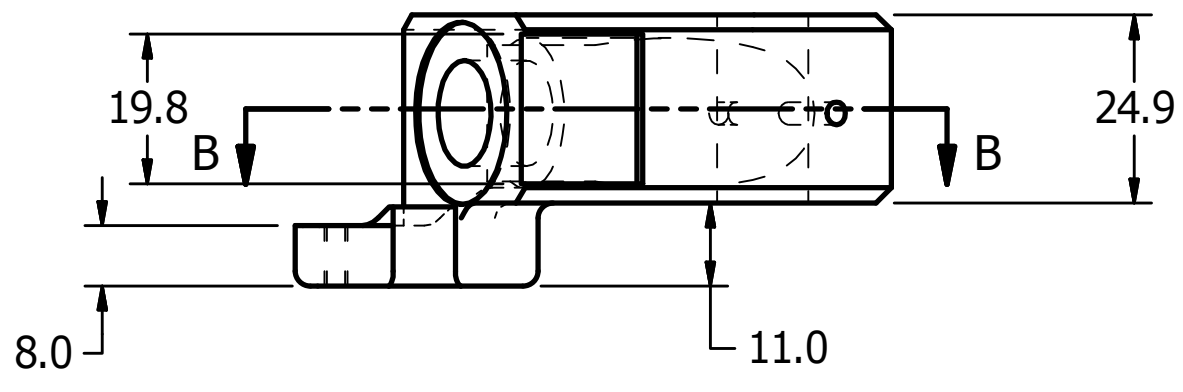
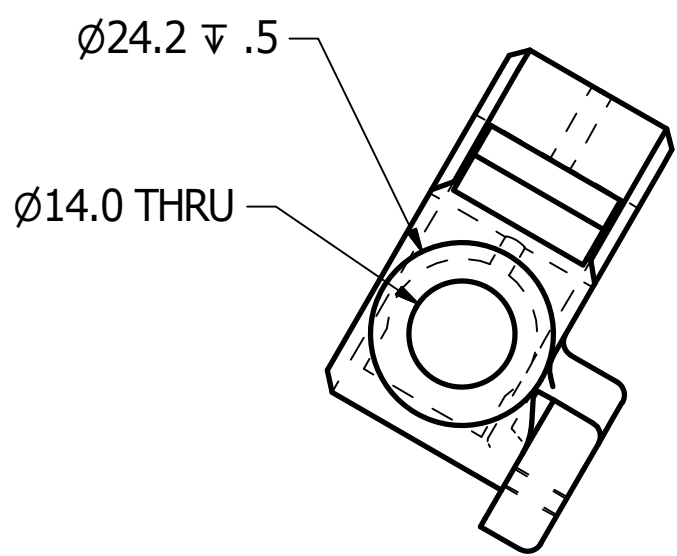
1



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	DESI
	A	DRAWING NUMBER WAS AXSDM006B	9/10/2014	DW
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	6/29/2015	DW



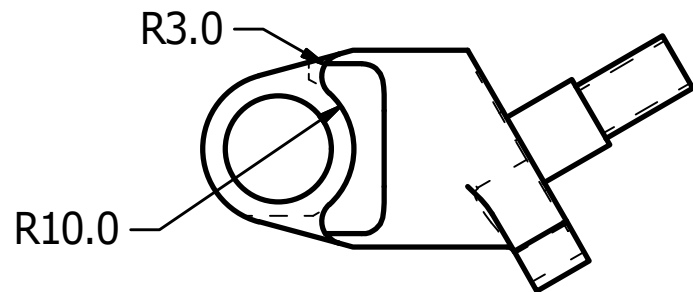
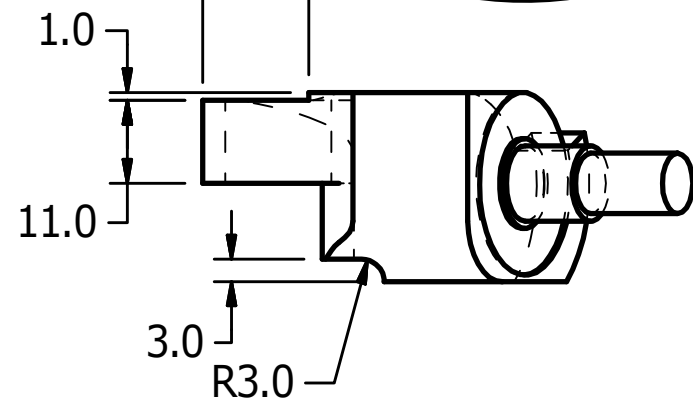
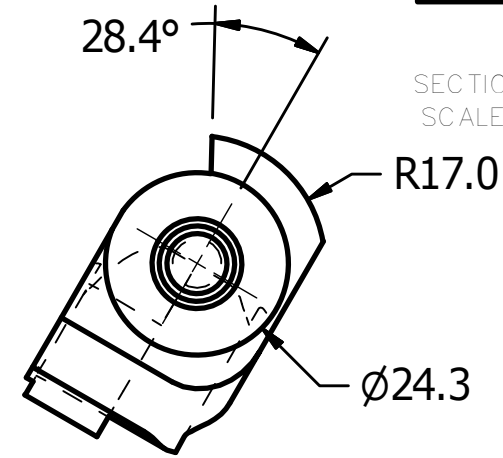
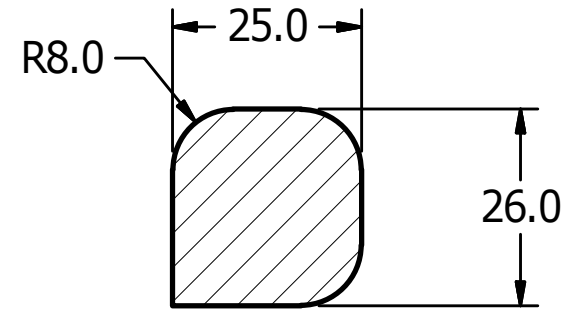
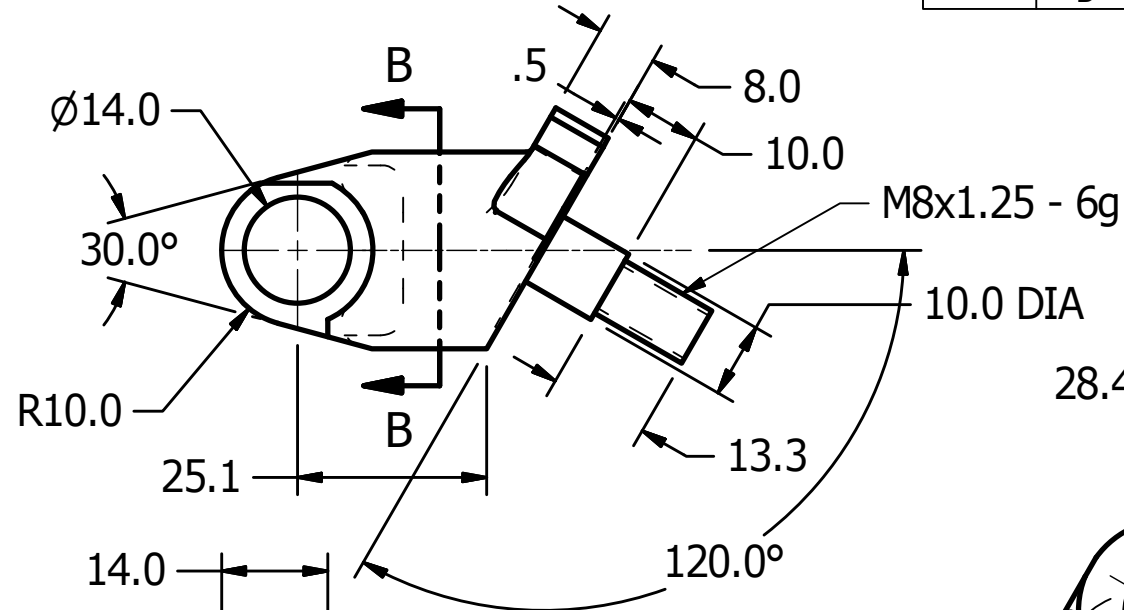
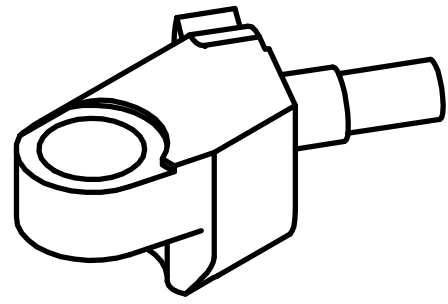
SECTION B-B  
SCALE 1 : 1



SECTION C-C  
SCALE 1 : 1

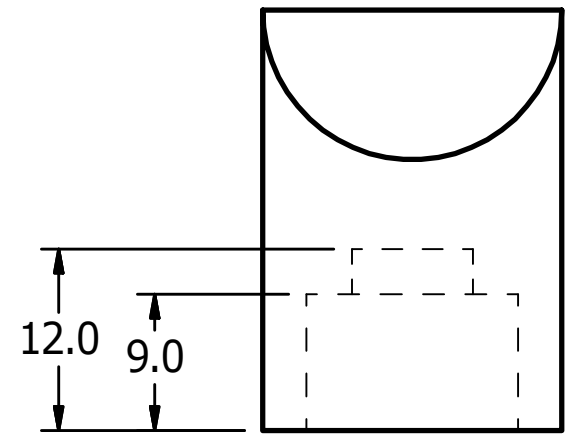
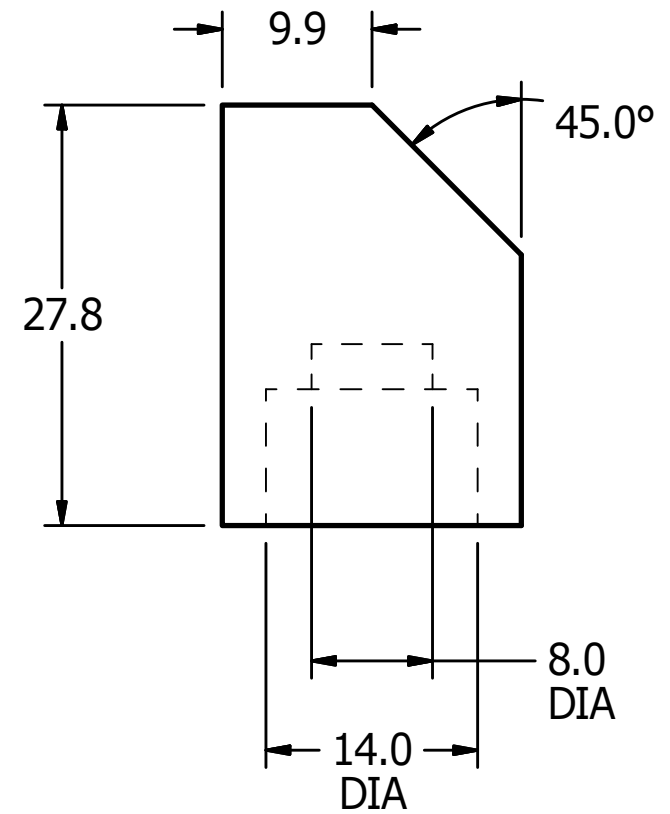
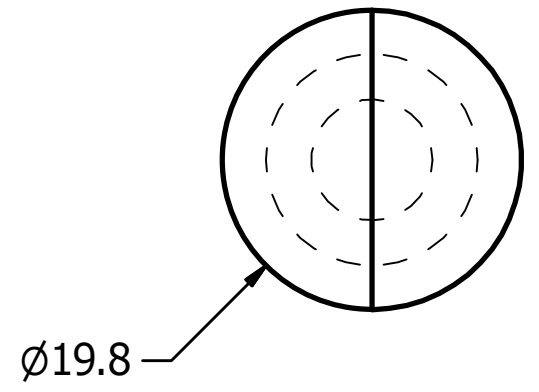
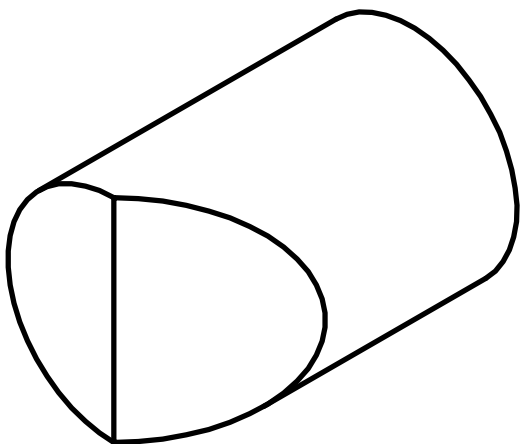
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		SHOULDER SUPPORT, LH	
DRAWN JIM CLEVENGER		8/15/2013		SIZE C	
CHECKED				DRAWING NUMBER 472-3814-1	
MATERIAL Steel		ENG		REV B	
HEAT TREAT		APPROVED		SCALE: 1:1	
FINISH ELECTROLESS NICKEL .008 MAX.				SHEET 1 OF 1	

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM008B	9/10/2014	DW
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	6/29/2015	DW




UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		SHOULDER SUPPORT PIVOT, LH
	DRAWN JIM CLEVINGER	8/15/2013	SIZE B	
	CHECKED		DRAWING NUMBER 472-3815-1	
MATERIAL Steel	ENG		REV B	
HEAT TREAT	APPROVED		SHEET 1 OF 1	
FINISH ELECTROLESS NICKEL .008 MAX.		SCALE: 1:1		

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM016C	9/10/2014	DW



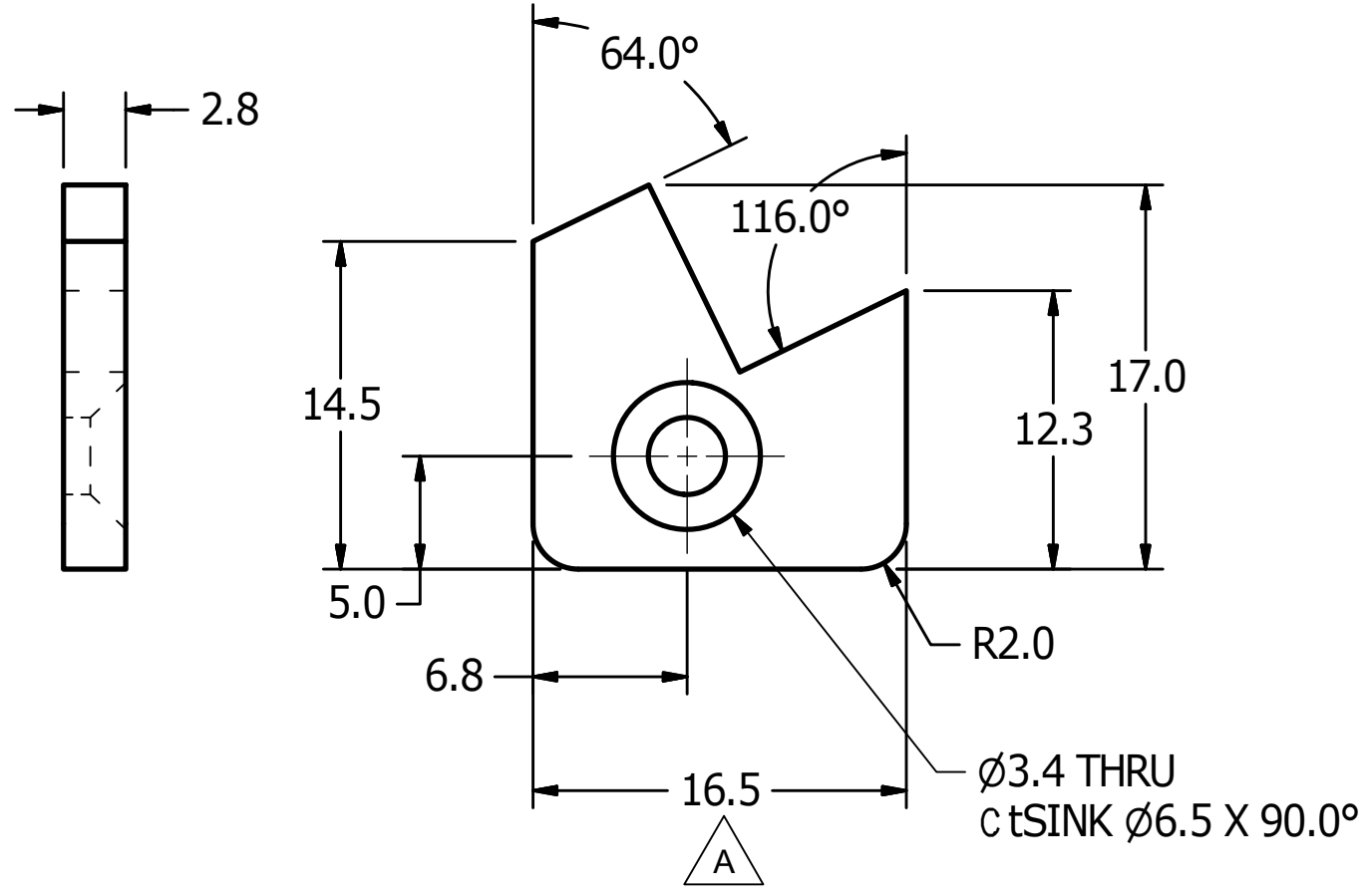
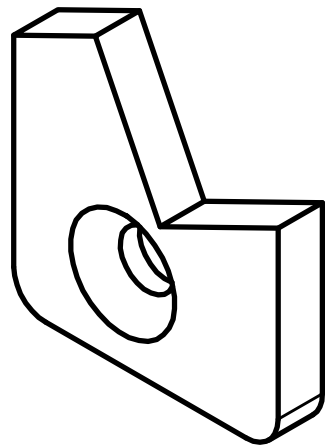
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DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:  
DECIMAL: ANGLES: MACHINED:  
X ±.5 ±.5 ✓  
X.X ±.2  
X.XX ±.1  
ASME Y14.5M - 1994  
DO NOT SCALE DRAWING


<b>VEHICLE RESEARCH and TEST CENTER</b>	
APPROVALS	DATE
DRAWN JIM CLEVINGER	8/20/2013
CHECKED	
ENG	
APPROVED	
FINISH	

	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	FORWARD ROM BUFFER	
SIZE B	DRAWING NUMBER 472-3816	REV A
SCALE: 2X	SHEET 1 OF 1	

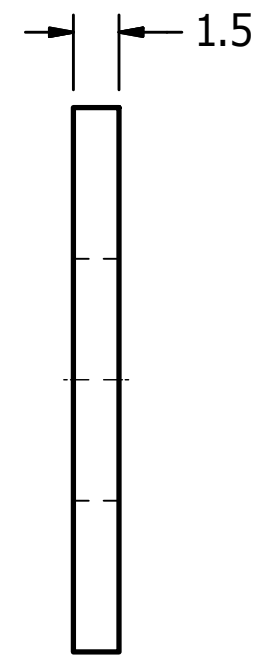
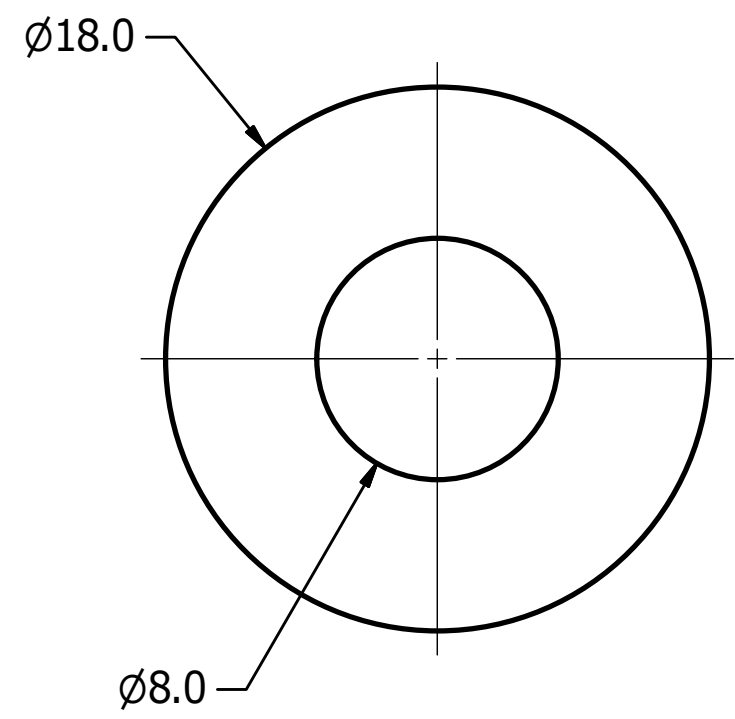
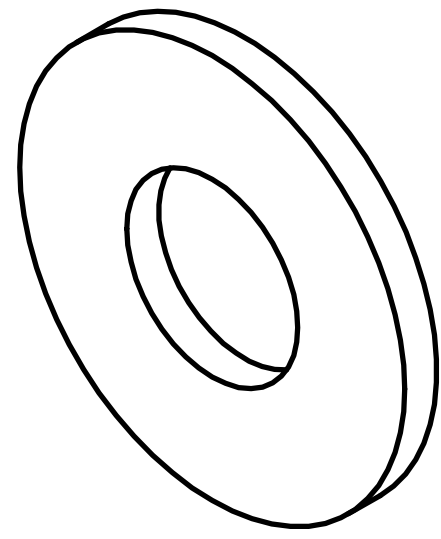
REVISION HISTORY


ZONE	RE	DESCRIPTION	DATE	BY
	A	ADDED DIMENSION 16.5	8/20/2013	DW
	B	DRAWING NUMBER WAS AXSDM025B	9/10/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  BUFFER, LOWER LEFT
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	CHECKED		
MATERIAL Acetal Resin, Black	ENG		
HEAT TREAT	APPROVED		
FINISH			
	SIZE B	DRAWING NUMBER 472-3817-1	REV B
	SCALE: 3X	SHEET 1	OF 1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	DESI
	A	DRAWING NUMBER WAW AXSDM030B	9/10/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		WASHER LINK, 18 x 8 x 1.5	
DRAWN JIM CLEVINGER		8/20/2013		SIZE	
CHECKED				DRAWING NUMBER	
MATERIAL Acetal Resin, Black		ENG		B	
HEAT TREAT		APPROVED		472-3818	
FINISH				SHEET	
				1 OF 1	
				REV	
				A	

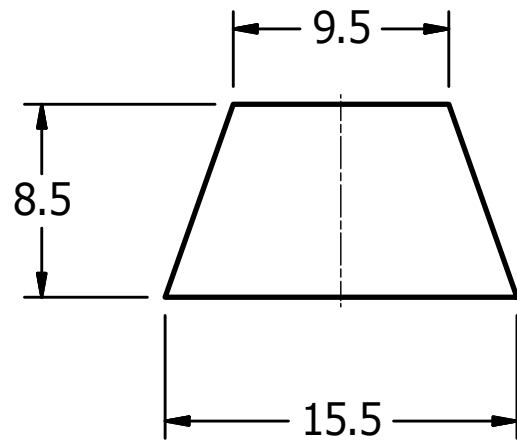
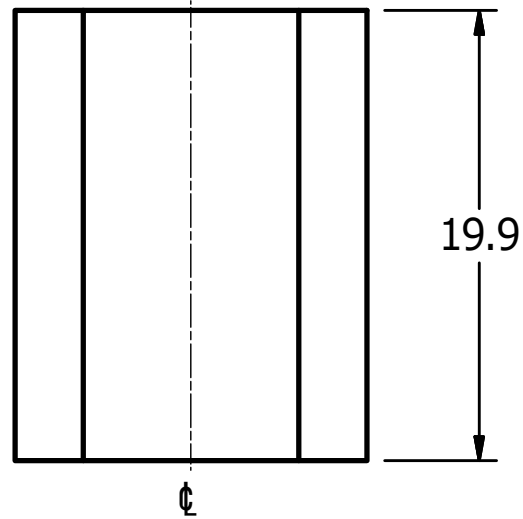
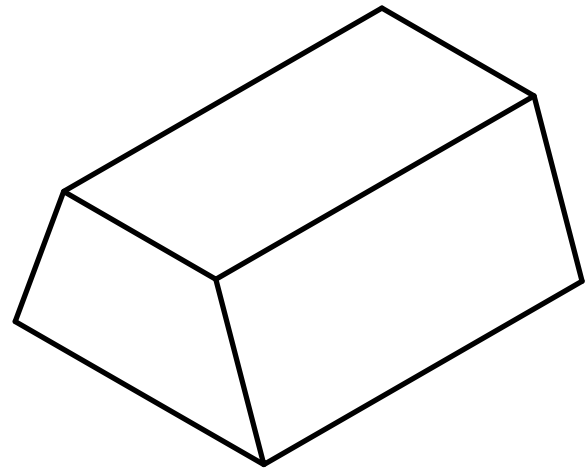
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3

2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS ASXDM017B	9/10/2014	DW



NOTES:

1. DIMENSIONS ARE SYMETRICAL ABOUT  $\phi$

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:  
DECIMAL: ANGLES: MACHINED:  
X ±.5 ±.5 ✓  
X.X ±.2  
X.XX ±.1

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

VEHICLE RESEARCH  
and TEST CENTER

APPROVALS DATE

DRAWN JIM CLEVINGER 8/20/2013

CHECKED

ENG

APPROVED

FINISH



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

REAR ROM BUFFER

SIZE B

SCALE: 3X

DRAWING NUMBER 472-3819 REV A

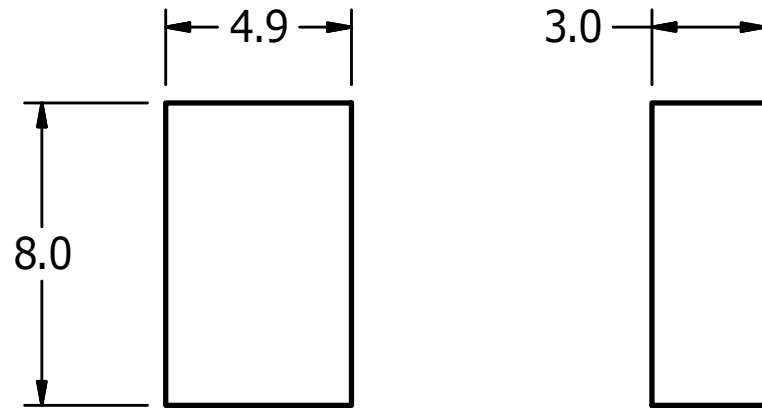
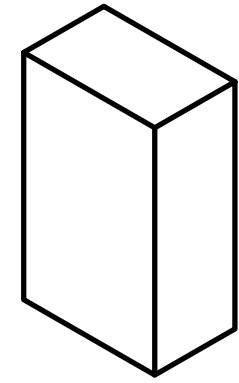
SHEET 1 OF 1

4


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2

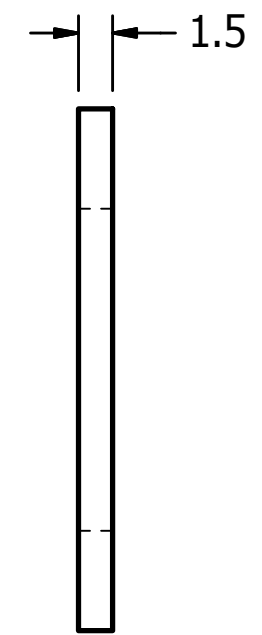
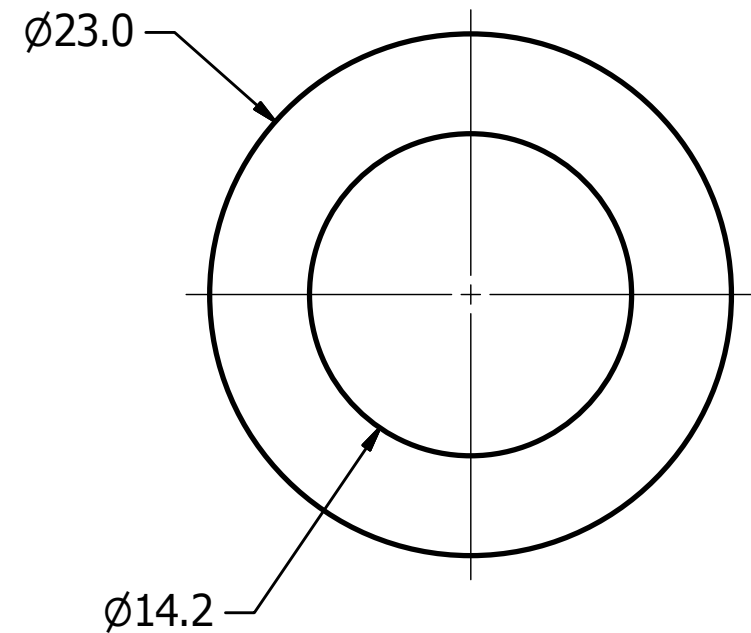
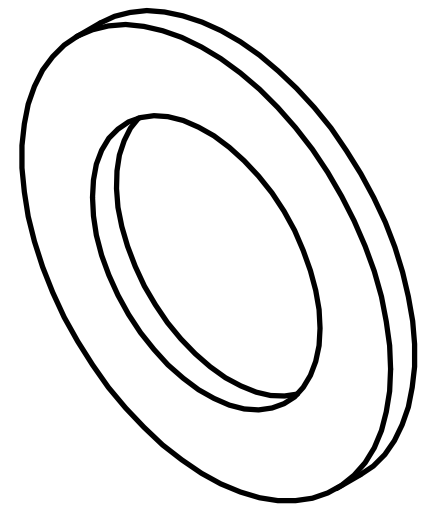
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REVISION HISTORY				
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	A	DRAWING NUMBER WAS AXSDM024B	9/10/2014	DW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  <b>BUFFER, VERTICAL</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	MATERIAL Acetal Resin, Black	ENG	
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3820
FINISH			REV A
			SCALE: 5X
			SHEET 1 OF 1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM031B	9/10/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	SIZE B
	MATERIAL Acetal Resin, Black	ENG	DRAWING NUMBER 472-3821
HEAT TREAT	APPROVED	SCALE: 3X	SHEET 1 OF 1
FINISH			



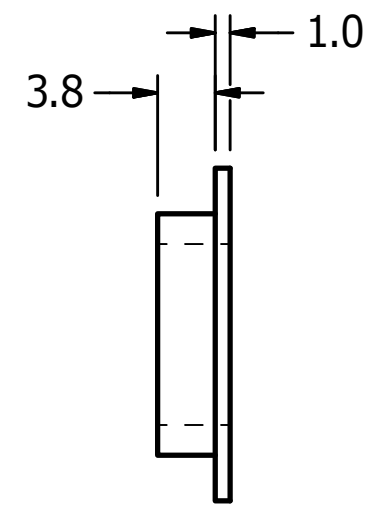
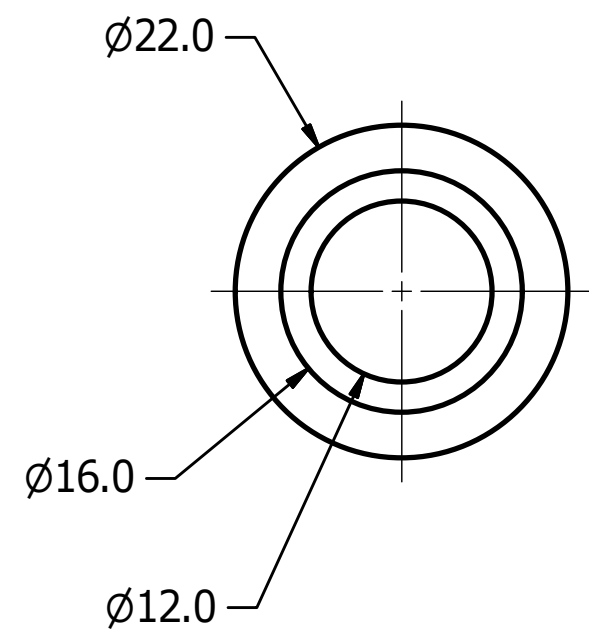
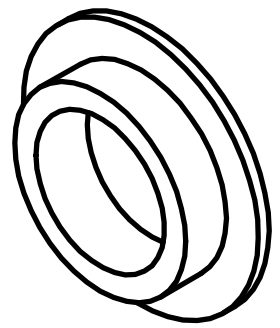
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	DESI
	A	DRAWING NUMBER WAS AXSDM020B	9/10/2014	DW




B

B

A

A

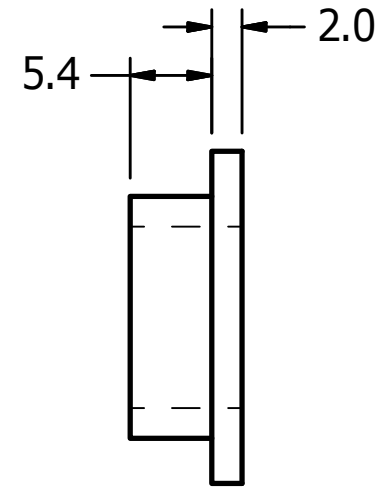
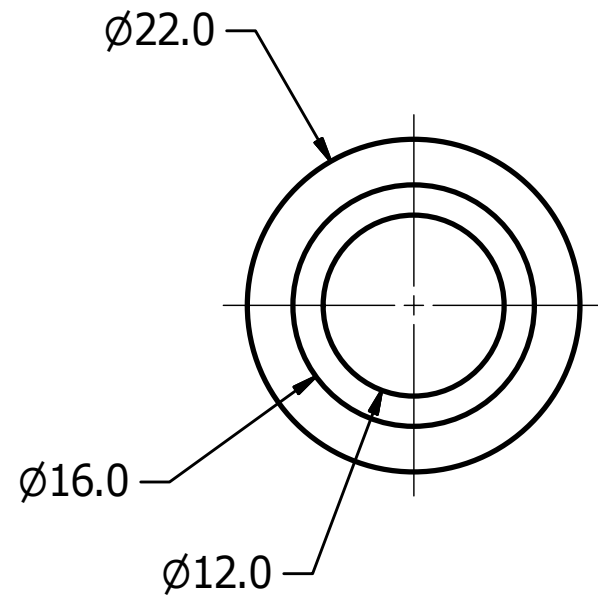
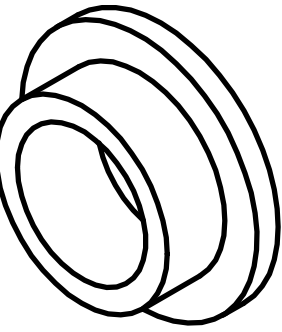
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/21/2013	
	CHECKED		
MATERIAL Acetal Resin, Black	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3822
FINISH			REV A
			SCALE: 2X
			SHEET 1 OF 1

4

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2

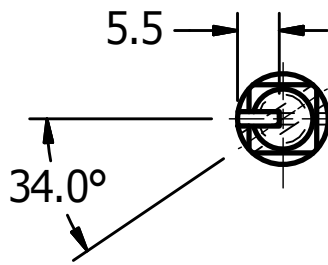
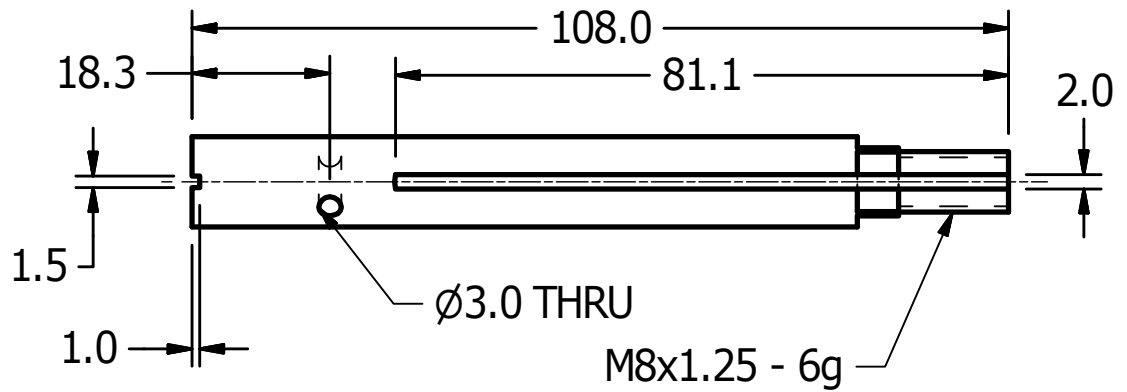
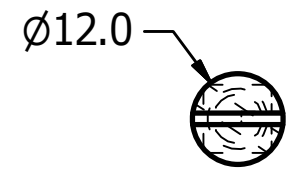
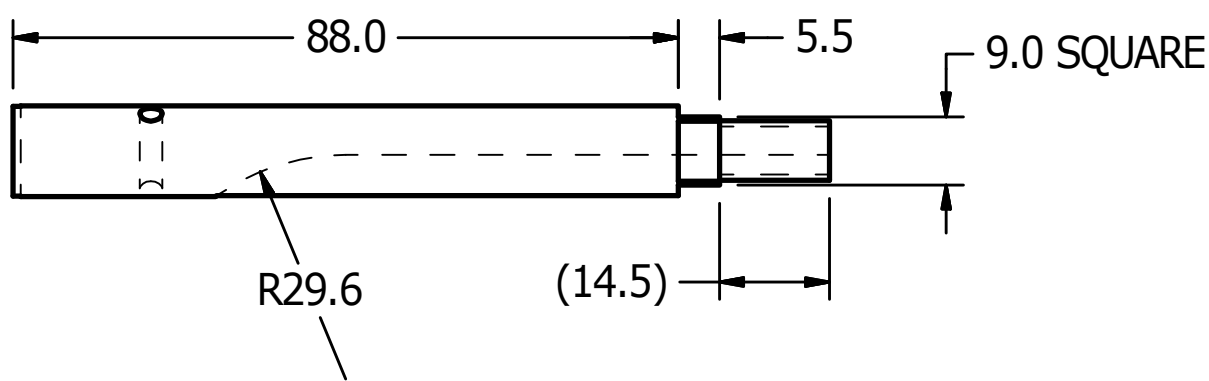
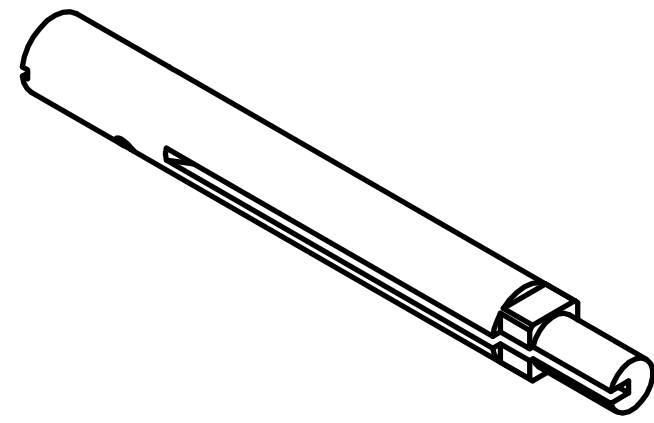
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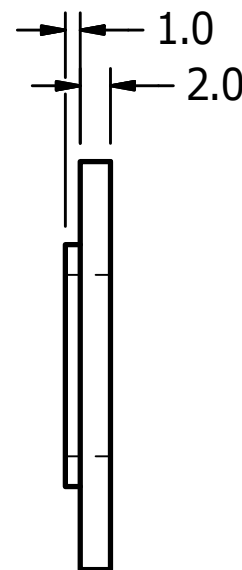
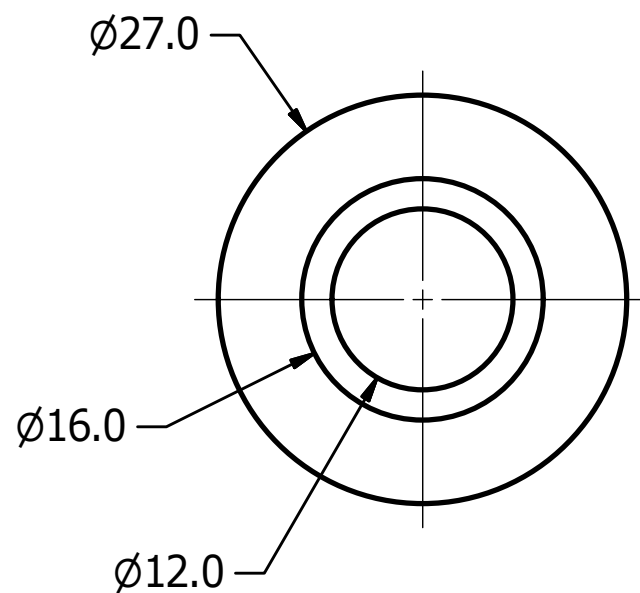
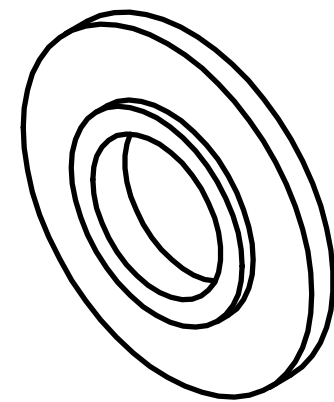
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM019B	9/10/2014	DW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 $\sqrt{1.6}$ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH          and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS DRAWN JIM CLEVINGER CHECKED		DATE 8/21/2013		SPRING HOUSING BUSHING, LOWER	
MATERIAL Acetal Resin, Black		ENG APPROVED		SIZE B	DRAWING NUMBER 472-3823
HEAT TREAT FINISH				SCALE: 2X	SHEET 1 OF 1
				REV A	


REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM001B	9/10/2014	DW
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	6/30/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
MATERIAL Steel		APPROVALS	DATE		
HEAT TREAT		DRAWN JIM CLEVINGER	8/21/2013	SIZE B	DRAWING NUMBER 472-3824
FINISH ELECTROLESS NICKEL .008 MAX.		CHECKED		SCALE: 1:1	
		ENG		SHEET 1 OF 1	
		APPROVED			



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM005C	9/10/2014	DW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/21/2013	SPRING HOUSING WASHER, LOWER
	CHECKED		
MATERIAL Acetal Resin, Black	ENG	SIZE B	DRAWING NUMBER 472-3825
HEAT TREAT	APPROVED	SCALE: 2X	REV A
FINISH		SHEET 1 OF 1	

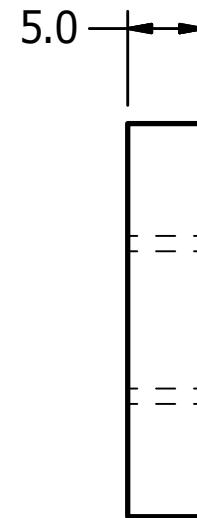
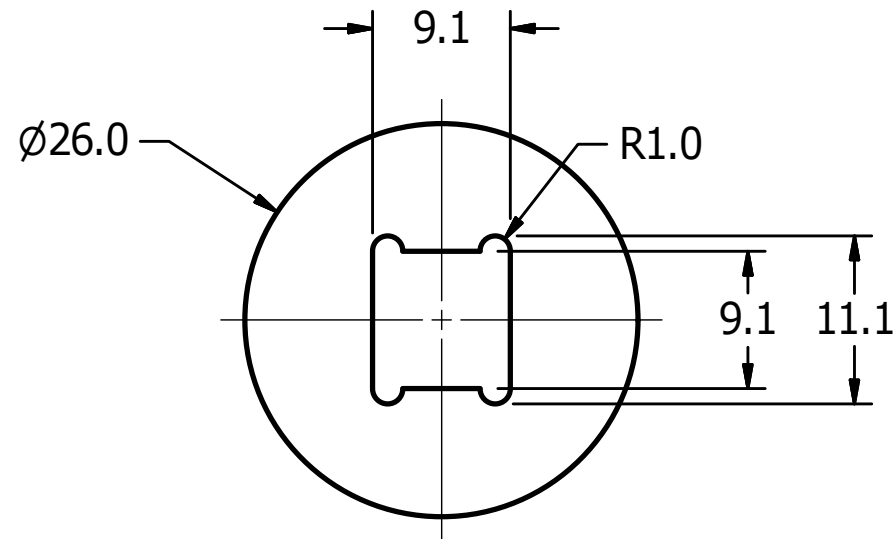
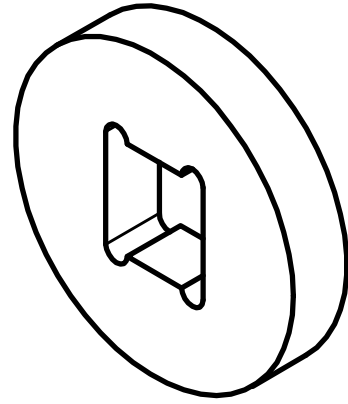
4

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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM004B	9/10/2014	DW




B

B

A

A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/21/2013	
	CHECKED		
MATERIAL Aluminum 6061	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3826
FINISH ANODIZE			SCALE: 2X
			SHEET 1 OF 1
			REV A

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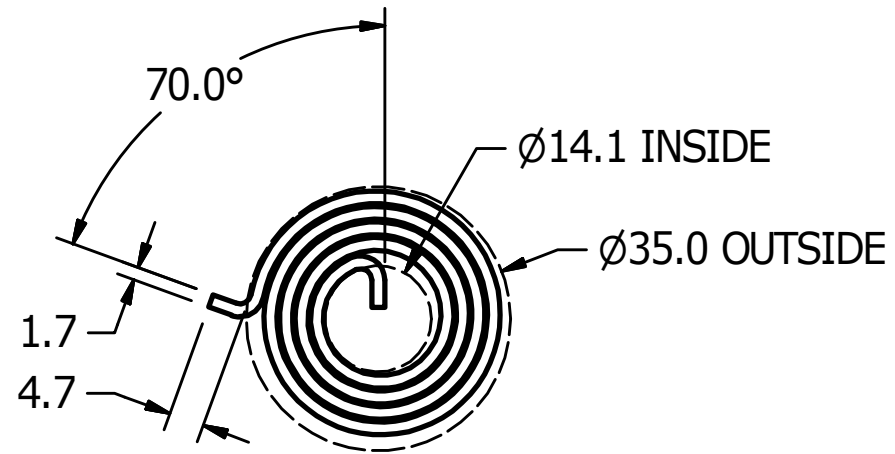
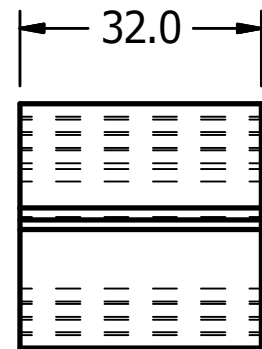
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1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM018	9/10/2014	DW

B

B




A

A

A

A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  SPRING
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/21/2013	
	CHECKED		
MATERIAL Steel, SPRING	ENG		SIZE: B DRAWING NUMBER: 472-3827 REV: A
HEAT TREAT	APPROVED		
FINISH			
		SCALE: 1:1	SHEET: 1 OF 1

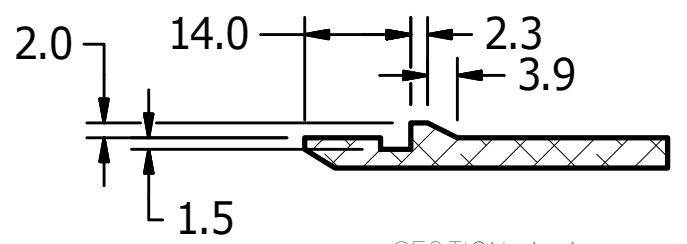
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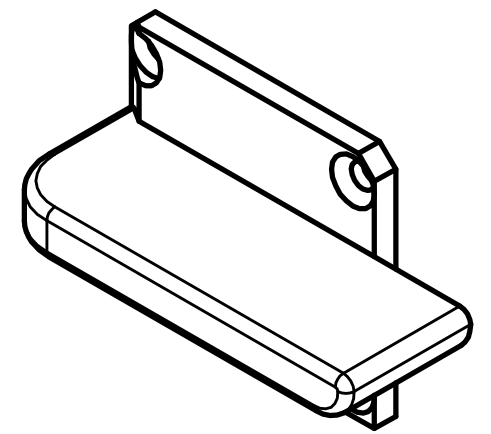
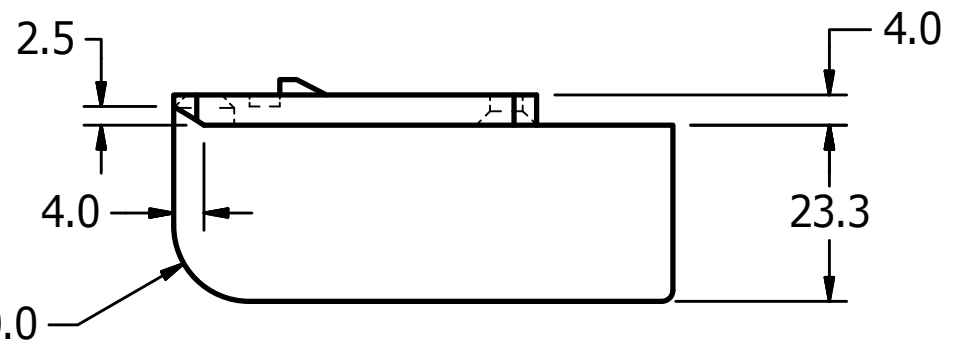
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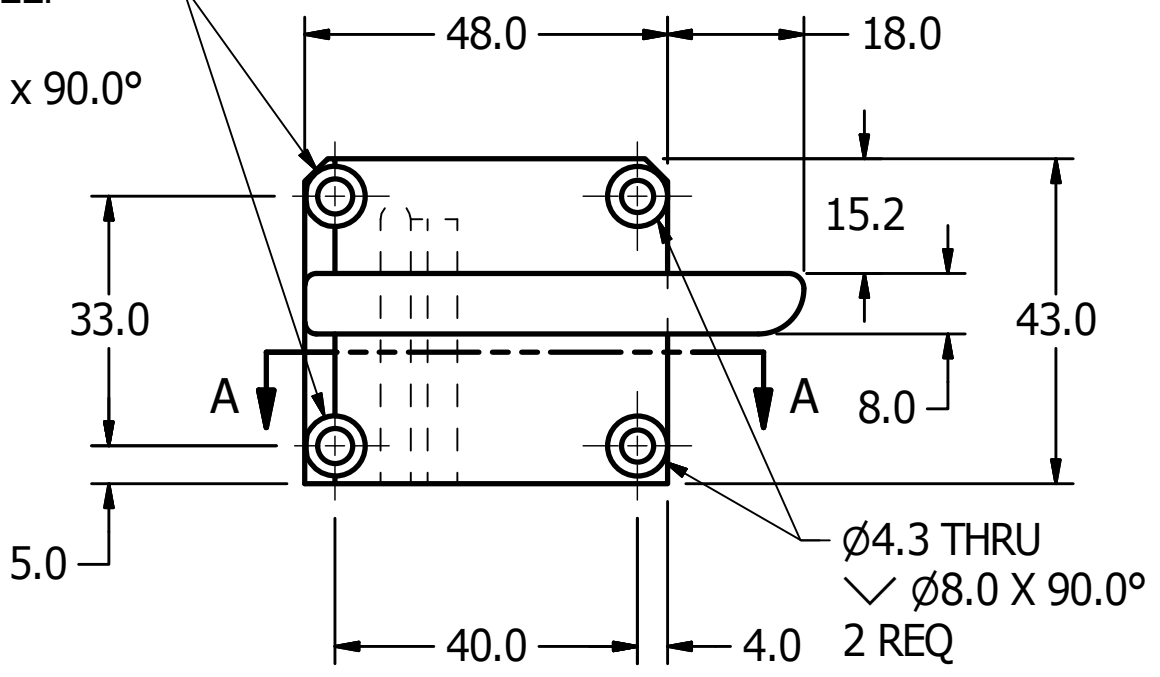
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ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM014B	9/10/2014	DW



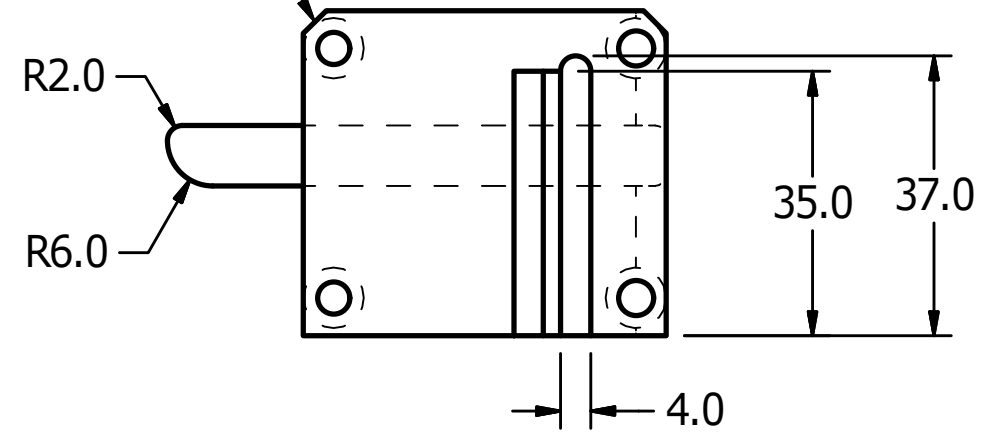
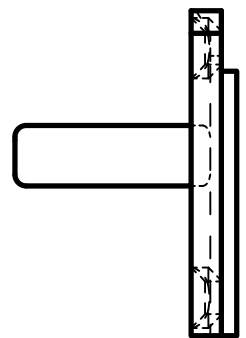
SECTION A-A  
SCALE 1 : 1




Ø8.0 x 2.3 DEEP  
Ø4.3 THRU  
CtSINK Ø8.0 x 90.0°  
2 REQ



3.0 X 45.0° CHAMFER



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
MATERIAL Aluminum 6061	DRAWN JIM CLEVINGER	8/21/2013	RIB GUIDE LOWER, LH
HEAT TREAT	CHECKED		SIZE B
FINISH ANODIZE	ENG		DRAWING NUMBER 472-3828-1
	APPROVED		REV A
			SCALE: 1:1
			SHEET 1 OF 1

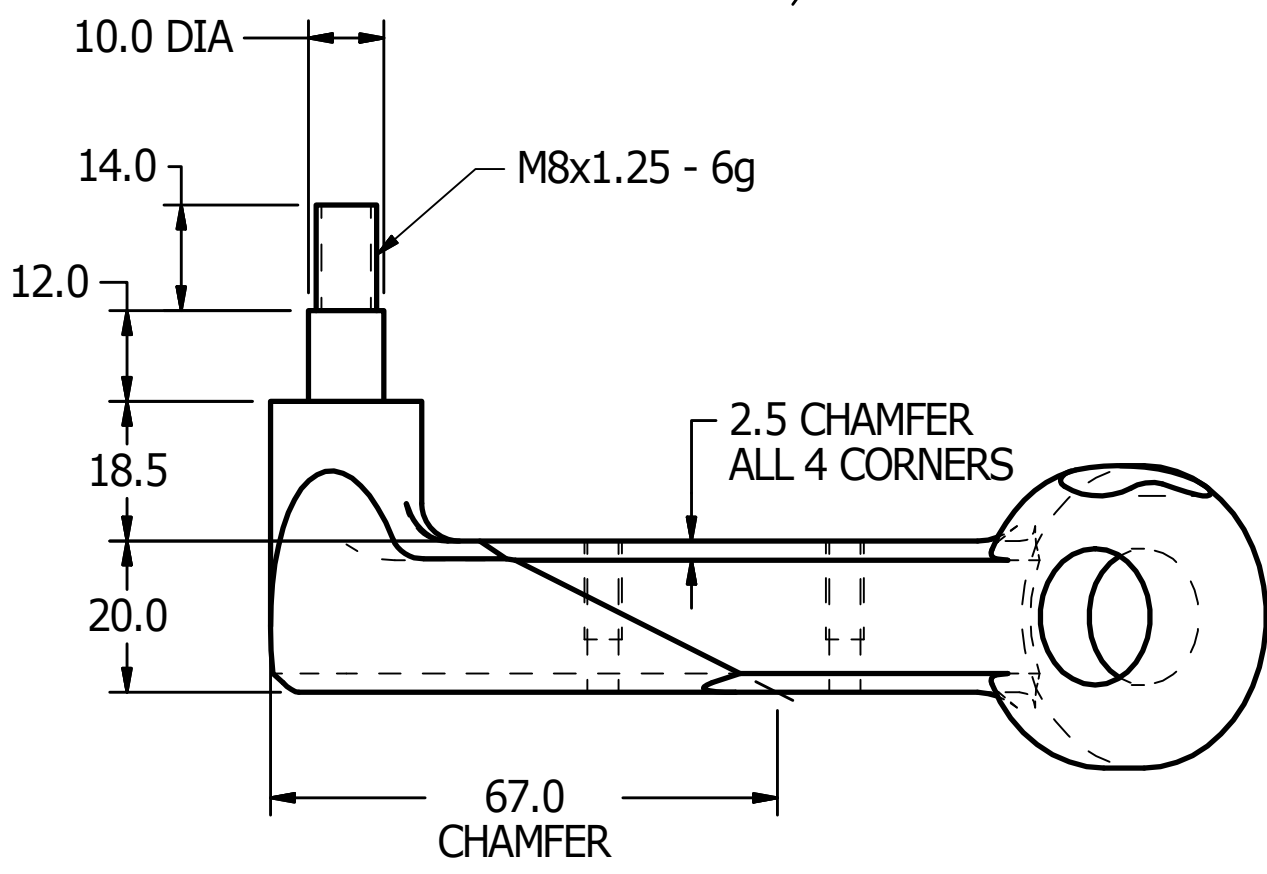
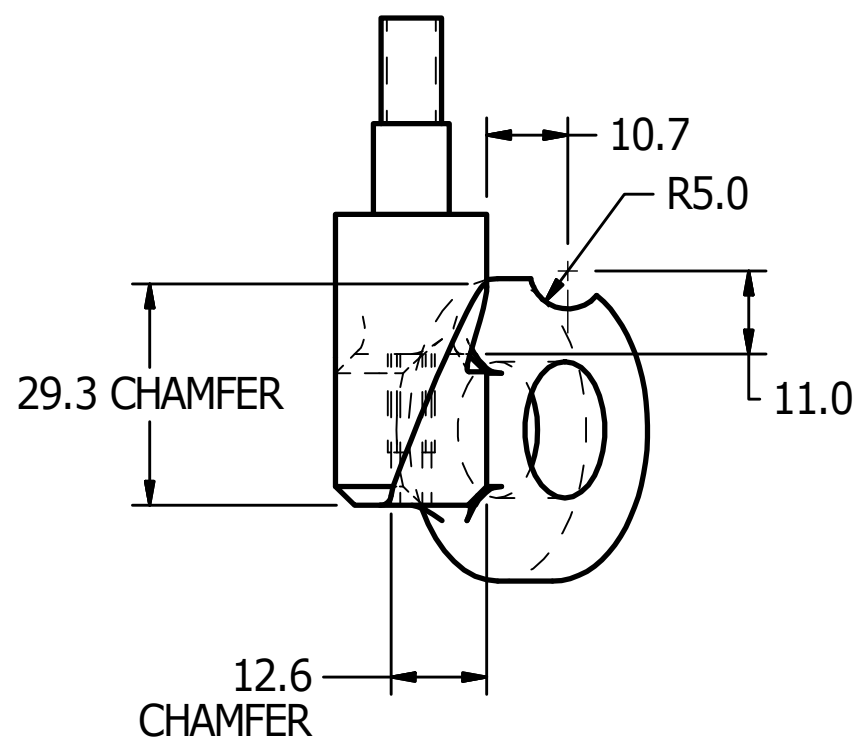
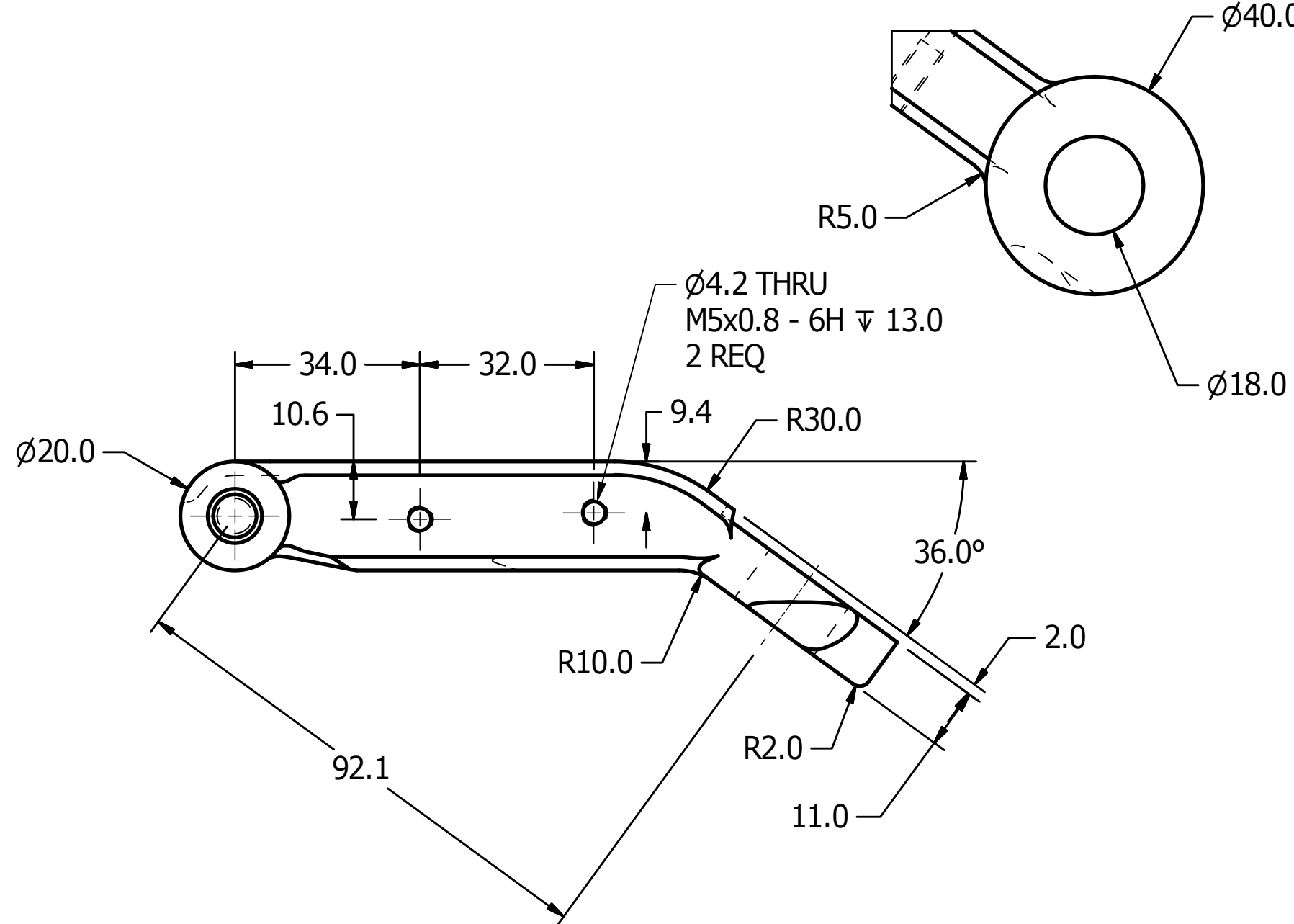
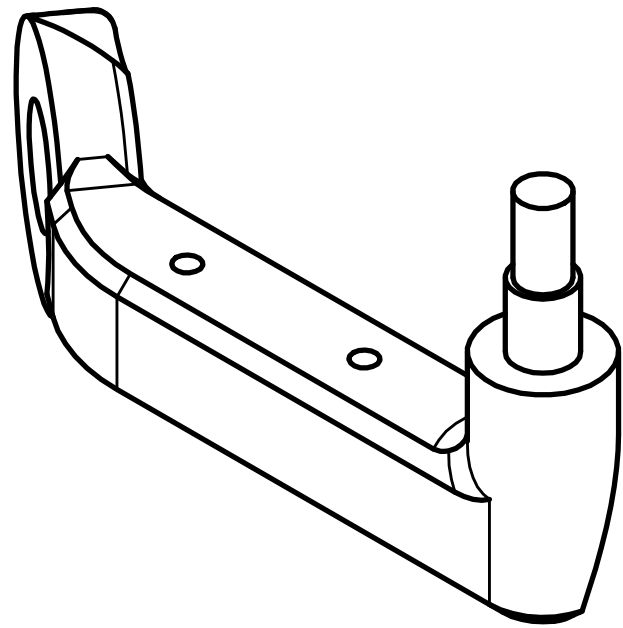
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ZONE		REV	DESCRIPTION	DATE	BY
		A	DRAWING NUMBER WAS AXSDM012B	9/10/2014	DW
		B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	6/30/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		ARM LINK, LH	
DRAWN JIM CLEVINGER		8/15/2013		DRAWING NUMBER 472-3829-1	
CHECKED				REV B	
MATERIAL Steel		ENG		SIZE C	
HEAT TREAT		APPROVED		SCALE: 1:1	
FINISH ELECTROLESS NICKEL .008 MAX.				SHEET 1 OF 1	

4

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2

1



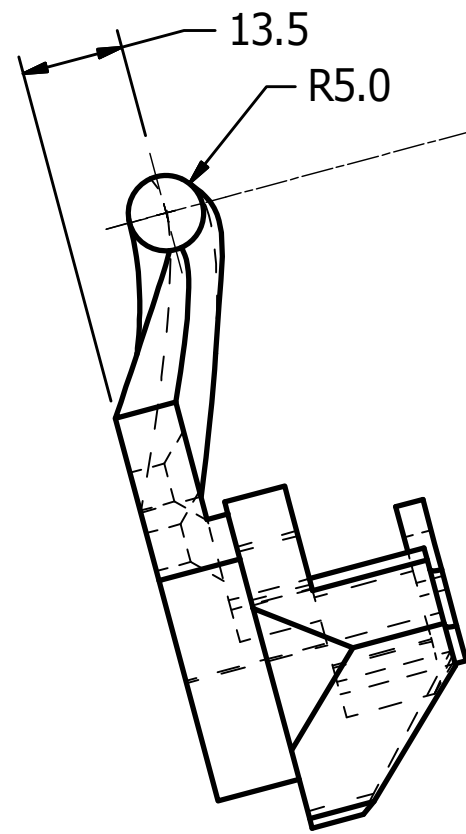
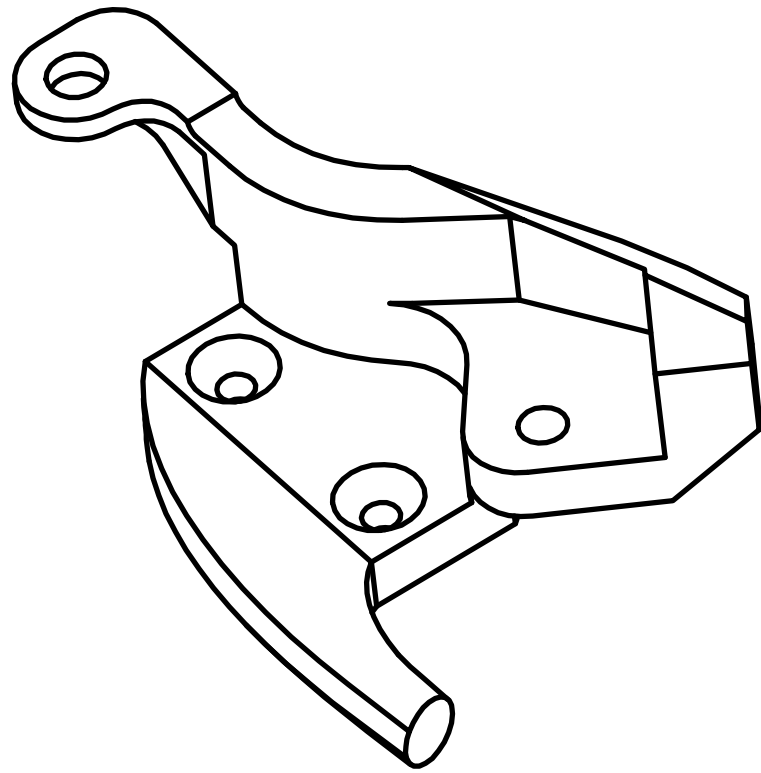
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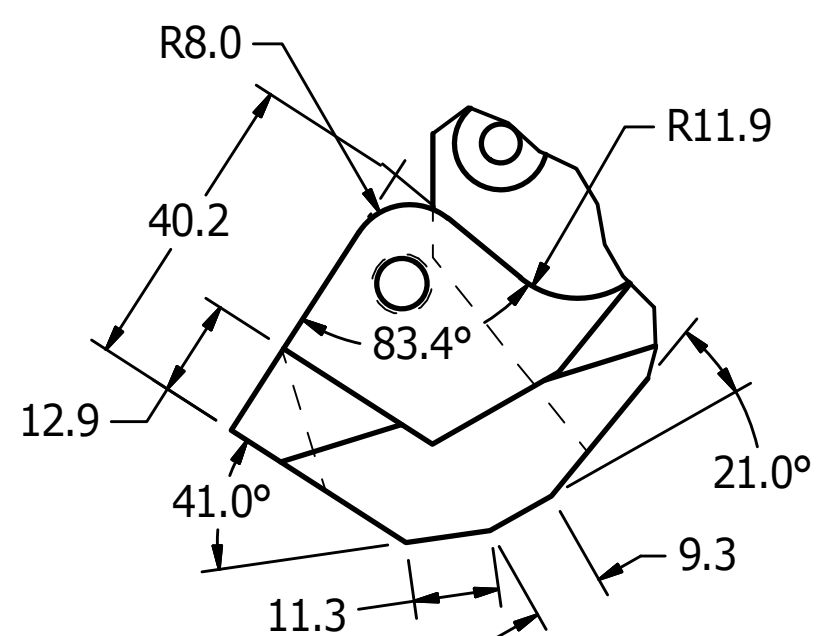
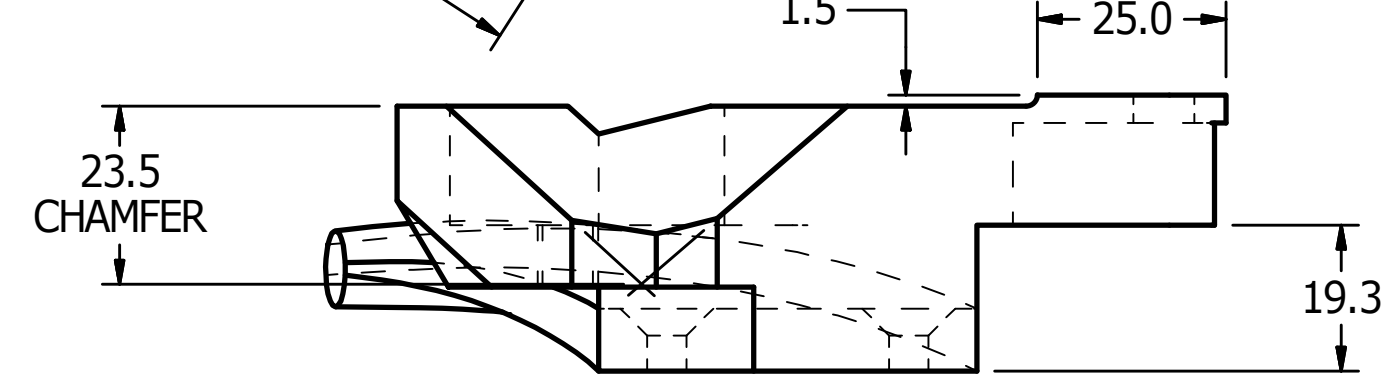
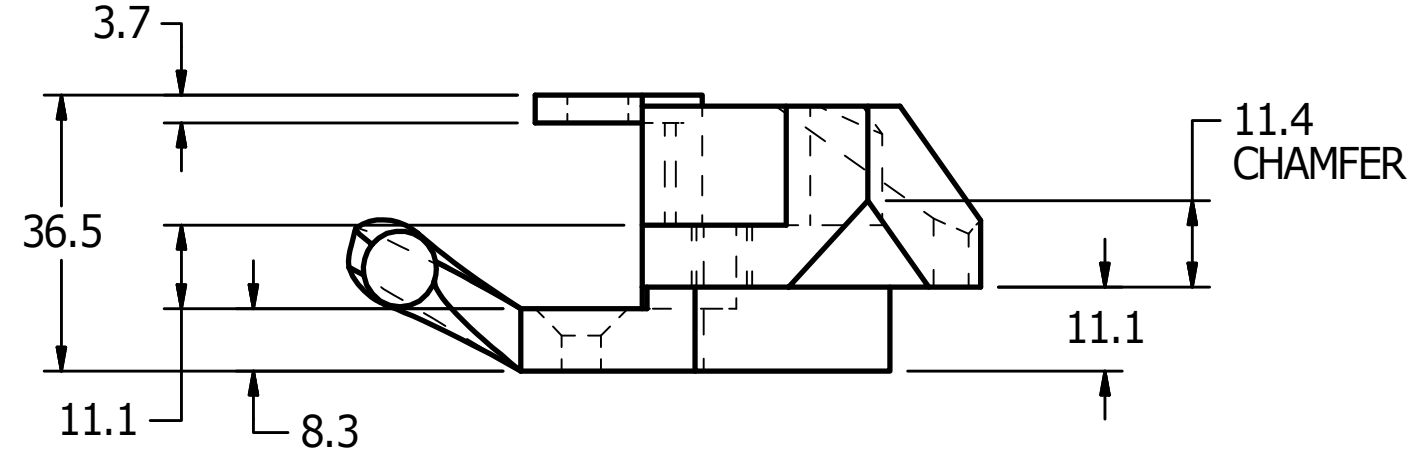
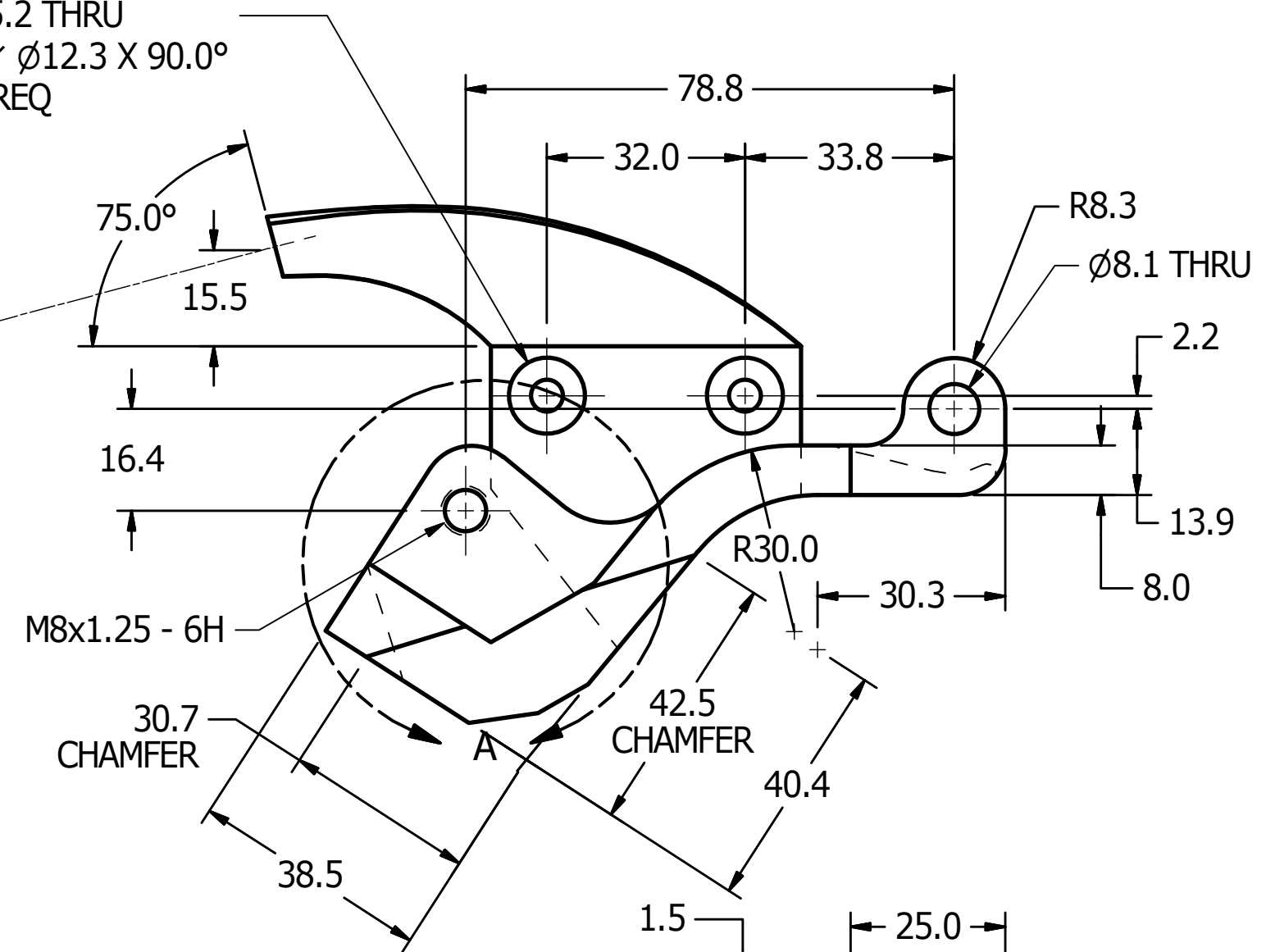
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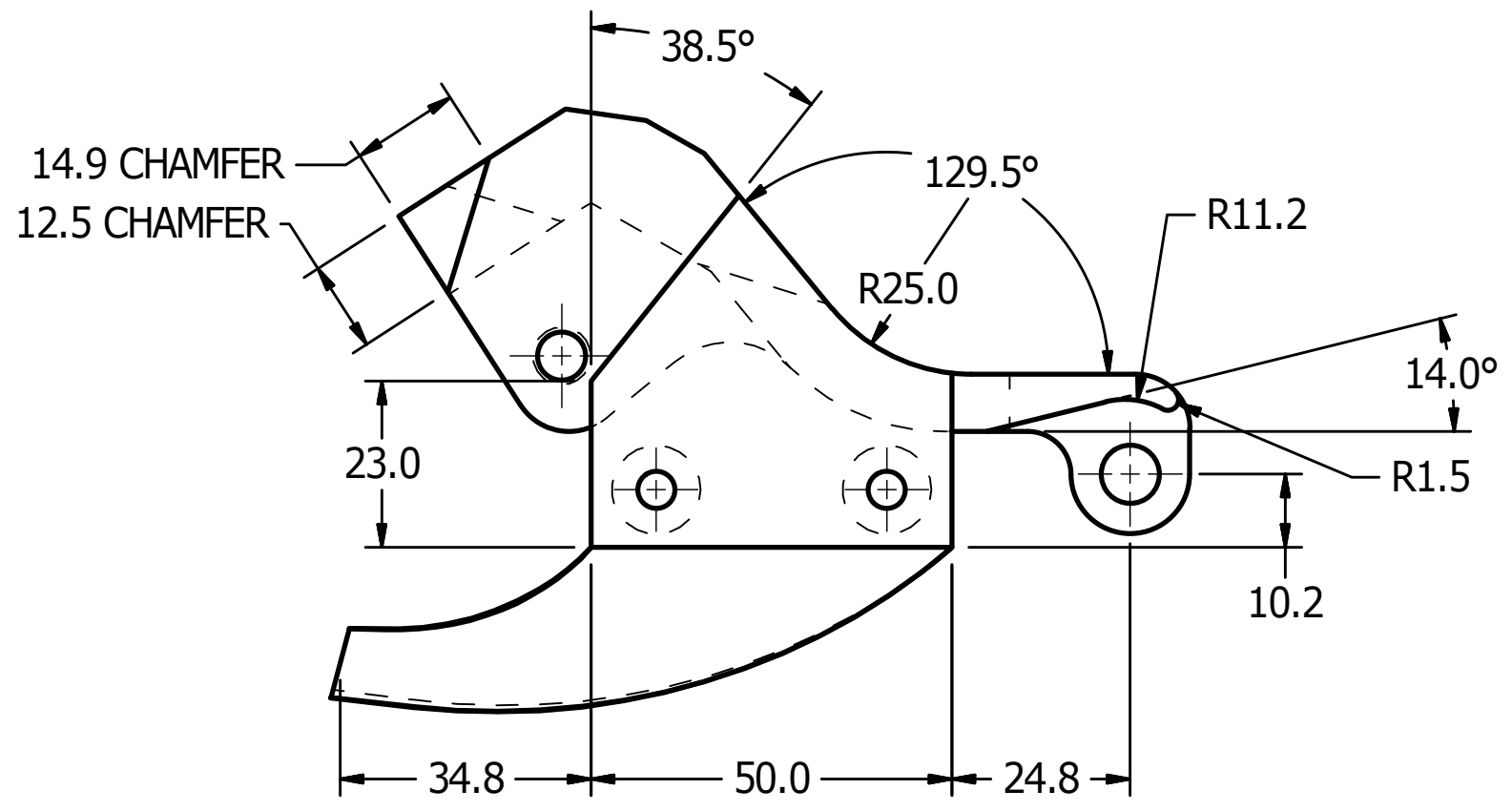
ZONE		REV	DESCRIPTION	DATE	BY
		A	DRAWING NUMBER WAS AXSDM010B	9/10/2014	DW



Ø5.2 THRU  
 ✓ Ø12.3 X 90.0°  
 2 REQ



DETAIL A  
 SCALE 1 : 1



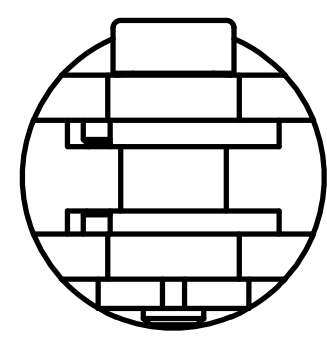
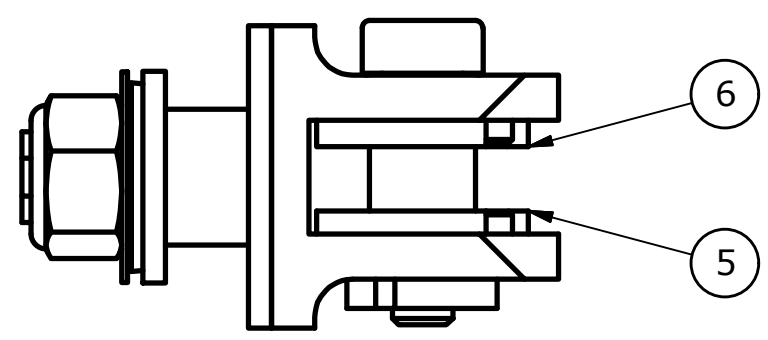
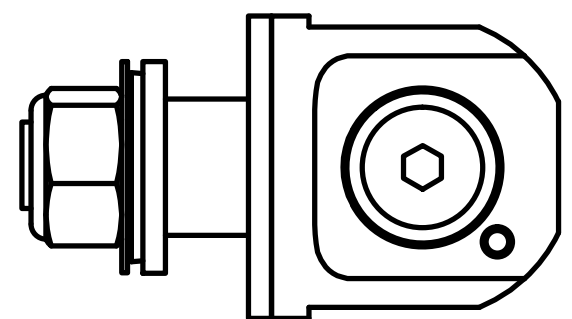
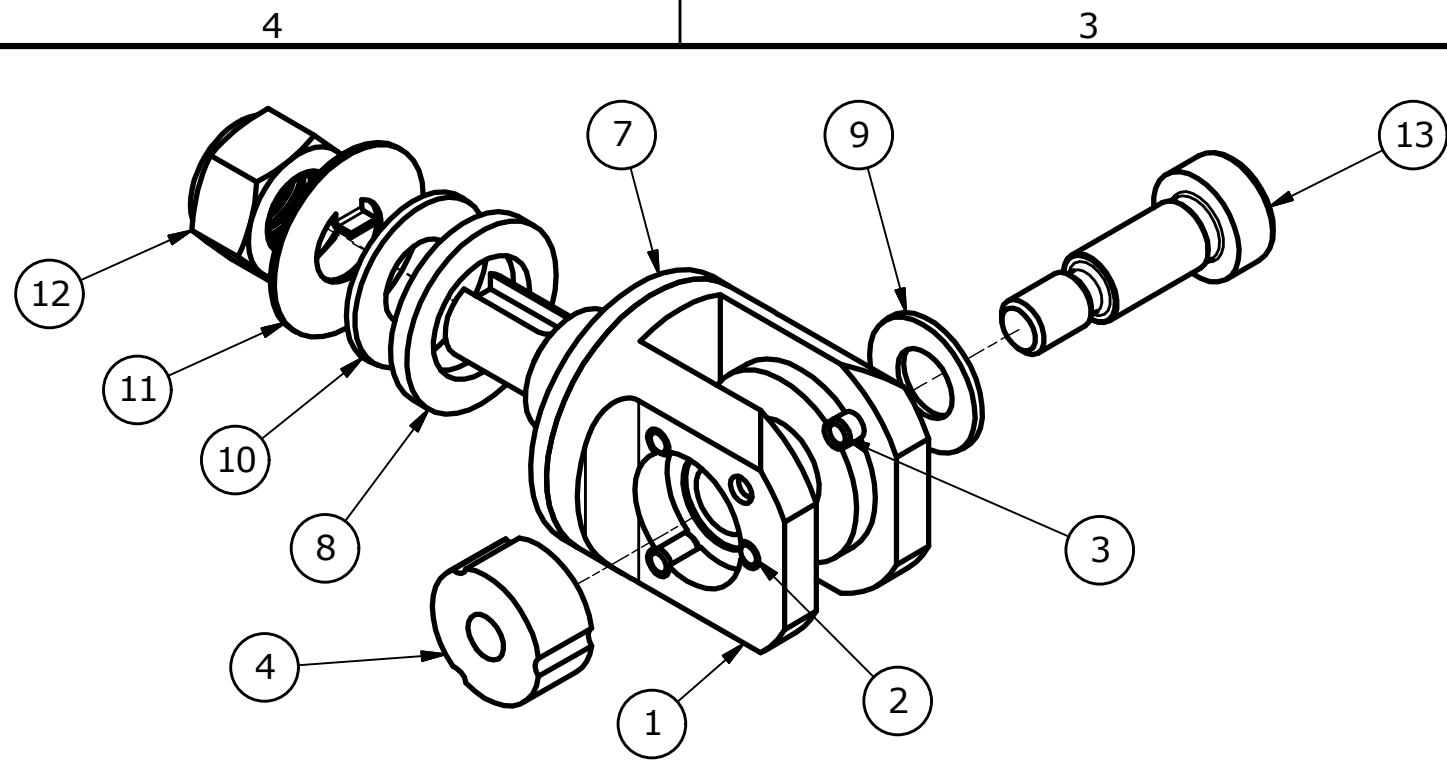
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		SCAPULA, LH	
DRAWN JIM CLEVINGER		8/19/2013		DRAWING NUMBER 472-3830-1	
CHECKED				REV A	
MATERIAL Steel		ENG		SIZE C	
HEAT TREAT		APPROVED		SCALE: 1:1	
FINISH				SHEET 1 OF 1	

4

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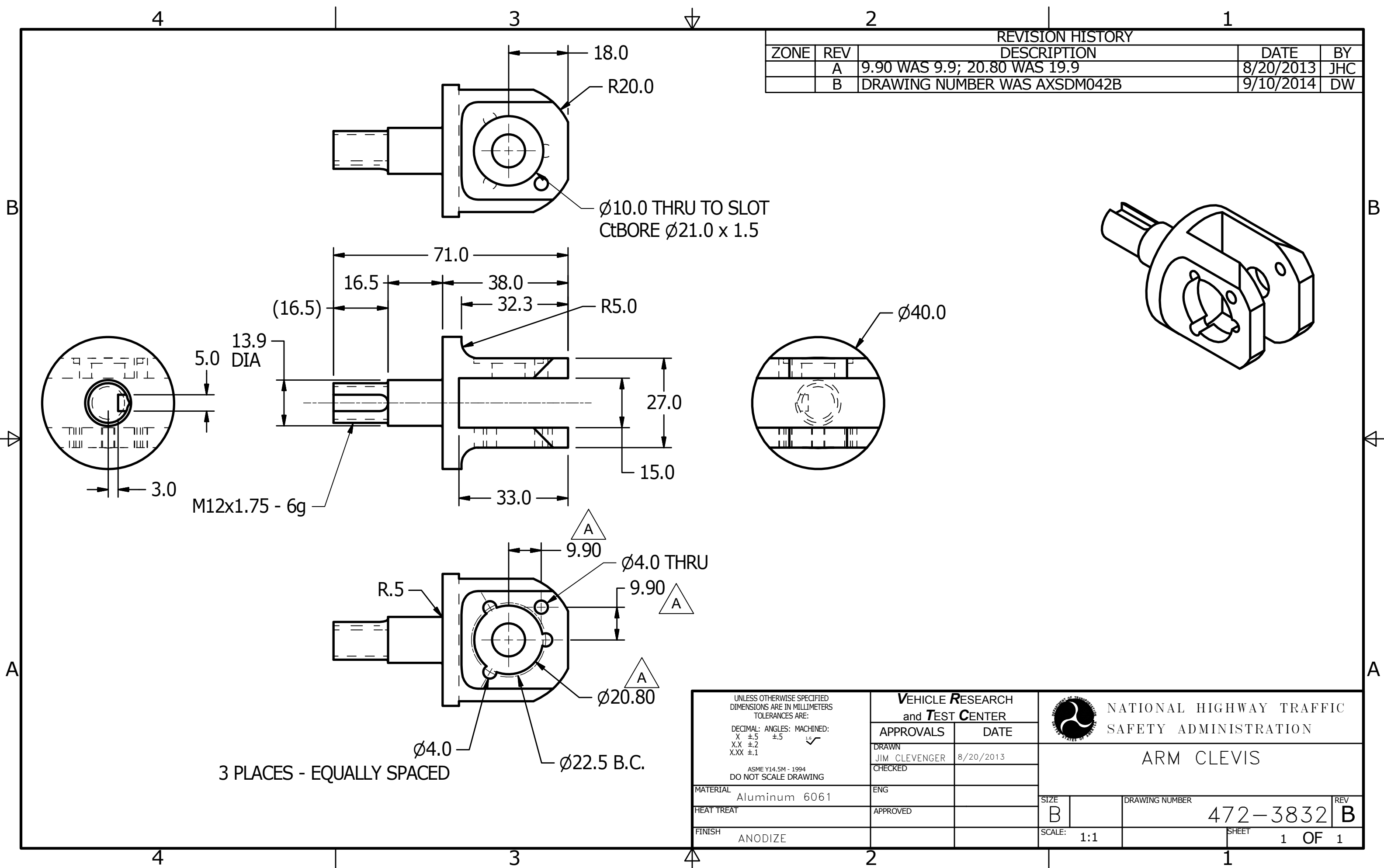
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM500; IN PARTS LIST 472-3832 WAS AXSDB042B, 472-3833 WAS AXSDM043B, 472-3834 WAS AXSDM056, 472-3835 WAS AXSDM045B, 472-3836 WAS AXSDM028B, 472-3837 WAS AXSDM029B, & 472-3838 WAS AXSDM510V	9/10/2014	DW

A	13	1	5001172V	SCREW, SHSS M10 x 20mm LG.
	12	1	5001177V	LOCKNUT, NYLON, M12 x 1.75
	11	1	472-3838	TABBED WASHER
	10	1	5001167V	DISC SPRING WASHER, 25 x 12.2 x 1.25
A	9	1	5001166V	DISC SPRING WASHER, 20 x 10.2 x 1.1
	8	1	472-3837	WASHER, ARM CLEVIS
	7	1	472-3836	BUSHING, ARM PIVOT
	6	1	472-3835	BUSHING, UPPER ARM
	5	1	472-3834	WASHER, UPPER ARM
A	4	1	472-3833	NUT, UPPER ARM PIVOT
	3	2	5000524	PIN, DOWEL M4 x 8
	2	3	5000680	PIN, DOWEL M4 x 6
A	1	1	472-3832	ARM CLEVIS

ITEM	QTY	PART NUMBER	DESCRIPTION
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b> APPROVALS: _____ DATE: _____ DRAWN: JIM CLEVINGER 8/7/2013 CHECKED: _____ ENG: _____ APPROVED: _____		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION <b>ARM CLEVIS ASSEMBLY</b>	
MATERIAL:	HEAT TREAT:	FINISH:	SIZE: B	DRAWING NUMBER: 472-3831	REV: A
			SCALE: 1:1	SHEET 1 OF 1	

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	9.90 WAS 9.9; 20.80 WAS 19.9	8/20/2013	JHC
	B	DRAWING NUMBER WAS AXSDM042B	9/10/2014	DW




M12x1.75 - 6g

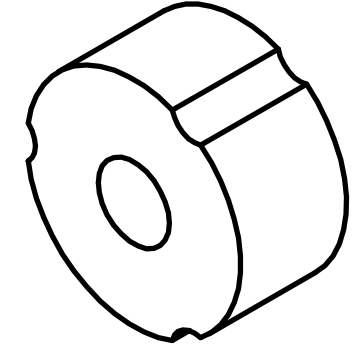
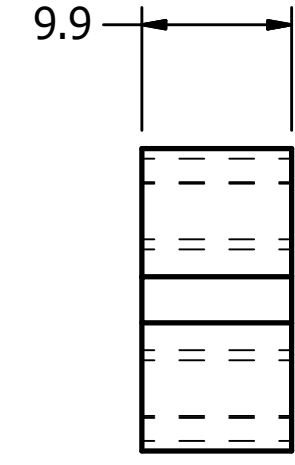
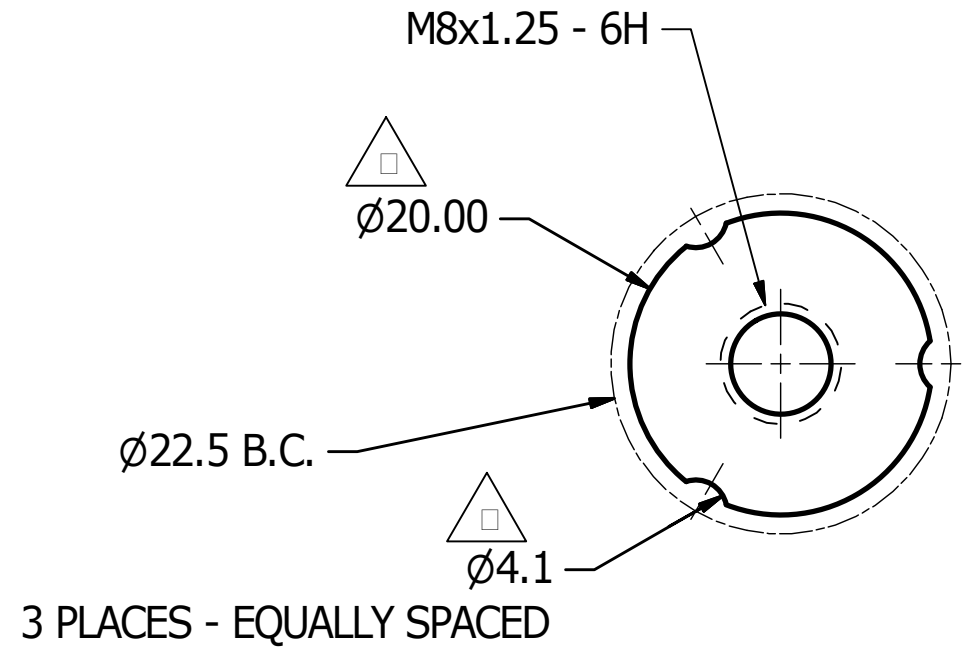
3 PLACES - EQUALLY SPACED


UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:  
DECIMAL: X  $\pm 0.5$ ; ANGLES:  $\pm 0.5$ ; MACHINED: X.X  $\pm 0.2$ ; X.XX  $\pm 0.1$   
ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

<b>VEHICLE RESEARCH and TEST CENTER</b>	
APPROVALS	DATE
DRAWN JIM CLEVINGER	8/20/2013
CHECKED	
ENG	
APPROVED	
FINISH ANODIZE	

 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
ARM CLEVIS	
SIZE B	DRAWING NUMBER 472-3832
SCALE: 1:1	SHEET 1 OF 1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	1	4.1 WAS 4.0; 20.00 WAS 20.0	8/20/2013	JHC
	A	DRAWING NUMBER WAS AXSDM043B	9/10/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
MATERIAL	303 S.S.	DRAWN JIM CLEVINGER CHECKED	8/20/2013
HEAT TREAT		ENG	
FINISH		APPROVED	
		SIZE	DRAWING NUMBER
		B	472-3833
		SCALE: 2X	SHEET 1 OF 1

4

3

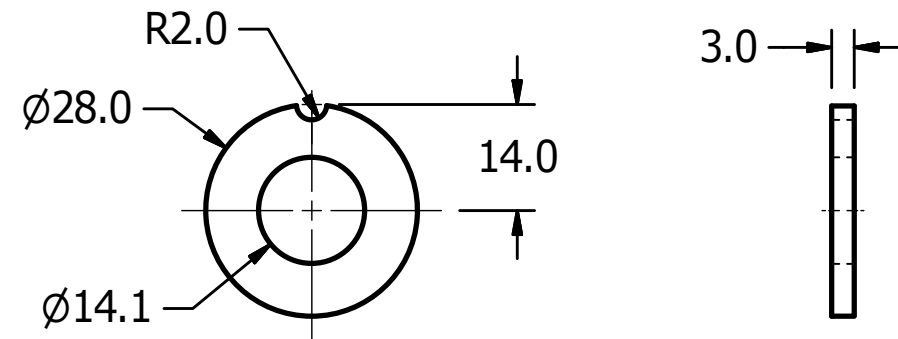
2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM046	9/10/2014	DW

B

B




A

A

A

A

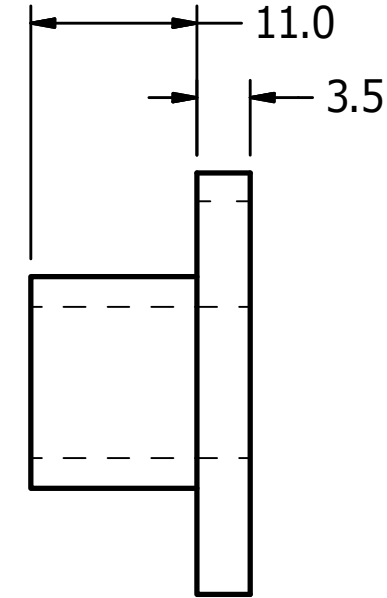
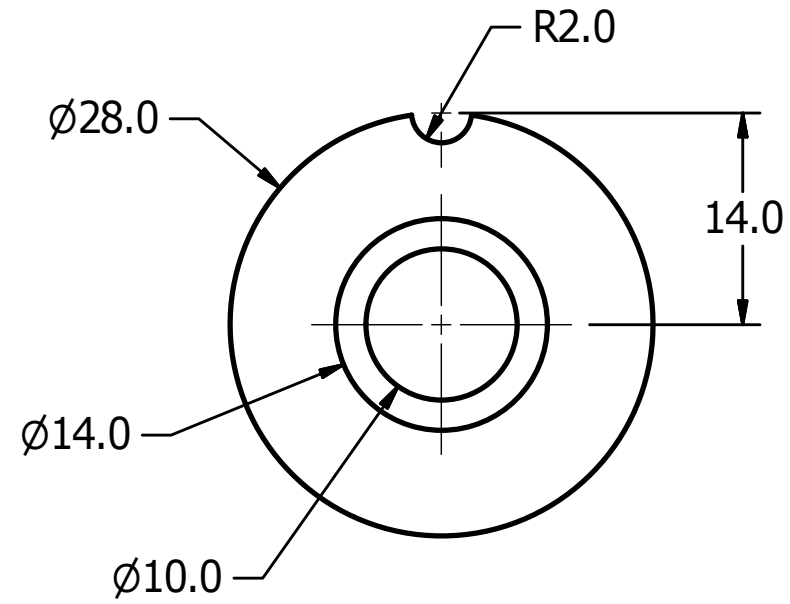
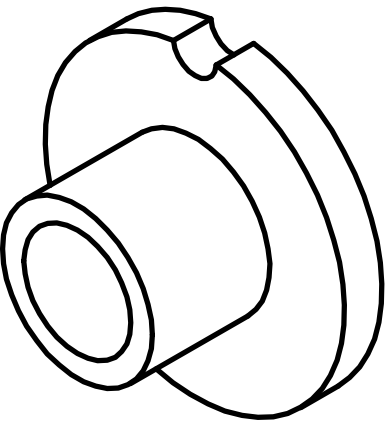
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	CHECKED		
MATERIAL Acetal Resin, Black	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3834
FINISH			SCALE: 1:1
			SHEET 1 OF 1
			REV A

4


3

2

1



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM045B	9/10/2014	DW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  <b>BUSHING, UPPER ARM</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	CHECKED		
MATERIAL Acetal Resin, Black	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3835
FINISH			SCALE: 2X
			SHEET 1 OF 1

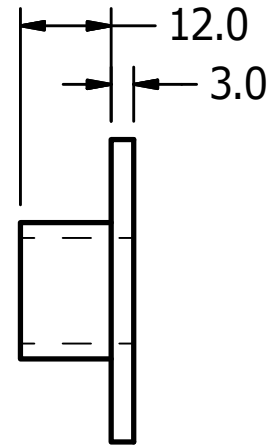
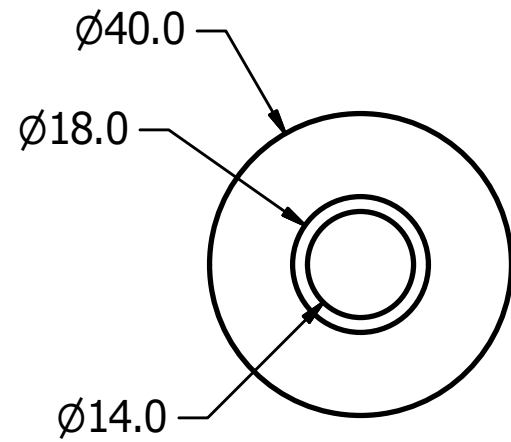
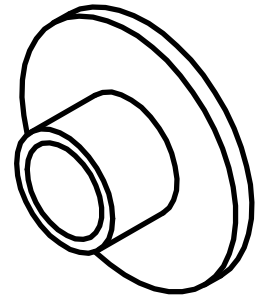
4

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2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM028B	9/10/2014	DW



B

B

A

A

A

A

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL: ANGLES: MACHINED:  
X ±.5 ±.5 1.6 ✓  
X.X ±.2  
X.XX ±.1

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

**VEHICLE RESEARCH  
and TEST CENTER**

APPROVALS DATE

DRAWN  
JIM CLEVINGER 8/20/2013

CHECKED

ENG

APPROVED



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

BUSHING, ARM PIVOT

MATERIAL Acetal Resin, Black

HEAT TREAT

FINISH

SIZE  
B

SCALE: 1:1

DRAWING NUMBER

472-3836

REV  
A

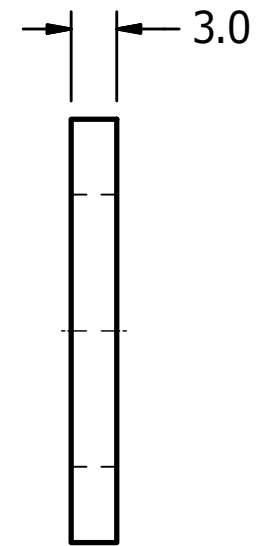
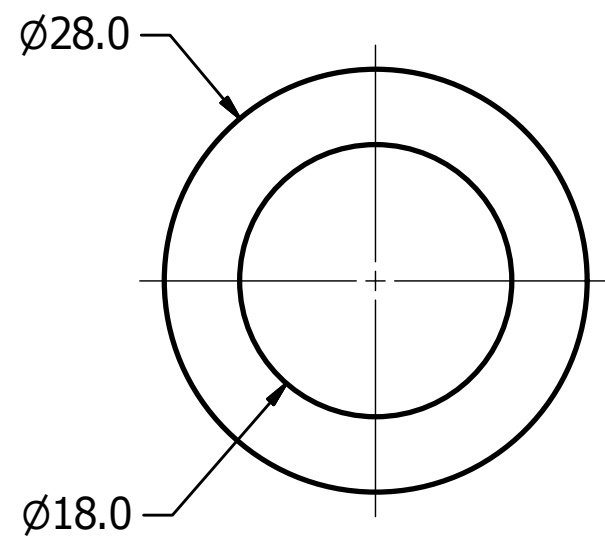
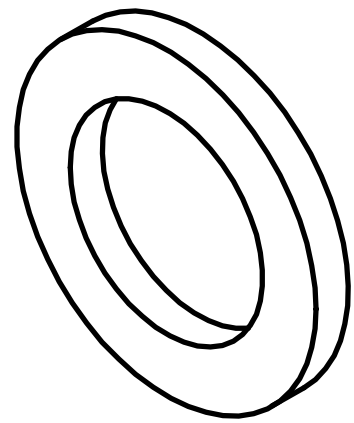
SHEET 1 OF 1

4


3

2

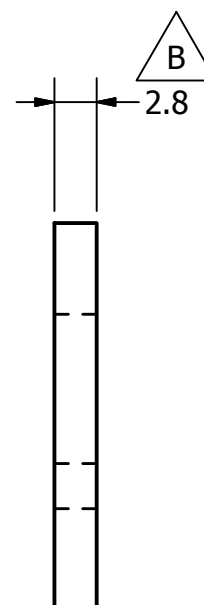
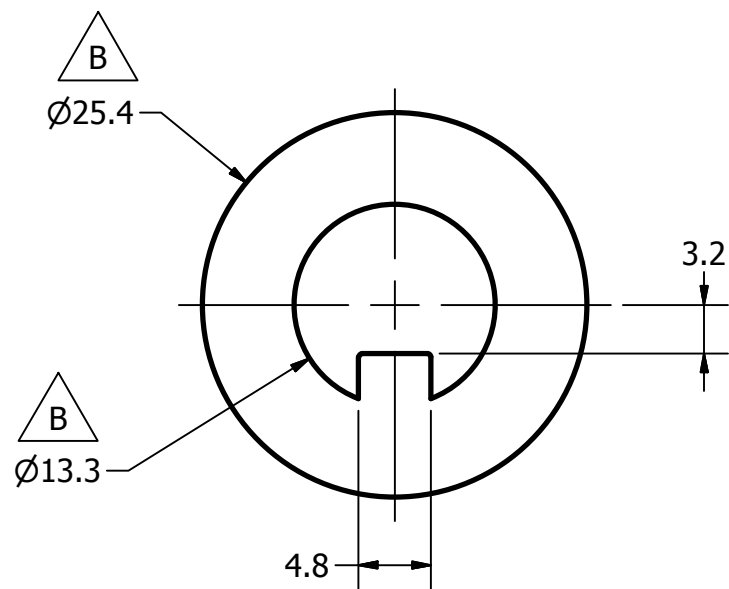
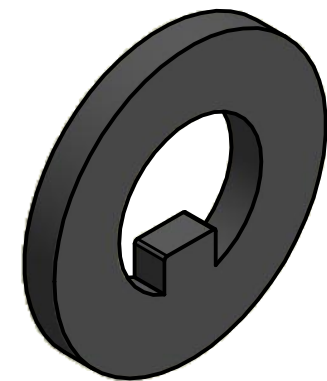
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM029B	9/11/2014	DW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  <b>WASHER, ARM CLEVIS</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	CHECKED		
MATERIAL Stainless Steel	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3837
FINISH			REV A
			SCALE: 1:1
			SHEET 1 OF 1





REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM510V	9/11/2014	DW
	B	DIMENSION Ø25.4 WAS Ø27.9, Ø13.3 WAS Ø12.1, AND 2.8 WAS .8; REMOVED BEND IN TAB	9/4/2015	DW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	CHECKED		
MATERIAL Steel	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3838
FINISH			REV B
			SCALE: 2X
			SHEET 1 OF 1

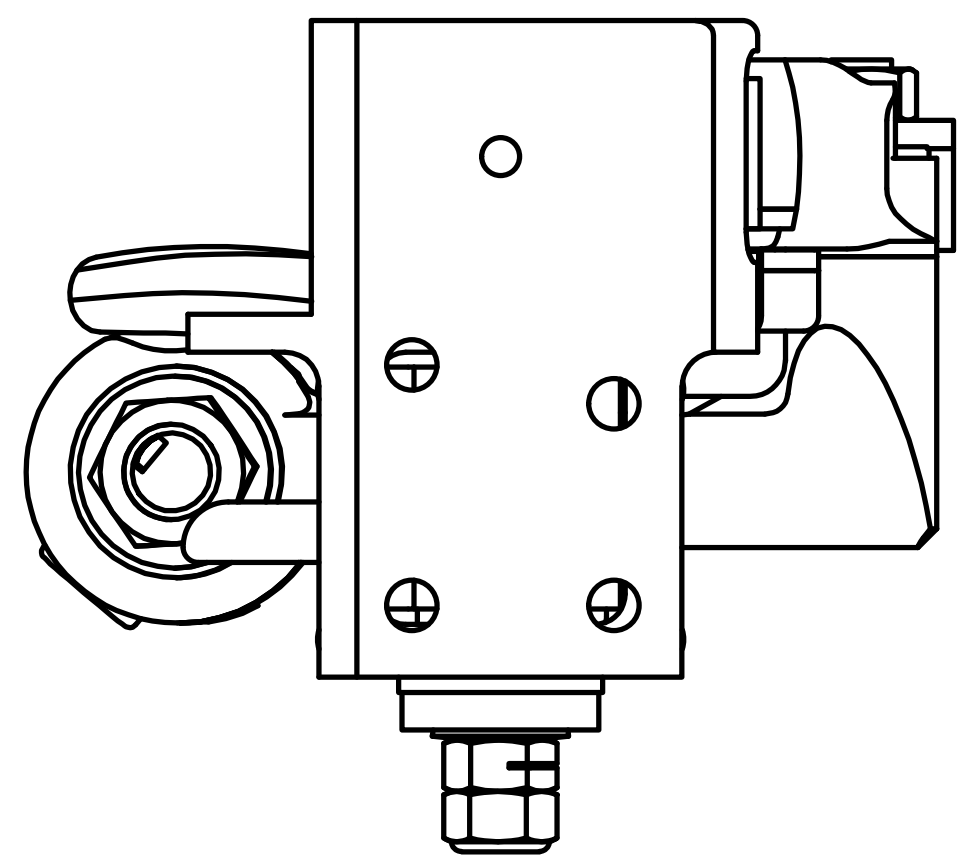
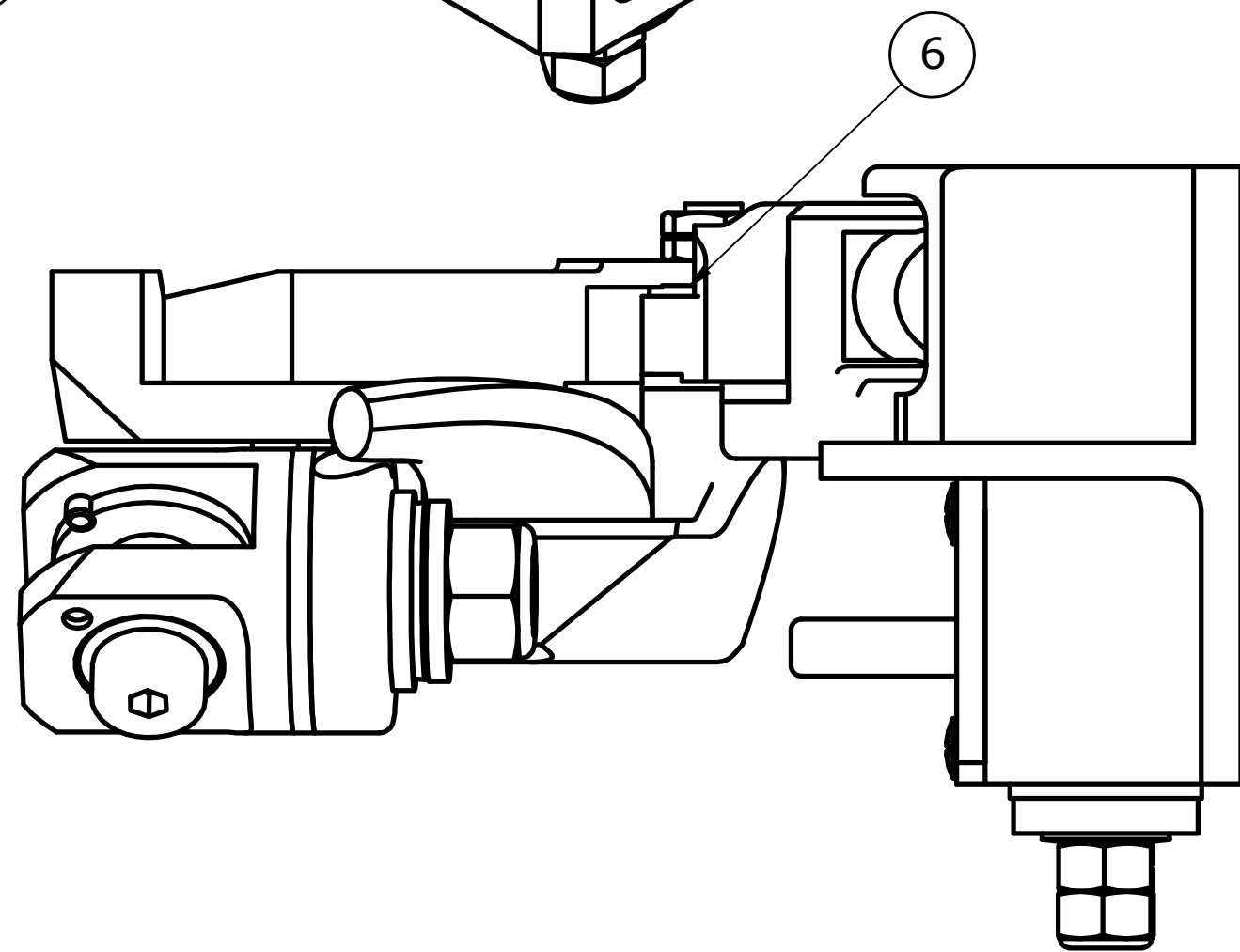
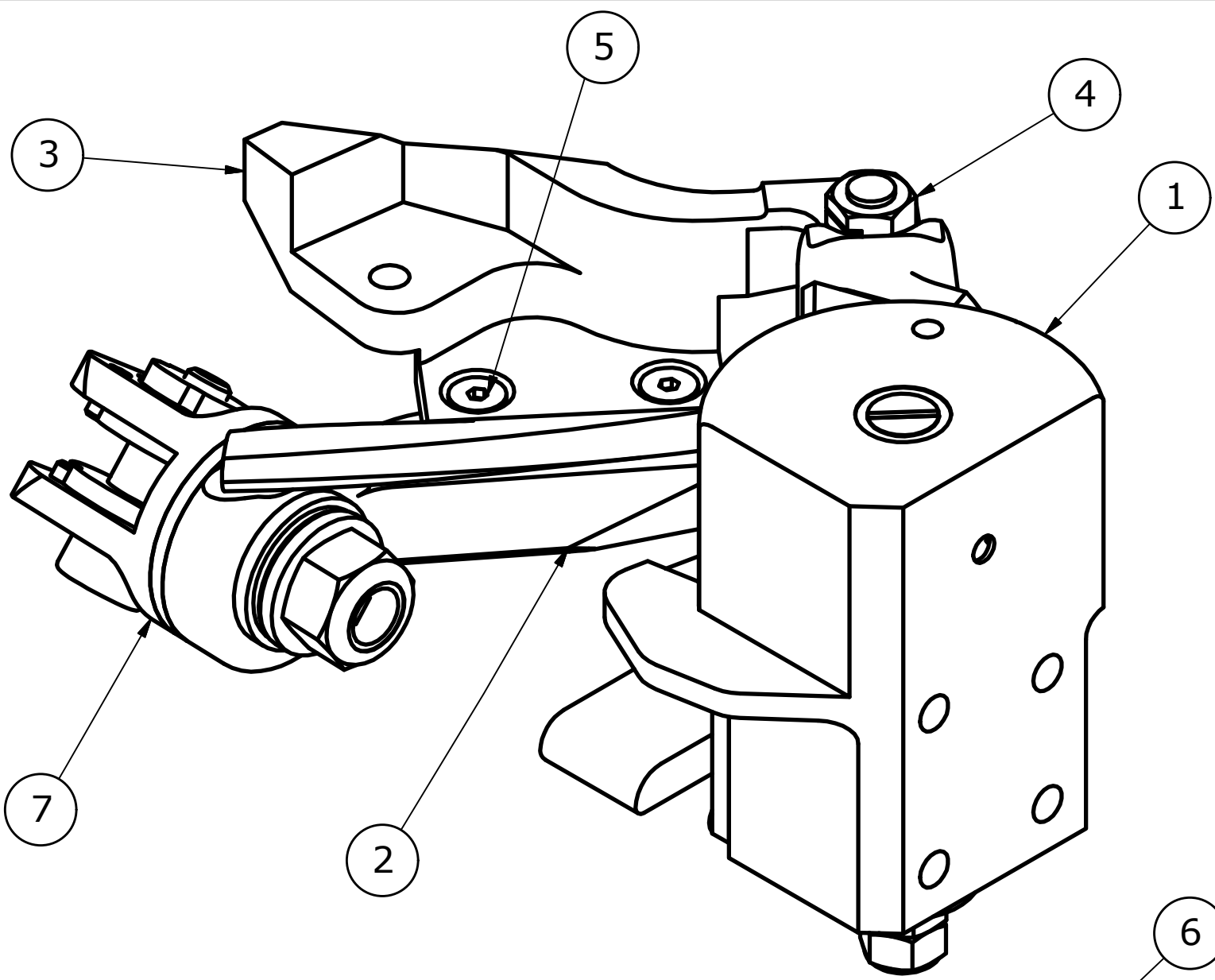
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2

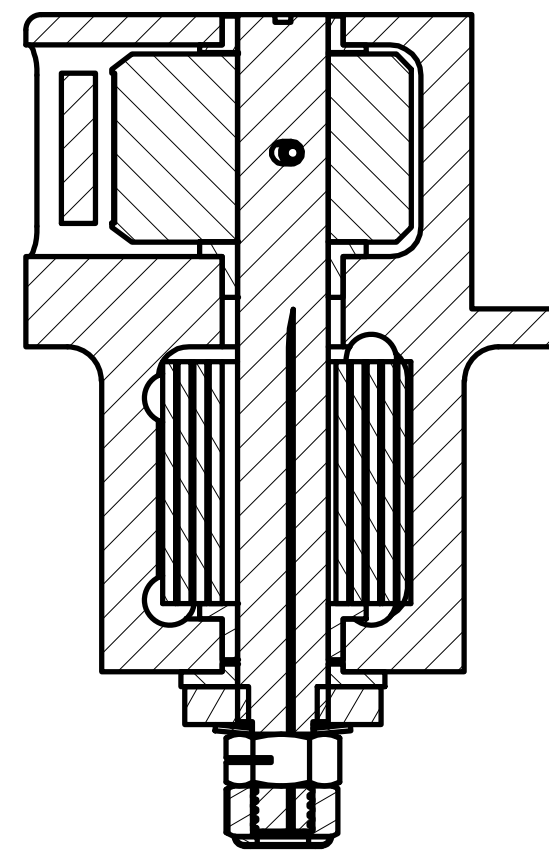
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM400; IN PARTS LIST 472-3841 WAS AXSDM900, 472-3829-2 WAS AXSDM013B, 472-2830-2 WAS AXSDM011B, 472-3818 WAS AXSDM030B & 472-3831 WAS AXSDM500	9/11/2014	DW

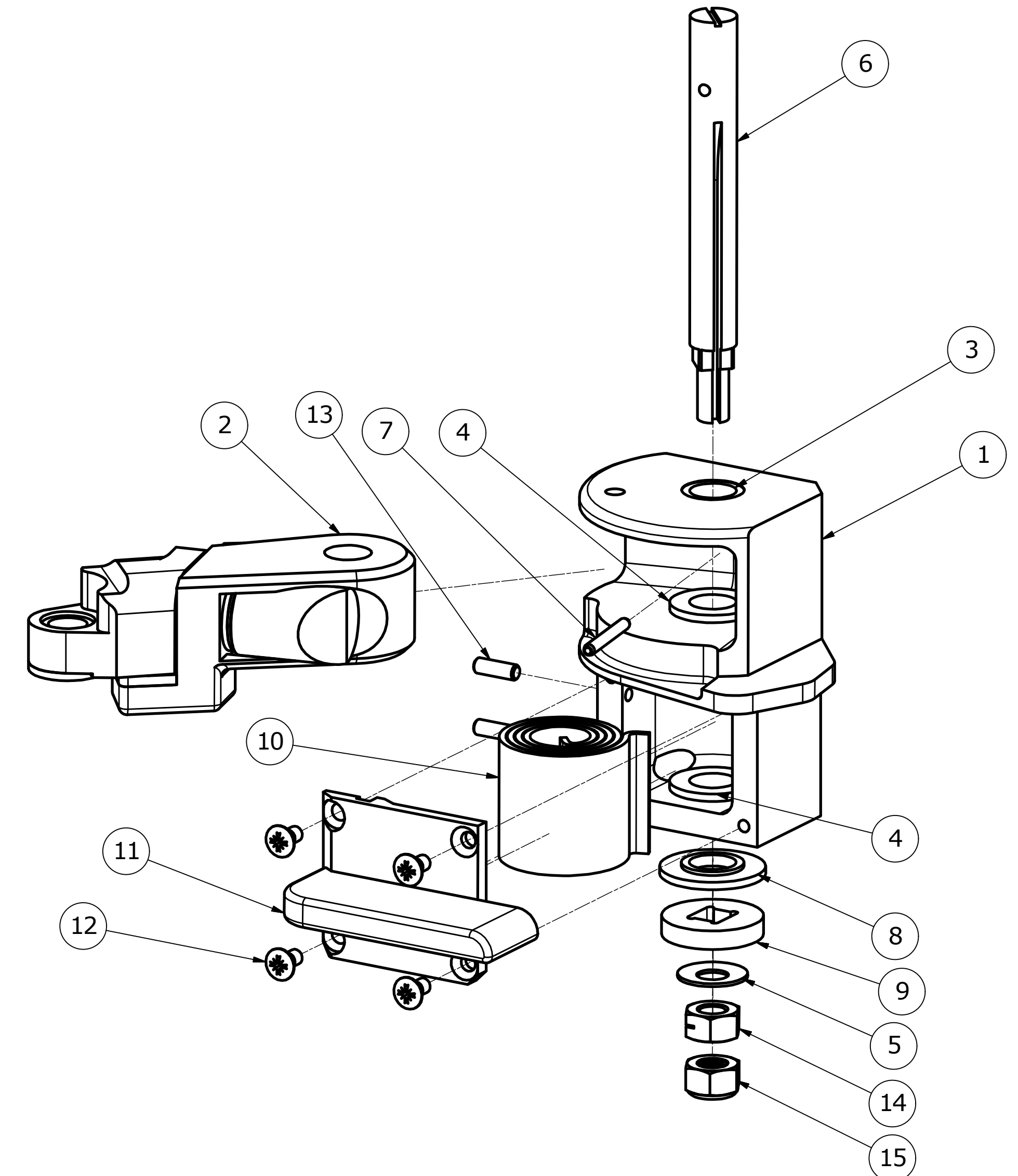
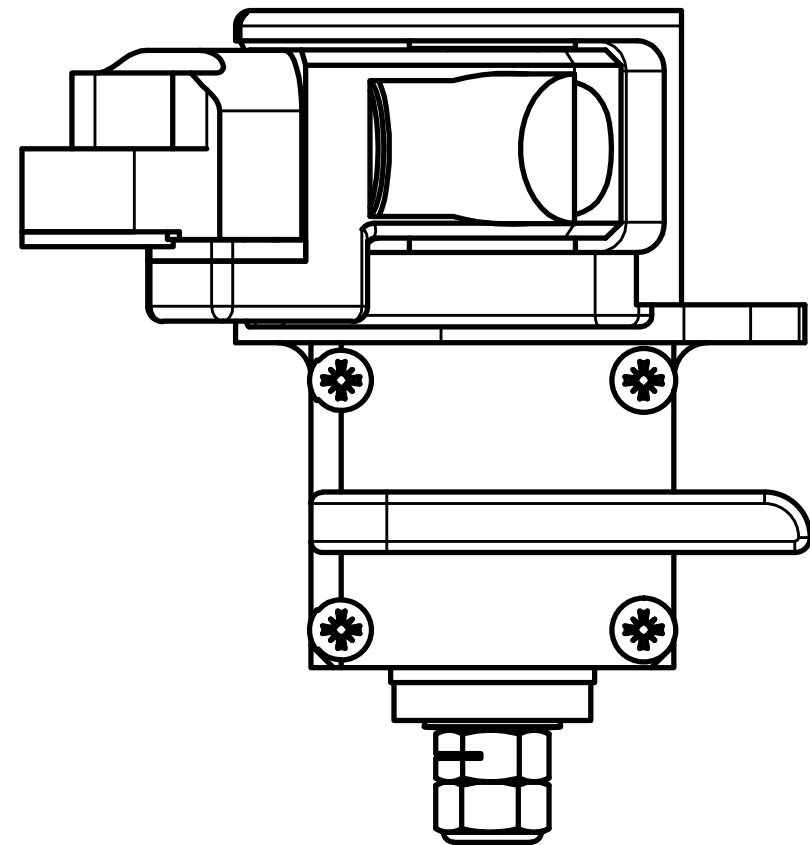
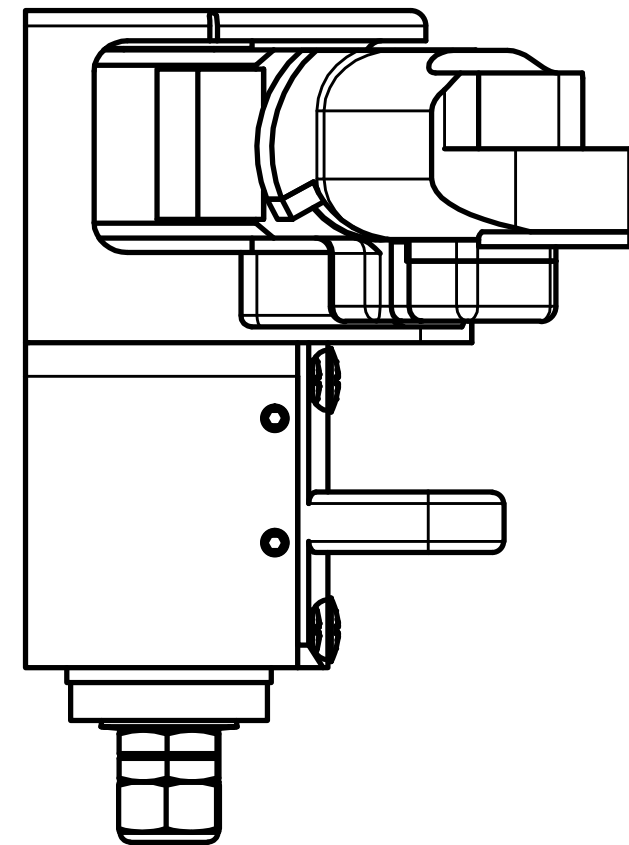
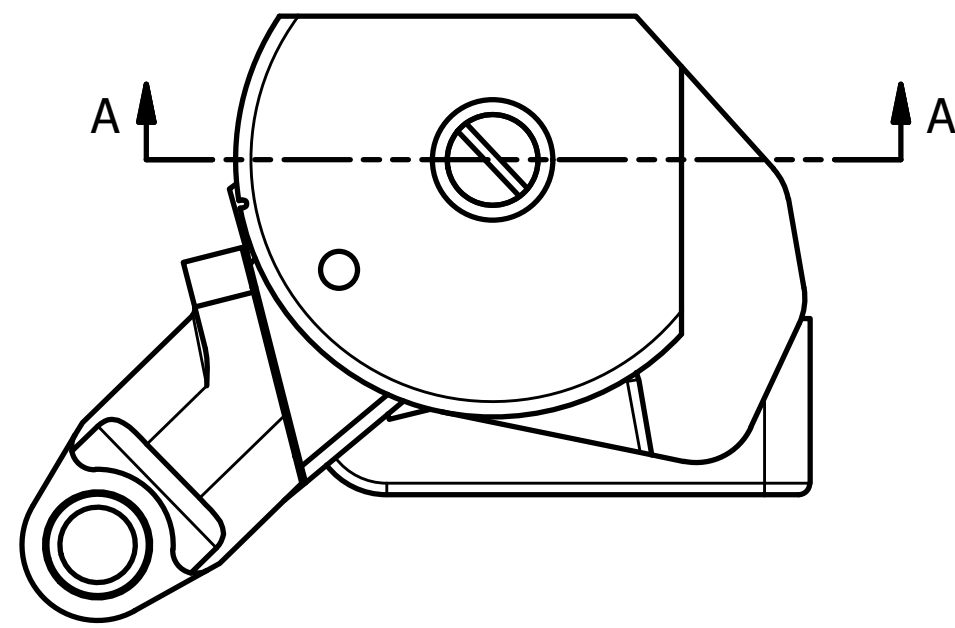


A	7	1	472-3831	ARM CLEVIS ASSEMBLY
A	6	1	472-3818	WASHER LINK, 18 x 8 x 1.5
	5	2	5000467	SCREW, FHCS M5 x 0.8 x 16
	4	1	5001164V	LOCKNUT, M8 x 1.25, SNEP #ESN H100
A	3	1	472-3830-2	SCAPULA, RH
	2	1	472-3829-2	ARM LINK, RH
A	1	1	472-3841	RIGHT SHOULDER PIVOT ASSEMBLY

PARTS LIST				
ITEM	QTY	PART NUMBER	DESCRIPTION	
<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:            DECIMAL: ANGLES: MACHINED:            X ±.5 ±.5            XX ±.2            XXX ±.1            ASME Y14.5M - 1994            DO NOT SCALE DRAWING</p>				
MATERIAL		ENG	<p><b>VEHICLE RESEARCH and TEST CENTER</b>            NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>	
HEAT TREAT		APPROVED	<p>APPROVALS DATE            DRAWN: JIM CLEVENGER 8/5/2013            CHECKED:</p>	
FINISH			<p>SIZE: C            SCALE: 1:1</p>	<p>DRAWING NUMBER: 472-3840            SHEET: 1 OF 1            REV: A</p>



SECTION A-A  
SCALE 1:1



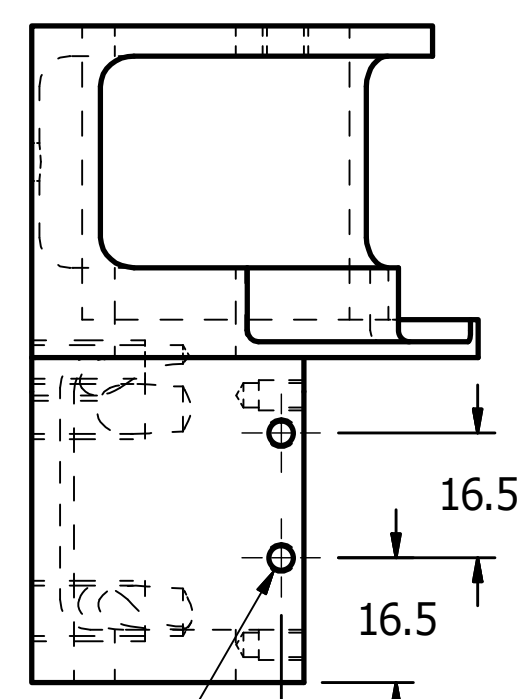
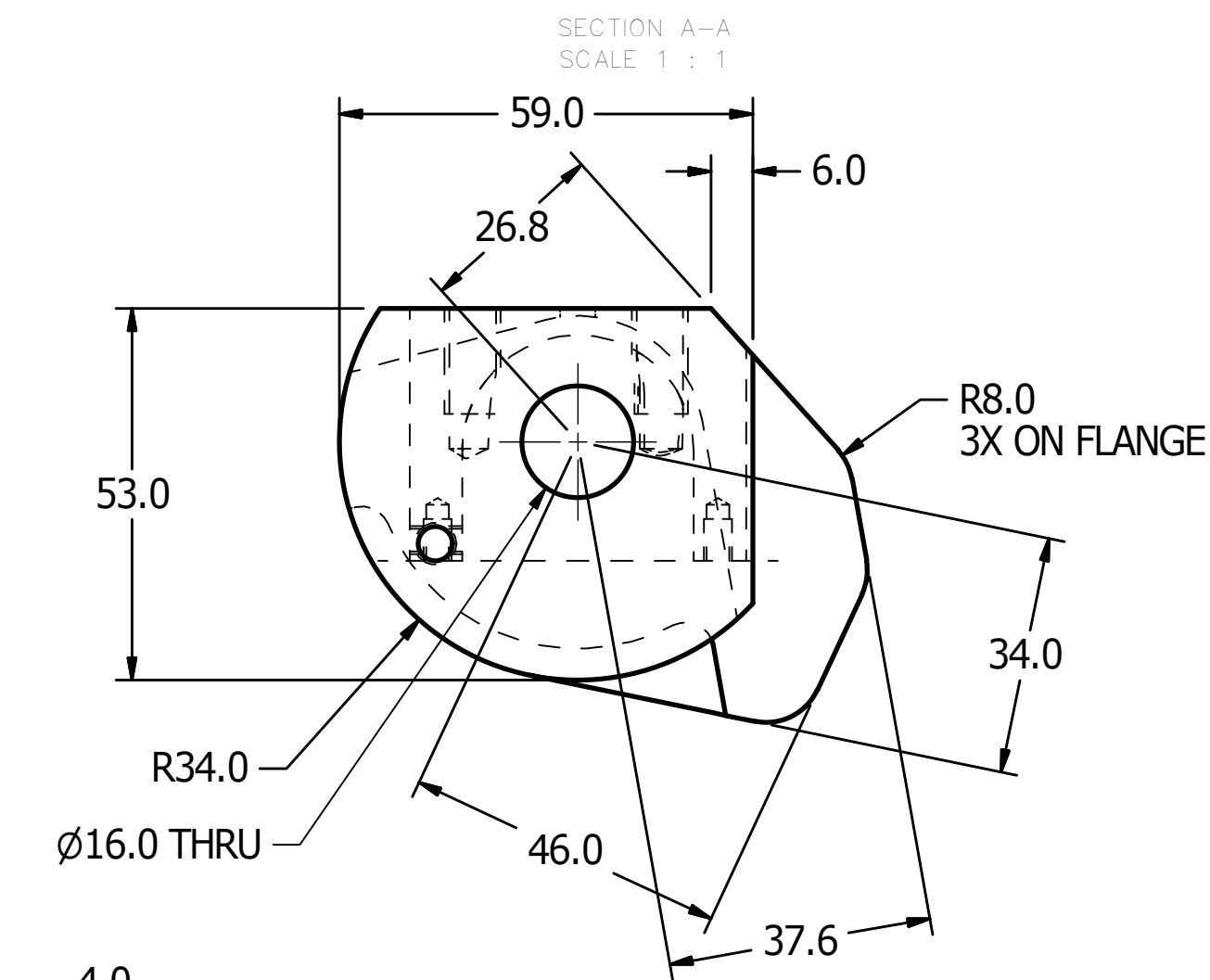
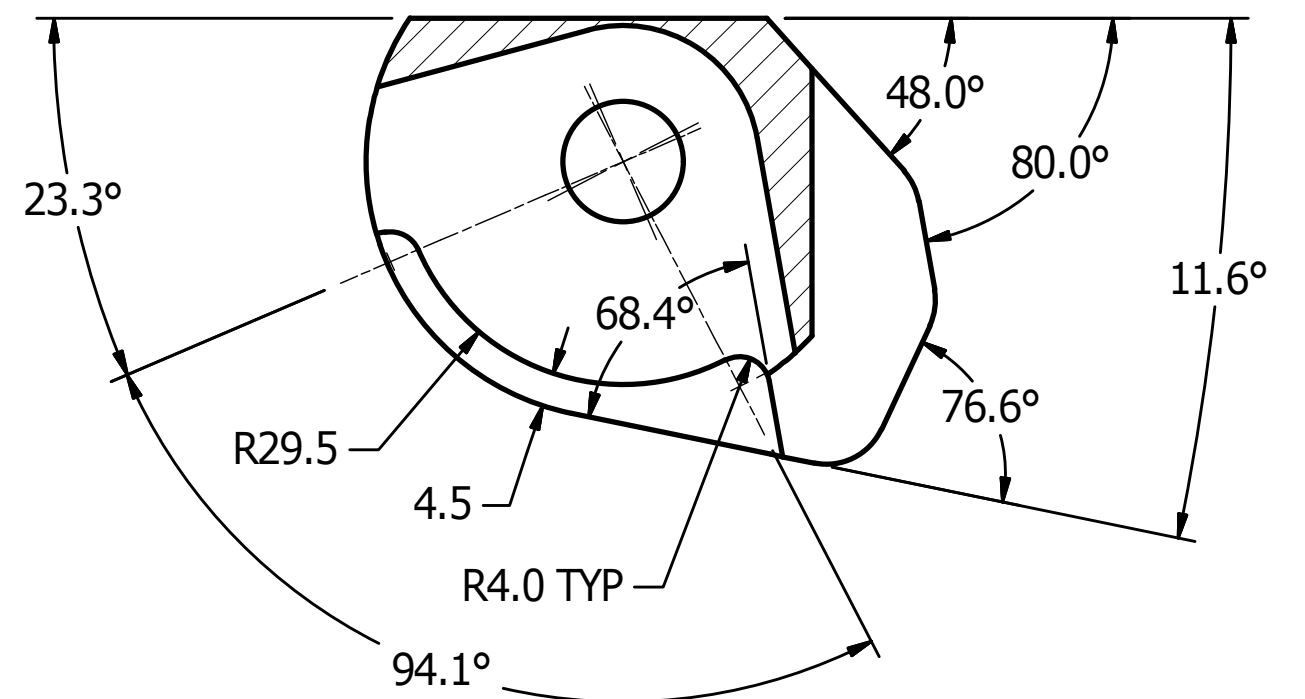
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM900; IN PARTS LIST 472-3812-2 WAS AXSDM003C, 472-3813-2 WAS AXSDM800, 472-3822 WAS AXSDM0020B, 472-3823 WAS AXSDM019B, 472-3824 WAS AXSDM001B, 472-3825 WAS AXSDM005C, 472-3826 WAS AXSDM004B, 472-3827 WAS AXSDM018 & 472-3828-2 WAS AXSDM015B	9/11/2014	DW
	B	MOVED BALLOON CALLOUTS TO EXPLODED VIEW	7/27/2015	DW

15	1	5001165V	NYLOCK, M8 x 1.25
14	1	5001164V	LOCKNUT, M8 x 1.25, SNEP #ESN H100
13	2	5000292V	SCREW, SSFP M4 x 12
12	4	5000699	SCREW, FHMS M4 x .7 x 8 PHILLIPS
11	1	472-3828-2	RIB GUIDE LOWER, RH
10	1	472-3827	SPRING
9	1	472-3826	WASHER
8	1	472-3825	SPRING HOUSING WASHER, LOWER
7	1	5000140	ROLL PIN, M3 x 24
6	1	472-3824	SPRING SHAFT
5	1	5001170V	SPRING DISC WASHER, 20 x 8.2 x 1.0
4	2	472-3823	SPRING HOUSING BUSHING, LOWER
3	1	472-3822	SPRING HOUSING BUSHING, UPPER
2	1	472-3813-2	SHOULDER SUPPORT ASSEMBLY, RH
1	1	472-3812-2	SPRING HOUSING COVER, RH

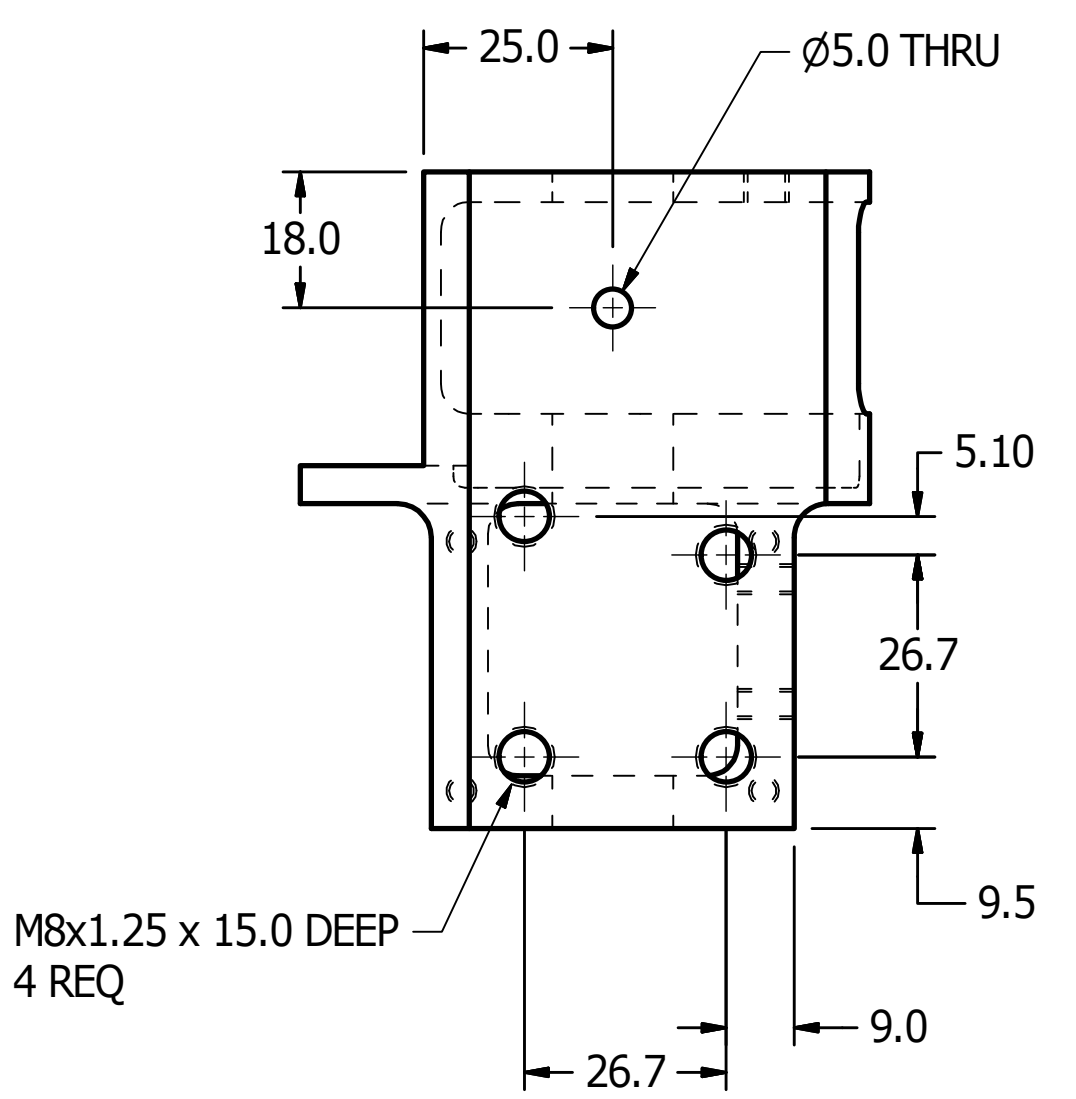
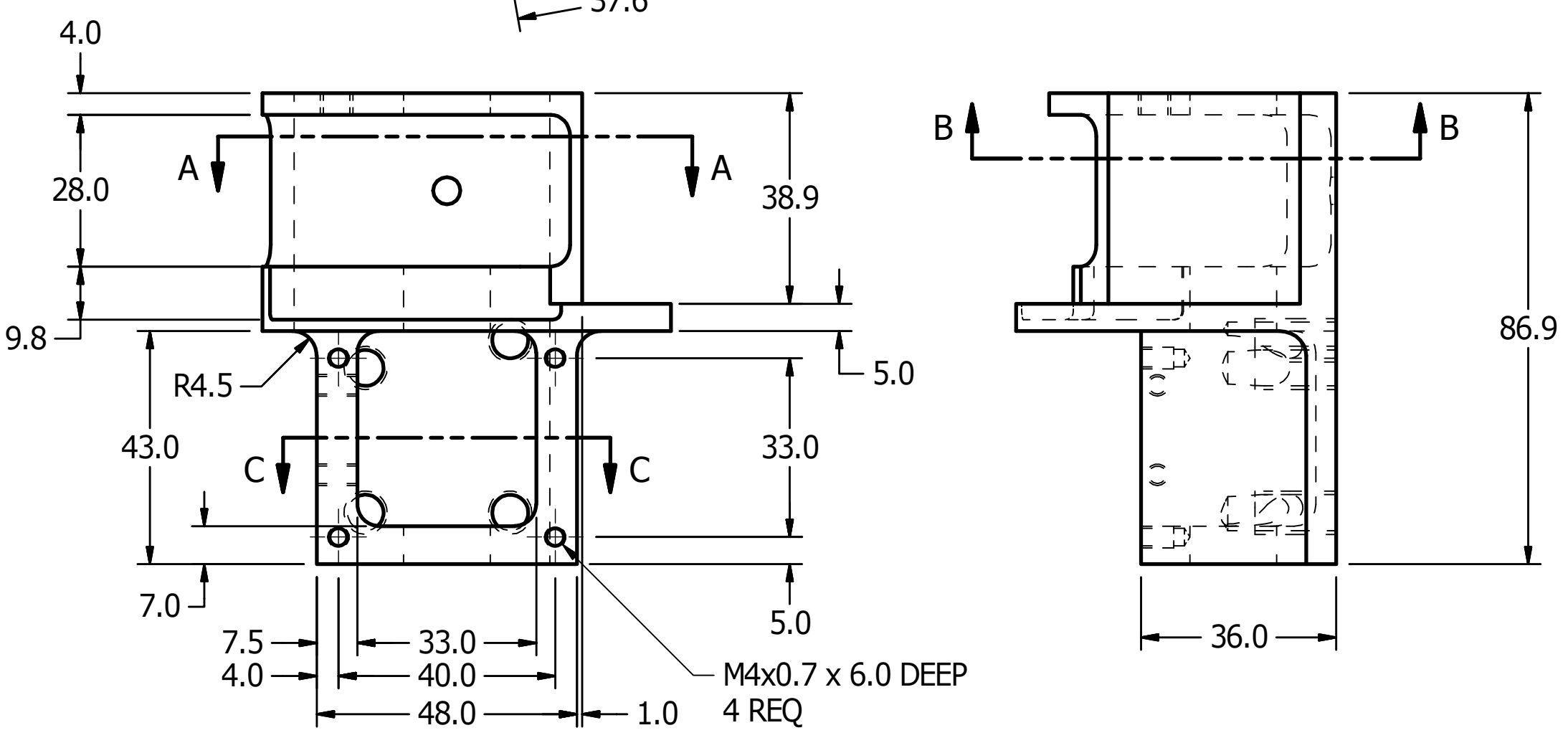
ITE	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL ANGLES: MACHINED: X ±.5 XX ±.2 XXX ±.1 <small>DO NOT SCALE DRAWING</small>		<b>VEHICLE RESEARCH and TEST CENTER</b> APPROVALS: _____ DATE: 8/8/2013 DRAWN: JIM CLEVENGER CHECKED: _____		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
MATERIAL: _____		ENG: _____		SIZE: D	
FINISH: _____		APPROVED: _____		DRAWING NUMBER: 472-3841	
		SCALE: 1:1		REV: B	
				SHEET 1 OF 1	

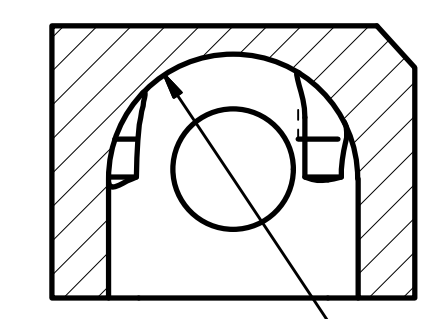
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM003C	9/11/2014	DW
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	6/29/2015	DW



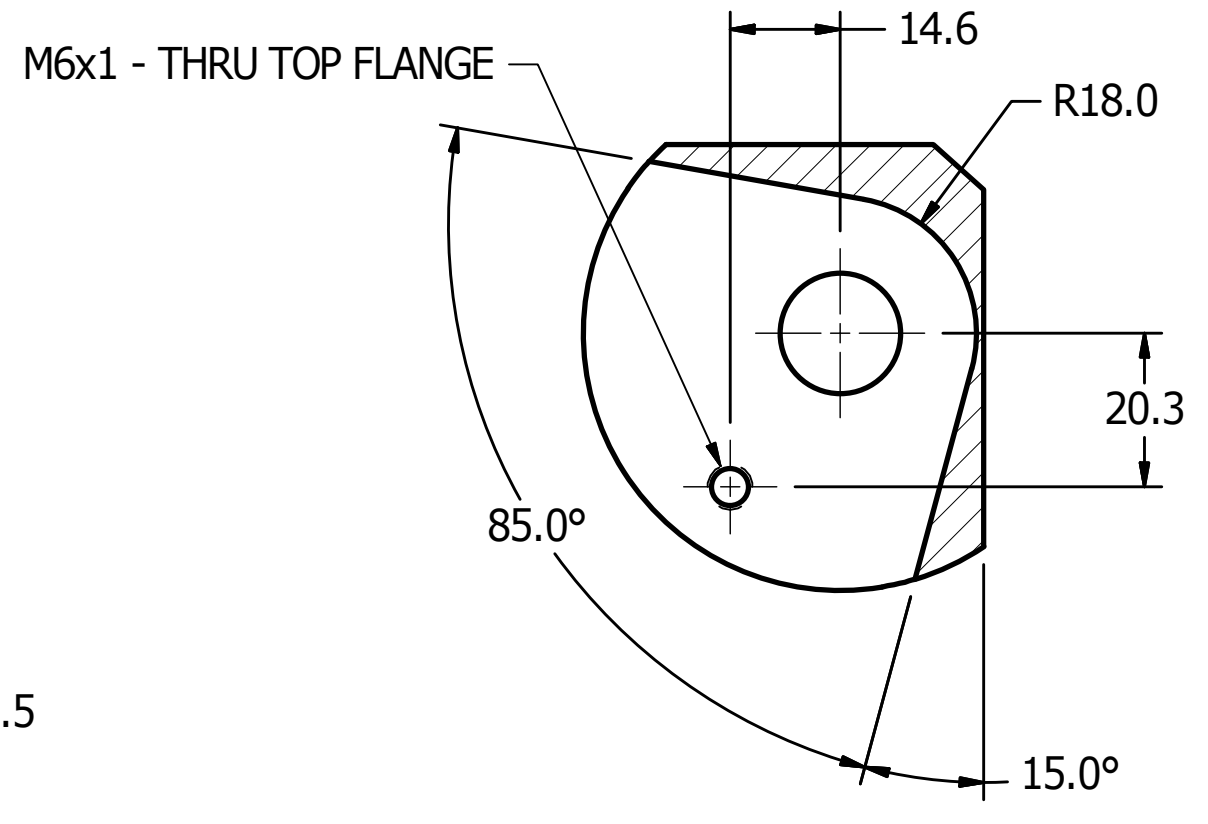
M4x0.7 THRU TO POCKET 2 REQ



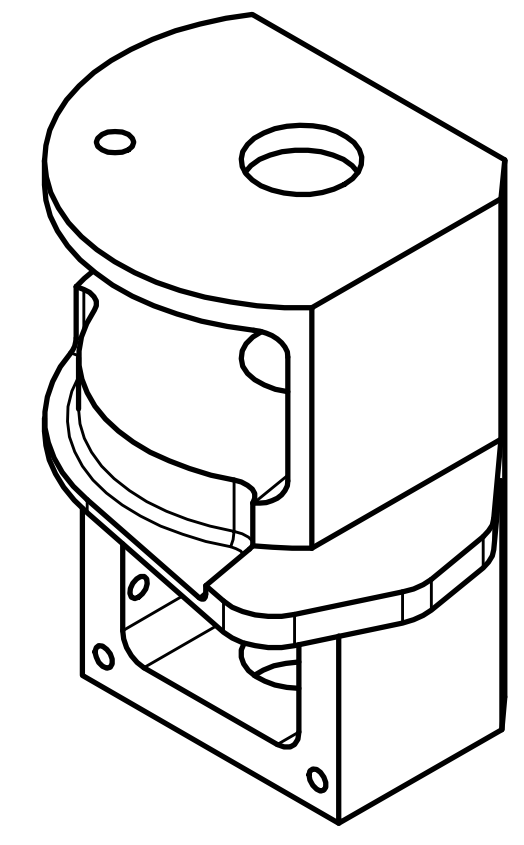
M8x1.25 x 15.0 DEEP 4 REQ



SECTION C-C SCALE 1:1



SECTION B-B SCALE 1:1



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: X ±0.5 XX ±0.2 XXX ±0.1		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		DRAWING NUMBER	
DRAWN JIM CLEVENGER		8/14/2013		472-3812-2	
CHECKED		ENG		SCALE	
MATERIAL: Steel		APPROVED		1:1	
FINISH: ELECTROLESS NICKEL .008 MAX.		DRAWN BY		1 OF 1	

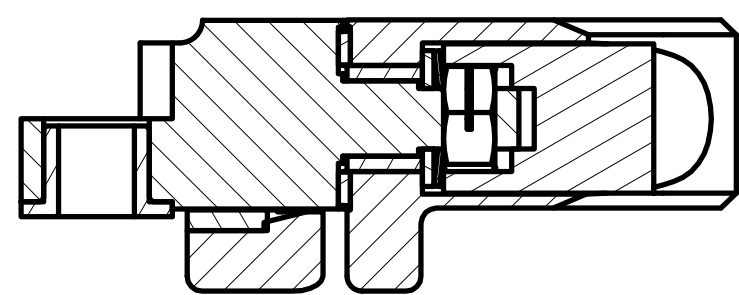
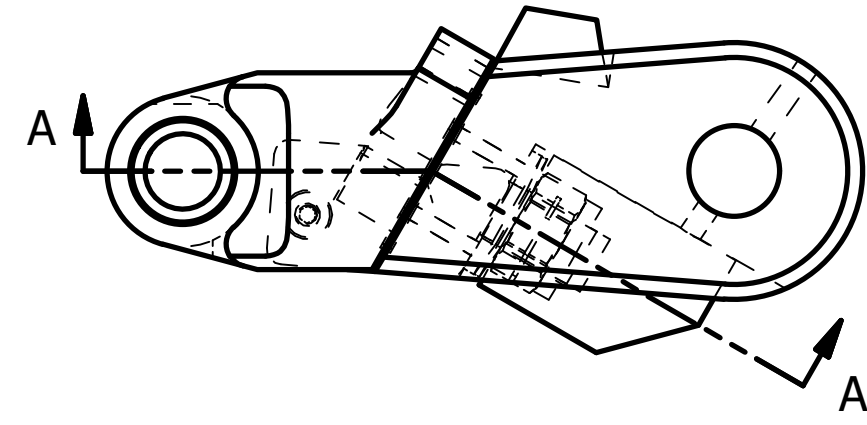
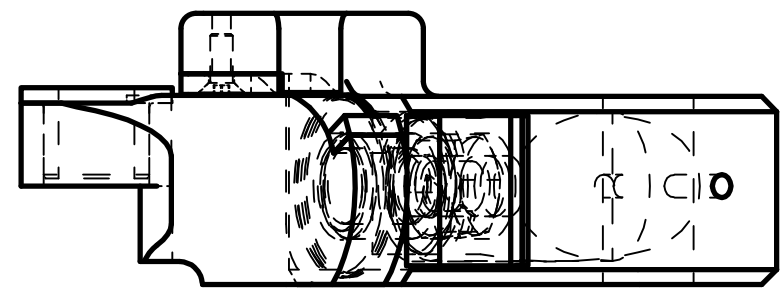
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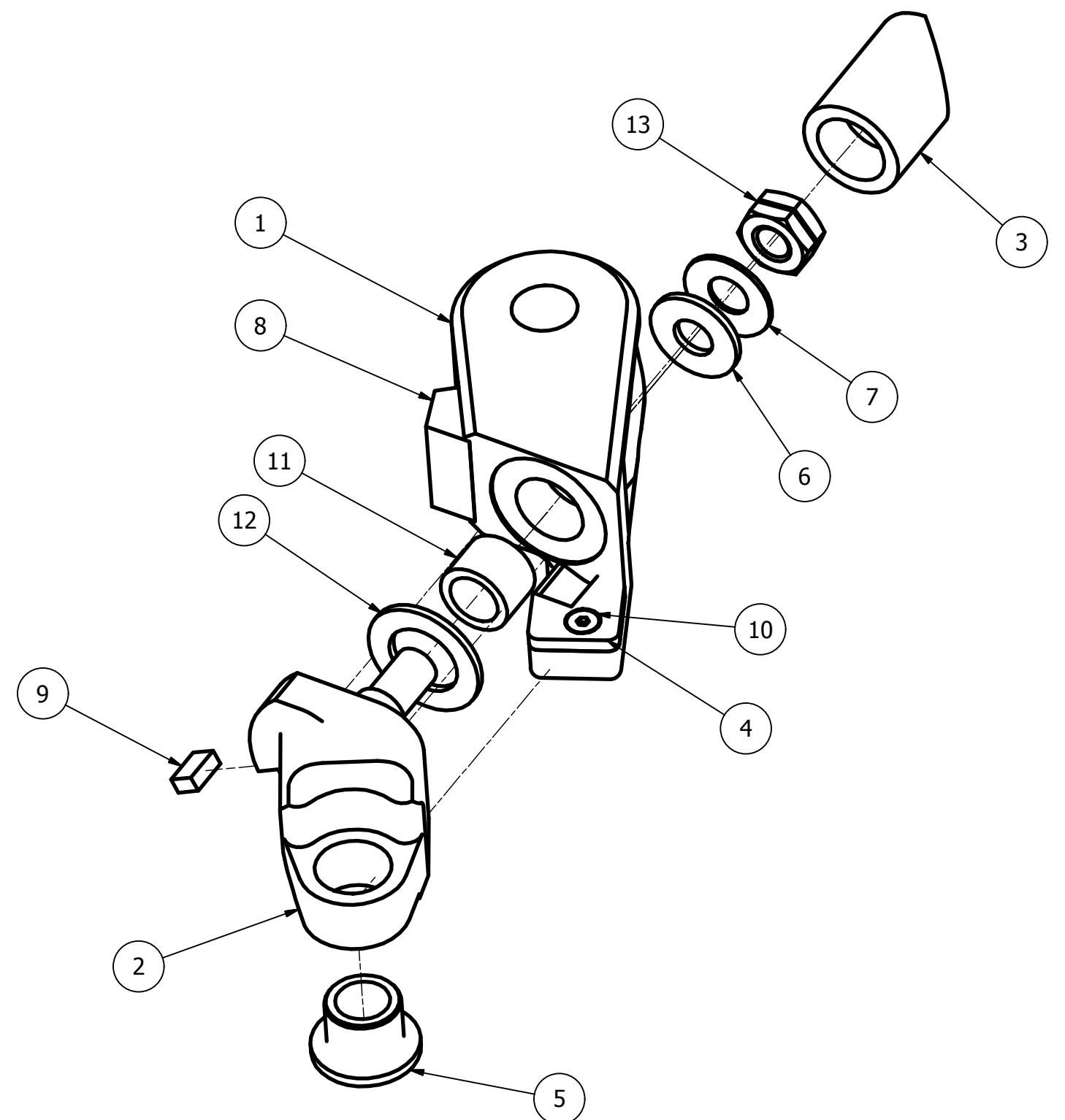
2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM800; IN PARTS LIST 472-3814-2 WAS AXSDM007B, 472-3815-2 WAS AXSDM009B, 472-3816 WAS AXSDM016C, 472-3817-2 WAS AXSDM026B, 472-3818 WAS AXSDM030B, 472-3819 WAS AXSDM017B, 472-3820 WAS AXSDM024B & 472-3821 WAS AXSDM031B	9/11/2014	DW
	B	MOVED BALLOON CALLOUTS TO EXPLODED VIEW	7/13/2015	DW



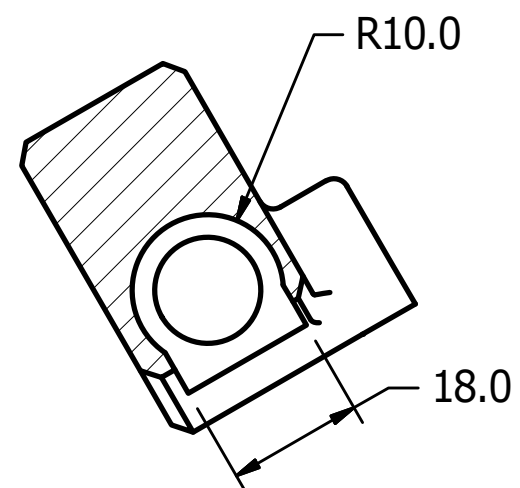
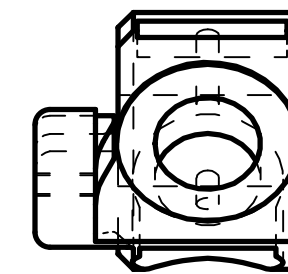
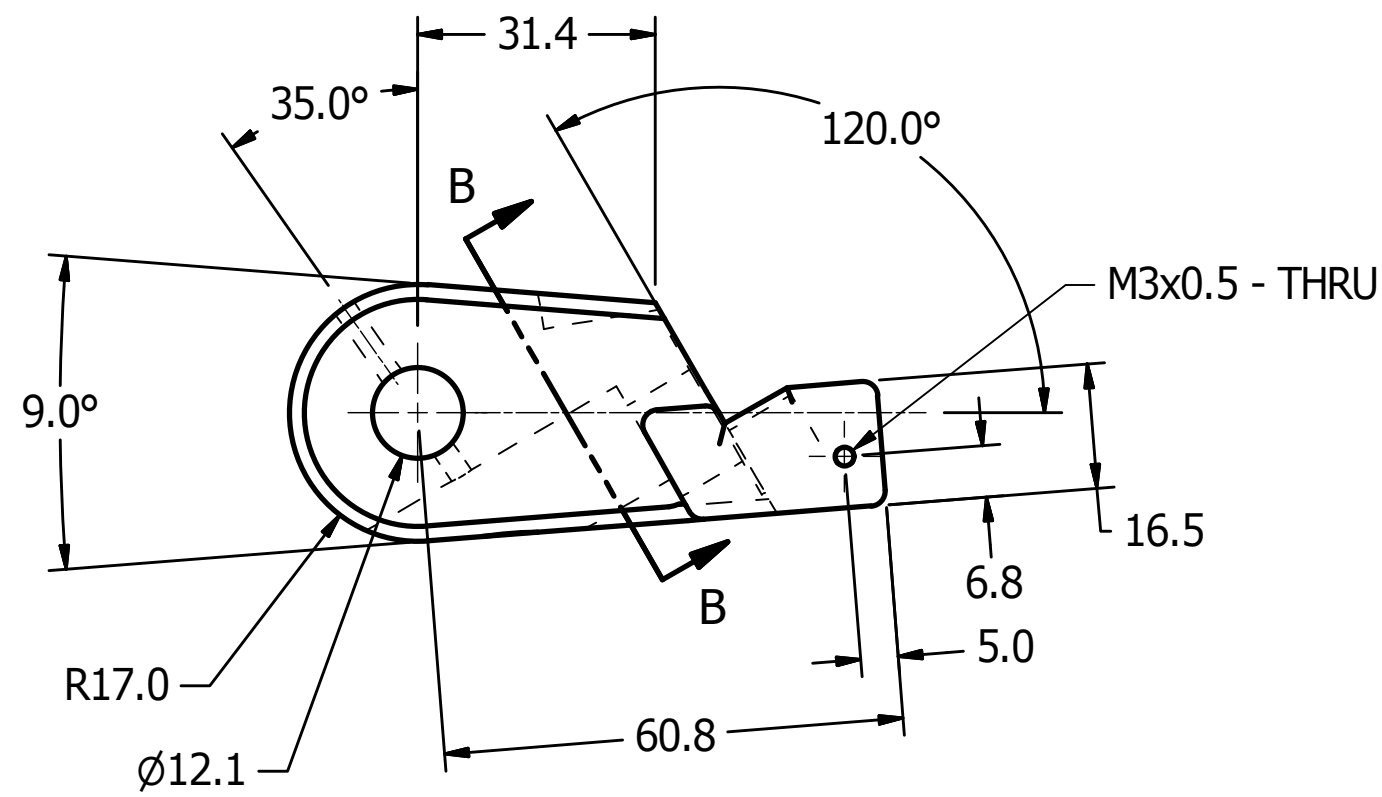
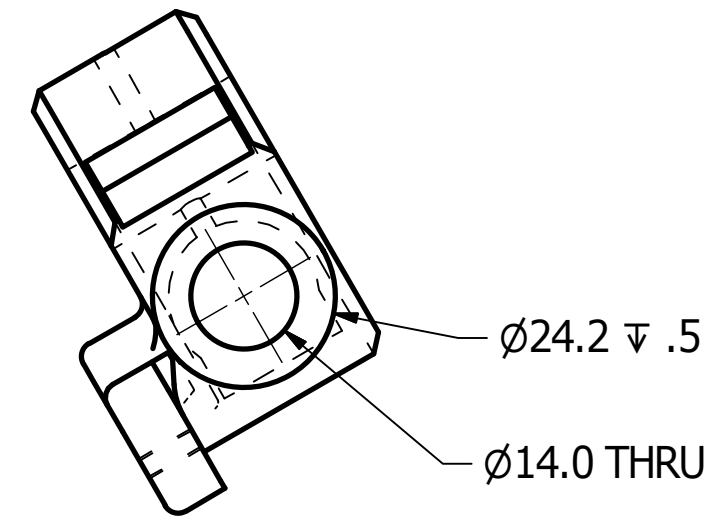
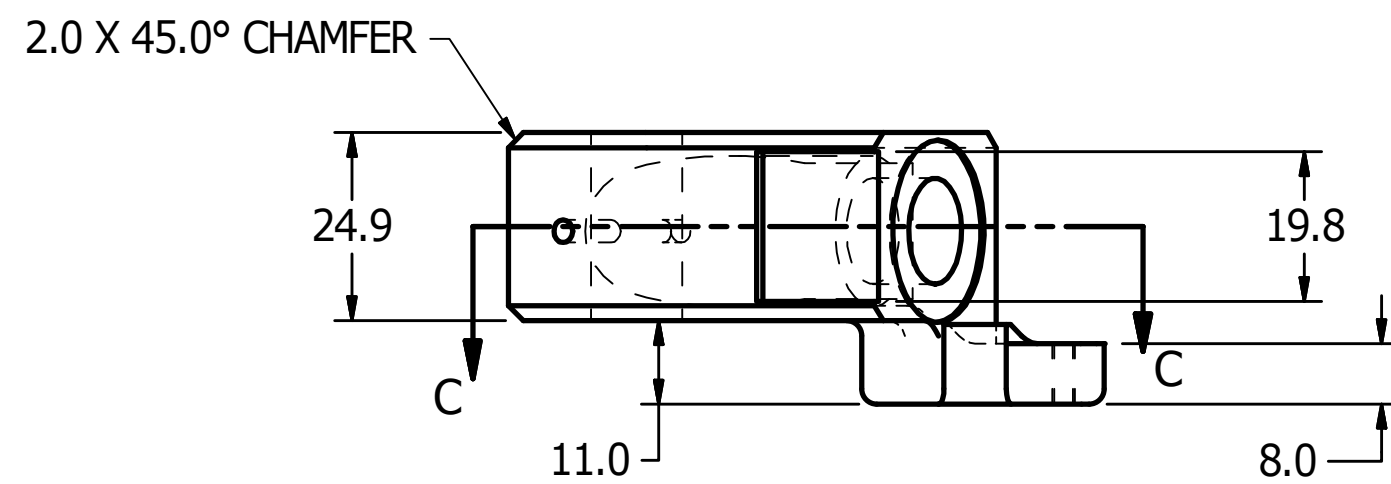
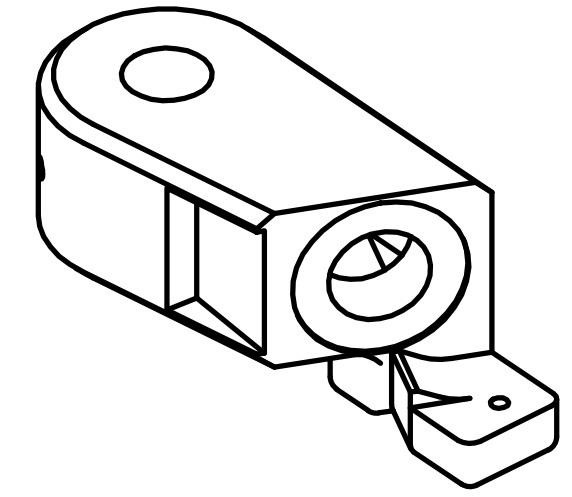
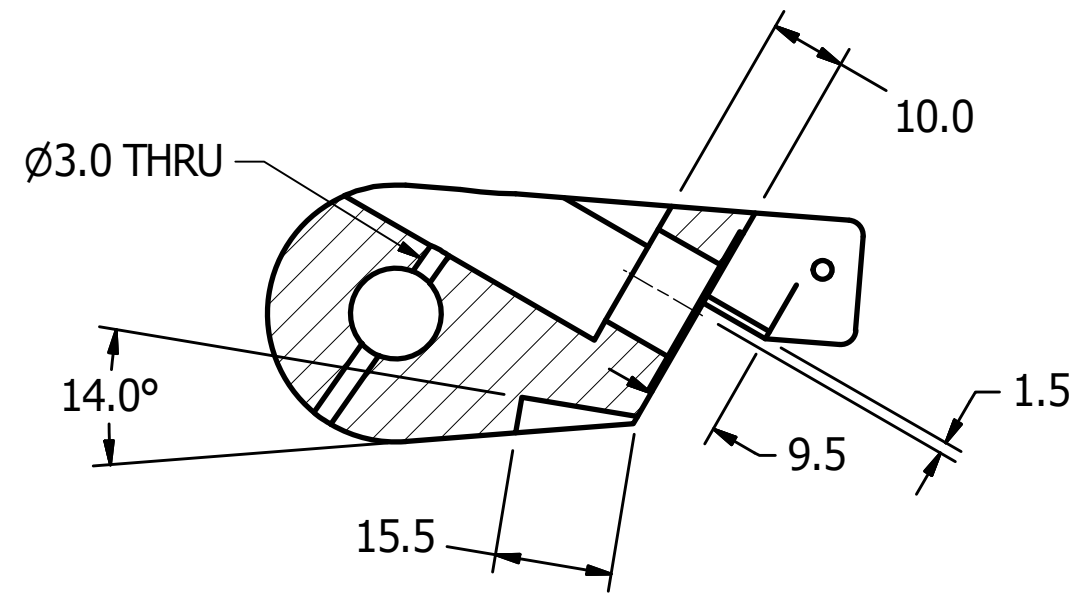
SECTION A-A  
SCALE 1 : 1



A	13	1	5001164V	LOCKNUT, M8 x 1.25, SNEP #ESN H100
A	12	1	472-3821	LINK WASHER, 23 x 14.2 x 1.5
A	11	1	5001169V	BEARING, IGLIDUR 14 x 10 X 10 LG
A	10	1	5000116	SCREW, FHCS, M3 x .5 x 8
A	9	1	472-3820	BUFFER, VERTICAL
A	8	1	472-3819	REAR ROM BUFFER
A	7	1	5001170V	SPRING DISC WASHER, 20 x 8.2 x 1.0
A	6	1	472-3818	WASHER LINK, 18 x 8 x 1.5
A	5	1	5001168V	FLANGE BEARING, 14OD x 20 FL x 10ID x 12LG
A	4	1	472-3817-2	BUFFER, LOWER RIGHT
A	3	1	472-3816	FORWARD ROM BUFFER
A	2	1	472-3815-2	SHOULDER SUPPORT PIVOT, RH
A	1	1	472-3814-2	SHOULDER SUPPORT, RH

ITEM	QTY	PART NUMBER	DESCRIPTION
<b>PARTS LIST</b>			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b> APPROVALS: _____ DATE: 8/8/2013 DRAWN: JIM CLEVINGER CHECKED: _____ MATERIAL: ENG HEAT TREAT: APPROVED FINISH: _____	
		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> SHOULDERS SUPPORT ASSEMBLY, RH SIZE: C DRAWING NUMBER: 472-3813-2 REV: B SCALE: 1:1 SHEET: 1 OF 1	

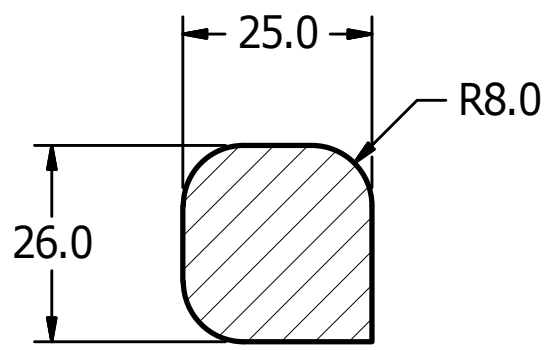
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM007B	9/11/2014	DW
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	6/29/2015	DW



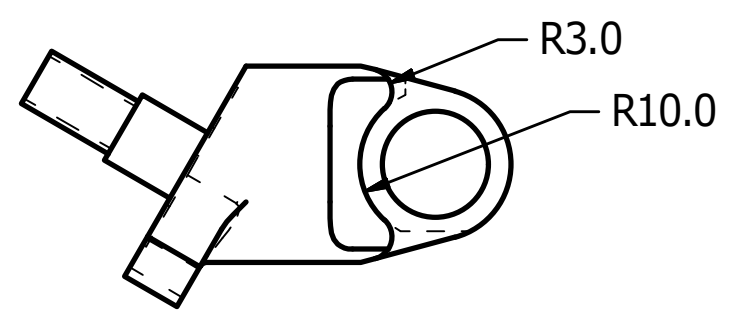
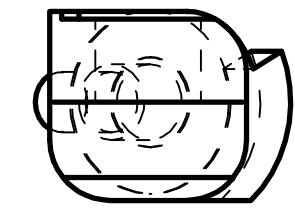
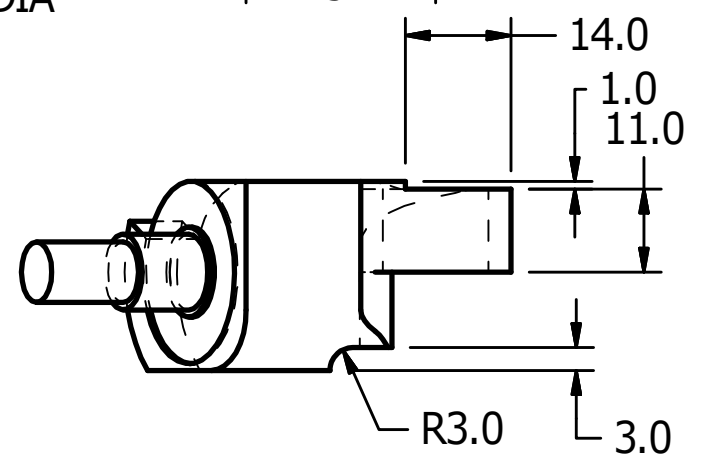
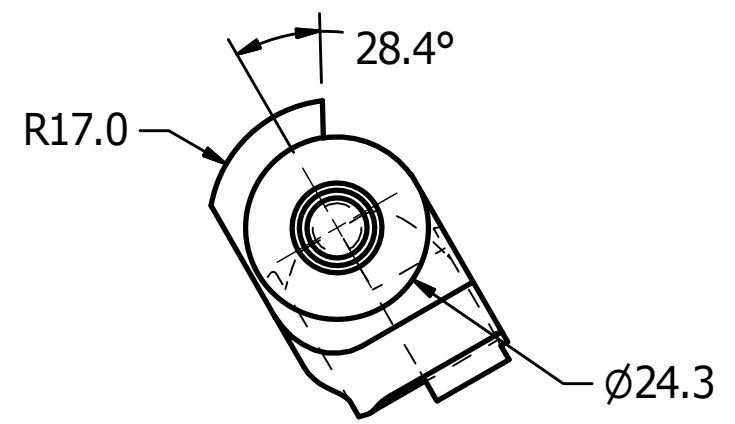
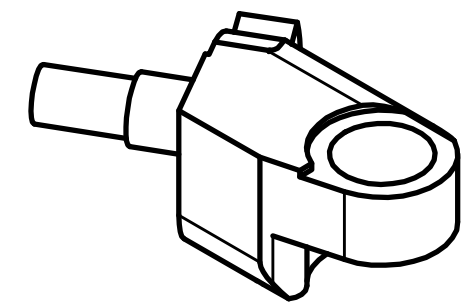
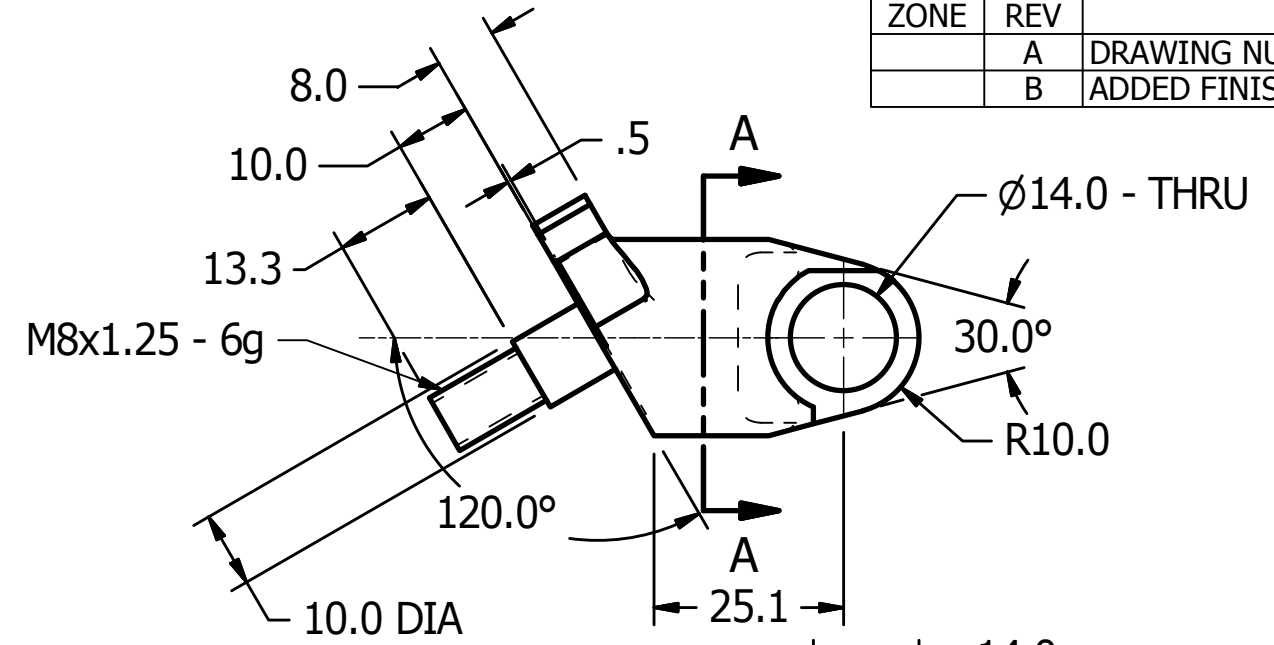
SECTION B-B  
SCALE 1 : 1


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		SHOULDER SUPPORT, RH	
DRAWN JIM CLEVINGER		8/15/2013		DRAWING NUMBER 472-3814-2	
CHECKED				REV B	
MATERIAL Steel		ENG		SIZE C	
HEAT TREAT		APPROVED		SCALE: 1:1	
FINISH ELECTROLESS NICKEL .008 MAX.				SHEET 1 OF 1	

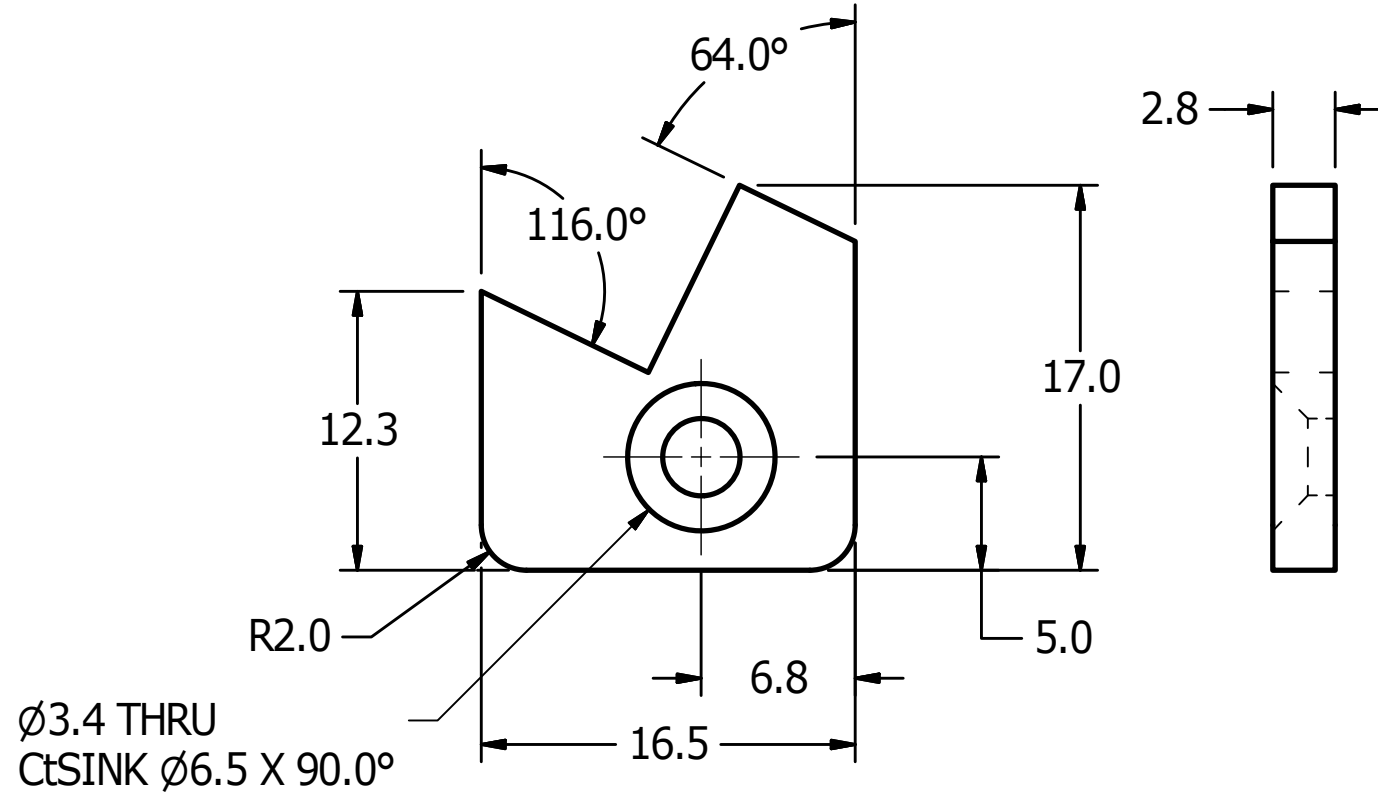
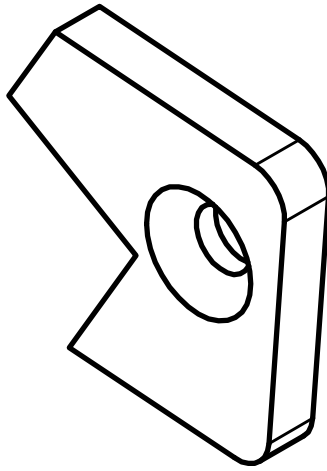
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM009B	9/11/2014	DW
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	6/29/2015	DW




SECTION A-A  
SCALE 1 : 1



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/15/2013	
	CHECKED		
MATERIAL Steel	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3815-2
FINISH ELECTROLESS NICKEL .008 MAX.			REV B
			SCALE: 1:1
			SHEET 1 OF 1



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM026B	9/11/2014	DW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  BUFFER, LOWER RIGHT
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	CHECKED		
MATERIAL Acetal Resin, Black	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3817-2
FINISH			REV A
			SCALE: 3X
			SHEET 1 OF 1



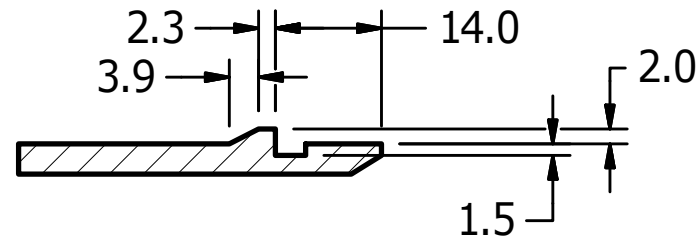
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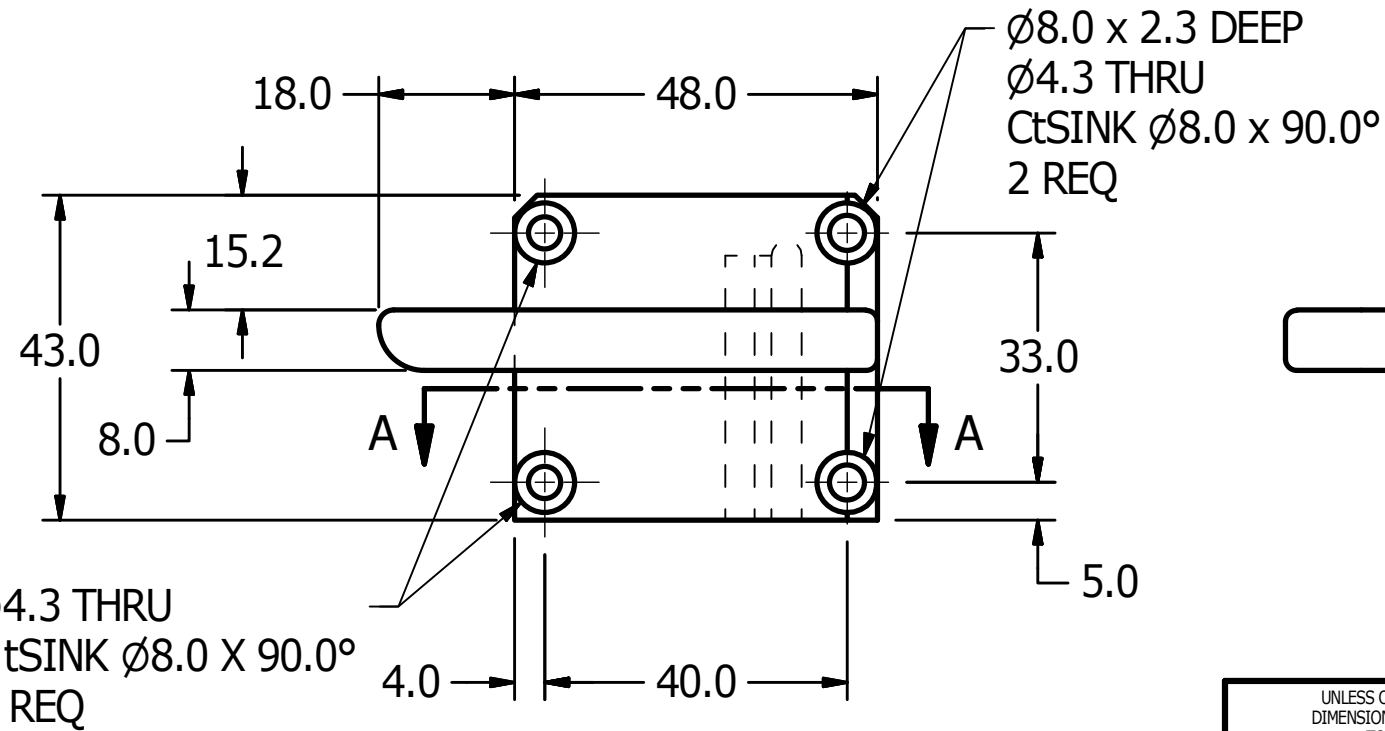
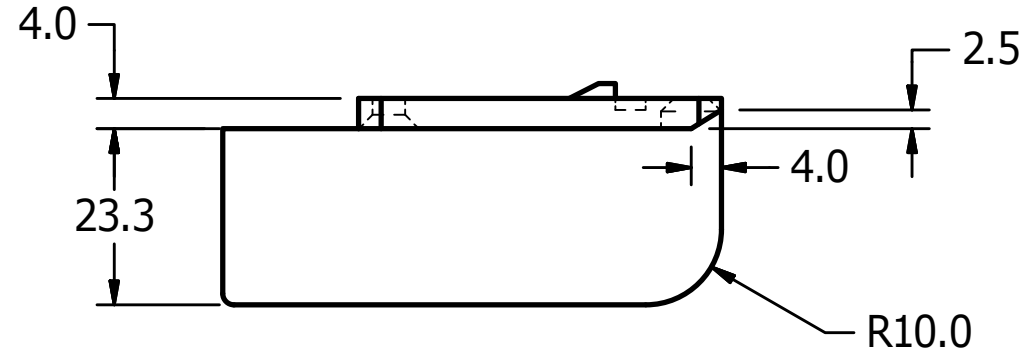
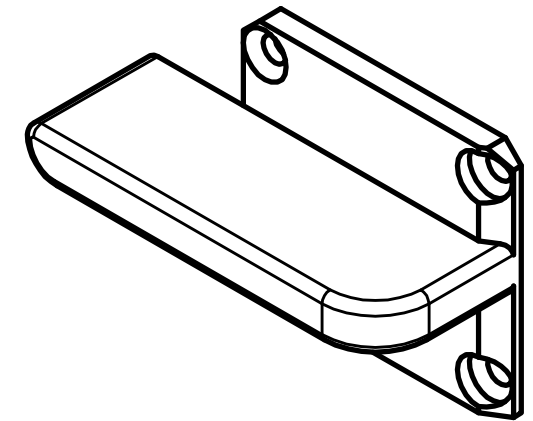
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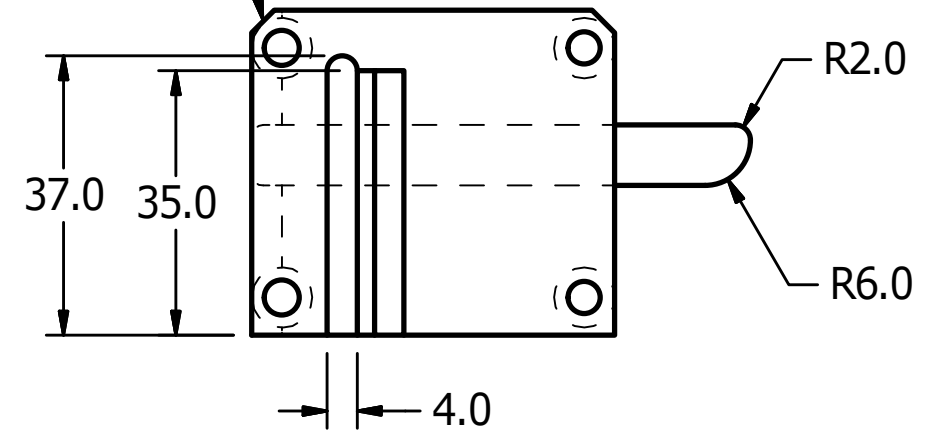
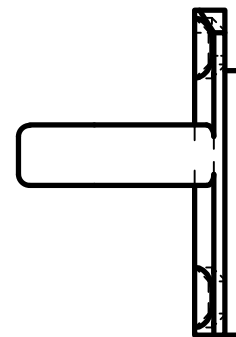
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM015B	9/11/2014	DW



SECTION A-A  
SCALE 1 : 1



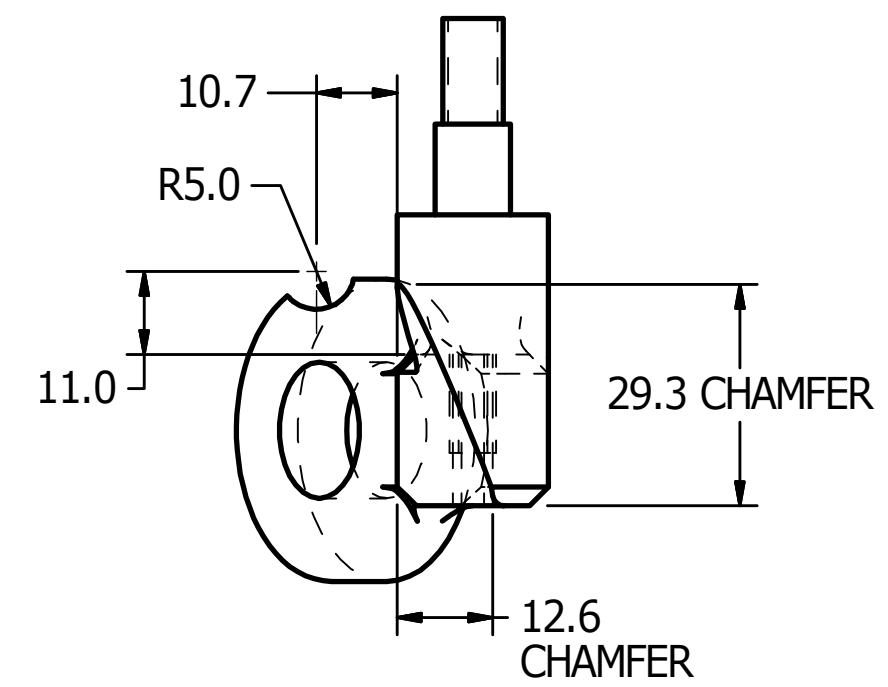
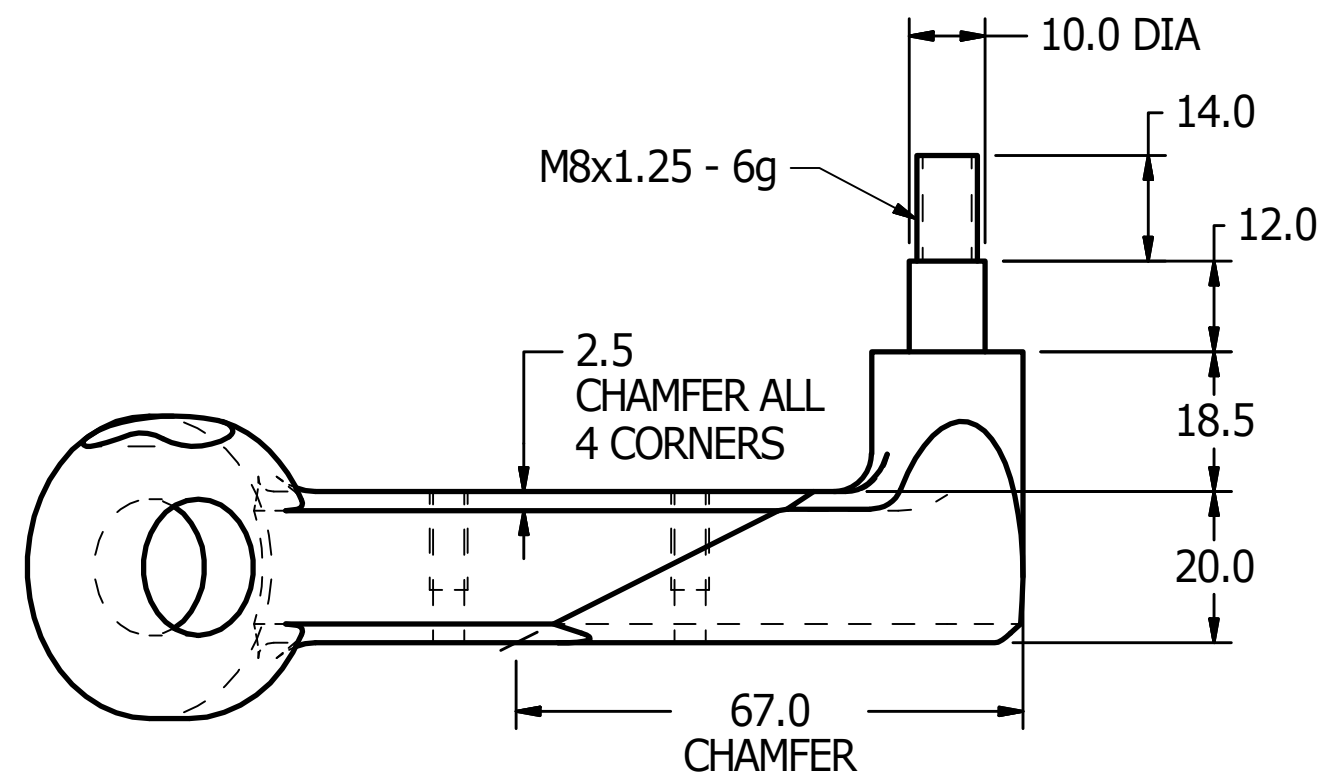
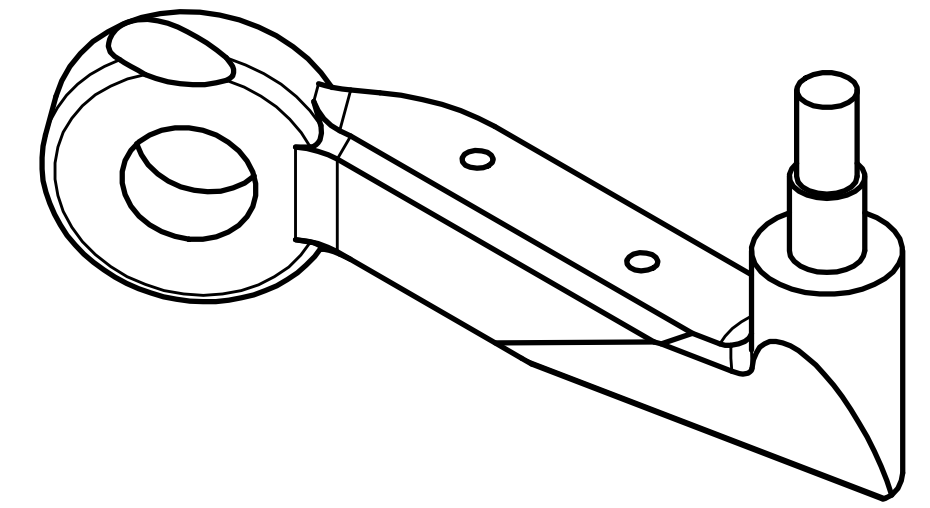
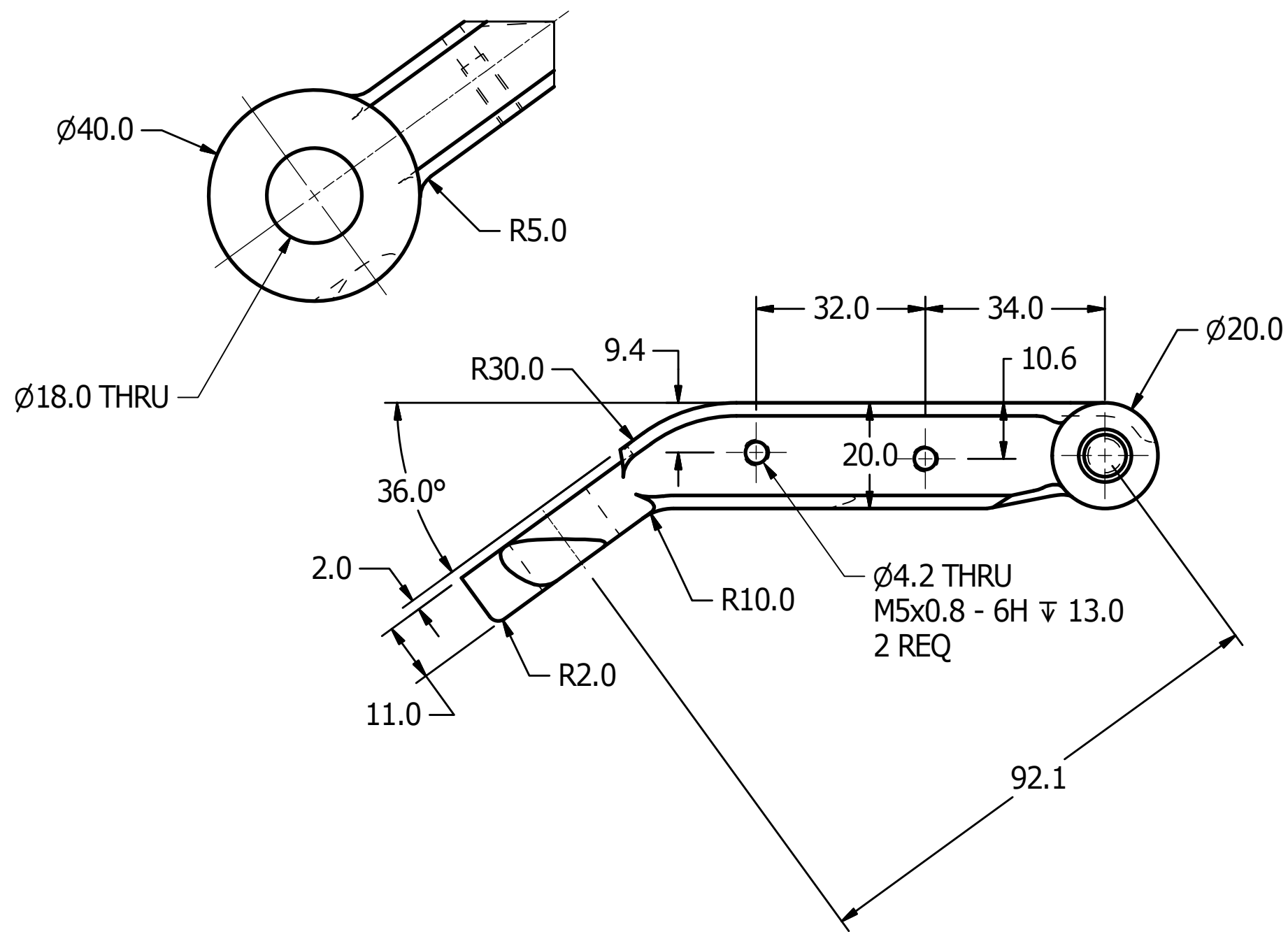
3.0 X 45.0° CHAMFER



Ø4.3 THRU  
CtSINK Ø8.0 X 90.0°  
2 REQ

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		
	DRAWN JIM CLEVINGER	8/21/2013	SIZE B	DRAWING NUMBER 472-3828-2
	MATERIAL Aluminum 6061	ENG	REV A	SHEET 1 OF 1
HEAT TREAT	APPROVED	SCALE: 1:1		
FINISH				

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM013B	9/11/2014	DW
	B	ADDED FINISH - ELECTROLESS NICKEL .008 MAX.	8/26/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		ARM LINK, RH	
DRAWN JIM CLEVINGER		8/15/2013		DRAWING NUMBER 472-3829-2	
CHECKED				REV B	
MATERIAL Steel		ENG		SIZE C	
HEAT TREAT		APPROVED		SCALE: 1:1	
FINISH ELECTROLESS NICKEL .008 MAX.				SHEET 1 OF 1	

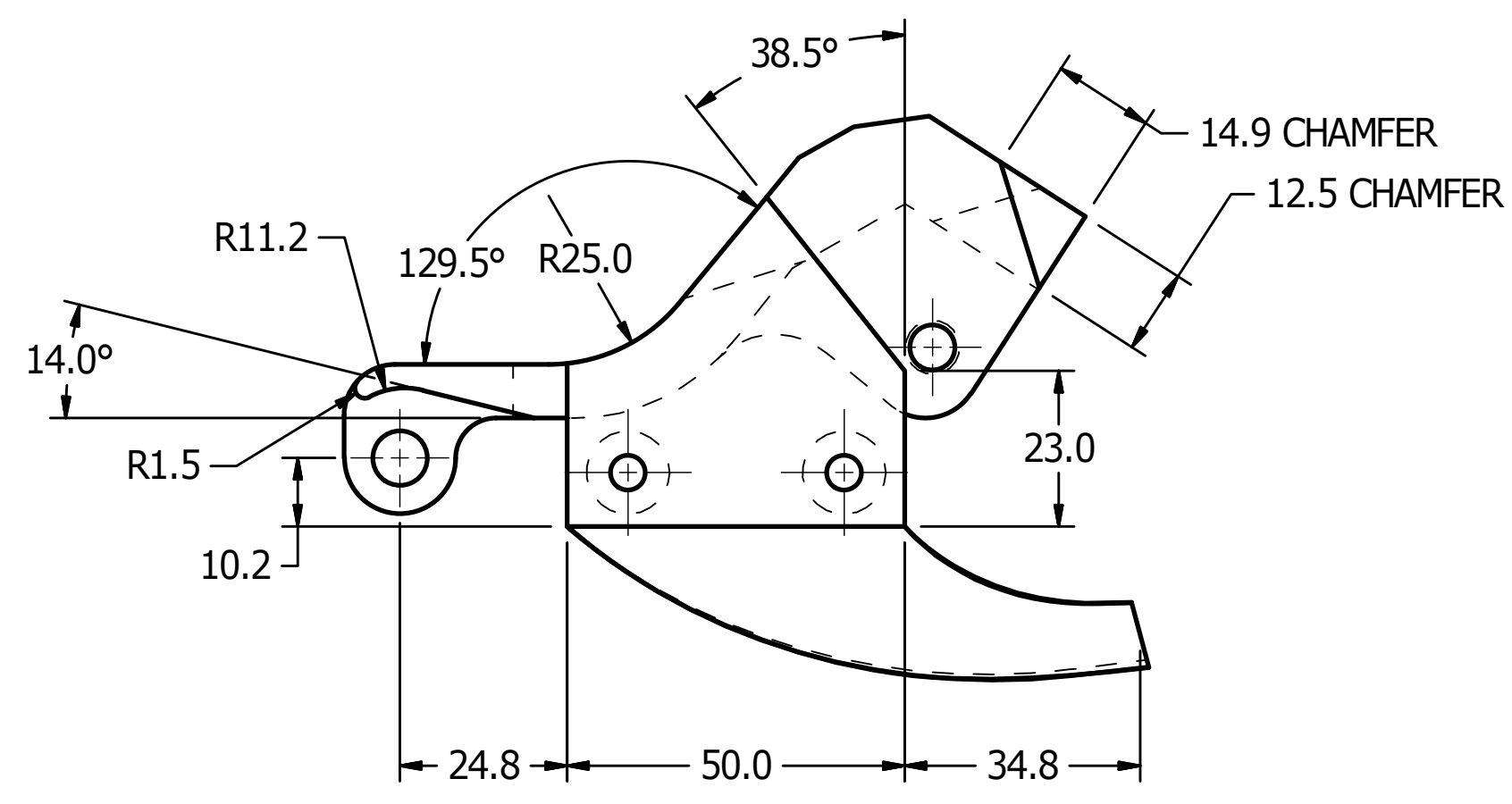
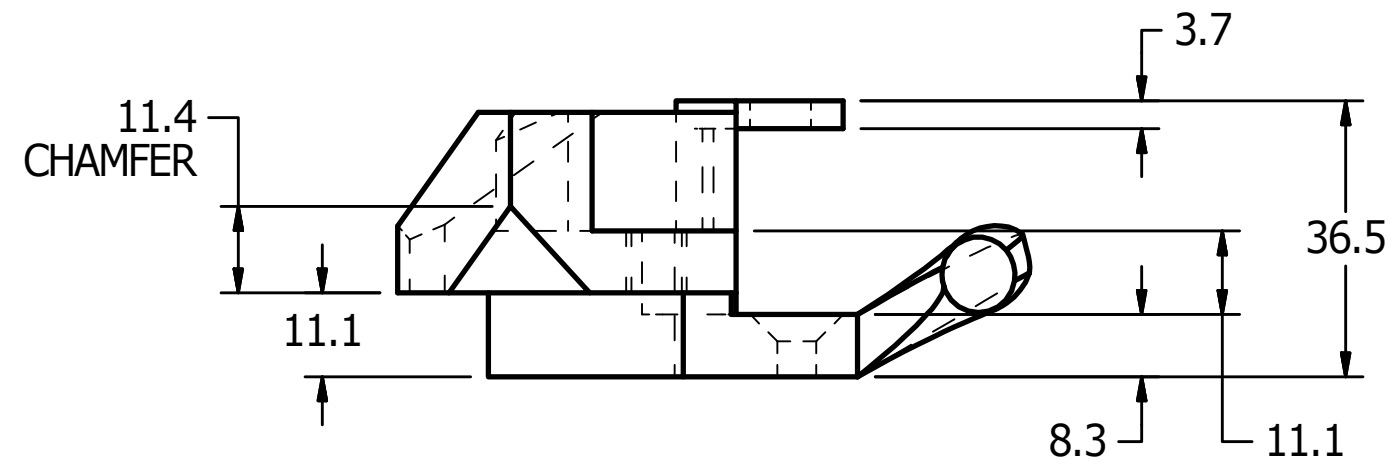
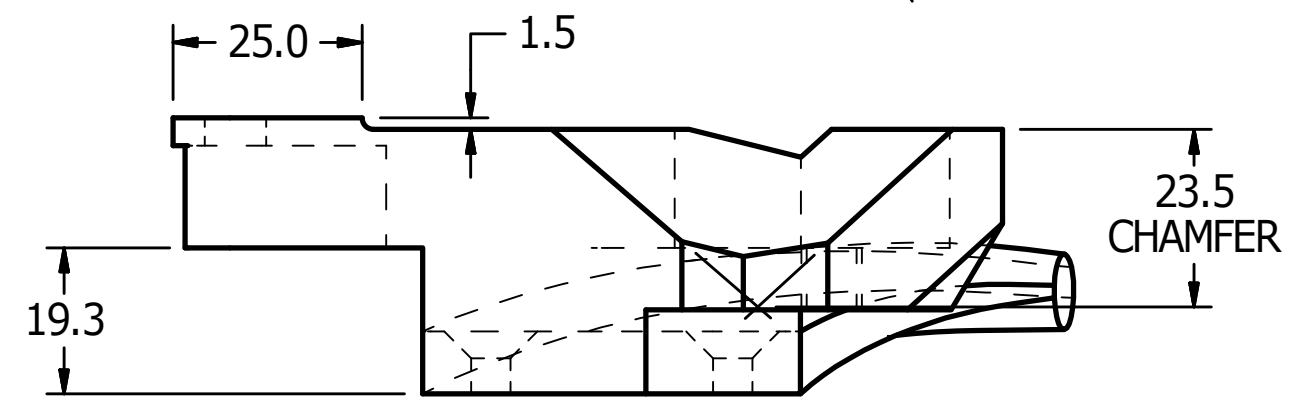
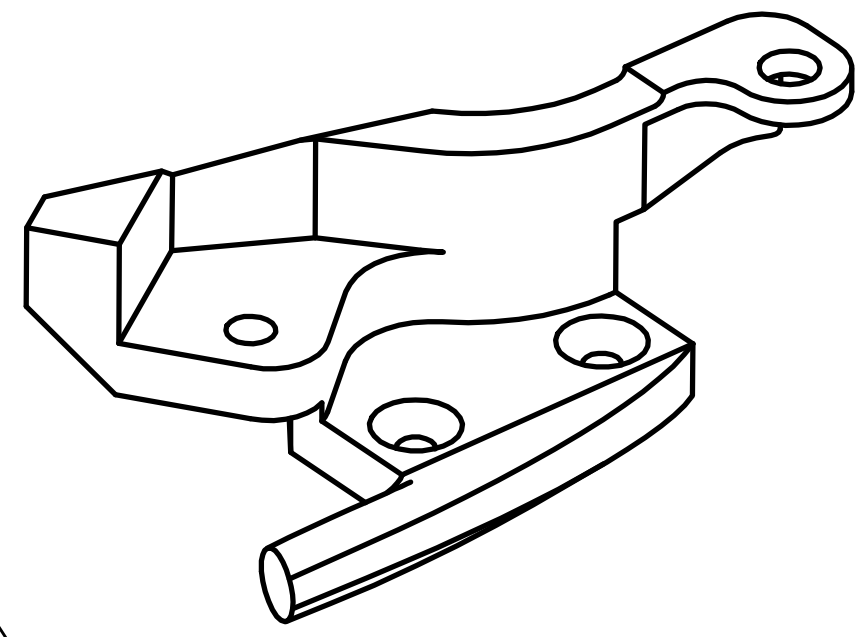
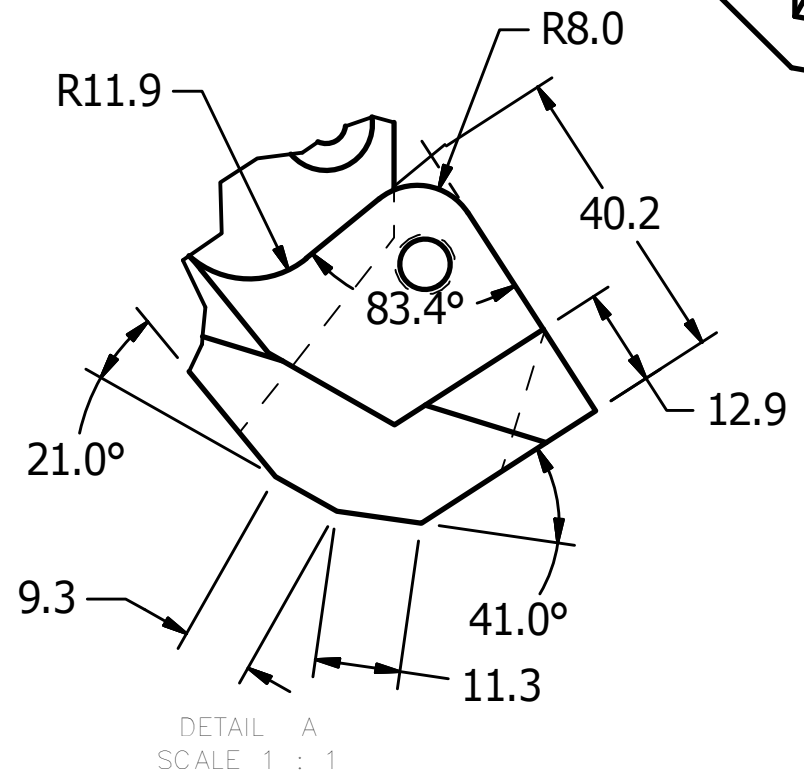
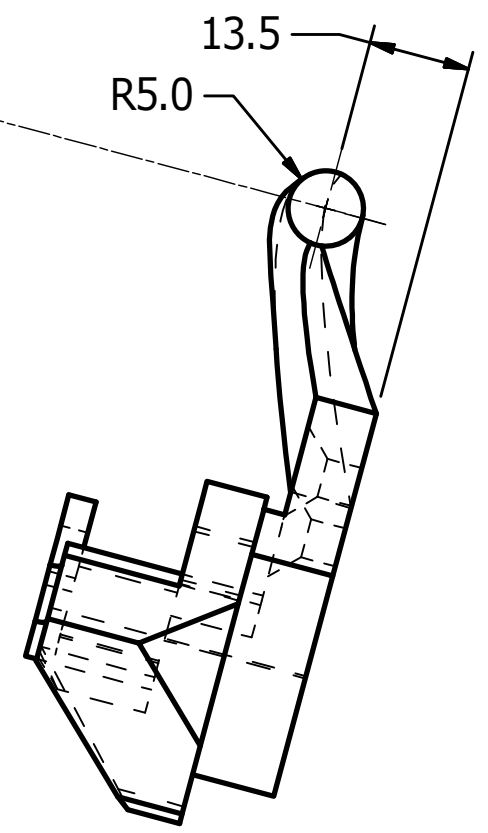
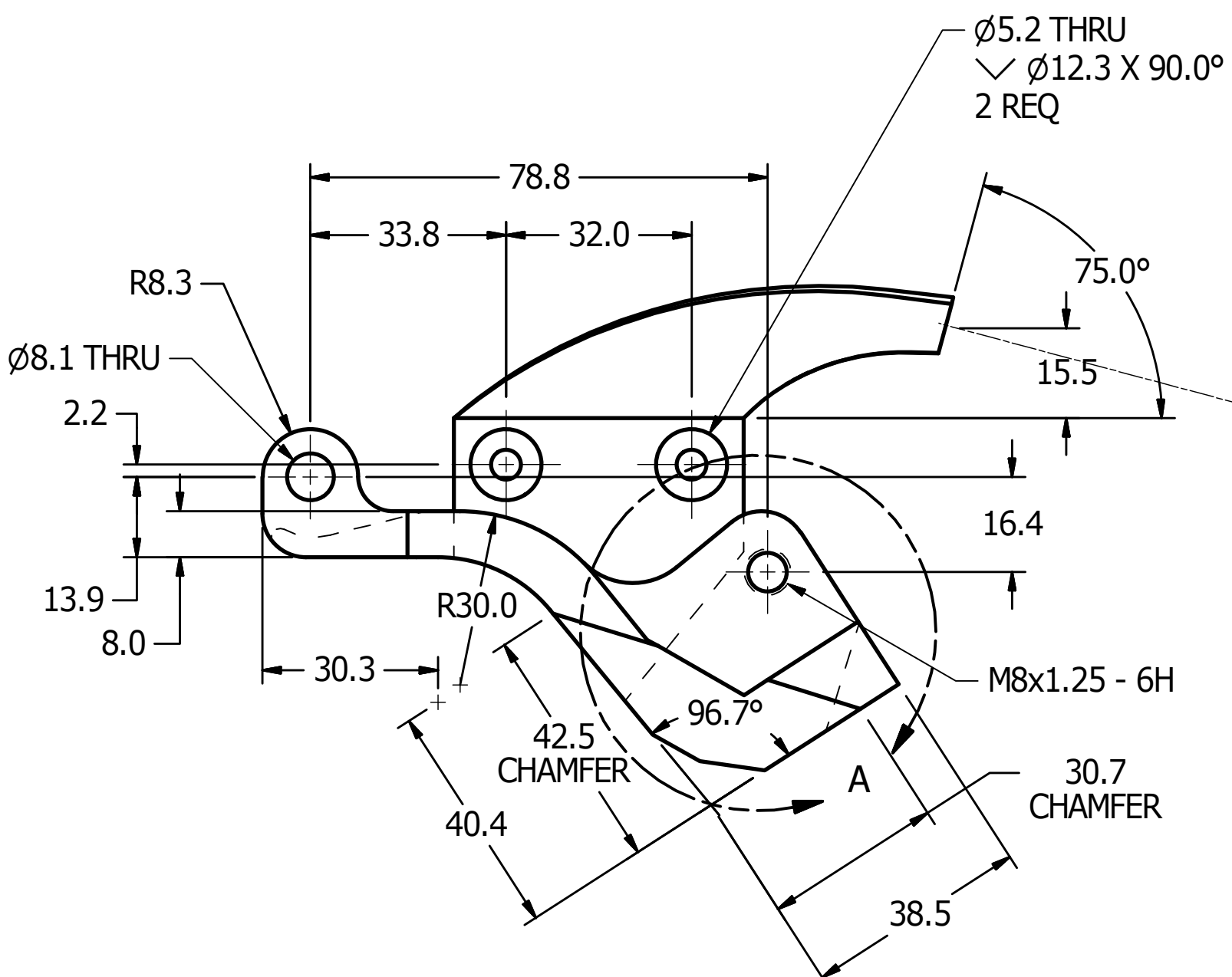
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM011B	9/11/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b> APPROVALS DATE DRAWN: JIM CLEVINGER 8/19/2013 CHECKED:		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION SCAPULA, RH	
MATERIAL: Steel	ENG	SIZE: C	DRAWING NUMBER: 472-3830-2	REV: A	
HEAT TREAT:	APPROVED:	SCALE: 1:1	SHEET: 1 OF 1		

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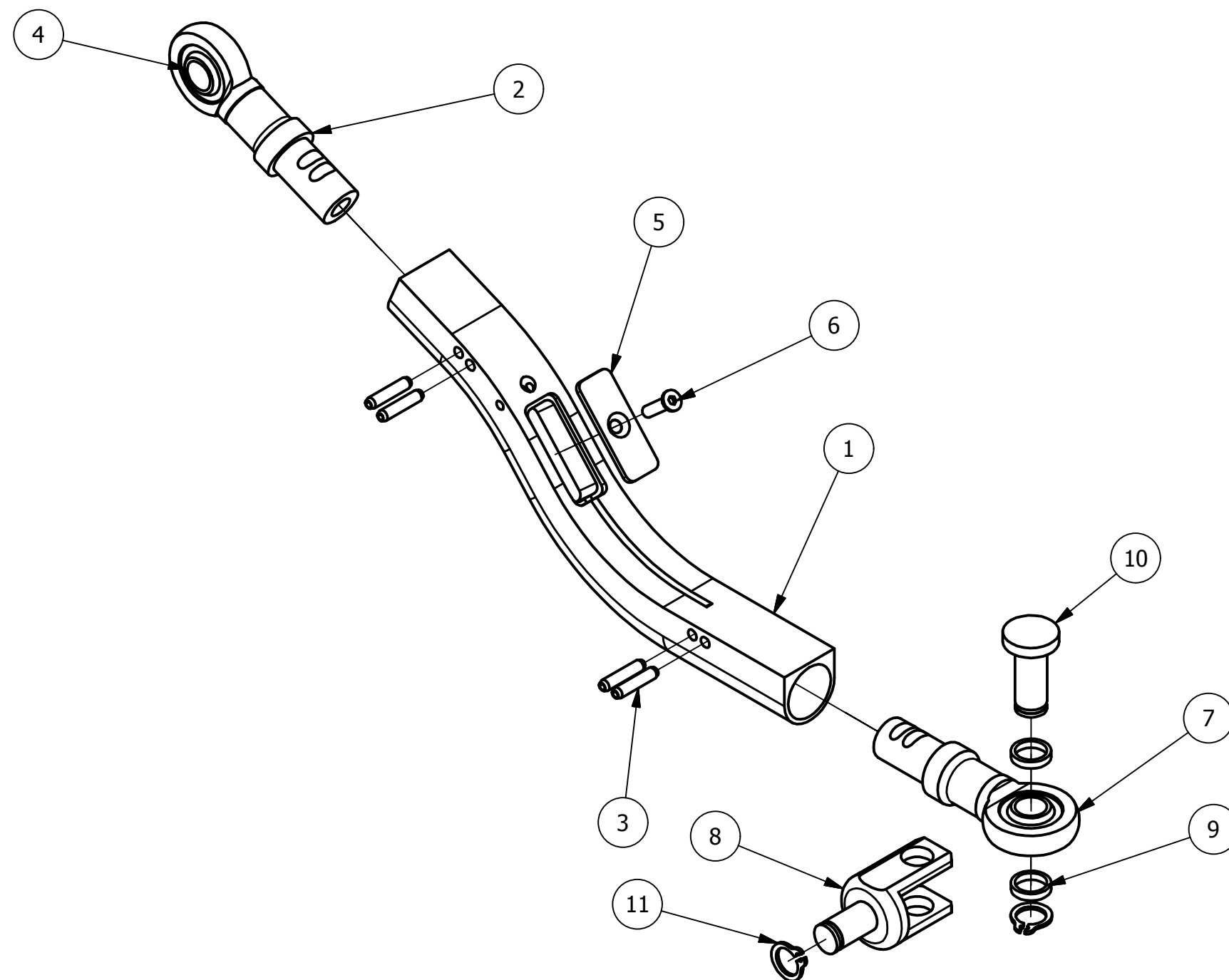
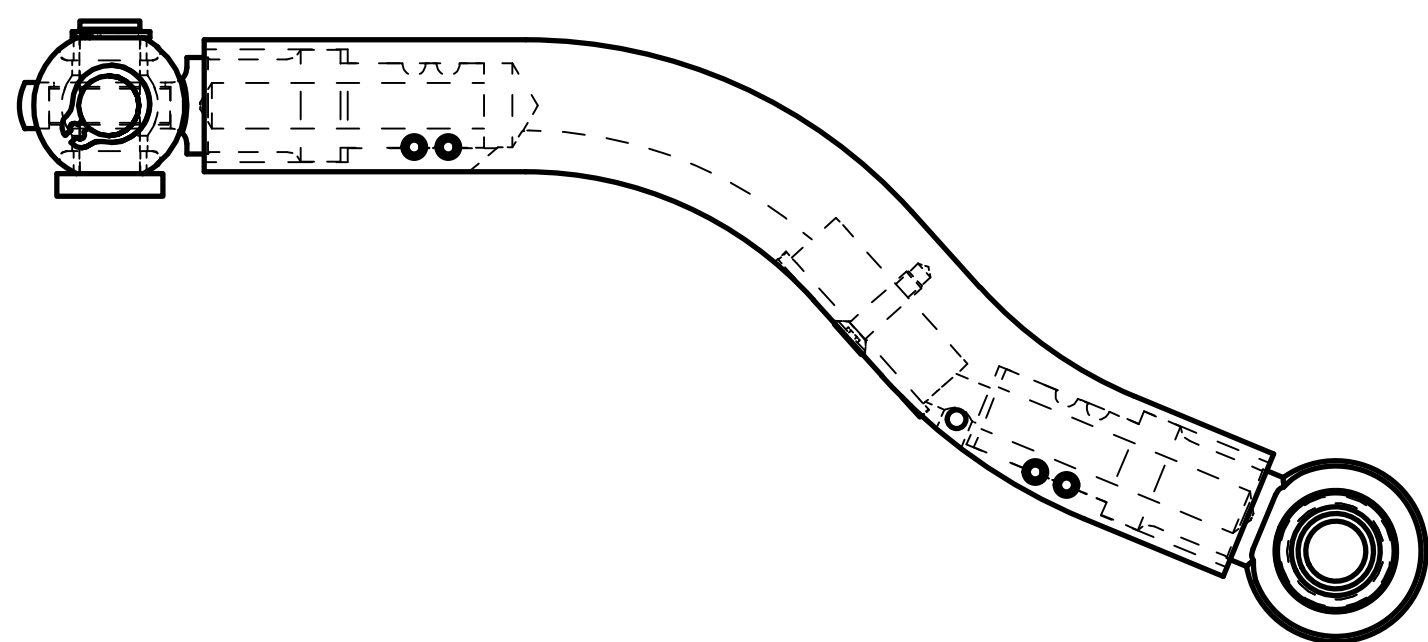
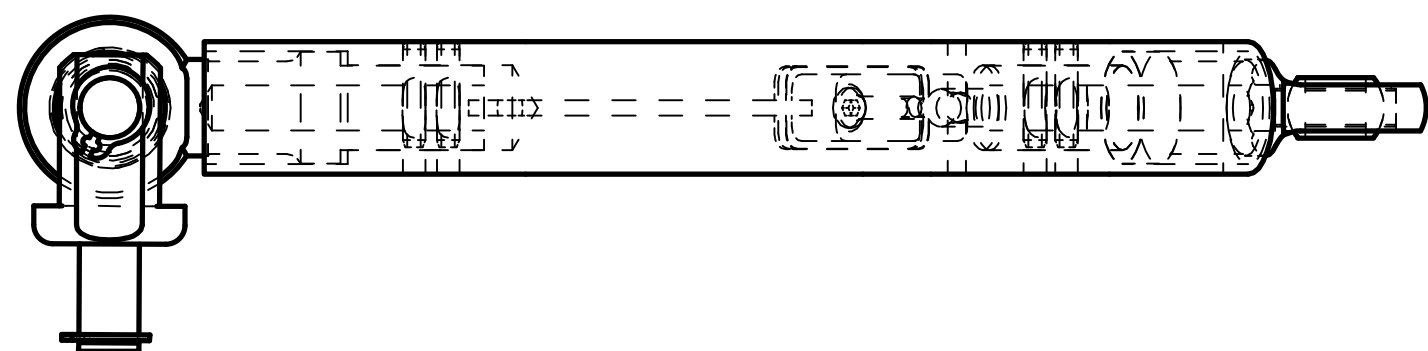
4

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1

REVISION HISTORY				
ZON	REV	DESCRIPTION	DATE	BY
	A	CHANGED SHEET SIZE TO C; REPLACED ITEMS AXSDM104B, AXSDM034B, AND AXSDM021B WITH ITEM 7, 8, 9, & 10; REMOVED ITEM 5001175V	2/5/2014	JHC
	B	DRAWING NUMBER WAS AXSDM100B; IN PARTS LIST 472-3851 WAS AXSDM101, 472-3852 WAS AXSDM103, 472-3853 WAS AXSDM102, 472-3854 WAS AXSDM105, 472-3855 WAS AXSDM107, 472-3856 WAS AXSDM108 & 472-3899 WAS AXSDM106	9/11/2014	DW
	C	ADDED EXPLODED VIEW	8/13/2015	DW



11	2	5001174V	8mm RETAINING RING
10	1	472-3899	LINKAGE PIN, INBOARD CLAVICLE
9	2	472-3856	ROD END BEARING SPACER, INBOARD
8	1	472-3855	LINKAGE BASE, INBOARD
7	1	472-3854	ROD END HOUSING, INBOARD
6	1	9010449	SCREW, FHCS M3 x 12
5	1	472-3853	CLAVICLE COVER PLATE
4	2	5000946	METRIC SPHERICAL BEARING
3	4	5000196	ROLL PIN, M3 x 14
2	1	472-3852	ROD END HOUSING, OUTBOARD
1	1	472-3851	CLAVICLE

ITEM	QTY	PART NUMBER	DESCRIPTION
<b>PARTS LIST</b>			
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>		<b>VEHICLE RESEARCH and TEST CENTER</b> <small>APPROVALS DATE</small> <small>DRAWN JIM CLEVINGER 8/12/2013</small> <small>CHECKED</small>	
		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
		<b>LEFT CLAVICLE ASSEMBLY</b>	
MATERIAL	ENG	SIZE	DRAWING NUMBER
HEAT TREAT	APPROVED	C	472-3850
FINISH		SCALE: 1:1	REV C
		SHEET 1 OF 1	

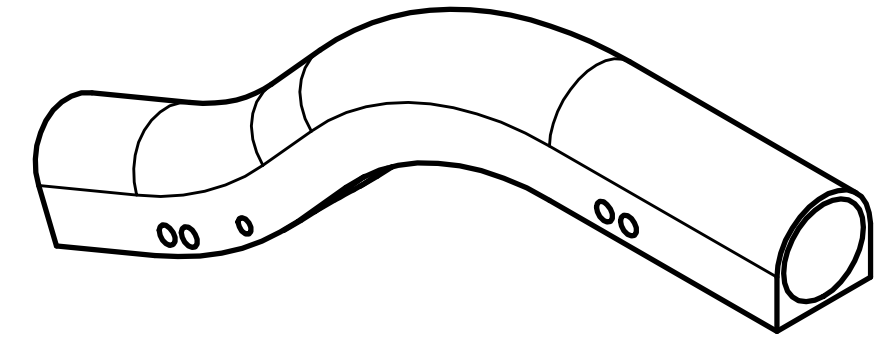
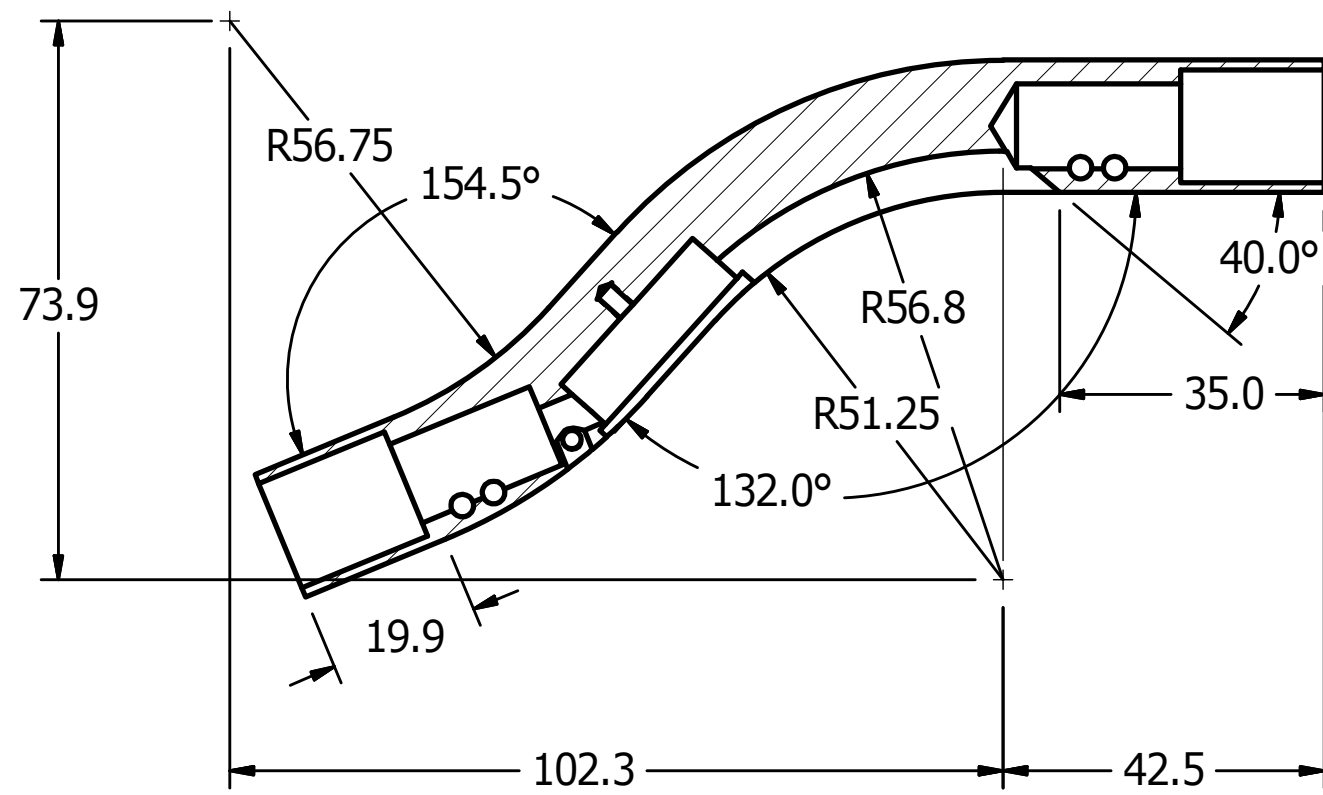
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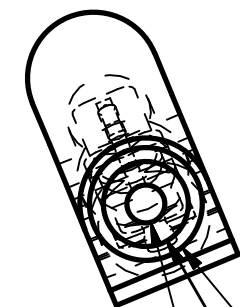
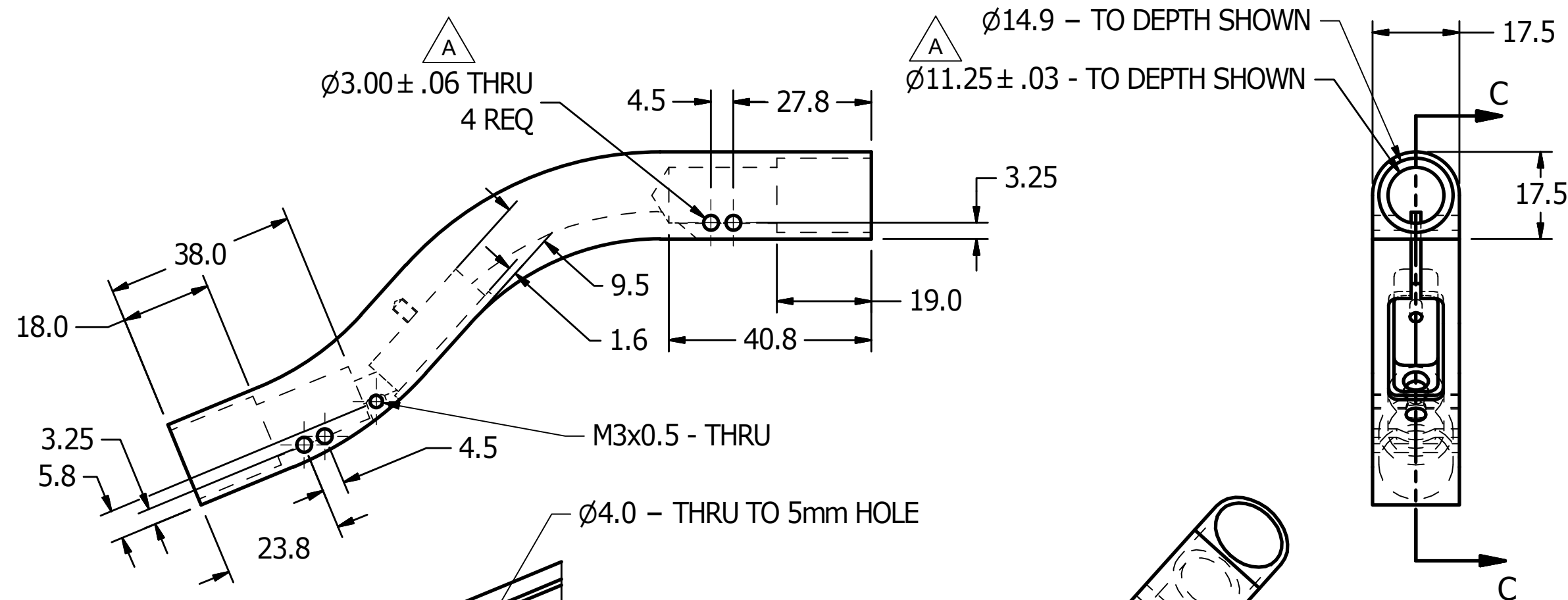
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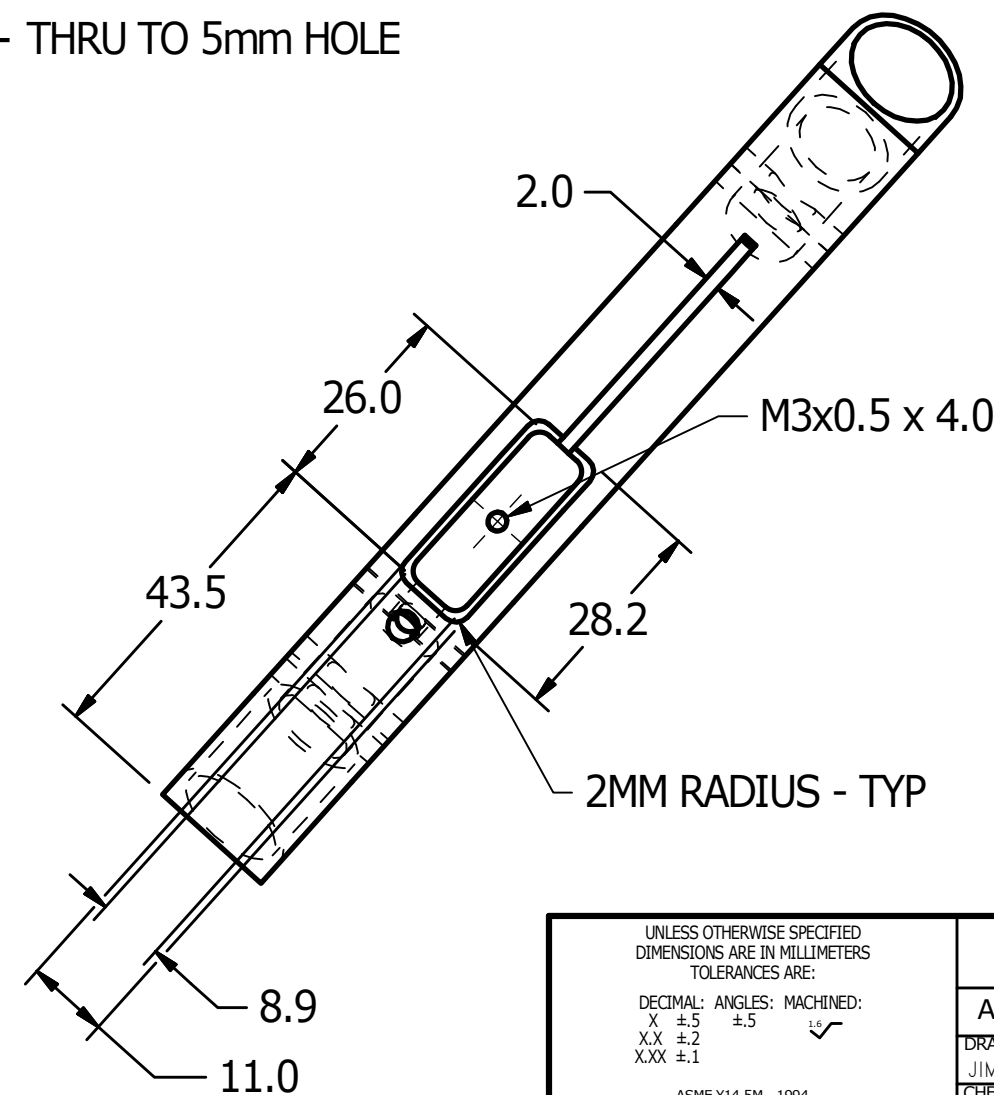
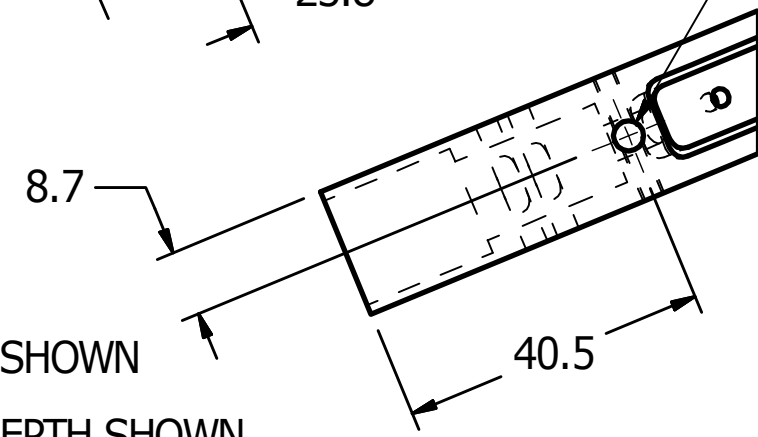
REVISION HISTORY				
ZON	RE	DESCRIPTION	DATE	BY
	A	ADDED TOLERANCES	8/13/2013	JHC
	B	DRAWING NUMBER WAS AXSDM101	9/11/2014	DW



SECTION C-C  
SCALE 1 : 1



$\phi 14.9$  - TO DEPTH SHOWN  
 $\phi 11.25 \pm .03$  - TO DEPTH SHOWN  
 $\phi 5.0$  - THRU



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		APPROVALS	DATE	CLAVICLE	
		DRAWN			
		JIM CLEVINGER	8/13/2013		
		CHECKED			
MATERIAL	4140 STEEL	ENG		SIZE	C
HEAT TREAT	28-32 Rc	APPROVED		DRAWING NUMBER	472-3851
FINISH				SCALE:	1:1
				SHEET	1 OF 1

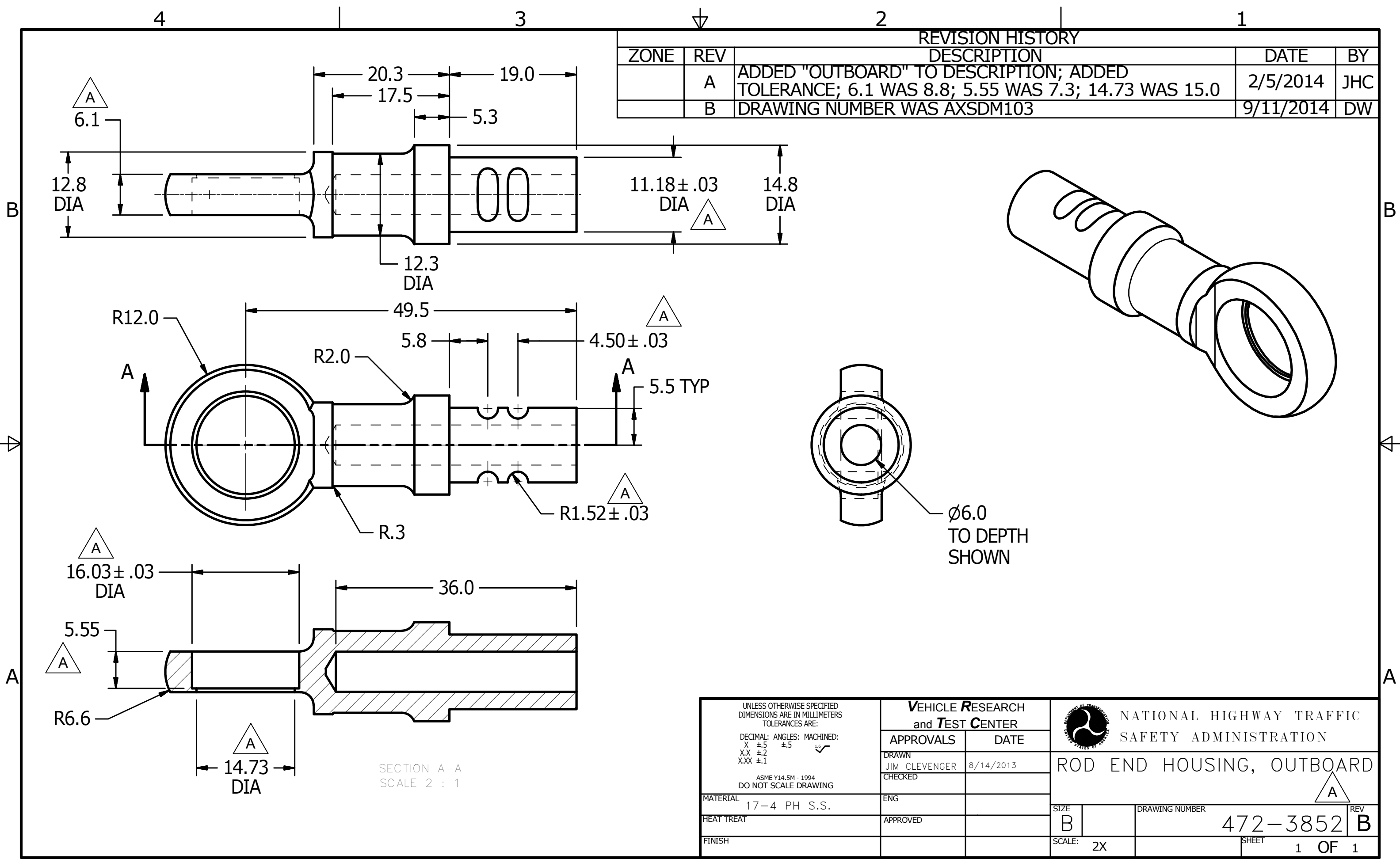
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	ADDED "OUTBOARD" TO DESCRIPTION; ADDED TOLERANCE; 6.1 WAS 8.8; 5.55 WAS 7.3; 14.73 WAS 15.0	2/5/2014	JHC
	B	DRAWING NUMBER WAS AXSDM103	9/11/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5    ANGLES: ±.5    MACHINED: 1.6 ✓ X.X ±.2    X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		
	DRAWN JIM CLEVINGER	8/14/2013	ROD END HOUSING, OUTBOARD 	
	CHECKED			
MATERIAL 17-4 PH S.S.	ENG	SIZE B	DRAWING NUMBER 472-3852	
HEAT TREAT	APPROVED	SCALE: 2X	REV B	
FINISH		SHEET 1 OF 1		

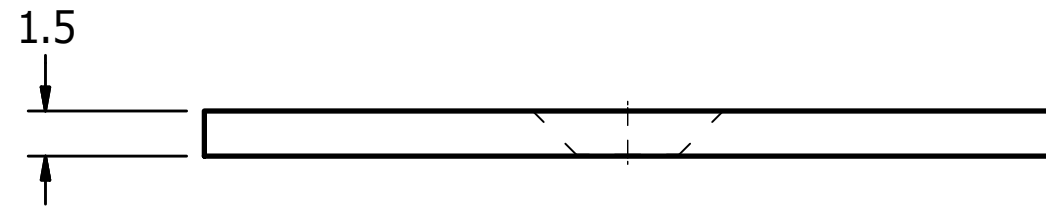
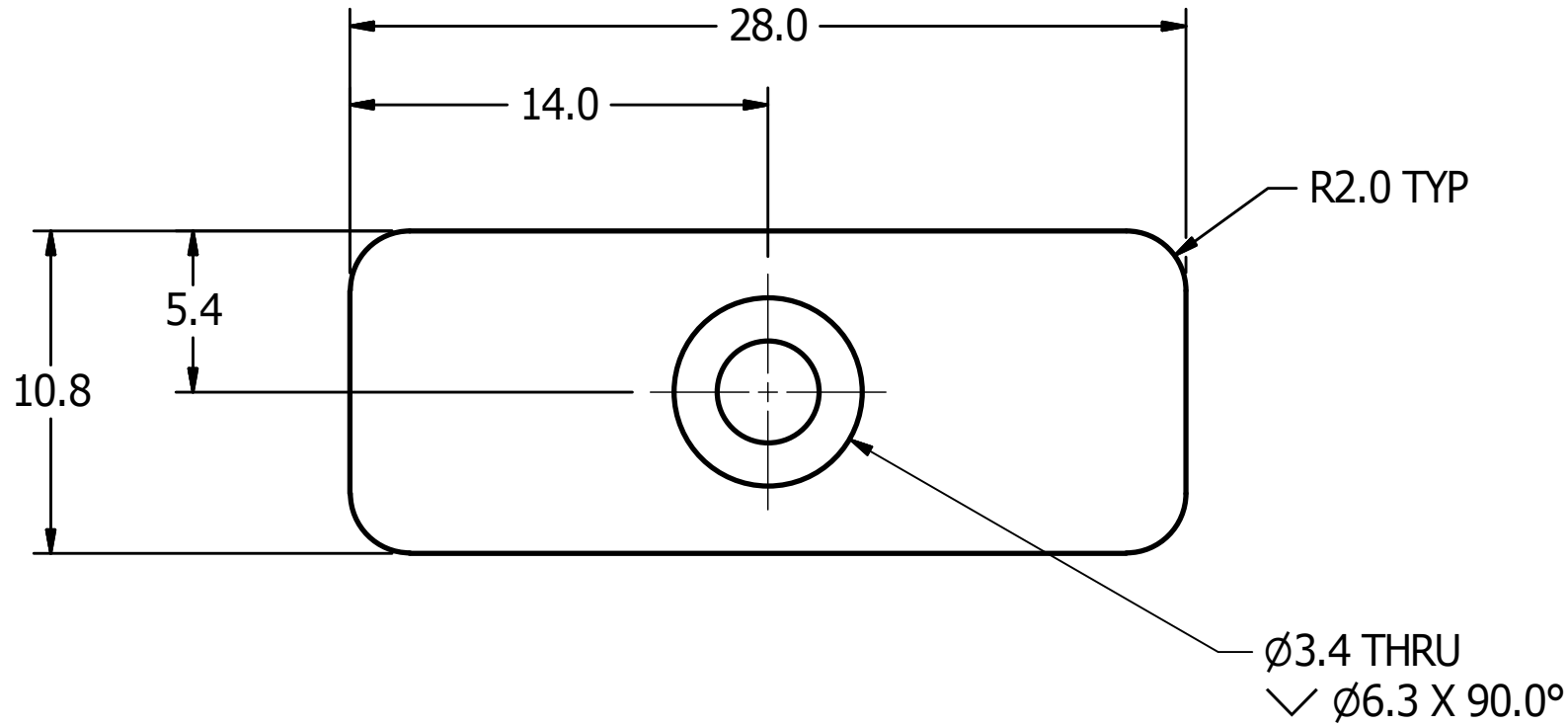
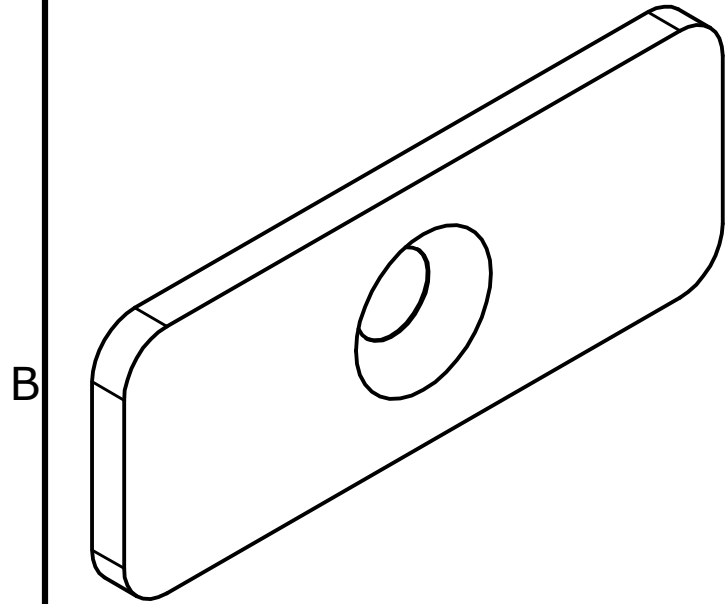
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	DESI
	A	DRAWING NUMBER WAS AXSDM102	9/11/2014	DW




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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/14/2013	
	CHECKED		
MATERIAL Steel	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3853
FINISH			SCALE: 4X
			REV A
			SHEET 1 OF 1

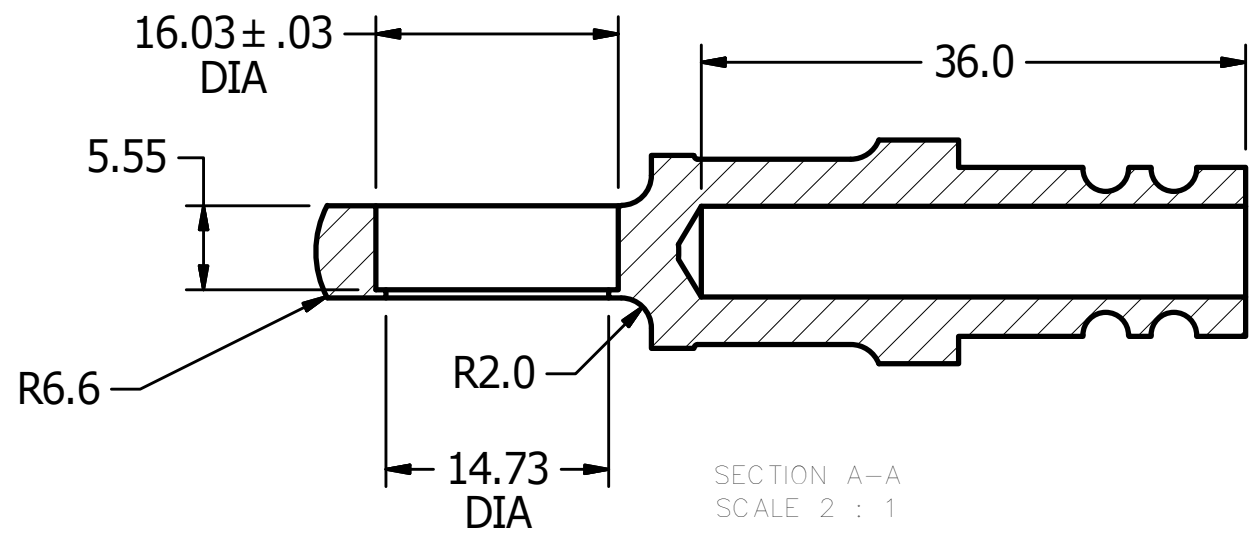
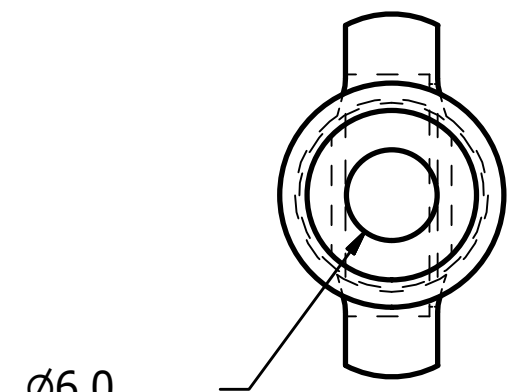
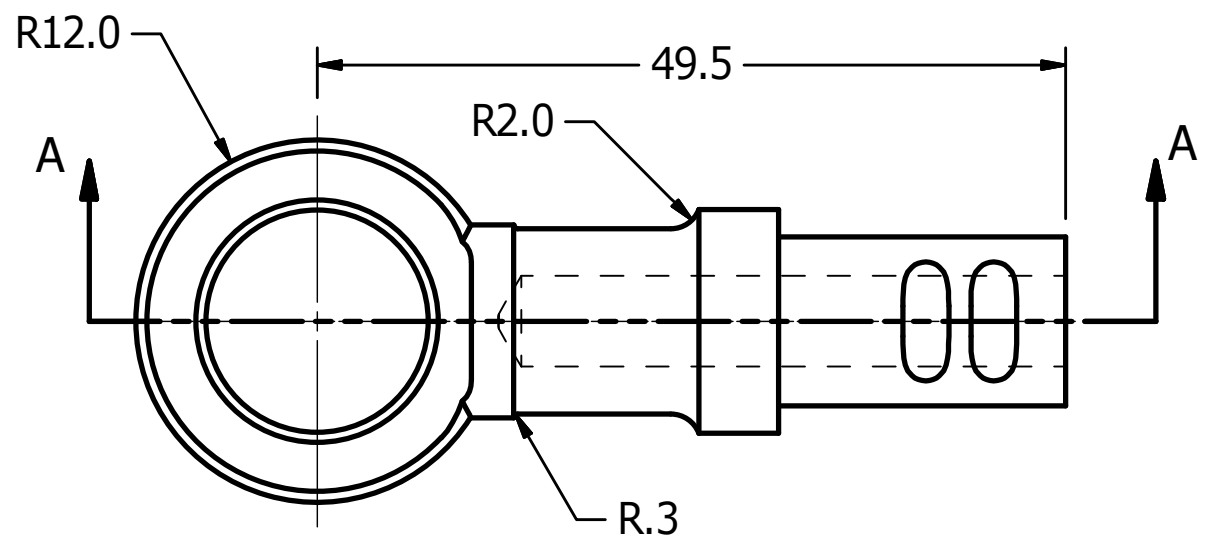
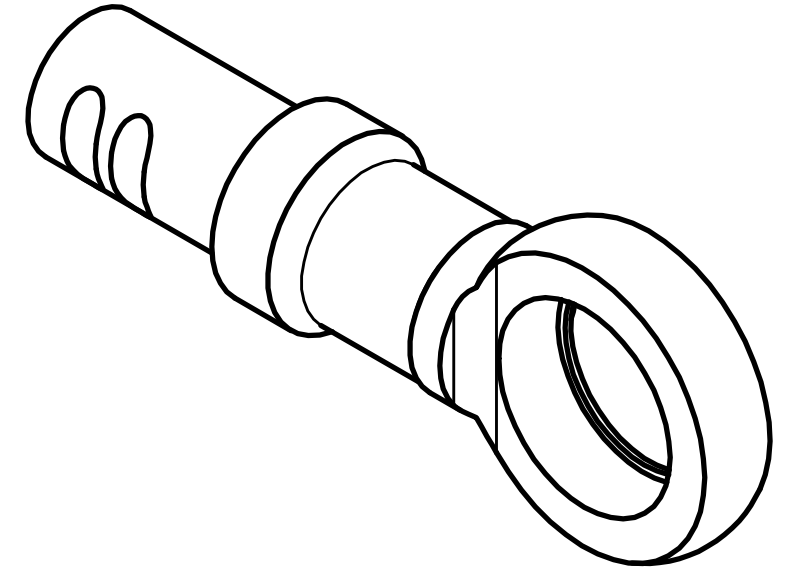
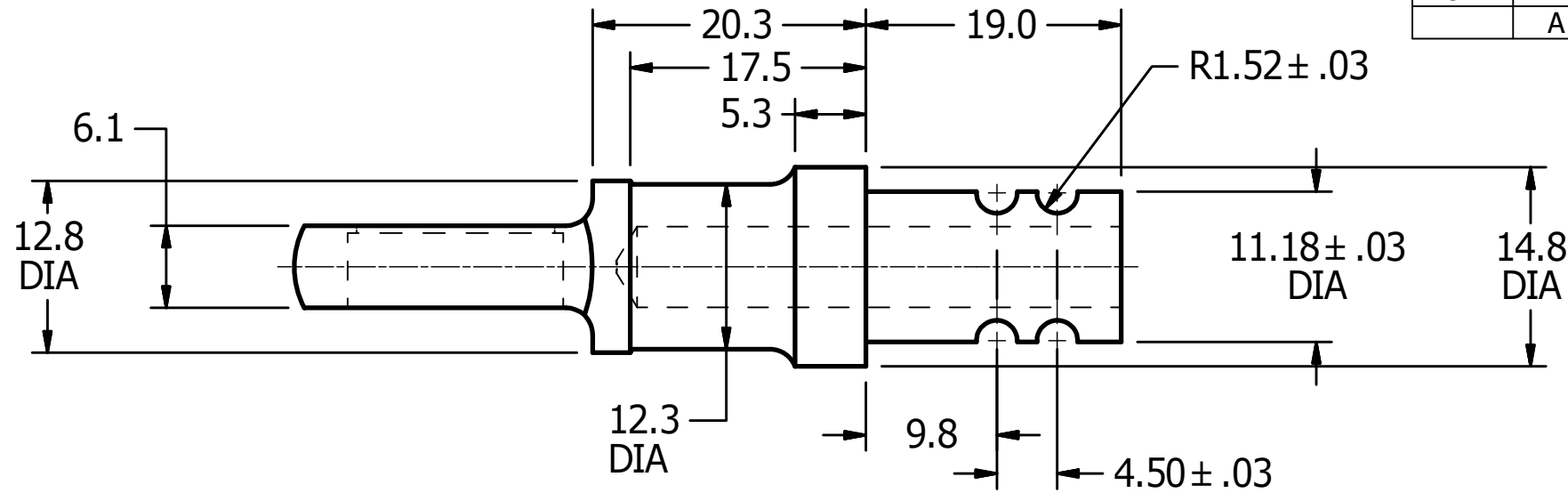
4

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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM105	9/11/2014	DW



SECTION A-A  
SCALE 2 : 1

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:  
DECIMAL: X ±.5 ANGLES: ±.5 MACHINED: ✓  
X.X ±.2  
X.XX ±.1  
ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

<b>VEHICLE RESEARCH and TEST CENTER</b>	
APPROVALS	DATE
DRAWN JIM CLEVINGER	8/14/2013
CHECKED	
ENG	
APPROVED	
FINISH	

		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
ROD END HOUSING, INBOARD			
SIZE B	DRAWING NUMBER 472-3854	REV A	
SCALE: 2X	SHEET 1	OF 1	



4

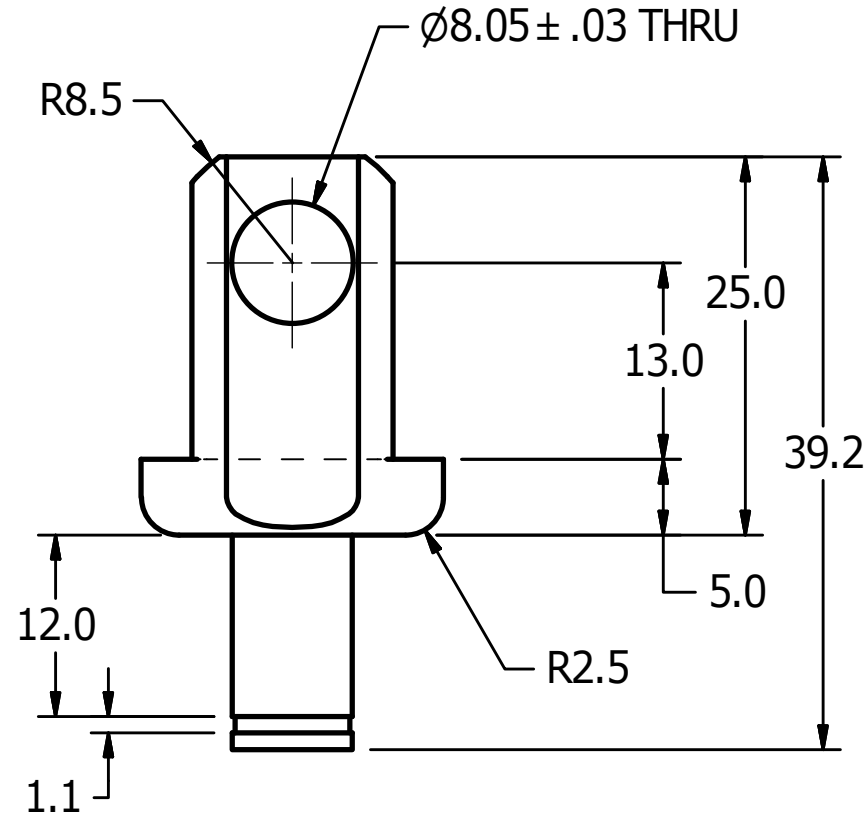
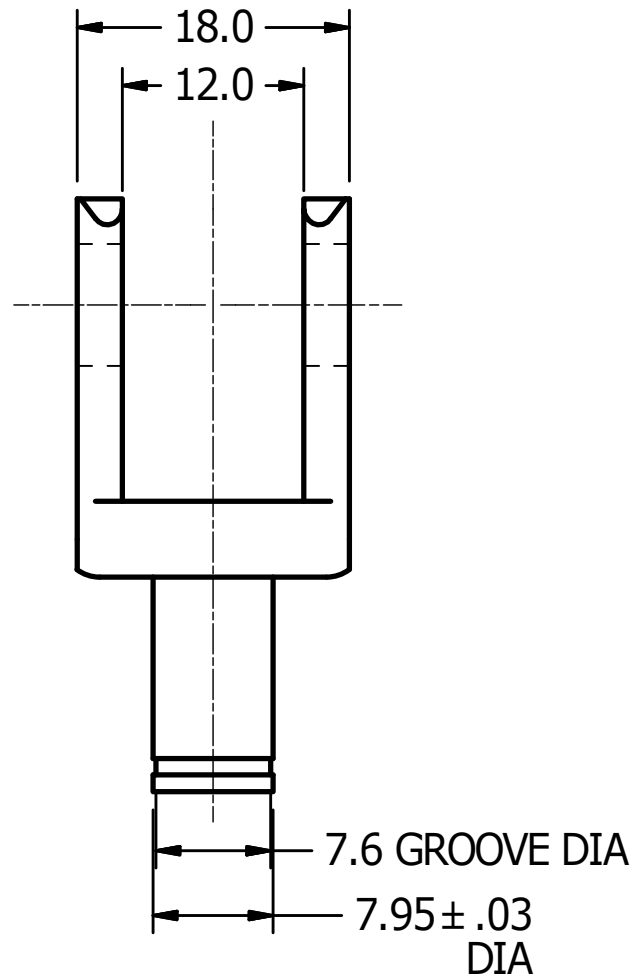
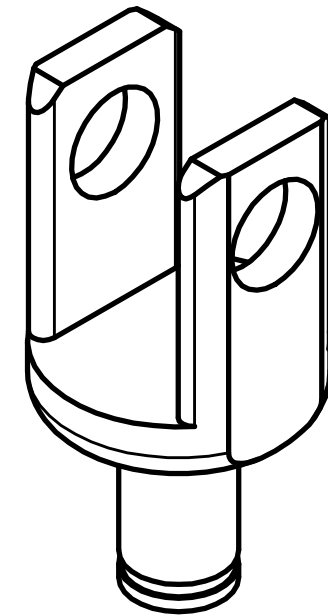
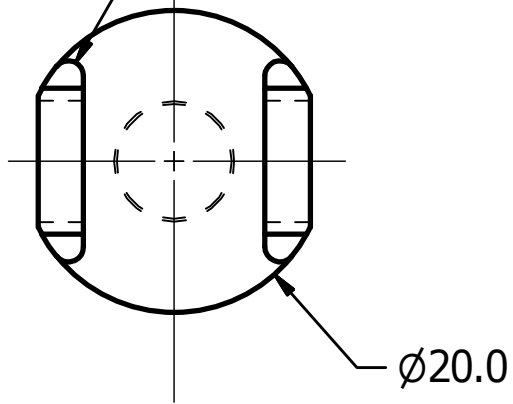
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1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM107	9/11/2014	DW

R1.0 TYP - 4 PLACES



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		LINKAGE BASE, INBOARD THOR-M
	DRAWN JIM CLEVINGER	2/10/2014	SIZE B	
	CHECKED		DRAWING NUMBER 472-3855	
MATERIAL Steel	ENG		REV A	
HEAT TREAT	APPROVED		SHEET 1 OF 1	
FINISH				

4

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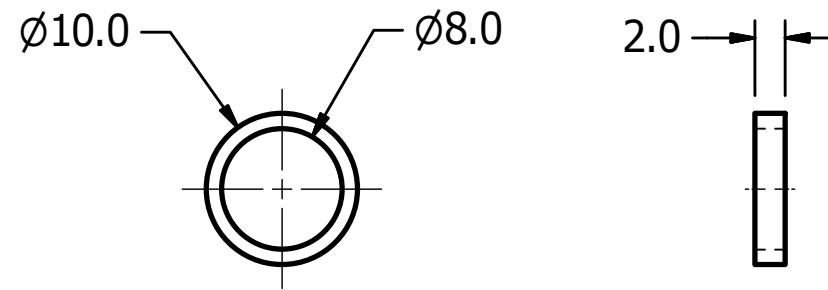
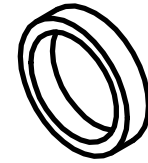
4

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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	DESI
	A	DRAWING NUMBRER WAS AXSDM108	9/11/2014	DW




B

B

A

A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		ROD END BEARING SPACER, INBOARD
	DRAWN JIM CLEVINGER CHECKED	2/10/2014		
MATERIAL Aluminum 6061	ENG		SIZE B DRAWING NUMBER 472-3856 REV A	
HEAT TREAT	APPROVED		SHEET 1 OF 1	
FINISH				

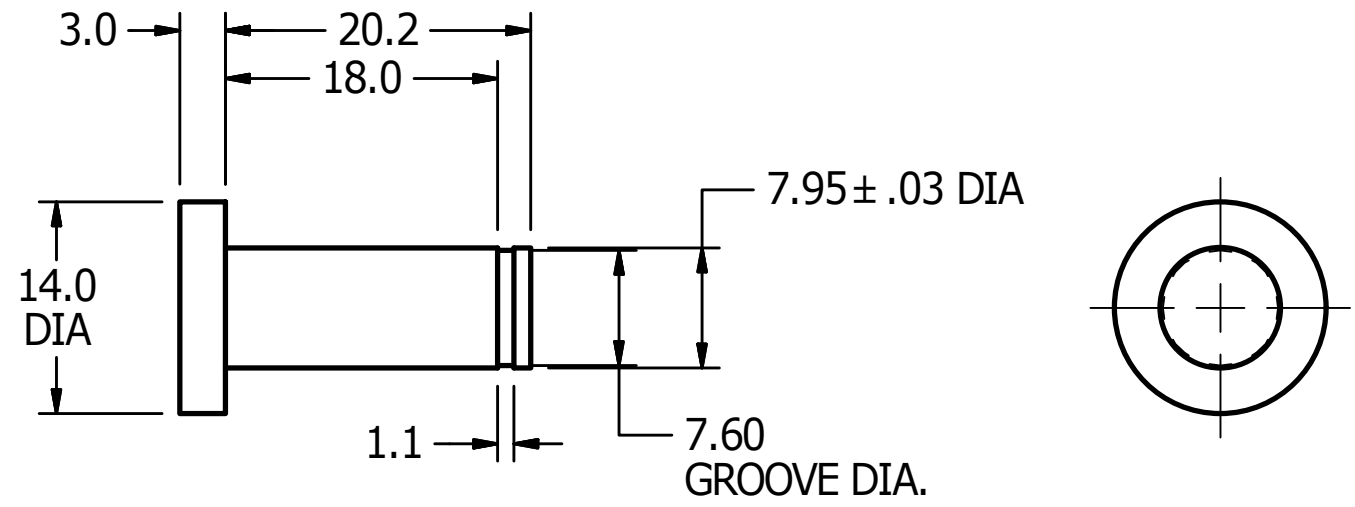
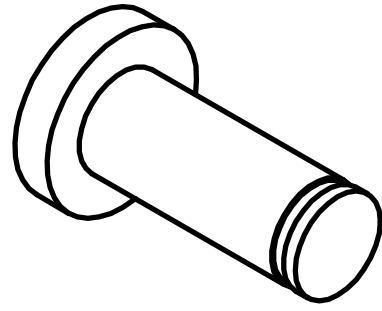
4


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1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXADM106	9/15/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	2/10/2014	LINKAGE PIN, INBOARD CLAVICLE
	CHECKED		
MATERIAL Steel	ENG	SIZE B	DRAWING NUMBER 472-3899
HEAT TREAT	APPROVED	SCALE:	REV A
FINISH			SHEET 1 OF 1

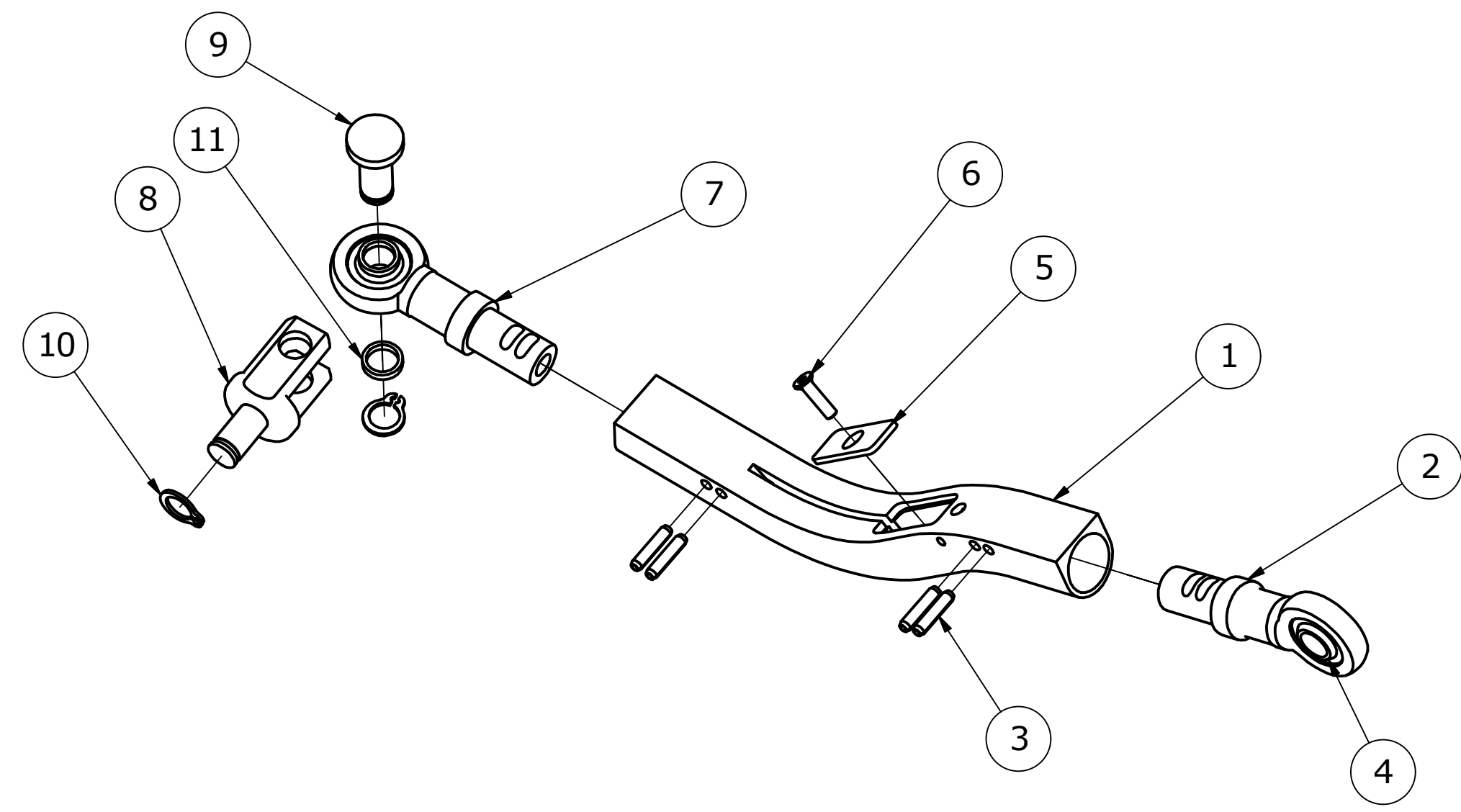
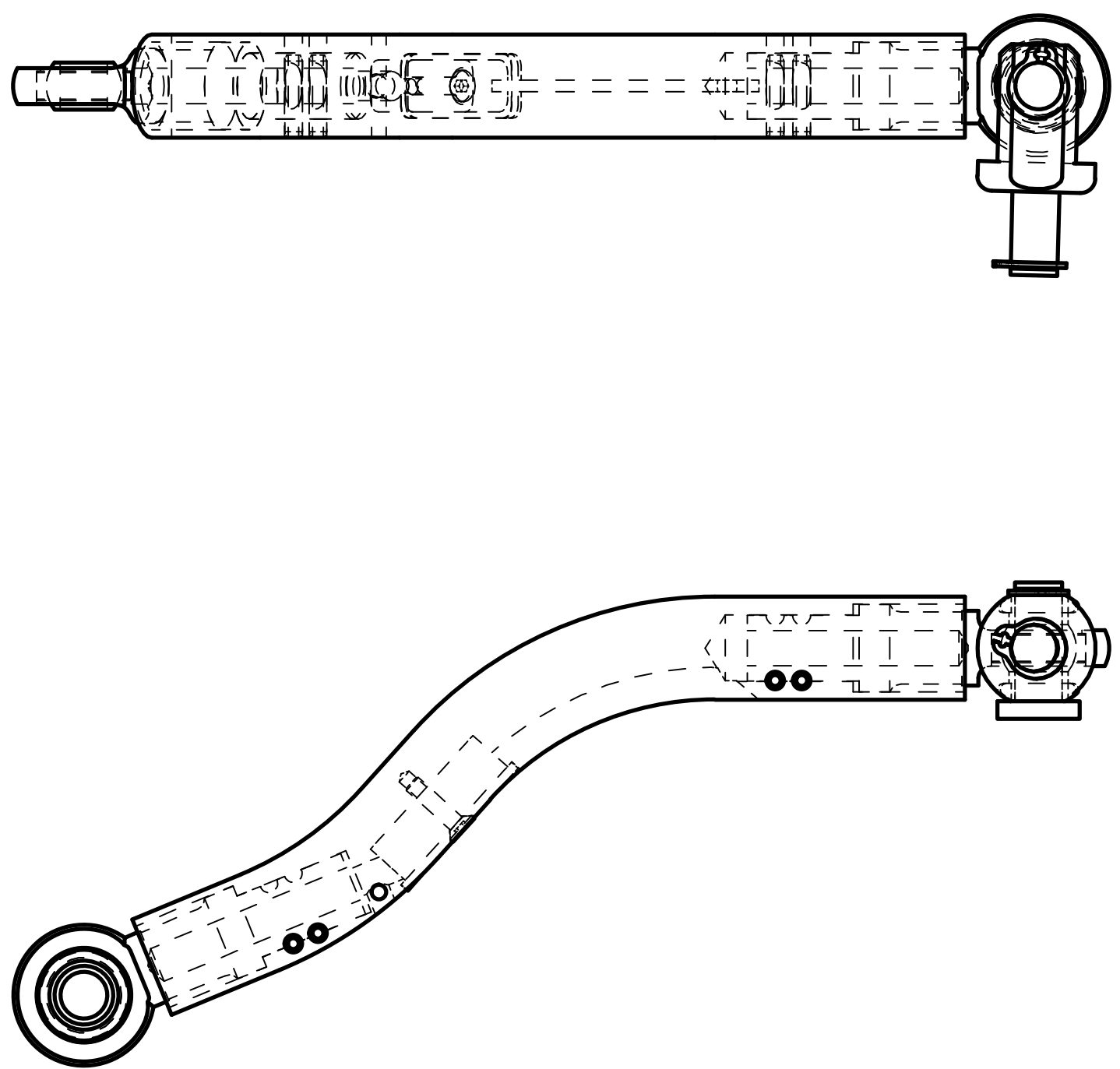
4

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REVISION HISTORY				
ZON	RE	DESCRIPTION	DATE	BY
	A	CHANGED SHEET SIZE TO C; REPLACED ITEMS AXSDM104B, AXSDM034B, AND AXSDM021B ITEM 7, 8, 9, & 10; REMOVED ITEM 5001175V	2/5/2014	JHC
	B	DRAWING NUMBER WAS AXSDM200B; IN PARTS LIST 472-3851 WAS AXSDM101, 472-3852 WAS AXSDM103, 472-3853 WAS AXSDM102, 472-3854 WAS AXSDM1058, 472-3855 WAS ASXDM107, 472-3857 WAS AXSDM106 & 472-3856 WAS AXSDM108	9/11/2014	DW
	C	ADDED EXPLODED VIEW, MOVED BALLOON CALLOUTS TO EXPLODED VIEW	7/27/2015	DW



B	11	2	472-3856	ROD END BEARING SPACER, INBOARD
	10	2	5001174V	8mm RETAINING RING
B	9	1	472-3899	LINKAGE PIN, INBOARD CLAVICLE
	8	1	472-3855	LINKAGE BASE, INBOARD
B	7	1	472-3854	ROD END HOUSING, INBOARD
	6	1	5000377	SCREW, FHCS M3 x 12
B	5	1	472-3853	CLAVICLE COVER PLATE
	4	2	5000946	METRIC SPHERICAL BEARING
	3	4	5000196	ROLL PIN, M3 x 14
B	2	1	472-3852	ROD END HOUSING, OUTBOARD
B	1	1	472-3851	CLAVICLE

ITEM	QTY	PART NUMBER	DESCRIPTION
<b>PARTS LIST</b>			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1		<b>VEHICLE RESEARCH and TEST CENTER</b>	
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		APPROVALS DRAWN: JIM CLEVINGER CHECKED:	DATE 8/12/2013
MATERIAL	ENG	 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> <b>RIGHT CLAVICLE ASSEMBLY</b>	
HEAT TREAT	APPROVED		
FINISH			
SIZE	C	DRAWING NUMBER	472-3860
SCALE:	1:1	SHEET	1 OF 1

4

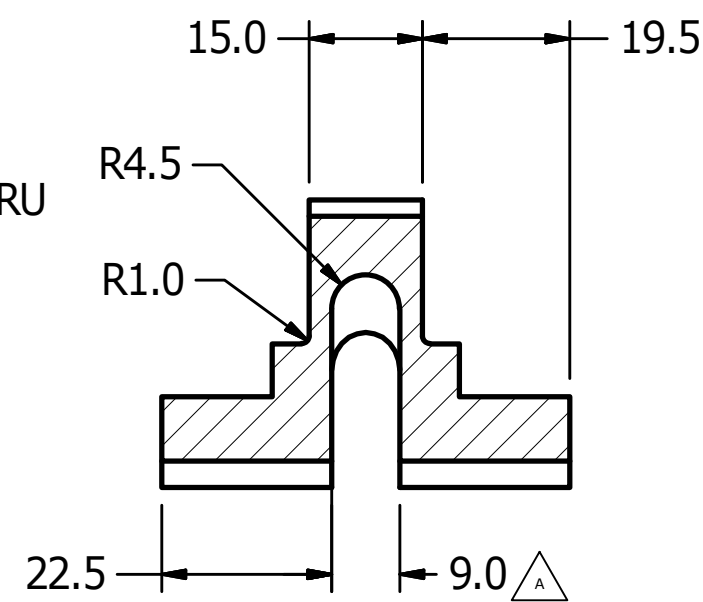
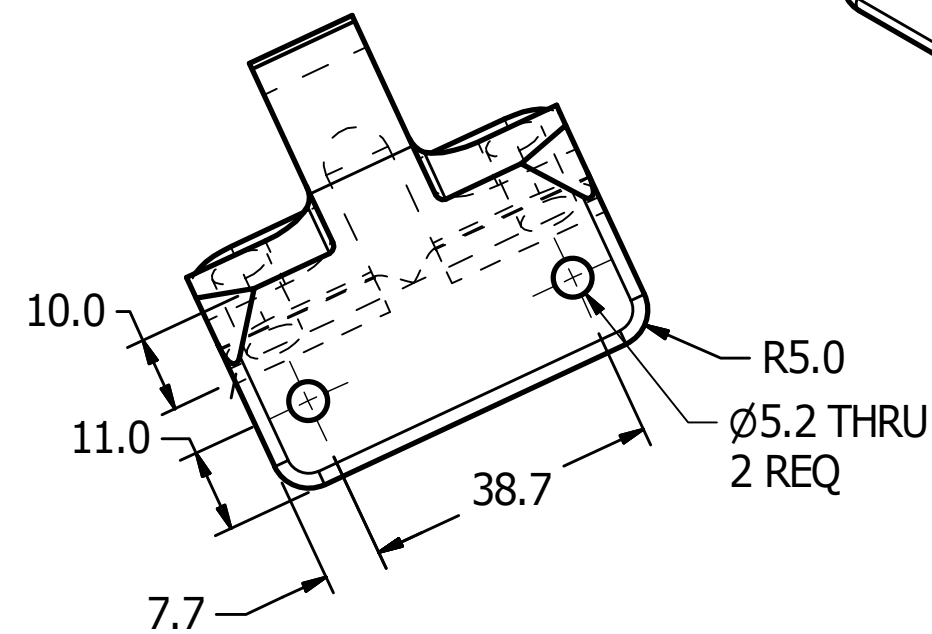
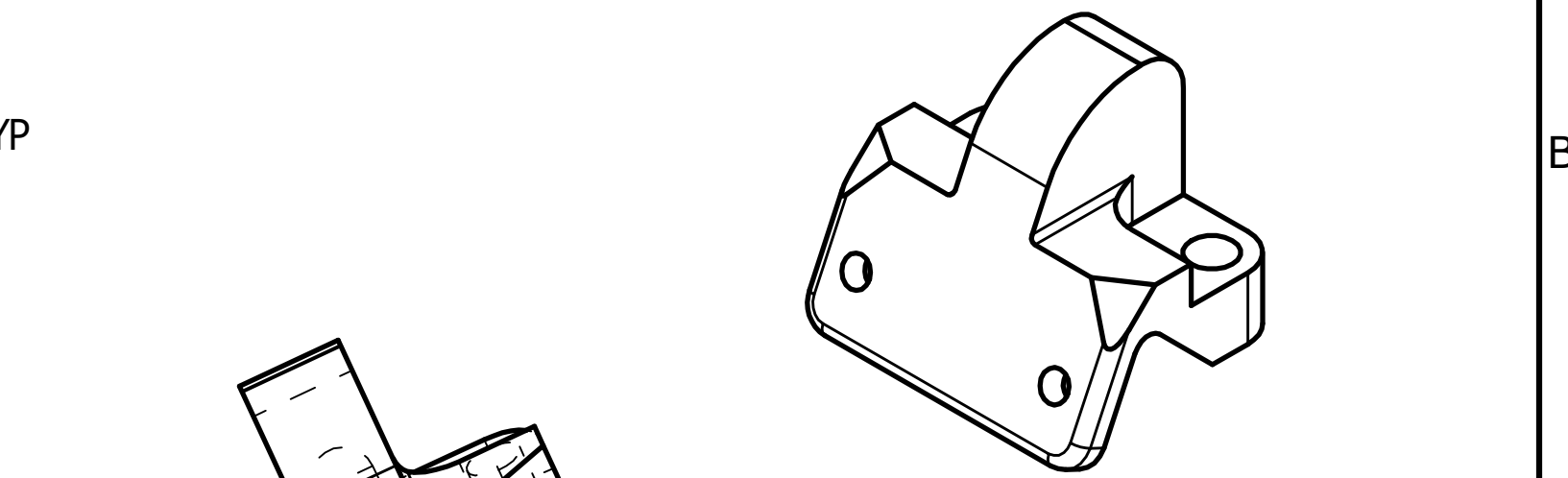
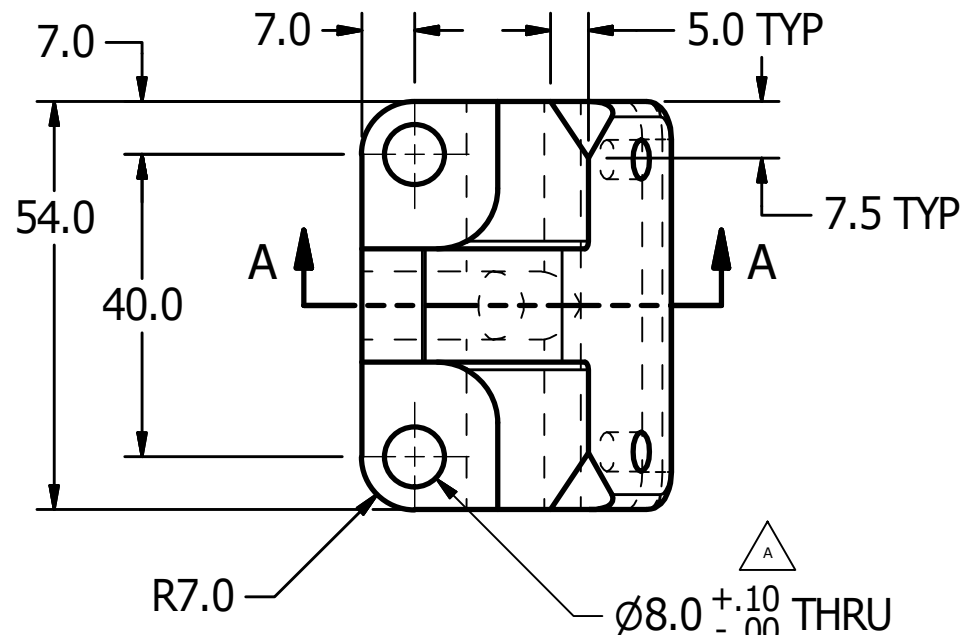
3

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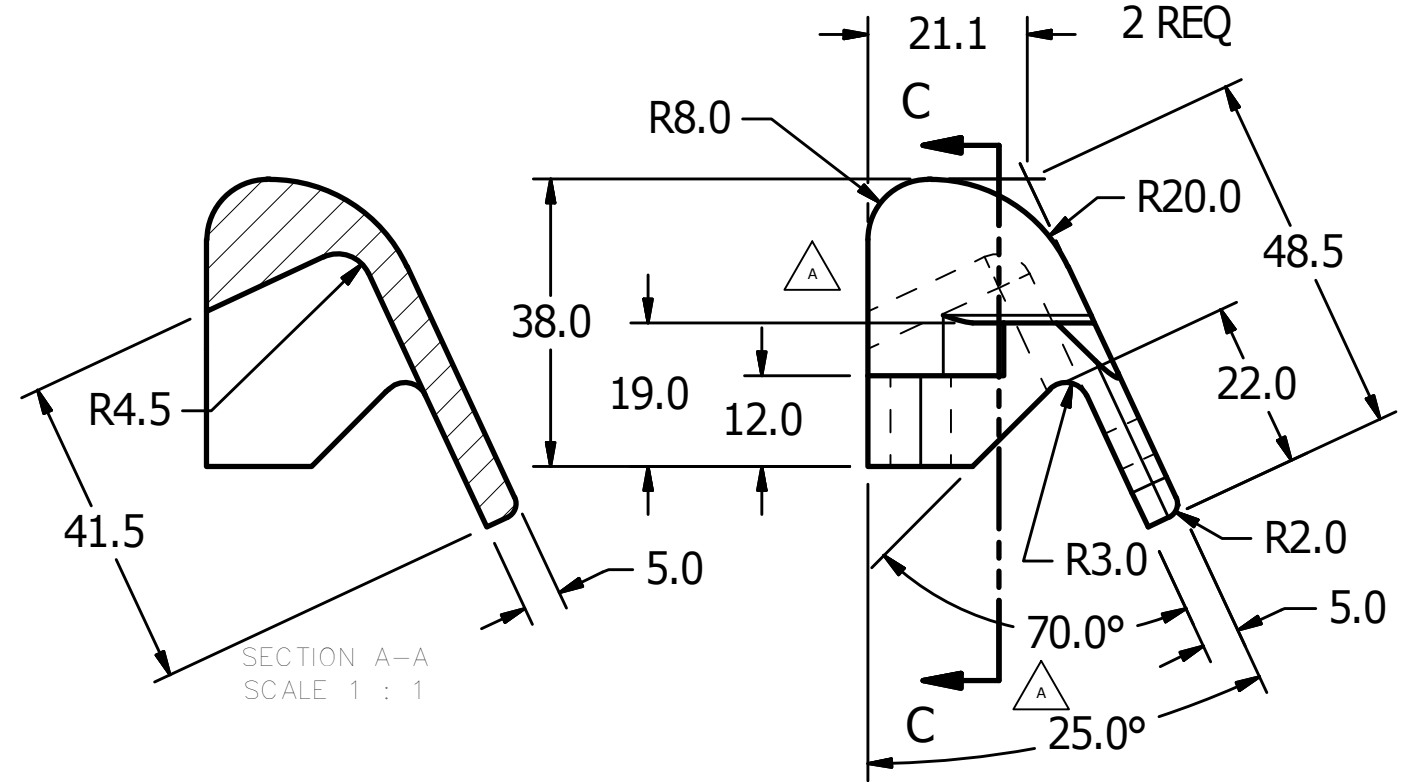
1

REVISION HISTORY


ZON	REV	DESCRIPTION	DATE	BY
	A	15.0 WAS 18.0, 9.0 WAS 10.0, ADDED 70.0, ADDED 19.0; ADDED TOLERANCE	2/6/2014	JHC
	B	DRAWING NUMBER WAS AXSDM040C	9/11/2014	DW



SECTION C-C  
SCALE 1 : 1



SECTION A-A  
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5    ANGLES: ±.5    MACHINED: X.X ±.2    X.XX ±.1	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
ASME Y14.5M - 1994 DO NOT SCALE DRAWING	DRAWN JIM CLEVINGER	8/13/2013	SIZE B
MATERIAL Aluminum 6061	CHECKED		
HEAT TREAT	ENG		REV B
FINISH ANODIZE	APPROVED		
		SCALE: 1:1	

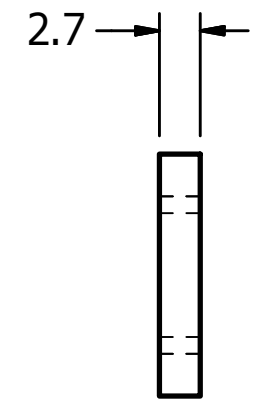
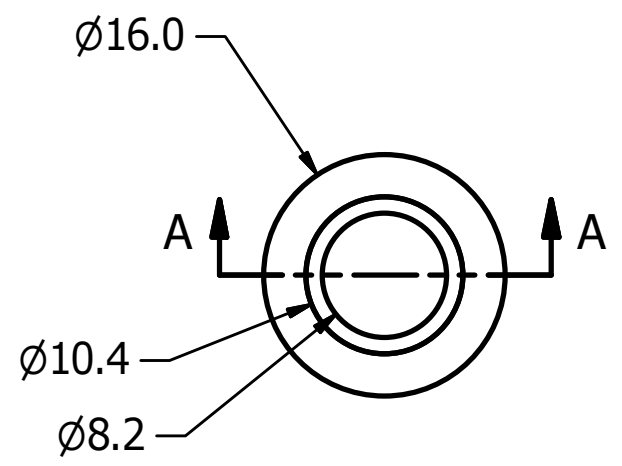
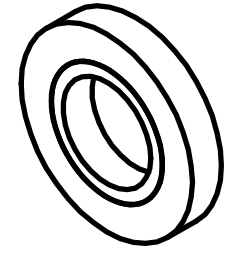
4

3

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1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM038	9/11/2014	DW
	B	ADDED NOTE 1	7/27/2015	DW



RUBBER OUTER RING MOLDED AROUND ALUMINUM INNER HUB, SEE NOTE 1

**SECTION A-A**  
SCALE □□□

**NOTES:**  
 1. MATERIAL:  
 INNER RING: ALUMINUM 6061-T6.  
 OUTER RING: NATURAL RUBBER, 50 ±5 SHORE A DUROMETER.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION <b>ROD END SPACER ASSY</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	10/29/2013	
	CHECKED		
MATERIAL <b>SEE NOTES</b>	ENG		SIZE: B DRAWING NUMBER: 472-3880 REV: B
HEAT TREAT	APPROVED		
FINISH			
		SCALE: 2X	SHEET 1 OF 1

4

3

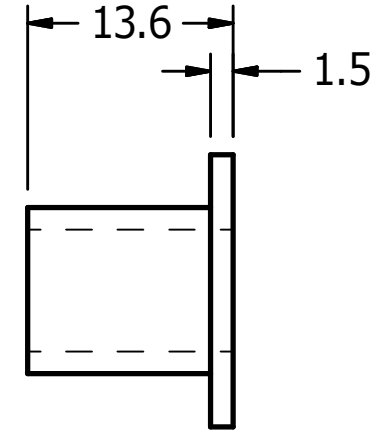
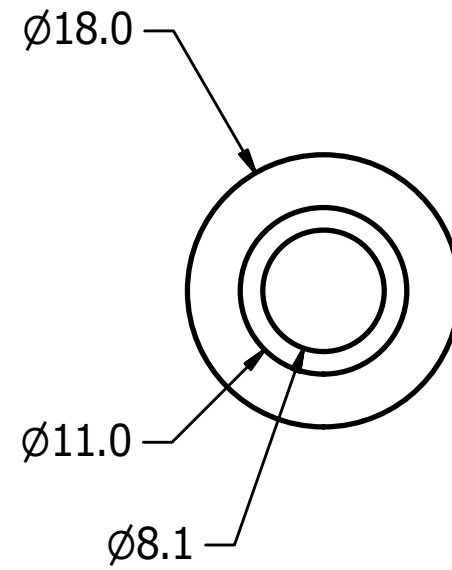
2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM037A	9/11/2014	DW

B

B




A

A

A

A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	10/29/2013	
	CHECKED		
MATERIAL Aluminum 6061	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-3890
FINISH			REV A
			SCALE: 2X
			SHEET 1 OF 1

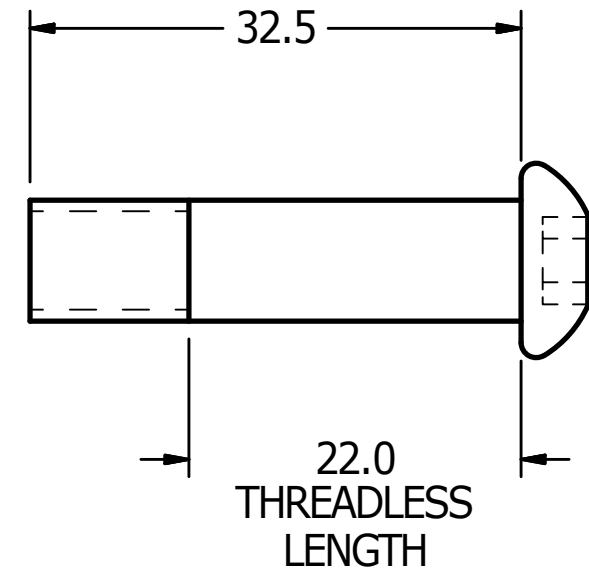
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM037B, ADDED "(5000260V) MODIFY AS SHOWN" TO MATERIAL NOTE	9/11/2014	DW



**MATERIAL**

START WITH A M8-1.25 x 50mm LONG BHCS (5000260V)  
 MODIFY AS SHOWN.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 1.6 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  <b>MODIFIED M8 BOLT</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	10/29/2013	
	CHECKED		
MATERIAL Steel	ENG		SIZE: B DRAWING NUMBER: 472-3891 REV: A
HEAT TREAT	APPROVED		
FINISH			
		SCALE: 2X	SHEET 1 OF 1



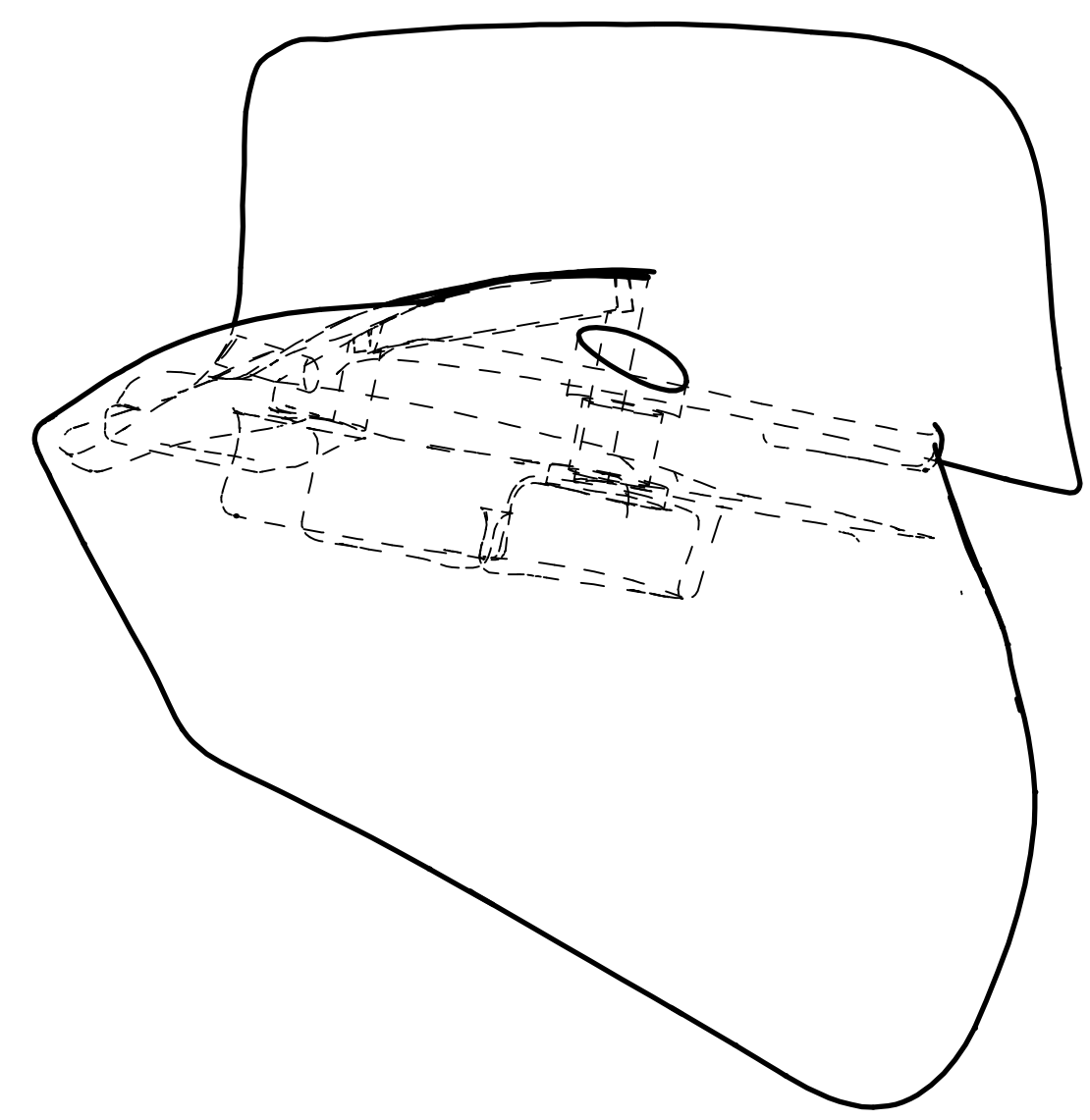
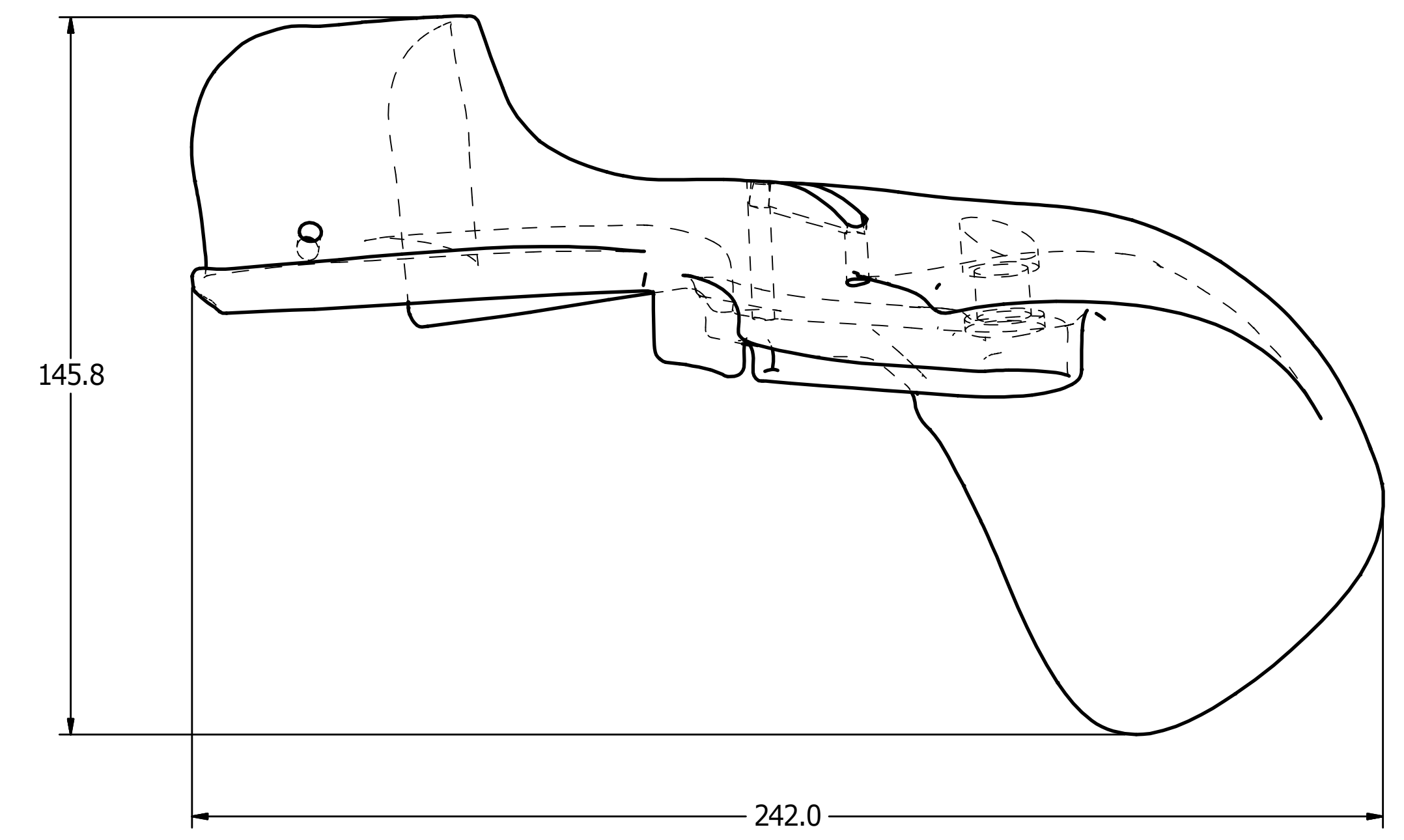
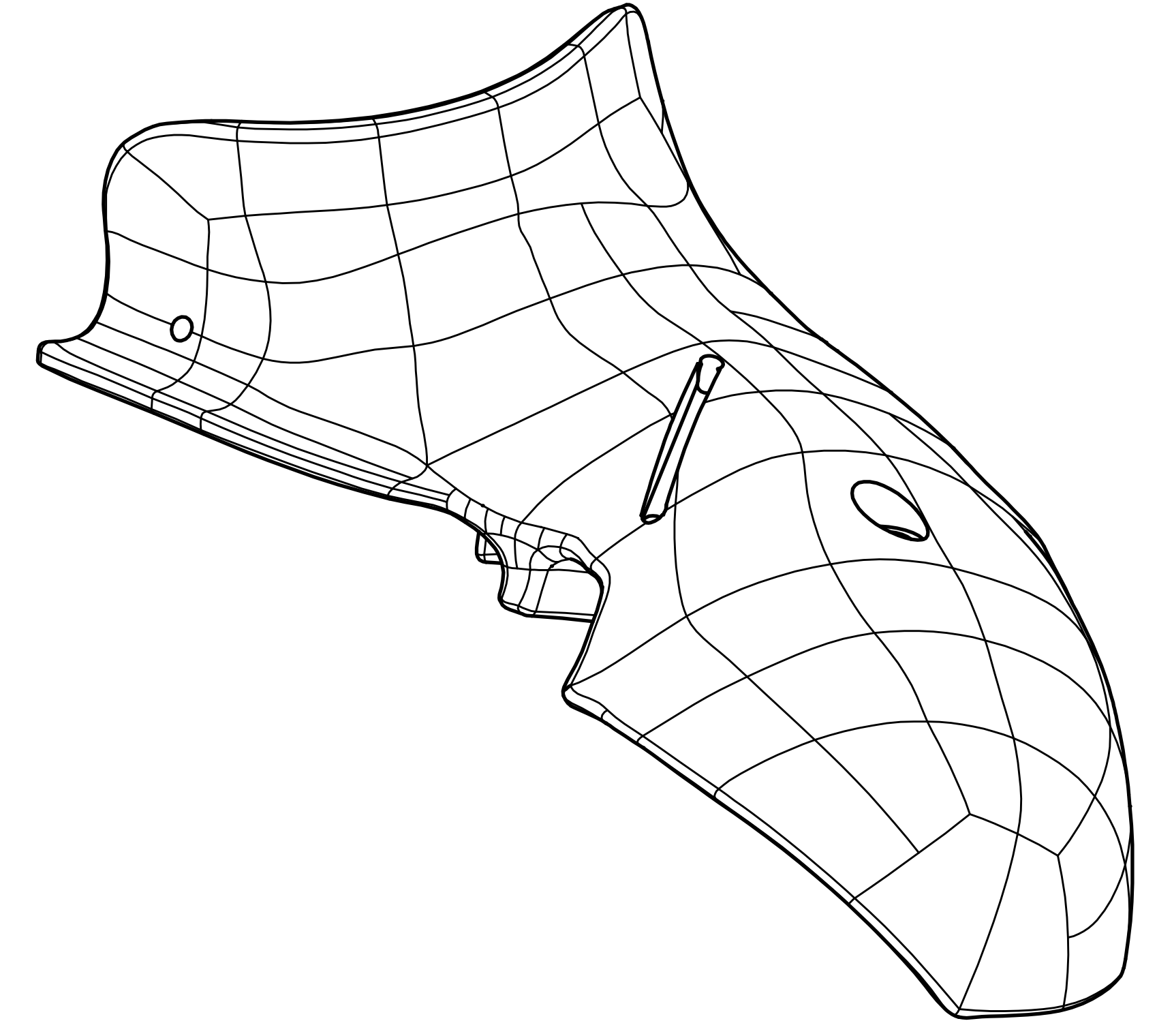
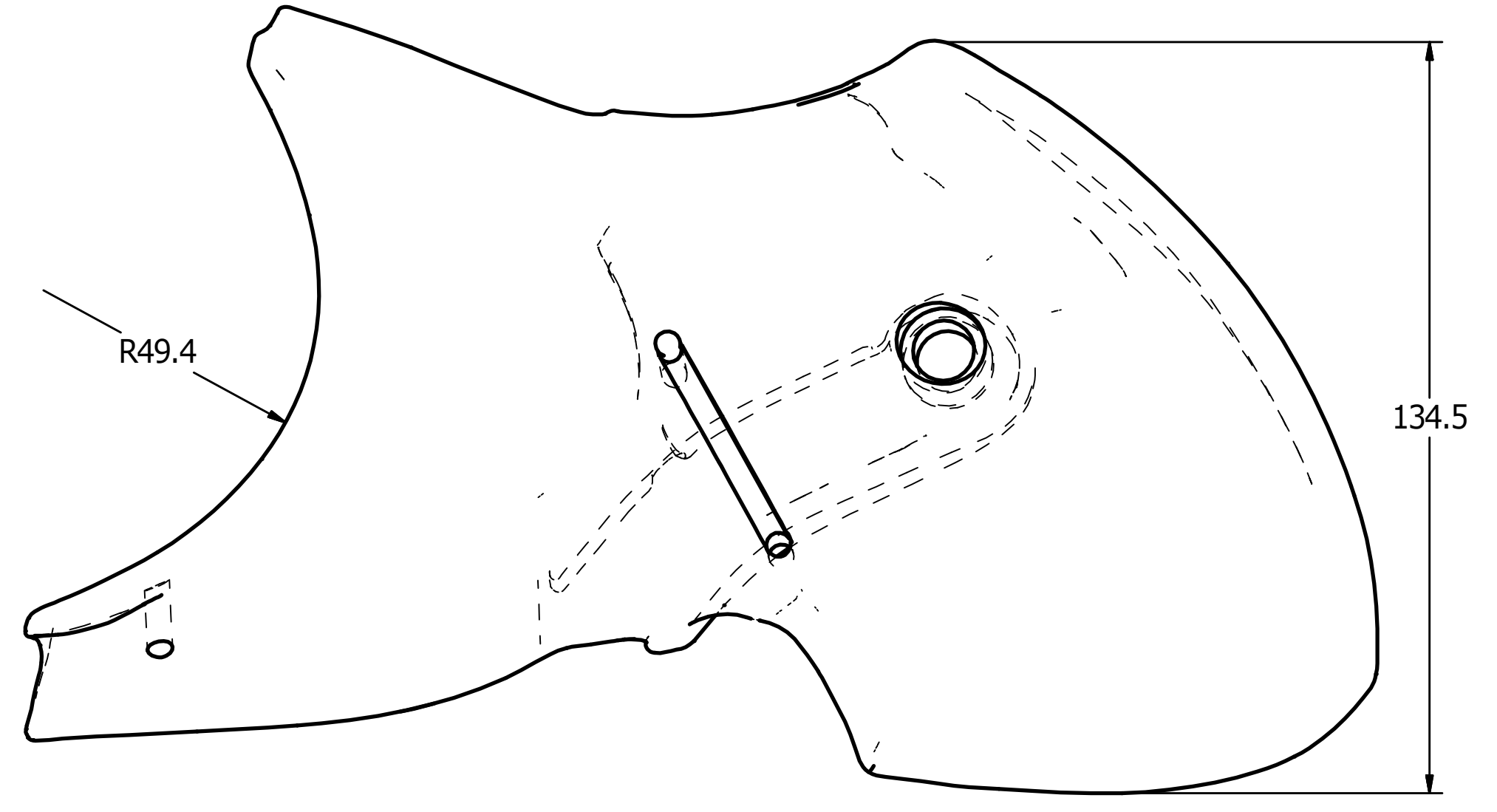
4

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ZONE		REV	REVISION HISTORY	DATE	BY
A			CHANGED SHEET SIZE TO "D", DRAWING NUMBER WAS AXSDM035	9/11/2014	DW



NOTE:  
A 3-D FILE IS AVAILABLE  
FOR REFERENCE FROM NHTSA

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: X ±0.5 XX ±2 XXX ±1		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DECIMAL ANGLES: MACHINED: X ±0.5 XX ±2 XXX ±1		APPROVALS	DATE	SHOULDER COVER, LEFT	
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		DRAWN JIM CLEVELER	8/21/2013		
MATERIAL: Urethane, Clear		CHECKED			
FINISH		ENG		SIZE D	DRAWING NUMBER 472-3895-1
		APPROVED		SCALE: 1:1	REV A
				SHEET 1	OF 1

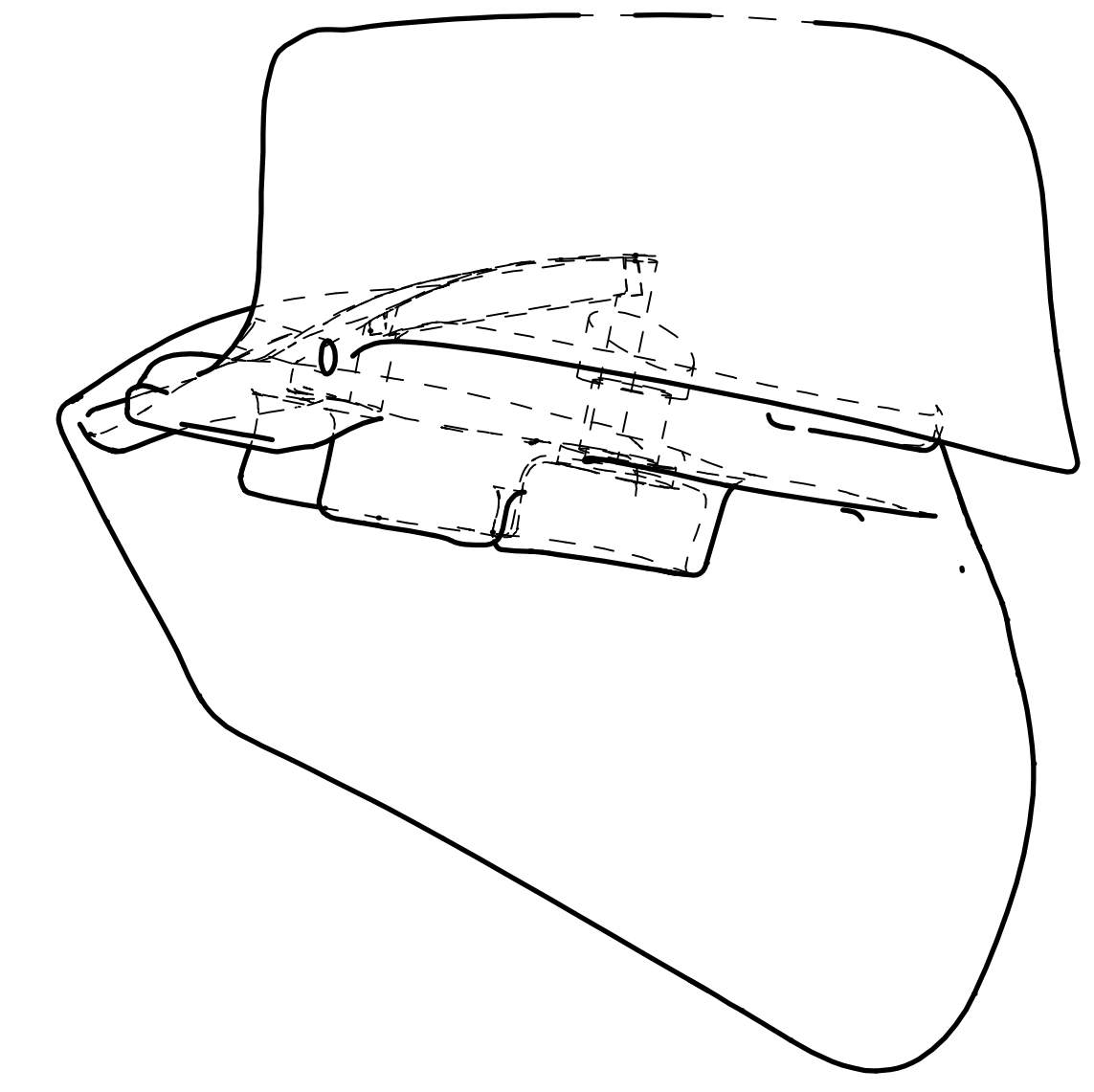
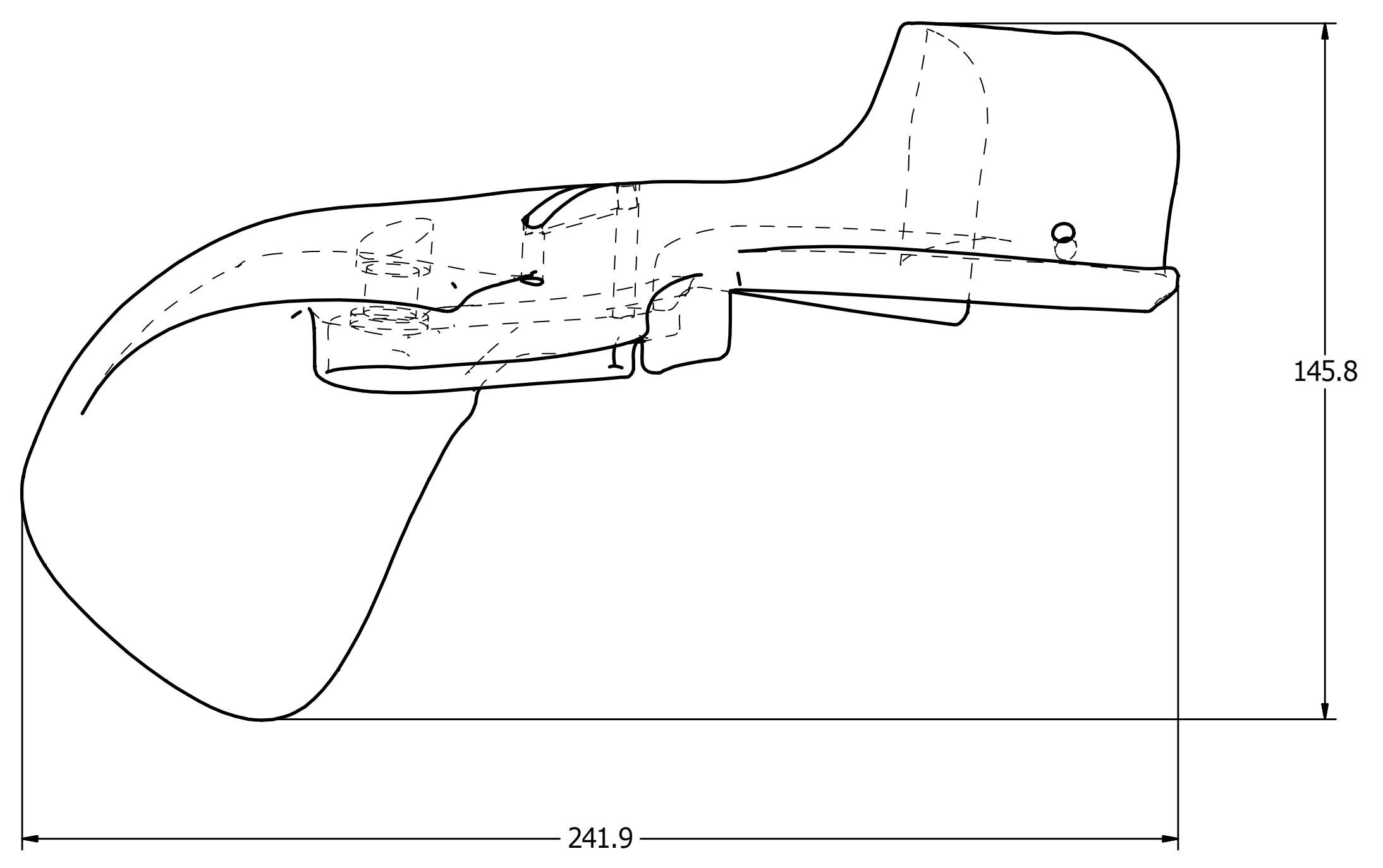
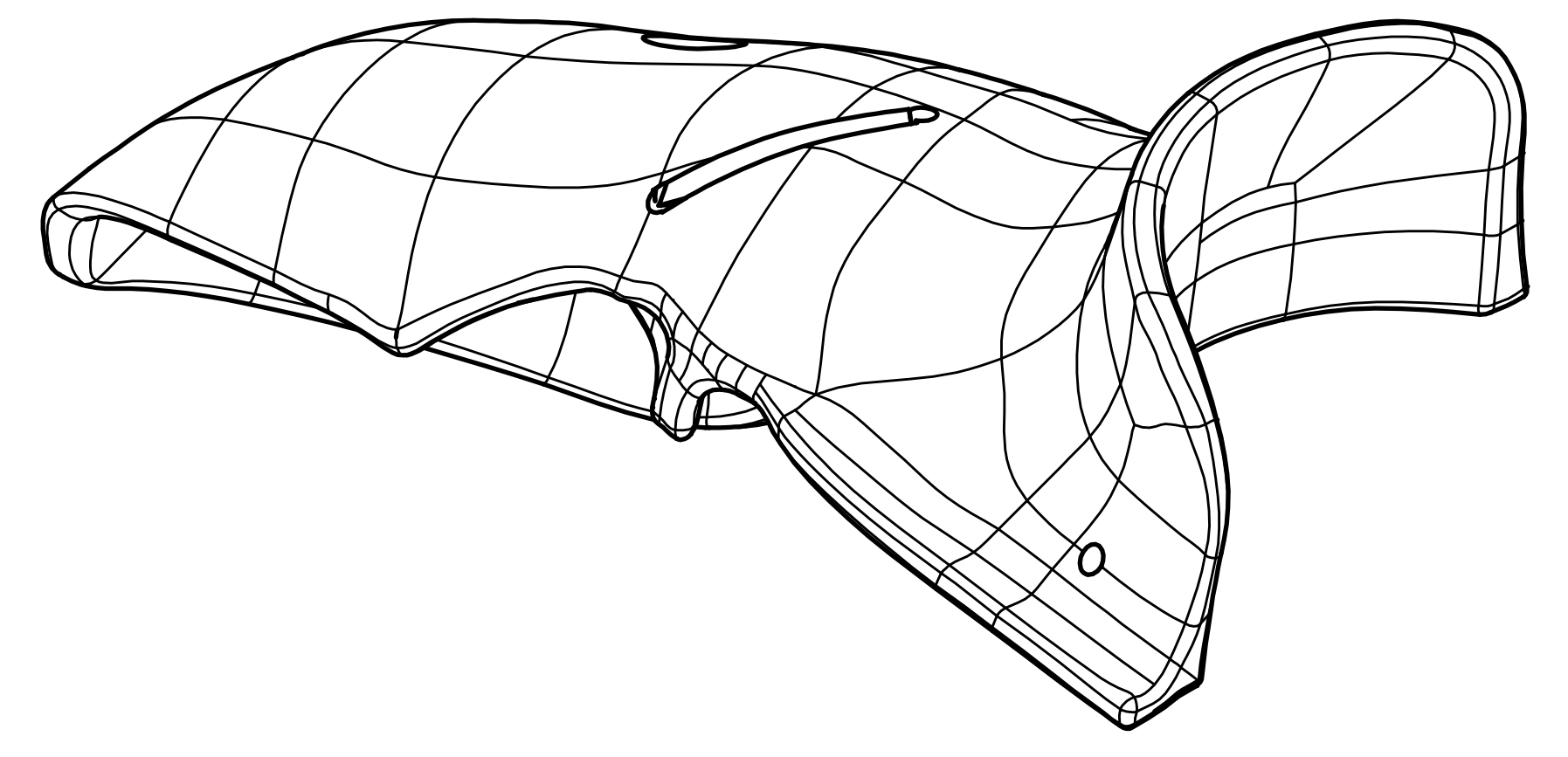
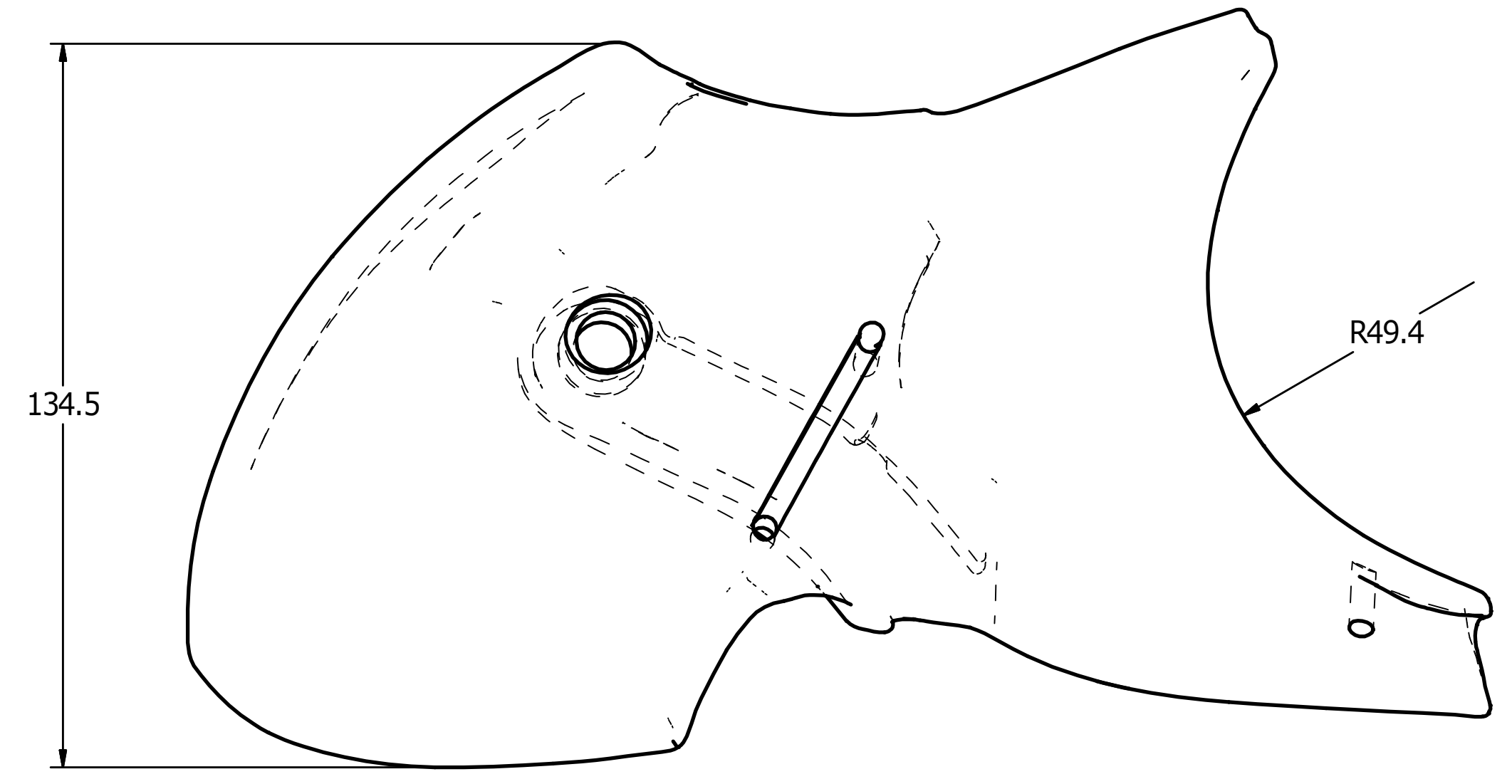
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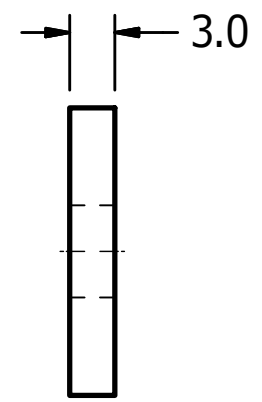
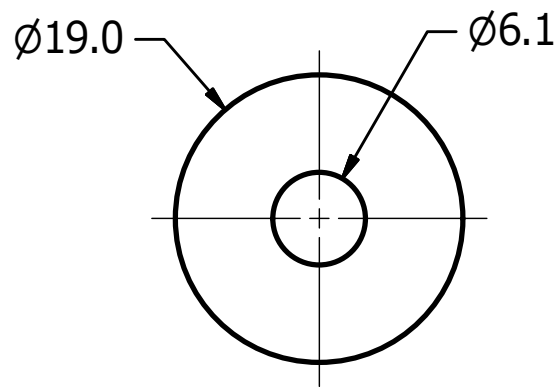
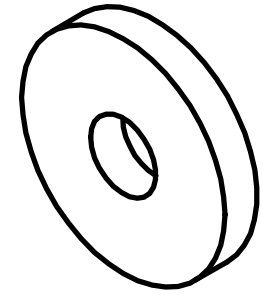
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGE SHEET SIZE TO "D", DRAWING NUMVBER WAS AXSDM036	9/11/2014	DW





NOTE:  
A 3-D FILE IS AVAILABLE  
FOR REFERENCE FROM NHTSA


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: X ±0.5 XX ±1 XXX ±1		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DECIMAL ANGLES: MACHINED: X ±0.5 XX ±1 XXX ±1		APPROVALS	DATE	SHOULDER COVER, RIGHT	
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		DRAWN JIM CLEVENGER	8/21/2013		
MATERIAL Urethane, Clear	ENG	CHECKED		SIZE D	DRAWING NUMBER 472-3895-2
TREAT TREAT	APPROVED			SCALE 1:1	REV A
FINISH				SHEET 1 OF 1	

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXSDM033	9/11/2014	DW
	B	ADDED NOTES 1 & 2; MATERIAL WAS RUBBER	7/27/2015	DW

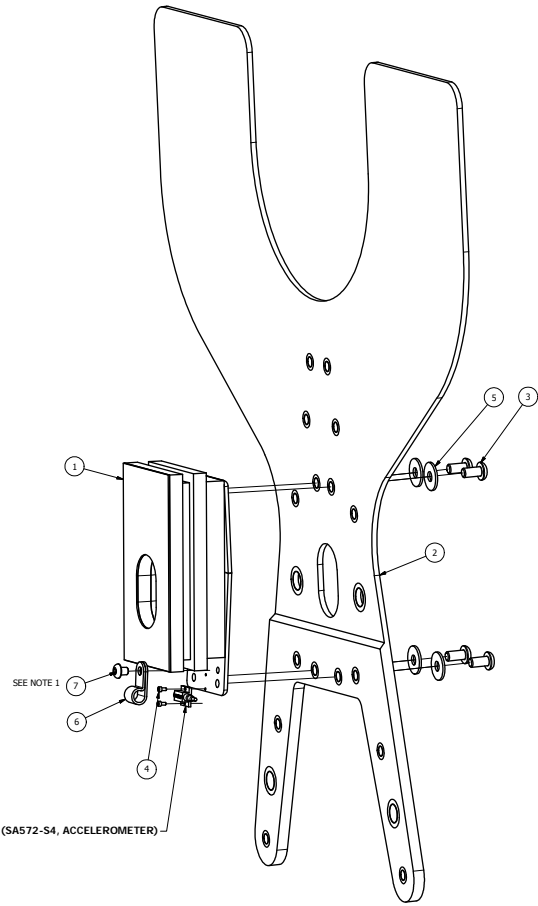


NOTES:

-  1. RUBBER DIMENSIONAL TOLERANCE  $\pm 0.5$  UNLESS OTHERWISE SPECIFIED.
-  2. MATERIAL: BUNA-N RUBBER, 50  $\pm 5$  SHORE A DURAMETER.

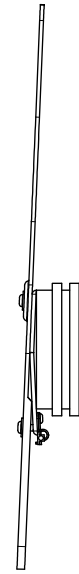
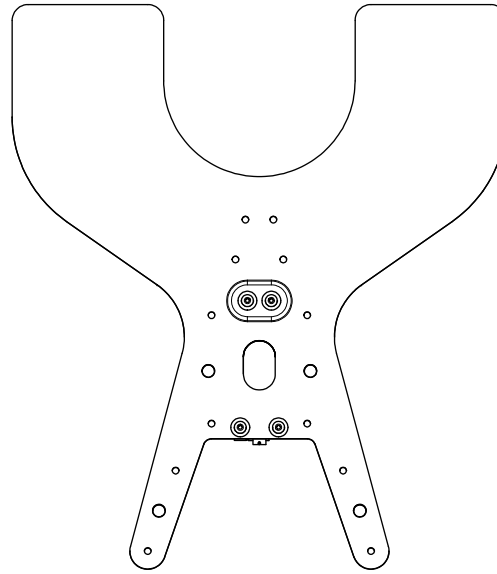
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X $\pm 0.5$ $\pm 0.5$ $\pm 0.1$ X.X $\pm 0.2$ X.XX $\pm 0.1$  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
MATERIAL	SEE NOTES	DRAWN JIM CLEVINGER 2/10/2014	SIZE
HEAT TREAT		CHECKED	DRAWING NUMBER
FINISH		ENG	472-3898
		APPROVED	REV
			1 OF 1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
A		RENUMBERED FROM T1TXM100 RS AND CONVERTED TO METRIC FOR THOR-M	10/26/2011	BK
B		5001163 WAS 5000674	6/14/2012	BK
C		UPDATE TO SHOW 472-3420 HOLE CHANGE	7/20/2012	BK



(SA572-S4, ACCELEROMETER)

SCALE .750

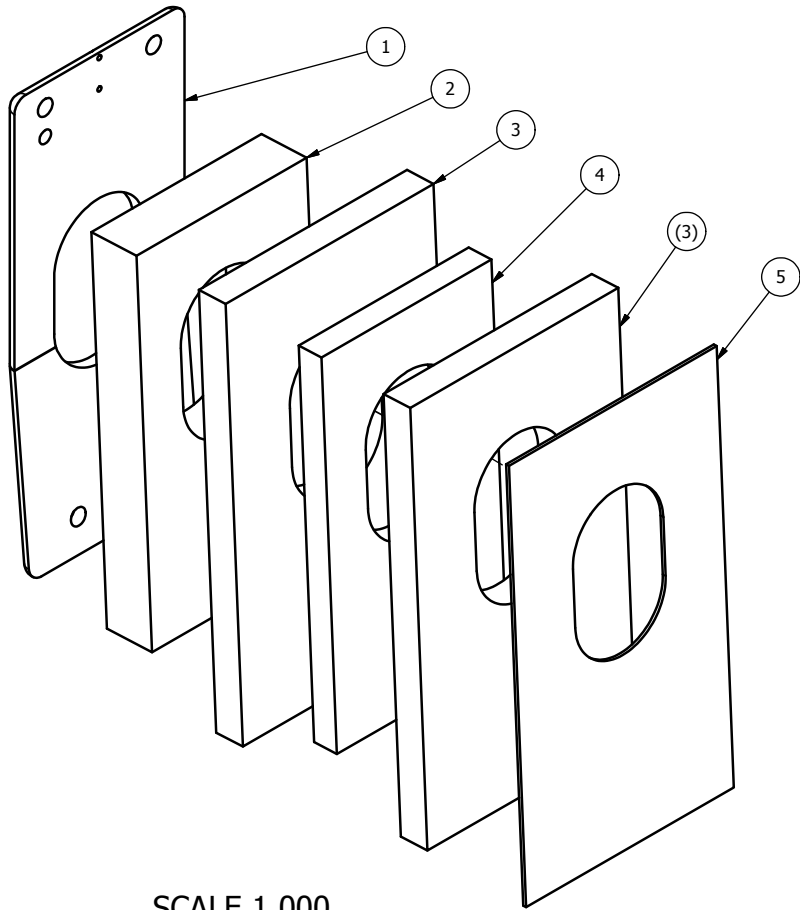


NOTES:  
1. STRAIN RELIEVE THE ACCELEROMETER WIRE TO THE MID-STERNUM PLATE AS SHOWN.

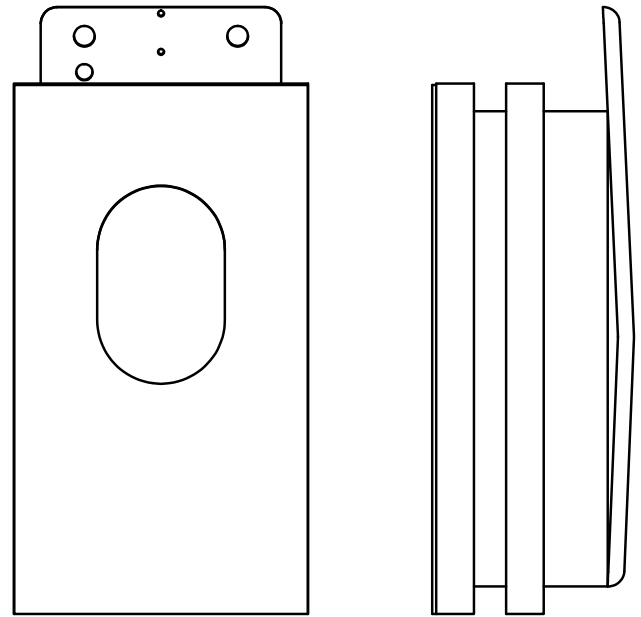
ITEM	QTY	PART NUMBER	DESCRIPTION
7	1	5001163	M4 X 0.7 X 5 LG. BHCS
6	1	9002655	WIRE CLAMP,NYLON 1/8 DIA.
5	4	5001126	WASHER, M5 X .15 X 1.2 S.S.
4	2	5000068	M4 X 0.3 X 3 LG. SHCS
3	4	5000003	M5 X 0.8 X 10 LG. BHCS
2	1	472-3420	THORAX OUTER BIB
1	1	472-3410	MID-STERNUM BONDING ASSEMBLY

DO NOT SCALE DRAWING		ISSUES/REV		PARTS LIST	
472-3000	1	ISSUED	10/26/2011	THORAX BIB ASSEMBLY	
NEXT ASSEMBLY	QTY	BY	DATE	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
TOTAL QTY IN DRAWING	1	B. KIMES	03/07/2012	1 of 1	472-3400
		1 NAME	12/18/2012	500	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1MSM015 R0 FOR THOR-M	9/13/2011	BK



SCALE 1.000



NOTES:

- SAND BLAST AND CLEAN WITH ACETONE, THE AREA OF EACH METAL PLATE THAT WILL MAKE CONTACT WITH EITHER THE FOAM OR RUBBER.
- ALIGN AND CENTER THE FRONT EDGE OF 472-3414 WITH 472-3413. MAKE SURE THE HOLE PATTERN ON THE METAL PLATE IS AS SHOWN.
- CENTER EACH MID-STERNUM MASS PLATE (472-3411) ON EACH MASS DAMPING FOAM (472-3414 AND 472-3412).
- BOND FOAM AND RUBBER PADS TO PLATES USING THERMOSETTING CONTACT ADHESIVE OR EQUIVALENT.

5	1	472-3415	MID-STERNUM RUBBER PAD
4	1	472-3412	MASS DAMPING FOAM #2, MID-STERNUM
3	2	472-3411	MID-STERNUM MASS
2	1	472-3414	MASS DAMPING FOAM #1, MID-STERNUM
1	1	472-3413	MID-STERNUM PLATE
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

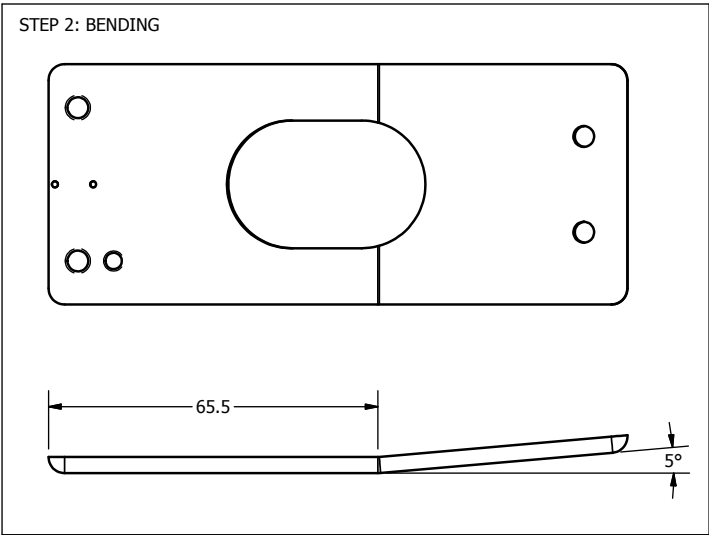
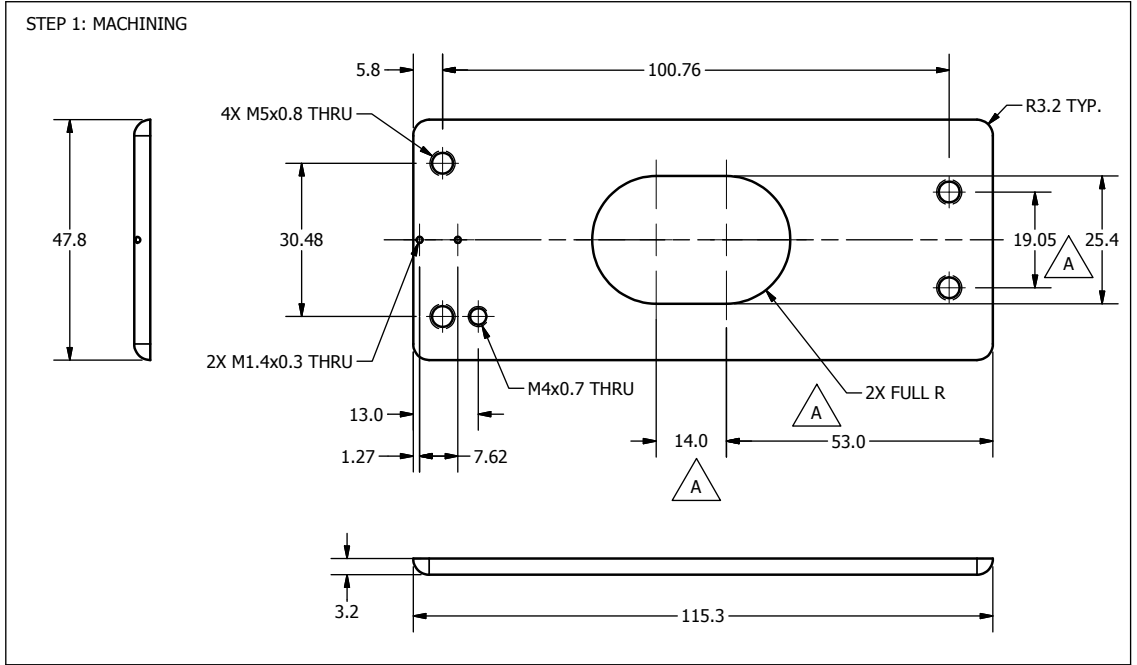
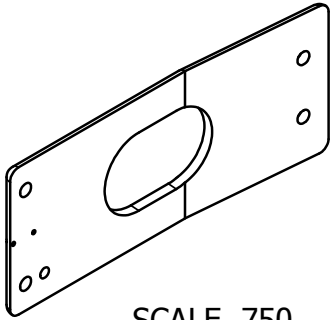
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X ±0.2	° ±0.5 16
		XX ±0.3	
		XXX ±0.5	
		XXXX ±0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:	DRAWN BY:	DATE:	SCALE:
472-3400	B. KIMES	9/13/2011	A3 1 OF 1
NEXT ASSEMBLY	CHECKED BY:	DATE:	DRAWING NO:
TOTAL QTY IN DUMMY	J. WANG	1/17/2012	472-3410
1	ENGINEER:	DATE:	REV:
			A



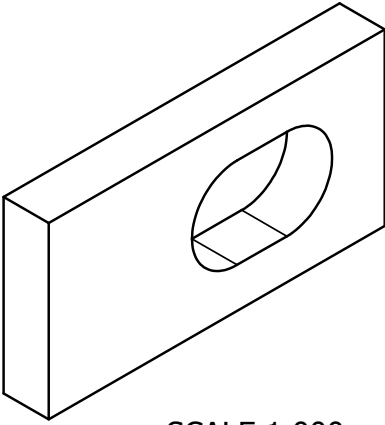
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

MID-STERNUM BONDING ASSEMBLY

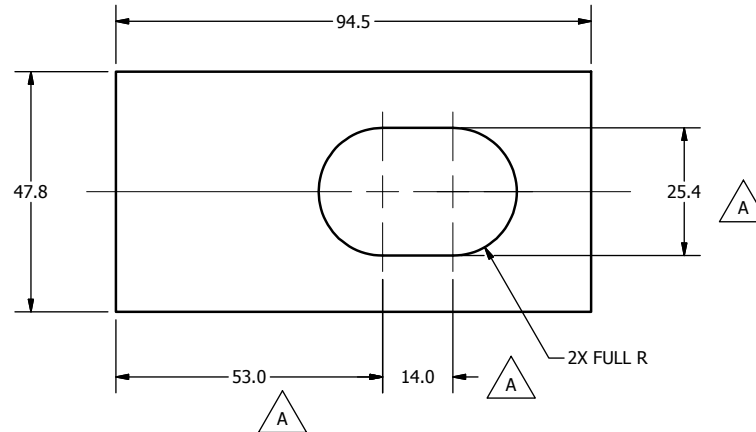
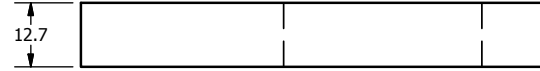
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1MSM010 RB0 AND CONVERTED TO METRIC FOR THOR-M; ADD CENTER HOLE	9/13/2011	BK



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 1.6 XX 0.02 0.07 1.6 XXX 0.03 0.07 1.6 XXXX 0.01 0.07 1.6		
PROJECT NO.:	472-3410	MATERIAL:	01 TOOL STEEL	DESCRIPTION:
DRIVEN BY:	B. KIMES	DATE:	9/13/2011	MID-STERNUM PLATE
CHECKED BY:		DATE:		
HEAT TREAT:	Rc 40-43	ENGINEER:	J. WANG	DATE:
TREATMENT:	TEFLON COATING	DATE:	1/17/2012	SCALE: 1.000
TOTAL QTY IN DUMMY	1	SIZE:	A3	SHEET: 1 OF 1
		DRAWING NO.:	472-3413	REV.:
				A



SCALE 1.000



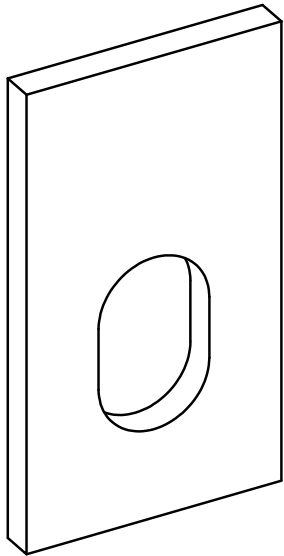
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1MSM014 R0 FOR THOR-M; ADD CENTER HOLE	9/13/2011	BK

NOTES:

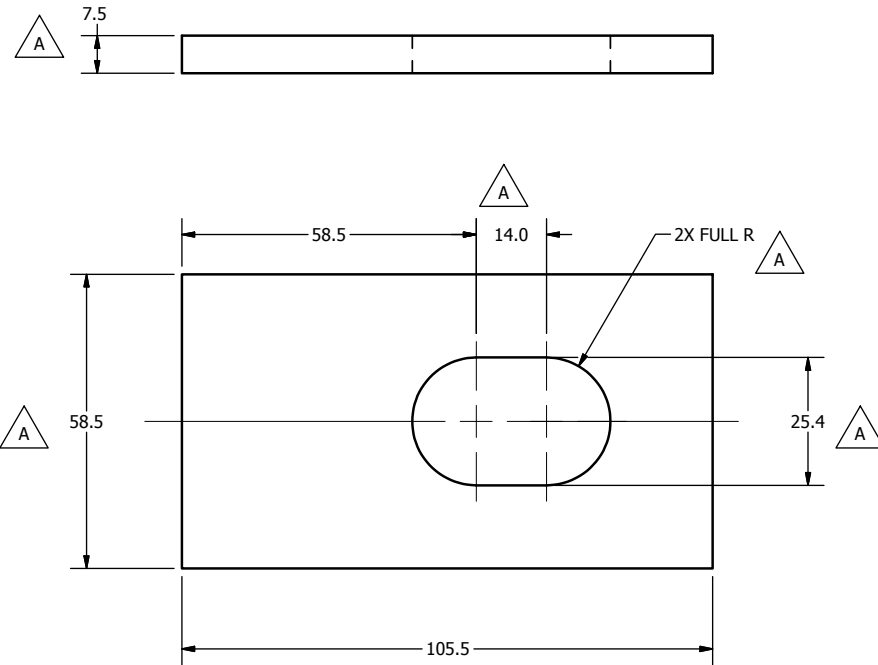
1. DIMENSION TOLERANCE  $\pm 0.8$  , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3410	MATERIAL:	ESTER FOAM (6lb., CHARCOAL)	DESCRIPTION:
DATE:	9/13/2011	DESIGNED BY:	B. KIMES	MASS DAMPING FOAM #1, MID-STERNUM
CHECKED BY:		DATE:		SIZE: A3
DATE:	1/17/2012	ENGINEER:	J. WANG	SHEET: 1 OF 1
FINISH:		SCALE:	1.000	DRAWING NO.: 472-3414
TOTAL QTY IN DUMMY:	1	REV:		A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1MSM011 RB0 AND CONVERTED TO METRIC FOR THOR-M; 7.5, 58.5, 105.5 WAS 6.4, 58.4, 105.2; ADD CENTER HOLE, NOTES	10/26/2011	BK



SCALE 1.000

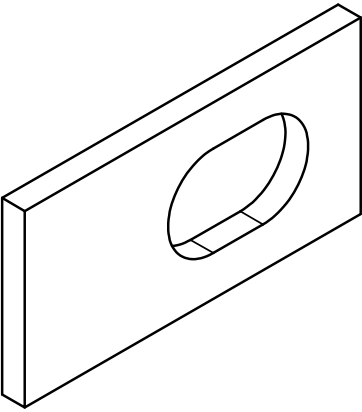


NOTES:

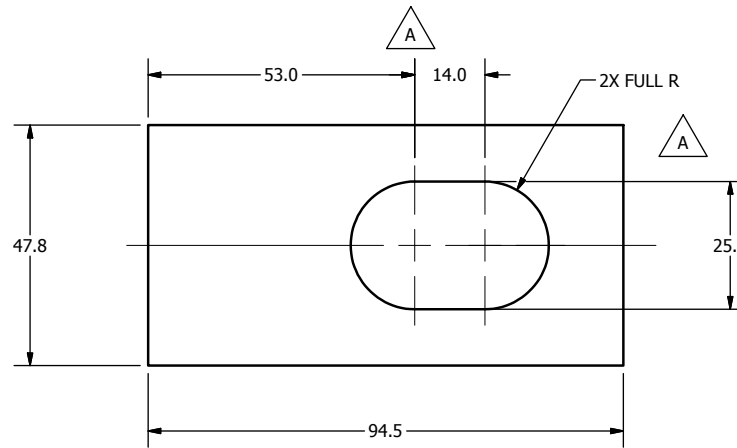
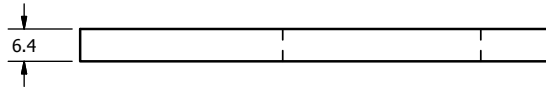
1. POWDER OR BEAD BLAST.
2. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
3. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.0 0.1 1.6 X.X ±0.2 ✓ X.XX ±0.3 X.XXX ±0.01		
PROJECT NO:	472-3410	MATERIAL:	1018 STEEL	DESCRIPTION:
HEAT TREAT:		ENGINEER:	J. WANG	MID-STERNUM MASS
DATE:	8/17/2011	CHECKED BY:	A. ABRAMOSKI	DATE:
DATE:	1/17/2012	DATE:	1/17/2012	DATE:
FINISH:	SEE NOTES	ENGINEER:	J. WANG	DATE:
QTY	2	DATE:	1/17/2012	DATE:
TOTAL QTY IN DUMMY	2	DATE:	1/17/2012	DATE:
SIZE: A3 SHEET: 1 OF 1 SCALE: 1.000				DRAWING NO.: 472-3411
				REV: A






SCALE 1.000

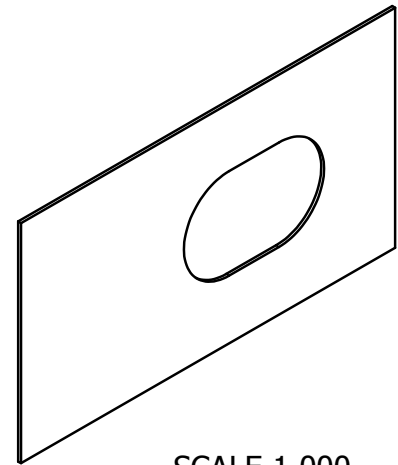


NOTES:

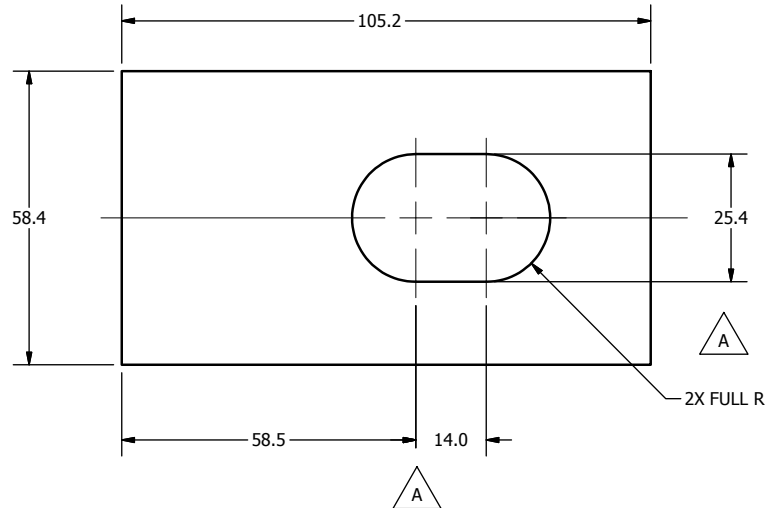
1. DIMENSION TOLERANCE  $\pm 0.8$ , UNLESS OTHERWISE NOTED.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1MSM012 RB0 FOR THOR-M; ADD CENTER HOLE	9/12/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X 0.2 XX 0.3 XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3410	MATERIAL:	ESTER FOAM (6LB., CHARCOAL)	DESCRIPTION:
DATE:	9/12/2011	DESIGNED BY:	B. KIMES	MASS DAMPING FOAM #2, MID-STERNUM
CHECKED BY:		DATE:		SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	A3 1 OF 1
FINISH:		DATE:	1/17/2012	SCALE: 1.000
QTY	1	DRIVING NO.:	472-3412	REV:
TOTAL QTY IN DUMMY	1			A



SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1MSM015 R0 FOR THOR-M; ADD CENTER HOLE	9/13/2011	BK

NOTES:

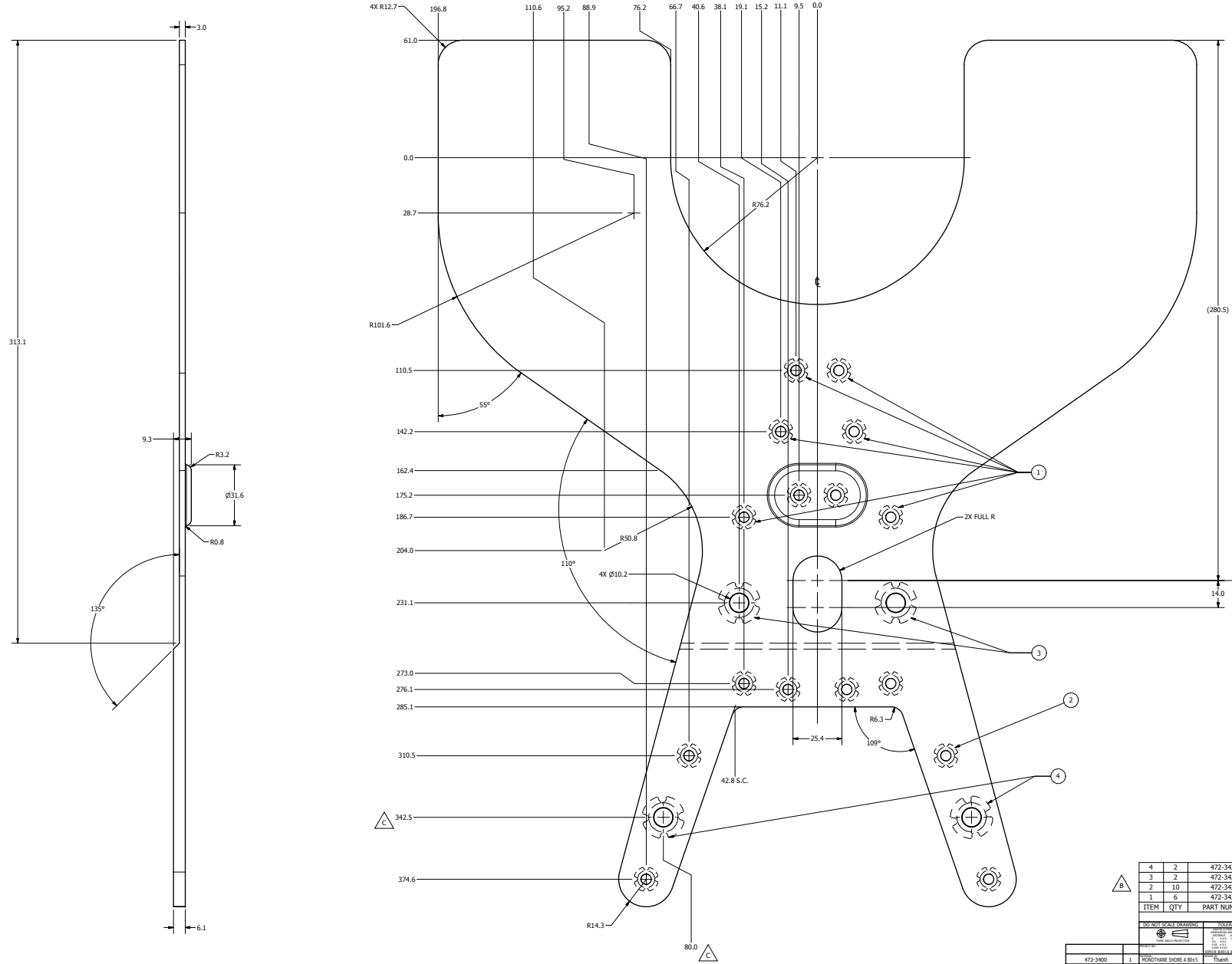
- RUBBER TOLERANCE  $\pm .5$  AND DUROMETER  $\pm 5$ , UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION MID-STERNUM RUBBER PAD
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3410	MATERIAL:	BUNA-N RUBBER 50A	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	9/13/2011	SIZE: SHEET
CHECKED BY:		ENGINEER:	J. WANG	DATE:
HEAT TREAT:		FINISH:		SCALE:
TOTAL QTY IN DUMMY	1			A3 1 OF 1
				472-3415



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T11TXM110 RBD AND CONVERTED TO METRIC FOR THORAX	9/23/2011	TKN
	B	REMOVED NOTE; REPLACED MESH WITH ADD MATERIAL	1/9/12	KHS
	C	342.5, 80.0 WERE 334.5, 79.4	7/20/2012	BK

PART IS SYMMETRICAL ACROSS CENTERLINE

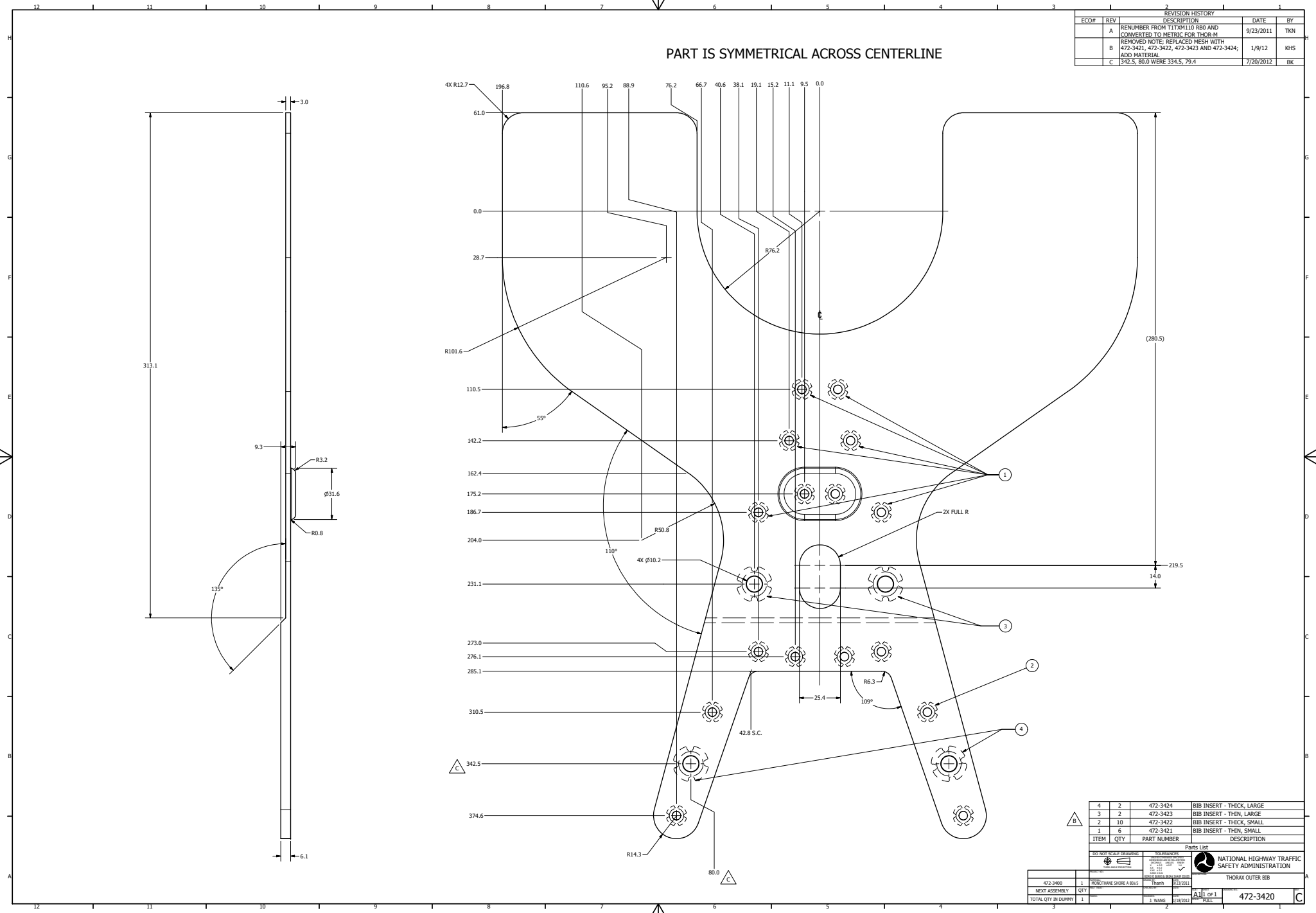


ITEM	QTY	PART NUMBER	DESCRIPTION
4	2	472-3424	BIB INSERT - THICK, LARGE
3	2	472-3423	BIB INSERT - THIN, LARGE
2	10	472-3422	BIB INSERT - THICK, SMALL
1	6	472-3421	BIB INSERT - THIN, SMALL

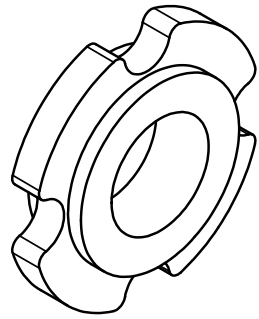
  

NO TEXT SCALE DRAWING		Partic List	
472-3400	1	THORAX OUTER BIB	
NEXT ASSEMBLY	QTY		
TOTAL QTY IN DRAWING	1		

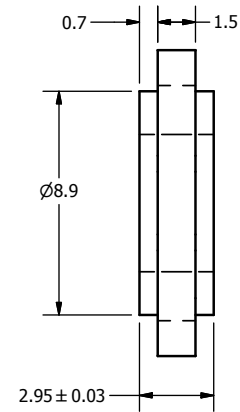
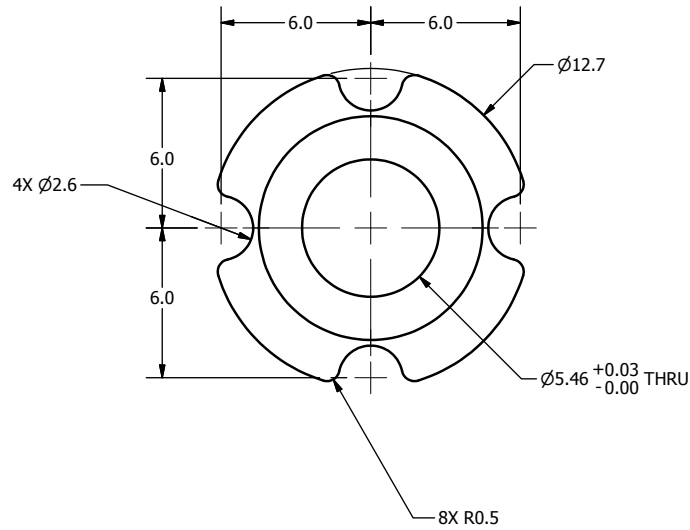
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
   
 THORAX OUTER BIB
   
 472-3400 1 THORAX OUTER BIB
   
 TOTAL QTY IN DRAWING 1
   
 1 NAME: [blank] 2 DATE: 12/20/2011
   
 1 of 1
   
 472-3420



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	1/6/2012	KHS

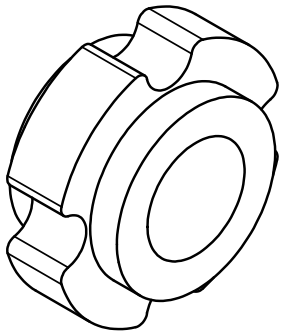


SCALE 5.000

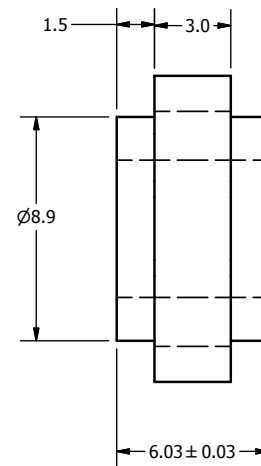
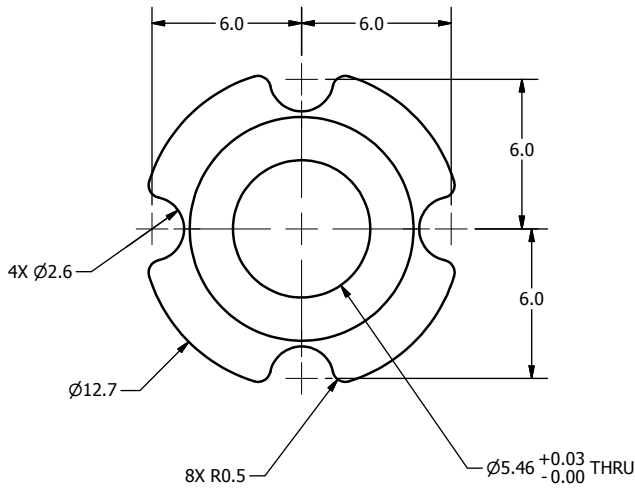


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 ± 0.05 1.6 0.1 ± 0.1 0.2 ± 0.2 0.3 ± 0.3 0.01 ± 0.01		
PROJECT NO:	472-3420	MATERIAL:	Aluminum-7075	DESCRIPTION:
DATE:	1/6/2012	DESIGNED BY:	KHS	BIB INSERT - THIN, SMALL
CHECKED BY:	TMV	DATE:	1/9/2012	SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	A3 1 OF 1
FINISH:		DATE:	1/18/2012	DRAWING NO.:
TOTAL QTY IN DUMMY:	6	SCALE:	5:1	472-3421

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	1/18/2012	KHS



SCALE 5.000



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

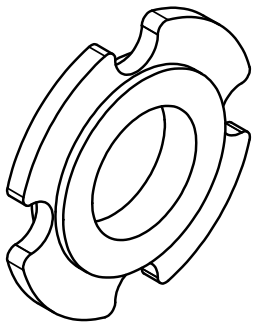
TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ± 0.5 ± 0.5 1.6  
XX ± 0.2 ± 0.2  
XXX ± 0.1 ± 0.1



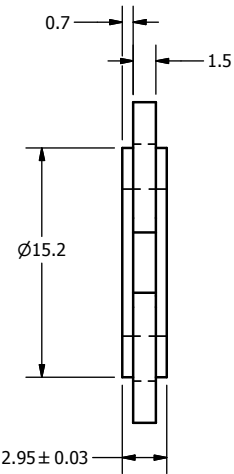
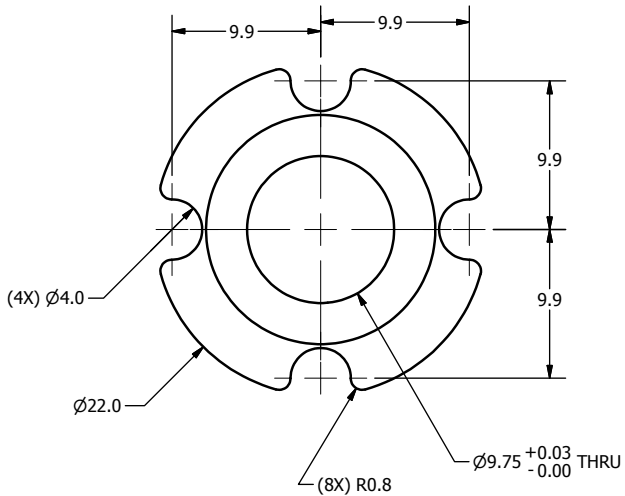
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO.: 472-3420	QTY: 10	MATERIAL: Aluminum-7075	DATE: 1/9/2012	REMOVE BURRS & BREAK SHARP EDGES DRAWN BY: KHS CHECKED BY: TMV ENGINEER: J. WANG DATE: 1/9/2012 DATE: 1/18/2012	DESCRIPTION: BIB INSERT - THICK, SMALL	SIZE: A3 SHEET: 1 OF 1 SCALE: 5:1	DRAWING NO.: 472-3422	REV: A
NEXT ASSEMBLY	QTY: 10	HEAT TREAT:	FINISH:					
TOTAL QTY IN DUMMY	10							

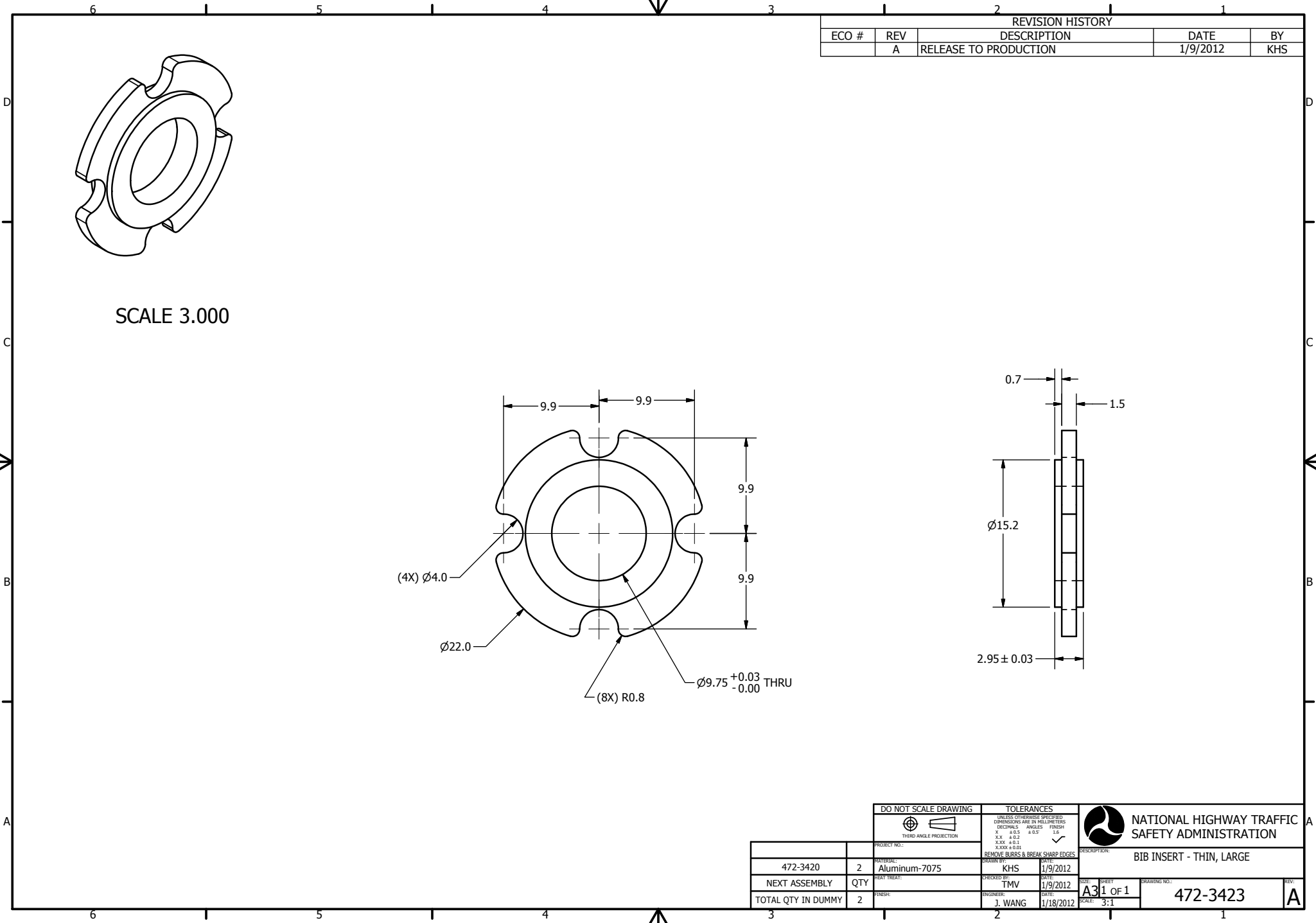
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	1/9/2012	KHS



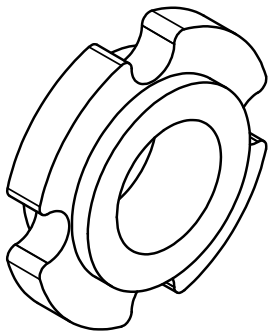
SCALE 3.000



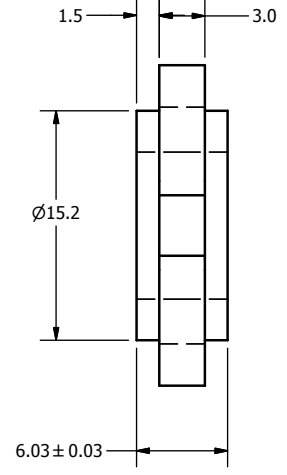
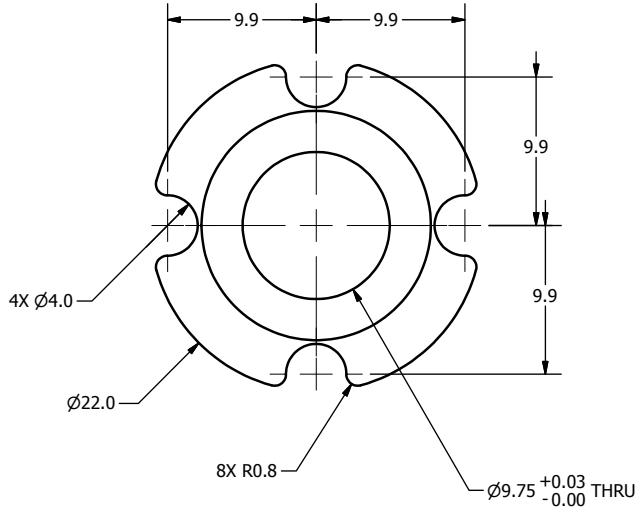
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 16 X 0.2 XX 0.3 XXX 0.01		
PROJECT NO:	472-3420	MATERIAL:	Aluminum-7075	DESCRIPTION:
DATE:	1/9/2012	CHECKED BY:	KHS	BIB INSERT - THIN, LARGE
HEAT TREAT:		DATE:	1/9/2012	SIZE: SHEET
ENGINEER:	J. WANG	DATE:	1/18/2012	A3 1 OF 1
TOTAL QTY IN DUMMY:	2	FINISH:		DRAWING NO:
				472-3423



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	1/18/2012	KHS



SCALE 3.000



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION BIB INSERT - THICK, LARGE
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.3 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO.:	472-3420	MATERIAL:	Aluminum-7075	DESCRIPTION:
DATE:	1/9/2012	DESIGNED BY:	KHS	DATE:
CHECKED BY:	TMV	DATE:	1/9/2012	SIZE:
ENGINEER:	J. WANG	DATE:	1/18/2012	SHEET:
FINISH:		SCALE:	3:1	DRAWING NO.:
TOTAL QTY IN DUMMY:	2			472-3424

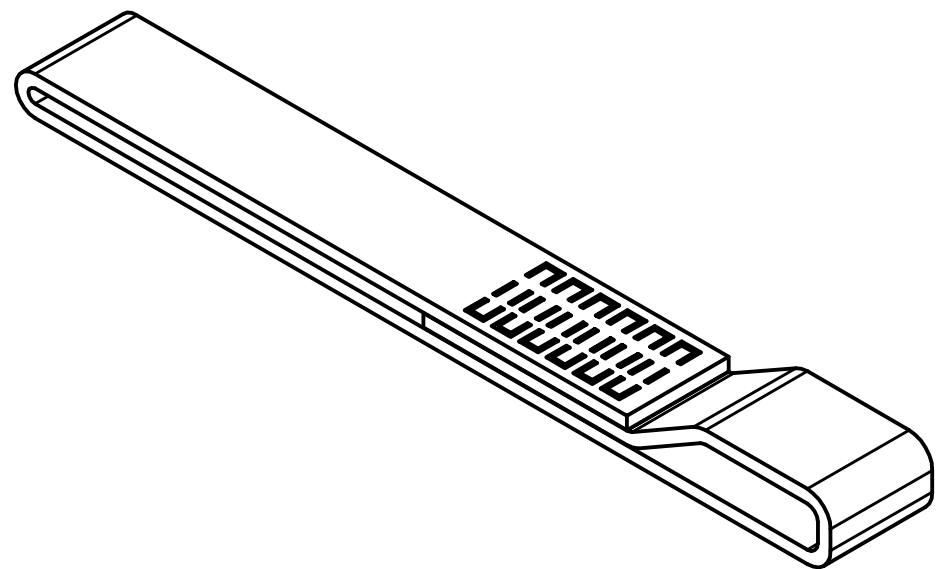


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

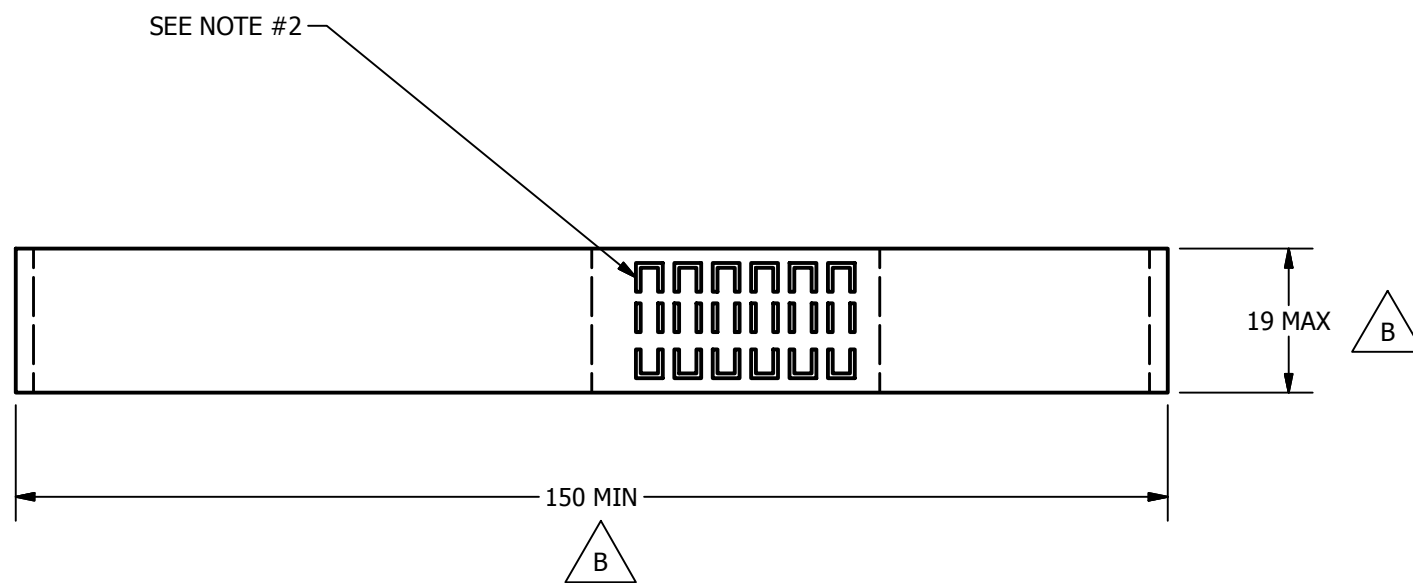
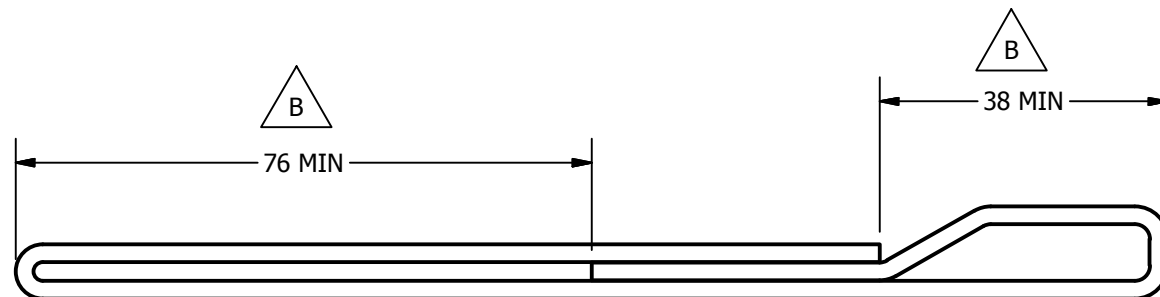
BIB INSERT - THICK, LARGE

472-3424

A



ISO VIEW  
SCALE 1 : 1



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER T1TXM017 RN/C AND CONVERTED TO METRIC FOR THOR-M	9/23/2011	TKN
	B	REMOVED PARTS LIST; DIM. 150 MIN WAS 152, 76 MIN WAS 76, AND 38 MIN WAS 38; REMOVED STITCHING DIMENSIONS; ADDED DIMENSION 20 MAX; IN NOTE 1, 336mm WAS 343MM; IN NOTE 2, AS NECESSARY WAS AS DIMENSIONED; ADDED NOTE 3	8/27/2015	DW

NOTES:

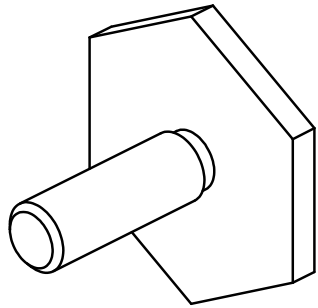
- CUT THE NYLON WEBBING TO A LENGTH OF 336mm AND OVERLAP AS DIMENSIONED.
- STITCH THE NYLON WEBBING USING KEVLAR THREAD AS NECESSARY.
- MAKE FROM NYLON WEBBING WITH A 10 kN BREAKING STRENGTH MIN.



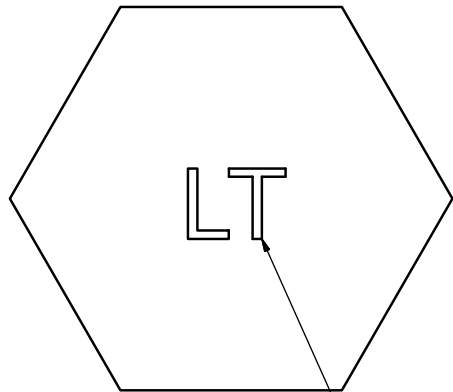
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO.: THOR-M	MATERIAL:	REMOVE BURRS & BREAK SHARP EDGES	DATE: 9/23/2011	DESCRIPTION: THORAX RIB #1 DUMMY LIFT STRAP
472-3000	1	Checked by: Thanh	DATE:	SIZE: A3
NEXT ASSEMBLY	QTY	ENGINEER: J. WANG	DATE: 1/18/2012	SHEET: 1 OF 1
TOTAL QTY IN DUMMY	1			DRAWING NO.: 472-3517



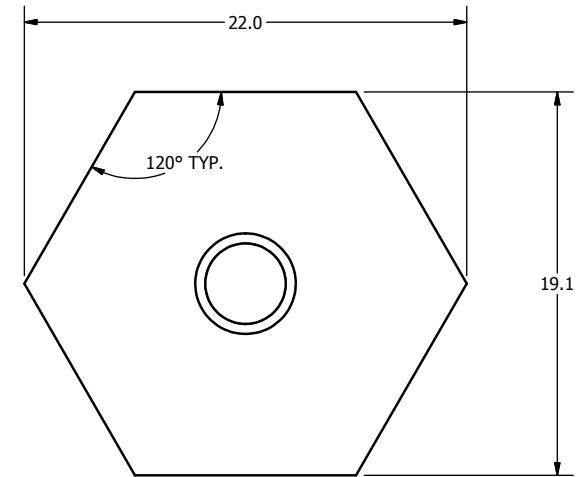
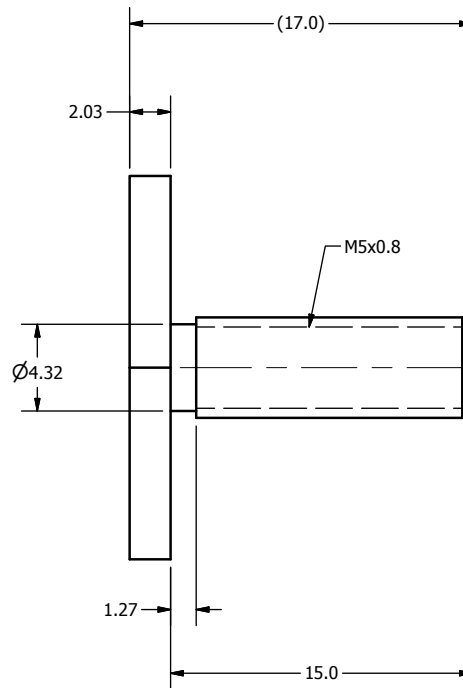
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	7/25/2012	BK
	B	CHANGE DESC, "LOWER THORAX" WAS "ABDOMEN"; STAMP "LT" ON PART AND ADD NOTE 4; ADD VIEW	7/11/2013	BK



ISO VIEW  
SCALE 3.000



**B** SEE NOTE 4



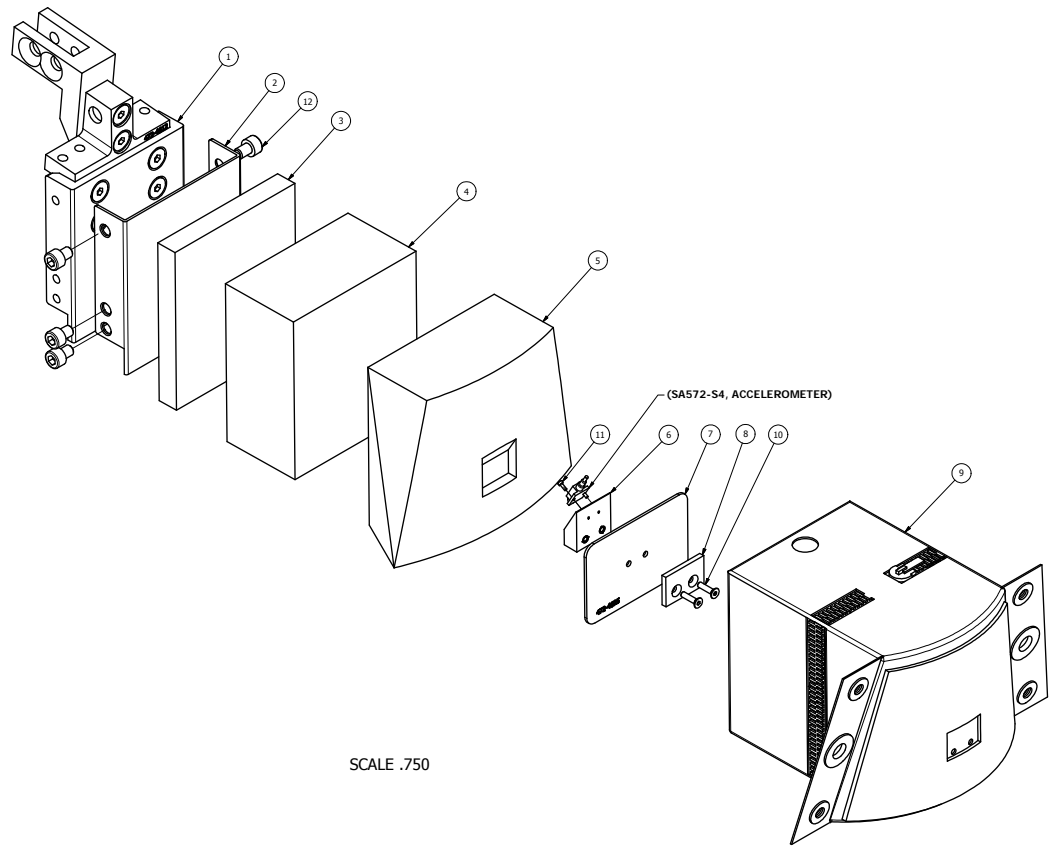
NOTES:

- POWDER OR BEAD BLAST.
- NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
- DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.
- STAMP OR ETCH "LT" (3mm MIN. CHARACTERS) WHERE SHOWN.

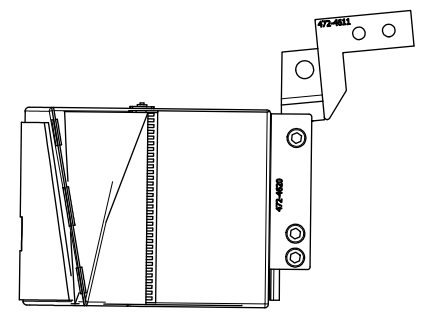
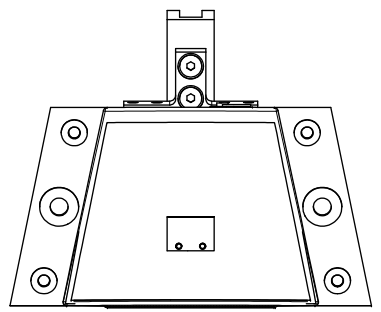
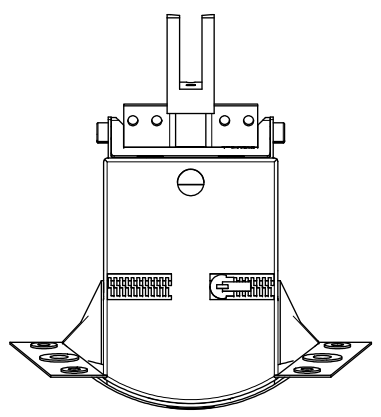
**B**

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION IRTRACC CONNECTING BOLT, LOWER THORAX	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 1.6 ✓ X 0.2 ✓ XX 0.3 ✓ XXX 0.01 ✓			
PROJECT NO:	472-3000	MATERIAL:	1018 STEEL HEX	DATE:	7/25/2012
QTY:	2	CHECKED BY:	Thanh	DATE:	
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/18/2012
FINISH:	SEE NOTES	TOTAL QTY IN DUMMY:	2	SCALE:	4.000
				SIZE SHEET	A3 1 OF 1
				DRAWING NO.	472-3520
				REV.	B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
A		RENUMBERED FROM T1UAM000 R05	9/8/2011	BK
B		AND CONVERTED TO METRIC FOR THOR-M	2/4/2012	BK
C		UPDATE TO SHOW CHANGES TO 472-4622, 472-4623	4/3/2012	BK
		UPDATE TO SHOW PROPER VELCRO LOCATION	4/3/2012	BK



SCALE .750



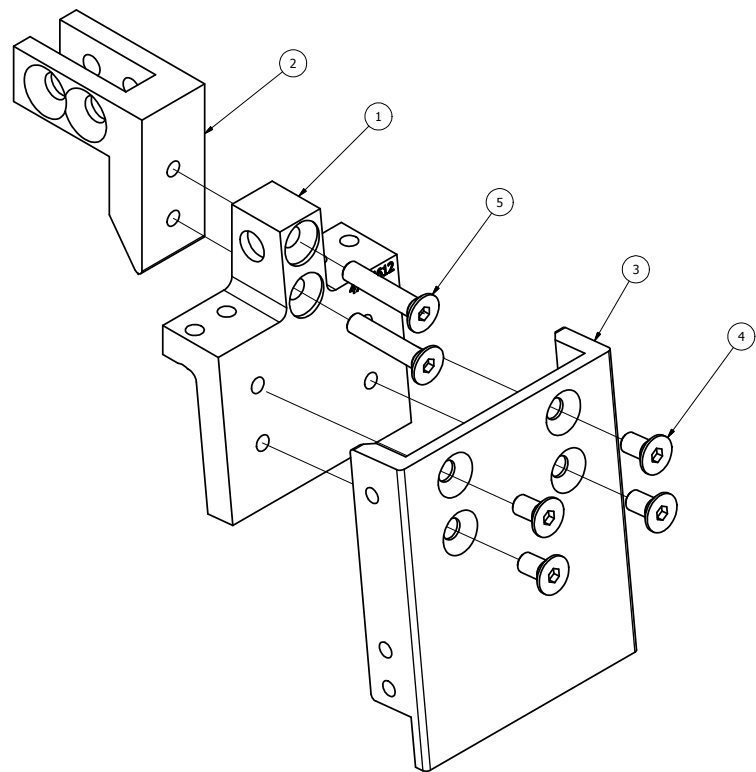
ITEM	QTY	PART NUMBER	DESCRIPTION
12	6	5000085	M6 X 1 X 8 LG. SHCS
11	2	5000375	M1.4 X 0.3 X 4 LG. SHCS
10	2	5000377	M3 X 0.5 X 12 LG. FHCS SS
9	1	472-4627	GROMMET ASSEMBLY, UPPER ABDOMEN BAG
8	1	472-4626	ACCELEROMETER MOUNT PLATE
7	1	472-4625	LOAD DISTRIBUTION PLATE
6	1	472-4624	ACCELEROMETER MOUNT, UPPER ABDOMEN
5	1	472-4623	INTERNAL FOAM FRONT LAYER
4	1	472-4622	INTERNAL FOAM MIDDLE LAYER
3	1	472-4621	INTERNAL FOAM REAR LAYER
2	1	472-4620	UPPER ABDOMEN INTERN. MOUNT PLATE FRONT
1	1	472-4610	SPINAL MOUNT BRACKET ASSEMBLY

DO NOT SCALE DRAWING		TOLERANCES		PARTS LIST	
472-3000	1				
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DRAWING	1				

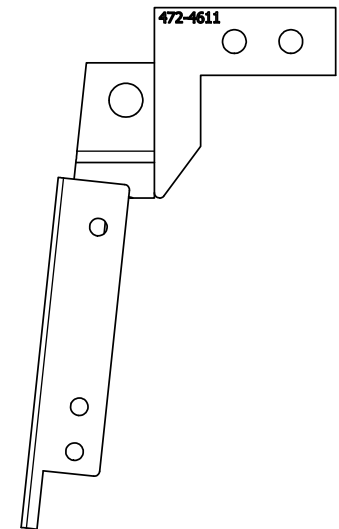
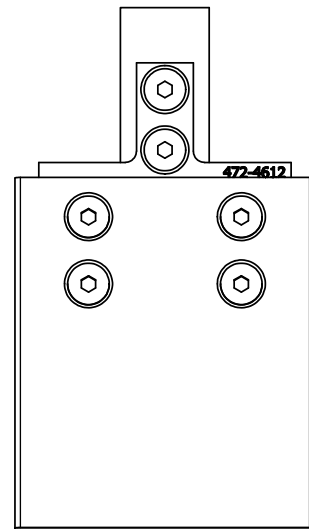
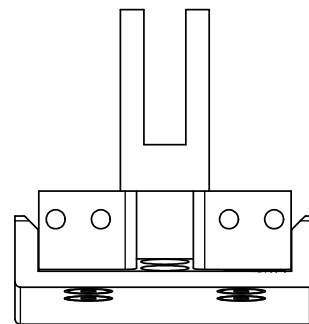
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 UPPER ABDOMEN ASSEMBLY  
 472-4600

472-3000	1				
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DRAWING	1				

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JAM100 R05 (AND CONVERTED TO METRIC) FOR THOR-M	9/7/2011	BK



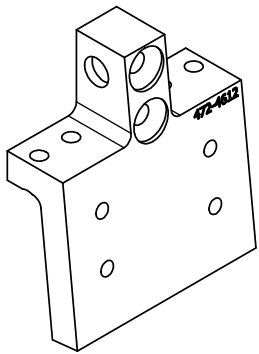
SCALE 1.000



NOTES:  
1. ASSEMBLE USING PERMANENT LIQUID THREAD LOCKER.

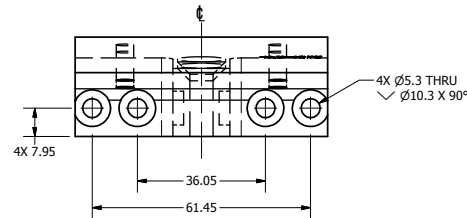
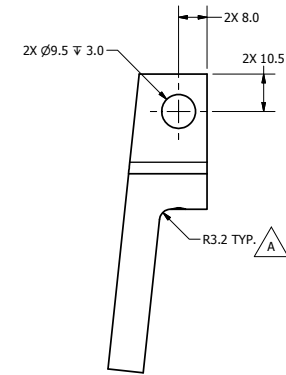
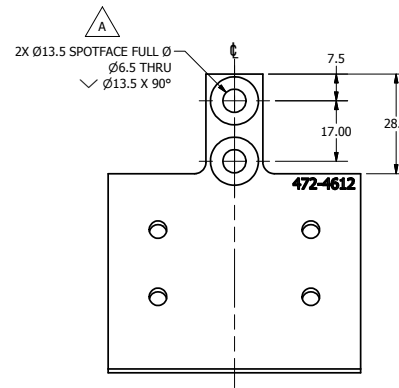
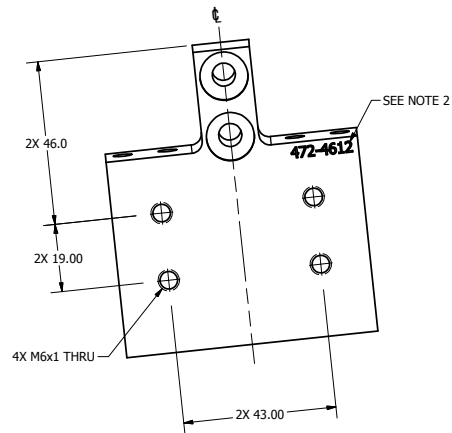
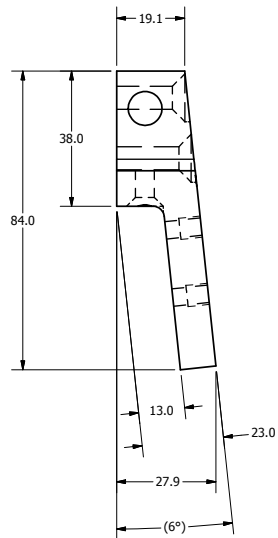
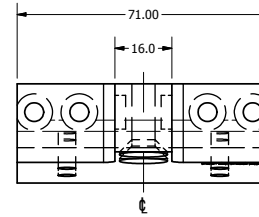
ITEM	QTY	PART NUMBER	DESCRIPTION
5	2	5000265	M6 X 1 X 30 LG. FHCS
4	4	5000139	M6 X 1 X 12 LG. FHCS
3	1	472-4613	UPPER ABDOMEN SPINAL MOUNT BRACKET
2	1	472-4611	THORACIC INSTR. BRACKET, UPPER ABDOMEN
1	1	472-4612	THORACIC INSTR. BRACKET BASE PLATE

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO 0.001 FRACTIONS ARE TO 1/32"	
SHOW HIDDEN & BREAK SHARP EDGES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-4600 NEXT ASSEMBLY TOTAL QTY IN DUMMY	1 QTY 1	DESIGNED BY B. KIMES DATE 9/7/2011	DRAWN BY J. WANG DATE 1/18/2012
		SHEET NO. A21 of 1	PART NUMBER 472-4610



SCALE 1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM111 R03 AND CONVERTED TO METRIC FOR THOR-M; ADD 2X SPOTFACE, R3.2 TYP., (OPTIONAL) TO NOTE 2, NOTES 1,3,5; FINISH WAS FLOUROCARBON	9/6/2011	BK



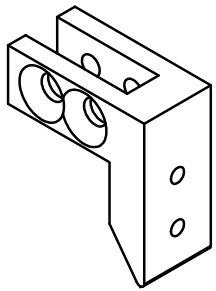
- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
  3. POWDER OR BEAD BLAST.
  4. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  5. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

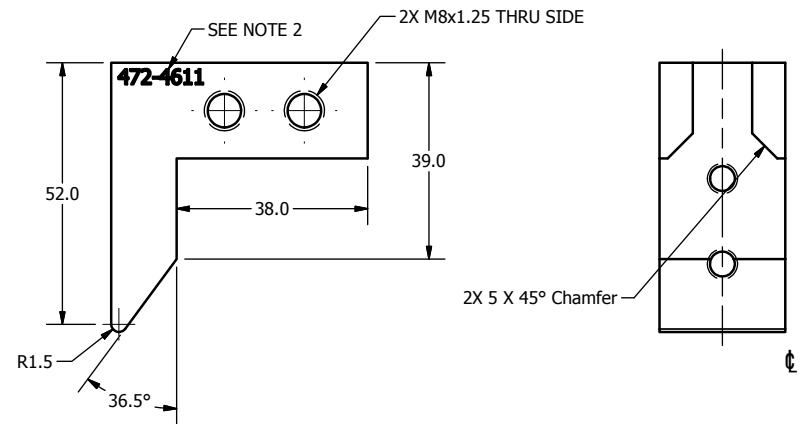
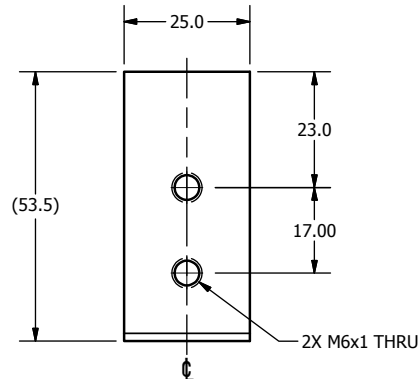
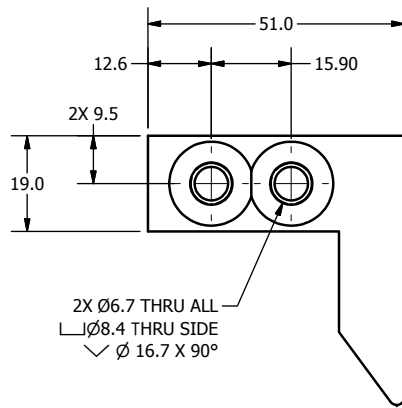
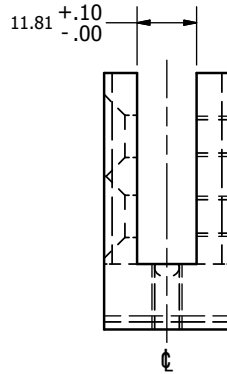
TOLERANCES  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS FRACTIONS  
0.001 0.005 0.010 0.020 0.050 0.100  
0.125 0.150 0.200 0.250 0.300 0.400 0.500  
0.600 0.800 1.000 1.500 2.000 3.000 4.000  
5.000 6.000 8.000 10.000  
UNLESS SPECIFIED OTHERWISE

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
THORACIC INSTR. BRACKET BASE PLATE

472-4610	1	1018 STEEL	DESIGNED BY B. KIMES	DATE 9/6/2011		A21 of 1 1.000	472-4612
NEXT ASSEMBLY	QTY		DESIGNED BY J. WANG	DATE 1/18/2012			
TOTAL QTY IN DUMMY	1	SEE NOTES					



SCALE .750



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
3. POWDER OR BEAD BLAST.
4. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
5. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

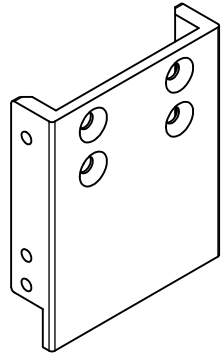
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM110 R06 AND CONVERTED TO METRIC FOR THOR-M; ADD (OPTIONAL) TO NOTE 2, NOTES 1,3,5; FINISH WAS FLOUROCARBON COATING	9/6/2011	BK

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION THORACIC INSTR. BRACKET, UPPER ABDOMEN
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-4610	MATERIAL:	1018 STEEL	DATE:
CHECKED BY:	B. KIMES	DATE:	9/6/2011	SCALE:
ENGINEER:	J. WANG	DATE:	1/18/2012	SCALE:
FINISH:	SEE NOTES	DATE:		SCALE:

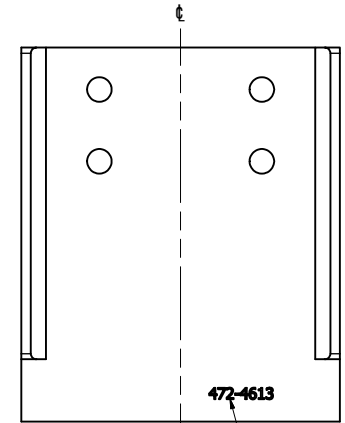
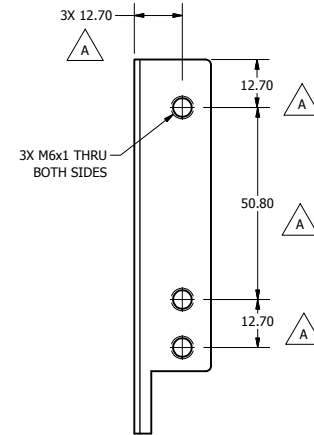
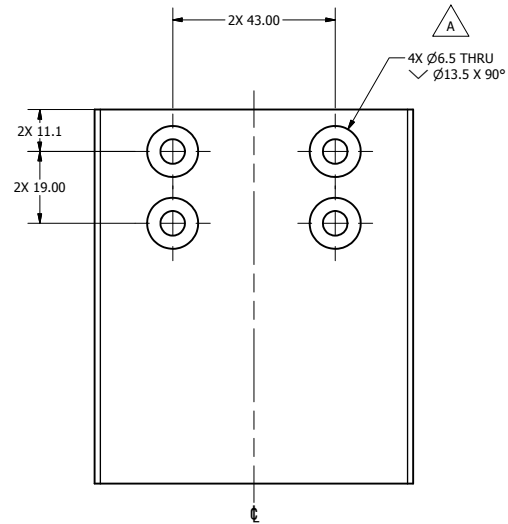
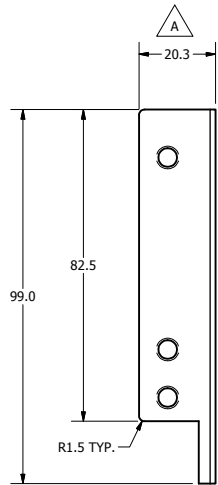
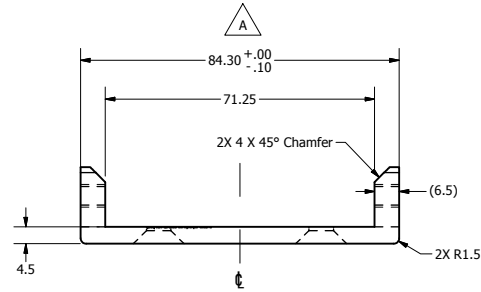
472-4610	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

SIZE	SHEET	DRAWING NO.	REV.
A3	1 OF 1	472-4611	A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TIUAM113 R08 AND CONVERTED TO METRIC FOR THOR-M; 20.3 WAS 20.5±.2; 4X Ø6.5 C'SINK Ø13.5 WAS Ø6.6 C'SINK Ø12.6; 3X 12.70 WAS 3X 12.700±.100; 50.80 WAS 50.800±.100; 84.30 ±.00/-0.10 WAS 84.3	9/6/2011	BK



SCALE .750



472-4613  
SEE NOTE 2

NOTES:

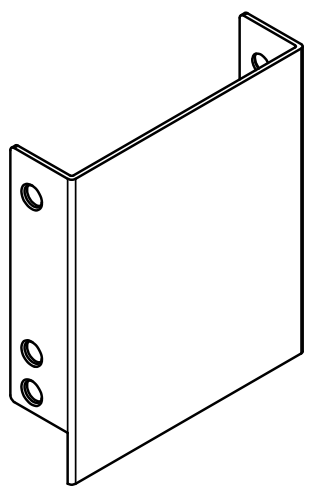
- DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
- STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
- POWDER OR BEAD BLAST.
- NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
- DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.



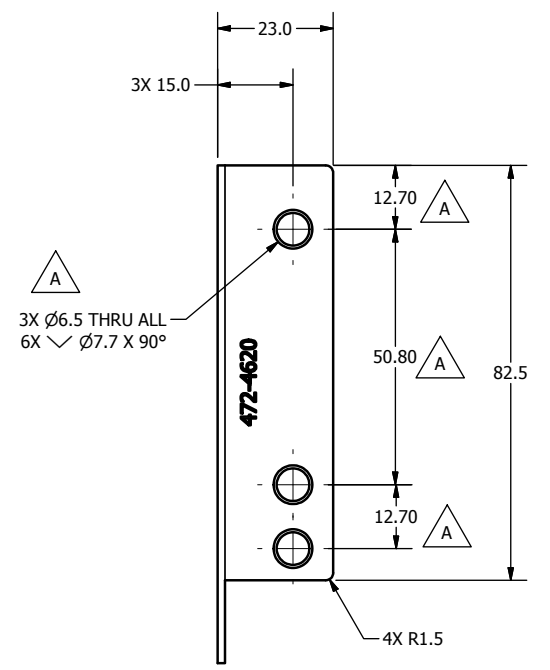
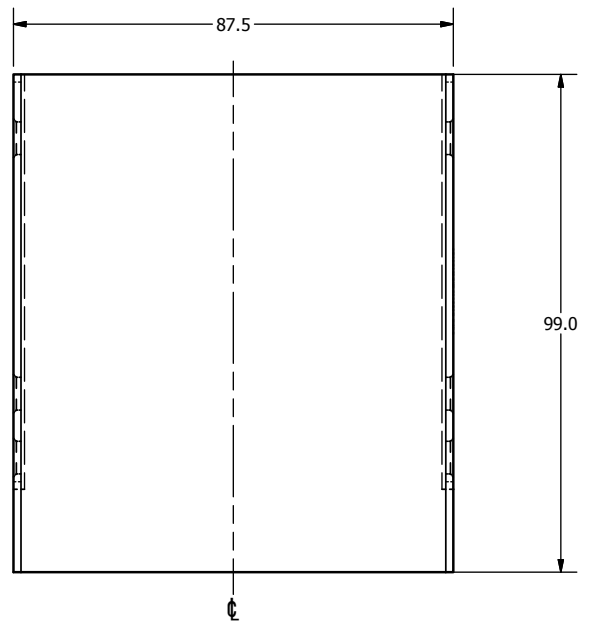
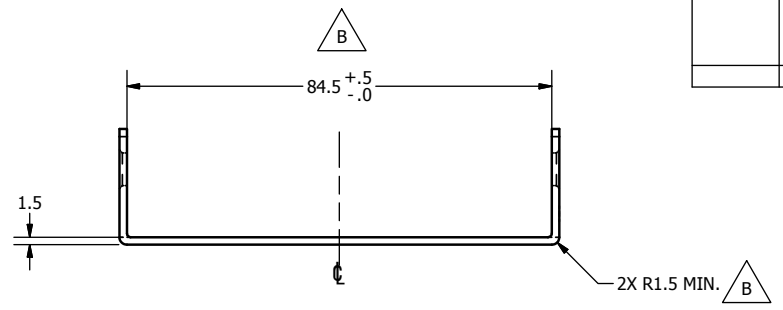
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS FRACTIONS ARE IN 16ths DECIMALS ARE IN 10ths DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY		
472-4610	1	1018 STEEL	B. KIMES	9/6/2011
NEXT ASSEMBLY	QTY			
TOTAL QTY IN DUMMY	1	SEE NOTES	J. WANG	1/18/2012

1 OF 1  
472-4613

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM113 R08 AND CONVERTED TO METRIC FOR THOR-M; ADD 12.70, 50.80, (OPTIONAL) TO NOTE 2; NOTES 1,3,5; FINISH WAS FLOUROCARBON COATING; 3X Ø6.5 C'SINK Ø7.7 X 90° WAS 3X Ø6.756±.100 C'SINK Ø7.7 X 82°	9/6/2011	BK
	B	84.5+.5/-0 WAS +.1/-0; ADD "MIN." TO R1.5	6/14/2012	BK



SCALE .750



- NOTES:
- DIMENSIONS SYMMETRIC ABOUT  $\text{C}$ , UNLESS OTHERWISE NOTED.
  - STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)
  - POWDER OR BEAD BLAST.
  - NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
  - DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION UPPER ABDOMEN INTERN. MOUNT PLATE FRONT
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 1.6 X.X ±0.2 X.XX ±0.3 X.XXX ±0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-4600	MATERIAL:	1018 STEEL	QTY
CHECKED BY:	B. KIMES	DATE:	9/6/2011	DATE:
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:	SEE NOTES	DATE:	1/18/2012	SCALE:
TOTAL QTY IN DUMMY	1	SEE NOTES		1.000

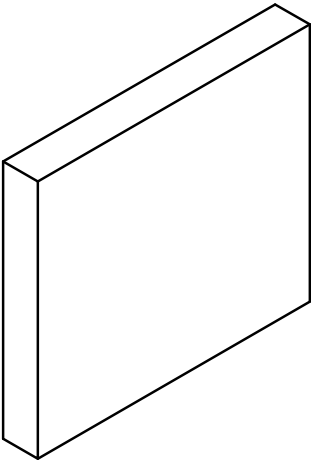


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

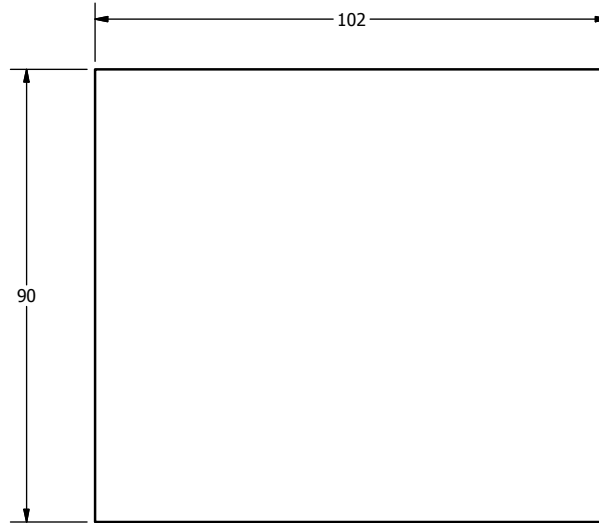
UPPER ABDOMEN INTERN. MOUNT PLATE FRONT

SIZE: A31 OF 1 SHEET  
 DRAWING NO.: 472-4620

REV: B



SCALE .750



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM010 R03 FOR THOR-M	9/7/2011	BK

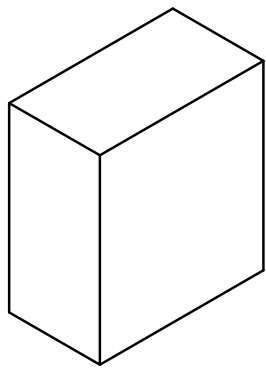
NOTES:

- MATERIAL: BUNA-N (SHORE 60A ±5)  
SAE J2000 SPECIFICATION: 2BG617B14K11 Z1Z2Z3  
2-GRADE 2  
BG-SWELL 405 @ CONSTANT TEMP 100°C  
6-DUROMETER 60  
17-17 MPA  
B14-COMPRESSION SET 22H @ 110°C < 50%  
K11-ADHESION > 1.4 MPA  
Z1-BUNA-N  
Z2-DUROMETER 55-65A  
Z3-PERFORMANCE SPECIFICATIONS TAKE PRECEDENCE OVER DUROMETER
- NOMINAL STIFFNESS @ 25% COMPRESSION: 900±50 KPA (130±7 PSI)  
REFER TO THOR CERTIFICATION MANUAL FOR DYNAMIC PERFORMANCE SPECIFICATIONS.
- FOAM TOLERANCE ±1mm, UNLESS OTHERWISE NOTED.

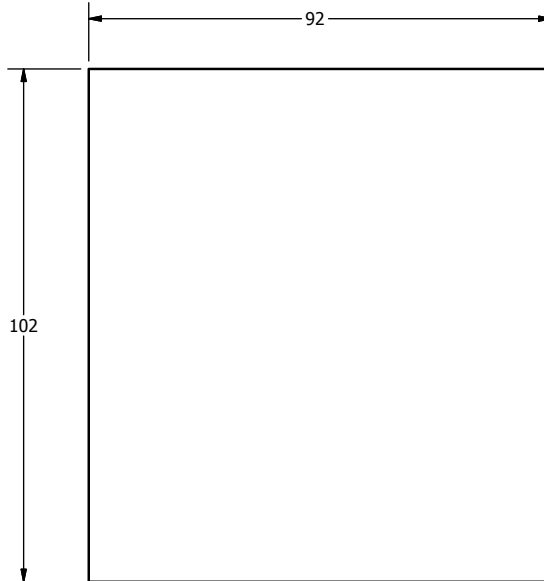
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-4600	MATERIAL:	SEE NOTES	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	9/7/2011	INTERNAL FOAM REAR LAYER
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
TOTAL QTY IN DUMMY	1	FINISH:		DATE:
				SCALE: 1.000
				SIZE: SHEET: A3 1 OF 1
				DRAWING NO.: 472-4621
				REV: A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM111 R03 FOR THOR-M	9/7/2011	BK
	B	REDESIGN TO ORIGINAL NHTSA DESIGN REV 2 (WITHOUT HOLES)	2/4/2012	BK



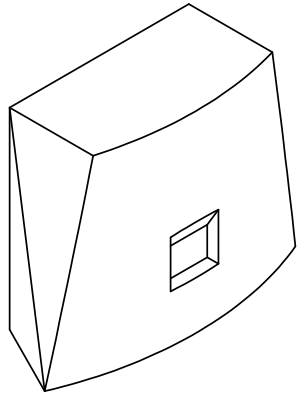
SCALE .500



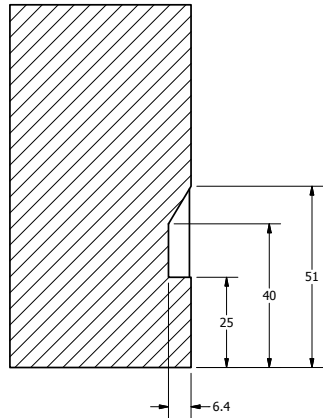
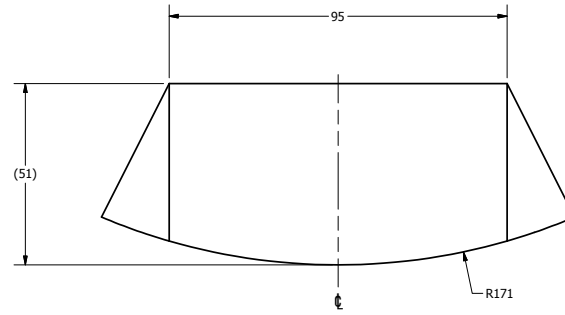
NOTES:

- FOAM MATERIAL IS BLENDED SPONGE RUBBER  
NEOPRENE/SBR/EPDM FOAM RUBBER (NOMINAL DUROMETER 20A ±5)  
SAE J18 SPECIFICATION: 1A5  
1-OPEN CELL FOAM  
A-NON-OIL RESISTANT  
5-COMPRESSION DEFLECTION 25% 119-168 KPA (17-24 PSI)
- NOMINAL STIFFNESS @ 50% COMPRESSION: 200±15 KPA (29±2 PSI)  
REFER TO THOR CERTIFICATION MANUAL FOR PERFORMANCE SPECIFICATIONS.
- FOAM TOLERANCE ±1mm, UNLESS OTHERWISE NOTED.

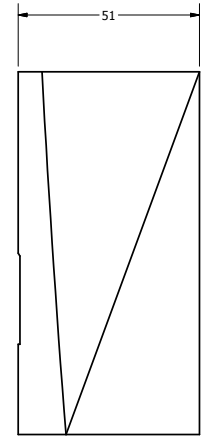
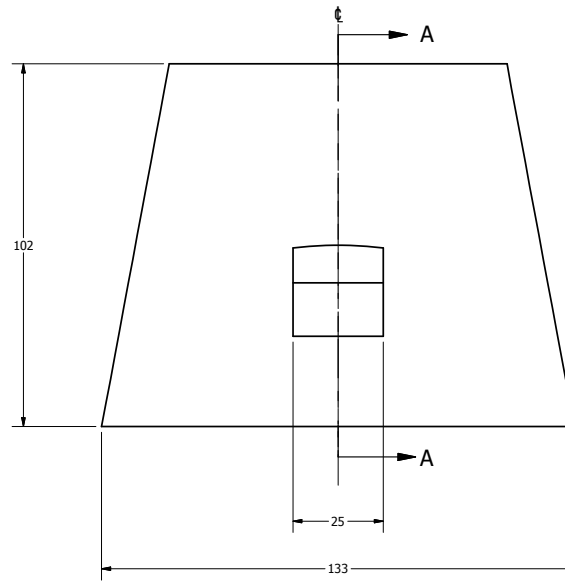
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 16 XX ±0.2 XXX ±0.3 XXXX ±0.51		
PROJECT NO:	472-4600	MATERIAL:	SEE NOTES	DESCRIPTION: INTERNAL FOAM MIDDLE LAYER
DATE:	9/7/2011	DESIGNED BY:	B. KIMES	
CHECKED BY:		DATE:		SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	A3 1 OF 1
TOTAL QTY IN DUMMY	1	DATE:	1/18/2012	SCALE: 1.000
				DRAWING NO.:
				472-4622
				REV:
				B



SCALE .750



SECTION A-A  
SCALE 1.000



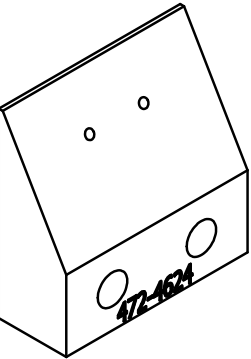
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM012 R04 FOR THOR-M; ADD NOTE 1 & 2	9/8/2011	BK
	B	REDESIGN TO ORIGINAL NHTSA DESIGN REV 3 (WITHOUT HOLES)	2/4/2012	BK

NOTES:

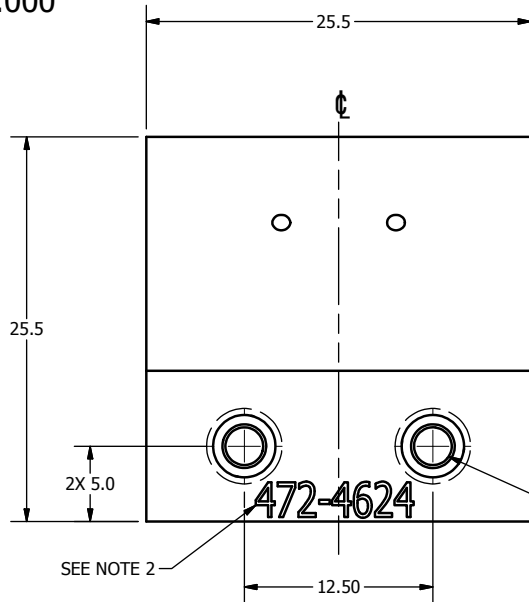


1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED
2. FOAM TOLERANCE  $\pm 1\text{mm}$ , UNLESS OTHERWISE NOTED.
3. MATERIAL: CHARCOAL POLYESTER FOAM WITH NOMINAL DENSITY OF 6 LB/CU FT OR EQUIVALENT. MATERIAL CAN BE ADJUSTED TO MEET CERTIFICATION REQUIREMENT.

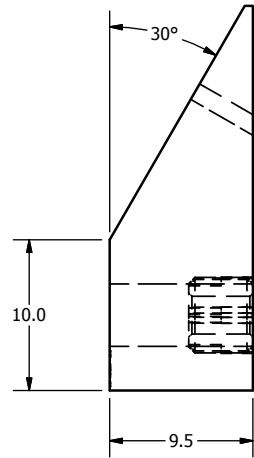
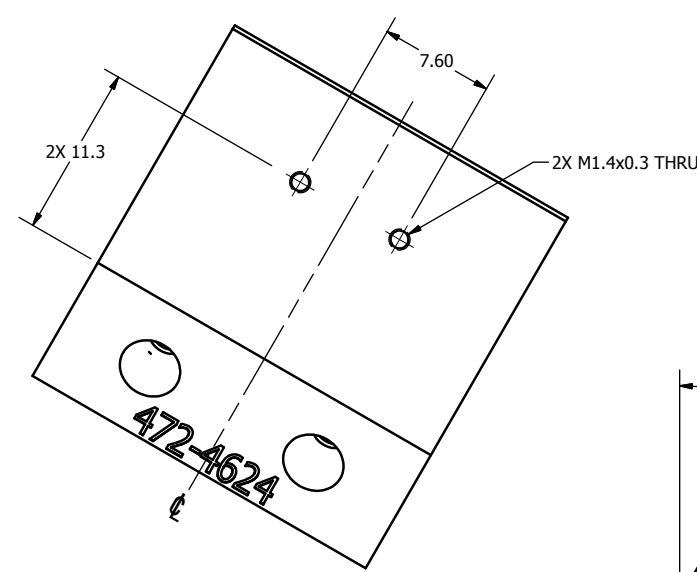
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		DIMENSIONS UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    DECIMALS    FRACTIONS 0.1    1/16    0.05    1/32 0.2    1/8    0.1    1/16 0.5    1/4    0.25    1/8 1.0    1/2    0.5    1/2 2.0    1    1    1		INTERNAL FOAM FRONT LAYER	
472-4600	1	SEE NOTES	B. KIMES	9/8/2011	
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DUMMY	1		J. WANG	1/18/2012	
A21 of 1				472-4623	B



SCALE 2.000



1 2X DRILL AND TAP THRU FOR M3 X .5 X 4.25 MINI KEENSERT INSTALL OPPOSITE SIDE

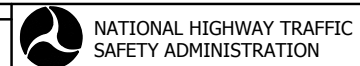


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM015 R05 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 1 AND (OPTIONAL) TO NOTE 2	9/7/2011	BK
	B	INSTALL KEENSERTS FROM OTHER SIDE; ADD NOTE	7/19/2012	BK

1	2	5001107	M3 X 0.5 X 4.25 LG. MINI KEENSERT
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X .50 ± 0.07 1.6	
		X.X ± 0.2	
		X.XX ± 0.3	
		X.XXX ± 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:	472-4600	MATERIAL:	6061-T6 ALUMINUM
CHECKED BY:	B. KIMES	DATE:	9/7/2011
HEAT TREAT:		FINISH:	CLEAR ANODIZE
ENGINEER:	J. WANG	DATE:	1/18/2012
FRONT:		SCALE:	3.000

- NOTES:
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

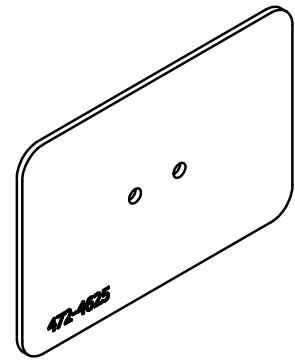
ACCELEROMETER MOUNT, UPPER ABDOMEN

DESCRIPTION: 472-4624

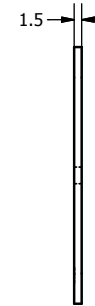
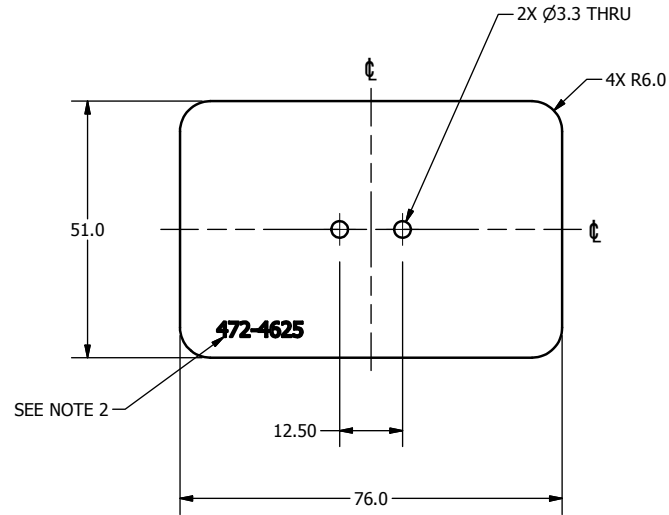
PROJECT NO:	472-4600	QTY	1
MATERIAL:	6061-T6 ALUMINUM	DATE:	9/7/2011
HEAT TREAT:		FINISH:	CLEAR ANODIZE
ENGINEER:	J. WANG	DATE:	1/18/2012
FRONT:		SCALE:	3.000

SIZE: A3  
SHEET: 1 OF 1  
DRAWING NO.: 472-4624

REV: B



SCALE 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM013 R04 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 1 AND (OPTIONAL) TO NOTE 2	9/7/2011	BK

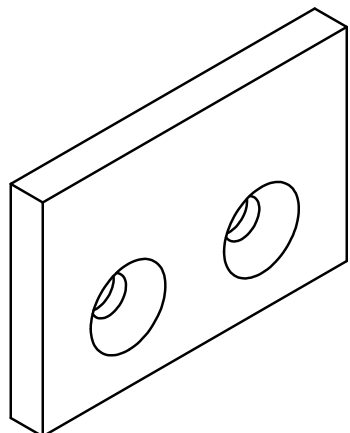
NOTES:



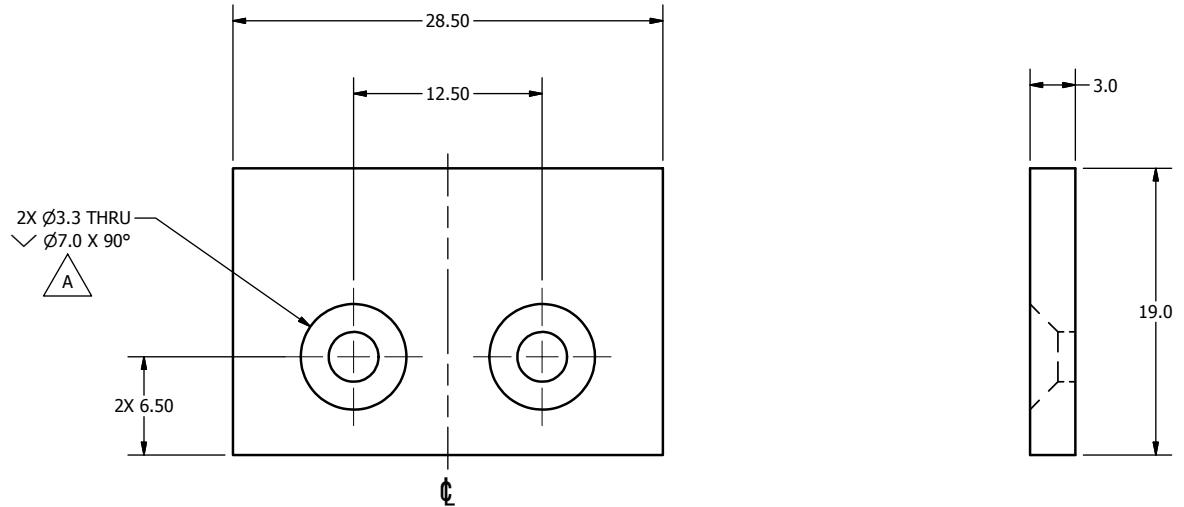
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. STAMP OR ETCH PART NUMBER (3mm CHARACTERS) WHERE SHOWN. (OPTIONAL)

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION LOAD DISTRIBUTION PLATE
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 16 XX ±0.2 ±0.5 ✓ XXX ±0.3 ±0.5 ✓ XXXX ±0.01		
PROJECT NO.:	472-4600	MATERIAL:	High Density Polyethylene	REMOVED BLURBS & BREAK SHARP EDGES
DESIGNED BY:		CHECKED BY:	B. KIMES	DATE:
DATE:	9/7/2011	ENGINEER:	J. WANG	DATE:
DATE:	1/18/2012	SCALE:	1.000	SIZE: SHEET
TOTAL QTY IN DUMMY			1	DRAWING NO. 472-4625 REV. A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAM014 R03 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 1; $\phi 7.0 \times 90^\circ$ WAS $\phi 6.9 \times 82^\circ$	9/7/2011	BK

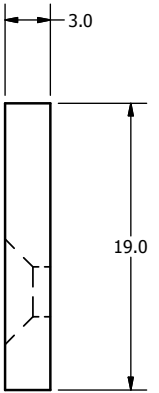


SCALE 3.000



2X  $\phi 3.3$  THRU  
 $\checkmark \phi 7.0 \times 90^\circ$   
 A

2X 6.50



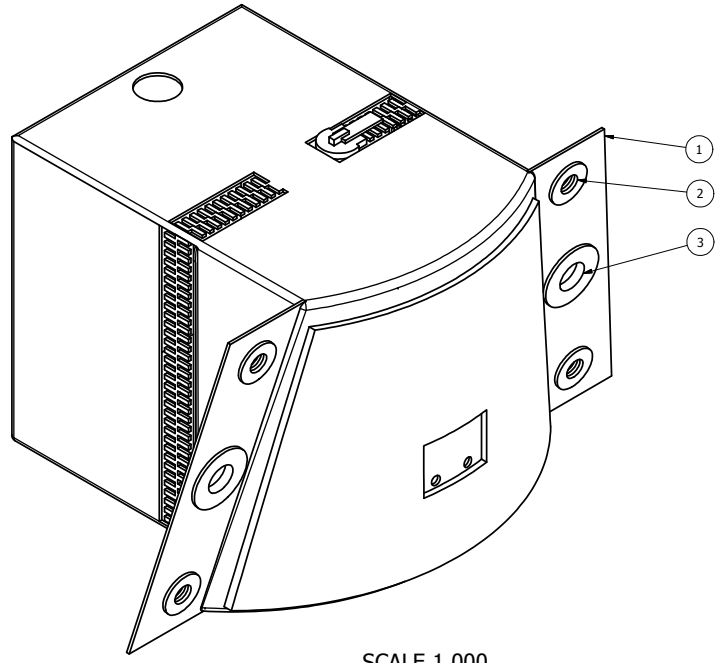
NOTES:  
 1. DIMENSIONS SYMMETRIC ABOUT  $\text{C}$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING	TOLERANCES
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.5 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES

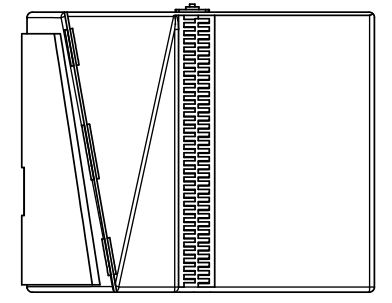
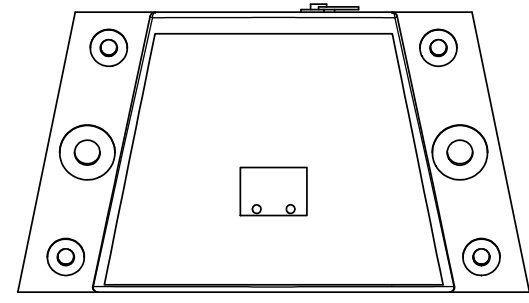
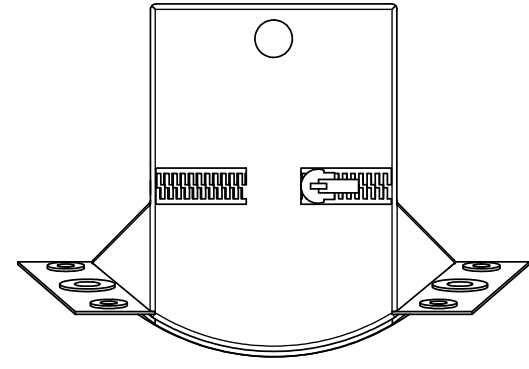
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 DESCRIPTION: ACCELEROMETER MOUNT PLATE

PROJECT NO.: 472-4600	QTY: 1	MATERIAL: DELRIN BLACK	DESIGNED BY: B. KIMES	DATE: 9/7/2011	SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-4626	REV: A
NEXT ASSEMBLY	TOTAL QTY IN DUMMY: 1	FINISH:	CHECKED BY: J. WANG	DATE: 1/18/2012	SCALE: 3.000			

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAF301 R02 FOR THOR-M	9/12/2011	BK
	B	UPDATE TO SHOW PROPPER VELCRO LOCATION; ADD GROMMET TO DESC; REMOVE MATERIAL NOTES	4/2/2012	BK



SCALE 1.000



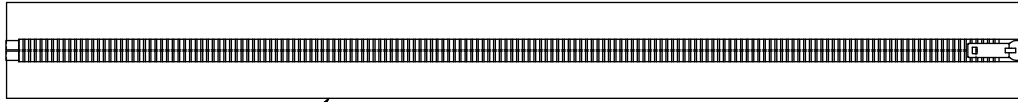
NOTES:  
1. PUNCH GROMMET TO FLAPS OF COMPLETED ASSEMBLY USING GROMMET TOOL.

ITEM	QTY	PART NUMBER	DESCRIPTION
3	2	6002912	GROMMET, .375 I.D. X .815 O.D.
2	4	6002911	GROMMET, .250 I.D. X .545 O.D.
1	1	472-4650	BAG-SEWING ASSEMBLY, UPPER ABDOMEN

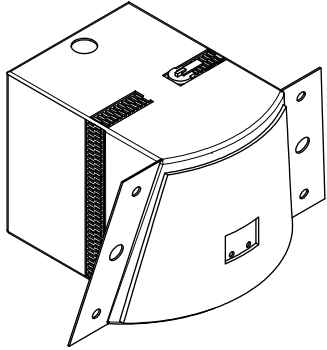
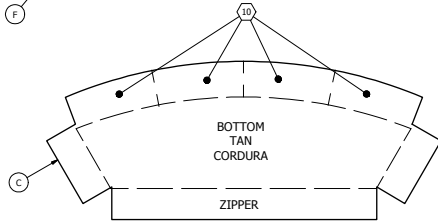
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
 THIRD ANGLE PROJECTION		DECIMAL FRACTIONS UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS ARE 16ths UNLESS OTHERWISE SPECIFIED HOLE SIZE HOLE SIZE HOLE SIZE HOLE SIZE HOLE SIZE	
SHOW DIMENSIONS & BREAK DIMENSIONS 472-4600 1 NEXT ASSEMBLY QTY TOTAL QTY IN DUMMY 1		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION GROMMET ASSEMBLY, UPPER ABDOMEN BAG B. KIMES 9/12/2011 J. WANG 1/18/2012	

472-4600	1	B. KIMES	9/12/2011	1 of 1	472-4627
NEXT ASSEMBLY	QTY	DESIGNED BY	DATE	REV	
TOTAL QTY IN DUMMY	1	DESIGNED BY	DATE	REV	
		J. WANG	1/18/2012		

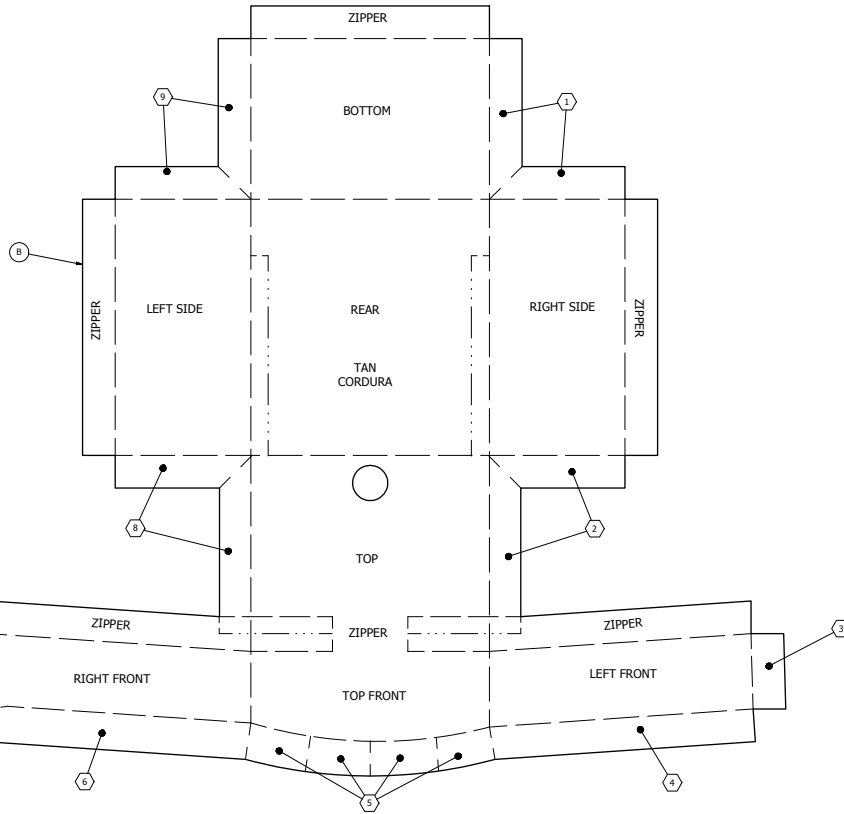
REVISION HISTORY					
ECO#	REV	DESCRIPTION	DATE	BY	
	A	RENUMBERED FROM 11LUF300 R04 FOR THORAX; ADD ISO VIEW	9/8/2011	BK	
	B	SHOW VELCRO PATCH IN CORRECT POSITION; ADD HOLE DIMENSIONS, SEWING AND MATERIAL NOTES	4/3/2012	BK	



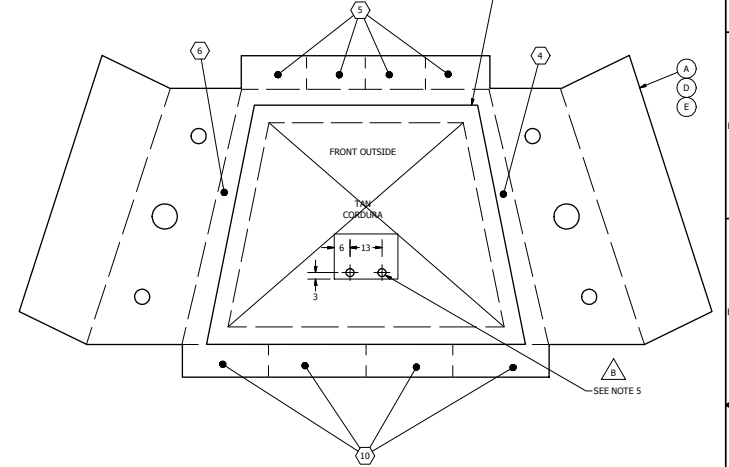
f



SCALE .750



ALIGN THE TOP OF THE STIFFENING CLOTH (472-4654) ALONG THIS LINE AND SEW IT TO THE INSIDE OF THE FRONT OVERLAY FABRIC PATTERN (472-4655).  
ALIGN THE TOP OF THE FRONT VELCRO PATCH (472-4651) ALONG THIS LINE AND SEW IT TO THE OUTSIDE SURFACE OF THE FRONT OVERLAY FABRIC PATTERN (472-4655).



SEE NOTE 5

LEGEND	
---	PATTERN EDGES
- - -	STITCH LINES
---	CUT LINES

NOTES:

1. THE NUMBERING SCHEME IS USED TO INDICATE WHICH PATTERN EDGES ARE SEWN TOGETHER TO CREATE THE UPPER ABDOMEN BAG.
2. STITCHES MUST BE CONSISTANT AND SECURE.
3. THE BAG IS STITCHED WITH KEVLAR THREAD (MINIMUM 3 STITCHES/CM).
4. FABRIC: CORDURA NYLON (TAN)  
ZIPPER: STIFFENED NYLON (WHITE)  
SIZE: #10, LENGTH 405mm, BRASS, OPEN TOP, CLOSED BOTTOM
5. ADD 2X Ø3.2 HOLES AFTER SEWING.

ITEM	QTY	PART NUMBER	DESCRIPTION
F	1	472-4656	ZIPPER, UPPER ABDOMEN
E	1	472-4655	FRONT OVERLAY FABRIC PATTERN
D	1	472-4654	FRONT STIFFENING CLOTH
C	1	472-4653	BOTTOM FABRIC PATTERN
B	1	472-4652	TOP/SIDE REAR FABRIC PATTERN
A	1	472-4651	FRONT VELCRO PATCH

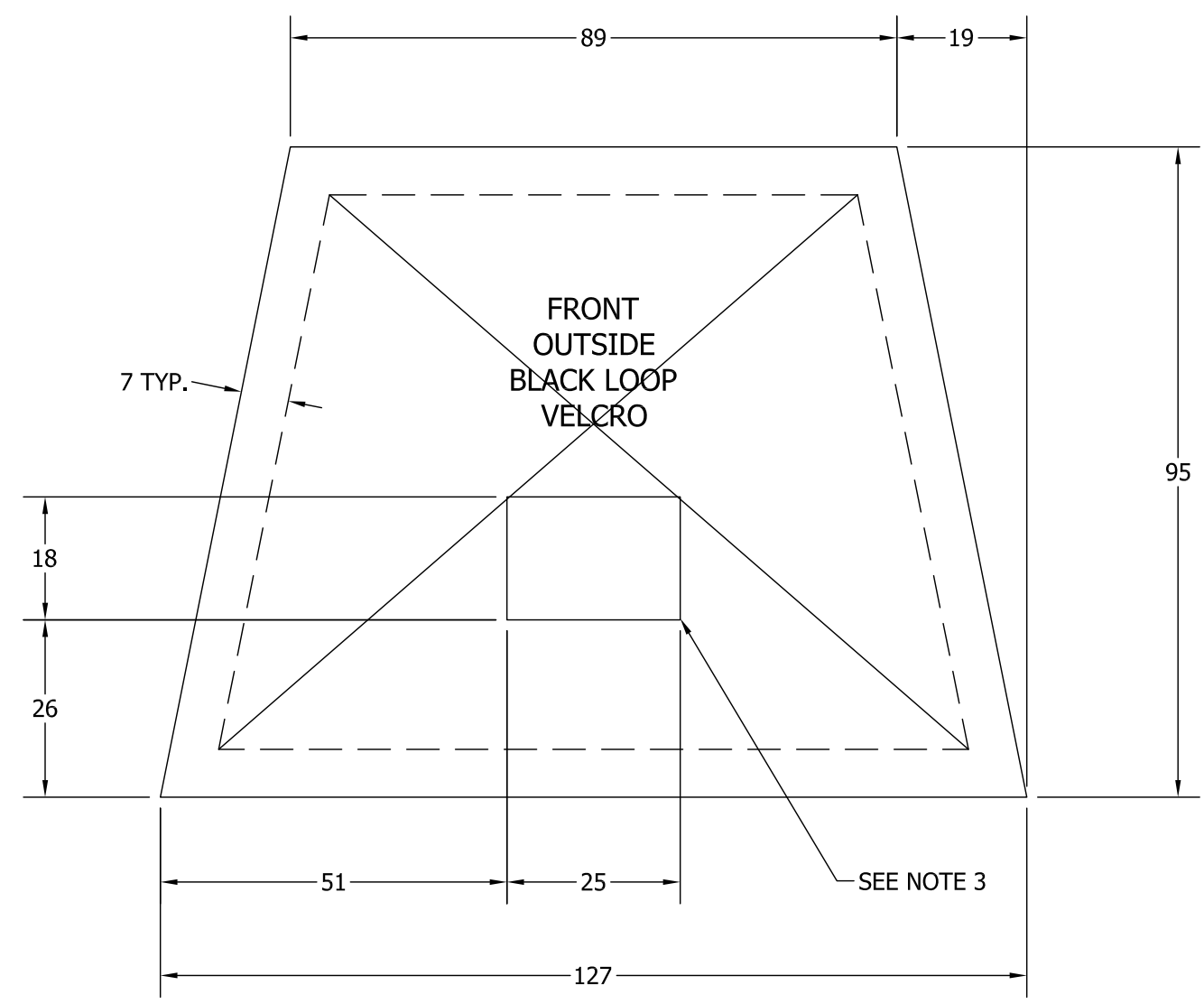
DO NOT SCALE DRAWING		TOLERANCES		PARTS LIST	
472-4657	1		B. KIMES	1	472-4650
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DRAWING	1				

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

BAG SEWING ASSEMBLY, UPPER ABDOMEN

All of 1 472-4650

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
78027	A	RENUMBERED FROM T1UAF310 R02 FOR THOR-M; ADD NOTE 2	9/9/2011	BK



LEGEND	
	PATTERN EDGES
	STITCH LINES

**NOTES:**

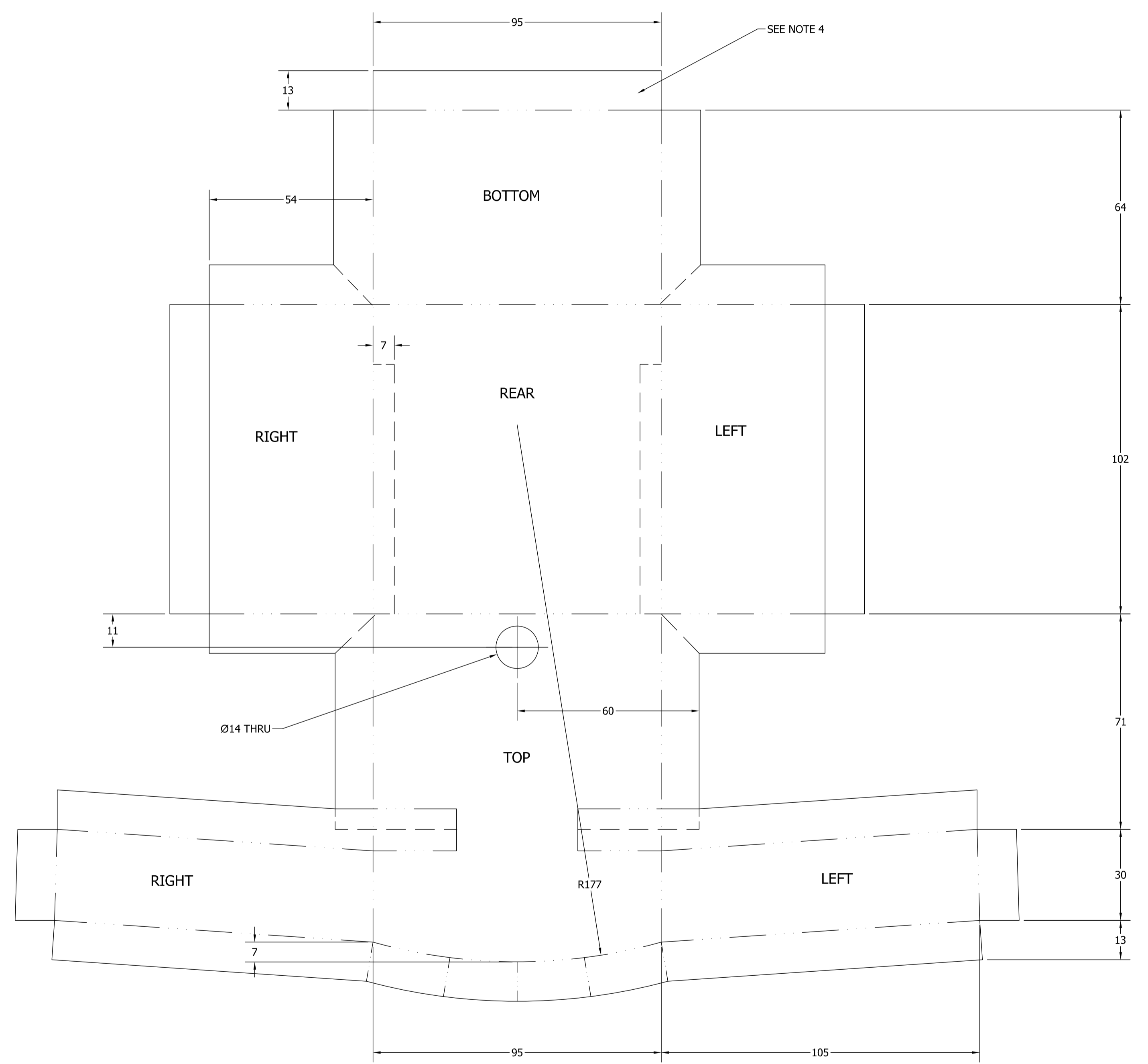
1. USE BLACK LOOP VELCRO MATERIAL AND SEW TO THE FRONT OF THE UPPER ABDOMEN FRONT OVERLAY FABRIC PATTERN (472-4655).
2. TOLERANCE  $\pm 1\text{mm}$ , UNLESS OTHERWISE NOTED.
3. PRINT SCALE AND USE AS PATTERN FOR CUTTING OUT MATERIAL.
4. CUT OUT ACCELEROMETER MOUNTING HOLE AFTER SEWING.



DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X $\pm 0.5$ $\pm 0.5$ 1.6 XX $\pm 0.2$ XXX $\pm 0.1$ XXXX $\pm 0.01$		
PROJECT NO.:	MATERIAL:	DRAWN BY:	DATE:	DESCRIPTION:
	SEE NOTES	B. KIMES	9/9/2011	FRONT VELCRO PATCH
472-4650	1	CHECKED BY:	DATE:	SIZE: SHEET
NEXT ASSEMBLY	QTY	J. WANG	1/18/2012	A31 OF 1
TOTAL QTY IN DUMMY	1	FINISH:		SCALE: 1.000
			DRAWING NO.:	REV:
			472-4651	A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAF311 R04 FOR THOR-M; ADD NOTE 2	9/9/2011	BK

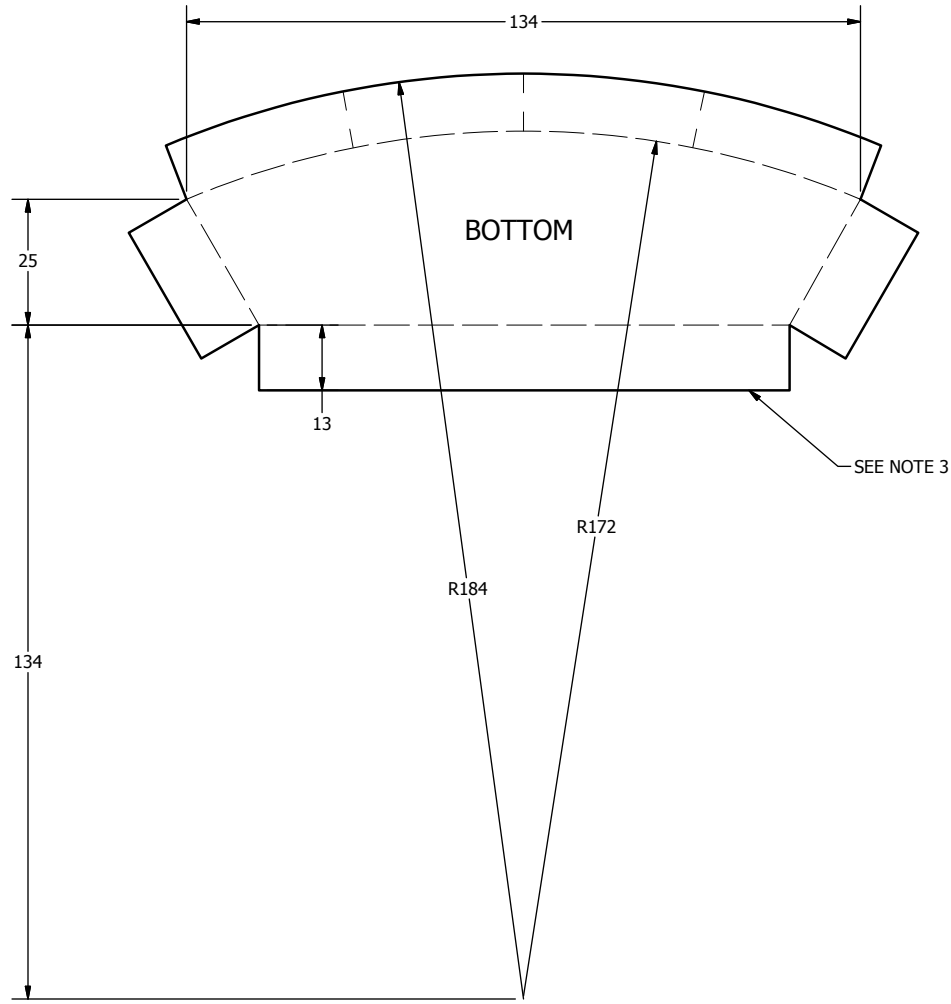


LEGEND	
	PATTERN EDGES
	CUT LINES
	FOLD LINES

- NOTES:
1. USE CORDURA NYLON FABRIC (1000 DENIER - 10 OZ/YD)
  2. TOLERANCE ±1mm, UNLESS OTHERWISE NOTED.
  3. PRINT TO SCALE AND USE AS A PATTERN FOR CUTTING OUT MATERIAL.
  4. VIEW SHOWN IS THE OUTSIDE OF THE BAG.
  5. SEE DRAWING 472-4650 FOR ASSEMBLY PROCEDURES.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS 0.1    1/16 0.2    1/8 0.5    1/4 1.0    1/2 2.0    1/2 5.0    1/2 10.0    1/2		
PROJECT NO:	472-4650	DATE:	9/9/2011	TOP/SIDE REAR FABRIC PATTERN A11 of 1 SCALE: 1:1000 472-4652
REVISED BY:	SEE NOTES	DESIGNED BY:	B. KIMES	
DATE:		DATE:	1/18/2012	
PREPARED BY:	J. WANG	CHECKED BY:		

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAF312 R02 FOR THOR-M; ADD NOTE 2	9/9/2011	BK



LEGEND	
	PATTERN LINES
	FOLD LINES
	CUT LINES

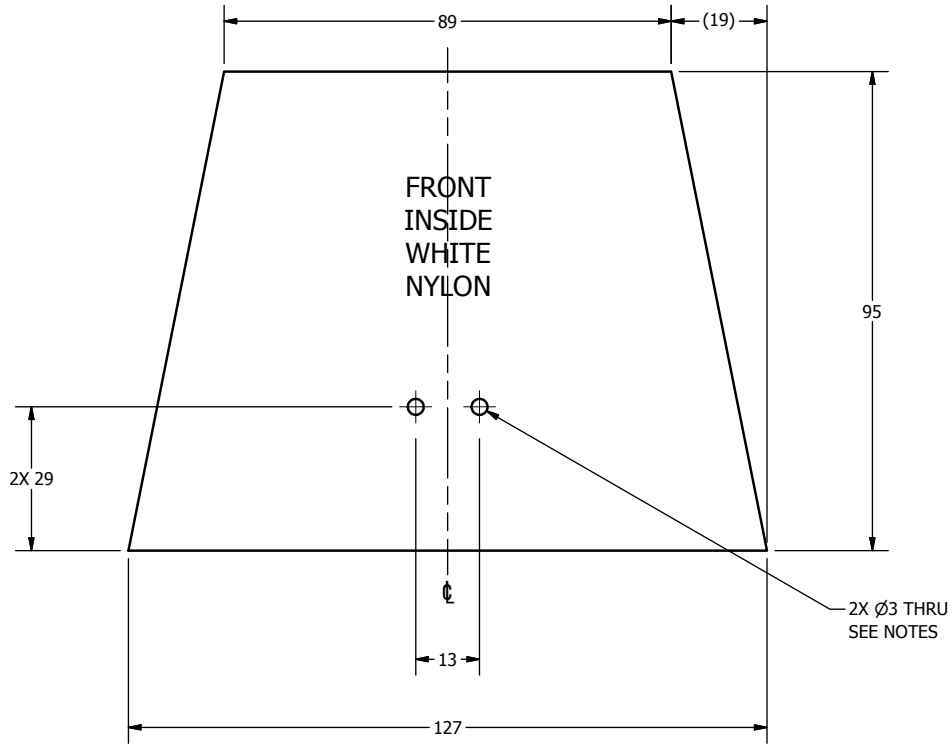
NOTES:

1. USE CORDURA NYLON FABRIC (1000 DENIER 10 OZ/YD).
2. TOLERANCE  $\pm 1\text{mm}$ , UNLESS OTHERWISE NOTED.
3. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING OUT MATERIAL.
4. SEE DRAWING 472-4650 FOR ASSEMBLY PROCEDURE.







DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 1.6 XX 0.2 XXX 0.3 XXXX 0.01		
PROJECT NO.:	472-4650	MATERIAL:	SEE NOTES	DESCRIPTION: BOTTOM FABRIC PATTERN
CHECKED BY:	B. KIMES	DATE:	9/9/2011	SIZE: A3
HEAT TREAT:		ENGINEER:	J. WANG	SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	DATE:	1/18/2012	DRAWING NO.: 472-4653
		FINISH:		SCALE: 1.000

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAF313 R03 FOR THOR-M; ADD NOTE 1 & 3	9/12/2011	BK

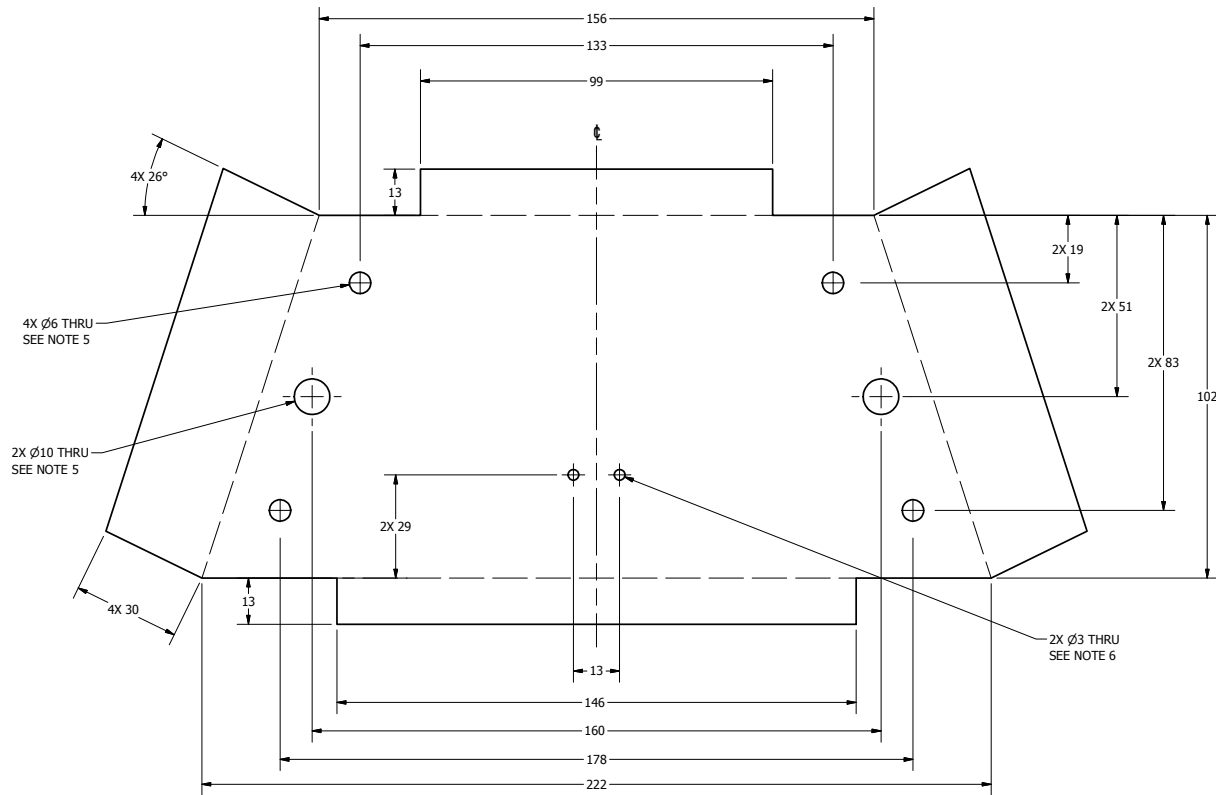


NOTES:

-  1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
-  2. MATERIAL: NYLON STIFFENING CLOTH (DUCK CLOTH) (20 OZ.YD MEETS MIL-C-3953)
-  3. CLOTH TOLERANCE  $\pm 1\text{mm}$ , UNLESS OTHERWISE NOTED.
- 4. ADD ACCELEROMETER MOUNTING HOLES AFTER SEWING.
- 5. SEE DRAWING 472-4650 FOR ASSEMBLY PROCEDURE.

DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>F ±0.5 ±0.5 1.6</small> <small>M ±0.2</small> <small>N ±0.3</small> <small>P ±0.3</small> <small>R ±0.01</small> <small>S ±0.01</small> <small>T ±0.01</small> <small>U ±0.01</small> <small>V ±0.01</small> <small>W ±0.01</small> <small>X ±0.2</small> <small>Y ±0.2</small> <small>Z ±0.2</small>		
PROJECT NO.:	472-4650	MATERIAL:	SEE NOTES	DESCRIPTION:
DATE:	9/12/2011	DESIGNED BY:	B. KIMES	FRONT STIFFENING CLOTH
CHECKED BY:		DATE:		SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	A3 1 OF 1
DATE:	1/18/2012	SCALE:	1.000	DRAWING NO.:
TOTAL QTY IN DUMMY	1	REV:		472-4654

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAF314 R04 FOR THOR-M; ADD NOTES 1 & 3	9/12/2011	BK



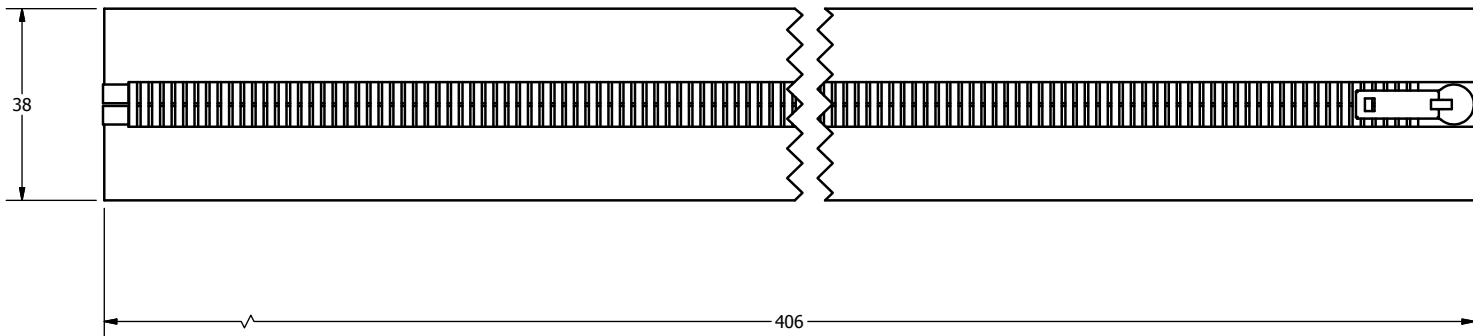
LEGEND	
	PATTERN EDGES
	FOLD LINES

NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. USE CORDURA NYLON FABRIC (1000DENIER 10 OZ/YD)
3. FABRIC TOLERANCE  $\pm 1\text{mm}$ , UNLESS OTHERWISE NOTED.
4. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING MATERIAL.
5. PUNCH HOLES THROUGH FLAP AFTER SEWING.
6. CUT OUT ACCELEROMETER MOUNTING HOLES AFTER SEWING.
7. THE DRAWING AS SHOWN REPRESENTS THE FRONT VIEW OF THE BAG. (AS IF VIEWING THE THOR FROM THE FRONT)
8. SEE DRAWING 472-4650 FOR ASSEMBLY PROCEDURE.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		DIMENSIONS IN PARENTHESES DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO 0.001 FRACTIONS ARE TO 1/32"		
472-4650	1	Default	B. KIMES	9/12/2011
NEXT ASSEMBLY	QTY	REV	DATE	DESCRIPTION
TOTAL QTY IN DUMMY	1		J. WANG	1/18/2012
			A2	1 of 1
			1.000	472-4655

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1UAF315 R05 FOR THOR-M; ADD NOTE 3	9/12/2011	BK



NOTES:

1. SIZE: #10, BROWN POLYESTER, METAL (BRASS)  
ZIPPER TYPE: OPEN TOP -CLOSED BOTTOM STYLE.
2. THE ENDS SHOULD BE SEWN TOGETHER TO PREVENT THE SLIDER FROM PULLING OFF THE TRACK.
3. ZIPPER TOLERANCE  $\pm 1\text{mm}$ , UNLESS OTHERWISE NOTED.

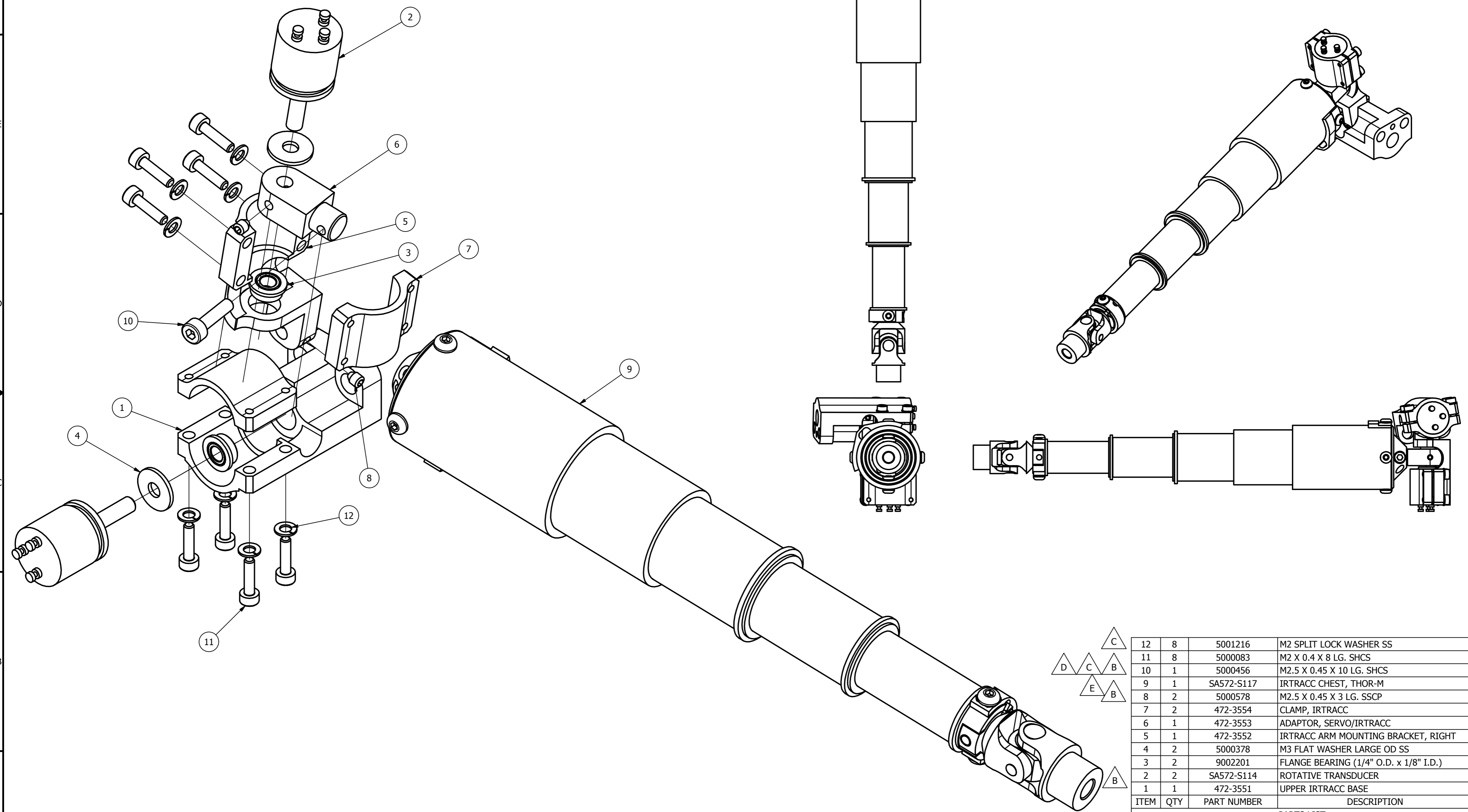
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 1.6 XX 0.2 XXX 0.3 XXXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-4650	MATERIAL:	Default	DESCRIPTION: ZIPPER, UPPER ABDOMEN
CHECKED BY:	B. KIMES	DATE:	9/12/2011	SIZE: A3
ENGINEER:	J. WANG	DATE:	1/18/2012	SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	SCALE:	1.000	DRAWING NO. 472-4656

A

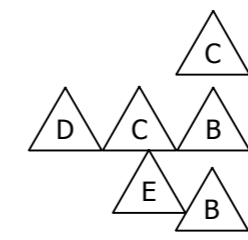
A

A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM101 RB FOR THOR-M	10/7/2011	BK
	B	MADE ITEMS 2 AND 10 VISIBLE TO PARTS LIST	6/8/2012	JBH
	C	REDESIGN PARTS FOR NEW LOCATION; ADD 8X LOCK WASHERS; 8X M2 X 8 SHCS WERE M2 X 6 BHCS	10/11/2012	BK
	D	5000456 WAS 5000600	12/17/2012	BK
	E	REVISED ITEM #9 SA572-S117 - IRTRACC CHEST, THOR-M	5/30/2014	DW

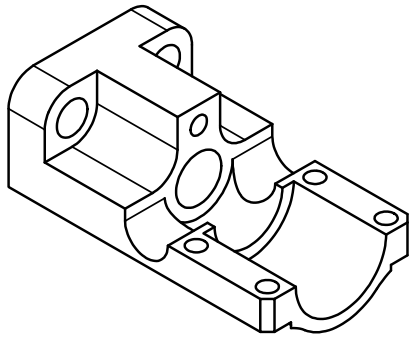


SCALE 2.000

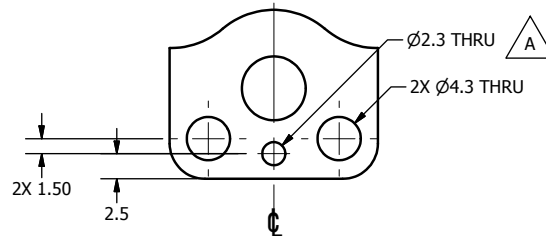
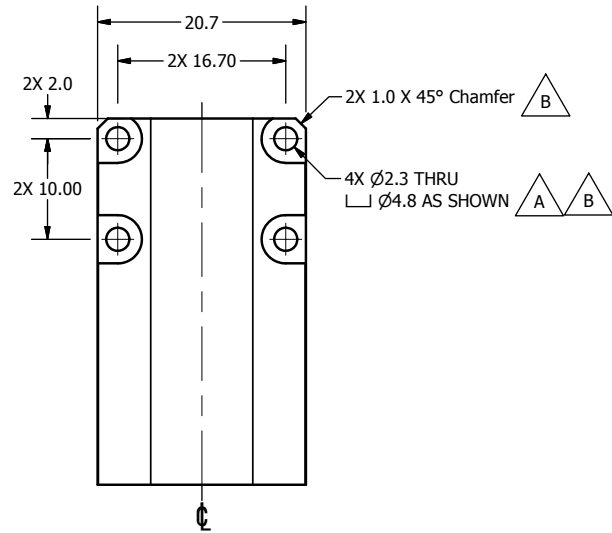
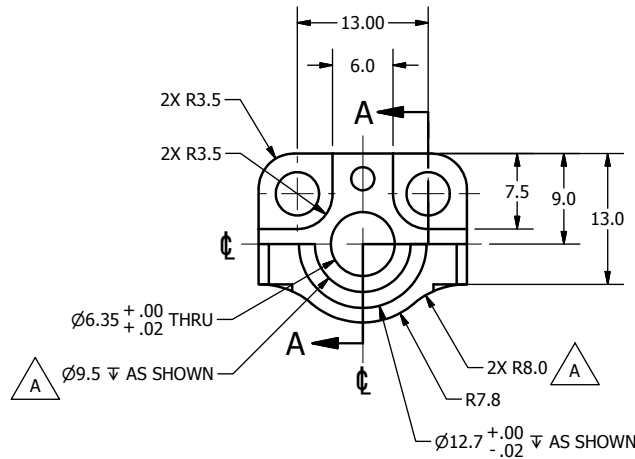


ITEM	QTY	PART NUMBER	DESCRIPTION
12	8	5001216	M2 SPLIT LOCK WASHER SS
11	8	5000083	M2 X 0.4 X 8 LG. SHCS
10	1	5000456	M2.5 X 0.45 X 10 LG. SHCS
9	1	SA572-S117	IRTRACC CHEST, THOR-M
8	2	5000578	M2.5 X 0.45 X 3 LG. SSCP
7	2	472-3554	CLAMP, IRTRACC
6	1	472-3553	ADAPTOR, SERVO/IRTRACC
5	1	472-3552	IRTRACC ARM MOUNTING BRACKET, RIGHT
4	2	5000378	M3 FLAT WASHER LARGE OD SS
3	2	9002201	FLANGE BEARING (1/4" O.D. x 1/8" I.D.)
2	2	SA572-S114	ROTATIVE TRANSDUCER
1	1	472-3551	UPPER IRTRACC BASE

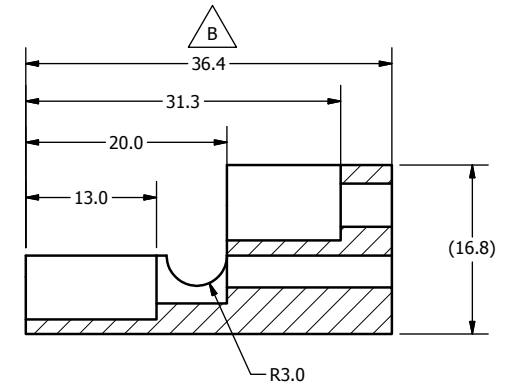
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH	
PROJECT NO. 472-3000		DRAWN BY B. KIMES DATE 9/7/2012	
NEXT ASSEMBLY QTY 1		CHECKED BY J. WANG DATE 1/10/2012	
TOTAL QTY IN DUMMY 1		ENGINEER J. WANG DATE 1/10/2012	
MATERIAL:		REMOVE BURRS & BREAK SHARP EDGES	
HEAT TREAT:		DESCRIPTION: IRTRACC ASSEMBLY, UPPER LEFT	
FINISH:		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
SCALE: 1.000		DRAWING NO. 472-3550	



SCALE 2.000




REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM110 R01 FOR THOR-M 2.3 DIA. HOLES WERE M2 THREADED; ADD 2.3 DIA. HOLE; 2X R8.0 WAS 4.8; Ø9.5 WAS Ø9.53; FINISH WAS RED ANODIZE	10/5/2011	BK
	B	ADD 2X 1.0 X 45° CHAMFERS; 36.4 WAS 26.0, 31.3 WAS 24.0; C'BORE Ø 4.8 WAS Ø4.3	10/11/12	BK



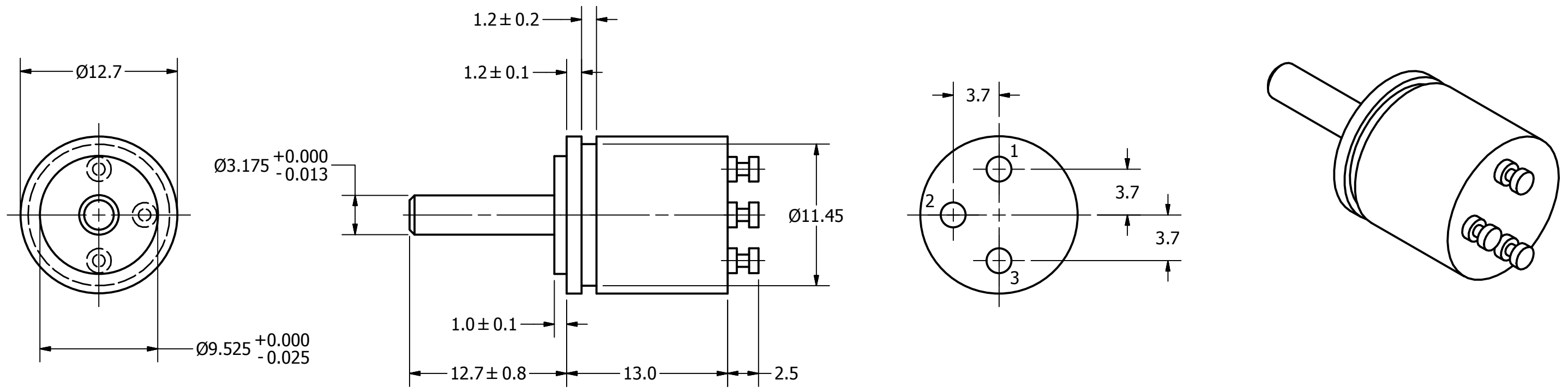
SECTION A-A  
SCALE 2.000

NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 0.5 1.6 XX 0.2 0.5 1.6 XXX 0.3 0.5 1.6 XXX 0.01		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION DESCRIPTION: UPPER ITRACC BASE	
PROJECT NO.: 472-3560		MATERIAL: 7075-T6 ALUMINUM			
CHECKED BY: B. KIMES		DATE: 9/7/2012		REVISION: 1	
NEXT ASSEMBLY QTY		FINISH: CLEAR ANODIZE		SCALE: 2.000	
TOTAL QTY IN DUMMY 2		ENGINEER: J. WANG		DATE: 1/10/2012	
				DRAWING NO.: 472-3551	
				REV: B	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	INDEPENDENT LINEARITY (TEA) WAS ±0.25%	9/17/2015	DW



**SPECIFICATIONS**

SHAFT GUIDING: BALL BEARINGS  
 INDEPENDENT LINEARITY (TEA):  $\pm 0.5\%$   
 OHMIC VALUES: 1000 OHMS  
 ACTUAL ELECTRICAL ANGLE 330°:  $\pm 5\%$   
 MAXIMUM POWER RATING @ 70°C: 0.2 WATTS  
 WEIGHT:  $5 \pm 2g$  (LESS CABLES)  
 OPERATING TEMPERATURE RANGE: -55°C TO +125°C  
 MAXIMUM SPEED ROTATION: 600

**PIN DESIGNATION**

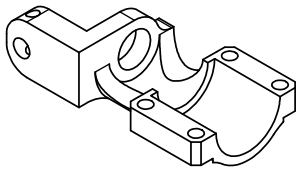
1 = -EXCITATION  
 2 = +SIGNAL  
 3 = +EXCITATION

REFERENCE: VISHAY SFERNICE #ECO-50-ESC-102

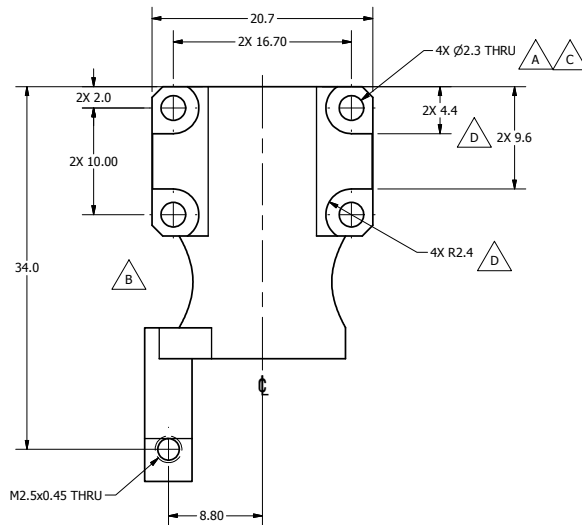
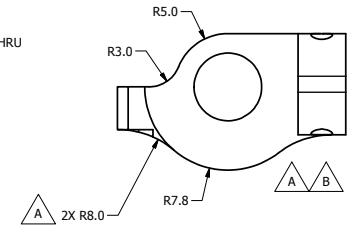
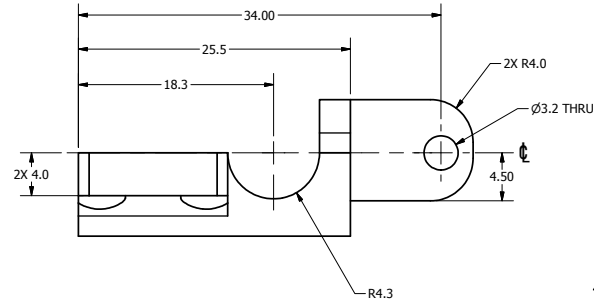
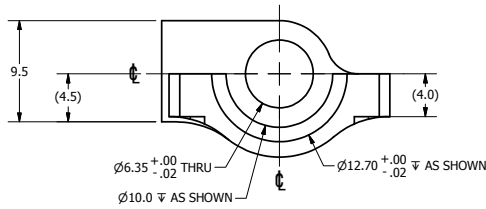
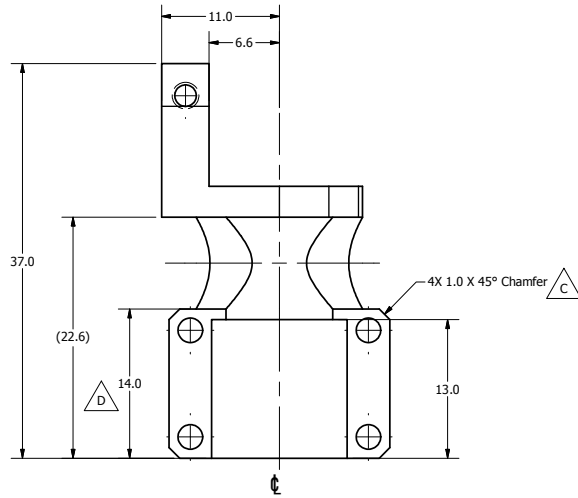
UNLESS OTHERWISE SPECIFIED:  
 ALL MACHINED SURFACES  $1.60$  OR BETTER.

PARTS LIST				DEPARTMENT OF TRANSPORTATION	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ANGLES $\pm 5^\circ$ DECIMALS X $\pm 1$ mm X.X $\pm 0.1$ mm *DO NOT SCALE DRAWING*	ENGINEERED: C Torchala	DATE: 4/21/2010	MATERIAL:		
	DRAWN: C Torchala	DATE: 6/15/2010	FINISH:		
	CHECKED: M Salloum	DATE: 8/10/2010	HEAT TREAT:		
	DEBUR AND BREAK ALL SHARP EDGES		QTY./ASSEMBLY: 2	DRAWING TITLE: ROTARY POTENTIOMETER	
	SCALE: 3 : 1	SIZE: A3	REVISION: A	QTY./DUMMY: 4	DRAWING NUMBER: SA572-S114
					Page: 1 of 1





SCALE 2.000

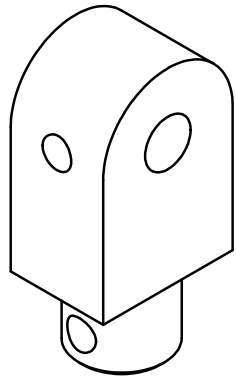


NOTES:  
1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

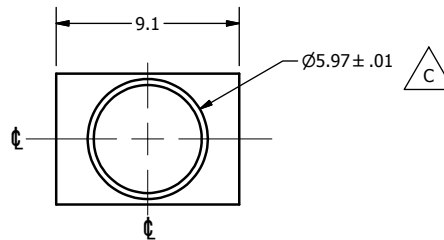
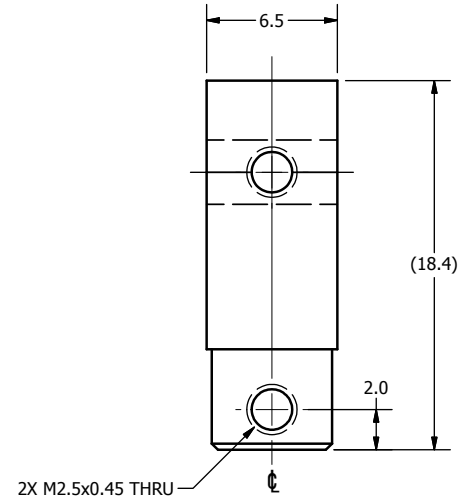
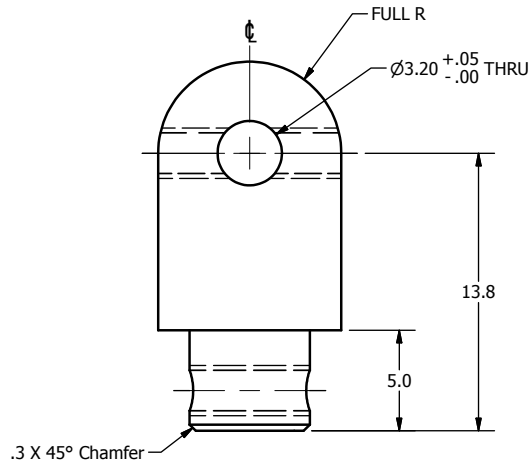
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM113 R01 FOR THOR-M 2.3 DIA. HOLES WERE M2 THREADED; 2X R8.0 WAS 3.0; ADD VIEW, R3.0 DIMENSION; FINISH WAS RED ANODIZE	10/5/2011	BK
	B	REMOVE CUT OUT, R3.0	3/22/2012	BK
	C	ADD 4X 1.0 X 45° CHAMFER; C'BORE $\phi$ 4.8 WAS $\phi$ 4.3	10/11/2012	BK
	D	CORRECT DIMENSIONING ERROR; REDIMENSION 4X COUNTERBORE SLOTS	12/12/2012	BK

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS FRACTIONS		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS FRACTIONS		IRTRACC ARM MOUNTING BRACKET, RIGHT	
472-3550	1	7075-T6 ALUMINUM	B. KIMES	9/7/2012	A21 of 1
NEXT ASSEMBLY	QTY	PREPARED BY	DATE	APPROVED BY	3.000
TOTAL QTY IN DUMMY	1	CLEAR ANODIZE	J. WANG	1/11/2012	472-3552

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM115 R01 FOR THOR-M	10/6/2011	BK
	B	REMOVE Ø1.143 THRU HOLE	2/7/2012	BK
	C	Ø5.97±.01 WAS Ø5.80	11/9/2012	BK



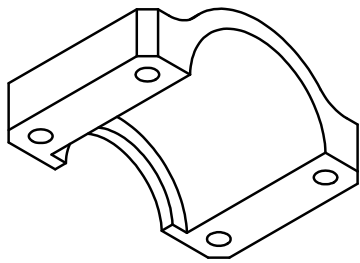
SCALE 4.000



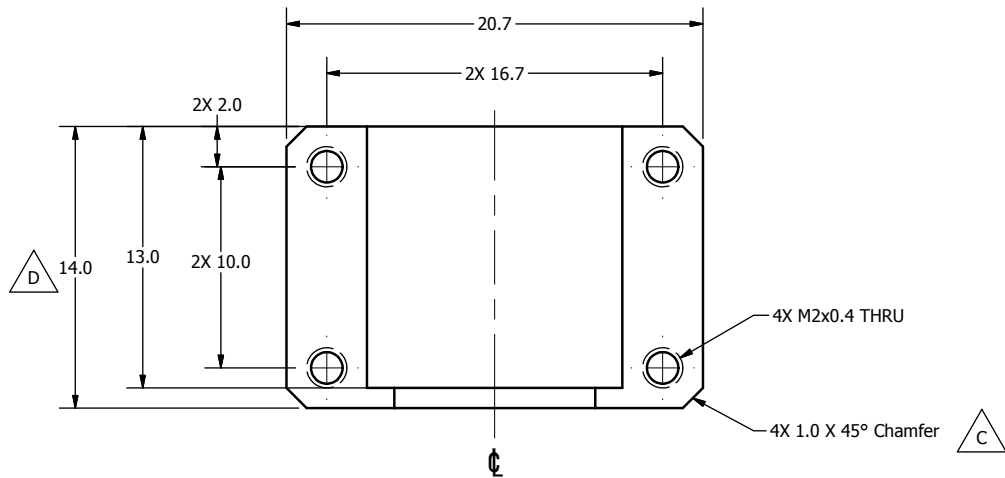
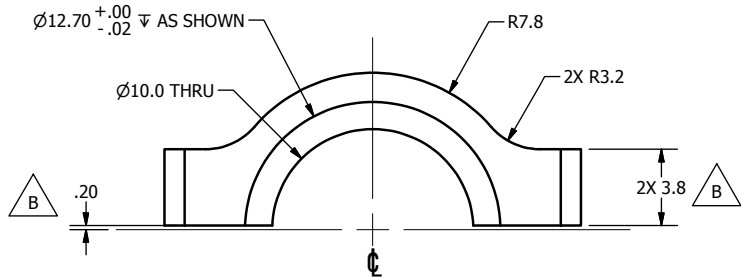
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

472-3570		1	DO NOT SCALE DRAWING THIRD ANGLE PROJECTION	TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.5° 1.6 X 0.2 0.5° 1.6 XX 0.3 0.5° 1.6 XXX 0.01 0.5° 1.6			NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION ADAPTOR, SERVO/IRTRACC	
472-3560		1		PROJECT NO.:	DRAWN BY: B. KIMES			DATE: 10/6/2011
472-3550		1		MATERIAL: 303 STAINLESS STEEL	HEAT TREAT:			DATE: 1/11/2012
NEXT ASSEMBLY		QTY		FINISH:		ENGINEER: J. WANG		DATE: 1/11/2012
TOTAL QTY IN DUMMY		3	FINISH:		SCALE: 4.000	SIZE: A3	SHEET: 1 OF 1	
						DRAWING NO. 472-3553		
						REV. C		



SCALE 3.000



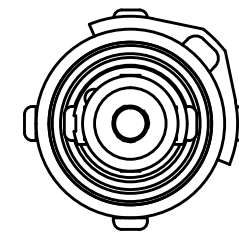
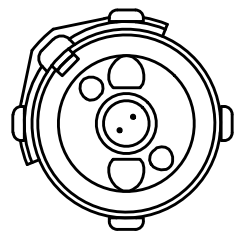
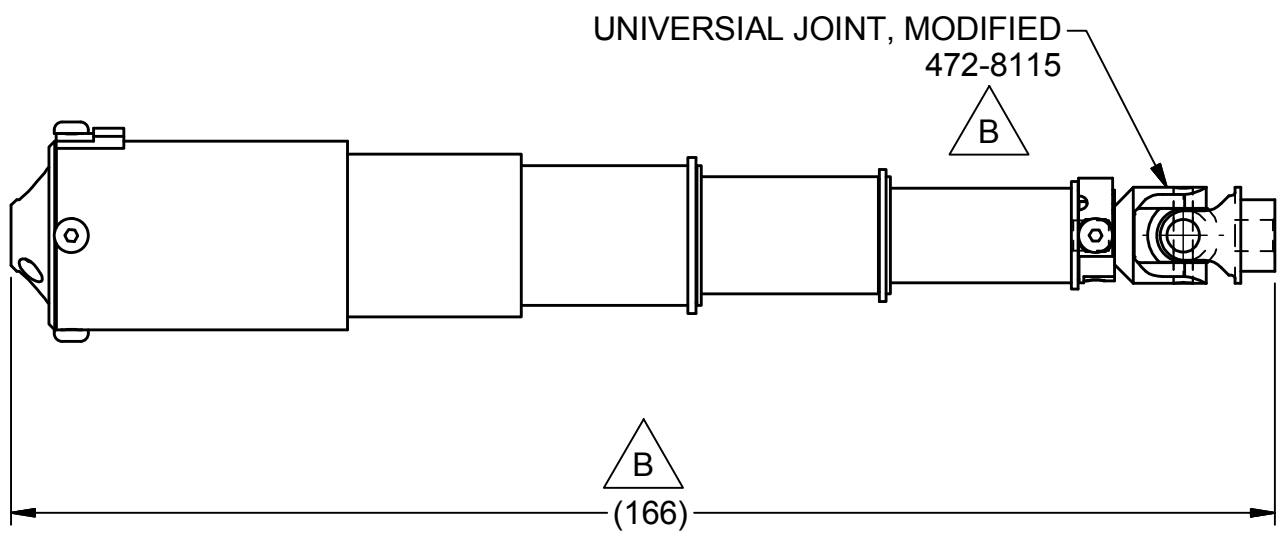
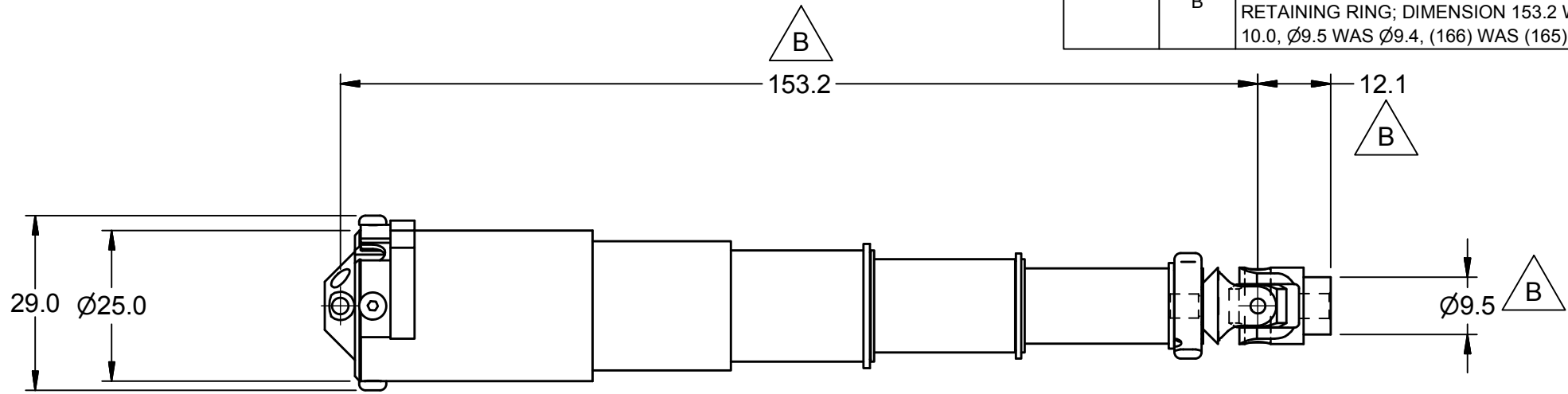
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM112 R01 FOR THOR-M CHANGE 2.2 DIA. HOLES TO M2 THREADED; REMOVE BURR NOTE; FINISH WAS RED ANODIZE	10/6/2011	BK
	B	REMOVE .20 FROM BOTTOM OF PART; 2X 3.8 WAS 4.0; ADD NEXT ASSY, TOTAL QTY 4 WAS 3	3/15/2012	BK
	C	ADD 4X 1.0 X 45° CHAMFERS	10/11/2012	BK
	D	CORRECT DIMENSIONING ERROR	12/12/2012	BK

NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

472-3580	1	DO NOT SCALE DRAWING	TOLERANCES	<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>
472-3570	1	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 0.05 1.6 XX 0.2 XXX 0.3 XXXX 0.01	
472-3560	1	PROJECT NO.:	REMOVE BURRS & BREAK SHARP EDGES	
472-3550	1	MATERIAL: 7075-T6 ALUMINUM	DRAWN BY: B. KIMES DATE: 9/7/2012 CHECKED BY: DATE:	
NEXT ASSEMBLY	QTY	HEAT TREAT:	FINISH: CLEAR ANODIZE	ENGINEER: J. WANG DATE: 1/11/2012 SCALE: 4.000
TOTAL QTY IN DUMMY	4			DESCRIPTION: CLAMP, ITRACC SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-3554

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	RELEASED TO PRODUCTION	7/3/2012	BK
	B	UNIVERSAL JOINT MODIFIED - 472-8115 WAS UNIVERSAL JOINT MODIFIED - 472-8110; REMOVED EXTERNAL RETAINING RING; DIMENSION 153.2 WAS 152.2, 12.1 WAS 10.0, Ø9.5 WAS Ø9.4, (166) WAS (165)	5/30/2014	DW



WIRE ASSIGNMENTS		
WIRE #1	WIRE COLOR	FUNCTION
1	RED	+EXC
2	GREEN	+SIG
3	ORANGE	ID
4	SHIELD	GROUND
5	WHITE	-SIG
6	BLACK	-EXC
7	NONE	GUIDE

**LINEARITY SPECIFICATIONS:**

MAXIMUM DISPLACEMENT: 90mm  
 LINEARITY: 2% FS  
 MAXIMUM ERROR: 2% FS

INPUT VOLTAGE: 5V @20mA  
 OUTPUT VOLTAGE: 0V to 1.7V

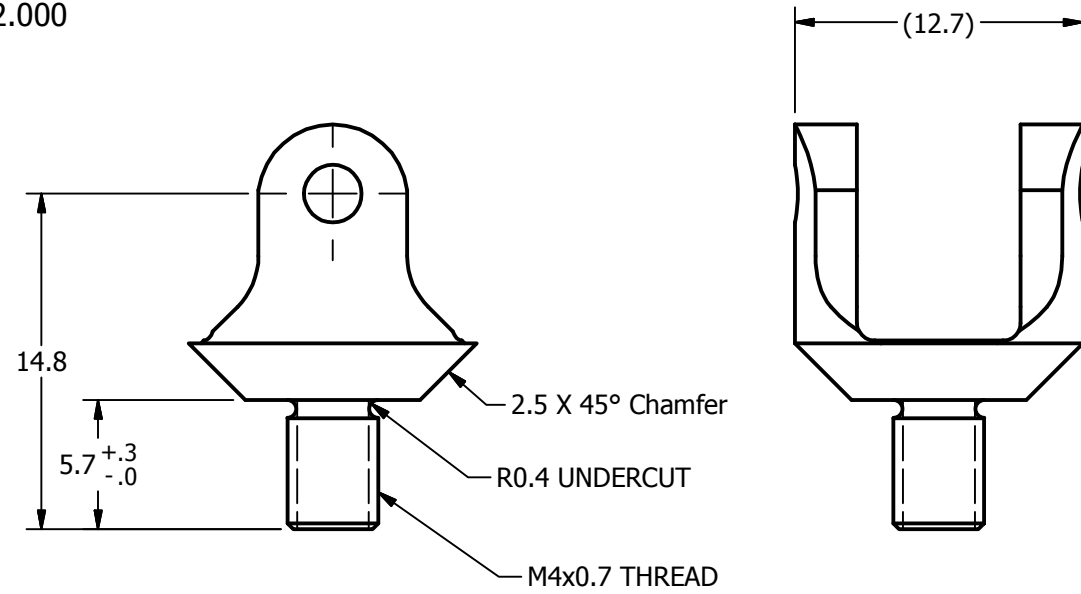
**NOTES:**  
 THE ITRACC IS AN INHERENTLY NON-LINEAR TRANSDUCER. AN ITRACC'S RAW VOLTAGE VALUES MUST BE ADJUSTED BY THE APPLICATION OF A LINEARIZATION EXPONENT APPLIED THROUGH POST TEST PROCESSING SOFTWARE IN ORDER TO ACHIEVE ACCURATE DISPLACEMENT DATA.

NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	4

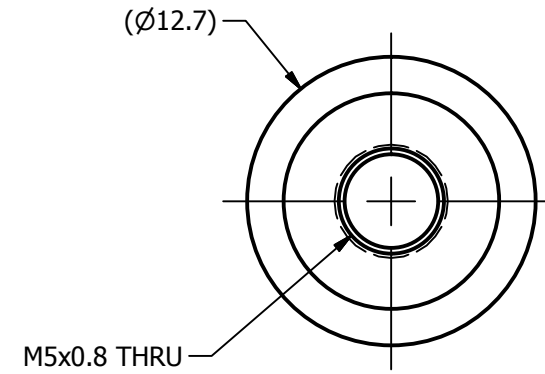
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5' ✓ X.X ±.2 X.XX ±.1 X.XXX ±.01 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS	DATE	DRAWN		IRTRACC CHEST, THOR-M	
		B. Kimes		7/3/2012	
CHECKED		ENG		SIZE	
		APPROVED		DRAWING NUMBER	
		J. WANG		SA572-S117	
		HEAT TREAT		REV	
		FINISH		B	
		SCALE:		SHEET	
				1 OF 1	



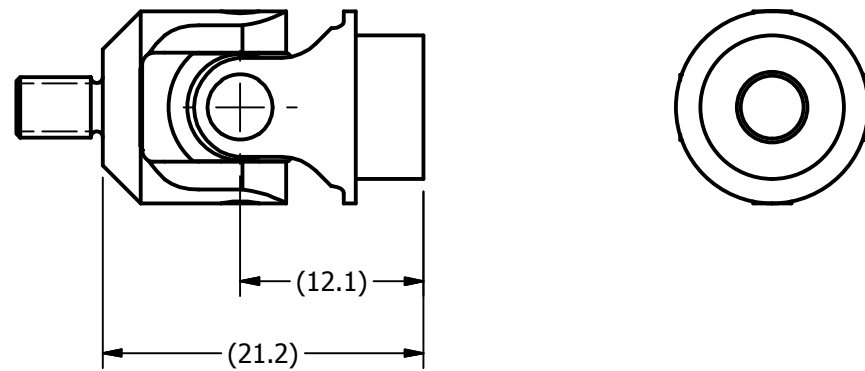
SCALE 2.000



IRTRACC SEGMENT  
SCALE 3.000



BIB SEGMENT  
SCALE 3.000



NOTES:

1. MAKE FROM 9002660V, MODIFY AS SHOWN.

DO NOT SCALE DRAWING



TOLERANCES

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS

DECIMALS	ANGLES	FINISH
X ± 0.5	± 0.5	1.6
.XX ± 0.2		
.XXX ± 0.1		
.XXXX ± 0.01		

REMOVE BURRS & BREAK SHARP EDGES

DATE: 5/30/2014

CHECKED BY: Dave Walker

ENGINEER: DATE:



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

DESCRIPTION:  
UNIVERSIAL JOINT, MODIFIED, THOR-M

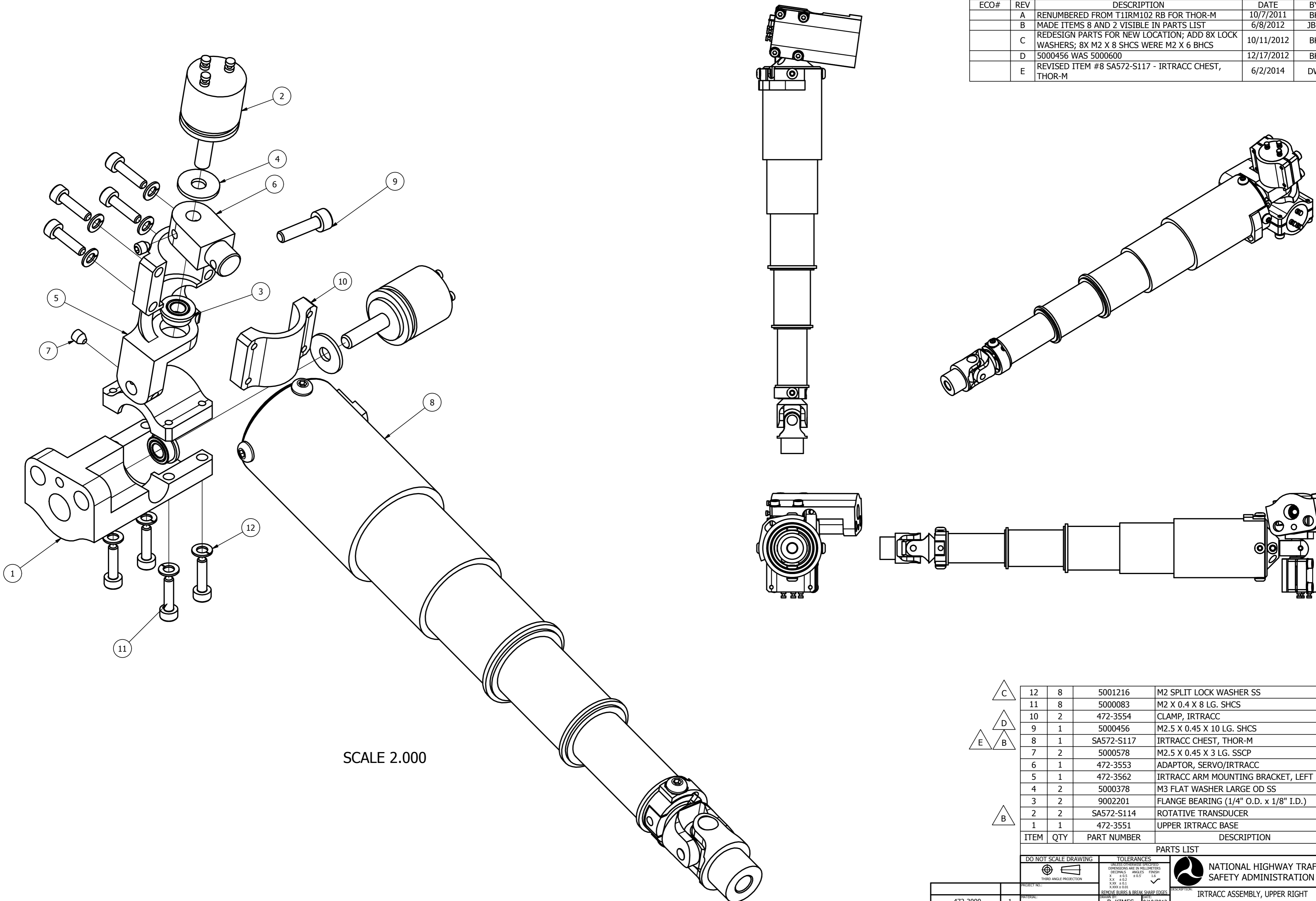
PROJECT NO.:	
MATERIAL:	SA572-S117
HEAT TREAT:	
FINISH:	
TOTAL QTY IN DUMMY	1

QTY	1
QTY	
QTY	1

SIZE:	A3
SHEET	1 of 1
SCALE:	2.000

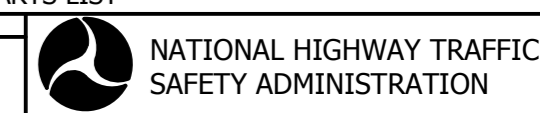
DRAWING NO.:	472-8115
--------------	----------

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM102 RB FOR THOR-M	10/7/2011	BK
	B	MADE ITEMS 8 AND 2 VISIBLE IN PARTS LIST	6/8/2012	JBH
	C	REDESIGN PARTS FOR NEW LOCATION; ADD 8X LOCK WASHERS; 8X M2 X 8 SHCS WERE M2 X 6 BHCS	10/11/2012	BK
	D	5000456 WAS 5000600	12/17/2012	BK
	E	REVISED ITEM #8 SA572-S117 - IRTRACC CHEST, THOR-M	6/2/2014	DW



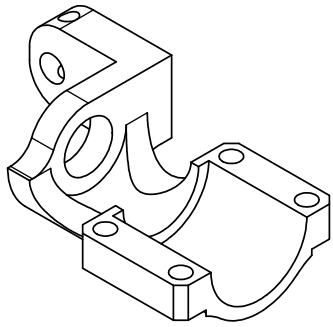
ITEM	QTY	PART NUMBER	DESCRIPTION
12	8	5001216	M2 SPLIT LOCK WASHER SS
11	8	5000083	M2 X 0.4 X 8 LG. SHCS
10	2	472-3554	CLAMP, IRTRACC
9	1	5000456	M2.5 X 0.45 X 10 LG. SHCS
8	1	SA572-S117	IRTRACC CHEST, THOR-M
7	2	5000578	M2.5 X 0.45 X 3 LG. SSCP
6	1	472-3553	ADAPTOR, SERVO/IRTRACC
5	1	472-3562	IRTRACC ARM MOUNTING BRACKET, LEFT
4	2	5000378	M3 FLAT WASHER LARGE OD SS
3	2	9002201	FLANGE BEARING (1/4" O.D. x 1/8" I.D.)
2	2	SA572-S114	ROTATIVE TRANSDUCER
1	1	472-3551	UPPER IRTRACC BASE

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH	
PROJECT NO.:		DATE:	
MATERIAL:		DRAWN BY:	
HEAT TREAT:		DATE:	
FINISH:		ENGINEER:	
CHECKED BY:		DATE:	
TOTAL QTY IN DUMMY:		SCALE:	
472-3000 1		A21 OF 1	
NEXT ASSEMBLY QTY		DRAWING NO.:	
1		472-3560	

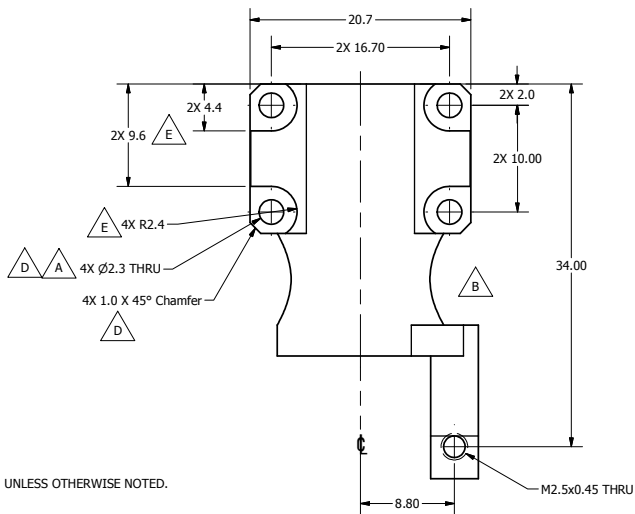
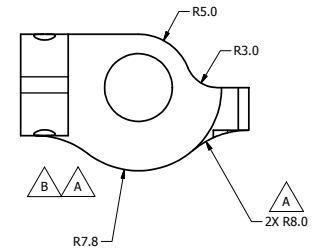
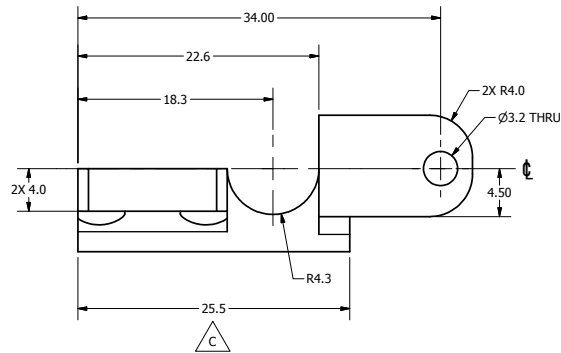
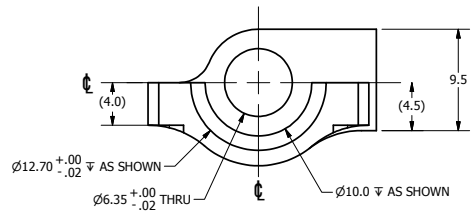
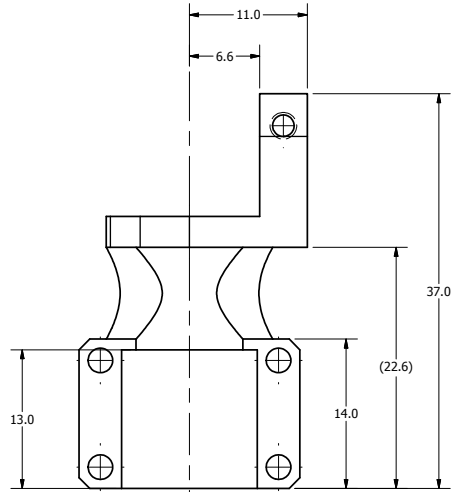


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

IRTRACC ASSEMBLY, UPPER RIGHT



SCALE 3.000



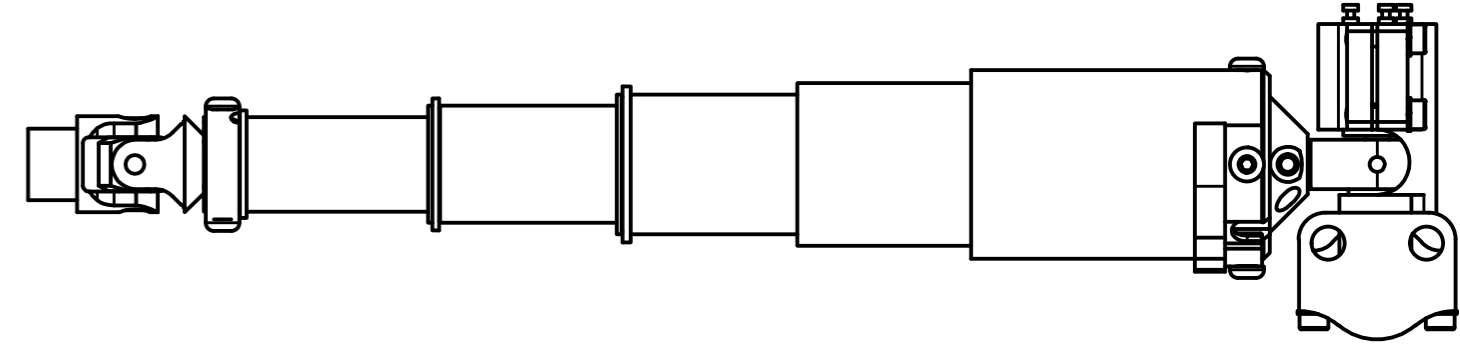
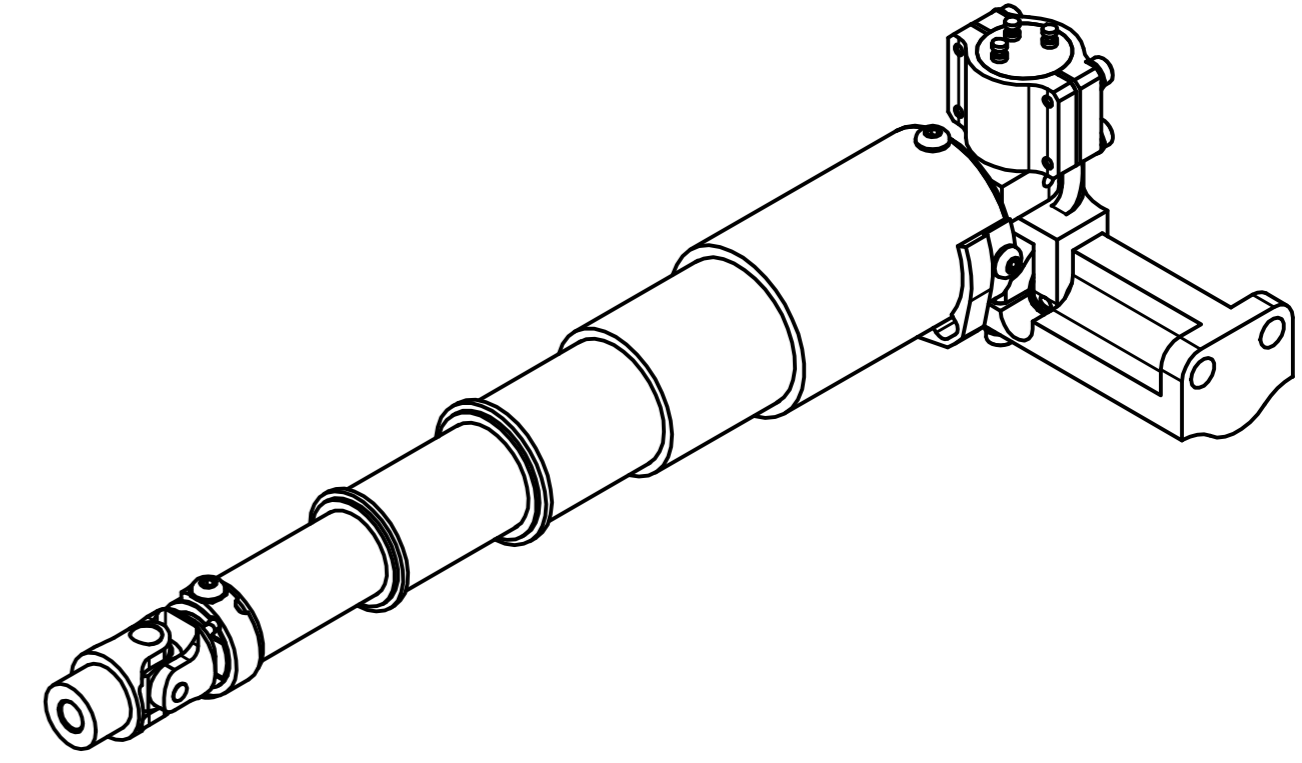
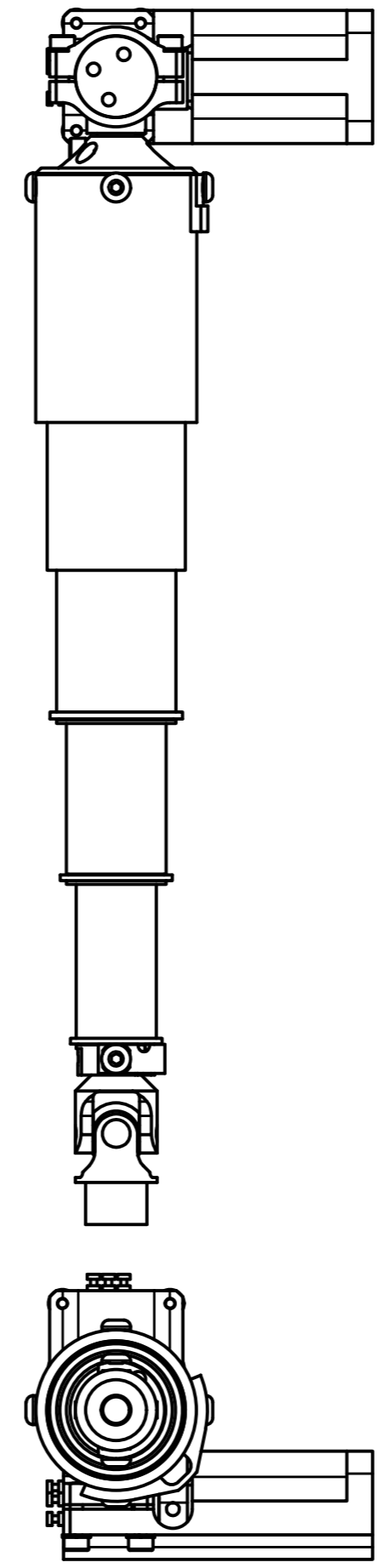
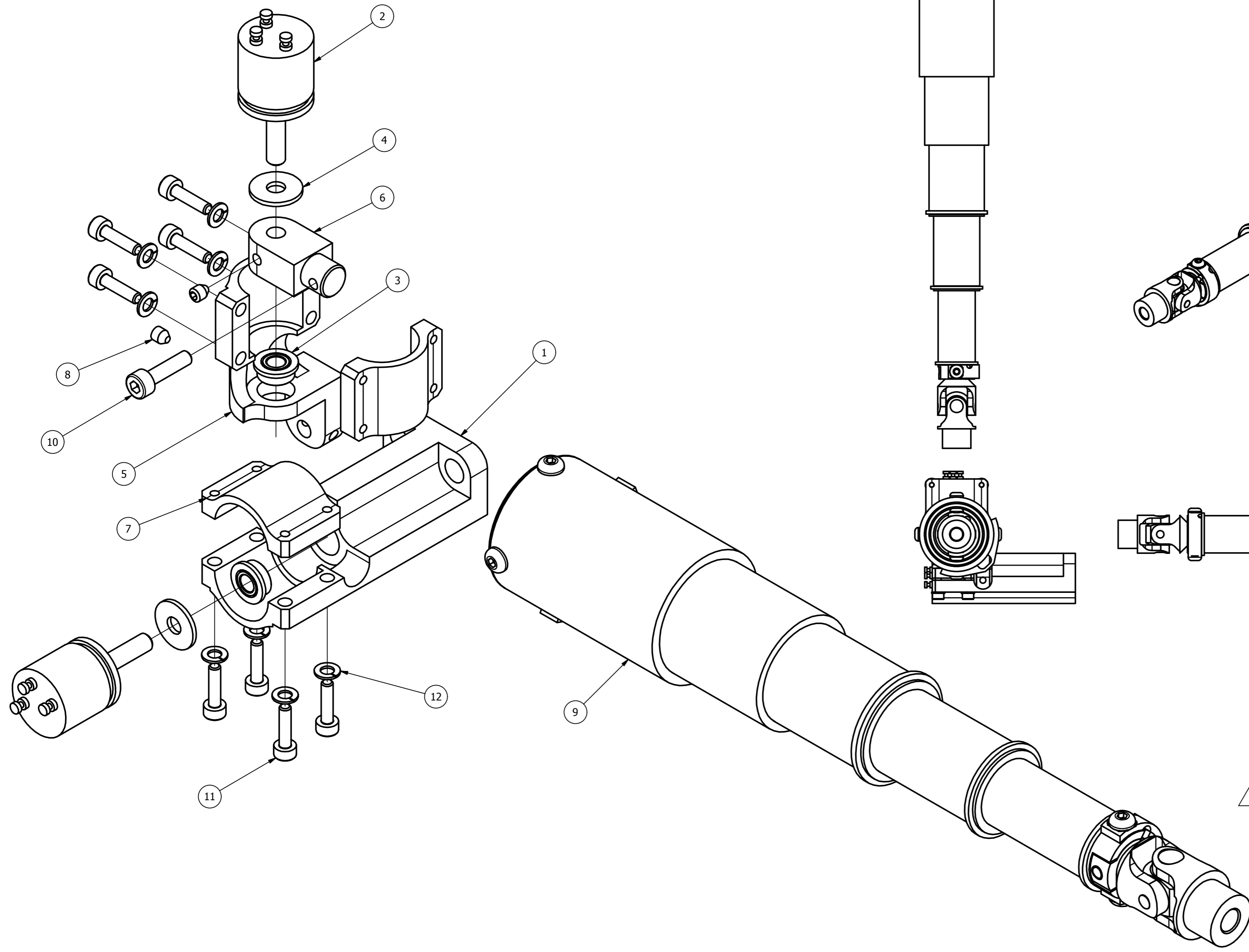
NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM114 R01 FOR THOR-M 2.3 DIA. HOLES WERE M2 THREADED; 2X R8.0 WAS 3.0; ADD VIEW, R3.0 DIMENSION; FINISH WAS RED ANODIZE	10/6/2011	BK
	B	REMOVE CUT OUT, R3.0	3/22/2012	BK
	C	ADD DIMENSION	4/3/2012	BK
	D	ADD 4X 1.0 X 45° CHAMFER; C'BORE $\phi 4.8$ WAS $\phi 4.3$	10/11/2012	BK
	E	REDIMENSION 4X COUNTERBORE SLOTS	12/12/2012	BK

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		DECIMAL FRACTIONS UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS FRACTIONS ARE 16ths UNLESS OTHERWISE SPECIFIED HOLE SIZE HOLE SIZE HOLE SIZE HOLE SIZE HOLE SIZE		ITRACC ARM MOUNTING BRACKET, LEFT B. KIMES 9/10/2012 1 of 1 3.000 472-3562	
472-3560	1	7075-T6 ALUMINUM	B. KIMES	9/10/2012	1 of 1
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DUMMY	1	CLEAR ANODIZE	J. WANG	1/11/2012	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM103 RB FOR THOR-M	10/7/2011	BK
	B	MADE ITEMS 9 AND 2 VISIBLE IN PARTS LIST	6/8/2011	JBH
	C	REDESIGN PARTS FOR NEW LOCATION; ADD 8X LOCK WASHERS; 8X M2 X 8 SHCS WERE M2 X 6 BHCS	10/11/2012	BK
	D	5000456 WAS 5000600	12/17/2012	BK
	E	REVISED ITEM #9 SA572-S114 - IRTRACC CHEST, THOR-M	6/2/2014	DW



ITEM	QTY	PART NUMBER	DESCRIPTION
12	8	5001216	M2 SPLIT LOCK WASHER SS
11	8	5000083	M2 X 0.4 X 8 LG. SHCS
10	1	5000456	M2.5 X 0.45 X 10 LG. SHCS
9	1	SA572-S117	IRTRACC CHEST, THOR-M
8	2	5000578	M2.5 X 0.45 X 3 LG. SSCP
7	2	472-3554	CLAMP, IRTRACC
6	1	472-3553	ADAPTOR, SERVO/IRTRACC
5	1	472-3552	IRTRACC ARM MOUNTING BRACKET, RIGHT
4	2	5000378	M3 FLAT WASHER LARGE OD SS
3	2	9002201	FLANGE BEARING (1/4" O.D. x 1/8" I.D.)
2	2	SA572-S114	ROTATIVE TRANSDUCER
1	1	472-3571	UPPER IRTRACC BASE

SCALE 2.000

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

TOLERANCES  
(UNLESS OTHERWISE SPECIFIED)  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ANGLES FINISH  
 X ± 0.5 0.5° 1.6  
 XX ± 0.2  
 XXX ± 0.1  
 XXXX ± 0.01

REMOVE BURRS & BREAK SHARP EDGES

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: IRTRACC ASSEMBLY, LOWER RIGHT

PROJECT NO.: 472-3000

DATE: 10/7/2011

DESIGNER: B. KIMES

ENGINEER: J. WANG

CHECKED BY:

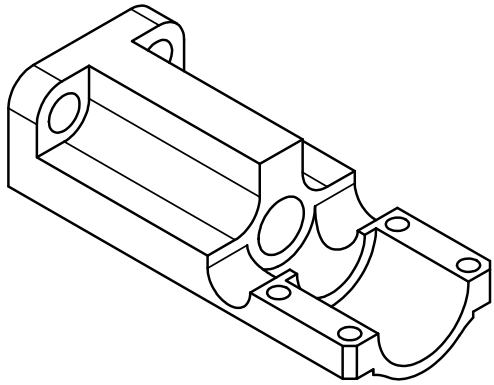
DATE: 1/11/2012

SCALE: 1.000

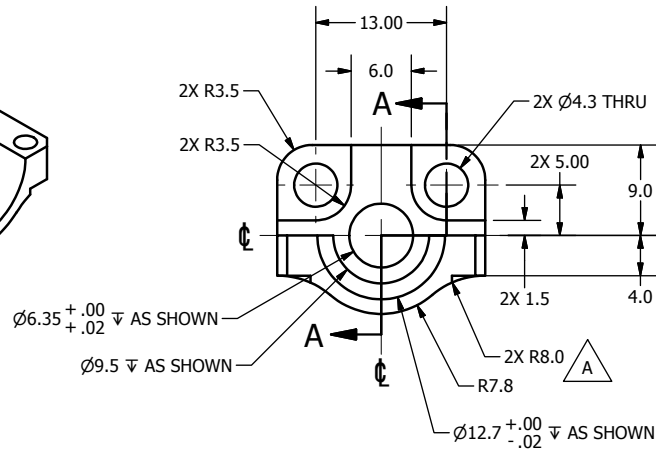
DRAWING NO.: 472-3570

REV: 1 OF 1

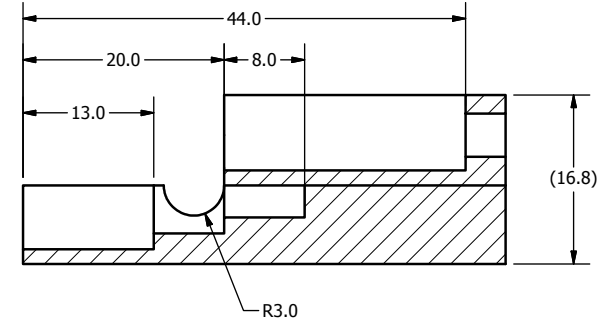




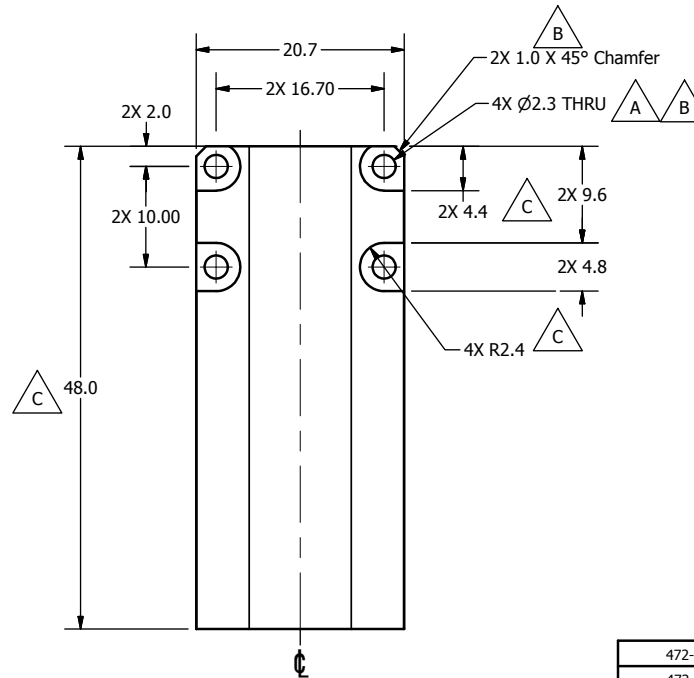
SCALE 2.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM111 R01 FOR THOR-M 2.3 DIA. HOLES WERE M2 THREADED; 2X R8.0 WAS R4.8; FINISH WAS RED ANODIZE	10/6/2011	BK
	B	Ø4.8 WAS Ø4.3; ADD 2X 1.0 X 45° CHAMFERS	10/11/2012	BK
	C	CORRECT DIMENSIONING ERROR; REDIMENSION 4X COUNTERBORE SLOTS	12/12/2012	BK



SECTION A-A  
SCALE 2.000

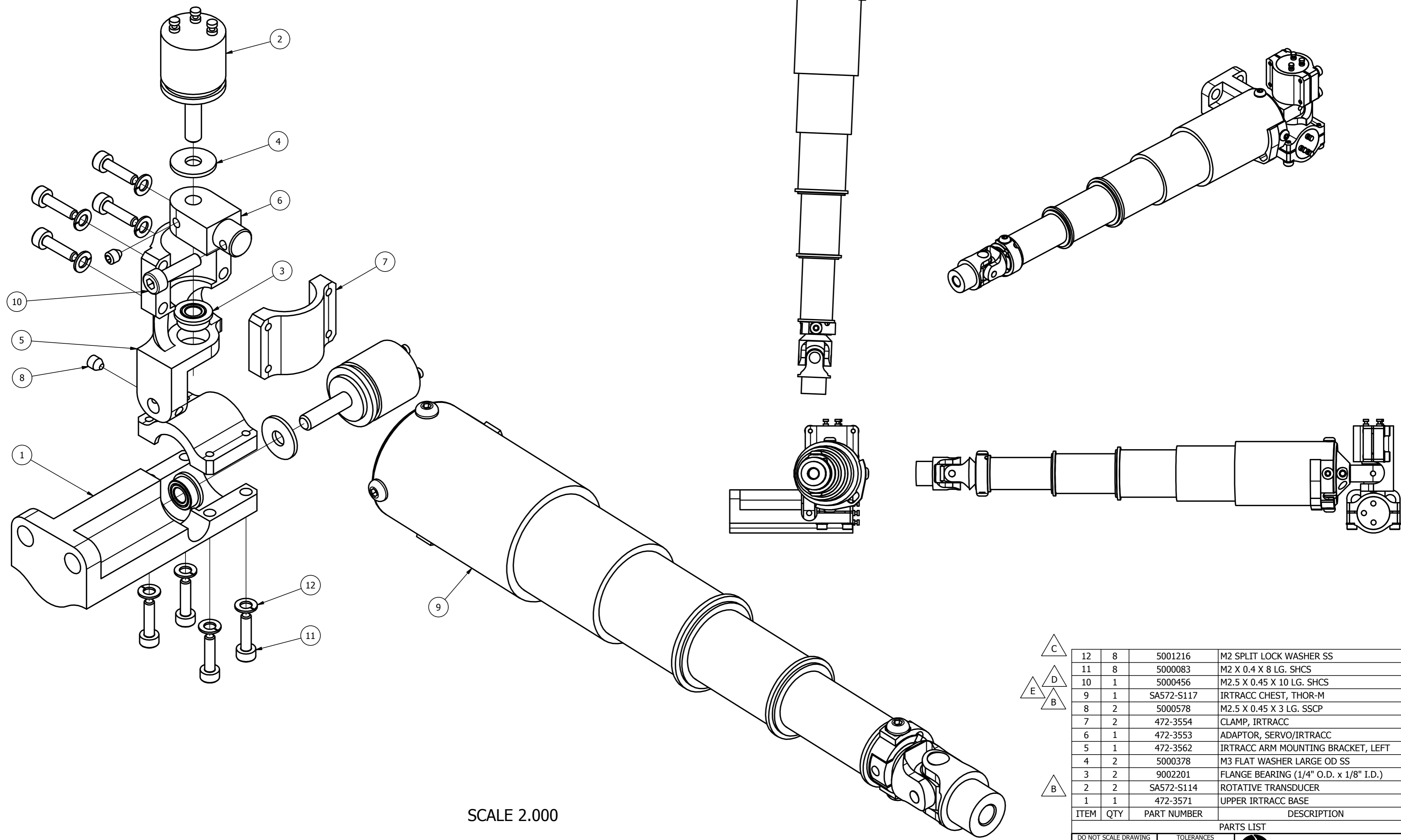


NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.01 0.05 1.6 X X 0.02 0.5 X XX 0.03 X XXX 0.04		
PROJECT NO.: 472-3560	1	MATERIAL: 7075-T6 ALUMINUM	DATE: 10/6/2011	DESCRIPTION: UPPER INTRACC BASE
CHECKED BY: J. WANG	DATE: 1/11/2012	DESIGNED BY: B. KIMES	DATE: 10/6/2011	
HEAT TREAT: CLEAR ANODIZE	FINISH: CLEAR ANODIZE	ENGINEER: J. WANG	DATE: 1/11/2012	SIZE: A3 SHEET: 1 OF 1 SCALE: 2.000
TOTAL QTY IN DUMMY: 2	QTY: 2	REVISION: 1	DATE: 1/11/2012	DRAWING NO.: 472-3571

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM104 RA FOR THOR-M	10/27/2011	BK
	B	MADE ITEMS 9 AND 2 VISIBLE IN PARTS LIST	6/8/2012	JBH
	C	REDESIGN PARTS FOR NEW LOCATION; ADD 8X LOCK WASHERS; 8X M2 X 8 SHCS WERE M2 X 6 BHCS	10/11/2012	BK
	D	5000456 WAS 5000600	12/17/2012	BK
	E	REVISED ITEM #9 SA572-S117 - ITRACC CHEST, THOR-M	6/2/2014	DW



SCALE 2.000

ITEM	QTY	PART NUMBER	DESCRIPTION
12	8	5001216	M2 SPLIT LOCK WASHER SS
11	8	5000083	M2 X 0.4 X 8 LG. SHCS
10	1	5000456	M2.5 X 0.45 X 10 LG. SHCS
9	1	SA572-S117	ITRACC CHEST, THOR-M
8	2	5000578	M2.5 X 0.45 X 3 LG. SSCP
7	2	472-3554	CLAMP, ITRACC
6	1	472-3553	ADAPTOR, SERVO/ITRACC
5	1	472-3562	ITRACC ARM MOUNTING BRACKET, LEFT
4	2	5000378	M3 FLAT WASHER LARGE OD SS
3	2	9002201	FLANGE BEARING (1/4" O.D. x 1/8" I.D.)
2	2	SA572-S114	ROTATIVE TRANSDUCER
1	1	472-3571	UPPER ITRACC BASE

**PARTS LIST**

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

TOLERANCES  
(UNLESS OTHERWISE SPECIFIED)  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ANGLES FINISH  
 X ± 0.5 0.5° 1.6  
 XX ± 0.2 0.2° 1.6  
 XXX ± 0.1 0.1° 1.6  
 XXXX ± 0.01 0.01° 1.6

REMOVE BURRS & BREAK SHARP EDGES

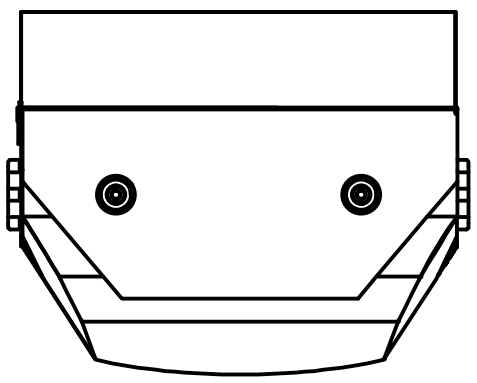
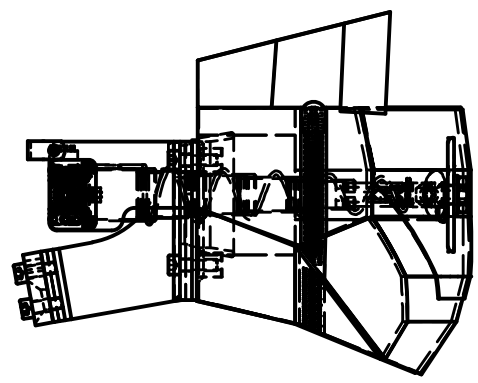
**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: ITRACC ASSEMBLY, LOWER LEFT

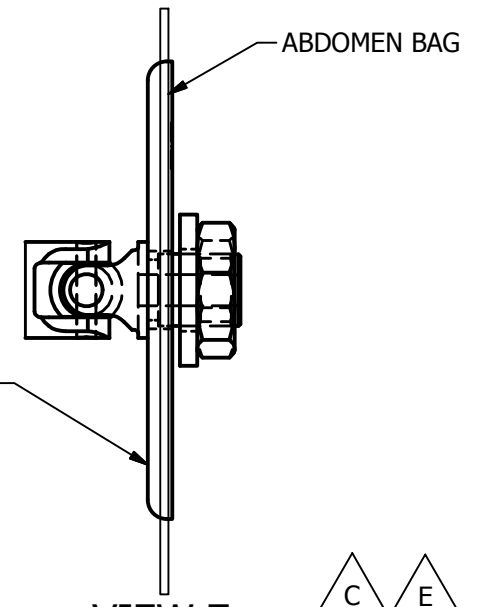
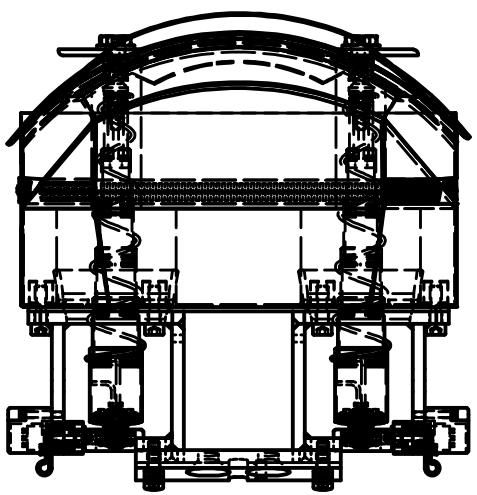
PROJECT NO:	472-3000	1	DATE:	10/27/2011
DESIGN BY:	B. KIMES		DATE:	
CHECKED BY:			DATE:	
ENGINEER:	J. WANG		DATE:	1/11/2012
TOTAL QTY IN DUMMY:	1		SCALE:	1.000

SIZE: A21 OF 1  
 DRAWING NO: 472-3580

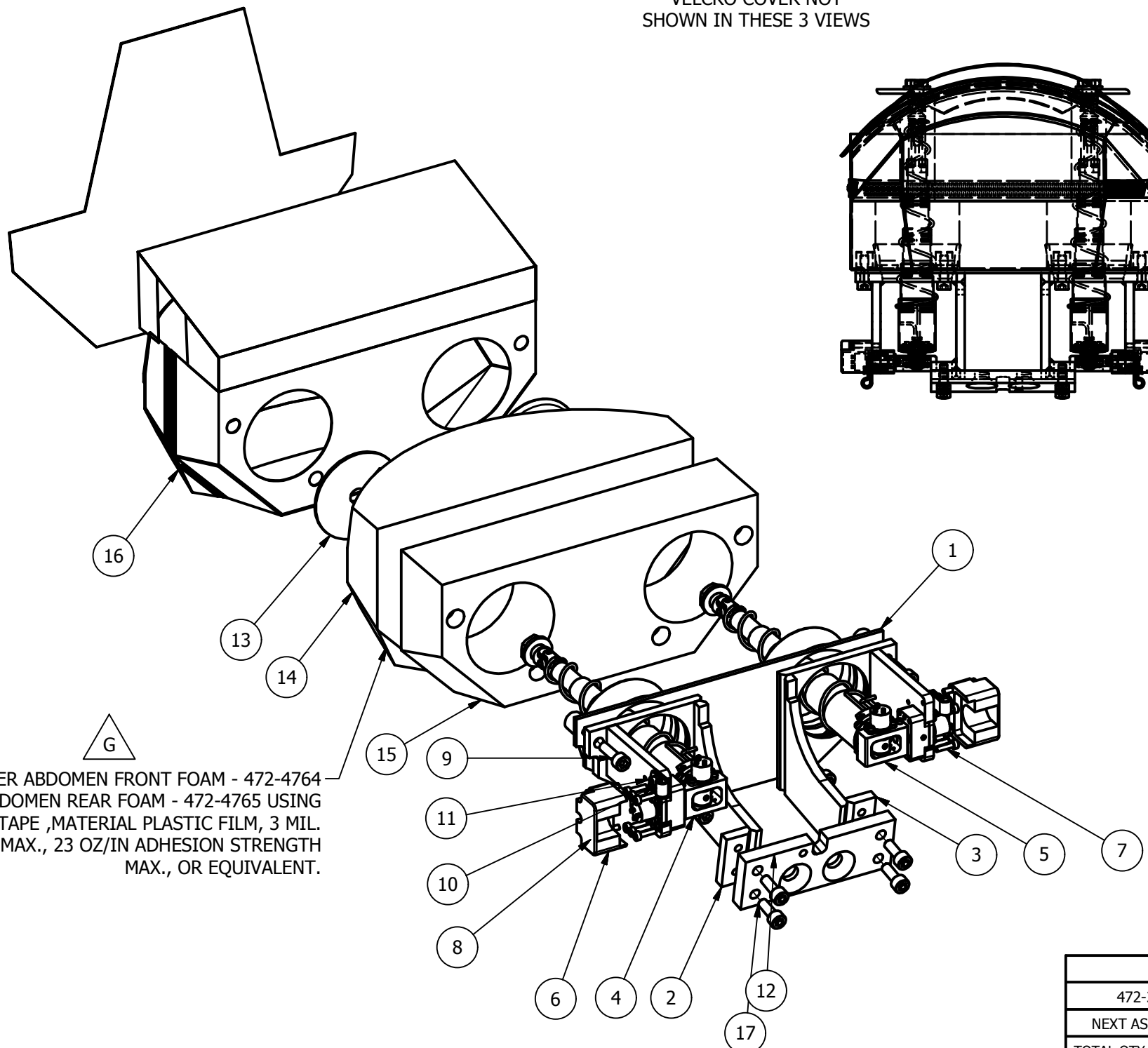
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM000 R08 AND CONVERTED TO METRIC; RESTRUCTURED BOM COMPONENTS TO CREATE 3D ITRACC ASSYS	8/23/2011	DW
	B	UPDATE TO SHOW PROPER VELCRO LOCATIONS	4/3/2012	BK
	C	ADD VIEW Z	6/25/2012	BK
	D	5000081 WAS 5000457	7/19/2012	BK
	E	ADD 5001415 QTY 2; UPDATE VIEW	2/14/2013	BK
	F	REMOVED ITEM 18 - PART #5001415	8/14/2014	DW
	G	ADDED NOTE TO ATTACH FOAMS USING DOUBLE SIDED TAPE	8/25/2015	DW



VELCRO COVER NOT SHOWN IN THESE 3 VIEWS



VIEW Z  
SCALE 1.000



ATTACH LOWER ABDOMEN FRONT FOAM - 472-4764 TO LOWER ABDOMEN REAR FOAM - 472-4765 USING DOUBLE SIDED TAPE, MATERIAL PLASTIC FILM, 3 MIL. THICKNESS MAX., 23 OZ/IN ADHESION STRENGTH MAX., OR EQUIVALENT.

ITEM	QTY	PART NUMBER	DESCRIPTION
17	4	5000081	M6 X 1 X 16 LG. SHCS
16	1	472-4763	LOWER ABDOMEN BAG, SEWING ASSEMBLY
15	1	472-4765	LOWER ABDOMEN REAR FOAM LAYER
14	1	472-4764	LOWER ABDOMEN FRONT FOAM LAYER
13	2	472-4762	LOWER ABDOMEN DISTRIBUTION PLATE
12	1	472-4761	REAR ATTACHMENT PLATE
11	2	5000388	M3 X 0.5 X 8 LG. SHCS
10	2	6004191	3/16 CABLE CLAMP
9	4	5000001	M6 X 1 X 20 LG. SHCS
8	6	5000312	M3 X 0.5 X 20 LG. SHCS
7	12	5001103	M3 X 0.5 X 12 LG. SHCS
6	2	472-4760	POTENTIOMETER COVER
5	1	472-4730-2	3D ITRACC ASS'Y, RIGHT, THOR ABDOMEN - METRIC
4	1	472-4730-1	3D ITRACC ASS'Y, LEFT, THOR ABDOMEN - METRIC
3	1	472-4720-2	ATTACH BRACKET WELD ASS'Y. RIGHT
2	1	472-4720-1	ATTACH BRACKET WELD ASS'Y, LEFT
1	1	472-4710	INTERNAL MOUNTING WELD ASSEMBLY

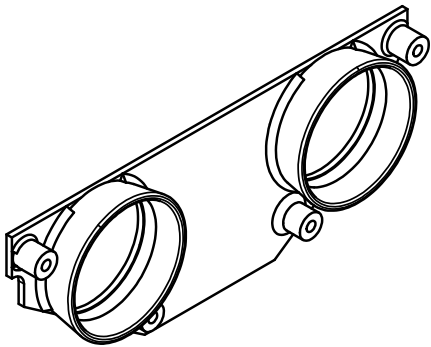
DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ±0.5 ±0.5 1.6  
XX ±0.2  
XXX ±0.1  
XXXX ±0.01

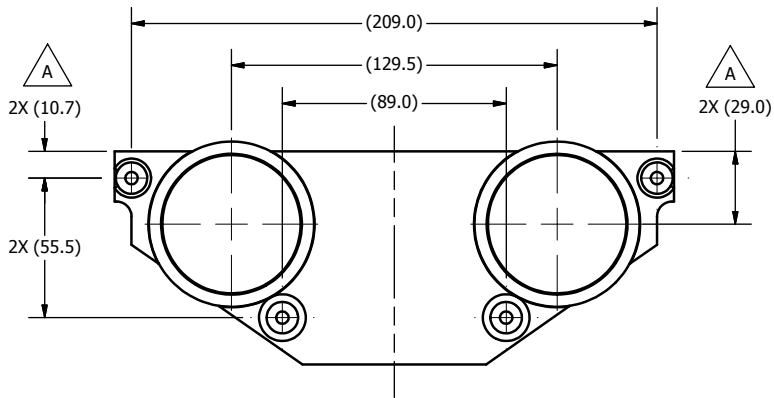
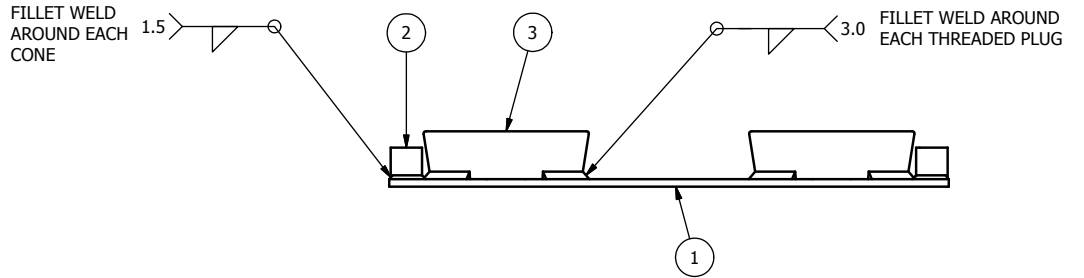


PROJECT NO.: THOR-M	DRAWN BY: dwashenko	DATE: 8/23/2011	DESCRIPTION: LOWER ABDOMEN MECHANICAL ASS'Y
MATERIAL:	HEAT TREAT:	CHECKED BY:	DATE:
FINISH:	ENGINEER: J. WANG	DATE: 1/11/2012	SCALE: .750
472-3000	1		
NEXT ASSEMBLY	QTY		
TOTAL QTY IN DUMMY	1		
SIZE: SHEET A3 1 of 1	DRAWING NO.: 472-4700	REV: G	

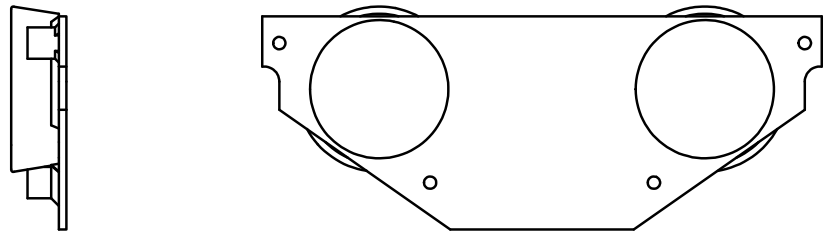
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM080 R04 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTES 4 & 6; 2X (10.7) WAS 9.7, 2X (29.0) WAS 28.0	8/22/2011	DW



SCALE .500



DIMENSIONS SYMMETRIC ABOUT CENTERLINE



NOTES:

- 472-4713 PARTS WILL OVERHANG 472-4711 PLATE SLIGHTLY IN SEVERAL PLACES.
- USE M6 BOLTS TO AFFIX 472-4712 PARTS TO 472-4711 PLATE DURING WELDING.
- CLEAR ALL HOLES OF EXCESS WELD MATERIAL.
- POWDER OR BEAD BLAST.
- NICKEL PLATE 0.003mm-0.008mm MAX. AFTER MACHINING.
- DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

ITEM	QTY	PART NUMBER	DESCRIPTION
3	2	472-4713	FLARED OVERLOAD CONE
2	4	472-4712	THREADED PLUG
1	1	472-4711	INTERNAL PLATE

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 ± 0.07 1.6 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-4700	DATE:	8/22/2011	DESCRIPTION: INTERNAL MOUNTING WELD ASSEMBLY
MATERIAL:		DESIGNED BY:	dwashenko	
HEAT TREAT:		CHECKED BY:		
FINISH:	SEE NOTES	DATE:	1/11/2012	SIZE: A3 SHEET: 1 OF 1 SCALE: .500
TOTAL QTY IN DUMMY	1	DRAWING NO:	472-4710	REV: A

PROJECT NO:	472-4700	QTY	1
HEAT TREAT:		QTY	
FINISH:	SEE NOTES	QTY	1

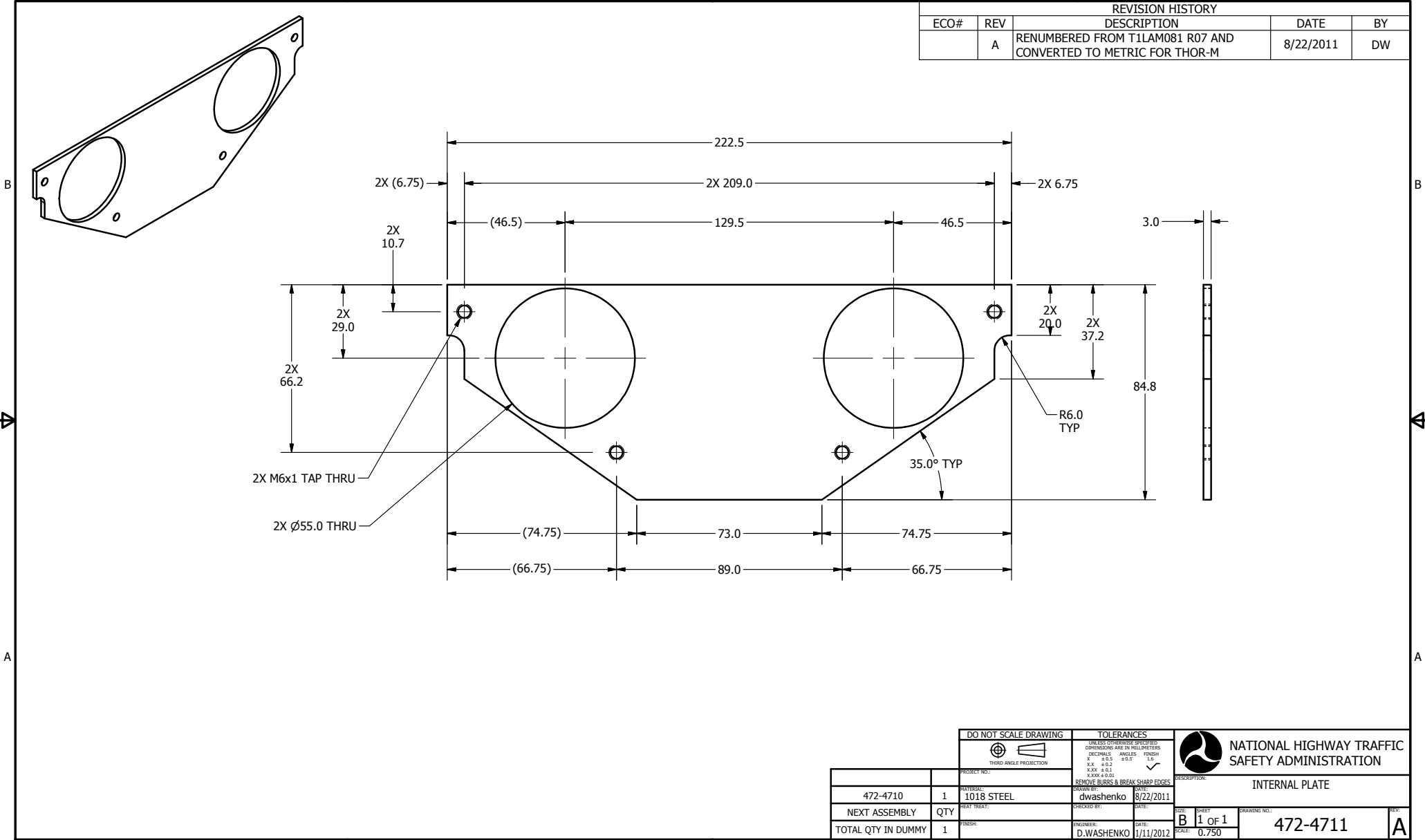
4

3

2

1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM081 R07 AND CONVERTED TO METRIC FOR THOR-M	8/22/2011	DW



B

B

A

A

4

3

2

1

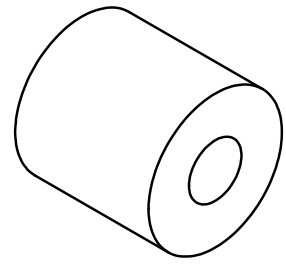
DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS    ANGLES    FINISH X.X    0.02    1.6 X.XX   0.01 X.XXX 0.008		
PROJECT NO.	472-4710	MATERIAL:	1018 STEEL	DESCRIPTION:
DATE:	8/22/2011	DRAWN BY:	dwashenko	INTERNAL PLATE
QTY:	1	CHECKED BY:		SIZE: B
FINISH:		ENGINEER:	D.WASHENKO	SHEET: 1 OF 1
		DATE:	1/11/2012	DRAWING NO.: 472-4711
				SCALE: 0.750

4

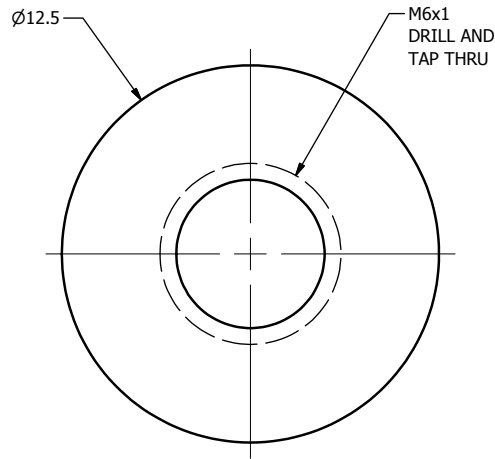
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2

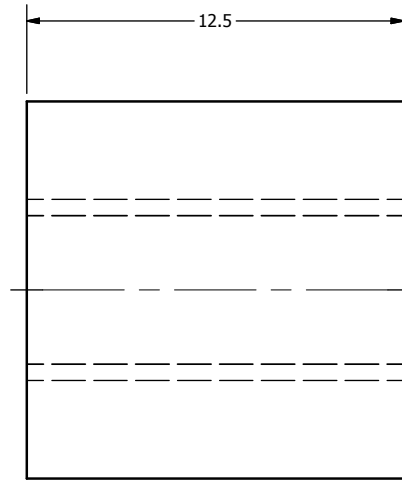
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SCALE 3.0

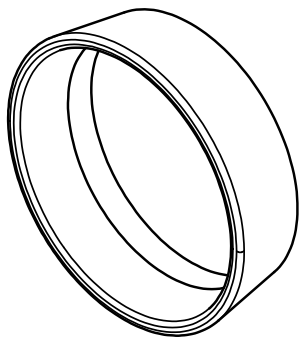


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM083 R02 AND CONVERTED TO METRIC FOR THOR-M	8/22/2011	DW

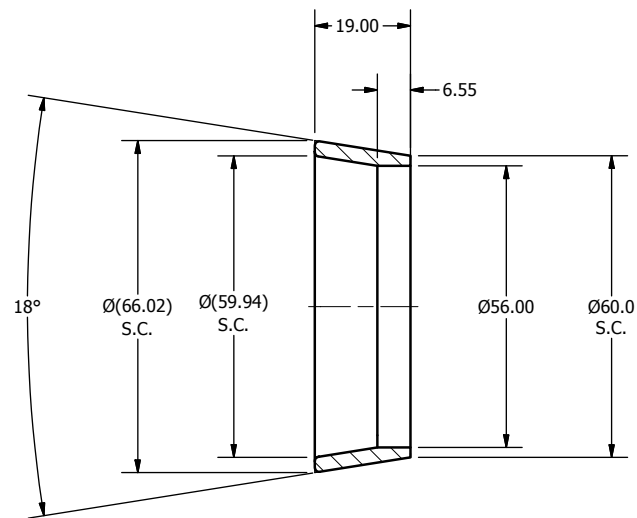
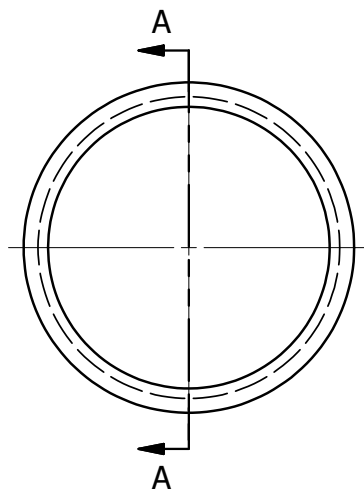
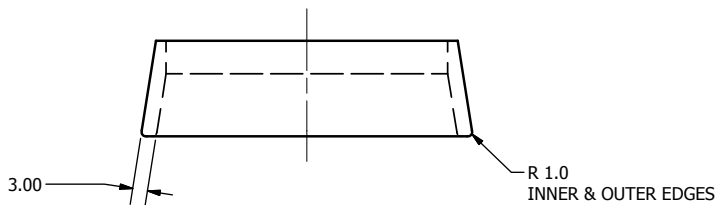


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.07 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-4710	MATERIAL:	1018 STEEL	DESCRIPTION:
DESIGNER:	D. WASHENKO	CHECKED BY:	dwashenko	DATE:
DATE:	8/22/2011	DATE:	1/11/2012	SCALE:
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:
SCALE:	6.000	472-4712		REV:
				A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM082 R6 AND CONVERTED TO METRIC FOR THOR-M	08/30/11	DW



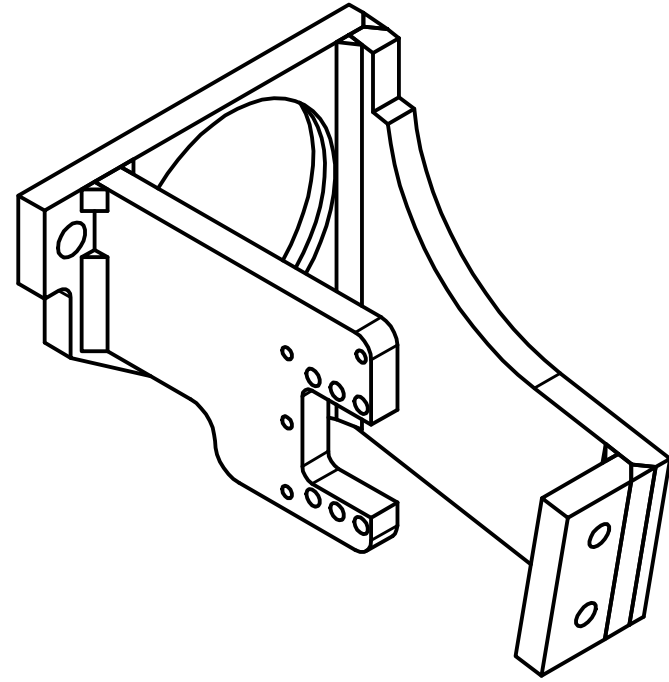
SCALE 1.000



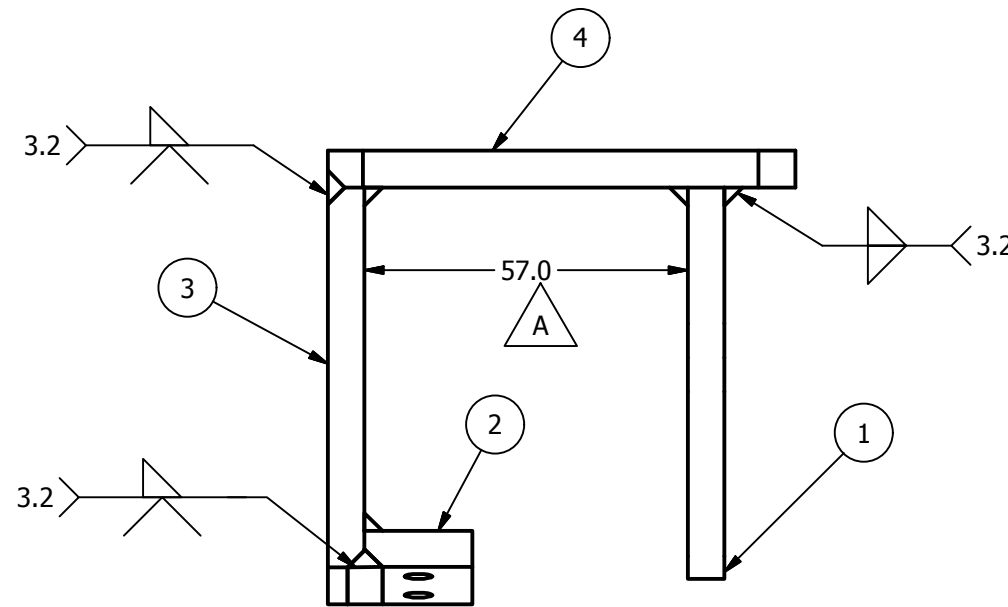
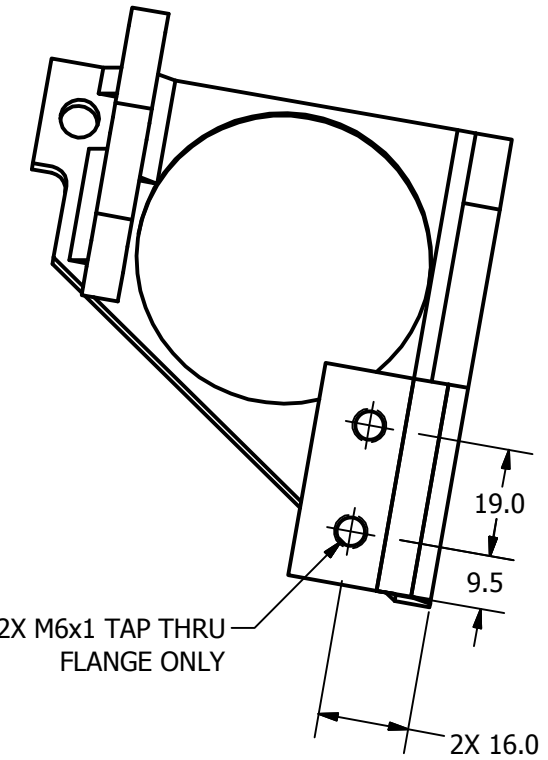
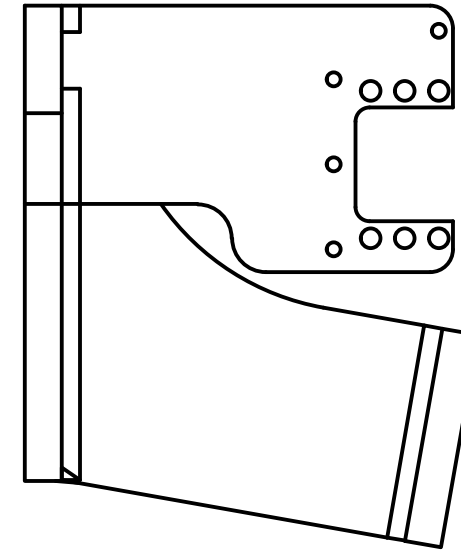
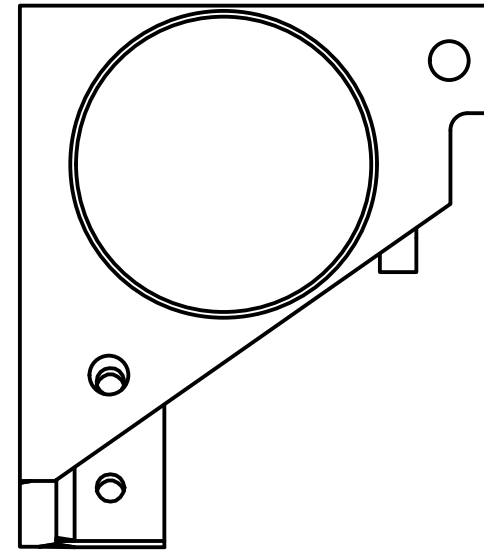
SECTION A-A  
SCALE 1.000

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 1.0 X.X 0.2 1.6 X.XX 0.3 1.6 X.XXX 0.01		
PROJECT NO:	472-4710	MATERIAL:	1018 STEEL	DESCRIPTION: FLARED OVERLOAD CONE
DATE:	6/16/2010	DESIGNED BY:	dwashenko	
CHECKED BY:		HEAT TREAT:		SCALE: 1.000
DATE:		ENGINEER:	D. WASHENKO	SIZE: SHEET A3 1 OF 1
DATE:	1/11/2012	DRAWING NO.:	472-4713	REV: A
TOTAL QTY IN DUMMY	2			

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAW040 R09 AND CONVERTED TO METRIC FOR THOR-M; ADD 57.0; ADD NOTES 3, 4, 5	8/22/2011	DW
	B	ADDED NOTCH TO PART #472-4721 - DGSP MOUNT	8/13/2015	DW



SCALE .750



NOTES:

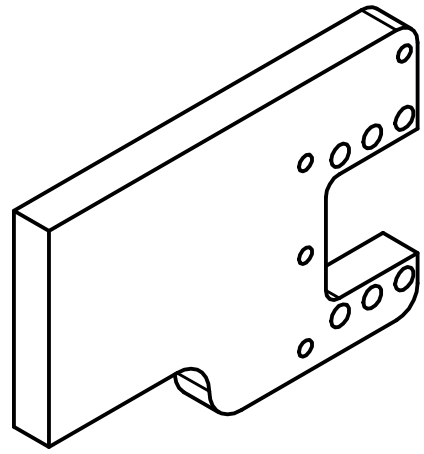
1. EXTERIOR BUTT WELDS TO BE GROUND DOWN TO STOCK FINISH.
2. CLEAR ALL HOLES OF EXCESS WELD MATERIAL.
3. POWDER OR BEAD BLAST.
4. NICKEL PLATE 0.003mm-0.008mm MAX. AFTER MACHINING.
5. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.



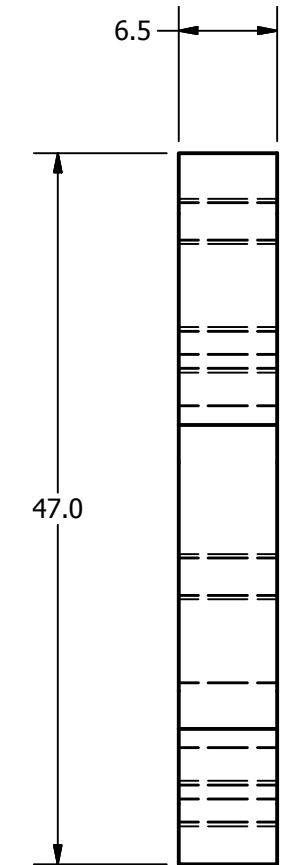
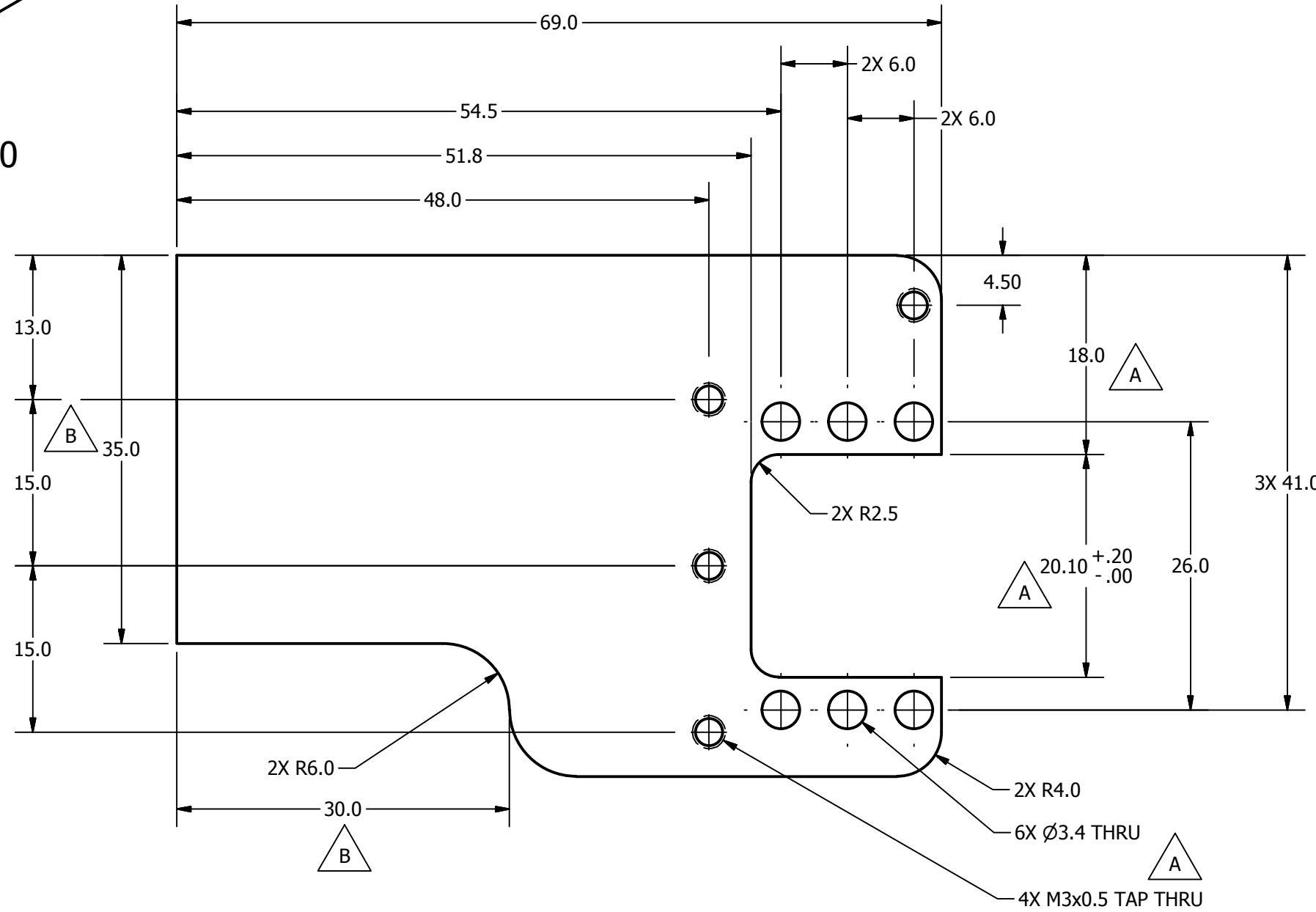
ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	472-4724-1	SIDE ATTACH BRACKET FRONT LEFT PLATE
3	1	472-4723-1	SIDE BRACKET PLATE, LEFT
2	1	472-4722	SIDE BRACKET REAR FLANGE
1	1	472-4721	DGSP MOUNT

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 .XX ±0.2 .XXX ±0.1 X.XXX ±0.01			
PROJECT NO.: 472-4700		DRAWN BY: dwashenko			
MATERIAL: NEXT ASSEMBLY		DATE: 8/22/2011		DESCRIPTION: ATTACH BRACKET WELD ASS'Y, LEFT	
TOTAL QTY IN DUMMY 1		FINISH: SEE NOTES		SIZE: SHEET A3 1 OF 1 SCALE: 0.750 DRAWING NO.: 472-4720-1 REV: B	





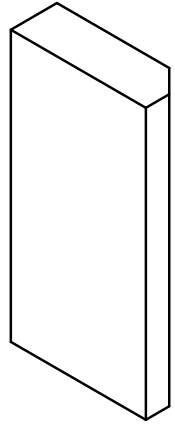
SCALE 1.0



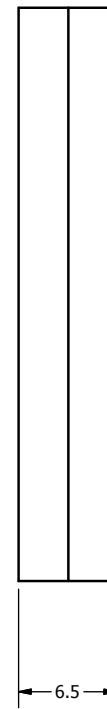
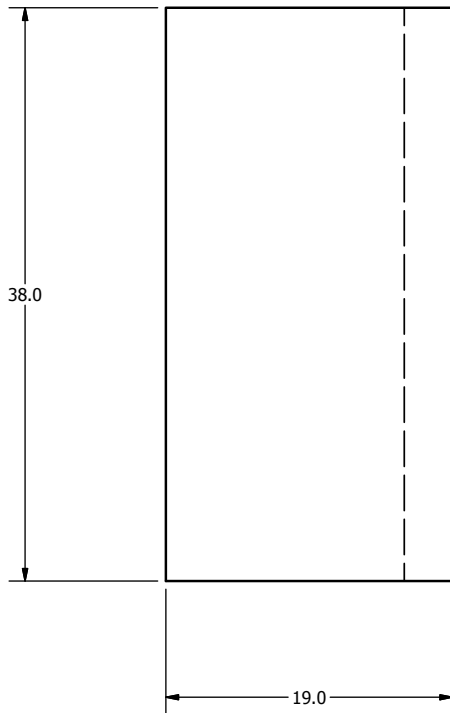
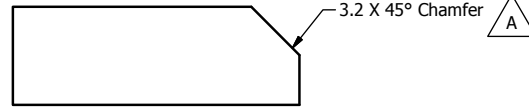
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM044 R3 FOR THOR-M; 18.0 WAS 17.95; 20.10 +.20/-0.00 WAS 20.10 +.05/-0.00; Ø3.4 WAS Ø3.18; 4X M3x.5 WAS 4X #4-40	8/22/2011	DW
	B	ADDED NOTCH IN BOTTOM	9/4/2015	DW

472-4720-2		1	PROJECT NO.	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-4720-1		1	MATERIAL:	THIRD ANGLE PROJECTION	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
NEXT ASSEMBLY		QTY	HEAT TREAT:	dwashenko	DATE:	8/22/2011	DESCRIPTION:
TOTAL QTY IN DUMMY		2	FINISH:	D. WASHENKO	DATE:	1/12/2012	DGSP MOUNT
							SIZE: SHEET
							A3 1 OF 1
							SCALE: 2.000
							DRAWING NO.: 472-4721
							REV: B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM041 R1 FOR THOR-M; ADD CHAMFER	8/31/2011	DW



SCALE 2.000



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
0.05 0.05 1.6  
X.X 0.2  
X.XX 0.3  
X.XXX 0.01  
REMOVE BURRS & BREAK SHARP EDGES



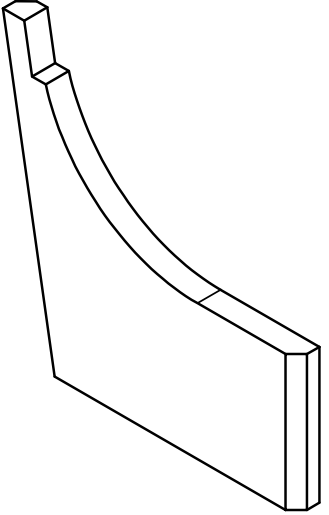
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

472-4720-2	1	PROJECT NO.:	
472-4720-1	1	MATERIAL:	1018 STEEL
NEXT ASSEMBLY	QTY	CHECKED BY:	dwashenko
TOTAL QTY IN DUMMY	2	DATE:	8/31/2011

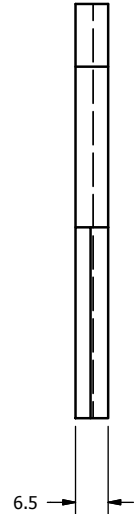
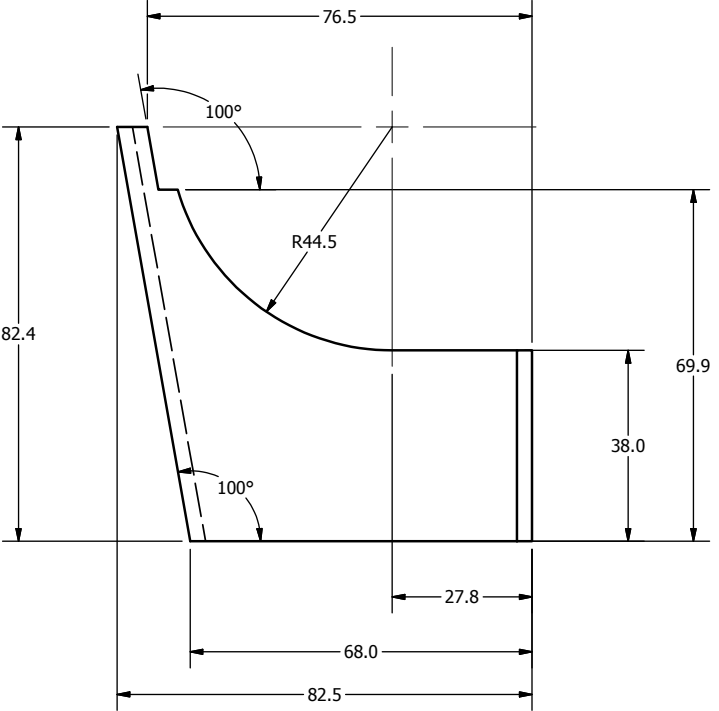
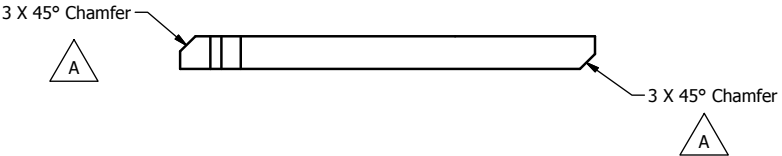
DRIVER:	D. WASHENKO	DATE:	1/12/2012
SCALE:	3.000	SIZE:	A3

DESCRIPTION:	SIDE BRACKET REAR FLANGE
DRAWING NO.:	472-4722
SHEET:	1 OF 1
REV:	A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TILAM042 R4 FOR THOR-M; ADD CHAMFERS TO CREATE LEFT SIDE	8/31/2011	DW

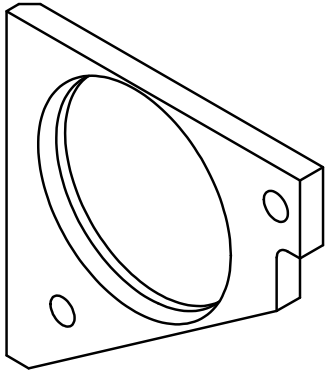


SCALE 1.000

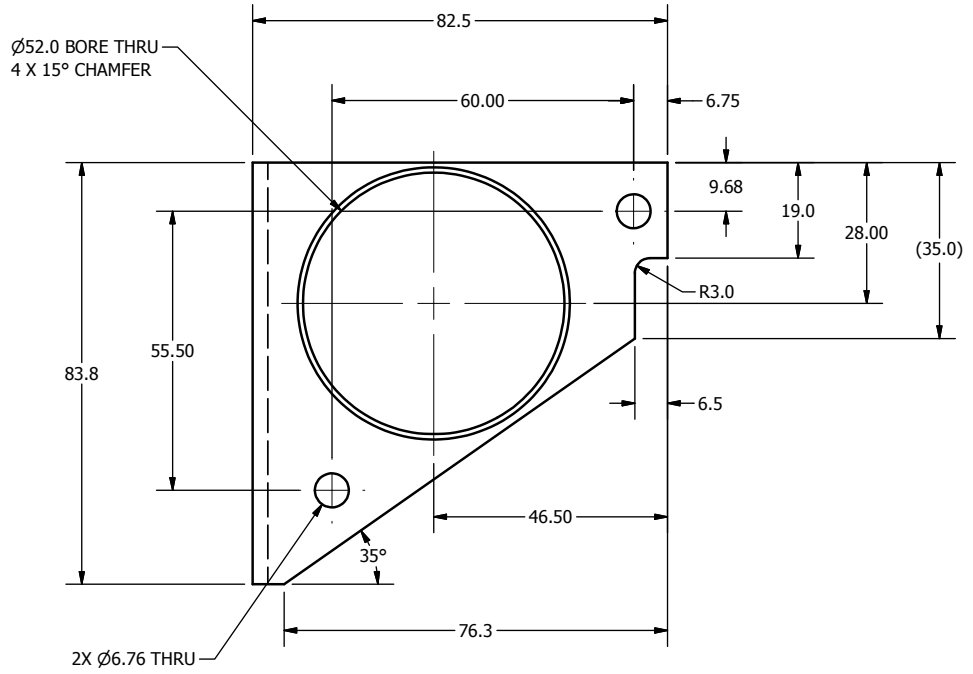
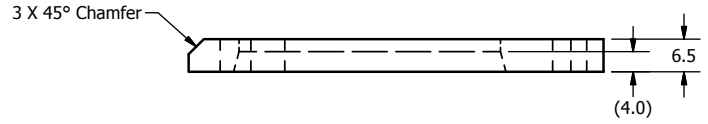


DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05° 1.6 X 0.2 0.2° 1.6 XX 0.3 0.3° 1.6 XXX 0.01		
PROJECT NO:	472-4720-1	MATERIAL:	1018 STEEL	DESCRIPTION: <b>SIDE BRACKET PLATE, LEFT</b>
DRAWN BY:	dwashenko	DATE:	8/31/2011	
CHECKED BY:		HEAT TREAT:		REMOVE BLURBS & BREAK SHARP EDGES SCALE: 1.000
ENGINEER:	D. WASHENKO	DATE:	1/12/2012	SIZE: <b>A3</b> SHEET: <b>1</b> OF <b>1</b> DRAWING NO.: <b>472-4723-1</b>
TOTAL QTY IN DUMMY	1	FINISH:		REV: <b>A</b>

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM043L R07 FOR THOR-M	8/31/2011	DW

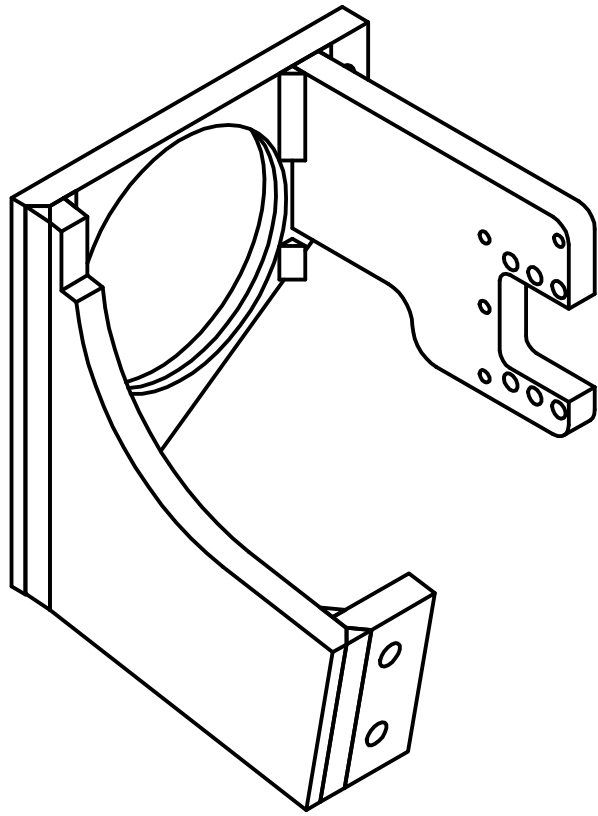


SCALE 1.000

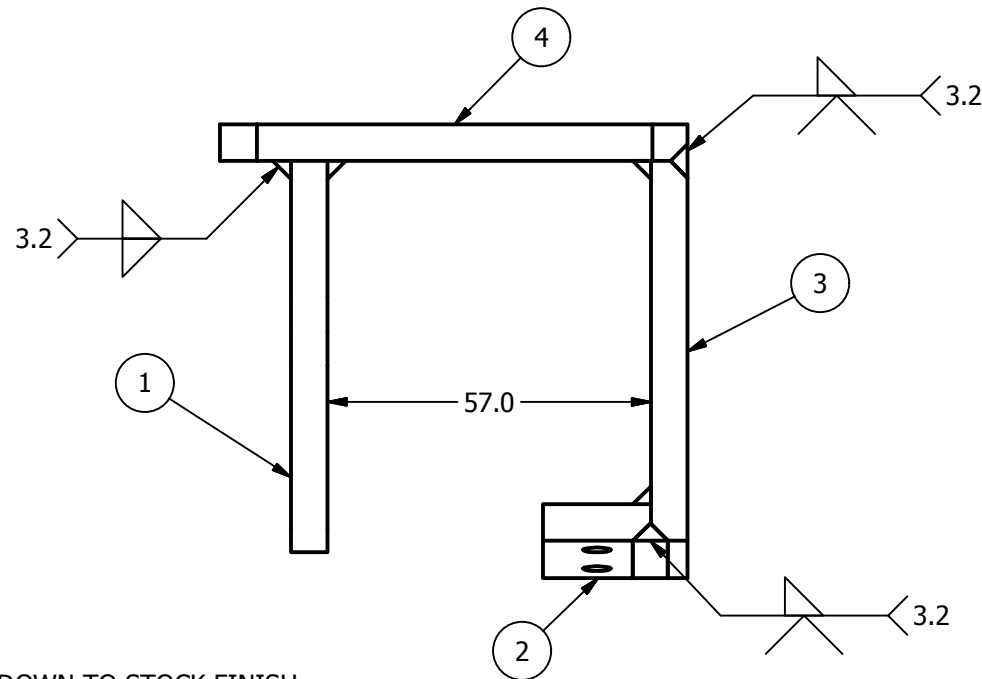
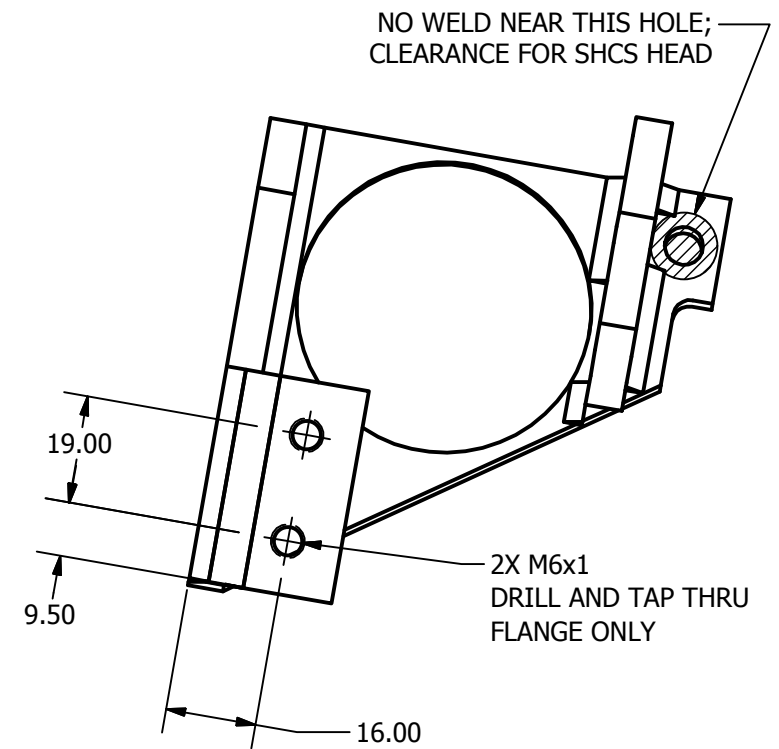
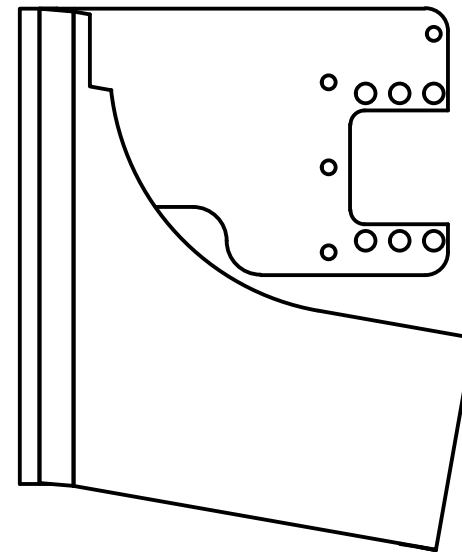
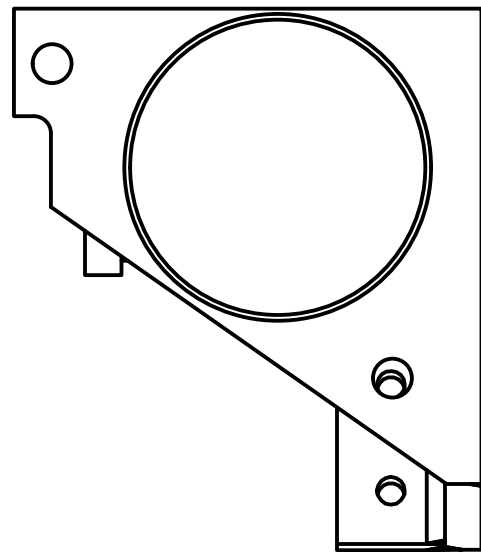


DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>								
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>0.05 0.05 1.6</small> <small>X 0.2 0.2</small> <small>XX 0.3 0.3</small> <small>XXX 0.01</small>										
PROJECT NO:	472-4720-1	MATERIAL:	1018 Steel	<small>REMOVE BLURRS &amp; BREAK SHARP EDGES</small> <b>DESCRIPTION:</b> <b>SIDE ATTACH BRACKET FRONT LEFT PLATE</b>								
CHECKED BY:	dwashenko	DATE:	8/31/2011									
DATE:	1/12/2012	SCALE:	1.000									
TOTAL QTY IN DUMMY		QTY	1	<table border="1"> <tr> <td>SIZE</td> <td>SHEET</td> <td>DRAWING NO.</td> <td>REV.</td> </tr> <tr> <td>A3</td> <td>1 OF 1</td> <td>472-4724-1</td> <td>A</td> </tr> </table>	SIZE	SHEET	DRAWING NO.	REV.	A3	1 OF 1	472-4724-1	A
SIZE	SHEET	DRAWING NO.	REV.									
A3	1 OF 1	472-4724-1	A									

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAW060 R9 FOR THOR-M; ADD NOTES 3, 4, 5	8/22/2011	DW
	B	ADDED NOTCH TO PART #472-4721 - DGSP MOUNT	8/13/2015	DW



SCALE .750



NOTES:

1. EXTERIOR BUTT WELDS TO BE GROUND DOWN TO STOCK FINISH.
2. CLEAR ALL HOLES OF EXCESS WELD MATERIAL.
3. POWDER OR BEAD BLAST.
4. NICKEL PLATE 0.003mm-0.008mm MAX. AFTER MACHINING.
5. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

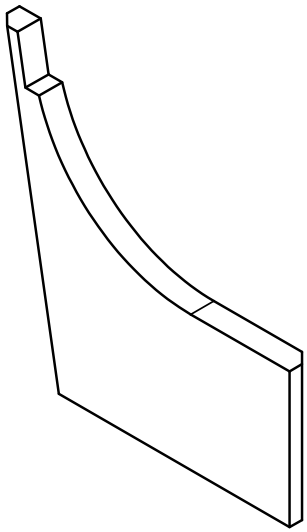


ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	472-4724-2	SIDE ATTACH BRACKET FRONT RIGHT PLATE
3	1	472-4723-2	SIDE BRACKET PLATE, RIGHT
2	1	472-4722	SIDE BRACKET REAR FLANGE
1	1	472-4721	DGSP MOUNT

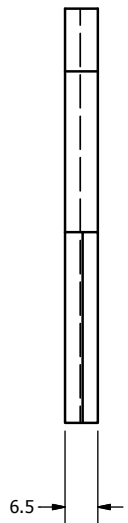
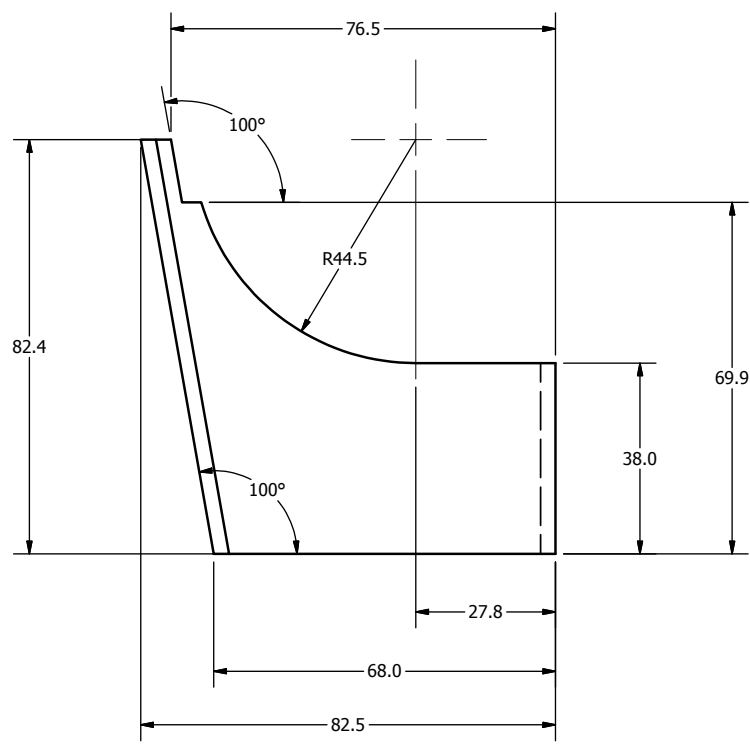
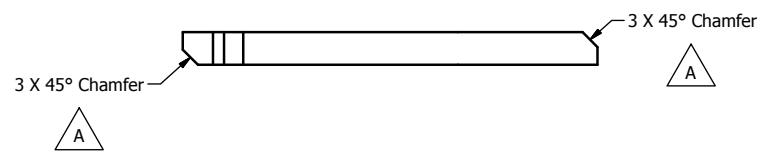
PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
PROJECT NO.:	MATERIAL:	REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION:
472-4700	1	dwashenko	8/22/2011	ATTACH BRACKET WELD ASS'Y. RIGHT
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	SIZE: SHEET
TOTAL QTY IN DUMMY	1	ENGINEER:	DATE:	A3 1 of 1
		SEE NOTES	D. WASHENKO 1/11/2012	SCALE: 0.750
				DRAWING NO.: 472-4720-2

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TILAM042 R4 FOR THOR-M; ADD CHAMFERS TO CREATE RIGHT SIDE	8/31/2011	DW

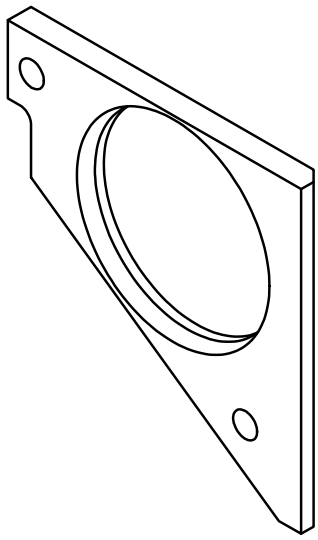


SCALE 1.000

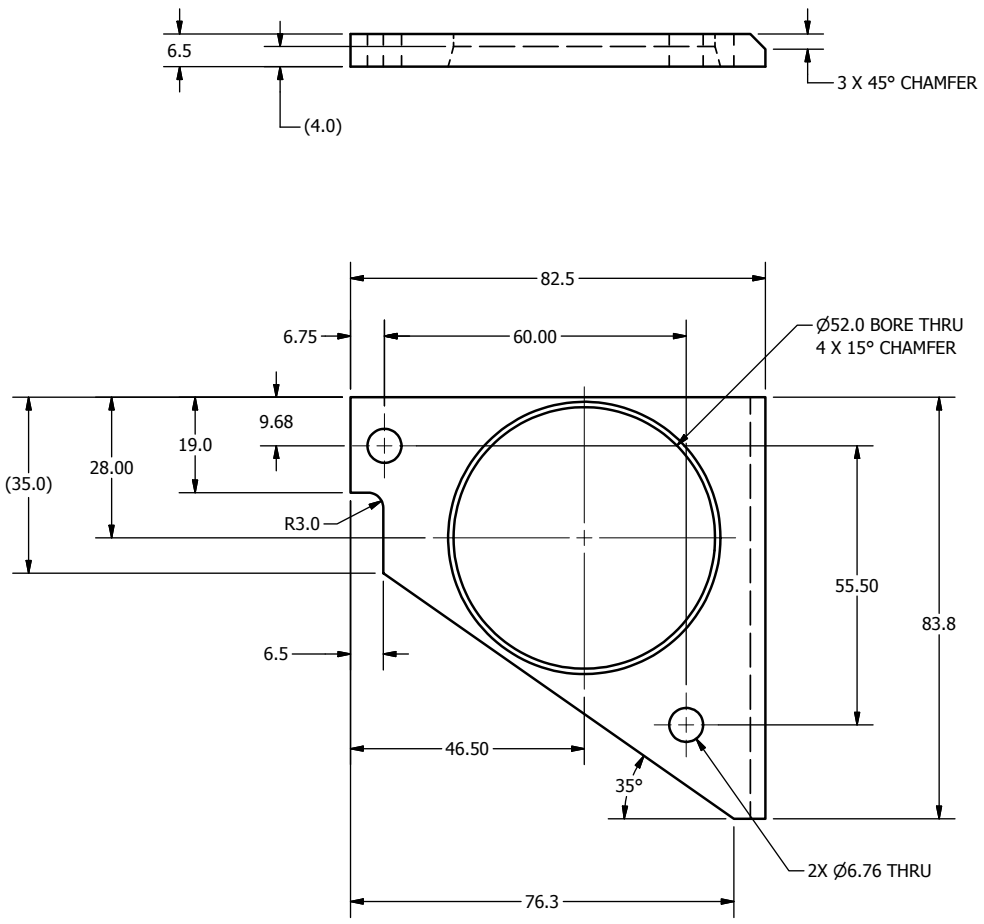


DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01		
PROJECT NO:	472-4720-2	MATERIAL:	1018 STEEL	DESCRIPTION: <b>SIDE BRACKET PLATE, RIGHT</b>
DATE:	8/31/2011	DESIGNED BY:	dwashenko	
CHECKED BY:		HEAT TREAT:		REMOVE BURRS & BREAK SHARP EDGES CHECKED BY: DATE:
ENGINEER:	D. WASHENKO	DATE:	1/12/2012	SIZE: <b>A3</b> SHEET: <b>1</b> OF <b>1</b> SCALE: 1.000
TOTAL QTY IN DUMMY	1	FINISH:		DRAWING NO.: <b>472-4723-2</b> REV: <b>A</b>

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM043R R7 FOR THOR-M	9/1/11	DW

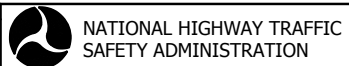


SCALE 1.000



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES		
UNLESS OTHERWISE SPECIFIED	DECIMALS	ANGLES
±0.2	±0.5°	±1.0°
±0.1	±0.25°	±0.5°
±0.05	±0.125°	±0.25°
±0.02	±0.0625°	±0.125°

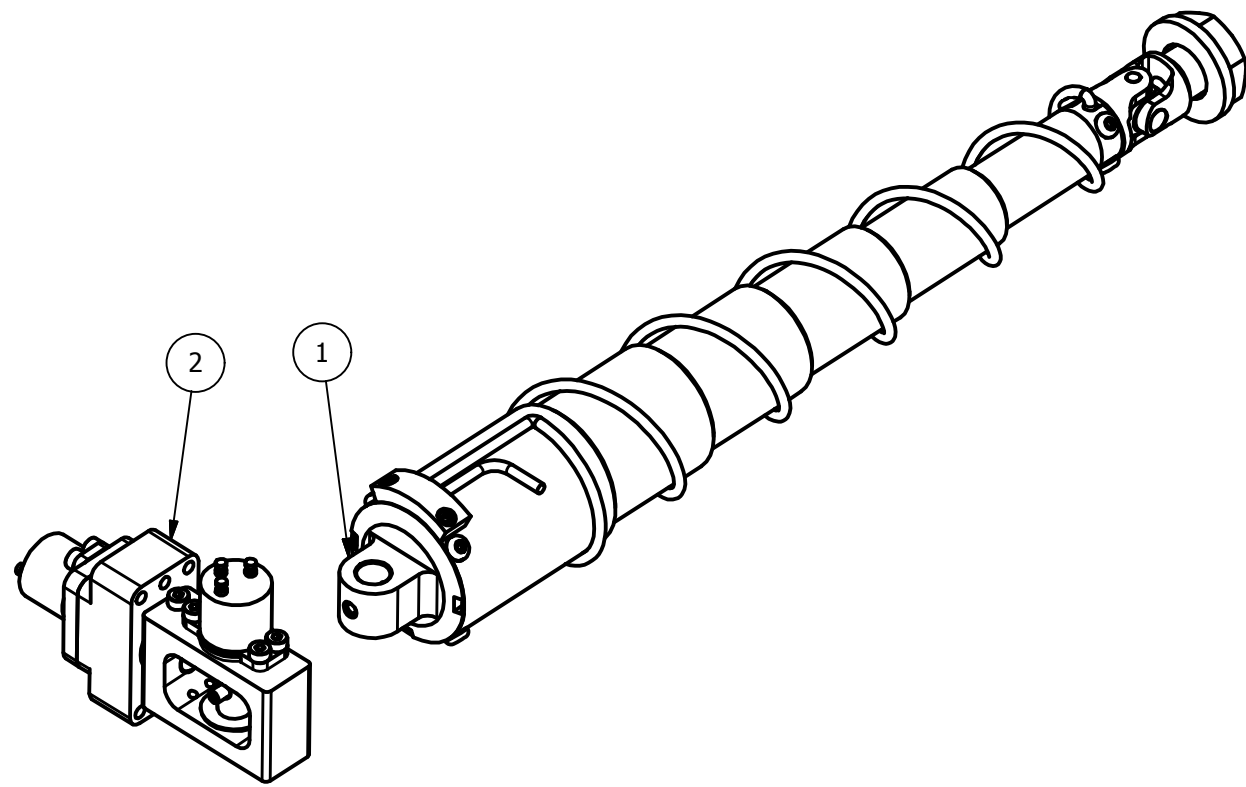


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

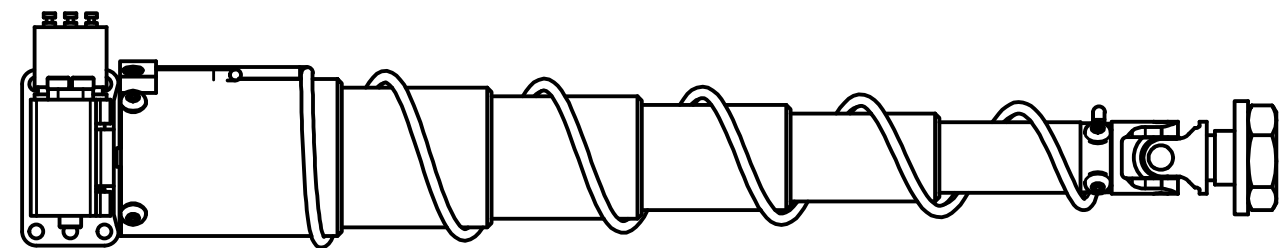
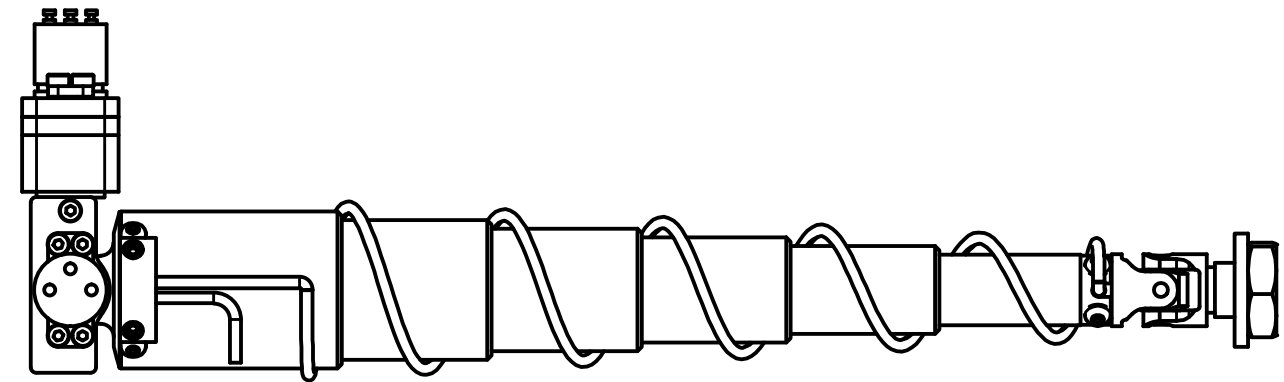
PROJECT NO.: 472-4720-2	QTY: 1	MATERIAL: 1018 STEEL	DATE: 7/2/2010	SCALE: 1.000	DESCRIPTION: SIDE ATTACH BRACKET FRONT RIGHT PLATE
CHECKED BY: D. WASHENKO	DATE: 1/12/2012	ENGINEER: D. WASHENKO	DATE: 1/12/2012	SCALE: 1.000	DESCRIPTION: SIDE ATTACH BRACKET FRONT RIGHT PLATE
TOTAL QTY IN DUMMY: 1	QTY: 1	MATERIAL: 1018 STEEL	DATE: 1/12/2012	SCALE: 1.000	DESCRIPTION: SIDE ATTACH BRACKET FRONT RIGHT PLATE

SIZE: A3  
SHEET: 1 OF 1  
DRAWING NO.: 472-4724-2  
REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED AS NEW ASSEMBLY FOR THOR-M	8/23/2011	DW
	B	MADE PARTS UNTESTED	6/8/2012	JBH



SCALE .750



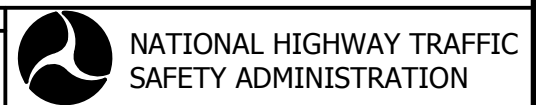
NOTES:

1. ASSEMBLE IRTRACC TO PIVOT ASSEMBLY AS SHOWN.
2. PROVIDE INDIVIDUAL CERT SHEETS FOR IRTRACC AND (2) POTENTIOMETERS.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-4740-1	PIVOT ASSEMBLY, LEFT
1	1	SA572-S121	120mm IRTRACC ASSEMBLY - METRIC

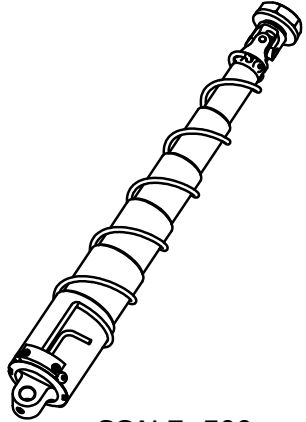
PARTS LIST

DO NOT SCALE DRAWING	TOLERANCES
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01

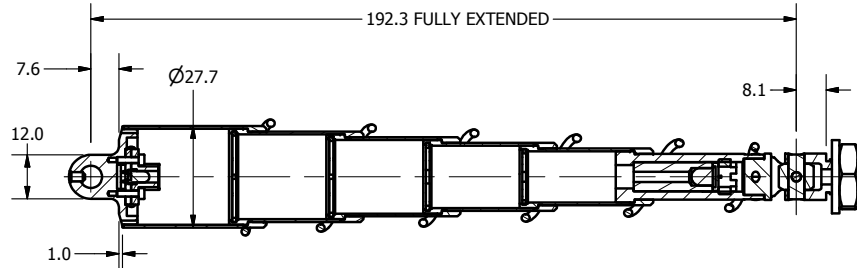


PROJECT NO.: THOR-M	REMOVE BURRS & BREAK SHARP EDGES	DATE: 8/23/2011	DESCRIPTION: 3D IRTRACC ASS'Y, LEFT, THOR ABDOMEN - METRIC
MATERIAL:	ENGINEER: dwashenko	CHECKED BY:	DATE:
HEAT TREAT:	ENGINEER: D. WASHENKO	CHECKED BY:	DATE: 1/12/2012
FINISH:	FINISH:	FINISH:	FINISH:
SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-4730-1	REV: B
TOTAL QTY IN DUMMY	1	SCALE: .750	

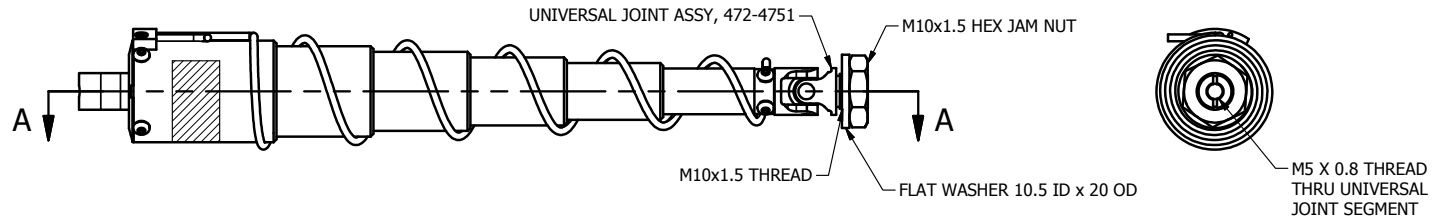




SCALE .500

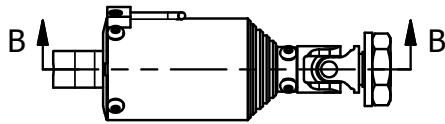


SECTION A-A  
FULLY EXTENDED  
SCALE 0.75



WIRE COLOR	FUNCTION
RED	+EXC
GREEN	+SIG
ORANGE	ID
SHIELD	GND
WHITE	-SIG
BLACK	-EXC

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC FOR THOR-M; MECHANICAL TRAVEL WAS 120mm; ADD COLLAPSED VIEW AND SEC B-B	8/23/2011	DW



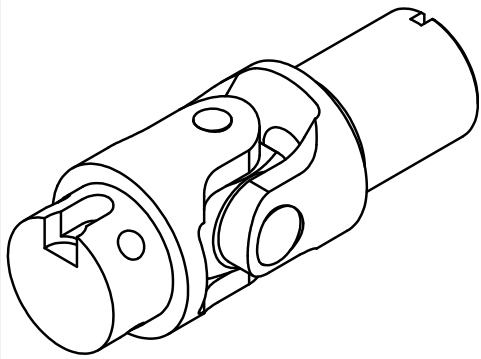
SECTION B-B  
FULLY COLLAPSED  
SCALE 0.75

**SPECIFICATIONS:**  
 MECHANICAL TRAVEL: 123 mm  $\triangle A$   
 MEASURED RANGE: 105 mm  
 PRE/POST TRAVEL: 7.5 mm  
 MAXIMUM ERROR:  $\pm 3\%$   
 INPUT VOLTAGE: 5 VOLTS ( $\pm 1\%$ ) @20mA  
 OUTPUT RANGE: 0 TO 4.0 VOLTS  
 WEIGHT: 163 g (.36 LBS) LESS MAIN CABLE  
 NONLINEARITY: (LINEARIZED DATA) < 2% FULL SCALE  
 SEE CALIBRATION REPORT FOR LINEARITY CONSTANT FIGURE.  
 DIMENSIONS NOT SHOWN TO BE MANUFACTURER'S STANDARDS.

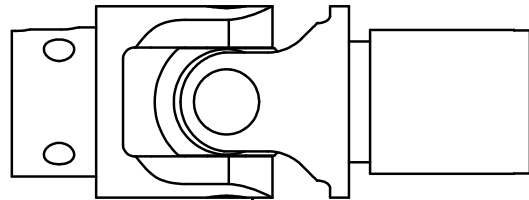
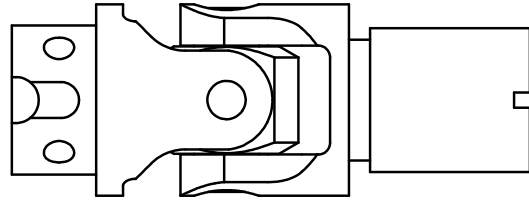
**NOTES:**  
 THE IRTRACC IS AN INHERENTLY NON-LINEAR DISPLACEMENT TRANSDUCER.  
 AN IRTRACC'S RAW VOLTAGE VALUES MUST BE ADJUSTED BY THE APPLICATION  
 OF A LINEARIZATION EXPONENT APPLIED THROUGH POST TEST PROCESSING SOFTWARE IN  
 ORDER TO ACHIEVE ACCURATE DISPLACEMENT DATA.

<b>DO NOT SCALE DRAWING</b> 		<b>TOLERANCES</b> UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X 0.05 0.5 $\pm 0.1$ X.XX 0.01 0.5X 0.05 X.XXX 0.005		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION DESCRIPTION: 120mm IRTRACC ASSEMBLY - METRIC
PROJECT NO: 472-4730-2	1	DRAWN BY: dwashenko	DATE: 8/23/2011	
MATERIAL:	472-4730-1	CHECKED BY:	DATE:	
HEAT TREAT:	NEXT ASSEMBLY	ENGINEER:	DATE:	
FINISH:	TOTAL QTY IN DUMMY	DATE:	DATE:	

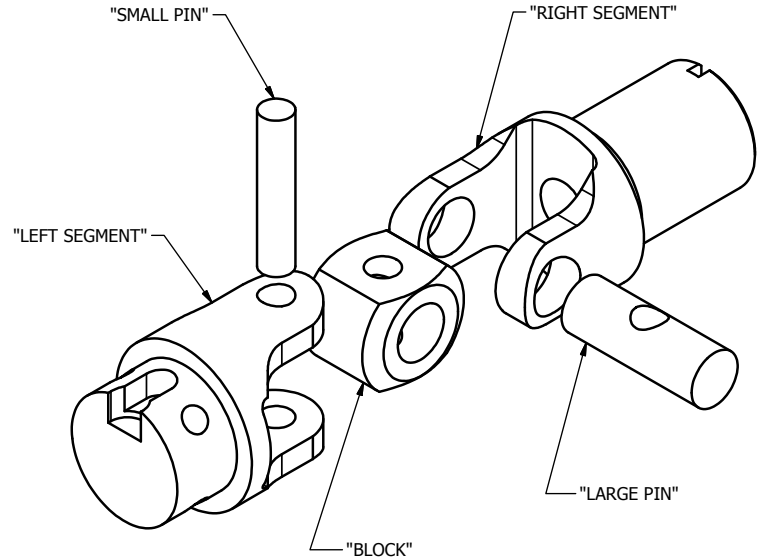
SIZE: B	SHEET: 1 OF 1	DRAWING NO.: SA572-S121	REV: A
SCALE: 0.750			



SCALE 3.000



1

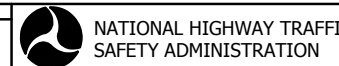


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION; NEW VERSION BASED ON 9900	8/23/2011	DW
	B	ADD SHEET 3 WITH LEFT SEGMENT DIMENSIONS	3/8/2012	DW
	C	REMOVED PLATING; ITEM WAS UJ500	6/18/2012	MCO
	D	CHANGE UNDERCUT; Ø8.0 WAS Ø 8.5, 1.4±.13 WAS 1.0 (SHT 2)	1/10/2013	BK
	E	20.4 WAS 16.8; 12.24 WAS 8.64 (SHT 2)	2/14/2013	BK

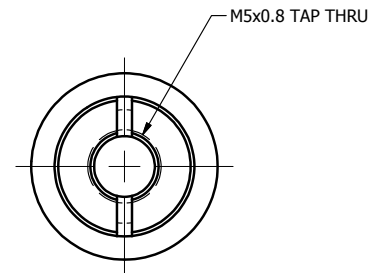
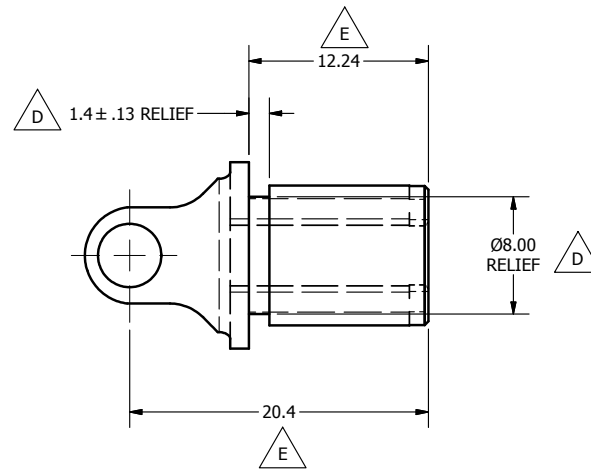
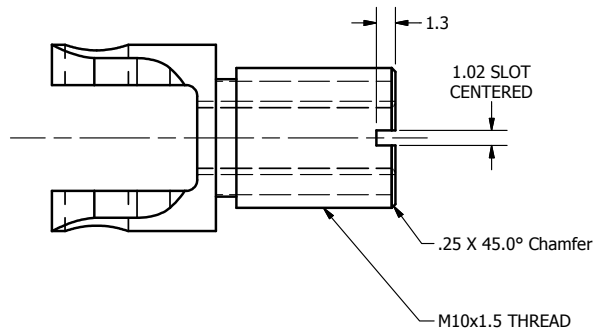
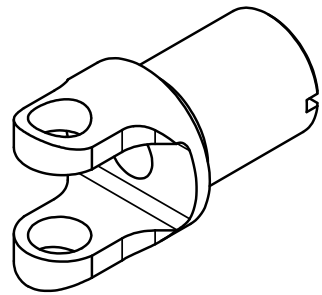
NOTES:

- UNIVERSAL JOINT ASSEMBLY IS PURCHASED IN KIT FORM.
- MODIFY "RIGHT SEGMENT" AS SHOWN ON SHEET 2.
- MODIFY "LEFT SEGMENT" AS SHOWN ON SHEET 3.
- NICKEL PLATE "RIGHT SEGMENT" AFTER MACHINING. 0.008mm MAXIMUM PER SIDE.
- PREASSEMBLE UNIVERSAL JOINT WITHOUT GREASE TO VERIFY SMOOTH AND CORRECT MOVEMENT. REMOVE NICKEL PLATE MATERIAL FROM I.D. OF RIGHT SEGMENT, AS NECESSARY.
- DISASSEMBLE JOINT ASSEMBLY. LIGHTLY GREASE AL BEARING AND CONTACT SURFACES.
- INSTALL THE LARGE PIN THRU THE RIGHT SEGMENT AND BLOCK WITH CENTER HOLES ALIGNED.
- ORIENT LEFT SEGMENT OVER BLOCK WITH CENTER HOLES ALIGNED AND INSTALL SMALL PIN THRU LEFT SEGMENT, BLOCK, & LARGE PIN.
- PLACE THE ASSEMBLED JOINT ON A FLAT, HARD SURFACE AND PEEN THE ENDS OF THE SMALL PIN WITH A PUNCH AND HAMMER.
- (CAUTION: DO NOT CRUSH THE YOKE OR OVER PEEN THE PIN.)**
- CHECK THE ASSEMBLY FOR CORRECT MOVEMENT. THE SMALL PIN SHOULD NOT HAVE ANY SIDE TO SIDE MOVEMENT.

1	1	6004070	UJ500 U-JOINT KIT 1/2 OD
ITEM	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 X .005 1.6 XX ± 0.2 X .005 XXX ± 0.3 X .005 XXXX ± 0.01 X .005	
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	
MATERIAL:		DRAWN BY: dwashenko	
SA572-S121		DATE: 8/23/2011	
NEXT ASSEMBLY QTY		CHECKED BY:	
TOTAL QTY IN DUMMY 2		DATE: 1/12/2012	
FRESH: SEE NOTES		ENGINEER: D. WASHENKO	
		DATE: 1/12/2012	
		SCALE: 3.0	
		SIZE: A3	
		SHEET: 1 OF 3	
		DRAWING NO.: 472-4751	
		REV: E	



UNIVERSAL JOINT ASSEMBLY



**RIGHT SEGMENT**

DO NOT SCALE DRAWING

TOLERANCES

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS

DIGITALS ANGLES FINISH  
X.X .0.2 .0.5  
X.XX .0.1 1.6  
X.XXX .0.01

REMOVE BURRS & BREAK SHARP EDGES

THIRD ANGLE PROJECTION

PROJECT NO.

MATERIAL:

HEAT TREAT:

FINISH:

DRAWN BY:

DATE:

CHECKED BY:

ENGINEER:



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

DESCRIPTION:

UNIVERSAL JOINT ASSEMBLY

SA572-S121 1

NEXT ASSEMBLY QTY

TOTAL QTY IN DUMMY 2

1

QTY

2

SEE NOTES

DATE:

8/23/2011

D.WASHENKO

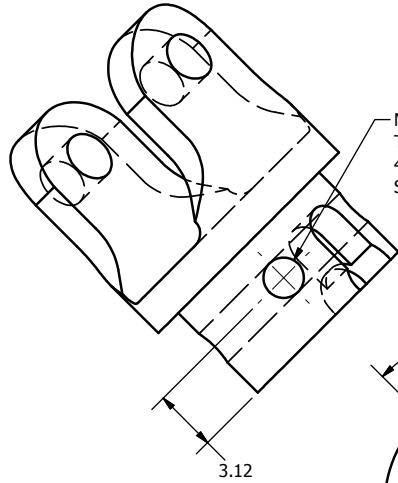
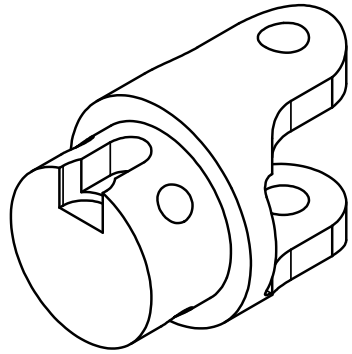
SIZE: B

SHEET: 2 OF 3

SCALE: 3.0

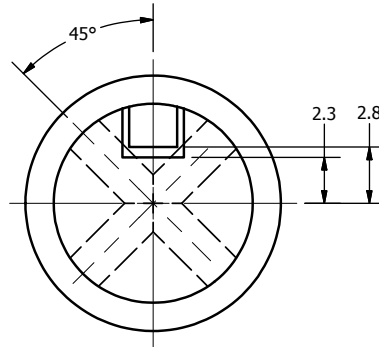
DRAWING NO.: 472-4751

REV: E



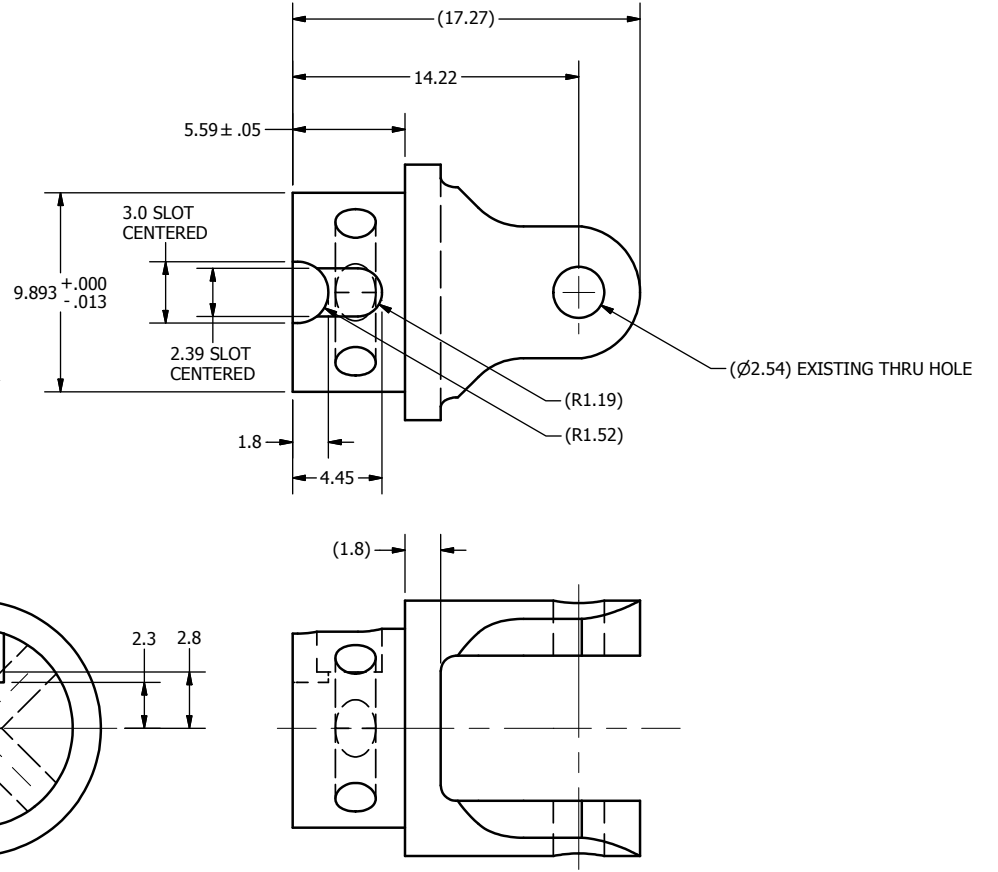
M2.5x0.45 TAP  
THRU TO CENTER  
4 HOLES EQUALLY  
SPACED ON O.D.

3.12



45°

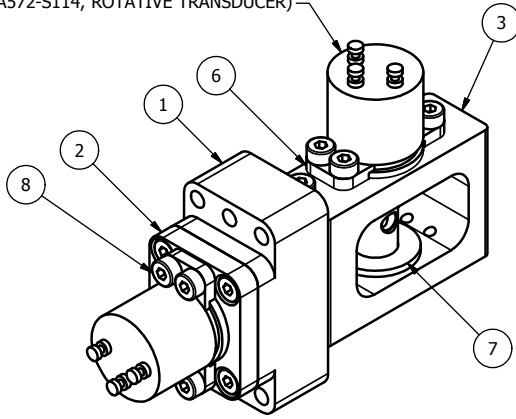
2.3 2.8



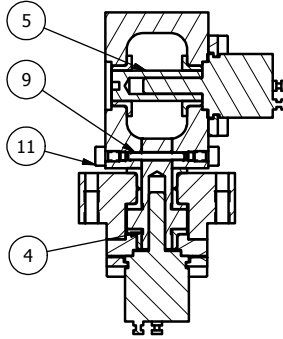
LEFT SEGMENT

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.01 0.05 1.6 X 0.2 XX 0.3 XXX 0.01		
PROJECT NO.:	SA572-S121	1	MATERIAL:	REMOVE BURRS & BREAK SHARP EDGES DWASHENKO 8/23/2011
CHECKED BY:	dwashenko	QTY	DATE:	
HEAT TREAT:		TOTAL QTY IN DUMMY	2	ENGINEER: D. WASHENKO
FRISON:	SEE NOTES			DATE: 8/23/2011
			SIZE: A3 SHEET: 3 OF 3 SCALE: 3.0	DRAWING NO.: 472-4751 REV: E

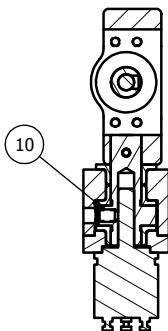
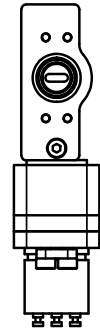
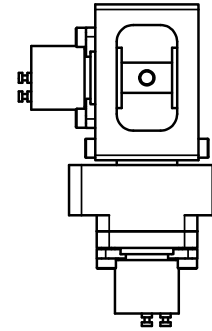
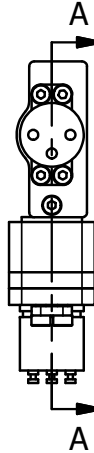
(2X SA572-S114, ROTATIVE TRANSDUCER)



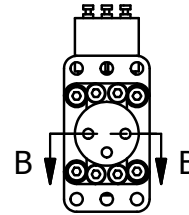
SCALE 1.50



SECTION A-A  
SCALE 1.0



SECTION B-B



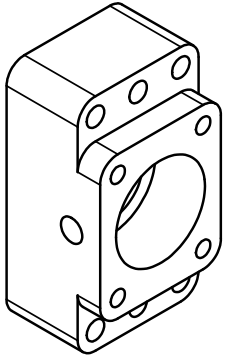
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TIRM200 R00 AND CONVERTED TO METRIC FOR THOR-M; CREATE LEFT SIDE	8/22/2011	DW

ITEM	QTY	PART NUMBER	DESCRIPTION
11	2	5001136	M2 X 0.4 X 3 LG. SHCS
10	1	5001043	M2.5 X 0.45 X 4 LG. SSSCP SS
9	1	5000514	M1.5 X 12 LG. DOWEL SS
8	12	5001079	M2 X 0.4 X 5 LG. SHCS
7	5	5000949	FLANGE BEARING 6 X 8 X 4 LG.
6	4	472-4746	CLAMP POT
5	1	472-4745	SHAFT VERTICAL
4	1	472-4744	SHAFT HORIZONTAL
3	1	472-4743	BLOCK PIVOT
2	1	472-4742	COVER
1	1	472-4741	BLOCK MOUNTING

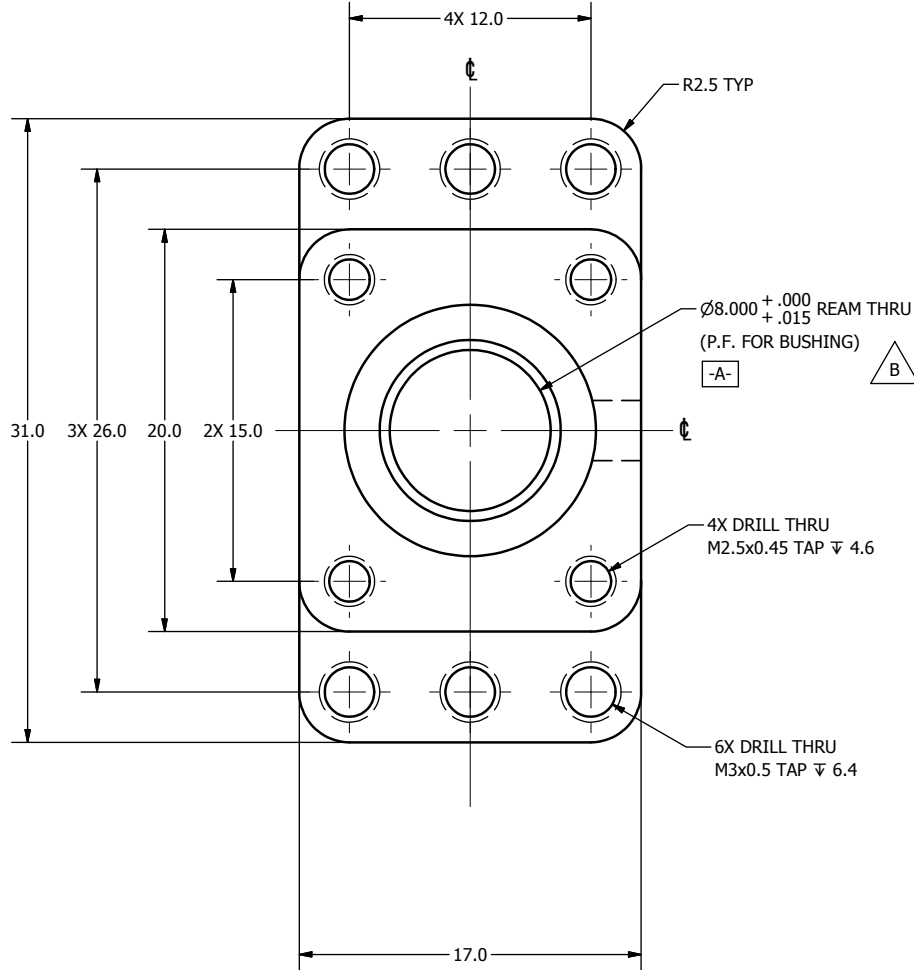
PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.3 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO.:	472-4730-1	MATERIAL:	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION:
DATE:	8/22/2011	CHECKED BY:	D. WASHENKO	PIVOT ASSEMBLY, LEFT
DATE:	1/12/2012	DATE:	1/12/2012	SIZE: SHEET
DATE:	1/12/2012	DATE:	1/12/2012	A3 1 OF 1
DATE:	1/12/2012	DATE:	1/12/2012	SCALE: 1.000
DATE:	1/12/2012	DATE:	1/12/2012	DRAWING NO.:
DATE:	1/12/2012	DATE:	1/12/2012	472-4740-1
DATE:	1/12/2012	DATE:	1/12/2012	REV:
DATE:	1/12/2012	DATE:	1/12/2012	A

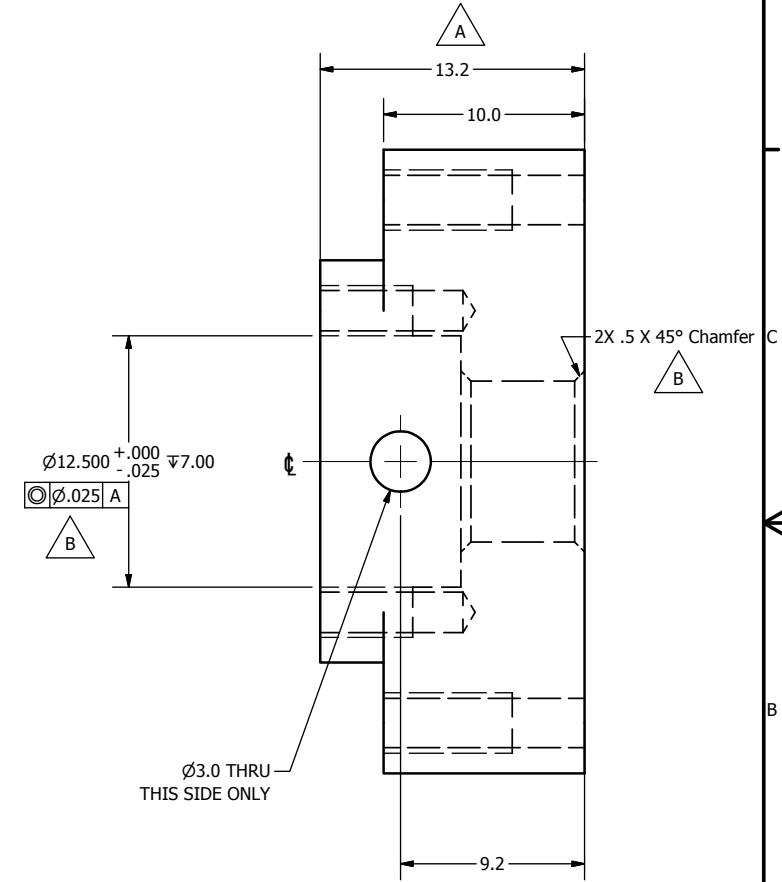
PROJECT NO.:	472-4730-1	QTY	1
MATERIAL:	472-4730-1	QTY	1
CHECKED BY:	D. WASHENKO	QTY	1
DATE:	1/12/2012	TOTAL QTY IN DUMMY	1



SCALE 2.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1TRM201 FOR THOR-M; 13.2 WAS 13.15	8/22/2011	DW
	B	ADD TOLERANCES, GD&T BOX, MISSING DIMENSION, AND NOTE	8/1/2012	BK

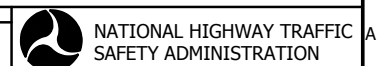


NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

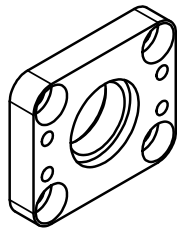
TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X .05 ± 0.07 1.6  
X.X ± 0.2  
X.XX ± 0.3  
X.XXX ± 0.01



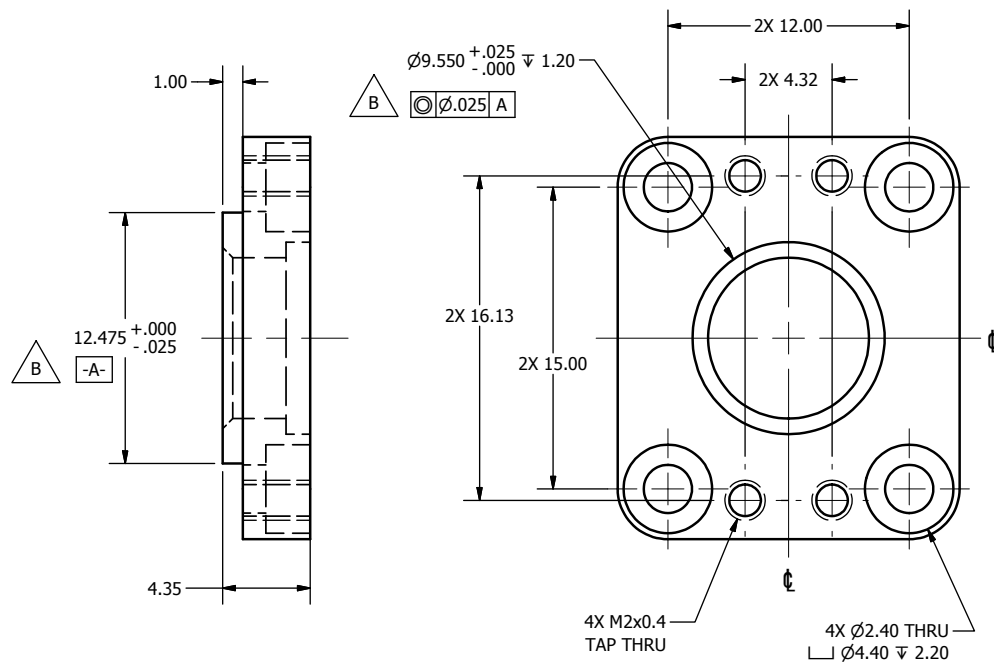
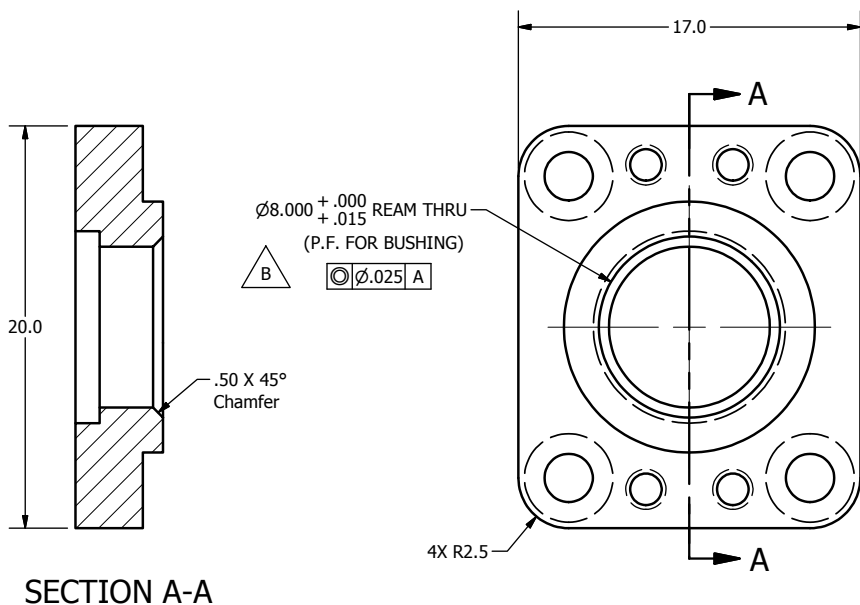
472-4740-2	1	PROJECT NO.:	DATE:	SIZE	SHEET	DRAWING NO.	REV.
472-4740-1	1	MATERIAL:	dwashenko	8/22/2011	A3	1 OF 1	B
NEXT ASSEMBLY	QTY	HEAT TREAT:					
TOTAL QTY IN DUMMY	2	FINISH:	D. WASHENKO	1/12/2012	SCALE:	4.000	

DESCRIPTION: BLOCK MOUNTING

472-4741

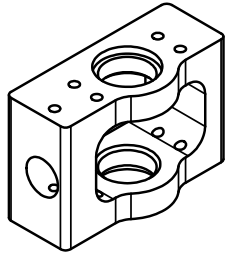


SCALE 2.000



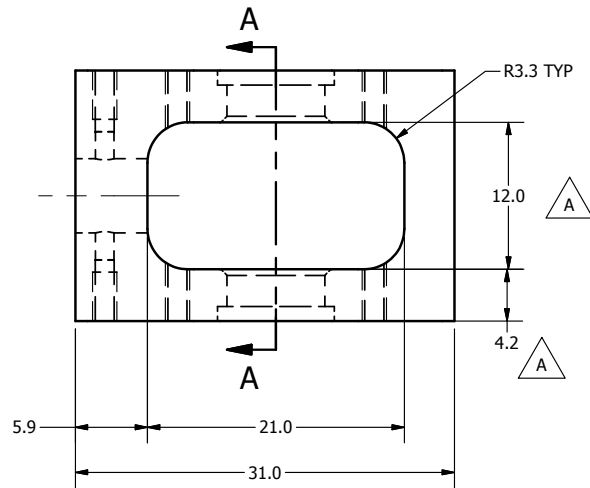
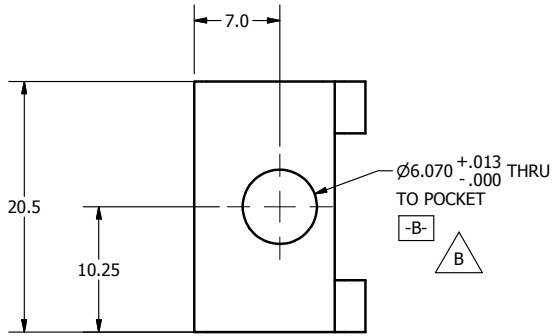
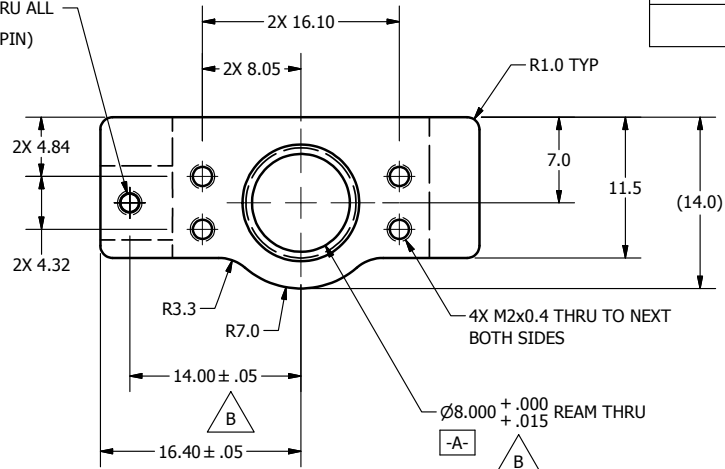
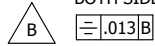
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM202 R00 FOR THOR-M	8/22/2011	DW
	B	ADD TOLERANCES, GD&T BOXES; Ø12.475 WAS Ø12.48	8/1/2012	BK

472-4740-2		1	PROJECT NO.:	DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	DESCRIPTION: COVER
472-4740-1		1	MATERIAL:	THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 0.5 1.6 XX 0.2 0.5 1.6 XXX 0.3 0.5 1.6 XXXX 0.01			
NEXT ASSEMBLY		QTY	HEAT TREAT:	REMOVE BURRS & BREAK SHARP EDGES		DATE:		SIZE: SHEET	DRAWING NO.:
TOTAL QTY IN DUMMY		2	FINISH:	DRAWN BY:		DATE:		A3 1 OF 1	472-4742
				D. WASHENKO		1/12/2012		SCALE: 4.000	B

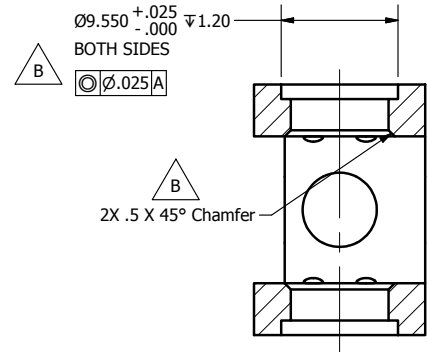


SCALE 1.50

$\varnothing 1.510^{+.010}_{-.000}$  DRILL THRU ALL  
(FOR S.F.  $\varnothing 1.5$  DOWEL PIN)  
TAP M2X0.4  $\nabla 4.0$   
BOTH SIDES



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM203 R00 FOR THOR-M; 12.0 WAS 12.02; 4.2 WAS 4.24	8/22/2011	DW
	B	ADD ADD TOLERANCES, GD&T BOXES, MISSING DIMENSIONS; ADD CHAMFER	8/1/2012	BK



SECTION A-A

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X.X 0.0 0.5  
X.XX 0.1 1.6  
X.XXX 0.01 3.2

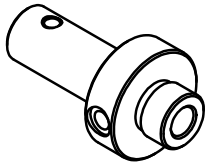


NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

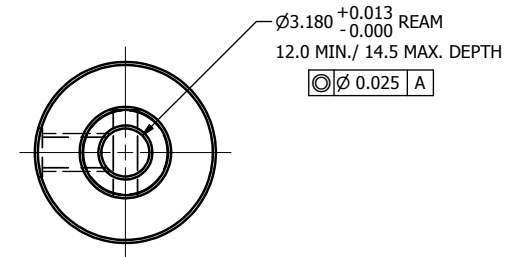
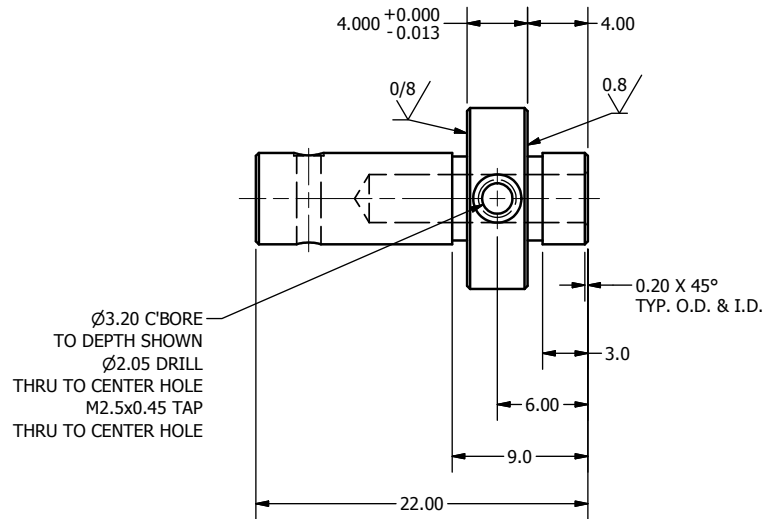
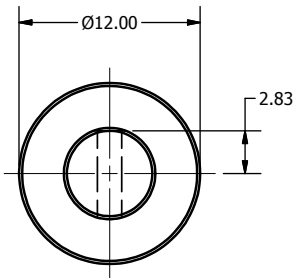
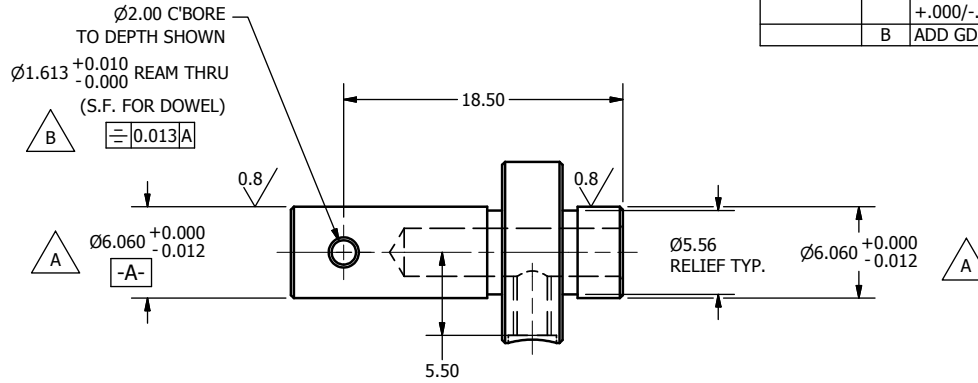
472-4740-2	1	PROJECT NO.		DESCRIPTION:	BLOCK PIVOT
472-4740-1	1	MATERIAL:	7075-T6 Aluminum	DRAWN BY:	dwashenko
NEXT ASSEMBLY	QTY	DATE:	8/22/2011	CHECKED BY:	
TOTAL QTY IN DUMMY	2	FINISH:	CLEAR ANODIZE	ENGINEER:	D. WASHENKO

SIZE:	B	SHEET:	1 OF 1	DRAWING NO.:	472-4743
SCALE:	2.5	DATE:	1/12/2012	BY:	B





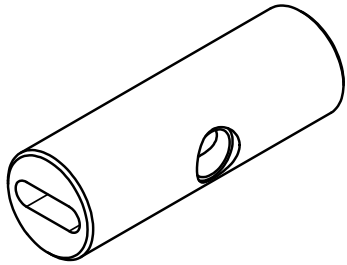
SCALE 2.000



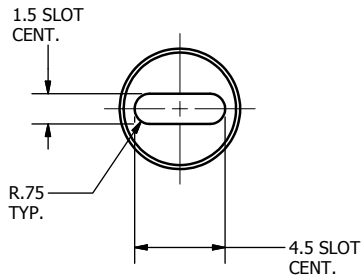
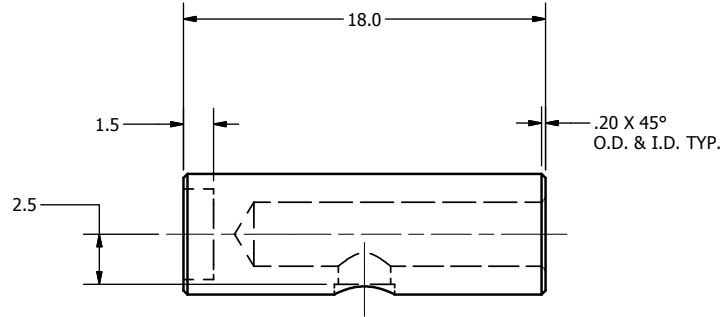
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T11RM204 R00 FOR THOR-M; $\varnothing 1.613^{+0.010/-0.000}$ WAS $\varnothing 1.613$ ; $\varnothing 6.060^{+0.000/-0.012}$ WAS $\varnothing 6.060^{+0.000/-0.013}$	9/1/11	DW
	B	ADD GD&T BOX	8/1/2012	BK

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.5 1.6 X 0.2 0.5 XX 0.3 0.5 XXX 0.01		
PROJECT NO:	472-4740-2	1	DATE:	6/17/2010
MATERIAL:	303 S.S. OR EQUIVALENT	1	DESIGNED BY:	ctorchala
NEXT ASSEMBLY	QTY	2	CHECKED BY:	
TOTAL QTY IN DUMMY	2	2	DATE:	1/12/2012
DESCRIPTION: SHAFT HORIZONTAL			SIZE: A3 SHEET: 1 OF 1 SCALE: 3.000	DRAWING NO.: 472-4744 REV: B

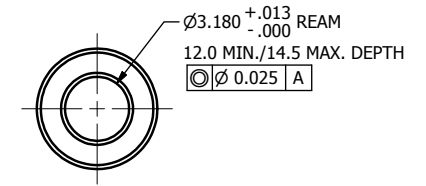
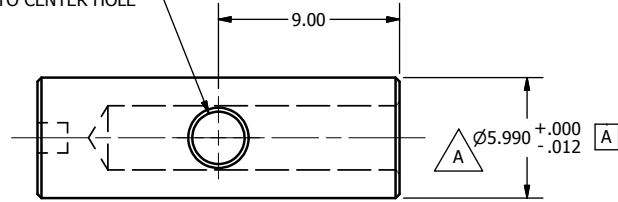
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM205 R00 FOR THOR-M; Ø5.990+-.000/-.012 WAS Ø5.990+-.000/-.013	9/1/11	DW



SCALE 4.000

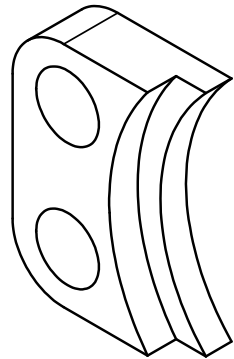


Ø3.00 C'BORE TO DEPTH SHOWN  
Ø2.60 DRILL THRU TO CENTER HOLE

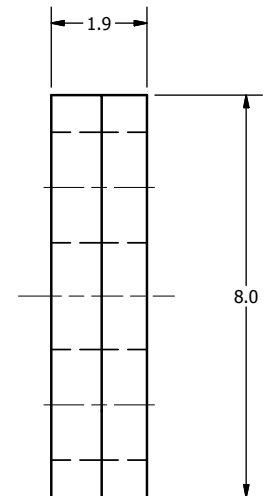
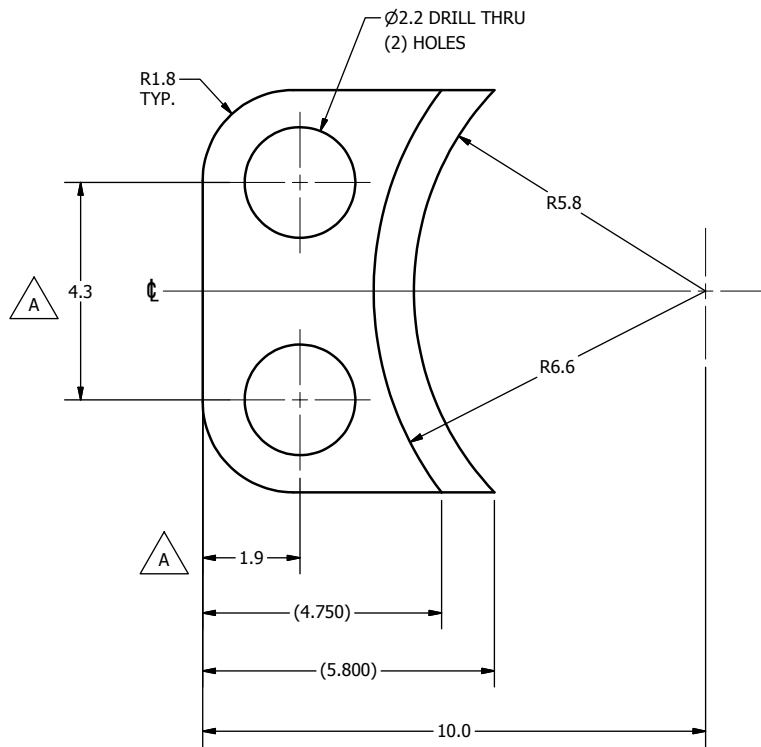
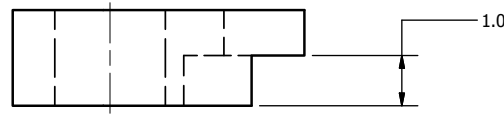


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-4740-2	1	DATE:	6/18/2010
MATERIAL:	303 S.S. OR EQUIVALENT	1	CHECKED BY:	ctorchala
HEAT TREAT:			DATE:	
CHECKED BY:			DATE:	
FINISH:			DATE:	
DRIVER:	D. WASHENKO		DATE:	1/12/2012
TOTAL QTY IN DUMMY:	2		SCALE:	4.000
DESCRIPTION:				SHAFT VERTICAL
SIZE SHEET:				A3 1 OF 1
DRAWING NO.:				472-4745
REV.:				A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM206 R00 FOR THOR-M; 4.3 EAS 4.32; 1.9 WAS 1.93	9/1/11	DW

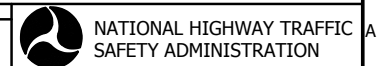


SCALE 8.000



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES		
UNLESS OTHERWISE SPECIFIED		
DIMENSIONS ARE IN MILLIMETERS	DECIMALS	ANGLES FINISH
0.5	± 0.07	1.6
0.2	± 0.03	✓
0.1	± 0.01	
0.01	± 0.001	



PROJECT NO.: 472-4740-2	QTY: 4	DATE: 6/18/2010	SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-4746	REV: A
MATERIAL: Aluminum-6061	DRIVER BY: ctorchala	DATE:	DESCRIPTION: CLAMP POT			
HEAT TREAT:	CHECKED BY:	DATE:	SCALE: 10.000			
FINISH: CLEAR ANODIZE	ENGINEER: D. WASHENKO	DATE: 1/12/2012				
TOTAL QTY IN DUMMY: 8						

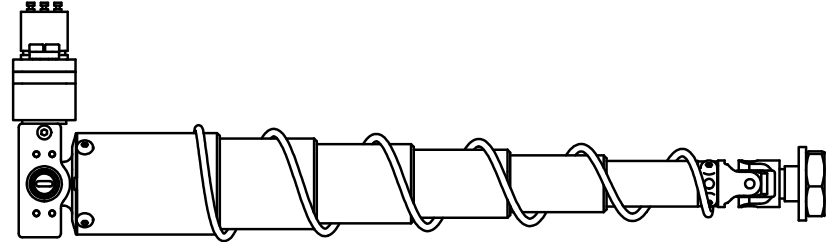
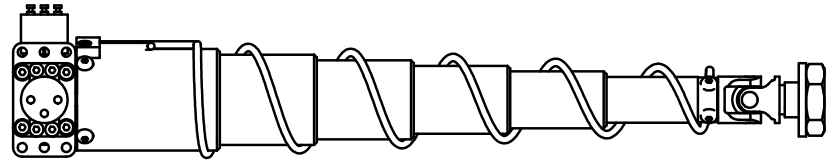
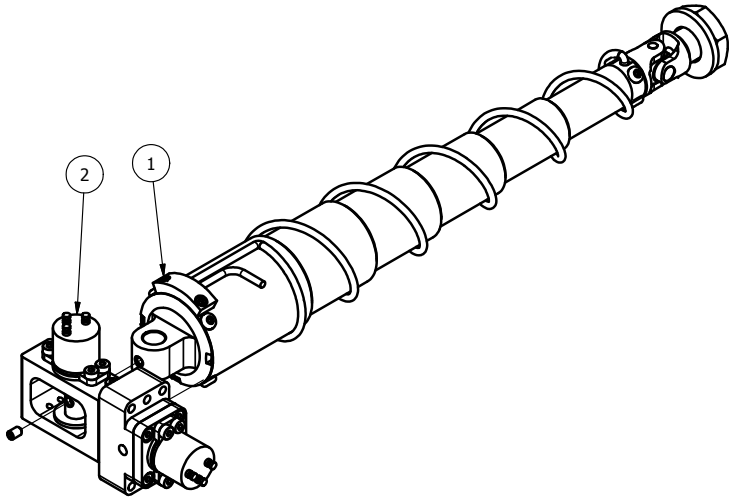
4

3

2

1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED AS NEW ASSEMBLY FOR THOR-M	8/23/2011	DW
	B	MADE PARTS UNTESTED	6/8/2012	JBH



NOTES:

1. ASSEMBLE IRTRACC TO PIVOT ASSEMBLY AS SHOWN.
2. PROVIDE INDIVIDUAL CERT SHEETS FOR IRTRACC AND (2) POTENTIOMETERS.



ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-4740-2-U	PIVOT ASSEMBLY, RIGHT UNTESTED
1	1	SA572-S121-U	120mm IRTRACC ASSEMBLY - METRIC UNTESTED

PARTS LIST

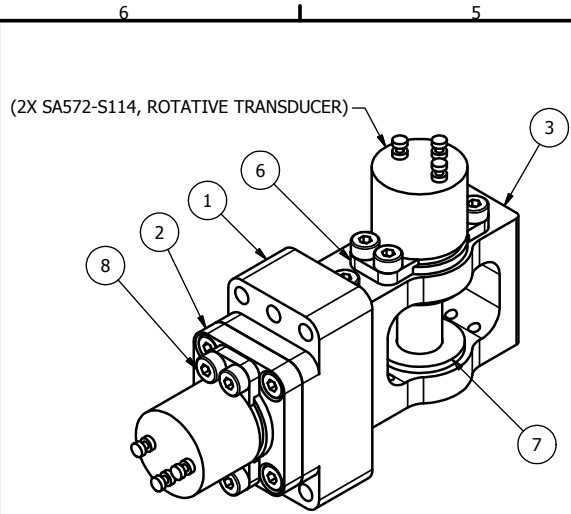
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X 0.02 0.5 1.6 X.XX 0.1 X.XXX 0.05		
PROJECT NO.	MATERIAL:	DRAWN BY:	DATE:	DESCRIPTION:
	HEAT TREAT:	CHECKED BY:	DATE:	3D IRTRACC ASSY, RIGHT, THOR ABDOMEN - METRIC
472-4700	1	D. WASHENKO	8/23/2011	
NEXT ASSEMBLY	QTY	ENGINEER:	DATE:	SIZE: B SHEET 1 OF 1
TOTAL QTY IN DUMMY	1	D. WASHENKO	1/12/2012	DRAWING NO.: 472-4730-2
		FINISH:		SCALE: .750

4

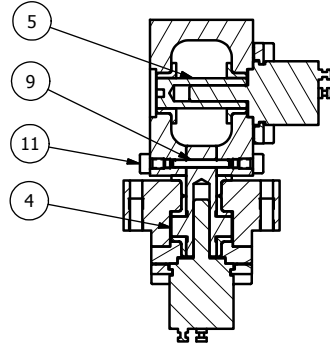
3

2

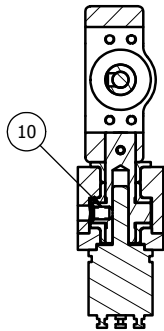
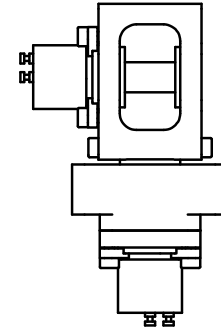
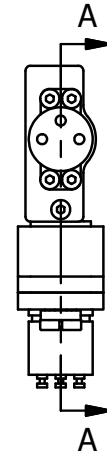
1



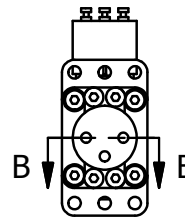
SCALE 1.50



SECTION A-A  
SCALE 1.0



SECTION B-B

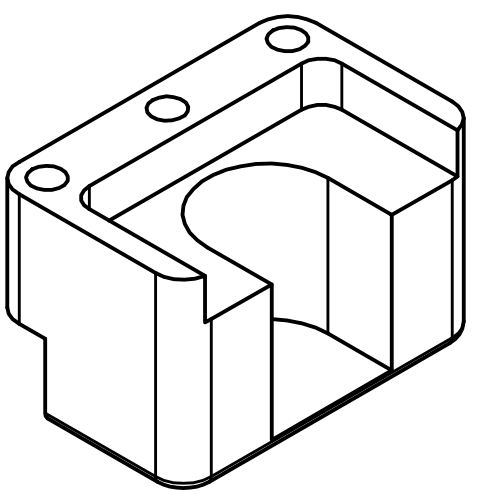


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1IRM202 R00 AND CONVERTED TO METRIC FOR THOR-M; CREATE RIGHT SIDE	8/22/2011	DW

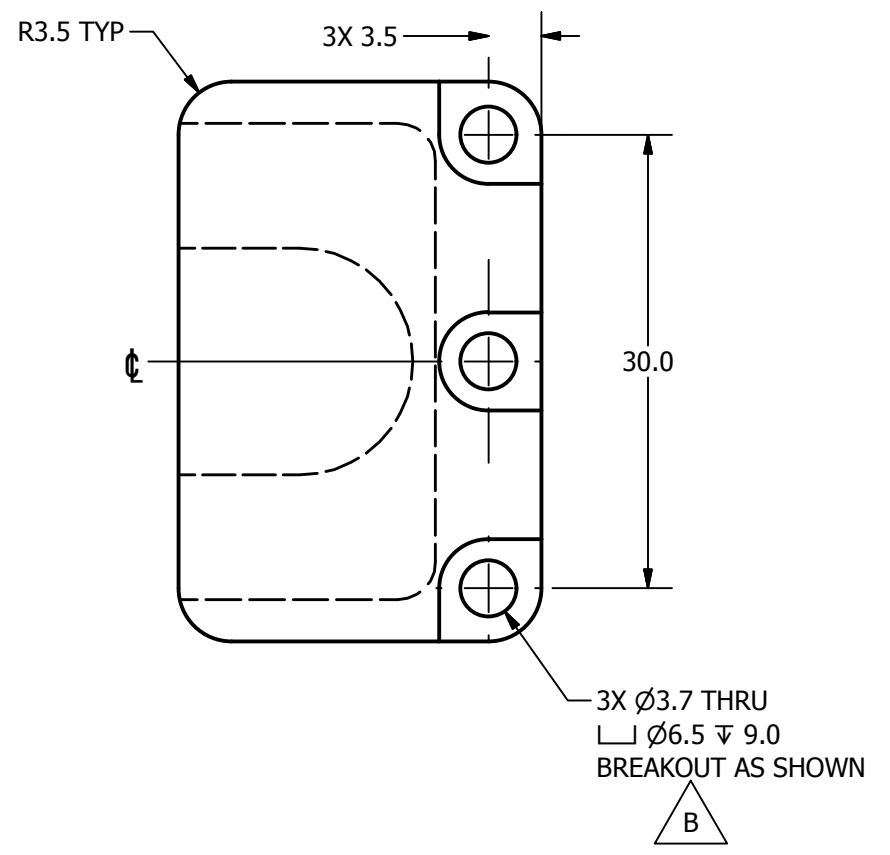
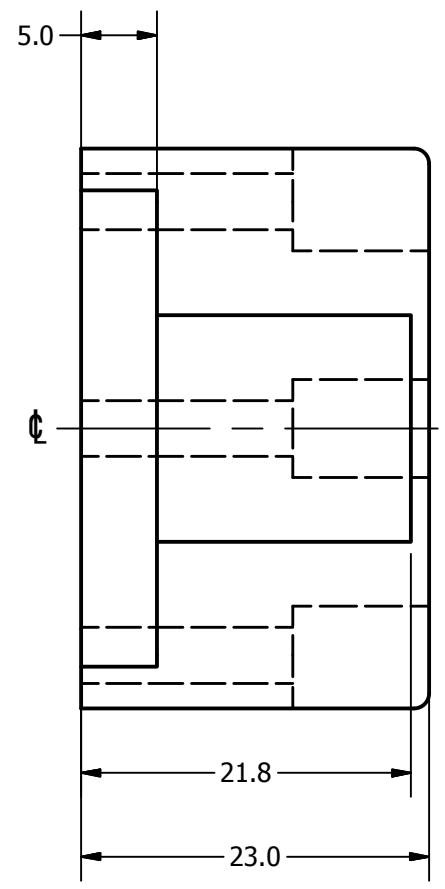
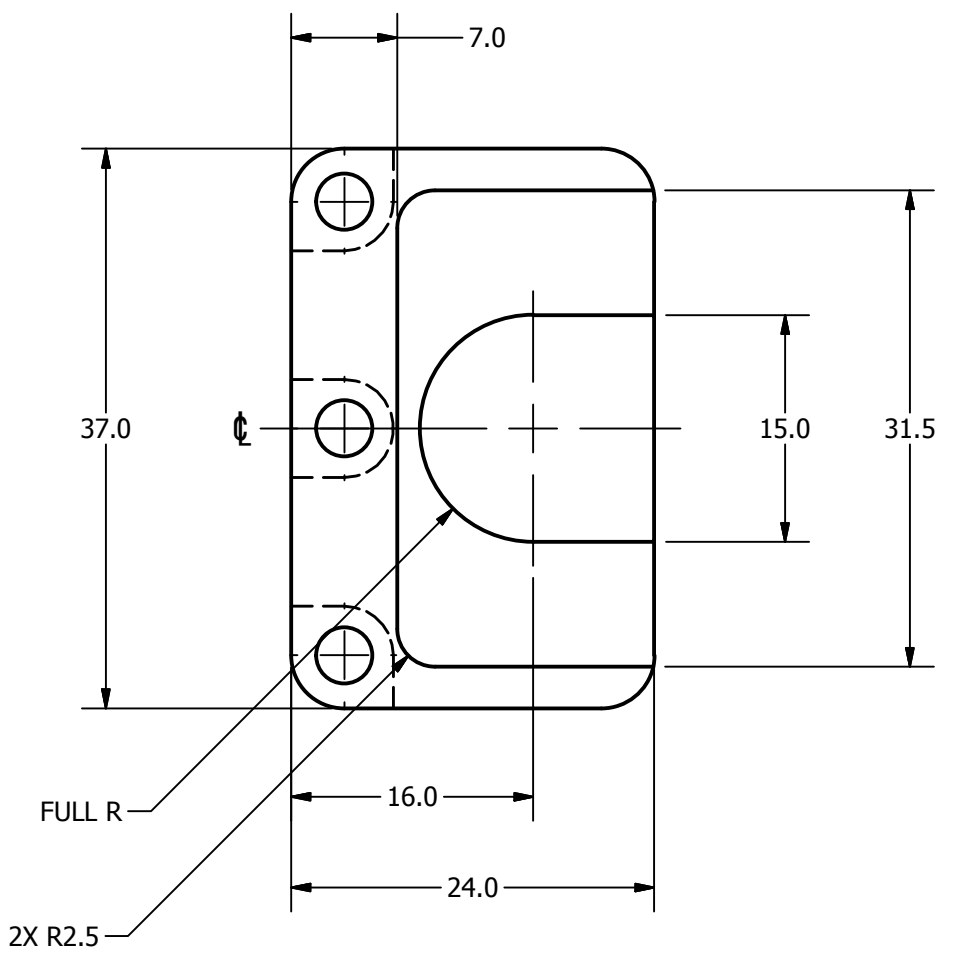
ITEM	QTY	PART NUMBER	DESCRIPTION
11	2	5001136	M2 X 0.4 X 3 LG. SHCS
10	1	5001043	M2.5 X 0.45 X 4 LG. SSSCP SS
9	1	5000514	M1.5 X 12 LG. DOWEL SS
8	12	5001079	M2 X 0.4 X 5 LG. SHCS
7	5	5000949	FLANGE BEARING 6 X 8 X 4 LG.
6	4	472-4746	CLAMP POT
5	1	472-4745	SHAFT VERTICAL
4	1	472-4744	SHAFT HORIZONTAL
3	1	472-4743	BLOCK PIVOT
2	1	472-4742	COVER
1	1	472-4741	BLOCK MOUNTING

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DECIMALS ANGLES FINISH X ±0.05 1.6 X.X ±0.2 X.XX ±0.3 X.XXX ±0.01	
PROJECT NO.: 472-4730-2	DATE: 8/22/2011	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
MATERIAL: NEXT ASSEMBLY	QTY: 1	DESCRIPTION: PIVOT ASSEMBLY, RIGHT	
CHECKED BY: D. WASHENKO	DATE: 1/12/2012	SIZE: SHEET A3 1 OF 1	DRAWING NO.: 472-4740-2
TOTAL QTY IN DUMMY:	1	SCALE: 1.000	REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM018 R2 FOR THOR-M; ADD NOTE 1	8/22/2011	DW
	B	ADDED BREAKOUT TO COUNTERBORE	8/14/2014	DW



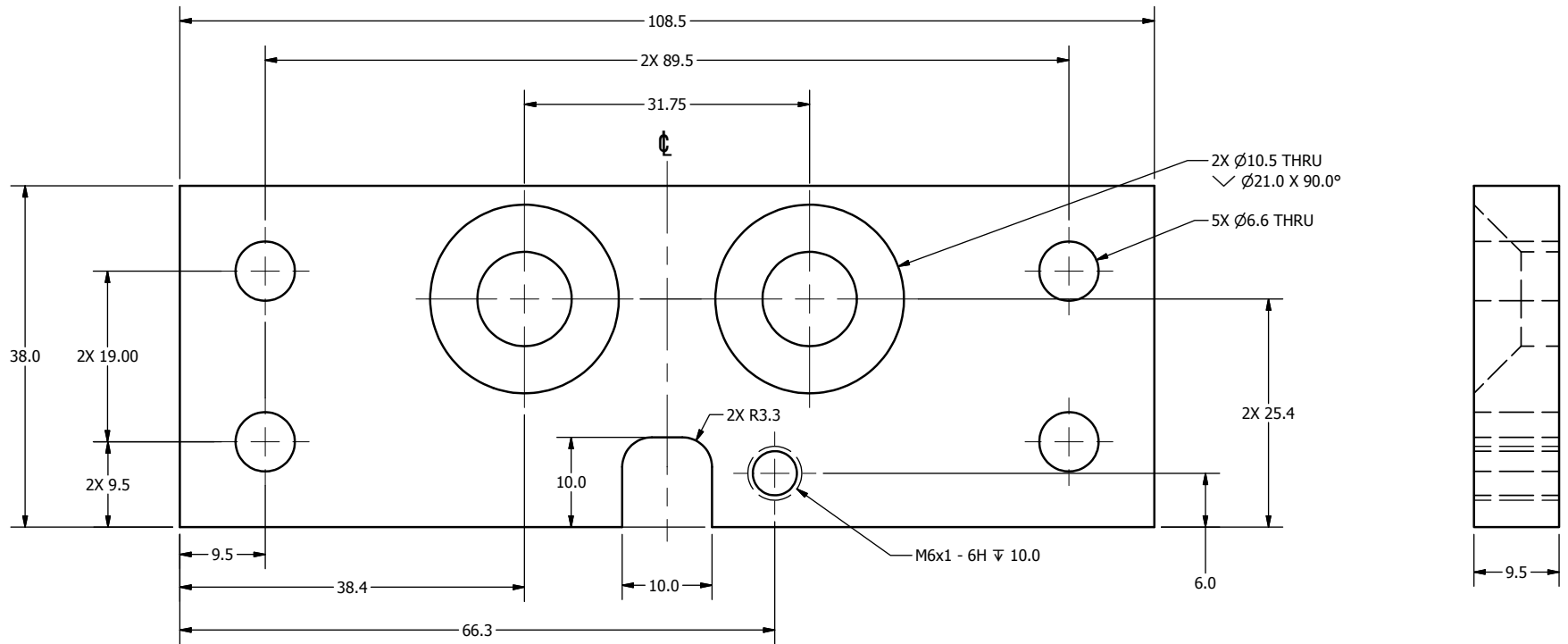
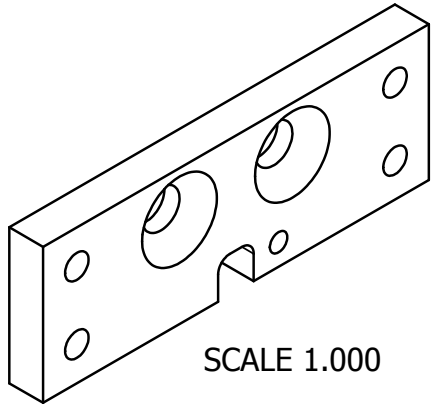
SCALE 1.5



NOTES:  
 A 1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ±0.5 1.6 XX ±0.2 ±0.5 1.6 XXX ±0.1 ±0.5 1.6 XXXX ±0.01 ±0.5 1.6		
PROJECT NO.: THOR-M	REMOVE BURRS & BREAK SHARP EDGES	DRAWN BY: dwashenko		DESCRIPTION: POTENTIOMETER COVER
472-4700	QTY	HEAT TREAT:	DATE: 8/22/2011	SIZE: A3
NEXT ASSEMBLY	2	ENGINEER: D. WASHENKO	DATE: 1/12/2012	SHEET 1 OF 1
TOTAL QTY IN DUMMY	2	SCALE: 2.000	DRAWING NO.: 472-4760	REV: B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM010 R03 AND CONVERTED TO METRIC FOR THOR-M	9/1/2011	DW



NOTES:

1. POWDER OR BEAD BLAST.
2. NICKEL PLATE 0.003mm-0.008mm MAX. AFTER MACHINING.
3. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X .05 ± 0.07 1.6  
X.X ± 0.2  
X.XX ± 0.3  
X.XXX ± 0.01



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO:	472-4700	QTY	1	MATERIAL:	1018 STEEL	DATE:	9/1/2011	SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:	472-4761	REV.:	A
HEAT TREAT:		TOTAL QTY IN DUMMY	1	FINISH:	SEE NOTES	ENGINEER:	D. WASHENKO	DATE:	1/12/2012	SCALE:	2.000	DESCRIPTION:	REAR ATTACHMENT PLATE		

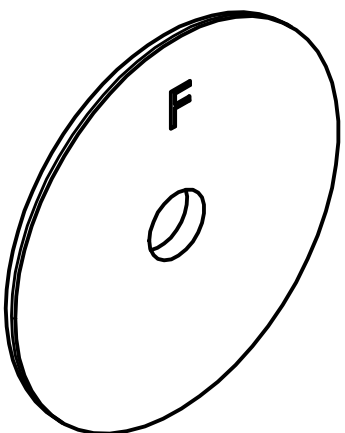
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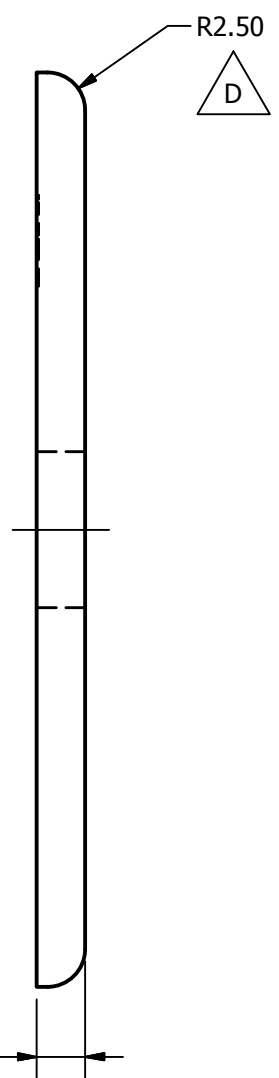
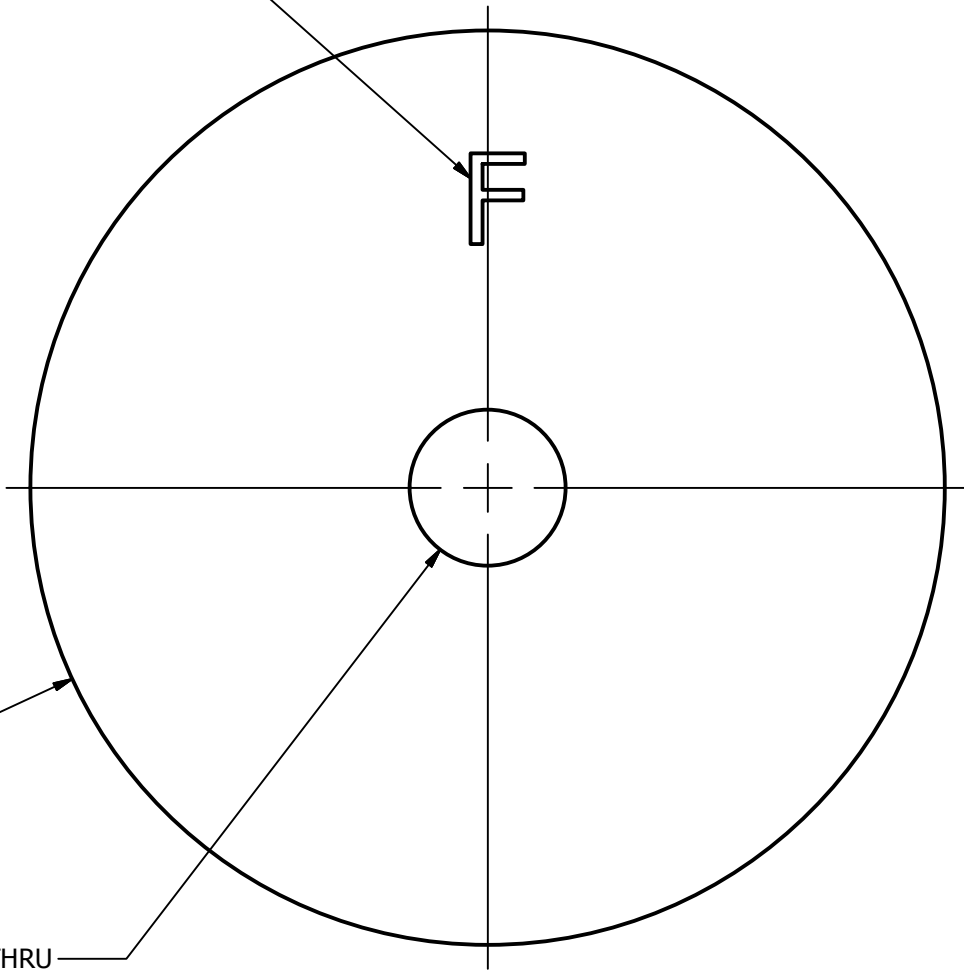
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REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM014 R1 FOR THOR-M	9/1/2011	DW
	B	Ø10.3 THRU C'BORE Ø14.0 WAS Ø12.7 THRU C'BORE Ø19.05	6/20/2012	BK
	C	REMOVE C'BORE FROM HOLE	2/14/2013	BK
	D	ADDED R2.5 AND NOTE 1	4/29/2014	DW



SCALE 1.000

SEE NOTE 1



NOTES:

- 1. STAMP OR ETCH "F" AS SHOWN.

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
DECIMALS	ANGLES	FINISH	
X ±0.5	±0.5°	1.6	
XX ±0.2			
XXX ±0.1			
XXXX ±0.01			
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	
472-4700	2	MATERIAL: Acetal Resin, Black	DRAWN BY: dwashenko
NEXT ASSEMBLY	QTY	HEAT TREAT:	DATE: 9/1/2011
TOTAL QTY IN DUMMY	2	FINISH:	CHECKED BY:
			DATE:
		ENGINEER: D. WASHENKO	DATE: 1/12/2012

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: LOWER ABDOMEN DISTRIBUTION PLATE

SIZE: SHEET **B 1 OF 1** DRAWING NO.: **472-4762** REV: **D**

SCALE: 2.000

4

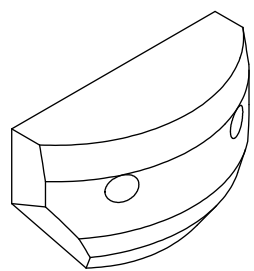
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2

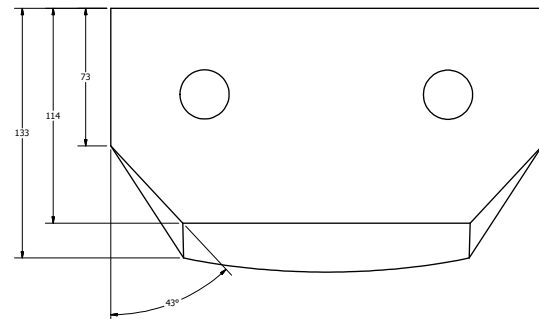
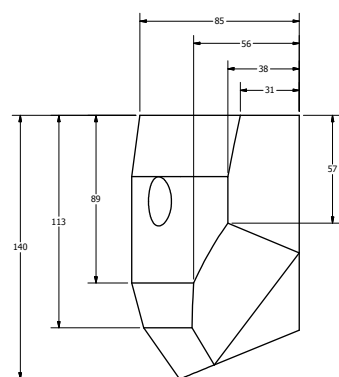
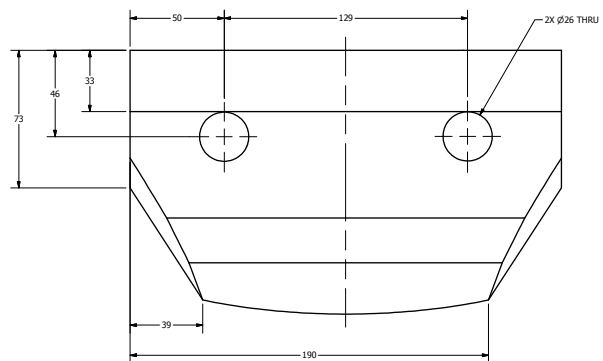
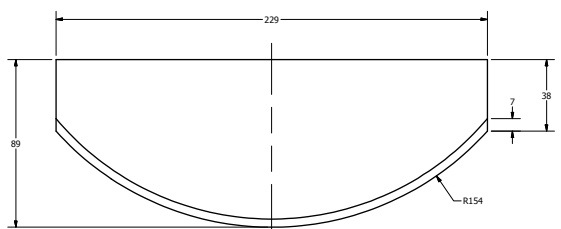
1



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	5	CONVERTED FROM ENGLISH TO METRIC EXCLUDING FASTENERS	9/20/2006	C. SPADE
	A	RENUMBERED FROM Y1L4M012 R05 FOR THOR-M	12/8/2011	BK



SCALE .500



- NOTES:
- MATERIAL: CHARCOAL POLYESTER FOAM WITH NOMINAL DENSITY OF 6 LBS/CU FT  
SAE J18 SPECIFICATION: 1A0  
1- OPEN CELL  
A- NONCIL RESISTANT  
O- COMPRESSION DEFLECTION 25% 3.5-14 KPA (0.5-2 PSI)
  - NOMINAL STIFFNESS @ 75% COMPRESSION: 43+3 KPA (6.2+0.5 PSI)  
@ 90% COMPRESSION: 420+30 KPA (62+0.5 PSI)  
REFER TO CERTIFICATION MANUAL FOR PERFORMANCE SPECIFICATIONS FOR THIS PART.

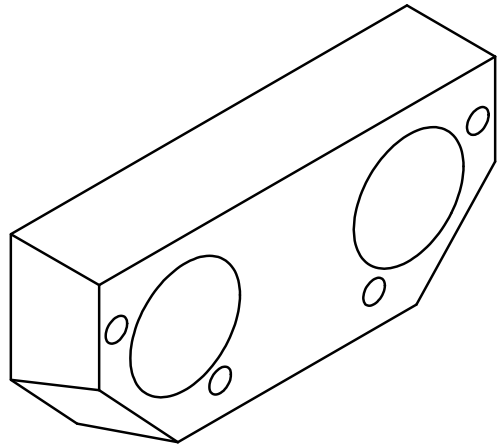
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-4760	1	SEE NOTES	B. KIMES	12/8/2011	LOWER ABDOMEN FRONT FOAM LAYER
TOTAL QTY IN DRAWING	1				



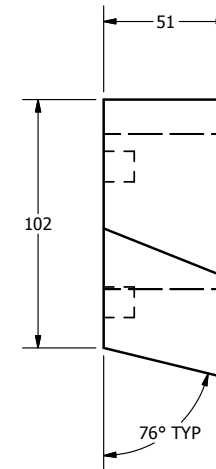
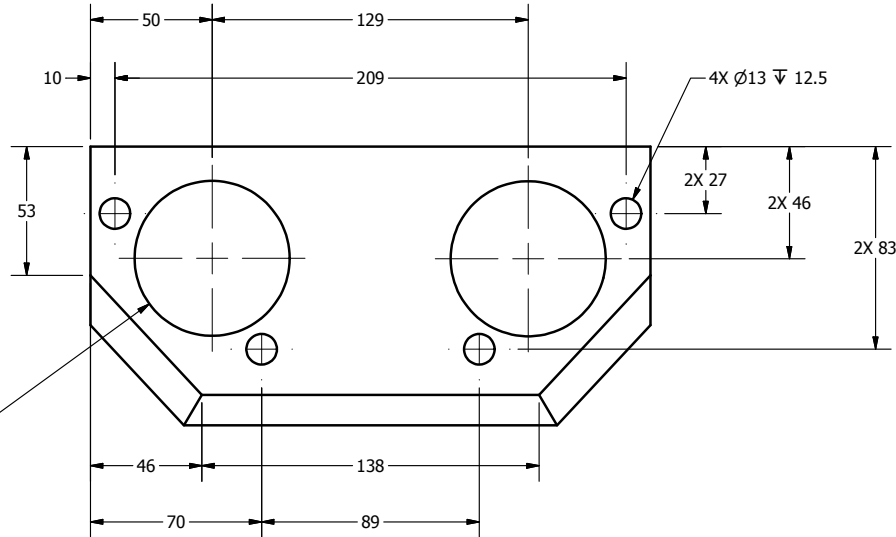
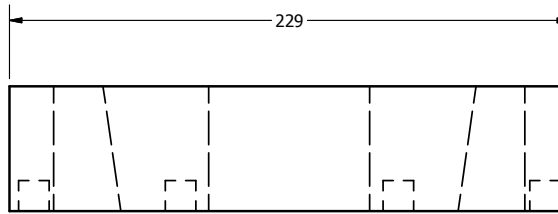
LOWER ABDOMEN FRONT FOAM LAYER

1 of 1

472-4764



SCALE .500



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAM013 R5 FOR THOR-M	9/1/2011	DW

NOTES:  
 THE FOAM MATERIAL IS BLENDED SPONGE RUBBER  
 NEOPRENE / EPDM / SBR FOAM RUBBER (NOMINAL DUROMETER 20A± 5A)  
 SAE J18 SPECIFICATION: 1A5  
 1-OPEN CALL FOAM  
 2-NON-OIL RESISTANT  
 S-COMPRESSION DEFELCTION 25% 119-168 kPa (17-24 PSI)

NOMINAL STIFFNESS @ 50% COMPRESSION: 200± 15 kPa (29± 2 PSI)  
 REFER TO THE CERTIFICATION MANUAL FOR PERFORMANCE SPECIFICATION FOR THIS PART.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION DESCRIPTION: LOWER ABDOMEN REAR FOAM LAYER
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X .0.5 0.5 1.6 X.XX 0.1 0.1 1.6 X.XXX 0.05 0.1 1.6		
PROJECT NO.	472-4700	DATE:	9/1/2011	SIZE: B
DRAWN BY:	SEE NOTES	CHECKED BY:	dwashenko	SHEET: 1 OF 1
NEXT ASSEMBLY	QTY	ENGINEER:	D. WASHENKO	DATE: 1/12/2012
TOTAL QTY IN DUMMY	1	SCALE:	.500	DRAWING NO.: 472-4765

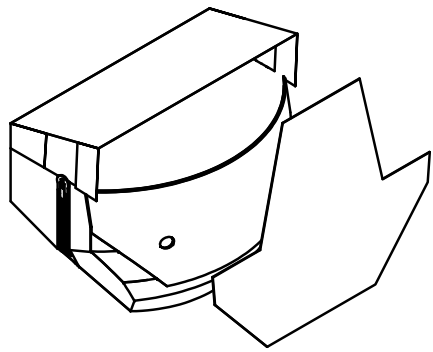
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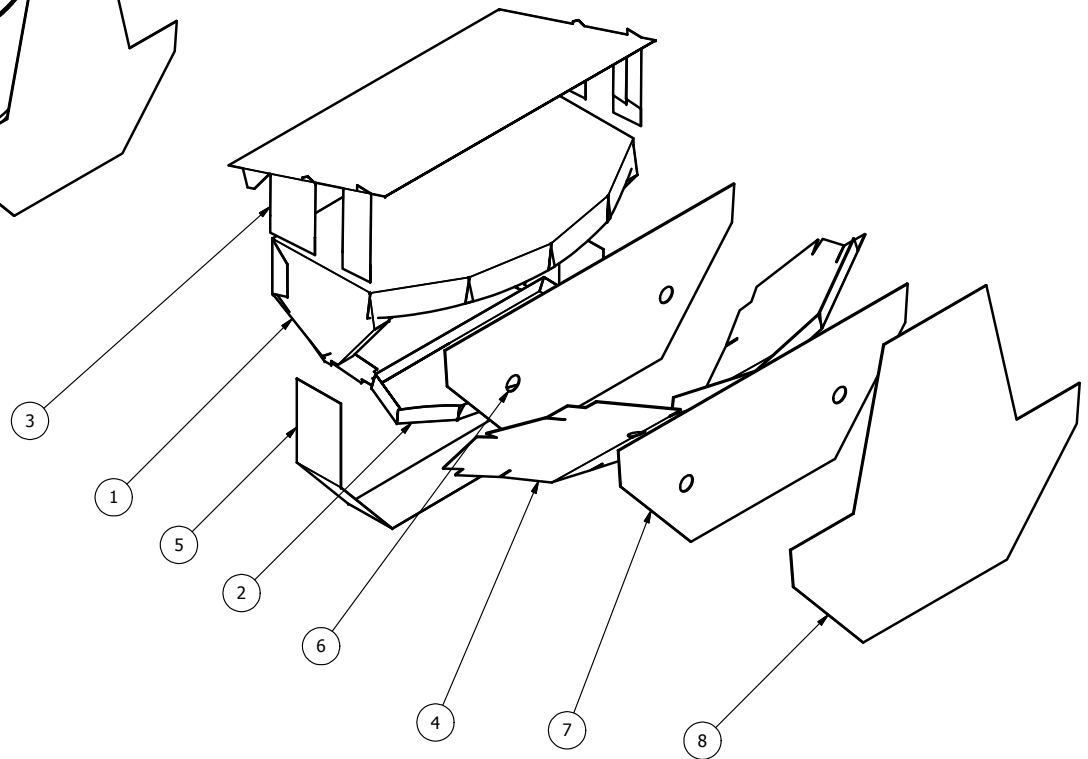
2

1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TILAF101 R1 FOR THOR-M	9/8/2011	DW
	B	SHOW VELCRO PATCH AND COVER IN CORRECT LOCATION; ADD NOTE 4	4/3/2012	BK



SCALE .250



ITEM	QTY	PART NUMBER	DESCRIPTION
8	1	472-4763-8	UPPER AND LOWER ABDOMEN VELCRO COVER
7	1	472-4763-7	LOWER ABDOMEN OUTSIDE VLECOR PATCH
6	1	472-4763-6	LOWER ABDOMEN STIFFENING CLOTH
5	1	472-4763-5	LOWER ABDOMEN ZIPPER
4	1	472-4763-4	LOWER ABDOMEN FRONT PATTERN
3	1	472-4763-3	LOWER ABDOMEN TOP POCKET PATTERN
2	1	472-4763-2	LOWER ABDOMEN BOTTOM BAG PATTERN
1	1	472-4763-1	LOWER ABDOMEN TOP / SIDES / REAR PATTERN

NOTES:

- EXPLODED VIEW SHOWS SOME COMPONENTS IN PARTIALLY FOLDED STATE.
- ISO VIEW SHOWS COMPONENTS IN IDEAL STATE.
- STITCH ALL ADJACENT TABS TO FORM SEWN ASSEMBLY AS SHOWN. SEE INDIVIDUAL PATTERN DRAWINGS FOR MORE INFORMATION.
- 472-4763-8 ASSEMBLES BETWEEN THE LOWER AND UPPER ABDOMEN AT THORAX ASSEMBLY.

DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X 0.0 0.0 1.6 X.XX 0.1 X.XXX 0.05 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.	MATERIAL:	DRAWN BY:	DATE:	DESCRIPTION:
472-4700	1	dwashenko	9/8/2011	LOWER ABDOMEN SEWING ASSEMBLY
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	SIZE: B 1 OF 1
TOTAL QTY IN DUMMY	1	ENGINEER:	DATE:	DRAWING NO.: 472-4763
		D. WASHENKO	1/12/2012	SCALE: .333

4

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B

B

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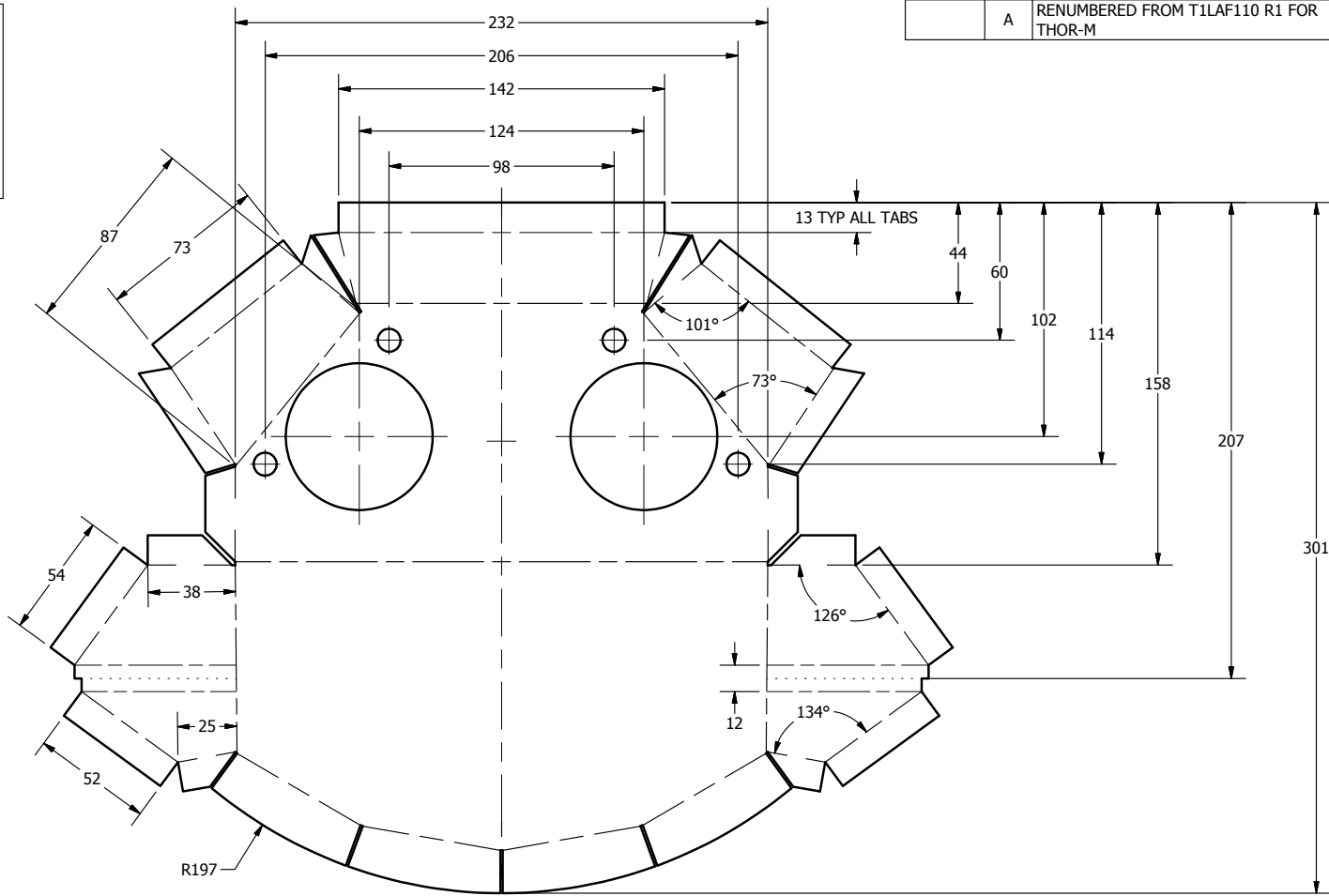
2

1

**LEGEND**

- PATTERN EDGE
- - - FOLD LINE
- ..... CUT LINE

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAF110 R1 FOR THOR-M	9/8/2011	DW



- NOTES:**
1. USE CORDURA NYLON FABRIC (1000 DENIER NYLON - 10 OZ/YD)
  2. ADD HOLES AFTER SEWING.
  3. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING OUT MATERIAL.
  4. PATTERN IS SYMMETRICAL ABOUT CENTERLINE.

<b>DO NOT SCALE DRAWING</b>		<b>TOLERANCES</b>		<p><b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b></p>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS: ±0.2    ANGLES: ±0.5    FINISH: ✓ XX: ±0.2    ANGLES: ±0.5    FINISH: ✓ XXX: ±0.1    ANGLES: ±0.25    FINISH: ✓ XXXX: ±0.08    ANGLES: ±0.25    FINISH: ✓		
PROJECT NO.	DATE:	DESIGNED BY:	DATE:	DESCRIPTION:
472-4763	1	SEE NOTES	9/8/2011	LOWER ABDOMEN TOP / SIDES / REAR PATTERN
NEXT ASSEMBLY	QTY	DRAWN BY:	DATE:	SIZE: B 1 OF 1
TOTAL QTY IN DUMMY	1	dwashenko	1/12/2012	SCALE: 1.000
		CHECKED BY:	DATE:	DRAWING NO.: 472-4763-1
		D. WASHENKO	1/12/2012	REV: A

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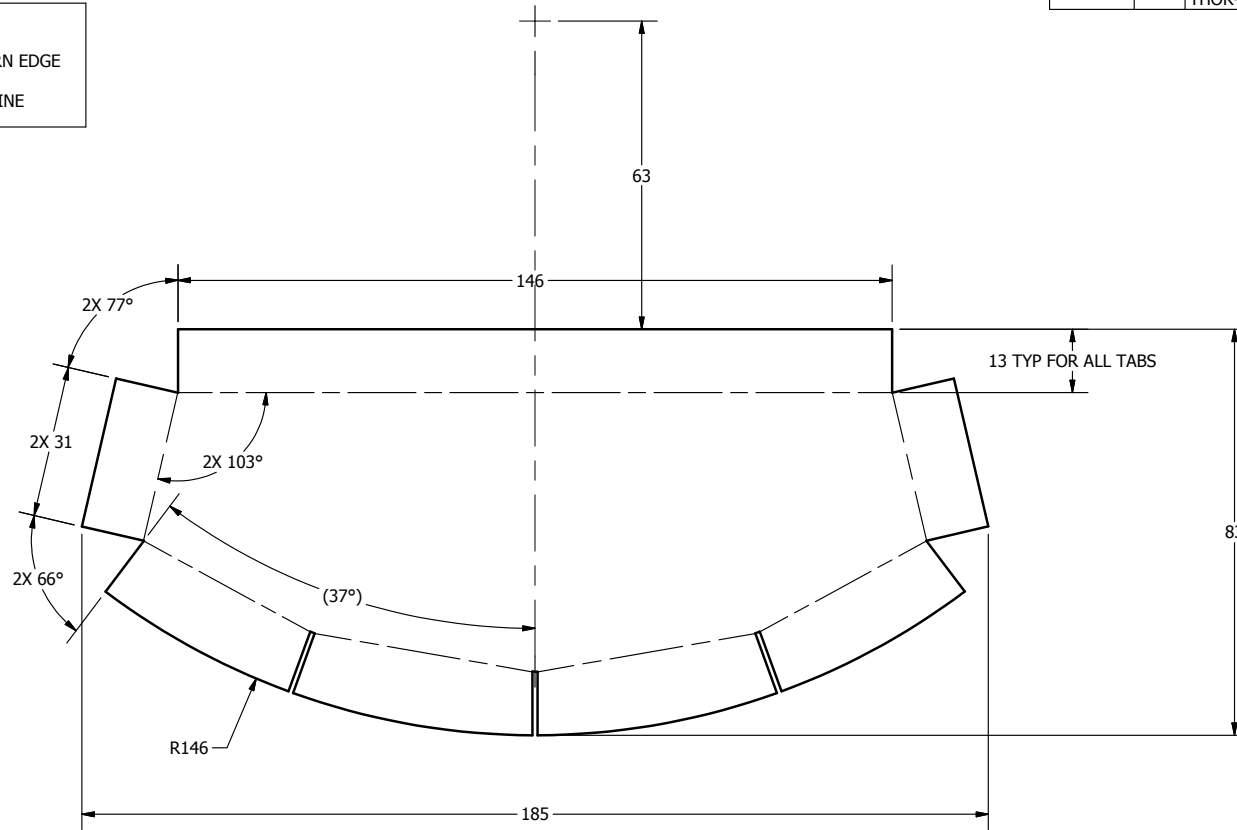
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1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAF111 R1 FOR THOR-M	9/8/2011	DW

LEGEND	
	PATTERN EDGE
	FOLD LINE



NOTES:

1. MATERIAL: CORDURA NYLON FABRIC (1000 DENIER NYLON - 10 OZ/YD.)
2. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING OUT MATERIAL.

DO NOT SCALE DRAWING  
  
THIRD ANGLE PROJECTION

TOLERANCES		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		
DIMENSIONAL	ANGLES	FINISH
X.X ±0.2	±0.5	F.6
X.XX ±0.1		
X.XXX ±0.05		

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO.	472-4763	DATE:	9/8/2011	DESCRIPTION:	LOWER ABDOMEN BOTTOM BAG PATTERN
DRAWN BY:	SEE NOTES	DRAWN BY:	dwashenko	DATE:	9/8/2011
CHECKED BY:		CHECKED BY:		DATE:	
ENGINEER:		ENGINEER:	D. WASHENKO	DATE:	1/12/2012
TOTAL QTY IN DUMMY	1	SIZE:	B	SHEET:	1 OF 1
		SCALE:	1:000	DRAWING NO.:	472-4763-2

4

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1



4

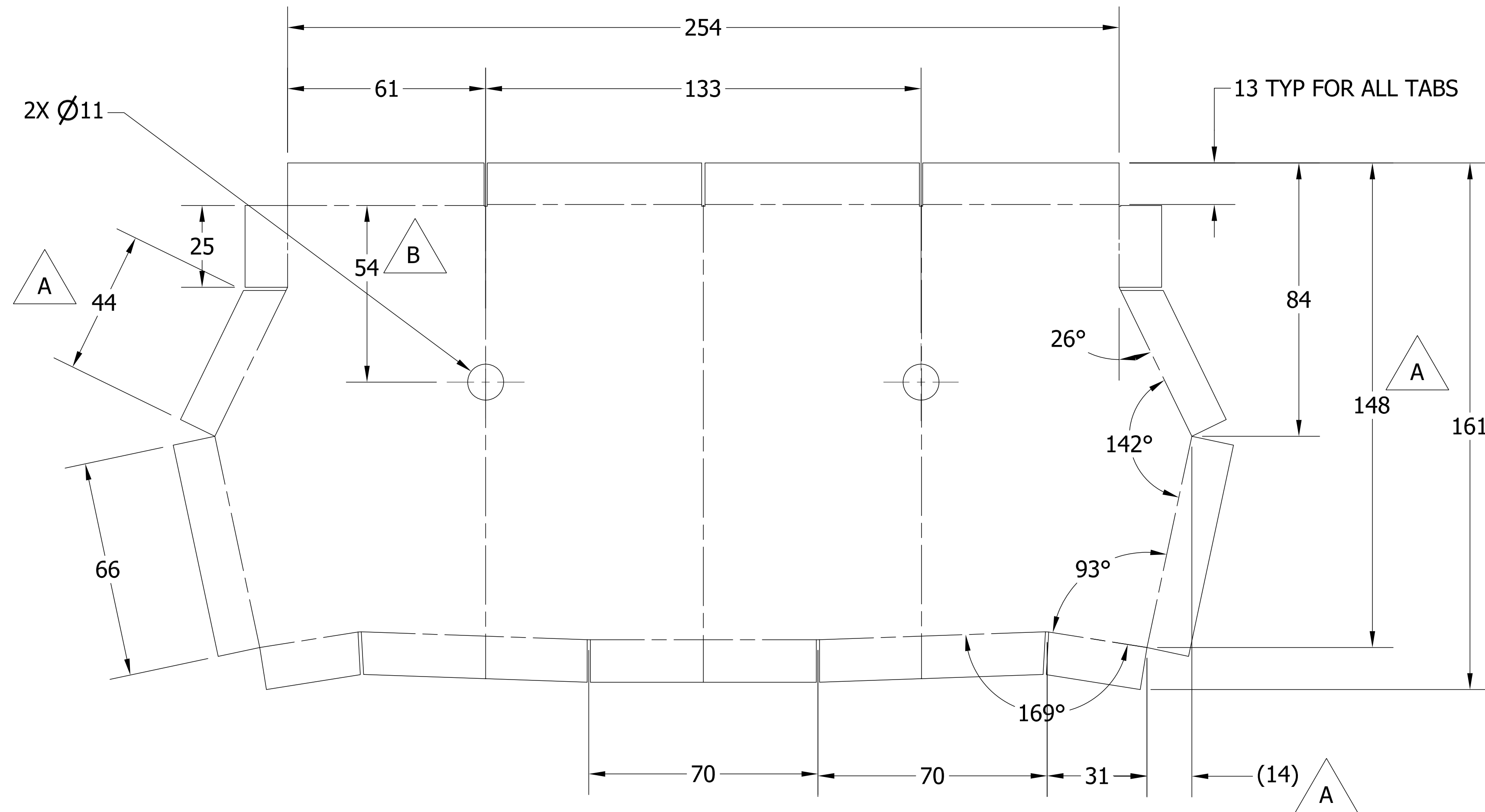
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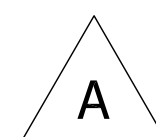
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAF113 R1 FOR THOR-M; ADD NOTE 4; 44 WAS 45, 148 WAS 150, (14) WAS 15	9/8/2011	DW
	B	DIMENSION 54 WAS FROM EDGE OF MATERIAL	8/12/2014	DW

LEGEND	
	PATTERN EDGE
	FOLD LINE

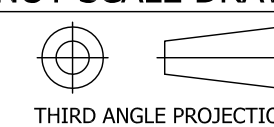


NOTES:

1. MATERIAL: CORUDRA NYLON FABRIC (1000 DENIER NYLON - 10 OZ/YD)
2. ADD HOLES AFTER SEWING.
3. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING OUT MATERIAL.
4. DIMENSIONS ARE SYMMETRIC ABOUT CENTERLINE.



DO NOT SCALE DRAWING



THIRD ANGLE PROJECTION

TOLERANCES

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS

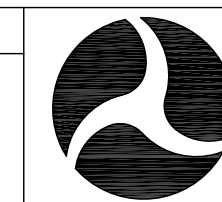
DECIMALS	ANGLES	FINISH
X ± 0.5	± 0.5°	1.6
X.X ± 0.2		
X.XX ± 0.1		
X.XXX ± 0.01		

REMOVE BURRS & BREAK SHARP EDGES

DRAWN BY: dwashenko DATE: 9/8/2011

CHECKED BY: DATE:

ENGINEER: D. WASHENKO DATE: 1/12/2012



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: LOWER ABDOMEN FRONT PATTERN

SIZE: D SHEET: 1 OF 1 SCALE: 1.000

DRAWING NO.: 472-4763-4 REV: B

4

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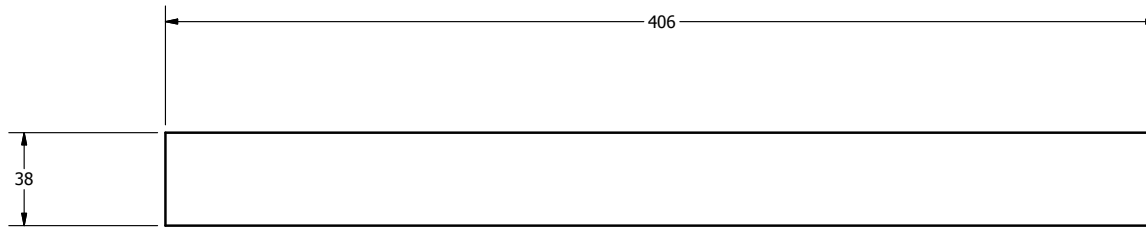
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1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAF114 R2 FOR THOR-M	9/8/2011	DW



NOTES:

1. ZIPPER SHOWN AS EXTERNAL SHAPE ONLY.
2. SIZE: #10, LENGTH: 406mm, MATERIAL: BROWN POLYESTER METAL (BRASS), ZIPPER TYPE: OPEN TOP - CLOSED BOTTOM STYLE.
3. THE END SHOULD BE SEWN TOGETHER TO PREVENT THE SLIDER FROM PULLING OFF THE TRACK.

<b>DO NOT SCALE DRAWING</b>		<b>TOLERANCES</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X 0.0 0.5 1.6 X.XX 0.1 X.XXX 0.05		
PROJECT NO.	DATE:	DRAWN BY:	DATE:	DESCRIPTION:
472-4763	1	SEE NOTES	9/8/2011	LOWER ABDOMEN ZIPPER
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	SIZE: B
TOTAL QTY IN DUMMY	1	ENGINEER:	DATE:	SHEET: 1 OF 1
		D. WASHENKO	1/12/2012	DRAWING NO.: 472-4763-5
				SCALE: A

4

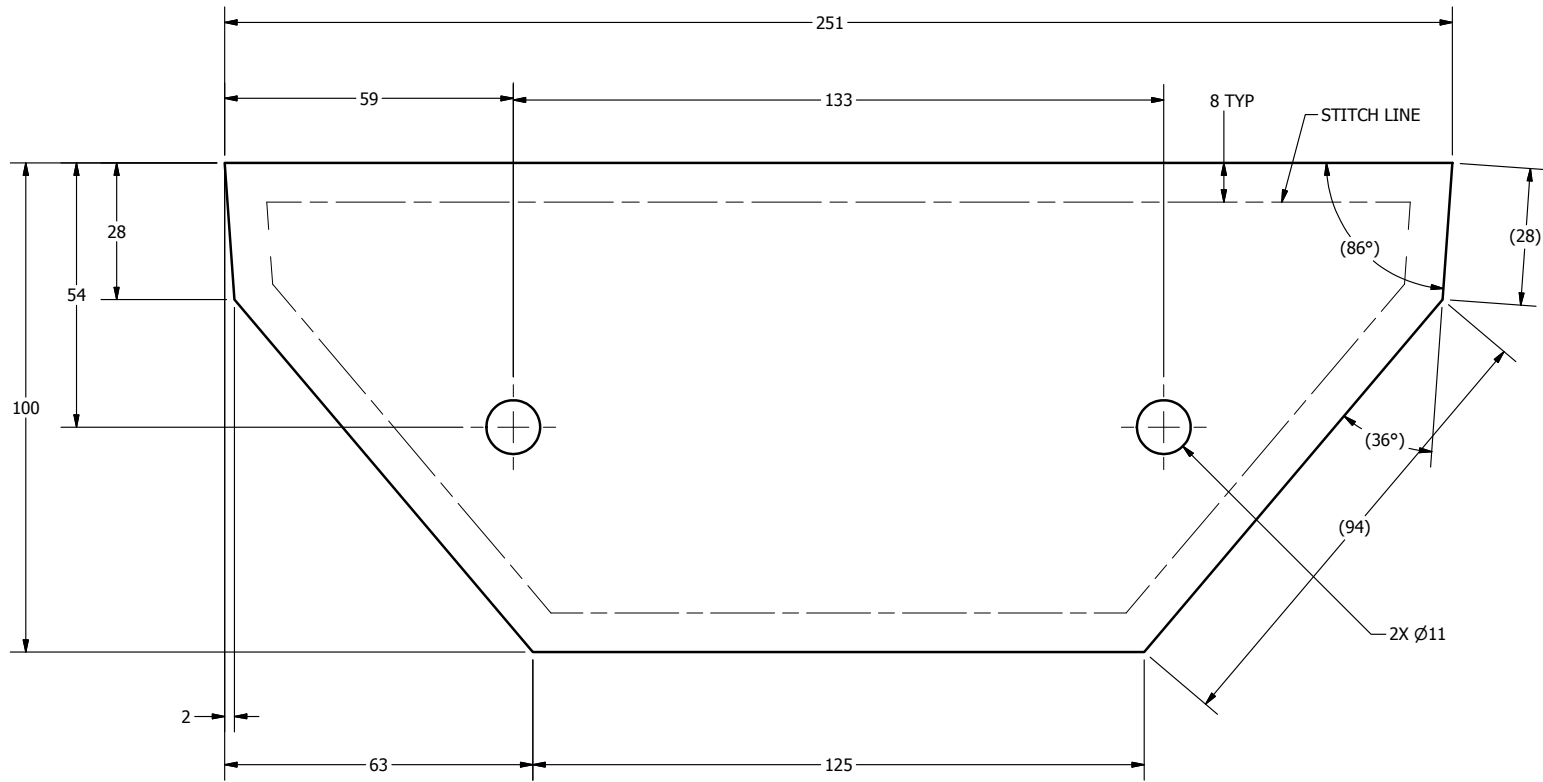
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2

1



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAF115 R1 FOR THOR-M	9/8/2011	DW



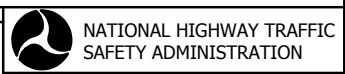
NOTES:

1. MATERIAL: NYLON STIFFENING CLOTH (DUCK CLOTH)  
(20 OZ/YD; MEETS MIL-C-3953)  
SEW TO THE INSIDE OF OF PATTERN 472-4763-4
2. CUT HOLES AFTER SEWING
3. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING MATERIAL.

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES		
DIMENSIONAL	ANGLES	FINISH
X.X ±0.2	±0.5	F.6
X.XX ±0.1		
X.XXX ±0.05		

REMOVE BURRS & BREAK SHARP EDGES



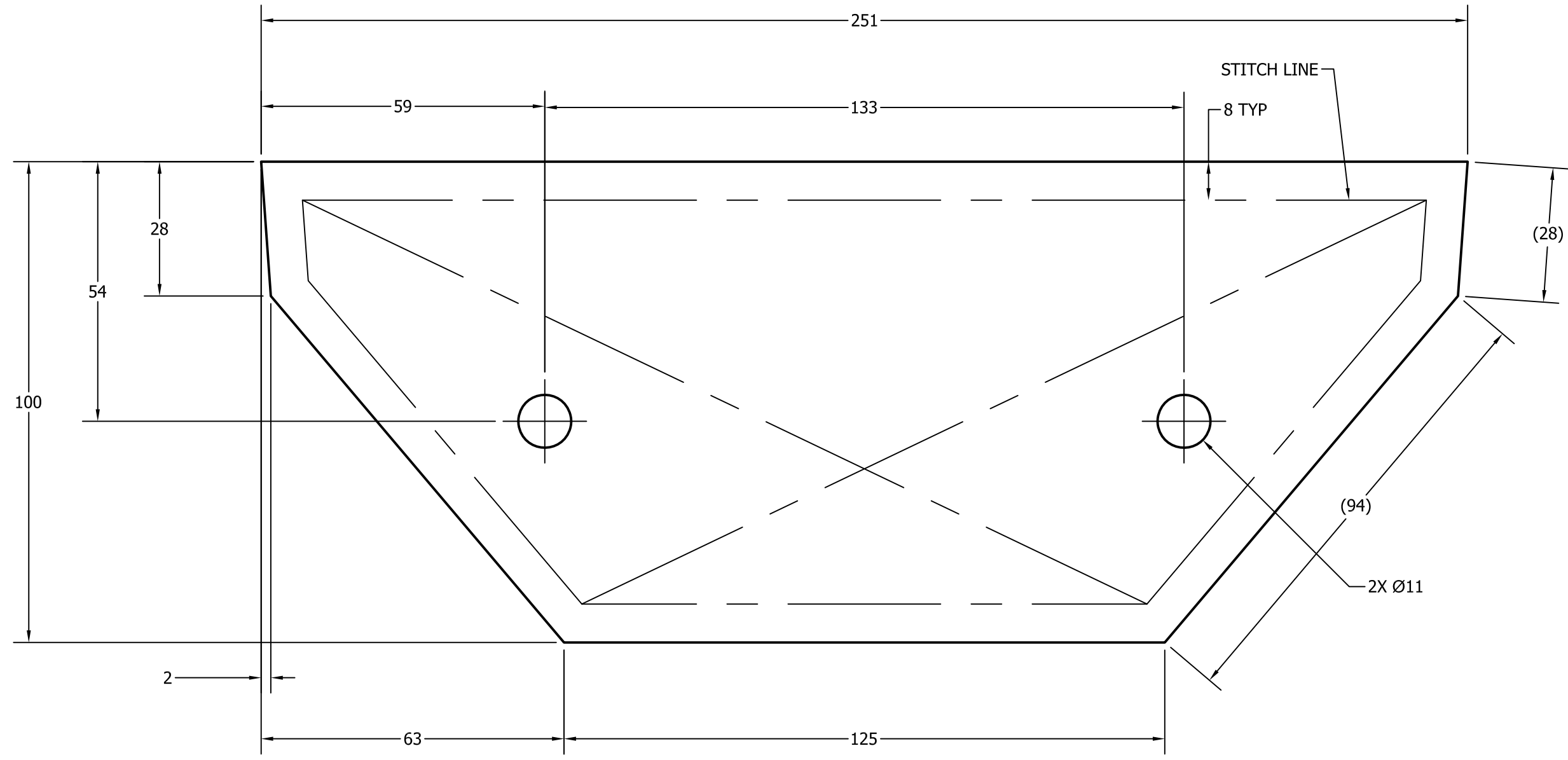
PROJECT NO.	472-4763	DATE:	9/8/2011
DRAWN BY:	SEE NOTES	DRAWN BY:	dwashenko
CHECKED BY:		CHECKED BY:	
ENGINEER:		ENGINEER:	D. WASHENKO
DATE:		DATE:	1/12/2012

DESCRIPTION:	LOWER ABDOMEN STIFFENING CLOTH
SIZE:	B
SHEET:	1 OF 1
DRAWING NO.:	472-4763-6
SCALE:	

	QTY
NEXT ASSEMBLY	
TOTAL QTY IN DUMMY	1

REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAF116 R2 FOR THOR-M	9/8/2011	DW



NOTES:

1. MATERIAL: BLACK LOOP VELCRO. SEW TO THE FRONT OF THE FRONT PATTERN 472-4763-4.
2. CUT HOLES AFTER SEWING.
3. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING OUT MATERIAL.

DO NOT SCALE DRAWING		TOLERANCES	
 THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ± 0.5° 1.6 X.X ± 0.2 X.XX ± 0.1 X.XXX ± 0.01	
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	
MATERIAL:	472-4763	DRAWN BY:	dwashenko
SEE NOTES	1	DATE:	9/8/2011
HEAT TREAT:		CHECKED BY:	
FINISH:		ENGINEER:	D. WASHENKO
		DATE:	1/12/2012

 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DESCRIPTION: LOWER ABDOMEN OUTSIDE VELCRO PATCH	
SIZE: B	SHEET: 1 OF 1
DRAWING NO.: 472-4763-7	REV: A

472-4763	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

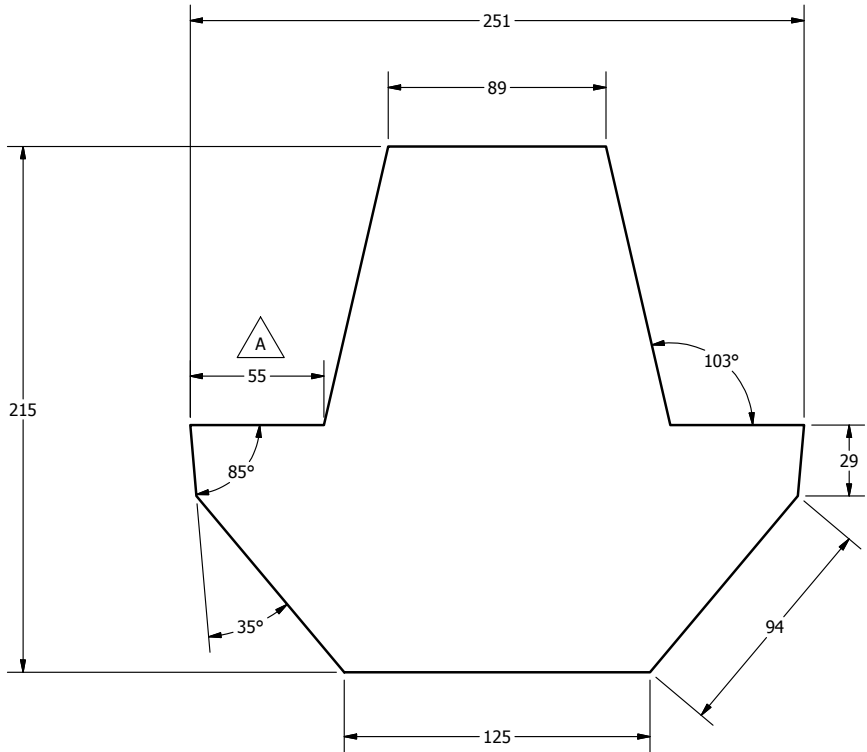
4

3

2

1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1LAF117 R1 FOR THOR-M; 55 WAS 56	9/8/2011	DW



- NOTES:
1. MATERIAL: BLACK VELCRO - HOOK SIDE
  2. VELCRO COVER ATTACHES TO MATCHING FRONT VELCRO PATCH OF UPPER ABDOMEN BAG (472-4627)
  3. PRINT TO SCALE AND USE AS PATTERN FOR CUTTING OUT MATERIAL.

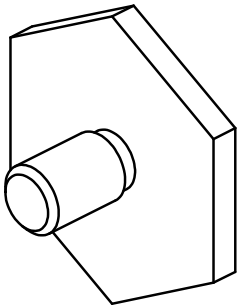
<b>DO NOT SCALE DRAWING</b>		<b>TOLERANCES</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X.X 0.0 0.0 1.6 X.XX 0.01 X.XXX 0.001		
PROJECT NO.	DATE:	DRAWN BY:	DATE:	DESCRIPTION:
472-4763	1	SEE NOTES	9/8/2011	UPPER AND LOWER ABDOMEN VELCRO COVER
NEXT ASSEMBLY	QTY	PART NAME:	CHECKED BY:	SIZE: B
TOTAL QTY IN DUMMY	1	ENGINEER:	DATE:	SHEET: 1 OF 1
		D. WASHENKO	1/12-2012	DRAWING NO.: 472-4763-8
				SCALE: 1.000

4

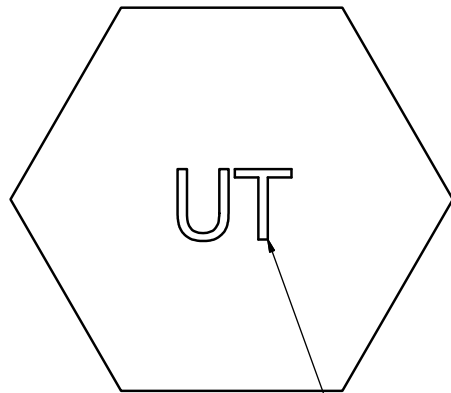
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2

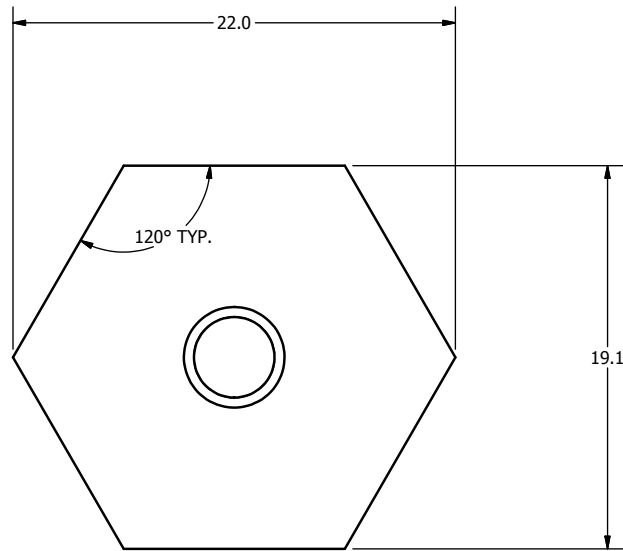
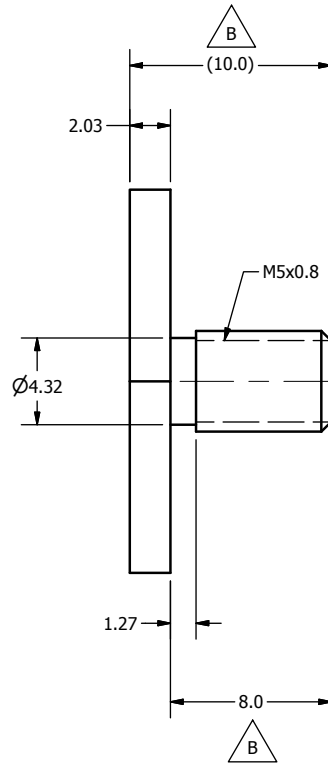
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ISO VIEW  
SCALE 3.000



SEE NOTE 4



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1CXM010 R2 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTES	9/23/2011	TKN
	B	8.0 WAS 10.49; 10.0 WAS 12.52; QTY 2 WAS 4	7/25/2012	BK
	C	CHANGE DESC, "UPPER THORAX" WAS "THORAX"; STAMP "UT" ON PART AND ADD NOTE 4; ADD VIEW	7/11/2013	BK



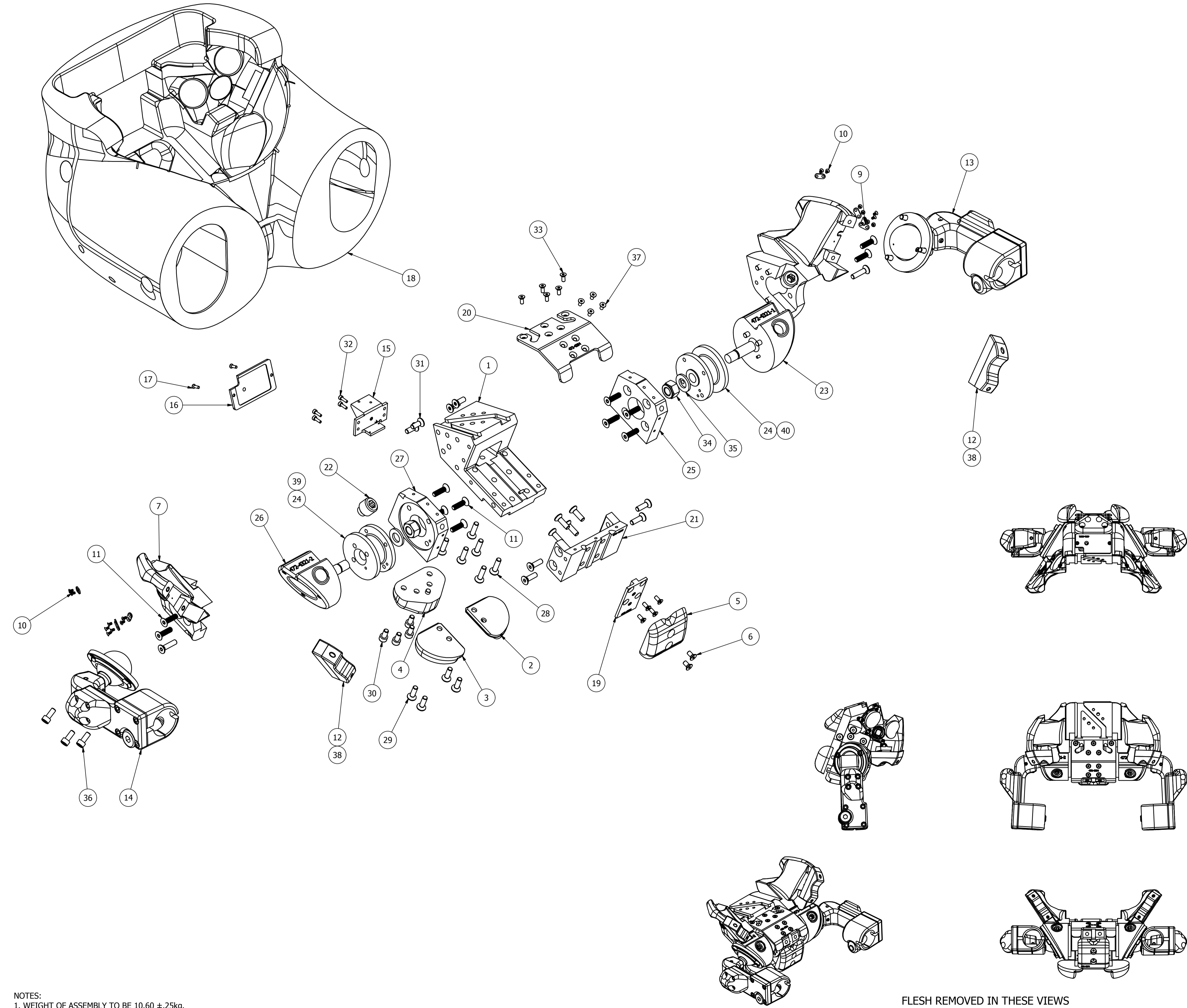
NOTES:

1. POWDER OR BEAD BLAST.
2. NICKEL PLATE 0.003mm - 0.008mm MAX. AFTER MACHINING.
3. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH.
4. STAMP OR ETCH "UT" (3mm MIN. CHARACTERS) WHERE SHOWN.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.07 1.6 XX 0.02 ± 0.02 1.6 XXX 0.01 ± 0.01 1.6 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3000	MATERIAL:	1018 STEEL HEX	DESCRIPTION:
QTY:	2	HEAT TREAT:		IRTRACC CONNECTING BOLT, UPPER THORAX
NEXT ASSEMBLY:		CHECKED BY:	Thanh	DATE:
TOTAL QTY IN DUMMY:	2	ENGINEER:	J. WANG	DATE:
		REVISION:	SEE NOTES	DATE:
				SCALE: 4.000
				SIZE: A3
				SHEET: 1 OF 1
				DRAWING NO.: 472-3518
				REV: C

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLS000 R02 AND CONVERTED TO METRIC FOR THOR-M	8/15/2011	JSJ
	B	ADD 5000604 QTY. 6, 5000646 QTY. 4; 5000023 QTY 9 WAS 13	6/27/2012	BK
	C	472-4375 WAS 472-4373; REMOVED 5000416	9/18/2014	DW
	D	REVISED 472-4380-2 RIGHT WING ASSEMBLY AND 472-4380-1 LEFT WING ASSEMBLY; ADDED PART #SA572-S119 A.S.I.S. LOAD CELL (OPTIONAL), SA572-S129 ACETABULAR LOAD CELL ASSY., RIGHT, & SA572-S128 ACETABULAR LOAD CELL ASSY., LEFT	9/3/2015	DW



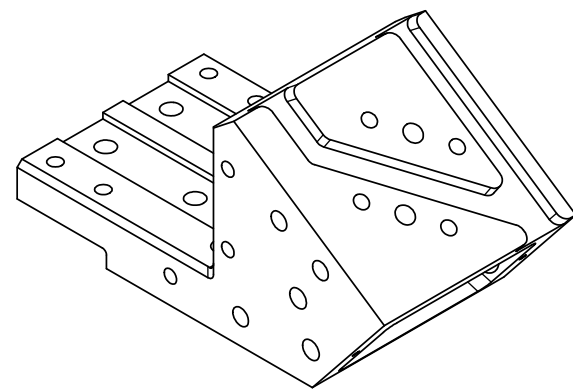
ECO#	REV	PART NUMBER	DESCRIPTION
D	40	1	SA572-S128 ACETABULAR LOAD CELL ASSY., LEFT
D	39	1	SA572-S129 ACETABULAR LOAD CELL ASSY., RIGHT
D	38	2	SA572-S119 A.S.I.S. LOAD CELL (OPTIONAL)
B	37	4	5000646 SCREW, FHCS M4-0.7 x 8
B	36	6	5000604 SCREW, SHCS M6-1 x 14 mm
B	35	2	5000267 M12 FLAT WASHER PLAIN ZINC
B	34	2	5000462 M12 X 1.75 HEX LOCK NUT ZINC
B	33	9	5000023 SCREW, FHCS M4-0.7 x 10
B	32	4	5000119 M3 X 0.5 X 10 LG. SHCS
B	31	4	5000090 SCREW, FHCS M6-1 x 16
B	30	4	5000281 M6 X 1 X 12 LG. SHCS
B	29	12	5001089 SCREW, FHCS M6X1 X 20
B	28	8	5000135 SCREW, FHCS M6-1 x 25
B	27	1	472-4325-2 PELVIS LOAD CELL MTG. PLATE (RIGHT)
B	26	1	472-4321-2 PELVIS SOCKET ADAPTER (RIGHT)
B	25	1	472-4325-1 PELVIS LOAD CELL MTG. PLATE LEFT
B	24	2	472-4323 ACETABULAR LOAD CELL STRUCTURAL REPLACEMENT
B	23	1	472-4321-1 PELVIS SOCKET ADAPTOR (LEFT)
B	22	2	472-4310 FRICTION ADJUSTMENT SET SCREW ASSEMBLY
B	21	1	472-4205 PELVIS, REAR PLATE
B	20	1	472-4204 PELVIS TOP PLATE
B	19	1	472-4330 PELVIS FRONT PLATE
B	18	1	472-4100 PELVIS FLESH, MOLDED
B	17	2	5000203 SCREW, FHCS M3-0.5 x 10
B	16	1	472-4371 PELVIS ACCELEROMETER COVER
B	15	1	472-4361 PELVIS TRI-PACK MOUNTING BRKT.
B	14	1	472-4800-2 RIGHT FEMUR BALL JOINT ASS'Y
B	13	1	472-4800-1 LEFT FEMUR BALL JOINT ASS'Y
B	12	2	472-4375 S.R. THOR A.S.I.S.
B	11	12	5000572 SCREW, FHCS M6-1 x 22
B	10	16	5000723 SCREW, FHCS M2.5-0.45 x 5
B	9	8	472-4372 ILIAC CABLE COVER, PELVIS
D	8	1	472-4380-1 LEFT ILIAC ASSEMBLY
D	7	1	472-4380-2 RIGHT ILIAC ASSEMBLY
B	6	2	5000084 SCREW, FHCS M5 x 0.8 x 10
B	5	1	472-4370 MACHINED FRONT PELVIC CASTING
B	4	1	472-4350 PELVIS COCCYX
B	3	1	472-4340-2 PELVIS RIGHT D-PT
B	2	1	472-4340-1 PELVIS LEFT D-PT
B	1	1	472-4211 PELVIS BASE MODULE

NOTES:  
1. WEIGHT OF ASSEMBLY TO BE 10.60 ±.25kg.

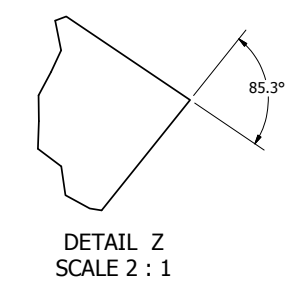
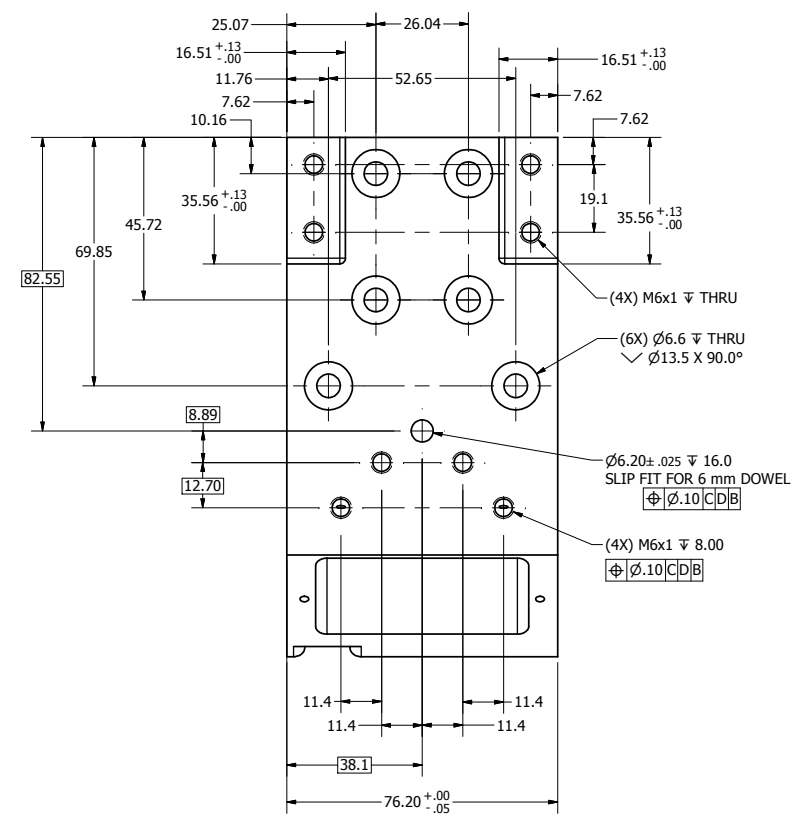
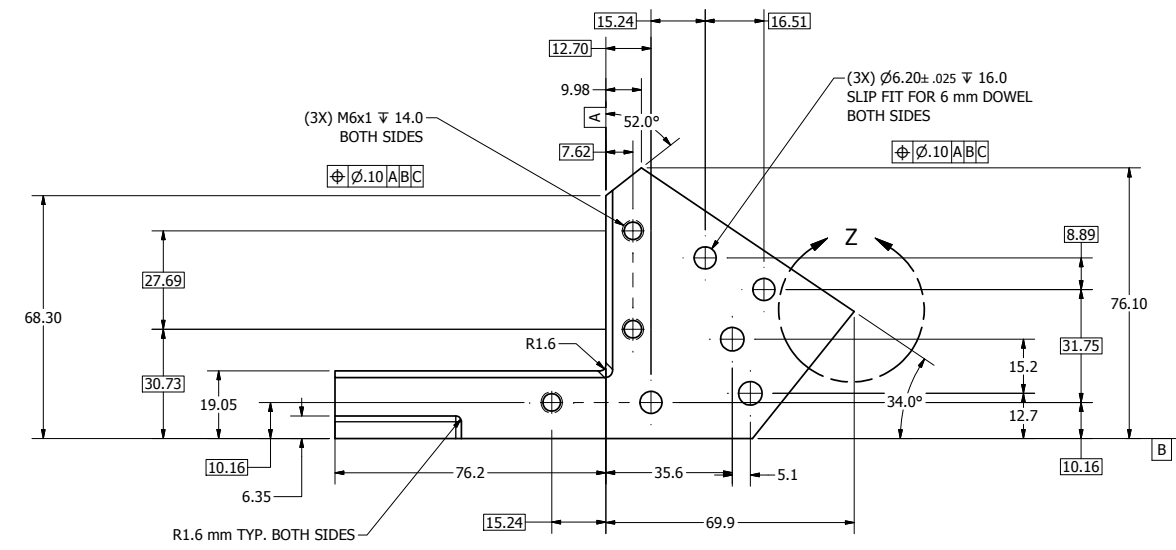
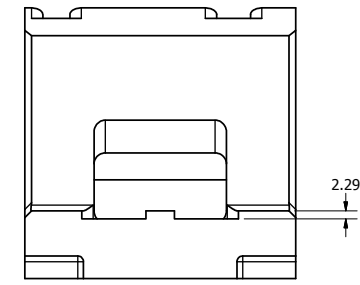
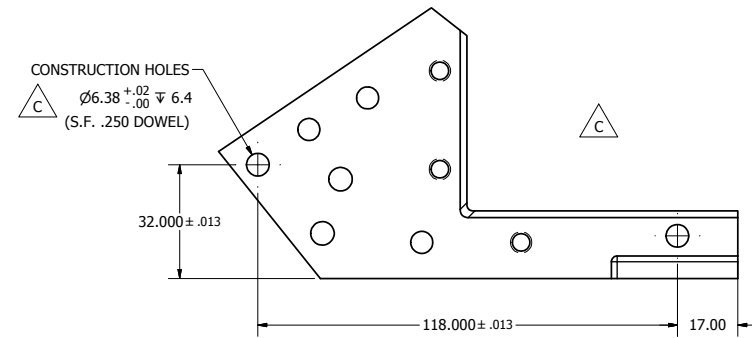
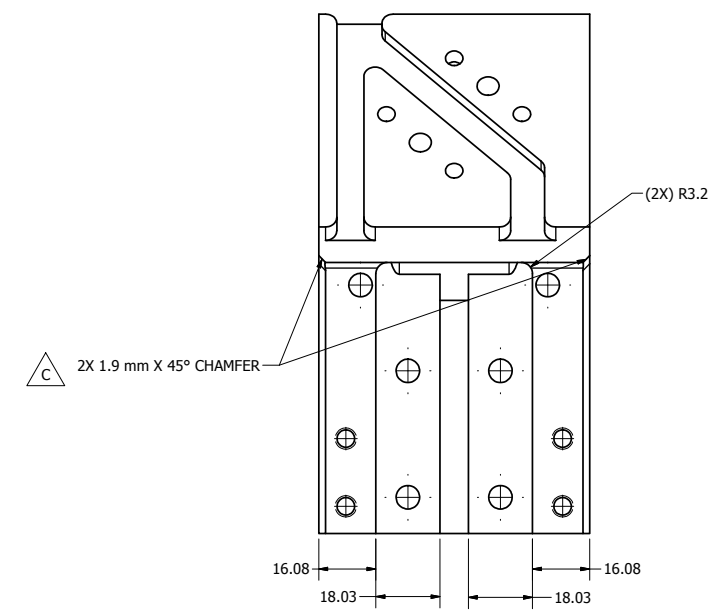
FLESH REMOVED IN THESE VIEWS

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
UNLESS OTHERWISE SPECIFIED		FRACTIONAL DECIMALS		PELVIS ASSEMBLY	
NEXT ASSEMBLY		DATE		DATE	
TOTAL QTY IN DUMMY		DRAWN BY		DATE	
1		J. WANG		1/20/2012	

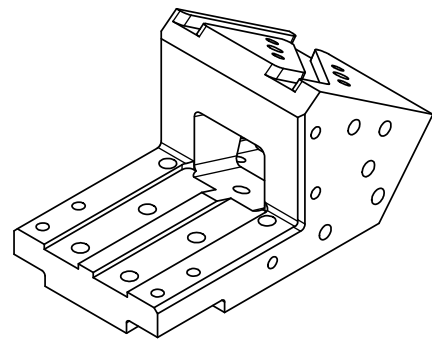
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM010-03 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ
	B	NICKEL PLATE FINISH WAS TEFLON	12/22/2011	TMV
	C	ADD VIEW TO SHOW ADDED CONSTRUCTION HOLES; 2X M3 WAS M2.5 (SHT 2); 1.9 WAS 1.91	6/27/2012	BK



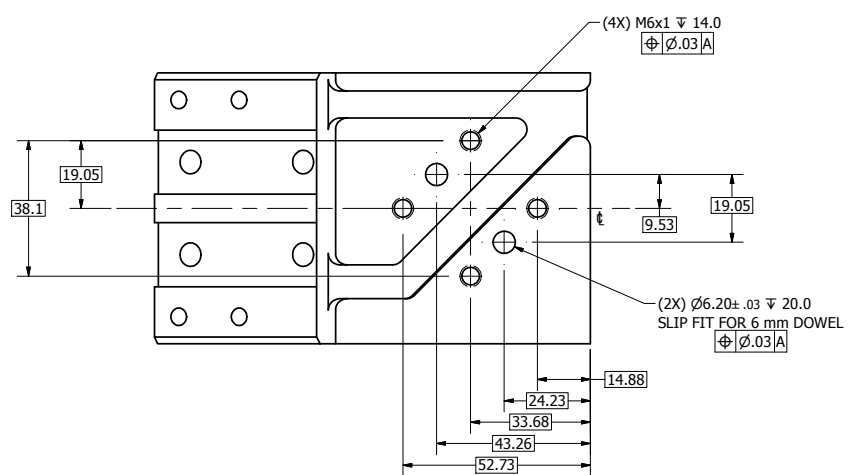
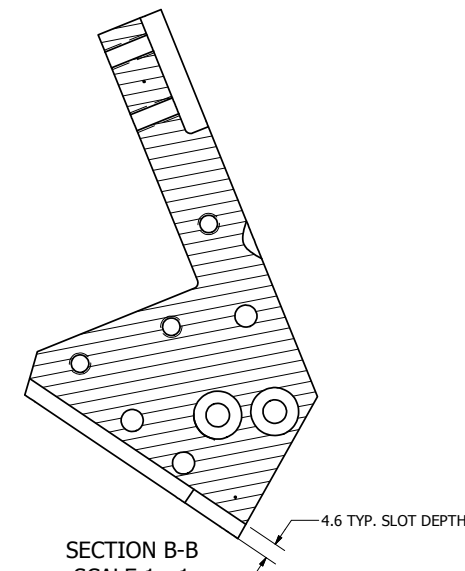
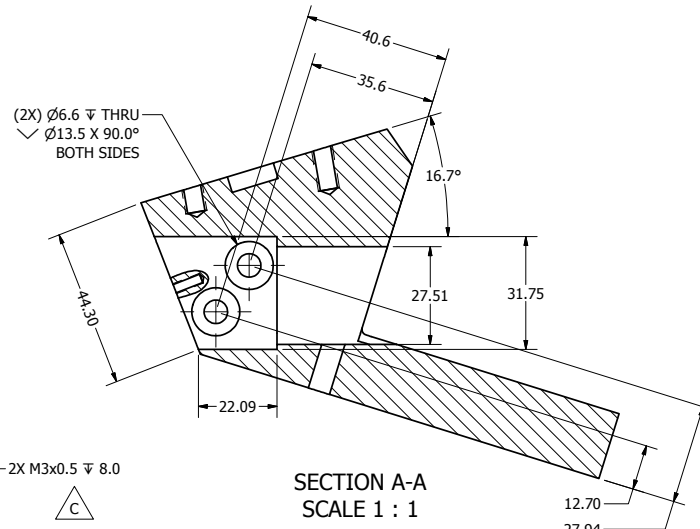
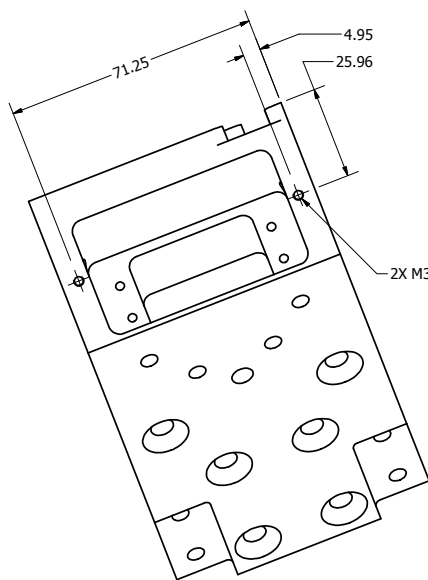
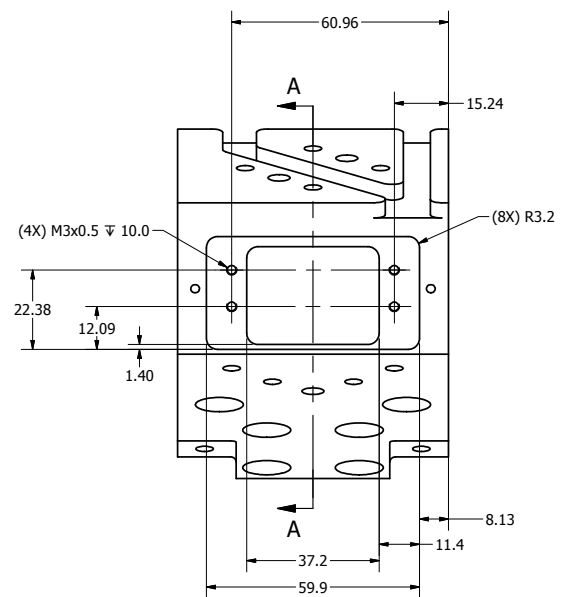
SCALE 1.000



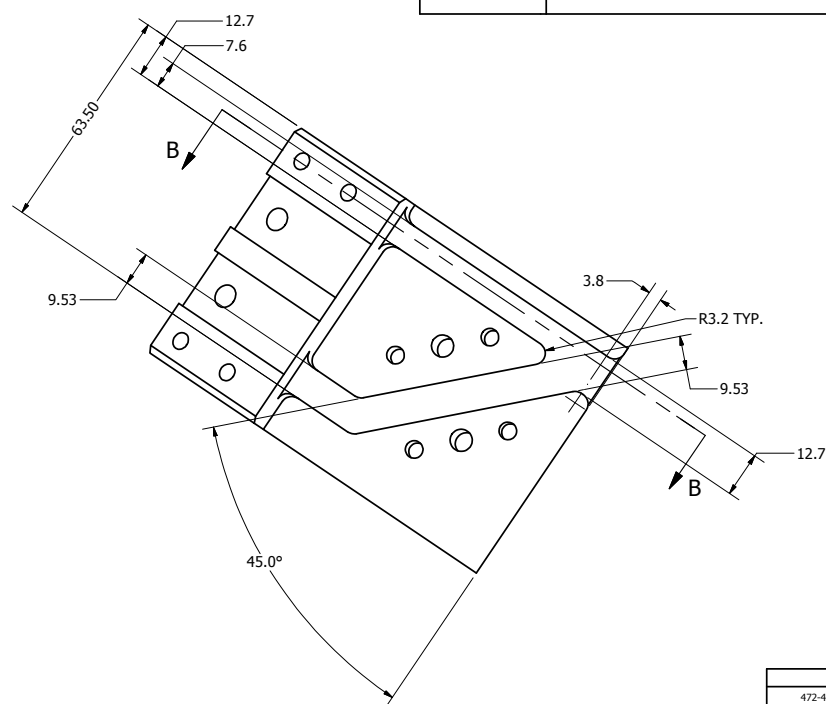
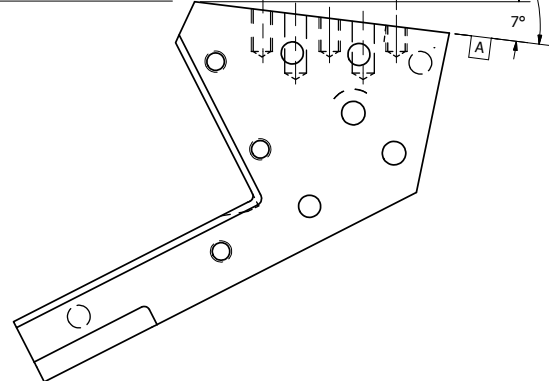
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
UNLESS OTHERWISE SPECIFIED		MILITARY STANDARD		PELVIS BASE MODULE	
472-4210	1	1018 STEEL	DLW	8/18/2011	A11 OF 2
NEXT ASSEMBLY	QTY		TMV	12/23/2011	
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL RATE 888 RW	J. WANG	1/29/2012	
					472-4211



SCALE .750

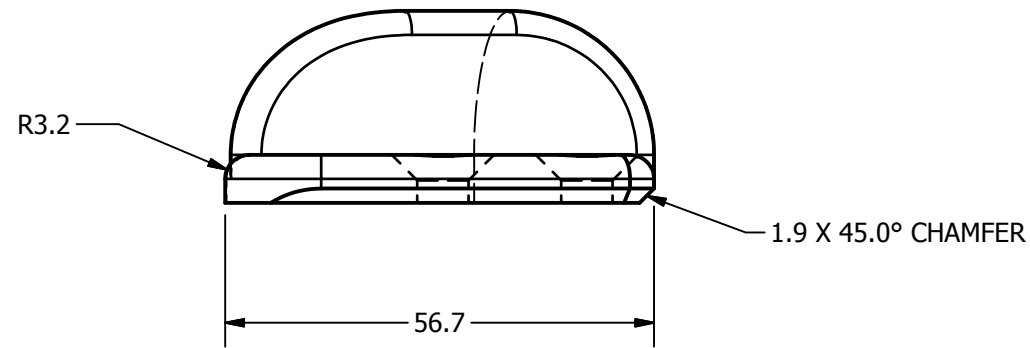
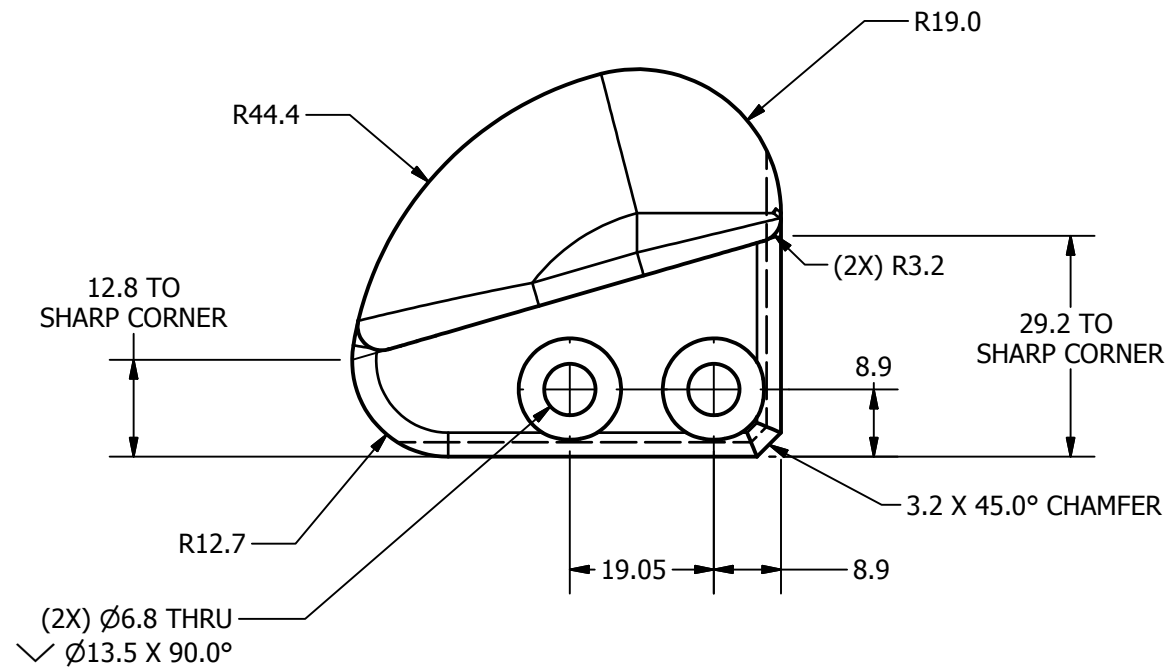
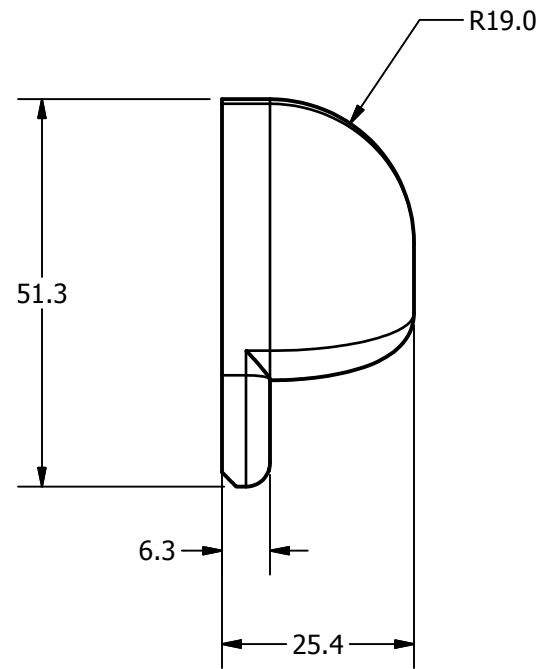
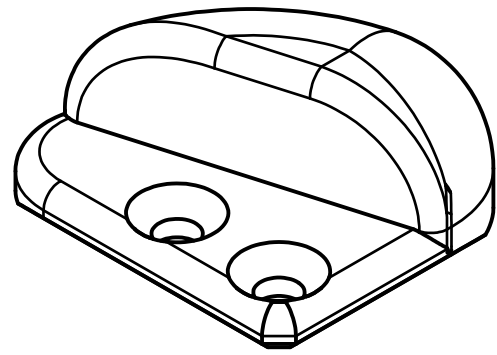


ABSOLUTE HORIZONTAL PLANE



DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
UNLESS OTHERWISE SPECIFIED		FRACTIONS DECIMALS		PELVIS BASE MODULE	
472-4210	1	1018 STEEL	DLW	8/20/2011	A12 OF 2 1:1
NEXT ASSEMBLY	QTY		TW	12/29/2011	
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL RATE 88 RW	J. WANG	1/29/2012	
					472-4211

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM014 R3 AND CONVERTED TO METRIC FOR THOR-M	8/24/2011	JSJ



DO NOT SCALE DRAWING  
  
 THIRD ANGLE PROJECTION

TOLERANCES		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		
DECIMALS	ANGLES	FINISH
X ±0.5	±0.5°	1.6
X.X ±0.2		
X.XX ±0.1		
X.XXX ±0.01		

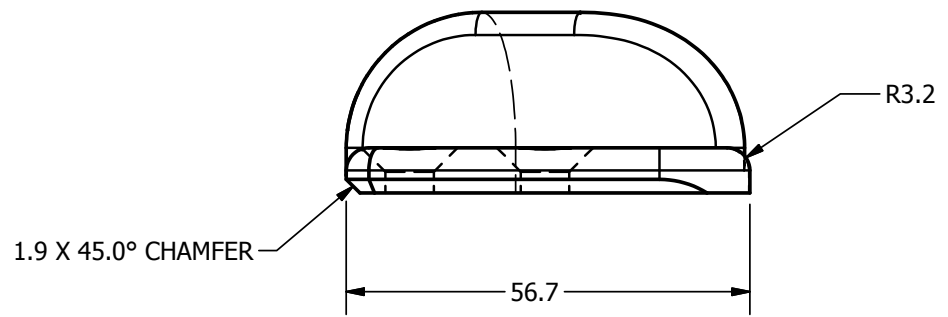
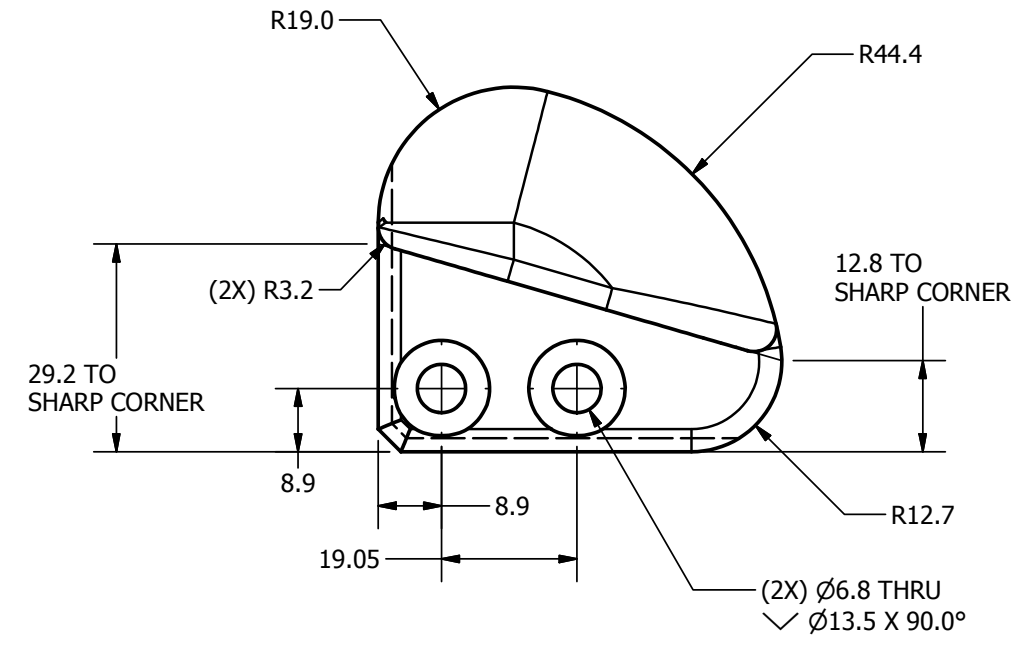
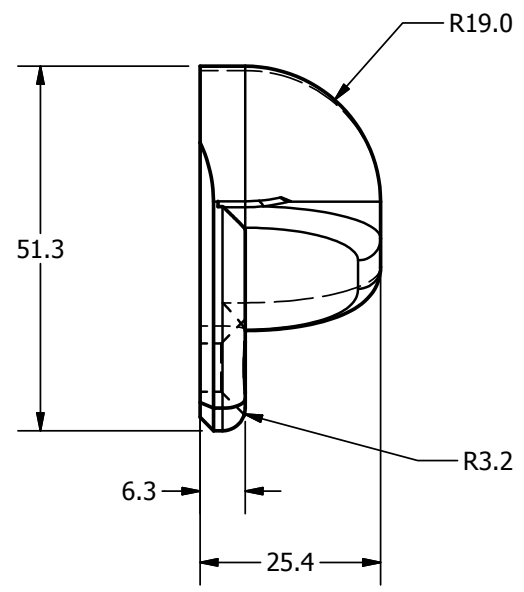
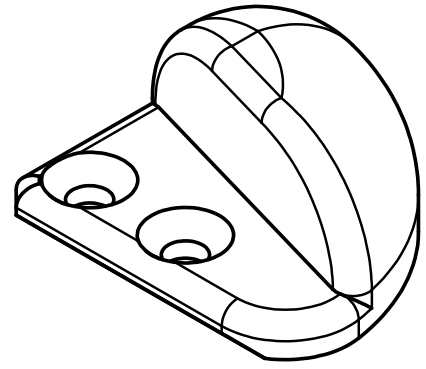
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO.: 472-4000	QTY: 1	MATERIAL: Aluminum-6061	DRAWN BY: jjordan	DATE: 8/24/2011
NEXT ASSEMBLY		HEAT TREAT:	CHECKED BY: TMV	DATE: 10/26/2011
TOTAL QTY IN DUMMY	1	FINISH: CLEAR ANODIZE	ENGINEER: J. WANG	DATE: 1/23/2012

REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: PELVIS LEFT D-PT
SIZE: B	SHEET: 1 OF 1
SCALE: 1:1	DRAWING NO.: 472-4340-1
	REV: A



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM015 R3 AND CONVERTED TO METRIC FOR THOR-M	8/24/2011	JSJ



DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
PROJECT NO.: 472-4000		DECIMALS	ANGLES FINISH
MATERIAL: Aluminum-6061	DATE: 8/24/2011	X ±0.5	±0.5 1.6
HEAT TREAT:	CHECKED BY: TMV	X.X ±0.2	
FINISH: CLEAR ANODIZE	DATE: 10/26/2011	X.XX ±0.1	
	ENGINEER: J. WANG	X.XXX ±0.01	
		REMOVE BURRS & BREAK SHARP EDGES	

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: PELVIS RIGHT D-PT

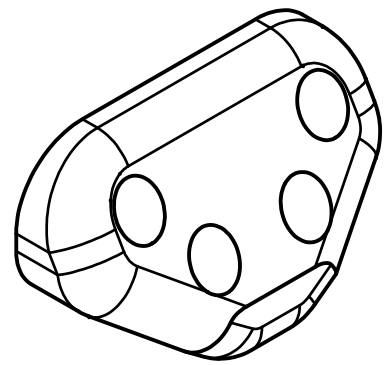
SIZE: A3 1 OF 1 SHEET

SCALE: 1:1

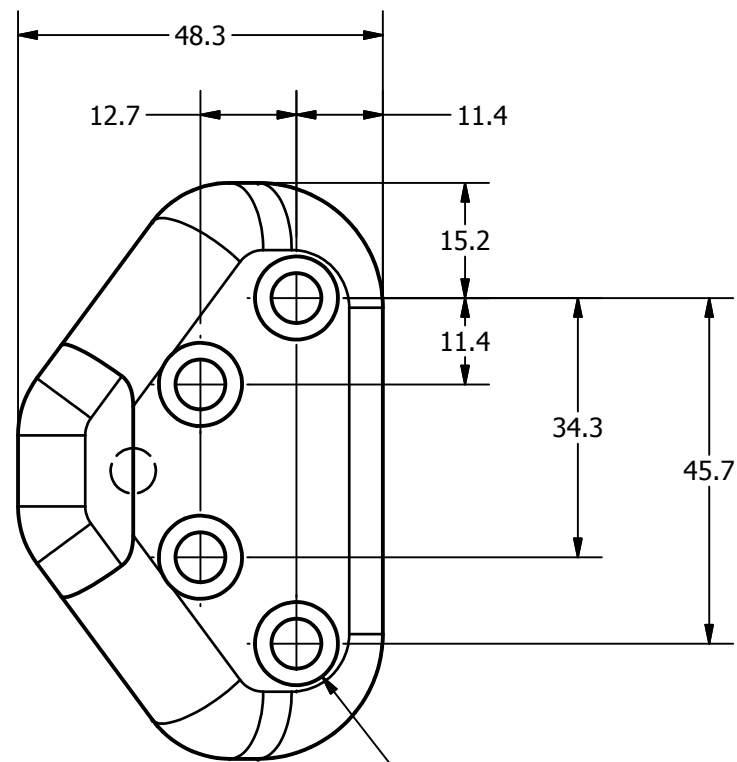
DRAWING NO.: 472-4340-2

REV: A

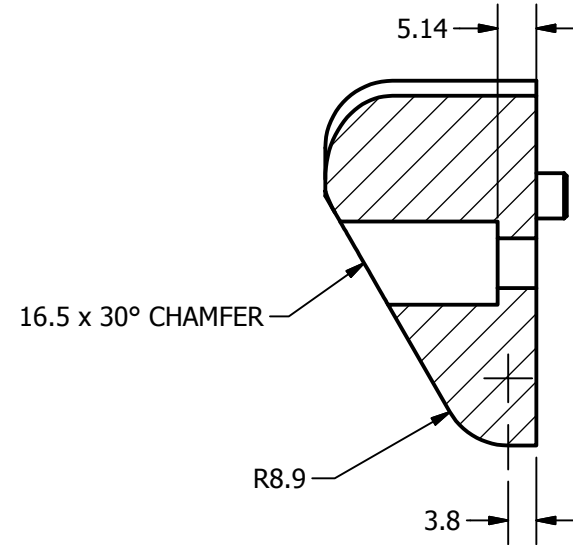
472-4000	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1



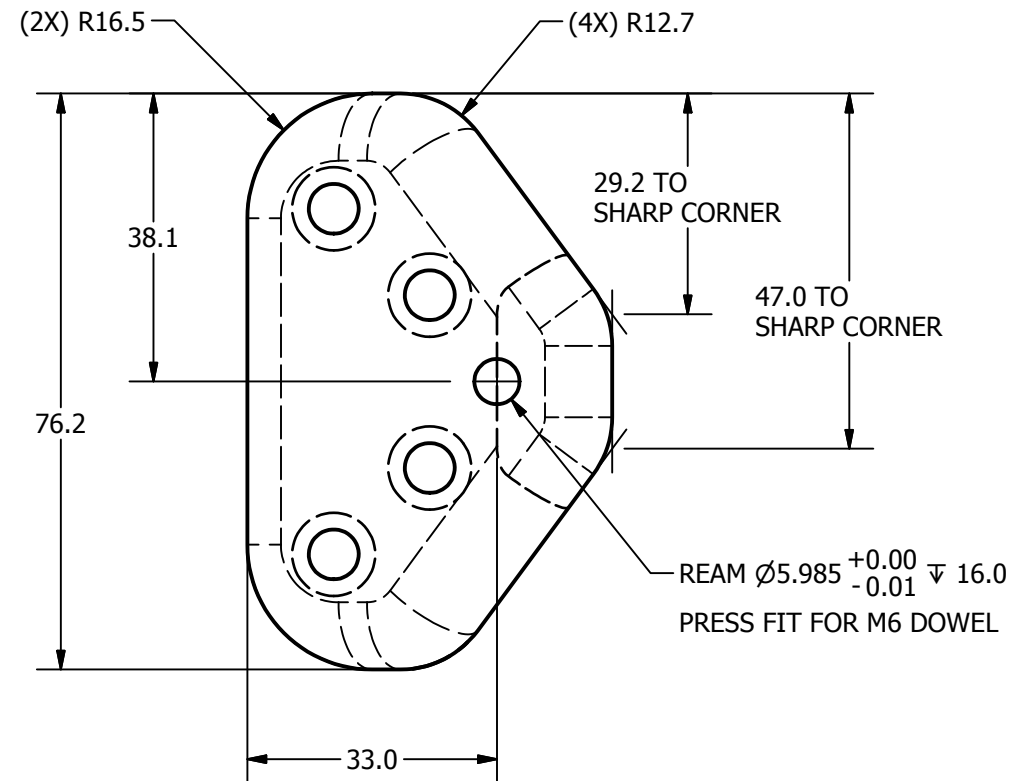
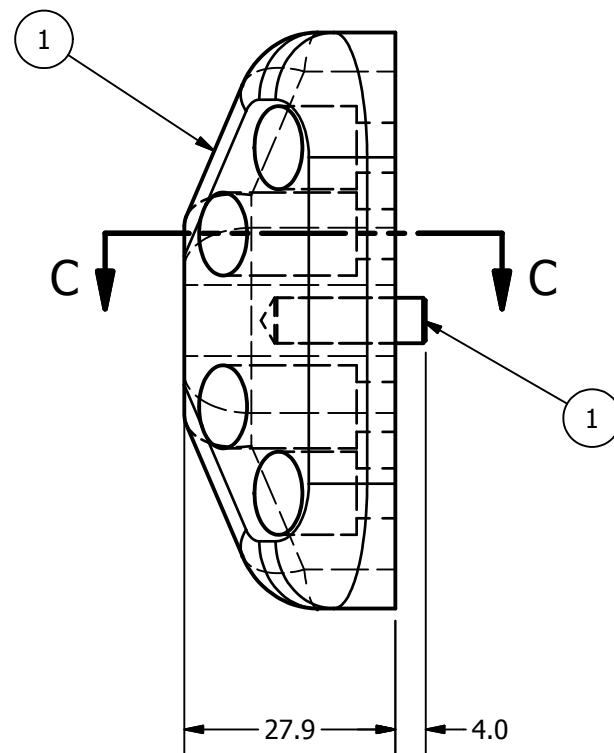
SCALE .750



(4X)  $\varnothing 6.6$   $\nabla$  THRU  
 $\square$   $\varnothing 11.0$   $\nabla$  TO  
 DEPTH SHOWN



SECTION C-C  
 SCALE 1 : 1

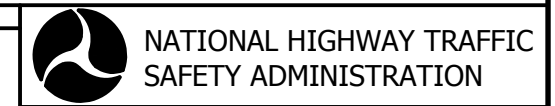


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM013-04 AND CONVERTED TO METRIC FOR THOR-M	8/23/2011	JSJ

1	1	5000570	PIN, DOWEL M6 X 20 mm
ITEM	QTY	PART NUMBER	DESCRIPTION

Parts List

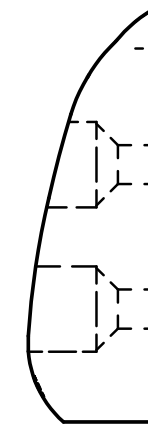
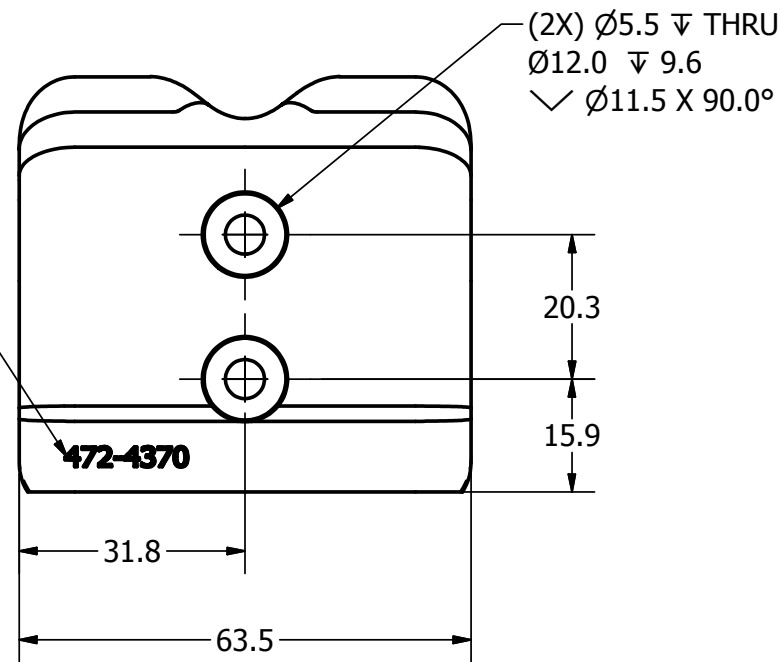
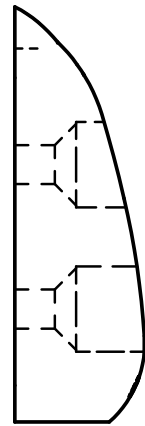
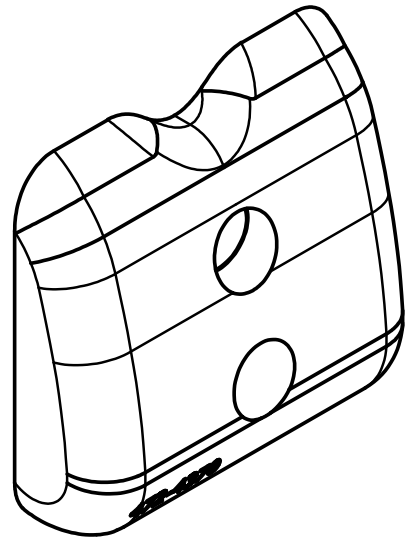
<b>DO NOT SCALE DRAWING</b>	<b>TOLERANCES</b>
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
	DECIMALS ANGLES FINISH
	X ±0.5 ±0.5 1.6
	X.X ±0.2
	X.XX ±0.1
	X.XXX ±0.01



DESCRIPTION: PELVIS COCCYX

472-4000	1	ALUMINUM-6061	DRAWN BY: jjordan	DATE: 8/23/2011	SIZE: B 1 OF 1 SCALE: 1:1	DRAWING NO.: 472-4350	REV: A
NEXT ASSEMBLY	QTY	HEAT TREAT:	CHECKED BY: TMV	DATE: 10/28/2011			
TOTAL QTY IN DUMMY	1	FINISH: CLEAR ANODIZE	ENGINEER: J. WANG	DATE: 1/23/2012			

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM219 R05 AND CONVERTED TO METRIC FOR THOR-M; ADD (OPTIONAL) TO NOTE 2; REMOVE VENDOR REFERENCE FROM NOTE 3; REMOVE NOTE 4	8/22/2011	JSJ



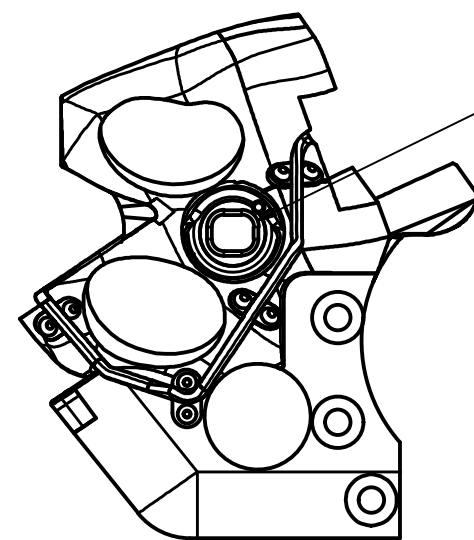
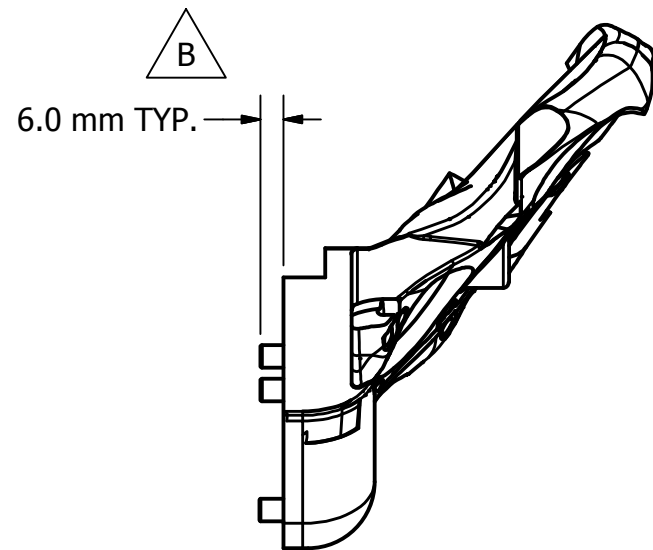
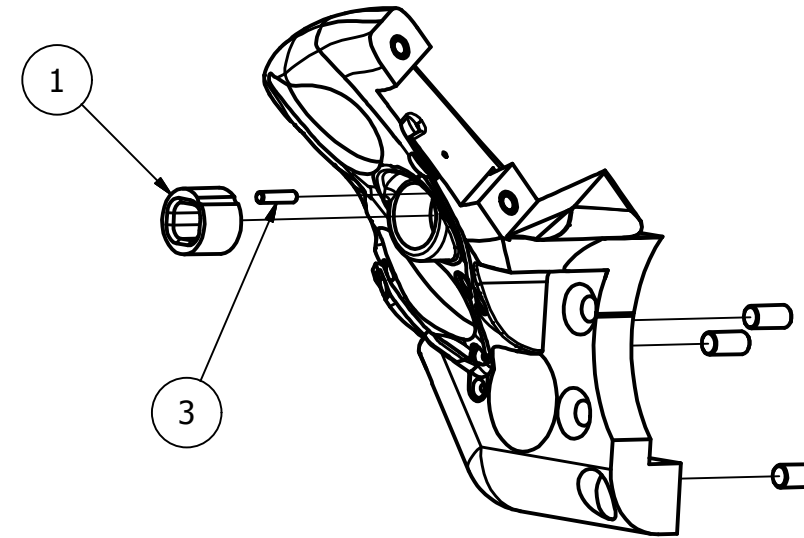
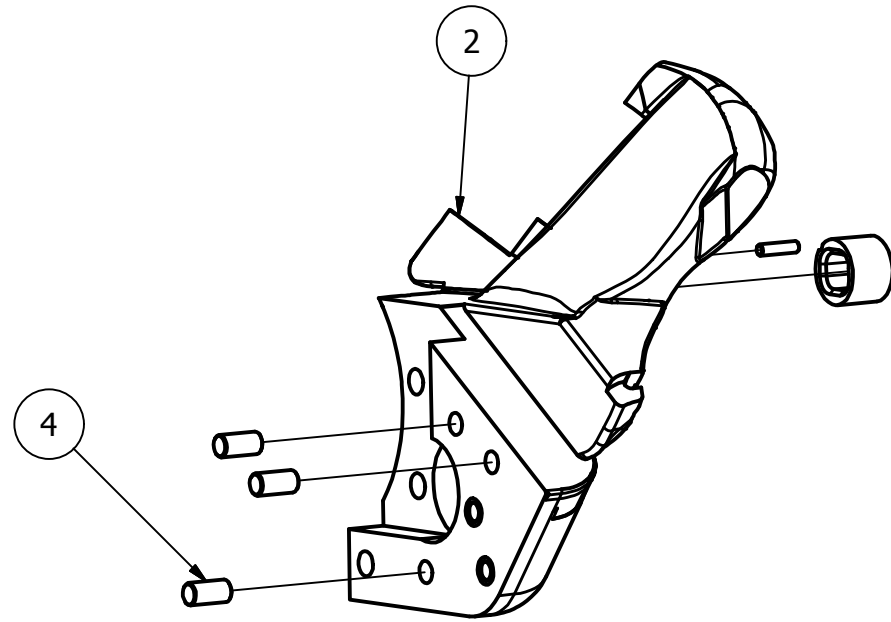
NOTES:

- FRONT PELVIC CASTING IS A CONTOURED CAST PART WHICH REPRESENTS THE CURVATURE AT THE FRONT OF THE PELVIS.
- ENGRAVE DWG. # 472-4370 ON THE SPECIFIED AREA ABOVE. (OPTIONAL)
- THE FRONT PELVIC CASTING IS A URETHANE CASTING, THE CASTING MATERIAL IS CIBI-GIEGY RP6430 URETHANE ( $75 \pm 3$  D)



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO.:		MATERIAL:	Thermoplastic Resin	DESCRIPTION: <b>MACHINED FRONT PELVIC CASTING</b>	
DRAWN BY:	DLW	DATE:	8/10/2011		
CHECKED BY:	TMV	DATE:	10/25/2011		
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/23/2012
FINISH:				SCALE:	1:1
472-4000	1			SIZE:	A3 1 OF 1
NEXT ASSEMBLY	QTY			DRAWING NO.:	472-4370
TOTAL QTY IN DUMMY	1			REV:	A

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM402 R0 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ
	B	ADDED VIEW WITH PIN HEIGHT DIMENSION	7/24/2012	TMV
	C	REVISED PART #472-4382-2 PELVIS WING MACHINING (RIGHT)	8/25/2015	DW

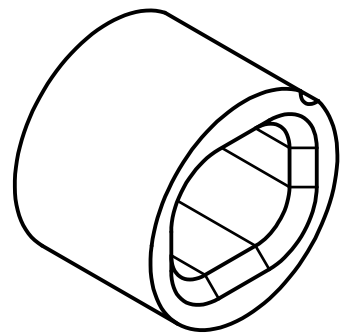


472-4381 TO BE INSTALLED AS SHOWN  
LONGER DIMENSION OF OPENING  
IS TO BE HORIZONTAL

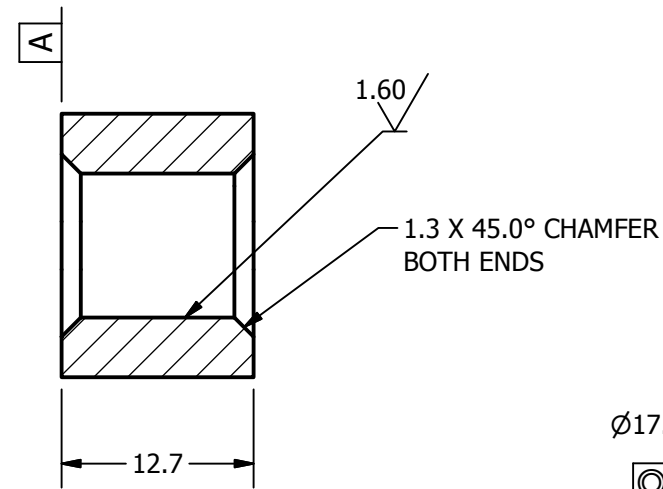
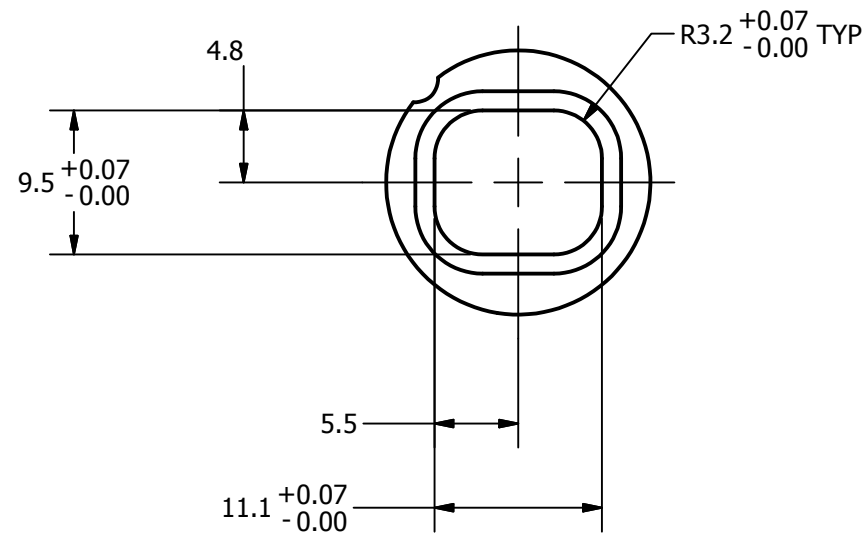
4	3	5000433	PIN, DOWEL M6 X 12 mm
3	1	5000183	PIN, DOWEL M3 X 12 mm
2	1	472-4382-2	PELVIS WING MACHINING (RIGHT)
1	1	472-4381	PELVIS H-PT. TOOL BEARING
ITEM	QTY	PART NUMBER	DESCRIPTION

Parts List

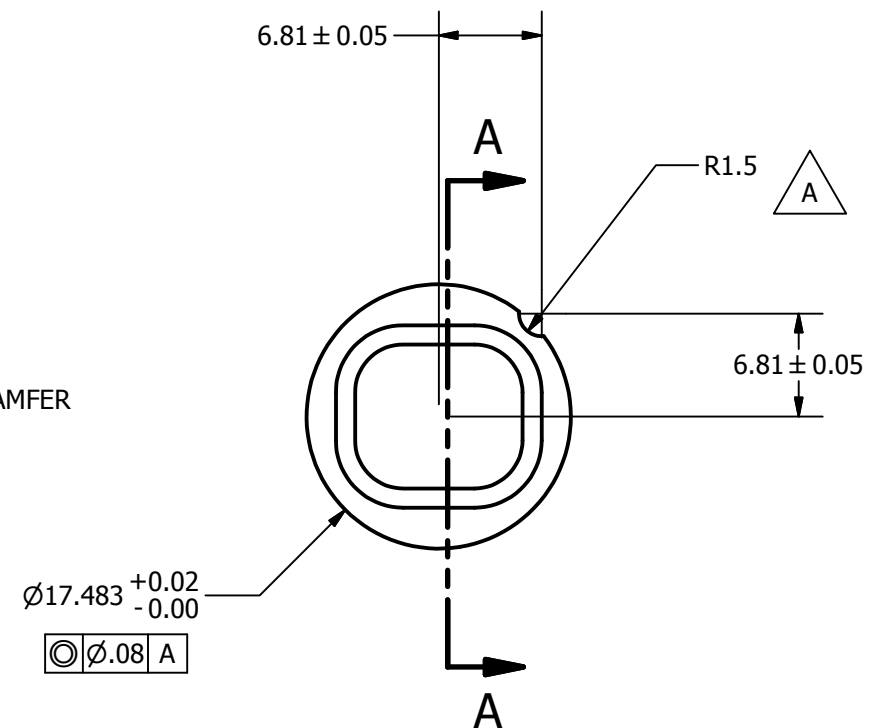
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION:
MATERIAL:		DRAWN BY:	S. RICE	8/10/2011
HEAT TREAT:		CHECKED BY:	TMV	9/21/2011
FINISH:		ENGINEER:	J. WANG	1/24/2012
472-4000	1			
NEXT ASSEMBLY	QTY			
TOTAL QTY IN DUMMY	1			
SIZE: A3		SHEET 1 of 1		DRAWING NO.: 472-4380-2
SCALE: 1:2				REV: C



SCALE 2.000



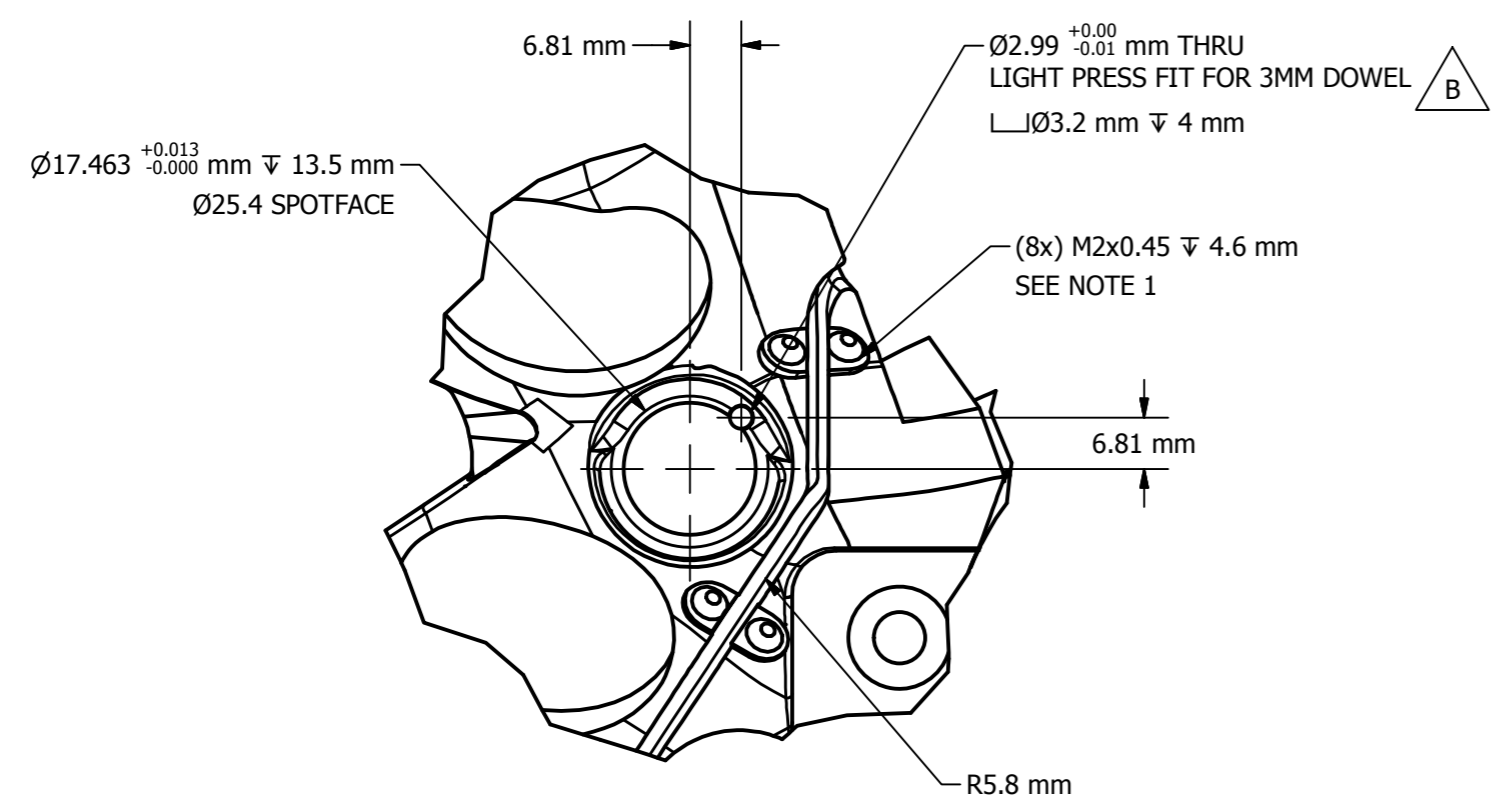
SECTION A-A  
SCALE 2 : 1



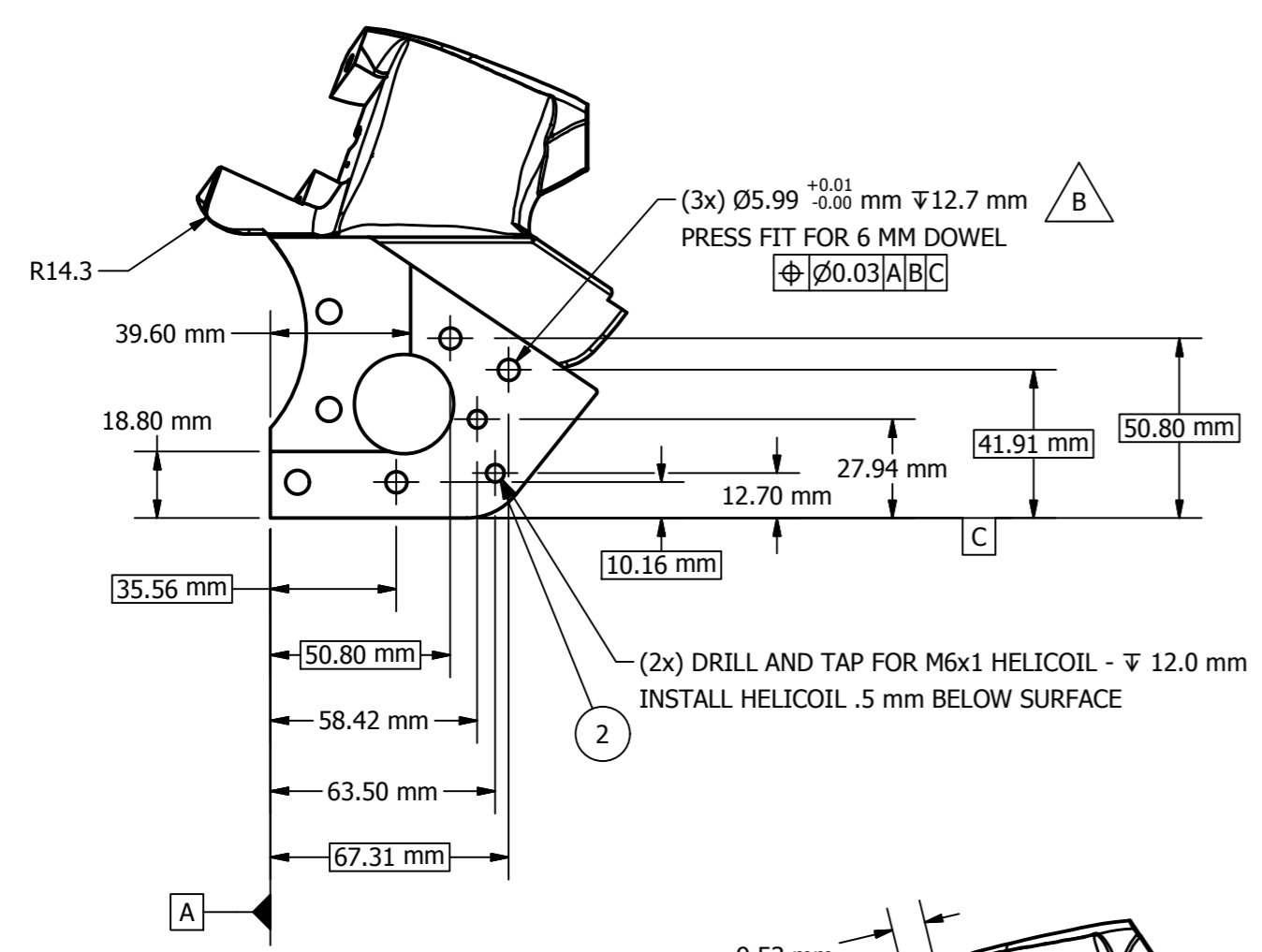
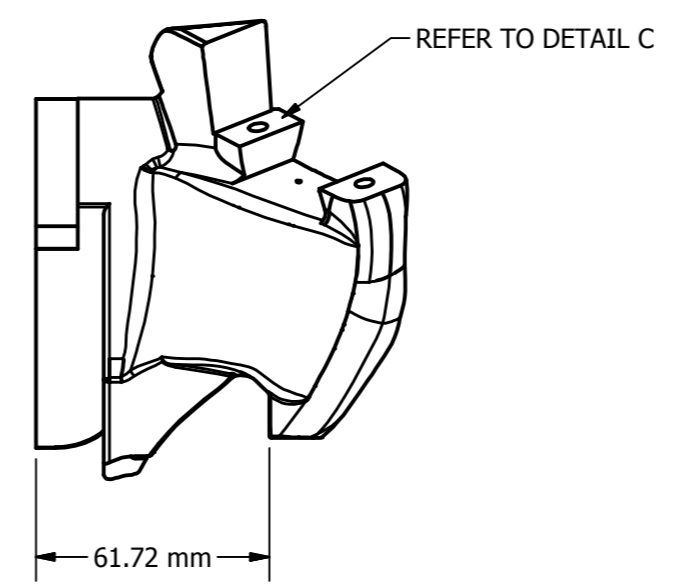
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM019 R1 AND CONVERTED TO METRIC FOR THOR-M; R1.5 WAS R1.6	8/23/2011	JSJ

472-4380-2		1	DO NOT SCALE DRAWING		TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-4380-1		1	THIRD ANGLE PROJECTION		DECIMALS	ANGLES		
NEXT ASSEMBLY		QTY	PROJECT NO.:		X	± 0.5	± 0.5	1.6
TOTAL QTY IN DUMMY		2	MATERIAL:		X.X	± 0.2		
			4140 STEEL		X.XX	± 0.1		
			HEAT TREAT:		X.XXX	± 0.01		
			RC 44-48		REMOVE BURRS & BREAK SHARP EDGES			
			FINISH:		DRAWN BY:		DATE:	DESCRIPTION: PELVIS H-PT. TOOL BEARING
			ELECTROLESS NICKEL PLATE .008 MAX		jjordan		8/23/2011	
			ENGINEER:		CHECKED BY:		DATE:	DRAWING NO.:
			J. WANG		TMV		10/26/2011	
			SCALE:		DATE:		1/23/2012	SHEET B 1 OF 1
			2:1					
								472-4381
								A

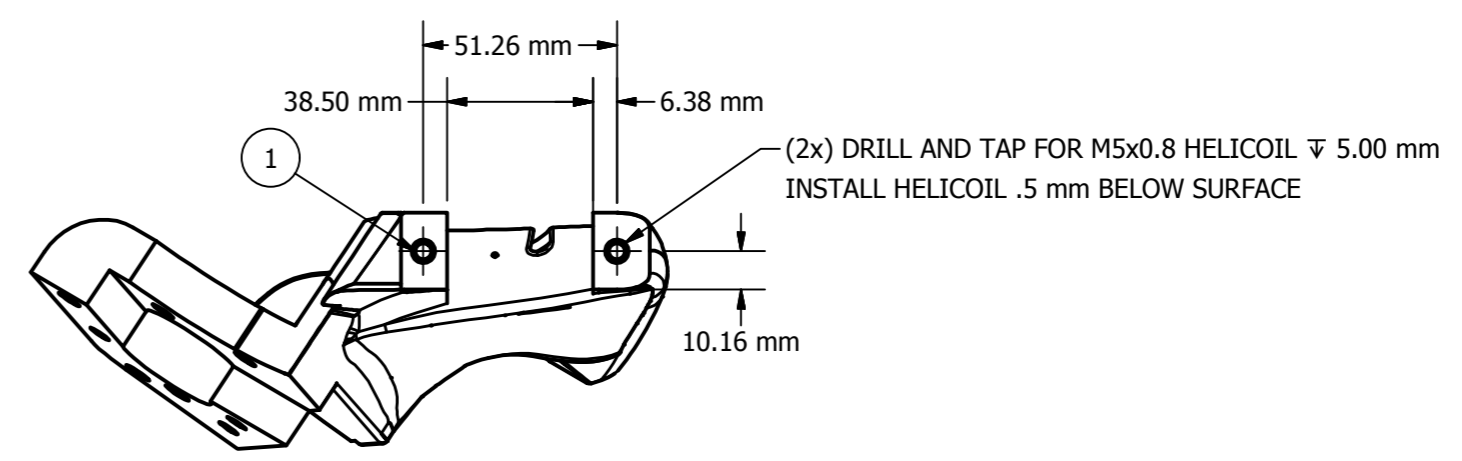
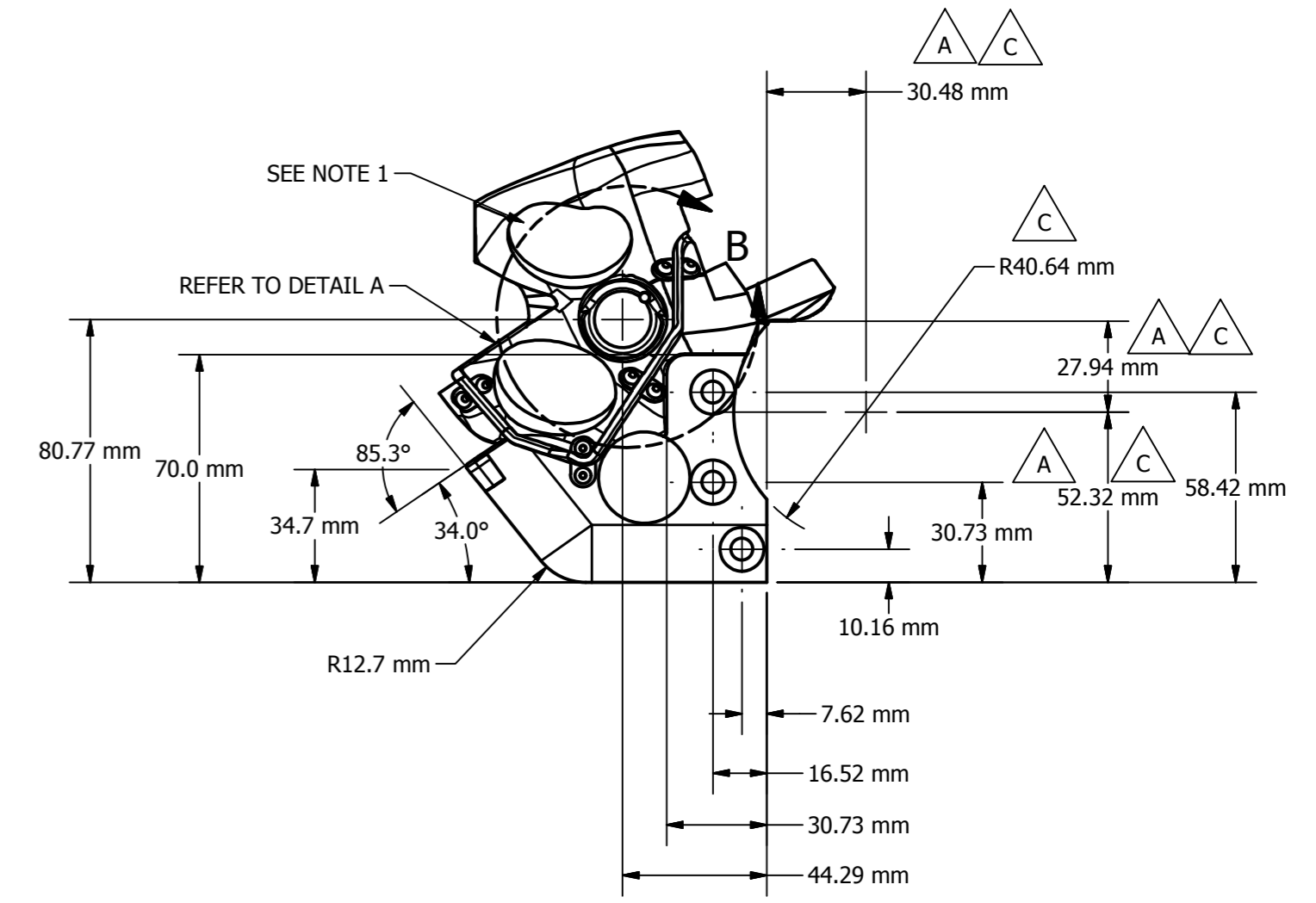
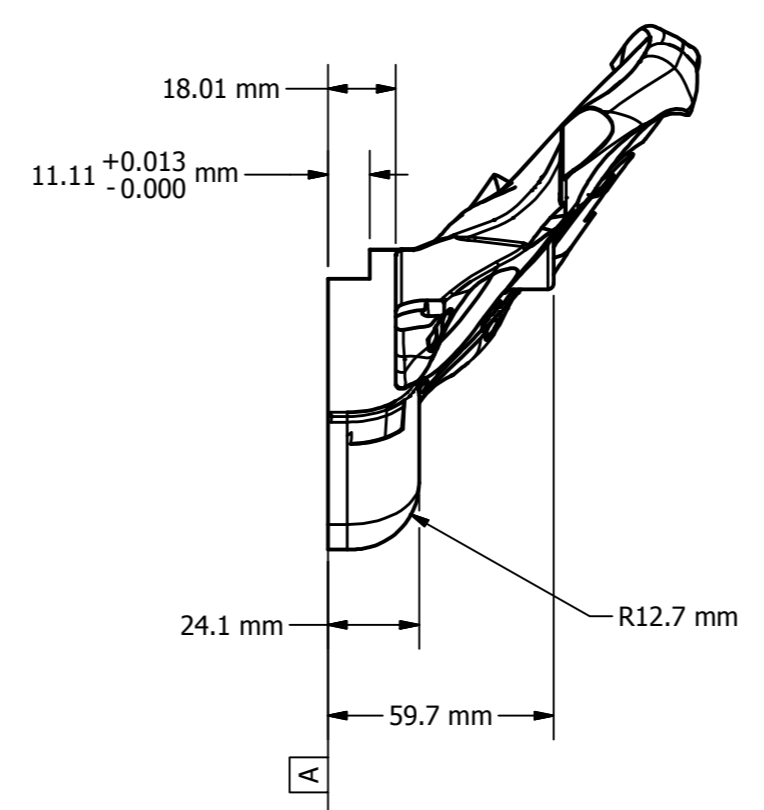
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM012-05 AND CONVERTED TO METRIC FOR THOR-M; 30.04 WAS 30.48; R40.1 WAS 40.6; 28.20 WAS 27.94; 52.06 WAS 52.32	8/26/2011	JSJ
	B	Ø2.99 +.00/-0.01 WAS +.01/-0.00 12.7 DEEP WAS 16.00	5/3/2012	TMV
	C	REDESIGNED TO STRENGTHEN PART, MATERIAL WAS ALUMINUM CAST 357-T6, ADDED HOLE Ø28.00 mm THRU; DIM. 30.48 mm WAS 30.04 mm, R40.64 mm WAS R40.1 mm, 27.94 mm WAS 28.20 mm, AND 52.32 mm WAS 52.06 mm	8/26/2015	DW



DETAIL B  
SCALE 1 : 1



DETAIL A  
SCALE 1/2



DETAIL C  
SCALE 1/2

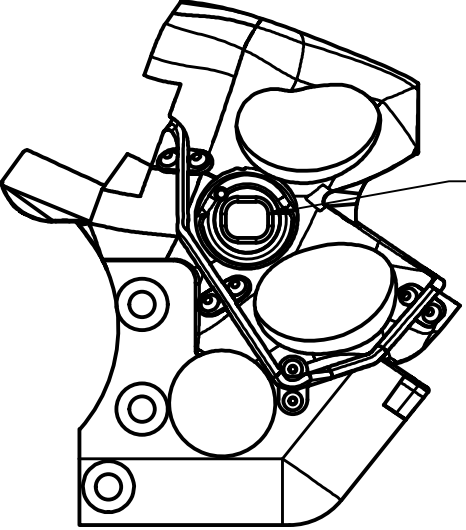
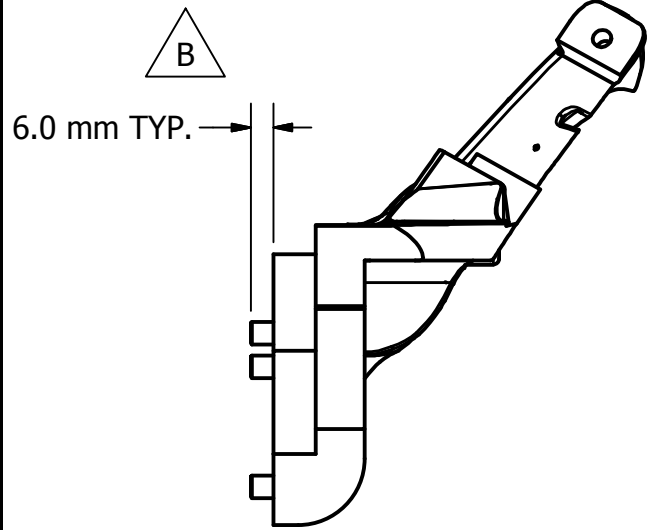
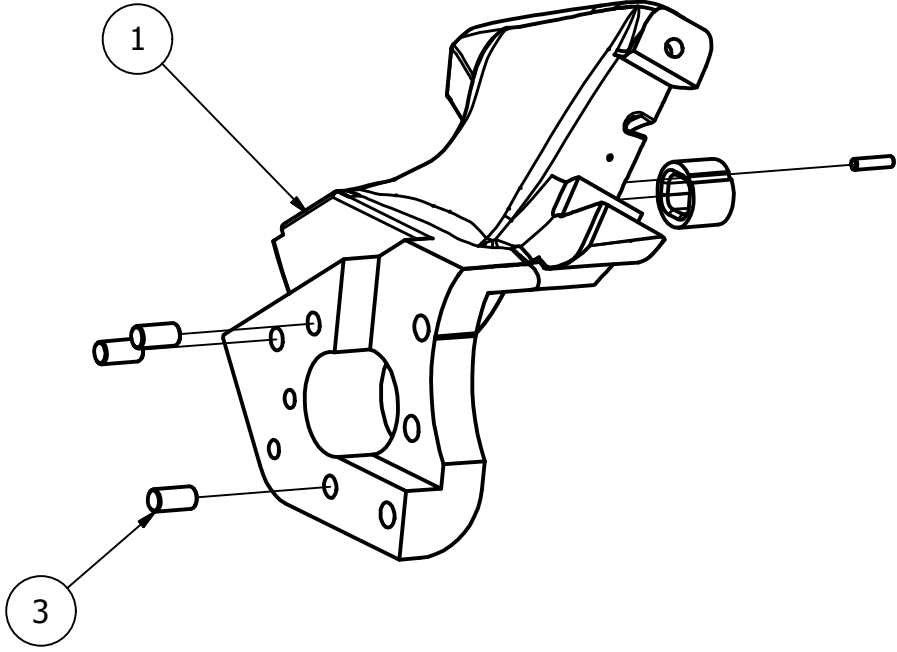
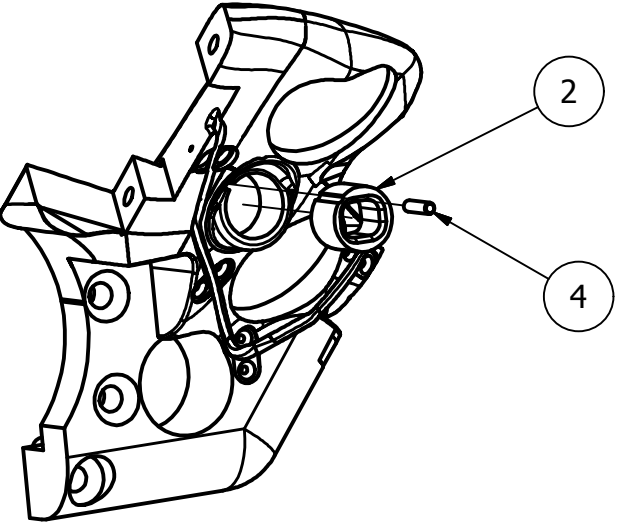
NOTES:  
1. USE CAD GEOMETRY TO DETERMINE LOCATION OF COUNTERBORES, TRAJECTORY AND LOCATION OF CABLE SLOT, AND HOLES FOR CABLE COVERS

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	5000088	HELICOIL, M6 X 1 X 9mm
1	2	5000086	HELICOIL, M5 X 0.8 X 7.5

Parts List

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED:</small> DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
PROJECT NO:	472-4380-2	DATE:	8/26/2011	PELVIS WING MACHINING (RIGHT)
MATERIAL:	Aluminum 6061	DRAWN BY:	jordan	
CHECKED BY:	TMV	DATE:	9/13/2011	
ENGINEER:	shawnr	DATE:	1/25/2012	
TOTAL QTY IN DUMMY	1	FINISH:		SIZE: A2 SHEET: 1 OF 1 SCALE: 1:1 DRAWING NO: 472-4382-2 REV: C

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM401-00 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ
	B	ADDED VIEW WITH PIN HEIGHT DIMENSION	7/24/2012	TMV
	C	REVISED PART #472-4382-1 PELVIS WING MACHINING (LEFT)	8/25/2015	DW



472-4381 TO BE INSTALLED AS SHOWN  
LONGER DIMENSION OF OPENING  
IS TO BE HORIZONTAL.

ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	5000183	PIN, DOWEL M3 X 12 mm
3	3	5000433	PIN, DOWEL M6 X 12 mm
2	1	472-4381	PELVIS H-PT. TOOL BEARING
1	1	472-4382-1	PELVIS WING MACHINING (LEFT)

Parts List

<b>DO NOT SCALE DRAWING</b>		<b>TOLERANCES</b>	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		DECIMALS ANGLES FINISH	
X ± 0.5		± 0.5 1.6	
XX ± 0.2		✓	
XXX ± 0.1		REMOVE BURRS & BREAK SHARP EDGES	
XXXX ± 0.01		DATE: 8/10/2011	
PROJECT NO.:		DRAWN BY: S. RICE	
MATERIAL:		CHECKED BY: TMV	
HEAT TREAT:		DATE: 9/21/2011	
FINISH:		ENGINEER: J. WANG	
		DATE: 1/23/2012	

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

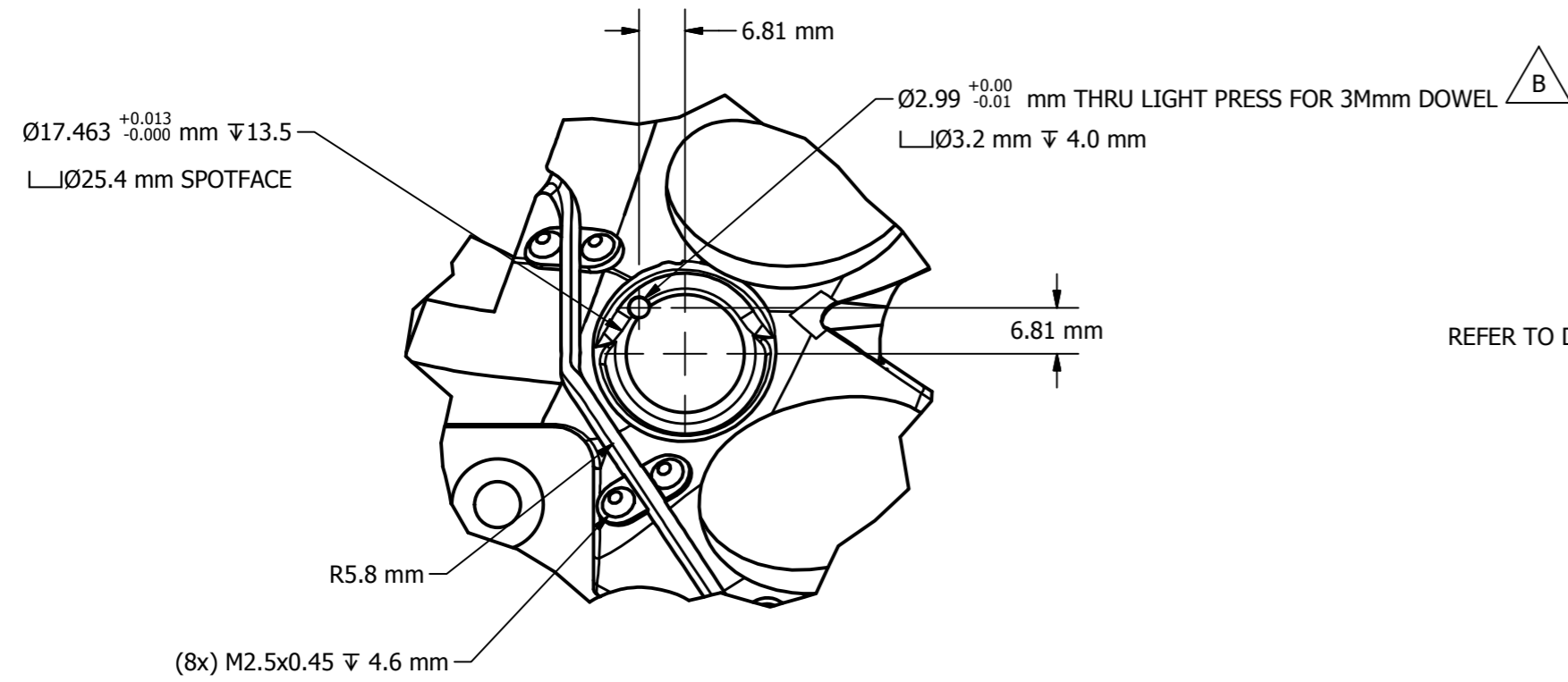
DESCRIPTION: LEFT ILIAC ASSEMBLY

SIZE: A3 SHEET 1 OF 1  
SCALE: 1:2

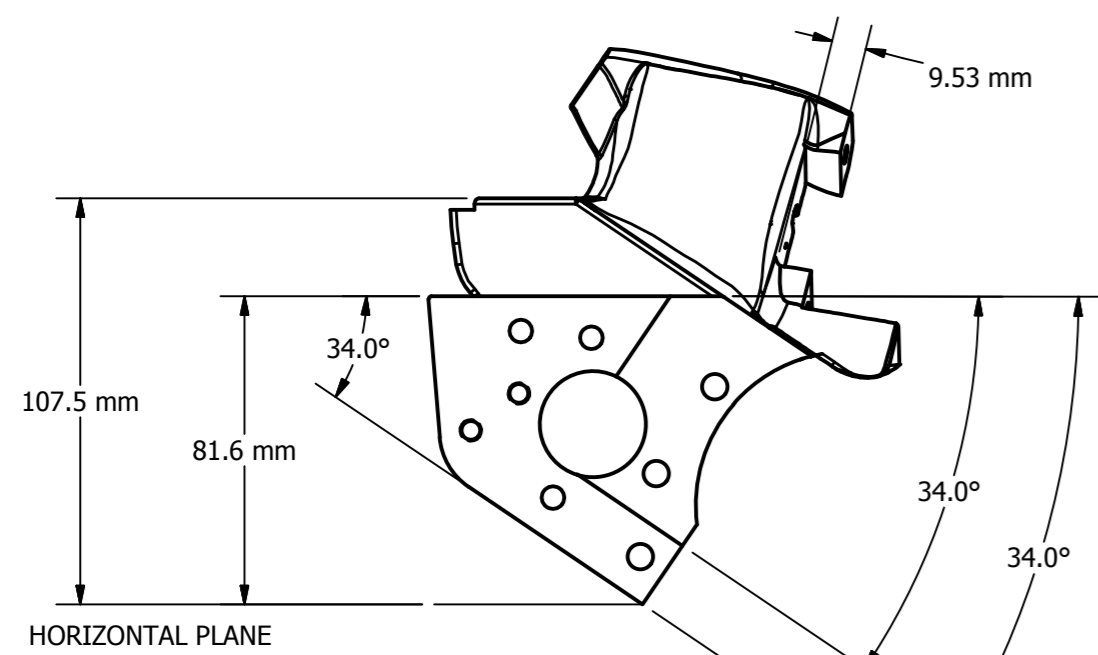
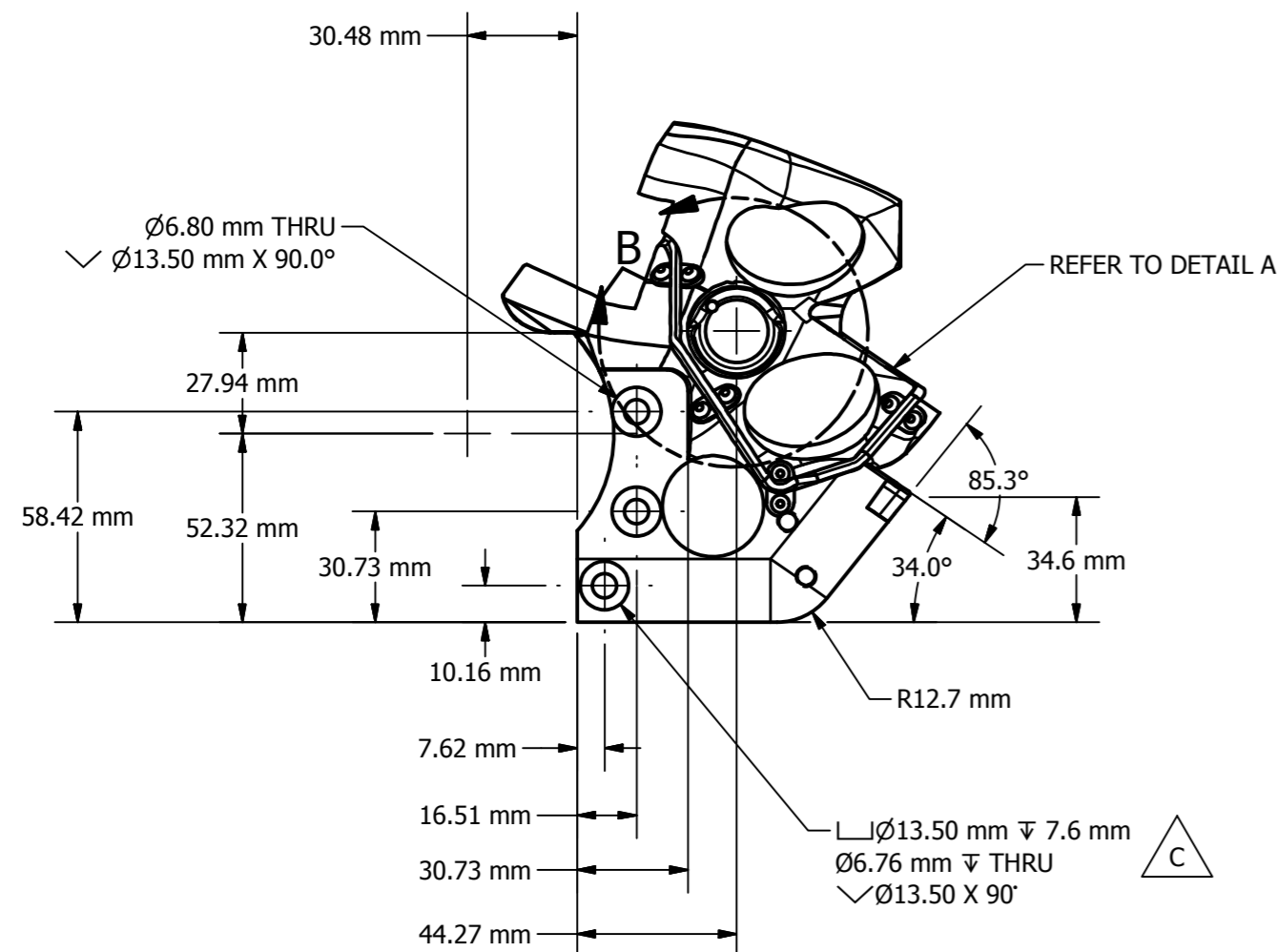
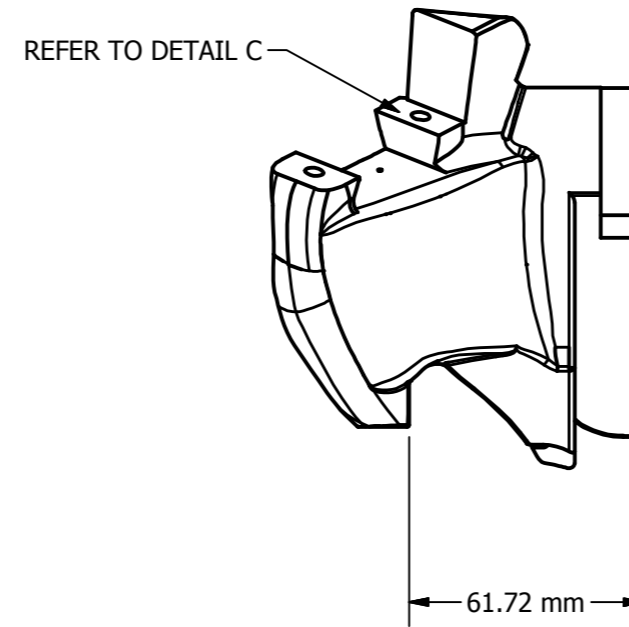
DRAWING NO.: 472-4380-1

472-4000	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

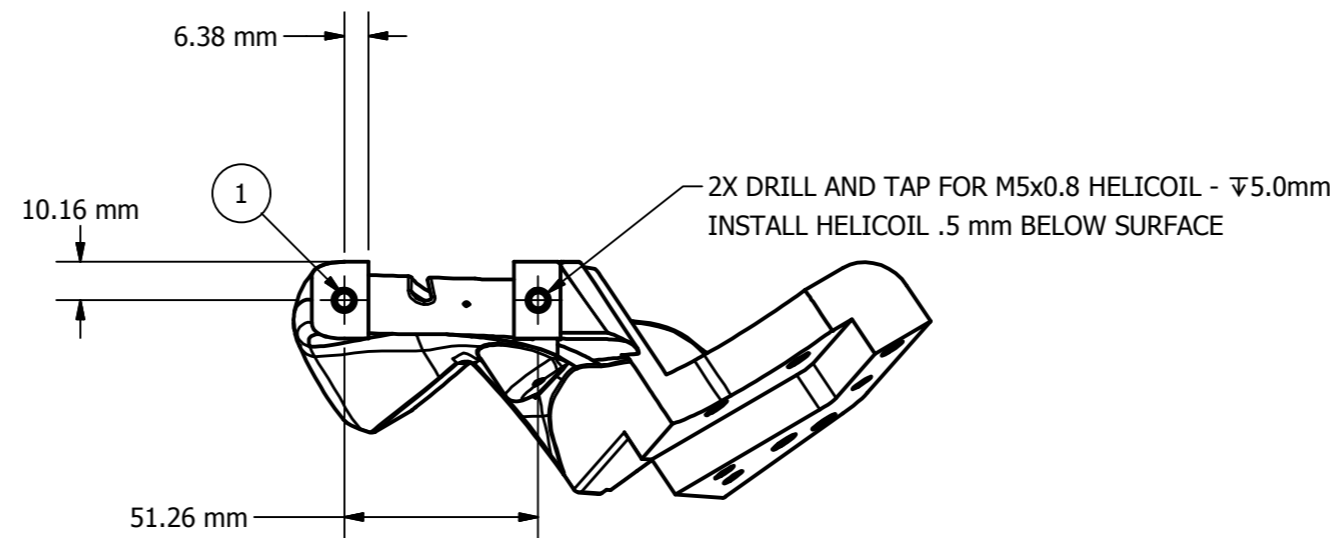
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
78027	A	RENUMBERED FROM T1PLM011-05 AND CONVERTED TO METRIC FOR THOR-M	8/25/2011	JSJ
10439	B	Ø2.99 +.00/-0.01 WAS +.01/-0.00 12.7 DEEP WAS 16.00	5/3/2012	TMV
70784	C	C'BORE Ø13.50 WAS Ø6.8	1/31/2013	BK
	D	REDESIGNED TO STRENGTHEN PART, MATERIAL WAS ALUMINUM CAST 357-T6, ADDED HOLE 28.00 mm THRU	8/25/2015	DW



DETAIL B  
SCALE 1 : 1

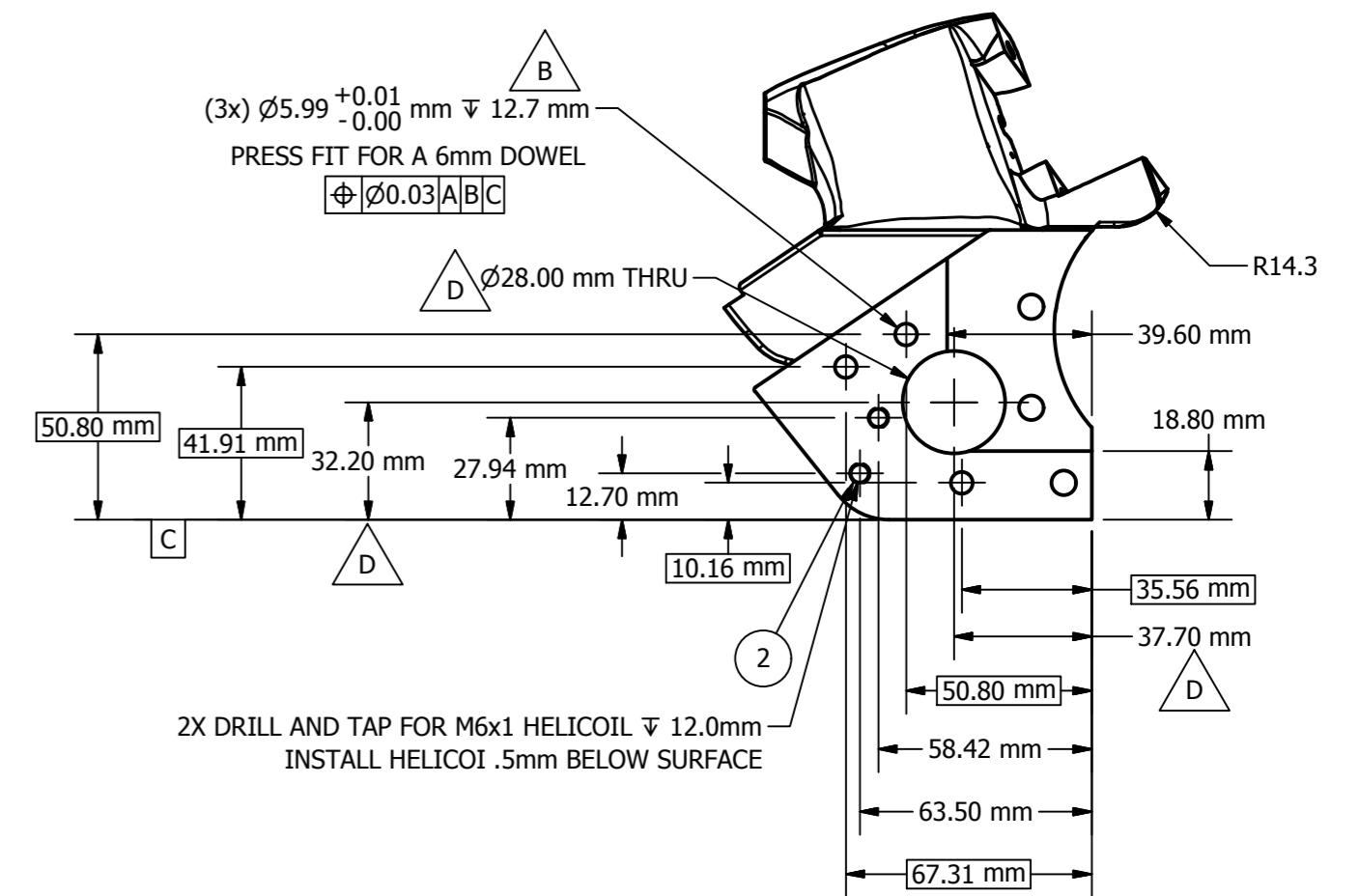


DETAIL A  
SCALE 1/2



DETAIL C  
SCALE 1/2

NOTES:  
1. USE CAD GEOMETRY TO DETERMINE LOCATION OF COUNTERBORES, TRAJECTORY AND LOCATION OF CABLE SLOT, AND HOLES FOR CABLE COVERS



ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	5000088	HELICOIL, M6 X 1 X 9mm
1	2	5000086	HELICOIL, M5 X 0.8 X 7.5

Parts List

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH	
		X ± 0.5	1.6
		X.X ± 0.2	
		X.XX ± 0.1	
		X.XXX ± 0.01	
		X.XXXX ± 0.001	

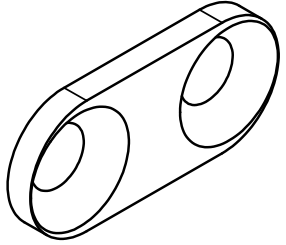
REMOVE BURRS & BREAK SHARP EDGES

PROJECT NO:	DATE:	DESCRIPTION:
472-4380-1	8/25/2011	PELVIS WING MACHINING (LEFT)
MATERIAL:	DRAWN BY:	DATE:
Aluminum 6061	Jordan	8/25/2011
HEAT TREAT:	CHECKED BY:	DATE:
ENGINEER:	DATE:	SCALE:
		1:2

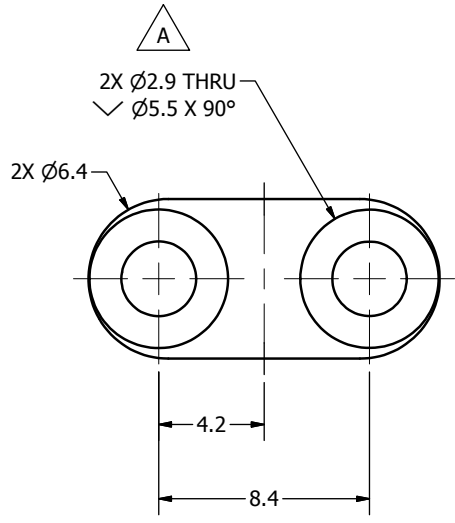
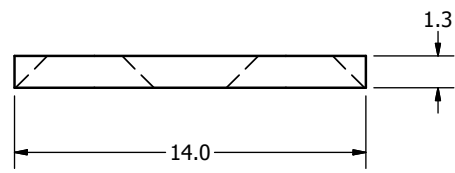
SIZE:	SHEET:	DRAWING NO.:	REV.:
A2	1 OF 1	472-4382-1	D



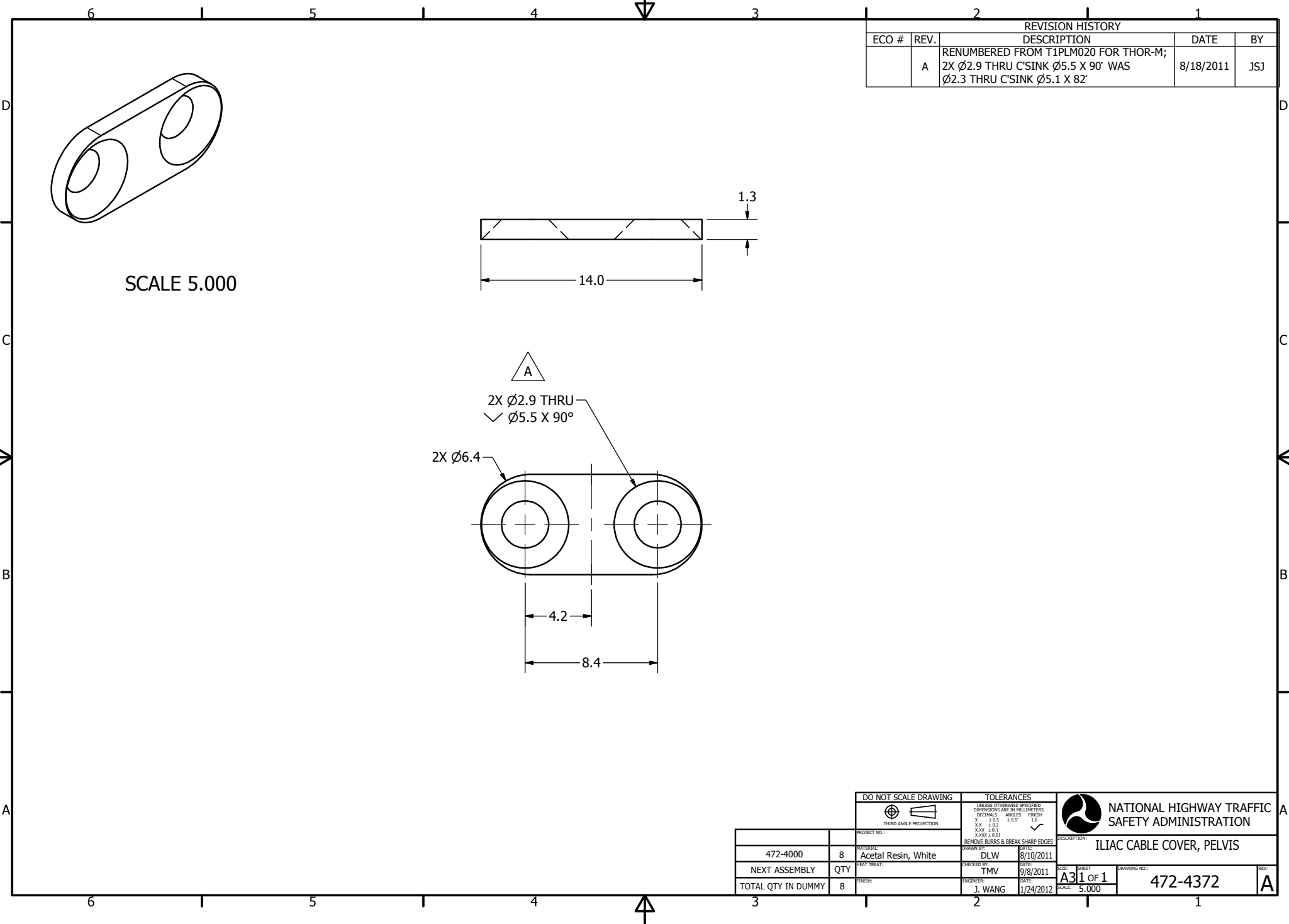
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TIPLM020 FOR THOR-M; 2X Ø2.9 THRU C'SINK Ø5.5 X 90° WAS Ø2.3 THRU C'SINK Ø5.1 X 82°	8/18/2011	JSJ



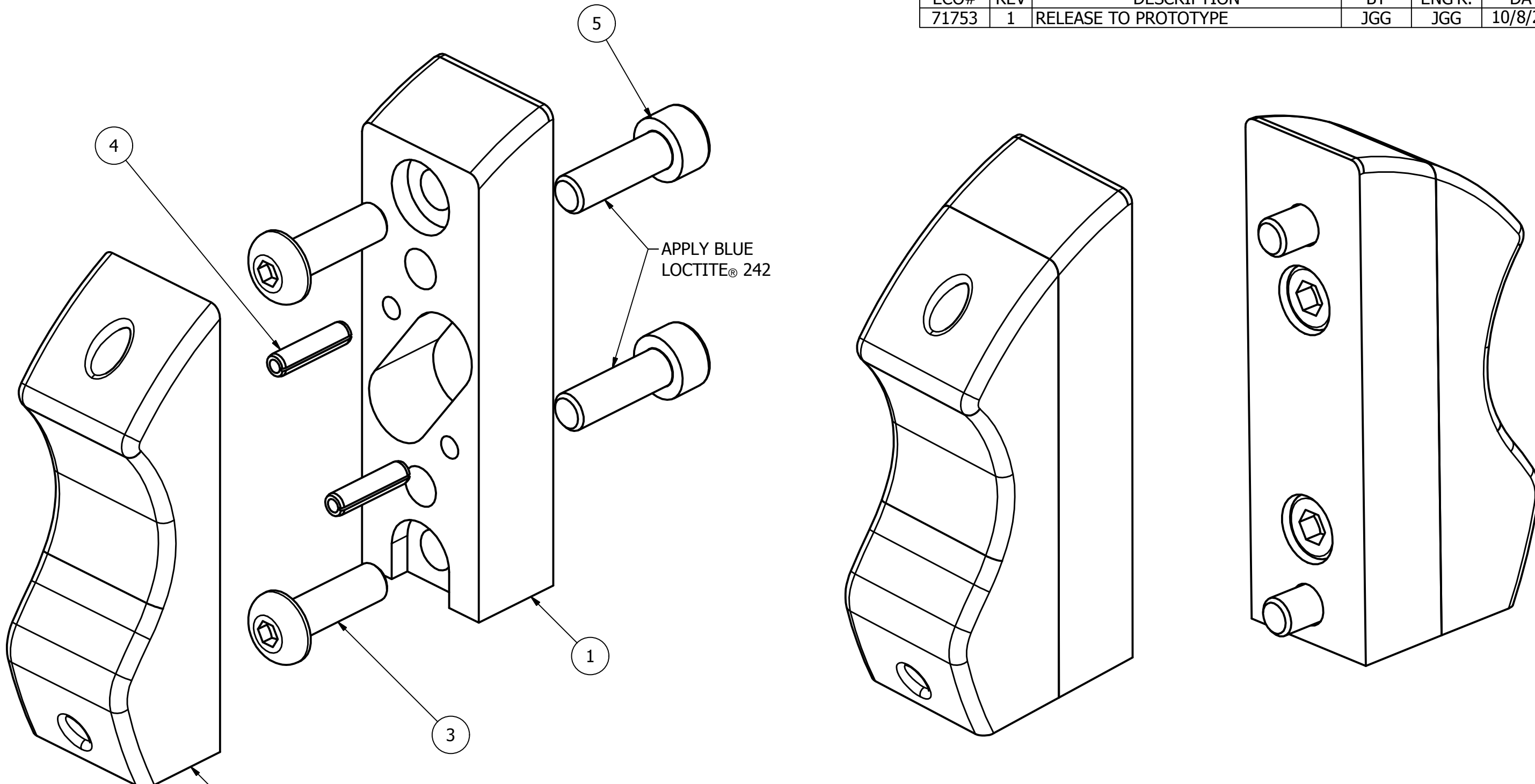
SCALE 5.000



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5 16 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO.	472-4000	DRAWN BY	DLW	DATE	8/10/2011
MATERIAL	Acetal Resin, White	CHECKED BY	TMV	DATE	9/8/2011
HEAT TREAT		ENGINEER	J. WANG	DATE	1/24/2012
FINISH		SCALE	5.000	SIZE SHEET	A3 1 OF 1
TOTAL QTY IN DUMMY		8	DRAWING NO.		472-4372



REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
71753	1	RELEASE TO PROTOTYPE	JGG	JGG	10/8/2013



**ASSEMBLY INSTRUCTIONS**

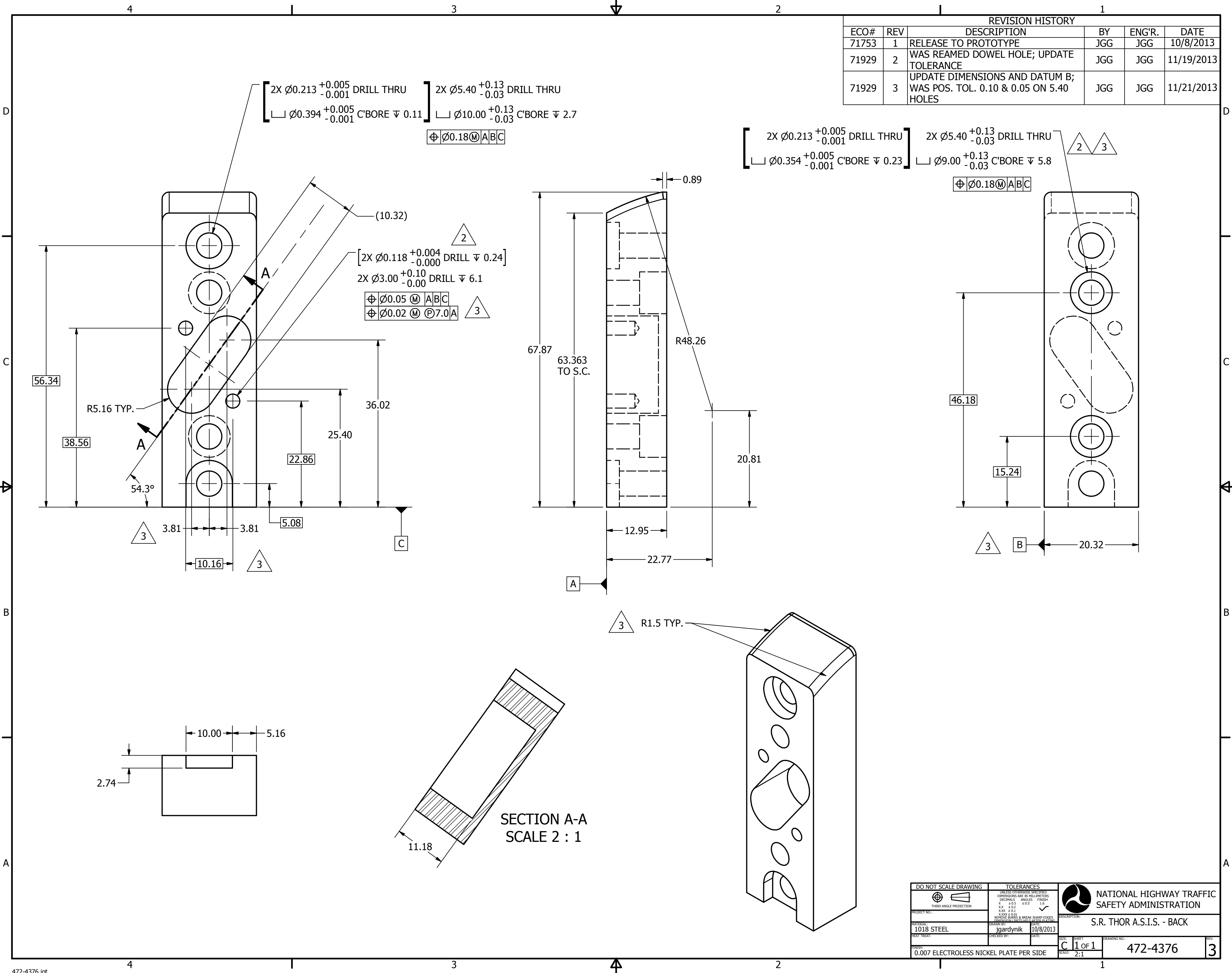
1. PRESS THE M3 ROLL PINS INTO PART #472-4376 AS SHOWN.
2. PLACE THE M5 X 0.8 X 16MM LG. BHCS IN THE CLEARANCE HOLES.
3. PRESS PART #472-4377 ONTO THE ROLL PINS AS SHOWN.
4. FASTEN THE TWO SIDES TOGETHER USING M5 X 0.8 X 16MM LG SHCS WITH LOCTITE® BLUE 242 AS SHOWN. TORQUE TO 7 Nm [60 IN-LBF]

ITEM	QTY	PART NUMBER	DESCRIPTION
5	2	5000020	SCREW, SHCS M5 x 0.8 x 16 LG.
4	2	5000166	PIN, ROLL M3 x 12 LG.
3	2	5000416	SCREW, BHCS M5 x 0.8 x 16 LG.
2	1	472-4377	S.R. THOR A.S.I.S. - FRONT
1	1	472-4376	S.R. THOR A.S.I.S. - BACK

**PARTS LIST**

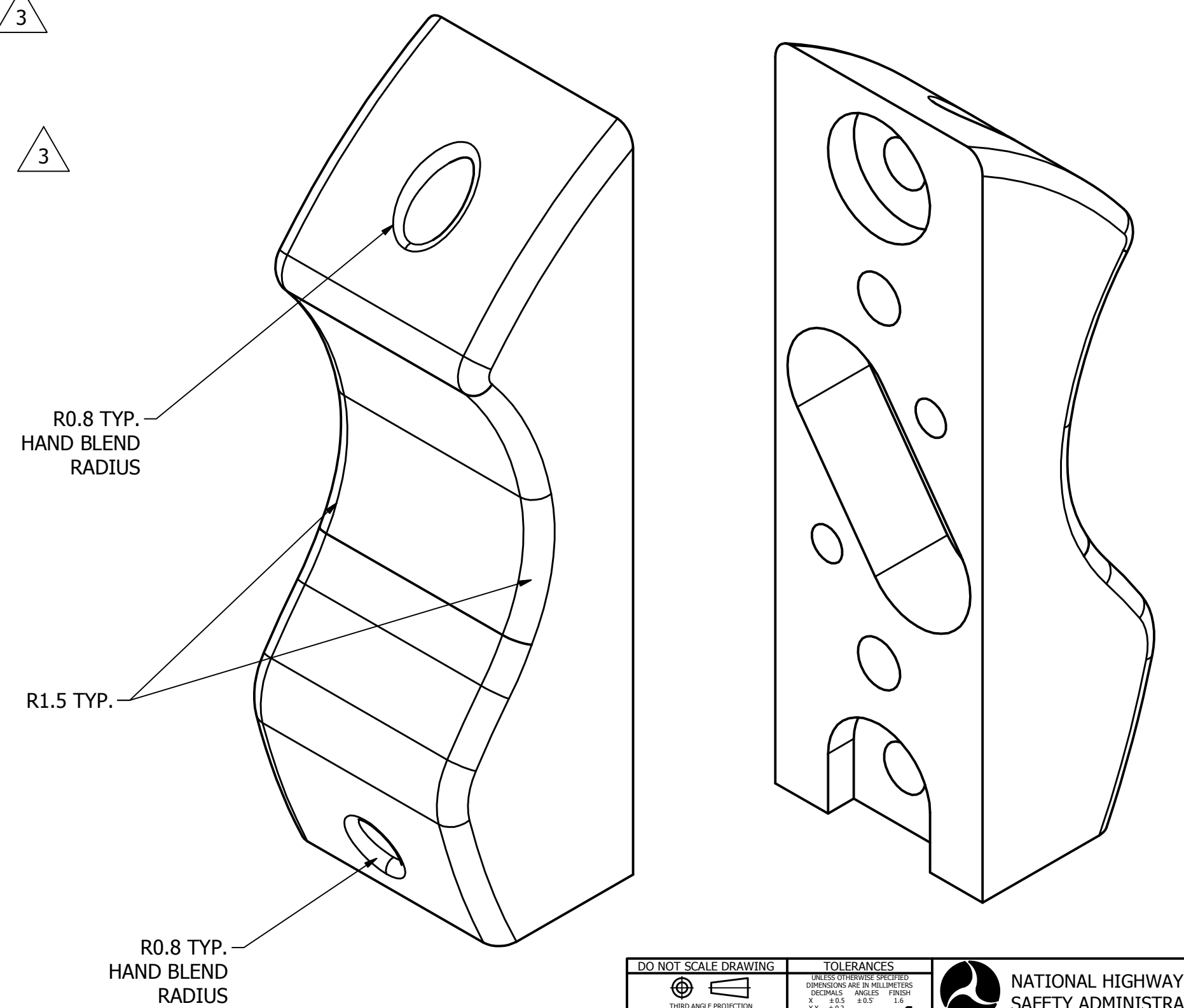
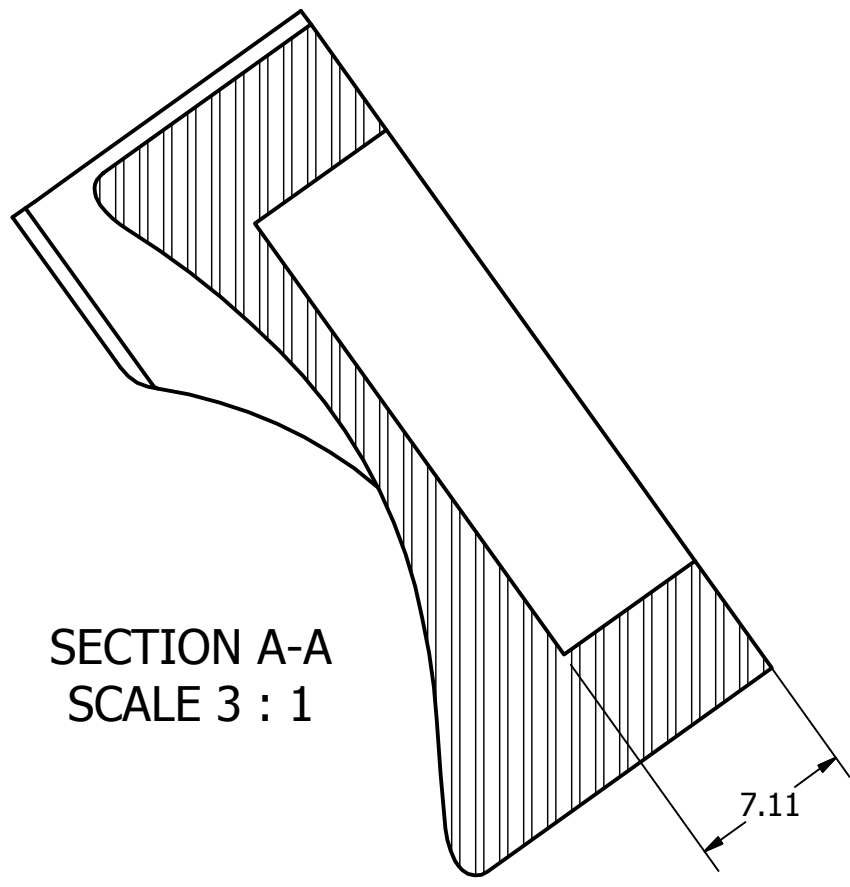
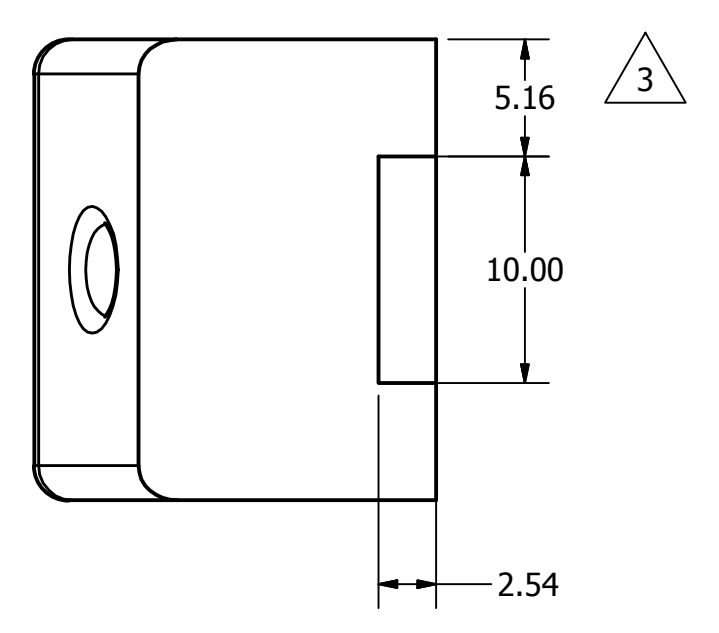
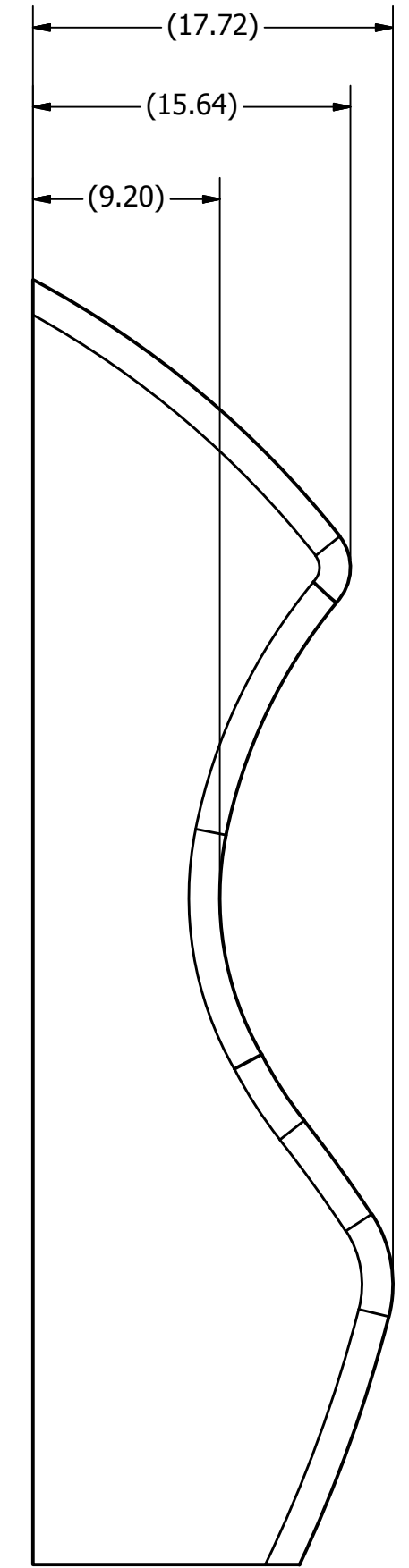
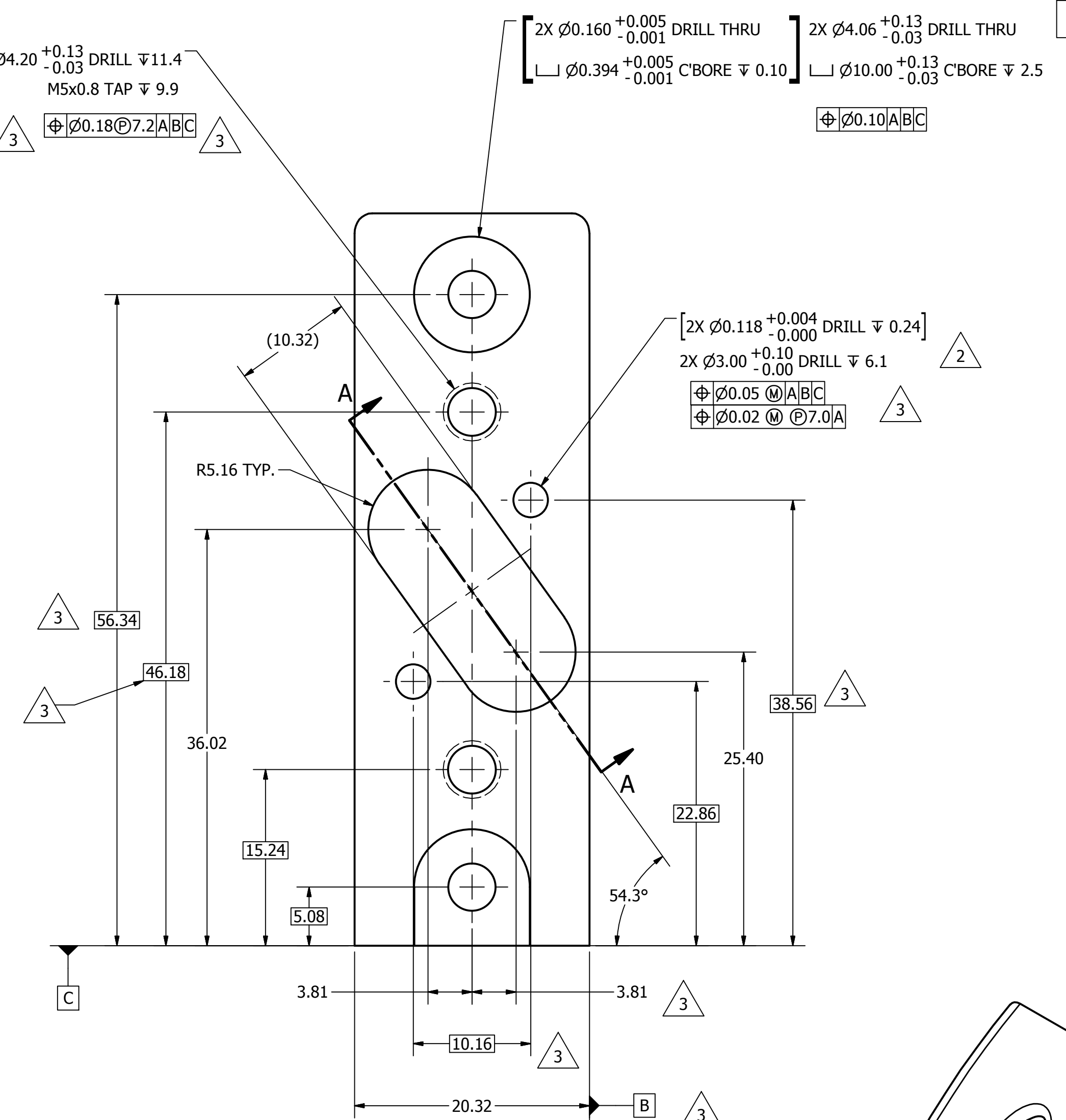
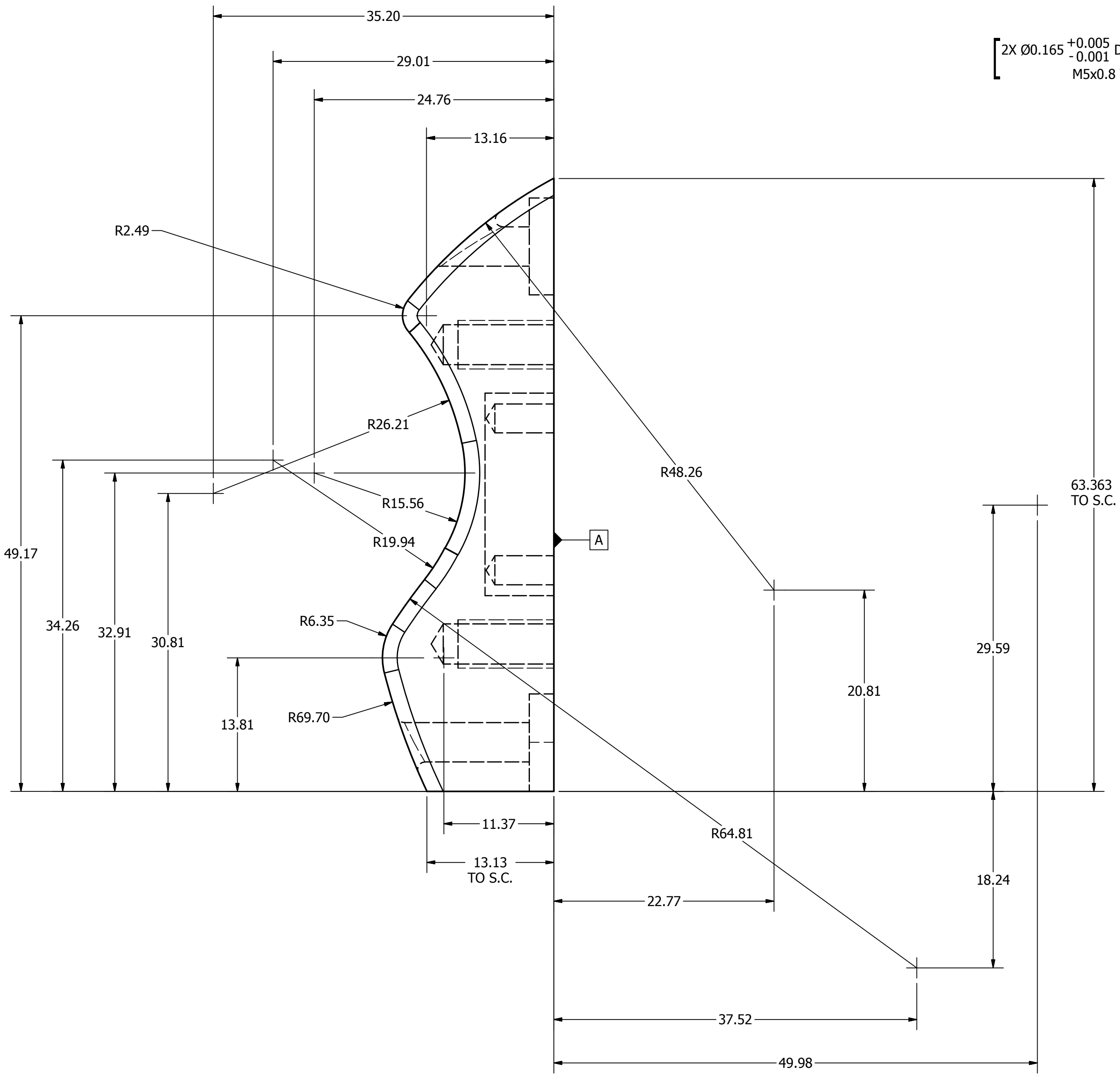
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ° ±0.5 1.6 X.X ±0.2 ° X.XX ±0.1 ° X.XXX ±0.01 ° REMOVE BURRS & BREAK SHARP EDGES DIMENSION LIMITS FIELD AFTER PLATING		
PROJECT NO.:	DATE:	DRAWN BY: jgardynik		DESCRIPTION: S.R. THOR A.S.I.S.
MATERIAL:	DATE: 10/8/2013	CHECKED BY:	DATE:	SIZE: SHEET A31 of 1
HEAT TREAT:	SCALE: 2:1	DRAWING NO.: 472-4375		REV: 1

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
71753	1	RELEASE TO PROTOTYPE	JGG	JGG	10/8/2013
71929	2	WAS REAMED DOWEL HOLE; UPDATE TOLERANCE	JGG	JGG	11/19/2013
71929	3	UPDATE DIMENSIONS AND DATUM B; WAS POS. TOL. 0.10 & 0.05 ON 5.40 HOLES	JGG	JGG	11/21/2013



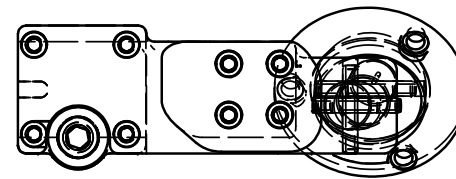
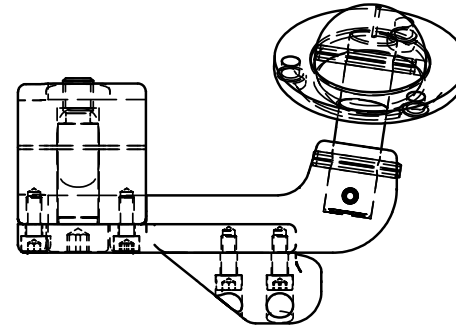
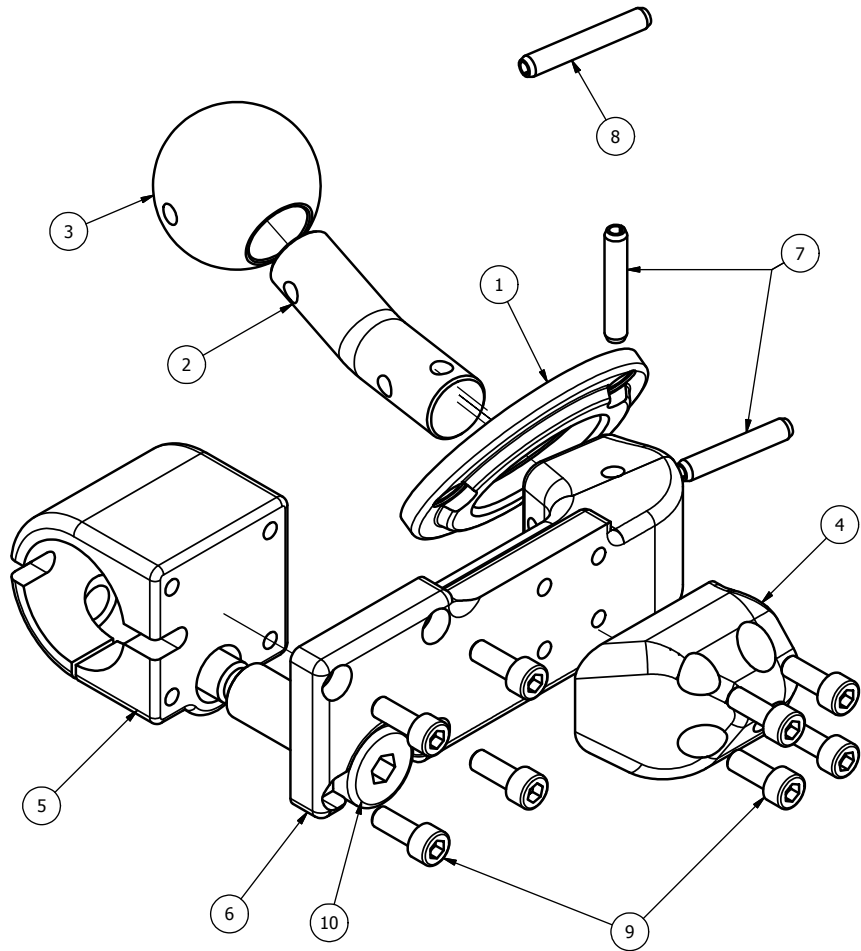
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		S.R. THOR A.S.I.S. - BACK	
PROJECT NO:		DIMENSIONAL ANGLES FINISH		DRAWING NO.:	
MATERIAL:		XX ± 0.2		SCALE:	
PART NAME:		XXX ± 0.1		C 1 OF 1	
DRAWN BY:		REMOVE BURRS & BREAK SHARP EDGES		472-4376	
CHECKED BY:		CONFIRMED BY: (DATE)		3	
DATE:		0.007 ELECTROLESS NICKEL PLATE PER SIDE		2:1	
10/8/2013					

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
71753	1	RELEASE TO PROTOTYPE	JGG	JGG	10/8/2013
71929	2	WAS REAMED DOWEL HOLE	JGG	JGG	11/19/2013
71929	3	UPDATE DIMENSIONS AND DATUM WAS POS. TOL 0.05 ON M5 HOLES	JGG	JGG	11/21/2013



DO NOT SCALE DRAWING	TOLERANCES	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
1018 STEEL	10/8/2013	S.R. THOR A.S.I.S. - FRONT
0.007 ELECTROLESS NICKEL PLATE PER SIDE	D 11 of 1	472-4377

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM100 R2 FOR THOR-M	8/17/2011	TKN
	B	ADD 5000298	7/19/2012	BK

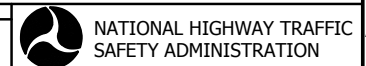


ISO VIEW  
SCALE 3/4

ITEM	QTY	PART NUMBER	DESCRIPTION
10	1	5000298	M16 X 40 LG. SHSS
9	8	5000081	M6 X 1 X 16 LG. SHCS
8	1	5001118	M6 X 40mm ROLL PIN
7	2	5001119	M6 X 35mm ROLL PIN
6	1	472-4815-1	HIP ARM, LEFT
5	1	472-4814-1	HIP CYLINDER, LEFT
4	1	472-4812-1	TROCHANTER, LEFT
3	1	472-4820	FEMUR BALL
2	1	472-4819	HIP SHAFT
1	1	472-4830	FEMUR RETAINING RING

B

Parts List	
DO NOT SCALE DRAWING	TOLERANCES
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X ±0.2 X.XX ±0.3 X.XXX ±0.01
PROJECT NO.: 472-4000	DATE: 8/17/2011
MATERIAL: NEXT ASSEMBLY	DESIGNED BY: Thanh
HEAT TREAT:	CHECKED BY:
DATE:	DATE:
ENGINEER: J. WANG	DATE: 1/23/2012
TOTAL QTY IN DUMMY	SCALE: 1:2
1	1

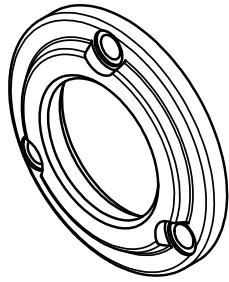


NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

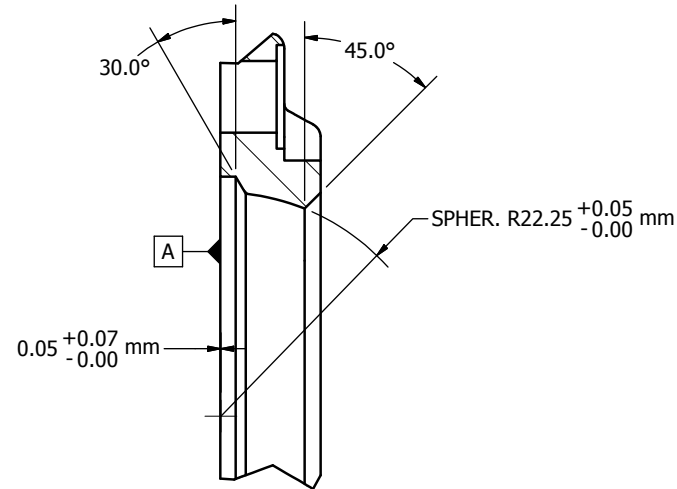
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472-4800-1

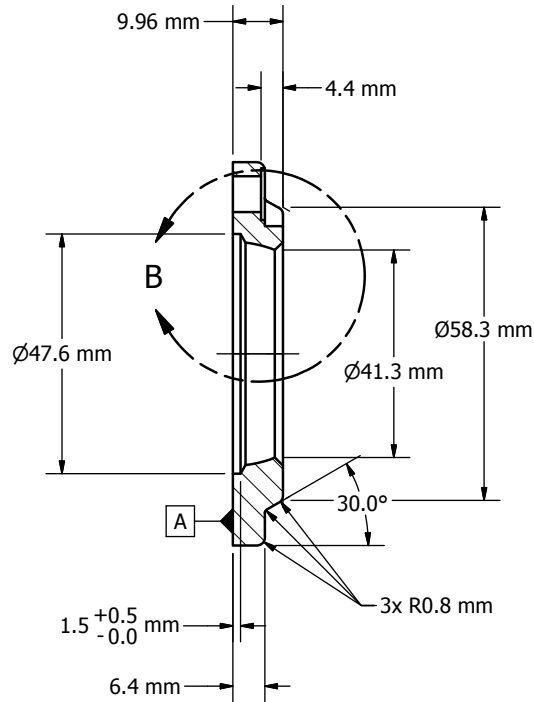
B



SCALE .750

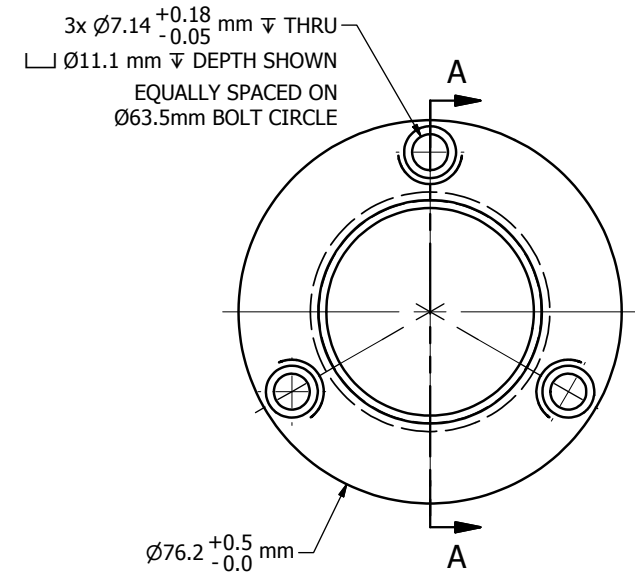


DETAIL B  
SCALE 2 : 1



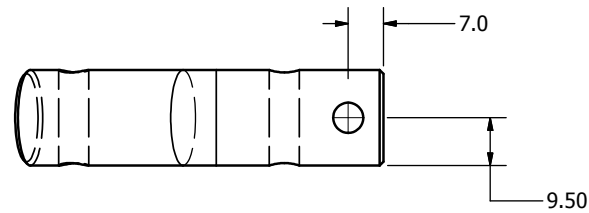
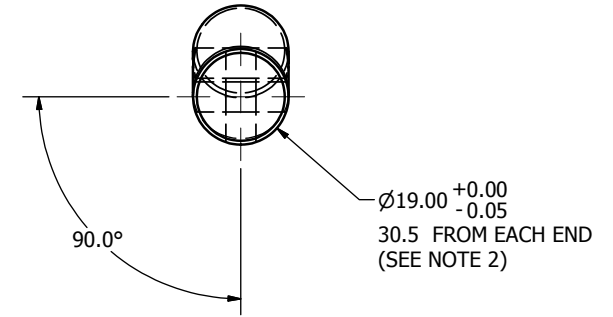
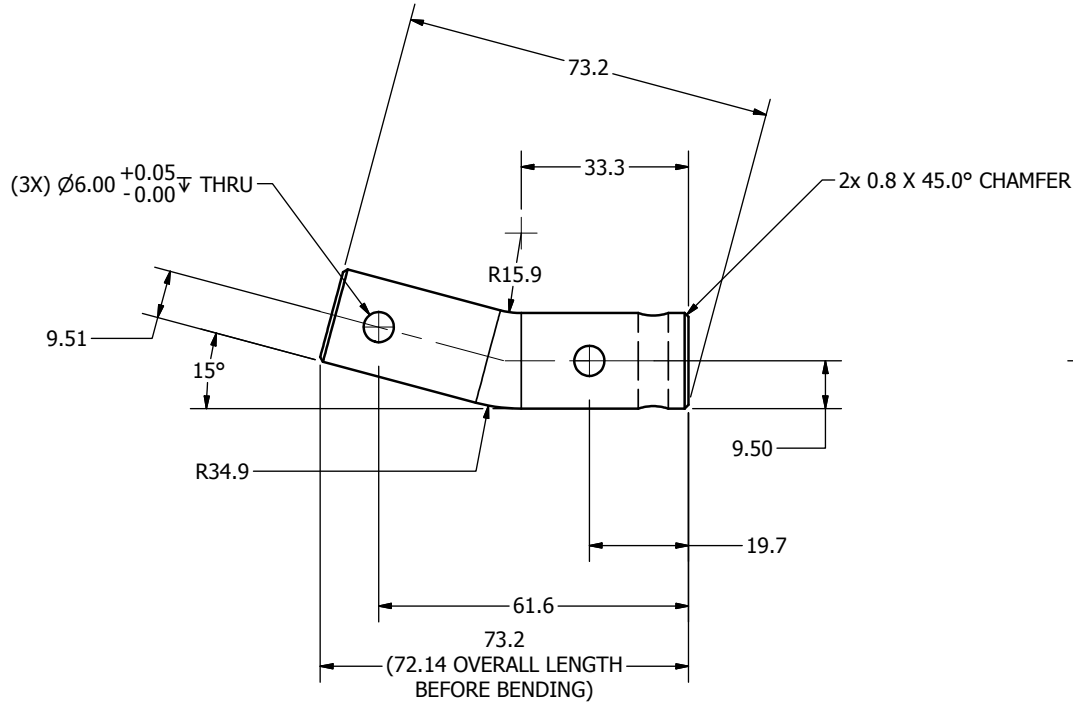
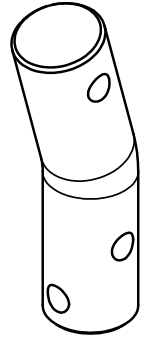
SECTION A-A  
SCALE 1 : 1

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM130 R4 FOR THOR-M; REMOVE NOTES	8/22/2011	JSJ



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 1.6 XX .02 1.6 XXX .01 1.6 XXXX 0.01		
PROJECT NO.:	472-4800-2	1	PROJECT NO.:	DESCRIPTION: <b>FEMUR RETAINING RING</b>
MATERIAL:	Brass, Soft Yellow	1	DATE:	
CHECKED BY:	TMV	9/8/2011	DATE:	
ENGINEER:	J. WANG	1/25/2012	DATE:	
HEAT TREAT:			SCALE:	SIZE: SHEET <b>A31</b> OF 1 SCALE: 1:1
NEXT ASSEMBLY	QTY	2	DRAWING NO.:	472-4830
TOTAL QTY IN DUMMY	QTY	2	REV.:	A

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM119 AND CONVERTED TO METRIC FOR THOR-M; MATERIAL WAS 1018 STEEL; HEAT TREAT WAS Rc 44-47; FINISH WAS ELECTROLESS NICKEL .0003 MA.X	8/18/2011	JSJ



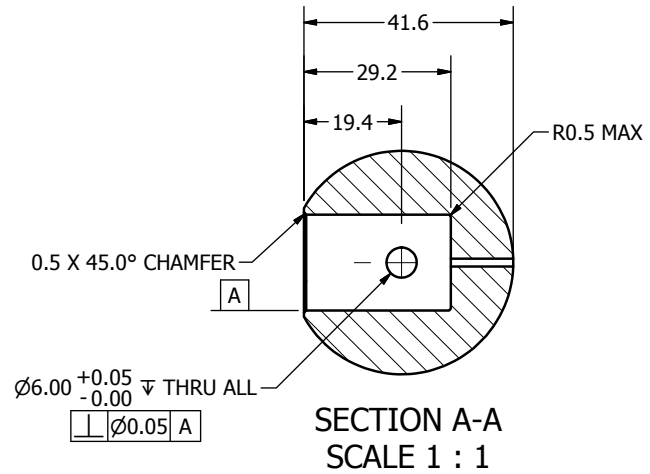
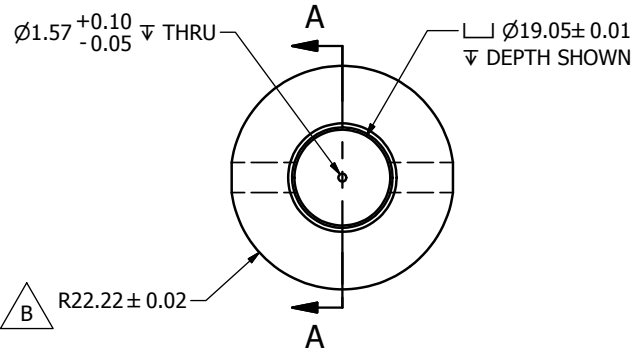
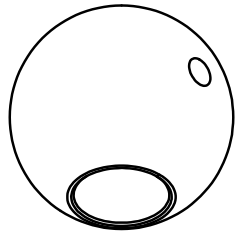
NOTES:

- ONCE THE SHAFT IS BENT TO 15°, THE DIAMETER NEAR THE BEND WILL NEED REMACHINING.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 1.6 ✓ XX .02 ✓ XXX .01 ✓ XXXX 0.01 ✓		
PROJECT NO:	472-4800-2	1	DATE:	8/17/2011
MATERIAL:	4130 STEEL	1	DESIGNED BY:	HORCHLER
HEAT TREAT:	Rc 44-48	1	CHECKED BY:	TMV
FINISH:	ELECTROLESS NICKEL .008 MAX	2	DATE:	10/26/2011
TOTAL QTY IN DUMMY		2	ENGINEER:	J. WANG
			DATE:	1/25/2012

DESCRIPTION:		HIP SHAFT		
SIZE:	A3	SHEET:	1 OF 1	
SCALE:	1:1	DRAWING NO.:	472-4819	
			REV.:	A

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM120 R3 FOR THOR-M	8/18/2011	JSJ
	B	R22.22 +/- .02 WAS R22.23 +/- .02	7/13/2012	TMV



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ± 0.2 16  
XX ± 0.2  
XXX ± 0.01

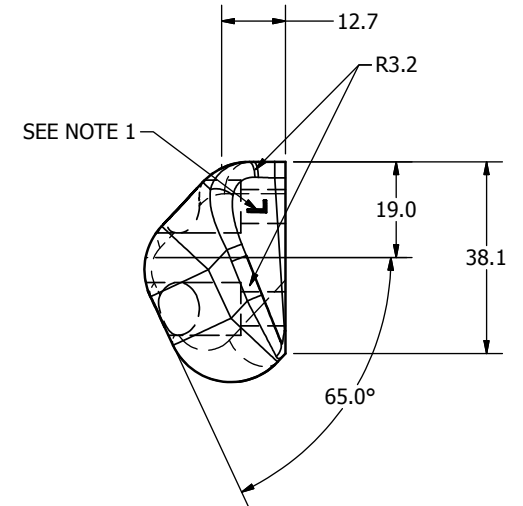
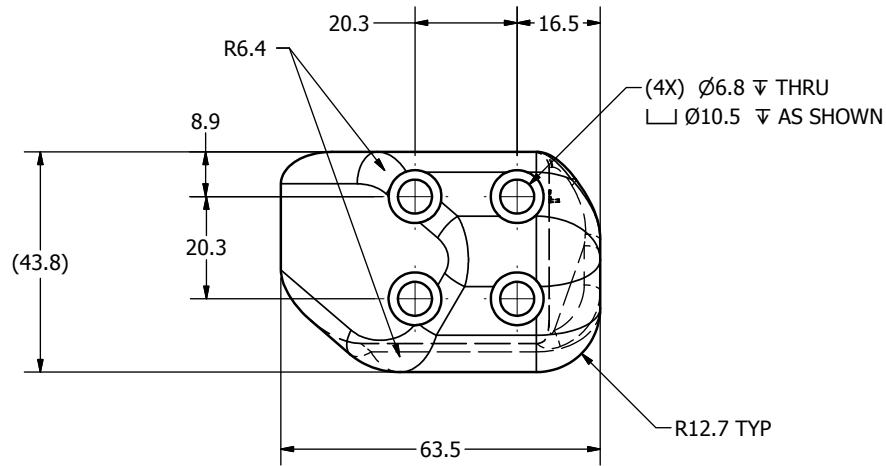
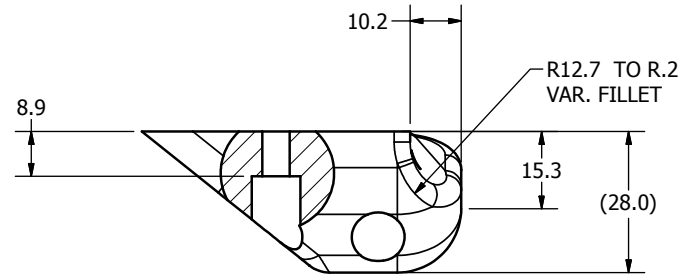
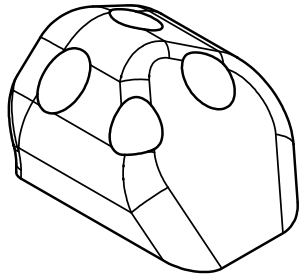


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

472-4800-2	1	PROJECT NO.:	DATE:	SIZE:	SHEET:	DRAWING NO.:	REV.:
472-4800-1	1	MATERIAL:	8/17/2011	A3	1 OF 1	472-4820	B
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:	DESCRIPTION:			
TOTAL QTY IN DUMMY	2	TMV	10/27/2011	FEMUR BALL			
		HEAT TREAT:	DATE:				
			1/25/2012				
		ENGINEER:					
		J. WANG					

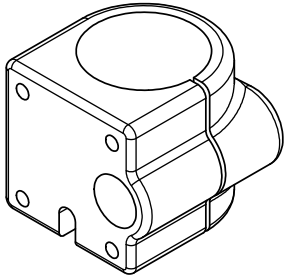


REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM112 R2 THOR-M	8/18/2011	JSJ

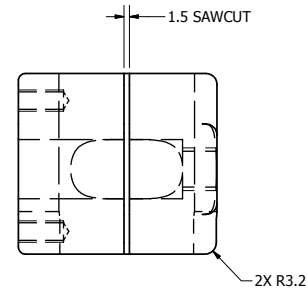
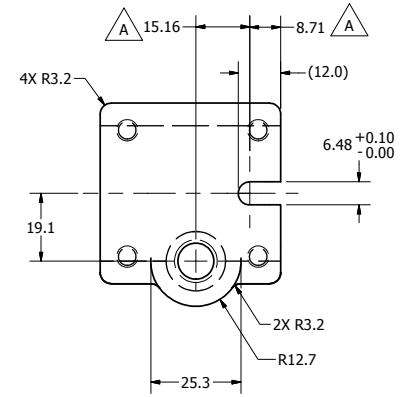
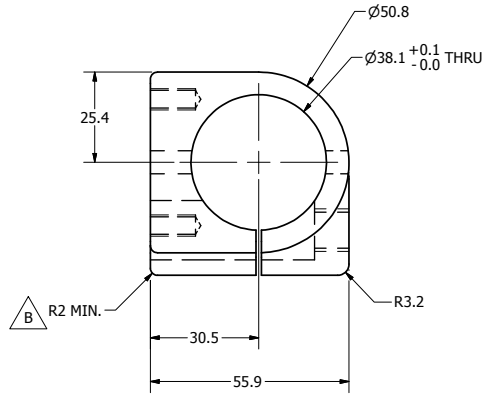
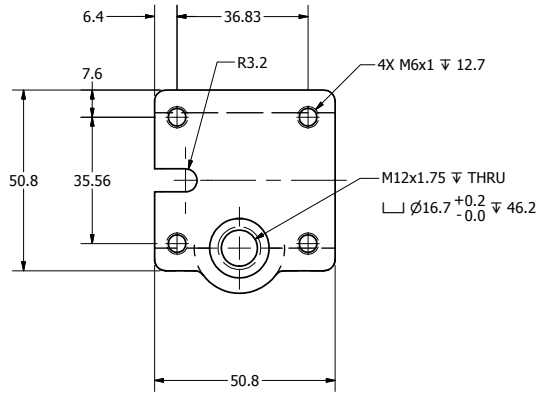


NOTES:  
1. ENGRAVE THE LETTER "L"

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED		
PROJECT NO.:	472-4800-1	MATERIAL:	Acetal Resin, White	DESCRIPTION: TROCHANTER, LEFT
DATE:	8/17/2011	ENGINEER:	J. WANG	
CHECKED BY:	TMV	DATE:	10/25/2011	SIZE: A3
HEAT TREAT:		ENGINEER:	J. WANG	SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	FINISH:		SCALE: 1:1
				DRAWING NO.: 472-4812-1
				REV: A

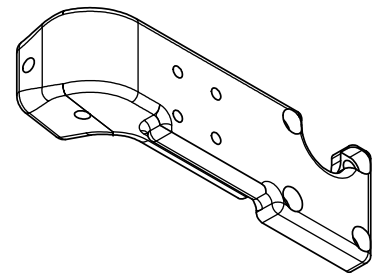
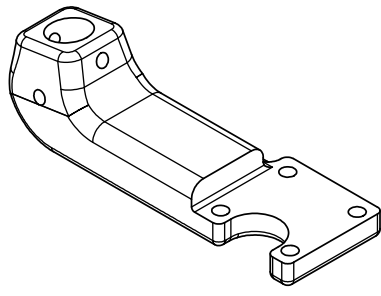


REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM114 R4 FOR THOR-M; 15.16 WAS 15.14, 8.71 WAS 8.76	8/18/2011	JSJ
	B	ADD R2 WAS R1.6	4/24/2012	BK

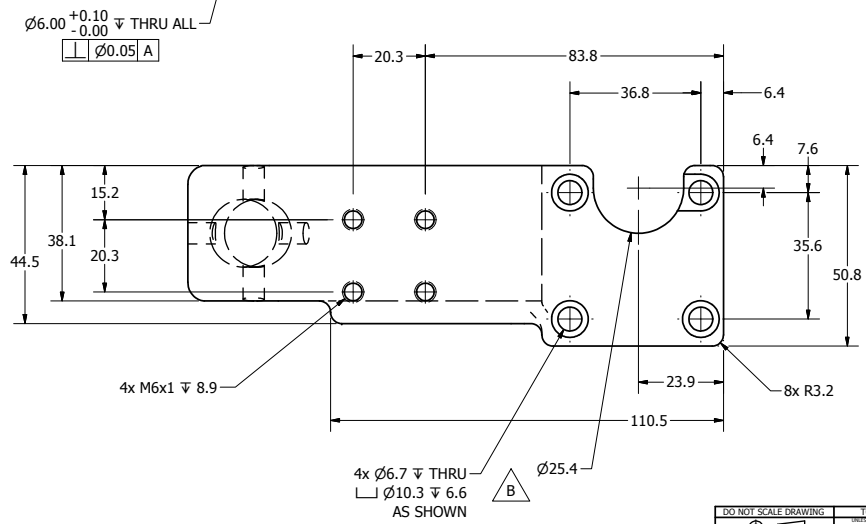
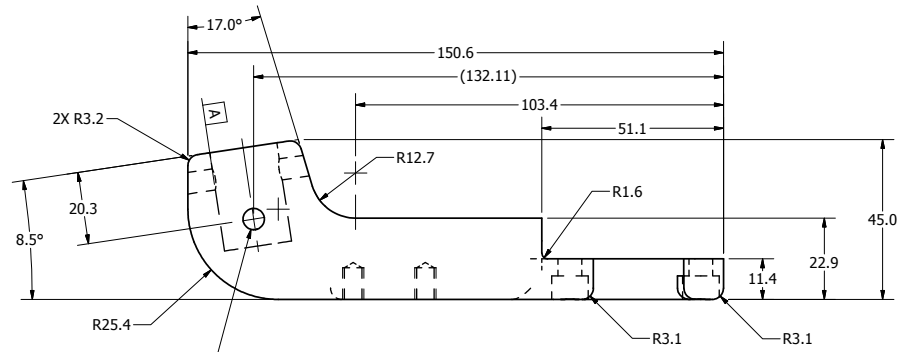
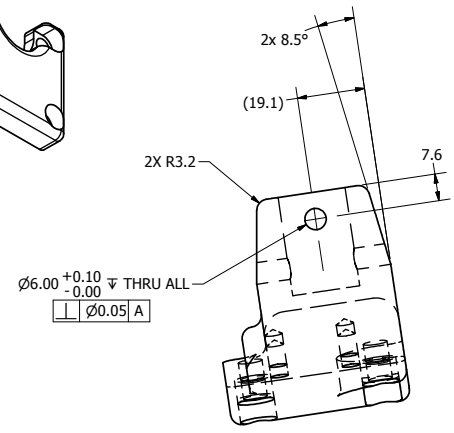
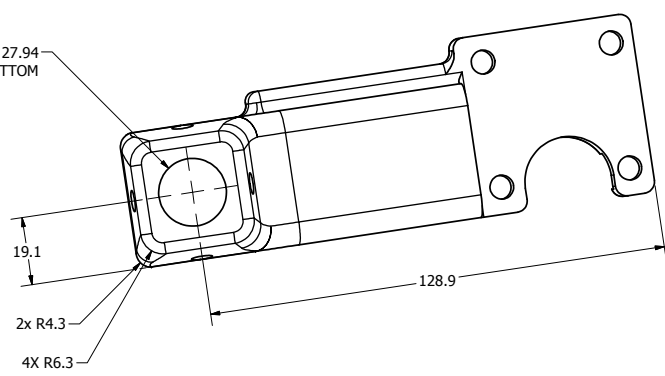


DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    DECIMALS    FRACTIONS 0.1    1/16    0.01    1/32 0.5    1/8    0.25    1/4 1.0    1/4    0.5    1/2 2.0    1/2    1.0    1		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-4800-1	1	1018 STEEL	HORCHLER	8/17/2011	HIP CYLINDER, LEFT
NEXT ASSEMBLY	QTY		PREPARED BY	DATE	
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL 008 MAX	J. WANG	11/25/2012	
		SCALE		PAGE 1 OF 1	
		DATE		PART NO. 472-4814-1	

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM115 R5 AND CONVERTED TO METRIC FOR THOR-M; FINISH WAS ELECTROLESS NICKEL .0003 MAX.	8/18/2011	JSJ
	B	Ø25.4 WAS Ø22.9; ADD "AS SHOWN"	7/18/2012	BK



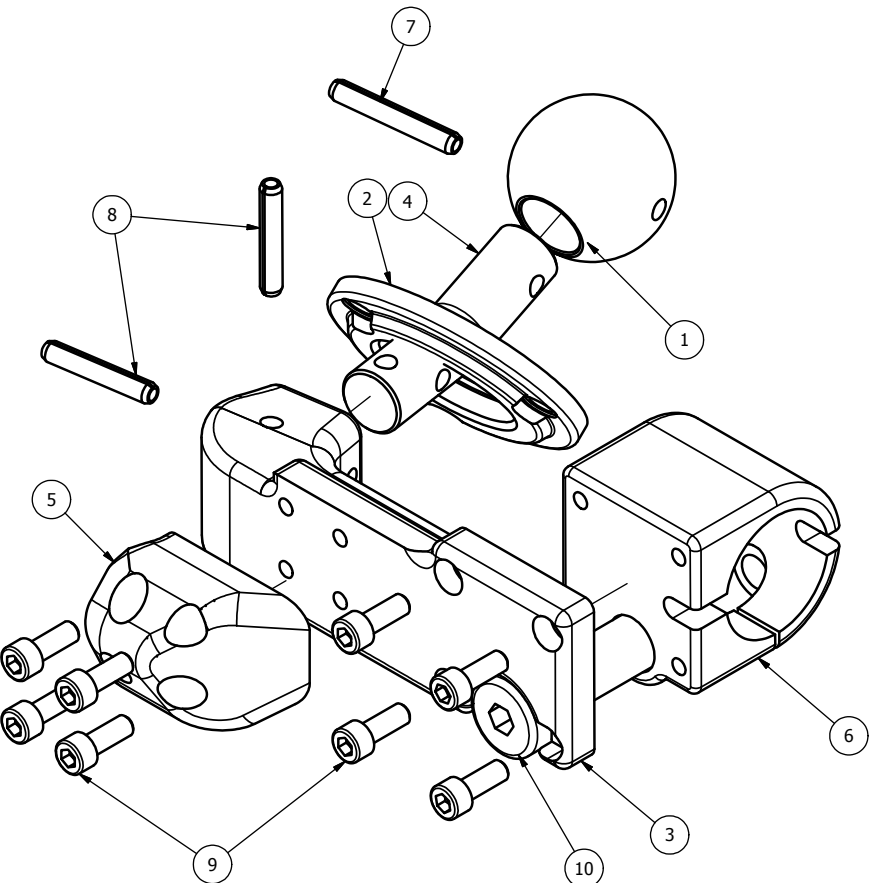
Ø19.05±0.02  $\nabla$  27.94  
FLAT BOTTOM



- NOTES:  
 1. BREAK ALL SHARP EDGES.  
 2. PLUG Ø19.05 AND M6x1 HOLES BEFORE APPLYING SURFACE FINISH.

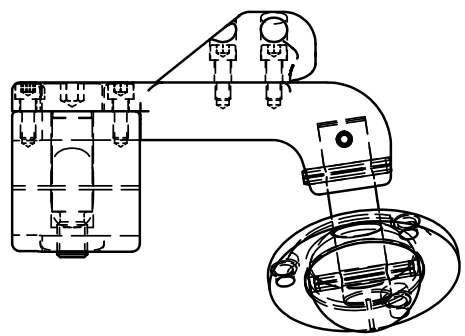
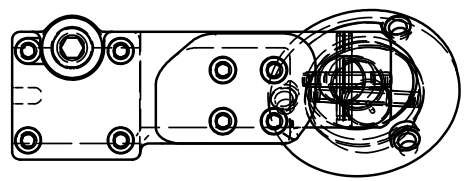
DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE IN HUNDRETHS FRACTIONS ARE IN THIRDS		HIP ARM, LEFT	
472-4800-1	1	1018 STEEL	HORCHLER	8/17/2011	
NEXT ASSEMBLY	QTY		PREPARED BY	DATE	
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL .008 MAX	J. WANG	1/25/2012	

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 HIP ARM, LEFT  
 A21 of 1  
 472-4815-1



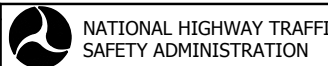
ISO VIEW  
SCALE 3/4

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM101 R2 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	TKN
	B	ADD 5000298	7/19/2012	BK



ITEM	QTY	PART NUMBER	DESCRIPTION
10	1	5000298	M16 X 40 LG. SHSS
9	8	5000081	M6 X 1 X 16 LG. SHCS
8	2	5001119	M6 X 35mm ROLL PIN
7	1	5001118	M6 X 40mm ROLL PIN
6	1	472-4814-2	HIP CYLINDER, RIGHT
5	1	472-4812-2	TROCHANTER, RIGHT
4	1	472-4819	HIP SHAFT
3	1	472-4815-2	HIP ARM, RIGHT
2	1	472-4830	FEMUR RETAINING RING
1	1	472-4820	FEMUR BALL

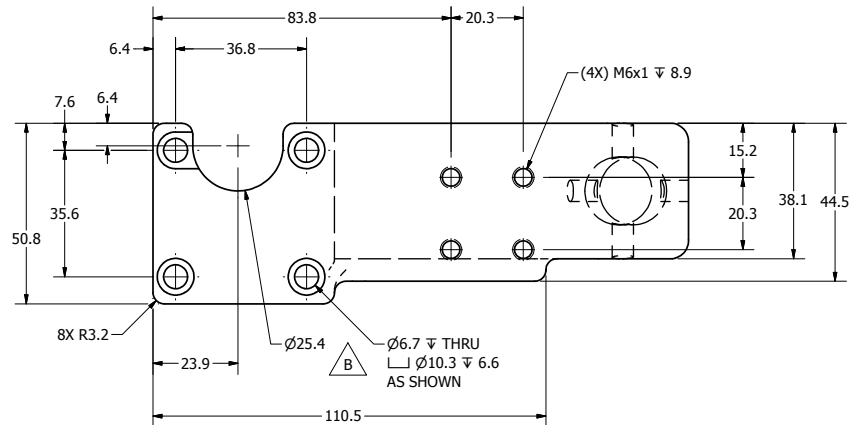
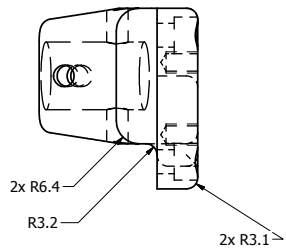
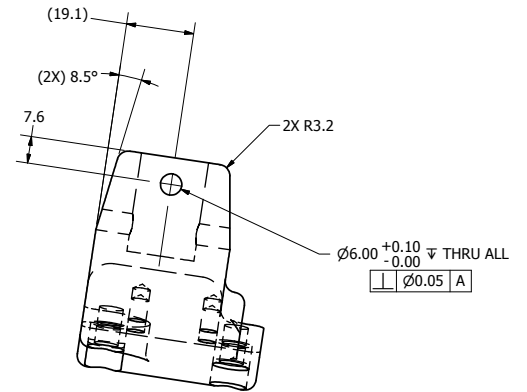
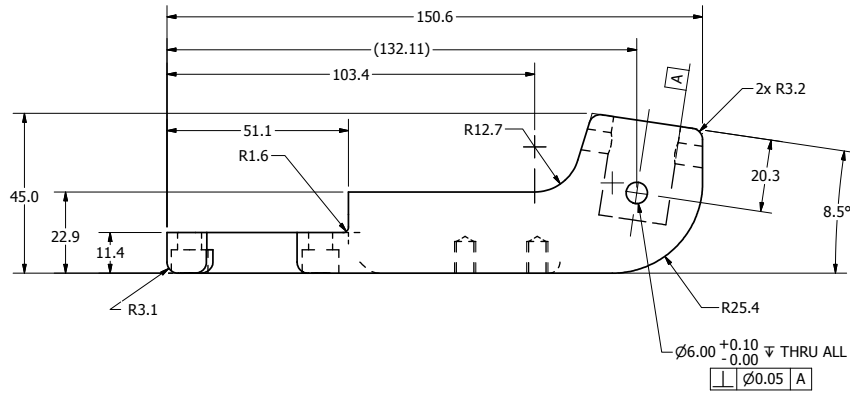
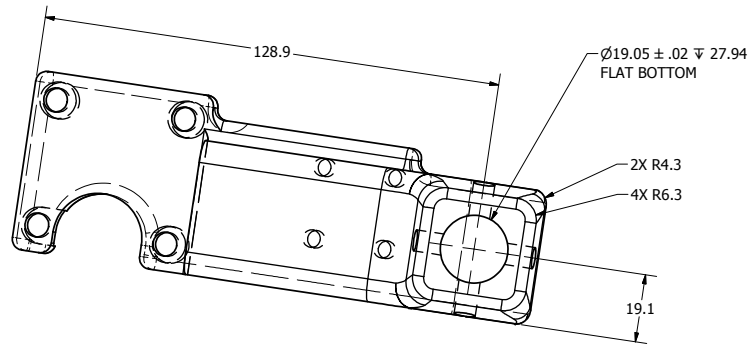
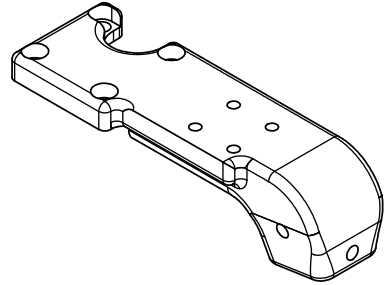
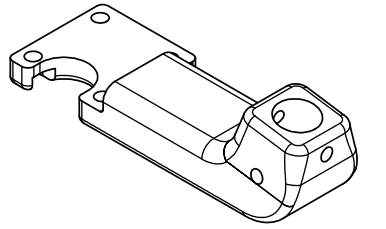
Parts List			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		0.05 16	
		X.X ±0.2	
		X.XX ±0.3	
		X.XXX ±0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO.: 472-4000		DATE: 8/17/2011	
MATERIAL:		DRAWN BY: THANH	
NEXT ASSEMBLY QTY		CHECKED BY:	
TOTAL QTY IN DUMMY 1		DATE: 1/23/2012	
FINISH:		ENGINEER: J. WANG	
		SCALE: 1:2	
		SIZE: A3	
		SHEET: 1 OF 1	
		DRAWING NO.: 472-4800-2	
		REV: B	



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

RIGHT FEMUR BALL JOINT ASS'Y

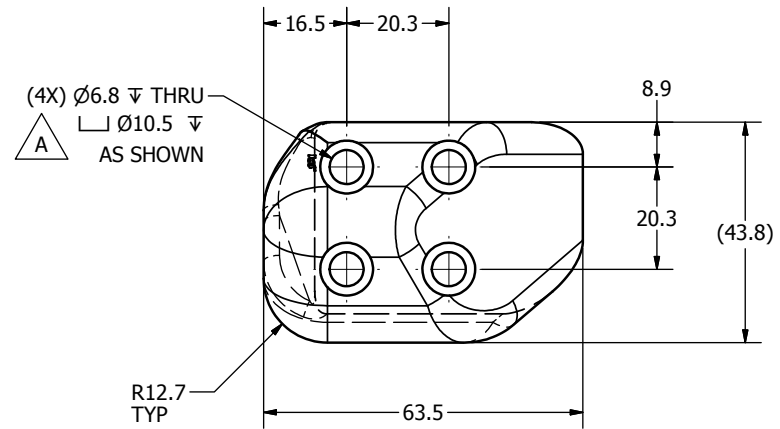
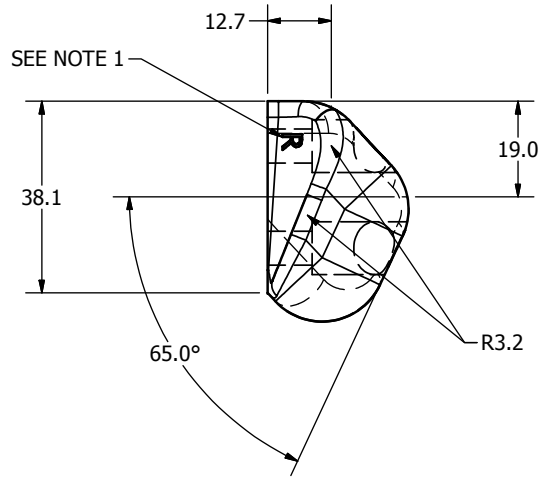
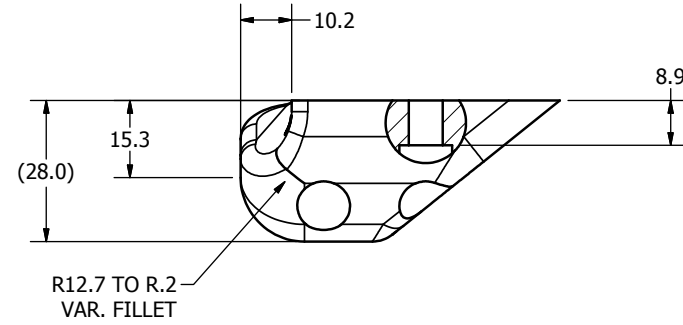
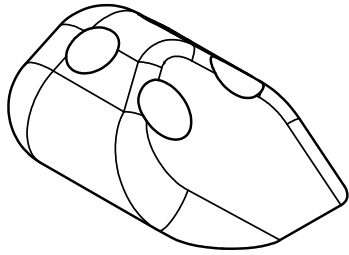
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM117 R5 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ
	B	Ø25.4 WAS Ø22.9; ADD "AS SHOWN"	7/18/2012	BK



- NOTES:
- BREAK ALL SHARP EDGES
  - PLUG Ø19.05 AND M6x1 HOLES BEFORE APPLYING SURFACE FINISH.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED		HIP ARM, RIGHT	
472-4800-2	1	1018 STEEL	HORCHLER	8/17/2011	
NEXT ASSEMBLY	QTY		PREPARED BY	DATE	
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL .008 MAX	J. WANG	1/25/2012	
			A21 of 1		472-4815-2
			PAGE 11		

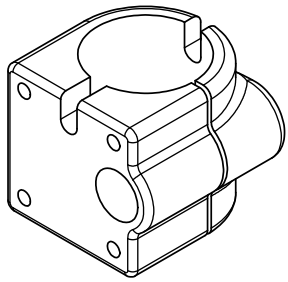
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM113 R2 FOR THOR-M; C'BORE Ø10.5 WAS Ø9.8	8/18/2011	JSJ



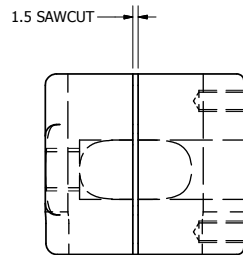
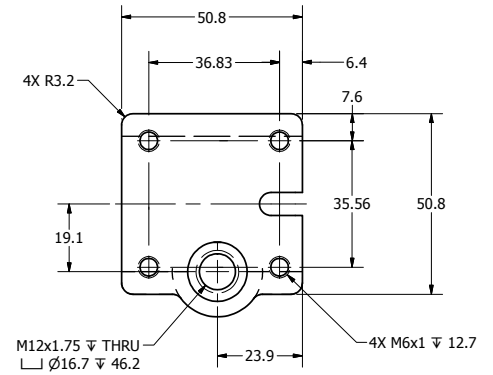
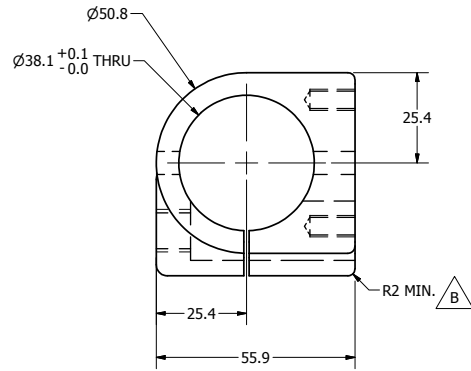
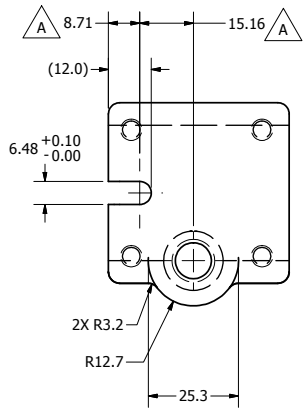
NOTES:  
1. ENGRAVE THE LETTER "R"

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 16 XX 0.2 XXX 0.3 XXXX 0.01		
PROJECT NO.:	472-4800-2	MATERIAL:	Acetal Resin, White	DESCRIPTION:
DATE:	8/17/2011	DESIGNED BY:	HORCHLER	TROCHANTER, RIGHT
CHECKED BY:	TMV	DATE:	10/25/2011	SIZE: SHEET
ENGINEER:	J. WANG	DATE:	1/25/2012	A31 OF 1
FINISH:		SCALE:	1:1	DRAWING NO.:
TOTAL QTY IN DUMMY:	1			472-4812-2

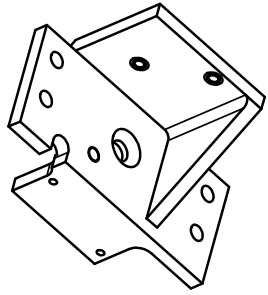
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM116 R03 FOR THOR-M; 15.16 WAS 15.14, 8.71 WAS 8.76	8/18/2011	JSJ
	B	ADD R2 WAS R1.6	4/24/2012	BK



SCALE 1.000

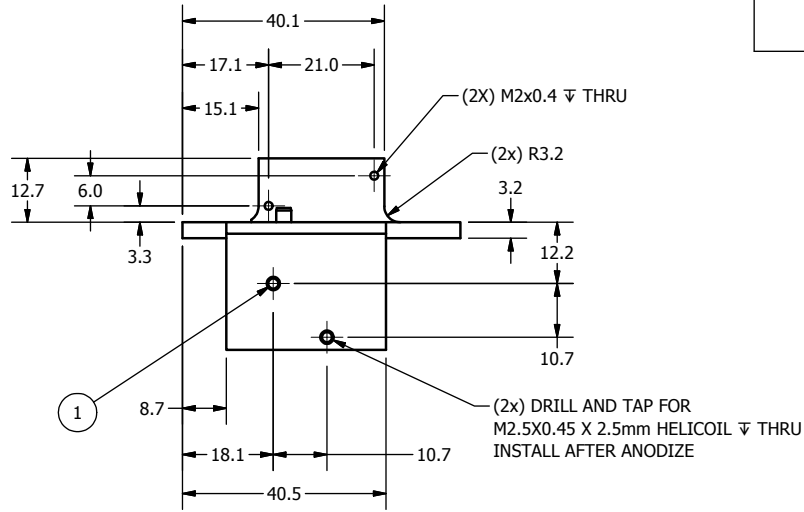
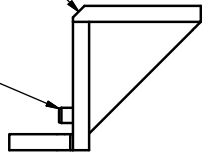


DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO 0.01</small> FINISH: AS SHOWN THREADS: PER ANSI B1.13-2M UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE TO BE HUMAN READABLE		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO 0.01</small> FINISH: AS SHOWN THREADS: PER ANSI B1.13-2M UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE TO BE HUMAN READABLE		HIP CYLINDER, RIGHT 472-4814-2	
472-4800-2	1	1018 STEEL	HORCHLER	8/17/2011	
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL Z08 MAN	J. WANG	1/25/2012	
				Sheet 1 of 1	11

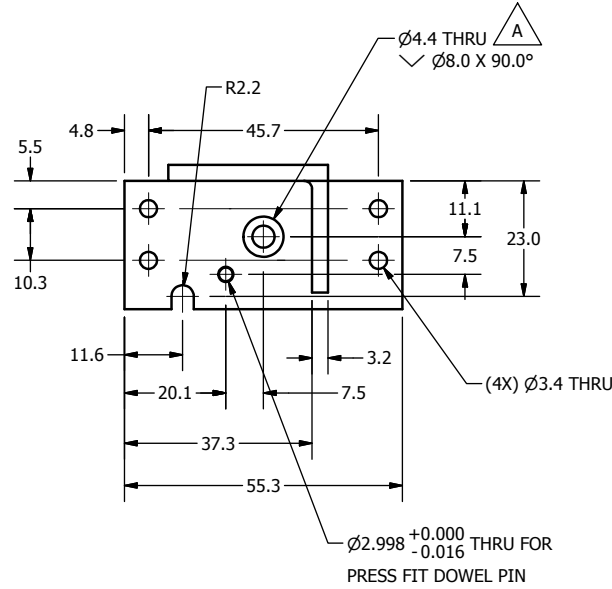


2.3 X 45.0° Chamfer

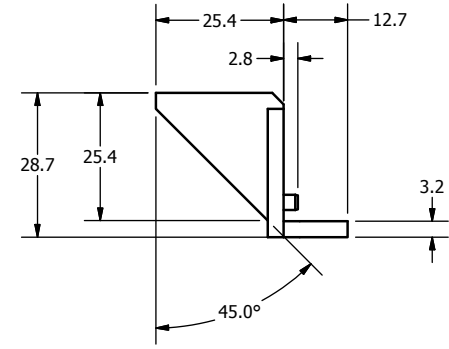
2



1



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TIPLM112 R07 AND CONVERTED TO METRIC FOR THOR-M; $\varnothing$ 4.4 WAS 2X $\varnothing$ 4.0	8/23/2011	JSJ



ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	5000385	M3 X 6 LG. DOWEL PIN
1	2	5000451	HELICOIL, M2.5x0.45 X 2.5 mm

Parts List

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
0.05 1.6  
0.1 0.2  
0.2 0.3  
0.3 0.5  
0.5 0.8



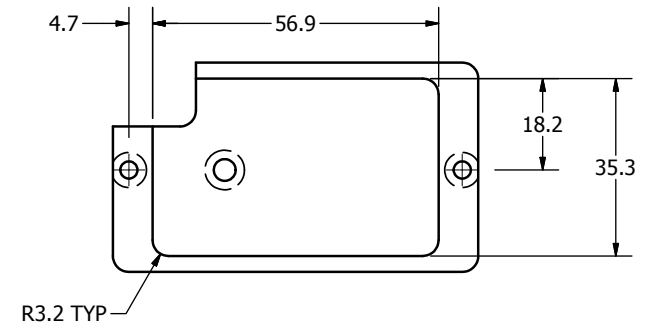
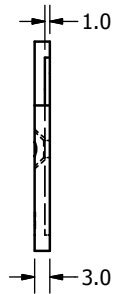
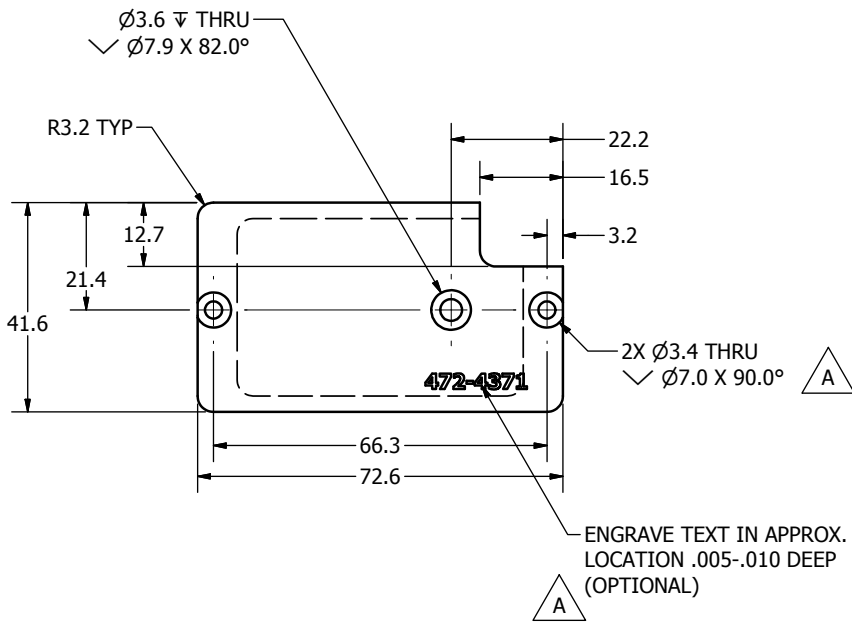
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO.: 472-4000	QTY: 1	MATERIAL: 6061-T6 ALUMINUM	DATE: 8/23/2011	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION PELVIS TRI-PACK MOUNTING BRKT.
NEXT ASSEMBLY	QTY	HEAT TREAT:	CHECKED BY: TMV DATE: 10/26/2011	
TOTAL QTY IN DUMMY	1	FINISH: CLEAR ANODIZE	ENGINEER: J. WANG DATE: 1/23/2012	

SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-4361	REV: A
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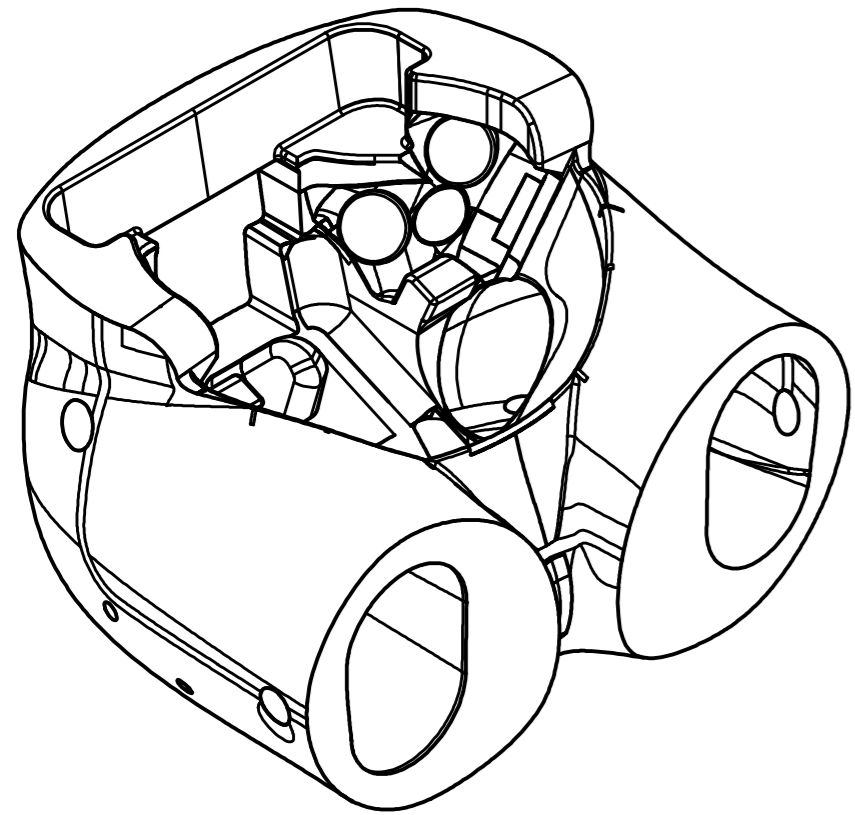


REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM111 R03 FOR THOR-M; Ø3.4 THRU C'SINK Ø7.0 X 90° WAS Ø3.0 THRU C'SINK Ø6.6 X 82°; ADD (OPTIONAL) TO NOTE	8/18/2011	JSJ

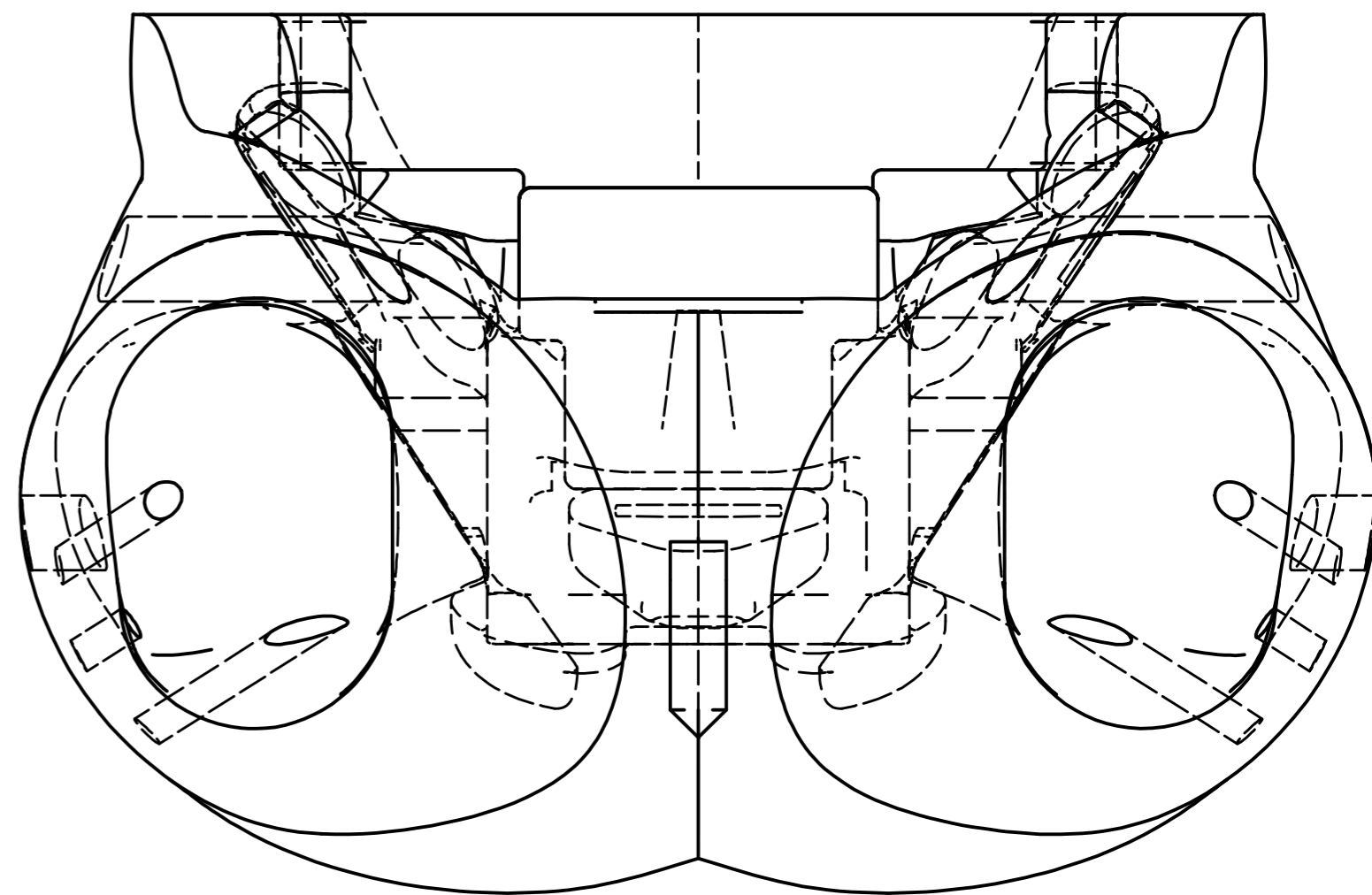
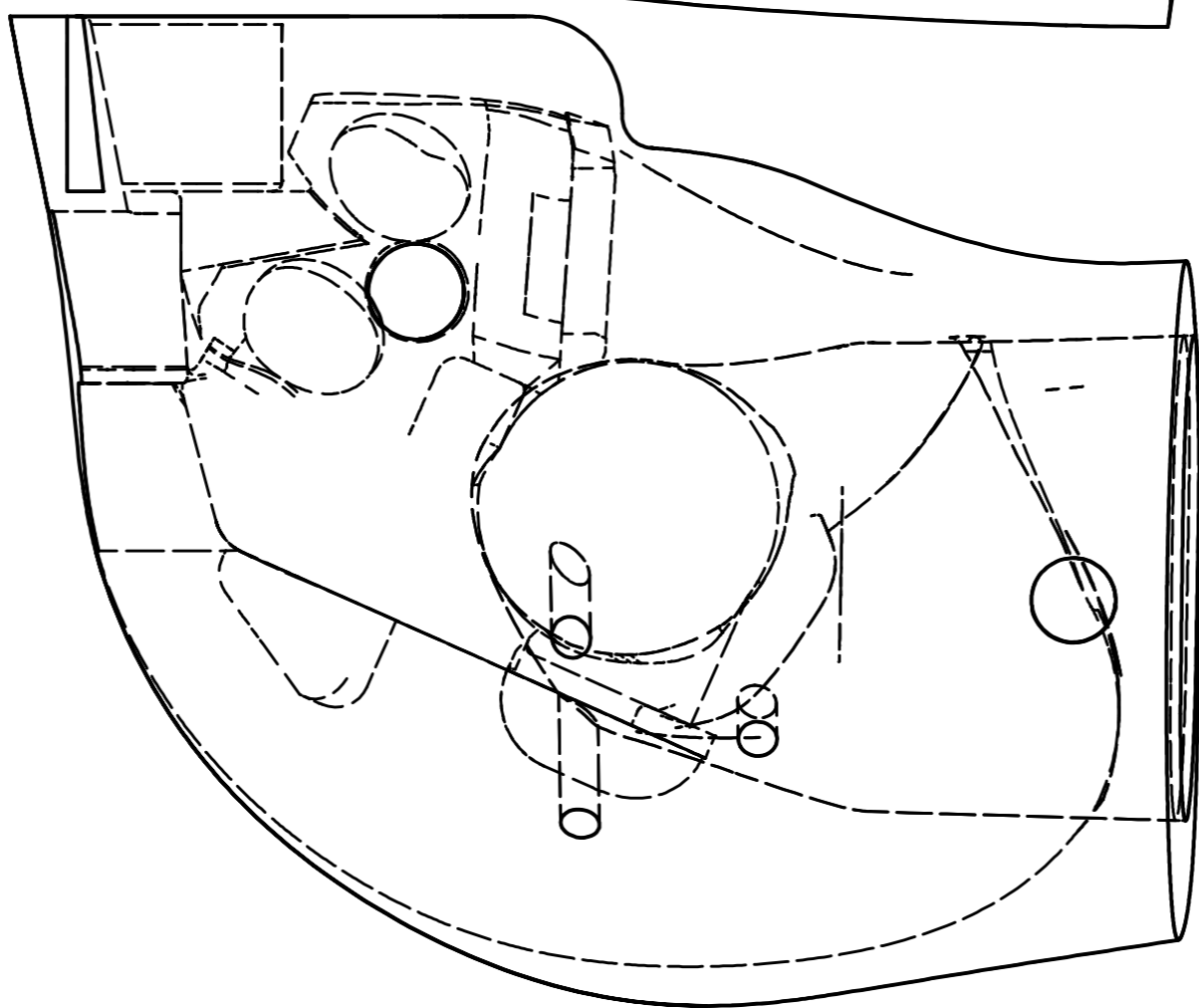
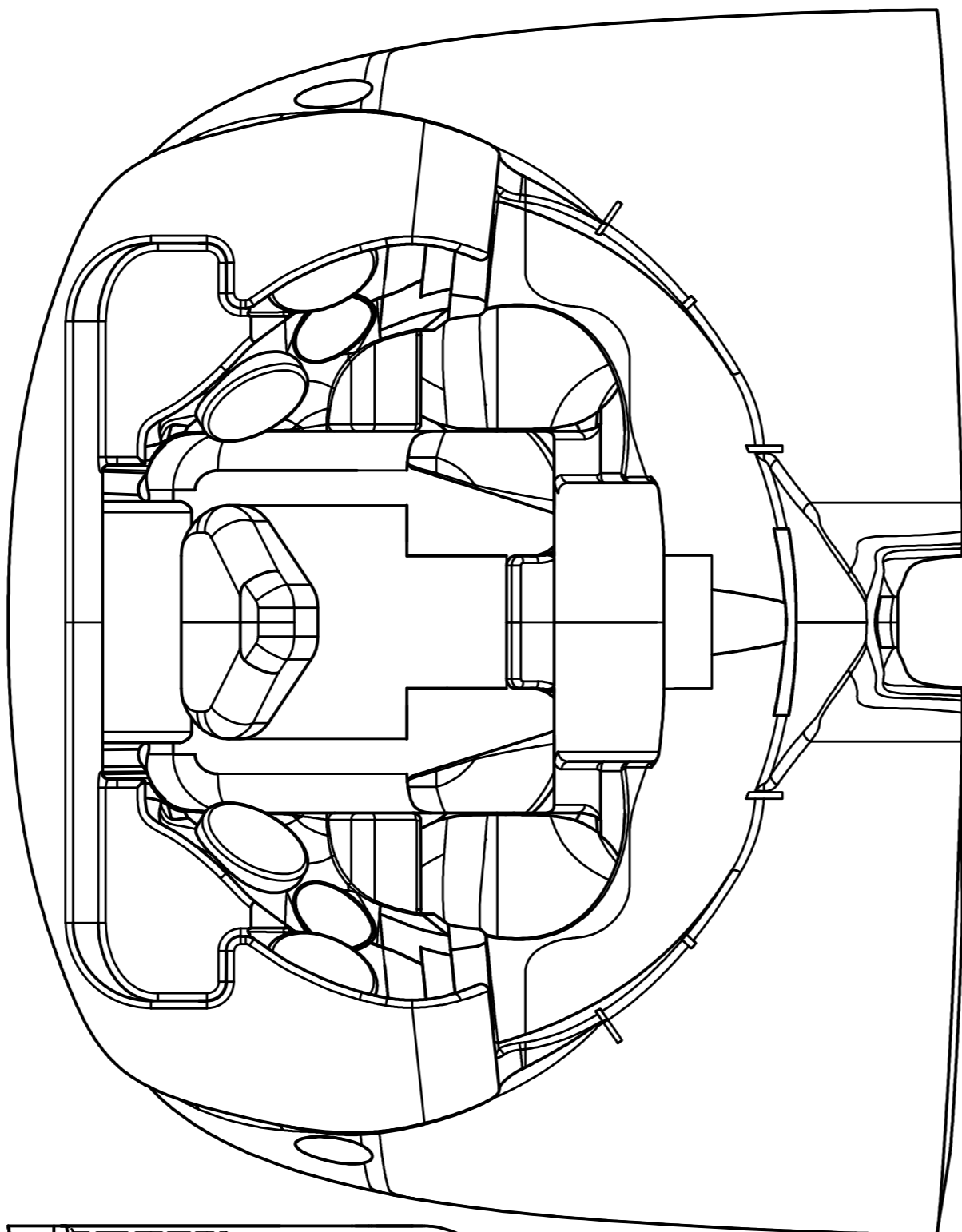


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
PROJECT NO.:	472-4000	MATERIAL:	Aluminum-6061-T6	DESCRIPTION:
DRAWN BY:	KHS	DATE:	8/10/2011	REMOVE BURRS & BREAK SHARP EDGES
CHECKED BY:	TMV	DATE:	9/11/2011	SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:	CLEAR ANODIZE	DATE:	1/23/2012	SCALE: 1:1
TOTAL QTY IN DUMMY	1			A31 OF 1
				472-4371

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLS010 AND CONVERTED TO METRIC FOR THOR-M	8/15/2011	JSJ



SCALE .250

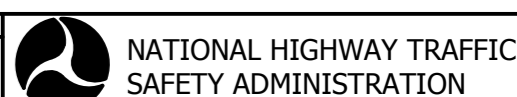


NOTE:

1. OUTER SKIN MATERIAL IS VINYL AND THE FILLER MATERIAL IS 3 LB/IN<sup>3</sup> EXPANDABLE POLYURETHANE FOAM.
2. MOLDED PART WEIGHT IS TO BE 3.2 KG ± .15 KG

DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
(UNLESS OTHERWISE SPECIFIED)  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ± 0.5 ± 0.5 1.6  
XX ± 0.2 ± 0.2 1.6  
XXX ± 0.1 ± 0.1 1.6  
XXXX ± 0.01 ± 0.01 1.6



DESCRIPTION: PELVIS FLESH, MOLDED

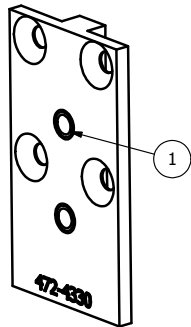
PROJECT NO:	472-4000	DATE:	8/15/2011	DRAWN BY:	S. RICE	DATE:	8/15/2011	REVISION:	1
DESCRIPTION:	SEE NOTES	CHECKED BY:	TMV	DATE:	9/13/2011	SCALE:	A21 OF 1	DRAWING NO.:	472-4100
NEXT ASSEMBLY:	QTY	FINISH:	J. WANG	DATE:	1/18/2012	SCALE:	.500	REV:	A
TOTAL QTY IN DUMMY:	1								

4

3

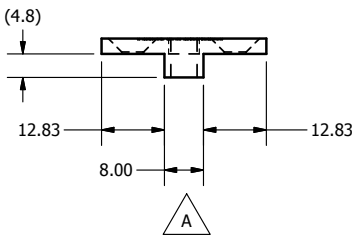
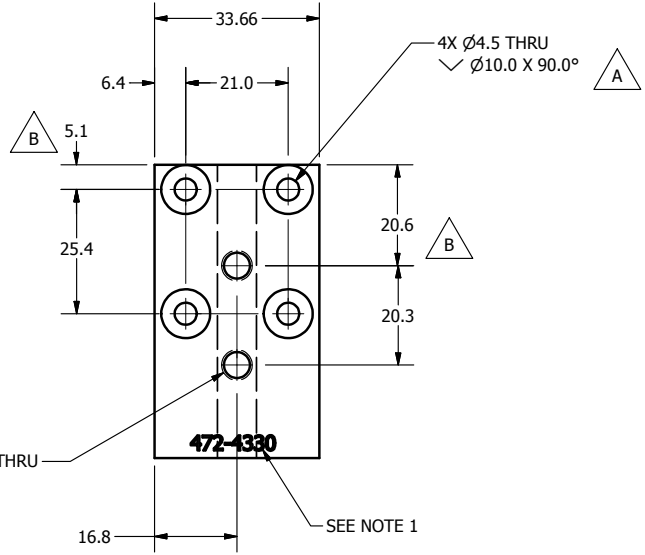
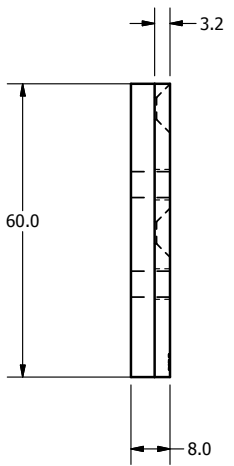
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1



1

B



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM215 R02 AND CONVERTED TO METRIC FOR THOR-M; ADD (OPTIONAL) TO NOTE 1; ADD KEY TO BOTTOM OF PLATE; Ø4.5 THRU C'SINK Ø10.0 X 90° WAS Ø5.2 THRU C'SINK Ø10.2 X 82'	8/23/2011	JSJ
	B	60.0 WAS 63.8; 5.1 WAS 8.9; 20.6 WAS 24.5	11/9/2012	BK

- NOTES:
- ENGRAVE 472-4330 ON THE AREA SPEC'D ABOVE. (OPTIONAL) A
  - INSTALL HELICOILS AFTER ANODIZE.

1	2	5000351	HELICOIL, M5 X .8 X 5
ITEM	QTY	PART NUMBER	DESCRIPTION
Parts List			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X.X 0.0 0.0	
		X.XX 0.01 1.6	
		X.XXX 0.001	
		X.XXX 0.005	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:		DRAWN BY:	
472-4000		Jordan	
NEXT ASSEMBLY		DATE:	
QTY		8/23/2011	
TOTAL QTY IN DUMMY		CHECKED BY:	
1		TMV	
		DATE:	
		10/27/2011	
		FINISH:	
		CLEAR ANODIZE	
		ENGINEER:	
		J. WANG	
		DATE:	
		1/23/2012	
		SIZE:	
		B 1 OF 1	
		SHEET:	
		1:1	
		DRAWING NO:	
		472-4330	
		DESCRIPTION:	
		FRONT PELVIC PLATE	
		BY:	
		B	

4

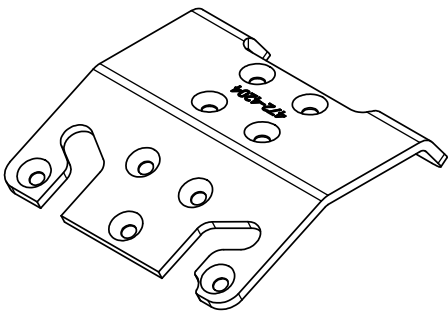
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2

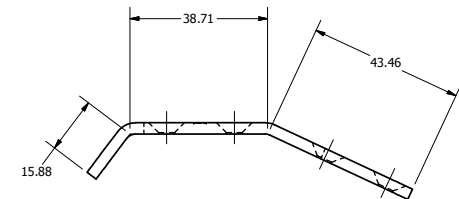
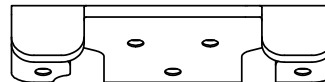
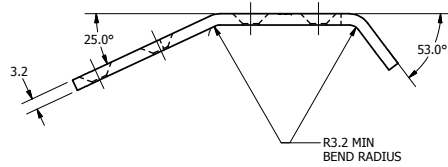
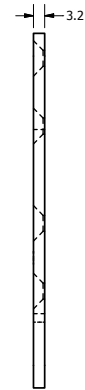
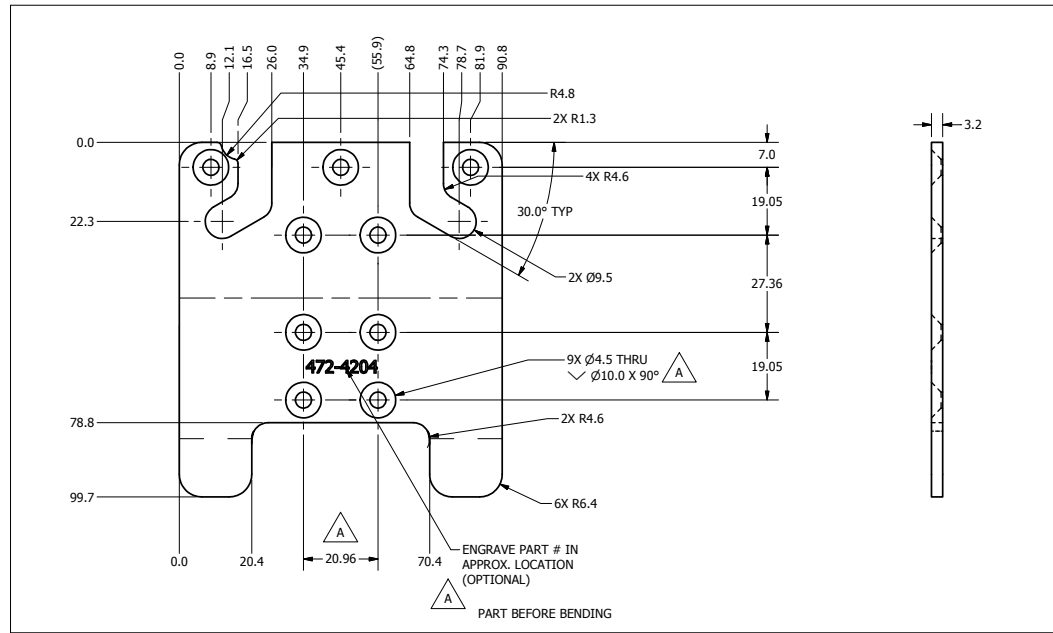
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REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM213 R05 AND CONVERTED TO METRIC FOR THOR-M; Ø4.5 THRU CSINK Ø10.0 x 90° WAS Ø5.2 THRU CSINK Ø10.2 X 82°; ADD SLOT TO BOTTOM; (OPTIONAL) TO NOTE	8/25/2011	JSJ

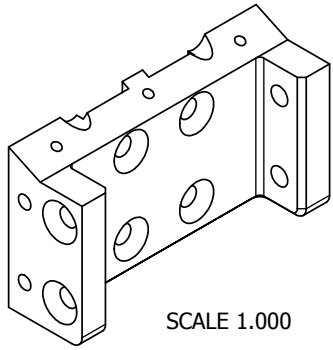


SCALE 1.000

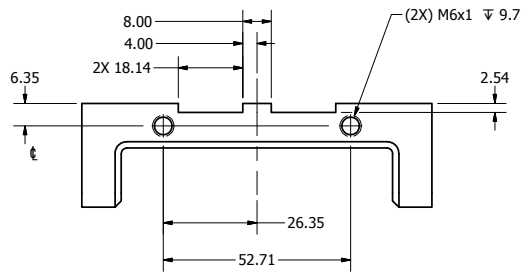
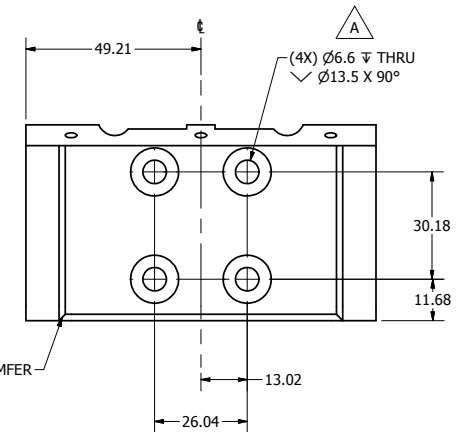
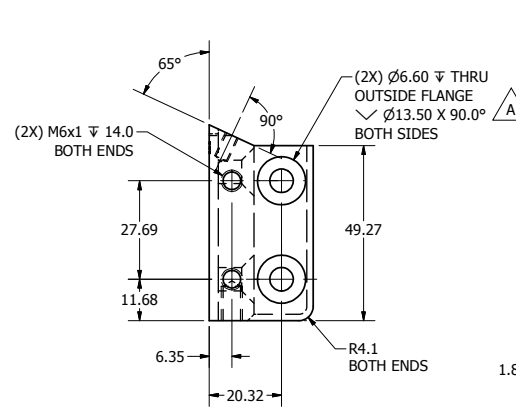
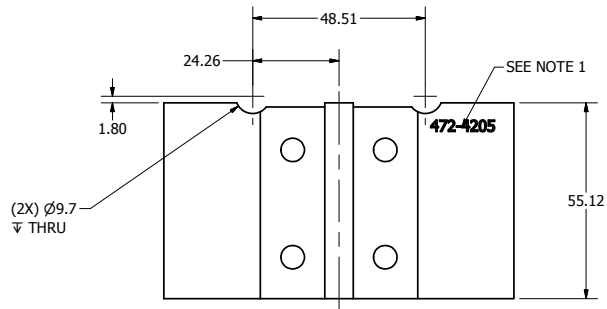
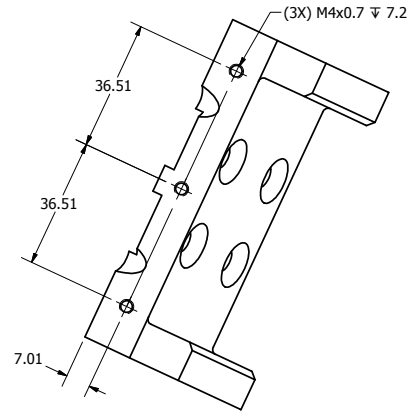
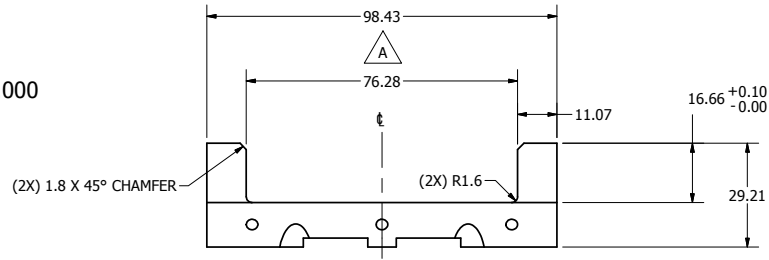


DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE IN HUNDRETHS FRACTIONS ARE IN 16THS UNLESS OTHERWISE SPECIFIED			
472-4300	1	Aluminum-6061-T6	Jordan	8/25/2011	PELVIS TOP PLATE
NEXT ASSEMBLY	QTY		TMV	10/27/2011	
TOTAL QTY IN DUMMY	1	CLEAR ANODIZE	J. WANG	1/18/2012	

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 PELVIS TOP PLATE  
 472-4204



SCALE 1.000

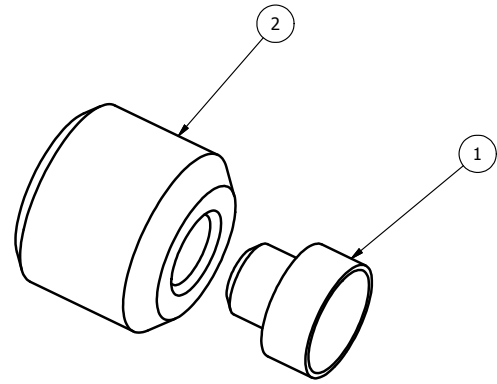


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TIPLM214 R05 AND CONVERTED TO METRIC FOR THOR-M; 98.43 WAS 98.43+.00/-0.05; 76.28 WAS 76.28+.05/-0.00; Ø6.60 WAS Ø6.8; C'SINK Ø13.50 X 90° WAS Ø13.5 X 82'; Ø6.6 WAS Ø6.8, C'SINK Ø13.5 X 90° WAS 12.5 X 82'; ADD (OPTIONAL) TO NOTE 1	8/24/2011	JSJ

NOTE:  
1. ENGRAVE DWG. #472-4205 AT APPROXIMATE LOCATION SHOWN. (OPTIONAL)

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIS DRAWING IS THE PROPERTY OF THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION. IT IS TO BE USED FOR THE PURPOSES SPECIFIED IN THE ORDER. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION.		SHOW DIMENSIONS & SURFACE FINISH SYMBOLS		PROJECT: PELVIS, REAR PLATE	
472-4300	1	1018 STEEL	Jordan	8/24/2011	
NEXT ASSEMBLY	QTY	DESCRIPTION	BY	DATE	
	1	ELECTROLESS NICKEL PLATE .008 MM	J. WANG	11/18/2012	
TOTAL QTY IN DUMMY					
A21 of 1					472-4205

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM300-02 AND CONVERTED TO METRIC FOR THOR-M	8/24/2011	JSJ



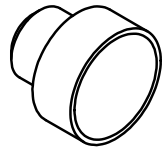
ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-4312	FRICTION ADJUSTMENT SET SCREW
1	1	472-4311	FRICTION ADJUSTMENT NYLON TIP

Parts List

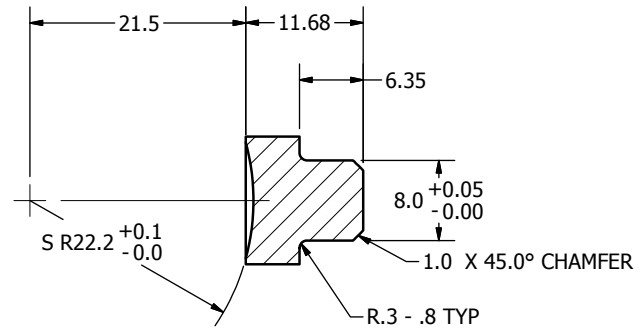
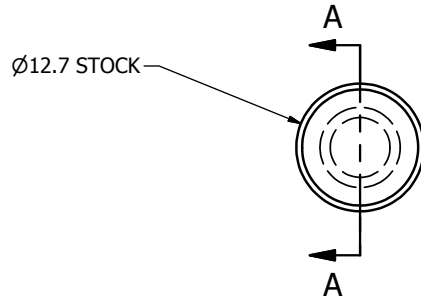
<p>DO NOT SCALE DRAWING</p> <p>THIRD ANGLE PROJECTION</p>	<p>TOLERANCES</p> <p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</p> <table border="1"> <tr> <td>DIGITALS</td> <td>ANGLES</td> <td>FINISH</td> </tr> <tr> <td>X.XX ±0.2</td> <td>0.5°</td> <td>1.6</td> </tr> <tr> <td>X.X ±0.1</td> <td></td> <td></td> </tr> <tr> <td>X.XX ±0.25</td> <td></td> <td></td> </tr> </table>		DIGITALS	ANGLES	FINISH	X.XX ±0.2	0.5°	1.6	X.X ±0.1			X.XX ±0.25			<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>
	DIGITALS	ANGLES	FINISH												
X.XX ±0.2	0.5°	1.6													
X.X ±0.1															
X.XX ±0.25															
<p>REMOVE BURRS &amp; BREAK SHARP EDGES</p>															

PROJECT NO.		MATERIAL:		DRAWN BY:	jordan	DATE:	8/24/2011	SIZE:	B	SHEET:	1 OF 1	DRAWING NO.:	472-4310	REV:	A
472-4000	2	HEAT TREAT:		CHECKED BY:	TMW	DATE:	9/13/2011	SCALE:	2:1						
NEXT ASSEMBLY	QTY	FINISH:		ENGINEER:	J. WANG	DATE:	1/20/2012								
TOTAL QTY IN DUMMY	2														

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM311 R1 FOR THOR-M; REMOVE NOTES	8/24/2011	JSJ

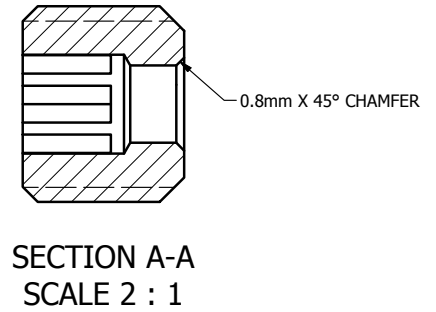
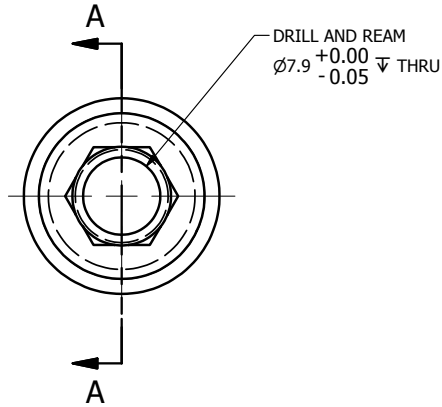
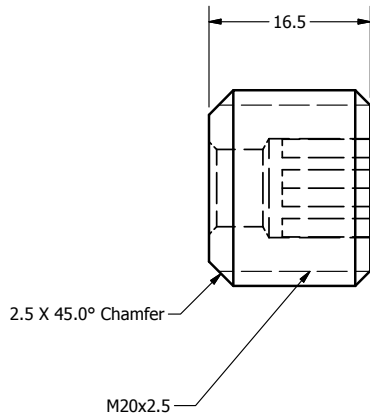
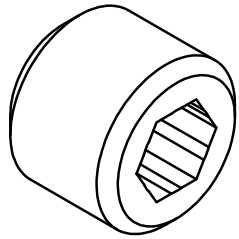


SCALE 2.000



SECTION A-A  
SCALE 2.000

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
PROJECT NO.:	472-4310	MATERIAL:	Nylon-6/6	DESCRIPTION:
DESIGNER:	jordan	DATE:	8/24/2011	FRICITION ADJUSTMENT NYLON TIP
CHECKED BY:	TMV	DATE:	9/13/2011	SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	DATE: 1/23/2012
TOTAL QTY IN DUMMY:	2	FINISH:		SCALE: 2.000
				DRAWING NO.:
				472-4311
				REV:
				A



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM310-02 AND CONVERTED TO METRIC FOR THOR-M	8/24/2011	JSJ

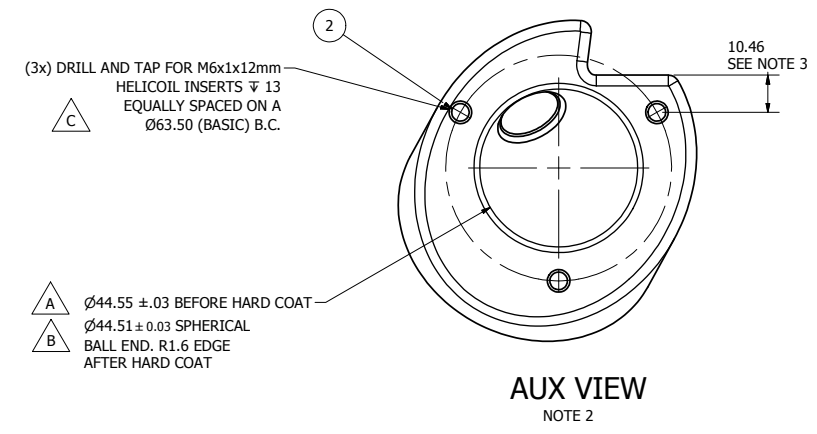
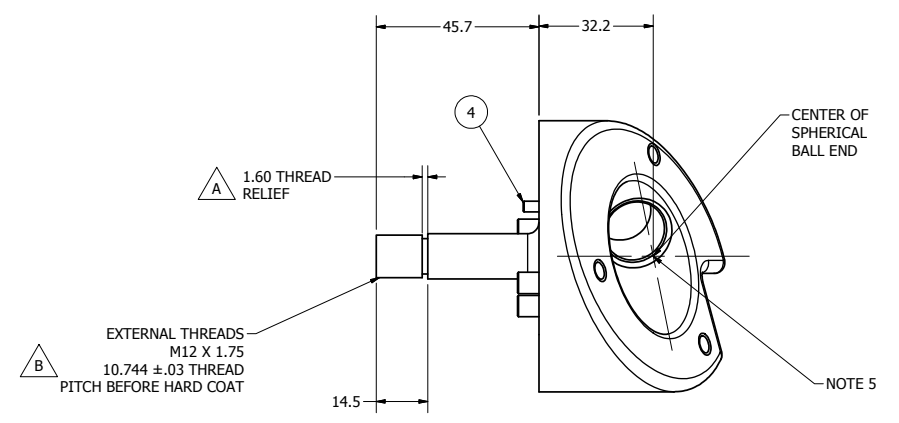
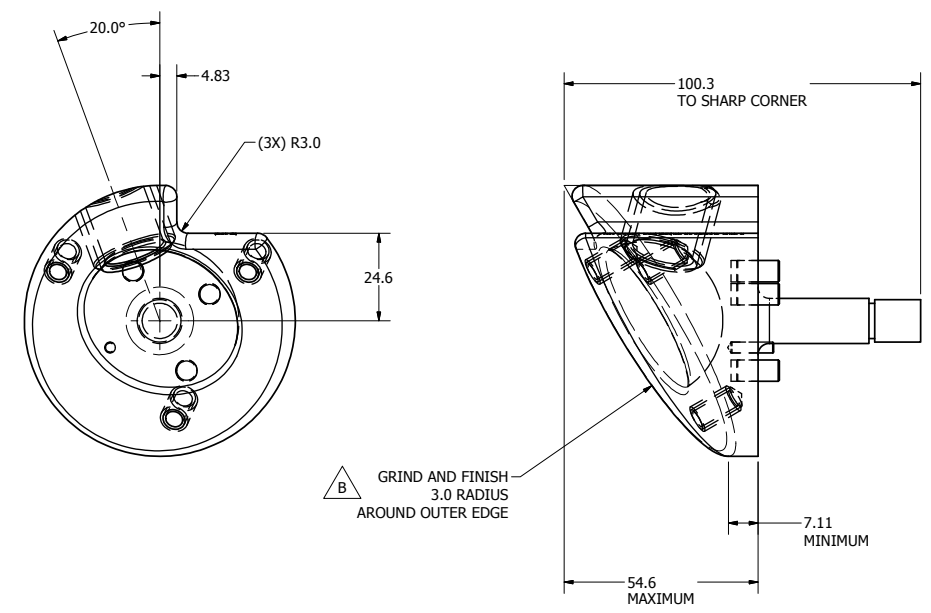
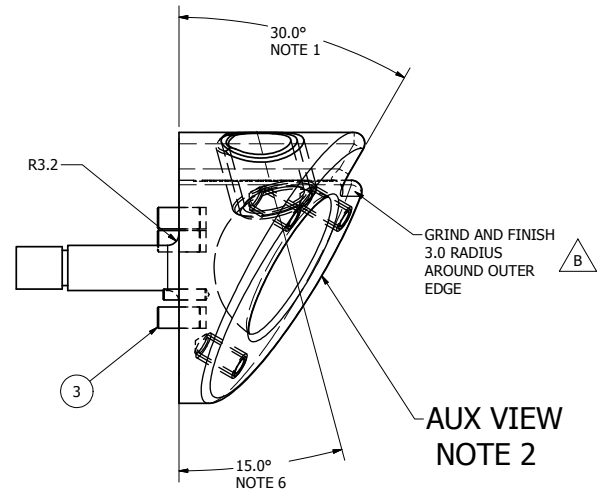
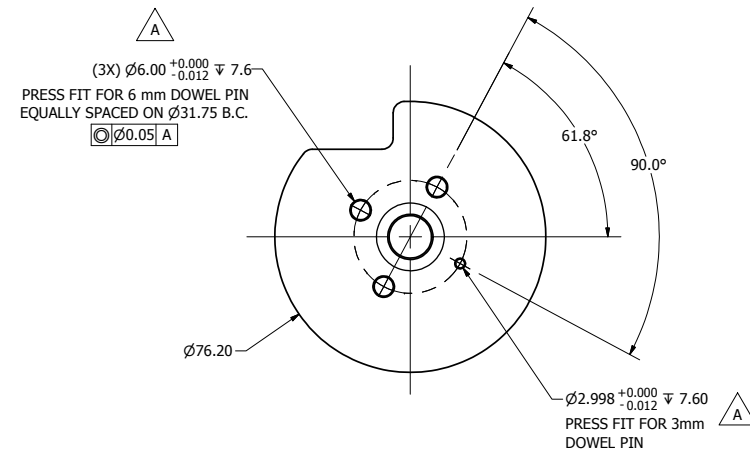
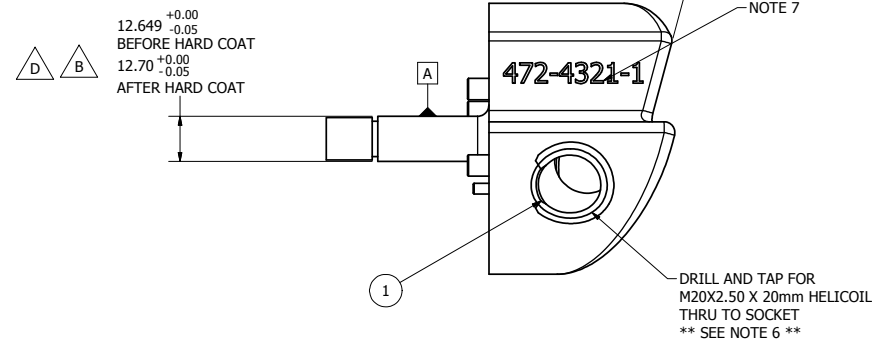
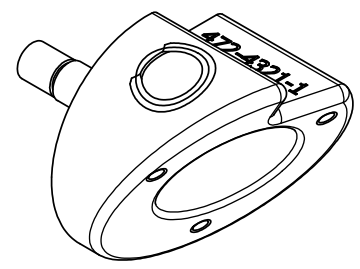
NOTES:

1. MAKE FROM 5000508 (M20 X 2.5 X 20 CUP POINT SET SCREW), MODIFY AS SHOWN

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X 0.0 0.0 1.6 X.XX 0.01 X.XXX 0.001		THIRD ANGLE PROJECTION 		REMOVE BURRS & BREAK SHARP EDGES DRAWN BY: jordan DATE: 8/24/2011	
PROJECT NO:	472-4310	QTY:	1	DESCRIPTION:	FRICITION ADJUSTMENT SET SCREW
DATE:	9/9/2011	CHECKED BY:	TMV	SIZE:	B 1 OF 1
ENGINEER:	J. WANG	DATE:	1/23/2012	DRAWING NO.:	472-4312
				SCALE:	2:1



REVISION HISTORY				
REV	ZONE	DESCRIPTION	DATE	BY
A	GLOBAL	RENUMBERED FROM T1PLM217-10 AND CONVERTED TO METRIC FOR THOR-M; Ø45.35 WAS Ø44.45; Ø6.00 +.000/-0.012 WAS Ø6.4, Ø31.75 B.C. WAS Ø31.8 B.C.; 1.6 THREAD RELIEF WAS .8; ADD 2.998+.000/-0.012 DOWEL HOLE	8/25/2011	JSJ
B	GLOBAL	INCREASE BALL SOCKET SIZE TO 44.51 FROM 44.35. REVISED AND ADDED DIMENSIONS/NOTE FOR BEFORE AND AFTER HARD COAT. ADD 3mm RADIUS TO OUTER EDGE.	5/24/2012	JSJ
C	A,3	CORRECTED TOP TWO M6 HOLE LOCATIONS TO BE PARALLEL WITH CUT OUT	7/2/2012	JSJ
D	B,3	Ø12.70 +.00/-0.05 WAS +.00/-0.01	7/12/2012	TMV

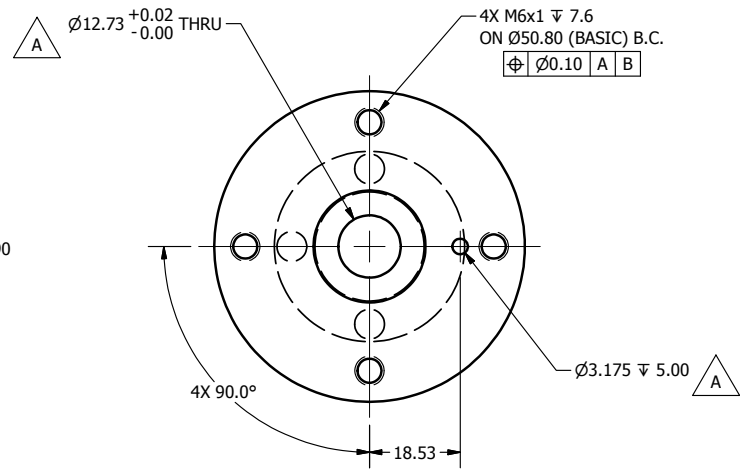
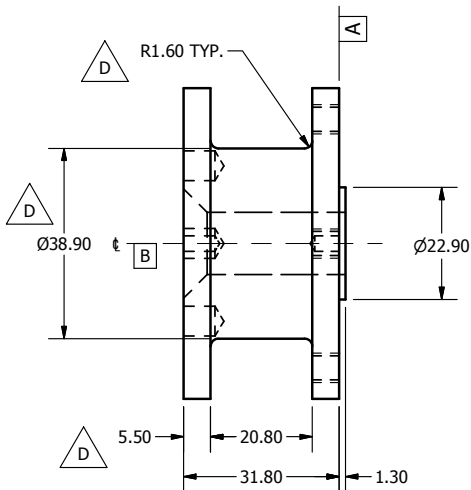
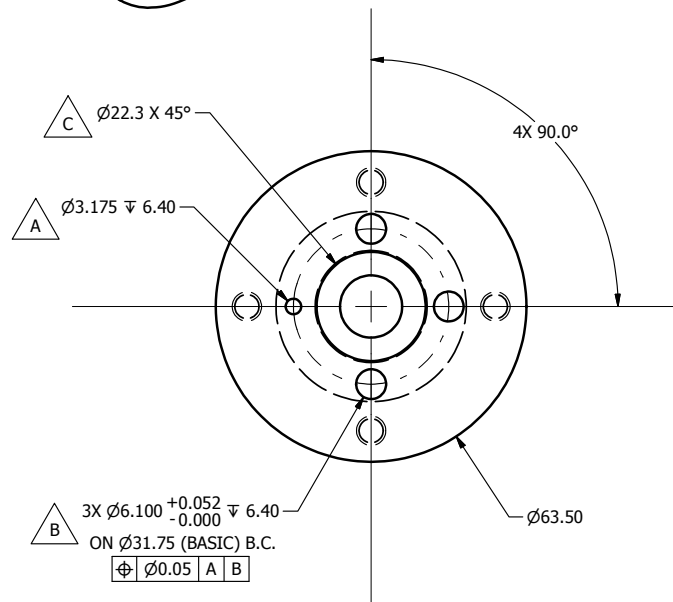
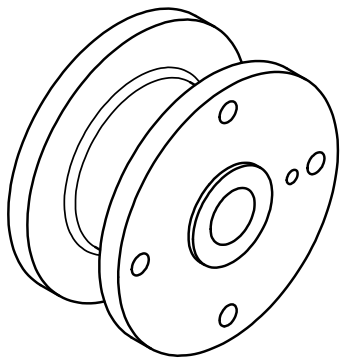


- NOTES:
- BEGIN BY MACHINING THE 15° PLANE. MACHINE 30° PLANE FROM 15° TOP VIEW PLANE
  - AUX VIEW IS PERPENDICULAR TO THE RESULTING SURFACE.
  - THE TOP TWO M6X 1.00 HOLES ARE ON A LINE PARALLEL WITH THE CUTOUT.
  - THE EXTRA LINES ARE THE REPRESENTATION OF THE COMPUTERS CURVED CONTOURS; THEY ARE NOT MACHINED.
  - THE SPHERICAL BALL IS CENTERED ON THE Ø76.2 CROSS-SECTION, AND DRILLED PERPENDICULAR TO THE 15°/30° SURFACE.
  - THE CENTER LINE OF THE M20X2.50 THREADS PASSES THROUGH THE CENTER OF THE SPHERICAL SOCKET.
  - ENGRAVE DWG # 472-4321-1 AT THE LOCATION SPECIFIED.
  - MASK PIN HOLES AND SHAFT PRIOR TO HARD COAT ANODIZING.
  - HARD COAT ANODIZE PART UPON COMPLETION - CLEAN UP AS NECESSARY AND ADD HELICOILS. HARD COAT THICKNESS IS .025mm PER SIDE ± 20%
  - DIMENSIONAL LIMITS AND THREADED HOLES APPLY AFTER FINISH

ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	5000183	PIN, DOWEL M3 X 12 mm
3	3	5000433	PIN, DOWEL M6 X 12 mm
2	3	5000422	HELICOIL, M6x1x12mm
1	1	5000430	HELICOIL M20x2.5 X 20 mm

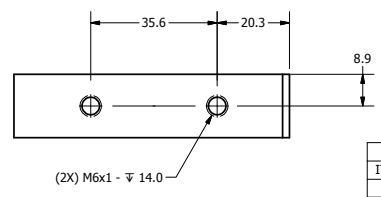
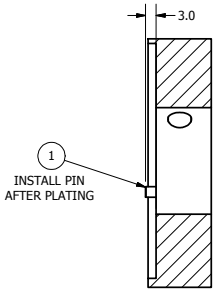
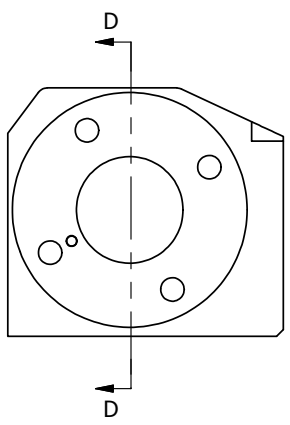
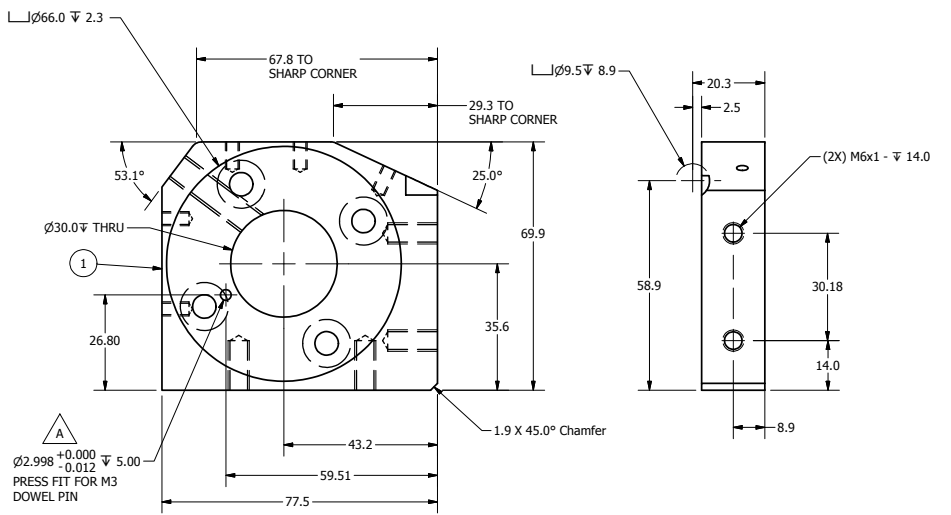
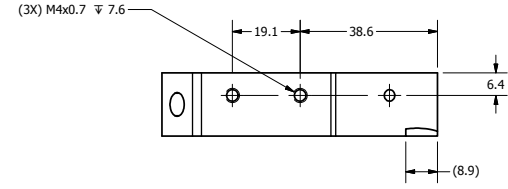
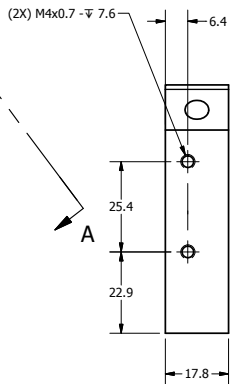
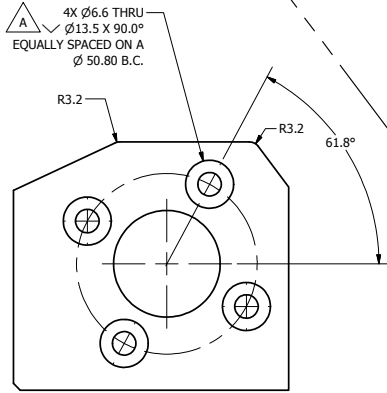
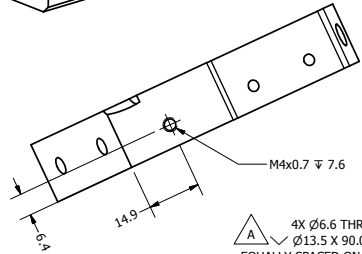
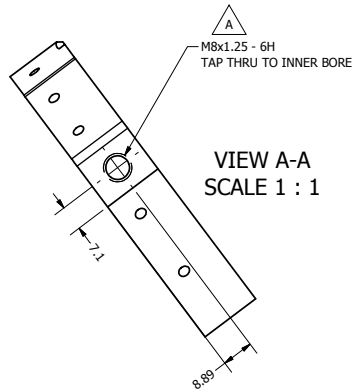
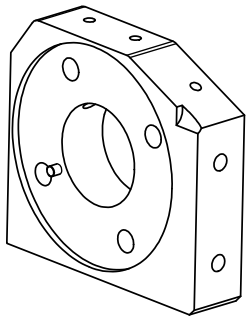
Parts List

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-4300	1	7075-T6 ALUMINUM	1/25/2011	PELVIS SOCKET ADAPTOR (LEFT)	
NEXT ASSEMBLY	QTY	DATE	BY	REV	
TOTAL QTY IN DUMMY	1	SEE NOTE 9	J. WANG	1/23/2012	1



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM220 R03 AND CONVERTED TO METRIC FOR THOR-M; ADD $\varnothing 3.175 \nabla 6.40$ , $\varnothing 3.175 \nabla 5.00$ ; $\varnothing 12.73 +.02/-0.00$ WAS $12.73 +.008/-0.000$	8/23/2011	JSJ
	B	$\varnothing 6.10 +.05/-0$ WAS $\varnothing 6.042 +.052/-0$	4/25/2012	BK
	C	ADD $\varnothing 22.3 \times 45^\circ$ CHAMFER TO HOLE	6/21/2012	BK
	D	MODIFIED PART TO ACHIEVE LOAD CELL WEIGHT	7/12/2012	JSJ

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION ACETABULAR LOAD CELL STRUCTURAL REPLACEMENT			
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.X 0.5 0.5 1.6 X.XX 0.1 0.5 X.XXX 0.05					
PROJECT NO.	472-4000	MATERIAL:	1018 STEEL	DRAWN BY:	jjordan	DATE:	10/20/2011
NEXT ASSEMBLY	QTY	REVISION:		CHECKED BY:		DATE:	
TOTAL QTY IN DUMMY	2	FINISH:	NICKEL PLATE .008 MAX	ENGINEER:	J. WANG	DATE:	1/23/2012
				SIZE:	B	SHEET:	1 OF 1
				SCALE:	1:1	DRAWING NO.:	
						472-4323	
						REV:	
						D	



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TIPLM211-03 AND CONVERTED TO METRIC FOR THOR-M; 6.6 WAS 6.8, CSINK Ø13.5 X 90° WAS Ø13.2 X 82; ADD Ø2.998 +0.000/-0.012 1 5.0, M8x1.25 TAP HOLE	8/22/2011	JSJ
	B	NICKEL PLATE WAS TEFLON (ECO 10179)	10/17/2011	TMV

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5000384	M3 x 8mm DOWEL PIN

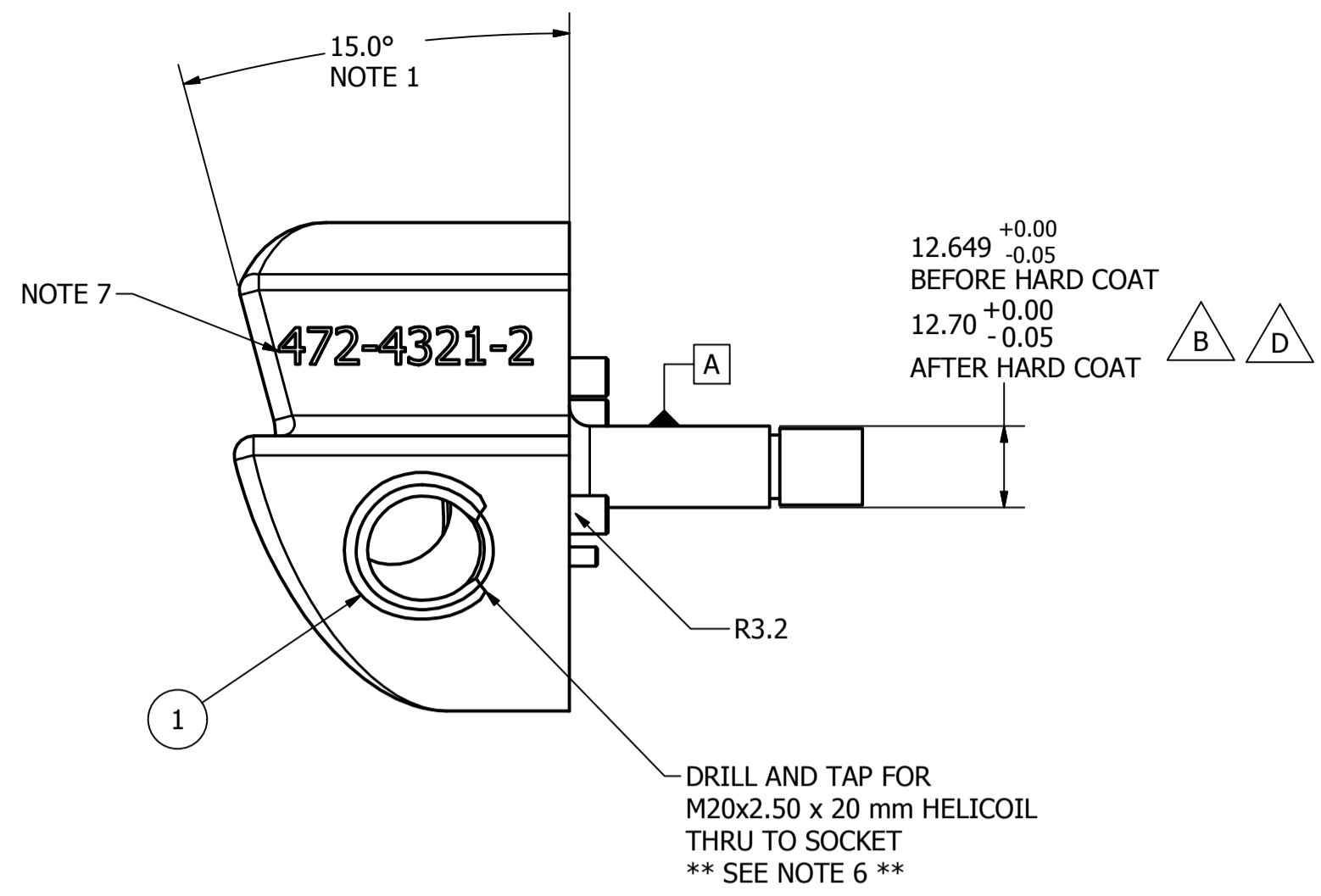
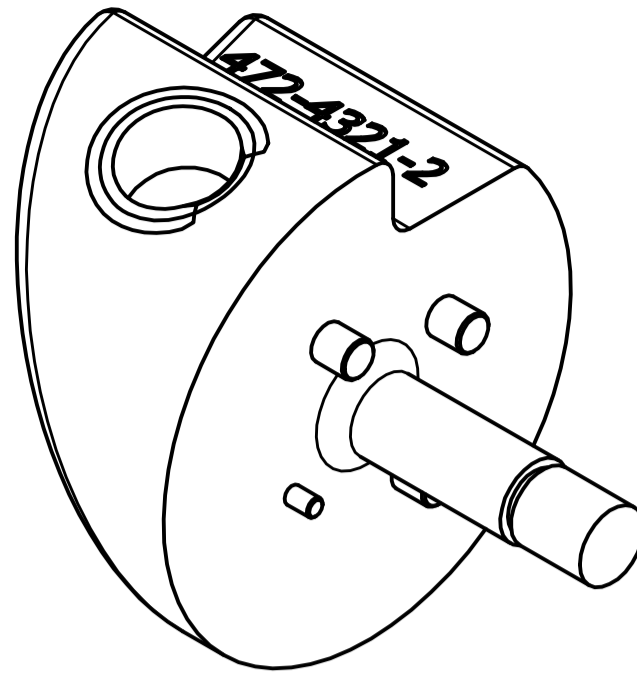
  

Parts List			
472-4000	1	1018 STEEL	Jordan 8/22/2011
NEXT ASSEMBLY	QTY	BY	DATE
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL PLATE JOB WAK	J. WANG 1/23/2012

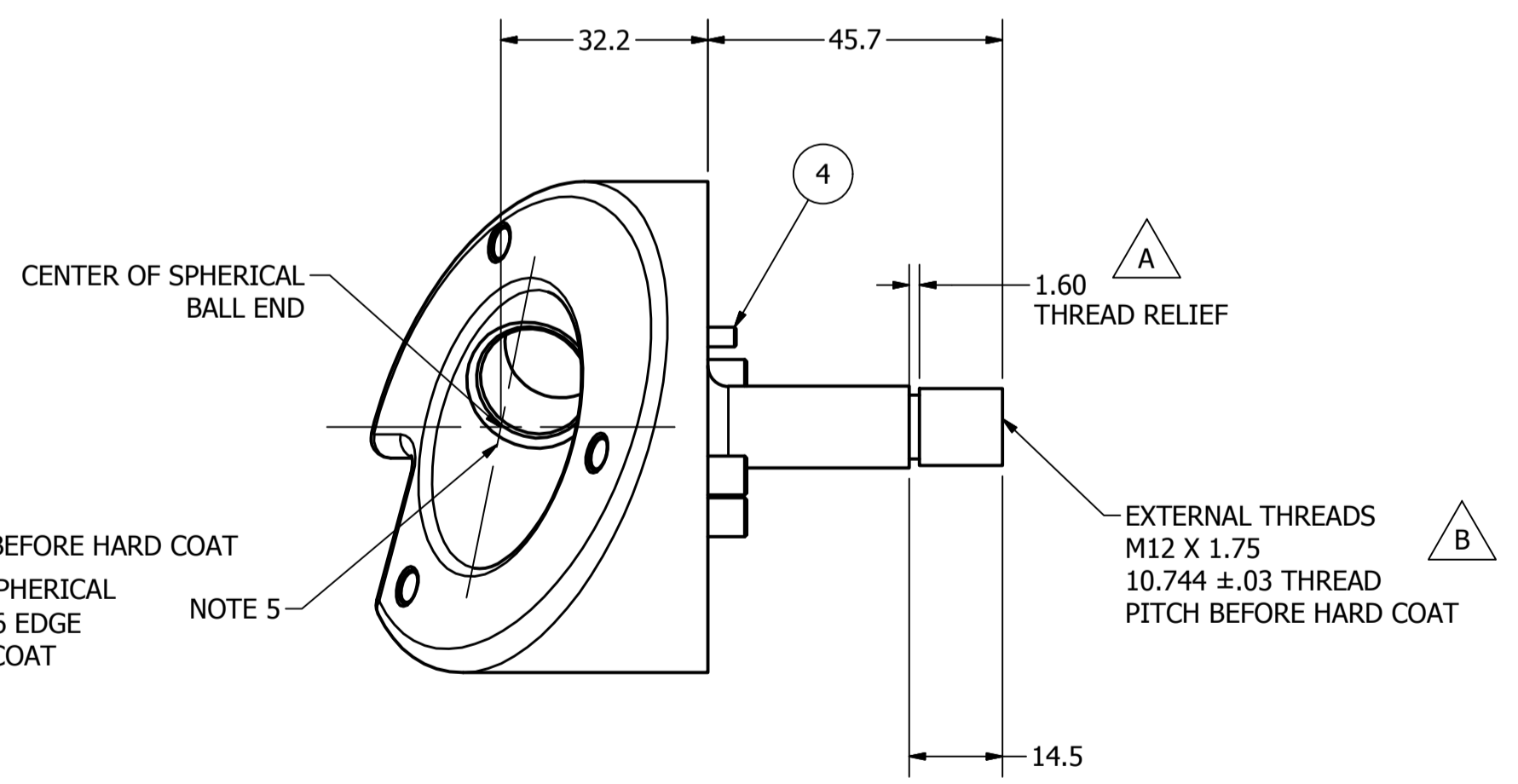
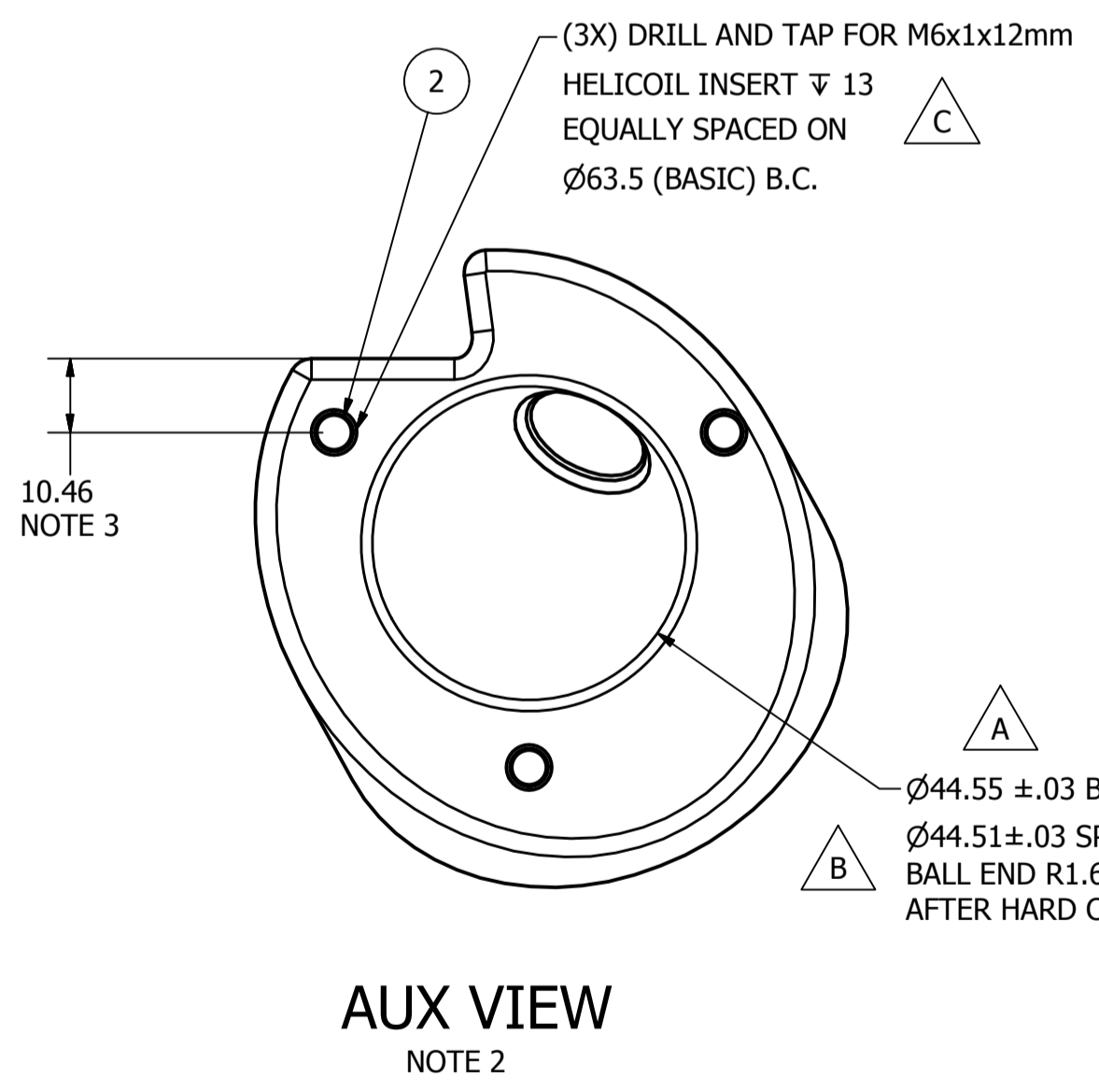
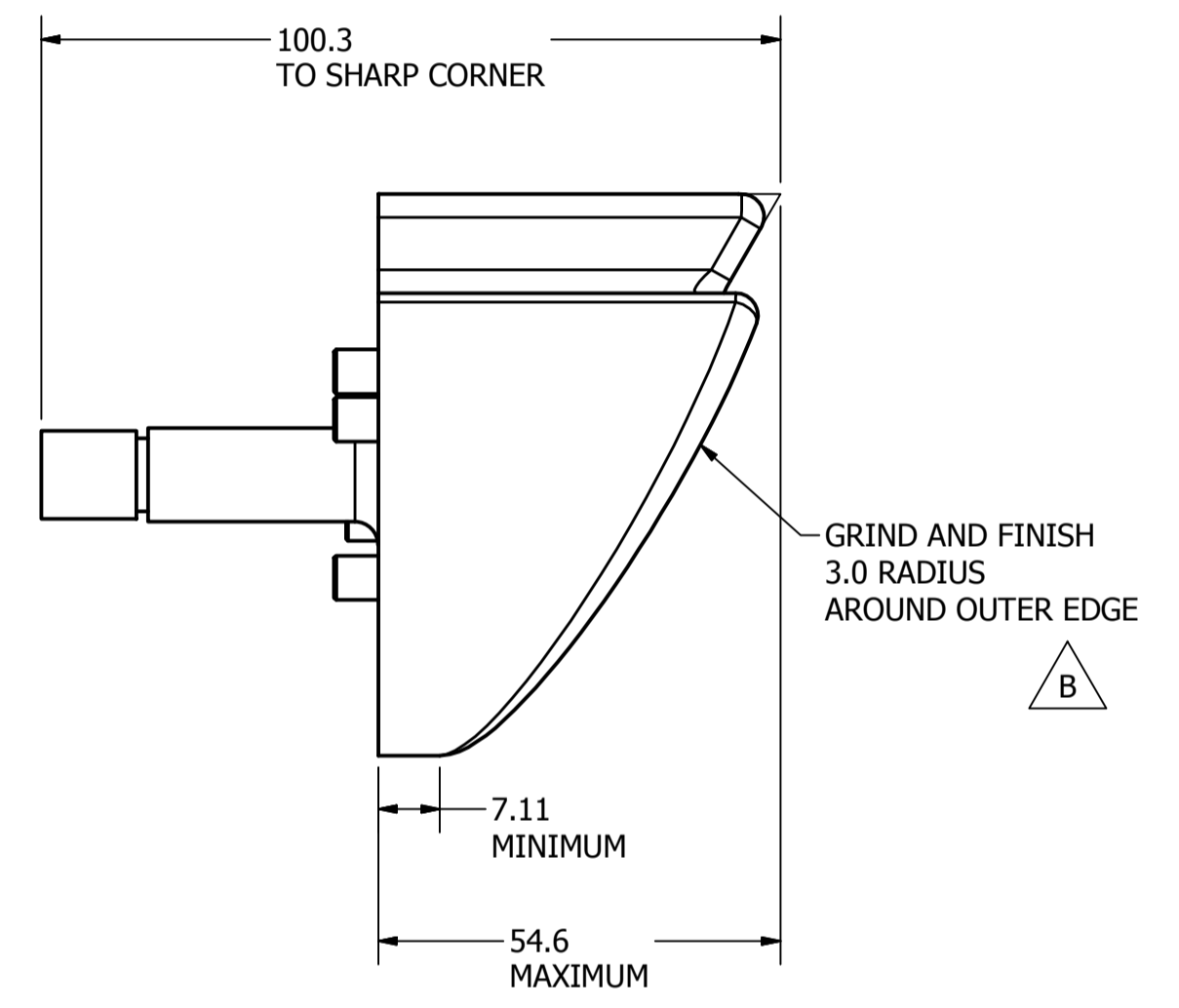
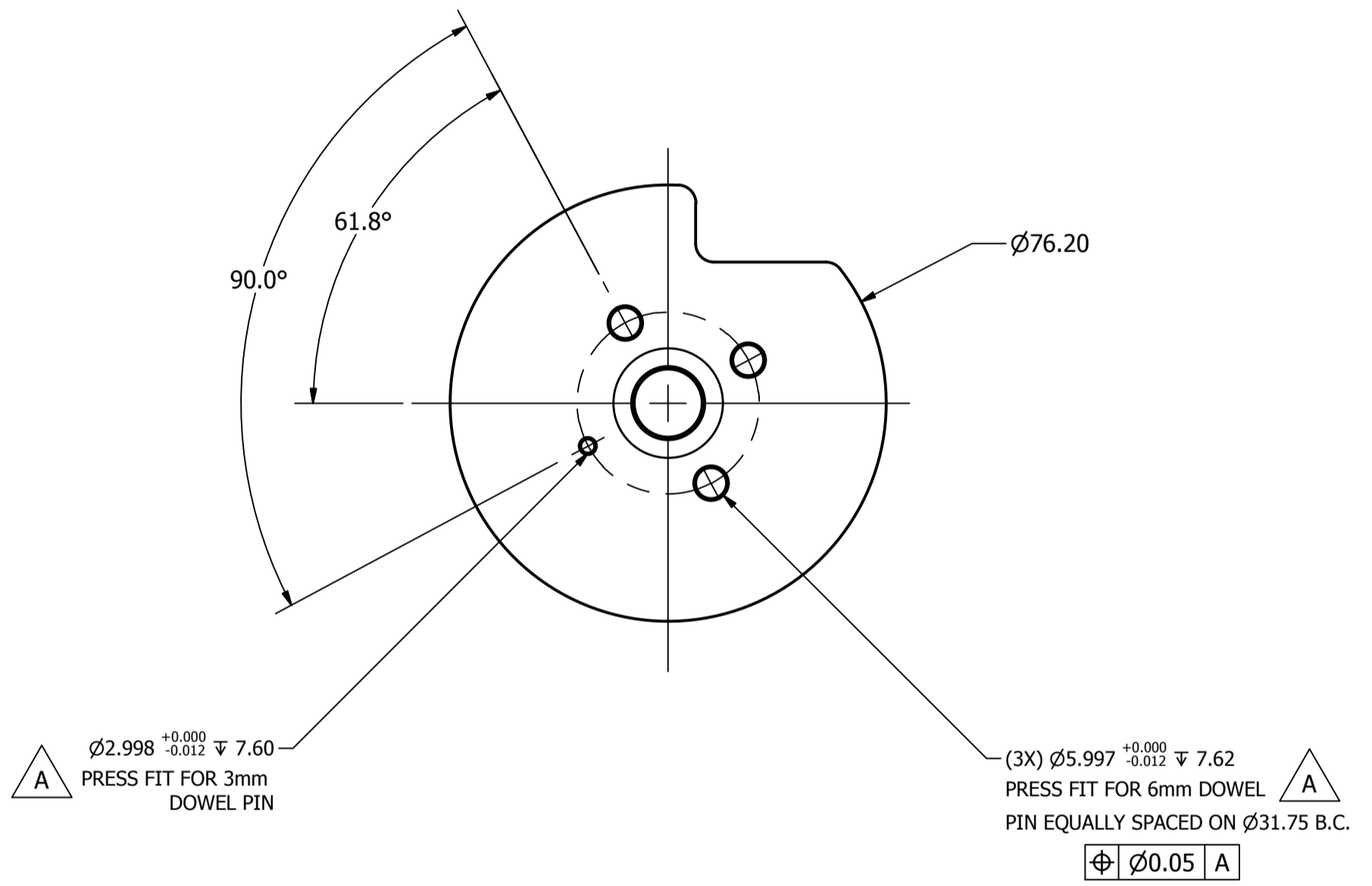
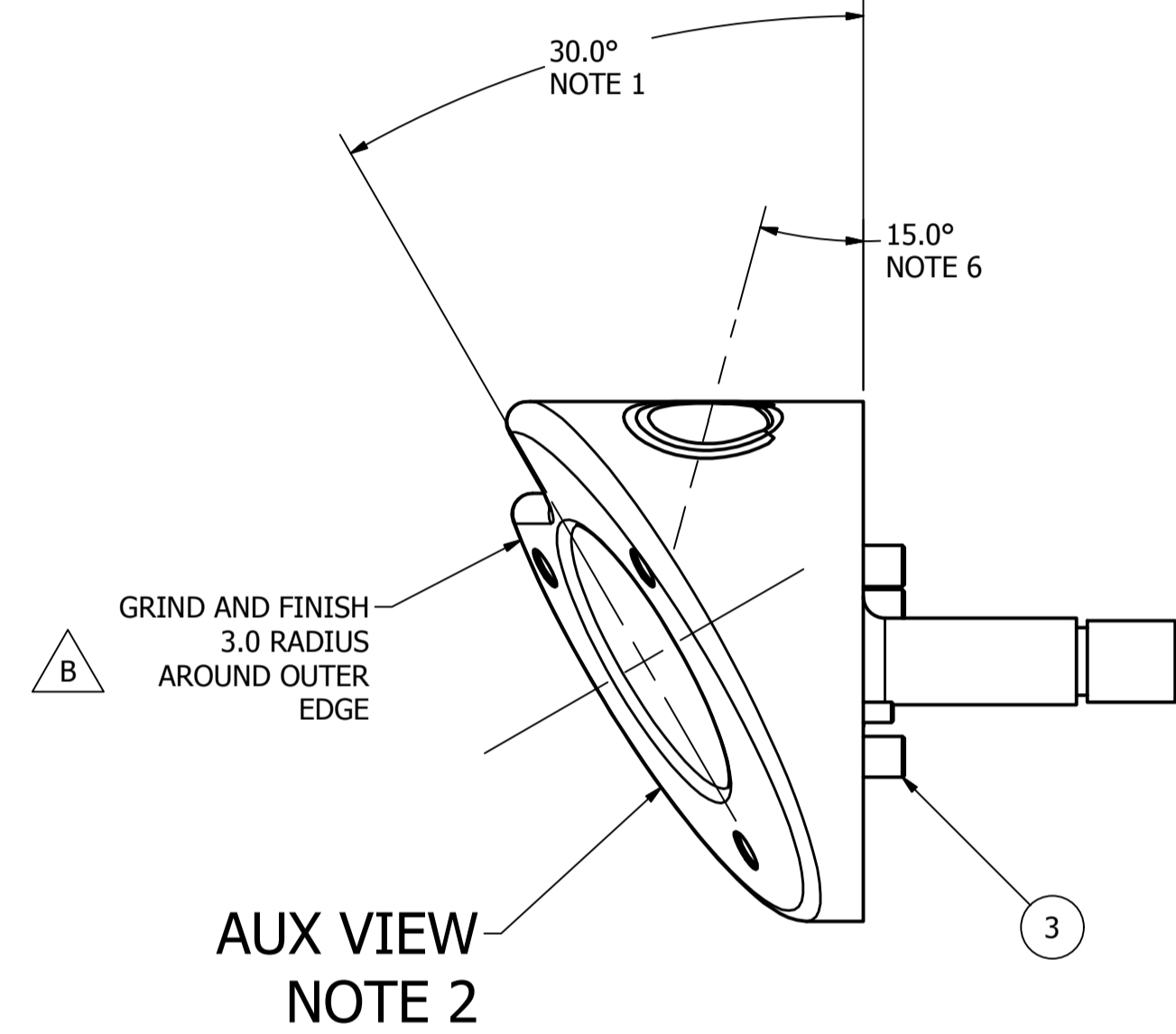
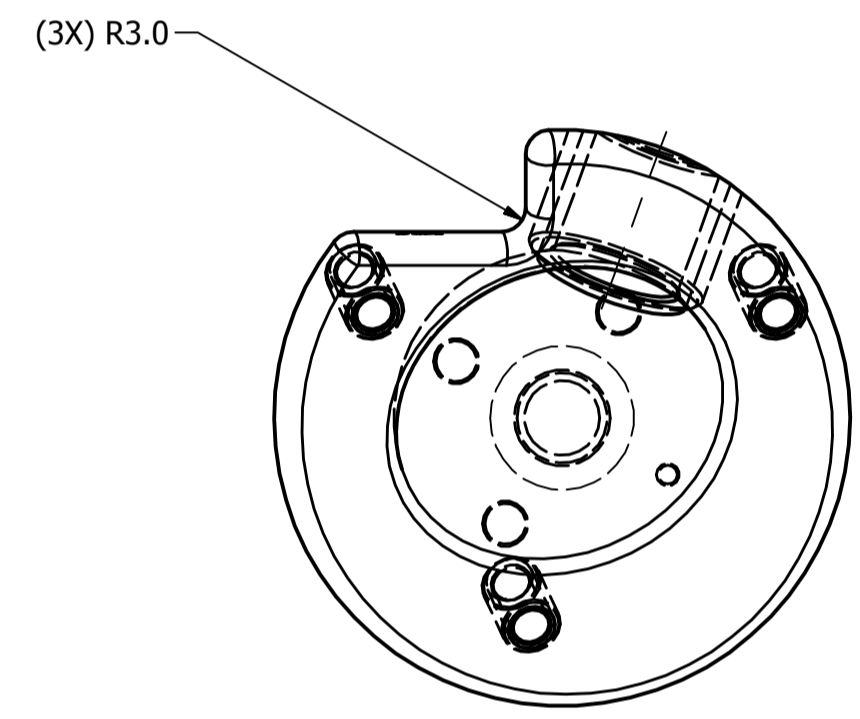
  

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO 0.0125 FRACTIONS ARE TO 1/32		SHOW HIDDEN & BREAK DIMENSIONS		
PELVIS LOAD CELL MTG PLATE LEFT				A21 of 1 111

472-4000	1	1018 STEEL	Jordan	8/22/2011
NEXT ASSEMBLY	QTY	BY	DATE	
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL PLATE JOB WAK	J. WANG	1/23/2012



REVISION HISTORY				
REV	ZONE	DESCRIPTION	DATE	BY
A	GLOBAL	RENUMBERED FROM T1PLM218-10 AND CONVERTED TO METRIC FOR THOR-M; Ø45.35 WAS Ø44.45; Ø6.00 +.000/-0.012 WAS Ø6.4, Ø31.75 B.C. WAS Ø31.8 B.C.; 1.6 THREAD RELIEF WAS .8; ADD 2.998+.000/-0.012 DOWEL HOLE	8/25/2011	JSJ
B	GLOBAL	INCREASE BALL SOCKET SIZE TO 44.51 FROM 44.35. REVISED AND ADDED DIMENSIONS/NOTE FOR BEFORE AND AFTER HARD COAT. ADD 3mm RADIUS TO OUTER EDGE.	5/24/2012	JSJ
C	A,4 GLOBAL	CORRECTED TOP TWO M6 HOLE LOCATIONS TO BE PARALLEL WITH CUT OUT	7/2/2012	JSJ
D	B,2	Ø12.70 +.00/-0.05 WAS +.00/-0.1	7/12/2012	TMV



- NOTES:
- BEGIN BY MACHINE THE 15° PLANE. MACHINE 30° PLANE FROM 15° TOP VIEW PLANE
  - AUX VIEW IS PERPENDICULAR TO THE RESULTING SURFACE.
  - THE TOP TWO M6x1 HOLES ARE ON A LINE PARALLEL WITH THE CUTOUT.
  - THE EXTRA LINES ARE THE REPRESENTATION OF THE COMPUTERS CURVED CONTOURS; THEY ARE NOT MACHINED
  - THE SPHERICAL BALL IS CENTERED ON THE Ø76.2 CROSS-SECTION, AND DRILLED PERPENDICULAR TO THE 15°/30° SURFACE
  - THE CENTER LINE OF THE M20x2.50 THREAD PASSES THROUGH THE CENTER OF THE SPHERICAL SOCKET.
  - ENGRAVE DWG# 472-4321-2 AT THE LOCATION SPECIFIED
  - MASK PIN HOLES AND SHAFT PRIOR TO HARD COAT ANODIZING
  - HARD COAT ANODIZE PART UPON COMPLETION - CLEAN UP AS NECESSARY AND ADD HELICOILS. HARD COAT THICKNESS IS .025mm PER SIDE ± 20%
  - DIMENSIONAL LIMITS AND THREADED HOLES APPLY AFTER FINISH.

ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	5000183	PIN, DOWEL M3 X 12 mm
3	3	5000433	PIN, DOWEL M6 X 12 mm
2	3	5000422	HELICOIL, M6 X 1 X 12
1	1	5000430	HELICOIL M20x2.5 X 20 mm

Parts List

DO NOT SCALE DRAWING

TOLERANCES

UNLESS OTHERWISE SPECIFIED

FRONT VIEW

THIRD ANGLE PROJECTION

SHOW HIDDEN & BREAK SHARP EDGES

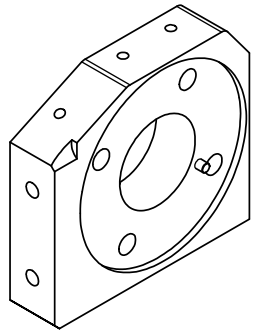
472-4000 1 7075-T6 ALUMINUM Jordan 8/25/2011

NEXT ASSEMBLY QTY N/A TMV 7/3/2012

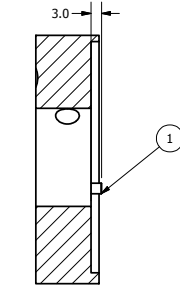
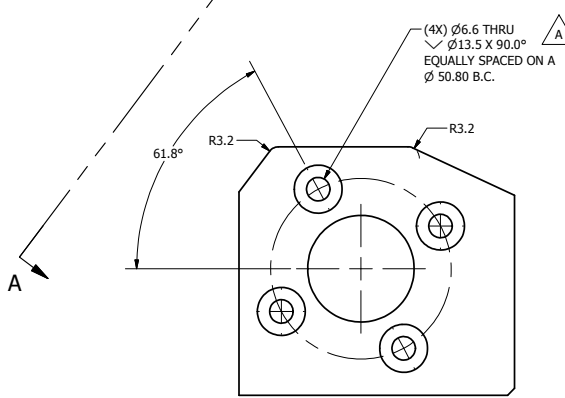
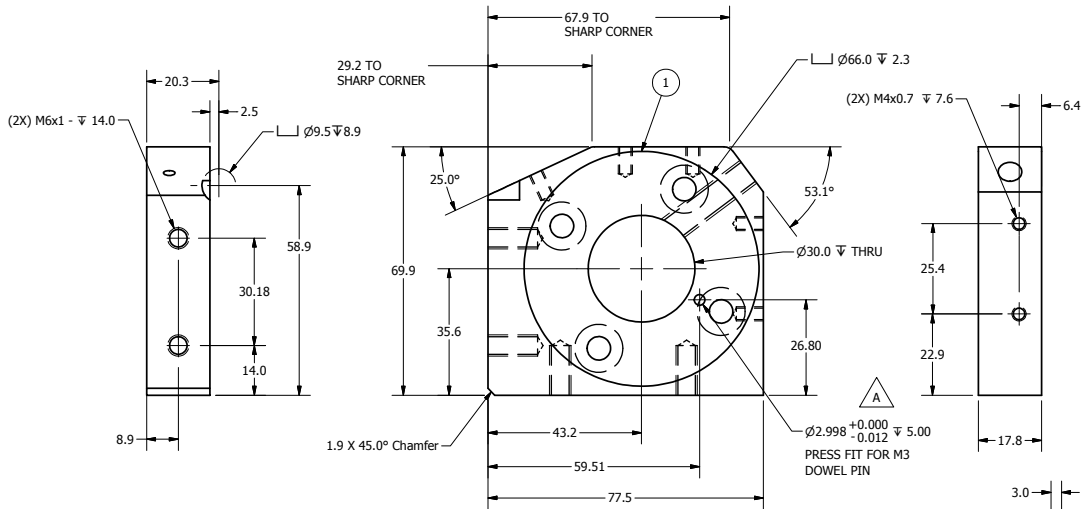
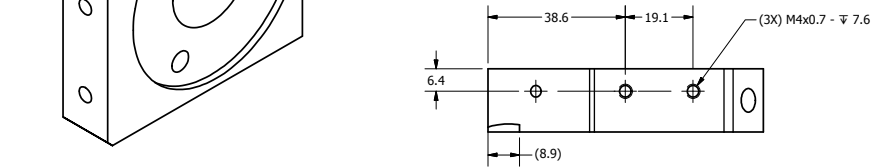
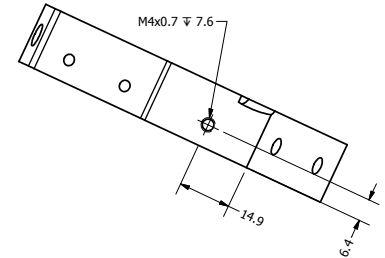
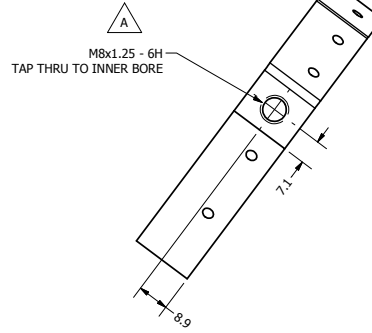
TOTAL QTY IN DUMMY 1 SEE NOTE 9 J. WANG 1/23/2012

1 of 1 472-4321-2

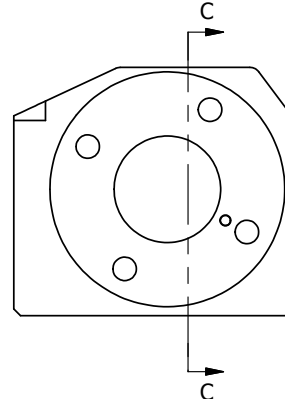
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1PLM211-03 AND CONVERTED TO METRIC FOR THOR-M; · 6.6 WAS · 6.8, C'SINK Ø13.5 X 90° WAS Ø13.2 X 82°; ADD Ø2.998 +.000/-0.012 1 5.0, M8x1.25 TAP HOLE	8/23/2011	JSJ
	B	NICKEL PLATE FINISH WAS TEFLON (ECO 10181)	10/18/2011	TMV



VIEW A-A  
SCALE 1 : 1



SECTION C-C  
SCALE 1 : 1



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5000384	M3 x 8mm DOWEL PIN

Parts List				
472-4000	1	1018 STEEL	Jordan	8/23/2011
NEXT ASSEMBLY	QTY	BY	DATE	
TOTAL QTY IN DUMMY	1	ELECTROLESS NICKEL PLATE (88 PH)	J. WANG	11/23/2012

DO NOT SCALE DRAWING	TOLERANCES	 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION	DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE IN HUNDRETHS FRACTIONS ARE IN SIXTEENTHS UNLESS OTHERWISE SPECIFIED	
SHOW HIDDEN & BREAK DIMENSIONS UNLESS OTHERWISE SPECIFIED	PELVIS LOAD CELL MTG. PLATE (RIGHT)	A21 of 1 111

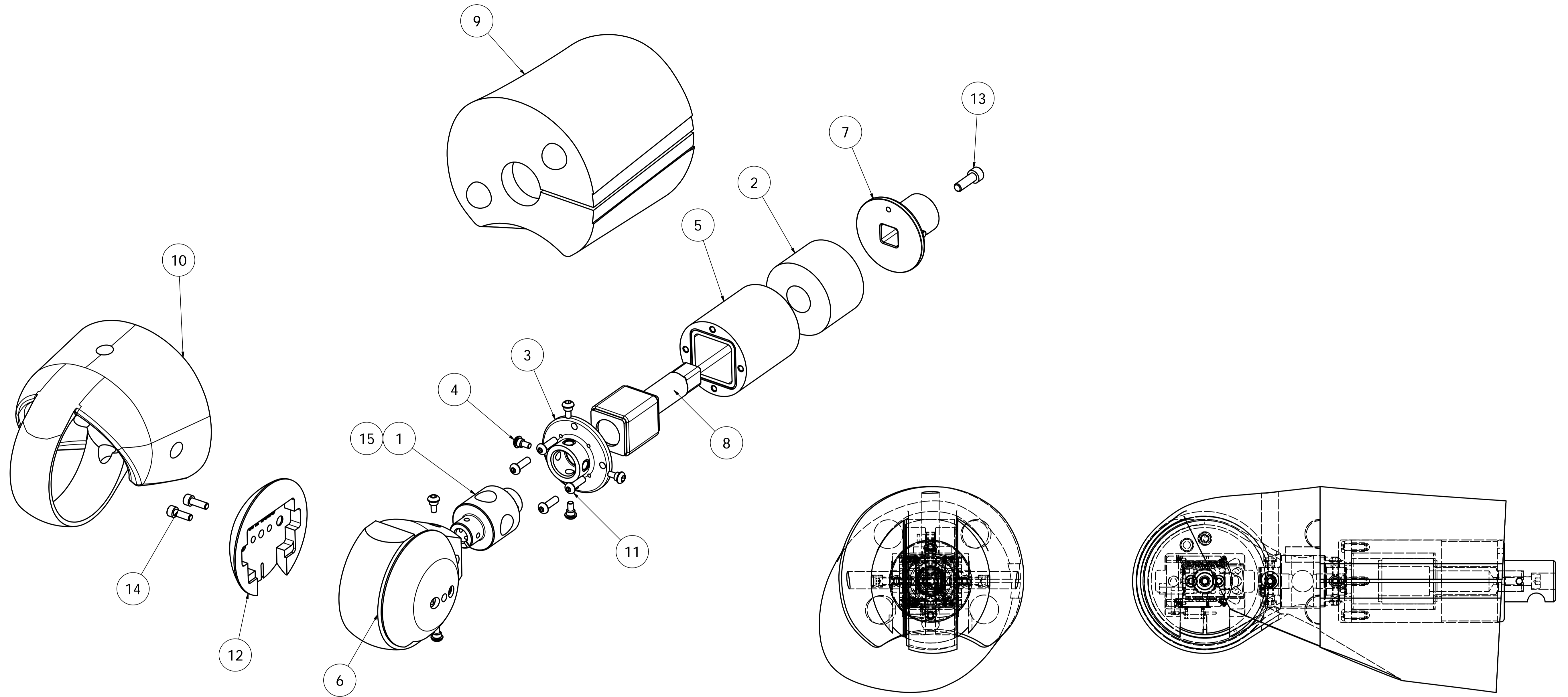
4 1 3 2 1

B

A

4 1 3 2 1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM000-04 AND CONVERTED TO METRIC FOR THOR-M: REMOVED LEFT FEMUR BALL JOINT ASSY FROM ASSY (T1FMM100-02)		TKN
	B	ADD 472-5353 AND 9005217	2/14/2012	KHS
	C	ADDED PART #SA572-S120 - FEMUR LOAD CELL (OPTIONAL)	9/3/2015	DW



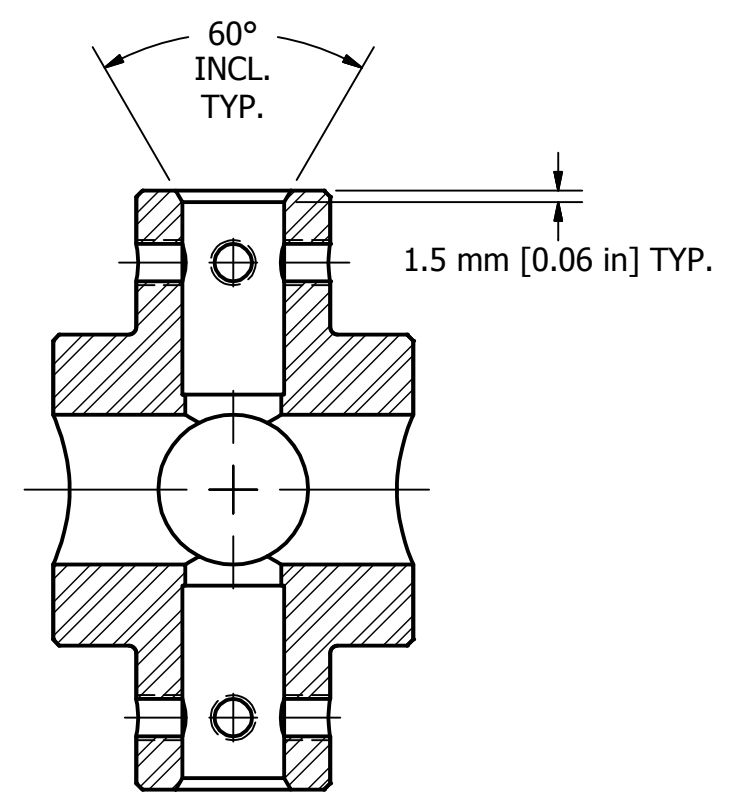
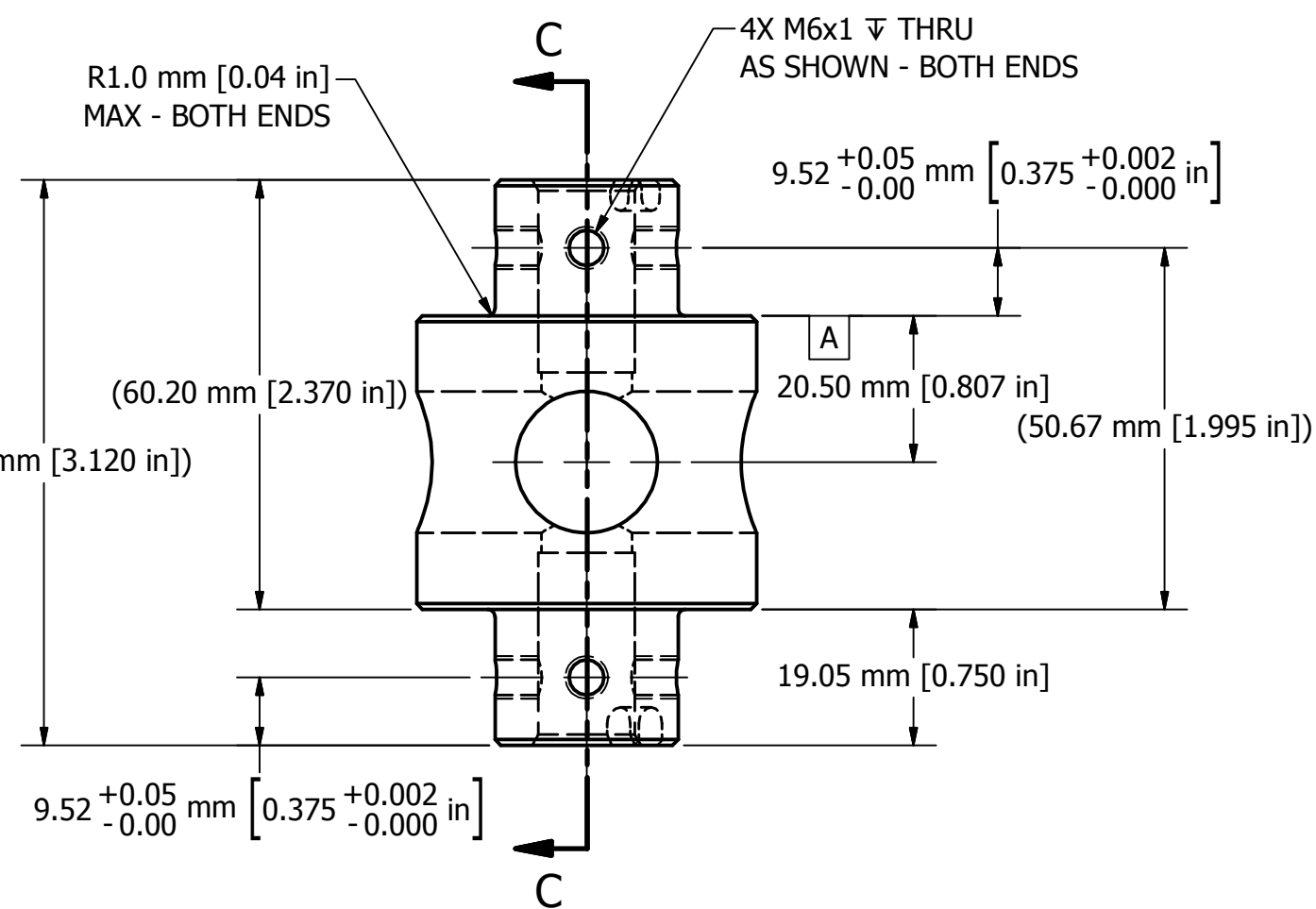
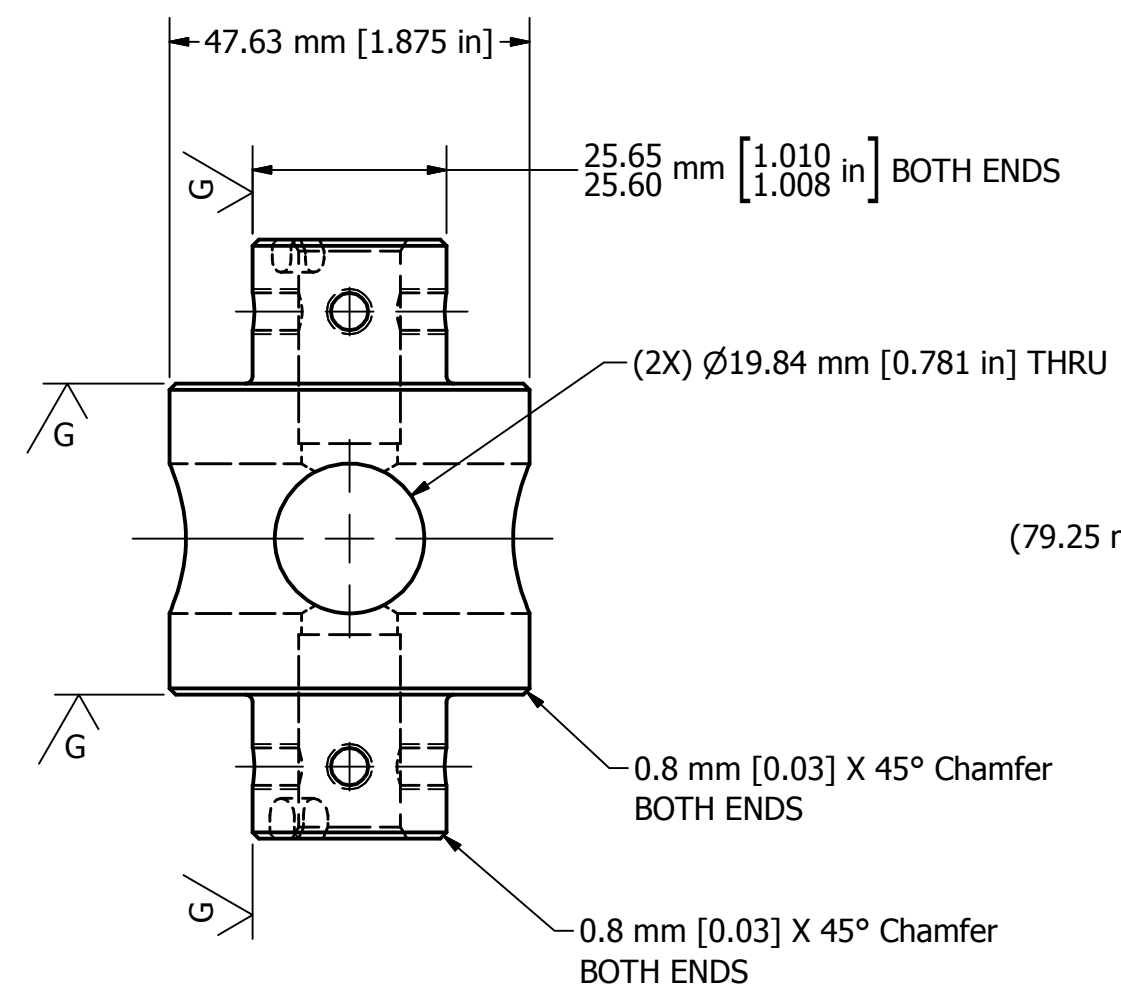
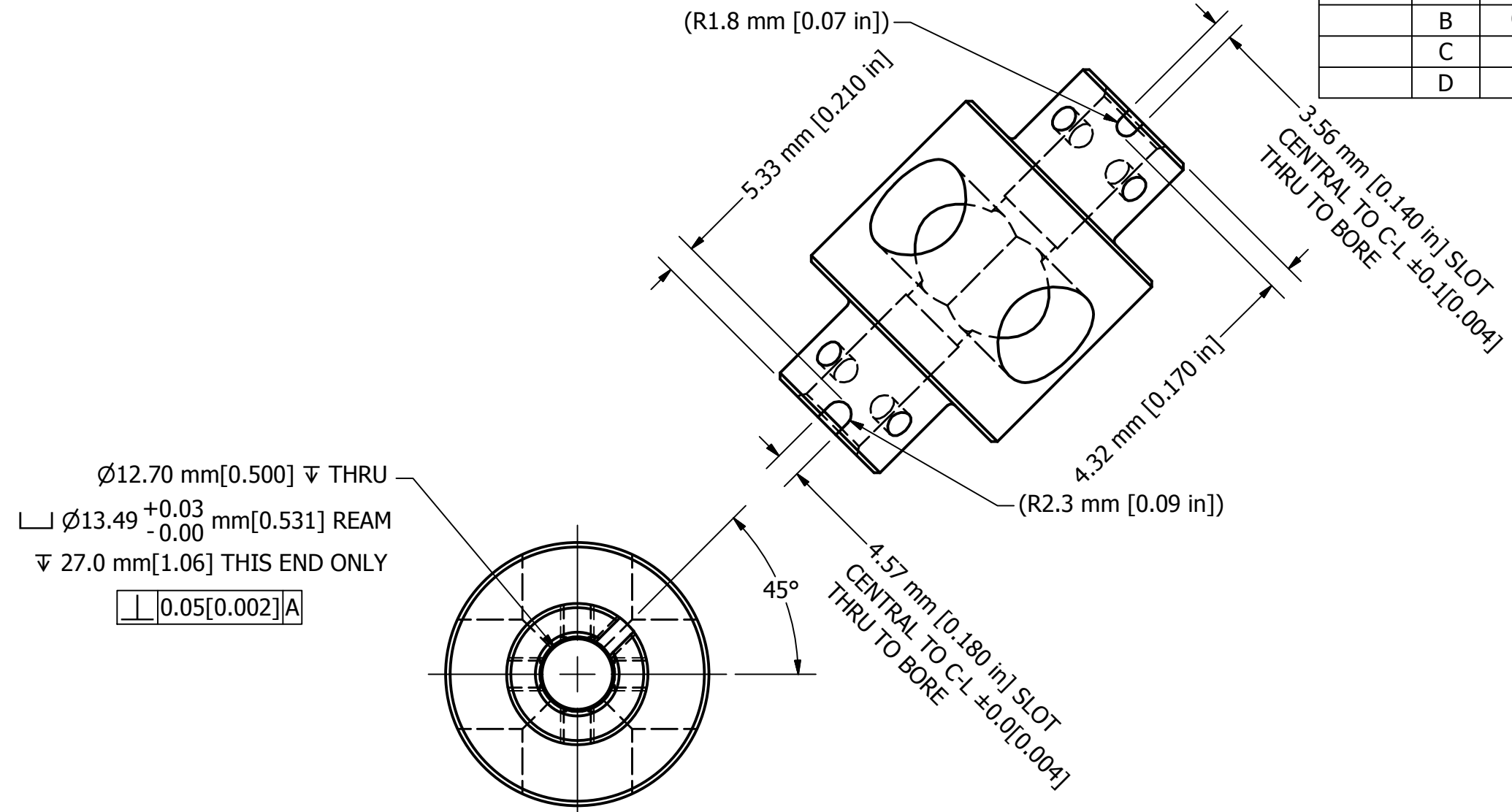
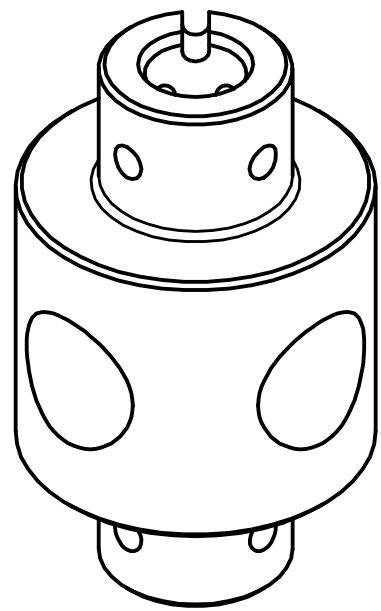
ISO VIEW  
SCALE 1 / 2

ITEM	QTY	PART NUMBER	DESCRIPTION
15	1	SA572-S120	FEMUR LOAD CELL (OPTIONAL)
14	4	9005217	SHCS M6 X 18 mm
13	1	5000037	SCREW, SHCS M8-1.25 X 25mm
12	2	472-5353	KNEE COVER
11	4	5000438	SCREW, BHCS M6-1 X 20mm
10	1	472-5502	KNEE FLESH LEFT/RIGHT (MODIFIED)
9	1	472-5503-1	THIGH FLESH - LEFT
8	1	472-5420	FEMUR PLUNGER ASSY.
7	1	472-5410	FEMUR BALL ATTACHMENT PLATE ASSY.
6	1	472-5300	KNEE CAP ASSY., LEFT
5	1	472-5200	FEMUR BUSHING ASSY.
4	8	W50-61042	MODIFIED BHSS M6 THREAD
3	1	472-5203	END CAP - FEMUR
2	1	472-5206	COMPRESSION ELEMENT-UPPER LEG
1	1	W50-51060	UNIVERSAL LEG L.C. STRUCTURAL REPLACEMENT

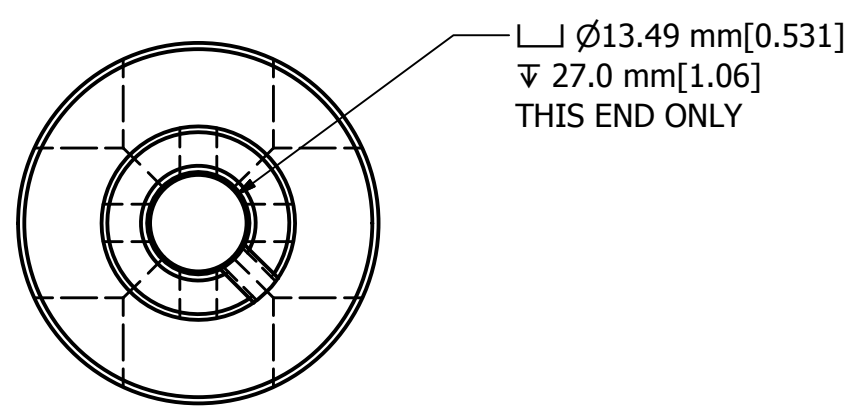
Parts List  
 DO NOT SCALE DRAWING  
 TOLERANCES  
 UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ARE TO BE USED  
 FRACTIONS ARE TO BE USED  
 HOLE DIMENSIONS ARE TO BE USED  
 UNLESS OTHERWISE SPECIFIED  
 SHOW HIDDEN LINES AND SHARP EDGES  
 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO.	472-5000-1	DATE	8/29/2011	DESCRIPTION	LEFT UPPER LEG ASSY.
DESIGNED BY	THANH	CHECKED BY		DATE	
DRAWN BY		DATE			
TOTAL QTY IN DUMMY	1	DATE	1/28/2012	SCALE	1:2

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	REM CONNECTION HOLES; CHANGE MASS; CHANGE HOLE DIAMETER	23SEP02	N/A
	B	CHANGE TO BORE, ONE END ONLY	22OCT02	N/A
	C	CENTERS ADDED	11DEC02	TORCH
	D	REDRAWN IN INVENTOR	3/22/2007	BB



SECTION C-C  
SCALE 1 : 1



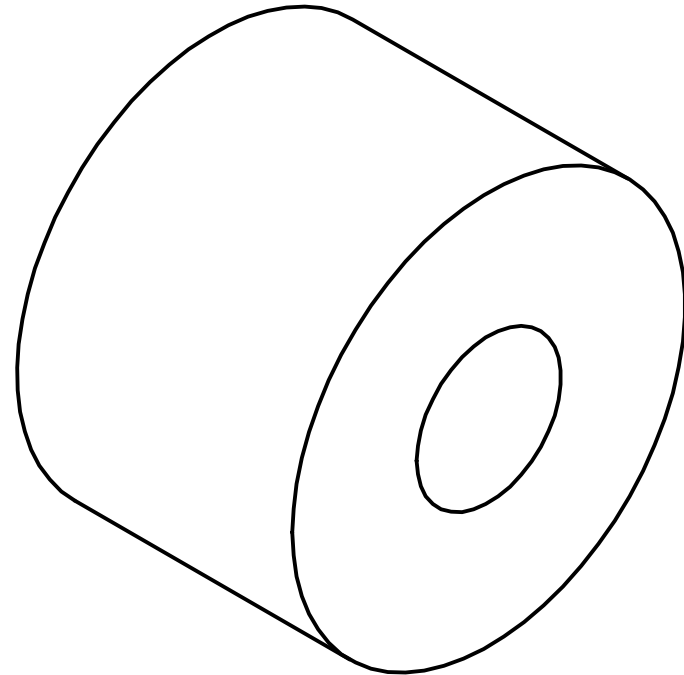
MASS: .467 Kg [1.06 lbs.]

TABLE "A"	
Metric Tolerances	Inch Tolerances
XX. ±0.50mm	XX. ±.020"
XX.X ±0.10mm	XX.X ±.004"
XX.XX ±0.05mm	XX.XX ±.002"

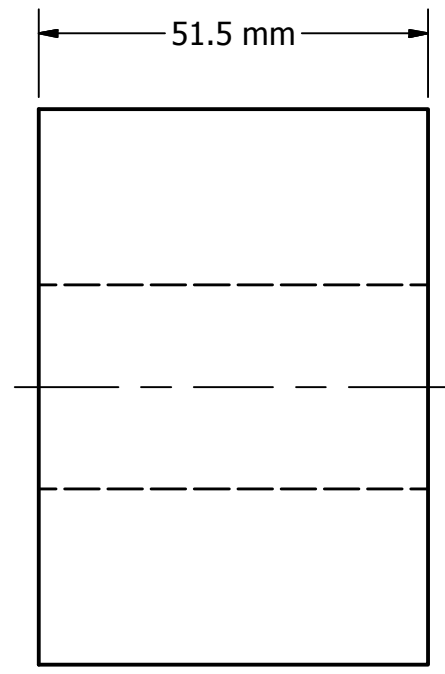
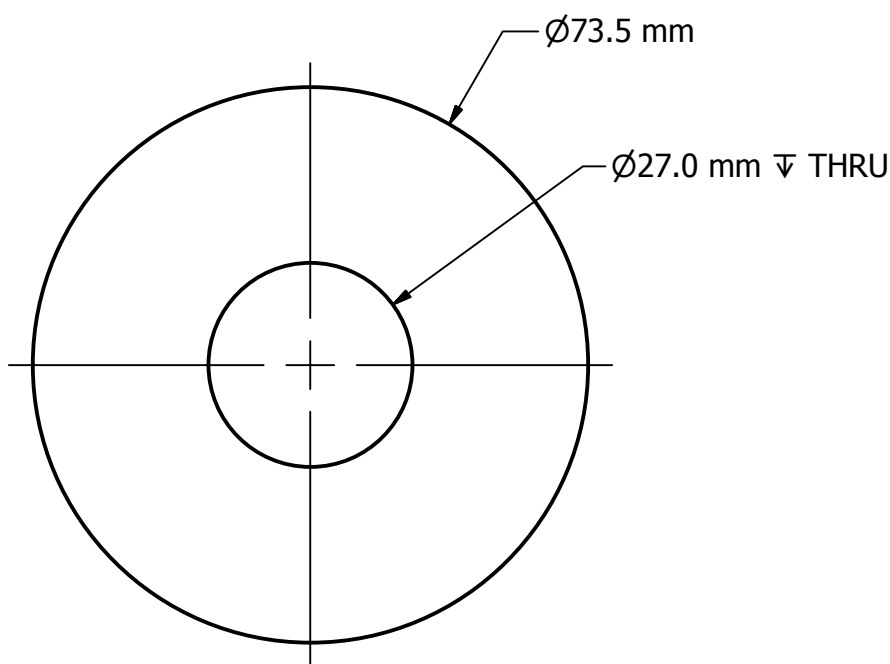
- UNLESS OTHERWISE SPECIFIED:
1. ALL DIMENSIONS ARE IN INCHES.
  2. BREAK ALL SHARP EDGES.
  3. ALL MACHINED SURFACES  $\sqrt{125}$  OR BETTER.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION UNIVERSAL LEG L.C. STRUCTURAL REPLACEMENT
THIRD ANGLE PROJECTION 		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS ANGLES FINISH XX ±0.1 ±1 125 XXX ±0.05 FRACTION 1/64		
PROJECT NO:		REMOVE BURRS & BREAK SHARP EDGES	DATE:	
MATERIAL:	4140 STEEL	DRAWN BY:	BRYAN B	1/18/2007
PREPARE:	N/A	CHECKED BY:	KSG	3/22/2007
FINISH:	.0003 ELECTROLESS NICKEL PLATE	ENGINEER:		
SCALE: 1:1		DRAWING NO.: W50-51060		REV: D

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM206 R0 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ



SCALE 1.000



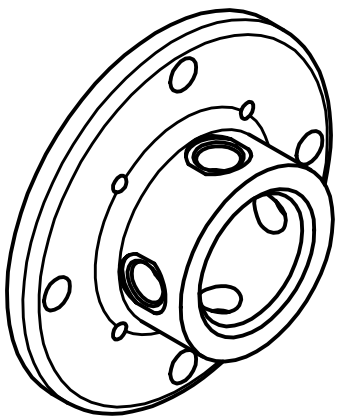
NOTES:

- 1.MATERIAL: NATURAL RUBBER, 60 ± 5 SHORE "A"  
ADJUST DUROMETER TO MEET DYNAMIC PERFORMANCE
2. TOLERANCE ± 0.5 mm ALL DIMENSIONS

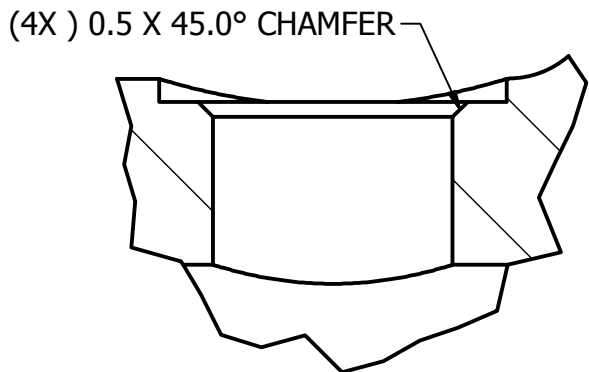
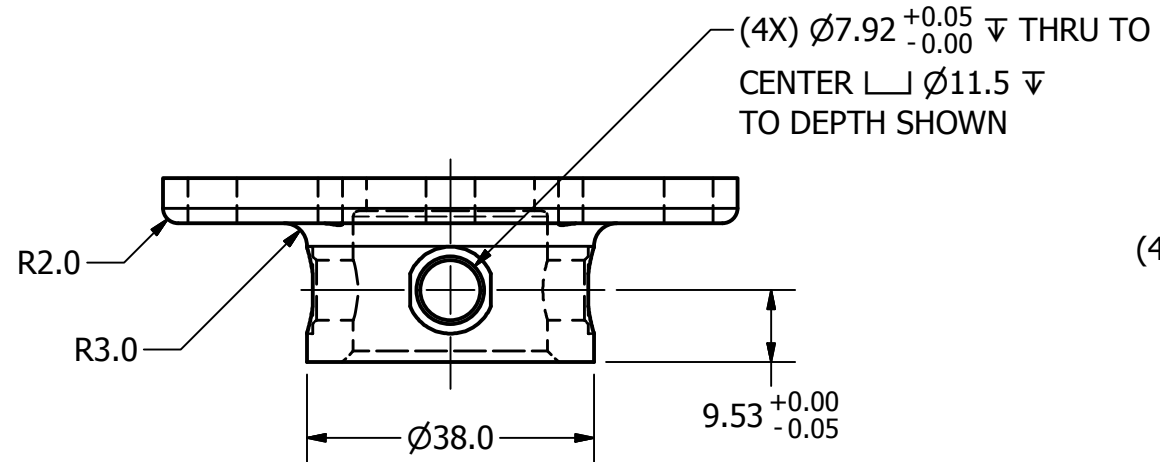
472-5100-2		1	PROJECT NO.:	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-5100-2		1	MATERIAL: SEE NOTES	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.5 1.6 XXX ± 0.1 ± 0.5 1.6 XXXX ± 0.01 ± 0.5 1.6		
NEXT ASSEMBLY		QTY	HEAT TREAT:	CHECKED BY: TMV	DATE: 9/12/2011	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: COMPRESSION ELEMENT-UPPER LEG
TOTAL QTY IN DUMMY		2	FINISH:	ENGINEER: J. WANG	DATE: 1/26/2012	SCALE: 1:1	DRAWING NO.: 472-5206



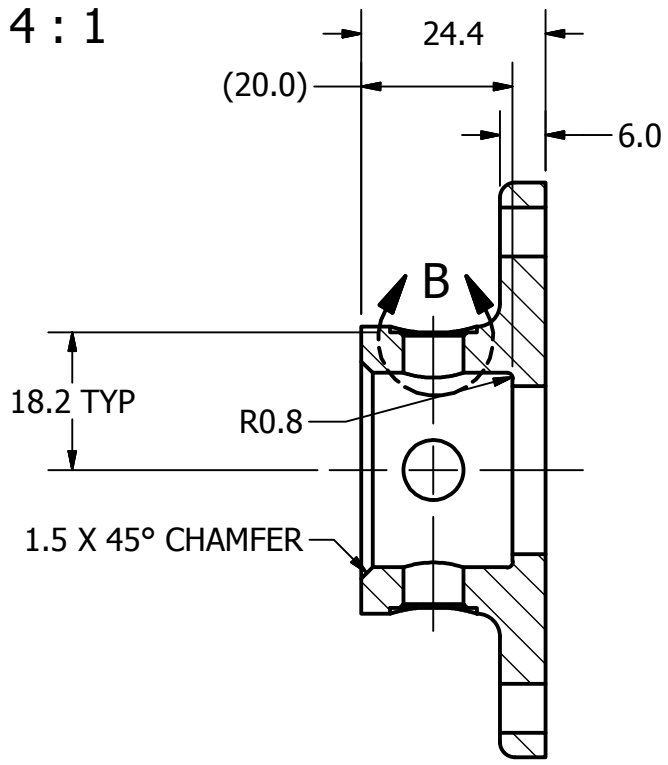
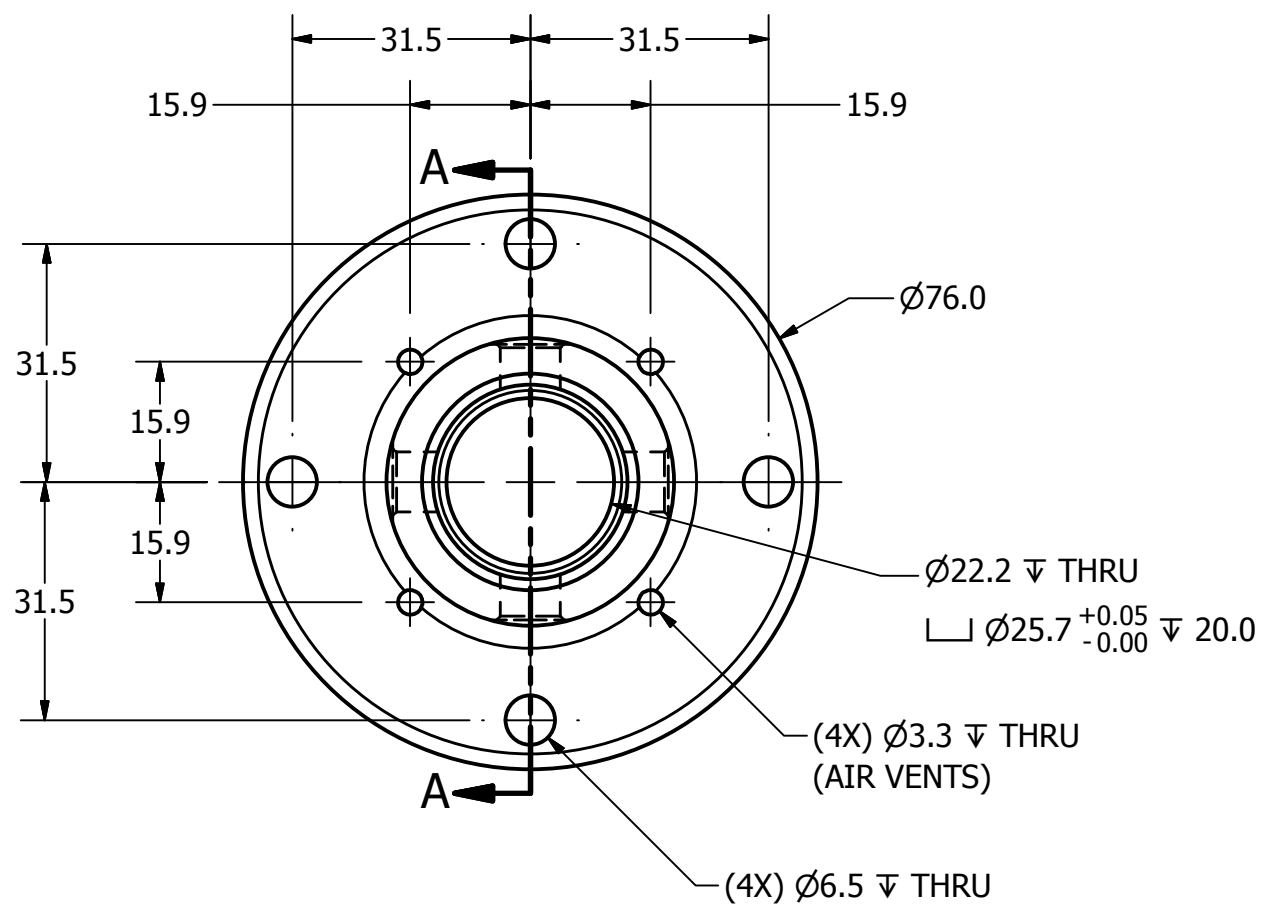
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM203 R0 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ



SCALE .750



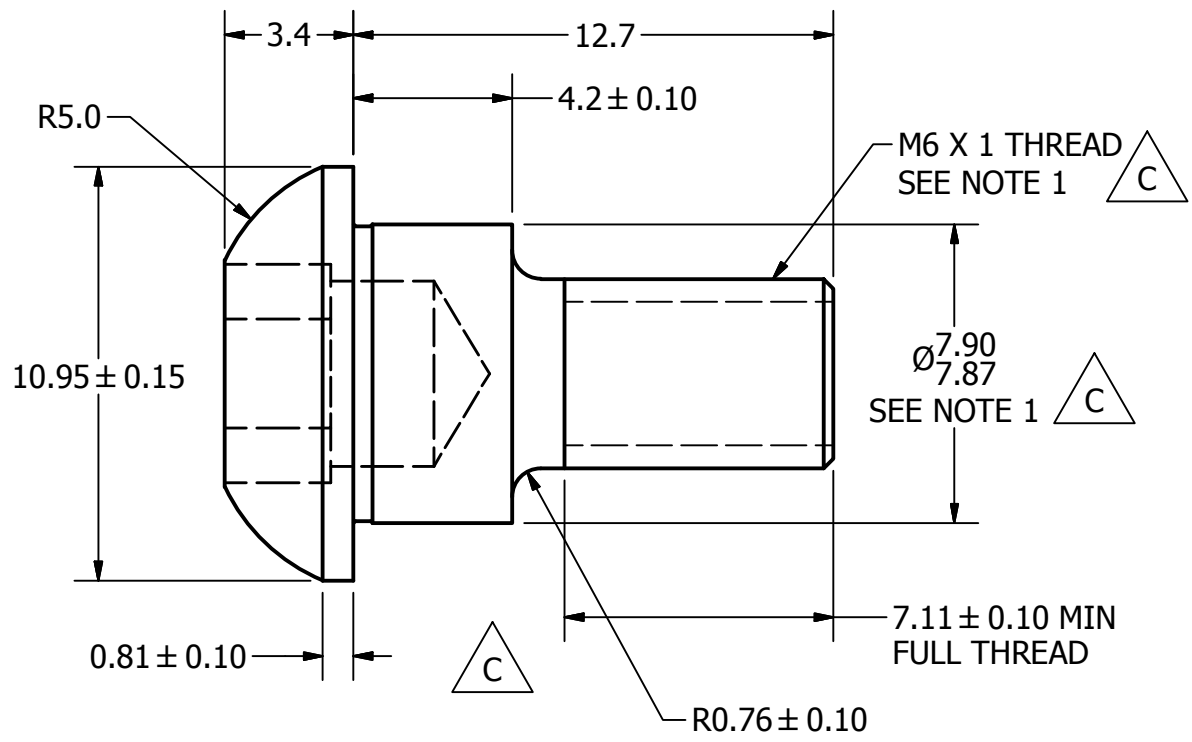
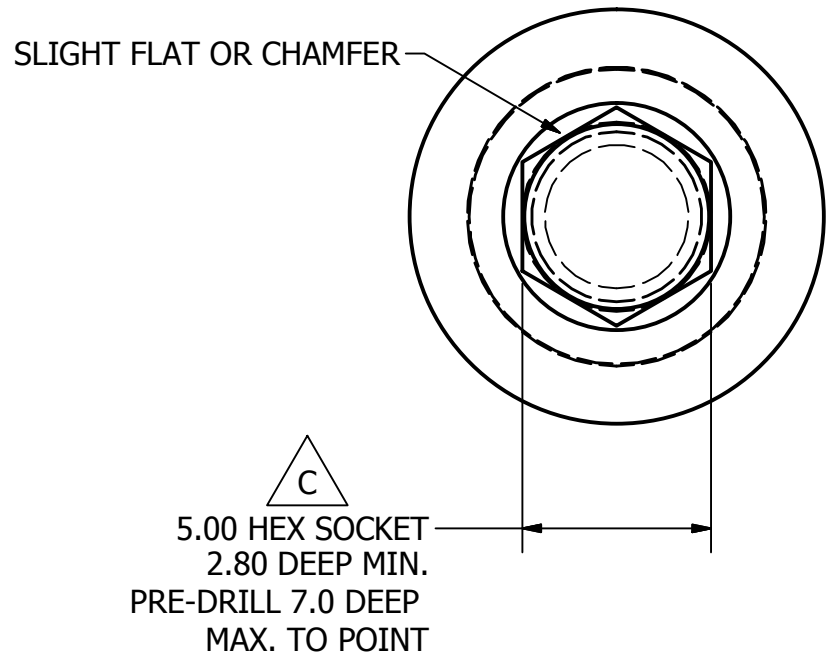
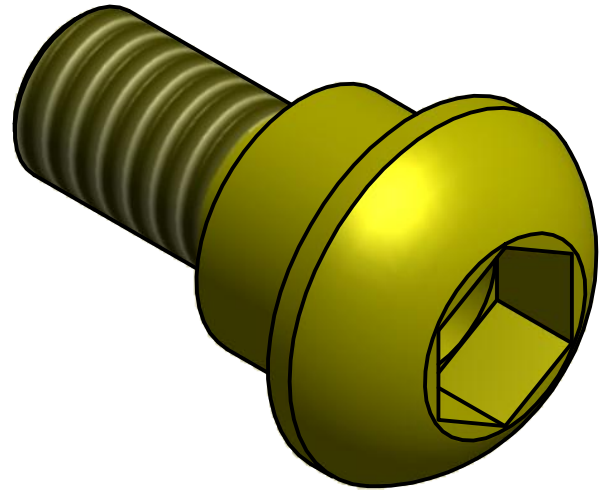
DETAIL B  
SCALE 4 : 1



SECTION A-A

472-5100-2		1	PROJECT NO.	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-5100-1		1	MATERIAL: Aluminum-7075-T6	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.5 XXX ± 0.1 ± 0.1 XXXX ± 0.01 ± 0.01		
NEXT ASSEMBLY		QTY	HEAT TREAT:	CHECKED BY: TMV	DATE: 9/9/2011	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: END CAP - FEMUR
TOTAL QTY IN DUMMY		2	FINISH: CLEAR ANODIZE	ENGINEER: J. WANG	DATE: 1/26/2012	DATE: 8/17/2011	
			SIZE: A3		SHEET: 1 OF 1	DRAWING NO.: 472-5203	REV: A

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
	A	RELEASE TO PRODUCTION	SP	JWANG	5/24/05
5708	B	CHANGE APPLICATION QTY FROM 16 TO 4	RN		10/31/05
70730	C	REDRAWN IN INVENTOR. .25 RADIUS WAS MIN. UNDERCUT. 2.80 DEEP MIN WAS 3.5 DEEP MIN. ADD REF TO CONCENTRICITY NOTE. REMOVE 'USED ON' TABLE, SCALE WAS 4 : 1, DISCONTINUE DN/FT TITLE BLOCK DRAWINGS, RE-RELEASE AS HUMANETICS TITLE BLOCK, NO DN/FT SUFFIX (THIS DWG WAS FT)	GMB		1/14/2013

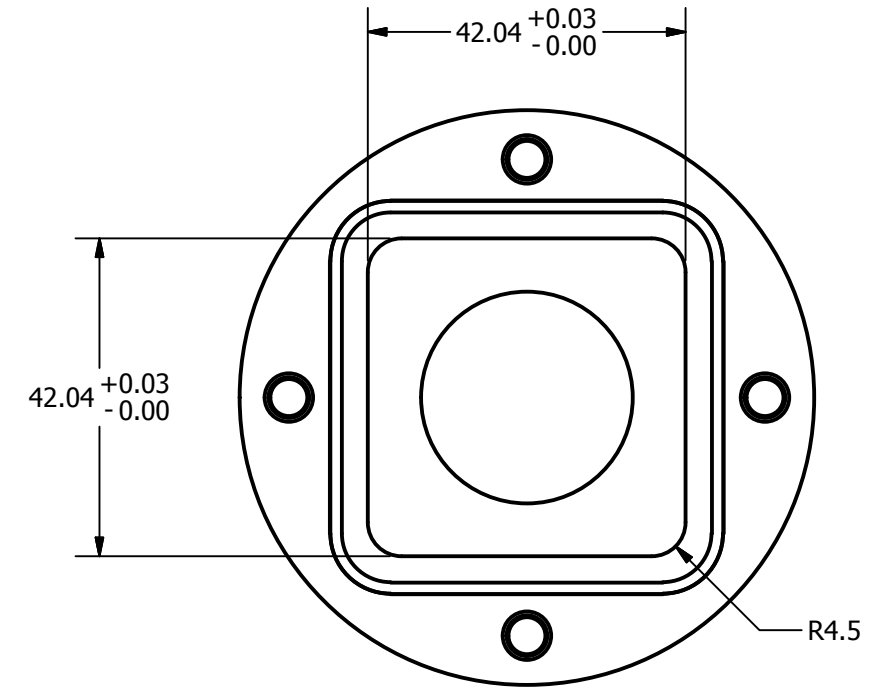
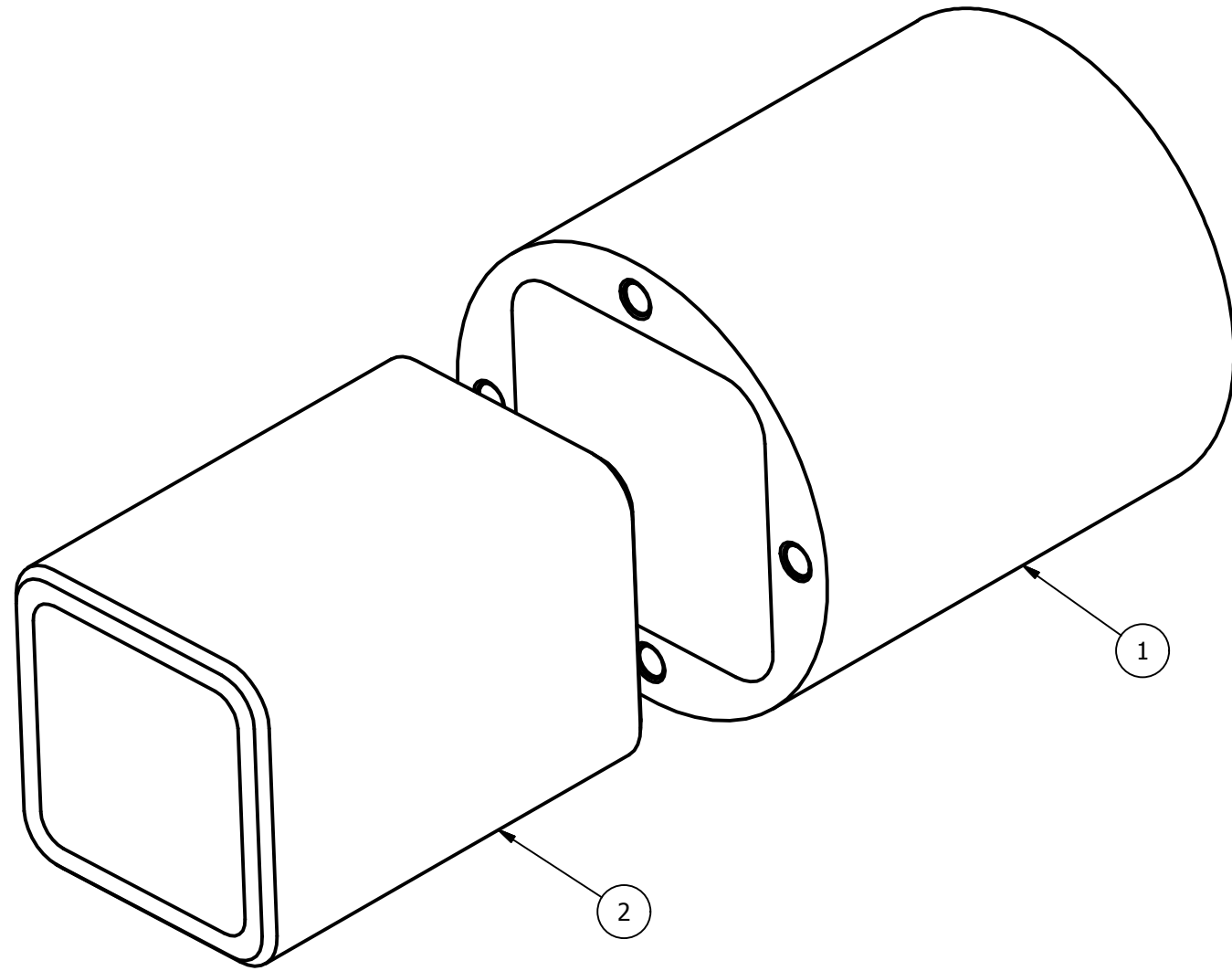


NOTES:

1. SHOULDER TO BE CONCENTRIC TO AXIS OF THREAD WITHIN .02 MM TOTAL INDICATOR READING.
2. REMOVE BURRS AND BREAK SHARP EDGES
3. FINISH: .002 - .008 ZINC PER SIDE YELLOW DICHROMATE
4. DIMENSIONAL LIMITS AND THREAD SIZES APPLY AFTER FINISH

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</small> <small>DECIMALS ANGLES FINISH</small> <small>XX ± 0.1 ± 1 125</small> <small>X.XX ± 0.01 ± 1</small> <small>X.XXX ± 0.005 FRACTIONS ± 1/64</small>		
PROJECT NO.:	REMOVE BURRS & BREAK SHARP EDGES	DATE:	1/14/2013	DESCRIPTION:
MATERIAL:	4140 STEEL	DRAWN BY:	gbrock	MODIFIED BHSS M6 THREAD
HEAT TREAT:	Rc 36-42	CHECKED BY:		SIZE: SHEET
FINISH:	SEE NOTES	ENGINEER:	J. WANG	A31 of 1
		DATE:	11/9/2005	DRAWING NO.:
				W50-61042
				C

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM200 R00 AND CONVERTED TO METRIC FOR THOR-M	8/22/2011	JSJ



MACHINE AFTER ASSEMBLY

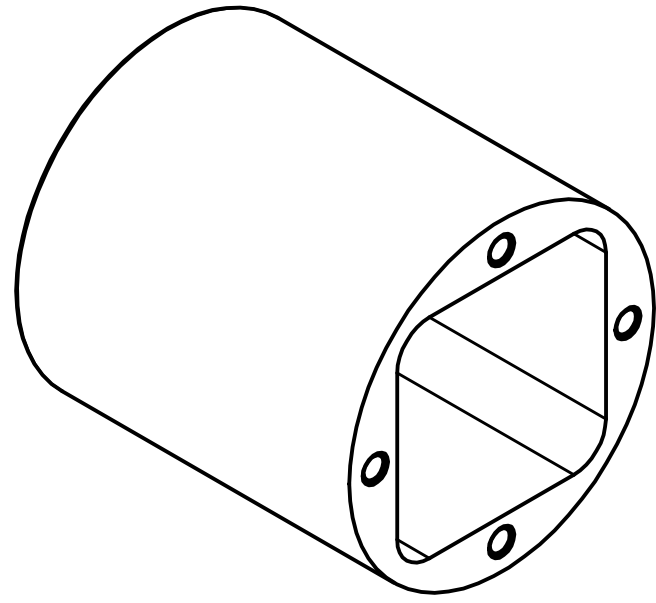
NOTES:  
1. BOND ITEM 1 TO ITEM 2 BEFORE FINAL MACHINING.

2	1	472-5202	FEMUR BUSHING
1	1	472-5201	FEMUR CUP ASSY.
ITEM	QTY	PART NUMBER	DESCRIPTION
DO NOT SCALE DRAWING		TOLERANCES	
 THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>X ± 0.5 ± 0.5 1.6</small> <small>.XX ± 0.2 ± 0.5 1.6</small> <small>.XXX ± 0.1 ± 0.5 1.6</small> <small>XXX ± 0.01 ± 0.5 1.6</small>	
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	
MATERIAL:		DLW	DATE: 8/17/2011
HEAT TREAT:		TMV	DATE: 9/13/2011
FINISH:		J. WANG	DATE: 1/26/2012
472-5100-2	1		
472-5100-1	1		
NEXT ASSEMBLY	QTY		
TOTAL QTY IN DUMMY	2		

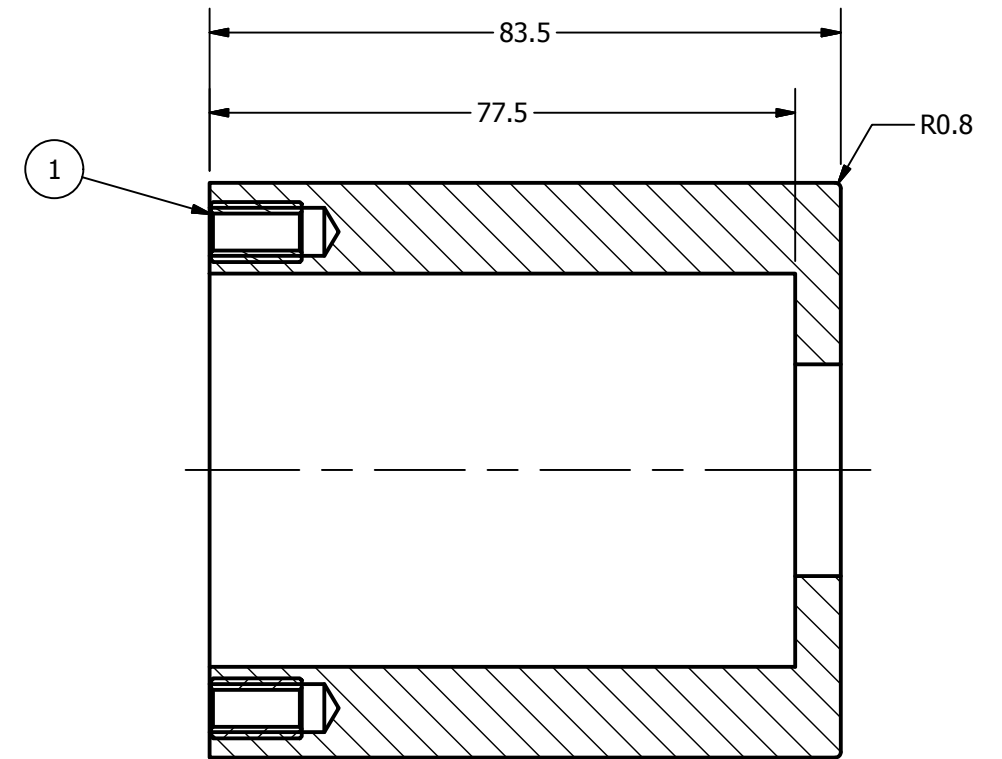
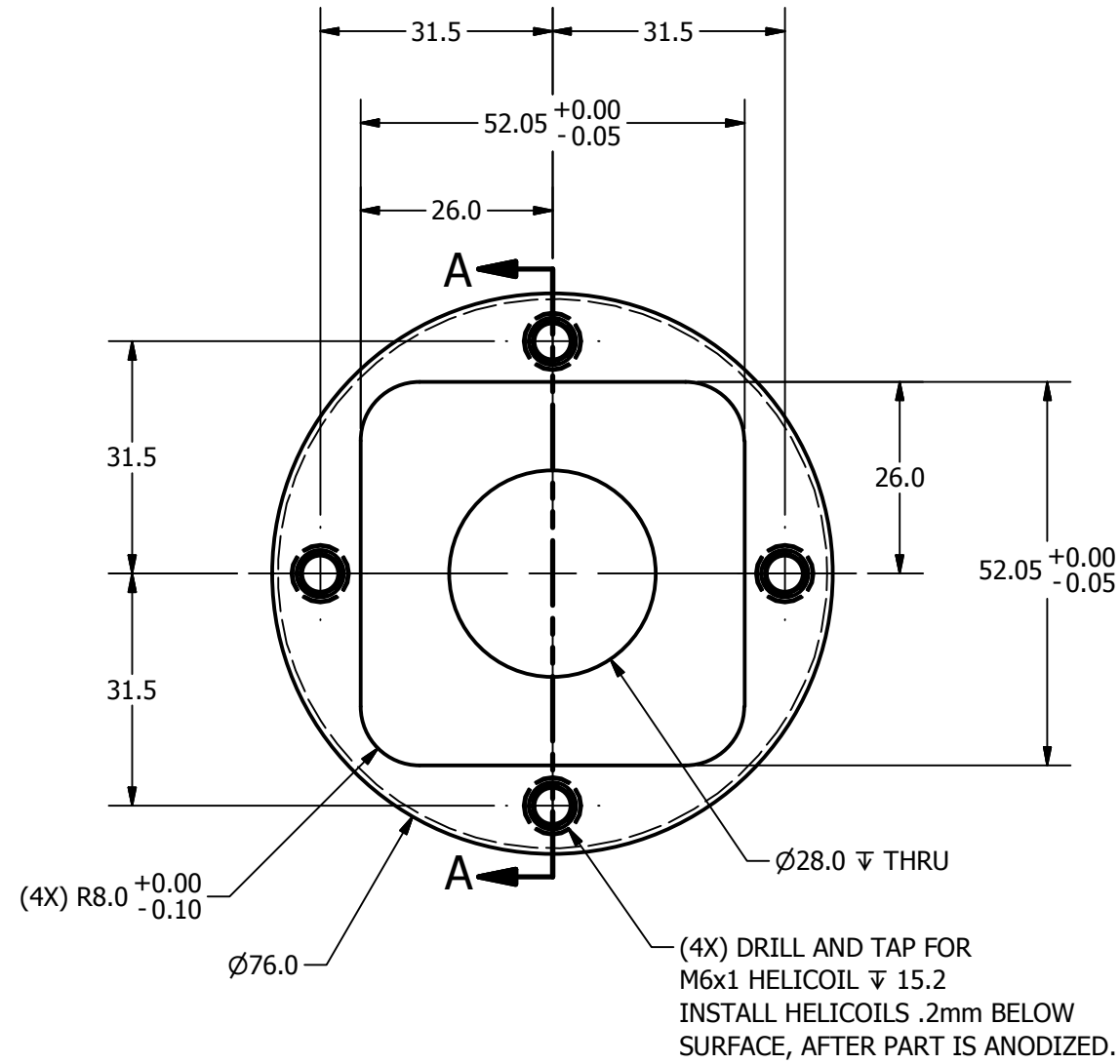


DESCRIPTION:		FEMUR BUSHING ASSY.
SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-5200
SCALE: 1:1		REV: A

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM201 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ



SCALE .750



SECTION A-A

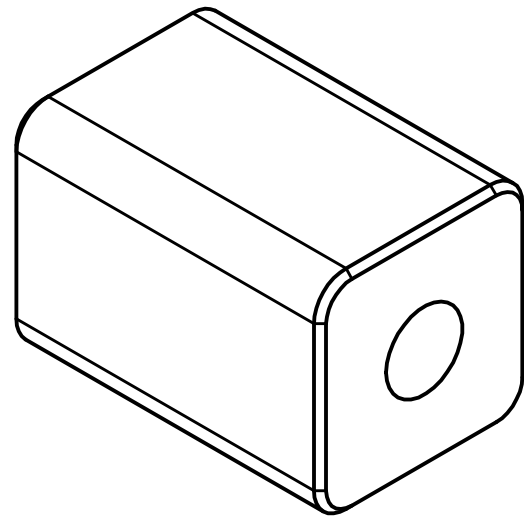
ITEM	QTY	PART NUMBER	DESCRIPTION
4	4	5000422	HELICOIL, M6 X 1 X 12

Parts List

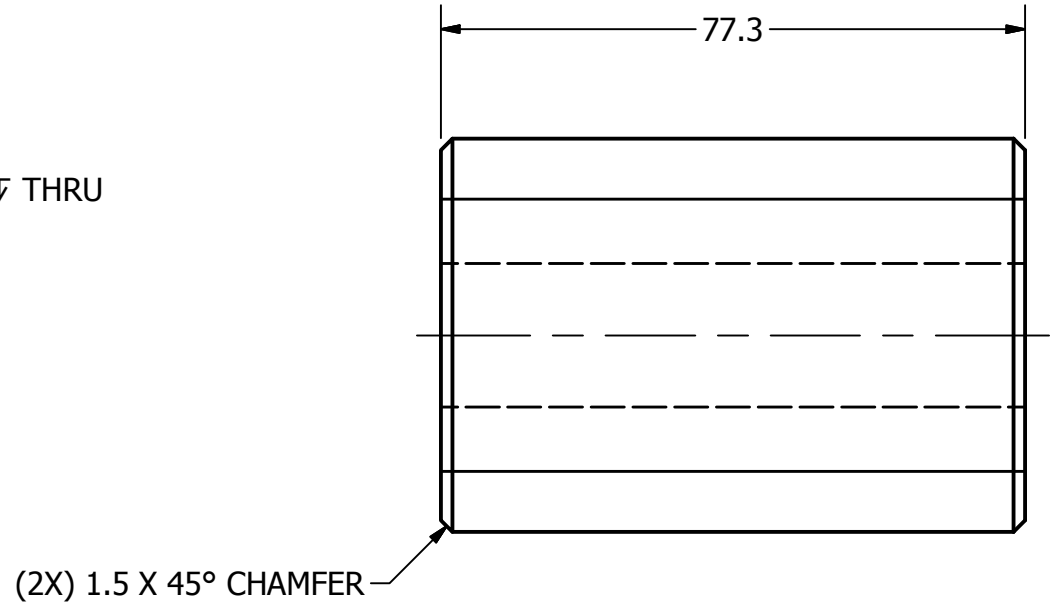
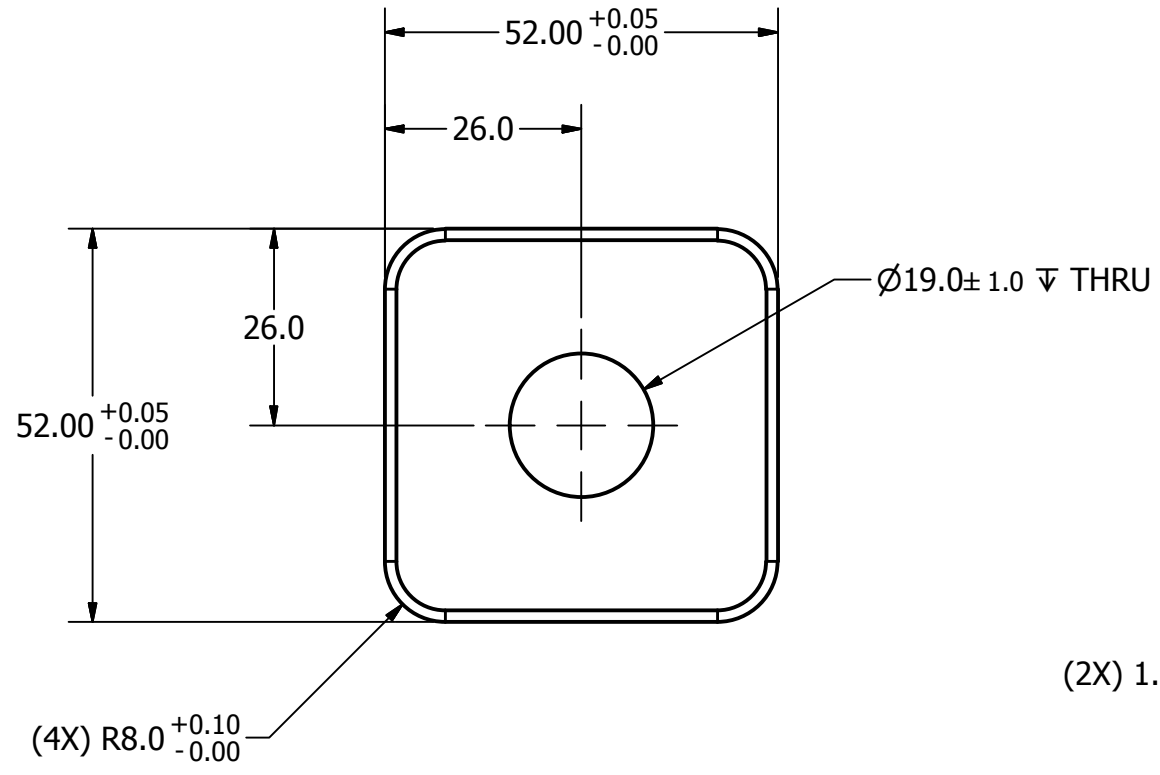
DO NOT SCALE DRAWING	TOLERANCES	 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6	
PROJECT NO.:	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION:
472-5200	MATERIAL: 7076-T6 ALUMINUM	FEMUR CUP ASSY.
NEXT ASSEMBLY	HEAT TREAT:	DATE: 8/17/2011
TOTAL QTY IN DUMMY	FINISH: CLEAR ANODIZE	CHECKED BY: KHS
		DATE: 9/12/2011
		ENGINEER: J. WANG
		DATE: 1/26/2012

SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-5201	REV: A
SCALE: 1:1			

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM202 AND CONVERTED TO METRIC FOR THOR-M	8/18/2011	JSJ



SCALE .750

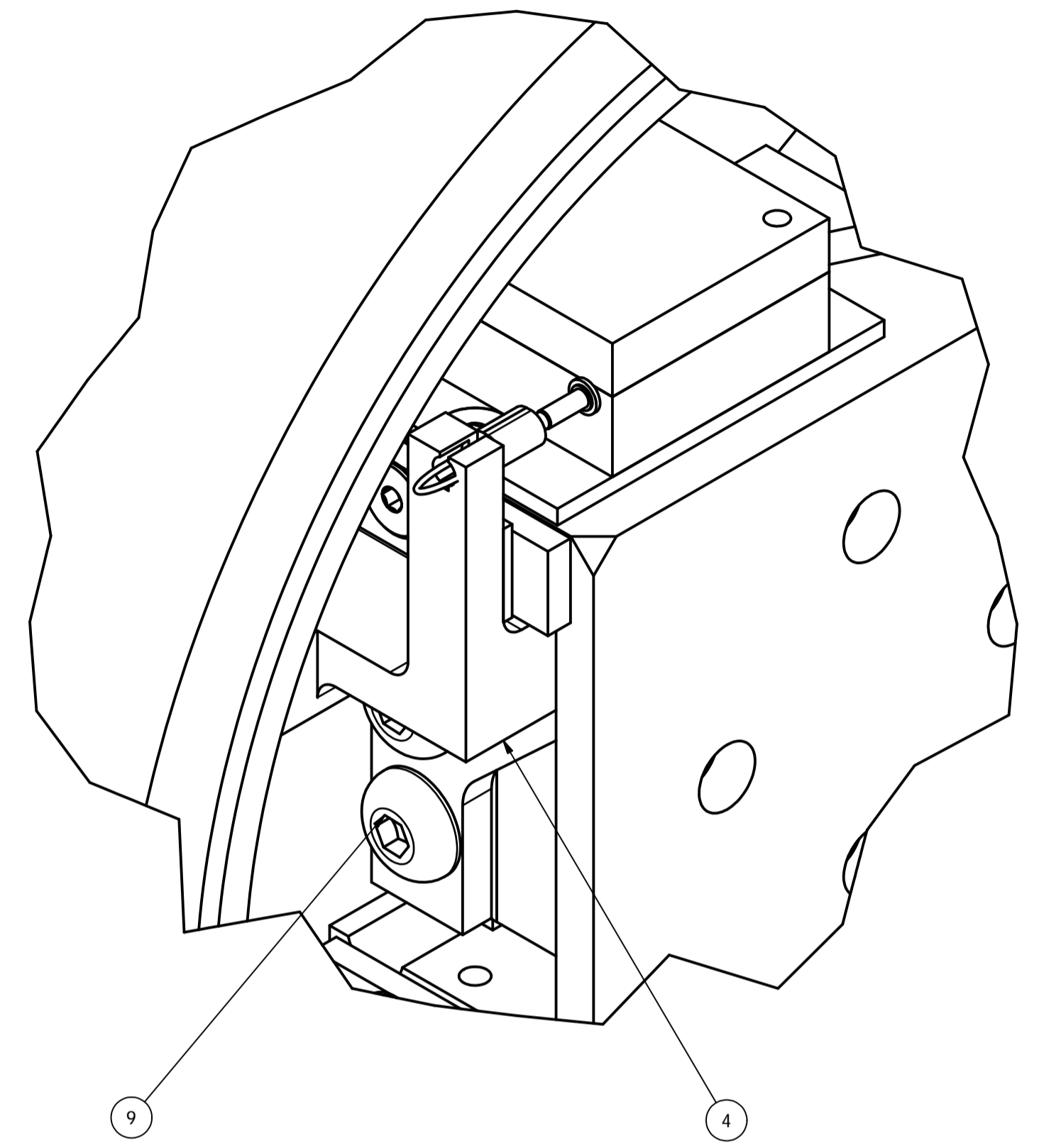
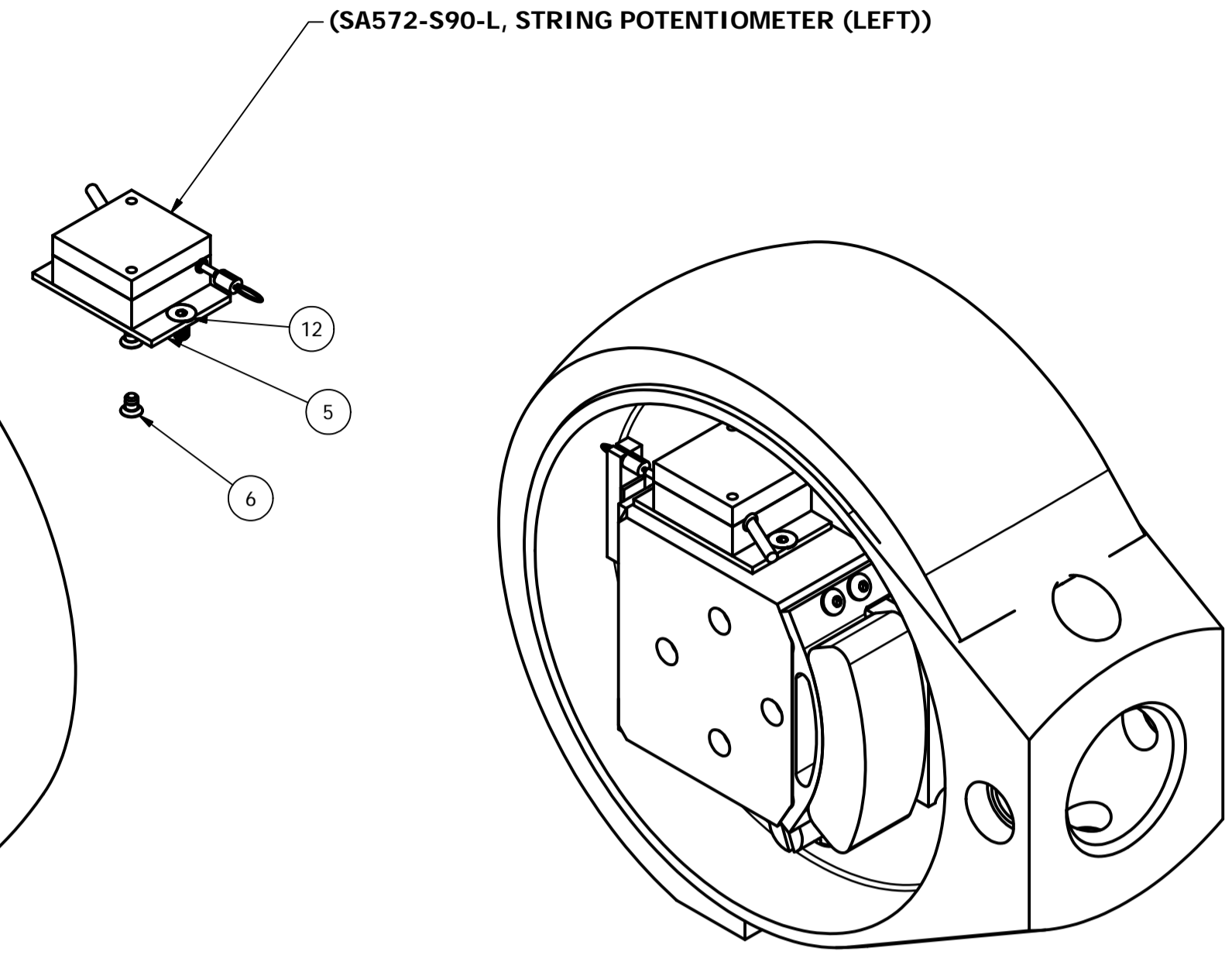
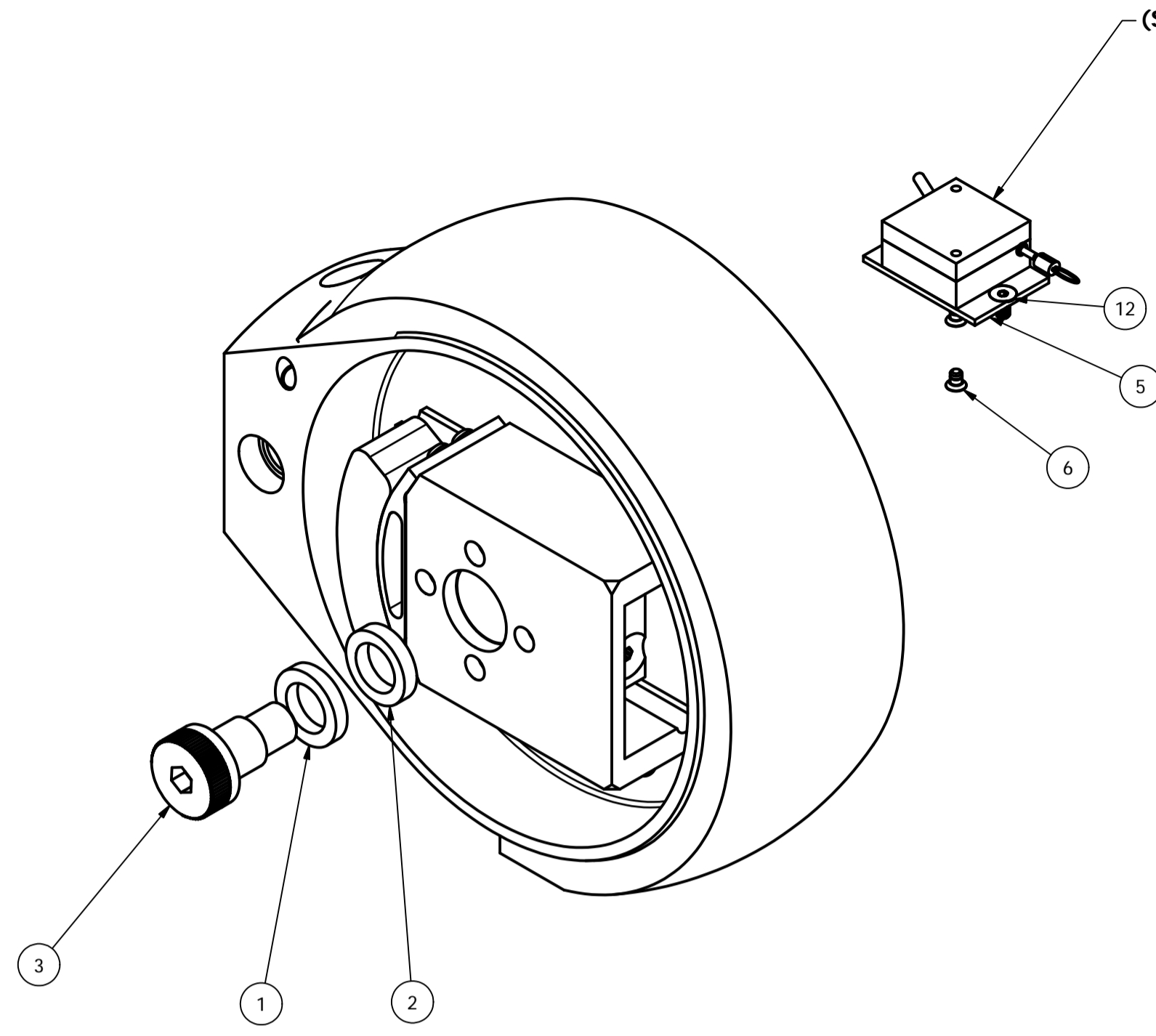
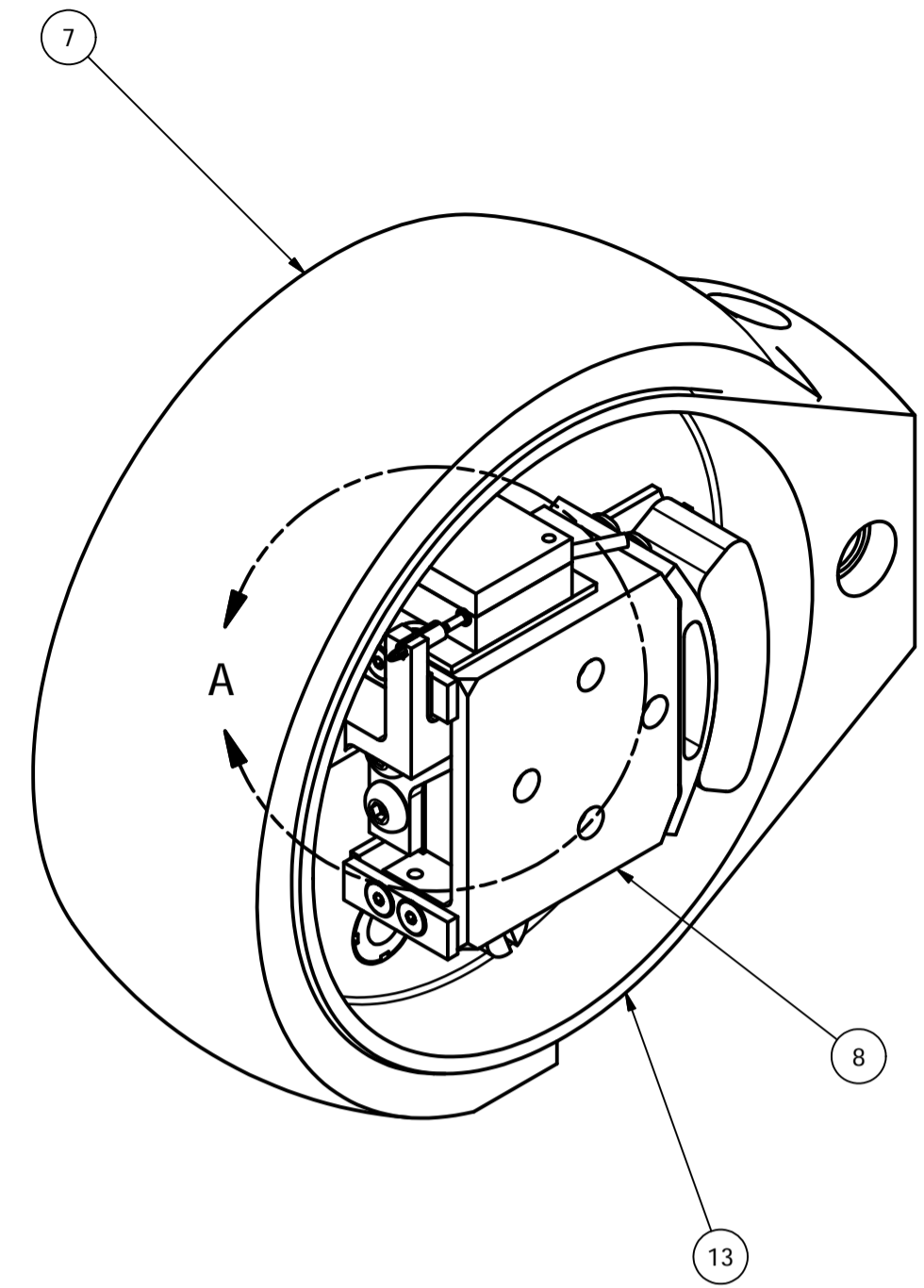


NOTES:  
 1. MUST BE ACETAL HOMOPOLYMER, PTFE FILLED,  
 MIN. COMPRESSIVE STRENGTH 80 Mpa. COLOR BROWN

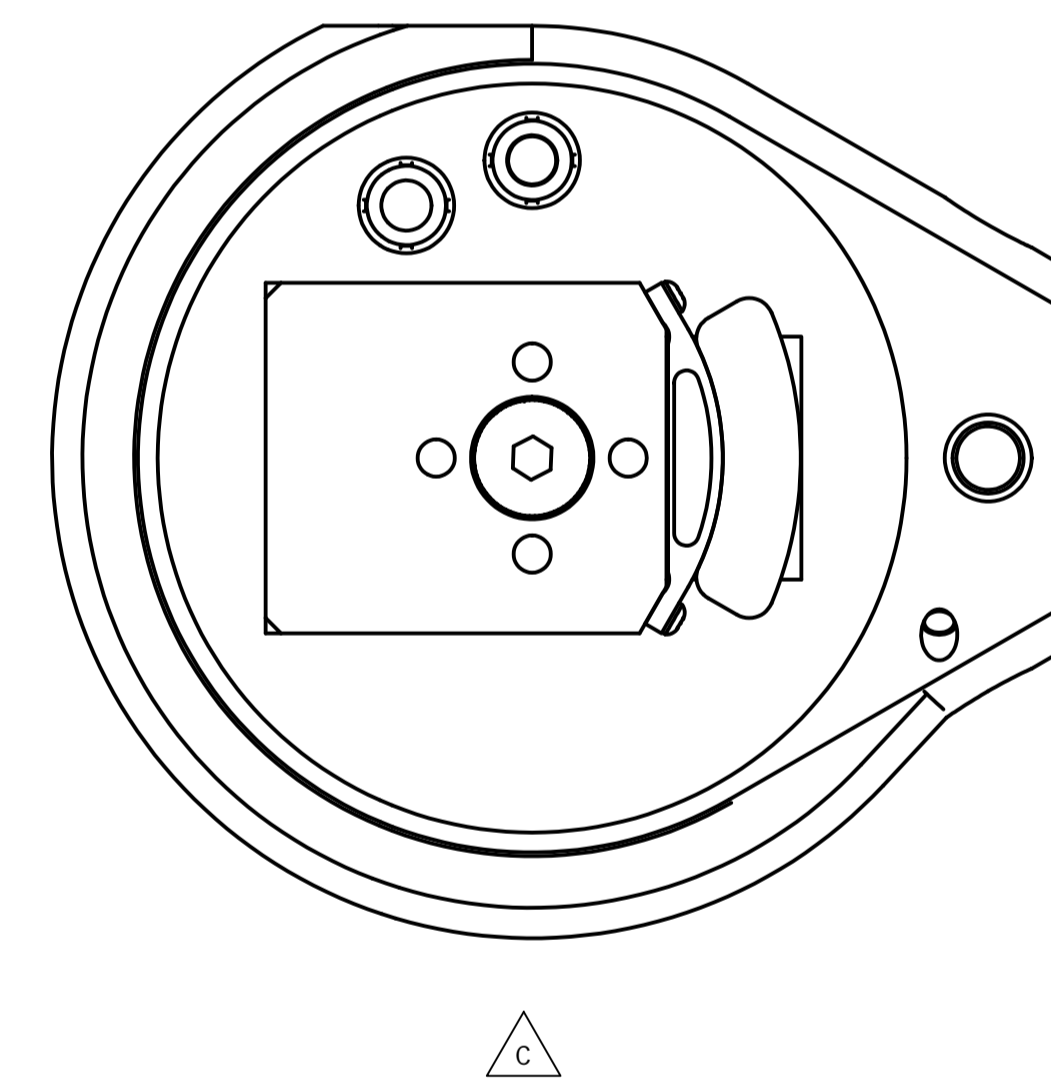
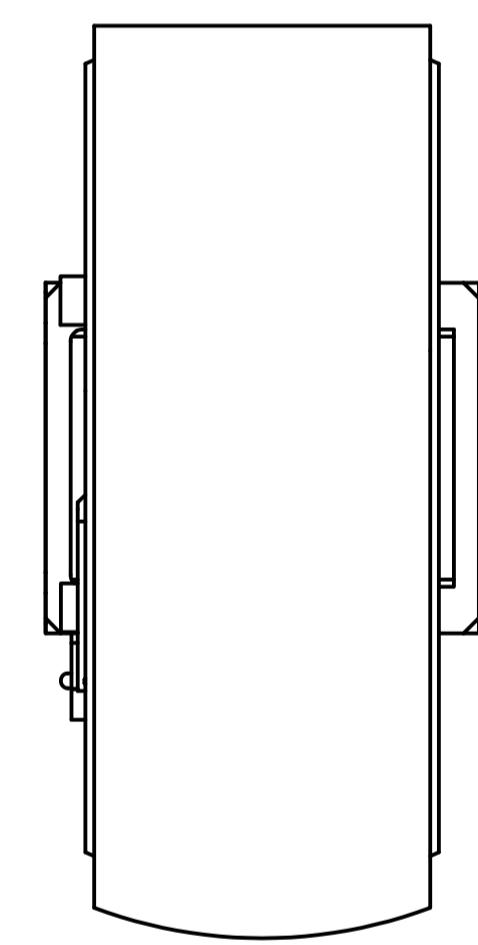
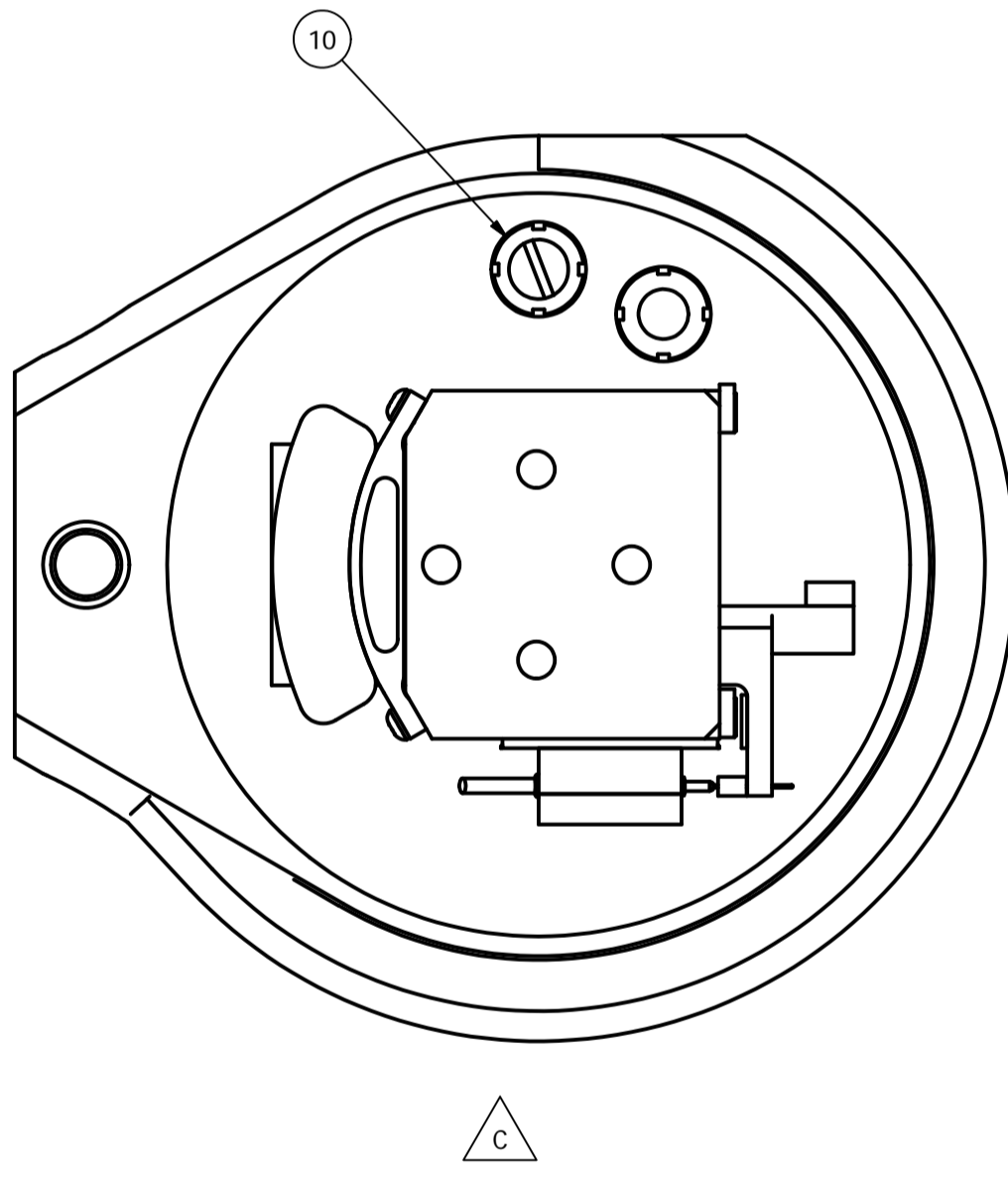
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED          DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
PROJECT NO.:	472-5200	MATERIAL:	SEE NOTES	DESCRIPTION: FEMUR BUSHING
DRAWN BY:	KHS	CHECKED BY:	TMV	DATE: 8/17/2011
HEAT TREAT:		ENGINEER:	J. WANG	DATE: 1/26/2012
TOTAL QTY IN DUMMY	2	FINISH:		DATE: 9/9/2011

SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:	472-5202	REV:	A
SCALE:	1:1						

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM209 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
	B	5000723 WAS 5000595	7/19/2012	BK
	C	CORRECTED SIDE VIEWS	9/29/2015	DW



DETAIL A  
SCALE 3 : 1



ITEM	QTY	PART NUMBER	DESCRIPTION
12	2	5000723	SCREW, FNCS M2.5-0.45 x 5
11	1	472-5350	KNEE CAP ASSEMBLY
10	1	472-5763	PIN, KNEE STOP
9	2	5001075	BHCS, M4 X .7 X 6
8	1	472-5310	ASSY, INBOARD/OUTBOARD SLIDER
7	1	472-5301	KNEE FLESH INSERT-MOLDED
6	2	9004003	SCREW, FHCS #2-56 X 1/8" PHILLIPS HEAD
5	1	472-5305	PLATE, MOUNT
4	1	472-5306	ASSEMBLY, POT STRING HOLDER (LEFT)
3	1	472-5302	BOLT, SHOULDER
2	1	472-5304	WASHER, COMPRESSION
1	1	472-5303	WASHER, SLIDING KNEE

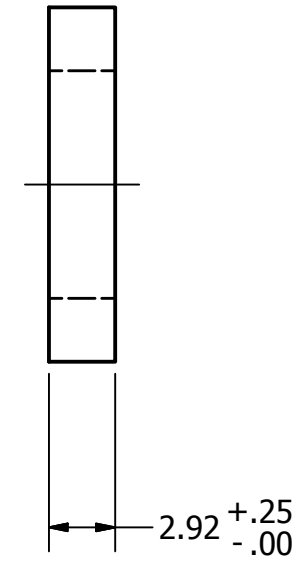
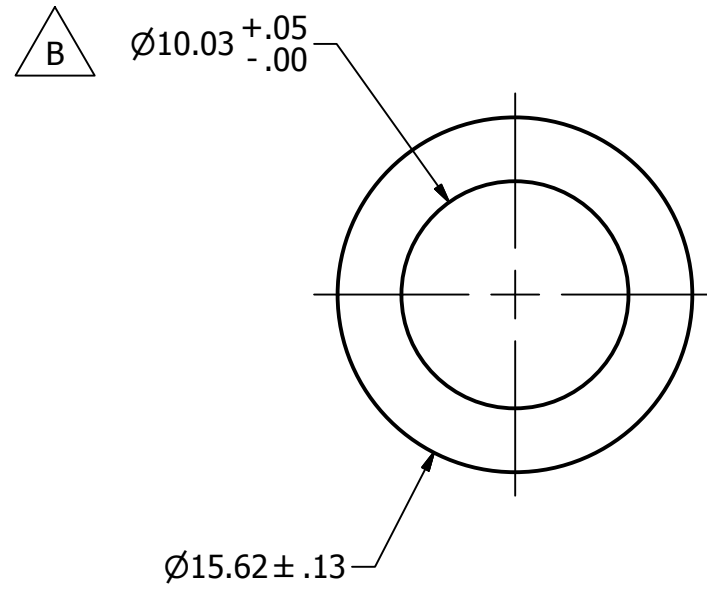
Parts List			
472-5100-1	1	472-5100-1	KNEE CAP ASSY., LEFT
NEXT ASSEMBLY	QTY	BY	DATE
TOTAL QTY IN DUMMY	1	J. WANG	1/28/2012



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

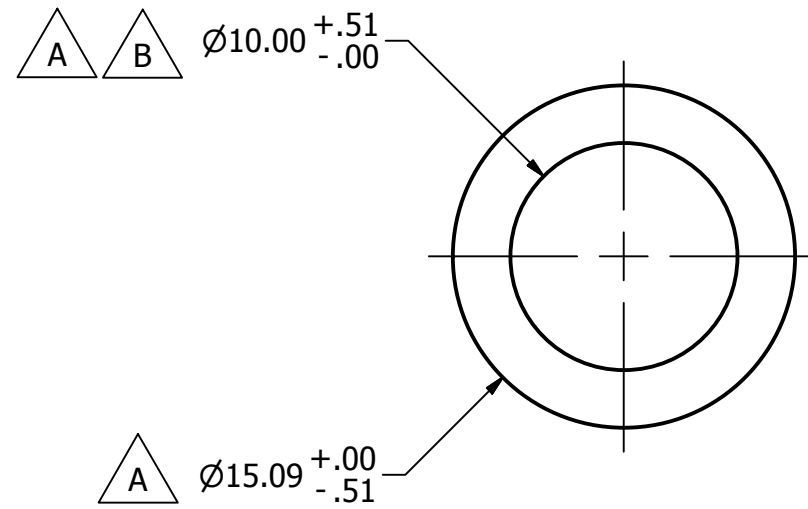
472-5100-1	1	472-5100-1	KNEE CAP ASSY., LEFT
NEXT ASSEMBLY	QTY	BY	DATE
TOTAL QTY IN DUMMY	1	J. WANG	1/28/2012

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 78051-32 REV A AND CONVERTED TO METRIC FOR THOR-M; MATERIAL WAS 416 S.S.	8/19/2011	JSJ
	B	Ø10.03 WAS Ø9.55	7/19/2012	BK



472-5700		1	DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-5300		1	 THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
NEXT ASSEMBLY		QTY	PROJECT NO.:	MATERIAL:	REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION:
TOTAL QTY IN DUMMY		2	304 Stainless Steel	KSG	8/17/2011	8/17/2011	WASHER, SLIDING KNEE
			HEAT TREAT:	CHECKED BY:	DATE:	DATE:	SIZE: SHEET
			FINISH:	J. WAMG	1/26/2012	1/26/2012	A31 of 1
							SCALE: 3.000
							DRAWING NO.: 472-5303
							REV: B

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 78051-33 REV - AND CONVERTED TO METRIC FOR THOR-MØ9.53+.51/-.00 WAS Ø10.31, 15.09+.00/-.51 WAS Ø14.28	8/19/2011	JSJ
	B	Ø10.00 WAS Ø9.53	7/19/2012	BK



NOTE:

1. DATA SOURCE  
MP950  
HI-TUFF THERMOSET PRODUCTS

MECHANICAL PROPERTY:

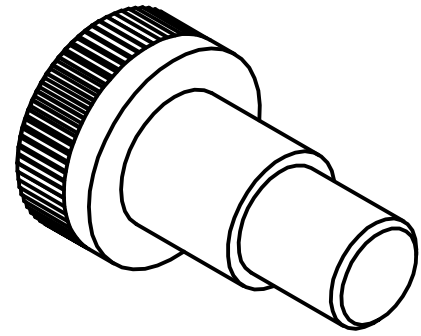
DUROMETER (± 5)	95A
TENSILE PSI	6000-7000
ELONGATION %	300-350
ELONGATION SET	9
TEAR DIE B (#/IN)	550-650
TEAR DIE C (#/IN)	450-550
MODULUS #@ 300%	4500-5500
COMPSET %	1.0
BASE	ETHER

472-5700		1	PROJECT NO.:	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-5300		1	MATERIAL: SEE NOTES	THIRD ANGLE PROJECTION	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
NEXT ASSEMBLY		QTY	HEAT TREAT:	REMOVE BURRS & BREAK SHARP EDGES	DATE:	8/17/2011	DESCRIPTION: WASHER, COMPRESSION
TOTAL QTY IN DUMMY		2	FINISH:	CHECKED BY:	DATE:	1/26/2012	SIZE: SHEET A3 1 of 1 SCALE: 3.000
			ENGINEER:	J. WANG	DATE:	1/26/2012	DRAWING NO.: 472-5304

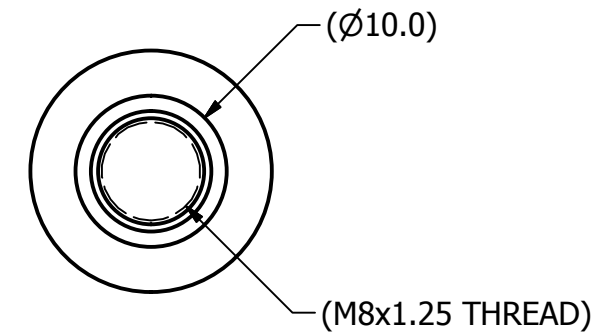
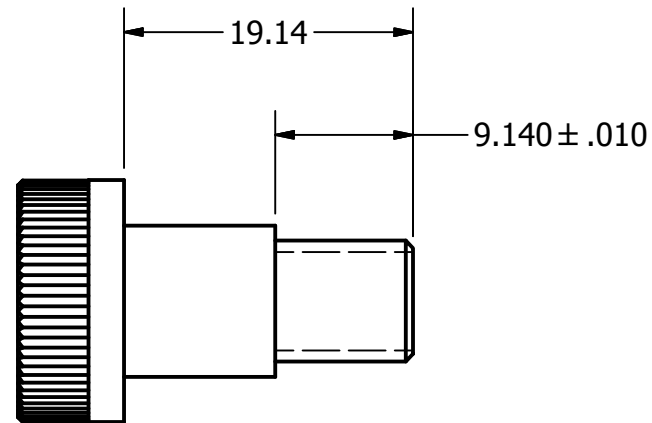


REVISION HISTORY

ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 79051-30 REV -AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ



SCALE 2.000

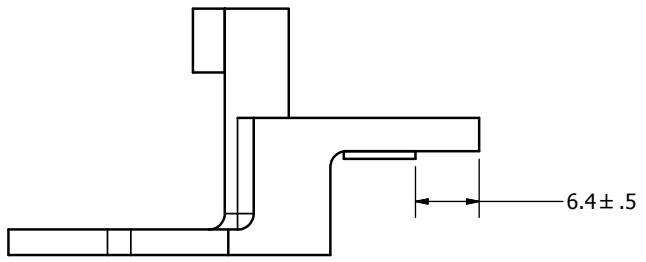
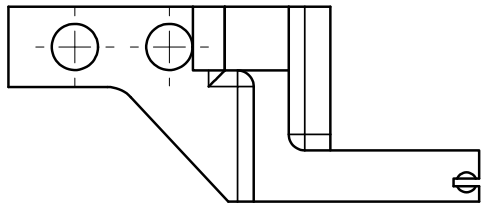
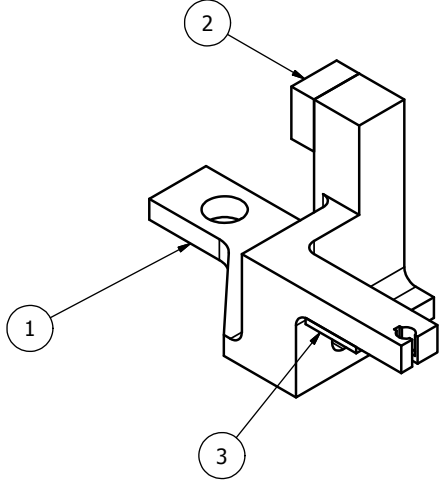


NOTE:

1. MAKE FROM 5000588, M10 X 12 (M8 THREAD) SOCKET HEAD SHOULDER SCREW, MODIFY AS SHOWN.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ° ± 0.5 1.6 XX ± 0.2 ° ± 0.5 1.6 XXX ± 0.1 ° ± 0.5 1.6 XXXX ± 0.01 ° ± 0.5 1.6		
PROJECT NO.:	472-5700	1	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: BOLT, SHOULDER
MATERIAL:	SEE NOTES	1	DRAWN BY: TOM F	
HEAT TREAT:		QTY	CHECKED BY: TMV	DATE: 8/17/2011
FINISH:		2	ENGINEER: J. WANG	DATE: 9/14/2011
TOTAL QTY IN DUMMY		2	DATE: 1/26/2012	DATE: 1/26/2012
			SCALE: 2:1	SIZE: A3 1 OF 1
				DRAWING NO.: 472-5302
				REV: A

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1650-2 REV E AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ



NOTES:  
 BONDING INSTRUCTIONS:  
 1. SAND SURFACES TO BE BONDED.  
 2. CLEAN SURFACES WITH MEK.  
 3. CLEAN SURFACES WITH ALCOHOL.  
 4. APPLY LOCTITE 411, OR EQUIVALENT, TO ONE SURFACE.  
 5. PRESS PARTS TOGETHER AND APPLY PRESSURE FOR 30 SECONDS AFTER ADHESIVE BECOMES TACKY.

ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-5736	BUMPER, RETURN STOP
2	1	472-5735	BUMPER, EXTENSION STOP
1	1	472-5737-1	HOLDER, POT STRING (LEFT)

Parts List

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

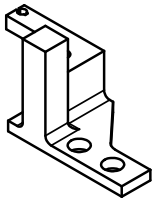
TOLERANCES  
 UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ANGLES FINISH  
 0.05 1.6 ✓  
 X 0.2 ✓  
 XX 0.3 ✓  
 XXX 0.01 ✓

REMOVE BURRS & BREAK SHARP EDGES

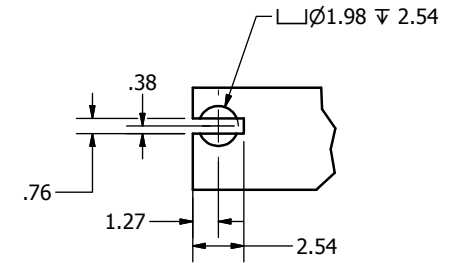
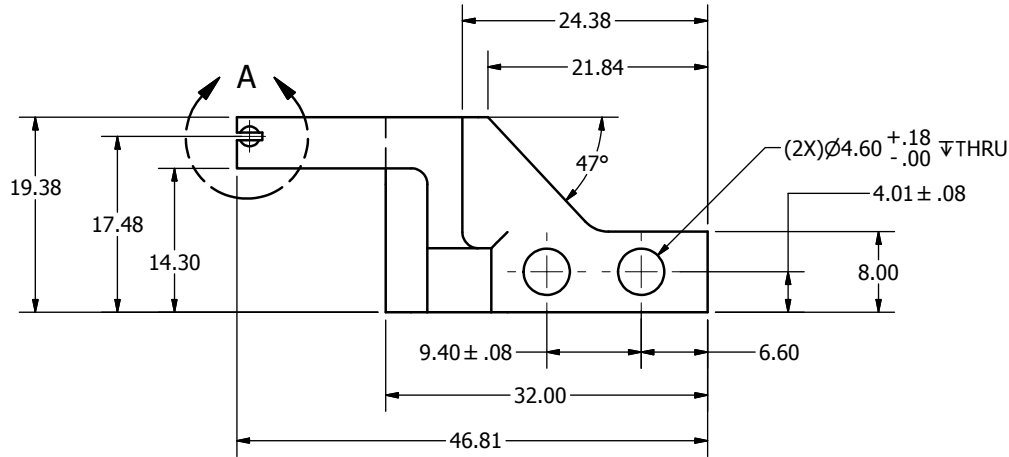
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: ASSEMBLY, POT STRING HOLDER (LEFT)

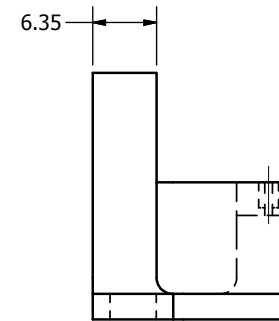
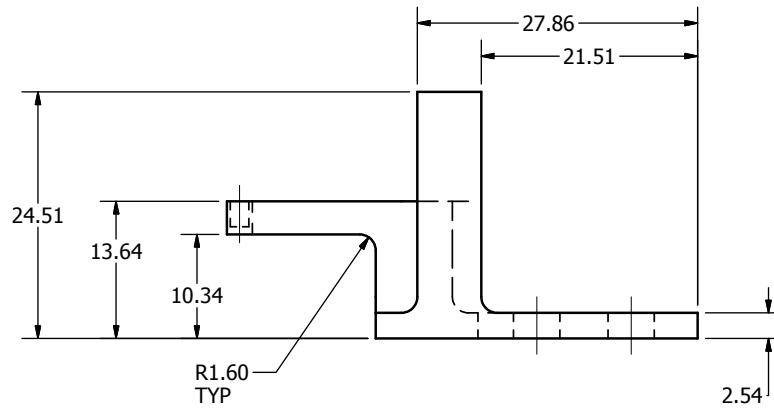
PROJECT NO.: 472-5300	QTY: 1	DRAWN BY: KSG	DATE: 8/17/2011	SCALE: 2:1	DRAWING NO.: 472-5306	REV: A
NEXT ASSEMBLY	QTY	CHECKED BY: TMV	DATE: 9/14/2011	SIZE: A3		
TOTAL QTY IN DUMMY: 1	FINISH:	ENGINEER: J. WANG	DATE: 1/27/2012	SHEET: 1 OF 1		



SCALE 1.000

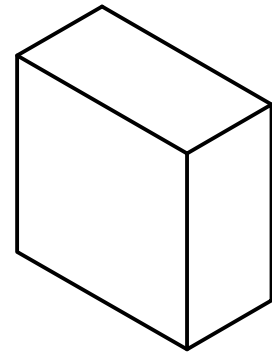


DETAIL A  
SCALE 4 : 1

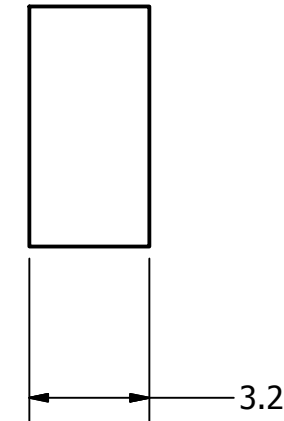
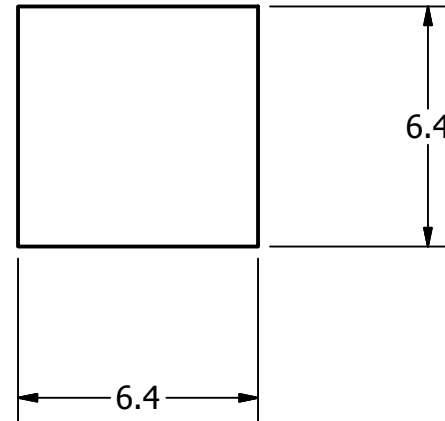


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1648-1 REV F AND CONVERTED TO METRIC FOR THOR-M; FINISH WAS ELECTROLESS NICKEL PLATE .0003 MAX.	8/19/2011	JSJ

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 1.6 XX .03 0.05 XXX .03 XXXX 0.01		
PROJECT NO.:	472-5306	MATERIAL:	4140 STEEL	DESCRIPTION: HOLDER, POT STRING (LEFT)
DATE:	8/17/2011	HEAT TREAT:	Rc 42-48	
DESIGNED BY:	J. WANG	CHECKED BY:	TMV	
DATE:	1/278/2012	DATE:	9/12/2011	
FINISH:	ELECTROLESS NICKEL PLATE .008 MAX	ENGINEER:	J. WANG	REMOVE BURRS & BREAK SHARP EDGES SCALE: 2:1
TOTAL QTY IN DUMMY	1	QTY	1	SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-5737-1 REV: A



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1646 REV B AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ



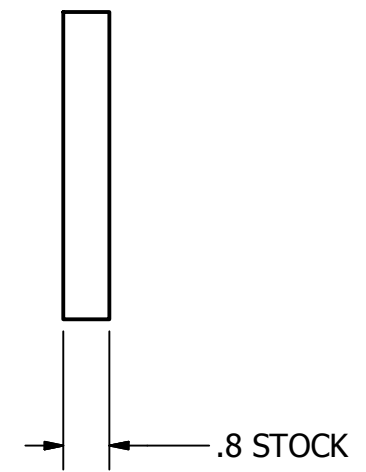
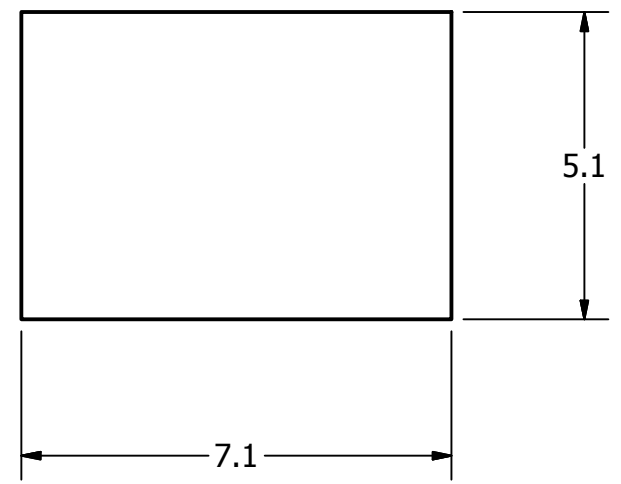
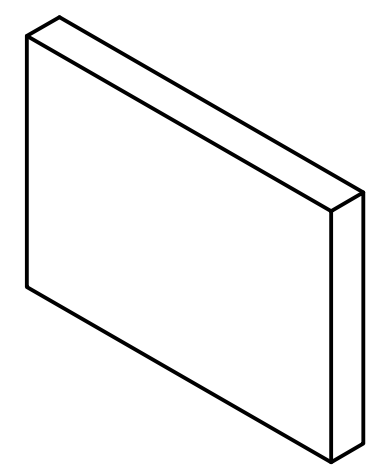
NOTES:

1. MATERIAL: NEOPRENE RUBBER SHORE A 70 ±5.
2. RUBBER DIMENSIONS ±0.5mm, UNLESS OTHERWISE NOTED.

472-5307		1	PROJECT NO.:	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION		
472-5306		1	MATERIAL: SEE NOTES	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 X.X ±0.2 X.XX ±0.1 X.XXX ±0.01				
NEXT ASSEMBLY		QTY	HEAT TREAT:	CHECKED BY: TMV	DATE: 9/9/2011	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: <b>BUMPER, EXTENSION STOP</b>		
TOTAL QTY IN DUMMY		2	FINISH:	ENGINEER: J. WANG	DATE: 1/27/2012	SIZE: A3 SHEET: 1 OF 1 SCALE: 5.000			
							DRAWING NO.:	472-5735	REV: A

REVISION HISTORY

ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1647 REV D AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ



NOTES:

1. MATERIAL: NEOPRENE RUBBER SHORE A 70 ±5.
2. RUBBER DIMENSIONS ±0.5mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X ±0.5	±0.5 1.6
		.XX ±0.2	
		.XXX ±0.1	
		.XXXX ±0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO.:		DRAWN BY:	DATE:
472-5307	1	KSG	8/17/2011
472-5306	1	TMV	9/9/2011
NEXT ASSEMBLY	QTY	CHECKED BY:	DATE:
		J. WANG	1/27/2012
TOTAL QTY IN DUMMY	2	ENGINEER:	DATE:

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

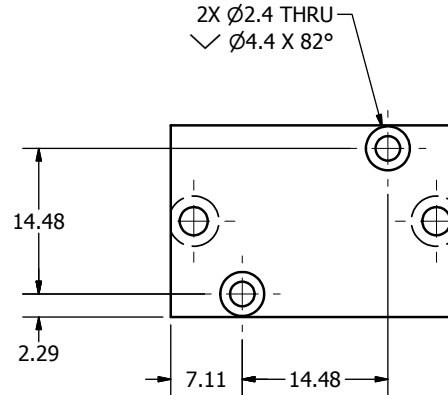
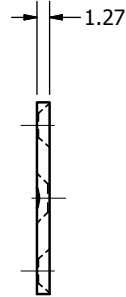
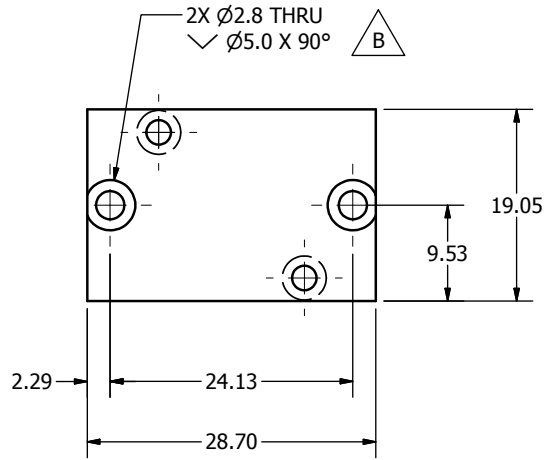
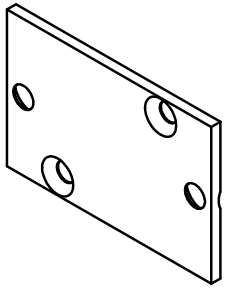
DESCRIPTION: BUMPER, RETURN STOP

SIZE: A3 1 OF 1 SHEET  
SCALE: 8:1

DRAWING NO.: 472-5736

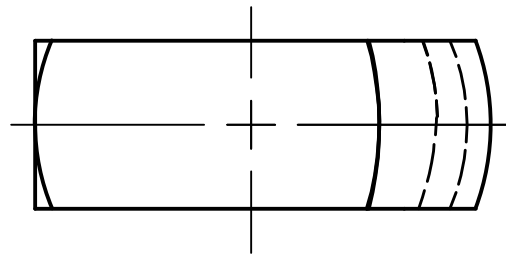
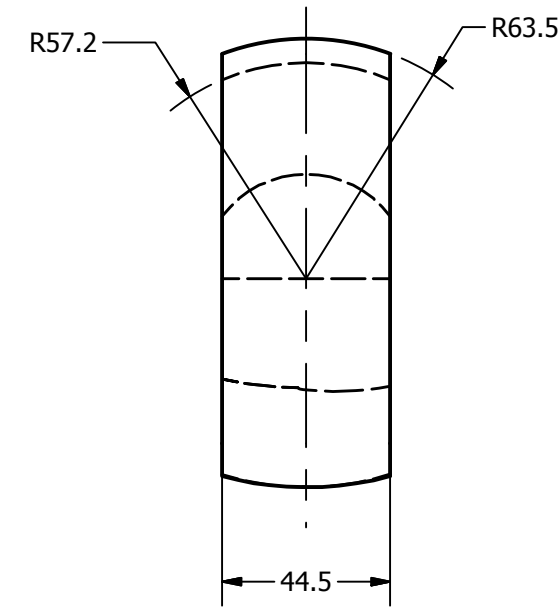
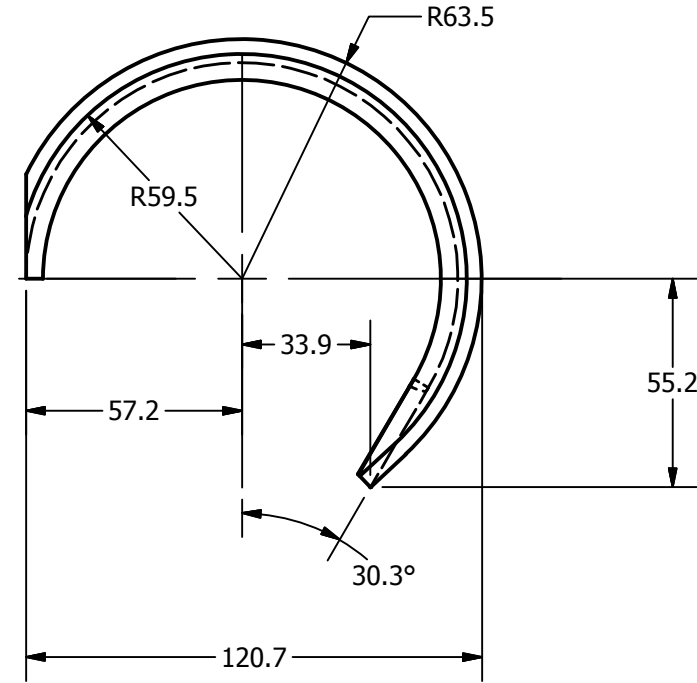
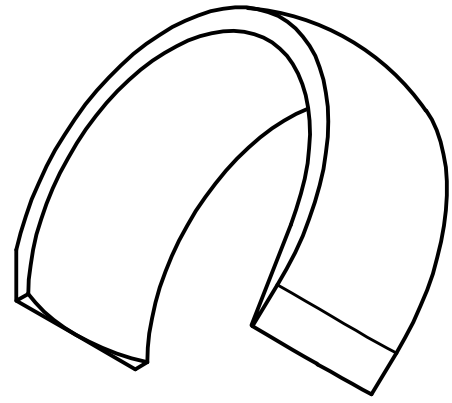
REV: A

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1638-1 REV G AND CONVERTED TO METRIC FOR THOR-M; ADD FINISH: CLEAR ANODIZE	8/17/2011	JSJ
	B	Ø2.8 C'SINK Ø5.0 WAS Ø2.39 C'SINK Ø4.39	7/19/2012	BK



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.05 1.6 X.X ± 0.2 ✓ X.XX ± 0.3 X.XXX ± 0.01		
PROJECT NO.:	472-5300	MATERIAL:	Aluminum-6061-T6	DESCRIPTION:
DATE:	8/17/2011	DESIGNED BY:	KSG	PLATE, MOUNT
CHECKED BY:		HEAT TREAT:		SCALE: 2:1
DATE:	1/26/2012	FINISH:	CLEAR ANODIZE	SIZE: A3
ENGINEER:	J. WANG	TOTAL QTY IN DUMMY:	1	SHEET: 1 OF 1
				DRAWING NO.:
				472-5305
				REV.:
				B

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 78051-27 REV A AND CONVERTED TO METRIC FOR THOR-M	8/29/2011	JSJ

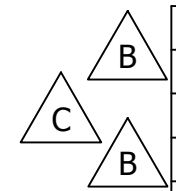
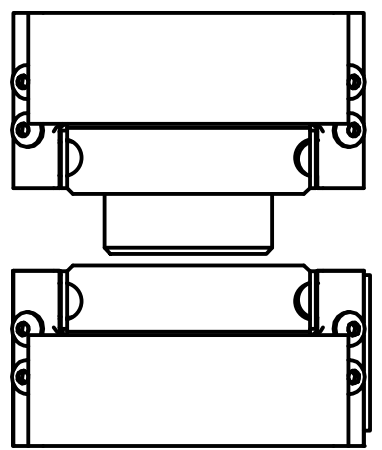
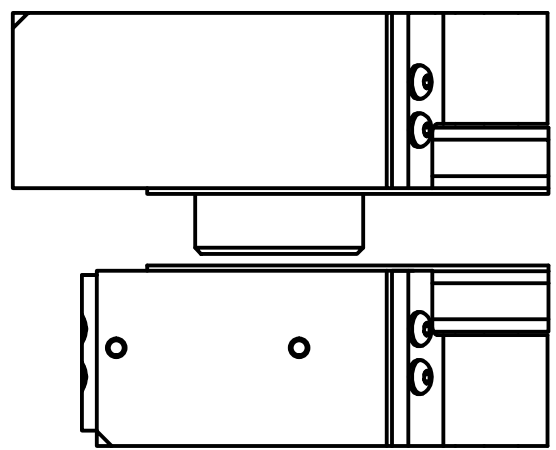
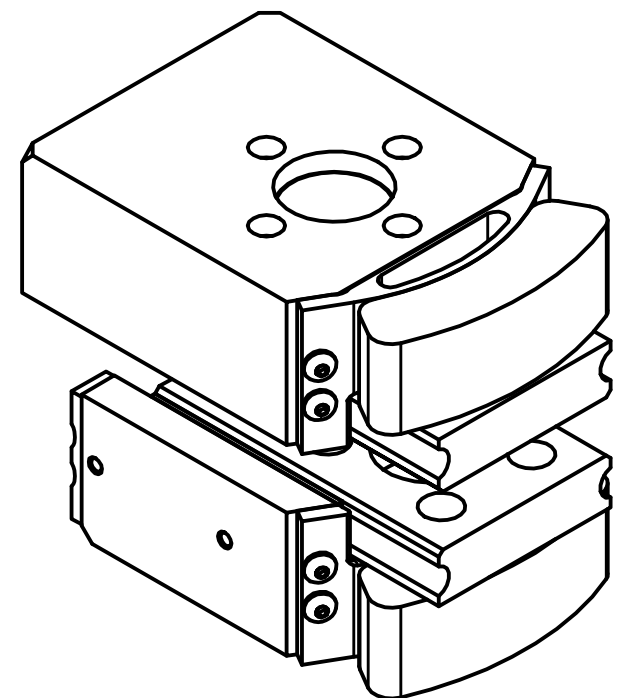
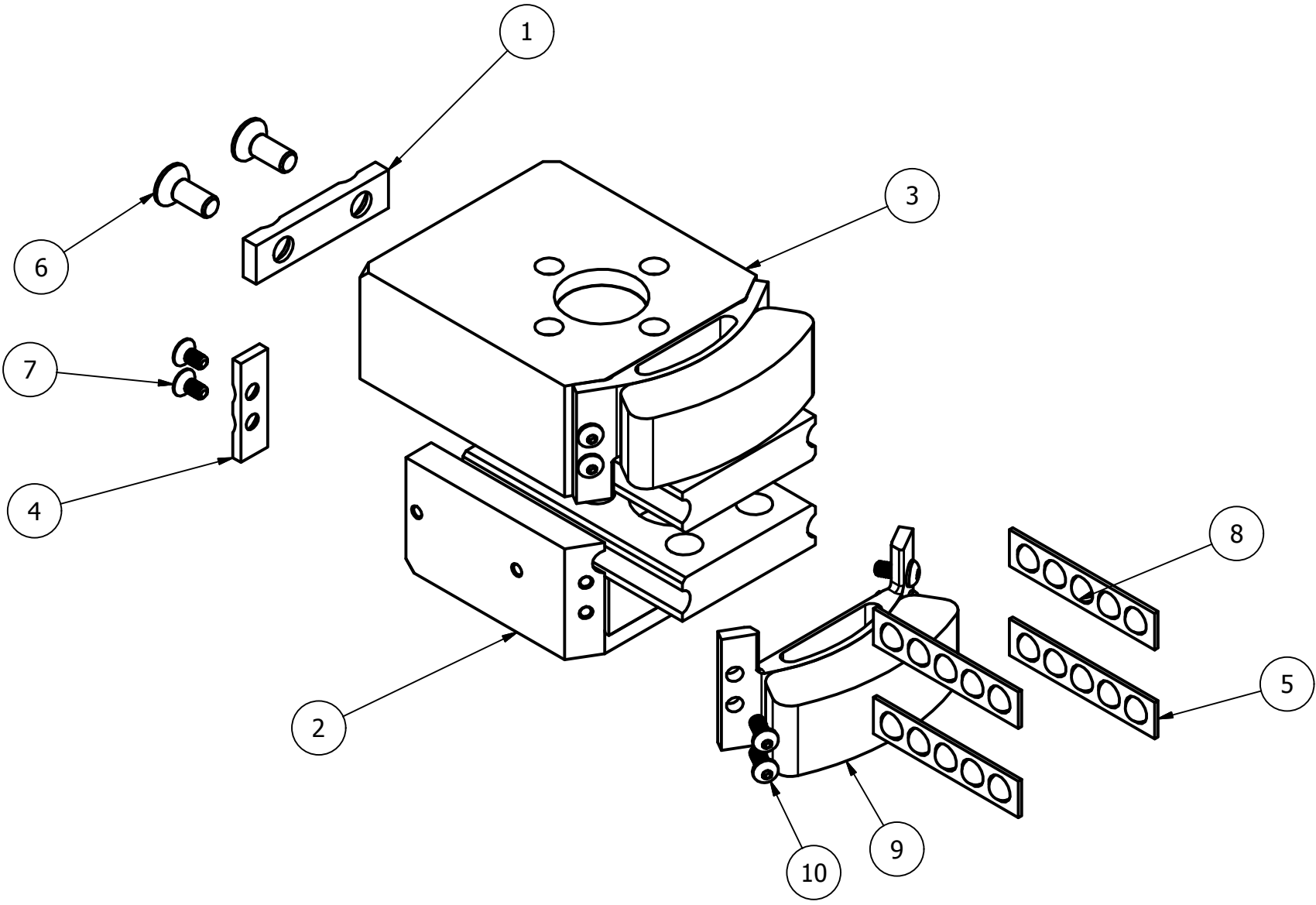


NOTE:

- MATERIAL IS PER SAE J200/ASTM D 2000  
 BUTYL 45 DUR.  
 4AA725A13 B13K11Z1Z2Z3  
 Z1= BUTYL  
 Z2= 40 TO 50 DUROMETER  
 Z3= KNEE IMPACT TEST

472-5700		1	DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-5300		1	THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.5 1.6 XXX ± 0.1 ± 0.5 1.6 XXXX ± 0.01 ± 0.5 1.6		
NEXT ASSEMBLY		QTY	PROJECT NO.:	REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION:	
TOTAL QTY IN DUMMY		2	MATERIAL:	jjordan	8/29/2011	KNEE FLESH INSERT-MOLDED	
			HEAT TREAT:	TMV	9/9/2011	SIZE: SHEET	DRAWING NO.:
			FINISH:	J. WANG	1/26/2012	A3 1 OF 1	472-5301
						SCALE: 1:2	A

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM214 REV A AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
	B	REMOVED 472-5750, 5000003, 472-5738; 5000723 QTY 4 WAS 12; ADDED 472-5358 AND 9010681	2/14/12	KHS
	C	9002186 WAS 472-5355	8/17/2011	BK



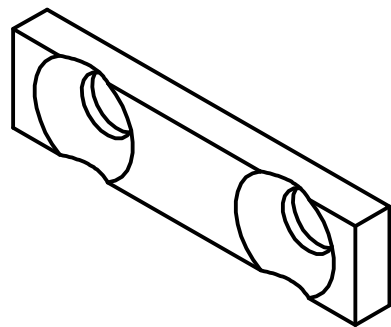
ITEM	QTY	PART NUMBER	DESCRIPTION
10	8	9010681	BHCS M2.5 x 6
9	2	472-5358	KNEE SLIDER STOP ASSY.
8	20	9002186	BALL 4.76mm DIA.
7	4	5000723	FHCS M2.5X5mm
6	2	5000023	FHCS M4X10mm
5	4	472-5733	BRONZE SEPARATOR
4	2	472-5738	STOP, BALL
3	1	472-5330	OUTBOARD SLIDER, MOLDED
2	1	472-5320	INBOARD SLIDER, MOLDED
1	1	472-5740	BALL SLIDER BALL STOP

Parts List

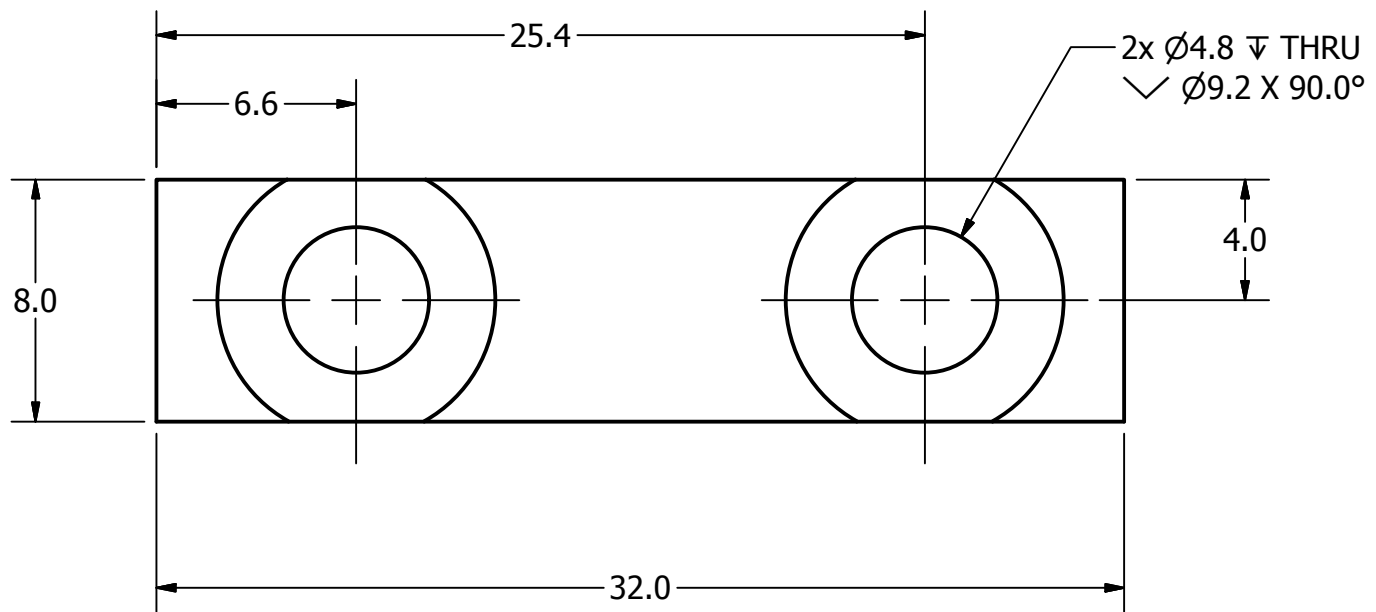
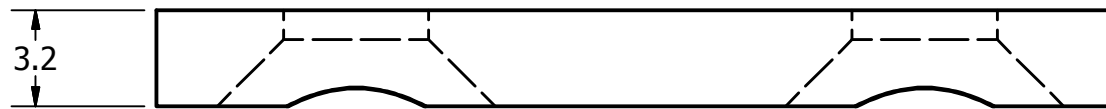
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01			
PROJECT NO.:	472-5700	DRAWN BY:	HORCHLER	DATE:	8/17/2011
MATERIAL:		CHECKED BY:	J. WANG	DATE:	1/27/2012
HEAT TREAT:		ENGINEER:		DATE:	
FINISH:					
REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION:		ASSY, INBOARD/OUTBOARD SLIDER	
NEXT ASSEMBLY	QTY	SIZE:	SHEET	DRAWING NO.:	REV:
TOTAL QTY IN DUMMY	2	A3	1 of 1	472-5310	C
		SCALE:	1:1		



REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM216 R0 AND CONVERTED TO METRIC FOR THOR-M; FINISH WAS ELECTROLESS NICKEL .0003 MAX.	8/19/2011	JSJ



SCALE 2.000



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES		
DECIMALS	ANGLES	FINISH
X ± 0.5	± 0.5	1.6
.XX ± 0.2		
.XXX ± 0.1		
.XXXX ± 0.01		

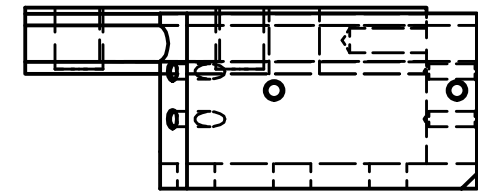
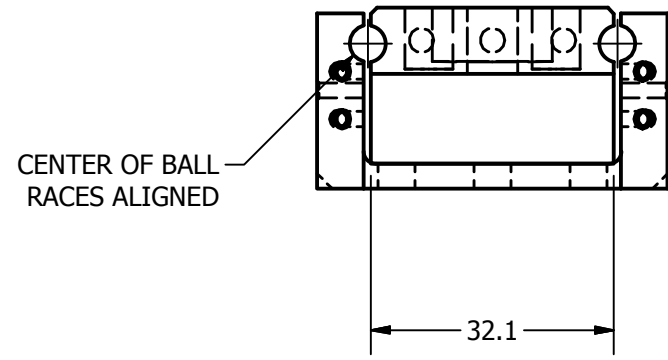
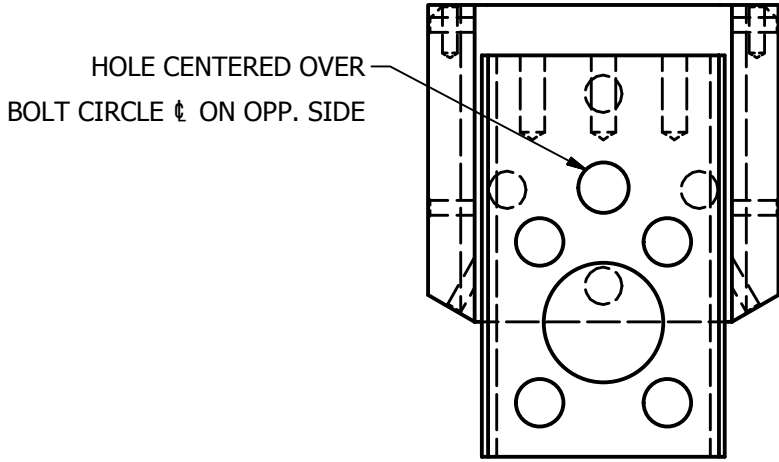
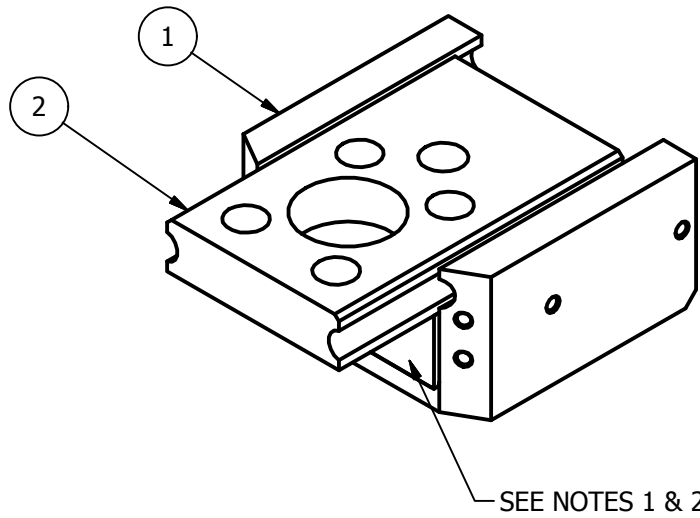


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PROJECT NO:		REMOVE BURRS & BREAK SHARP EDGES	DATE:	8/17/2011
MATERIAL:	1095 STEEL	DRAWN BY:	HORCHLER	
HEAT TREAT:	Rc 44-48	CHECKED BY:	TMV	DATE:
FINISH:	ELECTROLESS NICKEL .008 MAX	ENGINEER:	J. WANG	DATE:

DESCRIPTION:		BALL SLIDER BALL STOP	
SIZE:	A3	SHEET:	1 of 1
SCALE:	4:1	DRAWING NO.:	472-5740

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM212 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ

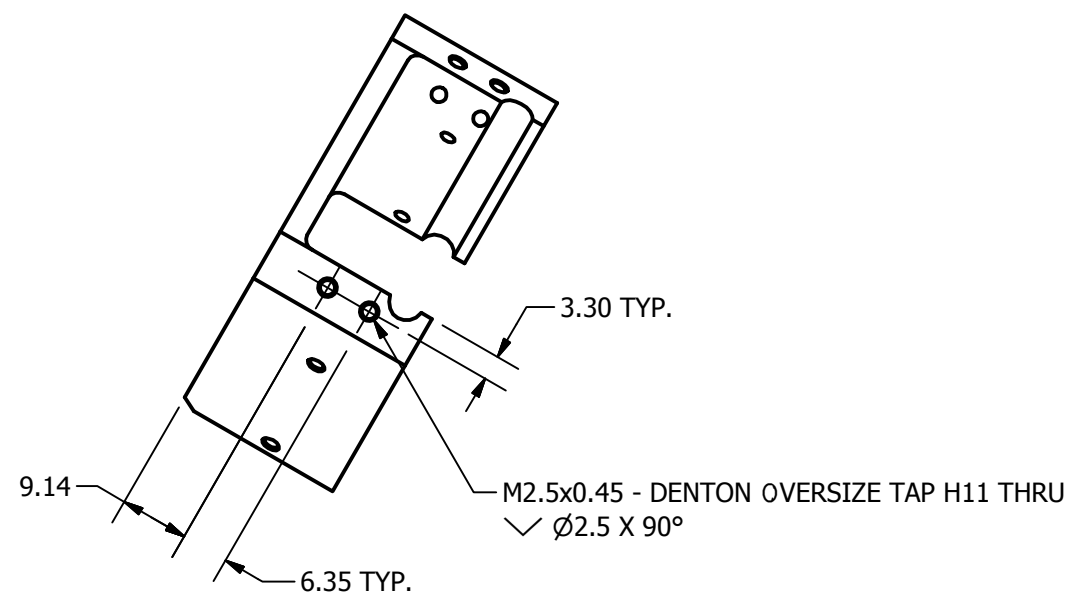
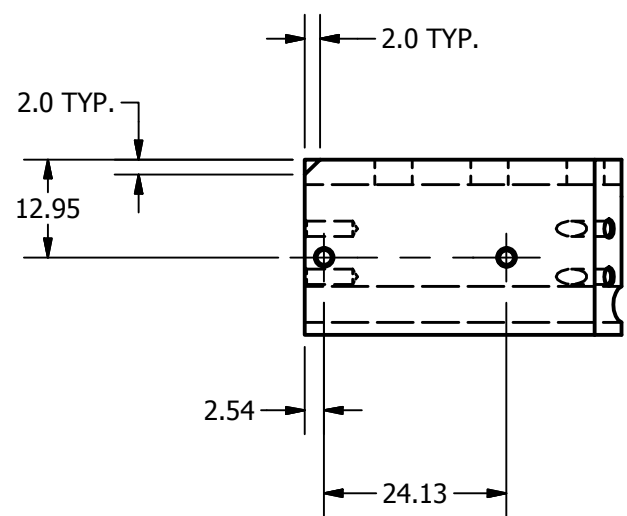
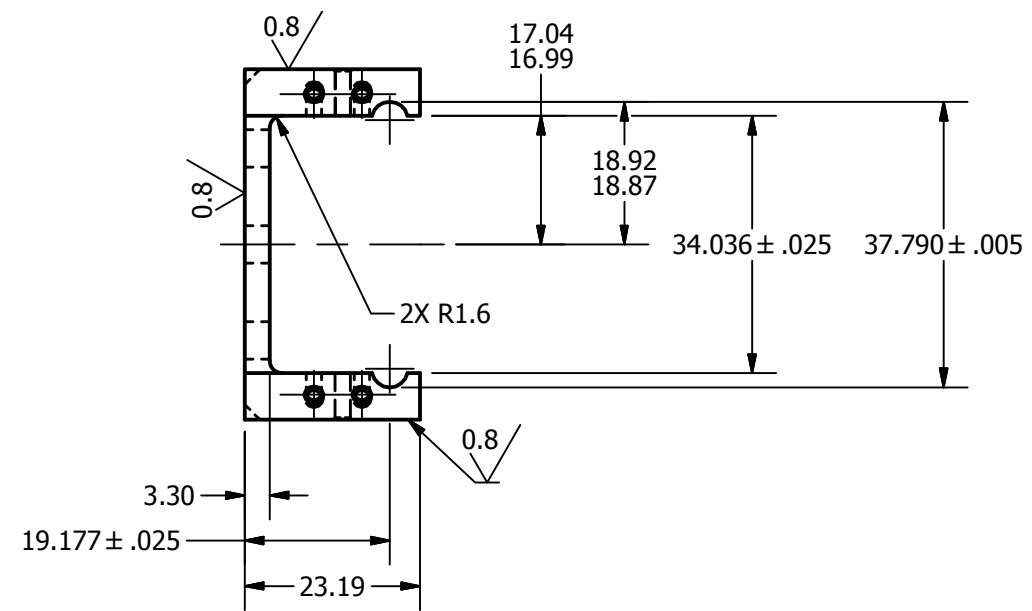
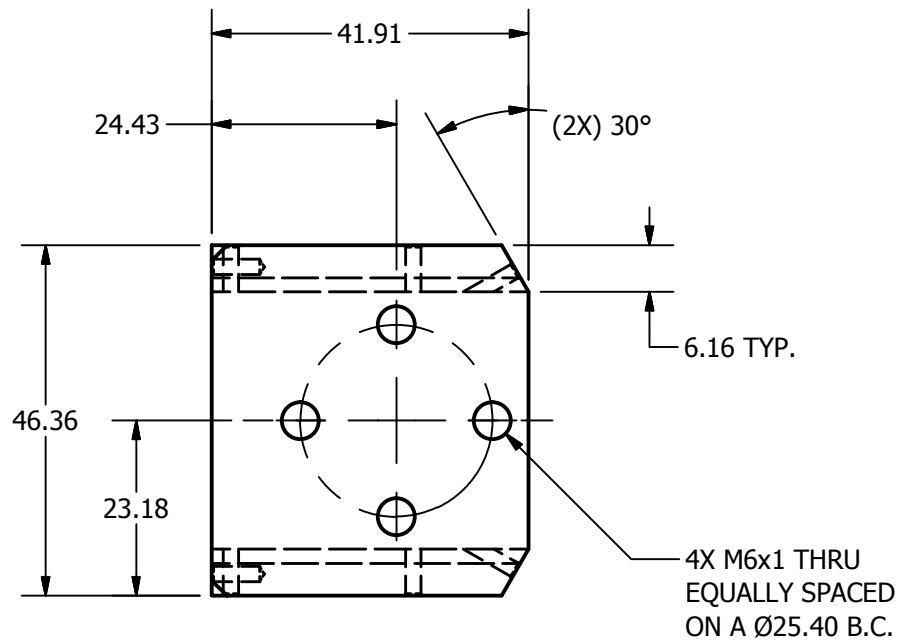
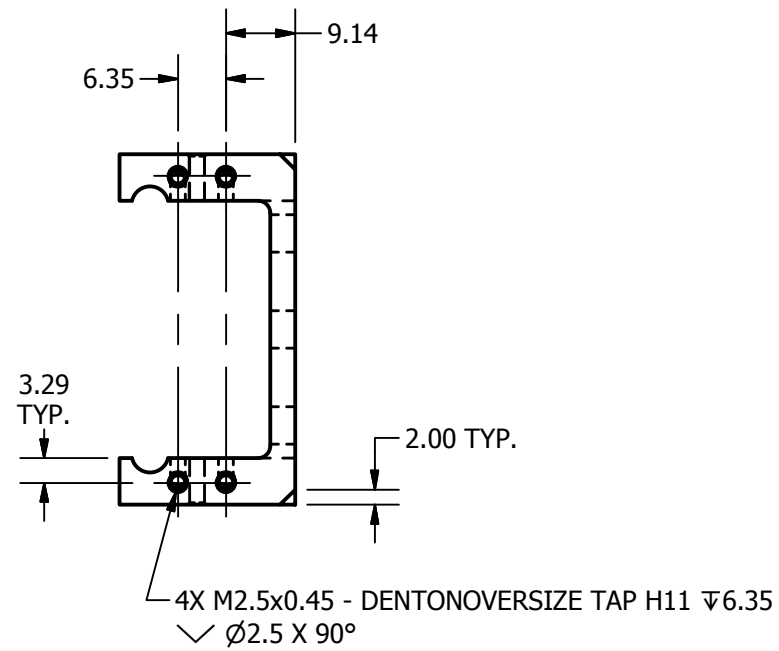
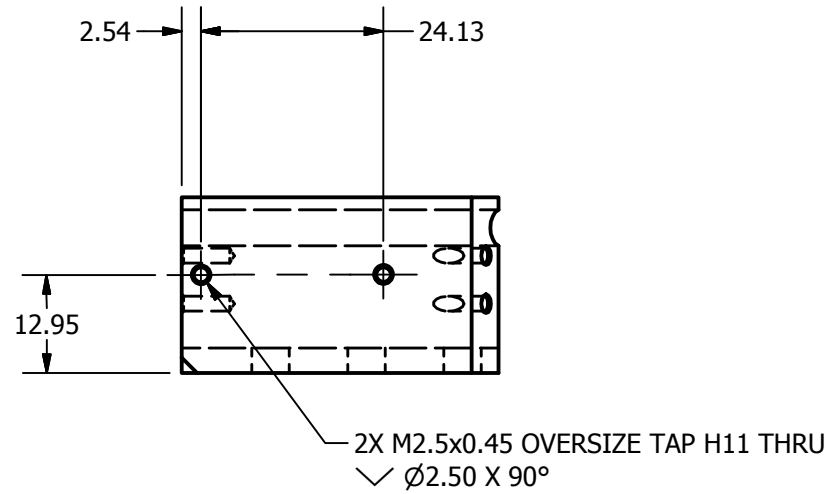
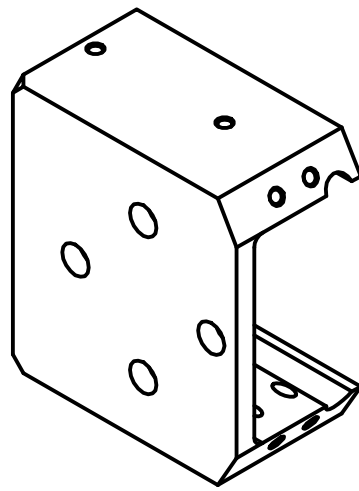


NOTES:  
 1. RUBBER DUROMETER OF 30±5 SHORE "A"  
 2. ADJUST DUROMETER FOR DYNAMIC PERFORMANCE.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-5322	RACE, INNER
1	1	472-5321	RACE, OUTER

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION: INBOARD SLIDER, MOLDED
MATERIAL:		DRAWN BY:	DATE:	
HEAT TREAT:		CHECKED BY:	DATE:	
FINISH:		ENGINEER:	DATE:	SIZE: A3 SHEET: 1 of 1 SCALE: 1:1
472-5310	1			DRAWING NO.: 472-5320
NEXT ASSEMBLY	QTY			
TOTAL QTY IN DUMMY	2			REV: A

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1639 REV D AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
	B	ADD HEAT TREAT NOTE; 6.35 WAS THRU	4/12/2012	BK



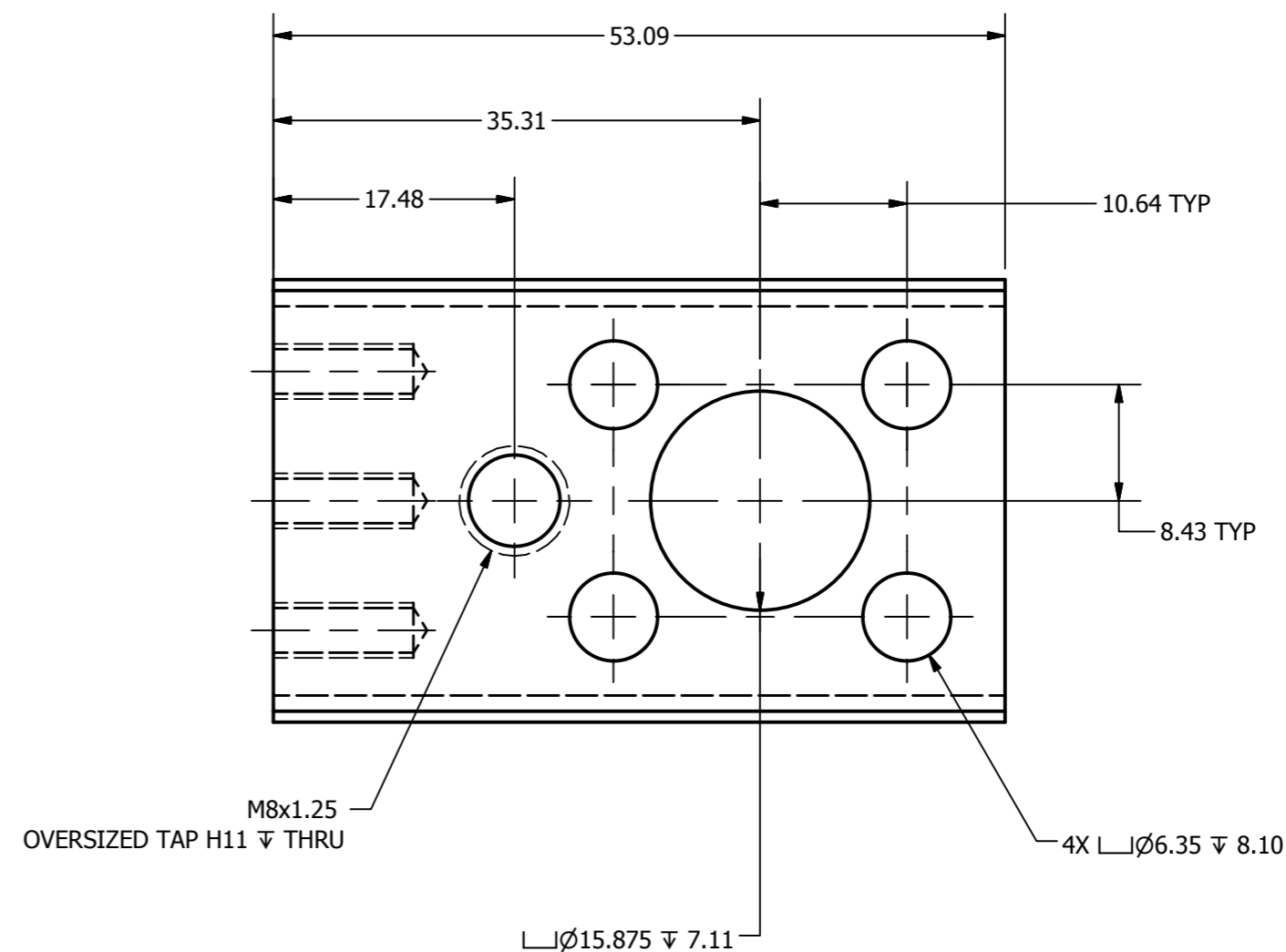
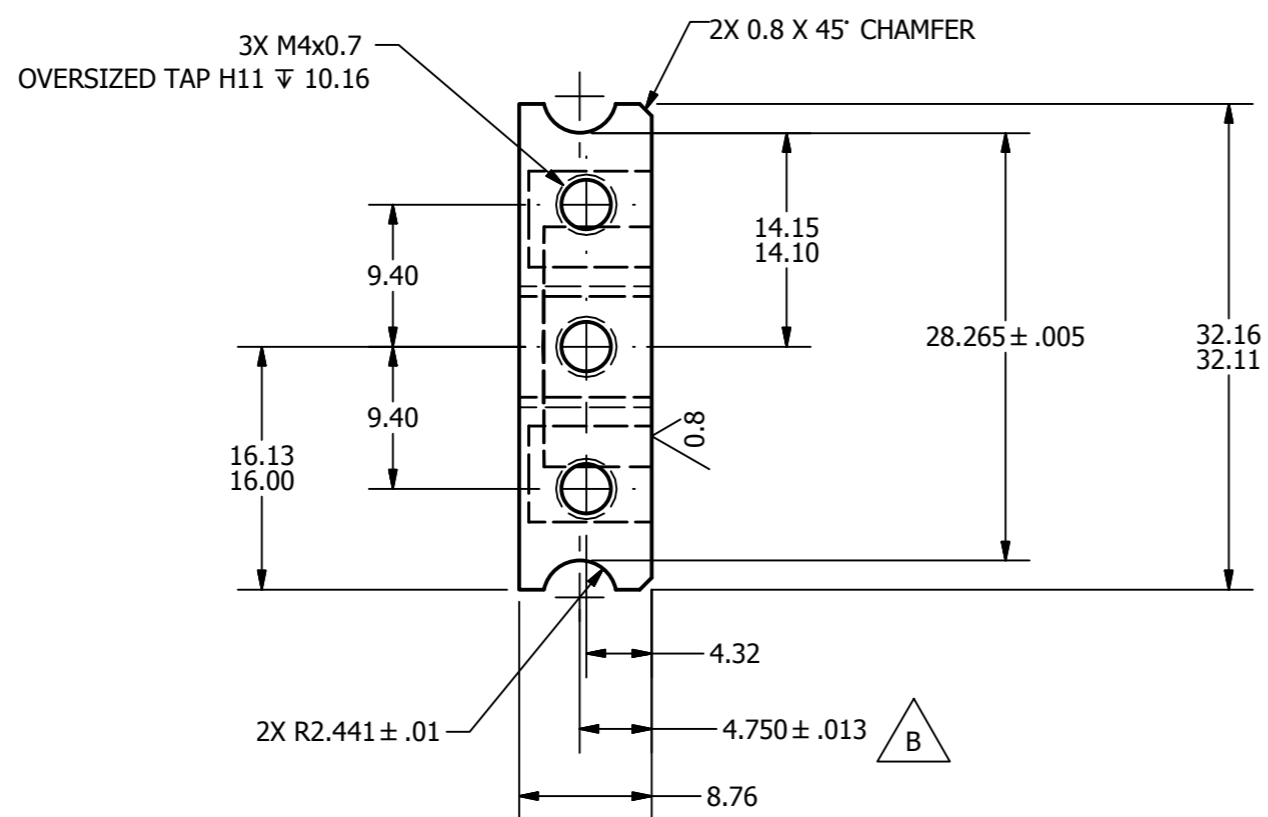
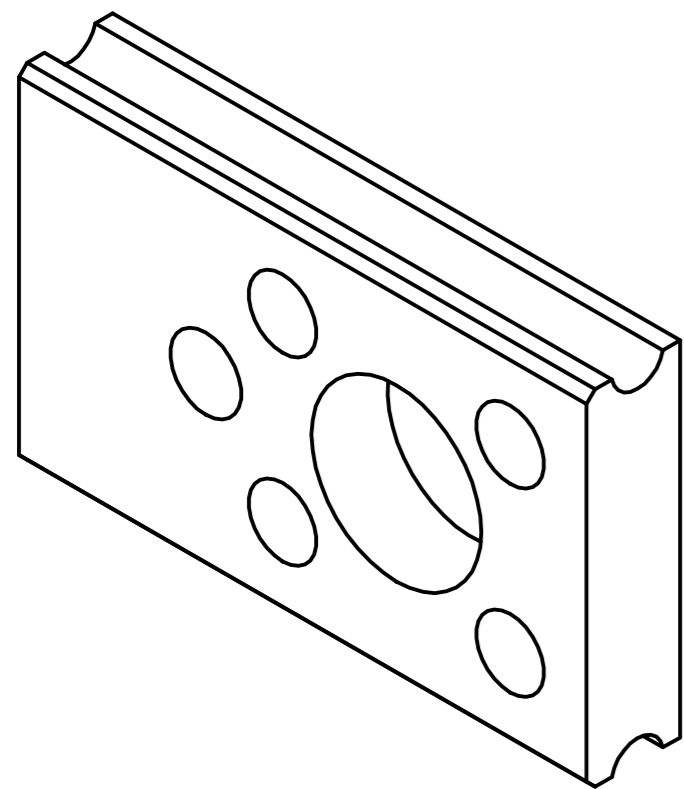
NOTES:

- HEAT TREAT:
  - MASK ENTIRE PART EXCEPT THE PATHWAYS
  - CARBURIZE PART @ 1700°F FOR 6 HOURS
  - FURNACE COOL, DO NOT QUENCH
  - REHARDEN @ 1520°F AND OIL QUENCH
  - TEMPER @ 350°F FOR 2 HOURS
  - SURFACE HARDNESS IN PATHWAYS SHOULD BE Rc 60-65



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH</small> X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.05 ± 0.05 1.6		
PROJECT NO:	472-5320	MATERIAL:	4140 STEEL	DESCRIPTION:
DRAWN BY:	KSG	DATE:	8/17/2011	RACE, OUTER
CHECKED BY:		FINISH:	SEE NOTES	SIZE: C
ENGINEER:	J. WANG	DATE:	1/27/2012	SHEET: 1 OF 1
TOTAL QTY IN DUMMY			2	DRAWING NO.: 472-5321

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1640 REV F AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
	B	ADD HEAT TREAT NOTE; 4.750±.013 WAS 4.75±.03	4/12/2012	BK



NOTES:

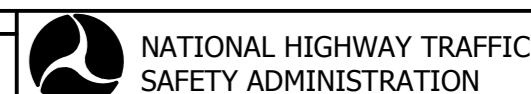
1. HEAT TREAT:

- MASK ENTIRE PART EXCEPT THE PATHWAYS
- CARBURIZE PART @ 1700°F FOR 6 HOURS
- FURNACE COOL, DO NOT QUENCH
- REHARDEN @ 1520°F AND OIL QUENCH
- TEMPER @ 350°F FOR 2 HOURS
- SURFACE HARDNESS IN PATHWAYS SHOULD BE Rc 60-65



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
(UNLESS OTHERWISE SPECIFIED)  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ± 0.5 ± 0.5 1.6  
XX ± 0.2 ± 0.2 1.6  
XXX ± 0.1 ± 0.1 1.6  
XXXX ± 0.01 ± 0.01 1.6

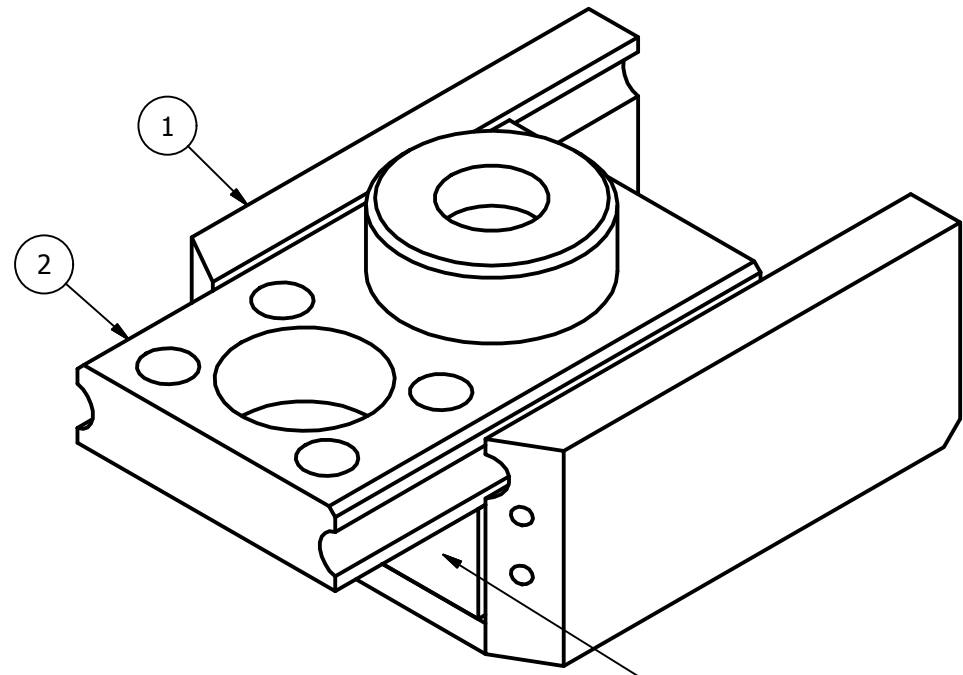


RACE, INNER

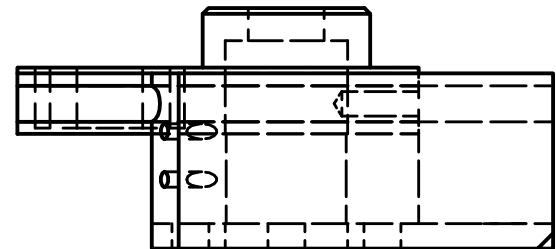
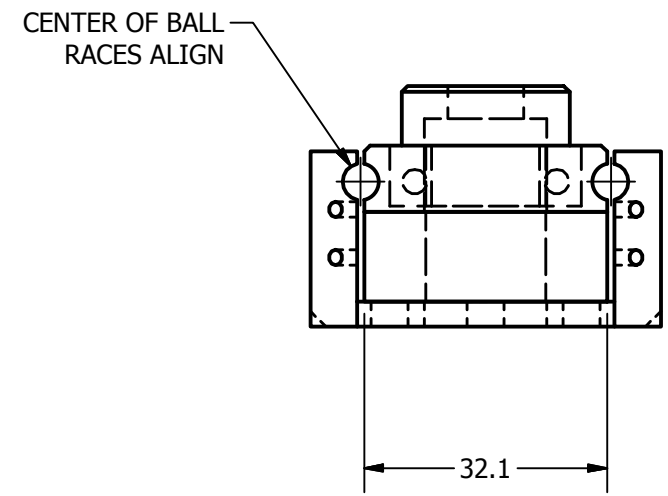
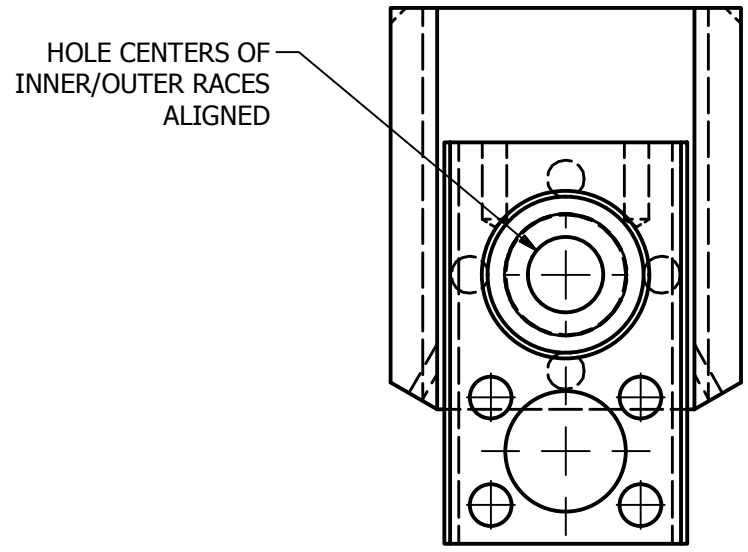
PROJECT NO:	472-5320	DATE:	8/17/2011
WYSIDE:	4140 STEEL	DRAWN BY:	KSG
HEAT TREAT:	SEE NOTES	CHECKED BY:	J. WANG
TOTAL QTY IN DUMMY:	2	ENGINEER:	J. WANG
DATE:	1/27/2012	SCALE:	2:1

SIZE: A2  
SHEET: 1 OF 1  
DRAWING NO: 472-5322  
REV: B

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
		RENUMBERED FROM T1FMM213 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ



SCALE 1.500



NOTES:  
 1. RUBBER DUROMETER OF 30±5 SHORE "A"  
 2. ADJUST DUROMETER FOR DYNAMIC PERFORMANCE.

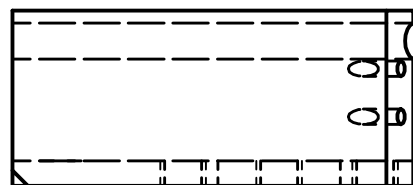
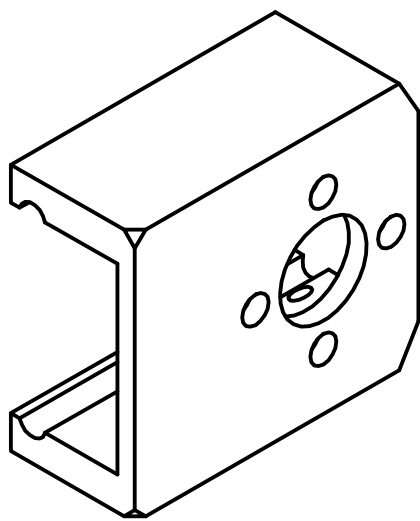
ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-5332	OUTBOARD SLIDER, INNER RACE
1	1	472-5331	RACE, OUTER

Parts List

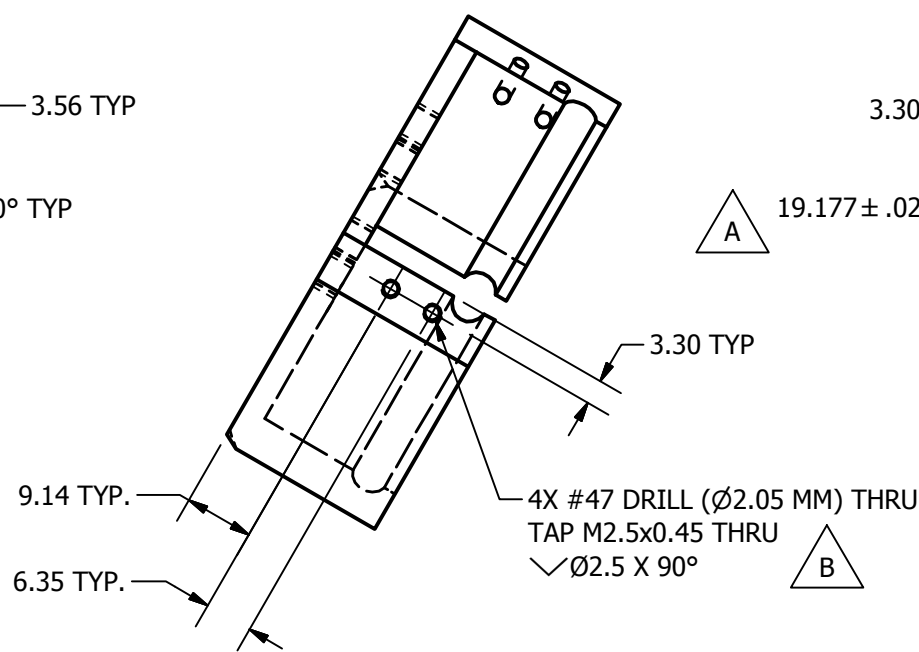
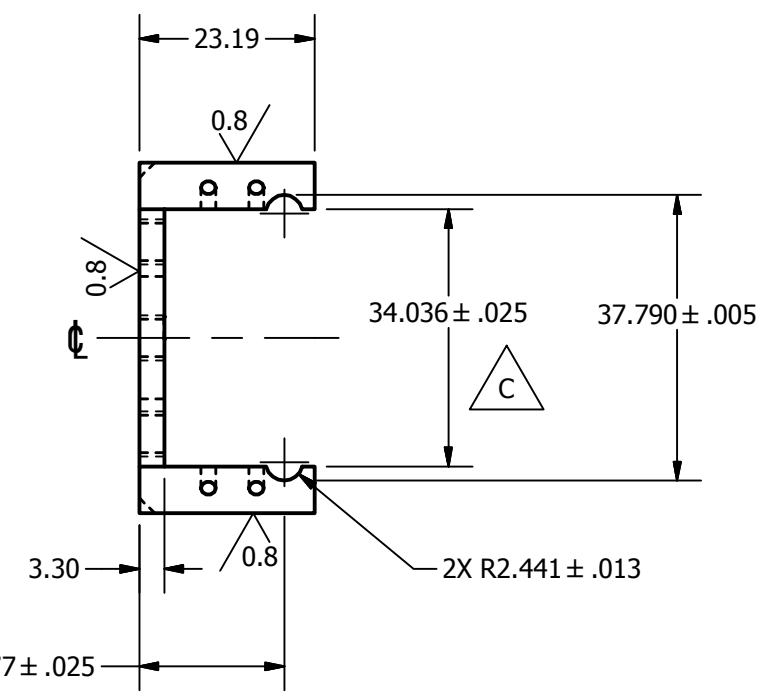
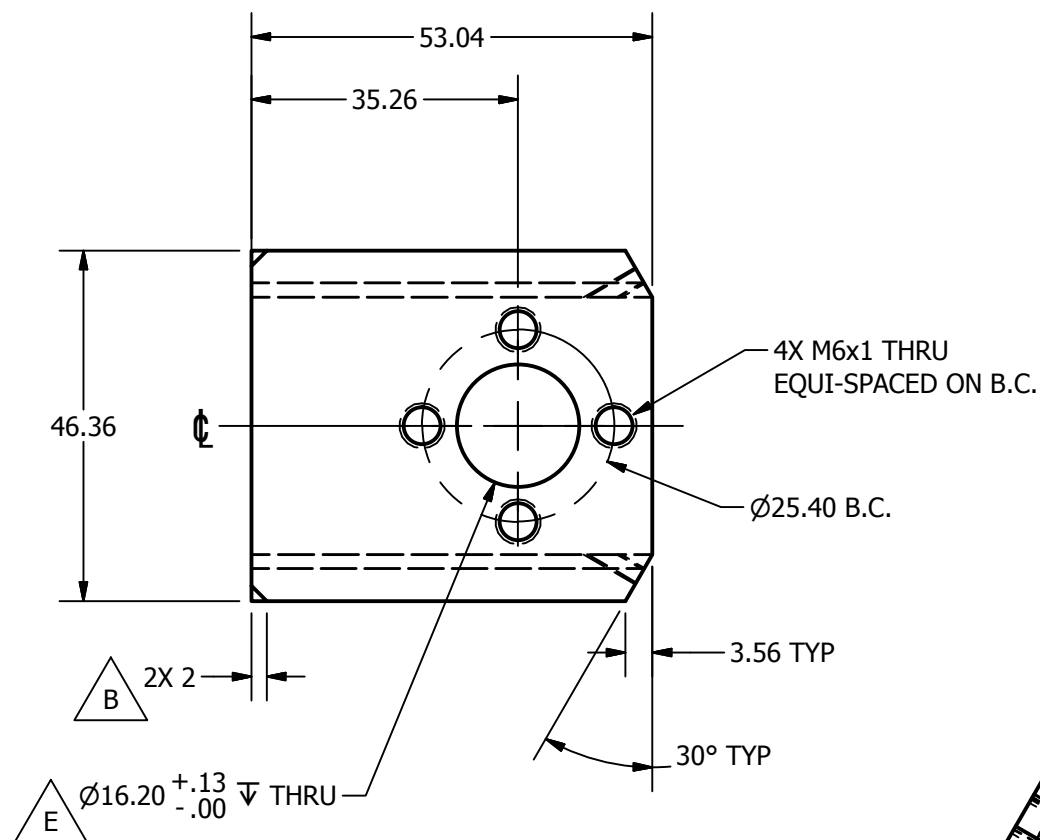
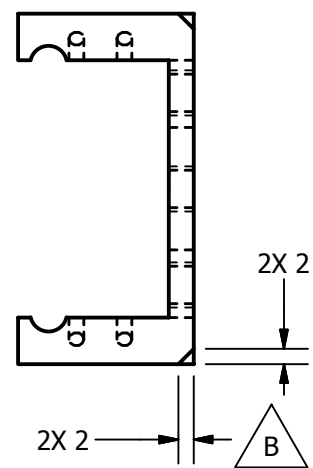
DO NOT SCALE DRAWING	TOLERANCES	 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01	
PROJECT NO.:	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: OUTBOARD SLIDER, MOLDED
MATERIAL:	DRAWN BY: HORCHLER	DATE: 8/17/2011
HEAT TREAT:	CHECKED BY: TMV	DATE: 9/20/2011
FINISH:	ENGINEER: J. WANG	DATE: 1/27/2012

472-5310	1								
NEXT ASSEMBLY	QTY								
TOTAL QTY IN DUMMY	2								

SIZE: A3	SHEET: 1 of 1	DRAWING NO.: 472-5330
SCALE: 1:1		



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1642 REV D AND CONVERTED TO METRIC FOR THOR-M; 19.177±.025 WAS 19.177	8/19/2011	JSJ
	B	CHANGE DEPTH FROM THRU TO 4.0 MM FOR M2.5X0.45, DIM 2 WAS 2.03	2/1/12	ZJW
	C	REDIMENSION PART/SLOT FEATURE ACROSS CL; REMOVE DIMENSIONS TO CL; ADD NOTE	2/22/2012	BK
	D	ADD HEAT TREAT NOTE; REMOVE Ø4.85 HOLE	4/12/2012	BK
	E	Ø16.20 WAS Ø15.88	7/23/2012	BK



- NOTES:
- C 1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
  - D 2. HEAT TREAT:
    - MASK ENTIRE PART EXCEPT THE PATHWAYS
    - CARBURIZE PART @ 1700°F FOR 6 HOURS
    - FURNACE COOL, DO NOT QUENCH
    - REHARDEN @ 1520°F AND OIL QUENCH
    - TEMPER @ 350°F FOR 2 HOURS
    - SURFACE HARDNESS IN PATHWAYS SHOULD BE Rc 60-65

DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X ±0.5	±0.5 1.6
		.XX ±0.2	
		.XXX ±0.1	
		.XXX ±0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:	472-5330	DRAWN BY:	KSG
MATERIAL:	4140 STEEL	CHECKED BY:	J. WANG
HEAT TREAT:	SEE NOTES	DATE:	8/17/2011
FINISH:		DATE:	2/1/2012

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

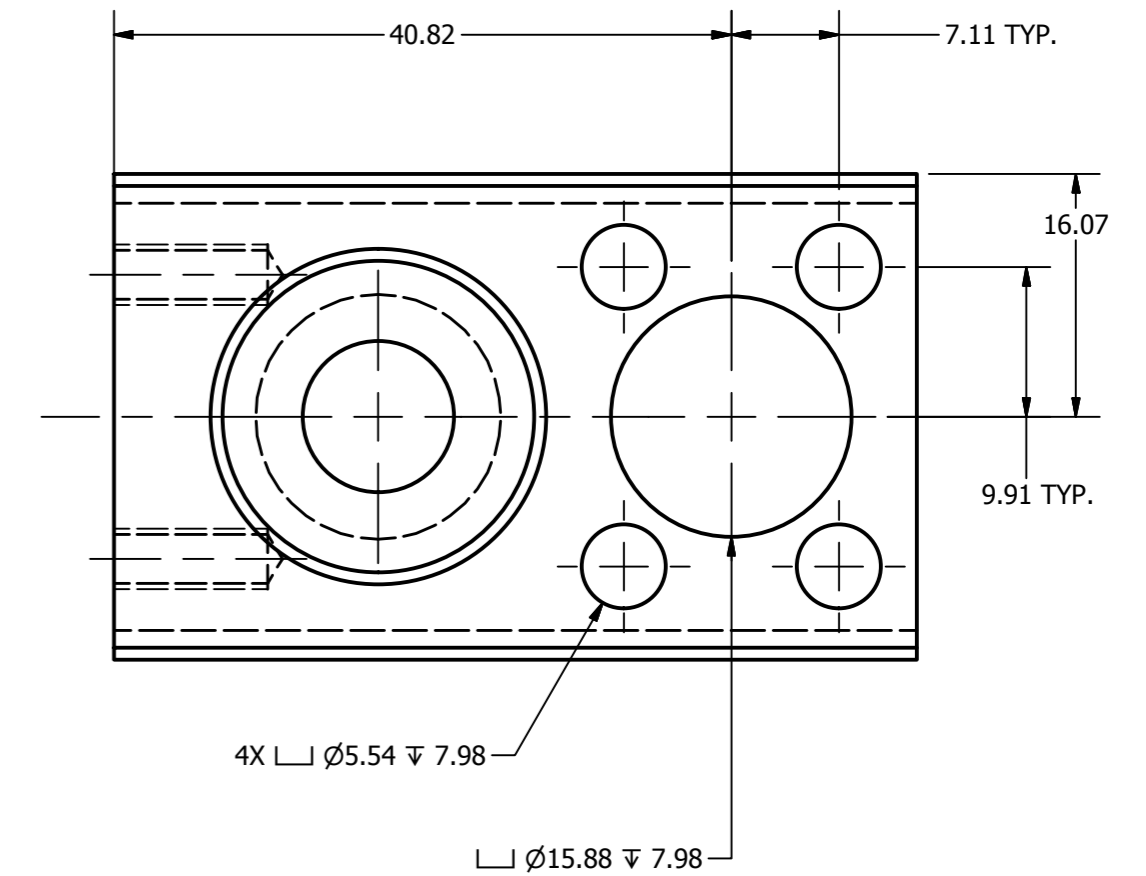
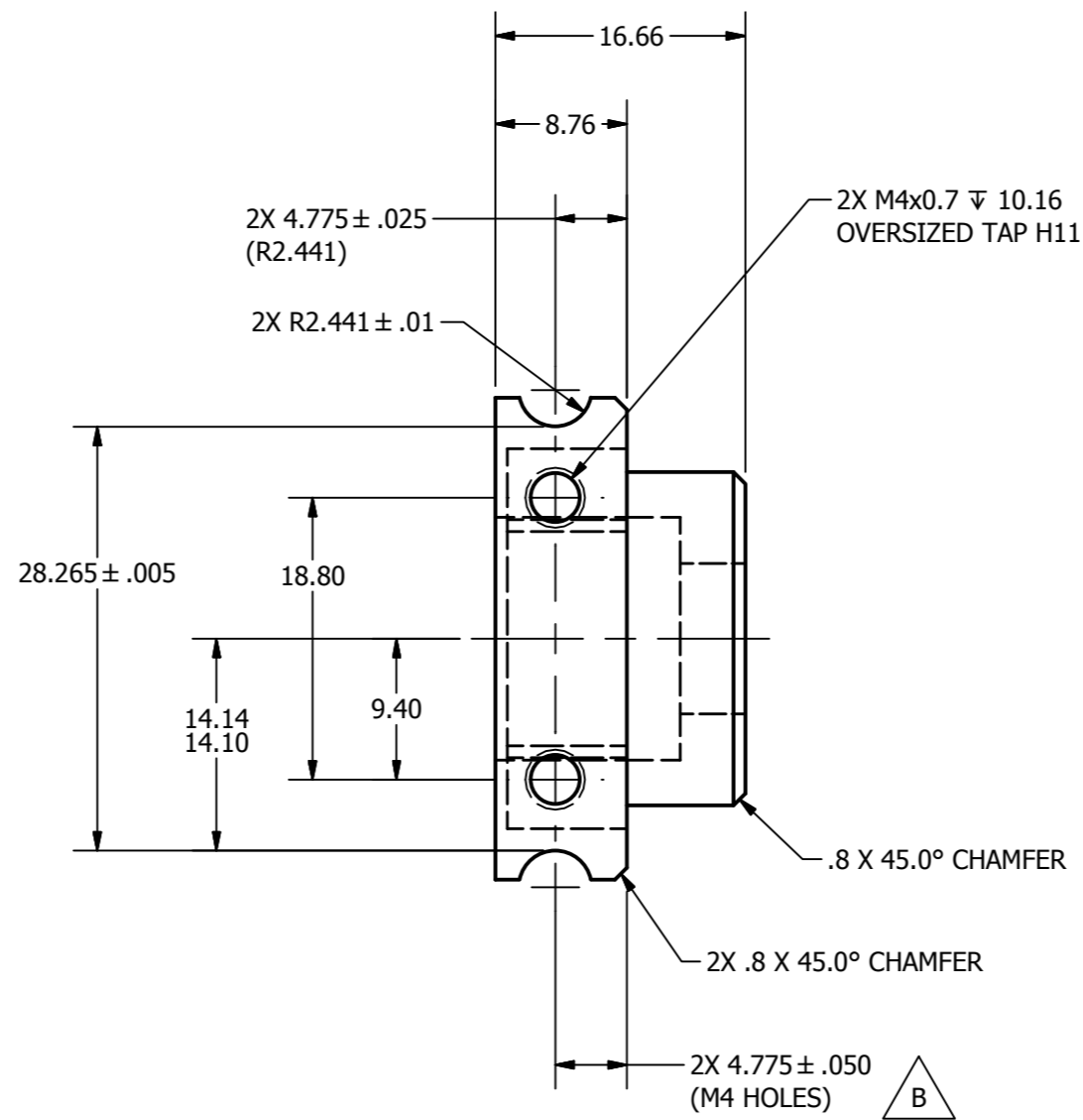
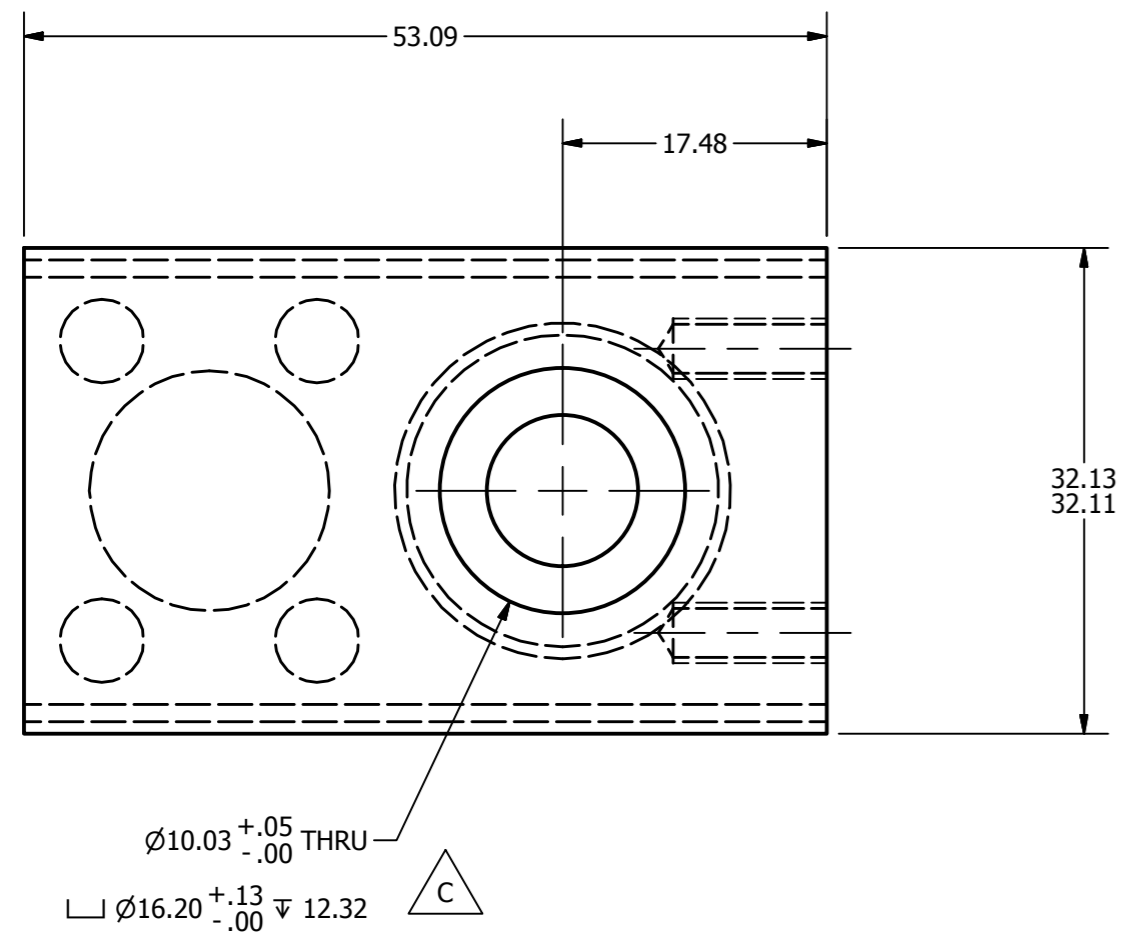
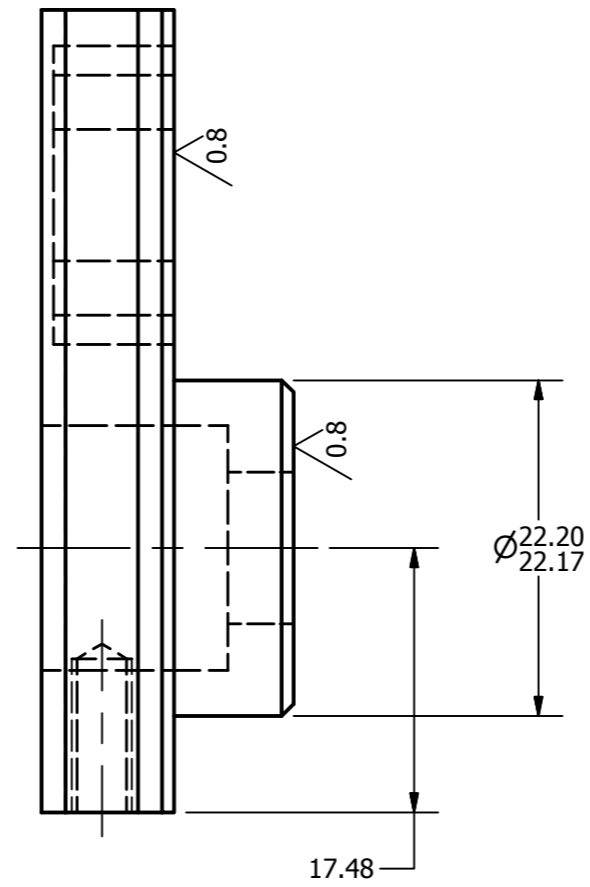
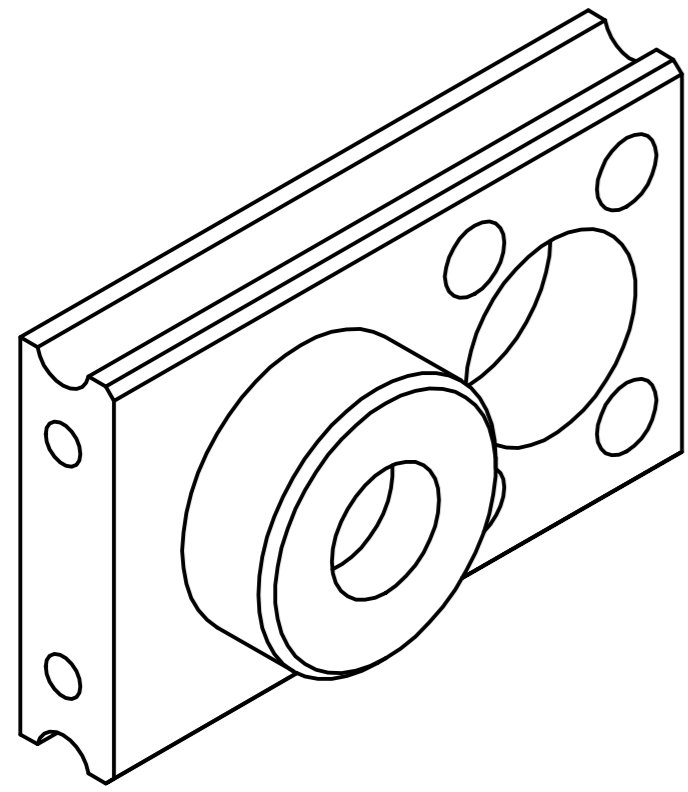
DESCRIPTION: RACE, OUTER

SIZE: A3 1 OF 1  
SCALE: 1:1

DRAWING NO.: 472-5331

472-5330	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	2

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1643 REV F AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
	B	ADD HEAT TREAT NOTE; ADD 2X 4.775+/-0.050	4/12/2012	BK
	C	Ø10.03+0.05/-0 C'BORE Ø16.2+0.13/-0 12.32 DEEP WAS Ø9.550+0.050/-0 C'BORE Ø15.875+0.127/-0 12.319+/-0.127 DEEP	7/19/2012	BK

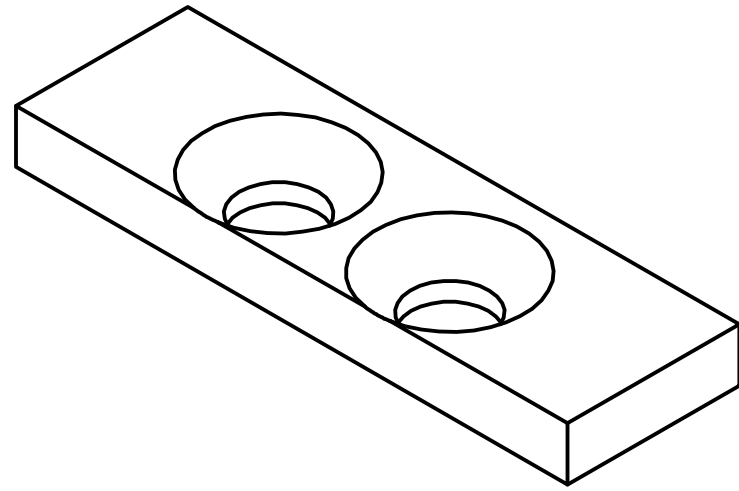


NOTES:

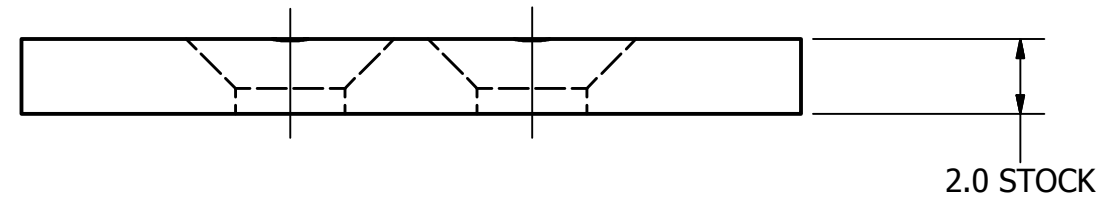
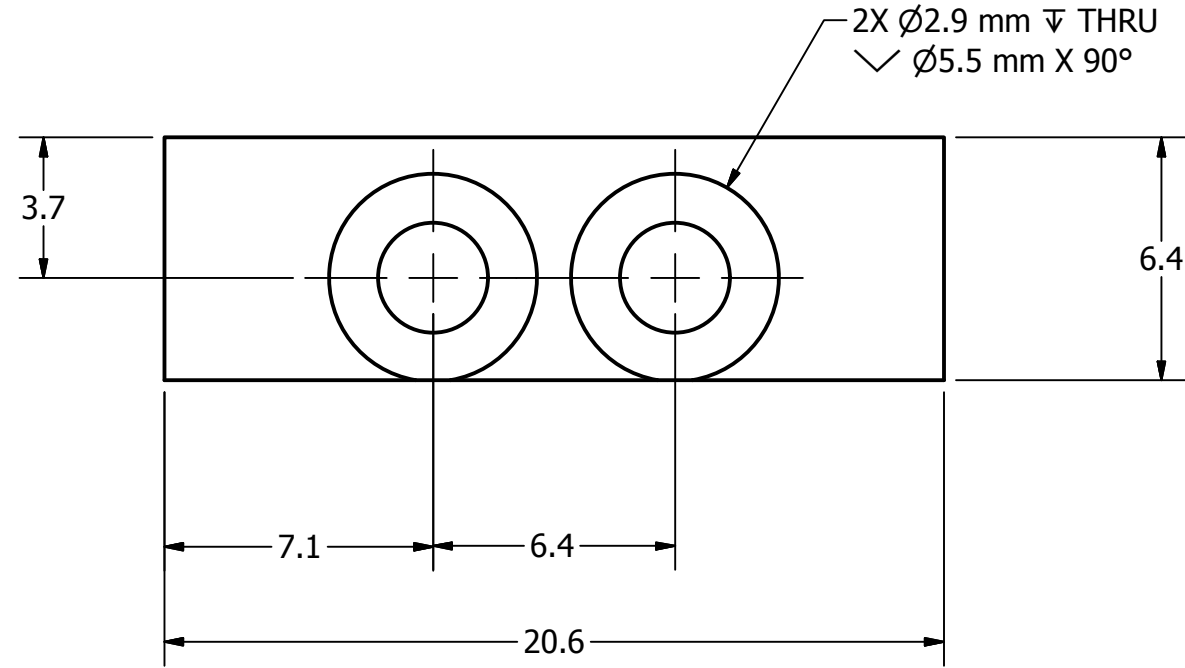
1. HEAT TREAT:

- MASK ENTIRE PART EXCEPT THE PATHWAYS
- CARBURIZE PART @ 1700°F FOR 6 HOURS
- FURNACE COOL, DO NOT QUENCH
- REHARDEN @ 1520°F AND OIL QUENCH
- TEMPER @ 350°F FOR 2 HOURS
- SURFACE HARDNESS IN PATHWAYS SHOULD BE Rc 60-65

DO NOT SCALE DRAWING		TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		X ± 0.5 1.0 XX ± 0.2 0.5 XXX ± 0.1 0.2 XXXX ± 0.01 0.02			
PROJECT NO:	472-5330	DATE:	8/17/2011	DESCRIPTION: OUTBOARD SLIDER, INNER RACE	
DRAWN BY:	4140 STEEL	CHECKED BY:	KSG		
HEAT TREAT:	SEE NOTES	DATE:	1/27/2012	SIZE: A2 SHEET: 1 OF 1 SCALE: 2 : 1	
ENGINEER:	J. WANG	DATE:	1/27/2012		
TOTAL QTY IN DUMMY:	2	DATE:	1/27/2012	DRAWING NO:	472-5332



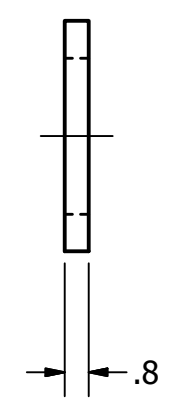
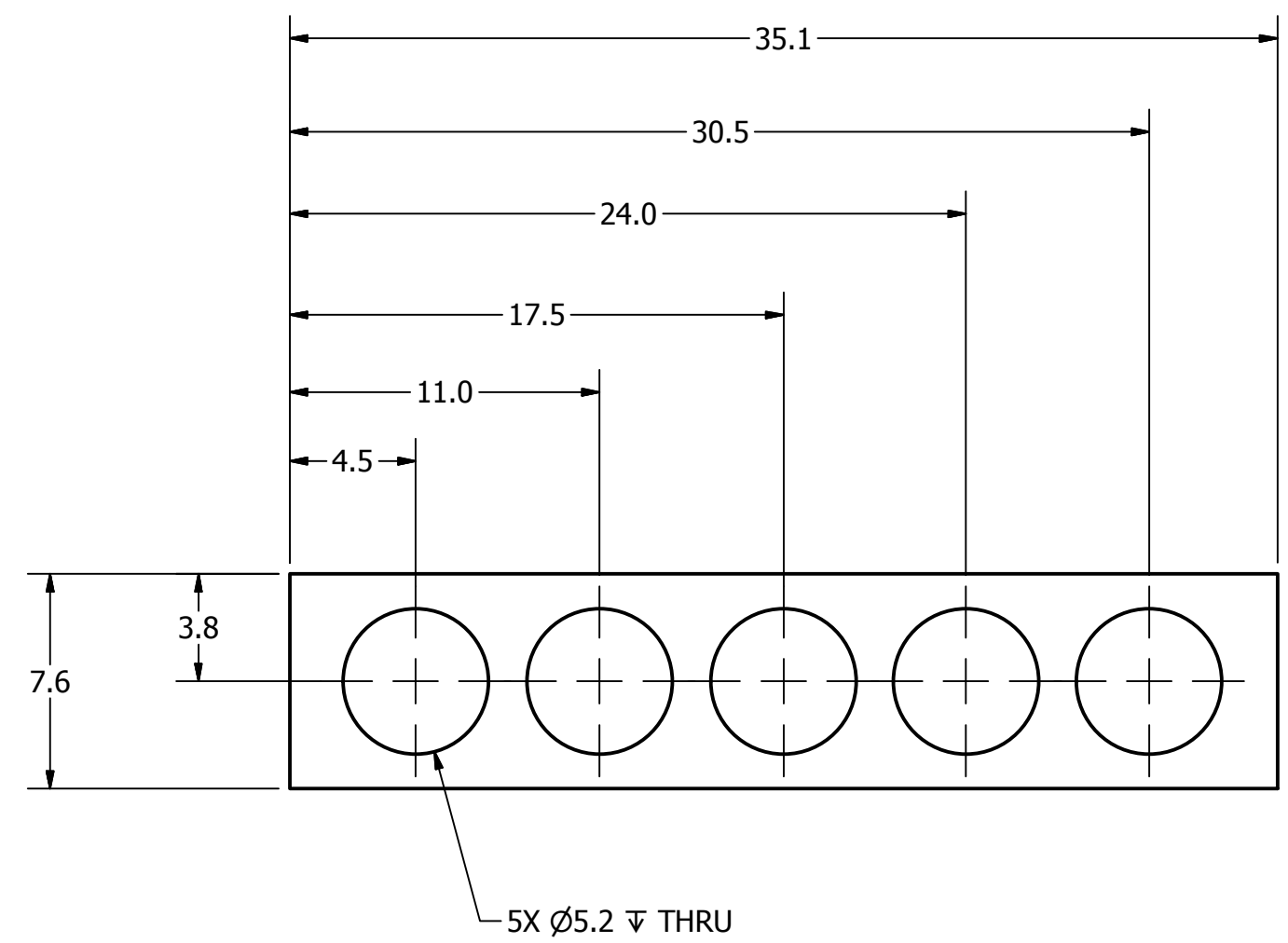
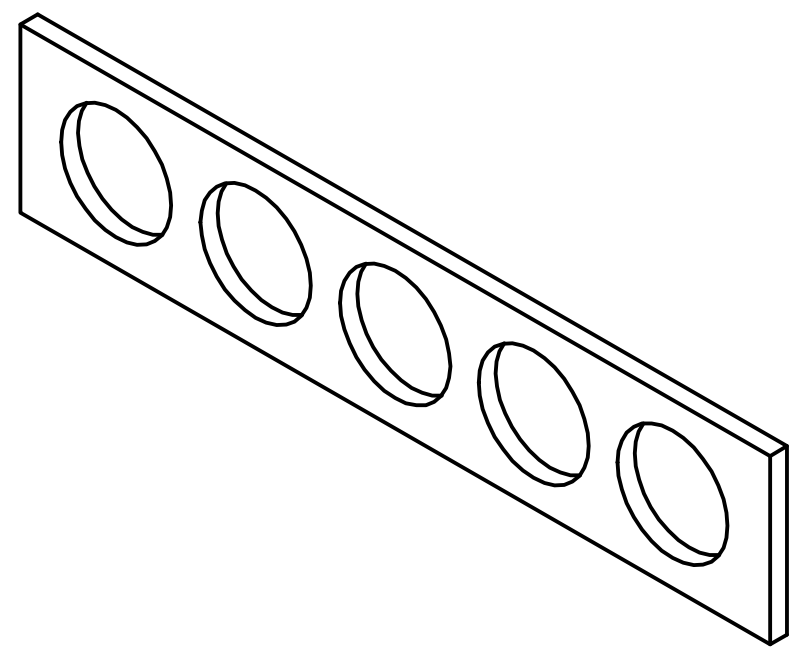
REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1636 AND CONVERTED TO METRIC FOR THOR-M; FINISH WAS .0003 ELECTROLESS NICKEL OR EQUIVALENT	8/19/2011	JSJ



DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		STOP, BALL	
PROJECT NO.: 472-5310		MATERIAL: C1075 ANNEALED		DRAWN BY: KSG	
NEXT ASSEMBLY QTY		HEAT TREAT: Rc 44-50		DATE: 8/17/2011	
TOTAL QTY IN DUMMY 12		FINISH: .008 ELECTROLESS NICKEL		DATE: 9/12/2011	
		ENGINEER: J. WANG		DATE: 1/28/2012	
		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION: STOP, BALL	
		SCALE: 4:1		DRAWING NO.: 472-5738	
		SHEET: 1 OF 1		REV: A	



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1635 REV C AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ



DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X ± 0.5	± 0.5 1.6
		.XX ± 0.2	
		.XXX ± 0.1	
		X.XXX ± 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO.:	472-5310	DRAWN BY:	KSG
MATERIAL:	PHOSPHORUS BRONZE	CHECKED BY:	TMV
HEAT TREAT:		DATE:	9/12/2011
FINISH:		ENGINEER:	J. WANG
		DATE:	1/27/2012

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: **BRONZE SEPARATOR**

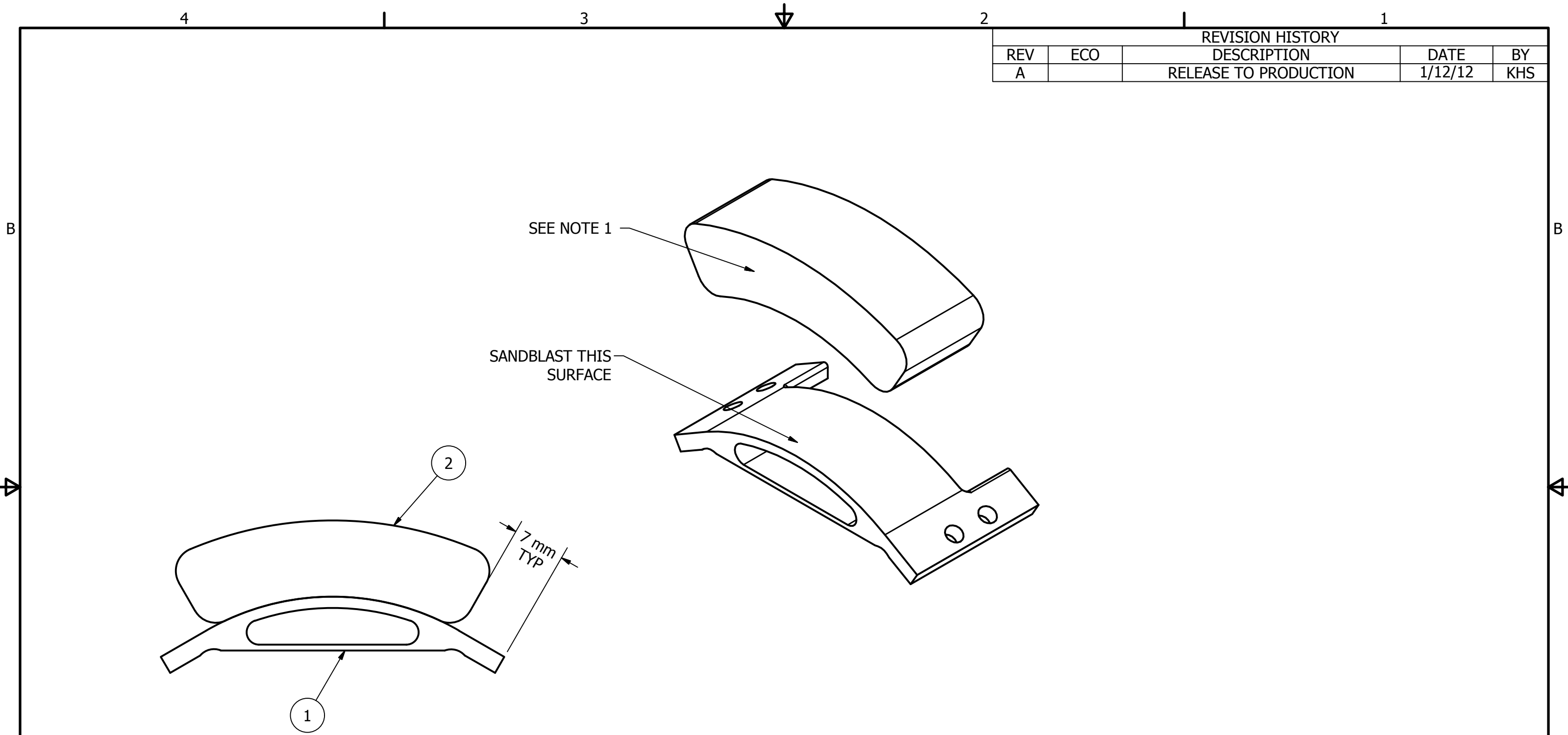
SIZE: A3 1 of 1 SHEET  
SCALE: 4:1

DRAWING NO.: **472-5733**

REV: **A**

472-5310	4
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	8

REVISION HISTORY				
REV	ECO	DESCRIPTION	DATE	BY
A		RELEASE TO PRODUCTION	1/12/12	KHS



NOTES:

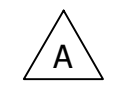
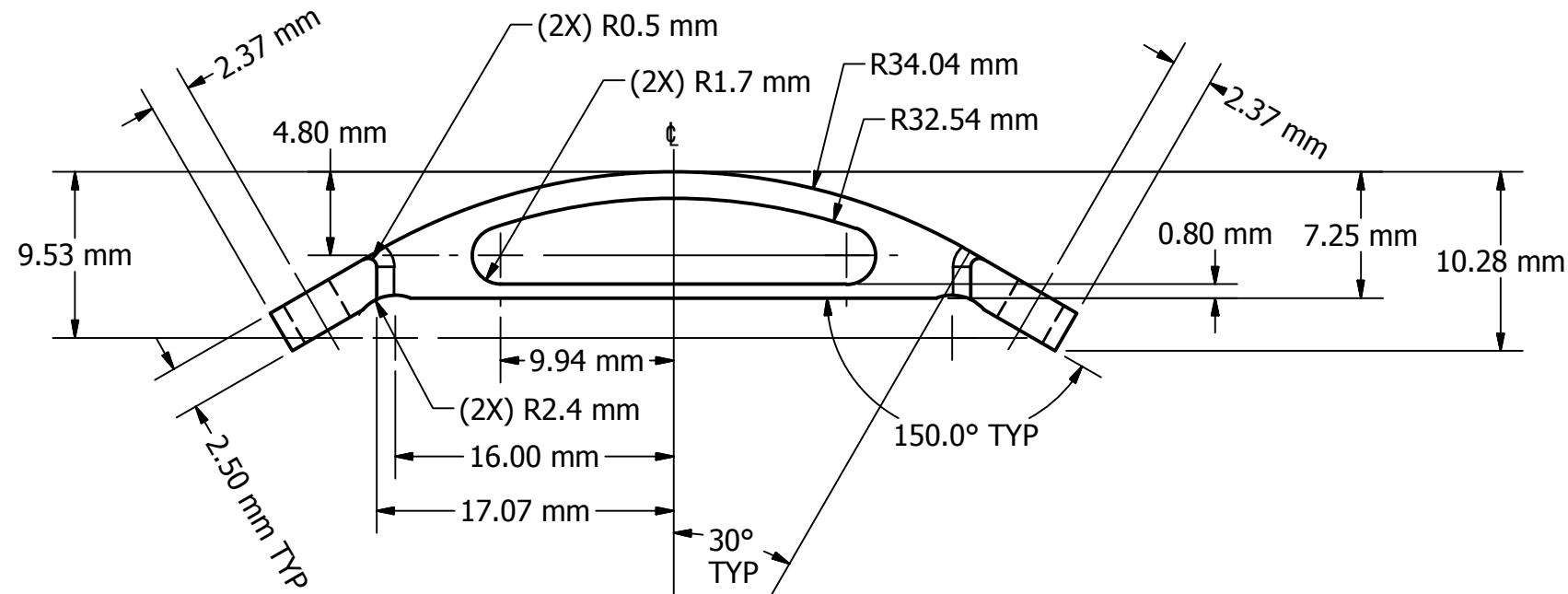
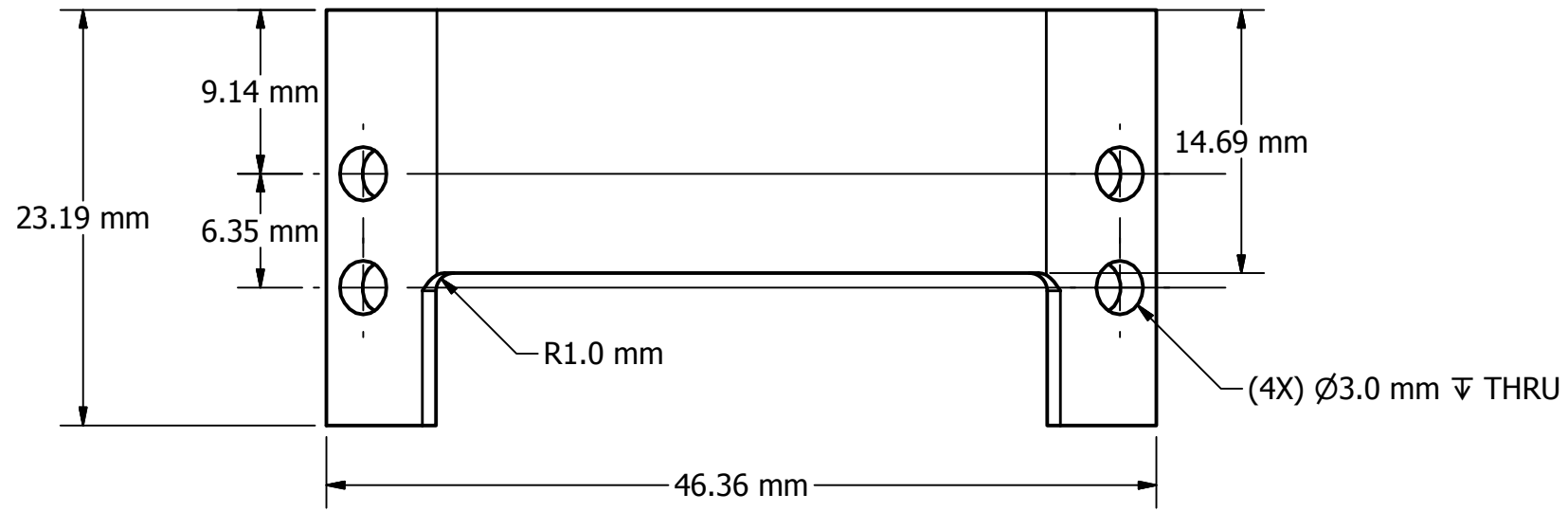
1. BOND ITEM 2 TO ITEM 1 USING CYANOACRYLATE

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-5357	BUMPER - SLIDER
1	1	472-5356	STOP - SLIDER

Parts List

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION: KNEE SLIDER STOP ASS'Y.
MATERIAL:		DRAWN BY: KHS		DATE: 1/12/2012
NEXT ASSEMBLY		HEAT TREAT:		CHECKED BY:
TOTAL QTY IN DUMMY		FINISH:		ENGINEER: J. WANG
		DATE: 1/23/2012		SCALE: 2:1
			SIZE: SHEET	DRAWING NO.: 472-5358
			B 1 OF 1	REV: A

REVISION HISTORY				
REV	ZONE	DESCRIPTION	DATE	BY
A	GLOBAL	HEAT TREAT WAS Rc 42 +/- 5	2/14/2012	KHS



DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
PROJECT NO.: 472-5358	MATERIAL: 4140 STEEL	DECIMALS: X ±0.5	ANGLES: ±0.5
HEAT TREAT: N/A	FINISH: ELECTROLESS NICKEL .008 MAX.	FINISH: 1.6	
		X.X ±0.2	
		X.XX ±0.1	
		X.XXX ±0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
		DRAWN BY: KHS	DATE: 1/12/2012
		CHECKED BY: TMV	DATE: 2/16/2012
		ENGINEER: J. WANG	DATE: 1/26/2012

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

DESCRIPTION: STOP - SLIDER

SIZE: B 1 OF 1

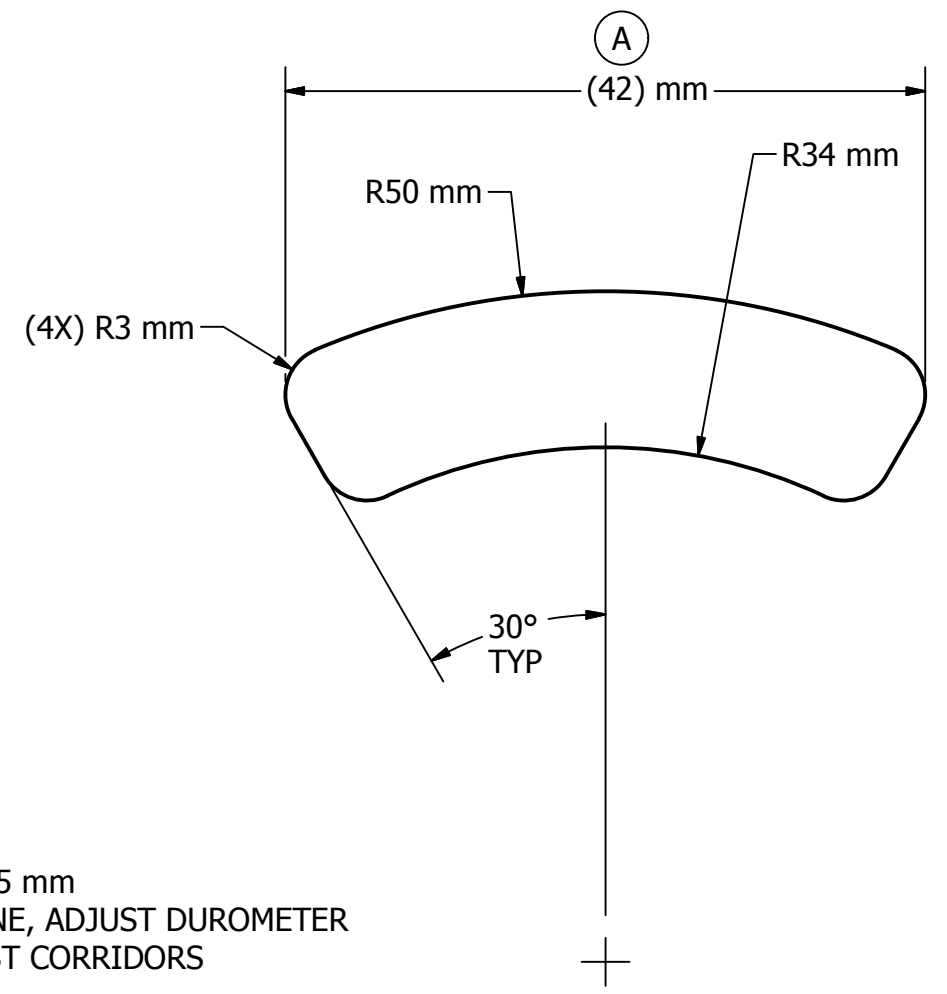
DRAWING NO.: 472-5356

SCALE: 2.5:1

REV: A

472-5358	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

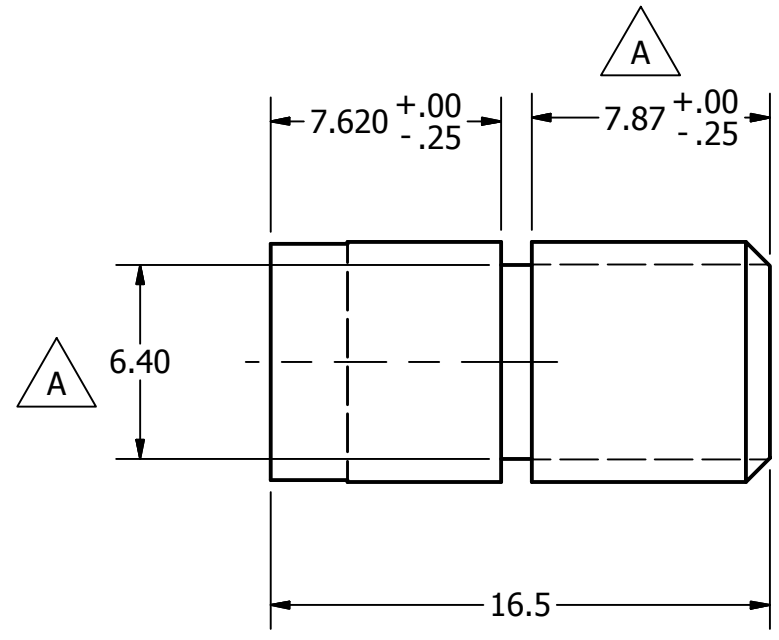
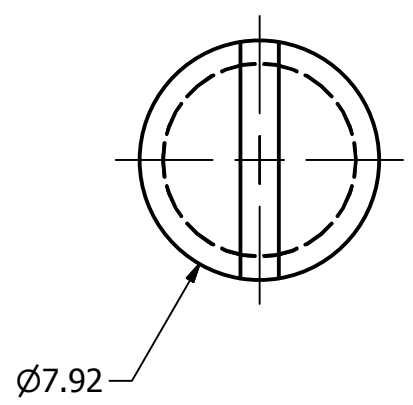
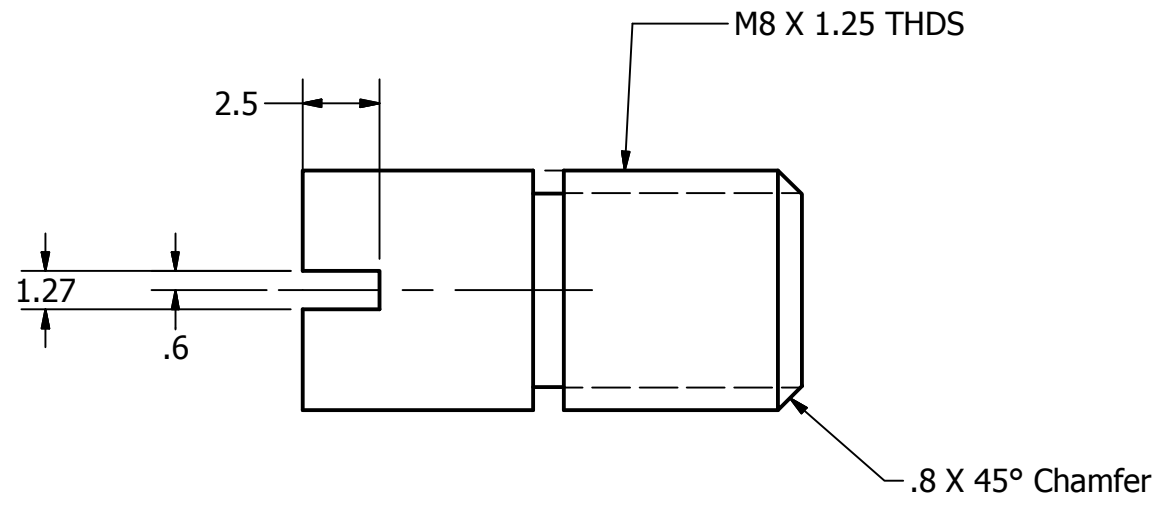
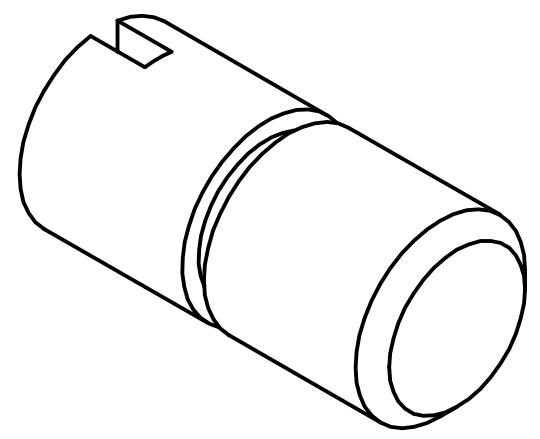
REVISION HISTORY				
REV	ZONE	DESCRIPTION	DATE	BY
A	GLOBAL	ADDED NOTES; MATERIAL WAS RUBBER; (42) mm WAS (48) mm	2/14/2012	KHS



(A) TOLERANCE ALL DIMENSIONS:  $\pm 1.5$  mm  
 MATERIAL: 40 SHORE "A" URETHANE, ADJUST DUROMETER  
 TO MEET DYNAMIC TEST CORRIDORS  
 COLOR: BLACK

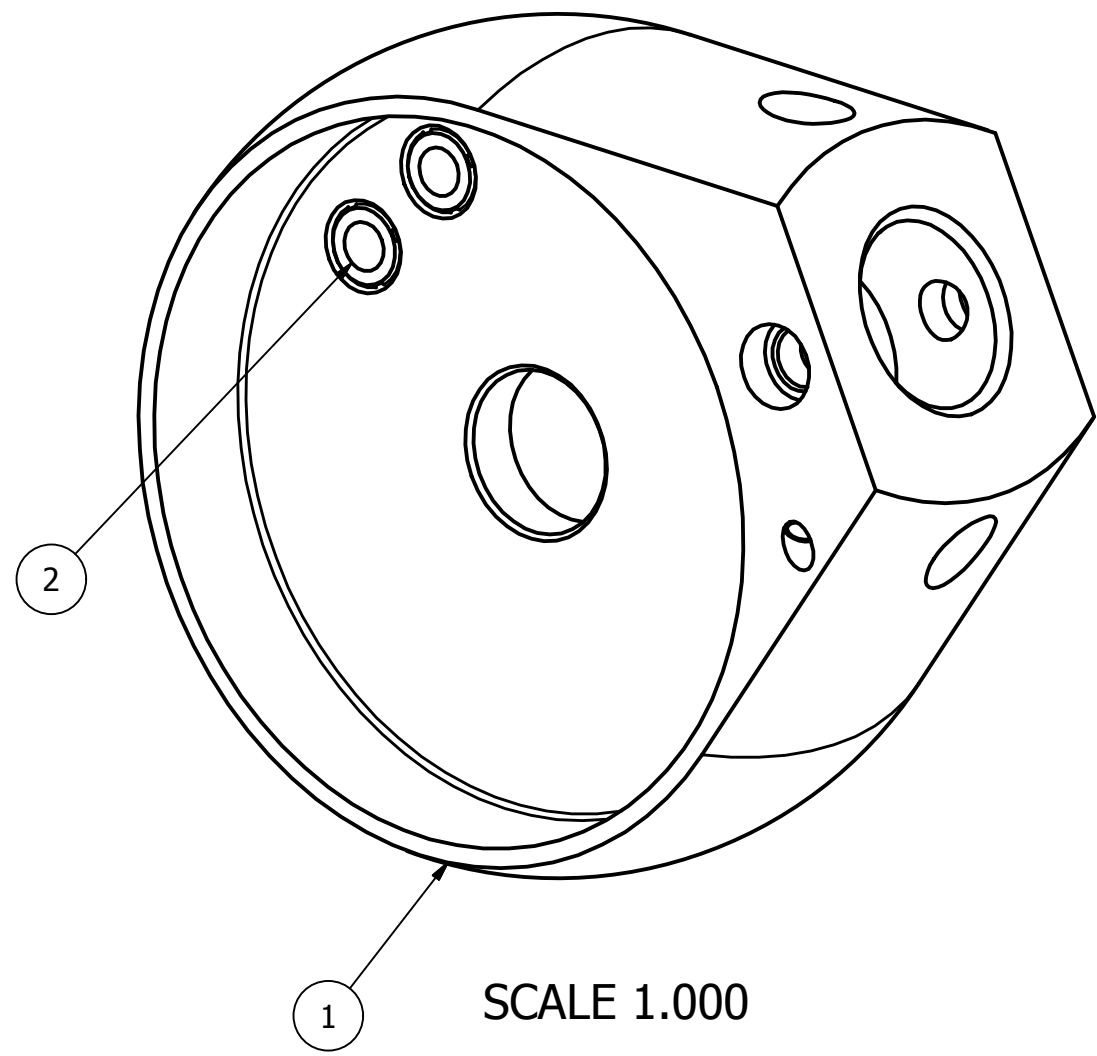
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X $\pm 0.5$ $\pm 0.5$ 1.6 X.X $\pm 0.2$ X.XX $\pm 0.1$ X.XXX $\pm 0.01$		
PROJECT NO.:	472-5358	MATERIAL:	SEE NOTES	DESCRIPTION: BUMPER - SLIDER
DATE:	1/12/2012	DRAWN BY:	KHS	REMOVED BURRS & BREAK SHARP EDGES
HEAT TREAT:	N/A	CHECKED BY:	TMV	DATE: 2/16/2012
FINISH:	N/A	ENGINEER:	J. WANG	DATE: 1/26/2012
TOTAL QTY IN DUMMY			1	SCALE: 2:1

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM EX593-122 AND CONVERTED TO METRIC FOR THOR-M; ADD THREAD RELIEF	9/6/2011	JSJ
	B	FINISH ELECTROLESS NICKEL PLATE WAS BLACK OXIDE	1/30/2012	BK

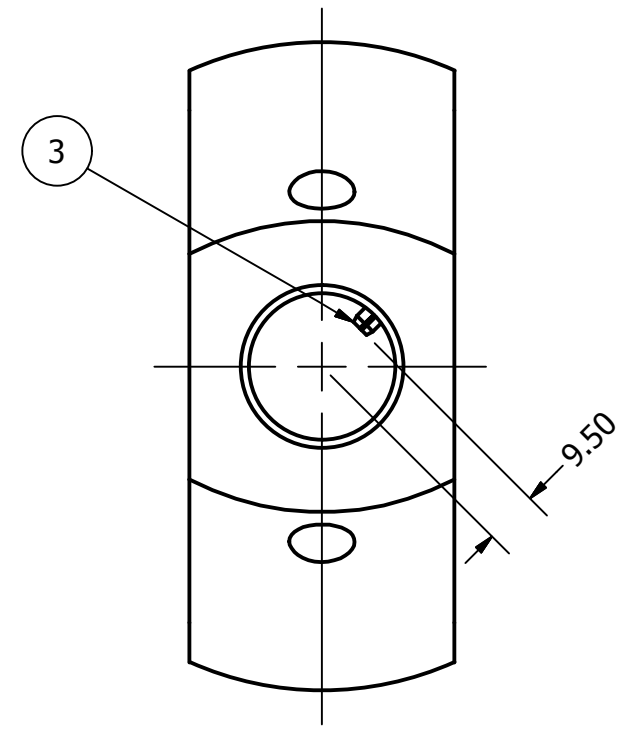
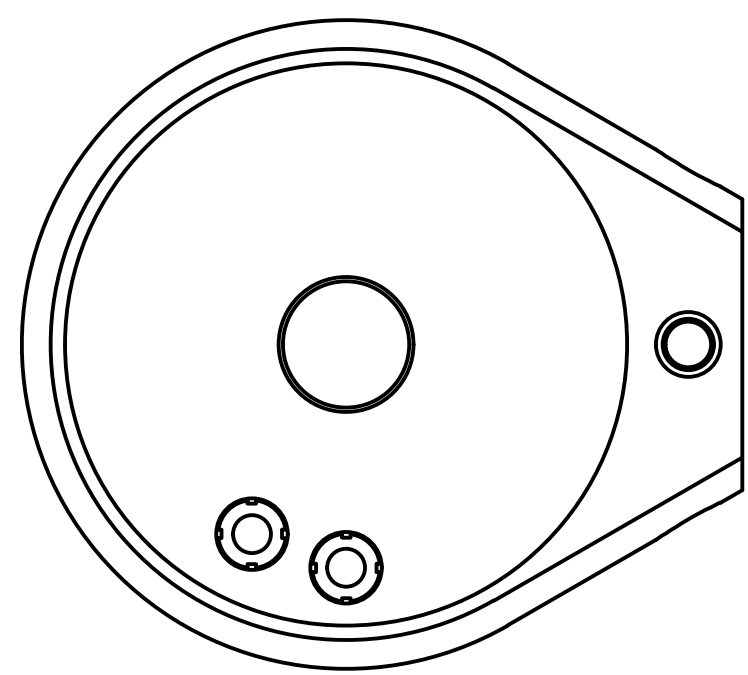


472-5700		1	PROJECT NO.:	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-5300		1	MATERIAL: 4140 STEEL	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
NEXT ASSEMBLY		QTY	HEAT TREAT:	CHECKED BY: TMV	DATE: 9/21/2011	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: PIN, KNEE STOP
TOTAL QTY IN DUMMY		2	FINISH: ELECTROLESS NICKEL PLATE .008 MAX.	ENGINEER: J. WANG	DATE: 1/28/2012	SCALE: 4:1	DRAWING NO.: 472-5763

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM220 R00 AND CONVERTED TO METRIC FOR THOR-M	9/20/2011	JSJ
	B	REVISED M12X1.75 TO M12X1.25 THREAD. ADDED M4X10 ROLL PIN.	5/22/2012	JSJ



SCALE 1.000



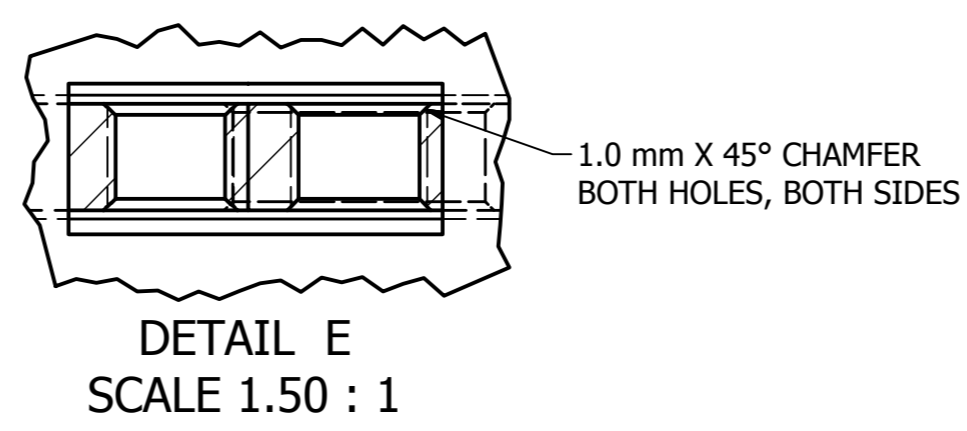
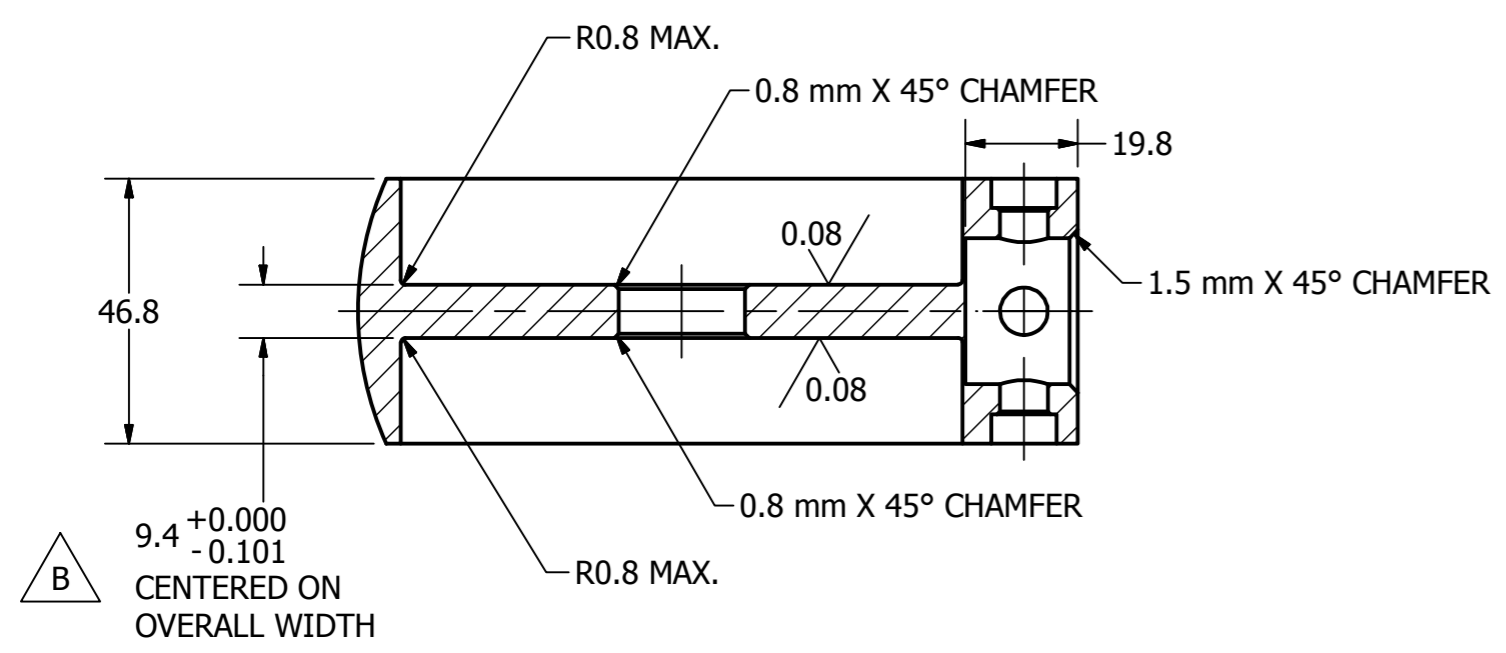
B

ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	5000182	PIN, ROLL M4 X 10mm
2	2	472-5762	THREADED INSERT, MODIFIED
1	1	472-5351	KNEE CAP

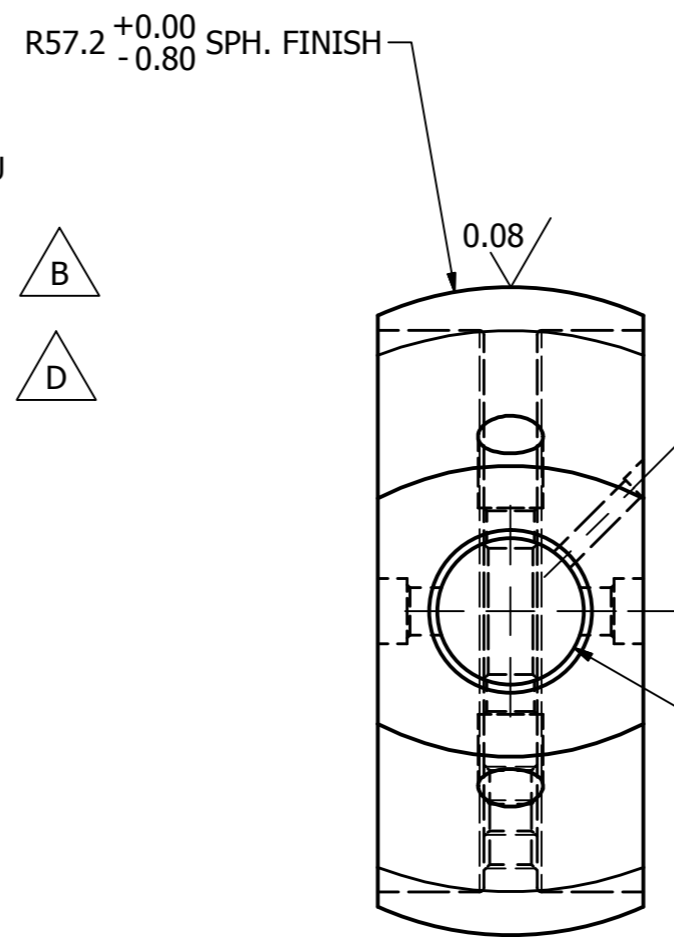
Parts List

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ° ± 0.5 1.6 X.X ± 0.2 ° ± 0.5 1.6 X.XX ± 0.1 ° ± 0.5 1.6 X.XXX ± 0.01 ° ± 0.5 1.6			
PROJECT NO.:	472-5700	DRAWN BY:	jjordan	DATE:	9/20/2011
MATERIAL:	472-5300	CHECKED BY:	TMV	DATE:	5/23/2012
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/27/2012
FINISH:		TOTAL QTY IN DUMMY	2	SIZE: SHEET	A31 of 1
				SCALE:	.750
				DRAWING NO.:	472-5350

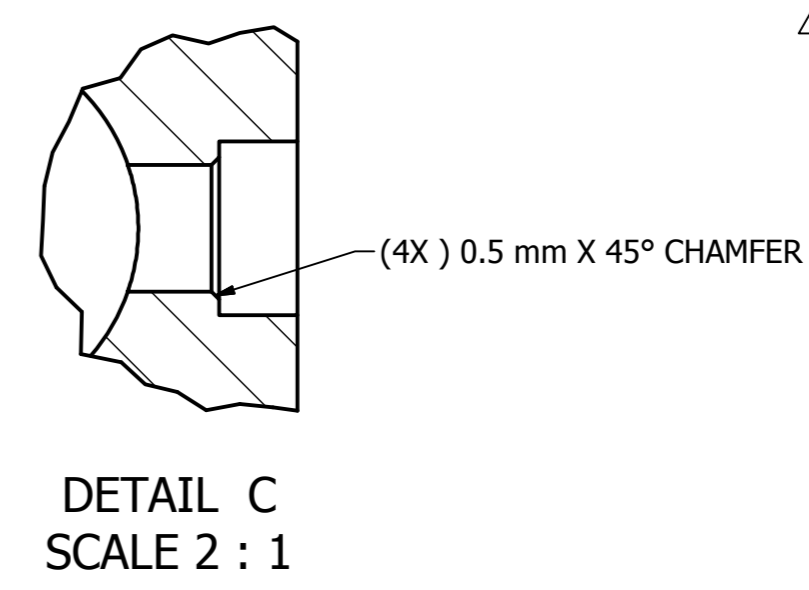
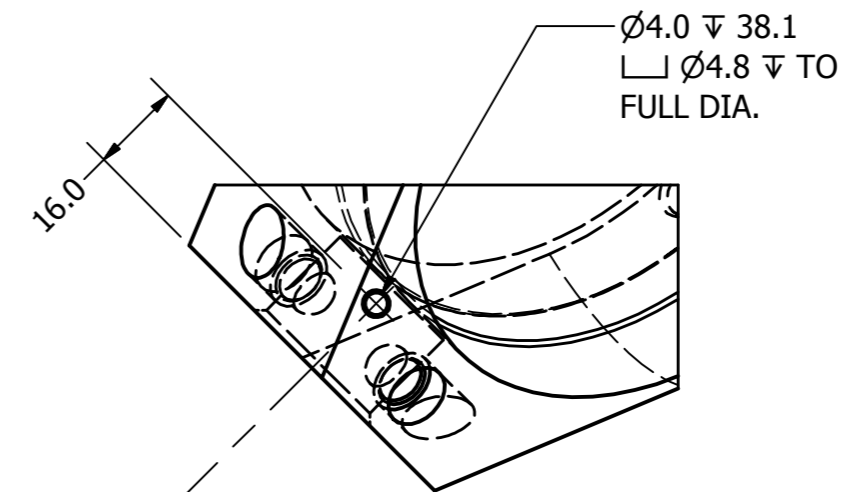
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
78027	A	RENUMBERED FROM T1FMM208 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
10483	B	REVISED/ADDED DIMENSIONS	5/16/2012	JSJ
10490	C	REVISED M12X1.75 TO M12X1.25 THREAD	5/22/2012	JSJ
10532	D	INCREASED PRECISION ON DIMENSIONS TO 3 PLACE	7/2/2012	JSJ
70244	E	Ø8.4 WAS Ø7.92 +0.05 / -0.00	12/18/2012	DW



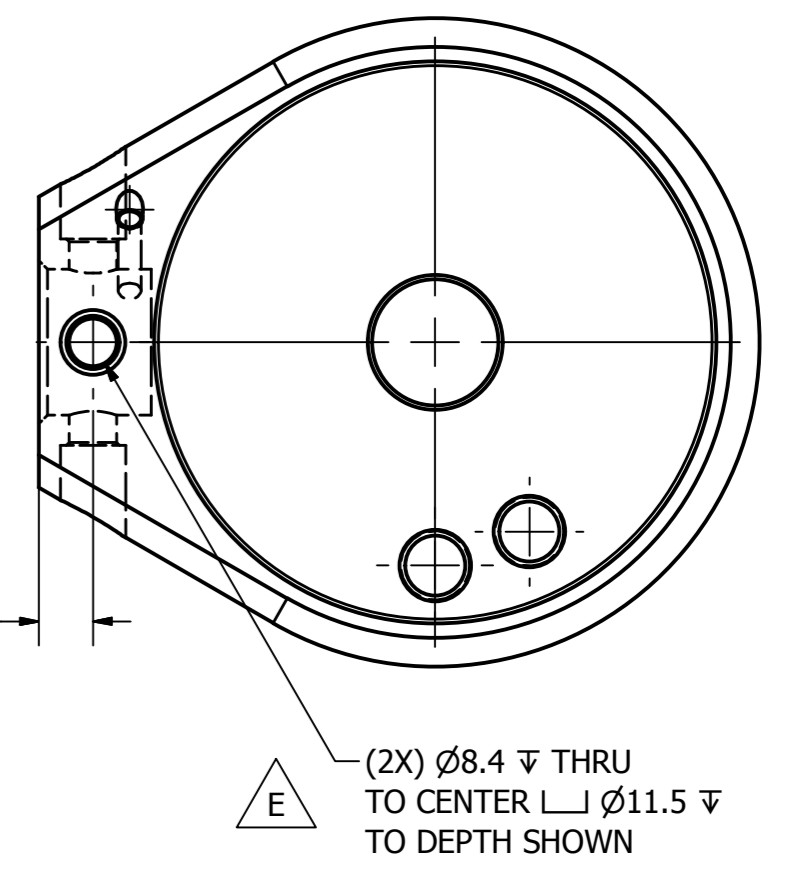
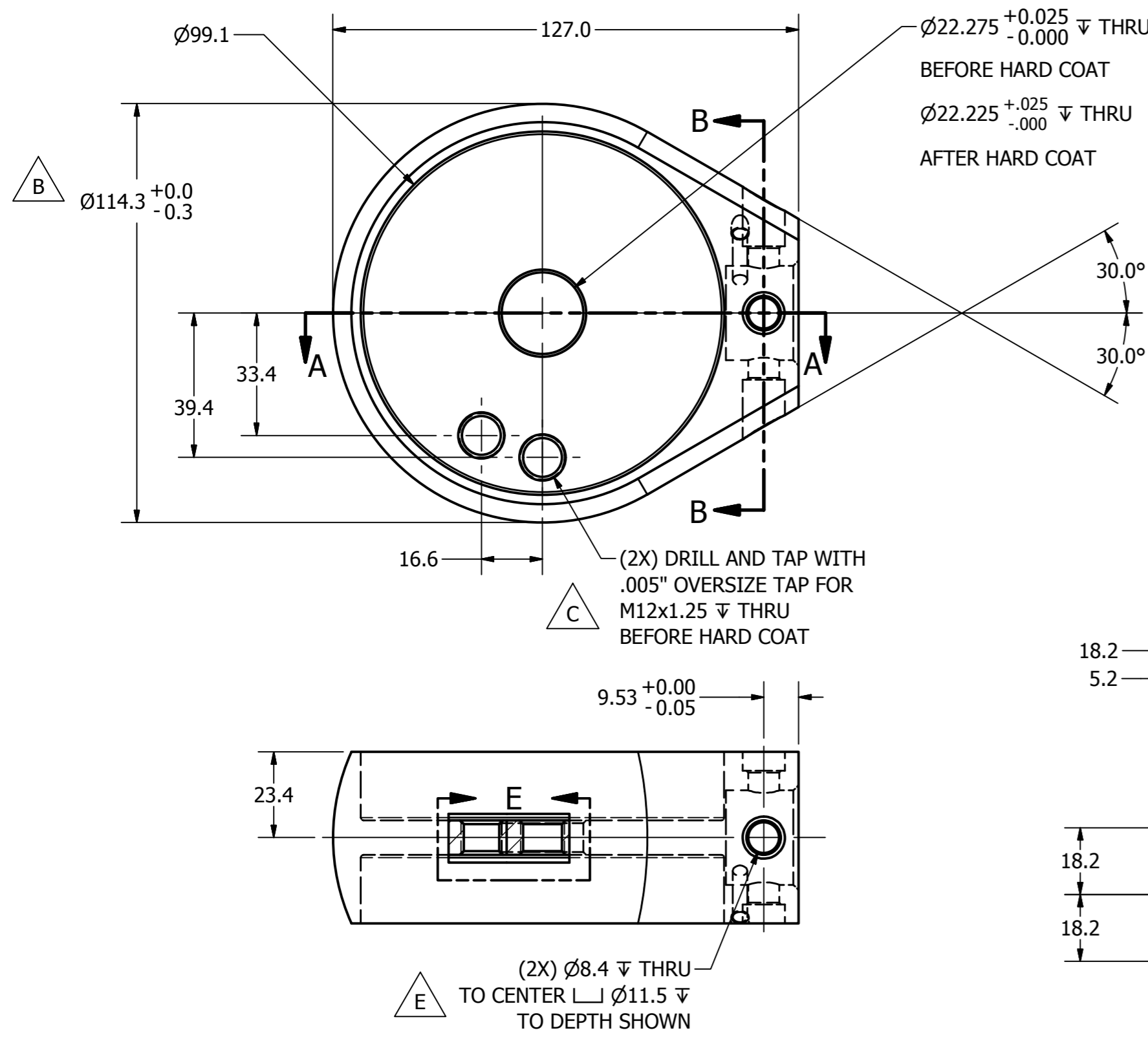
SECTION A-A



SECTION B-B



DETAIL C  
SCALE 2 : 1



NOTES:  
1. ALL DIMENSIONS AFTER HARDCOAT EXCEPT WHERE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS		KNEE CAP	
PROJECT NO:	472-5350	MATERIAL:	Aluminum-7075-T6	DATE:	8/16/2011
QTY:	1	HEAT TREAT:		CHECKED BY:	KHS
TOTAL QTY IN DUMMY:	2	FINISH:	HARDCOAT ANODIZE	DATE:	7/10/2012
		ENGINEER:	J. WANG	DATE:	1/27/2012
				SCALE:	3:4
				SIZE:	A21 OF 1
				DRAWING NO.:	472-5351
				REV.:	E

4

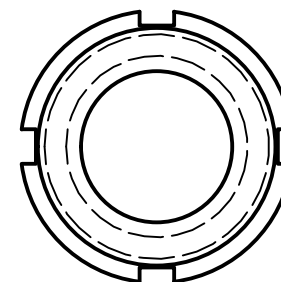
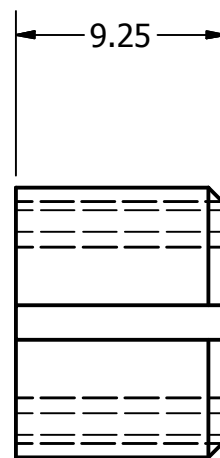
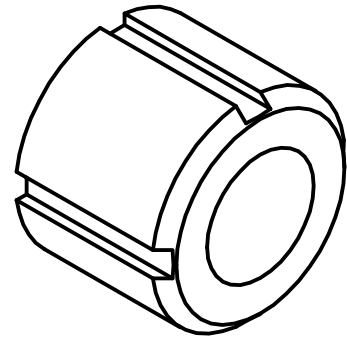
3

2

1

REVISION HISTORY

ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 79051-22-1 REV A AND CONVERTED TO METRIC FOR THOR-M	9/2/2011	JSJ



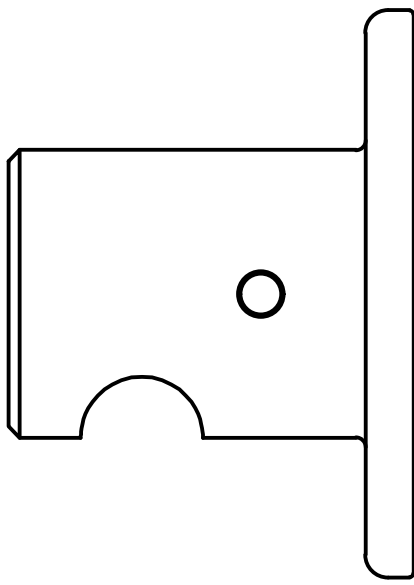
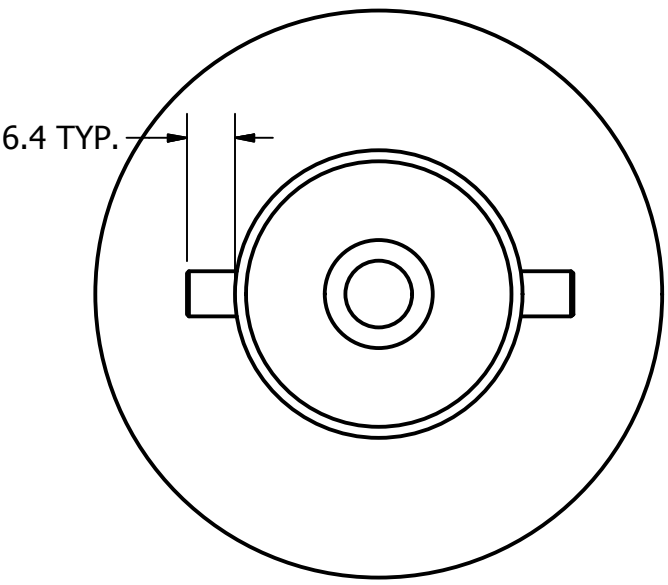
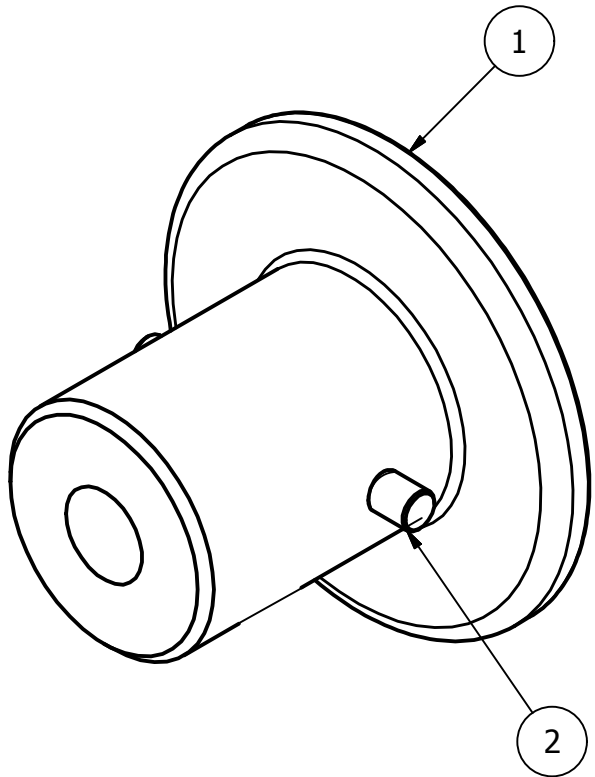
NOTE:

1. MAKE FROM M8 X 1.25 X 12 LIGHTWEIGHT KEENSERT (5000585), MODIFY AS SHOWN.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 X.X ±0.2 X.XX ±0.1 X.XXX ±0.01		
PROJECT NO.:		MATERIAL:	DATE:	REMOVE BURRS & BREAK SHARP EDGES DESCRIPTION: <b>THREADED INSERT, MODIFIED</b>
472-5350	2	SEE NOTES	9/2/2011	
NEXT ASSEMBLY	QTY	HEAT TREAT:	DATE:	
TOTAL QTY IN DUMMY	4	FINISH:	DATE:	SCALE: <b>B 1 of 1</b> 3:1
			ENGINEER: J. WANG	DRAWING NO.: <b>472-5762</b> REV: <b>A</b>



REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM211 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ

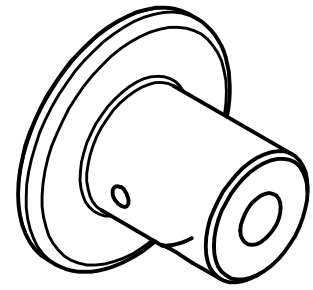


ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	5000433	PIN, DOWEL M6 X 12 mm
1	1	472-5411	FEMUR BALL JOINT ATTACHMENT PLATE

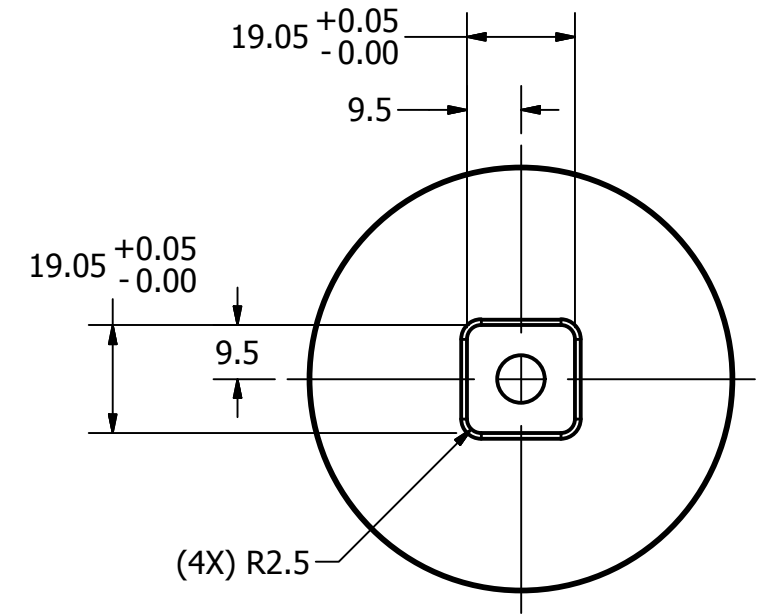
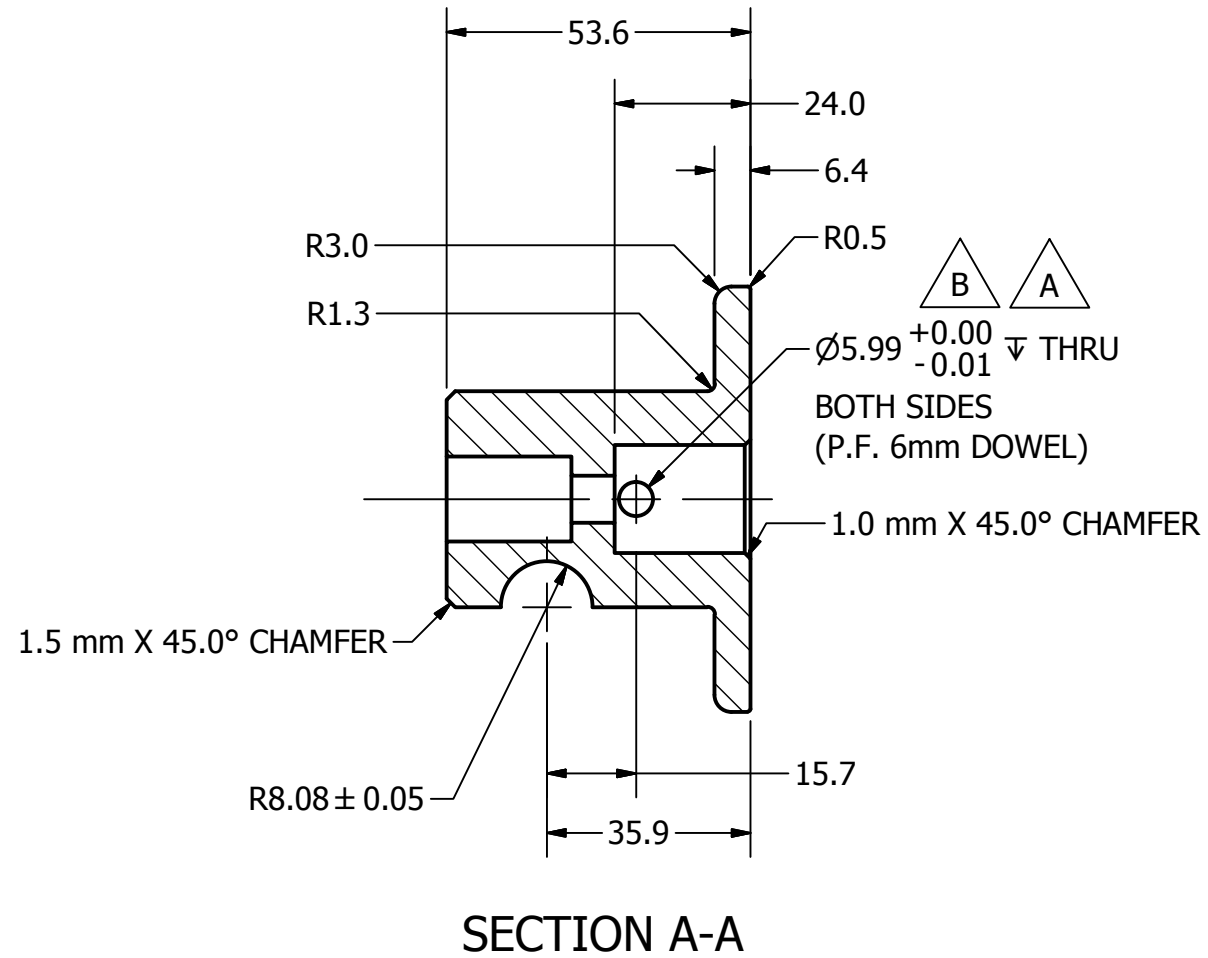
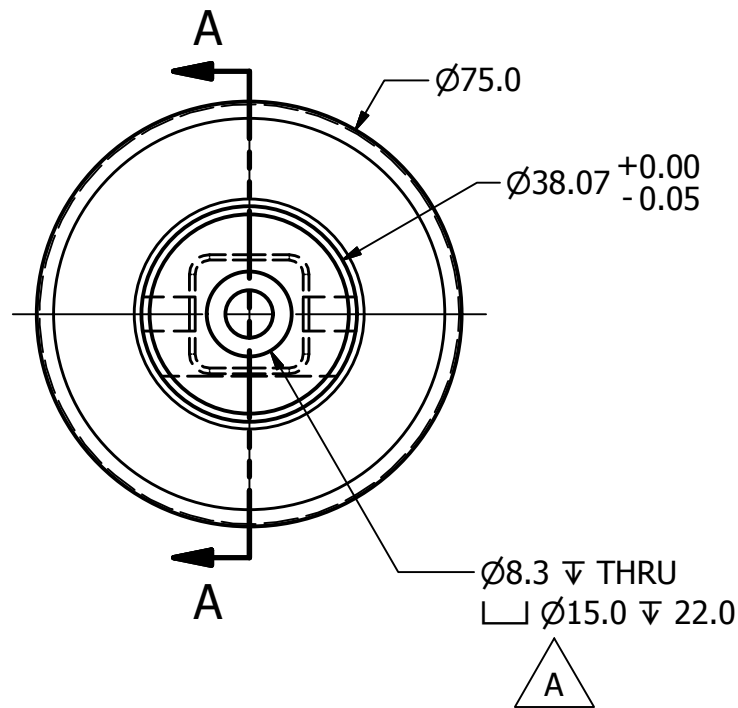
**Parts List**

<b>DO NOT SCALE DRAWING</b>		<b>TOLERANCES</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
 <small>THIRD ANGLE PROJECTION</small>		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		<small>DESCRIPTION:</small> <b>FEMUR BALL ATTACHMENT PLATE ASS'Y.</b>
DRAWN BY:		DATE:		
MATERIAL:		KHS		<small>SIZE: SHEET</small> <b>A3 1 of 1</b>
NEXT ASSEMBLY		DATE:		
QTY		CHECKED BY:		<small>DRAWING NO.:</small> <b>472-5410</b>
TOTAL QTY IN DUMMY		DATE:		
2		ENGINEER:		<small>REV:</small> <b>A</b>
		DATE:		
		J. WANG		
		1/27/2012		
		SCALE:		
		1:1		

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM205 R0 AND CONVERTED TO METRIC FOR THOR-M; Ø8.3 WAS Ø8.2, C'BORE Ø15.0 WAS Ø13.0; Ø6.000 WAS Ø6.337	8/19/2011	JSJ
	B	Ø5.99+0/-0.01 WAS Ø6.000+/-0.005	5/29/2012	KHS



SCALE .500

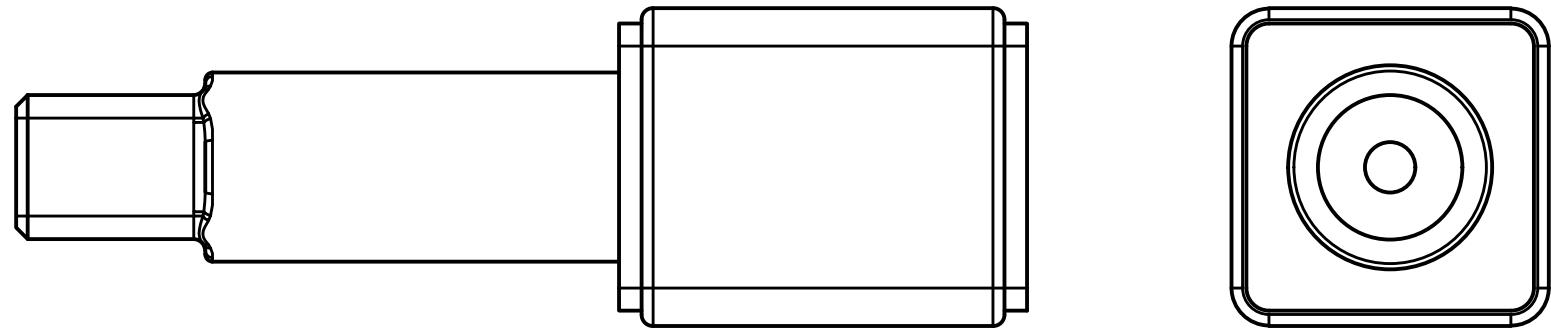
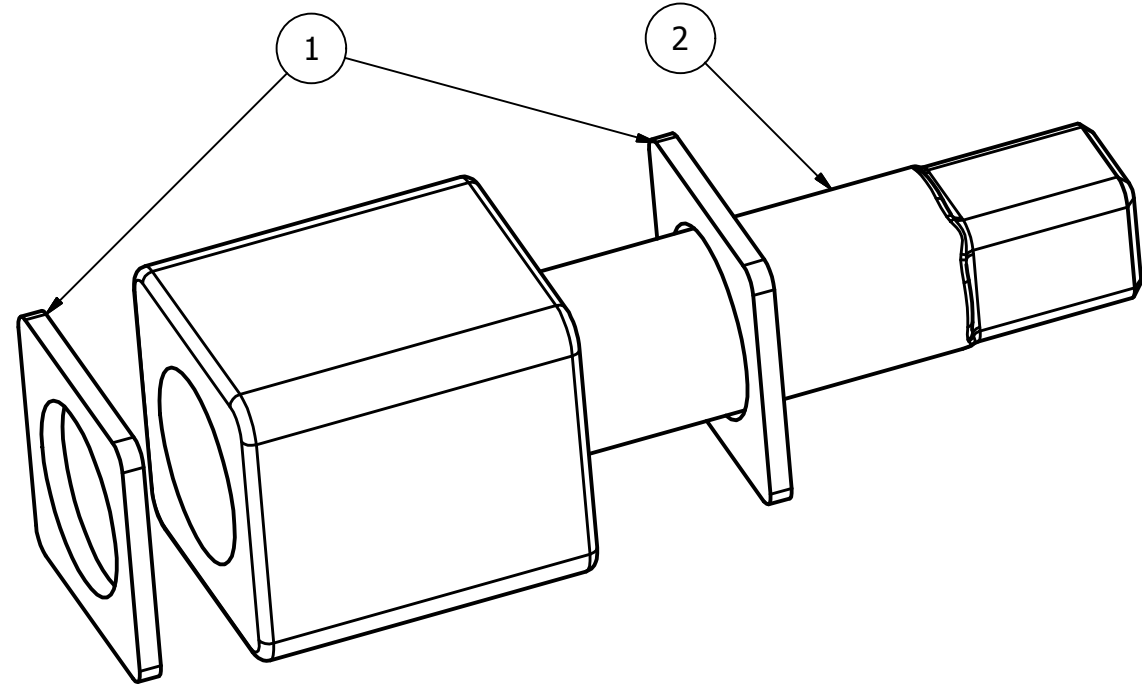


NOTES:

- ALL DIMENSIONS APPLY AFTER NICKEL PLATE.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.5 1.6 XXX ± 0.1 ± 0.5 1.6 XXXX ± 0.01 ± 0.5 1.6		
PROJECT NO.:	472-5410	MATERIAL:	4140 STEEL	DESCRIPTION:
DATE:	8/17/2011	HEAT TREAT:		FEMUR BALL JOINT ATTACHMENT PLATE
CHECKED BY:	KHS	FINISH:	ELEC. NICKEL .008 MAX.	SIZE: SHEET
DATE:	9/12/2011	ENGINEER:	J. WANG	A31 of 1
CHECKED BY:	TMV	DATE:	1/27/2012	DRAWING NO.:
DATE:	1/27/2012	SCALE:	1:1	472-5411

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM210 R0 AND CONVERTED TO METRIC FOR THOR-M	8/22/2011	JSJ
	B	ADD GLUE SPEC	4/3/2012	BK



ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-5422	PLUNGER - FEMUR
1	2	472-5421	END STOP

Parts List

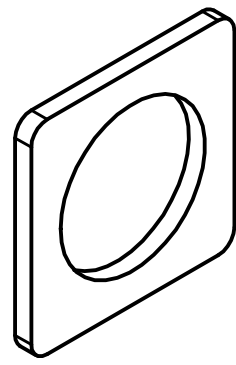
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ° ± 0.5 1.6 XX ± 0.2 ° ± 0.5 1.6 XXX ± 0.1 ° ± 0.5 1.6 XXXX ± 0.01 ° ± 0.5 1.6		
PROJECT NO.:	472-5100-2	DATE:	8/17/2011	DESCRIPTION: FEMUR PLUNGER ASSY.
MATERIAL:	472-5100-1	DRAWN BY:	DLW	
HEAT TREAT:	NEXT ASSEMBLY	CHECKED BY:	TMV	
FINISH:	TOTAL QTY IN DUMMY	ENGINEER:	J. WANG	
		DATE:	9/14/2011	SIZE: A3 SHEET: 1 of 1 SCALE: 1:1
		DATE:	1/27/2012	DRAWING NO.: 472-5420 REV: B

NOTES:

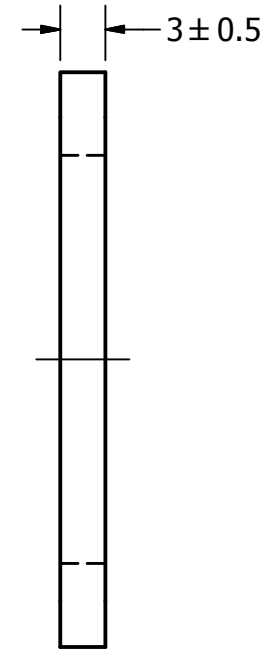
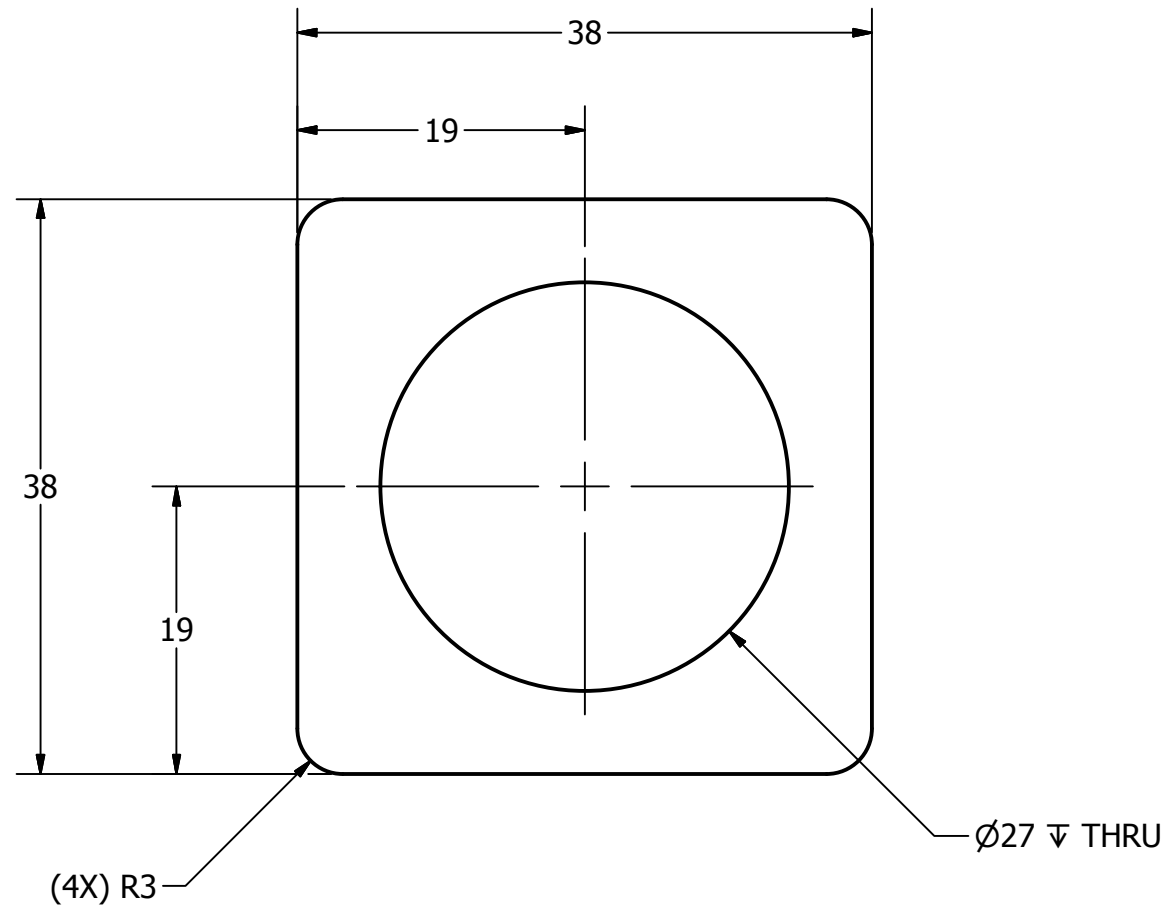


1. BOND ITEM 1 TO ITEM 2 USING LOCTITE 401 OR EQUIVALENT.

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM204 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ



SCALE 1.000



MATERIAL: URETHANE, 42±5 SHORE "A"  
 COLOR: BLACK

DO NOT SCALE DRAWING  
 THIRD ANGLE PROJECTION

TOLERANCES

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN MILLIMETERS

DECIMALS	ANGLES	FINISH
X ± 0.5	± 0.5	1.6
.XX ± 0.2		
.XXX ± 0.1		
.XXXX ± 0.01		



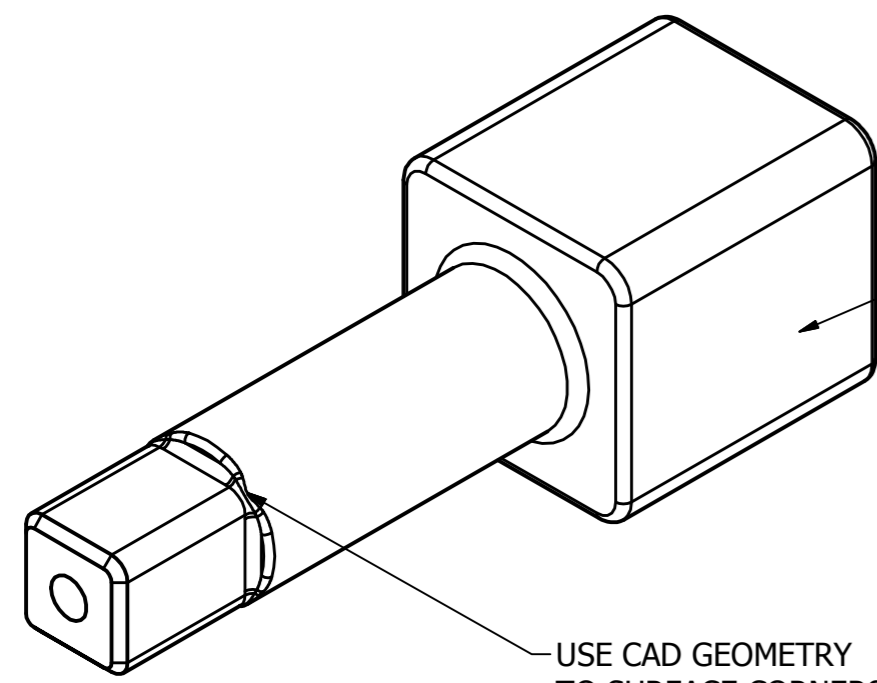
NATIONAL HIGHWAY TRAFFIC  
 SAFETY ADMINISTRATION

PROJECT NO.:	
MATERIAL:	BJB F-42 URETHANE
HEAT TREAT:	
FINISH:	
TOTAL QTY IN DUMMY	4

REMOVE BURRS & BREAK SHARP EDGES	DATE:	8/17/2011
DRAWN BY:	KHS	
CHECKED BY:	TMV	DATE: 9/9/2011
ENGINEER:	J. WANG	DATE: 1/27/2012

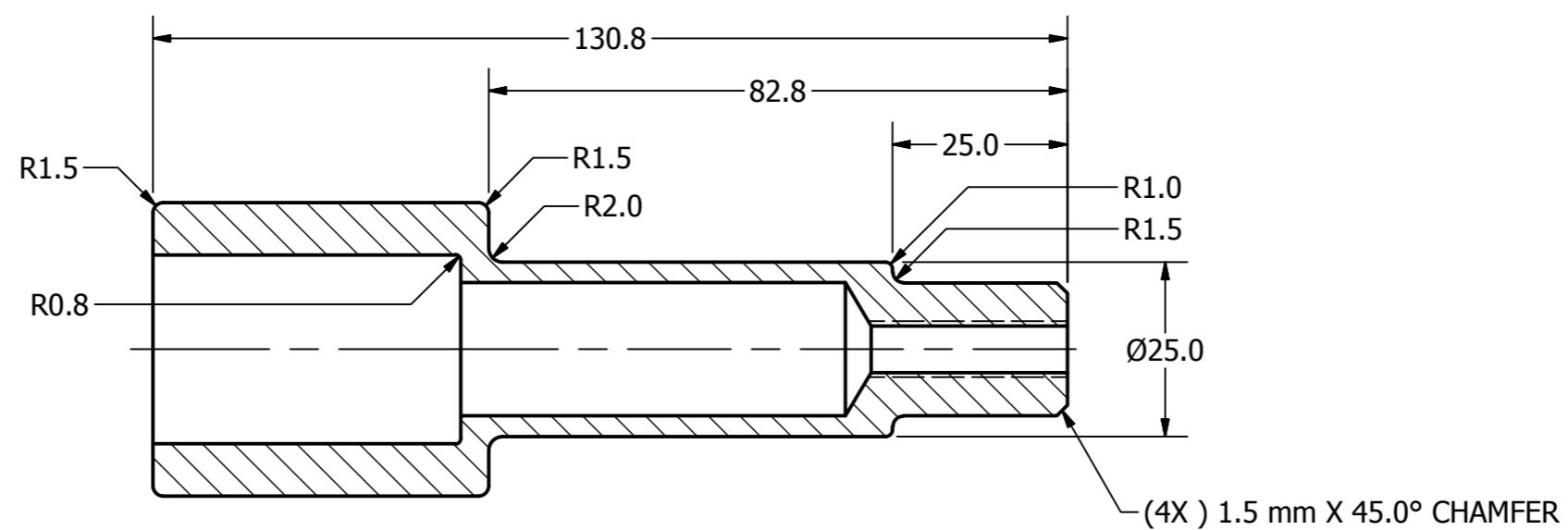
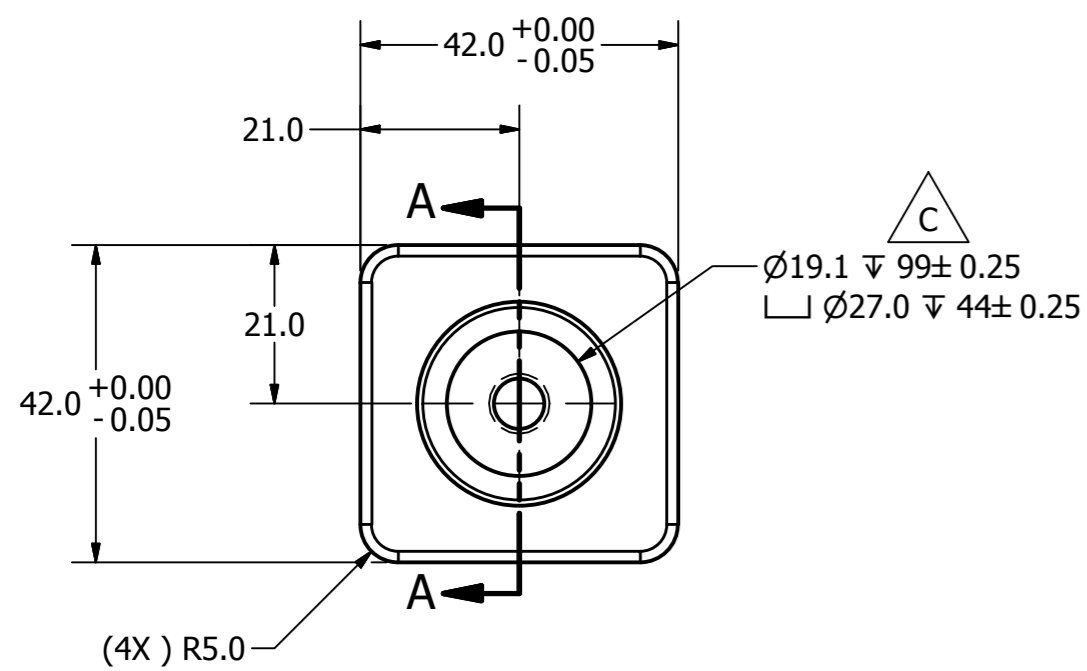
DESCRIPTION:		END STOP	
SIZE:	SHEET	DRAWING NO.:	REV:
A3	1 of 1	472-5421	A
SCALE:	2:1		

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM207 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
	B	ADD HARDNESS CHECK NOTE	3/20/2012	SKK
	C	99 DEPTH WAS 102	11/26/2012	BK

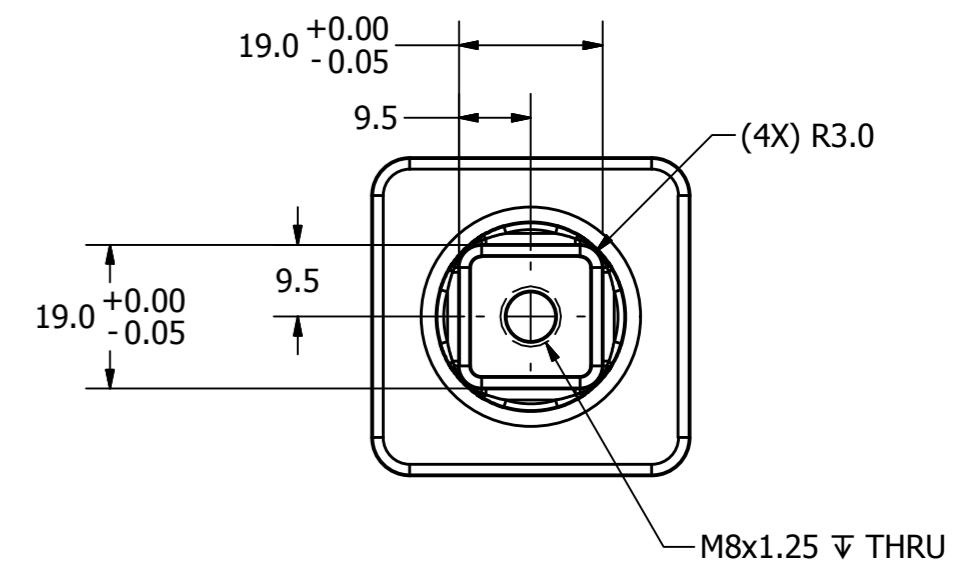


CHECK FOR HARDNESS  
THIS SURFACE ONLY  $\triangle B$

USE CAD GEOMETRY  
TO SURFACE CORNERS  
OR HAND FILE

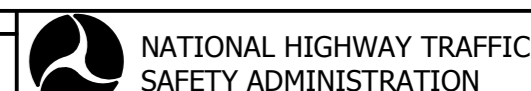


SECTION A-A



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

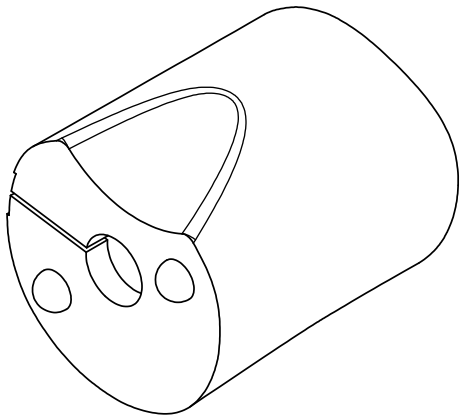
TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ± 0.5 ± 0.5 1.6  
XX ± 0.2 ± 0.2 1.6  
XXX ± 0.1 ± 0.1 1.6  
XXXX ± 0.0 ± 0.0 1.6



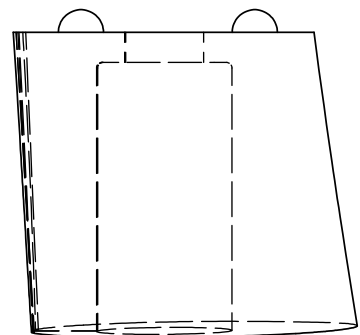
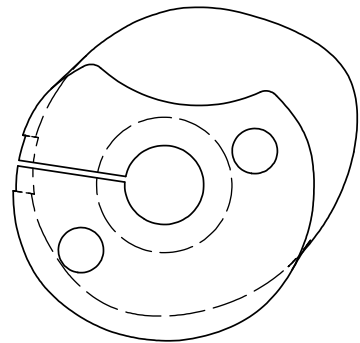
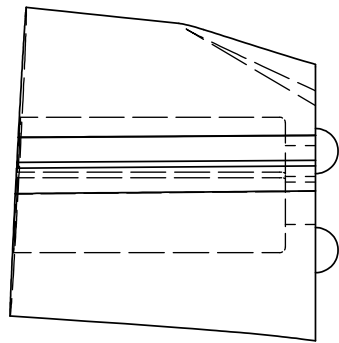
PLUNGER - FEMUR

PROJECT NO:	472-5420	DATE:	8/17/2011	SIZE:	A21 OF 1	DRAWING NO:	472-5422	REV:	C
MATERIAL:	Stainless Steel, 440C	DRAWN BY:	KHS	DATE:	9/9/2011	SCALE:	1:1		
HEAT TREAT:	Rc 57 +/- 5	CHECKED BY:	TMV	DATE:	1/27/2012				
FINISH:		ENGINEER:	J. WANG						
TOTAL QTY IN DUMMY:	2								

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMS011 R2 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 5	8/22/2011	JSJ



← CLOSURE DIRECTION

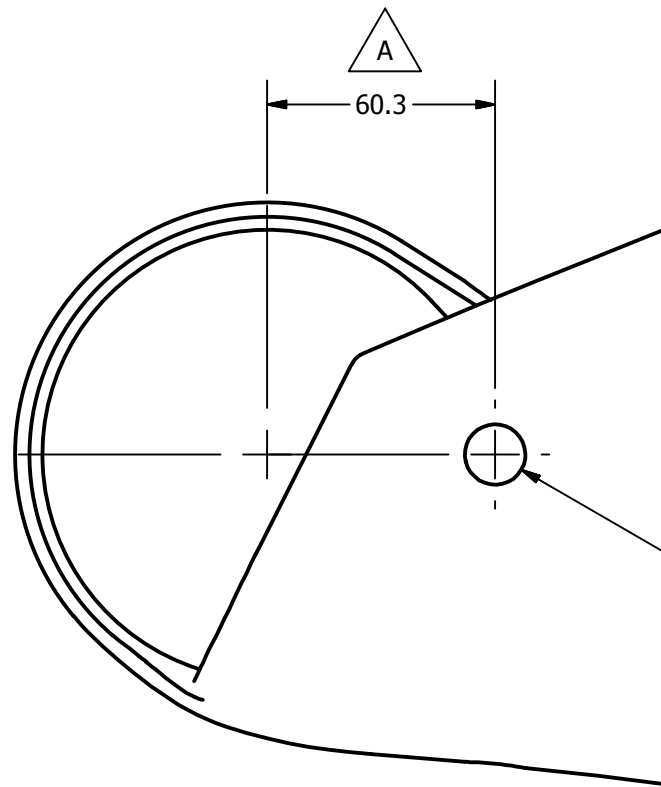
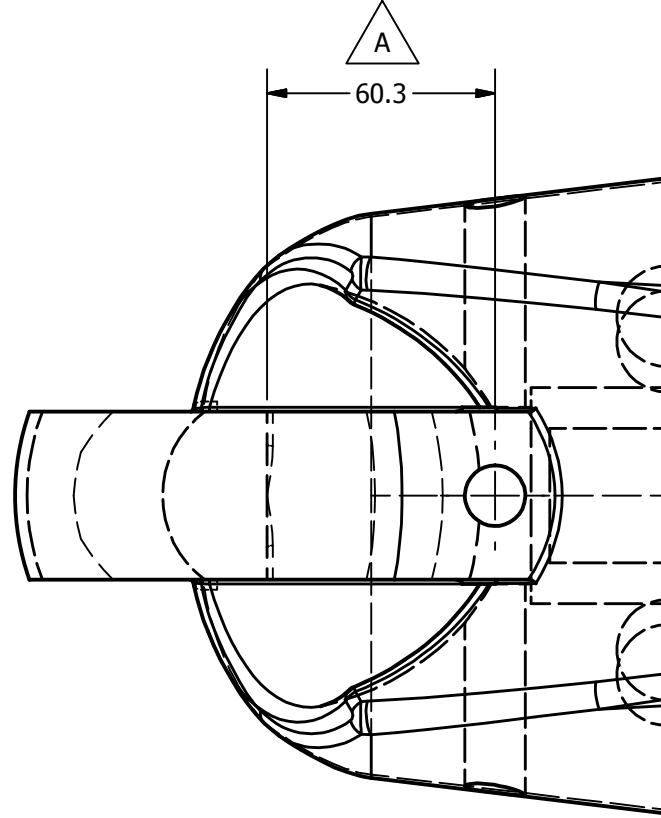
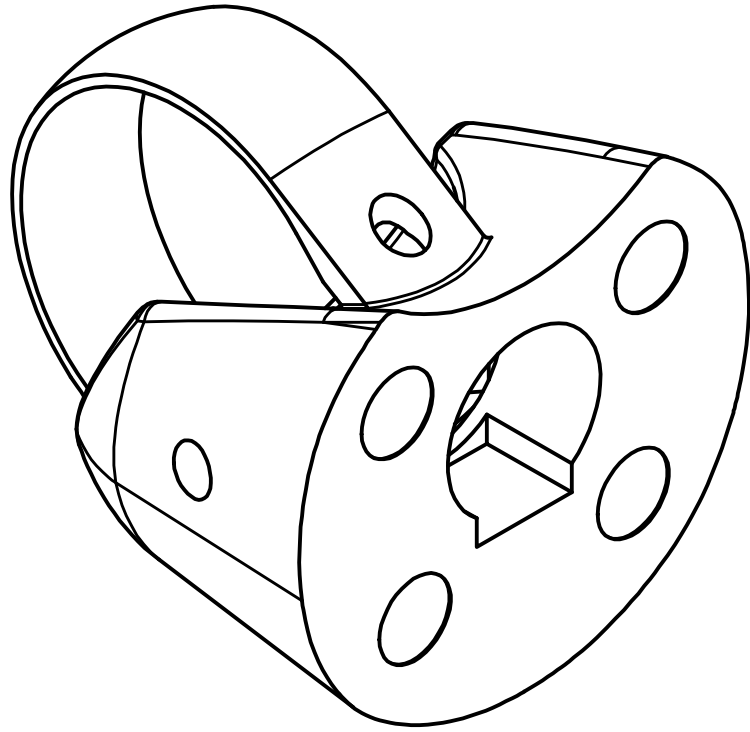


- NOTES:
1. THE OUTER SKIN IS VINYL AND FILLER MATERIAL IS A 3lb/in<sup>3</sup> POLYURETHANE EXPANDABLE FOAM.
  2. FEMUR SKIN IS SPLIT ALONG SIDE AS SHOWN AND A BONDED ZIPPER IS APPLIED ON OUTSIDE
  3. THIS DRAWING IS ONLY A REPRESENTATION OF THE SKIN AND IS NOT MEANT TO BE SCALED
  4. THE ZIPPER IS LENGTH IS 165.1 mm, BLACK POLYESTER, MESH = #9 METAL (BRASS) ZIPPER TYPE = SEPARATING STYLE, SLIDER TYPE = 30-0 (AUTO LOCK)
  5. WEIGHT: 1.00 ±0.05KG.



DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION			
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    TYPICAL 0.1    1/16    0.125 0.2    1/8    0.25 0.5    1/4    0.5 1    1/2    1 2    1    2 5    2    5 10    4    10 25    1    25 50    2    50 100    5    100 250    10    250 500    20    500 1000    50    1000		 THIGH FLESH - LEFT		472-5100-1 1 FLESH VINYL S. RICE 8/17/2011	
472-5100-1 1 FLESH VINYL S. RICE 8/17/2011		SHOW HIDDEN & BREAK SHARP EDGES PREPARED BY TMV 9/12/2011		1 of 1 472-5503-1 A			
NEXT ASSEMBLY QTY 1		TOTAL QTY IN DUMMY 1		DATE 1/27/2012 J. WANG			

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1KNS010 R7 AND CONVERTED TO METRIC FOR THOR-M; 60.3 WAS 60	8/23/2011	JSJ



Ø16.00 ∇ THRU TYP

- NOTES:  
 1. REFERENCE HYBRID III 50TH KNEE FLESH 78051-5  
 2. TRIM FLAP SKIN FROM INSIDE KNEE

472-5100-2	1
472-5100-1	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	2

DO NOT SCALE DRAWING  
 THIRD ANGLE PROJECTION

TOLERANCES		
DECIMALS	ANGLES	FINISH
X ± 0.5	± 0.5	1.6
.XX ± 0.2		
.XXX ± 0.1		
.XXXX ± 0.01		

REMOVE BURRS & BREAK SHARP EDGES

PROJECT NO:	DATE:
MATERIAL:	DRAWN BY:
HEAT TREAT:	CHECKED BY:
FINISH:	ENGINEER:

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

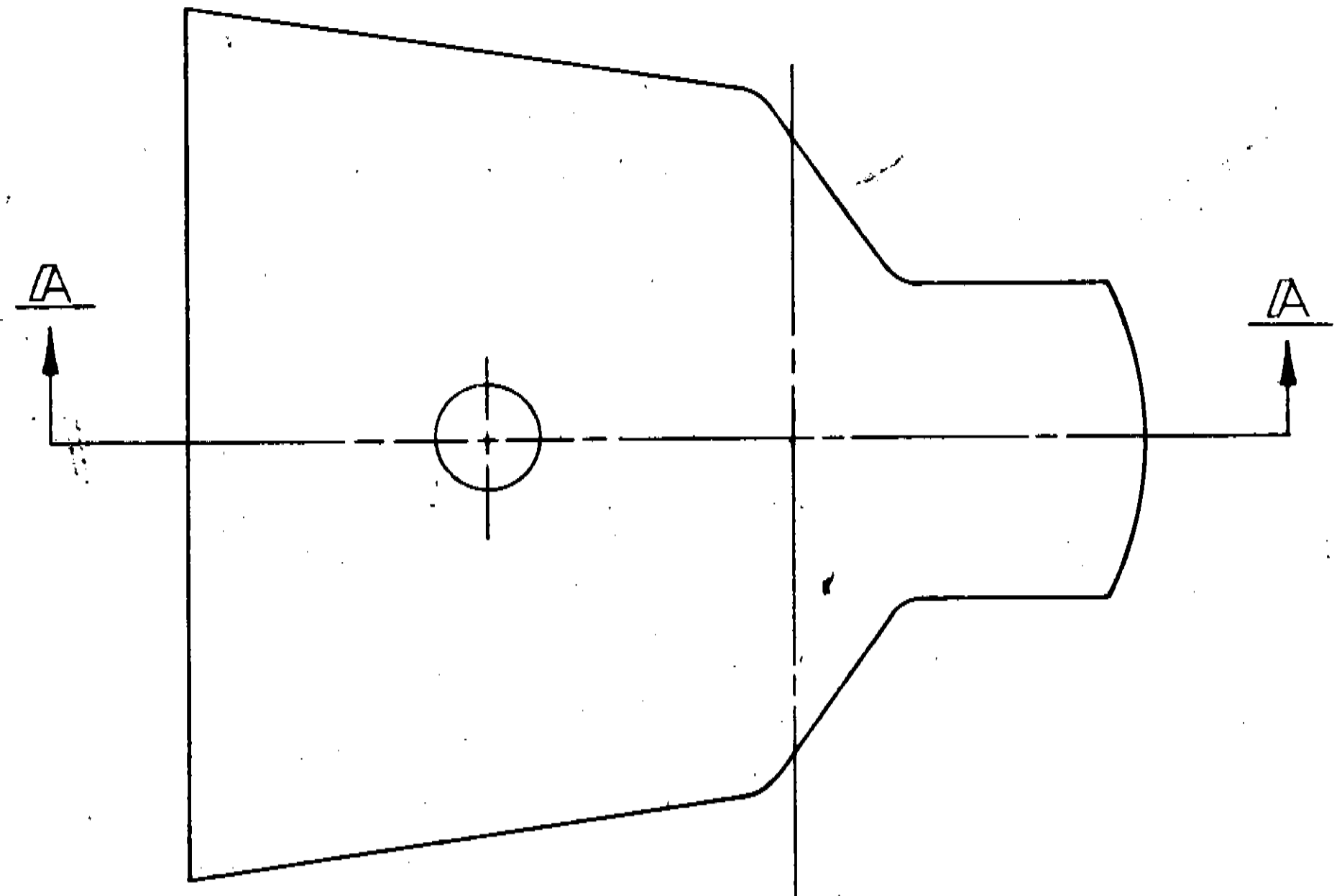
DESCRIPTION: KNEE FLESH LEFT/RIGHT (MODIFIED)

SIZE: A3 1 OF 1  
 SCALE: 1:2

DRAWING NO.: 472-5502

REV: A

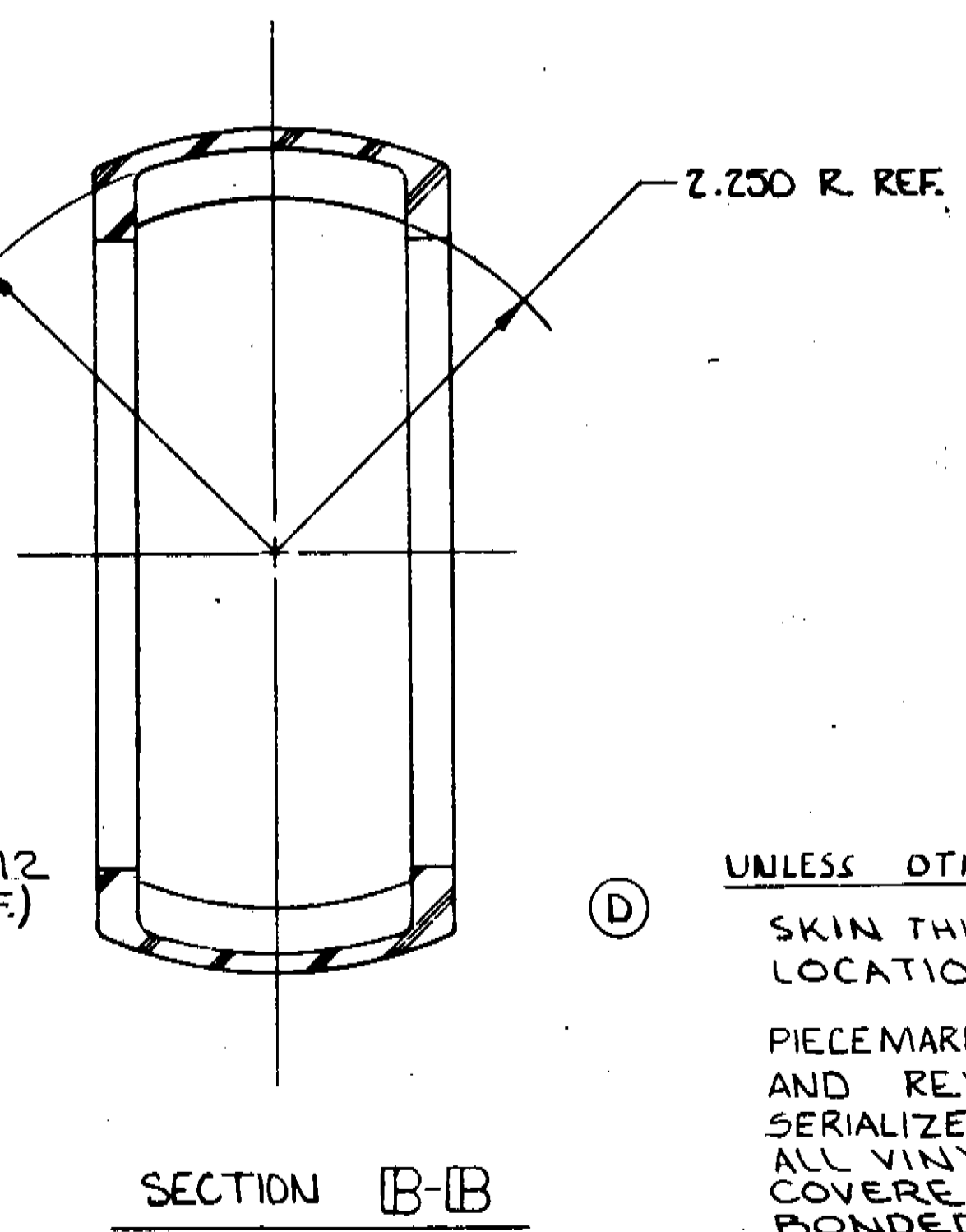
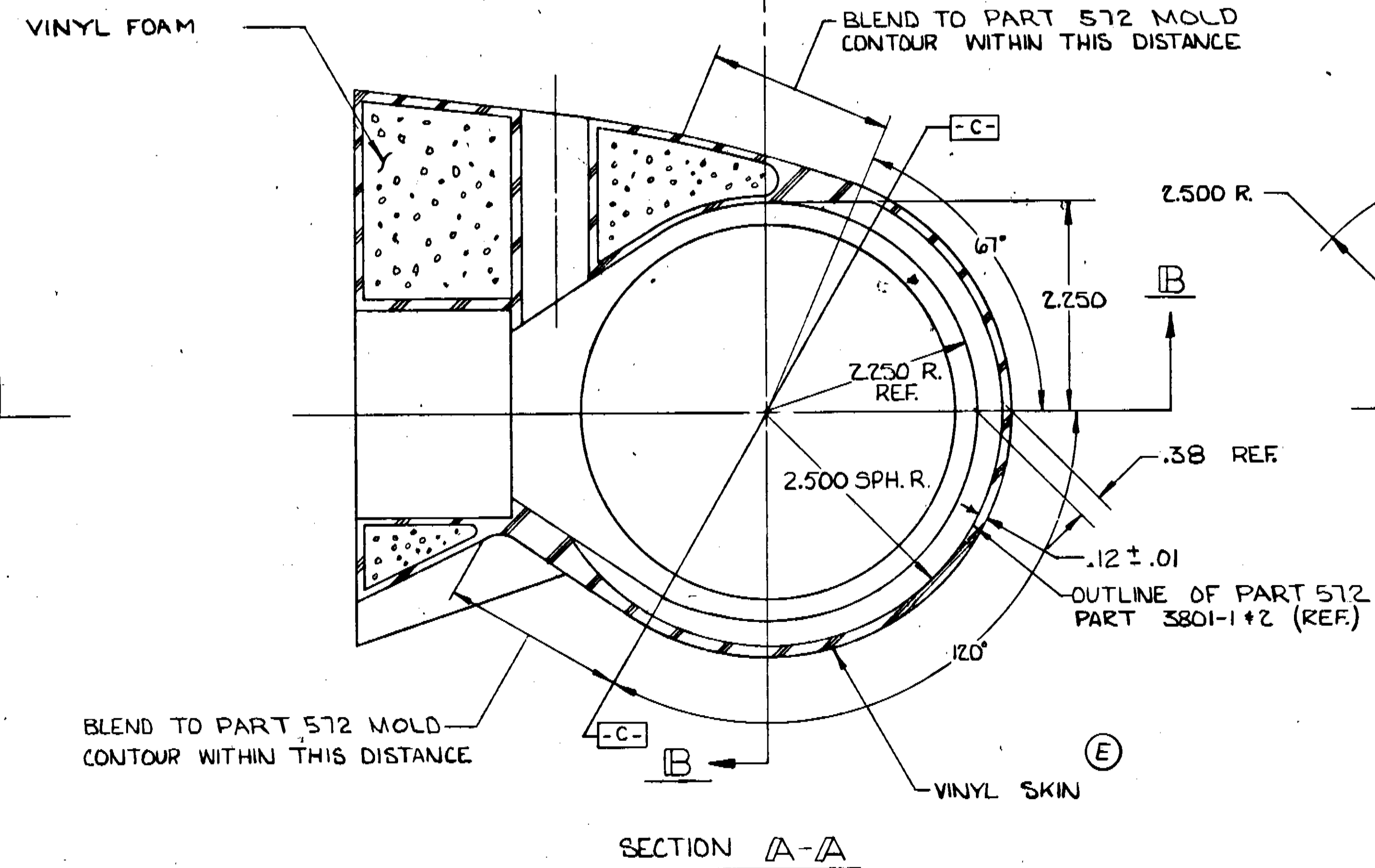
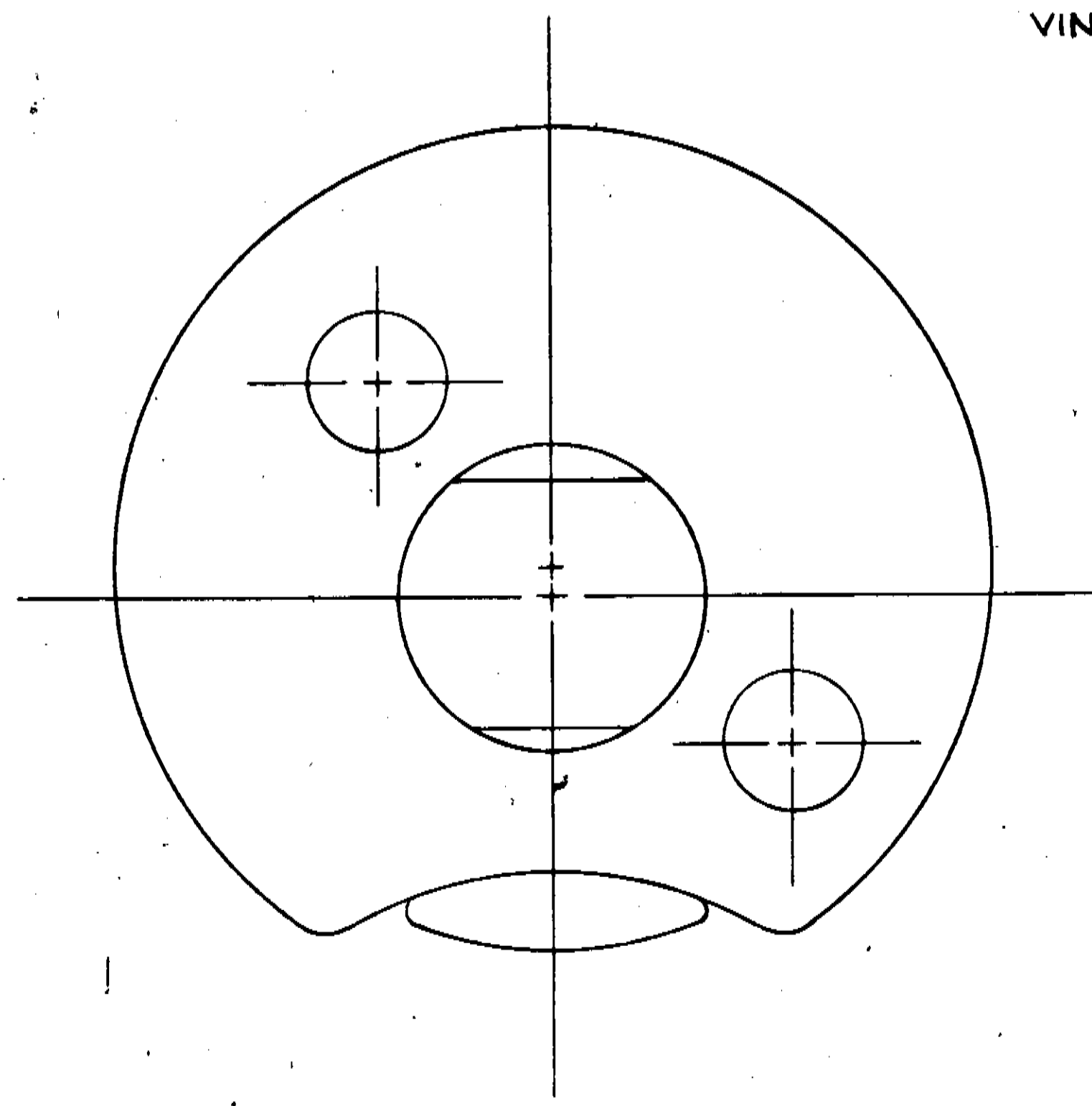
REVISION RECORD			
DATE	LET	CHANGES	BY
7-24-78	A	SKIN MATERIAL WAS-NHTSA-PT3	KLT
7-24-78	B	FOAM MATERIAL WAS-AVIP-	KLT
7-24-78	C	NOTES CHANGED	KLT
7-24-78	D	NOTES REMOVED	KLT
7-24-78	E	NHTSA-PT3 REMOVED	KLT



MOULDING PROCEDURES (REF.)			
TOTAL WT.	STRUCTURE WT	N/A	SKIN & FOAM WT.
SKIN MATERIAL - 78051-372-PT3			SKIN WT.
FOAM MATERIAL-78051-373-			FOAM WT.
SKIN CURE: MOLD TEMPERATURE			CURE TIME
FOAM PROCESSING: MOLD TEMPERATURE FOR POUR			
EXPANSION & CURE: OVEN TEMPERATURE			TIME

(A)  
(B)  
(C)

**NOTES:**  
ALL MOLDED ASSEMBLY LINEAR DIMENSIONS MUST CONFORM TO MODEL 78051-5,6 WITHIN ± 0.020 INCHES.  
USE MODEL NO. 78051-5 (LEFT), 78051-6 (RIGHT) FOR MOLDMAKING



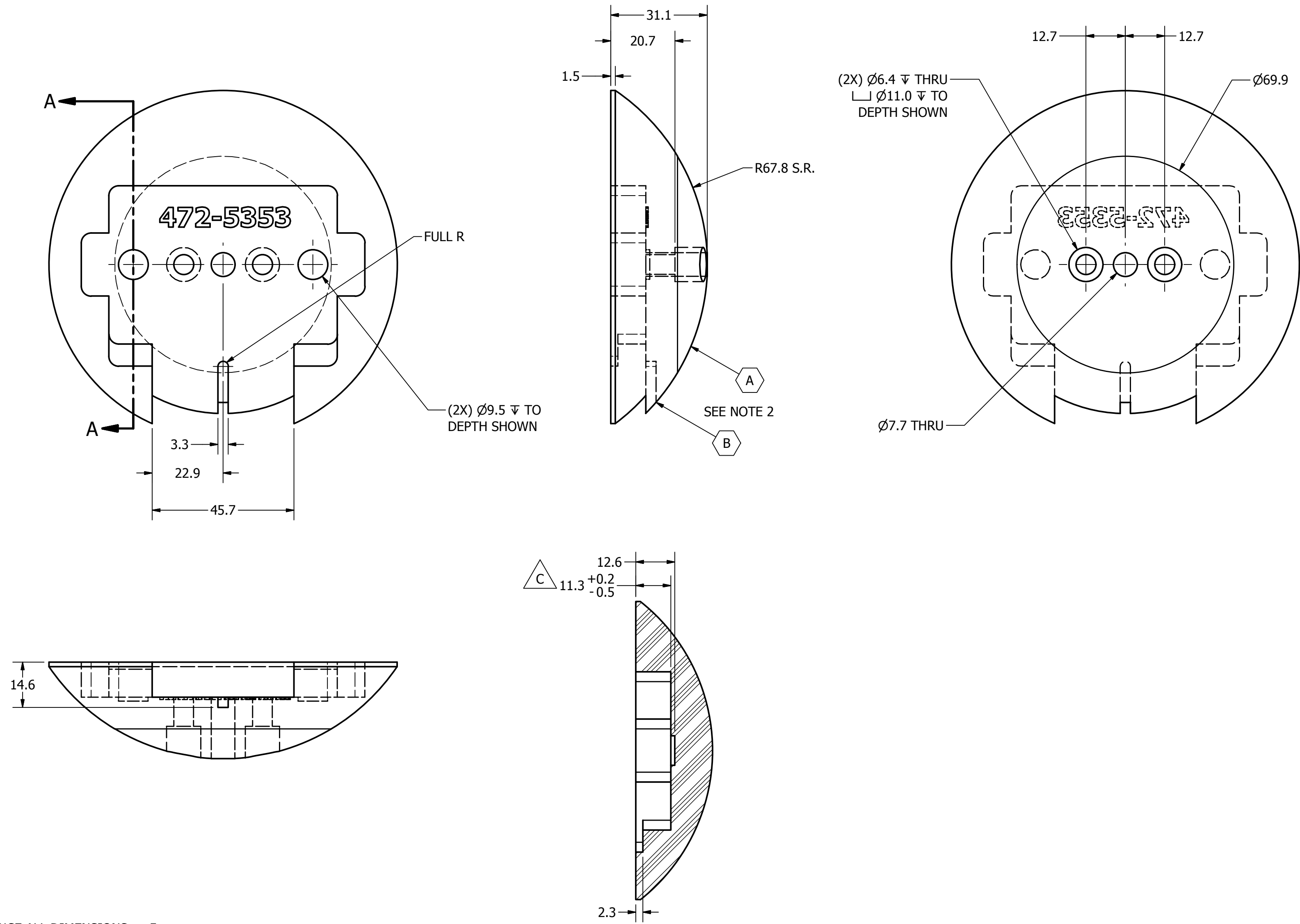
(D) **UNLESS OTHERWISE SPECIFIED:**  
SKIN THICKNESS AT ANY LOCATION TO BE 0.06 ± 0.03-  
PIECEMARK USING PART NUMBER AND REVISION LETTER-  
SERIALIZE WITH HOT IRON-  
ALL VINYL FOAM TO BE COVERED BY & SECURELY BONDED TO VINYL SKIN-  
ASSY WEIGHT: 1.54 ± 0.10 LBS

NOTE: READ CAREFULLY BEFORE STARTING; REPORT ALL ERRORS

DO NOT SCALE UNLESS OTHERWISE SPECIFIED. ALLOWABLE VARIATION ON ALL DIMENSIONS: DECIMALS: ± .015 FRACTIONS: ± 1/32 ANGLES: ± 5° FINISH:	DWG. BY: J. WILSON ENGR.: M. WILSON DATE: 5-20-78 PROJ. NO.: 78-105-103 MATERIAL:	<b>GM</b> PROVING GROUND GENERAL MOTORS CORPORATION TITLE: KNEE FLESH & SKIN ASSY-MOLDED-HYBRD III
HEAT TREAT:	SCALE: FULL SHEET	DWG. NO. 78051-5-L.H. SHOWN 78051-6-R.H. OPP.



REVISION HISTORY				
REV	ZONE	DESCRIPTION	DATE	BY
A	GLOBAL	REPLACES T1KNM011, 012, 013 AND 014 FOR THOR-M	9/7/2011	KHS
B	GLOBAL	MATERIAL A WAS 37 +/- 3; MATERIAL B WAS 75 +/- 3	4/20/12	KHS
C	70812	ADDED TOLERANCE TO 11.3 mm DIMENSION	1/22/13	KHS

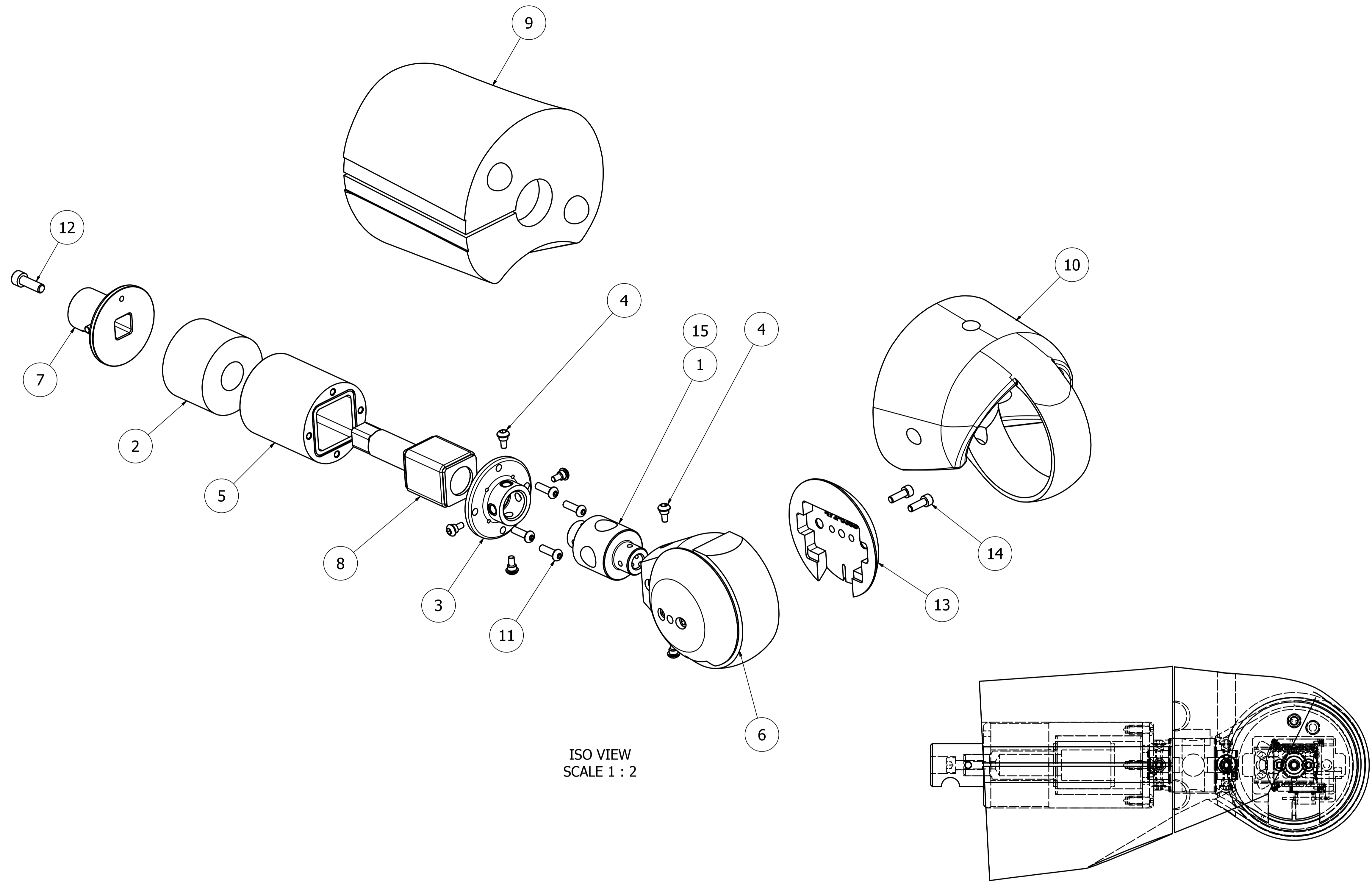


NOTE:  
 1. TOLERANCE ALL DIMENSIONS: ±.5 mm  
 2. MATERIAL A: URETHANE 37 ± 5 SHORE A  
 MATERIAL B: URETHANE 65 ± 5 SHORE D

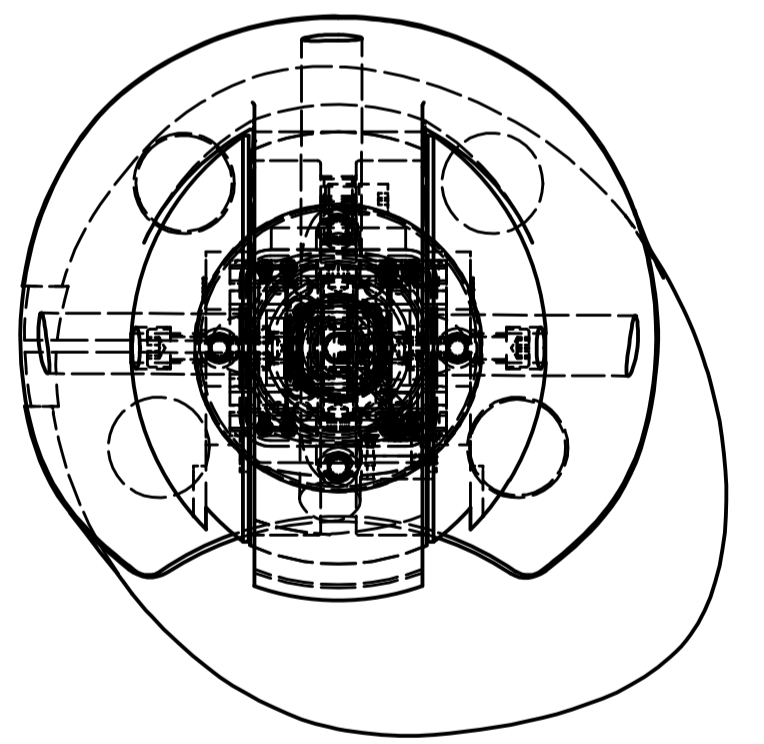
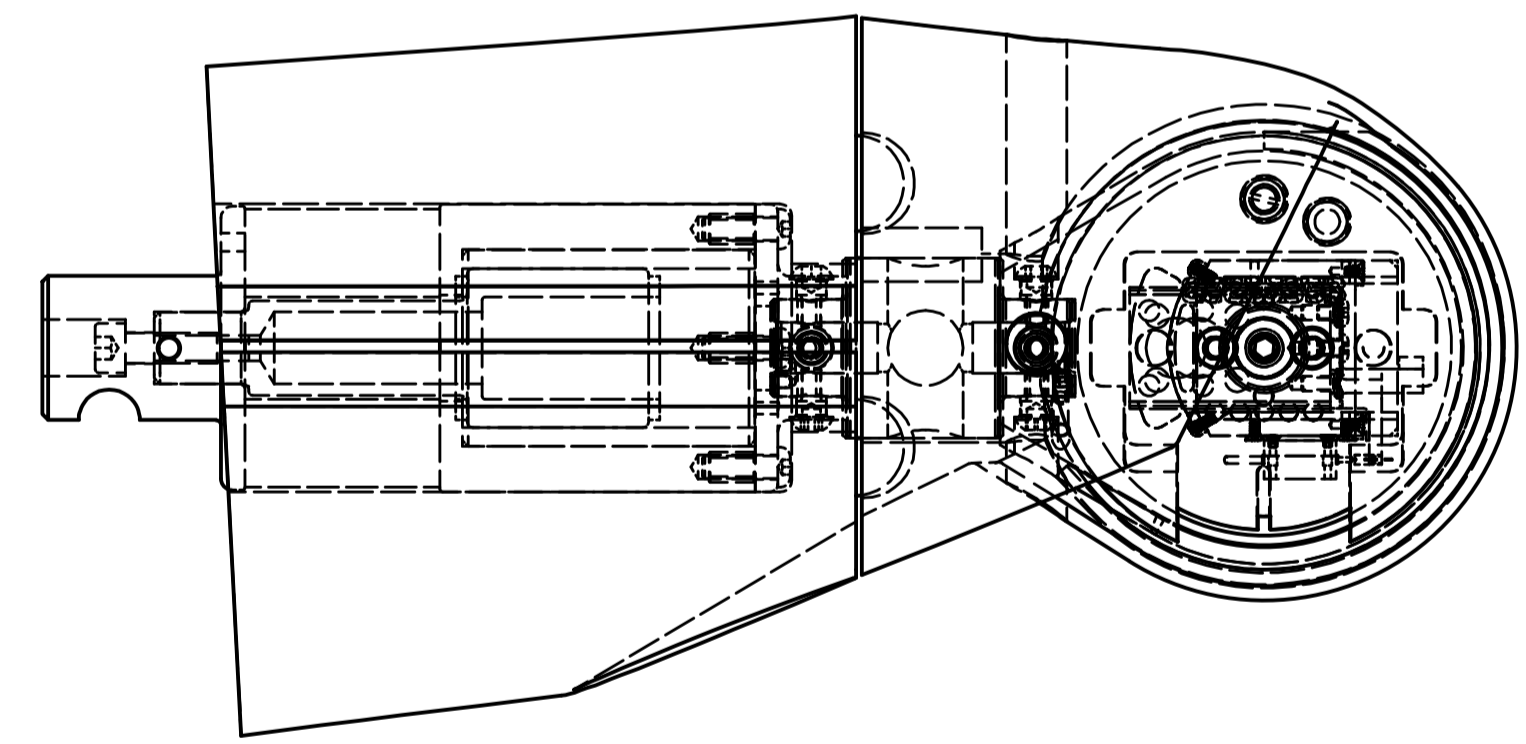
SECTION A-A

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DIGITALS ANGLES FINISH</small> X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.05		
PROJECT NO:	472-5600	2	DATE:	9/7/2011
MATERIAL:	472-5000	2	DRAWN BY:	KHS
NEXT ASSEMBLY:		QTY:	CHECKED BY:	
TOTAL QTY IN DUMMY:		4	ENGINEER:	J. WANG
			DATE:	1/26/2012
			SCALE:	1:1
				DESCRIPTION: KNEE COVER
				SIZE: C 1 OF 1
				DRAWING NO.: 472-5353

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM001 R0 FOR THOR-M; ADD THIGH FLESH 472-5503-2) AND KNEE FLESH (472-5502); REMOVED FEMUR BALL JOINT ASSY (472-4800-2)	8/29/2011	TKN
	B	ADD 472-5353 AND 9005217	2/14/2012	KHS
	C	ADDED PART #SA572-S120 - FEMUR LOAD CELL (OPTIONAL)	9/3/2015	DW



ISO VIEW  
SCALE 1 : 2



ITEM	QTY	PART NUMBER	DESCRIPTION
15	1	SA572-S120	FEMUR LOAD CELL (OPTIONAL)
14	4	9005217	SHCS M6 X 18 mm
13	2	472-5353	KNEE COVER
12	1	5000037	M8 X 1.25 X 25 LG. SHCS
11	4	5000438	SCREW, BHCS M6-1 X 20mm
10	1	472-5502	KNEE FLESH LEFT/RIGHT (MODIFIED)
9	1	472-5503-2	THIGH FLESH - RIGHT
8	1	472-5420	FEMUR PLUNGER ASSY.
7	1	472-5410	FEMUR BALL ATTACHMENT PLATE ASSY.
6	1	472-5700	KNEE CAP ASSY.,RIGHT
5	1	472-5200	FEMUR BUSHING ASSY.
4	8	W50-61042	MODIFIED BHSS M6 THREAD
3	1	472-5203	END CAP - FEMUR
2	1	472-5206	COMPRESSION ELEMENT-UPPER LEG
1	1	W50-51060	UNIVERSAL LEG L.C. STRUCTURAL REPLACEMENT

Parts List

DO NOT SCALE DRAWING

TOLERANCES

UNLESS OTHERWISE SPECIFIED

ASSEMBLY AND FIT TO BE USED

FINISHES

SHOW HIDDEN & BREAK SHARP EDGES

THIRD ANGLE PROJECTION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

RIGHT UPPER LEG ASSY.

472-5000-2 1

472-5000-2 1

TOTAL QTY IN DUMMY 1

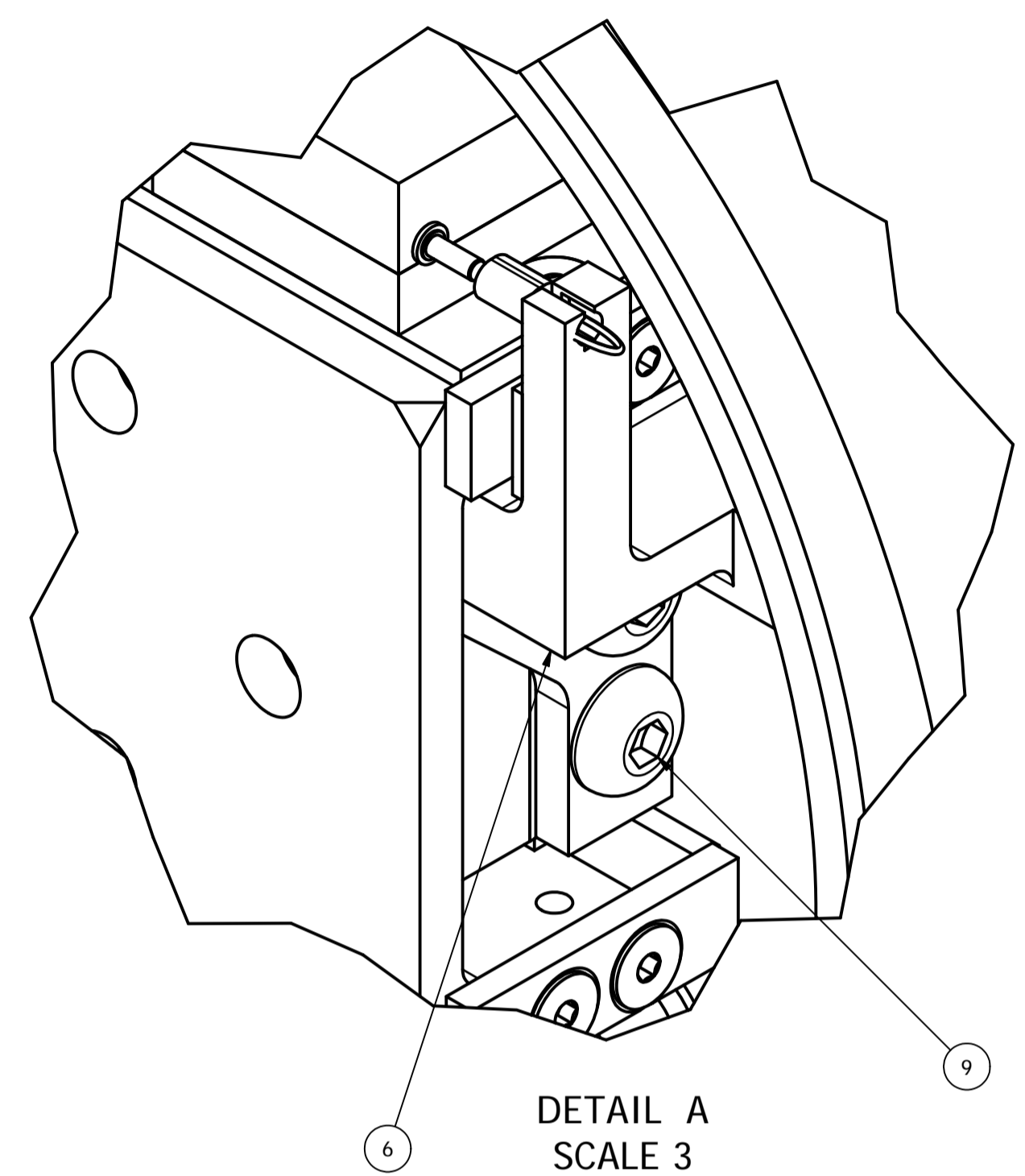
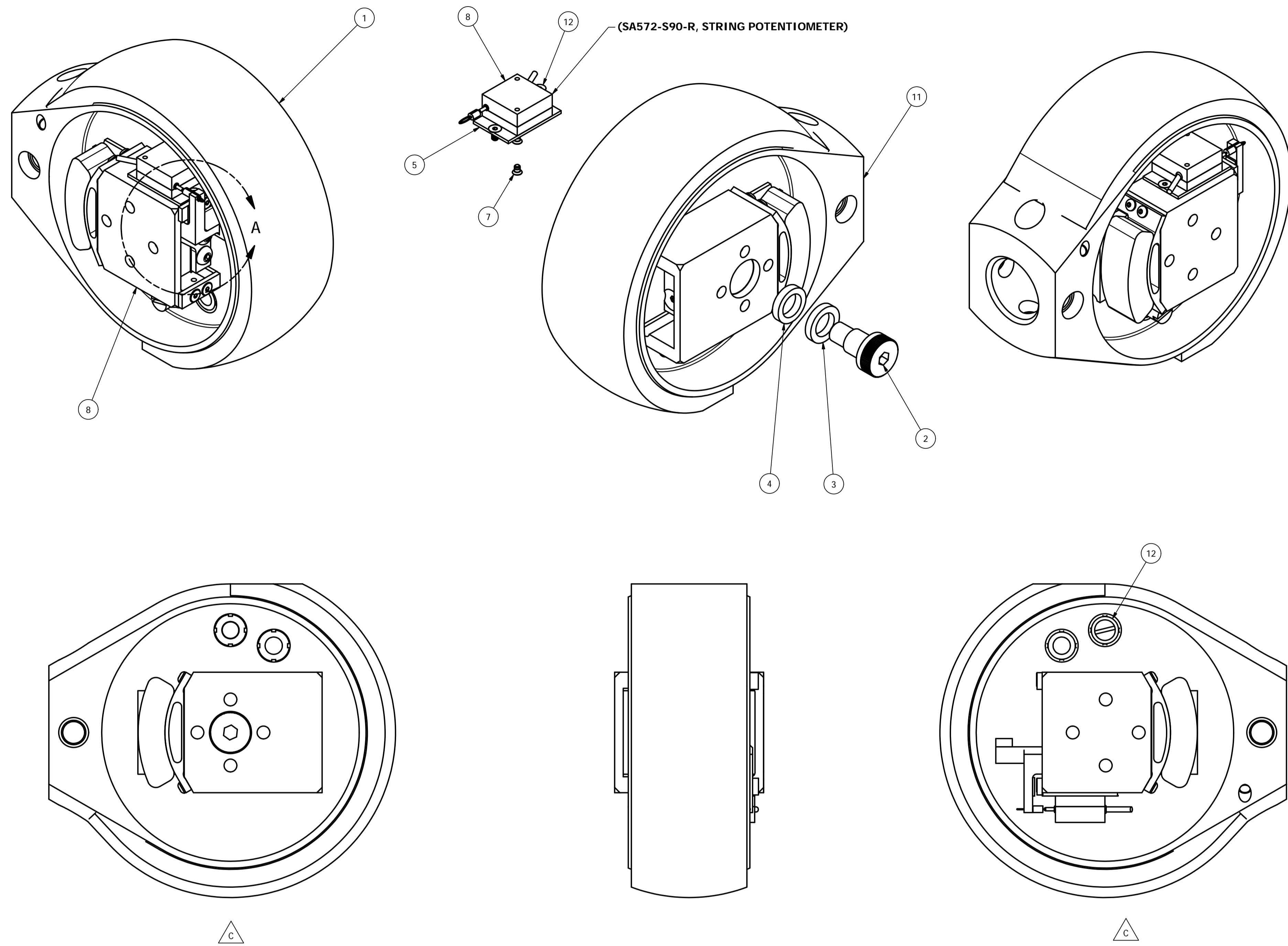
THNAH 8/29/2011

J. WANG 1/28/2012

1 of 1

472-5100-2

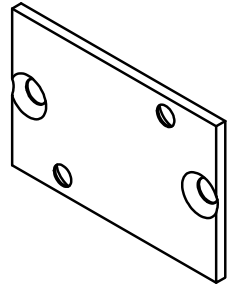
REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1FMM215 R0 AND CONVERTED TO METRIC FOR THOR-M	8/19/2011	JSJ
	B	5000723 WAS 5000595	7/19/2012	BK
	C	CORRECTED SIDE VIEWS	9/29/2015	DW



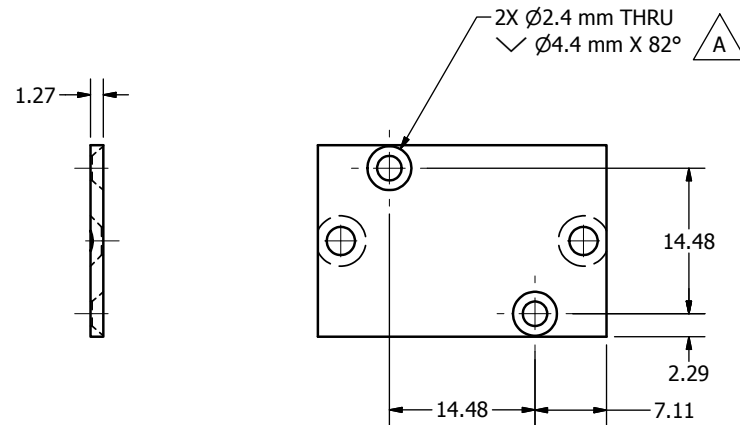
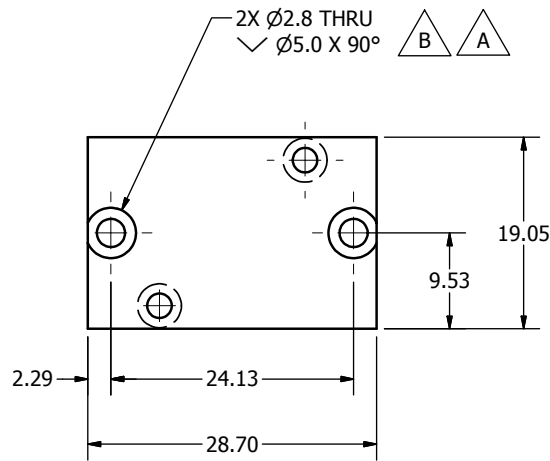
DETAIL A  
SCALE 3

ITEM	QTY	PART NUMBER	DESCRIPTION
12	2	5000723	SCREW, FNCS M2.5-0.45 x 5
11	1	472-5350	KNEE CAP ASSY
10	1	472-5763	PIN, KNEE STOP
9	2	5001075	BHCS, M4 X .7 X 6
8	1	472-5310	ASSY, INBOARD/OUTBOARD SLIDER
7	2	9004003	SCREW, FHCS #2-56 X 1/8" PHILLIPS HEAD
6	1	472-5307	ASSEMBLY, POT STRING HOLDER (RIGHT)
5	1	472-5308	PLATE, MOUNT
4	1	472-5304	WASHER, COMPRESSION
3	1	472-5303	WASHER, SLIDING KNEE
2	1	472-5302	BOLT, SHOULDER
1	1	472-5301	KNEE FLESH INSERT-MOLDED

472-5100-2		1	QTY	1	DESCRIPTION	KNEE CAP ASSY., RIGHT
NEXT ASSEMBLY		QTY	1	DESCRIPTION		
TOTAL QTY IN DUMMY		1	QTY	1	DESCRIPTION	472-5700



REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1638-2 REV F AND CONVERTED TO METRIC FOR THOR-M; DIMENSION Ø2.39 THRU C'SINK Ø4.39 X 90° WAS Ø2.26 ↓ THRU C'SINK Ø4.06 X 82°; Ø2.4 THRU C'SINK Ø4.4 X 82° WAS Ø2.26 ↓ THRU C'SINK Ø4.06 X 82°; FINISH WAS BLUE ANNOIDIZED (OPTIONAL)	8/19/2011	JSJ
	B	Ø2.8 C'SINK Ø5.0 WAS Ø2.39 C'SINK Ø4.39	7/19/2012	BK



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-5700	MATERIAL:	Aluminum-6061-T6	DESCRIPTION:
DRAWN BY:	KSG	DATE:	8/17/2011	PLATE, MOUNT
CHECKED BY:		ENGINEER:	J. WANG	DATE:
HEAT TREAT:		FINISH:	CLEAR ANODIZE	DATE:
TOTAL QTY IN DUMMY	1	FINISH:	CLEAR ANODIZE	DATE:



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

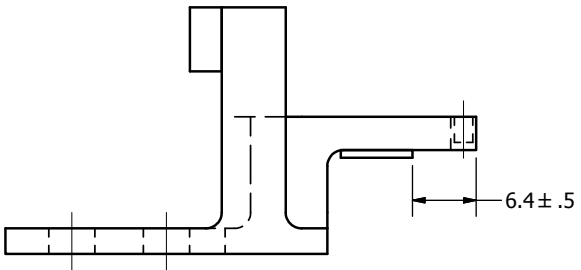
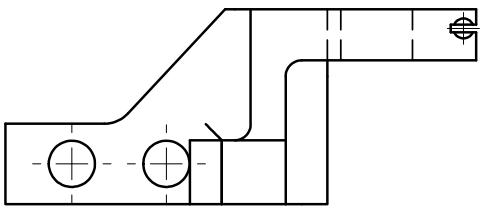
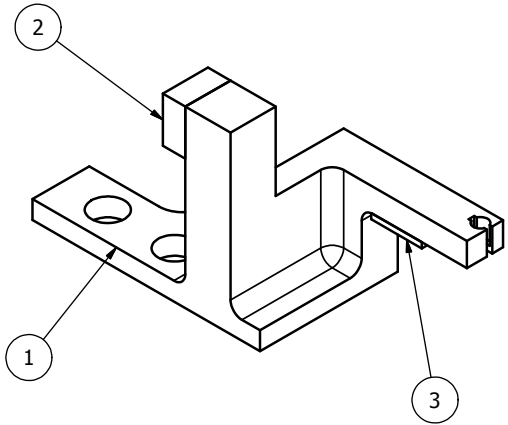
PLATE, MOUNT

SIZE: A3  
 SHEET: 1 OF 1  
 SCALE: 2:1

DRAWING NO.: 472-5308

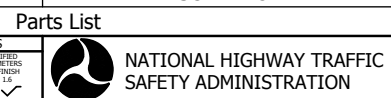
REV: B

REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1650-1 REV G AND CONVERTED TO METRIC FOR THOR-M; ADD NOTES 1, 2, 3, 5; ADDOR EQUIVALENT TO NOTE 4	8/19/2011	JSJ

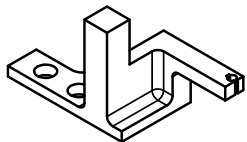


NOTES:  
 BONDING INSTRUCTIONS:  
 1. SAND SURFACES TO BE BONDED.  
 2. CLEAN SURFACES WITH MEK.  
 3. CLEAN SURFACES WITH ALCOHOL.  
 4. APPLY LOCTITE 411, OR EQUIVALENT, TO ONE SURFACE.  
 5. PRESS PARTS TOGETHER AND APPLY PRESSURE FOR 30 SECONDS AFTER ADHESIVE BECOMES TACKY.

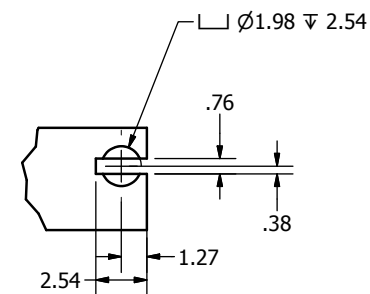
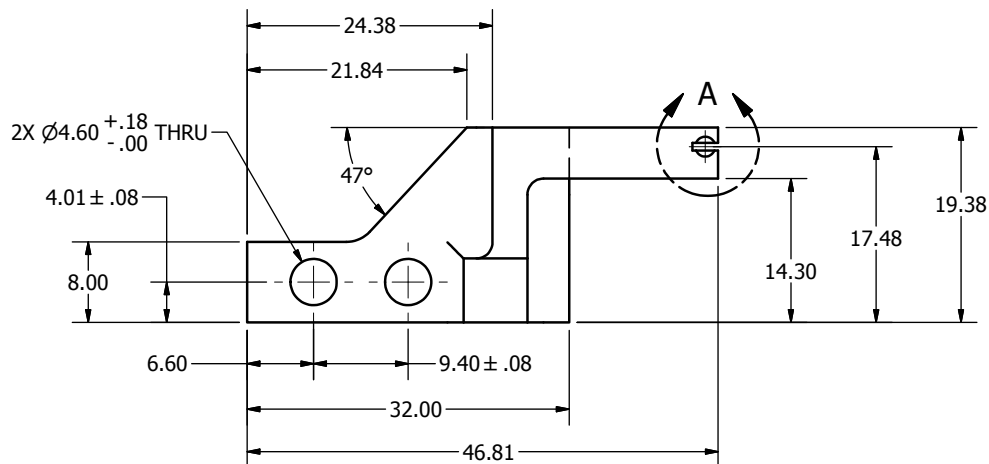
ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-5736	BUMPER, RETURN STOP
2	1	472-5735	BUMPER, EXTENSION STOP
1	1	472-5737-2	HOLDER, POT STRING (RIGHT)



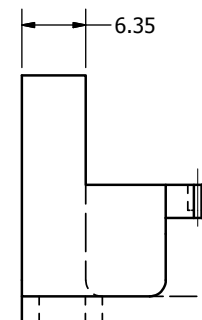
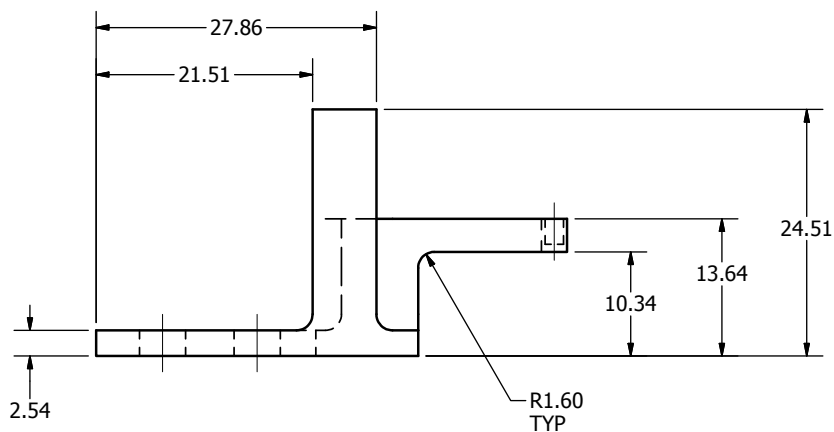
Parts List			
DO NOT SCALE DRAWING		TOLERANCES	
PROJECT NO:	472-5700	UNLESS OTHERWISE SPECIFIED:	
MATERIAL:		DIMENSIONS ARE IN MILLIMETERS	
CHECKED BY:	TMV	DECIMALS ANGLES FINISH	
ENGINEER:	J. WANG	0.0 0.1 0.2 0.5 1.0	
DATE:	1/27/2012	X.X ± 0.2	
SCALE:	2:1	X.XX ± 0.3	
		X.XXX ± 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
DATE:	8/17/2011		
DATE:	9/18/2011		
DATE:	1/27/2012		
SIZE:	A3	SHEET:	1 OF 1
DRAWING NO.:	472-5307	REV.:	A



SCALE 1.000



DETAIL A  
SCALE 4 : 1

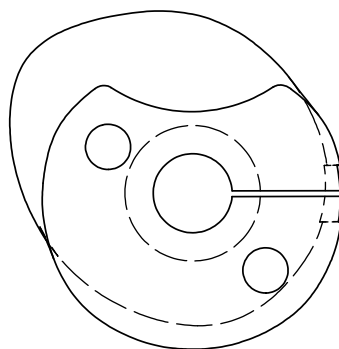
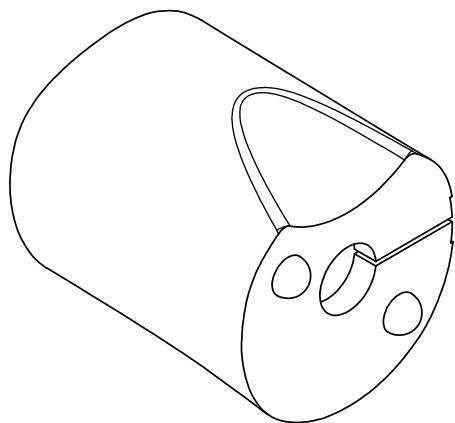


REVISION HISTORY				
ECO #	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 880995-1648-2 REV G AND CONVERTED TO METRIC FOR THOR-M; FINISH WAS ELECTROLESS NICKEL PLATE .0003 MAX.	8/19/2011	JSJ

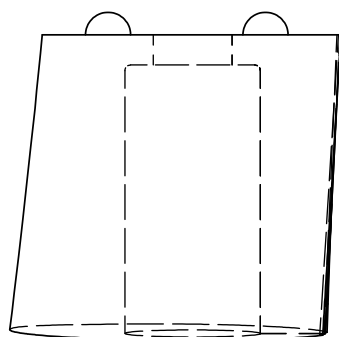
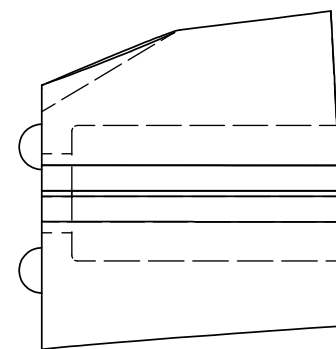
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 1.6 XX .02 0.51 XXX .03 XXXX 0.01		
PROJECT NO:	472-5307	MATERIAL:	4140 STEEL	DESCRIPTION: HOLDER, POT STRING (RIGHT)
DATE:	8/17/2011	CHECKED BY:	KSG	
DESIGNED BY:	TMV	DATE:	9/11/2011	
FINISH:	ELECTROLESS NICKEL PLATE .008 MAX	ENGINEER:	J. WANG	SCALE: 2:1 SIZE: A3 SHEET: 1 OF 1
TOTAL QTY IN DUMMY	1	DATE:	1/28/2012	DRAWING NO.: 472-5737-2

REV: A

REVISION HISTORY				
ECO #	REV.	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TIFMS010 R2 AND CONVERTED TO METRIC FOR THOR-M	8/22/2011	J5J



CLOSURE DIRECTION →

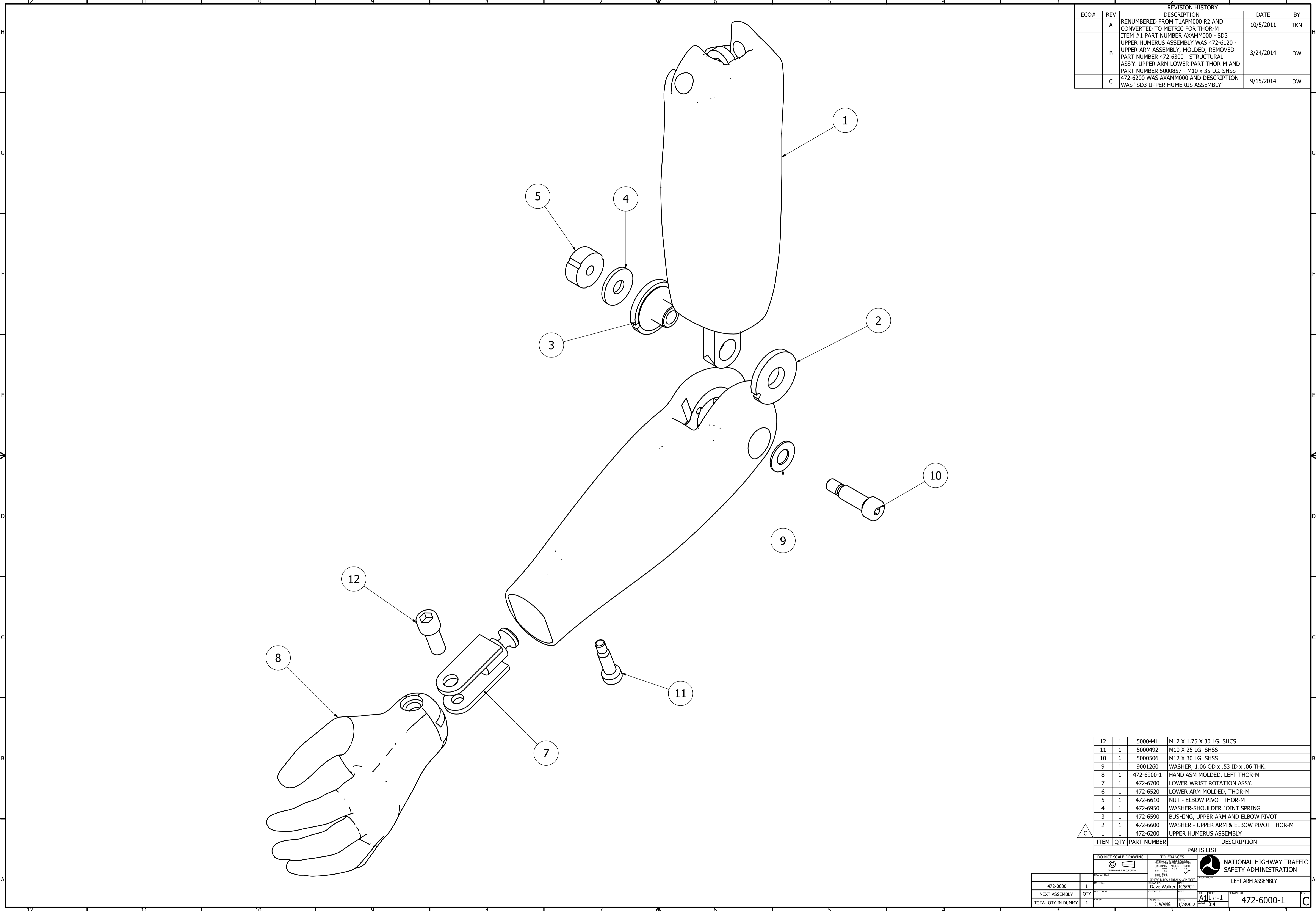


**NOTES:**

1. THE OUTER SKIN IS VINYL AND FILLER MATERIAL IS A 3lb/in<sup>3</sup> POLYURETHANE EXPANDABLE FOAM.
2. FEMUR SKIN IS SPLIT ALONG SIDE AS SHOWN AND A BONDED ZIPPER IS APPLIED ON OUTSIDE
3. THIS DRAWING IS ONLY A REPRESENTATION OF THE SKIN AND IS NOT MEANT TO BE SCALED
4. THE ZIPPER IS LENGTH IS 165.1 mm, BLACK POLYESTER, MESH = #9 METAL (BRASS) ZIPPER TYPE = SEPARATING STYLE, SLIDER TYPE = 30-0 (AUTO LOCK)
5. WEIGHT: 1.00±0.05KG.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
 THIRD ANGLE PROJECTION		DIMENSIONS UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    DECIMALS    FRACTIONS 0.1    1/10    0.01    1/100 0.2    1/5    0.02    1/50 0.5    1/20    0.05    1/20 1    1/10    0.1    1/10 2    1/5    0.2    1/5 5    1/20    0.5    1/20 10    1/10    1    1/10 20    1/5    2    1/5 50    1/20    50    1/20 100    1/10    100    1/10 200    1/5    200    1/5 500    1/20    500    1/20 1000    1/10    1000    1/10			
PART NO:		DESIGNED BY:	S. RICE	DATE:	8/17/2011
472-5100-2	1	SEE NOTES			
NEXT ASSEMBLY	QTY	DESIGNED BY:	TMV	DATE:	9/12/2011
TOTAL QTY IN DUMMY	2	DESIGNED BY:	J. WANG	DATE:	11/27/2012
				THIGH FLESH - RIGHT 472-5503-2	A21 of 1 1 .500

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1APM000 R2 AND CONVERTED TO METRIC FOR THOR-M	10/5/2011	TKN
	B	ITEM #1 PART NUMBER AXAMM000 - SD3 UPPER HUMERUS ASSEMBLY WAS 472-6120 - UPPER ARM ASSEMBLY, MOLDED; REMOVED PART NUMBER 472-6300 - STRUCTURAL ASSY. UPPER ARM LOWER PART THOR-M AND PART NUMBER 5000857 - M10 x 35 LG. SHSS 472-6200 WAS AXAMM000 AND DESCRIPTION WAS "SD3 UPPER HUMERUS ASSEMBLY"	3/24/2014	DW
	C		9/15/2014	DW

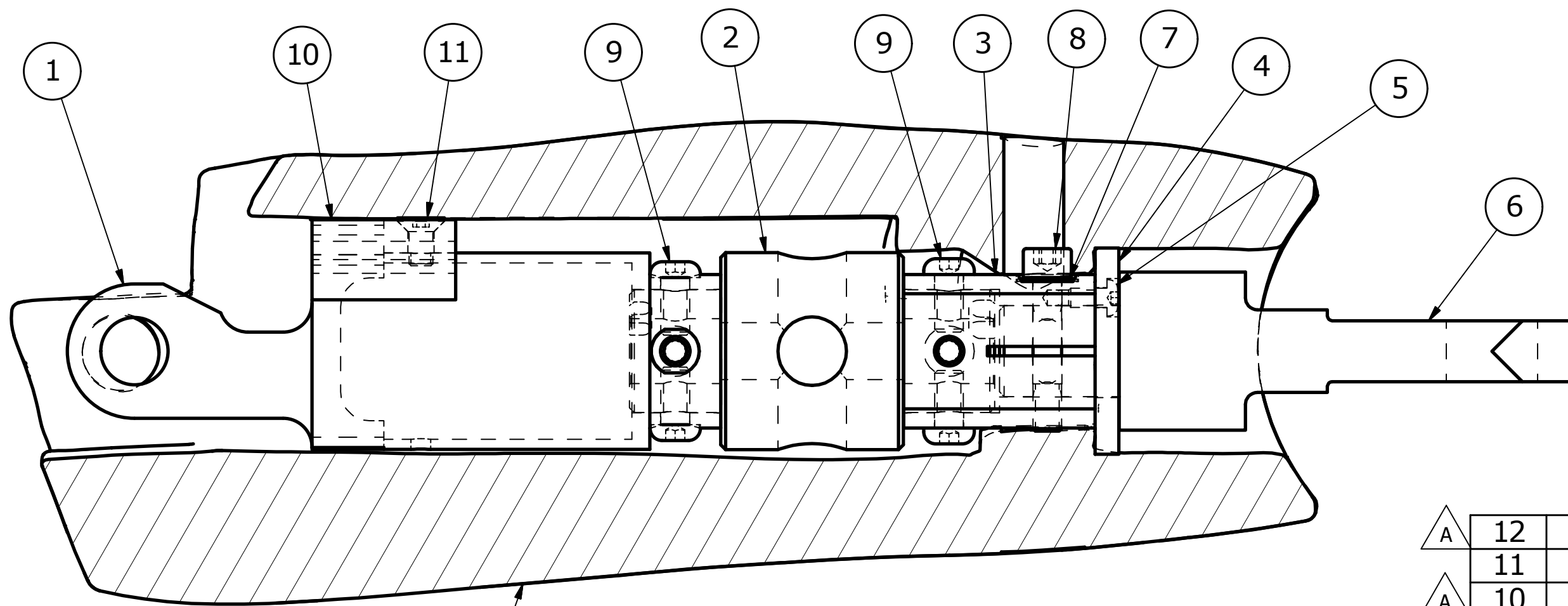
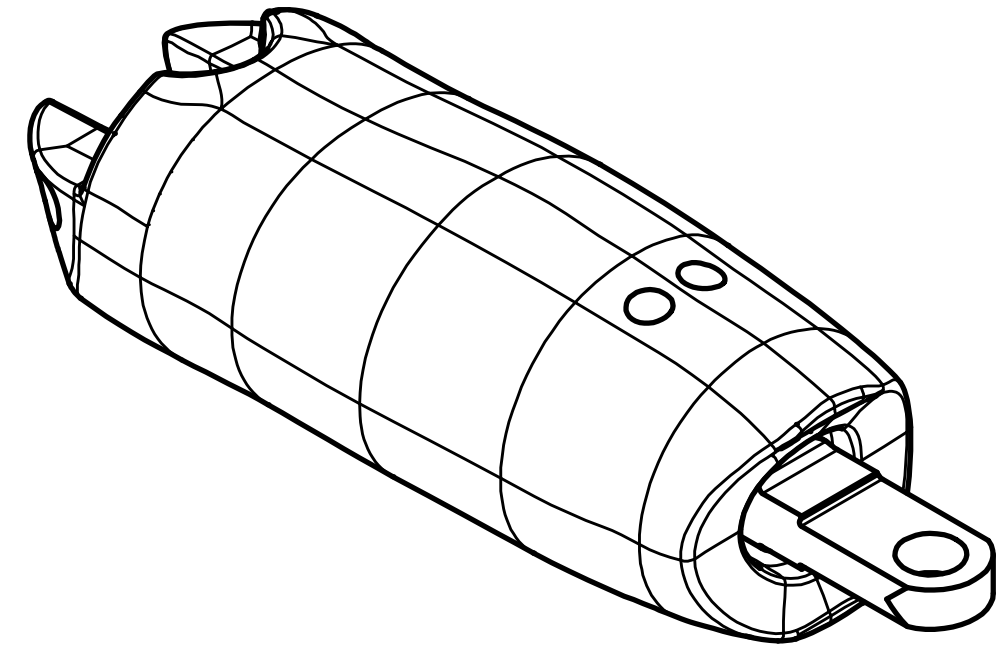
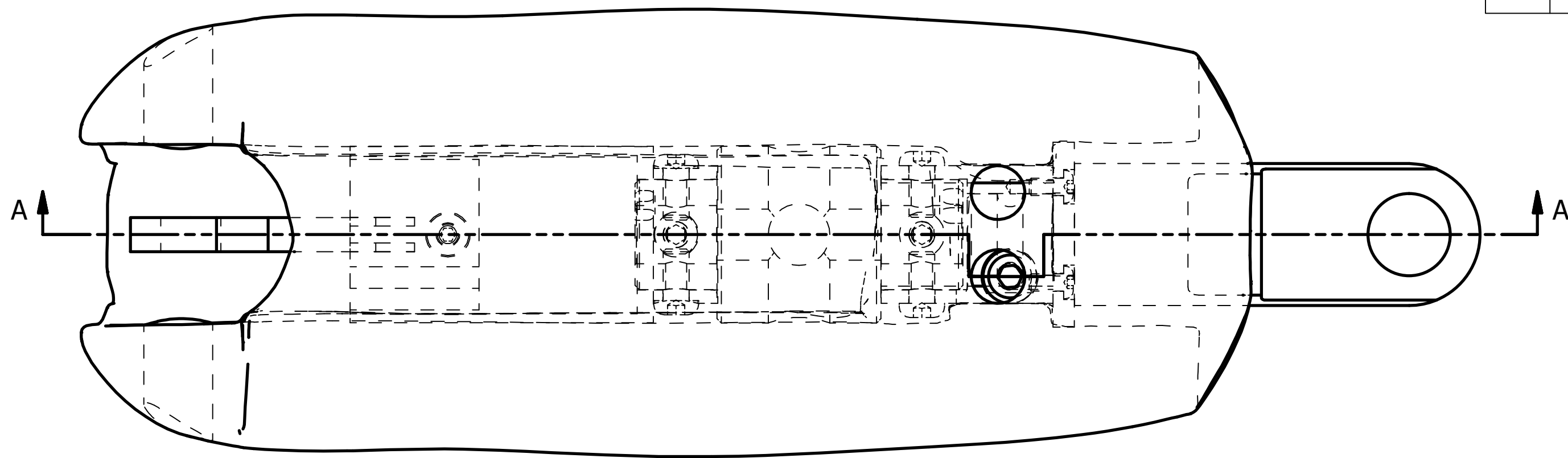


ITEM	QTY	PART NUMBER	DESCRIPTION
12	1	5000441	M12 X 1.75 X 30 LG. SHCS
11	1	5000492	M10 X 25 LG. SHSS
10	1	5000506	M12 X 30 LG. SHSS
9	1	9001260	WASHER, 1.06 OD x .53 ID x .06 THK.
8	1	472-6900-1	HAND ASM MOLDED, LEFT THOR-M
7	1	472-6700	LOWER WRIST ROTATION ASSY.
6	1	472-6520	LOWER ARM MOLDED, THOR-M
5	1	472-6610	NUT - ELBOW PIVOT THOR-M
4	1	472-6950	WASHER-SHOULDER JOINT SPRING
3	1	472-6590	BUSHING, UPPER ARM AND ELBOW PIVOT
2	1	472-6600	WASHER - UPPER ARM & ELBOW PIVOT THOR-M
1	1	472-6200	UPPER HUMERUS ASSEMBLY

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 LEFT ARM ASSEMBLY  
 472-6000-1  
 11 OF 1  
 1/28/2012  
 J. WANG



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM000, TITLE WAS "SD3 UPPER HUMERUS ASSEMBLY", IN PARTS LIST 472-6210 WAS AXAMM010, 472-6220 WAS AXAMM001, 472-6230 WAS AXAMM002, 472-6240 WAS AXAMM003, 472-6250 WAS AXAMM014, 472-6260 & 472-6270 WAS AXAMM004	9/15/2014	DW



SECTION A-A  
SCALE 1 : 1

△ A	12	1	472-6270	UPPER ARM FLESH
△ A	11	1	5000084	SCREW, FHCS M5 x 0.8 x 10
△ A	10	1	472-6260	ARM FLESH SPACER
△ A	9	8	5000356	SCREW, BHCS M6 x 1 x 12
△ A	8	1	472-6250	SCREW, SHCS, M6 (MODIFIED)
△ A	7	1	5001176V	SPRING DISC WASHER, 12.5 x 6.2 x .5
△ A	6	1	472-6240	UPPER ARM, LOWER SECTION
△ A	5	2	5000103	SCREW, BHCS M4 x 0.7 x 8
△ A	4	1	472-6230	ARM END PLATE
△ A	3	1	472-6220	LOWER LOADCELL INTERFACE
△ A	2	1	W50-61041	STRUCTURAL REPLACEMENT
△ A	1	1	472-6210	UPPER HUMERUS WELDMENT

ITEM	QTY	PART NUMBER	DESCRIPTION
<b>PARTS LIST</b>			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>	
APPROVALS		DATE	
DRAWN JIM CLEVENGER		8/12/2013	
CHECKED			
MATERIAL		ENG	
HEAT TREAT		APPROVED	
FINISH			
SIZE C		DRAWING NUMBER 472-6200	
SCALE: 1:1		REV A	
		SHEET 1 OF 1	

4

3

2

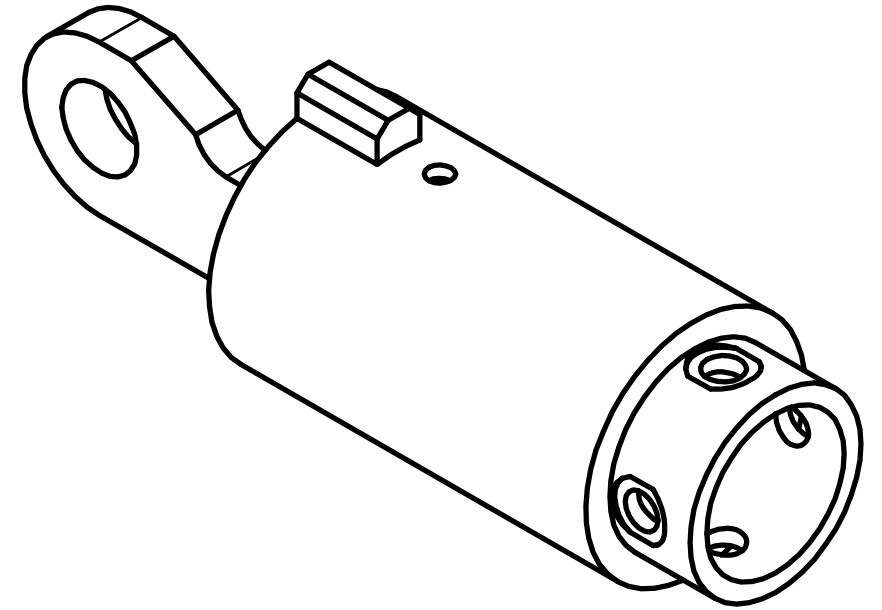
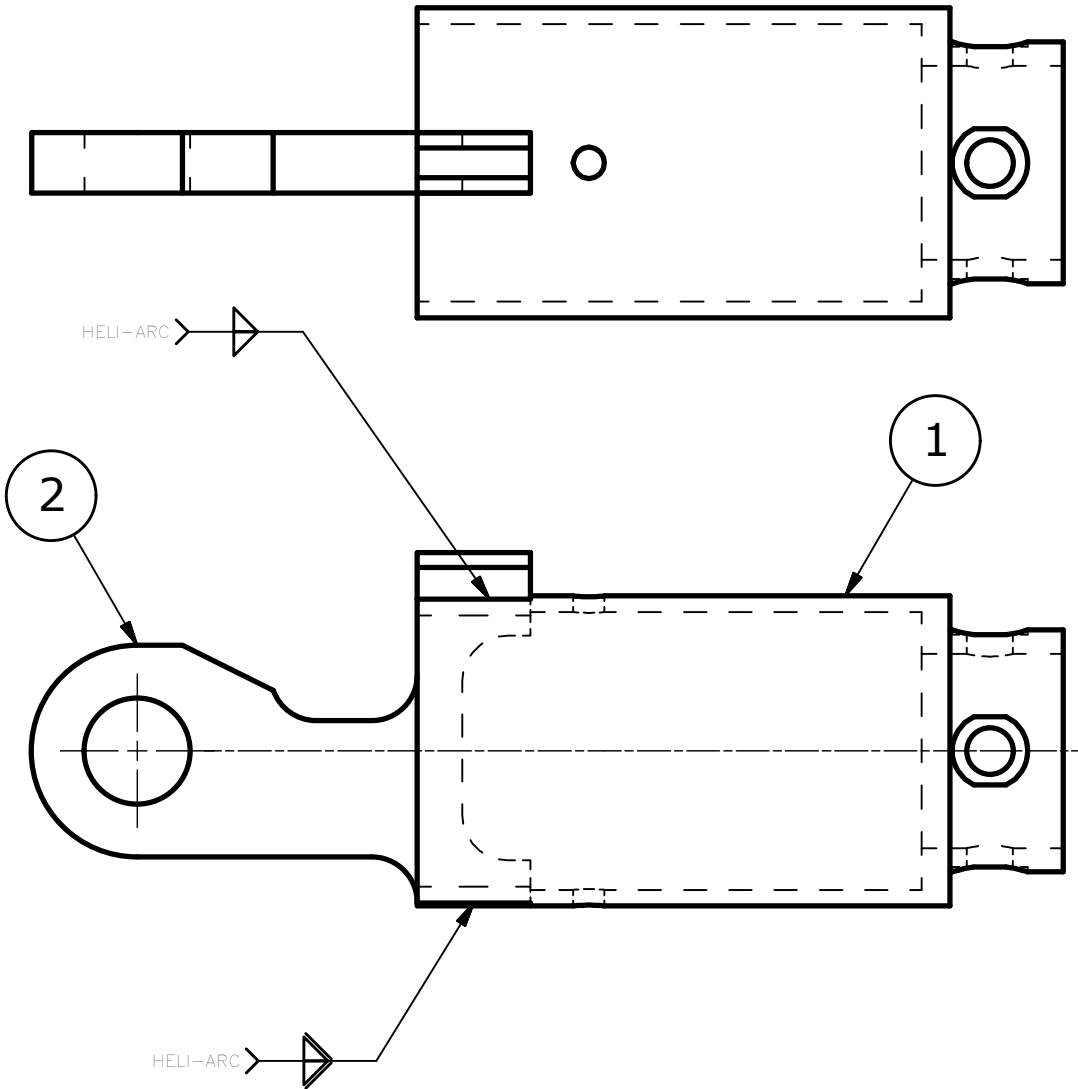
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REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM010, IN PARTS LIST 472-6211 WAS AXAMM012, 472-6212 WAS AXAMM011	9/15/2014	DW

B

A

A




B

A

A

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-6212	UPPER ARM MOUNT
1	1	472-6211	UPPER ARM TUBE

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		DRAWING NUMBER	
DRAWN JIM CLEVINGER		8/20/2013		472-6210	
CHECKED				REV A	
MATERIAL Steel, Mild, Welded		ENG		SIZE B	
HEAT TREAT		APPROVED		SHEET 1 OF 1	
FINISH				SCALE: 1:1	

4

3

2

1

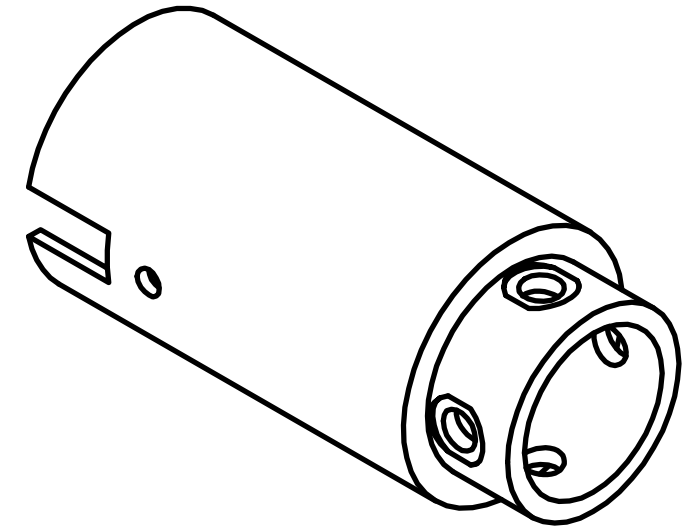
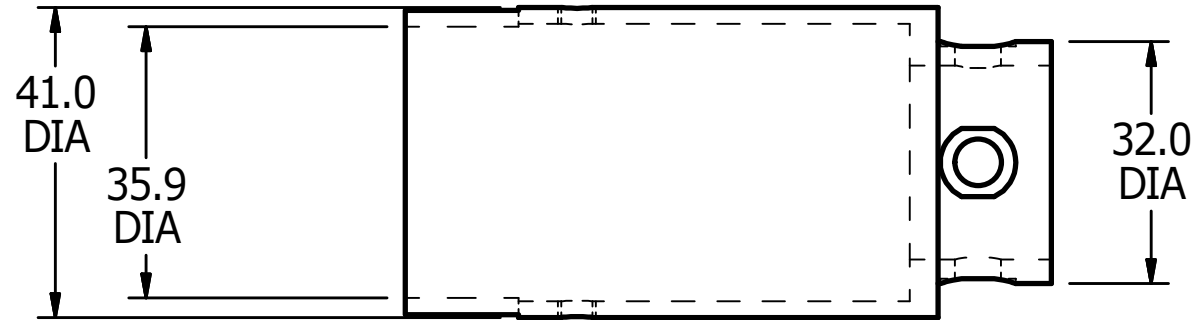
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3

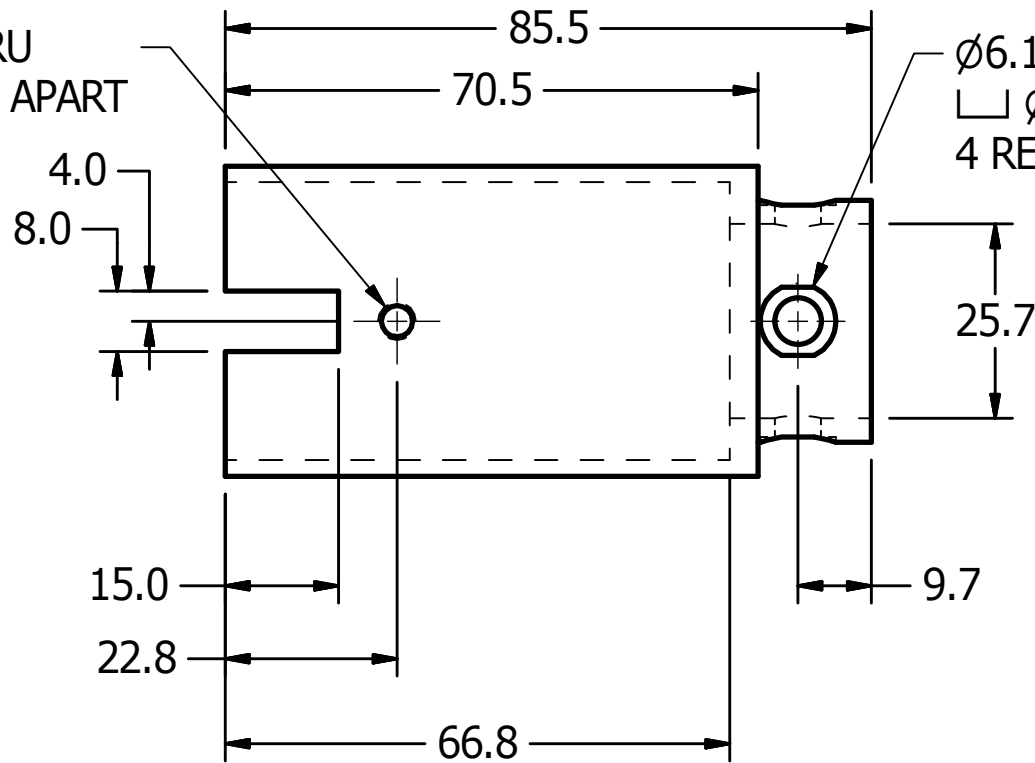
2

1

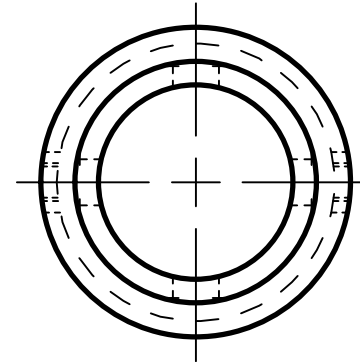
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	DESI
	A	DRAWING NUMBER WAS AXAMM012	9/15/2014	DW




M5x0.8 - THRU  
2 REQ - 180° APART



Ø6.1 THRU TO BORE  
□ Ø10.0 x .75 DEEP  
4 REQ - 90° APART



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>			NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		UPPER ARM TUBE	
MATERIAL Steel	DRAWN JIM CLEVINGER	8/20/2013	SIZE B	DRAWING NUMBER 472-6211	REV A
HEAT TREAT	CHECKED		SCALE: 1:1	SHEET 1 OF 1	
FINISH	ENG				
	APPROVED				

4

3

2

1

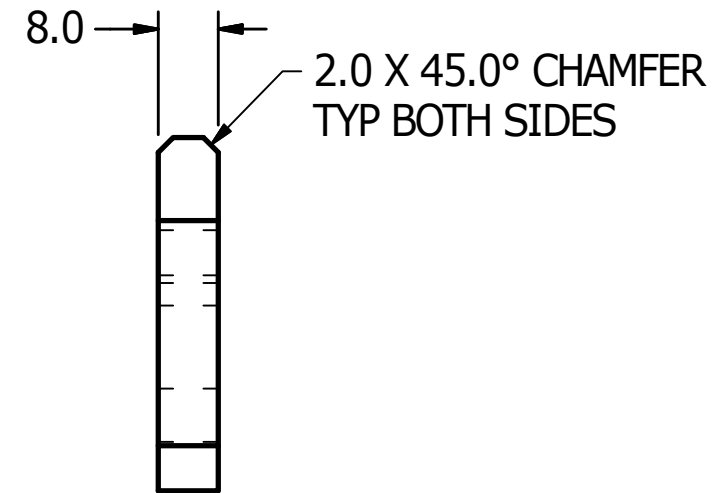
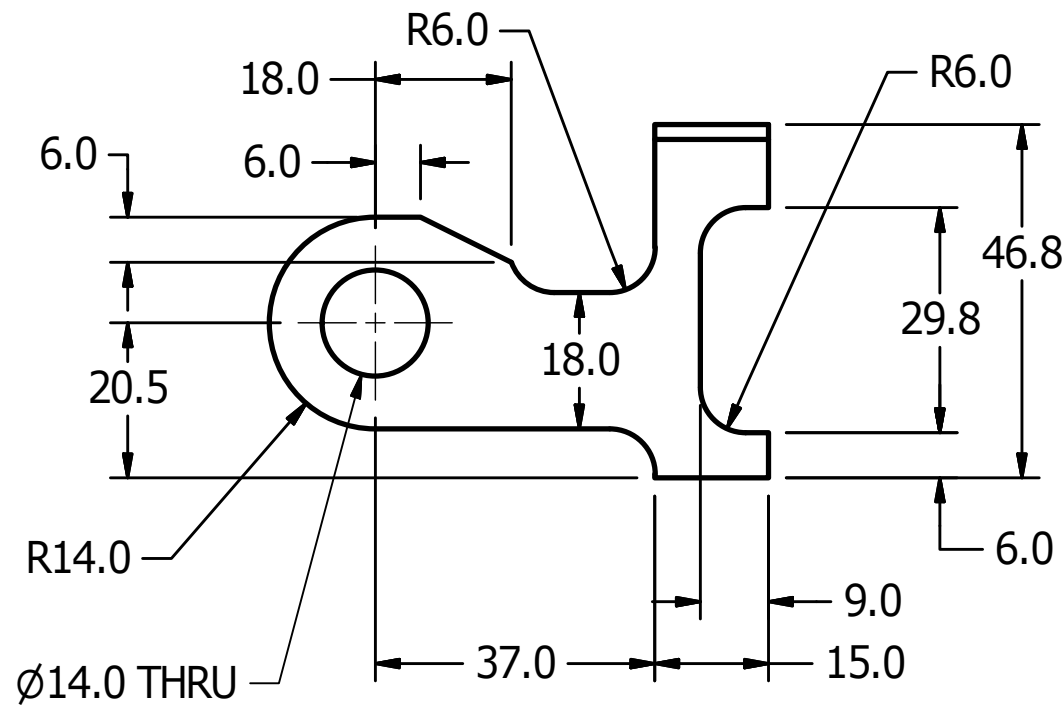
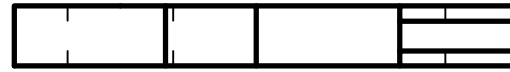
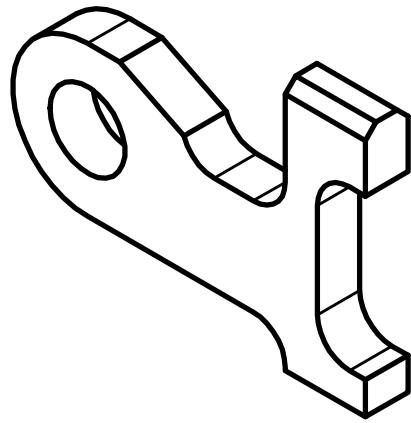
4

3

2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM011	9/15/2014	DW



B

B

A

A

A

A

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL: ANGLES: MACHINED:  
X ±.5 ±.5 ✓  
X.X ±.2  
X.XX ±.1

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

**VEHICLE RESEARCH  
and TEST CENTER**

APPROVALS DATE

DRAWN JIM CLEVINGER 8/20/2013

CHECKED

ENG

APPROVED



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

UPPER ARM MOUNT

MATERIAL Steel

HEAT TREAT

FINISH

SIZE B

SCALE: 1:1

DRAWING NUMBER

472-6212

REV

A

SHEET

1 OF 1

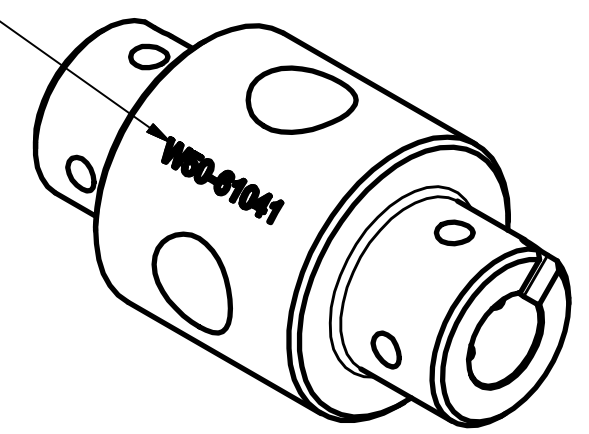
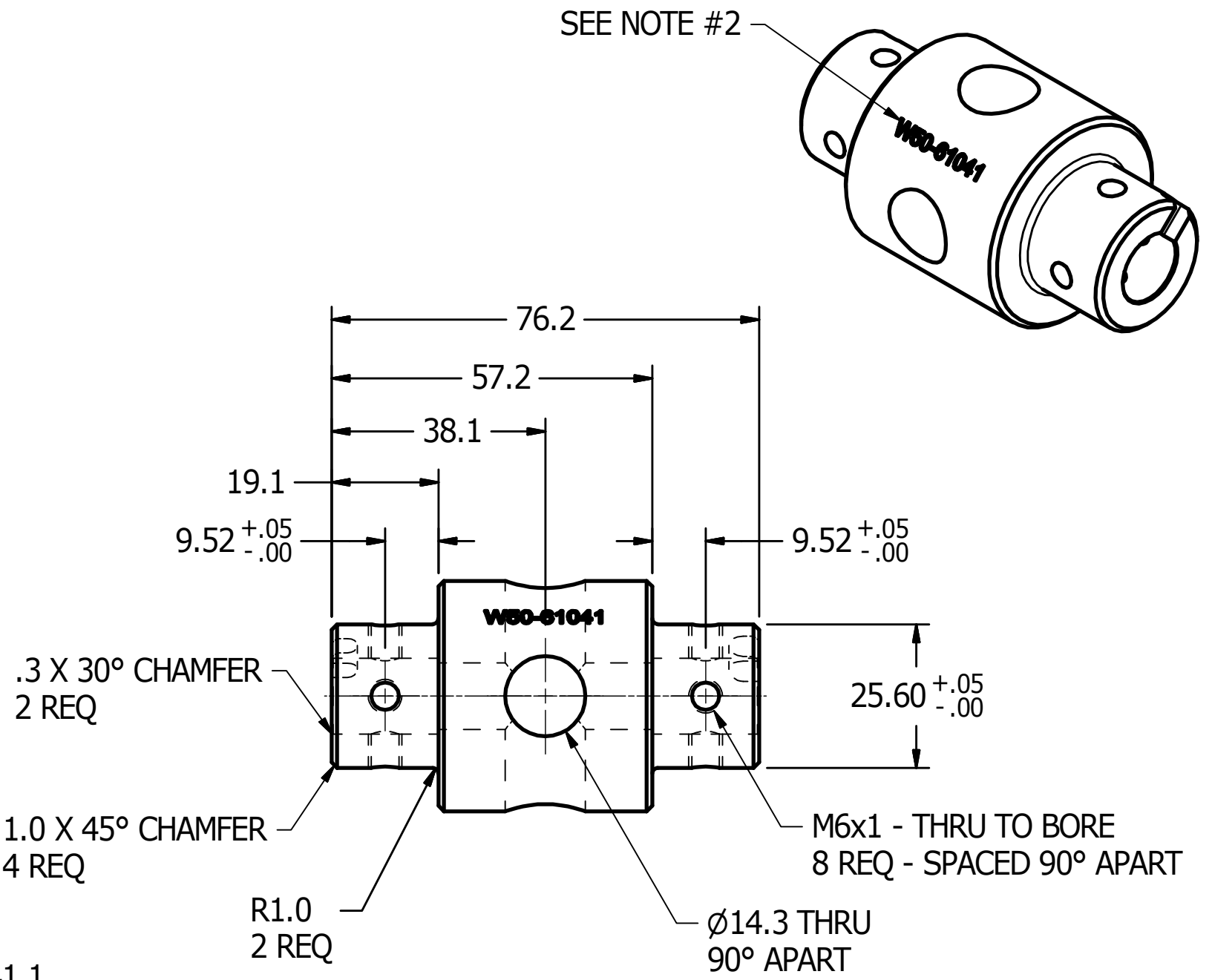
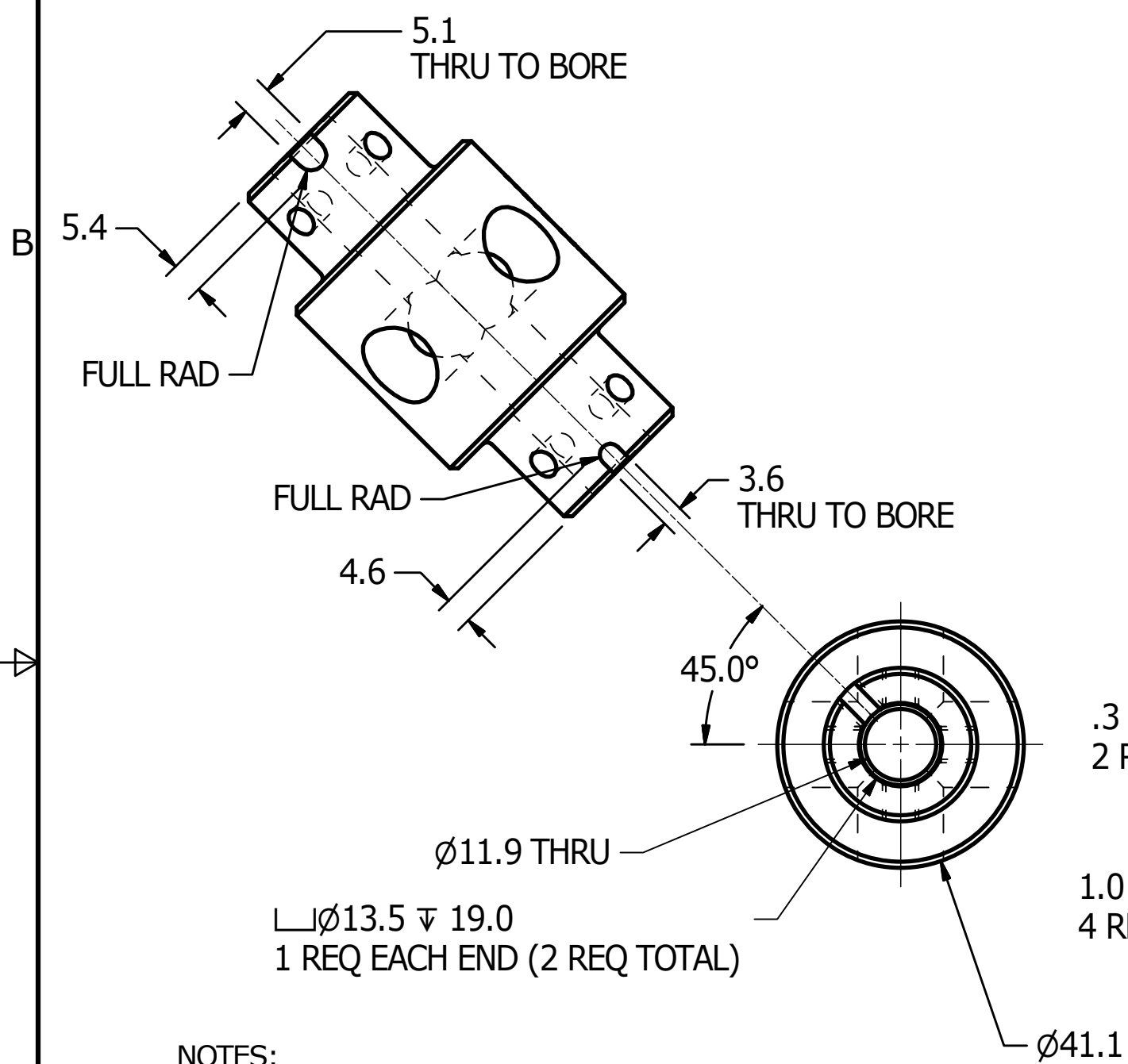
4

3

2

1

4 | 3 | 2 | 1



SEE NOTE #2

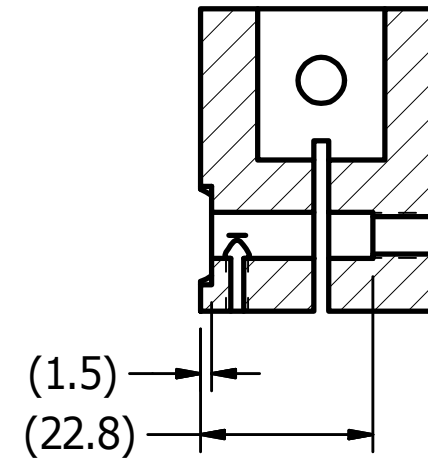
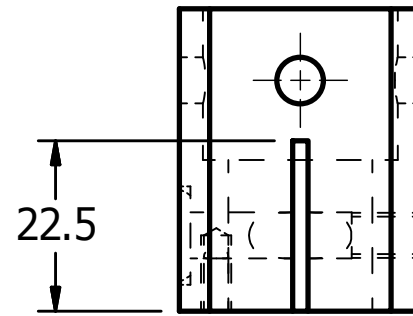
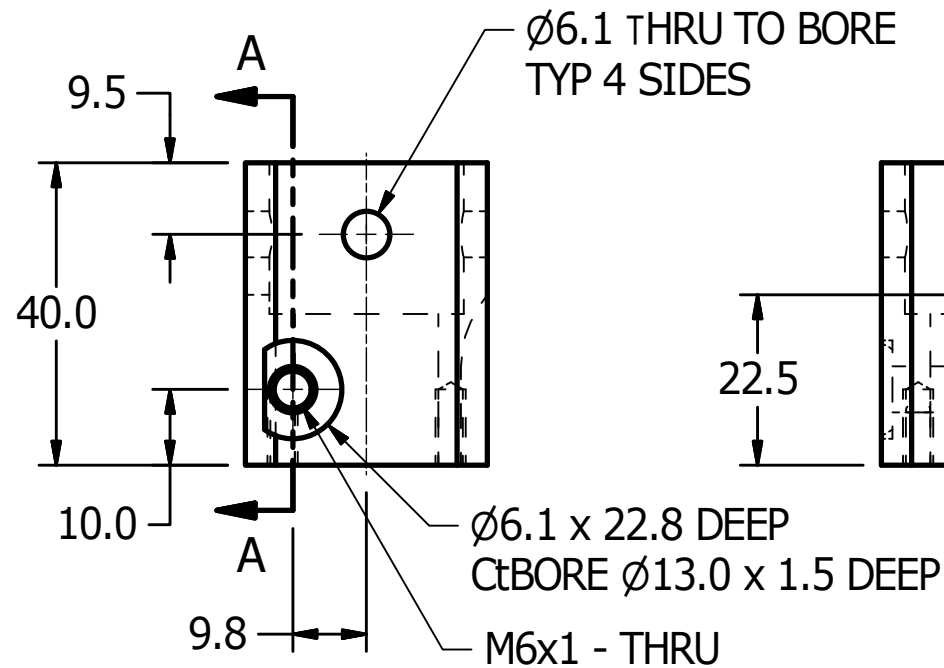
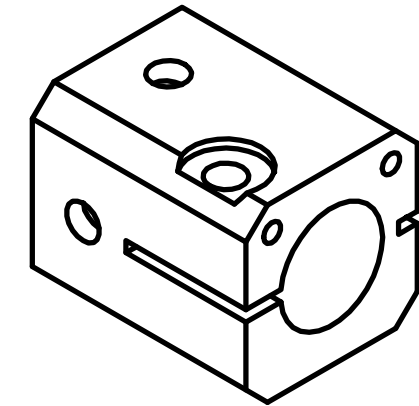
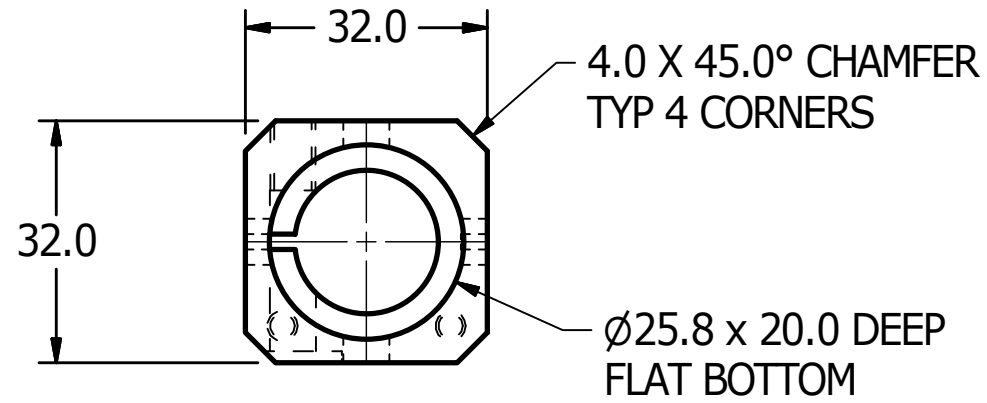
NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES
2. STAMP OR ETCH PART NUMBER AS SHOWN
3. NICKEL PLATE .012 MAX. AFTER MACHINING
4. DIMENSIONAL LIMITS AND THREADED HOLE SIZES APPLY AFTER FINISH

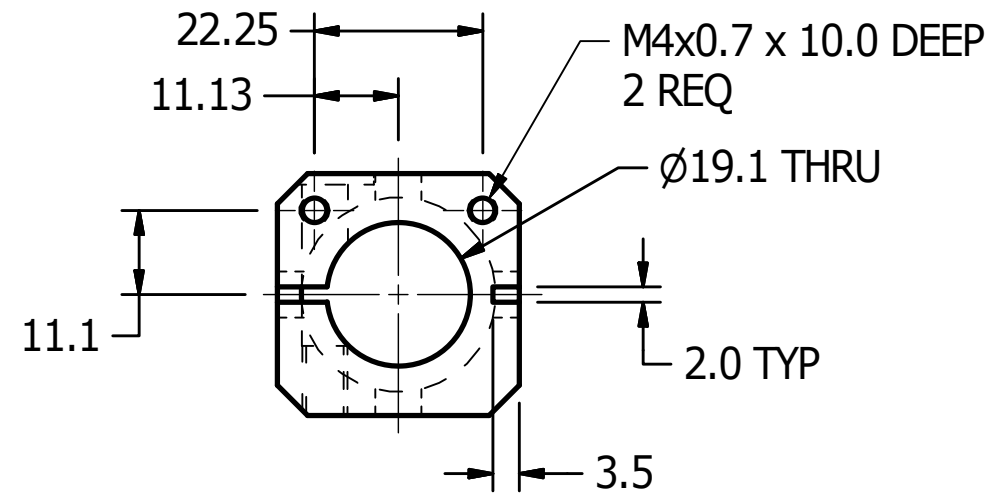
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		
	DRAWN JIM CLEVINGER	12/4/2013	SIZE B	DRAWING NUMBER W50-61041
	MATERIAL Steel	ENG	SCALE:	REV
HEAT TREAT	APPROVED	SHEET		1 OF 1
FINISH NICKEL PLATE				


4 | 3 | 2 | 1

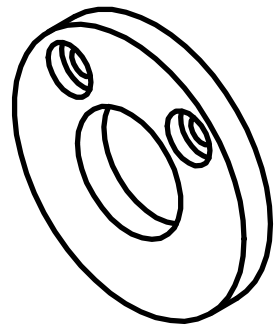
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM001	9/15/2014	DW



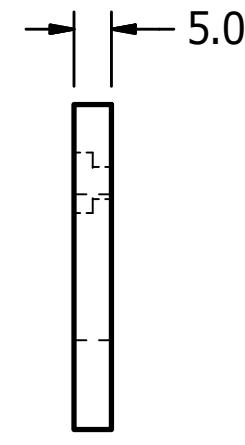
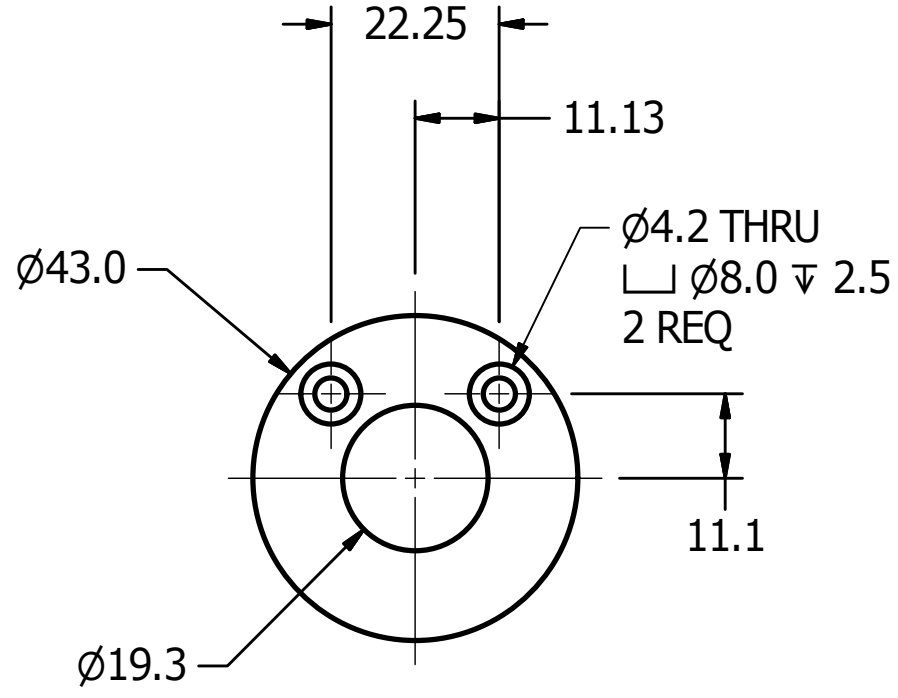
SECTION A-A  
SCALE 1 : 1




UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5 ANGLES: ±.5 MACHINED: X.X ±.2 X.XX ±.1		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		APPROVALS	DATE	LOWER LOADCELL INTERFACE	
MATERIAL Aluminum 6061		DRAWN JIM CLEVINGER	8/20/2013	DRAWING NUMBER 472-6220	
HEAT TREAT		CHECKED		SIZE B	REV A
FINISH ANODIZE		ENG	APPROVED	SCALE: 1:1	SHEET 1 OF 1



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM002	9/15/2014	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
	DRAWN JIM CLEVINGER	8/20/2013	
	CHECKED		
MATERIAL Aluminum 6061	ENG		SIZE B
HEAT TREAT	APPROVED		DRAWING NUMBER 472-6230
FINISH ANODIZE			SCALE: 1:1
			REV A
			SHEET 1 OF 1

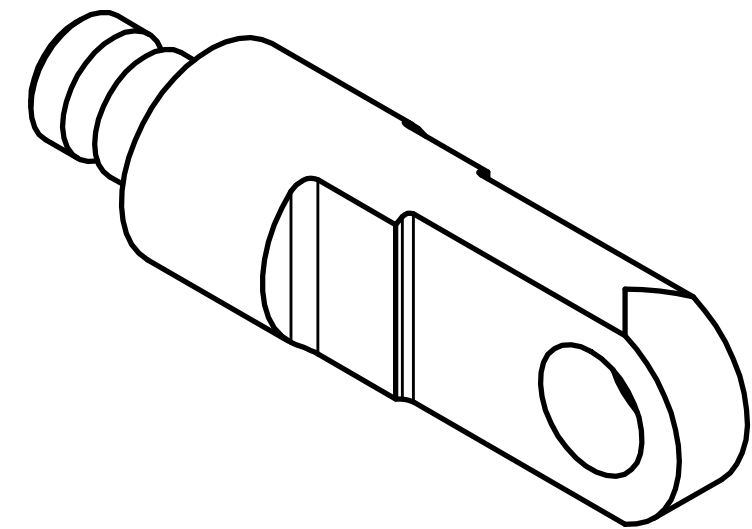
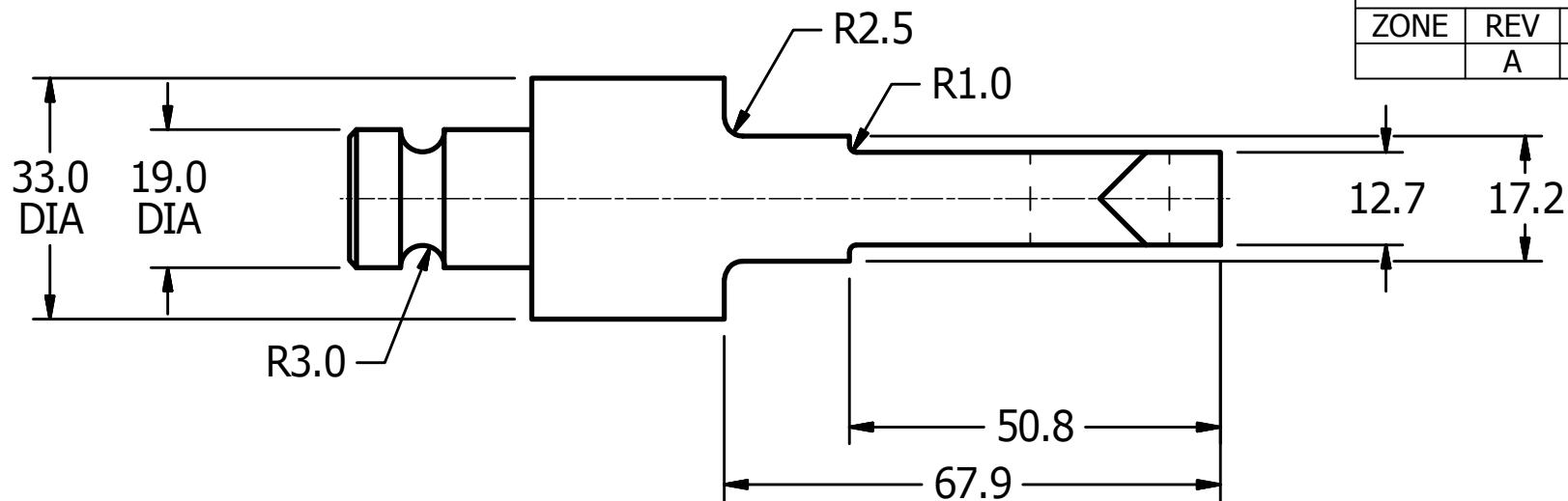
4

3

2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM003	9/15/2014	DW



B

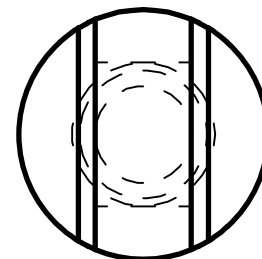
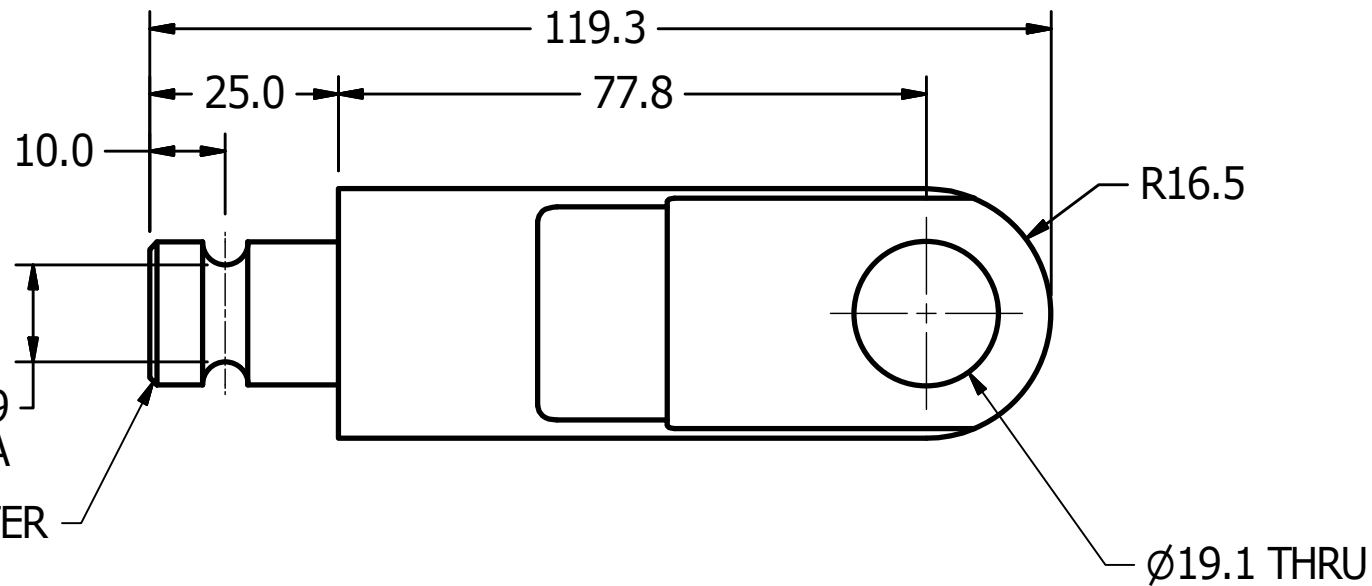
B

A

A

A

A



1.0 X 45.0° CHAMFER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 ✓ X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
	APPROVALS	DATE		
	DRAWN JIM CLEVINGER	8/20/2013	SIZE B	DRAWING NUMBER 472-6240
	MATERIAL Aluminum 6061	ENG	SCALE 1:1	REV A
HEAT TREAT	APPROVED	SHEET 1 OF 1		
FINISH ANODIZE				

4

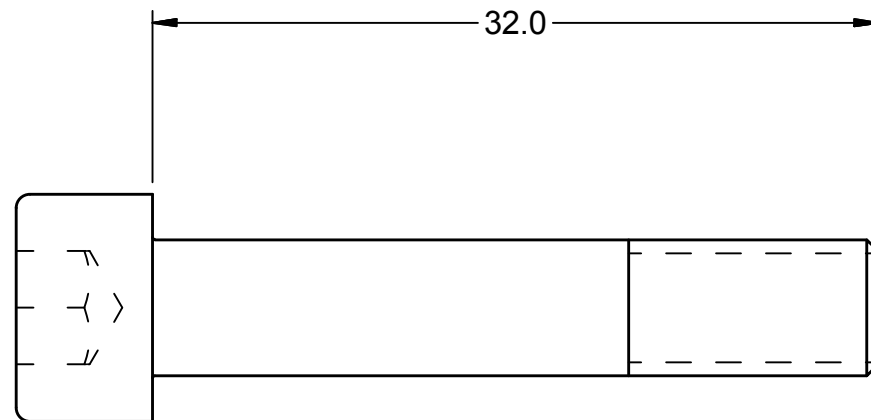
3

2

1




REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM014	9/15/2014	DW



NOTE:

1. MAKE FROM PART # 5000016V SCREW, SHCS M6-1 x 45 mm.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5° ✓ X.X ±.2 X.XX ±.1 X.XXX ±.01  ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
APPROVALS		DATE		SCREW, SHCS, M6 (MODIFIED)	
DRAWN Dave Walker		3/24/2014		DRAWING NUMBER	
CHECKED				472-6250	
MATERIAL Steel, Mild		ENG		SIZE A3	REV A
HEAT TREAT		APPROVED		SCALE: 3:1	SHEET 1 OF 1
FINISH					

4

3

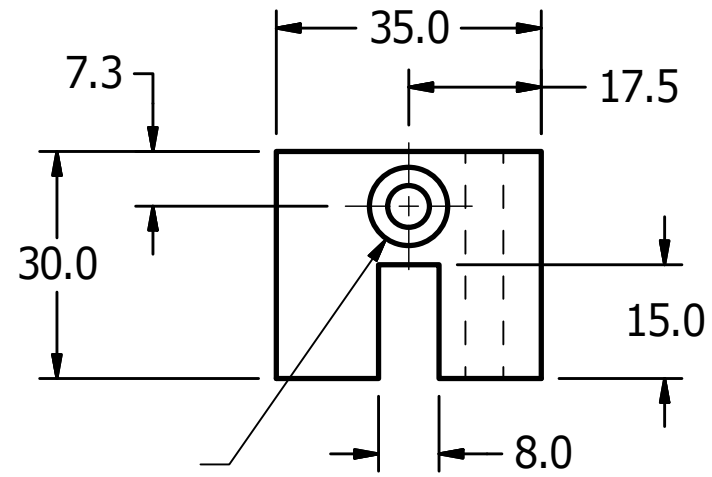
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1

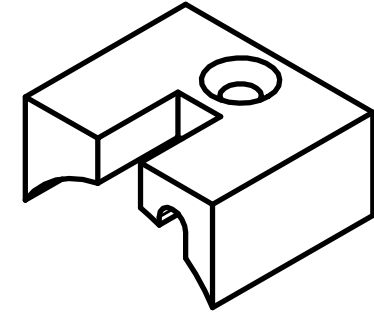
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM005	9/15/2014	DW

B

B

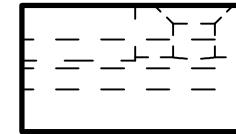
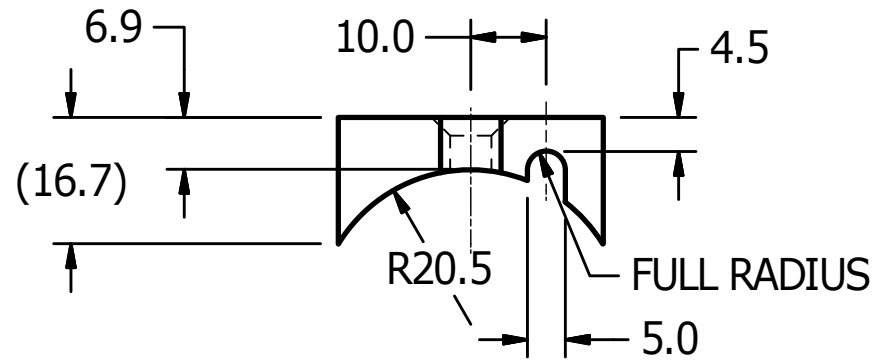


Ø5.5 THRU  
C tSINK Ø10.4 X 90.0°



A

A



A

A

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL: ANGLES: MACHINED:  
X ±.5 ±.5 1.6 ✓  
X.X ±.2  
X.XX ±.1

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

**VEHICLE RESEARCH  
and TEST CENTER**

APPROVALS DATE

DRAWN JIM CLEVINGER 8/20/2013

CHECKED

ENG

APPROVED



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

ARM FLESH SPACER

MATERIAL Acetal Resin, Black

HEAT TREAT

FINISH

SIZE B

SCALE: 1:1

DRAWING NUMBER

472-6260

REV

A

SHEET

1 OF 1

4

3

2

1

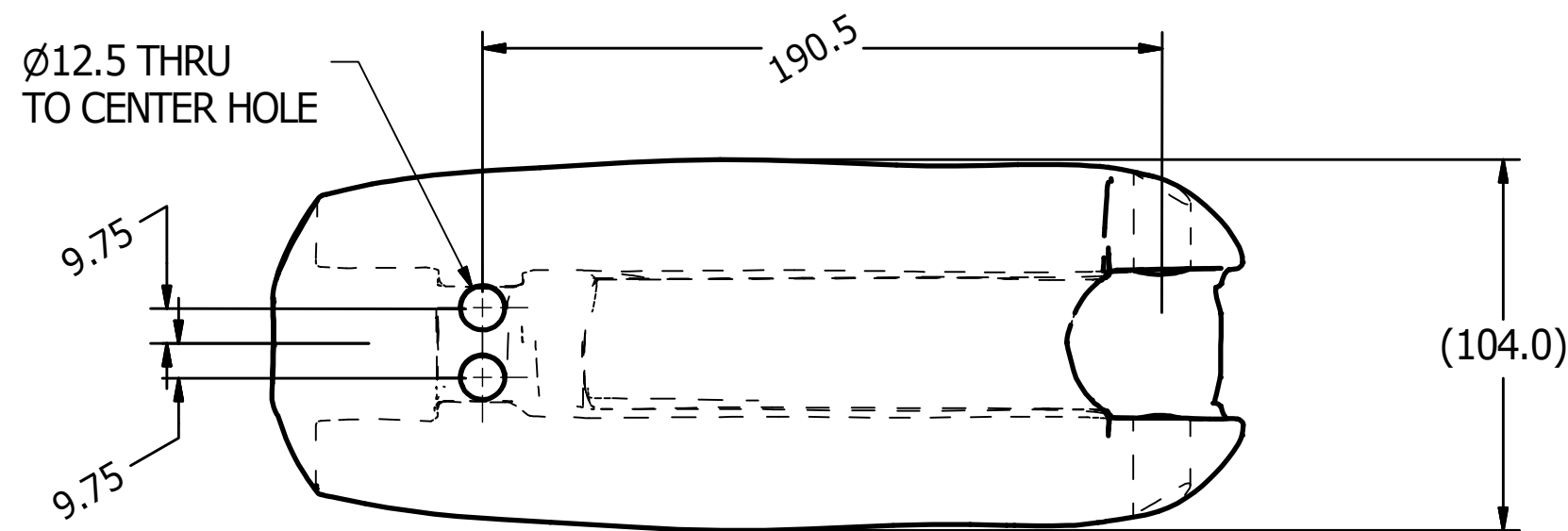
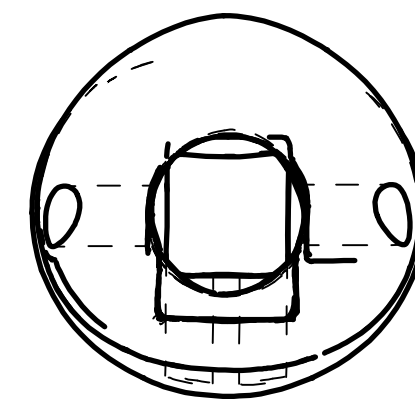
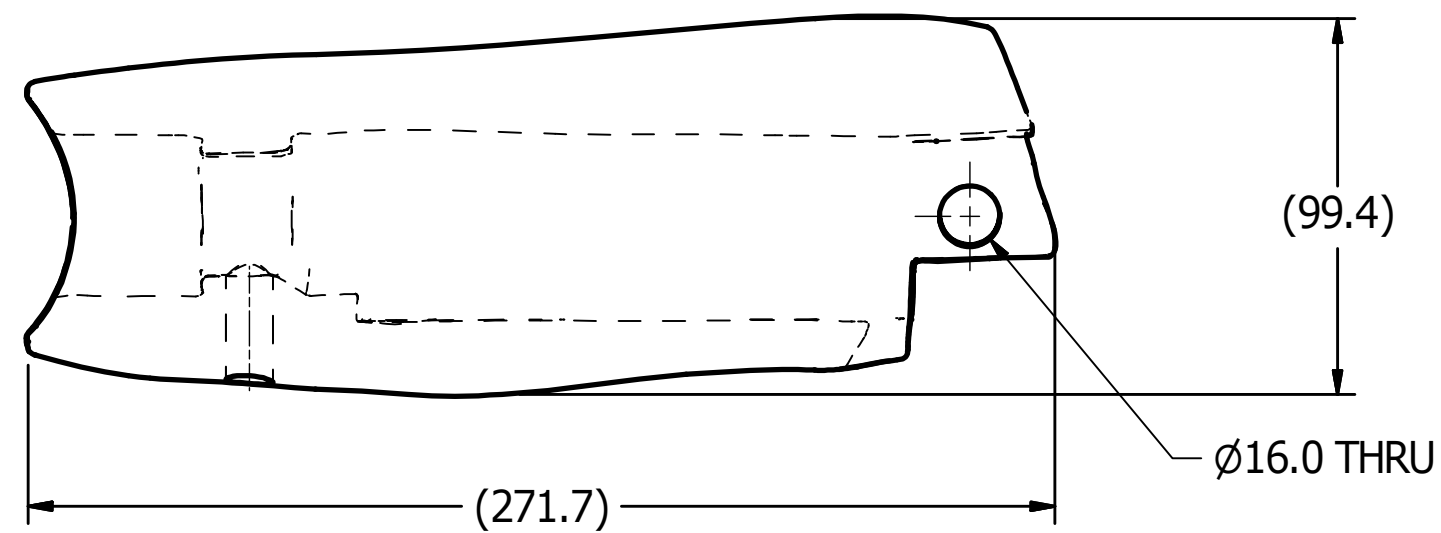
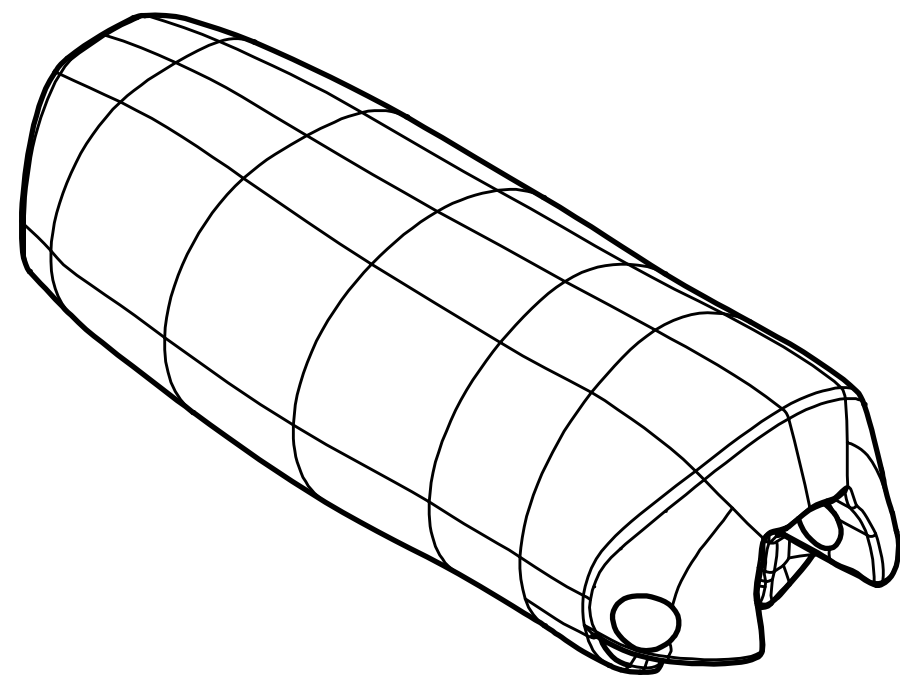
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3

2

1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	DRAWING NUMBER WAS AXAMM004	9/15/2014	DW



NOTE:

A 3-D FILE IS AVAILABLE FOR REFERENCE FROM NHTSA

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		DRAWING NUMBER	
DRAWN JIM CLEVINGER		10/29/2013		472-6270	
CHECKED				REV A	
MATERIAL Polystyrene		ENG		SCALE: 1/2	
HEAT TREAT		APPROVED		SHEET 1 OF 1	
FINISH				1	

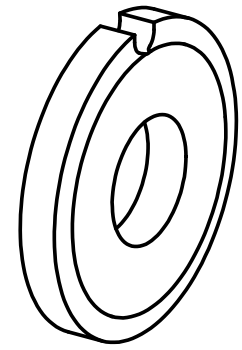
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3

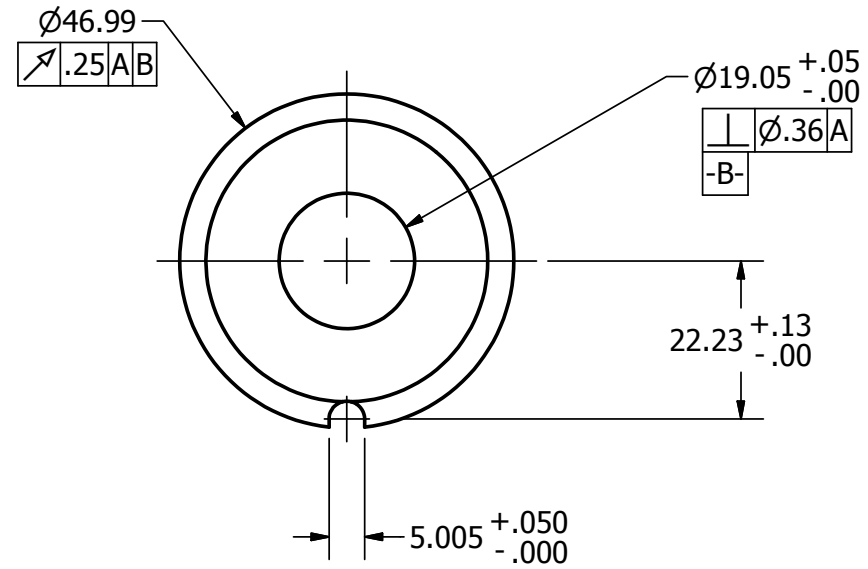
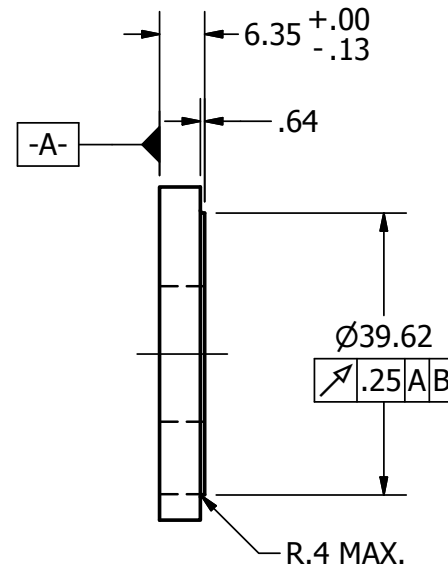
2

1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #7805-200 AND CONVERTED TO METRIC FOR THOR-M	9/30/2011	TKN

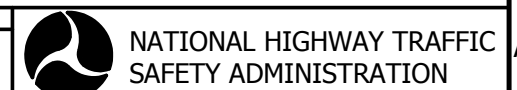


ISO VIEW  
SCALE 1 : 1



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ±0.5 ±0.5 1.6  
X.X ±0.2  
X.XX ±0.1  
X.XXX ±0.01  
REMOVE BURRS & BREAK SHARP EDGES



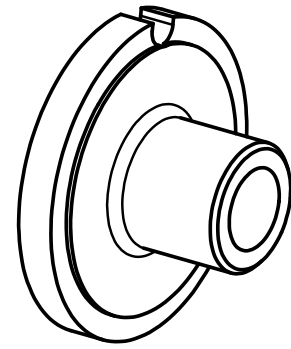
DESCRIPTION:  
WASHER, ELBOW PIVOT THOR-M

472-6000-2	1
472-6000-1	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	2

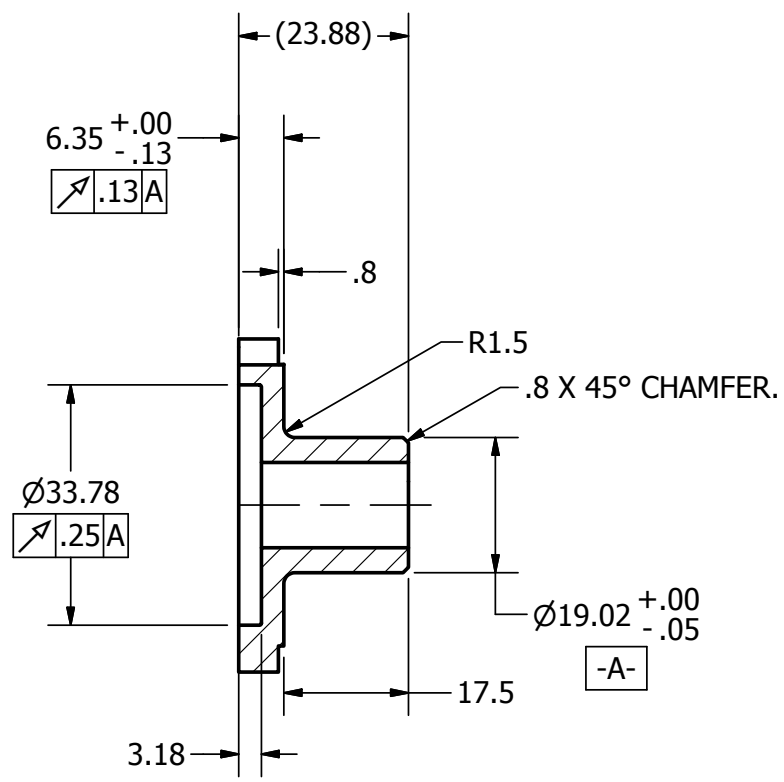
PROJECT NO.:		DRAWN BY:	Thanh	DATE:	9/30/2011
MATERIAL:	Delrin, White	CHECKED BY:		DATE:	
HEAT TREAT:		ENGINEER:	J. WANG	DATE:	1/30/2012

SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:	472-6600	REV:	A
SCALE:	FULL						

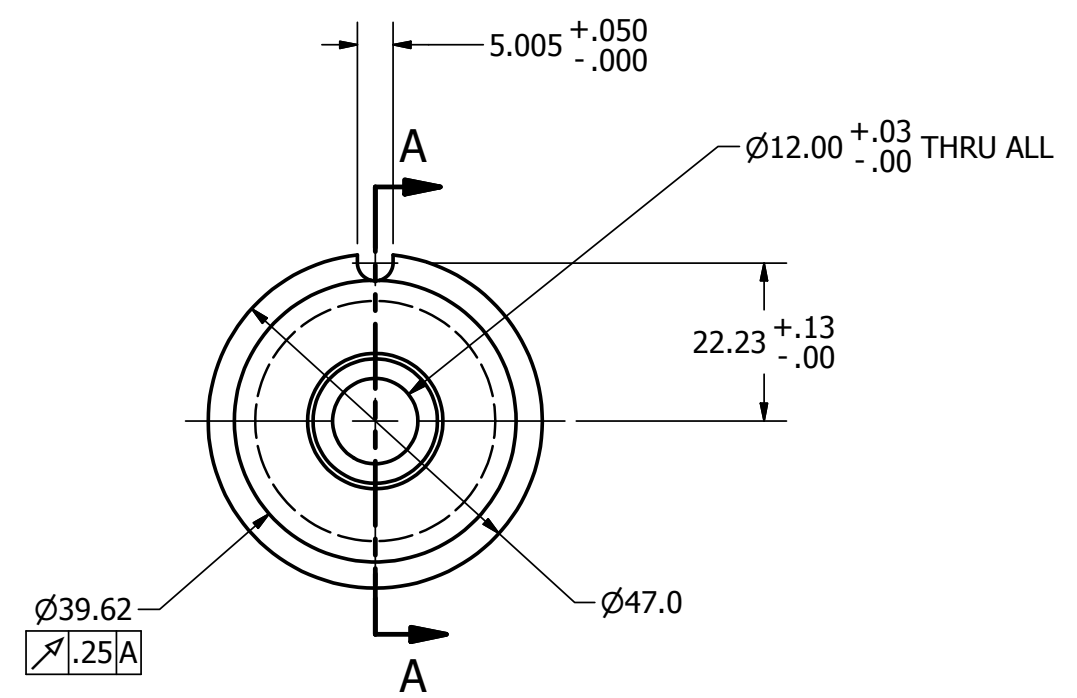
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-199 AND CONVERTED TO METRIC FOR THOR-M	9/30/2011	TKN



ISO VIEW  
SCALE 1 : 1



SECTION A-A  
SCALE 1 : 1

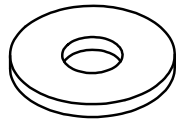


NOTES:

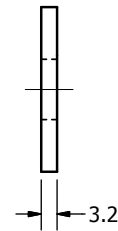
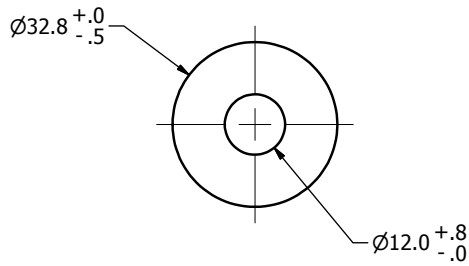
- MATERIAL: DELRIN 500 ACETAL RESIN ® DUPONT


472-6000-2		1	PROJECT NO.:	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-6000-1		1	MATERIAL:	THIRD ANGLE PROJECTION	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 XX ±0.2 XXX ±0.1 XXXX ±0.01		
NEXT ASSEMBLY		QTY	SEE NOTES	DRAWN BY:	DATE:	REMOVE BURRS & BREAK SHARP EDGES Thanh 9/30/2011	
TOTAL QTY IN DUMMY		2	FINISH:	CHECKED BY:	DATE:	DESCRIPTION: BUSHING, ELBOW PIVOT	
				ENGINEER:	DATE:	SIZE: SHEET A31 OF 1 SCALE: FULL	DRAWING NO.: 472-6590
				J. WANG	1/30/2012	REV:	A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-249 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN

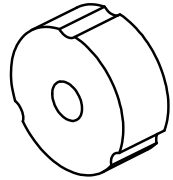


ISO VIEW  
SCALE 1 : 1

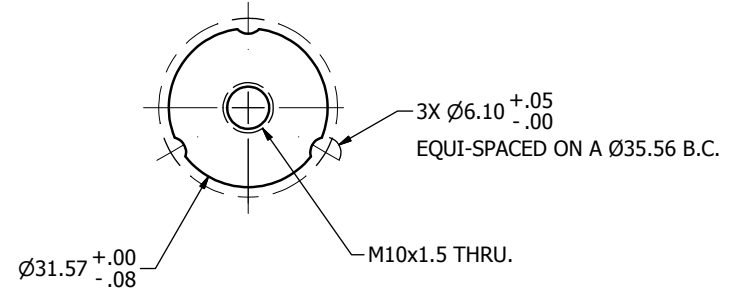
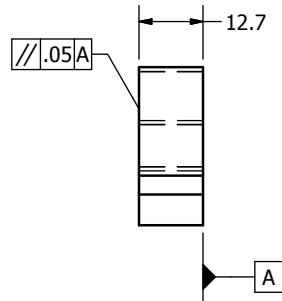


472-6000-2		1	PROJECT NO.:	DO NOT SCALE DRAWING	TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-6000-1		1	MATERIAL:	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
NEXT ASSEMBLY		QTY	HEAT TREAT:	CHECKED BY:	DATE:	SIZE: SHEET	DRAWING NO.:
TOTAL QTY IN DUMMY		2	FINISH:	ENGINEER:	DATE:	A3 1 OF 1	472-6950
				J. WANG	1/30/2012	SCALE: FULL	A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-202 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN

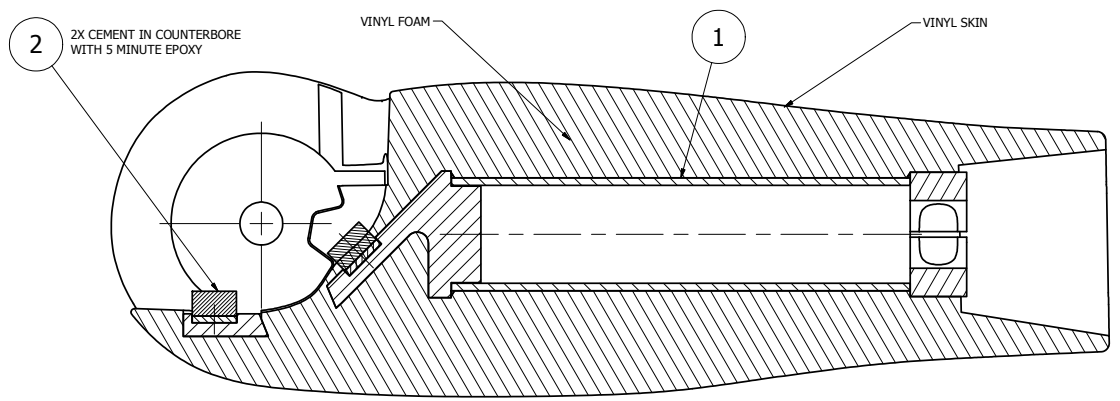
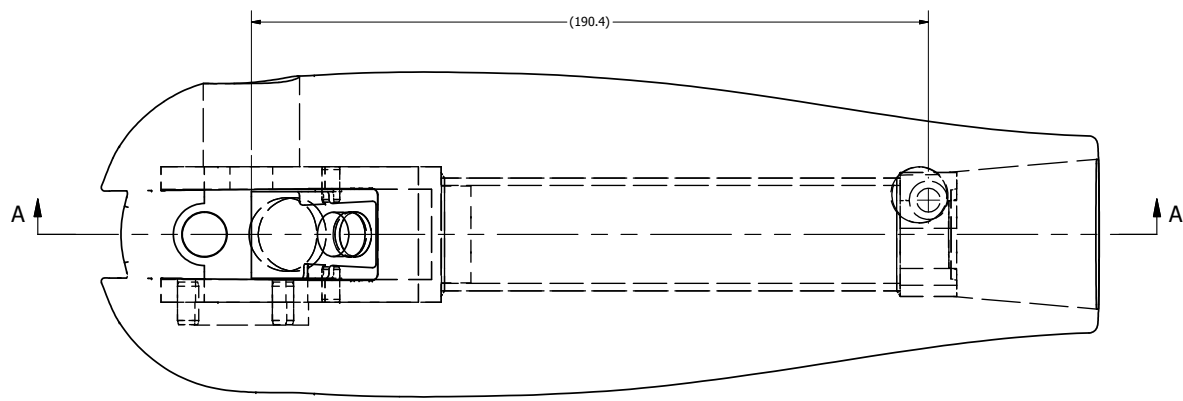


ISO VIEW  
SCALE 1 : 1



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.5° 1.6 0.02 0.5° 1.6 0.03 0.5° 1.6 0.01 0.5° 1.6		
472-6000-2	1	PROJECT NO.:	DATE:	DESCRIPTION: NUT - ELBOW PIVOT THOR-M
472-6000-1	1	MATERIAL:	10/4/2011	
NEXT ASSEMBLY	QTY	303 STAINLESS STEEL	Thanh	
TOTAL QTY IN DUMMY	2	HEAT TREAT:	DATE:	SIZE: A3 SHEET: 1 OF 1 SCALE: FULL
		ENGINEER:	DATE:	DRAWING NO.:
		J. WANG	1/30/2012	472-6610

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-194 AND CONVERTED TO METRIC FOR THOR-M	10/3/2011	TKN



SECTION A-A  
SCALE 1 : 1

NOTES:  
1. PART WEIGHT: 1.29 Kg ± .05 Kg (2.85 LBS ± .10 LBS)

ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	472-6570	STOP ASM-LOWER ARM THOR-M
1	1	472-6530	STRUCTURAL ASSY. LOWER ARM - UPPER PART

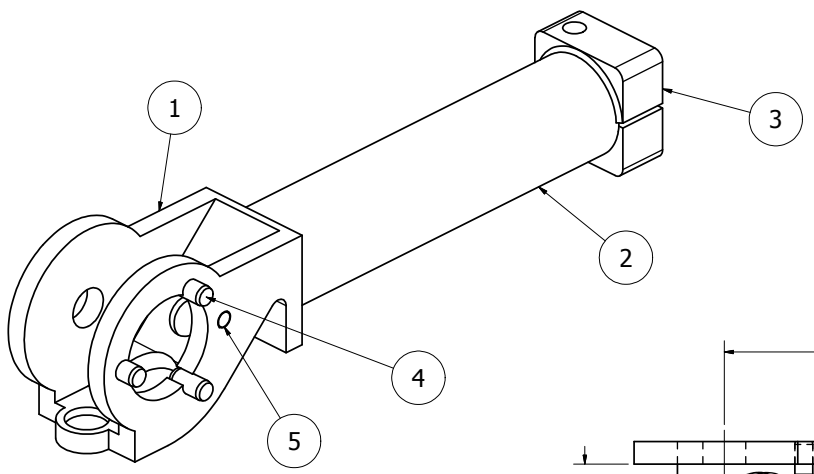
PARTS LIST

<p>DO NOT SCALE DRAWING</p>	<p>TOLERANCES</p> <p>FRACTIONS DECIMALS ANGLES HOLE POSITION</p> <p>FRACTIONS DECIMALS ANGLES HOLE POSITION</p> <p>FRACTIONS DECIMALS ANGLES HOLE POSITION</p> <p>FRACTIONS DECIMALS ANGLES HOLE POSITION</p> <p>FRACTIONS DECIMALS ANGLES HOLE POSITION</p>	<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>
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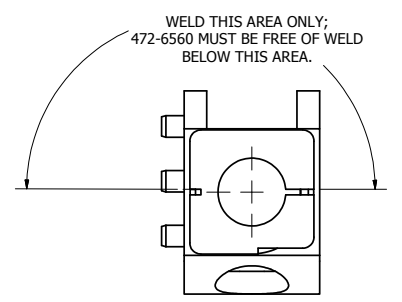
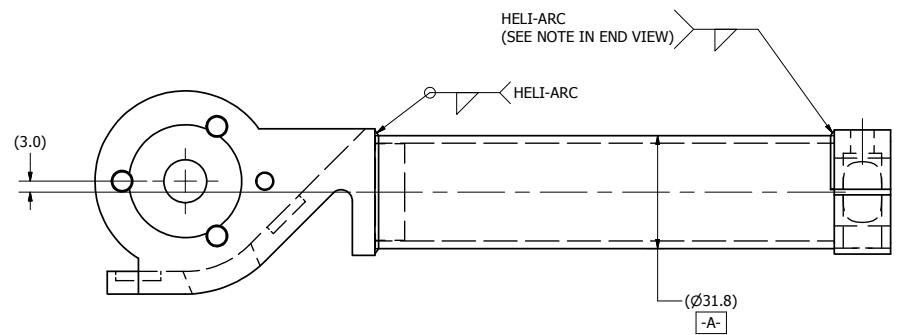
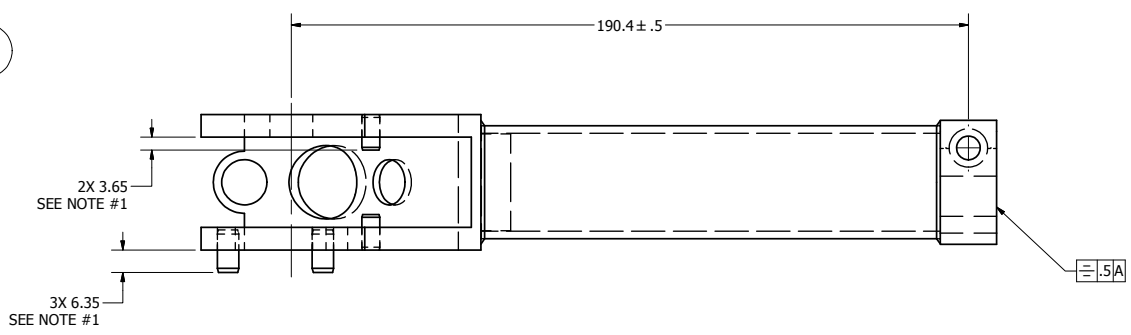
472-6000-2	1	REVISED BY:	DATE:	APPROVED BY:	DATE:	SCALE:	FIGURE NO.:
472-6000-1	1	DESIGNED BY:	DATE:	THANH	10/3/2011		
NEXT ASSEMBLY	QTY	BY:	DATE:				
TOTAL QTY IN DUMMY	2	BY:	DATE:	J. WANG	11/30/2012	A21 of 1	472-6520



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-195 AND CONVERTED TO METRIC FOR THOR-M	10/3/2011	TKN



ISO VIEW  
SCALE 1 : 1



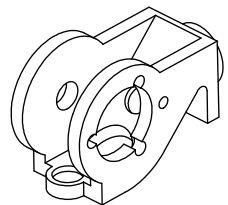
NOTES:  
1. INSTALL DOWEL PINS AFTER NICKEL PLATE.

ITEM	QTY	PART NUMBER	DESCRIPTION
5	2	5000280	M5 X 10 LG. DOWEL PIN
4	3	5000433	M6 X 12 LG. DOWEL PIN
3	1	472-6560	CLAMP - WRIST ROTATION
2	1	472-6550	TUBE - LOWER ARM
1	1	472-6540	ELBOW YOKE

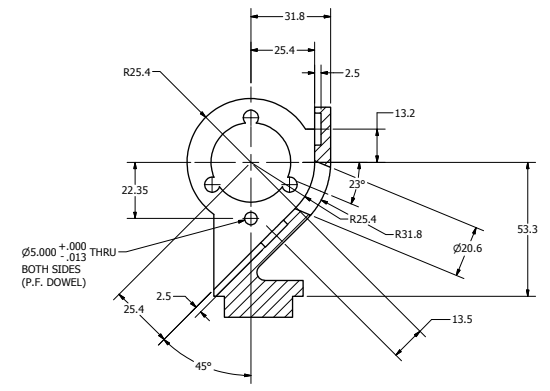
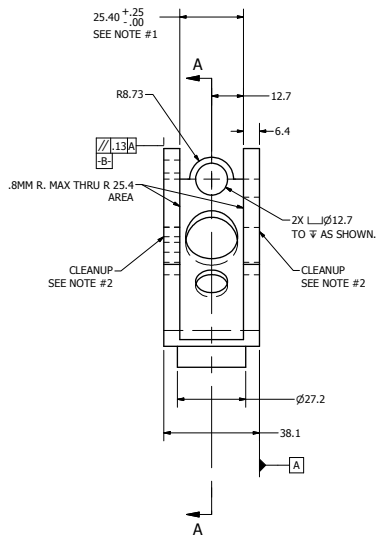
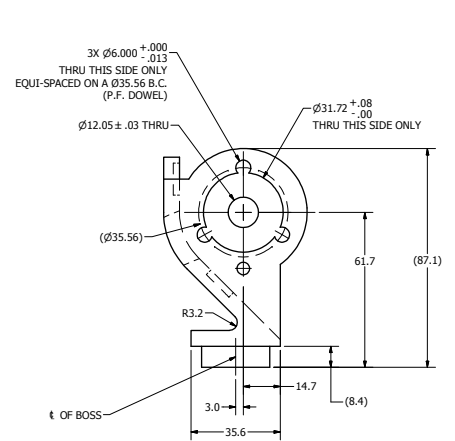
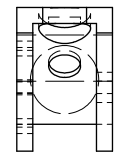
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-6520	1	THANH	10/3/2011	
NEXT ASSEMBLY	QTY	BY	DATE	STRUCTURAL ASSY. LOWER ARM - UPPER PART A21 of 1 FULL
TOTAL QTY IN DUMMY	2	ELECTROLESS NICKEL PLATE (SS) MAL	J. WANG 11/30/2012	

472-6530

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG# 78051-138 AND CONVERTED TO METRIC FOR THOR-M	9/30/2011	TKN



ISO VIEW  
SCALE 1 : 1

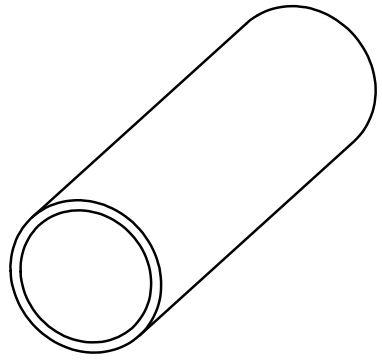


SECTION A-A  
SCALE 1 : 1

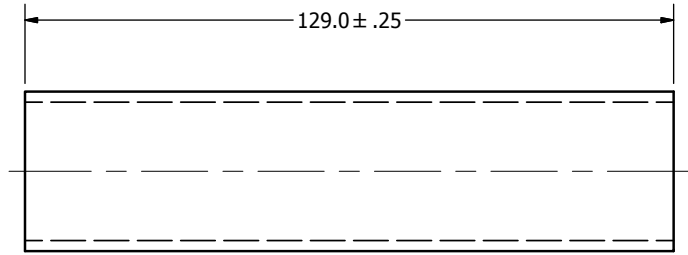
- NOTES:
- PART MAY REQUIRE STRAIGHTENING TO MEET 25.4  $\pm .25$  DIM BEFORE MACHINING.
  - FIRST MACHINE OPERATION.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-6530	1	Thorn	9/30/2011	ELBOW YOKE	
NEXT ASSEMBLY	QTY			A11 of 1	
TOTAL QTY IN DRAWING	2	J. WANG	9/30/2011	472-6540	A

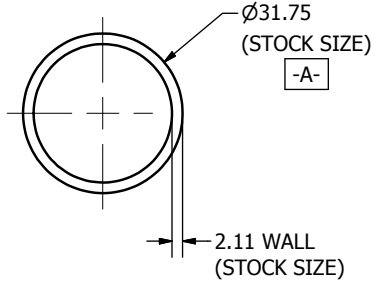
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG# 78051-196 AND CONVERTED TO METRIC FOR THOR-M	10/3/2011	TKN



ISO VIEW  
SCALE 1 : 1



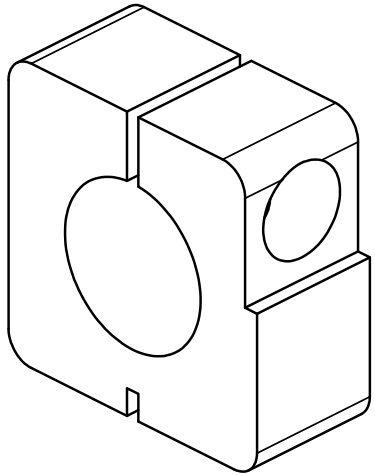
$\pm .25$   
BOTH SIDES



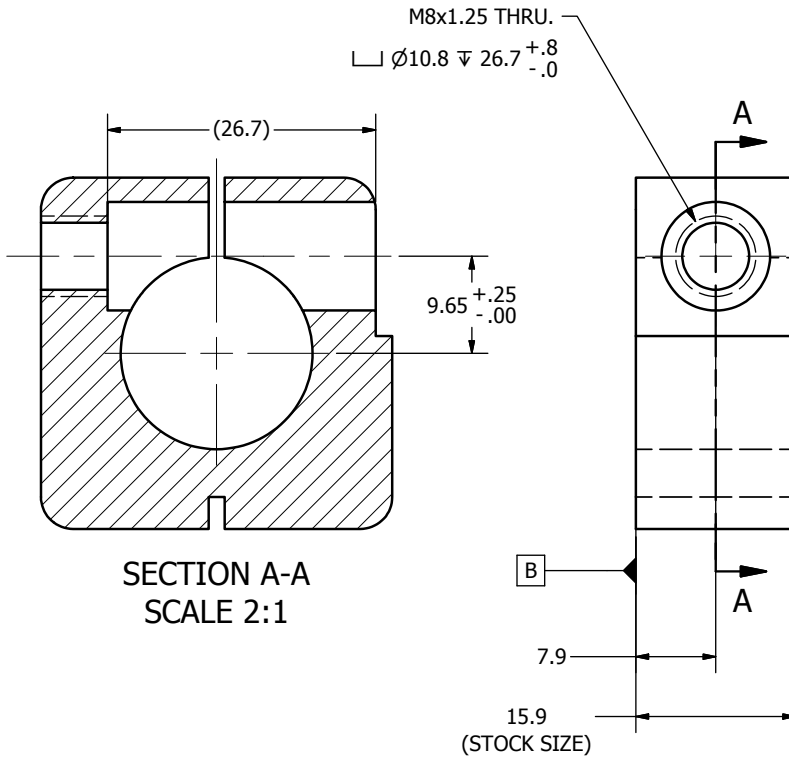
NOTES:

- MATERIAL: SEAMLESS STEEL MECHANICAL TUBING SAE 1018.  
(Ø1¼" 14 ga. WALL)

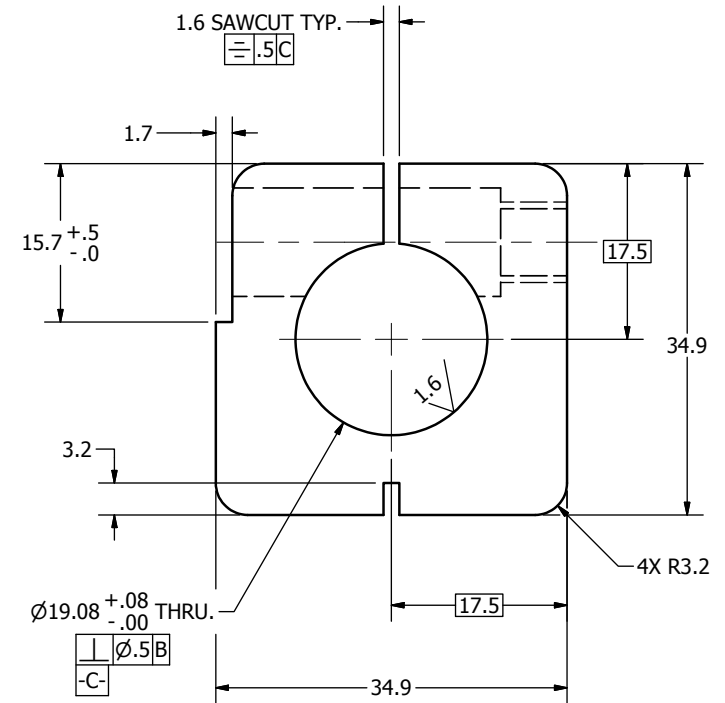
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.57 16 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01		
PROJECT NO.:	472-6530	MATERIAL:	SEE NOTE	DESCRIPTION:
DRAWN BY:	1	CHECKED BY:	Thanh	TUBE - LOWER ARM
DATE:	10/3/2011	DATE:	10/3/2011	SIZE: A3
HEAT TREAT:		ENGINEER:	J. WANG	SHEET: 1 OF 1
DATE:		DATE:	1/30/2012	DRAWING NO.:
FINISH:	2	SCALE:	FULL	472-6550



ISO VIEW  
SCALE 2:1

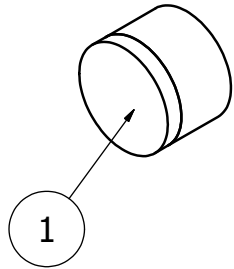


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-197 AND CONVERTED TO METRIC FOR THOR-M	10/3/2011	TKN

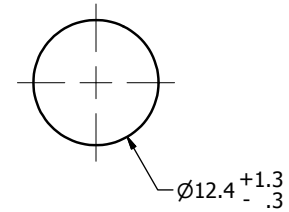
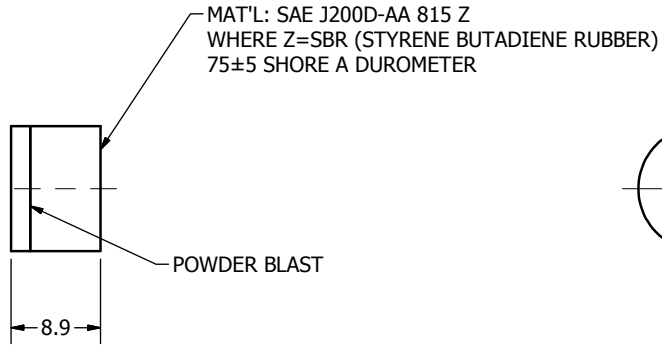


DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	DESCRIPTION:	
PROJECT NO.:	472-6530	DIMENSIONS ARE IN MILLIMETERS	CLAMP - WRIST ROTATION	
MATERIAL:	1018 STEEL	DECIMALS ANGLES FINISH		
CHECKED BY:	Thanh	0.0 0.05 0.1 0.2 0.3 0.01		
DATE:	10/3/2011	REMOVE BURRS & BREAK SHARP EDGES		
ENGINEER:	J. WANG	SCALE: 2:1		
DATE:	1/30/2012	SIZE: A3		
DRIVING NO.:	472-6560	SHEET: 1 OF 1		
REV:	A			

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-198 AND CONVERTED TO METRIC FOR THOR-M	10/5/2011	TKN



ISO VIEW  
SCALE 2:1



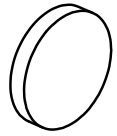
1	1	472-6580	STOP, BACKING, LOWER ARM
ITEM	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X 0.0 0.05 1.6	
		XX 0.2	
		XXX 0.3	
		XXX 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:		DATE:	
472-6520		10/5/2011	
MATERIAL:		DRAWN BY:	
		Thanh	
CHECKED BY:		DATE:	
NEXT ASSEMBLY		1/30/2012	
TOTAL QTY IN DUMMY		ENGINEER:	
4		J. WANG	
		DATE:	
		1/30/2012	
		SCALE:	
		2:1	
DESCRIPTION:			REV:
STOP ASM-LOWER ARM THOR-M			A
SIZE: SHEET: DRAWING NO:			
A3 1 OF 1			
472-6570			

NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

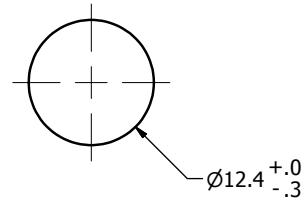
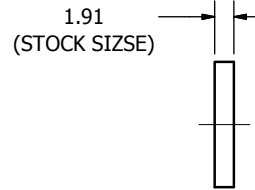
STOP ASM-LOWER ARM THOR-M

472-6570

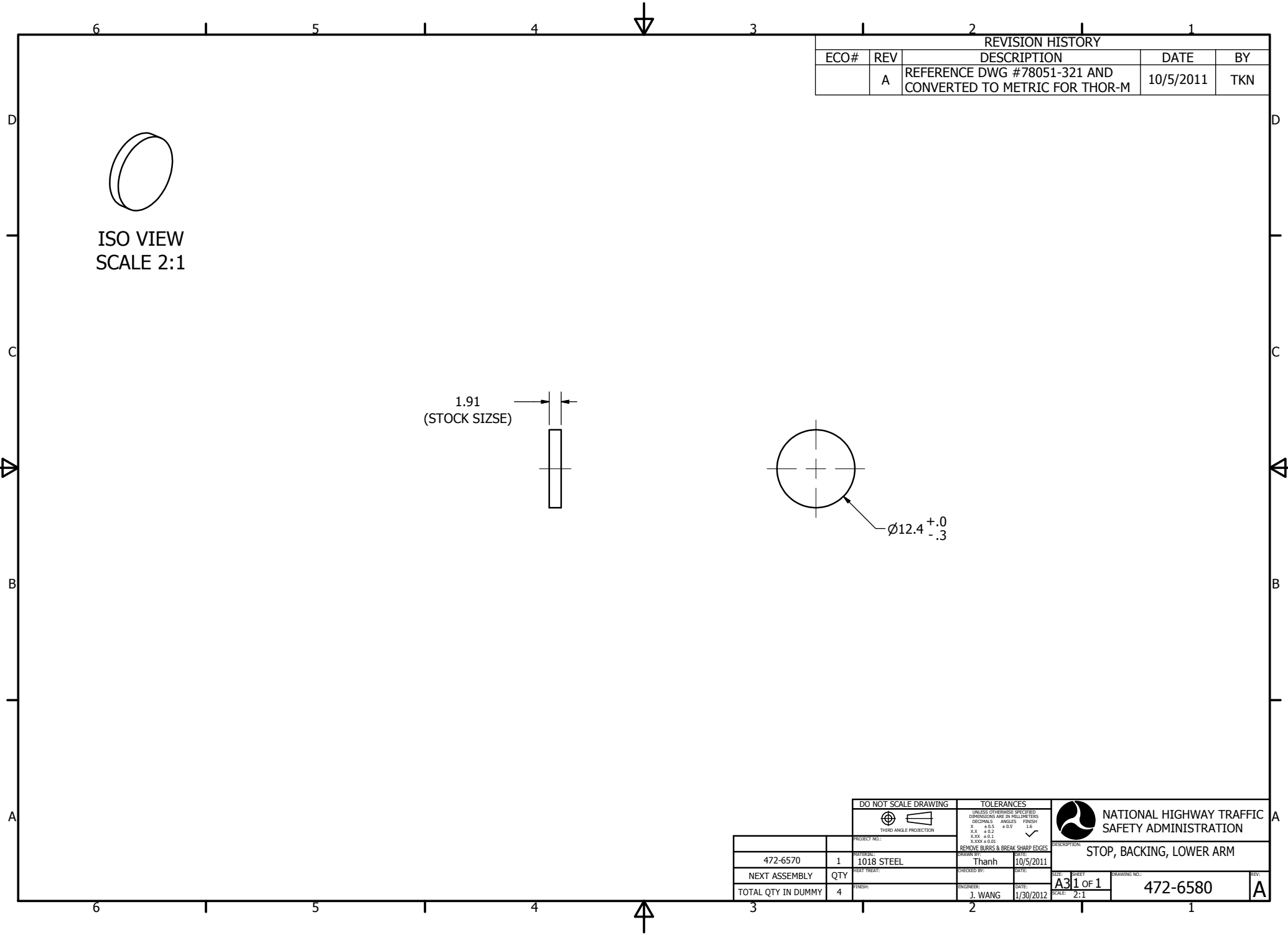
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-321 AND CONVERTED TO METRIC FOR THOR-M	10/5/2011	TKN



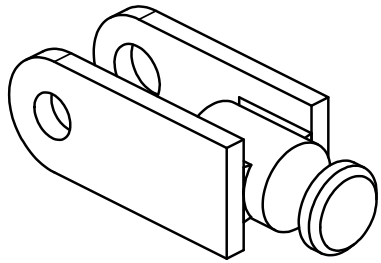
ISO VIEW  
SCALE 2:1



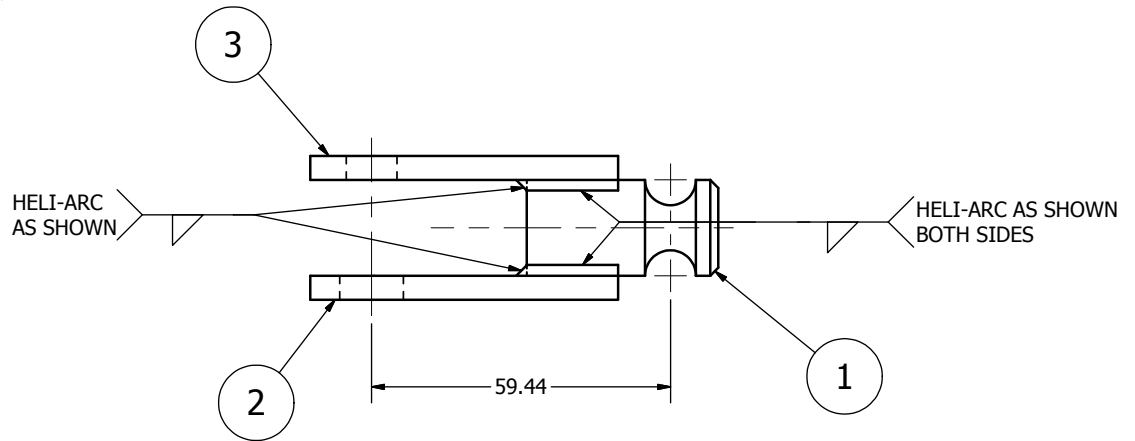
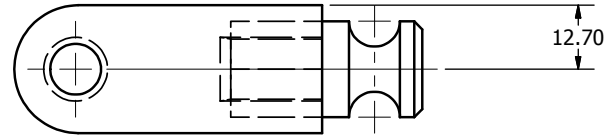
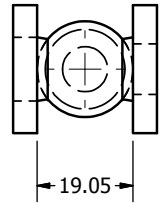
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.57 16 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-6570	MATERIAL:	1018 STEEL	DESCRIPTION: STOP, BACKING, LOWER ARM
DRAWN BY:	Thanh	DATE:	10/5/2011	
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/30/2012	SCALE:
SIZE:	A3	SHEET:	1 OF 1	DRAWING NO.:
TOTAL QTY IN DUMMY:	4	FINISH:		472-6580



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-204 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN



ISO VIEW  
SCALE 1 : 1

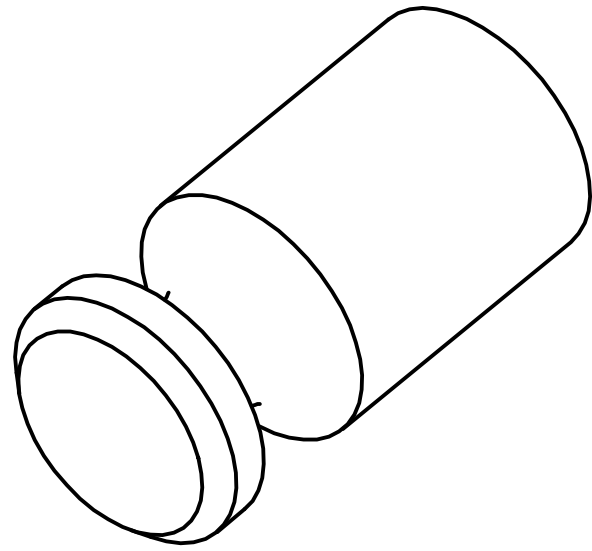


ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-6720	LUG - WRIST, LOWER
2	1	472-6710	LUG - WRIST, UPPER
1	1	472-6730	SHAFT - WRIST ROTATION

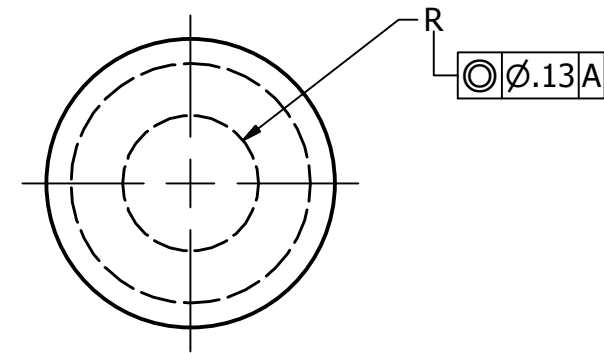
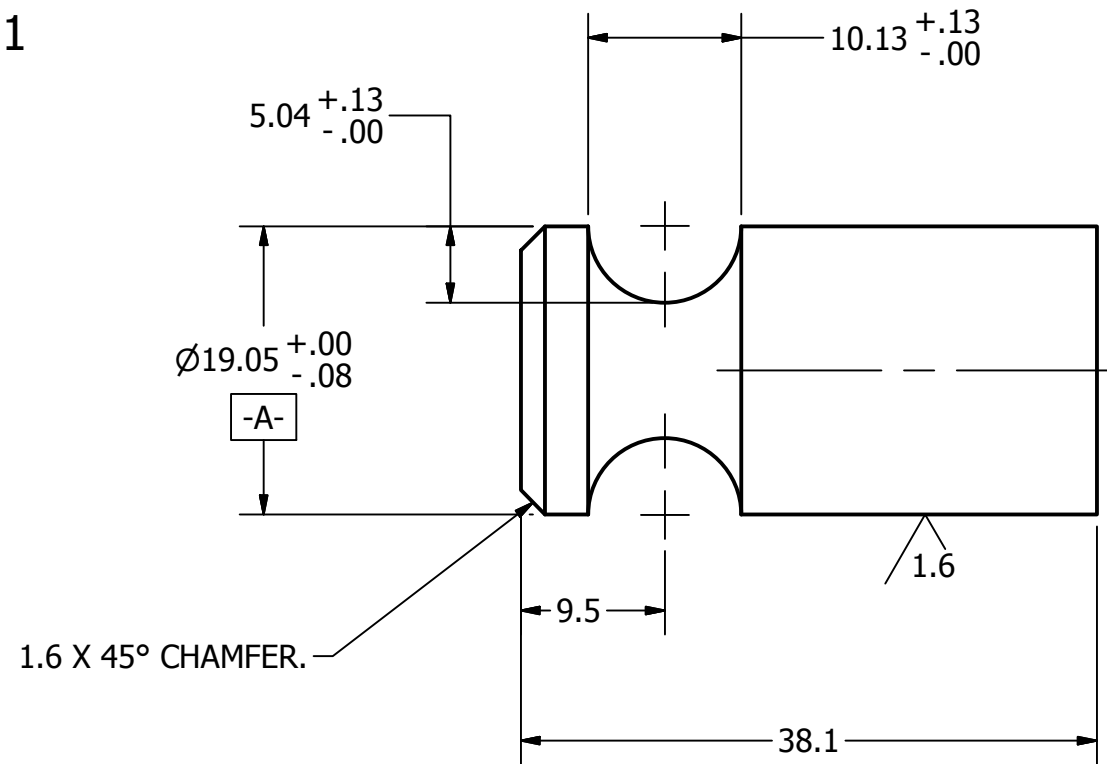
PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X.X 0.2 X.XX 0.3 X.XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-6000-2	QTY:	1	DESCRIPTION: LOWER WRIST ROTATION ASSY.
MATERIAL:	472-6000-1	DRAWN BY:	Thanh	
HEAT TREAT:		CHECKED BY:		
FINISH:	ELECTROLESS NICKEL PLATE .008 MAX.	DATE:	10/4/2011	
ENGINEER:	J. WANG	DATE:	1/30/2012	SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-6700
TOTAL QTY IN DUMMY	2	SCALE:		REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-207 AND CONVERTED TO METRIC FOR THOR-M	10/3/2011	TKN

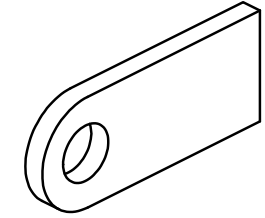


ISO VIEW  
SCALE 2:1

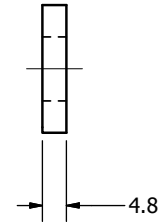
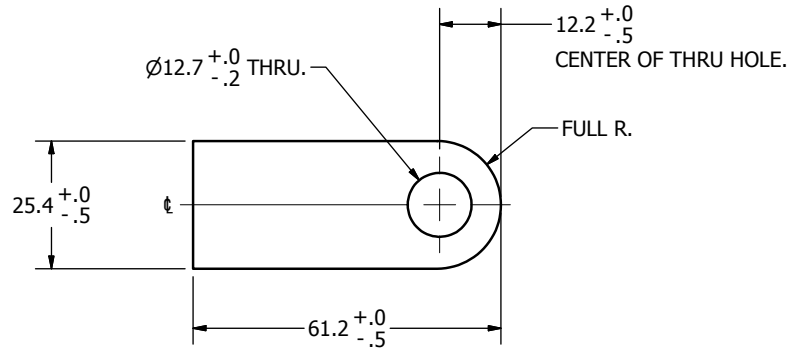


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
PROJECT NO.:	472-6700	MATERIAL:	1018 STEEL	DESCRIPTION:
DRAWN BY:	Thanh	HEAT TREAT:		SHAFT - WRIST ROTATION
CHECKED BY:	J. WANG	DATE:	1/30/2012	SIZE: SHEET
DATE:	10/3/2011	ENGINEER:	J. WANG	A3 1 of 1
DATE:	10/3/2011	SCALE:	2:1	DRAWING NO.:
TOTAL QTY IN DUMMY	2			472-6730



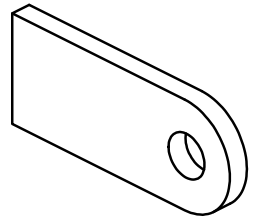


ISO VIEW  
SCALE 1 : 1

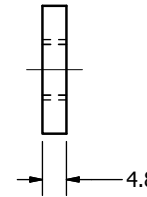
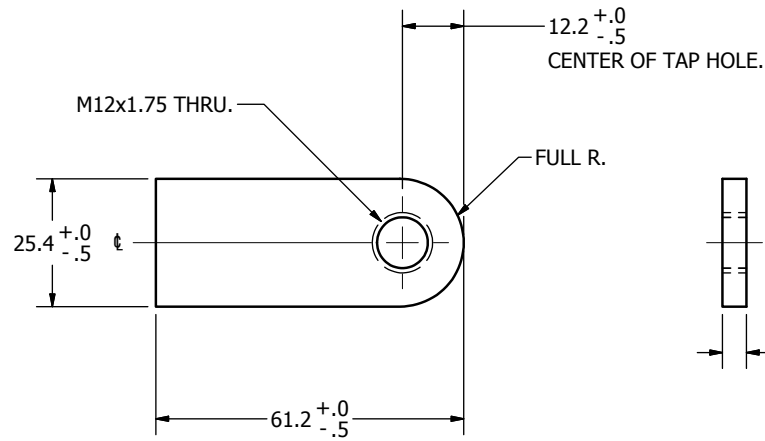


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-205 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION			
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 ± 0.07 16 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01					
PROJECT NO:	472-6700	MATERIAL:	1018 STEEL	DESCRIPTION: LUG - WRIST, UPPER			
DRAWN BY:	Thanh	DATE:	10/4/2011				
CHECKED BY:		ENGINEER:	J. WANG	SIZE: SHEET A3 1 OF 1 SCALE: FULL			
HEAT TREAT:		DATE:	1/30/2012				
TOTAL QTY IN DUMMY	2	FINISH:		DRAWING NO:	472-6710	REV:	A



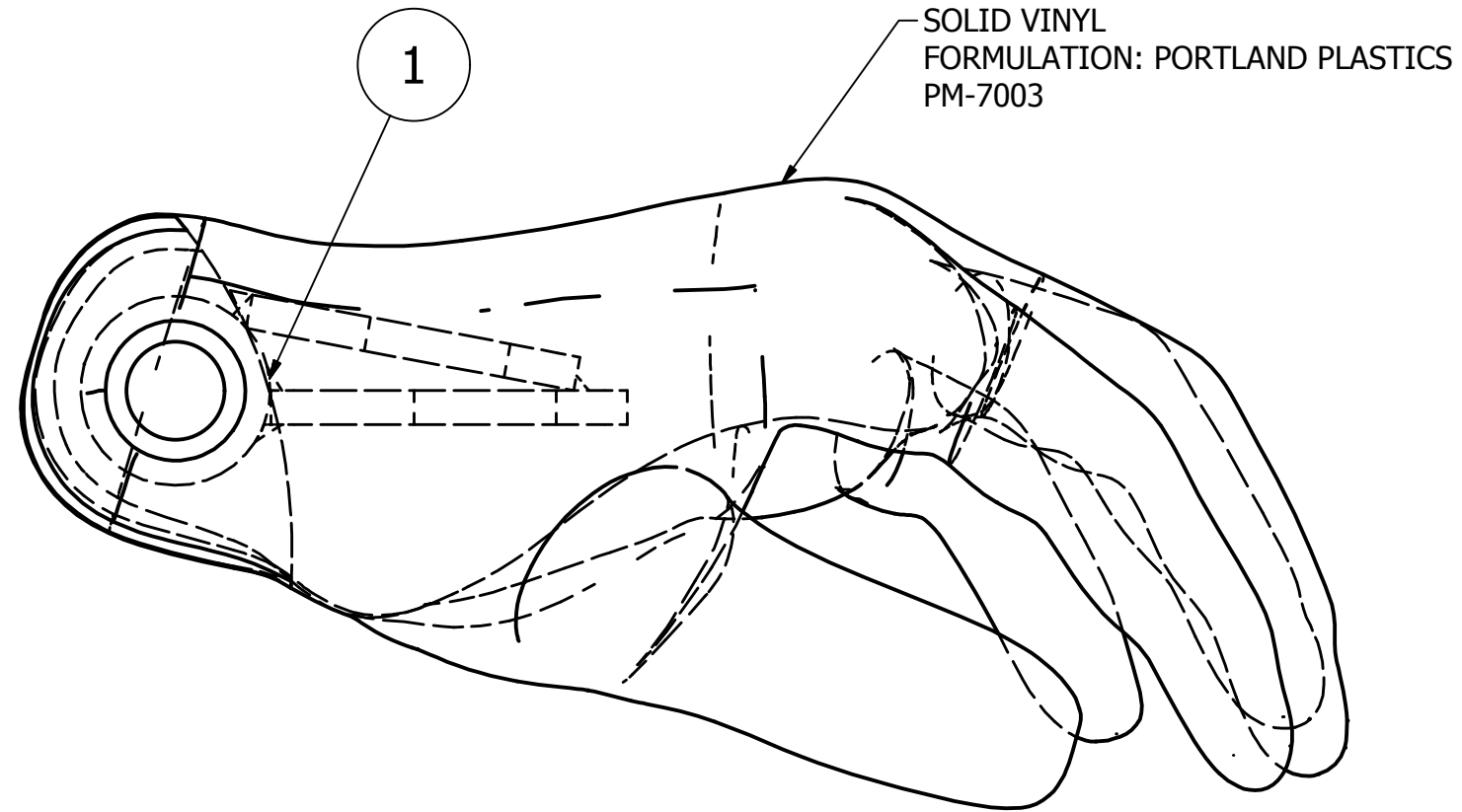
ISO VIEW  
SCALE 1 : 1



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-206 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION			
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.57 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01					
PROJECT NO:	472-6700	MATERIAL:	1018 STEEL	DESCRIPTION: LUG - WRIST, LOWER			
DRAWN BY:	Thanh	DATE:	10/4/2011				
CHECKED BY:		ENGINEER:	J. WANG	SIZE: A3 SHEET: 1 OF 1 SCALE: FULL			
DATE:		DATE:	1/30/2012				
NEXT ASSEMBLY	QTY	TOTAL QTY IN DUMMY	2	DRAWING NO:	472-6720	REV:	A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-208 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN



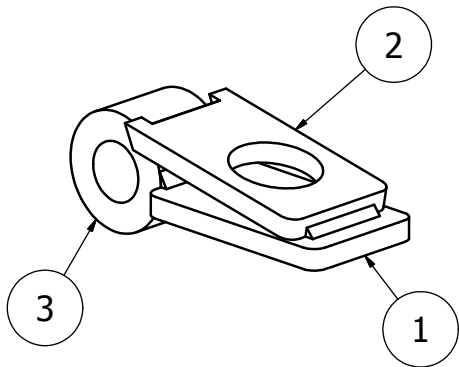
NOTES:

1. UNLESS OTHERWISE SPECIFIED: PIECEMARK USING PART NUMBER AND REVISION LETTER. SERIALIZE
2. PART WEIGHT .57 Kg ± .05 Kg (1.25 LBS ± .10 LBS).

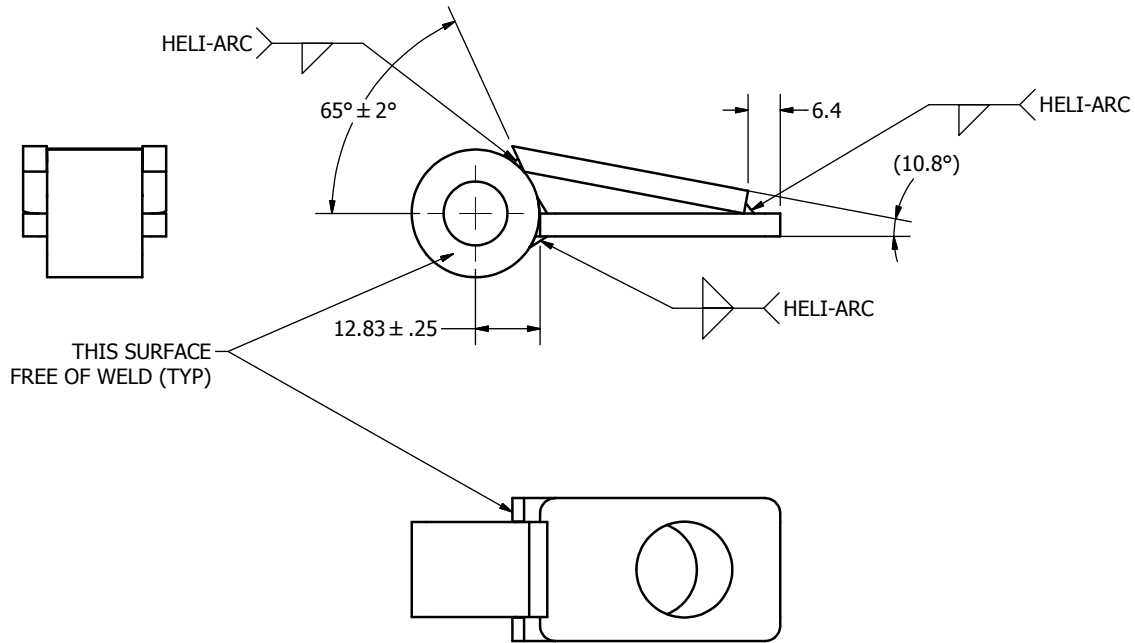
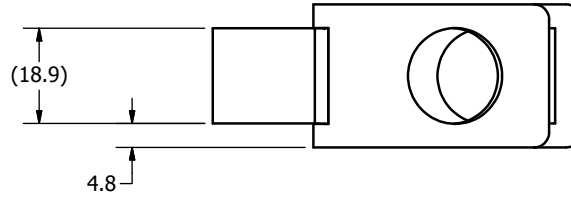
1	1	472-6910	STRUCTURAL ASS'Y-HAND THOR-M
ITEM	QTY	PART NUMBER	DESCRIPTION

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 ± 0.2 1.6 XXX ± 0.1 ± 0.1 1.6 XXXX ± 0.01 ± 0.01 1.6		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION:
DRAWN BY: Thanh		DATE: 10/4/2011		HAND ASM MOLDED, LEFT THOR-M
MATERIAL:		CHECKED BY: J. WANG		SIZE: A3
HEAT TREAT:		DATE: 1/30/2012		SHEET: 1 of 1
FINISH:		ENGINEER: J. WANG		DRAWING NO.: 472-6900-1
TOTAL QTY IN DUMMY: 1		SCALE: FULL		REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-210 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN



ISO VIEW  
SCALE 1 : 1



ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-6920	HUB, HAND
2	1	472-6930	PLATE - HAND, INNER
1	1	472-6940	HAND PLATE - OUTER

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.5° 1.6 0.1 0.2 0.3 0.01 <input checked="" type="checkbox"/> REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	DATE:	DESIGNER:	DATE:	SCALE: FULL
MATERIAL:	DRAWN BY: Thanh	ENGINEER:	DATE:	SIZE: A3
HEAT TREAT:	CHECKED BY:	DATE:	SCALE: FULL	SHEET: 1 OF 1
FINISH: ELECTROLESS NICKEL PLATE .008 MAX.	DATE:	DATE:	SCALE: FULL	DRAWING NO: 472-6910
TOTAL QTY IN DUMMY: 2	DATE:	DATE:	SCALE: FULL	REV: A

472-6900-2	1	PROJECT NO:	DATE:
472-6900-1	1	MATERIAL:	DRAWN BY: Thanh
NEXT ASSEMBLY	QTY	HEAT TREAT:	CHECKED BY:
TOTAL QTY IN DUMMY	2	FINISH: ELECTROLESS NICKEL PLATE .008 MAX.	DATE:



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: STRUCTURAL ASS'Y-HAND THOR-M

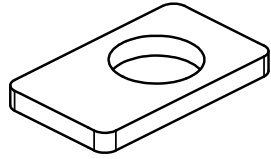
SIZE: A3

SHEET: 1 OF 1  
DRAWING NO: 472-6910

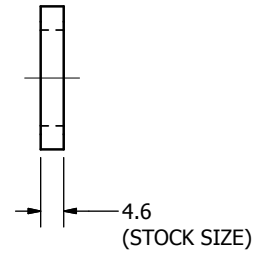
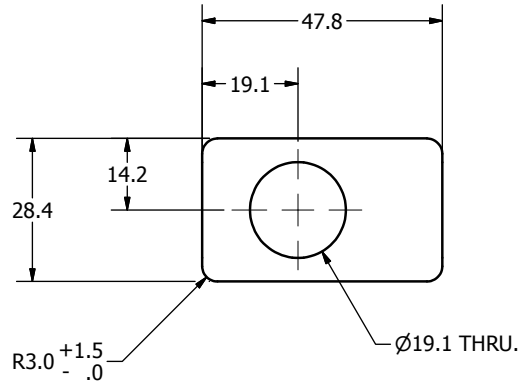
REV: A

REVISION HISTORY

ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-213 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN



ISO VIEW  
SCALE 1 : 1



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

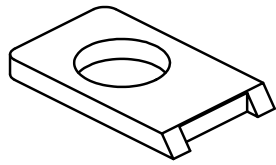
TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
0.05 16  
X 0.2  
XX 0.3  
XXX 0.01  
REMOVE BURRS & BREAK SHARP EDGES



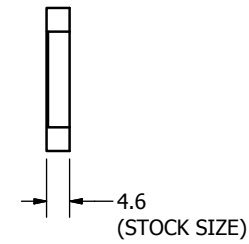
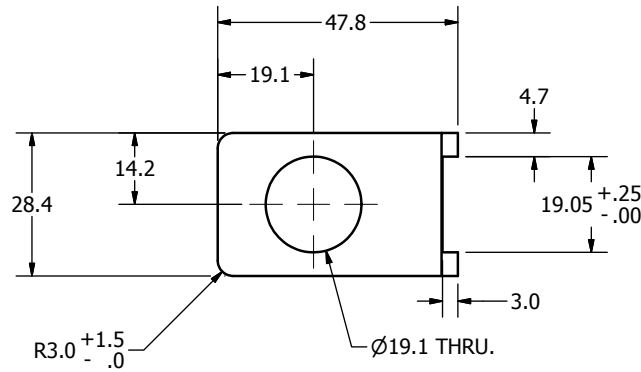
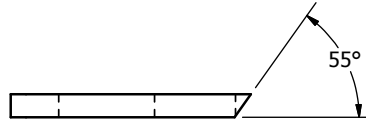
NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

PROJECT NO.: 472-6910	1	MATERIAL: 1018 STEEL	DRAWN BY: Thanh	DATE: 10/4/2011	DESCRIPTION: HAND PLATE - OUTER
NEXT ASSEMBLY	QTY	HEAT TREAT:	CHECKED BY:	DATE:	
TOTAL QTY IN DUMMY	2	FINISH:	ENGINEER: J. WANG	DATE: 1/30/2012	
SIZE: A3 SHEET: 1 OF 1 SCALE: FULL					DRAWING NO.: 472-6940

REV: A



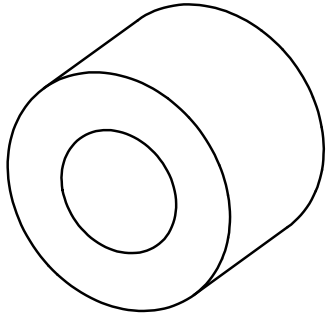
ISO VIEW  
SCALE 1 : 1



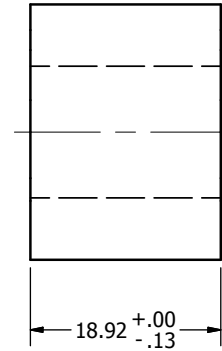
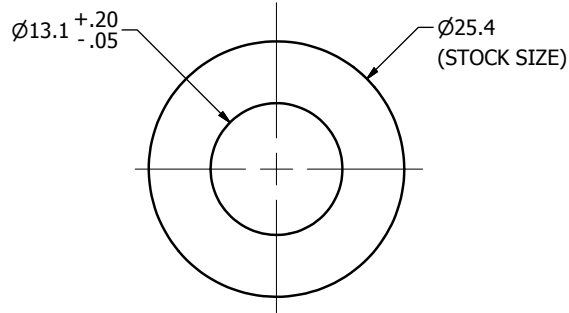
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-212 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.05 1.6 X 0.2 XX 0.3 XXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-6910	MATERIAL:	1018 STEEL	DESCRIPTION: PLATE - HAND, INNER
DRAWN BY:	Thanh	DATE:	10/4/2011	
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	SIZE: A3 SHEET: 1 OF 1 SCALE: FULL
TOTAL QTY IN DUMMY	2	FINISH:		DRAWING NO.: 472-6930 REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-211 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN
	B	CHANGED Ø13.1 +.0/-0.2 TO Ø13-1 +.20/-0.05	10/4/2011	JSJ

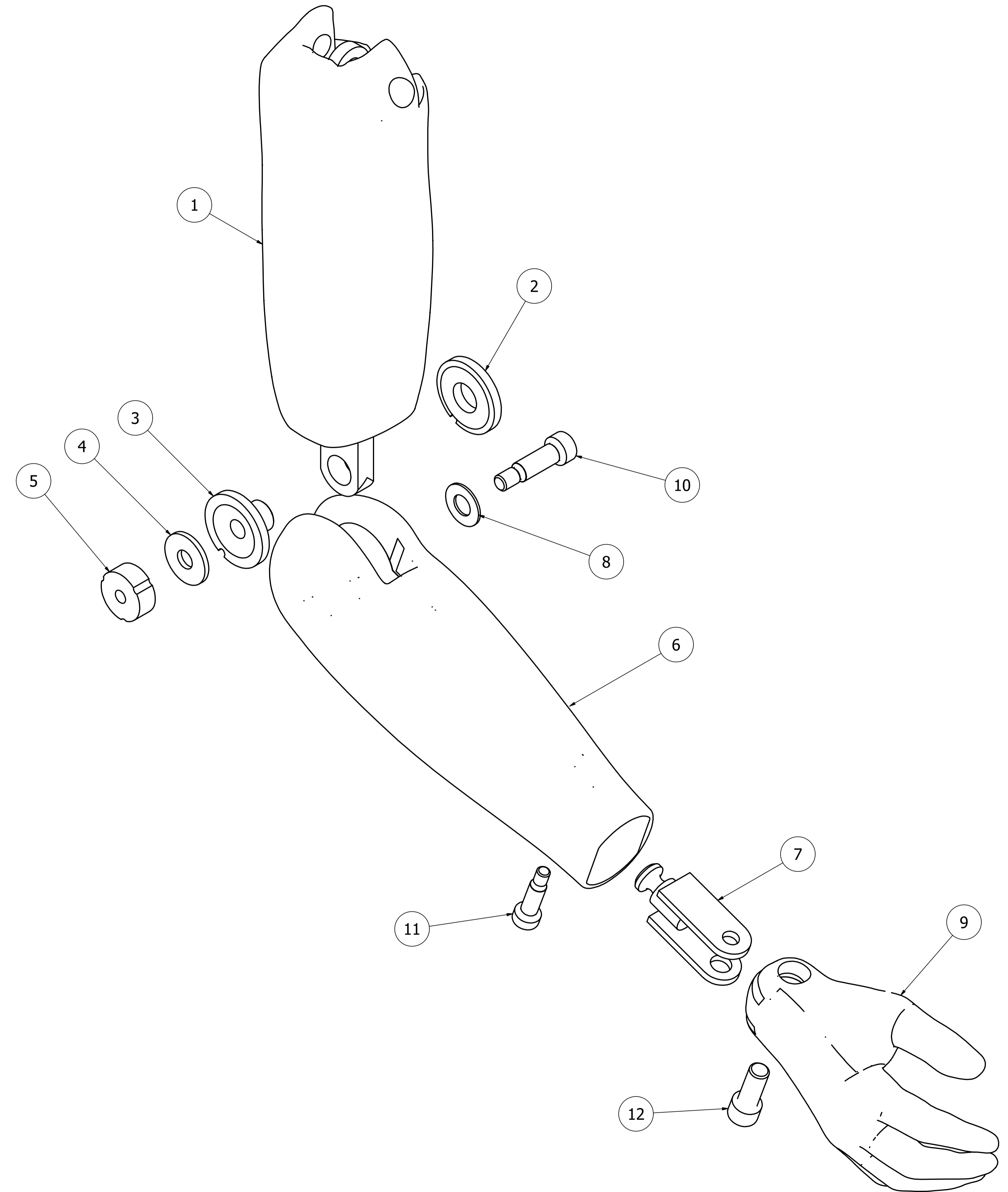


ISO VIEW  
SCALE 2:1



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>F ±0.5 ±0.5° 16</small> <small>XX ±0.2 ±0.5°</small> <small>XXX ±0.3 ±0.5°</small> <small>XXX ±0.01 ±0.5°</small> <small>REMOVE BURRS &amp; BREAK SHARP EDGES</small>		
PROJECT NO:	472-6910	MATERIAL:	1018 STEEL	DESCRIPTION:
DRAWN BY:	1	CHECKED BY:	Thanh	HUB, HAND
DATE:	10/4/2011	DATE:	1/30/2012	SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	A31 OF 1
FINISH:		DATE:	1/30/2012	SCALE: 2:1
DESCRIPTION:	HUB, HAND			DRAWING NO.:
	TOTAL QTY IN DUMMY			2
	NEXT ASSEMBLY			QTY
	TOTAL QTY IN DUMMY			2
	DRAWING NO.:			472-6920
	REV.:			B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1APM000 AND CONVERTED TO METRIC FOR THOR-M	10/5/2011	TKN
	B	ITEM NUMBER 1 - PART #AXAMM000 - SD3 UPPER HUMERUS ASSEMBLY WAS PART #472-6120 - UPPER ARM ASSEMBLY, MOLDED; REMOVED PARTS #472-6300 - STRUCTURAL ASSY. UPPER ARM LOWER PART THOR-M AND PART #5000857 - M10 X 35 LG. SHSS	3/27/2014	DW
	C	ITEM NUMBER 1 - PART #472-6200 - UPPER HUMERUS ASSEMBLY WAS PART #AXAMM000 - SD3 UPPER HUMERUS ASSEMBLY	9/15/2014	DW



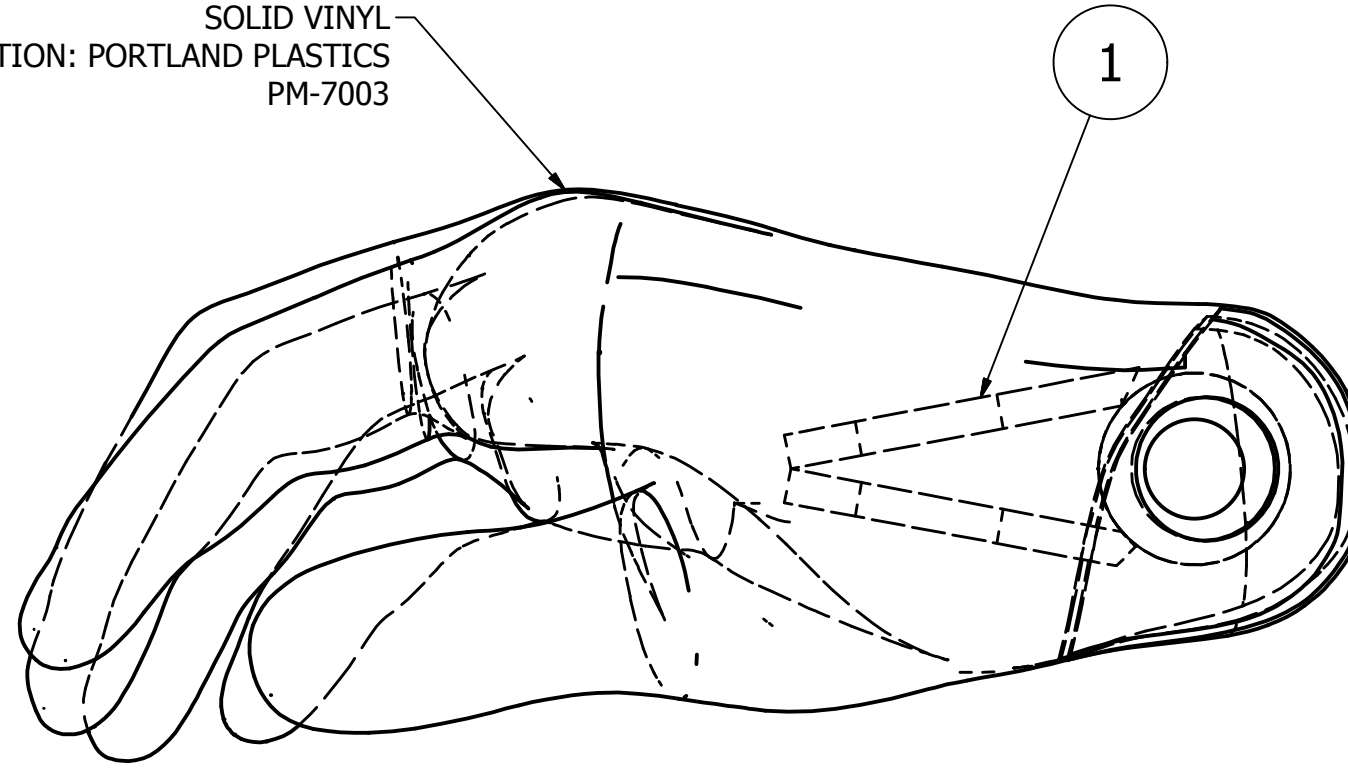
ITEM	QTY	PART NUMBER	DESCRIPTION
12	1	5000441	M12 X 1.75 X 30 LG. SHCS
11	1	5000492	M10 X 25 LG. SHSS
10	1	5000506	M12 X 30 LG. SHSS
9	1	472-6900-2	HAND ASM MOLDED, RIGHT THOR-M
8	1	9001260	WASHER, 1.06 OD x .53 ID x .06 THK.
7	1	472-6700	LOWER WRIST ROTATION ASSY.
6	1	472-6520	LOWER ARM MOLDED, THOR-M
5	1	472-6610	NUT - ELBOW PIVOT THOR-M
4	1	472-6950	WASHER-SHOULDER JOINT SPRING
3	1	472-6590	BUSHING, UPPER ARM AND ELBOW PIVOT
2	1	472-6600	WASHER - UPPER ARM & ELBOW PIVOT THOR-M
1	1	472-6200	UPPER HUMERUS ASSEMBLY

<small>DO NOT SCALE DRAWING</small> <small>UNLESS OTHERWISE SPECIFIED</small> <small>ALL DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS - 0.00 0.01 0.02 0.03 0.04 0.05 0.07 0.08 0.10 0.15 0.20 0.25 0.30 0.40 0.50 0.60 0.80 1.00 1.50 2.00 3.00 4.00 5.00 6.00 8.00 10.00 12.00 15.00 20.00 25.00 30.00 40.00 50.00 60.00 80.00 100.00</small> <small>SHOW HIDDEN &amp; BREAK SHARP EDGES</small> <small>THIRD ANGLE PROJECTION</small>		<small>TOLERANCES</small> <small>FINISH</small> <small>TEXT</small> <small>DATE</small> <small>SCALE</small> <small>SHEET</small> <small>TOTAL</small>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> RIGHT ARM ASSEMBLY	
472-0000	1	THANH	10/5/2011	11 OF 1	
NEXT ASSEMBLY	QTY	DATE	BY	472-6000-2	
TOTAL QTY IN DUMMY	1	J. WANG	1/28/2012	3:4	



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REFERENCE DWG #78051-209 AND CONVERTED TO METRIC FOR THOR-M	10/4/2011	TKN



SOLID VINYL  
FORMULATION: PORTLAND PLASTICS  
PM-7003



NOTES:

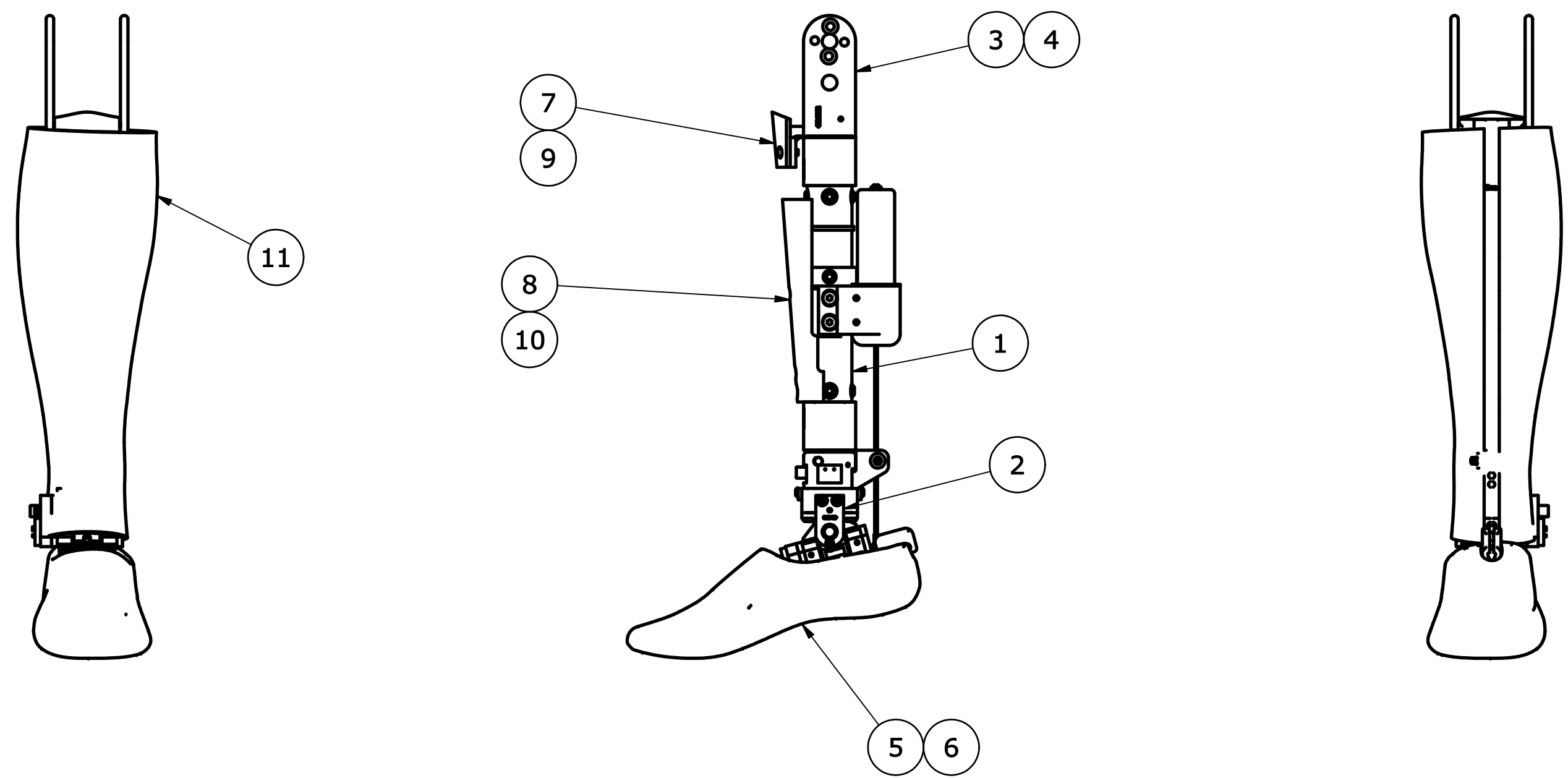
- UNLESS OTHERWISE SPECIFIED:  
PIECEMARK USING PART NUMBER AND  
REVISION LETTER. SERIALIZE
- PART WEIGHT .57 Kg ± .05 Kg (1.25 LBS ± .10 LBS).

1	1	472-6910	STRUCTURAL ASS'Y-HAND THOR-M
ITEM	QTY	PART NUMBER	DESCRIPTION
PARTS LIST			


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	DATE:	DESCRIPTION: <b>HAND ASM MOLDED, RIGHT THOR-M</b>
MATERIAL:		DRAWN BY:	DATE:	
HEAT TREAT:		CHECKED BY:	DATE:	
TOTAL QTY IN DUMMY	1	FINISH:	ENGINEER:	SIZE: SHEET <b>A3 1 of 1</b> SCALE: FULL
			J. WANG	DRAWING NO.: <b>472-6900-2</b>
			1/30/2012	REV: <b>A</b>

472-6000-2	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

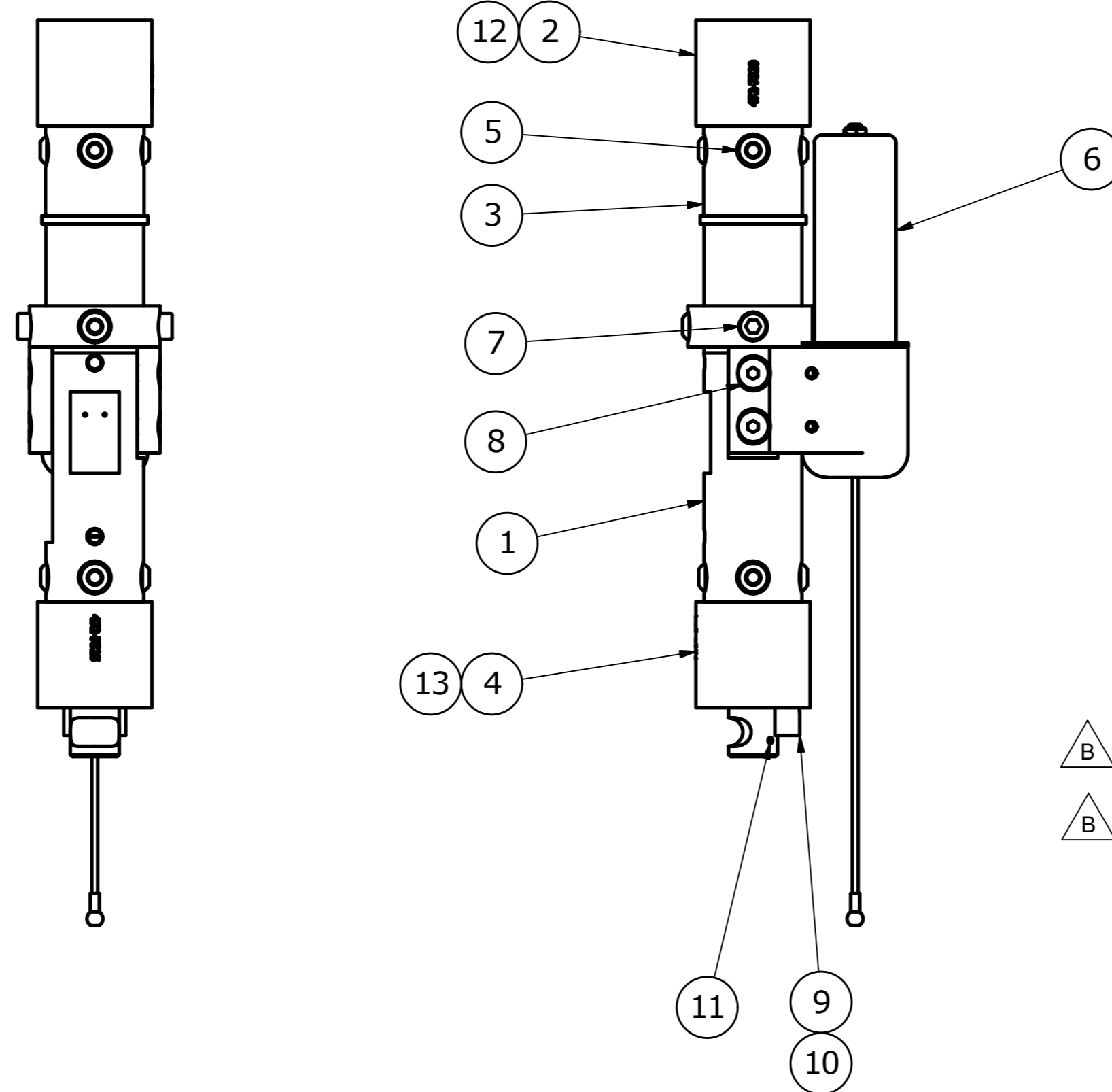
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGED TO METRIC DIMENSIONS	12/5/2008	BLW
	B	ADDED ITEM #11	7/14/2015	DW




ITEM	QTY	PART NUMBER	DESCRIPTION
11	1	472-7370-1	LOWER LEG FLESH, LEFT
10	2	9010453	SCREW, BHCS M6-1.0 x 16
9	2	9003042	SCREW, BHCS M5 x 10
8	1	472-7115	TIBIA GUARD
7	1	472-7110	KNEE BUMPER, MOLDED
6	4	9000826	SCREW, FHCS M6-1.0 x 16
5	1	472-7700-1	FOOT ASS'Y., LEFT
4	4	9000852	SCREW, SHCS M6 x 1.0 X 16mm LONG
3	1	472-7200	KNEE CLEVIS WELDMENT
2	1	472-7500-1	ANKLE ASSEMBLY, LEFT
1	1	472-7300	LOWER LEG MECHANICAL ASSEMBLY

PARTS LIST			
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small>  DECIMAL: X ±.5, XX ±.2, XXX ±.1 MACHINED ANGLES ±.5° <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
MATERIAL	CHECKED		<b>LOWER LEG ASSEMBLY, COMPLETE - LEFT</b> <b>THOR M</b>
HEAT TREAT	ENG		
FINISH	APPROVED		
<small>THIRD ANGLE PROJECTION</small>		SIZE <b>C</b>	DRAWING NUMBER <b>472-7000-1</b>
		SCALE:	SHEET <b>1</b> OF <b>1</b>

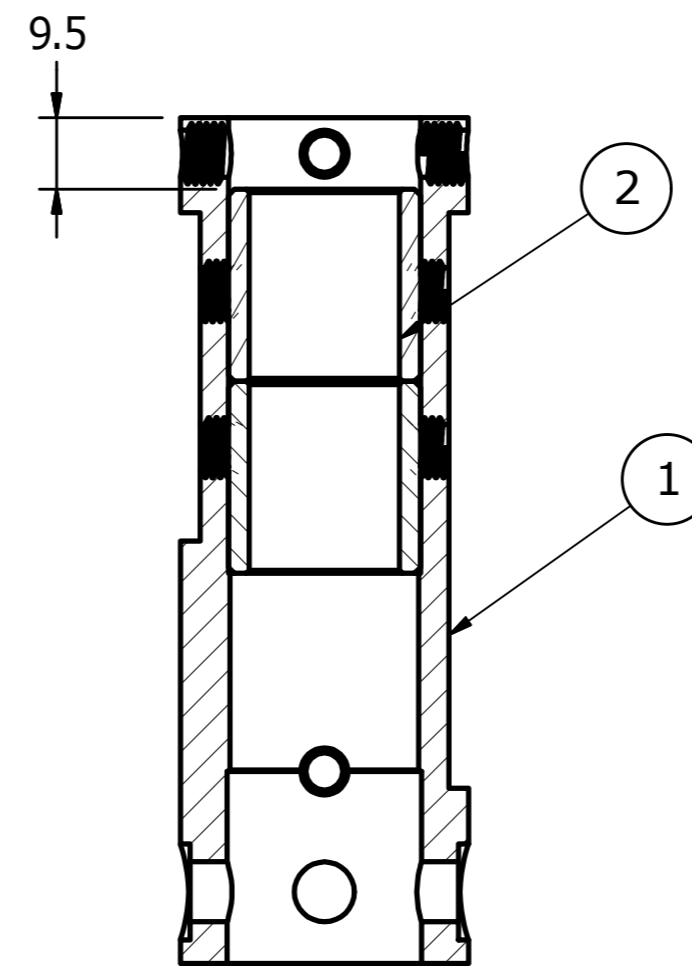
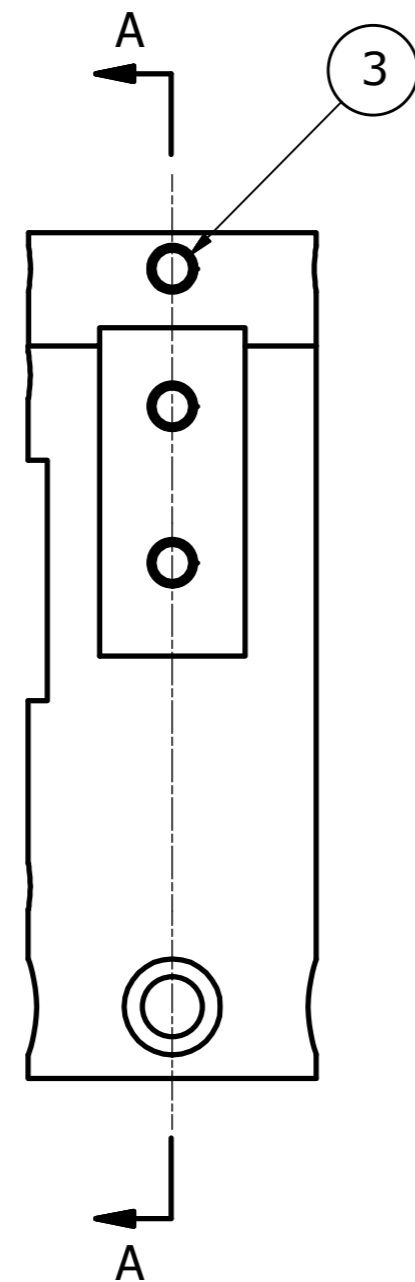
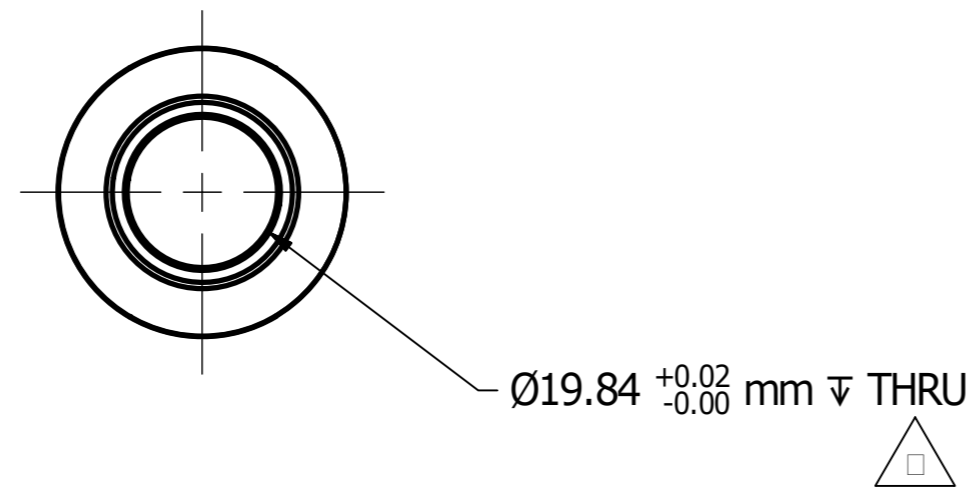
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	12/5/2008	BLW
	B	DRAWING NO. WAS 472-7300-1; REMOVED LOWER LEG FLESH, LEFT 472-7370-1; ADDED PART #SA572-S32 - FIVE CHANNEL UPPER TIBIA LOAD CELL (OPTIONAL), & #SA572-S33 - FIVE CHANNEL LOWER TIBIA LOAD CELL (OPTIONAL)	9/3/2005	DW



ITEM	QTY	PART NUMBER	DESCRIPTION
13	1	SA572-S33	FIVE CHANNEL LOWER TIBIA LOAD CELL (OPTIONAL)
12	1	SA572-S32	FIVE CHANNEL UPPER TIBIA LOAD CELL (OPTIONAL)
11	1	9010447	SCREW, SHSS, M3X0.5 X 3
10	1	9000058	SCREW, SHCS M3-0.5 x 12
9	1	472-7330	Z ROTATION WEDGE ASSY
8	5	9001445	SCREW, FHCS M6-1 x 12
7	2	472-7335	PLUNGER RETAINING BOLT
6	1	472-7350	ACHILLES SPRING TUBE MECHANICAL ASS'Y.
5	9	W50-61042	MODIFIED BHSS M6 THREAD
4	1	472-7325	LOWER TIBIA LOAD CELL BLANK
3	1	472-7315	TIBIA COMPLIANT BUSHING
2	1	472-7320	UPPER TIBIA LOAD CELL BLANK
1	1	472-7310	LOWER TIBIA TUBE ASSY

PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5 X.X ±.2 X.XX ±.1 MACHINED ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>  <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
APPROVALS		DATE	LOWER LEG MECHANICAL ASSEMBLY
DRAWN B. WADE		12/5/2008	
CHECKED			THOR M
HEAT TREAT		ENG	
FINISH		APPROVED	
MATERIAL		CHECKED	
THIRD ANGLE PROJECTION		SCALE: A2	DRAWING NUMBER: 472-7300 REV: B
		SHEET	1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	REMOVED NOTES 4, 5, & 6; REMOVED DIMENSION; .38 WAS .375; ADD MACHINING ASSEMBLY NOTES	7/30/2008	KHS
	B	CHANGE TO METRIC HELICOILS	10/14/2008	BLW
	C	CHANGE TO METRIC DIMENSIONING	11/16/2008	BLW
	D	THRU HOLE WAS 76mm DEEP	11/19/2008	DW



SECTION A-A  
SCALE □ □ □

MACHINING/ASSEMBLY NOTES:

1. FOR HELICOILS INSTALLED INTO FLATS ON PART, REMOVE 2 3/4 TREADS PRIOR TO INSTALLATION.
2. FOR HELICOILS INSTALLED INTO ROUNDS OF PART, REMOVE 5/8 OF A THREAD PRIOR TO INSTALLATION.
3. HELICOILS MUST NOT PROTRUDE INTO 25.4mm HOLE IN TOP CENTER OF PART.
4. INSTALL BEARING AFTER INSTALLATION OF HELICOILS.
5. REAM CENTER OF BEARING TO SPECIFIED DIMENSION.

3	10	9010437	HELICOIL, M6 x 1 x 6
2	2	9010423	IGUS IGLIDE J BEARING, 1" OD x 3/4" ID x 1" LG (PART #JSI-1216-16)
1	1	472-7311	LOWER TIBIA TUBE
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5 X.X ±.2 X.XX ±.1 MACHINED ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		LOWER TIBIA TUBE ASSY	
DRAWN B. WADE		11/19/2008		THOR M	
CHECKED				THOR M	
MATERIAL		ENG		SCALE: A2	
HEAT TREAT		APPROVED		DRAWING NUMBER: 472-7310	
FINISH				REV: D	
				SHEET: 1 OF 1	

4

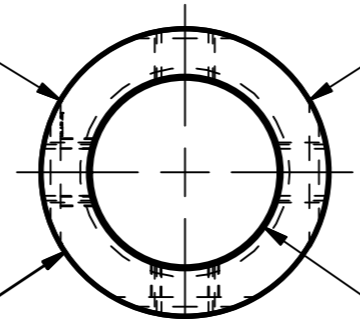
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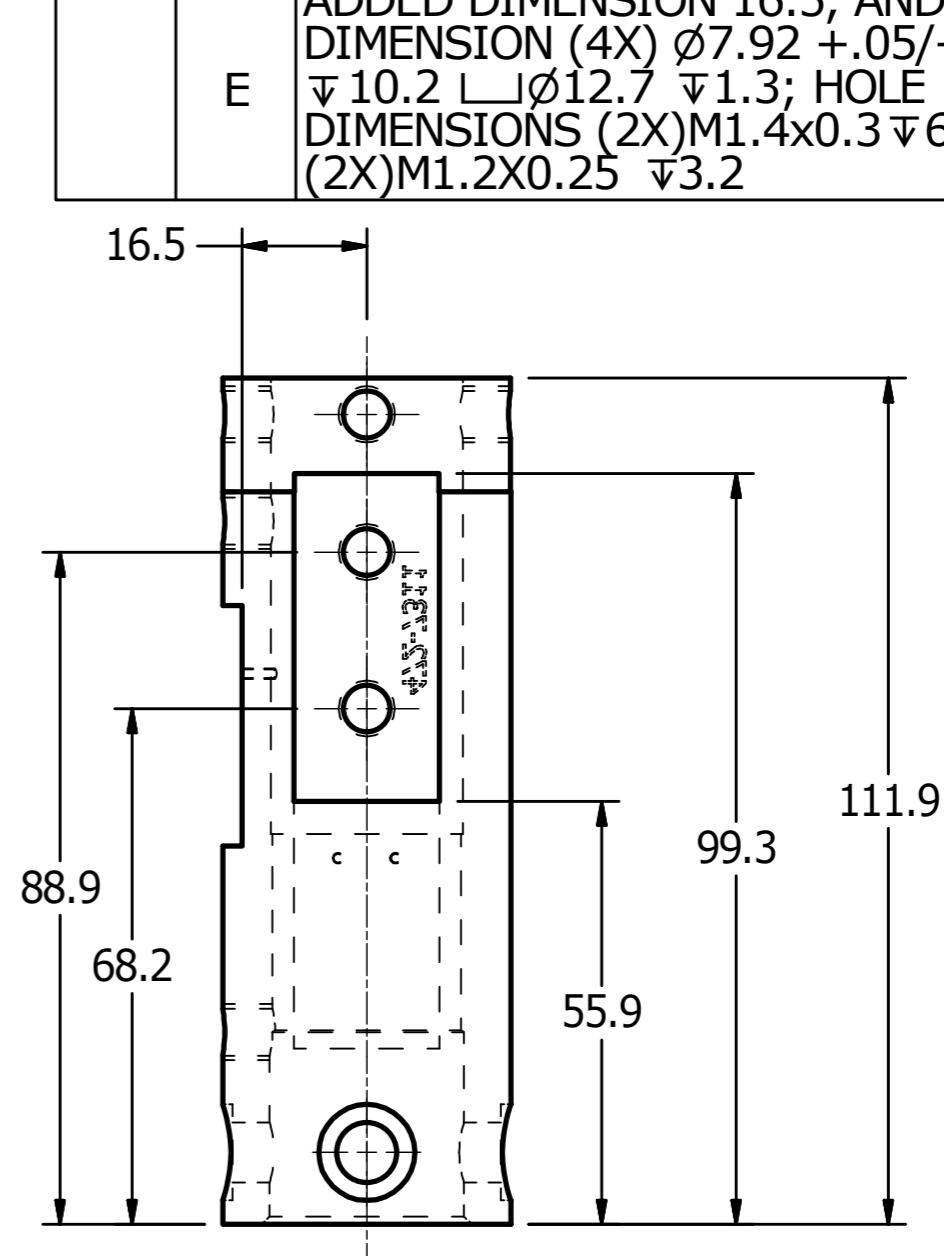
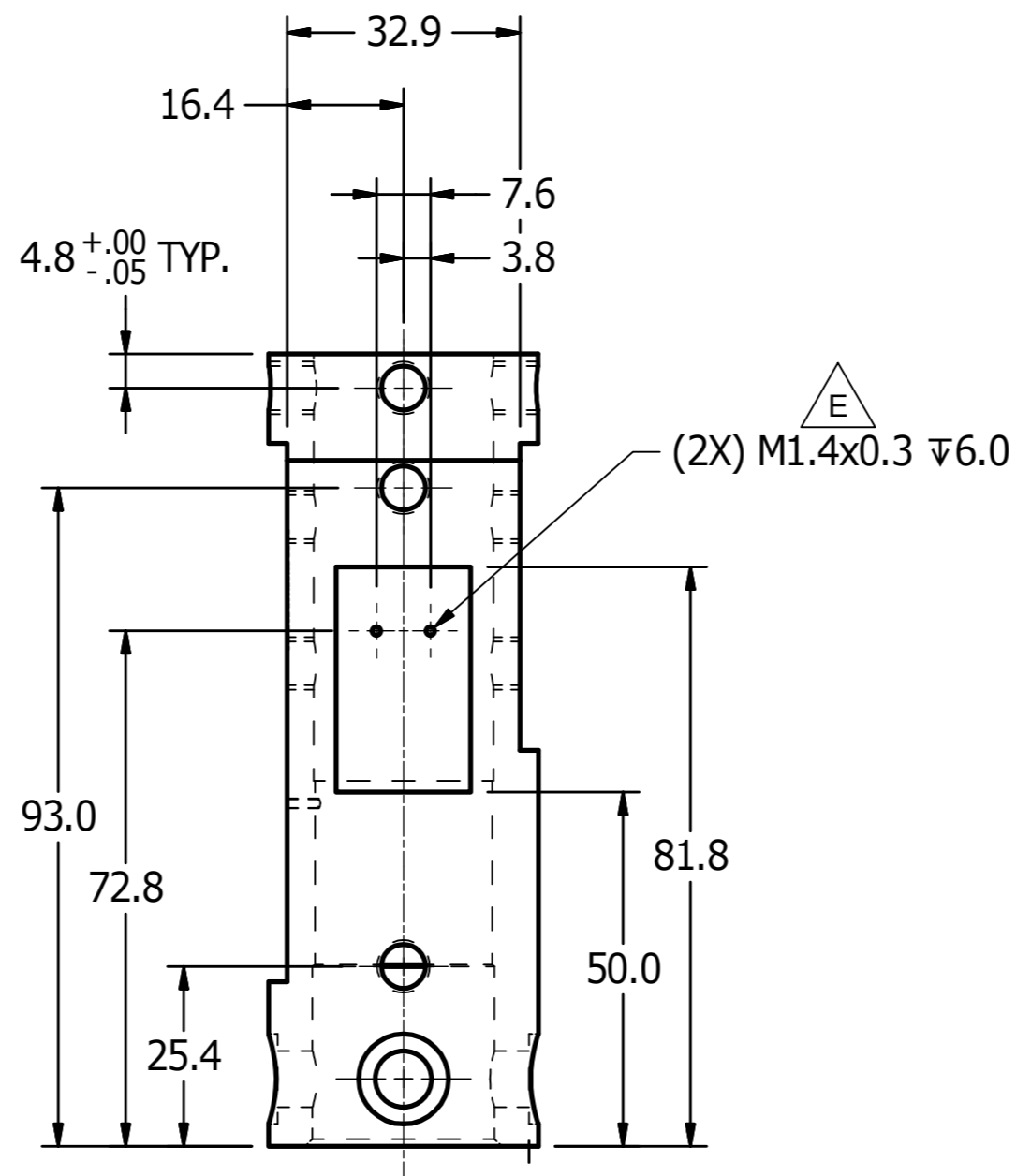
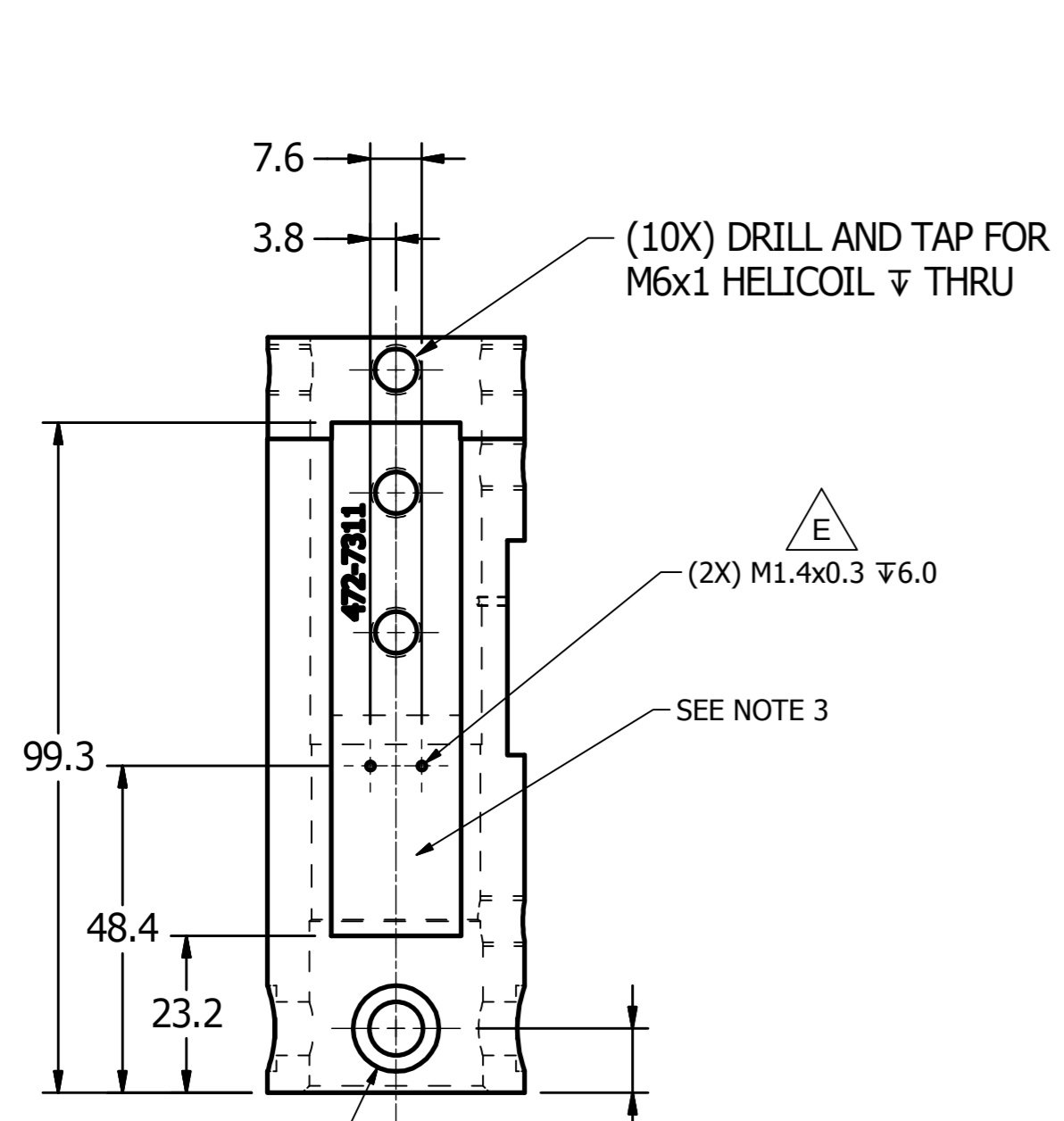
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	HOLE WAS .984 THRU; 1.500 +.005/- .000 WAS 1.500	7/29/2008	KHS
	B	.373-.000/ -.001 TYP WAS .375 TYP; ADDED VIEW SECTION A-A, DETAIL B AND SECTION C-C; ADDED CHAMFER; .188+.000/ -.002 TYP WAS .188 TYP; HOLES WERE .257 THRU C.B. .313 DOWN .220 C.B. .500 DOWN .050	8/28/2008	KHS
	C	CHANGE TO METRIC HARDWARE	10/14/2008	BLW
	D	CHANGE TO METRIC DIMENSIONING, REMOVE .06 X 23 CHAMFER, SECTION A-A, DETAIL B	11/20/2008	BLW
	E	ADDED DIMENSION 16.5, AND HOLE DIMENSION (4X) $\varnothing 7.92 +.05/- .00$ $\varnothing 10.2$ $\varnothing 12.7 \pm 1.3$ ; HOLE DIMENSIONS (2X) M1.4x0.3 $\pm 6.0$ WAS (2X) M1.2x0.25 $\pm 3.2$	7/14/2015	DW

SEE NOTE 2



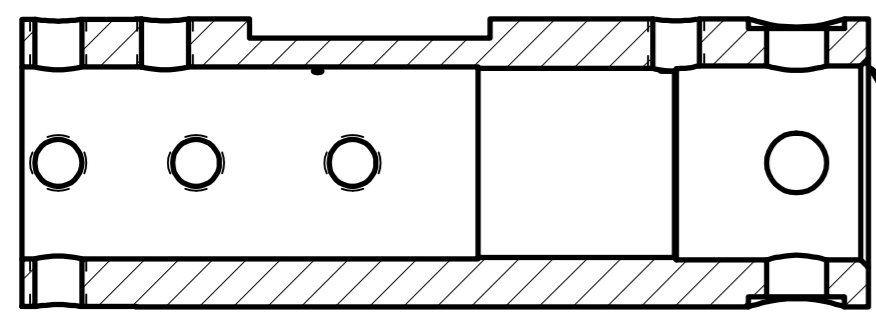
$\varnothing 38.0 \pm 15$  FROM THIS END

$\varnothing 25.0 \pm$  THRU  
 $\varnothing 25.4 \pm 60.3$



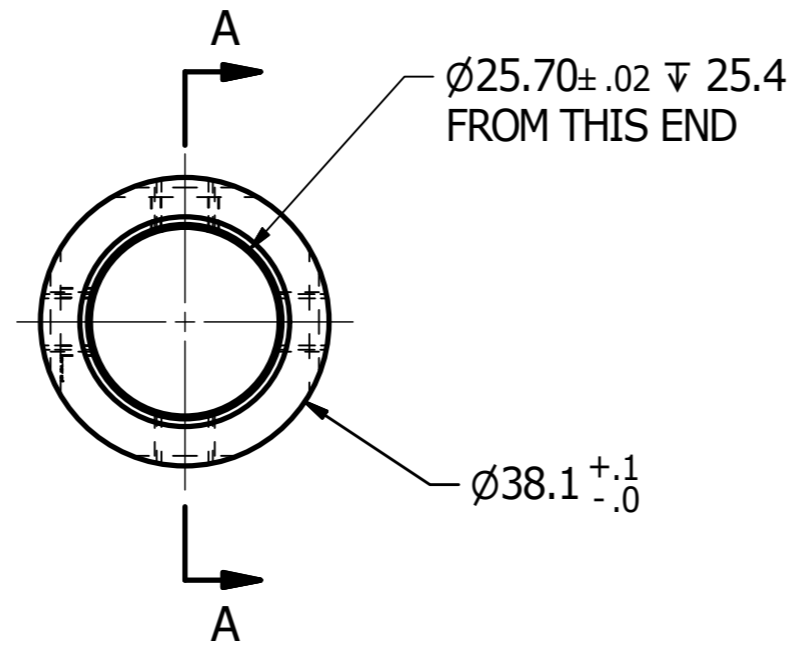
(4X)  $\varnothing 7.92 +.05/- .00$   $\varnothing 10.2$   
 $\varnothing 12.7 \pm 1.3$

9.47  $+ .00/- .05$  TYP.



**SECTION A-A**  
SCALE □ □ □

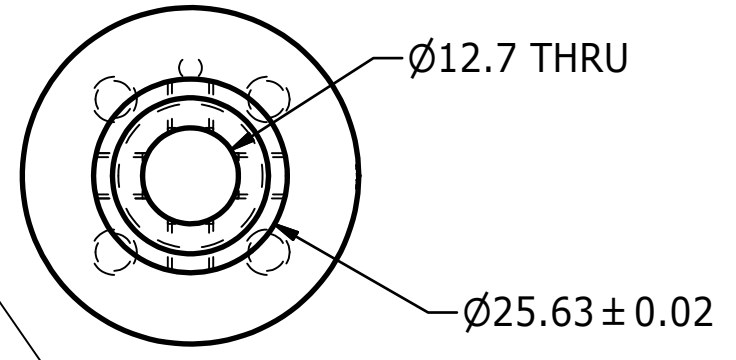
1.0 X 45° CHAMFER



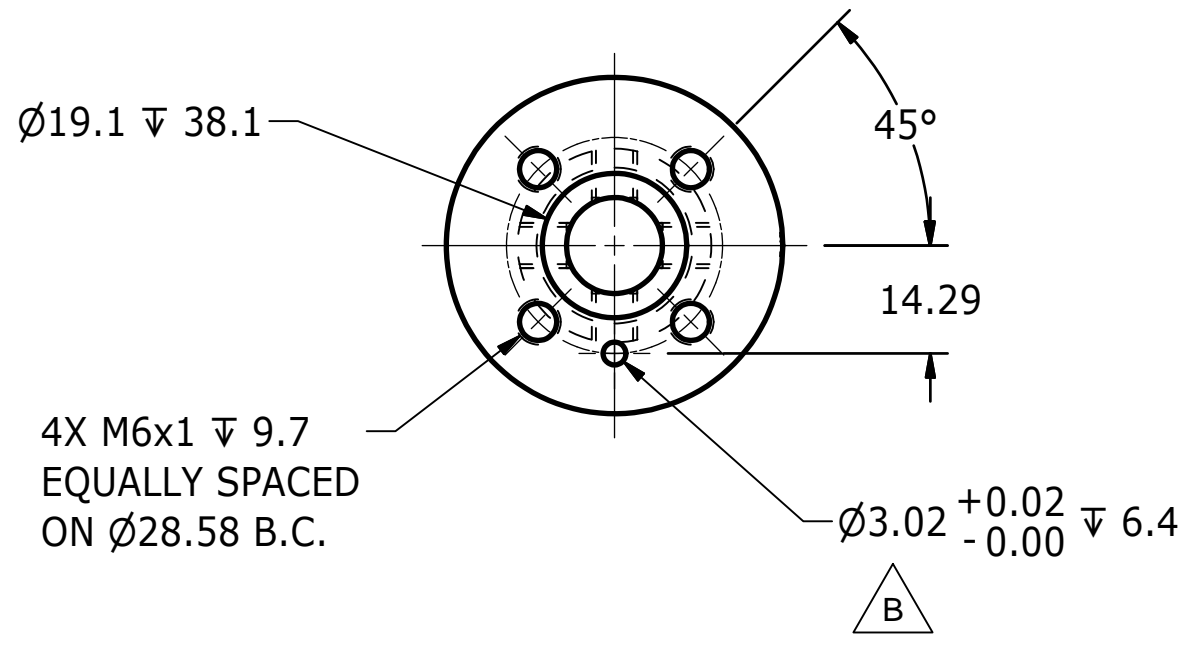
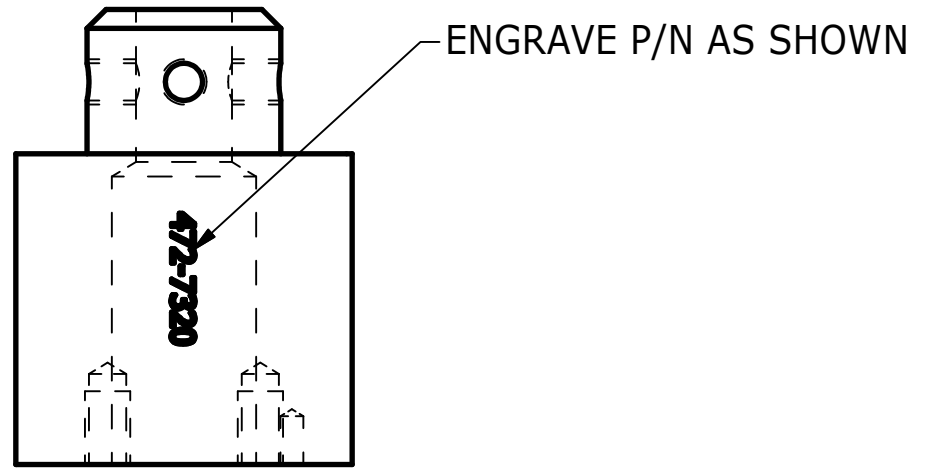
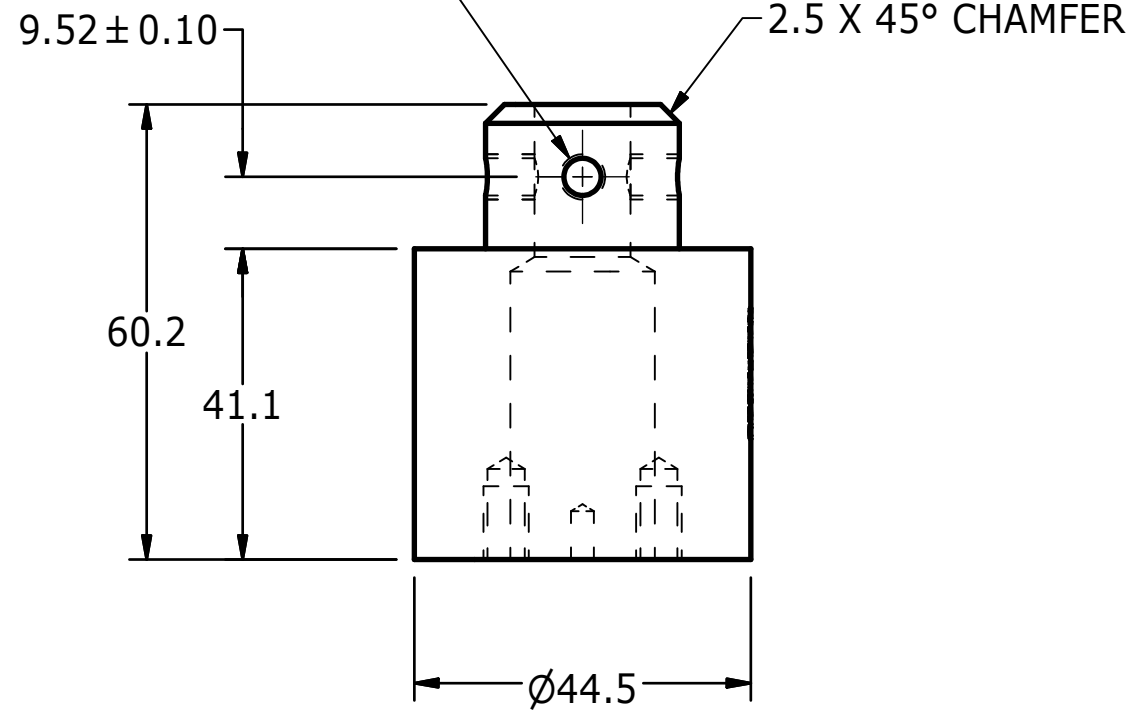
- UNLESS OTHERWISE NOTED:
- BREAK ALL SHARP EDGES
  - BREAK EDGES OF MILLED FLAT AREA TO BLEND WITH TUBE
  - INDICATED SURFACES MUST BE FLAT AND DEBURRED FOR INSTRUMENTATION MOUNTING.

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL: X ±.5, XX ±.2, XXX ±.1 MACHINED ANGLES ±.5° <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>	<b>VEHICLE RESEARCH and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED MATERIAL Aluminum-7075-T6 HEAT TREAT ENG FINISH BLUE ANNOZIDE	DATE 11/20/2008		<b>LOWER TIBIA TUBE</b> THOR M	
		APPROVED		SHEET 1 OF 1	REV E

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANFGE TO METRIC DIMENSIONING	11/11/2008	BLW
	B	ADDED 3.02 DIA PIN HOLE	7/29/2015	JHC



4X M6x1  $\nabla$  THRU TO BORE  
EQUALLY SPACED AS SHOWN



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1 MACHINED $\nabla$ 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE		<b>UPPER TIBIA LOAD CELL BLANK</b> <b>THOR M</b>	
MATERIAL 1018 STEEL	DRAWN B.WADE	CHECKED	11/20/2008	SIZE <b>B</b>	DRAWING NUMBER <b>472-7320</b>
HEAT TREAT	ENG	APPROVED		SCALE: 1:1	REV <b>B</b>
FINISH .0003 ELECTROLESS NICKEL				SHEET 1 OF 1	

THIRD ANGLE PROJECTION

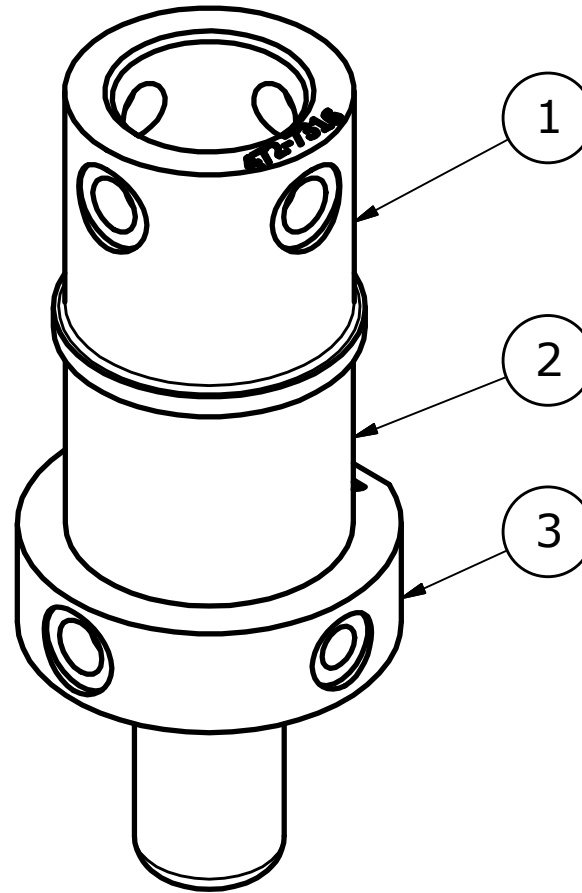
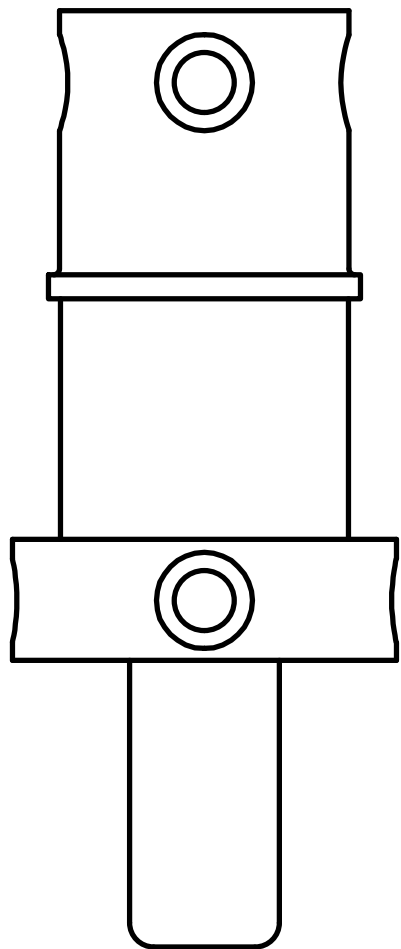
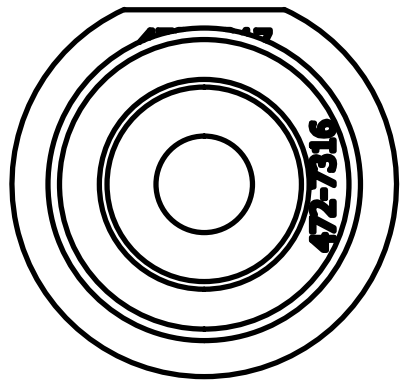
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3

2

1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGE TO METRIC DIMENSIONING	11/20/2008	BLW



ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-7317	LOWER FLANGE
2	1	472-7318	BUSHING, COMPLIANT
1	1	472-7316	PLUNGER- COMPLIANT BUSHING

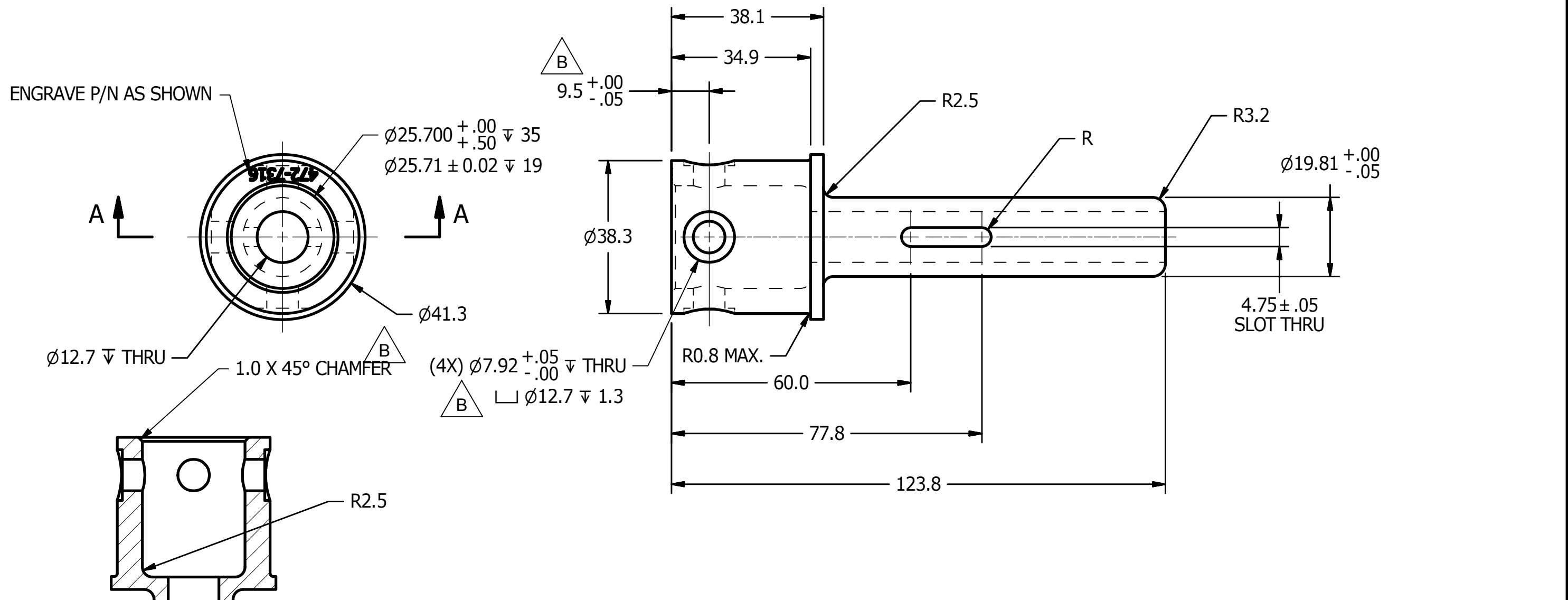
PARTS LIST

UNLESS OTHERWISE SPECIFIED:

1. BREAK ALL SHARP EDGES.
2. BOND ASSEMBLY WITH LORD 305 ADHESIVE, HOLE IN ITEM 1 MUST HAVE SAME ANGULAR ORIENTATION ABOVE CENTER AXIS HOLES IN ITEM 3.
3. METAL AND RUBBER SURFCES MUST BE SANDBLASTED & CLEANED WITH SOLVENT PRIOR TO BONDING
4. CYCLE ASSEMBLY THROUGH TEN 50% COMPRESSION LOADING CYCLES PRIOR TO ASSEMBLY TO LEG.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN B. WADE CHECKED TMV ENG FINISH APPROVED	DATE 11/20/2008 12/12/2008	
SIZE <b>A3</b>		DRAWING NUMBER <b>472-7315</b>	REV <b>A</b>
SCALE: <b>1:1</b>		SHEET <b>1 OF 1</b>	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	.188 +/- .002 WAS .188 SLOT	7/25/2008	BLW
E00609	B	.373 +.000/-.002 WAS .375; HOLES WERE .257 THRU C.B. .313 DOWN .220 C.B. .500 DOWN .050; ADDED CHAMFER	8/29/2008	KHS
E00609	C	CHANGED TO METRIC DIMENSIONING	11/20/2008	BLW

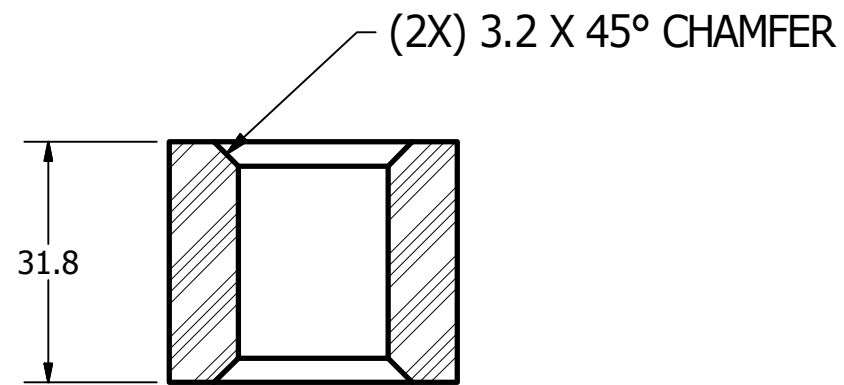
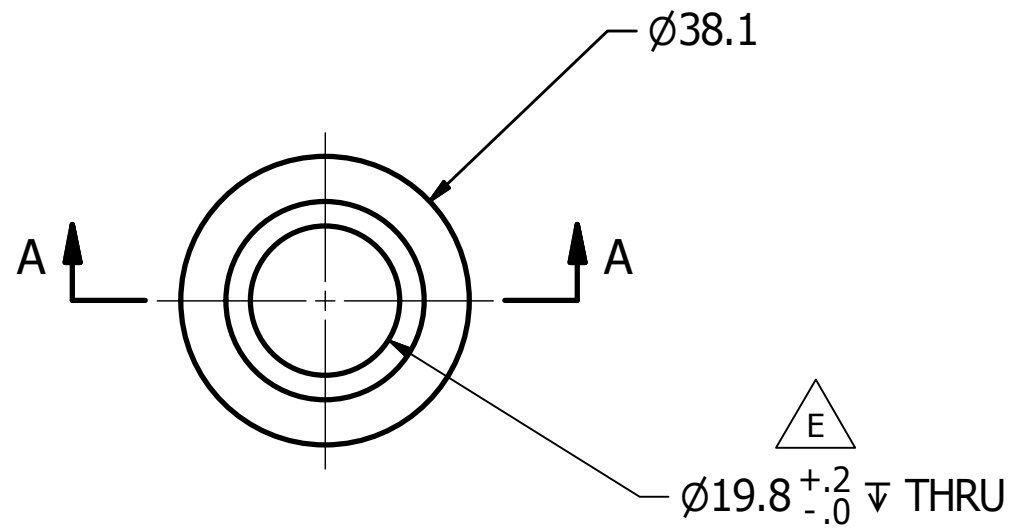


UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED $\frac{1}{16}$ ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 11/20/2008	<b>PLUNGER- COMPLIANT BUSHING</b>  <b>THOR M</b>	
MATERIAL Stainless Steel, 440C  HEAT TREAT Rc 57 +/-5  FINISH N/A	THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7316</b>	REV <b>C</b>
		SCALE: 1:1	SHEET 1 OF 1	



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	C	REDRAWN IN INVENTOR	7/19/2007	KSG
	D	CHANGED TO METRIC DIMENSIONING	11/20/2008	BLW
	E	DIMENSION WAS Ø19.1 $\nabla$ THRU; REVISED NOTES	7/14/2015	DW



SECTION A-A  
SCALE 1 : 1

STATIC COMPRESSION ON TEST RESULTS (0.5 mm/sec)

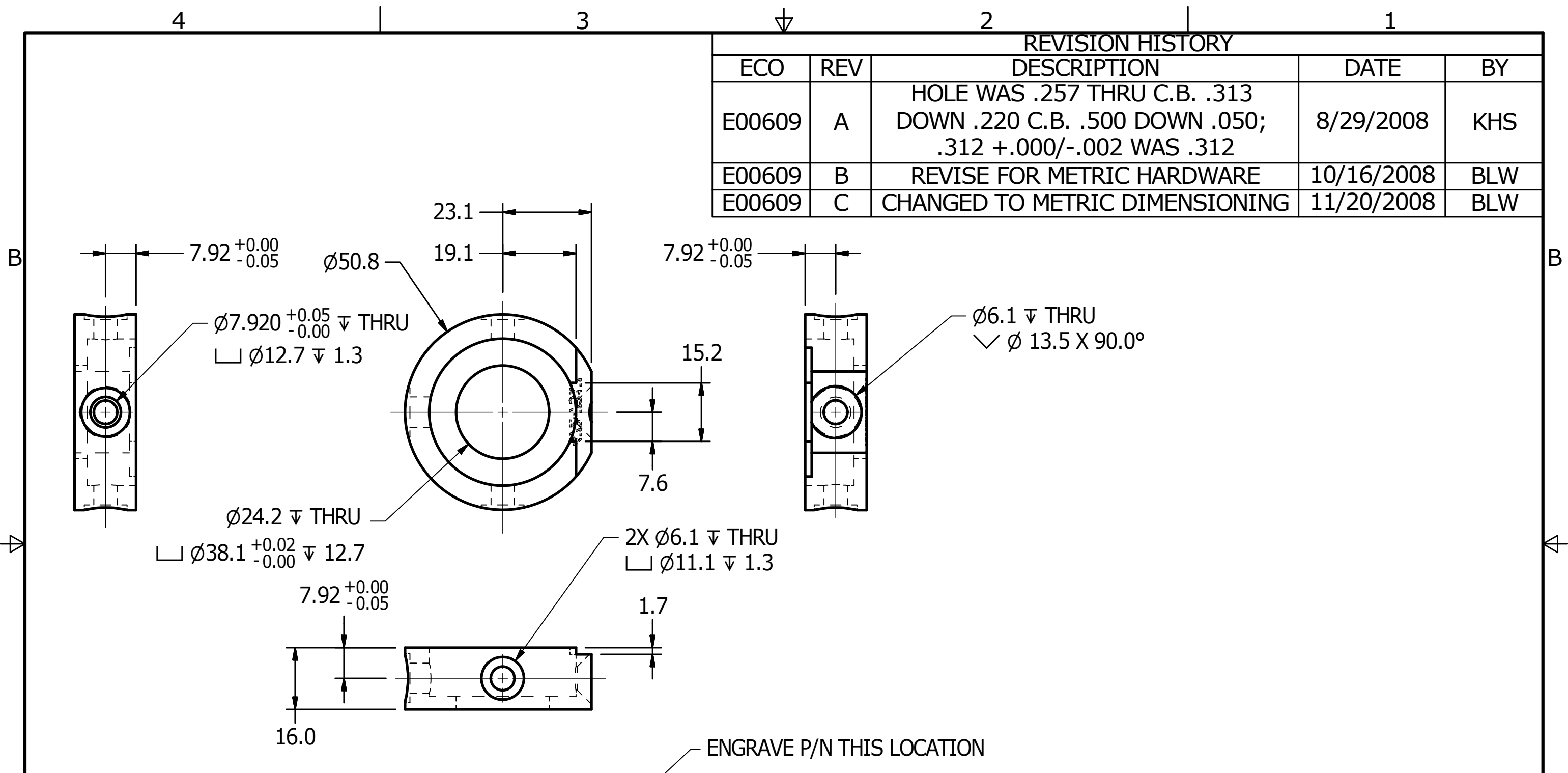
COMPRESSION (mm)	FORCE RANGE (N)
7.9 (25%)	1270-1550
15.9 (50%)	2750-3370

PREFORM (3) BREAK IN TESTS AT 50% COMPRESSION  
FLAT RIGID SURFACES ON BOTH SIDES. ALL TESTING IS 50% COMPRESSION.  
DATA FOR 25% COMPRESSION IS TO BE TAKEN FROM GRAPH OF 50% TESTING.  
A MINIMUM RECOVERY TIME OF 1 HOUR MUST BE ALLOWED BETWEEN TESTS.

- $\nabla$  E UNLESS OTHERWISE SPECIFIED:
- BREAK ALL SHARP EDGES
  - MATERIAL: NEOPRENE RUBBER 65  $\pm$ 3 SHORE A (MEASURED ON CUT END OF CYLINDER)
  - DUROMETER CAN BE SUPERCEDED BY STATIC OR DYNAMIC TEST RESULTS.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm$ .5 X.X $\pm$ .2 X.XX $\pm$ .1  MACHINED $\frac{1}{16}$ ANGLES $\pm$ .5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED ENG APPROVED	DATE 7/14/2015		<b>BUSHING, COMPLIANT</b> <b>THOR M</b>	
MATERIAL SEE NOTE 2 HEAT TREAT FINISH	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7318</b>	REV <b>E</b>	SCALE: SHEET <b>1</b> OF <b>1</b>	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	HOLE WAS .257 THRU C.B. .313 DOWN .220 C.B. .500 DOWN .050; .312 +.000/-.002 WAS .312	8/29/2008	KHS
E00609	B	REVISE FOR METRIC HARDWARE	10/16/2008	BLW
E00609	C	CHANGED TO METRIC DIMENSIONING	11/20/2008	BLW



ENGRAVE P/N THIS LOCATION

UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm .5$ X.X $\pm .2$ X.XX $\pm .1$  MACHINED $\frac{1}{16}$ ANGLES $\pm .5^\circ$  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED		DATE 11/20/2008 12/10/2008	
	MATERIAL Aluminum 6061-T6 HEAT TREAT N/A FINISH BLUE ANODIZE		<b>LOWER FLANGE</b> THOR M SIZE: <b>A3</b> SCALE: 1:1 DRAWING NUMBER: <b>472-7317</b> SHEET: 1 OF 1 REV: <b>C</b>	

4

3

2

1

REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGE TO METRIC DIMENSIONING	11/20/2008	BLW
8918	B	14.7 WAS 15.2	4/30/2009	BLW
E00609	C	ADD C'BORE, INCREASE HOLE DEPTH	5/1/2009	BLW
9096	D	ADDED CHAMFER	9/21/2009	BLW

Ø12.7 ± 0.02

Ø25.63 ± 0.02

(4X) M6x1 ± THRU TO Ø12.7 BORE EQUALLY SPACED AS SHOWN

2.5 X 45° CHAMFER

ENGRAVE P/N AS SHOWN

9.52 ± 0.10

19.1

41.1

19.1

9.53 <sup>+0.00</sup> <sub>-0.02</sub>

R5.56 <sup>+0.07</sup> <sub>-0.00</sub> THRU AT ANGLE SHOWN IN SECTION A-A

0.8 X 45° CHAMFER

9.5

Ø3.230 <sup>+0.02</sup> <sub>-0.00</sub> ± 14.7  
□ Ø6.7 ± 4.6

Ø42.4

Ø19.02 ± 0.02

14.7

45°

(2X) □ Ø4.030 <sup>+0.02</sup> <sub>-0.00</sub> ± 4.7  
EQUALLY SPACED ON 30.48 B.C.

M3x0.5 ± 5.0

(2X) 30°



6.3

M3x0.5 ± 9.7

140°

SECTION A-A  
SCALE 1:1

UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 11/20/2008 9/22/2009	<b>LOWER TIBIA LOAD CELL BLANK</b> THOR M	
MATERIAL 1018 STEEL HEAT TREAT N/A FINISH .0003 ELECTROLESS NICKEL	SIZE A2 SCALE 1:1	DRAWING NUMBER 472-7325 SHEET 1 OF 1	REV D	 THIRD ANGLE PROJECTION

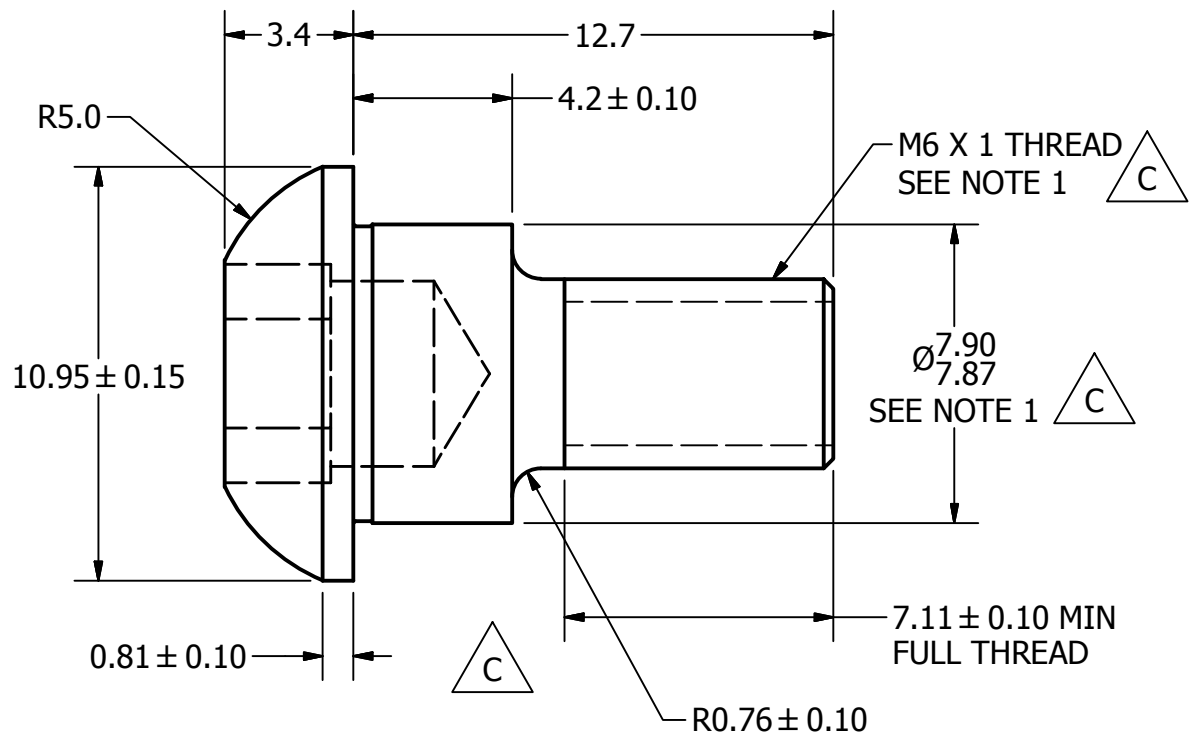
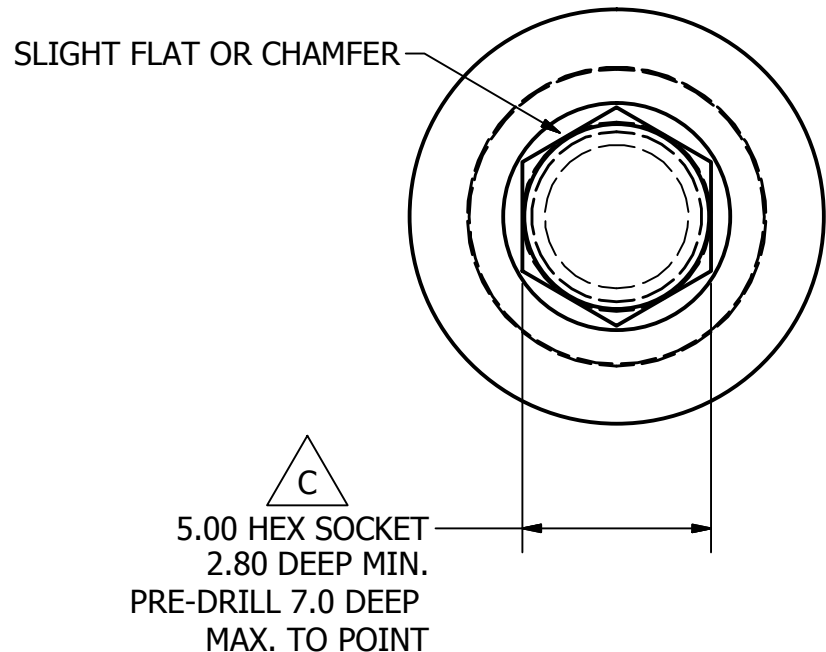
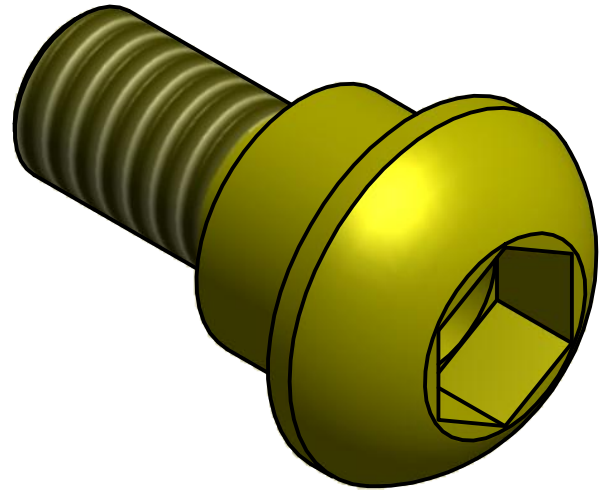
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3

2

1

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
	A	RELEASE TO PRODUCTION	SP	JWANG	5/24/05
5708	B	CHANGE APPLICATION QTY FROM 16 TO 4	RN		10/31/05
70730	C	REDRAWN IN INVENTOR. .25 RADIUS WAS MIN. UNDERCUT. 2.80 DEEP MIN WAS 3.5 DEEP MIN. ADD REF TO CONCENTRICITY NOTE. REMOVE 'USED ON' TABLE, SCALE WAS 4 : 1, DISCONTINUE DN/FT TITLE BLOCK DRAWINGS, RE-RELEASE AS HUMANETICS TITLE BLOCK, NO DN/FT SUFFIX (THIS DWG WAS FT)	GMB		1/14/2013

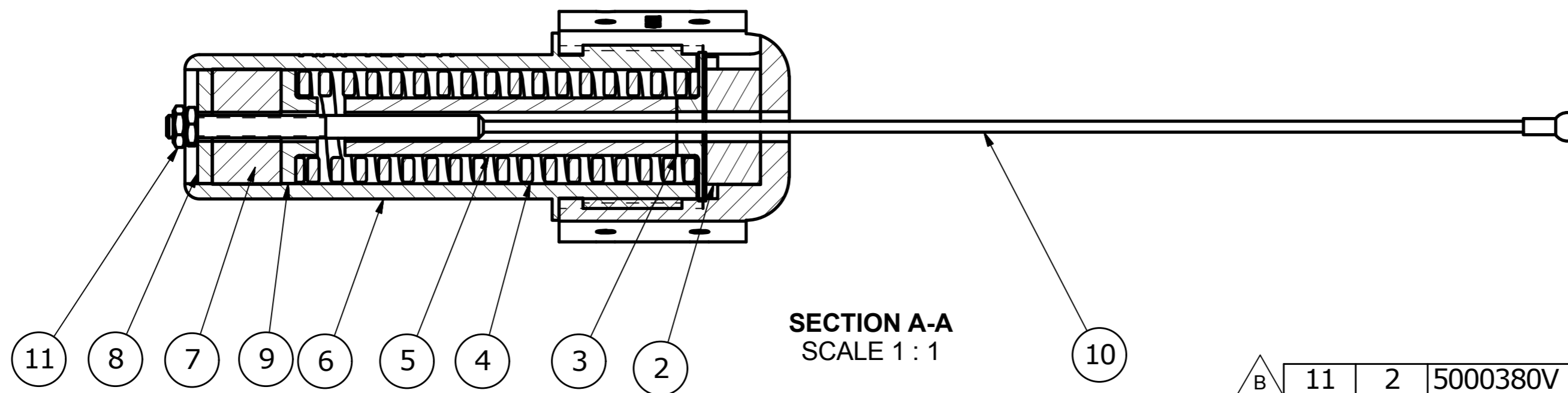
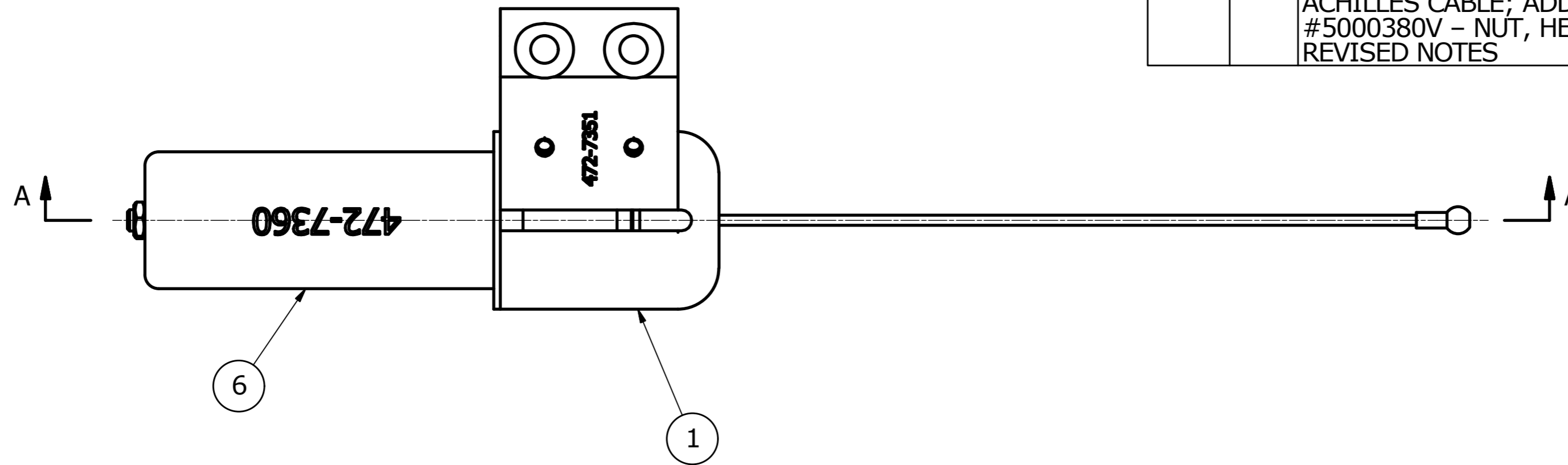


NOTES:

1. SHOULDER TO BE CONCENTRIC TO AXIS OF THREAD WITHIN .02 MM TOTAL INDICATOR READING.
2. REMOVE BURRS AND BREAK SHARP EDGES
3. FINISH: .002 - .008 ZINC PER SIDE YELLOW DICHROMATE
4. DIMENSIONAL LIMITS AND THREAD SIZES APPLY AFTER FINISH

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</small> <small>DECIMALS ANGLES FINISH</small> <small>XX ± 0.1 ± 1 125</small> <small>X.XX ± 0.01 ± 1</small> <small>X.XXX ± 0.005 FRACTIONS ± 1/64</small>		
PROJECT NO.:	REMOVE BURRS & BREAK SHARP EDGES	DATE:	1/14/2013	DESCRIPTION:
MATERIAL:	4140 STEEL	DRAWN BY:	gbrock	MODIFIED BHSS M6 THREAD
HEAT TREAT:	Rc 36-42	CHECKED BY:		SIZE: SHEET
FINISH:	SEE NOTES	ENGINEER:	J. WANG	A31 of 1
		DATE:	11/9/2005	SCALE: 5 : 1
				DRAWING NO.: W50-61042
				REV: C

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGED TO METRIC DIMENSIONING	11/21/2008	BLW
	B	REMOVED PART #9010447 - SCREW, SET M3 X 0.5 X 3, AND PART #472-7353 - RETAINING NUT, ACHILLES CABLE; ADDED PART #5000380V - NUT, HEX JAM M5; REVISED NOTES	7/14/2015	DW



SECTION A-A  
SCALE 1:1

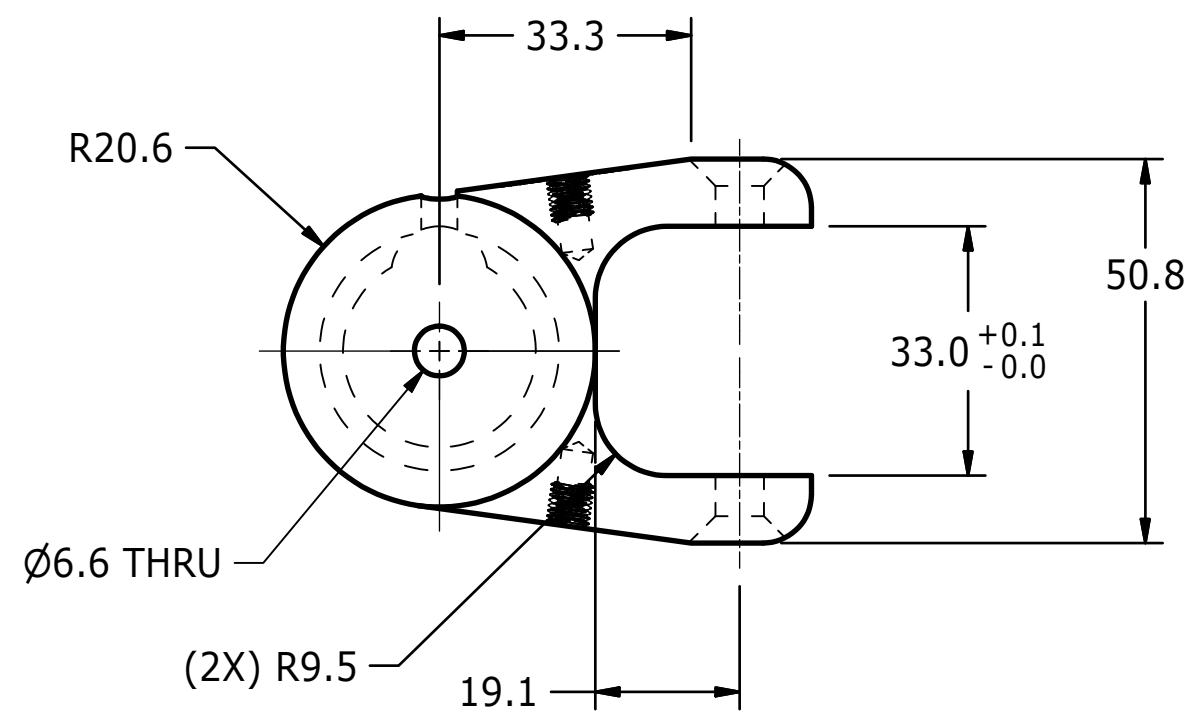
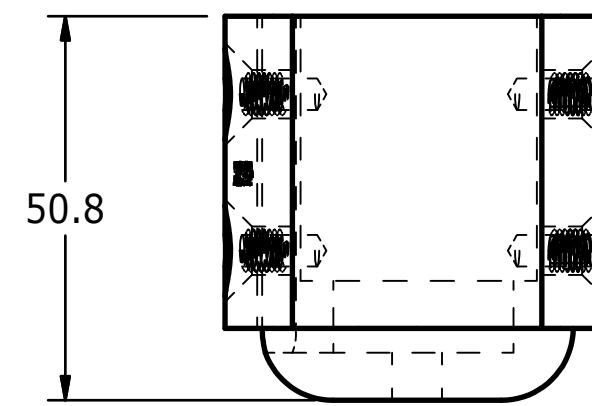
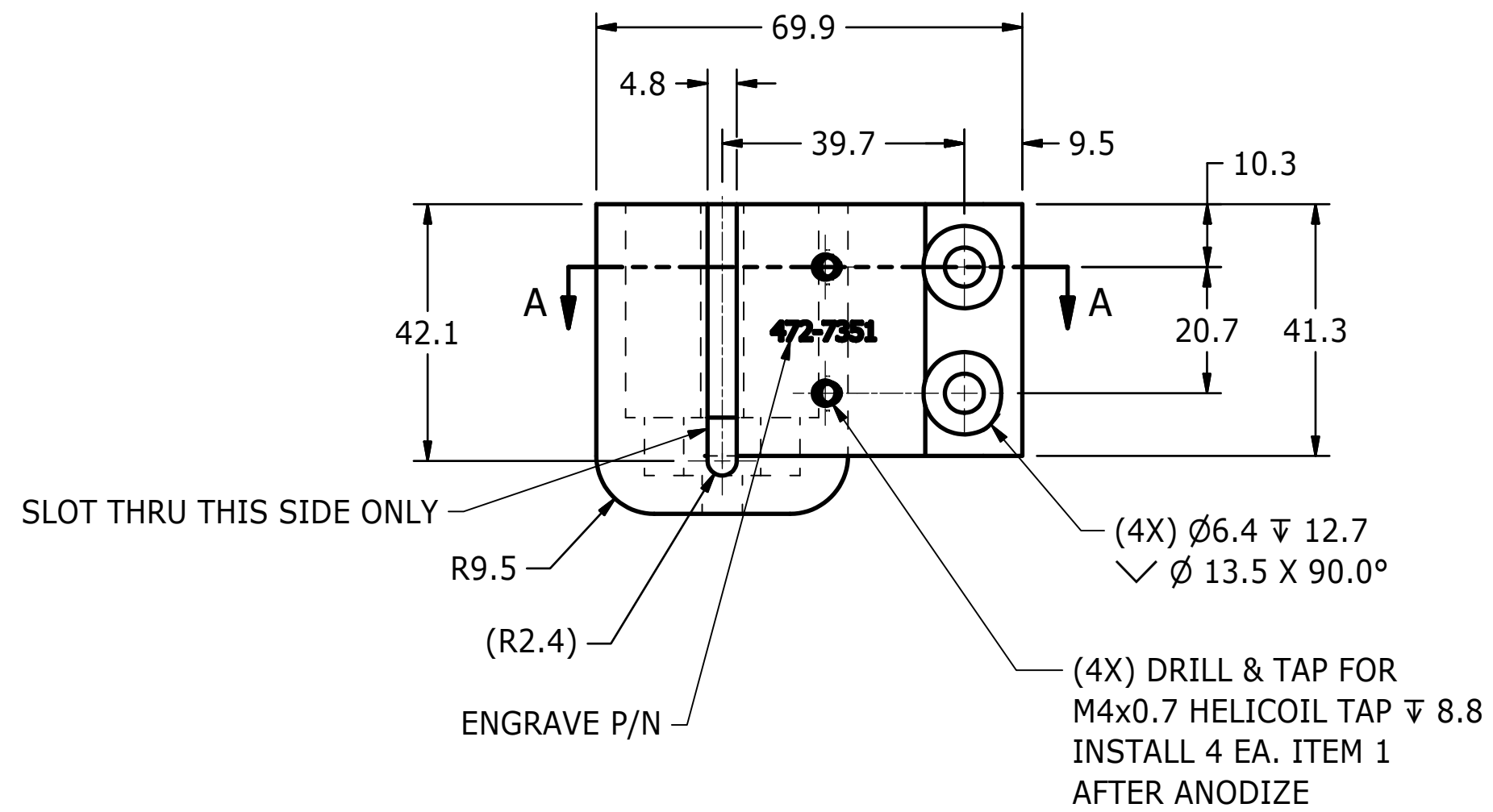
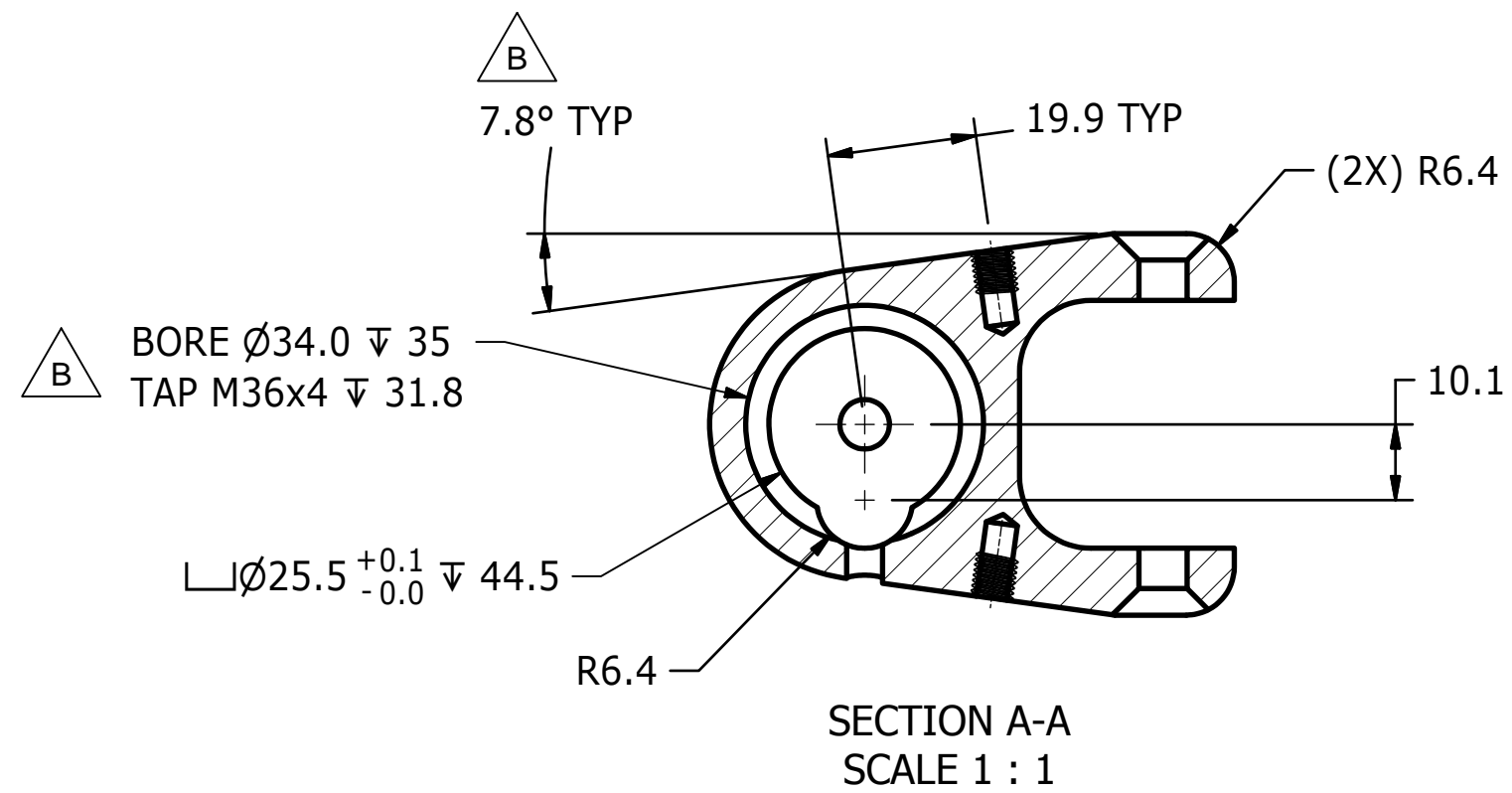
ITEM	QTY	PART NUMBER	DESCRIPTION
11	2	5000380V	NUT, HEX JAM M5
10	1	472-7352	ACHILLES CABLE ASSEMBLY
9	1	472-7355	SPRING CAP, ACHILLES
8	1	472-7354	WASHER, ACHILLES PRIMARY
7	1	472-7358	FOAM COMPRESSION ELEMENT
6	1	472-7360	TUBE, ACHILLES SPRING
5	1	472-7357	ELASTOMERIC SPRING ELEMENT
4	1	9000540	COMPRESSION SPRING
3	1	472-7356	SPRING BASE CAP, ACHILLES
2	1	472-7359	ACHILLES LOAD CELL BLANK
1	1	472-7351	TUBE BASE, ACHILLES SPRING

PARTS LIST

- UNLESS OTHERWISE SPECIFIED:**
- ADJUST NUT AS DESCRIBED IN THOR-LX/HYBRID III VERSION 2.0 USER'S MANUAL
  - SPRING RATE LISTED AT NOMINAL 24 N/mm  
NOMINAL SPRING RATE IS SUPERCEDED BY STATIC TESTING REQUIERMENTS:  
SPRING RATE: 25.0 ±1.3 N/mm  
MAX DEFLECTION TO SOLID HEIGHT MUST EXCEED 46 mm.

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL: X ±.5 .XX ±.2 X.XX ±.1 <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>									
	APPROVALS DRAWN B. WADE CHECKED	DATE 11/21/2008		<b>ACHILLES SPRING TUBE MECHANICAL ASSY. THOR M</b>								
MATERIAL HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	<table border="1"> <tr> <td>SIZE</td> <td>DRAWING NUMBER</td> <td>REV</td> </tr> <tr> <td>A2</td> <td>472-7350</td> <td>B</td> </tr> <tr> <td>SCALE:</td> <td>SHEET</td> <td>1 OF 1</td> </tr> </table>		SIZE	DRAWING NUMBER	REV	A2	472-7350	B	SCALE:	SHEET
SIZE	DRAWING NUMBER	REV										
A2	472-7350	B										
SCALE:	SHEET	1 OF 1										

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	11/21/2008	BLW
	B	M36X2 WAS M36X4, CORRECTED ANGLE DIM WAS 8.1°	7/20/2015	JHC



ITEM	QTY	PART NUMBER	DESCRIPTION
2	4	9009073	M4 x .7 x 6mm HELICOIL

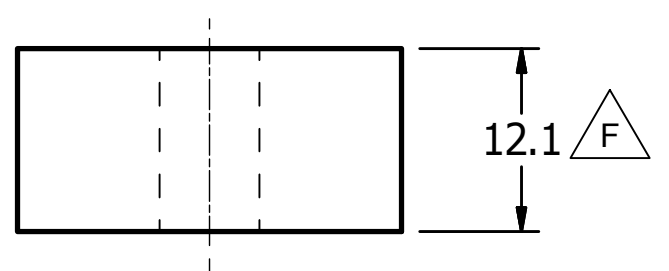
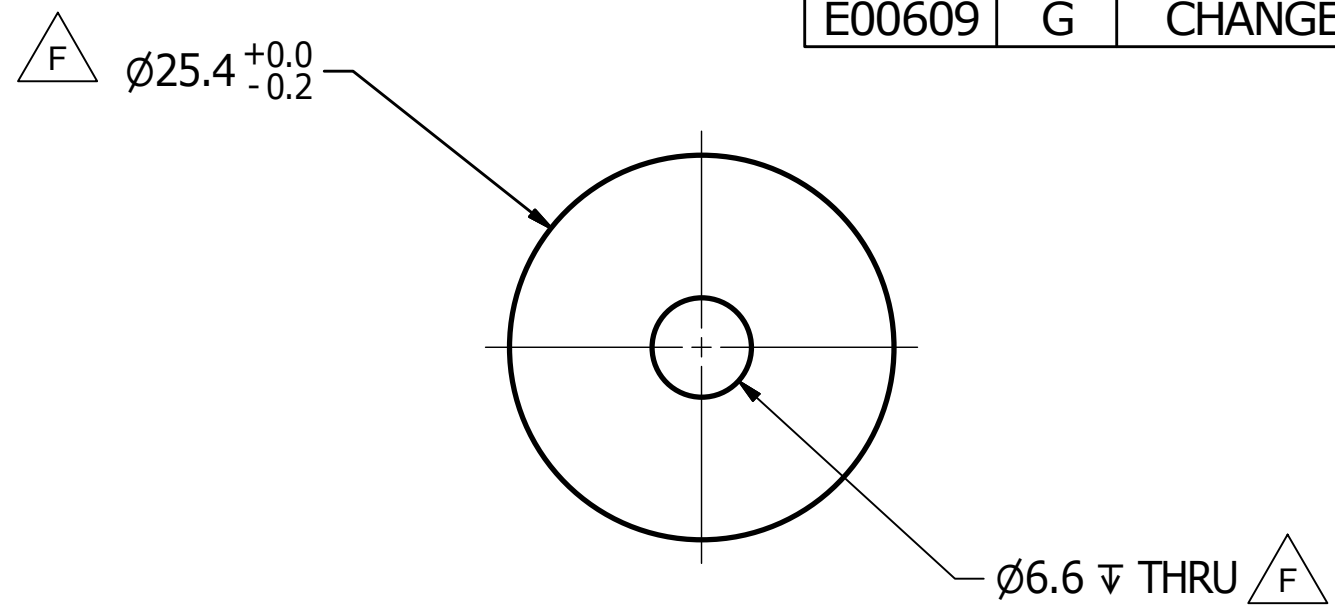
  

PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5 X.X ±.2 X.XX ±.1 DO NOT SCALE DRAWING		VEHICLE RESEARCH and TEST CENTER	
MATERIAL: 7075-T6 ALUMINUM HEAT TREAT:		APPROVALS: DRAWN: B WADE CHECKED:	DATE: 11/21/2008
FINISH: BLUE ANODIZE		APPROVED:	

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
TUBE BASE, ACHILLES SPRING	
THOR M	
SIZE: C	DRAWING NUMBER: 472-7351
SCALE: FULL	REV: B
SHEET 1 OF 1	

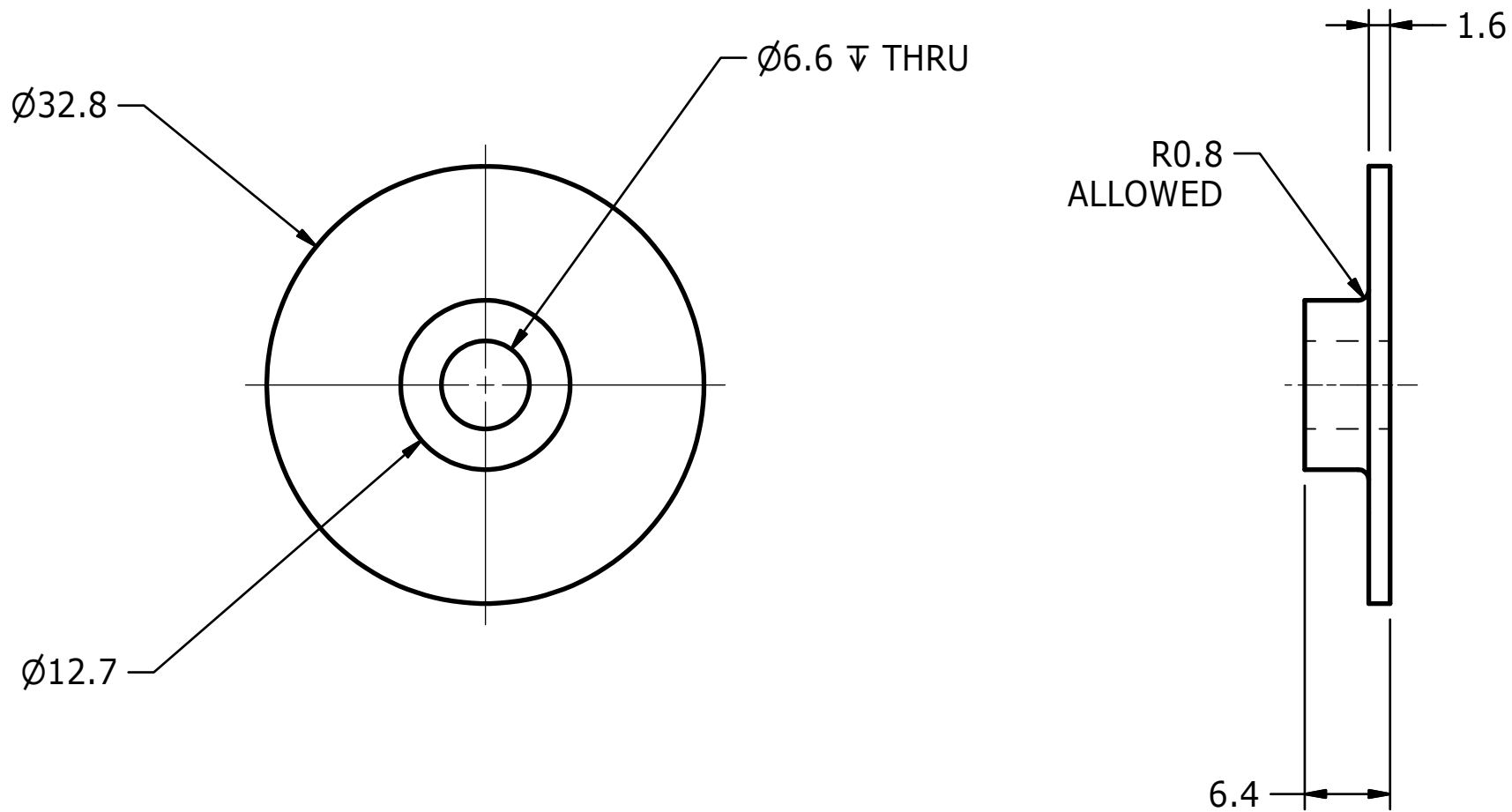
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	E	REDRAWN IN INVENTOR	7/19/2007	KSG
8288	F	1.000 WAS .850, .261 WAS .25, .475 WAS .350	6/26/2008	TF
E00609	G	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW




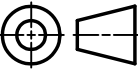
UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/1/2008 12/10/2008		<b>ACHILLES LOAD CELL BLANK</b> THOR M	
MATERIAL Aluminum 6061-T6 HEAT TREAT N/A FINISH BLUE ANODIZE	THIRD ANGLE PROJECTION	SIZE A3	DRAWING NUMBER 472-7359	REV G	SHEET 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/19/2007	KSG
8292	C	.261 WAS .250	6/17/2008	TF
E00609	D	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 10/19/2007 12/10/2008	<b>SPRING BASE CAP, ACHILLES</b> <b>THOR M</b>	
MATERIAL Stainless Steel, 440C HEAT TREAT 57 +/- Rc FINISH N/A	 THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE: 2:1	DRAWING NUMBER <b>472-7356</b>	REV <b>D</b> SHEET 1 OF 1



4

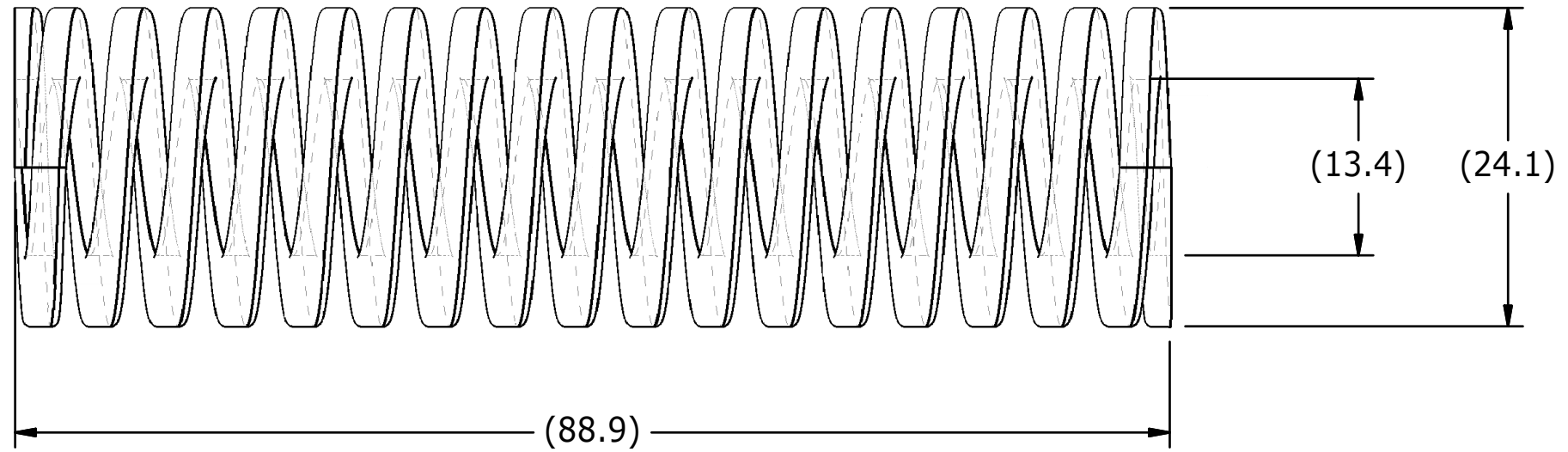
3

2

1

B

B



SPRING RATE: 24 N/mm

UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL:	MACHINED
X ±.5	±.6
X.X ±.2	ANGLES
X.XX ±.1	±.5°

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

MATERIAL	Steel
HEAT TREAT	N/A
FINISH	N/A

VEHICLE RESEARCH  
and TEST CENTER

APPROVALS

DATE

DRAWN

B. WADE

1/9/2009

CHECKED

ENG

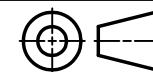
APPROVED



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

COMPRESSION SPRING

THOR-M



THIRD ANGLE  
PROJECTION

SIZE  
A3

DRAWING NUMBER  
9000540

SCALE:

SHEET  
1 OF 1

4

3

2

1

A

A

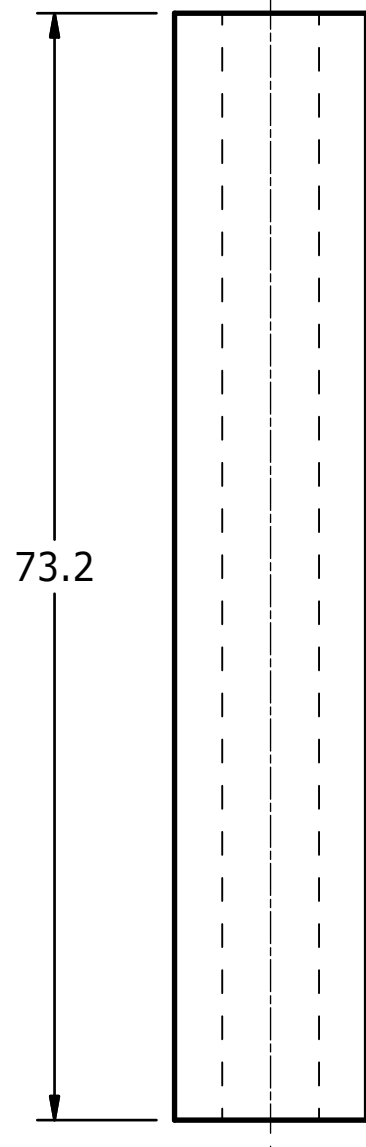
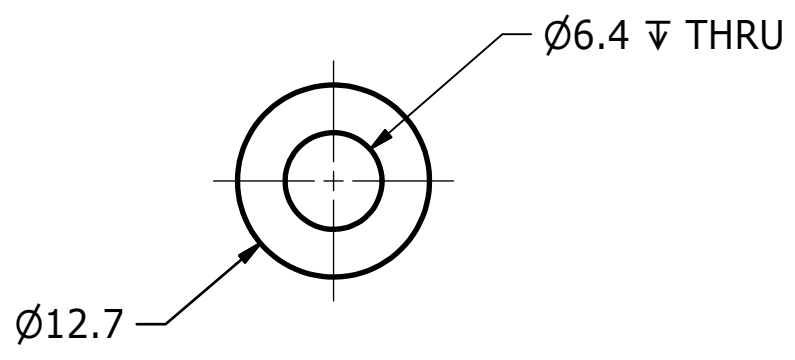
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3

2


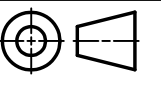
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REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/19/2007	KSG
E00609	C	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EGES.

MATERIAL: BUNA-N/SBR RUBBER HOSE (1/2" OD X 1/4" ID)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLE ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/1/2008 12/10/2008	<b>ELASTOMERIC SPRING ELEMENT</b>  <b>THOR M</b>	
MATERIAL SEE ABOVE HEAT TREAT N/A FINISH N/A	 THIRD ANGLE PROJECTION		SIZE <b>A3</b>	DRAWING NUMBER <b>472-7357</b>
			SCALE: 2:1	REV <b>C</b>  SHEET 1 OF 1

B

B

A

A

4

3

2

1

4

3

2

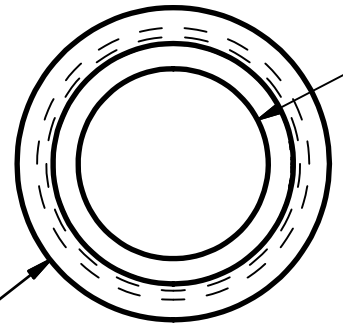
1

B

B

A

A



Ø41.3

Ø25.15± 0.05 THRU

Ø31.8

R3.2

ENGRAVE P/N

113.0

5.3

1.5

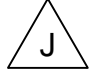
21.8

30.5

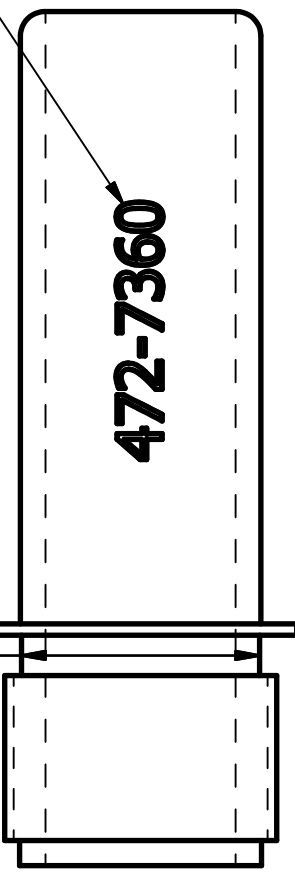
3.3

Ø32.0


M36x2 THDS

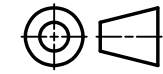


Ø31.5



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	F	REDRAWN IN INVENTOR	7/19/2007	KSG
	G	REDRAWN TO PREVIOUS NHTSA REVISION	6/16/2008	TF
	H	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW
	J	M36x2 WAS M36 X 4	7/20/2015	JHC

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ±.6 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> <b>DO NOT SCALE DRAWING</b>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>TUBE, ACHILLES SPRING</b>  <b>THOR M</b>	
	DRAWN B. WADE	12/1/2009		
	CHECKED			
MATERIAL Aluminum 6061-T6	ENG			
HEAT TREAT	APPROVED			
FINISH BLUE ANODIZE				



THIRD ANGLE PROJECTION

SIZE <b>B</b>	DRAWING NUMBER <b>472-7360</b>	REV <b>J</b>
SCALE: FULL	SHEET 1 OF 1	

4

3

2

1

4

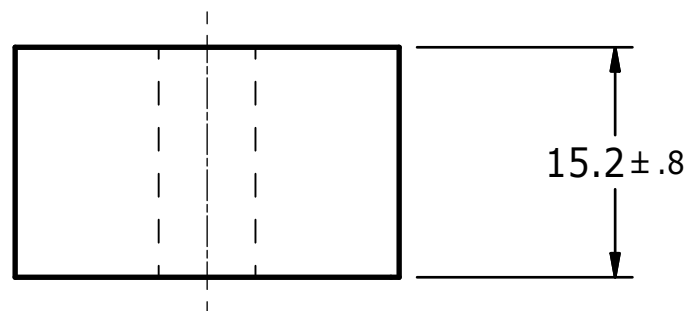
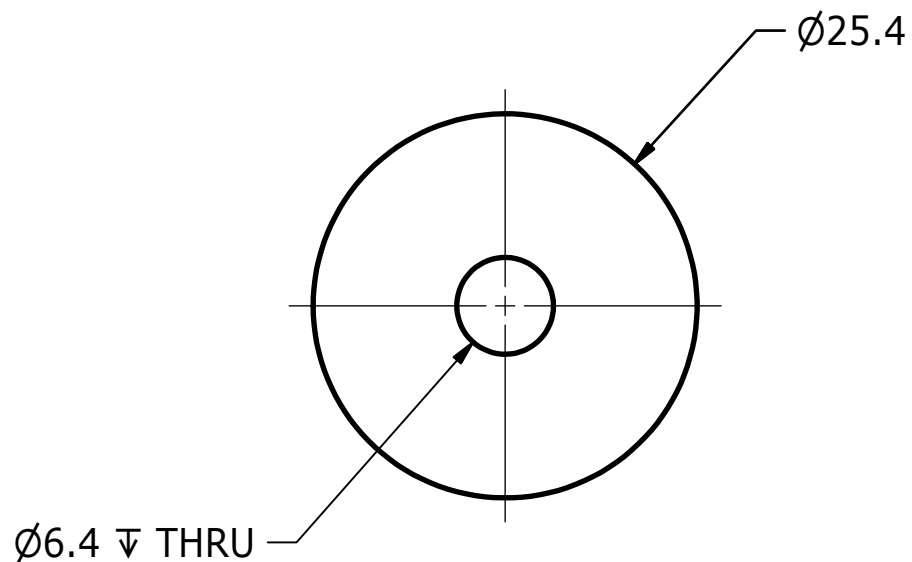
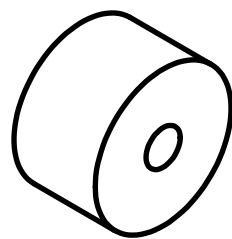
3

2

1

REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	BY
E00690	C	REDRAWN IN INVENTOR	7/9/2007	KSG
8290	D	ADDED +/- .03	6/7/2008	TF
E06009	E	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL:	MACHINED
X ±.5	±.5
X.X ±.2	±.2
X.XX ±.1	±.1
	ANGLES
	±.5°

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

MATERIAL	POLYURETHANE FOAM
HEAT TREAT	N/A
FINISH	N/A

VEHICLE RESEARCH  
and TEST CENTER

APPROVALS

DATE

DRAWN

B. WADE

12/1/2008

CHECKED

TMV

12/10/2008

ENG

APPROVED



NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

FOAM COMPRESSION ELEMENT

THOR M



THIRD ANGLE  
PROJECTION

SIZE  
A3

SCALE:  
2:1

DRAWING NUMBER

472-7358

REV

E

SHEET

1 OF 1

4

3

2

1

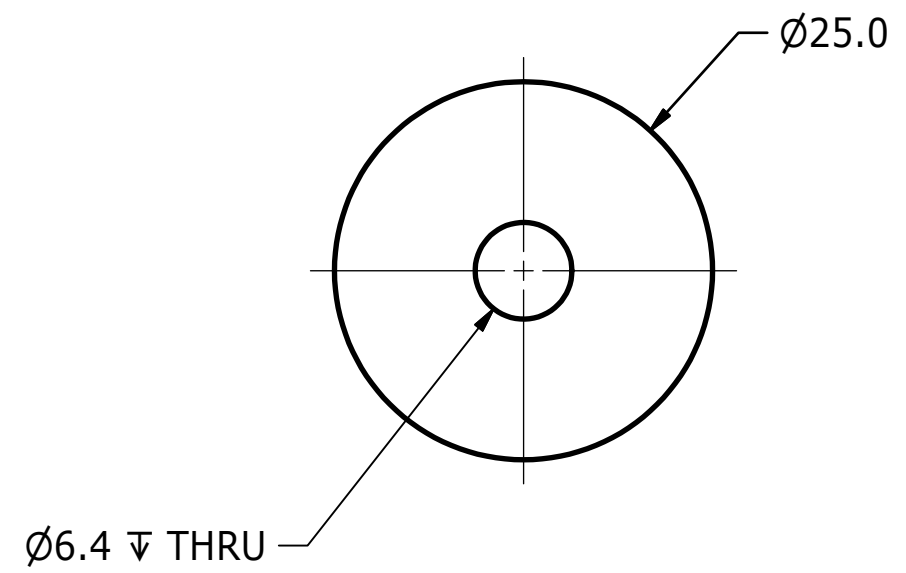
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	REDRAWN IN INVENTOR	7/19/2007	KSG
E00609	B	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW

B

B

A

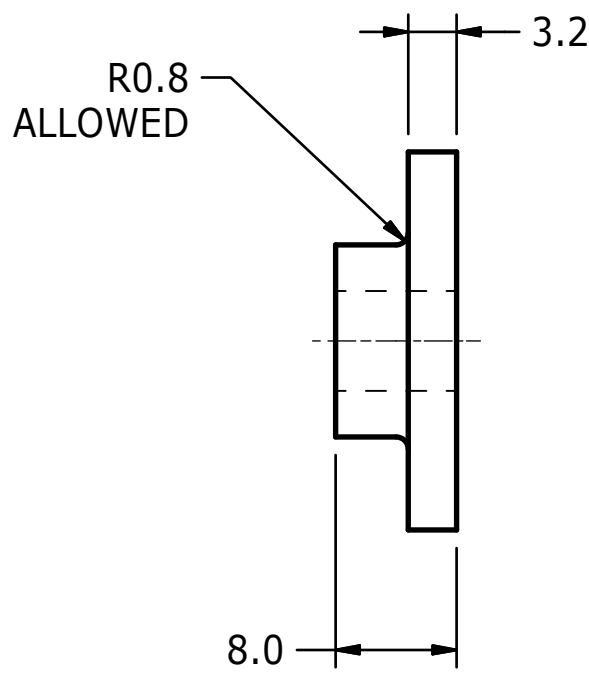
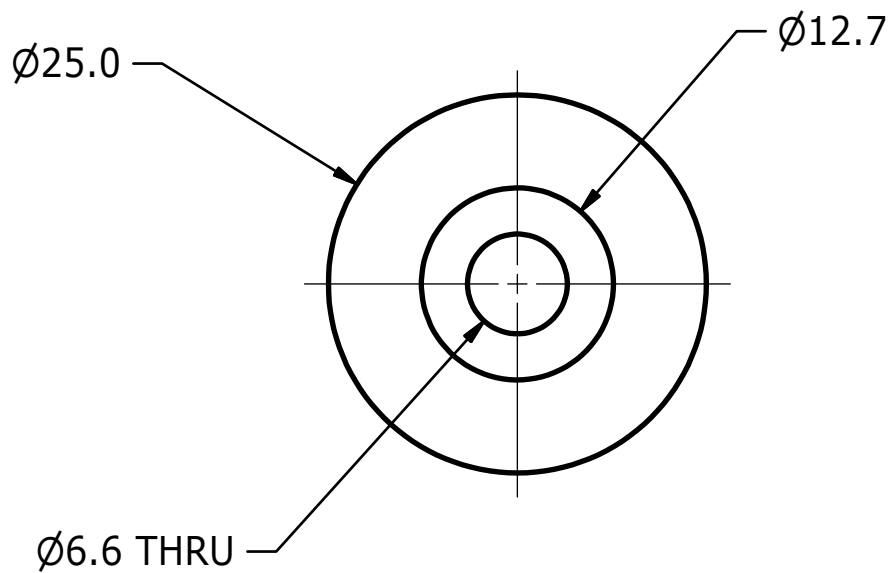
A





UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:     MACHINED X ±.5            1/6 X.X ±.2          ANGLE X.XX ±.1        ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>		
	APPROVALS DRAWN B. WADE CHECKED	DATE 12/1/2008	<b>WASHER, ACHILLES PRIMARY</b>  <b>THOR M</b>		
MATERIAL Delrin, White HEAT TREAT N/A FINISH N/A	ENG APPROVED	 THIRD ANGLE PROJECTION			
		SCALE: 2:1		SHEET 1 OF 1	

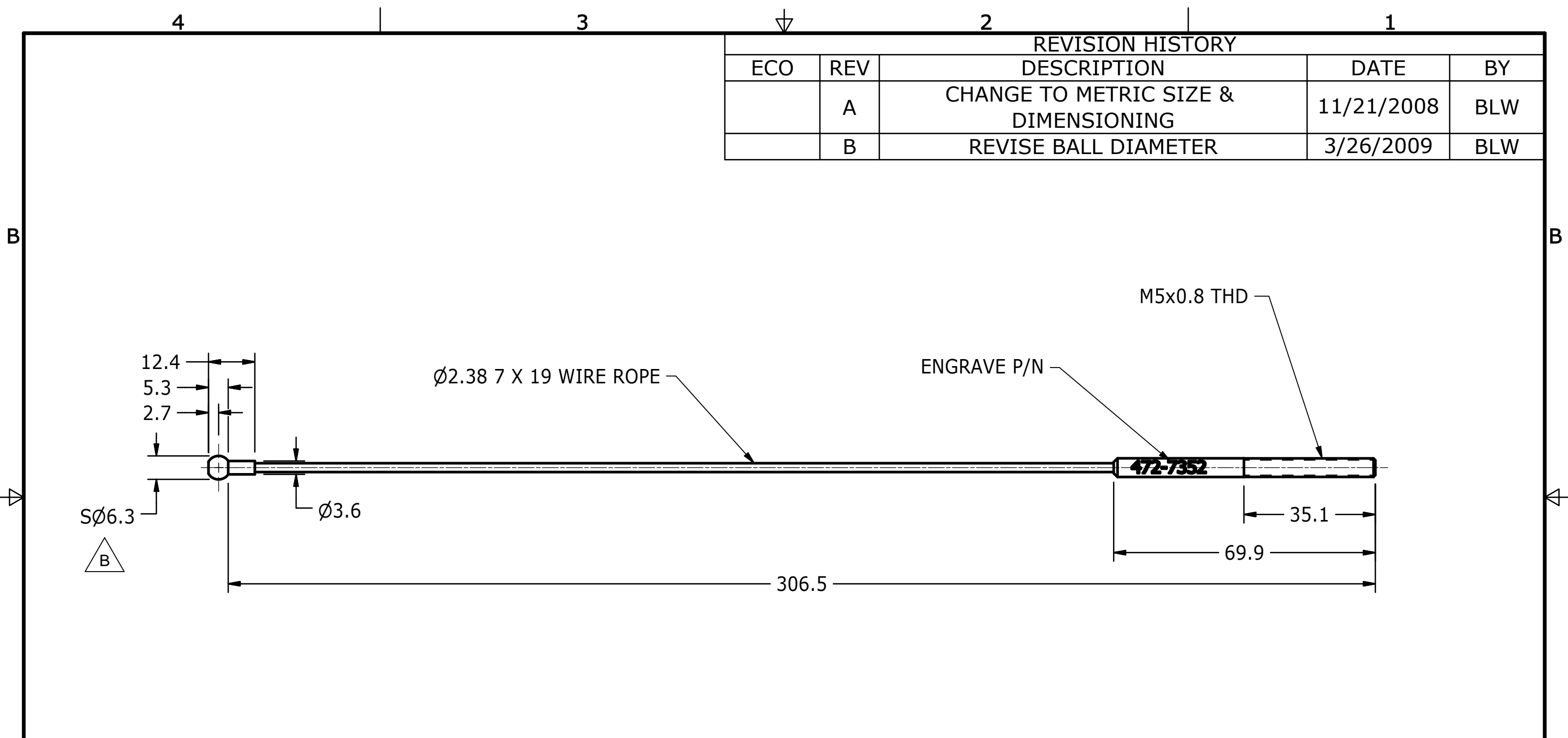
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	REDRAWN IN INVENTOR	7/19/2007	KSG
E00609	B	CHANGE TO METRIC DIMENSIONS	12/1/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

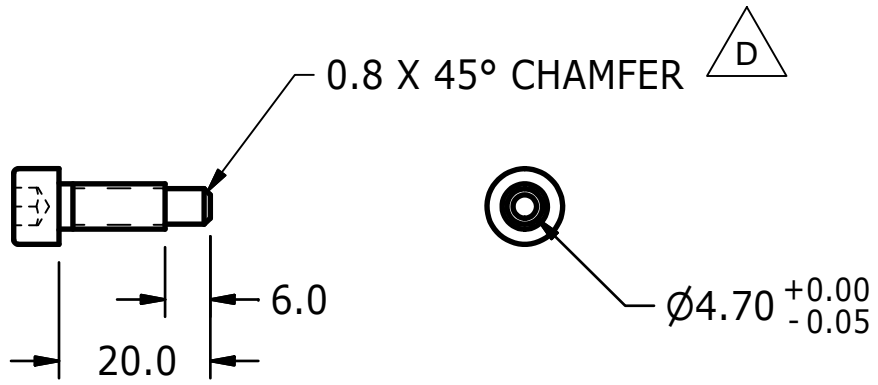
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLE ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/1/2008 12/11/2008	<b>SPRING CAP, ACHILLES</b> <b>THOR M</b>	
MATERIAL Delrin, White HEAT TREAT N/A FINISH N/A	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7355</b>	REV <b>B</b>  SHEET 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC SIZE & DIMENSIONING	11/21/2008	BLW
	B	REVISE BALL DIAMETER	3/26/2009	BLW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			
	APPROVALS		DATE	
	DRAWN B. WADE		11/21/2008	
	CHECKED			
MATERIAL	ENG	<b>ACHILLES CABLE ASSEMBLY</b>  <b>THOR M</b>		
HEAT TREAT	APPROVED			
FINISH			SIZE: <b>B</b>	DRAWING NUMBER: <b>472-7352</b>
		SCALE:	SHEET: <b>1</b> OF <b>1</b>	REV: <b>B</b>

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	.185 +.000/-.002 WAS .186	7/25/2008	KHS
	B	CHANGE TO METRIC HARDWARE	10/10/2008	BLW
	C	CHANGE TO METRIC DIMENSIONING	11/21/2008	BLW
	D	ADD MISSING DIMENSION	7/21/2015	JHC

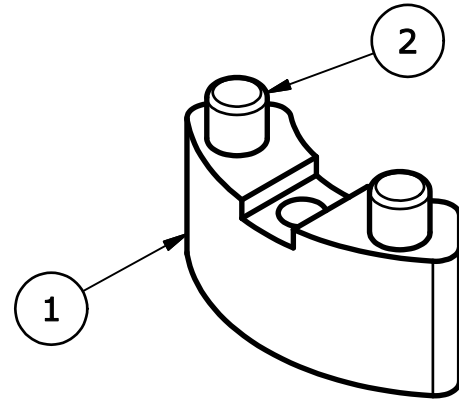
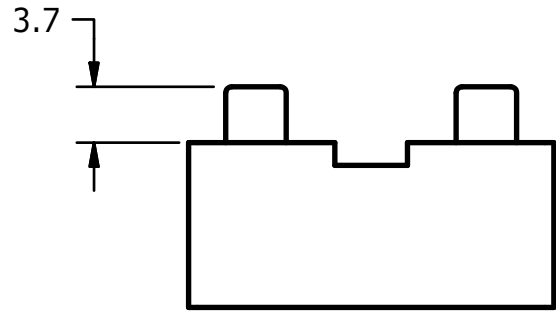
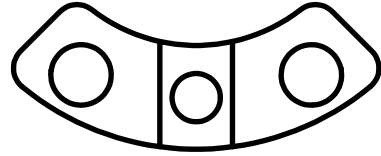


NOTE: MAKE FROM M6X1.0 X 20mm SHCS

<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</p> <p>DECIMAL: X ±.5, X.X ±.2, X.XX ±.1</p> <p>MACHINED ANGLES ±.5°</p> <p>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</p>	<p>VEHICLE <b>RESEARCH</b> and <b>TEST CENTER</b></p>		<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>		
	APPROVALS	DATE	<p><b>PLUNGER RETAINING BOLT</b></p> <p><b>THOR M</b></p>		
	DRAWN B. WADE	11/21/2008			
	CHECKED		<p>THIRD ANGLE PROJECTION</p>	SIZE <b>A</b>	DRAWING NUMBER <b>472-7335</b>
HEAT TREAT	ENG	SCALE:		SHEET 1 OF 1	
FINISH	APPROVED				



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	11/20/2008	BLW
	B	PIN LENGTH DESCRIPTION WAS 18mm	7/21/2015	JHC

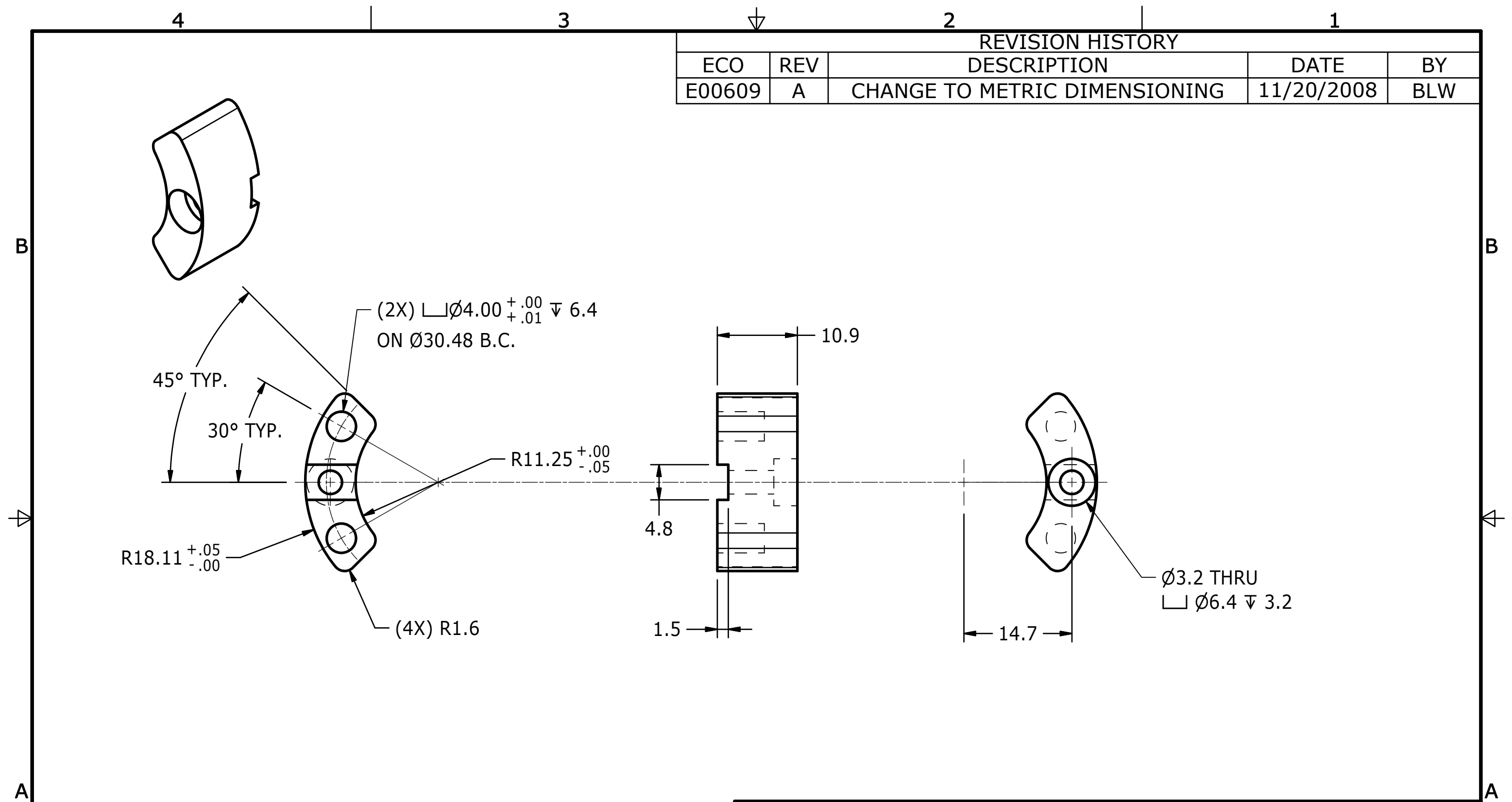


ITEM	QTY	PART NUMBER	DESCRIPTION
2	2	9010459	DOWEL PIN, 4mm X 10mm
1	1	472-7331	Z ROTATION WEDGE



PARTS LIST

<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</p> <p>DECIMAL: X ±.5 X.X ±.2 X.XX ±.1</p> <p>MACHINED 1.6- ANGLES ±.5°</p> <p>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</p>	<p>VEHICLE <b>RESEARCH</b> and <b>TEST CENTER</b></p>		<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>	
	APPROVALS	DATE	<p>Z ROTATION WEDGE ASSY</p> <p>THOR M</p>	
	DRAWN B. WADE	11/20/2008		
	CHECKED			
MATERIAL	ENG	<p>THIRD ANGLE PROJECTION</p>		
HEAT TREAT	APPROVED	SIZE <b>A</b>	DRAWING NUMBER <b>472-7330</b>	REV <b>B</b>
FINISH		SCALE: 2:1	SHEET 1 OF 1	

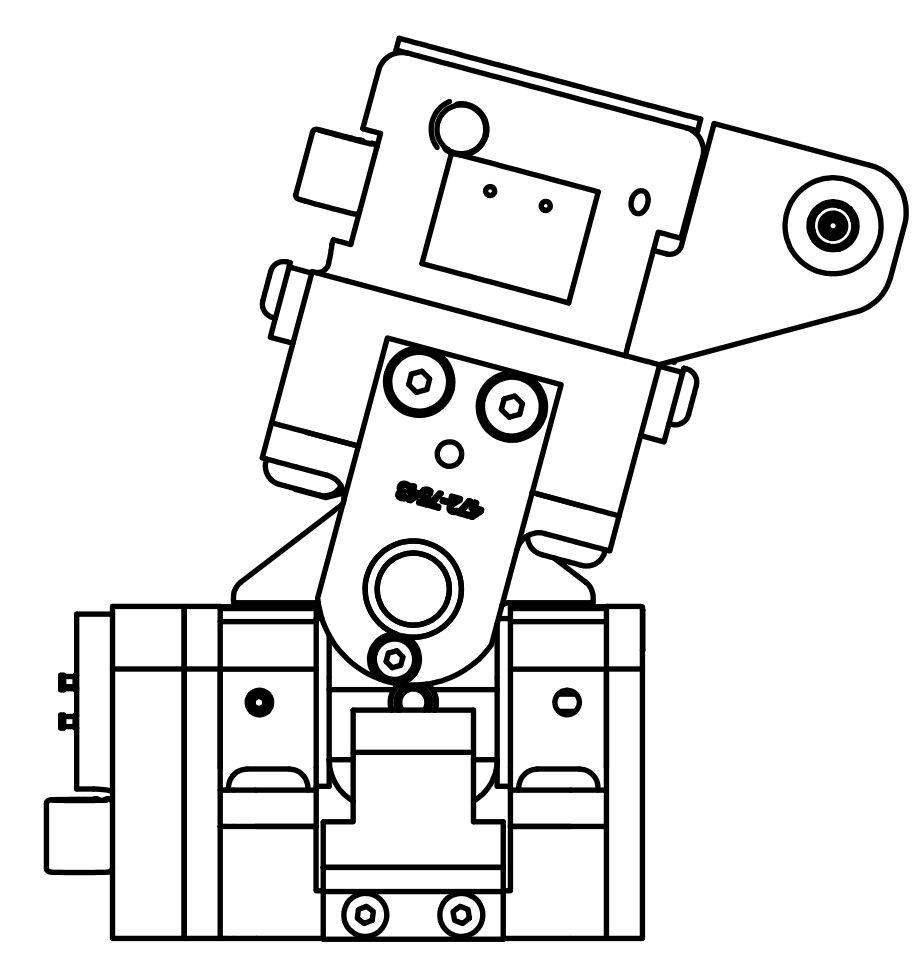
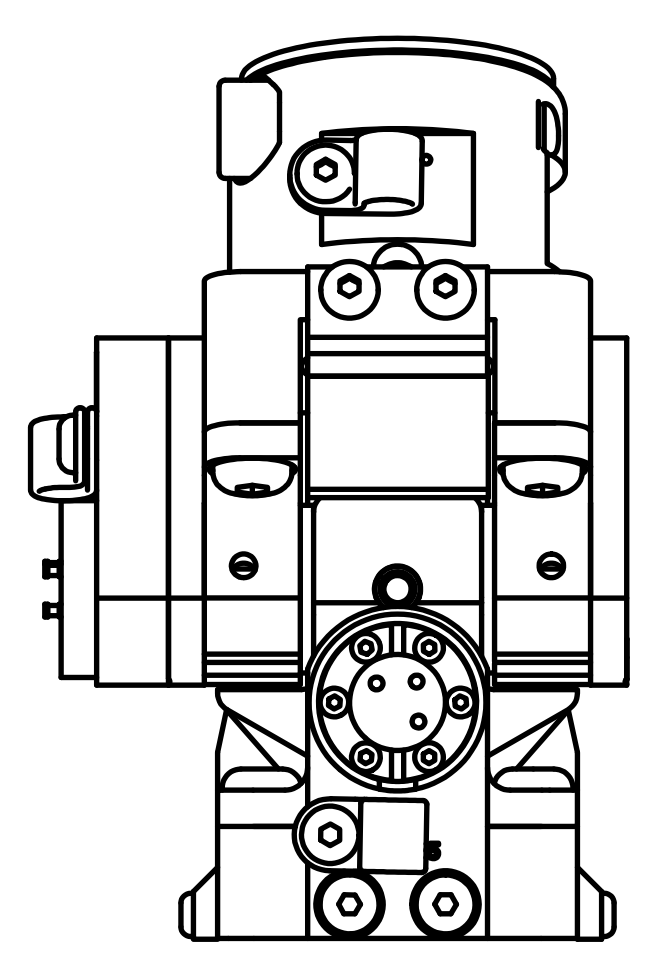
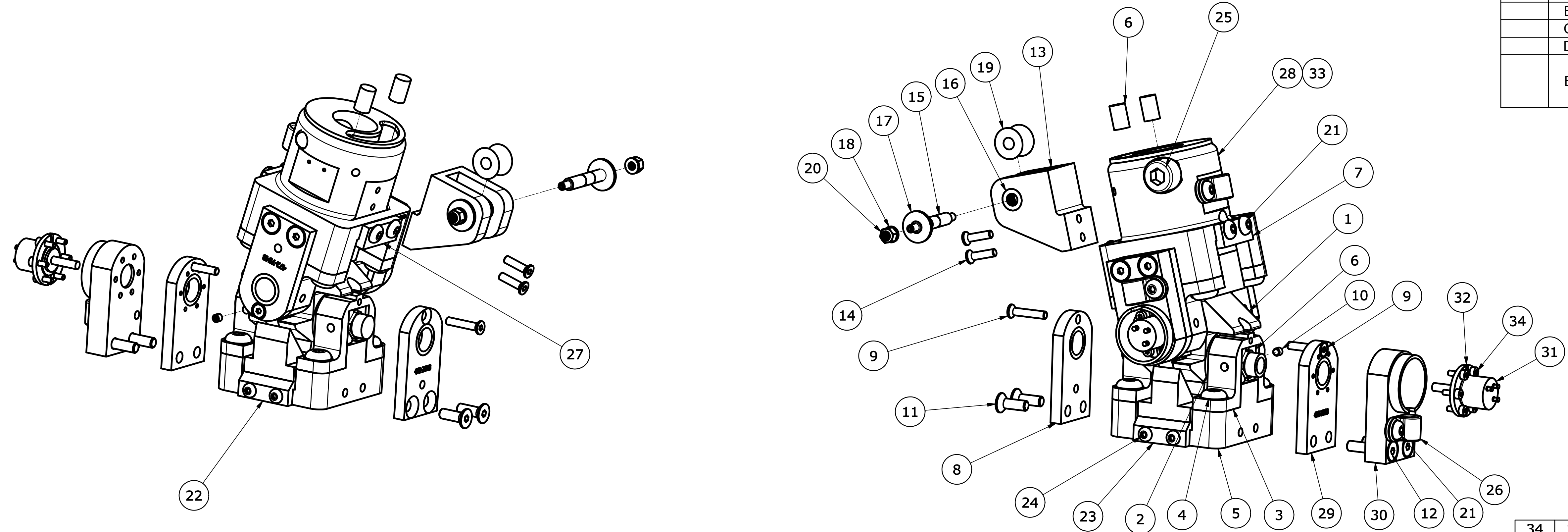
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGE TO METRIC DIMENSIONING	11/20/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 11/20/2008 12/11/2008	<b>Z ROTATION WEDGE</b>  <b>THOR M</b>   THIRD ANGLE PROJECTION	
MATERIAL Alum. Bronze HEAT TREAT FINISH	SIZE <b>A3</b> SCALE:	DRAWING NUMBER <b>472-7331</b> SHEET		

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	B	REDRAWN IN INVENTOR	7/25/2007	KSG
	C	CHANGE TO METRIC HARDWARE	10/14/08	BLW
	D	CHANGE TO METRIC DIMENSIONING	12/5/2008	BLW
	E	QTY OF ITEM 7 WAS 2, ADD ITEM 27, REDESIGN POT MOUNTING, POT PART NUMBER WAS 472-7550	7/27/2015	JHC



34	12	9010560	SCREW, SHCS M2X0.4 X 6
33	6	9010559	SCREW, SHCS M2X0.2 X 4
32	3	472-7581	POTENTIOMETER CLAMP
31	3	SA572-S114	POTENTIOMETER
30	2	472-7585	RETAINER, POTENTIOMETER
29	2	472-7582	ANKLE BUSHING PLATE ASSEMBLY - POT END
28	1	472-7580	BASE, TORQUE - ANKLE TOP
27	1	472-7527	STOP ASSEMBLY, REAR DORSI
26	3	9005135	CLAMP, NYLON LOOP
25	1	472-7563	BOLT & SLEEVE ASSEMBLY, ANKLE
24	4	9010332	SCREW, BHCS M3X0.5 X 8
23	1	472-7534	STOP ASSEMBLY - INVERSION
22	1	472-7533	STOP ASSEMBLY - EVERSION
21	7	9003049	SCREW, BHCS M4 x 0.7 x 8
20	2	9010450	NUT, NYLOCK M3X0.5
19	1	472-7562	PULLEY, ACHILLES CABLE
18	2	9000510	FLATWASHER, #4 TYPE B NARROW
17	2	9000508	ACHILLES WASHER
16	2	9000509	NEEDLE BEARING
15	1	472-7561	ACHILLES CABLE PULLEY SHAFT
14	2	9010449	SCREW, FHCS M3 x 12
13	1	472-7560	BRACKET, ACHILLES PULLEY
12	4	9010448	SCREW, FHCS M4X0.7 X 20
11	4	9000873	SCREW, FHCS M4-0.7 x 12
10	2	9010447	SCREW, SHSS, M3X0.5 X 3
9	4	9010446	SCREW, FHCS M3X0.5 X 16
8	2	472-7540	ANKLE BUSHING PLATE ASSEMBLY - FREE END
7	1	472-7530	STOP ASSEMBLY - DORSI
6	18	472-7524	TORQUE CYLINDER
5	1	472-7523	BASE, TORQUE - BOTTOM
4	8	9010445	SCREW, BHCS M6 x 1 x 12
3	4	472-7522	CAP, BASE TORQUE
2	4	472-7515	RETAINING WASHER
1	1	472-7510	CENTER BLOCK ASSEMBLY, ANKLE

ASSEMBLY INSTRUCTIONS  
 1. SAND 4 EA OF ITEM 2 TO ACHIEVE SNUG ASSEMBLY

ITEM		QTY	PART NUMBER	DESCRIPTION
<b>PARTS LIST</b>				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5 XX ±.2 XXX ±.1 MACHINED ANGLES ±.5° DO NOT SCALE DRAWING		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		ANKLE ASSEMBLY, LEFT	
DRAWN: B. WADE		12/8/2008		THOR M	
CHECKED:				DRAWING NUMBER	
HEAT TREAT:		ENG		SIZE: D	
FINISH:		APPROVED:		DRAWING NUMBER: 472-7500-1	
				SCALE: 1:1	
				SHEET: 1 OF 1	

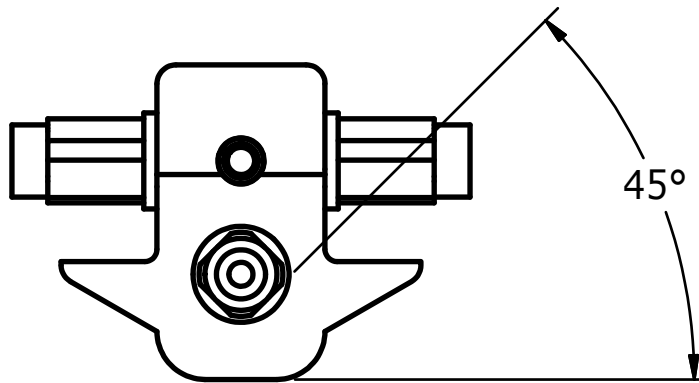
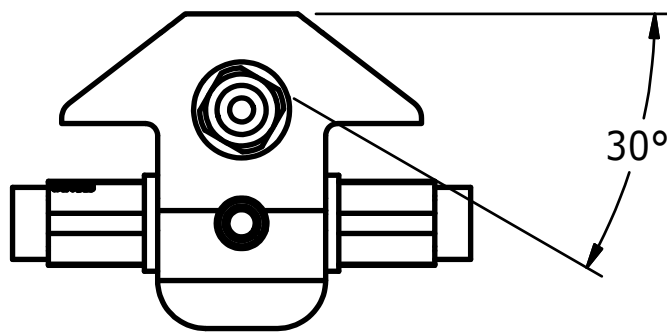
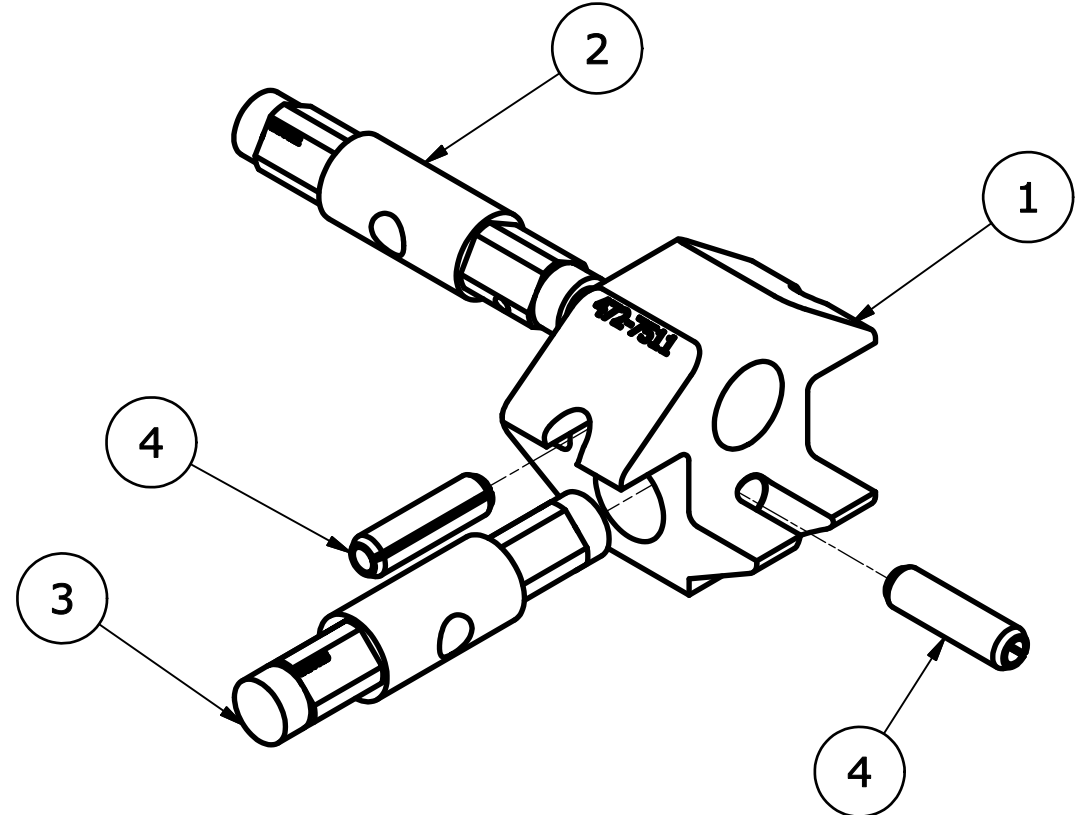
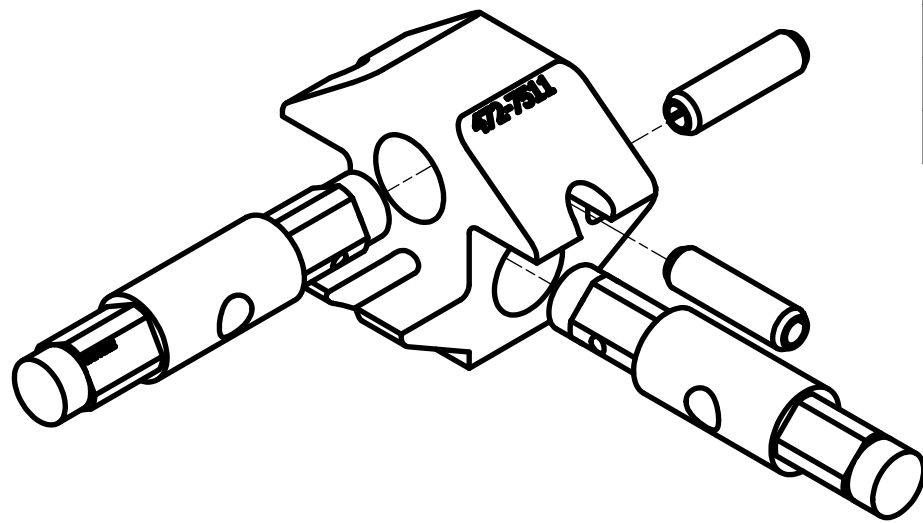
4

3

2

1


REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/23/2007	KSG
E00609	C	INCORPORATED METRIC HARDWARE	10/6/2008	BLW
E00609	D	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW
8894	E	CREATE EXPLODED VIEWS	4/30/2009	BLW



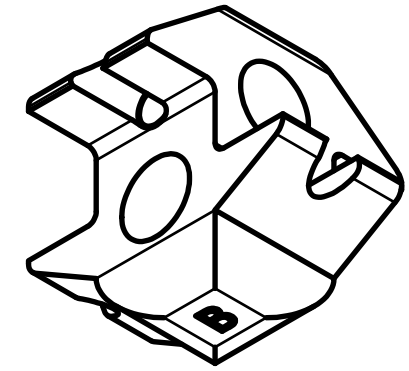
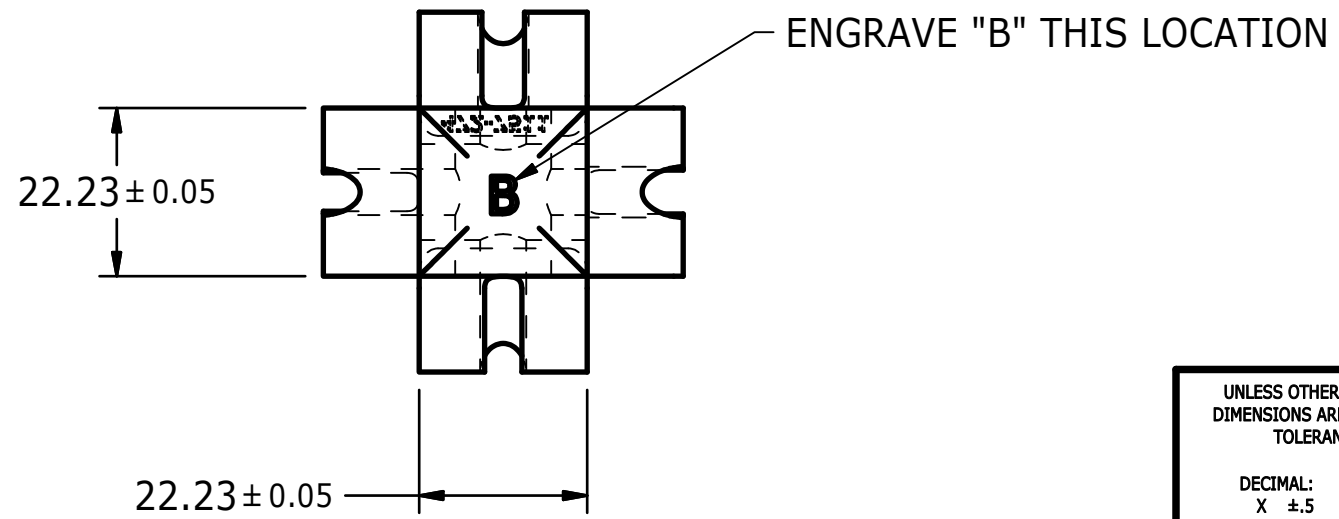
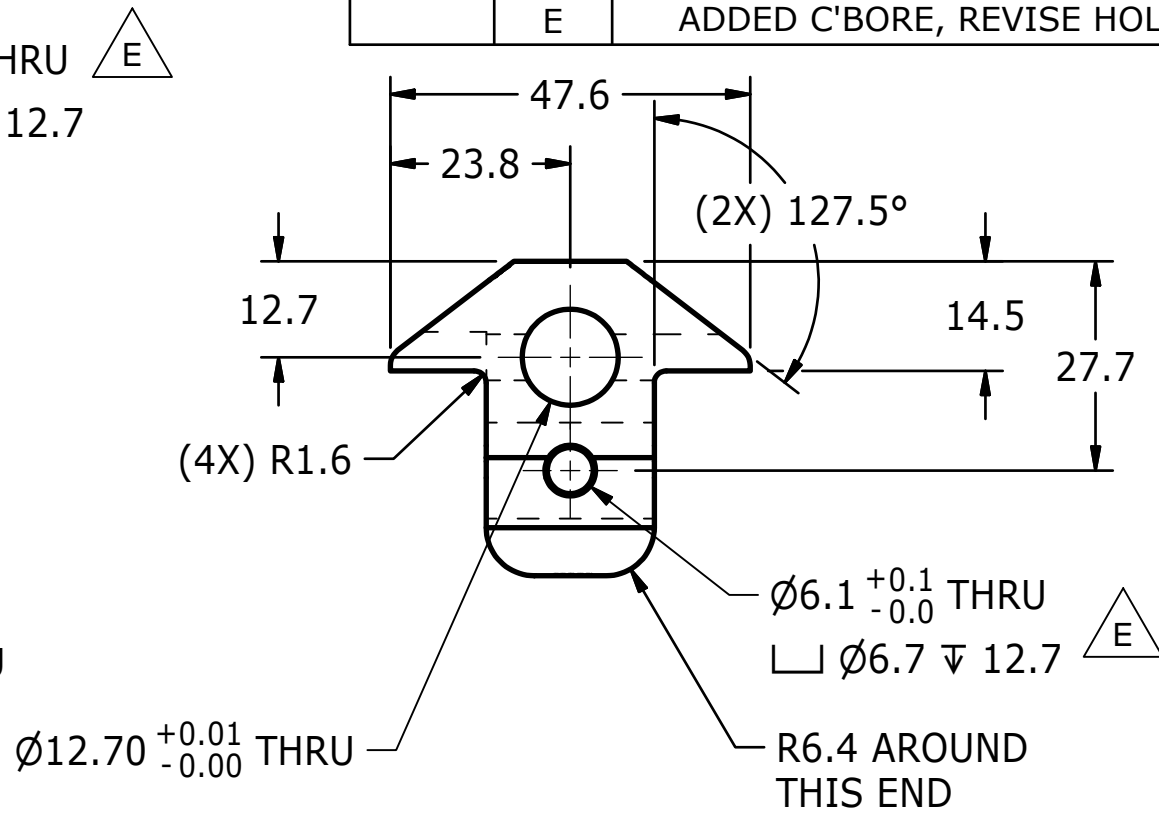
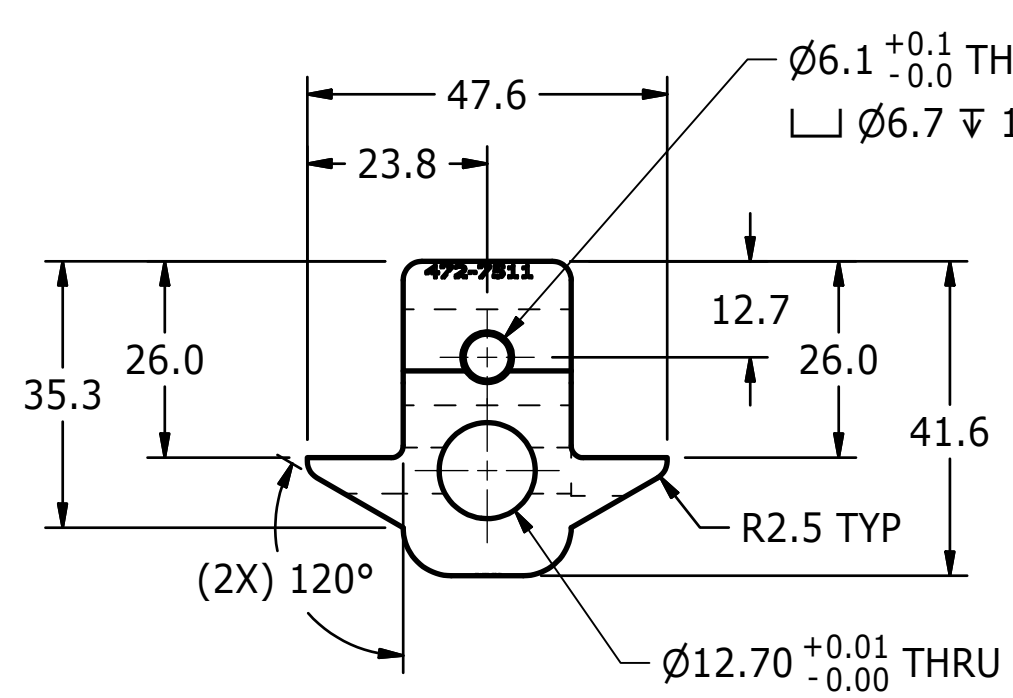
4	2	9010444	PIN, SPRING 6mm x 20mm
3	1	472-7513	TORQUE SHAFT, LOWER
2	1	472-7512	TORQUE SHAFT, UPPER
1	1	472-7511	CENTER BLOCK, ANKLE
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

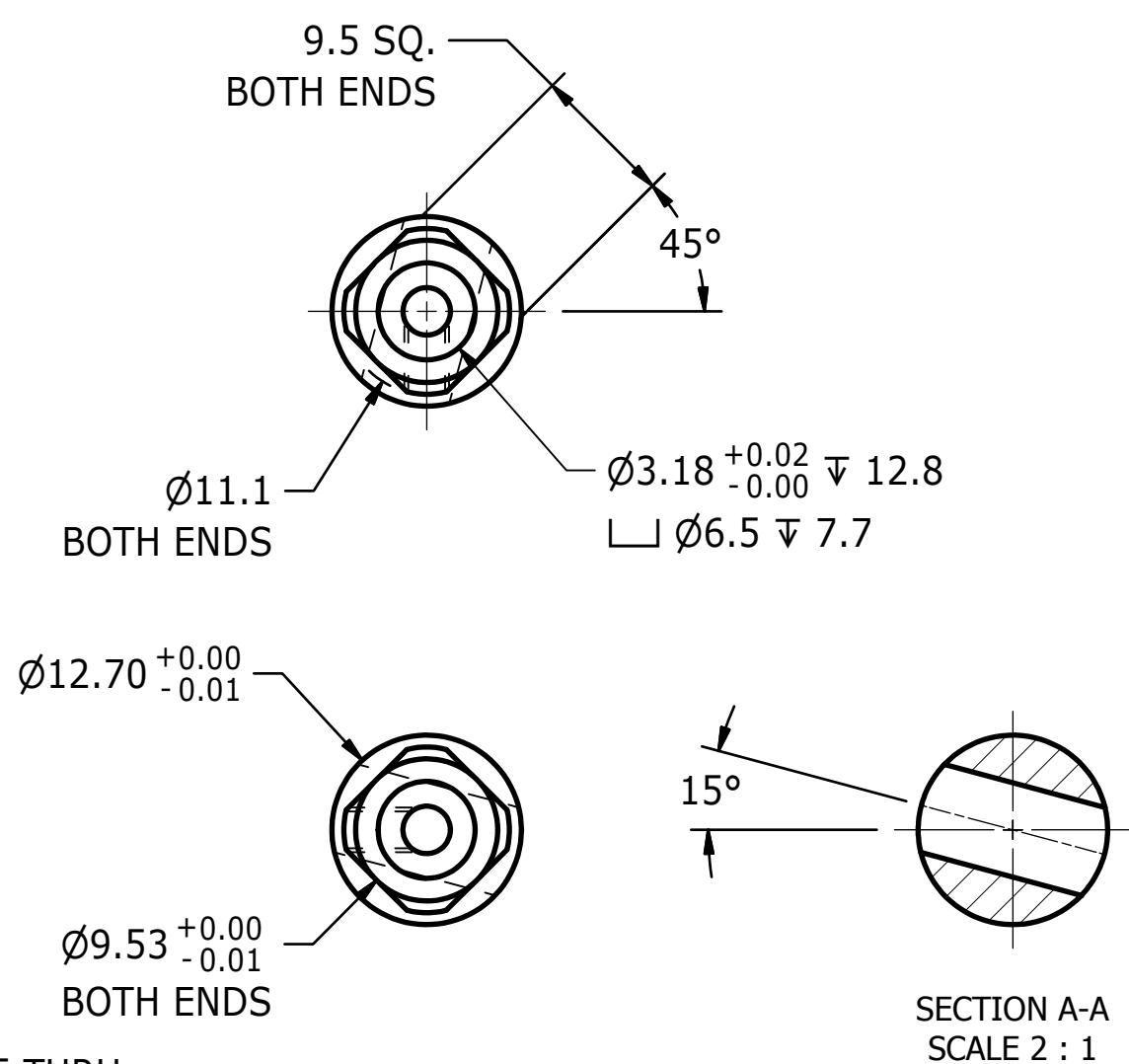
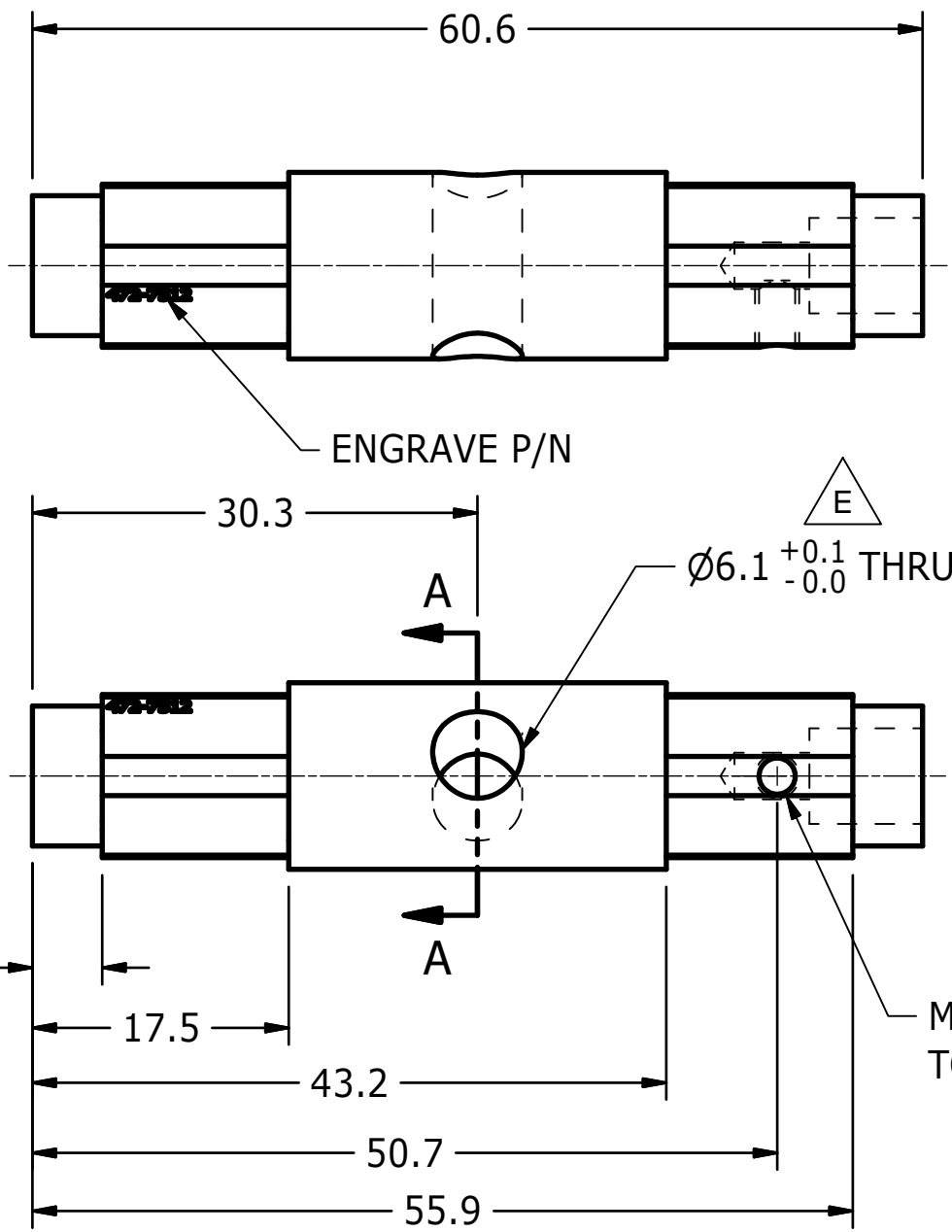
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	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/1/2008 4/30/2009	<b>ANKLE CENTER BLOCK ASS'Y.</b>  <b>THOR M</b>	
MATERIAL HEAT TREAT N/A FINISH N/A	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7510</b>	REV <b>E</b>
		SCALE: 1:1	SHEET 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	B	REDRAWN IN INVENTOR	7/23/2007	KSG
	C	REDIM FOR METRIC HARDWARE	10/2/2008	BLW
	D	CHANGE TO METRIC DIMENSIONING	12/1/2008	BLW
	E	ADDED C'BORE, REVISE HOLE DIA	7/22/2015	JHC



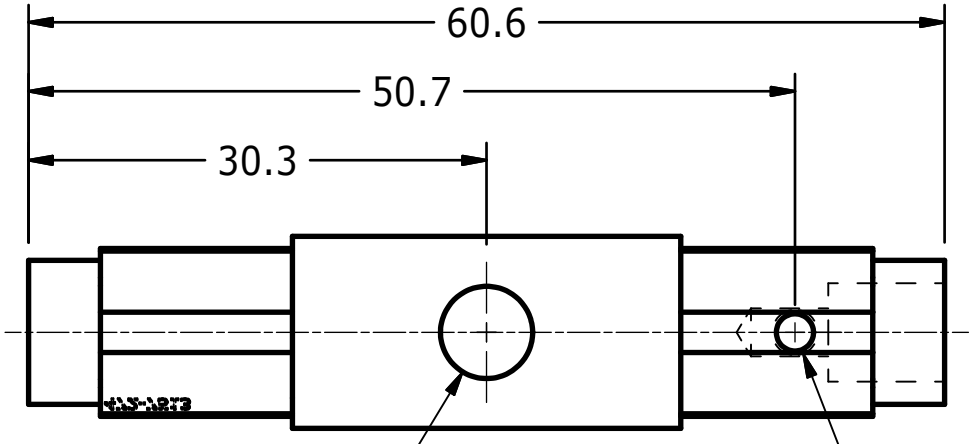
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ±.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN B. WADE CHECKED ENG APPROVED	DATE 12/1/2008	
MATERIAL Aluminum 6061 HEAT TREAT	FINISH BLUE ANODIZE	 THIRD ANGLE PROJECTION	SIZE: <b>B</b> SCALE: 1:1 DRAWING NUMBER: <b>472-7511</b> SHEET: 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	B	REDRAWN IN INVENTOR	7/23/2007	KSG
	C	REDIM FOR METRIC HARDWARE	10/6/2008	BLW
	D	CHANGE TO METRIC DIMENSIONING	12/2/2008	BLW
	E	6.1 WAS 6.0	7/22/2015	JHC



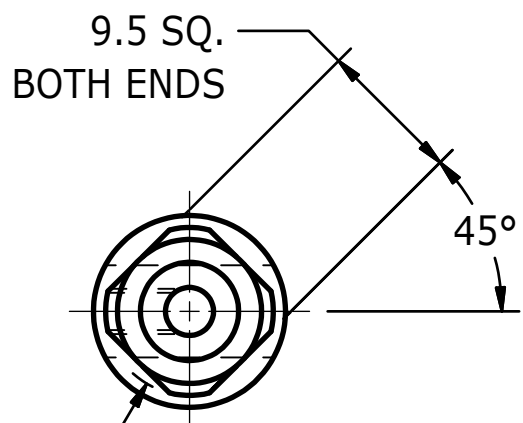
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5, X.X ±.2, X.XX ±.1 MACHINED 1.6, ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE		<b>TORQUE SHAFT, UPPER</b> <b>THOR M</b>	
	DRAWN B. WADE	12/2/2008			
	MATERIAL Stainless Steel, 440C	CHECKED		REV: <b>E</b>	
HEAT TREAT 57-61 Rc	ENG				
FINISH	APPROVED				

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	B	REDRAWN IN INVENTOR	7/23/2007	KSG
	C	REDIM FOR METRIC HARDWARE	10/6/2008	BLW
	D	CHANGE TO METRIC DIMENSIONING	12/2/2008	BLW
	E	6.1 WAS 6.0	7/22/2015	JHC



$\triangle E$   $\varnothing 6.1^{+0.1}_{-0.0}$  THRU

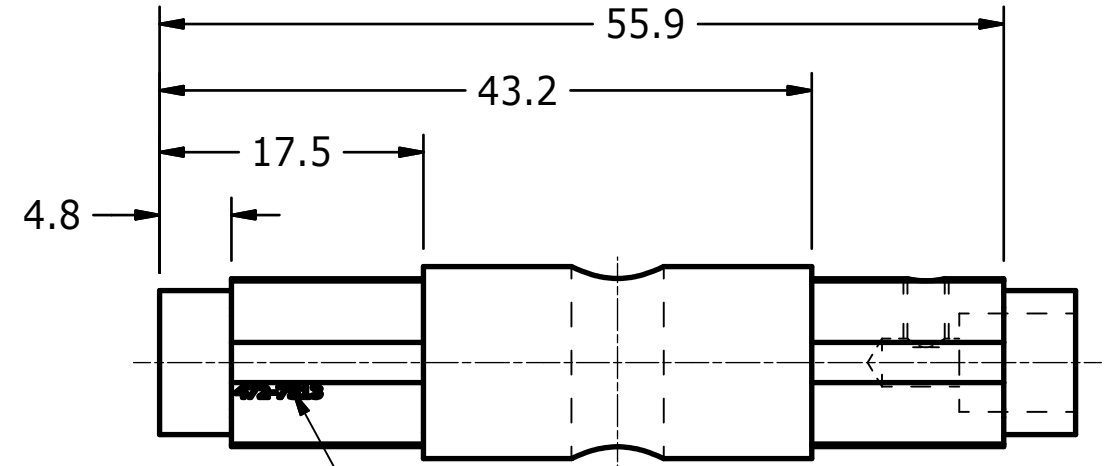
M3x0.5 THRU TO BORE



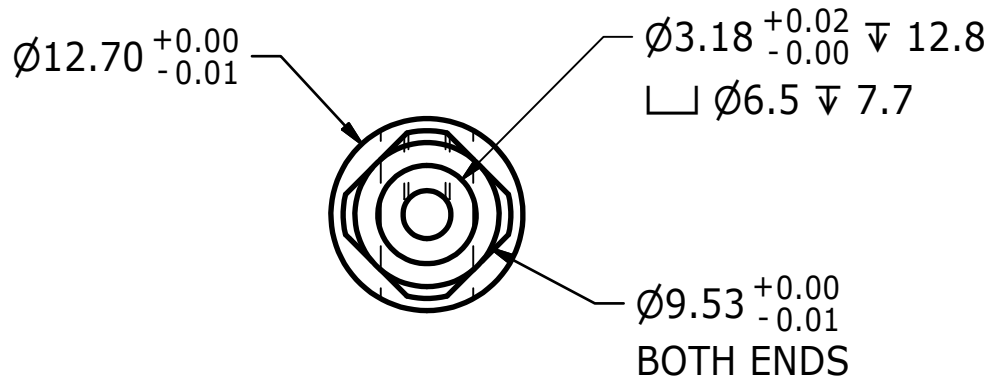
9.5 SQ. BOTH ENDS

$45^\circ$

$\varnothing 11.1$  BOTH ENDS

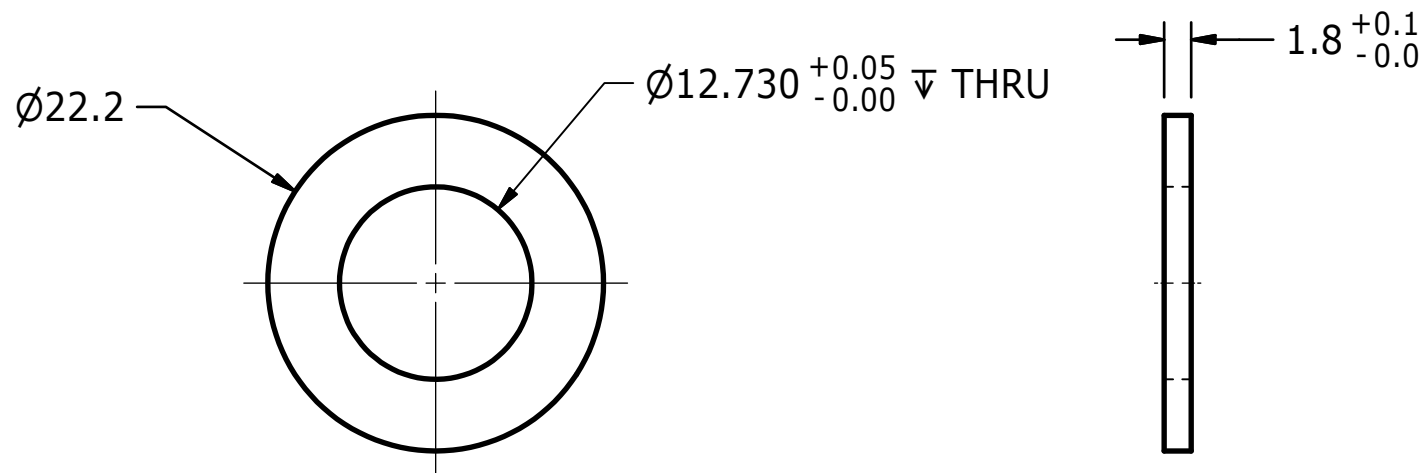


ENGRAVE P/N


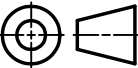


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm .5$ X.X $\pm .2$ X.XX $\pm .1$  MACHINED $\pm .6$ ANGLES $\pm .5^\circ$  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED	DATE 12/2/2008		<b>TORQUE SHAFT, LOWER</b>  <b>THOR M</b>	
MATERIAL Stainless Steel, 440C  HEAT TREAT 57-61 Rc  FINISH	ENG  APPROVED		SIZE <b>B</b>	DRAWING NUMBER <b>472-7513</b>	REV <b>E</b>
			SCALE: <b>2:1</b>	SHEET <b>1 OF 1</b>	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	REDRAWN IN INVENTOR	7/23/2007	KSG
E00609	B	REVISE THICKNESS	10/6/2008	BLW
E00609	C	CHNAGE TO METRIC DIMENSIONING	12/2/2008	BLW

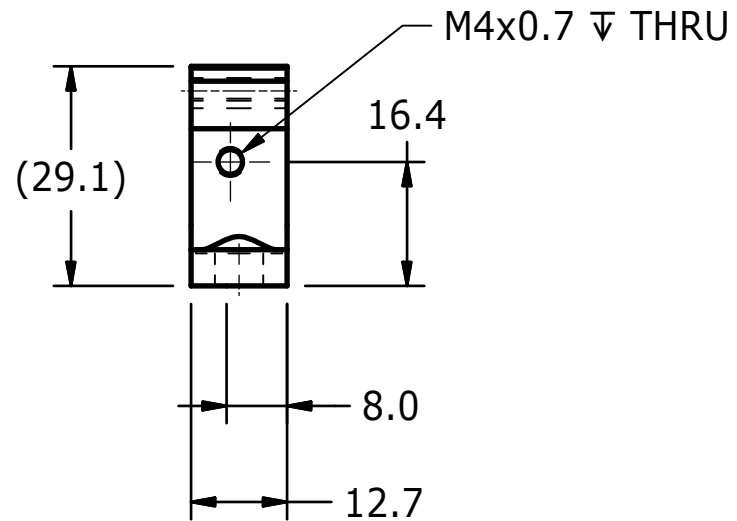
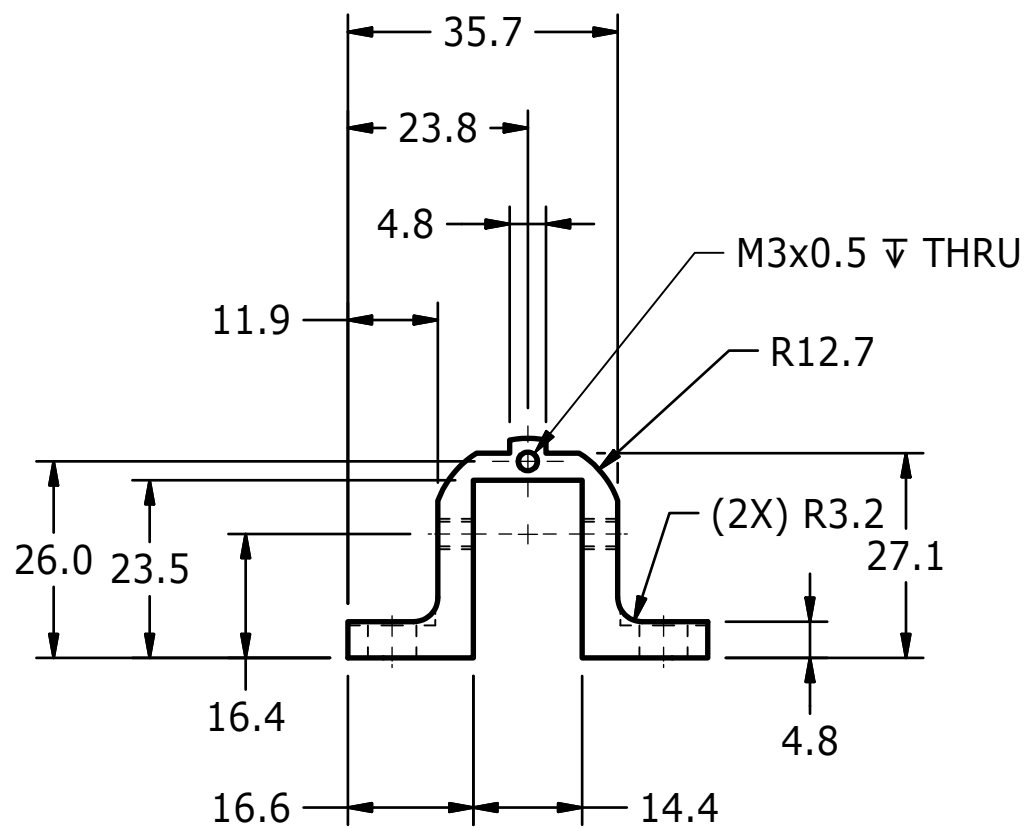
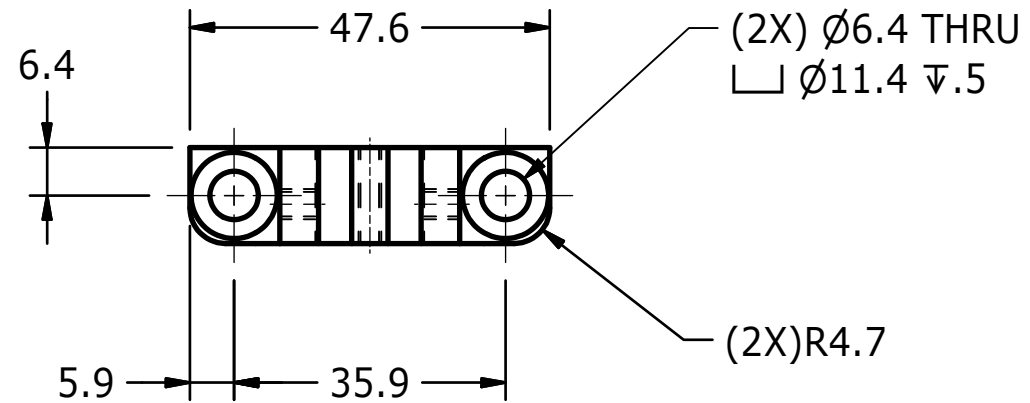


UNLESS OTHERWISE SPECIFIED:  
1 BBREAK ALL SHARP EDGES.


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
		APPROVALS	DATE	<b>RETAINING WASHER</b>  <b>THOR M</b>	
		DRAWN B. WADE	12/2/2008		
MATERIAL Delrin, White		CHECKED TMV	12/11/2008	 THIRD ANGLE PROJECTION	
HEAT TREAT N/A		ENG			
FINISH N/A		APPROVED		SIZE A3	DRAWING NUMBER 472-7515
				SCALE: 2:1	SHEET 1 OF 1



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/23/2007	KSG
E00609	C	REDIM FOR METRIC HARDWARE	10/2/2008	BLW
E00609	D	CHNAGE TO METRIC DIMENSIONING	12/3/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED		DATE 12/3/2008 12/11/2008	
MATERIAL Aluminum 6061-T6 HEAT TREAT N/A FINISH BLUE ANODIZE	SCALE: 1:1		<b>CAP, BASE TORQUE</b> <b>THOR M</b> SIZE: <b>A3</b> DRAWING NUMBER: <b>472-7522</b> REV: <b>D</b> SHEET: 1 OF 1	

4

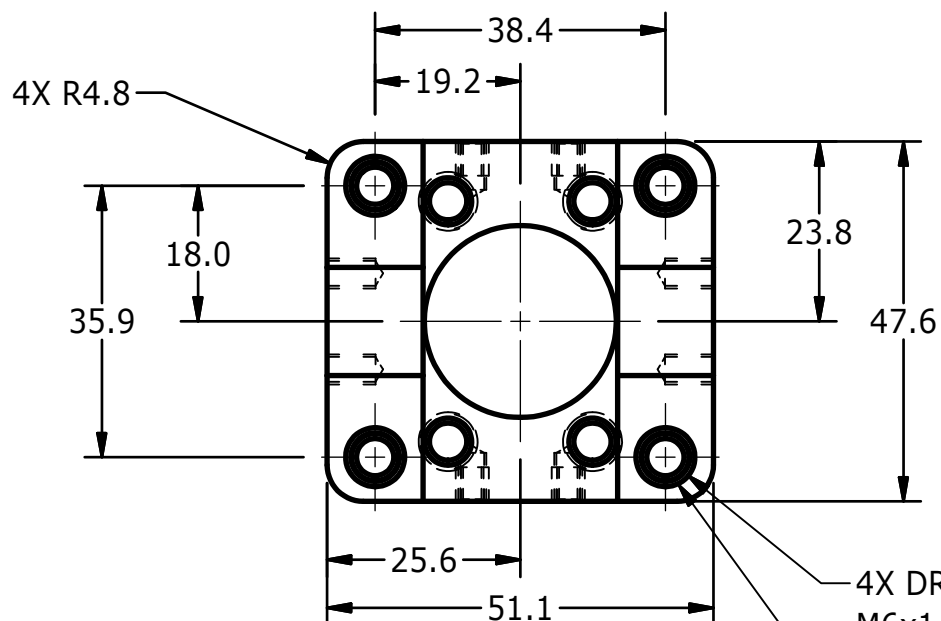
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2

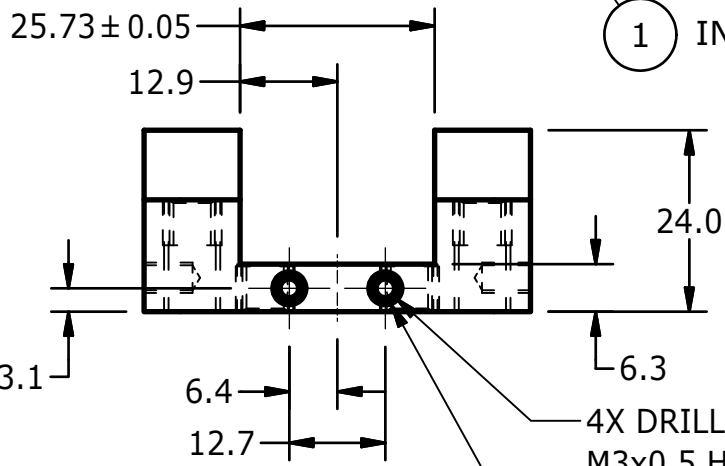
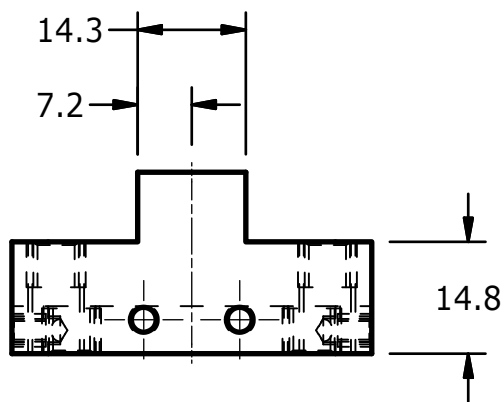
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### REVISION HISTORY

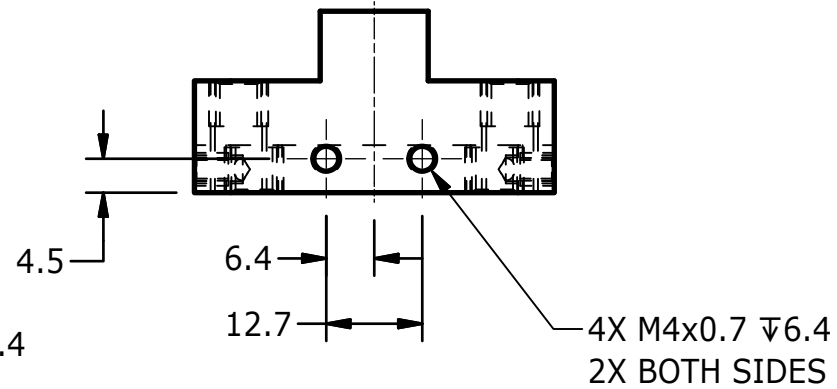
ECO	REV	DESCRIPTION	DATE	BY
	C	REDRAWN IN INVENTOR; DRILL & TAP FOR 6-32 HELICOIL WAS 6.32 TAP	7/23/2007	KSG
	D	CHANGE TO METRIC HARDWARE, REV DIM	9/30/2008	BLW
	E	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW
	F	CHANGE TO 4.5MM LG HELICOIL	3/27/2009	JHC



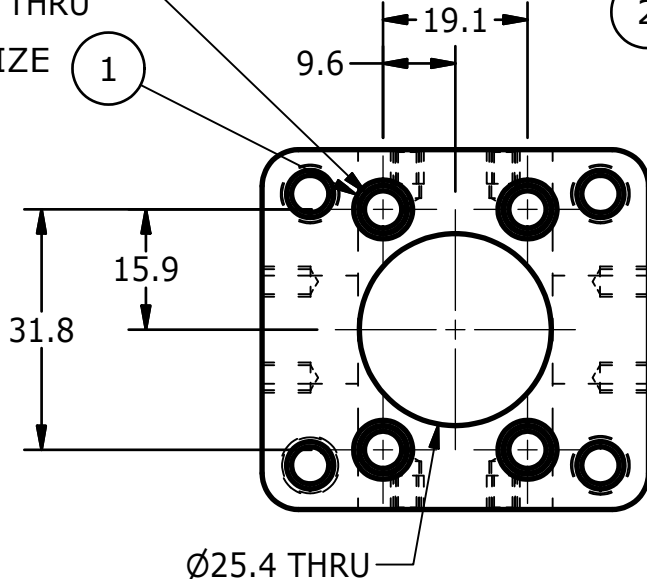
4X DRILL & TAP  
M6x1 HELICOIL TAP - THRU  
1 INSTALL AFTER ANODIZE



4X DRILL & TAP  
M3x0.5 HELICOIL TAP ∇ 6.4  
2X BOTH SIDES  
2 INSTALL AFTER ANODIZE



4X DRILL & TAP  
M6x1 HELICOIL TAP - THRU  
INSTALL AFTER ANODIZE  
1



ITEM	QTY	PART NUMBER	DESCRIPTION
2	4	9010508	M3X0.5 X 4.5mm Helicoil
1	8	9010437	M6X1 X 6mm Helicoil

### PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5, X.X ±.2, X.XX ±.1 MACHINED 1.6, ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE		
	DRAWN B. WADE	12/3/2008	<b>BASE, TORQUE - BOTTOM</b>  <b>THOR M</b>	
	CHECKED			
MATERIAL ALUMINUM 6061-T6	ENG	THIRD ANGLE PROJECTION	SIZE: <b>B</b> DRAWING NUMBER: <b>472-7523</b> REV: <b>F</b>	
FINISH BLUE ANODIZE	APPROVED	SCALE: 1:1	SHEET 1 OF 1	

4

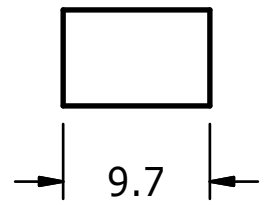
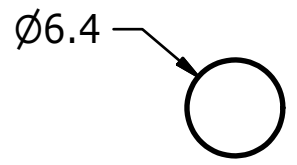
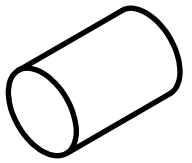
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2

1

REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	BY
	B	REDRAWN IN INVENTOR	7/23/2007	KSG
	C	CHANGED TO METRIC DIMENSIONING	12/3/2008	BLW
	D	MADE DUROMETER REFERENCE, ADDED TEST REQUIREMENT NOTE	7/22/2015	JHC



MATERIAL:

NATURAL RUBBER (70 ±5 SHORE A)  
 DUROMETER MAY BE SUPERCEDED BY  
 DYNAMIC TEST REQUIREMENTS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> <b>DO NOT SCALE DRAWING</b>	<b>VEHICLE RESEARCH          and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>			
	APPROVALS	DATE		<b>TORQUE CYLINDER</b>			
	DRAWN B. WADE	12/3/2008	<b>THOR M</b>		SIZE <b>A</b>	DRAWING NUMBER <b>472-7524</b>	REV <b>D</b>
	MATERIAL SEE ABOVE	CHECKED	DATE	SCALE: 2:1		SHEET 1 OF 1	
HEAT TREAT	ENG	APPROVED					
FINISH	APPROVED		THIRD ANGLE PROJECTION				

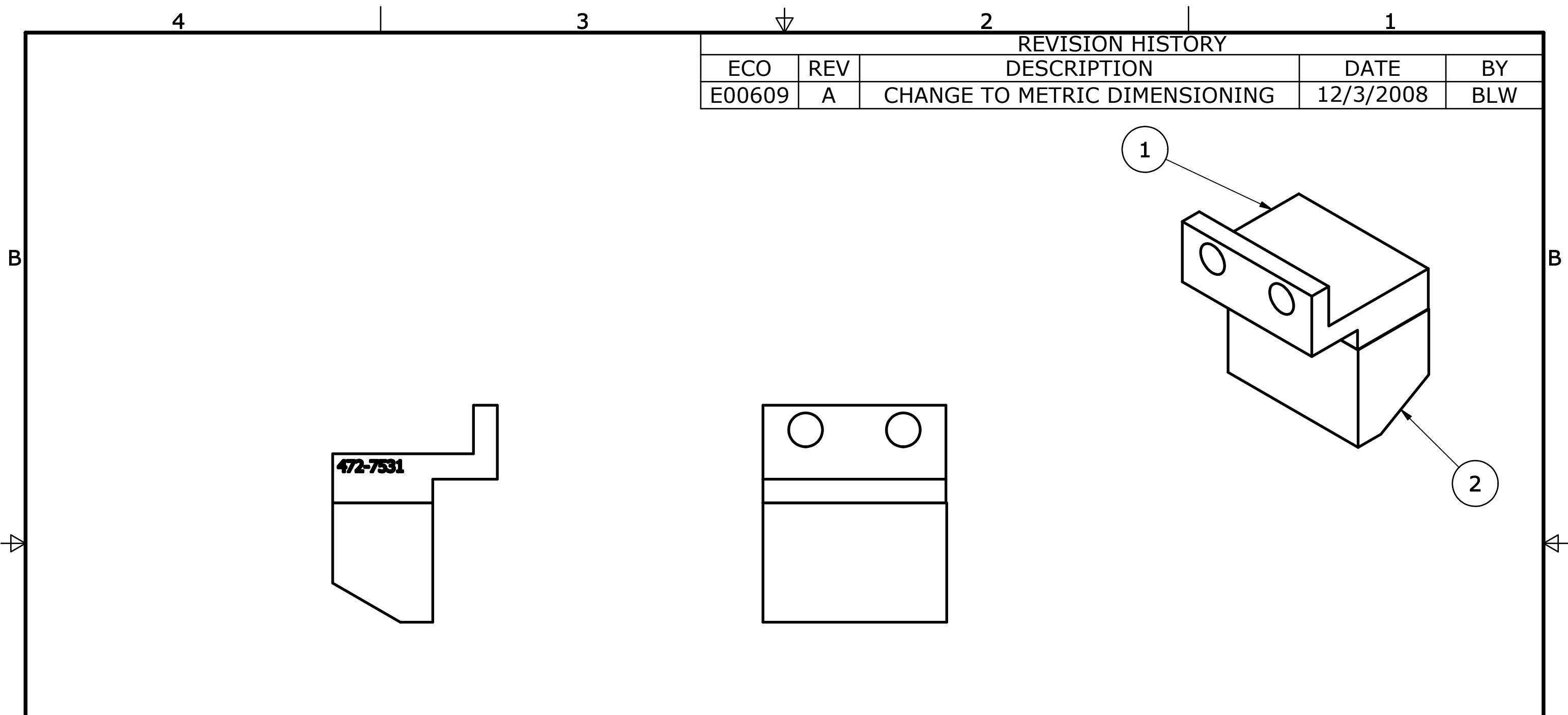
4

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1


REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW



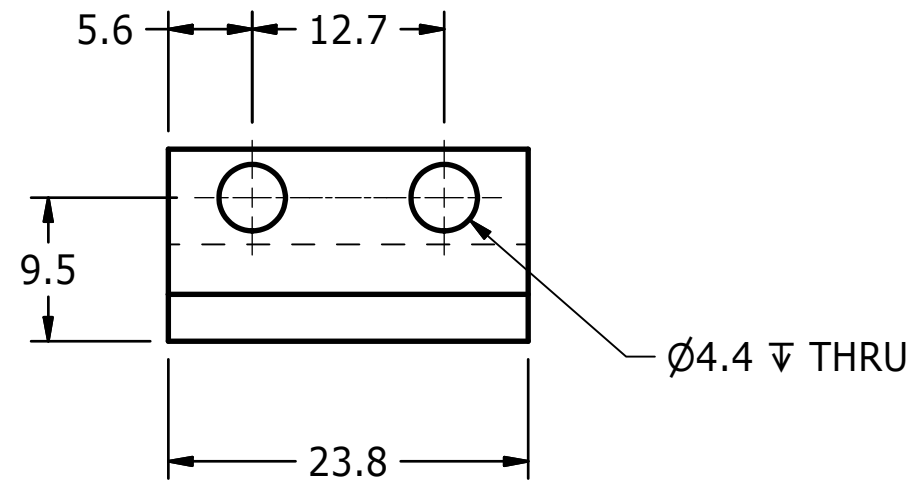
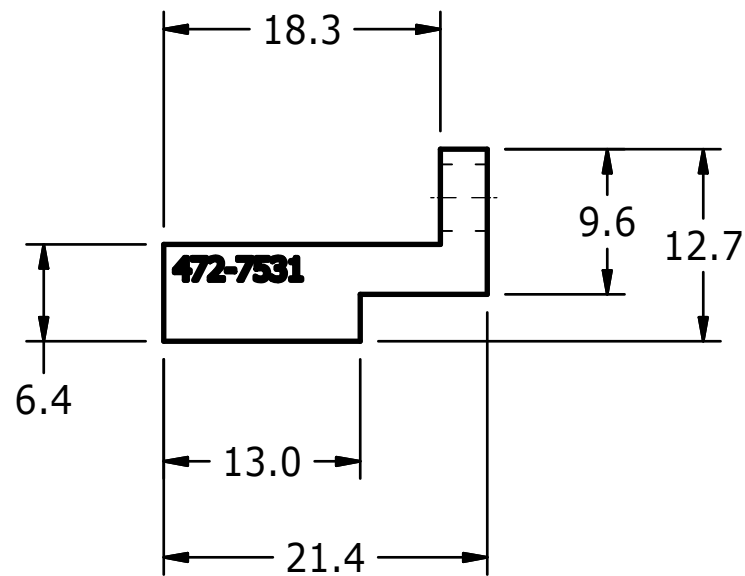
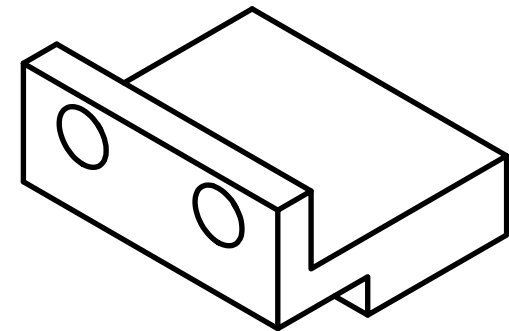
ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-7532	FRONT STOP, SOFT-DORSI/PLANTAR
1	1	472-7531	BRACKET, FRONT STOP-DORSI/PLANTAR

**PARTS LIST**



UNLESS OTHERWISE SPECIFIED:  
 1. BREAK ALL SHARP EDGES.  
 2. SANDBLAST ITEM 1 & CLEAN WITH MEK.  
 3. ABRABE ITEM 2 WITH SANDPAPER & CLEAN WITH MEK & ALCOHOL.  
 4. BOND PARTS UNDER PRESSURE USING LORD 305 EPOXY ADHESIVE.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/5 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED		DATE 12/3/2008 12/12/2008	
MATERIAL HEAT TREAT N/A FINISH N/A		THIRD ANGLE PROJECTION		STOP ASSEMBLY - DORSI  THOR M  SIZE <b>A3</b> SCALE: 2:1 DRAWING NUMBER <b>472-7530</b> SHEET 1 OF 1 REV <b>A</b>

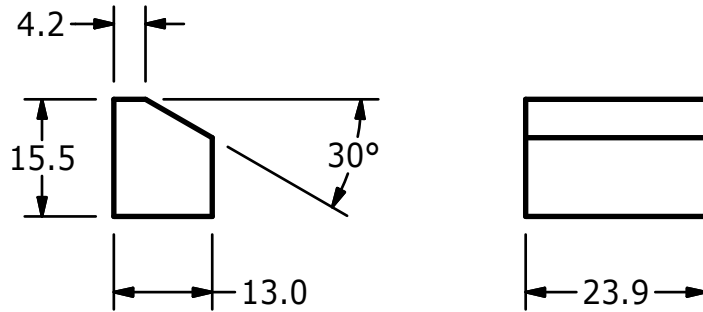
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	REDIM FOR METRIC HARDWARE	10/2/2008	BLW
E00609	B	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/3/2008 12/10/2008	<b>BRACKET, FRONT STOP-DORSI/PLANTAR THOR-M</b>	
MATERIAL Aluminum 6061-T6 HEAT TREAT N/A FINISH BLUE ANODIZED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7531</b>	REV <b>B</b>
		SCALE: 2:1	SHEET 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW
	B	MADE DUROMETER REFERENCE, ADDED TEST REQUIREMENT NOTE	7/22/2015	JHC

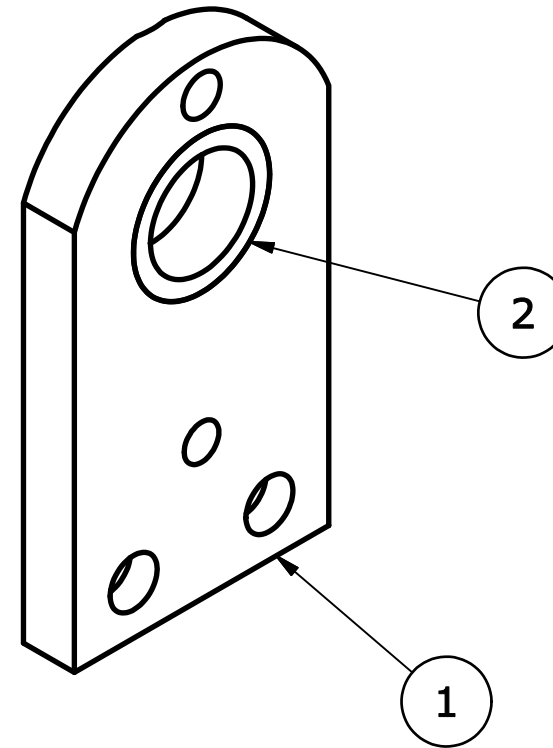
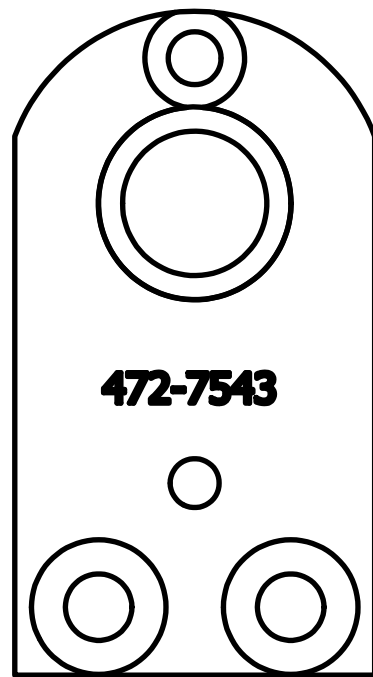


MATERIAL: NEOPRENE (84 ± SHORE A)

DUROMETER MAY BE SUPERCEDED BY DYNAMIC TEST REQUIREMENTS.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> <b>DO NOT SCALE DRAWING</b>	<b>VEHICLE RESEARCH and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>		
	APPROVALS	DATE		<b>STOP, DORSI/PLANTAR THOR M</b>		
	DRAWN B. WADE	12/3/2008				
	CHECKED					
MATERIAL SEE ABOVE	ENG			SIZE <b>A</b>	DRAWING NUMBER <b>472-7532</b>	REV <b>B</b>
HEAT TREAT	APPROVED			SCALE:	SHEET 1 OF 1	
FINISH						



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	REDRAWN IN INVENTOR	7/23/2008	KSG
E00609	B	CHANGED TO METRIC DIMENSIONING	12/3/2008	BLW



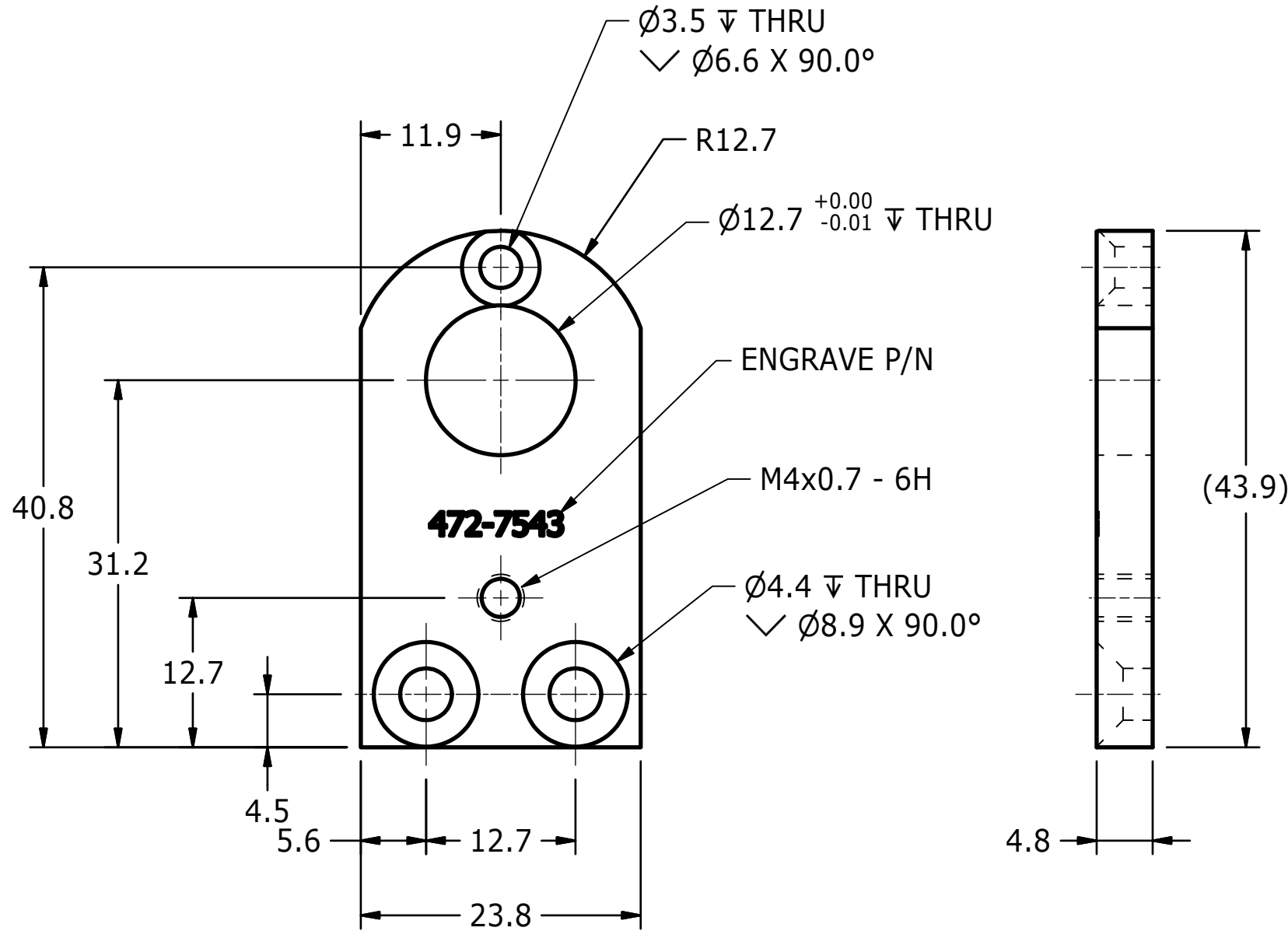
2	1	472-7542	BUSHING, ANKLE
1	1	472-7543	BUSHING PLATE, FREE END
ITEM	QTY	PART NUMBER	DESCRIPTION

**PARTS LIST**



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG HEAT TREAT N/A FINISH N/A	DATE 12/3/2008 12/12/2008	<b>ANKLE BUSHING PLATE ASSEMBLY - FREE END THOR M</b>	
	APPROVED	 THIRD ANGLE PROJECTION	SIZE A3	DRAWING NUMBER 472-7540
			SCALE: 2:1	REV B SHEET 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRWN IN INVENTOR	7/23/208	KSG
E00609	C	REDIM FOR METRIC HRDWARE	10/1/2008	BLW
E00609	D	CHANGED TO METRIC DIMENSIONING	12/4/2008	BLW

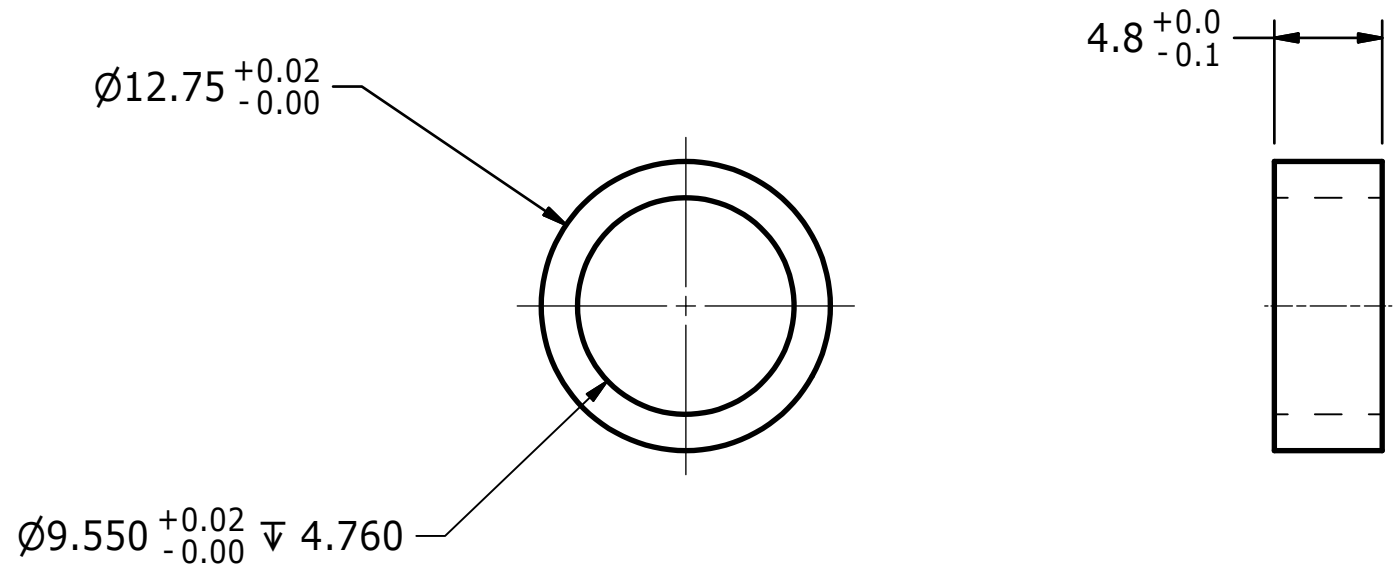


UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.


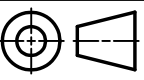
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/4/2008 12/10/2008	<b>BUSHING PLATE, FREE END</b>  <b>THOR M</b>   SIZE: <b>A3</b> DRAWING NUMBER: <b>472-7543</b> REV: <b>D</b>	
MATERIAL Aluminum 6061 HEAT TREAT N/A FINISH BLUE ANODIZED	SHEET 1 OF 1			



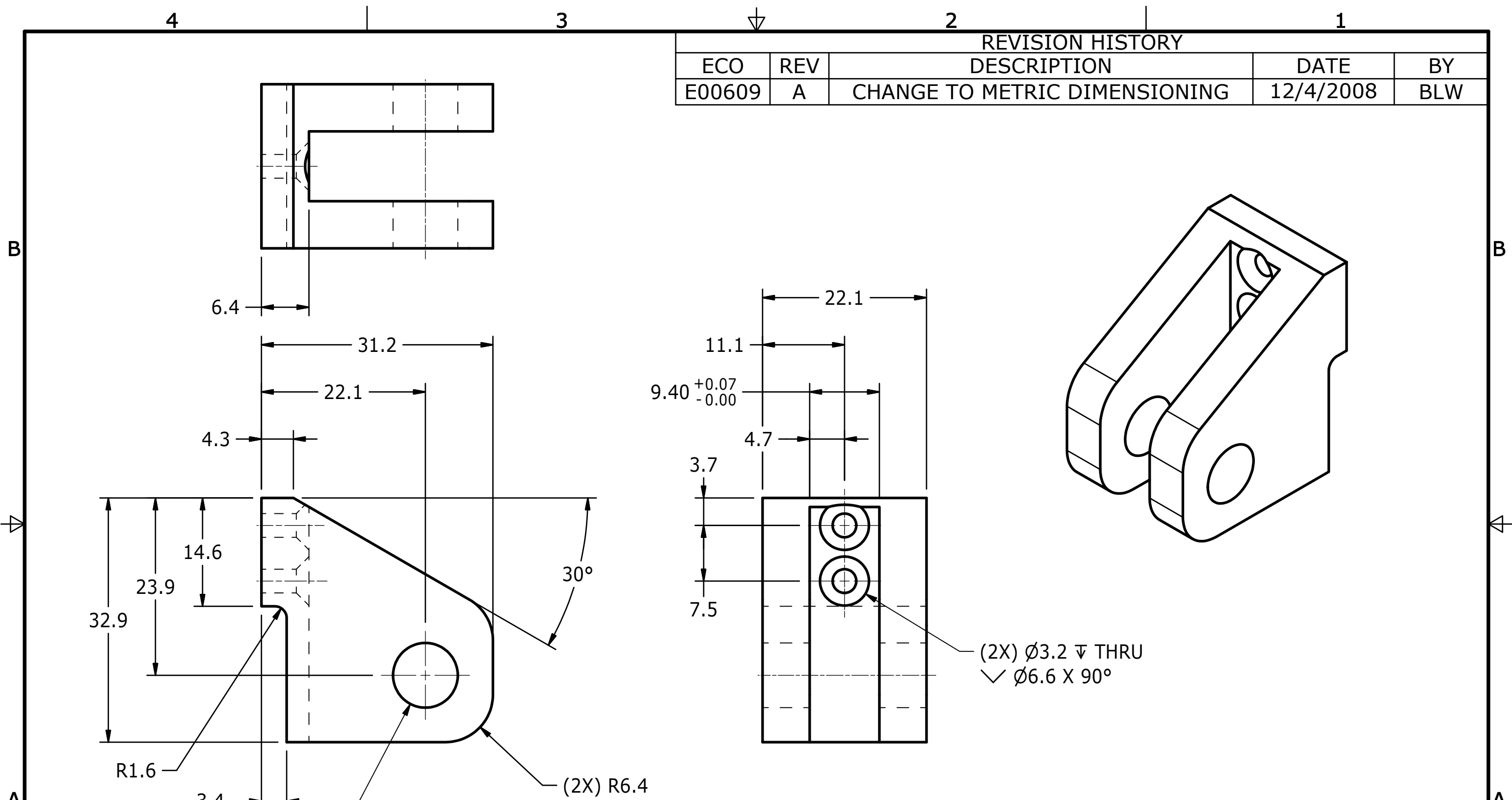
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/23/2007	KSG
E00609	C	REV DIMS TO MATCH RAW MATERIAL	10/2/2008	BLW
E00609	D	CHANGED TO METRIC DIMENSIONING	12/3/2008	BLW





UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHAR EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/3/2008 12/11/2008	
MATERIAL 841 BRONZE HEAT TREAT N/A FINISH N/A	 THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE: 3:1	DRAWING NUMBER <b>472-7542</b> SHEET 1 OF 1
			REV <b>D</b>

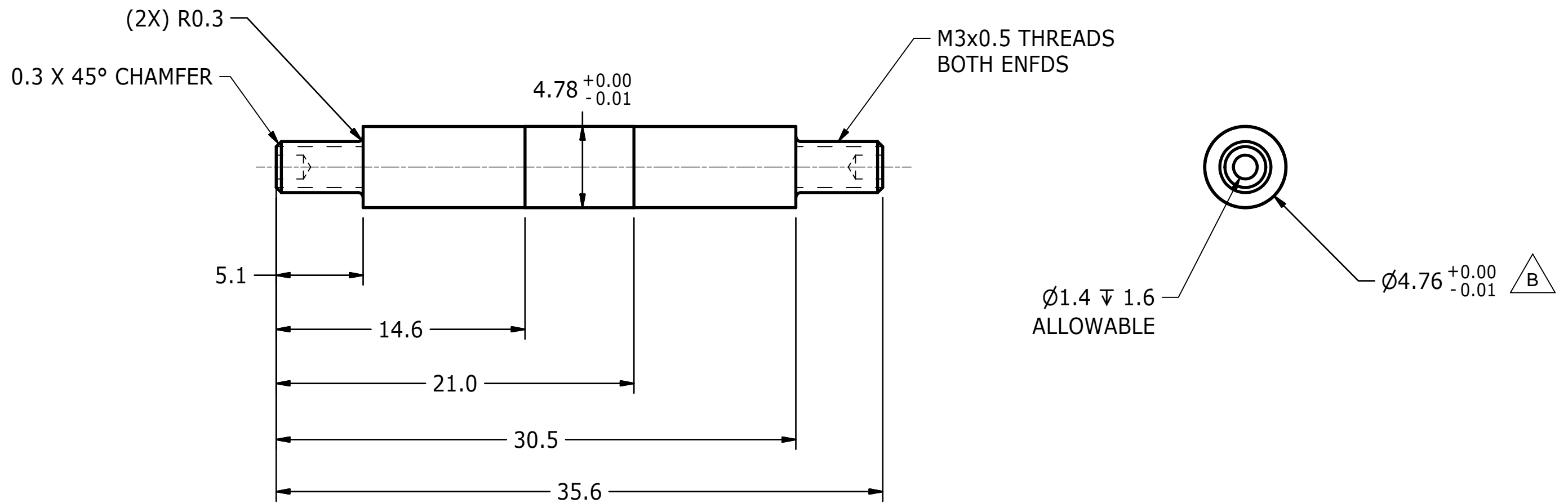
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGE TO METRIC DIMENSIONING	12/4/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/4/2008 12/18/2008	<b>BRACKET, ACHILLES PULLEY</b> <b>THOR M</b>	
MATERIAL Aluminum-7075-T6 HEAT TREAT N/A FINISH BLUE ANODIZED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>		
		SCALE: 2:1	SHEET 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	12/4/2008	BLW
	B	DIMENSION 4.76 +0.00/-0.01 WAS 4.79 +0.00/-0.01	9/28/2015	DW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED	DATE 12/4/2008	<b>SHAFT, ACHILLES CABLE PULLEY</b> <b>THOR-M</b>	
MATERIAL ETD 150 Steel HEAT TREAT N/A FINISH N/A	ENG APPROVED	THIRD ANGLE PROJECTION	SIZE A3 SCALE: 4:1	DRAWING NUMBER <b>472-7561</b> SHEET 1 OF 1
				REV B

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B

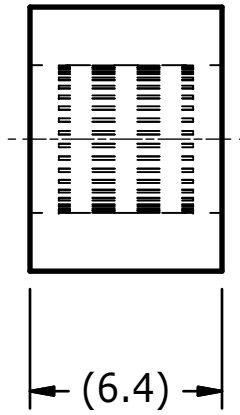
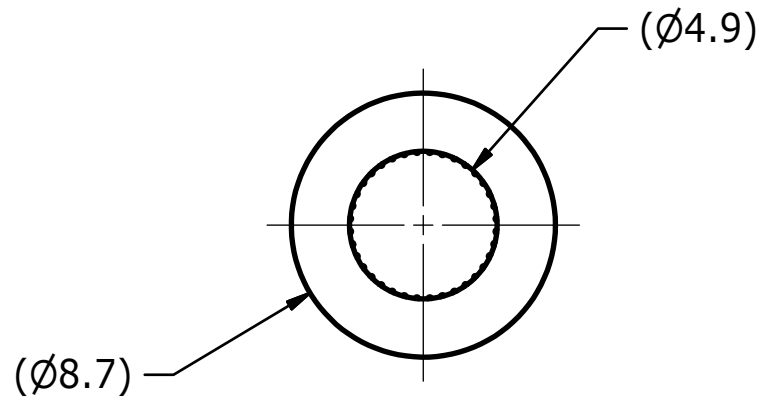
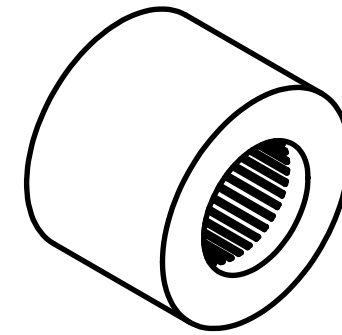
B

A

A

A

A



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>NEEDLE ROLLER BEARING</b>  <b>THOR-M</b>	
DRAWN B. WADE	1/9/2009			
MATERIAL Steel, Alloy	CHECKED	 THIRD ANGLE PROJECTION		
HEAT TREAT N/A	ENG			
FINISH N/A	APPROVED	SIZE <b>A3</b>	DRAWING NUMBER <b>9000509</b>	REV
		SCALE:	SHEET 1 OF 1	

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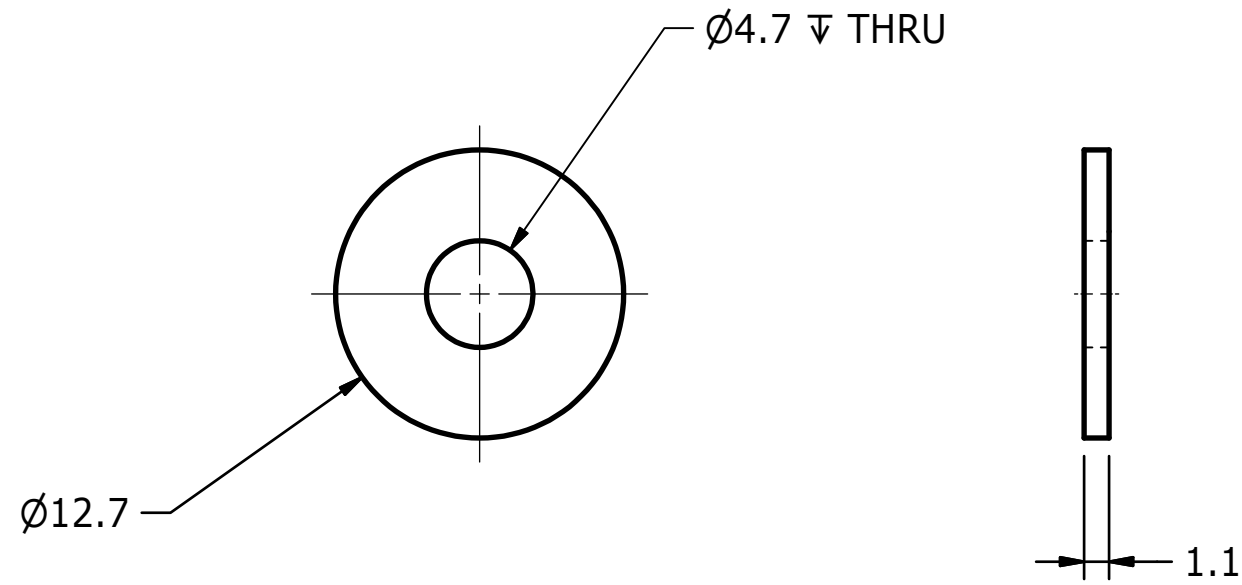
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B



B

A

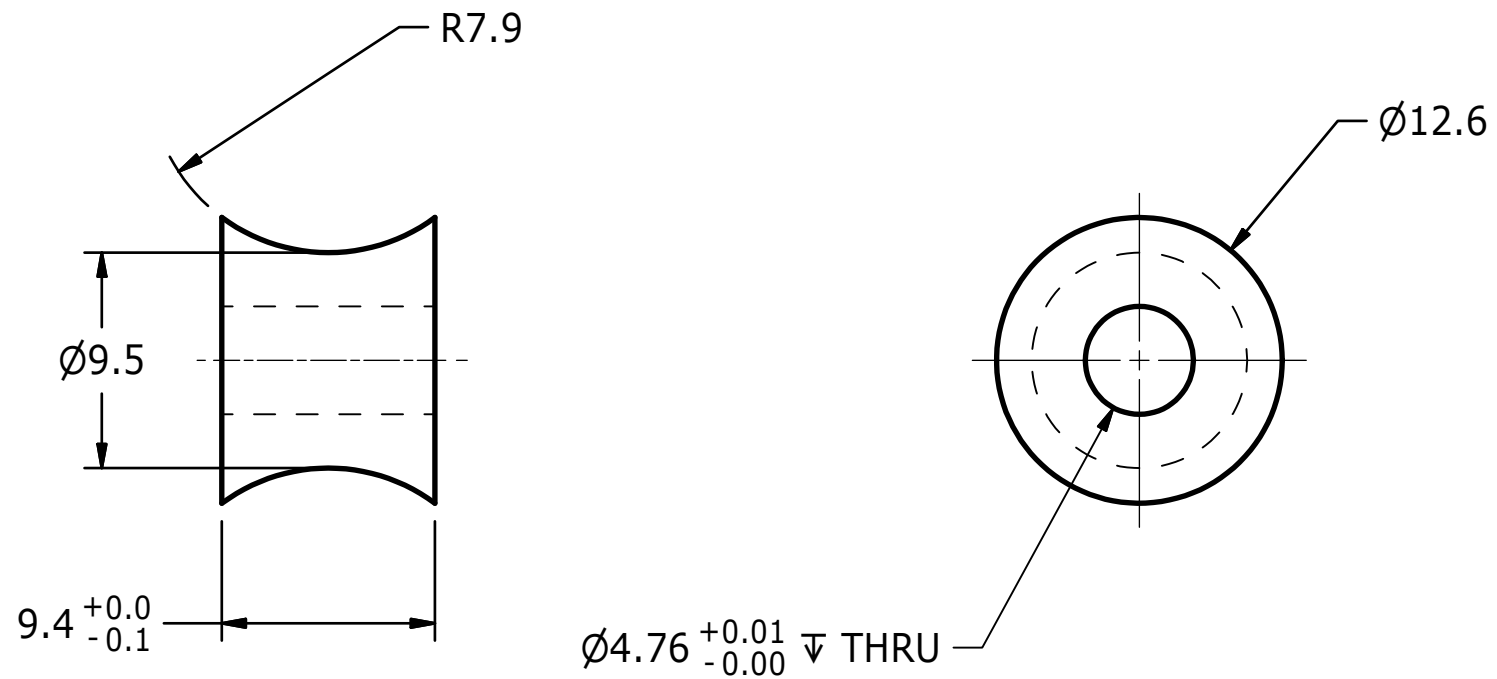
A





UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X    ±.5        1.6 X.X   ±.2       ANGLE X.XX ±.1       ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED	DATE 9/28/2015	<b>ACHILLES WASHER</b> <b>FLX LEG</b>	
MATERIAL PTFE TEFLON HEAT TREAT N/A FINISH N/A	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>9000508</b>
			SCALE: 3:1	SHEET 1 OF 1

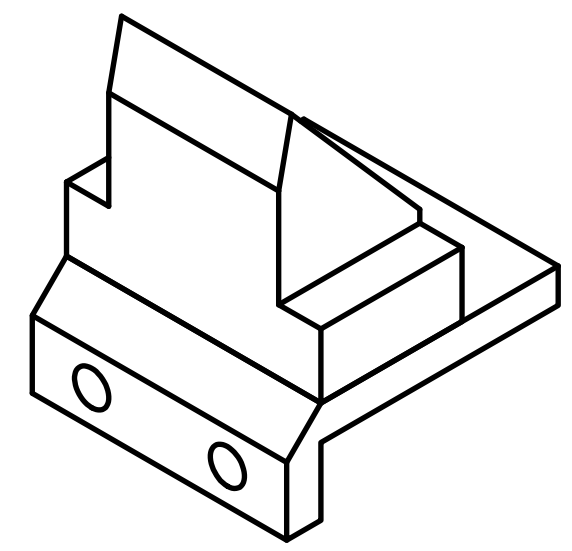
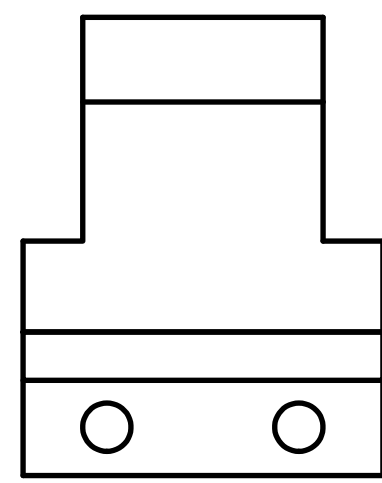
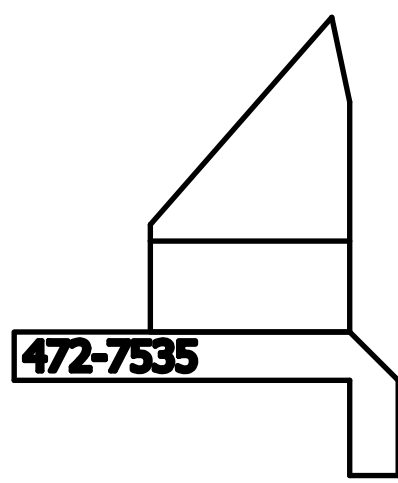
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/10/2007	KSG
E00609	C	CHANGED TO METRIC DIMENSIONING	12/4/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLE ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED ENG APPROVED	DATE 12/4/2008	<b>PULLEY, ACHILLES CABLE</b>  <b>THOR M</b>	
MATERIAL Bronze, Cast HEAT TREAT N/A FINISH N/A	 THIRD ANGLE PROJECTION		SIZE A3 SCALE: 3:1	DRAWING NUMBER 472-7562 SHEET 1 OF 1
			REV C	


REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW



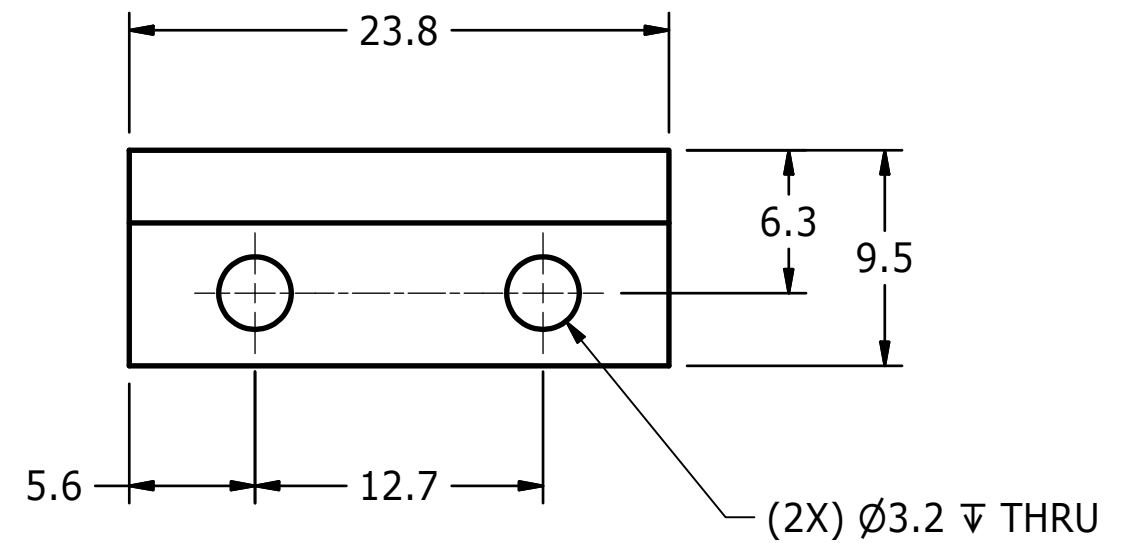
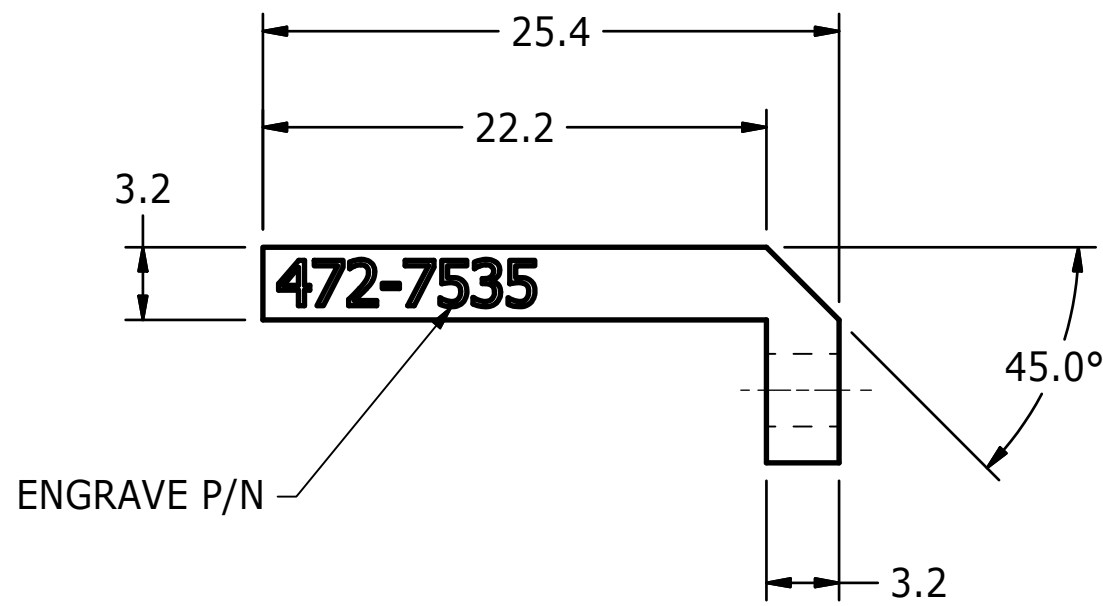
- UNLESS OTHERWISE SPECIFIED:
- BREAK ALL SHARP EDGES.
  - SANDBLAST ITEM 1 & CLEAN WITH MEK.
  - ABRADE ITEM 2 WITH SANDPAPER & CLEAN WITH MEK & ALCOHOL.
  - BOND PARTS UNDER PRESSURE USING LORD 305 EPOXY ADHESIVE.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-7536	STOP, EVERSION
1	1	472-7535	BRACKET, SOFT STOP - LOWER



**PARTS LIST**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV HEAT TREAT N/A FINISH N/A	DATE 12/3/2008	<b>STOP ASSEMBLY - EVERSION</b>  <b>THOR M</b>	
THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7533</b>	REV <b>A</b>	SHEET <b>1 OF 1</b>

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	REDIM FOR METRIC HARDWARE	10/2/2008	BLW
E00609	B	CHANGED TO METRIC DIMENSIONING	12/3/2008	BLW

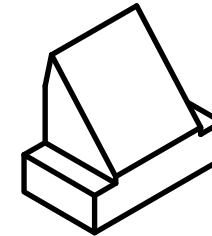
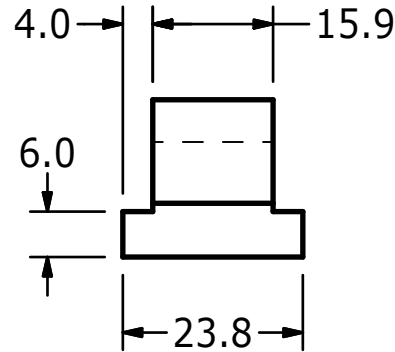
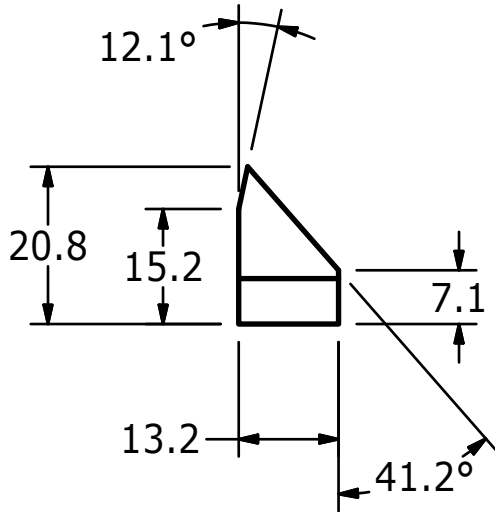


UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/3/2008 12/10/2008	<b>BRACKET, SOFT STOP - LOWER</b> <b>THOR-M</b>	
MATERIAL Aluminum 6061-T6 HEAT TREAT N/A FINISH BLUE ANODIZED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7535</b>	REV <b>B</b>
		SCALE: 3:1	SHEET 1 OF 1	



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	ADDED DUROMETER SPEC	10/8/2008	BLW
	B	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW
	C	ADDED DYNAMIC TEST NOTE	7/23/2015	JHC

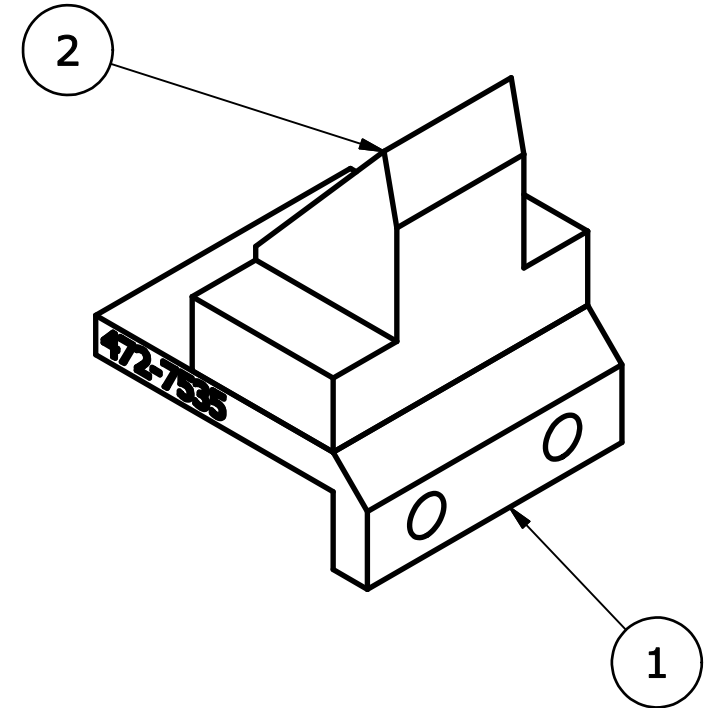
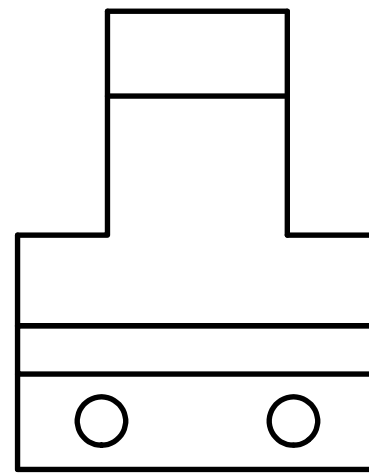
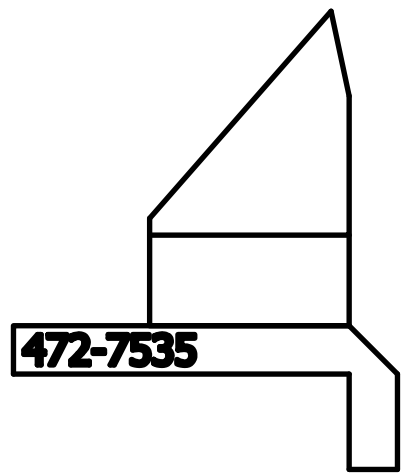


MATERIAL: NEOPRENE (75-85 SHORE A)

DUROMETER MAY BE SUPERCEDED BY DYNAMIC TEST REQUIREMENTS.

<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</p> <p>DECIMAL: X ±.5, X.X ±.2, X.XX ±.1</p> <p>MACHINED: 1.6, ANGLES ±.5°</p> <p>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</p> <p>MATERIAL: SEE ABOVE</p> <p>HEAT TREAT:</p> <p>FINISH:</p>	<p>VEHICLE <b>RESEARCH</b> and <b>TEST CENTER</b></p>		<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>
	APPROVALS	DATE	
	DRAWN B. WADE	12/3/2008	
	CHECKED		
	ENG		<p>THIRD ANGLE PROJECTION</p>
	APPROVED		<p>SIZE: <b>A</b></p> <p>DRAWING NUMBER: <b>472-7536</b></p> <p>REV: <b>C</b></p>
			<p>SCALE:</p> <p>SHEET: 1 OF 1</p>



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	12/3/2008	BLW



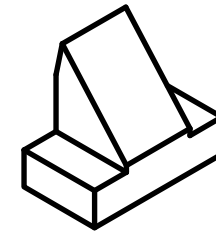
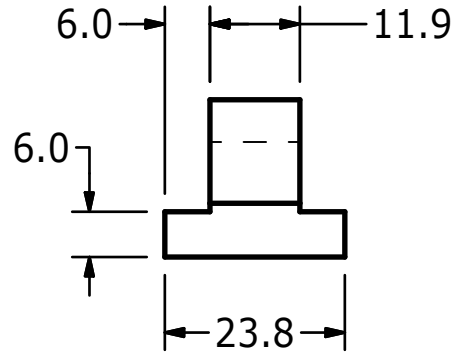
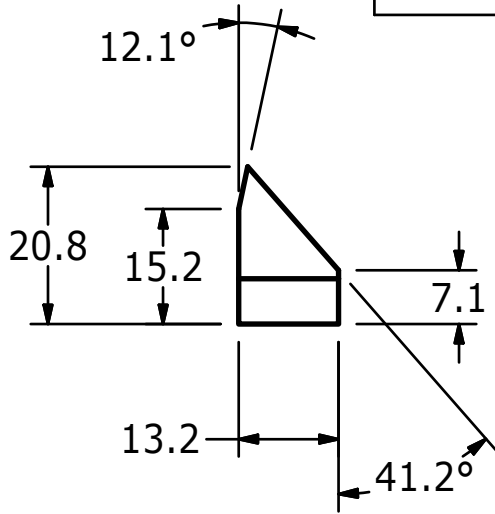
- UNLESS OTHERWISE SPECIFIED:
- BREAK ALL SHARP EDGES.
  - SANDBLAST ITEM 1 & CLEAN WITH MEK.
  - ABRADE ITEM 2 WITH SANFDPAPER & CLEAN WITH MEK & ALCOHOL.
  - BOND PARTS UNDER PRESSURE USING LORD 305 EPOXY ADHESIVE.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-7537	STOP, INVERSION
1	1	472-7535	BRACKET, SOFT STOP - LOWER

**PARTS LIST**


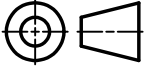
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.5 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/3/2008 12/12/2008	<b>STOP ASSEMBLY - INVERSION</b>  <b>THOR M</b>	
MATERIAL HEAT TREAT N/A FINISH N/A	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7534</b>	REV <b>A</b>
		SCALE: 2:1	SHEET 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	ADDED DUROMETER SPEC	10/8/2008	BLW
	B	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW
	C	MADE DUROMETER REFERENCE, ADD TEST REQUIREMENT NOTE	7/23/2015	JHC

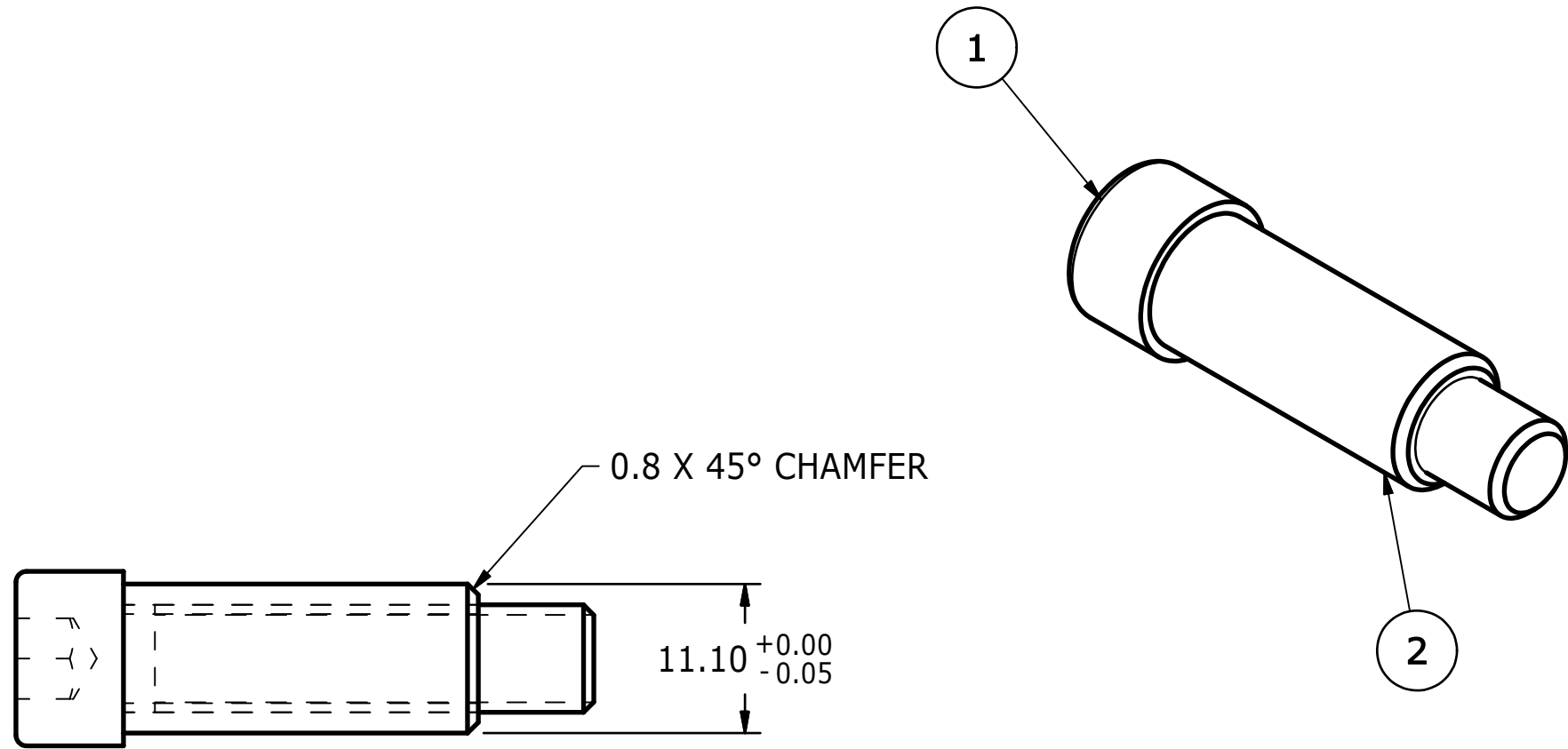


MATERIAL: NEOPRENE (65-75 SHORE A)

DUROMETER MAY BE SUPERCEDED BY DYNAMIC TEST REQUIREMENTS.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:       MACHINED X ±.5            1.6 X.X ±.2         ANGLES X.XX ±.1        ±.5°  <small>ASME Y14.5M - 1994</small> <b>DO NOT SCALE DRAWING</b>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
DRAWN B. WADE	12/3/2008	 THIRD ANGLE PROJECTION	
CHECKED			SIZE   DRAWING NUMBER   REV
MATERIAL SEE ABOVE	ENG	<b>A</b> <b>472-7537</b> <b>C</b>	
HEAT TREAT	APPROVED	SCALE:	SHEET                           1   OF   1
FINISH			



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/23/2007	KSG
E00609	C	CHANGE TO METRIC SCREW	10/6/2008	BLW
E00609	D	CHANGED TO METRIC DIMENSIONING	12/4/2008	BLW



- UNLESS OTHERWISE SPECIFIED:
1. BREAK ALL SHARP EDGES.
  2. REMOVE OIL FROM ITEM 2 WITH SOLVENT.
  3. APPLY LOCTITE 262 TO THREADS AND ASSEMBLY ITEMS 1 & 2.
  4. MACHINE OD AND CHAMFER AS NOTED.

2	1	472-7564	SLEEVE, BOLT - ANKLE
1	1	9010164	SCREW, SHCS M8-1.25 x 35
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/5 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>		
	APPROVALS DRAWN B. WADE CHECKED	DATE 12/4/2008		<b>BOLT &amp; SLEEVE ASSEMBLY,          ANKLE          THOR M</b>	
MATERIAL  HEAT TREAT N/A  FINISH N/A	ENG  APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>  SCALE: 2:1		DRAWING NUMBER <b>472-7563</b>  SHEET 1 OF 1

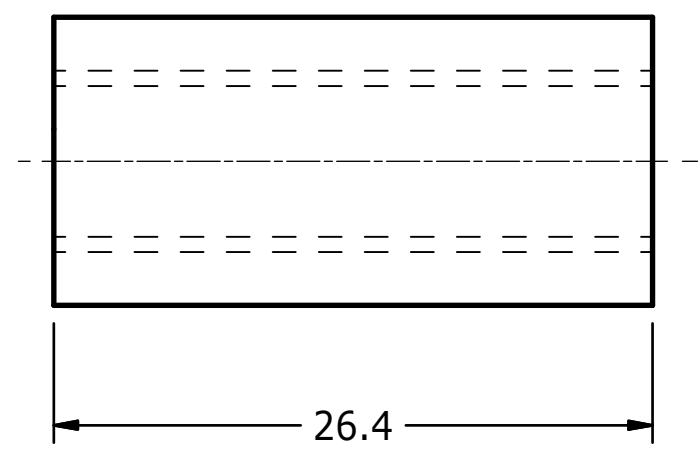
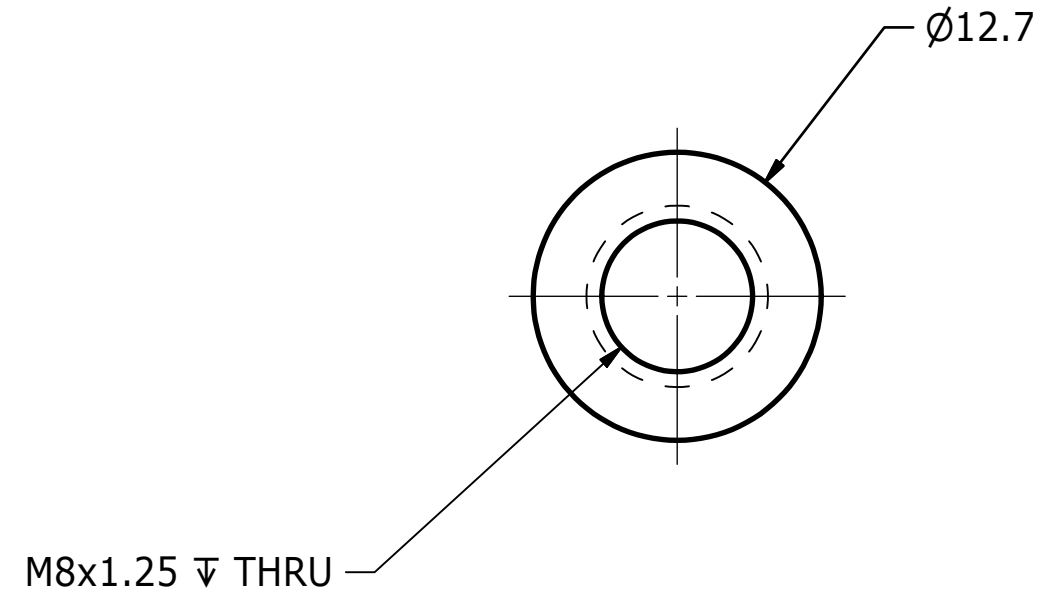
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	B	REDRAWN IN INVENTOR	7/23/2007	KSG
E00609	C	REDIM FOR METRIC HARDWARE	10/6/2008	BLW
E00609	D	CHANGE TO METRIC DIMENSIONING	12/4/2008	BLW

B


B

A

A

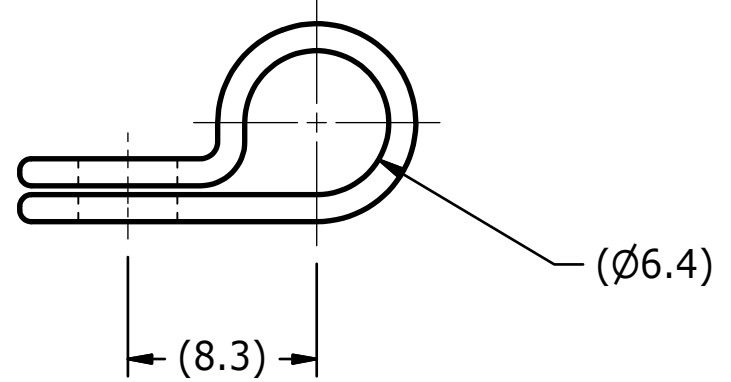
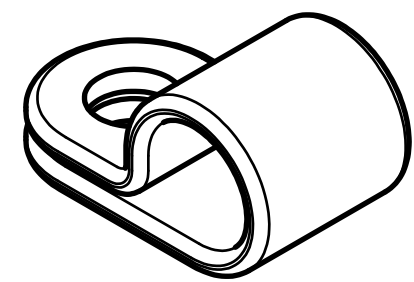
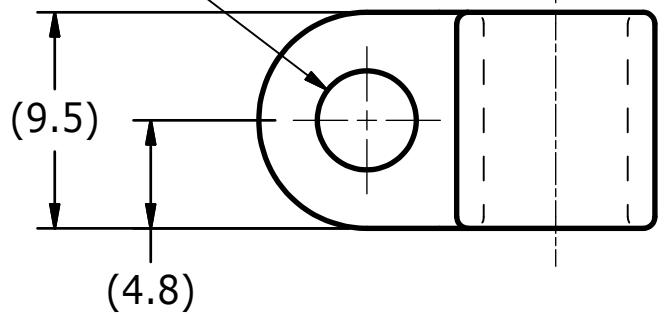


UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

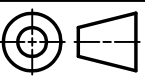
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED	DATE 12/4/2008	<b>SLEEVE, BOLT - ANKLE THOR-M</b>	
MATERIAL Delrin, White HEAT TREAT N/A FINISH N/A	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7564</b>
		SCALE: 3:1	SHEET 1 OF 1	REV <b>D</b>

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	REMOVED MCMASTER P/N AND ADDED DIMENSIONS	9/29/2015	DW

(Ø4.4) ∇ THRU



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED	DATE 1/12/2009	<b>CLAMP, NYLON LOOP</b> THOR-M	
MATERIAL Nylon 6/6 HEAT TREAT N/A FINISH N/A	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>9005135</b>
		SCALE: 3:1	SHEET 1 OF 1	REV <b>A</b>

4

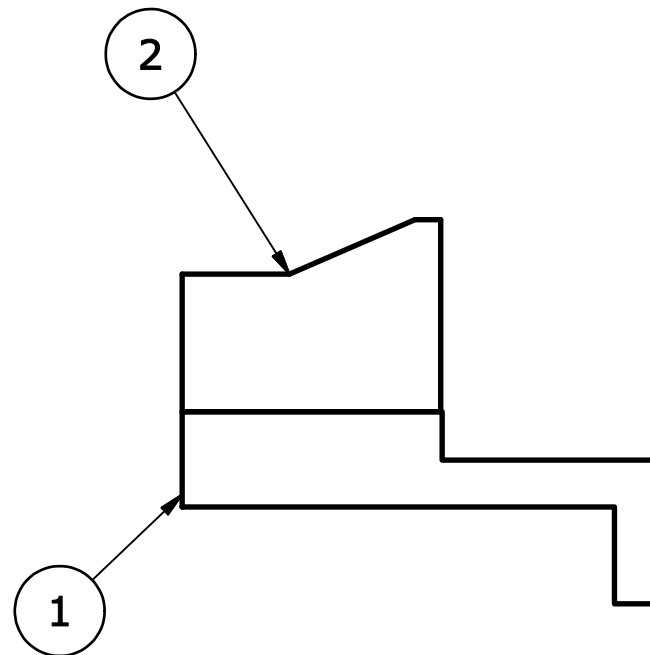
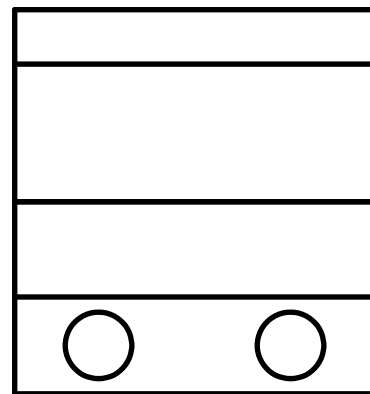
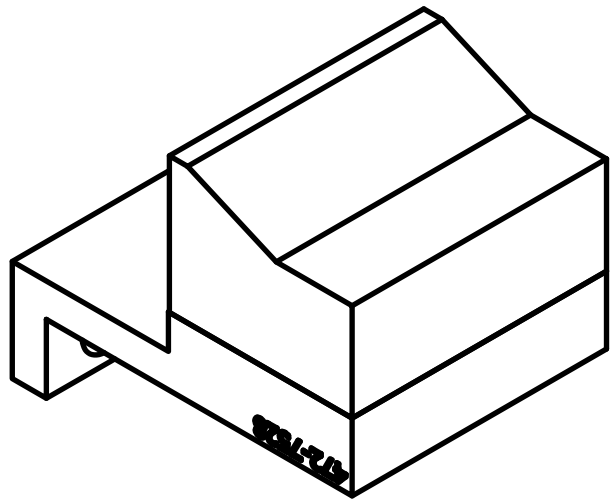
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2

1

B



B

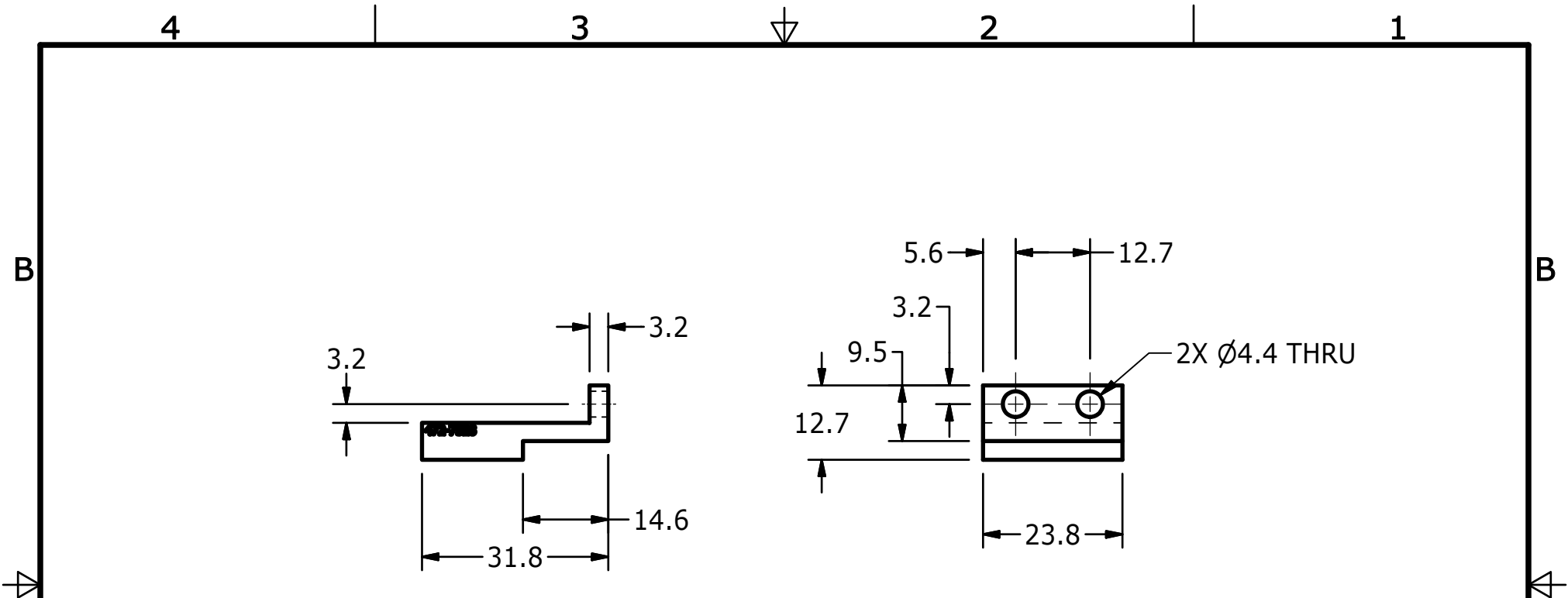



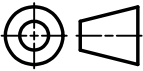
- UNLESS OTHERWISE SPECIFIED:
1. BREAK ALL SHARP EDGES.
  2. SANDBLAST ITEM 1 & CLEAN WITH MEK.
  3. ABRABE ITEM 2 WITH SANDPAPER & CLEAN WITH MEK & ALCOHOL.
  4. BOND PARTS UNDER PRESSURE USING LORD 305 EPOXY ADHESIVE.

2	1	472-7529	DORSI/PLANTAR SOFT STOP
1	1	472-7528	STOP BRACKET, REAR DORSI/PLANTAR
ITEM	QTY	PART NUMBER	DESCRIPTION

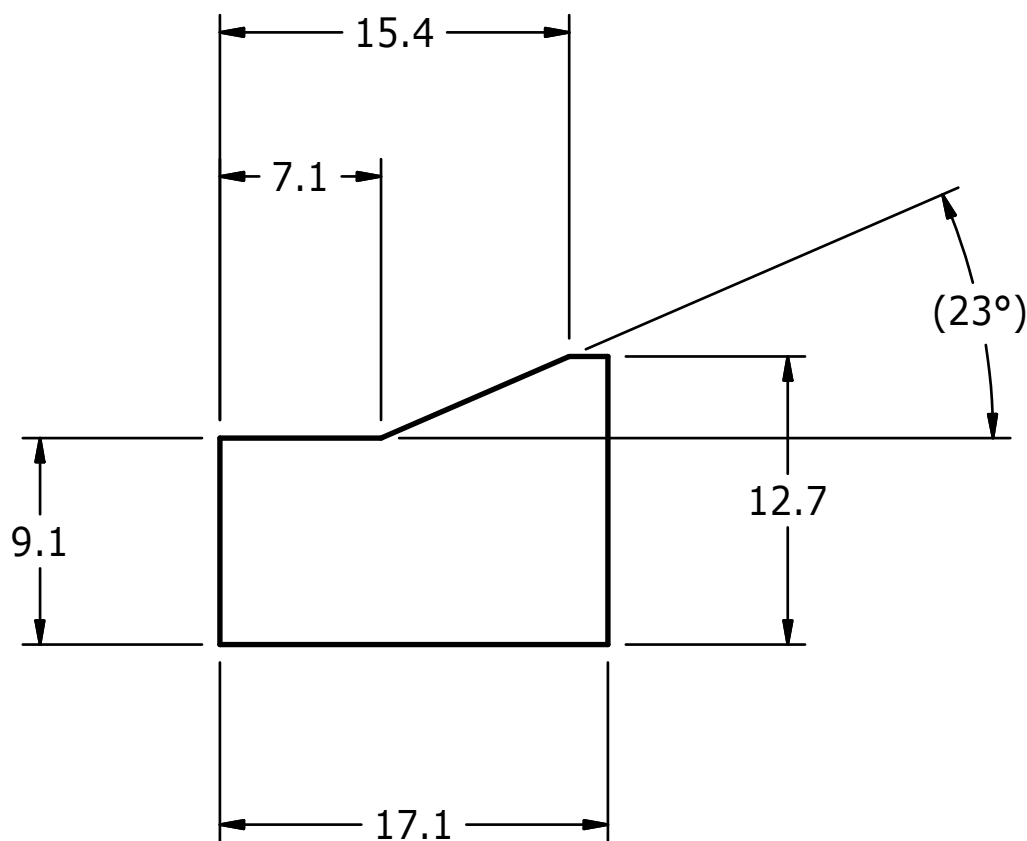
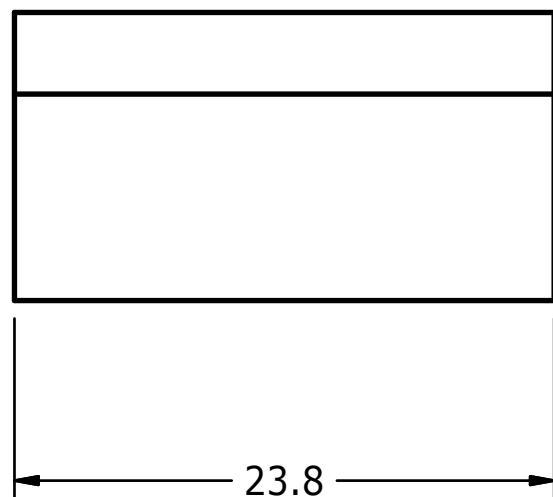
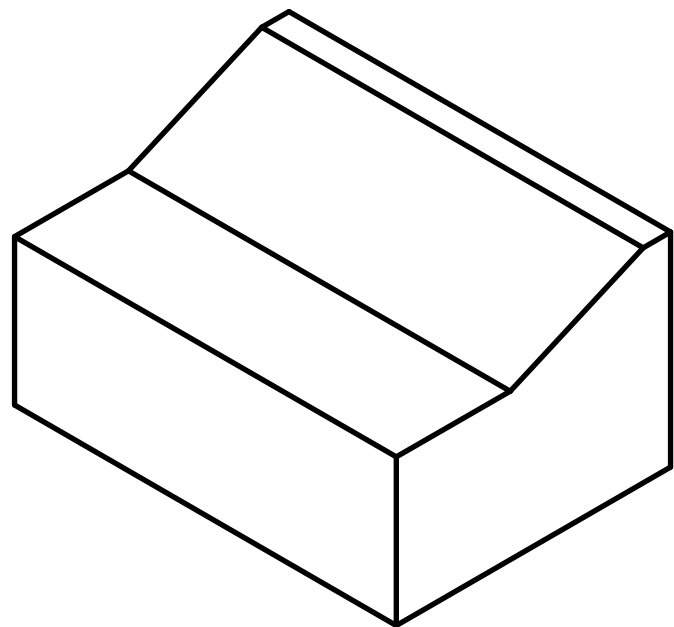
**PARTS LIST**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/5 ANGLES ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>		
	APPROVALS DRAWN B. WADE CHECKED		DATE 5/11/2009		
MATERIAL  HEAT TREAT N/A  FINISH N/A		ENG  APPROVED		<b>STOP ASSEMBLY, REAR DORSI</b>  <b>THOR M</b>	
		 THIRD ANGLE PROJECTION		SIZE <b>A3</b>	DRAWING NUMBER <b>472-7527</b>
				SCALE: 2:1	SHEET 1 OF 1





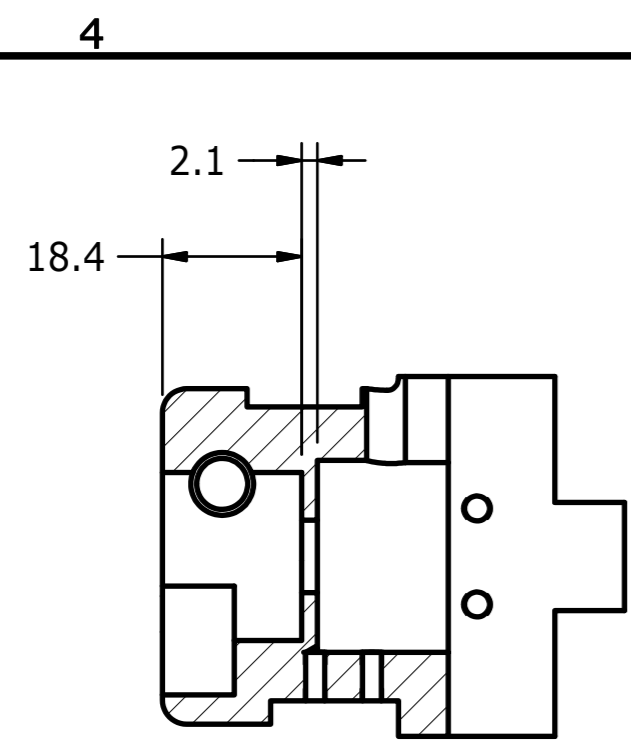
<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</p> <table border="0"> <tr> <td>DECIMAL:</td> <td>MACHINED</td> </tr> <tr> <td>X ±.5</td> <td>1.6</td> </tr> <tr> <td>X.X ±.2</td> <td>ANGLES</td> </tr> <tr> <td>X.XX ±.1</td> <td>±.5°</td> </tr> </table> <p>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</p>	DECIMAL:	MACHINED	X ±.5	1.6	X.X ±.2	ANGLES	X.XX ±.1	±.5°	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	DECIMAL:	MACHINED										
	X ±.5	1.6										
	X.X ±.2	ANGLES										
X.XX ±.1	±.5°											
APPROVALS		DATE										
DRAWN JIM CLEVENGER		7/30/2015										
CHECKED												
MATERIAL Aluminum 6061		ENG		<b>STOP BRACKET, REAR DORSI/PLANTAR THOR M</b>								
HEAT TREAT		APPROVED										
FINISH BLUE ANODIZE				 <b>THIRD ANGLE PROJECTION</b>								
		SIZE <b>A</b>		DRAWING NUMBER <b>472-7528</b>								
		SCALE: 1:1		REV SHEET 1 OF 1								



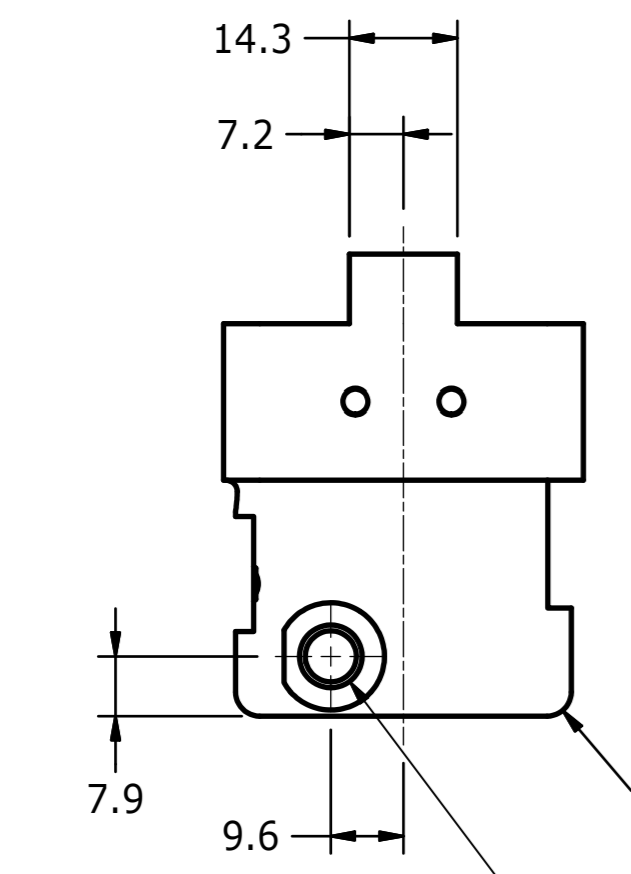
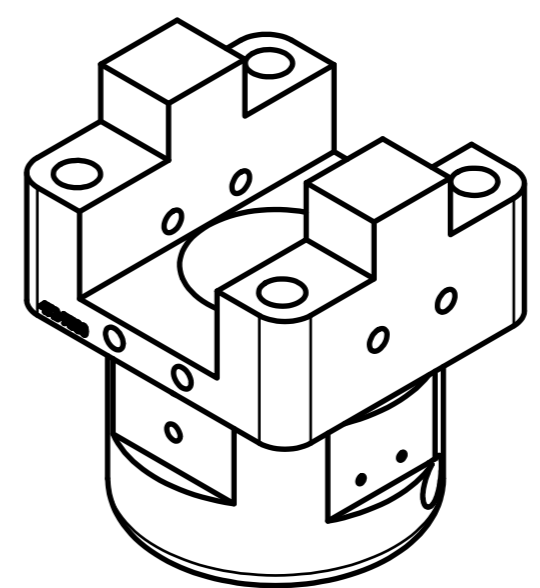
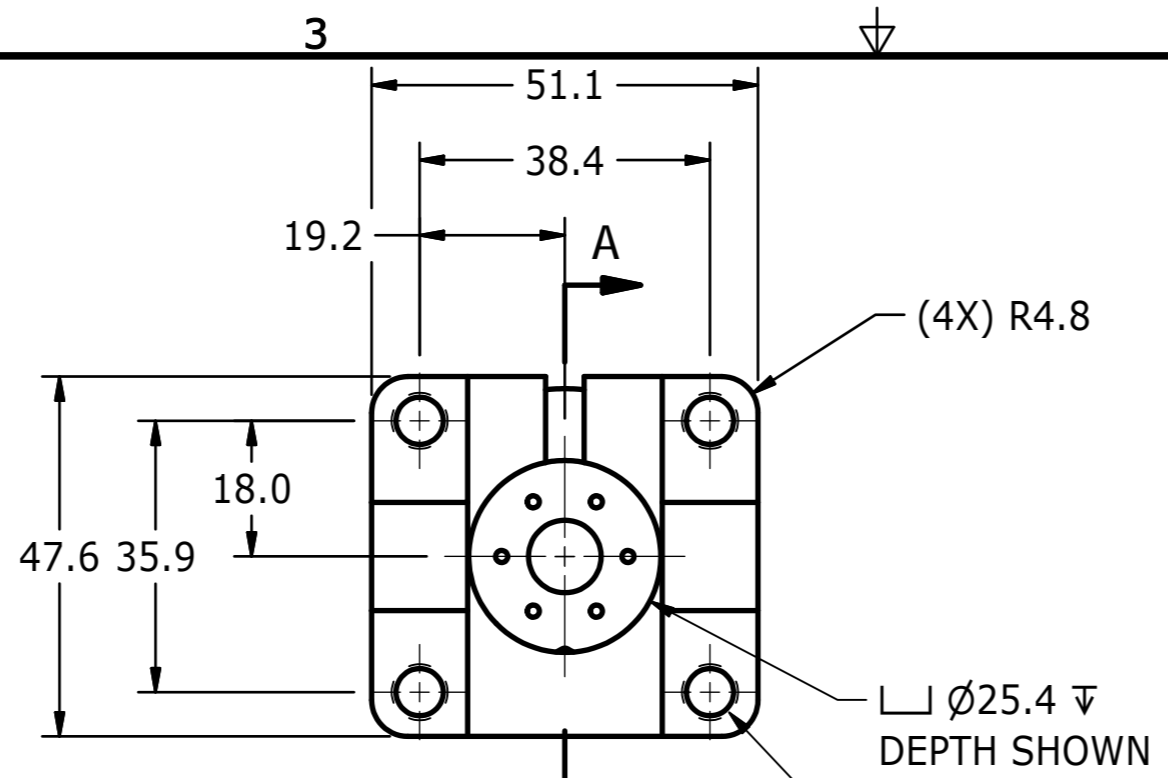


UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

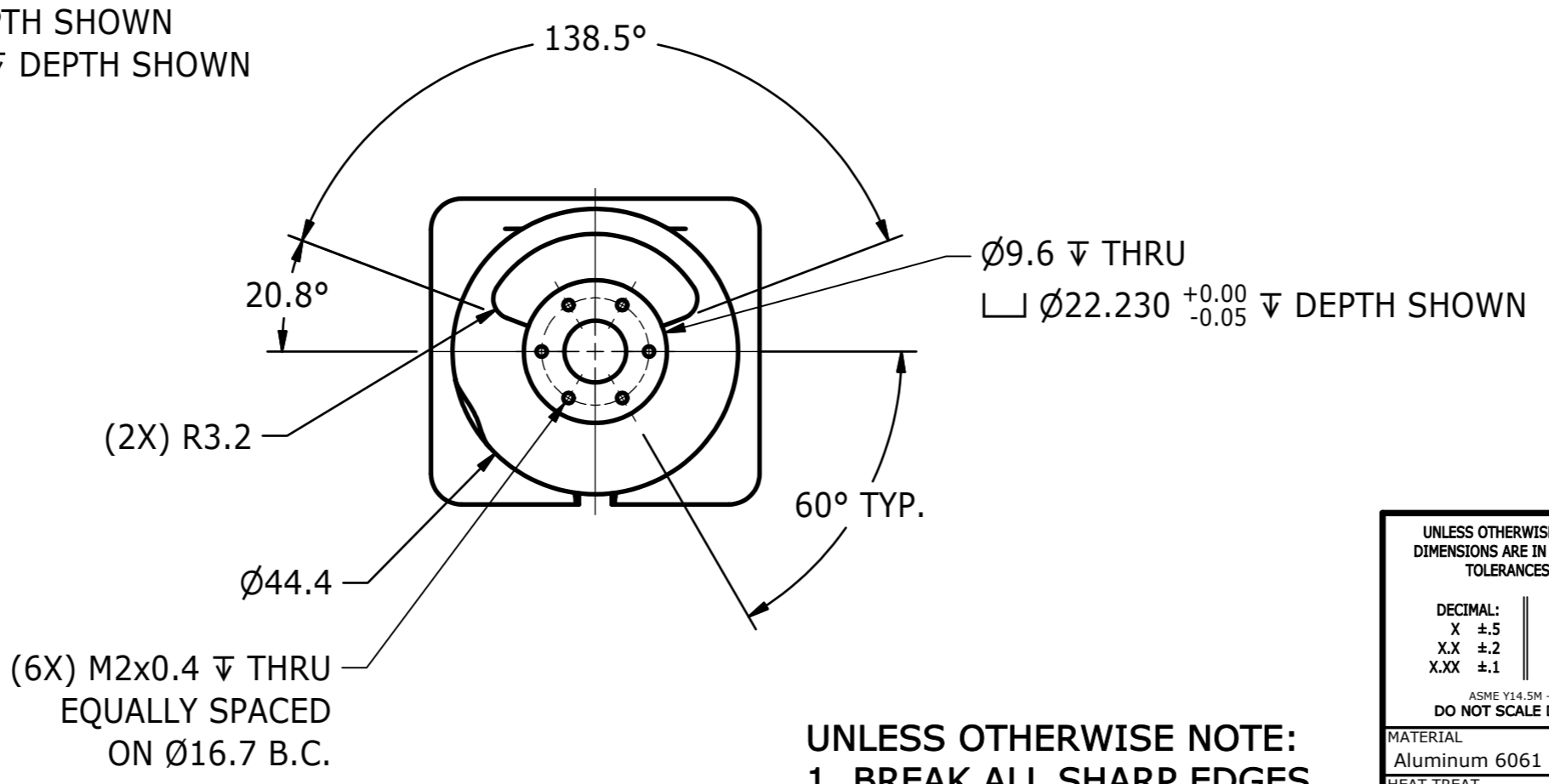
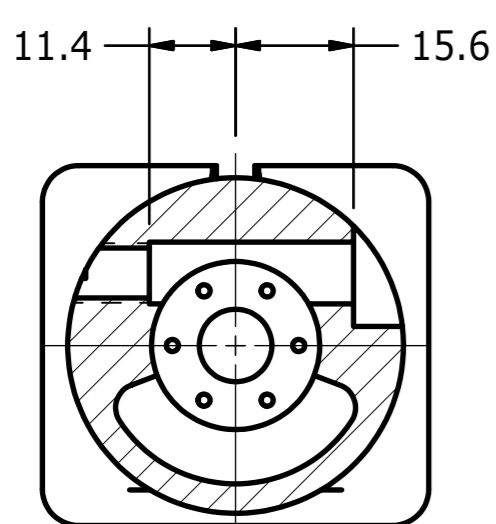
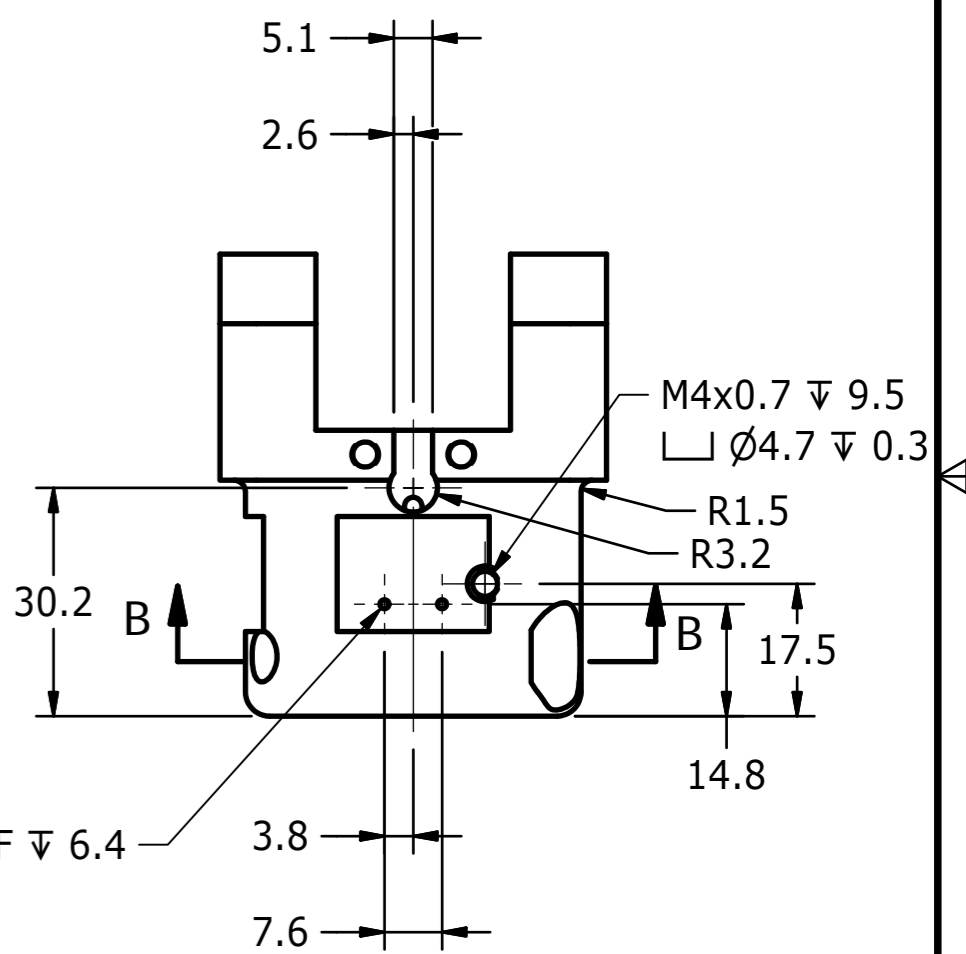
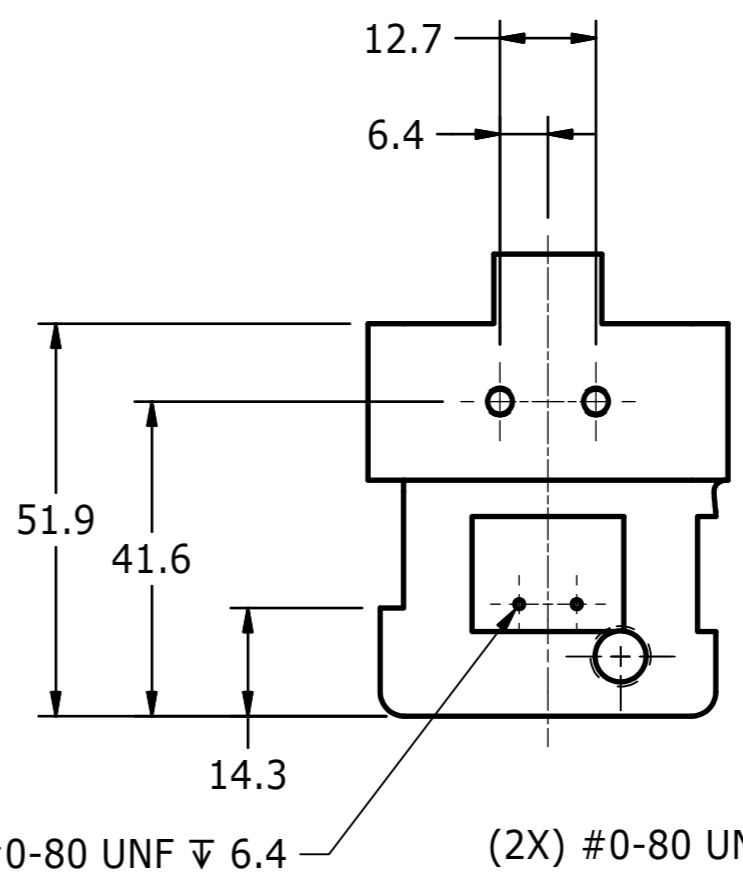
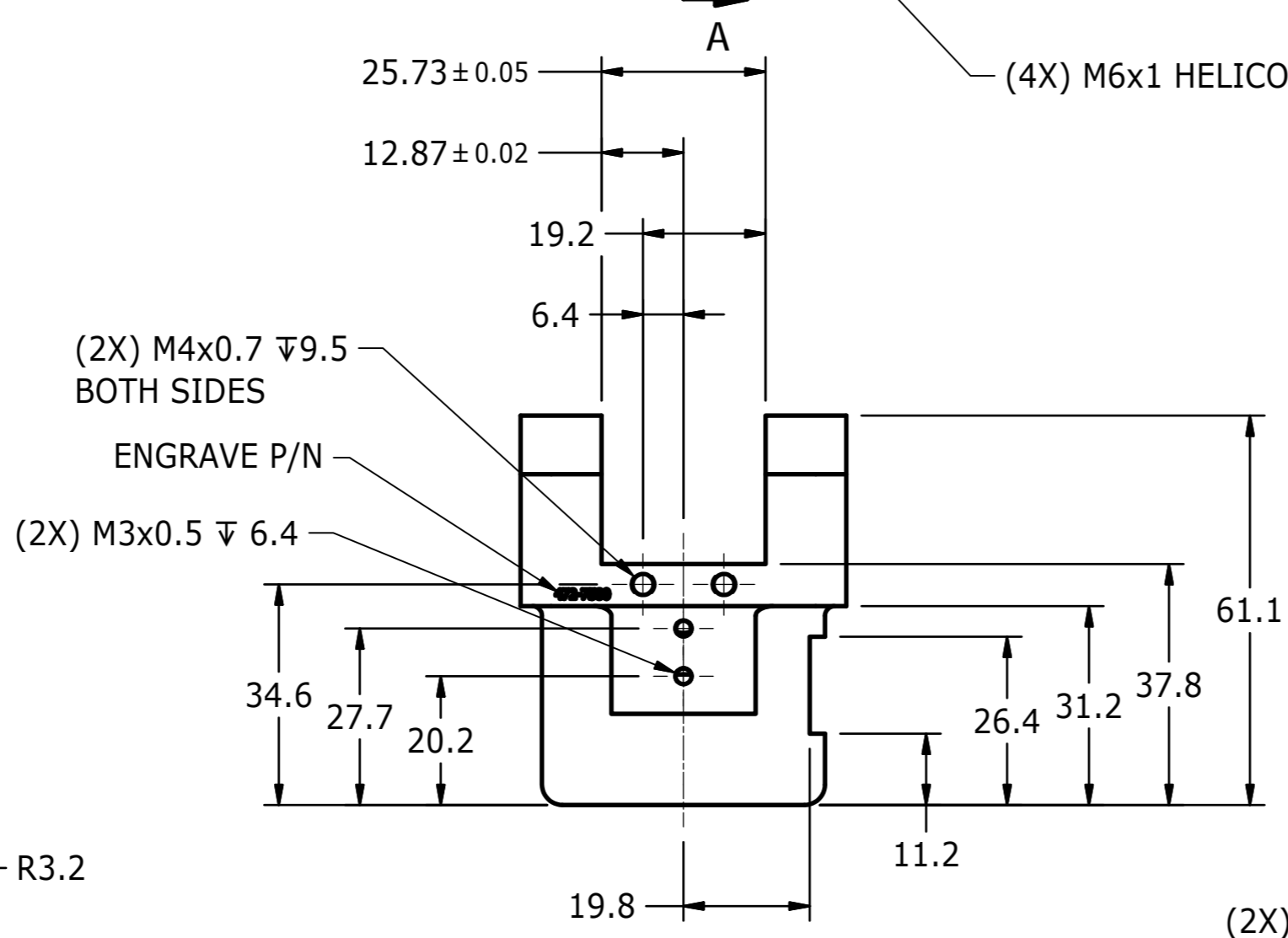
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:     MACHINED X ±.5         1.6 X.X ±.2       ANGLE X.XX ±.1      ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED	DATE 5/11/2009	<b>DORSI/PLANTAR SOFT STOP</b>  <b>THOR-M</b>	
MATERIAL NEOPRENE 78 ±5 SHORE A HEAT TREAT N/A FINISH N/A	ENG APPROVED	 THIRD ANGLE PROJECTION		
		SCALE: 3:1		SHEET 1 OF 1



SECTION A-A  
SCALE 1 : 1



SECTION B-B  
SCALE 1 : 1



UNLESS OTHERWISE NOTE:  
1. BREAK ALL SHARP EDGES.

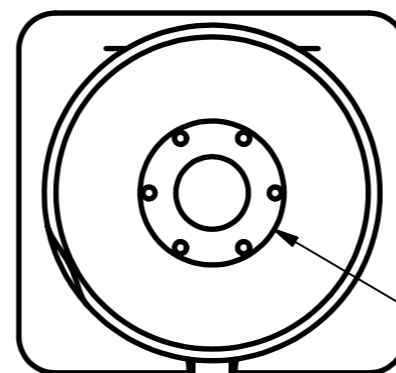
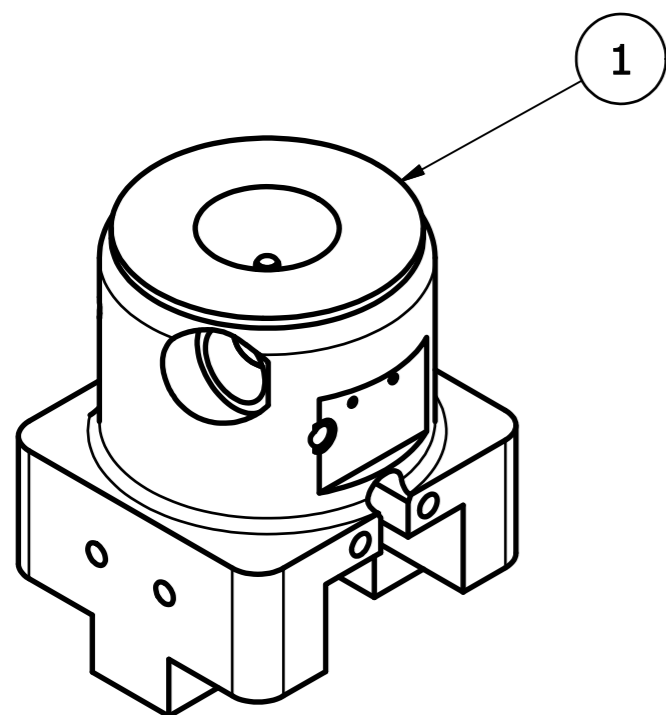
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5 XX ±.2 X.XX ±.1 MACHINED ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		BASE, TORQUE - ANKLE TOP	
DRAWN B. WADE		12/16/2009		THOR-M	
CHECKED TMV		2/2/2010		SIZE A2	
MATERIAL Aluminum 6061		ENG		DRAWING NUMBER 472-7580	
HEAT TREAT N/A		APPROVED		SCALE: 1:1	
FINISH BLUE ANODIZE		THIRD ANGLE PROJECTION		SHEET 1 OF 2	

4

3

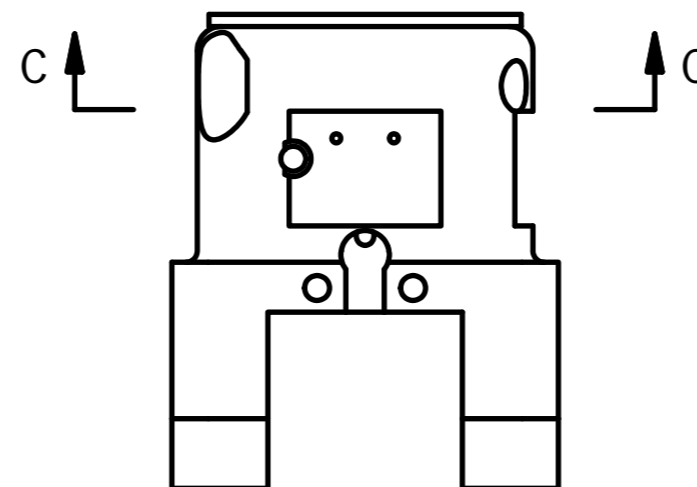
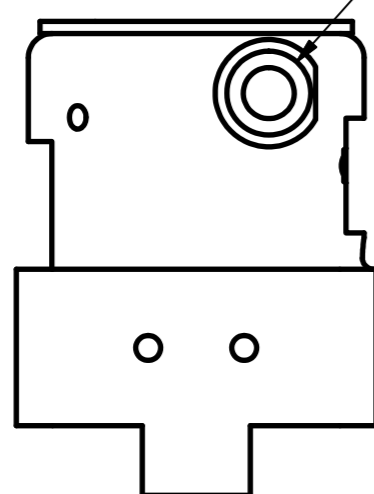
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1

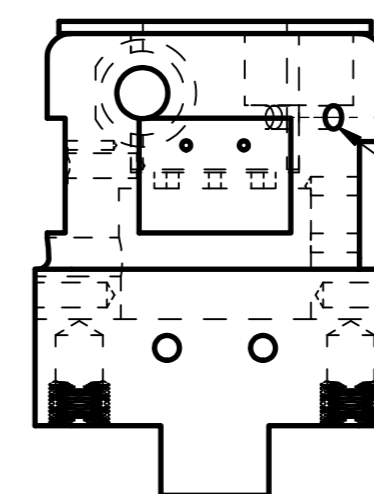


□  $\varnothing 19.050 \pm 0.01 \nabla 19.700$

□  $\varnothing 11.100 \pm 0.02 \nabla$  DEPTH SHOWN IN SECTION C-C

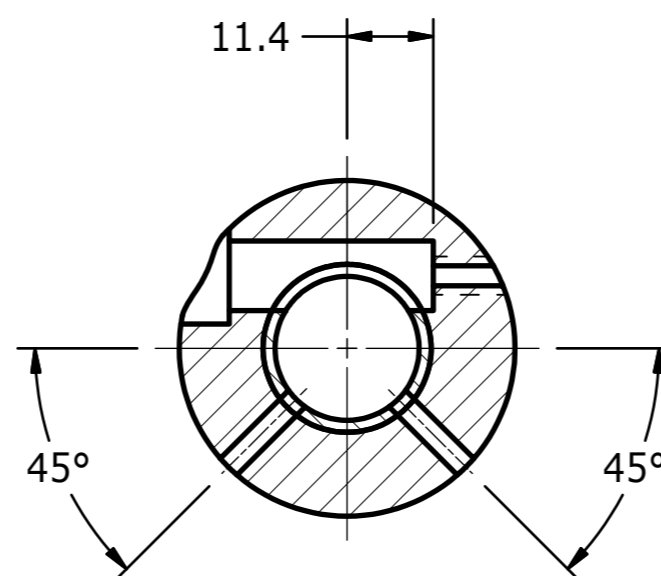


12.7



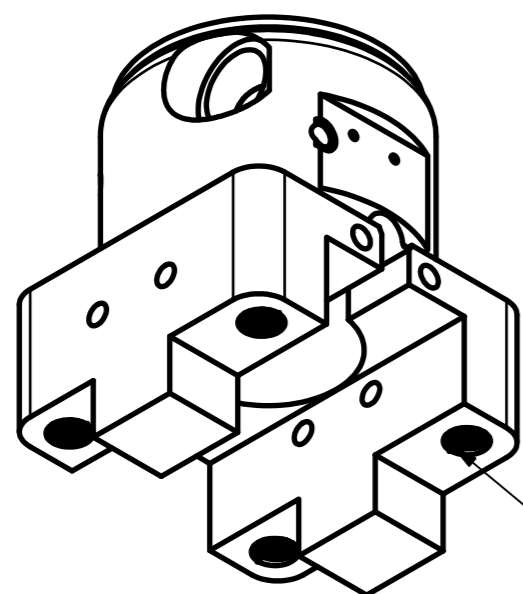
(2X)  $\varnothing 3.1 \nabla$  TO BORE ON ANGLES SHOWN IN SECTION C-C

11.4



SECTION C-C  
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.



NOTES:  
1. AFTER ANODIZE, INSTALL ITEM 1 WITH LOCTITE 262, AND ITEM 2.  
2. MACHINE HOLES AS INDICATED.

2	4	9010437	HELICOIL, M6 x 1 x 6
1	1	472-7521	THRUST BUSHING
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5 XX ±.2 X.XX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		MACHINED ↓ ANGLES ±.5°		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		BASE, TORQUE - ANKLE TOP			
DRAWN B. WADE		12/16/2009		THOR M			
CHECKED TMV		2/2/2010		SIZE A2		DRAWING NUMBER 472-7580	
HEAT TREAT N/A		ENG		SCALE: 1:1		SHEET 2 OF 2	
FINISH BLUE ANODIZE		APPROVED		THIRD ANGLE PROJECTION			

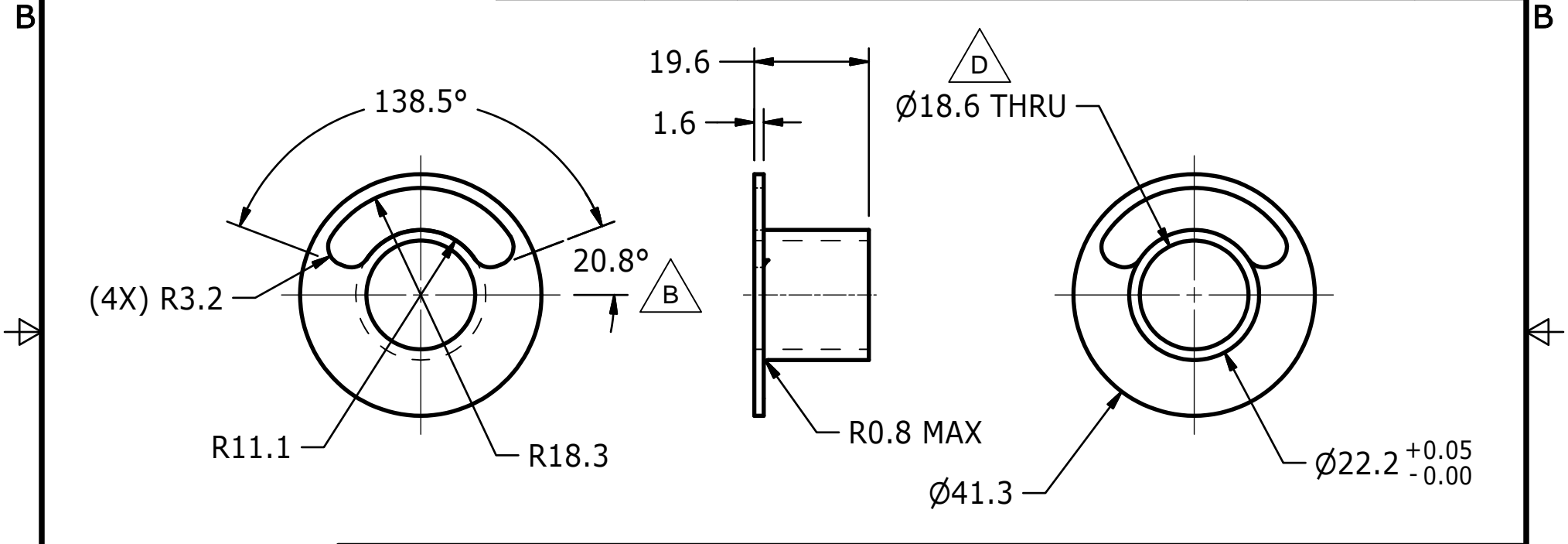
4

3

2

1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	REDRAWN IN INVENTOR	7/23/2007	KSG
	B	ADDED SLOT	10/3/2008	BLW
	C	CHANGE TO METRIC DIMENSIONING	12/3/2008	BLW
	D	REVISE ID, WAS 19.1 +.02/-.00	7/22/2015	JHC



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm 0.5$ X.X $\pm 0.2$ X.XX $\pm 0.1$  MACHINED $\frac{1.6}{\sqrt{}}$ ANGLES $\pm 0.5^\circ$  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED ENG APPROVED	DATE 12/3/2008		<b>THRUST BUSHING</b> <b>THOR M</b>	
MATERIAL Delrin, White HEAT TREAT FINISH	THIRD ANGLE PROJECTION		SIZE <b>A</b>	DRAWING NUMBER <b>472-7521</b>	REV <b>D</b>
			SCALE:	SHEET 1 OF 1	

4

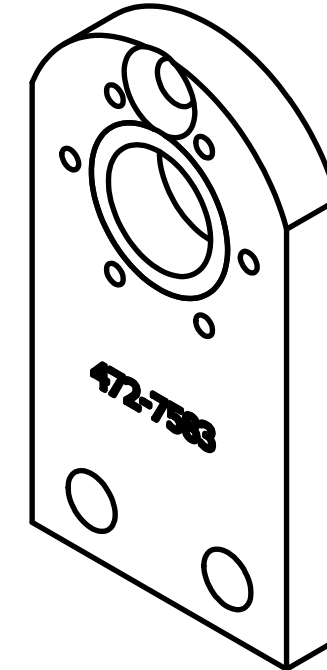
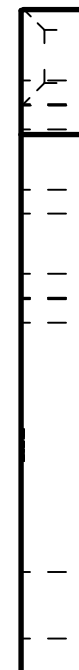
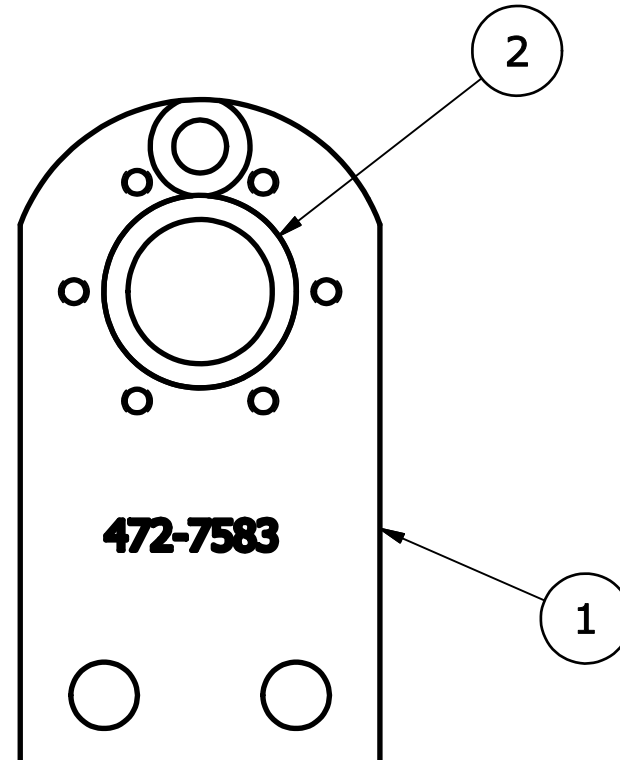
3

2

1

B

B



2	1	472-7542	BUSHING, ANKLE
1	1	472-7583	BUSHING PLATE, POT END
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

A

A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>		
	APPROVALS	DATE		<b>ANKLE BUSHING PLATE          ASSEMBLY - POT END          THOR M</b>		
	DRAWN JIM CLEVINGER	7/22/2015				
	CHECKED					
MATERIAL	ENG			SIZE <b>B</b>	DRAWING NUMBER <b>472-7582</b>	REV
HEAT TREAT	APPROVED			SCALE:	SHEET <b>1</b> OF <b>1</b>	
FINISH						

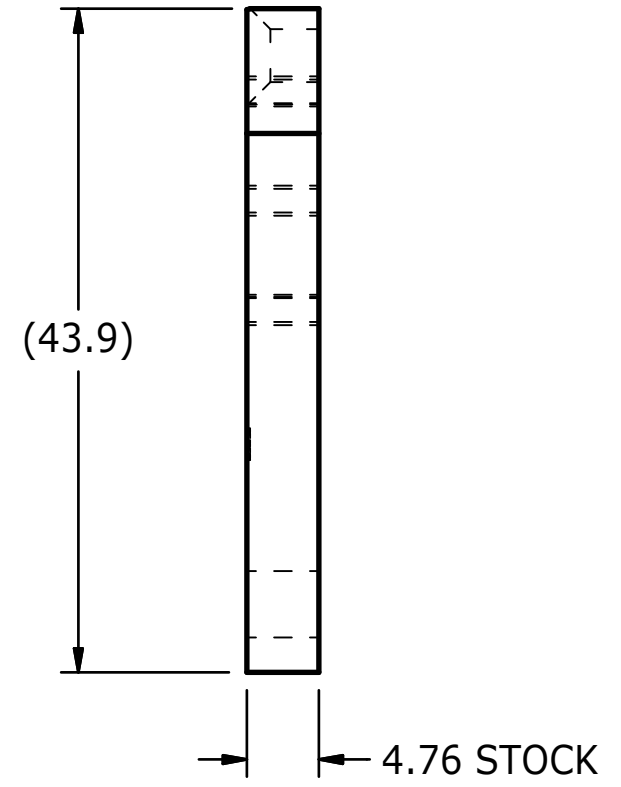
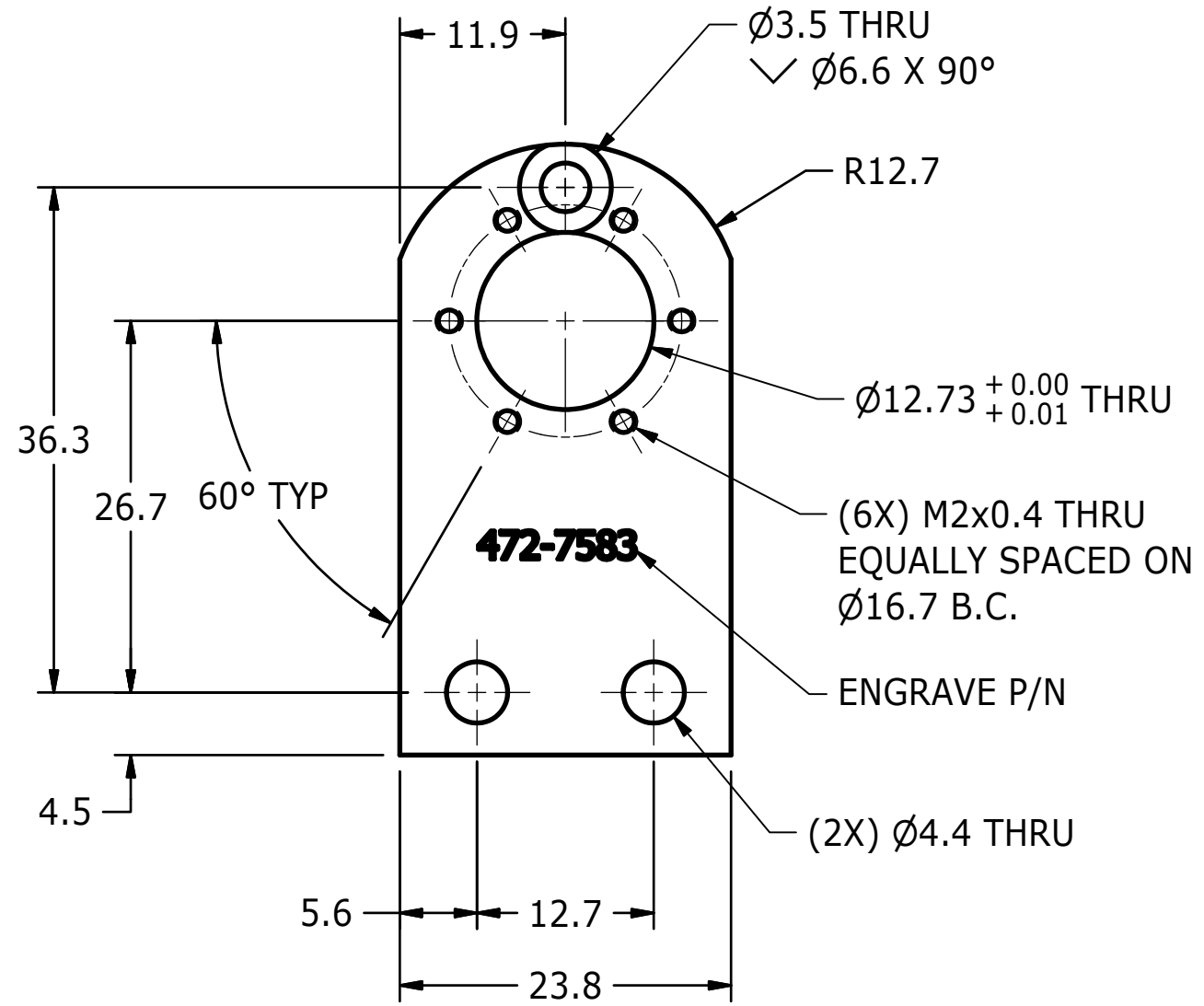
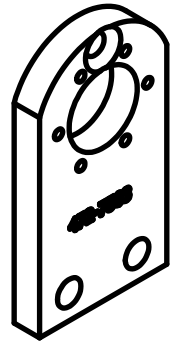
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3

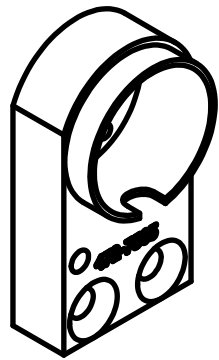
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1

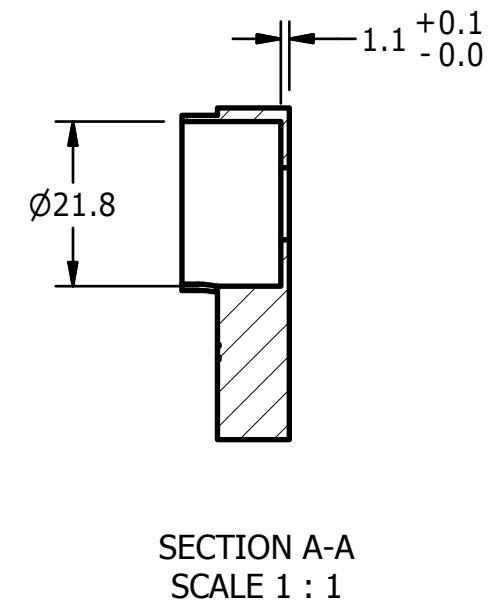
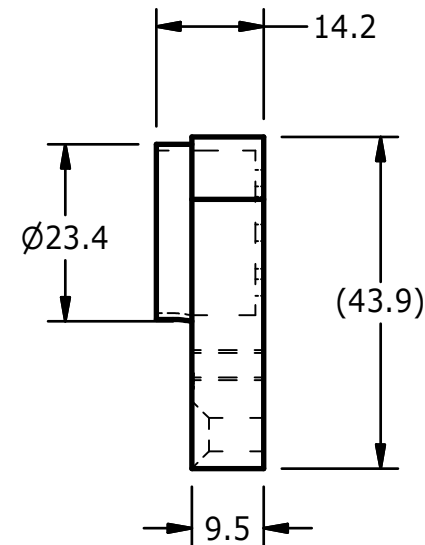
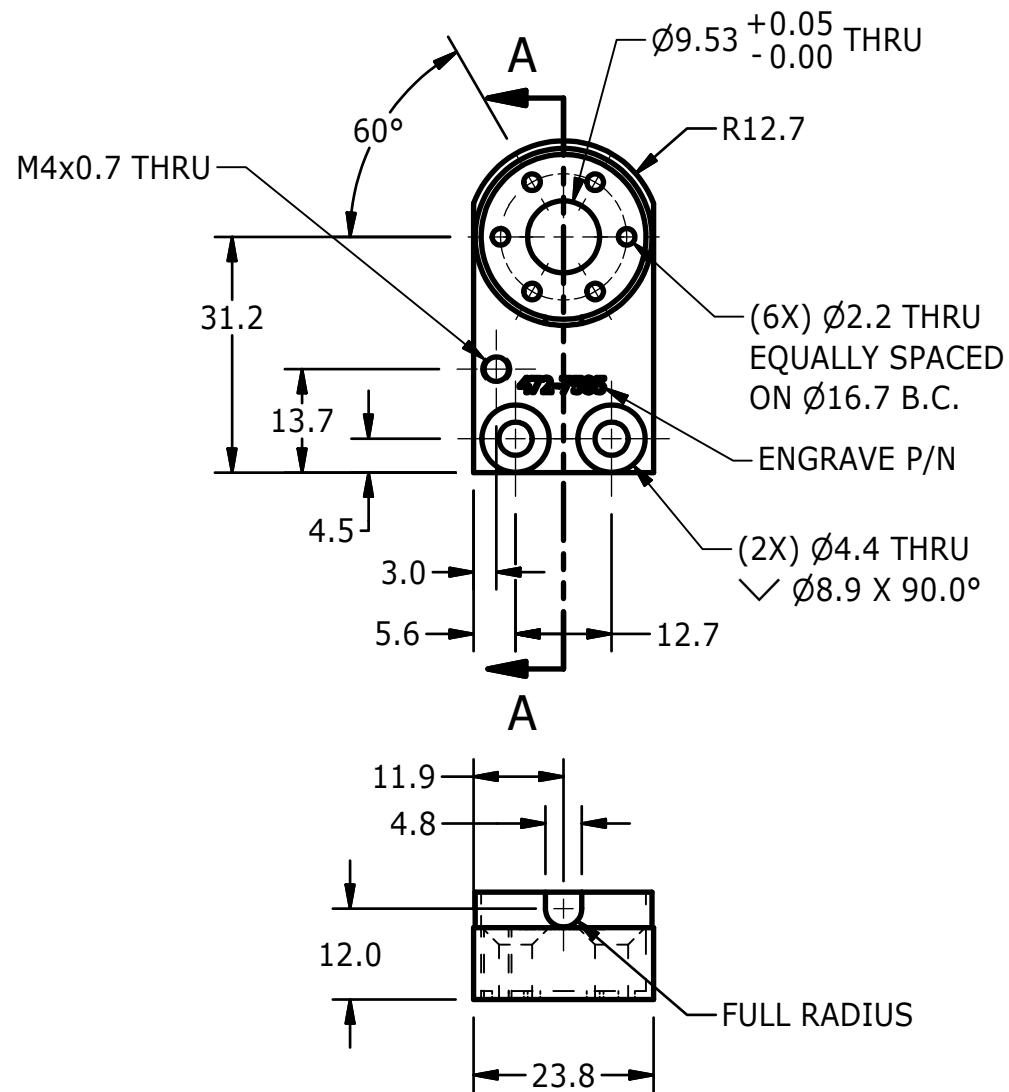
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGED TITLE BLOCK	8/3/2015	JHC



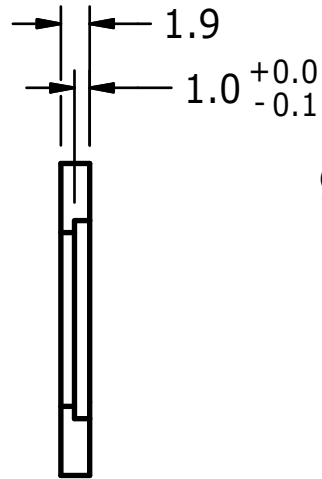
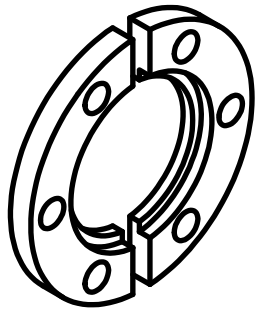
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5, X.X ±.2, X.XX ±.1 MACHINED 1.6, ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>PLATE, ANKLE BUSHING</b>  <b>THOR M</b>	
	DRAWN B. WADE	12/16/2009		
	MATERIAL Aluminum 6061	CHECKED	SIZE: <b>B</b> DRAWING NUMBER: <b>472-7583</b> REV: <b>A</b>	
HEAT TREAT	ENG			
FINISH BLUE ANODIZE	APPROVED	SCALE: <b>2:1</b>	SHEET <b>1</b> OF <b>1</b>	



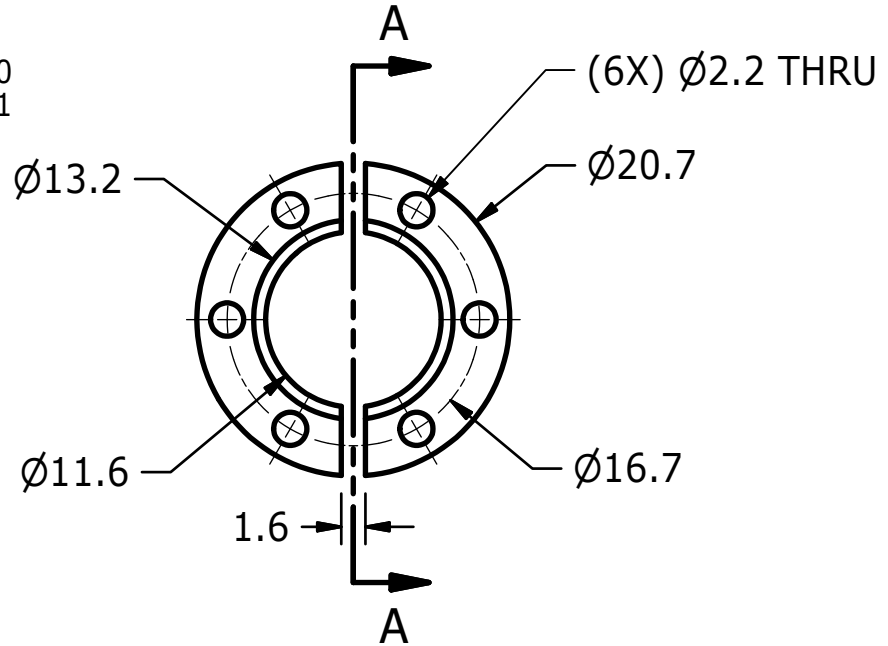
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGED TITLE BLOCK	8/3/2015	JHC




UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm 0.5$ X.X $\pm 0.2$ X.XX $\pm 0.1$  MACHINED $\pm 0.1$ ANGLES $\pm 0.5^\circ$  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
	DRAWN B. WADE	12/16/2009	
	CHECKED		
MATERIAL Delrin, White	ENG		THIRD ANGLE PROJECTION
HEAT TREAT	APPROVED		
FINISH			SIZE: <b>B</b> SCALE: 1:1
		DRAWING NUMBER: <b>472-7585</b> SHEET: 1 OF 1	REV: <b>A</b>



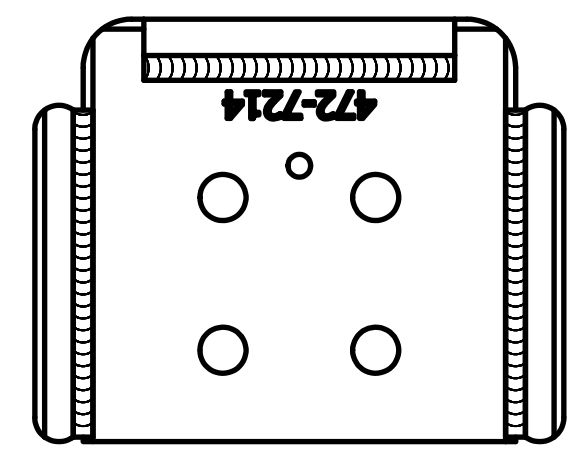
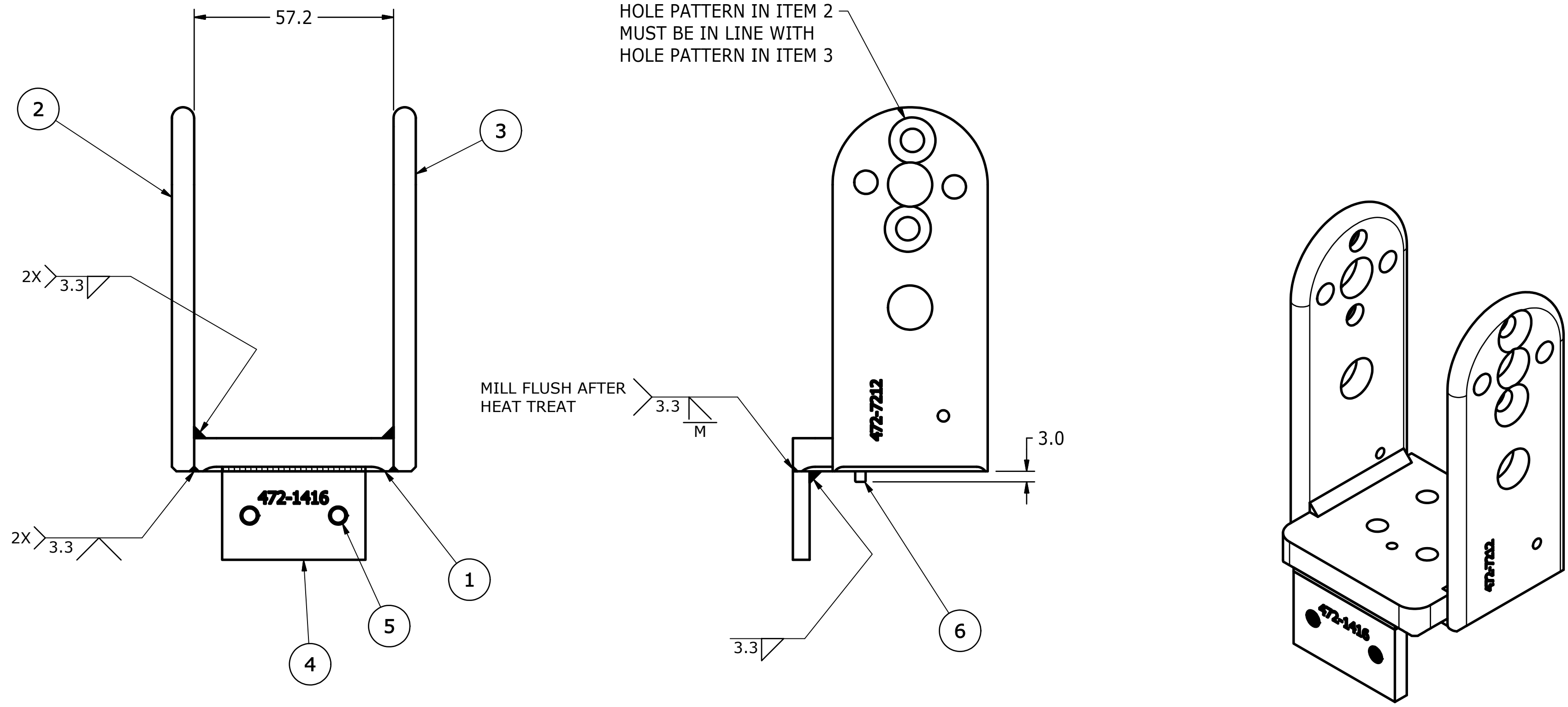
SECTION A-A  
SCALE 2 : 1



<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</p> <p>DECIMAL:     MACHINED</p> <p>X ±.5             1.6</p> <p>X.X ±.2           ANGLS</p> <p>X.XX ±.1         ±.5°</p> <p>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</p>	<p>VEHICLE <b>RESEARCH</b> and <b>TEST CENTER</b></p>		 <p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>	
	<p>APPROVALS</p> <p>DRAWN JIM CLEVENGER</p> <p>CHECKED</p> <p>ENG</p> <p>APPROVED</p>	<p>DATE</p> <p>7/22/2015</p>	<p>POTENTIOMETER CLAMP</p> <p>THOR M</p>	
<p>MATERIAL Aluminum 6061</p> <p>HEAT TREAT</p> <p>FINISH BLUE ANODIZE</p>	<p>THIRD ANGLE PROJECTION</p>		<p>SIZE <b>A</b></p> <p>SCALE: 2:1</p>	<p>DRAWING NUMBER <b>472-7581</b></p> <p>SHEET 1 OF 1</p>



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	11/19/2008	BLW
	B	ADDED ITEM 6 DOWEL PIN	7/29/2015	JHC

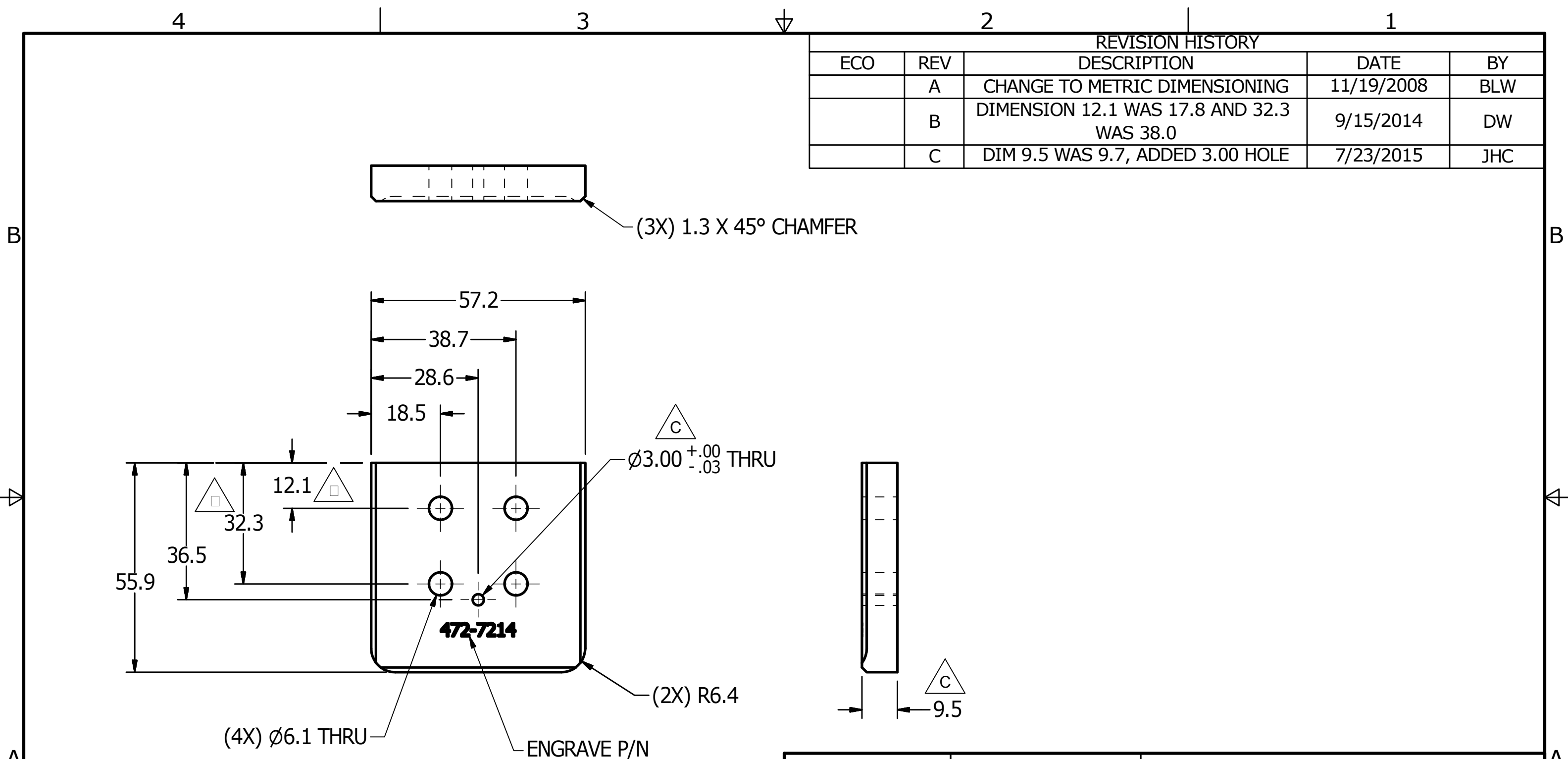


- NOTES**
- HEAT TREAT AFTER WELDING
  - ANODIZE AFTER HEAT TREAT
  - INSTALL ITEM 5 & 6 AFTER ANODIZE

ITEM	QTY	PART NUMBER	DESCRIPTION
6	1	9010688	PIN, DOWEL M3 X 8
5	2	9010040	M5 x .8 x 5mm HELICOIL
4	1	472-7216	STIFFENER, KNEE BUMPER
3	1	472-7212	CLEVIS, KNEE - LEFT
2	1	472-7210	CLEVIS, KNEE - RIGHT
1	1	472-7214	BOTTOM PLATE, KNEE CLEVIS

PARTS LIST			
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL: X ±.5, XX ±.2, XXX ±.1 MACHINED ANGLES ±.5° <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>		<b>VEHICLE RESEARCH and TEST CENTER</b> APPROVALS: B. WADE DATE: 11/19/2008	
<small>MATERIAL: T6</small> <small>HEAT TREAT: T6</small> <small>FINISH: HARDCOAT ANODIZE</small>		<small>CHECKED:</small> <small>ENG:</small> <small>APPROVED:</small>	
<small>THIRD ANGLE PROJECTION</small>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> <b>KNEE CLEVIS WELDMENT</b> <b>THOR-M</b> SIZE: C DRAWING NUMBER: 472-7200 REV: B SCALE: 1:1 SHEET: 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	11/19/2008	BLW
	B	DIMENSION 12.1 WAS 17.8 AND 32.3 WAS 38.0	9/15/2014	DW
	C	DIM 9.5 WAS 9.7, ADDED 3.00 HOLE	7/23/2015	JHC



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5, X.X ±.2, X.XX ±.1 MACHINED: ±.6, ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
	DRAWN B. WADE	11/19/2008	
	CHECKED		
MATERIAL Aluminum-6061-T6	ENG		THIRD ANGLE PROJECTION
HEAT TREAT	APPROVED		
FINISH			SIZE: <b>B</b> SCALE: 1:1
		DRAWING NUMBER: <b>472-7214</b> SHEET: 1 OF 1	REV: <b>C</b>

4

3

2

1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	C	REDRAWN IN INVENTOR	7/18/2007	BLW
	D	ADDED TOLERANCE TO .500 HOLES, ADDED 1.390 DIMENSION WITH TOLERANCE.	9/3/2008	TF
	E	CHANGE TO METRIC DIMENSIONING	11/19/2008	BLW
	F	CTSINK WAS 82°, B.C. WAS 1.000	7/23/2015	JHC

B

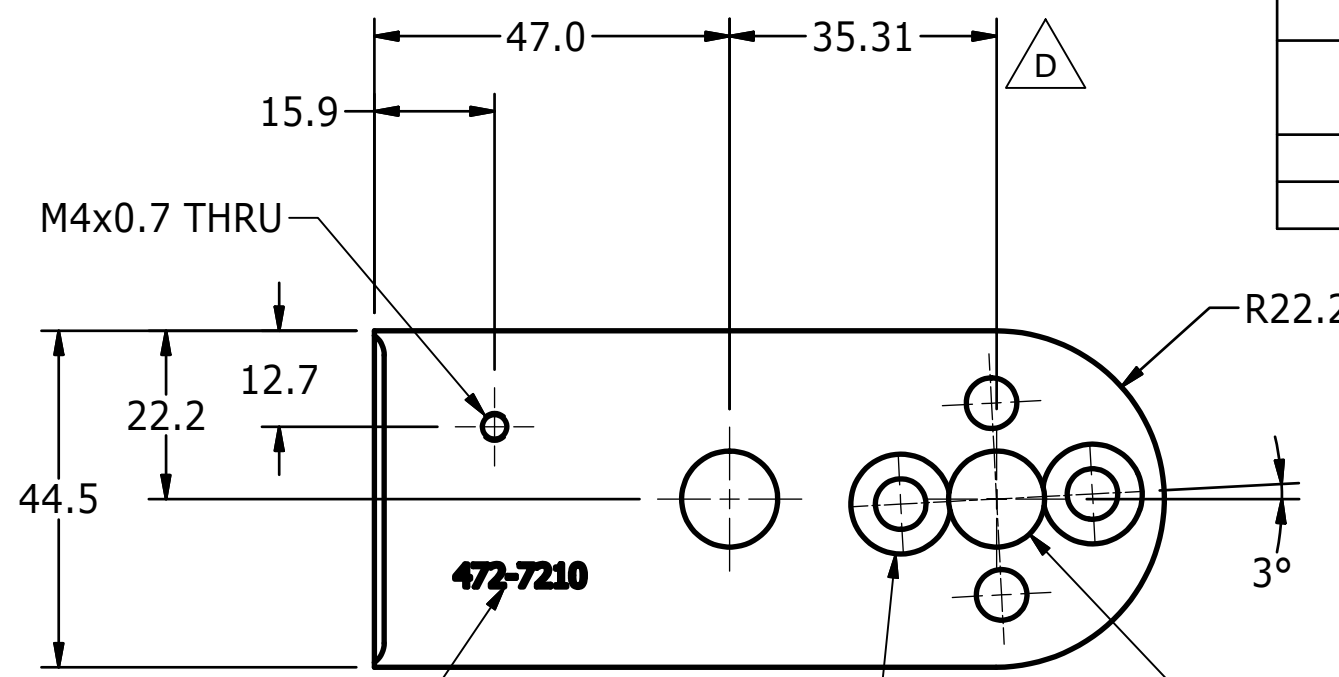
B

A

A

A

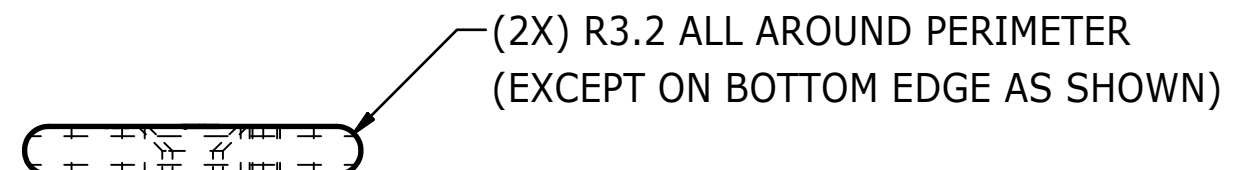
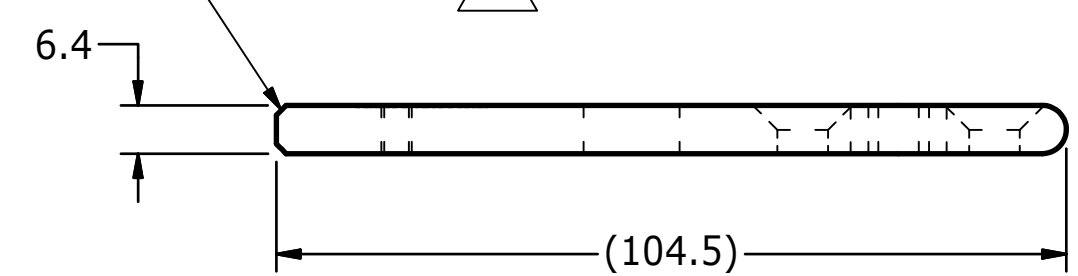
A



ENGRAVE P/N AT THIS LOCATION

(4X)  $\varnothing 6.7$  THRU  
 (2X)  $\sphericalangle \varnothing 13.2 \times 90^\circ$   
 EQUALLY SPACED ON  $\varnothing 25.4$  B.C.

(2X) 1.3 X 45° CHAMFER  
 ALONG BOTTOM EDGE



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm .5$ X.X $\pm .2$ X.XX $\pm .1$  MACHINED $\sphericalangle$ ANGLES $\pm .5^\circ$  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			
	APPROVALS DRAWN B. WADE CHECKED		DATE 11/19/2008	
	MATERIAL Aluminum-6061-T6 HEAT TREAT FINISH		THOR M	
	APPROVED		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  <b>CLEVIS, KNEE - RIGHT</b>  <b>THOR M</b>  SIZE: <b>B</b> DRAWING NUMBER: <b>472-7210</b> REV: <b>F</b> SCALE: 1:1 SHEET: 1 OF 1	

4

3

2

1

4

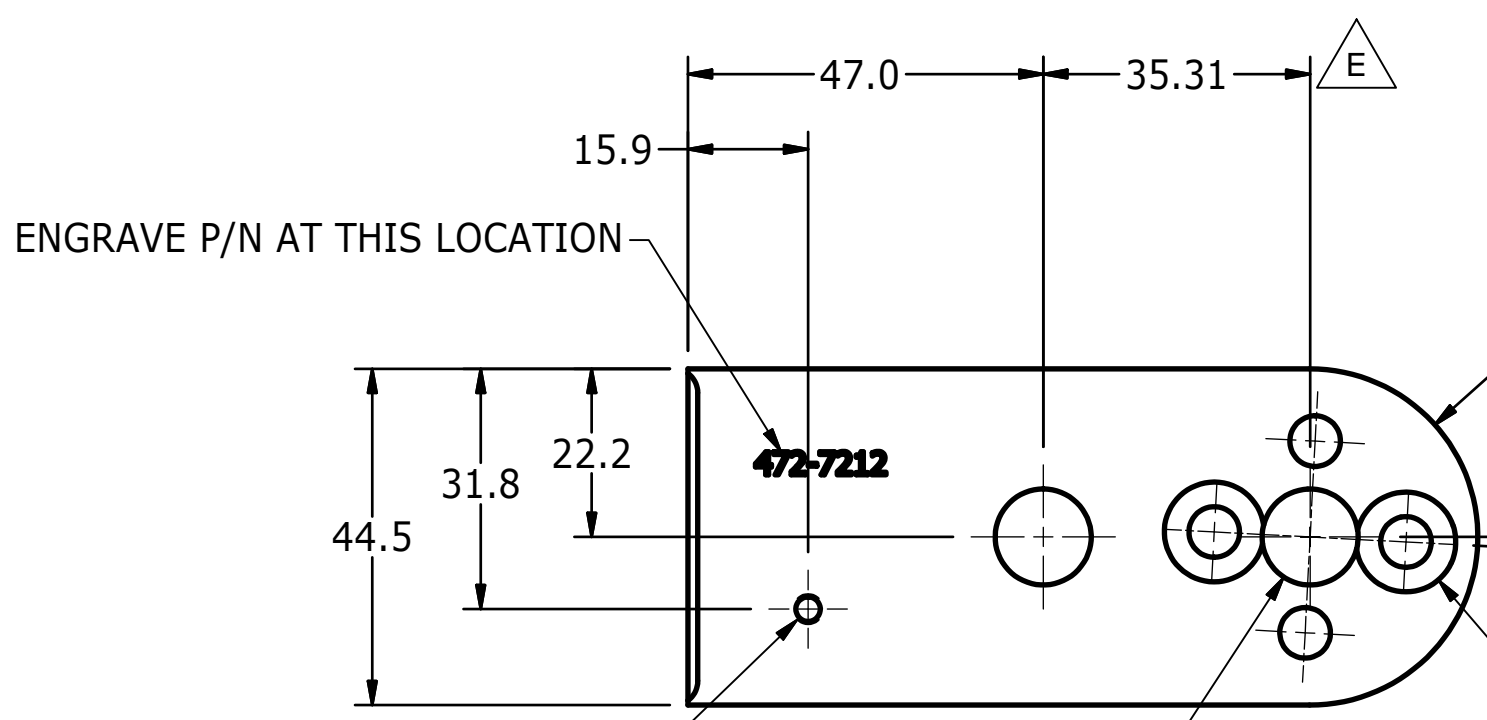
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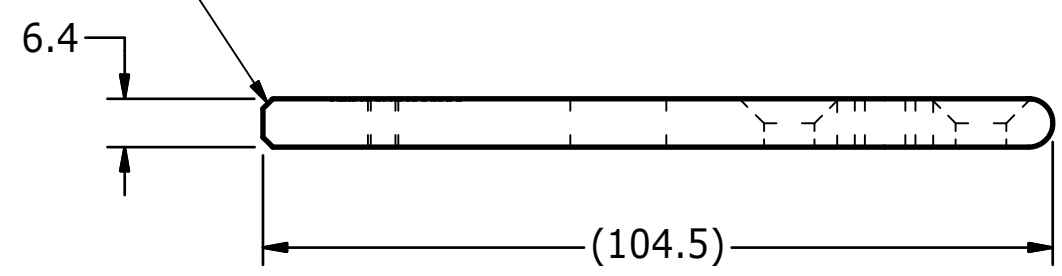
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REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	BY
	C	REDRAWN IN INVENTOR	7/18/2007	KSG
	D	ADDED CHAMFER TO BOTTOM, R.125 AROUND PERIMETER, .520 HOLE WAS .438	6/11/2008	TF
	E	ADDED TOLERANCE TO .500 HOLES, ADDED 1.390 DIMENSION WITH TOLERANCE.	9/3/2008	TF
	F	CHANGE TO METRIC DIMENSIONING	11/19/2008	BLW
	G	CTSINK WAS 82°, B.C. WAS 1.000	7/23/2015	JHC



(2X) 1.3 X 45° CHAMFER ALONG BOTTOM EDGE



(2X) R3.2 ALL AROUND PERIMETER (EXCEPT ON BOTTOM EDGE AS SHOWN)



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE		<b>CLEVIS, KNEE - LEFT</b>	
	MATERIAL Aluminum-6061-T6	DRAWN B. WADE	CHECKED	<b>THOR M</b>	
	HEAT TREAT	ENG	APPROVED		SIZE: <b>B</b> SCALE: 1:1

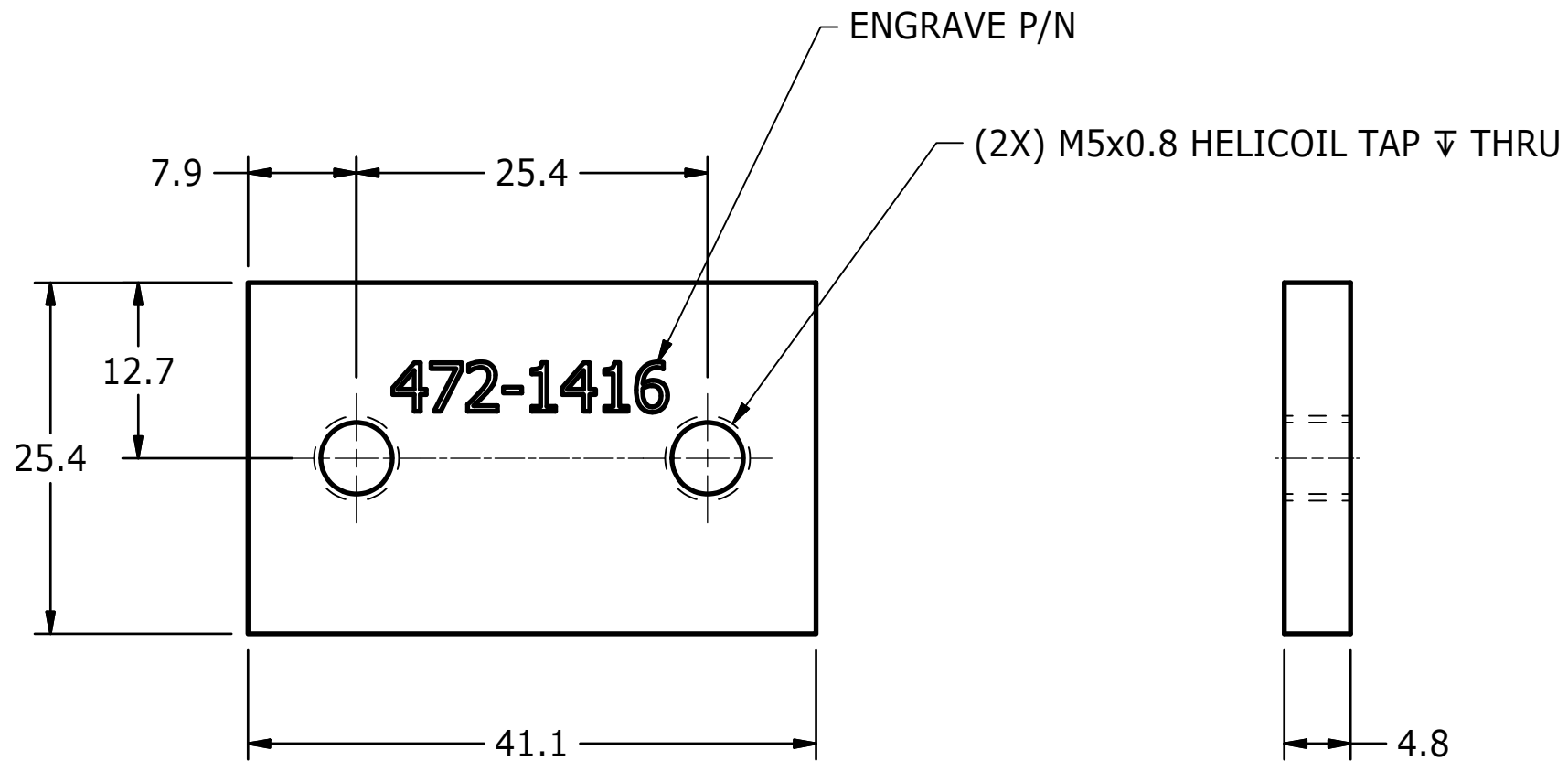
4

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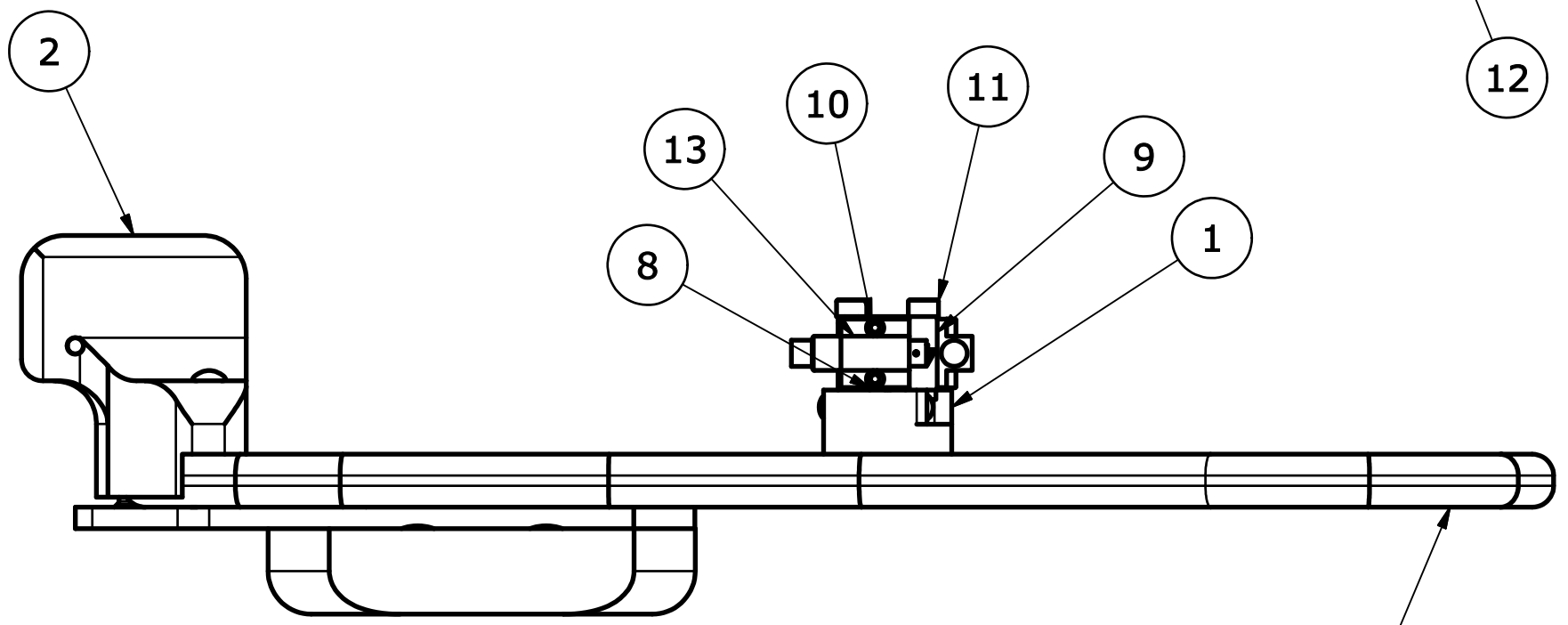
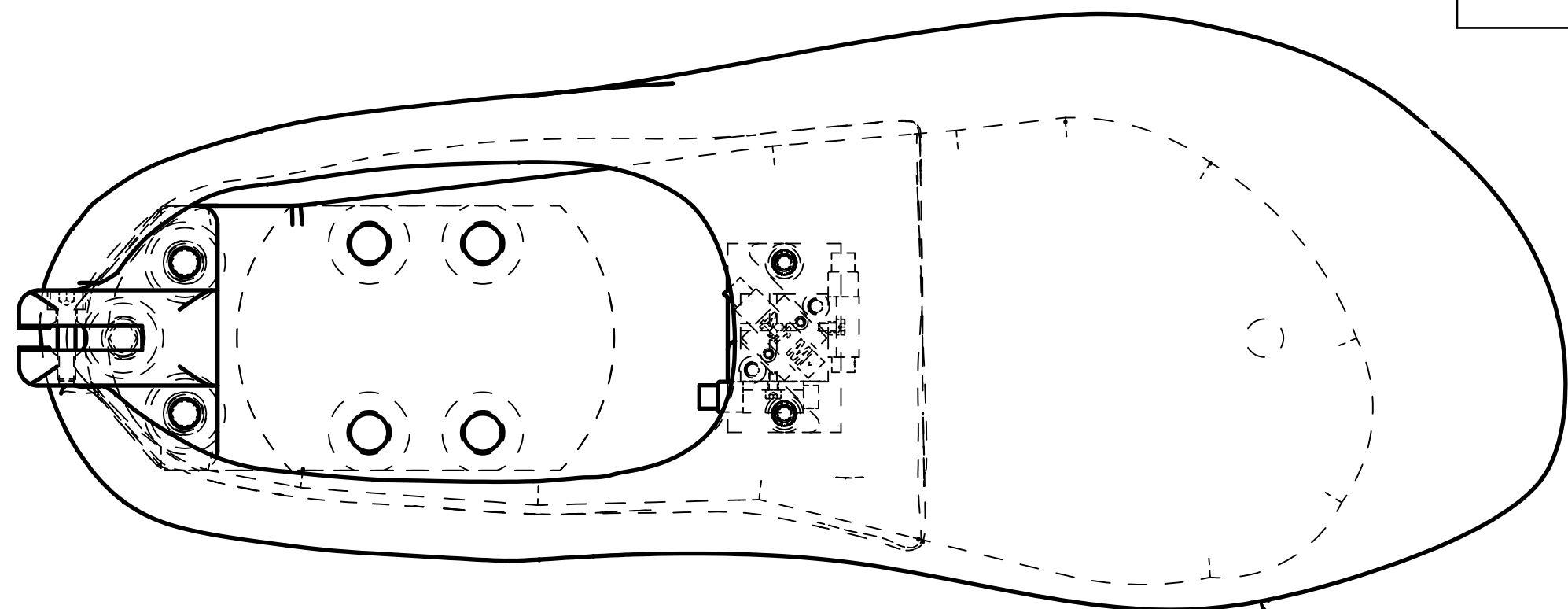
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	11/19/2008	BLW



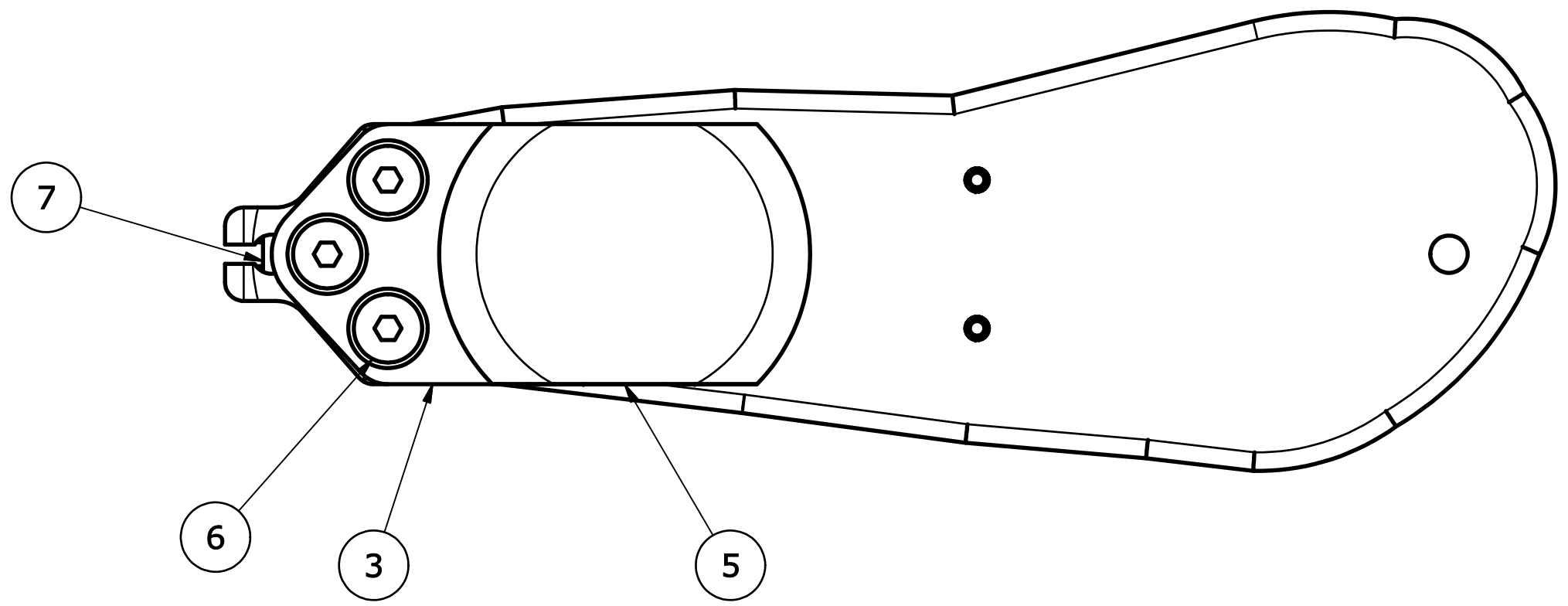
UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLE ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN: B. WADE CHECKED: TMV ENG: [ ] APPROVED: [ ]		DATE 11/19/2008 12/11/2008	
MATERIAL: Aluminum-6061-T6 HEAT TREAT: N/A FINISH: N/A		<b>STIFFENER, KNEE BUMPER</b>  <b>THOR M</b>		SIZE: <b>A3</b> SCALE: 2:1
		DRAWING NUMBER: <b>472-7216</b> SHEET: 1 OF 1		REV: <b>A</b>

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	12/5/2008	BLW
	B	ITEM 9 WAS 7264-AM	7/28/2015	JHC




FLESH NOT SHOWN FOR CLARITY

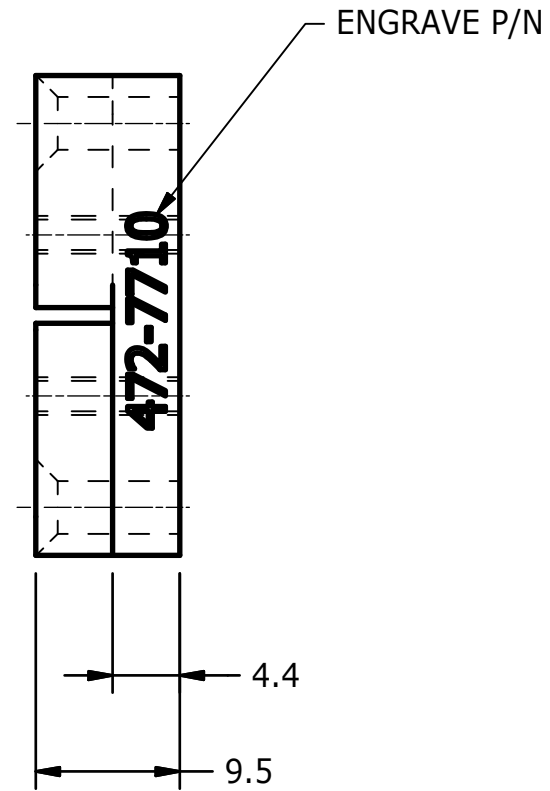
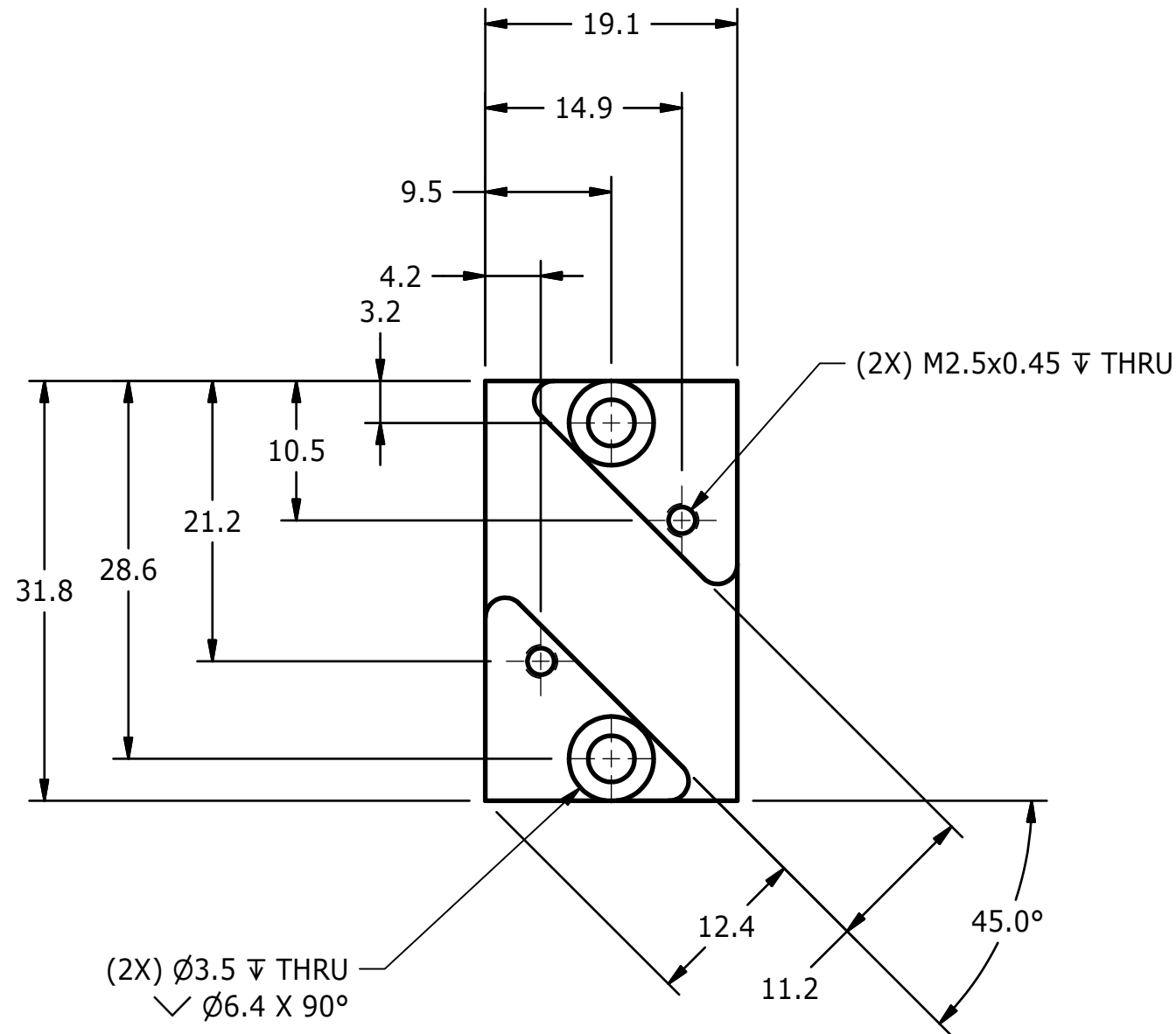




ITEM	QTY	PART NUMBER	DESCRIPTION
13	3	SA572-S4	UNIAXIAL PIEZORESISTIVE ACCELEROMETER
12	1	472-7725-1	FOOT FLESH, LEFT
11	2	9000863	SCREW, SHCS M2.5X0.45 X 16
10	6	9010407	SCREW, SHCS M1.4 x 0.3 x 3 LG.
9	1	SA572-S80M	TRI-PACK BLOCK
8	2	9010446	SCREW, FHCS M3X0.5 X 16
7	1	9000058	SCREW, SHCS M3-0.5 x 12
6	3	9001443	SCREW, FHCS M6X1 X 20
5	1	472-7717	PADDING, HEEL
4	1	472-7716	SOLE PLATE ASSEMBLY, LEFT
3	1	472-7714	BRACKET, MOUNTING-HEEL/ACHILLES
2	1	472-7712	MOUNTING POST, ACHILLES
1	1	472-7710	PLATE MOUNTING, TRI PACK ACCEL

PARTS LIST

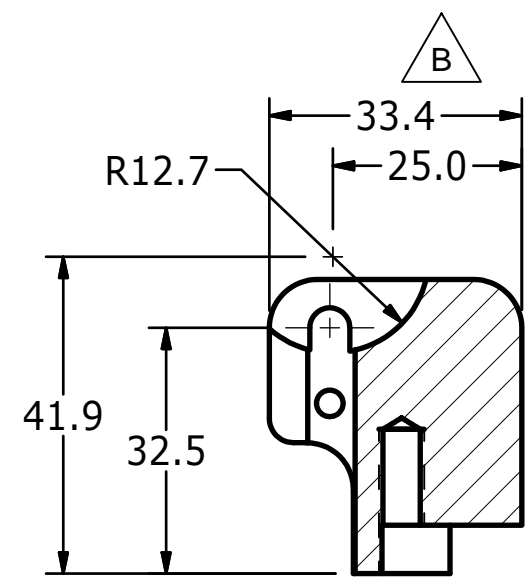
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small>  <small>DECIMAL: X ±.5 X.X ±.2 X.XX ±.1</small>  <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS B. WADE	DATE 12/5/2008	
MATERIAL HEAT TREAT FINISH	CHECKED ENG APPROVED	SIZE C	DRAWING NUMBER <b>472-7700-1</b> SCALE: 1:1 SHEET 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	12/4/2008	BLW

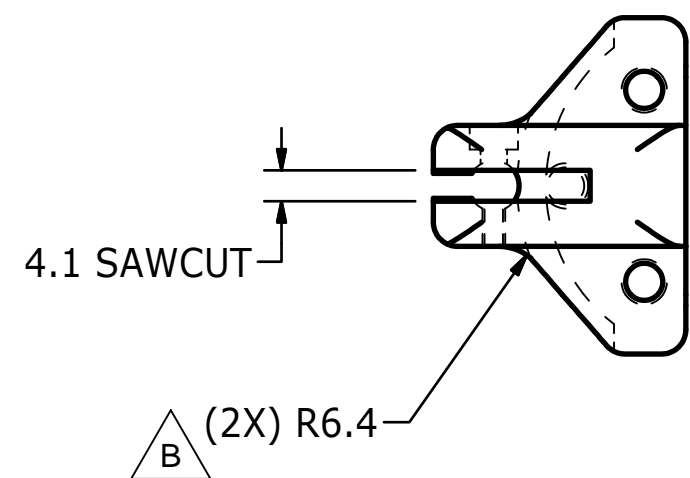
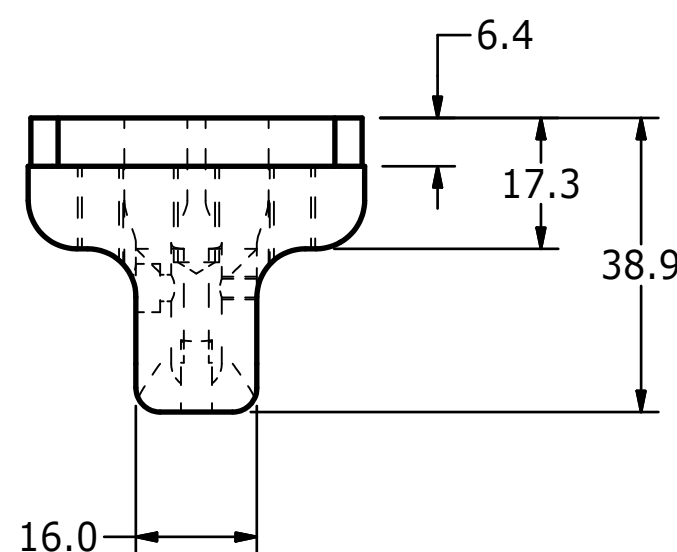
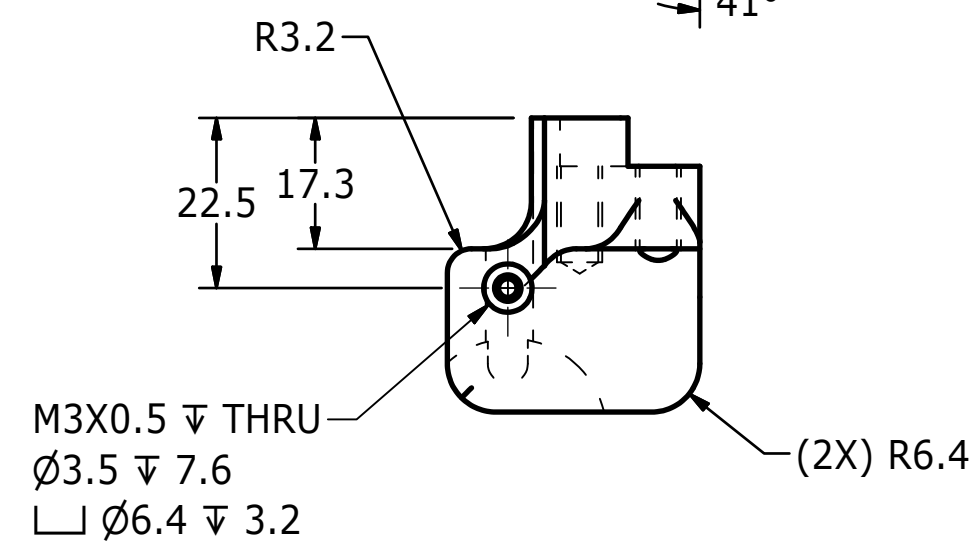
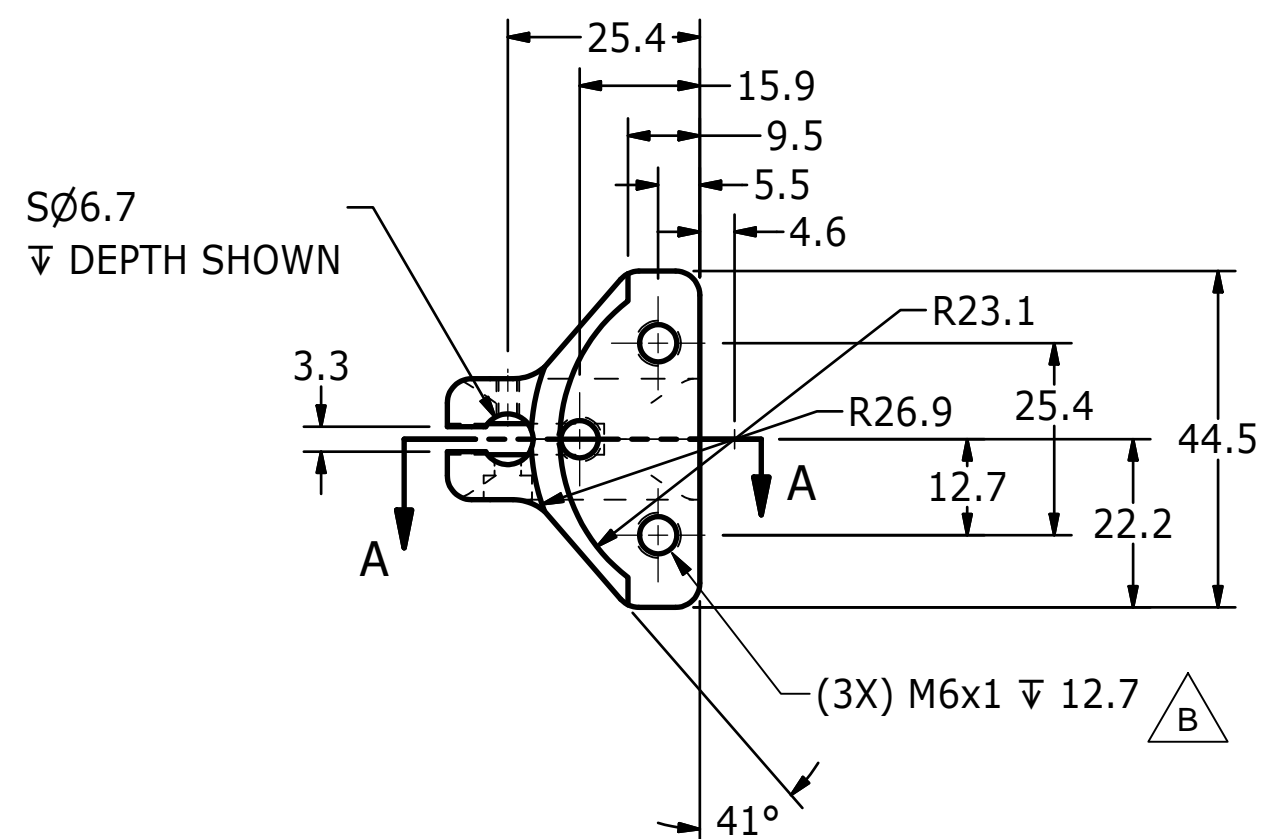



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 12/4/2008 12/10/2008	<b>PLATE MOUNTING, TRI PACK          ACCEL          THOR-M</b>	
MATERIAL Aluminum 6061-T6 HEAT TREAT N/A FINISH BLUE ANODIZE	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-7710</b>	REV <b>A</b>
		SCALE: 2:1	SHEET 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	12/4/2008	BLW
	B	ADDED 33.4 & (2X) R6.4 DIMENSIONS, HOLE DEPTH 12.7 WAS .5	7/23/2015	JHC



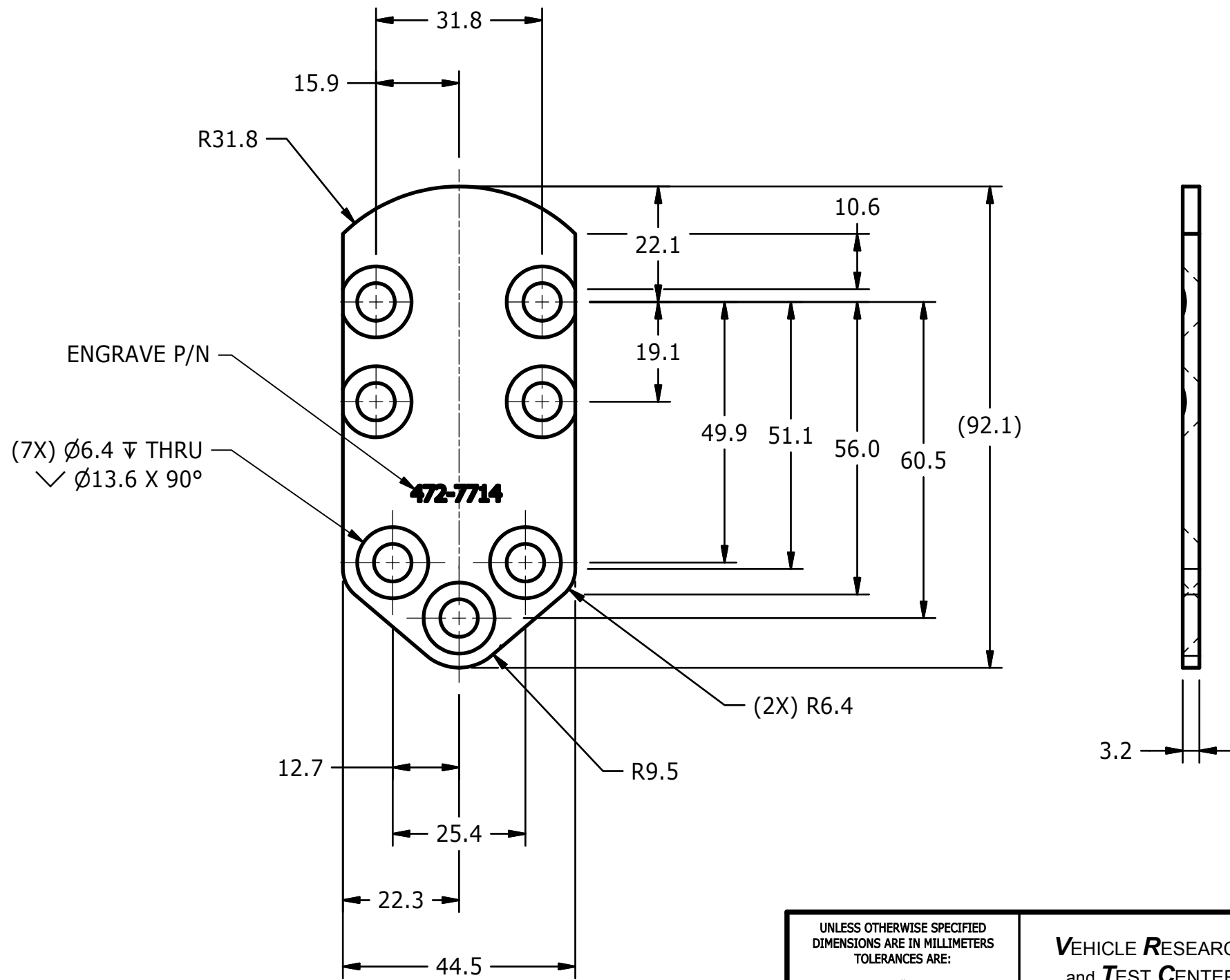
SECTION A-A  
SCALE 1 : 1




UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5, XX ±.2, XXX ±.1 MACHINED ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN: B. WADE CHECKED: _____ ENG: _____ APPROVED: _____	DATE 12/4/2008	
MATERIAL: Aluminum 6061-T6 HEAT TREAT: _____ FINISH: _____	SIZE: C SCALE: _____	DRAWING NUMBER: <b>472-7712</b> SHEET: 1 OF 1	REV: B



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	12/4/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED		DATE 12/4/2008 12/11/2008	
MATERIAL Aluminum 6061-T6 HEAT TREAT M/A FINISH BLUE ANODIZED	<b>BRACKET, MOUNTING-HEEL/ACHILLES THOR M</b>			SIZE <b>A3</b>
	DRAWING NUMBER <b>472-7714</b>		REV <b>A</b>	SHEET <b>1 OF 1</b>

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	12/4/2008	BLW

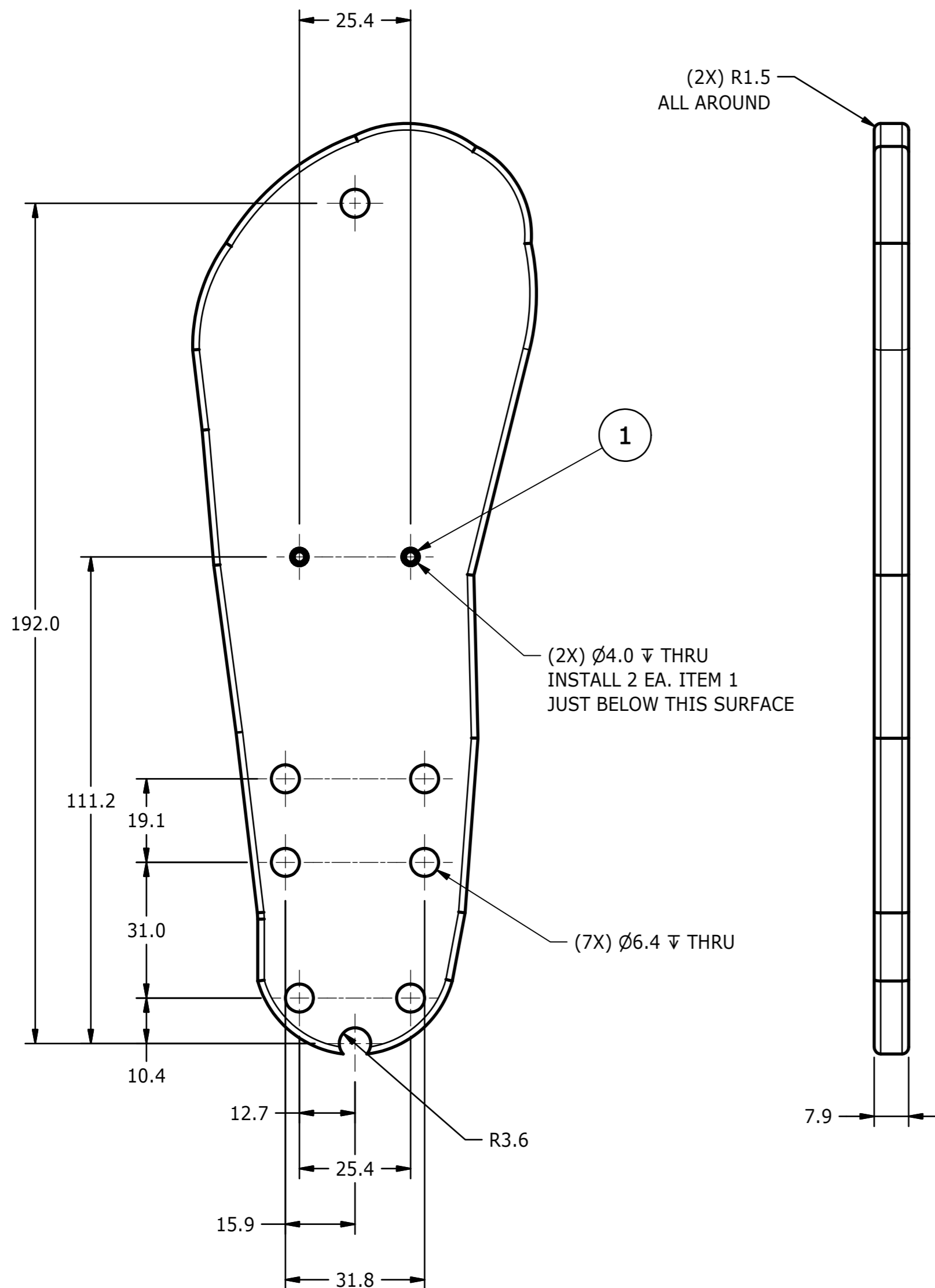
NOTES:  
 CARBON CLOTH - 3K, 2 X 2 TWILL WEAVE 5.7 oz/sq. yd.  
 .012" THICK (SOURCE: FIBRE GLAST) FG# 1069-B

EPOXY - 2000 EPOXY RESIN SYSTEM BY FIBRE GLAST  
 2000 EPOXY RESIN AND 2020 EPOXY HARDENER  
 FG# 2000-A AND 2020-A

EPOXY MIX RATIO PER FOOT LAY-UP  
 100 g - EPOXY RESIN (2000)  
 23 g - EPOXY HARDENER (2020)  
**LAY-UP SCHEDULE:**  
 [45/45/90/90/45/45/45/90/90/45/45/90/90]S

25 PLYS OF CARBON CLOTH TOTAL  
 LAYUP IS SYMMETRIC ABOUT THREE CENTRAL 0-90 PLYS  
 45 INDICATES A PLY WITH +/- 45° FIBER ORIENTATION  
 RELATIVE TO THE LONG AXIS OF THE FOOT PLATE  
 90 INDICATES A PLY WITH 0° & 90° FIBER ORIENTATION  
 RELATIVE TO THE LONG AXIS OF THE FOOT PLATE.

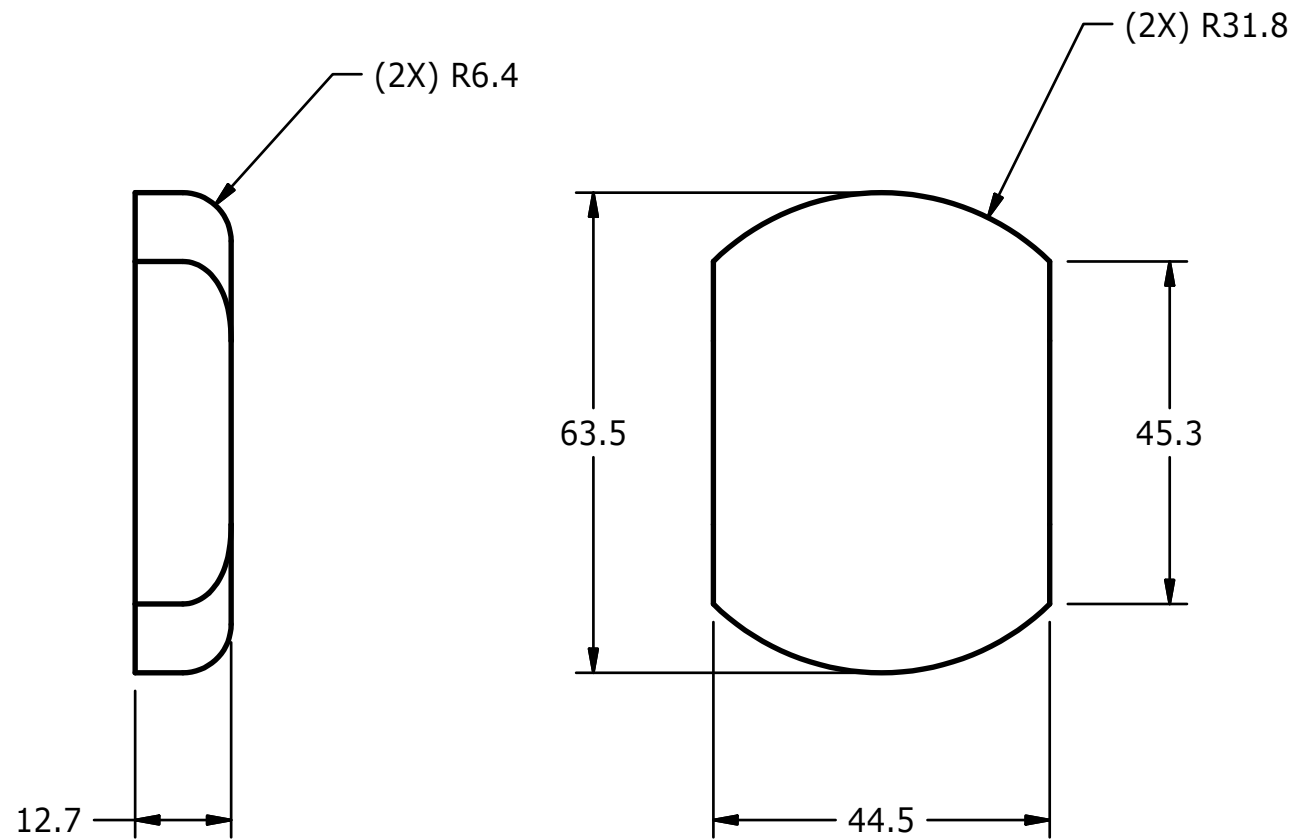
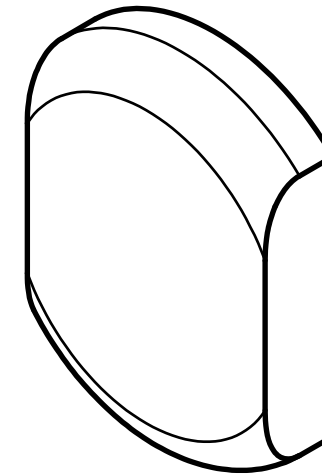
**MOLDING PROCEDURE:**  
 PLYS ARE HAND LAID INTO AN EPOXY MOLD USING  
 WET-LAYUP TECHNIQUES.  
 MOLD IS COATED WITH PART-ALL PASTE WAX (FG#1016)  
 AND REN RP78-2 SILICONE RELEASE AGENT (CIBI-GIEGY)  
 PLYS ARE LAID INTO MOLD AND BRUSHED WITH EPOXY  
 RESIN AND COMPLETELY WET-OUT.  
 MOLD IS TOPPED WITH POLYESTER PEEL PLY AND FOUR  
 LAYERS OF BREATHER MATERIAL.  
 VACUUM BAG AT 350°F FOR 3 HOURS AT 20 in-Hg





UNLESS OTHERWISE SPECIFIED:  
 1. BREAK ALL SHARP EDGES.

1	2	9010451	INSERT, M3 KNURLED TREADED PRESS
ITEM	QTY	PART NUMBER	DESCRIPTION
<b>PARTS LIST</b>			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 XX ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>  APPROVALS: _____ DATE: 12/4/2008 DRAWN: B. WADE CHECKED: TMV 12/12/2008 ENG: _____ APPROVED: _____	
MATERIAL: N/A		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>  <b>SOLE PLATE ASS'Y., LEFT</b>  <b>THOR M</b>	
HEAT TREAT: N/A		SIZE: <b>A2</b> DRAWING NUMBER: <b>472-7716</b> REV: <b>A</b>	
FINISH: N/A		SCALE: 1:1 SHEET: 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	D	REDRAWN IN INVENTOR	7/10/2007	KSG
E00609	E	CHANGE TO METRIC DIMENSIONING	12/4/2008	BLW



- UNLESS OTHERWISE SPECIFIED:
- BREAK ALL SHARP EDGES.
  - MATERIAL: NEOPRENE RUBBER 50A ±5.
  - STATIC HEEL PAD RESPONSE SPECIFICATIONS:  
COMPRESSION: 3.54 mm  
FORCE RANGE: 4770 TO 5830N.
  - DUROMETER SPECIFICATION CAN BE SUPERCEDED BY DYNAMIC HEEL IMPACT RESPONSE SPECIFICATIONS.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLE ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN B, WADE	DATE 12/4/2008	
MATERIAL SEE NOTE 2	CHECKED TMV	DATE 12/11/2008	 THIRD ANGLE PROJECTION
HEAT TREAT N/A	ENG	APPROVED	
FINISH N/A	DRAWING NUMBER <b>472-7717</b>		REV <b>E</b>
SCALE: 1:1		SHEET 1 OF 1	

4

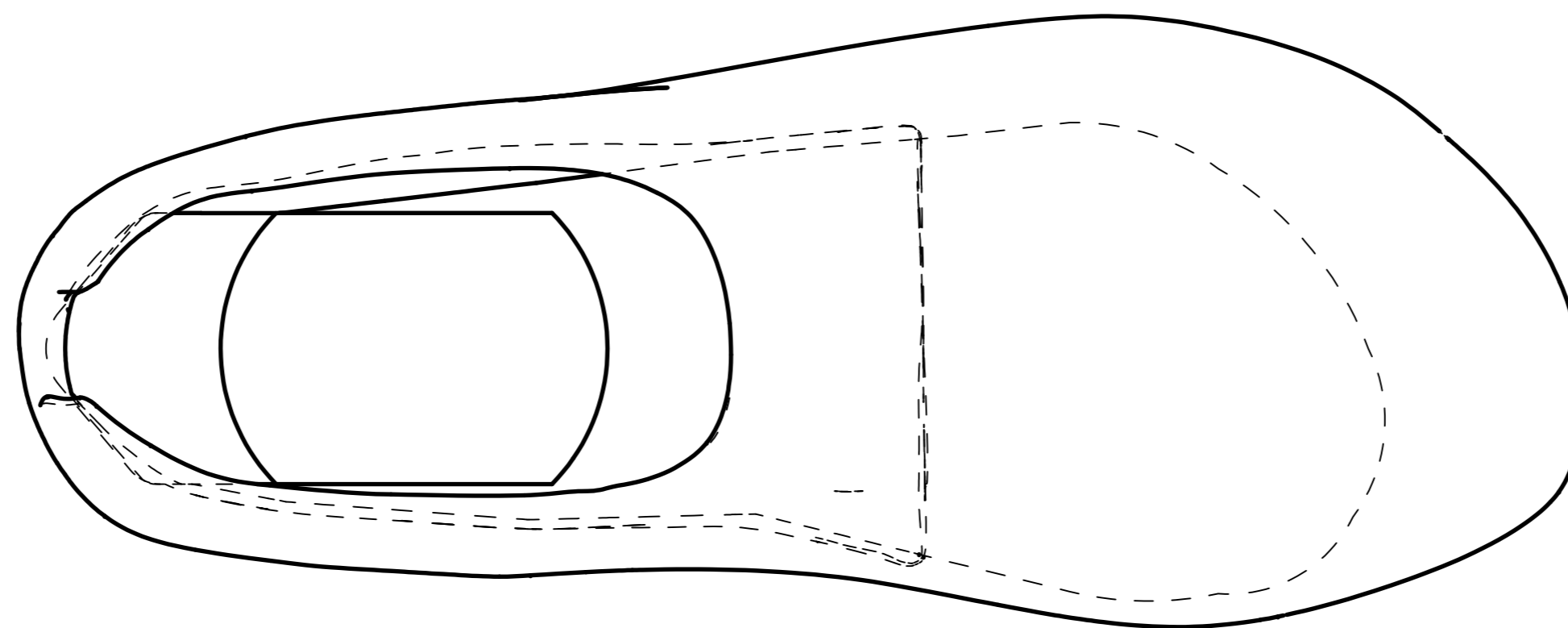
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2

1

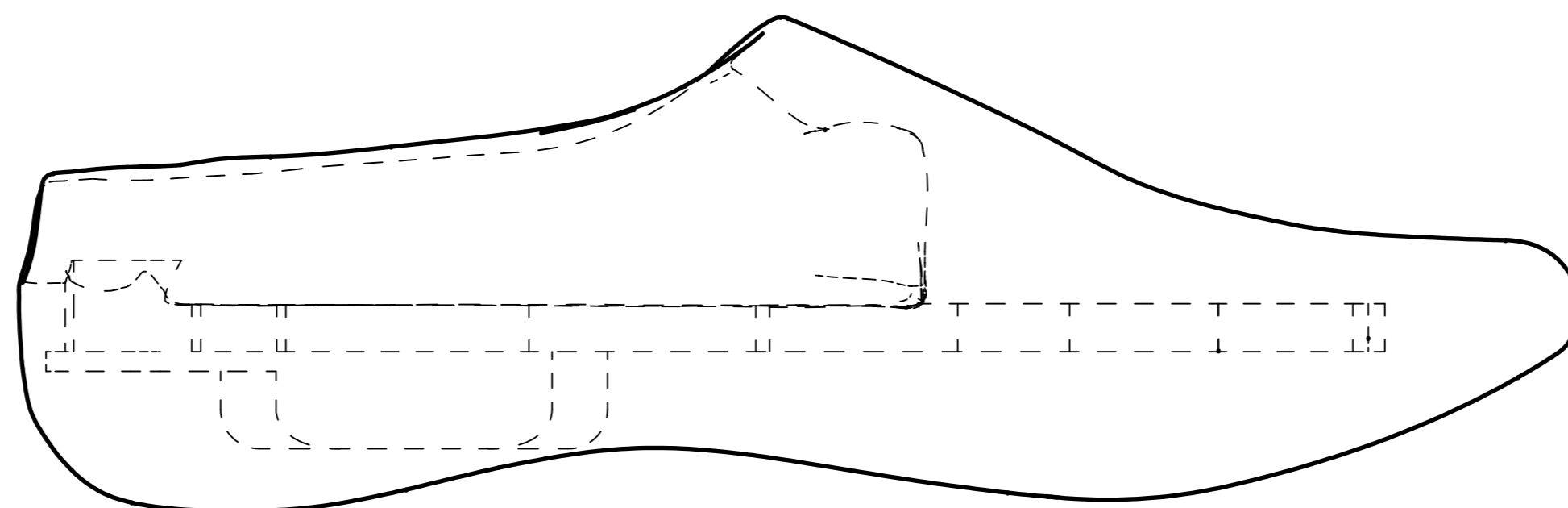
B

B



A


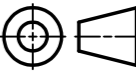
A



A

A

- UNLESS OTHERWISE SPECIFIED:  
 1. BREAK ALL SHARP EDGES  
 2. MATERIAL: SELF SKINNING URETHANE FOAM.  
 3. TOTAL MASS: .34 ±.02 KG.  
 4. EXTERNALSHAPE DEFINED BY 78051-600.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 XX ±.2 XXX ±.1  MACHINED ANGLER ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>			
	APPROVALS	DATE		<b>FOOT FLESH, LEFT THOR M</b>		
MATERIAL SEE NOTE 2	CHECKED	DRAWN B. WADE	10/19/2007		 SIZE: <b>A2</b> SCALE: 1:1	DRAWING NUMBER
HEAT TREAT N/A	ENG	APPROVED		<b>472-7725-1</b>		
FINISH N/A				SHEET	1 OF 1	

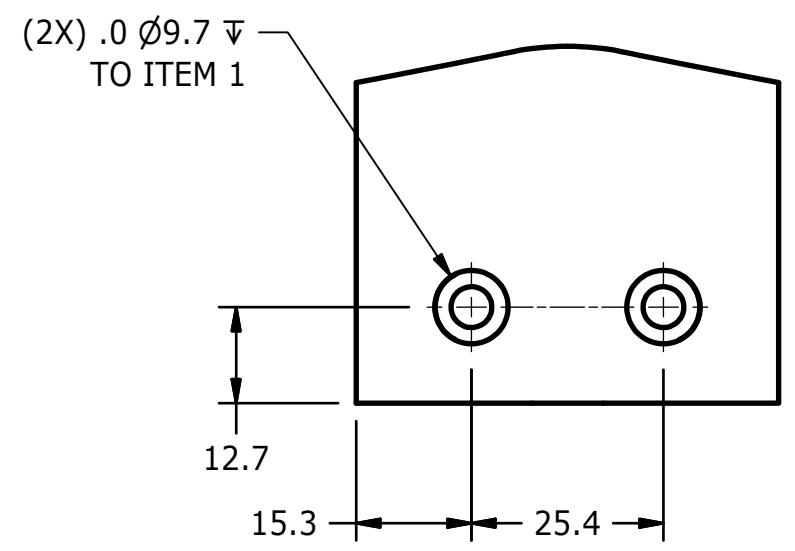
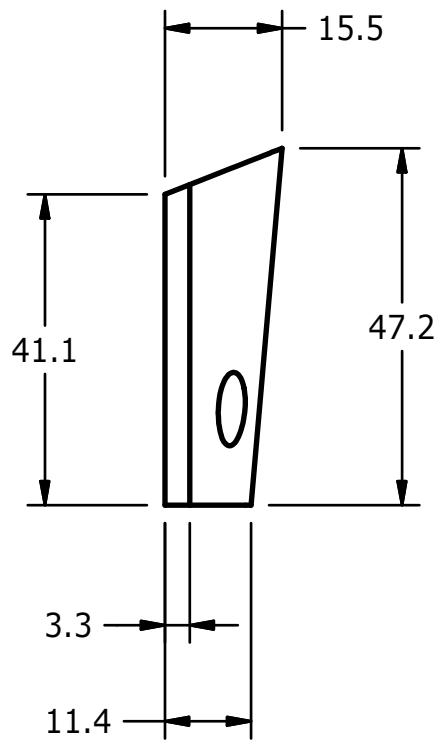
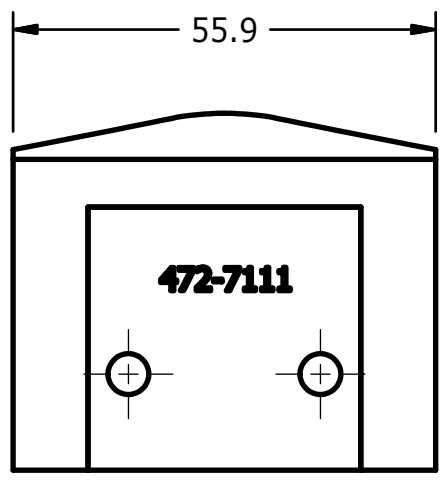
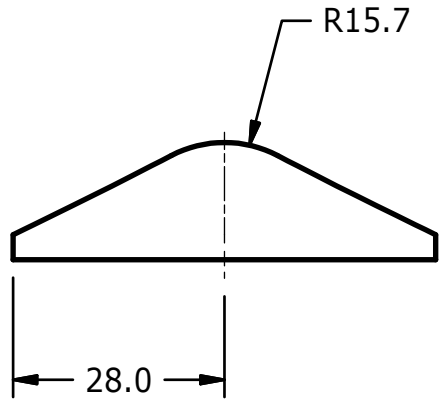
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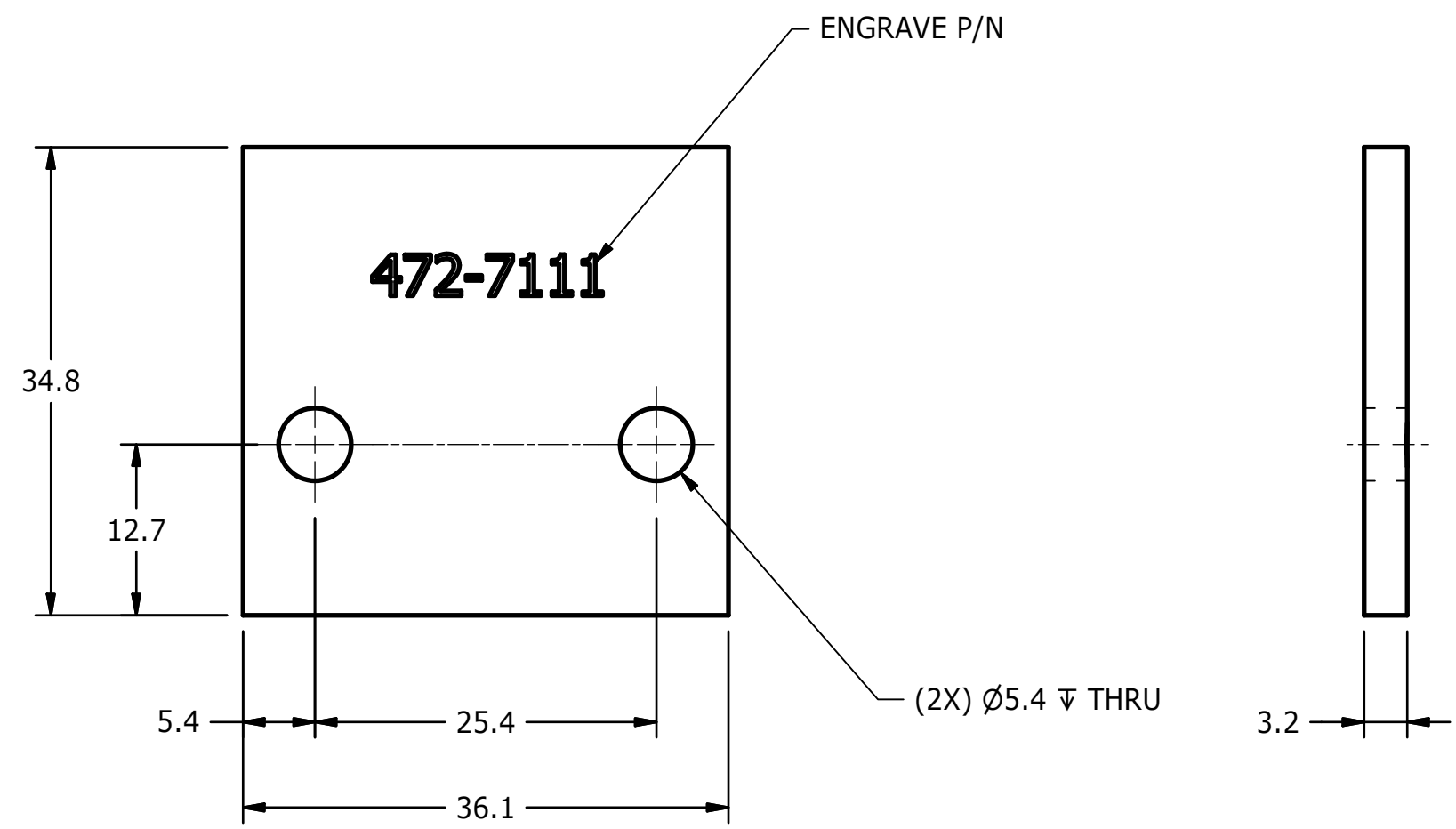
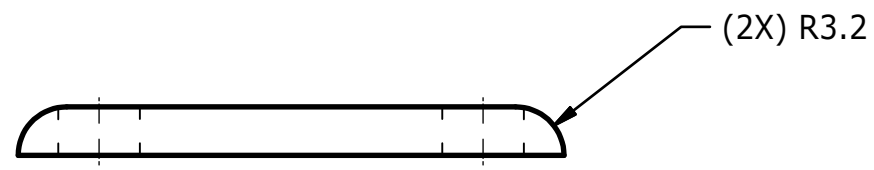
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	11/19/2008	BLW



- UNLESS OTHERWISE SPECIFIED:
- BREAK ALL SHARP EDGES.
  - MATERIAL: URETHANE 37 ±5 SHORE A.
  - SANDBLAST AND CLEAN WITH SOLVENT SIDE OF ITEM 1 TO BE BONDED TO URETHANE.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLE ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN: B. WADE CHECKED: TMV ENG: [ ] APPROVED: [ ]		DATE 11/19/2008 12/12/2008	
MATERIAL: SEE NOTE 2 HEAT TREAT: N/A FINISH: N/A	<b>KNEE BUMPER, MOLDED</b>  <b>THOR M</b>		SIZE: <b>A3</b>	DRAWING NUMBER: <b>472-7110</b> REV: <b>A</b>
		THIRD ANGLE PROJECTION		SCALE: 1:1 SHEET: 1 OF 1

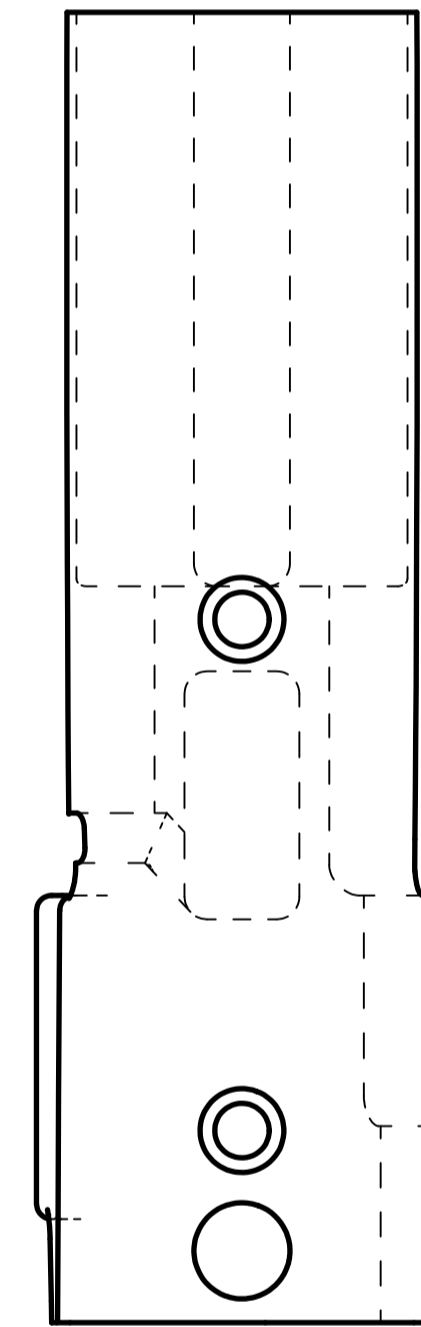
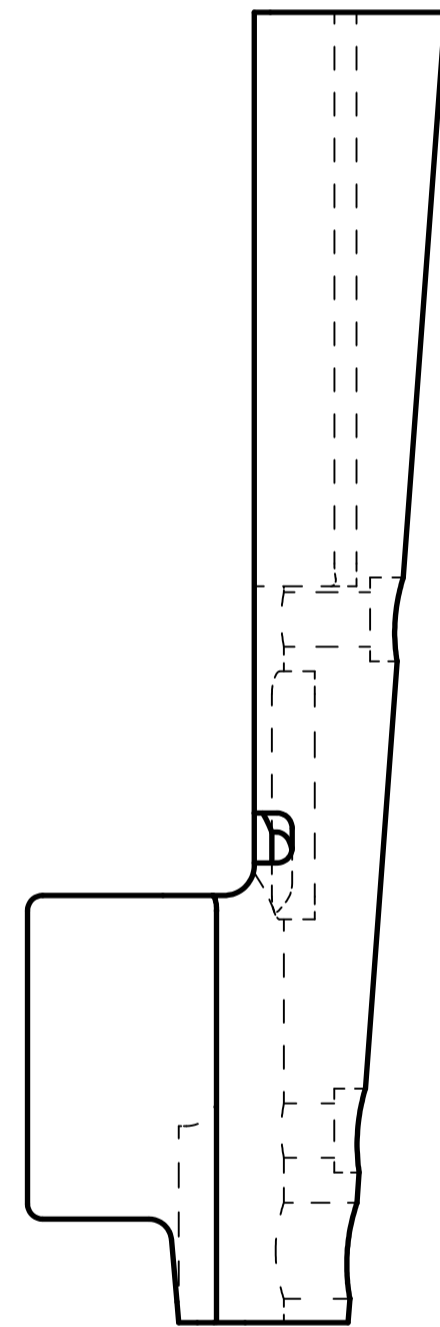
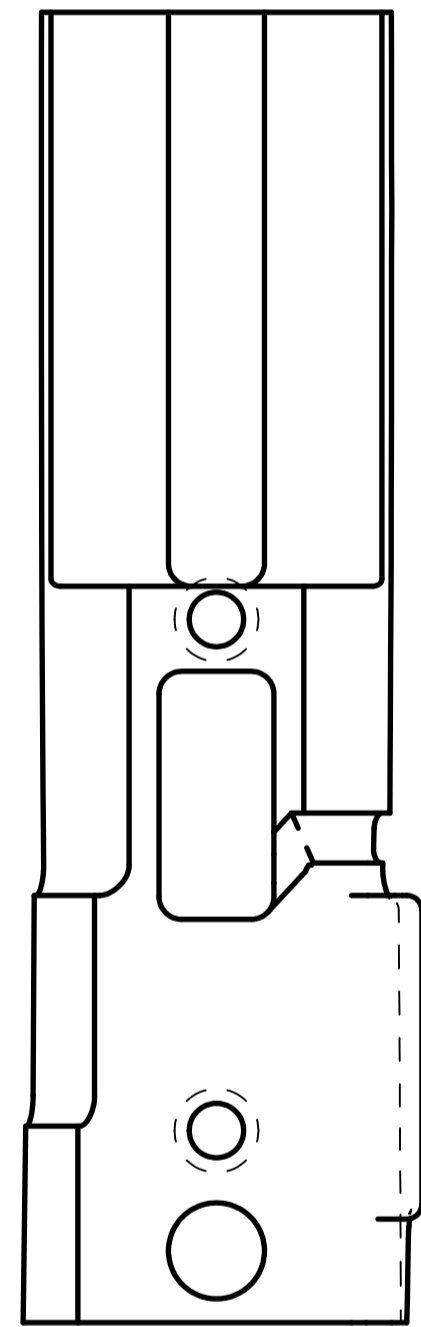
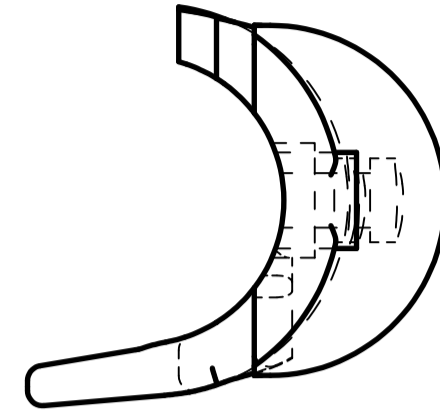
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGED TO METRIC DIMENSIONING	11/19/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
1. BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. WADE CHECKED TMV ENG APPROVED	DATE 11/19/2008 12/11/2008	<b>BACK PLATE, MOLDED BUMPER</b> <b>THOR M</b>	
MATERIAL 1018 STEEL HEAT TREAT N/A FINISH N/A	 THIRD ANGLE PROJECTION	SIZE A3 SCALE: 2:1	DRAWING NUMBER <b>472-7111</b> SHEET 1 OF 1	REV A

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHNGED TO METRIC DIMENSIONING	12/5/2008	BLW



UNLESS OTHERWISE SPECIFIED:  
 1. BREAK ALL SHARP EDGES.  
 2. MATERIAL: URETHANE 85 ±5 SHORE A.  
 3. GEOMETRY SPECIFIED BY 3-D MODEL NO. 472-7115.

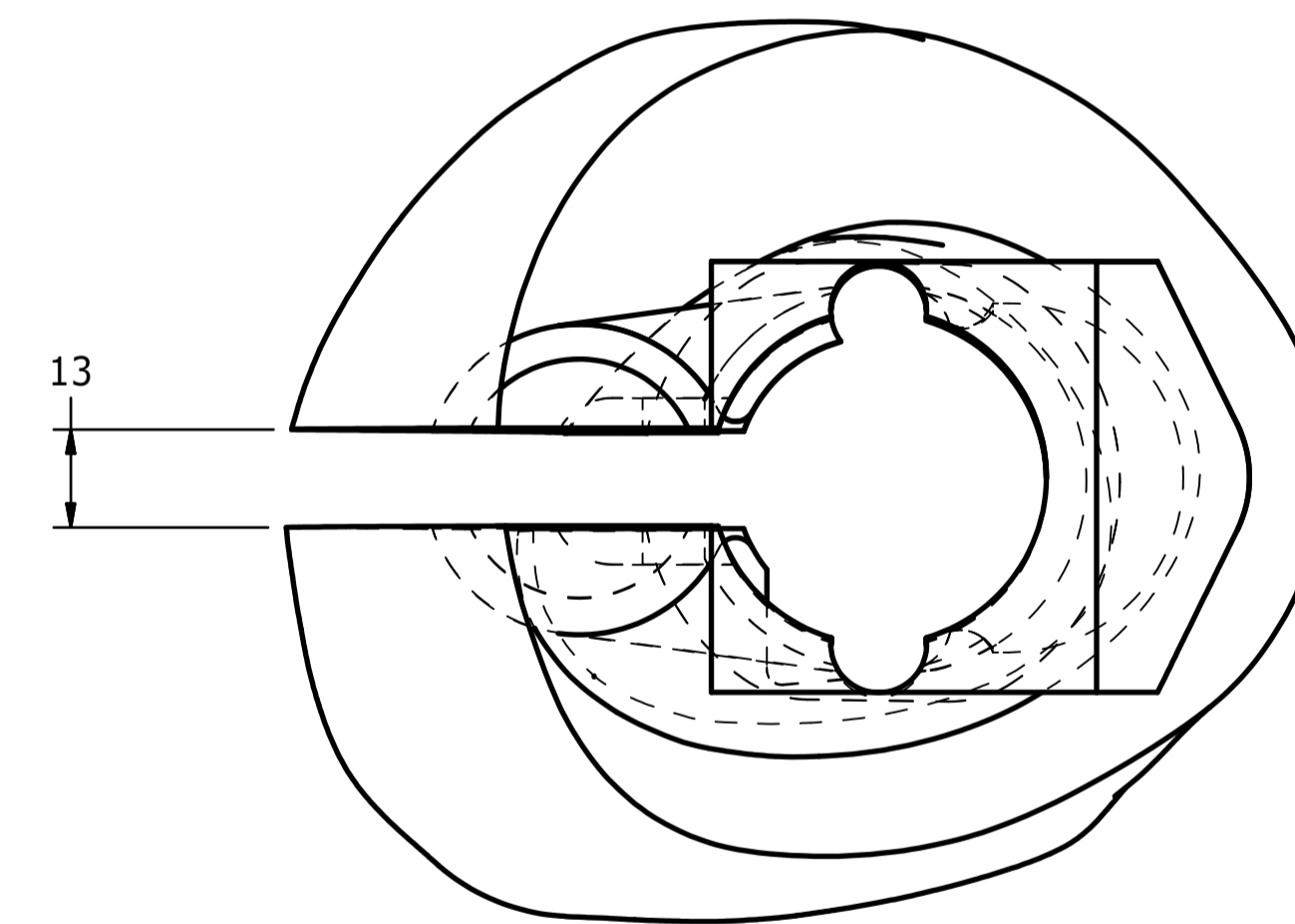
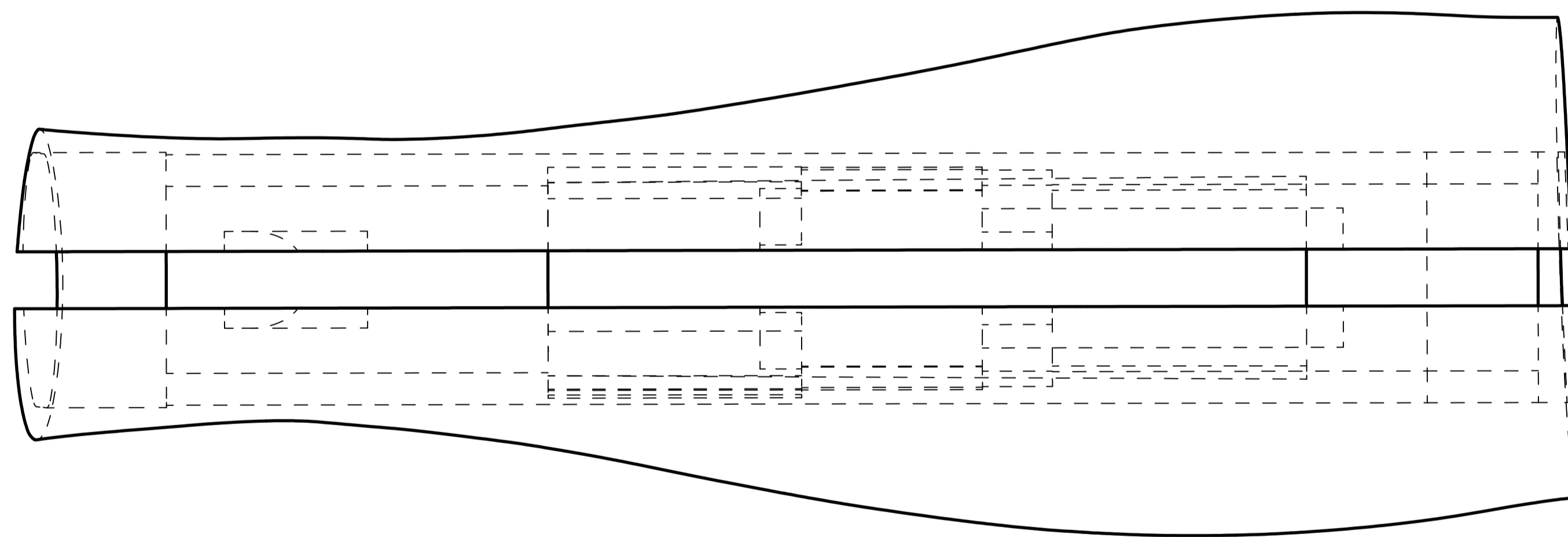
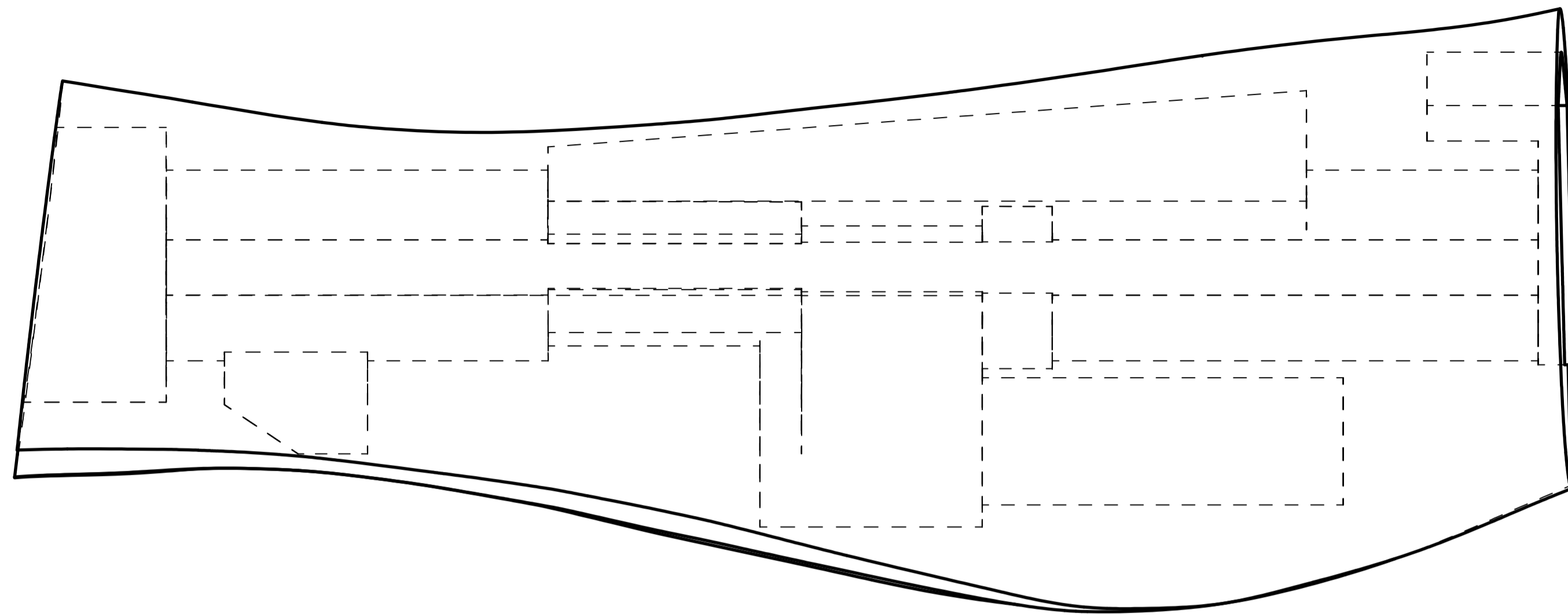
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DECIMAL: X ±.5 XX ±.2 XXX ±.1	MACHINED ±.125 ANGLES ±.5°	APPROVALS	DATE	TIBIA GUARD	
DO NOT SCALE DRAWING		DRAWN	12/5/2008	THOR-M	
MATERIAL: RP 6442 URETHANE	HEAT TREAT N/A	CHECKED	12/10/2008	DRAWING NUMBER 472-7115	
FINISH N/A	APPROVED	ENG		SCALE: 1:1	REV A
		THIRD ANGLE PROJECTION		SHEET 1 OF 1	

4

3

2

1



- UNLESS OTHERWISE SPECIFIED:  
 1. BREAK ALL SHARP EDGES.  
 2. PART TO BE MOLDED VINYL AND URETHANE FOAM.  
 3. TOTAL MASS: .63 ± .05 KG.  
 4. ATTACH ZIPPER TO CLOSE FLESH AT BACK.  
 5. EXTERNAL SHAPE DEFINED BY UNTRI 50TH PERCENTILE LOWER LEG.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DECIMAL: X ±.5 XX ±.2 XXX ±.1	MACHINED ±.05 ANGLES ±.5°	APPROVALS	DATE	LOWER LEG FLESH, LEFT	
DO NOT SCALE DRAWING		DRAWN B. WADE	10/1/2015	THOR M	
MATERIAL	ENG	CHECKED		SIZE A1	DRAWING NUMBER 472-7370-1
HEAT TREAT N/A	APPROVED			SCALE: 1:1	SHEET 1 OF 1
FINISH N/A				THIRD ANGLE PROJECTION	

4

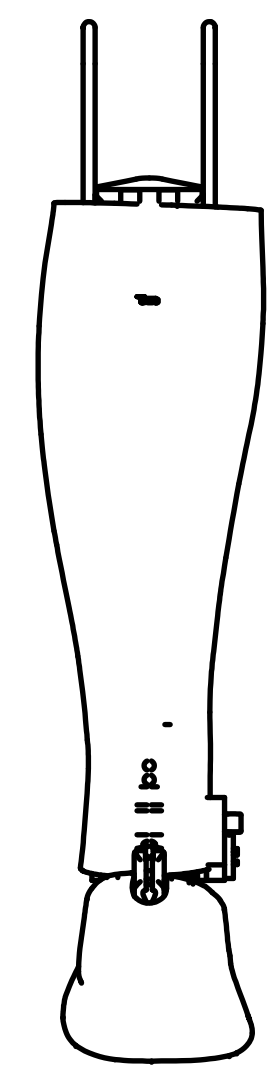
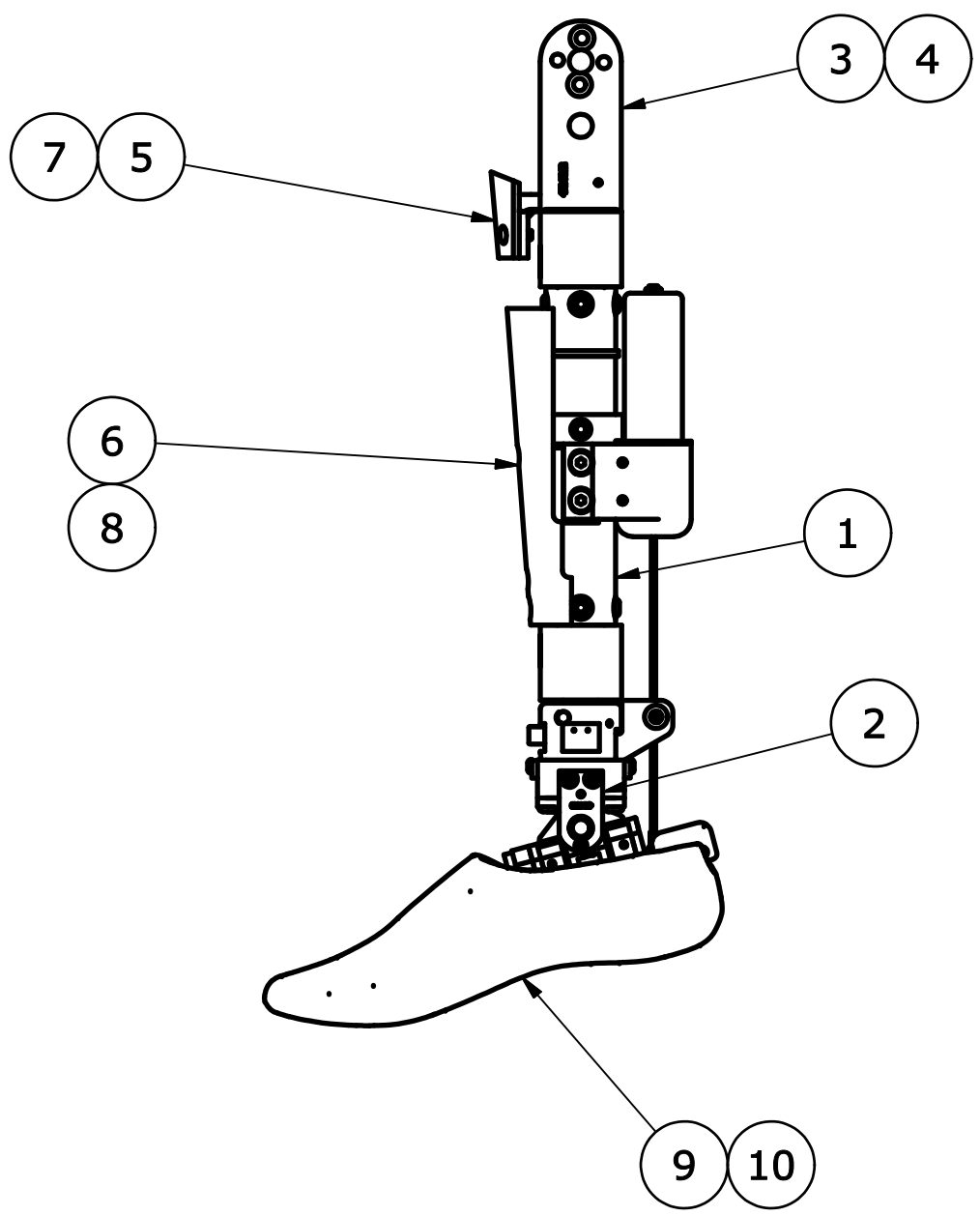
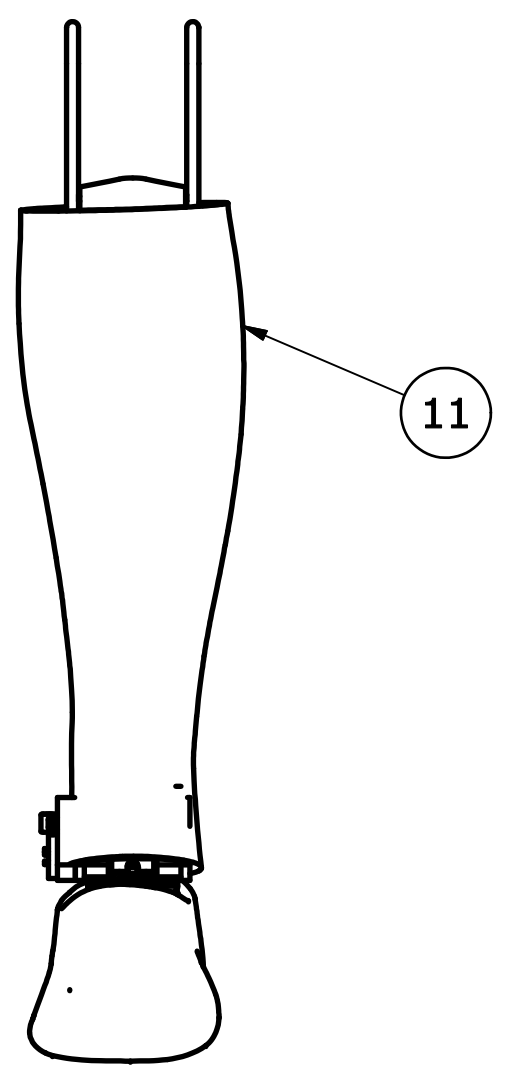
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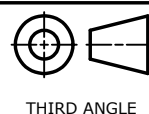
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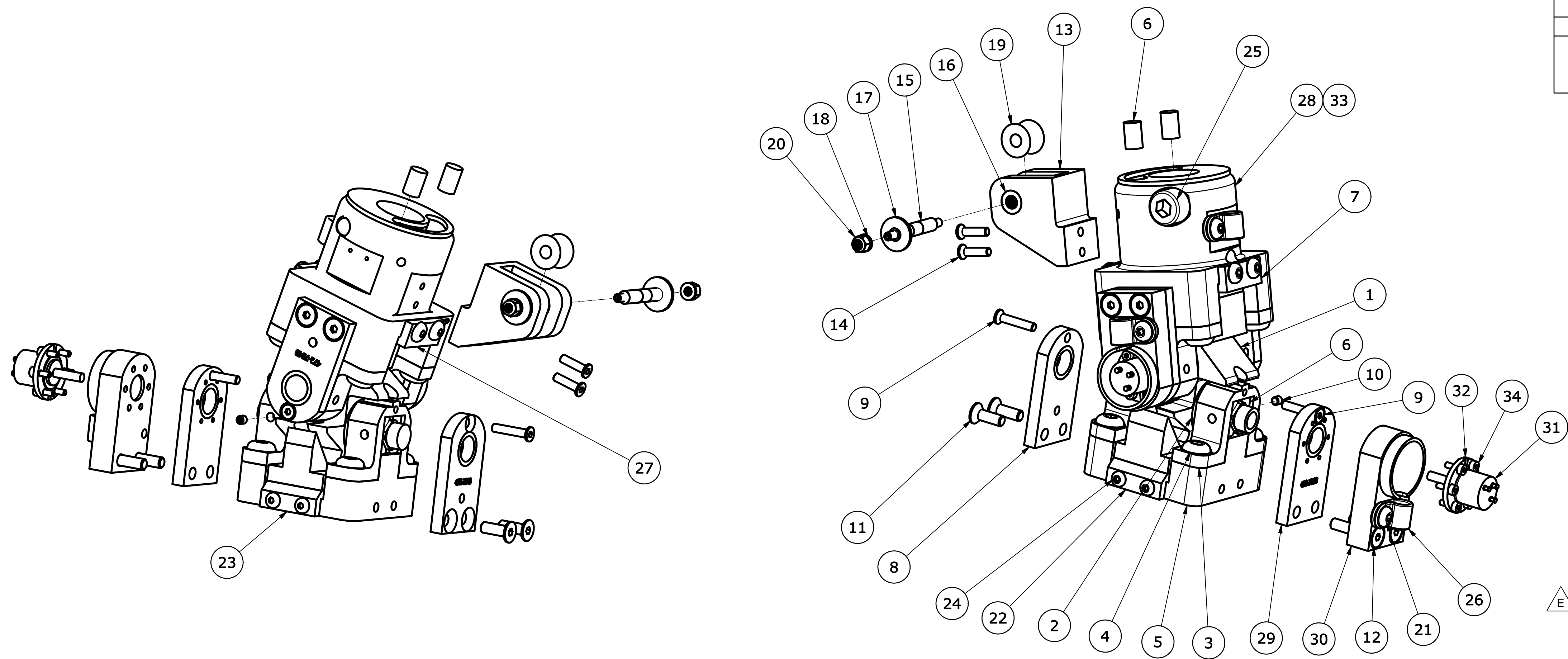
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGED TO METRIC DIMENSIONS	12/5/2008	BLW
	B	ADDED ITEM #11	7/14/2015	DW



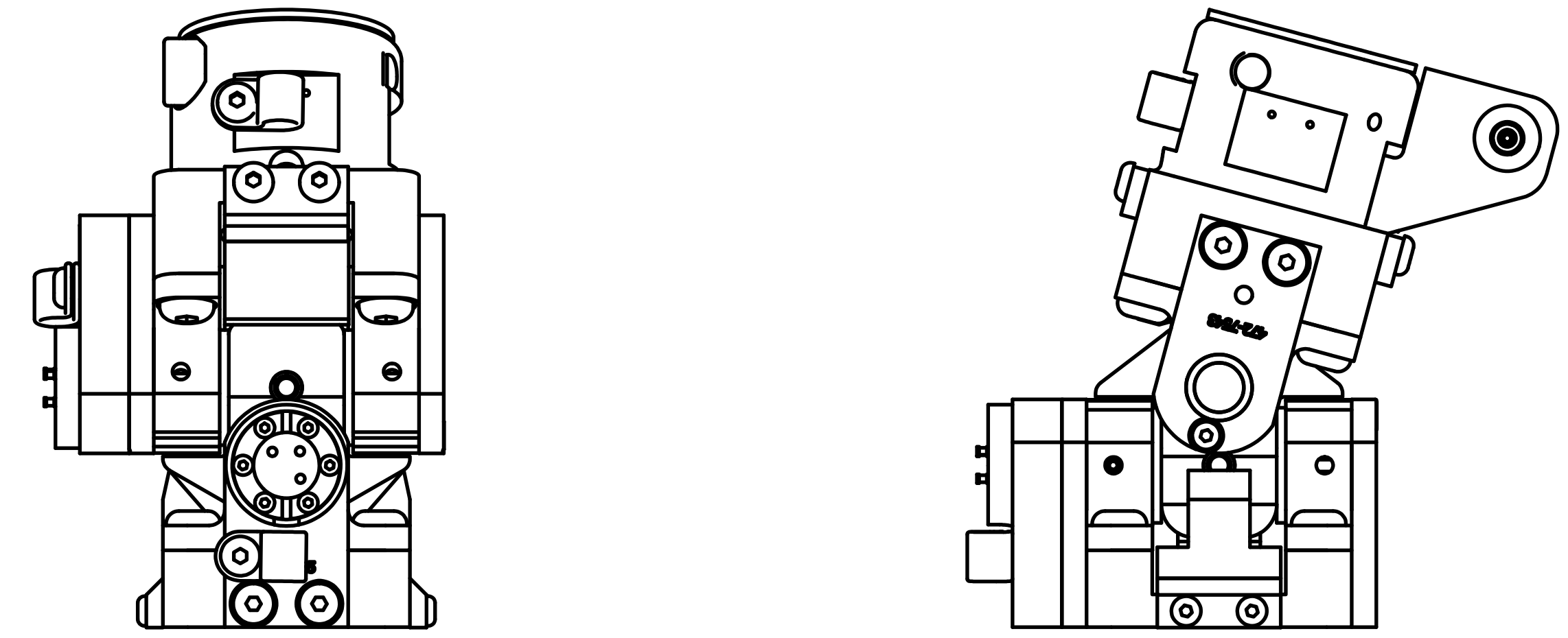
ITEM	QTY	PART NUMBER	DESCRIPTION
11	1	472-7370-2	LOWER LEG FLESH, RIGHT
10	4	9000826	SCREW, FHCS M6-1.0 x 16
9	1	472-7700-2	FOOT ASSEMBLY, RIGHT
8	2	9010453	SCREW, BHCS M6-1.0 x 10
7	2	9003042	SCREW, BHCS M5 x 10
6	1	472-7115	TIBIA GUARD
5	1	472-7110	KNEE BUMPER, MOLDED
4	4	9000852	SCREW, SHCS M6 x 1.0 X 16mm LONG
3	1	472-7200	KNEE CLEVIS WELDMENT
2	1	472-7500-2	ANKLE ASSEMBLY, RIGHT
1	1	472-7300	LOWER LEG MECHANICAL ASSEMBLY

PARTS LIST					
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small>  DECIMAL: X ±.5 XX ±.2 X.XX ±.1  <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>  MACHINED ↓ ANGLES ±.5°	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>		
	APPROVALS	DATE			
	DRAWN B. WADE	12/5/2008	<b>LOWER LEG ASSEMBLY, COMPLETE - RIGHT THOR M</b>		
	CHECKED				
HEAT TREAT	ENG	 THIRD ANGLE PROJECTION	SIZE <b>C</b>	DRAWING NUMBER <b>472-7000-2</b>	REV <b>B</b>
FINISH	APPROVED		SCALE:	SHEET <b>1</b> OF <b>1</b>	

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	B	REDRAWN IN INVENTOR	7/25/2007	KSG
	C	CHANGE TO METRIC HARDWARE	10/14/08	BLW
	D	CHANGE TO METRIC DIMENSIONING	12/5/2008	BLW
	E	QTY OF ITEM 7 WAS 2, ADD ITEM 27, REDESIGN POT MOUNTING, POT PART NUMBER WAS 472-7550	7/28/2015	JHC



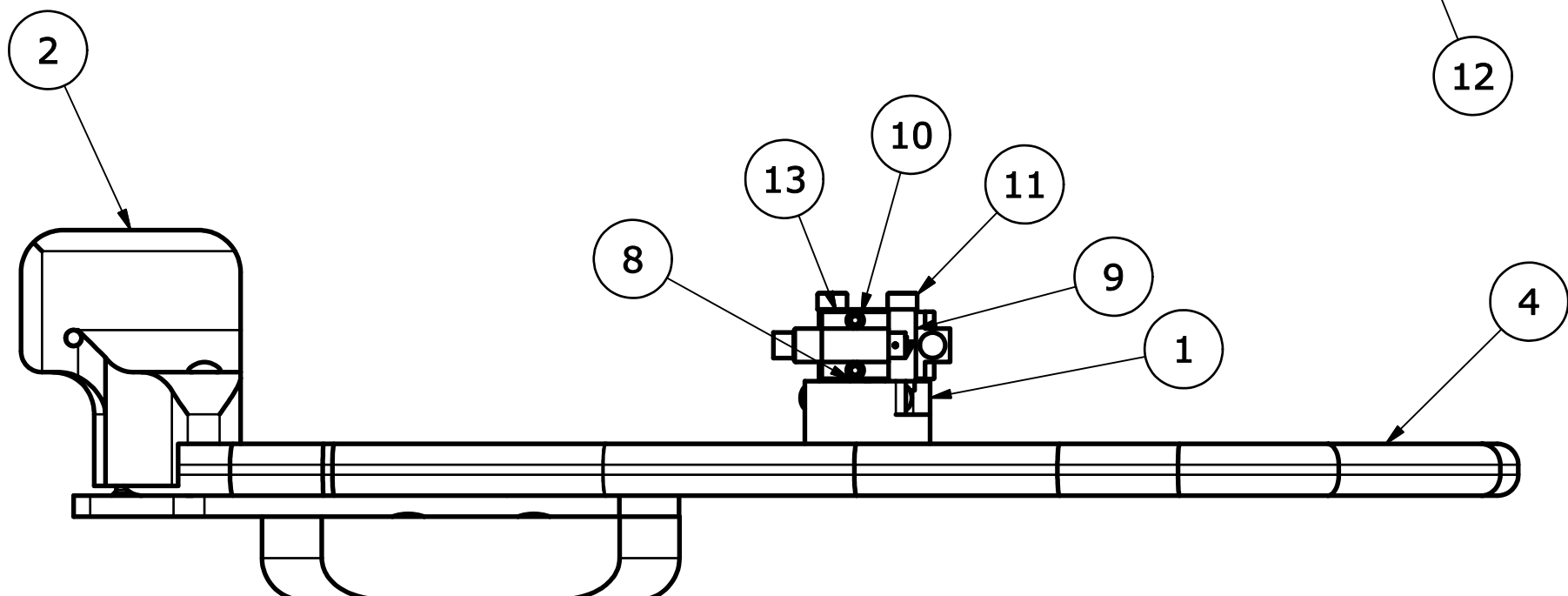
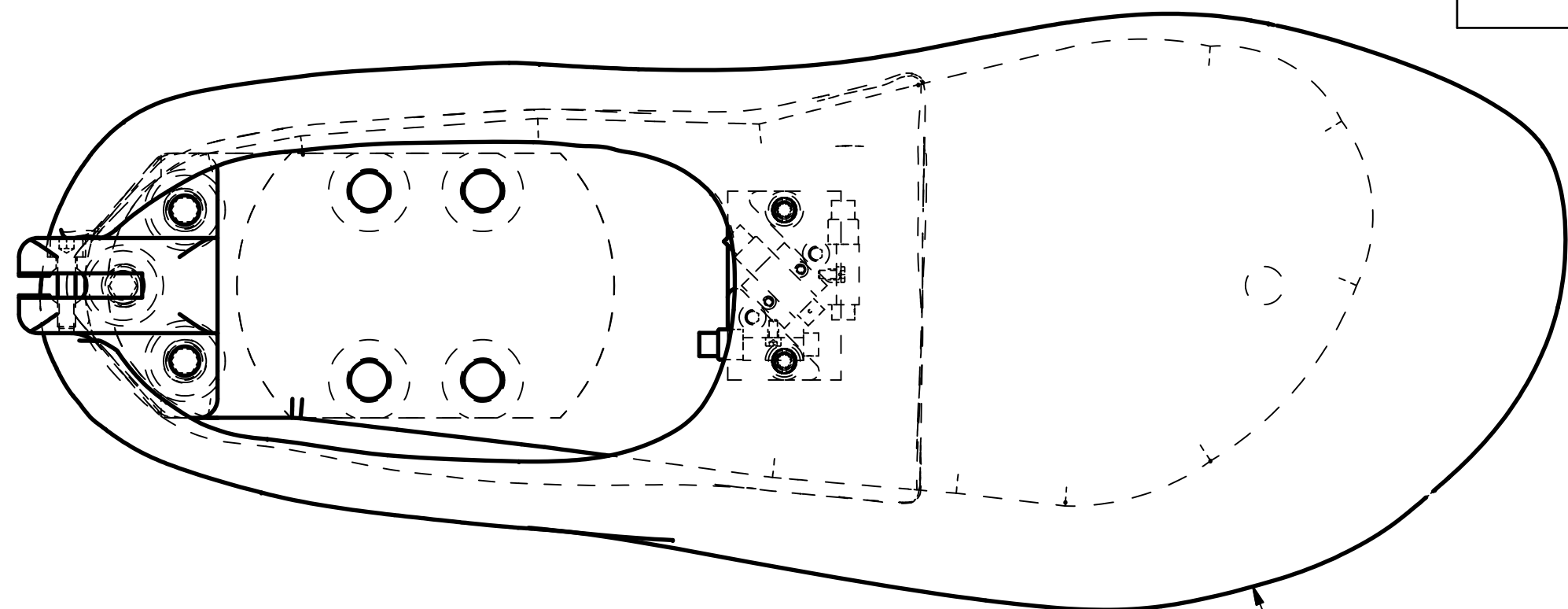
34	12	9010560	SCREW, SHCS M2X0.4 X 6
33	6	9010559	SCREW, SHCS M2X0.2 X 4
32	3	472-7581	POTENTIOMETER CLAMP
31	3	SA572-S114	POTENTIOMETER
30	2	472-7585	RETAINER, POTENTIOMETER
29	2	472-7582	ANKLE BUSHING PLATE ASSEMBLY - POT END
28	1	472-7580	BASE, TORQUE - ANKLE TOP
27	1	472-7527	STOP ASSEMBLY, REAR DORSI
26	3	9005135	CLAMP, NYLON LOOP
25	1	472-7563	BOLT & SLEEVE ASSEMBLY, ANKLE
24	4	9010332	SCREW, BHCS M3X0.5 X 8
23	1	472-7534	STOP ASSEMBLY - INVERSION
22	1	472-7533	STOP ASSEMBLY - EVERSION
21	7	9003049	SCREW, BHCS M4 x 0.7 x 8
20	2	9010450	NUT, NYLOCK M3X0.5
19	1	472-7562	PULLEY, ACHILLES CABLE
18	2	9000510	FLATWASHER, #4 TYPE B NARROW
17	2	9000508	ACHILLES WASHER
16	2	9000509	NEEDLE BEARING
15	1	472-7561	ACHILLES CABLE PULLEY SHAFT
14	2	9010449	SCREW, FHCS M3 x 12
13	1	472-7560	BRACKET, ACHILLES PULLEY
12	4	9010448	SCREW, FHCS M4X0.7 X 20
11	4	9000873	SCREW, FHCS M4-0.7 x 12
10	2	9010447	SCREW, SHSS, M3X0.5 X 3
9	4	9010446	SCREW, FHCS M3X0.5 X 16
8	2	472-7540	ANKLE BUSHING PLATE ASSEMBLY - FREE END
7	1	472-7530	STOP ASSEMBLY - DORSI
6	18	472-7524	TORQUE CYLINDER
5	1	472-7523	BASE, TORQUE - BOTTOM
4	8	9010445	SCREW, BHCS M6 x 1 x 12
3	4	472-7522	CAP, BASE TORQUE
2	4	472-7515	RETAINING WASHER
1	1	472-7510	CENTER BLOCK ASSEMBLY, ANKLE



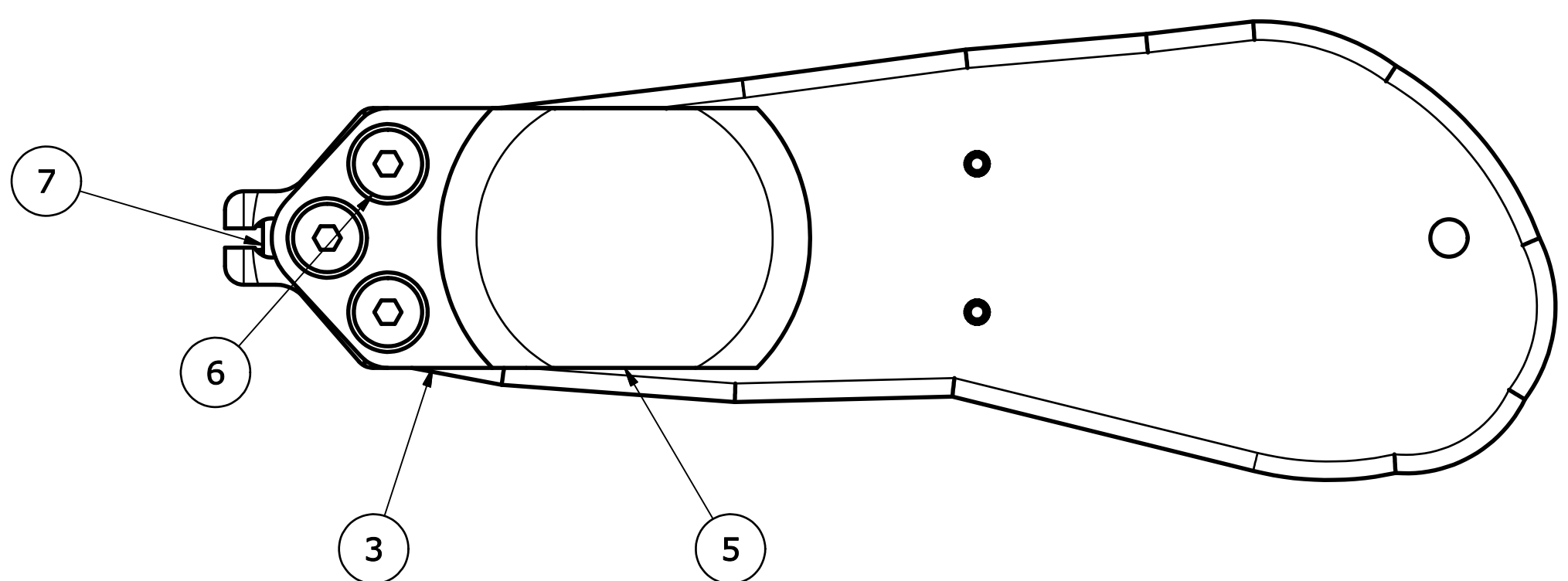
ASSEMBLY INSTRUCTIONS  
1. SAND 4 EA OF ITEM 2 TO ACHIEVE SNUG ASSEMBLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DECIMAL:	MACHINED	APPROVALS	DATE	ANKLE ASSEMBLY, RIGHT	
X ±0.5	±0.15	B. WADE	12/8/2008	THOR M	
XX ±0.2	ANGLES ±0.5°	CHECKED		DRAWING NUMBER	
XXX ±0.1	DO NOT SCALE DRAWING	ENG		472-7500-2 E	
		APPROVED		SCALE: 1 OF 1	

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CHANGE TO METRIC DIMENSIONING	12/5/2008	BLW
	B	ITEM 9 WAS 7264-AM	7/28/2015	JHC



FLESH NOT SHOWN FOR CLARITY

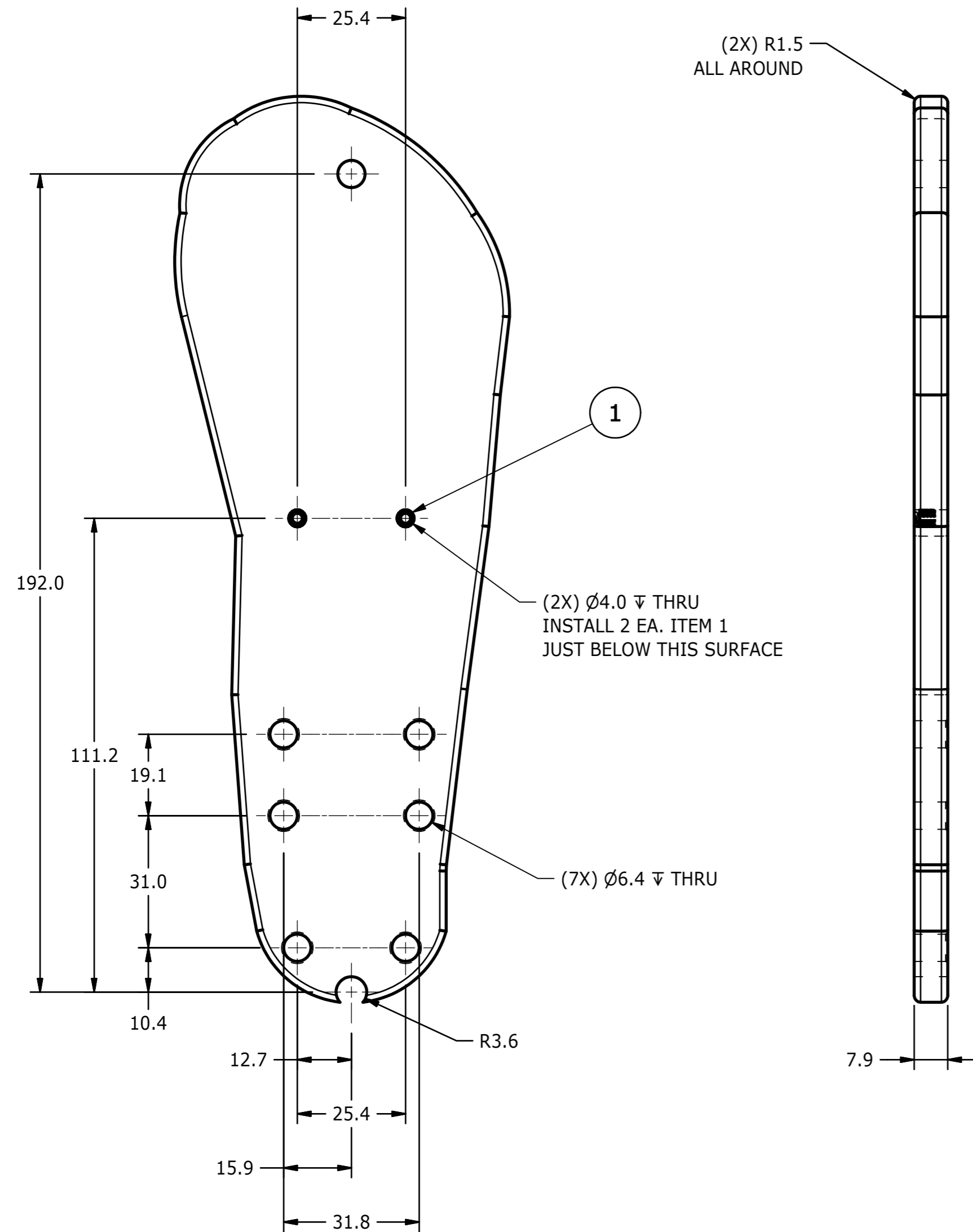


ITEM	QTY	PART NUMBER	DESCRIPTION
13	3	SA572-S4	UNIAXIAL PIEZORESISTIVE ACCELEROMETER
12	1	472-7725-2	FOOT FLESH, RIGHT
11	2	9000863	SCREW, SHCS M2.5X0.45 X 16
10	6	9010407	SCREW, SHCS M1.4 x 0.3 x 3 LG.
9	1	SA572-S80M	TRI-PACK BLOCK
8	2	9010446	SCREW, FHCS M3X0.5 X 16
7	1	9000058	SCREW, SHCS M3-0.5 x 12
6	3	9001443	SCREW, FHCS M6X1 X 20
5	1	472-7717	PADDING, HEEL
4	1	472-7718	SOLE PLATE ASSEMBLY
3	1	472-7714	BRACKET, MOUNTING-HEEL/ACHILLES
2	1	472-7712	MOUNTING POST, ACHILLES
1	1	472-7710	PLATE MOUNTING, TRI PACK ACCEL

PARTS LIST

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL: X ±.5, XX ±.2, X.XX ±.1 MACHINED ANGLES ±.5° <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN: B. WADE CHECKED:	DATE 12/5/2008	
MATERIAL: HEAT TREAT: FINISH:	APPROVED:	SIZE: C SCALE: 1:1	DRAWING NUMBER: <b>472-7700-2</b> SHEET: 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
E00609	A	CHANGE TO METRIC DIMENSIONING	12/4/2008	BLW



NOTES:  
 CARBON CLOTH - 3K, 2 X 2 TWILL WEAVE 5.7 oz/sq. yd. .012" THICK (SOURCE: FIBRE GLAST) FG# 1069-B


EPOXY - 2000 EPOXY RESIN SYSTEM BY FIBRE GLAST  
 2000 EPOXY RESIN AND 2020 EPOXY HARDENER  
 FG# 2000-A AND 2020-A

EPOXY MIX RATIO PER FOOT LAY-UP  
 100 g - EPOXY RESIN (2000)  
 23 g - EPOXY HARDENER (2020)  
**LAY-UP SCHEDULE:**  
 [45/45/90/90/45/45/90/90/45/45/90/90]S

25 PLYS OF CARBON CLOTH TOTAL  
 LAYUP IS SYMMETRIC ABOUT THREE CENTRAL 0-90 PLYS  
 45 INDICATES A PLY WITH +/- 45° FIBER ORIENTATION  
 RELATIVE TO THE LONG AXIS OF THE FOOT PLATE  
 90 INDICATES A PLY WITH 0° & 90° FIBER ORIENTATION  
 RELATIVE TO THE LONG AXIS OF THE FOOT PLATE.

**MOLDING PROCEDURE:**  
 PLYS ARE HAND LAID INTO AN EPOXY MOLD USING  
 WET-LAYUP TECHNIQUES.  
 MOLD IS COATED WITH PART-ALL PASTE WAX (FG#1016)  
 AND REN RP78-2 SILICONE RELEASE AGENT (CIBI-GIEGY)  
 PLYS ARE LAID INTO MOLD AND BRUSHED WITH EPOXY  
 RESIN AND COMPLETELY WET-OUT.  
 MOLD IS TOPPED WITH POLYESTER PEEL PLY AND FOUR  
 LAYERS OF BREATHER MATERIAL.  
 VACUUM BAG AT 350°F FOR 3 HOURS AT 20 in-Hg

UNLESS OTHERWISE SPECIFIED:  
 1. BREAK ALL SHARP EDGES.

1	2	9010451	INSERT, M3 KNURLED TREADED PRESS
ITEM	QTY	PART NUMBER	DESCRIPTION
<b>PARTS LIST</b>			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 XX ±.2 X.XX ±.1  MACHINED ↓ ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>  <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
APPROVALS		DATE	
DRAWN B. WADE		12/4/2008	
CHECKED TMV		12/12/2008	
MATERIAL SEE NOTES		ENG	
HEAT TREAT N/A		APPROVED	
FINISH N/A		THIRD ANGLE PROJECTION	
SIZE A2		DRAWING NUMBER 472-7718	
SCALE: 1:1		REV A	
SHEET 1		OF 1	

4

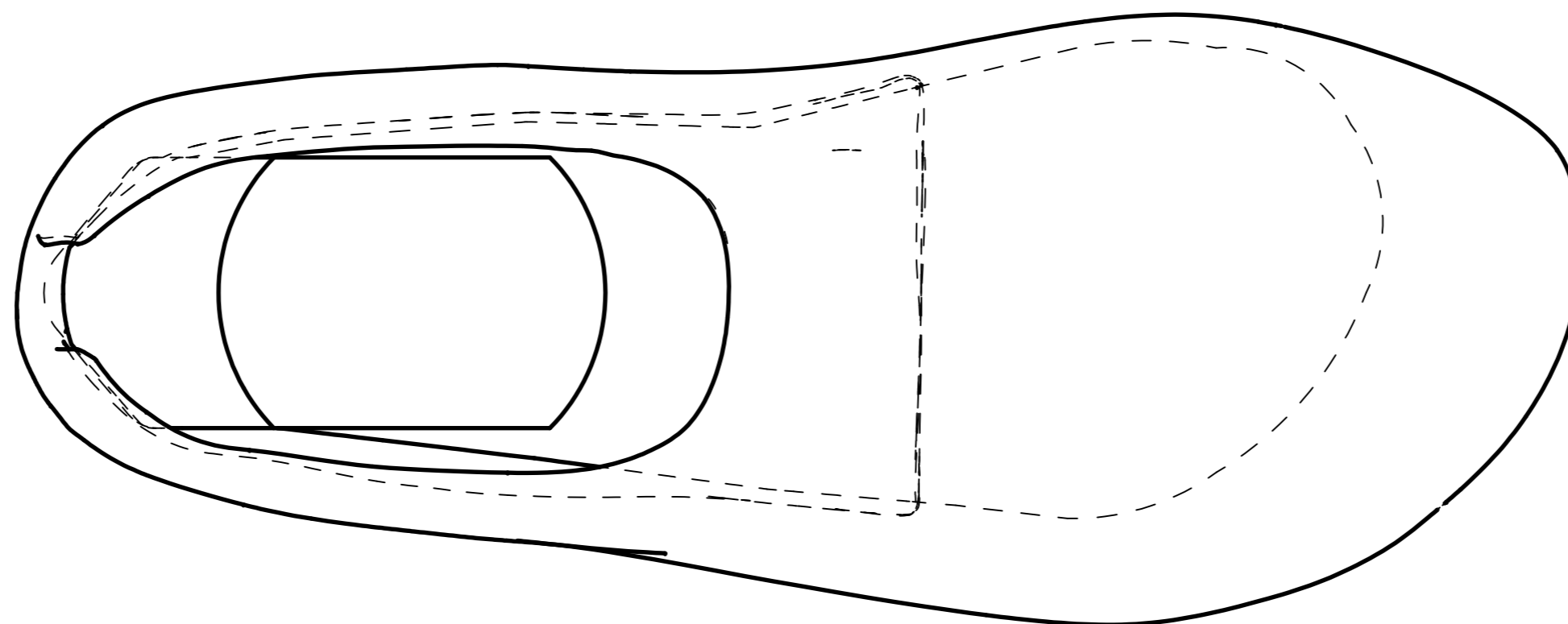
3

2

1

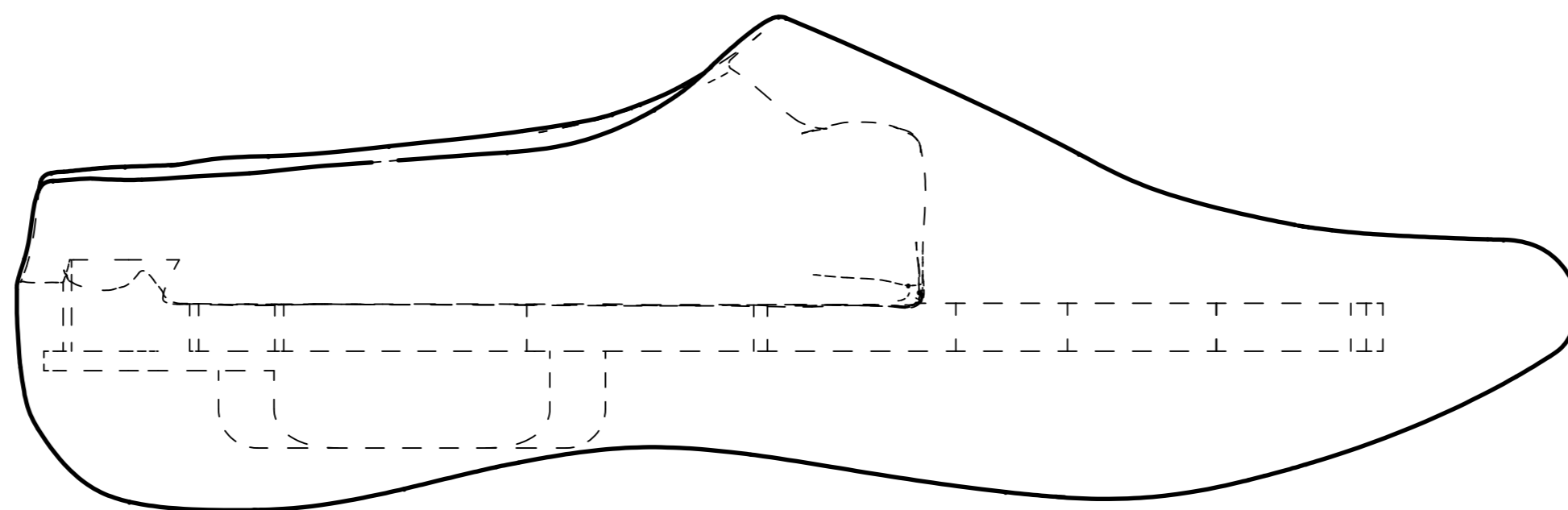
B

B



A


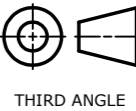
A



A

A

- UNLESS POTHERWISE SPECIFIED:
1. BREAK ALL SHARP EDGES.
  2. MATERIAL: SELF SKINNING URETHANE FOAM.
  3. TOTAL MASS: .34 ±.02 KG.
  4. EXTERNAL SHAPE DEFINED BY 78051-601.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 XX ±.2 XXX ±.1  MACHINED ANGLER ±.5°  <small>ASME Y14.5M - 1994</small> <b>DO NOT SCALE DRAWING</b>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
MATERIAL SEE NOTE 2	DRAWN B. WADE	1/19/2009	<b>FOOT FLESH, RIGHT THOR M</b>
HEAT TREAT N/A	CHECKED		
FINISH N/A	ENG		 <b>THIRD ANGLE PROJECTION</b>
	APPROVED		
SIZE: <b>A2</b>		DRAWING NUMBER: <b>472-7725-2</b>	REV:
SCALE: <b>1:1</b>		SHEET: <b>1</b> OF <b>1</b>	

4

3

2

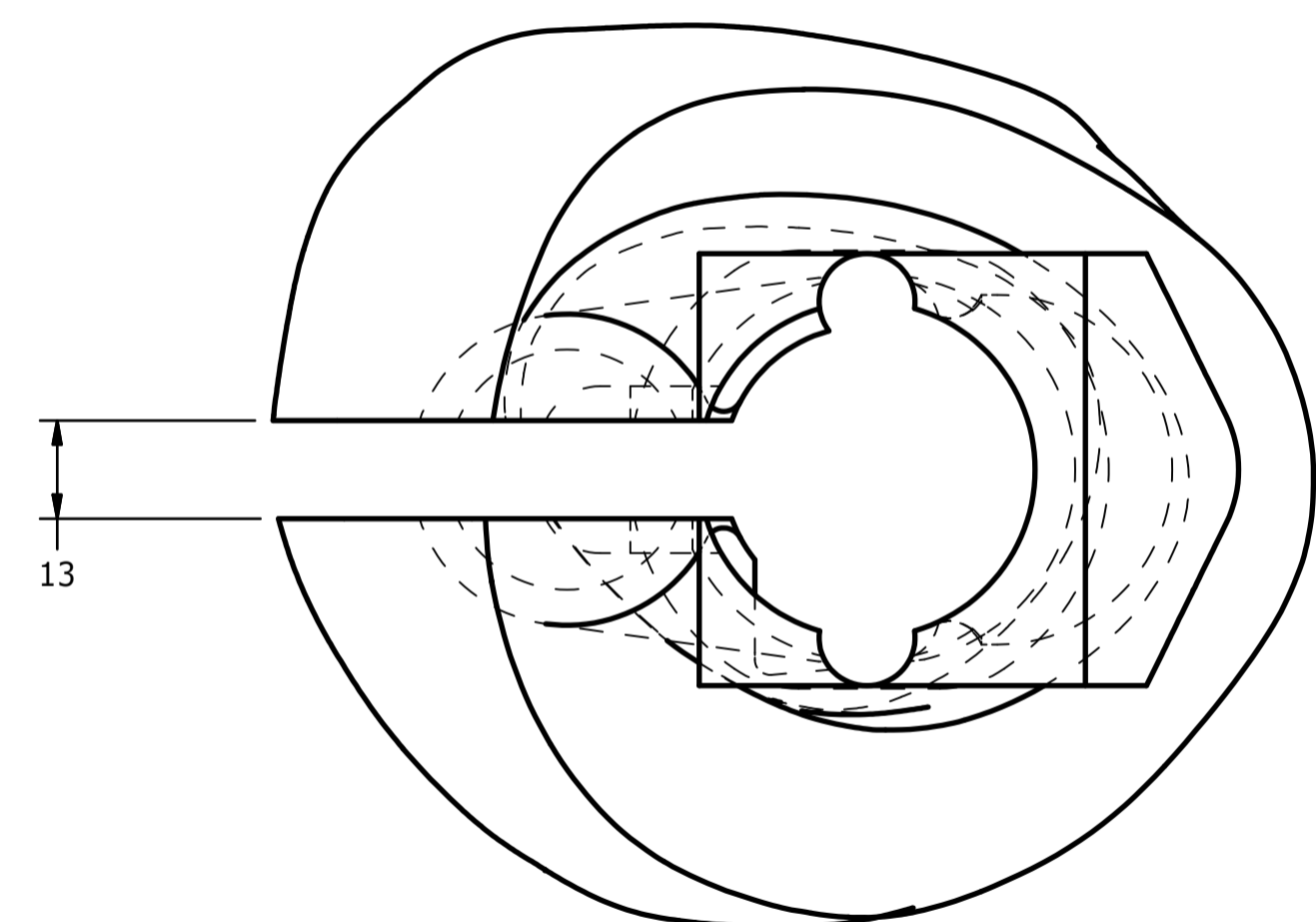
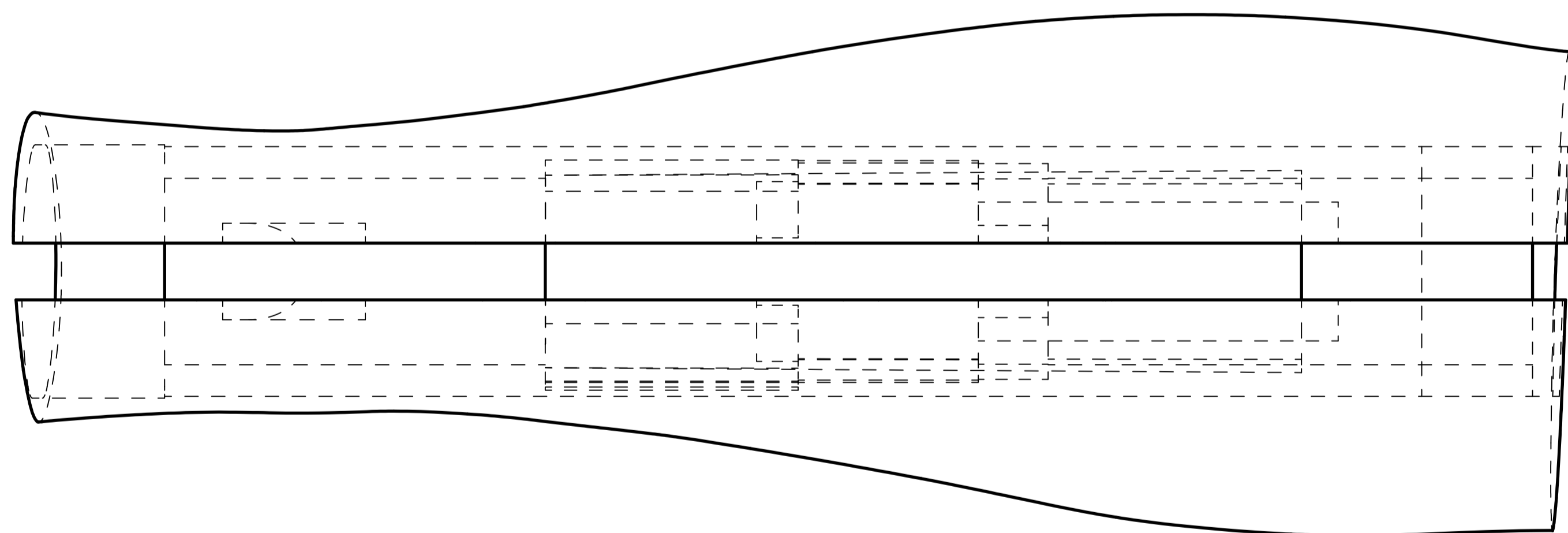
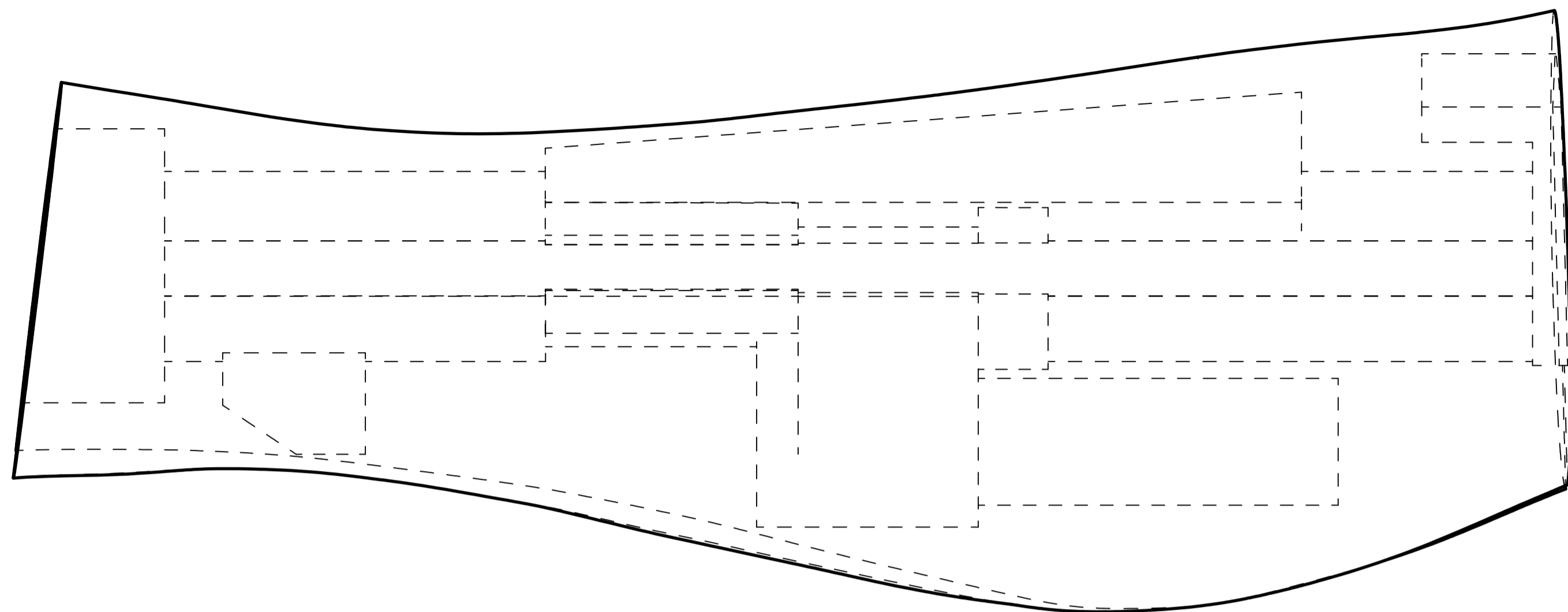
1

4

3

2

1



- UNLESS OTHERWISE SPECIFIED:  
 1. BREAK ALL SHARP EDGES.  
 2. PART TO BE MOLDED VINYL AND URETHANE FOAM.  
 3. TOTAL MASS: .63 ± .05 KG.  
 4. ATTACH ZIPPER TO CLOSE FLESH AT BACK.  
 5. EXTERNAL SHAPE DEFINED BY UMTRI 50TH PERCENTILE LOWER LEG.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DECIMAL: X ±.5 XX ±.2 XXX ±.1	MACHINED ±.05 ANGLES ±.5°	APPROVALS	DATE	LOWER LEG FLESH, RIGHT	
DO NOT SCALE DRAWING		DRAWN B. WADE	1/19/2009	THOR-M	
MATERIAL	HEAT TREAT N/A	ENG	APPROVED	SIZE A1	DRAWING NUMBER 472-7370-2
FINISH N/A				SCALE: 1:1	SHEET 1 OF 1

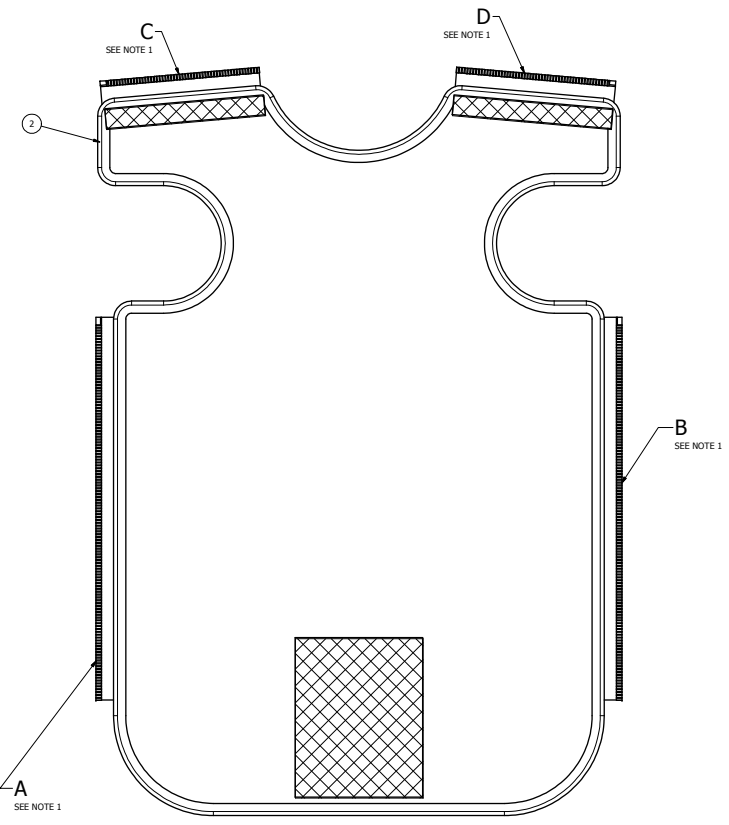
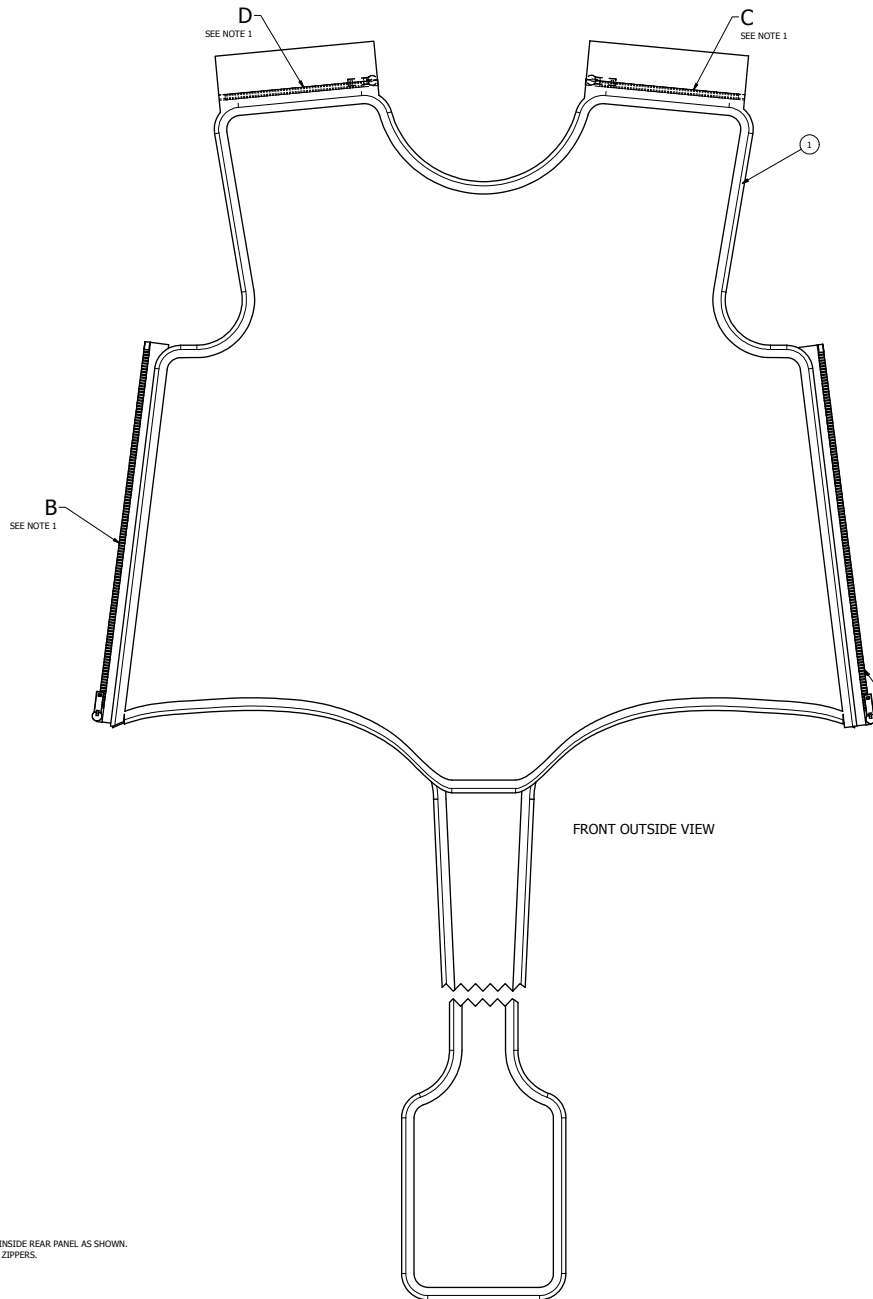
4

3

2

1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JW0000 RB1 AND CONVERTED TO METRIC FOR THOR-M	12/13/2011	BK
	B	UPDATE VIEWS TO SHOW CORRECTED ZIPPER DIRECTION	6/21/2012	BK



NOTES:  
 1. REMOVE ZIPPER HALF AND SEW TO THE INSIDE REAR PANEL AS SHOWN.  
 LETTERS INDICATE MATCHING SIDES OF ZIPPERS.

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	472-3951	REAR PANEL ASSEMBLY, JACKET
1	1	472-3910	FRONT PANEL ASSEMBLY, JACKET

PARTS LIST	
472-0000	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN SUPPLY	1

DO NOT SCALE DRAWING

ISSUES

APPROVED BY: [Signature]

DATE: 6/21/2012

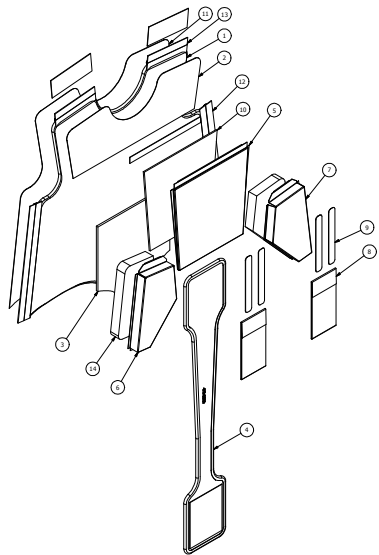
BY: J. WANG

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

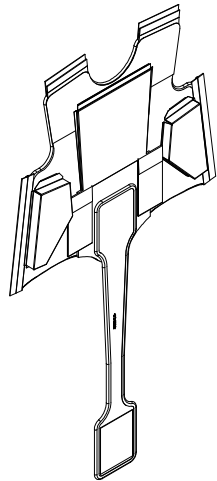
FRONT/REAR PANEL ASSEMBLY, JACKET

A11 of 1 472-3900 B

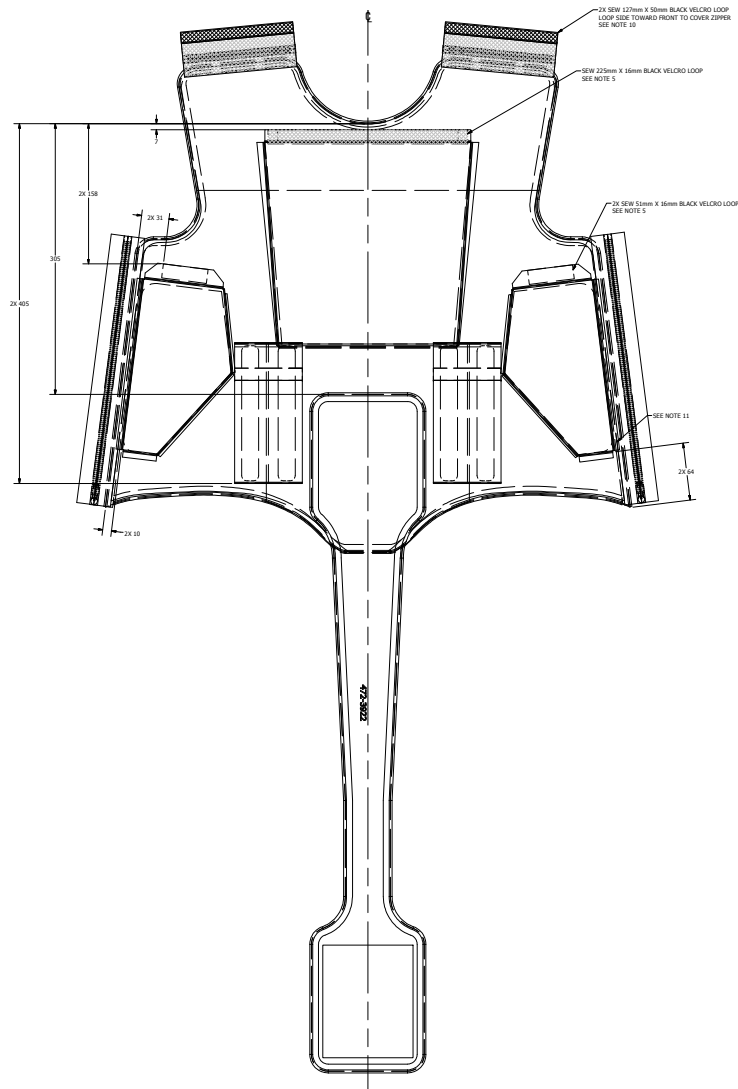
DATE	REV	DESCRIPTION	DATE	BY
	1	DESIGNED FROM PHOTO REF AND CONVERTED TO METERS FOR THIN	13/12/2013	BA
	2	DESIGN FOR 3D PRINTING AND 3D PRINT	28/02/14	BA
	3	SHOW SIDE ZIPPERS DIRECTION ZIPPING TO DOWNWARD DIRECTION	6/15/2012	BA



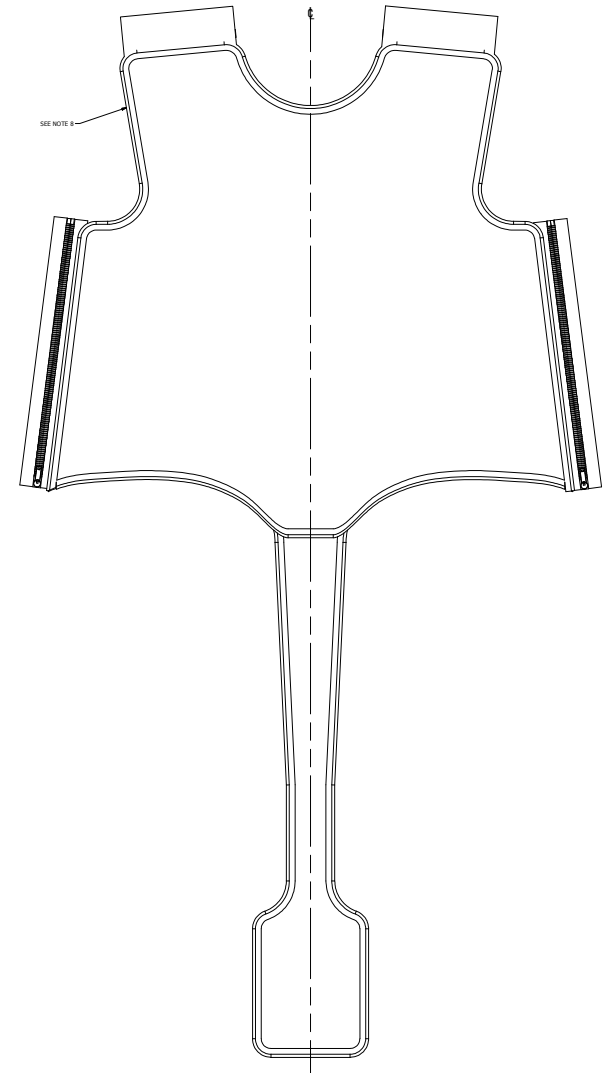
SCALE .250



SCALE .250



REAR VIEW



FRONT VIEW

NOTES

1. SEW COMPONENTS TO NEOPRENE WITH THE DARK (WINE COLOR) SIDE UP.
2. COROURA COMPONENTS ARE SEW WITH THE LAMINATED SIDE FACING DOWN.
3. SEW ABOBORN IN PLACE ALIGNED WITH BOTTOM EDGE AND CENTERED, STRETCH NEOPRENE TO FIT IF NECESSARY.
4. SEW SHOULDER PATCH IN PLACE; STRETCH NEOPRENE TO FIT IF NECESSARY.
5. SEW VELCRO INTO PLACE AS NOTED; CENTERED ACROSS.
6. SEW CHEST POCKET, LEFT & RIGHT FOAM POCKETS, AND LEFT & RIGHT STIFFENER POCKETS INTO PLACE AS SHOWN.
7. SEW ASSEMBLED NEOPRENE TO FRONT COROURA PANEL, STRETCH NEOPRENE WHERE NECESSARY.
8. TRIM EDGES WITH BIAS TAPE.
9. SEW ZIPPERS THRU ENTIRE ASSEMBLY MAKING SURE ZIPPER CLOSURE DIRECTION IS DOWNWARDS.
10. SEW VELCRO FLAPS AS NOTED.
11. INSERT SIDE FOAM, STEEL STIFFENERS, AND WEIGHTED RIB.

ITEM	QTY	PART NUMBER	DESCRIPTION
14	2	472-3919	UPPER SIDE FOAM
13	2	472-3917	FRONT PANEL SHOULDER ZIPPER, JACKET
12	2	472-3918	FRONT PANEL ZIPPER, JACKET
11	1	472-3912	FRONT OUTER PANEL PATTERN (COROURA)
10	1	472-3920	WEIGHTED RIB, JACKET
9	4	472-3929	STEEL STIFFENER, JACKET
8	2	472-3913	STIFFENER POCKET, JACKET
7	1	472-3915	UPPER RIGHT FOAM POCKET
6	1	472-3915-1	UPPER LEFT FOAM POCKET
5	1	472-3914	CHEST FOAM POCKET
4	1	472-3922	CRITCH STRAP ASSEMBLY, JACKET
3	1	472-3923	FRONT INTERIOR ABOBORN PATCH, JACKET
2	1	472-3927	FRONT INTERIOR SHOULDER PATCH
1	1	472-3911	FRONT INSIDE PANEL PATTERN (NEOPRENE)

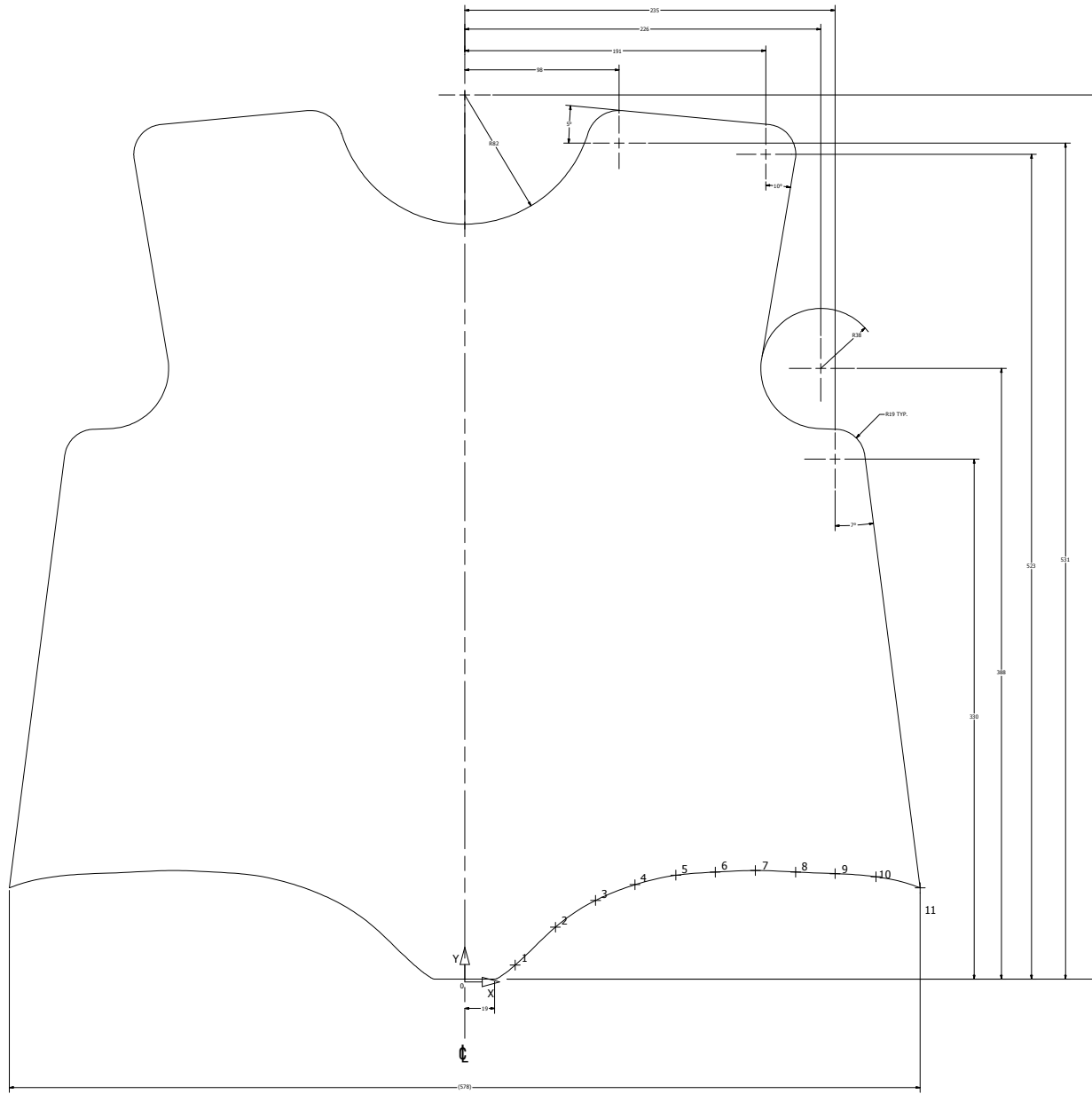
DATE	REV	DESCRIPTION	DATE	BY
	1	DESIGNED FROM PHOTO REF AND CONVERTED TO METERS FOR THIN	13/12/2013	BA
	2	DESIGN FOR 3D PRINTING AND 3D PRINT	28/02/14	BA
	3	SHOW SIDE ZIPPERS DIRECTION ZIPPING TO DOWNWARD DIRECTION	6/15/2012	BA

472-3910	FRONT PANEL ASSEMBLY, JACKET	1
TOTAL QTY IN BOMBY	1	

472-3910



REV#	REV	DESCRIPTION	DATE	BY
A	1	RECALCULATED FROM 17" DIA FITTED AND CONVERTED TO METRIC FOR THIS IN-ADD TOLERANCE AND DIMENSIONS TO NOTE, INDICATED WITH SMALLER THAN COORDINATE PANEL. SIZE: 6mm SMALLER	12/9/2011	BK
B	1	BLACK AND WHITE, REMOVE COLOR NUMBER IN NEOPRENE MATERIALS	6/28/2012	BK



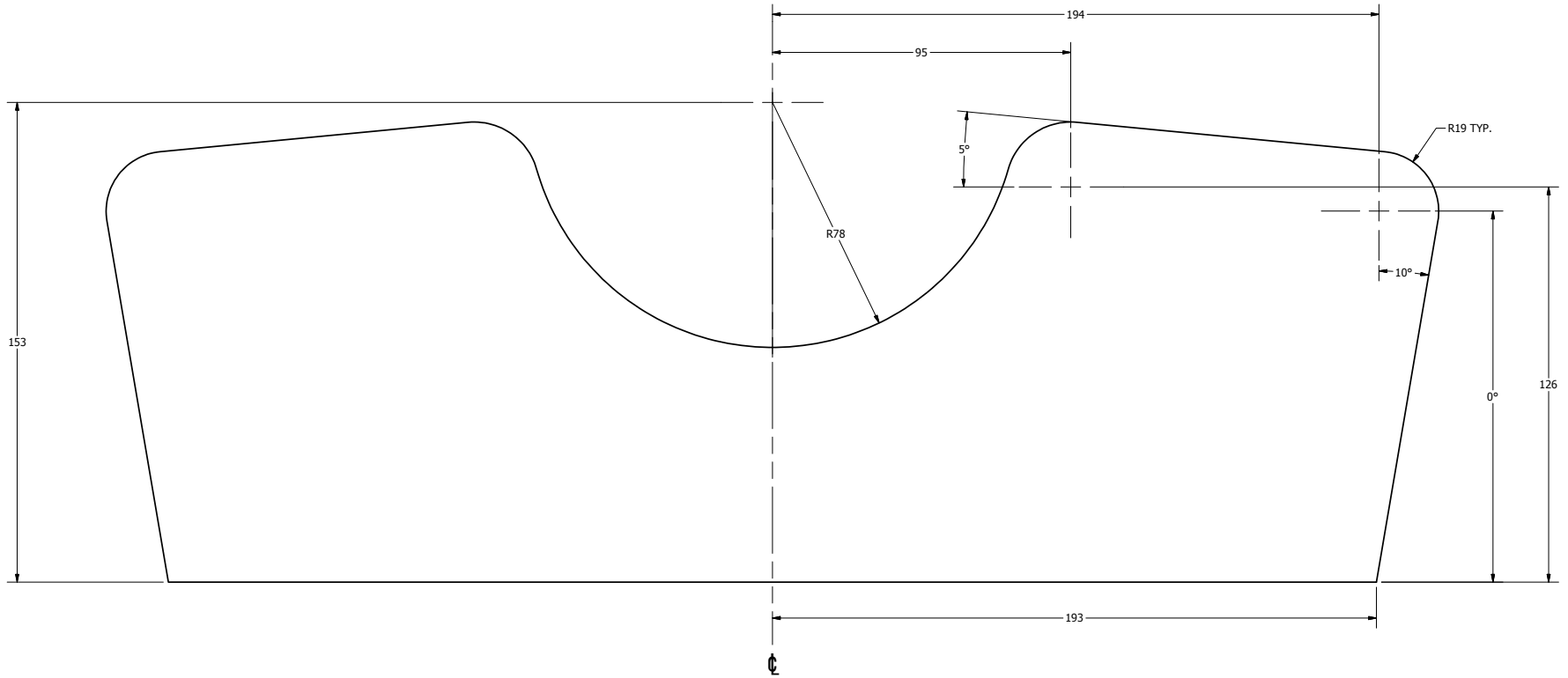
**TABLE 1**

POINT	X (+/- 0.5mm)	Y (+/- 0.5mm)
1	37	0
2	37.5	13
3	83	50
4	100	60
5	115	60
6	132	60
7	180	60
8	210	60
9	225	60
10	283	60
11	283	60

- NOTES:
1. MATERIAL: NEOPRENE G-221-N 3/16" (4.8mm) THICK WITH 2 SIDES OF NYLON (N-2-S), COLORS BLACK AND RED.
  2. PATTERN IS SYMMETRIC ABOUT  $\downarrow$ .
  3. TOLERANCE  $\pm 3mm$ , UNLESS OTHERWISE NOTED.
  4. CUT THIS PATTERN WITH THE RED COLOR SURFACE FACING UPWARDS.
  5. MARK PART NUMBER WITH PERMANENT MARKER ON RED COLORED SIDE.

		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DATE: 02/20/12 NEXT ASSEMBLY: 02/15/12	REV. NO.: 02 REV. DATE: 02/15/12	PART NAME: FRONT INSIDE PANEL PATTERN (NEOPRENE) QTY: 1	DRAWING NO.: 472-3911 SHEET NO.: 1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	12/9/2011	BK



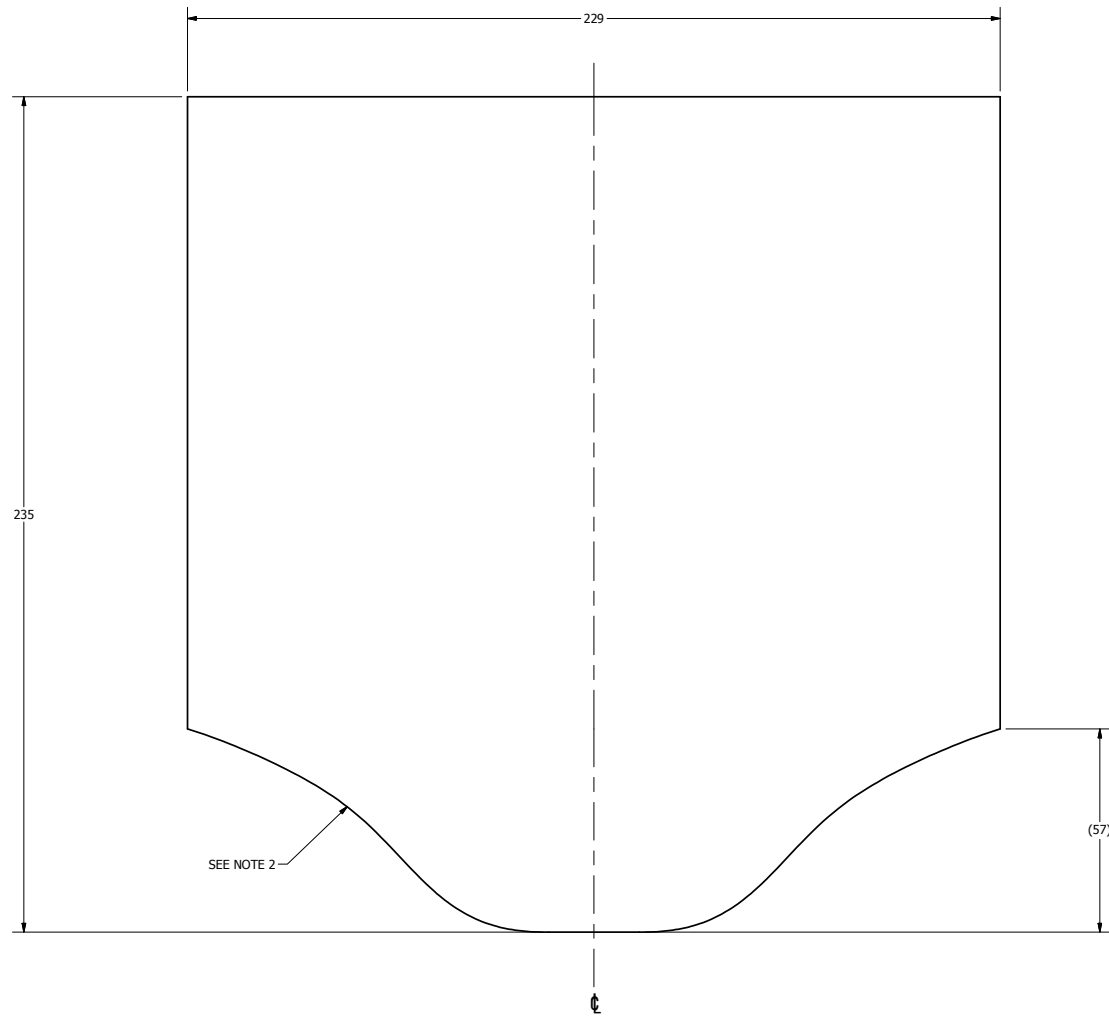
NOTES:

1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED.
2. PATTERN IS SYMMETRIC ABOUT  $\phi$ .
3. TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.
4. CUT THIS PATTERN WITH THE RED COLOR SURFACE FACING UPWARDS.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    DECIMALS    FRACTIONS 0.1    1/10    0.02    1/50 0.5    1/2    0.1    1/8 1.0    1    0.2    1/4 2.0    1/2    0.5    1/2 5.0    1    1.0    1 10.0    1    2.0    1 SHOW DIMENSIONS & BREAK SHARP EDGES		
ECO#	REV	DESCRIPTION	DATE	BY
472-3910	1	SEE NOTES	12/9/2011	B. KIMES
NEXT ASSEMBLY	QTY	PREPARED BY	DATE	APPROVED BY
TOTAL QTY IN DUMMY	1	J. WANG	1/11/2012	

FRONT INTERIOR SHOULDER PATCH  
 A21 of 1  
 1.000  
 472-3927

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF120 RB1 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 3	11/30/2011	BK



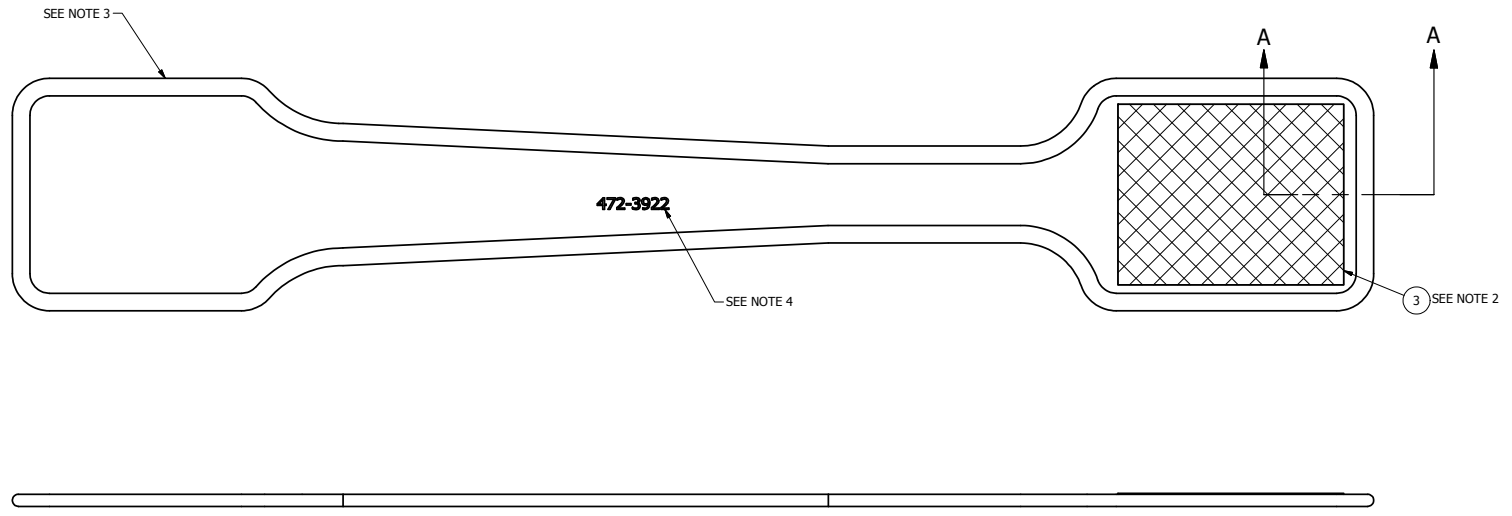
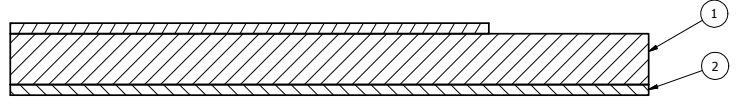
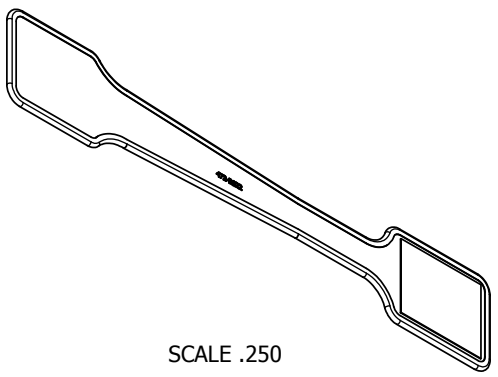
- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. SEE DRAWING 472-3912, TABLE 1, FOR RADIUS OF CURVATURE.
  3. TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.

A

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE IN HUNDRETHS FRACTIONS ARE IN SIXTEENTHS UNLESS OTHERWISE SPECIFIED		
472-3910	1	SEE NOTES	11/30/2011	FRONT INTERIOR ABDOMEN PATCH, JACKET
NEXT ASSEMBLY	QTY	BY	DATE	
TOTAL QTY IN DUMMY	1	J. WANG	1/11/2012	

A21 of 1  
472-3921

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF130 RB1 AND CONVERTED TO METRIC FOR THOR-M; REMOVE NOTES 4,5 AND RENUMBER	11/29/2011	BK



- NOTES:
1. PATTERN IS SHOWN WITH INSIDE (NEOPRENE) UP.
  2. SEW VELCRO LOOP, CENTERED AT AREA SHOWN, DIRECTLY TO NEOPRENE ONLY.
  3. CORDURA AND NEOPRENE LAYERS ARE SEWN TOGETHER AND LINED WITH RED BIAS TAPE. NEOPRENE IS TO BE STRETCHED TO 711mm DURING SEWING.
  4. MARK PART NUMBER (6.4mm CHARACTERS MIN.) WITH PERMANENT MARKER, WHERE SHOWN.

ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-3925	REAR CROTCH STRAP HOOK VELCRO
2	1	472-3924	OUTER CROTCH STRAP PATTERN, JACKET
1	1	472-3923	INNER CROTCH STRAP PATTERN, JACKET

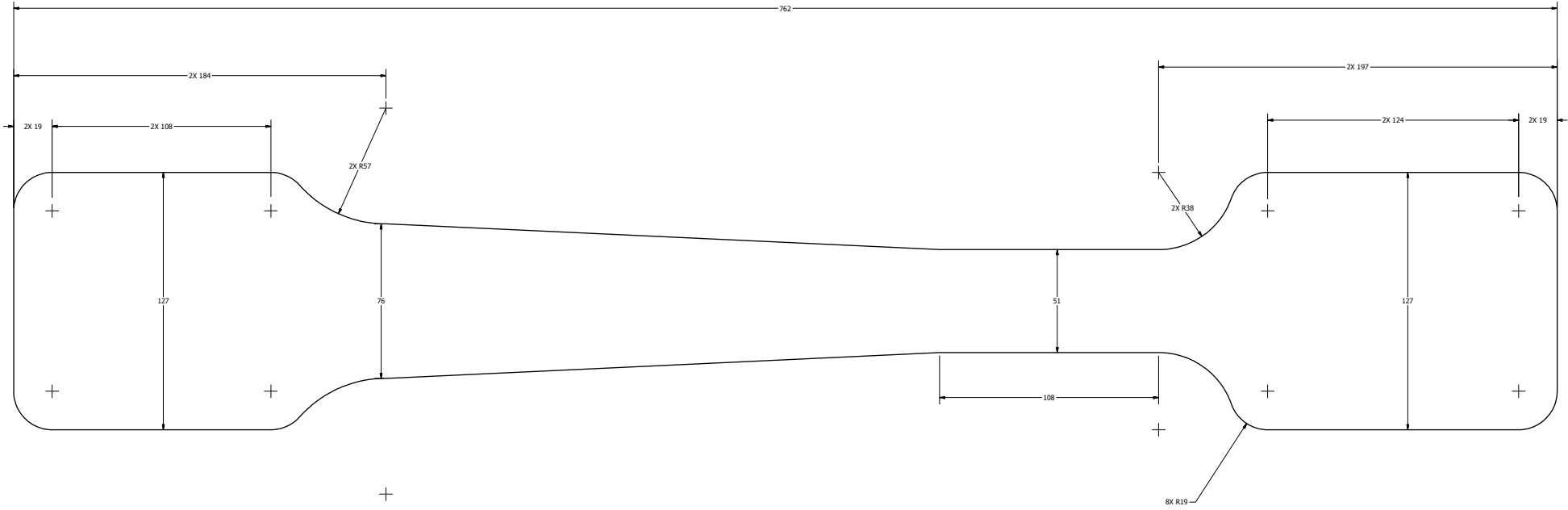
PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES	
		DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN MILLIMETERS DECIMALS    FRACTIONS    DECIMALS    FRACTIONS 0.1    1/16    0.25    1/4 0.5    1/2    0.75    3/4 1.0    1    1.5    1 1/2 2.0    2    3.0    3 4.0    4    5.0    5 6.0    6    8.0    8 10.0    10    12.0    12 15.0    1 1/2    20.0    2 25.0    2 1/2    30.0    3 40.0    4    50.0    5 75.0    7 1/2    100.0    10 150.0    15    200.0    20 300.0    30    400.0    40 500.0    50    1000.0    1000	
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION 		CROTCH STRAP ASSEMBLY, JACKET	
472-3910    1 NEXT ASSEMBLY    QTY TOTAL QTY IN DUMMY    1	DESIGNED BY: B. KIMES DATE: 11/29/2011 DRAWN BY: J. WANG DATE: 11/11/2012	CHECKED BY: [ ] DATE: [ ] APPROVED BY: [ ] DATE: [ ]	SHEET NO. 1 OF 1 SCALE: .500

472-3910	1				
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DUMMY	1				

472-3922

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JNF131 R81 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/29/2011	BK
	B	BLACK WAS WINE, REMOVE COLOR NUMBER IN NEOPRENE MATERIALS	6/12/2012	BK

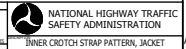


NOTES:

1. MATERIAL: NEOPRENE G-231-N 3/16" (4.8mm) THICKNESS, WITH 2 SIDES OF NYLON (N-2-S); COLORS BLACK AND RED.

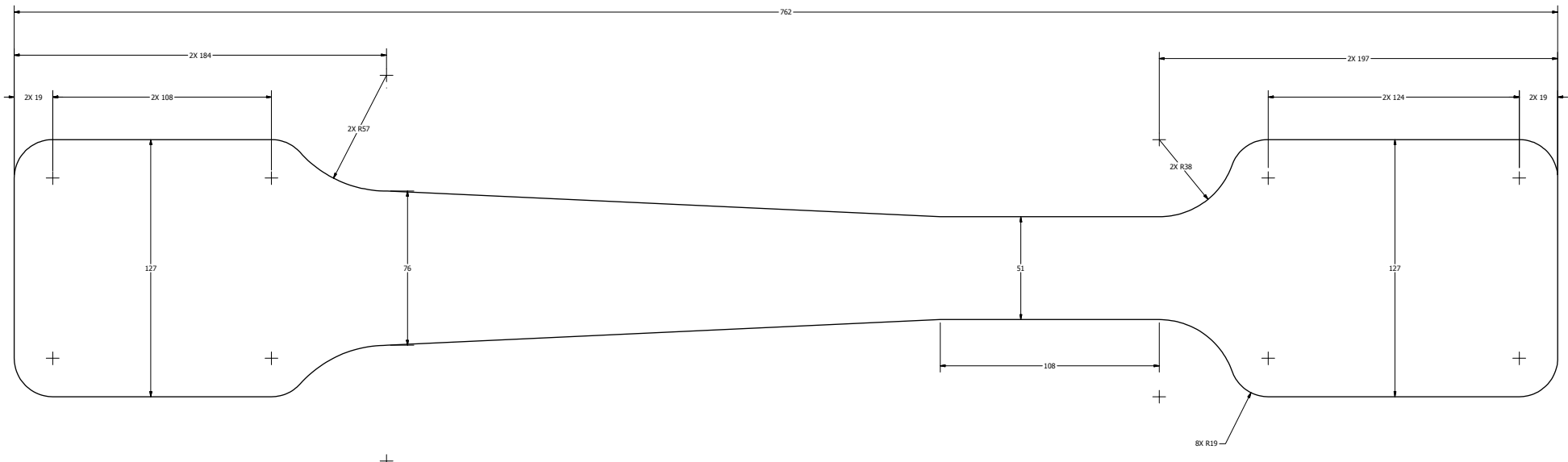
2. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3922	1	SEE NOTES	B. KIMES	11/29/2011	INNER CROTCH STRAP PATTERN, JACKET
NEXT ASSEMBLY	QTY				
TOTAL QTY IN DRAWING	1		J. WANG	6/12/2012	1.000



1 of 1  
472-3923

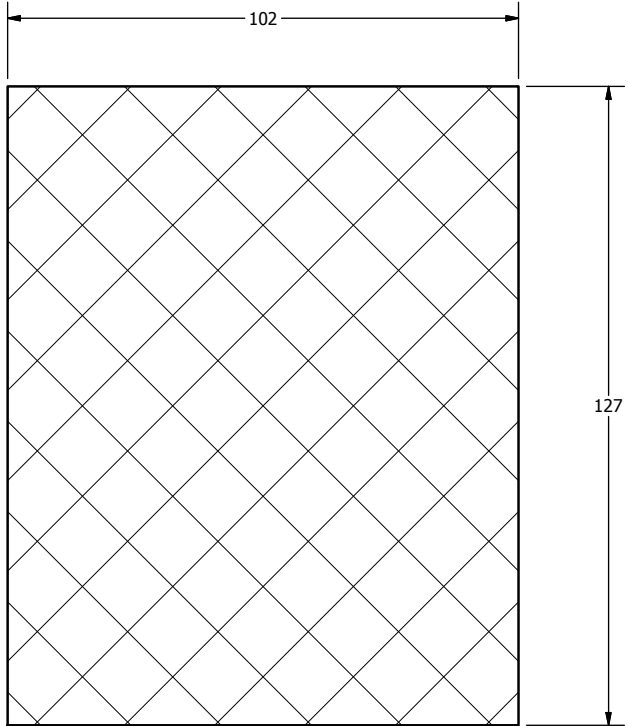
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM 11JNF132 R81 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/29/2011	BK



NOTES:  
 1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.  
 2. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3924		1 SEE NOTES		B. KIMES 11/29/2011	
NEXT ASSEMBLY		QTY		A11 of 1	
TOTAL QTY IN DRAWING		1		472-3924	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF133 RB0 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/29/2011	BK

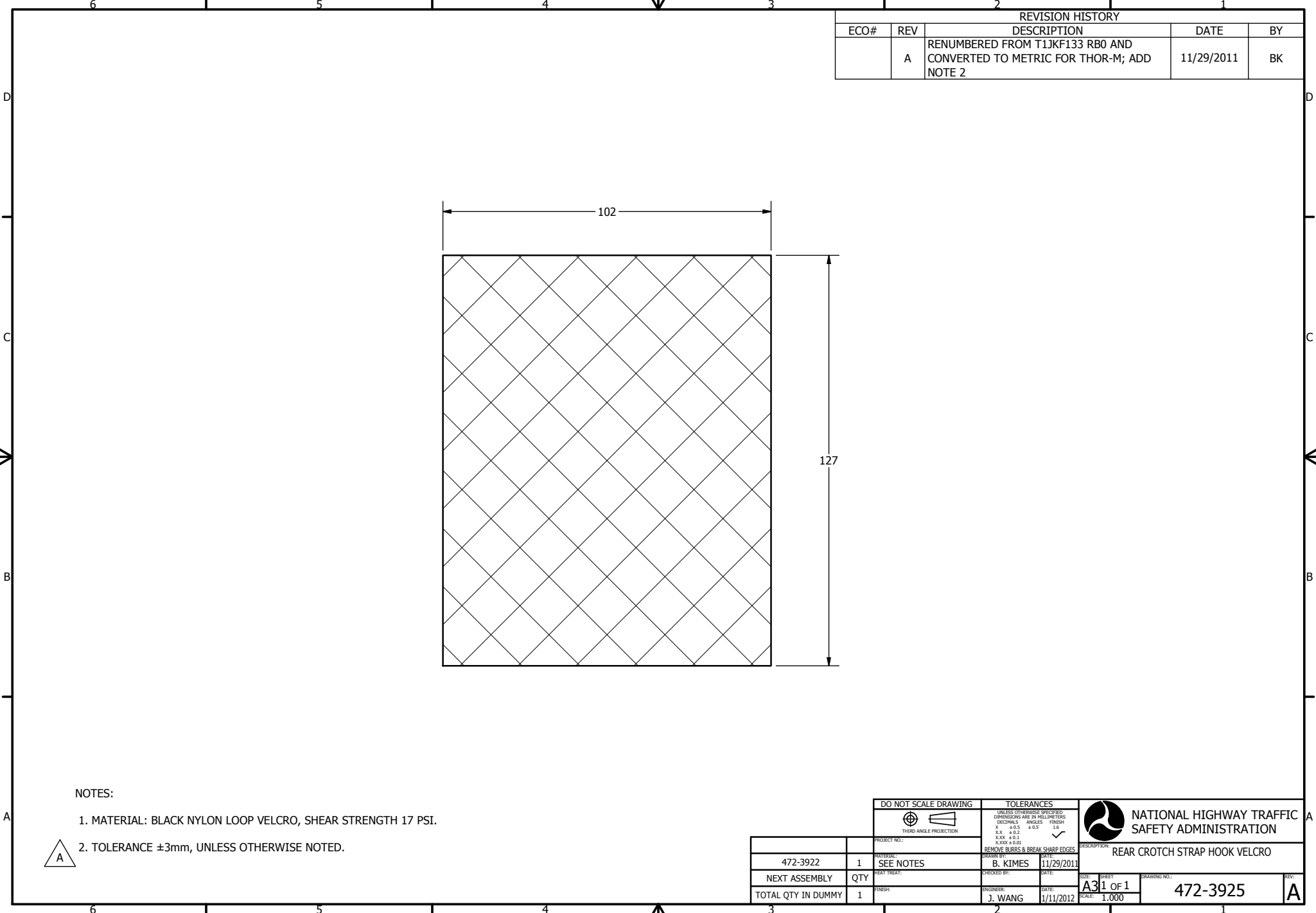


NOTES:

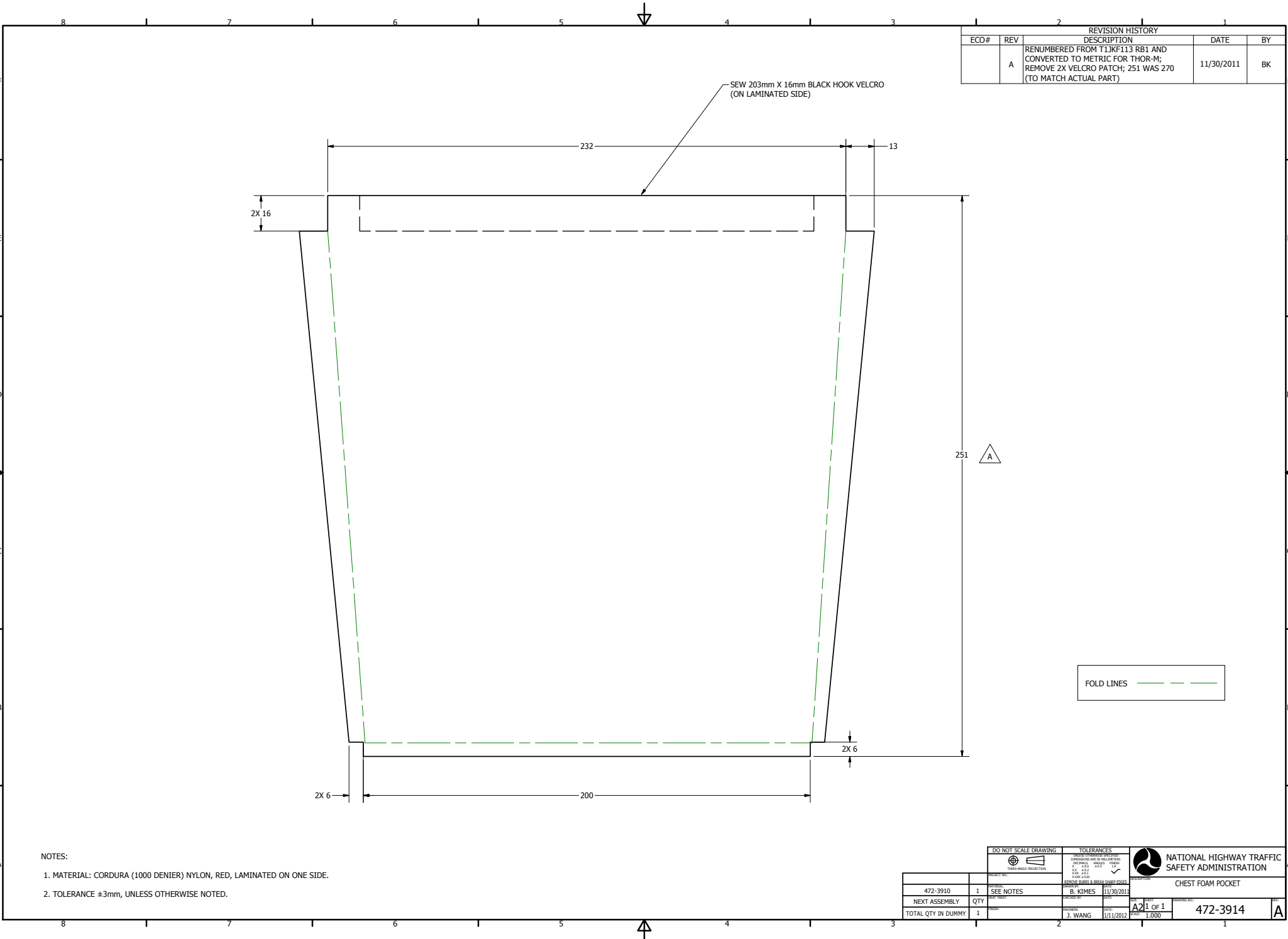
1. MATERIAL: BLACK NYLON LOOP VELCRO, SHEAR STRENGTH 17 PSI.
2. TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.05 0.05 1.6 XX 0.02 XXX 0.01 XXXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		PROJECT NO.: 472-3922		
MATERIAL: SEE NOTES		DRAWN BY: B. KIMES		DATE: 11/29/2011
NEXT ASSEMBLY QTY TOTAL QTY IN DUMMY 1		CHECKED BY: J. WANG		
		FINISH: NONE		SIZE SHEET A3 1 OF 1
		DRAWING NO.: 472-3925		REV: A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF113 RB1 AND CONVERTED TO METRIC FOR THOR-M; REMOVE 2X VELCRO PATCH; 251 WAS 270 (TO MATCH ACTUAL PART)	11/30/2011	BK

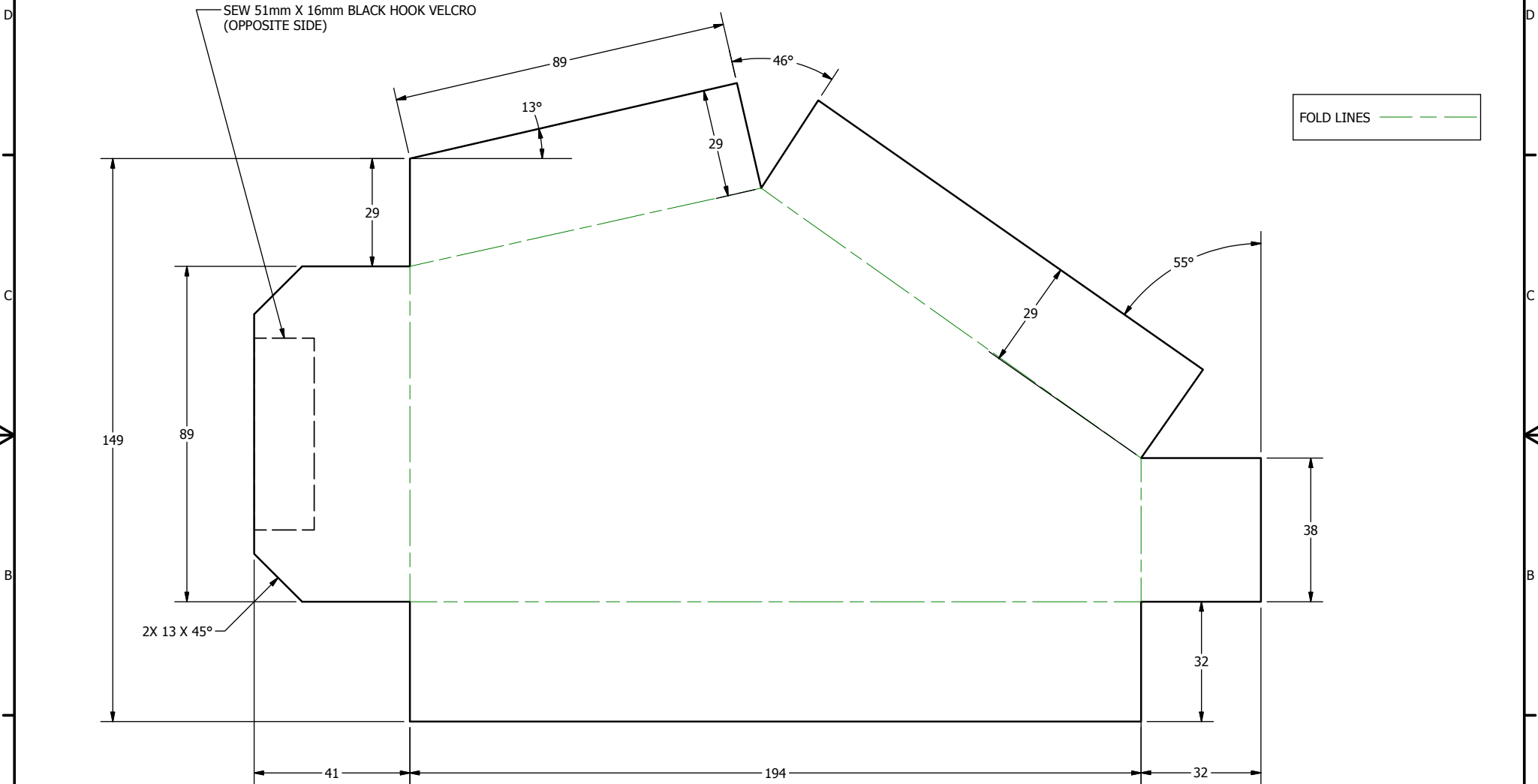


- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
472-3910		SEE NOTES		CHEST FOAM POCKET	
NEXT ASSEMBLY	QTY	DESIGNED BY	DATE	APPROVED BY	DATE
TOTAL QTY IN DUMMY	1	J. WANG	11/11/2012	AZ	11/30/2011
				1 of 1	472-3914
				1.000	

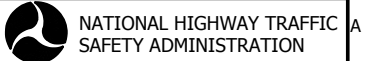


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF115 RB1 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 3	11/30/2011	BK



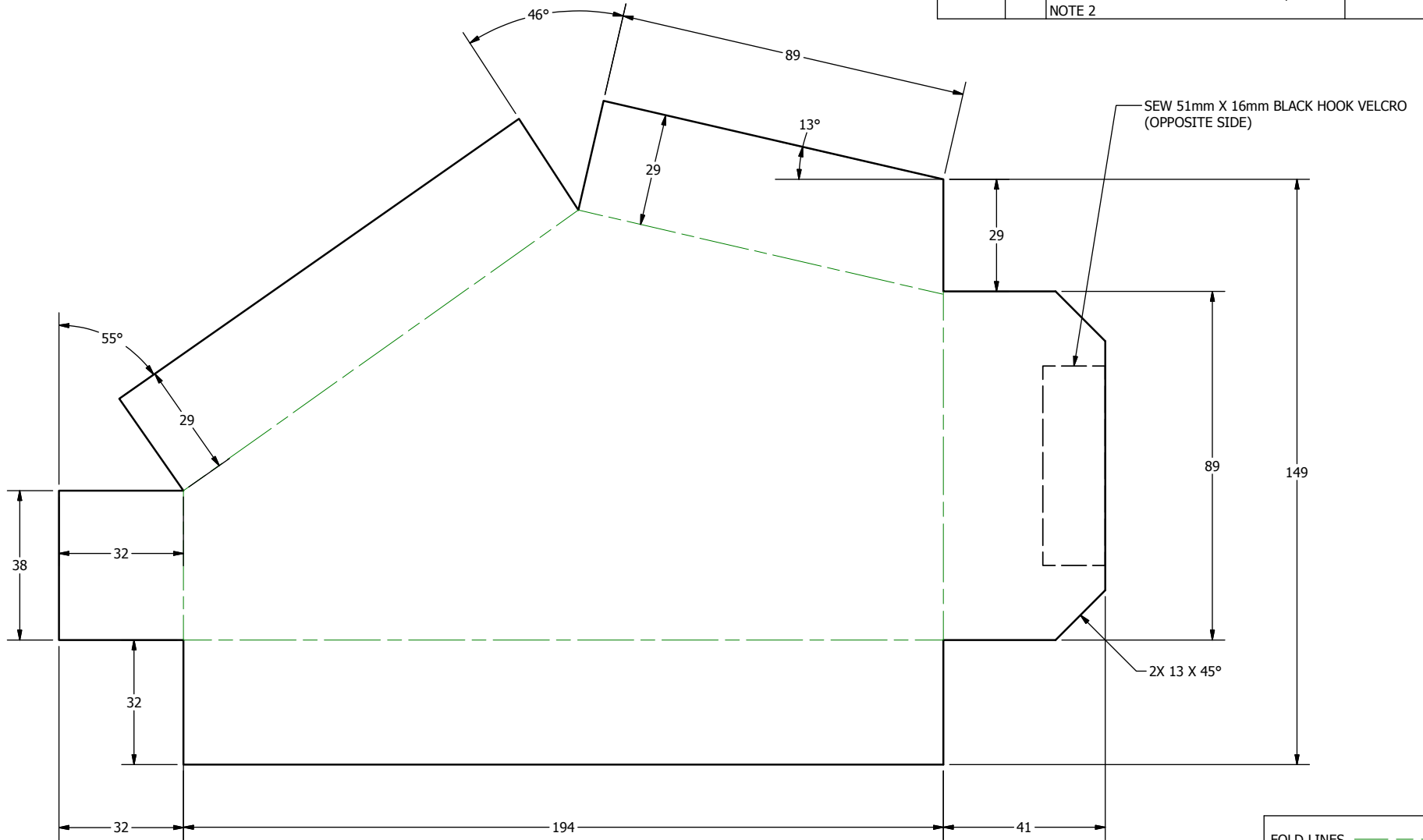
- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. CUT WITH LAMINATED SIDE DOWNWARDS.
  3. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING	TOLERANCES
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
	DECIMALS ANGLES FINISH
	X 0.0 ±0.1 1.6 ✓
	X.X ±0.2 ✓
	X.XX ±0.3 ✓
	X.XXX ±0.01 ✓
	REMOVE BURRS & BREAK SHARP EDGES



PROJECT NO.: 472-3910	DATE: 11/30/2011	DESCRIPTION: UPPER LEFT FOAM POCKET
MATERIAL: SEE NOTES	DESIGNED BY: B. KIMES	
HEAT TREAT:	CHECKED BY:	DATE:
TOTAL QTY IN DUMMY: 1	ENGINEER: J. WANG	DATE: 1/11/2012
	SCALE: 1:000	SIZE: A3 1 OF 1
		DRAWING NO.: 472-3915-1
		REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF114 RB1 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/30/2011	BK

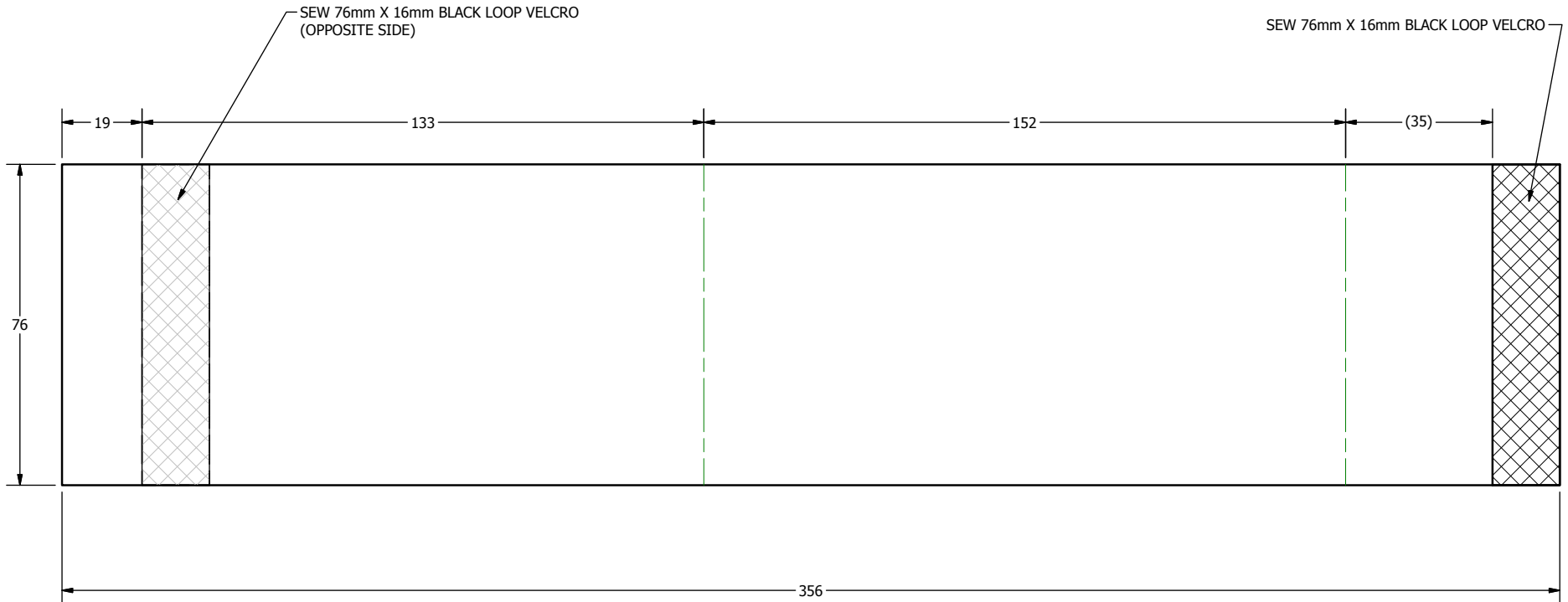


- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. CUT WITH LAMINATED SIDE DOWNWARDS.
  3. TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .001 X .001 1.6 X.X X .02 X .02 X.XX X .03 X .03 X.XXX X .01 X .01		
PROJECT NO.:	472-3910	MATERIAL:	SEE NOTES	DESCRIPTION:
DATE:	11/30/2011	DESIGNED BY:	B. KIMES	UPPER RIGHT FOAM POCKET
CHECKED BY:		DATE:		SIZE: SHEET
HEAT TREAT:		ENGINEER:	J. WANG	A31 OF 1
FINISH:		DATE:	1/11/2012	SCALE: 1.000
TOTAL QTY IN DUMMY	1			DRAWING NO. 472-3915-2



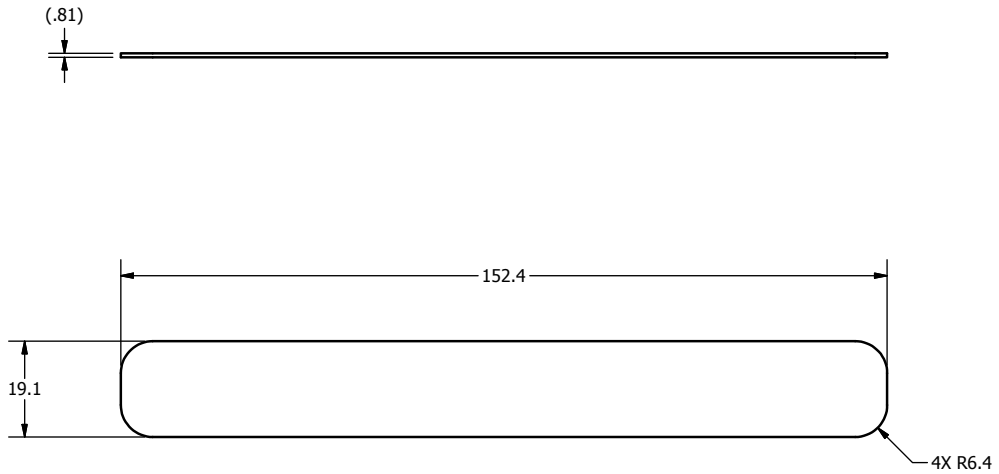
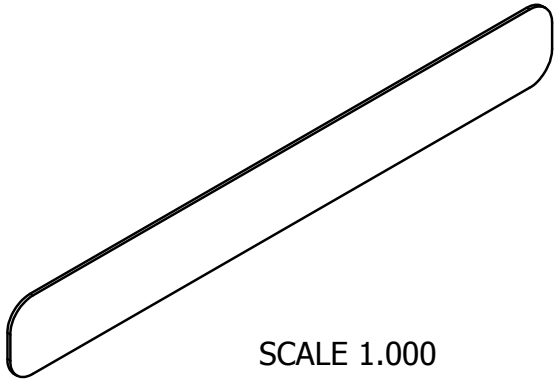
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF112 RB0 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/30/2011	BK



- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. TOLERANCE  $\pm 3$ mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>0.0 0.5 1.6</small> <small>X 0.2 0.5</small> <small>XX 0.3 1.6</small> <small>XXX 0.01</small> <small>REMOVE BURRS &amp; BREAK SHARP EDGES</small>		
PROJECT NO.:	472-3910	MATERIAL:	SEE NOTES	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	11/30/2011	STIFFENER POCKET, JACKET
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/11/2012	SCALE:
QTY	2	SIZE	A3	SHEET
TOTAL QTY IN DUMMY	2	SCALE	1 OF 1	1.000
		DRAWING NO.:	472-3913	REV.:
				A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKM010 R2 AND CONVERTED TO METRIC FOR THOR-M; REMOVE NOTES 2,3 AND RENUMBER	11/29/2011	BK



NOTES:

- MATERIAL: BLUE TEMPERED SPRING STEEL SHIM STOCK (GRADE 1095 Rc 48-51).
- APPLY POLYOLEFIN THIN WALLED TUBING (SHRINK WRAP) AROUND SHIM. (I.D 12.7mm)



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ±0.5 ±0.5 16 XX ±0.2 XXX ±0.3 XXXX ±0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO:	472-3910	MATERIAL:	SEE NOTES	DESCRIPTION: STEEL STIFFNER, JACKET
CHECKED BY:	B. KIMES	DATE:	11/29/2011	SCALE: 1.000
HEAT TREAT:		ENGINEER:	J. WANG	DRAWING NO: 472-3926
TOTAL QTY IN DUMMY:	4	FINISH:		DATE: 1/11/2012



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

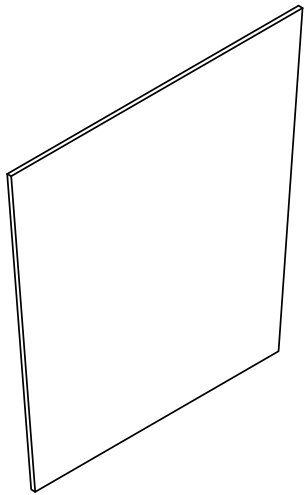
DESCRIPTION: STEEL STIFFNER, JACKET

SIZE: A3  
SHEET: 1 OF 1  
SCALE: 1.000

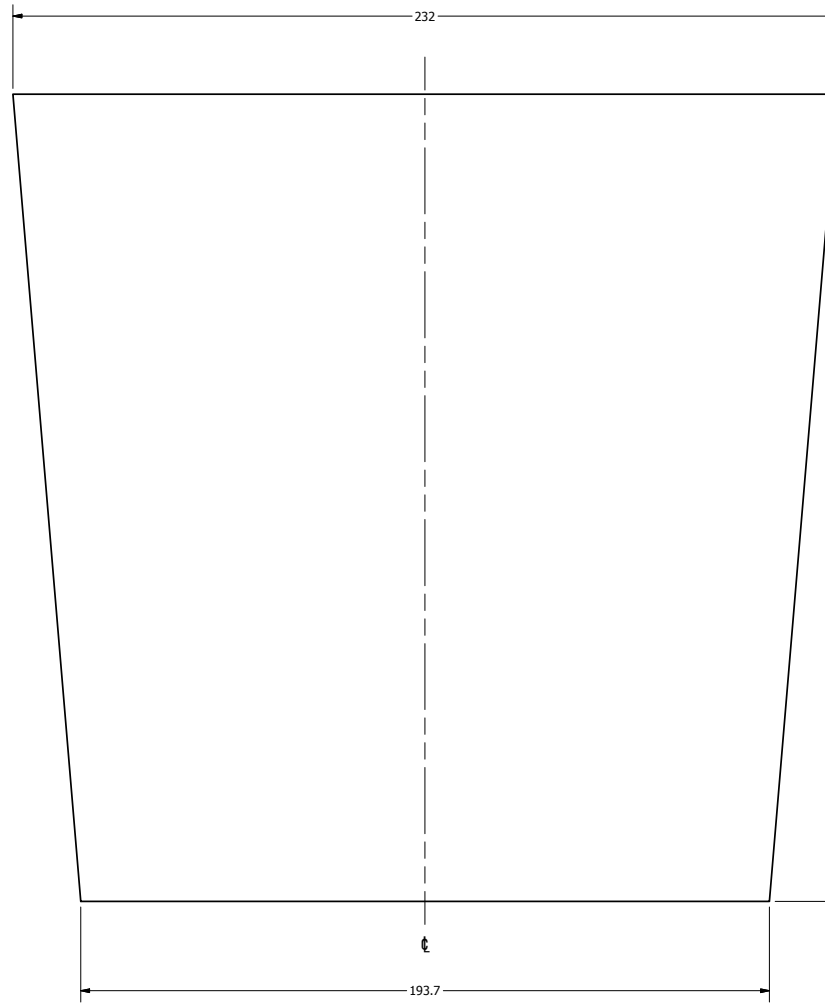
DRAWING NO: 472-3926

REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF119 RB2 AND CONVERTED TO METRIC FOR THOR-M; 227 WAS 231 (TO MATCH ACTUAL PART); ADD NOTE 3	11/29/2011	BK



SCALE .500



SEE NOTE 2

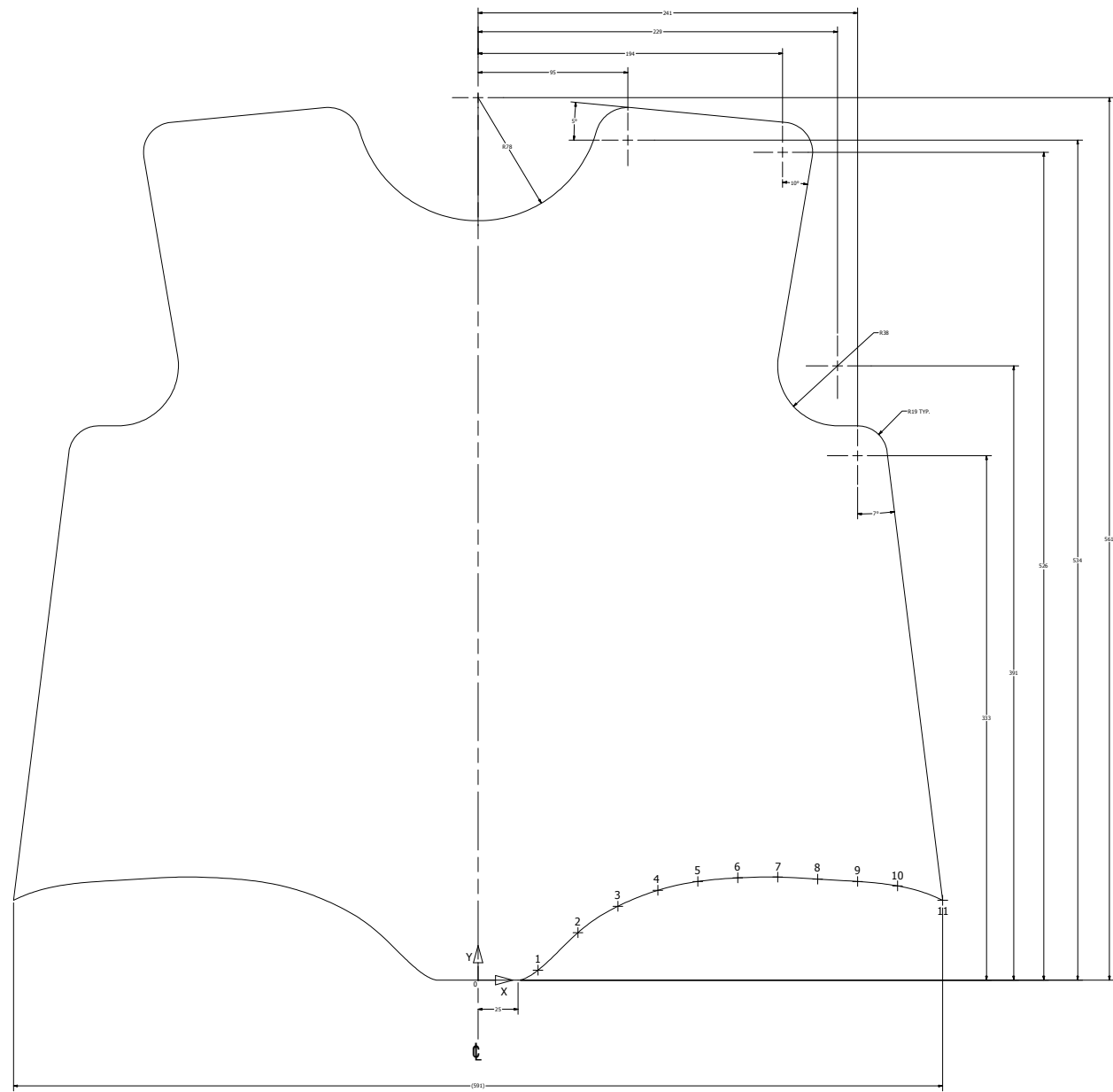
NOTES:

1. MATERIAL: WEIGHTED ACOUSTICAL SOUND CONTROL MATTING.  
3.2±.5mm (1/8") THICK WITH 6.4mm THICK OPEN CELL FOAM BACKING.
2. REMOVE AND DISCARD 6.4mm FOAM BACKING FROM MATTING.
3. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		DECIMAL FRACTIONS: UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS: .1 .2 .5 .6 .8 1.0 1.5 2.0 3.0 4.0 5.0 FRACTIONS: 1/8 1/4 3/8 1/2 5/8 3/4 7/8 1 1 1/4 1 1/2 1 3/4 2 2 1/4 2 1/2 3 3 1/4 3 1/2 4 4 1/4 4 1/2 5 5 1/4 5 1/2 6 6 1/4 6 1/2 7 7 1/4 7 1/2 8 8 1/4 8 1/2 9 9 1/4 9 1/2 10 ANGLES: UNLESS OTHERWISE SPECIFIED ANGLES: 15 30 45 60 90 120 150 180 SHOW DIMENSIONS & BREAK SYMBOLS		
472-3910	1	SEE NOTES	B. KIMES	11/29/2011
NEXT ASSEMBLY	QTY	BY	DATE	APPROVED BY
TOTAL QTY IN DUMMY	1	J. WANG	11/11/2012	A21 of 1
				472-3920

REV#	REV	DESCRIPTION	DATE	BY
A		RENUMBERED FROM TYP 1111111 AND CONVERTED TO METRIC FOR THOR-PL ADD TOLERANCE AND CHANGE TO NOTE	11/30/2011	BK



**TABLE 1**

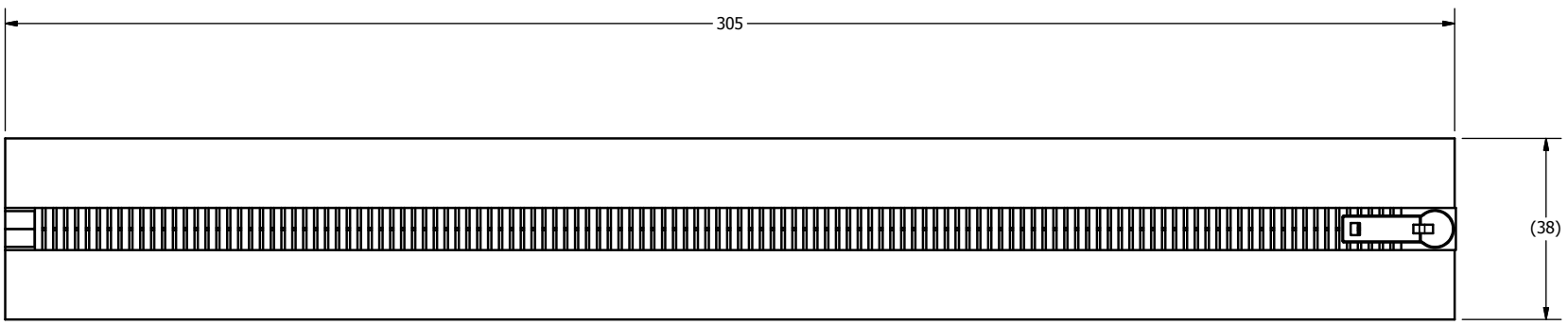
POINT	X (±.5mm)	Y (±.5mm)
1	96	6
2	83.5	35
3	82	47
4	112	57
5	106	57
6	105	55
7	102.5	53.5
8	215	54
9	215	53
10	282	56
11	282	51

NOTES:  
 1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.  
 2. PATTERN IS SYMMETRIC ABOUT C.  
 3. TOLERANCE ±.3mm, UNLESS OTHERWISE NOTED.

REV#	REV	DESCRIPTION	DATE	BY
A		RENUMBERED FROM TYP 1111111 AND CONVERTED TO METRIC FOR THOR-PL ADD TOLERANCE AND CHANGE TO NOTE	11/30/2011	BK

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 TYP 1111111  
 NEXT ASSEMBLY CITY: [ ]  
 TOTAL QTY IN BOMBY: 1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF117 RB2 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/30/2011	BK



NOTES:

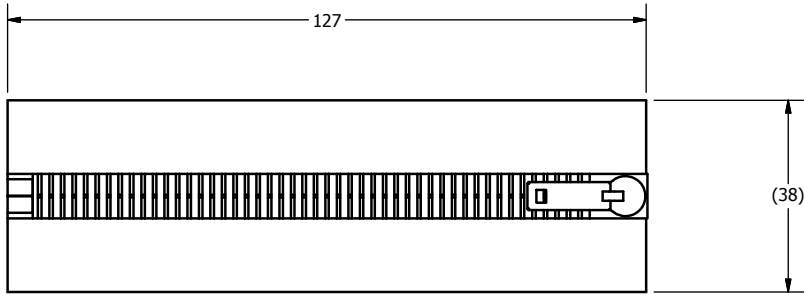
- 304.8 (12"), BLACK, BRASS ZIPPER  
YKK, MODEL #MGM0L-106 DA G 3/4 OR EQUIVALENT.
- TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .005 16 X.X ± 0.2 X.XX ± 0.3 X.XXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-3910	MATERIAL:	SEE NOTES	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	11/30/2011	FRONT PANEL ZIPPER, JACKET
CHECKED BY:	J. WANG	DATE:	1/11/2012	SIZE: A3
HEAT TREAT:		FINISH:		SHEET: 1 OF 1
TOTAL QTY IN DUMMY	2	SCALE:	1:000	DRAWING NO. 472-3918

A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF116 RB2 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/30/2011	BK



NOTES:

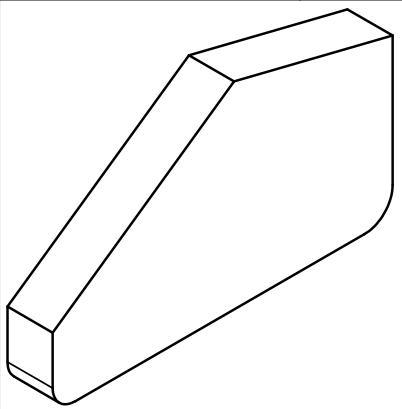
1. 127.0 (5"), BLACK, BRASS ZIPPER  
YKK, MODEL #MGM0L-106 DA G 3/4 OR EQUIVALENT.
2. TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.



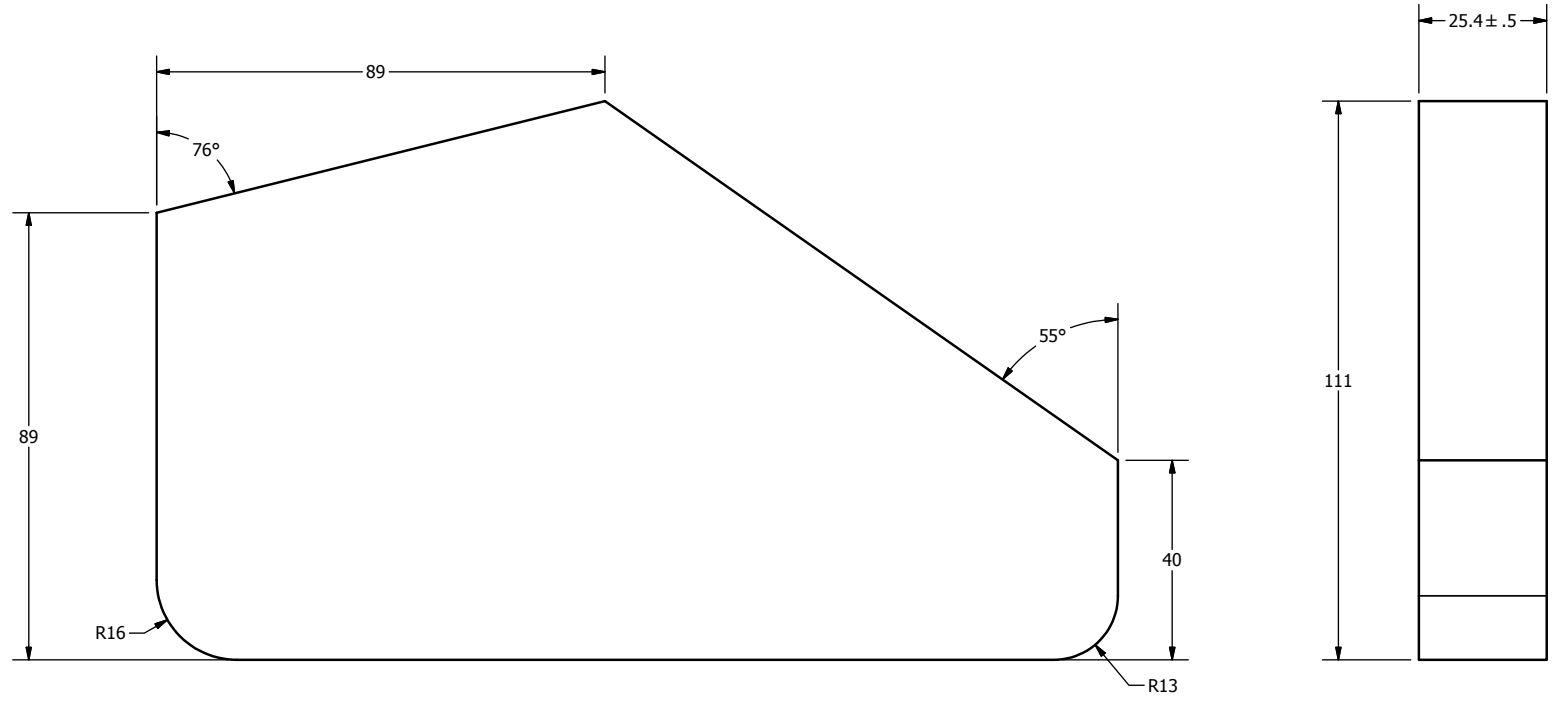
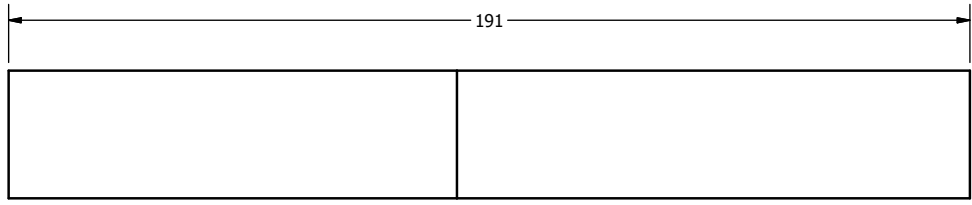
DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X .05 ± 0.5° 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-3910	MATERIAL:	SEE NOTES	DESCRIPTION: FRONT PANEL SHOULDER ZIPPER, JACKET
CHECKED BY:	B. KIMES	DATE:	11/30/2011	
HEAT TREAT:		ENGINEER:	J. WANG	SIZE: A3 SHEET: 1 OF 1 SCALE: 1.000
FINISH:		DATE:	1/11/2012	DRAWING NO.:
TOTAL QTY IN DUMMY	2	REV:		472-3917



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF118 RB2 AND CONVERTED TO METRIC FOR THOR-M; REMOVE RADIUS AND OBSOLETE -1/-2 VERSIONS; ADD NOTE 2	2/8/2012	BK



SCALE .500



- NOTES:
1. MATERIAL: #6 CHARCOAL POLYESTER FOAM OR EQUIVALENT.
  2. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.

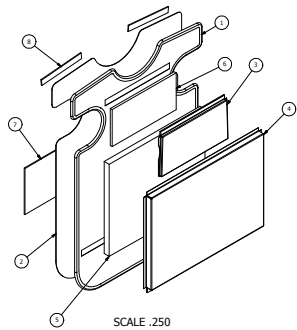


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 0.5° 1.6 X.X ±0.2 X.XX ±0.3 X.XXX ±0.01		
PROJECT NO:	472-3910	MATERIAL:	SEE NOTES	DESCRIPTION:
CHECKED BY:	B. KIMES	DATE:	2/8/2012	UPPER SIDE FOAM
HEAT TREAT:		ENGINEER:	J. WANG	DATE:
FINISH:		DATE:	1/11/2012	SCALE:
TOTAL QTY IN DUMMY		QTY	2	SIZE SHEET
		SCALE:	1.000	DRAWING NO.
				472-3919
				REV: A

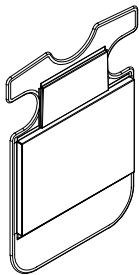
A31 OF 1

472-3919

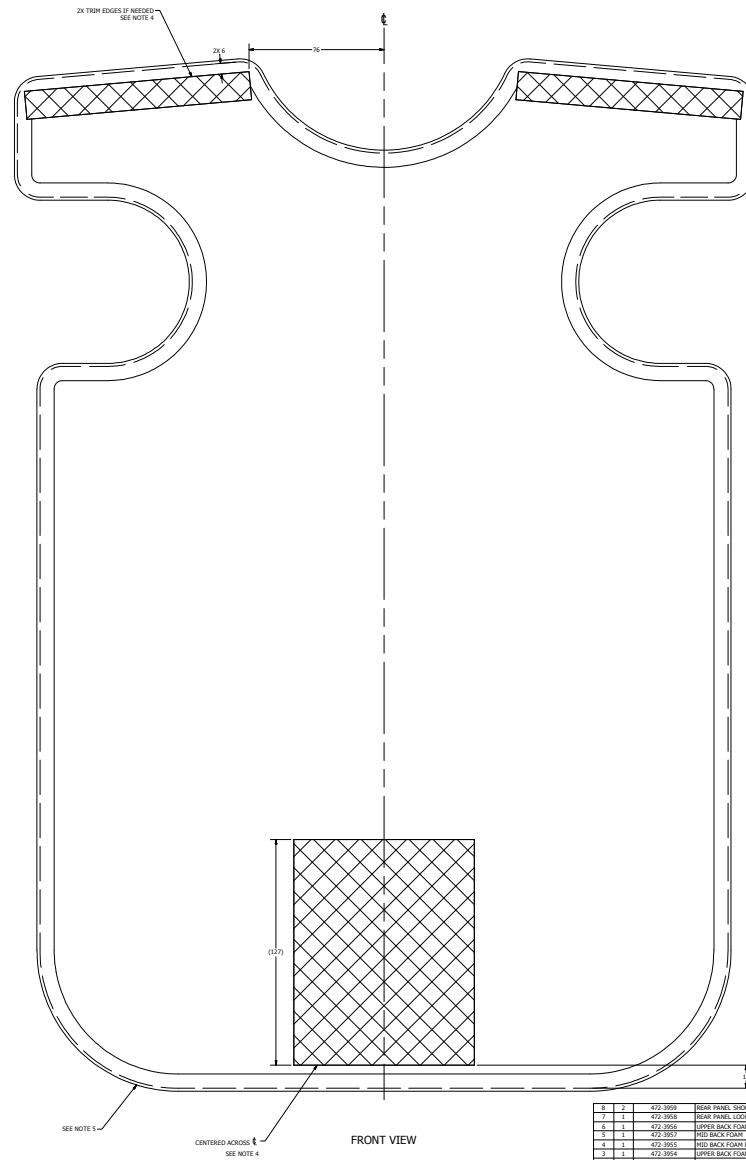
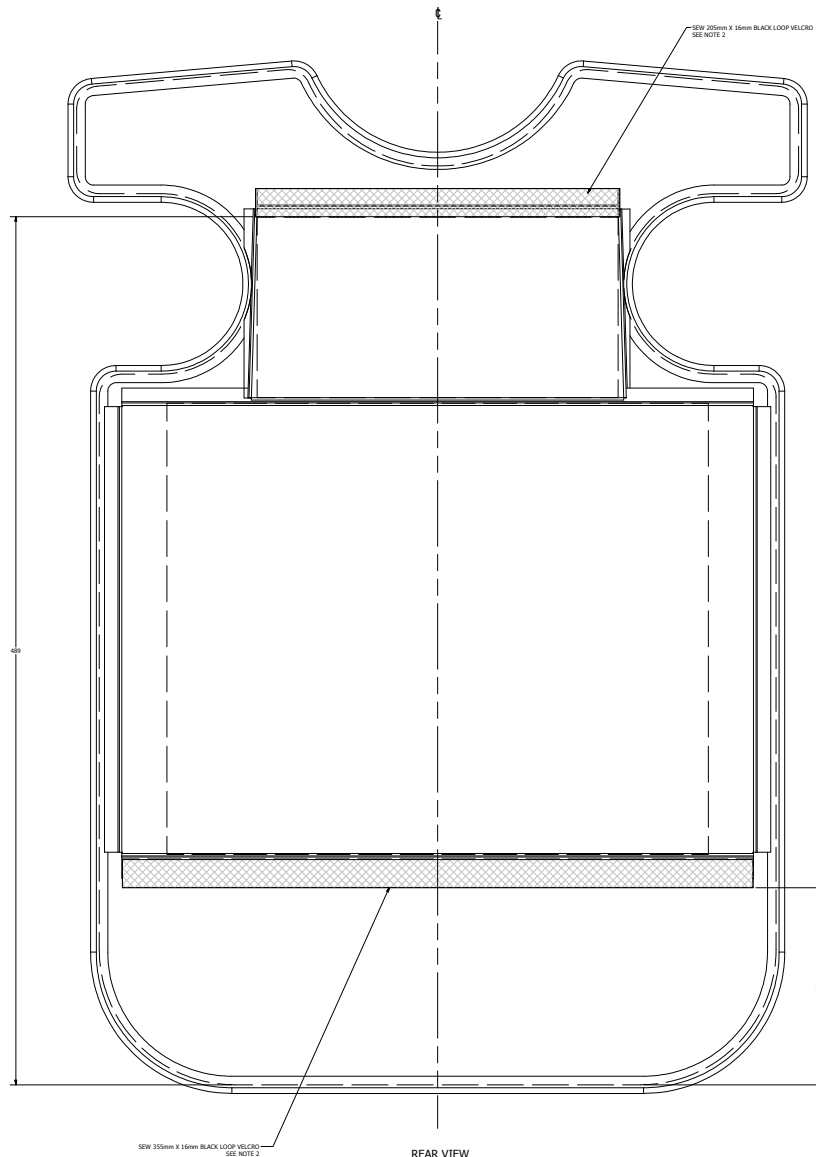
A



SCALE .250



SCALE .250

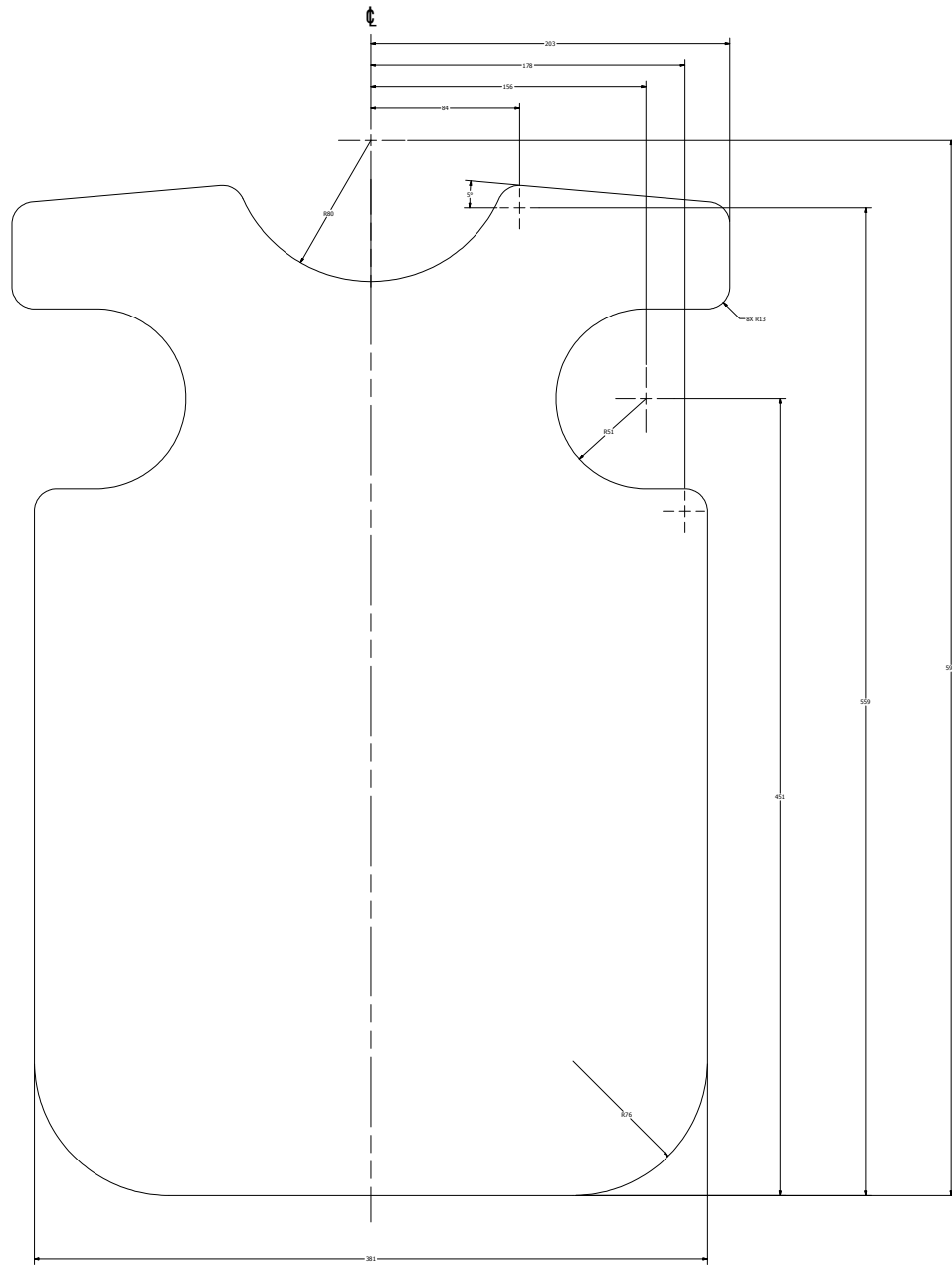


- NOTES:
- JACKET PATTERNS SHOWN WITH INSIDE (DARK SIDE) FACING UP.
  - SEW INSIDE VELCRO STRIPS AS NOTED.
  - SEW POCKETS AS SHOWN, WITH LAMINATED SIDE FACING DOWN.
  - SEW VELCRO TO FRONT COROURA PANEL BEFORE SEWING PANEL TO NEOPRENE.
  - AFTER SEWING VELCRO AND POCKETS, ASSEMBLE OUTSIDE COROURA PANEL ON THE OUTER SURFACE (BRIGHT SIDE) OF THE NEOPRENE WITH LAMINATED SIDE DOWN, STRETCH NEOPRENE TO COLOURA PROFILE, AND SEW ALONG EDGE WITH 1/8" BIAS TAPE.
  - DIMENSIONS ARE BEFORE BIAS TAPE IS SEWN IN, FROM NEOPRENE PANEL.
  - AFTER SEWING, INSERT FOAM PANELS INTO POCKETS.

ITEM	QTY	PART NUMBER	DESCRIPTION
8	2	472-3959	REAR PANEL SHOULDER HOOK VELCRO
7	2	472-3958	REAR PANEL LOOP VELCRO
6	1	472-3956	UPPER BACK FOAM
5	1	472-3957	MID BACK FOAM
4	1	472-3955	LOWER BACK FOAM
3	1	472-3954	UPPER BACK FOAM POCKET
2	1	472-3953	LOWER BACK FOAM POCKET
1	1	472-3952	INSIDE REAR PANEL PATTERN

		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
472-3950	REV	48-3980	REV
REAR ASSEMBLY	QTY	472-3951	REV
TOTAL QTY IN BOMBY	1	472-3951	REV

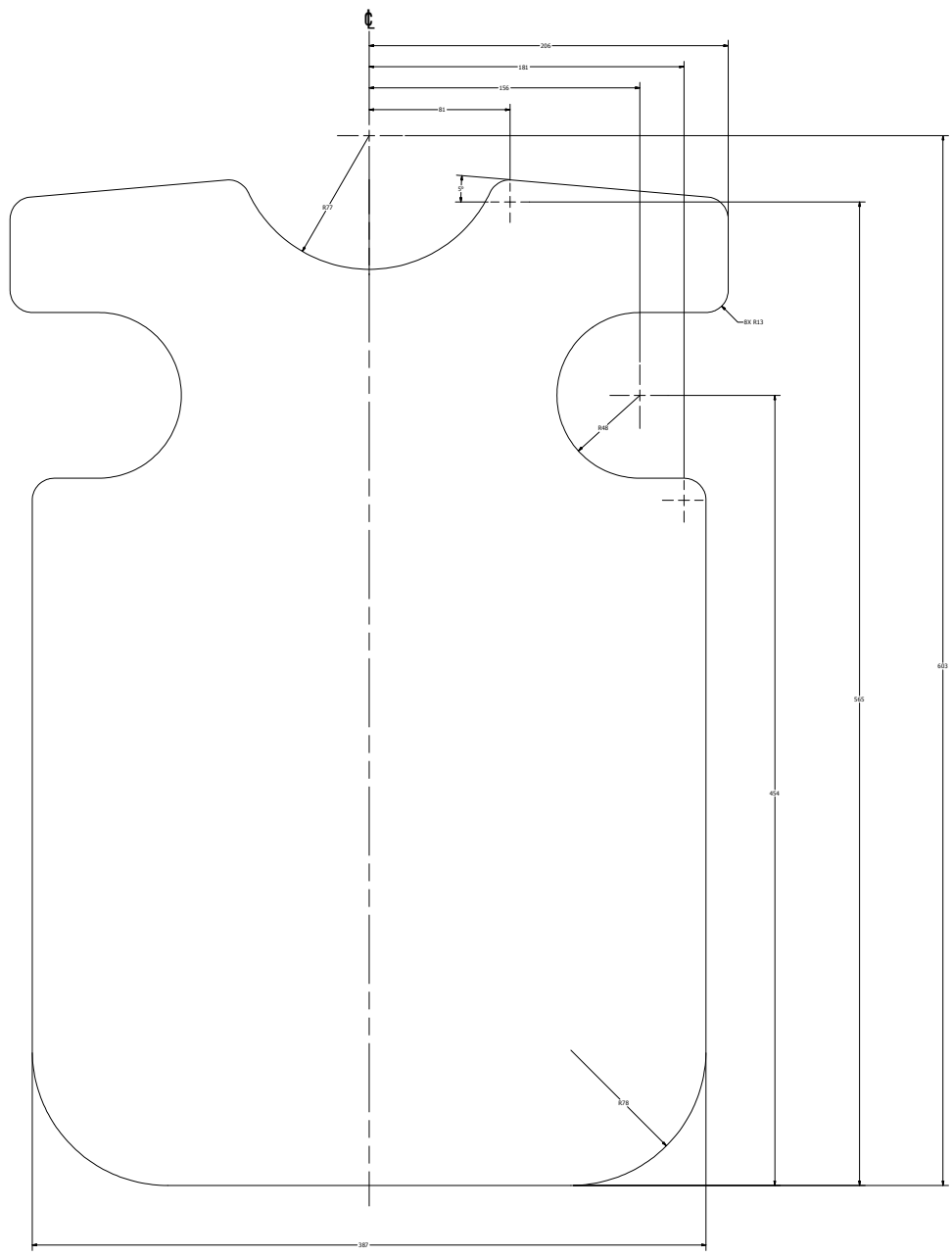
REVISION HISTORY		DATE	BY
REV	DESCRIPTION		
A	REPLACED FROM TYPED SET AND CONVERTED TO METRIC FOR THOR-96 ADD TOLERANCE AND DIMENSION NOTE	11/20/2013	BK
B	BLACK HAS WERE, REMOVE COLOR NUMBER IN NEOPRENE MATERIALS.	6/12/2012	BK



- NOTES:
1. MATERIAL: NEOPRENE G-231, 4.8mm THICK, WITH 2 SIDES OF PLYER (NO-S), COLOR: BLACK AND RED.
  2. PATTERN IS SYMMETRIC ABOUT  $\updownarrow$ .
  3. TOLERANCE  $\pm 0.3mm$ , UNLESS OTHERWISE NOTED.
  4. CUT THIS PATTERN WITH THE RED COLOR SURFACE FACING UPWARDS.
  5. MARK PART NUMBER WITH PERMANENT MARKER ON RED COLORED SIDE.

		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
472-3952 NEXT ASSEMBLY CITY TOTAL QTY IN BUNCH 1	472-3952 472-3952 472-3952	472-3952 472-3952 472-3952	<b>472-3952</b>

REV	DESCRIPTION	DATE	BY
A	RENDERED FROM 11 INCH SET AND CONVERTED TO METRIC FOR THO-M; ADD TOLERANCE AND DIMENSION NOTES; CORRECT MATERIAL & DIMENSIONS	12/6/2011	BK

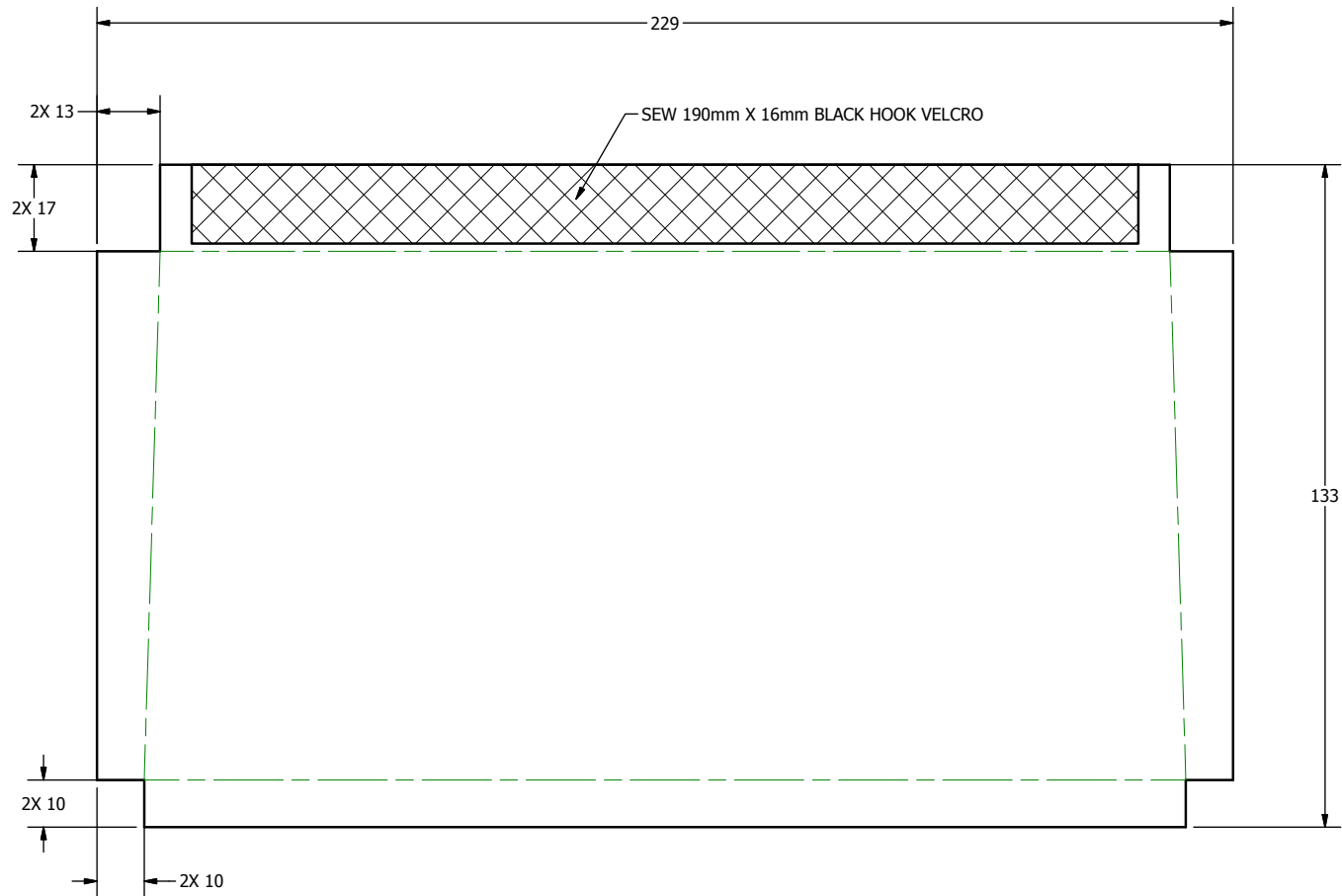


- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. PATTERN IS SYMMETRIC ABOUT  $\phi$ .
  3. TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.
  4. MARK PART NUMBER WITH PERMANENT MARKER ON LAMINATED SIDE.

REV	DESCRIPTION	DATE	BY
A	OUTSIDE REAR PANEL PATTERN	12/6/2011	BK

472-3953	472-3953	472-3953	472-3953
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REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF212 RB1 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/30/2011	BK



FOLD LINES

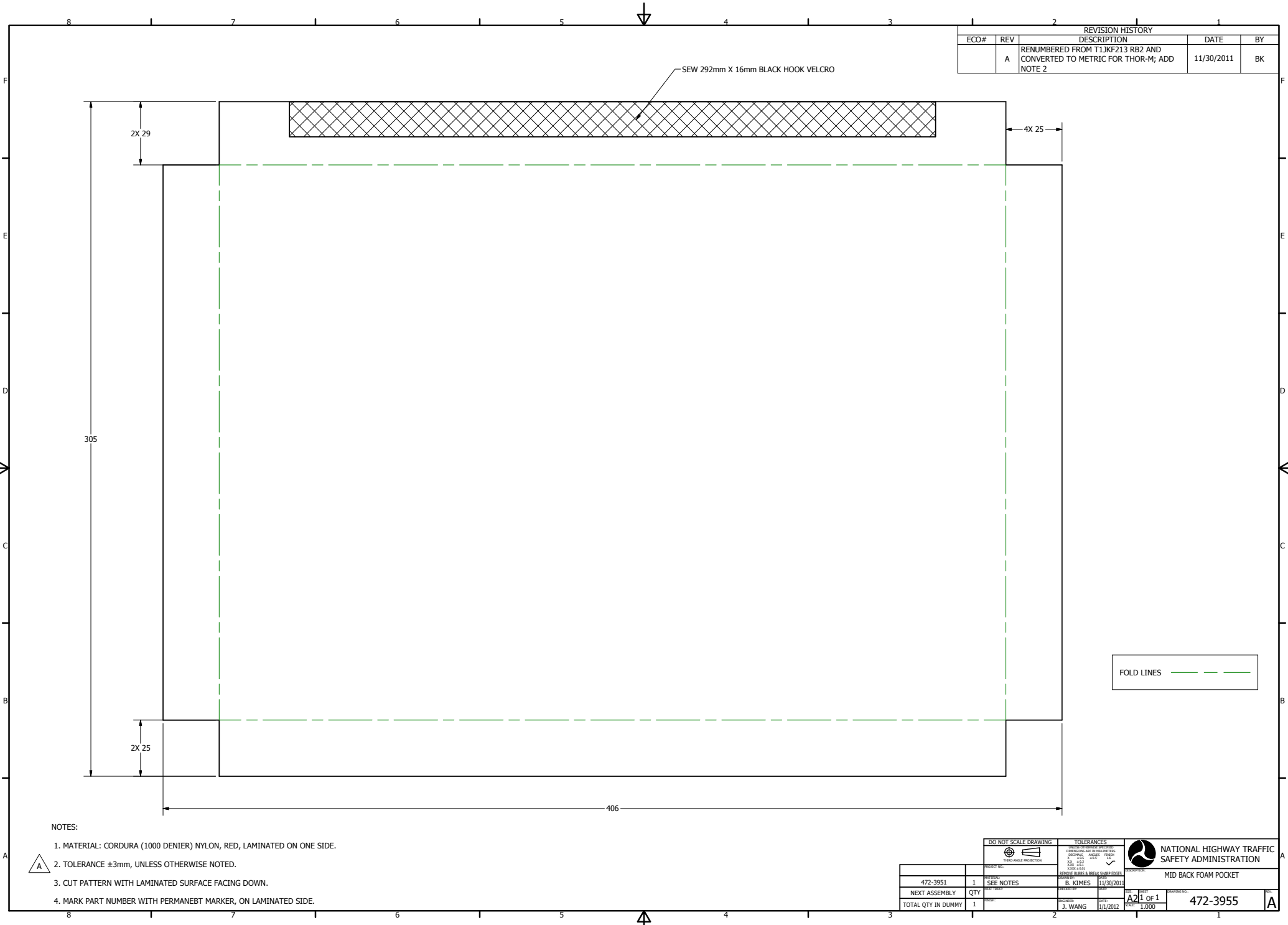
- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. TOLERANCE  $\pm 3$ mm, UNLESS OTHERWISE NOTED.
  3. MARK PART NUMBER WITH PERMANENT MARKER, ON LAMINATED SIDE.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.XX ±0.1 16 ✓ X.X ±0.2 ✓ X.XX ±0.3 ✓ X.XXX ±0.01 ✓		
PROJECT NO.:	472-3951	MATERIAL:	SEE NOTES	DESCRIPTION: UPPER BACK FOAM POCKET
PROVED BY:	B. KIMES	DATE:	11/30/2011	REMOVE BURRS & BREAK SHARP EDGES
CHECKED BY:		DATE:		SIZE: A3
ENGINEER:	J. WANG	DATE:	1/11/2012	SHEET: 1 OF 1
HEAT TREAT:		SCALE:	1:000	DRAWING NO.:
TOTAL QTY IN DUMMY:	1	FINISH:		472-3954

REV: A

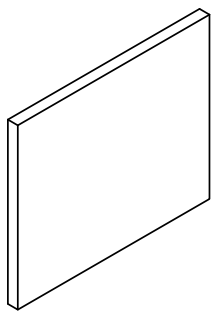
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF213 RB2 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/30/2011	BK



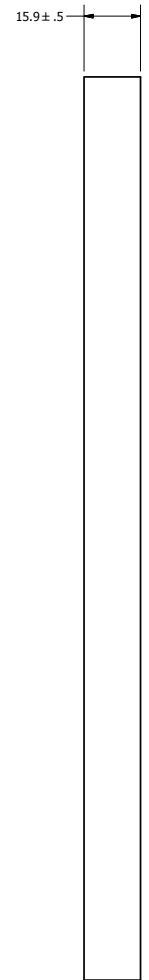
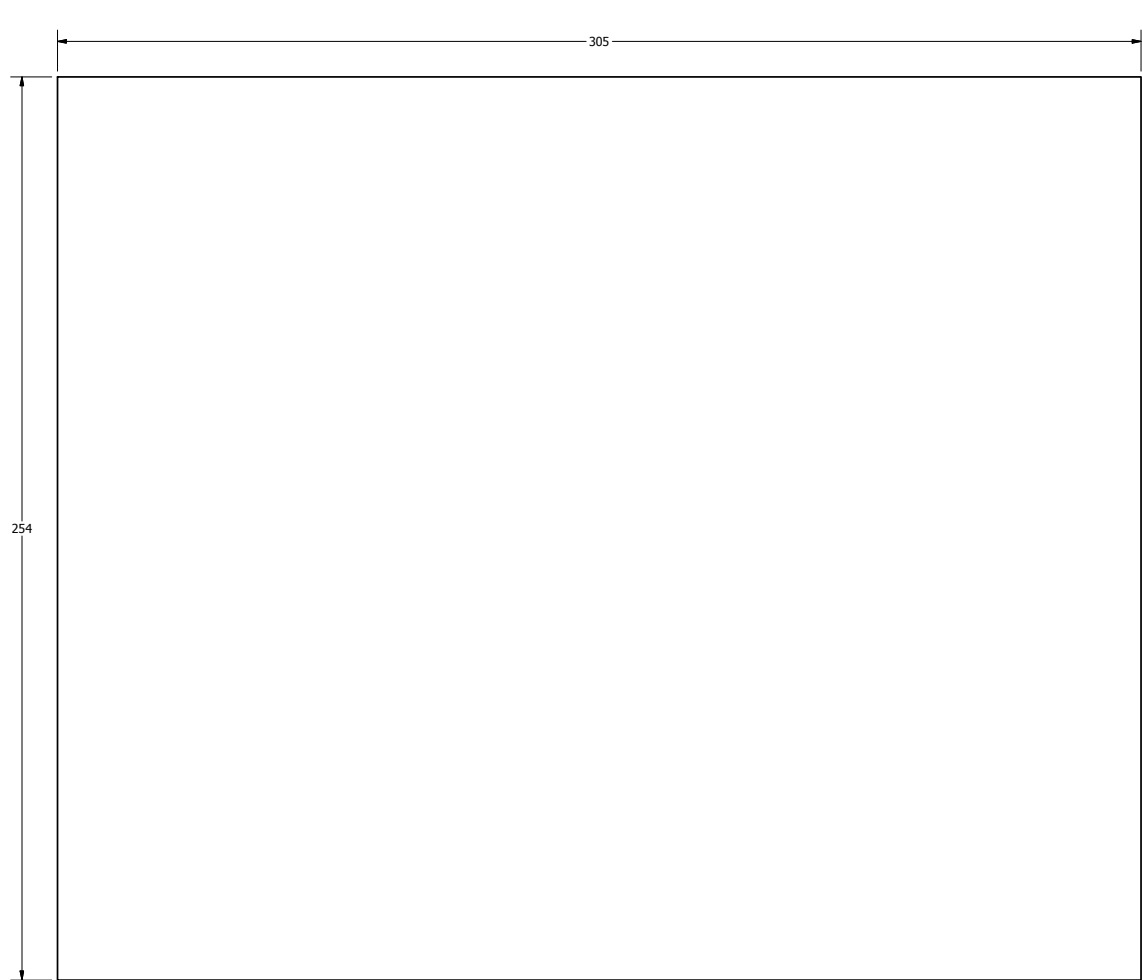
- NOTES:
1. MATERIAL: CORDURA (1000 DENIER) NYLON, RED, LAMINATED ON ONE SIDE.
  2. TOLERANCE  $\pm 3$ mm, UNLESS OTHERWISE NOTED.
  3. CUT PATTERN WITH LAMINATED SURFACE FACING DOWN.
  4. MARK PART NUMBER WITH PERMANENT MARKER, ON LAMINATED SIDE.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		DIMENSIONS UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS    FRACTIONS    DECIMALS    FRACTIONS 0.1    1/10    0.02    1/50 0.5    1/20    0.1    1/10 1.0    1/10    0.2    1/5 2.0    1/5    0.5    1/2 5.0    1/2    1.0    1 10.0    1    2.0    2 25.0    1    5.0    5 50.0    1    10.0    10 100.0    1    20.0    20 250.0    1    50.0    50 500.0    1    100.0    100 1000.0    1    200.0    200 2500.0    1    500.0    500 5000.0    1    1000.0    1000		
472-3951	1	SEE NOTES	B. KIMES	11/30/2011
NEXT ASSEMBLY	QTY			
TOTAL QTY IN DUMMY	1			
		DESIGNED BY	DATE	APPROVED BY
		J. WANG	11/12/2012	
		SCALE	1:1	
		DATE	11/30/2011	
		REV	A2	1 OF 1
		QTY	1.000	
		PART NO.	472-3955	

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF215 RB2 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/29/2011	BK
	B	REMOVE R13 TYP.	3/15/2012	BK



SCALE .250

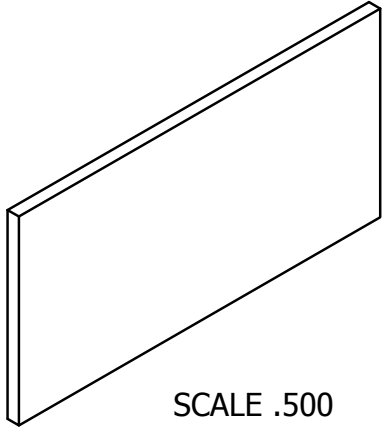


- NOTES:
1. MATERIAL: #6 CHARCOAL POLYESTER FOAM.
  2. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.

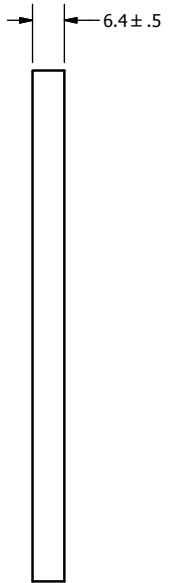
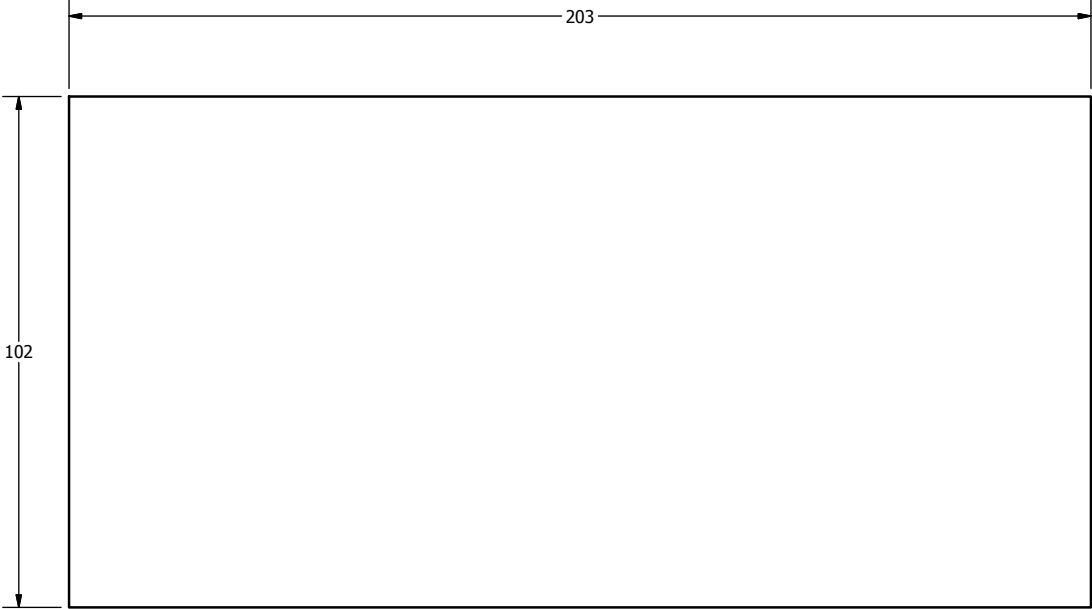


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE IN PARENTHESES FRACTIONS ARE IN PARENTHESES UNLESS OTHERWISE SPECIFIED FRACTIONS SHALL BE IN 16ths UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED		
472-3951	1	SEE NOTES	B. KIMES	11/29/2011
NEXT ASSEMBLY	QTY			
TOTAL QTY IN DUMMY	1		J. WANG	1/11/2012
		A2		1 of 1
		1,000		472-3957

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF214 RB1 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	11/29/2011	BK



SCALE .500



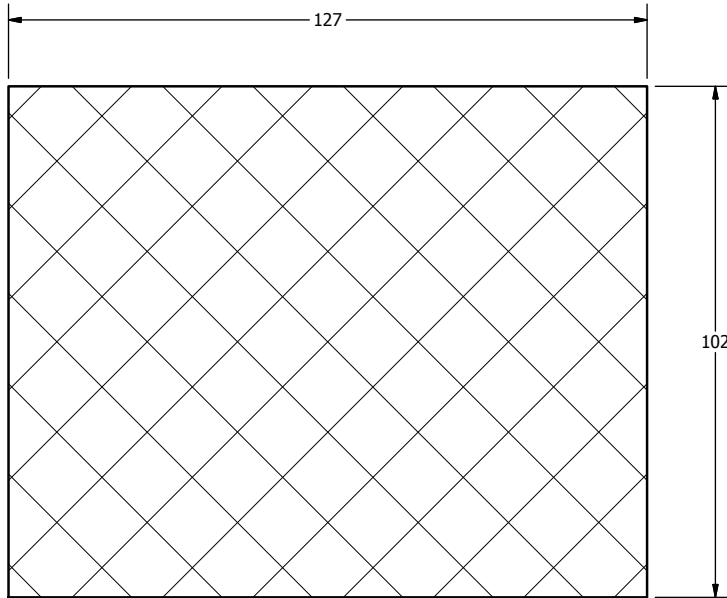
- NOTES:
1. MATERIAL: #6 CHARCOAL POLYESTER FOAM.
  2. TOLERANCE ±3mm, UNLESS OTHERWISE NOTED.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.07 1.6 XX ± 0.2 XXX ± 0.3 XXXX ± 0.51		
PROJECT NO:	472-3951	MATERIAL:	SEE NOTES	DESCRIPTION:
DRAWN BY:	B. KIMES	DATE:	11/29/2011	UPPER BACK FOAM
CHECKED BY:	J. WANG	DATE:	1/11/2012	SIZE: SHEET: DRAWING NO. REV:
HEAT TREAT:		ENGINEER:	J. WANG	A3 1 OF 1 472-3956 A
TOTAL QTY IN DUMMY	1	FINISH:		SCALE: 1.000



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF216 RB0 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	12/2/2011	BK



NOTES:

1. MATERIAL: BLACK POLYPROPYLENE HOOK VELCRO, SHEAR STRENGTH 17 PSI.
2. TOLERANCE  $\pm 3\text{mm}$ , UNLESS OTHERWISE NOTED.

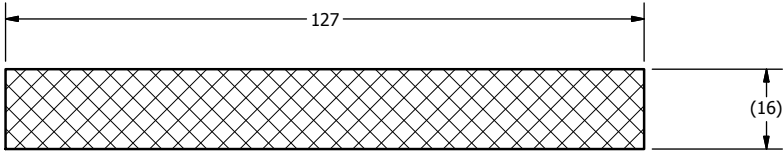


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 16 XX 0.02 XXX 0.03 XXXX 0.04		
PROJECT NO.:	472-3951	MATERIAL:	SEE NOTES	DESCRIPTION:
DATE:	12/2/2011	DESIGNED BY:	B. KIMES	REAR PANEL LOOP VELCRO
CHECKED BY:		DATE:		SIZE: A3
HEAT TREAT:		ENGINEER:	J. WANG	1 OF 1
DATE:		DATE:	1/11/2012	DRAWING NO.:
TOTAL QTY IN DUMMY	1	FINISH:		472-3958
				SCALE: 1.000

A

A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1JKF217 RB0 AND CONVERTED TO METRIC FOR THOR-M; ADD NOTE 2	12/2/2011	BK



NOTES:

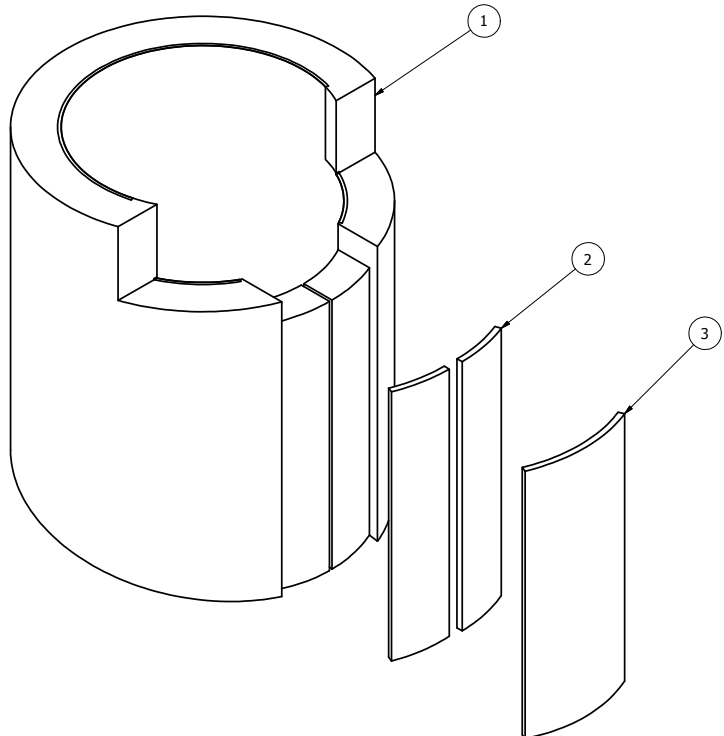
1. MATERIAL: 16mm, BLACK POLYPROPYLENE HOOK VELCRO, SHEAR STRENGTH 17 PSI.
2. TOLERANCE  $\pm 3$ mm, UNLESS OTHERWISE NOTED.



DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X 0.0 0.05 1.6 XX 0.2 XXX 0.3 XXXX 0.01 REMOVE BURRS & BREAK SHARP EDGES		
PROJECT NO.:	472-3951	MATERIAL:	SEE NOTES	DESCRIPTION:
DESIGNED BY:	B. KIMES	DATE:	12/2/2011	REAR PANEL SHOULDER HOOK VELCRO
CHECKED BY:	J. WANG	DATE:	1/11/2012	SIZE: A3
HEAT TREAT:		FINISH:		SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	SCALE:	1:000	DRAWING NO. 472-3959

REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM TINKS100 FOR THOR M	7/6/2012	BK
	C	UPDATE VIEWS TO SHOW REPOSITIONED MESH: REMOVE SEWING NOTES AND VIEW; ADD NOTE 3	10/3/2012	BK



NOTES:

- 1. THE VELCRO HOOK PIECES (472-2913) ARE GLUED TO THE OUTER FRONT EDGES OF THE FOAM SKIN USING A HIGH STRENGTH CONTACT CEMENT.
- 2. THE VELCRO LOOP (472-2914) IS USED TO SECURE THE NECK TOGETHER AFTER BEING PLACED AROUND THE NECK ASSEMBLY.
- 3. REVISION "B" SKIPPED.

ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	472-2914	VELCRO LOOP, NECK SKIN
2	2	472-2913	VELCRO HOOK, NECK SKIN
1	1	472-2910	NECK FOAM

PARTS LIST

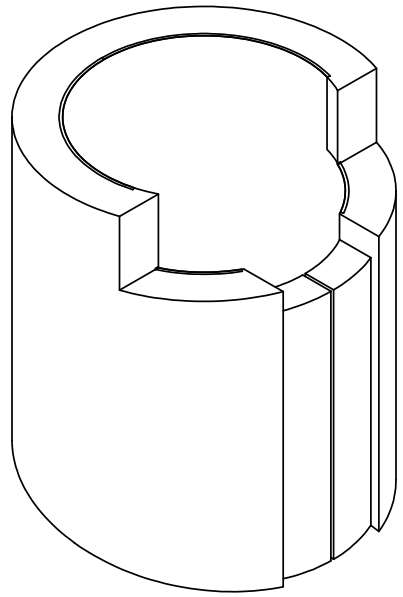
<p>DO NOT SCALE DRAWING</p>		<p>TOLERANCES</p> <p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS ARE TO BE USED DECIMALS TO 3 PLACES DIMENSIONS TO BE USED UNLESS OTHERWISE SPECIFIED</p>		<p>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</p>	
<p>472-0000</p>		<p>DESIGNED BY: B. Kimes</p>		<p>DATE: 7/6/2012</p>	
<p>NEXT ASSEMBLY</p>		<p>DESIGNED BY: J. WANG</p>		<p>DATE: 10/3/2012</p>	
<p>TOTAL QTY IN DUMMY</p>		<p>DATE: 10/3/2012</p>		<p>DATE: 10/3/2012</p>	

NECK FOAM ASSEMBLY

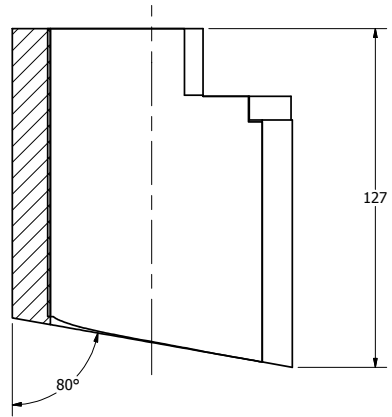
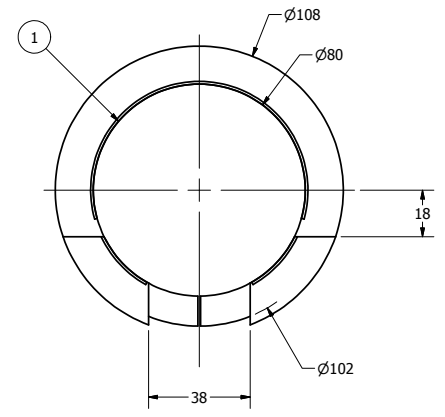
A21 of 1

472-2900

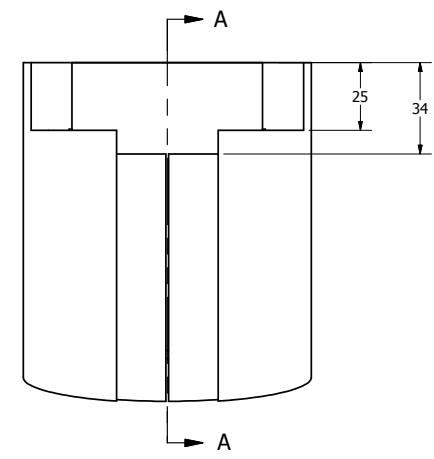
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM TINKS110 FOR THOR M	7/9/2012	BK
	C	REPOSITION REINFORCEMENT MESH PER MANUFACTURING PROCESS; 75g WAS 70 g; CHANGE DIMENSION DECIMAL PLACE TO 0; ADD NOTE 5	10/3/2012	BK



SCALE 1.000



SECTION A-A  
SCALE .750



NOTES:

1. MATERIAL: 5lb/CU FT POLYURETHANE FOAM.
2. REINFORCEMENT MESH IS CAST INTO URETHANE FOAM.
3. PART WEIGHT: 75g ±10g
4. FOAM TOLERANCE: ±2mm.
5. REVISION "B" SKIPPED.

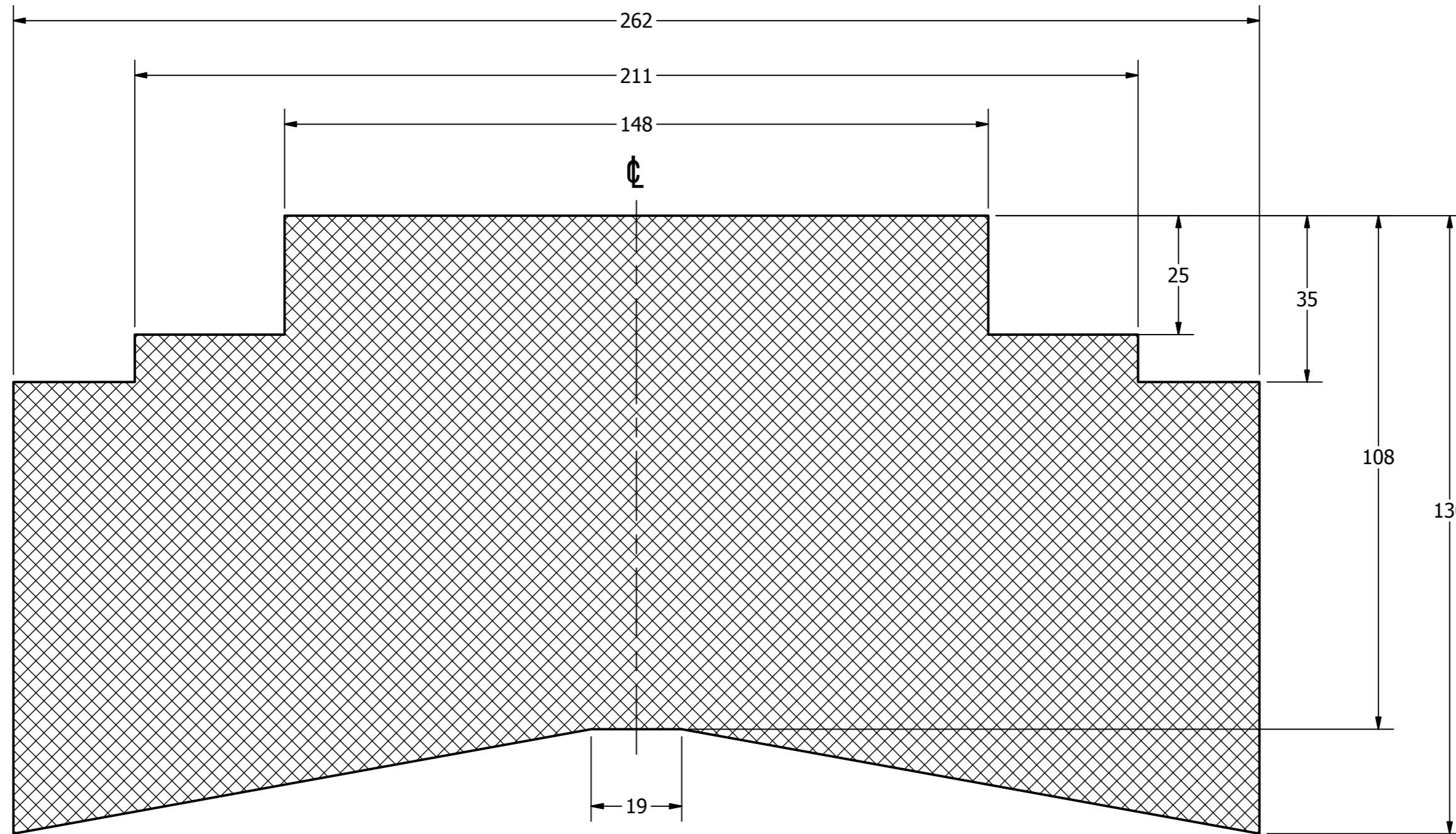
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	472-2912	FOAM REINFORCEMENT MESH

**PARTS LIST**

472-2900	1	NEXT ASSEMBLY	QTY	DATE	BY	DATE	BY
TOTAL QTY IN DUMMY	1						

DO NOT SCALE DRAWING  
 THIRD ANGLE PROJECTION  
 TOLERANCES  
 UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ARE TO BE USED  
 FRACTIONS ARE TO BE USED  
 FRACTIONS ARE TO BE USED  
 UNLESS SPECIFIED  
 SHOW HIDDEN & BREAK SHARP EDGES  
 DRAWN BY: B. Kimes  
 CHECKED BY: J. WANG  
 DATE: 7/9/2012  
 DATE: 10/3/2012  
 SHEET: A21 of 1  
 SCALE: .750  
 PART: 472-2910  
 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
 NECK FOAM

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKS112 FOR THOR M	7/9/2012	BK
	B	REDESIGNED PART; DIMENSION DECIMAL PLACES TO 0	11/8/12	KHS



NOTES:

1. DIMENSIONS SYMMETRIC ABOUT  $\phi$ , UNLESS OTHERWISE NOTED.
2. TOLERANCE  $\pm 2\text{mm}$ .

DO NOT SCALE DRAWING		THIRD ANGLE PROJECTION		<b>TOLERANCES</b> <small>(UNLESS OTHERWISE SPECIFIED)</small> DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 XX ± 0.2 XXX ± 0.1 XXXX ± 0.01		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> DESCRIPTION: <b>FOAM REINFORCEMENT MESH</b>	
PROJECT NO:	472-2910	DATE:	7/9/2012	DESIGNED BY:	B. Kimes		
WYCODE:	COTTON MESH	CHECKED BY:		DATE:		SIZE: SHEET	A21 OF 1
NEXT ASSEMBLY	QTY	ENGINEER:	J. WANG	DATE:	7/25/2012	DRAWING NO.:	472-2912
TOTAL QTY IN DUMMY	1	FINISH:	N/A	SCALE:	1:000	REV:	B

4

3

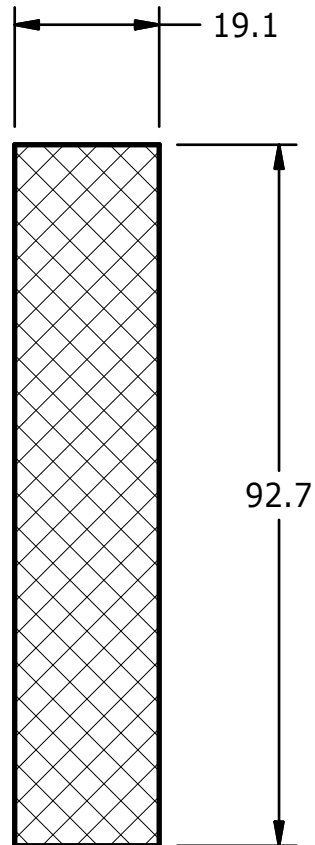
2

1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKS113 FOR THOR M; ADD NOTES	7/9/2012	BK

B

B





A

A

NOTES:



- 1. MAKE FROM BLACK HOOK VELCRO AND CUT AS SHOWN.
- 2. TOLERANCE  $\pm 2\text{mm}$ .

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm 0.5$ X.X $\pm 0.2$ X.XX $\pm 0.1$  MACHINED ANGLES $\pm 0.5^\circ$  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>		
	APPROVALS DRAWN B. Kimes	DATE 7/9/2012	<b>VELCRO HOOK, NECK SKIN</b>  <b>THOR-M</b>		
CHECKED ENG J. WANG	DATE 7/25/2012				
MATERIAL SEE NOTES HEAT TREAT FINISH	APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-2913</b>	REV <b>A</b>
			SCALE:	SHEET <b>1 OF 1</b>	

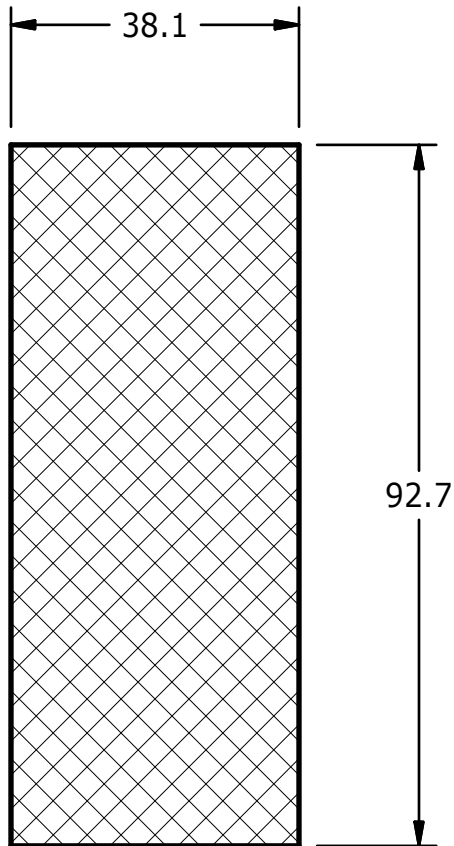
4

3

2

1



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1NKS114 FOR THOR M; ADD NOTES	7/9/2012	BK



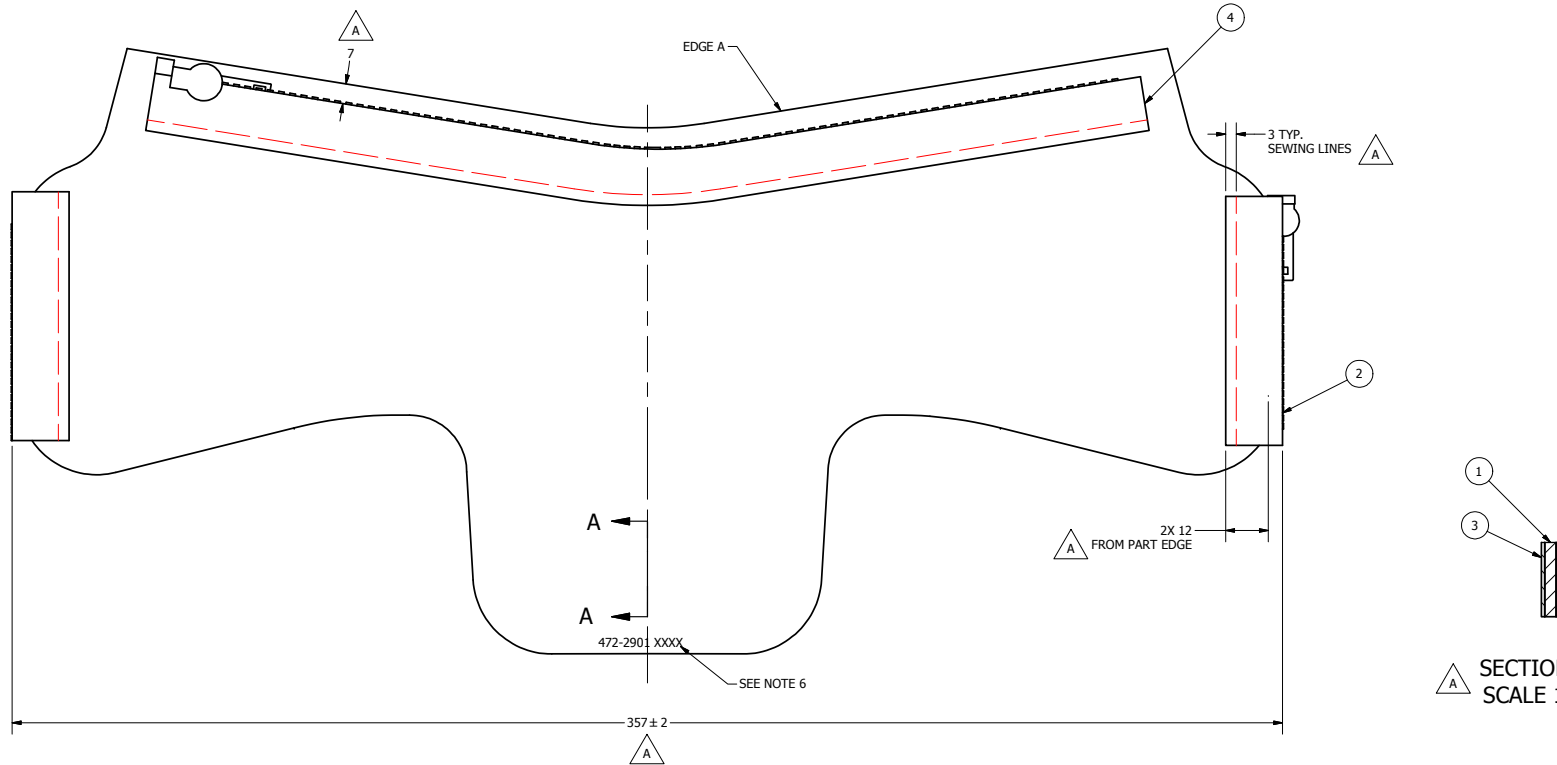
NOTES:



1. MAKE FROM BLACK LOOP VELCRO AND CUT AS SHOWN
2. TOLERANCE 2mm.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLE ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
DRAWN B. Kimes	7/9/2012		
CHECKED			
ENG J. WANG	7/25/2012		
MATERIAL SEE NOTES			
HEAT TREAT			
FINISH			
		 THIRD ANGLE PROJECTION	SIZE: <b>A3</b> SCALE:
		DRAWING NUMBER: <b>472-2914</b> SHEET: <b>1</b> OF <b>1</b>	REV: <b>A</b>

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1NKS200 AND CONVERT TO METRIC FOR THOR M; ADD 3 TYP., 2X 12, 7, 357±2; REVISE NOTES; ADD NOTE 5, 6, 8, SEC A-A	7/27/2012	BK



INSIDE FACE VIEW  
SCALE 1.000

NOTES:

1. TRACE SEWING LINES 3mm OUTSIDE THE PROFILE OF THE NEOPRENE PATTERN ON THE INSIDE FACE OF THE CORDURA SKINS.
2. LAYER THE CORDURA SHEETS SO THE INNER FACES ARE FACING OUTWARD.
3. USING KEVLAR THREAD, SEW THE LAYERS TOGETHER ALONG THE TRACED SEWING LINE WITH THE EXCEPTION OF EDGE A.
4. TRIM THE EXCESS CORDURA LEAVING 3mm MATERIAL ALONG THE STITCHED LINE.
5. TURN THE LAYERS INSIDE OUT, INSERT THE NEOPRENE (472-2923), AND FOLD THE INNER AND OUTER CORDURA LAYER INSIDE, THEN SEW ALONG EDGE A.
6. MARK PART NUMBER AND SERIAL NUMBER AS SHOWN. (THIS WILL BECOME THE INNER FACE)
7. SEW THE ZIPPERS AS SHOWN WITH THE INSIDE FACE (WITH PART MARK) FACING UP.
8. TOLERANCE: ±2mm.

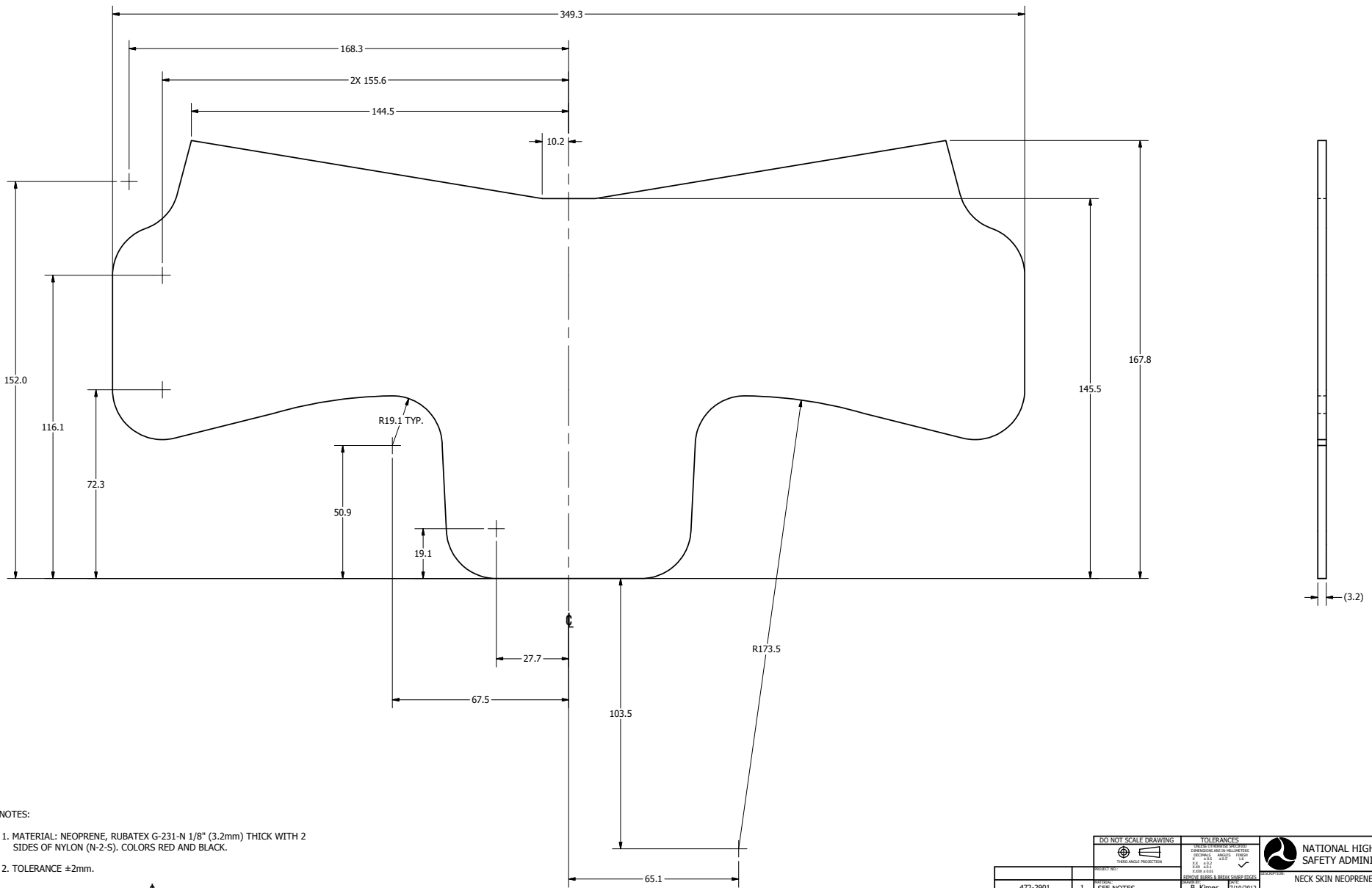
ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	472-2920	NECK/HEAD SKIN ZIPPER
3	1	472-2922	NECK SKIN CORDURA PATTERN (OUTER/INNER)
2	1	472-2921	REAR ZIPPER, NECK
1	1	472-2923	NECK SKIN NEOPRENE PATTERN

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE TO BE USED UNLESS OTHERWISE NOTED DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY		NECK SKIN ASSEMBLY	
472-0000	1	DESIGNED BY	B. Kimes	DATE	7/27/2012
NEXT ASSEMBLY	QTY	DESIGNED BY	J. WANG	DATE	7/25/2012
TOTAL QTY IN DUMMY	1	DRAWN BY		SCALE	A2 1 OF 1
				DATE	7/25/2012
				SCALE	1.000
				PART NUMBER	472-2901



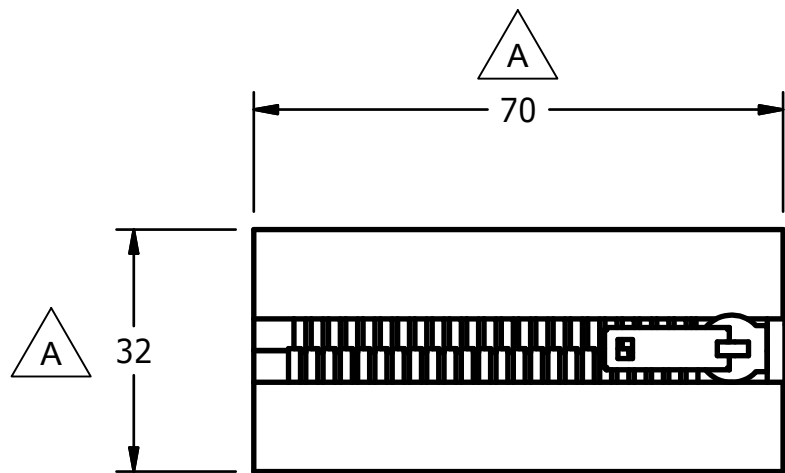
REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED AND REDESIGNED FROM T1NKS214 FOR THOR M; ADD NOTES 2, 3; REMOVE PATTERN CUT NOTE	7/10/2012	BK



- NOTES:
- MATERIAL: NEOPRENE, RUBATEX G-231-N 1/8" (3.2mm) THICK WITH 2 SIDES OF NYLON (N-2-S). COLORS RED AND BLACK.
  - TOLERANCE ±2mm.
  - PATTERN IS SYMMETRIC ABOUT  $\epsilon$ , UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
472-2901 1 SEE NOTES NEXT ASSEMBLY QTY 1 TOTAL QTY IN DUMMY 1		B. Kimes 7/10/2012 J. WANG 7/25/2012		
A21 of 1			472-2923	A

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1NKS211 AND CONVERT TO METRIC FOR THOR M; 70 WAS 63.5; 32 WAS 38.1; ADD NOTE 2	7/10/2012	BK



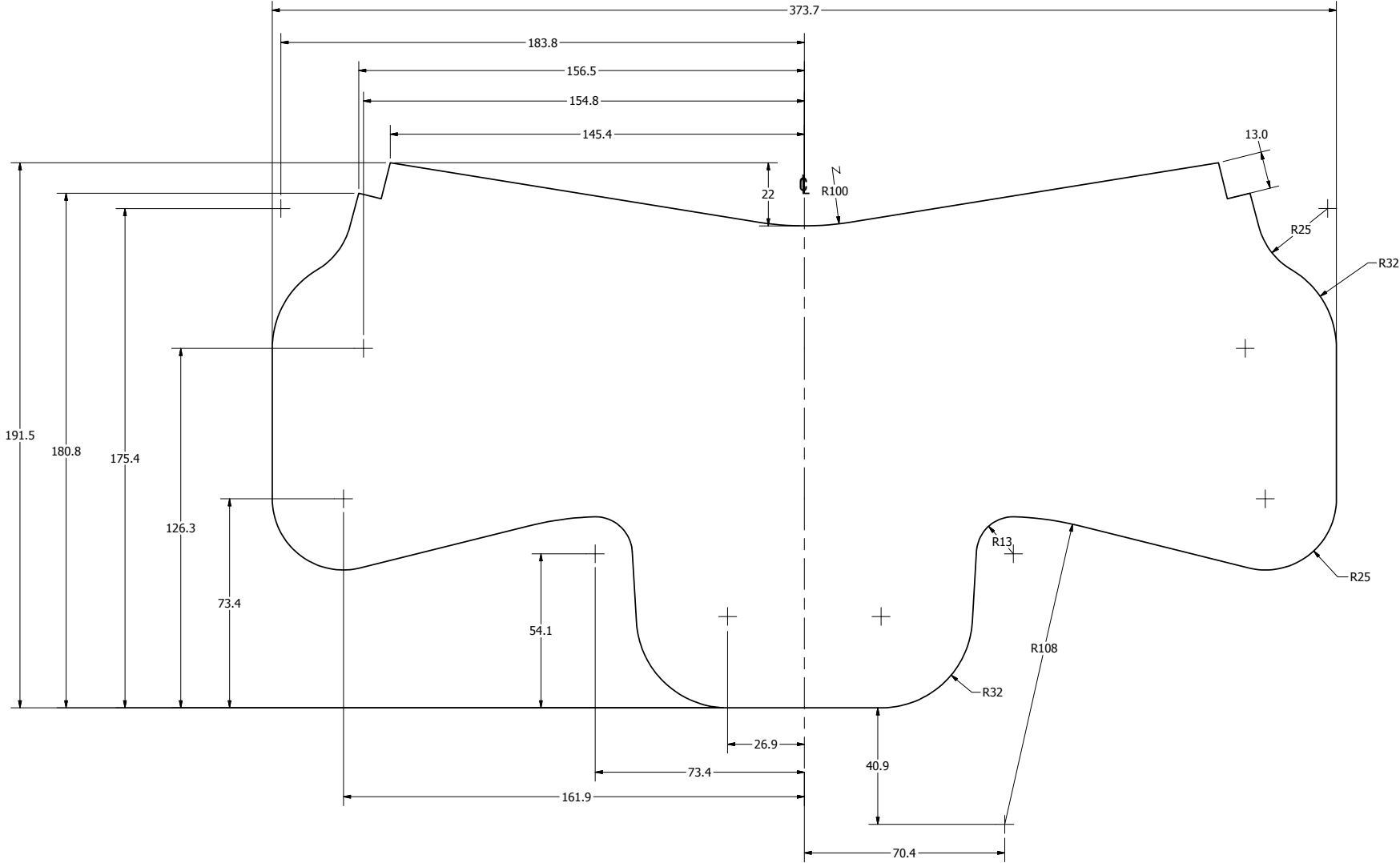
**NOTES:**

- #5 BLACK OXIDE BRASS ZIPPER STANDARD AUTOLOCK SLIDER TOP AND BOTTOM SEPERATING COLOR: BLACK (LENZIP)
- TOLERANCE +/- 2mm.



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1 MACHINED ANGLES ±.5° <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. Kimes CHECKED ENG J. WANG APPROVED	DATE 7/10/2012  7/25/2012	<b>NECK SKIN REAR ZIPPER</b>  <b>THOR-M</b>	
MATERIAL SEE NOTES HEAT TREAT FINISH	 THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE:	DRAWING NUMBER <b>472-2921</b> SHEET <b>1</b> OF <b>1</b>	REV <b>A</b>

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	7/27/2012	BK

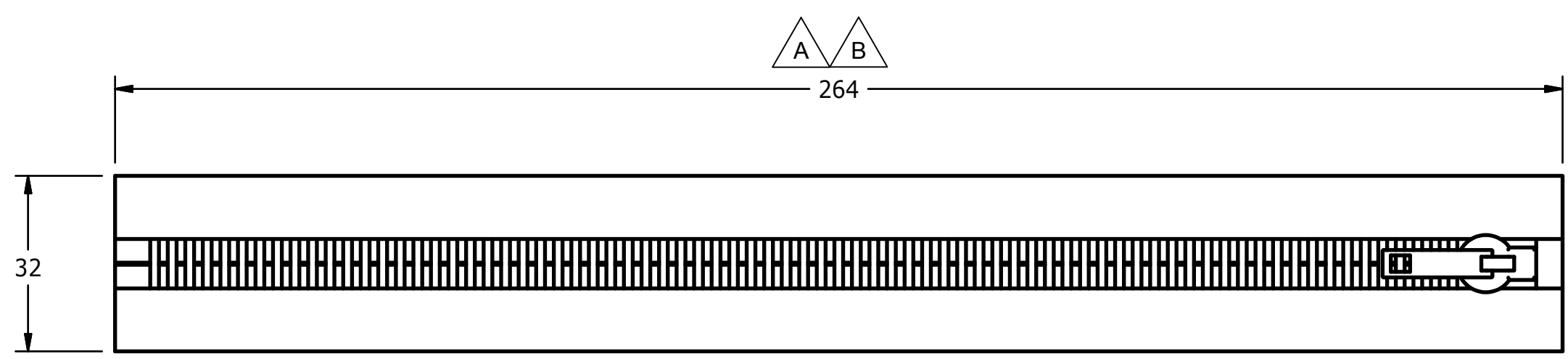


- NOTES:
1. PATTERN IS SYMMETRIC ABOUT  $\text{C}$ , UNLESS OTHERWISE NOTED.
  2. TOLERANCE:  $\pm 2\text{mm}$ .

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
DIMENSIONS SHOWN IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS SHOWN IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS SHOWN IN PARENTHESES ARE FOR REFERENCE ONLY DIMENSIONS SHOWN IN PARENTHESES ARE FOR REFERENCE ONLY		SHOW HIDDEN & BREAK DIMENSIONS SHOW HIDDEN & BREAK DIMENSIONS SHOW HIDDEN & BREAK DIMENSIONS SHOW HIDDEN & BREAK DIMENSIONS		
ECO#	REV	DESCRIPTION	DATE	BY
472-2901	2	RED CORDURA	7/27/2012	B. Kimes
NEXT ASSEMBLY	QTY	BY	DATE	BY
TOTAL QTY IN DUMMY	2	J. WANG	7/25/2012	J. WANG

NECK SKIN CORDURA PATTERN (OUTER/INNER)  
 A21 of 1  
 472-2922

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	RENUMBER FROM T1NKS210 AND CONVERT TO METRIC FOR THOR M; 279 WAS 279.4; 32 WAS 31.8; ADD NOTE 2	7/10/2012	BK
	B	764 WAS 279	1/31/2013	BK



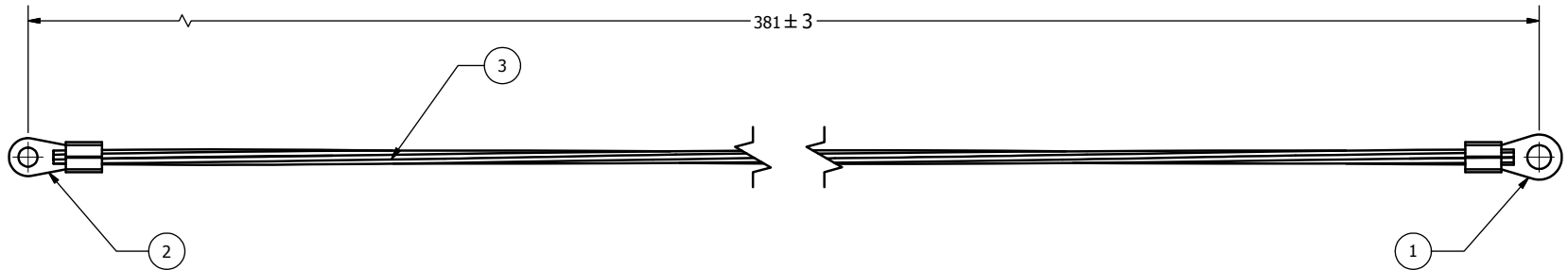
**NOTES:**

- #5 BLACK OXIDE BRASS ZIPPER STANDARD AUTOLOCK SLIDER TOP AND BOTTOM SEPERATING COLOR: BLACK (LENZIP)
- TOLERANCE:  $\pm 2$ mm.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm 0.5$ X.X $\pm 0.2$ X.XX $\pm 0.1$  MACHINED $\pm 0.15$ ANGLES $\pm 0.5^\circ$  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN B. Kimes CHECKED ENG J. WANG FINISH APPROVED	DATE 7/10/2012  7/25/2012		<b>NECK/HEAD SKIN ZIPPER</b>  <b>THOR-M</b>	
				SCALE:	SHEET <b>1 OF 1</b>

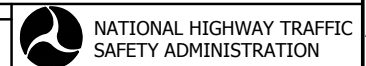
# **GROUNDING STRAPS**

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1INM011 R1 AND CONVERTED TO METRIC FOR THOR-M	2/7/2012	SKK
	B	6002273 WAS 6002977	12/14/2012	BK



ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	6002273	BRAID, TINNED COPPER TUBULAR 1/8"
2	1	6002978	METRIC RING TERMINAL M4 NON-INSULATED
1	1	6002979	METRIC RING TERMINAL M5 NON-INSULATED

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X .05 ± 0.57 1.6	
		XX ± 0.2	
		XXX ± 0.3	
		XXX ± 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:	472-0000	DESIGNED BY:	skantola
MATERIAL:		CHECKED BY:	J. WANG
HEAT TREAT:		DATE:	1/23/2012
TOTAL QTY IN DUMMY:	1	FINISH:	



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

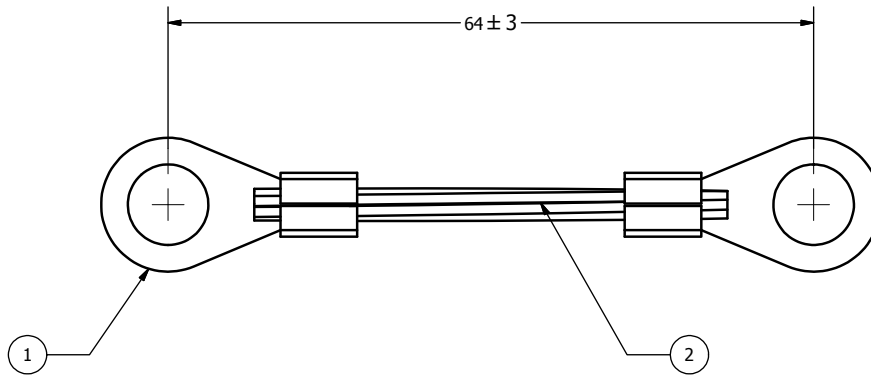
DESCRIPTION: INSTRUMENT GROUND STRAP, HEAD/NECK

SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-8700 REV: B

PROJECT NO:	472-0000	QTY:	1
MATERIAL:		CHECKED BY:	J. WANG
HEAT TREAT:		DATE:	1/23/2012
TOTAL QTY IN DUMMY:	1	FINISH:	



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1INM013 R1 AND CONVERTED TO METRIC FOR THOR-M	2/7/2012	SKK
	B	6002273 WAS 6002977	12/17/2012	BK



2	1	6002273	BRAID, TINNED COPPER TUBULAR 1/8"
1	2	6002981	METRIC RING TERMINAL M8 NON INSULATED
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
 <small>THIRD ANGLE PROJECTION</small>		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>X ±0.5 ±0.5 1.6</small> <small>XX ±0.2</small> <small>XXX ±0.3</small> <small>XXX ±0.01</small> <small>REMOVE BURRS &amp; BREAK SHARP EDGES</small>		
PROJECT NO.:	472-0000	DATE:	2/7/2012	<small>DESCRIPTION:</small> <b>INSTRUMENT GROUND STRAP, THORACIC SPINE</b> <b>THORACIC SPINE</b>
MATERIAL:		DESIGNED BY:	skantola	
CHECKED BY:		DATE:		
HEAT TREAT:		ENGINEER:	J. WANG	<small>SIZE:</small> A3 <small>SHEET:</small> 1 OF 1 <small>SCALE:</small> 2.000
TOTAL QTY IN DUMMY	1	DATE:	1/23/2012	<b>472-8702</b>

PROJECT NO.:	472-0000	DATE:	2/7/2012
MATERIAL:		DESIGNED BY:	skantola
CHECKED BY:		DATE:	
HEAT TREAT:		ENGINEER:	J. WANG
TOTAL QTY IN DUMMY	1	DATE:	1/23/2012



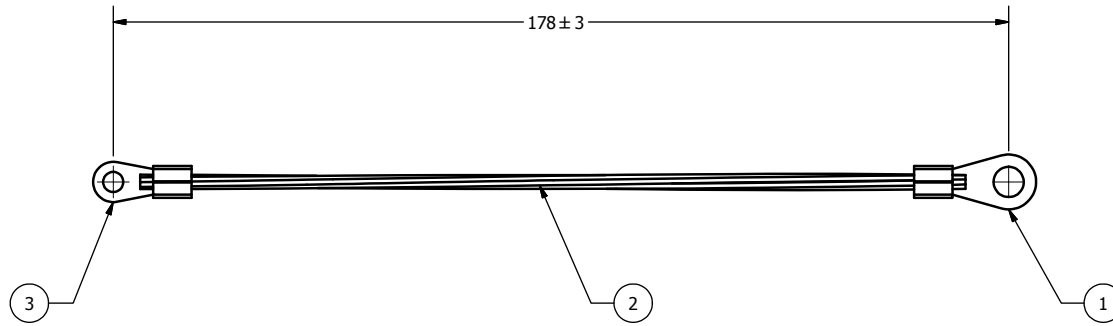
**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

**INSTRUMENT GROUND STRAP, THORACIC SPINE**  
**THORACIC SPINE**

**472-8702**

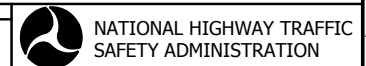


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1INM014 R 1 AND CONVERTED TO METRIC FOR THOR-M	2/7/2012	SKK
	B	6002273 WAS 6002977	12/17/2012	BK



ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	6002978	METRIC RING TERMINAL M4 NON-INSULATED
2	1	6002273	BRAID, TINNED COPPER TUBULAR 1/8"
1	1	6002980	METRIC RING TERMINAL M6 NON INSULATED

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS ANGLES FINISH	
		X ± 0.5 ± 0.5 1.6	
		XX ± 0.2 ± 0.5 1.6	
		XXX ± 0.3 ± 0.5 1.6	
		XXX ± 0.01	
		REMOVE BURRS & BREAK SHARP EDGES	
PROJECT NO:	472-0000	DATE:	2/7/2012
MATERIAL:		DESIGNED BY:	skantola
CHECKED BY:		DATE:	
HEAT TREAT:		ENGINEER:	J. WANG
TOTAL QTY IN DUMMY:	1	DATE:	1/23/2012
		FINISH:	
		SCALE:	1:000

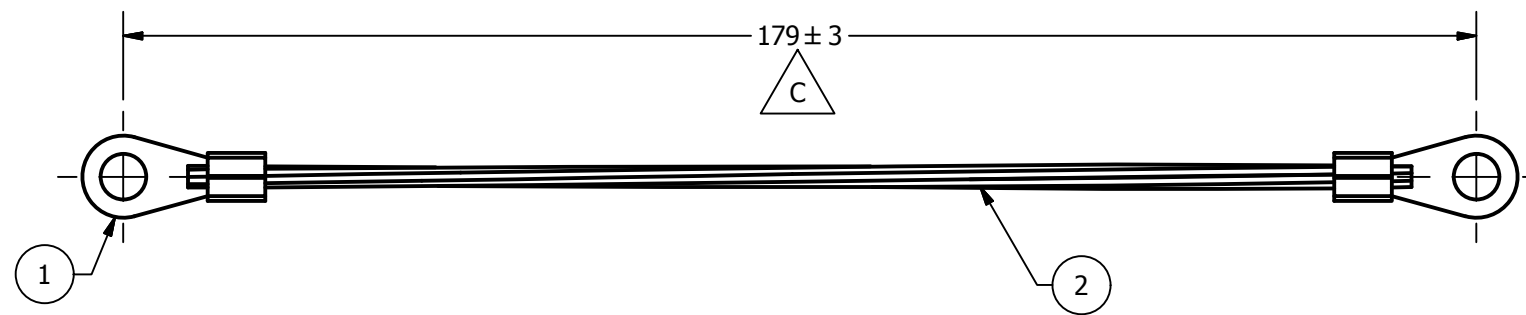


NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: INSTRUMENT GROUND STRAP, LUMBAR SPINE  
LUMBAR SPINE

SIZE: A3 SHEET: 1 OF 1 DRAWING NO.: 472-8703 REV: B

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1INM015 R2 AND CONVERTED TO METRIC FOR THOR-M	2/7/2012	SKK
	B	6002273 WAS 6002977	12/17/2012	BK
	C	ITEM #1 PART #6002980 - METRIC RING TERMAL M6 NON INSULATED WAS PART #6002978 - METRIC RING TERMAL M4 NON INSULATED; DIM. 179 ±3 WAS 76 ±3	7/1/2015	DW



ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	6002273	BRAID, TINNED COPPER TUBULAR 1/8"
1	2	6002980	METRIC RING TERMINAL M6 NON INSULATED

PARTS LIST

DO NOT SCALE DRAWING  
 THIRD ANGLE PROJECTION  
 TOLERANCES  
 UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN MILLIMETERS  
 DECIMALS ANGLES FINISH  
 X ± 0.5 ± 0.5 1.6  
 XX ± 0.2 ± 0.2 1.6  
 XXX ± 0.1 ± 0.1 1.6  
 XXXX ± 0.01 ± 0.01 1.6  
 REMOVE BURRS & BREAK SHARP EDGES

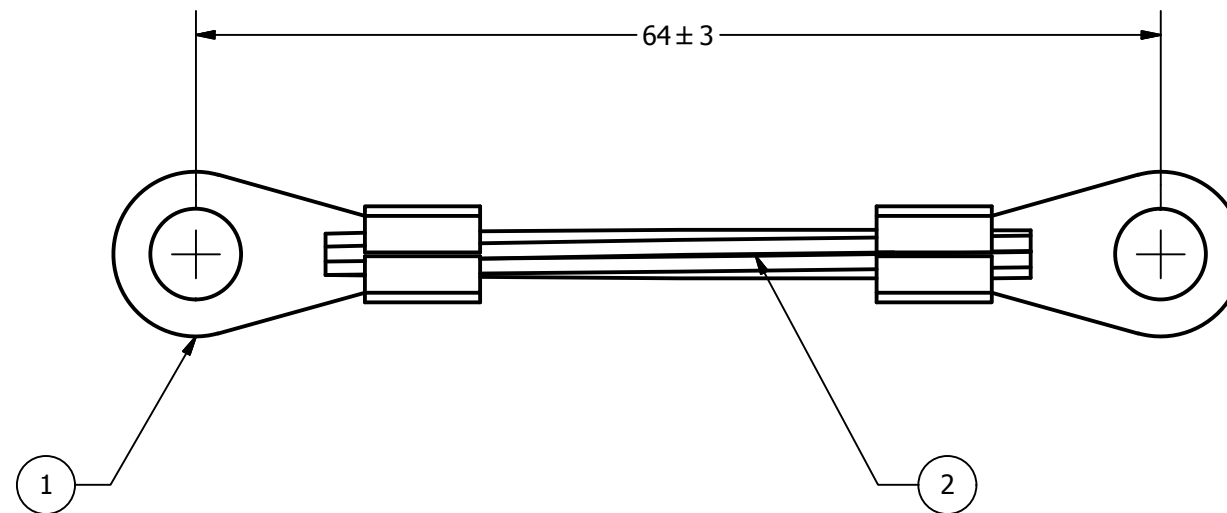


PROJECT NO.:	
MATERIAL:	472-0000
HEAT TREAT:	
FINISH:	
TOTAL QTY IN DUMMY	2

DRAWN BY:	skantola	DATE:	2/7/2012
CHECKED BY:		DATE:	
ENGINEER:	J. WANG	DATE:	1/23/2012

DESCRIPTION:	INSTRUMENT GROUND STRAP, FEMUR
SIZE:	A3
SHEET:	1 of 1
SCALE:	1.000
DRAWING NO.:	472-8704

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RENUMBERED FROM T1INM016 R1 AND CONVERTED TO METRIC FOR THOR-M	2/7/2012	SKK
	B	6002273 WAS 6002977	12/17/2012	BK



ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	6002273	BRAID, TINNED COPPER TUBULAR 1/8"
1	2	6002980	METRIC RING TERMINAL M6 NON INSULATED

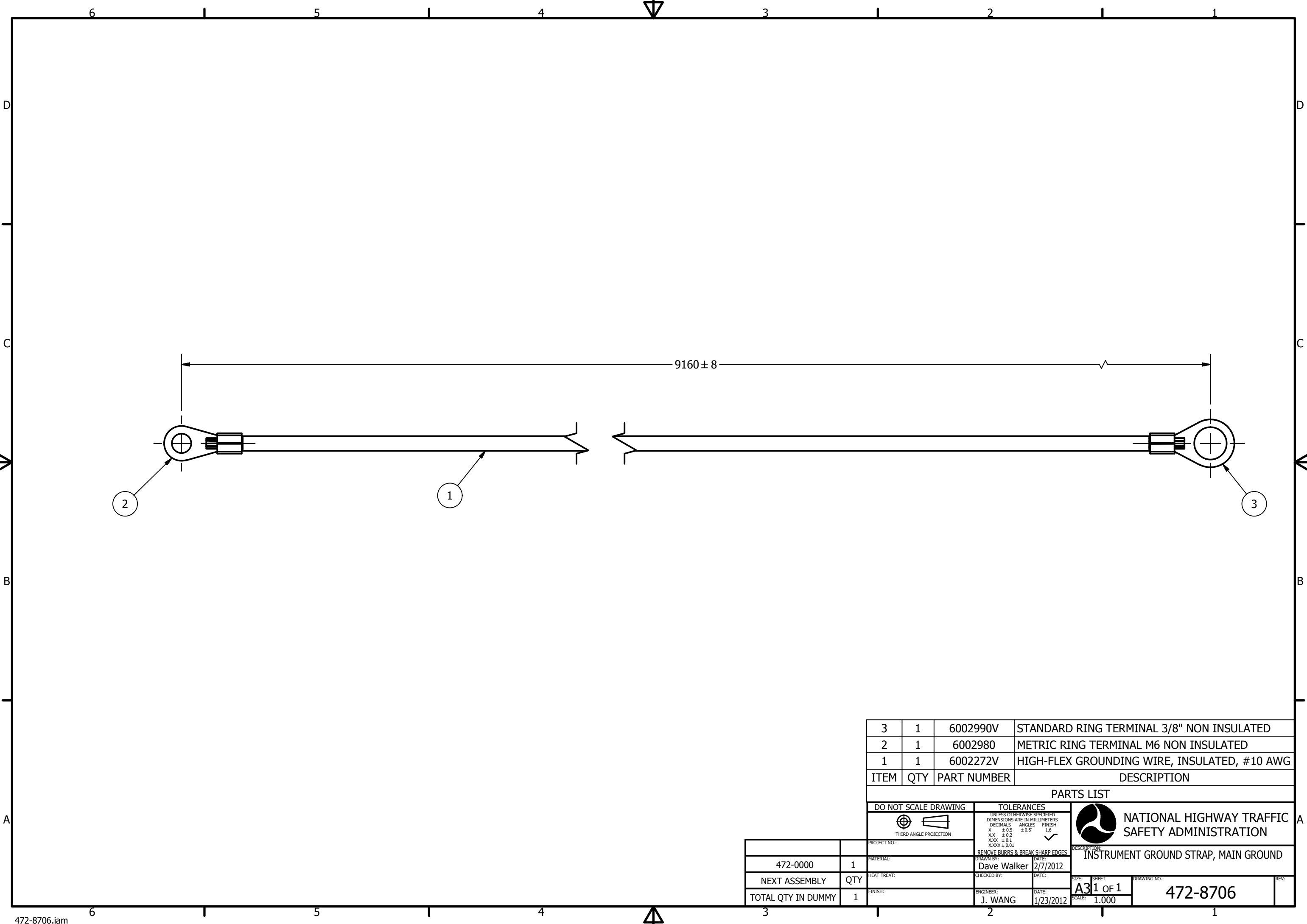
  

PARTS LIST			
DO NOT SCALE DRAWING		TOLERANCES	
 THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS    ANGLES    FINISH</small> <small>X   ± 0.5    ± 0.5    1.6</small> <small>.XX   ± 0.2    ± 0.5    1.6</small> <small>.XXX ± 0.1    ± 0.5    1.6</small> <small>XXX ± 0.1    ± 0.5    1.6</small>	
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES	
MATERIAL:		DRAWN BY: skantola	DATE: 2/7/2012
HEAT TREAT:		CHECKED BY:	DATE:
FINISH:		ENGINEER: J. WANG	DATE: 1/23/2012

 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION		<small>DESCRIPTION:</small> INSTRUMENT GROUND STRAP, TIBIA TIBIA	
SIZE: A3	SHEET: 1 OF 1	DRAWING NO.: 472-8705	REV: B
SCALE: 2.000			

472-0000	2
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	2



9160 ± 8



2

1

3

ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	6002990V	STANDARD RING TERMINAL 3/8" NON INSULATED
2	1	6002980	METRIC RING TERMINAL M6 NON INSULATED
1	1	6002272V	HIGH-FLEX GROUNDING WIRE, INSULATED, #10 AWG

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
 THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X ± 0.5 ± 0.5 1.6 X.X ± 0.2 ± 0.5 1.6 X.XX ± 0.1 ± 0.5 1.6 X.XXX ± 0.01 ± 0.5 1.6		
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION: INSTRUMENT GROUND STRAP, MAIN GROUND
DRAWN BY:		DATE:		
MATERIAL:		DRAWN BY: Dave Walker		SIZE: A3 SHEET: 1 of 1 SCALE: 1.000
HEAT TREAT:		DATE: 2/7/2012		
FINISH:		ENGINEER: J. WANG		DRAWING NO.: 472-8706
TOTAL QTY IN DUMMY		DATE: 1/23/2012		

472-0000	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1



# **INSTRUMENTATION**

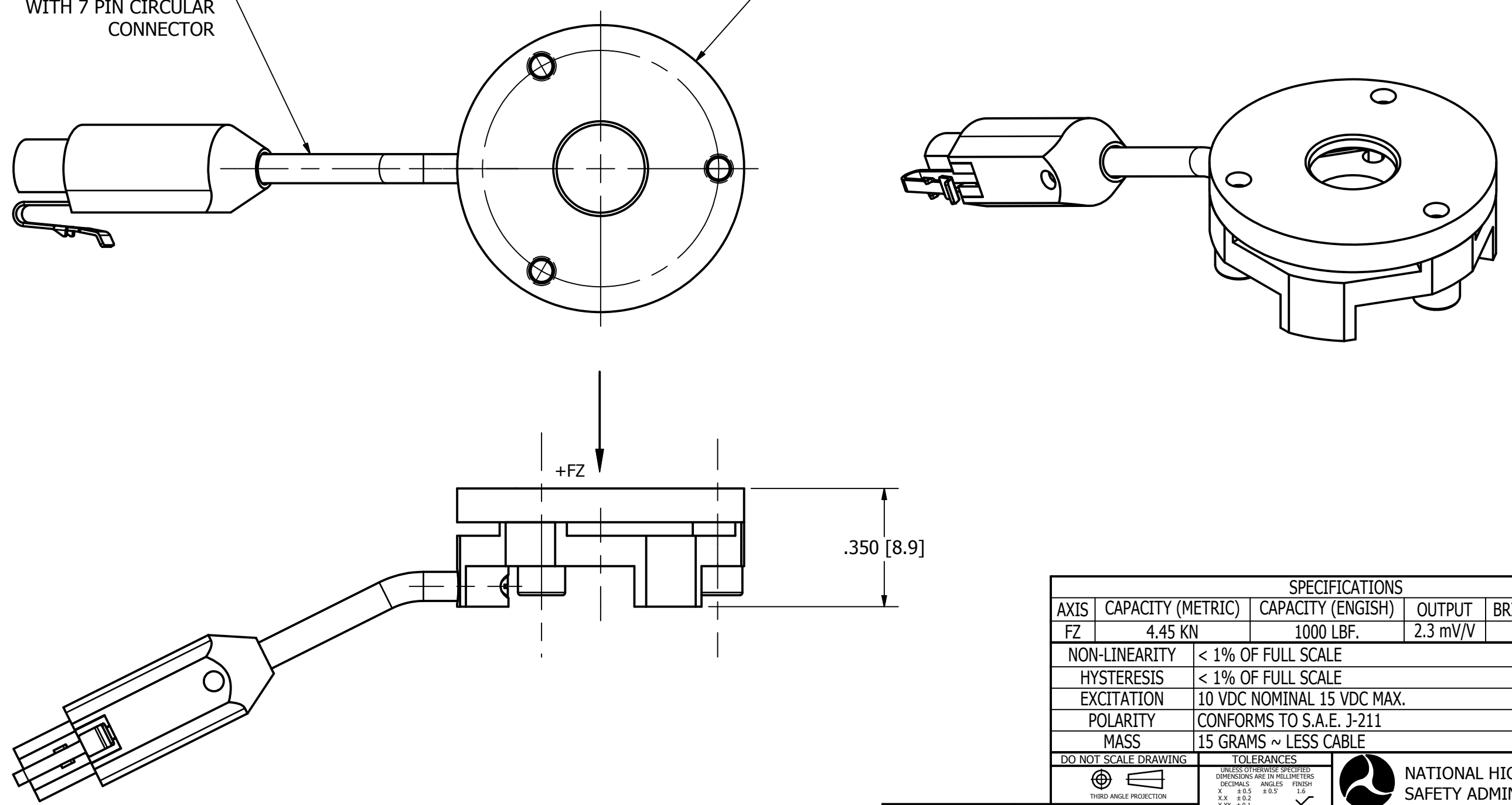
380MM LG. CABLE  
WITH 7 PIN CIRCULAR  
CONNECTOR

Ø.850 [21.6]

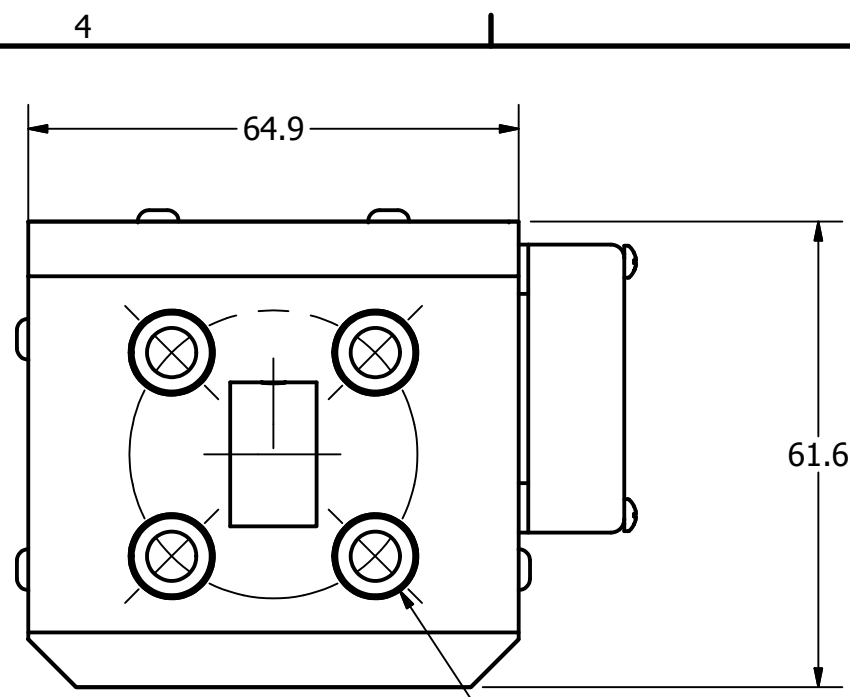
.350 [8.9]

+FZ

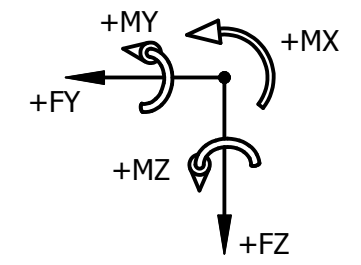
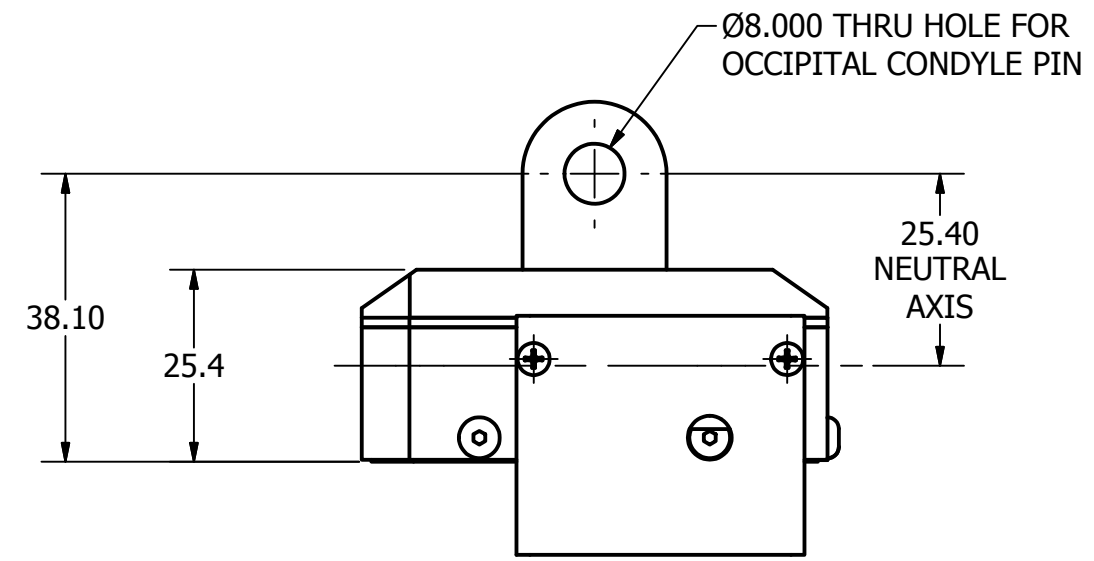
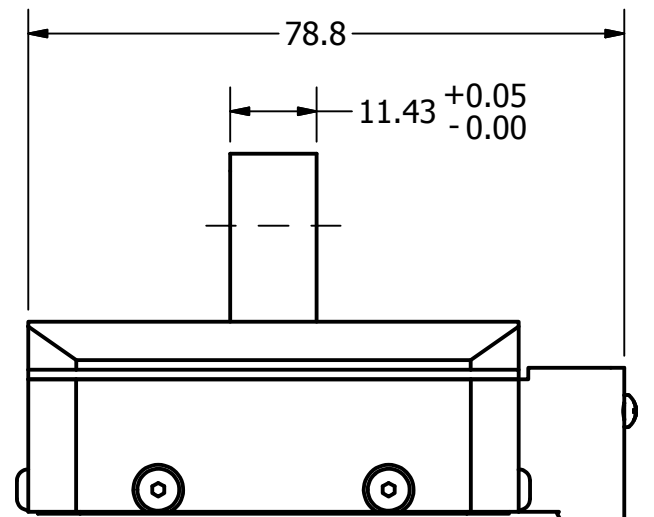
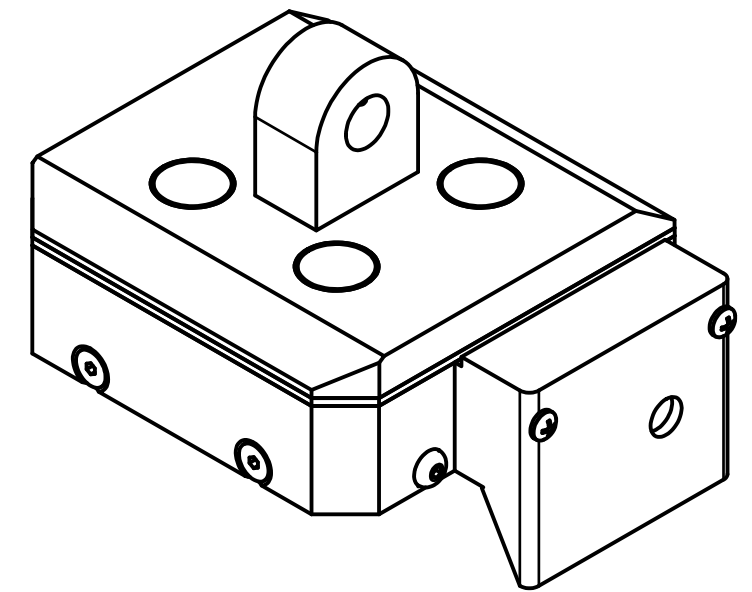
SPECIFICATIONS				
AXIS	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTANCE
FZ	4.45 KN	1000 LBF.	2.3 mV/V	1050 OHM
NON-LINEARITY	< 1% OF FULL SCALE			
HYSTERESIS	< 1% OF FULL SCALE			
EXCITATION	10 VDC NOMINAL 15 VDC MAX.			
POLARITY	CONFORMS TO S.A.E. J-211			
MASS	15 GRAMS ~ LESS CABLE			
DO NOT SCALE DRAWING	TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> DESCRIPTION: Ø .850 SKULL SPRING LOAD CELL THOR (METRIC)	
 THIRD ANGLE PROJECTION	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> DECIMALS ANGLES FINISH X ±0.5 ±0.5 1.6 X.X ±0.2 X.XX ±0.1 X.XXX ±0.01			
PROJECT NO.:	MATERIAL:	HEAT TREAT:	FINISH:	REMOVED BURRS & BREAK SHARP EDGES
				DRAWN BY: M.FINK DATE: 8/11/2011 CHECKED BY: CJT DATE: 7/3/2012 ENGINEER: M.FINK DATE: 7/3/12
NEXT ASSEMBLY	QTY	SCALE: 3:1		DRAWING NO.: SA572-S112
TOTAL QTY IN DUMMY	2	SCALE: 3:1		REV: A



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE FOR PRODUCTION	9/16/11	TORCH



C'BORE HOLE FOR  
M6x1 X 14 LG. SHCS  
(4) HOLES ON A Ø38.10 B.C.



COVER FOR A 31 SOCKET  
MICRO-D CONNECTOR

SPECIFICATIONS				
AXIS	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTANCE
FX	8.9 kN	2000 LBF.	2.0 mV/V	350
FY	8.9 kN	2000 LBF.	2.0 mV/V	350
FZ	13.3 kN	3000 LBF.	1.2 mV/V	700
MX	282.4 Nm	2500 IN-LBF.	1.7 mV/V	350
MY	282.4 Nm	2500 IN-LBF.	1.7 mV/V	350
MZ	282.4 Nm	2500 IN-LBF.	2.7 mV/V	700

NON-LINEARITY	< 1% OF FULL SCALE
HYSTERESIS	< 1% OF FULL SCALE
CROSSTALK	< 5% OF FULL SCALE
EXCITATION	10 VDC NOMINAL 15 VDC MAX.
POLARITY	CONFORMS TO S.A.E. J-211
MASS	426 g (.94 LBS) LESS CABLE

DO NOT SCALE DRAWING		TOLERANCES	
	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS	
		DECIMALS	ANGLES FINISH
		X ±0.5	±0.5 1.6
		X.X ±0.2	
		X.XX ±0.1	
		X.XXX ±0.01	

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: UPPER NECK LOAD CELL THOR (METRIC)

DRAWN BY: M.FINK DATE: 8/22/2011

CHECKED BY: C TORCHALA DATE: 9/16/2011

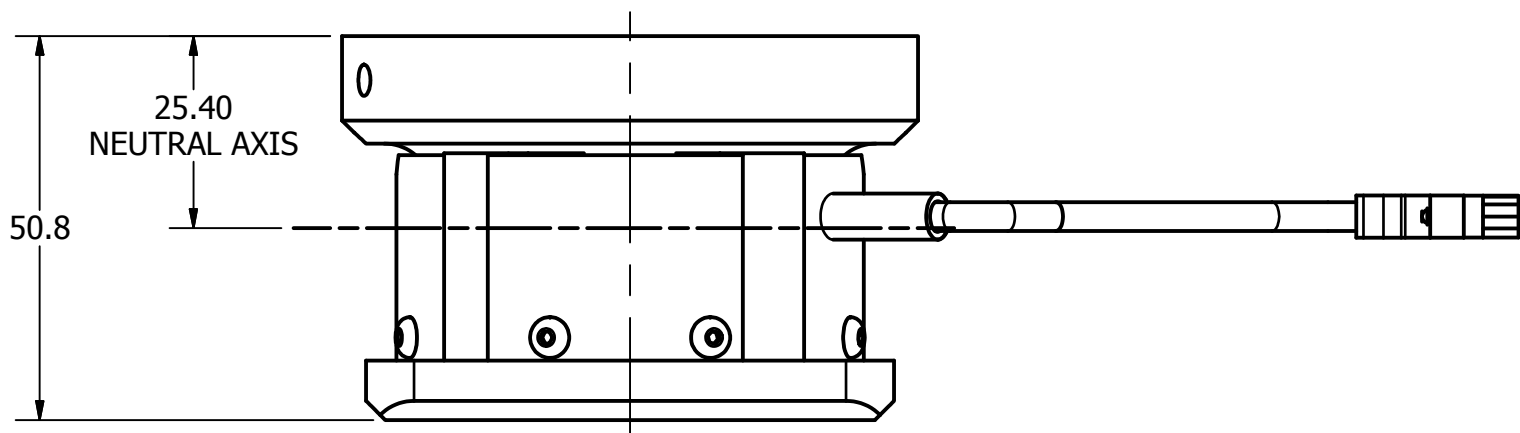
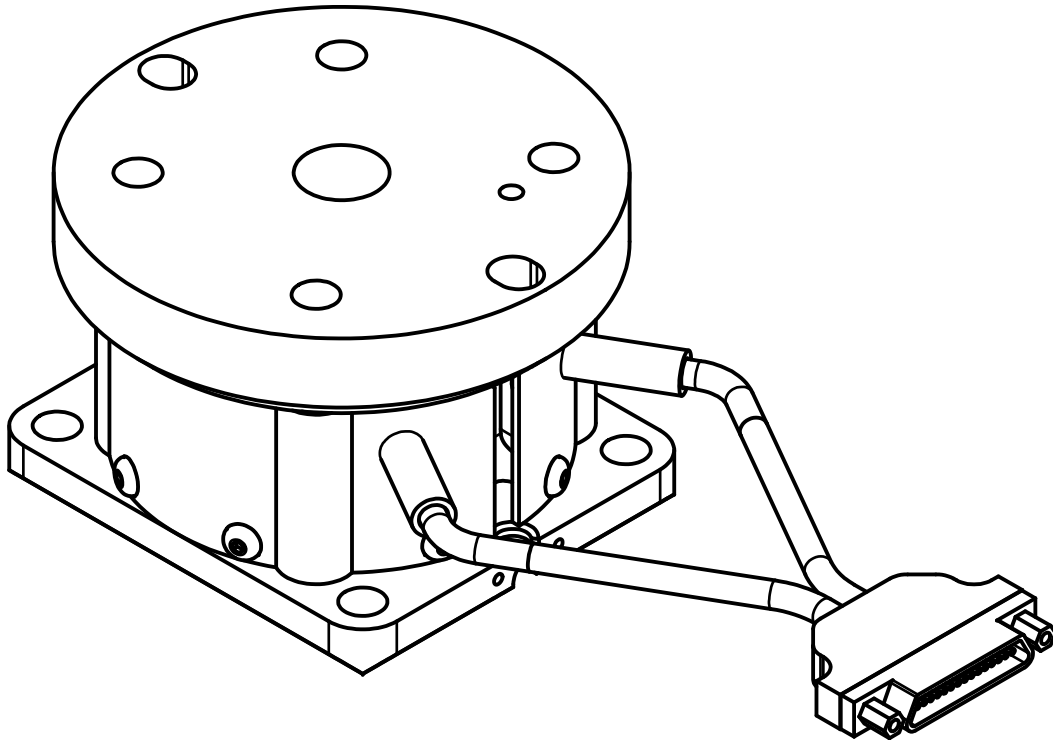
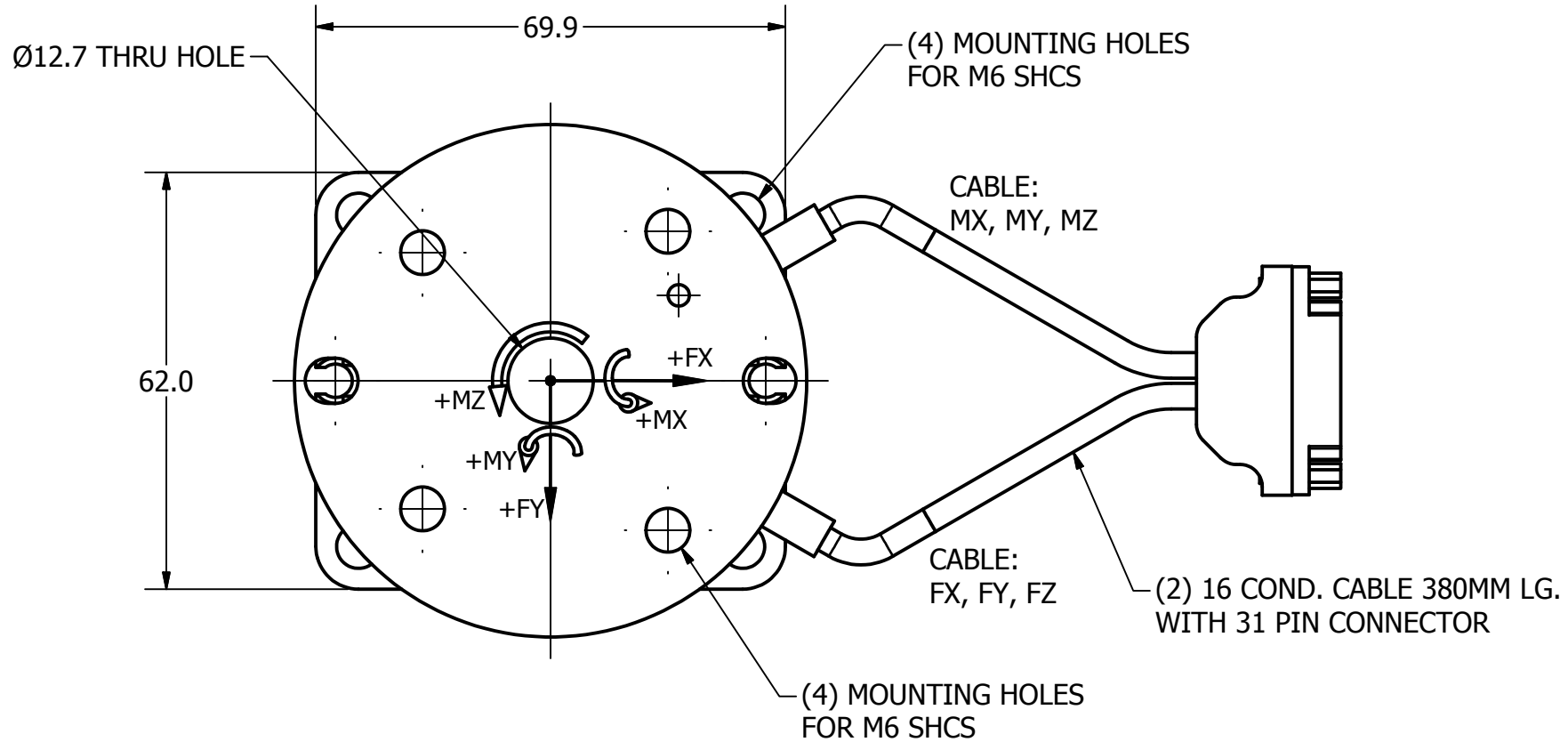
ENGINEER: M.FINK DATE: 7/3/12

SIZE: SHEET B 1 OF 1

DRAWING NO.: SA572-S110

NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE FOR PRODUCTION	9/9/2011	TORCH



SPECIFICATIONS				
AXIS	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTANCE
FX	13.3 kN	3000 LBF.	2.3 mV/V	350
FY	13.3 kN	3000 LBF.	2.3 mV/V	350
FZ	13.3 kN	3000 LBF.	1.0 mV/V	700
MX	452.0 Nm	4000 IN-LBF.	1.8 mV/V	350
MY	452.0 Nm	4000 IN-LBF.	1.8 mV/V	350
MZ	226.0 Nm	2000 IN-LBF.	1.5 mV/V	700

NON-LINEARITY	< 1% OF FULL SCALE
HYSTERESIS	< 1% OF FULL SCALE
CROSSTALK	< 5% OF FULL SCALE
EXCITATION	10 VDC NOMINAL 15 VDC MAX.
POLARITY	CONFORMS TO S.A.E. J-211
MASS	800 GRAMS (1.76 LBS.)

DO NOT SCALE DRAWING		TOLERANCES	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		DECIMALS ANGLES FINISH	
X	±0.5	±0.5	1.6
X.X	±0.2		
X.XX	±0.1		
X.XXX	±0.01		
REMOVE BURRS & BREAK SHARP EDGES			
PROJECT NO.:		DRAWN BY:	M.FINK
MATERIAL:		DATE:	8/24/2011
CHECKED BY:	C TORCHALA	DATE:	9/9/2011
FINISH:		ENGINEER:	M.FINK
		DATE:	7/3/12

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

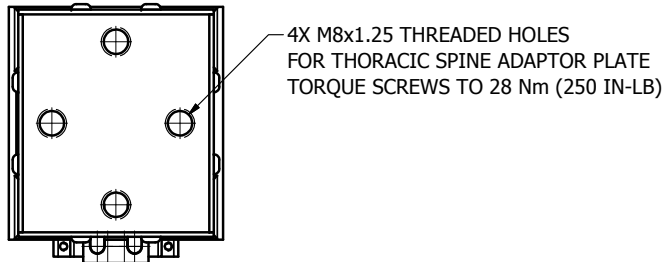
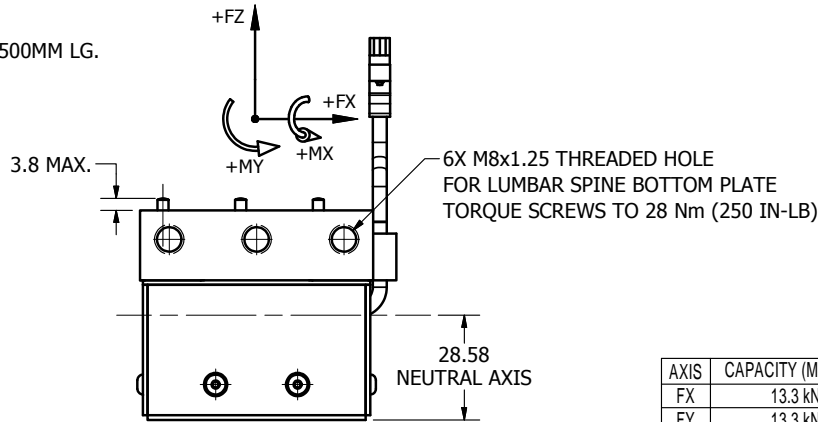
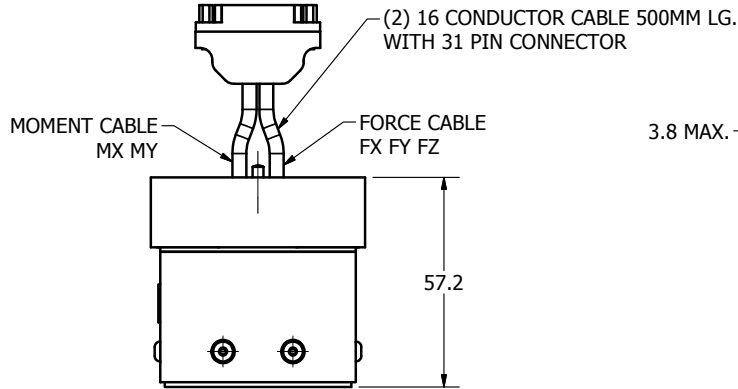
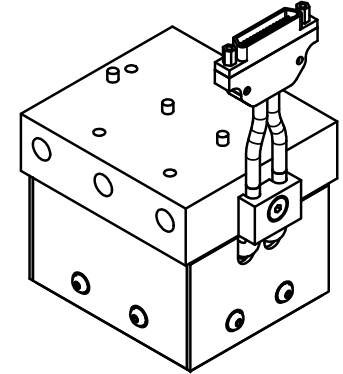
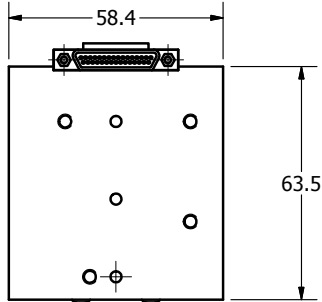
DESCRIPTION: LOWER NECK LOAD CELL THOR (METRIC)

SIZE: SHEET **B 1 of 1** DRAWING NO.: SA572-S111

NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE FOR PRODUCTION	9/13/11	TORCH



AXIS	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTANCE
FX	13.3 kN	3000 LBF.	1.9 mV/V	350
FY	13.3 kN	3000 LBF.	1.9 mV/V	350
FZ	17.8 kN	4000 LBF.	1.0 mV/V	700
MX	677.9 Nm	6000 IN-LBF.	1.4 mV/V	700
MY	903.9 Nm	8000 IN-LBF.	1.6 mV/V	700

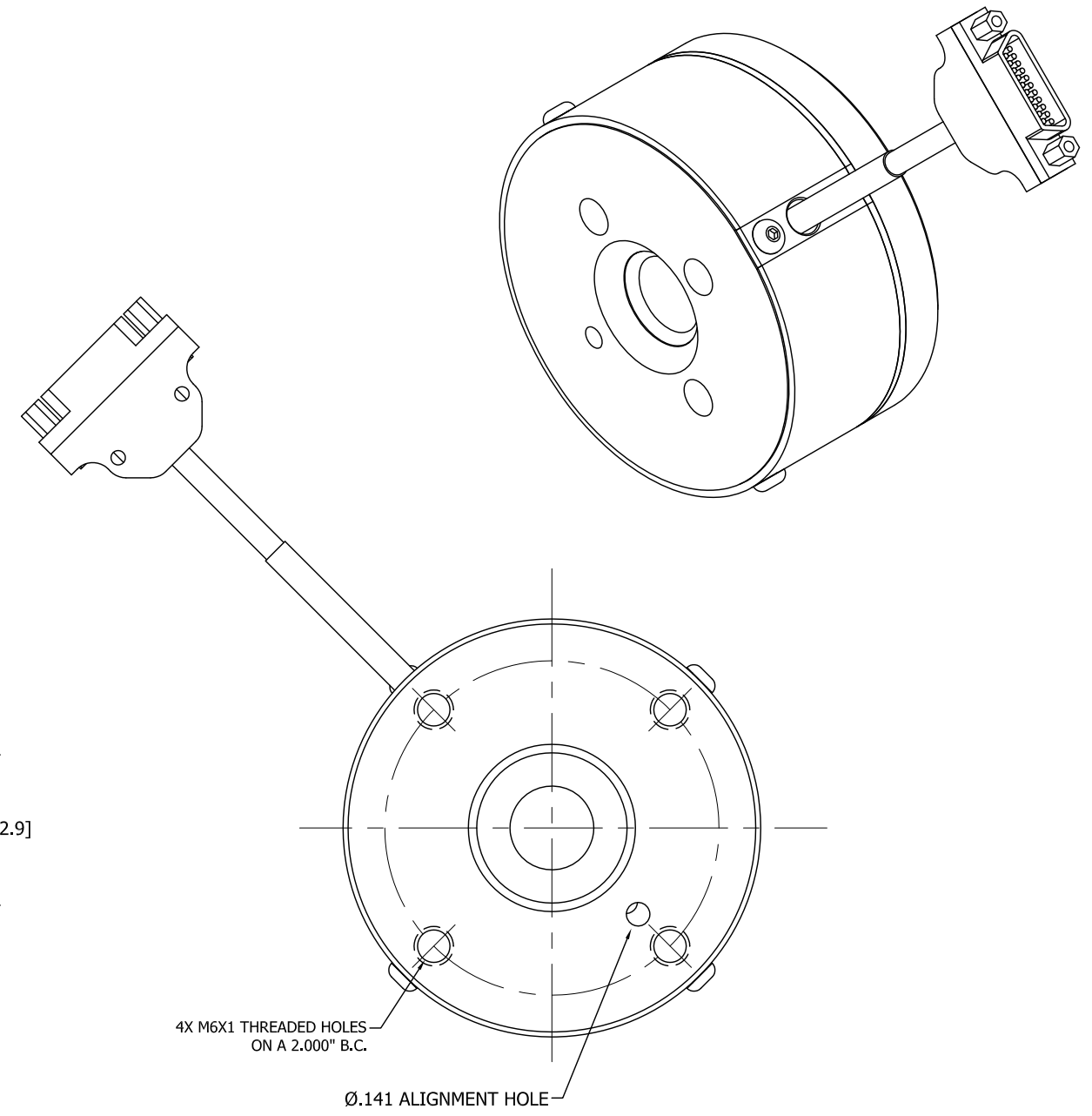
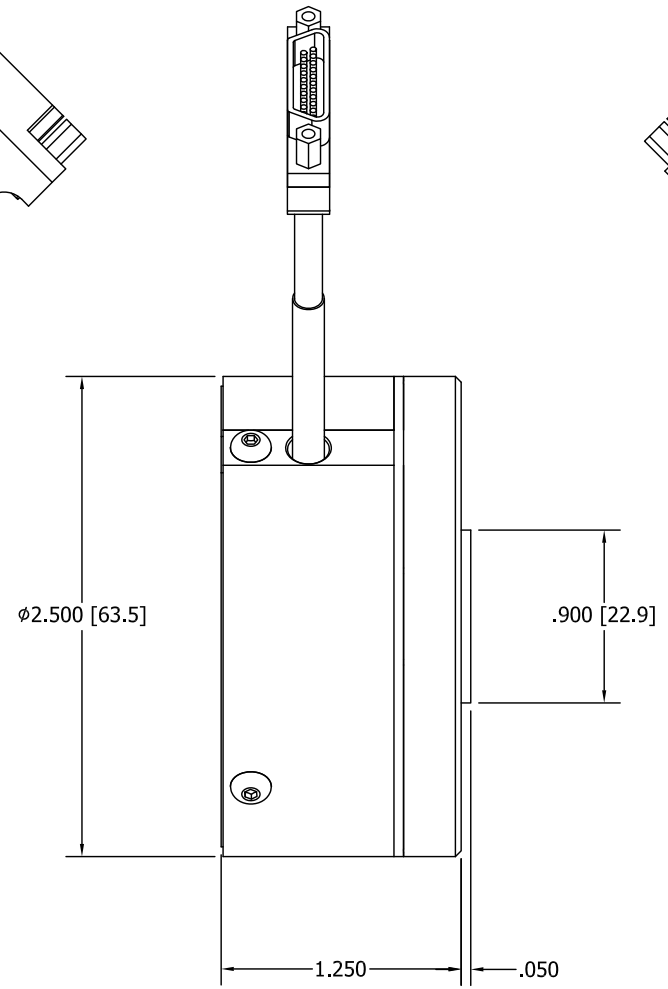
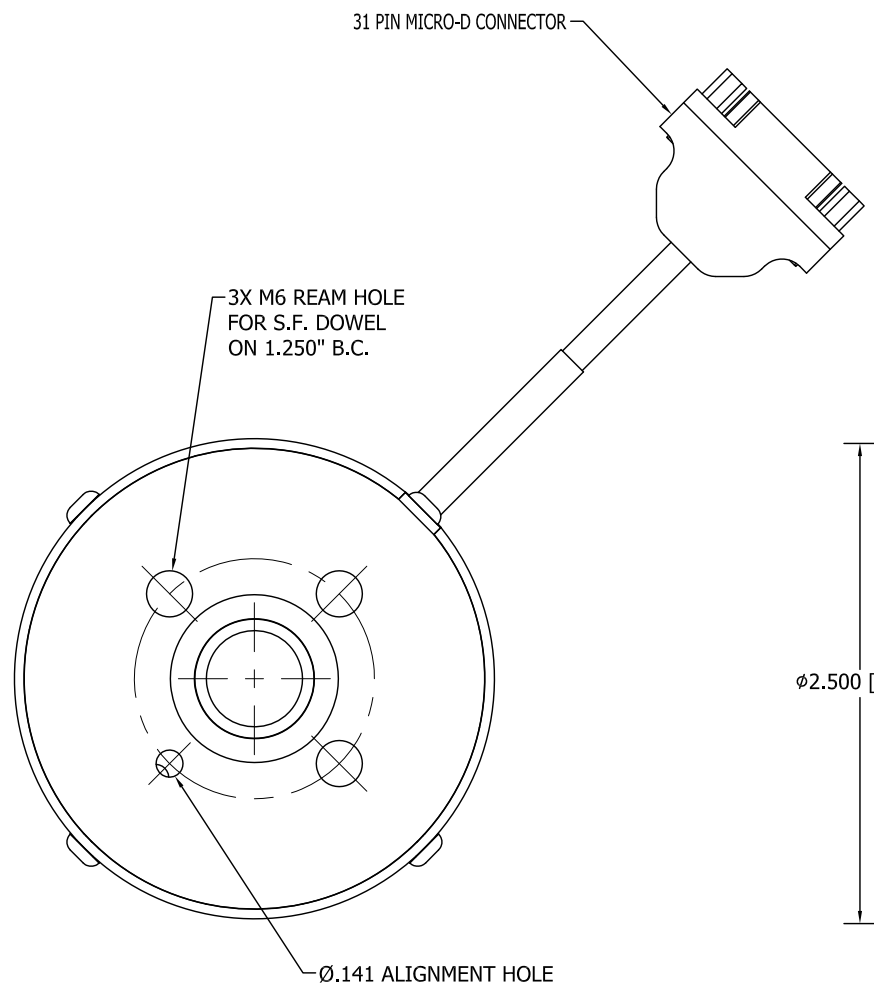
NON-LINEARITY	< 1% OF FULL SCALE
HYSTERESIS	< 1% OF FULL SCALE
CROSSTALK	< 5% OF FULL SCALE
EXCITATION	10 VDC NOMINAL 15 VDC MAX.
POLARITY	CONFORMS TO S.A.E. J-211
MASS	1.03 kg (2.27 LBS) ~ LESS CABLES & CONNECTOR

<p><b>DO NOT SCALE DRAWING</b></p> <p>THIRD ANGLE PROJECTION</p>	<p><b>TOLERANCES</b></p> <p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</p> <table border="1"> <tr> <th>DIMENSIONAL</th> <th>ANGLES</th> <th>FINISH</th> </tr> <tr> <td>0.1</td> <td>0.5</td> <td>1.6</td> </tr> <tr> <td>0.2</td> <td>0.5</td> <td>1.6</td> </tr> <tr> <td>0.3</td> <td>0.5</td> <td>1.6</td> </tr> <tr> <td>0.4</td> <td>0.5</td> <td>1.6</td> </tr> <tr> <td>0.5</td> <td>0.5</td> <td>1.6</td> </tr> </table> <p>REMOVE BURRS &amp; BREAK SHARP EDGES</p>	DIMENSIONAL	ANGLES	FINISH	0.1	0.5	1.6	0.2	0.5	1.6	0.3	0.5	1.6	0.4	0.5	1.6	0.5	0.5	1.6	<p><b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b></p> <p>DESCRIPTION: THORACIC SPINE LOAD CELL THOR (METRIC)</p>
DIMENSIONAL	ANGLES	FINISH																		
0.1	0.5	1.6																		
0.2	0.5	1.6																		
0.3	0.5	1.6																		
0.4	0.5	1.6																		
0.5	0.5	1.6																		
<p>PROJECT NO.</p> <p>MATERIAL:</p> <p>HEAT TREAT:</p> <p>FINISH:</p>	<p>DRAWN BY: M.FINK</p> <p>CHECKED BY: C.TORCHALA</p> <p>ENGINEER: M.FINK</p> <p>DATE: 9/3/2011</p> <p>DATE: 9/15/2011</p> <p>DATE: 7/3/12</p>	<p>SIZE: B</p> <p>SHEET: 1 OF 1</p> <p>SCALE: NONE</p> <p>DRAWING NO.: SA572-S127</p> <p>REV: A</p>																		

NOTE: MOUNT LOAD CELL WITH CABLES TO REAR OF SPINE

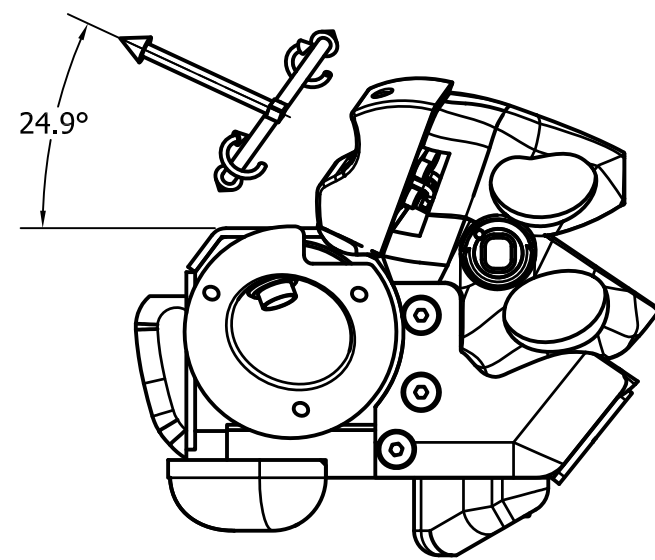
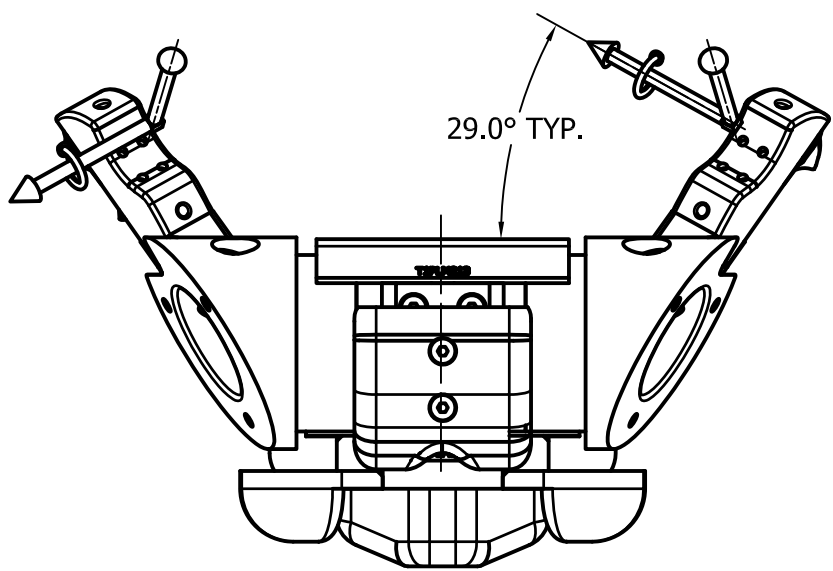
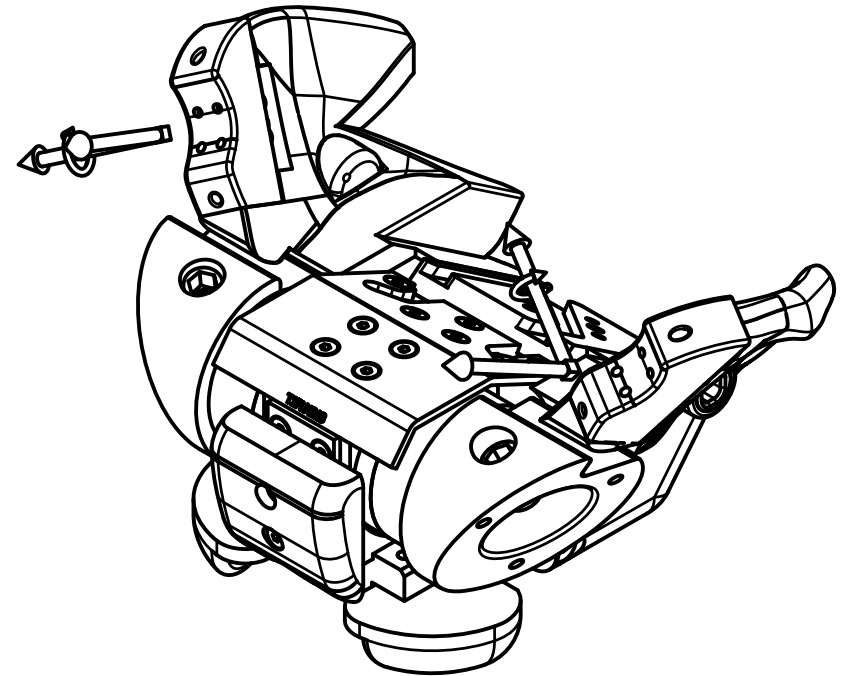
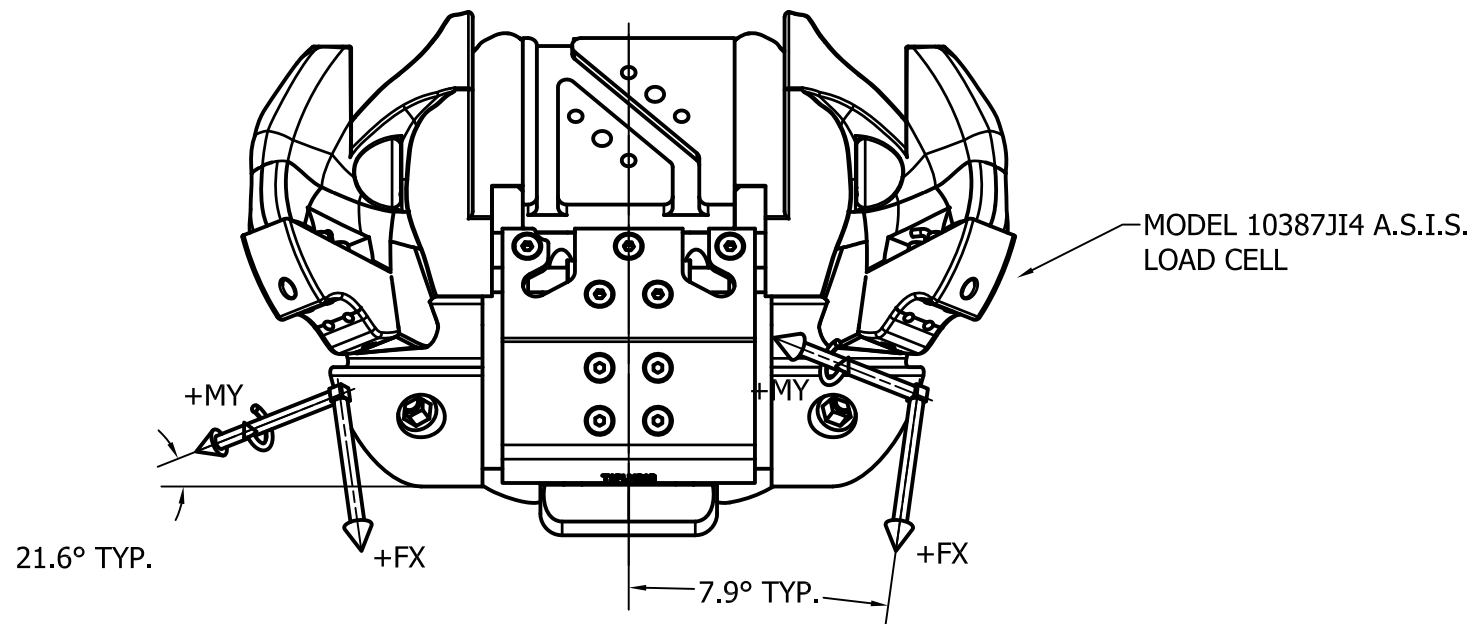
NEXT ASSEMBLY	QTY	TOTAL QTY IN DUMMY
		1

REVISION HISTORY				
REV.	ZONE	DESCRIPTION	DATE	BY
1			10/19/2007	



SPECIFICATIONS				
CH.	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTA
FX	22.24 kN	5000 LBF.	2.4 mV/V	350
FY	13.34 kN	3000 LBF.	0.8 mV/V	700
FZ	13.34 kN	3000 LBF.	2.0 mV/V	350
NON-LINEARITY		< 1% OF FULL SCALE		
HYSTERESIS		< 1% OF FULL SCALE		
CROSSTALK		< 5% OF FULL SCALE		
EXCITATION		10 VDC NOMINAL 15 VDC MAX.		
POLARITY		CONFORMS TO S.A.E. J-211 (RIGHT SIDE ONLY)		
MASS		0.94 LBS (426.3 g) LESS CABLE		



PARTS LIST				DEPARTMENT OF TRANSPORTATION	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES		ENGINEERED: L.BENFANT	DATE: 10/18/2011	MATERIAL:	
ANGLES ±.5° DECIMALS X ±1 mm X.X ±0.1 mm * DO NOT SCALE DRAWING *		DRAWN: L.BENFANT	DATE: 10/18/11	FINISH:	
THIRD ANGLE PROJECTION		CHECKED: M.FINK	DATE: 10/18/11	HEAT TREAT:	
UNLESS OTHERWISE SPECIFIED: ALL MACHINED SURFACES 1.60 OR BETTER.		DEBUR AND BREAK ALL SHARP EDGES		QTY./ASSEMBLY:	DRAWING TITLE:
SCALE:	SIZE:	REVISION:	QTY./DUMMY:	ACETABULUM LOAD CELL ASS'Y, LEFT	
A3		1	1	DRAWING NUMBER:	Page:
				SA572-S128	1 of 1



THE MODEL 10387JI4 A.S.I.S. LOAD CELL IS DESIGNED TO PROVIDE A MEASUREMENT OF THE FORCE OF A LAP BELT AGAINST THE ILIAC SPINE OF THE PELVIS. THIS FORCE IS MEASURED AS FX AND IS INSENSITIVE TO THE POSITION OF THE BELT ON THE ILIAC. THE CHANNEL MY IS DESIGNED TO PROVIDE AN INDICATION OF THE POSITION OF THE BELT ON THE ILIAC. A READING OF ZERO OUTPUT WOULD OCCUR IF THE CENTER OF PRESSURE OF THE BELT IS ON THE LOAD CELL NEUTRAL AXIS. IF THE BELT IS ABOVE THE NEUTRAL AXIS A POSITIVE MOMENT READING WOULD OCCUR, AND A BELT POSITIONED BELOW THE NEUTRAL AXIS WOULD PRODUCE A NEGATIVE BENDING MOMENT OUTPUT.

SPECIFICATIONS				
AXIS	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTANCE
FX	13.0 KN	2922.5 LBF.	0.9 mV/V	350
MY	325.0 NM	2876.5 IN-LBF.	1.3 mV/V	700

NON-LINEARITY	< 2.0% OF FULL SCALE
HYSTERESIS	< 2.5% OF FULL SCALE
CROSSTALK	< 5.0% OF FULL SCALE
EXCITATION	10 VDC NOMINAL, 15 VDC MAXIMUM
POLARITY	CONFORMS TO S.A.E. J-211
MASS	211 GRAMS ~ LESS CABLES

DO NOT SCALE DRAWING	TOLERANCES	 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>														
 <small>THIRD ANGLE PROJECTION</small>	<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> X ±0.5 ° ±0.5 1.6 XX ±0.2 ° ±0.5 1.6 XXX ±0.1 ° ±0.5 1.6 XXXX ±0.01 ° ±0.5 1.6															
PROJECT NO.:	REMOVE BURRS & BREAK SHARP EDGES	DESCRIPTION: <b>A.S.I.S. LOAD CELL</b>														
MATERIAL:	DRAWN BY: <b>M.FINK</b>	DATE: <b>8/5/2011</b>														
HEAT TREAT:	CHECKED BY: <b>CRM</b>	DATE: <b>8/18/2011</b>														
FINISH:	ENGINEER:	DATE:														
<table border="1"> <tr> <td>NEXT ASSEMBLY</td> <td>QTY</td> </tr> <tr> <td>TOTAL QTY IN DUMMY</td> <td></td> </tr> </table>	NEXT ASSEMBLY	QTY	TOTAL QTY IN DUMMY		<table border="1"> <tr> <td>SIZE: <b>B</b></td> <td>SHEET: <b>1</b></td> <td>OF: <b>1</b></td> </tr> <tr> <td>SCALE:</td> <td></td> <td></td> </tr> </table>	SIZE: <b>B</b>	SHEET: <b>1</b>	OF: <b>1</b>	SCALE:			<table border="1"> <tr> <td>DRAWING NO.:</td> <td>REV:</td> </tr> <tr> <td><b>SA572-S119</b></td> <td><b>C</b></td> </tr> </table>	DRAWING NO.:	REV:	<b>SA572-S119</b>	<b>C</b>
NEXT ASSEMBLY	QTY															
TOTAL QTY IN DUMMY																
SIZE: <b>B</b>	SHEET: <b>1</b>	OF: <b>1</b>														
SCALE:																
DRAWING NO.:	REV:															
<b>SA572-S119</b>	<b>C</b>															

4

3

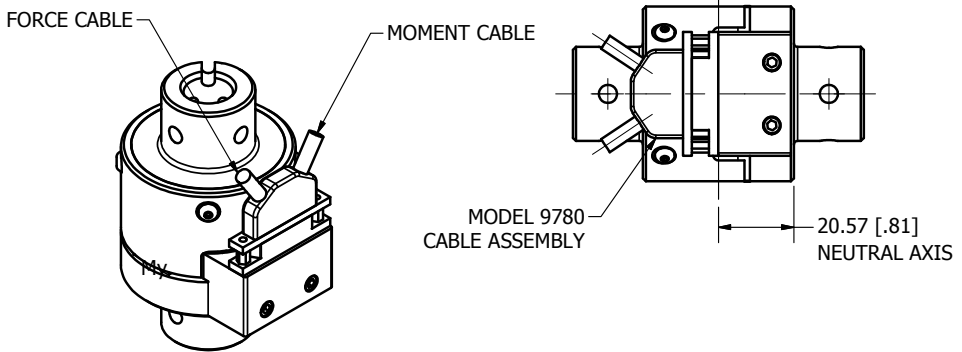
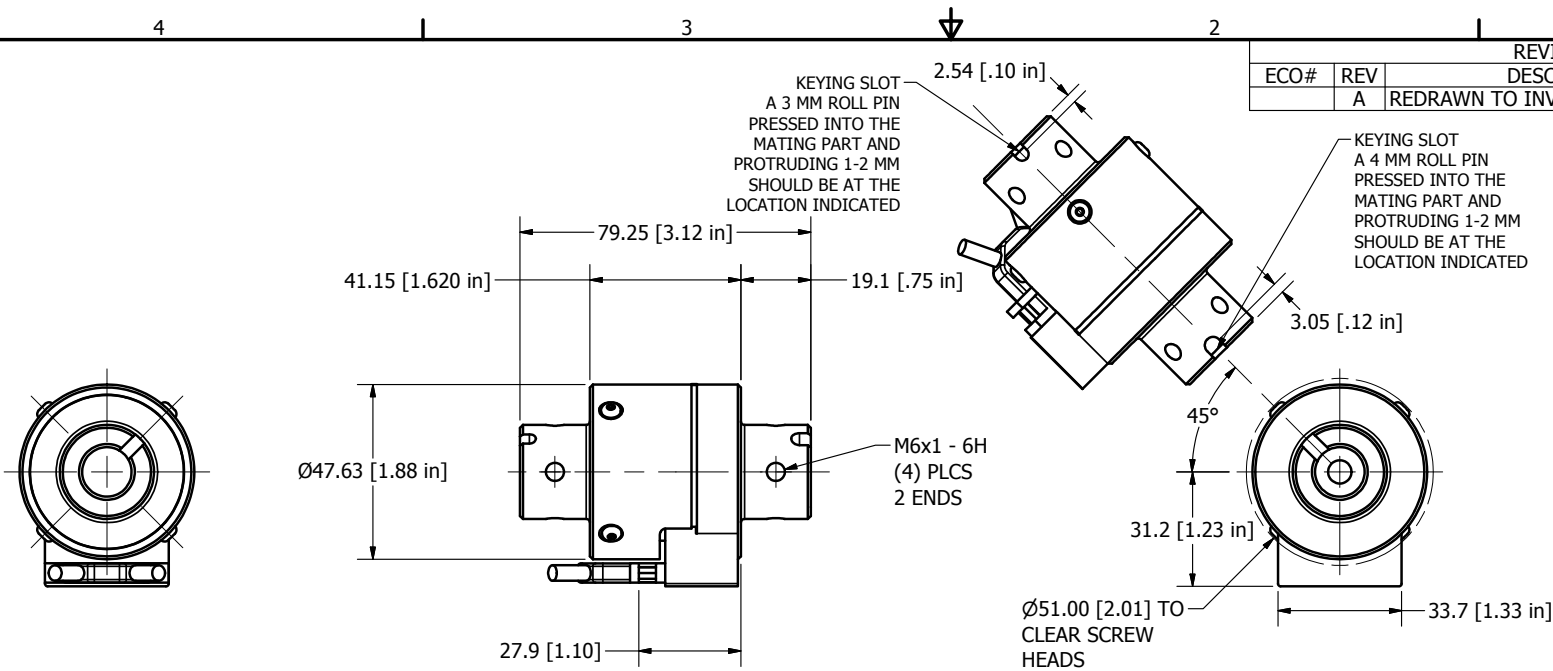
2

1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	REDRAWN TO INVENTOR	7/12/2011	MCO

KEYING SLOT  
A 3 MM ROLL PIN  
PRESSED INTO THE  
MATING PART AND  
PROTRUDING 1-2 MM  
SHOULD BE AT THE  
LOCATION INDICATED

KEYING SLOT  
A 4 MM ROLL PIN  
PRESSED INTO THE  
MATING PART AND  
PROTRUDING 1-2 MM  
SHOULD BE AT THE  
LOCATION INDICATED



SPECIFICATIONS				
AXIS	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTANCE
FX	15 KN	3400 LBF.	2.1 mV/V	350
FY	15 KN	3400 LBF.	2.1 mV/V	350
FZ	15 KN	3400 LBF.	1.0 mV/V	700
MX	350 NM	3100 IN-LBF.	2.3 mV/V	350
MY	350 NM	3100 IN-LBF.	2.3 mV/V	350
MZ	300NM	2700 IN-LBF.	2.7 mV/V	700
NON-LINEARITY		< 1% OF FULL SCALE		
HYSTERESIS		< 1% OF FULL SCALE		
CROSSTALK		< 5% OF FULL SCALE		
EXCITATION		10 VDC NOMINAL 15 VDC MAX.		
POLARITY		CONFORMS TO S.A.E. J-211		
MASS		470g		

DO NOT SCALE DRAWING	TOLERANCES
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
	DIMENSIONAL ANGLES FINISH
	X.X ±0.2 0.5 1.6
	X.XX ±0.1 0.25 0.5
	X.XXX ±0.05
	REMOVE BURRS & BREAK SHARP EDGES
MATERIAL:	DRAWN BY: mconnor DATE: 7/12/2011
HEAT TREAT:	CHECKED BY: DATE:
FINISH:	ENGINEER: DATE:

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: THOR FEMUR LOAD CELL

SIZE: B 1 OF 1 SHEET

SCALE: .75 : 1

DRAWING NO.: SA572-S120

REV: A

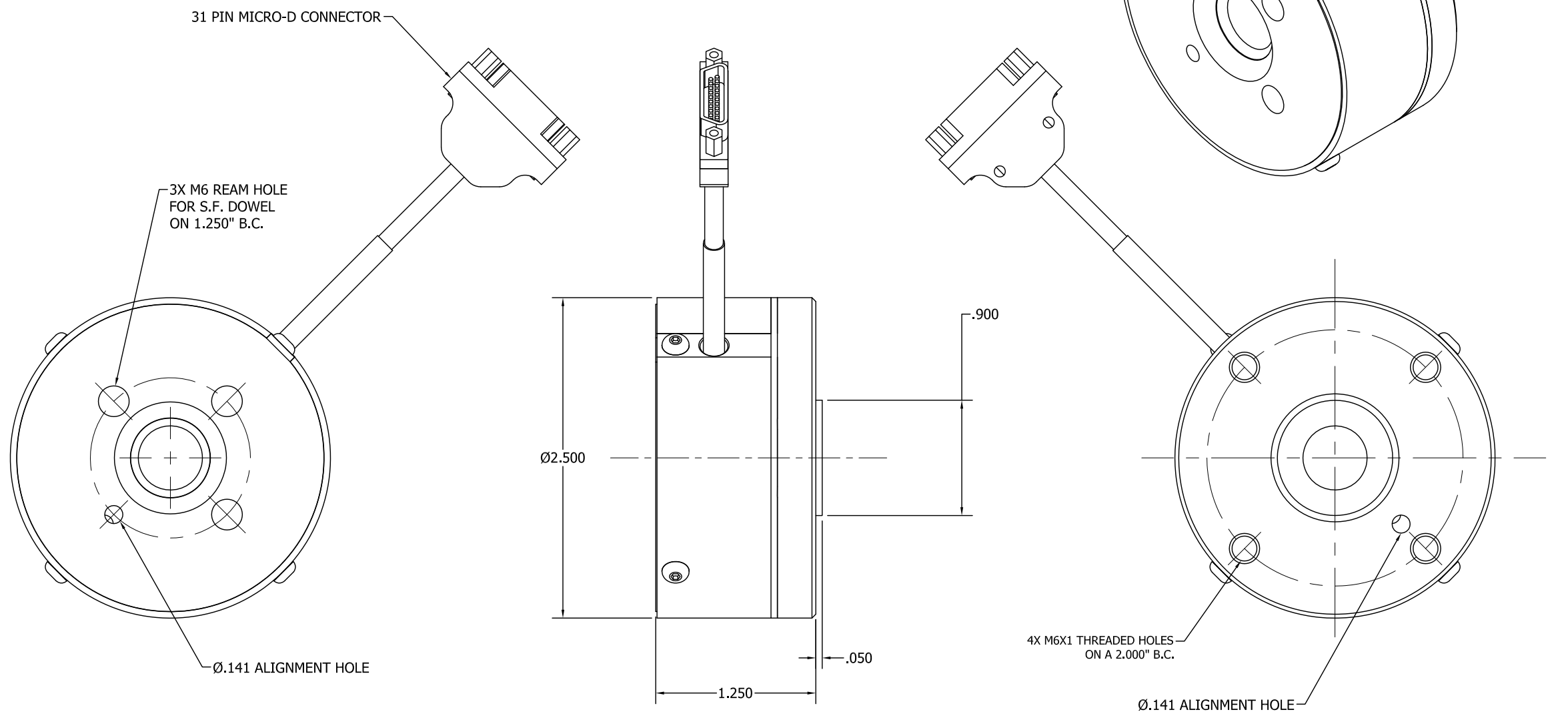
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2

1

REVISION HISTORY				
REV.	ZONE	DESCRIPTION	DATE	BY
1			10/19/2007	



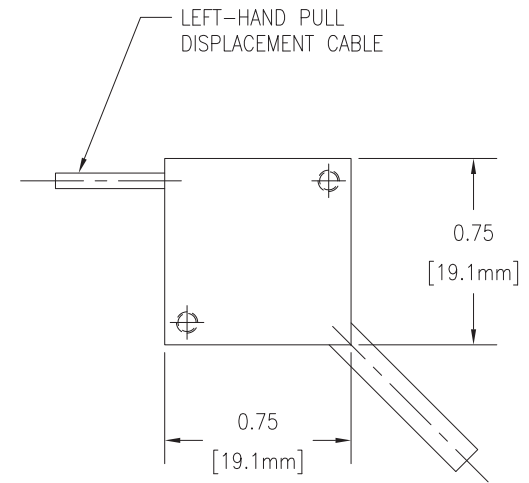
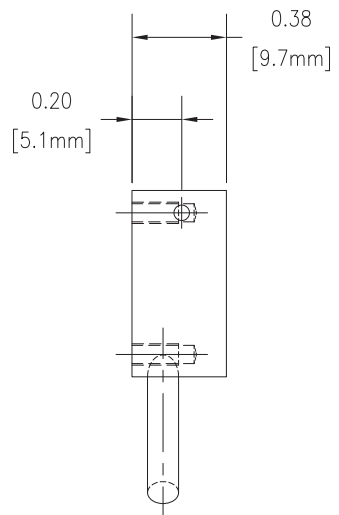
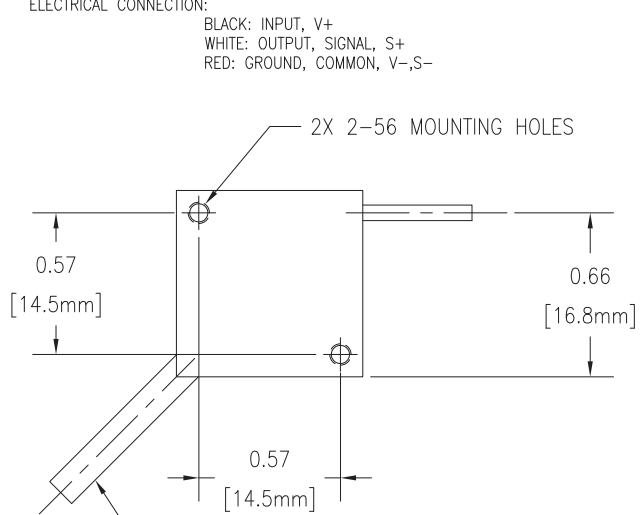
SPECIFICATIONS				
CH.	CAPACITY (METRIC)	CAPACITY (ENGLISH)	OUTPUT	BRIDGE RESISTANCE
FX	22.24 kN	5000 LBF.	2.4 mV/V	350
FY	13.34 kN	3000 LBF.	0.8 mV/V	700
FZ	13.34 kN	3000 LBF.	2.0 mV/V	350
NON-LINEARIT	< 1% OF FULL SCALE			
HYSTERESIS	< 1% OF FULL SCALE			
CROSSTALK	< 5% OF FULL SCALE			
EXCITATION	10 VDC NOMINAL 15 VDC MAX.			
POLARITY	CONFORMS TO S.A.E. J-211 (RIGHT SIDE ONLY)			
MASS	0.94 LBS (426.3 g) LESS CABLE			

PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ANGLES ±.5° DECIMALS X ±1 mm X.X ±0.1 mm * DO NOT SCALE DRAWING *	ENGINEERED: L.BENFANT	DATE: 10/18/2011	MATERIAL:	DEPARTMENT OF TRANSPORTATION
	DRAWN: L.BENFANT	DATE: 10/19/2007	FINISH:	
	CHECKED: M.FINK	DATE: 10/19/12	HEAT TREAT:	
	DEBUR AND BREAK ALL SHARP EDGES		QTY./ASSEMBLY:	DRAWING TITLE: ACETABULUM LOAD CELL ASSY, RIGHT
THIRD ANGLE PROJECTION	SCALE:	SIZE: A3	REVISION: 1	QTY./DUMMY: 1
				DRAWING NUMBER: SA572-S129
				Page: 1 of 1

UNLESS OTHERWISE SPECIFIED:  
ALL MACHINED SURFACES 1.60 OR BETTER.

POTENTIOMETER TYPE 1-TURN, PRECISION, CONDUCTIVE PLASTIC  
 RESISTANCE: 5K ohms ±10%  
 OUTPUT SIGNAL: ANALOG SIGNAL FROM 0 TO SUPPLY VOLTAGE (VOLTAGE DIVIDER CIRCUIT)  
 INDEPENDENT LINEARITY ERROR: ±1.0% MAX. PER VRCI-P-100A  
 OUTPUT SMOOTHNESS: 0.1% MAX.  
 NORMAL MASS: 0.5 oz. (15.0g)  
 CABLE TRAVEL: 1.5" (38mm) MAXIMUM TRAVEL  
 ELECTRICAL CONNECTION:

BLACK: INPUT, V+  
 WHITE: OUTPUT, SIGNAL, S+  
 RED: GROUND, COMMON, V-,S-



ELECTRICAL CABLE  
 3-CONDCT FLYING LEAD  
 30 GAUGE MIN  
 18" (457MM) MIN. LENGTH

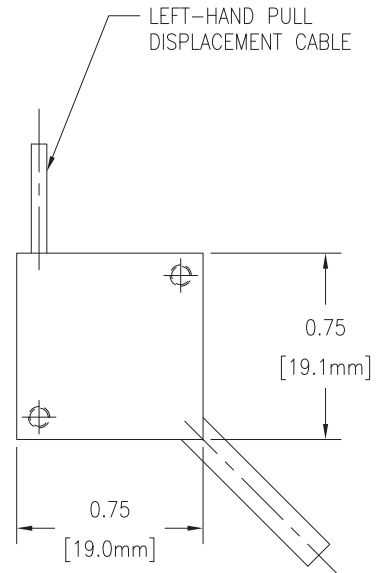
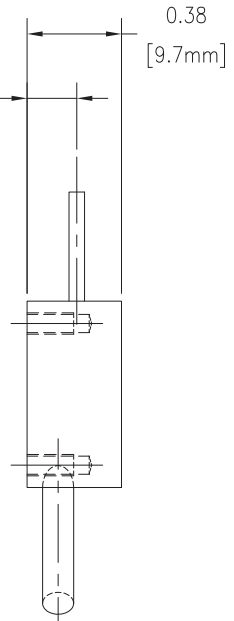
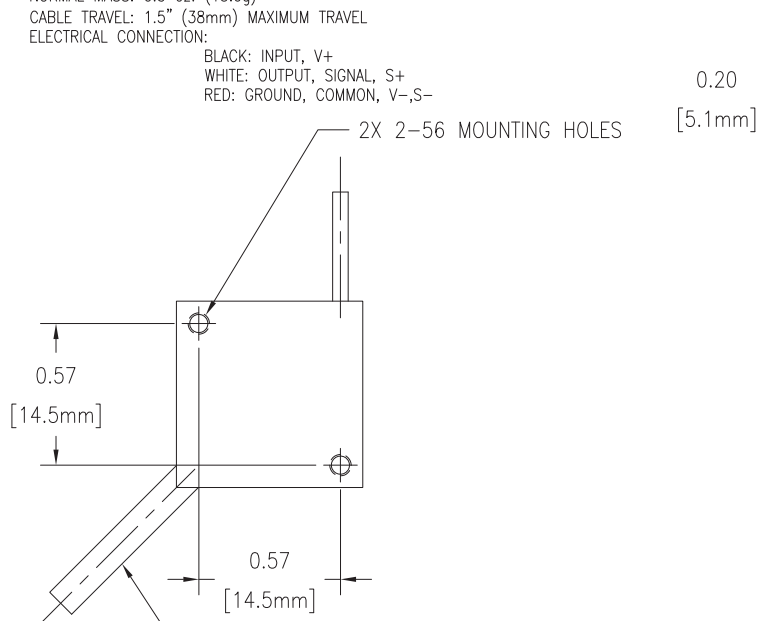
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY

ITEM	QTY	PART NO.	DESCRIPTION	MATERIAL
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±1/64    DECIMALS: .X ±.1    ANGLES: MACHINED: ±.5°			 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> STRING POT,MINI (LEFT)	
APPROVALS		DATE		
DRAWN D. Walker		12/14/2010		
CHECKED				
MATERIAL		ENGINEER	SIZE	
HEAT TREAT		APPROVED	DWG. NO.	
FINISH			REV.	
			SCALE 2:1	
			SHEET 1 OF 1	

POTENTIOMETER TYPE 1-TURN, PRECISION, CONDUCTIVE PLASTIC  
 RESISTANCE: 5K ohms  $\pm 10\%$   
 OUTPUT SIGNAL: ANALOG SIGNAL FROM 0 TO SUPPLY VOLTAGE (VOLTAGE DIVIDER CIRCUIT)  
 INDEPENDENT LINEARITY ERROR:  $\pm 1.0\%$  MAX. PER VRCI-P-100A  
 OUTPUT SMOOTHNESS: 0.1% MAX.  
 NORMAL MASS: 0.5 oz. (15.0g)  
 CABLE TRAVEL: 1.5" (38mm) MAXIMUM TRAVEL  
 ELECTRICAL CONNECTION:

BLACK: INPUT, V+  
 WHITE: OUTPUT, SIGNAL, S+  
 RED: GROUND, COMMON, V-, S-

2X 2-56 MOUNTING HOLES




ELECTRICAL CABLE  
 3-CONDCT FLYING LEAD  
 30 GAUGE MIN  
 18" (457MM) MIN. LENGTH

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY

ITEM	QTY	PART NO.	DESCRIPTION	MATERIAL
PARTS LIST				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		APPROVALS	DATE
FRACTIONS: $\pm 1/64$	DECIMALS: .X $\pm 1$ .XX $\pm 0.1$ .XXX $\pm 0.005$		
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		DRAWN D. Walker	12/14/2010
MATERIAL		CHECKED	
HEAT TREAT		ENGINEER	
FINISH		APPROVED	

 **NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION**

STRING POT, MINI (RIGHT)

SIZE <b>B</b>	DWG. NO. SA572-S90-R	REV.
SCALE 2:1	SHEET 1 OF 1	

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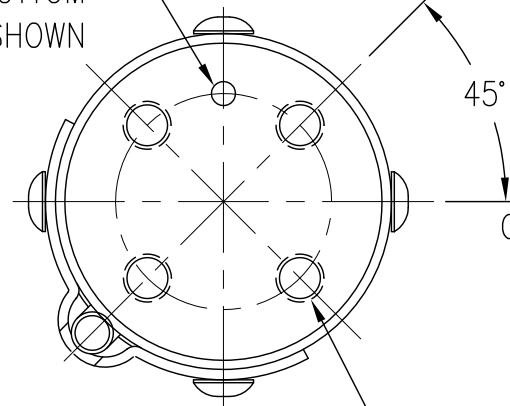
2

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REVISION HISTORY

ZONE	REV	DESCRIPTION	DATE	BY
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∅.125 [3.175] x .07 [1.78] DEEP  
FLAT BOTTOM  
1.125 [28.575] B.C. AS SHOWN



NEUTRAL AXIS

0.800 [20.32]

2.370 [60.20] MAX.

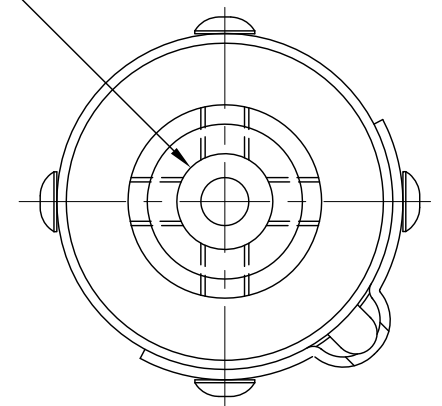
1.620 [41.15]

1/2"∅ HOLE

1.009 [25.62]

1.008 [25.60]

1.750 [44.45]



TAP 1/4-28 UNF  
(4) PLACES EQUALLY  
SPACED FULL THREADS.  
.38 [9.65] DEEP ON 1.125 [28.58] B.C.  
AS SHOWN.

1/4-28 UNF TAP THRU  
(4) PLACES 90° APART.

0.375 [9.53]

SPECIFICATIONS

AXIS	CAPACITY	
	LBF.	N
FX	2500	11120.5
FY	2500	11120.5
FZ	2500	11120.5
	IN-LBF	Nm
MX	3500	395.5
MY	3500	395.5

OUTPUT AT CAPACITY: 1MV/V MINIMUM  
NONLINEARITY < 1% OF FULL SCALE  
CROSSTALK < 5% OF FULL SCALE  
WEIGHT < 1.105LBS/.501 kg (CABLES NOT INCLUDED)

SIGNAL OUTPUT MUST BE COMPATIBLE WITH AND  
RECORDABLE IN A DATA CHANNEL AS DEFINED BY  
SAE J211.

FREE AIR RESONANT FREQUENCY: 5000 Hz FORCES MIN.  
3000 Hz MOMENTS MIN.

OPERATING TEMPERATURE: 0° TO 200° F.  
THERMAL SENSITIVITY: (60° TO 80°F) ±.03% OF READING /F°

MATERIAL: THE LOAD BEARING STRUCTURE OF THE LOAD CELL,  
INCLUDING PROVISIONS FOR THE LOAD CELL MOUNTING, ARE  
OF METAL OR METAL ALLOYS. NON-LOAD BEARING PARTS  
OF THE LOAD CELL, INTERNALLY AND/OR EXTERNALLY,  
INCLUDING WIRES AND THEIR ATTACHMENTS, MAY BE MADE  
OF ANY MATERIAL PROVIDING THEY DO NOT INTERFERE WITH  
THE PERFORMANCE OF THE LOAD CELL OR THE  
TRANSMISSION OF THE LOAD CELL SIGNALS.

AXIS SHOW ILLUSTRATE THEIR ORIENTATION WITH RESPECT TO THE INSTRUMENTATION; THEY ARE NOT MEANT TO INDICATE DIRECTION OF POSITIVE POLARITY.

ITEM	QTY	PART NO.	DESCRIPTION	MATERIAL
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			<p><b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b></p>	
FRACTIONS: ±1/64	DECIMALS: .X ±.1 .XX ±.01 .XXX ±.005	ANGLES: MACHINED: ±.5°		
APPROVALS		DATE	<p>FIVE CHANNEL UPPER TIBIA LOAD CELL THOR-M</p>	
DRAWN D. WALKER		1/10/2002		
CHECKED			<p>SIZE <b>B</b></p> <p>DWG. NO. SA572-S32</p>	
ENGINEER H. Pritz				
MATERIAL SEE NOTES		APPROVED	<p>SCALE 1:1</p> <p>SHEET 1 OF 1</p>	
HEAT TREAT				
FINISH				

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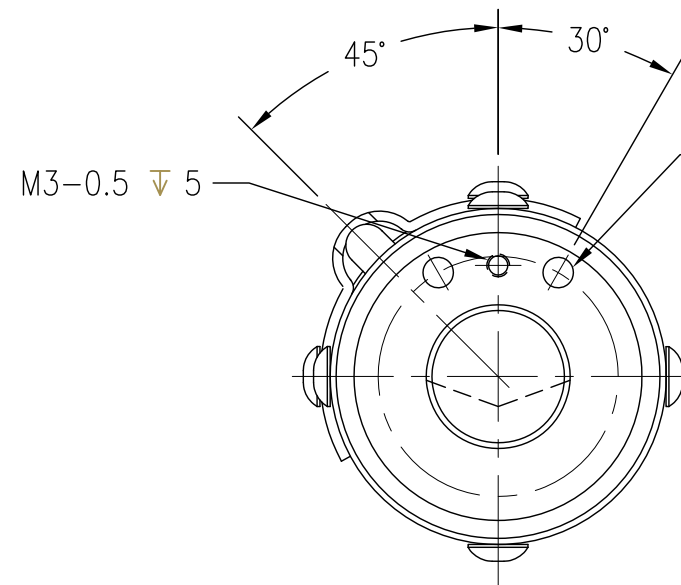
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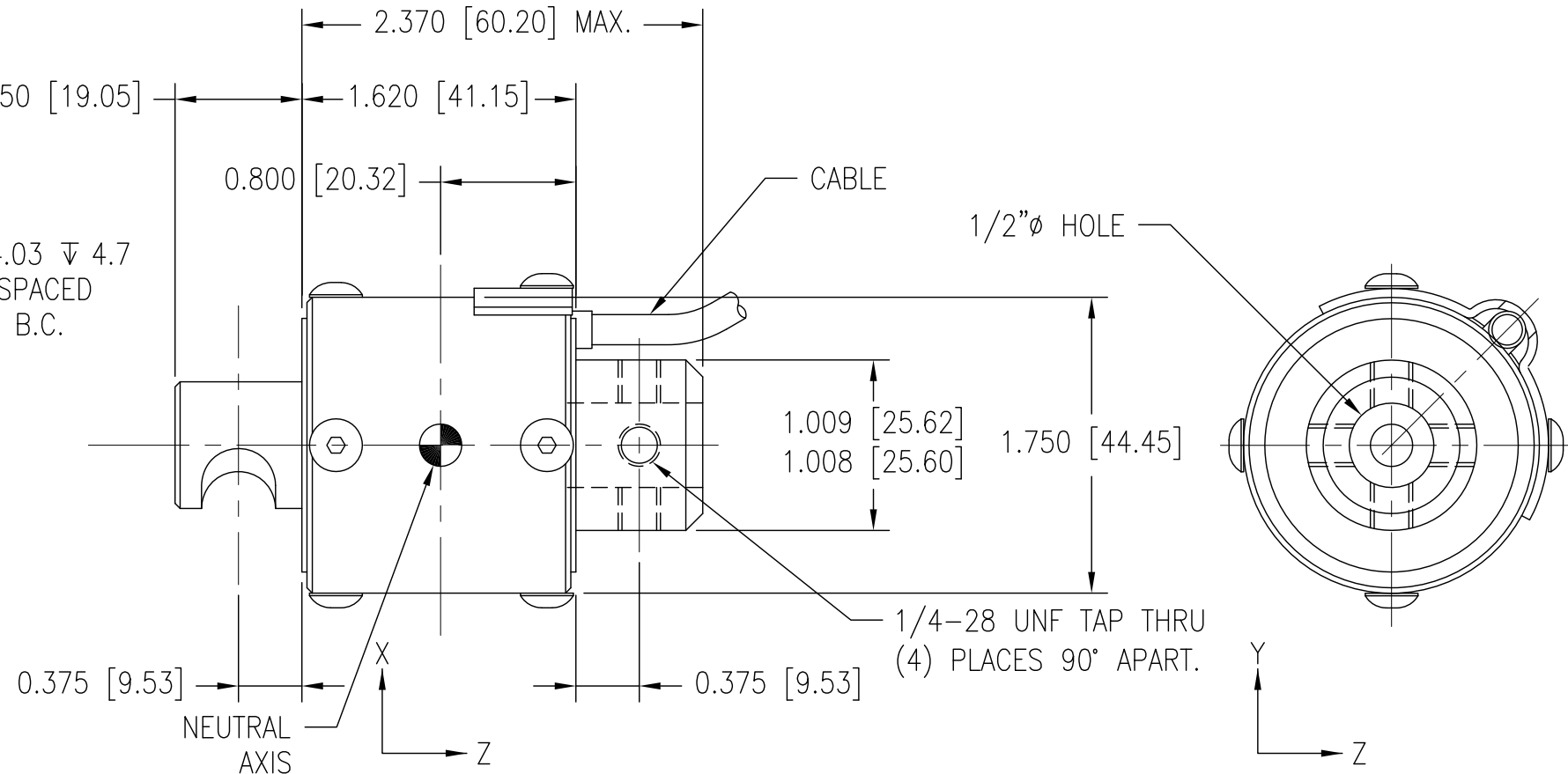
1

REVISION HISTORY

ZONE	REV	DESCRIPTION	DATE	BY
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(2)  $\square$   $\phi$ 4.03  $\nabla$  4.7  
EQUALLY SPACED  
ON 30.48 B.C.



SPECIFICATIONS

AXIS	CAPACITY	
	LBF.	N
FX	2500	11120.5
FY	2500	11120.5
FZ	2500	11120.5
	IN-LBF	Nm
MX	3500	395.5
MY	3500	395.5

OUTPUT AT CAPACITY: 1MV/V MINIMUM  
NONLINEARITY < 1% OF FULL SCALE  
CROSSTALK < 5% OF FULL SCALE  
WEIGHT < 1.105LBS/.501 kg (CABLES NOT INCLUDED)

SIGNAL OUTPUT MUST BE COMPATIBLE WITH AND RECORDABLE IN A DATA CHANNEL AS DEFINED BY SAE J211.

FREE AIR RESONANT FREQUENCY: 5000 Hz FORCES MIN.  
3000 Hz MOMENTS MIN.

OPERATING TEMPERATURE: 0° TO 200° F.  
THERMAL SENSITIVITY: (60° TO 80° F)  $\pm$ .03% OF READING /F°

MATERIAL: THE LOAD BEARING STRUCTURE OF THE LOAD CELL, INCLUDING PROVISIONS FOR THE LOAD CELL MOUNTING, ARE OF METAL OR METAL ALLOYS. NON-LOAD BEARING PARTS OF THE LOAD CELL, INTERNALLY AND/OR EXTERNALLY, INCLUDING WIRES AND THEIR ATTACHMENTS, MAY BE MADE OF ANY MATERIAL PROVIDING THEY DO NOT INTERFERE WITH THE PERFORMANCE OF THE LOAD CELL OR THE TRANSMISSION OF THE LOAD CELL SIGNALS.

AXIS SHOW ILLUSTRATE THEIR ORIENTATION WITH RESPECT TO THE INSTRUMENTATION; THEY ARE NOT MEANT TO INDICATE DIRECTION OF POSITIVE POLARITY.

ITEM	QTY	PART NO.	DESCRIPTION	MATERIAL
PARTS LIST				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
FRACTIONS: $\pm 1/64$	DECIMALS: .X $\pm$ .1 .XX $\pm$ .01 .XXX $\pm$ .005		
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		APPROVALS	DATE
MATERIAL SEE NOTES		DRAWN D. WALKER CHECKED	1/14/2002
HEAT TREAT		ENGINEER H. Pritz APPROVED	
FINISH		SIZE <b>B</b>	DWG. NO. SA572-S33
		SCALE 1:1	SHEET 1 OF 1

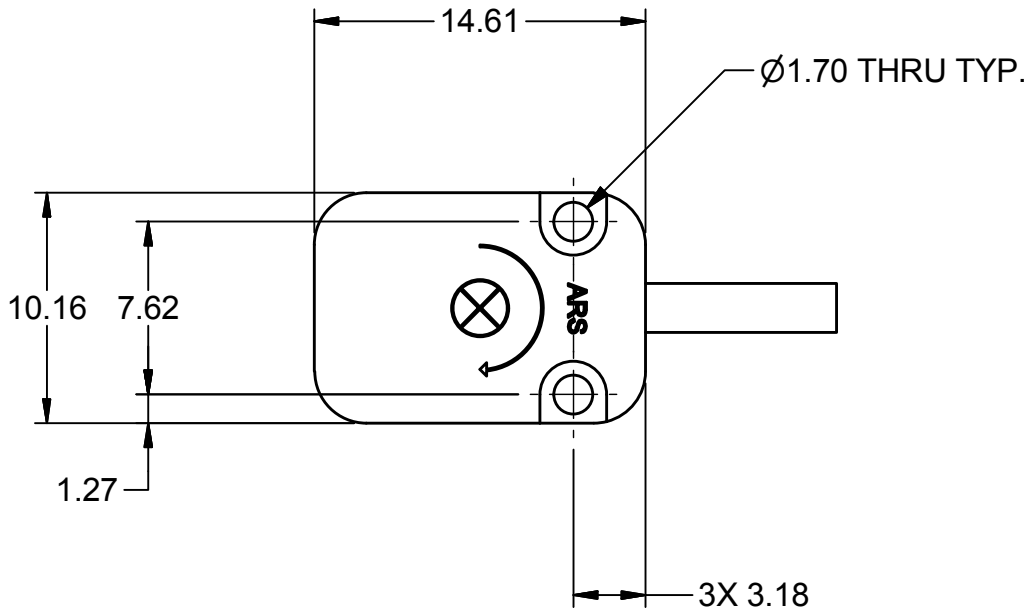
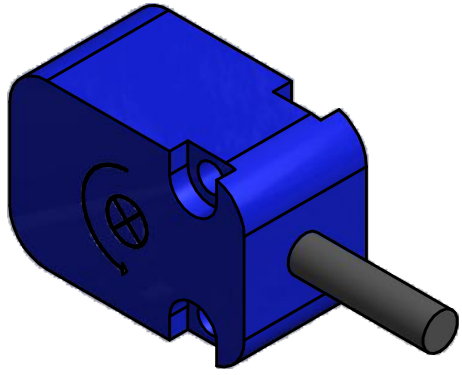
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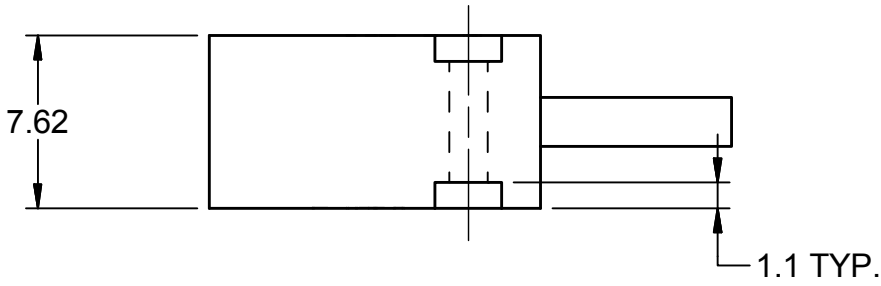
REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
	A	RELEASED TO PRODUCTION	AB		04/30/2013
	B	ADDED NHTSA TITLE BLOCK, ADDED AXIS OF ROTATION SYMBOL	DW		5/20/2014



**Test Procedure:**


- 1) Mount the ARS unit to the shock anvil such that the axis of rotation of ARS is parallel to the axis of the imparted shock pulse.
- 2) Subject ARS to linear acceleration haversine pulse with peak between 500g and 550g and a pulse width less than 3.5ms, measured at 10% of peak acceleration, when filtered at SAE Class 1000.
- 3) Record ARS output and filter at SAE Class 180.

**Performance requirements:**  
ARS output should be within  $\pm 100$ deg/second.

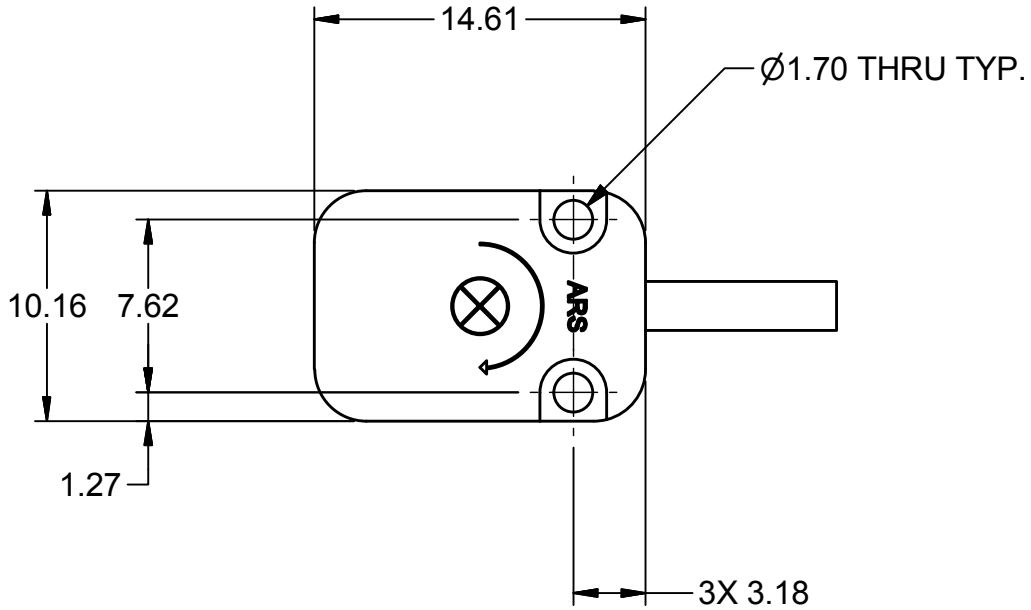
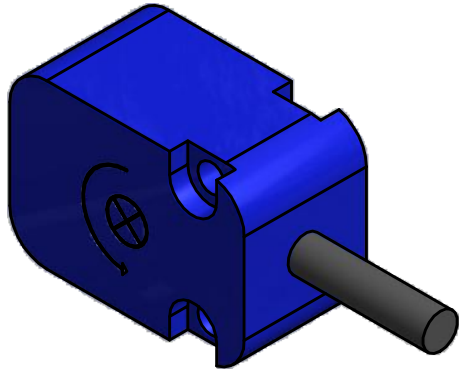


**SPECIFICATIONS:**

MASS: 3g  
 RANGE:  $\pm 1500$  DEG/SEC  
 BANDWIDTH: 0-1000 Hz (DC RESPONSE)  
 NOISE: <0.15% (RMS FULL SCALE)  
 EXCITATION: 4.9-14.0 VDC  
 CURRENT: 6mA NOMINAL  
 ZERO OUTPUT:  $\pm 200$ mV  
 FULL SCALE OUTPUT:  $\pm 2$ V NOMINAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5' ✓ X.X ±.2 X.XX ±.1 X.XXX ±.01 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		ANGULAR RATE SENSOR-1500	
DRAWN abarchock		4/30/2013		INSTRUMENTATION	
CHECKED				DRAWING NUMBER	
MATERIAL		ENG		SA572-S55	
HEAT TREAT		APPROVED		REV B	
FINISH				SHEET 1 OF 1	
		SCALE: 3:1		SIZE A3	

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
	A	RELEASED TO PRODUCTION	AB		04/30/2013
	B	ADDED NHTSA TITLE BLOCK, ADDED AXIS OF ROTATION SYMBOL	DW		5/20/2014



**Test Procedure:**

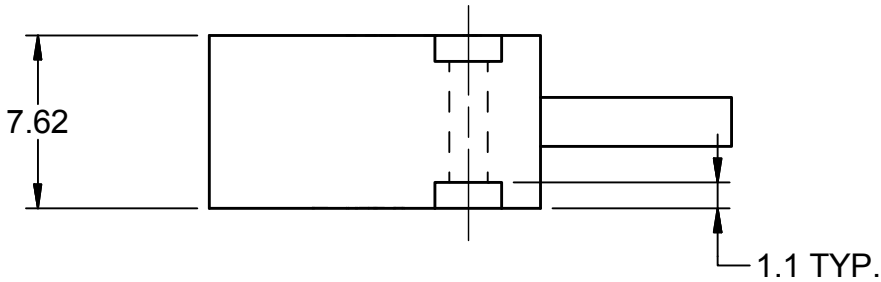
1) Mount the ARS unit to the shock anvil such that the axis of rotation of ARS is parallel to the axis of the imparted shock pulse.

2) Subject ARS to linear acceleration haversine pulse with peak between 500g and 550g and a pulse width less than 3.5ms, measured at 10% of peak acceleration, when filtered at SAE Class 1000.

3) Record ARS output and filter at SAE Class 180.


**Performance requirements:**

ARS output should be within  $\pm 100$ deg/second.

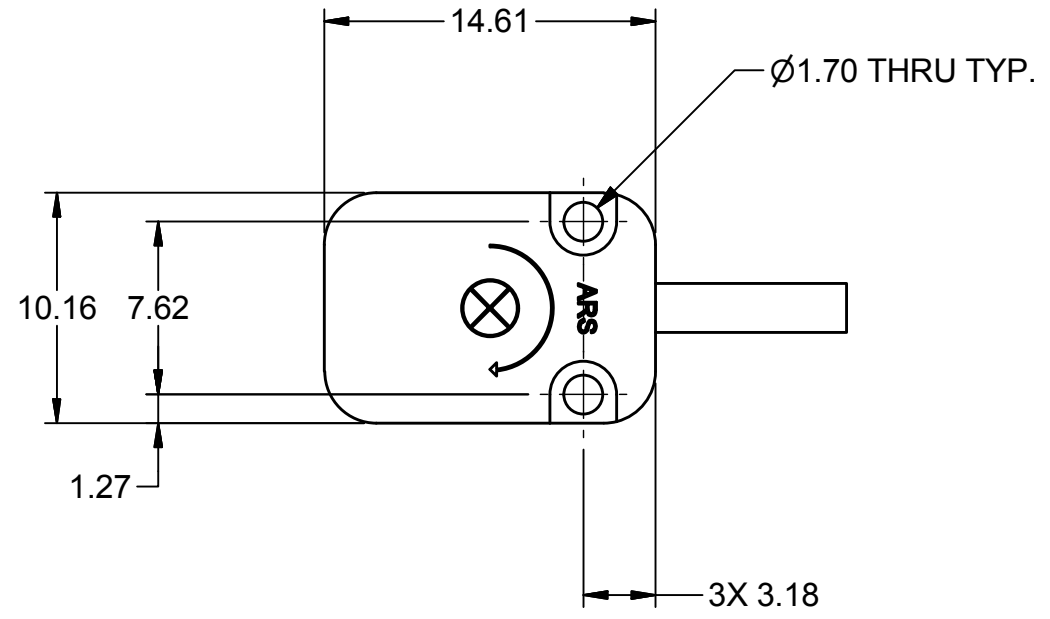
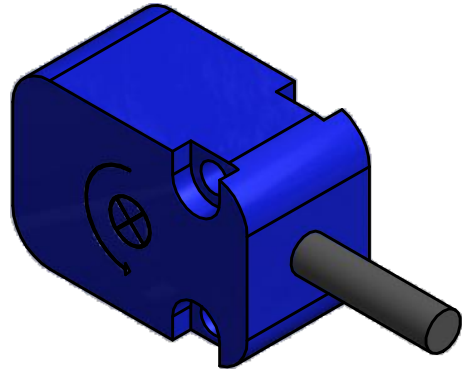


**SPECIFICATIONS:**

MASS: 3g  
 RANGE:  $\pm 8000$  DEG/SEC  
 BANDWIDTH: 0-300 Hz OR 0-600 Hz (DC RESPONSE)  
 NOISE: <0.15% (RMS FULL SCALE)  
 EXCITATION: 4.9-14.0 VDC  
 CURRENT: 6mA NOMINAL  
 ZERO OUTPUT:  $\pm 200$ mV  
 FULL SCALE OUTPUT:  $\pm 2$ V NOMINAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5' ✓ X.X ±.2 X.XX ±.1 X.XXX ±.01 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		ANGULAR RATE SENSOR-8K	
DRAWN abarchock		5/1/2013		INSTRUMENTATION	
CHECKED				DRAWING NUMBER	
MATERIAL		ENG		SA572-S56	
HEAT TREAT		APPROVED		REV B	
FINISH		SCALE: 3:1		SHEET 1 OF 1	

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
	A	RELEASED TO PRODUCTION	AB		04/30/2013
	B	ADDED NHTSA TITLE BLOCK, ADDED AXIS OF ROTATION SYMBOL	DW		5/21/2014

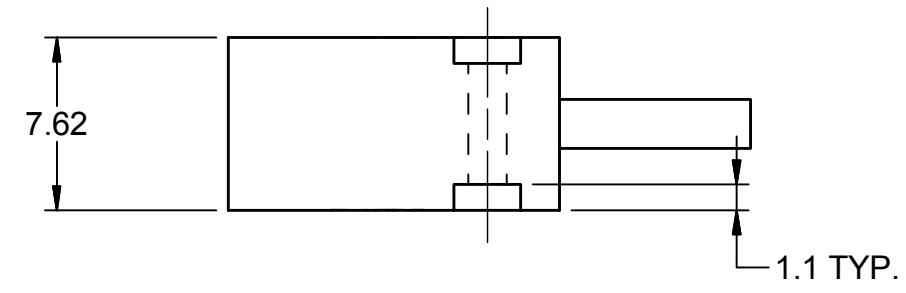


**Test Procedure:**

- 1) Mount the ARS unit to the shock anvil such that the axis of rotation of ARS is parallel to the axis of the imparted shock pulse.
- 2) Subject ARS to linear acceleration haversine pulse with peak between 500g and 550g and a pulse width less than 3.5ms, measured at 10% of peak acceleration, when filtered at SAE Class 1000.
- 3) Record ARS output and filter at SAE Class 180.


**Performance requirements:**

ARS output should be within  $\pm 100$ deg/second.

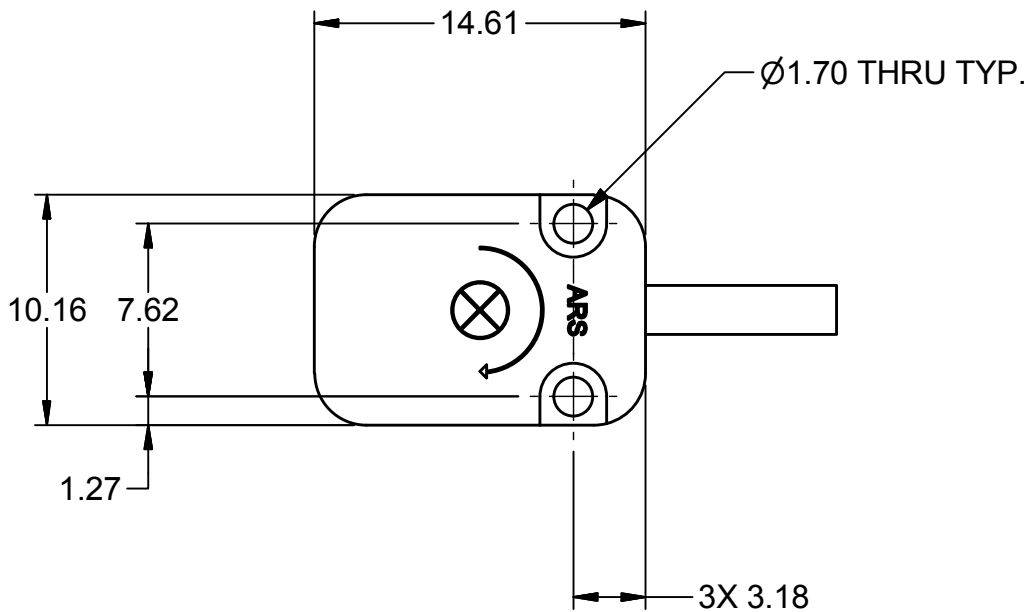
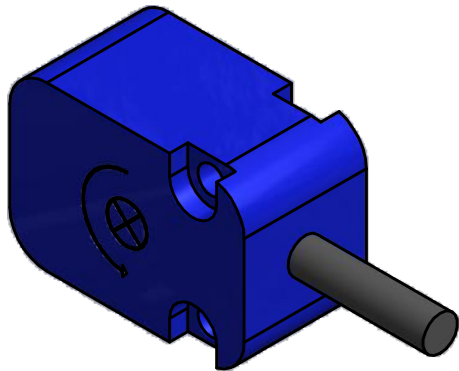


**SPECIFICATIONS:**

MASS: 3g  
 RANGE:  $\pm 12000$  DEG/SEC  
 BANDWIDTH: 0-1650 Hz (DC RESPONSE)  
 NOISE: <0.25% (RMS FULL SCALE)  
 EXCITATION: 4.9-14.0 VDC  
 CURRENT: 6mA NOMINAL  
 ZERO OUTPUT:  $\pm 200$ mV  
 FULL SCALE OUTPUT:  $\pm 2$ V NOMINAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5' ✓ X.X ±.2 X.XX ±.1 X.XXX ±.01 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		ANGULAR RATE SENSOR-12K	
DRAWN abarchock		5/1/2013		INSTRUMENTATION	
CHECKED				DRAWING NUMBER	
MATERIAL		ENG		SA572-S57	
HEAT TREAT		APPROVED		REV B	
FINISH				SHEET 1 OF 1	
		SCALE: 3:1		SIZE A3	

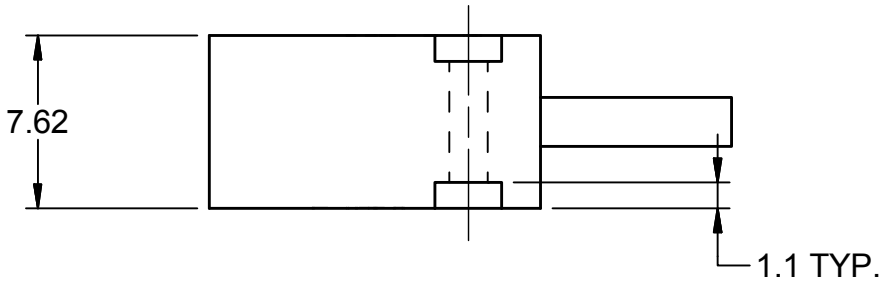
REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
	A	RELEASED TO PRODUCTION	AB		04/30/2013
	B	ADDED NHTSA TITLE BLOCK, ADDED AXIS OF ROTATION SYMBOL	DW		5/21/2014



**Test Procedure:**


- 1) Mount the ARS unit to the shock anvil such that the axis of rotation of ARS is parallel to the axis of the imparted shock pulse.
- 2) Subject ARS to linear acceleration haversine pulse with peak between 500g and 550g and a pulse width less than 3.5ms, measured at 10% of peak acceleration, when filtered at SAE Class 1000.
- 3) Record ARS output and filter at SAE Class 180.

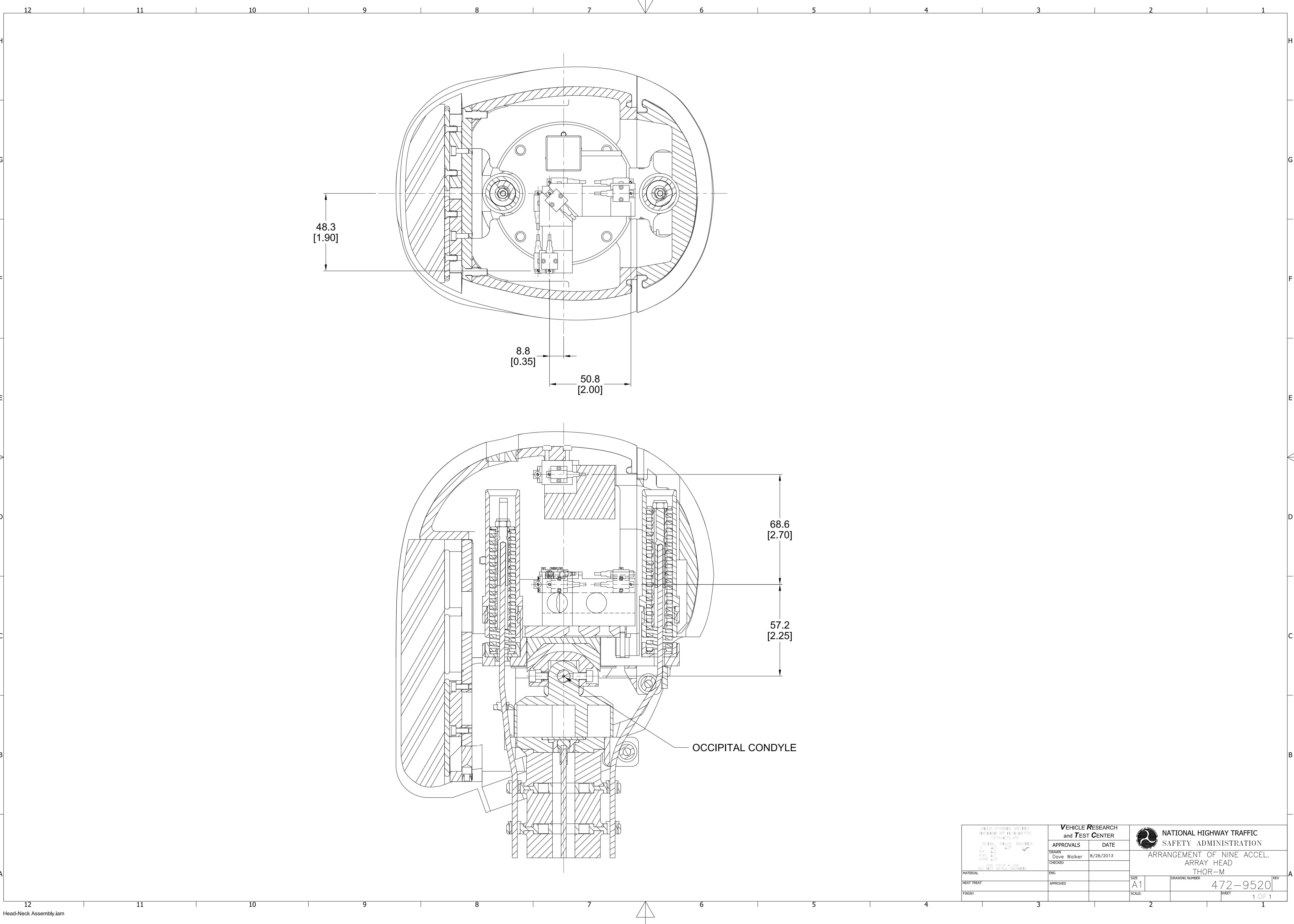
**Performance requirements:**  
ARS output should be within  $\pm 100$ deg/second.



**SPECIFICATIONS:**

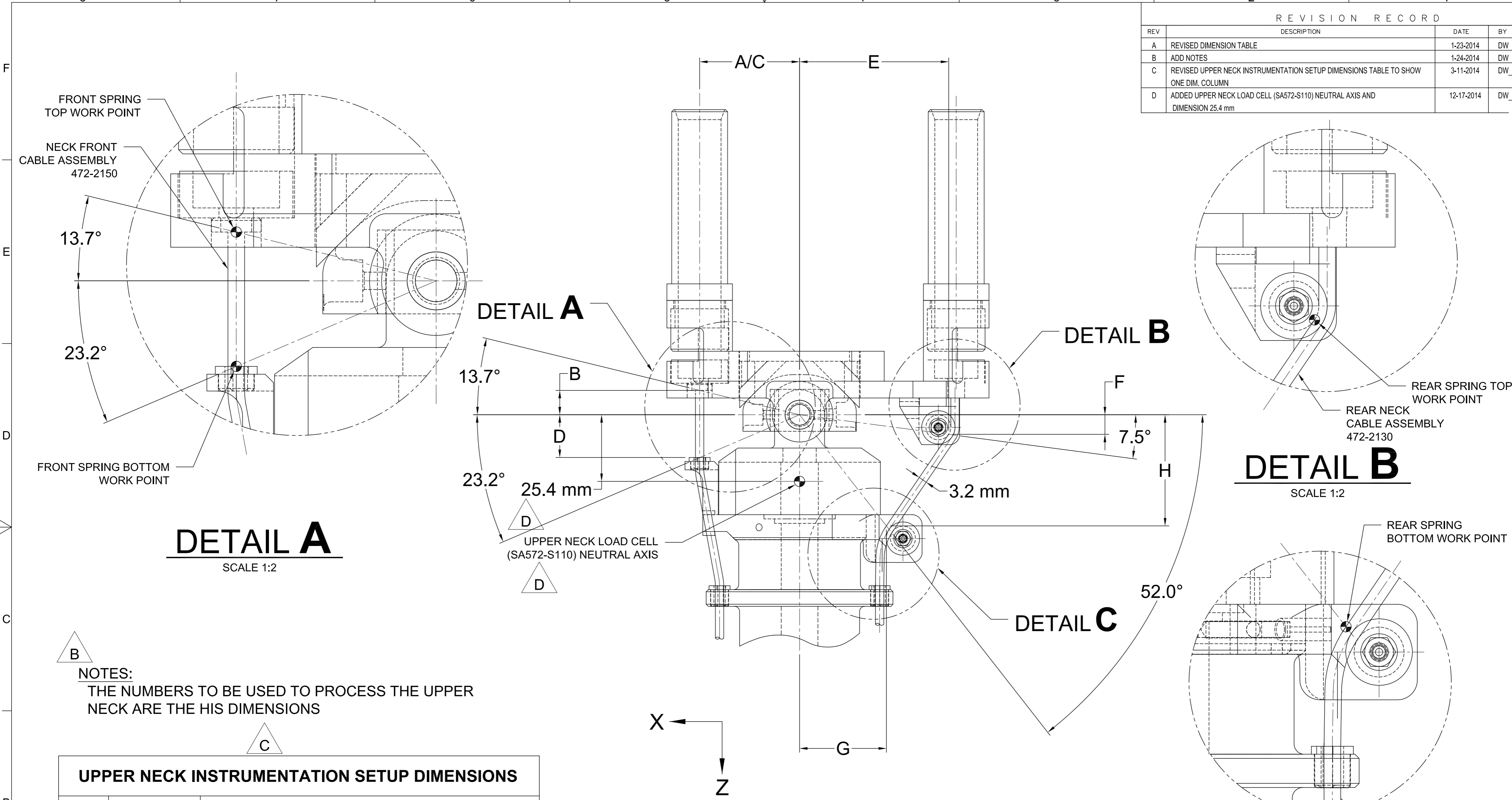
MASS: 3g  
 RANGE:  $\pm 18000$  DEG/SEC  
 BANDWIDTH: 0-300 Hz OR 0-2000 Hz(DC RESPONSE)  
 NOISE:  $< 1.5\%$  DEG/SEC  $\sqrt{\text{Hz}}$   
 EXCITATION: 4.9-14.0 VDC  
 CURRENT: 6mA NOMINAL  
 ZERO OUTPUT:  $\pm 200$ mV  
 FULL SCALE OUTPUT:  $\pm 2$ V NOMINAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5' ✓ X.X ±.2 X.XX ±.1 X.XXX ±.01 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		ANGULAR RATE SENSOR-18K	
DRAWN abarchock		5/1/2013		INSTRUMENTATION	
CHECKED				DRAWING NUMBER	
MATERIAL		ENG		SA572-S58	
HEAT TREAT		APPROVED		REV B	
FINISH		SCALE: 3:1		SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL - ANGLES - MICHED: XX ±.1 XXX ±.1 XXXX ±.1		<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
DRAWN Dave Walker		DATE 8/26/2013		ARRANGEMENT OF NINE ACCEL. ARRAY HEAD THOR-M	
MATERIAL		ENG		SIZE A1	DRAWING NUMBER 472-9520
HEAT TREAT		APPROVED		SCALE	1 OF 1
FINISH					REV

REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	REVISED DIMENSION TABLE	1-23-2014	DW
B	ADD NOTES	1-24-2014	DW
C	REVISED UPPER NECK INSTRUMENTATION SETUP DIMENSIONS TABLE TO SHOW ONE DIM. COLUMN	3-11-2014	DW
D	ADDED UPPER NECK LOAD CELL (SA572-S110) NEUTRAL AXIS AND DIMENSION 25.4 mm	12-17-2014	DW



**DETAIL A**  
SCALE 1:2

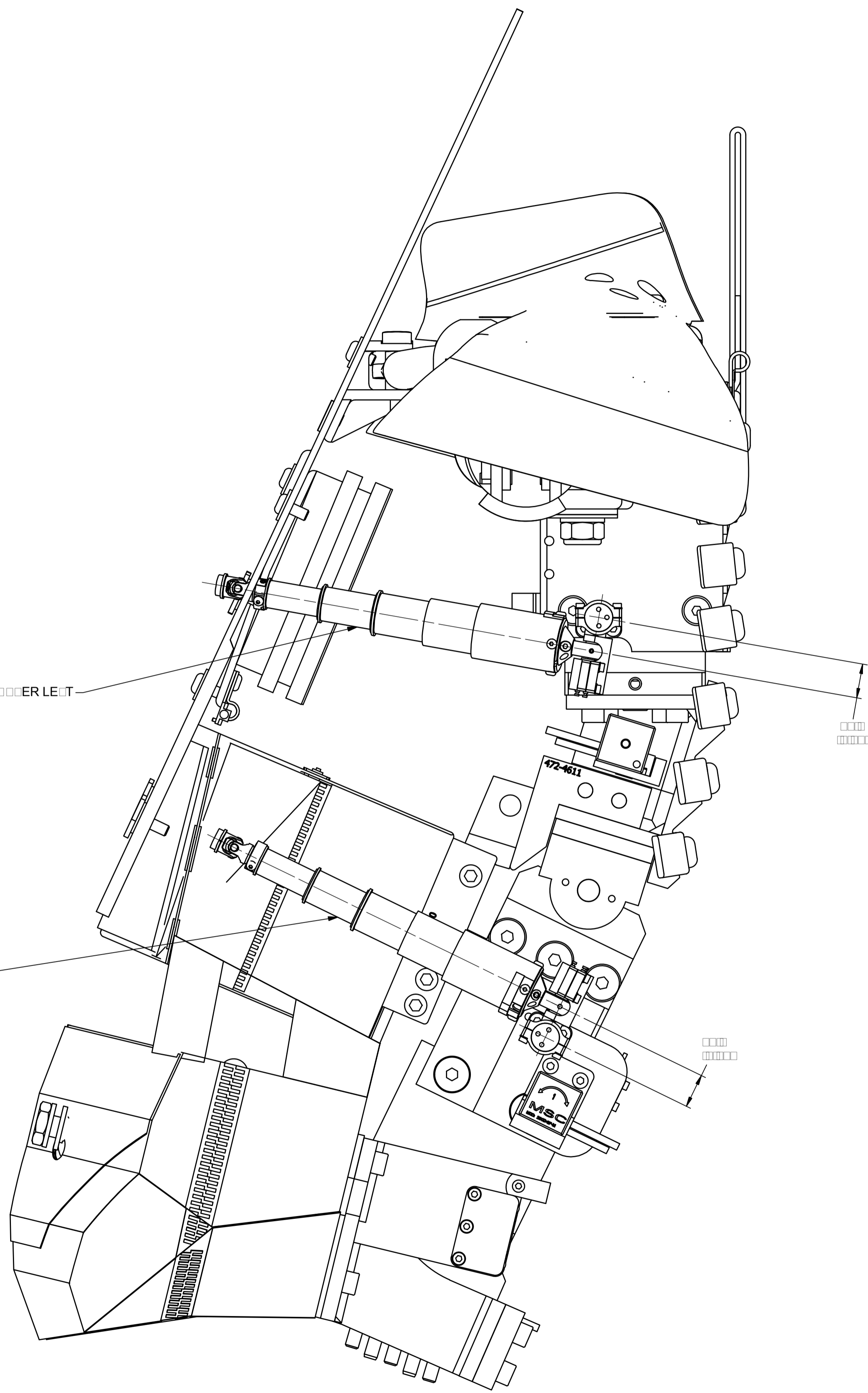
**DETAIL B**  
SCALE 1:2

**DETAIL C**  
SCALE 1:2

**NOTES:**  
THE NUMBERS TO BE USED TO PROCESS THE UPPER NECK ARE THE HIS DIMENSIONS

UPPER NECK INSTRUMENTATION SETUP DIMENSIONS		
	DIM.	DESCRIPTION
A	38.1mm	FRONT SPRING TOP X
B	-9.3mm	FRONT SPRING TOP Z
C	38.0mm	FRONT SPRING BOTTOM X
D	16.3mm	FRONT SPRING BOTTOM Z
E	-56.9mm	REAR SPRING TOP X
F	7.5mm	REAR SPRING TOP Z
G	-33.1mm	REAR SPRING BOTTOM X
H	42.4mm	REAR SPRING BOTTOM Z

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: ANGLES: MACHINED: X ±.5 ±.5° XX ±.2 ±.5° XXX ±.1 ±.5° XXXX ±.01		<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
APPROVALS		DATE		UPPER NECK ASSEMBLY - SETUP DIMENSIONS THOR-M	
DRAWN Dave Walker		8/21/2013		DRAWING NUMBER 472-9500	
CHECKED				REV D	
MATERIAL		ENG		SIZE A2	
HEAT TREAT		APPROVED		SCALE: 1 OF 1	
FINISH				SHEET	

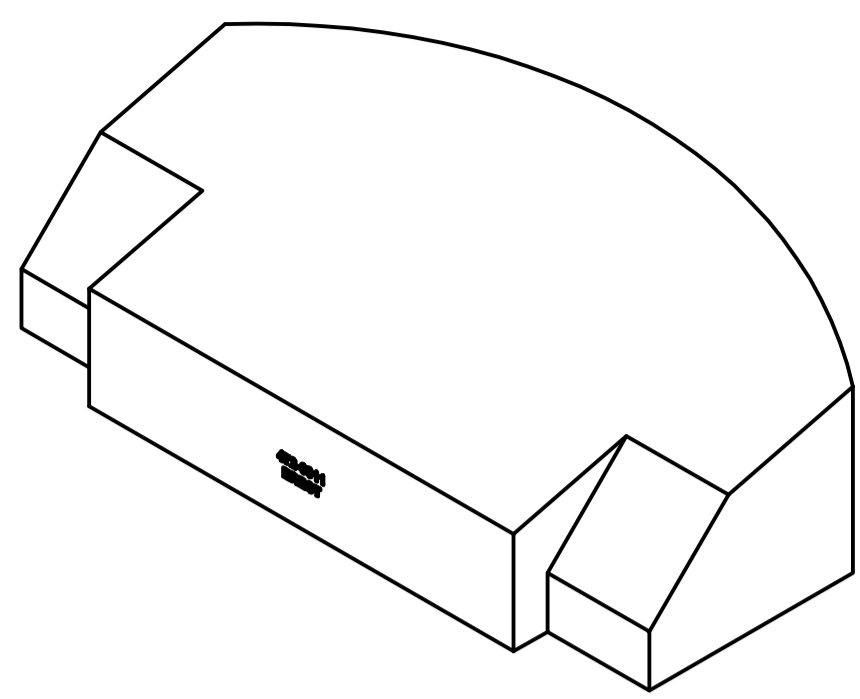


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL ANGLES: MACHINED: X.X ±0.2 X.XX ±0.1 X.XXX ±0.01 HOLE: +0.04 -0.04 HOLE: +0.04 -0.04 HOLE: +0.04 -0.04	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS: _____ DATE: 7/17/2013 CHECKED: _____ DRAWN: _____	DATE: 7/17/2013 CHECKED: _____ DRAWN: _____	THORAX MECHANICAL ASSEMBLY IRTRACC OFFSET THOR-M	
MATERIAL: _____ PART: _____ FINISH: _____	APPROVED: _____ DATE: _____	SIZE: A1 SCALE: 0.5:1	DRAWING NUMBER: 472-9510 SHEET: 1 OF 1	TITLE: _____ SHEET: 1 OF 1

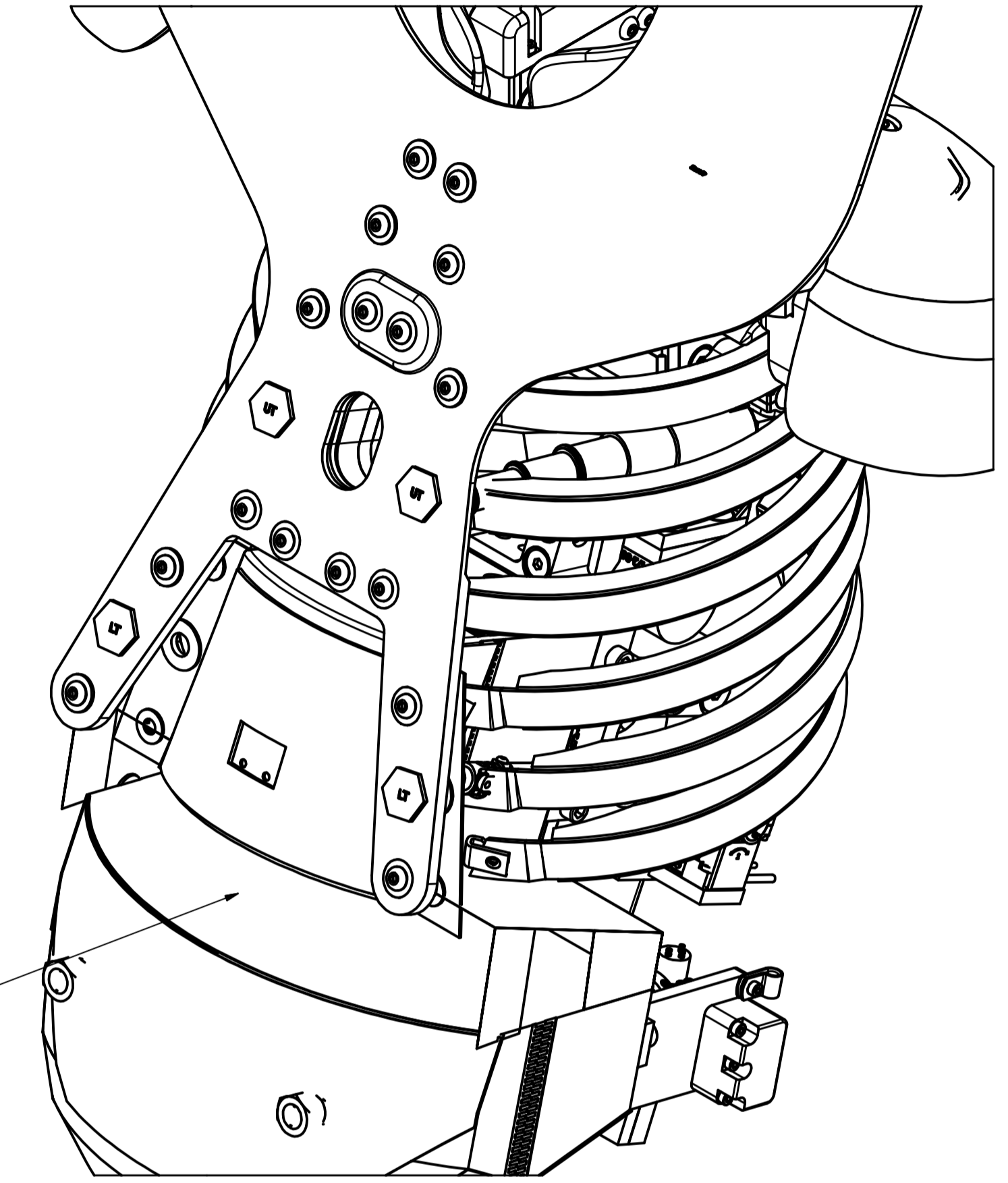
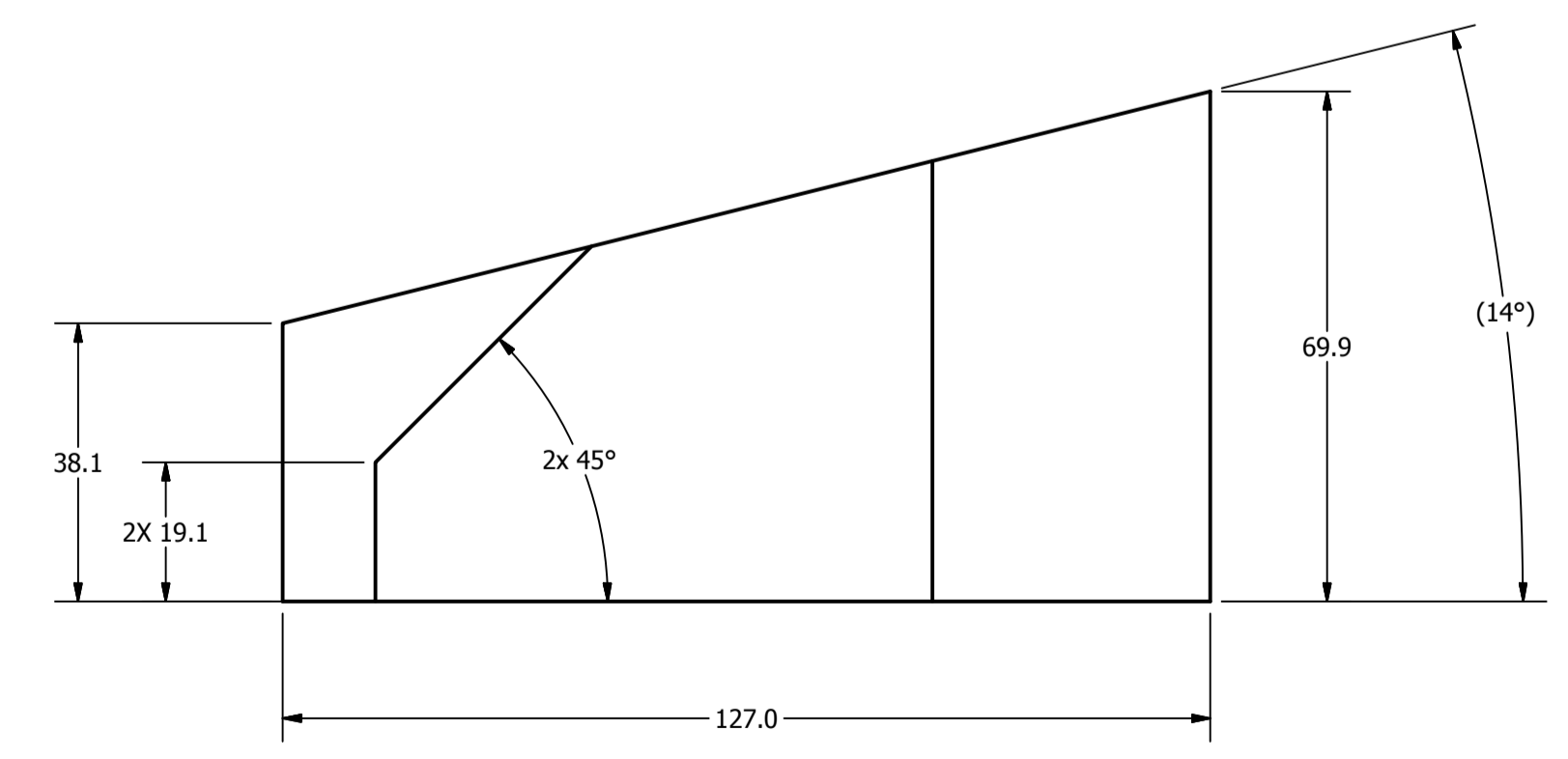
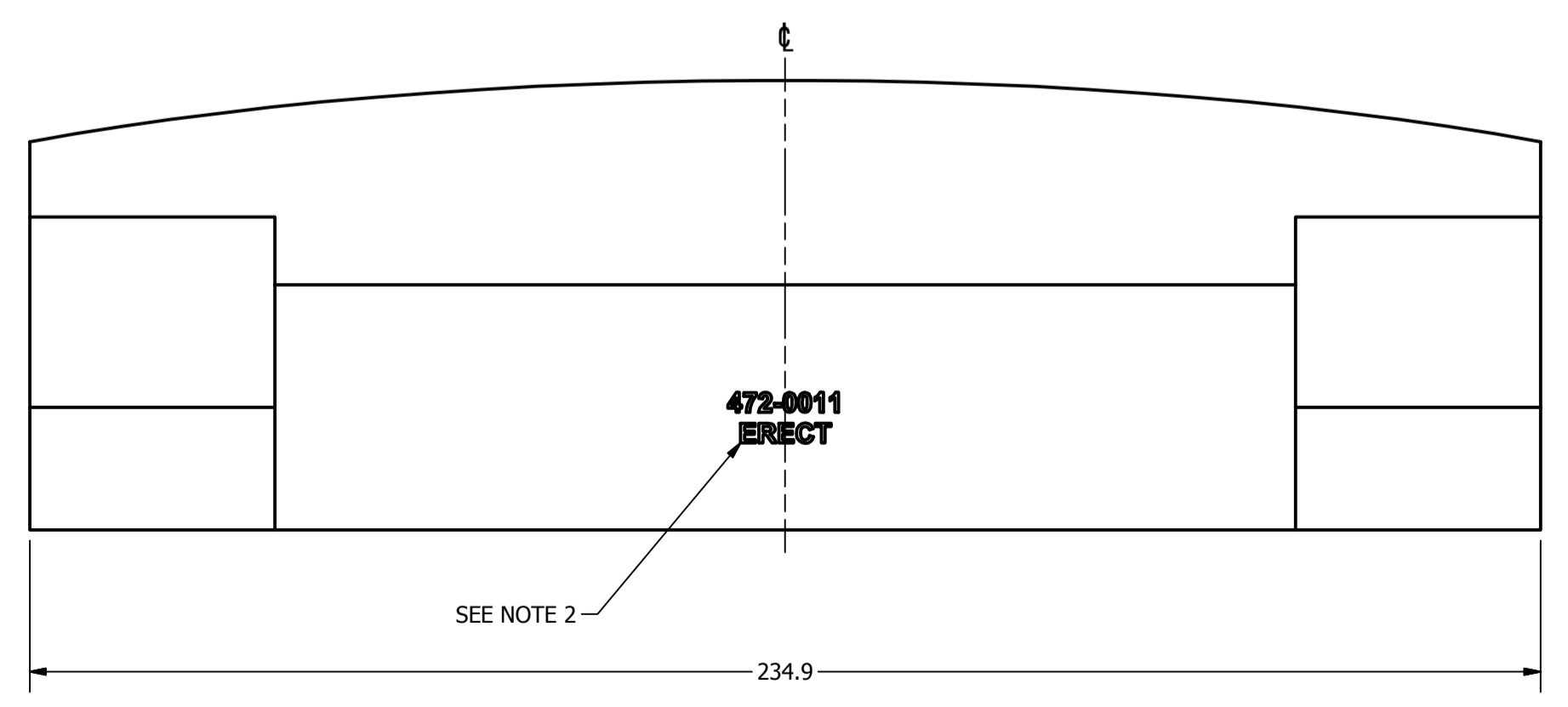
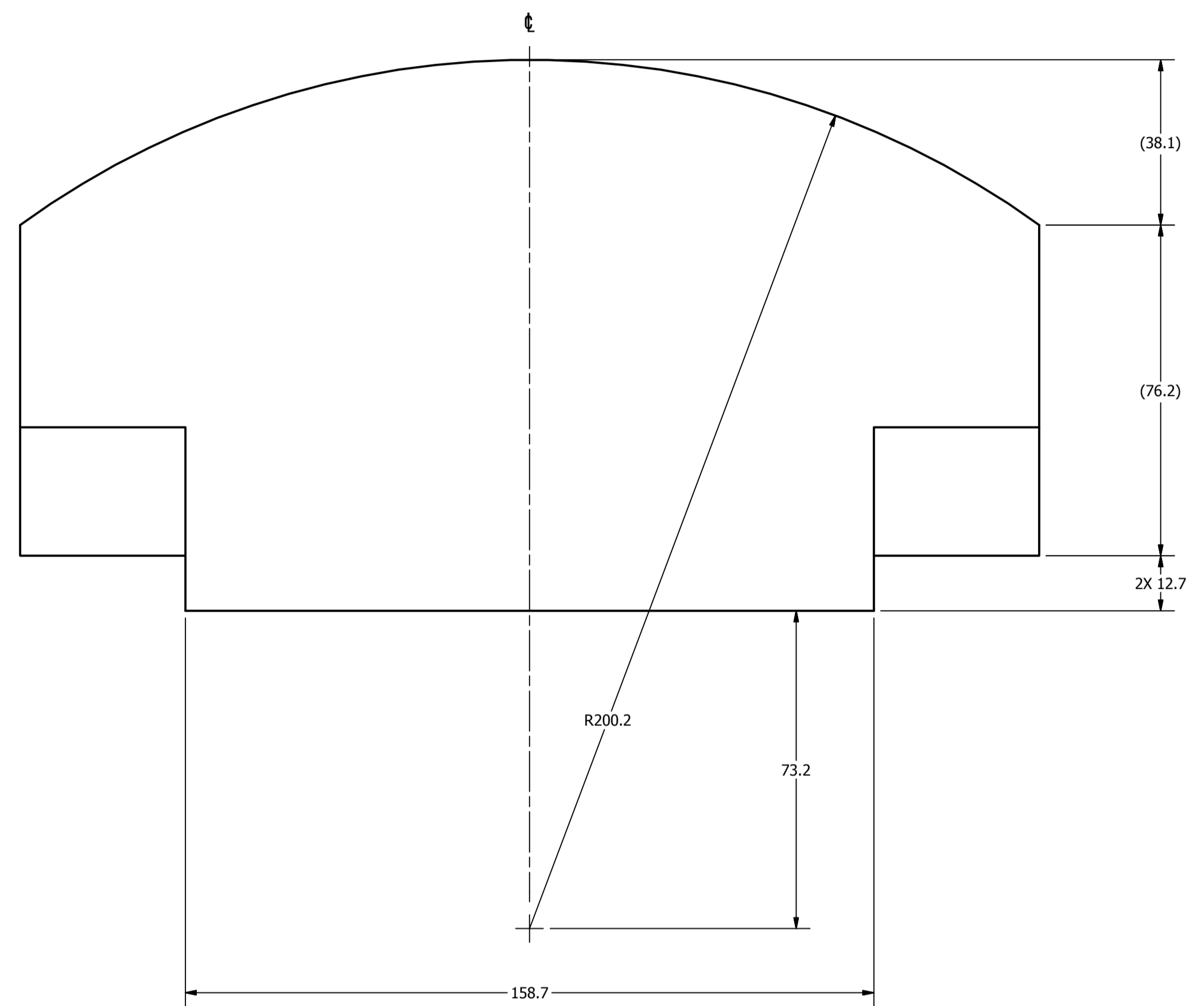


# **POSTURE FOAMS**

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENGR.	DATE
70717	A	RENUMBERED FROM T1FDM011 AND CONVERTED TO METRIC FOR THOR M; ADD NOTE 3; REMOVE VENDOR DATA FROM NOTE 1; REDIMENSION ACROSS CL; ADD REFERENCE VIEW	BK	JW	1/28/2013



SCALE 1 / 2



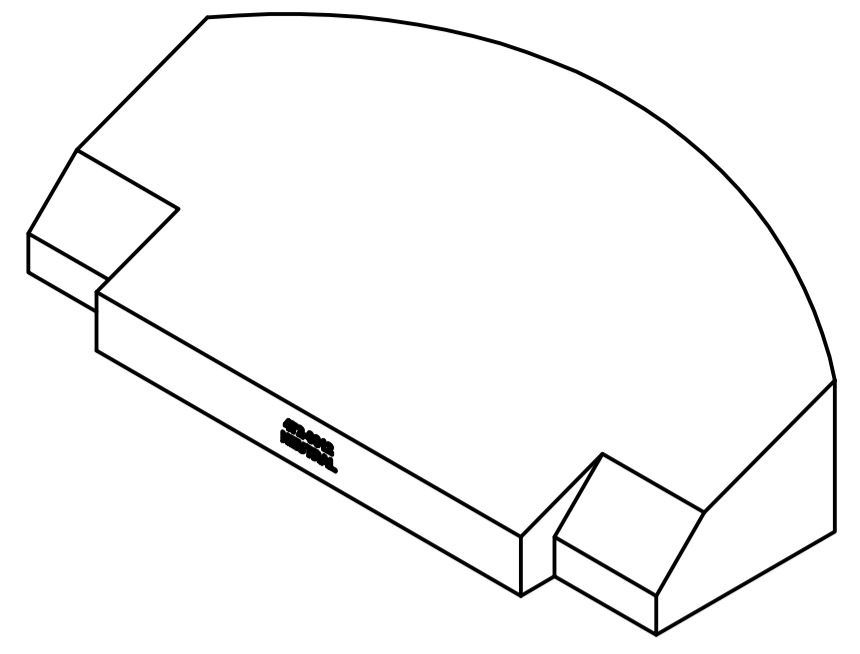
472-0011 SLIDES INTO LOWER ABDOMEN POCKET (BETWEEN UPPER AND LOWER ABDOMEN) FOR DUMMY AT ERECT POSITION

△ FOAM LOCATION REFERENCE VIEW SCALE 1 / 2

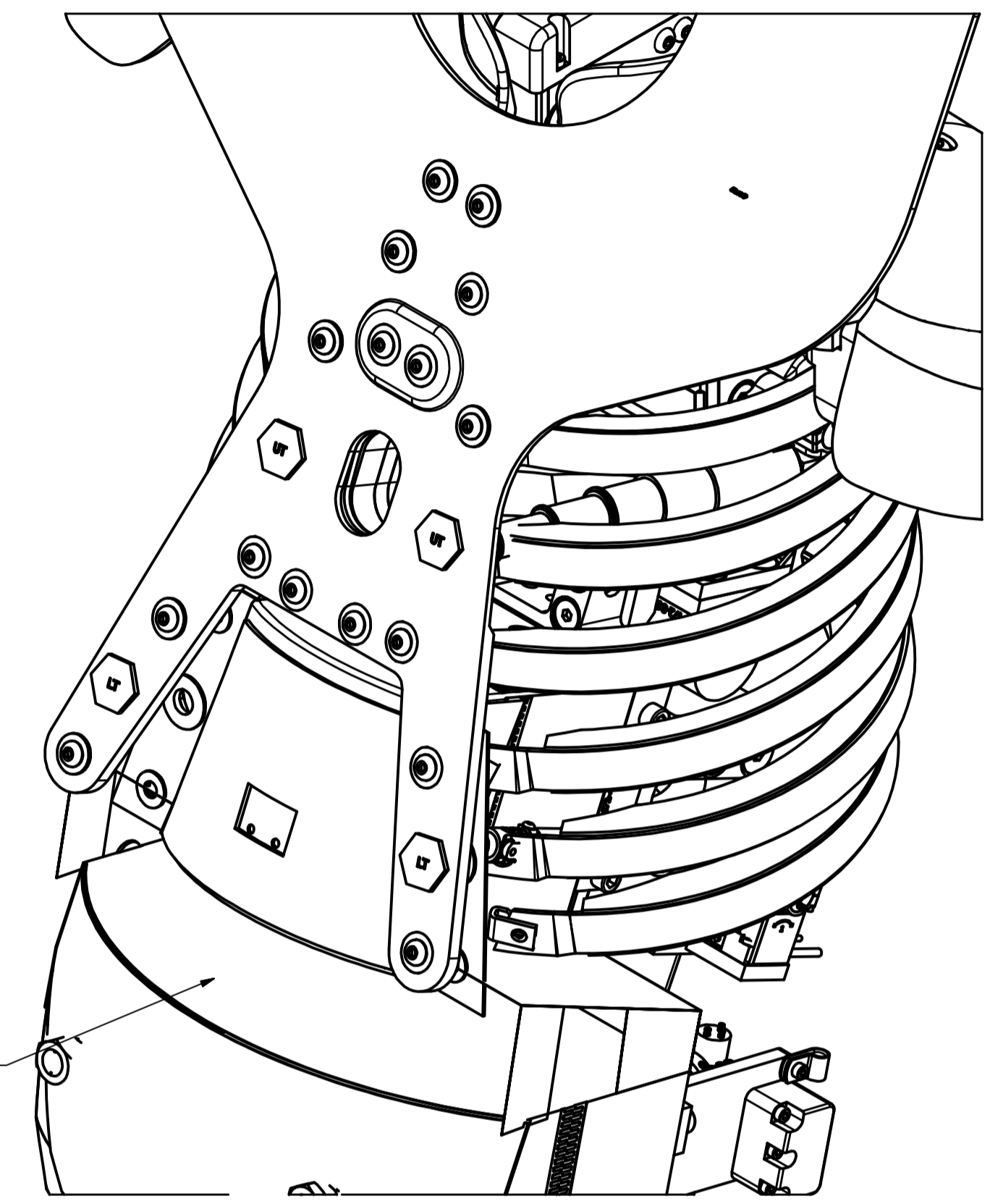
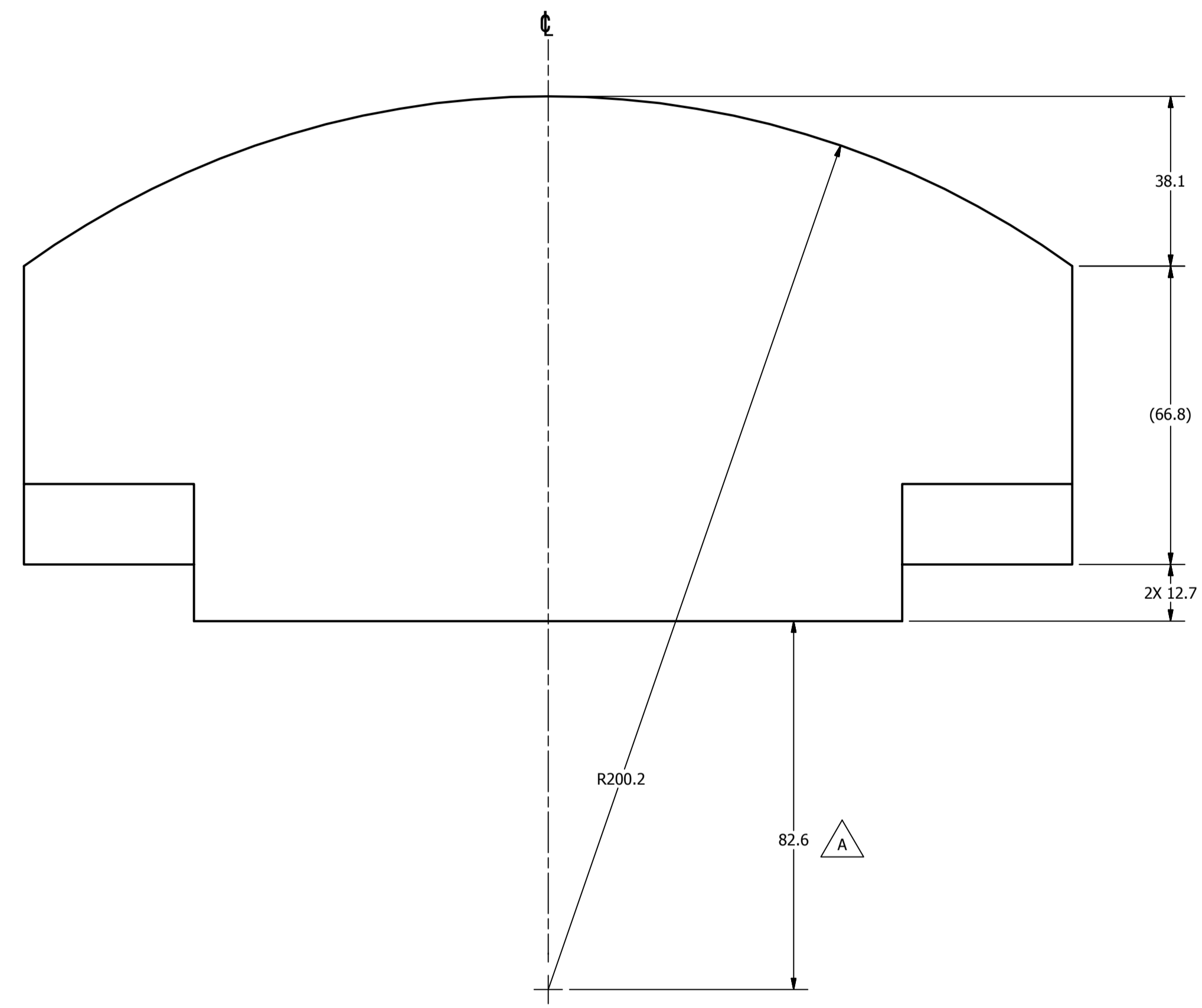
- NOTES:
- △ 1. MATERIAL: 6 LB. CHARCOAL ESTER FOAM.
  - △ 2. MARK PART NUMBER AND "ERECT" WHERE SHOWN.
  - △ 3. FOAM TOLERANCE: ±1mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
SEE NOTES		B. Kimes 1/28/2013		LOWER ABDOMEN ERECT POSITION FOAM	
NEXT ASSEMBLY	QTY	DATE	BY	DATE	BY
TOTAL QTY IN DUMMY	1	2/4/2013	J. WANG	2/4/2013	J. WANG

REVISION HISTORY					
ECO#	REV	DESCRIPTION	BY	ENG'R.	DATE
70717	A	RENUMBERED FROM T1FDM012 AND CONVERTED TO METRIC FOR THOR M; ADD NOTE 3; REMOVE VENDOR DATA FROM NOTE 1; REDIMENSION ACROSS CL; ADD REFERENCE VIEW; 82.6 WAS 82.8	BK	JW	1/28/2013

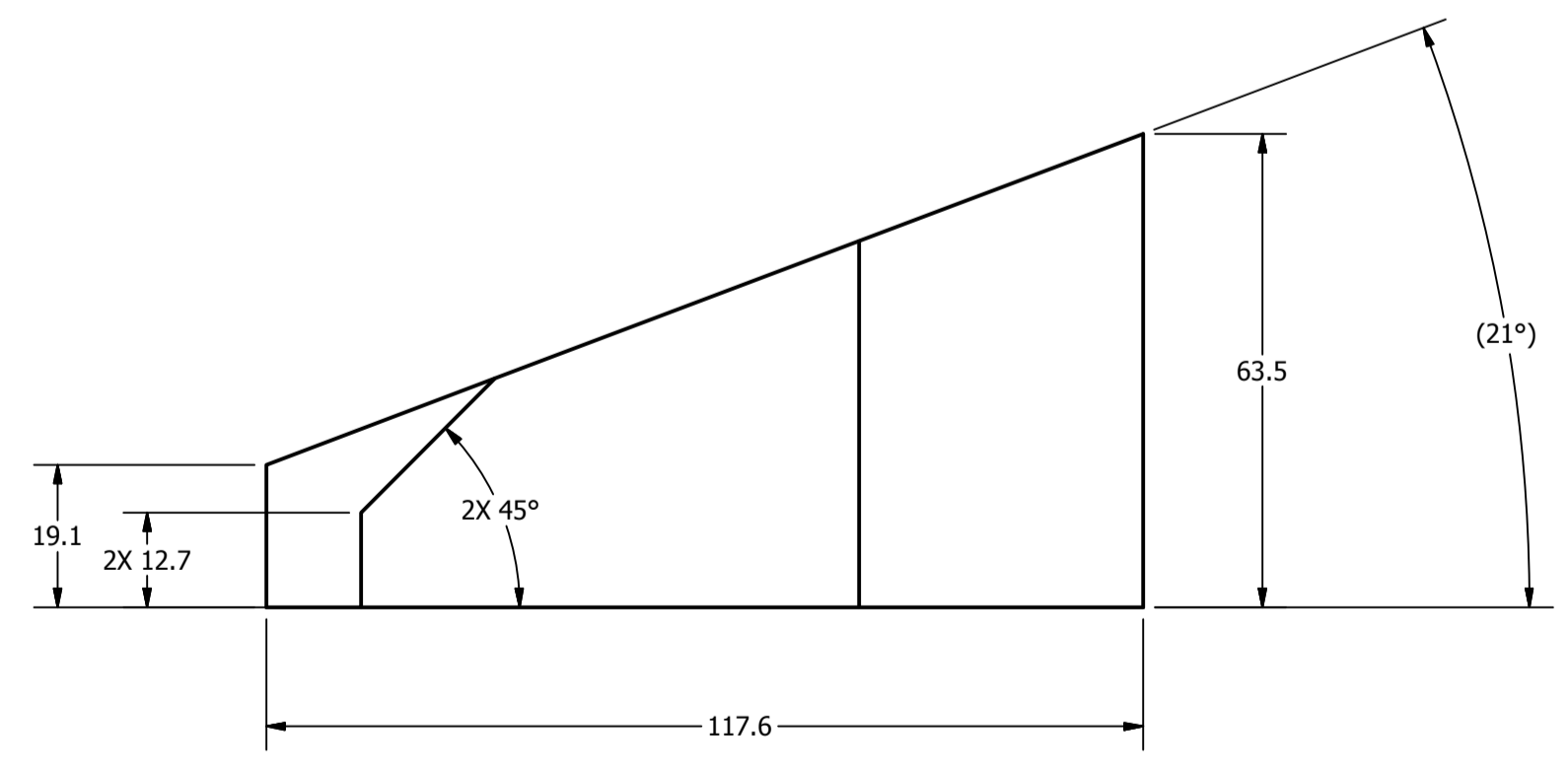
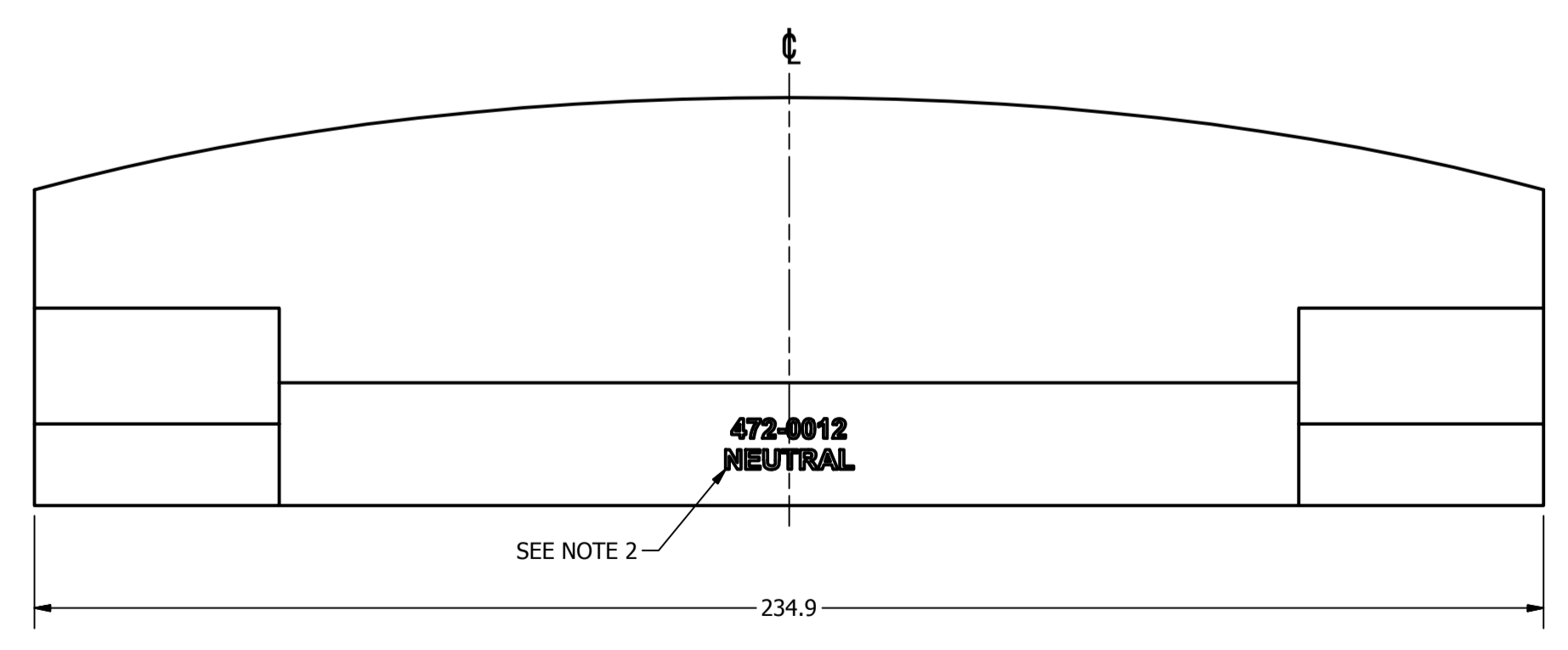


SCALE 1 / 2



472-0012 SLIDES INTO LOWER ABDOMEN POCKET (BETWEEN UPPER AND LOWER ABDOMEN) FOR DUMMY AT NEUTRAL POSITION

FOAM LOCATION REFERENCE VIEW SCALE 1 / 2

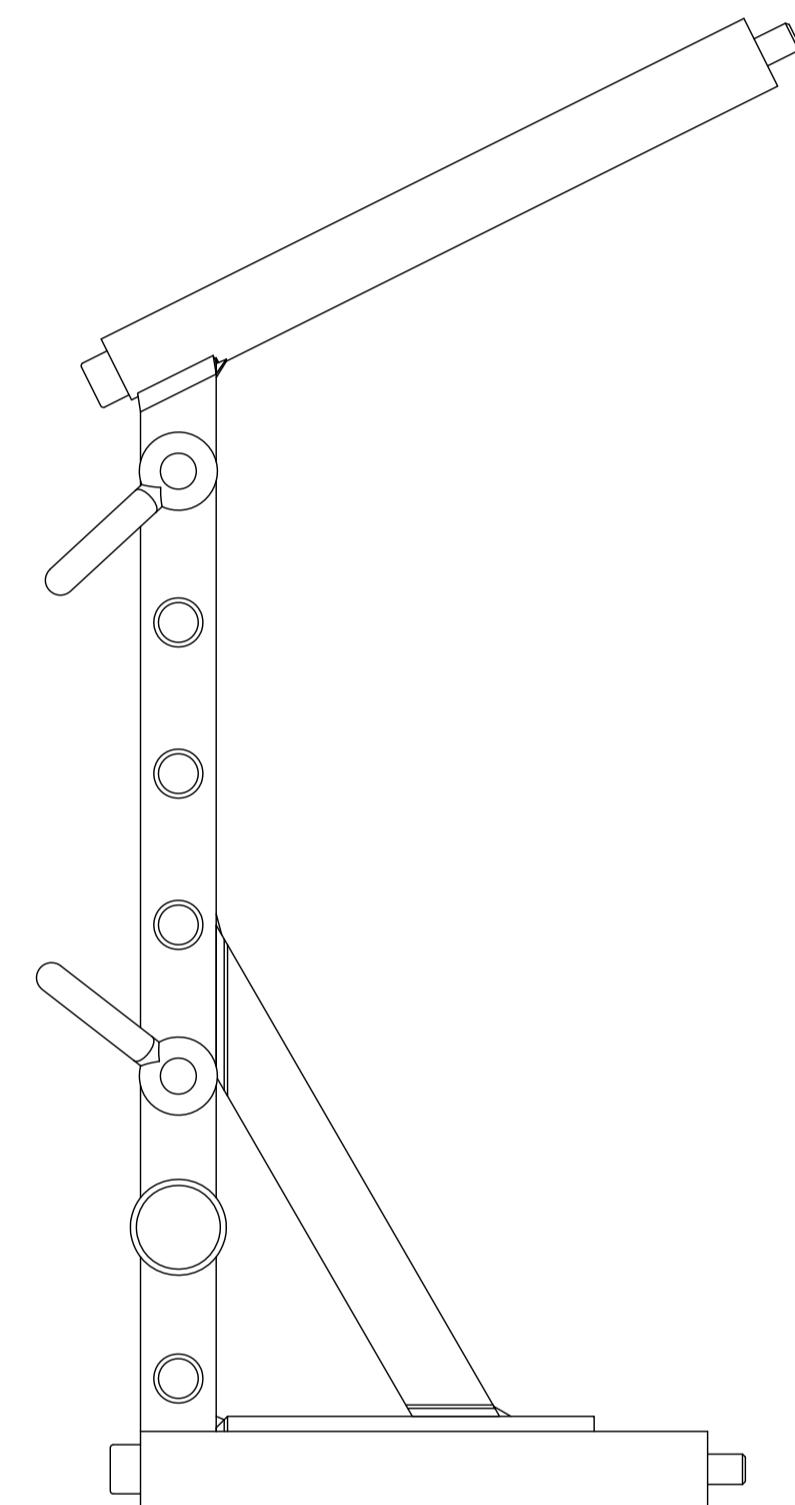
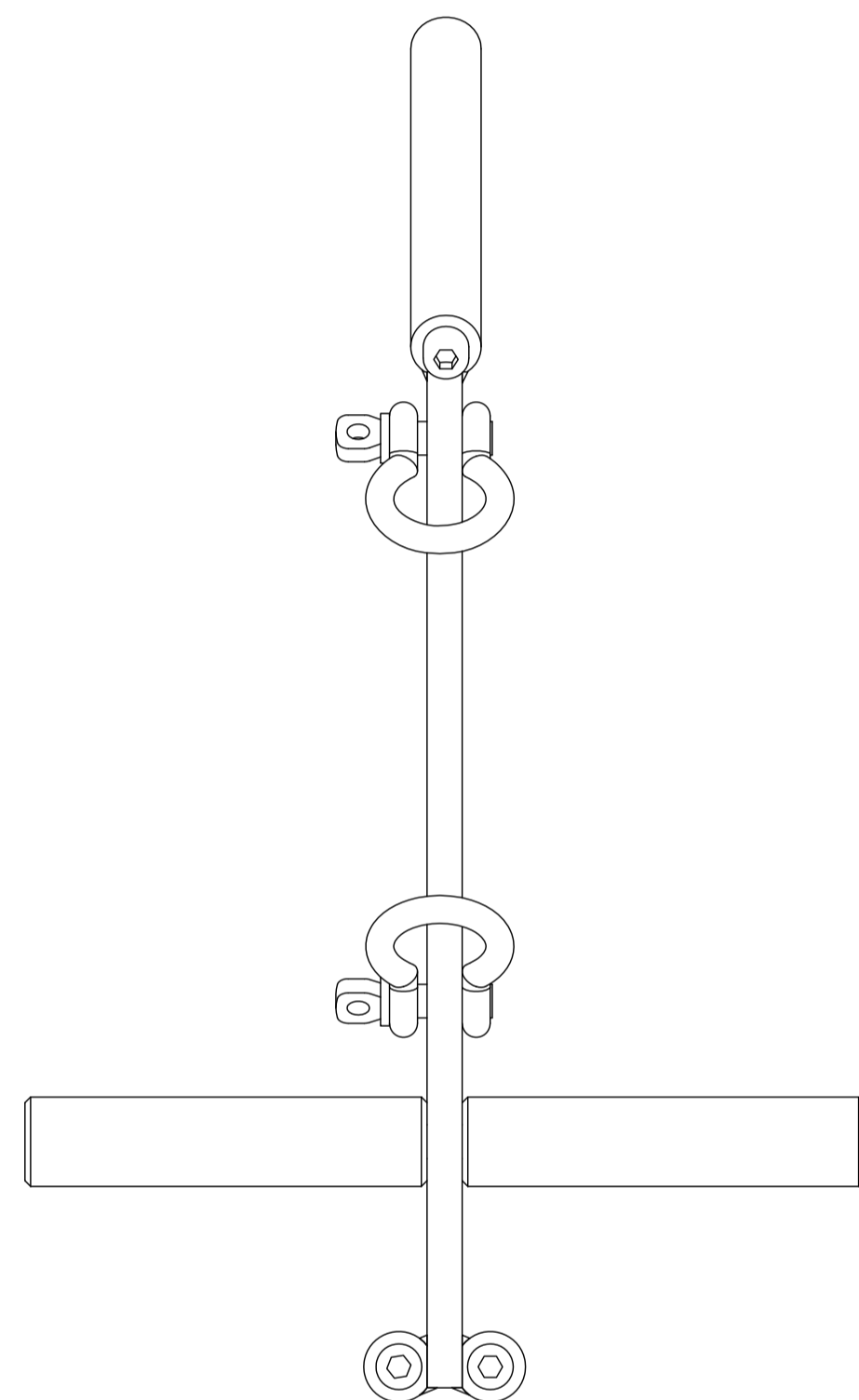
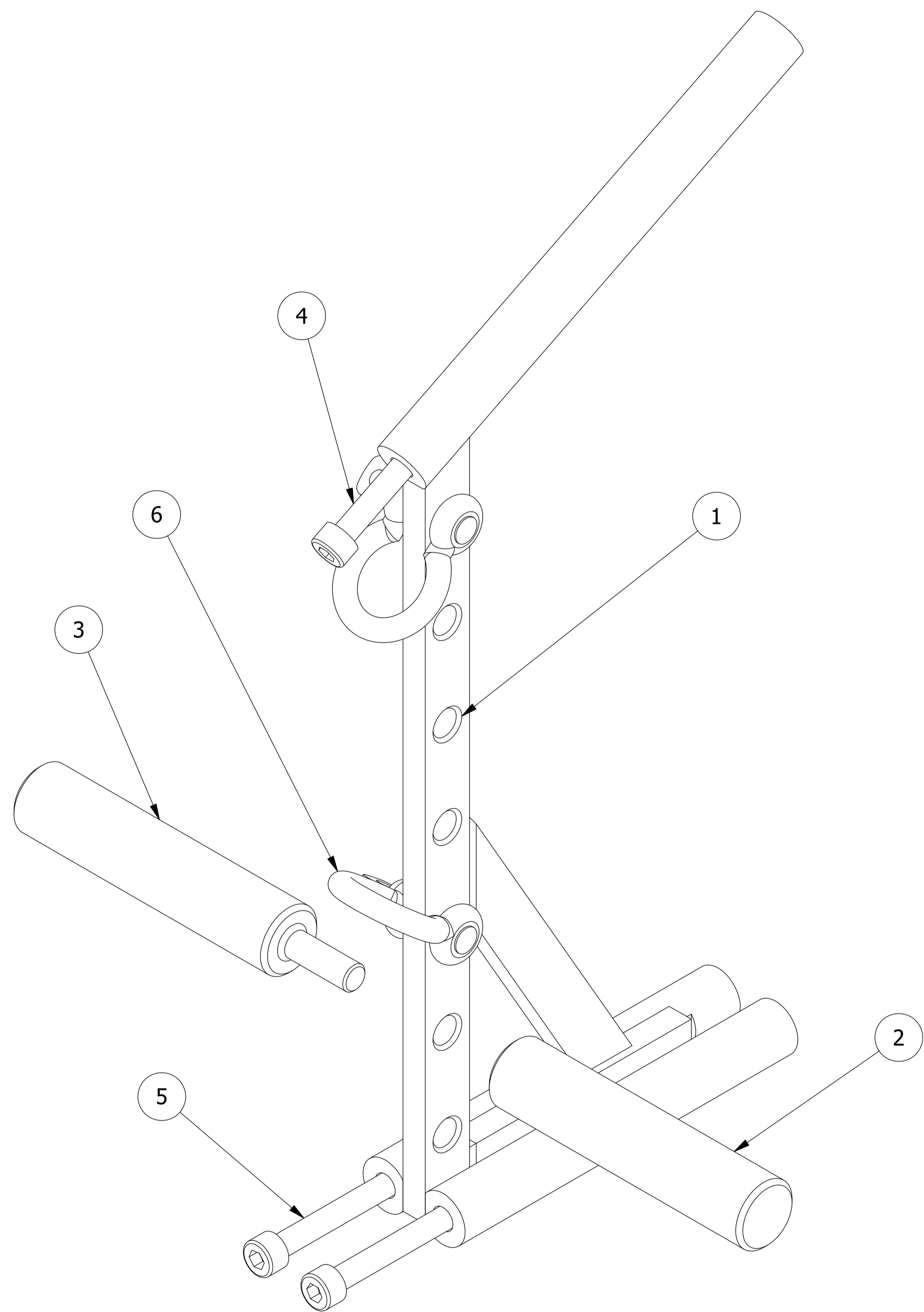


- NOTES:
- 1. MATERIAL: 6 LB. CHARCOAL ESTER FOAM.
  - 2. MARK PART NUMBER AND "NEUTRAL" WHERE SHOWN.
  - 3. FOAM TOLERANCE: ±1mm, UNLESS OTHERWISE NOTED.

DO NOT SCALE DRAWING		TOLERANCES		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
NHTSA/VRTC		SEE NOTES		LOWER ABDOMEN NEUTRAL POSITION FOAM	
DESIGNED BY	DATE	DESIGNED BY	DATE	SCALE	DESCRIPTION
B. Kimes	1/28/2013	J. Wang	2/4/2013	A11 OF 1	472-0012
REV	QTY	TOTAL QTY IN DUMMY	1	FULL	

**TOOLS**

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/2/2011	DW
	B	MOVED HANDLE POSITIONS	12/16/2011	DW



SCALE 0.5

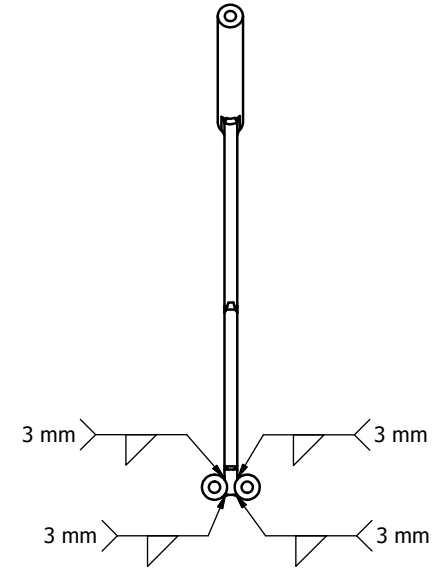
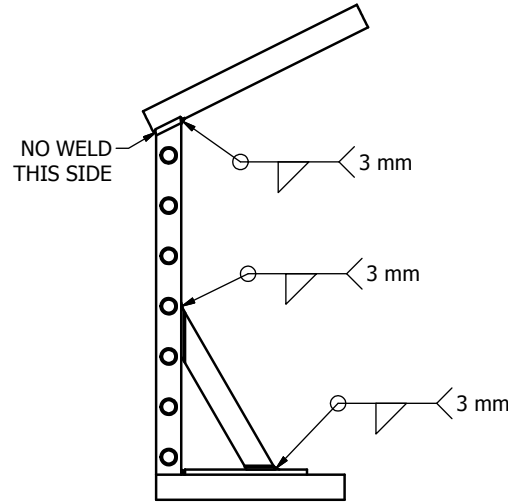
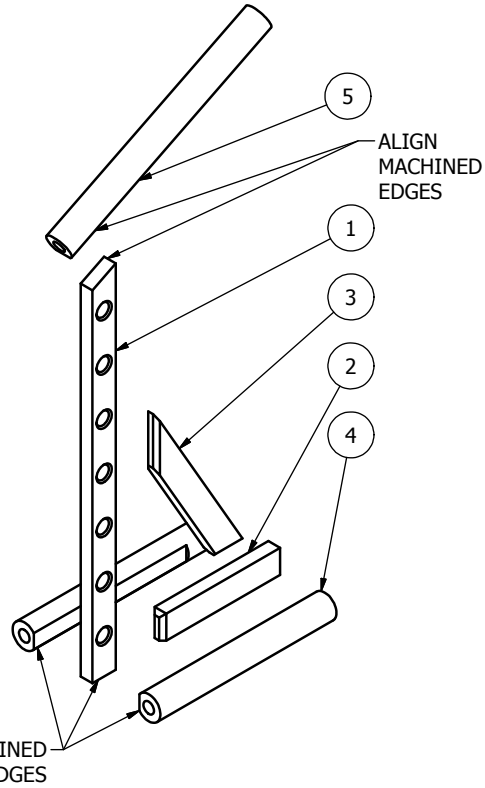
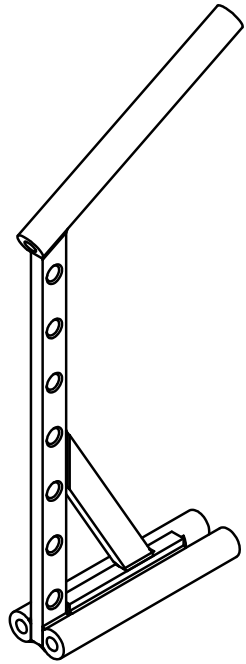
6	2	9002905	SHACKLE, W/ SCREW PIN 3/8"
5	2	5001120	M8 X 1.25 X 160 LG. SHCS
4	1	5001121	M8 X 1.25 X 200 LG. SHCS
3	1	W50-84106	HANDLE, THREADED ROD
2	1	W50-84104	HANDLE, THREADED HOLE
1	1	472-8101	LIFTING BRACKET WELDMENT
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
THIRD ANGLE PROJECTION		DECIMALS    ANGLES    FINISH X ± 0.5    ± 0.5    1.6 XX ± 0.2    ± 0.5 XXX ± 0.1    ± 0.5 XXXX ± 0.01    ± 0.5			
PROJECT NO.:		REMOVE BURRS & BREAK SHARP EDGES		DESCRIPTION: LIFTING BRACKET ASSEMBLY, THOR	
DRAWN BY: dwashenko		DATE: 11/2/2011		SIZE: SHEET A11 of 1	
MATERIAL:		CHECKED BY: BJS		DRAWING NO.:	
HEAT TREAT:		DATE: 2/13/2012		472-8100	
FINISH:		ENGINEER: D. WASHENKO		SCALE: .25 : 1	
DATE: 2/10/2012		DATE: 2/10/2012		REV: B	

NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/2/2011	DW



ALIGN MACHINED EDGES

ALIGN MACHINED EDGES

NO WELD THIS SIDE

- NOTES:
1. WELD ITEMS 1, 2, # 3 TOGETHER FIRST. GRIND WELDS FLUSH.
  2. WELD ITEMS 4 & 5 SECOND.
  3. WELDS ARE "ALL AROUND" WITH EXCEPTION TO THE LOCATIONS NOTED.
  4. FINISH: ELECTROLESS NICKEL PLATE .008 mm MAXIMUM PER SIDE.

ITEM	QTY	PART NUMBER	DESCRIPTION
5	1	472-8106	UPPER ROD
4	2	472-8105	LOWER ROD
3	1	472-8104	SUPPORT BAR
2	1	472-8103	LOWER BAR
1	1	472-8102	MAIN BAR

PARTS LIST

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH 0.05 1.6 ✓ X.X 0.2 ✓ X.XX 0.3 ✓ X.XXX 0.01 ✓		
PROJECT NO.: 472-8100		DATE: 11/2/2011		DESCRIPTION: LIFTING BRACKET WELDMENT SCALE: .33 : 1
MATERIAL:		DRAWN BY: dwashenko		
NEXT ASSEMBLY QTY		CHECKED BY: BJS		SIZE: SHEET 1 OF 1 DRAWING NO.: 472-8101
TOTAL QTY IN DUMMY 1		DATE: 11/2/2011		
FINISH: SEE NOTES		ENGINEER: D. WASHENKO		REV: A

472-8100	1
NEXT ASSEMBLY	QTY
TOTAL QTY IN DUMMY	1



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DESCRIPTION: LIFTING BRACKET WELDMENT

SIZE: SHEET 1 OF 1  
SCALE: .33 : 1

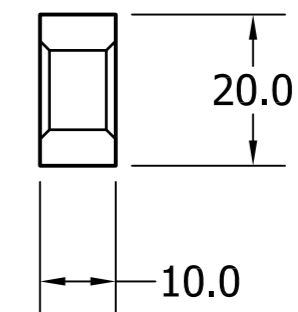
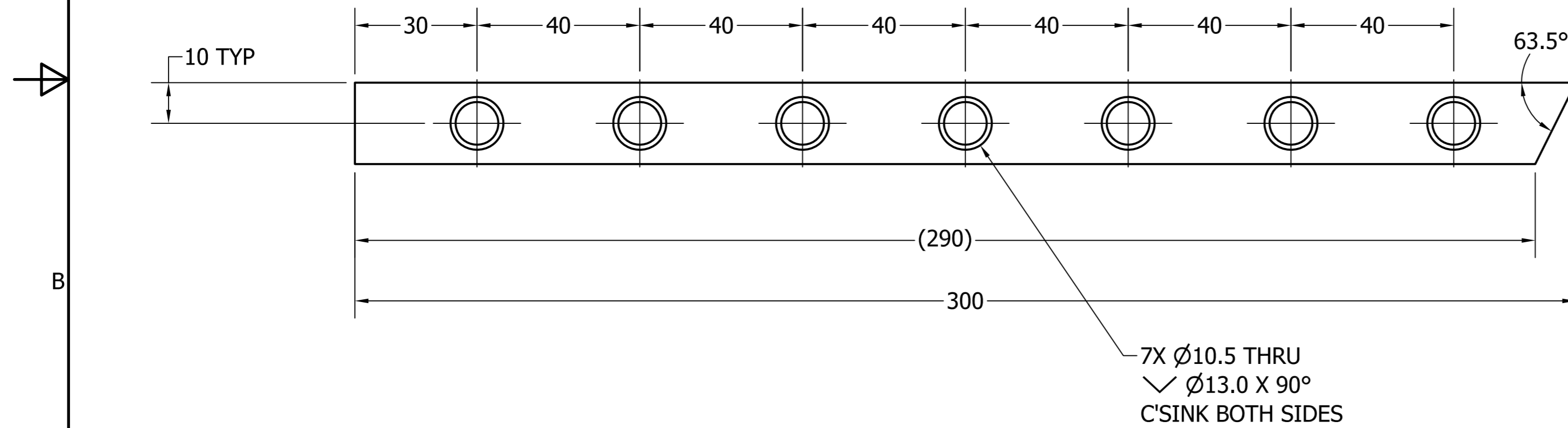
DRAWING NO.: 472-8101

REV: A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/2/2011	DW



SCALE .250



DO NOT SCALE DRAWING  
THIRD ANGLE PROJECTION

TOLERANCES  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
DECIMALS ANGLES FINISH  
X ± 0.5 ± 0.5 1.6  
XX ± 0.2  
XXX ± 0.1  
XXXX ± 0.01

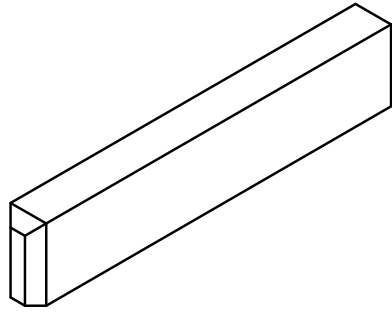


NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

PROJECT NO:	472-8101	QTY	1
MATERIAL:	1018 STEEL	HEAT TREAT:	
FINISH:		ENGINEER:	D. WASHENKO
DRAWN BY:	dwashenko	DATE:	11/2/2011
CHECKED BY:	BJS	DATE:	11/2/2011
TOTAL QTY IN DUMMY	1	SCALE:	.75 : 1

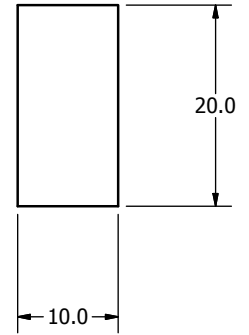
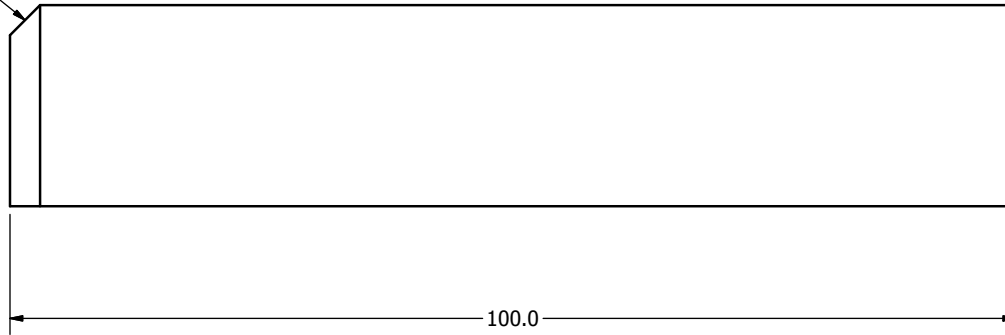
DESCRIPTION:	MAIN BAR
SIZE:	A21 of 1
DRAWING NO.:	472-8102
REV:	A


REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/2/2011	DW

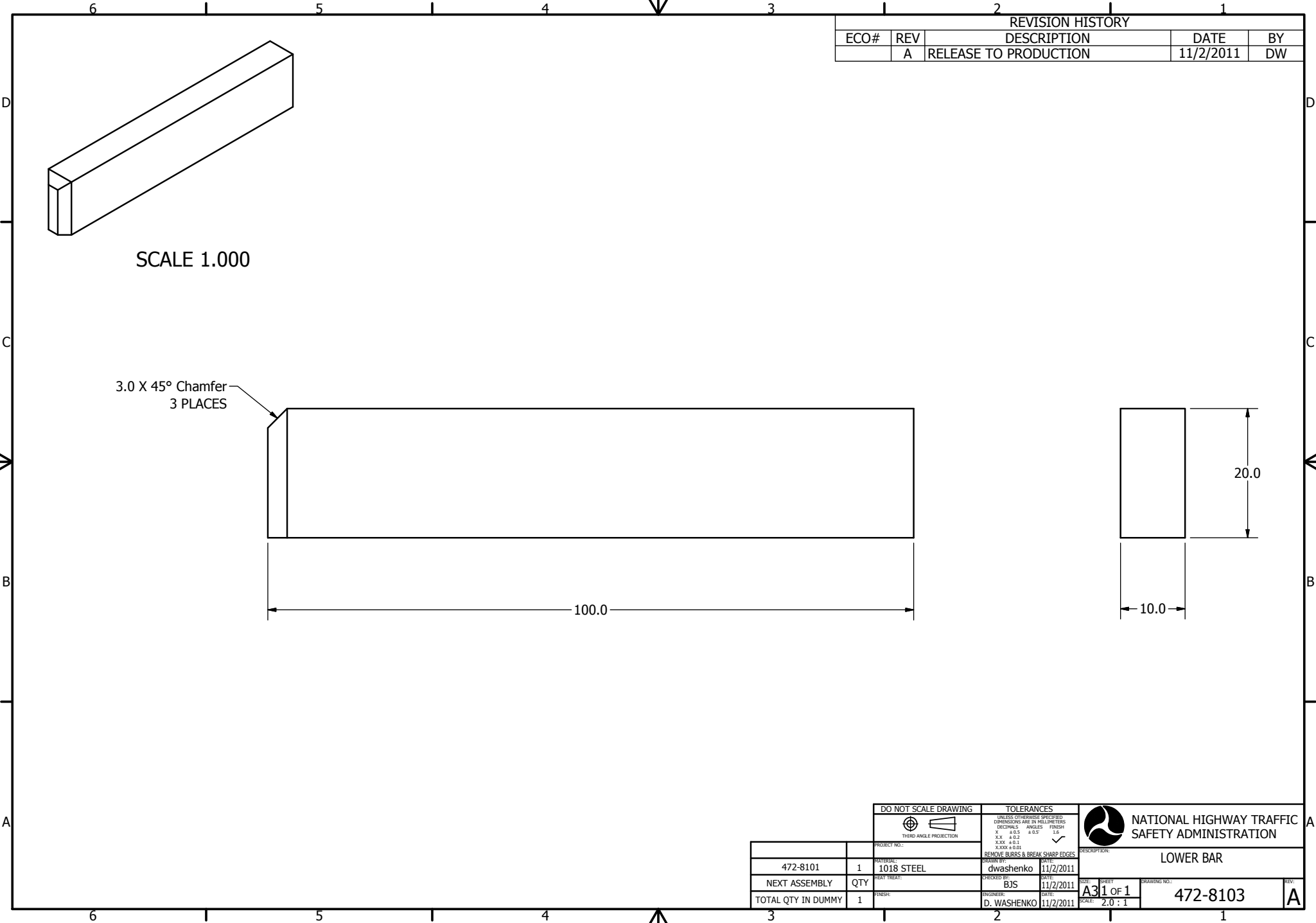


SCALE 1.000

3.0 X 45° Chamfer  
3 PLACES

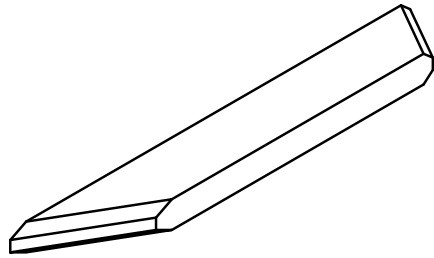


DO NOT SCALE DRAWING		TOLERANCES		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
THIRD ANGLE PROJECTION		<small>UNLESS OTHERWISE SPECIFIED</small> <small>DIMENSIONS ARE IN MILLIMETERS</small> <small>DECIMALS ANGLES FINISH</small> <small>0.05 1.6</small> <small>X 0.2</small> <small>XX 0.3</small> <small>XXX 0.01</small>		
PROJECT NO:	472-8101	MATERIAL:	1018 STEEL	<small>DESCRIPTION:</small> <b>LOWER BAR</b>
DRW BY:	dwashenko	DATE:	11/2/2011	
CHECKED BY:	BJS	DATE:	11/2/2011	
HEAT TREAT:		ENGINEER:	D. WASHENKO	<small>SIZE SHEET</small> <b>A3 1 OF 1</b>
TOTAL QTY IN DUMMY	1	FINISH:		<small>DRAWING NO.:</small> <b>472-8103</b>
				<small>SCALE:</small> <b>2.0 : 1</b>

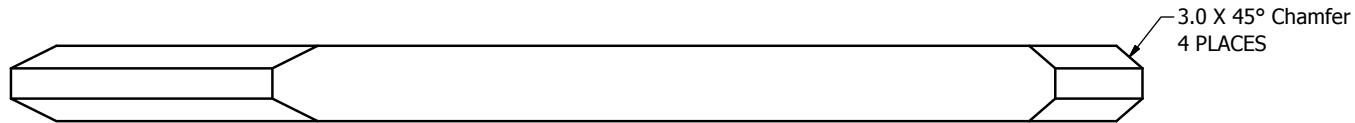
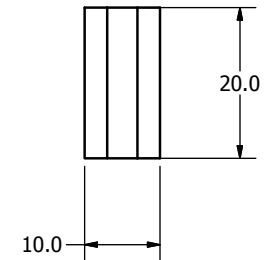
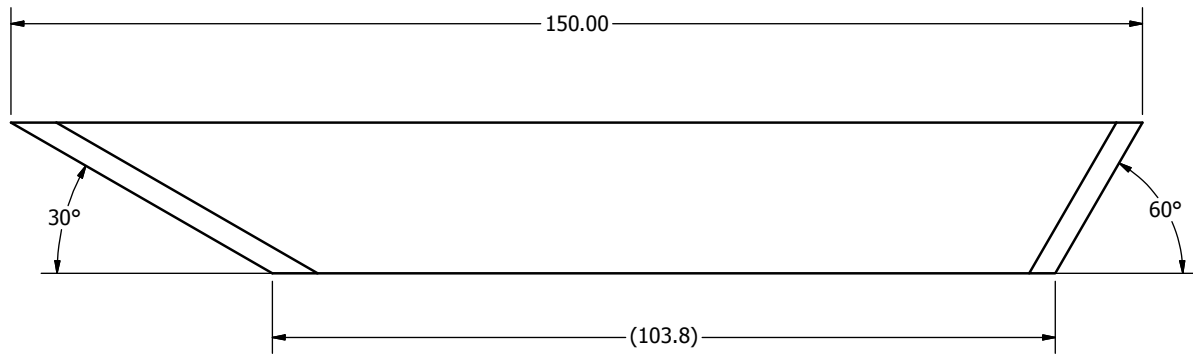




REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/2/2011	DW

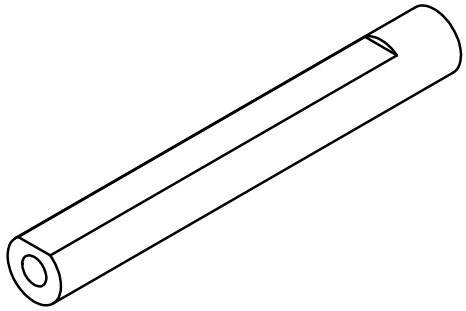


SCALE .750

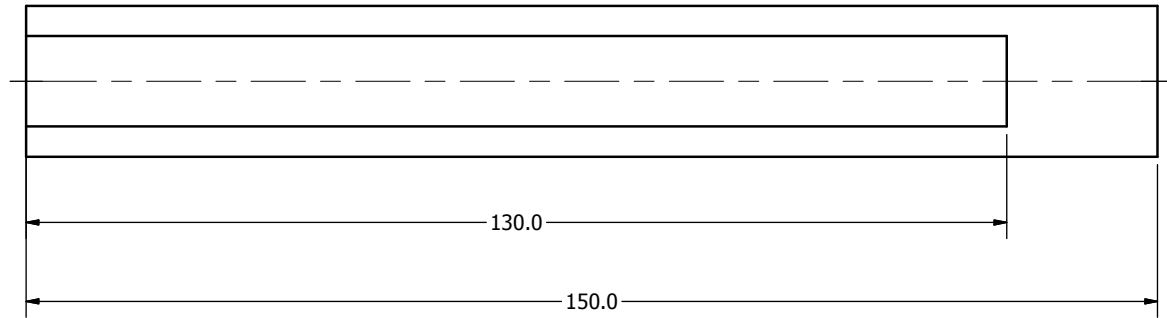
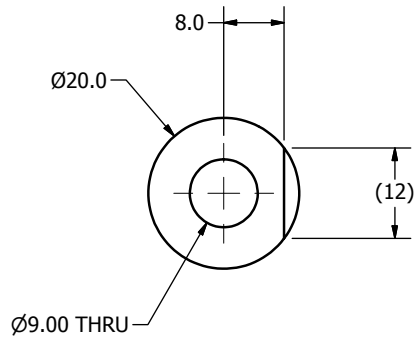


DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 ± 0.5 16 XX ± 0.2 ✓ XXX ± 0.3 XXXX ± 0.01		
PROJECT NO:	472-8101	MATERIAL:	1018 STEEL	DESCRIPTION:
DESIGNED BY:	dwashenko	HEAT TREAT:		SUPPORT BAR
CHECKED BY:	BJS	DATE:	11/2/2011	SIZE: SHEET
ENGINEER:	D. WASHENKO	DATE:	11/2/2011	A3 1 OF 1
SCALE:	1.5 : 1	DRAWING NO.:	472-8104	REV.:
TOTAL QTY IN DUMMY	1	FINISH:		A

REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/2/2011	DW

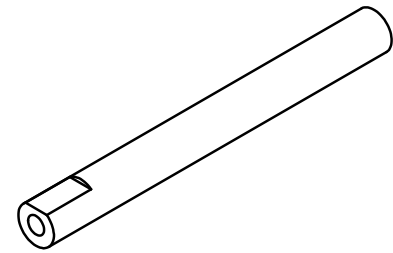


SCALE .750

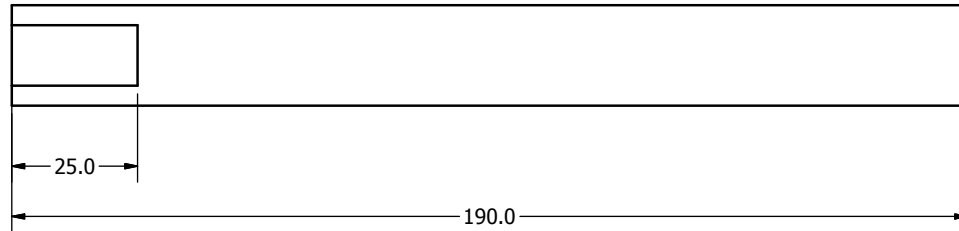
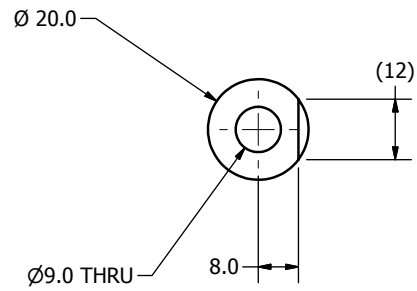


DO NOT SCALE DRAWING		TOLERANCES			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> LOWER ROD
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X.XX ± 0.1 16 ✓ X.X ± 0.2 ✓ X.XX ± 0.3 ✓ X.XXX ± 0.01 ✓			
PROJECT NO:	472-8101	MATERIAL:	1018 STEEL	DESIGNED BY:	D. WASHENKO
DATE:	11/2/2011	CHECKED BY:	BJS	DATE:	11/2/2011
DRIVEN BY:	dwashenko	HEAT TREAT:		SCALE:	1.5 : 1
FINISH:		QTY:	2	SIZE SHEET:	A3 1 OF 1
TOTAL QTY IN DUMMY:	2	REVISION:		DRAWING NO.:	472-8105

REV: A



SCALE .500



REVISION HISTORY				
ECO#	REV	DESCRIPTION	DATE	BY
	A	RELEASE TO PRODUCTION	11/2/2011	DW

DO NOT SCALE DRAWING		TOLERANCES		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
THIRD ANGLE PROJECTION		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES FINISH X .05 16 XX 0.2 ✓ XXX 0.3 XXXX 0.01		
PROJECT NO:	472-8101	MATERIAL:	1018 STEEL	DESCRIPTION: UPPER ROD DRAWING NO: 472-8106
DRIVE BY:	dwashenko	CHECKED BY:	BJS	
DATE:	11/2/2011	DATE:	11/2/2011	
HEAT TREAT:		ENGINEER:	D. WASHENKO	REMOVE BLURBS & BREAK SHARP EDGES SCALE: 1.0 : 1 SIZE: A3 SHEET: 1 OF 1
TOTAL QTY IN DUMMY:	1	FINISH:		REV: A

4

3

2

1

D

C

B

A

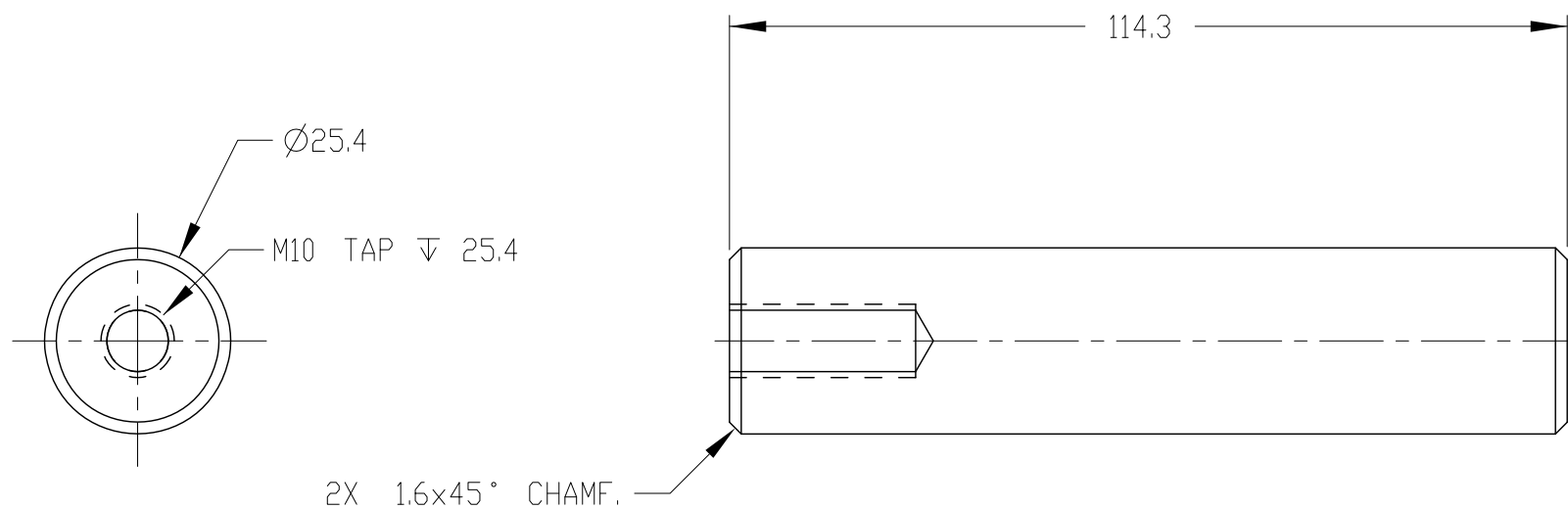
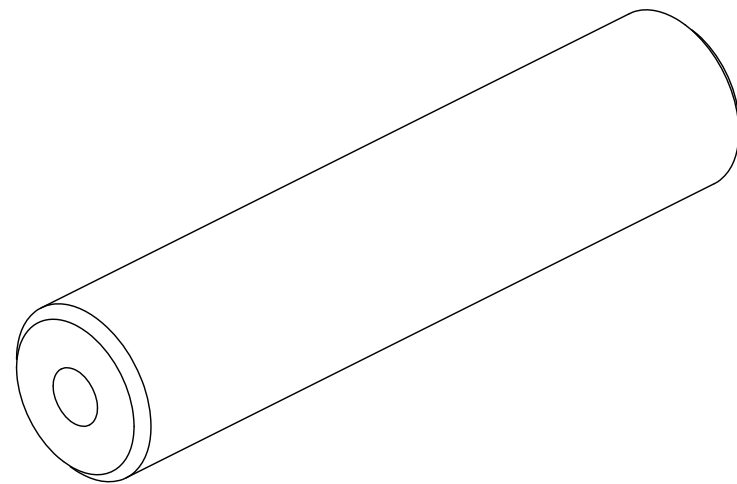
D

C

B

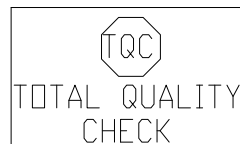
A

REVISIONS				
ECD/ECR#	REV.	DESCRIPTION	DATE	CHANGED BY
	A	RELEASE TO PRODUCTION	1/20/03	JS
80027	B	UPDATED TITLE BLOCK FOR MACHINE FINISH	8/9/12	BTH



NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES.



W50-84100	1	W50-00000
NEXT ASSEMBLY	QTY	USED ON
APPLICATION		

ITEM NO.	QTY	PART NO.	DESCRIPTION
PART LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMALS: ANGLES: MACHINED: X ± 0.5 ±0.5° 1.6 X.X ± 0.1 X.XX ± 0.05 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		STANDARD BUILD LEVEL: NA THIRD ANGLE PROJECTION	
MATERIAL CRS 1018		APPROVALS	DATE
HEAT TREAT		DRAWN J.WANG	09-Aug-12
FINISH NICKEL PLATE		CHECKED	
		PRDD. ENG.	
SIZE A3		DWG NO. W50-84104	REV B
SCALE 1.000		SHEET 1 OF 1	



HANDLE, THREADED HOLE

3

2

1

FORMAT: SHEET-A3 REV: A DOCUMENT 1 OF 2

4

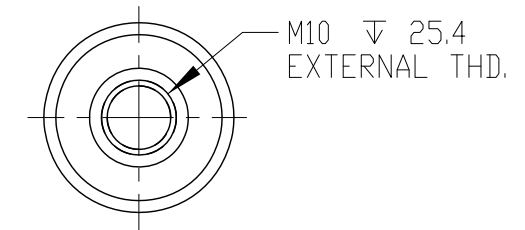
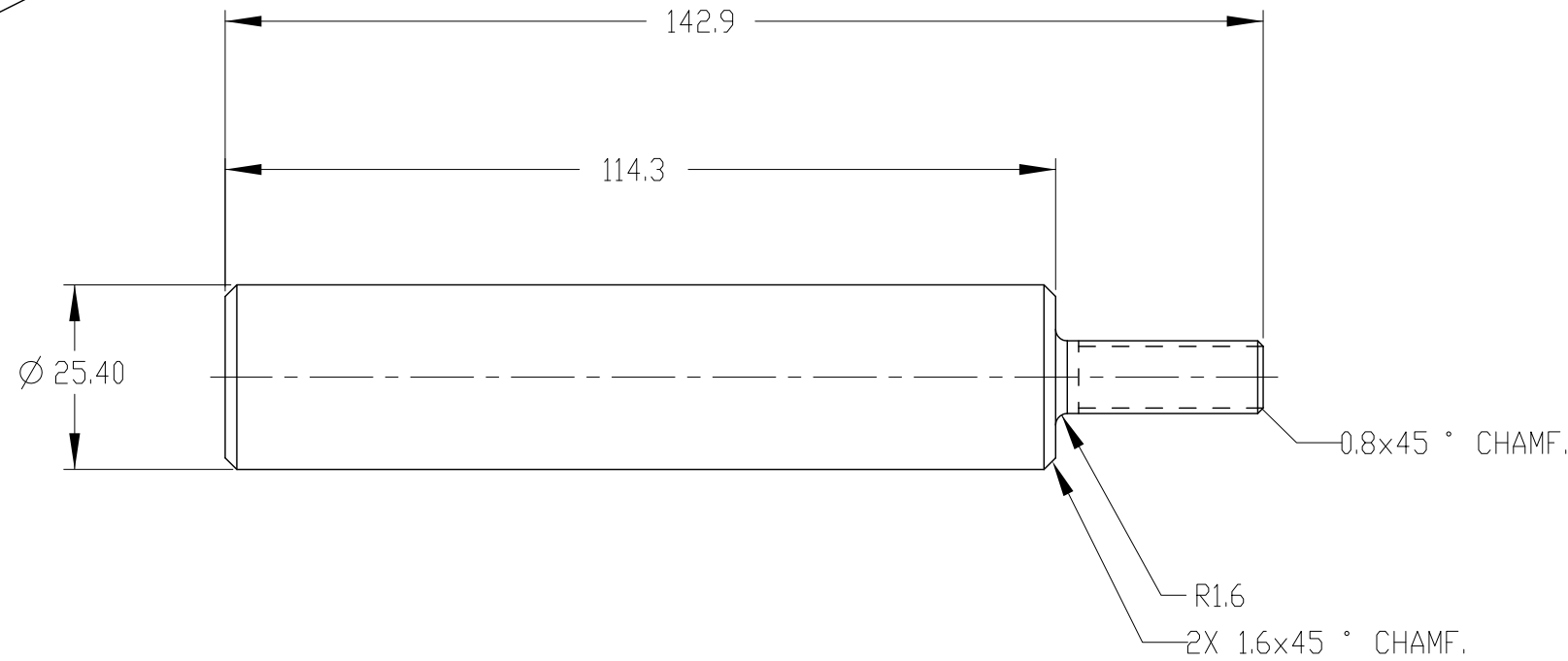
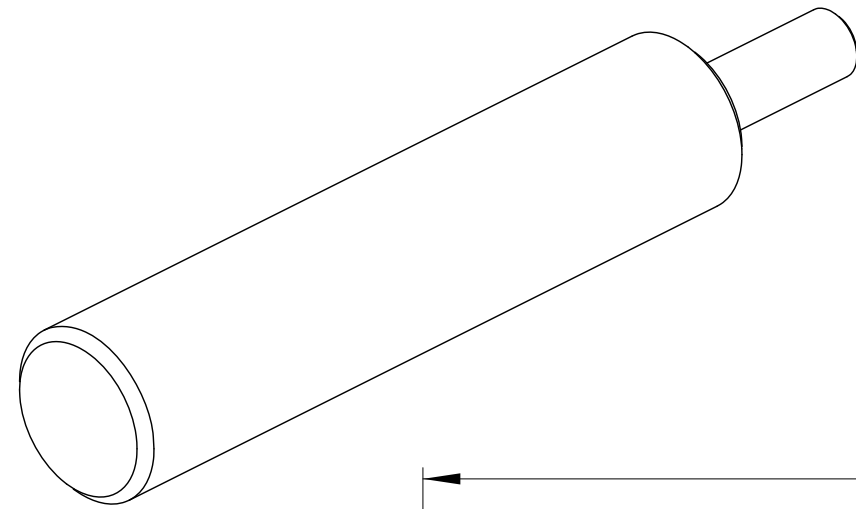
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2

1

REVISIONS

ECD/ECR#	REV.	DESCRIPTION	DATE	CHANGED BY
	A	RELEASE TO PRODUCTION	1/20/03	JS
80027	B	UPDATED TITLE BLOCK FOR MACHINE FINISH	8/9/12	BTH



NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES.

ITEM NO.	QTY	PART NO.	DESCRIPTION
PART LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMALS: ANGLES: MACHINED: X ± 0.5 ±0.5 ° 1.6 X.X ± 0.1 X.XX ± 0.05 ASME Y14.5M - 1994 DO NOT SCALE DRAWING		STANDARD BUILD LEVEL: NA	
MATERIAL CRS 4140/4130		DRAWN J.WANG 09-Aug-12	
HEAT TREAT		CHECKED	
FINISH NICKEL PLATE		PRD. ENG.	
APPROVALS		DATE	
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION		HANDLE, THREADED ROD	
SIZE A3		DWG NO. W50-84106	
SCALE 1.000		SHEET 1 OF 1	



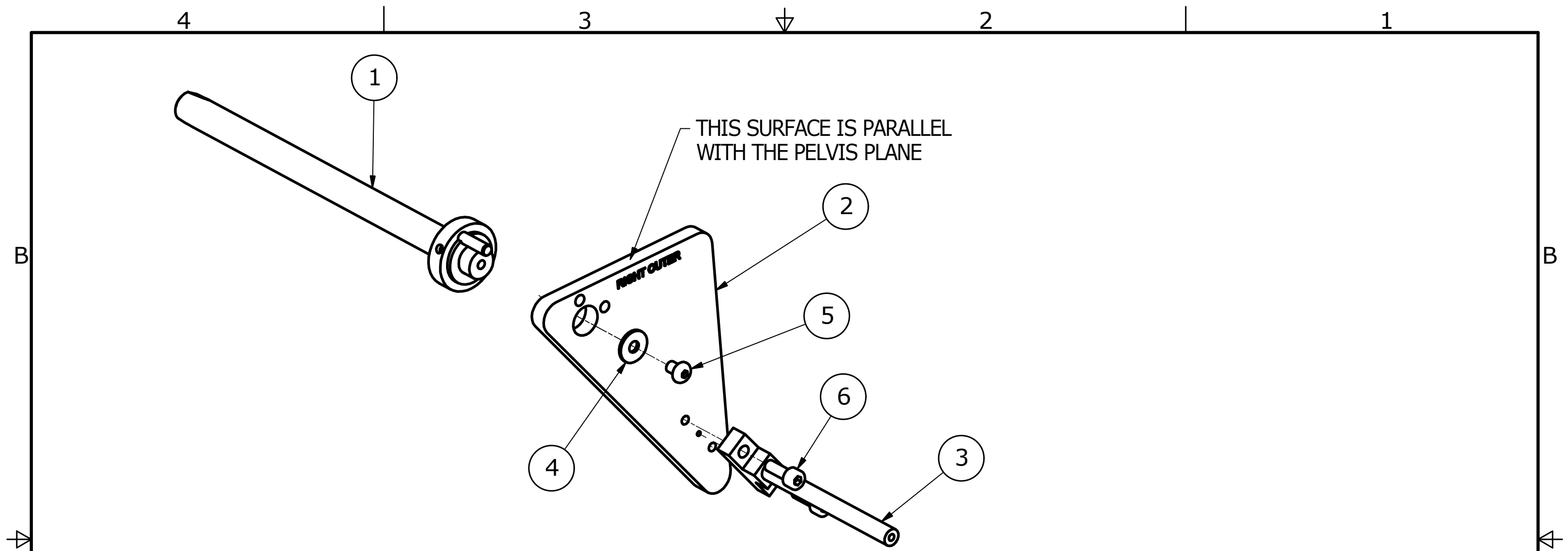
W50-84100	1	W50-00000
NEXT ASSEMBLY	QTY	USED ON
APPLICATION		

3

2

1

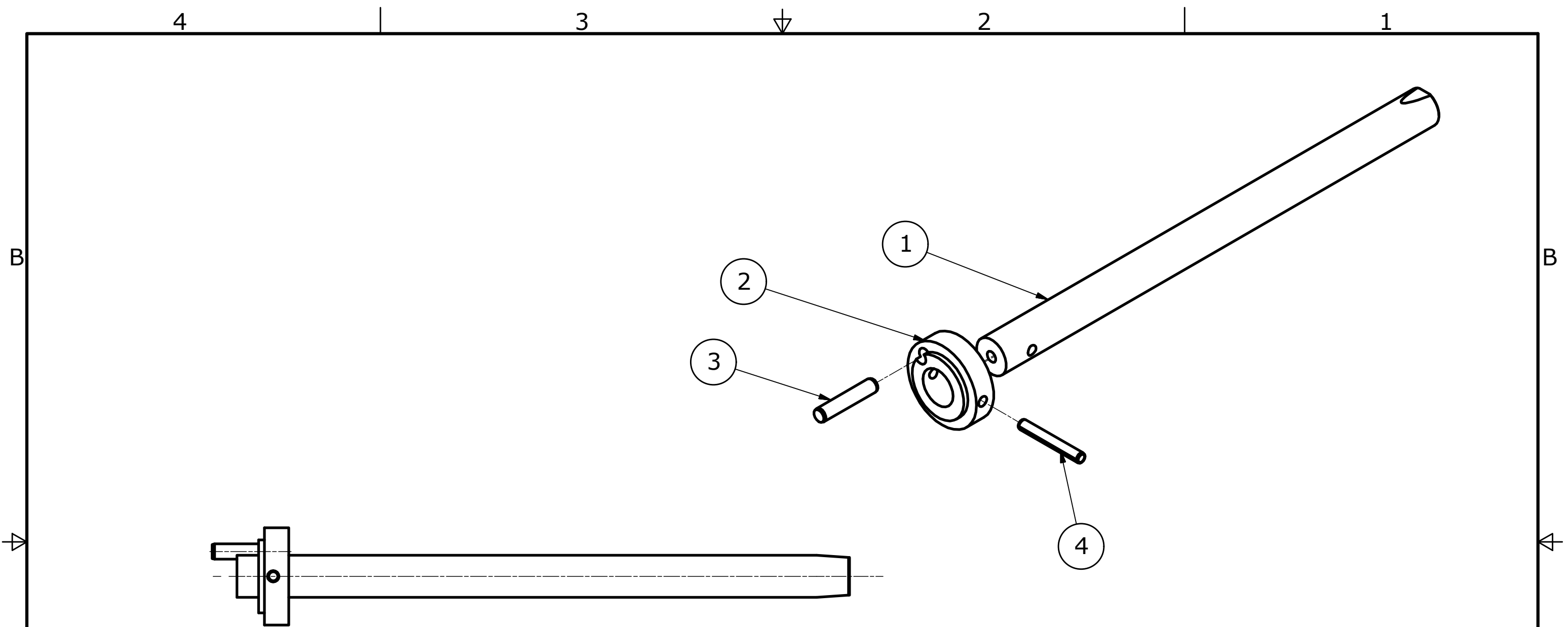
FORMAT: SHEET-A3 REV: A DOCUMENT 1 OF 2



6	2	5000152	SCREW, SHCS M4-0.7 x 12
5	1	5001075	SCREW, BHCS M4x0.7 x 6mm
4	1	5000155V	WASHER, 4.3mm x 12mm x 1mm
3	1	472-8220	SILL ADAPTOR H-POINT GAGE
2	1	472-8215	PLATE, H-POINT GAGE
1	1	472-8210	PIN ASS'Y., H-POINT GAGE
ITEM	QTY	PART NUMBER	DESCRIPTION



PARTS LIST

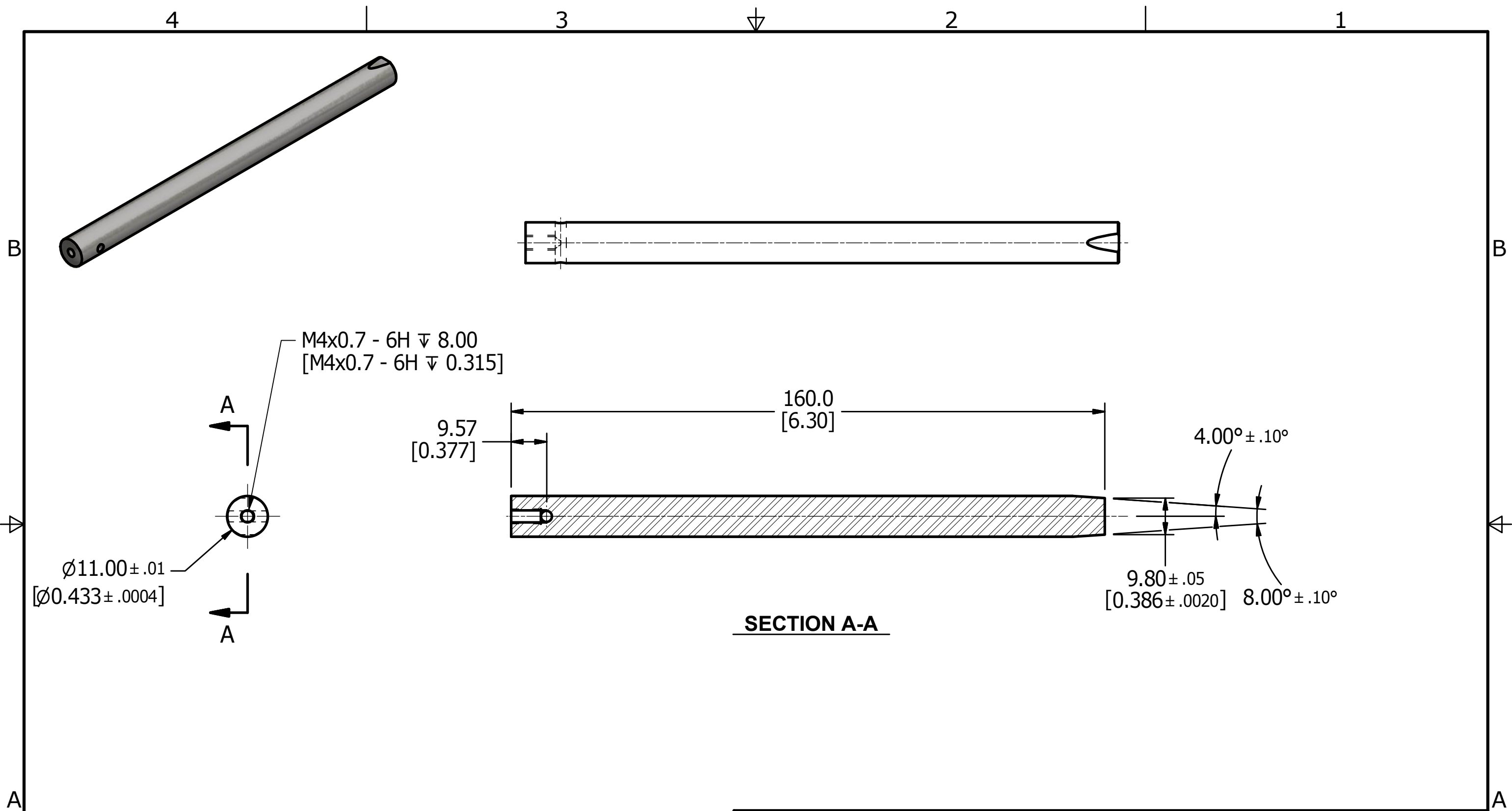
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.5 X.X ±.2      ANGL X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC            SAFETY ADMINISTRATION</b>												
	APPROVALS DRAWN Dave Walker CHECKED	DATE 8/28/2015		<b>H-POINT GAGE ASSEMBLY</b>  <b>THOR-M</b>											
MATERIAL  HEAT TREAT  FINISH	ENG  APPROVED	 THIRD ANGLE PROJECTION	<table border="1"> <tr> <td>SIZE</td> <td>DRAWING NUMBER</td> <td>REV</td> </tr> <tr> <td>A3</td> <td>472-8200</td> <td></td> </tr> <tr> <td>SCALE:</td> <td>SHEET</td> <td></td> </tr> <tr> <td>0.75:1</td> <td>1 OF 1</td> <td></td> </tr> </table>	SIZE	DRAWING NUMBER	REV	A3	472-8200		SCALE:	SHEET		0.75:1	1 OF 1	
SIZE	DRAWING NUMBER	REV													
A3	472-8200														
SCALE:	SHEET														
0.75:1	1 OF 1														


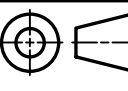


ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	5000189V	ROLL PIN M3 x 22 SS
3	1	5000405V	PIN, DOWEL M4 x 20
2	1	472-8212	DISK, H-POINT GAGE
1	1	472-8211	PIN, TAPPERED, H-POINT GAGE

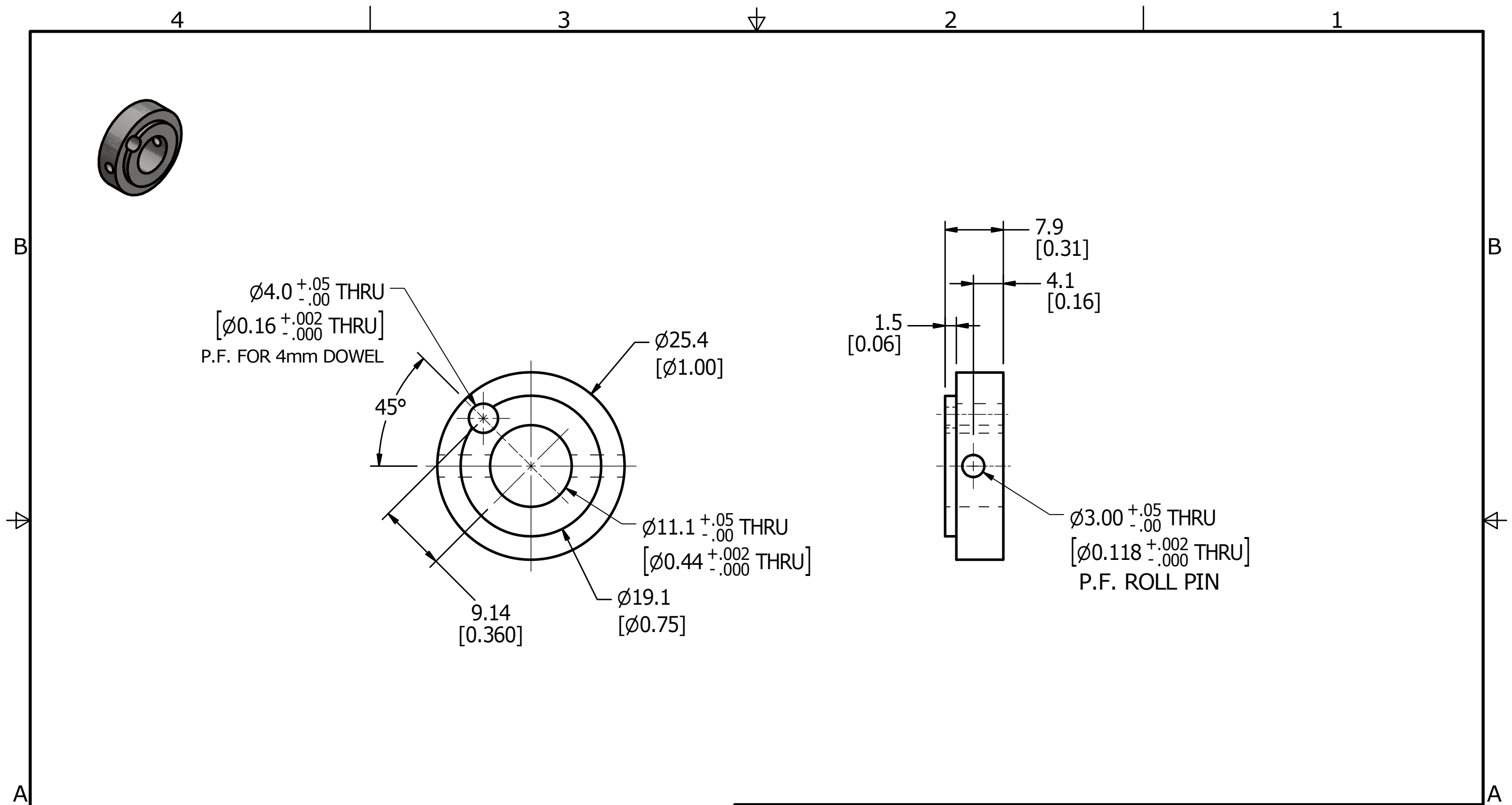
PARTS LIST



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN Dave Walker CHECKED	DATE 8/27/2015	
MATERIAL	HEAT TREAT	FINISH	 THIRD ANGLE PROJECTION
SIZE <b>A3</b>		DRAWING NUMBER <b>472-8210</b>	REV SHEET <b>1 OF 1</b>

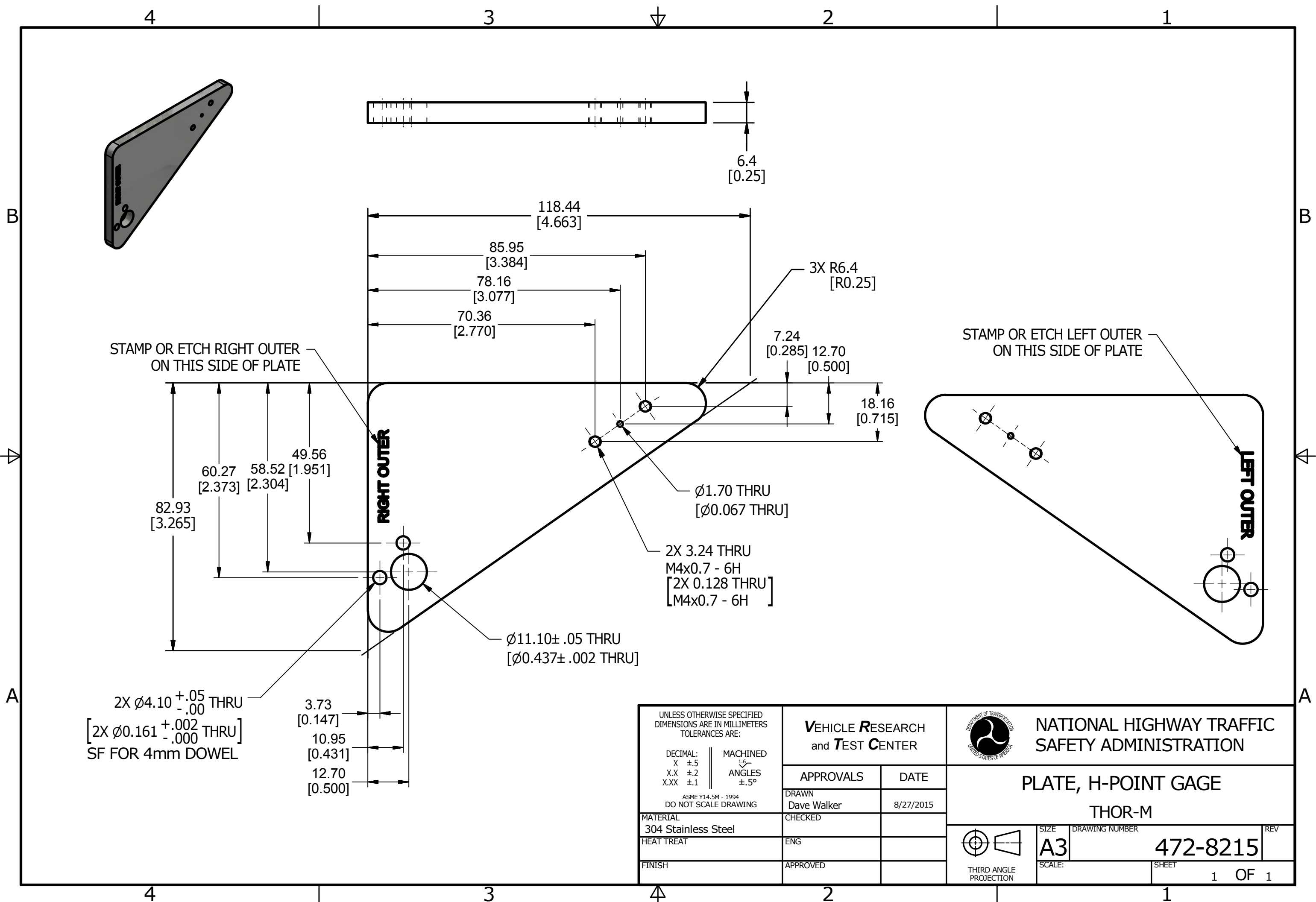


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X $\pm .5$ $\nabla$ X.X $\pm .2$ ANGLE X.XX $\pm .1$ $\pm .5^\circ$  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 8/27/2015	<b>PIN, TAPPED, H-POINT GAGE</b> <b>THOR-M</b>	
MATERIAL 304 Stainless Steel HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>472-8211</b>
		SCALE:		SHEET <b>1 OF 1</b>





UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 8/27/2015		<b>DISK, H-POINT GAGE THOR-M</b>
MATERIAL 304 Stainless Steel HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE A3 SCALE: 2:1	



STAMP OR ETCH RIGHT OUTER  
ON THIS SIDE OF PLATE

STAMP OR ETCH LEFT OUTER  
ON THIS SIDE OF PLATE

**RIGHT OUTER**

**LEFT OUTER**

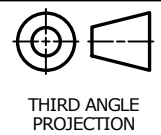
2X  $\phi 4.10 \begin{smallmatrix} +.05 \\ -.00 \end{smallmatrix}$  THRU  
[2X  $\phi 0.161 \begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$  THRU]  
SF FOR 4mm DOWEL

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:  
  
DECIMAL:      MACHINED  
X ±.5            1/5  
X.X ±.2        ANGLES  
X.XX ±.1       ±.5°  
  
ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

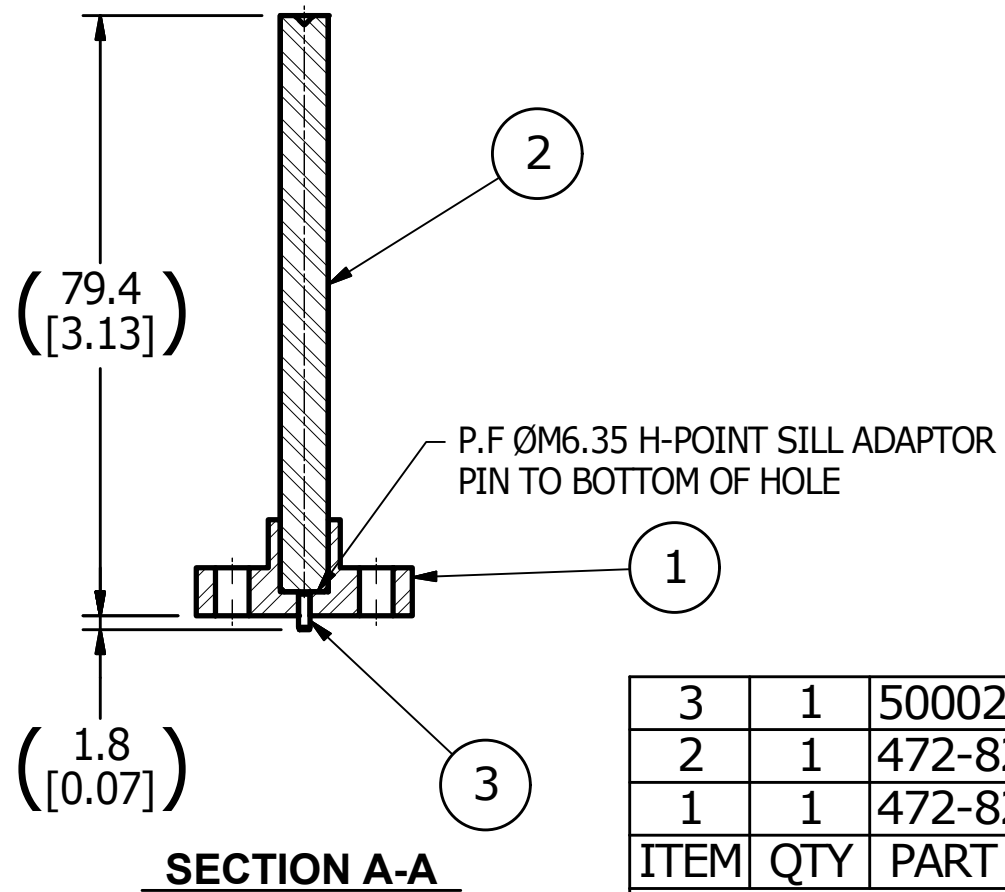
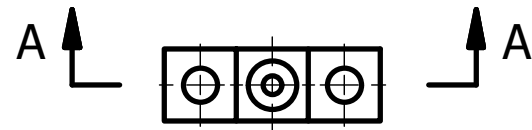
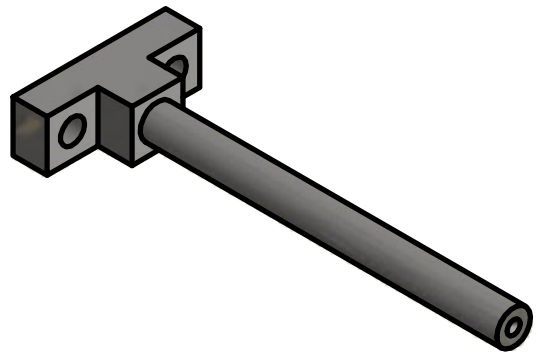
<b>VEHICLE RESEARCH and TEST CENTER</b>	
APPROVALS	DATE
DRAWN Dave Walker	8/27/2015
CHECKED	
ENG	
APPROVED	

DEPARTMENT OF TRANSPORTATION  
UNITED STATES OF AMERICA  
**NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION**

**PLATE, H-POINT GAGE  
THOR-M**



SIZE <b>A3</b>	DRAWING NUMBER <b>472-8215</b>	REV
SCALE:	SHEET <b>1 OF 1</b>	




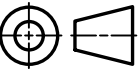
ITEM	QTY	PART NUMBER	DESCRIPTION
3	1	5000224	PIN, DOWEL M1.5 x 5
2	1	472-8222	PIN, H-POINT SILL ADAPTOR
1	1	472-8221	BASE, H-POINT SILL ADAPTOR

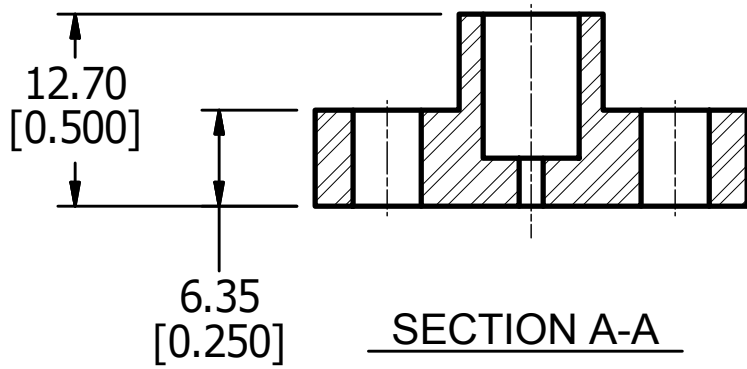
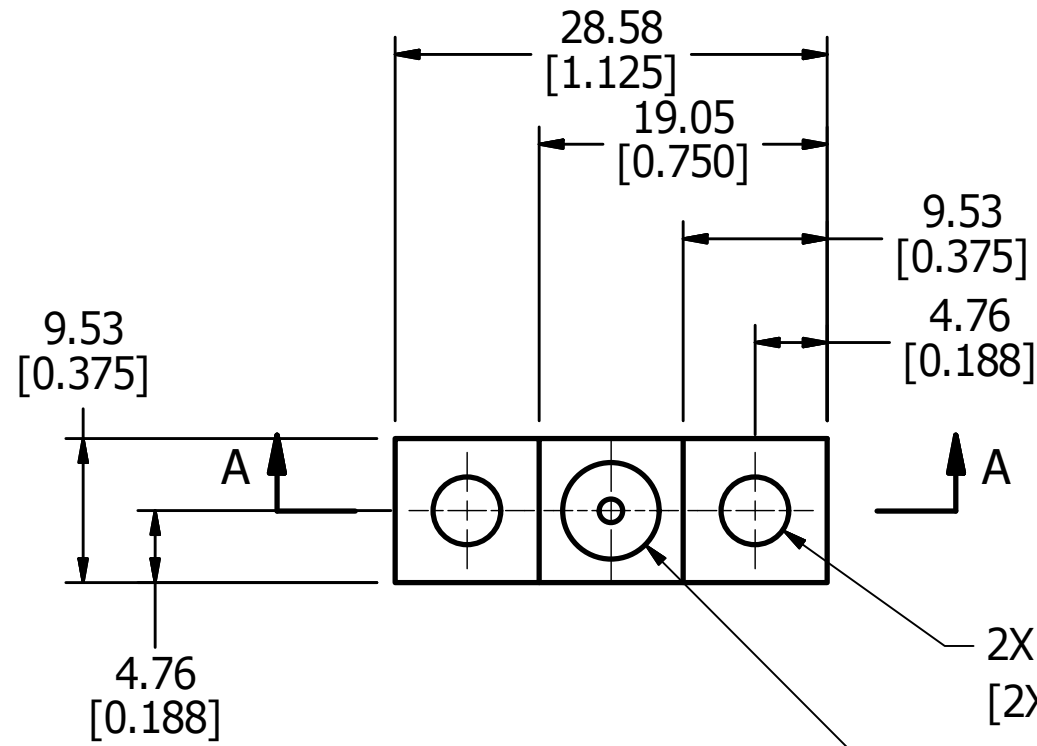
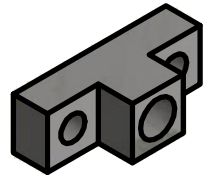
PARTS LIST

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL:      MACHINED  
X ±.5            1/5  
X.X ±.2         1/5  
X.XX ±.1        ANGLE  
                   ±.5°

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
APPROVALS DRAWN Dave Walker		DATE 8/27/2015	
MATERIAL HEAT TREAT FINISH		<b>SILL ADAPTOR H-POINT GAGE</b> <b>THOR-M</b>	
CHECKED ENG APPROVED		 <b>A3</b> DRAWING NUMBER <b>472-8220</b>	
		SCALE: 1:1      SHEET 1 OF 1	




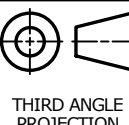
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[2X  $\varnothing 0.177$  THRU]

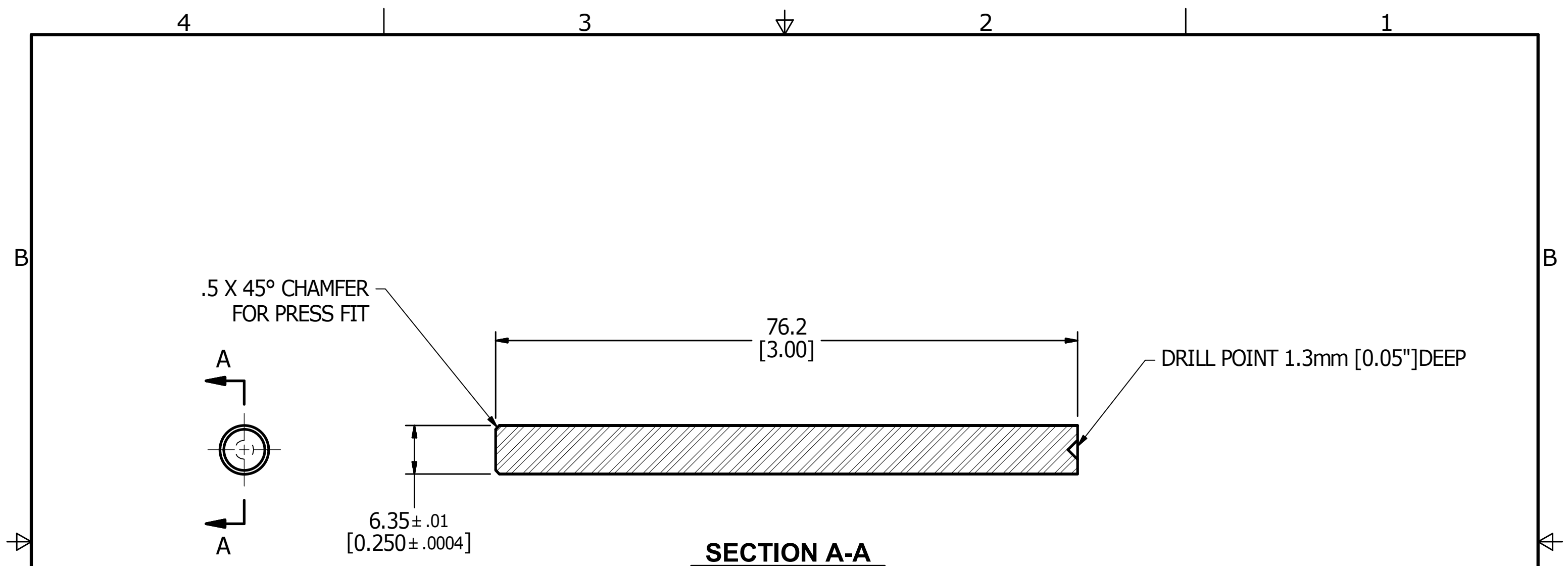
$\varnothing 1.57^{+0.00}_{-0.03}$  THRU, PF DOWEL PIN


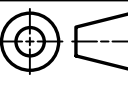
$\sqsubset \varnothing 6.35^{+0.00}_{-0.03} \nabla 9.53^{+0.00}_{-0.03}$  PF  $\varnothing 6.35$  PIN TO BOTTOM

$\left[ \varnothing 0.062^{+0.000}_{-0.001}$  THRU, PF DOWEL PIN

$\left[ \sqsubset \varnothing 0.250^{+0.000}_{-0.001} \nabla 0.375^{+0.000}_{-0.001}$  PF  $\varnothing 6.35$  PIN TO BOTTOM

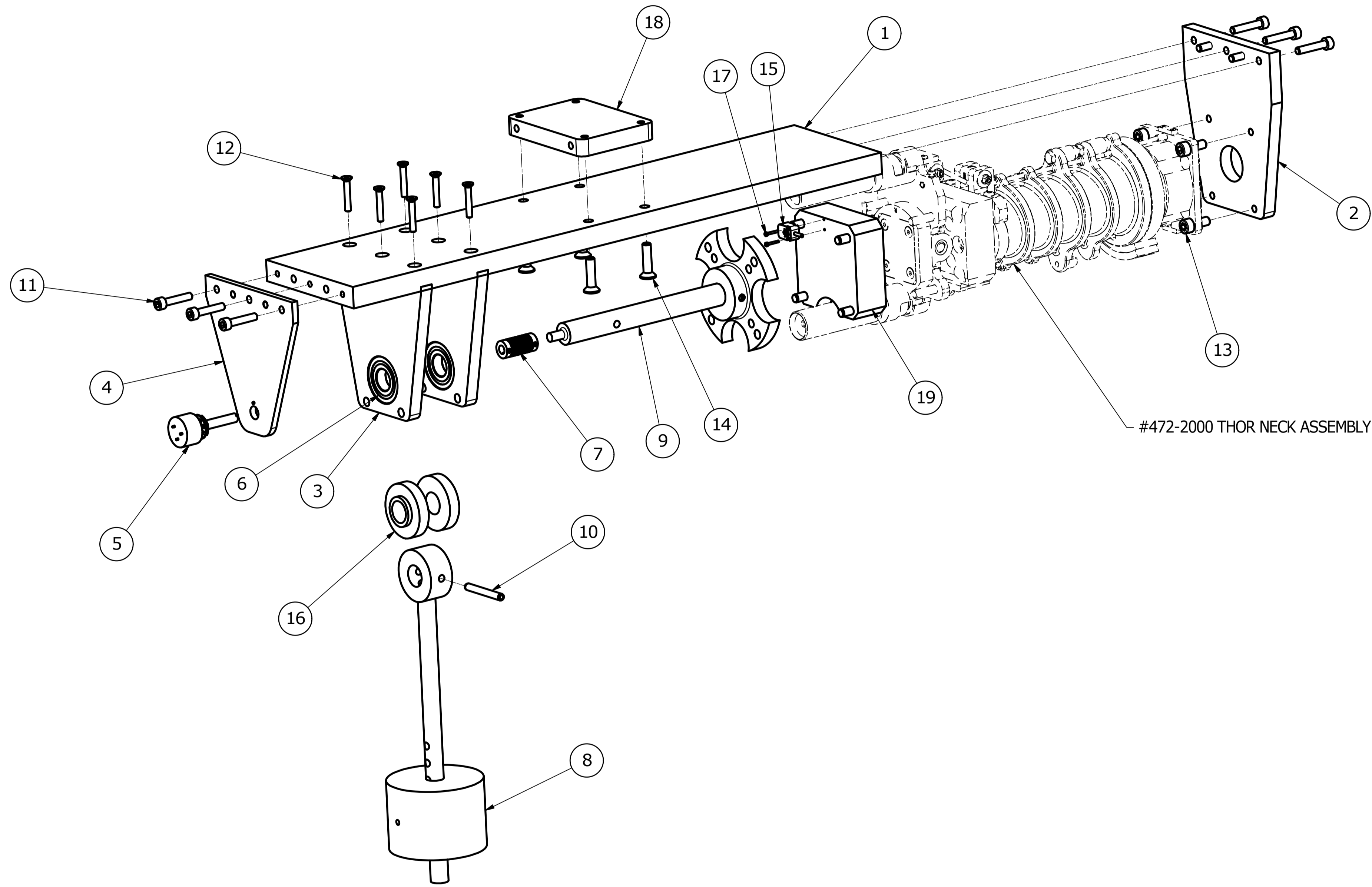
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>BASE, H-POINT SILL ADAPTOR</b> <b>THOR-M</b>	
	DRAWN Dave Walker	8/27/2015		
	MATERIAL 304 Stainless Steel	CHECKED	SIZE A3	DRAWING NUMBER 472-8221
HEAT TREAT	ENG	SCALE: 2:1	SHEET 1	OF 1
FINISH	APPROVED	 THIRD ANGLE PROJECTION		



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2     1/5 X.XX ±.1    1/4  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 8/27/2015	<b>PIN, H-POINT SILL ADAPTOR THOR-M</b>	
MATERIAL 304 Stainless Steel HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE A3 SCALE: 1:2	DRAWING NUMBER <b>472-8222</b> SHEET 1 OF 1

# **TEST FIXTURES**

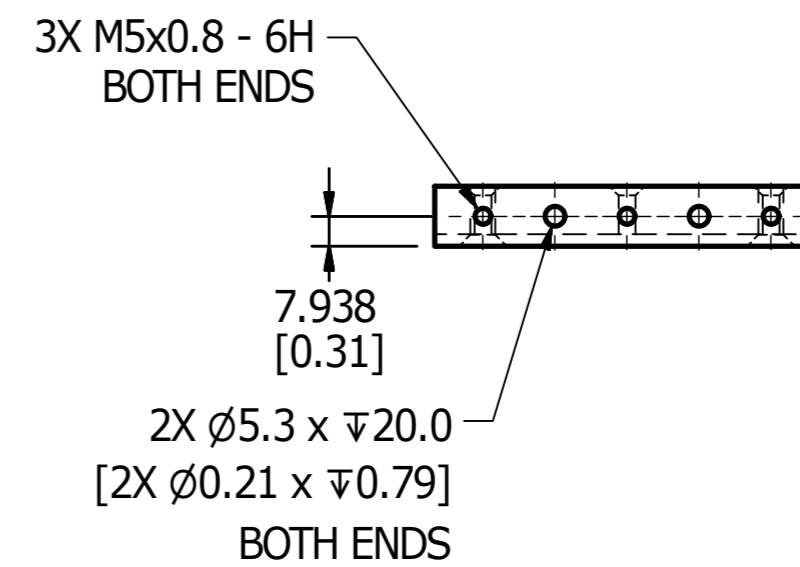
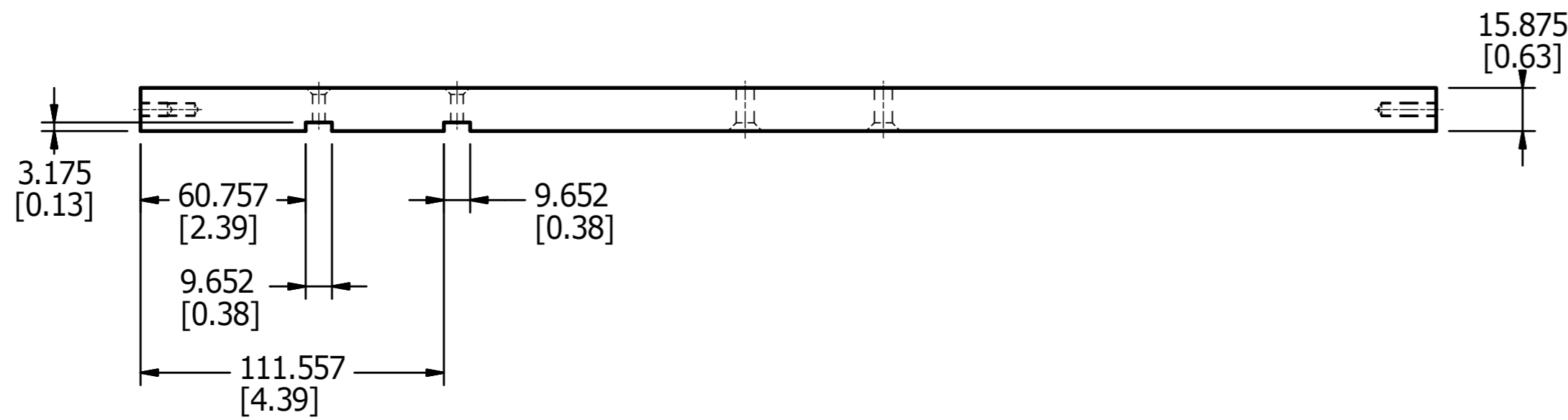
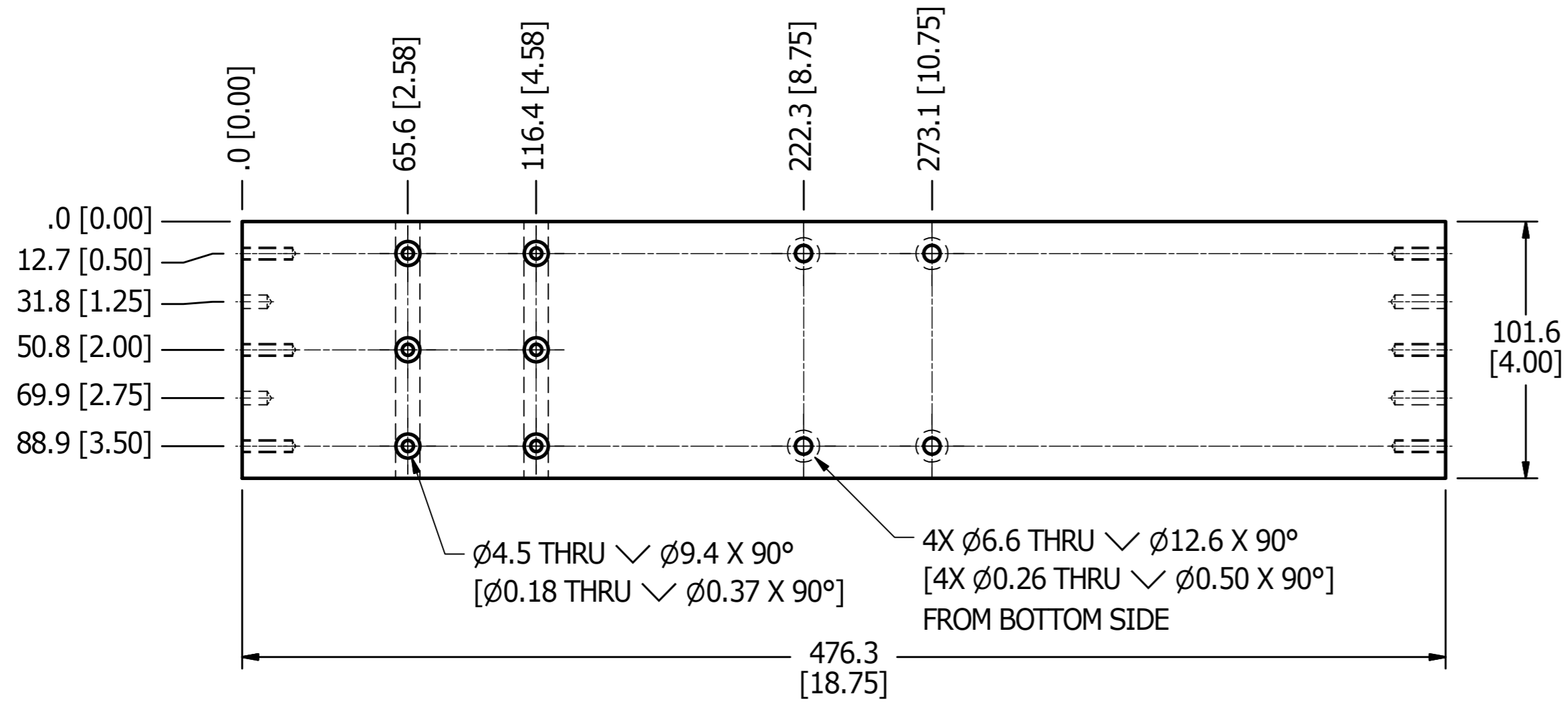
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC; REMOVED PART #DL472-1135 - NECK TWIST FIXTURE END PLATE ASS'Y., LEFT, FRONT IMPACT		DW



ITEM	QTY	PART NUMBER	DESCRIPTION
19	1	DL472-1170	NECK TWIST FIXTURE NECK MOUNTING ADAPTER
18	1	DL472-109	NECK TWIST TEST FIXTURE MOUNTING PLATE
17	2	5000376V	SCREW, SHCS M1.4-0.3 x 10
16	2	DL472-1180	NECK TWIST FIXTURE PENDULUM SPACER
15	1	SA572-S55	ANGULAR RATE SENSOR
14	4	5000135	SCREW, FHCS M6-1 x 25
13	4	5000604	SCREW, SHCS M6-1 x 16
12	6	5000292V	SCREW, FHCS M4-0.7 x 25
11	6	5000373V	SCREW, SHCS M5-08 x 25
10	1	5000200V	PIN, ROLL M5 x 40
9	1	DL472-1150	NECK TWIST FIXTURE SHAFT ASSEMBLY ASS.Y.
8	1	DL472-1160	NECK TWIST FIXTURE PENDULUM ROD ASS.Y.
7	1	3000300V	SHAFT COUPLING, FLEXIBLE BELLOWS FOR 1/4" [6.4 MM] SHAFT, 1.09" [27.7 MM] LG., 1/2" [12.7 MM] O.D.
6	2	3000150V	BALL BEARING, 5/8" [15.9] BORE, 1 3/8" [35.0] O.D., 11/32" [8.7] THK., S.S.
5	1	SA572-S51	ROTARY POTENTIOMETER
4	1	DL472-1120	NECK TWIST FIXTURE END PLATE ASSEMBLY
3	2	DL472-1140	NECK TWIST FIXTURE MIDDLE SUPPORT PLATE
2	1	DL472-1130	NECK TWIST FIXTURE END PLATE ASS'Y., LATERAL IMPACT
1	1	DL472-1110	NECK TWIST FIXTURE TOP PLATE

PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:		VEHICLE RESEARCH and TEST CENTER	
DECIMAL: X ±.5 X.X ±.2 X.XX ±.1	MACHINED ANGLES ±.5°	APPROVALS JIM CLEVENGER	DATE 6/10/2015
ASME Y14.5M - 1994 DO NOT SCALE DRAWING		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
MATERIAL		NECK TWIST FIXTURE THOR-M	
HEAT TREAT	ENG	SIZE A1	DRAWING NUMBER DL472-1000
FINISH	APPROVED	SCALE 1/2	REV A
		THIRD ANGLE PROJECTION	SHEET 1 OF 1

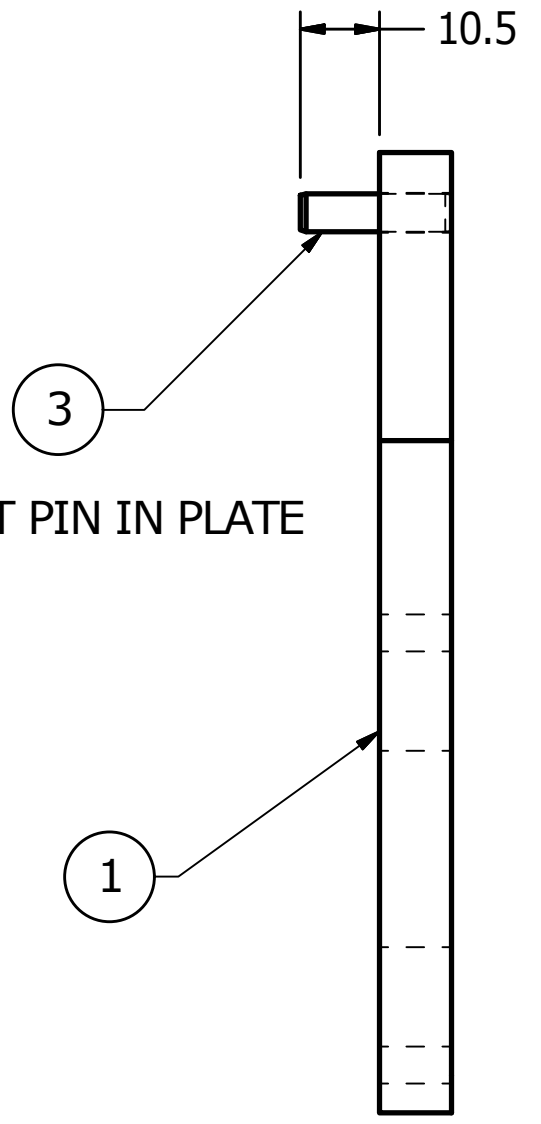
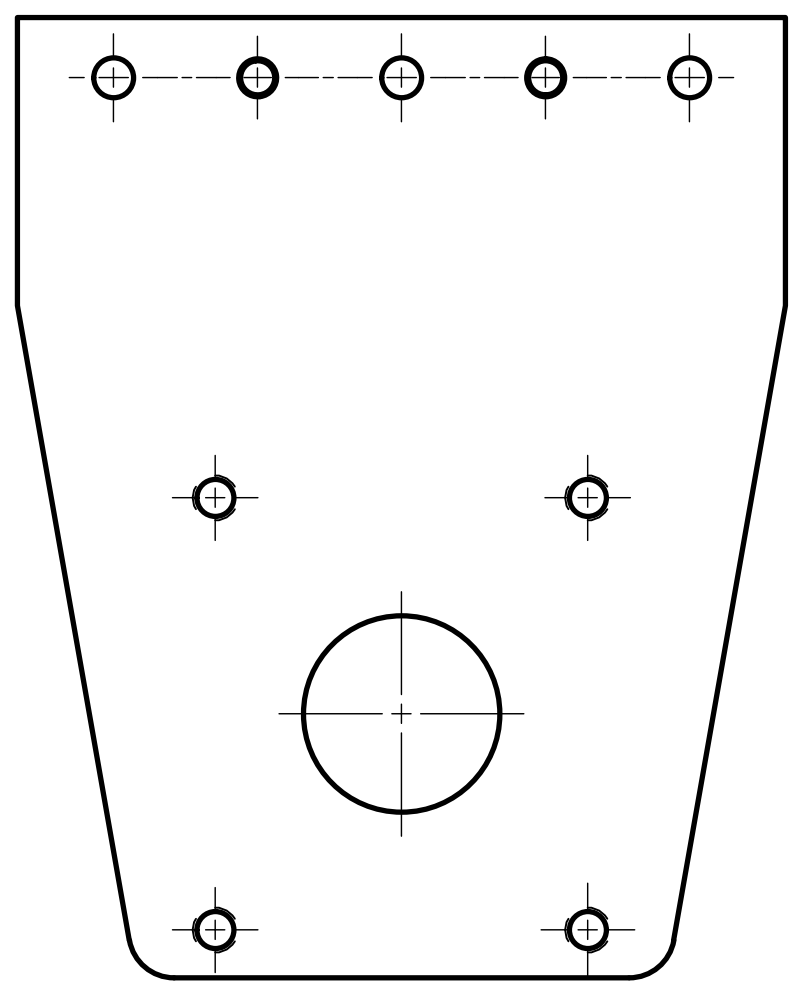
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC		DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
	APPROVALS	DATE	
MATERIAL Aluminum-6061	DRAWN JIM CLEVENGER	2/23/2015	NECK TWIST FIXTURE TOP PLATE THOR-M
HEAT TREAT	CHECKED		SIZE A2
FINISH	ENG		DRAWING NUMBER DL472-1110
	APPROVED		SCALE: 1/2
			THIRD ANGLE PROJECTION
			SHEET 1 OF 1




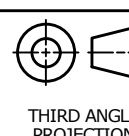
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW



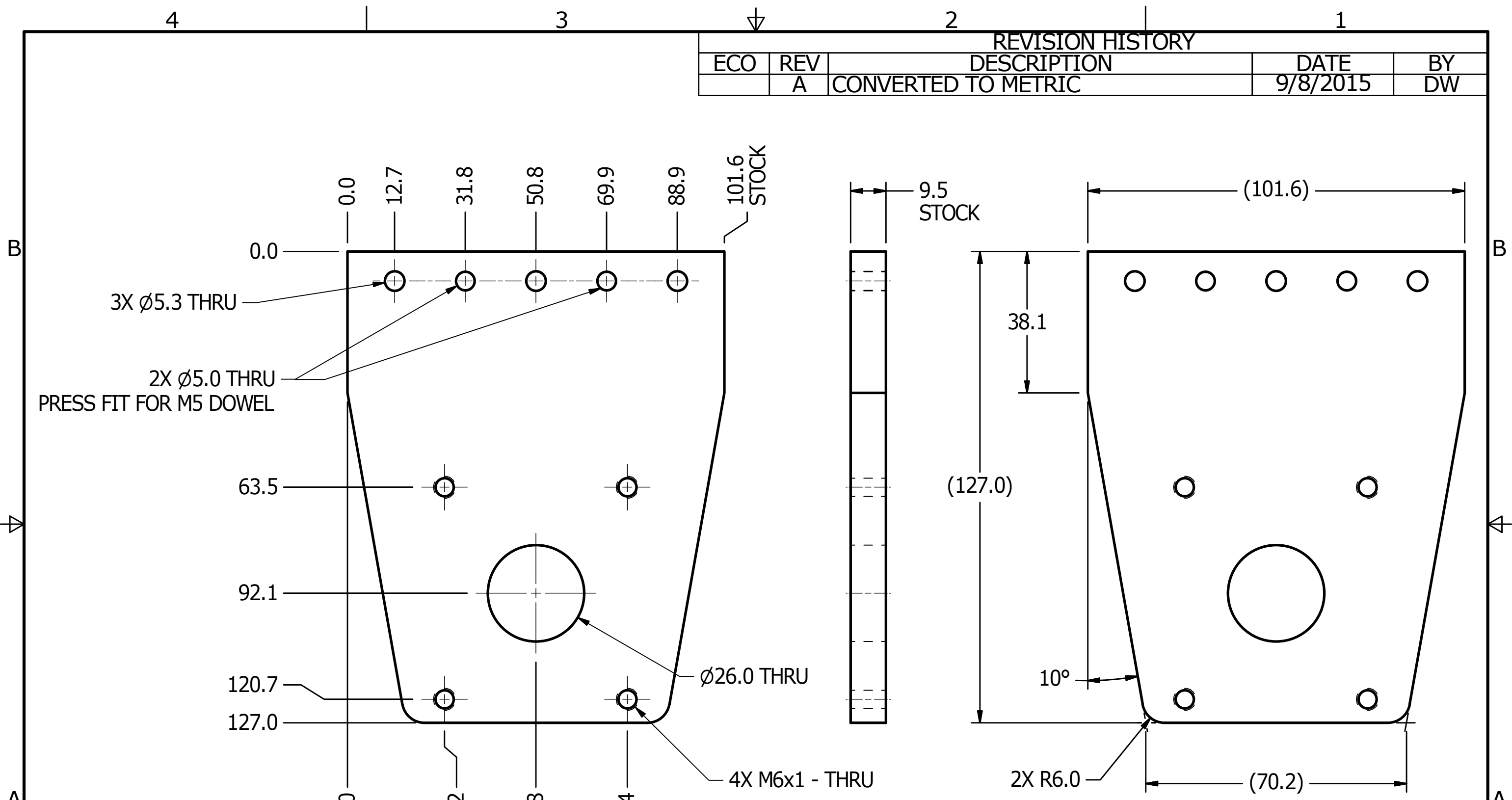
PRESS FIT PIN IN PLATE


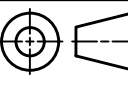
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
3	2	5000332V	PIN, DOWEL M5 x 20	Steel
1	1	DL472-1131	NECK TWIST FIXTURE END PLATE, LATERAL IMPACT	

PARTS LIST

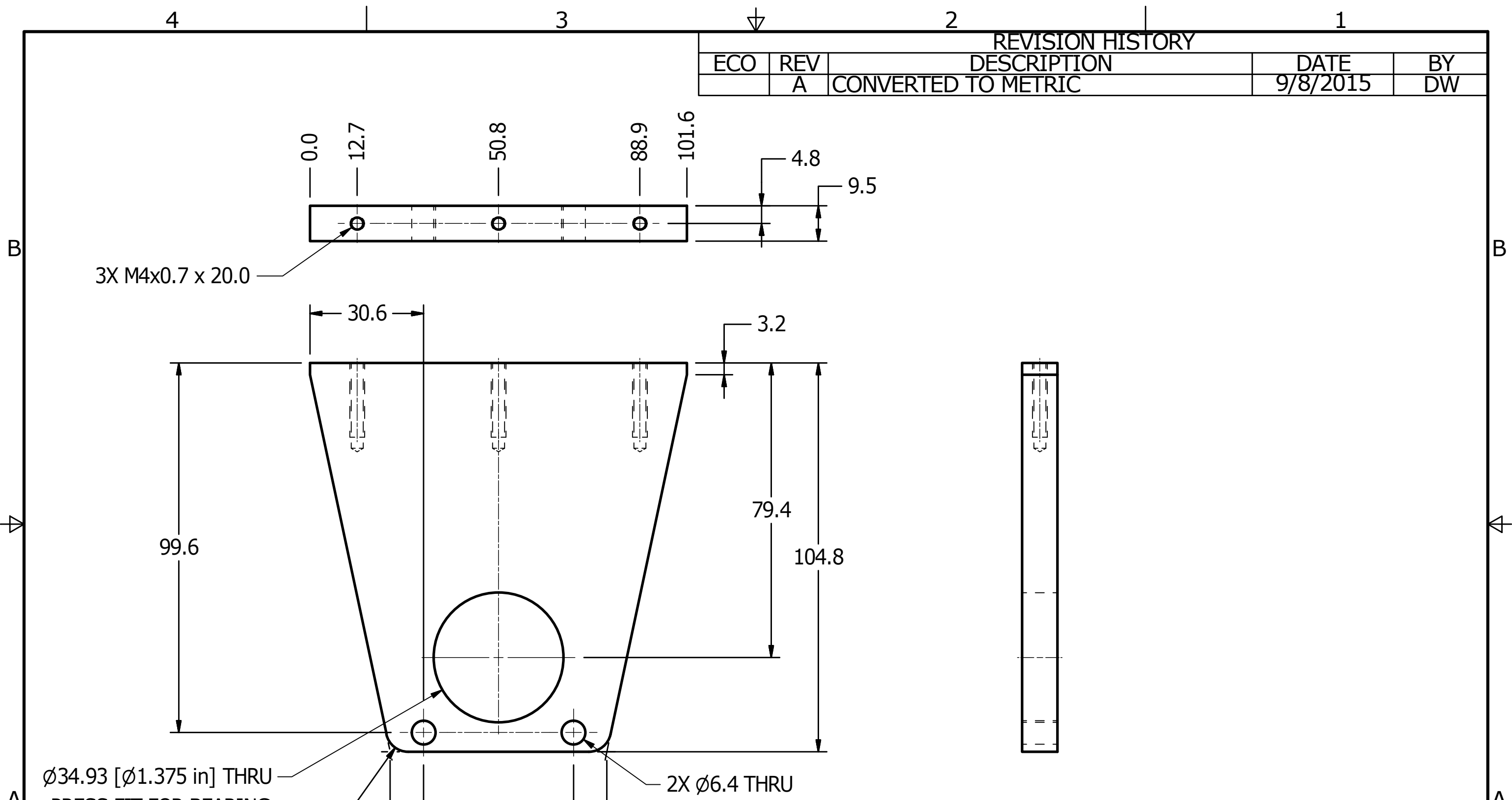
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>NECK TWIST FIXTURE END PLATE ASS'Y., LATERAL IMPACT THOR-M</b>	
	DRAWN JIM CLEVENGER	2/24/2015		
	CHECKED			
MATERIAL	ENG			
HEAT TREAT	APPROVED			
FINISH				
 THIRD ANGLE PROJECTION		SIZE: <b>A3</b> SCALE: 1:1	DRAWING NUMBER: <b>DL472-1130</b> SHEET: 1 OF 1	REV: <b>A</b>

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN JIM CLEVENGER CHECKED	DATE 2/24/2015	<b>NECK TWIST FIXTURE END          PLATE, LATERAL IMPACT          THOR-M</b>	
MATERIAL Aluminum-6061 HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-1131</b>
		SCALE: 1:1	SHEET 1 OF 1	REV <b>A</b>

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5, X.X ±.2, X.XX ±.1 MACHINED 1/6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>NECK TWIST FIXTURE MIDDLE SUPPORT PLATE THOR-M</b>	
	DRAWN JIM CLEVENGER	2/24/2015		
	MATERIAL Aluminum-6061	CHECKED	SIZE: <b>A3</b> DRAWING NUMBER: <b>DL472-1140</b> REV: <b>A</b>	
HEAT TREAT	ENG	SCALE: 1:1 SHEET 1 OF 1		
FINISH	APPROVED			

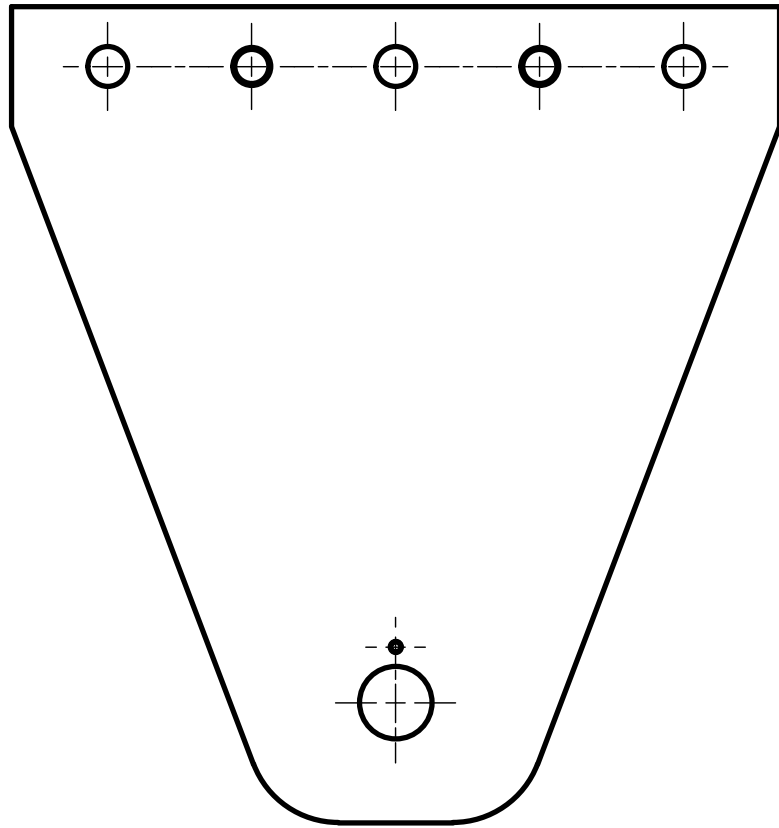
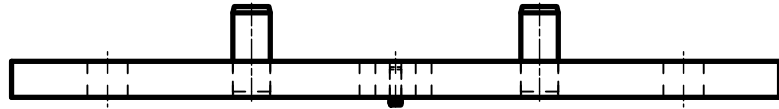
4

3

2

1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC, ADDED PART #5000224 - PIN, DOWEL M1.5 X 5	9/8/2015	DW



7.2

2 PRESS FIT PIN IN PLATE

1

3 PRESS FIT PIN IN PLATE

1.0

A

ITEM	QTY	PART NUMBE	DESCRIPTION	MATERIAL
3	1	5000224	PIN, DOWEL M1.5 x 5	Steel
2	2	5000002	PIN, DOWEL M5 x 12	Steel
1	1	DL472-1121	NECK TWIST FIXTURE END PLATE, RIGHT	

PARTS LIST

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL: X ±.5  
X.X ±.2  
X.XX ±.1

MACHINED 1.5  
ANGLES ±.5°

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

VEHICLE RESEARCH and TEST CENTER



NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

APPROVALS DATE

DRAWN JIM CLEVINGER 2/24/2015

NECK TWIST FIXTURE END PLATE ASSEMBLY THOR-M

MATERIAL

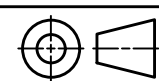
HEAT TREAT

FINISH

CHECKED

ENG

APPROVED



THIRD ANGLE PROJECTION

SIZE A3 DRAWING NUMBER DL472-1120 REV A

SCALE: 1:1 SHEET 1 OF 1

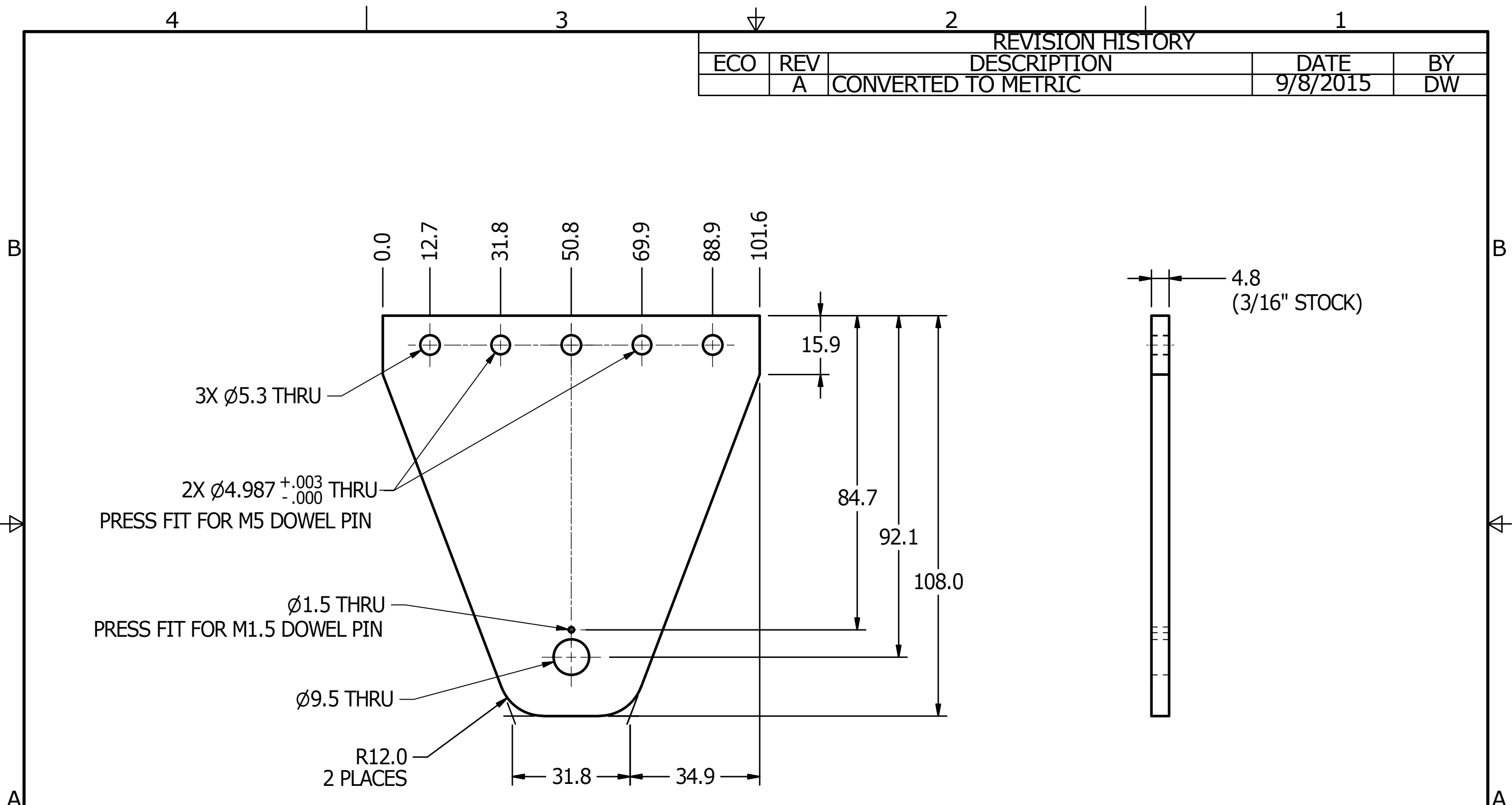
4


3

2

1

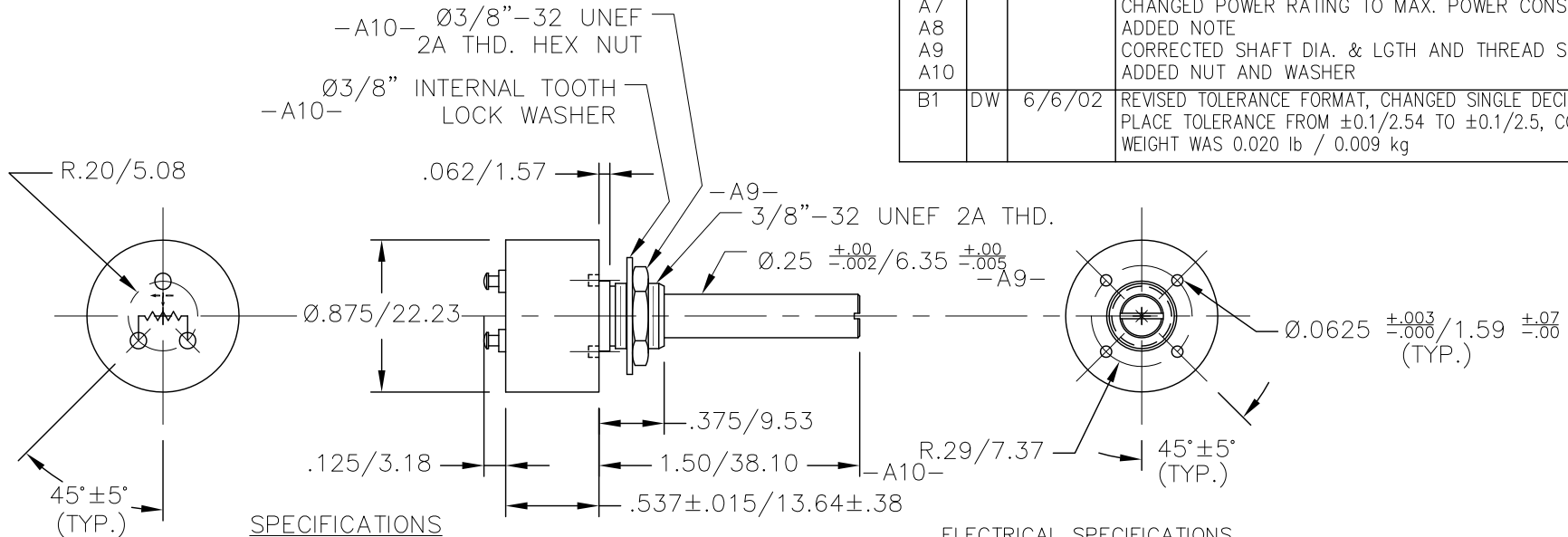
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>NECK TWIST FIXTURE END</b> <b>PLATE, RIGHT</b> <b>THOR-M</b>	
	DRAWN JIM CLEVENGER	2/24/2015		
	MATERIAL Aluminum-6061	CHECKED	SIZE A3	DRAWING NUMBER DL472-1121
HEAT TREAT ENG	APPROVED	SCALE: 1:1	SHEET 1 OF 1	

REVISION RECORD

ITEM NO.	BY	DATE	DESCRIPTION
A1	DW	9/20/99	CHANGED RESISTANCE OF 1 K Ohm TO 1K, 2K, 5K, 10K Ohm
A2			RESOLUTION FROM CONTINUES TO VIRTUALLY INFINITE
A3			LIFE REDUCED TO >10,000 REVS.
A4			ADDED REFERENCE TO NORMAL OUTPUT SENSITIVITY
A5			CHANGED EFFECTIVE LINEAR RANGE FROM 320-360 ±5° TO 320 ±5°
A6			CHANGED EFFECTIVE ELECTRICAL TRAVEL FROM 320-360 ±5° TO 320 ±5°
A7			CHANGED POWER RATING TO MAX. POWER CONSUMPTION
A8			ADDED NOTE
A9			CORRECTED SHAFT DIA. & LGTH AND THREAD SIZE
A10			ADDED NUT AND WASHER
B1	DW	6/6/02	REVISED TOLERANCE FORMAT, CHANGED SINGLE DECIMAL PLACE TOLERANCE FROM ±0.1/2.54 TO ±0.1/2.5, CORRECTED WEIGHT WAS 0.020 lb / 0.009 kg



SPECIFICATIONS

PERFORMANCE PARAMETERS

- A1-TOTAL RESISTANCE 1K,2K,5K,10K Ohm ±10%
- A2-RESOLUTION VIRTUALLY INFINITE
- ROTATIONAL SPEED to 700 rpm
- LINEARITY ± 0.5% F.S.
- A3-ROTATIONAL LIFE > 10,000 REVS
- SHOCK 50 g

CHARACTERISTICS

- NOMINAL MAXIMUM INPUT VOLTAGE 10V DC
- A4-NOMINAL OUTPUT SENSITIVITY > 0.03%Vin/10 deg (REF.)
- A5-EFFECTIVE LINEAR RANGE 320, ±5 deg
- MECHANICAL TRAVEL NO LIMIT
- MOUNTING PLANE
- A8-SIGNAL OUTPUT MUST BE COMPATIBLE WITH AND RECORDABLE IN A DATA CHANNEL AS DEFINED IN SAE J211

ELECTRICAL SPECIFICATIONS

- A6-EFFECTIVE ELECTRICAL TRAVEL 320, ±5 deg
- INDEPENDENT LINEARITY < ± 0.5% F.S.
- A7-MAX POWER CONSUMPTION < 1/10 Watts

MECHANICAL SPECIFICATIONS

- MECHANICAL ANGLE CONTINUOUS NO STOPS
- TORQUE MAX MINIMAL TORQUE
- OPERATING TEMP. 69-72°F/20.6 - 22.2°C
- STORAGE TEMP. 0-200°F/-17.8-93.3°C
- HUMIDITY 10-70% RELATIVE HUMIDITY
- WATER PROOF NO
- B1-WEIGHT < .050 lb / 0.023 kg

RELEASED

JUN. 10, 2002

NHTSA

UNITS ARE in/mm

TOLERANCES ARE: *	
DECIMALS	ANGLES
.X ±0.1/2.5	+ 0.5°
.XX ±0.01/.25	
.XXX ±0.005/.127	
* unless otherwise noted	

MATERIAL:	
SCALE NONE	
APPROVALS	DATE
DRAWN Gerda England	4/7/98
CHECKED	
ENG J. McFadden	



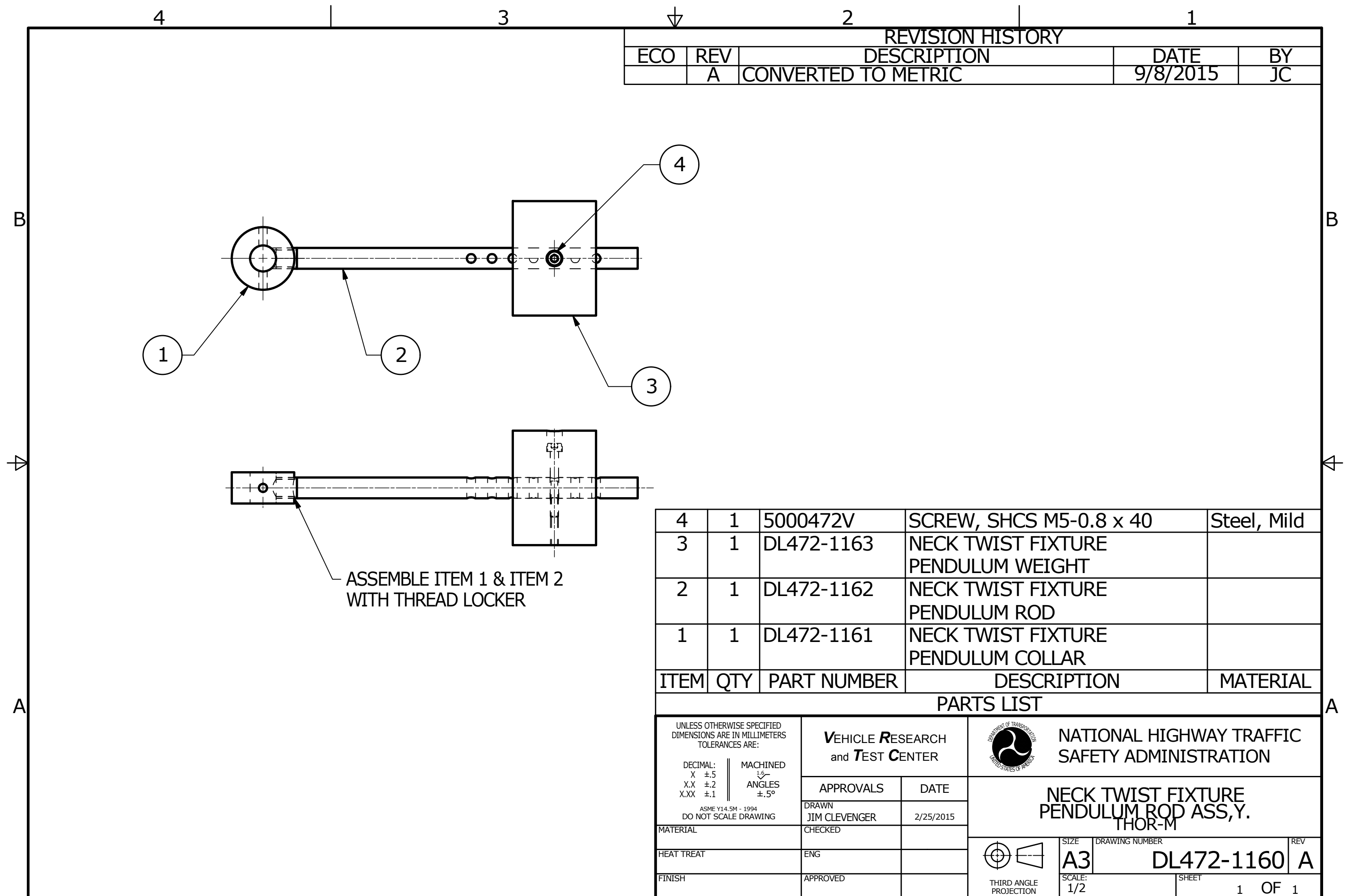
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

CHEST ROTARY POTENTIOMETER

HYBRID III DUMMY FAMILY

SIZE A	DRAWING NUMBER SA572-S51	REV B
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REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	JC

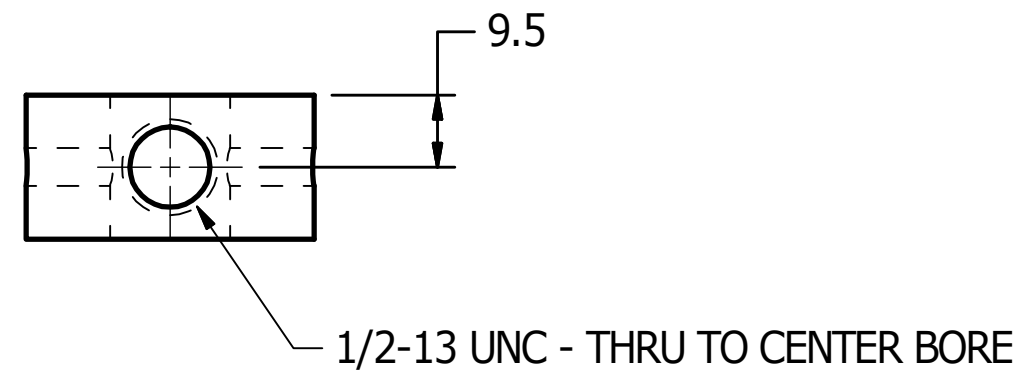
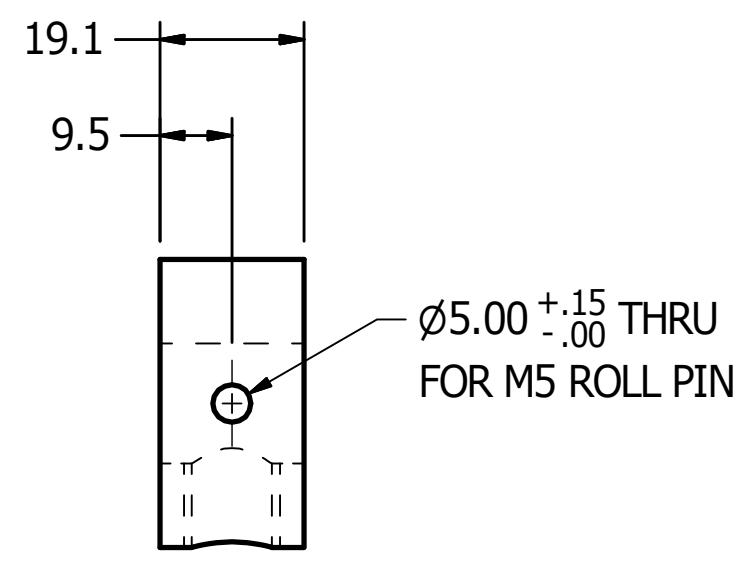
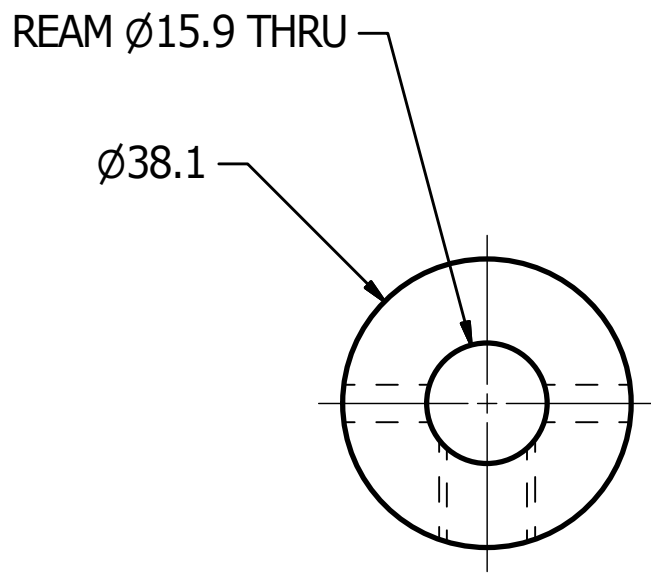



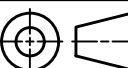
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
4	1	5000472V	SCREW, SHCS M5-0.8 x 40	Steel, Mild
3	1	DL472-1163	NECK TWIST FIXTURE PENDULUM WEIGHT	
2	1	DL472-1162	NECK TWIST FIXTURE PENDULUM ROD	
1	1	DL472-1161	NECK TWIST FIXTURE PENDULUM COLLAR	

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN JIM CLEVINGER CHECKED	DATE 2/25/2015		<b>NECK TWIST FIXTURE          PENDULUM ROD ASS, Y.          THOR-M</b>	
MATERIAL  HEAT TREAT  FINISH	ENG  APPROVED		SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-1160</b>	REV <b>A</b>
			SCALE: 1/2	SHEET 1 OF 1	

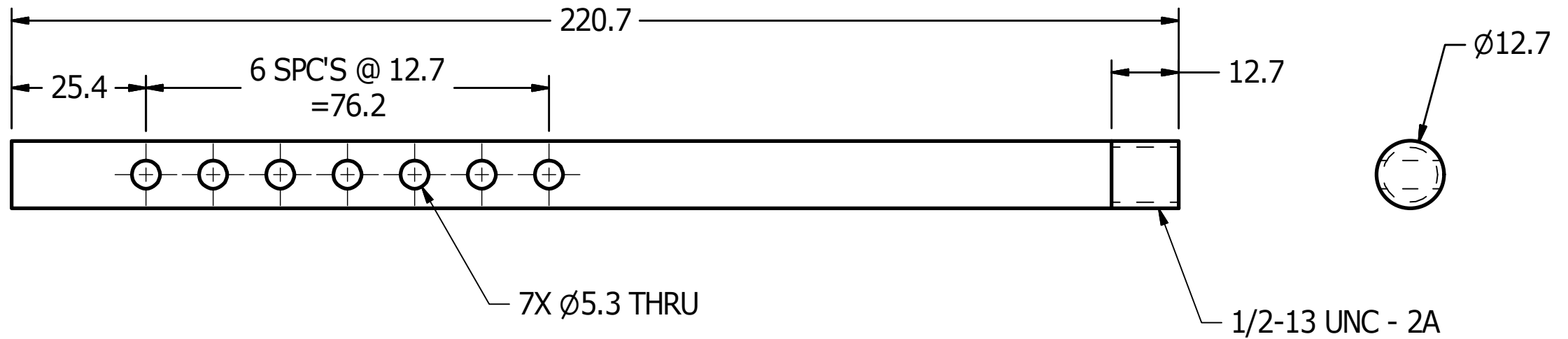
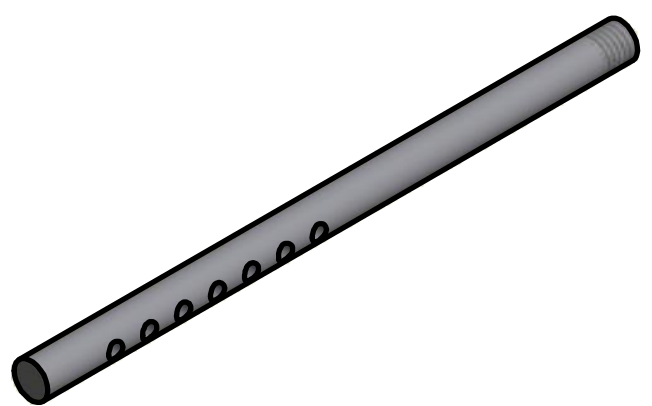
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVENGER	2/25/2015	
	CHECKED		
MATERIAL Steel	ENG		 THIRD ANGLE PROJECTION
HEAT TREAT	APPROVED		SIZE: <b>A3</b> SCALE: 1:1
FINISH			DRAWING NUMBER: <b>DL472-1161</b> SHEET: 1 OF 1



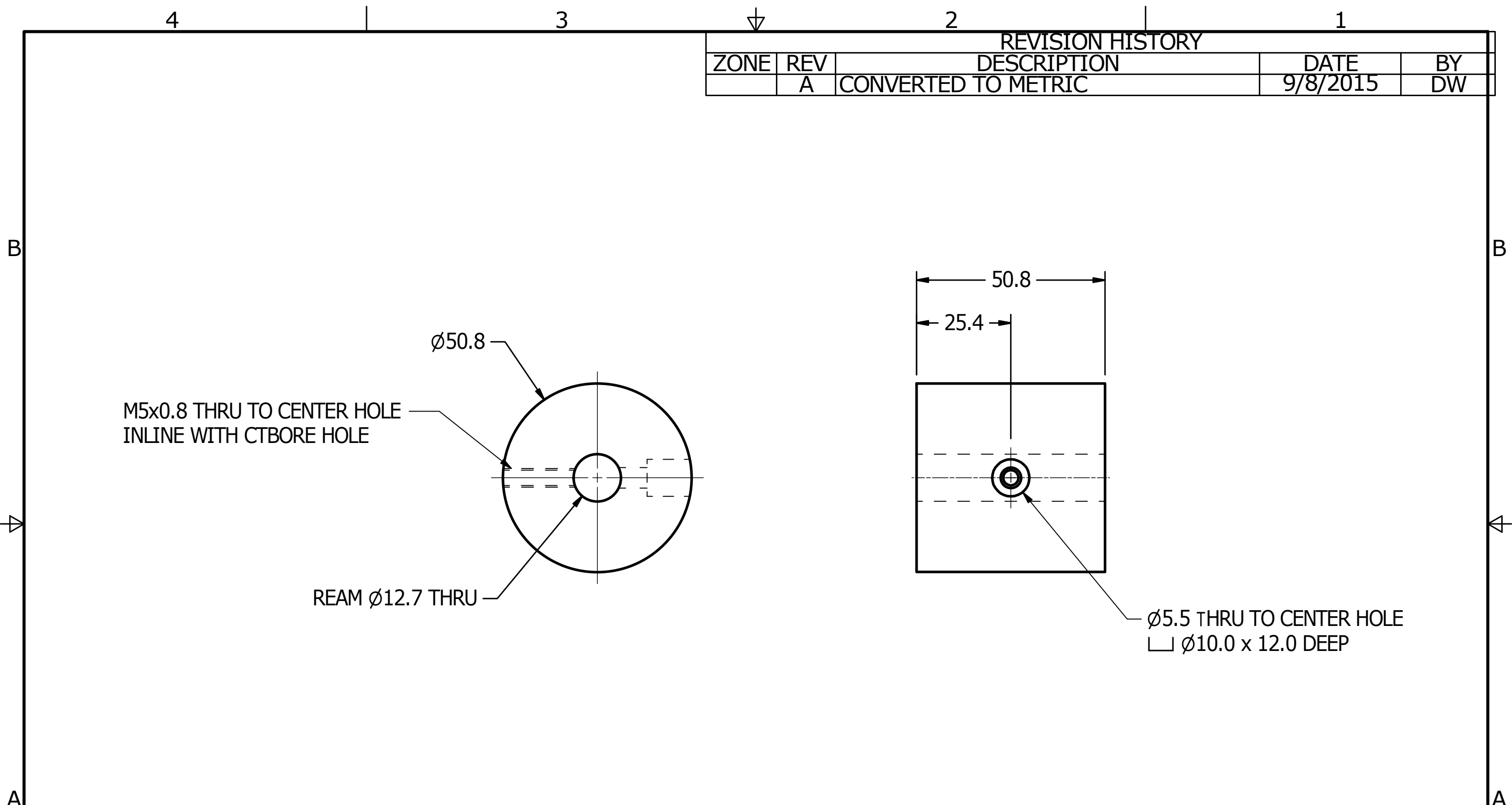
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	2/25/2015	JC




STOCK: Ø1/2" CR ROUND BAR

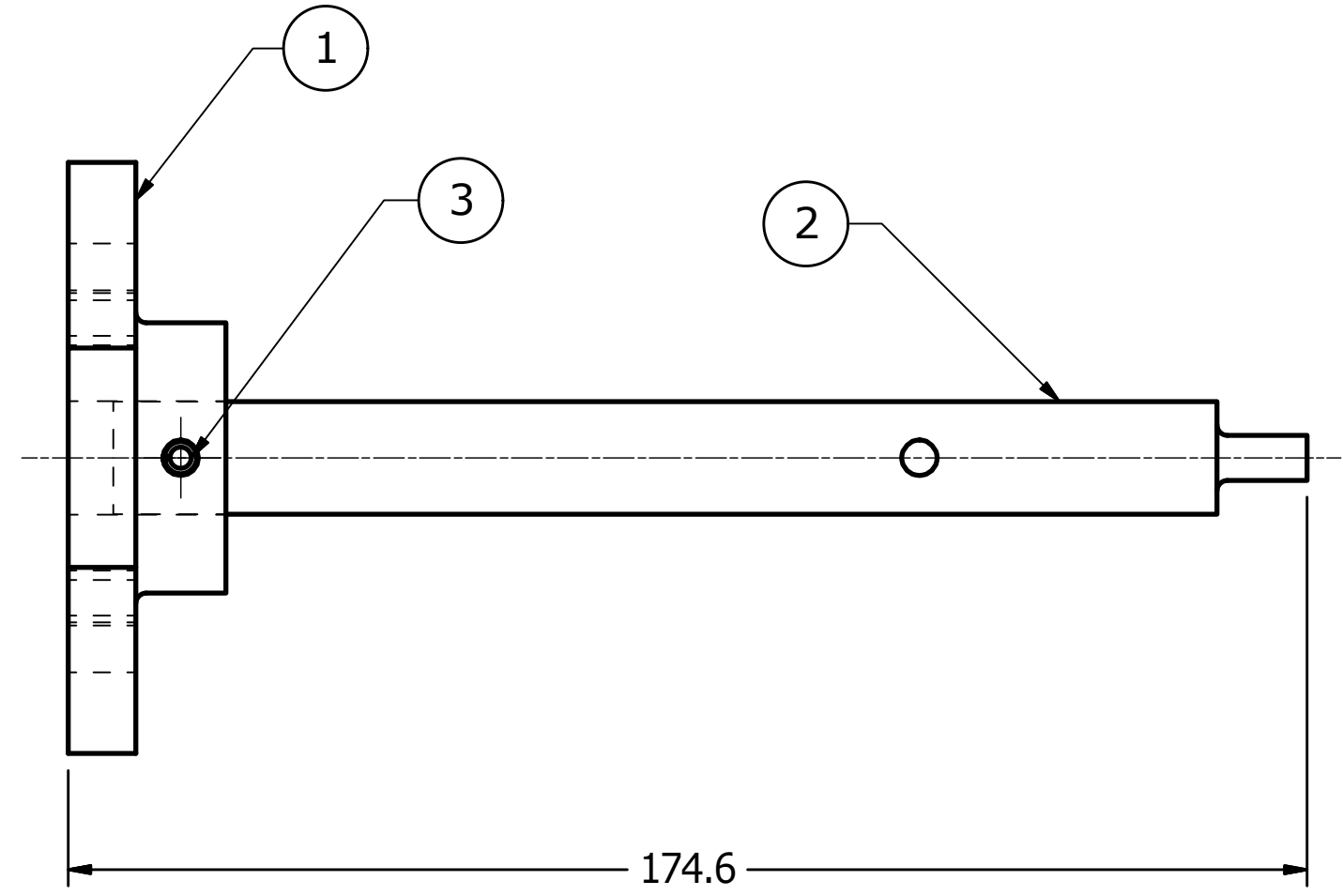
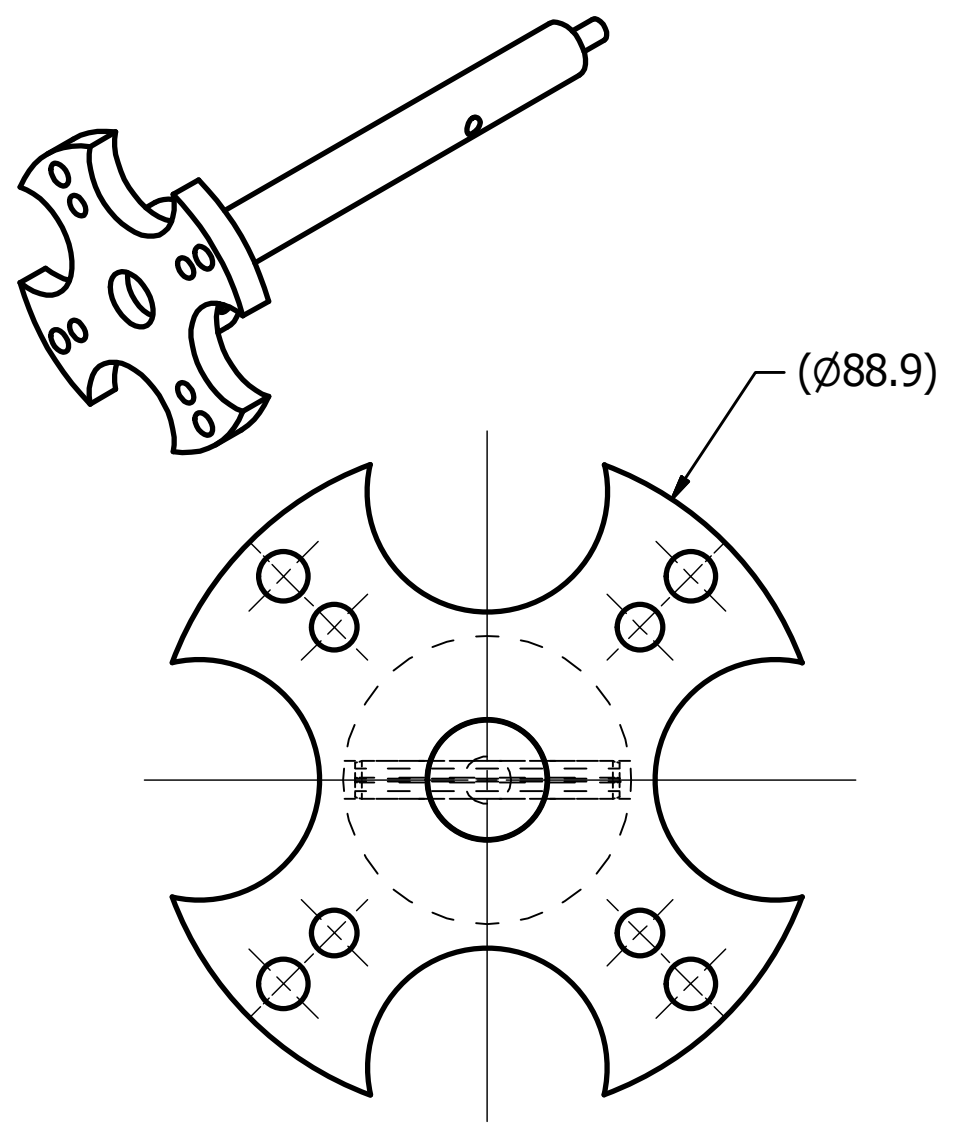
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>		
	APPROVALS	DATE		<b>NECK TWIST FIXTURE</b> <b>PENDULUM ROD</b> <b>THOR-M</b>		
	DRAWN JIM CLEVENGER	2/25/2015				SIZE <b>A3</b>
	MATERIAL Steel	CHECKED		SCALE: <b>1:1</b>	SHEET <b>1 OF 1</b>	
HEAT TREAT	ENG					
FINISH	APPROVED					

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW





UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>NECK TWIST FIXTURE          PENDULUM WEIGHT          THOR-M</b>	
	DRAWN JIM CLEVENGER	2/25/2015		
	CHECKED			
MATERIAL Steel	ENG			
HEAT TREAT	APPROVED			
FINISH				

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW

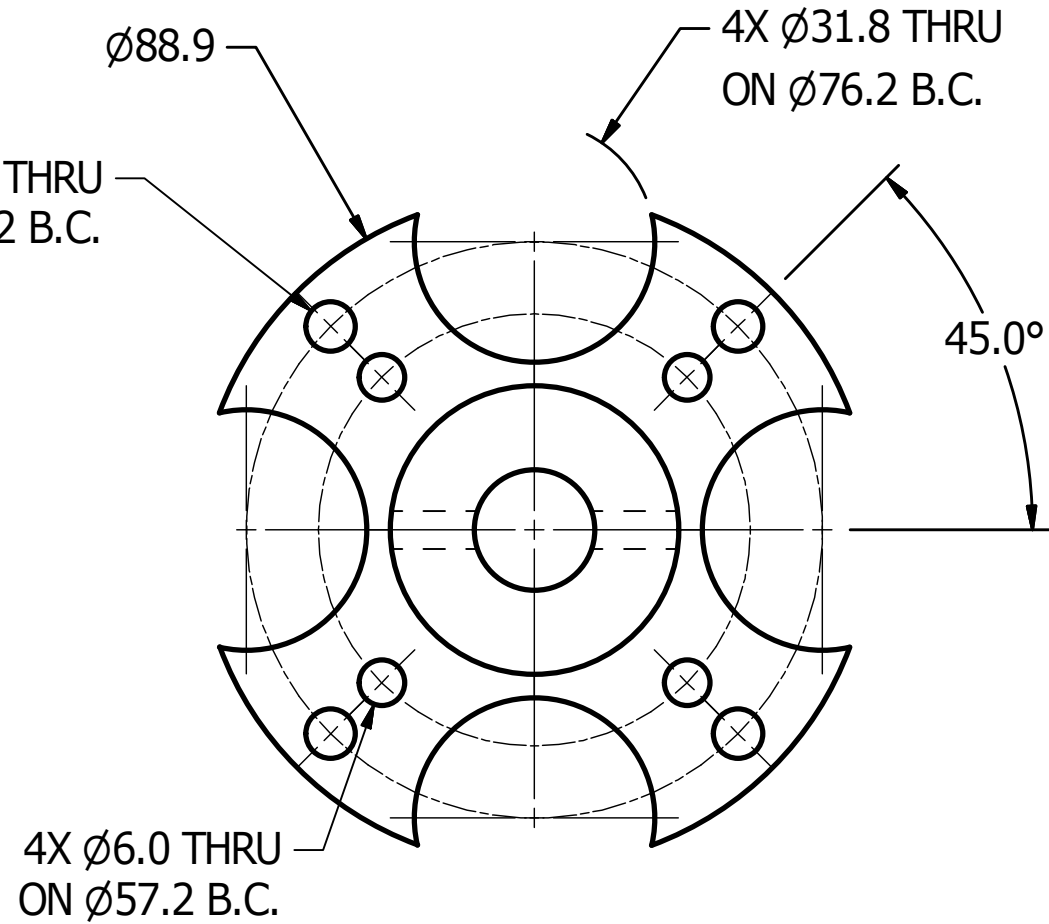
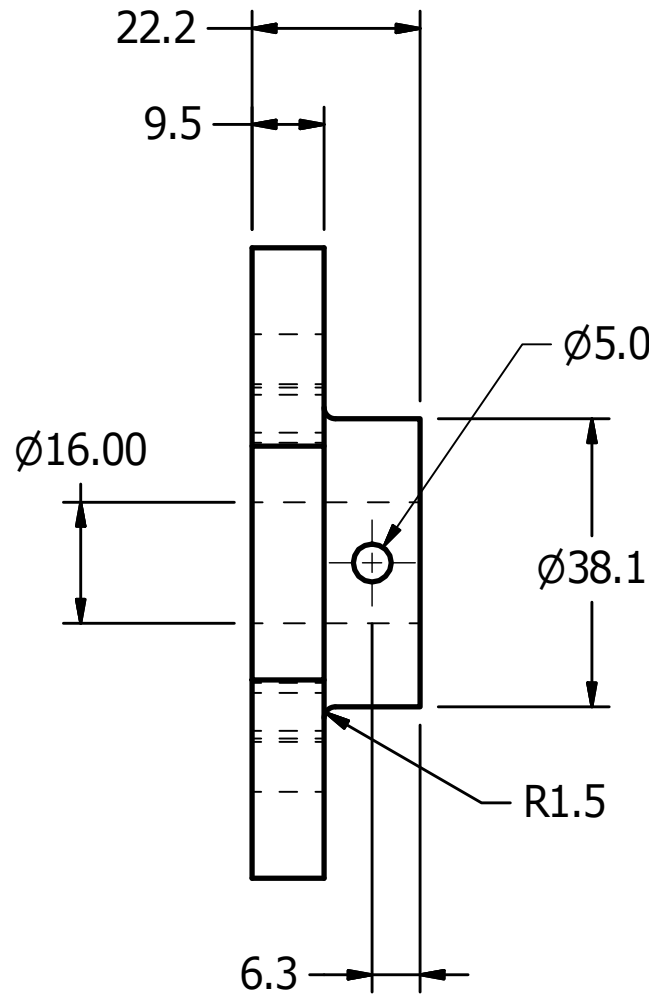
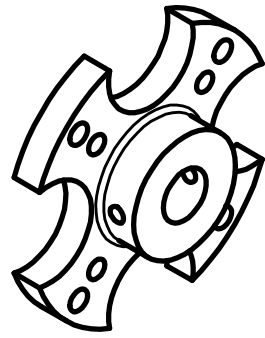



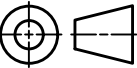
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
3	1	5000198V	PIN, ROLL M5 x 35	S.S.
2	1	DL472-1152	NECK TWIST FIXTURE ROTATION SHAFT	
1	1	DL472-1151	NECK TWIST FIXTURE NECK ATTACHMENT PLATE	

**PARTS LIST**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:  FRACTION: DECIMAL: ANGLES: MACHINED: ±1/64 .X ±.1 ±.5 ✓ .XX ±.01 .XXX ±.005  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>  <b>NECK TWIST FIXTURE SHAFT ASSEMBLY THOR-M</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVENGER	2/24/2015	
MATERIAL	CHECKED		 THIRD ANGLE PROJECTION
HEAT TREAT	ENG		
FINISH	APPROVED		
		SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-1150</b>
		SCALE: 1:1	REV <b>A</b>
		SHEET 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/8/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>NECK TWIST FIXTURE NECK          ATTACHMENT PLATE          THOR-M</b>	
	DRAWN JIM CLEVENGER	2/24/2015		
	MATERIAL Aluminum 6061	CHECKED	SIZE A3	DRAWING NUMBER DL472-1151
HEAT TREAT	ENG	 THIRD ANGLE PROJECTION		SCALE: 1:1
FINISH	APPROVED	SHEET 1 OF 1		

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/4/2015	DW

B

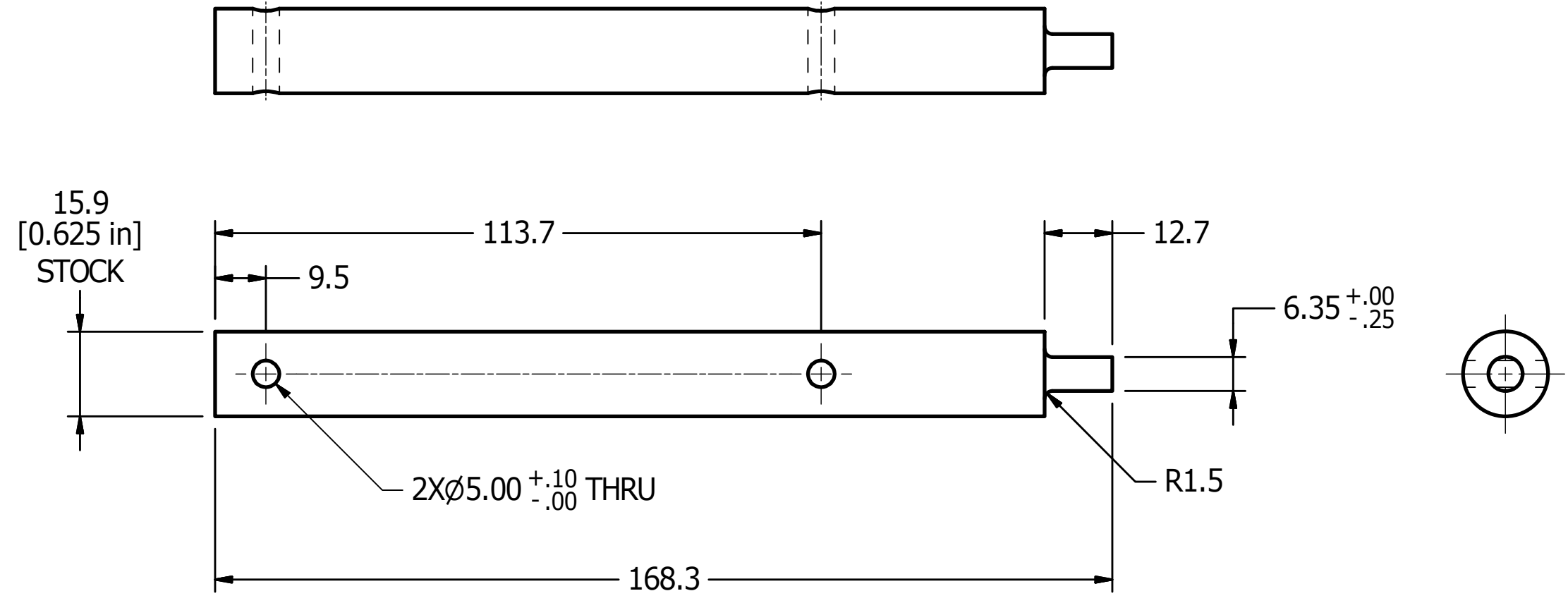
B

A

A

A

A

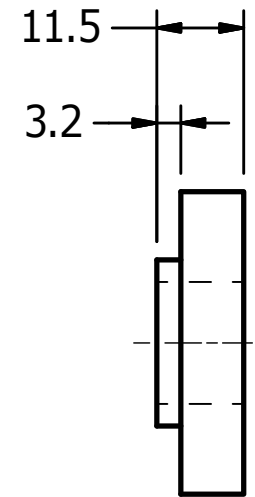
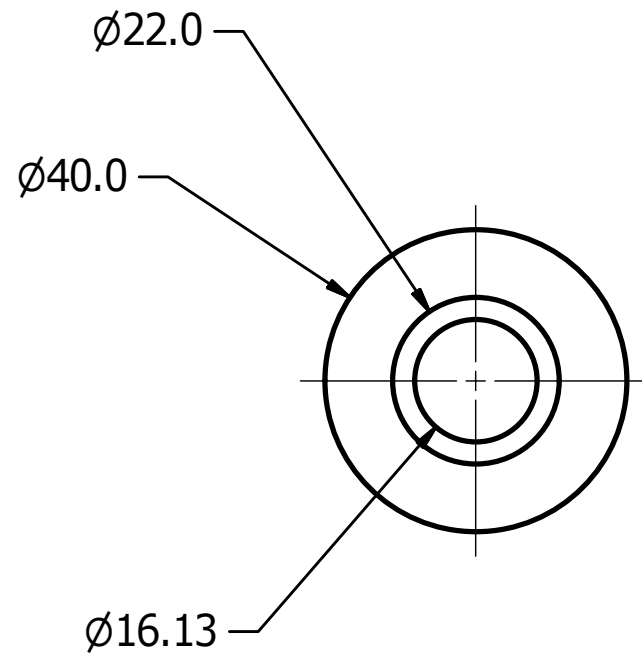


STOCK: Ø5/8" CR BAR

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION		
	APPROVALS	DATE		<b>NECK TWIST FIXTURE ROTATION          SHAFT          THOR- M</b>		
	DRAWN JIM CLEVENGER	2/24/2015				SIZE <b>A3</b>
	MATERIAL Steel, Mild	CHECKED		SCALE: 1:1	SHEET 1 OF 1	
HEAT TREAT	ENG					
FINISH	APPROVED					

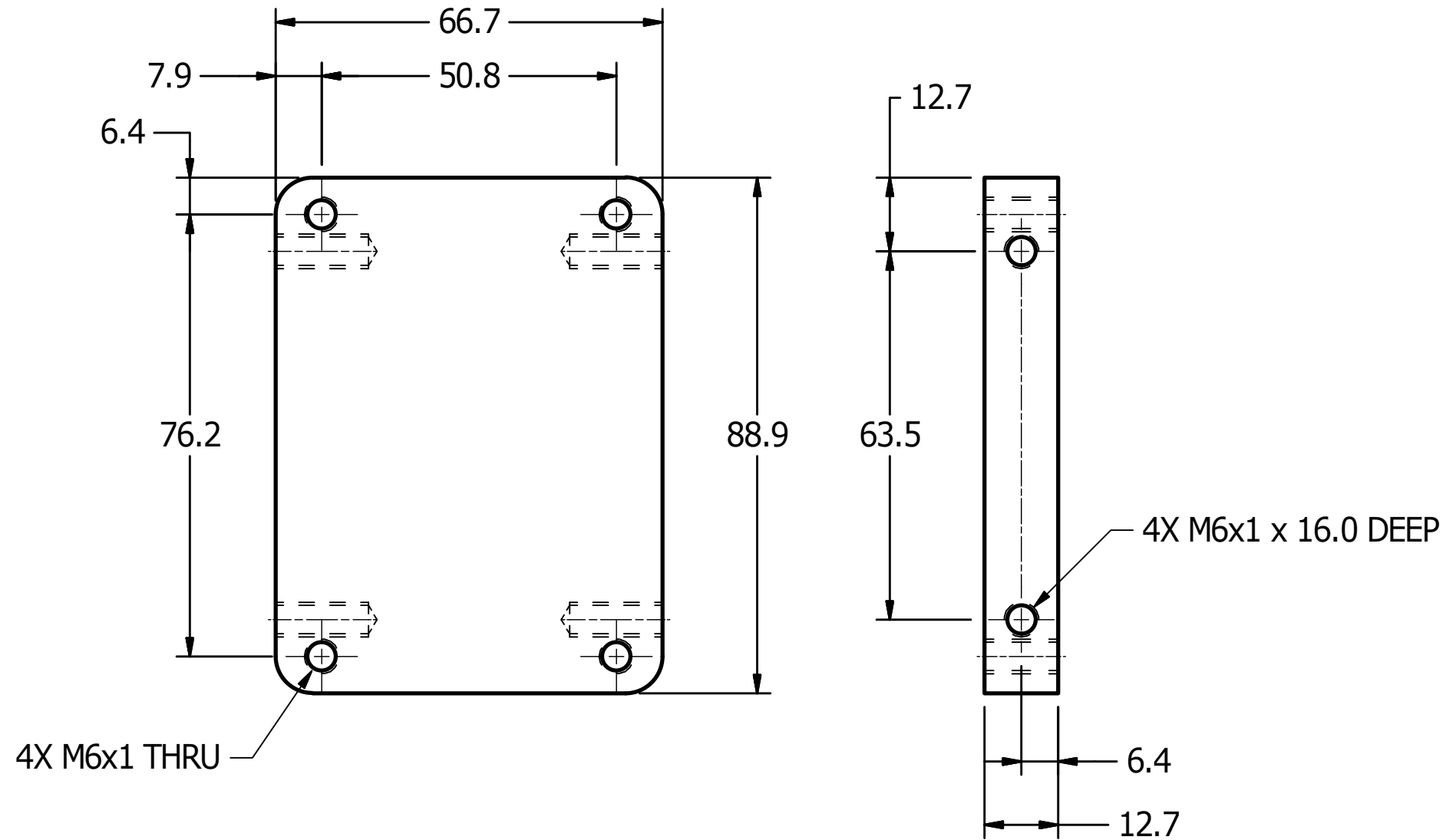




REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/4/2015	DW



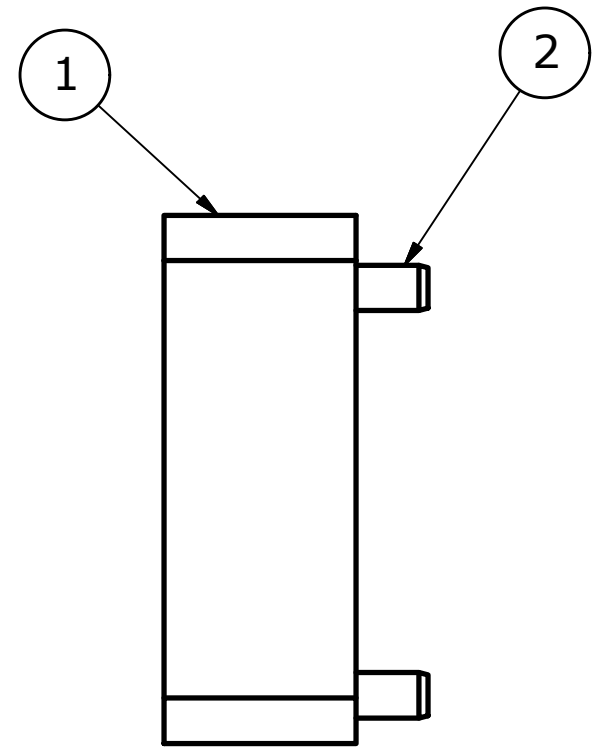
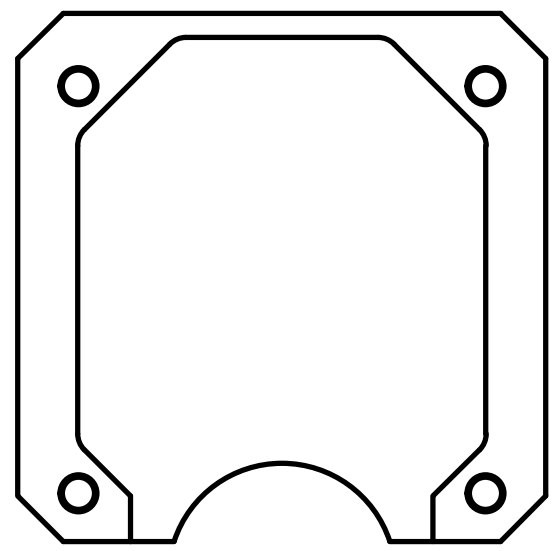
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN Jim Clevenger CHECKED	DATE 7/20/2015	
MATERIAL Steel, Mild HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE: FULL
		DRAWING NUMBER <b>DL472-1180</b>	REV <b>A</b> SHEET 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/4/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
	DRAWN JIM CLEVENGER	2/24/2015	
	CHECKED		
MATERIAL Aluminum-6061	ENG		 THIRD ANGLE PROJECTION
HEAT TREAT	APPROVED		
FINISH			SIZE: <b>A3</b> SCALE: 1:1
			DRAWING NUMBER: <b>DL472-109</b> SHEET: 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/4/2015	DW



ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
2	4	5000445	PIN, DOWEL M6 x 20	Steel
1	1	DL472-1171	NECK TWIST FIXTURE NECK ADAPTER PLATE	Aluminum 6061

**PARTS LIST**

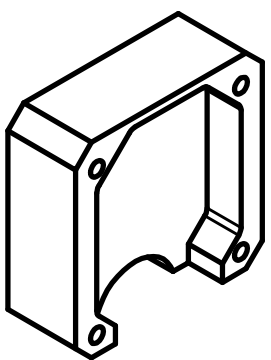
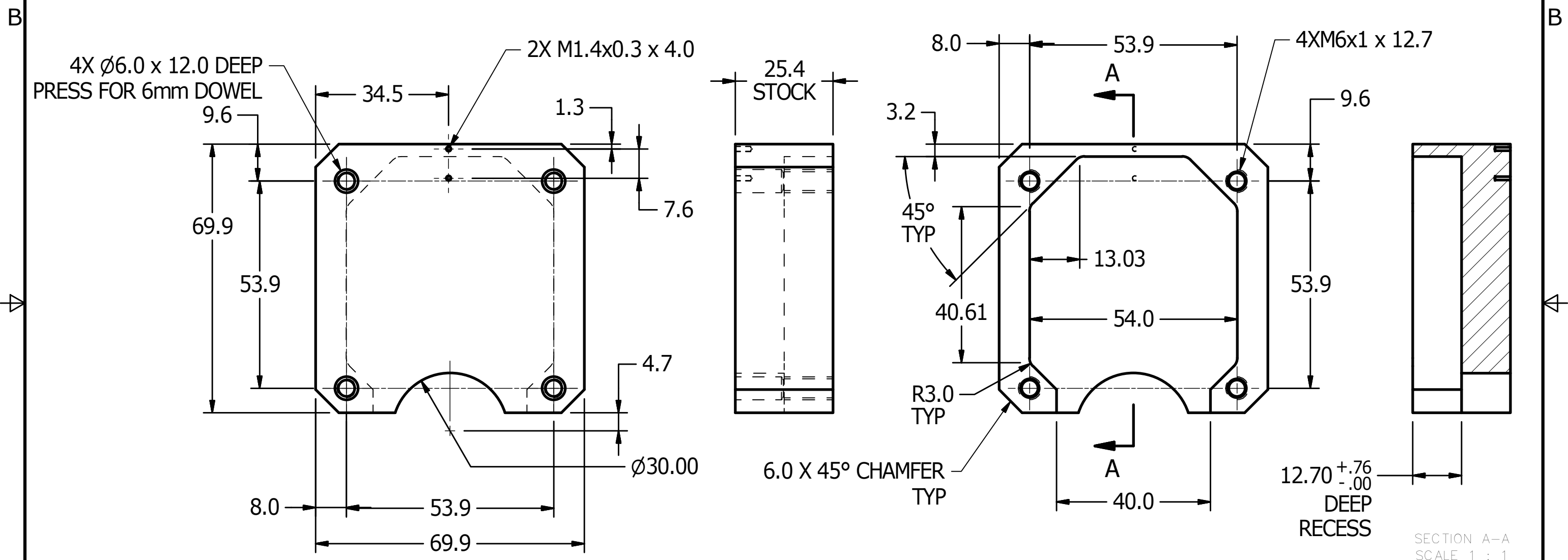
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	<b>NECK TWIST FIXTURE NECK MOUNTING ADAPTER THOR-M</b>
	DRAWN JIM CLEVENGER	2/24/2015	
	CHECKED		
MATERIAL	HEAT TREAT	FINISH	 THIRD ANGLE PROJECTION
	ENG	APPROVED	SIZE: <b>A3</b> SCALE: 1:1
			DRAWING NUMBER: <b>DL472-1170</b> SHEET: 1 OF 1



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/4/2015	JC

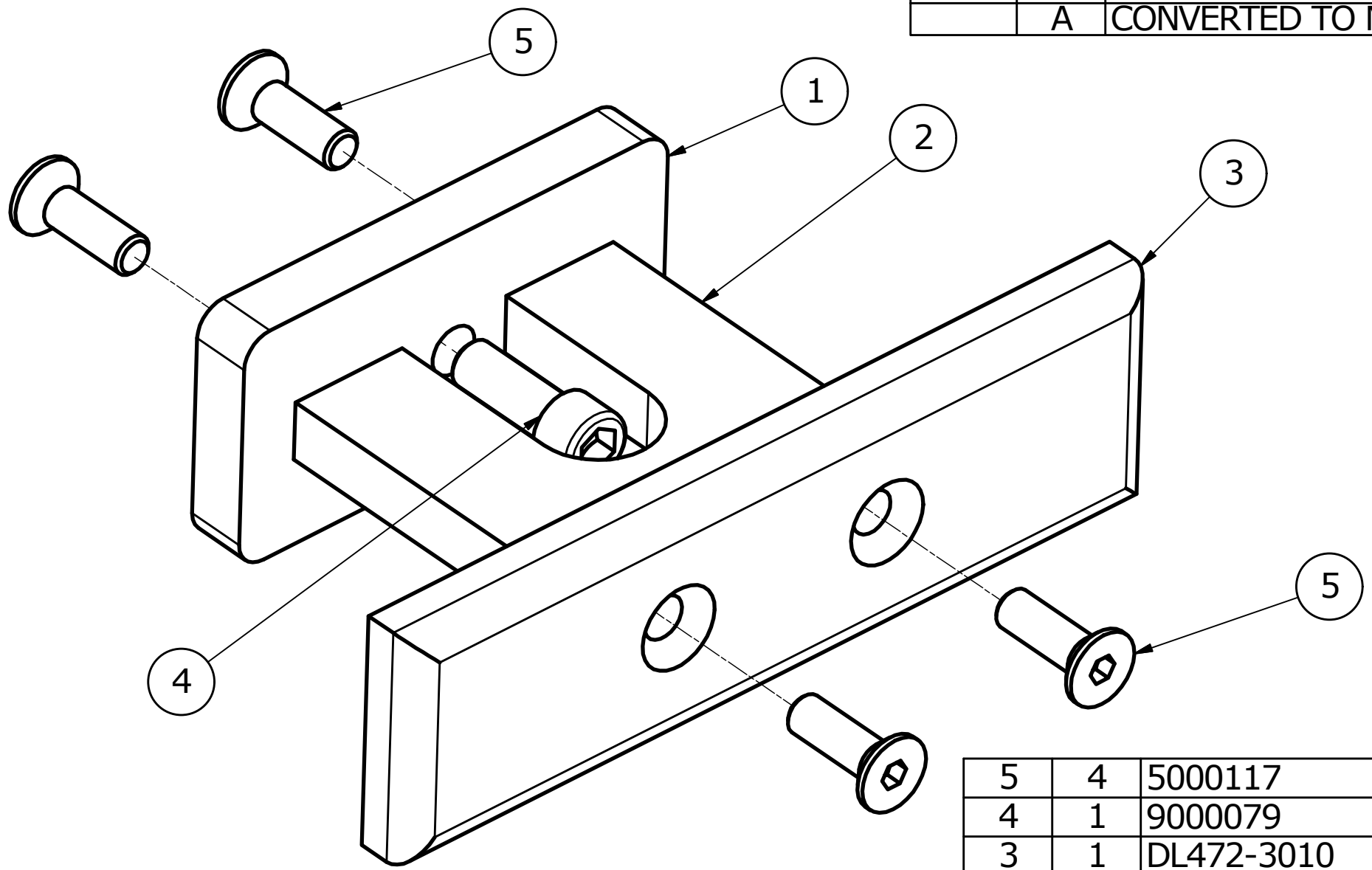
NOTE:

THE M6 AND THE 6mm  
DOWEL HOLES LINE UP



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:  FRACTION: DECIMAL: ANGLES: MACHINED: ±1/64 .X ±.1 ±.5 ✓ .XX ±.01 .XXX ±.005  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE		<b>NECK TWIST FIXTURE NECK ADAPTER PLATE THOR-M</b>
	DRAWN JIM CLEVENGER	2/24/2015	SIZE <b>A3</b> DRAWING NUMBER <b>DL472-1171</b>	
	CHECKED		SCALE: 1:1 SHEET 1 OF 1	
MATERIAL Aluminum 6061	ENG	APPROVED	REV <b>A</b>	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/9/2015	DW



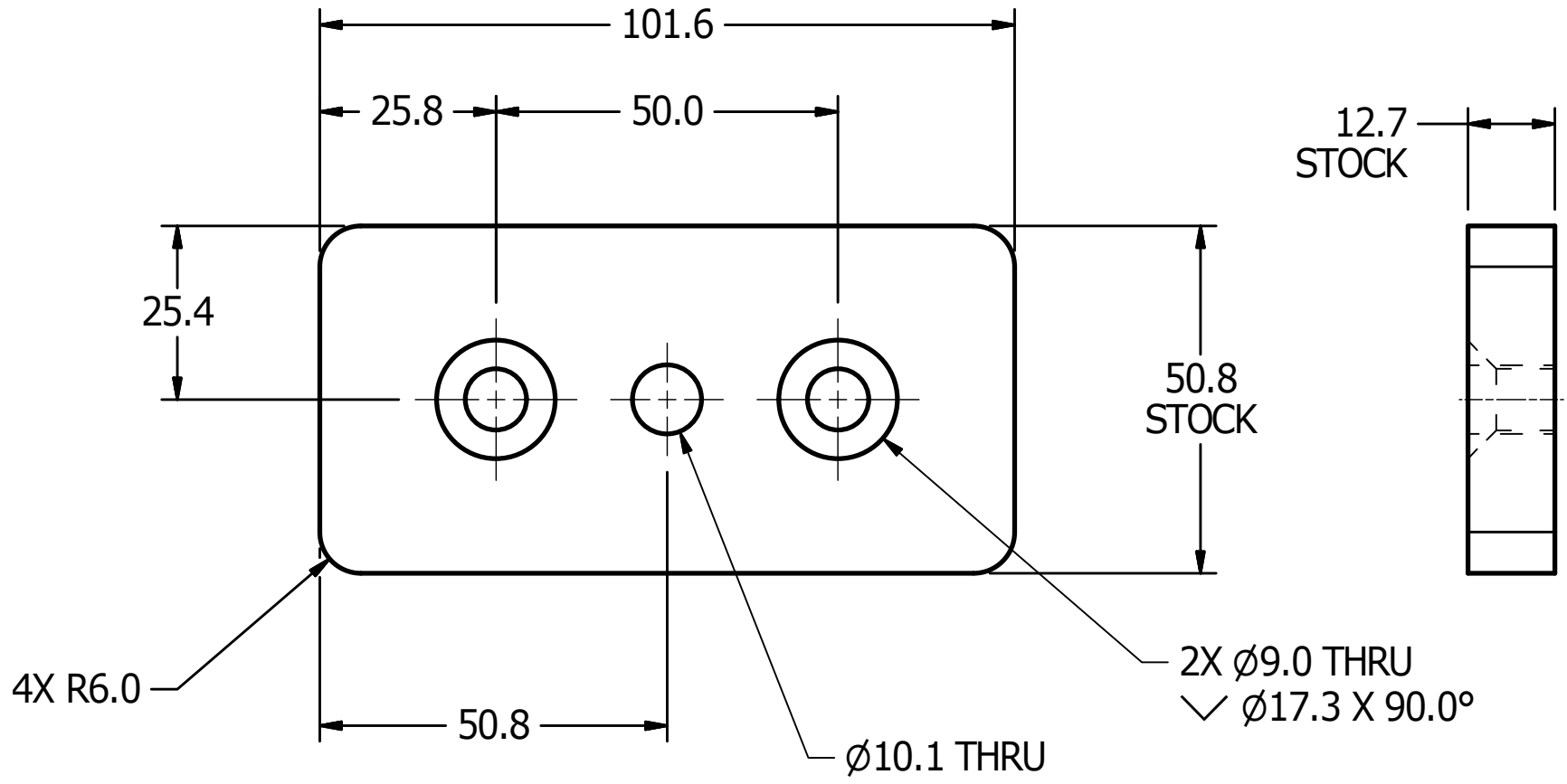
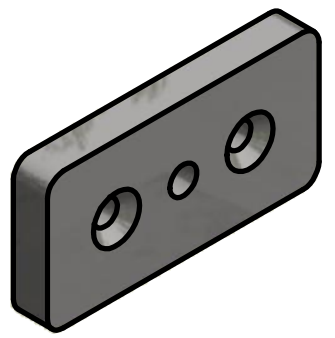
5	4	5000117	SCREW, FHCS M8-1.25 x 5
4	1	9000079	SCREW, SHCS 3/8-16 x 1"
3	1	DL472-3010	LOWER ABDOMEN PROBE FACE FRONT PLATE
2	1	DL472-3020	LOWER ABDOMEN PROBE FACE CONNECTOR PLATE
1	1	DL472-3030	LOWER ABDOMEN PROBE FACE MOUNTING PLATE

ITEM	QTY	PART NUMBER	DESCRIPTION
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**PARTS LIST**

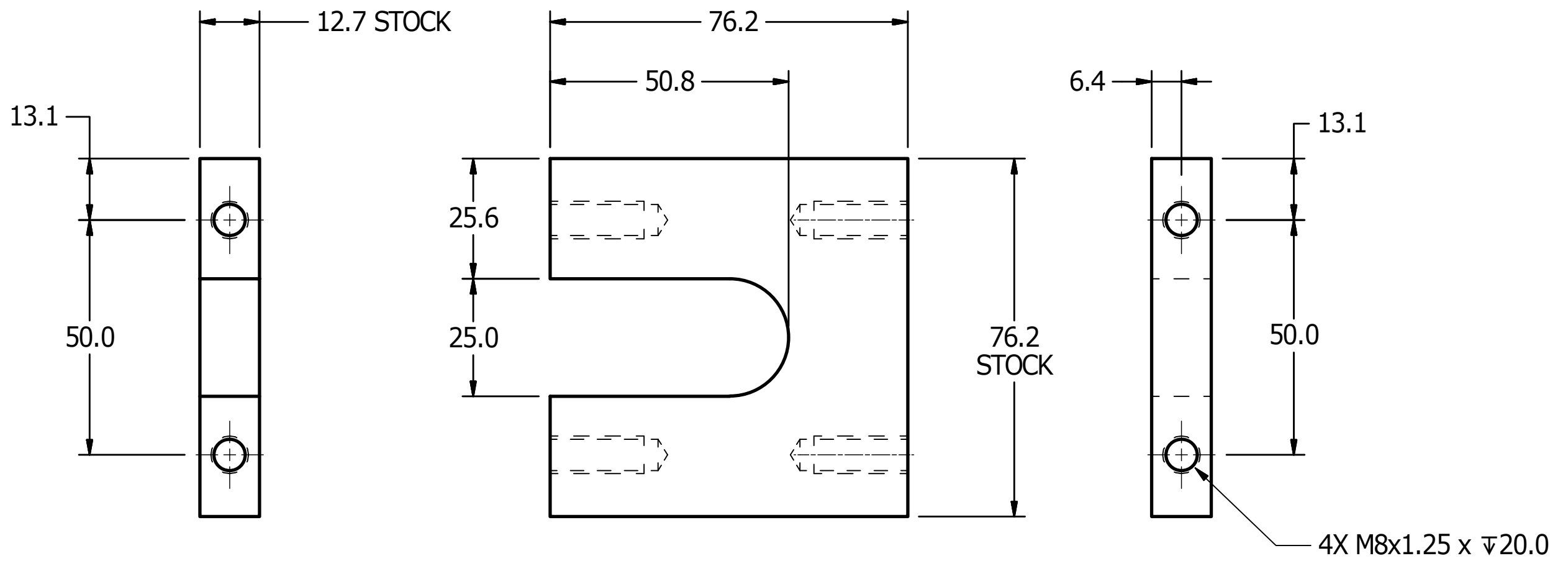
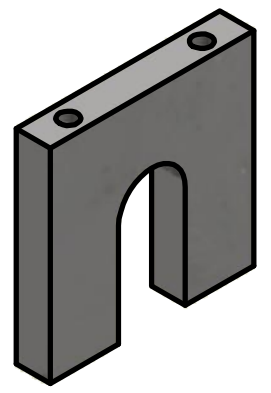
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN JIM CLEVENGER CHECKED	DATE 6/10/2015		<b>LOWER ABDOMEN PROBE FACE ASSEMBLY THOR-M</b>	
MATERIAL  HEAT TREAT  FINISH	ENG  APPROVED		SIZE <b>A3</b>		
			SCALE: 1:1	SHEET 1 OF 1	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/9/2015	DW



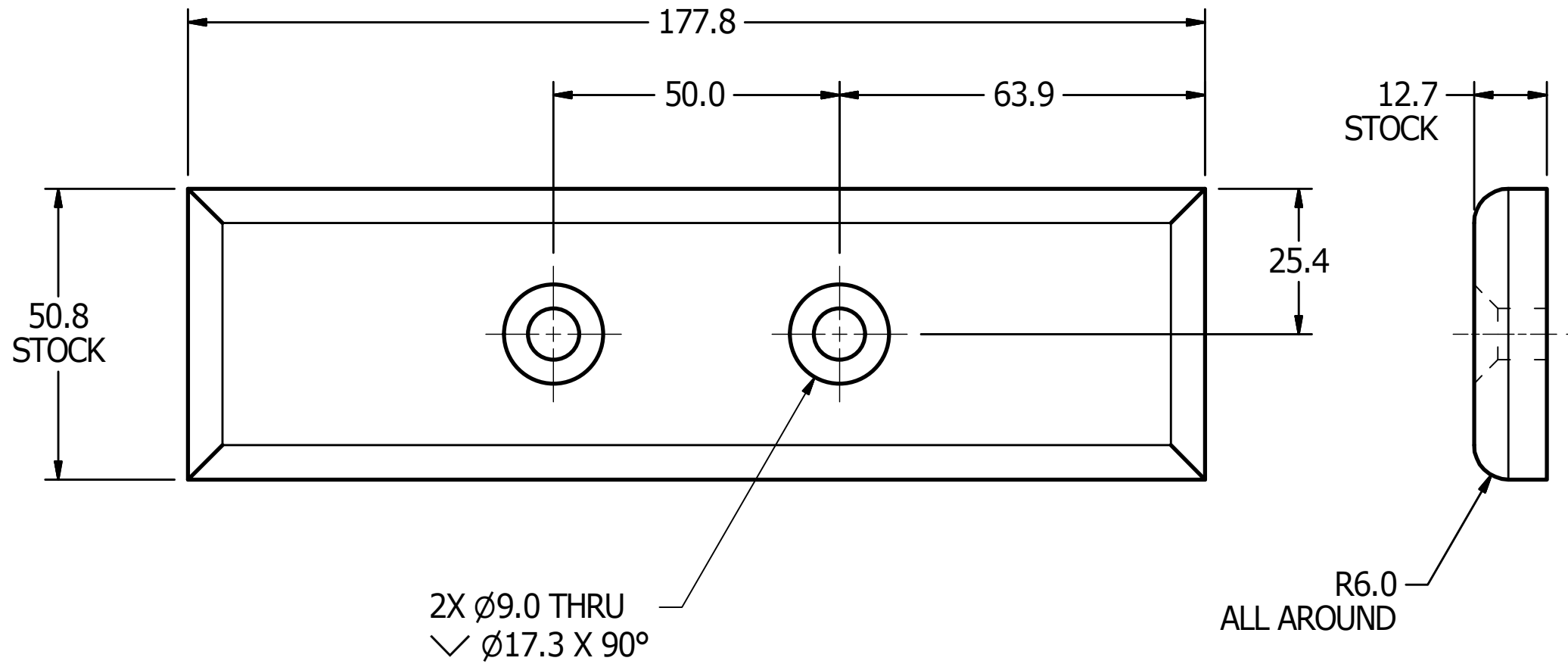
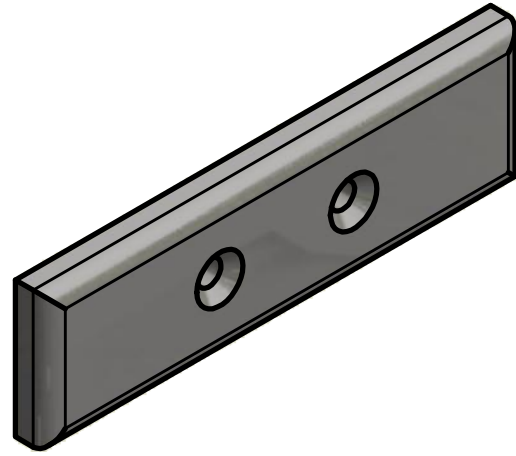
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			
	APPROVALS DRAWN JIM CLEVENGER CHECKED	DATE 6/10/2015	<b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>  <b>LOWER ABDOMEN PROBE FACE          MOUNTING PLATE</b> THOR-M	
MATERIAL Steel, Mild  HEAT TREAT  FINISH	ENG  APPROVED		SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-3030</b>
		SCALE: 1:1	SHEET 1 OF 1	REV <b>A</b>



REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/9/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X $\pm$ .5 X.X $\pm$ .2 X.XX $\pm$ .1  MACHINED $\frac{1.6}{\sqrt{}} \pm$ .5 ANGLES $\pm$ .5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC</b> <b>SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN JIM CLEVENGER CHECKED	DATE 6/10/2015		<b>LOWER ABDOMEN PROBE FACE</b> <b>CONNECTOR PLATE</b> <b>THOR-M</b>	
MATERIAL Steel, Mild  HEAT TREAT  FINISH	ENG  APPROVED		SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-3020</b>	REV <b>A</b>
			SCALE: <b>1:1</b>	SHEET <b>1 OF 1</b>	

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/9/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1/6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>LOWER ABDOMEN PROBE FACE          FRONT PLATE          THOR-M</b>	
	DRAWN JIM CLEVENGER	6/10/2015		
	MATERIAL Steel, Mild	CHECKED	SIZE A3	DRAWING NUMBER DL472-3010
HEAT TREAT ENG	APPROVED	 THIRD ANGLE PROJECTION		SCALE: 1:1
FINISH		SHEET 1 OF 1		

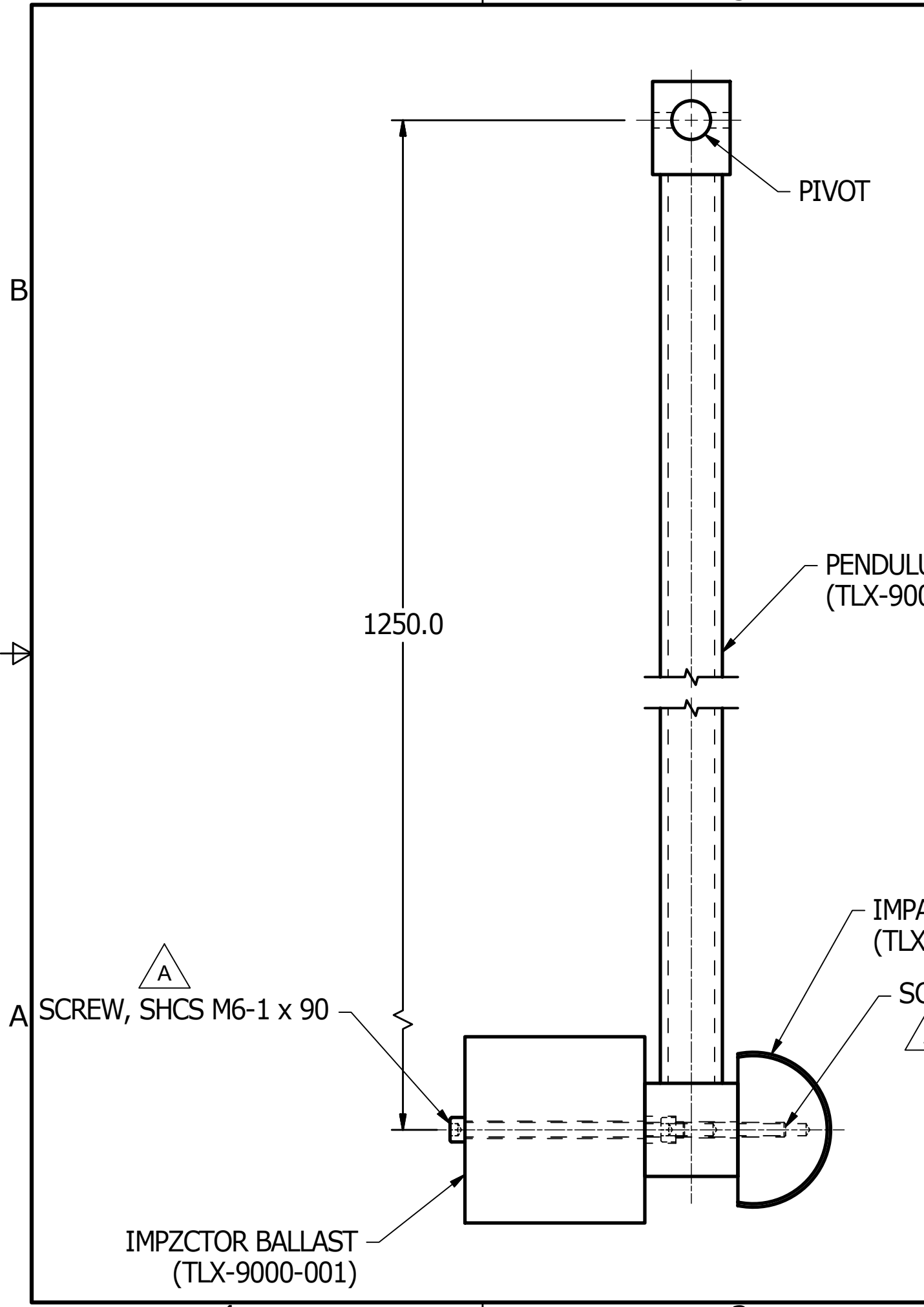
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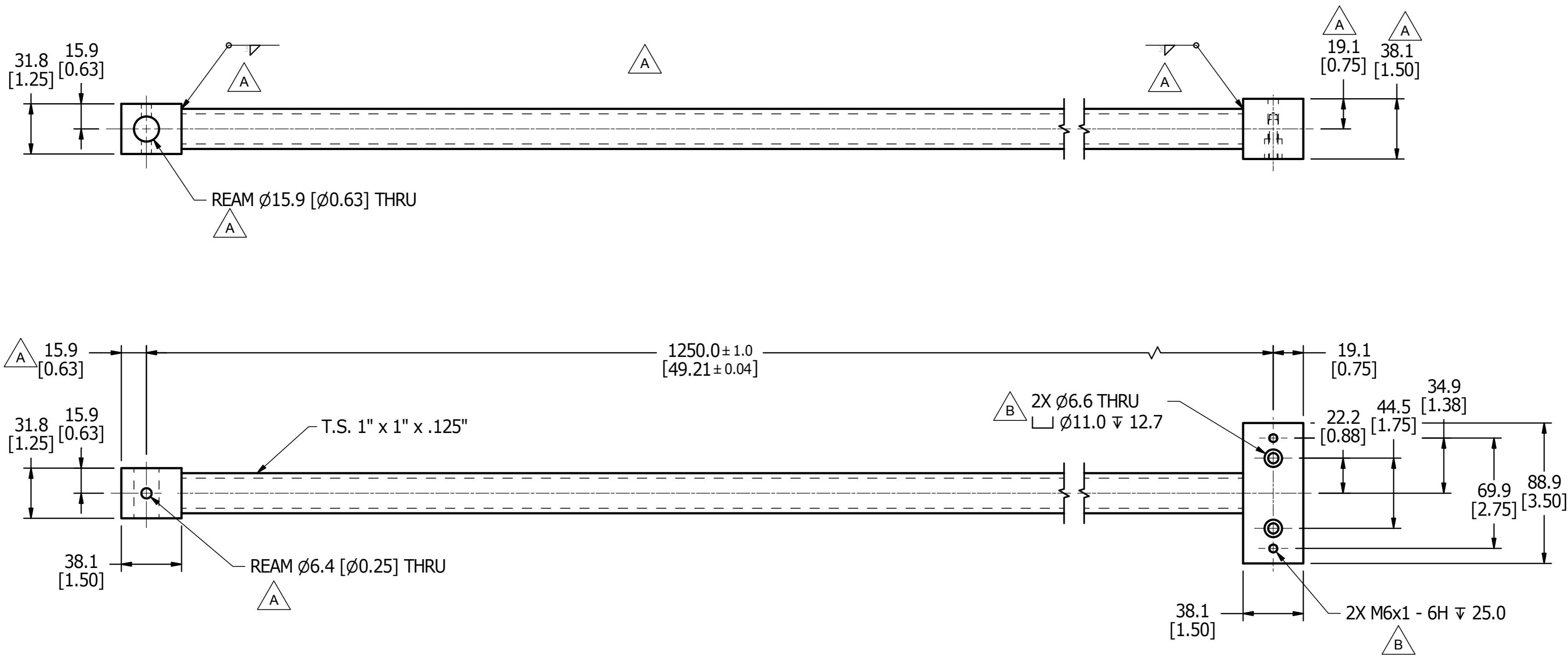
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	SCREW, SHCS M6-1 x 45 WAS SHCS 1/4"Ø - 20 x 1 3/4"; AND SCREW, SHCS M6-1 x 90 WAS SHCS 1/4"Ø - 20 x 3 1/2"	9/28/2000	DW



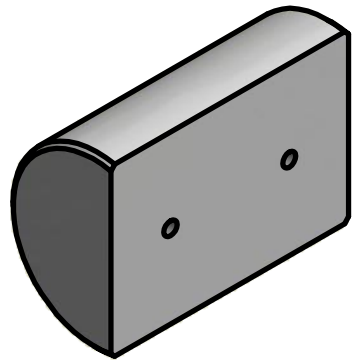
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:	
DECIMAL:	MACHINED
X ±.5	1/6
X.X ±.2	ANGLES
X.XX ±.1	±.5°
ASME Y14.5M - 1994 DO NOT SCALE DRAWING	
MATERIAL	CHECKED
HEAT TREAT	ENG
FINISH	APPROVED

 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
<b>DYNAMIC IMPACTOR THOR-M</b>	
APPROVALS DRAWN Dave Walker CHECKED ENG APPROVED	DATE 9/28/2000
SIZE <b>A3</b>	DRAWING NUMBER <b>TLX-9000-013</b>
SCALE: 1:1	SHEET 1 OF 1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	REMOVED HOLES, ADDED DIMENSIONS, CHANGED DRILL TO REAM, CORRECTED DIMENSION (0.625 WAS 15.88), AND ADDED WELD SYMBOLS	9/8/2000	DW
	B	HOLE DIM. 2X Ø6.6 THRU □ Ø11.0 X12.7 WAS DRILL 6.528 (0.257) THRU COUNTERBORE 10.0/(0.4375) x 12.7/(0.50) DEEP (2 PLC'S.); AND 2X M6x1 - 6H x 25.0 WAS DRILL 5.105/(0.201) x 25.4/(1.0) DEEP TAP 1/4-20 (2 PLC'S.)	9/10/2015	DW

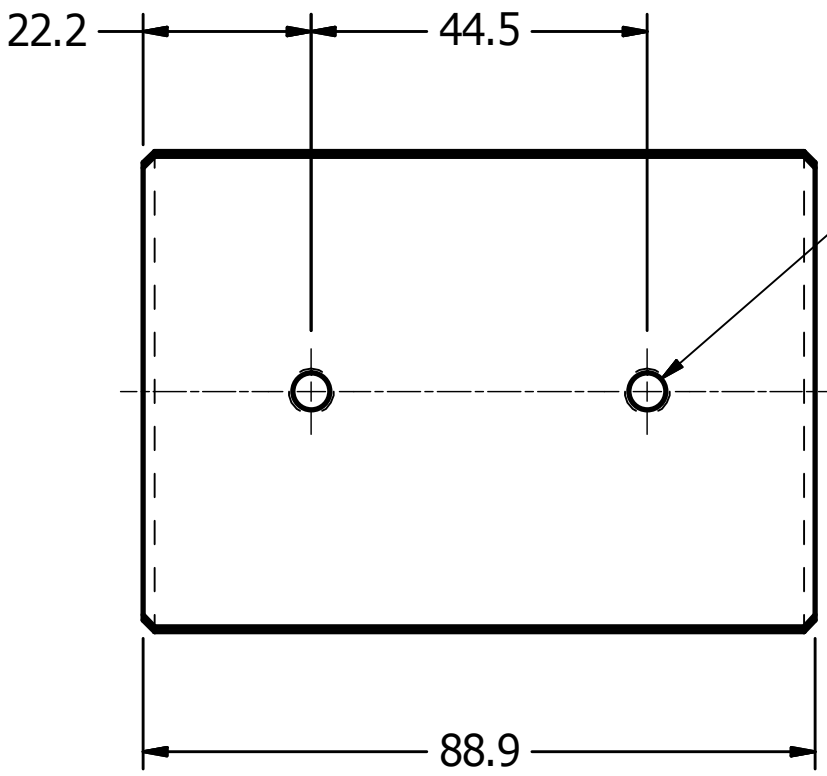
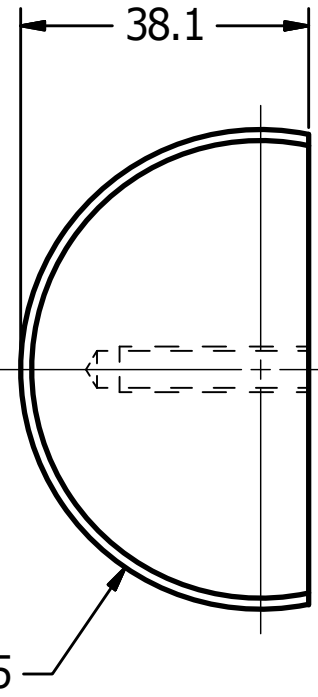
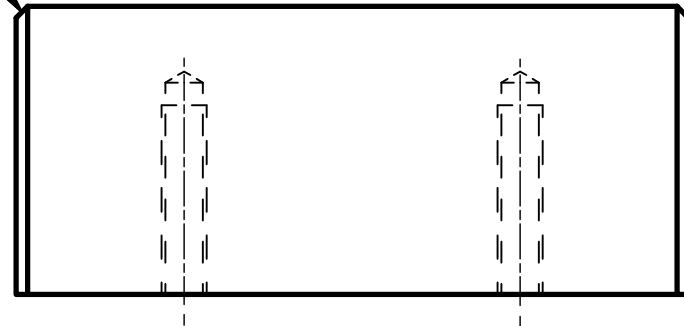


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 XX ±.2 XXX ±.1 ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN: Dave Walker CHECKED:	DATE 3/20/2000	
MATERIAL: HEAT TREAT: FINISH:	ENG: APPROVED:	SIZE: A2 SCALE: 1:2	DRAWING NUMBER: TLX-9000-007 REV: B SHEET: 1 OF 1



1.5 X 45° CHAMFER  
TYP. BOTH ENDS

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	ADDED DECIMAL EQUIVALENT TO DRILL SIZE	5/23/2002	DW
	B	REMOVED "#7" FROM HOLE NOTE	9/19/2003	DW
	C	DIMENSION 2X M6-1 - 6H $\nabla$ 25.0 WAS DRILL 5.105/0.201 X 25.4/1.0 DEEP TAP 1/4-20 (2 PLC'S.)	9/9/2015	DW

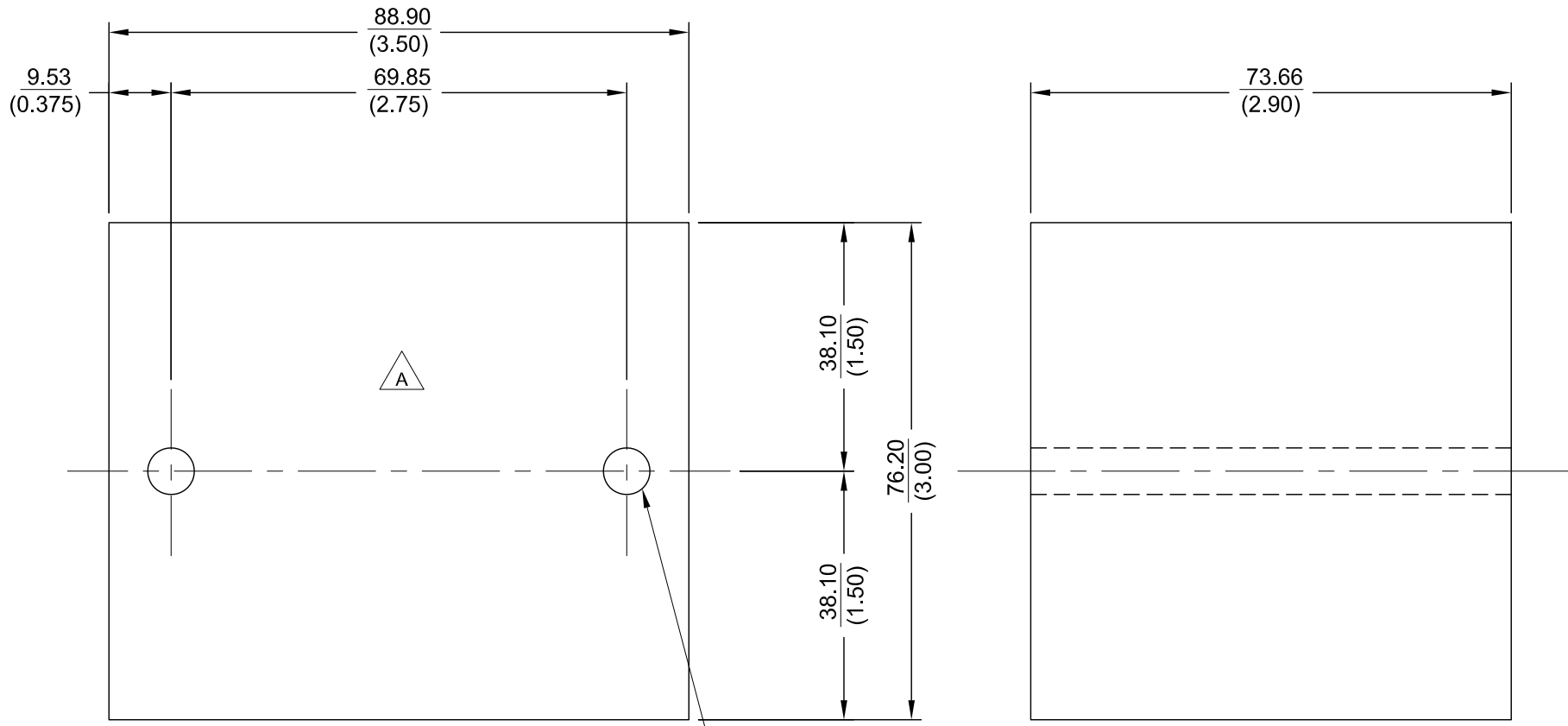


2X M6x1 - 6H  $\nabla$  25.0

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE		<b>TEST FIXTURE - IMPACTOR FACE</b>	
	MATERIAL PTFE, Teflon	DRAWN Dave Walker	CHECKED	<b>THOR-M</b>	
	HEAT TREAT	ENG	APPROVED	SIZE: <b>A3</b> SCALE:	DRAWING NUMBER: <b>TLX-9000-006</b> SHEET: <b>1 OF 1</b>




REVISION RECORD			
ITEM NO.	BY	DATE	DESCRIPTION
A	DW	9/19/2003	REMOVED TAPED HOLES (ACCELEROMETER)



WEIGHT: 3.94 kg./(8.68 lbs.)



UNITS ARE mm/in		MATERIAL: STEEL		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
TOLERANCES ARE: *		SCALE 1=1	APPROVALS	
DECIMALS	ANGLES	DRAWN	DATE	THOR-LX LOWER EXTREMITY
.X ±2.5/0.1 + 0.5'		D. WALKER	3/20/00	
.XX ±0.25/0.01		CHECKED		
.XXX ±0.127/0.005		ENG		
* unless otherwise noted		SIZE A	DRAWING NUMBER	REV A
			TLX-9000-001	

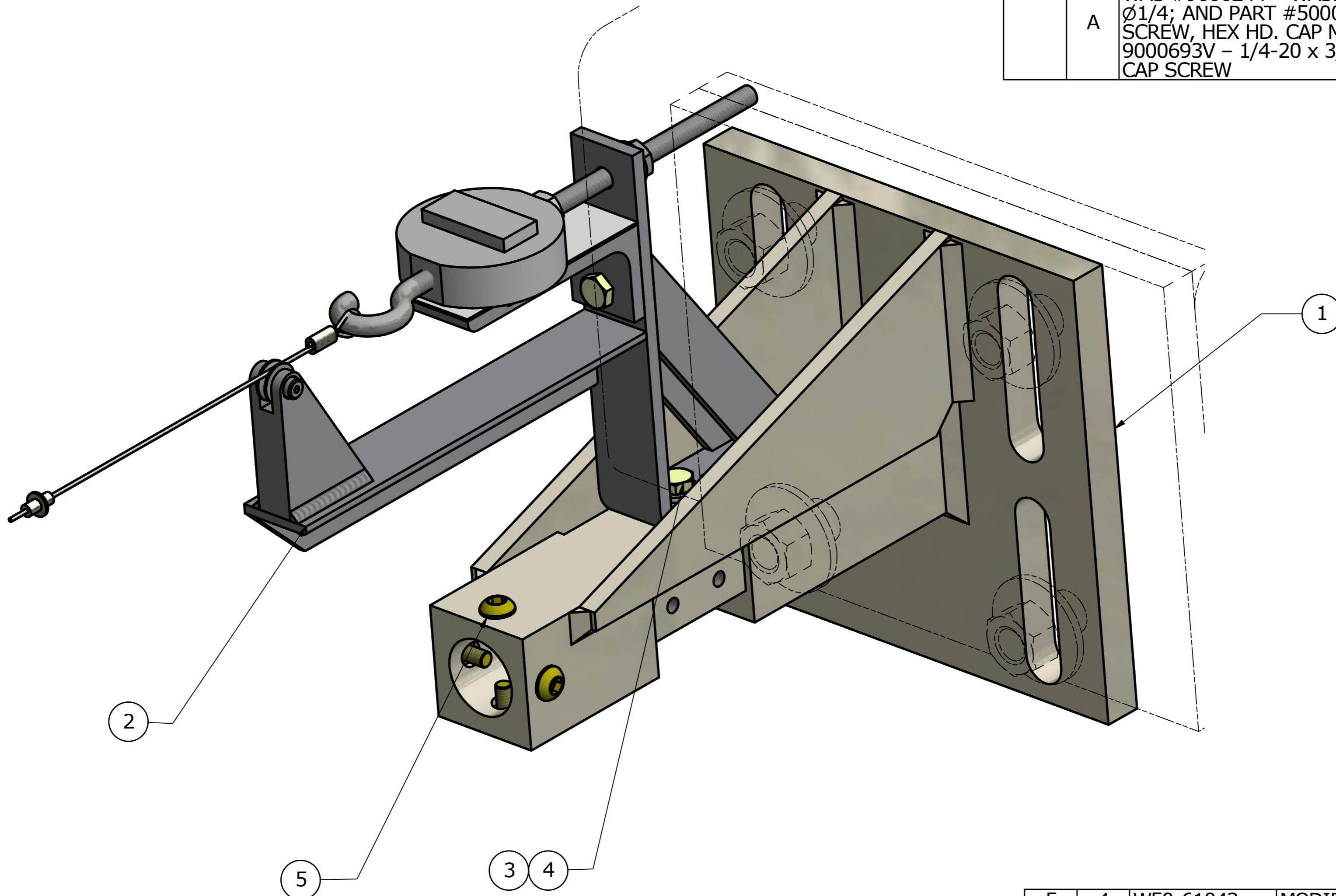
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REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	PART #5000094 - WASHER, FLAT M6 WAS #9000244 - WASHER, FLAT Ø1/4; AND PART #5000567V - SCREW, HEX HD. CAP M6-1 x 20 WAS 9000693V - 1/4-20 x 3/4 HEX HEAD CAP SCREW	9/10/2015	DW



5	4	W50-61042	MODIFIED BHSS M6 THREAD
4	2	5000567V	SCREW, HEX HD. CAP M6-1 x 20
3	2	5000094	WASHER, FLAT M6
2	1	DL472-4200	LOAD CELL MOUNTING ASSEMBLY
1	1	DL472-4100	LOWER LEG MOUNTING BRACKET ASS'Y.
ITEM	QTY	PART NUMBER	DESCRIPTION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:  
DECIMAL: X ±.5  
X.X ±.2  
X.XX ±.1  
MACHINED  
ANGLES ±.5°  
ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

VEHICLE RESEARCH and TEST CENTER	
APPROVALS	DATE
DRAWN Jim Clevenger	10/26/2009
CHECKED	
ENG	
APPROVED	

NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

ACHILLES FIXTURE - COMPLETE  
THOR M

SIZE: A2  
DRAWING NUMBER: DL472-4000  
REV: A

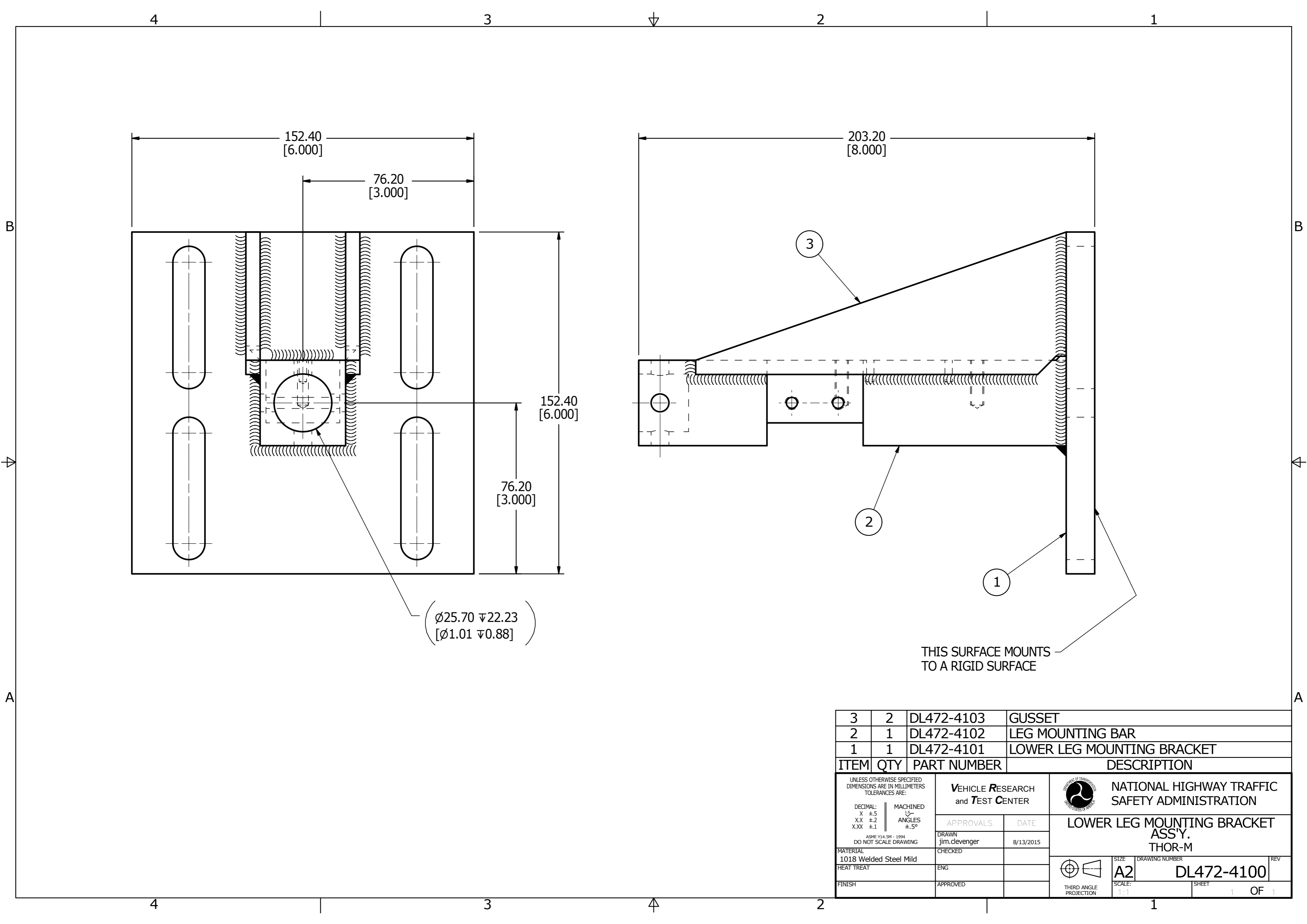
SCALE: SHEET 1 OF 1

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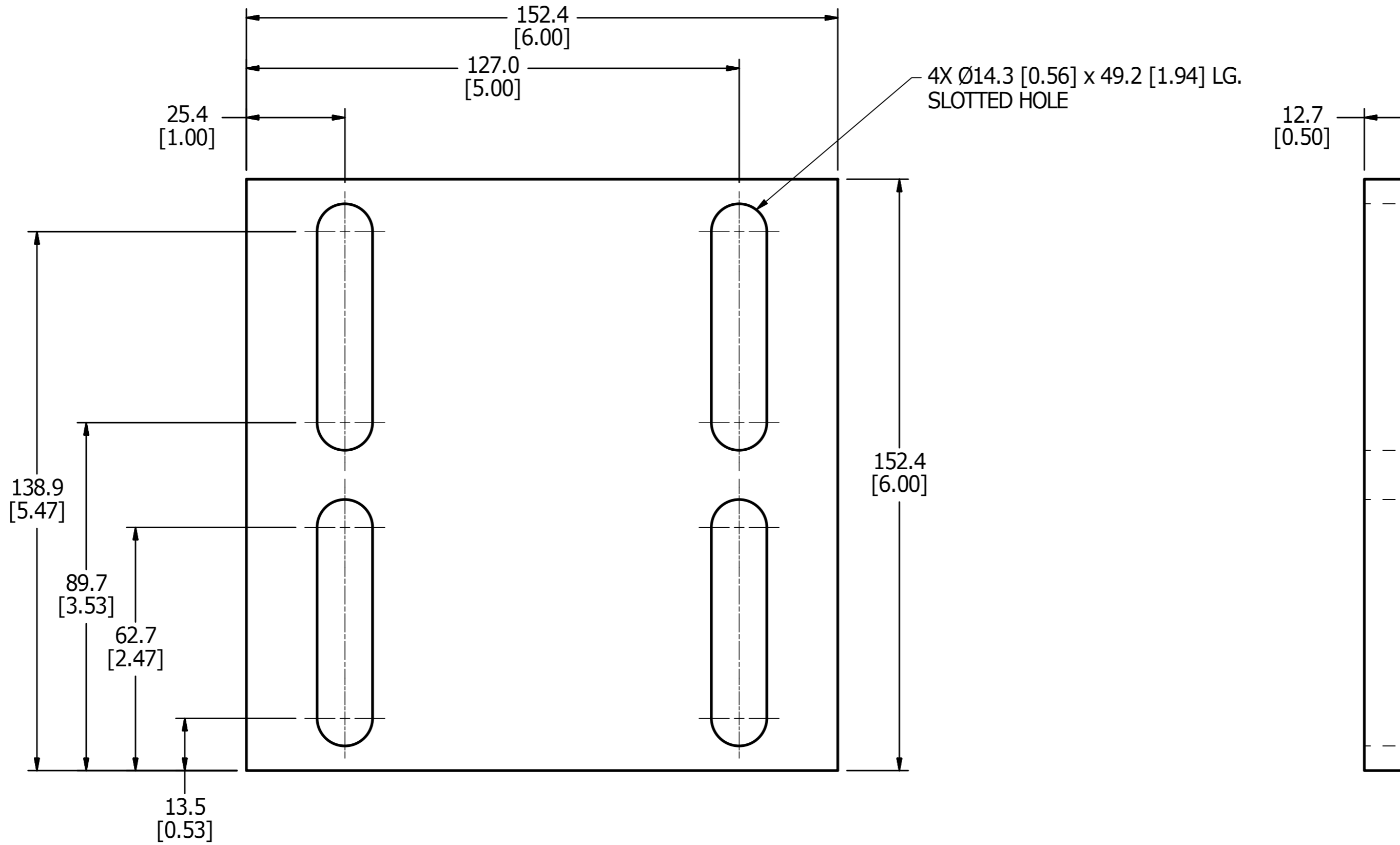
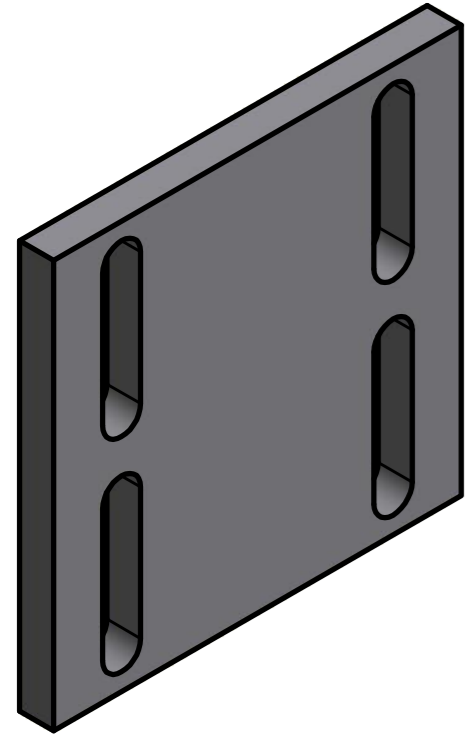


( $\varnothing 25.70 \pm 0.223$ )  
 [ $\varnothing 1.01 \pm 0.88$ ]

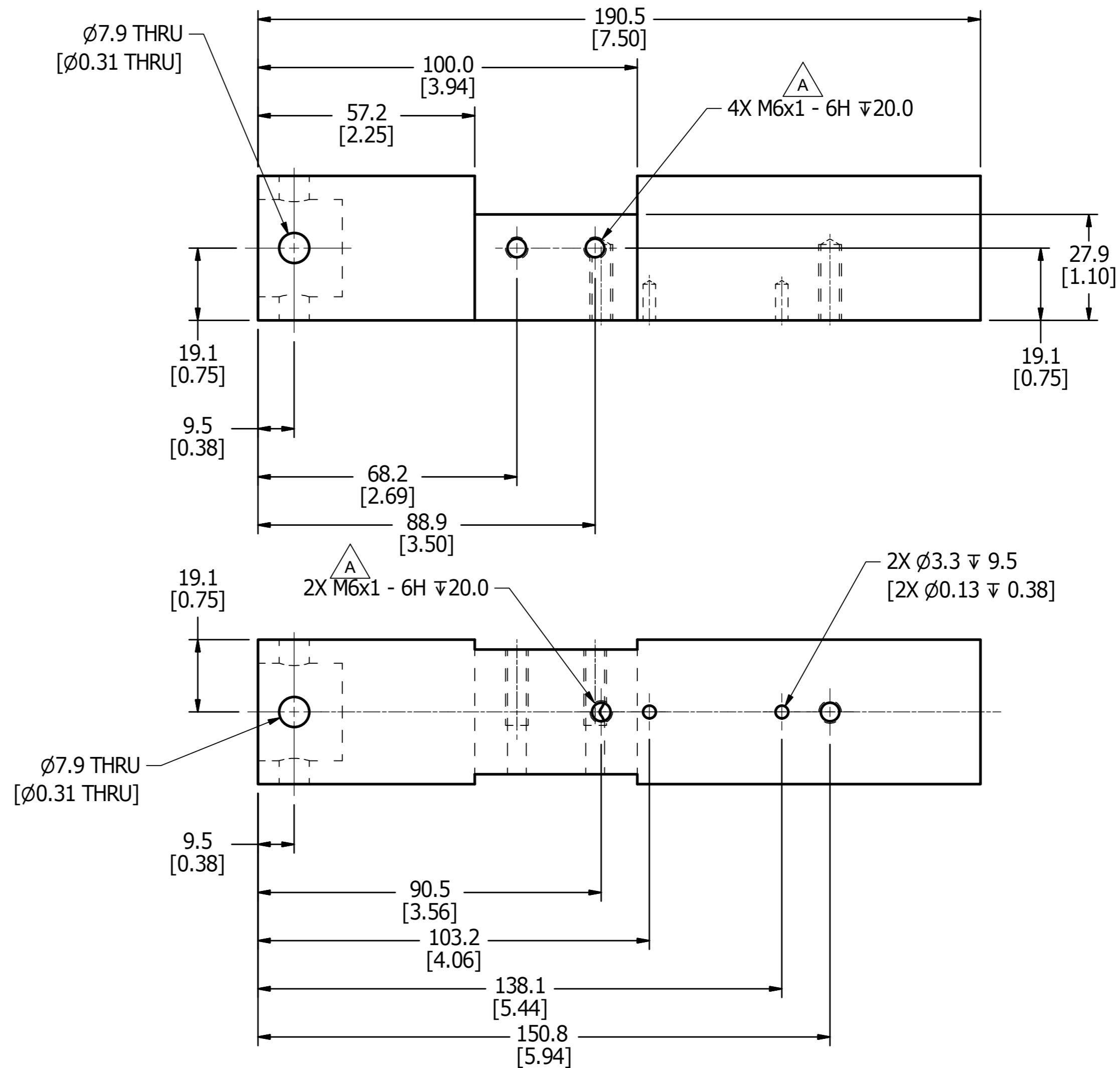
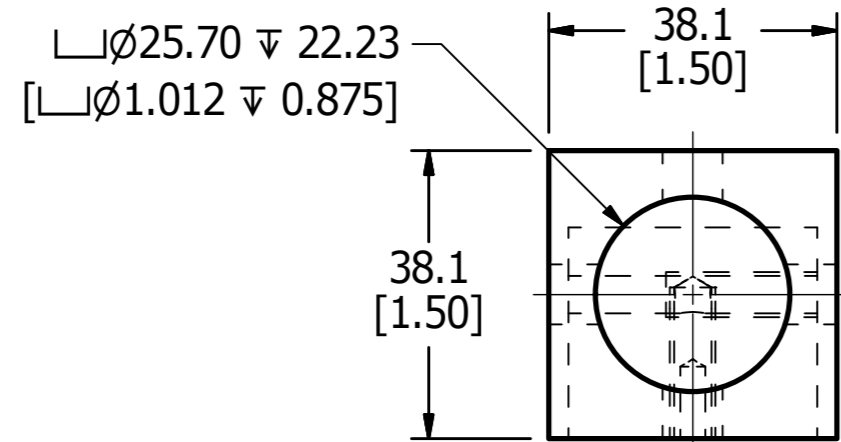
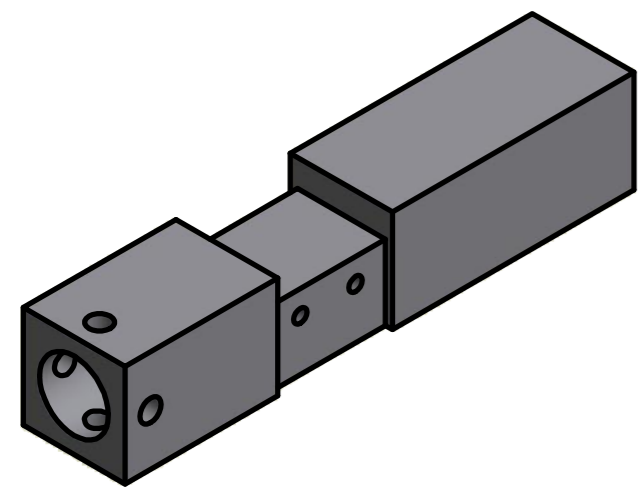
THIS SURFACE MOUNTS  
 TO A RIGID SURFACE

ITEM	QTY	PART NUMBER	DESCRIPTION
3	2	DL472-4103	GUSSET
2	1	DL472-4102	LEG MOUNTING BAR
1	1	DL472-4101	LOWER LEG MOUNTING BRACKET

<small>UNLESS OTHERWISE SPECIFIED          DIMENSIONS ARE IN MILLIMETERS          TOLERANCES ARE:</small> DECIMAL: X ±.5 XX ±.2 XXX ±.1 <small>ASME Y14.5M - 1994          DO NOT SCALE DRAWING</small>	<small>MACHINED</small> ↓ <small>ANGLES</small> ±.5°	<b>VEHICLE RESEARCH          and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>
		<small>APPROVALS</small> DRAWN jim.devinger	<small>DATE</small> 8/13/2015	
<small>MATERIAL</small> 1018 Welded Steel Mild	<small>CHECKED</small>	<small>SCALE</small> A2	<small>DRAWING NUMBER</small> DL472-4100	<small>REV</small>
<small>HEAT TREAT</small>	<small>ENG</small>	<small>SCALE</small> 1:1	<small>SHEET</small> 1	<small>OF</small> 1
<small>FINISH</small>	<small>APPROVED</small>	<small>THIRD ANGLE          PROJECTION</small>		

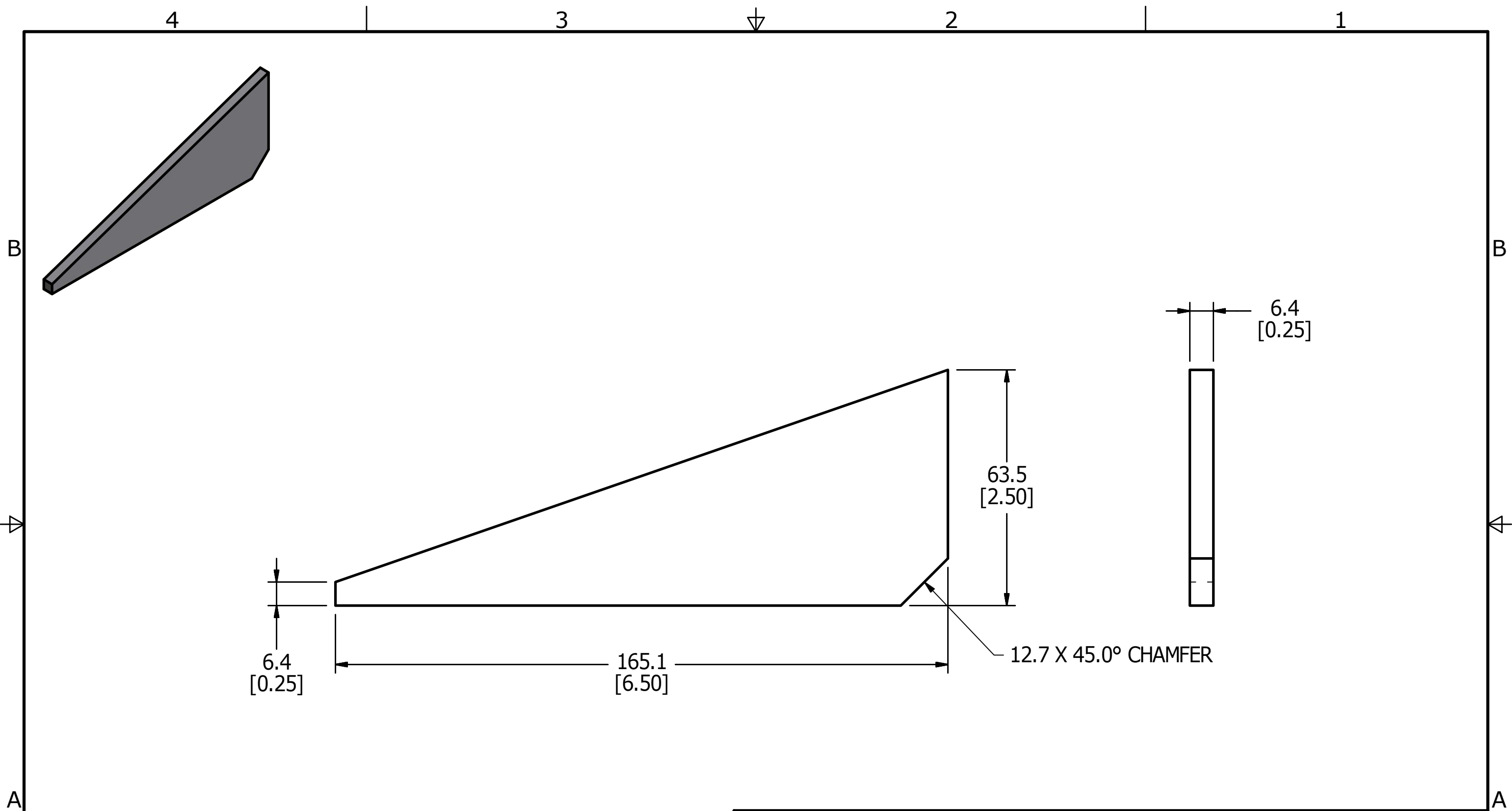



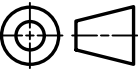
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN Dave Walker CHECKED	DATE 9/1/2015	
MATERIAL 1018 Steel HEAT TREAT	ENG	APPROVED	SCALE: 1:1 SHEET 1 OF 1

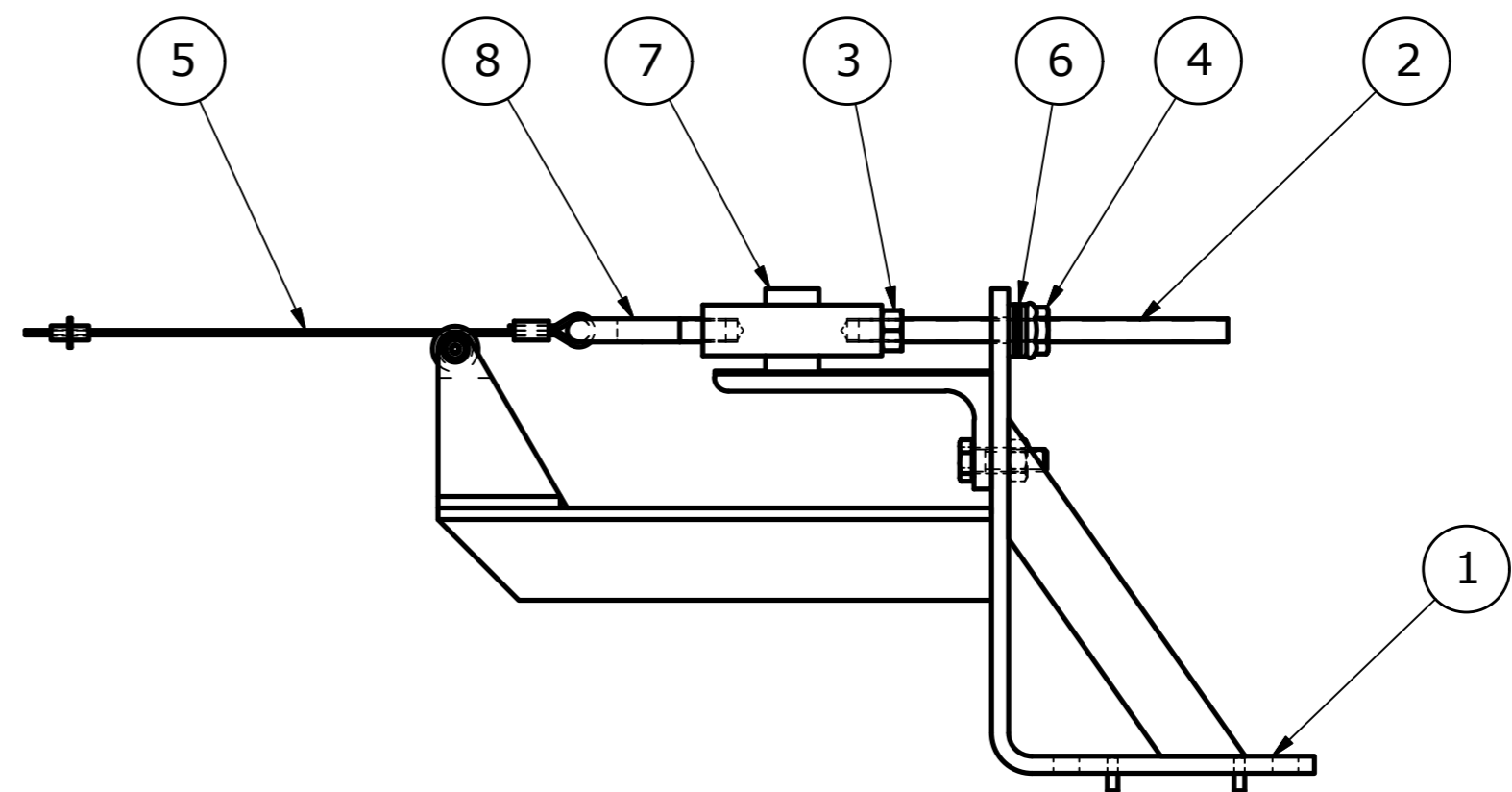
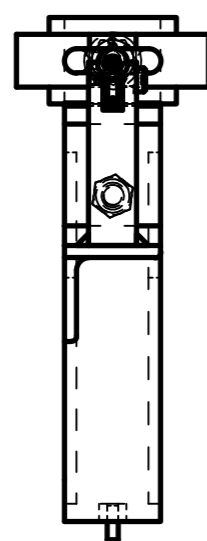
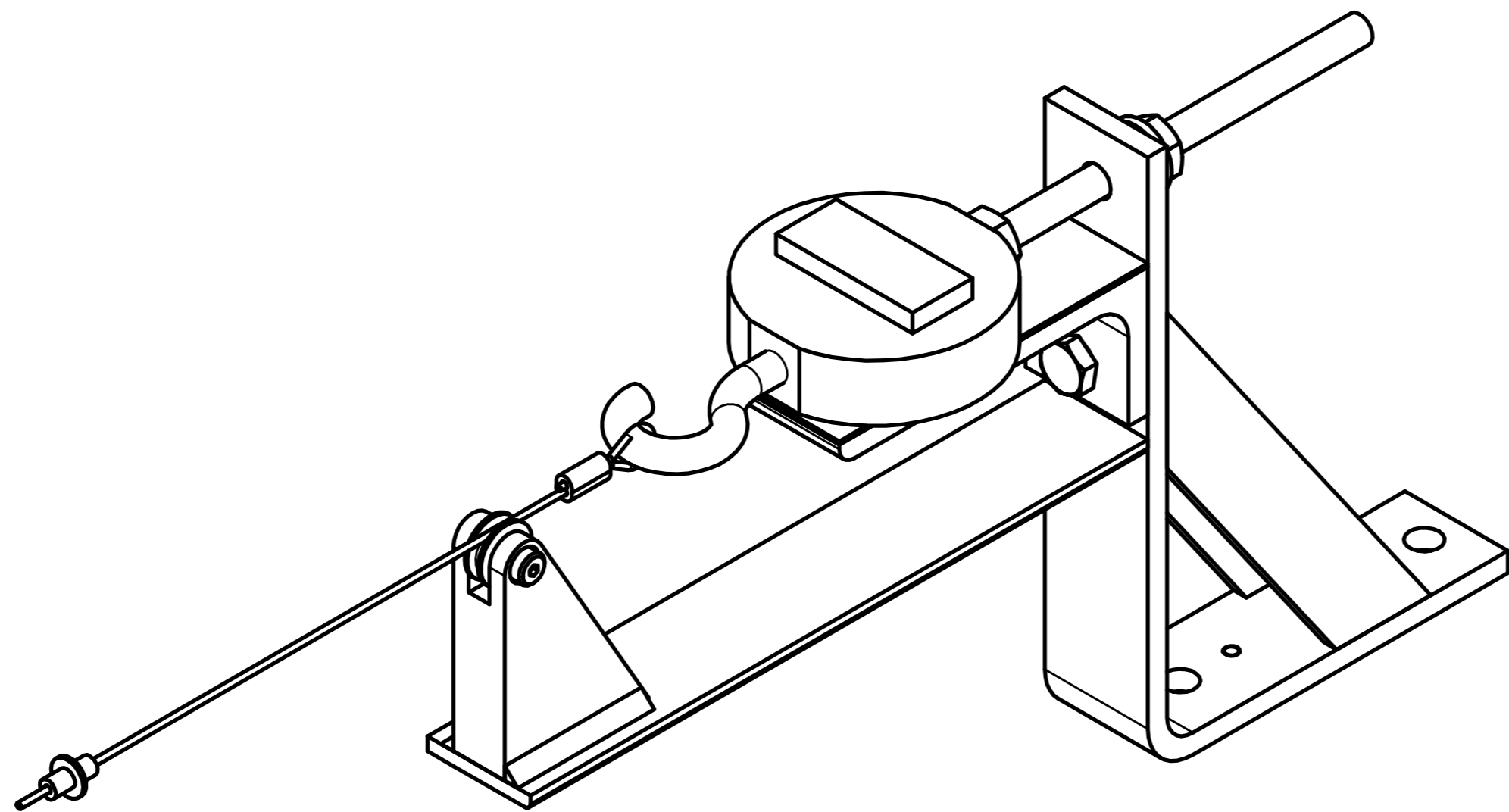


REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	HOLE NOTE 4X M6x1 - 6H ± 20.0 WAS 4X 1/4-28 UNF - 2B ± 9.5; HOLE NOTE 2X M6x1 - 6H ± 20.0 WAS 2X 1/4-20 UNC - 2B ± 15.9	9/10/2015	DW


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED: ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>			<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN: Dave Walker CHECKED:	DATE 9/1/2015		<b>LEG MOUNTING BAR</b> THOR-M	
MATERIAL: 1018 Steel HEAT TREAT: FINISH:	ENG: APPROVED:	SIZE: A2 SCALE: 1:1	DRAWING NUMBER: DL472-4102 SHEET: 1 OF 1	REV: A	



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      1/8 X.XX ±.1     1/16  ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 9/1/2015	<b>GUSSET          THOR-M</b>	
MATERIAL 1018 Steel HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE: 1:1	DRAWING NUMBER <b>DL472-4103</b> SHEET 1 OF 1



ITEM	QTY	PART NUMBER	DESCRIPTION
8	1	DL472-4204	EYE BOLT - MODIFIED
7	1	5001500V	LOAD CELL, 25# CAP, LCR-25
6	1	5000685V	THRUST BEARING, 1/4" ID
5	1	DL472-4203	PULL WIRE ASSEMBLY
4	1	9000101V	HEX NUT, FLANGED, 1/4-28
3	1	9000110	HEX NUT 1/4-28
2	1	DL472-4202	DRAW SCREW
1	1	DL472-4210	MOUNTING BRACKET ASSEMBLY

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small>  <small>DECIMAL: X ±.5 XX ±.2 X.XX ±.1</small> <small>MACHINED ANGLES ±.5°</small>  <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	<small>APPROVALS</small> <small>DRAWN</small> Jim Clevenger <small>CHECKED</small>	<small>DATE</small> 8/13/2015	
<small>MATERIAL</small>  <small>HEAT TREAT</small>  <small>FINISH</small>	<small>ENG</small>  <small>APPROVED</small>	<small>SIZE</small> A2 <small>SCALE:</small> 1:1	<small>DRAWING NUMBER</small> DL472-4200 <small>SHEET</small> 1 <small>OF</small> 1

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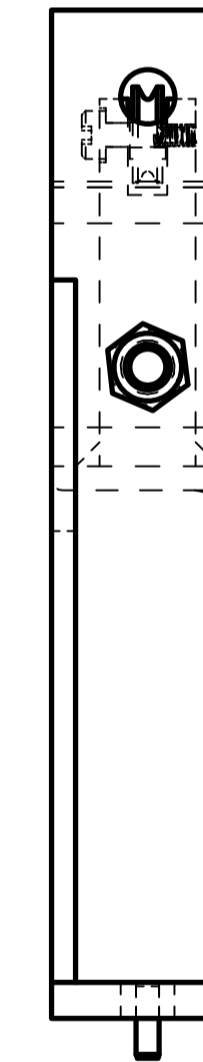
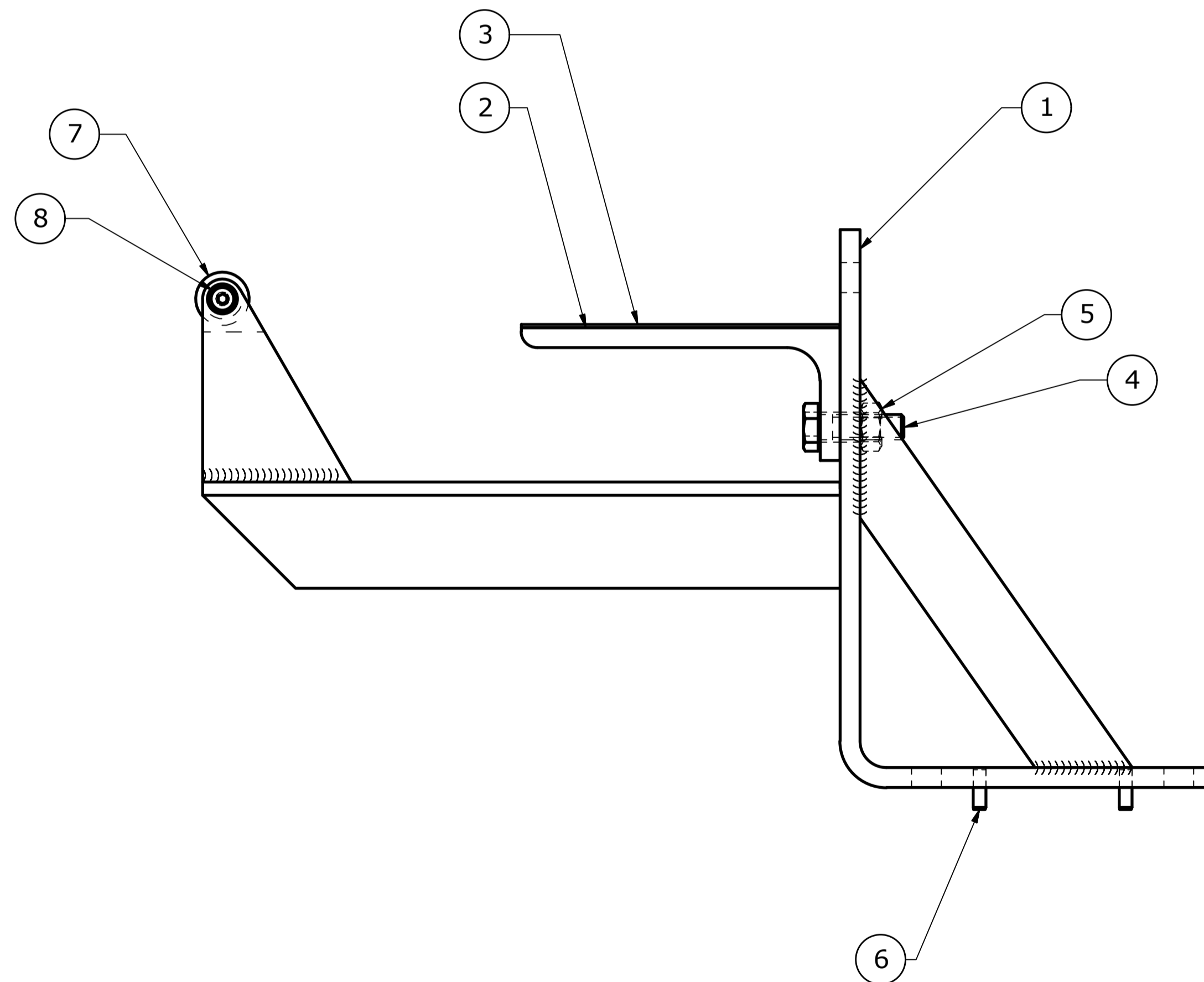
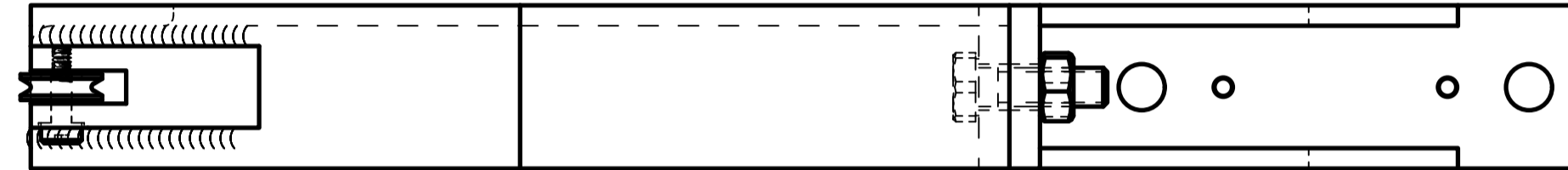
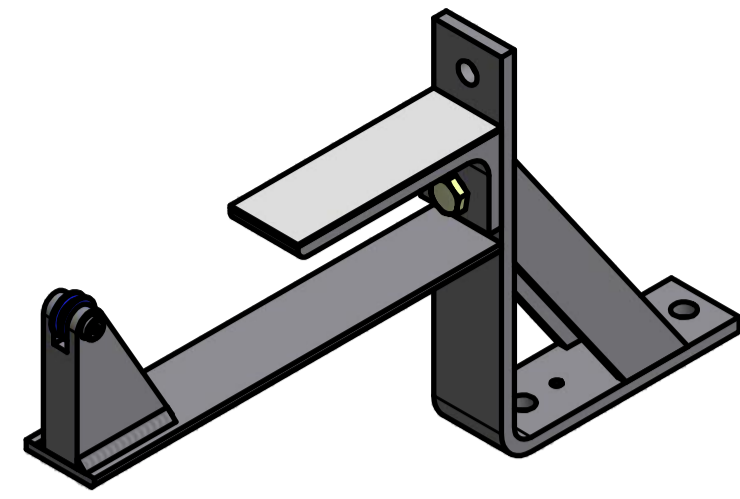
A

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REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	PART # 5000567V - SCREW, HEX HD. CAP M6-1 x 20 WAS 90000963V - SCREW, HEX HD. CAP, 1/4-20 x 3/4; PART #9009091 - NUT, HEX M6-1 WAS 9000105 - NUT, HEX 1/4; PART #5000284 - PIN, DOWEL M3 x 10 WAS 9000046 - PIN DOWEL 1/8" x 3/8"	9/10/2015	JC

ITEM	QTY	PART NUMBER	DESCRIPTION
8	1	9002947V	SCREW, SHSS 1/8 x 3/8
7	1		PULLEY, FOR 3/16"Ø WIRE ROPE, .125"Ø BORE x .375"Ø GROOVE x .1875" HUB WIDTH
6	2	5000284	PIN, DOWEL M3 x 10
5	1	9009091	NUT, HEX M6-1
4	1	5000567V	SCREW, HEX HD. CAP M6-1 x 20
3	1		TEFLON PAD, 0.8 [0.03] x 25.4 [1.00] x 76.2 [3.00]
2	1	DL472-4216	LOAD CELL SUPPORT
1	1	DL472-4211	LOAD ARM WELDMENT

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL: X ±.5 X.X ±.2 X.XX ±.1 <small>DO NOT SCALE DRAWING</small>		<b>VEHICLE RESEARCH and TEST CENTER</b> APPROVALS: Jim Clevenger CHECKED:	DATE: 10/22/2009 DRAWN: Jim Clevenger CHECKED:	<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b> <b>MOUNTING BRACKET ASSEMBLY</b> THOR-M
MATERIAL: HEAT TREAT: FINISH:	ENG: APPROVED:	SIZE: A1 SCALE: 1:1	DRAWINGS NUMBER: DL472-4210 SHEET 1 OF 1	REV: A

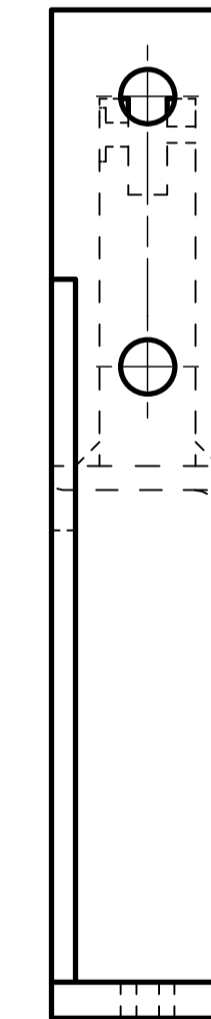
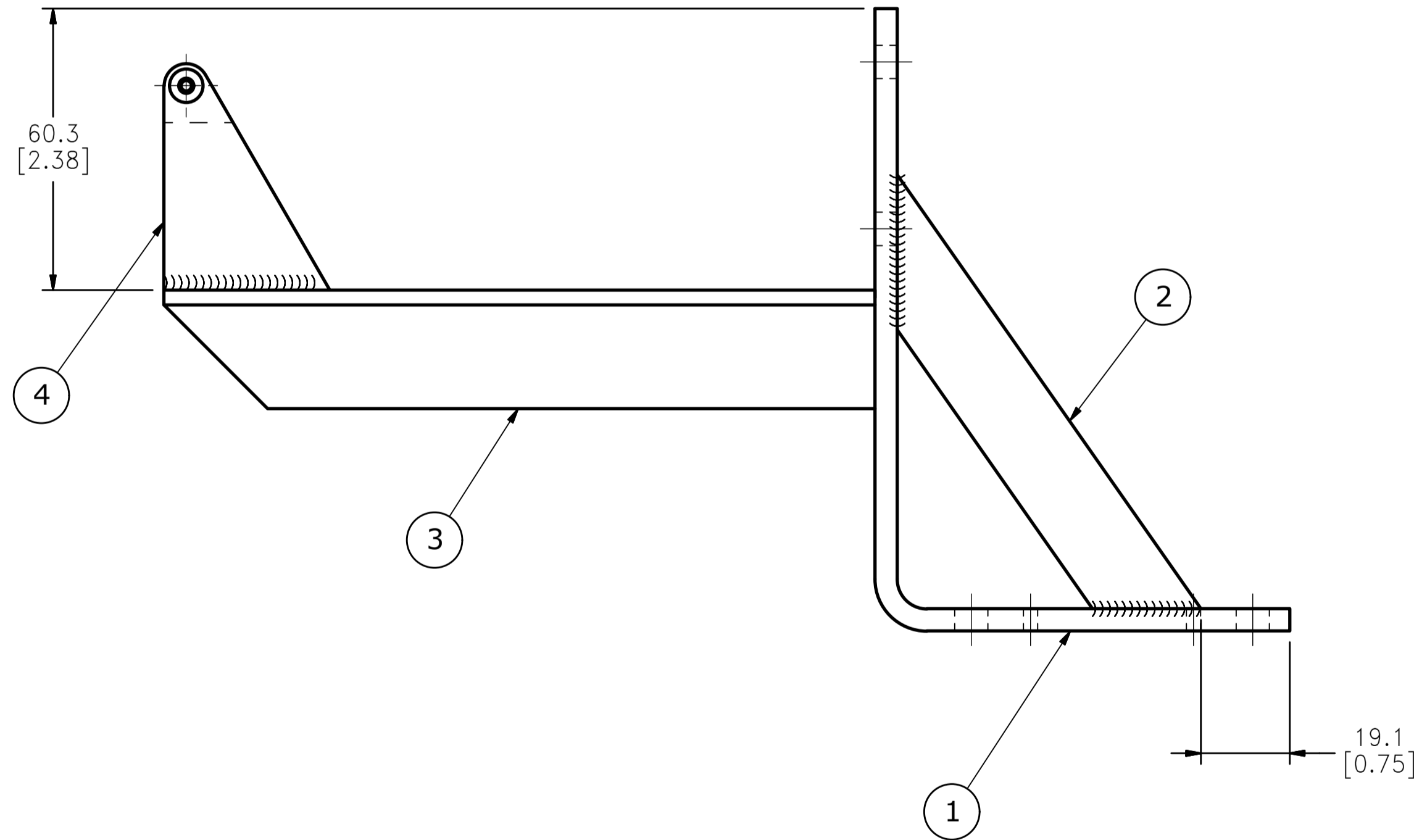
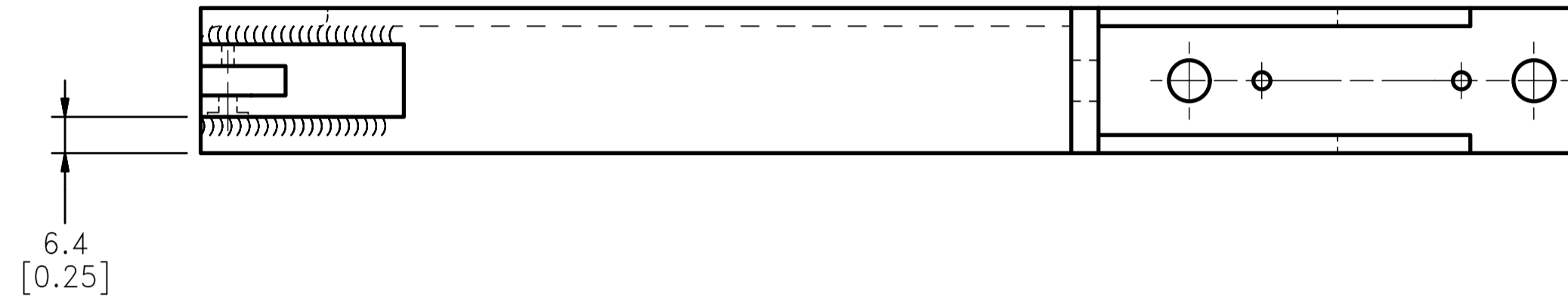
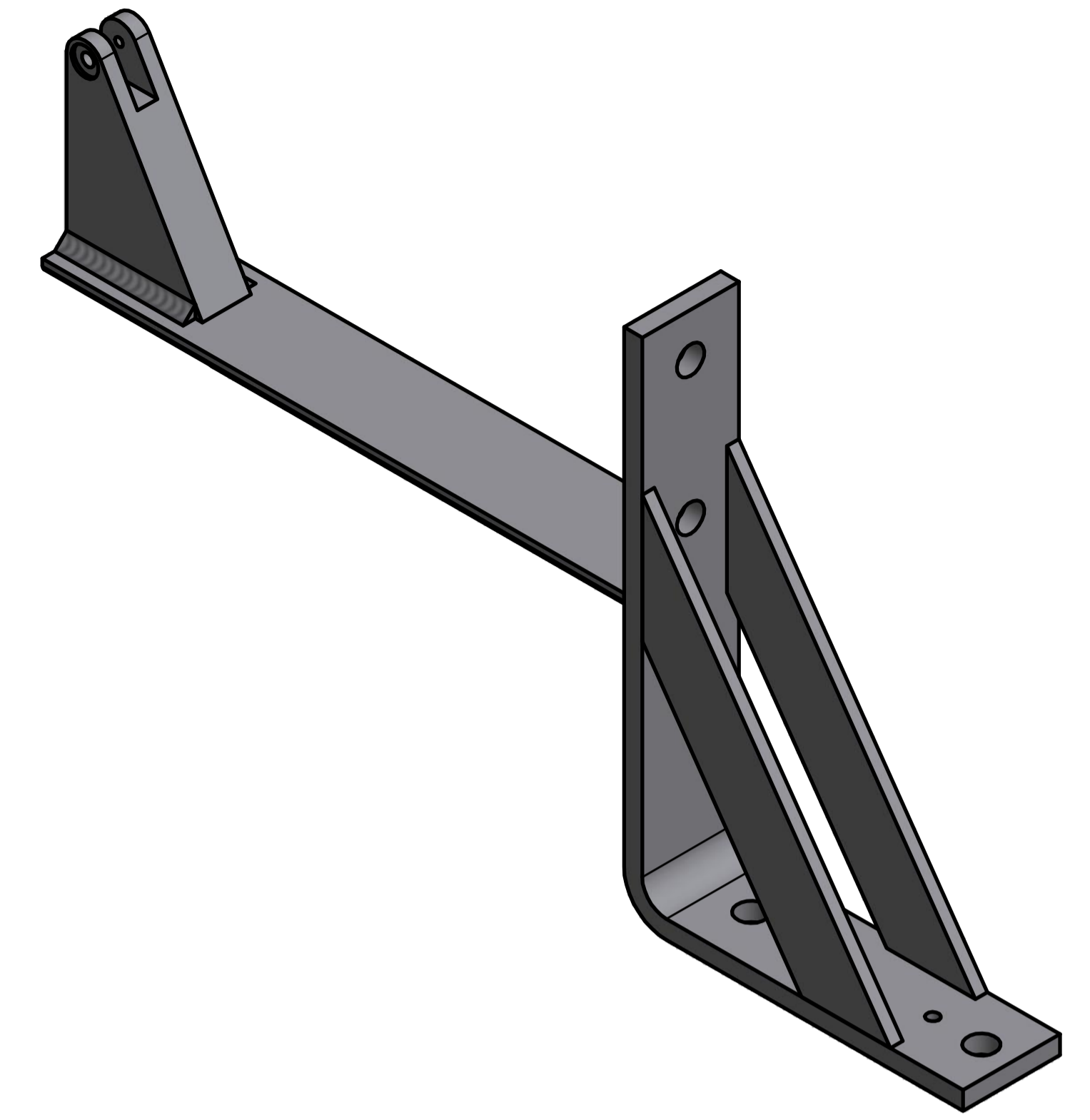


4

3

2

1



ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	DL472-4215	PULLEY BRACKET
3	1	DL472-4214	PULLEY SUPPORT ANGLE
2	2	DL472-4213	GUSSET
1	1	DL472-4212	LOAD CELL BRACKET

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
DECIMAL: X ±.5 XX ±.2 XXX ±.1	MACHINED ANGLES ±.5°	APPROVALS	DATE	LOAD ARM WELDMENT	
ASME Y14.3M - 1994 DO NOT SCALE DRAWING		DRAWN jmn.clevenger	10/26/2009	THOR-M	
MATERIAL Welded Steel Mild	HEAT TREAT	CHECKED	ENG	SIZE A1	DRAWING NUMBER DL472-4211
FINISH	APPROVED			SCALE: 1:1	SHEET 1 OF 1

4

3

4

2

1

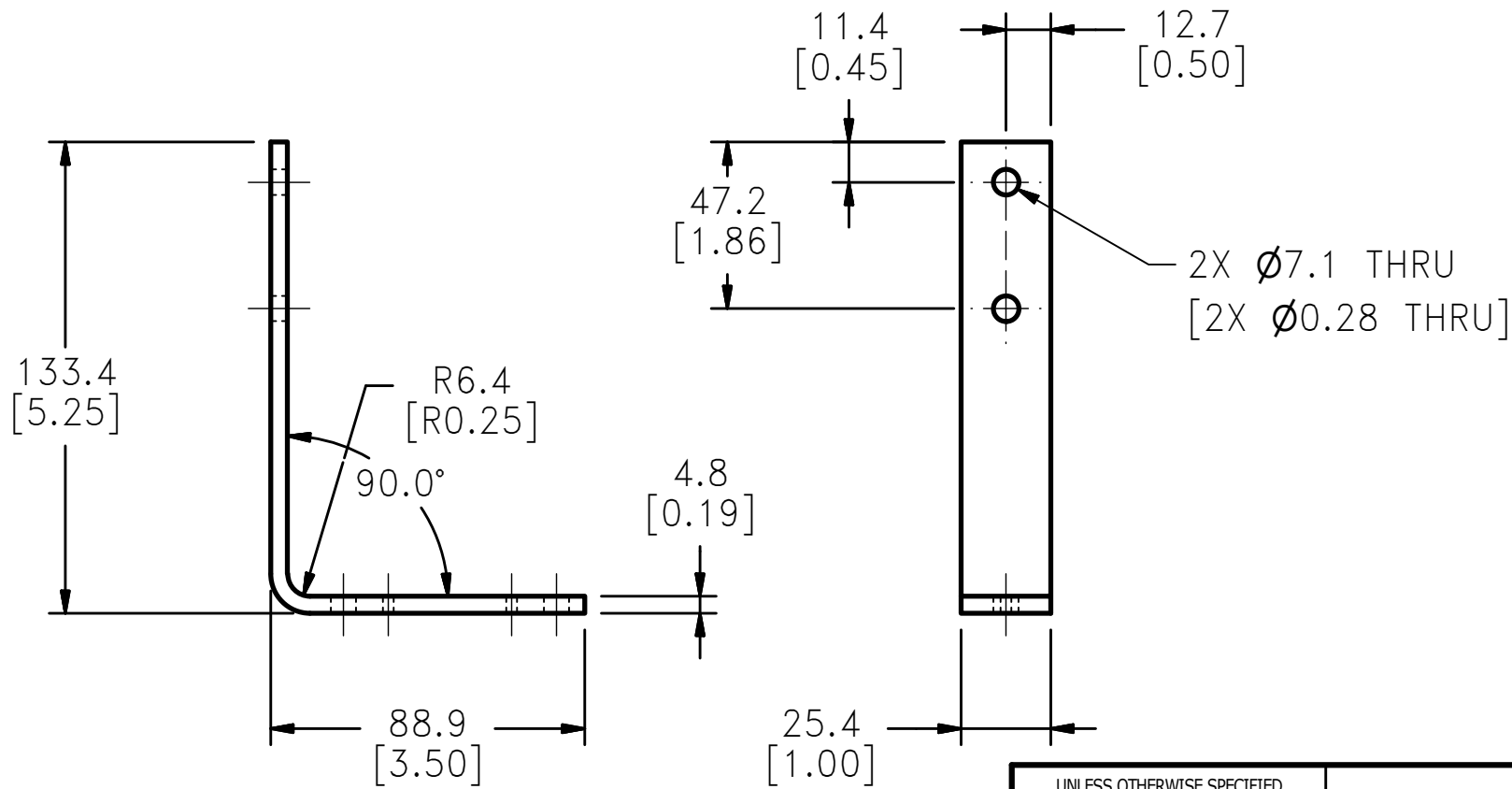
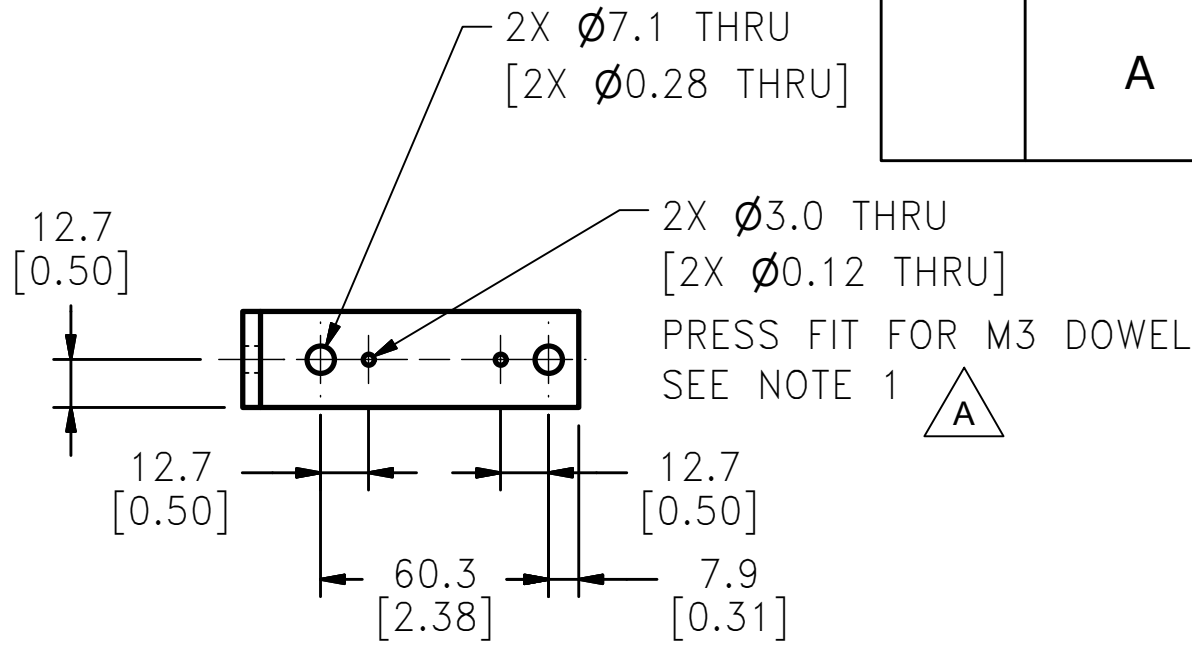
4

3

2

1

REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	DIMENSION 2X Ø3.0 THRU [2X Ø0.12 THRU] PRESS FIT FOR M3 DOWEL SEE NOTE 1 WAS 2X Ø3.2 THRU [2X Ø0.13 THRU] 2 PLACES SEE NOTE 1	10/26/2009	JC



NOTE:

1. THESE HOLES ARE LOCATING DOWEL HOLES AND MUST MATCH UP WITH CORRESPONDING HOLES IN THE LEG MOUNTING BRACKET

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1 MACHINED 1/6 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS DRAWN Jim Clevenger CHECKED ENG APPROVED	DATE 10/26/2009	
MATERIAL Steel HEAT TREAT FINISH	THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE: 1:1	DRAWING NUMBER <b>DL472-4212</b> SHEET 1 OF 1

4

3

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4

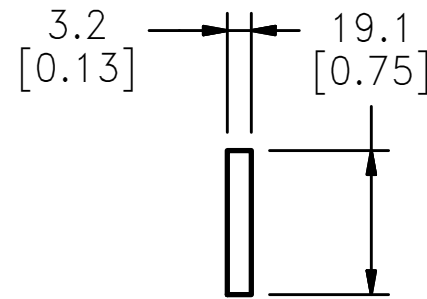
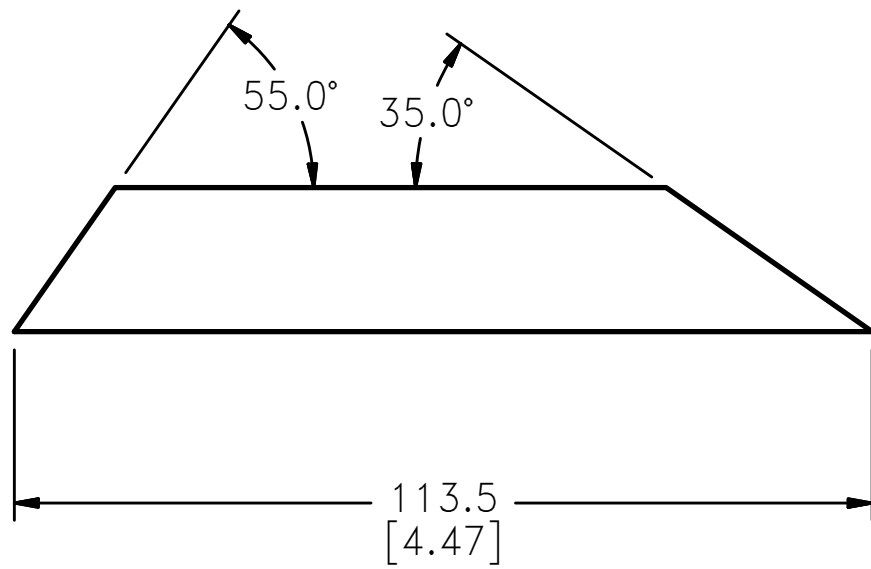
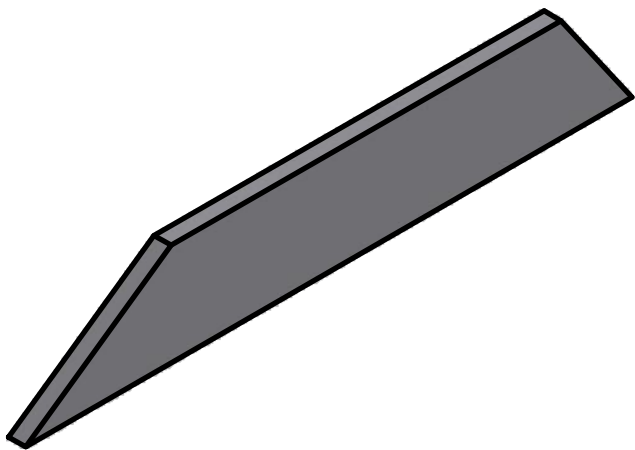
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2

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B

B



A

A

A


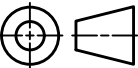
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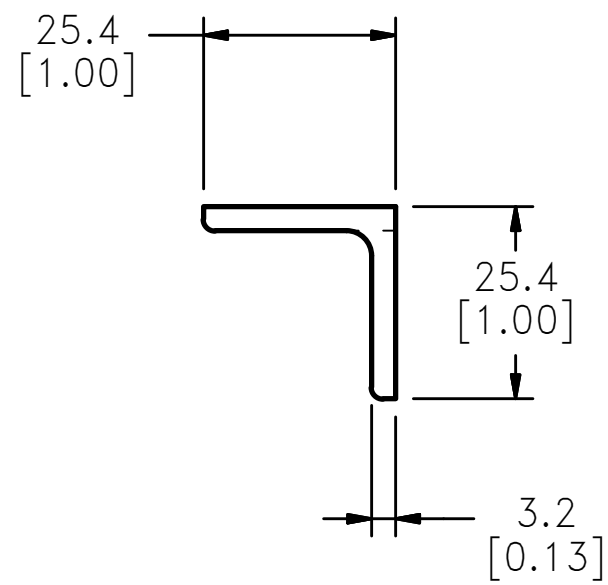
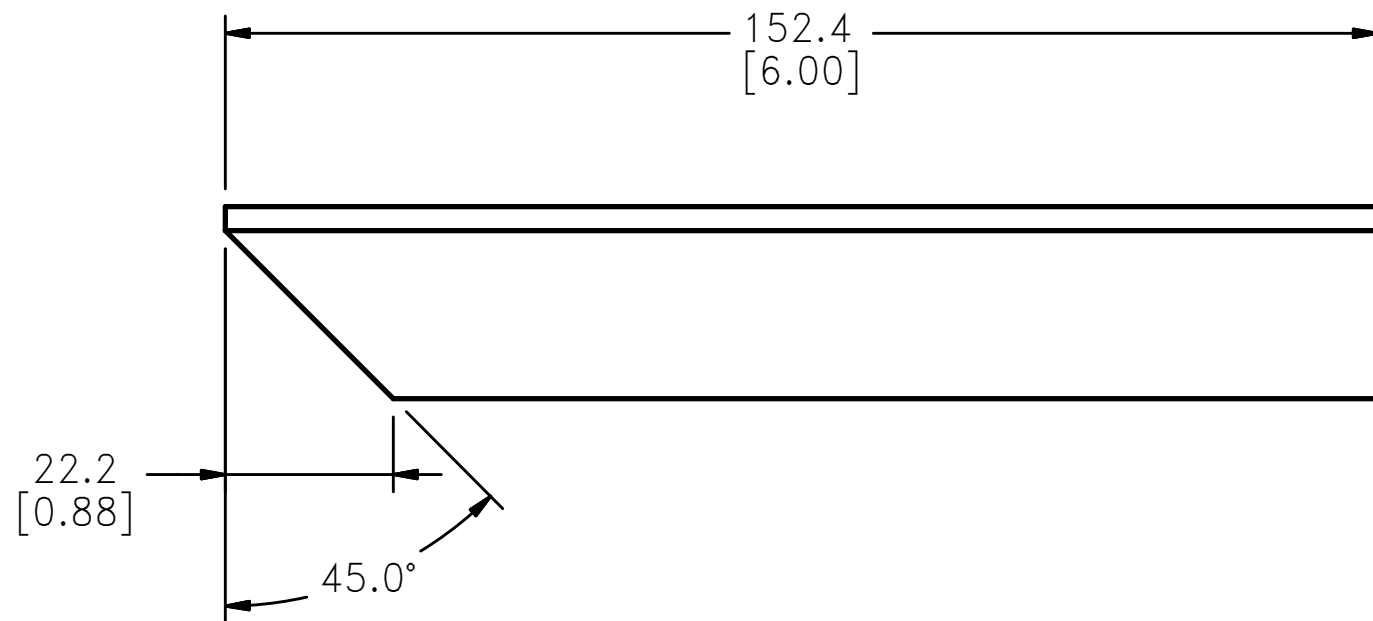
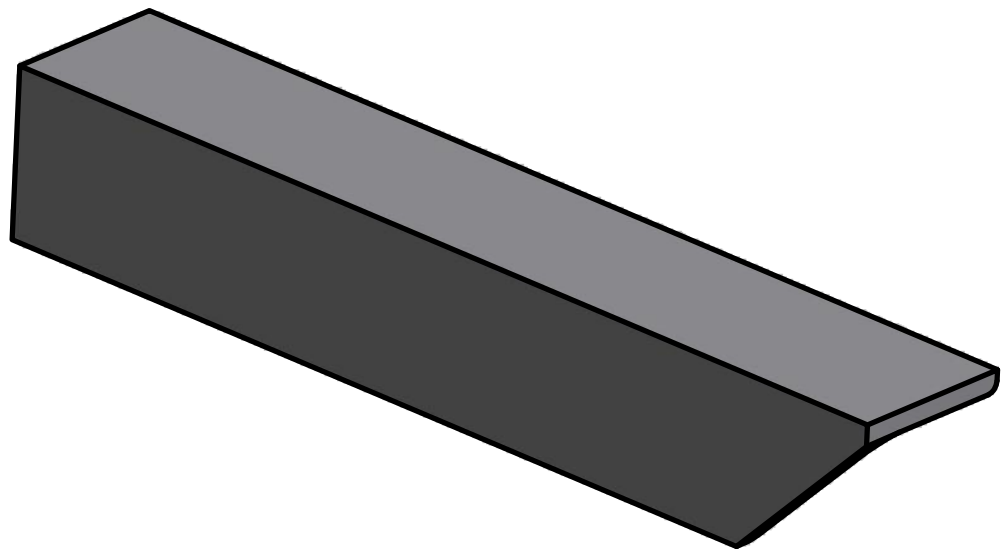
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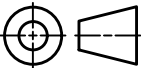
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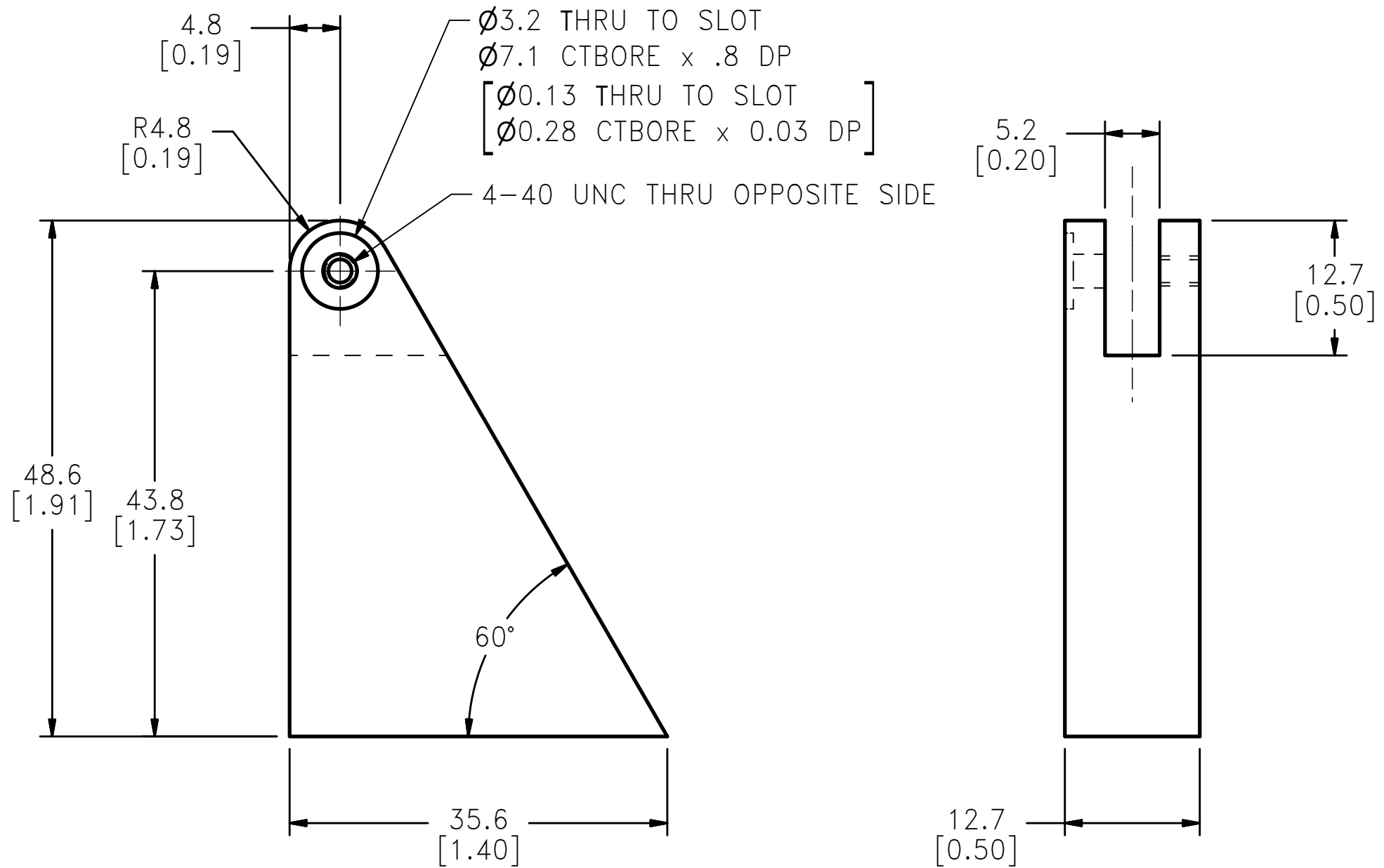
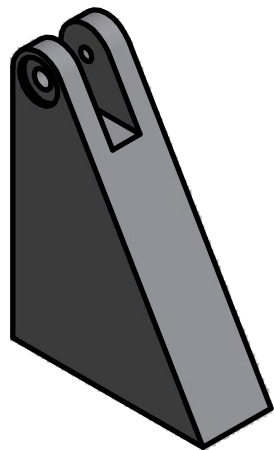
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1

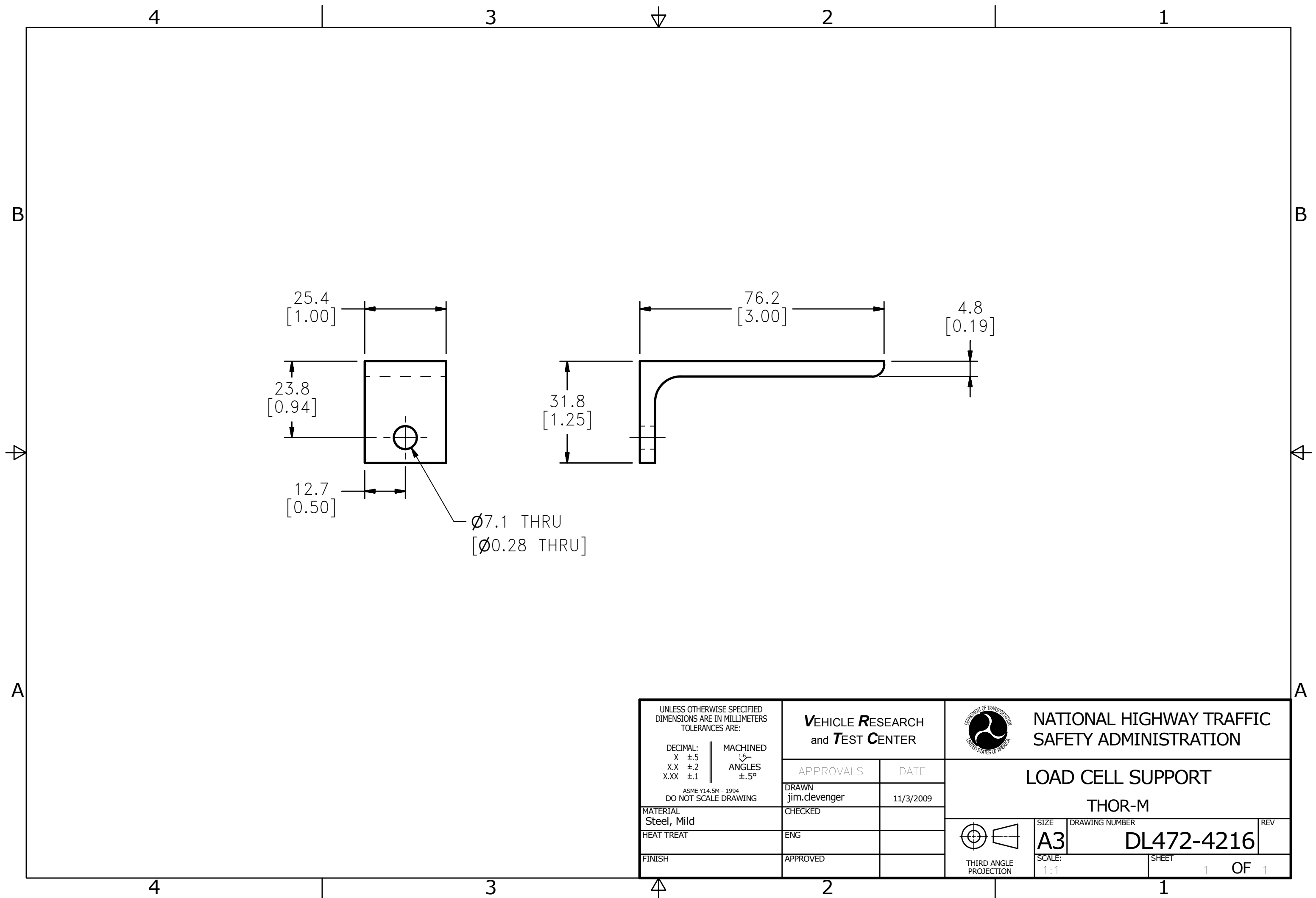
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN jim.devinger CHECKED	DATE 10/26/2009	<b>GUSSET THOR-M</b>	
MATERIAL Steel HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION		SIZE <b>A3</b> SCALE: 1:1
		DRAWING NUMBER <b>DL472-4213</b>		REV SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>PULLEY SUPPPORT ANGLE</b>  <b>THOR-M</b>	
MATERIAL Steel, Mild	DRAWN jim.devinger	 THIRD ANGLE PROJECTION		SIZE <b>A3</b>
HEAT TREAT	CHECKED	DRAWING NUMBER <b>DL472-4214</b>		REV 
FINISH	ENG	SCALE: 1:1		SHEET 1 OF 1
	APPROVED			



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
MATERIAL Steel	DRAWN jim.devinger	10/26/2009	 THIRD ANGLE PROJECTION
HEAT TREAT	CHECKED		
FINISH	ENG		SCALE: 1:1    SHEET: 1 OF 1
	APPROVED		



4

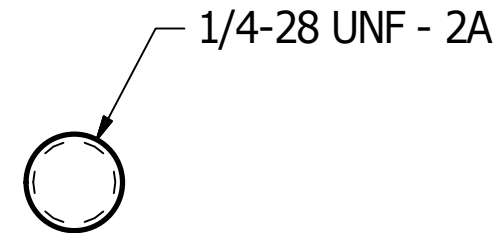
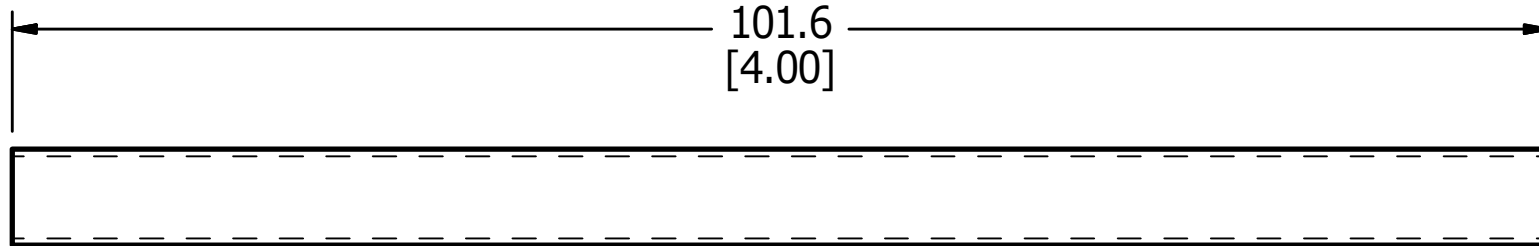
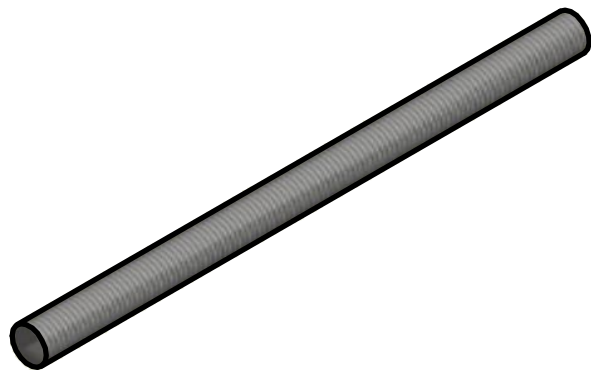
3

2

1

B

B



A

A

A

A

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
TOLERANCES ARE:

DECIMAL:	MACHINED
X ±.5	1.6
X.X ±.2	ANGLES
X.XX ±.1	±.5°

ASME Y14.5M - 1994  
DO NOT SCALE DRAWING

MATERIAL  
Steel, Mild

HEAT TREAT

FINISH

**VEHICLE RESEARCH**  
and **TEST CENTER**

APPROVALS

DATE

DRAWN  
Dave Walker

9/1/2015

CHECKED

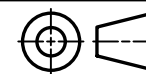
ENG

APPROVED



**NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION**

**DRAW SCREW**  
**THOR-M**



THIRD ANGLE  
PROJECTION

SIZE  
**A3**

SCALE:  
2:1

DRAWING NUMBER

**DL472-4202**

SHEET

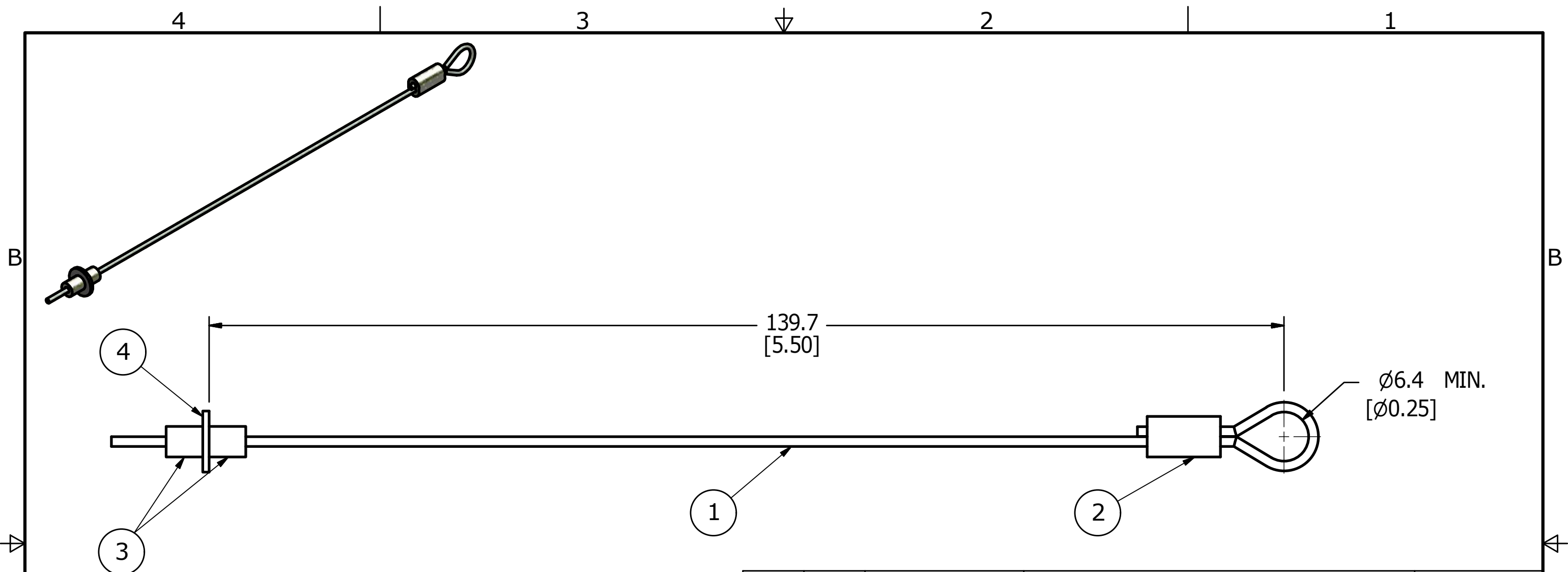
1 OF 1

4

3



2

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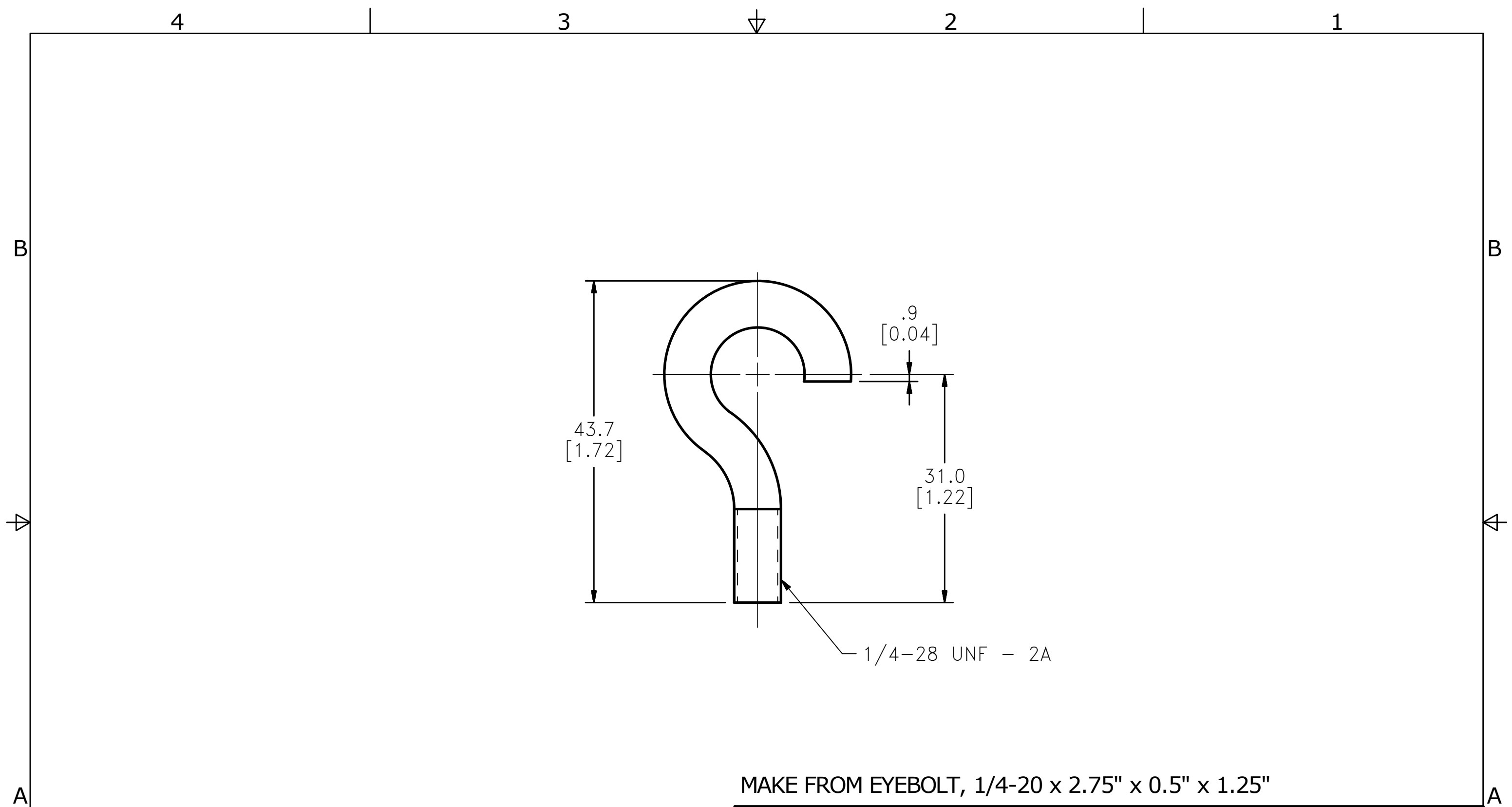


4	1	9003725V	WASHER, OVERSIZE FLAT, ID 0.094" X OD 0.312" X THK. 0.05"	Steel, Mild
3	2		WIRE ROPE STOP COMPRESSION SLEEVE FOR 3/64"Ø WIRE ROPE	Zinc-Plated Copper
2	1		WIRE ROPE OVAL COMPRESSION SLEEVE FOR 3/64"Ø WIRE ROPE	Zinc-Plated Copper
1	1		WIRE ROPE, 7 x 7, Ø0.047"	Steel, Galvanized
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL


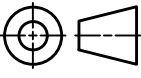
PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED 1.5 ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC            SAFETY ADMINISTRATION</b>
	APPROVALS	DATE	
	DRAWN Dave Walker	9/1/2015	
	CHECKED		
MATERIAL	ENG		 THIRD ANGLE PROJECTION
HEAT TREAT	APPROVED		
FINISH			SIZE: <b>A3</b> SCALE: 2:1
			DRAWING NUMBER: <b>DL472-4203</b> SHEET: 1 OF 1

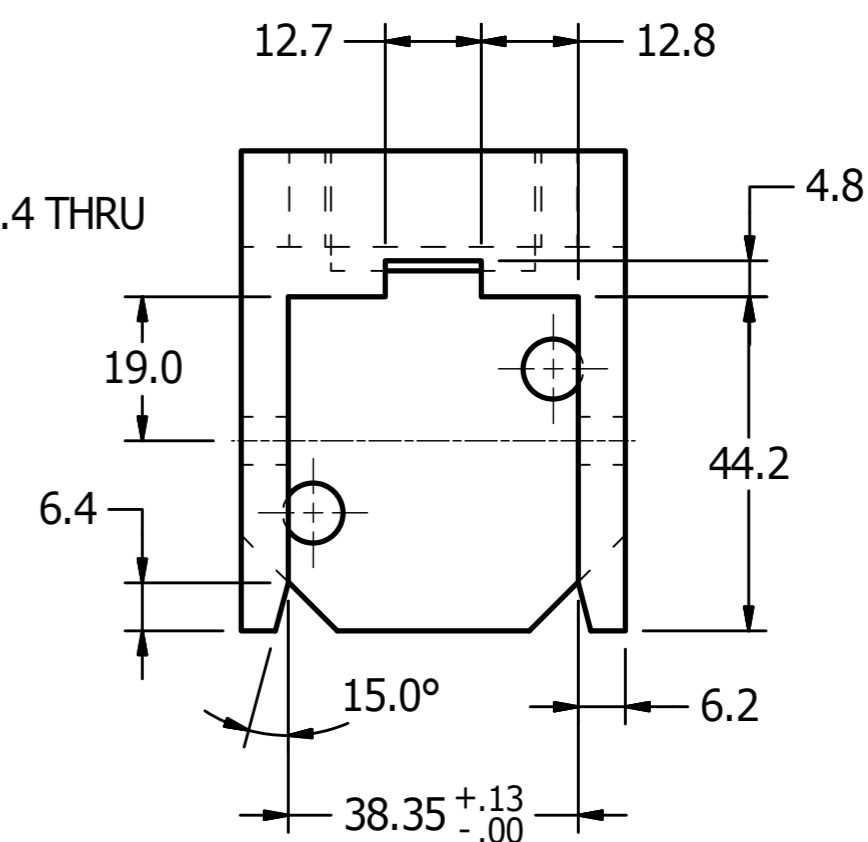
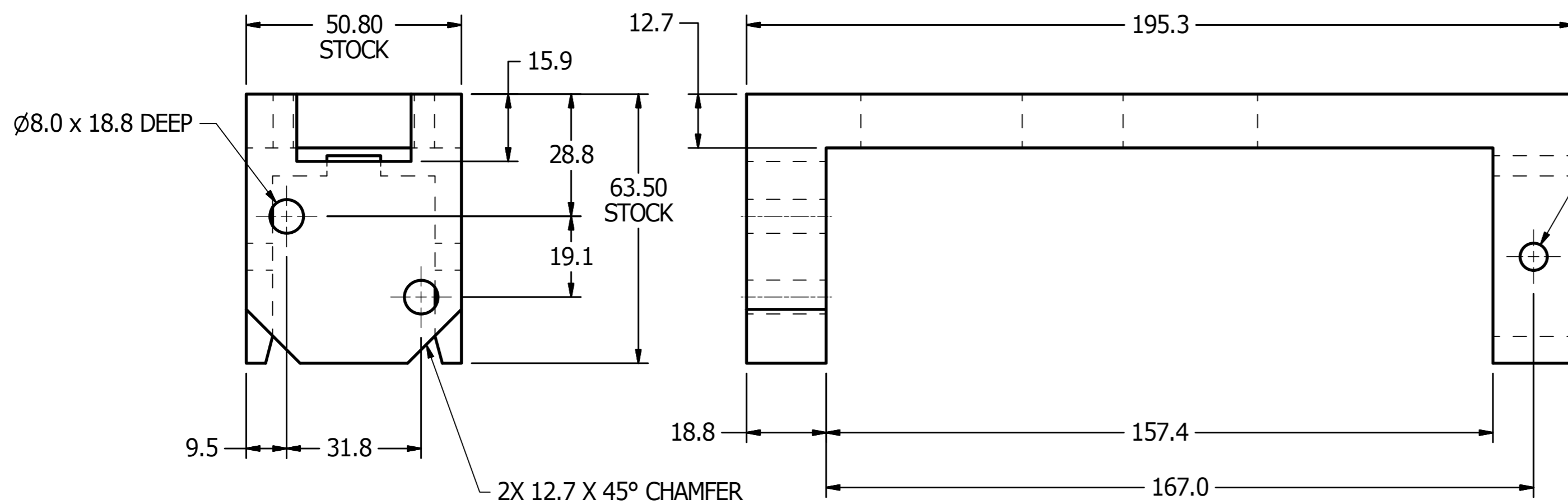
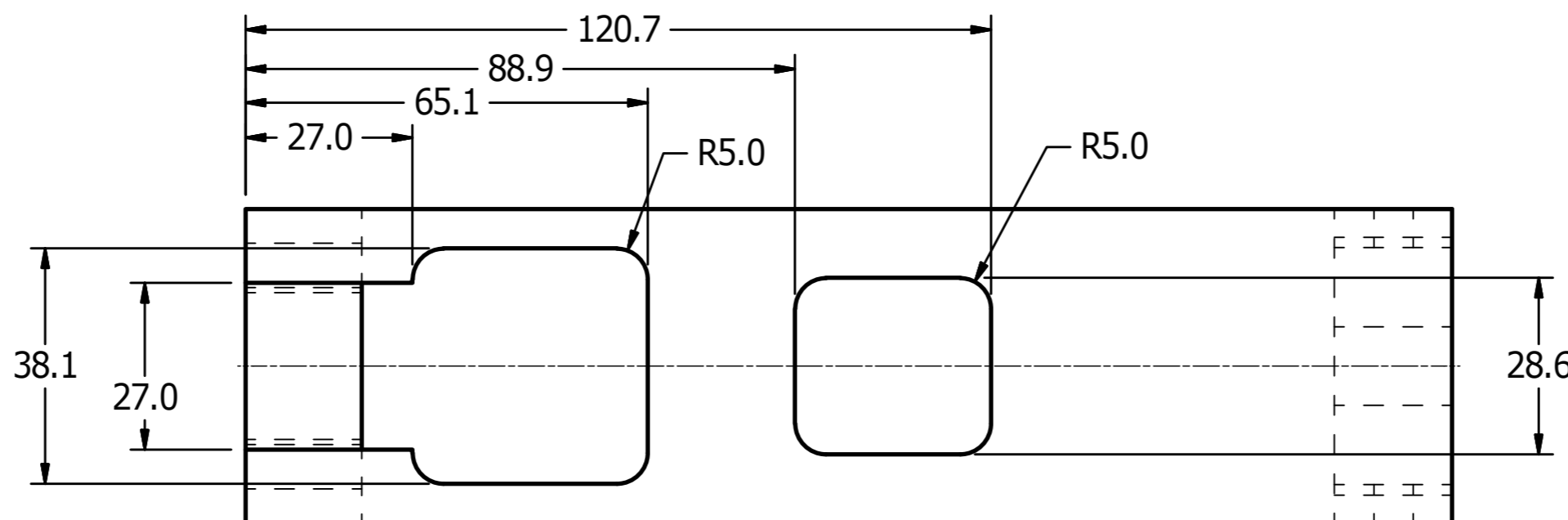
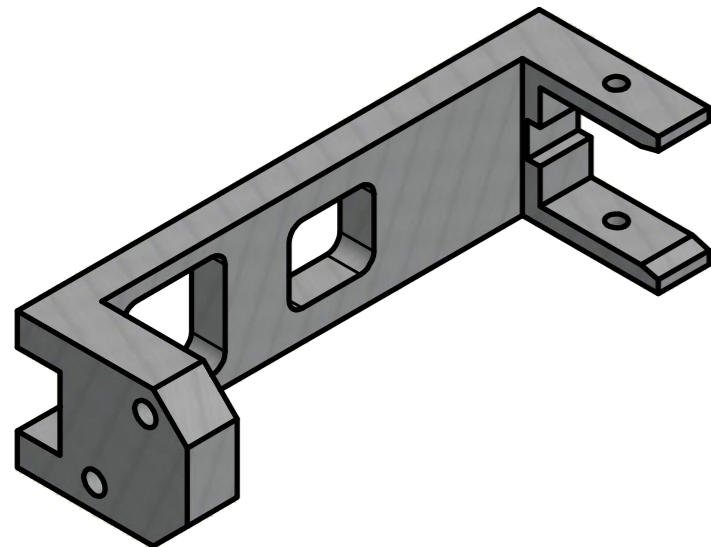




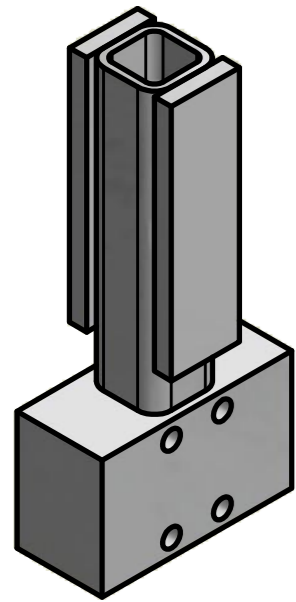
MAKE FROM EYEBOLT, 1/4-20 x 2.75" x 0.5" x 1.25"

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      1.5 X.XX ±.1     1.5  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 12/21/2009	<b>EYE BOLT - MODIFIED THOR-M</b>	
MATERIAL Steel, Mild HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION		
		SCALE:		SHEET 1 OF 1

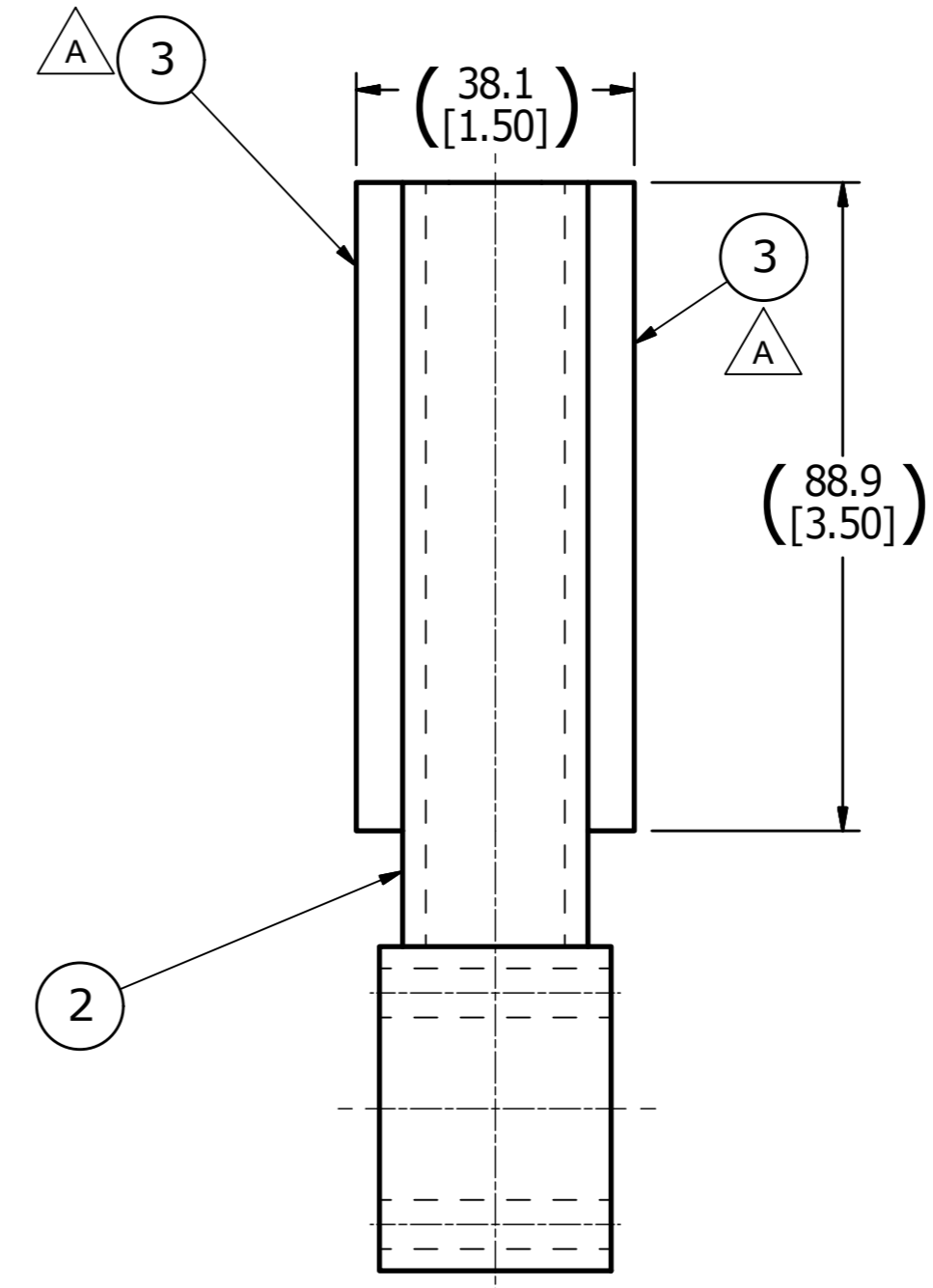
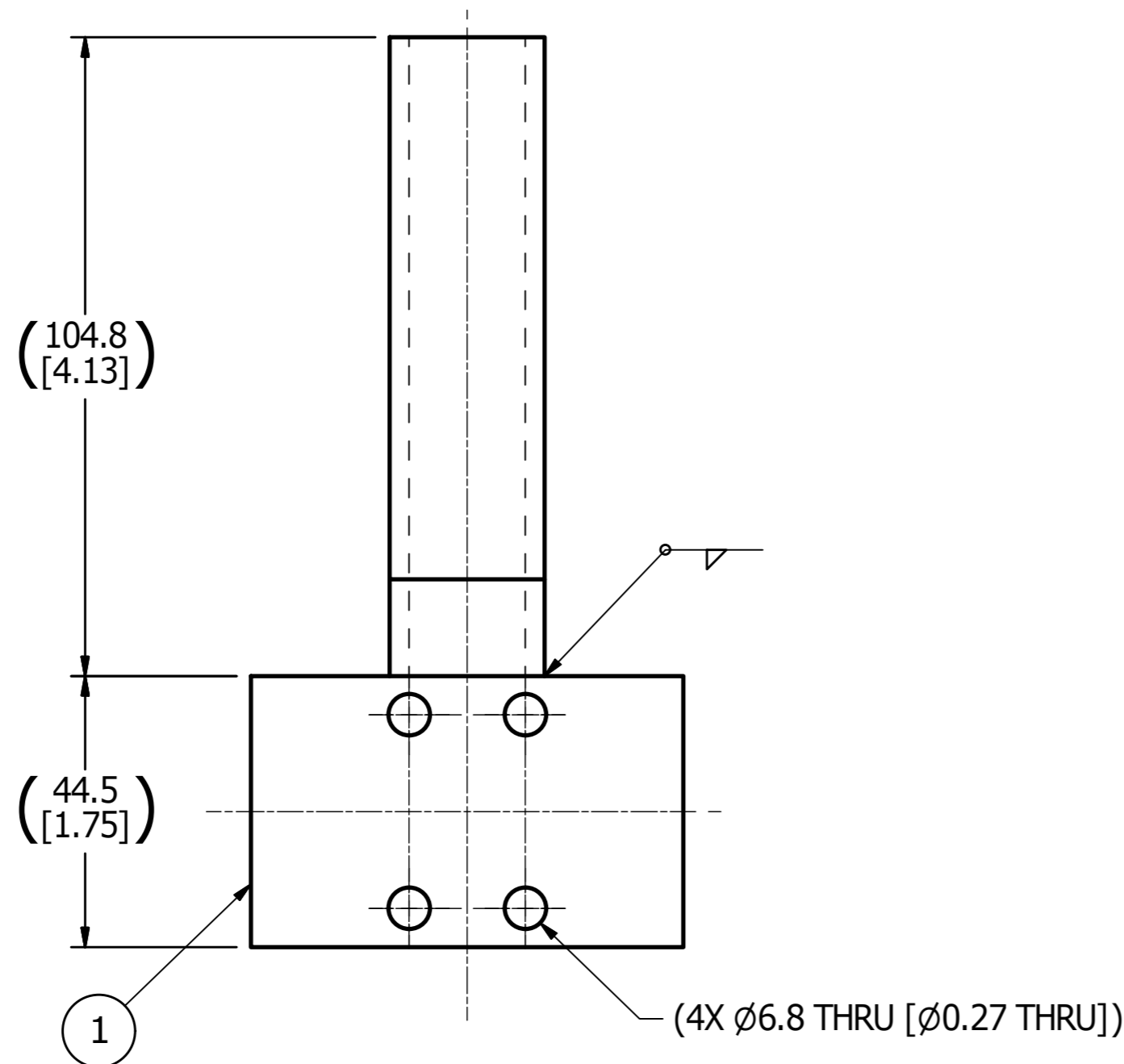
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	CONVERTED TO METRIC	9/9/2015	DW



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 X.X ±.2 X.XX ±.1  MACHINED ANGLES ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH and TEST CENTER</b>		<b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN: Jim Clevenger CHECKED: _____ ENG: _____ APPROVED: _____		DATE: 3/3/2010    	
MATERIAL: Aluminum-6061 HEAT TREAT: _____ FINISH: _____			<b>LOWER LEG ZERO BRACKET</b> THOR-M	
SCALE: 1:1 THIRD ANGLE PROJECTION		SIZE: A2 DRAWING NUMBER: DL472-3500 SHEET: 1 OF 1		REV: A



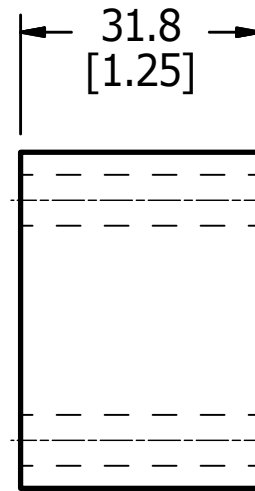
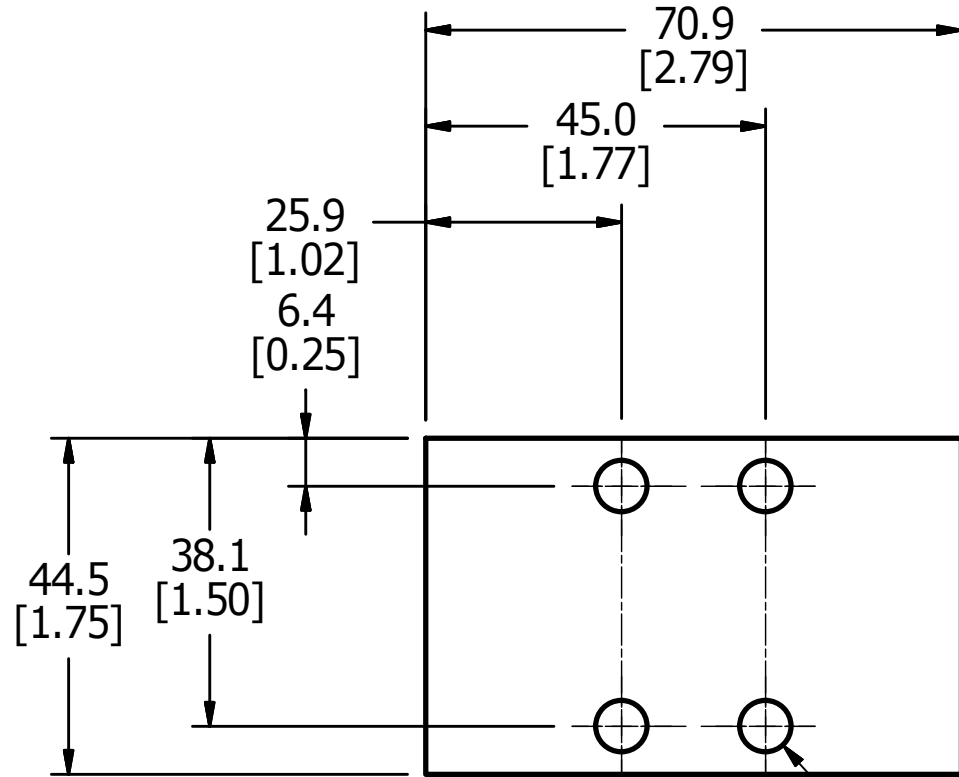
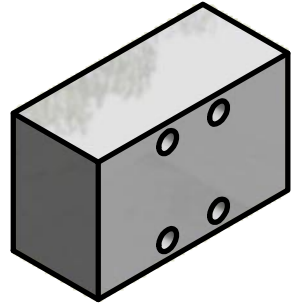
REVISION HISTORY				
ECO	REV	DESCRIPTION	DATE	BY
	A	ADDED ENSOLITE FOAM	9/22/2003	DW
	B	ADDED PARTS NUMBERS AND DETAIL DRAWINGS; ADDED "OR EQUIVALENT" TO NOTE #1	9/11/2015	DW




NOTES:  
 1. ATTACH FOAM ITEM #3 WITH 3M DP-110 EPOXY ADHESIVE OR EQUIVALENT.

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
3	2	TLX-9000-027	INVERSION/EVERSION BRACKET, FOAM IMPACT PAD	ENSOLITE AHC
2	1	TLX-9000-026	INVERSION/EVERSION BRACKET, IMPACT TUBE	Aluminum 6061
1	1	TLS-9000-025	INVERSION/EVERSION BRACKET, ATTACHMENT BAR	Aluminum 6061

PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: DECIMAL: X ±.5, XX ±.2, XXX ±.1 MACHINED ANGLES ±.5° ASME Y14.5M - 1994 DO NOT SCALE DRAWING		<b>VEHICLE RESEARCH and TEST CENTER</b>		
APPROVALS		DATE		<b>TEST FIXTURE - DYNAMIC INVERSION/EVERSION BRACKET THOR-M</b>
DRAWN Dave Walker		3/20/2001		
CHECKED				
HEAT TREAT ENG				
FINISH APPROVED				SIZE: A2 SCALE: 1:1 SHEET: 1 OF 1



4X  $\phi$ 6.8 THRU [ $\phi$ 0.27 THRU]

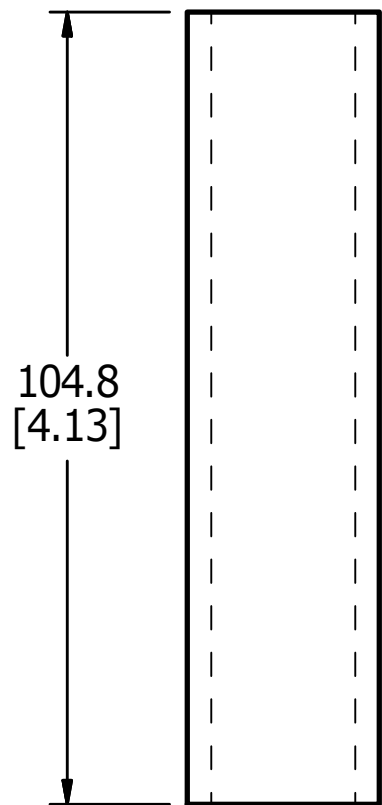
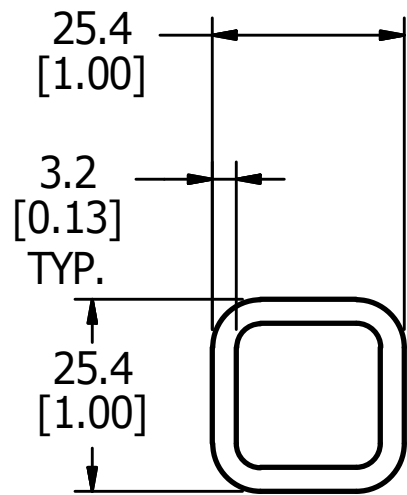
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X $\pm$ .5    1/6 X.X $\pm$ .2    ANGLE X.XX $\pm$ .1 $\pm$ .5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 9/11/2015	<b>INVERSION/EVERSION BRACKET,          ATTACHMENT BAR          THOR-M</b>	
MATERIAL Aluminum 6061 HEAT TREAT ENG FINISH APPROVED	THIRD ANGLE PROJECTION	SIZE <b>A3</b>		
		SCALE: <b>1:1</b>	SHEET <b>1 OF 1</b>	

4


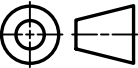
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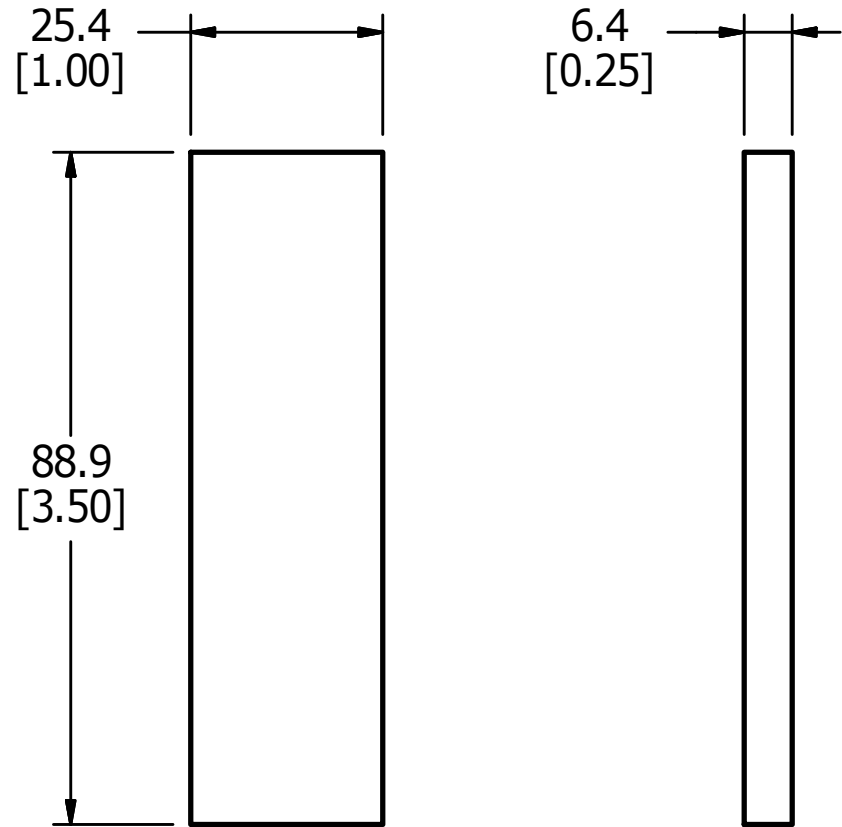
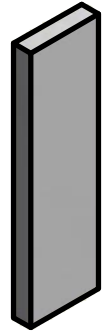
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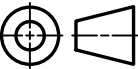
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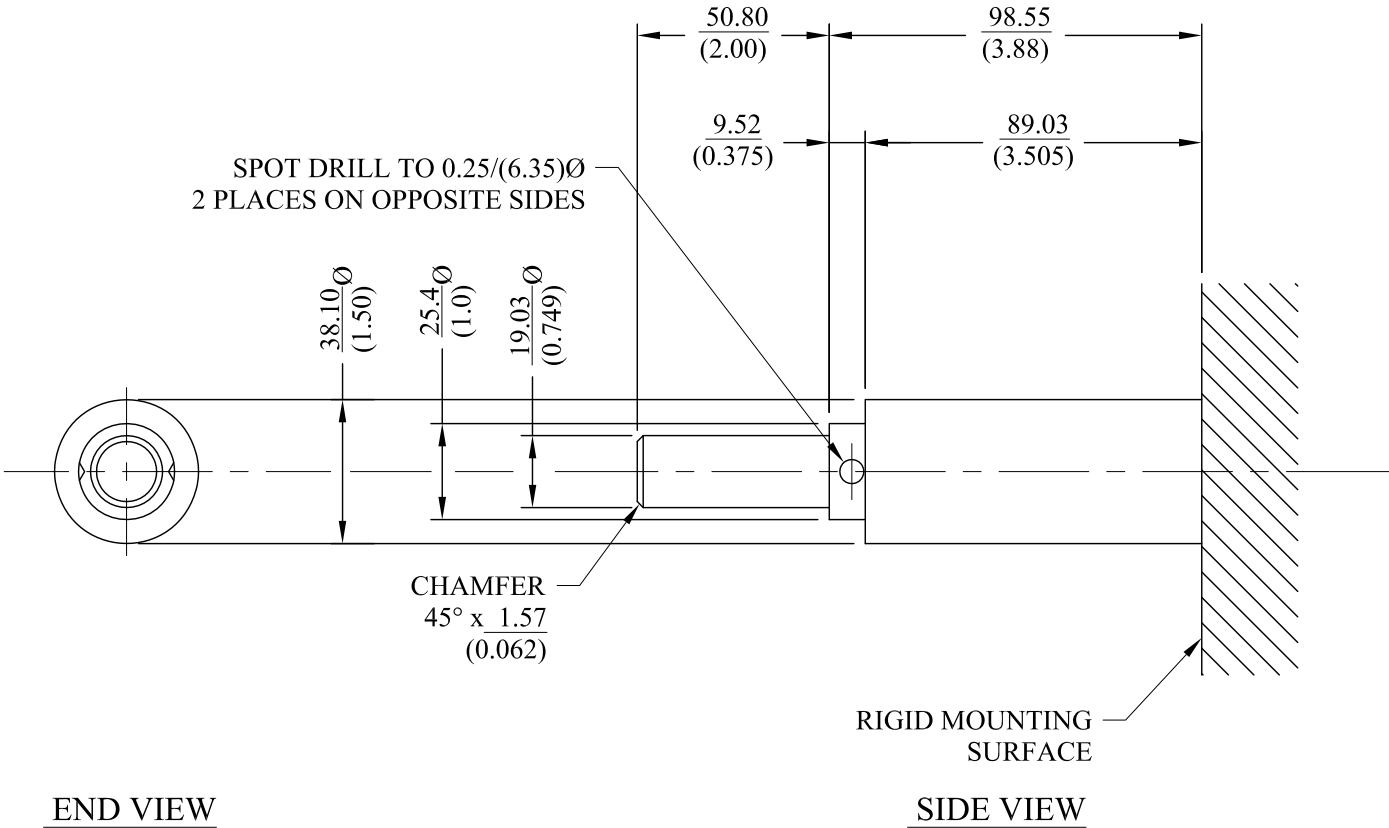
MATERIAL: T.S. 1" x 1" x 1/8" x 4.125"[104.8mm]


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>		
	APPROVALS DRAWN Dave Walker CHECKED	DATE 9/11/2015		<b>INVERSION/EVERSION BRACKET,          IMPACT TUBE          THOR-M</b>	
MATERIAL Aluminum 6061 HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION	SIZE <b>A3</b>		DRAWING NUMBER <b>TLX-9000-026</b>
		SCALE: <b>1:1</b>	SHEET <b>1 OF 1</b>		

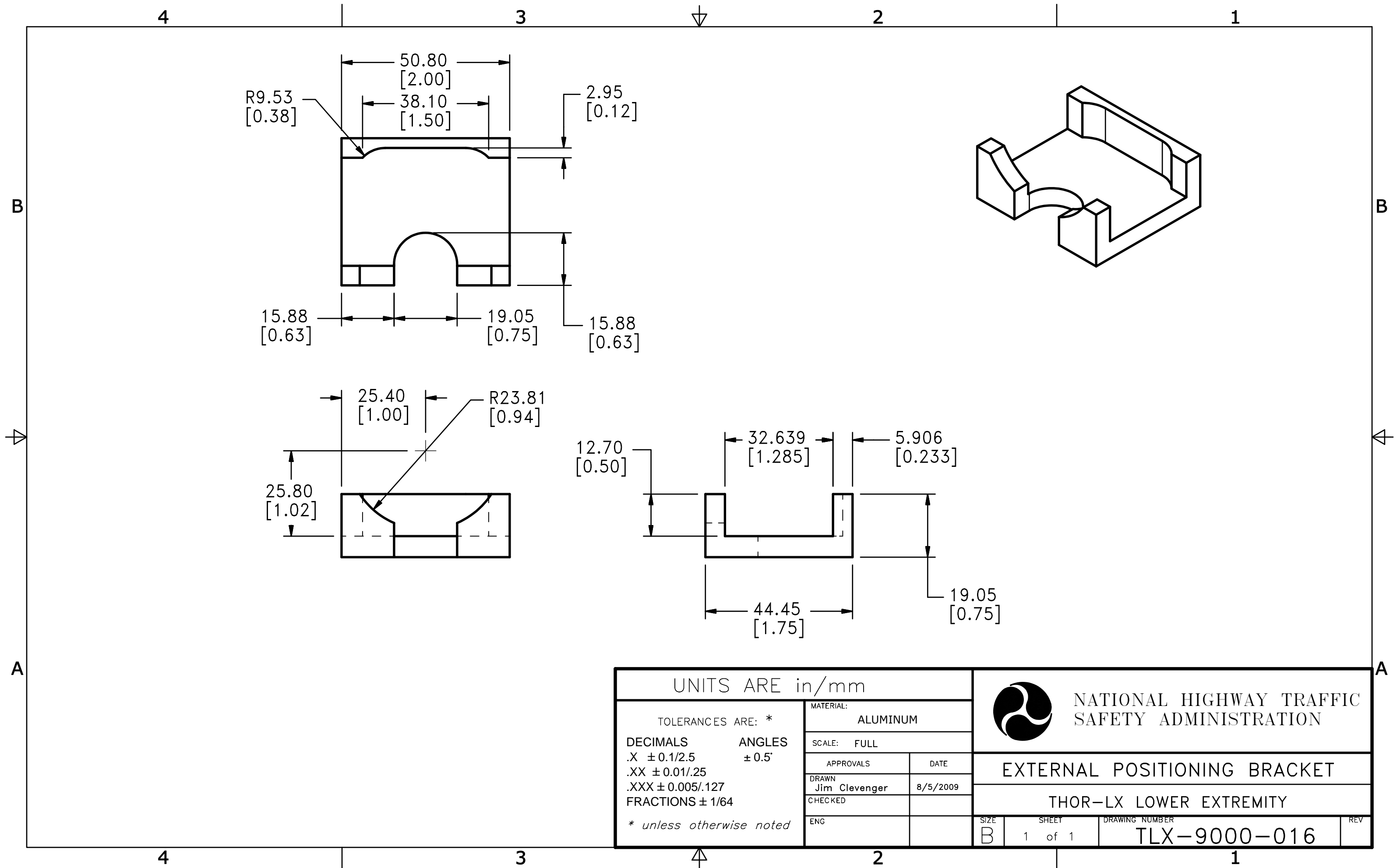



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      1.6 X.XX ±.1     1.6  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 9/11/2015	<b>INVERSION/EVERSION BRACKET,          FOAM IMPACT PAD          THOR-M</b>	
MATERIAL ENSOLITE FOAM AHC HEAT TREAT FINISH	ENG APPROVED	 THIRD ANGLE PROJECTION		
		SCALE: <b>1:1</b>	SHEET <b>1 OF 1</b>	REV

REVISION RECORD			
ITEM NO.	BY	DATE	DESCRIPTION



UNITS ARE mm/in		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
TOLERANCES ARE: * DECIMALS ±2.5/0.1    ANGLES + 0.5° .XX ±0.25/0.01 .XXX ±0.127/0.005 * unless otherwise noted		MATERIAL: C.R. STEEL SCALE: 1=2 APPROVALS:    DATE: DRAWN: D. WALKER    3/20/00 CHECKED: ENG:	
		TEST FIXTURE - LEG MOUNT	
		THOR - LX LOWER EXTREMITY	
SIZE A		DRAWING NUMBER TLX-9000-004	REV -



UNITS ARE in/mm		 NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION					
TOLERANCES ARE: * DECIMALS            ANGLES .X ± 0.1/2.5           ± 0.5° .XX ± 0.01/1.25 .XXX ± 0.005/1.27 FRACTIONS ± 1/64 * unless otherwise noted				MATERIAL: ALUMINUM SCALE: FULL			
		APPROVALS	DATE	EXTERNAL POSITIONING BRACKET			
		DRAWN Jim Clevenger	8/5/2009				
		CHECKED		THOR-LX LOWER EXTREMITY			
		ENG		SIZE B	SHEET 1 of 1	DRAWING NUMBER TLX-9000-016	REV



4

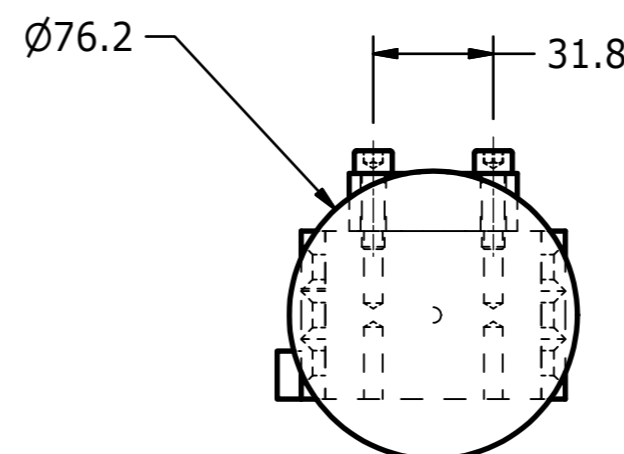
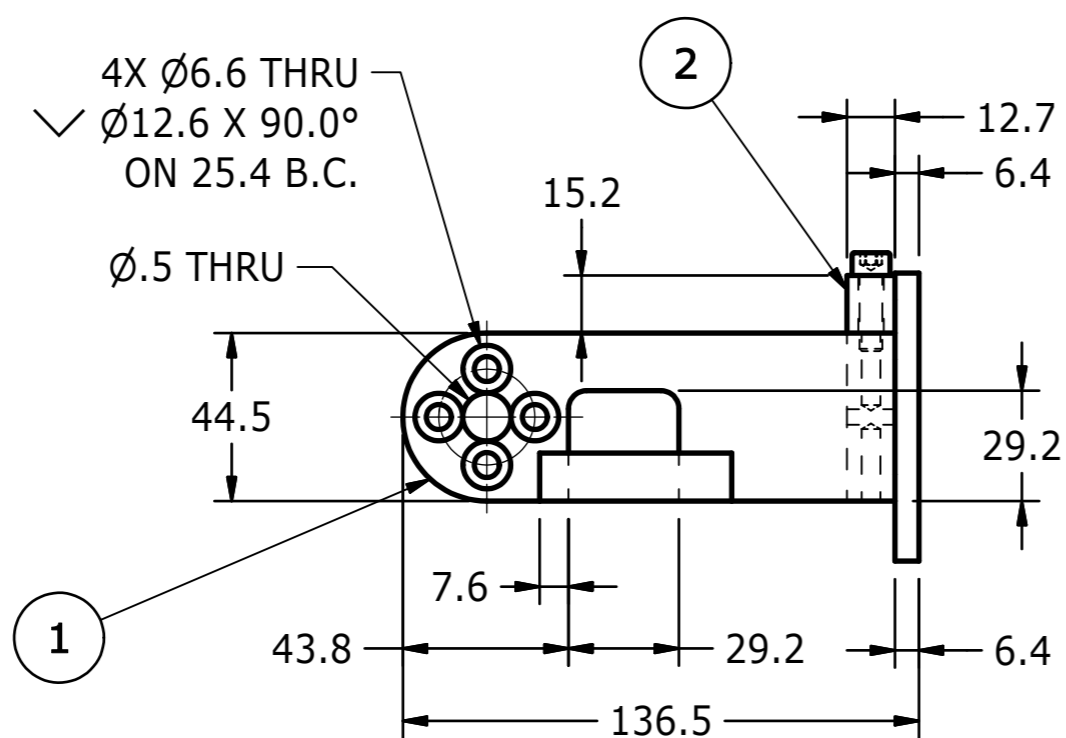
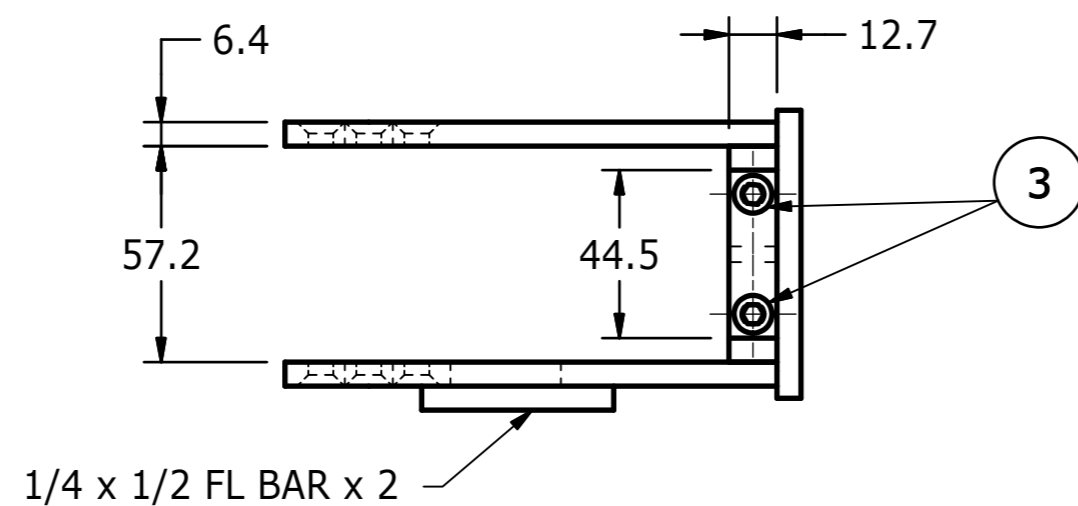
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3	2	5000001	SCREW, SHCS M6-1.0 x 20mm
2	1	DL472-5020	KNEE SLIDER TEST DISTRIBUTION BRACKET - BALLAST WEIGHT
1	1	DL472-5010	KNEE SLIDER TEST DISTRIBUTION BRACKET - WELDMENT
ITEM	QTY	PART NUMBER	DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL: X ±.5 XX ±.2 X.XX ±.1  ASME Y14.5M - 1994 DO NOT SCALE DRAWING		MACHINED ↓ ANGLES ±.5°		VEHICLE RESEARCH and TEST CENTER		NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	
APPROVALS		DATE		KNEE SLIDER TEST DISTRIBUTION BRACKET - ASS'Y. THOR-M			
DRAWN JIM CLEVENGER		8/27/2015					
MATERIAL		CHECKED		SIZE		DRAWING NUMBER	
HEAT TREAT		ENG		A2		DL472-5000	
FINISH		APPROVED		SCALE: 0.5:1		SHEET 1 OF 1	

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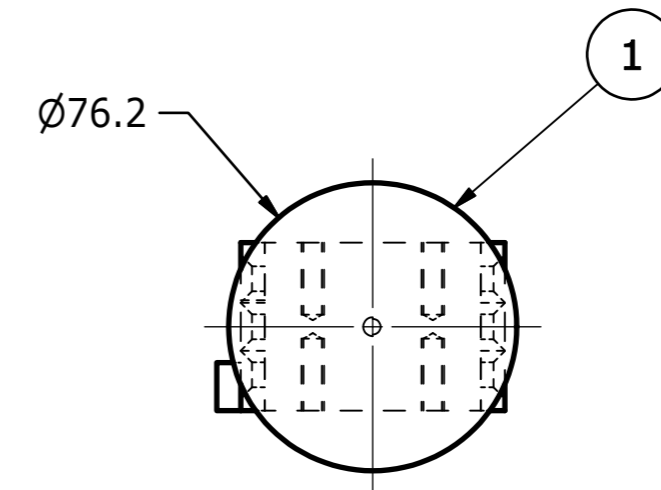
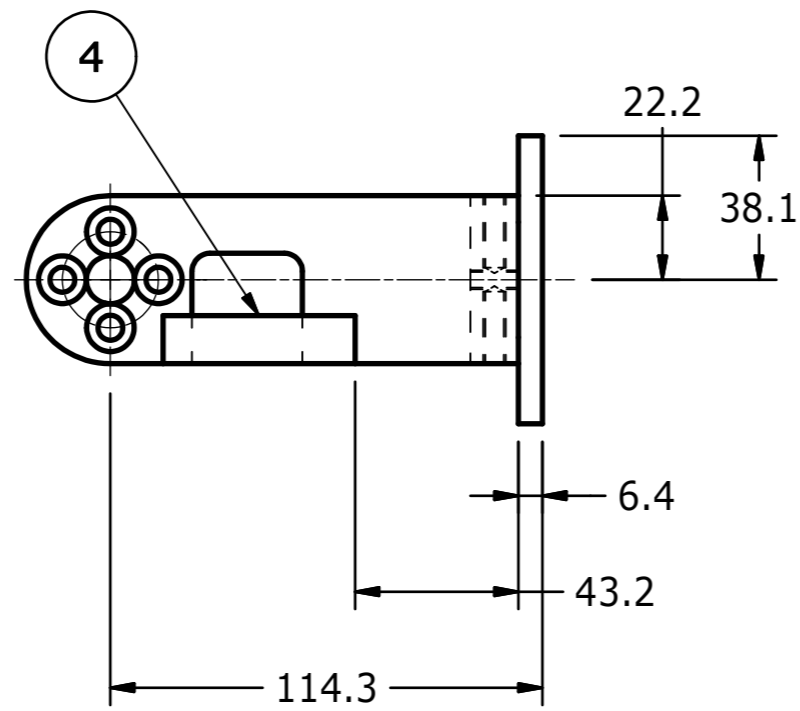
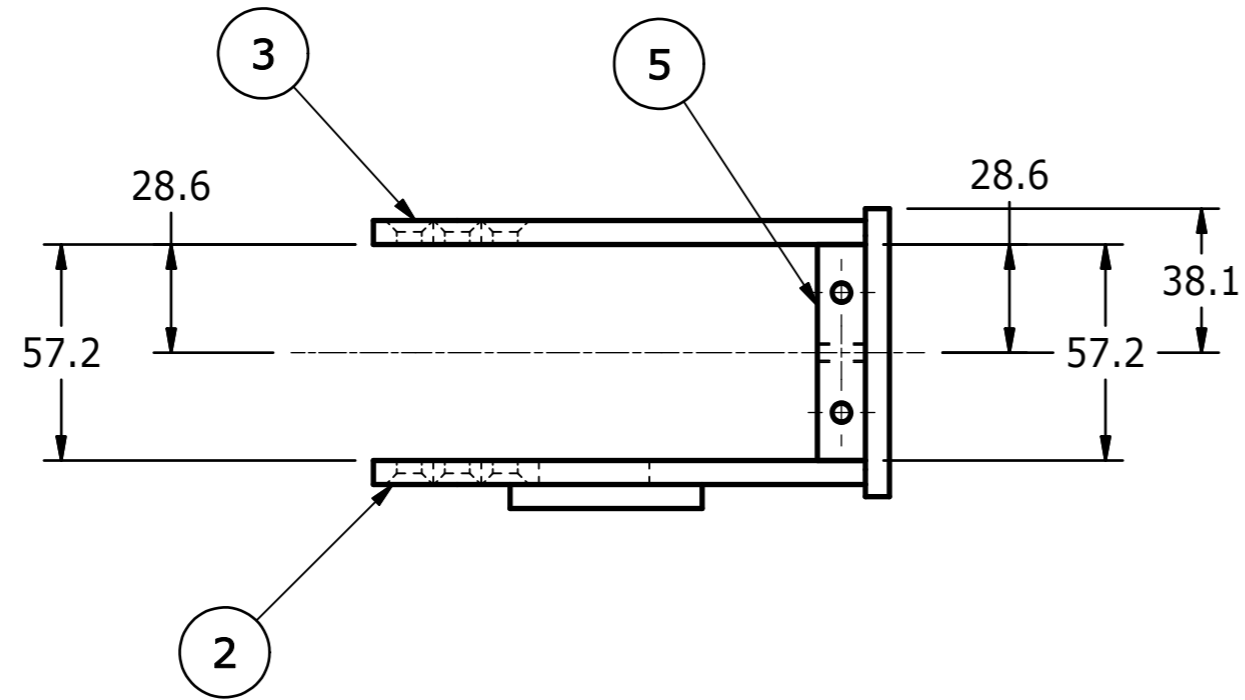
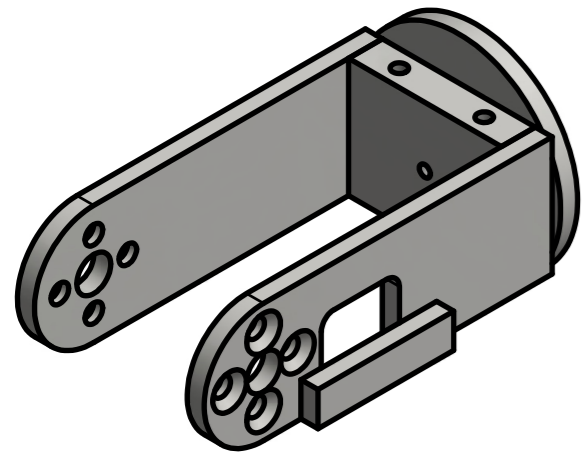
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ITEM	QTY	PART NUMBER	DESCRIPTION
5	1	DL472-5015	KNEE SLIDER TEST DISTRIBUTION BRACKET - BACK PLATE
4	1	DL472-5014	KNEE SLIDER TEST DISTRIBUTION BRACKET - TIE BAR
3	1	DL472-5013	KNEE SLIDER TEST DISTRIBUTION BRACKET, SIDE PLATE - LEFT
2	1	DL472-5012	KNEE SLIDER TEST DISTRIBUTION BRACKET, SIDE PLATE - RIGHT
1	1	DL472-5011	KNEE SLIDER TEST DISTRIBUTION BRACKET - IMPACT PLATE

**PARTS LIST**

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</small> DECIMAL: X ±.5 XX ±.2 X.XX ±.1 <small>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</small>		<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
<small>MACHINED</small> ANGLES ±.5°		APPROVALS DRAWN Dave Walker	DATE 10/2/2015	<b>KNEE SLIDER TEST DISTRIBUTION BRACKET - WELDMENT THOR-M</b>	
MATERIAL	CHECKED			 THIRD ANGLE PROJECTION	SIZE <b>A2</b>
HEAT TREAT	ENG				DRAWING NUMBER <b>DL472-5010</b>
FINISH	APPROVED				SCALE: SHEET 1 OF 1

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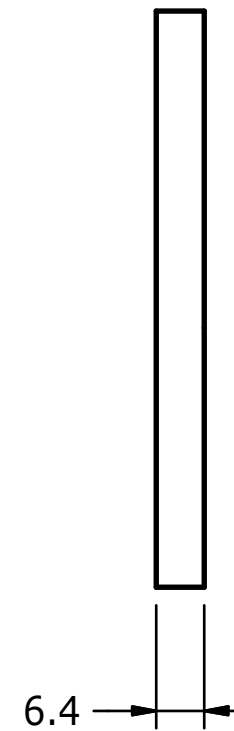
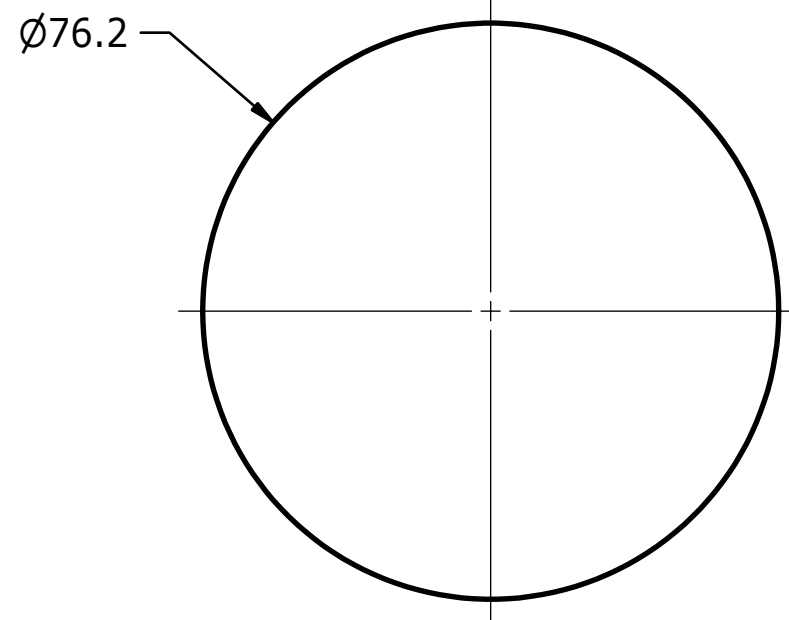
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.5 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> <b>DO NOT SCALE DRAWING</b>	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>				<b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	MATERIAL 1018 STEEL  HEAT TREAT  FINISH	APPROVALS DRAWN Dave Walker CHECKED  ENG  APPROVED	DATE 10/2/2015	<b>KNEE SLIDER TEST DISTRIBUTION          BRACKET - IMPACT PLATE          THOR-M</b>		
				SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-5011</b>	REV
			THIRD ANGLE PROJECTION	SCALE:	SHEET <b>1 OF 1</b>	

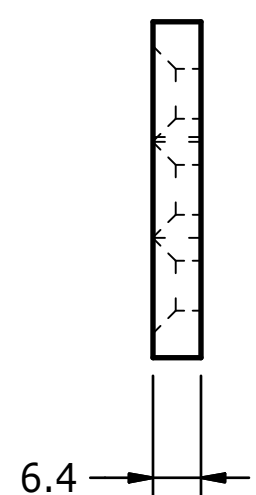
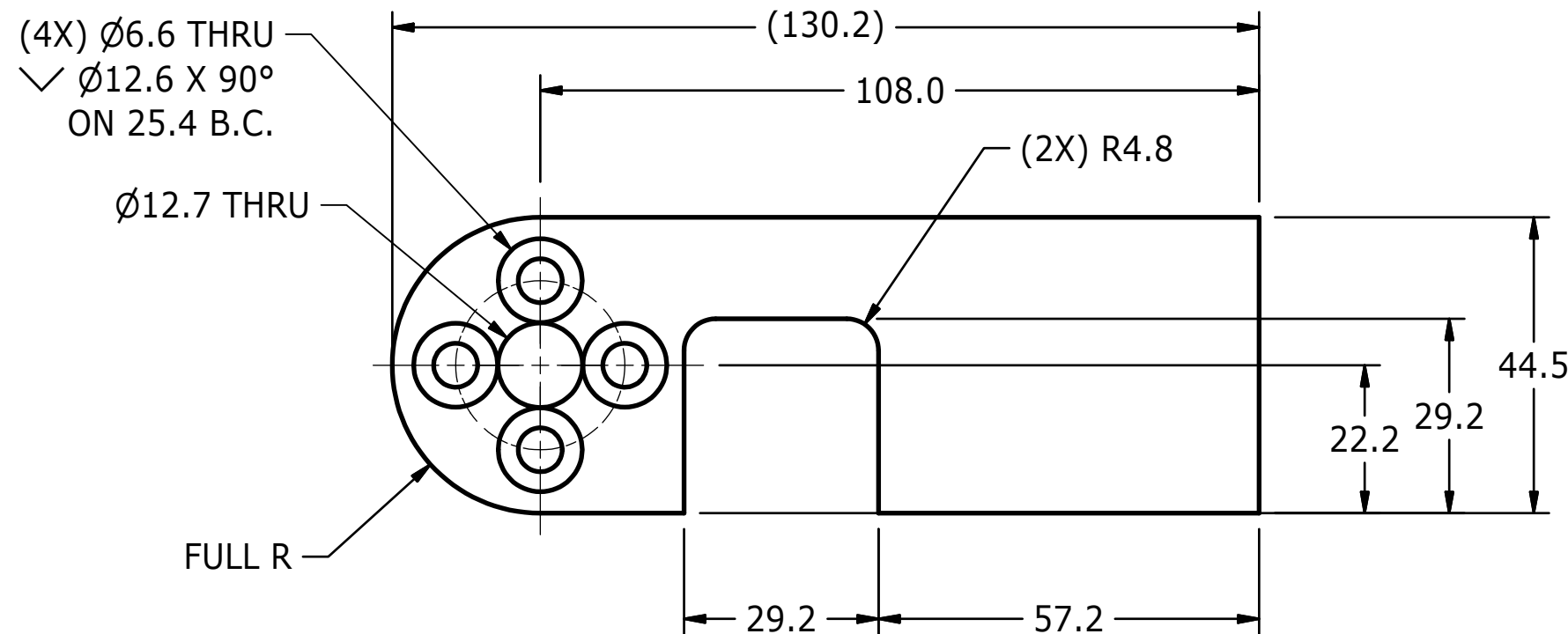
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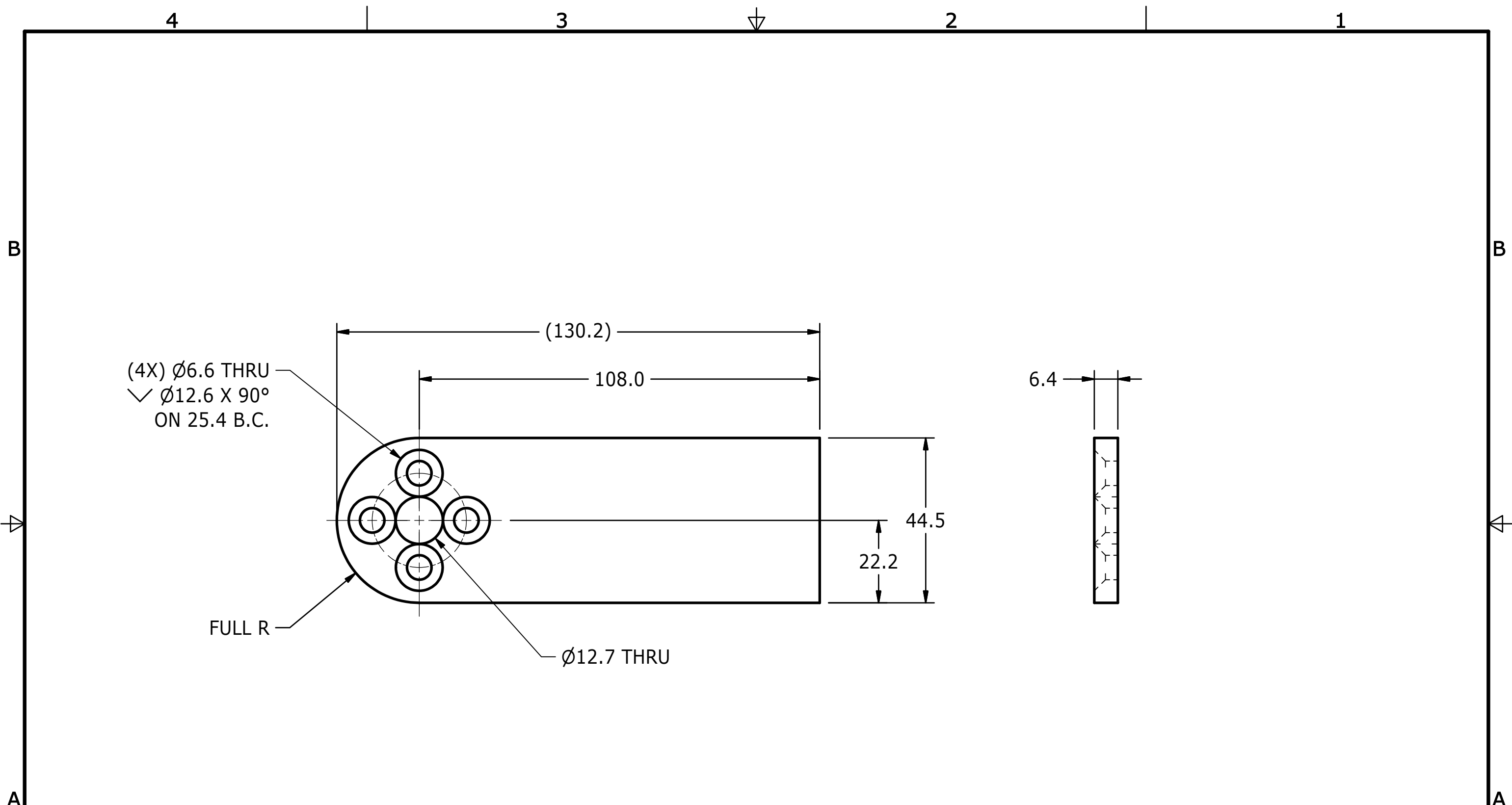



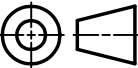
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1.6 X.X ±.2      1.5 X.XX ±.1     1.5  ASME Y14.5M - 1994 DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS DRAWN Dave Walker CHECKED	DATE 10/2/2015	<b>KNEE SLIDER TEST DISTRIBUTION          BRACKET, SIDE PLATE - RIGHT          THOR-M</b>	
MATERIAL 1018 STEEL HEAT TREAT FINISH	ENG APPROVED	SIZE <b>A3</b>		
		THIRD ANGLE PROJECTION	SCALE:	SHEET <b>1 OF 1</b>

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:      MACHINED X ±.5            1.6 X.X ±.2        ANGLE X.XX ±.1       ±.5°  <small>ASME Y14.5M - 1994</small> <b>DO NOT SCALE DRAWING</b>	<b>VEHICLE RESEARCH and TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>KNEE SLIDER TEST DISTRIBUTION BRACKET, SIDE PLATE - LEFT THOR-M</b>	
	DRAWN Dave Walker	10/2/2015		
	MATERIAL 1018 STEEL	CHECKED	 THIRD ANGLE PROJECTION	
HEAT TREAT	ENG			
FINISH	APPROVED	SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-5013</b>	REV
		SCALE:	SHEET 1 OF 1	

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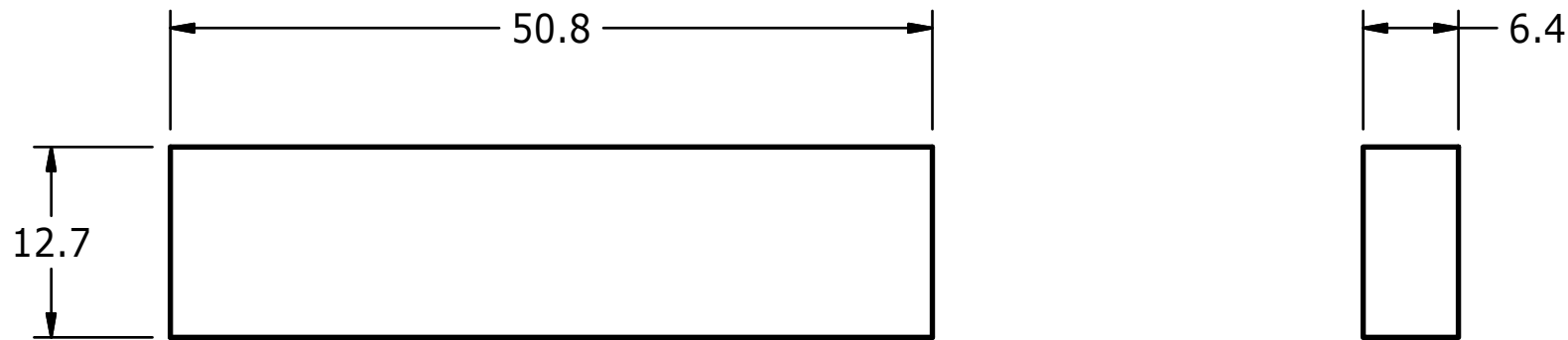
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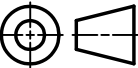
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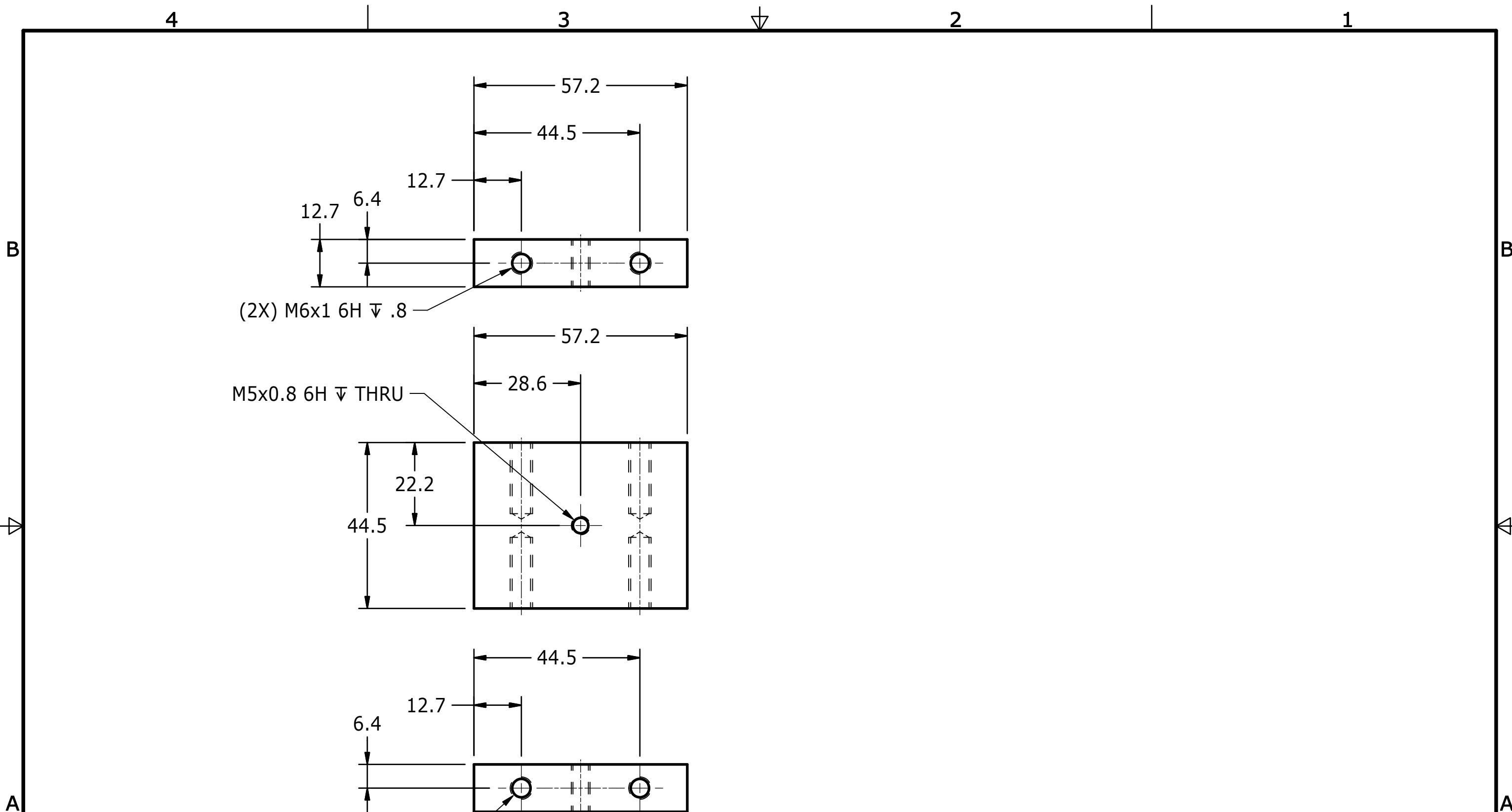
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	MATERIAL 1018 STEEL  HEAT TREAT  FINISH	APPROVALS DRAWN Dave Walker CHECKED  ENG  APPROVED	DATE 10/5/2015	<b>KNEE SLIDER TEST DISTRIBUTION          BRACKET - TIE BAR          THOR-M</b>
			 THIRD ANGLE PROJECTION	SIZE <b>A3</b> SCALE: 2:1
			DRAWING NUMBER <b>DL472-5014</b>	REV  SHEET 1 OF 1


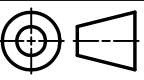
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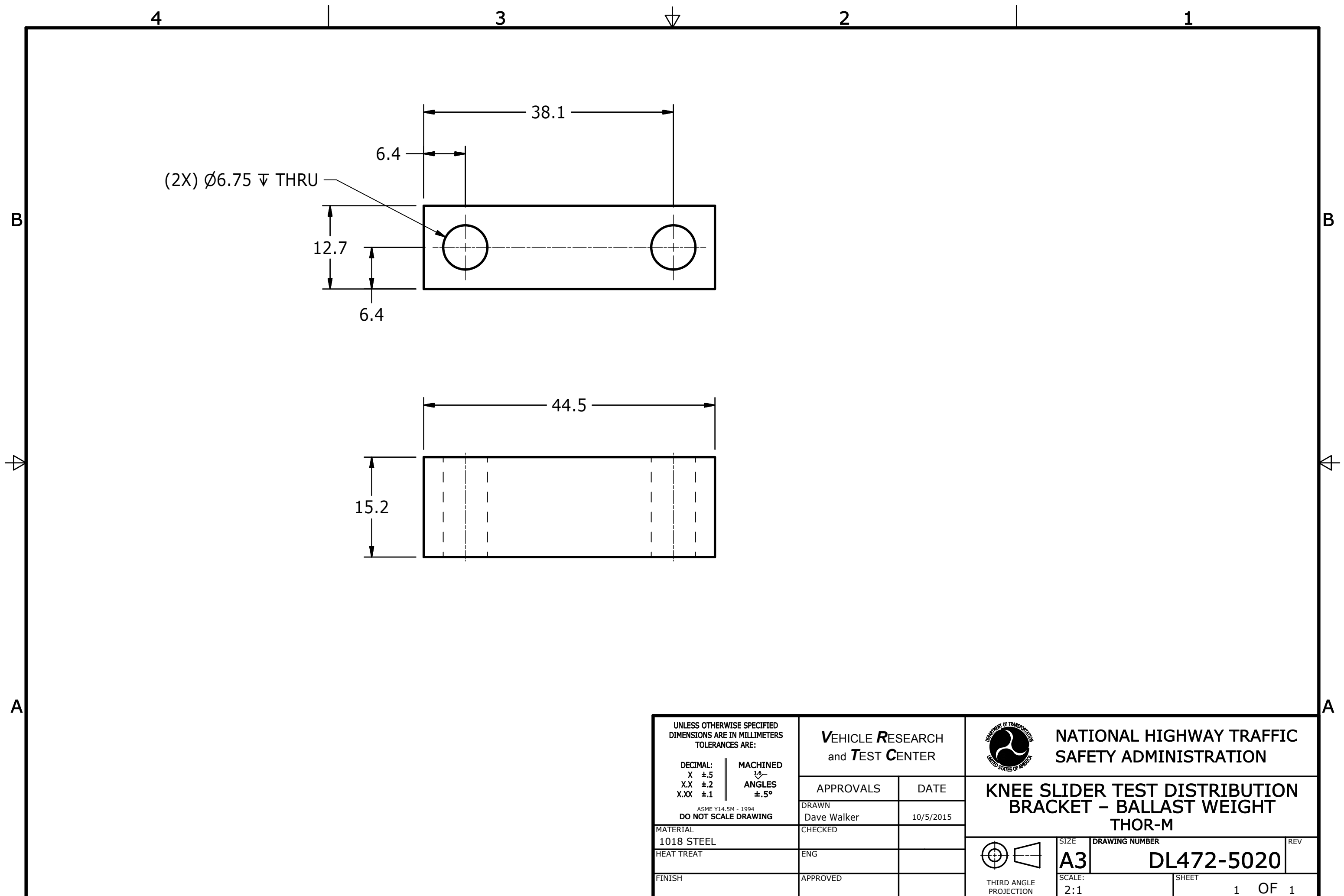
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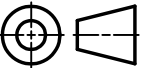
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:  DECIMAL:    MACHINED X ±.5        1/6 X.X ±.2      ANGLE X.XX ±.1     ±.5°  <small>ASME Y14.5M - 1994</small> DO NOT SCALE DRAWING	<b>VEHICLE RESEARCH</b> and <b>TEST CENTER</b>		 <b>NATIONAL HIGHWAY TRAFFIC          SAFETY ADMINISTRATION</b>	
	APPROVALS	DATE	<b>KNEE SLIDER TEST DISTRIBUTION          BRACKET - BACK PLATE          THOR-M</b>	
	DRAWN Dave Walker	10/5/2015		
	MATERIAL 1018 STEEL	CHECKED	SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-5015</b>
HEAT TREAT	ENG	 THIRD ANGLE PROJECTION		SHEET 1 OF 1
FINISH	APPROVED			



<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE:</p> <p>DECIMAL:     MACHINED X ±.5             1.6 X.X ±.2           ANGLE X.XX ±.1         ±.5°</p> <p>ASME Y14.5M - 1994 DO NOT SCALE DRAWING</p>	<p><b>VEHICLE RESEARCH and TEST CENTER</b></p>		 <p><b>NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION</b></p>		
	APPROVALS	DATE	<p><b>KNEE SLIDER TEST DISTRIBUTION BRACKET - BALLAST WEIGHT THOR-M</b></p>		
	DRAWN Dave Walker	10/5/2015			
	CHECKED		 <p>THIRD ANGLE PROJECTION</p>	SIZE <b>A3</b>	DRAWING NUMBER <b>DL472-5020</b>
HEAT TREAT	ENG	SCALE: 2:1		SHEET 1	OF 1
FINISH	APPROVED				