

SS:1034619 TBB 05G and 05K AC belt alignment improvement

This Service Solution does not imply any special warranty coverage. Standard warranty guidelines and coverage apply. This Service Solution is provided to assist Dealers/Customers in resolving the issue of AC Belt not properly aligned or excessive belt wear

Applicable Vehicles

HDX

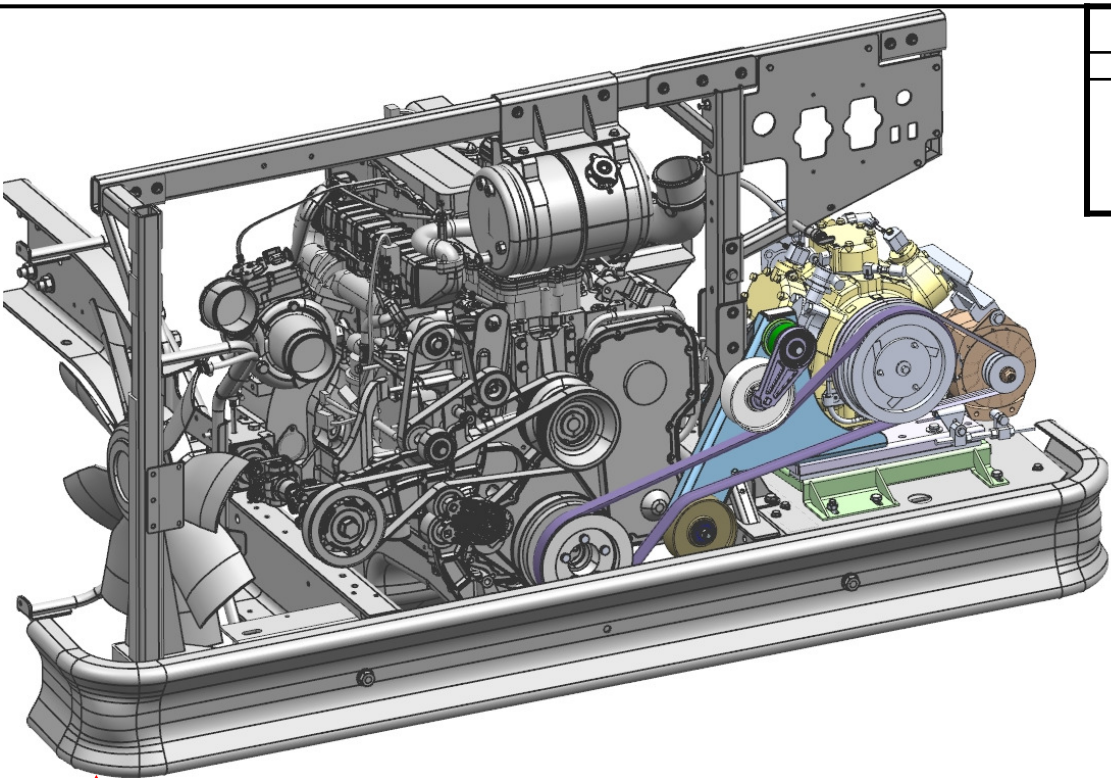
Issue

Excessive Belt wear or alignment

Solution:

New Parts and updated Diagram to show proper alignment procedure. Need to verify which Engine application for the components to order. New revised AC belt alignment started in Production Late 9/2018

SRT Code 174-6222A @ 3.5 hours



RELEASE NUMBER	REV LTR	REVISION DESCRIPTION	BY	DATE	APPD
P53750-01	A	INITIAL RELEASE	LLF	11/11/16	MAB
P55826-01	B	ADDED ITEM 22 , 23 AND 24	LLF	06/13/17	MAB
		UPDATED NOTE ON PAGE 6			
		ADDED NOTE ON PAGE 8			
		ADDED PAGE 9			
		ADDED STEP 4.6 ON PAGE 16			



TORQUE TO TARGET 38 FT-LBS, RANGE: 33-42 FT-LBS .



LOCATING HOLE.



TIGHTEN HARDWARE IN STAR PATTERN.



TORQUE TO TARGET: 41 FT-LBS, RANGE: 36-46 FT-LBS.



TORQUE TO TARGET: 62 FT-LBS, RANGE: 55-70 FT-LBS.



TORQUE TO TARGET: 68 FT-LBS, RANGE: 60-76 FT-LBS



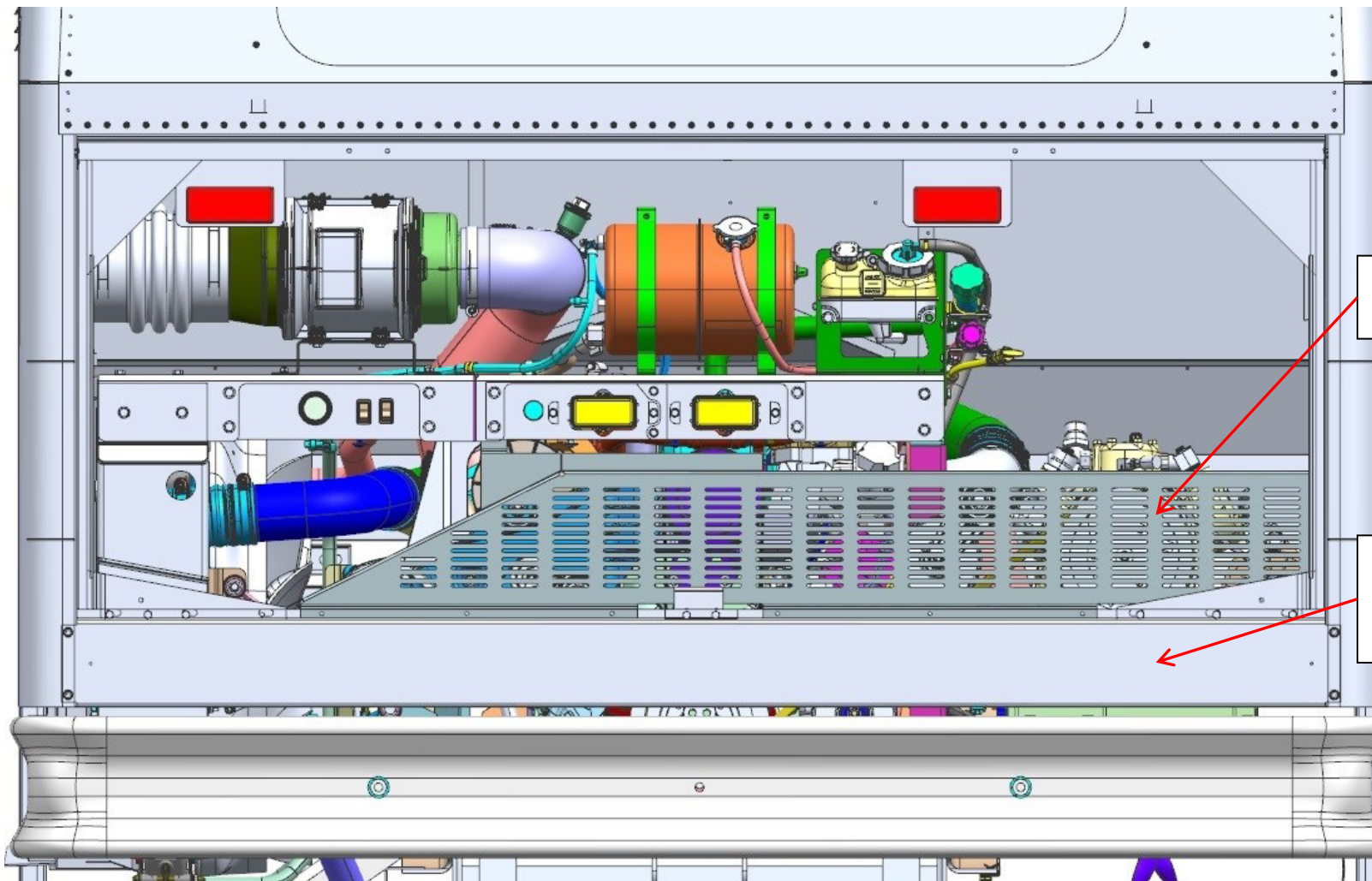
APPLY LOCTITE 61480081 ON CRANK PULLEY FASTENERS

ITEM NUMBER TBBN211081	DESCRIPTION INSTL-SERVICE KIT,05G/K,HDX	DAIMLER		Daimler Trucks North America			
		THE INFORMATION CONTAINED HEREIN IS PROPRIETARY DATA, AND IS NOT FOR DISSEMINATION OR DISCLOSURE, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SUBMITTED, EXCEPT AS AUTHORIZED IN WRITING BY DAIMLER TRUCKS NORTH AMERICA LLC (DTNA)					
		MATERIAL APPROVAL	DATE	UNLESS OTHERWISE NOTED, DIMENSIONS AND TOLERANCES ARE DEFINED ACCORDING TO ASME Y14.5M- 1994, WITH EXCEPTION PER DTNA 09ENG-WI037			UNITS OF MEASURE MM
		N/A	N/A				
		DRAWN BY	DATE				
		L.L.I	11/11/16				
		CHECKED BY	DATE				
		J.NEBLETT	11/11/16				
		RESPONSIBLE ENGINEER	DATE				
		L.L.I	11/11/16	THIRD ANGLE PROJECTION			
APPROVED BY	DATE						
M.BOBAK	11/11/16						
DESCRIPTION							
INSTL-SERVICE KIT,05G/K,HDX							
SUPPLEMENTAL DESCRIPTION							
130D1							
ITEM/DRAWING NUMBER			REVISION LETTER		PAGE		
TBBN211081			B		1 of 16		

MODULE 130 SERVICE KIT				QUANTITY		
ITEM	TBB PART #	FTL PART #	DESCRIPTION	ISB	ISL	ISL-G
1	212956	TBBN212956	PULLEY-IDLER,6IN,FLAT STEEL	1	1	1
2	212957	TBBN212957	TNSR-PULLEY,05G/05K CMPRSR,6IN	1	1	1
3	213527	TBBN213527	SPACER-IDLER MTG,AC,HDX	1	1	1
4	61370352	23-09114-003	WASHER-HRDN,0.53X1.06X.177,ZN	4	4	8
5	61370043	23-13833-108	NUT-HEX,PT,1/2-13,C,ZN/AL,.448	3	3	3
6	211161	TBBN211161	BELT-05G/K,ISB,HDX	1	0	0
	211162	TBBN211162	BELT-05G/K,ISL/G,HDX	0	1	1
7	61310443	681 328 13 84	SHIM-AXLE ALIGNMENT,FASTI	3	3	3
8	213287	TBBN213287	PAD-TENSIONER	1	1	1
9	213288	TBBN213288	SPINDLE-IDLER	1	1	1
10	213289	TBBN213289	SPACER-IDLER	2	2	2
11	212954	TBBN212954	PULLEY-CRANK,ISB,HDX	1	0	0
	213290	TBBN213290	PULLEY-CRANK,ISL	0	1	0
	213291	TBBN213291	PULLEY-CRANK,ISL-G	0	0	1
12	213292	TBBN213292	PIN-TENSIONER MTG PAD	1	1	1
13	61370899	210101 012017	BOLT-FLG HD,M12X110,10.9,P&O	1	1	1
14	61370211	23-13112-012	NUT-HEX,LKG,M12-1.75,PC10,ZNAL	1	1	1
15	61370648	23-11751-200	SCREW-CAP,HEX,GR8,1/2-13X2.00	1	1	1
16	27120390	23-09114-015	WASHER-HRDN,05X1.15X1.04,ZN	2	2	2
17	61370351	23-09114-001	WASHER-HRDN,0.47X0.92X0.08,ZN	4	0	0
18	213466	23-09439-100	SCREW-CAP,HEX,7/16-20X1.0GR8	4	0	0
19	61370918	23-12609-060	SCREW-CAP,HEX,M12X60,10.9,ZINC	0	0	4
20	61370890	000931 010142	SCREW-CAP,HEX,M10X90,10.9 P/O	0	5	0
21	61370361	23-09114-002	WASHER-HRDN,0.41X0.81.0.080,ZN	0	5	0
22	215727	TBBN215727	ADAPTER-ISB,CRANKSHAFT	1	0	0
23	215728	TBBN215728	SCREW-CAPTIVE WASHER CAP	6	0	0
24	215919	TBBN215919	SPACER-TENSIONER	2	2	2

NOTE: REQUIRED QTY FOR ITEM 10 IS 1 PIECE. EXTRA PIECE MAY BE USED IN STEP 4.4 ON PAGE 16 IF NECESSARY.

1. PREPARING FOR SERVICE



1.1. IF EQUIPPED,
REMOVE BELT
GUARD.

1.2. REMOVE & RETAIN
REAR ENGINE DOOR
THRESHOLD FOR
CLEARANCE. RETAIN
ALL HARDWARE.

1. PREPARING FOR SERVICE

1.3. REMOVE AND DISCARD
BELT

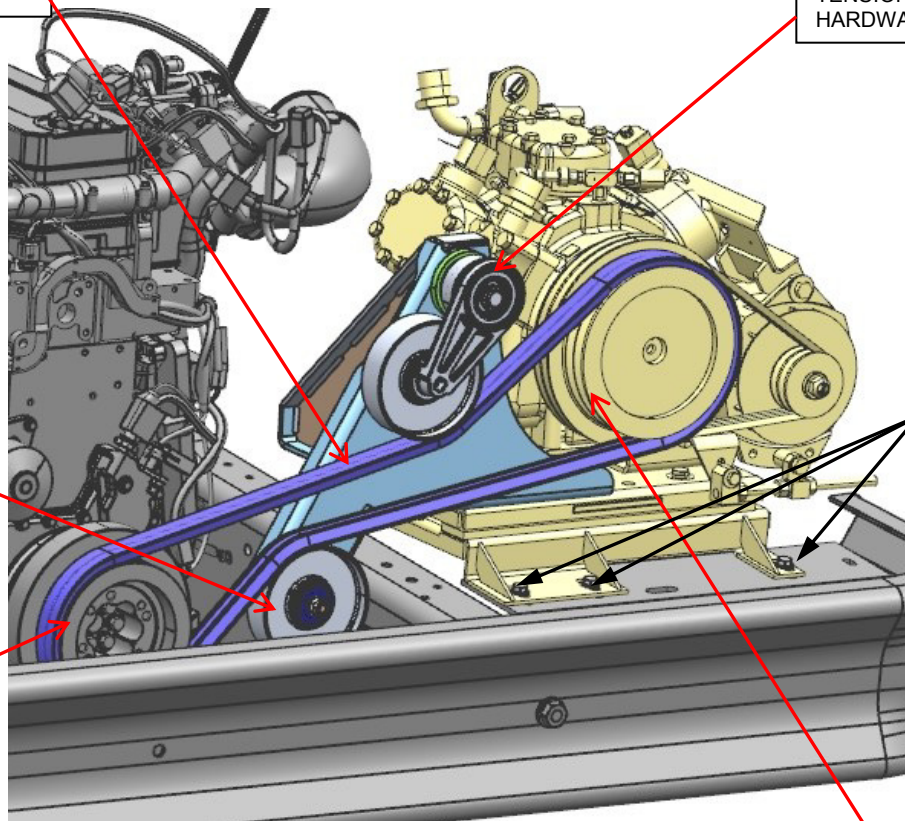
1.6 REMOVE AND DISCARD
TENSIONER AND MOUNTING
HARDWARE

1.4. REMOVE AND DISCARD
IDLER AND MOUNTING
HARDWARE.

AC MOUNTING BOLTS, 3 AT FRONT OF AC
MOUNTING BASE, 3 AT THE BACK.

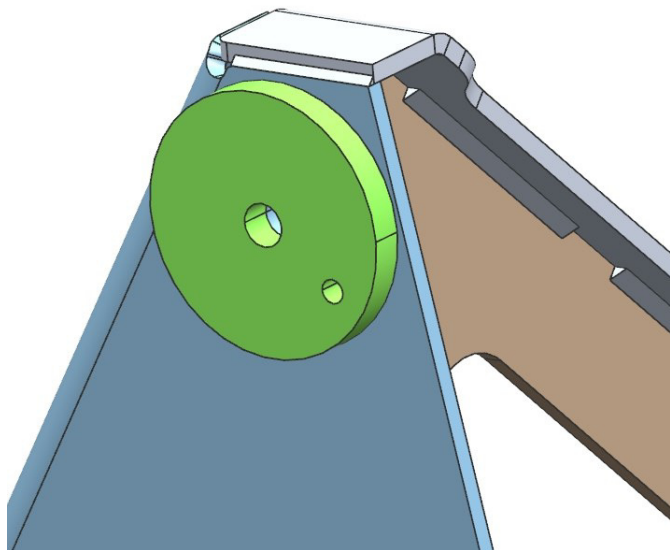
1.5 REMOVE AND DISCARD
CRANK PULLEY.

1.7 IF NECESSARY, USE WIRE BRUSH
TO CLEAN RUST ON AC PULLEY
GROOVES.

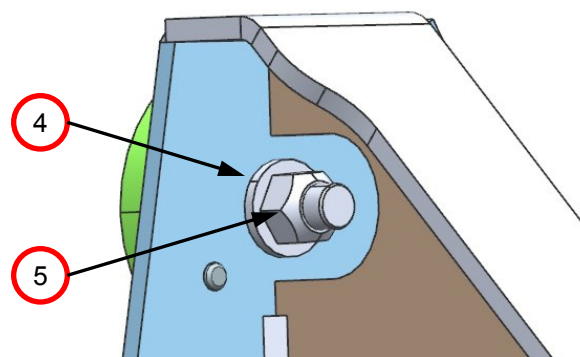
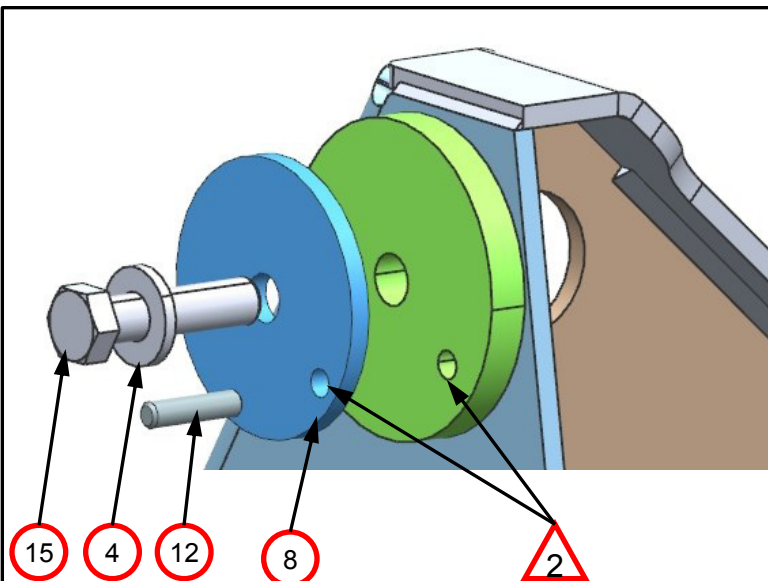


2. INSTALLATION

2.1 WELDING PREPARATION: REMOVE PAINT ON THE FRONT FACE OF GREEN PAD AS SHOWN BELOW.



2.2 INSTALL NEW PAD, USE PIN TO ALIGN LOCATING HOLE TO THE HOLE ON BRACKET. TORQUE HARDWARE TO TARGET 56 FT-LBS, RANGE: 49-63 FT-LBS.

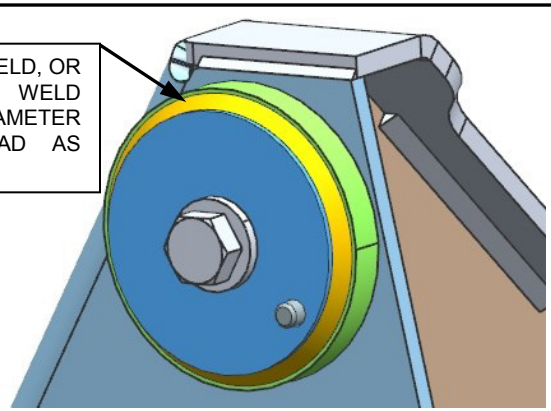


2. INSTALLATION

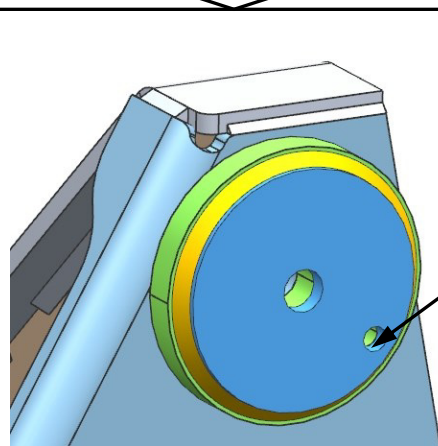
2.3 WELD ADDITIONAL PAD TO BRACKET AS SHOWN BELOW. LET WELDMENT COOL DOWN, REMOVE AND DISCARD ITEM 4, 5, 12 AND 15 USED ON PAGE 5.

CAUTION: BEFORE WELDING, DISCONNECT THE BATTERY POWER, GROUND CABLES AND ANY ELECTRIC CONTROL UNITS INSTALLED ON THE VEHICLE. MOUNTING PAD AND WELDMENT MUST BE PAINTED BLACK TO AVOID GALVANIC CORROSION AFTER WELDING.

4MM FILLET WELD, OR CONTINUOUS WELD AROUND DIAMETER OF BLUE PAD AS SHOWN.

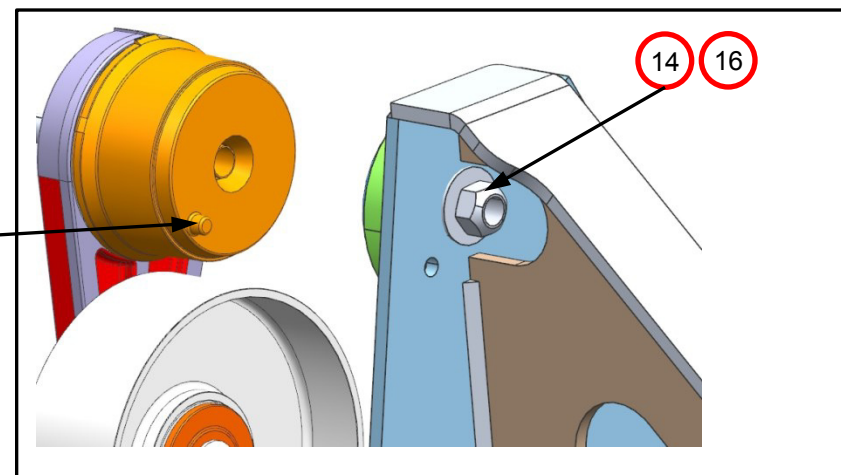
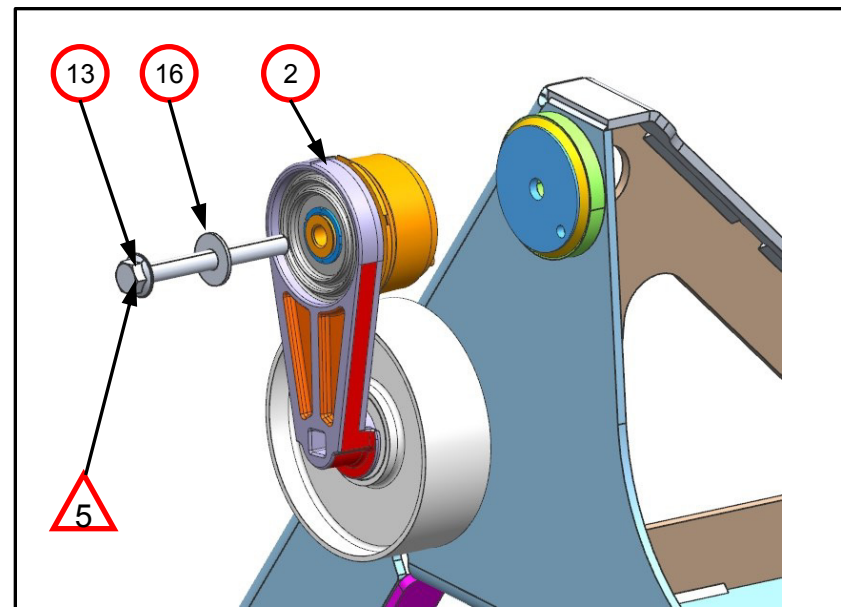


REMOVE
HARDWARE



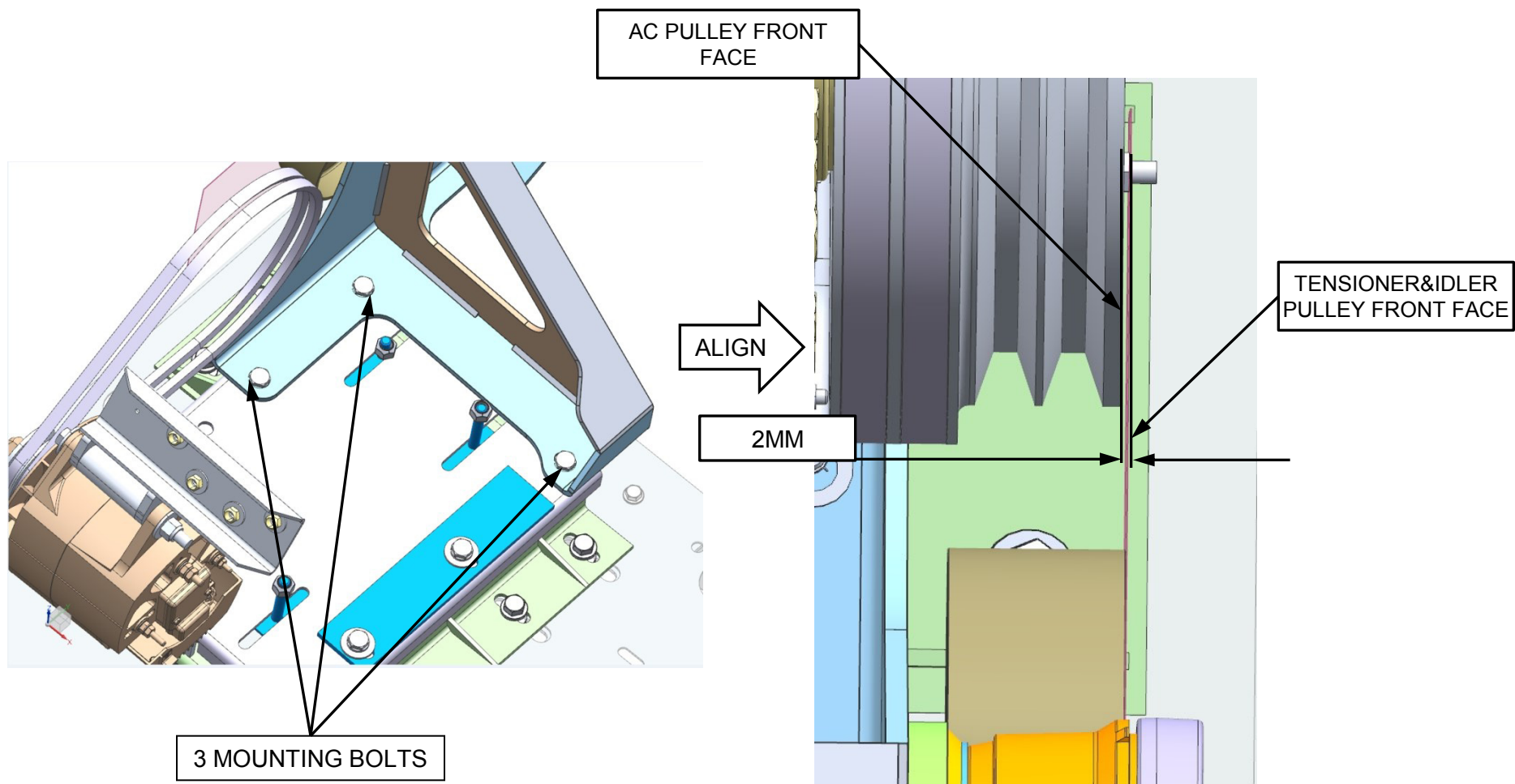
ALIGN

2.4 INSTALL TENSIONER ASSEMBLY TO MOUNTING BRACKET. ALIGN LOCATING PIN ON TENSIONER TO HOLE ON MOUNTING PAD.



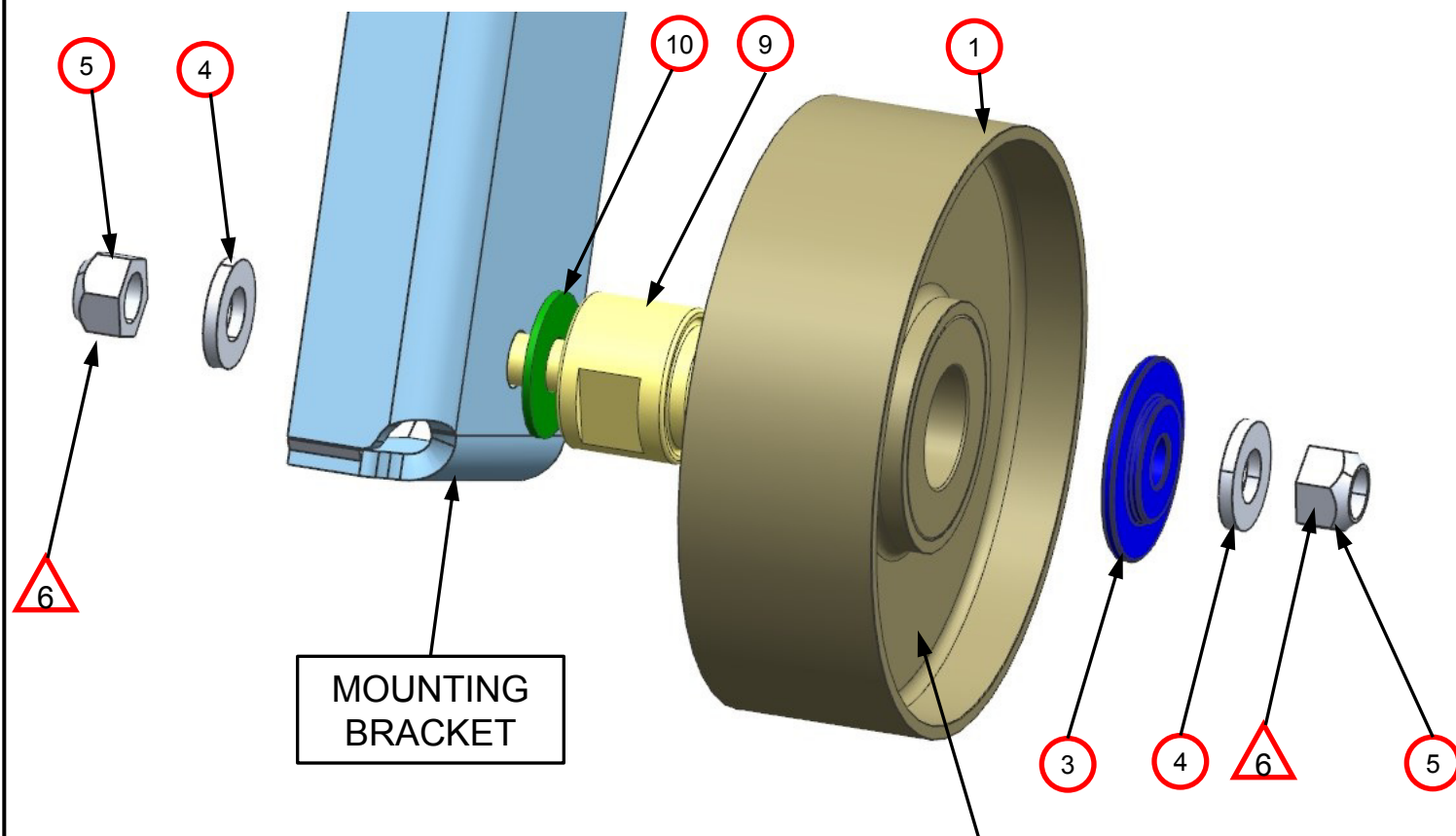
2. INSTALLATION

2.5 LOOSEN 3 MOUNTING BOLTS AND ALIGN TENSIONER PULLEY WITH AC PULLEY. DISTANCE FROM AC PULLEY FRONT FACE TO TENSIONER PULLEY FRONT FACE SHOULD BE $2\pm0.5\text{MM}$ TO PERFECTLY ALIGN CENTERLINE OF TENSIONER PULLEY TO CENTERLINE OF THE TWO GROOVES ON AC PULLEY. TIGHTEN 3 MOUNTING BOLTS TO TARGET 63 FT-LBS, RANGE: 56-71 FT-LBS AFTER PULLEYS ARE ALIGNED.



2. INSTALLATION

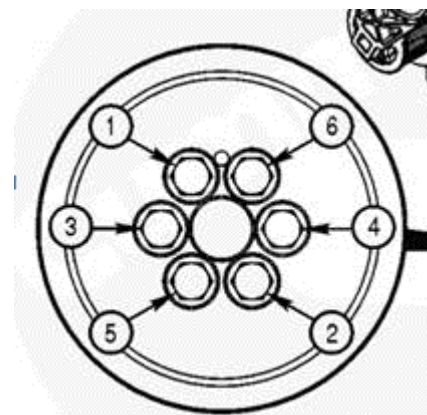
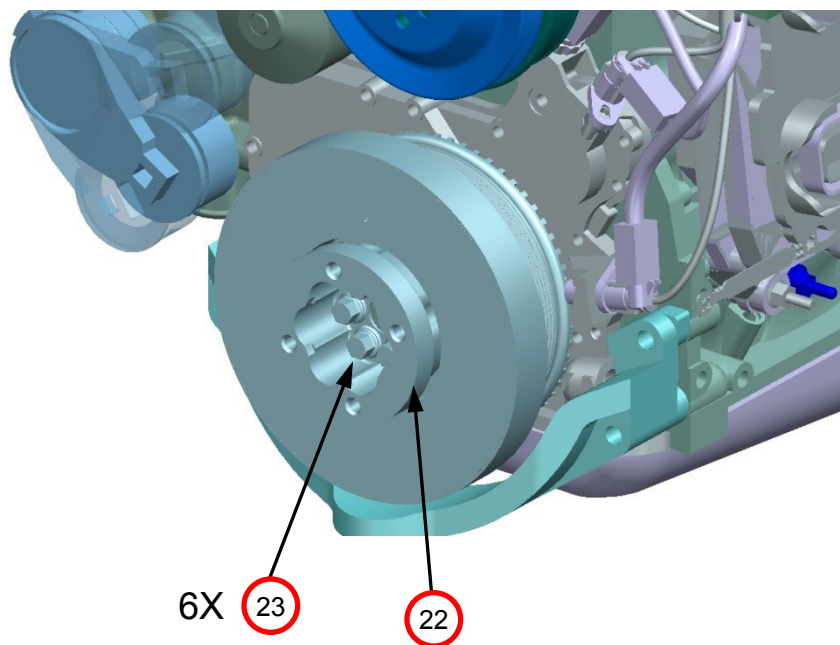
2.5 INSTALL IDLER.



IDLER PULLEY IS NOT SYMMETRICAL. IN ORDER TO ALLOW PROPER ALIGNMENT OF IDLER AND TENSIONER PULLEY, SHALLOW SIDE NEEDS TO BE ON THE OUTSIDE AS SHOWN IN THIS PICTURE, POINTING TO THE REAR OF CHASSIS. DEEP SIDE SHOULD BE CLOSER TO MOUNTING BRACKET.

2. INSTALLATION

2.6 ENGINE CRANKSHAFT ADAPTER INSTALLATION ON ISB ENGINE.

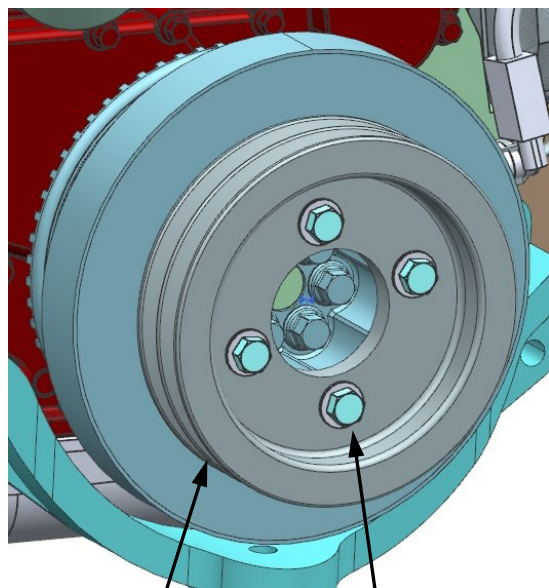


TORQUE ITEM 23 TO TARGET 37 FT-LB, RANGE 33 TO 41 FT-LB, TIGHTENING SEQUENCE SHOWN ON THE RIGHT.

2. INSTALLATION

2.7 INSTALL CRANK PULLEY. REFERENCE PICTURES SHOWN BELOW FOR INSTALLATION ON DIFFERENT ENGINE.

ISB



11

4X

17

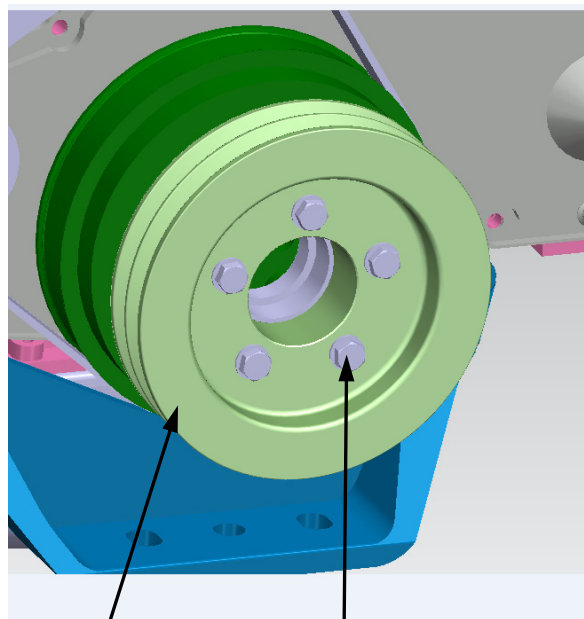
18

3

4

7

ISL



11

5X

20

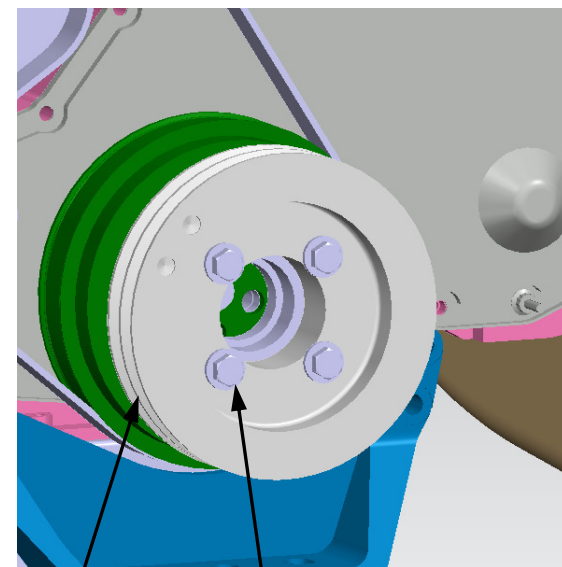
21

3

1

7

ISL-G



11

4X

19

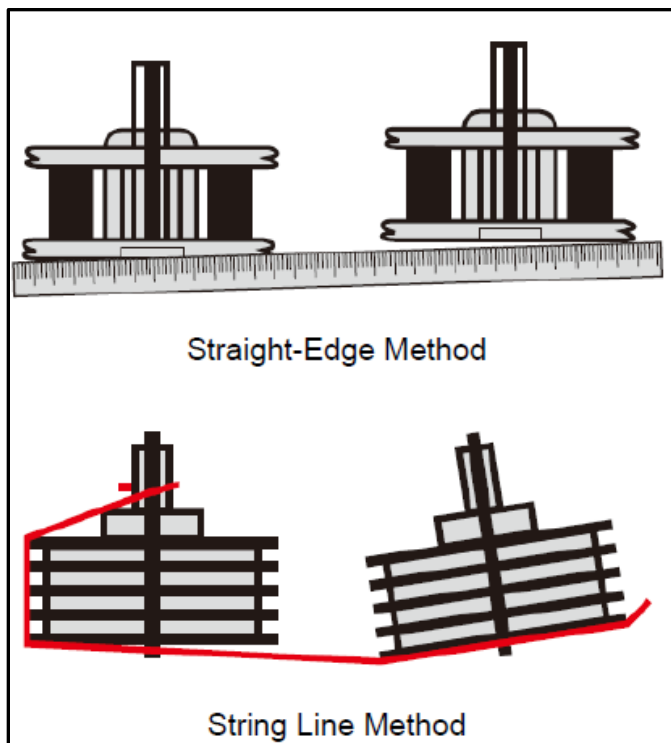
4

3

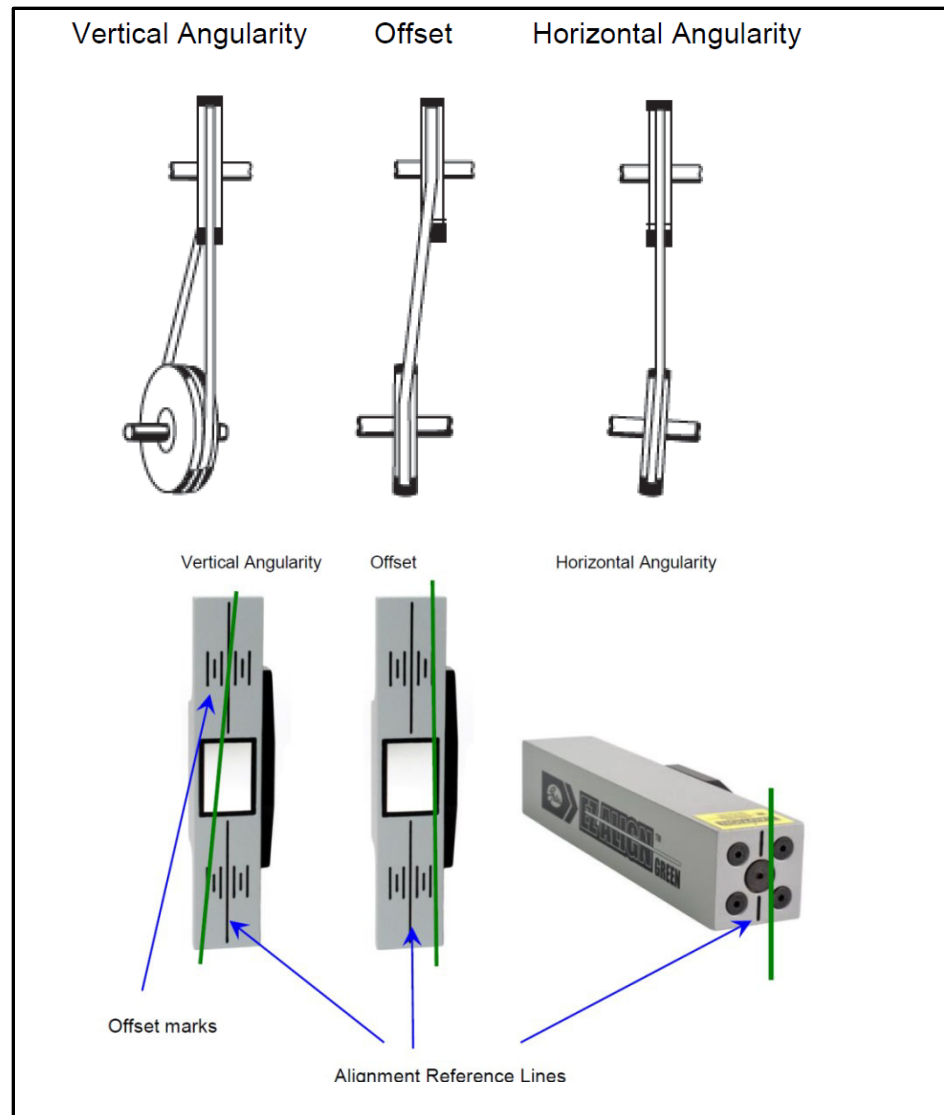
5

7

2.8 LOOSEN 6 MOUNTING BOLTS AT AC MOUNTING BASE AS SHOWN ON PAGE 4.
 USE STRAIGHT EDGE OR STRING LINE METHOD TO ROUGHLY ALIGN AC PULLEY TO CRANK PULLEY. POSSIBLE ERROR MAY EXIST AT THIS POINT AS SHOWN BELOW..
 COMPRESSOR PULLEY WILL BE IN ROUGH ALIGNMENT WITH CRANK PULLEY AFTER THIS STEP. FINAL ALIGNMENT IS SHOWN IN STEP 3.1.
 THIS STEP MAY NOT BE NEEDED IF COMPRESSOR PULLEY IS ALREADY IN ROUGH ALIGNMENT WITH CRANK PULLEY.
 TYPICAL MISALIGNMENT TYPES ARE SHOWN ON THE RIGHT. ONLY OFFSET IS ADJUSTED BY THIS STEP.
 ENGINE ANGLE TO HORIZONTAL PLANE IS 4.5 DEGREES, AC PULLEY FRONT FACE SHOULD BE 85.5 DEGREES TO HORIZONTAL PLANE.

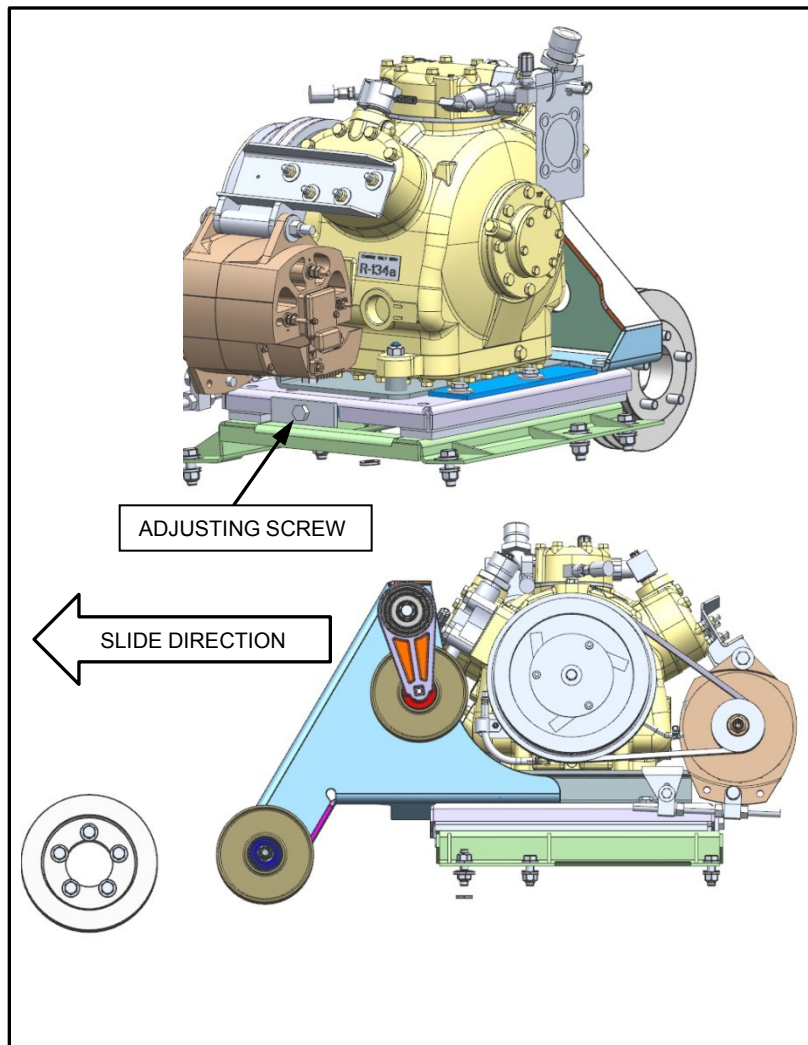


TYPICAL MISALIGNMENT AND HOW IT REFLECTS ON GATES ALIGNMENT TOOL. TOOL SHOWN BELOW IS GATES EZ ALIGN.

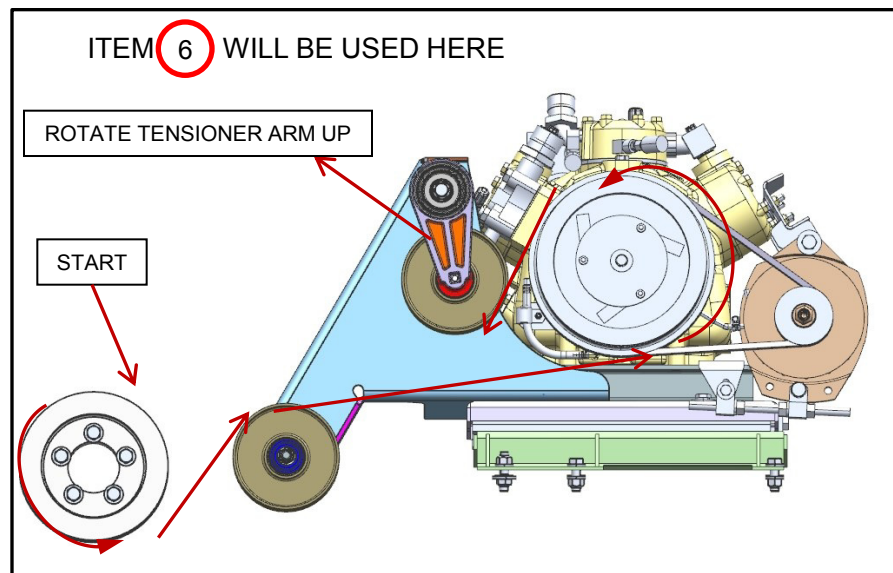
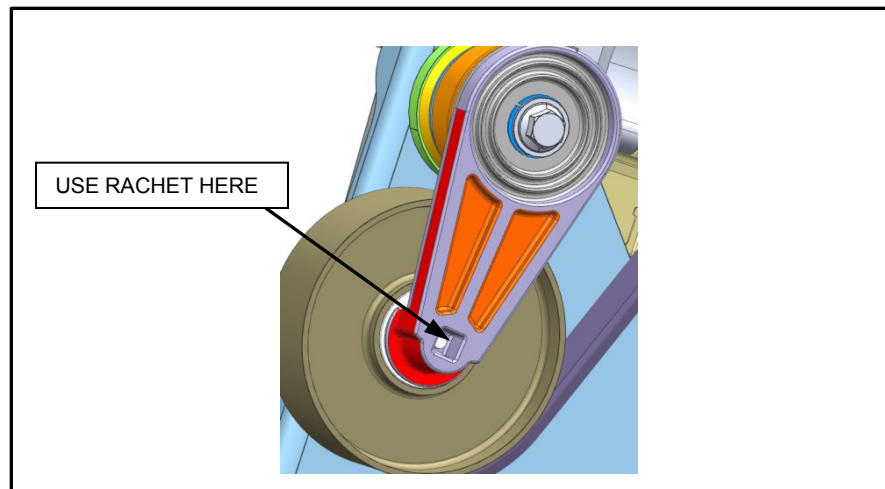


2. INSTALLATION

2.9 SLIDE AC COMPRESSOR 40MM CLOSER TO ENGINE USING ADJUSTING SCREW AT AC MOUNTING BASE.



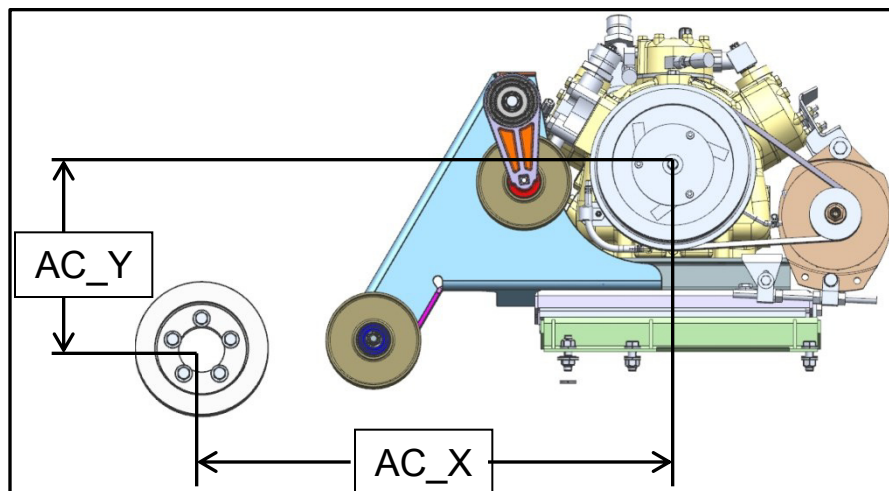
2.10 ROUTE BELT ON CRANK PULLEY FIRST, AND THEN IDLER PULLEY, AC PULLEY AND FINALLY TENSIONER PULLEY. ROTATE TENSIONER ARM UP BY USING A 1/2" DRIVE RACHET FOR EASY BELT ROUNTING. UNDER NO CIRCUMSTANCES SHOULD THE BELT BE FORCED ONTO GROOVES.



2. INSTALLATION

2.11 SLIDE AC COMPRESSOR AWAY FROM ENGINE AFTER BELT IS INSTALLED. TARGET AC LOCATION RELATIVE TO CRANK CENTER IS SHOWN IN THE TABLE BELOW. ALL DIMENSIONS IN MM. TENSIONER ARM WILL BE PUSHED UP SLIGHTLY BY BELT IN THIS PROCESS.

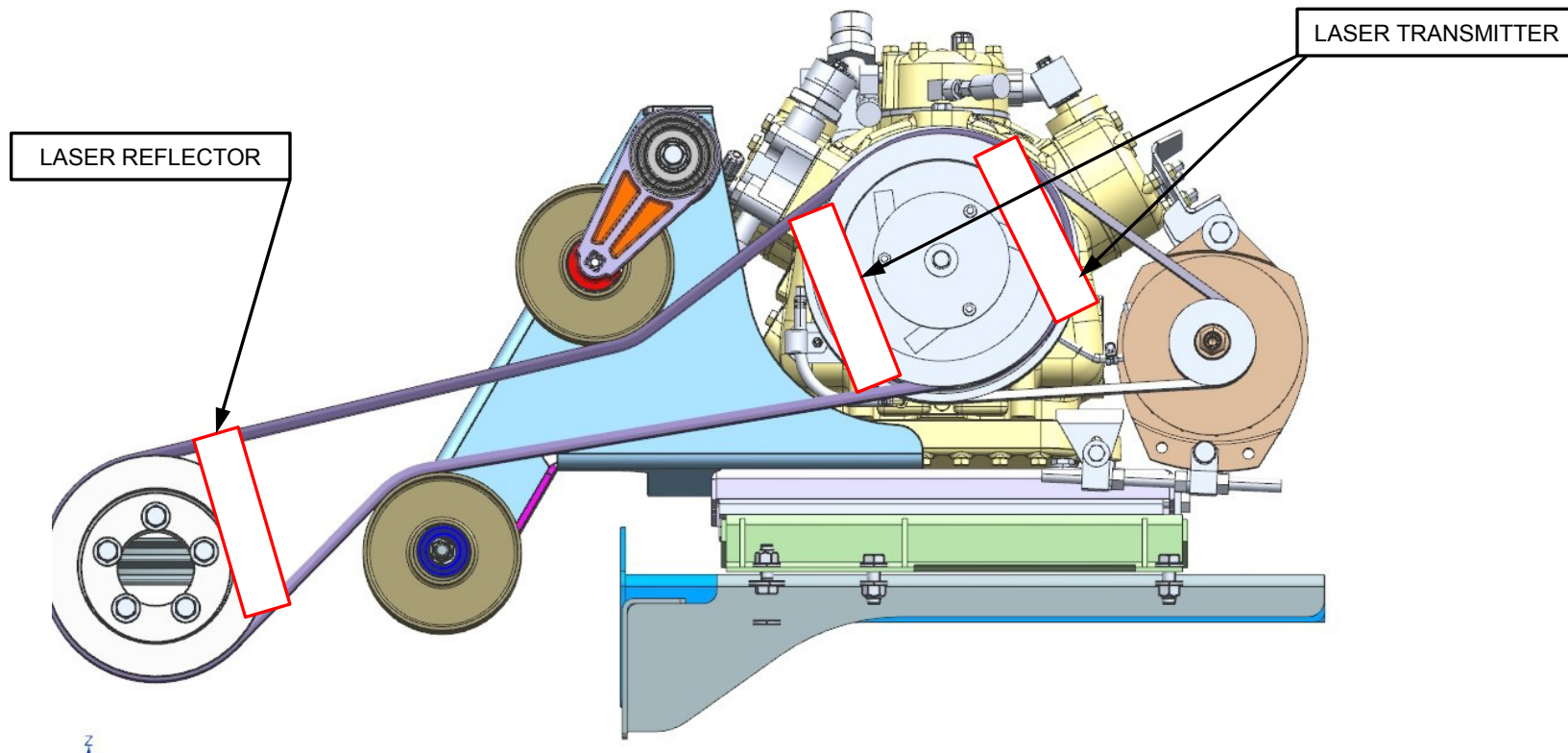
	05K	05G
Crank_X	0	0
Crank_Y	0	0
AC_X	755	745
AC_Y	260	294



3. Alignment

3.1 LOOSEN 6 AC MOUNTING BOLTS IF STEP 2.7 IS SKIIPED. USE PRY AND HAMMER TO ALIGN AC PULLEY FRONT FACE TO CRANK PULLEY FRONT FACE.:

- I. RECCOMENDED TOOL: GATES EZ ALIGN LASER ALIGNMENT TOOL,
- II. ATTACH LASER REFLECTOR ON CRANK PULLEY, LASER TRANSMITTER ON BOTH LEFT AND RIGHT SIDE OF AC PULLEY WHEN ALIGNING.

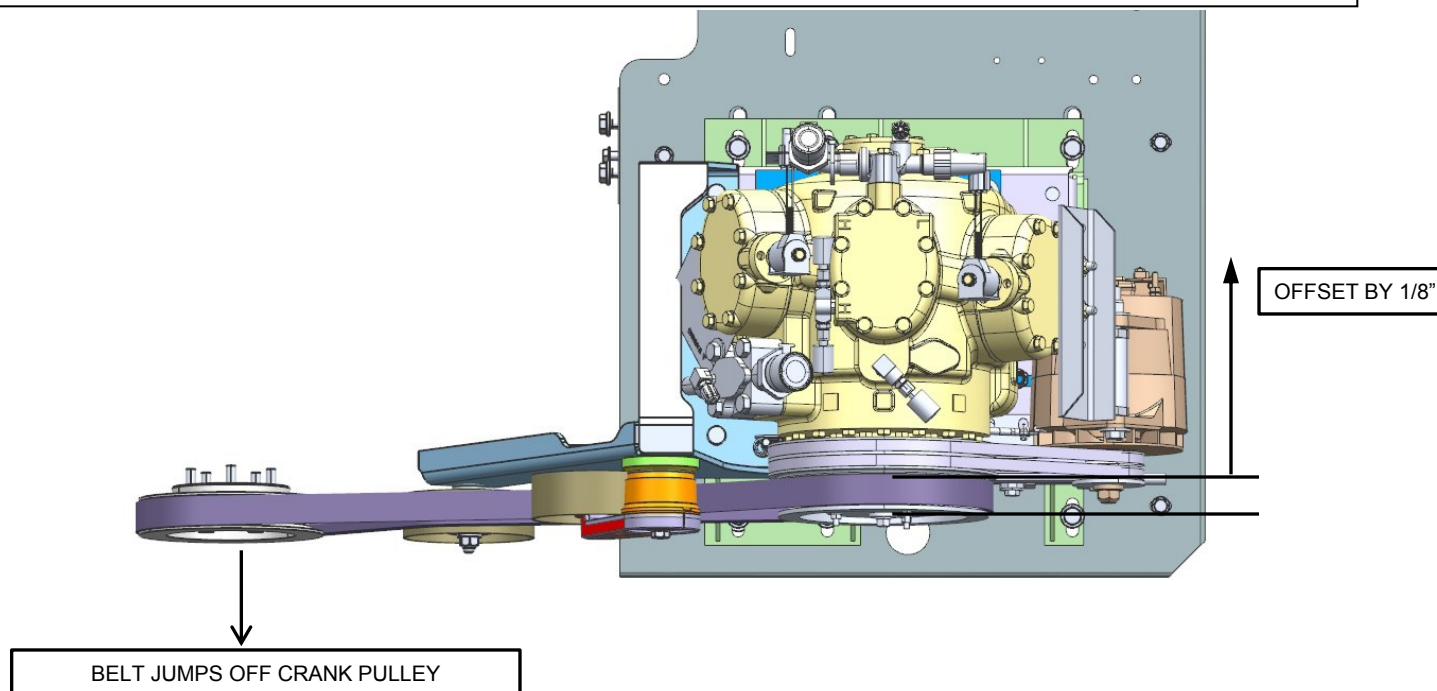


3.2 AFTER PULLEYS ARE ALIGNED, TIGHTEN 6 MOUNTING BOLTS TO 68 FT-LBS, RANGE: 60-76 FT-LBS.

4. Test Run

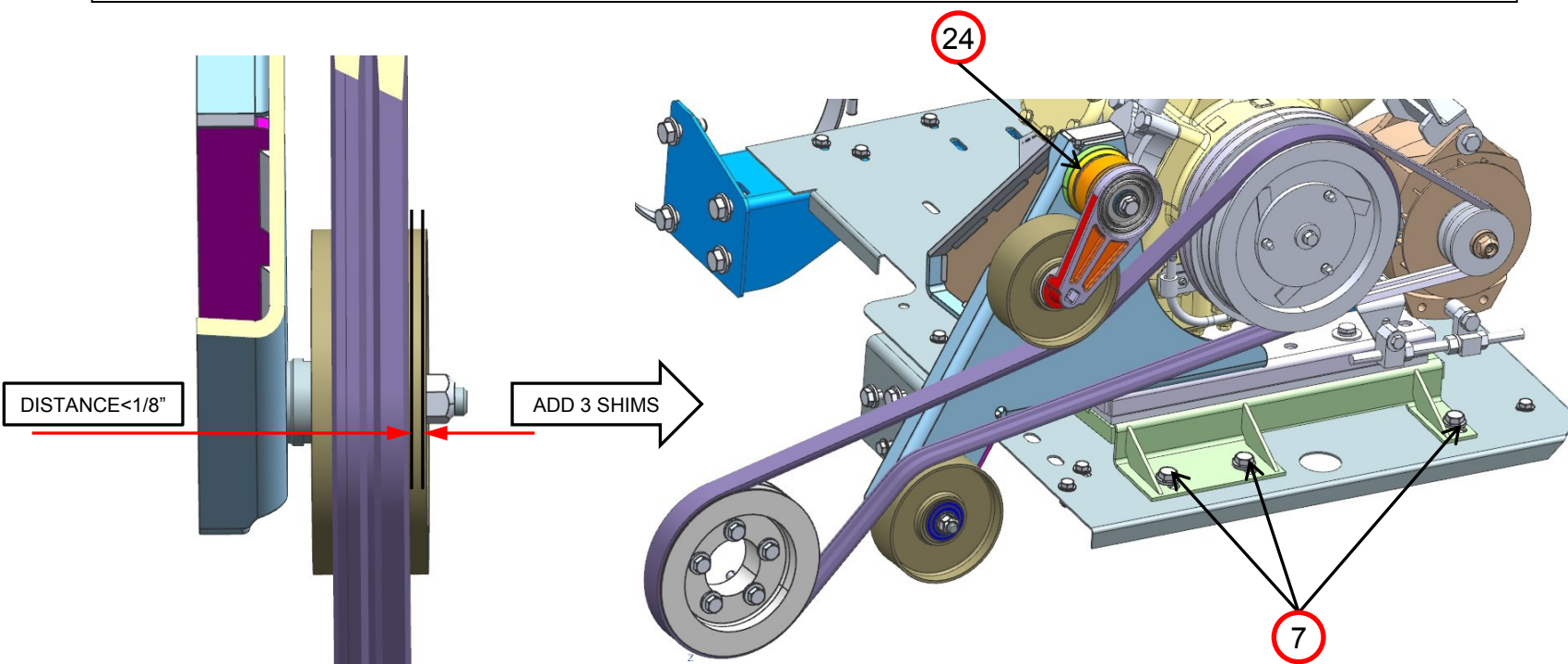
4.1 RECONNECT BATTERY POWER, GROUND CABLES AND ALL ELECTRIC CONTROL UNITS THAT WERE DISCONNECTED IN STEP 2.3. START ENGINE AND CHECK BELT DRIVE PERFORMANCE. BELT MAY BE RUNNING DIFFERENTLY COMPARED TO HOW IT SITS ON IDLER WHEN ENGINE STOPS.

4.2 IF BELT IS COMING OFF FROM CRANK PULLEY TO THE REAR OF CHASSIS AT ENGINE IDLE, GO BACK TO STEP 3.1 AND OFFSET AC PULLEY TO THE FRONT BY 1/8" AS SHOWN BELOW. IF BELT IS COMING OFF TO THE OTHER DIRECTION, OFFSET AC PULLEY IN THE OPPOSITE WAY.



4. Test Run

4.3 IF BELT IS RUNNING CLOSE TO THE OUTER EDGE OF IDLER, THE DISTANCE AS SHOWN BELOW IS LESS THAN $\frac{1}{8}$ ", ADD 1 SHIM AT EACH FRONT MOUNTING BOLT BETWEEN AC MOUNTING BASE AND DUST PAN. RETURN TO STEP 3.1 AFTER SHIMS ARE INSTALLED.



4.4 IF BELT IS STILL RUNNING CLOSE TO THE OUTER EDGE OF IDLER, ADD 1 ITEM 10 BETWEEN MOUNTING BRACKET AND ITEM 9 AS SHOWN ON PAGE 8.

4.5 IF BELT IS RUNNING CLOSE TO INNER EDGE OF IDLER PULLEY. REMOVE ITEM 10 SHOWN ON PAGE 8.

4.6 SIMILAR TO ADJUSTING BELT POSITION ON IDLER PULLEY, ITEM 24 COULD BE USED BETWEEN TENSIONER BASE AND MOUNTING BRACKET TO ADJUST BELT POSITION ON TENSIONER PULLEY. HOLE ON THIS SPACER NEEDS TO BE ALIGNED WITH TENSIONER PIN.

4.7 ONCE EVERYTHING RUNS SMOOTHLY AT ENGINE IDLE, RUN RPM SWEEP WHEN CHASSIS IS STATIONARY.

5. RE-INSTALL ENGINE DOOR AND BELT GUARD REFERENCED ON PAGE 3.