EA02-025

TEXAS INSTRUMENTS, INC.'S

9/10/03 ATTACHMENT TO ODI

REQUEST #3

BOX 5

PARTS A - P

PART A

[redacted]

[redacted]C.'S

[redacted] No. 3

TI-NHTSA 007043.A

KAPTON LIFE EXPERIMENT

PURPOSE:
77PSL2-1 (Pass Car) Production Validation parts are failing Impulse testing due to Kapton rupture. Previous validation on 57PSL5-3, using a very similar sensor design (model shop cup rather than production), proved successful. We are now trying to determine the fundamental difference(s) which account for the drastic difference in Kapton life.

SCOPE:
This test will compare the life of a 2 x 2 matrix of test sensors. One variable is cup, model shop or production; the other variable is crimp techinque, AMI or hand-line. We will run all devices to failure (if time permits) and use Weibull techniques as well as autopsy to gain knowledge of the characteristic Kapton life. The model shop cup, hand-line crimp devices will be taken from the previous validation test - vacuum, vibration, etc (none with significant cycles on them). Model shop cup, AMI crimp devices will be built from scratch. Production cup, AMI crimp devices will be taken from the failure-prone 77PSL2-1 validation lot. Production cup, hand-line crimp devices will be built from scratch. This test will be sensor-only, no switches will be used. This will be more expedient and allow leakage to be detected more readily.

PROCEDURE:
Obtain six devices from each of the sublots that are already built (model shop/hand-line and production/AMI). Record which test(s) the model shop/hand-line parts were run on previously. Characterization is not required, but devices should be checked to ensure they are properly built.

Pre-kit six each for the two lots that are to be built from scratch, and crimp on the proper equipment as listed in SCOPE. It may be necessary to work with Mfg. to obtain priority on the AMI.

Before beginning cycles, check the pressure waveform on the cycler. Do either of the following:

A. Remove the APT from the cycler, and have the proper APT personnel run a characteristic curve before using the device

to check the cycler.

B. Obtain a Sensotec transducer of the proper pressure range, with known calibration, and use it to check the cycler.

If you discover the cycler is running at a pressure outside of the specified range of 1450 +/- 50 psi, alert me immediately.

When installing the devices on the manifolds, distribute the four lots across the manifold ports rather than placing each sublot in its own row. This will serve to minimize effects due to pressure drops / transients / uneven heating / etc. across the manifolds.

When bleeding air from the system, take care not to dump more fluid than necessary. A possible variable is the fluid itself, which may become caustic as it ages. Fresh fluid may actually improve the results of the test.

Run the Impulse test per standard procedure in terms of temperature, pressure, and cycle rate. However, the test will not necessarily end at 500K cycles. Valuable Kapton life information will be gained by running ALL devices to failure -or- until a point substantially beyond 500K, say approx. 2MM, where a decision may be made to abort.

As devices die, record the # of cycles, the sublot, and the manifold position. Have plugs (dummy sensors, whatever), tools, and gloves readily available at the cycler. Since this test is receiving the highest priority, every attempt will be made to monitor the test during working AND non-working hours.

9/08/22

DUPONT

CIRCLEVILLE PLANT
P.O. Box 89
Circleville, OH 43113

NO: KC-11
Effective Date: 3/06/92
Expiration Date: 3/06/93
Page 1 of 1

MATERIAL CERTIFICATION

DATE: 8-24-92

CUSTOMER: TEXAS INSTRUMENTS, ATTLEBORO

CUSTOMER ORDER NO. 500085037

CUSTOMER PART NO. & REV. 27225-1 (REV. N)

QUANTITY THIS SHIPMENT 68#

SHIPMENT DATE 8-24-92

We certify that the material used to produce the product in this shipment, namely 500FN131 Kapton*, 3/4" wide, conforms to TI drawing and TI purchase order requirements on file with the HPF Group of the Dupont Company.

SUPPLIER REPRESENTATIVE
ENGINEER - QUALITY CONTROL - TITLE

idkh/smart no. 387

TI-NHTSA 7046

Charting a Course for Excellence

Z-580 (5/20/78) REV. 4/91

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	LABEL "CORE MATERIAL" COLUMN 27225-1 & -2 "THE PUT UP" (I.D. WAS -1" OD. 134404. CF	5-8-90	[illegible]

NOTES:

1. STRIP TO BE INSPECTED FOR TEFLON COATING, THICKNESS, DEFORMITIES, BUBBLES, AND LAMINATE SEPARATION.
2. EACH KAPTON STRIP ROLL MUST BE LABELED WITH T.I. PART NO. ON INSIDE OF CORE.
3. NO MORE THAN 2 SPLICES PER COIL PERMITTED. SPLICES TO BE CLEARLY MARKED WITH YELLOW MYLAR.
4. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.
5. ROLLS SLITTED FROM END OF MASTER COIL NOT ACCEPTABLE.
6. BUCKLING OF THE CORE ALLOWED UP TO 1/4" MEASURED RADIALLY AWAY FROM THE CORE.
7. DENT RIP OR JAGGED EDGES ON MATERIAL NOT ALLOWED.
8. ROLLS ARE TO BE SHIPPED WITH PROTECTIVE INSERT CORES IN THE PACKING BOX.

THIS DWG. SUPERSEDES 27225 REV. "A" DATED 12-13-89

PART NO.	MATERIAL	THICKNESS (MILS)	TEFLON FEP (A)	KAPTON TYPE H (B)	TEFLON FEP (C)	STRIP WIDTH (IN.)	PKG PUT UP (I.D.) (O.D.) (IN.)	CORE MATERIAL
			CONSTRUCTION (MILS) (SEE NOTE 2)					
27225-3	DUPONT 300 FN829	3 ±.4 MILS	0.5	2	0.5	.953-.954	3 x 9 1/2	PLASTIC (WHITE)
27225-2	DUPONT 500 FN131	5 ±.5 MILS	1	3	1	.953-.954	5 x 9 1/2	CARDBOARD
27225-1	DUPONT 500 FN131	5 ±.5 MILS	1	3	1	.734-.735	4 x 9 1/2	CARDBOARD

DRAWN BY TOM DAIL	DATE 11-1-88	TEXAS INSTRUMENTS	KIMTON
CHK.			
ENG. [signature]	5-22-90	TITLE KAPTON STRIP SPECIFICATION	
APPROVED		REV. B	CODE IDENT NO. 82647 — 27225
		SCALE	SHEET

TI-NHTSA 7047

77PS QUIET PRESSURE SWITCH
PROCESS FLOW DETAIL

8/24/92
Rev: A

PILOT MAKER

Assemble Pilot(32 PC.)
- 090 +/-.0005 Bases
- Pin per sensor-pin matrix chart

Test/Evaluate
- Use standard acceptance criteria
- Approve/dis-approve as required
- Q.C. test/accept or reject

Complete Pilot Communication Chart
- Date
- Lot quantity
- Lot number
- Status

Release Kit to AMI # 2
- Standard routing paperwork
- Gomplete pilot logs

Receive 50 Piece Sample
- Calculate sensor X-Bar and assign lot code
- Determine with BAM operator; pin selection and base check selection from chart
- Process 50 piece sample. Accept or reject
- Complete remaining chart columns:
  - High and low pin
  - High and low sensor lot code
  - High and low base check target
  - Update Status

CONFIDENTIAL

BASE ASSEMBLY OPERATOR

Build on F.A.M. operator instructions. Either into F.A.M. directly or into WIP stock.

Set-up check target to mid-point of high and low targets. Refer to chart.

Total high and low gage base assemblies produced should equal total lot quantity on chart.

Clearly label all totes of WIP with lot #, base check target, +/- base check tolerance, etc.

Follow all rework and salvage loop standard procedures.

FINAL ASSEMBLY OPERATOR

Ensure at all times that a valid final assembly matrix exist:
- Pilot communication chart
- Routing paperwork
- SPC verification procedures

Follow all rework and salvage loop standard procedures.

FUNCTION TEST OPERATOR

Standard procedures.

Follow salvage loop standard procedures.

TEXAS INSTRUMENTS
INCORPORATED
MATERIALS AND CONTROLS GROUP
☐ ATTLEBORO, MA 02703 ☐ HOPKINSVILLE, KY 42240
☐ CENTRAL LAKE, MI 49622

Shipping Order

DATE: 8 / 27 / 92 S.O. #: 271330

REF. #: _____ DATE SHIPPED: / /

SHIPPED VIA: OVERNIGHT

SHIP TO:
PITTS INDUSTRIES, INC.
1671 N. BROADWAY
CARROLLTON, TEXAS 75006

ATTN. MEHRAT HARASHI

CHARGE TO:

USE (CHECK ONE)

☐ SCRAP SALES
☐ SALE OF ASSETS
☐ OUTSIDE PROCESSING
☐ TRANSFERS BETWEEN TI LOCATIONS
☐ EXPENSE MATERIAL
☐ OTHER, EXPLAIN: _____

DIV/ACCT. # _____ CC: _____

QUANTITY	DESCRIPTION/PART #/PO	UNIT PRICE	TOTAL
6	77P612-1	n/c	
1	IEIR PKG.	n/c	

GROSS WEIGHT	NO. OF CONTAINERS	ORIGINATOR'S NAME (TYPED)	ORIGINATOR'S SIGNATURE
		ELAINE ROSE 12-27	Elaine Rose

TI-NHTSA 7049

TEXAS INSTRUMENTS

ISR SUBMISSION

TO PITTS INDUSTRIES FOR PART NUMBER F2VC-9F924-AB NEXT GENERATION SPEED CONTROL DEACTIVATION SWITCH

AUGUST 27, 1992

TEXAS INSTRUMENTS INCORPORATED • 34 FOREST STREET • ATTLEBORO, MA 02703
508-699-5502 • TELEX 210504 • CABLE TEXINS

TI-NHTSA 7050

TEXAS INSTRUMENTS, INC. ISIR SUBMISSION
TO PITTS INDUSTRIES
FOR PART NUMBER F2VC-9F924-AB

TEXAS INSTRUMENTS, INC. ISIR SUBMISSION
TO PITTS INDUSTRIES
FOR PART NUMBER F2VC-9F924-AB (77PSL2-1)

Enclosed GM
manual with
Pitts Prop

12-4-91

Jim,

Please review &
complete forms -
also for Pitts,
we'll need an
FMEA
Sample pcs. for both
Pitts & Nova? They
won't match
the FAI

Elaine

		* L2-1			L3-1		L5-2					
1	BASE	46515-2			46515-3		46515-3					
2	Sta. Tem.	36888-1			36888-1		36888-1					
3	Move. Contact	74408-1			74408-1		74408-1					
4	Rivet	74171-1		✓	74916-1	N/A	74916-1	N/A				
5	Move. Tem.	36887-1			36887-1		36887-1					
6	Spring Arm	36889-1			36889-1		36889-1					
7	Spr. Mat'l	27716-1			27716-1		27716-1					
8	JS12 Hexport	36900-1		✓ *	36900-1		36997-1	snubber				
9	GASKET	74353-1		✓	74353-1		74353-1					
10	Cup	27713-1		✓	27713-1		27713-1					
11	SEAL	74176-1			74176-1		74176-1					
12	Kapton Strip	27225-1			27225-1		27225-1					
13	WASHER	27639-1		✓	27639-1		27639-1					
14	CONVERTER	27406-1		✓	27406-1		27406-1					
15	SPACER	73958-2/-3		✓	73958-2/-3		73958-2/-3					
16	Kapton TAPE	74224-1		✓	74224-1		74224-1					
17	CR. RING	74797-1		✓	74797-1		74797-1					
18	TRANSFER PIN	74078-xx		✓	74078-xy		74078-1					
19	ENVIO. SEAL	74247-4		✓	74247-4		74247-4					
20												
21												
22												
23												
24												
25												
26												
27												
28												

OPERATING UNIT: PREPARED BY: DATE:

UNIVERSAL PLANNING FORM TI-94798

TLNHTSA 7053

1-9-92

FORD PKG. FAI:

* Full L/T Dim's and 10 P/C Dim's pertaining to BASE

K-H PKG. FAI:

* Initially sent full P/C Dim's with Ford Print with out of spec. condition's -

* Followed up with Dim's matched up to K-H print (16 compared to 55

Pitts / [redacted]

* Need to resolve out of spec. conditions.
dim.# 13, 20, 45, 52

→ Submitted Ford Copy 8-24-92

INCORPORATED
MATERIALS AND CONTROLS GROUP

☐ ATTLEBORO, MA 02703 ☐ VERSAILLES, KY 40383
☐ JOHNSON CITY, TN 37601 ☐ CENTRAL LAKE, MI 49622

FORD MOTOR COMPANY
1700 Oakwood Blvd.
P. O. Box 1586-D-2015
Dearborn, Michigan 48121

Attn: Mark Scholler

ARGE

DATE: / / S.O. #

REF. # DATE SHIPPED / /

SHIPPED VIA:

USE (CHECK ONE)

☐ SCRAP SALES
☐ SALE OF ASSETS
☐ OUTSIDE PROCESSING
☐ TRANSFERS BETWEEN TI LOCATIONS
☐ EXPENSE MATERIAL
☐ OTHER, EXPLAIN:

DIV/ACCT. # CC:

QUANTITY	DESCRIPTION/PART #/PC	UNIT PRICE	TOTAL
1	ISR Supplement Pkg 6 Bases	N/C	

GROSS WT	NO. OF CONTAINERS	ORIGINATOR'S NAME (TYPED)	ORIGINATOR'S SIGNATURE
		Blaine Rose MS 12-27	

ACCOUNTS RECEIVABLE COPY

TI-NHTSA 7055

ISIR Submission

Pitts
~~[illegible]~~ Industries

P/N F2VC-9F924-AB

Next Generation Speed
Control Deactivation
Switch

(77PSL2-1)

TEXAS INSTRUMENTS INC. | MATERIALS & CONTROLS GROUP | SITE

PARTS LIST | PROJECT | PART NUMBER: 77PSL2-1 | REV LTR: B CLS: 650
EXPLOSION | NUM: 3423 | DWG PFX: NUM:77PSL2-1 | ECN INC.DT: 92/02/20

TITLE: PRESSURE SWITCH

LV	CNT	QTY/UM	BITM	PART/DRAWING NUMBER	RV	NOMENCLATURE/PARM DATA
01	1	REF		36952-1		FINAL ASSEMBLY
				36952-1		
01	2	1	27	27759-2		BASE ASSEMBLY
				27759SH1		
02	3	1	2	46515-2		BASE (BROWN)
				46515		
02	4	1	3	36888-1		STATIONARY TERMINAL
				36888		
02	5	1	4	36897-1		MOVABLE TERMINAL ASM
				36897SH1		
03	6	1	2	74408-1		MOVABLE CONTACT
				74408		
03	7	1	3	74171-1		RIVET
				74171		
03	8	1	4	36887-1		MOVABLE TERMINAL
				36887		
03	9	1	5	36889-1		SPRING ARM
				36889		
04	10	AR	2	27716-1		SPR MAT'L STR SPEC(.216 LBS/K)
				27716SH1		
01	11	1	24	27293-13		SENSOR ASSEMBLY
				27293SH2		
02	12	1	2	36900-1		MOD SAE J512 HEXPORT
				36900		
[illegible]	13	1	3	74353-1		GASKET
				74353		
[illegible]	14	1	4	27713-1		CUP
				27713		
02	15	3	5	74176-1		SEAL
				74176		
03	16	AR		27225-1		KAPTON STRIP SPEC (.175 LBS/K)
				27225		
02	17	1	6	27639-1		WASHER
				27639		
02	18	1	7	27406-1		CONVERTER
				27406		
02	19	1	8	73958-2		SPACER
				73958		
02	20	OR	8	73958-3		SPACER
				73958		
03	21	AR		74224-1		KAPTON TAPE (.100 LBS/K)
				74224		
02	22	1	9	36656-27		3/4" FORMED DISC
				36656SH1		
01	23	1	14	74797-1		CRIMP RING
				74797		
01	24	1	18	74078-143		TRANSFER PIN
				74078		
01	25	1	21	74247-4		ENVIRONMENTAL SEAL
				74247		
01	26	1	22	74888-1		THREAD CAP
				74888		
01	27	AR		27318-1		CARTON ASM.
				27318		
	28	1	2	74219-1		CARTON
				74219		
02	29	5	3	74218-1		ROW SEPARATOR
				74218		
02	30	4	4	27317-1		DEVICE SEPARATOR

I	I	I	I	27317	I	I

NOTES, REV.DATA,DISTRIBUTION,OPERATING CHARACTERISTICS,SPECIAL REQUIREMENTS

REV DESC: SET UP	CCB APPROVAL DATE: 92/01/30
.G WORK GROUP: PRECISION CONTROLS	ECN ORIGINATOR: STEPHEN B OFFILER

NOTES:

1 - ACTUATION PRESSURE ---------- 90-160 PSIG

2 - RELEASE PRESSURE ---------- 20 PSIG MIN.

99 - CR M07857,THREAD CAP 74868-1 WAS 74179-2
STOCK DISPOSITION
FINISHED DEVICES - N/A
PARTS & SUB ASMS - N/A

DETAILED REVISION DESCRIPTION:

NO DATA EXISTS FOR THIS REVISION

-MSG M#= 411164 FR=RIVA TO=FOSL SENT=08/26/92 07:55 AM
R#=102 ST=C DIV=0050 CC=00149 BY=RIVA AT=08/26/92 07:55 AM

To: Amy Andres AMYA

TEXAS INSTRUME[redacted] ! MATERIALS & CONTROLS GROUP ! SITE

PARTS LIST : PRE[redacted] !PART NUMBER: 77PSL2-1 !REV LTR: E DLS: 05
EXPLOSION : NUM: 3423 !DWG PFX: NUM: 77PSL2-1 !ECN INC.DT: 92/02/2

TITLE: PRESSURE SWITCH

LV	CNT	QTY/UM	ITM	PART/DRAWING NUMBER	RV	NOMENCLATURE/PARM DATA
01	1	REF		~~36952-1~~		~~FINAL ASSEMBLY~~
				36952-1		
01	2	1	27	~~27759-6~~		~~BASE ASSEMBLY~~
				27759SH1		
02	3	1	2	46515-2		BASE (BROWN)
				46515		
02	4	1	3	36888-1		STATIONARY TERMINAL
				36888		
02	5	1	4	~~36897-1~~		~~MOVABLE TERMINAL ASS~~
				36897SH1		
03	6	1	2	74408-1		MOVABLE CONTACT
				74408		
03	7	1	3	74171-1		RIVET
				74171		
914C/G 371 1 4 02				ADAIMC	Pro a	Printing
03	8	1	4	36887-1		MOVABLE TERMINAL
				36887		
03	9	1	5	36889-1		SPRING ARM
				36889		
04	10	AR	2	27716-1		SPR MAT'L STR SPEC(.216 LBS/K
				27716SH1		
01	11	1	24	~~27299-10~~		~~SENSOR ASSEMBLY~~
				27299SH2		
02	12	1	2	36900-1		MOD SAE J512 HEXPORT
				36900		
02	13	1	3	74353-1		GASKET
				74353		
02	14	[redacted]		13-1		CUP
				7713		
02	15			76-1		SEAL
				4176		
03	16			225-1		KAPTON STRIP SPEC (.175 LBS/K
				27225		
02	17	1	6	27639-1		WASHER
				27639		
02	18	1	7	27406-1		CONVERTER
				27406		
02	19	1	8	73958-2		SPACER
				73958		
914C/G 371 1 4 02				ADAIMC	Pro a	Printing
02	20	OR	8	73958-3		SPACER
				73958		
03	21	AR		74224-1		KAPTON TAPE (.100 LBS/K)
				74224		
02	22	1	9	~~36656-27~~		~~STA TURNED DISC~~
				36656SH1		
01	23	1	14	74797-1		CRIMP RING

TI-NHTSA 7059

01	24	1	18	74078-143	TRANSFER PIN
				74078	
01	25	1	21	74247-4	ENVIRONMENTAL SEAL
				74247	
01	26	1	22	~~74888-1~~	~~THREAD CAP~~
				74888	
01	27	AR	[illegible]	~~27318-1~~	~~BARTON ASM.~~
				27318	
02	28	1	[illegible]	~~74219-1~~	~~BARTON~~
				74219	

914C/G 971 1 4 02 ADAIMC Pro a Printing

-MSG M#- 115981 FR=QCBJ TO=PCQA SENT=04/27/92 09:33 AM
R#=218 ST=C DIV=0050 CC=00566 BY=QCBJ AT=04/27/92 09:33 AM

To:	Jim Watt	PCQA	Elaine Rose	PCQA
Copy:	Norm Roy	MLDG	Bill Sweet	PCME
	Bill Archibald	AFCQ	Matt Sellers	PCME
	Jim Kern	KERN	Steve Offiler	SBO1

pitch Dan a pkgs.

From: James Frerichs JPF

Subj: 46412 Dimensions MSG #32290.

Date: 04-27-92.

The two dimensions referenced in your message were measured on two different historical samples of the 46412-2.

1. Dimension 0.461/0.465

Historical data taken 1-4-89 to Rev R.

Cav P	Cav U	Cav V	Cav X
.4665	.4688	.4683	.4681

From production runs on 3-6-92 and 3-26-92 on the 46412-2.

Cav P	Cav Z	Cav O	Cav Blank
.4682	.4683	.4682	.4678
.4682	.4684	.4672	.4685

(Tool makers microscope looking down into part)

This dimension is controlled by the stack up of the terminal slots and their separation. The spec. for the T/S is 0.180/0.184 2x and web 0.096/0.103. Adding these up the tolerance would be 0.456/0.471. Changing the steel for 0.461/0.465 would also change the T/S and web.

2. Dimension 0.531/0.543

Historical data taken 1-4-89 to Rev R.

Cav P	Cav U	Cav V	Cav X
[illegible]276	.5302	.5282	.5258

Fr[illegible]uction runs on 3-6-92 and 3-26-92 on the 46412-2.

Cav P	Cav Z	Cav O	Cav Blank
.5294	.5272	.5255	.5331
.5329	.5289	.5270	.5271

(Tool makers microscope to the ends of the radii)

Steel could be modified to increase this.

Regards,

James x-3078

TEXAS INSTRUMENTS INC. MATERIALS & CONTROLS GROUP ! SITE

PARTS LIST [redacted] !PART NUMBER! 77PSLS-2 !REV LTR! B CLS! 65
EXPLOSION [redacted] !DWG PFX! NDM!77PSLS-2 !ECN INC.DT! 92/07/2

TITLE! PRESS[redacted]

LV	CNT	QTY/UM	BITM	PART/DRAWING NUMBER	RV	NOMENCLATURE/PARM DATA
01	1	REF		~~37002-1~~		~~FINAL ASSEMBLY~~
				37002-1		
01	2	1	27	~~27759-9~~		~~BASE ASSEMBLY~~
				27759SH1		
02	3	1	2	46515-3		BASE (NATURAL)
				46515		
02	4	1	9	36888-1		STATIONARY TERMINAL
				36888		
02	5	1	4	~~36897-2~~		~~MOVABLE TERMINAL ASM~~
				36897SH1		
03	6	1	2	74408-1		MOVABLE CONTACT
				74408		
03	7	1	3	74916-1		RIVET
				74916		

LV	CNT	QTY/UM	BITM	PART/DRAWING NUMBER	RV	NOMENCLATURE/PARM DATA
03	8	1	4	36887-1		MOVABLE TERMINAL
				36887		
03	9	1	5	36889-1		SPRING ARM
				36889		
04	10	AR	2	27716-1		SPR MAT'L STR SPEC(.216 LBS/K
				27716SH1		
01	11	1	24	~~27293-18~~		~~SENSOR ASSEMBLY~~
				27293SH2		
02	12	1	2	36997-1		HEXPORT
				36997		
02	13	1	3	74353-1		GASKET
				74353		
02	14	1	4	27713-1		CUP
				27713		
02	15	[redacted]		176-1		SEAL
				74176		
03	16			225-1		KAPTON STRIP SPEC (.175 LBS/K
				27225		
02	17			639-1		WASHER
				27639		
02	18			27406-1		CONVERTER
				27406		
02	19	1	8	73958-2		SPACER
				73958		

LV	CNT	QTY/UM	BITM	PART/DRAWING NUMBER	RV	NOMENCLATURE/PARM DATA
02	20	OR	8	73958-3		SPACER
				73958		
03	21	AR		74224-1		KAPTON TAPE (.100 LBS/K)
				74224		
02	22	1	9	~~36656-35~~		~~3/4" FORMED DISC~~
				36656SH1		
01	23	1	14	74797-1		CRIMP RING
				74797		
01	24	1	18	74078-SEL		TRANSFER PIN
				74078		

01	26	1	2	~~74888-1~~ 74888		~~THREAD GAP~~
01	27	AR		~~27318-1~~ 27318		~~CARTON ASM.~~
02	28	[illegible]	2	~~74219-1~~ 74219		~~CARTON~~

9140/0 371 1 4 02 ADAIMC Pro a Printing

02	29	5	3	74218-1 74218		ROW SEPARATOR
02	30	4	4	27317-1 27317		DEVICE SEPARATOR

! NOTES, REV.DATA,DISTRIBUTION,OPERATING CHARACTERISTICS,SPECIAL REQUIREMENTS

REV DESC: NEW P/L SET UPS ! CCB APPROVAL DATE: 92/07/09

DFTG WORK GROUP: PRECISION CONTROLS ! ECN ORIGINATOR: STEPHEN B OFFILER

NOTES:

1 - ACTUATION PRESSURE ---------- 90-160 PSIG

2 - RELEASE PRESSURE ---------- 20 PSIG MIN.

99 - CR M09991.BASE ASM 27759-9 WAS 27759-3 & MOV TERM ASM 36897-2 WAS 36897-1

STOCK DISPOSITION
FINISHED DEVICES - USE
PARTS & SUB ASMS - USE

DETAILED REVISION DESCRIPTION:

9140/0 371 1 4 02 ADAIMC Pro a Printing

TEXAS INSTRUMEN[redacted] | MATERIALS & CONTROLS GROUP | SITT

PARTS LIST : PROJECT : | PART NUMBER: 77PSL3-1 | REV LTR: B CLS: 650
EXPLOSION : NUM: 3423 | DWG PFX: NUM: 77PSL3-1 | ECN INC.DT: 92/07/27

TITLE: PRESSURE SWITCH

LV	CNT	QTY/UM	BITM	PART/DRAWING NUMBER	RV	NOMENCLATURE/PARM DATA
01	1	REF		~~36952-1~~		~~FINAL ASSEMBLY~~
				36952-1		
01	2	1	27	~~27759-1~~		~~BASE ASSEMBLY~~
				27759SH1		
02	3	1	2	46515-3		BASE (NATURAL)
				46515		
02	4	1	3	36888-1		STATIONARY TERMINAL
				36888		
02	5	1	4	~~36897-2~~		~~MOVABLE TERMINAL ASS~~
				36897SH1		
03	6	1	2	74408-1		MOVABLE CONTACT
				74408		
03	7	1	3	74916-1		RIVET
				74916		
9140/0	371	1 4 02		ADAIMC	Pro a	Printing
03	8	1	4	36887-1		MOVABLE TERMINAL
				36887		
03	9	1	5	36889-1		SPRING ARM
				36889		
04	10	AR	2	27716-1		SPR MAT'L STR SPEC(.216 LBS/K
				27716SH1		
01	11	1	24	~~27293-25~~		~~SENSOR ASSEMBLY~~
				27293SH3		
02	12	1	2	36900-1		MOD SAE J512 HEXPORT
				36900		
02	13	1	3	74353-1		GASKET
				74353		
02	14	[redacted]		13-1		CUP
				7713		
02	15			176-1		SEAL
				74176		
03	16			225-1		KAPTON STRIP SPEC (.175 LBS/K
				27225		
02	17	1	6	27639-1		WASHER
				27639		
02	18	1	7	27406-1		CONVERTER
				27406		
02	19	1	8	73958-2		SPACER
				73958		
9140/0	371	1 4 02		ADAIMC	Pro a	Printing
02	20	OR	8	73958-3		SPACER
				73958		
03	21	AR		74224-1		KAPTON TAPE (.100 LBS/K)
				74224		
02	22	1	9	~~36656-88~~		~~3/4" FORMED DISC~~
				36656SH1		
01	23	1	14	74797-1		CRIMP RING

TI-NHTSA 7084

01	24	1	18	~~74078-SEL~~		TRANSFER PIN
				74078		
01	25	1	21	74247-4		ENVIRONMENTAL SEAL
				74247		
01	26	1	22	~~74888-1~~		~~THREAD GAP~~
				74888		
01	27	AR		~~27318-1~~		~~CARTON ASM.~~
				27318		
02	28	[illegible]	2	~~74219-1~~		~~CARTON~~
				74219		

914C/G 371 1 4 02 ADAIMC Pro a Printing

02	29	5	3	74218-1		ROW SEPARATOR
				74218		
02	30	4	4	27317-1		DEVICE SEPARATOR
				27317		

NOTES. REV.DATA,DISTRIBUTION,OPERATING CHARACTERISTICS,SPECIAL REQUIREMENTS

REV DESC: NEW P/L SET UPS | CCB APPROVAL DATE: 92[illegible]

DFTG WORK GROUP: PRECISION CONTROLS | ECN ORIGINATOR: STEPH[illegible]LER

NOTES:

1 - ACTUATION PRESSURE ---------- 90-160 PSIG

2 - RELEASE PRESSURE ---------- 20 PSIG MIN.

99 - CR M09981.FINAL ASM 36952-1 WAS 37002-1.BASE ASM 27759-9 WAS 27759-3, MOV TERM ASM 36897-2 WAS 36897-1,SENSOR ASM 27293-25 WAS 27293-13

STOCK DISPOSITION
FINISHED DEVICES - USE
PARTS & SUB ASMS - USE

TEXAS INSTRUMENTS
INCORPORATED
MATERIALS AND CONTROLS GROUP

☐ ATTLEBORO, MA 02703 ☐ VERSAILLES, KY 40383
☐ CENTRAL LAKE, MI 49622

Shipping Order

DATE: 5 / 27 / 92 S.O. # 271330

REF. # _____ DATE SHIPPED ___ / ___ / ___

SHIPPED VIA: OVERNIGHT

SHIP TO:
FLYTE INDUSTRIES, INC.
1671 S.BROADWAY
CARROLLTON, TEXAS 75006

ATTN. MEHRAT HARASHI

CHARGE TO:

USE (CHECK ONE)

- ☐ SCRAP SALES
- ☐ SALE OF ASSETS
- ☐ OUTSIDE PROCESSING
- ☐ TRANSFERS BETWEEN TI LOCATIONS
- ☐ EXPENSE MATERIAL
- ☐ OTHER, EXPLAIN: _____

DIV/ACCT. # _____ CC: _____

QUANTITY	DESCRIPTION/PART #/PO	UNIT PRICE	TOTAL
6	77PEL2-1	n/c	
1	ISIR REQ.	n/c	

GROSS WEIGHT	NO. OF CONTAINERS	ORIGINATOR'S NAME (TYPED)	ORIGINATOR'S SIGNATURE
		KLATEK ROSE 12-27	Elaine Rose

S-010148 LRS

TI-NHTSA 7066

TEXAS INSTRUMENTS
INCORPORATED
MATERIALS AND CONTROLS GROUP

☐ ATTLEBORO, MA 02703 ☐ VERSAILLES, KY 40383
☐ CENTRAL LAKE, MI 49622

Shipping Order

DATE: 8 / 27 / 92 S.O. # 271338

REF. #: _____ DATE SHIPPED: 8 27 92

SHIPPED VIA: OVERNIGHT

TO:
FITZ INDUSTRIES, INC.
2671 S.BROADWAY
CARROLLTON, TEXAS 75006

ATTN. NEHRAT BARAMIX

USE (CHECK ONE)

870883112

☐ SCRAP SALES
☐ SALE OF ASSETS
☐ OUTSIDE PROCESSING
☐ TRANSFERS BETWEEN TI LOCATIONS
☐ EXPENSE MATERIAL
☐ OTHER, EXPLAIN: _____

CHARGE TO:

DIV/ACCT. #: _____ CC: _____

QUANTITY	DESCRIPTION/PART #/PO	UNIT PRICE	TOTAL
6	77PEL3-1	n/c	
1	IEIR PEL.	n/c	
			Rita Kolb 8/27/92

GROSS WEIGHT	NO. OF CONTAINERS	ORIGINATOR'S NAME (TYPED)	ORIGINATOR'S SIGNATURE
	1	ELAINE ROSE ms 12-27	Elaine Rose

S-01546 (10)

ORIGINATOR COPY

TI-NHTSA 7067

Pitts INC.

Customer Information

Checklist Of Required Actions

Part Number: 77PSC2-1 Customer Requested Date: 8/28/92

Actions	Available/Completed	Status/Update
1. Manufacturing feasibility (Discs, base, terminals,...)	✓	
2. Customer Print/Buyer/Buyer code Platform/MY/SQA/SQA code	✓	
3. Available product to accomplish testing/measurement (6 pcs for FAI, ...)	✓	
4. First Article Inspection (Also check IR code height against customer's print). external o-ring, threaded protective cap)	✓	
5. Design FMEA Process FMEA	✓	
6. Process Flow Diagram	✓	
7. Designated characteristics(kpc) (Significant characteristics)	TBD	
8. Manufacturing Control Plan	✓	
9. Gage R & R Studies (send copy to gage lab)	✓	
10. Process Capability Studies (Cpk) (Short term, quarterly, ...)	✓	
11. ES testing	✓	
12. Material Analysis (Date)	'92	
13. PIPC (Process potential Cp and process capability Cpk on a minimum of 300 switches once the process is stable for significant characteristics.)	✓	
14. PIST (Includes dimensional requirements on the print and also all engineering specification (ES) test results.)	✓	

16. Comments/negotiations:

shipped to:

ii

(Date)

(Rev 3, 08/21/92, J. Watt)

TEXAS INSTRUMENTS

August 26, 1992

Pitts Industries, Inc.
1671 S. Broadway
Carrollton, Tx 75006

Attn: Mr. Medhat Habashi
QRA Manager

Subj: ISIR Ford Part Number F2VC-9F924-AB (Pressure Switch)
T.I. Part Number 77PSL2-1

Ref: 08/25/92 Telephone call

Dear Medhat,

Enclosed, please find a copy of the ISIR for Ford p.n. F2VC-9F924-AB that was previously forwarded to Ford. You can retain this copy for your files.

Please let me know if you have any questions or if I may be of any further assistance.

Regards,

Jim Watt
QRA Engineer
Precision Controls Department
Control Products Division

cc: Dave Czarn, MS 12-29; Steve Offiler, MS 12-29
Charlie Douglas, MS 12-33; Gary Snyder, MS 12-29
Joe Jorda, Pitts Industries Purchasing Dept., Carrollton, Tx.
Andy McGuirk, MS 12-27
Norm Freda, TI Farmington Hills, Michigan

encl: ISIR Ford P.N. F2VC-9F924-AB

TEXAS INSTRUMENTS INCORPORATED • 34 FOREST STREET • ATTLEBORO, MA 02703
508-699-4800 • TELEX 949001 • CABLE TEXINS

HELITE INDUSTRIES, INC.
INITIAL SAMPLE DATA REQUEST
(ISDR)

REQUIRED APPROVAL BY: Pitts

REQUEST DATE: 8/28/92

PT NUMBER: F2VC-9F924-AB	RECERTIFICATION:
DESIGN LEVEL & DATE: "G" 4-11-91	INITIAL SAMPLE - PRODUCTION TOOLING:
PART DESCRIPTION: PRESSURE SWITCH	INITIAL SAMPLE - PROTOTYPE TOOLING:
APPLICATION: NAVT GEN.SPEED CONTROL	NEW SUPPLIER:
SUPPLIER: TEXAS INSTRUMENTS INC	DESIGN CHANGE:
SUPPLIER LOCATION: ATTLESBORO MA 02703	PROCESS CHANGE:
REQUESTED BY: GEORGE COMISKEY	TOOLING CHANGE:

	Yes/No	Samples Required	Approved	Rejected
I. FEASIBILITY ASSESSMENT COMPLETION: DATE 12/5/91	YES			
II. SUPPLIER INFORMATION REQUIRED:				
A. Dimensional Layout with Numbered Print	YES			
B. Material Certification	YES			
C. Process Potential Study on All Designated Characteristics	YES			
D. Functional Test	YES			
E. Control Plan	YES			
F. Process Flow Chart	YES			
G. Process FMEA	YES			
H. Other:				

III. SAMPLE REQUIREMENTS:

A. 6 Samples Due By 8/28/92. Attention: Madhat HASASHI

B. _____ Samples Due By _____. Attention: _____

C. _____ TOTAL SAMPLES REQUIRED. (Purchase order is the governing document for actual released requirement. Here information is provided here as requirements to meet needs for approval.)

IV. REMARKS / SPECIAL INSTRUCTIONS [Design FMEA, Special Gages, Cleanliness, Packaging, Designated Characteristics, Etc.]

FMEA ENCLOSED.

V. HELITE APPROVING AUTHORITY:	Yes/No	Samples	Approved	Rejected
A. Product Engineering				
B. Materials				
C. Quality Assurance				
D. Manufacturing Engineering				
E. Customer Approval				
F. Supplier Management				

Final Approval on This Form by Quality Assurance Authorizes Release to Purchase Parts.

Approved: _____ Date: _____

/ Recertification, Current Approval Expires: _____

VI: DISTRIBUTION: Supplier___ Purchasing ___ Receiving Inspection___ Material___ Manufacturing ___

ISDR

TI-NHTSA 7071

HILITE INDUSTRIES, INC.

SUPPLIER QUALITY SYSTEM INFORMATION	DATE OF REPORT: 8/28/92
VENDOR (NAME, ADDRESS, PHONE): TEXAS INSTRUMENTS INC. 34 FOREST ST. MS 12-27 ATTLEBORO,MA 02780	GENERAL PRODUCT LINE: Automotive SWITCHES
	TOTAL NO. OF EMPLOYEES: 5000
	PRODUCTION EMPLOYEES: 3000
	QUALITY ASSURANCE EMPLOYEES: 300

CONTACT PERSONS - (NAME, FUNCTION):

JIM WATT QPA ENGINEER
STEVE OFFILER DESIGN ENGINEER
MATT SELLERS MANUFACTURING ENGINERR
CHARLIE DOUGLAS PRODUCT SPECIALIST

ITEMS CONSIDERED / PURCHASED FROM THIS SOURCE:

AUTOMOTIVE PRESSURE SWITCHES

LIST SPECIFICATIONS APPLICABLE:

FORD Q101

LIST SPECIALIZED AREAS & PROCESSES:

SENSOR ASSEMBLY
CONNECTOR ASSEMBLY

IS INSPECTION EQUIPMENT TRACEABLE TO NBS: ✓ YES ___ NO
NIST

IS SUPPLIER NOW USING SPC TECHNIQUES AS A REGULAR PART OF DOING BUSINESS:

TI-SPC87 DATA SYSTEM

LIST MAJOR CUSTOMER QUALITY CERTIFICATIONS: (E.G. FORD Q1, GM TYP. 200):

FORD Q1
GM MARK OF EXECELLENCE

__ Quotation Level __ Initial Production Level

HILITE INDUSTRIES INC.

HILITE MANUFACTURING FEASIBILITY SIGN-OFF

SUPPLIER TEXAS INSTRUMENTS INC.
CUSTOMER HILITE INDUSTRIES INC.
PART NUMBER & REVISION B2EC-9E924-AB
CUSTOMER PART NUMBER & REVISION 77P618-1

DEFINITION:
Manufacturing Feasibility is the mutual agreement between product engineering, manufacturing, the supplier, and assembly activities that a proposed design can be manufactured, assembled, packaged and shipped at an acceptable level. A feasible design must permit meeting production volumes and schedules, consistent with the ability to meet engineering requirements and program quality, reliability, investment cost, unit cost and timing objectives.

FEASIBILITY CONSIDERATIONS:
The following list, not intended to be inclusive, identifies major questions which should be considered in performing a feasibility evaluation. The data provided in this request should be used as a basis for analyzing your ability to meet all the specified requirements. Negative answers to the questions must be supported by comments identifying your concerns and/or proposed changes to enable you to meet the specified requirements. Comments, as appropriate, may also be requested on other pertinent considerations not mentioned below. If you require additional space for comments, use an attachment to the form.

YES	NO	CONSIDERATIONS
✓		Can the part be manufactured as specified on the attached drawings?
		. Compatibility of specifications to accepted manufacturing standards.
		. Containability of tolerance stack-up.
		. Special equipment requirements.
		. Adequacy of part definition to enable feasibility evaluations.
✓		Can you meet the Engineering Specification (ES) as written?
		. Containability of all ES requirements.
✓		Can you meet the quality control requirements of Q-101?
		. Establishment of process capability at required volume levels.
		. Maintenance of required quality system controls.
✓		Can you meet all specified requirements at the projected volume levels?
		. Adequacy of capacity.
✓		Does the design allow use of conventional efficient material handling equipment techniques?
		. Attainability of shipping densities.
✓		Can the part be manufactured without incurring any unusual costs (capital equipment, tooling or piece costs)?
		. Product improvement proposals.
		. Cost reduction alternatives.
✓		Can you maintain production capacity on the related part until incorporation of new/ revised design (for current suppliers only)?

FEASIBILITY ASSESSMENT:

__ Feasible - Part can be produced as specified with no revisions.
__ Changes Required - Design revision required to produce part within the specified requirements.
✓ Changes Recommended - Feasible but can be improved or less costly if proposed revision is incorporated. Note change revision reverse side.

1671 S. Broadway Carrollton, TX 75006 P.O. Box 814649 Dallas, TX 75381-4649
(214) 242-2116 Telex. (910) 860-5741 Cablex: (214) 242-2002

TI-NHTSA 7074

[illegible] 06:53 AM

[illegible] 26, 1993

[illegible]	Dave [illegible]	[illegible]ARN	Matt [illegible]	PCME
	Terry Rodrig[illegible]	[illegible]ER7	Charlie [illegible]	CMP1
	Gary [illegible]	[illegible]G1	Bill Sweet	WS4
	Dick [illegible]	[illegible]DG	Andy McGu[illegible]	RCGA
	[illegible]	[illegible]IZ	Paul Snorme[illegible]	AMET
	Cheryl DeCosta	ATGC	George Glee[illegible]	MELT
	[illegible] Frece	WHLZ	Elaine Rose	GAMY
	[illegible]ick Conlin	RAC1	Rusty Struble	RCS2
	[illegible] Harrop	ZING	Jim Grammer	JGQ1
	Cheryl DeCosta	CDBQ	Claude Richardson	CER
cc:	Bill Cohedon	MFPC	Martha Sullivan	CPPC
	Tom Cherbonneau	TC	Chuck Stanfa	ATPA
	Neil MacKinnon	MAPA	Bob Bartosh	RLBS
Fm:	Jim Watt	JW02		

Re: Pitts Industries Quality Survey Audit (July 19 & 20)

I would like to thank everyone involved with the recent Pitts Industries Quality survey audit on July 19 - 20, 1993.
Mr. George Comiskey, Pitts Industries QRA representative, was impressed with the people he met and with the work they were doing.
We scored 84% which is excellent with numerous favorable comments.

Thank you again for your excellent support!

Regards

Jim

[illegible] 1718 msgid: JW02

AMSG MSG 553979 FR=JW02 TO=GAMY SENT=07/12/93 11:07 AM
Reming ST=C DI[illegible] CC=00149 BY=JW02 AT=07/12/93 11:07 AM

[illegible] 12, 1993

[illegible]	Dave Czarn	[illegible]RN	Matt Sellers	PCME
	Terry Rodrigue[illegible]	[illegible]ER7	Charlie Douglas	CMF1
	Gary Snyder	GUZ1	Bill Sweet	WS4
	Dick Garrison	RWB3	Andy McGuirk	PCQA
	Aziz Rahman	ZIZ	Paul Sherman	AMET
	Cheryl DeCosta	ATQC	George Glear	AELT
	Norm Freda	WHLZ	Elaine Rose	GAMY
	Rick Conlin	RAC1	Rusty Struble	RCB2
	Louise Parroo	ZING	Jim Gremmar	JGO1
	Cheryl DeCosta	CDBQ	Claude Richardson	CER
[illegible]	Bill Condon	MFPC	Martha Sullivan	CPPC
	Yon Charpcneau	TC	Chuck Stanfa	ATPA
	Neil MacKinnon	MAPA	Bob Bartosh	RLB3
[illegible]	Jim Watt	JW02		

[illegible] Pitts Industries Quality Survey Audit (July 19 & 20)

[illegible] Mr. George Comiskey, Pitts Industries QRA representative, will be visiting Precision Controls on July 19 & 20, 1993, to complete a quality survey audit of our processes in support of our 77PS and 57PS pressure switches. Areas of interest include receiving inspection, process [illegible] fixtures, route slips, gage lab, TSL lab, in-process inspection, final inspection, process control, and process capability. The final agenda follows.

Regards.

Jim ext. 1719 msgid: JW02

Below is a tenta[illegible] for the Pitts Industries visit:

[illegible] (July 19, 1993)

[illegible] Conference Room (Bldg 12)

Time		Individuals
08:30	Arrival / Introductions Review visit agenda	* Marketing Conference Rm Charlie Douglas Dick Garrison Aziz Rahman Matt Sellers Jim Watt
08:30 - 08:40	Pressure Switch Product Intro Precision Controls Intro	Charlie Douglas

TI-NHTSA 7077

08:55- 09:15	77PS Design Features	Aziz Rahman
09:15 - 09:45	Flow Diagram Mfg Control Plan	Matt Sellers
09:45 - 10:15	Receiving Inspection	George Comiskey
10:15 - 11:15	Line Tour (77PS) JIT Warehousing SPC 97 Demonstration Control Charts Operator Training PLOT Books	Dick Garieby Matt Sellers
11:20 - 12:00	Receiving Inspection Tour Bldg 11	Jim Watt Cheryl DeCosta
12:10 - 12:50	Lunch Bldg 12 Cafeteria	TBD
01:00 - 1:45	Environmental Test Lab Bldg 10	Jim Watt
1:45 - 5:00	Quality Audit	Jim Watt
5:00 -	Dinner	Aziz Rahman Jim Watt

(Tuesday, July 20, 1993: Quality Audit Continues)
(Wrap-up " at 2:00 p.m. tentatively, MCR)

- FAI -
77PSL 3-2

DRAWINGS AVAILABLE UPON REQUEST

-MSG M#= 00466586 FR=VAGS TO=EB01 SENT=08/27/92 02:29 PM
R#=143 ST=C DIV=0050 CC=00101 BY=VAGS AT=08/27/92 02:29 PM

TO: TED BALLARD ETB
STEVE OWEILER SBOI

CC: DALE SOGGE FFUN
DAVE CZARN ZARN
BILL SWEET PCME
CLAIRE BALTHAZAR PCME

FR: MATT SELLERS PCME

SJ: QUIET DISC SPEC'S

GENTLEMEN,

RECENT SHIPMENTS OF 36656-35 QUIET PASS CAR DISC TO THE 77PB LINE HAVE EXHIBITED A HIGH INCIDENT LEVEL OF NOISE FALLOUT. AS YOU KNOW WE DETERMINE A DEVICE NOISY IF THE FUNCTION TESTER DETECTS AN AUDIBLE SNAP OCCURRENCE WITHIN 200 MSEC OF CONTINUITY CHANGEOVER. UPON FURTHER INVESTIGATION IN THE LAB IT WAS DETERMINED THAT THE DEVICES WERE IN FACT NOISIER THAN IS GENERALLY CONSIDERED ACCEPTABLE. ADDITIONALLY, CONVERSATIONS WITH DISC DEPT. INDICATE THAT THESE PARTICULAR LOTS DID HAVE A HIGHER DIFFERENTIAL MEAN AFTER THE 500 DEGREE HEAT TREAT OPERATION THAN IS TYPICAL FROM PREVIOUS AND SUBSEQUENTLY PRODUCED DISC LOTS. SPECIFICALLY THE 500 DEGREE H.T. DIFF MEAN ON THE NOISY LOT WAS ROUGHLY 10.0 PSI. LATTER LOTS RECENTLY RECEIVED THAT HAVE PERFORMED WELL WITH RESPECT TO ACCR FALLOUT HAVE HAD 500 DEGREE H.T. DIFF MEANS IN THE 9.0 PSI RANGE.

PLEASE CONSIDER WHERE WE CAN PLACE CONTROLS IN THE DISC DEPT. TO LIMIT THE ACCEPTABLE 500 DEGREE H.T. DIFF MEANS TO 9.0 TO 9.5 PSI. ALSO PLEASE UPDATE PRINT SPECIFICATIONS TO LIMIT THE SAME.

REGARDS...MATT
X1245

TO: Matt Sellers
Dave Czarn
Steve Offiler
Dick Gariepy

FR: Dale Sogge

sj: Quiet switch preload

I have completed the preliminary capacitance vs preload study. As you may recall we proposed that capacitance could be used to check each device from possible mis-pining prior to shipping. It was felt that it would be a more useful test than Hypot. Hypot only checks for long pinned devices where as capacitance checks for both long and short pins.

There is an excellent correlation between capacitance and preload as shown in the attached figure (r=.95). The correlation includes two sets of readings taken one dey apart, so repeatability seems to have little effect.

Twenty devices from production were measured to get a feel for our production capability. These are shown on the attached graph. Unfortunately we are not capable to the limits of 3.5 and 9.5. Cpk is 0.67. The data also shows that we are not centered at the 6.5 mil target.

In spite of this lack of capability I strongly recommend that we add a capacitance test to the final tester. If we don't have it in place then we can't figure out what we have to do to improve. Matt has agreed to coordinate mechanization to get this built.

I also strongly suggest that we add this on a sample basis immediately to set if some bad parts are getting out the door. No one currently has this as an action item.

We temporarily installed the cap tester inside the final tester and found that we got identical readings to hose taken in the lab. This means that we don't have to worry about electrical nbise if cabled properly.

Regards,
Dale

CAPACITANCE VS PRELOAD 77PSL3 1

y=1.857558369+0.014273174*X R=0.9514 N=90

DRS, 6/19/92, CAPREG.XLC

avg=1.7657pF

sindp=0.0136

Cpk

0.67

TI-NHTSA 7063

THE EIGHT DISCIPLINES ARE:

1. USE TEAM APPROACH
Establish a small group of people with the process/product knowledge, allocated time, authority, and skill in the required technical disciplines to solve the problem and implement corrective actions. The group must have a designated champion.

2. DESCRIBE THE PROBLEM
Specify the internal/external customer problem by identifying in quantifiable terms the who, what, when, where, why, how, how many (5W2H) for the problem.

3. IMPLEMENT AND VERIFY INTERIM (CONTAINMENT) ACTIONS
Define and implement containment actions to isolate the effect of problem from any internal/external customer until corrective action is implemented. Verify the effectiveness of the containment action.

4. DEFINE AND VERIFY ROOT CAUSES
Identify all potential causes which could explain why the problem occurred. Isolate and verify the root cause by testing each potential cause against the problem description and test data. Identify alternative corrective actions to eliminate root cause.

5. VERIFY CORRECTIVE ACTIONS
Through pre-production test programs quantitatively confirm that the selected corrective actions will resolve the problem for the customer, and will not cause undesirable side effects. Define contingency actions, if necessary, based on risk assessment.

6. IMPLEMENT PERMANENT CORRECTIVE ACTIONS
Define and implement the best permanent corrective actions. Choose on-going controls to ensure the root cause is eliminated. Once in production, monitor the long-term effects and implement contingency actions, if necessary.

7. PREVENT RECURRENCE
Modify the management systems, operating systems, practices, and procedures to prevent recurrence of this and all similar problems.

8. CONGRATULATE YOUR TEAM
Recognize the collective efforts of the team.

These steps do not have to be followed in the order given. They can vary with each problem. For example, by the time a problem is reported and a team formed, the interim action may have been taken by the foreman or operator.

PROBLEM SOLVING PROCESS

CONGRATULATIONS! YOU'VE BEEN NAMED TO THE TEAM.

8D TEAM ORIENTED PROBLEM SOLVING

The Eight Discipline (8D) Approach, also known as Team Oriented Problem Solving (TOPS), is the Ford method for addressing concerns including those issues concerning capability indices that are below desired values.

The 8D approach to problem solving:

- Provides an orderly team-oriented method for solving problems using facts rather than personal bias. Creative, permanent solutions usually require input from many activities.
- Applies to any problem or activity and assists in achieving effective communication between departments which share a common objective.
- Requires documentation through the **Concern Analysis Report**. A typical report form is shown on the following pages.
- Provides the missing link between SPC and realized quality improvement.

The eight disciplines are identified and defined on the following page, and diagramed with a flow chart.

While the documentation of each problem is essential, the order of steps taken for resolution may vary depending on the degree of difficulty or complexity of a particular problem. For example, by the time a problem is reported and a team formed, interim action may have been taken already by the manufacturing personnel but the permanent solution may require subsequent team involvement.

21781

TEXAS INSTRUMENTS

CERTIFICATION OF COMPLIANCE TEST

CUSTOMER: Pitts Industries, Inc.

CUSTOMER ORDER NO.: _____ TI ORDER NO.: _____

CUSTOMER PART NO.: Ford No. F2VC-9F924-AB TI PART NO.: 77PSL2-1

CUSTOMER SPEC: BS F2VC-9F924-AA TI SR: _____

QUANTITY: 6 pcs DATE SHIPPED: 08/27/92

IT IS HEREBY CERTIFIED THAT THE GOODS SPECIFIED ABOVE CONFORM TO THE TI ORDER SHOWN ABOVE, AS REVISED BY MUTUALLY AGREED WRITTEN AMENDMENTS, IF ANY. Further, component parts utilized have been scrutinized and do not violate Ford Engineering Materials Specifications WSS-M99P9999-A1/A2/A3 restrictions.

Jim Watt, QRA Engr.
PRECISION CONTROLS QUALITY CONTROL

DATED: 8/27/92

F2VC-9F924-AB

MATERIAL ANALYSIS

PARTS LIST

	PART NAME	PART #	CERTIFIED
1	BASE	46515-2	YES
2	STA.TERM.	36888-1	YES
3	MOVE.CONTACT	74409-1	YES
4	RIVET	74171-1	YES
5	MOVE.TERM.	36887-1	YES
6	SPRING ARM	36889-1	YES
7	J512 HEXPORT	36900-1	YES
8	GASKET	74353-1	YES
9	CUP	27713-1	YES
10	SEAL	74176-1	YES
11	KAPTON STRIP	27225-1	YES
12	WASHER	27639-1	YES
13	CONVE[illegible]E	27406-1	YES
14	KAPTO[illegible]E	74224-1	YES
15	SPACER	73958-2/-3	YES
16	CRIMP RING	74797-1	YES
17	TRANSFER PIN	74078-SEL	YES
18	ENVIO.SEAL	74247-4	YES

TI-NHTSA 7086

August 28, 1991

To: Donna Moynihan 12-27

From: Beth Kill 10-16

Subject: GP-3 Material Confirmation
TSL Request # 110822

Sample Description:

P/N 46515-2 Thermoplastic Polyester
Celanex 4300

Results:

	P/N 46515-2	Spec.
Glass Fill	32%	30%

TGA results confirm the base contains slightly high glass fill. DSC results confirm the base material to be a thermoplastic polyester with a melting point at 223 -225 deg. C., and a glass transition at 50 - 60 deg. C., consistent with Celanex 4300.

Regards,

Beth X3069

D 82647
36888

August 20, 1991

To: Donna Moynihan 12-27

From: Beth X111 10-16

Subject: GP-3 Material Confirmation
TSL Request # 110823

Sample Description:

P/N 36888-1 Stationary Terminal CDA 260 Brass
1/2 Hard

Results:

	P/N 36888-1	Spec. CDA 260
Cu (wt%)	68.5%	68.5 - 71.5%
Fe	0.030	0.05 max
Pb	0.010	0.07 max
Zn	balance	balance
Hardness	73 RB	60 - 77 RB

Results confirm the terminal is made of CDA 260 brass, 1/2 hard.

Regards,

Beth X3069

TITLE MOVABLE CONTACT REV D 7440E

NOTES:

1. PARTS MUST BE STORED IN PLASTIC BAGS THROUGH ALL SHIPPING AND HANDLING PROCESSES.
2. MATERIAL & PLATING THICKNESS CERTIFICATION REQUIRED WITH EACH SHIPMENT.
3. DIMENSIONS APPLY AFTER PLATING.
4. MEASURE PLATING THICKNESS BY MOUNTING & CROSS-SECTIONING PART.
5. PLATING THICKNESS APPLIES AT THE INDICATED LOCATION ONLY.
6. (D2) TOOL VENT MARK ON .040-.050R ALLOWED. DIMENSIONS MAY NOT EXCEED .001 IN HEIGHT AND .003 IN WIDTH. THERE MUST BE NO VOID IN PLATING IN THIS AREA. .032-.035 DIMENSION MAY MEASURE .036 OVER THIS MARK.
7. (D3) PLATING THICKNESS OF .0007 MINIMUM ALLOWED ABOVE TOOL VENT MARK ONLY. ADJACENT AREAS MUST MEET "FINISH" REQUIREMENTS.

TI-NHTSA 7092

PART NO.	MATERIAL	(D1) FINISH (M)	DIA. "A"
74408-1	COPPER	(D3) SILVER PLT. .0011/.0024 THK (SEE NOTE #5)	.0605-.063

REV'S: C SEE CN - CR# 98957 3-3-87 M.D. DBB; D SEE DCN C-91-1140 9-19-88 AMC; B SEE DCN C-97-1486 TR 5-7-86 BARD; A ISSUE E-96-1759 TR 1-6-85 AMC

BY T. Dalip 1-6-85
CH. R. Rutter 1-13-85
ENG

TEXAS INSTRUMENTS INCORPORATED
ATTLEBORO, MASS., U.S.A.

KLIXON CONTROL PRODUCTS

SIZE A

PARTS LIST 7440E

84

74408-1

Paul Molinari LHM

DATE: 07-31-92

RADCLIFF WIRE INC.

FLAT, SQUARE AND SHAPED WIRE

Phosphor Bronze • Brass • Stainless Steel

ORDER NUMBER 54450

NONZO ROAD • P.O. BOX 803 • BRISTOL, CONNECTICUT 06011-0803
TELEPHONE: 203 / 583-1305 • FAX: 203 / 583-5553

MATERIAL CERTIFICATION

SHIP TO

TO
MILFORD RIVET
857 BRIDGEPORT AVE.
MILFORD, CT 06460

VIA

YOUR ORDER NO.	DATE ENTERED	DATE WANTED	DATE PROMISED	F.O.B.
1456-2	12/23/91	1/17/92 OS		BRISTOL

QYT/WEIGHT ORDERED	SIZE/TOLERANCE	SHAPE
200 LBS.	.057 P/M .001 DIA.	ROUND

TEMPER	MATERIAL	EDGE	FINISH
1/2 HARD	OFHC COPPER 102		

SPACE	TENSILE	[redacted]
	45-52,000 PSI	

SPECIAL CONDITIONS

CERTS/MAT'L

SPOOL-COIL

SHIPPING RECORD

DATE	QUANTITY	PACKAGING	TEST
[redacted]-92	197#	1 - Barrel	52,000 psi

HEAT	C	MN	SI	S	P	Cr	Ni	Cu	B	Fe	Al
HARDNESS	Ti	CB + TA	Co	MO	V	Mg	Ca	N	Zn	Pb	
TENSILE STR.	ZA	CB	TA	Sn	Se						

This is to certify that the above wire was processed from raw material and was found to be in compliance with the specifications of your PO #1456-2.

RADCLIFF WIRE, INC.

Judy Belanger
Judy Belanger Quality Control Inspector

TI-NHTSA 7094

AMERICAN ELECTRO PRODUCTS INC.
1358 THOMASTON AVENUE
WATERBURY, CT 06704
(203) 758-7051

Certificate of Compliance

NO. 21-54327
REL# 1

MILFORD RIVET & MACH
837 BRIDGEPORT AVE

MILFORD CT 06460

DATE 06/30/91

YOUR ORDER NO. 133523
SHIPPED VIA UNITED P. S.

This is to verify that parts and/or your material furnished against your purchase order number shown above, have been manufactured in accordance with requirements and specification as required.

PART NO.	DESCRIPTION	QUANTITY
6254A	SILVER 0.001100-0.002400 MAE	720.625.0

Tests to substantiate this have been performed in our plant (or have been performed by our suppliers) and are available upon request from us/or our suppliers.

Very truly yours,
AMERICAN ELECTRO PRODUCTS, INC.
Signed by: [signature]
Q.C. Inspector

TI-NHTSA 7095

TITLE RIVET

REV. B

74171

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

NOTE:
1. PARTS MUST BE STORED IN PLASTIC BAGS THRU ALL SHIPPING AND HANDLING PROCESSES

TI-NHTSA 7096

74171-1	CDA #260 BRASS
PART NO.	MATERIAL

BY 2-1-84
CH. K.H. Wenning 2-12-84
ENG. D. Shortt 2/13/84

TEXAS INSTRUMENTS INCORPORATED
ATTLEBORO, MASS., U.S.A.

KILDON CONTROL PRODUCTS DIVISION

DWG. SIZE A

DWG. NO. 74171

THE MILFORD GROUP
537 BRIDGEPORT AVE.
MILFORD, CONNECTICUT 06460

TEL: 203-878-4371 * FAX 203-878-5471. 1-800 878-1344

TO: TEXAS INSTRUMENTS

CERTIFICATE OF COMPLIANCE

ACME MILFORD CERTIFIES THAT;

P.O. NUMBER: 500086022
ACME/MILFORD CONTROL NUMBER: 001579
ACME/MILFORD P/N: 6051-AX.067
QUANTITY: 191630

WAS PROCESSED TO CONFORM TO THE FOLLOWING

PART NUMBER: 74174-1
PART REVISION: M/PC
MATERIAL: BRASS C26130

HEAT NUMBER:
TENSILE AFTER LIGHT DRAW:
FINISH: BRITE FREE OF OIL

SIGNED: James DeSmarais DATE: 07-06-92

JAMES DESMARAIS
TITLE: QUALITY ASSURANCE DIRECTOR

SWORN TO AND SUBSCRIBED BEFORE ME THIS/_____DAY_____MONTH_____/YEA

NOTARY PUBLIC_____

MECHWIN CORPORATION
440 NEPPERHAN AVENUE
YONKERS, N.Y. 10701

#74171-1

****
*** CERTIFICATE OF ANALYSIS AND COMPLIANCE ***
****

.CT: 35500 FEB 3 1992

ACME MILFORD
857 BRIDGEPORT AVENUE
MILFORD, CT. 06460

MWC # 7741
P.O.: 1288
OUR INVOICE: 8532
DELIVERY DATE: 01/29/92

SIZE: .0570

ALLOY: 360

ASTM: B 134

FINISH: B

TENSILE STRENGTH: 61.4 KSI

R.I.A.: %

ELONGATION:

ROCKWELL HARDNESS:

GRAIN SIZE AT FINAL ANNEAL:

ELECTRICAL CONDUCTIVITY: %

TEMPER DESIGNATION: H08

CHEMICAL ANALYSIS:

CU	ZN	PB	FE	SN
69.580	BAL	0.002	0.019	
AL	MN	NI	SI	P

OTHER:

WE CERTIFY THAT THIS SHIPMENT CONFORMS TO THE CHEMICAL AND PHYSICAL PROPERTIES SHOWN ABOVE, AND IS IN COMPLIANCE WITH THE SPECIFICATIONS OF THIS ORDER

MECHWIN CORPORATION

Dated: 01/30/92

By: E.C. [illegible]

TI-NHTSA 7098

TI-NHTSA 7099

August 20, 1991

To: Donna Moynihan 12-27

From: Beth Kill 10-16

Subject: GP-3 Material Confirmation
TSL Request # 110824

Sample Description:

P/N 36887-1 Moving Terminal CDA 260 Brass
1/2 Hard

Results:

	P/N 36887-1	Spec. CDA 260
Cu (wt%)	68.7%	68.5 - 71.5%
Fe	0.020	0.05 max
Pb	0.010	0.07 max
Zn	balance	balance
Hardness	80.5 RB	60 - 77 RB

Results confirm the terminal is made of CDA 260 brass, and slightly above 1/2 hard.

Regards,

Beth X3069

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	[illegible]	[illegible]	[illegible]

NOTE:
1. SURFACE MUST BE FREE OF TOOL MARKS AFTER FORMING.
2. MAXIMUM .001 RUN ALLOWED.

CERTIFIED PRINT
Int. No. [illegible] REV. E
Date JULY 1971

SPRING	[illegible]
PART NO.	[illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	BY T. MOTTERN	DATE [illegible]	TEXAS INSTRUMENTS
TOLERANCE ON FRACTIONS DECIMALS ANGLES	CHK. [illegible]	DATE [illegible]	TITLE SPRING ARM
MATERIAL	ENG. [illegible]	DATE [illegible]	
	APPROVED		SIZE C CODE IDENT NO. 82647 — 36889
			SCALE NONE — SHEET

THIS DRAWING SUPERSEDES [illegible] REV. 3 DATED: 10-31-[illegible]

TI-NHTSA 7101

August 20, 1991

To: Donna Moynihan 12-27

From: Beth Kill 10-16

Subject: GP-3 Material Confirmation
TSL Request # 110825

Sample Description:

P/N 36889-1 Spring C17200 Beryllium Copper

Results:

	P/N 36889-1	Spec. C17200
Be (wt%)	1.87%	1.80 - 2.00%
Fe	0.089	
Ni	0.068	[Fe + Ni + Co <0.6%] [Ni + Co ->0.2%]
Co	0.220	
Hardness	300 DPH	285 - 343 DPH

Results confirm the spring is made of C17200 beryllium copper at the specified hardness.

Regards,

Beth X3069

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	B	1. NOTE 4 EDGE WAS END. 2. ADDED NOTES 5, 6, AND 7. CH 100000	1-24-81	

NOTES:

1. MATERIAL CERTIFICATION INCLUDING TENSILE STRENGTH AND HARDNESS DATA REQUIRED WITH EACH SHIPMENT.
2. EACH REEL TO BE LABELED WITH T.I. PART NUMBER ON INSIDE OF CORE.
3. MAX. ALLOWABLE BURR .001.
4. ROLLS SLITTED FROM EDGE OF MASTER COIL NOT ACCEPTABLE.
5. MAX. WEIGHT PER REEL IS 30 LBS.
   MIN. WEIGHT PER REEL IS 10 LBS.
6. ROLL TO BE PANCAKE STYLE.
   12" TO 16" ID.
   24" MAX. OD.
   3/4" DRIVE HOLE
7. NO SPLICES ALLOWED.

CERTIFIED PRINT
ENG. STD. E9888 REV. E
Date JUL 1 1981

PART NO	MATERIAL	TENSILE STRENGTH (KSI)	HARDNESS DPH	THICKNESS (IN)	STRIP WIDTH	PAD PUT UP (LB) (OD)
27716-1	BERYLLIUM COPPER C17200, WELL HARDENED (BRUSH WELLMAN ALLOY 190 HM)	135-180	358-343	.005 ± .0002	.181-.188	TBD

DRAWN BY T. WEITERMAN	DATE 11-14-80	TEXAS INSTRUMENTS	KIDDON
TRACED BY		SPRING MATERIAL STRIP SPECIFICATION	
		B	82647	27716SH1

THIS DRAWING SUPERSEDES 27716SH1 REV.A DATED: 11-14-80

TI-NHTSA 7103

BRUSH WELLMAN
ENGINEERED MATERIALS

BRUSH WELLMAN INC. 5 WUST ROAD FAIRFIELD NJ 07006 201-227-2556

CERTIFICATE OF MATERIAL QUALITY

TEXAS INSTRUMENTS
34 FOREST STREET
BUILDING 11 DOOR 15
ATTLEBORO MA 02703

OUR ORDER NO: FA4484 CUSTOMER NO: 897832
OUR ITEM NO: 01 SHIPMENT NO: 001
YOUR P.O. NO: 500015520 05/01/92
YOUR SPEC NO:
YOUR PART NO: 27716-1

PART NO	DESCRIPTION	ALLOY	TEMPER	HEAT NO	DIMENSIONS (IN)				
ALLOY	STRIP	190	HM TM04	24737	0.005 0.183	+0.0002 +0.002	-0.0002 -0.002	" "	THI WID COI

SHIPMENT NBR 001 = 102.0 LBS
HEAT NUMBER 24737

***** CHEMICAL COMPOSITION (PERCENT) *****

1.94 BE .23 CO .06 NI .09 FE 12 SI .07 AL
.006 SN (.01 ZN .007 CR (.003 PB

REMAINDER CU

***** AS SHIPPED PROPERTIES *****

TENSILE	(KSI)	142.6 - 144.6	
YIELD	(KSI)	122.8 - 122.9	
ELONGATION	% IN 2"	14.0 - 14.0	
HARDNESS-1	DPH	308.0	
CONDUCTIVITY	% IACS	16.8	
GRAIN SIZE	(MM)	.015 - .015	

******* PC / LOT OR COIL NUMBER ******
80- E- 1

Paul J. Freund
QUALITY ASSURANCE MANAGER

DATE

[redacted]

TI-NHTSA 7104

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUN 22 1992

36900-1	COLD ROLL STEEL	ZINC PLATING, .0002 MIN. THICK WITH YELLOW DICHROMATE
PART NO.	MATERIAL	FINISH

NOTES:
1. DIMENSIONS APPLY AFTER PLATING.
2. PARTS TO BE SHIPPED, TRIBED, AND STORED IN SEALED PLASTIC BAGS.
3. FINISHED PART FLANGE HARDNESS TO BE ROCKWELL B-70 MINIMUM.
4. THREAD MUST CONFORM TO FORD SPEC. (ES-30600-9400(A.) IN-LBS MIN. TORQUE ON STEEL BAR).
5. .010" MIN. REMOVAL ALLOWABLE IN ø.132 – .140 THROUGH HOLE WHEN SMALLER FROM BOTH SIDES OF PART.
6. 41°-45° CHAMFER ANGLE APPLIES IN AREAS TO INCLUDE THREAD.
7. BREAK EDGE WITH RADIUS OR 45° REF. CHAMFER .010" MAX.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	BY J.D. MAYALL	DATE 12-19-88	TEXAS INSTRUMENTS
TOLERANCE ON FRACTIONS DECIMALS ANGLES	CK.		TITLE MODIFIED SAE J512 HEX PORT
	ENG.		
MATERIAL	APPROVED	DATE	SIZE C · DWG ITEM NO. 82647 · 36900

TI-NHTSA 7105

CERTIFICATION

June 3, 1992

TEXAS INSTRUMENTS
ACCTS PAYABLE DEPT
P.O. BOX 666
ATTLEBORO, MA 02703

This is to certify the parts furnished on your purchase order have been produced in accordance with specifications listed on your purchase order and/or blueprint. This certification and accompanying documents may not be reproduced, except in full, without written approval of Elco Industries, Inc.

INSPECTION SHEET, MILL SHEET AND SAMPLES ATTACHED

REV.: A

SAMPLES FOR S.O. # 20778 SENT WITH PREVIOUS SHIPMENTS

Records covering material used and the tests and inspection conducted are on file, subject to examination. This is an original certification and has not been amended unless stated below.

Purchase Order No.	505106996
Register No.	50347
Part No.	38900-1
Description	3/8-24 X .81
Quality Control No.	A9341-8
Mfg. Lot No.(s)	20778
Quantity	6,915

Authorized Signature
Quality Coordinator

CERTIFICATION

TI-NHTSA 7106

ELCO INDUSTRIES, INC.
PRECISION AUTOMOTIVE DIVISION
1111 Samuelson Road • P.O. Box 7009
Rockford, Illinois 61125-7009
815/397-5151 • Fax 815/355-4566

TITLE GASKET

REV. H

74353

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

NEITHER THIS PRINT NOR THE INFORMATION CONTAINED HEREON IS TO BE USED AGAINST THE INTEREST OF TEXAS INSTRUMENTS INCORPORATED OR AGAINST THE INTERESTS OF ANY OF ITS AFFILIATED COMPANIES OR WHOLLY OWNED SUBSIDIARIES.

NOTES:

1. PARTS MUST BE PURCHASED FROM T.I. ENGINEERING APPROVED VENDORS, LISTED BELOW.
2. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.
3. MATERIAL TO BE COMPATABLE WITH FREON-12 & REFRIGERANT OIL.
4. PARTS TO BE SHIPPED, ISSUED, AND STORED ON 4 FOOT +/- 6 INCH MANDRELS, SEALED IN PLASTIC BAGS AND SHIPPED IN CARDBOARD TUBES.
5. ALL CONTAINERS OF PARTS MUST BE MARKED TO REFLECT ANY MATERIAL LOT, TOOL OR PROCESS CHANGE.
6. (M) DASH 1 (-1) AND DASH 4 (-4) GASKET MUST HAVE FOUR (4) WHITE STRIPING INK MARKS, EQUALLY SPACED AROUND THE CIRCUMFERENCE, AND NOT LESS THAN 1/8 INCH WIDE. NO INK IS ALLOWED ON ANY OTHER SURFACE.

PART NO.	MATERIAL	DUROMETER	COLOR	A (M)	B (M)	C
74353-4	ETYLENE PROPYLENE JBL COMPOUND E-7104-70 JBL PART NO. 6197E	70	BLACK	.670-.662	.030-.036	.063
74353-3	ETHYLENE PROPYLENE JBL COMPOUND E-7064	70	WHITE	.670-.662	.030-.036	.063
74353-2	ETHYLENE PROPYLENE JBL COMPOUND E-7064	70	WHITE	.599-.591	.030-.036	.063
74353-1	ETHYLENE PROPYLENE JBL COMPOUND E-7104-70 JBL PART NO. 6197E	70	BLACK	.599-.591	.030-.036	.063

					75	6131	01-1	MJH	P3173	P3151

T. Dail 3-10-95
J. Jones 3-10-95
3-17-95

TEXAS INSTRUMENTS INCORPORATED
ATTLEBORO, MASS. U.S.A.

KIDDON CONTROL PRODUCTS DIVISION

SIZE A

PARTS LIST 74353

TI-NHTSA 7107

T1450215

TEXAS INSTRUMENTS, INC.
BUILDING 11-16
34 FOREST STREET
ATTLEBORO, MA 02703

PARKER HANNIFIN CORPORATION
JBL DIVISION
WEST CHOPE CIRCLE
SPARTANBURG, S.C. 29301
TELEPHONE (803) 573-1332

J.B.L. Division of Parker Seal certifies that the material used to produce the product in this shipment, namely SPIN/ST104. Conforms to TI drawing and TI purchase order requirements.

PART TITLE... GASKET

CUST P/N... 74353-1 REV B DATE SHIPPED P/O... 5000120513

J.B.L. P/N.. 20015Z 5-28-92 R/N... 19141

SILICONE COMPOUND... ST104 QUANTITY... 15,000

Very Truly Yours,
J.B.L. Division

Dennis T. Johnson

DENNIS T. JOHNSON
Quality Control Manager

DTJ/RE

KD 6/11/92

Bob
X3788
2pgs.

TI-NHTSA 7108

06-05-92 08:20 AM

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

NEITHER THIS PRINT NOR THE INFORMATION CONTAINED HEREIN IS TO BE USED AGAINST THE INTEREST OF TEXAS INSTRUMENTS INCORPORATED OR AGAINST THE INTEREST OF ANYONE RELATED OR COMPANIES OR WHOLLY OWNED SUBSIDIARIES.

REVISIONS				
ZONE	LTR	STPS DESCRIPTION PROJ. # 3423	DATE	APPROVED
	B	ADDED NOTE 10, ADDED "SEE NOTE 10" IN 3 PL... "MAX. FILLET .003" WAS "R.010 MAX. 2-PL.". "[illegible]" WAS "[illegible]" IN 3-PL. ALSO "R.016 MAX. SEE NOTE 10" WAS "R.008 MIN. SEE NOTE 10 [illegible]", [illegible]	3-14-91	[illegible]

NOTES:
1. .002 MAX. BURR ALLOWED, EXCEPT WHERE INDICATED.
2. .156-.161 ø MUST BE MAINTAINED THRU .036 MIN..
3. DIMENSIONS APPLY AFTER PLATING.
4. PINCH OFF RADIUS ALLOWED.
5. PARTS TO BE SHIPPED, ISSUED, AND STORED IN SEALED PLASTIC BAGS.
6. ALL CONTAINERS OF PARTS MUST BE DATE CODED, DATE CODE IS TO REFLECT ANY MATERIAL LOT, TOOL OR PROCESS CHANGE.
7. THIS PART IS LOT CONTROLLED. ANY PRESS CHANGE; NEW SET-UP, PUNCH CHANGE, MAJOR TOOL WORK OR MATERIAL LOT CHANGE WILL SIGNIFY START OF A NEW LOT. EACH LOT WILL HAVE IT'S OWN PACKING SLIP WITH LOT IDENTIFICATION. PALLETIZED LOTS REQUIRE ONE SKID FOR EACH LOT.
8. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.
9. .038 - .041 THICKNESS DOES NOT APPLY IN THIS AREA DUE TO WALL THINNING DURING FORMING.
10. EFFECTIVE RADIUS. NO MATERIAL MAY PROTRUDE BEYOND THE THEORETICAL BOUNDARY ESTABLISHED BY THE GIVEN RADIUS.

PART NO	MATERIAL	THICKNESS	FINISH
27713-1	ø1010 OR ø1006 C.R.S.	.038-.041	ZINC PLATING W/YELLOW CHROMATE .0002-.0004 THICK

DRAWN BY CHAS FLEMMERT	DATE 3-27-91	TEXAS INSTRUMENTS	XEROX
TITLE CUP			
SIZE B	DWG GROUP NO. 82647	27713	

THIS DWG. SUPERSEDES 27713 REV. "A" DATED 11-2-90

TI-NHTSA 7109

VALENTINE TOOL & STAMPING INC

[illegible] NORTH [illegible] 48[illegible]
[illegible]

MATERIAL CERTIFICATION

DATE : FRIDAY MAY 29, 1992

CUSTOMER : TEXAS INSTRUMENTS INC

CUSTOMER P.O. NO : 605111897 SUPPLIER INVOICE NO.: 81761

PART DESCRIPTION : 2773-1 CUP REV.5

SUPPLIER PJO NO. : 19059

QUANTITY SHIPPED : 63,800

SHIPMENT DATE : 05/29/92

WE CERTIFY THAT THE MATERIAL USED
TO PRODUCE THE PRODUCT IN THIS
SHIPMENT, MEETS
[illegible]
CONFORMS TO ALL DRAWINGS AND
ALL PURCHASE ORDER REQUIREMENTS

SIGNED
(Supplier Representative)

Joanne Lariamme Quality Assurance Manager

TI-NHTSA 7110

TELEX
FAX
PHONE
DUNS

ROME STRIP STEEL COMPANY, INC.
530 HENR. / BOX 189
ROME, NEW YORK 13440

SALES CODE
N6502036

0 1 0 0 0 0 0 0

DATE	INVOICE NO
04/01/92	15355

INVOICE TO: VALENTINE TOOL & STAMPING, INC.
171 W MAIN ST
NORTON, MA 02766

SHIP TO: VALENTINE TOOL & STAMPING, INC.
171 W MAIN ST
NORTON, MA

QUANTITY (LBS)	NO. CLS.	NO. SKIDS OR COILS	ORIGINAL CONTENTS	SHIPPED BY	MT NO.	C	HR	F	S	SH	RI	CR	NO
15,834	034	06	COMP	CAN MEX	R42735	04	28	008	013	01	01	03	01

AL WR CR CA

MEETS REQUIREMENTS OF:
CUST ORDER NO. 13425

COLOR CODE

	HEAT NO	PREPAID COLLECT	STRAPPING	PAPER WRAP	BOLS	CRATES	BOX
SIZE .2MM X 50.80MM	72007	PREPAID					

	TEMPER	COILS OR CUT		SKIDS	SKID SIZE	PKG. WT	WASTERS	CORES
.04000 X 2.0000	8 50 MAX	COIL	440 LBS	3000				

TOLERANCE	EDGE	LENGTH SPEC	RUNNERS	SPACERS	SHROUD	BOARDS	CAPS
+.001 -.001 +.005 -.005	NO3 SLIT	220 PIW 16 30		3/4'			

BURR	CAMBER	FLATNESS	OIL	T-PER

+.025 -.025MM +.127 -.127MM

CLASS	ASTM NO.
ALUM KILO	C-1006

TEST REPORT

(7,182 KG) 15,834

Certificate of Compliance

ATTEST:
952 07298 35 051192
Notary Public, Oneida County
My commission expires 5/31/92

DATE 4/2/92

I certify that the above figures are a true and correct copy of those contained in the records of this corporation.

ROME STRIP STEEL CO., INC.

TI-NHTSA 7111

#27713

9738

TITLE SEAL

REV. B 74176

74176

.0055
.0045

NOTE:
1.001 MAX. BURR ALLOWED

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 1 1991

TI-NHTSA 7112

ISSUE 57PSLI

D	74176-1	MAKE FROM 27225-1 (STEEL)
	PART NO.	MATERIAL

REV.						VS		Q13-1	Q14	M34	M34-1	P38	P37A	P35-1	P29

BY 2-1-84
CK. K.H. Wong 2-13-84
ENG. D 2/13/84

TEXAS INSTRUMENTS INCORPORATED
ATTLEBORO, MASS., U.S.A.

KLIXON CONTROL PRODUCTS DIVISION

SYM. SIZE A

SYM. NO. 74176

September 25, 1991

To: Donna Moynihan 12-27

From: Beth Kill 10-16

Subject: Material Confirmation
TSL Request # 110832

Sample Description:

P/N 74176-1 Seal Teflon and Kapton

Results:

DSC results confirm the presence of Teflon by the characteristic melt point at 316 - 319 degrees C.

Kapton is confirmed in the seal by the IR scan. It shows the same chacteristic absorbances exhibited by the sample known to be Kapton. See the enclosed scan.

Finally, the Teflon is confirmed to be on the surface of both sides of the seal by EDAX analysis.

Regards,

Beth X3069

CENTRATION
XNESS
SE
ARKS

SCAN MODE
ACCY. ☐ SURVEY ☐
HI ENERGY ☐ CAL ☐
RESOLUTION ☑
OPERATOR JS DATE 3/20/97

SPECTRUM NO.
SAMPLE DuPont Kapton
100FN099
ORIGIN

SAMPLE
SPECTRUM NO.

TI-NHTSA 7114

NO. 007-1493

PERKIN-ELMER

CONCENTRATION

THICKNESS

BASE

REMARKS

SCAN MODE: ACCY. ☐ SURVEY ☐ HI ENERGY ☐ CAL. ☐ RESOLUTION ☑

OPERATOR EK DATE 9/23/91

SPECTRUM NO.

SAMPLE 110232 Kapton - Teflon

ORIGIN

SAMPLE

SPECTRUM NO.

TI-NHTSA 7145

Sample: 78478-1 KAPTON TAPE
Size: 3.3600 mg
Method: KAPTON
Comment: TBL# 110838 IBIR DUAL

DSC

File: DKAPTON.08
Operator: K ROSS
Run Date: 06/25/91 08:16

Sample: 78478-2 KAPTON TAPE
Size: 8.9000 mg
Method: KAPTON
Comment: TBL# 110838 IBIR DUAL

DSC

File: DKAPTON.10
Operator: K ROSS
Run Date: 06/25/91 08:18

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	K	ADDED "CORE WIDTH & SQUARE" 27225-1 & -2 "PAD OUT UP" I.D. WAS "3" CH. LENGTH. CF	5-2-90	CJM

NOTES:

1. STRIP TO BE INSPECTED FOR TEFLON COATING, THICKNESS, DEFORMITIES, BUBBLES, AND LAMINATE SEPARATION.
2. EACH KAPTON STRIP ROLL MUST BE LABELED WITH T.I. PART NO. ON INSIDE OF CORE.
3. NO MORE THAN 2 SPLICES PER COIL PERMITTED. SPLICES TO BE CLEARLY MARKED WITH YELLOW MYLAR.
4. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.
5. ROLLS SLITTED FROM END OF MASTER COIL NOT ACCEPTABLE.
6. BUCKLING OF THE CORE ALLOWED UP TO 1/4" MEASURED RADIALLY AWAY FROM THE CORE.
7. DENT RIP OR JAGGED EDGES ON MATERIAL NOT ALLOWED.
8. ROLLS ARE TO BE SHIPPED WITH PROTECTIVE INSERT CORES IN THE PACKING BOX.

THIS DWG. SUPERSEDES 27225 REV. "H" DATED 12-13-89

PART NO.	MATERIAL	THICKNESS (MILS)	TEFLON FEP (A)	KAPTON TYPE H (B)	TEFLON FEP (C)	STRIP WIDTH (IN.)	PAD OUT UP (I.D.)(O.D.) (IN.)	CORE MATERIAL
			CONSTRUCTION (MILS) (SEE NOTE 2)					
27225-3	DUPONT 300 FINISH	3 ± .4 MILS	0.5	2	0.5	.992-.994	3 ± 0 1/2	PLASTIC (WHITE)
27225-2	DUPONT 300 FINISH	5 ± .5 MILS	1	3	1	.992-.994	4 ± 0 1/2	CARDBOARD
27225-1	DUPONT 300 FINISH	5 ± .5 MILS	1	3	1	.734-.736	4 ± 0 1/2	CARDBOARD

TOM BAIL	11-1-89	TEXAS INSTRUMENTS	XEROX
		KAPTON STRIP SPECIFICATION	
5-22-90			
		B	82647	27225

TI-NHTSA 7117

DUPONT

CIRCLEVILLE PLANT
P.O. Box 89
Circleville, OH 43113

NO: KC-11
Effective Date: 3/06/92
Expiration Date: 3/06/93
Page 1 of 1

MATERIAL CERTIFICATION

DATE: 8-24-92

CUSTOMER: TEXAS INSTRUMENTS, ATTLEBORO

CUSTOMER ORDER NO. 500085037

CUSTOMER PART NO. & REV. 27225-1 (REV. N)

QUANTITY THIS SHIPMENT 68#

SHIPMENT DATE 8-24-92

We certify that the material used to produce the product in this shipment, namely 500FN131 Kapton*, 3/4" wide, conforms to TI drawing and TI purchase order requirements on file with the HPF Group of the Dupont Company.

SUPPLIER REPRESENTATIVE
ENGINEER - QUALITY CONTROL - TITLE

:dkh/smart no. 387

Charting a Course for Excellence

Z-360 (S92076) REV. 4/91

TI-NHTSA 7118

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	D	1:-SEE NOTE 4- WAS -SEE NOTE 3- 2:-SEE NOTE 8- WAS -SEE NOTE 9- 3:-SEE NOTE 10- WAS -SEE NOTE 11- 4:-SEE NOTE 11- WAS -SEE NOTE 12- CN 139056 C.F.	5-8-90	

NOTES:

1. PART MUST BE FLAT TO WITHIN .006 T.I.R..
2. DIAMETERS MARKED WITH ✻ MUST BE CONCENTRIC TO WITHIN .004 T.I.R..
3. PARTS TO BE SHIPPED, ISSUED, AND STORED WITH APPLIED RUST PREVENTIVE BEFORE PLATING. AFTER PLATING, PARTS TO BE SHIPPED, ISSUED, AND STORED IN SEALED PLASTIC BAGS.
4. NO TOOL MARKS ALLOWED IN THE SHADED AREA ON BEVELED SIDE OF WASHER.
5. THE PARTS HARDNESS IS MEASURED AFTER A .006-.010 THICK SKIN IS REMOVED.
6. THIS PART IS LOT CONTROLLED, ANY PRESS CHANGE, NEW SETUP, PUNCH CHANGE, MAJOR TOOL WORK OR MATERIAL LOT CHANGE WILL SIGNIFY START OF A NEW LOT. NO MINIMUM LOT SIZE. EACH SIDE WILL HAVE A LOT NUMBER. EACH LOT WILL HAVE IT'S OWN PACKING SLIP WITH LOT IDENTIFICATION.
7. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.
8. STAMP IDENTIFICATION CODE AS REQUIRED TO IDENTIFY SUPPLIER TOOL. CODE SHALL BE CLEARLY VISIBLE AFTER PLATING. NO BURR OR SHARP EDGES PERMITTED.(-6 ONLY)
9. DIM. "A" TO BE MEASURED WITH STANDARD WASHER GAUGE.
10. IDENTIFICATION MARKS ALLOWED BETWEEN .410-.470R..
11. THESE SURFACES MUST BE SMOOTH AND FREE OF ANY PLATING ASPERITIES OR INCLUSIONS. (i.e. NO FROSTED EFFECTS OR PARTICULATE CONTAMINATION IN THE PLATING.)

THIS DWG. SUPERSEDES 27639 REV. "C" DATED 3-30-88

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

PART NO	MATERIAL	FINISH	HEAT TREAT	"A" DIM.
27639-1	1050 CRS	ZINC PLATE .0002 – .0006 THK	HEATTREAT TO ROCKWELL C40-60	.097 – .101

BY ED JUDGE	DATE 5-08-90	TEXAS INSTRUMENTS	TITLE WASHER
CHK Stan Hawk	06-19-90		
APPROVED Stan Hawk		REV. B	CODE IDENT NO. 82647 · 27639
		SCALE	SHEET

TI-NHTSA 7119

DIEMASTERS MANUFACTURING, INC.

CERTIFICATE OF CONFORMANCE

DATE: 07-10-92

CUSTOMER: TEXAS INSTRUMENTS

PURCHASE ORDER NUMBER: 500015400

PART NUMBER: 27639-1 REV/ECO NUMBER: D

PART DESCRIPTION: WASHER

QUANTITY THIS SHIPMENT: 12,362

SHIPMENT DATE: 07-10-92

TRACEABLE LOT NUMBER: TI - 163

* * * * * * * * * *

WE CERTIFY THAT ALL ITEMS SHIPPED ON THIS ORDER MEET THE REQUIREMENTS OF THE TI PURCHASE ORDER AND TI DRAWINGS/SPECIFICATIONS. RESULTS OF REQUIRED MECHANICAL, VISUAL, FUNCTIONAL, AND CHEMICAL TESTS ARE ON FILE IN OUR QUALITY CONTROL DEPARTMENT.

* * * * * * * * * *

SIGNED: [signature]
QUALITY ASSURANCE REPRESENTATIVE

TITLE: Q/A INSPECTOR

TI-NHTSA 7120

DIEMASTERS MANUFACTURING, INC.

MATERIAL CERTIFICATION

DATE: 07-10-92

CUSTOMER: TEXAS INSTRUMENTS

SUPPLIER PURCHASE ORDER: 033652

CUSTOMER PURCHASE ORDER: 500015400

PART NUMBER: 27639-1 REV/ECO: D

PART DESCRIPTION: WASHER

QUANTITY THIS SHIPMENT: 12,367

SHIPMENT DATE: 07-10-92

TRACEABLE LOT NUMBER: TI - 163

HEAT NUMBER: 664332

TYPE OF MATERIAL: CRS 1C5C

* * * * * * * * * *

WE CERTIFY THAT THE MATERIAL USED TO PRODUCE THE PRODUCT IN THIS SHIPMENT, NAMELY (SPECIFIC NAME/NUMBER OF MATERIAL), CONFORMS TO TI DRAWING AND TI PURCHASE ORDER REQUIREMENTS.

* * * * * * * * * *

SIGNED: Phil Jurgen
QUALITY ASSURANCE REPRESENTATIVE

TITLE: Q/A INSPECTOR

TI-NHTSA 7121

DIEMASTERS MANUFACTURING, INC.

CERTIFICATE OF MATERIAL ANALYSIS

DATE: 07-10-92

CUSTOMER: TEXAS INSTRUMENTS

SUPPLIER PURCHASE ORDER: 033652

CUSTOMER PURCHASE ORDER: 5000154 00

PART NUMBER: 27639-1 REV/ECO: D

PART DESCRIPTION: WASHER

QUANTITY THIS SHIPMENT: 12,367 SHIPMENT DATE: 07-10-92

TRACEABLE LOT NUMBER: TI- 163

HEAT NUMBER: 664332

TYPE OF MATERIAL: CRS 1050

* * * * * * * * * *

WE CERTIFY THAT THE MATERIAL USED TO PRODUCE THE PRODUCT IN THIS SHIPMENT CONFORMS TO THE TI PURCHASE ORDER AND TI DRAWING/SPECIFICATION REQUIREMENTS. RESULTS VERSUS SPECIFICATION ARE AS NOTED BELOW.

* * * * * * * * * *

ELEMENTAL CONSTITUENTS	SPECIFIED RANGE	ACTUAL RANGE
1. C	0.47–0.55	.51
2. Mn	0.60–0.90	.69
3. PMAX.	0.040	.013
4. SMAX.	0.050	.002
5.		

ROCKWELL HARDNESS: B/76 DPH:

TS. K.S.I.:

SIGNED: Phil Fuyen
QUALITY ASSURANCE REPRESENTATIVE

TITLE: Q/A Inspector

TI-NHTSA 7122

#27639

R

TOLLWAY STEEL CORPORATION
25th Ave. & Main St.
Melrose Park, IL 60160
Phone (708) 681-9190

Customer DIEMASTERS MFG.

ANALYSIS REPORT

ITEM #	ORDER #	PART #	SIZE	GRADE	TEMPER
1.	033652	CROSSAD 1375C	.0985 x 1.375 x cl	C1050	ANNLD
2.			QUALITY CONTROL		
3.			APR 30 1992		

ITEM #	ID#	C	Mn	P	S	Si	Ni	Cr	Al
1.	664332	.51	.69	.013	.002	.27			
2.									
3.									

ITEM #	ROCKWELL	TENSILE	YIELD	ELONGATION	OTHER
1.	RB 78				
2.					
3.					

CERTIFIED BY: Thomas E Bulwan
THOMAS BULWAN

TEXAS INSTR
27639-1

8/76

TI-NHTSA 7123

CERTIF

RIVERDALE PLATING & HEAT TREATING, INC.

[illegible]

DYEMASTERS MANUFACTURING, INC.
767 INDUSTRIAL [illegible]
ELMHURST IL [illegible]

27639-1 WASHER TT-LOT 143

THIS IS TO CERTIFY THAT THE PARTS, FURNISHED AGAINST THE LISTED PURCHASE ORDER, WERE PROCESSED IN ACCORDANCE TO SPECIFICATION

OUR ORDER NO.	CUSTOMER				
155947	110792	[illegible] TO S/C [illegible]	12,369	249	6/29/92
155947	110792	[illegible] - .0006	12,369	249	6/29/92

Subscribed and sworn to before me

THIS 29 DAY OF JUNE [illegible]

Notary Public

OFFICIAL SEAL
[illegible]

RIVERDALE PLATING & HEATING TREATING, INC.
QUALITY CONTROL

Vice President

[illegible] 1 1992

#27659

TI-NHTSA 7124

CERTIF[illegible]
Parts Made To This [illegible] To
ENG. STD. E9898 REV. E
Date JUL 16 1992

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
—	A	[illegible]	1-3-86	[illegible]
—	B	[illegible]	[illegible]	[illegible]
~	C	ADDED NOTE #3	[illegible]	[illegible]
~	D	[illegible]	[illegible]	[illegible]
~	E	[illegible]	[illegible]	[illegible]
	F	SEE CN	9-20-89	CES

(E6) TOOL MARKS (RING FORM NECESSARY TO PRODUCE INTERNAL DETAIL ARE ALLOWED ON THIS SURFACE ONLY.

NOTE:
1. DIAMETERS MUST BE CONCENTRIC TO APPROXIMATE TO WITHIN .008 TIR.
2. PARTS TO BE SHIPPED ISSUED AND STORED IN SEALED PLASTIC BAGS AFTER PLATING.
3. DUPLICATE DRAWING THRU REV. B SCR DWG. 273 ET.
4. THIS PART IS LOT CONTROLLED. ANY CHANGE TO THE FORMING RING PUNCH OR DIE WILL SIGNIFY THE START OF A NEW LOT. A MINIMUM LOT SIZE OF 600 PIECES WILL BE THE ONLY EXCEPTION. ANY LOT SIZE UNDER 600 PIECES WILL BE MIXED AND RECORDED ALONG WITH THE DATE ON EACH BOX. EACH LOT WILL HAVE ITS OWN PACKING SLIP WITH LOT IDENTIFICATION.
5. STAINS ON PRODUCT DUE TO RUST-INHIBITOR ARE ACCEPTABLE. PARTS MUST BE ABLE TO BE PLATED PER TI'S CURRENT PROCESS.

PART NO.	MATERIAL	.19 DIA	PLATING
27406-1	1008 OR 1010 C.R. STEEL	.066 REF.	ZINC PLATING .0002-.0004 THK

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCE ON FRACTIONS DECIMALS ANGLES
MATERIAL

BY [illegible] 1-3-86
CHK.
ENG. [illegible] 1/30/86
APPROVED

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS U.S.A.
KLIXON CONTROL PRODUCTS DIVISION

TITLE CONVERTER

SIZE B | CODE IDENT NO. 82647 | 27406
SCALE 4/1 | SHEET 1 OF 1

TI-NHTSA 7125

7-1

K. F. BASSLER COMPANY, INC.
PRECISION TOOLING & METAL STAMPINGS
45 John Willem St. • Attleboro, MA 02703 • (508) 222-1061 • Fax: (508) 226-1605

EST. 1945

MATERIAL CERTIFICATION

CUSTOMER: TEXAS INSTRUMENTS, INC -- ATTLEBORO

CUSTOMER ORDER NO.: 80 5118095

CUSTOMER PART NO.: 27406-1

REVISION: F

QUANTITY THIS SHIPMENT: 10,500

LOT NO. THIS SHIPMENT: 166

SHIPMENT DATE: 7.1.92

WE CERTIFY THAT THE MATERIAL USED TO PRODUCE THE PRODUCT IN THIS SHIPMENT, NAMELY, AK 1008 CRS, CONFORMS TO TI3 DRAWING AND PURCHASE ORDER REQUIREMENTS.

AUTHORIZED SIGNATURE: Kathleen A. Penkala
Kathleen A. Penkala
Inside Sales Specialist

PMA PRECISION METALFORMING ASSOCIATION

TI-NHTSA 7126

TELEX 681214
FAX 315-336-3510
PHONE 315-336-3800
DUNS 825-3138

ROME STRIP STEEL COMPANY, INC.

530 HENRY ST. BOX 189
ROME, NEW YORK 13440

COMPLIANCE

SALES CODE
00072016

0 1 0 0 0 0 0 0

DATE	INVOICE NO
03/02/92	14240

INVOICE TO: K. F. BASSLER CO., INC.
45 JOHN WILLIAM ST.
ATTLEBORO, MA 02703

SHIP TO: K. F. BASSLER CO., INC.
45 JOHN WILLIAM ST.
ATTLEBORO, MA

QUANTITY (LBS)	NO CLS.	NO SKID OR BOXES	MATERIAL COMPLETE	SHIPPED BY	HT NO	C	MN	P	S	SI	NI	CR	MO
11,366	072	08	PART	R S S	F40019	05	29	011	012	01	01	03	
									AL	VN	CU	CN	

MEETS REQUIREMENTS OF:
CUST ORDER NO 14474

COLOR CODE

SIZE									
.7MM X 25.40MM			BILL NO 66012	PREPAID COLLECT PREPAID	STRAPPING	PAPER WRAP	RODS	CHAPES	BOX
		TEMPER	COILS OR CUT		SKIDS 1600	SKID SIZE	PKG. HT 21 HI MAX	WASHERS	CORES
.04600 X 1.0000		5 50 MAX	COIL	200 LBS					
TOLERANCE		EDGE	LENGTH DESC		BUNDLES	SPACERS	SHROUD	BOLTS	CAPS
+00050-00050+005 -005		NO3 SLIT	200 FIW 16 34						
					BOXES	CARTONS 500/096'	FLATHEDS	OIL	T-PCS
+013 -013MM +127 -127MM			CLASS ALUM KTCO	MILL NO. C-1008					

(5,156 KG) 11,366

TEST REPORT

Certificate of Compliance

ATTEST:
052 06280 33-030792
Notary Public, Oneida County
My commission expires

DATE

I certify that the above figures are a true and correct copy of those contained in the records of this corporation.

TS

ROME STRIP STEEL CO., INC.

#27406

TLHHTSA 7127

TELEX 881214
FAX 315-336-3310
PHONE 315-336-5900
DIALS 223-3136

ROME STRIP STEEL COMPANY, INC.

530 HENRY ST. BOX 189
ROME, NEW YORK 13440

COMPLIANCE 1

SALES CODE 08072416

0 1 0 0 0 0 0 0

DATE	INVOICE NO
03/04/92	14343

INVOICE TO: K. F. BASSLER CO., INC.
45 JOHN WILLIAM ST
ATTLEBORO, MA 02703

SHIP TO: K. F. BASSLER CO., INC.
45 JOHN WILLIAM ST
ATTLEBORO, MA

QUANTITY (LBS)	WT. CLS.	NO. SKIDS OR BOLS	PARTIAL COMPLETE	SHIPPED BY	HT NO.	C	MN	P	S	SI	NI	CR	MO
9,562	060	07	COMP	CAN MEX	F40019	05	29	011	012	01	01	03	

MO CU CB CR

MEETS REQUIREMENTS OF:
CUST. ORDER NO. 14474

COLOR CODE

SIZE 17MM X 25.40MM		MILL NO. 66012	PREPAID COLLECT PREPAID	STRAPPING	PAPER WRAP	ROLLS	CRATES	BOX
.04600 X 1.0000	TEMPER = 50 MAX	COILS OR CUT COIL	200 LBS	SKIDS 1600	SKID SIZE	PKG. WT 21 MI MAX	WASTERS	COILS
TOLERANCE +00050-00050+005 -005	GRADE N03 SLIT	LENGTH SPEC 200 PIW 16 34		BUNDLES	SPACERS	SHROUD	BOARDS	CAPS
+013 -013MM +127. -127MM	CLASS ALUM-K			SKIDS	CARTONS 500/096'	FLATTENER	OIL	T-PCS

[redacted]

(4,337-KG) 9,562

TEST REPORT

Certificate of Compliance

ATTEST: [signature]
052 06280 33 030742
Notary Public, Oneida County, [illegible]
My commission expires [illegible]

DATE 3/5/92

I certify that the above figures are a true and correct copy of those contained in the records of this corporation.

[signature]
ROME STRIP STEEL CO., INC.

[redacted]

TI-NHTSA 7128

#27906

TITLE	REV.	
KAPTON TAPE	F	74224

NOTES:

1. ROLLS SLITTED FROM ENDS OF MASTER COIL NOT ACCEPTABLE.
2. BUCKLING OF THE CORE ALLOWED UP TO 1/4" MEASURED RADIALLY AWAY FROM THE CORE.
3. DENTS, RIPS, OR JAGGED EDGES ON MATERIAL NOT ALLOWED.
4. ROLLS ARE TO BE SHIPPED WITH PROTECTIVE INSERT CORES IN THE PACKING BOX.

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

74224-1	DUPONTS, KAPTON 200H	.0017/.0023	
PART NUMBER	MATERIAL	THICKNESS	

THIS DWG. SUPERSEDES 74224 REV. "E" DATED 10-14-88 .

ISS											P37-3	Q13	Q1	M91	P8-5

BY TOM DAIL 10-14-88
CH.
ENG. 10-16-90

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KIDDON
CONTROL PRODUCTS DIVISION

DWG. SIZE A

DWG. NO. 74224

TI-NHTSA 7129

E. I. DU PONT DE NEMOURS & COMPANY
CIRCLEVILLE, OHIO 43113

NO: KC-13
Effective Date: 4/3/91
Expiration Date: 4/3/92
Page 1 of 1

MATERIAL CERTIFICATION

DATE: 6-30-92

CUSTOMER: TEXAS INSTRUMENTS, ATTLEBORO

CUSTOMER ORDER NO. 5000 11913

CUSTOMER PART NO. & REV. 74224-1 (REV. F)

QUANTITY THIS SHIPMENT 31.90

SHIPMENT DATE 6-30-92

We certify that the material used to produce the product in this shipment, namely 200HN Kapton*, 15/16" wide, conforms to TI drawing and TI purchase order requirements on file with the HPF Group of the Dupont Company.

SUPPLIER REPRESENTATIVE
ENGINEER - QUALITY CONTROL - TITLE

dkh/smart no. 389

TI-NHTSA 7130

TITLE	REV.	
SPACER	C	73958

NOTES:

1. .001 MAX. BURR ALLOWABLE.
2. PARTS TO BE SHIPPED, ISSUED, AND STORED IN SEALED PLASTIC BAGS.
3. ALL CONTAINERS OF PARTS MUST BE DATE CODED, DATE CODE IS TO REFLECT ANY MATERIAL LOT, TOOL OR PROCESS CHANGE.
3. MATERIAL CERTIFICATION REQUIRED WITH EACH LOT.

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

PART NO.	MATERIAL	DIM "A"
73958-3	MADE FROM 74224-1 (KAPTON TAPE)	
73958-2	DUPONTS, KAPTON 200H, .0017 - .0023 THICK	NO HOLE
73958-1	KAPTON .0017 - .0023 THICK	.260/.270

THIS DWG. SUPERSEDES 73958 REV. "F" DATED 10-14-88

BY TOM DAIL 10-10-88
CH.
ENG. 10/16/92

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KLIXON
CONTROL PRODUCTS DIVISION

DWG. SIZE A

DWG. NO. 73958

TI-NHTSA 7131

7-1

Insulfab PLASTICS, INC.

PLASTIC FABRICATORS DIVISION
155 NO. MAIN STREET, FRANKLIN, N.H. 03235
603-934-2770

CERTIFICATE OF CONFORMANCE

TO: TEXAS INSTRUMENTS DATE: JUN 30 1992

ATT: QUALITY CONTROL SUP.

THIS CERTIFIES THAT:

SHIPMENT # 164098

PART # 73958-1 REVISION C2

QUANTITY 300,000

MAT'L DESC KAPTON HN

IS IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS ON YOUR ORDER # 5051093537-9

BY: INSULFAB PLASTICS
FRANKLIN, NH 03235

Fred Vuyny
QUALITY CONTROL MANAGER

TI-NHTSA 7132

DISTRIBUTORS AND FABRICATORS OF
TEFLON · FEP · TFE · PLEXIGLAS · POLYSTYRENE · GLASS
NYLON · COATED PAPER · ACETATE · POLYETHYLENE
DELRIN · LEXAN · NYLAR · ZYDEX · BENCLEX · CERAMICS
HAVELITE MELAMINES SILICONES EPOXIES

TITLE	REV.	
CRIMP RING	B	74797

NOTES:
1. PINCH OFF RADIUS ALLOWED.
2. .002 MAX. BURR ALLOWED.
3. PARTS TO BE SHIPPED, ISSUED, AND STORED IN SEALED PLASTIC BAGS.
4. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

NEITHER THIS PRINT NOR THE INFORMATION CONTAINED HEREIN IS TO BE USED AGAINST THE INTEREST OF TEXAS INSTRUMENTS INCORPORATED OR AGAINST THE INTERESTS OF ANY OF ITS AFFILIATED COMPANIES OR WHOLLY OWNED SUBSIDIARIES.

SUPERSEDES DWG. 74797 REV. A DATED 11-2-90

TI-NHTSA 7133

PART NO.	MATERIAL	FINISH
74797-1	ALUMINUM 5052	

												DJB	DJ	DAI	[illegible]

BY GHAS FLEURANT 11-2-90
CH. [illegible] 1-30-91
ENG. [illegible] 9/6/28

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KIXON
CONTROL PRODUCTS DIVISION

SIZE A

DWG. NO. 74797

Jt #10

VALENTINE TOOL & STAMPING, INC.

111 WEST MAIN ST. NORTON, MASS. 02766
(508) 285-6911 226-0246

CERTIFICATE OF CONFORMANCE

DATE : MONDAY JULY 6, 1992

CUSTOMER : TEXAS INSTRUMENTS INC

CUSTOMER P.O. NO : 505095438 SUPPLIER INVOICE NO.: 62065

PART DESCRIPTION : 7679/-1 CRIMP RING REV.B

SUPPLIER PJO NO. : 18829

QUANTITY SHIPPED : 60,800

SHIPMENT DATE : 07/07/92

WE CERTIFY THAT ALL ITEMS SHIPPED ON THIS ORDER MEET THE REQUIREMENTS OF THE PURCHASE ORDER AND APPLICABLE DRAWINGS/SPECIFICATIONS. RESULTS OF REQUIRED MECHANICAL, VISUAL, FUNCTIONAL AND CHEMICAL TESTS ARE ON FILE IN OUR QUALITY ASSURANCE DEPARTMENT.

SIGNED Jeanne LaFlamme
Jeanne LaFlamme
Quality Assurance Manager

UNITED ALUMINUM CORPORATION

100 UNITED DRIVE • P.O BOX 218 • NORTH HAVEN, CONNECTICUT 06473

CUSTOM ROLLED™ ALUMINUM SHEET

#74797

9821

SOLD TO: VA003
ATTN: DICK WHITNEY

VALENTINE TOOL & STAMPING INC.
171 WEST MAIN STREET
NORTON, MA 02766-0469

DATE	March 27, 1992
CUST. PO#	14726
ORDER SPECS	5052-O .03200 x 2.312
UA ORDER#	166712D
SPECIFICATIONS	ASTM B209,QQ-A-250/8

CHEMICAL COMPOSITION LIMITS

This is to certify the following chemical composition limits, based on an individual or blanket certification of analysis supplied to United Aluminum by its vendor(s):

	VENDOR CERTIFICATION MIN	MAX
SILICON		0.25
IRON		0.40
COPPER		0.10
MANGANESE		0.10
MAGNESIUM	2.2	2.8
CHROMIUM	0.15	0.35
ZINC		0.10
OTHER ELEMENTS (EACH)		0.05
OTHER ELEMENTS (TOTAL)		0.15
ALUMINUM	REMAINDER	

MECHANICAL PROPERTY RESULTS

This is to certify that the following are the results of the mechanical property test(s) performed by United Aluminum, based on a minimum of one sample for the order:

TENSILE STRENGTH (KSI)	28.2
ELONGATION (%)	24

Any test results reported above are subject to the limitations of the testing process. All sales are subject to United Aluminum's Terms and Conditions contained on the reverse of its Sales Order Acknowledgement.

copyright (c) 1991 United Aluminum Corp.
03/27/1992 14:22:15
WS SHIP SHIP 2
00124-00002 05254

VALENTINE TOOL & STAMPING, INC.

111 WEST MAIN ST. NORTON, MASS. 02766
(508) 285-5911

MATERIAL CERTIFICATION

DATE : MONDAY JULY 6, 1992

CUSTOMER : TEXAS INSTRUMENTS INC

CUSTOMER P.O. NO : 505395438 SUPPLIER INVOICE NO.: 82066

PART DESCRIPTION : 74767-1 CRIMP RING REV.B

SUPPLIER PO NO. : 18829

QUANTITY SHIPPED : 60,800

SHIPMENT DATE : 07/07/92

WE CERTIFY THAT THE MATERIAL USED
TO PRODUCE THE PRODUCT IN THIS
SHIPMENT, NAMELY
(5052 AL)
CONFORMS TO T.I. DRAWINGS AND
T.I. PURCHASE ORDER REQUIREMENTS.

SIGNED Jeanne LaFlamme
(Supplier Representative)

Jeanne Laflamme Quality Assurance Manager

TI-NHTSA 7136

TITLE	REV.	
TRANSFER PIN	G	74078

"L" LENGTH IS DETERMINED BY THE SUFFIX OF THE PART NUMBER IN THOUSANDTHS OF AN INCH. I.E.;

PART NO.	"L"
74078-155	.155
74078-210	.210

VENDOR WILL BE PREPARED TO FURNISH PINS .130 - .250 LONG.

NOTES:

1. FINISHED PARTS TO BE SHIPPED, ISSUED AND STORED IN SEALED PLASTIC BAGS. SEALED PLASTIC BAGS TO CONTAIN 20,000 PINS(OR LESS FOR PARTIAL BAGS). BAGS MUST BE CLEARLY LABELED WITH THE PART NO. AND THE QUANTITY OF PARTS IDENTIFIED ON THE OUTSIDE OF EACH BAG.
2. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.

MATERIAL: L-3 GRADE STEATITE (DC-186E5) OR
L-3 GRADE STEATITE (DC-144E)

CURE PER SPEC.------ 50502-2

SHRINKAGE SPEC.---- 50501-1

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date JUL 16 1992

NOTICE: THIS PRINT AND THE INFORMATION CONTAINED HEREON IS TO BE USED AGAINST THE INTEREST OF TEXAS INSTRUMENTS INCORPORATED OR AGAINST THE INTERESTS OF ANY OF ITS AFFILIATED COMPANIES OR WHOLLY OWNED SUBSIDIARIES.

TI-NHTSA 7137

THIS DWG. SUPERSEDES 74078 REV. "E" DATED 6-4-86

REV																
													013	01	M87	P37-3 P38

BY TOM DAIL 10-17-86	TEXAS INSTRUMENTS ATTLEBORO, MASSACHUSETTS 02703	KLIXON CONTROL PRODUCTS DIVISION	Dwg. Size A	DWG. NO. 74078
CK.				
ENG.				

Paratech, Inc.

MINIATURE TECHNICAL CERAMICS

15940 MINNESOTA AVENUE • P.O. BOX 718 • PARAMOUNT, CALIFORNIA 90723
TELEPHONE (213) 633-2045 • FAX (213) 633-8907

MATERIAL CERTIFICATION

DATE: 6-30-92

TEXAS INSTRUMENTS, INC.

ORDER NO.: 505108677

PART NO : 74078-148 REV. NO.: G

QUANTITY THIS SHIPMENT: 80,000

SHIPMENT DATE: 6-30-92

PART DESCRIPTION: PIN

WE CERTIFY THAT THE MATERIAL USED TO PRODUCE THE PRODUCT IN THIS SHIPMENT, NAMELY PIN / STEATITE - L3, CONFORMS TO T.I. DRAWING AND T.I. PURCHASE ORDER REQUIREMENTS.

PRODUCTION MANAGER

DEVICE # 52/57PS PROJ. # 3355	TITLE ENVIROMENTAL SEAL	REV E	74247

CERTIFIED PRINT
Parts Made To This Print Must Conform To
ENG. STD. E9898 REV. E
Date NOV 2 2 1991

NOTES:

1. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.
2. 74247-3 IS TO BE RED IN COLOR WITH 3 BLACK MARKS ON THE EXTERNAL CIRCUMFERENCE AT 120° INTERVALS.

TI-NHTS

THIS DWG. SUPERSEDES 74247 REV. "D" DATED 10-14-88

PART NO.	MATERIAL	DUROMETER	COLOR	DIM. "A"
74247-1	SILICONE JBL (T-B-D)	55 - 65	BLUE	.045-.055
74247-3	SILICONE JBL S7424-6	55 - 65	SEE NOTE 2	.045-.055
74247-2	SILICONE JBL S7424-6	55 - 65	RED	.040-.050
74247-1	BUNA N JBL N7014-50	50 - 60	BLACK	.040-.050

DIM. "A" TO TABLE. 10-1-91 DM

02-3 M5-3 Q13 01 M01 P37-3 P3

TOM DAIL 8-19-91

TEXAS INSTRUMENTS

REV A

74247

75220721

TEXAS INSTRUMENTS, INC.
P.O. BOX 666
ATTLEBORO, MA 02703

PARKER HANNIFIN CORPORATION
J.B.L. DIVISION
WEST CROFT CIRCLE
SPARTANBURG, S.C. 29302
TELEPHONE (803) 573-7532

J.B.L. Division of Parker Seal certifies that the material used to produce the product in this shipment, namely SILICONE/ 87519, Conforms to TI drawing and TI purchase order requirements.

PART TITLE... ENVIRONMENTAL SEAL

CUST P/N.. [redacted] REV B

J.B.L. P/N.. 207218

SILICONE COMPOUND... 87519

DATE SHIPPED

10-21-91

P/O... 300023492

S/N... 71249-1

QUANTITY... 5,000

Very Truly Yours,
J.B.L. Division

DENNIS T. JOHNSON
Quality Control Manager

97J/90

DTJ

TI-NHTSA 7140