

-MSG N#- 69457 FR=CHP1 TO=PCQA SENT=06/06/91 07:11 AM
R#-175 ST=C DIV=0050 CC=00175 BY=CHP1 AT=06/06/91 07:11 AM
TO: ANDY MCGUIRK PCQA RAY TOURANGEAU PCME
BILL CONGDON MFPC LEO MARCOUX AELN
TOM CHARBONNEAU TC STEVE FOSTER SRF

CC: MARTHA SULLIVAN CPPC
FR: CHARLIE DOUGLAS CPPC

THIS IS TO INFORM YOU THAT A NEW CUSTOMER DRAWING HAS BEEN RECEIVED. PLEASE
COMMUNICATE THIS CHANGE TO THE APPROPRIATE PEOPLE WITHIN YOUR GROUP.
PERTINENT INFORMATION IS AS FOLLOWS:

CUSTOMER: FORD
CUSTOMER PART NUMBER: F2VC-9F924-AB
TI PART NUMBER: 77PSL2-1
ENGINEERING CHANGE LEVEL: G

REGARDS, CHARLIE

77PS
cc. DARRAM.
FYE/2m.

-MSG HQ- 91903 FR-DAN2 TO-PCQA SENT-06/06/91 03:40 PM
R#-002 ST-C DIV-0050 CC-00149 BY-DAN2 AT-06/06/91 03:40 PM

Memorandum

June 06, 1991

TO:	STAN HONOL	SE2	NATT SELLERS	PCNE
	TED BALLARD	AVNE	DONNA MOTWILAN	PCQA
	TED BREDIKEN	MPFC	BILL SWEET	PCNE
	RAY TOURANGEAU	PCNE	ELAINE ROSE	PCQA
CC:	ANDY MCGUIRK	PCQA	TOM CHARBONNEAU	TC
	RUSTY STRUBLE	NJC2	GARY SNYDER	CPPC
	BILL CONGDON	MPFC	PAUL LESSER	PL
	DAVE CHARN	EAH	DICK GARIEPY	MPFC
	SHELLEY WHITE	ATRD	AL HOPKINS	ANOP
FM:	Jim Watt	PCQA		

SJ: 52/57PS DISC FRACTURE MEETING UPDATE

SUMMARY

o 6 Units from Weibull Testing reached 3KK cycles from 52PS lot; 87 units tested, 250K cycles on each unit at start, 500K cycles on each unit at completion resulting in one failure. Appears to be infant mortality failure mode rather than endurance related failure mode.

o Double vacuum melt material vs. single vacuum melt material will be available by end of June 91 for disc evaluation.

o Shot peen testing will not be completed till after mid-June '91 due to press availability.

ONGOING ACTIONS TO BE REPORTED ON IN THE NEXT MEETING:

1. Impulse testing lots shows no failures since March 18, 1991. Impulse testing continues. Watt/Brediken
2. Passivate current non-passivated material and compare results to old passivated material; need Shelley White's involvement to compare test results. Six of each being tested. White/Honol
3. Investigate use of larger radius form tools on 52PS and 57PS disc material during August 91. Ballard
4. Investigate means for testing disc material prior to forming discs; normal beam bending? Can Shelley White suggest method for testing on:
a. formed discs?
b. raw disc material? Ballard/White
5. Cross section matrix of parts from sensor tests conducted above and provide assessment. High incidence of inclusions? Honol/Ballard
6. Continue Weibull testing of sensor groups focusing on one good set and one bad set. Honol/Rose

TI-NHTSA 002037

7. Report on cost differences with: double
vacuum melt vs. single vacuum melt, passivated
vs. non-passivated material, .014 " vs .0122 "
material, for next meeting:

Sallard

Date: Tuesday, June 25, 1991

PLACE: Purchasing Conference Room (Bldg 12)

TIME: 9:00 a.m.

Regards,

Jim ext. 1719 msg: PCQA

TI-NHTSA 002038

HIGHLIGHTS

Stephen B. Offler
Week Ending 91-06-07

Handwritten signature/initials



FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

CUSTOMER ISSUES / SAMPLES: Bruce Pease has responded with information on the Ford spec. ES20000-S100, thought to possibly contain thread-gaging information which could help to serve as arbitrator on the Hilight rejection. However, this spec. apparently covers surface finishes, not gaging. Bruce spoke with Jim Leavitt from Ford's fastener group about gaging. It seems that Ford policy does not officially recognize GO/NOGO type gages; rather, they promote use of Johnson tri-roll gages. Since our goal of finding an official Ford spec. covering gaging will not be fulfilled, this leaves us to deal with Hilight on our own. Jim Watt is handling this. We will continue to promote use of the GO gage with torque wrench set at 4.5 lb-in for objectivity. This procedure comes directly from GM spec 6102M. Also, we will involve the other Tier-1's as well.

We have created a detailed plan to carry out the connector insertion force test required by Light Truck. The goal is to characterize insertion force versus terminal position. Several lots of test switches will be individually measured and tweaked to specific positions. Connectors will be installed using a peak-hold force gage. This test will be underway soon.

We learned that the Light Truck samples with quiet discs shipped last week to Kevin Zajac were actually destined for WIN88, which is a Taurus-based platform and therefore should actually require Pass Car spec's. Joe Schuck addressed this situation, and learned that these switches are exactly what Kevin needed, because he's considering raising the pressures on WIN88 into the Light Truck range.

Bruce Pease has informed us that the very low volume MY93 SHO Taurus will place the pressure switch directly in the master cylinder. The MAC is a Teves unit, part of their Mark VI (?) ABS/Traction Control system. Joe will be proactively following-up with Teves USA. Bruce has requested a few quiet Pass Car spec. switches ASAP, anticipating the noise situation discovered in Light Truck will be an issue here as well due to the hydraulic similarity. I have explained that we're still developing quiet discs in this pressure range, and could have switches to him in a couple of weeks. This timing is acceptable. I'm communicating with Ted Ballard to get the status of these discs.

We have completed the formal "8D" Concern Analysis Report for Kelsey-Hayes. They returned a device which failed after many salt-water submersion cycles. The gist of the CAR is that our device is not submersible, and TI accepts no responsibility for the failure. This same information was previously conveyed to K-H using an informal format.

PRODUCTION ISSUES: Eastern Automation is experiencing schedule problems, apparently related to their chrome-plate supplier. Mechanization and Purchasing are hounding EA to do whatever is needed ASAP. We should have already had their next iteration for analysis of the spring geometry, and should have been well on the way to approving the tool and bringing it in-house. Now, it will be early next week before we can analyze the spring. This tooling is required to finish the base AMI, which will be needed very soon to build 77PS validation parts.

TI-NHTSA 002039

We met with Valentins to determine if tooling changes could be made to 27713 to correct the environmental-seal gland relative to 27288. The basic answer was no. Any changes made to this area (not dimensioned on the print) would directly affect more critical geometry in the cup-bump area. This answer came as no surprise to us. We will continue to evaluate solutions to determine the correct permanent fix for environmental seal compression. This includes two different seals, or a change to the seal size and/or diameter such that one seal could be used for both cups, and/or changes to the geometry of the base flange which compresses the seal.

Work to determine the best way to pin silent sensors is ongoing. Using a 'scope, we were not able to find repeatable electrical phenomenon on a gross-creeper versus a good device. This effort is complicated by the fact that our test ramp-rates were manual and therefore limited in consistency.

Another hypothesis we are working on to help determine pin window on silent sensors is the change in differential. Diff. is largest in the middle of the pin window, and decreases at either end. Combining this fact with some other fundamentals may provide a creative means of determining pin window; for example, low-act. plus low-diff. indicates a device to the left of the ideal pin window, and high-act plus low-diff indicates a device to the right. Piloting each disc lot would still be required to set control points.

To determine if creepers are a problem in Ford's system, it was decided to build test-lots of devices pinned as gross creepers at both ends of the window, and run on a powered impulse test. This has been completed, including one device per lot run without a flyback diode such that it saw the full inductive kick. We had no catastrophic failures; in fact, devices run with the normal diode in place look quite normal. Devices without diode show obvious arcing effects: heating (based on spring discolorations) contact erosion, and silver transfer. Millivolt drop on these diodeless devices is significantly higher than normal: one of the two was out-of-spec. at 280 mV. However, this test is far more severe than would ever be seen in the application. The failure mode which would cause concern is welded contacts, and we've yet to see any evidence of this. The conclusion is that, from a system standpoint, a creep device is not a problem.

7795 CISEP IMPULSE TEST TEST 150-15-10 JAN 6/7/99

INSTRUMENT	SIZE	Q10	LENGTH	ACT / REL	IMPULSE (mV-SEC)	CIRCUIT	ACT / REL	IMPULSE (mV-SEC)
1150-15-01	LOW	98.1	151	196 / 154	44	1.4	2	100
1150-15-02	LOW	102.4	150	202 / 154	48	1.4	5	100
1150-15-03	LOW	97.2	150	180 / 130	42	2.5	6	100
1150-15-04	LOW	102.5	152	181 / 139	42	2.2	1	100
1150-15-05	LOW	100.5	151	180 / 141	47	2.3	2	100
1150-15-06	WIDE	92.0	146	200 / 232	56	2.1	1	100
1150-15-07	WIDE	90.6	148	232 / 271	63	2.0	1	100
1150-15-08	WIDE	90.4	144	240 / 275	65	2.0	8	100
1150-15-09	WIDE	92.5	150	299 / 235	64	4.2	5	100
1150-15-10	WIDE	92.8	147	264 / 213	71	2.1	1	100

TI-NHTSA 002041

-MSG N#- 210736 FR-CERN TO-PCQA SEPT-06/11/91 04:40 PM
 RA-130 ST-C DIV-0050 CC-00101 SY-CERN AT-06/11/91 04:40 PM

JUNE 11, 1991

TO: RUSTY STRUBLE RCSZ
 MIKE DeNATTIA PCQA
 CHARLIE DOUGLAS CPFC
 DICK GARIEPY MFPC
 PAUL KOTCH PRKI
 JOE LAZARE JNLS
 STEVE OFFILER SBOI
 MATT SELLERS PCNE
 BILL SWEET PCNE
 JIM WATT PCQA
 TED BREDIKEN MFPC

CC: TOM CHARBONEAU TC
 JOHN KOUTSIS NDES
 STEVE MAJOR WELS
 ANDY McGUIRE PCQA
 ED O'NEILL BJON
 JOE SCHUCK WELS
 GARY SWYDER CPFC
 MARTHA SULLIVAN CPFC
 RAY TOURANGEAU PCNE
 TED BALLARD JUNE
 STAN SCHOL SKZ
 CLAIRE BALTAZAR MFPC
 BILL CONGDON MFPC
 STEVE MCCOONEY NDES
 TERRY RODRIGUES MFPC

FR: DAVE CSARN ZARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:
 06/06/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 06/13 (THURSDAY)
 TIME: 10:00 - 11:30 AM
 PLACE: MARKETING CONFERENCE ROOM

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* - ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED
 SINCE PREVIOUS MEETING

57 L/T

Export:

- * L/T PILOT RUN
 (POSSIBLE DUE TO EXPORT AVAILABILITY)
 . UPDATE EXPORT SHIPPING SCHEDULE
- * PLAN FOR EVALUATING POULSEN
- * PUT 13K EXPORT ORDER ON HOLD; PENDING
 RE-ROLL RESOLUTION

WHO	WHEN	
SELLERS/	01/24	ORIG.
GARIEPY	06/07	REV.
KOTCH	ONGOING	
KOTCH	05/16	ORIG.
	07/11	REV.
KOTCH	05/31	ORIG.
	05/31	CONF.

ISR issues:

- * CONNECTOR INSTALLATION FORCE STUDY
- . DEVELOP TERM. POS'H GAGE CONCEPT
- * RELEASE PRINT FROM L/T
- * SUBMIT ISR FOLLOW-UP TO FORD SQA
 (NEED RELEASE PRINT)

OFFILER	06/06	ORIG.
	06/20	REV.
SELLERS	06/13	
SCHUCK	05/09	ORIG.
	06/27	REV.
WATT	06/04	ORIG.
	07/04	REV.

57 P/C

- * ISR SUPPLEMENT FOR SWITCHES W/BROWN
 OFFSET POLARITY KEY BASES
 (POSSIBLE DUE TO SREA DELAY)
- * PLAN FOR MAKING L/T AND P/C
 ENV. SEAL COMPRESSION CONSISTENT

WATT	04/10	ORIG.
	06/06	REV.
	06/06	CONF.
OFFILER/	06/06	ORIG.
SELLERS	06/27	REV.

TI-NHTSA 002042

* ADD MATING CONNECTOR FIT-UP CHECK TO INSP. REQTS. - 5 PCS/HR.	WATT	05/30	ORIG.
DEFINE INSTALLATION TORQUE SPEC W/PHASE & TIER 1'S	OFFILER	06/20	COMP.
* REC'V THICKER P/C GASKETS (EX3355-97-1)	SELLERS	06/17	
* BUILD ALL 57PALS-3'S W/EX3355-97-1 GASKETS UNTIL TBD TIME	BREDIKEN	ONGOING	
SHIP 21K LS-3'S	GARIETY/	06/03	ORIG.
(DELIV. DATE PUSHOUT BY FORD)	STRUBLE	07/01	REV.

77PS

DESIGN UPDATE	OFFILER	ONGOING	
MFG/MECH UPDATE	SELLERS	ONGOING	
PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHASAR	ONGOING	
UPDATE SPC FILES/RUN CAPABILITY STUDIES	BALTHASAR	ONGOING	
* ESTABLISH OVERALL SCHEDULE OF DESIGN ENG. ACTIONS	OFFILER	05/02	ORIG.
* 77PS PARTS LISTS		06/20	REV.
	OFFILER	06/06	ORIG.
		06/20	REV.
COMPLETE DESIGN FMEA	OFFILER	04/18	ORIG.
		06/27	REV.
COMPLETE PROCESS FMEA	SELLERS	07/01	
* DETERMINE ACCEPTABLE CALIBRATION WINDOW BY DIMENSIONAL ANALYSIS	OFFILER/	03/24	ORIG.
	SELLERS	06/20	REV.
* VERIFICATION RUN FOR CALIBRATION WINDOW	OFFILER/	03/28	ORIG.
	SELLERS	06/13	REV.
F/D CHARACTERIZATION OF SPRING ARMS	OFFILER	DELETED/	
		COMBINED W/BELOW	
* 77PS DESIGN CONFIRMATION TEST	OFFILER	06/20	
* GAGING TECHNIQUE FOR IN-PROCESS F/D CHARACTERIZATION OF SPRING ARMS	SELLERS	04/25	ORIG.
		06/13	REV.
* STAKE PROD'N PARTS ON PROD'N STAKER AND MEASURE TERMINAL POSITION	SELLERS	05/02	ORIG.
COMMUNICATE ANY REQ'D TERMINAL CHANGES TO BASSLER	SELLERS	06/13	REV.
* WARE CRIMP RINGS FOR ES BUILD	SELLERS	06/13	
* BUILD 300 SWITCHES FOR ES TESTING	SELLERS/	06/14	
	MCDOON		
* 57 TO 77 CONVERSION: PHASE 1 TESTING (PUSHOUT DUE TO COMPONENT AVAILABILITY)	BOWOL	05/30	ORIG.
		07/11	REV.
* COST ESTIMATE FOR LOW DIFF. SWITCH	SELLERS	06/06	ORIG.
		06/27	REV.
IDENTIFY INSPECTION REQTS. FOR SOP	WATT	06/01	
* IDENTIFY AUTOMATION SPECIALIST	GARIETY	06/06	ORIG.
		06/13	REV.
77PS QAS (PRELIMINARY)	WATT	07/01	
77PS CHARACTERISTIC SHEETS	WATT	07/15	
GAGE R&R STUDIES	WATT	07/15	
77PS QAS (FINAL)	WATT	08/01	
SET UP SPC FILES/RUN CAPABILITY STUDIES	BALTHASAR	06/01	

Production Components:

* UPDATE CUP PRINT	OFFILER	03/28	ORIG.
		06/20	REV.
RESOLVE OPEN ISSUES ON BASE	SELLERS	06/21	ORIG.
		06/23	REV.
* UPDATE TERMINAL PRINTS/BASE PRINT	OFFILER	05/09	ORIG.
		06/20	REV.

Manufacturing Equipment:

FINAL ASH MACHINE DEBUG COMPLETION	SELLERS/	06/03	ORIG.
	KOURTESIS	77777	REV.
BASE ASH MACHINE BUILD COMPLETION	SELLERS/	05/31	ORIG.
(NEED BASE BOWL FRED & S.A. MACHINE)	KOURTESIS	06/13	REV.
PRESSURE TESTER BUILD COMPLETION	SELLERS/	06/20	ORIG.

* PROVIDE DATES FOR ABOVE ??????'S
 . E.A.M. EFFECTIVITY RUN #1
 . F.A.M. EFFECTIVITY RUN #1

Tokico:
 . REPORT ON TOKICO P.S.

KOURTESIS ?????? REV.
 SELLERS/ 06/13 ORIG.
 SELLERS 07/03
 SELLERS 07/03

DOUGLAS ONGOING

MILESTONES	PLANNED	ACTUAL
57 L/T ISIR	11/21/90	11/21/90
57 L/T JOB 1	09/03/91	
57 P/C ISIR	01/15/91	01/15/91
57 P/C JOB 1	06/03/91	
77PS ISIR	08/01/91	
77PS SOP (TX)	09/01/91	

PRODUCTION PLAN BY MONTH (THOUSANDS) - WITHOUT OVERAGE

	P/C 57PSL5-3	L/T 57PSL5-2	P/C 77PSL2-1	L/T 77PSL2-3
APR	0	0	0	0
MAY	2 (COMP.)	2	0	0
JUN	**22	0	0	0
JUL	10 (tentative)	2.3	0	0
AGO	10 "	2.3	2	0
SEP	10 "	**2.6	3	0
OCT	0	9.5	**9	2
NOV	0	8.5	25	3
DEC	0	0	25	**9.5

* - JOB1 FOR 57PS VERSIONS
 ** - TENTATIVE JOB1 FOR 77PS VERSIONS

REGARDS,
 DAVE CHARN 126-FORD

TI-NHTSA 002044

VALENTINE TOOL & STAMPING, INC.

171 WEST MAIN ST. MANTON, MASS. 02768
(508) 285-6911

MATERIAL CERTIFICATION

DATE : FRIDAY JUNE 14, 1991

CUSTOMER : TEXAS INSTRUMENTS INC

CUSTOMER P.O. NO : 505083392

SUPPLIER INVOICE NO.: 19500

PART DESCRIPTION : 27713-1 CUP REV.A

SUPPLIER PJO NO. : 18571

QUANTITY SHIPPED : 1.085

SHIPMENT DATE : 06/14/91

WE CERTIFY THAT THE MATERIAL USED
TO PRODUCE THE PRODUCT IN THIS
SHIPMENT, NAMELY
1 C1006 1
CONFORMS TO T.I. DRAWINGS AND
T.I. PURCHASE ORDER REQUIREMENTS.

SIGNED *Jeanne Laflemme*
(Supplier Representative)

Jeanne Laflemme Quality Control Manager

TI-NHTSA 002045

VALENTINE TOOL & STAMPING, INC.

111 WEST MAIN ST. MORTON, MASS. 02766
(508) 285-8811 226-0012

CERTIFICATE OF CONFORMANCE

DATE : FRIDAY JUNE 14, 1991

CUSTOMER : TEXAS INSTRUMENTS INC

CUSTOMER P.O. NO : 605063382

SUPPLIER INVOICE NO.: 79586

PART DESCRIPTION : 27712-1 CUP Rev.A

SUPPLIER FJO NO. : 18871

QUANTITY SHIPPED : 1.085

SHIPMENT DATE : 06/14/91

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 CONTROL DEPARTMENT.

SIGNED *Jeanne LaPlante*
Jeanne LaPlante
Quality Control Manager

TI-NHTSA 002046

100 100
E 395 326
S 223 312

530 HENRY ST
ROME, NEW YORK 13440

27712

SALES CODE
5027010

0 1 0 0 0 0 0

DATE	INVOICE NO
07/26/91	92740

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

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

ATTN: JEANNE LAFLETTE, Q.C. MGR.

ITEM NO	QTY	UNIT	DESCRIPTION	SHIPPED BY
161156	040	06	CAMP	K S S

ITEM NO	QTY	UNIT	DESCRIPTION	SHIPPED BY
466707	07	34	012 JCO U1	

5 INCHMENTS IN

INCHES 13428

COLOR CODE

12PM X 50.00PM

62456
PREPARED
PAPER

500-0000

PAPER WRAP

0000

0000

0000

04000 Y 2.0000

04000 Y 2.0000

04000 Y 2.0000

04000 Y 2.0000

04000 Y 2.0000

04000 Y 2.0000

04000 Y 2.0000

04000 Y 2.0000

001 0005 0005

001 0005 0005

025 0025MM 0127 0127MM

ALUM KILD	C-1006
-----------	--------

TEST REPORT

Certificate of Compliance

TEST: 1
0127 0127 0127

Notary Public, Onondaga County,
My commission expires

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

A. Zingulini
ROME STEEL CO., INC.

71-NHTSA 002047



REVISIONS					
REVISION	DATE	BY	DESCRIPTION	APPROVED	DATE
1	10-1-81	SW	REVISIONS		
2	10-1-81	SW	REVISIONS		
3	10-1-81	SW	REVISIONS		
4	10-1-81	SW	REVISIONS		
5	10-1-81	SW	REVISIONS		
6	10-1-81	SW	REVISIONS		
7	10-1-81	SW	REVISIONS		
8	10-1-81	SW	REVISIONS		
9	10-1-81	SW	REVISIONS		
10	10-1-81	SW	REVISIONS		
11	10-1-81	SW	REVISIONS		
12	10-1-81	SW	REVISIONS		
13	10-1-81	SW	REVISIONS		
14	10-1-81	SW	REVISIONS		
15	10-1-81	SW	REVISIONS		
16	10-1-81	SW	REVISIONS		
17	10-1-81	SW	REVISIONS		
18	10-1-81	SW	REVISIONS		
19	10-1-81	SW	REVISIONS		
20	10-1-81	SW	REVISIONS		
21	10-1-81	SW	REVISIONS		
22	10-1-81	SW	REVISIONS		
23	10-1-81	SW	REVISIONS		
24	10-1-81	SW	REVISIONS		
25	10-1-81	SW	REVISIONS		
26	10-1-81	SW	REVISIONS		
27	10-1-81	SW	REVISIONS		
28	10-1-81	SW	REVISIONS		
29	10-1-81	SW	REVISIONS		
30	10-1-81	SW	REVISIONS		
31	10-1-81	SW	REVISIONS		
32	10-1-81	SW	REVISIONS		
33	10-1-81	SW	REVISIONS		
34	10-1-81	SW	REVISIONS		
35	10-1-81	SW	REVISIONS		
36	10-1-81	SW	REVISIONS		
37	10-1-81	SW	REVISIONS		
38	10-1-81	SW	REVISIONS		
39	10-1-81	SW	REVISIONS		
40	10-1-81	SW	REVISIONS		
41	10-1-81	SW	REVISIONS		
42	10-1-81	SW	REVISIONS		
43	10-1-81	SW	REVISIONS		
44	10-1-81	SW	REVISIONS		
45	10-1-81	SW	REVISIONS		
46	10-1-81	SW	REVISIONS		
47	10-1-81	SW	REVISIONS		
48	10-1-81	SW	REVISIONS		
49	10-1-81	SW	REVISIONS		
50	10-1-81	SW	REVISIONS		

- NOTES:**

NOTES:

1. USE MAX. WARE ALLOWED, EXCEPT WHERE INDICATED.
2. 12" - 18" IF MUST BE CONTAINED WITHIN .008 MIN..
3. DIMENSIONS APPLY AFTER PLATING.
4. PLATING OF SPRINGS RELEASED.
5. PARTS OF SPRINGS ISSUED AND STORED IN SEALED PLASTIC BAGS.
6. PARTS CONTAINING PARTS OF DATE CODES, DATE CODE IS TO REFLECT ANY MATERIAL LOT YOU OR SUCCESSOR CHANGE.
7. THIS PART IS NOT CONTROLLED. ANY PRESS CHANGE, NEW SET-UP, PURCH CHANGE, MAJOR TOOL WORK OR MATERIAL LOT CHANGE WILL SIGNIFY START OF A NEW LOT. EACH LOT WILL HAVE IT'S OWN PLATING SLIP WITH LOT IDENTIFICATION. PALLETIZED LOTS SHOULD BE SHIP FOR EACH LOT.
8. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.
9. C&A - C&A THICKNESS DOES NOT APPLY IN THIS AREA DUE TO WALL THINNING SPRING FORMING.
10. EFFECTIVE DATE: NO MATERIAL MAY PRODUCE BEYOND THE THEORETICAL BOUNDARY ESTABLISHED BY THE C&A RANGE.

[illegible][illegible]

HIGHLIGHTS
Stephen B. Offiler
Week Ending 91-06-14

Handwritten signature and date 7/20/91



FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

CUSTOMER ISSUES: We have partially completed the connector insertion force test. So far, four groups have been run: no terminals, terminals in ideal position, both terminals out .015" in the same direction, and terminals out .015" in opposite directions. The plan is to analyze the results and decide if further test-lots are required, and in what configuration. The lot with no terminals requires (average) 1.98 kg to insert; the lot with ideal position requires 3.77 kg; the lot with .015" offset in the same direction requires 4.11 kg; and the lot with .015" offset in opposite directions requires 4.18 kg. The presence of terminals makes a significant difference in insertion force, 90% greater than the lot without terminals. The position of the terminals makes a much smaller difference, only 9.0% and 10.9% greater compared with terminals in the ideal position. Since the terminals in opposite directions seems to be worst-case, and it is the typical real-world condition, further test-lots will test this condition only for expediency. Additional lots at .010" and .020" are suggested. Upon completion, the plan is to draft a formal report for submission to Ford.

A lot of twenty devices has been shipped to Hilite Ind. (Surfaces/Pins) for the Ford-required hydraulic testing. This completes our responsibilities for all three Tier-1's.

77PS DESIGN ISSUES: Eastern Automation is presently working to finalize the movable assembly tooling. They have had various issues with their chrome plater, including lost parts and incorrect plating thicknesses. Their submission on Tuesday of this week looked terrible; we're told the reasons for this are all directly related to the above. As of yesterday, Scott Bellows was reporting that they were making progress on all issues, and were on track to ship the final configuration for receipt today. Measurement of the spring remains an issue. They do not have a toolmaker's microscope, and instead rely on an optical comparator. The trick involves location of the "magic point in space", that is, the intersection of imaginary lines drawn from the vertical and horizontal surfaces in side view. All key spring dimensions are referenced off the magic point in space. My technique to locate this point with a TM is not exactly duplicatable with an OC. Scott and I have agreed upon a measurement technique which he will be using.

We are progressing on the 77PS Design Confirmation test. This test will be running a matrix of devices with highest and lowest spring angles combined with highest and lowest "pin" (actually calibration) dimensions. Jeff has completed sensors and has manually set springs to the specified angles. We need the calibrator running to the best of Mechanization's ability in order to complete this experiment.

An experiment is being planned to provide information which will be used to determine the best way to pilot seat devices in production. The concept involves a pin-window style experiment, using switches built to various calibration targets (rather than using a variety of pin sizes). This assumes the calibrator is running properly. Several devices at each calibration point will be built, actuation and release will be collected, differentials calculated, and hachet-curves drawn. We will then explore the data for relationships between the optimum pinning window versus measured variables. It has been suggested that differential may be a good indicator of pin-window, since it is widest in the pin window and tapers off at either side. Also, we hypothesize that actuation sigma's will be wider outside the pin window. Possible

HIGHLIGHTS 91-06-14

Page 2

combination of these measurable variables should allow inference of pin window on silent devices.

Another experiment is being planned to provide information on crimp-shift. This phenomenon has been noted during pin-window experiments in the lab. It involves a change in the location of the center of the pin-window between pre and post crimp. The hypothesis is that the switch assembly compresses slightly during crimp, which shifts the required pin length downward. (This applies to lab pin experiments; production pin experiments are done on finished devices so the shift is automatically accounted for.)

I have spoken with Tom Olson at Maxwell Laboratories, regarding the prototypes we sent him for experimentation with the Magnaform process. He is shipping us the results of the experiment, due to arrive roughly today. He reports they had mixed success. He discussed four "discontinuities" on the aluminum crimp rings which caused "wrinkles" on the finished product. He refers to the hanger marks. They machined the hanger marks off some crimp rings and had much better success. One important note: they are assembling upside-down, such that the hexport is "up" rather than the switch "up" as in our crimp process. This was done to avoid damage to the base as the crimp ring material is thrown inward by the magnetic pulse.

TI-NHTSA 002050

TO: BILL SWEET
FM: MATT SELLERS
SJ: HIGHLIGHTS FOR W/E 6/14/91

77PS

EASTERN AUTOMATION UPDATE ...SAMPLES ARRIVED THIS WEEK OFF THE CORRECTED TOOL IN A LESS THAN DESIREABLE STATE. NONE HAD CONTACTS ON THEM DUE TO EASTERN'S INABILITY TO OPERATE SOME FUNCTIONS ON THE MACHINE. HOWEVER, THE BIGGEST PROBLEM WAS THE CONDITION OF THE SPRING. THE FORM WAS INCONSISTENT AND IN MOST CASES ACTUALLY DISTORTED OUT OF SHAPE. THE BEND AREA TENDED TO FLOW IN TWO DIFFERENT DIRECTIONS. THINNING OF THE BECU MATERIAL WAS OBSERVED AROUND THE BEND INDICATING THEY WERE HITTING THE SPRING TOO HARD. NEEDLESS TO SAY OUR PLAN TO MAKE AN EFFECTIVITY RUN IN EASTERN'S FACILITIES THIS WEEK WAS POSTPONED. EASTERN IS WORKING WITH A HIGH SENSE OF PRIORITY ON THIS ISSUE. THEY INDICATE THAT THE PROBLEMS STEM FROM DIFFICULTY GETTING PARTS TO GO TOGETHER AFTER PLATING.

TERMINAL STAKING ON THE BASE AND ...FURTHER TESTING OF THE STAKING FUNCTION HAS TURNED UP A FEW ADDITIONAL PROBLEM AREAS. ONE IS WITH RADIUS DIMENSIONS/LOCATION ON THE FORM ANVILS. TOO LARGE A RADIUS AND IMPROPER POSITIONING RELATIVE TO THE TERMINAL LANCE CAUSES BAD ALIGNMENT AND INSUFFICIENT ROLL OVER ONTO THE BASE MOLD STEP. STEVE M. MADE SOME NEW ANVILS AND WE TRIED THEM OUT WEDNESDAY THIS WEEK, BUT THIS IS WHEN THE SECOND ISSUE SURFACED. THE STAKING STATIONS ARE DIFFICULT TO ALIGN AFTER BEING TAKEN APART FOR TOOL CHANGEOVER. TO COMPOUND THE PROBLEM THE ANVILS HAVE SO MUCH CLEARANCE AREA THAT THE STATION CAN BE OUT OF ALIGNMENT AND IT WILL STILL ATTEMPT TO STAKE RATHER THAN JUST PUSH THE PART OUT OF THE NEST INDICATING BAD ALIGNMENT. STEVE M. HAS BEEN ASKED TO PROVIDE SOME SORT OF RECTANGULAR STEEL ALIGNMENT PLUG THAT WILL SLEEVE THE TOP AND BOTTOM TOOL TOGETHER DURING INSTALLATION OF NEW TOOLS. LATER TODAY OR MONDAY WE WILL TRY TO STAKE SOME MORE PARTS.

ALUMINUM CRIMP RING CRIMPING ...THE NEW CRIMP STATION ARE INSTALLED AND WERE TESTED YESTERDAY. THEY WERE HAVING PROBLEMS WITH THE FIRST STAGE CRIMP NOT DOING ENOUGH WORK TO GIVE THE FINAL STAGE A CHANCE. WE VERIFIED IT WAS NOT MATERIAL RELATED BY USING BLDG. 12'S FIRST STAGE CRIMP AS A PARALLEL PATH TO THE AMI SECOND STAGE. DEVICES CRIMPED IN BLDG. 12 WERE SUFFICIENTLY CRIMPED. THE PROBLEM MAY BE RELATED TO THE DIE DIMENSIONS. THEY CUT THEIR TOOL AT 48 DEGREES COMPARED WITH OUR 45 DEGREES. ADDITIONALLY THEIR DIES HAVE GROSSLY

ALUMINUM CRIMP RING CRIMPING CONT . . .

DIFFERENT DIAMETERS, AND THEIR STRIPPER FORCES SEEM LOW. ALL FOR REASONS UNKNOWN. DAVE P. BROUGHT OVER OUR PRINTS OF NEST AND DIES AND WILL PROGRESS THEM THROUGH ALL THE STEPS THAT WE TOOK OVER HERE TO MAKE A QUALITY CRIMP.

NO QUOTES BACK FROM VALENTINE YET ON WAXING THE RINGS AT THEIR SOURCE. VALENTINE WILL ALSO BE QUOTING INVESTMENT INTO THEIR OWN EQUIPMENT TO ALLOW THEM TO WAX TUMBLE. TOOLING UP AFCC TO TUMBLE LARGER CAPACITIES WILL BE \$9K AND WILL REDUCE THE PIECE COST TO \$8.00 AS OPPOSED TO THE CURRENT \$14.00.

CONTROL PLANS . . . THE BASE ASSEMBLY CONTROL PLAN WAS PRESENTED AT THE LAST CCPS START-UP MEETING AND RECEIVED AGREEMENT ON ITS DETAILS. THE PLAN INVOLVES A SIMPLE PLUG GAGE SYSTEM TO MONITOR TERMINAL POSITION ALONG WITH A MULTILEVEL DEAD WEIGHT SYSTEM TO KEEP TABS ON FORCE DEFLECTION. THE LATER WILL BE PERFORMED ON A CALIBRATED BASE ASSEMBLY. ADDITIONALLY THE SPRING ANGLE WILL BE MONITORED INDIRECTLY WITH SOME DISTANCE MEASURING SYSTEM THAT REFERENCES OFF SOME PART OF THE TERMINAL AND MEASURES TRAVEL DISTANCE TO CONTINUITY.

PRESSURE TESTER . . . THE TESTER IS COMPLETE AND WIRING IS CURRENTLY BE TESTED FOR CORRECTNESS. PLANS ARE TO USE DEVICES FROM THE PRODUCTION VALIDATION RUN TO PERFORM A COMPLETE CYCLE EVALUATION.

DESIGN HAS DETERMINED THAT THERE IS SOME ALLOWANCE FOR DIMENSION VARIATION BEYOND THE .007" FREE SNAP RANGE ALREADY ESTABLISHED. HOW MUCH IS TBD. STEVE O. AND MYSELF WILL MEET AT 1:00 TODAY TO REVIEW WHAT WILL BE A PROTOTYPE PILOTING SYSTEM THAT WILL SERVE TO DICTATE A SYSTEM TO BE USED IN PRODUCTION. IT WILL INVOLVE SOME FORCE DEFLECTION ANALYSIS ALONG WITH BASE CALIBRATION MATRIXING FOLLOWED BY PRESSURE TESTER ANALYSIS.

PASS CAR SEAL COMPRESSION . . . THICKER GASKETS TO PROVIDE THE PASS CAR DEVICES WITH ADEQUATE SEAL COMPRESSION WILL BE ARRIVING BY MONDAY. THESE WILL BE THE SAME RED COLOR BUT WITH A PIN STRIP SIMILAR TO THE BRAKE HEXPORT GASKETS.

TERMINALS ... THE 100 PIECE SAMPLE LOT TO SUPPORT PROVEOUT SAMPLE BUILD HAS BEEN RECEIVED FROM BASSLER RIGHT ON SCHEDULE.

BASE MOLD ... JUST RECEIVED THE 100 PIECE SAMPLE OF THE NEW BASE MOLD THIS MORNING FROM AFCC. THIS IS AFTER ONE ITERATION FOR SOME OUTSIDE ENVELOP DIMENSIONS.

RIVETERS ... TOWNSEND SENT IN BOTH RIVETERS PRIOR TO T.I. REVIEWING THEM AT THEIR FACILITY. RATHER THAN PUT UP WITH THE SHIPPING DELAYS TO SEND THEM BACK WE SHIPPED THEM TO BLDG 20 FOR MOUNTING. TOWNSEND HAS BEEN INVITED DOWN TO OUR FACILITY TODAY AT 10:00AM TO REVIEW THE BUILD OF THE 100 PROVEOUT SAMPLES. ANY PROBLEMS WILL BE NOTED AND TOWNSEND WILL SEND TECH SUPPORT.

STAKER/ RIVETING FIXTURES ... ALL COMPLETED. WILL BE TESTED THIS AFTERNOON WITH THE SAMPLE BUILD.

LINE LAYOUT ... TED BREDIKEN IS WORKING ON DETERMINING WHERE THESE THREE NEW STATIONS WILL GO ON THE 57PS LINE. THE LINE IS TIGHT ON SPACE DUE TO THE MOVE. THIS IS A MY93 START UP.

52/57PS GENERAL

THE CAP INSTALLER WAS EVALUATED AGAIN THIS WEEK. THIS COMES AFTER ALL THE FIXES PERFORMED AS A RESULT OF LAST WEEKS RUN. MOST PROBLEM ARE FIXED WITH THE EXCEPTION OF PARTS BEING KNOCKED OVER DURING ALIGNMENT IN THE TRACK. ALSO A NEW ONE SURFACED WITH THE PLUG ITSELF. THE NEW PLUGS PULLED FROM THE WAREHOUSE EXHIBITED A SLIPPERY APPEARANCE DUE MAYBE TO MOLD RELEASE, ETC. THIS CAUSES THE PLUGS TO CREEP OUT OF THE BASE WITHIN A FEW SHORT MINUTES AFTER FULL INSERTION. WYNN'S HAS BEEN APPROACHED, BUT IS NOT AN EXTREMELY FAST PACE COMPANY. WE TRIED WASHING SOME IN SOLVENT AND FREON. BOTH CLEANED THE SURFACE ADEQUATELY, BUT DESIGN HAS CONCERNS OVER THE EFFECT ON THE COMPOUND. NEED RESOLUTION TODAY FROM DESIGN SO THAT A 2000 PIECE CUSTOMER SAMPLE BUILD CAN BE COMPLETED NEXT WEEK. INSTALLATION WAS PUSHED OUT 1 WEEK TO BEGIN NEXT THURSDAY. WILL BE COMPLETED NEXT SUNDAY.

STANDARDS UPDATES WERE NOT COMPLETED THIS WEEK DUE TO FAST PACE ASSOCIATED WITH PREPARING FOR VACATION. WILL WORK SATURDAY MORNING WITH CHRISTINE TO COMPLETE.

PAGE 4

THE PROBLEM WITH THE 27288-1 CUP WITH THE NON-RADIUS BUMP HAS PROVED TO NEGATIVELY AFFECT THE DISC FRACTURE ANOMALIES. VALENTINE SUBMITTED SAMPLES FROM BOTH CUP LOTS IN THEIR FACILITY. BOTH EXHIBITED THE SAME CONDITION. VALENTINE IS CURRENTLY WORKING TO FIND THE CAUSE OF THE NON-RADIUS. PURCHASING IS CONSTANTLY BEING CALLED TO KEEP THE HEAT ON AS WE DO NOT WANT THIS TO TURN INTO A LINE SHUTDOWN SITUATION DUE TO MATERIAL AVAILABILITY.

TI-NM73A 002054

MSG N# 323246 FR=ELB3 TO=PCQA SENT=06/14/91 04:41 PM
R#040 ST=C DIV=0050 CC=00101 BY=ELB3 AT=06/14/91 04:41 PM

TO: DAVE CEARN ZARN
WATT SELLERS MJS2
ELAINE ROSE PCQA
MIKE DEMATTIA PCQA
GEORGE LAVOIR B512
RUSTY STRUBLE RCS2
DICK GARIEPY MFPC
JOE LASARE JML8

CC = DONNA M.
FYI/PC 6/17/91

CC: BILL SWEET WSS0
JIM WATT PCQA
RAY TOURANGEAU RGT2
TOM CHARBONEAU TC

From: STAN HOMOL SH2

Subj: DISCUSSION ON RECENT INCREASE IN 52/57 DISC FATIGUE PROBLEM

A meeting was held to discuss the recent increase in the fatigue problem on both the 52 and 57PS line. The team was brought up to speed on the current problem (i.e. failure rate and testing results, etc). The following is a summary of the information presented and the resulting action assigned.

- * Since June 6, production has impulse tested 12 lot, 6 of which have failed, or 50% of the product tested is failing. Production is currently using approximately 6 lot per day, which means we are testing every third disc lot.
- * Design and manufacturing have begun looking into this problem and design has assigned cause for the recent increase in failures, to an out of spec cup bump; this decision was based on the testing described below.
- * Valentine has inspected all cup lots available, either at TI or Valentine and found that they all have the out of spec cup bump. This condition can be described as a flat on the top of the bump, which causes an increased stress in the disc, and thereby increases the fatigue problem. Valentine has acknowledged the out of spec condition and is currently working toward fixing the problem; new punch and die are being built, with first tryout schedules for next Tuesday/Wednesday of next week.
- * Design has conducted a test to confirm/deny the increased failure rate. This test used previously tested components used to determine the disc lot histogram. We changed only the cup component, using the most current cups. To recall, the previously tested lot had 13 failures or 13 % after 250k cycles. Breaking these results down further, into similar sample size as this new test we find we had; Devices 1 to 50 had a 8% F.R. and devices 51-100 had an 18% F.R. The new test with the current cups had 14 out of 48 fail, for a 29% failure rate. The predominant direction of the fracture

TI-NHTSA 002055

on this current test was parallel to the rolling direction, in contrast to the previously test which had fracture predominantly at 45 degrees to the rolling direction.

ng Additionally, this new test showed that the failure are not occurring any earlier than the first test; earliest failure occurred after 120K cycles, and the majority of failure happened from 160 to 180k cycles.

* Action to address this new problem are as follows:

ACTION	WHO	WHEN
Production will begin impulse testing every lot to 200k cycles.	QC	ASAP
Have disc department selectively choose coils of materials which are at the higher end of the thickness requirement.	Struble	ASAP
Receive samples of Valentine corrected cups.	Lavoie	ASAP
Confirm Valentine's corrective action for checking the cup bump geometry	QC/Man Eng	TBD
Retest cup assemblies with the new cups to confirm increased failure cause	Homol	TBD
Confirm that TI can reject/return cup lots not meeting print dimension, even if we knowingly order them (see below).	Lavoie	6/19
Update Joe Lasare as to whether or not he can order of the current out of spec cups in order to keep the line running. Decision needs to be made by next Wednesday.	Design/QC Manufac	6/18

REGARDS, STAN X1249

TI-NHTSA 002036

-MSG NM- 15200 FR-CZNN TO-PCNA SENT-06/26/91 10:41 AM
 NM-157 ST-C DIV-0050 CC-00101 BY-CZNN AT-06/26/91 10:41 AM

JUNE 17, 1991

TO: RUSTY STRUBLE
MIKE DENALITA
CHARLIE DUNELAS
DICK BRIDGEMAN
PAUL ROUGH
JIM A2827
STEVE OFFILER
MATT SELLERS
DAN SWEET
THE WALL
TED BREUKEN

FR: DNE CZARN ZACH

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:

MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 06/27 (THURSDAY) *** PLEASE NOTE CHANGE ***
TIME: 10:00 - 11:30 AM
PLACE: T.I.P. CONFERENCE ROOM

WE'LL FOLLOW THE MINUTES FROM THE 6/13 MEETING.

REC'D
DATE 12/1/88
BY 0278-FDD

cc: Donna M.
FYI/orn

THNHTBA 002057

-MSG N1= 364599 FR=CERN TO=PCQA SENT=06/17/91 03:37 PM
R1=083 ST=C DIV=0050 CC=00101 BY=CERN AT=06/17/91 03:37 PM

JUNE 17, 1991

TO:	RUSTY STRUBLE	RCS2	CC:	TOM CHARBONNEAU	TC
	MIKE DeMATTIA	PCQA		JOHN KOUTSIS	NDES
	CHARLIE DOUGLAS	CPFC		STEVE MAJOR	WELS
	DICK GARIFFY	NPFC		ANDY McGUIRE	PCQA
	PAUL KOTCH	PRK1		ED O'NEILL	EJON
	JOE LAZARE	JNLS		JOE SCHUCK	WELS
	STEVE OFFILER	SD01		GARY SNYDER	CPFC
	NATT SELLERS	PCNE		MARTHA SULLIVAN	CPFC
	DEE SWINE	PCNE		RAY TOURANGEAU	PCNE
	JIM WATT	PCQA		TED BALLARD	AVNE
	TED BREIDIKEN	PSNT		STAN MONOL	SH2
				CLAIRE BALTHAZAR	PSNT
				BILL CONGDON	NPFC
				STEVE MCCOBBY	NDES
				TERRY RODRIGUEZ	NPFC

FR: DAVE CERN SARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:
06/13/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 06/20 (THURSDAY)
TIME: 10:00 - 11:30 AM
PLACE: MARKETING CONFERENCE ROOM

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* - ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED
SINCE PREVIOUS MEETING

57 L/T (L5-2)

Export:

	WHO	WHEN	
* L/T PILOT RUN	SELLERS/	01/24	ORIG.
(IN PROGRESS; SENSORS BUILT)	GARIFFY	06/20	REV.
. UPDATE EXPORT SHIPPING SCHEDULE	KOTCH	ONGOING	
. PLAN FOR EVALUATING FOULSEN	KOTCH	05/16	ORIG.
		07/11	REV.
* PROPOSAL FOR RECEIVING GASKETS ON MANDRELS	SELLERS	07/11	

ISR Issues:

. CONNECTOR INSTALLATION FORCE STUDY	OFFILER	06/06	ORIG.
		06/20	REV.
* DEVELOP TERM. POS'S GAGE CONCEPT	SELLERS	06/13	ORIG.
		06/13	COMP.
PROTOTYPE TERM. POS'S GAGE CONCEPT	SELLERS	07/11	
. RELEASE PRINT FROM L/T	SCHUCK	05/09	ORIG.
		06/27	REV.
. SUBMIT ISR FOLLOW-UP TO FORD SQA (NEED RELEASE PRINT)	NATT	06/04	ORIG.
		07/04	REV.

TI-NHTSA 002058

57 P/C (LS-3)

PLAN FOR MAKING L/T AND P/C	OFFILER/	06/06	ORIG.
TV. SEAL COMPRESSION CONSISTENT	SELLERS	06/27	REV.
DEFINE GAGING TORQUE	WATT	06/20	
SPEC W/PEASE & TIER 1'S			
* REC'V THICKER P/C GASKETS (EX3355-97-1)	SELLERS	06/17	
* BUILD ALL 57PSLS-3'S W/EX3355-97-1	BREDIKEN	ONGOING	
GASKETS UNTIL TBD TIME			
SHIP 21K LS-3'S	GARIKPY/	06/03	ORIG.
(DELIV. DATE PUSHOUT BY FORD)	STROBLE	07/01	REV.
	(TENTATIVE DATE - ORDER NOT REC'VD)		
* PULL IN P/C CUP DELIVERY TO 06/28	STROBLE/	06/20	
	LAZANE		

77PS

DESIGN UPDATE	OFFILER	ONGOING	
MFG/MECH UPDATE	SELLERS	ONGOING	
PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHAZAR	ONGOING	
UPDATE SPC FILES/RUN CAPABILITY STUDIES	BALTHAZAR	ONGOING	
ESTABLISH OVERALL SCHEDULE OF	OFFILER	05/02	ORIG.
DESIGN ENG. ACTIONS		06/20	REV.
77PS PARTS LISTS	OFFILER	06/06	ORIG.
		06/20	REV.
COMPLETE DESIGN FMEA	OFFILER	04/18	ORIG.
		06/27	REV.
COMPLETE PROCESS FMEA	SELLERS	07/01	
DETERMINE ACCEPTABLE CALIBRATION WINDOW	OFFILER/	03/14	ORIG.
BY DIMENSIONAL ANALYSIS	SELLERS	06/20	REV.
VERIFICATION RUN FOR CALIBRATION WINDOW	OFFILER/	03/28	ORIG.
	SELLERS	06/27	REV.
77PS DESIGN CONFIRMATION TEST	OFFILER	06/20	
PROD'N CALIBRATION WINDOW EXPERIMENT	OFFILER	07/04	
W/ "SILENT" SENSORS			
* GAGING TECHNIQUE FOR IN-PROCESS F/D	SELLERS	04/25	ORIG.
CHARACTERIZATION OF SPRING ARMS		06/13	REV.
		06/13	COMP.
* BUILD F/D GAGE FOR SPRING ARMS	SELLERS	07/18	
* STAKE PROD'N PARTS ON PROD'N STAKER	SELLERS	05/02	ORIG.
AND MEASURE TERMINAL POSITION		06/20	REV.
* COMMUNICATE ANY REQ'D TERMINAL CHANGES	SELLERS	06/13	ORIG.
TO BASSLER		06/27	REV.
* WAXED CRIMP RINGS FOR ES BUILD	SELLERS	06/13	ORIG.
		06/13	COMP.
* BUILD 200 SWITCHES FOR ES TESTING	SELLERS/	06/14	ORIG.
	MCCOCHY	06/21	REV.
57 TO 77 CONVERSION: PHASE 1 TESTING	HOWOL	05/30	ORIG.
(PUSHOUT DUE TO COMPONENT AVAILABILITY)		07/11	REV.
COST ESTIMATE FOR LOW DIFF. SWITCH	SELLERS	06/06	ORIG.
		06/27	REV.
* IDENTIFY INSPECTION REQTS. FOR SOP	WATT	ONGOING	
* IDENTIFY AUTOMATION SPECIALIST	GARIKPY	06/06	ORIG.
		06/14	REV.
77PS QAS (PRELIMINARY)	WATT	07/01	
77PS CHARACTERISTICS SHEETS	WATT	07/15	
GAGE R&R STUDIES - TALK TO MATT IN EQUIPMENT	WATT	07/15	
77PS QAS (FINAL)	WATT	08/01	
SET UP SPC FILES/RUN CAPABILITY STUDIES	BALTHAZAR	08/01	

Production Components:

• UPDATE CUP PRINT	OFFILER	03/28	ORIG.
		06/20	REV.
• RESOLVE OPEN ISSUES ON BASE (PUSHOUT DUE TO STAKER EVAL.)	SELLERS	04/11	ORIG.
		06/27	REV.
• UPDATE TERMINAL PRINTS/BASE PRINT	OFFILER	05/09	ORIG.
		06/20	REV.

Manufacturing Equipment:

* FINAL ASM MACHINE DEBUG COMPLETION	SELLERS/	06/03	ORIG.
	KOURTESIS	07/03	REV.
* BASE ASM MACHINE BUILD COMPLETION (NEED E.A. MACHINE)	SELLERS/	05/31	ORIG.
	KOURTESIS	07/03	REV.
* PRESSURE TESTER BUILD COMPLETION	SELLERS/	06/20	ORIG.
	KOURTESIS	07/03	REV.
• B.A.M. EFFECTIVITY RUN #1	SELLERS	07/03	
• P.A.M. EFFECTIVITY RUN #1	SELLERS	07/03	

Tokico:

• REPORT ON TOKICO P.S.	DOUGLAS	ONGOING
• MTG. TO REVIEW IMPACT OF DOWNSIZED SWITCH ON ASM. EQUIP.	CEARN	06/27

DISCUSSION:

57 L/T & P/C

1 PILOT RUN IS UNDERWAY. SENSOR ASSEMBLY MACHINE FAULT CODES WERE DOCUMENTED; MOST FAULTS DUE TO GASKET MISFEED, FOLLOWED BY DISC AND KAPTON FEED. GASKET FEED PROBLEMS OCCUR WITH ALL BRAKE SWITCHES - GASKETS ARE RECEIVED IN BULK, RATHER THAN ON MANDRELS. MATT WILL DETERMINE IF WE SHOULD HAVE GASKETS SHIPPED ON MANDRELS. THE DISC AND KAPTON FEED PROBLEMS ARE STILL OPEN.

ED O'NEILL WILL VISIT WITH ELCO ON 06/19. TOPICS ON THE AGENDA INCLUDE JS12 EXPORT COST, RE-ROLLING THREADS, AND ELCO'S ENGINEERING SUPPORT.

7796

WE RECEIVED PARTS FROM EASTERN ON TUESDAY AND ON FRIDAY; SOME DIMENSIONAL ISSUES REMAIN.

CALIBRATOR DEBUG IS THE PAGING ITEM FOR B.A.M. COMPLETION; EASTERN'S INABILITY TO SUPPLY SPRINGS TO PRINT CONTINUES TO IMPACT

ITS COMPLETION. SWITCHES FOR RS TESTING NEED TO BE BUILT BY 06/21;

A 1 WEEK PUSHOUT. TERMINAL STAKE AND FINAL CRIMP ISSUES NEED TO BE RESOLVED BEFORE SWITCHES CAN BE BUILT.

MILESTONES	PLANNED	ACTUAL
57 L/T ISR	11/21/90	11/21/90
57 L/T JOB 1	09/03/91	
57 P/C ISR	01/15/91	01/15/91
57 P/C JOB 1	06/03/91	

TI-NHTSA 002060

77PS ISIR 08/01/91
77PS SOP (TI) 09/01/91

PRODUCTION PLAN BY MONTH (THOUSANDS) - WITHOUT OVERAGE

	P/C 57PSL5-3	L/T 57PSL5-2	P/C 77PSL2-1	L/T 77PSL2-3
APR	0	0	0	0
MAY	2 (CONF.)	2	0	0
JUN	*22	0	0	0
JUL	10 (tentative)	2.3	0	0
AUG	10 "	2.3	2	0
SEP	10 "	*2.6	2	0
OCT	0	9.5	**9	2
NOV	0	8.5	25	2
DEC	0	0	25	**9.3

* = JOB1 FOR 57PS VERSIONS

** = TENTATIVE JOB1 FOR 77PS VERSIONS

REGARDS,
DAVE CEARH \27-FORD

TI-NHTSA 002061

CONNECTOR INSERTION FORCE TEST TEST 152-15-40 JAN 06/17/91

CASE	LOT 0		LOT 1		LOT 2		LOT 3		LOT 4		LOT 5	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
	HOME	HOME	TOTAL	TOTAL	+0.015"	+0.015"	+0.015"	-0.015"	+0.010"	-0.010"	+0.020"	-0.020"
1	1.67	KG	3.40	KG	4.9	KG	4.4	KG	4.2	KG	3.4	KG
2	1.81		3.50		3.5		4.9		3.4		3.6	
3	2.24		4.10		2.9		3.9		4.1		3.2	
4	2.11		3.80		3.1		3.7		3.4		3.4	
5	1.81		3.20		5.4		3.3		3.1		3.7	
6	2.15		4.30		5.0		3.1		3.2		3.5	
7	1.90		4.70		3.8		3.2		5.0		3.2	
8	2.05		3.15				4.9		3.5		3.3	
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												
66												
67												
68												
69												
70												
71												
72												
73												
74												
75												
76												
77												
78												
79												
80												
81												
82												
83												
84												
85												
86												
87												
88												
89												
90												
91												
92												
93												
94												
95												
96												
97												
98												
99												
100												
101												
102												
103												
104												
105												
106												
107												
108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												
121												
122												
123												
124												
125												
126												
127												
128												
129												
130												
131												
132												
133												
134												
135												
136												
137												
138												
139												
140												
141												
142												
143												
144												
145												
146												
147												
148												
149												
150												
151												
152												
153												
154												
155												
156												
157												
158												
159												
160												
161												
162												
163												
164												
165												
166												
167												
168												
169												
170												
171												
172												
173												
174												
175												
176												
177												
178												
179												
180												
181												
182												
183												
184												
185												
186												
187												
188												
189												
190												
191												
192												
193												
194												

DIEMASTERS

CERTIFICATE OF CONFORMANCE

SHIP TO:

**TEXAS
INSTRUMENTS**



FROM
Diemasters Manufacturing, Inc.

767 Industrial Drive
Elmhurst, Illinois 60120

DATE SHIPPED: 6-18-91 PURCHASE ORDER # 65790
SHIPPING OR INVOICE NUMBER: 65790
MATERIAL TRACE NUMBER (P.O. # HEAT LOT OR ROUTE SHEET NUMBER) 65790
QUANTITY SHIPPED: 75,790
PART NUMBER: 27639-1 REVISION: D
PART DESCRIPTION: WASHER
OPERATION PERFORMED: MANUFACTURING
SPECIFICATION: 27639-1 REVISION: D

THE MATERIAL DESCRIBED ABOVE WAS PROCESSED, INSPECTED AND FOUND TO CONFORM TO THE DRAWING(S) AND SPECIFICATION(S) LISTED.

[Signature]
QUALITY CONTROL

6-18-91
DATE

ENCLOSURES: ☒ CERTIFICATE OF RAW MATERIAL

TRACEABLE LOT# 70

☐ INDEPENDENT LABORATORY TEST REPORT OF RAW MATERIAL

☐ INSPECTION REPORT(S)

☒ SUB ^{HEAT TREAT} ~~PLATING~~ SUPPLIER'S CERTIFICATION(S) OF CONFORMANCE

☐ FORM _____ NON-CONFORMANCE RELEASED BY _____

☐ REWORK EXPLANATION

TI-NHTSA 002083

RIVERDALE PLATING & HEAT TREATING, INC.

688 West 124th Street Riverdale, Illinois 60627-1194

TELEPHONES
(708) 649-2750
(412) 568-2400

DIEMASTER MANUFACTURING, INC.

747 INDUSTRIAL DR

PLUMBST

IL 60126-1515

27019-1

JUN - 3198

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

133431	108657	AUSTIMP. * TO R/C 40-45	74,515	1,552	5/29/71
133431	108657	ZINC PLATE - 10000	74,515	1,552	5/29/71

Subscribed and sworn to before me

THIS 10 DAY OF MAY, 1971

Leonard D. Dwyer
Notary Public

"OFFICIAL SEAL"
JAMES H. RICHARDS

RIVERDALE PLATING & HEATING TREATING, INC.

Orville K. Nelson

Vice President

71-0178A 002064

that material meets ordered specification

Bally Diemasters
TEXAS INSTR.
27639-1

QUALITY CONTROL
APR 30 1991
L BALLO

Size
1 3/8 x .048
PO Number
021540
MSR Number
62276

Steel						AISI			Finish		
657196						C-185			B ⁷ /78		
%C	%Mn	%P	%S	%Si	%Ni	%Cr	%Mo	%Al	%Cu	%V	%Nb
52	78	0.15	008	23							
Tensile Strength (psi)				35 Yield Strength (psi)				5 Elongation in 2"			
Surface		Inclusion Rating		Grade Mark							
Decarburization				Microstructure							
Cold Bend											
Parallel to the rolling direction over a						Radius Bend					
Perpendicular to the rolling direction over a						Radius Bend					
Hardness						Microhardness					

I verify that the above data is correct

Joe M. M. M. on 4/26/91

Noted Public Item of New York, County of Onondaga

My commission expires 5/1/92

ROME STRIP STEEL

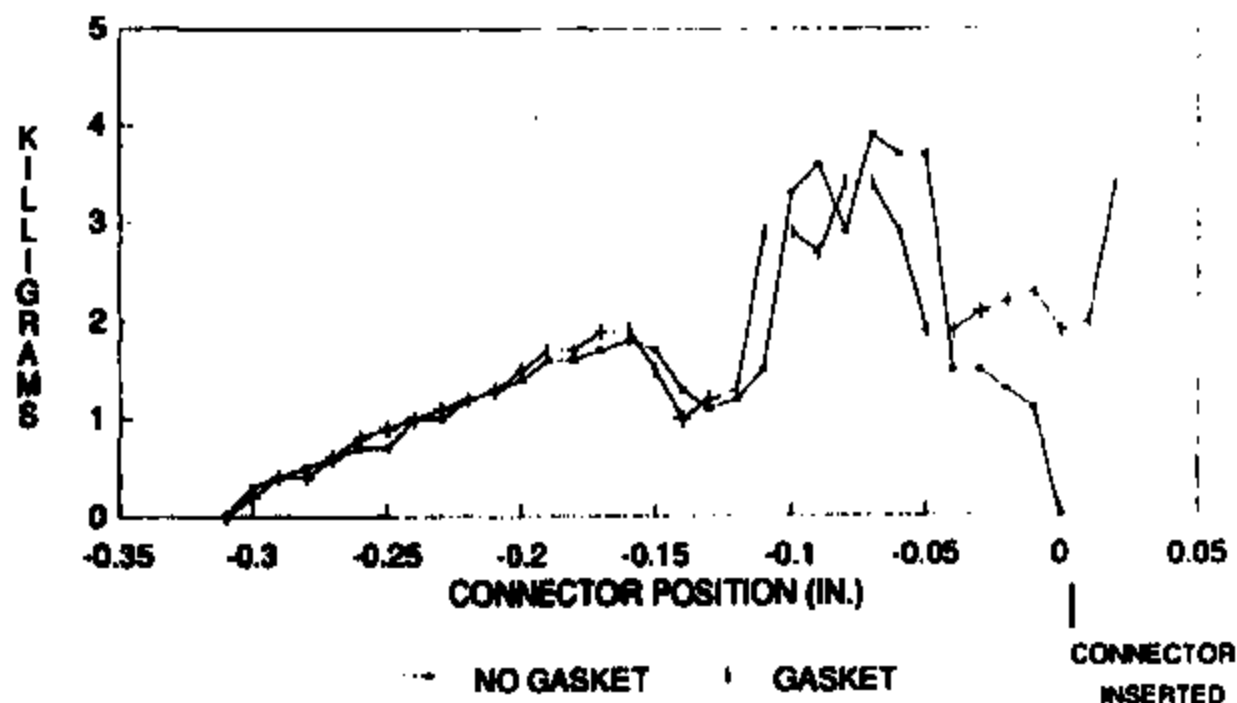
530 Henry St.
Rome, NY 13440

315-338-5500
FAX 315-338-5510

TI-NHTSA 002055

CONNECTOR INSERTION TEST

FORCE vs. POSITION



TI-NHTSA 002066

JAD 8/20/91

910624

77PS SWITCH CALIBRATION REQUIREMENTS

CONTRIBUTORS TO UNCERTAINTY:

DAVE -

- 1) SWITCH REFERENCE DIMENSION (✓)
- 2) CVT REFERENCE - TO - PSL ✓
- 3) DISC CHARACTERISTIC CURVE; UNDER
- 4) PIN LENGTH ✓
- 5) SWITCH COMPRESSION DURING Firing

I PUT THIS TOGETHER
TO GIVE YOU A BRIEF
STATUS UPDATE. MORE OF
GATTING ANYWHERE

✓ INDICATES THAT DATA HAS BEEN COLLECTED

X INDICATES THAT DATA HAS NOT BEEN COLLECTED

NO VALID CONCLUSIONS CAN BE DRAWN USING ONLY EXISTANT
DATA; FURTHERMORE COLLECTION OF MISSING DATA IS A SUBSTANTIALLY
LARGE TASK.

TI-NHTSA 002088

SAMPLE ORDER

ORDER NO: CD91-32
REQUEST DATE: 06/19/91
CREDIT ACCOUNT: 5902
COST CENTER: 101
PRODUCT CODE: 060

CUSTOMER: DANA (WEATHERHEAD DIVISION)
CUSTOMER P.O. NO: AN962B1-05
TI PART NO: 57PSL5-3
CUSTOMER PART NO: N/A
QUANTITY: 25
PRICE: \$8.00 EACH

LIVERY PROMISED: 6/24/91

SPECIAL INSTRUCTIONS:

BILL TO:
DANA CORPORATION
WEATHERHEAD DIVISION
203 WEATHERHEAD STREET
ANDOLA, IN 46703

SHIP TO:
SAME
ATTN: MIKE ROGERS

XX PRODUCTION SAMPLES

ENGINEERING DEVELOPMENT SAMPLES

CC: ENGINEERING: STEVE OFFLER

PRODUCTION CONTROL: MARIE CROSSLAND

SALES ENGINEER: JOE SCHUCKR

TI-NHTSA 002068

PRESSURE SWITCH DATA

Form 21605

TEST NO. 56-15-104

DEVICE 77P5L2-1	DATE REQUESTED	REQUESTED BY	REQUESTED COMPL. DATE
PERFORMED BY Jeffrey D. Osasica	DATE STARTED 6/14/91	DATE COMPLETED	APPROVED BY
PROJECT TITLE: Ford MY91 Electronic Speed Control Unit into P.			

CUSTOMER: *P.J.S. Co.*

PURPOSE OF TEST:

Refer to Ford ES

PROCEDURE

Current leakage								
Day's	Art/Ref	AV Drop	To Anode	To Insulator	Over Cathode	Proof	Tests	
12-15-01	127/46	4.2	1.88	1.83	1.87	Good	Fluor. test 2 Insulator	
	127/51	4.7	2.16	1.89	1.60		Fluor. test 2 Insulator	
	127/55	4.8	1.78	1.83	1.62		Fluor. test 2 Insulator	
	127/53	4.4	1.67	1.72	1.79		Fluor. test 2 Insulator	
	127/57	2.1	1.71	1.77	1.88		Fluor. test 2 Insulator	
	127/53	3.2	1.72	1.83	1.84		Fluor. test 2 Insulator	
	127/47	3.3	2.28	1.61	1.60		Fluor. test 2 Insulator	
	127/51	3.5	2.00	1.99	1.87		Fluor. test 2 Insulator	
	127/52	3.0	1.98	1.98	1.97		Fluor. test 2 Insulator	
	127/41	3.5	1.87	1.83	1.71		Fluor. test 2 Insulator	
	127/47	3.9	1.89	1.83	1.85		Fluor. test 2 Insulator	
	127/49	4.7	1.85	1.92	1.81		Fluor. test 2 Insulator	
	127/53	4.2	1.62	1.88	1.66		Fluor. test 2 Insulator	
	127/55	4.0	1.96	1.88	1.95		Fluor. test 2 Insulator	
	127/46	4.5	1.83	1.91	1.97		Fluor. test 2 Insulator	
	127/57	4.7	1.87	1.92	1.78		Fluor. test 2 Insulator	
	127/43	3.7	1.88	1.88	1.84		Fluor. test 2 Insulator	
	127/52	3.0	1.91	1.93	1.83		Fluor. test 2 Insulator	
	127/56	3.7	1.87	1.94	1.88		Fluor. test 2 Insulator	
	127/58	3.0	1.76	1.85	1.70		Fluor. test 2 Insulator	
	127/53	3.2	1.78	1.87	1.88		Fluor. test 2 Insulator	
	127/59	4.3	1.84	1.91	1.87		Fluor. test 2 Insulator	
	127/57	3.3	1.77	1.86	1.62		Fluor. test 2 Insulator	
	127/59	4.8	1.82	1.89	1.73		Fluor. test 2 Insulator	
	127/48	4.1	1.67	1.77	1.64		Fluor. test 2 Insulator	
	127/52	3.8	1.92	1.89	1.71	Good	Fluor. test 2 Insulator	
	127/46	3.3	1.60	1.85	1.63		Fluor. test 2 Insulator	

770 K

Rebuild of Inverter parts/Post Cycle

Device	Proof	Act/Rel	H ₂ O ₂	Current	Voltage			
156-5-91	OK	105/53	31	1.81	1.53	1.80		
-91		111/53	181	1.90	1.60	1.77		
-91		113/54	101	2.05	1.64	1.78		
-91		108/55	47	2.14	1.66	1.70		
-91		110/60	91	1.96	1.86	1.69		
-91		120/64	56	1.88	2.55	1.80		
-91		118/56	257	1.89	1.87	1.81		
-91		116/53	110	1.88	1.56	1.80		
-91		110/54	59	1.87	1.57	1.83		
-91		118/55	42	1.93	1.58	1.74		
-91		119/57	40	2.27	1.69	1.72		
-91		116/60	42	2.83	1.58	1.66		
-91		111/58	76	2.01	1.60	1.66		
-91		115/56	45	2.18	1.64	1.68		
-91		118/53	28	1.92	1.67	1.89		
-91		115/57	125	1.86	1.60	1.79		
-91		118/57	111	2.20	1.68	1.78		
-91		112/60	108	1.75	1.92	1.73		
-91		114/58	178	1.96	1.64	1.75		
-91		108/57	86	1.93	1.64	1.81		
-91		115/56	108	1.78	1.47	1.73		
-91		117/58	43	2.05	1.67	1.76		
-91		115/53	48	2.06	1.63	1.76		
-91	IV	112/52	132	2.17	1.65	1.73		
Test 5								
1-15-91	Fluid Re-9 Tank	OK	105/53	401	2.02	1.42	1.61	
91	Fluid Re-9 Tank		135/62	41	1.65	1.87	1.57	
91	Fluid Re-9 Tank		125/53	45	1.71	1.36	1.58	
91	Fluid Re-9 Tank		131/58	44	1.83	1.48	1.55	
91	Fluid Re-9 Tank		125/49	48	1.62	1.34	1.54	
91	Fluid Re-9 Tank		132/61	43	1.81	1.56	1.55	
91	Fluid Re-9 Tank		133/60	46	1.70	1.43	1.50	
91	Fluid Re-9 Tank		133/58	47	1.70	1.58	1.72	
91	Fluid Re-9 Tank		137/50	43	1.81	1.09	1.53	
91	Fluid Re-9 Tank		131/62	45	1.84	1.47	1.60	
91	Fluid Re-9 Tank		135/64	48	1.87	1.56	1.60	
91	Fluid Re-9 Tank		133/63	40	1.70	1.40	1.66	
91	Fluid Re-9 Tank		130/62	41	1.88	1.53	1.68	
91	Fluid Re-9 Tank		132/62	40	2.02	1.58	1.71	
91	Fluid Re-9 Tank		137/63	41	2.05	1.65	1.71	
91	Fluid Re-9 Tank		137/65	41	2.08	1.81	1.82	
91	Fluid Re-9 Tank		137/66	41	2.12	1.81	1.77	
91	Fluid Re-9 Tank		136/60	41	2.19	1.77	1.79	

TI-NHTSA 002072

PRESSURE SWITCH DATA

Form 21605

TEST NO. 157-15-183

DEVICE 77PSL2-3	DATE REQUESTED	REQUESTED BY	REQUESTED COMPL. DATE
PERFORMED BY Jeffrey A. Domenico	DATE STARTED 8/24/91	DATE COMPLETED	APPROVED BY
PROJECT TITLE: Ford MY '82 Electronic Speed control Pinch into PS			

CUSTOMER: LT

PURPOSE OF TEST:

Refer to Ford ES

PROCEDURE:

Current Leakage									
Device	Act/Rel	AV Prop	Electrical Leakage	10 Lines per inch	10 Lines per inch	Proof	Tests		
157-15-01	201/199	4.5	1.65 mA	1.22 mA	1.84 mA	Good	Fluid Res	Engine	
02	252/196	4.9	1.60	1.21	1.93		Fluid Res	Engine	
03	260/191	4.2	1.60	1.23	1.98		Fluid Res	Engine	
04	260/192	4.8	1.69	1.25	1.97		Fluid Res	Engine	
05	260/192	4.9	1.63	1.21	1.93		Fluid Res	Engine	
06	260/191	6.0	1.60	1.23	1.96		Fluid Res	Engine	
07	262/192	6.0	1.57	1.20	1.97		Fluid Res	Engine	
08	263/195	5.8	1.76	1.28	1.90		Fluid Res	Engine	
09	264/196	5.1	1.77	1.28	1.59		Fluid Res	Engine	
10	262/190	4.7	1.93	1.37	1.50		Fluid Res	Engine	
11	259/190	4.5	1.75	1.26	1.90		Fluid Res	Engine	
12	246/195	3.6	1.76	1.27	1.92		Fluid Res	Engine	
13	260/191	4.8							
14	250/191	5.9	1.85	1.39	1.53	Good	Fluid Res	Engine	
15	259/191	5.1	2.00	1.52	1.67		Fluid Res	Engine	
16	259/191	4.9	1.90	1.45	1.65		Fluid Res	Engine	
17	265/195	5.3	1.73	1.31	1.50		Fluid Res	Engine	
18	262/190	4.7	1.61	1.21	1.57		Fluid Res	Engine	
19	260/192	5.5	1.76	1.39	1.75		Fluid Res	Engine	
20	262/191	5.2	1.77	1.38	1.98		Fluid Res	Engine	
21	263/196	4.1	1.77	1.29	1.43		Fluid Res	Engine	
22	260/191	5.2	1.93	1.38	1.55		Fluid Res	Engine	
23	263/193	3.9	1.91	1.35	1.50		Fluid Res	Engine	
24	262/192	4.2	1.62	1.27	1.77		Fluid Res	Engine	
25	259/190	4.2	1.65	1.27	1.60		Fluid Res	Engine	
26	261/190	6.4	1.92	1.40	1.55	Good	Fluid Res	Engine	
27	259/192	4.6	1.77	1.38	1.57		Fluid Res	Engine	

TI-NHTSA 002076

Final Characterizations

Device #	TESTS	Pass/Fail	Act/Rel	Mo Disp	Temp 1	Temp 2	Temp 3
157-01	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
02	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
03	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
04	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
05	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
06	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
07	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
08	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
09	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
10	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
11	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
12	Fluid Res & Temp	OK	237/180	2.5	1.67	1.67	1.66
13	NOT USED						
14	Fluid Res & Temp Strength	OK	250/180	41	1.66	1.67	1.67
15	Fluid Res & Temp Strength		250/180	41	1.66	1.67	1.67
16	Fluid Res & Temp Strength		250/180	42	1.65	1.67	1.67
17	Fluid Res & Temp Strength		250/180	42	1.65	1.67	1.66
18	Fluid Res & Temp Strength		250/180	40	1.74	1.67	1.66
19	Fluid Res & Temp Strength		250/180	42	1.65	1.67	1.66
20	Fluid Res & Temp Strength		250/180	40	1.76	1.67	1.66
21	Fluid Res & Temp Strength		250/180	41	1.66	1.67	1.66
22	Fluid Res & Temp Strength		250/180	41	1.67	1.67	1.66
23	Fluid Res & Temp Strength		250/180	41	1.75	1.67	1.66
24	Fluid Res & Temp Strength		250/180	40	1.72	1.65	1.66
25	Fluid Res & Temp Strength		250/180	43	1.54	1.67	1.66
26	Fluid Res & Humidity	OK	250/180	6.5	2.11	1.70	1.67
27	Fluid Res & Humidity		250/180	7.3	2.10	1.70	1.66
28	Fluid Res & Humidity		250/180	6.1	2.00	1.61	1.67
29	Fluid Res & Humidity		250/180	6.7	1.66	1.65	1.67
30	Fluid Res & Humidity		250/180	5.7	2.00	1.65	1.67
31	Fluid Res & Humidity		250/180	5.7	2.00	1.65	1.67
32	Fluid Res & Salt Spray		250/180	40	306.00	4.39	3.77
33	Fluid Res & Salt Spray		250/180	40	2.11	1.67	1.66
34	Fluid Res & Salt Spray		250/180	40	306.00	4.39	4.20
35	Fluid Res & Salt Spray		250/180	40	306.00	307.00	307.00
36	NOT USED						
37	Fluid Res & Salt Spray	OK	250/180	40	39.6	37.4	34.9
38	NOT USED						
39	Fluid Res & Salt Spray	OK	250/180	40	307.00	306	35.9
40	Fluid Res	OK					
41	Fluid Res	OK					
42	Fluid Res	OK					
43	NOT USED						
44	Fluid Res	OK					
45	Fluid Res	OK					
46	Fluid Res	OK					
47	Vibration	OK	250/180	11.6	1.67	1.66	1.67
48	Vibration	OK	250/180	9.5	1.67	1.66	1.67
49	Vibration	OK	250/180	7.7	1.67	1.66	1.67
50	Vibration	OK	250/180	11.5	1.67	1.66	1.67
51	NOT USED						
52	Vibration	OK	250/180	6.5	1.67	1.66	1.67
53	Vibration	OK	250/180	7.7	1.67	1.66	1.67
54	NOT USED						
55	Vibration	OK	250/180	6.5	1.67	1.66	1.67
56	Vibration	OK	250/180	6.5	1.67	1.66	1.67
57	Vibration	OK	250/180	6.5	1.67	1.66	1.67

PRESSURE SWITCH DATA

FORM 21605

TEST NO. 156-15-184

DEVICE 77P562-1	DATE REQUESTED	REQUESTED BY	REQUESTED COMP. DATE
PERFORMED BY Jeffrey D. Dierman	DATE STARTED 6/14/91	DATE COMPLETED	APPROVED BY
PROJECT TITLE: Ford MY94 Electronic Speed Control Reactivate			

CUSTOMER: Pass-Car

PURPOSE OF TEST:

Refer to Ford ES

PROCEDURE:

Current leakage									
Device #	Act/Rel	AV Drop	To Load	4 Load	One Cycle	100f	Test		
156-15-81	107/46	4.2	1.88	1.93	1.87	Good	Fluid test	2	Inspected
1	107/46	4.2	2.16	1.87	1.88		Fluid test	2	Inspected
2	107/46	4.2	1.78	1.83	1.82		Fluid test	2	Inspected
3	107/46	4.4	1.87	1.83	1.82		Fluid test	2	Inspected
4	107/46	3.1	1.71	1.82	1.83		Fluid test	2	Inspected
5	107/46	3.0	1.70	1.83	1.82		Fluid test	2	Inspected
6	107/46	3.2	2.23	1.61	1.60		Fluid test	2	Inspected
7	107/46	3.6	2.00	1.82	1.82		Fluid test	2	Inspected
8	107/46	3.0	1.88	1.83	1.82		Fluid test	2	Inspected
9	107/46	3.5	1.82	1.83	1.82		Fluid test	2	Inspected
10	107/46	2.9	1.88	1.82	1.82		Fluid test	2	Inspected
11	107/46	4.3	1.87	1.82	1.82		Fluid test	2	Inspected
12	107/46	4.2	1.82	1.82	1.82		Fluid test	2	Inspected
13	107/46	4.0	1.76	1.82	1.82		Fluid test	2	Inspected
14	107/46	4.5	1.82	1.82	1.82		Fluid test	2	Inspected
15	107/46	4.7	1.82	1.82	1.82		Fluid test	2	Inspected
16	107/46	3.7	1.88	1.82	1.82		Fluid test	2	Inspected
17	107/46	3.0	1.91	1.83	1.82		Fluid test	2	Inspected
18	107/46	3.7	1.87	1.84	1.82		Fluid test	2	Inspected
19	107/46	5.0	1.76	1.85	1.82		Fluid test	2	Inspected
20	107/46	4.2	1.78	1.82	1.82		Fluid test	2	Inspected
21	107/46	4.3	1.82	1.82	1.82		Fluid test	2	Inspected
22	107/46	3.3	1.72	1.82	1.82		Fluid test	2	Inspected
23	107/46	4.7	1.82	1.82	1.82		Fluid test	2	Inspected
24	107/46	4.1	1.82	1.82	1.82		Fluid test	2	Inspected
25	107/46	5.9	1.82	1.82	1.82	Good	Fluid test	2	Inspected
26	107/46	4.2	1.80	1.85	1.82		Fluid test	2	Inspected
27	107/46	4.9	1.84	1.82	1.82		Fluid test	2	Inspected

TI-NHTSA 002075

770 K

Rebuild of Impulse parts/Post 2.5.12

Drawn	Proof	Act/Ref	H ₂ Oep	Current	Wage			
156-15-91	OK	1181/53	51	1.81	1.53	1.70		
-12		111/53	181	1.90	1.60	1.77		
-13		113/54	187	2.05	1.64	1.78		
-14		107/54	47	2.14	1.66	1.70		
-15		110/60	91	1.96	1.58	1.69		
-16		100/64	36	1.80	1.55	1.60		
-17		112/56	57	1.89	1.57	1.71		
-18		110/53	114	1.98	1.56	1.68		
-19		110/54	53	1.97	1.57	1.73		
-20		108/53	42	1.93	1.57	1.74		
-21		112/57	40	2.27	1.63	1.75		
-22		116/60	42	2.03	1.58	1.66		
-23		111/58	76	2.01	1.60	1.71		
-24		115/56	43	2.10	1.61	1.68		
-25		113/53	69	1.82	1.67	1.59		
-26		115/57	125	1.86	1.60	1.70		
-27		115/57	117	2.20	1.63	1.70		
-28		112/60	104	1.75	1.52	1.73		
-29		110/56	128	1.96	1.64	1.75		
-30		108/57	86	1.93	1.60	1.74		
-31		115/56	100	1.78	1.47	1.73		
-32		113/58	95	2.05	1.67	1.76		
-33		115/53	48	2.06	1.63	1.71		
-34		117/52	132	2.19	1.65	1.73		

Final Charge

Drawn	Proof	Act/Ref	H ₂ Oep	Current	Wage			
156-15-91	OK	1181/53	51	1.81	1.53	1.70		
-12		111/53	181	1.90	1.60	1.77		
-13		113/54	187	2.05	1.64	1.78		
-14		107/54	47	2.14	1.66	1.70		
-15		110/60	91	1.96	1.58	1.69		
-16		100/64	36	1.80	1.55	1.60		
-17		112/56	57	1.89	1.57	1.71		
-18		110/53	114	1.98	1.56	1.68		
-19		110/54	53	1.97	1.57	1.73		
-20		108/53	42	1.93	1.57	1.74		
-21		112/57	40	2.27	1.63	1.75		
-22		116/60	42	2.03	1.58	1.66		
-23		111/58	76	2.01	1.60	1.71		
-24		115/56	43	2.10	1.61	1.68		
-25		113/53	69	1.82	1.67	1.59		
-26		115/57	125	1.86	1.60	1.70		
-27		115/57	117	2.20	1.63	1.70		
-28		112/60	104	1.75	1.52	1.73		
-29		110/56	128	1.96	1.64	1.75		
-30		108/57	86	1.93	1.60	1.74		
-31		115/56	100	1.78	1.47	1.73		
-32		113/58	95	2.05	1.67	1.76		
-33		115/53	48	2.06	1.63	1.71		
-34		117/52	132	2.19	1.65	1.73		
-35		118/51	141	2.30	1.68	1.78		
-36		119/50	150	2.40	1.70	1.80		
-37		120/49	159	2.50	1.72	1.82		
-38		121/48	168	2.60	1.74	1.84		
-39		122/47	177	2.70	1.76	1.86		
-40		123/46	186	2.80	1.78	1.88		
-41		124/45	195	2.90	1.80	1.90		
-42		125/44	204	3.00	1.82	1.92		
-43		126/43	213	3.10	1.84	1.94		
-44		127/42	222	3.20	1.86	1.96		
-45		128/41	231	3.30	1.88	1.98		
-46		129/40	240	3.40	1.90	2.00		
-47		130/39	249	3.50	1.92	2.02		
-48		131/38	258	3.60	1.94	2.04		
-49		132/37	267	3.70	1.96	2.06		
-50		133/36	276	3.80	1.98	2.08		

48-45-3

TI-NHTSA 002081

PRESSURE SWITCH DATA

Form 21605

TEST NO. 77-11-104

DEVICE 77PSL2-1	DATE REQUESTED	REQUESTED BY	REQUESTED FOR DATE
PERFORMED BY Jeffrey D. Domenech	DATE STARTED 6/27/91	DATE COMPLETED	APPROVED BY
PROJECT TITLE: Ford MY91 Electronic Speed Control React. to F.			

CUSTOMER: Pass-Car

PURPOSE OF TEST:

Refer to Ford ES

PROCEDURE:

Current Leakage									
Device #	Act/Rel	mV Drop	to source	to ground	to chassis	Proof	Tests		
156-15-01	127/46	9.9	1.88mA	1.43mA	1.77mA	Good	Fluid res 2	Impulse	
01	137/61	4.7	2.16	1.49	1.50		Fluid res 4	Impulse	
02	128/56	4.8	1.78	1.33	1.62		Fluid res 6	Impulse	
04	138/52	4.4	1.67	1.32	1.72		Fluid res 8	Impulse	
05	124/57	2.1	1.71	1.29	1.48		Fluid res 10	Impulse	
07	130/53	3.2	1.72	1.33	1.59		Fluid res 12	Impulse	
07	124/47	3.2	2.29	1.61	1.60		Fluid res 14	Impulse	
08	120/61	3.6	2.00	1.49	1.87		Fluid res 16	Impulse	
09	132/52	3.0	1.98	1.48	1.97		Fluid res 18	Impulse	
10	118/41	5.5	1.79	1.53	1.71		Fluid res 20	Impulse	
11	122/54	2.9	1.90	1.43	1.85		Fluid res 22	Impulse	
12	120/44	4.9	1.95	1.42	1.81		Fluid res 24	Impulse	
13	121/52	4.2	1.82	1.39	1.66		Fluid res 26	Term. Storage	
14	137/55	4.0	1.76	1.38	1.85		Fluid res 28	Term. Storage	
15	126/46	4.5	1.82	1.48	1.97		Fluid res 30	Term. Storage	
16	123/51	4.7	1.87	1.42	1.70		Fluid res 32	Term. Storage	
17	120/43	3.7	1.80	1.38	1.84		Fluid res 34	Term. Storage	
18	133/52	3.0	1.86	1.43	1.88		Fluid res 36	Term. Storage	
19	132/56	3.7	1.87	1.44	1.83		Fluid res 38	Term. Storage	
20	137/50	5.0	1.76	1.35	1.70		Fluid res 40	Term. Storage	
21	137/53	4.2	1.78	1.37	1.79		Fluid res 42	Term. Storage	
22	122/59	4.3	1.74	1.49	1.57		Fluid res 44	Term. Storage	
23	138/57	3.3	1.79	1.36	1.62		Fluid res 46	Term. Storage	
24	134/57	4.8	1.82	1.39	1.63		Fluid res 48	Term. Storage	
25	125/48	4.1	1.67	1.27	1.64		Fluid res 50	Term. Storage	
26	124/52	5.8	1.72	1.29	1.71	Good	Fluid res 52	Term. Storage	
27	127/46	4.2	1.60	1.25	1.63		Fluid res 54	Term. Storage	
28	121/45	4.8	1.64	1.22	1.72		Fluid res 56	Term. Storage	

(OVER)

TI-NHTSA 002082

Rebuild of Impulse parts/Post Cycle

Device #	Proof	Act/Rel	Hu Drop	Current Leakage					
156-15-91	OK	105/53	51	1.81	1.53	1.80			
-92		111/58	181	1.90	1.60	1.72			
-93		113/54	101	2.05	1.64	1.78			
-94		108/55	47	2.14	1.66	1.70			
-95		110/60	91	1.96	1.56	1.69			
-96		120/64	55	1.88	1.56	1.80			
-97		112/56	47	1.89	1.59	1.81			
-98		116/53	114	1.88	1.56	1.80			
-99		110/54	53	1.87	1.57	1.83			
-100		113/55	42	1.93	1.58	1.74			
-101		112/57	40	2.27	1.64	1.72			
-102		116/60	42	2.03	1.58	1.66			
-103		111/58	76	2.01	1.60	1.66			
-104		115/56	43	2.18	1.64	1.68			
-105		118/55	68	1.92	1.61	1.89			
-106		115/57	125	1.86	1.60	1.79			
-107		118/57	111	2.20	1.68	1.78			
-108		112/60	104	1.75	1.52	1.73			
-109		114/58	128	1.96	1.64	1.75			
-110		109/57	86	1.93	1.64	1.89			
-111		115/56	108	1.78	1.47	1.73			
-112		117/58	97	2.05	1.61	1.76			
-113		113/53	48	2.06	1.63	1.76			
-114		112/52	132	2.17	1.65	1.73			

Final Check

Device #	Proof	Act/Rel	Hu Drop	Current Leakage					
156-15-91	OK	128/61	411	2.07	1.42	1.61			
-92		135/62	41	1.62	1.32	1.52			
-93		125/53	45	1.71	1.36	1.55			
-94		131/58	44	1.83	1.48	1.55			
-95		125/49	49	1.62	1.34	1.54			
-96		132/61	43	1.81	1.56	1.55			
-97		133/60	42	1.90	1.43	1.54			
-98		133/58	47	1.70	1.38	1.72			
-99		137/59	43	1.81	1.44	1.53			
-100		131/62	45	1.84	1.47	1.60			
-101		135/64	48	1.87	1.56	1.60			
-102		135/63	44	1.70	1.40	1.66			
-103		140/62	41	1.89	1.59	1.78			
-104		137/62	5.0	2.02	1.58	1.71			
-105		131/53	5.1	2.04	1.65	1.71			
-106		125/57	18.1	2.28	1.81	1.82			
-107		137/65	5.9	1.87	1.58	1.72			
-108		136/60	2.9	1.99	1.77	1.99			

PRESSURE SWITCH DATA

FORM 21605

TEST NO. 157-15-105

DEVICE 777522-3	DATE REQUESTED	REQUESTED BY	REQUESTED COMP. DATE
PERFORMED BY Jeffrey D. Domenico	DATE STARTED 8/27/91	DATE COMPLETED	APPROVED BY
PROJECT TITLE: Ford MY '92 Electronic Speed control Panel into FS			

CUSTOMER:

LT

PURPOSE OF TEST:

Refer to Ford FS

PROCEDURE:

Current leakage

Device	Act/Rel	mV drop	100mA	100mA	100mA	Proof	Test	
157-15-01	251/184	4.5	1.65	1.22	1.64	Good	Fluid Res	Emergency
02	263/186	4.7	1.60	1.21	1.52		Fluid Res	Emergency
03	260/176	4.2	1.60	1.23	1.48		Fluid Res	Emergency
04	262/179	4.8	1.63	1.25	1.47		Fluid Res	Emergency
15	249/187	4.3	1.63	1.21	1.43		Fluid Res	Emergency
16	254/181	6.0	1.60	1.23	1.46		Fluid Res	Emergency
17	262/199	4.0	1.57	1.20	1.49		Fluid Res	Emergency
18	263/185	5.2	1.76	1.28	1.40		Fluid Res	Emergency
19	254/176	4.1	1.49	1.40	1.58		Fluid Res	Emergency
20	262/178	4.7	1.92	1.37	1.50		Fluid Res	Emergency
21	258/180	4.5	1.75	1.26	1.40		Fluid Res	Emergency
22	246/175	3.6	1.76	1.27	1.42		Fluid Res	Emergency
23	NO. 1	NO. 1						
14	250/186	4.8	1.85	1.39	1.53	Good	Fluid Res	Tank Strength
15	258/181	4.1	2.00	1.52	1.64		Fluid Res	Tank Strength
16	258/186	4.9	1.90	1.45	1.65		Fluid Res	Tank Strength
17	245/175	5.3	1.73	1.31	1.50		Fluid Res	Tank Strength
18	262/200	4.7	1.63	1.31	1.57		Fluid Res	Tank Strength
19	259/187	5.5	1.76	1.29	1.46		Fluid Res	Tank Strength
20	247/188	5.2	1.89	1.30	1.48		Fluid Res	Tank Strength
21	263/196	4.1	1.77	1.29	1.43		Fluid Res	Tank Strength
22	260/193	5.2	1.93	1.37	1.55		Fluid Res	Tank Strength
23	263/199	3.4	1.91	1.35	1.50		Fluid Res	Tank Strength
24	252/192	4.2	1.62	1.27	1.27		Fluid Res	Tank Strength
25	259/184	4.0	1.65	1.27	1.60		Fluid Res	Tank Strength
26	261/190	6.4	1.92	1.40	1.55	Good	Fluid Res	Harsh
27	258/182	4.6	1.91	1.42	1.52		Fluid Res	Harsh
28	270/195	4.2	1.69	1.23	1.63		Fluid Res	Harsh

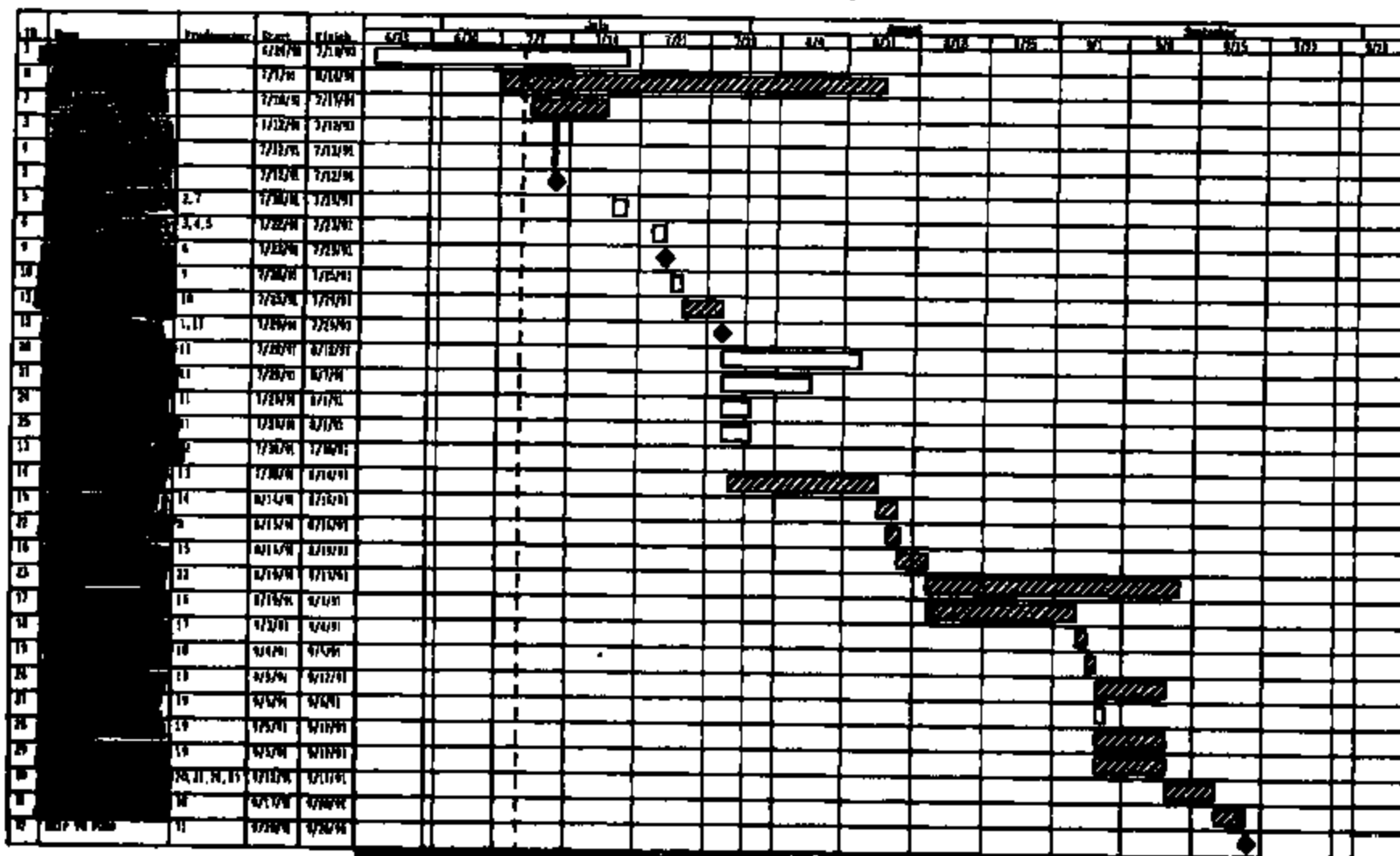
10/2/91

TI-NHTSA 002086

Final Characterizations

Device #	TESTS	Proof	Acc/Rel	M. Prop	Env. Temp	Humidity	Altitude
157-10-01	Fluid Res & Impulse	OK	237/180	3.5	1.81	1.47	1.96
02	Fluid Res & Impulse	OK	238/182	4.3	1.61	1.37	1.80
03	Fluid Res & Impulse	OK	239/183	4.3	1.64	1.38	1.78
04	Fluid Res & Impulse	OK	240/183	4.3	1.59	1.39	1.8
05	Fluid Res & Impulse	OK	238/181	2.9	1.77	1.41	1.91
06	Fluid Res & Impulse	OK	241/180	6.3	1.73	1.44	1.92
07	Fluid Res & Impulse	OK	251/185	2.5	1.72	1.38	1.87
08	Fluid Res & Impulse	OK	237/178	2.3	1.48	1.18	1.96
09	Fluid Res & Impulse	OK	237/180	2.4	1.54	1.35	1.91
10	Fluid Res & Impulse	OK	240/183	3.2	1.52	1.32	1.95
11	Fluid Res & Impulse	OK	242/181	2.2	1.47	1.31	1.86
12	Fluid Res & Impulse	OK	232/177	3.3	1.49	1.22	1.92
13	NOT USED						
14	Fluid Res & Term Strength	OK	250/180	41	1.86	1.47	1.67
15	Fluid Res & Term Strength		255/196	41	1.68	1.43	1.67
16	Fluid Res & Term Strength		256/194	42	1.65	1.41	1.67
17	Fluid Res & Term Strength		246/186	42	1.65	1.41	1.66
18	Fluid Res & Term Strength		265/202	40	1.74	1.43	1.60
19	Fluid Res & Term Strength		258/192	42	1.66	1.39	1.66
20	Fluid Res & Term Strength		245/190	40	1.76	1.37	1.67
21	Fluid Res & Term Strength		260/196	41	1.60	1.38	1.69
22	Fluid Res & Term Strength		258/185	41	1.63	1.39	1.71
23	Fluid Res & Term Strength		262/194	41	1.75	1.40	1.68
24	Fluid Res & Term Strength		254/192	40	1.72	1.35	1.68
25	Fluid Res & Term Strength		247/187	43	1.54	1.31	1.68
26	Fluid Res & Humidity	OK	267/194	6.3	2.11	1.70	1.72
27	Fluid Res & Humidity		261/190	4.8	2.10	1.70	1.76
28	Fluid Res & Humidity		278/200	4.1	2.00	1.61	1.72
29	Fluid Res & Humidity		270/199	6.7	1.66	1.45	1.72
30	Fluid Res & Humidity		279/192	5.8	2.00	1.65	1.75
31	Fluid Res & Humidity		249/189	5.9	2.00	1.65	1.73
32	Fluid Res & Salt Spray		265/194	40	306.00	4.39	3.82
33	Fluid Res & Salt Spray		251/183	40	2.10	1.7	1.86
34	Fluid Res & Salt Spray		260/193	40	310.00	4.40	4.200
35	Fluid Res & Salt Spray		271/205	41	310.00	307.00	309.00
36	NOT USED						
37	Fluid Res & Salt Spray	OK	259/193	40	39.6	37.4	34.9
38	NOT USED						
39	Fluid Res & Salt Spray	OK	257/192	40	307.00	306	35.9
40	Burst	9600					
41	Burst	9200					
42	Burst	9400					
43	NOT USED						
44	Burst	4500					
45	Burst	4900					
46	Burst	5100					
47	Vibration	OK	250/189	11.6	1.53	1.70	1.74
48	Vibration	OK	263/189	4.8	1.64	1.40	1.77
49	Vibration	OK	250/189	5.7	1.47	1.22	1.77
50	Vibration	OK	258/188	10.5	1.27	1.15	1.77
51	NOT USED						
52	Vibration	OK	254/189	6.5	1.35	1.14	1.74
53	Vibration	OK	263/196	3.2	1.39	1.17	1.75
54	NOT USED						
55	Vibration	OK	262/195	6.4	1.57	1.71	1.88
56	Vibration	OK	257/189	5.3	1.63	1.47	1.81
57	Vibration	OK	253/186	6.3	1.67	1.46	2.02

TPS PRODUCTION VALIDATION TESTING



to 910709

ENVIRONMENTAL TEST LAB REQUEST FORM
(ONE TEST PER REQUEST)

DATE 9/6/91
REQUIRED COMPLETION DATE 7/16/91
DEVICE 77P562-1 ; 77P562-3
CHARGE DEPT. NO. 111 I.O. NO. 101060
REFERENCE SPEC. NO. PS-F206-9F924-AA
SOURCE OF TEST SAMPLES Defica Lab
QUANTITY OF TEST SAMPLES 12

REQUESTED BY Jeffrey D. Domasio
EXTENSION 3/44 MS 12-29
REPORT NO. 0934-091
TESTED BY Sal
COMPLETION DATE 9-9-91

TEST REQUIREMENTS: (TO BE FILLED IN BY REQUESTOR)

Please run salt spray Test per attached.

TEST PERFORMED:

IN: 1430 9-6-91
Out: 1430 9-9-91

TEST RESULTS:

to be determined by requestor.

EQUIPMENT USED:

CALIBRATION DATE:

NEXT DUE DATE:

Engineering Specification

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

G. Humidity

1. Test Requirements

- a. Mount the switch in the test port in a humidity chamber. Currently released mating electrical connector must be installed before start of test.
- b. Subject the switch to ten (10) continuous humidity cycles as follows:
 - (1) Raise temperature to $65 \pm 10/-2$ °C over 2.5 hours; at 90-98% relative humidity.
 - (2) Hold 3 hours at $65 \pm 10/-2$ °C at 90-98% relative humidity.
 - (3) Lower temperature to $25 \pm 10/-2$ °C over 2.5 hours; at 80-98% relative humidity.

2. Acceptance Requirements

- a. Within 15 minutes after completion of the tenth humidity cycle check the switch to sections A, B, C, D, using the procedure established in each section.
- b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D.

H. Salt Spray

1. Test Requirements

- a. Mount the switch in the test port in a salt spray chamber. The currently released mating electrical connector and wiring must be installed prior to start of test.
- b. Expose the switch assembly to 72 hours of salt spray per ASTM B-117.

2. Acceptance Requirements

- a. After exposure, check the switch to sections A, B, C, D, using the procedure established in each section.
- b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D. Samples used for this test must be destroyed after all testing is completed.

8	18			ES-F2VC-9F924-AA
FRAME	OF	REVISED		NUMBER

MAY 1988 PD 3947-82 (Previous editions may NOT be used)

TI-NHTSA 002092

TEST NO. 107831

TECHNICAL SERVICE LABS

TEST NO. 107831

TEST CENTER	137	STATE YOUR PROBLEM SAMPLE DESCRIPTION	INFORMATION DESIRED
NO.	101040	Samples are	Please see 2625
REQUESTOR	101040	7-705	test of
MAIN STATION	137	Sanitation	
EXTENSION	137		
DATE RECEIVED	8/28/91		
NO. OF SAMPLES	1		

REPORT OF RESULTS:

complete

DATE RECEIVED

8/28/91

DATE OUT

9-5

EMPLOYEE NO.									
JOB NO.									
NO. ANALYZED									
HOURS WORKED									

ENVIRONMENTAL TEST LAB REQUEST FORM
(ONE TEST PER REQUEST)

DATE 8/5/91
REQUIRED COMPLETION DATE 9/19/91 9/27/91
DEVICE 7996604, 77P562-3
CHARGE DEPT. NO. 127 I.O. NO. 101060
REFERENCE SPEC. NO. ES-F206-9F919-AA
SOURCE OF TEST SAMPLES Design Lab
QUANTITY OF TEST SAMPLES 12

REQUESTED BY Jeffrey D. D'Amico
EXTENSION 3147 MS 12-22

REPORT NO. 0887-081
TESTED BY Lab
COMPLETION DATE 9-3-91

TEST REQUIREMENTS: (TO BE FILLED IN BY REQUESTOR)

See attached, Vibration.

TEST PERFORMED: *per attached specification.*

TEST RESULTS:

See attached sheets.

EQUIPMENT USED:

CALIBRATION DATE:

NEXT DUE DATE:

TI-NHTSA 002084

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

I. Vibration

1. Test Requirements

- a. Mount the switch in the test part and attach the currently released mating electrical connector before start of test.
- b. ~~Switches are to be vibrated in all 3 planes with electrical continuity being monitored during the entire test. See Figure 1 for switch orientation in the 3 planes. Vibration tests are to be conducted at room temperature using brake fluid, ambient air, or equivalent as the pressure medium.~~ *10ms*
- c. Internal pressure shall be maintained at 0 KPa G. when the switch is in the closed position and 1.1 times max actuation pressure shown on print when the switch is in the open position. *(178 PSI for Brown and 318 PSI for Black.)*
- d. Vibrate the switch at 1.5 mm displacement (peak-to-peak) while varying the frequency uniformly from 5 to 50 to 5 Hz over a 5 minute period.
- e. Vibrate the switch in alternate one-hour periods in the open and closed positions for a total of 8 hours in each plane. (Total test time is 24 hours).

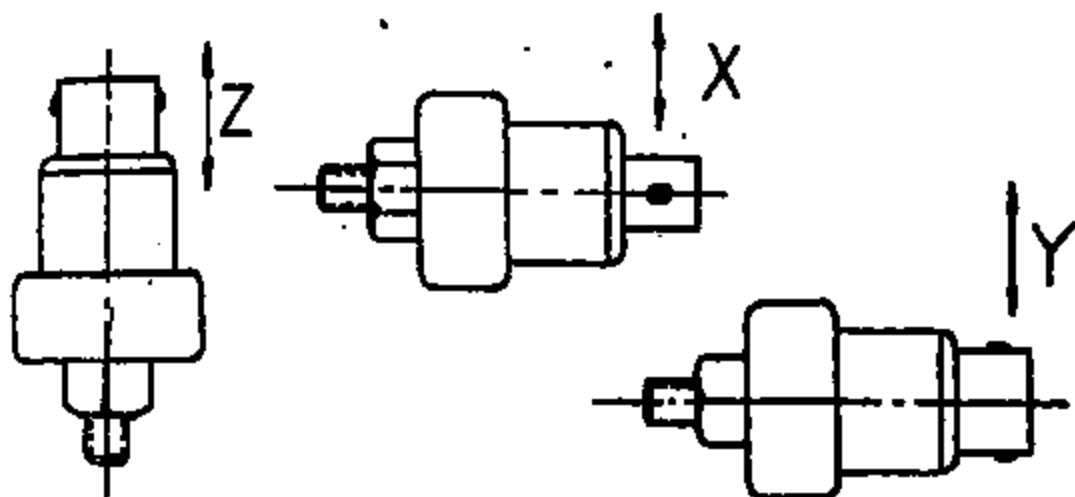
2. Acceptance Requirements

- a. After the entire vibration sequence check the switches to sections A, B, C, or D using the procedure established in each section.
- b. Nonconformance is defined as any evidence of leakage or any change in electrical continuity/discontinuity during the vibration cycles, or any switch not meeting the criteria in sections A, B, C, or D. Samples used for this test must be destroyed after all testing is completed.

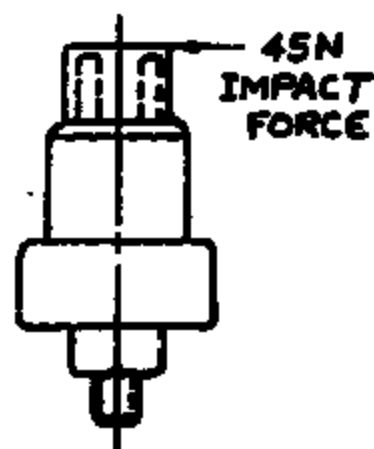
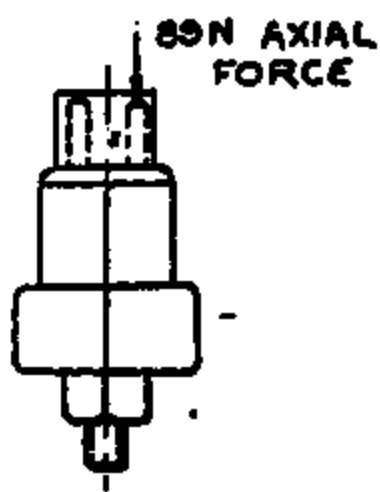
9	18			ES-P79C-9F924-AA
FRAME	OF	REVISED		NUMBER

MAY 1966 PD 3947-82 (Previous editions may NOT be used)

TI-NHTSA 002095



VIBRATION TEST - SWITCH ORIENTATION

TERMINAL STRENGTH - LOAD ORIENTATION
FIGURE 2.

16 18
FRAME OF

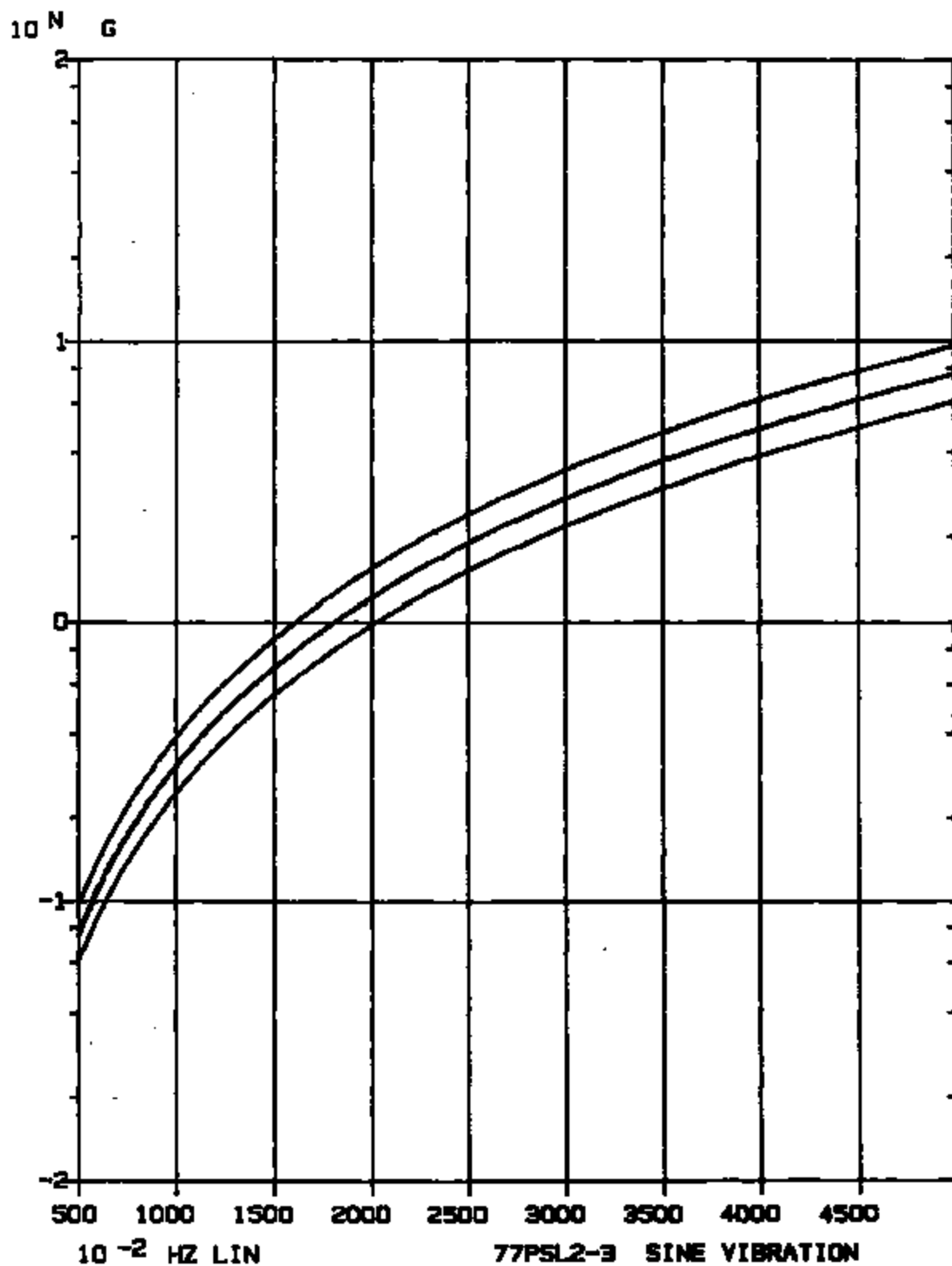
REVISED

▽ ES-F27C-9724-11
NUMBER

MAY 1988 PD 3947-82 (Previous editions may NOT be used)

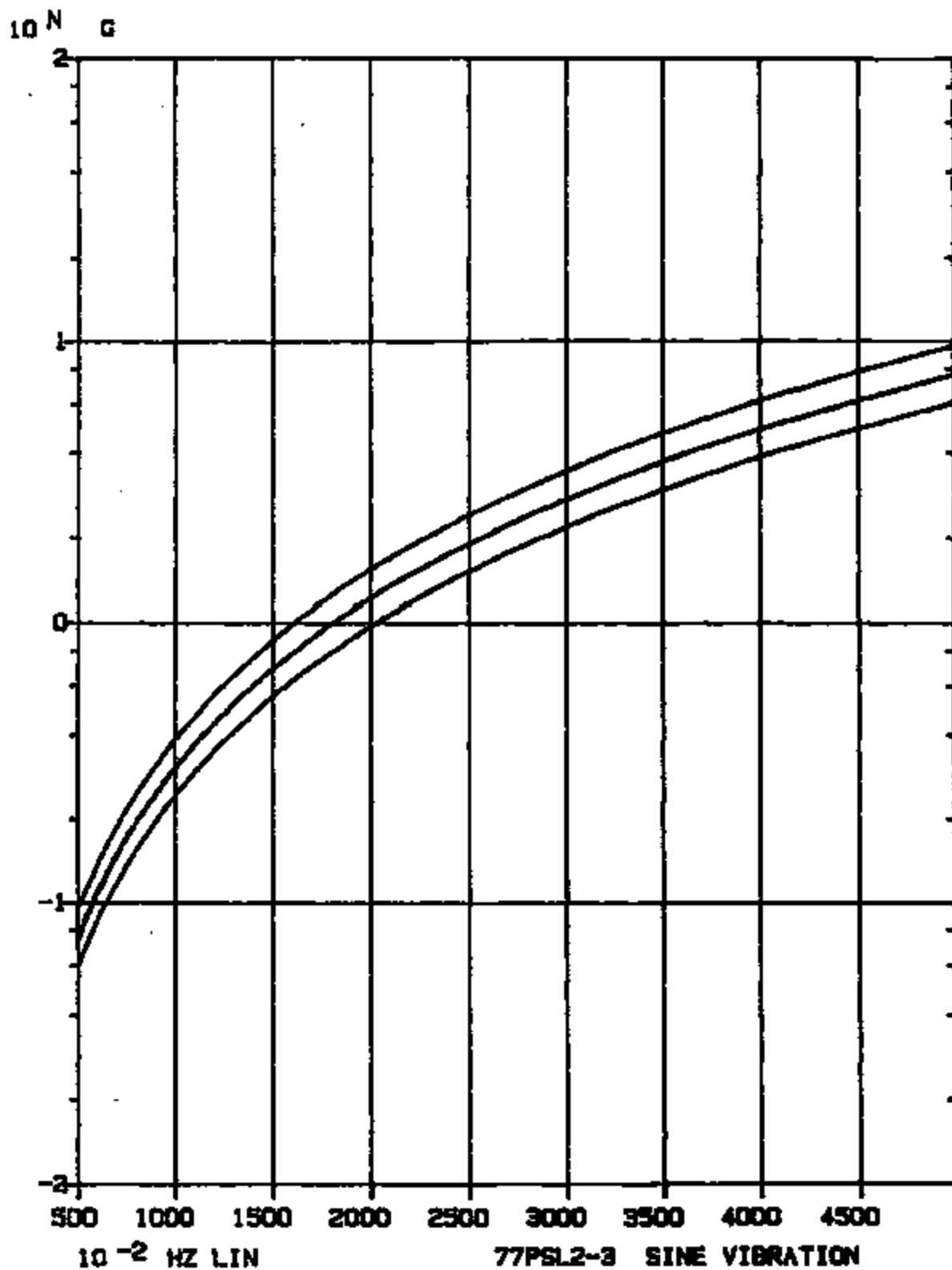
TI-NHTSA 002086

EVT 0887-081 RUN 2 B-30-91 Z AXIS B-OK O-REJ LF
POST TEST SWEEP # 192 DOWN



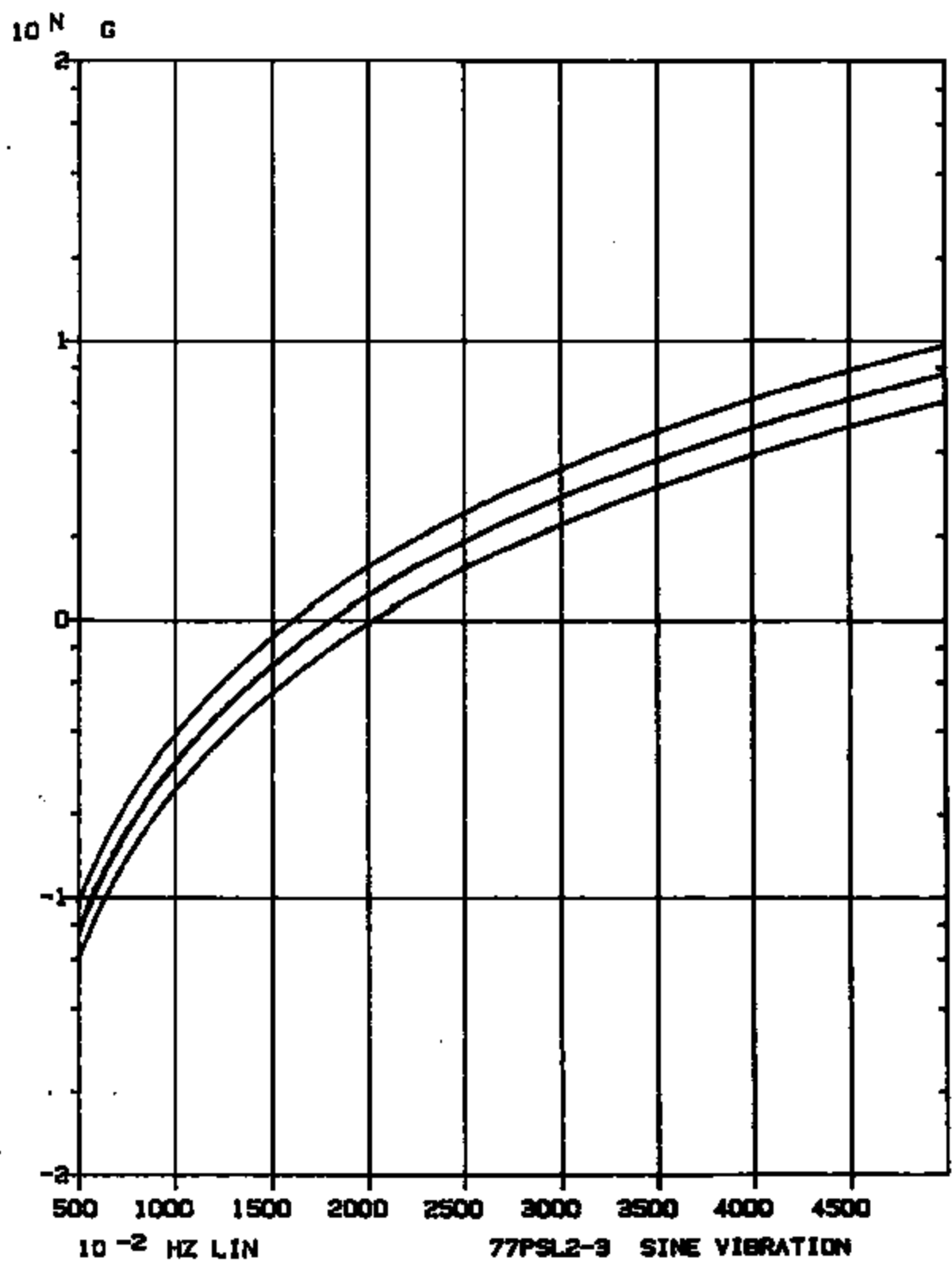
TI-NHTSA 002097

EVT 0887-081 RUN 1 8-29-91 Y AXIS 8-OK 0-REJ LF
POST TEST SWEET # 182 DOWN



TI-NHTSA 002088

EVT 0887-081 RUN 3 9-3-91 X AXIS B-OK O-REJ LF
POST TEST SWEEP # 192 DOWN



ENVIRONMENTAL TEST LAB REQUEST FORM

(ONE TEST PER REQUEST)

DATE 9/6/91
REQUIRED COMPLETION DATE 7/16/91
DEVICE 77P5L8-1; 77P5L2-3
CHARGE DEPT. NO. 122 I.D. NO. 101960
REFERENCE SPEC. NO. ES-F2VL-9F924-AA
SOURCE OF TEST SAMPLES Design Lab
QUANTITY OF TEST SAMPLES 12

REQUESTED BY Jeffrey D. LomenicoEXTENSION 2144 - 16-27
7/6/91REPORT NO. 0933-091TESTED BY LABCOMPLETION DATE 9-20-91

TEST REQUIREMENTS: (TO BE FILLED IN BY REQUESTOR)

Please run humidity test per attached.

TEST PERFORMED:

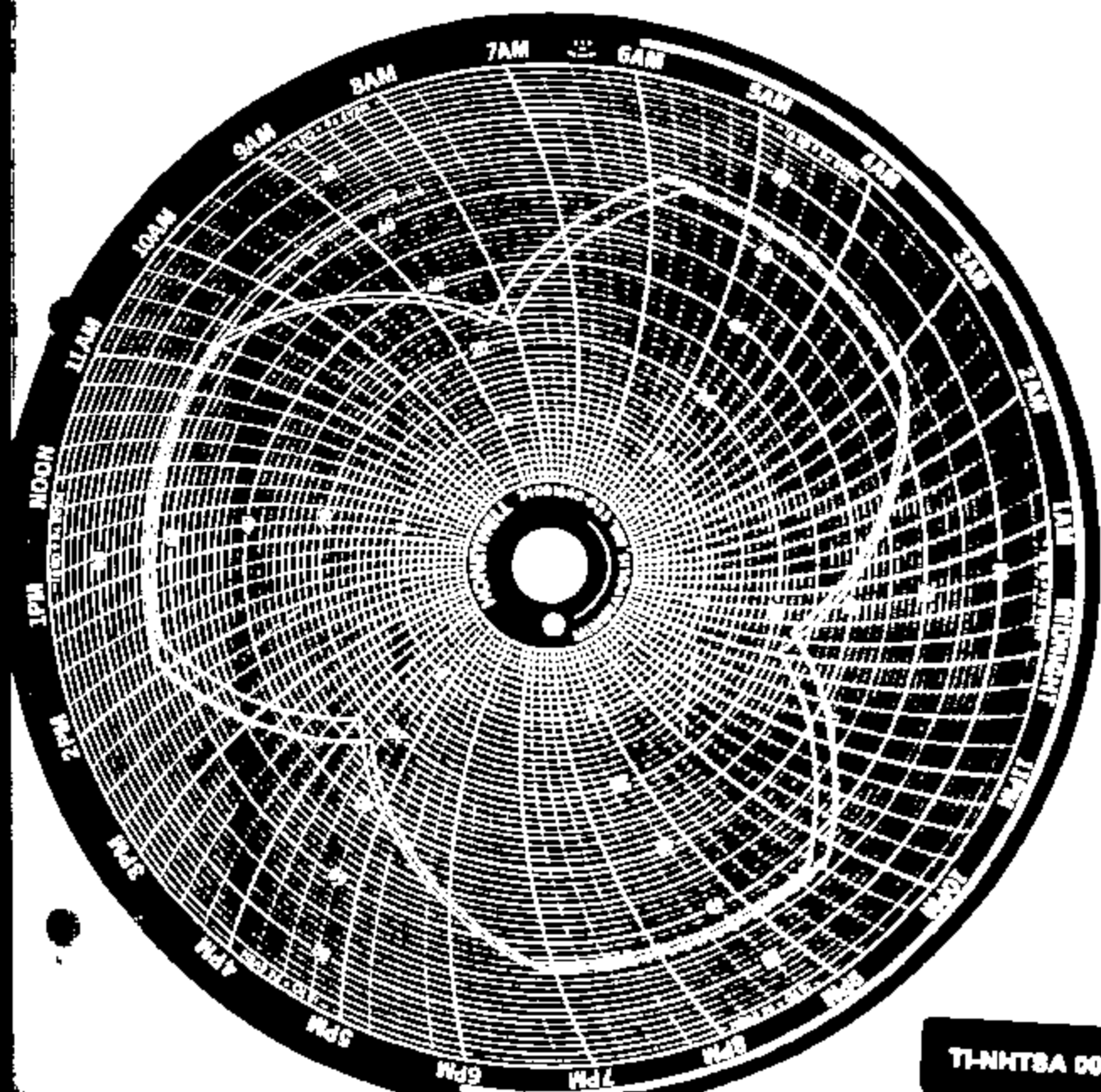
START 9-16-91 16:00 CHAMBER MALFUNCTION (SHUT DOWN) *ff*
RESTART 9-18-91 0830 HOURS
STOP 9-20-91 1630 HOURS

TEST RESULTS:

EQUIPMENT USED:

CALIBRATION DATE:

NEXT DUE DATE:



TI-NHT8A 002101



K. F. BASSLER COMPANY, INC.
PRECISION TOOLING & METAL STAMPINGS

45 John William St. • Attleboro, MA 02703 • (508) 222-1081 • Fax: (508) 228-7605

MATERIAL CERTIFICATION

CUSTOMER: Texas Instruments Inc. - Attleboro
CUSTOMER ORDER NO.: 505047078
CUSTOMER PART NO.: 27406-1
REVISION: F
QUANTITY THIS SHIPMENT: 21,000
LOT NO. THIS SHIPMENT: 143
SHIPMENT DATE: 6.25.91

WE CERTIFY THAT THE MATERIAL USED TO PRODUCE THE PRODUCT IN THIS SHIPMENT, NAMELY, AK-1008 CES, CONFORMS TO TT5 DRAWING AND PURCHASE ORDER REQUIREMENTS.

AUTHORIZED SIGNATURE:

Kathleen A. Penkala
Kathleen A. Penkala
Inside Sales Specialist



PMA PRECISION
METAL STAMPING
ASSOCIATION

TI-NHTSA 002102

TELEX 001214
FAX 315-336-0010
PHONE 315-336-0000
CUMS 023-3128

ROME STRIP STEEL COMPANY, INC.
630 HENRY ST. BOX 189
ROME, NEW YORK 13440

COMPLIANCE

SALES CODE
00022016

01000000

DATE INVOICE NO
02/28/91 02/86

INVOICE TO: K. F. BASSLER CO., INC.
P. O. BOX 995
ATTLEBORO, MA

02703

SHIP TO: K. F. BASSLER CO., INC.
13TH-JOHN WILLIAM STS
ATTLEBORO, MA

QUANTITY (LBS)	NO. CLS	NO. SPTS ON QMS	PERFORM	SHIPPER BY	HT NO	C	MM	P	S	SI	SI	CR	RD
19,636	135	13	PART	PAUL R	466708	07	36	014	008	01			

NETS MOVEMENTS BY:
COST ORDER NO 14474

COLOR CODE

ITEM NO	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL	DATE	BY	REMARKS
17MM X 25.40MM	58100	PREPAID						
0.04400 X 1.0000	200 LBS	COIL						
00030-00030-003	NO3 SLIT	200 PTH 16 B4						
013 -013MM +127 -127MM	500/096							

TEST REPORT

(8,987 KG) 19,636

Certificate of Compliance

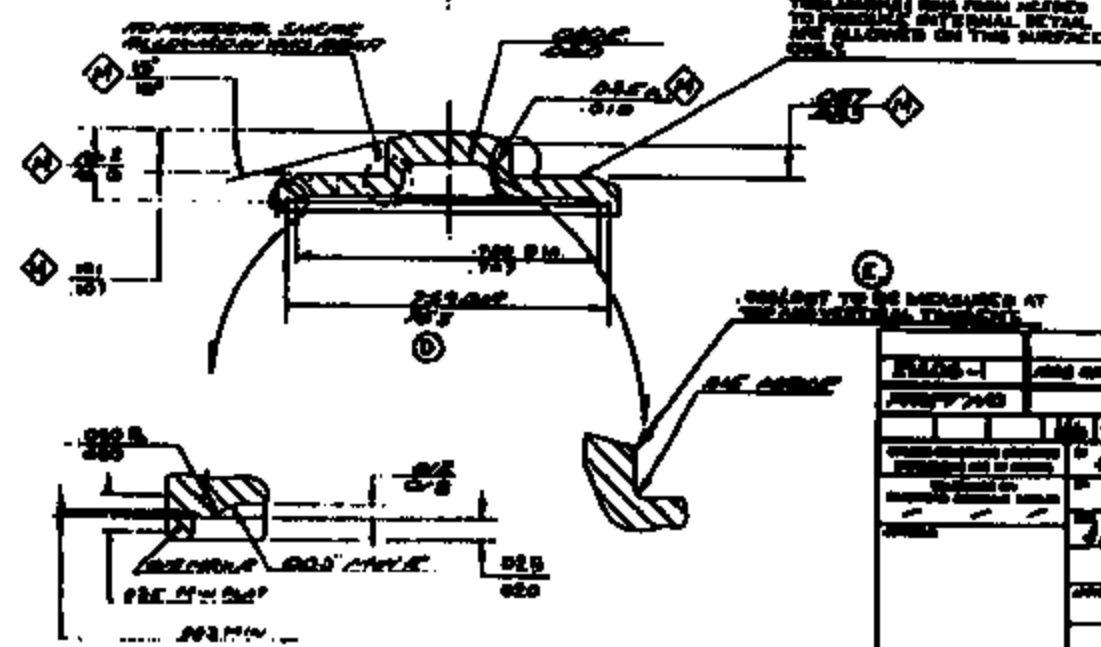
ATTN: *[Signature]*
002-8280-02-030291
Henry Public, Onida County
My commission expires *[Signature]*

DATE *3/1/91*

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.

THMTSA 002103



57P51		REVERSE		
ZONE	LWI	DESCRIPTION	DATE	APPROVED
1	A	RECEIVED 1/10	1-10-61	
1	B	RECEIVED 1/10	1-10-61	
2	C	ADDED NOTE RE	1-20-61	
2	D	RECEIVED 1/10	1-10-61	
2	E	RECEIVED 1/10	1-10-61	
2	F	RECEIVED 1/10	1-10-61	

Abstract

1. DOWRY ITEMS MUST BE CONCENTRATED TO IMPROVEMENT TO HARRY QGB TLE.
 2. PARTS TO ONE JAWBARD ASSURED AND STORED IN SEALED PLASTIC BAGS AFTER PLATING.
 3. DUPLICATE DRAWING THEREOF & SEE DWG E7527
 4. THIS PART IS UNCONTROLLED ANY CHANGE TO THE FORM OR FUNCTION OF ONE WILL BRING THE START OF A NEW LOT. A MINIMUM LOT SIZE OF GOOD PRICE WILL BE THE ONLY EXCEPTION. ANY LOT OVER UNDER GOOD PRICE WILL BE AWAYED AND REWARDED ALONG WITH THE DATA ON EACH . ONE. EACH LOT WILL HAVE ITS OWN PACKING SLIP WITH LOT IDENTIFICATION.
- CERTIFIED PRINT
Part Made by For Each Lot - subject to
by the INSPECTION
5. STANDS ON PRODUCT BNC ACCEPTABLE. PARTS MUST BE MADE TO S. PLATE FOR C'S CURRENT PROCESS.

[illegible][illegible]

11-NOV-84 002104

T52-0042

TEXAS INSTRUMENTS, INC.
BUILDING 11-18
34 FORREST STREET
ATLANTA, GA 30303

PARKER HANFORD CORPORATION
JEL DIVISION
WEST CREST DRIVE
SPRINGFIELD, S.C. 29162
TELEPHONE 803 575-1111

J.B.L. Division of Parker Seal certifies that the material used to produce the product
in this shipment, namely SILICONE/ 57424. Conforms to TI drawing and TI purchase
order requirements.

PART TITLE... ENVIRONMENTAL SEAL

CUST P/N... 74247 2 REV D

DATE SHIPPED

P/O... 500023131

J.B.L. P/N... 060425

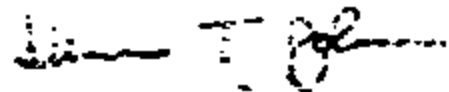
6-26-81

R/A... 17108

SILICONE COMPOUND... 57424

QUANTITY... 23550

Very Truly Yours,
J.B.L. Division



DENNIS C. JOHNSON
Quality Control Manager

DTJ/MS

DTJ

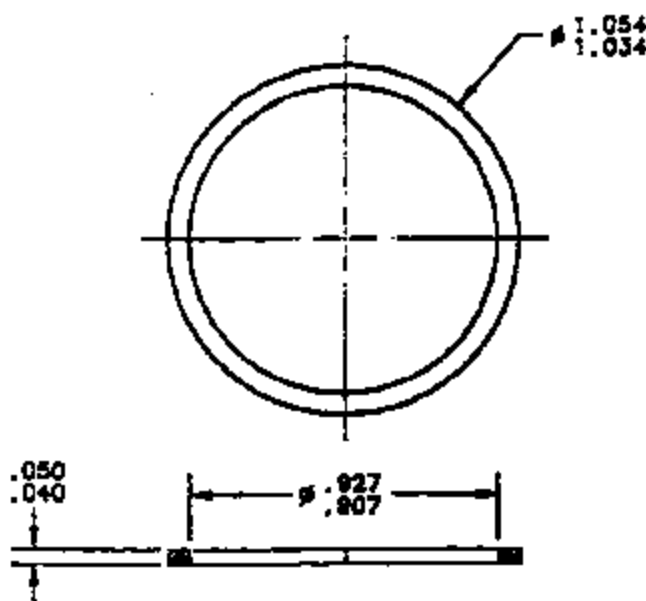
TI-NHTSA 002103

ENVIRONMENTAL SEAL

REV
B

74247

74247



CERTIFIED PRINT	
Part Made To This Print Must Conform To	
ENG. STD. E9898 REV. E	
Date JUL 1 1991	
Certified This Print And The Information On Therein Is True To The Best Of My Knowledge And Belief. I Am Not Aware Of Any Defects In The Design Or Construction Of The Part Or Material.	

NOTES:

1. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.

THIS DWG. SUPERSEDES 74247 REV. "C" DATED 9-20-85

PART NO.	MATERIAL	DURUMETER	COLOR
74247-2	SILICONE JBL S7424-6	55 - 65	RED
74247-1	BUNA N JBL N7014-50	50 - 60	BLACK

BY YON DALL 10-14-88

CH.

E. G. McKenna 11-10-88

MAKEPLACE



TEXAS INSTRUMENTS
ATLASEBORO, MASSACHUSETTS 02703

KIDCON

CONTROL PRODUCTS
P.O. BOX 100

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

P.W. NO.

74247

TI-NHTSA 002106

752-6042

YELAS INSTRUMENTS, INC.
BUILDING 11-10
34 FOREST STREET
ATTLEBORO, MA 01703

PARKER HANFORD CORPORATION
FOL DIVISION
WEST CROFT CIRCLE
SPARTANBURG, S.C. 29302
TELEPHONE (803) 573-7332

J.E.L. Division of Parker Seal certifies that the material used to produce the product in this shipment, namely SILICONE/ ST424. Conforms to TI drawing and TI purchase order requirements.

PART TYPE... ENVIRONMENTAL SEAL

COST P/N... 74247 2 REV 9

DATE SHIPPED

P/O... 50023131

J.E.L. P/N... 060425

6-26-91

A/R... 16374

SILICONE COMPOUND... ST424

QUANTITY... 14,70

Very Truly Yours,
J.E.L. Division



DENNIS P. JOHNSON
Quality Control Manager

DYJ/MS

Diz

TI-NHTSA 002107

7
132-6042

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

PARKER HANIFIN CORPORATION
JAL DIVISION
WEST CROFT CIRCLE
SPARTANBURG, S.C. 29302
TELEPHONE (803) 573-7332

J.R.L. Division of Parker Seal certifies that the material used to produce the product in this shipment, namely SILICONE/ 57424. Conforms to TI drawing and TI purchase order requirements.

PART TITLE... ENVIRONMENTAL SEAL

CUST P/N... 74247 2 REV D

DATE SHIPPED

IN... 50023131

J.R.L. P/N... 060425

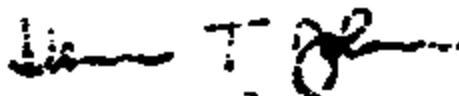
6-26-81

IN... 17108

SILICONE COMPOUND... 57424

QUANTITY... 23,550

Very Truly Yours,
J.R.L. Division



JAMES T. JOHNSON
Quality Control Manager

DTJ/MS

DTJ

TI-NHTSA 002108

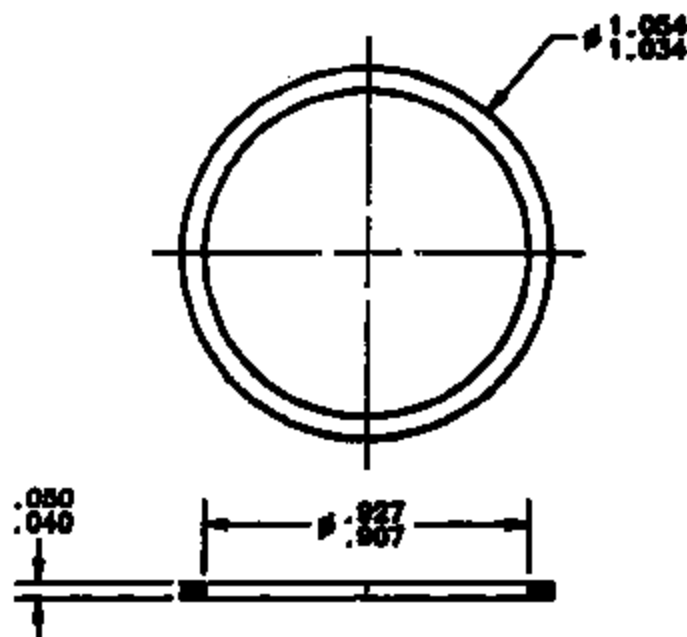
74247

TITLE

ENVIRONMENTAL SEAL

REV
D

74247



TIFIED PRINT
By the Print Shop
O. E9898 REV. E

JUL 1 1991

THIS PRINT USE THE DIMENSIONS OF
THESE TOLERANCES 4.5.24. 1.0. 1.0. 1.0.
APPLICABLE TO THIS PRINT. NO DIMENSIONS
IN BLACK. THE DIMENSIONS OF THIS PRINT
APPLICABLE TO THIS PRINT. 1.0. 1.0. 1.0.

NOTES:

1. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.

TI-NHTSA 002109

THIS DWG. SUPERSEDES 74247 REV. "C" DATED 9-20-86

74247-2	SILICONE JBL S7424-8	56 - 65	RED
74247-1	BUNA N JBL N7014-60	60 - 60	BLACK
PART NO.	MATERIAL	DIMETER	COLOR

REV. D

BY TCM DALL 10-10-88

CK

ENG. C. McKenna 11-10-88



TEXAS INSTRUMENTS

ATTLEBORO, MASSACHUSETTS 01703

CENTRAL PRODUCTS
DIVISIONREV. D
A

REV. D

74247

CONF INQUIRY NO. 69247

DIEMASTERS

CERTIFICATE OF CONFORMANCE

SHIP TO:

**TEXAS
INSTRUMENTS**



FROM
Diemasters Manufacturing, Inc.

767 Industrial Drive
Elmhurst, Illinois 60126

DATE SHIPPED: 1-18-91

PURCHASE ORDER #: 5000-12

SHIPPING OR INVOICE NUMBER: 60181

MATERIAL TRACE NUMBER (P.O. # HEAT, LOT, OR ROUTE SHEET NUMBER): 62-7196

QUANTITY SHIPPED: 75,790

PART NUMBER: 27639-1

REVISION: D

PART DESCRIPTION: WASHER

OPERATION PERFORMED: MANUFACTURING

SPECIFICATION: 27639-1

REVISION: E

THE MATERIAL DESCRIBED ABOVE WAS PROCESSED, INSPECTED AND FOUND TO CONFORM TO THE DRAWING(S) AND SPECIFICATION(S) LISTED.

[Signature]
QUALITY CONTROL

08-14-91
DATE

ENCLOSURES: ☒ CERTIFICATE OF RAW MATERIAL

TRACEABLE LOT# 70

☐ INDEPENDENT LABORATORY TEST REPORT OF RAW MATERIAL

☐ INSPECTION REPORT(S)

☒ SUB ^{HEAT-TREAT} ~~PLATING~~ SUPPLIER'S CERTIFICATION(S) OF CONFORMANCE

☐ FORM _____ NON-CONFORMANCE RELEASED BY: _____

☐ REWORK EXPLANATION

TI-NHTSA 002110

RIVERDALE PLATING & HEAT TREATING, INC.

880 West 134th Street Riverdale, Illinois 60627-1104

TELEPHONES
(708) 849-3050
(312) 668-2400

WILMASTERS MANUFACTURING, INC.

757 INDUSTRIAL DR

ELMHURST

TEL 60120-1525

27039-1

JUN - 3 1991

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

PURCHASE ORDER NO.	CUSTOMER P.O. NO.	PARTS DESCRIPTION	QUANTITY ORDERED	WEIGHT SHIPPED	DATE SHIPPED
193431	100657	AUSTENIT. & TO H/C 40-55	74,515	1,557	5/27/91
133411	100657	ZINC .0007 - .0006	74,515	1,557	5/29/91

Subscribed and sworn to before me

THIS 24 DAY OF MAY, 1991

Edward D. Simpson
Notary Public

"OFFICIAL SEAL"
Edward D. Simpson
Notary Public, State of Illinois
My Comm. Expires 06/27/92

RIVERDALE PLATING & HEATING TREATING, INC.

Deirdre K. Nelson
Vice President

TI-NHTSA 002111



K. F. BASSLER COMPANY, INC.
PRECISION TOOLING & METAL STAMPINGS

45 John Willem St. • Attleboro, MA 02703 • (508) 222-1061 • Fax: (508) 226-1605

MATERIAL CERTIFICATION

CUSTOMER: Texas Instruments Inc. - Attention
CUSTOMER ORDER NO.: 505047078
CUSTOMER PART NO.: 27406-1
REVISION: F
QUANTITY THIS SHIPMENT: 21 000
LOT NO. THIS SHIPMENT: 143
SHIPMENT DATE: 6.25.91

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

AUTHORIZED SIGNATURE:

Kathleen A. Penkala
Kathleen A. Penkala
Inside Sales Specialist



TI-NHTSA 002112

752-0042

TEXAS INSTRUMENTS, INC.
BUILDING 12-16
34 FOREST STREET
ATTLEBORO, MA 01703

PARKER HANIFIN CORPORATION
JBI DIVISION
WEST CRAFT CIRCLE
SPARTANBURG, S.C. 29302
TELEPHONE (803) 573-7332

J.B.L. Division of Parker Seal certifies that the material used to produce the product
in this shipment, namely SILICONE/ 57424. Conforms to TI drawing and TI purchase
order requirements.

PART TITLE... ENVIRONMENTAL SEAL

CUST P/N... 74247 2 REV D

DATE SHIPPED

P.O. 500023131

J.B.L. P/N... 000425

4-26-81

R.O. 16324

SILICONE COMPOUND... 57424

QUANTITY... 14,70

Very Truly Yours,
J.B.L. Division



DENNIS P. JOHNSON
Quality Control Manager

DTJ/MS

DTJ

TI-NHTSA 002113

752-0042

TEXAS INSTRUMENTS, INC.
BUILDING 11-16
34 FORREST STREET
ATLANTIC, NJ 02703

PARKER HANFORD CORPORATION
JEL DIVISION
WEST CROFT CIRCLE
SPARTANBURG, S.C. 29301
TELEPHONE (803) 572-7332

J.B.L. Division of Parker Seal certifies that the material used to produce the product in this shipment, namely SILICONE/ 57424. Conforms to FI drawing and FI purchase order requirements.

PART TITLE... ENVIRONMENTAL SEAL

COST P/N... 74247 2 REV D

DATE SHIPPED

P.O. 50023131

J.B.L. P/N... 060425

8-26-91

IN 17108

SILICONE COMPOUND... 37424

QUANTITY 23550

Very Truly Yours,
J.B.L. Division



DENNIS P. JOHNSON
Quality Control Manager

DTJ/MS

DTJ

TI-NHTSA 002114

74247

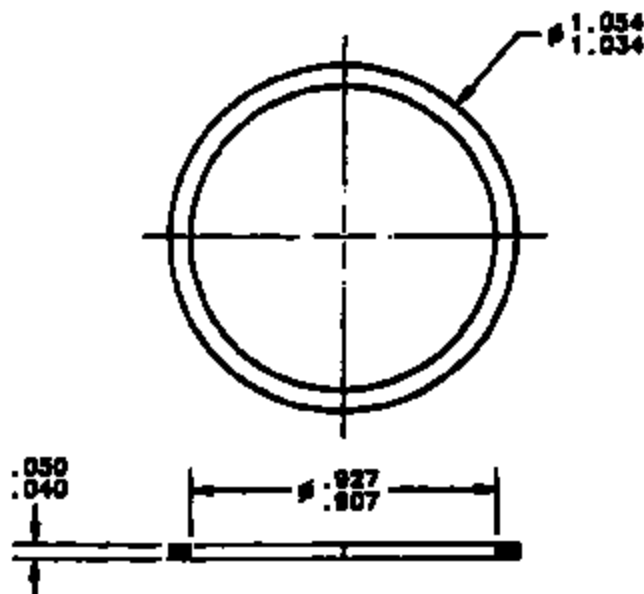
TITLE

ENVIRONMENTAL SEAL

REV

D

74247



RECEIVED
J. E9898 REV. E

NOTES:

1. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.

THIS DWG. SUPERSEDES 74247 REV. "C" DATED 8-20-85

74247-2	SILICONE JBL 57424-8	55 - 65	RED
74247-1	BUNA N JBL N7014-50	50 - 60	BLACK
PART NO.	MATERIAL	DUROMETER	COLOR

REV. V

BY TOM DALL 10-14-88

CH.

ENR. G. H. H. 11-10-88



TEXAS INSTRUMENTS

AFTLEBORO, MASSACHUSETTS 01703

KILKON

CONTROL PRODUCTS
DIVISION

REV

REV

REV

REV

REV. NO.

74247

TI-NHTSA 002115

752-6042

PERAS INSTRUMENTS, INC.
BUILDING 11-18
34 ROBERT STREET
ATTLEBORO, MA 01763

PARKER HAMILTON CORPORATION
JMC DIVISION
WEST CRAFT CIRCLE
SPARTANBURG, S.C. 29302
TELEPHONE (803) 573-7332

J.H.L. Division of Parker Seal certifies that the material used to produce the product in this shipment, namely SILICONE/ 57424. Conforms to TI drawing and TI purchase order requirements.

PART TITLE... ENVIRONMENTAL SEAL

COST P/N... 74247 2

J.H.L. P/N... 084425

SILICONE COMPOUND... 57424

REV D

NOT SHIPPED

6-26-81

P.O. 50023131

QTY 16324

QUANTITY... 14,700

REPLACED
with
Blue - 4 seal

Very Truly Yours,
J.H.L. Division

Dennis T. Johnson

DENNIS T. JOHNSON
Quality Control Manager

BTJ/MS

Dry

TI-NHTSA 002116

HIGHLIGHTS

Stephen B. Offler

Week Ending 91-06-27

(no highlights W/E 91-06-21 due to travel)

FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

77PS ISSUES: Steve McCooley and I visited Eastern Automation last week to oversee their assembly equipment debug and guide them in correcting dimensional issues. We discovered the major issue at present is related to the Milford riveter; malfunctions at this station are very likely to cause jams/downtime, unlike most of the other stations. We (Mich. & Paoli) are becoming involved with Eastern's dealings with Milford, to help get qualified riveter experts to aid in debug. We were able to bring back about a dozen strips of manual assemblies, 2-3' in length, for use in build of validation parts if needed. Fortunately, Eastern was able to make a few quickie modifications which allowed them to run a couple strips greater than 10' in length (with about 90% good parts). They overnighted them to us, and ultimately these were used to build validation parts. One outstanding design issue is the spring angle. The bend tool is basically fixed at 90°, and the final angle (spec'd at 96-100°) is wholly determined by springback. We will be modifying the 77 Design Confirmation test to include the greater anticipated range of spring angles. Better control of this angle, if possible, will probably require tool modification by Mechanization at a later date. Our own estimate of EA's delivery, based on the level of completeness we saw, is about 3 weeks.

Mechanization is making significant progress in debug of both the Base Arm Mach and Final Arm Mach. Over the last couple of days, we were able to reach the point where build of parts for the 77PS Production Validation/ISIR testing was accomplished. The calibrator has been improved to the point where Jeff's measurements show a sigma of 0.54 mils, approaching the level we attained originally on benchtop. Efforts are now being spent in speeding up this station to match the rest of the machine. High-speed video is being used to help reduce the cycle time while simultaneously locating possible sources of calibration error.

Jeff created a first-out validation schedule based on the previous work on 57PS, which has since been fleshed-out using Microsoft Project for Windows. The entire schedule is based on the assumption that validation must be complete by Sept 1. Working backwards, this requires that the Fluid Resistance test be underway by July 8. The chances of meeting this date are near zero, however. For the Pass-Car devices, we need off-the-shelf mating connectors from UTA. I am presently pursuing this, but making little headway. I have been informed that they cannot release connectors until Ford approves their ISIR submission. The gentleman I have been speaking with seems to understand my situation, but do not know the status of the ISIR nor whether any quantity of parts exist. I'm trying to involve Bruce Pease to help expedite this.

CUSTOMER ISSUES: We have made progress in completing the connector insertion force test. Parts run with terminals offset .010", .015", and .020" show little difference in peak insertion force. We've also plotted force versus connector penetration, to help show where the peak force is obtained. A wirecup is planned ASAP which will be designed to convince Ford that terminal position is basically inconsequential.

We have several recent requests for various samples, including 77PS physical samples for Light Track to experiment with assembly on Tokico M/C's; quiet Pass-Car devices in 57 and 77 variations for Bruce and the SMO Taurus group and Tover for the SMO application.

RADCLIFF WIRE INC.

RONZO ROAD • P.O. BOX 603 • BRISTOL, CONNECTICUT 06010
TELEPHONE: 203 / 583-1305 • FAX: 203 / 583-6553

PLANT OPERATIONS DEPT. 100
Riverton/Bristol • Iron • Bronze Wire

0424

53

MATERIAL CERT.

SOLD
TO

ACHE MILFORD
857 BRIDGEPORT AVENUE
MILFORD, CT 06460

1-2-90

** BUNTINGS

YOUR ORDER NO 347-2	DATE ENTERED 6/28/91	DATE WANTED 7/25/91	DATE PROMISED	FOR Bristol
QTY/WEIGHT ORDERED 300 lbs.	SIZE/TOLERANCE .0575 p/m .0005 Dia.			Shape Round
TEMPER	MATERIAL ETP 110 Copper		EDGE	Finish
SPECS	TENSILE 45-55,000 PSI			
SPECIAL CONDITIONS				SPC-COM

CERTS/NATL.

SHIPPING RECORD

DATE	QUANTITY	PACKAGING	TEST
7/16/91	1238	1 Barrel	46,000 PSI

HEAT	C	MN	SI	S	N	CU	AL	CL	NI	Fe
HARDNESS	Ti	CS-TA	Co	MO	V	MB	CA	W	CR	Ag
TENSILE STR	ZA	CB	TA	SI	Be					
46,000 PSI										

*This is to certify that the above wire was produced from raw material and was found to be in compliance with the specifications of your po#347-2.

RADCLIFF WIRE, INC.

Charles Barker

TI-NHTSA 002118

PAUL KOTCH
 AGNES CARDOZO 1016
 VINNEY BARROS 1933
 GEORGE LAVOIE 1680
 DAVE CZARN

CC: BILL SWEET

6/28/91

WE ARE TRYING TO ~~BE~~ DETERMINE THE COST FOR 2
 REDUCED SIZE VERSIONS OF THE CCPS, FOR MY93 AND BEYOND, PARTS
 ARE ATTACHED. WOULD YOU PLEASE ASK FOR A RESPONSE BY 7/19?
 Thank you, Dave G. X 2555

		WHO	QUOTE
X3355-98-1	HOXPORT	PAUL K	ELCO
-99-1	HOUSING	VINNEY AGNE	SCREW MACHINE
-99-2		AGNES	HYDRAMAT POWDERED METAL
-100-1	HEXCUP	PAUL	ELCO
-100-2		VINNEY	SCREW MACHINE HYDRAMAT
-101-1	DISC SUPPORT	VINNEY	AGNE: SCREW MACHINE
-101-2		AGNES	HYDRAMAT POWDERED METAL
-102-1	WASHER	GEORGE	DEMISTERS, UNKNOWN, ETC (SIMPLE PART)
-102-2			

PROTOTYPE AND
 PRODUCTION TOOLING & PIECE PRICE

VOLUMES: 250K, 500K 1M, 2M, 3M

FOR MY93 -

PROGRAM: 77PS (CRANE CONTROL P/S FOR FORD)

TI-NHTSA 002119

Washer	φ 27.0	
Disc	φ 19.2	.756" 3/4
Converter	φ 20.4	
Cup	φ 29.17	
Hex port	φ 26.9	10 = 3.4

Disc options	5/8" = .625 = 15.875mm
	1/2" = .500 = 12.7mm

Grip ring	φ 31.5
-----------	--------

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS

-MSG H#- 217179 FR=CERN TO=PCQA SENT=06/28/91 07:39 AM
R#040 ST=C DIV=0050 CC=00101 BY=CERN AT=06/28/91 07:39 AM

JUNE 27, 1991

TO: RUSTY STRUBLE	RCS2	CC: TOM CHARBONNEAU	TC
MIKE DeMATTIA	PCQA	JOHN KOURTESIS	NDES
CHARLIE DOUGLAS	CPPC	STEVE MAJOR	WHL3
DICK GARIFFY	MPFC	ANDY McGUIRE	PCQA
PAUL KOTCH	PRK1	ED O'NEILL	BJON
JOE LAZARE	JHL3	JOE SCHUCK	WHL3
STEVE OFFILER	SB01	GARY SWYDER	CPPC
NATT SELLERS	PCNE	MARTHA SULLIVAN	CPPC
BILL SWEET	PCNE	RAY TOURANGEAU	PCNE
JIM WATT	PCQA	TED BALLARD	AVNE
TED BREDIKEN	PSWT	STAN BOMOL	SR2
		CLAIRE BALTHASAR	PSWT
		BILL CONGDON	MPFC
		STEVE MCCOONT	NDES
		TERRY RODRIGUES	MPFC

FR: DAVE CERN IAHN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:
06/27/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 07/03 (WEDNESDAY) ** PLEASE NOTE CHANGE **
TIME: 1:00 - 2:00 PM
PLACE: PURCHASING CONFERENCE ROOM

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* = ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED
SINCE PREVIOUS MEETING

57 L/T (LS-2)

Export:

	WHO	WHEN	
* L/T PILOT RUN	SELLERS/	01/26	ORIG.
(IN PROGRESS; SENSORS BUILT)	GARIFFY	07/03	REV.
. UPDATE EXPORT SHIPPING SCHEDULE	KOTCH	ONGOING	
. PLAN FOR EVALUATING POULSEN	KOTCH	05/16	ORIG.
		07/11	REV.
. PROPOSAL FOR RECEIVING GASKETS ON HARDWARE	SELLERS	07/11	
* ENSURE THAT ELCO USES J512 GAGE ON ALL FUTURE LOTS	KOTCH	07/03	
* SET UP F/U MTG. WITH ELCO AT TI	KOTCH	07/11	
* REVISED EXPORT PRINT W/ RADIUS ON DOGPOINT DIAMETER	OFFILER	07/11	

ISR issues:

* CONNECTOR INSTALLATION FORCE STUDY	OFFILER	06/06	ORIG.
		06/20	REV.
		06/27	COMP.
* CONNECTOR INSERTION FORCE TEST REPORT	OFFILER	07/11	

TI-NHTSA 002121

* PROTOTYPE TERM. POS'N GAGE CONCEPT	SELLERS	07/11	
* RELEASE PRINT FROM L/T	SCHUCK	05/09	ORIG.
		07/10	REV.
* SUBMIT ISR FOLLOW-UP TO FORD SQA	WATT	04/04	ORIG.
(NEED RELEASE PRINT)		07/23	REV.

57 P/C (LS-3)

* PLAN FOR MAKING L/T AND P/C	OFFILER/	06/06	ORIG.
ENV. SEAL COMPRESSION CONSISTENT	SELLERS	07/03	REV.
* DEFINE GAGING TORQUE	WATT	06/20	ORIG.
SPEC W/PEASE & TIER 1'S		07/11	REV.
* REC'V THICKER P/C GASKETS (EX3355-97-1)	SELLERS	06/17	ORIG.
		06/17	COMP.
* BUILD ALL 57PSLS-3'S W/EX3355-97-1	BREDIKEN	ONGOING	
GASKETS UNTIL TBD TIME			
* SHIP 21K LS-3'S	GARIEPY/	06/03	ORIG.
(DELIV. DATE PUSHOUT BY FORD)	STRUBLE	06/01	REV.
	(TENTATIVE DATE - ORDER NOT REC'D)		
* FULL IN P/C CUP DELIVERY TO 06/28	STRUBLE/	DELETED	
	LAZAR		
* 2 SWITCHES FROM NEXT PILOT RUN TO	BALTHAZAR	WHEN AVAIL.	
STEVE G. FOR SECTIONING			

77PS

* DESIGN UPDATE	OFFILER	ONGOING	
* MFG/NECH UPDATE	SELLERS	ONGOING	
* PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHAZAR	ONGOING	
* UPDATE SPC FILES/RUN CAPABILITY STUDIES	BALTHAZAR	ONGOING	
* ESTABLISH OVERALL SCHEDULE OF	OFFILER	05/02	ORIG.
DESIGN ENG. ACTIONS		07/11	REV.
* 77PS HIS PARTS LISTS	OFFILER	06/06	ORIG.
		07/11	REV.
* 77PS COMPONENT LIST TO CLAIRE	OFFILER	06/28	
* COMPLETE DESIGN FMEA	OFFILER	04/18	ORIG.
		07/10	REV.
* COMPLETE PROCESS FMEA	SELLERS	07/01	ORIG.
		07/18	REV.
* CAL. WINDOW STUDY TO DETERMINE	OFFILER	07/18	
ALLOWABLE CALIBRATION RANGE			
* 77PS DESIGN CONFIRMATION TEST	OFFILER	06/20	ORIG.
		07/11	REV.
* PROD'N CALIBRATION WINDOW EXPERIMENT	OFFILER	07/04	
W/ "SILENT" SENSORS			
* BUILD F/D GAGE FOR SPRING ARMS	SELLERS	07/18	
* STAKE PROD'N PARTS ON PROD'N STAKER	SELLERS	05/02	ORIG.
AND MEASURE TERMINAL POSITION		06/20	REV.
(SEE DISCUSSION)		06/27	COMP.
* COMPLETE B.A.N. STAKER MODIFICATION	SELLERS/	07/31	
	MCCOBY		
* COMMUNICATE ANY REQ'D TERMINAL CHANGES	SELLERS	06/13	ORIG.
TO BASSLER		07/03	REV.
* BUILD 200 SWITCHES FOR ES TESTING	SELLERS/	06/14	ORIG.
	MCCOBY	06/28	REV.
* 57 TO 77 CONVERSION: PHASE 1 TESTING	BOWOL	05/30	ORIG.
(PUSHOUT DUE TO COMPONENT AVAILABILITY)		07/11	REV.
* COST ESTIMATE FOR LOW DIFF. SWITCH	SELLERS	06/06	ORIG.
		07/11	REV.
* IDENTIFY INSPECTION REQMTS. FOR SOP	WATT	ONGOING	

* IDENTIFY AUTOMATION SPECIALIST	GARIEPY	06/06	ORIG.
		06/14	REV.
. 77PS QAS (PRELIMINARY)	WATT	07/01	
. 77PS CHARACTERISTIC SHEETS	WATT	07/15	
. GAGE R&R STUDIES	WATT	07/15	
. 77PS QAS (FINAL)	WATT	08/01	
. SET UP SPC FILES/RUN CAPABILITY STUDIES	BALTHAZAR	08/01	

*When Does
Steve
have time to*

Production Components:

* UPDATE CUP PRINT	OFFILER	03/28	ORIG.
		07/11	REV.
* RESOLVE OPEN ISSUES ON BASE (PUSHOUT DUE TO STAKER EVAL.)	SELLERS	04/11	ORIG.
		07/03	REV.
* UPDATE TERMINAL PRINTS/BASE PRINT	OFFILER	05/09	ORIG.
		07/11	REV.

Manufacturing Equipment:

. FINAL ASM MACHINE DEBUG COMPLETION	SELLERS/	06/03	ORIG.
	KOURTESIN	07/03	REV.
. BASE ASM MACHINE BUILD COMPLETION (NEED E.A. MACHINE)	SELLERS/	05/31	ORIG.
	KOURTESIN	07/03	REV.
. PRESSURE TESTER BUILD COMPLETION	SELLERS/	06/20	ORIG.
	KOURTESIN	07/03	REV.
. B.A.M. EFFECTIVITY RUN #1	SELLERS	07/03	
. F.A.M. EFFECTIVITY RUN #1	SELLERS	07/03	

Torico:

. REPORT ON TORICO P.S.	DOUGLAS	ONGOING	
* MTG. TO REVIEW IMPACT OF DOWNISED SWITCH ON ASM. EQUIP.	CEASE	06/27	ORIG.
		06/27	COMP.

DISCUSSION:

S7 L/T & P/C

AN 11K PIECE LOT OF REPORTS WERE REJECTED FOR OUT-OF-SPEC CHAMFER. PROBLEM WAS RELATED TO HOW THE PARTS SENT IN THE GAGE; STEVE O. RE-MEASURED THE PARTS AND DETERMINED THAT THEY'RE WITHIN SPEC. THE IMPROPER FIT IS BEING ADDRESSED WITH A SLIGHT DESIGN MODIFICATION TO MINIMIZE THE IMPACT OF ROLLER ON THE DOGPOINT DIAMETER.

WE'VE NOT YET GOTTEN A RELEASE FROM PITTS FOR PRODUCTION VOLUMES OF 15-3'S. 21K REMAIN ON OUR INTERNAL SCHEDULE TO BE BUILT THROUGH JULY; ALL PARTS ARE IN HOUSE TO SUPPORT THIS, WITH THE EXCEPTION OF THE CUP (16K IN HOUSE, NEXT DELIVERY ON 07/12).

77PS

WE'VE BUILT OUR FIRST SWITCHES OFF OF ALL-PRODUCTION TOOLING. P/C PV TEST SWITCHES ARE COMPLETE; L/T SWITCHES EXPECTED TO BE COMPLETE BY FRIDAY 06/28.

WE ESTIMATE THAT EA IS ABOUT 3 WEEKS FROM DEBUG COMPLETION. PARTS RUN OFF THE EQUIPMENT MEET PRINT REQUIREMENTS IN MOST AREAS, WITH THE EXCEPTION OF THE SPRING ANGLE WHICH IS RUNNING SEVERAL DEGREES

TI-NHTSA 002123

TOO HIGH. THE ANGLE CANNOT BE ALTERED SIGNIFICANTLY WITHOUT CHANGING THE FORMING TOOLS; WE BELIEVE THEY ARE ACCEPTABLE AS IS AND WILL CHANGE THE PRINT IF WE CAN CONFIRM THIS.

THE PRESENT B.A.N. STAKER CANNOT STAKE TERMINALS WITHIN PRINT REQUIREMENTS - THE SAME PROBLEM THAT WAS REMEDIED ON THE 57PS LINE WITH ANVIL MODIFICATIONS. IT'S IMPERATIVE THAT THE STAKER BE MODIFIED TO PRODUCE PARTS TO PRINT BEFORE THE END OF JULY - TO MEET OUR EARLY SEPTEMBER ISR DATE.

MILESTONES	PLANNED	ACTUAL
57 L/T ISR	11/21/90	11/21/90
57 L/T JOB 1	09/03/91	
57 P/C ISR	01/15/91	01/15/91
57 P/C JOB 1	06/03/91	
77PS ISR	09/01/91	
77PS SOP (TI) est.	10/01/91	

PRODUCTION PLAN BY MONTH (THOUSANDS) - WITHOUT OVERAGE

	P/C 57PSL5-3	L/T 57PSL5-2	P/C 77PSL2-1	L/T 77PSL2-3
APR	0	0	0	0
MAY	2 (COMP.)	2	0	0
JUN	0	0	0	0
JUL	22 (tentative)	2.3	0	0
AUG	10 "	2.3	2	0
SEP	10 "	**2.6	2	0
OCT	0	9.5	**9	2
NOV	0	8.5	25	2
DEC	0	0	25	**9.5

* = JOB1 FOR 57PS VERSIONS

** = TENTATIVE JOB1 FOR 77PS VERSIONS

REGARDS,
DAVE CHARN \28-FORD

TI-NHTSA 002124

DISC LIFE TEST TEST 154-09-20 RAD 6/26/91

DEVICE #	DISC	CHP	INITIAL	ACT / REL	ACT	REL
154-09-01	22.02/19.66	27713	130 / 100		128	99
154-09-02	22.02/19.66	27713	142 / 103	S	127	97
154-09-03	22.02/19.66	27713	138 / 102	U	134	100
154-09-04	22.02/19.66	27713	138 / 103	G	128	92
154-09-05	22.02/19.66	27713	139 / 99	K	132	96
154-09-06	21.19/18.2	27713	132 / 98	L	127	99
154-09-07	21.19/18.2	27713	125 / 89	M	119	91
154-09-08	21.19/18.2	27713	126 / 93	P	121	89
154-09-09	21.19/18.2	27713	132 / 97	U	123	90
154-09-10	21.19/18.2	27713	114 / 85	L	111	86
154-09-11	21.64/17.66	27713	129 / 90	S	118	88
154-09-12	21.64/17.66	27713	124 / 89	S	117	90
154-09-13	21.64/17.66	27713	130 / 89		118	87
154-09-14	21.64/17.66	27713	132 / 93		124	90
154-09-15	21.64/17.66	27713	117 / 88		114	86
154-09-16	26.44/23.48	27288	253 / 193		243	172
154-09-17	26.44/23.48	27288	257 / 199		250	183
154-09-18	26.44/23.48	27288	249 / 187		245	171
154-09-19	26.44/23.48	27288	164 / 194		252	184
154-09-20	26.44/23.48	27288	170 / 194		259	191

TI-NHTSA 002125

<u>DEVICE</u>	<u>FORD P/N</u>	<u>--- P/N</u>
ASS - CAR STPS	F2VC - 9F924 - 5B	STPS - 5-2
ASS - CAR TTPS	F2VC - 9F924 - AS	TTPS - 2.
LTU TRUCK STPS	F3TA - 9C828 - AA	STPS - 2
LTU TRUCK TTPS	F3TA - 9F924 - AA	TTPS - 2-2

So 910227
 (COUN. JAL. 2 AS 18 - 2526)

TI-NHTSA 001733

PAGE NUMBER: 31651410

DATE: 3/26/91

REV DATE: 3/26/91

DESCRIPTION:

REWORK ARM - A/G CLUTCH CYCLING PROGRAMS SWTCH

REWORKED BY: T. GORDON

STEP	TO	FROM	STORY	IMPACT	OPERATION DESCRIPTION	KEY PRODUCT CHARACTERISTICS	KEY CONTROL CHARACTERISTICS
1					BASE PARTS STORED IN MAGNETIC		
					1- BASE		
					2- MOVABLE TERMINAL		
					3- STATIONARY TERMINAL		
					4- CONTACT ARM		
					5- RIVET		
					6- MOVABLE CONTACT		
					7- CONNECTION SEAL		
2					BASE PARTS MOVED TO MAG MACHINE		
3	10				1- AUTOMATIC ASSEMBLY OF BASE	TERMINAL PRODUCT TERMINAL MOUNT TERMINAL SEPARATION	LOSS OF PROPORTION BUSH/SHOULDER TOOL TOO TO SPREAD TOOL MOUNT/MENT CONNECTION IN BASE MAGNETIC PARTS PARTS OUT OF SYNC
					2- BASE FOR TYPE POST		
					3- STATIONARY TERMINAL		
					4- IMPROVED INTO BASE		
					5- CONTACT, CONTACT ARM		
					6- MOVABLE TERMINAL		
					7- PLACE OF MOUNTING		
					8- CONTACT RIVETED TO CONTACT ARM		
					9- CONTACT ARM RIVETED TO MOVABLE TERMINAL		
					10- MOVABLE TERMINAL LEFT IMPROVED IN BASE		
					11- TERMINAL STAIN		
					12- CONNECTION SEAL		
					13- IMPROVED INTO BASE		
4					1- FROM BASE ASST IN MAGNETIC		
5					2- CLAMP COU SYSTEM IN MAGNETIC		
6					3- MOVE CLAMP COU FROM MAGNETIC		
7	21				4- CLAMP COU	CLAMP MAGNETIC/CLAMP COU/CONTACT ARM CLAMP MAGNETIC	CLAMP TOOL CLAMP TOOL MULTIPLE PROPORTION
8					5- BASE ASSEMBLY 1- FINAL ASST CONDUCTIVE STORED IN MAGNETIC		
					2- CLAMP		
					3- RIVET		
					4- TRANSFER PIN		
					5- RISC SEAL		
					6- RISC		
					7- CLAMP SYSTEM		
9					8- BASE ASSEMBLY AND		

TI-NHTSA 001734

PAGE NUMBER: 1141141E

DATE: 11 14 61

REV DATE: 11 14 61

AS DESCRIPTION:

ARMOR ASM - A/C CLUTCH CYCLING PASSAGE SWITCH

PROGRAM NO: 1 SP0000

STEP	FAI	MOVE	STOPS	INJECT	OPERATION DESCRIPTION	KEY PRODUCT CHARACTERISTICS	KEY CONTROL CHARACTERISTICS
					INITIAL ASST COMPONENTS MOVED TO LINE		
10	35				1- PIN GAGE 1- ASSEMBLY BASE AND DISC 1- PIN GAGE & PIN SELECT 1- PIN SELECT		
11					MUVE BASE AND DISC BASE BASE TO FINAL ASSEMBLY		
12	40				1- FINAL ASSEMBLY (MOUNT) 1- BASE/DISC BASE ASST PLACED IN ASST UNIT 1- DISC PLACED ON DISC BASE 1- KAFFER PLACED OVER DISC 1- GASKET PLACED OVER KAFFER 1- FOOT FITTING PLACED OVER GASKET 1- CRIMP OUT PLACED OVER ARMEDLY FITTING 1- DEVICE COMPLETED 1- DEVICE PLACED IN TOTE		
13					DEVICE MOVED TO CRIMPING		
14	45				1- CRIMP FINGERING DEVICE 1- CRIMP RELEASE		1- CRIMP TONGS 1- FINGERING FINGER 1- EQUIPMENT FAILURE
15					MUVE DEVICE TO PRESSING TESTER		
16	50				1- PRESSING TEST DEVICE 1- RELEASE 1- ACTIVATION 1- CRIMP		1- EQUIPMENT FAILURE 1- FINGERING FINGER 1- EQUIPMENT FAILURE
17					SAMPLE MOVED TO OVER TESTER		
18	55				1- SAMPLE OVER TEST 1- TEST RELEASE 1- TEST ACT 1- TEST CRIMP		1- EQUIPMENT FAILURE 1- FINGERING FINGER 1- EQUIPMENT FAILURE
19					MUVE DEVICE TO FINAL INJECT		

TI-NHTSA 001735

PAGE NUMBER: 52481438

DATE: 3 28 91
REV DATE: 3 28 91
PREPARED BY: Y BROWN

T DESCRIPTION: SENIOR A/C - A/C CLOTH CYCLING PARASOLE SWITCH

STEP	FAB	MOVE	PICTURE	INSPCT	ITERATION DESCRIPTION	NEW PRODUCT	NEW CONTROL
						CHARACTERISTICS	CHARACTERISTICS
20				40	FINAL INSPECTION	FROM LEAK	REWORKED PART
						COSMETIC DEFECTS	
						THREAD DIMENSION	
						FUNCTIONALITY	

TI-NHTSA 001736

<u>DEVICE</u>	<u>FORD P/N</u>	<u>TI P/N</u>
PASS-CAR 57PS	F2VL-9F924-AB	57PSL5-3
PASS-CAR 77PS	F2VL-9F924-AB	77PSL2-1
LIGHT TRUCK 57PS	F2TA-9C888-AA	57PSL5-2
LIGHT TRUCK 77PS	F3TA-9F924-AA	77PSL2-2

to 910227

(CALL VALID AS OF 910226)

-MSG N#- 1114855 FR-WHLZ TO-PCQA SENT-02/27/91 07:45 AM
R#-080 ST-C DIV-0050 CC-00777 BY-WHLZ AT-02/27/91 07:45 AM

February 26, 1991

To: Steve Offiler SBO1
Cc: Charlie Douglas CNP1
John Haynes PCQA
Fr: Joe Schuck WHLZ
Sj: CCPS

LT TRUCK

- o George has issued a final print, based off your's, for the Lt. Truck F-Series (pick-ups) and B-Series (Broncos). This will have P.N. F3TA-9F924-AA, TI 77PSL2-3.
- o It comprehends both the modified J512 and terminal position (.50 +/- .20mm).
- o Then VN-58 Van (lead vehicle) print needs to be issued. George will do this in the next week or so. That will be P.N. F2TA-9C888-AA, TI 57PSL5-2.
- o George wants 100 77PSL2-3 around 4/1/91. At what cost (\$30 or \$12)?

PASS CAR

Wants brown vs. black base. Can we do this?

OTHER

Charlie, you need to pen a letter (as we agreed) to Fred with a copy to George and Bruce on CCPS pricing. Please include both the F2TA and F3TA part numbers.

Regards
Joe

TI-NHTSA 001738

TELEX 861214
FAX 378-378-1010
PHONE 378-378-3300
DUN & 235-3138

ROME STRIP STEEL COMPANY, INC. 510 HENRY ST. BOX 189 ROME, NEW YORK 13440

COMPLIANCE

SALES CODE
08022016

01000000

DATE INVOICE NO.
02/28/91 02786

INVOICE TO: K. F. BASSLER CO., INC.
P. O. BOX 995
ATTLEBORO, MA

SHIP TO: K. F. BASSLER CO., INC.
13TH-JOHN WILLIAM STS
ATTLEBORO, MA

02703

QUANTITY (LBS) NO. CLS. NO. INCHES OR BARS PART
19,636 135 13 PART

SHIPPED BY
PAUL M

HT NO. C HR P S ST HT CR NO
466708 07 36 014 008 01

MILITARY REQUIREMENTS BY:

CUST. ORDER NO. 14474

COLOR CODE

7MM X 25.40MM

WHL NO.
98100

PREPAID
COLLECT
PREPAID

STAMPING

PAPER WEAR

DRIS

CRATES

BOX

.04600 X 1.0000

IFMMR

8 50 MAX

COIL

200 LBS

THICK

DRIP SITE

PKG. WT

WEIGHTS

CORR.

INTERVAL

EDGE

LENGTHS

RUNNERS

SPACING

YARDING

SCALES

CATS

+00050-00050+805 -005

WD3 SLIT

200 FIM 16 34

+013 -013MM +127 -127MM

ALUM. X 100

BURN

CARRIER
500/096

FLATNESS

DR

1 PCS

TEST REPORT

(0.407 KG)

19,636

Certificate of Compliance

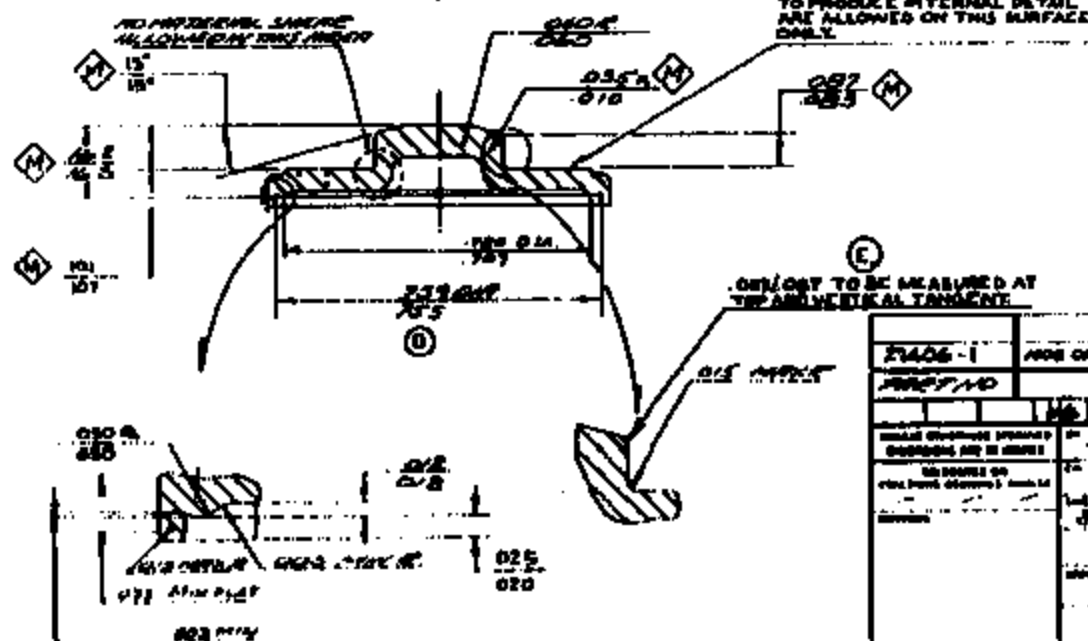
ATTEST: *[Signature]*
037 00280 11 030291
Notary Public, Oneida County
My commission expires *[Signature]*

DATE *[Signature]*

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.

TI-NHTSA 001738



57P561		REVISIONS	
ZONE	UTR	DESCRIPTION	DATE APPROVED
-	A	BY MAIL. EYES	1-5-56
-	B	REMOVED "C" AND "D"	1-24-56
-	C	ADDED NOTE #5	2-2-56
2	D	REMOVED WAS A 7300	3-1-57
-	E	ADDED NOTE #6	3-2-56
-	F	SEE CN	3-2-56

NOTE

1. DIMETER'S MUST BE CONCENTRIC TO REVOLUTION TO WITHIN .002 IN.
2. PARTS TO BE SHARPED, CHAMFERED, STRENGTH ENDED AND STITCHED AFTER MATING.
3. DUPLICATE DRAWING THEREOF IS SEE QMG. 2387.
4. THIS PART IS LOT CONTROLLED. ANY CHANGE TO THE FORMING RING PUNCH OR DIE WILL IDENTIFY THE START OF A NEW LOT. A MINIMUM LOT SIZE OF 6000 PIECES WILL BE THE ONLY EXCEPTION. ANY LOT SIZE UNDER 6000 PIECES WILL BE MIXED AND RECORDED ALONG WITH THE DATE ON EACH BOX. EACH LOT WILL HAVE ITS OWN PACKING SLIP WITH LOT IDENTIFICATION. FIVE WITH STAMP

5. STAMPS ON PRODUCT ARE ACCEPTABLE. PARTS MUST BE MADE TO BE PLAYED PER THE CURRENT PROCESS.

CERTIFIED MAIL
FIRST CLASS PERMIT NO. 708 NEW YORK, N.Y.
IS NOT A LETTER
NO POSTAGE
NECESSARY IF MAILED IN THE UNITED STATES

E1406-1		ADDS OR ADD C & STATE	065 RAR	ZINC PLATING 0002-0004 INK
PROF AND		ADDITIONAL	FI 12/14	ACCT 1/1/79
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
Initial Checkmate printed COPYING AND IN GROUP 1		NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	TEXAS INSTRUMENTS INSTRUMENTS INTERNATIONAL USA	REASON COMMON INVENTION TO COMMON INVENTION TO
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100				
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26				

11-NOV-24 001740

HIGHLIGHTS
Stephen B. Offiler
Week Ending 91-03-01

John H. [unclear]
7-2-91



FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

CUSTOMER ISSUES: We are preparing for the Tokico samples. J512 hexports have been stripped and replated with Nickel .0002" min. Although historically we used a chromium-over-nickel system, AFCC has no chromium capability. These hexports are bare nickel. We have two weeks left of the original four week quoted leadtime. No problem meeting this.

Bruce Paase called this week to confirm the changeover in color of the Pass-Car base, from gray to brown. I spoke with Stan Hornol and Steve Wahert, and no one is indicating that this will cause any issues. Bruce would like prints soon, showing the color change as well as the new terminal alignment tolerance. I plan to issue a CR to drafting right away. Bruce also indicated that we should send copies of the J512 tolerance relaxation report to the Tier-1's, Kelco-Hayes, Dana-Weatherhead, and Surfaces.

In a conversation with George Randall, he indicated that the best way for us to push the change in J512 specifications is for me to join the SAE committee and champion the effort. Otherwise, relying on Stan Bragdon to perform this on a low-priority basis means it could very well die in committee. George indicates that joining the committee is typically as simple as writing a letter to the chairman.

Ford WIN88 is indicating that audible noise is a problem in their application (MY94 I believe). They are asking for 6 samples with snubber due next Friday, and quotes of a device with J512 and snubber. Joe Schuck is confirming with them that the first 6 will be J514 o-ring. We are putting together a mock-up print of a J512 with snubber for Elco to look at. This may be the right time to look into a pressed-in snubber rather than machining it.

57PS ISSUES: It looks like all print details which needed to be addressed for the 57PS parts lists and bills-of-materials have been cleaned up. The CR will be transferred to Drafting right away.

We have received second submission of Valentine's 74797 aluminum crimp ring and 27713 cup. The crimp ring looks good; we are holding off inspection of the cup until I complete a mark-up to 27713 which grants relaxation of certain tolerances.

77PS ISSUES: Matt Sellers and I are working on a real-world determination of the required calibration tolerance for the 77PS base assembly. At present, the calibration operation is showing a $\pm$ three sigma capability of $\pm$ 1.2 mils, which is considered quite good. We are building three lots of sensors for dimensional analysis and hatchet curves, to study on paper the worst-case pin window. We will then build parts and cycle them as a verification.

We are working to modify the model-shop movable terminals to compensate for the fact that the MS springs are slightly too long, which places the bump too high in the base and requires excessive stationary terminal deformation to reach the correct dimension during calibration.

Matt and I met briefly with Rick Bassler to discuss dimensional issues he's having with the movable terminal tool. The interference bumps are too low by several mils, and another non-critical feature is also out by a few mils. He's hoping we'll grant print changes to avoid extensive punch and die rework. It looks like this won't be a problem.

TI-NHTSA 001741

TO: Bill Sweet
FM: Matt Sellers
SJ: Highlights . W/E 3/1/91

77PS

Valentine has completed Fixes on the Aluminum Crimp Ring and low ratio cup tools. FAI/MCS verification and correlation is complete on the crimp ring tool which is now approved! The low ratio cup is currently being verified at receiving. Completion expected by next Tue. However, design Eng. has a few issues to clear up on the print. These issues are a result of the print spec's not reflecting the manufacturing process.

A meeting was called by Bassler yesterday to discuss two dimensional issues with the movable terminal. These anomalies are resulting from un-accounted for material yielding around the bend areas. First glance tells us that no functional issues exist; Bassler will be notified today.

The environmental seal bowl will most likely require TALC powder to assist feeding. This comes as a result of communication between T.I., Hendrix, and Parker H. Parker has extensive experience with bowl supply methods for rubber products, and suggested the use of TALC. Mechanization has been asked to at least make dis-assembly and cleaning of the linear track easy.

An action plan to determine the variability allowed with the base assembly calibration has been outlined. Three groups of sensors will be built - (57LT/57PC/50PS). Variability between the disc crown and cup reference surface will be calculated for each group. Force deflection curves will also be developed for observation. It will be two weeks before we complete this study.

Meeting ^{next Tuesday} ~~to~~ to review "wish list" for new sensor AMI.

Chrysler LH

AFCC has been selected over Nypro to supply the base mold for this program. The deciding factor was criticality of lead time. Nypro is currently un-proven, and AFCC has formally committed to 6/3/91 for sample delivery. Piece price with AFCC was negotiated to comprehend annual usage. Quoted price is \$80.98 vs. 89.95 for the current STPS base. Mold released will be today.

Bassler has been selected to supply both .032" terminals for this program. A.J. Knott was second selection candidate. Bassler tooling will be approximately \$5K more than A.J. Knott between the two terminals. However, the Bassler tool is carbide vs. A.J.K.'s tool steel which will yield some price stability through reduced maintenance. Bassler has quoted a fixed two-year piece price. Bassler has also committed to a 6/7/91 delivery. Terminal tools will be released today.

52/57 PS

SBPS Rubber cap tool samples are in-house. An FAE has confirmed the dimensional problems found by Wynn's. This will be a MY92 start-up, so we have time to proceed with a mold iteration. G.M. needs 2K to 4K sample devices to facilitate assembly line testing. We are currently working on an arbor press tool to assemble these devices. Engineering samples off the mold are being used conditionally.

file:77PS
date:05MAR91
WHFarrow

77PS SENSOR ASSEMBLY

STATION	PROBLEMS	COPY IMPROVE MAJOR REDESIGN
1: HEXPORT LOAD	- Hopper belt jams - Low hopper capacity - Bowl flipover jams	Redesign
2: HEXPORT PROBE	>	Copy
3: GASKET LOAD	- Blowoff & vacuum finicky - Track cover access poor	Improve
4: GASKET PROBE	>	Copy
5: 1st SEAL BLANK & LOAD	- Kasten static cling - Vacuum pickup falls - Stock guide access poor	Improve
6: 2nd SEAL BLANK & LOAD	> Same as #5	(Improve)
7: 1st & 2nd SEAL PROBE	- No rotate = product -- - Pogo pins stick up	Redesign
8: 3rd SEAL BLANK & LOAD	> Same as #5	(Improve)
9: 3rd SEAL PROBE	- Same as #7	(Redesign)
10: WASHER - CONVERTER LOAD	- Should automate	Redesign
11: WASHER - CONVERTER PROBE	>	Copy
12: SPACER BLANK & LOAD	> Feed problems	Redesign
13: SPACER PROBE	-	Copy
14: EMPTY	>	-
15: DISC LOAD	- Disc not inside converter - Upside down & missing disc	Improve
16: DISC PROBE	>	Copy
17: EMPTY	-	-
18: CUP LOAD	> Lift belt jams > Flipover track jams > Flipover falls - Needed ?	Redesign
19: CUP PROBE	>	Copy
20: PRE-CRIMP	>	Copy
21: LO-PIN PROBE	-	Copy
22: GOOD & BAD PARTS UNLOAD	> Needs lots of adjustment	Redesign
23: EMPTY FIXTURE PROBE	-	Copy
24: EMPTY	>	-
1 "O"-RING FEED & LOAD	- Not needed on 77PS sensor	-
1 CRIMP	> Tooling OK with ZnCrO4 > Too large & expensive	Redesign

But . LEAK 4" Engin Space To ...

File: AM12
date: 05MAR91
WHFarrow

77PS SENSOR ASSEMBLY

AM1 24 STATION ROTARY ASSEMBLY MACHINE

D-140631, D141100

Station #1: HEXPORT LOAD D-140632

Performance:

- Lift conveyor jams parts between cleft & guide
- Must have lifter because parts are too heavy to manually load any higher.
- Hopper capacity too low, now 15-20 min = 500 pcs = 1 hr. Needs to be 1 hour = 1500 pcs = 3 hours. More parts makes present system jam
- Could load hopper down low, then power raise it above bowl feeder to act as gravity hopper feeder. Bowl capacity would give enough time to lower, fill, and raise again. This method preferred over lift belt because belt has many maintenance problems: wear, debris, adjustment.
- Bowl feed still jams up!! Parts shingle in orientation track where part is flipped over.
- Could use AM1 flip over mechanism at end of linear track before pick up point. OR make good bowl track (cheaper?)
- Track full sensor doesn't stop bowl. Must adjust sensitivity > once per shift. Not stable.
- Does hexport have to be oriented by hex flats in nest?
- Could cheapen nest and bowl by not orienting hex flats

Recommendations:

- Fix hopper jams with better parts elevator
- Increase hopper capacity
- Make bowl with better flip over track
- See if hexports must be oriented by flats - THEY DON'T! So simplify nests and bowl feed.

Station #2: HEXPORT PROBE D-140633

Performance:

- Mechanical probe works fine

Recommendations:

- Copy this station on new machine

Station #3: BASKET LOAD D-140634

Performance:

- Blowoff air system is finicky; requires frequent, careful

Noise

Exhaust

Part. Upset!?

- John R. said too much handling will not damage parts.

Handwritten notes:
p64p4...
1000
1000
1000

- adjustment.
- Misplaced gaskets is a problem - 71 stops for this on 1st shift 2/12/91
 - Vacuum pickup fails partially or fully even with vacuum on
 - Can see pile of dropped gaskets
 - Adjustment difficult because can't see in with tool down
 - Individual vacuum/blow off units (Piab) for each station work well on other AMI applications.
 - Shape pick-up head for better visibility Thinner. Clear -
 - SMC individual vacuum sensor may tell if part is picked and do the job of the gasket sense station "
 - Maybe shuttle position needs adjustment?
 - Linear track cover difficult to remove for frequent cleaning (taic powder). Bad access, too many screws.

Recommendations:

-
- Use individual Piab vacuum source
 - Fix track cover for easy removal & access
 - Shape pick-up head for better setup visibility
 - Otherwise, copy this station

Station #4: GASKET PROBE D-140835

Performance:

- Pogo pins sometimes stick up so a bad, missing gasket is called good.
- 4 pogo pins sense misplaced gasket. They also push gasket into place if sitting too high.
- Self check circuit needed

Recommendations:

- Copy this station on new machine
- Self check circuit

Handwritten note: Not a good idea

Station #5: 1st SEAL BLANK & LOAD D-143221

Performance:

- Kapton static (both cling & repulsion) is a problem
- Sometimes kapton flies away when cut
- Sometimes kapton sticks to vacuum gripper
- Anti-static wipes help on 43PM AMI - constant wipe
- Pickup fails - vacuum adjustment wrong
- Partial cutoff causes failed pickup, then a double length
- Wide kapton jams in stock guide
- Splices jam in stock guide
- Access to stock guides and tooling is too difficult
- Tooling must be maintained and tracks get cleaned
- Too many screws
- Proxy guard and pneumatic lines are in the way

- New style of pro-vy guard (see 63PS) gives better access

Recommendations:

-
- Place individual vacuum source
- Use anti-static wipes and ion charge gun
- Modify design for better access to tooling and stock guide
- New style pro-vy guard for better access and safety
- Good splice detector
- Copy everything else on this station

Station #6: 2nd SEAL BLANK & LOAD D-140836
 - Same as Station #5

Station #7: 1st & 2nd SEAL PROBE D-140837

Performance:

-
- Individual page pins sometimes stick up, then do not sense missing kapton.
- Self check circuit needed
- Kapton seals are rotated from each other to allow this probe system to work. Device stability over life is better if all seals are aligned with each other.
- Differential height probe may work on aligned spacers
- ANI probe ng, need LVDT sensitivity.

Recommendations:

-
- Investigate probe methods for aligned spacers
- Consider 1 probe at station #9 to sense all 3 seals

Station #8: 3rd SEAL BLANK & LOAD D-140838
 - Same as Station #5

Station #9: 3rd SEAL PROBE D-140839
 - Station #7 recommendations

Station #10: WASHER - CONVERTER LOAD D-140840, D-140841

Performance:

-
- Works but should be automated

Recommendations:

-
- Automate this station, Bob R. has a quote.

Station #11: WASHER - CONVERTER PROBE D-140842

Performance:

-
- Mechanical probe works fine

Recommendations:

- Copy this station on new machine

Station #12: SPACER BLANK & LOAD D-140843

Performance:

- Troublesome station, needs redesign, maybe pull feed.
- Feed problems?? Nick/ Lenny

Recommendations:

- Redesign with pull feed (see 43 PS) *Real*

Station #13: SPACER PROBE D-140844

Performance:

- Mechanical probe works fine

Recommendations:

- Copy this station on new machine

Station #14: EMPTY

Station #15: DISC LOAD D-140845, D-140846

Performance:

- Runs OK but:
- Must watch bowl speed to keep star wheel properly full
- Trapped disc problems continue - need to assure disc fully seated in converter
- Some upside down discs
- Empty disc nest in star wheel results in kapton spacer getting picked up and placed on top of next disc
- Could wink or bend in edges of converter to hold disc
- Yield improvement?? Matt will sketch a winked converter

Recommendations:

- Copy this station on new machine

Station #16: DISC PROBE D-140847

Performance:

- Mechanical probe works fine but needs adjustment
- This probe can be set to detect upside down & double discs as well as missing discs

Recommendations:

- Copy this station on new machine

Station #17: EMPTY

Station #18: CUP LOAD D-140848

Performance:

-
- Noisy station
 - Jams at lift belt
 - Jams at flip over point in track and after that point
 - Flip over fails sometimes; upside down parts then jam
 - * Lift track width seems too wide
 - * More reliable feed track seems feasible
 - * Could flip over before the track

Recommendations:

-
- Make more reliable flip over track
 - Use better parts elevator
 - Copy rest of this station

Station #19: CUP PROBE D-140849

Performance:

-
- Mechanical probe works fine

Recommendations:

-
- Copy this station on new machine

Station #20: PRE-CRIMP E-142426

Performance:

-
- Works well
 - Possible source of dislodged discs
 - * Incorporate 1st stage crimp ?
 - * Can not be a pre-crimp die with precrimp ribs in it - New design exists but is more expensive

Recommendations:

-
- Copy this station on new machine

Station #21: LO-PIN PROBE D-143546

Performance:

-
- Mechanical probe works fine

Recommendations:

TI-NHTSA 001749

- Copy this station on new machine

Station #22: GOOD & REJECT PARTS UNLOAD D-140850

Performance:

- Mechanical system should be simplified
- Still needs lots of adjustment
- * Can ~~crisp~~ crisp be done from below so flipping not needed
- * Would like way to unload AMI to tote when crisper is down
- * Would like way to load crisper from tote when AMI is down

Load

Recommendations:

- Redesign flip over
- Optional unload to tote
- Manual crisper load capability

Handwritten notes and scribbles

Station #23: EMPTY FIXTURE PROBE D-140851

Performance:

- Mechanical probe works fine

Recommendations:

- Copy this station on new machine

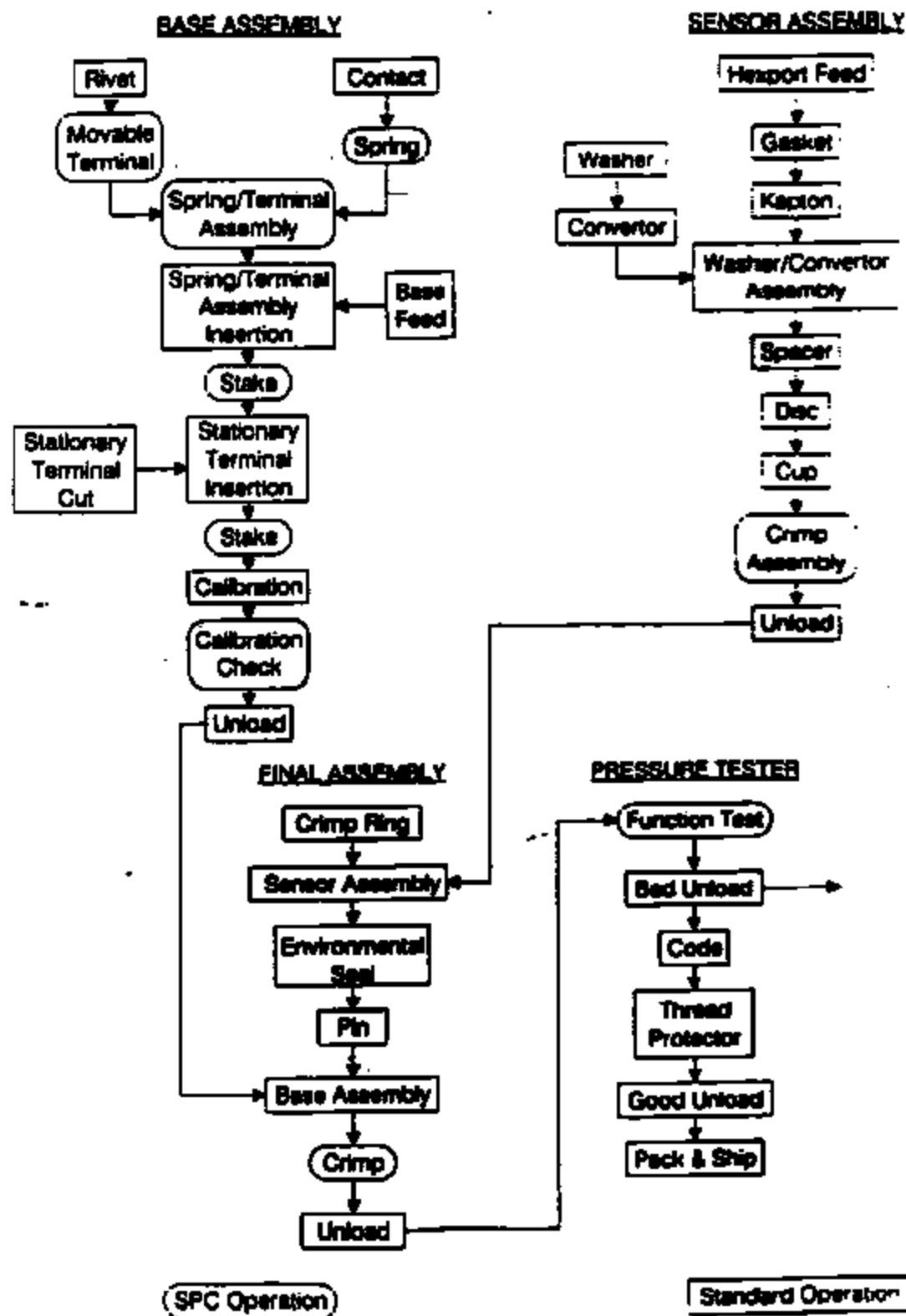
Station #24: EMPTY

PUCK CONVEYOR, CRIPPER, OVERPRESSURE

- This part of machine will be redesigned
 - New tooling problems - Related to plating
 - Table alignment
 - Table moves at two positions
- 'O'-ring station is not needed for this machine

FORD NEXT GENERATION SPEED CONTROL

PROCESS FLOW CHART 77PSL2-1/2-3



TEXAS INSTRUMENTS

ATLANTIC MASSACHUSETTS 01703

100-309

PAGE 1 OF 2

SAMPLE REPORT

REASON FOR REPORT	VENDOR	P.O.	PART NO.	REV
NEW PART	Valentine Tool		37713-1	1+
REPLACEMENT TOOL.	REPORT REQ. BY	DATE	INSPECTED BY	DATE
CORRECTED TOOL.	M. Sellers	3/05/91	Jeanne Gentles	3/17/91
REPAIRED TOOL.	* Marked-up			
REVIEW	THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' FINDINGS REGARDING THE ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DEVIATE FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION FOR EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.			
OTHER				

(CIRCLE ALL OUT OF TOLERANCE DIMENSIONS)					DISPOSITION	
	Sample			Inspection Method		
1	1.065 - 1.069	X 1.0670	Y 1.0679	T.M.		
2	.835 - .839	X .8393	Y .8384	T.M.		O.K. per Re-me.
	Φ .005 (A) Φ	X .0017	Y .0011			
			Φ .0040			
3	.158 - .161	X .1598	Y .1599			
	Φ .005 (A) Φ	X .0008	Y .0009			
			Φ .0024			
4	Max. fillet .003	.0016				
5	.038 - .032 R	.0302		SV		
6	□ .0015	.0010		Qual. Ind.		
7	Note # 4	OK		T.M.		
8	.005 R max	.0024		UN. TRN		Change print to
9	Note # 10	.0024		UN. TRN		.005 R + .010 - .015
9	.005 R max.	.002		UN. TRN		O.K.
	Note # 10	OK				
10	No burr allowed	OK				
11	.910 max.	X .9023	Note # 9	T.M.		
12	.795 min. flat	.8199				
13	.468 - .472	X .4693	Y .4690	T.M.		
	Φ .005 (A) Φ	X .0035	Y .0042	T.M. / C.H.I.		O.K. per Re-me.
			Φ .0109			
14	□ .003	.0004		Qual. Ind.		
15	.003 - .007 R	.0152		UN. TRN		Change Print to .015 R max
	Note # 10	OK				O.K.
16	.012 - .015	.014		Ins. Ind.		
17	.050 Ref	.059				

REMARKS AND/OR INSTRUCTIONS:

Tool Approved for re-measuring with
Jelco Gauges and ECN: # 9, # 9, # 1

DISPOSITION: TOOL APPROVED FOR PROG.	RESUBMISSION REQ'D
FG. ENG.: M. Sellers 3/10/91	QNA ENG.:
	PURCH. AGENT:



PAGE 3 OF 3

REASON FOR REPORT		VENDOR	P.O.	PART NO.	REV
NEW PART				27713-1	6*
REPLACEMENT TOOL.		REPORT REQ. BY	DATE	INSPECTED BY	DATE
CORRECTED TOOL.					
REPAIRED TOOL.		* <i>Noted up</i> THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS FINDINGS REGARDING THE ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DEVIATE FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION FOR EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.			
REVIEW					
OTHER					

[illegible]

~~SECTION: NOT APPROVED FOR PUBL.~~

RESUBMISSION REQUIRED

G. ENQ.:

QQA ENG.

PURCH. AGENT

TEXAS INSTRUMENTS

ATTLEBORO, MASSACHUSETTS 01903

1093091

PAGE 1 OF 2

SAMPLE REPORT

REASON FOR REPORT	VENDOR	P.O.	PART NO.	REP.
NEW PART	Valentine Tool		27713-1	i*
REPLACEMENT TOOL.	REPORT REQ. BY	DATE	INSPECTED BY	DATE
CORRECTED TOOL.	M. Sellers	3/05/91	Jeanne Gentes	3/7/91
REPAIRED TOOL.	* Marked-up			
REVIEW	THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' FINDINGS REGARDING THE ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DEVIATE FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION FOR EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.			
OTHER				

(CIRCLE ALL OUT OF TOLERANCE DIMENSIONS)					DISPOSITION	
	Sample			Insp. Method		
1	1.065 - 1.069	X 1.0670	Y 1.0674	T.M.		
2	.835 - .839	X .8393	Y .8388			
	Φ .005 (S) A (S)	X .0017				
		Y .0011	Φ .0040			
3	.158 - .161	X .1598	Y .1599			
	Φ .005 (S) A (S)	X .0008				
		Y .0009	Φ .0024			
4	Max. Fillet .003	.0018				
5	.028 - .032 R	.0308				
6	□ .0015	.0010		Dial Ind.		
7	Note # 4	OK		T.M.		
8	.005 R max	.0042		UN. TRN		
9	Note # 10	Material per drawing				
9	.005 R max.	.002		UN. TRN		
	Note # 10	OK				
10	No burr allowed	OK				
11	.910 max.	X .9023	Note # 9	T.M.		
12	.795 min. flat	.799				
13	.468 - .472	X .4693	Y .4690			
	Φ .005 (S) A (S)	X .0035				
		Y .0042	Φ .0109	T.M. / G. 110		
14	□ .003	.0004		Dial Ind.		
15	.003 - .007 R	.0158		UN. TRN		
	Note # 10	OK				
16	.012 - .015	.014		Dial Ind.		
17	.050 Ref.	.039				

REMARKS AND/OR INSTRUCTIONS:

DISPOSITION: TOOL APPROVED FOR PROD.

RESUBMISSION REQ'D

MFG. ENG.:

QRA ENG.:

PURCH. AGENT:

ATTENTION: 44762-CHRYSLER 42703



REASON FOR REPORT		VENDOR		P.O.	PART NO.	REQ.
NEW PART					27713-1	6*
REPLACEMENT TOOL.		REPORT REQ. BY	DATE	INSPECTED BY		DATE
CORRECTED TOOL.						
REPAIRED TOOL.						
REVIEW		* <i>Noted up</i> THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' FINDINGS REGARDING THE ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DE- VIE FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION FOR EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.				
OTHER						

[illegible]

REMARKS AND/OR INSTRUCTIONS:

DISPOSITION: TOOL APPROVED FOR PROD.	RESUBMISSION REQ'D
MFG. ENG.:	QRA ENG.:
	PURCH. AGENT:

HIGHLIGHTS
Stephen B. Offler
Week Ending 91-03-07

Handwritten signature
4/1/91



VACATION: Steve, 1 day 91-03-08

FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

Twelve Tokico samples will ship to TI Japan tomorrow. These are Light Truck specification 77PS's, with nickel-plated J512 hexports. Also, a total of nine engineering samples will ship today to Ford WIN88. Six use standard snubber J514 hexports, and three additional parts were built with snubbers drilled out for use as controls. WIN88 has been complaining of audible snap noise, and these parts will be used to determine if the snubber will help reduce the noise. Finally, two 57PSL5-2 production-representative parts were shipped to Ford, so M.A. Krench (new name in the Ford crowd) use unknown.

We have updated both of Pass-Car's prints to show the new base color, brown, and the new terminal alignment tolerance of 0.30-0.70mm. These went out today. Also, at Bruce Pease's request, we have sent copies of the J512 tolerance relaxation experiment report to each of the three Tier-1's.

All of the information required to add dash numbers to existing 57PS prints, and to create Parts Lists and Bills of Materials, has been handed over to Drafting. They are presently working on this.

We are in the process of determining how to go about modifying the prototype 77 spring arms and movable terminals in order to get them to better match the prints. We have milled slots of various sizes in the terminals, which places the spring at various heights relative to the base. The plan is to build a few, and use pin-window experiments to determine where we stand. Then we will have the model shop modify the rest, which will be used for the next rounds of planned 77PS testing and customer samples. Mechanization needs a couple days' notice to re-set-up the calibrator for these parts. This looks like it may happen late next week.

Basler has informed us that they will be reusing one of the stations in the production movable terminal tool. A couple of noncritical dimensions were out slightly, but they made the decision to rework because of concerns over the lance.

A marked-up 27713 cup print was completed, and is being used for FAI on Valentine's second submission. This print helps clarify certain areas where very tight radii are required; and it also grants slight relaxation of true-position tolerances on certain features to aid the measurement procedure for Valentine and for TI.

TI-NHTSA 001756

-MSG# 116960 FR-CERN TO-PCQA SENT-03/08/91 08:14 AM
R#-184 ST-C DIV-0050 CC-00101 BY-CERN AT-03/08/91 08:14 AM

MARCH 08, 1991

CC: TOM CHARBONEAU TC
JOHN KOURTESIS MDES
STEVE MAJOR WMLZ
ANDY MCGUIRK PCQA
ED O'NEILL BJON
JOE SCHUCK WMLZ
GARY SNYDER CPPC
MARTHA SULLIVAN CPPC
RAY TOURANGEAU PCNE
TED BALLARD AVNE
DAVE VARNEY FORM
SCOTT MARTIN HPFC
CLAIRE BALTEASAR HPFC
BILL CONGDON HPFC

RUSTY STRUBLE RCS2
MIKE DeMATTIA PCQA
CHARLIE DOUGLAS CPPC
DICK GARIEPY HPFC
PAUL KOTCH PRK1
JOE LASARE JNL8
STEVE OFFILER SBO1
MATT SELLERS PCNE
BILL SWEET PCNE
GEORGE LAVOIE B512
JIM WATT PCQA
STAN HOMOL SH2

4/10 - 50%

FR: DAVE CZARN ZARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:
03/07/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR

DATE: 03/14 (THURSDAY)
TIME: 10:00-11:30 AM
PLACE: MARKETING CONFERENCE ROOM

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* - ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED
SINCE PREVIOUS MEETING

57 L/T

Export:

✓ KICO CONTROL PLAN - *Theresa* *Leader* *Discussion* *4 1/2* *10*
KOTCH 01/17 ORIG.
03/14 REV.
* COMPLETE JS12 GAGE (TDR) SELLERS 04/18
* L/T PILOT RUN SELLERS/ 01/24 ORIG.
GARIEPY 03/18 REV.
* CREATE L/T EIS PARTS LIST OFFILER/ 01/24 ORIG.
AND B.O.M. WILSON 03/12 REV.
* RESOLVE TERMINAL POS'N ISSUE TEAM 03/21
* EVALUATE ANVIL CHANGE IN STAKER SELLERS/ 03/07 ORIG.
SWEET 03/14 REV.
* DELIVER 260 (LT) CUSTOMER SAMPLES OFFILER/ 04/01
100 (TT)

57 P/C

OFFSET POLARITY KEY BASE PRINT *(Gray is out)* OFFILER 11/16 ORIG.
03/14 REV.
* P/C PILOT RUN SELLERS/ 01/31 ORIG.
GARIEPY 03/18 REV.
* CREATE P/C EIS PARTS LIST OFFILER/ 01/24 ORIG.

TI-NHTSA 001757

AND B.O.M.	WILSON	03/12	REV.
* ENV. DNG. WITH REVISED POS'N TERM. TOL.	OFFILER	03/14	ORIG.
AND BROWN COLORED BASE		03/07	COMP.
* UPDATE HEXPORT IQP TO INCLUDE OPTICAL	SELLERS	03/04	ORIG.
YEAS. OF CHAMFER UNTIL GAGE IS COMP.		03/04	COMP.

77PS

DESIGN UPDATE ✓	OFFILER	ONGOING	
MFG/MECH UPDATE ✓	SELLERS	ONGOING	
REPORT ON TOKICO P.S. RESPONSIBILITY	DOUGLAS	ONGOING	
PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHASAR	ONGOING	
COMPLETE DESIGN FMEA	OFFILER	04/18	
COMPLETE PROCESS FMEA	SELLERS	07/01	
PROD. LINE LAYOUT - 1ST PASS ✓ <i>complete</i>	SELLERS	03/14	ORIG.
		03/07	COMP.
IMPULSE TEST LOW CURRENT CONTACT	OFFILER	03/14	
AT SLOWER CYCLE RATE ✓			
* CORRECTED MODEL SHOP PROD. INTENT PARTS	OFFILER	03/07	ORIG.
- TERMINAL		03/14	REV.
DETERMINE ACCEPTABLE CALIBRATION WINDOW	OFFILER/	03/14	
BY DIMENSIONAL ANALYSIS	SELLERS		
VERIFICATION RUN FOR CALIBRATION WINDOW	OFFILER/		
	SELLERS	03/28	
TOOLING EXPENSE ITEMIZATION	SELLERS	03/14	
* COMMUNICATE DUAL RADIUS CONTACT FEEDING	KOURTENSIS	03/14	DELETED
PROBLEM/SOLUTION TO EASTERN			
* J512 W/SNUBBER SKETCH ✓	OFFILER	03/14	
* QUOTE J512 W/SNUBBER	KOTCH	04/04	
IDENTIFY INSPECTION REQMTS. FOR SOP	WATT	06/01	
77PS QAS (PRELIMINARY)	WATT	07/01	
77PS CHARACTERISTICS SHEETS	WATT	07/15	
GAGE R&R STUDIES	WATT	07/15	
77PS QAS (FINAL)	WATT	08/01	
SET UP SPC FILES	BALTHASAR	08/01	
* 57PS TO 77PS CONVERSION - PLAN	HOMOL	03/14	

IQP'S:

* BASE	SELLERS/	02/28	ORIG.
	OFFILER	03/28	REV.
PRODUCTION COMPONENTS:			
* ALUMINUM CRIMP RING - <i>Approved</i>	LAVOIE	02/11	ORIG.
		02/11	COMP.
* REBUMP CUP	LAVOIE	02/27	ORIG.
		02/27	COMP.
* RESOLVE OPEN ISSUES ON CUP	SELLERS/	03/14	
AND CRIMP RING	OFFILER		
* MOVABLE TERM.	LAVOIE	03/01	ORIG.
		03/01	COMP.
* CORRECTED MOVABLE TERMINAL	LAVOIE	03/30	
STATIONARY TERM.	LAVOIE	03/22	
BASE	SELLERS	03/06	ORIG.
(AFCC DELIV. DATE PUSH-OUT)		03/15	REV.
* HEXPORT (P/N 36900)	KOTCH	03/04	ORIG.
		03/07	COMP.

MANUFACTURING EQUIPMENT:

FINAL ASN MACHINE BUILD COMPLETION	SELLERS/	04/15
	KOURTENSIS	
BASE ASN MACHINE BUILD COMPLETION	SELLERS/	05/31

TI-NHTSA 001758

PRESSURE TESTER BUILD COMPLETION

KOURTESIS
SELLERS/ 06/20
KOURTESIS

TO AUSTRALIA

FORD AUSTRALIA UPDATE

DOUGLAS ONGOING

DISCUSSION

57 L/T AND P/C

ELCO INFORMED US ON 03/05 THAT THEY MISTAKENLY LEACHED CLEAR THE YELLOW CHROMATE ON THEIR FIRST PRODUCTION BUILD OF THE J512 EXPORT (P/N 36900). WHEN WE ADVISED THEM ON 03/06 THAT THEY WOULD HAVE TO STRIP AND REPLATE, THEY INDICATED THAT THE PARTS HAD INADVERTENTLY BEEN SHIPPED ALREADY. WE RECEIVED THE 2500 PARTS ON 03/07, AND PLAN TO STRIP AND REPLATE IN-HOUSE, TRANSFERRING THE CHARGES TO ELCO. ANOTHER 1800 PARTS ARE IN TRANSIT - THEY'LL NEED TO BE REPLATED WHEN THEY ARRIVE NEXT WEEK. ON A POSITIVE NOTE, IF THE PARTS ARE DIMENSIONALLY OK, WE'RE ON SCHEDULE FOR THE 03/18 PILOT BUILD OF 2000 PIECES.

77PS

THE ALUMINUM CRIMP RING PRODUCTION TOOL (VALENTINE) HAS BEEN APPROVED. BY MAKING SEVERAL NEW STATIONS FOR THE TOOL THAT MAKES THE PRESENT STEEL RING, VALENTINE CAN NOW MAKE BOTH CRIMP RINGS ON THE SAME TOOL.

A SECOND SUBMISSION WAS MADE BY VALENTINE ON THE P/C REMUNP CUP. THE PARTS ARE CURRENTLY AT RECEIVING INSPECTION, AND WE EXPECT TO HAVE THIS TOOL APPROVED SHORTLY. AGAIN, THE TOOLING APPROACH WAS SIMILAR TO THE ALUMINUM CRIMP RING; IE, BOTH CUPS CAN NOW BE MADE WITH THE SAME PRODUCTION TOOL.

WE RECEIVED THE FIRST SUBMISSION OF MOVABLE TERMINALS ON TIME FROM KF BASSLER. THERE ARE SEVERAL AREAS THAT NEED TO BE MODIFIED TO MEET PRINT REQUIREMENTS; HOWEVER, THE PARTS ARE SUITABLE FOR USE BY EASTERN AUTOMATION IN THEIR TOOLING EVALUATION. (EASTERN IS MAKING THE STAND-ALONE UNIT THAT WILL FORM THE SPRING ARM FROM STRIP STOCK, AND RIVET IT TO THE MOVABLE TERMINAL.)

A MINI DESIGN REVIEW FOR THE PROPOSED NEW ANI SENSOR ASSEMBLY MACHINE WAS HELD ON MONDAY. MECHANIZATION IDENTIFIED THOSE AREAS OF THE CURRENT ANI-2 THAT SHOULD BE IMPROVED, AND THOSE THAT SHOULD BE COPIED. MECHANIZATION IS PREPARING TWO PROPOSALS FOR 3/15 - THE FIRST IS FOR A NEW MACHINE; THE SECOND IS FOR UPGRADING ANI-2 TO MEET THE TARGET PERFORMANCE OF 36 SPN W/70% UPTIME, TOTAL CAPACITY OF 6KK UNITS/YR.

THE PRODUCTION BUILD PLAN IS UPDATED BELOW.

<u>MILESTONES</u>	<u>PLANNED</u>	<u>ACTUAL</u>
57 L/T ISIR	11/21/90	11/21/90
57 L/T JOB 1	07/01/91	

TI-NHTSA 001750

57 P/C ISIR	01/15/91	01/15/91
57 P/C JOB 1	06/03/91	
77PS ISIR	08/01/91	
77PS SOP (TI)	09/01/91	

PRODUCTION PLAN BY MONTH (THOUSANDS) - WITHOUT OVERTAGE

	P/C 57PSL5-3	L/T 57PSL5-2	P/C 77PSL2-1	L/T 77PSL2-X ³
FEB	0	0	0	0
MAR	2	2	0	0
APR	2	0	0	0
MAY	2	0	0	0
JUN	2	0	0	0
JUL	*16.8	*2.3	2	0
AUG	26.5	2.3	2	0
SEP	25.5	2.6	6	0
OCT	0	9.5	**15.6	2
NOV	0	8.5	24.6	2
DEC	0	0	24.6	**9.5

NOTE: PLAN FOR AUGUST AND BEYOND IS TENTATIVE.

* = JOB1 FOR 57PS VERSIONS

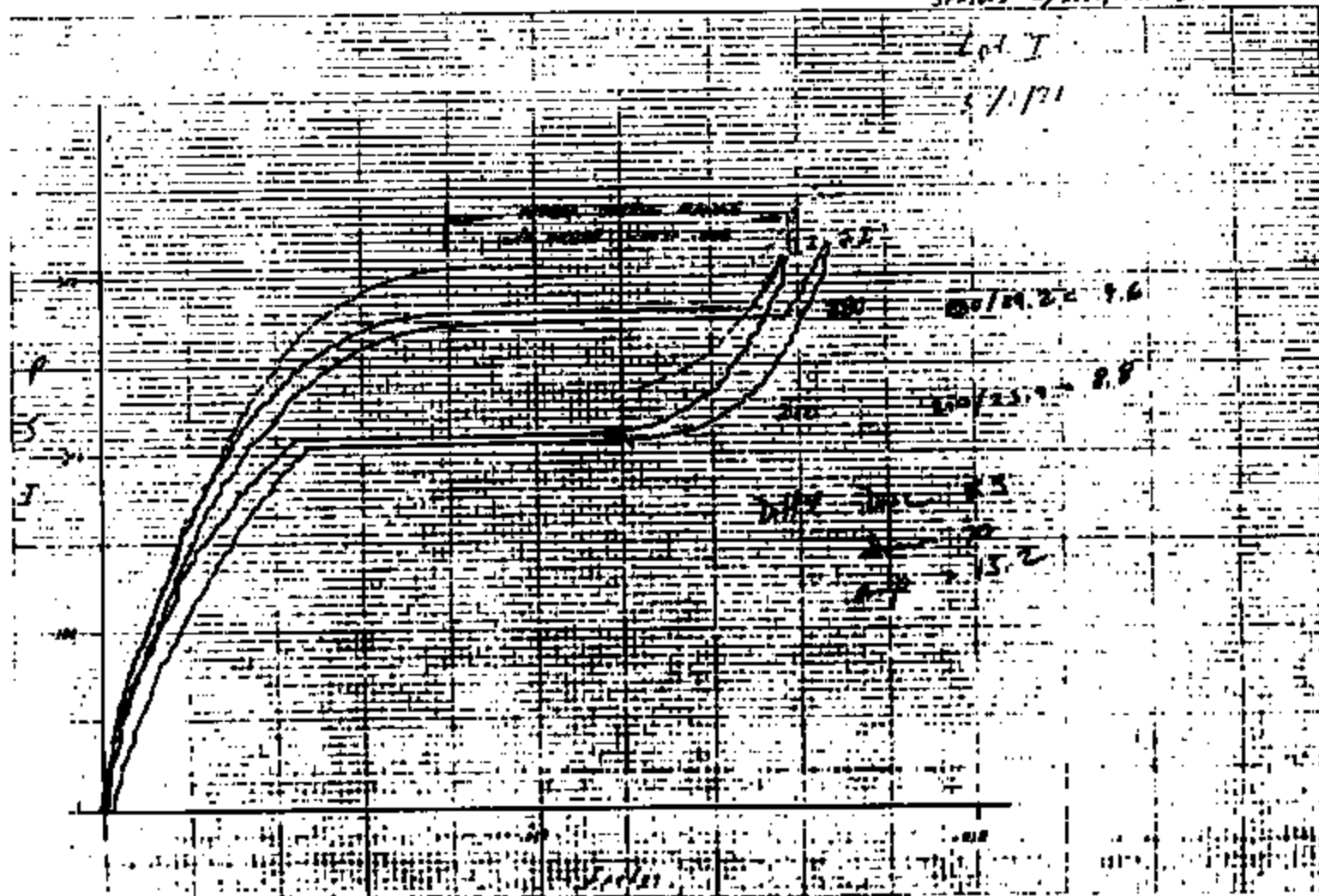
** = TENTATIVE JOB1 FOR 77PS VERSIONS

REGARDS,

DAVE CERN 114-FORD

TI-NHTSA 001760

SUBJECTIVELY, THERE ARE VERY QUIET BUT NOT BLIND

SEASONS w/ Incipient Dike 3

TI-NHTSA 001761

Ed Meyer, Jr. Director - Telecom 3/12/61
(02) 571 - 7426

2. Multiple Krypton/Tellur film

Discussed possibility of forming a composite of 2 or 3 layers
of Krypton/Tellur to simulate in place of the 2 or 3
1st Krypton diaphragms we use in high speed cameras

While it's possible to do, there are some drawbacks and/or
potential problems:

1. Using 3 layers in "webs" can be done - at the time
of 2 or 3 layers. However, the individual layers
separate passing through the illuminating process
→ leads to the cost of the material!
2. Bubbling is serious issue in the tri-layer Krypton
that we buy; due to the rubber layers in the
in the laminating process losing material.
→ Cautioned that additional layers would make
the occurrence of bubbling more likely.

Ed agreed to check to see if DuPont has any
multi-layer composite in stock, so they do further work
on fabrication w/ 3rd Krypton/Tellur multi-layer.

So 710714

SLOTTED TERMINAL PLAN

- 1) MILL SLOTS @ .020", .025", .030"
(THIS IS ONE, BY 7/EACH)
- 2) RIVET SPRINGS (W/ CONTACT) TO TERMINALS (ONE)
- 3) ASSEMBLE INTO BASES & STAKE
- 4) GAGE BASES USING DIAL INDICATOR / CONTINUITY SETUP.
PRE-CALIBRATION, THE GAGE DIM SHOULD BE LOWER
THAN TARGET .092"
- 5) THE PRE-CAL TARGET IS ~ .085" DETERMINE
WHICH SLOT DIMENSION YIELDS THIS.
- 6) MODIFY ALL MOVABLE TERMINALS. HAVE MODEL-
SHOP RESTAMP IF FEASIBLE, OR MILL.
- 7) INVENTORY IT TERM, MV TERM, & SPRINGS PER
THIS ITERATION ONLY. ~ 230

ADDED 710318 :

- 8) BUILD UP AS MANY SWITCHES AS PARTS ALLOW
- 9) CO-ORD W/ MECH; CALIBRATE ALL

TO: BILL SWEET
FM: MATT SELLERS
SJ: HIGHLIGHTS FOR W/E 3/15/91

77P8

MOVABLE TERMINAL FA/MCS DATA AND PARTS HAVE BEEN SUBMITTED THIS WEEK FROM K.F.BASSLER. CORRELATION WITH RECEIVING INSPECTION IS CURRENTLY BEING ASSESSED. BASSLER DATA ALL LOOKS ACCEPTABLE. SAMPLES OFF THIS NEW TOOL ARE ALREADY AT EASTERN AUTOMATION FACILITATING DEBUG EFFORTS.

STATIONARY TERMINAL TOOL HAS SURFACED AN OVERSIGHT ON THE PART OF BASSLER. A SECTION OF OUR TERMINAL DESIGN AS IT EXIST DICTATES A TOOL DESIGN THAT IS LESS THAN DESIREABLE WITH RESPECT TO PUNCH WIDTH. PARALLEL PORTIONS OF THE TERMINAL ARE SO CLOSE TOGETHER THAT A 'THIN' TOOL SECTION, LESS THAN THE 1-1/2 TO 1 RATIO STANDARD, IS REQUIRED. THIS FOR SOME REASON WAS NOT COMPREHENDED BY BASSLER UNTIL DEBUG STARTED THIS WEEK. BASSLER IS CURRENTLY WORKING TO CORRECT THE TOOLING CONCERN BY TIGHTENING UP TOLERANCES BETWEEN THE PUNCH AND HOLDER. THIS WILL POSSIBLY ALLOW USE OF A 'THIN' PUNCH SECTION. A TWO WEEK SCHEDULE SLIP IS ANTICIPATED. HOWEVER, NO CRITICAL SCHEDULE PATHS WILL BE EFFECTED.

THE J512 FLARE 38900-1 HEXPORTS FROM ELCO WERE LEACHED CLEAR WHEN RECEIVED. AS EXPECTED, NO ADDITIONAL ANOMALIES WERE UNCOVERED DURING INSPECTION. T.I. WILL BE TAKING RESPONSIBILITY FOR THE STRIP/RE-PLATE/RE-CHROMATE OPERATIONS, AND CHARGE BACK TO ELCO \$150.00/LOT REWORKED. PROBABLY TWO OR THREE LOTS. THESE HEXPORTS WILL BE USED TO SUPPORT PRODUCTION PILOT BUILDS.

THE VALENTINE CUP TOOL RESUBMISSION WAS MADE AND A FEW DIMENSIONAL ANOMALIES REMAIN: ALL RELATED TO GDT CALLOUTS. MEASUREMENT DIFFICULTIES ARE IN QUESTION. THE MEASUREMENT DIFFICULTIES ARE A SPINOFF OF PART GEOMETRY. THIS DRAWN PART HAS SIDES THAT A 'CURVED' AND POSSES HANGER MARKS. SO THE ESTABLISHMENT OF DATUM REFERENCES IS UNCERTAIN AT BEST. MANUFACTURING ENG. HAS REQUESTED THAT DESIGN ENG. MEASURE THE PARTS THEMSELVES TO GET A FEEL FOR THE SITUATION. MANUFACTURING ENG. HAS ALSO PASSED SOME EXISTING 27288-1 CUPS ON TO RECEIVING TO HAVE THEM MEASURED AGAINST THESE NEW GDT REQUIREMENTS. UPON COMPLETION OF THE TWO ACTIONS, PROBABLY MONDAY, AN ACTION PLAN WILL BE DRAFTED.

POULSEN IND., INC. WILL RESPOND THIS WEEK TO A QUOTE REQUEST ON THE 38900-1 HEXPORT. POULSEN IS A NEWLY IDENTIFIED SUPPLIER THAT HAS COLD HEADING CAPABILITIES, HYDROMATS, EUBAMAS, ETC. ADDITIONALLY THEY HAVE BEEN REQUESTED TO QUOTE BOTH 52PS AND 57PS HEXPORTS.

WORK THUS FAR ON FORD ISIR TERMINAL POSITION ISSUES HAS PROGRESSED STEADILY. THROUGH NESTING IMPROVEMENTS DAVE P. HAS TIGHTENED THE ± 3 SIGMA CAPABILITY THE $\pm .009$ ". (FORD HAS SIGNED ON TO $\pm .008$ ALREADY). WE HAVE NOT, HOWEVER, FULLY SUCCEEDED IN SHIFTING THE MEAN TO THE REQUIRED .020" OFFSET. WE ARE LOOKING AT TWO AREAS TO DO THIS: 1.) STAKING DIRECTION, AND 2.) TERMINAL CHANNELING. CHANGING THE STAKING DIRECTION WILL BE THROWING IN A DESIGN CONCERN OVER TERMINAL STABILITY. EVERY EFFORT IS BEING MADE TO ACHIEVE OUR GOAL WITHOUT HAVING TO INCORPORATE THIS. TERMINAL CHANNELING OF THE BLADE END DURING STAKING HAS SHOWN PROMISING RESULTS. WE ARE CLOSING IN ON THE PROPER TOOL DESIGN, BUT ARE NOT THERE YET. A LOT MORE WILL BE LEARNED TODAY.

CHRYSLER LH PROJECT

ASSEMBLY RIVETERS AND STAKER WERE RELEASED TO DESIGN WITH MECHANIZATION THIS WEEK. THESE TOOLS WILL BE REQUIRED IN SUPPORT OF THE PRODUCTION PROVEOUT RUN IN JUNE. MECHANIZATION HAS BEEN ASKED TO COMMIT TO A MAY 24 DELIVERY. A DETAILED SCHEDULE HAS YET TO BE RECEIVED.

HIGHLIGHTS
Stephen B. Offler
Week Ending 91-03-15

Handwritten: 1/20/91
40216



FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

Marie Crossland called this morning to inform me that she is receiving requests from Ford for 57PSL5-2 production devices. She reports the following needs for -2 (truck):

260	Service	91-02-xx
21	Lorraine B&A	91-03-18
103	"	91-04-22
171	"	91-07-01
476	"	91-09-01

Our plan for the Service parts is to ship parts from the pilot run later this month. However, the 21 for Lorraine are slated for pre-production assembly and should not be delayed. The only holdup to building truck parts is the 36900 hexports, which are being replaced in the AFCC and also have one dimensional discrepancy. They are being replaced because Elco used clear chromate, not yellow as spec'd. Also, visual inspection revealed a problem with the thread lead-in chamfer angle (not included on IQP). It is spec'd as 40-50 degrees, and it was obviously way off even with the naked eye. We sectioned one and measured the chamfer as 25 degrees. Neither the angle nor the AFCC plating will be a problem functionally; so, one option is to use these parts on an SREA.

Valentine's second FAI submission on the rebump cup (27713) still had certain discrepancies. However, it was unclear whether these were actual problems, or measurement technique difficulties, or deviations that were minor in nature and could be rectified with print changes. Matt Sellers and I studied the issues, and I have remeasured them myself. The first, a diameter with a spec. of 0.835-0.839", was measured as 0.8394 by Receiving Inspection but I came up with 0.837-0.838" with a caliper and 0.8374" on a X-section using a TM. The second, a true-position callout of .005" on the disc support bump, was measured by RI as .0109 but I came up with .0020" using a TM. The third, a .005 R MAX callout in two places, is okay in one place but measures .010 in the other. I agree with RI on this one, and Valentine will have to fix the tool. The fourth is a non-critical radius spec'd on the print as .003-.007" (directly from 27288) but is measuring .015. Based on the geometry in the area, I have calculated that the absolute max we can stand is .030R; but I'd like back off from that and use .015R MAX. I plan to change the print for this dimension.

We had an informal meeting with Rick Bassler on the progress of the stationary tool. He presented a difficulty they have run into. Basically, if a flat print is developed from the present 36888 part print, it becomes clear that there is an area that requires a very narrow punch, less than one material thickness. Opening this up removes material from the area which is used to apply force to push the terminal into the base and to support it during staking. We are attempting to reach a compromise.

Jeff has built and measured devices using slotted movable terminals. We have assumed that the pre-calibration bump height should be roughly .005" less than the target of .092". We have determined that a slot of .025" will put the bump in this position pre-cal. We will next determine the best way (stamp, mill) to slot all of our inventory of movable terminals.

HIGHLIGHTS
Stephen B. Offiler
Week Ending 91-03-15

Handwritten: 10/21/91



FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

Marie Crossland called this morning to inform me that she is receiving requests from Ford for 57PSLS-2 production devices. She reports the following needs for -2 (truck):

260	Service	91-02-xx	
21	Lorraine B&A	91-03-18	
103	"	91-04-22	
171	"	91-07-01	} ON PS LINE ?
476	"	91-09-01	

Our plan for the Service parts is to ship parts from the pilot run later this month. However, the 21 for Lorraine are slated for pre-production assembly and should not be delayed. The only holdup in building truck parts is the 36900 hexports, which are being replaced in the AFCC and also have one dimensional discrepancy. They are being replaced because Elco used clear chromate, not yellow as spec'd. Also, visual inspection revealed a problem with the thread lead-in chamfer angle (not included on IQP). It is spec'd as 40-50 degrees, and it was obviously way off even with the naked eye. We sectioned one and measured the chamfer as 25 degrees. Neither the angle nor the AFCC plating will be a problem functionally; so, one option is to use these parts on an SREA.

Valentine's second FAI submission on the rebump cup (27713) still had certain discrepancies. However, it was unclear whether these were actual problems, or measurement technique difficulties, or deviations that were minor in nature and could be rectified with print changes. Matt Sellers and I studied the issues, and I have remeasured them myself. The first, a diameter with a spec. of 0.835-0.839", was measured as 0.8394" by Receiving Inspection but I came up with 0.837-0.838" with a caliper and 0.8374" on a X-section using a TM. The second, a true-position callout of .005" on the disc support bump, was measured by RI as .0109 but I came up with .0020" using a TM. The third, a .005 R MAX callout in two places, is okay in one place but measures .010 in the other. I agree with RI on this one, and Valentine will have to fix the tool. The fourth is a non-critical radius spec'd on the print as .003-.007" (directly from 27288) but is measuring .015. Based on the geometry in the area, I have calculated that the absolute max we can stand is .030R; but I'd like back off from that and use .015R MAX. I plan to change the print for this dimension.

We had an informal meeting with Rick Bassler on the progress of the stationary tool. He presented a difficulty they have run into. Basically, if a flat print is developed from the present 36888 part print, it becomes clear that there is an area that requires a very narrow punch, less than one material thickness. Opening this up removes material from the area which is used to apply force to push the terminal into the base and to support it during staking. We are attempting to reach a compromise.

Jeff has built and measured devices using slotted movable terminals. We have assumed that the pre-calibration bump height should be roughly .005" less than the target of .092". We have determined that a slot of .025" will put the bump in this position pre-cal. We will next determine the best way (stamp, mill) to slot all of our inventory of movable terminals.

TI-NHTSA 001768

-MSG #= 290285 FR-CERN TO-PCQA SENT-03/15/91 09:10 AM
 RF-184 ST-C DIV-0050 CC-00101 BY-CERN AT-03/15/91 09:10 AM

MARCH 15, 1991

TO: RUSTY STRUBLE	RCS2	CC: TOM CHARBONEAU	TC
MIKE DeMATTIA	PCQA	JOHN KOURTESIS	NDRE
CHARLIE DOUGLAS	CPFC	STEVE MAJOR	WHL
DICK GARIEPY	NPFC	ANDY McGUIRE	PCQA
PAUL KOTCH	PRK1	ED O'NEILL	EJON
JOE LAZARE	JNL8	JOE SCHUCK	WHL
STEVE OFFILER	SBO1	GARY SNYDER	CPFC
MATT SELLERS	PCNE	MARTHA SULLIVAN	CPFC
BILL SWEET	PCNE	RAY TOURANGEAU	PCNE
GEORGE LAFOIX	B512	TED BALLARD	AVNE
JIM WATT	PCQA	DAVE VANNEY	FORM
STAN HOMOL	SE2	SCOTT MARTIN	NPFC
		CLAIRE BALTRAZAR	NPFC
		BILL CONGDON	NPFC

FR: DAVE CERN SARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:
 03/14/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR

DATE: 03/21 (THURSDAY)
 TIME: 10:00-11:30 AM ** PLEASE NOTE CHANGE **
 PLACE: CAFETERIA

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* - ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED
 SINCE PREVIOUS MEETING

S7 L/T

Export:

	NBO	WHEN	
* ELCO CONTROL PLAN	KOTCH	01/17	ORIG.
		03/28	REV.
. COMPLETE J512 GAGE (TDR)	SELLERS	04/18	
. L/T PILOT RUN	SELLERS/	01/24	ORIG.
	GARIEPY	03/18	REV.
* CREATE L/T RIS PARTS LIST	OFFILER/	01/24	ORIG.
AND B.O.M.	WILSON	03/12	REV.
		03/13	COMP.
. RESOLVE TERMINAL POS'N ISSUE	TEAM	03/21	
* EVALUATE ANVIL CHANGE IN STAKER	SELLERS/	03/07	ORIG.
	SWEET	03/18	REV.
. DELIVER 260 CUSTOMER SAMPLES	OFFILER	04/01	
* MEASURE EXPORT LEAD IN ANGLE	SELLERS/	03/21	
	OFFILER		

b/ P/C

* OFFSET POLARITY KEY BASE PRINT	OFFILER	11/16	ORIG.
		3/28	REV.

TI-NHTSA 001768

. P/C PILOT RUN	SELLERS/	01/31	ORIG.
	GARIFFY	03/18	REV.
* CREATE P/C HIS PARTS LIST	OFFILER/	01/24	ORIG.
AND B.O.N.	NILSON	03/12	REV.
		03/13	COMP.

77PS

. DESIGN UPDATE	OFFILER	ONGOING	
. MFG/NECH UPDATE	SELLERS	ONGOING	
. REPORT ON TOKICO P.S. RESPONSIBILITY	DOUGLAS	ONGOING	
. PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHASAR	ONGOING	
* UPDATE SPC FILES/RUN CAPABILITY STUDIES	BALTHASAR	ONGOING	
. COMPLETE DESIGN FMEA	OFFILER	04/18	
. COMPLETE PROCESS FMEA	SELLERS	07/01	
* IMPULSE TEST LOW CURRENT CONTACT	OFFILER	03/14	ORIG.
AT SLOWER CYCLE RATE		03/28	REV.
* CORRECTED MODEL SHOP PROD. INTENT PARTS	OFFILER	03/07	ORIG.
- TERMINAL		03/21	REV.
* DETERMINE ACCEPTABLE CALIBRATION WINDOW	OFFILER/	03/14	ORIG.
BY DIMENSIONAL ANALYSIS	SELLERS	03/28	REV.
. VERIFICATION RUN FOR CALIBRATION WINDOW	OFFILER/		
	SELLERS	03/28	
* F/D CHARACTERIZATION OF SPRING ARMS	OFFILER	04/18	
* TOOLING EXPENSE ITEMIZATION	SELLERS	03/14	ORIG.
		03/14	COMP.
* J512 W/SNUBBER SKETCH	OFFILER	03/14	ORIG.
		03/18	REV.
* QUOTE J512 W/SNUBBER	NOTCH	04/04	
* CLARIFY APRIL 01 SAMPLE REQNT.	DOUGLAS	03/21	
J7 TO 77 CONVERSION: PHASE 1 TESTING	BOMOL	05/30	
. IDENTIFY INSPECTION REQNTS. FOR SOP	WATT	06/01	
. 77PS QAS (PRELIMINARY)	WATT	07/01	
. 77PS CHARACTERISTICS SHEETS	WATT	07/15	
. GAGE R&R STUDIES	WATT	07/15	
. 77PS QAS (FINAL)	WATT	08/01	
. SET UP SPC FILES/RUN CAPABILITY STUDIES	BALTHASAR	08/01	
* 57PS TO 77PS CONVERSION - PLAN	BOMOL	03/14	ORIG.
		03/14	COMP.

IQP'S:

* BASE	SELLERS/	02/28	ORIG.
	OFFILER	03/28	REV.
PRODUCTION COMPONENTS:			
* RESOLVE OPEN ISSUES ON CUP	SELLERS/	03/14	ORIG.
	OFFILER	03/21	REV.
* REVIEW CAPABILITY DATA - NOV. TERM.	SELLERS	03/28	
* STATIONARY TERM.	LAVOIE	03/22	ORIG.
(KF BASHLER DELIV. DATE PUSH-OUT)		04/05	REV.
. BASE	SELLERS	03/06	ORIG.
(AFCC DELIV. DATE PUSH-OUT)		03/15	REV.
* 2ND HXPORT LOT DELIVERY	NOTCH	04/05	

MANUFACTURING EQUIPMENT:

. FINAL ASM MACHINE BUILD COMPLETION	SELLERS/	04/15	
	KOUTSIS		
. BASE ASM MACHINE BUILD COMPLETION	SELLERS/	05/31	
	KOUTSIS		
. PRESSURE TESTER BUILD COMPLETION	SELLERS/	06/20	
	KOUTSIS		

TI-NHTSA 001770

FORD AUSTRALIA

FORD AUSTRALIA UPDATE

DOUGLAS ONGOING

DISCUSSION

57 L/T AND P/C

INSPECTION PER THE IQP SHOWED NO DIMENSIONAL PROBLEMS WITH THE HEXPORTS; HOWEVER, STEVE NOTED THAT, VISUALLY, THE LEAD IN ANGLE APPEARS TO BE INCORRECT. STEVE AND NATT WILL REVIEW ACTUAL MEASUREMENTS BEFORE WE COMMUNICATE THIS TO ELCO.

EXPERIMENTATION HAS SHOWN THAT TERMINAL POSITION CAN BE MODIFIED BY CHANGING THE CHANNEL LOCATION IN THE BOTTOM TOOL. AN INITIAL MODIFICATION WAS MADE AND EVALUATED; HOWEVER, THE TOOL ACTUALLY OVERCOMPENSATED AND THE TERMINALS WERE OUT OF POSITION IN THE OPPOSITE DIRECTION. NATT AND DAVE P. ARE WORKING ON A SECOND ITERATION WHICH WILL BE COMPLETED EARLY NEXT WEEK. THEIR EXPERIMENTATION HAS ALSO SHOWN THAT CHANGING THE BEND DIRECTION OF ONE OF THE TABS IMPROVES THE POSITION OF THE TERMINALS RELATIVE TO EACH OTHER. HOWEVER, DESIGN FEELS THAT THE CHANGE IS NOT FEASIBLE, AS IT SIGNIFICANTLY CHANGES THE WAY THE TERMINAL IS SUPPORTED.

77PS

STAN PRESENTED HIS PLAN FOR CONVERTING L-TYPE 57PS'S TO 77PS'S. A TEST DURATION IS ESTIMATED AT 3 MONTHS; TIMING ASSUMES ONE ITERATION OF A FULL VALIDATION TEST, AFTER PRELIMINARY TESTING IS COMPLETED. WE PLAN TO INITIATE THE FIRST PHASE OF THE TESTING WHICH IS DESIGNED TO LOOK AT WORST-CASE 57PS SENSORS.

KE BASSLER HAS ENCOUNTERED PROBLEMS IN THE STATIONARY TERMINAL TOOLING AND, AS A RESULT, WILL BE 2 WEEKS LATE FOR DELIVERY. WE ARE WORKING WITH THEM TO SEE WHERE MINOR DESIGN CHANGES MAY BE MADE TO HELP AVOID A THIN WALL CONDITION IN THE TOOL. THE 2 WEEK PUSHOUT DOES NOT AFFECT ANY PROGRAM MILESTONES.

STAN VOICED CONCERN FOR THE BECKED DOWN REGIONS AROUND THE TOP EDGE OF THE ALUMINUM CRIMP RING - WHERE THE BLANK IS ATTACHED TO THE STRIP. MOISTURE INGRESS MAY BE INCREASED, WHICH IS A POTENTIAL CORROSION PROBLEM. STAN WILL LOOK AT THIS SPECIFICALLY DURING THE CHRYSLER L/H VALIDATION TESTING WHICH BEGINS NEXT WEEK.

MILESTONES	PLANNED	ACTUAL
57 L/T ISIR	11/21/90	11/21/90
57 L/T JOB 1	07/01/91	
57 P/C ISIR	01/13/91	01/13/91
57 P/C JOB 1	06/03/91	
77PS ISIR	08/01/91	
77PS SOP (TI)	09/01/91	

PRODUCTION PLAN BY MONTH (THOUSANDS) - WITHOUT OVERAGE

P/C	L/T	P/C	L/T
------------	------------	------------	------------

TI-NHT&A 001771

	57PSL5-3	57PSL5-2	77PSL2-1	77PSL2-3
FEB	0	0	0	0
MAR	2	2	0	0
1	2	0	0	0
1...	2	0	0	0
JUN	2	0	0	0
JUL	*16.8	*2.3	2	0
AUG	26.5	2.3	2	0
SEP	28.5	2.6	6	0
OCT	0	9.5	**15.6	2
NOV	0	8.5	24.6	2
DEC	0	0	24.6	**9.5

NOTE: PLAN FOR AUGUST AND BEYOND IS TENTATIVE.

* = JOB1 FOR 57PS VERSIONS

** = TENTATIVE JOB1 FOR 77PS VERSIONS

REGARDS,

DAVE CERN 115-FORD

TI-NHTSA 001772

PRESSURE SWITCH DATA

FORM 21605

TEST NO. 131-11-00

DEVICE 77PS	DATE REQUESTED 3/18/91	REQUESTED BY Steve Offler	REQUESTED COMP. DATE
PERFORMED BY Jeffrey R. Deane	DATE STARTED 3/19/91	DATE COMPLETED	APPROVED BY
PROJECT TITLE: Ford MY '91 Electronic Speed Control Reactivate PS			

CUSTOMER:

PURPOSE OF TEST:

Calibration Specification test

PROCEDURE:

Next page

Device #		Alt / Rel	Disc. St	Rel. St	Rel. St				
131-15-01		294/119	.0475						
01		298/124	.0478						
02		298/104	.0478						
04	L	296/107	.0477						
05		293/117	.0476						
06		296/119	.0477						
07	O	290/122	.0476	✓		.156-.153			
08		290/124	.0479						
09		297/112	.0477						
10	T	296/126	.0476						
11		296/118	.0478						
12		297/122	.0478						
13		296/129	.0477						
14		298/132	.0476	✓		.157-.155			
15		292/108	.0478						
16	↑	291/102	.0475						
17	L	298/118	.0477						
18		298/138	.0476						
19		297/121	.0478						
20		298/117	.0477						
21		297/125	.0476						
22		296/112	.0477	✓		.147-.151			
23		299/130	.0475						
24		298/122	.0480						
25		298/115	.0478						
26		299/134	.0476						
27		298/117	.0477						
28		297/118							

TI-NHTSA 001773

Device#		Act/Rel	Rel to	Notes	P.C.
131-15-19	LOT 1	272/111	.0486		
20		272/116	.0475		
131-15-21		132/64	.0485		
32		132/63	.0489		
33	L	140/67	.0483	✓	142-151
34		132/59	.0489		
35		135/63	.0481		
36		132/62	.0489		
37	O	143/67	.0486		
38		141/67	.0487		
39		140/66	.0487		
40	T	137/57	.0487	✓	146-151
41		136/56	.0487		
42		136/55	.0488		
43		132/57	.0486		
44	2	138/58	.0481		
45		138/59	.0487		
46		137/67	.0487		
47	A	135/70	.0481		
48		143/74	.0489		
49		140/76	.0487		
50		142/57	.0485		
51		145/72	.0487		
52		110/67	.0485		
53		126/72	.0486		
54		132/66	.0487	✓	147-151
55		140/64	.0486		
56		138/62	.0486		
57		132/60	.0486		
58		135/63	.0487		
59	▼	140/71	.0489		
60		142/72	.0487		
131-15-41	L	130/69	.0489		
62		132/59	.0489		
63		140/79	.0488		
64	O	140/70	.0487		
65		132/71	.0488		
66	T	143/75	.0488		
67		135/72	.0487		
68	2	136/68	.0489		
69		136/65	.0487		
70	8	141/71	.0482		
131-15-71	L	147/44	.0484	✓	147-151
72		140/44	.0486		
73		140/40	.0488		
74	O	144/45	.0482		
75		141/43	.0486		
76	T	147/47	.0488		
77		142/44	.0485		
78		141/49	.0485		
79		140/40	.0484	✓	146-150
80	3	140/41	.0485		
81		140/40	.0486		
82		140/41	.0487		

TI-NHTBA 001774

Dev. #		Act/Rat	Dist To Reference	Unit Cost	Rate				
41-10-03		601/454	.0452						
81	L	595/404	.0452						
82		596/412	.0458						
83		593/405	.0455						
84		574/414	.0455						
85	O	600/416	.0465						
86		603/433	.0456						
87	T	594/407	.0456						
88		593/409	.0461						
89		594/421	.0456						
90		595/404	.0458	✓	.0452-451				
91	3	594/412	.0452						
92		605/419	.0456						
93		604/419	.0455						
94		575/409	.0453						
95		606/435	.0454						
96		586/407	.0455						
100		593/419	.0455						

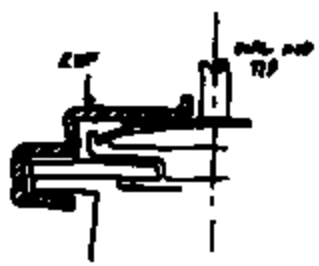
TI-NHTSA 001775

77PS CALIBRATION SPECIFICATION TEST

TEST LOT DESCRIPTION

		QTY
LOT 1:	LIGHT TRUCK DISCS w/ 27200 LIPS	30
LOT 2:	PASS-CAR DISCS w/ 27713 LIPS	10
LOT 2/B:	PASS-CAR DISCS w/ MODEL SHOT RUMPS	10
LOT 3:	SDS (UNHEED-INDICATING) OBTAIN FROM MDD.	30

- 1) CHAR. EVERY SENSOR (ALL LOTS)
- 2) CHOOSE 3 AT RANDOM FROM EACH OF LOTS 1, 2, 3 (NO 2/B NEEDED)
- 3) RECORD HATCHET CURVES ON THESE
- 4) GET A SINGLE 77PS SWITCH - SHOULD MEASURE CLOSE TO .092" - USE THIS ONE SW. TO DO A PIN-WINDOW ON EACH SENSOR FROM STEP 3.
- 2) MEASURE DISC POSITION RELATIVE TO REF SURFACE ON ALL SENSORS IN ALL LOTS



STPS Terminal Position
Process Improvement

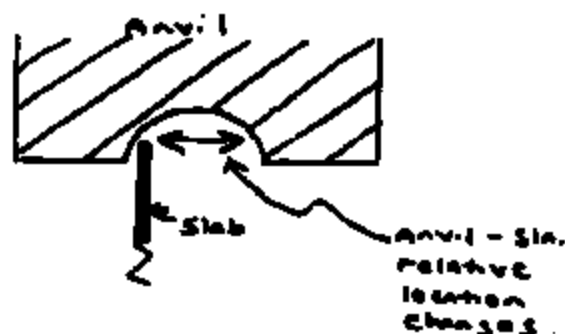
Pg 2 of 2

3/19/91

CONT . . .

Nominal to the previous position without losing gains made with Sigma.

- 0 Nominal Shifts to the right terminal position will require additional tooling iterations and Analysis. Another week or so will be required. Efforts will include investigating "Offset Channel" locations and also Anvil positional changes.



End

PRESSURE SWITCH DATA

Form 21605

TEST NO. 131. 11

DEVICE 77PS	DATE REQUESTED 3-19-91	REQUESTED BY Steve Coffey	REQUESTED COMPL. DATE
PERFORMED BY Jeffrey D. Venable	DATE STARTED 3-19-91	DATE COMPLETED	APPROVED BY
PROJECT TITLE: 114 '92 Electronic speed control project			

CUSTOMER:

PURPOSE OF TEST:

Next pages

PROCEDURE:

Device #	P.A. #	P.A. window	P.A.	P.A. location	Act/Rel	in Drop			
124-0 201	91.9	191-195	.141	Low	138/70	3.3			
01	91.0		.143		138/72	5.2			
02	91.5		.141		138/72	7.3			47.5K complete
03	92.0		.142		137/66	5.4			
04	90.6		.142	Middle	138/78	5.1			
05	92.9		.144		140/72	5.8			T cycles
06	91.8		.144		134/98	6.0			
07	93.4		.144		132/69	7.4			
08	92.5		.145	High	135/91	6.6			OP back
09	91.7		.145		139/73	7.7			
10	92.3		.146		138/90	6.8			
11	92.1		.145		140/73	6.7			

TI-NETSA 001778

(OVER)

Thermal cycles
warm

cold

Cycle	Exhibit Temp	Fluid Temp	Date	Time		Actual Temp	Target Temp	Unit	Time
1	40	39	4/2/91	1:25	/	-40	-40	4/2/91	2:55
2	41	40	4/2/91	3:25	/	-43	-40	"	7:20
3	40	39	4/2/91	5:05	/	-43	-41	4/2/91	7:15
4	42	40	"	7:50	/	-43	-42	4/2/91	11:30
5	40	40	"	11:35	/	-44	-41	"	1:40
6	40	38	"	5:55	/	-43	-43	4/2/91	7:55
7	44	37	4/2/91	8:25	/	-43	-43	"	10:15
8	43	41	"	11:50	/	-44	-41	"	11:55
9	42	39	"	11:40	/	-44	-41	"	1:50
10	42	41	"	2:25	/	-44	-43	"	4:00

Impulse

(covered)

Device #	Frequency	Act/Re/	Multiplier	P. Loss
114-07-01		138/80	5.6	70.7
02		143/81	10.2	92.8
03	2 Hz	152/81	8.7	90.9
04		137/77	8.2	91.3
05		130/75	4.1	90.3
06		144/80	2.5	92.6
114-07-07		139/78	7.4	73.0
08		140/77	6.3	72.9
09	1 Hz	139/76	8.6	91.9
10		138/77	7.8	91.8
11		141/80	11.7	92.0
12		140/82	13.12	91.5

TI-NHTSA 001779

SLOTTED TERMINAL PLAN

- 1) MILL SLOTS @ .020", .025", .030"
(THIS IS ONE, BY 7/EACH)
- 2) RIVET SPRINGS (W/ CONTACT) TO TERMINALS (ONE)
- 3) ASSEMBLE INTO BASES & STAKE
- 4) GAGE BASES USING DIAL INDICATOR / CONTINUITY SETUP.
PRE-CALIBRATION, THE GAGE DIM SHOULD BE LOWER
THAN TARGET .092"
- 5) THE PRE-CAL TARGET IS ~ .085" DETERMINE
WHICH SLOT DIMENSION YIELDS THIS.
- 6) MODIFY ALL MOVABLE TERMINALS. HAVE MODEL-
SHOP RESTAMP IF FEASIBLE, OR MILL.
- 7) INVENTORY AT TERM, MV TERM, & SPRINGS FROM
THIS ITERATION ONLY. ~ 250

~~XXXXXXXXXX~~ 920318 :

- 8) BUILD UP AS MANY SWITCHES AS PARTS ALLOW
- 9) CO-ORD W/ MECH; CALIBRATE ALL

77 IS PROTOTYPE VERIFICATION TEST

GOAL:

THE PRIMARY PURPOSE OF THIS TEST IS TO MAKE SURE THE MODEL-SHOP SLOTTED TERMINALS DO NOT CAUSE ANY DIFFICULTIES I.E. RIVETS LOOSENING.

A SECONDARY PURPOSE IS TO RUN A SEPARATE VERSION OF THE POWERED IMPULSE TEST TO DETERMINE IF HEAT-BUILD-UP IS A FACTOR.

PROCEDURE:

- 1) BUILD & CALIBRATE 77'S W/ MODEL-SHOP SLOTTED TERMINALS.
- 2) MEASURE PIN-GAGE DIM ON 12 SWITCHES
- 3) BUILD * DEVICES W/ PASS-CAVE SENSORS; CHAR & mV
- 4) BEGIN COMBINED T.C. AND IMPULSE TEST. DEVICES MUST SEE 475K UNPOWERED CYCLES W/ IMPULSE MONITOR; HOWEVER, IT IS NOT NECESSARY TO COMPLETE A FULL 25 TC'S DUE TO TIME CONSTRAINTS.
- 5) AT COMPLETION OF 475K UNPOWERED, CONNECT 6 DEVICES TO INDUCTOR BANK AND RUN 25K CYCLES @ ~0.2 Hz
- 6) AT COMPLETION OF THE WAVE, REMOVE THE FIRST 6. CONNECT THE REMAINING 6 AND RUN THE NORMAL 25K POWER CYCLES @ ~2 Hz.
- 7) PERFORM FINAL CHAR & mV; DISASSEMBLE; REMEASURE PIN-GAGE DIM; INSPECT CONTACTS.

* NOTE: PERFORM A PIN-WINDOW BEFORE BUILDING DEVICES. PIN @ NEAR LOW END, @ IN MIDDLE, AND @ NEAR HIGH END.

TIMING ASSUMPTIONS (9/11/87):

- | | | | |
|----|-----------------------------------|------------------------|----------------------|
| 1 | 3/28 | | |
| 2 | 4/1 | | |
| 3 | | | |
| 4 | | | |
| 5 | 4/1 P.M. RUN | ~ 120 cyc. | } ~ 2,5 Hz as needed |
| 6 | 4/2 STC'S | ~ 120 cyc. | |
| 7 | 4/3 STC | ~ 120 cyc | |
| 8 | 4/4 STC'S | ~ 120 cyc | |
| 9 | 4/5 Fast power / start slow power | | |
| 10 | 4/6 Finish, shut, | 4/9 reportable results | |

TEST 134-07-12

#	INITIAL			FINAL										DELTA	
	GAUGE	PIN	LOC.	ACT	REL	uV	POWER	GAUGE	ACT	REL	uV	GAUGE	DELTA	uV	DELTA
1	91.8	0.141	low	130	70	3.3	10.1 Hz	90.7	130	80	5.6	-1.1		2.3	
2	94	0.143	low	141	72	5.2	10.2 Hz	92.8	143	81	10.2	-1.2		5	
3	91.5	0.141	low	135	73	4.3	10.2 Hz	90.4	137	81	4.9	-1.1		0.6	
4	93	0.142	low	137	66	5.4	10.2 Hz	91.5	137	77	0.2	-1.5		1.0	
5	90.6	0.142	med	138	70	5.1	10.2 Hz	90.3	130	75	4.1	-0.3		-1	
6	92.9	0.144	med	140	77	5.8	10.2 Hz	92.6	140	80	0.5	-0.3		2.7	
7	92.8	0.144	med	134	72	6	2 Hz	93	138	78	7.4		0.2	1.4	
8	93.4	0.144	med	132	68	7.4	2 Hz	92.9	140	77	4.3		-0.5	-1.1	
9	92.5	0.145	high	135	71	6.4	2 Hz	91.9	139	76	3.6		-0.6	2	
10	91.7	0.145	high	139	73	7.4	2 Hz	91	130	77	0.8		-0.7	1.4	
11	92.9	0.146	high	138	80	6.8	2 Hz	92	143	80	11.9		0.1	5.3	
12	92.1	0.145	high	141	73	6.7	2 Hz	92.5	140	82	131.7		0.4	125	
				137.3	72.7			130.4	70.6			-0.91	-0.10	12.06	1.76
				2.7	3.9			3.0	2.2			10.456	0.429	11.87	1.98

7715 PROTOTYPE VERIFICATION TEST

GOAL:

THE PRIMARY PURPOSE OF THIS TEST IS TO MAKE SURE THE MODEL-SHIP SLATED TERMINALS DO NOT CAUSE ANY DIFFICULTIES I.E. RIVETS LOOSENING.

A SECONDARY PURPOSE IS TO RUN A SLOWER VERSION OF THE POWERED IMPULSE TEST TO DETERMINE IF HEAT-BUILD-UP IS A FACTOR.

PROCEDURE:

- 1) BUILD & CALIBRATE 77'S w/ MODEL-SHIP SLATED TERMINALS.
- 2) MEASURE PIN-GAGE DIM ON 12 SWITCHES
- 3) BUILD ²⁰ DEVICES w/ PASS-FARE SENSORS; CHARGE & MV
- 4) BEGIN COMBINED T.C. AND IMPULSE TEST. DEVICES MUST SEE 475K UNPOWERED INLET w/ IMPULSE MONITOR; HOWEVER, IT IS NOT NECESSARY TO COMPLETE A FULL 25 TC'S DUE TO TIME CONSTRAINTS.
- 5) AT COMPLETION OF 475K UNPOWERED, POWER 6 DEVICES TO IMPULSE GAGE AND RUN 25K INLET @ ~0.2 Hz
- 6) AT COMPLETION OF THE ABOVE, REMOVE THE FIRST 6. POWER THE REMAINING 6 AND RUN THE NORMAL 25K POWER INLET @ ~2 Hz.
- 7) PERFORM FINAL CHARGE & MV; DISASSEMBLE; REMEASURE PIN-GAGE DIM; INSPECT CONTACTS.

* NOTE: PERFORM A PIN-WINDOW DEVICE SLOWDOWN DEVICES. RUN @ NEAR LOW END, @ IN MIDDLE, AND @ NEAR HIGH END.

TIMING ASSUMPTIONS (HURRY):

- | | | | |
|-----|------------------------------|--------------|----------------------|
| 3 | 3/20 | | |
| 3/2 | 4/1 | | |
| 4/1 | P.M. RUN | ~ 120 sec. | } ~ 2.5 hr as needed |
| 4/2 | 5 TC'S | ~ 120 sec. | |
| 4/3 | 3 TC'S | ~ 120 sec. | |
| 4/4 | 3 TC'S | ~ 120 sec. | |
| 4/5 | Fast power/ start slow power | | |
| 4/6 | Finish, shut, | 49 w/ 1/2 hr | |

SAMPLE REPORT

REASON FOR REPORT	VENDOR	P.O.	PART NO.	REV.
NEW PART	<u>I</u>		<u>5-25</u>	
REPLACEMENT TOOL	REPORT REC'D BY	DATE	INSPECTED BY	DATE
CONNECTED TOOL	<u>K. M. Sellers</u>	<u>3/21/71</u>	<u>Lave Bon-pel.</u>	<u>3/21</u>
REPAIRED TOOL	THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' T-40-405 RECORD NO. 1 ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DEVIATE FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION FOR EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.			
REVIEW				
OTHER				

Device	CIRCLE ALL OUT OF TOLERANCE DIMENSIONS!	DISPOSITION			
		LEFT	RIGHT	LEFT	RIGHT
1	Spec. per Print	Terminal	Terminal		
2		.564	.610		
3		.630	.610		
4		.490	.564		
5		.640	.635		
6		.556	.615		
7		.640	.640		
8		.575	.625		
9		.551	.615		
10		.546	.574		
11		.435	.516		
12		.549	.610		
13		.541	.564		
14		.495	.551		
15		.475	.511		
16		.465	.516		
17		.564	.610		
18		.521	.526		
19		.615	.635		
20		.465	.521		
21		.450	.521		

REMARKS AND/OR INSTRUCTIONS:

DISPOSITION: TOOL APPROVED FOR PROD.	RESUBMISSION REQ'D
MFG. ENG.	QRA ENG.
	PURCH. AGENT

Abstract

Page 2

SAMPLE REPORT

REASON FOR REPORT	VENDOR	P.O.	DATE	REMARKS
NEW PART	T. J.			
REPLACEMENT TOOL	REPORT REQ. BY	DATE	INSPECTED BY	DATE
CORRECTED TOOL	X 10. S. 16.3	12/1/81	James R. - 200	200
REPAIRED TOOL	THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' DIMENSIONS REGARDING ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DEPART FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION FOR EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.			
REVIEW				
OTHER				

#	Device	Spec. for Point	CIRCLE ALL OUT OF TOLERANCE DIMENSIONS				DISPOSITION
			10.9.0.1 Terminal	10.9.0.2 Terminal	(3 pins) 10.9.0.3 Center	(4 pins) 10.9.0.4 12.7.0.1	
21			.569	.556			
22			.584	.579			
23			.556	.564			
24			.569	.569			
25			.599	.610			
26			.594	.551			
27			.546	.559			
28			.546	.556			
29			.556	.599			
30			.605	.635			
31			.610	.630			
32			.594	.599			
33			.579	.610			
34			.579	.536			
35			.574	.610			
36			.646	.635			
37			.630	.594			
38			.564	.546			
39			.630	.574			
40			.630	.630			
			mm	mm			
	2		.566	.583	.022	.023	
	5		.056	.039	.022	.015	
	25		.734	.700	.0289	.0276	
	25		.240	.406	.057	.063	

REMARKS AND/OR INSTRUCTIONS:

DISPOSITION: TOOL APPROVED FOR REQD.	REVISIONS REQ'D
MFG. ENG.:	QRA ENG.:
	PURCH. AGENT:

SAMPLE REPORT

REASON FOR REPORT	VENDOR <u>T. J.</u>	P.O.	PART NO. <u>5705</u>	REV
NEW PART	REPORT REQ. BY <u>CO. Sec 10.3</u>	DATE <u>3/21/81</u>	INSPECTED BY <u>Daye De-201</u>	DATE <u>3/23</u>
REPLACEMENT TOOL.	THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' PROMISE REGARDING ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DEVIATE FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION IN EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.			
CORRECTED TOOL.				
REPAIRED TOOL.				
REVIEW				
OTHER				

# Device	CIRCLE ALL OUT OF TOLERANCE DIMENSIONS!				DISPOSITION
	Spec. per Print	Left	Right	Spec. per Print	
21		.569	.556		
22		.584	.579		
23		.556	.564		
24		.569	.565		
25		.599	.610		
26		.594	.581		
27		.546	.559		
28		.546	.556		
29		.556	.599		
30		.605	.635		
31		.610	.630		
32		.594	.599		
33		.579	.610		
34		.579	.536		
35		.574	.610		
36		.696	.655		
37		.630	.574		
38		.564	.546		
39		.630	.574		
40		.630	.630		
		mm	mm		
	<u>Σ</u>	.566	.583	.0223	.023
	<u>C</u>	.056	.039	.0022	.0015
	<u>- 35</u>	.724	.700	.0229	.0236
	<u>- 30</u>	.298	.406	.0157	.0182

REMARKS AND/OR INSTRUCTIONS: 1

DISPOSITION: TOOL APPROVED FOR PROB.	RETURNED TO REQ'D
MFG. ENG.:	ORA ENG.:
	PURCH. AGENT:

TEXAS INSTRUMENTS

174,0000 14-0000-00710 01700

PAGE 2

SAMPLE REPORT

REASON FOR REPORT	VENDOR	P.O.	PORT NO.
NEW PART	T. J.		3705
REPLACEMENT TOOL.	REPORT REQ. BY	DATE	INSPECTED BY
CORRECTED TOOL.	X M. S. 10.3	3/21/91	Daye D. 201.
REPAIRED TOOL.			
REVIEW	THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' FINDINGS REGARDING ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DIFFER FROM THE SPECIFIED DIMENSIONS, THE DISPOSITION MUST INDICATE THE REQUIRED ACTION. EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.		
OTHER			

CIRCLE ALL OUT OF TOLERANCE DIMENSIONS						DISPOSITION	
# Device	Spec. Inc. Point	Left	Right	(STN) Left	(STN) Right		
21		.569	.556				
22		.584	.579				
23		.556	.564				
24		.569	.569				
25		.599	.610				
26		.594	.551				
27		.546	.559				
28		.546	.556				
29		.556	.599				
30		.605	.635				
31		.610	.630				
32		.594	.599				
33		.579	.610				
34		.579	.536				
35		.574	.610				
36		.696	.635				
37		.630	.574				
38		.564	.546				
39		.630	.574				
40		.630	.630				
		mm	mm	in	in		
	X	.566	.583	.0223	.022		
	C	.556	.579	.0228	.0215		
	.25	.734	.700	.0289	.0270		
	.20	.398	.406	.0157	.0162		

REMARKS AND/OR INSTRUCTIONS: 1

DISPOSITION: TOOL APPROVED FOR REUSE.	REMARKS REQ'D
NPS. ENG.:	ORA ENG.:
	PURCH. AGENT:

FORM NO. 00700

TI-NHTSA 001788

**TEXAS
INSTRUMENTS**

~~- in West office~~
~~- Ref~~

Page 1 of 2

7

THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' FINDINGS REGARDING THE ACTUAL VALUES FOR ALL CHARACTERISTICS MEASURED. IN CASES WHERE ACTUAL VALUES DEVIATE FROM THE SPECIFIED DIMENSIONS, THE DEVIATION INDICATES THE REQUIRED ACTION FOR EACH NON-COMFORMANCE IN THE APPROPRIATE COLUMN.

4ARKS AND/OR INSTRUCTIONS:

1992

TI-NHTSA 001789



A FURTHER INVESTIGATION INTO THE

PAGE 1 OF 1

SAMPLE REPORT

REASON FOR REPORT		VENDOR		P. N.		PART NO.		REV.	
NEW PART		Texas Instruments				57F5LS-3			
REPLACEMENT TOOL.		REPORT REC BY		DATE		INSPECTED BY		DATE	
CORRECTED TOOL.				4-5-91		J. Morgan		4-5-91	
REPAIRED TOOL.		THE DIMENSIONS INDICATED BELOW REPRESENT TEXAS INSTRUMENTS' FINISHED MEASUREMENTS. PLEASE ENTER ACTUAL VALUES DEVIATING FROM THE SPECIFIED DIMENSIONS. FOR DIMENSIONS NOT INDICATE THE REQUIRED ACTION FOR EACH NON-CONFORMANCE IN THE APPROPRIATE COLUMN.							
REVIEW									
OTHER									

[illegible]

REMARKS AND/OR INSTRUCTIONS:

DISPOSITION: TOOL APPROVED FOR PROB.	RESUBMISSION REQ'D
MFG. ENG.:	QMA ENG.:
	PURCH. AGENT:

TO: BILL SWEET
FM: MATT SELLERS
SJ: HIGHLIGHTS FOR W/E 3/22/91

77PS

THE LOW RATIO CUP TOOL WITH VALENTINE IS NEARING APPROVAL. VALENTINE'S RESUBMISSION HAS ERADICATED ALL DIMENSIONAL ISSUES IDENTIFIED ON OUR FAI EXCEPT FOR ONE INSIDE RADIUS. THE INSIDE RADIUS OF THE CONVERTER SUPPORT AREA IS STILL LARGE BY ABOUT .005"R. VALENTINE HAS INDICATED THAT THE TOOL DESIGN WILL NOT ALLOW ANY FURTHER TIGHTENING OF THE DIMENSION. INSPECTION OF THE CURRENT 27288 CUP SUPPORTS THIS CLAIM. IT APPEARS THAT VALENTINE HAS IMPROVED QUITE A BIT FROM 27288 TO THIS NEW CUP WITH RESPECT TO THIS RADIUS. IT'S OBVIOUSLY NOT A FUNCTIONAL CONCERN, AND DESIGN HAS BEEN ASKED TO COMPLETE A CROSS-SECTIONAL ANALYSIS AND PAPER STUDY TO SUPPORT AN ECN. THIS WILL ALLOW APPROVAL OF THE CUP TOOL.

THE MOVABLE TERMINAL TOOL FAI CORRELATION STUDY ORIGINALLY HAD INDICATED SEVERAL DIMENSIONAL ISSUES WITH THE NEW TOOL AT BASSLER. HOWEVER, SUBSEQUENT MEETINGS WITH BASSLER AND T.I. INSPECTORS HAVE SHOWN THAT THE T.I. INSPECTOR MADE SEVERAL DEVIATIONS FROM THE STATUS QUO MEASUREMENT PROCEDURES. RE-MEASURING THE SAME PARTS HAS CLEARED UP THE MAJORITY OF THE ISSUES. TWO ISSUES REMAIN HOWEVER; THE BLADE TIP ANGLE, AND THE BURR REMOVAL CHAMFER DIMENSION. THE LATTER WILL BE FIXED BY ECN, AND BASSLER WILL FIX THE ENVELOP SPECIFIED TIP ANGLE DIMENSION. BASSLER FIX SCHEDULE FORTHCOMING.

THE 4300 36900-1 J512 HEXPORTS ARE BEING REJECTED BACK TO ELCO. T.I. FOUND THE THREAD LEAD-IN ANGLE, (SPEC'D 41 TO 49 DEGREES), RUNNING ABOUT 25 DEGREES. THIS DIMENSION IS NON-NEGOTIABLE WITH FORD. THE "I TOLD YOU SO" HERE IS THE REQUESTED PROCESS CONTROL PLAN FROM ELCO THAT TO DATE HAS NOT BEEN RECEIVED. ELCO DID NOT INTEND ON PERFORMING A FULL DIMENSIONAL LAYOUT ON THIS NEW PRODUCTION PART - AS A T.I. APPROVED CONTROL PLAN WOULD REQUIRE. ELCO'S RECOVERY PLAN IS TO SUPPLY ANOTHER LOT OF 10K HEXPORTS NOT LATER THAN 4/3/91. ELCO HAS BEEN TOLD THAT A FULL 5-PIECE FAI SUBMISSION MUST ACCOMPANY THE LOT. THIS IS IMPACTING THE PILOT RUN, BUT WILL MOST LIKELY NOT IMPACT CUSTOMER.

THE TDR HEXPORT CHAMFER GAUGING SYSTEMS ARE AHEAD OF SCHEDULE - WITH A PROJECTED DELIVERY OF FIRST WEEK IN APRIL. ELCO WILL BE PROVIDED COMPLETE GAUGING INSTRUCTIONS WITH THEIR SYSTEM.

TI-NHTSA 001791

FORD PASS CAR DIVISION HAVE PULLED IN REQUESTED SHIPMENTS DRASTICALLY. THEY NOW NEED 20K DEVICES IN MAY! THIS WILL BE MARGINALLY TIGHT, BUT IT CAN BE DONE IF THE HEXPORT FIASCO IS RESOLVED AS CURRENTLY PLANNED.

CONCERNING THE 77PS SENSOR ASSEMBLY AMI. THE CALENDAR YEAR FORECAST THROUGH 1998 INDICATES THAT THE AMI#2 SENSOR MACHINE MAY REASONABLY BE EXPECTED TO SUPPORT DEMAND THROUGH 1994/1995 IF UPGRADES TO IDENTIFIED STATIONS ARE COMPLETED. AMI#2 WOULD BE REQUIRED TO PUMP OUT ABOUT 8KK SENSORS/YEAR. ASSUMING FORD IS BUYING CAPACITY WITH THEIR MONEY, T.J. MAY BE ABLE TO REDUCE TOTAL PROGRAM COST BY OVER \$350K WITH THIS APPROACH.

TERMINAL POSITION ISIR. SEE ATTACHED UPDATE WHICH WAS SHOWN TO FORD BY DAVE CZARN. T.J. STILL HAS TWO WEEKS TO COMPLETE IMPROVEMENT EFFORTS.

CHRYSLER LH PROJECT

BASSLER HAS SUBMITTED DETAILED TOOLING SCHEDULES FOR THE TERMINALS COMMITTING THEM TO THE JUNE 7, 1991 DELIVERY. AFCC MOLDING SCHEDULE STILL HAS NOT BE RECEIVED. THE MECHANIZATION COMMITMENT TO THE REQUESTED MAY 25, 1991 DELIVERY STILL HAS NOT BE RECEIVED.

52PS GENERAL

A HORRIFYING SIGHT WAS PRESENTED THIS WEEK AS A MANUFACTURING ENGINEER ROUNDED THE CORNER TO VIEW THE AMI#2 SENSOR MACHINE BEING OPERATED BY TWO OPERATORS: ONE WAS FEEDING WASHER/CONVERTER ASSEMBLIES WHILE THE OTHER WAS OILING CUPS. AFTER RE-GAINING SELF CONTROL - AN ASSESSMENT OF WHY WAS TAKEN. APPARENTLY THE SYSTEM HAD DEGRADED AGAIN TO A POINT WHERE SLIVERS WERE APPEARING AND CRIMP DIAMETER WAS SKEWING HIGH. AFTER REVIEWING THE SITUATION, TOOL ROOMMECH DISMISSED IT AS 'CUP GEOMETRY' PROBLEMS AGAIN, INSTRUCTED THE LINE TO OIL, INSTRUCTED MATERIAL PLANNING TO SORT THE ENTIRE WAREHOUSE FOR CUP PROBLEMS, AND LEFT. AFTER BRINGING EVERYONE BACK TO THE MACHINE WITH CHART RECORDERS, ETC. IT WAS DISCOVERED THAT ALL NESTS WERE LOOSE, AND PRESSURE PROFILES WERE ALL WRONG. AFTER FIXING THESE THINGS WE WERE AGAIN BACK IN CONTROL. MECHANIZATION HAS BEEN ASKED TO DOCUMENT DAILY OR WEEKLY PMS THAT WILL CHECK THESE THINGS OUT. THE LINE HAS BEEN INSTRUCTED TO NOT ACCEPT OIL ANY MORE. WE HAVE SHOWN THAT CUP GEOMETRY HAS NEGLIGIBLE IMPACT ON CRIMP QUALITY, AND CHROMATE WILL MAINTAIN AN ACCEPTABLE CRIMP IF THE SYSTEM IS SET-UP RIGHT.

-MSG MSG 14057 FR=CZRN TO=TC SENT=03/22/91 08:58 AM
R#003 BT=C DIV=0050 CC=00101 BY=CZRN AT=03/22/91 02:52 AM

TO: CHARLIE DOUGLAS CPPC
MATT SELLERS PCME
STEVE OFFILER BBO1
JIM WATT PCQA
JOE SCHUCK WHLZ
CC: BILL SWEET PCME
GARY SNYDER CPPC
STEVE MAJOR WHLZ
TOM CHARBONEAU TC
RAY TOURANDEAU RGT2
MARTHA SULLIVAN CPPC
ED O'NEILL EJOH

FR: DAVE CZARN ZARN

RE: FORD VISIT - CRUISE CONTROL P/S - 3/20/91

JOE AND I MET WITH GEORGE RANDALL (TRUCK) AND BRUCE
PEASE (CAR), TO DISCUSS OVERALL PROGRAM ISSUES.

o WE REVIEWED OUR PROGRESS IN IMPROVING TERMINAL
POSITION ON THE 57PS. AS YOU KNOW, OUR INABILITY TO MEET
A 0.4MM TOLERANCE HAS DELAYED OUR IBR APPROVAL.
APPROVAL IS BECOMING INCREASINGLY IMPORTANT, AS WE ARE
BEGINNING TO RECEIVE PRODUCTION ORDERS. NEITHER
ENGINEER WANTS TO ALLOW A DEVIATION TO THE SPECIFICATION
ON START-UP.

MATT'S SUMMARY OF THE LATEST EFFORTS IN THIS AREA
HIGHLIGHTED TO FORD THAT WE ARE SPENDING SIGNIFICANT
EFFORT TO IMPROVE THE PROCESS. I BELIEVE BOTH ENGINEERS
WILL ALLOW SOME FURTHER RELAXATION OF THE SPEC IF WE
CAN DEMONSTRATE WHAT OUR BEST EFFORT CAPABILITY IS
WITHIN THE NEXT TWO WEEKS. THIS NEEDS TO BE GIVEN TOP
PRIORITY.

ACTION:

COMPLETE TOOLING MODIFICATION AND	SELLERS/	04/01
PERFORM CAPABILITY STUDY	WATT	
SUBMIT IBR FOLLOW-UP TO FORD SQA	WATT	04/04

o WE DISCUSSED TOKICO'S EFFORTS IN SUPPLYING A MASTER
CYLINDER FOR TRUCK FOR MY93/94 (?), TO GET A READING ON
... ELSE MAY BE TRYING FOR THE BUSINESS. WHILE WE WERE
UNABLE TO GET MORE INFORMATION HERE, WE DID LEARN THAT
THERE IS INTEREST AT 2 MY95 PLATFORMS (FN-74 AND VN-101 ?)
TO MOVE THE P/C SWITCH TO THE MASTER CYLINDER. THE
PRESENT 77PS IS TOO LARGE, HOWEVER, AND BRUCE PEASE
URGED US TO CONSIDER A SMALLER PACKAGE DESIGN. HE SAID
HE UNDERSTANDS THERE ARE "OTHER SWITCHES" AVAILABLE

TI-NHTSA 001793

AT THIS BUSINESS ?? WE SHOULD KEEP WELL INFORMED IN THIS AREA SO WE CAN ACCOMMODATE A DESIGN CHANGE IN THE FUTURE IF WARRANTED. INCIDENTALLY, BRUCE MENTIONED THAT ANY SYSTEM WITH ABS WILL KEEP THE SWITCH ON THE PROP VALVE; NON-ABS SYSTEMS ARE CANDIDATES FOR MOVING THE SWITCH TO THE MASTER CYLINDER. (JCE, LET ME KNOW IF YOU UNDERSTOOD THIS DIFFERENTLY.)

ACTION:

PROVIDE UPDATE ON DOWNSIZED SWITCH
EFFORTS - AS NEEDED

SCHUCK ONGOING

□ OUR VOLUME ASSUMPTIONS FOR CY91 P/C ARE HIGH BY A FACTOR OF 2 - ACTUAL IS 12K/MONTH. WE HAD ASSUMED THAT THE EN50 PLATFORM WAS A MY92 START-UP, WHEN IT'S REALLY MY92.5. BRUCE RECOMMENDED WE FOLLOW UP WITH GARY KLINGLER, AS HE SHOULD HAVE THE MOST CURRENT INFORMATION REGARDING THE USE OF THE NEXT GENERATION SPEED CONTROL SYSTEM.

ACTION:

F/U WITH KLINGLER TO VERIFY
THE START-UP ASSUMPTIONS IN
BRUCE'S 12/21/90 LETTER

SCHUCK 03/29

□ LORRAINE BODY & ASSEMBLY HAS PRODUCED ~10 IPP VEHICLES, AND WILL BUILD A TOTAL OF 800 THROUGH AUGUST (57PS L/T SWITCHES). L/T JOB 1 IS SEPTEMBER 03, FOR VN-58 (ECONOLINE). GEORGE SAID HE HAS RELEASED THE 77PS SWITCH FOR F-SERIES/BRONCO (MY93) AND WIN-88 (MY94); CONVERSION FROM 57 TO 77 FOR THE VN-58 IS SOMETIME IN THE 'E 4Q91.

□ WE BRIEFLY DISCUSSED OPENING THE ENV. DIM. TOLERANCE ON THE LEAD-IN ANGLE, SO THE FIRST-PASS (OUT OF SPEC) ELCO HEXPORTS COULD BE USED. NEITHER ENGINEER WILL ALLOW THE CHANGE, AS IT REDUCES THE LENGTH OF THREAD ENGAGEMENT BY A SMALL PERCENTAGE. WE HAVE NO ARGUMENT HERE, THEREFORE WE CURRENTLY HAVE NO USABLE HEXPORTS IN HOUSE FOR OUR PILOT BUILDS, ORIGINALLY SCHEDULED TO BEGIN THIS WEEK.

ACTION:

F/U WITH ELCO TO GET DIMENSIONALLY
CORRECT ELCO HEXPORTS IMMEDIATELY

KOTCH 03/22

REGARDS,
DAVE CZARN
14-CCPB

TI-NHTSA 001794

HIGHLIGHTS
Stephen B. Offler
Week Ending 91-03-22

Handwritten signature



FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

CUSTOMER ISSUES: The thread lead-in chamfer angle, found out of spec. on Elco's first production submission of 4300 parts, will be cause to reject these parts. Dave Czern solicited Ford's opinion on this during his trip Wednesday, and they will not entertain a price change nor an SREA to use these parts, citing reduced thread engagement with the bad chamfer. We do not agree that this is a functional issue, since only a fraction of one thread is missing, but we have nothing to offer Ford in negotiation. This issue is having significant impact on scheduled pilot runs, from which we had planned to ship small quantities of production samples. We are now handling the small quantities of production samples as if they were engineering samples. A total of 28 57PSL5-2 devices shipped this week: 10 with IPP tags and quantities of 13 and 5 others, which should have been only one order for 18, but was miscommunicated through customer service and marketing to us resulting in duplicated efforts and some wasted time. On a positive note, we used the production crimp dies for the aluminum crimp rings, and the parts looked excellent.

27713 REBUMP CUP: We have resolved almost all the measurement issues with Valentine. Still remaining is the issue of the very tight (.005 max) inside radii, in two areas: where the washer and converter mate with the cup. We have made very careful measurements of both 27713 and 27288 (standard production cup) and discovered that radii on both are above the .005 max spec, and 27713 is actually tighter than 27288. Given the fact that we're using 27288 regularly, the radii on 27713 are probably adequate. A detailed analysis of the tolerance stack-ups between cup, washer, and converter is planned in order to determine if it is theoretically permissible to loosen the radii spec. on the prints.

36887 TERMINAL: We met with Rick Bessler to discuss discrepancies between his FAI submission and our own R.I. measurements. It appears that just about every issue is related to measurement technique, and we do not find anything fundamentally wrong with Bessler's techniques. We have scheduled a meeting with Jeanne Genes to review our techniques relative to Bessler's.

PROTO 77PS: The model shop has restamped the rivet holes in the movable terminals to move the spring down by the appropriate amount. We have begun to assemble devices (quantity roughly 230). We'll be ready early next week to calibrate those devices. Mechanization reports that by early-mid next week we should be able to use the calibrator on the AMI (rather than standalone as before). We plan to do a combined (Impulse/Powered Impulse/Thermal Cycle test to expose any weakness in the slotted rivet joint. The "slow" versus "fast" Powered Impulse evaluation will be piggybacked on this test. The goal is to get parts on test over the long weekend next week.

The calibration specification experiment is underway. The goal of this test, which was conceived and planned in conjunction with Mfg. Eng., is to determine how tolerance stackups in the sensor and variations in hatchet curve affect the pin-window. The expected size and variation of the pin window in turn determines the required accuracy of the calibration operation, and whether piloting will be required for each lot. This test will require significant time to complete, since we are taking measurements on a total of 100 parts for statistical significance.

TI-NHTSA 001795

022, 20 1024
114 2 015 114