PE03-044
FORD
5/13/2005
APPENDIX I
BOOK 17 OF 28
PART 2 OF 4

[redacted]

FLOW CHARTS
(GENERIC FOR THIS PLATFORM)

APTEK
Williams Inc.
A Williams Controls Company

QD-011-0098	Page 1 of 2
Rev. Date: 04/3/00	Rev.: A
Issuer: Process Engineer	
Approved By: Ken Pyle	

REV.	DATE	DESCRIPTION	CHG	CHK'D	ENG.	MFG.	QA.
A	04/3/00	ECN#11,743	FT				

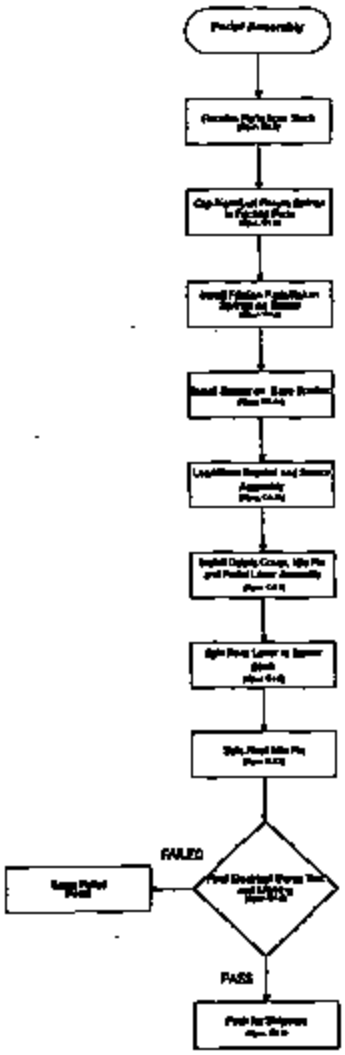
QD-011-0098
Ford P131 Final Assembly
Flow Chart

Approvals		Date	Approvals	Date
Prepared:	Franco Torres	04/3/00	Manufacturing	4/3/00
Checked:		4/3/00	Quality	4/3/00
Engineering:		4/3/00		

[redacted]

APTEK Williams Inc.

Process Flow Chart: Production-Final Pull	Rev B
Product: [redacted]	Page: 2 of 2
	Rev. Date: [redacted]



[redacted]

APTEK
Williams Inc.
A Williams Controls Company

Process Flow Chart: OD-611-0590	Rev. A
Product: Ford P131 Rotor Sub-Assembly	Page: 1 of 2
	Rev. Date: 3/31/00
Issuer: Process Engineer	
Approved By: Process Engineering Manager	

[redacted]

REV	DATE	DESCRIPTION	CHG	CHK'D	ENG	MFG	QA
A	3/31/00	ECN#11,740 Prelim released for production	SB	L	[illegible]	[illegible]	[illegible]

PROCESS FLOW CHART
Ford P131 Rotor Sub-Assembly

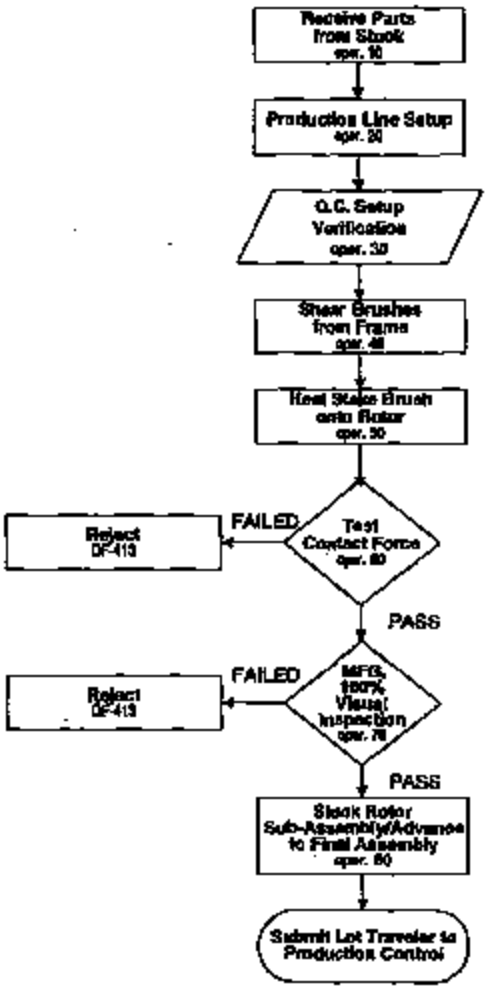
Approvals	Date	Approvals	Date
Prepared S. Beaverato	3/31/00	Manufacturing [signature]	4-3-00
Checked [signature]	4/3/00	Quality [signature]	4-3-00
Engineering [signature]	4/3/00		

[redacted]

APTEK
Williams Inc.
A Williams Controls Company

Process Flow Chart: QD-011-0098	Rev. A
Product: Ford P131 Rotor Sub-Assembly	Page: 2 of 2
	Rev. Date: 03/31/00

[redacted]



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APTEK
Williams Inc.

Process Flow Chart: 60-019-0258	Rev. A
Product: Ford P131 Sensor Assembly	Page: 1 of 2
	Rev. Date: 04/13/00
Issue: Process Engineer	
Approved BY: Process Engineering Manager	

REV	DATE	DESCRIPTION	ENG	CHK'D	QA	MFG	QA
A	3/31/00	[illegible]	BB	[illegible]	[illegible]	[illegible]	[illegible]

Process Flow Chart
Ford P131 Sensor Assembly

Approvals	Date	Approvals	Date
Prepared: S. Bannister	03/31/00	Manufacturing: [illegible]	4-3-00
Checked: [illegible]	4/1/00	Quality: [illegible]	4-3-00
Engineering: [illegible]	4/5/00		

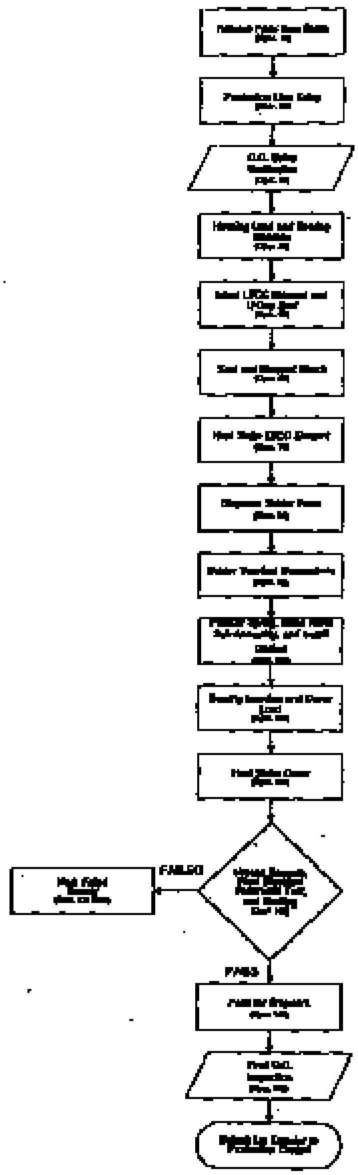
P003-844 12925

[redacted]

[redacted]

APTEK Williams Inc.

Process Flow Chart: QD-011-0092	Rev. A
Product: Ford P131 Sensor Assembly	Page: 2 of 2
	Rev. Date: [illegible]



[redacted]

[redacted]

APTEK
Williams Inc.

Process Flow Chart: [illegible]	Rev. A
Product: Ford P131 Element Sub-Assembly	Page: 1 of 2
	Rev. Date: [illegible]
Issuer: Process Engineer	
Approved BY: Process Engineering Manager	

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Rev	DATE	DESCRIPTION	CHD	CHKD	[illegible]	[illegible]	[illegible]
A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

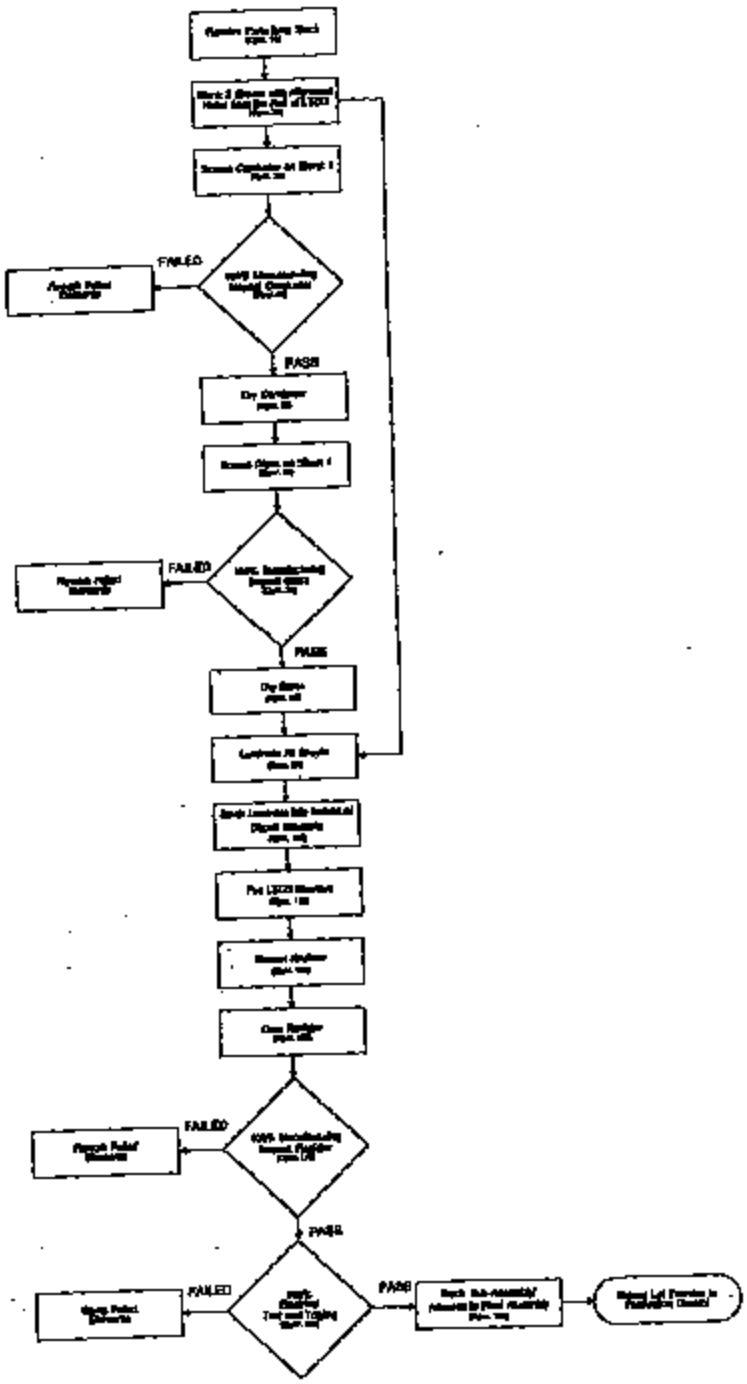
Process Flow Chart
Ford P131
Element Sub-Assembly

Approvals	Date	Approvals	Date
Prepared [illegible]	[illegible]	Manufacturing [signature]	4-3-00
Checked [signature]	4/3/00	Quality [signature]	4-3-00
Engineering [signature]	[illegible]		

[redacted]

APTEK
Williams Inc.

Process Flow Chart CD-8414091	Rev. A
Product: Part P431 Sensor Assembly	Page: 1 of 2
	Rev. Date: 6/21/99



PE83-844 12828

[redacted]

APTEK
Williams Inc.
A Williams Controls Company

Process Flow Chart: Preliminary-Ford P131 Program	Rev. A
Product: 8039-000-A Rotor Sub-Assembly	Page: 1 of 2
	Rev. Date: 12/6/99
Issuer: Process Engineer	
Approved By: Process Engineering Manager	

[redacted]

REV	DATE	DESCRIPTION	CHG	CHK'D	ENG	MFG	QA
A	12/6/99	Preliminary Flow Chart Created	SB				

PROCESS FLOW CHART
8039-000-A Rotor Sub-Assembly

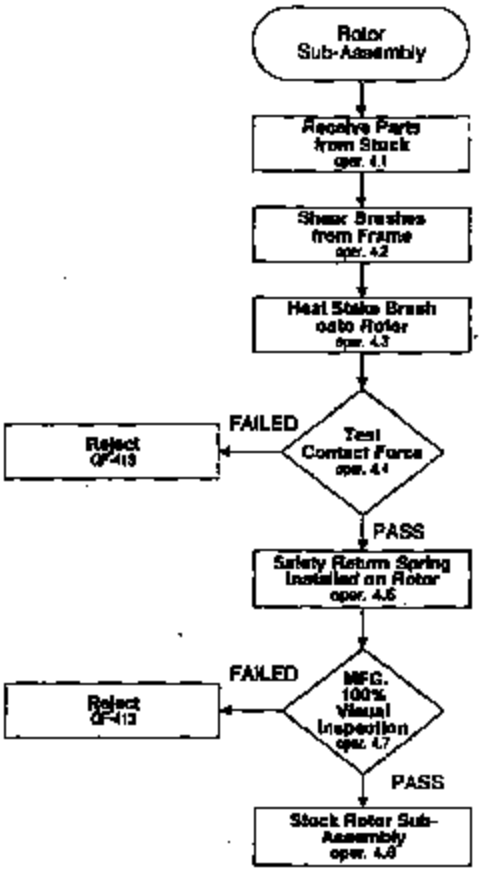
Approvals	Date	Approvals	Date
Prepared S. Benvenuto	12/6/99	Manufacturing	
Checked		Quality	
Engineering			

[redacted]

APTEK
Williams Inc.
A Williams Controls Company

Process Flow Chart: Preliminary-Ford P131 Program	Rev. A
Product: 8038-000-A Rotor Sub-Assembly	Page: 2 of 2
	Rev. Date: 12/6/99

[redacted]



[redacted]

APTEK
Hillsboro, Inc.

Process Flow Chart: [illegible]	Rev. A
Product: 8039-000-A Sensor Assembly	Page: 1 of 2
	Rev. Date: 11/4/99
Issuer: Process Engineer	
Approved BY: Process Engineering Manager	

REV	DATE	DESCRIPTION	QTY	ENG'D	QC	MFG	QA
A	12/6/99	Preliminary Flow Chart Created	50				

Process Flow Chart
8039-000-A Sensor Assembly

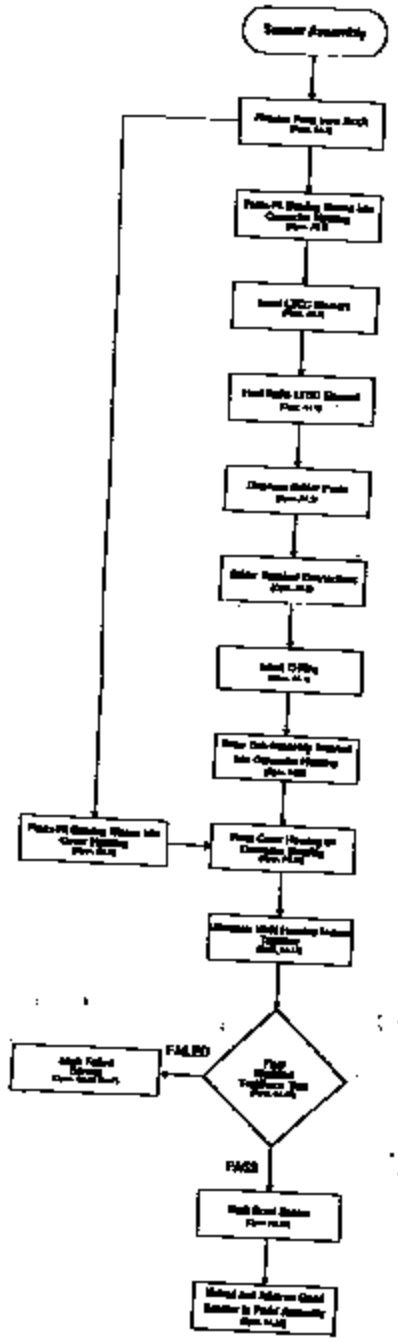
Approvals	Date	Approvals	Date
Prepared & Reviewed	12/6/99	Manufacturing	
Checked		Quality	
Engineering			

PE03-844 12831

[redacted]

APTEK Williams Inc.

Process Flow Chart: Preliminary-Font: F131	Rev. A
Product: 8859-000-A Sensor Assembly	Page: 2 of 2
	Rev. Date: (none)



PE83-044 12932

[redacted]

APTEK

Process Flow Chart: Preliminary Font P131	Rev. A
Product: 8039-000-A Pedal Assembly	Page: 1 of 2
	Rev. Date: 12/6/99
Issuer: Process Engineer	
Approved BY: Process Engineering Manager	

REV	DATE	DESCRIPTION	CHG	CHK'D	ENG	MFG	QA
A	12/6/99	Preliminary Flow Chart Created	SB				

Process Flow Chart
8039-000-A Pedal Assembly

Approvals	Date	Approvals	Date
Prepared: S. Bujnowicz	12/6/99	Manufacturing	
Checked		Quality	
Engineering			

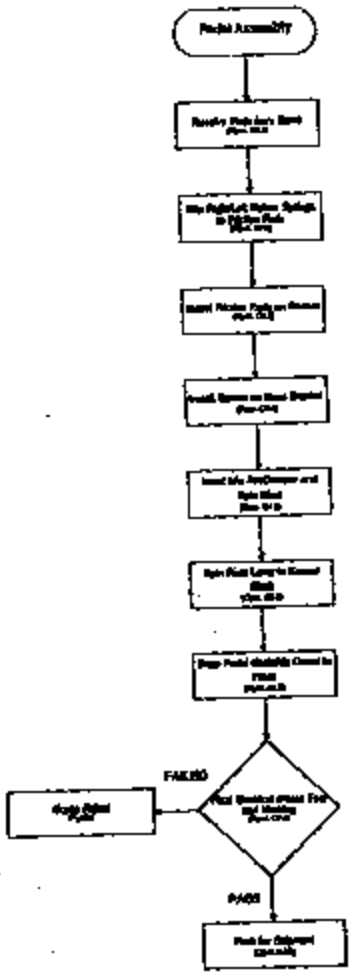
PE03-044 12933

[redacted]

[redacted]

APTEK Malibu Inc.

Process Flow Chart: Preliminary Post P131	Rev. A
Product: [redacted] Panel Assembly	Page 2 of 2
	Rev. Date: (MM/DD



PE83-844 12934

[redacted]

APTEK

Process Flow Chart: Preliminary-Part P121	Rev. A
Product: 8039-000-A Element Sub-Assembly	Page: 1 of 3
	Rev. Date: 10/8/99
Issuer: Process Engineer	
Approved BY: Process Engineering Manager	

[redacted]

REV	DATE	DESCRIPTION	CHG	CHK'D	ENG	MFG	QA
A	10/8/99	Preliminary Flow Chart Created	BS				

Process Flow Chart
8039-000-A Element Sub-Assembly

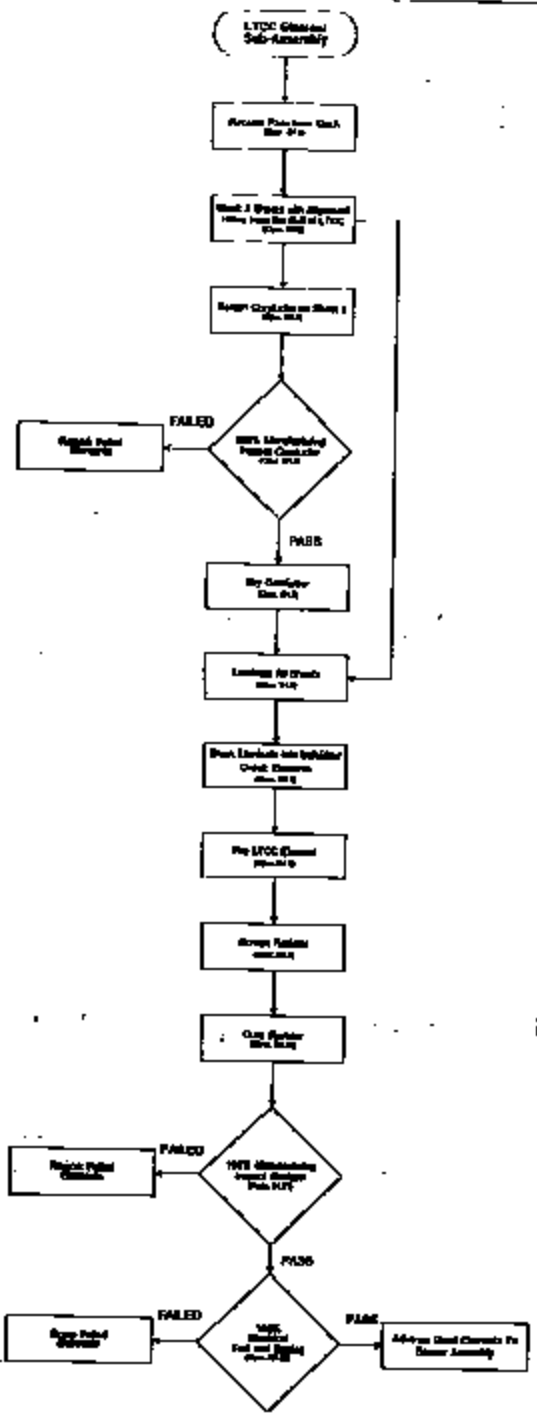
Approvals	Date	Approvals	Date
Prepared & Submitted	10/8/99	Manufacturing	
Checked		Quality	
Engineering			

PE83-044 12948

APTEK
Williams Inc.

Process Flow Chart: Preliminary-Prod P131	Rev. A
Product: [redacted] Element Assembly	Page: 2 of 2
	Rev. Date: xx/xx/xx

[redacted]



[redacted]

CONTROLS PLANS
(GENERIC FOR THIS PLATFORM)

[redacted]

2001 P131 Super Duty F-Series O'8500 Electronic Throttle Control Design Competition
Williams Controls (Supplier Code 0638B) vs Teleflex (Current Source)

9/24/99
wkl.williamsvsteleflex

Bill Ickes
FTSSE Des & Rel Supv
313-317-7840

1C34-9F836-BA Williams Control Pedal
Released 8/15/99 per C10994933

Advantages of Williams over Teleflex ETC Pedals

1) Williams Control Pedal is Designed For Assembly
   * Pedal/Brkt Envelope has a smaller package size

2) Williams Control owns patent on Idle Validation Switch onto Ceramic Element #5,321,980 & #5,133,321 (pg 2 & 3)

3) Williams Control Pedal Hysterisis meetsES-Spec (see graph pg 4)
   * 50% Less Driver Foot Effort Req'd to maintain Throttle Position

4) Williams Control Low Temp Co-Ceramic Sensor is Co-Planar
   See Pictures & Patent Disclosure
   * Longer life of brushes, less internal debris

5) Williams Control LTCC utilizes 11 wire laser polished brush
   * Improves output signal integrity and reliability

6) Williams Control terminals are direct soldered to ceramic surface
   * More reliable during handling shock and thermal expansion

7) Williams Contol sensor has 6.0% LAG over Full Pedal Travel
   * Prevent Hesitations during acceleration (see graph)
   * Improves Driver response, smoother accelearation

8) Williams Control Sensor is ultrasonicsally welded
   * No risk of contamination due to sealing

9) Williams Control Design Offers a $19.80 - $13.15 = $6.65 cost reduction
   * 2 month payback for $4 Avg Vehicle Savings (pg 10)

10) Williams Control Design is Released and supports 2001 timing
   * Williams is offering a 5/3/5% reduction
   * Williams 2001 sensor is compliant with 2003 GAP Strategy

Teleflex design does not provide socket access for assembly
*REJECTED by KENTUCKY TRUCK VEH-OPS

Teleflex/Spectrol design infringes on the WNCO patent
*FORD MOTOR CO will assume LIABILITY

Teleflex design is NOT COMPLIANT w/ES-SPEC
* Higher Driver Effort req'd to maintain throttle pos.(pg 5)

Teleflex/Spectrol Sensor design is NOT CO-PLANAR
*Spectrol article by R.Riley & Patent Discl #5,169,485
*Lower life of brushes, higher internal debris (pg 6 & 7)

Teleflex/Spectrol Silver & Glass utilizes 4 lang rake design
* Lower output signal integrity & reliability

Teleflex/Spectrol terminals are soldered to jumer wires which are soldered to ceramic surface
* High susceptibility to handling damage & ther. expan.
* Higher mortality rate w/jumper wires due to wire nicks

Teleflex/Spectrol has a 14.5% LAG over Full Pedal Travel (pg 9)
* Noticeable hesitation during acceleration
(see comments of Ford Dev Engr Don Ignasiak pg 13)

Teleflex/Spectrol is sealed with RTV adhesive, is not as robust
* Heat staking process w/RTV isn't as robust

Teleflex/Spectrol design offers no savings
* Re-design & DV of sensor & brkt will add 1.5 yrs

Teleflex/Spectrol design will not be released due to reasons 1/2/3
* Teleflex current product running 2.5 R/1000 @ 6 MIS $300/claim
* current design has hesitations and MIL Light warr. (pg 11 & 12)

Engineering Recommendation: Issue P.O. to Williams Controls to contain 2001 timing and realize $1.5 Million annual savings
Improved function will translate into lower warranty and higher customer satisfaction

[redacted]

FEB-04-M 12:27

United States Patent [19]
Hering et al.

US005321980A
[11] Patent Number: 5,321,9
[45] Date of Patent: Jun. 21, 19

[54] INTEGRATED THROTTLE POSITION SENSOR WITH INDEPENDENT POSITION VALIDATION SENSOR

[75] Inventors: Charles A. Hering, Portland, Oreg.; David A. Schaller, Fort Wayne, Ind.

[73] Assignee: Williams Controls, Inc., Portland, Oreg.

[21] Appl. No.: 991,854

[22] Filed: Jun. 19, 1992

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 699,671, May 10, 1991, Pat. No. 5,133,321.

[51] Int. Cl.[5] G01M 19/00
[52] U.S. Cl. 73/118.1; 123/361
[58] Field of Search 73/118.1; 123/399, 361

[56] References Cited

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4,920,930	5/1990	Gale	123/399
4,924,[illegible]	5/1990	Maurer	123/399 X
[illegible]	9/1990	Lundberg	123/399
[illegible]	5/1991	Chen et al.	73/118.1 X
5,150,681	9/1992	Kull et al.	73/118.1 X

FOREIGN PATENT DOCUMENTS

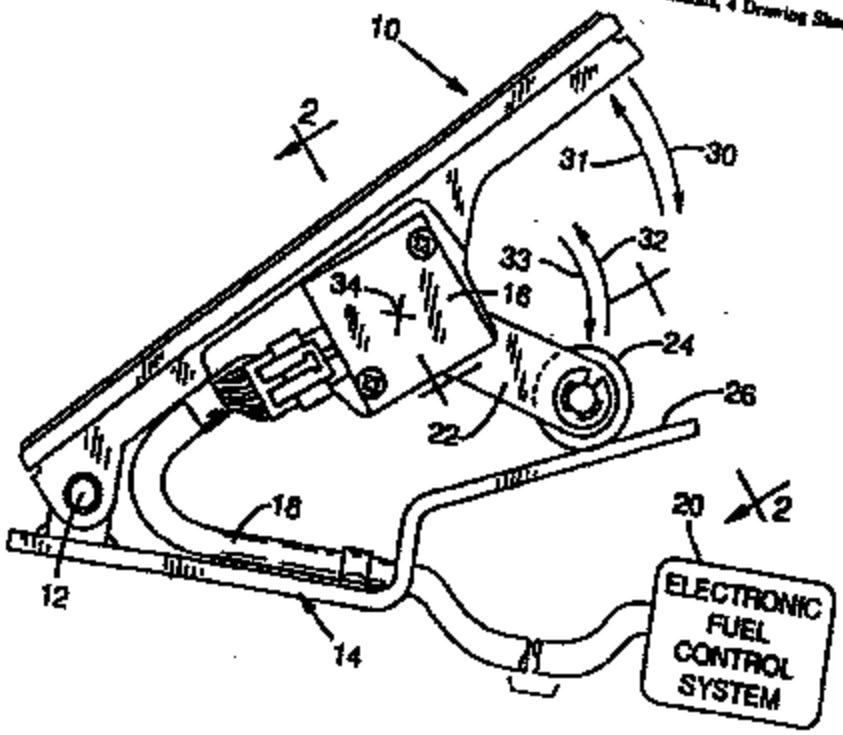
WO9005854 6/1990 World Int. Prop. O. .

Primary Examiner—Hezron E. Williams
Assistant Examiner—Mark Smith
Attorney, Agent, or Firm—Robert L. Harrington

[57] ABSTRACT

An integrated throttle position validation sensor includes electrically independent throttle position and position validation components responsive to a single mechanical input applied to a protective sensor housing. By rotating to the throttle control device, the mechanical input corresponds to accelerator pedal position. Within the sensor housing a potentiometer moves with the mechanical input whereby a variable voltage throttle position signal is generated. Also, within the housing a separate validation switch responsive to the mechanical input provides an independent representation of throttle control device position in the form of, for example, a Morse validation signal. The sensor integrates prevent separate throttle control position and position validation functions into a single environmentally secure housing which requires no calibration. The integrated sensor is more reliable and less costly than previously available separate throttle control and idle validation functions.

12 Claims, 4 Drawing Sheets



US005133321A

United States Patent [19]

Hering et al.

[11] Patent Number: 5,133,321

[45] Date of Patent: Jul. 28, 1992

[54] INTEGRATED THROTTLE CONTROL AND IDLE VALIDATION SENSOR

[76] Inventors: Charles A. Hering, 3004 SW. Moss St., Portland, Oreg. 97219; David A. Schaller, 5939 Hallowell Pl., Fort Wayne, Ind. 46815-6214

[21] Appl. No.: 658,671

[22] Filed: May 10, 1991

[51] Int. Cl.[5] F02D 1/00

[52] U.S. Cl. 123/399

[58] Field of Search 123/399, 361, 339; 74/511; 180/197, 335

[56] References Cited

U.S. PATENT DOCUMENTS

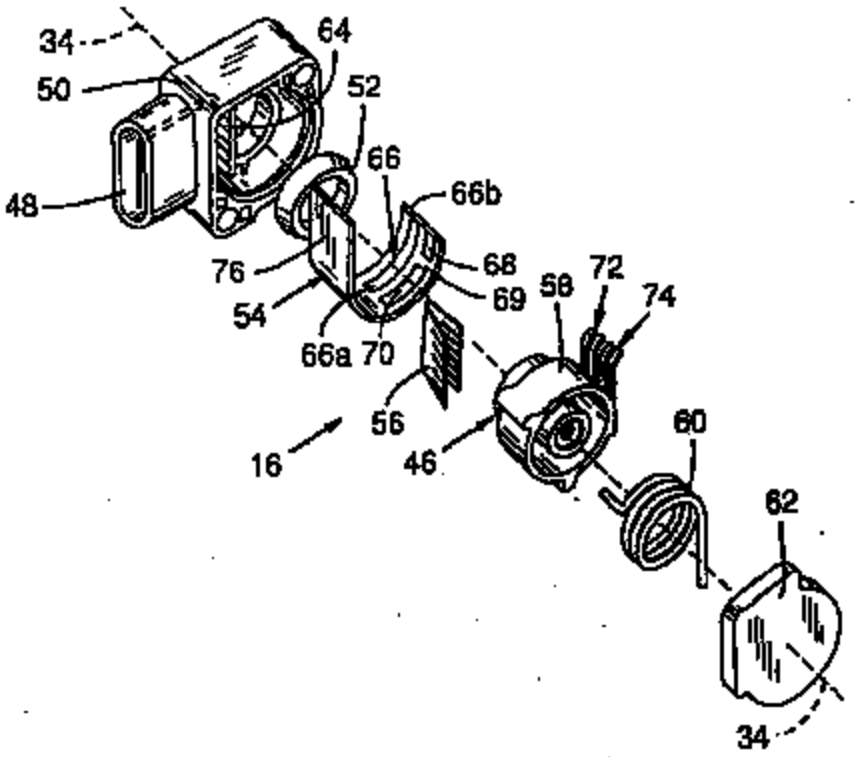
4,703,823	11/1987	Yogo et al.	180/197
4,813,037	11/1989	Mabon et al.	123/399
4,958,507	9/1990	Leadberg	123/399

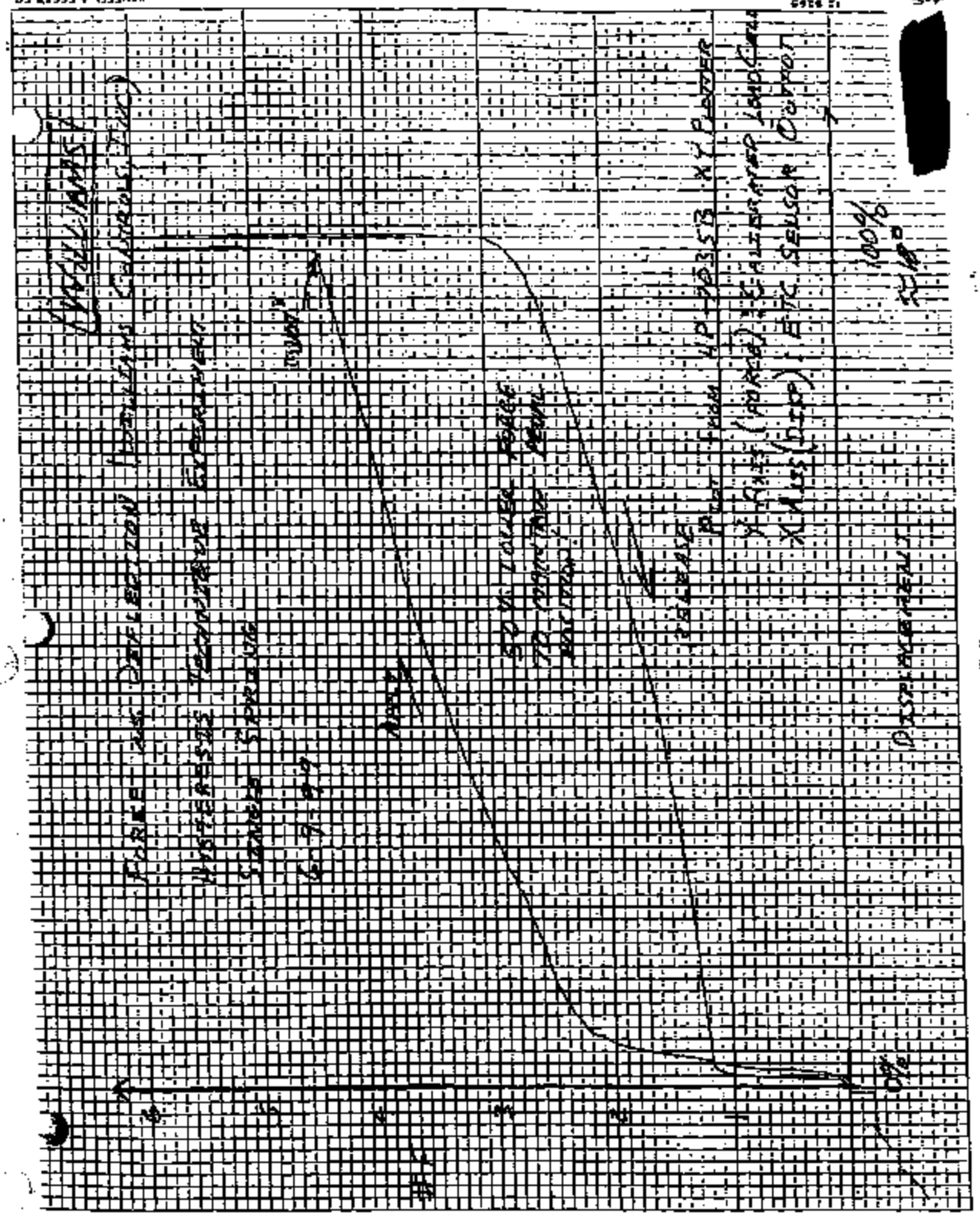
Primary Examiner—Raymond A. Nelli
Attorney, Agent, or Firm—Robert L. Harrington

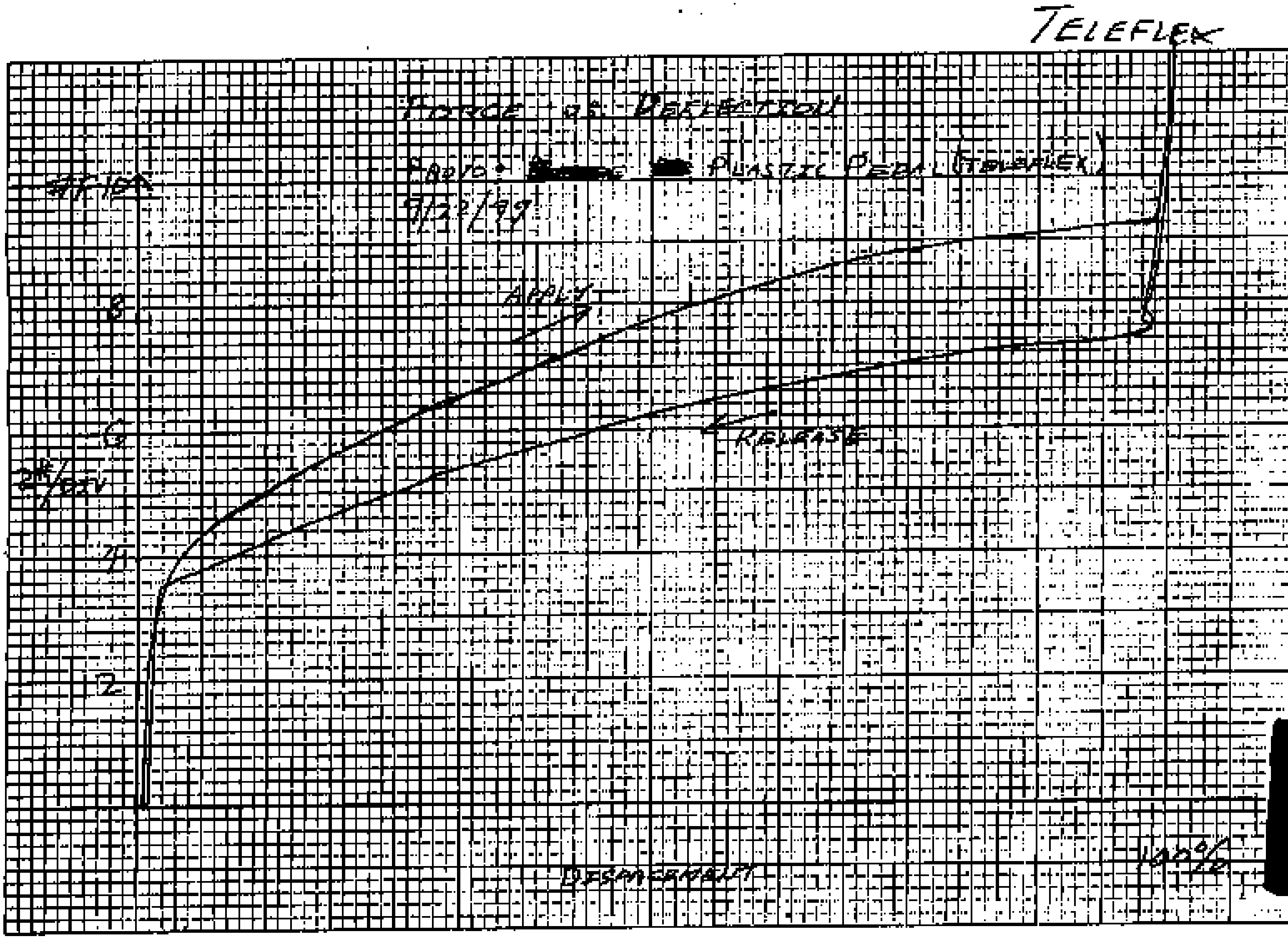
[57] ABSTRACT

An integrated throttle control and idle validation sensor includes mechanically coupled but electrically independent throttle control and idle validation components. A single mechanical input to the protective sensor housing corresponds to an accelerator pedal position and causes selective coupling of a supply voltage to one of an idle validation conductor and a throttle validation conductor for interpretation by an electronic control system. The throttle control system within the sensor housing comprises a potentiometer adapted for movement corresponding to the mechanical input whereby a variable voltage throttle control signal may be delivered to the electronic fuel control system. The sensor integrates previous separate throttle control and idle validation functions into a single environmentally secure housing and requires no calibration. The disclosed throttle system is more reliable and less costly than previously available separate throttle control and idle validation functions.

14 Claims, 3 Drawing Sheets






TELEFLEX
FORCE vs DEFLECTION
8
6
4
2
APPLY
RELEASE
100%
DISPLACEMENT

Silver-in-Glass Technology for Ruggedized Digital Encoders

Richard Riley, Spectrol Electronics Corp.

For more than a decade there has been a strong trend toward replacing analog motion control systems with digital. The advantages of digital systems include excellent stability over time, more accurate motion control, and no need for manual-gain adjustments in the field.

Silver-in-Glass

Digital contacting encoders based on a new thick film cermet technology called Silver-in-Glass (see Photo 1) are proving more rugged, reliable, and longer-lived than typical mechanical versions. Silver-in-Glass units can withstand the high temperatures, vibration, and shock of automotive and off-road environments. Due to the precious metal content of both the contact and encoder elements, there is no corrosion with time, and contact resistance remains at low levels throughout the life of the product. The life expectancy of this system is more than 25 million rotations, compared to the 25,000 for conventional mechanical encoder construction.

Step Height Differential. Silver-in-Glass technology minimizes the step height differential between the conductor and insulator surfaces. Conventional designs incorporating a composite board with an etched and plated copper foil have a sharp-edged conductor protruding 25–50 µm above the base wiping surface. As the contact moves over these protruding conductor areas, wear occurs and the accuracy of the encoder can degrade. Electrical noise can also be a problem due to wear debris.

Silver-in-Glass encoders are fabricated by the deposition of a smooth, thick film of glass over the entire surface of an alumina ceramic substrate (see Figure 1). After the glass layer has been fused to the substrate, a conductor pattern of palladium silver is screen printed on top of the glass. During firing, the glass softens and the conductor pattern sinks into the surface. The low step thus created means that as the shaft is rotated, the contacts must "climb up" a distance of only 5–8 µm at each contact point. In addition to a nearly flat, smooth wiping surface, the Silver-in-Glass design provides physical strength, dimensional stability, and an ability to handle relatively high power due to the ceramic's thermal dissipation properties.

Photo 1. *SpectroFs Silver-in-Glass encoders are intended for use as digital panel control or positioning devices, converting rotary motion into electrical signals.*

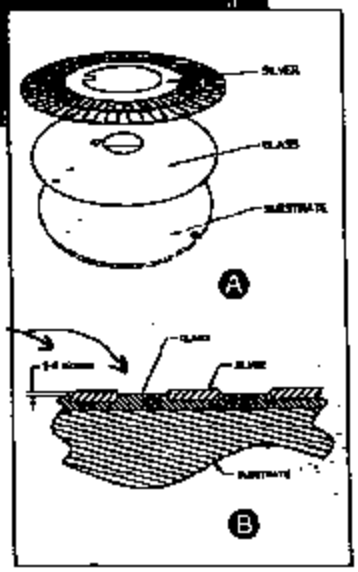


Figure 1. *The materials constituting the Silver-in-Glass sandwich configuration (A) are formulated so that the conductor material, which becomes the working portion of the encoder, sinks into a smooth glass layer previously deposited on the ceramic substrate (B). The multifingered wiper therefore rides on a layer of glass, making a smooth transition to the conductive areas.*

Hoe-Shaped Contacts. Multifingered, precious-metal hoe-shaped contacts (see Figure 2, page 40) at each contact point maintain a constant, relatively strong pressure against the thick film element in spite of wear, ensuring accuracy and helping reduce contact bounce. The contacts typically have multiple independent bifurcated fingers, at least one of which remains in constant electrical contact with the element in even the most severe environments.

System Design Considerations. The amount of switching current Silver-in-Glass

US005169465A

United States Patent [19]

Riley

[11] Patent Number: 5,169,465

[45] Date of Patent: Dec. 8, 1992

[54] THICK-FILM CIRCUIT ELEMENT ON A CERAMIC SUBSTRATE

[75] Inventor: Richard E. Riley, Riverside, Calif.

[73] Assignee: Spectrol Electronics Corporation, Ontario, Calif.

[21] Appl. No.: 646,264

[22] Filed: Jan. 28, 1991

[51] Int. Cl.[5] C03B 29/00

[52] U.S. Cl. 156/89; 156/298; 156/252; 427/101; 427/102

[58] Field of Search 156/89, 252, 298; 427/101, 102

[56] References Cited

U.S. PATENT DOCUMENTS

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4,393,915 8/1983 Walden et al. .
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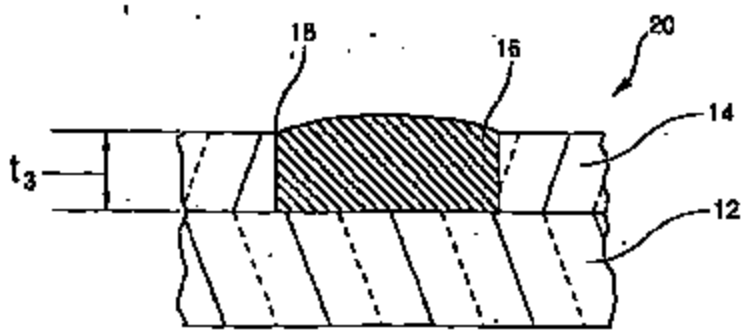
4,814,891 4/1989 Bauer et al. .
4,839,775 6/1989 Schreiber et al. .
5,024,883 6/1991 Singh Deo et al. 156/89

Primary Examiner—David A. Simmons
Assistant Examiner—Robert Harker
Attorney, Agent, or Firm—Woodard, Emhardt, Naughton, Moriarty & McNett

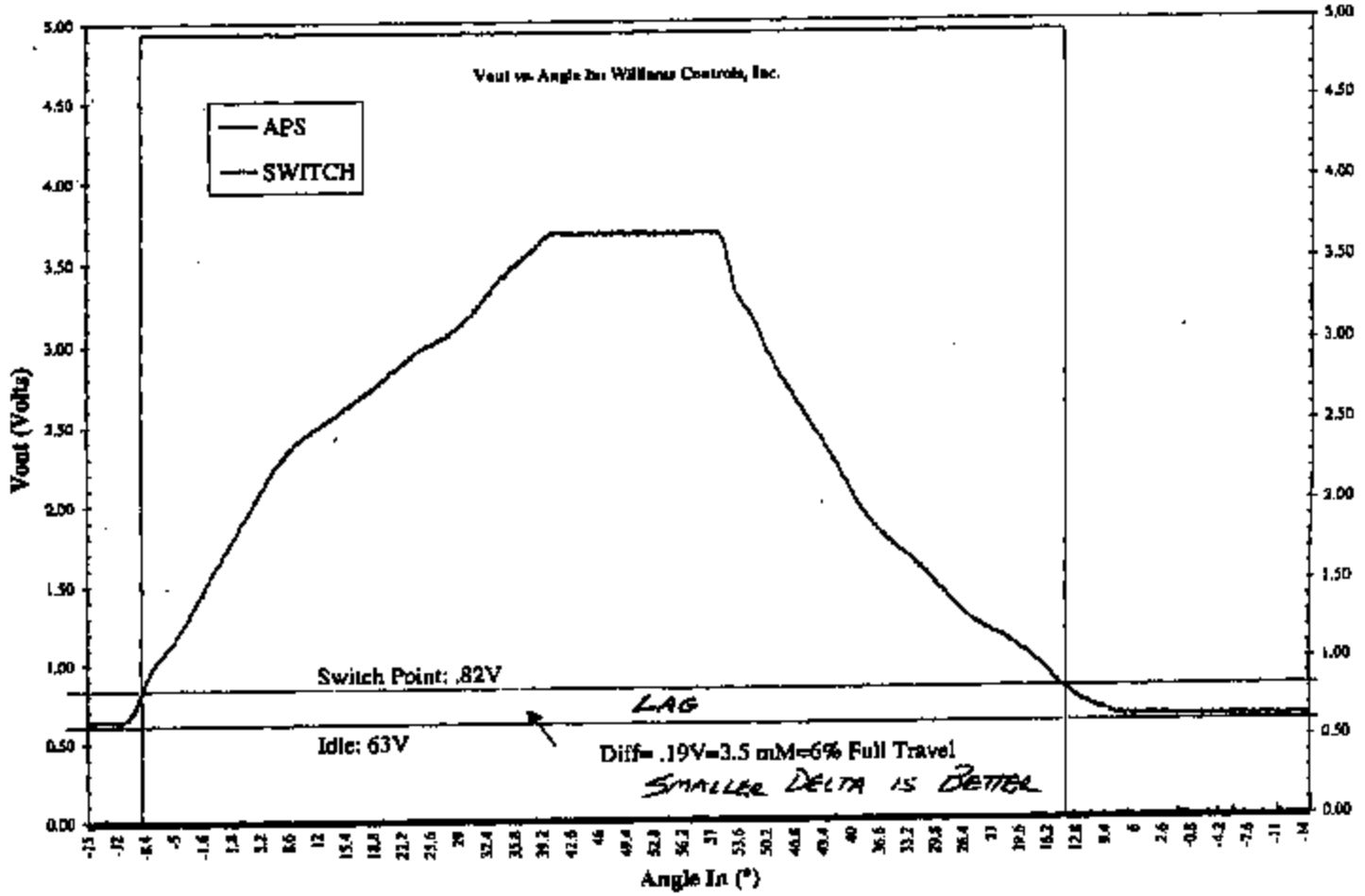
[57] ABSTRACT

A thick-film switch element includes a high-temperature glass frit fused to a ceramic substrate. A cermet layer having a low-temperature glass matrix is fired in a conventional furnace to sink into the glass frit layer such that the resulting thickness of the switch element layer is approximately equal to the original thickness of the glass frit layer. The exposed surface of the resulting thick-film switch element product is substantially smooth and the joint between the low-temperature cermet layer and the high-temperature glass frit layer is substantially uniform.

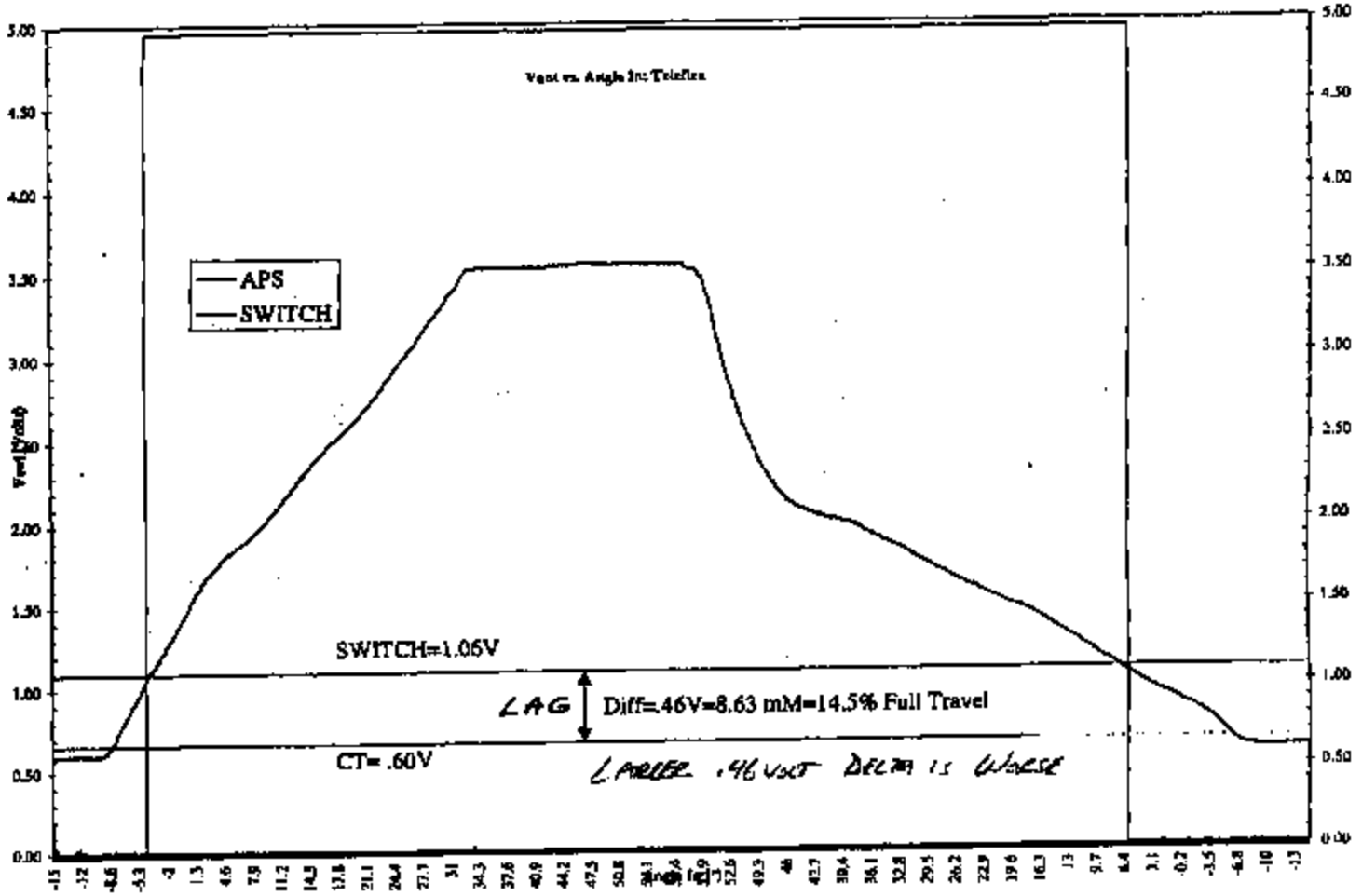
9 Claims, 1 Drawing Sheet



NMCO


Vout vs. Angle for Williams Controls, Inc.
APS
SWITCH
Vout (Volts)
Angle In (°)
Switch Point: .82V
Idle: 63V
LAG
Diff= .19V=3.5 mM=6% Full Travel
SMALLER DELTA IS BETTER

TELEFLEX


Vout vs. Angle In: Teleflex
APS
SWITCH
SWITCH=1.05V
LAG
Diff=.46V=8.63 mM=14.5% Full Travel
CT= .60V
LARGER .46 VOLT DELTA IS BETTER

Report Specific Information

Print Date : Jul 7, 1999
Print Time : 10:18

Cutoff Date: Jun 30, 1999

Result ID: 29731267
Page Number : 1

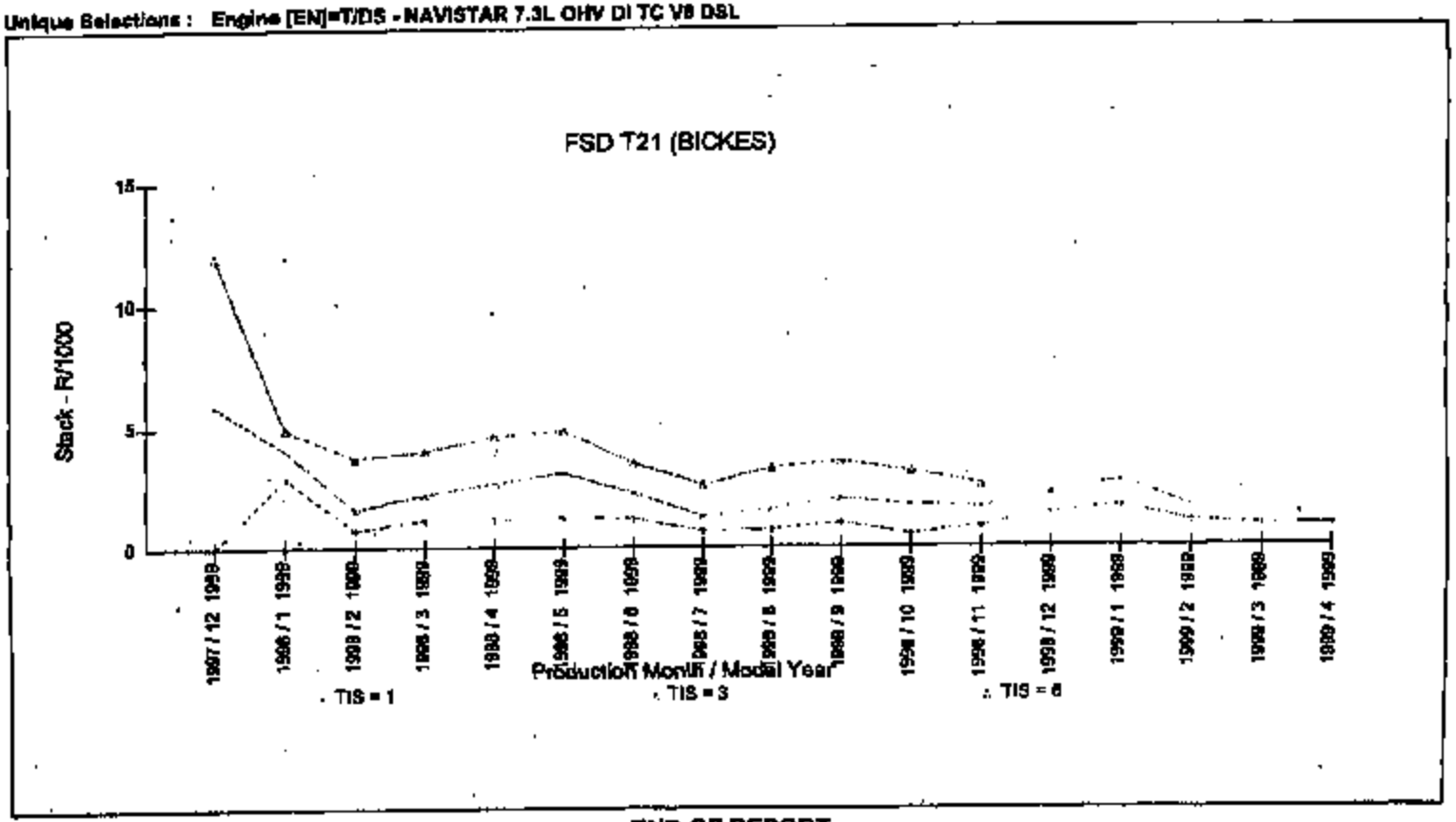
Model Years : 1999
TIS Value(s) : 1,3,6

Logic : Corporate

Min Divisor : 100

Statistic : R/1000
Max TIS : 6

Unique Selections : Engine [EN]=T/DS - NAVISTAR 7.3L OHV DI TC V8 DSL

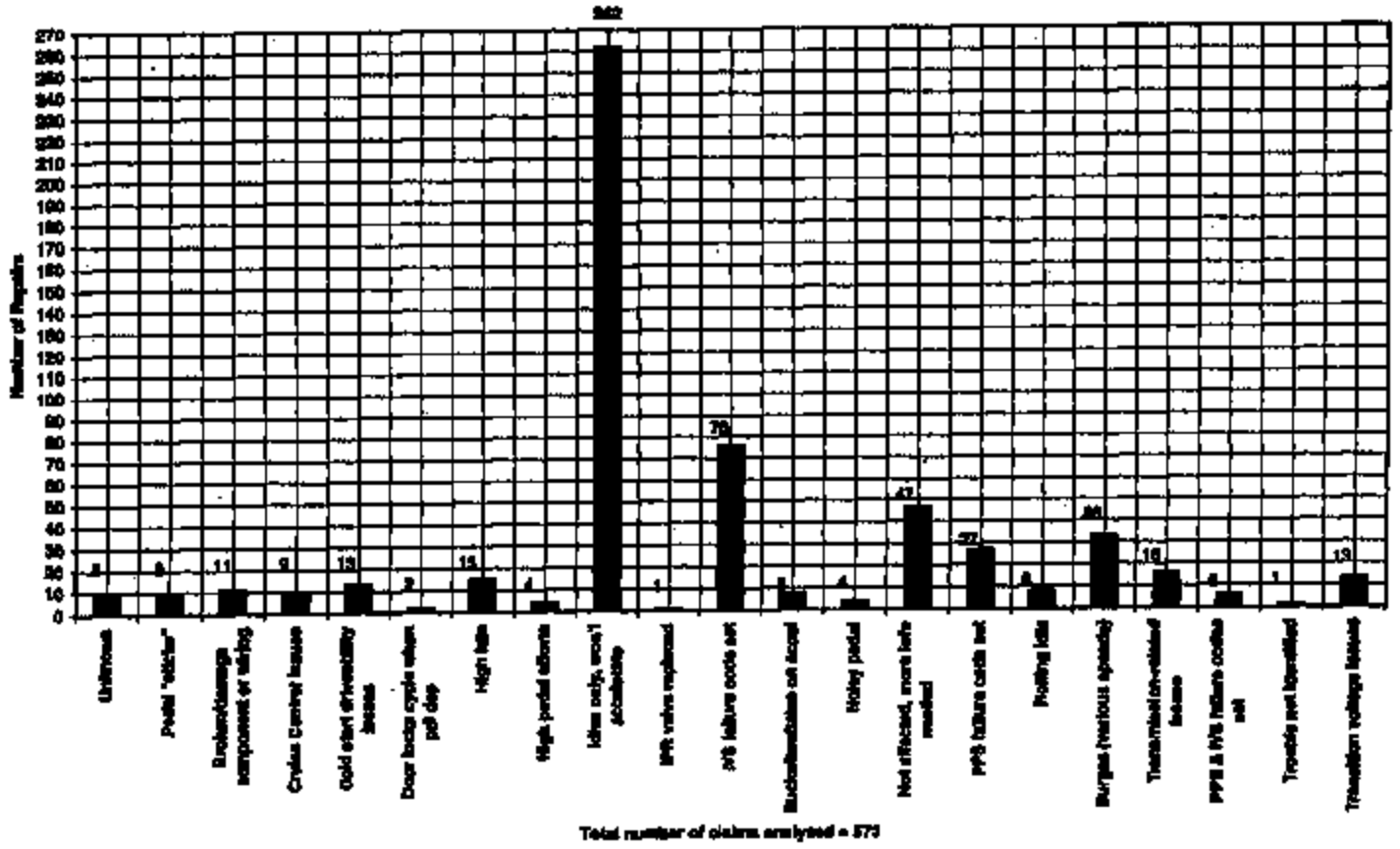


Generated By: RMURPHY5

END OF REPORT

PBES-04A 12/97

P131 ETC Issues



[redacted]

13

Ickes, Bill (B.K.)

From: Ignasiak, Donald (D.J.)
Sent: Friday, August 13, 1999 3:44 PM
To: Ickes, Bill (B.K.); Sillanpaa, Don (D.C.)
Cc: Hazerjian, Michael (M.J.); Currie, David (D.J.)
Subject: Cost Reduced Pedal Evaluations

Bill and Don,

During our Denver/APG development trip, Dave Currie and I evaluated both the cost reduced Teleflex pedal and the cost reduced Williams pedal. From an electrical transparency perspective, the cost reduced pedals behave much the same as the production pedal. However, from a feel perspective, the Williams pedal (although requiring greater effort to move the pedal) had a better feel than the new Teleflex pedal. Dave and I feel that the Williams pedal is the better of the two cost reduced alternatives. The new Teleflex pedal seemed to have a couple of issues:

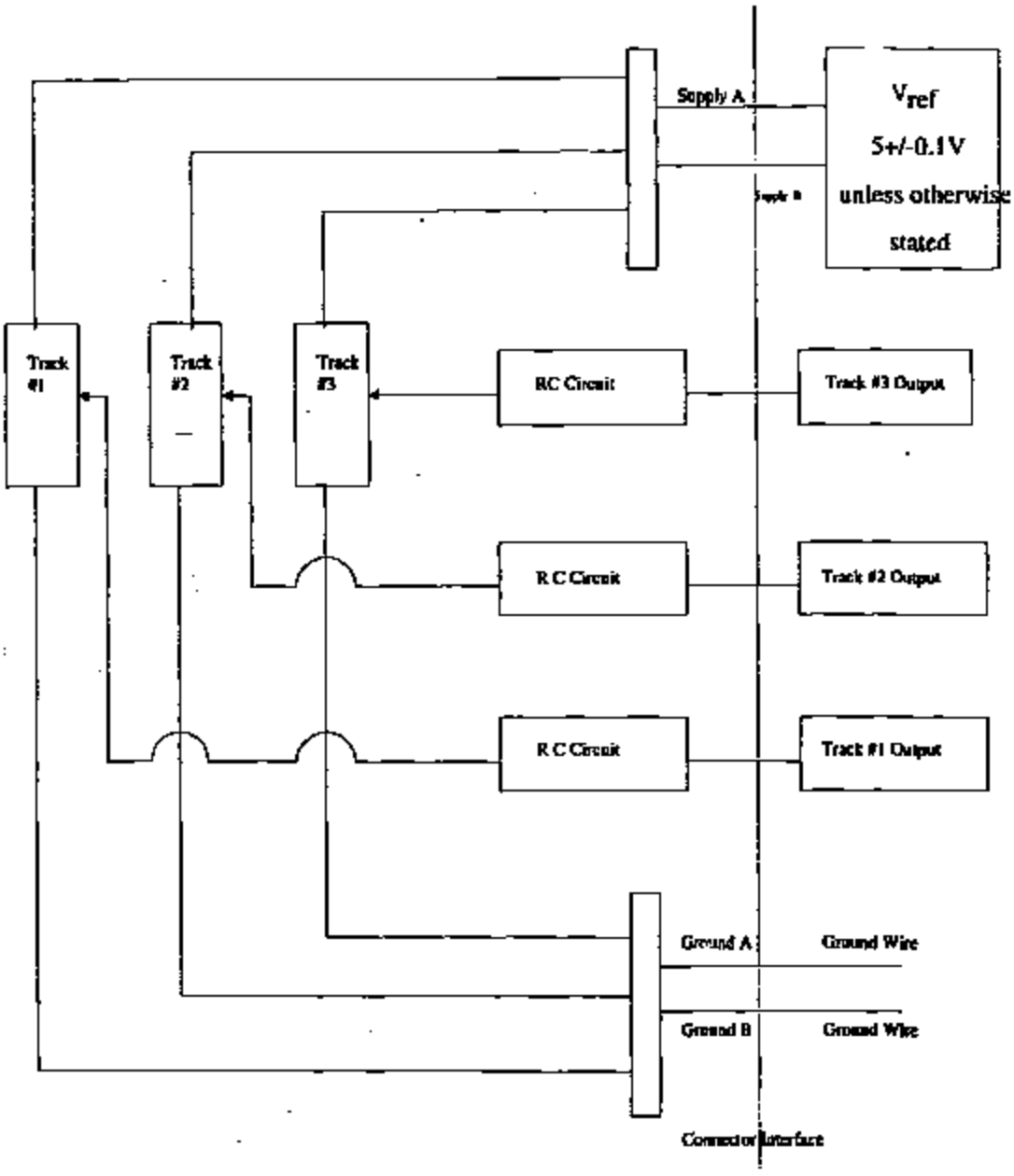
- a change of effort after reaching 500 pedal counts (over-center feel)
- several noisy rattles

Regards,

Donald Ignasiak
7.3L Diesel Development
Phone: (313)322-4947 Fax: (313)317-1712

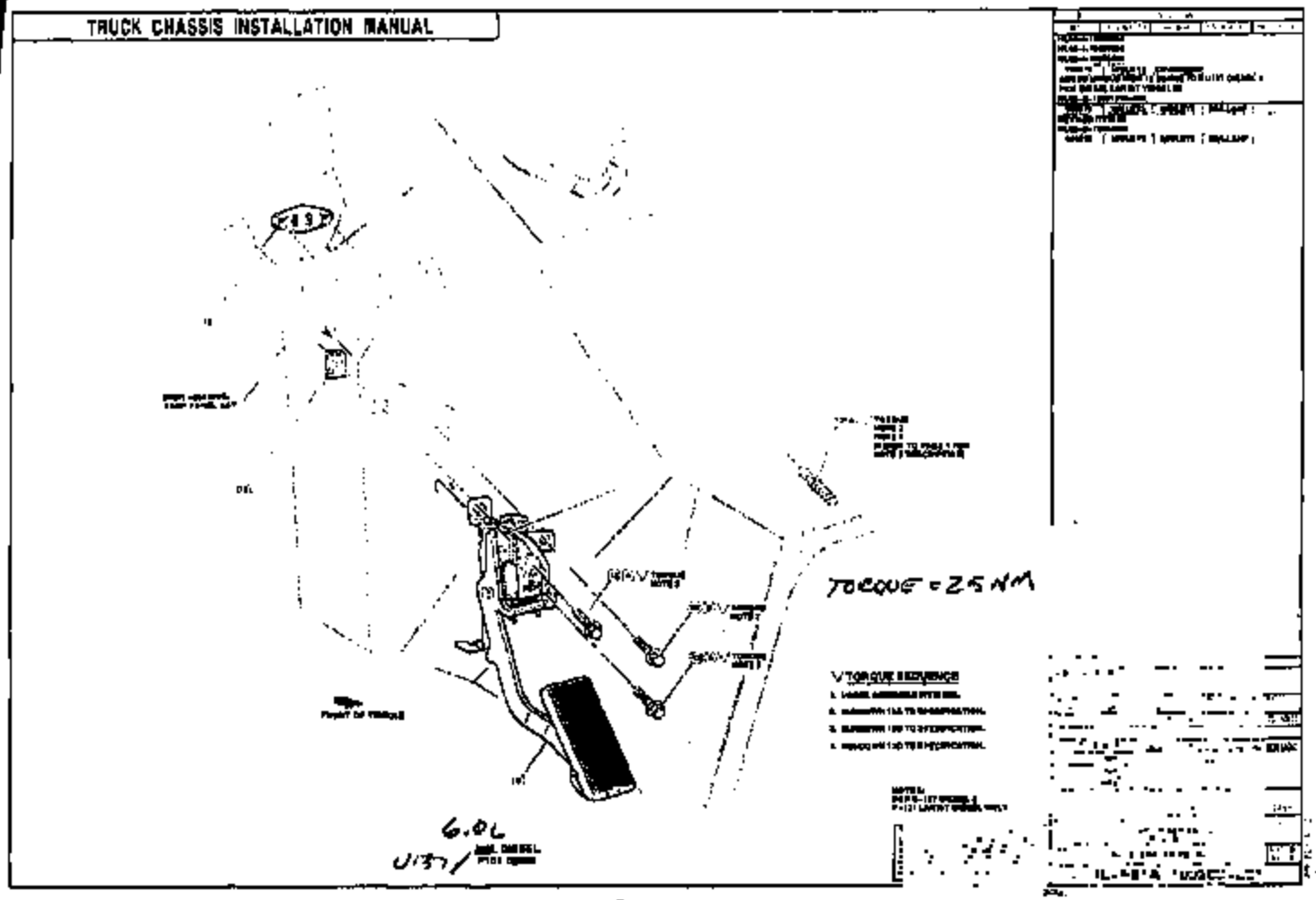
[redacted]

[redacted]



FOR REFERENCE ONLY

CR	Supplment	Change Description
~~C11084782~~	~~142~~	~~File setup for E-series MAP hose/oil fill tube - 4C34-9763-A1~~
A11327552		CAT pedal gets new sensor
C11260226		Pedal efforts and potential fixed pad
C11256951		New 6.8L throttle body spring
C11287688	000/001	Spring changes for fixed pedal 003 to delete notice
C11204852	13	No cost RC for Teleflex print
A11294911		Ship bracket pre-PSW
C11343805		Release 04 6.0L oil fill tube and required stud
C11343822		Release 04 6.0L MAP hose
C11342645		N/C R/C to modify P131 MAP hose drawing
C/A11346287		Revise transfer function/pedal efforts on Teleflex 6.0L adj pedal/TFX late 1PP PSW
A11360750		WMCO late 1PP PSW
C11362460		Torque converter access plug installation issues
C11364268		5.4L snow shield modified for heated throttle body
A11367364		1C34-9F836-BA N/C R/C to print
A11367369		1C34-9F836-BA Doesn't pass key life due to friction pad failure and moisture intrusion
C11237471	67	N/C R/C to 3C34-9F936 print
C11368457		N/C R/C to 1C34-9F836-BA print
C/A11372514		Change to adj pedal efforts for 03.25
A11374391		On site mod for access plug at KTP
A11377471		Revise 6.0L MAP hose at KTP
C11377619		Revise 6.0L MAP hose
A11400096		Adj pedal sensor change for 6.0L at TFX
C/A11403352		7.3L forked lever arm
C/A11403357		6.0L forked lever arm
C11401747		05 Adj pedal ETC IR
C11404770		HD Pedal
A11410712		New rotor press at Kendalville
A11411291		Torque converter access plug late PSW for IB
A11414430		Ship WMCI IB w/o PSW
C/A11415042		02 adj pedal revisions for lube migration
C11415505		CRID for adj pedal tube
A11418289		WMCO w/forked lever arm & TFX pin
A11421208		Adj pedal instead of fixed pedal for IB
A11421402		OSM to update IB and FEU fixed pedals
11400245		PM part number for 3C34-9F836-AB
A11429001		PM part number for for SF
C11400245	4	Release from WMCO to TFX for 03.25 job #1
C/A11427639		Assy labor for adj pedal in fixed application
A11427723	A11440278	8511 and old springs on 2C34-9F836



3C34-9F836-AA

[redacted]

Ford	ENGINEERING SUBSYSTEM SIGN-OFF	Subsystem Name and Number Accelerator Controls		Record Copy Stamp [redacted]
Model Year 2003.25	Vehicle/Program ID P131/U137	Feasbond Activity/Supplier/P&IT PTSE Statutorily components	Date 6/6/02	Suppliers Williams Controls and Teleflex

I. Subsystem Description

Fixed and Adjustable accelerator pedal assemblies

II. Subsystem Design Objective Assessment (Includes functional image as applicable)

Parts to date have been verified to function properly
Fixed accel pedal effort to target
Adj accel pedal efforts to target at FEU

III. Risk Assessment (Risk vs. Program Objectives, WCR, and Customer Satisfaction)

Issue/Resolution	Current Risk	IPE Risk
Fixed accelerator pedal production volume capability	full PSW at FEU	None

Engineer	Supervisor	Manager
Greg West 6/6/02	Larry Upesky 6-6-02	Gail Stelgen 6/10/02

Form EAE3201-3 20001221

Supercedes NAAO 816

PE83-B44 12188

[redacted]

	ENGINEERING SUBSYSTEM SIGN-OFF SUMMARY	Subsystem Name: Accelerator controls [redacted]	
Model Year: 2003.25	Vehicle/Program ID: P171/UL37	Functional Activity/Supplier/PMT: PTSE Stationary components	Date: 6/6/02

If you answer "No" to any of the following questions, please indicate shortfall and recovery plan on attachments

PRODUCT ENGINEERING

1. Have all SUBSYSTEM, SYSTEM, and TOTAL VEHICLE FUNCTIONAL OBJECTIVES been met?
   ___X___Yes _____No

2. Has 100% of DVP&R TESTING been completed successfully?
   ___X___Yes _____No

3. Has all F/CMVSS CERTIFICATION and SAFETY GUIDELINES documentation been completed per FAP03-202 and 203?
   ___X__Yes _____No

4. Are all PRODUCT ENGINEERING CR/CRs closed, validated, and containable to support 1PP?
   _____Yes __X___No
   Adj pedal effort curve to be modified for FEU (C11372514)

5. Are 100% of ALL PARTS projected ready for 1PP at PSW level?
   _____Yes ___x__No
   Both the fixed and adj accel pedal will be PSW'd for FEU

6. Are all CRITICAL PARTS identified?
   ___x___Yes _____No

7. Have Service Parts been released on WERS (including service fields filled in) and submitted to FCSD?
   ___x___Yes _____No

MANUFACTURING ENGINEERING

8. Have VO PROCESS SHEETS been completed?
   ___x___Yes _____No

9. Has MANUFACTURING PROCESS CAPABILITY been demonstrated through the use of surrogate parts?
   ___x___Yes _____No

10. Has ASSEMBLY PROCESS CAPABILITY been demonstrated through the use of surrogate parts?
    ___x___Yes _____No

11. Have Craftsmanship requirements been met?
    ___x___Yes _____No

FORD CUSTOMER SERVICE DIVISION

12. Have Service diagnostics, owner and shop manual publications, training and unique tool requirements been identified and signed-off?
    ____x__Yes _____No

Engineer/PMT Leader	*Manager/Project Manger*
Larry Liposky 6-6-02	Gail Sherard 6/11/02

Form FAF3201-3 20001221

Supercedes NAAO 816

PE03-944 12110

[redacted]

[redacted]

APG Trip report
4/17/02 thru 4/20/02
Greg West

Purpose:
Support management drive wrt accelerator pedal throttle efforts and "dead pedal".

Vehicles contained the "CP" fixed pedal assemblies (3C44-9F836-AA), which have LT26 pedal efforts ranging from approximately 3.8#s at break away to 9#s at WOT.
Production pedals will require nominal efforts from 4.5#s to 9.7#s due to the tolerance which can allow the break away forces to range from 3.8-5.2 #s. This is due to the variability in springs.

The management comments from this drive were extremely positive.

The "dead pedal" issue was brought to attention when one of the Engineering Sign Off vehicles had an accel pedal that was out of spec. This accentuated the strategy/calibration related dead pedal. We replaced that pedal and verified that all the other ESO trucks had pedals that were in spec.
The calibration (AK2_08) was revised for the drives to help reduce the "dead pedal". Specifically:

	APG	Recommended
pp_delta	500	45
pps_delta	10	27
pps_delta_ch	10	33

While this may have helped to reduce the dead pedal feel the calibration community must determine if this was a production feasible change. The concern would be a potential increase in mill lights set since the recommended values were based on the tolerance capability of the pedal voltage output.

Device Transmittal

FOR ALL 4.6L NAVISTAR BUILDS - Production Intent
FIXED & ADJUSTABLE ACCELERATOR CONTROLS

Control Number:
Issue Date:
Revised Date:

Ford Device Engineer: Greg West / Lisa Petrauskas
Phone Number: 84-39540 1/39-08070
Signature:
Location/Cube: PDC 38-848/39-A60

PWMS Systems Engineer: Tomas Pino/Dwiar Kalai
Phone number: [illegible]

Vehicle Code:
Model Year: [illegible]
Vehicle Line: P131/U/U137/N215
Device Name: Pedal Position Sensor
Subsystem Name: PCE & Gear Sup - Adat

Device Part Number:
Device Supplier:
WH Base Number:
Veh Location Code:

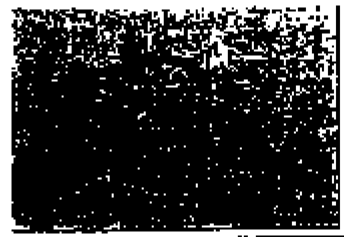
Device Connector P/N:
Device Connector Suppl: Williams Controls/Yazaki
Device Connection Type: Direct Connect

Ford Connector P/N*: [illegible]-14A624-BA
Connector Supplier: Yazaki
Ford Spacer P/N:

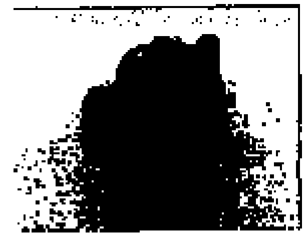
Ref. Conn App Form No.:
Connector Description: Direct Connect
Does Connector meet Mark EDS Requirements? Yes: X No:

*If connector does not have a Ford Part Number, a Connect[illegible] be submitted

Device Connection View:



WH Connection View:



	Cavity	Circuit Function	I/O	Discount Time	Max CH Res.	Mi[illegible]				Voltage Nom	Voltage Max	Term Temp Nom	Term Temp Max	Terminal Dimensions Width	Terminal Dimensions Thick	Terminal Dimensions Diam	Comp Term Plating Code	Wire Harness: Circuit Number	Terminal Part Number	Desc	Gage	Spec	CM?
6	A	Unused																					
1	B	Unused																					
7	C	APP - Pedal position output 1 ✓									4.2			1.50+/-.03	.80+/-.03	N/A	Tin & Au						
2	D	APP - Pedal position output 2 ✓									4.2			1.50+/-.03	.80+/-.03	N/A	Tin & Au						
8	E	APP - Pedal position output 3 ✓									4.2			1.50+/-.03	.80+/-.03	N/A	Tin & Au						
3	F	Unused																					
9	G	GRND ✓								0	4mV			1.50+/-.03	.80+/-.03	N/A	Tin & Au						
4	H	VREF ✓					5mA	10mA	4.8	5.0	5.2			1.50+/-.03	.80+/-.03	N/A	Tin & Au						
10	J	GRND ✓					5mA	10mA	0	0	4mV			1.50+/-.03	.80+/-.03	N/A	Tin & Au						
5	K	VREF ✓					5mA	10mA	4.8	5.0	5.2			1.50+/-.03	.80+/-.03	N/A	Tin & Au						

Ford System Engineer: G. West/L. Petrauskas
Phone number: 84-39540/39-08070
Signature:
Location/Cube: PDC 38-848/39-A60

Ford Wiring Engineer:
Phone number:
Signature:
Location/Cube:

Ford Conn Dsn Engineer:
Phone number:
Signature:
Location/Cube:

Ford Term Engineer:
Phone number:
Signature:
Location/Cube:

Ford Conn App Engineer:
Phone number:
Signature:
Location/Cube:

Comments:

FED3-044 12112

Electrical / Electronic System Design Transmittal

Component Name:	[illegible] (FIXED & ADJUSTABLE)
Part Number:	[illegible]
Subsystem:	[illegible]

Electrical Hardware Requirements Matrix

	Min	Nom	Max
Operating Temperature (Degrees C)	-40	[illegible]	[illegible]

EMC Compliance: [illegible]

Notes: All [illegible] voltages and currents are for NORMAL operation and must include both [illegible] and [illegible] states.

Physical Interface Requirements Matrix

Connector Part Number:		[illegible]	
Signal Name		Pin Number	[illegible]
[illegible]		1	N/A
[illegible]		2	
[illegible]		3	
[illegible]		4	
[illegible]		5	
[illegible]		6	
[illegible]		7	
[illegible]		8	
[illegible]		9	
[illegible]		10	

Connector Pin-Out - View Looking Into the Face of the Connector on Component

Production Intent

PEB3-044 12113

[redacted]

Containment Plan

Subject: Adjustable Pedal for 2001 MY P131/U137

The adjustable pedal PSW timing is 6/26/2000. 2001 MY 1PP and 4PP build will be supported with Non-PSW parts, and full PSW parts for Job #1 on 7/31/2000. The following are the key dates for the program:

Date	Actions
6/1/1999	Kick-off production tooling
9/3/1999	Prototype parts available for development tests
3/8/2000	PSW required
4/11/2000	Support 1PP build with parts that are built with production components, welded on prototype fixtures at tool maker, assembled with prototype assembly equipment
4/19/2000	KTP 1PP build
4/28/2000	Parts built with production components, production welding equipment, assembled at tool supplier
5/1/2000	Start PV testing
6/19/2000	KTP 4PP build - support with assemblies built on 4/28/2000
6/26/2000	PSW
7/31/2000	JOB #1

1 PP vehicles will not be salable as built.
4 PP vehicles will be salable.

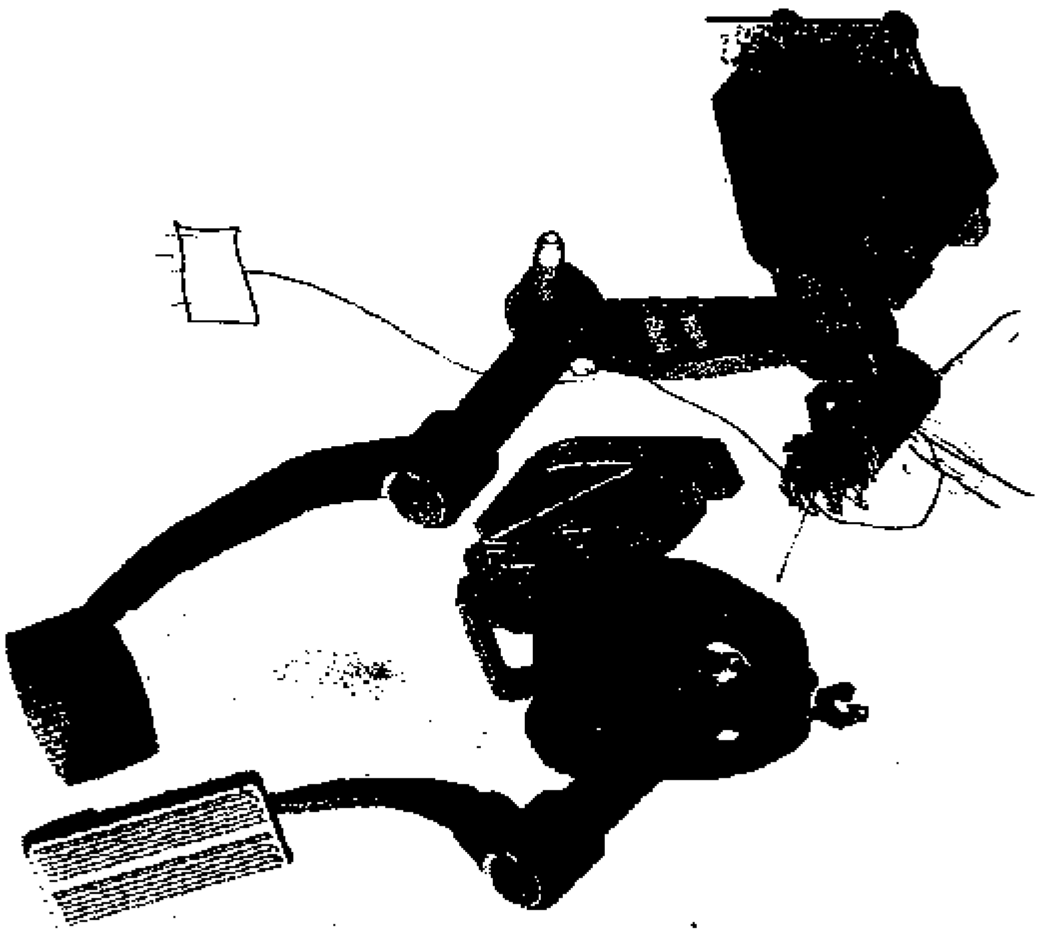
Jim Ross	Praful Patel	Ferguson, Rick (R.M.)
Chassis engineering	P131/U137 Program	Vehicle Operation
84-59159	84-19932	32-20037

Date Created : 7/27/1999
Date Printed : 08/04/1999

Originator: Peter Huang x41877
P131 CPD brake design

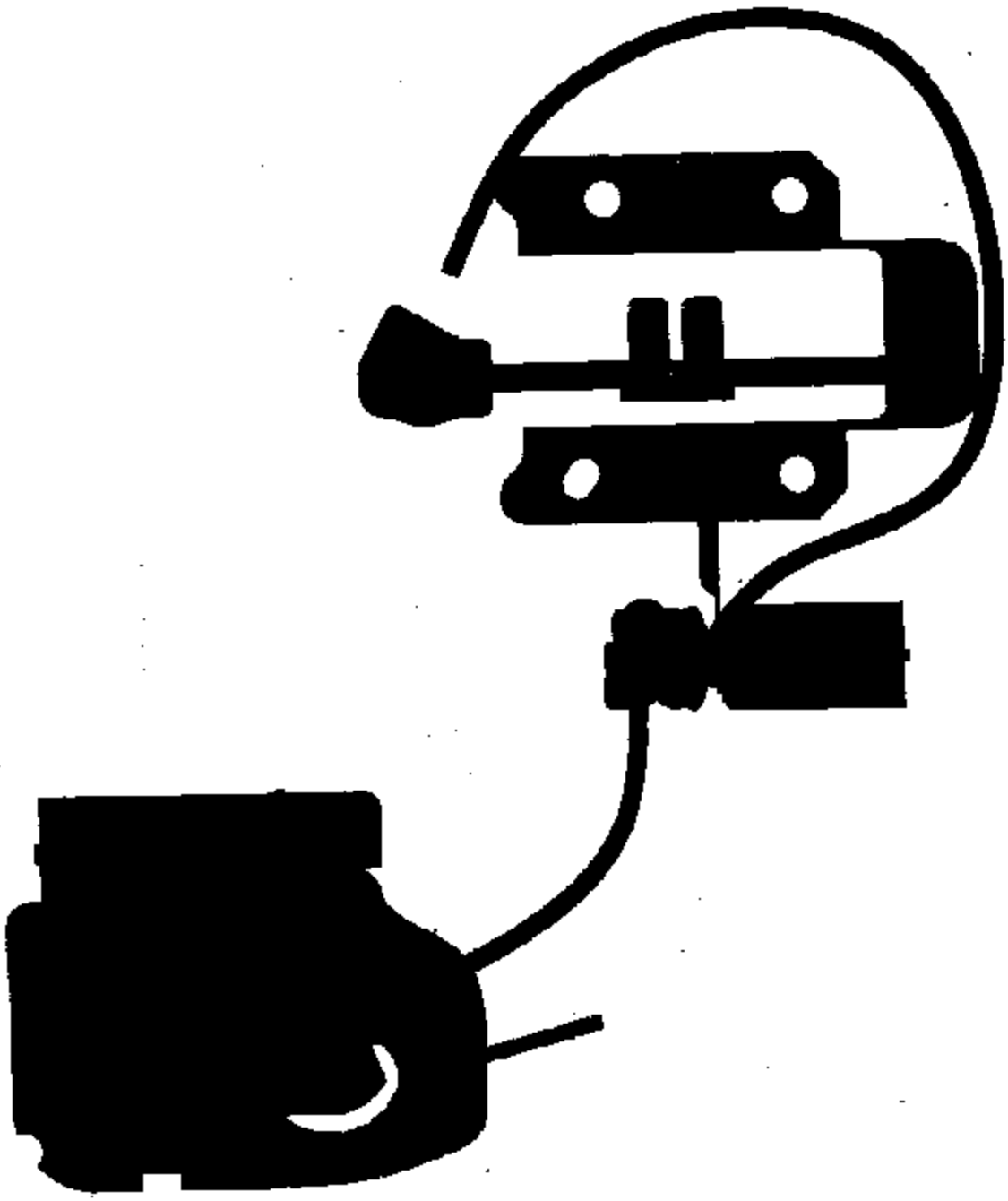
PE03-844 12177

[redacted]



4-137
ADJustable

PE03-044 12178

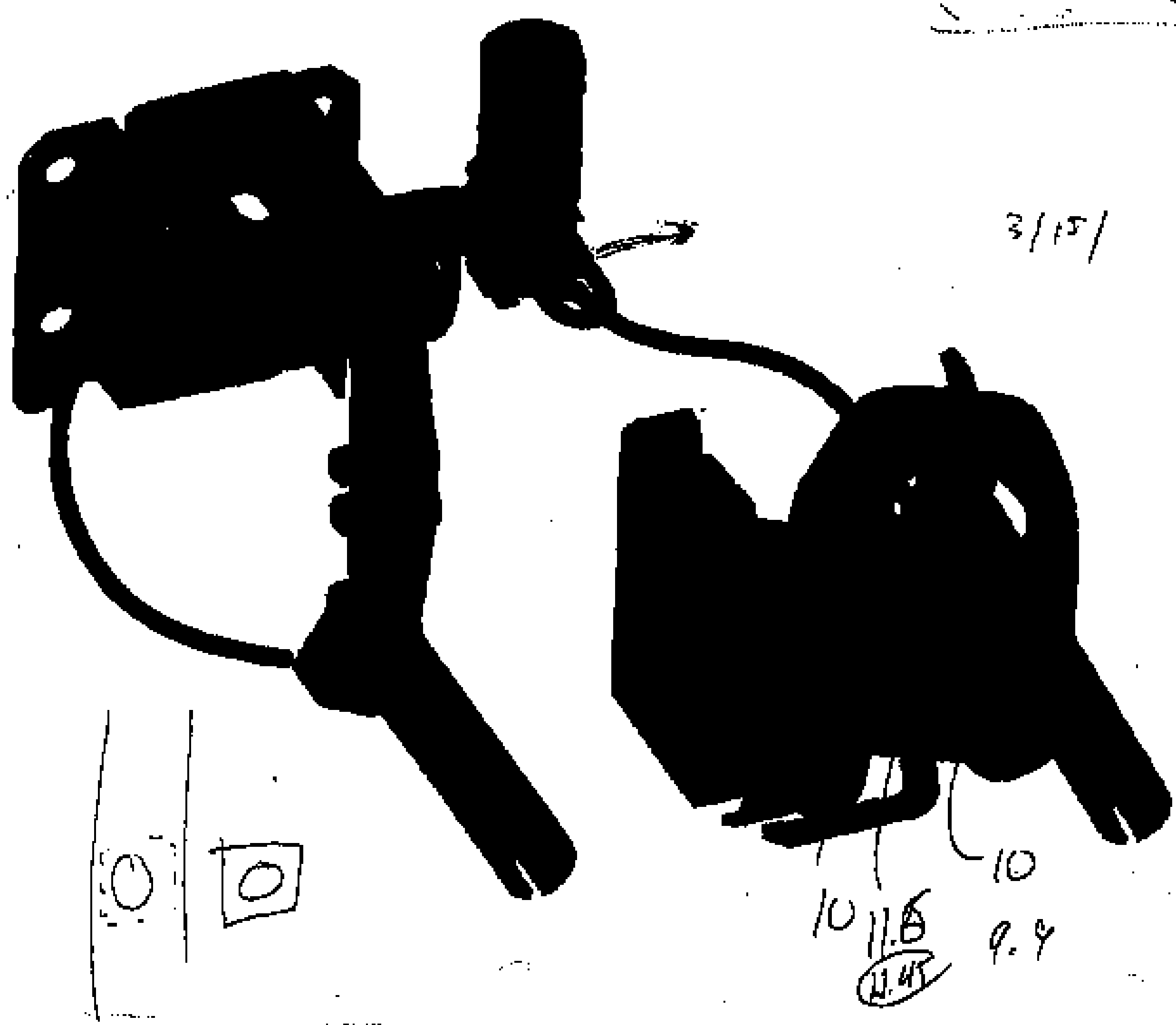


PB83-844 12179

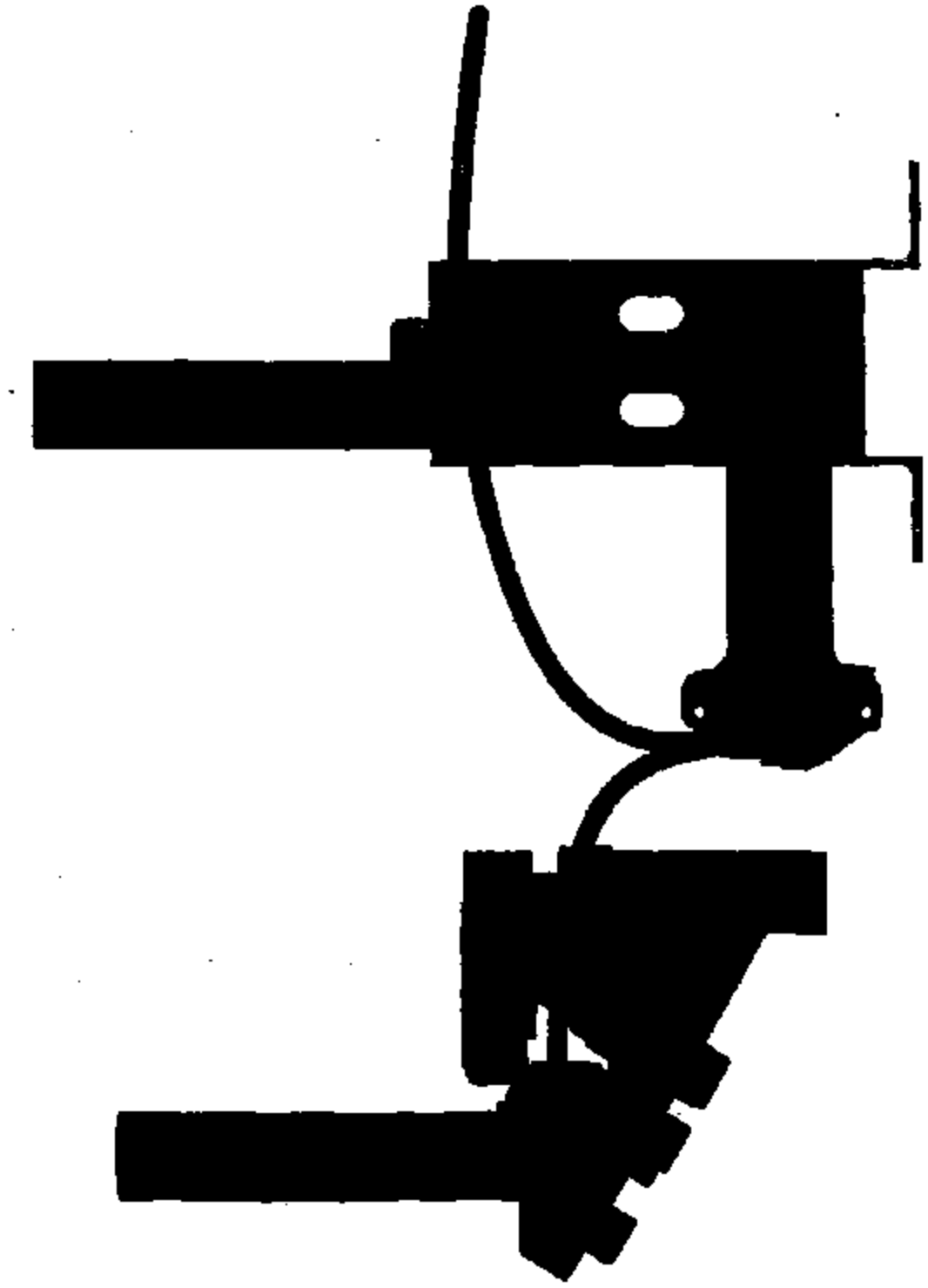
[redacted]

Responsibility
stack up

3/15/



PEB3-044 12180



PE83-844 12181

[redacted]

Reason for Delays?

When will we have Parts?

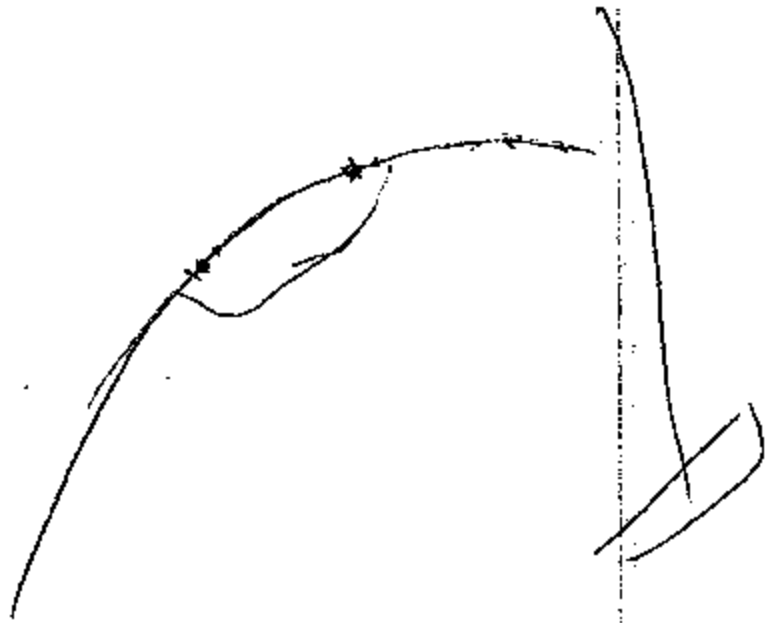
Impact on Production - since Nothing Learned from prototype testing?

Drop Dead Date timing?

Have the Critical Stacks been done?
- Show me.

[redacted]

① prototype parts status, Responsibility.
② System function study (Stack up, Manufacture,..
③ Drawing ~~Issue~~ Release Issue
④ Production tool kick-off.



PE83-844 12163

Device Transmittal

Control Number:

Issue Date:

Revised Date:

Vehicle Code: Model Year: Vehicle Line:

Device Name:

Subsystem Name:

Ford Device Engineer:
Phone Number:
Signature:
Location/Cube:

ASAE System Engineer:
Phone number:

Device Part Number:
Device Supplier:
WH Base Number:
Veh Location Code:

Device Connector P/N:
Device Connector Suppl
Device Connection Type:

Device Connection View:

WH Connection View:

Ford Connector P/N:
Connector Supplier:
Ford Spacer P/N:

Ref. Conn App Form No.:
Connector Description:
Does Connector meet basic SDS Requirements? Yes: No:

If connector does not have a Ford Part Number, a Connector Application Form must be Submitted

Device Connection																	Wire Harness Connection					Low Energy Ckt?
					Current			Voltage			Term Temp C		Terminal Dimensions									
Cavity	Circuit Function	I/O	Discrete Times	Max Dig Rate	Min	Nom	Max	Min	Nom	Max	Nom	Max	Width	Thick	Diam	Comp Term Plate Code	Circuit Number	Terminal Part Number	Term Suppl Term Desc	Wire Gage	Wire Sect	
1																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						

Ford System Engineer:
Phone number:
Signature:
Location/Cube:

Ford Wiring Engineer:
Phone number:
Signature:
Location/Cube:

Ford Conn App Engineer:
Phone number:
Signature:
Location/Cube:

Ford Term Engineer:
Phone number:
Signature:
Location/Cube:

Ford Conn App Engineer:
Phone number:
Signature:
Location/Cube:

Comments:

FSS-944 12184

Originator: Jeffy McDaniel,jmcDaniel8
[illegible]

Page 1 of 1

Date Issued: 07/03/1998
Date Revised: 7/23/1998

Device Transmittal

Control Number:

Issue Date:

Revised Date:

Ford Design Engineer:

Phone Number:

Signature:

Location/Cube:

Visteon Systems Engineer:

Phone number:

Vehicle Code:

Model Year: 2001

Vehicle Line: U137

Device Name: Intermediate Housing Connector - ETC

Subsystem Name: Accelerator Pedal - Electronic Throttle Control

Device Part Number: [illegible]

Device Supplier: Teleflex Automotive

W/H Desig Number:

Veh Location Code:

Device Connector P/N: [illegible]

Device Connector Suppl: Teleflex Automotive

Device Connection Type: Direct Connect

Ford Connector P/N: 1X7T-14A464-FA

Connector Supplier: Yazaki

Ford Spacer P/N:

Ref. Conn App Form No: N/A

Connector Description: Direct Connect

Does Connector Meet MMB MDS Requirements? Yes: X No:

*Transmitter Copy requires a Ford Part Number, a Connector Application Form must be submitted

Device Connection View:

Mating Connection View:

	Device Connection																	Wire Harness Connection					
Cavity	Circuit Function	I/O	Operate Time	Max Ckt Res.	Current Min	Current Nom	Current Max	Voltage Min	Voltage Nom	Voltage Max	Term Temp Nom	Term Temp Max	Terminal Dimensions Width	Terminal Dimensions Thick	Terminal Dimensions Diam	Comp Term Plate Code	Circuit Number	Terminal Part Number	Term Suppl Term Desc	Wire Gage	Wire Spec	Low Energy Ckt
1	Accelerator pedal position (+)					5mA	10mA		5V				[illegible]	[illegible]	N/A	Tin & Au						
2	Accelerator pedal position (-)					5mA	10mA		5V				[illegible]	[illegible]	N/A	Tin & Au						
3	Accel. pedal position output					5mA	10mA		5V				[illegible]	[illegible]	N/A	Tin & Au						
4	Idle validation switch					5mA	10mA	9V	12V	16V			[illegible]	[illegible]	N/A	Tin & Au						
5	Idle validation switch					5mA	10mA	9V	12V	16V			[illegible]	[illegible]	N/A	Tin & Au						
6																						
7																						
8																						
9																						
10																						

Ford System Engineer:
Phone number:
Signature:
Location/Cube:

Ford Wiring Engineer:
Phone number:
Signature:
Location/Cube:

Ford Conn Des Engineer:
Phone number:
Signature:
Location/Cube:

Ford Term Engineer:
Phone number:
Signature:
Location/Cube:

Ford Conn App Engineer:
Phone number:
Signature:
Location/Cube:

Comments: The Teleflex intermediate housing has the connector and pins molded with the intermediate housing. The Yazaki connector attaches to the intermediate housing.

Originator: [illegible]
U137nb

Date Issued: [illegible]
Date Revised: [illegible]

FED-044 12185

ENTIRE PAGE CONFIDENTIAL

9-29-99

Diesel

402370	Plate Bracket	Also Assembly Print
402362	Back Plate	
20061	Spacer	

Gas

402370	Plate Bracket	Also Assembly Print
402354	Back Plate	
20061	Spacer	

These are the parts Teleflex need drawings from KSR.

Call: Larry Willemsen (519)-674-5413

or

David Lydy (248)-354-4690

PE83-844 12106

[redacted]

CONFIDENTIAL

16 14

Containment Plan

Subject: Adjustable Pedal for 2001 MY P131/U137

The adjustable pedal PSW timing is 6/26/2000. 2001 MY 1PP and 4PP build will be supported with Non-PSW parts, and full PSW parts for Job #1 on 7/31/2000. The following are the key dates for the program:

Date	Actions
6/1/1999	Kick-off production tooling
9/3/1999	Prototype parts available for development tests
3/8/2000	PSW required
4/11/2000	Support 1PP build with parts that are built with production components, welded on prototype fixtures at tool maker, assembled with prototype assembly equipment
4/19/2000	KTP 1PP build
4/28/2000	Parts built with production components, production welding equipment, assembled at tool supplier
5/1/2000	Start PV testing
6/19/2000	KTP 4PP build - support with assemblies built on 4/28/2000
6/26/2000	PSW
7/31/2000	JOB #1

1 PP vehicles will not be suitable as built.
4 PP vehicles will be suitable.

C

Jim Ross	Praful Patel	Ferguson, Rick (R.M.)
Chassis engineering	P131/U137 Program	Vehicle Operation
84-59159	84-19952	32-20057

Date Created : 7/27/1999
Date Printed : 08/04/1999

Originator: Peter Hsiung x41877
P131 QPD brake design

PE83-844 12187

Uncontrolled Copy

2001 P131 DURABILITY FLEET

No.	ACTIVITY	PART #	SPEC #	PART DESCRIPTION	PART NUMBER			VEHICLE DESCRIPTIONS			SORT [illegible]	INVEST	DATE NEEDED	CONTACT	Detection No.	[illegible] Test Sign off	PHONE #
								7.3L Super Cab [illegible] 4R100 SRW 3.73 Axle [illegible]	5.4L Regular Chassis Cab [illegible]	6.8L Crew Cab [illegible] 4.10 Axle [illegible]							
					PRE	BASE	SUF	PRODUCTION [illegible]	TBD	TBD							
1		108	[illegible]	Adjustable Brake Pedals	[illegible]	[illegible]	[illegible]	X			N		[illegible]	J.HUANG	[illegible]		[illegible]
2			[illegible]	Adj. acc. pedal for diesel engine Switch	1C3[illegible]	[illegible]	AA	X			N		[illegible]	J.HUANG	[illegible]		[illegible]

FEB3-844 12186

[redacted]

ENTIRE PAGE
CONFIDENTIAL

PROGRAM TEAM DOCUMENT TRANSMITTAL
Cover sheet for program team documents to suppliers.

Supplier: Teleflex Automotive Group Inc.

Program Team: 2003 SD/Excursion
Chassis
Component: 03.18 Adjustable Accelerator
Electronic Throttle Control

DOCUMENT BEING TRANSMITTED:

	DOCUMENT	PURPOSE
☐	Early Supplier Involvement Agreement	Identify two or more suppliers to work with program teams to develop design intent.
☐	Sourcing Confirmation Letter	Confirms Sourcing for FPDS programs. Sourcing is committed prior to Target commitment.
☒	FPDS Target Agreement	Confirm Targets for FPDS programs.

ATTACHMENT(S) TO DOCUMENT:

	ATTACHMENT	PURPOSE
☐	Ford and Supplier Expectations	Communicates Ford and Supplier roles in Sourcing, Targets, Design and Design Validation.
☐	C3P Information	Contact Lists for C3P Information
☒	Procedure for Handling Confidential Information	Documents Confidentiality procedure and commitment to utilize.
☒	Program Specific Sys/Subsys Design Specification	Communicate design criteria.
☒	Program Specific FSS Statement of Work	Define program specific Ford/Supplier product design roles and responsibilities.
☒	Attribute Performance Expectations	Describes the performance expectations for the various attributes of a module or component.

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[redacted]

ENTIRE PAGE
CONFIDENTIAL

TARGET AGREEMENT

Vehicle/Product Program (including Model Year) 2003 SuperDuty Programs

Supplier*: Teleflex Automotive Group Inc.	Q1 Status: [redacted]
System/Subsystem/End Item/Component '03.18.01 – Adjustable Accelerator Control	Part Number(s): 3C34-9F839-AA (Use w/ Navistar 6.0L Engine)
Core / Leveraged Commodity: Leveraged	FSS Decision Maker: Grant Wilson
Buyer: Joe Starkie (313) 39-47478	PMT # 109
Quality Targets: Functional targets ensuring lifetime reliant and reliable performance (not TGW or R/1000 targets) TBD	Job #1 Date: Kentucky Truck Plant: August 6, 2002
Weight Target: 0.71Kg	Average Production Weekly Volume: TBD Maximum Production Weekly Volume: TBD Cycle Average annual FPV: F-Series = TBD Excursion = TBD
Production Piece Price Target * 3C34-9F836-AA = TBD	Production Tooling Target: (including gages and models) Production Tooling Start Date** : *Delay derived to support 1095 PSW for TPP MRD of 3/15/2001*
Prototype Piece Price Target: $2150 Per part	Prototype Tooling Target: TBD for all Proto-type builds through CP. *(Note: TPP are to be PSW parts)*
Ford Vehicle Operations Labor Assembly Time Target: No Applicable	Other Targets***:

COMMITMENT

Teleflex Automotive Group Inc was confirmed as the source of the above referenced system/subsystem/end item/component and has been a participating member of the PMT since Early Sourcing involvement was distributed in December of 1999. As a member of the PMT Teleflex Automotive Group Inc:

- Has joint responsibility for ensuring that the above specified system/subsystem/end item/component supports the established program functional/weight/quality/cost objectives.
- Has participated in the development of the above referenced Targets.
- Will participate in the design and development process outlined in the Full Service Supplier Partnering Guidelines dated July 1, 1998 (if this is a leveraged commodity), the attached program specific System/Subsystem Design Specification dated 2/25/2000, and the attached program specific FSS Statement of Work.

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* Must be a Q1 ship point, or, if the actual ship point is not known at this time, the parent supplier commits to put the business in a Q1 facility. For a new facility (therefore not Q1), the sourcing process is described at the Ford Internal WEB address http://www.purchasing.ford.com/prch_prod_proc_man/html/appn215.html.

** Tool Start Date is the estimated date for beginning tooling expenditures. Tooling cannot commence until the PMT gives authorization in written form.

*** Commodity specific targets such as fabric specification (seats), paint colors (painted components) or, on an exception basis, Ford directed sourcing items (see Ford policy on Supplier Sub-system Sourcing Responsibility at the Ford Internal WEB address "http://www.purchasing.ford.com/prch_proc_pubs/html/sply_ltr1.html".)

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On or before [redacted] Months Before Job #1, a Production Purchase Order based on Ford's standard purchase order terms and conditions (FGT 28, rev. 4/97*) will be issued which incorporates the targets contained in this Early Sourcing/Target Agreement unless either or both of the following occur:

1. Ford makes a change in program or subsystem/end item/component direction;
2. Your company is unable to continue with design and development of the subsystem/end item/component or carry out all of the responsibilities outlined in this Agreement;

in which case Ford and your company will each absorb their own cost of work for this program. If a Production Purchase Order is not issued due to (2) above, Ford, at its option, may then acquire from your company at actual cost, all or any portion of the technical information and data related to work your company performed for the program together with whatever licenses are required under your Company's intellectual property rights to use that information and data on a royalty free basis.

Upon issuance of the Initial Ford Purchase Order, Supplier's Purchase Part Capacity will be the Maximum Production Weekly Volume number shown on this document. Please see the CPV2 Application on the Ford Supplier Network for further information on Purchase Part Capacity.

TARGETS

Targets have been developed as follows:

- Piece Price - at Job #1 conditions (firm Job # 1 price). Targets are denominated in currency of supplier manufacturing location.
- Tooling - based on incurred cost and includes gages and models. Targets are denominated in currency of supplier manufacturing location.
- Prototype Piece Cost and Tooling - within program prototype piece/tooling cost targets and/or existing multiplier/formula pricing agreements
- Quality - Functional targets developed using VDS cascade and SDS/CDS to ensure robust and reliable lifetime performance.
- Capacity - Capacity planning supports ongoing production at Average Production Weekly volumes and Maximum Production Weekly Volumes for a minimum of 90 days.

We the team recognize that we will be exposed to data which is sensitive in nature and needs to be protected. Technology, as well as proprietary data, will be treated in accordance with the process outlined in Attachment I.

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* Supplemental Clauses to FGT 28, rev. 4/97:

- PROVISIONS APPLICABLE TO SELLER-OWNED TOOLING. "Seller represents and warrants that the prices for the Supplies will be no less favorable than those which Seller presently, or in the future, offers to any other customer for the same or similar goods or services for similar quantities. If Seller offers a lower price for the same or similar goods or services to any other customer during the term of a Purchase Order, then to the extent permitted by law, Seller will immediately offer Buyer the same price for the Supplies on the same layout and conditions as was offered to the other customer.

"If Seller has been notified that the special tooling required to support production of Supplies for this Purchase Order is to be funded by Seller ("Supplier-Owned Tooling"), the following provisions shall apply:

a) Seller acknowledges that the Purchase Order price includes a cost element to help Seller recover the capitalization of Supplier-Owned Tooling. The Supplier-Owned Tooling will be properly maintained by the Seller at its own expense for so long as the Supplies are purchased by Buyer for its useful production as well as for its service and replacement part requirements.

b) If Seller uses the Supplier-Owned Tooling to produce the Supplies for other customers, including aftermarket customers, such Supplies shall not incorporate any of Buyer's logos, trademarks, trade names or unique part numbers. Seller shall not disclose or imply in its marketing efforts that the Supplies are equivalent to those purchased from Seller by Buyer or any of its Associated

[redacted]

[redacted]

Companies. Seller shall indemnify and hold Buyer (including its employees) harmless from and against any claim, expense, loss or liability arising out its sale of Supplies to other customers or caused by or resulting from defects in design, materials or workmanship of the Supplies sold to such customers; the failure of Seller (or its subcontractors) to fully comply with applicable federal, state, or local laws, statutes, regulations or governmental directives which regulate the sale of Supplies to such customers; and from any and all claims, suits and liability for loss of or damage to any tangible property or persons (including death) caused by any act or omission, including negligent or willful conduct of Seller or its subcontractors, arising out of such sales of Supplies to other customers.

c) In consideration of Buyer's Purchase Order for parts to be produced from the Supplier-Owned Tooling, Seller grants Buyer an exclusive, irrevocable option to purchase Supplier-Owned Tooling by paying the lesser of the outstanding unrecovered capitalization or the fair market value at the time Buyer exercises the option. Buyer may exercise this option in the event of termination or expiration of this Purchase Order. If Seller finances any portion of the Supplier-Owned Tooling, Seller will obtain for Buyer the rights granted in this subparagraph (c) from its financing source."

- TERMINATION/CESSATION: "Buyer may terminate a Purchase Order without liability to Seller if Seller (i) sells, or offers to sell, a substantial portion of its assets used for the production of Supplies for Buyer, or (ii) sells or exchanges, or offers to sell or exchange an amount of its stock that would result in a change in the control of Seller. Buyer shall give Seller written notice of the termination at least 30 days prior to the effective termination date. Seller shall notify Buyer no more than ten days after entering into any negotiations for the sale or exchange of its stock or assets that could result in a change of control of Seller."

The Buyer is responsible to obtain management approval for this sourcing action as outlined in the Procurement Delegation of Authorities Guide prior to signing this Target Agreement. Reference Form #PP-P-F654.

We accept the conditions stated above and we commit to work toward achievement of the targets. At Program Approval <PA>, these targets will become objectives unless the assumptions contained in the agreement are formally amended.

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[redacted]

[redacted]

PMT Leader Philip Beuckelaere	Date 4/10/00
Vehicle Integration Supervisor I. Joseph Weems	Date
Team Finance Analyst	Date
Buyer	Date
Supplier	Date

ATTACHMENTS:

I - Procedure for Handling Confidential Information
II - Program specific System/Subsystem Design Specification dated __/__/__
III - Program specific FSS Statement of Work dated __/__/__

[redacted]

[redacted]

ATTACHMENT I: PROCEDURE FOR HANDLING CONFIDENTIAL INFORMATION

During the time Supplier is participating in this Program, Ford and Supplier agree that where it is necessary for either Ford or Supplier to disclose its proprietary and confidential information to the other, the following rules will apply to the Parties:

1. A Party which receives such information from the other Party shall have a duty to protect only that information which is (a) disclosed to it in writing or as a tangible item and is marked as confidential at the time of receipt, or (b) disclosed to it in any other manner, is identified as confidential at the time of receipt and is also detailed and designated as confidential in a written memorandum delivered, within thirty (30) days of the first disclosure, to the receiving Party's representative designated for this purpose.

2. A Party which receives confidential information from the other Party shall use a reasonable degree of care, that is at least equal to the degree of care it uses to protect its own confidential information of a like kind and nature from disclosure to third parties, to protect the received confidential information from being disclosed to any third party without the express written permission of the other Party. This obligation shall continue for a period of four (4) years from the date of this Agreement or until Ford commences production of products which incorporate the subject of this Program, whichever first occurs. This obligation shall be replaced and superseded by the confidentiality obligations contained in any Purchase and Supply Agreement issued pursuant to this Agreement.

3. A Party which receives information under this Program from the other Party has no obligation to protect information which (a) was in the receiving Party's possession before receipt from the other Party; (b) becomes a matter of public knowledge through no fault of the receiving Party; (c) is rightfully received by the receiving Party from a rightfully possessing third party without a duty of confidentiality; (d) is disclosed by the other Party to a third party without a duty of confidentiality on the third party; (e) is disclosed under operation of law; or (f) is independently developed by the receiving Party's personnel who have not had access to the information designated as confidential by the other Party, and is provable by competent evidence.

[redacted]

[redacted]

ATTACHMENT II: PHASED DATA NOTIFICATION EXPLAINATION

For Ford and Seller-owned tooling, Seller will not commence production of the tooling until:

1. The Tool Start Date as indicated on the Target Agreement is reached; and

2. Seller has received written Engineering Readiness Authorization from the PMT leader for this commodity.

   Engineering Readiness Authorization means that the part is at the appropriate engineering release level, as dictated by the PMT. "Appropriate release level" might mean a "Phased Data Notification" (sequential releases of increasing levels of detail about the part prior to actual final release), or a Final Engineering Release ("P" authority release) of the part.

   For "Phased Data Notification" parts, the Engineering Release events are described in the Commodity Plan for the part. A Commodity Plan is a detailed engineering workplan of the various events in the engineering process, leading to Job #1 and production usage of the part.

   The Commodity Plan will identify two key authorization dates for each phase of the tooling process for the part. The two phases of tooling are: 1) Tool Design and Planning, and 2) Procuring Materials for the Tools/Construction of the Tools. The Commodity Plan will also detail the specific activities that the supplier can undertake at each phase of tooling.

   If the Tool Start Date on the Target Agreement has been reached (and for Ford owned tooling, Seller has received a Tool Order for tooling), Seller may initiate the activities associated with Tool design and planning upon receipt of the Phased Data Notification indicating that Tool design and planning may commence. If the Tool Start Date on the Target Agreement has been reached (and for Ford owned tooling, Seller has received a Tool Order), Seller may initiate the activities associated with Procuring Materials for the Tools/Construction of the Tools upon receipt of the Phased Data Notification indicating that material procurement and tool construction may commence.

   Seller shall not incur costs for any phase prior to the specified commencement date for that phase.

1.03	Program Timing Planning & Management	X	X		
1.04	Technical Requirements - Establish/Review	X	X		
1.05	Recyclability Requirements	X			
1.06	Pre-Program / Pre-Target Agreement	X	X		
1.07	Prototype Build & Part Schedule	X	X		
1.08	CAD Responsibilities (shown here or in 2.05)	X		X	
1.09	CAE Responsibilities (shown here or in 2.05)	X			X
1.10	Testing & Check Fixtures	X			
1.11	Budget	X	X		
1.12	Facilities & Personnel	X	X		
2.01	Subsystems Sourcing - Interface	X	X		
2.02 - 2.03	Subsystem/Component Target Delivery	X			
2.04	Systems Integration	X			
2.05	Engineering Tasks	X	X	X	X
2.06	In-house Engineering & Manufacturing Concerns	X	X		
2.07	Product Change Approval	X	X	X	
2.08	CAD/CAE	X		X	X
2.09	Subsupplier Interface	X			
2.10	Engineering Status - Meetings	X	X		
2.11	Joint Vehicle-level Concern Resolution	X			
2.12	Joint Prototype Cost, Timing & Tooling Management	X	X		
2.13	Surface Layout Responsibilities	X		X	
2.14	Market Research Properties	X			
2.15	Service Documentation	X		X	
3.01 - 3.04 3.06	Launch & Production Support	X	X		
3.05	Service Support	X			
	Misc. Attachments				

***Note:** This Draft has been created for presentation purposes only as an example. Template is under development and may likely include new sections in 1.0 for: Illustration, Reliability, Service and Release/Change Management. As a result of the new sections the numbering in Section 1.0 will change.*

Program/Model Year:	2003 Super Duty / Excursion	Supplier/Commodity(s):	P13/MJ137 Adjustable Accelerator Electronic Throttle Control
Vehicle Assumptions:	Described in Product Table Below and Section 1.02		
Program Commodity:	Described in 1.01		
CDX Requirements, Specify:	C3P Program (CAD/CAM/CAE PM) - Sections 1.08, 1.09, 2.05 and C3P SOW		
Collocation Requirements, Specify:	Described in Section 1.12		
Program Targets:	Described in Target Agreement (to be attached), Target Table below and in Section 1.02		

Packaging:		
Net Weight:		
Gross Weight:		
Surface Area:		
Part/Carrier:		
Substrate:		
Part Size:		
Safety:		
Styling/Appearance: (including colors)		
Volume:		
Volume Mix:		
Thermal & Aero:		
Serviceability:		
Homologation:		
Recyclability:		
Quality:		
Cost: (see Target Agreement)		

1.0 *General Program Requirements and Pre-Target Agreement*

1.01 Commodity Description & Scope of Supplier Responsibility

03.18 Adjustable Accelerator Electronic Throttle Control	Teleflex Automotive Group Inc	Modified	X

Characteristics & Diagram (insert here)
- See Illustration on Master Document

Full Service Supplier (FSS) Roles & Responsibilities are defined by Ford's Full Service Supplier Partnering Guidelines and this Statement of Work. This includes the FSS Principles which require the cooperative development of targets, program/module definition, and the SOW. The Principles also describe a budget which is included as part of the SOW and is included in the piece price. Ford and the Supplier are responsible for achieving the budget and the targets. These items and others contained within the FSS Partnering Guidelines are the basis of this document. See the FSS Partnering Guidelines Issued 95.12 and revised 96.07.01 for more information.

Section 1.0 describes General Program Information and Pre-Program responsibilities (Section 1.08). Sections 2.0 and 3.0 contain FSS Roles & Responsibilities from the FSS Partnering Guidelines with additions denoted by bullets ' • ' and deletions denoted by ' *does not apply* '.

1.02 Program/Commodity Assumptions are listed below and will be provided by Ford at least two weeks prior to the planned signing of target agreement:
1.02.1 Program Direction Letter
1.02.2 Ford Assembly Plant Locations: [Kentucky Truck Plant, Custom assembly Plant]
1.02.3 Leveraged Commodity: [redacted]

1.03 Program Timing

[redacted]	[redacted]	[redacted]
SI	Strategic Intent	June 1999
C3P	Readiness with Data Integrity Test (Section 1.08 for details)	August 1999
SC	Strategic Confirmation	August 1999
TA	Target Agreement Signed	January 28, 2000
Level 3 CAD	Ideas package data with Design concept	January 28, 2000
PH	Proportions & Hardpoints	January 28, 2000
PA	Program Approval	April 2000
Level 4 CAD	All Interfaces and Some Component Detail Defined	April 2000
FEAS	Feas Sign-Off	N/A
DSO	Design Sign-Off	N/A
PT	Powertrain Design Complete - Design Release	February 20, 2001
PR	Product Readiness	January 2001
CP	Confirmation Prototype	April 23, 2001
CC	Change Cut-Off	December 2001
TA	Tooling Authority	TBD
Production TO	Production Tool Order	TBD
LR	Launch Readiness	March 22, 2000
SO	Engineering Sign-Off	March 4, 2000
LS	Launch Sign-Off	April 29, 2000
JI	Job #1	August 8, 2002 (KTP)

1.04 Technical Requirements
The following documents define the technical requirements for this component

[redacted]	[redacted]
Program Direction Letter (PDL)	GEN0121908/26/00
WCR Requirements	Provided by Ford
SDS Requirements:	See file
Program - Specific SDS	See File
PMT & supplier Work Plan that documents the following key events: • Reliability/Robustness Plan (Described in 1.08 and deliverables in 2.05) • Service Plan (described in 1.08 and deliverables in 2.05) • Engineering Sign-off Evidence (evidence and sign off requirements noted in 2.05) • CAD Deliverables (overview in 1.08 and data deliverables in 2.05) • CAE Deliverables (overview in 1.08 and data deliverables in 2.05)	
DVP&R: Vehicle Level, System Level, Component Level, CAE level (noted in 2.05)	On-going updates

1.06 Recyclability Requirements

- New Plastic and/or rubber parts must contain at least 25% by weight post-consumer recycled content. Exceptions to this must be reviewed and approved by the Recycling Attribute Team.
- All us of recycled material for parts form surrogate programs must contain that recycled material content incurrent program use.
- All plastic components must be marked with material identification in accordance with Engineering Drafting Standards Metrics 9Standard NO. E-4 issues April 19, 1995, SAE J1344 and ISO Standards.

In the following sections, work is described in a paired set. The Ford responsibilities are denoted with an (Ax) and they have complementing Supplier action set denoted with a (Bx).

1.08 Pre-Program Work; Pre-Target Agreement

A. Ford will perform the following pre-program activities:	B. Supplier will perform the following pre-program activities:
• Appoint e Ford Decision Maker/PMT leader (A1)	• Provide list of engineering and manufacturing team contacts including roles & responsibilities (B1)
• Provide Supplier with key Quality documents and support including (A2) ◊ Ford Reliability Guide (FRG) ◊ Ford Quality/Reliability Statement of work ◊ Cooperatively develop tooling and warranty responsibility that will be included in the FSS relationship; document in the Reliability SOW and be part of the TA ◊ Review and approve supplier submitted QR Commodity Strategy	• Develop a Quality/Reliability strategy that meets FRG intent and Ford QR SOW guidelines (B2) ◊ Provide Strategy including robustness & Reliability method to be used ◊ Description of Campaign prevention process ◊ Warranty Sharing Agreement ◊ Conducting FMA on Top 5 Super Duty Exhaust Warranty issues ◊ Competitive benchmarking ◊ Train Engineer in all Ford FTEP training classes
• Cooperatively develop system/component functional & cost targets with supplier (A3)	• Cooperatively develop system/component functional & cost targets with supplier (B3)
• Make available vehicle and engine package information. (A4) ◊ Ford engineering will insure all necessary CAD data is made available for Arvin CAD activity to access through Metaphase and the IMI bridge.	• Create and develop designs that are compatible with vehicle package environment (B4) ◊ Incorporate design improvements as directed by Ford ◊ Design Feasibility-Optimize vehicle/system to support program targets; provide package/design improvements
• Cooperatively develop service part requirements if any (A5)	• Cooperatively develop service strategy that includes: (B5) ◊ Meeting FCSD specific commodity targets ◊ Design system/components for ease of maintenance or repair at a competitive cost ◊ Identification of serviceable items via Service Bill-of-Material (SBOM) ◊ Identification of Tier II suppliers core system specific service parts per SBOM ◊ System diagnostic and special dealer tool identification ◊ Capacity planning including service requirements
• Train Tekelec Engineering support in the Ford Engineering C3P Curriculum (A6)	• Comply with C3P requirements described in section 2.06 (B6)
• Provide access to FMC WERS CONCERN and ALERT system to allow the supplier to generate the necessary data to support FMC release system. (A7)	• Prepare design release records in WERS (B7)
• Develop and cascade appearance acceptance (A8)	
• Communicate and facilitate Dunnage and shipping package requirements (A9)	• Identify material dunnage and shipping rack package assumptions including estimated packaging density, part orientation and rack dimensions used to identify packaging piece price, this is to be don in conclusence with the packaging guidelines.(B8) ◊ Verify design with Packaging Guidelines "retool & waste" utilizing CAD data ◊ Finalize prototype shipping rack design with prototype parts and verify whether "retool & waste" have been achieved

1.07 Prototype Build & Part Schedule

A. Ford will be responsible for issuing and executing the Prototype Plan including the following detail schedules:

- Craftsmanship sign-off schedule (to be provided by PMT Leader No Later than July 31, 2000)
- Service part schedule (to be provided by PMT Leader No Later than July 31, 2000)
- Vehicle Launch Plan
- Prototype build and tooling schedule (See table below)

PROTOTYPE BUILD & TOOLING SCHEDULE

Build Event	MRD	Tooling Requirement	Build Location	Build Specs
AP1 Build	03/27/2000	Prototype	TBD	To be Provided by Ford
AP2 Build	07/10/2000	Prototype	TBD	Minimum of 18 weeks
AP3 Build	09/05/2000	Prototype	TBD	Prior to MRD for all
Reliability Build	02/05/2001	Prototype	TBD	Builds
CP Build	04/23/2001	Prototype (Production Release)	TBD	
1PP	03/18/2002	Production (PSW parts)	TBD	

B. Supplier will provide the following:

- End-items/components to support builds at negotiate prototype part cost

Base Part Number and Description	Proto-type Piece Cost
-BP836- Accelerator Pedal	To Be Negotiated

Note: Volumes and cost for the above are negotiated as part of the Target Agreement.

- Product personnel to support prototype and production builds on site and during launch
- Product and personnel to support vehicle testing and vehicle sign-off
- Product to support service parts schedule
- On time PSW part approval

1.08 CAD General Responsibilities: (specific deliverables and timing managed by CAD Detail Schedule a.k.a VITAL)

A. Ford will be responsible for providing:

- CAD modeling guidelines (if applic. list here)
- Review of CAD model described in table below (A1)
- CAD file organization, procedures, and drawing requirements (Ford will provide) (A2)
  - ⇒ Engineering CAD File Organization and Data Exchange Guideline
  - ⇒ Illustration CAD File Organization and Data Exchange Guideline
- Ford Engineering CAD & Drafting Standards and any local procedures that apply (Ford will provide) (A2)
- Electronic library
- Design-specific Product Information Management requirements
- Layout numbering
- Related data for package, compatibility, and release that is not the supplier's design responsibility (A3)
- Methods of archiving released 3D CAD data (A4)

B. Supplier will be responsible for providing:

- The CAD models listed below in the prescribed format. Details and timing will be managed by CAD Detail Schedule and VITAL. (B1)

					Release Form				Supplier Confidentia l
	Definition F, F/H-S, F/H	Native/ Translated	Appearance Levels (A-IV)	CAD Levels (1-7)	Release CAD File	Release Drawing	CAD Illustrator Req'd	CAD Mfg. Req'd	Restrict Other Suppliers
[redacted]	F	N	N/A	2,3,4,6,7,	X	X	No		None

- Compliance to CAD File, Data Exchange, and Drafting Standards provided by Ford: (B2) (list Guideline and date)
- Electronic communication of CAD data via ftp
- CAD Package Studies, CAD Feasibility, CAD Compatibility and CAD Release of designs (B3)
- Archiving and release of 3D Data and Drawing prescribed by Ford (B4)

[redacted]

[redacted]	[redacted]	[redacted]

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

1.11 **Budget**
The budget which accompanies this SOW and Target Agreement is dated tbd and totals $ tbd . This amount has been included in the place cost target and will be managed by Supplier and the Ford Decision Maker in accordance with the FSS Partnering Guidelines issued 05.12 and revised 07.06.01.

The budget does not include design & engineering work resulting from activity not covered in this SOW (i.e. Ford - Sourced Tier 2 supplier non-conformance's, Ford added-starters, Target and/or specification changes after xxxxx, Ford re-surfacing post SLR, etc.)

1.12 **Facilities & Personnel**

A. Ford will provide:
   - facilities at locations where supplier personnel can be stationed; this includes office space, furniture, and phones at Pre-Program, program home base and launch sites (A1)

B. Supplier will provide the following:
   - technical and engineering liaison at the Supplier Engineering Center and plant location for Job #1 plus 60 days (via phone, e-mail and on-site as needed) (B1)
   - On-Call engineering support 24hrs per day during proto-type builds and Launch with the ability to be at Ford site within 24hrs. (Pager or Cell phone and list of contact required to be provided to PMT Leader and Launch Team Leader)
   - Technical and engineering support at the supplier facilities as required.
   - APQP Leader at the manufacturing facility.

2.0 *FSS Responsibilities Throughout the Program Implementation Phase Extracted from the Ford FSS Partnering Guidelines*

2.01 Subsystems Sourcing in accordance with Ford's Subsystems Sourcing Guidelines

2.02 Deliver the subsystem/component to target

2.03 Meet function, reliability/quality, safety, homologation, craftsmanship and recyclability requirements

2.04 Systems Integrator must ensure compatibility of all included components/systems

2.05 Function as the Program Module Team/Component Program Module Team Engineer for the subsystem/component. [list engineering tasks that are in-addition to Partnering Guidelines in table below with a " • "]

[illegible]	FSS

Engineering Prove-out:
• Develop and maintain System DVP&R
• Develop and maintain Component DVP&R
• Create and maintain Design & Process FMEAs
• Compliance with SDS and other technical requirements noted in Section 1.04
• Technical/engineering liaison support
• Sign-offs
  ▪ Component level during pre-builds
  ▪ System level after builds
	L

Preparation and maintenance of graphics files and engineering illustrations including: • Component CAD model and necessary detailed drawings compliant to Ford CAD & Drafting Standards per schedule noted in 2.08	L
Design Compatibility Review and Structures Support including: • CAD models/or package and digital buck / drawings per schedule noted in 2.08 • CAE Model and data as noted on 1.09 and 2.08	L
Utilize Advanced Product Quality Plan to support Quality Objectives including: • All 23 elements and associated checklists contained with FMCs APQP • Supplier Developed Ford approved Quality/Reliability Strategy described in 1.08 • Periodic APQP reviews including management of open issues list	L
Manage and support the release and shipment of all serviceable components ** to be negotiated under separate contract*	L
Tooling and Release Material Control support functions including change management	L
Manage component(s) scheduling • Provide required engineering freeze dates for each build communicated in the build schedule shown in section 1.07 to allow for sufficient prototype build time to support MRD.	L
Manage overall program timing of component(s) to ensure that all key milestones are met including: • Develop and execute a program work plan • Provide prototype parts according to agreed upon schedules (see Section 1.07) • Provide parts to schedules agreed upon (schedule provided in Section 1.03)	L
Develop and maintain part data records in WERS	L
Studio Engineering role does not apply	N/A
Provide vehicle and service part launch support	L
Support Ford Corporate documentation and reporting requirements • Maintain QOS / PTPRP / FPDS Checkpoint evidence books	L

2.06 Resolve Supplier in-house engineering and manufacturing concerns including:
- Utilize corrective action/problem resolution process throughout the program

2.07 Obtain Ford PMT Decision Makers agreement on feasibility and cost of Change Requests affecting systems before implementing change including:
- Participate in PMT/PAT and change control meetings as required.

2.08 Develop and maintain Computer Aided Design/Computer Aided Engineering models for subsystems/components (internal & sourced items) according to the following Data Delivery Schedule:
0 Reference CAE Schedule (if any) and/or Supplier Workplan

Note: Specific delivery dates will be controlled and managed through CAD Detail Schedule and MTAL; see attached CAD Deliverables Map for timing and model levels - Insert appropriate CAD Level where " n " is shown

Data Delivery Table - Section 2.08

Pre-PH	Proportions & Hardpoints	Hardpoints Process and specifically Hardpoint affecting Engine Cover (HP #)	Ford	D-F
Feas	Feasibility Studies	CAD feasibility studies to support package and concept development	Supplier	2
SI	Strategic Intent	Deliver CAD Level 2	Supplier	2
SC	Strategic Confirm	Deliver CAD Level 3	Supplier	3
PH	Proportions & Hardpoints	Deliver CAD Level 3	Supplier	3
PA	Program Approval	Deliver CAD Level 4	Supplier	4
PT	Powertrain Design	Deliver CAD Level 6	Supplier	6
PT + 4wks	Design	CAD Level 6	Supplier	6
CR	Compatibility Reviews	Performed via Digital Buck - some drawings may be requested (On going) AP1 AP3 CP	Ford & Supplier	 3 3 7
CP	Confirmation Prototype	Provide CAD data to support FMC safety CAE (as required - *ck date* - CP Design level is latest level typically used - CAE Sign-Off)	Supplier	7
DR	Design Release	1. Supplier release of CAD Design and associated Drawing 2. WERS Notice Approval	Supplier Ford	7
Ongoing	Digital Buck	Provide and maintain up-to-date data for FMC digital buck	Ford & Supplier	2-7
Ongoing	Meetings & Data	Support meetings with data; including up-to-date drawings, 3D models, charts and written submissions (preferably electronic).	Ford & Supplier	2-7
Ongoing	Drawings & 3D	Prepare drawings that have up-to-date 3D models; simultaneous support of 2D and Digital Buck requirements.	Ford & Supplier	2-7

2.9 Direct subsuppliers

2.10 Review jointly with Ford the engineering status as appropriate and control to target including:
- Develop an open issues management process for reporting design changes, risks and opportunities and open issues for the component.
- Provide communication as appropriate to all affected functions
- Review open issues on a regular basis (Minimum bi-weekly) and act in a timely manner to support program objectives.
- Ensure open issue management follows the 8D philosophy
- Recommend and implement opportunities to improve quality/design within agreed-upon budget noted in Section 1.09
- Maintain QOS documents tracking Quality, Cost, Weight, Facilities and Attribute Targets performance vs. objectives

2.11 Resolve jointly with Ford vehicle level problems and concerns utilizing the 8D Format

2.12 Manage jointly with Ford prototype cost, timing and tooling to meet vehicle goals and objectives including:
- Provide prototype parts according to agreed upon schedules

2.13 Surface Layout responsibilities

2.14 Market Research Property responsibilities

2.15 Develop service documentation for the subsystem or components specifically:
- component illustration pages for service manual (to be discussed)

3.0 *FSS Responsibilities Throughout the Production Phase*

3.01 Investigate problems, provide resolutions and implement corrective actions including:
- Utilization of correction action/problem resolution process (8D, FMEA Process)

3.2 Modify component for continuous quality improvement with agreement from Ford Decision maker
- all component or system modification that result in a change to the part geometry, cost must be approved by Ford PMT Leader prior to proceeding with change
- Internal changes to suppliers facility or process after PSW must be approved by Ford PMT Leader

3.03 Modify design/manufacturing for continuous cost improvement.
- all component or system modification that result in a change to the part geometry, cost must be approved by Ford PMT Leader prior to proceeding with change
- Internal changes to suppliers facility or process after PSW must be approved by Ford PMT Leader

3.04 Direct subsuppliers.

3.05 Provide ongoing service support for the service life cycle of the subsystem or component

3.06 Investigate and resolve jointly with Ford in-plant manufacturing and process concerns