EA02-025

FORD 10/27/03

APPENDIX N

BOOK 16 OF 61

PART 1 OF 4

****
* Note printed by FPORTER on 22 Feb 1999 at 17:02:20 *
****

From: I2060625--EXTERNAL Date and time 02/18/99 12:49:21
To: FPORTER --FORDMAIL 'Fred Porter (For NLAPOINT--FORDMAIL 'Norm LaPointe (F
SLAROUCH--FORDMAI 'Steve LaRouche (SREIMERS--FORDMAIL 'Steve Reimers (F
cc: PHB4K5L2--EXTERNAL Beringhause, Steve OTFW0GYK--EXTERNAL Sharpe, Robert

From: Rahman, Aziz
Subject: Switch Log and Eval. Procedure

cc: "Beringhause, Steven"<sberinghause@email.mc.ti.com>,
"Dague, Bryan"<bdague@email.mc.ti.com>,
"Baumann, Russ"<rbaumann@email.mc.ti.com>,
"McGuirk, Andy"<a-mcguirk@email.mc.ti.com>,
"Sharpe, Robert"<rsharpe@email.mc.ti.com>

Updated as of 2/18/99. There were some switches from the initial 24 switch survey that were opened up at AVT and the tag and switch parts were not kept together. I have noted this in the log.

Since the tag numbers for every incoming shipment start from 1, I suggest we use VIN numbers to track the database. This will uniquely identify the switch.

I suggest that the switch analysis priority be as follows:

- Switches from underhood fires, which have not been severely damaged
- Switches from Town Cars, starting by highest mileage and descending
- Switches from CV and GM, starting by highest mileage and descending
- Severely damaged switches from underhood fires
- Disassembled switches, with suspect paperwork trail

<<SwitchLog>>
Evaluation Procedure updated as of 2/18/99. Note identification of harness wires by color.

<<EVALPROC>>
I think we are closing in on finalizing the log format and the evaluation procedures. I believe that these are good enough for us to start using them for data entry.

In order to reduce confusion, I will plan on updating the log once a week. Please delete the earlier versions, so that you have only one latest copy.

Please comment.

Thanks
Aziz

Attachments sent separately:

Data Type	File Name
BINARY	SWITCHLO.XLS_PC
BINARY	EVALPROC.XLS_PC

****
* Note printed by FPORTER on 22 Feb 1999 at 17:04:19 *
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From: JJOYCE1 --DRBN007 Date and time 02/18/99 19:40:43
To: SREIMERS--DRBN007
cc: FPORTER --DRBN007

FROM: John Joyce USART(UTC -05:00)
Subject: (U)Pressure Tests

Steve,

I got your note and will be on vacation tomorrow through Wednesday. Here's the info.

The more I think about this, the more I think TC activation may be the mechanism.

I am not sure of the order of the things connected and that can influence the low frequency amplitude of the signals. But the short answer is to instrument for 0-250 Bar and sample at 1 kHz or more.

Since I'm not sure of where the pressure switch is hydraulically connected I'll give you pressures at nodes and states I do know. The worst case for the switch would be to be connected between the HCU and the prop valve, which is where I think it is.

This is the low frequency component of the signal, I'll talk about the high-frequency component further down.

MC - HCU NODE
Maximum Pressure - ~175 Bar
Achieved by getting maximum vacuum (high revving engine and suddenly close throttle) then standing on the pedal as hard as you can. I don't remember this number very well it might be as low as ~130 or as high as 220. It also depends on your leg strength. This type of pressure is VERY RARE at this node. For this car, the driver will typically apply <20 bar and very rarely exceed 50 bar.

HCU - PROP VALVE NODE
Standing Still - Same as MC pressure - see above.

ABS Maximum - ~110 Bar
This is achieved by loading to GVW and performing an ABS stop, you may find that you are pedal effort limited, not limited by ABS control. It's pretty rare to get this high of pressure in this mode.

TCS Maximum - ~180 Bar
This is a good candidate. On this vehicle because the HCU had to pump through the prop valve to do the brakes-only traction control, the pressures coming out of the HCU got very high. The pressure relief valve on the pump VERY OFTEN dictated the peak pressure which could be developed - not the control - put another way, because the pressure at the rear brake had to restrain the entire powertrain (no engine intervention) and push through a prop valve, it was often possible to drive through the TC - the engine could overpower the brakes, even though very high pressures were being generated at the HCU. The noise during TC activation in these applications was very dependant upon the pressure relief valve opening point. So the

pressure relief valve value got changed a few times over the years as performance was sacrificed for NVH. Also the tolerance on the pressure relief valves was fairly large - a total of 40 bar, at that time I believe. The pressure relief valve pressure might be anywhere from 90 to 180 bar depending on part-to-part variation and the design generation that was agreed upon.

You can achieve this easiest by getting the rear wheels off the ground and putting the car in drive. Get into the throttle hard, but not so hard that you drive out of first gear or faster than ~15 mph. If you maintain this for a while, the thermal model to protect the rear linings will disable the Traction Control. You will then need to wait for them to cool, before the function will be reenabled. You can dramatically accelerate the cooling time by cruising (without braking) at about 40 mph.

Typical drivers can regularly get high pressures in this mode.

PROP VALVE - REAR BRAKE MODE
ABS Maximum Pressure ~70 Bar
Load to GVW and perform an ABS stop at maximum pedal effort.

TCS Maximum Pressure ~100 Bar
This pressure level is strongly dependant upon the pressure relief valve level - see above.

Standing Still
Same as ABS Maximum Pressure

High Frequency Content
The high frequency content has two parts. If you are not in ABS or Traction Control there is practically no high frequency content - the pressure is modulated at <10 Hz. This is basically limited by Booster response times and hydraulic dampening in the ABS orifices.

High Frequency Content Due To Control
During ABS/TC events the pressure is changed in quick steps. Typically it will increase by ~10 Bar in a few milliseconds, and this type of change occurs about every 100ms. The pressure will decrease by about 20 Bar every 300 ms. There can be quite a bit of variation in these numbers, but those are pretty typical. (Actually the numbers I assigned were for ABS, swap "increase" and "decrease" for TC activation.)

High Frequency Content Due to Shock Waves
This is a secondary affect from the control. Generally it is worst right at the outlet of the HCU. It is dampened and dissipated the further you get from the HCU. The shock wave is generated from the cyclical pulsing of the pump as well as the sudden changes in pressure when a solenoid valve is snapped open or shut.

The amplitude of this can be really big - I haven't looked at it in this generation unit for a few years, but I think it's about 50 Bar peak-peak right at the HCU. It will fall off as you move further away from the HCU.

The frequency is pretty high and I think some components are above the 1 kHz level, but you can get a very good idea of the disturbances by sampling at ~1kHz.

Regards,
John Joyce

****
* . Note printed by FPORTER on 22 Feb 1999 at 16:44:49 *
****

From: SREIMERS--DRBN007 Date and time 02/16/99 17:00:16
To: JBRADLEY--DRBN006 RNEVI --DRBN005
JLOGEL --DRBN005
cc: JMEMB --DRBN005 FPORTER --DRBN007 Porter, F.J.

FROM: Steve Reimers USART(UTC -05:00)
Subject: Town Car Oasis message
The proposed wording is below for your approval.

Steve Reimers building 5 3C043
AVT Chassis E/E System Applications mail drop 5011
39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>
*** Forwarding note from TMASTERS--DRBN005 02/16/99 14:26 ***
To: FPORTER --DRBN007 SREIMERS--DRBN007

FROM: Tom Masters USART(UTC -05:00)
Subject: Town Car Oasis message

Oasis looks good. Have no changes or additions. Run with it.

Phone 313-39-08657, Text Pager 313-851-2005, Fax 313-317-9158
#5-2A024, M.D.-5017 AVT-EESE-OPD Elect System/EDS Trk/Large Car
The Road To Success is Uphill, So -
Don't Expect To Break Any Speed Records.
*** Forwarding note from SREIMERS--DRBN007 02/11/99 18:43 ***
To: TMASTERS--DRBN005 Masters, Tom

FROM: Steve Reimers USART(UTC -05:00)
Subject: Town Car Oasis message
Tom, here is the proposed wording for the oasis message. Please comment, revise and append. Send your response to FPORTER and cc me. Are there any parts you want to include in this message? I will be gone on Friday. Back Monday. The final word smithed version will be sent to Joe Bradley (FCSD), Ray Nevi (ASO), and Jay Logel (OGC) for their approval before sending it out.
****
For 1992 and 1993 Town Car: When replacing the Speed Control Deactivation switch (-99924, Brake Pressure Switch on the Brake Proportioning valve) or its electrical harness, tag the removed part and return to Ford Dearborn (??????). Tag to show VIN, mileage, dealer code, and reason removed.
****
thanks,

Steve Reimers building 5 3C043
AVT Chassis E/E System Applications mail drop 5011
39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

****
* Note printed by FPORTER on 22 Feb 1999 at 16:45:00 *
****

From: I2060625--EXTERNAL Date and time 02/16/99 17:09:05
To: FPORTER --FORDMAIL 'Fred Porter (For NLAPOINT--FORDMAIL 'Norm LaPointe (F
SLAROUCH--FORDNA1 'Steve LaRouche (SREIMERS--FORDMAIL 'Steve Reimers (F
cc: PHB4K5L2--EXTERNAL Beringhause, Steve OTFW0GYK--EXTERNAL Sharpe, Robert

From: Rahman, Aziz
Subject: Brake Pressure Switch Test Log.xls

cc: "Beringhause, Steven"<sberinghause@email.mc.ti.com>,
"Dague, Bryan"<bdague@email.mc.ti.com>,
"McGuirk, Andy"<a-mcguirk@email.mc.ti.com>,
"Baumann, Russ"<rbaumann@email.mc.ti.com>,
"Sharpe, Robert"<rsharpe@email.mc.ti.com>

<<Brake Pressure Switch Test Log.xls>>

Team,

This is a first pass at the test log we can use to track our tests and to update the core team on Wednesday meetings. Please review/add/edit/comment.

Thanks
Aziz.

Attachments sent separately:

Data Type	File Name
BINARY	BRAKEPRE.XLS_PC

****
* Note printed by FPORTER on 22 Feb 1999 at 16:45:06 *
****

From: I2060625--EXTERNAL Date and time 02/17/99 01:48:48
To: FPORTER --FORDMAIL 'Fred Porter (For NLAPOINT--FORDMAIL 'Norm LaPointe (F
SLAROUCH--FORDMAI 'Steve LaRouche (SREIMERS--FORDMAIL 'Steve Reimers (F

From: Rahman, Aziz
Subject: Brake Pressure Switch Evaluation Plan.xls

<<Brake Pressure Switch Evaluation Plan.xls>>

Team, please review evaluation plan. It is basically a collation of Steve R. and Norm's inputs. I will add the switch dissection section tomorrow. The pressure calibration station from TI is expected to arrive on Thursday and will probably reside at Central Labs due to availability of high pressure air.

Steve R, will Allan be available to perform the electrical characterizations data collection? I can definitely help with data analysis and maintenance of the database.

Please review the attachment and let's discuss tomorrow.

Thanks
Aziz.

Attachments sent separately:

Data Type	File Name
BINARY	BRAKEPRE.XLS_PC

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* Note printed by FPORTER on 22 Feb 1999 at 12:56:42 *
****

From: JNEME --DRBN005 Date and time 02/15/99 17:22:07
To: TMASTERS--DRBN005 FPORTER --DRBN007
cc: JMCINERN--DRBN005 RNEVI --DRBN005
JNEME --DRBN005

FROM: Joseph S. Neme USART(UTC -05:00)
SUBJECT: (C) Questionaire
Gentlemen,

We have a central contact point for underhood fires at FCSD litigation prevention. He will work with EA or design analysis to investigate alleged underhood fires.

What is needed from you tomorrow is:

1) list of questions/info you need to know regarding a fire like
- where did fire originate
- was the vehicle running, parked, on/off... if off, how long
- did you notice brake warning lamp or speed control inop prior to fire
- VIN #, Miles, location of incident
- where is the vehicle now

2) identify a "flag" to signal a vehicle investigation like
- underhood fire
- vehicle available
- 92-95 Town Car, Crown Victoria, Grand Marquis
- fires that totaled a vehicle or don't know origin

3) identify vehicles we want to have EA have a look at right away (suggest working with ASO on present list of alleged incidents)

4) list of special request from the investigators... ie which parts to get

We need all this info tomorrow so that we can kick things off... thanks

Call me if you have questions

Joseph S. Neme
LVC - Safety
Phone: 39-08133, Fax:62-18147, E-Mail:jneme@ford.com
Location: MD1258/Cube 2M37, Building #2 Textpager:313-795-7003

****
* Note printed by FPORTER on 22 Feb 1999 at 12:57:00 *
****

From: I2060625--EXTERNAL Date and time 02/15/99 20:23:01
To: FPORTER --FORDMAIL 'Fred Porter (For NLAPOINT--FORDMAIL 'Norm LaPointe (F
SLAROUCH--FORDMAI 'Steve LaRouche (SREIMERS--FORDMAIL 'Steve Reimers (F

From: Rahman, Aziz
Subject: Brake Pressure Switch Log

Attached is a log file with information on the devices under review. It also contains switches received today from John McInerney.In addition to Steve L's analysis summary file, I will be using this log to track incoming parts. Please advise if I have missed any data.

<<Brake Pressure Switch Log>>

Please let me know if you cannot open the file. Steve/Norm, can you please e-mail me the last update on your analysis summary file? Thanks.

Regards
Aziz.

Attachments sent separately:

Data Type	File Name
BINARY	BRAKEPRE.XLS_PC

****
* Note printed by FPORTER on 22 Feb 1999 at 13:18:21 *
****

From: SCOLE1 --DRBN005 Date and time 02/16/99 13:41:46
To: FPORTER --DRBN007
cc: TMASTERS--DRBN005 TDONOVAN--DRBN005
DGOEL --DRBN005

From: Sam L. Cole USAST(UTC -05:00)
Subject: (U)
I UNDERSTAND THAT THERE WILL BE A FOLLOW UP MEETING WITH JACK PASKUS THIS FRIDAY ON THE TOWN CAR INVESTIGATION. I MET WITH JACK TODAY FOR A 1 ON 1, AND HE REQUESTED SOME SPECIFIC INFO. AT FRIDAYS MEETING, PLEASE BRING A SAMPLE SWITCH TO SHOW JACK.

ALSO, HE IS INTERESTED IN KNOWING OUR PROGRESS AND INVESTIGATING IF THE PREVIOUS PROBLEM WITH THE INTERNAL COMPONENTS BREAKING LOOSE IS A POTENTIAL CAUSE OF THIS CONCERN. PLEASE BE PREPARED TO DISCUSS THIS ON FRIDAY. THANKS.

Thank You,
Sam
Ext. 21959
BLDG. 2, 22J31 - MD# 1220_- SCOLE1@FORD.COM

****
* Note printed by FPORTER on 22 Feb 1999 at 13:19:21 *
****

From: TMASTERS--DRBN005 Date and time 02/16/99 14:26:23
To: FPORTER --DRBN007 SREIMERS--DRBN007

FROM: Tom Masters USART(UTC -05:00)
Subject: Town Car Oasis message

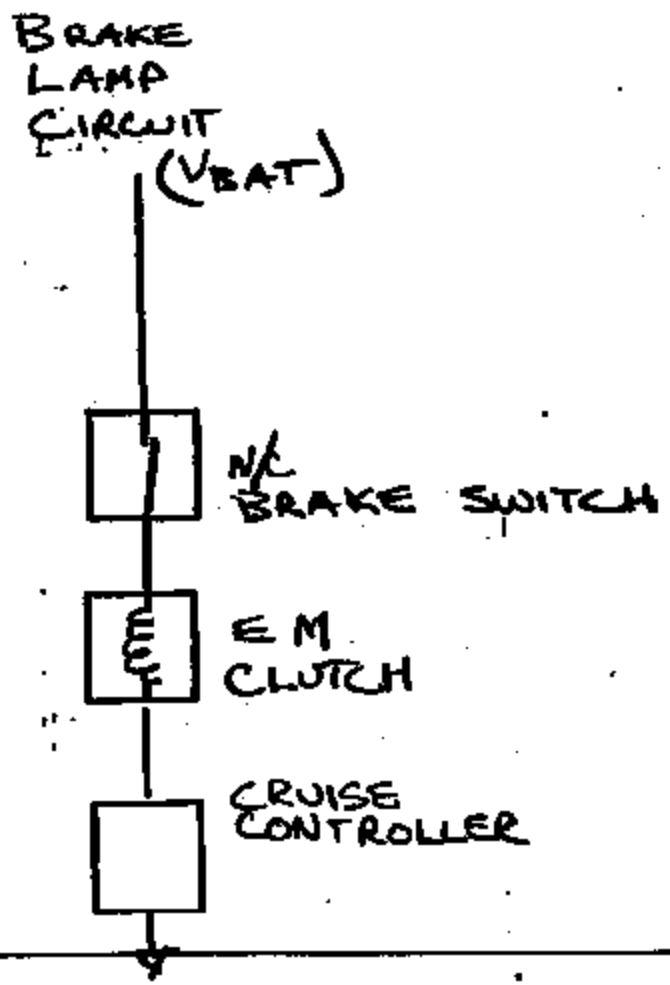
Oasis looks good. Have no changes or additions. Run with it.

Phone 313-39-08657, Text Pager 313-851-2009, Fax 313-317-9158
#5-2A024, M.D.-5017 AVT-EESE-OPD Elect System/SDS Trk/Large Car
The Road To Success is Uphill, So -
Don't Expect To Break Any Speed Records.
*** Forwarding note from SREIMERS--DRBN007 02/11/99 18:43 ***
To: TMASTERS--DRBN005 Masters, Tom

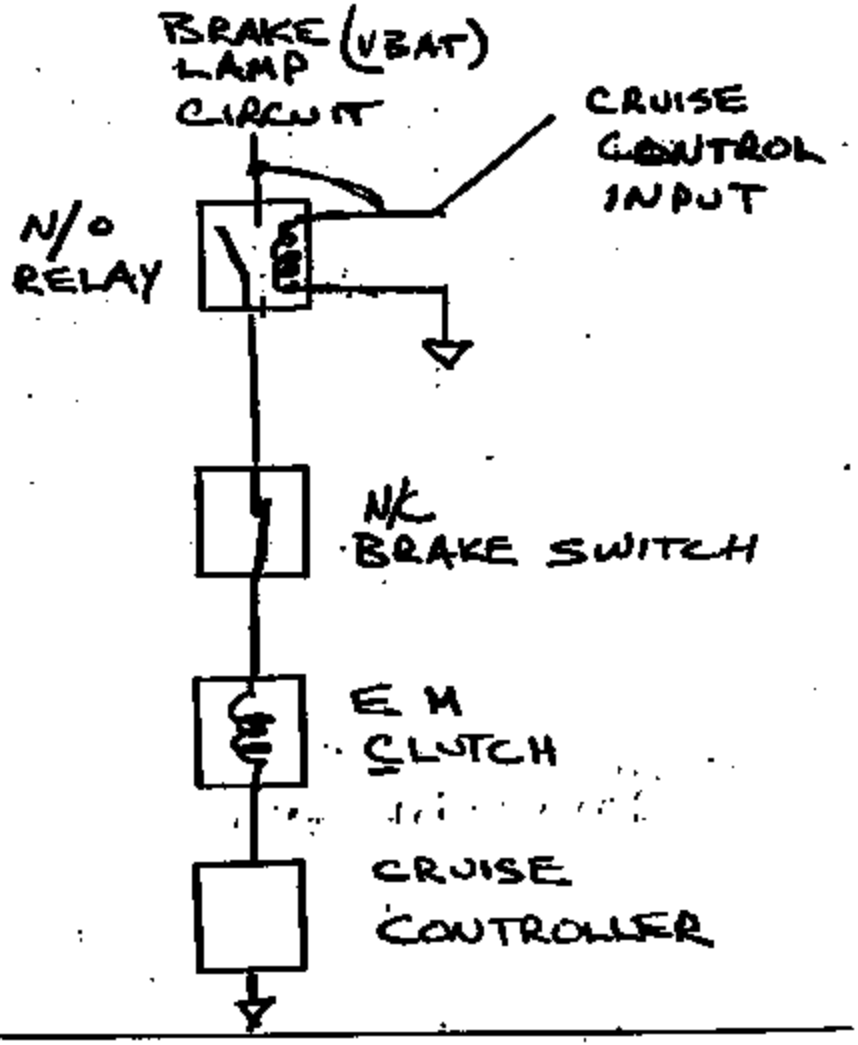
FROM: Steve Reimers USART(UTC -05:00)
Subject: Town Car Oasis message
Tom, here is the proposed wording for the oasis message. Please comment, revise and append. Send your response to FPORTER and cc me. Are there any pa rts you want to include in this message? I will be gone on Friday. Back Monday. The final word smithed version will be sent to Joe Bradley (FCSD), Ray Nevi (ASO), and Jay Logal (OGC) for their approval before sending it out.
****
For 1992 and 1993 Town Car: When replacing the Speed Control Deactivation switch (-9F924, Brake Pressure Switch on the Brake Proportioning valve) or its electrical harness, tag the removed part and return to Ford Dearborn (??????). Tag to show VIN, mileage, dealer code, and reason removed.
****
thanks,

Steve Reimers building 5 3C043
AVT Chassis E/E System Applications mail drop 5011
39-03286 SREIMERS sreimers@ford.com fax 39-03286 ;>

PRESENT

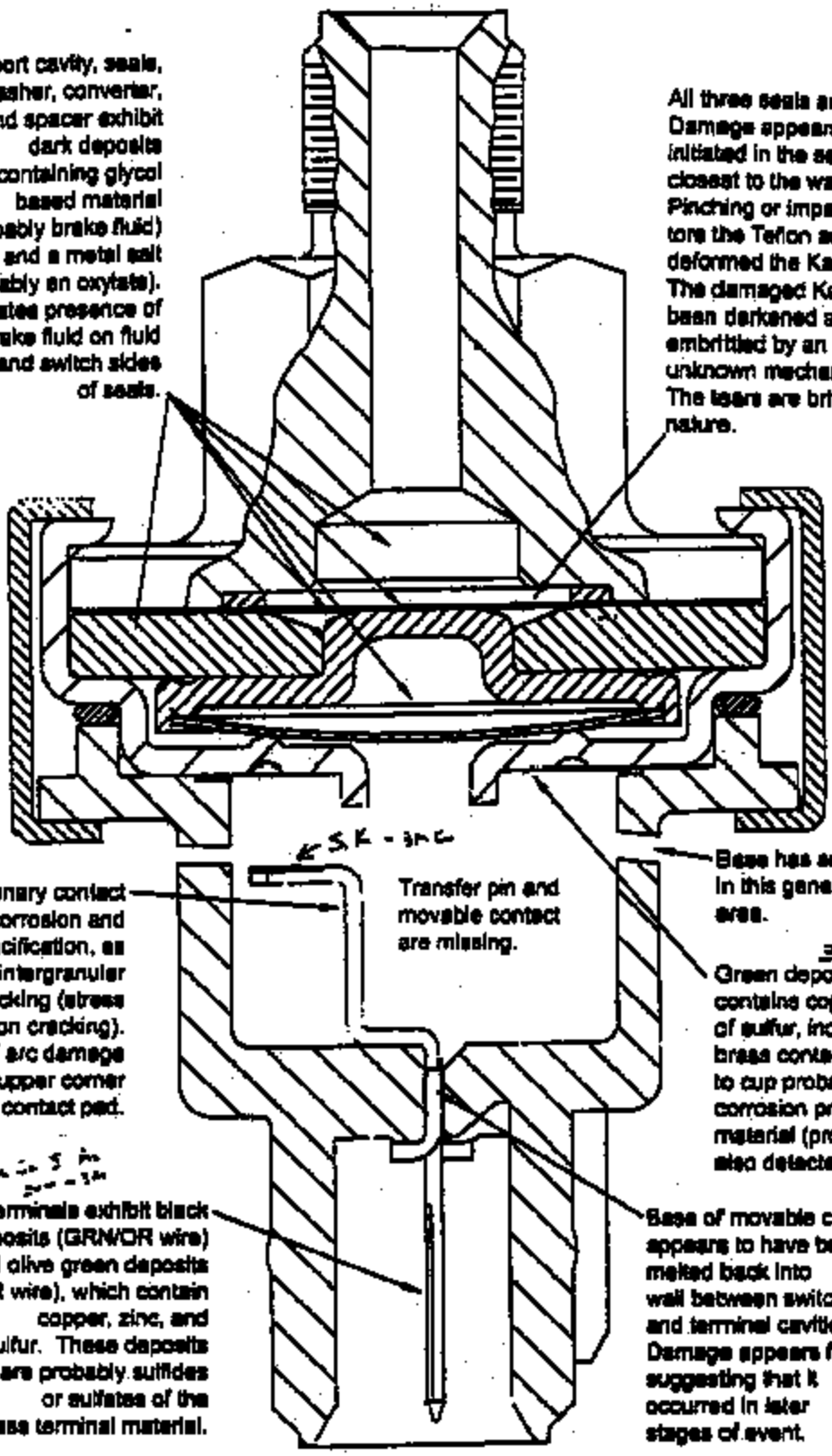


PROPOSED



3718 1397

Memphis Switch



Hexport cavity, seals, washer, converter, and spacer exhibit dark deposits containing glycol based material (probably brake fluid) and a metal salt (probably an oxylate). Indicates presence of brake fluid on fluid and switch sides of seals.

All three seals are torn. Damage appears to have initiated in the seal closest to the washer. Pinching or impact tore the Teflon and deformed the Kapton. The damaged Kapton has been darkened and embrittled by an unknown mechanism. The tears are brittle in nature.

Base has separated in this general area.

Stationary contact exhibits corrosion and dezincification, as well as intergranular cracking (stress corrosion cracking). Small amount of arc damage at upper corner away from contact pad.

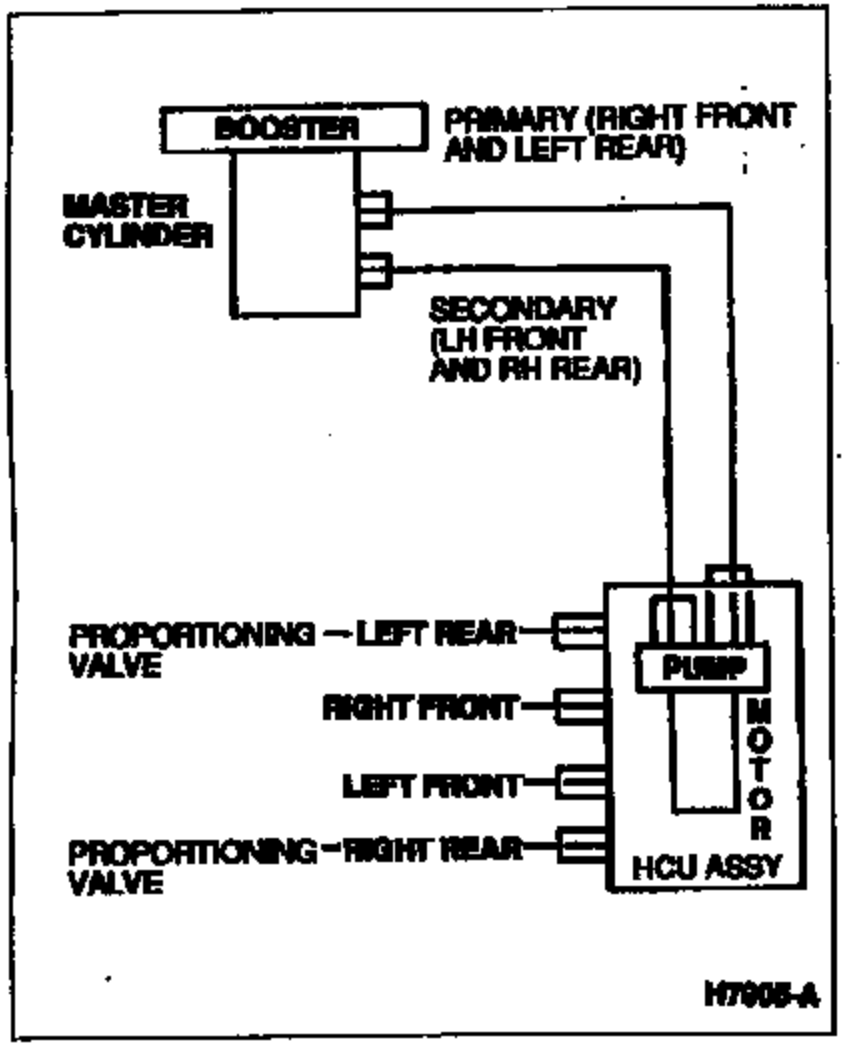
Transfer pin and movable contact are missing.

Green deposit on face of cup contains copper, zinc, and traces of sulfur, indicating transfer of brass contact material to cup probably as an oxide or corrosion product. Glycol based material (probably brake fluid) also detected in this area.

Terminals exhibit black deposits (GRN/OR wire) and olive green deposits (OR wire), which contain copper, zinc, and sulfur. These deposits are probably sulfides or sulfates of the brass terminal material.

Base of movable contact appears to have been melted back into wall between switch and terminal cavities. Damage appears fresh, suggesting that it occurred in later stages of event.

Wire cavity in connector (not shown) exhibits white deposits below seal, which contain elements typical of those found in dry chemical fire extinguishers.


BOOSTER
PRIMARY (RIGHT FRONT AND LEFT REAR)
MASTER CYLINDER
SECONDARY (LH FRONT AND RH REAR)
PROPORTIONING VALVE
LEFT REAR
RIGHT FRONT
LEFT FRONT
PROPORTIONING VALVE
RIGHT REAR
PUMP
MOTOR
HCU ASSY
H7005-A

2/10/99

4:15 P Brainstorm w/Lew

- Get Dow on Team
  ASK THEM HOW FIRE STARTS WITHIN CONSTRAINTS [14 V, Black Substance, 15 AMP MAX CURRENT, VEH. TEMPERATURES.]
- Char's REAL VEH Brake Pressure.
- " " " " " in ABS/TC EVENT.
- Thermo-couple Brk Pr switch after Veh. Driven & turned off.
- Take Rate of ABS
  " " " ABS w/TC
- Are Leaks/Fires common to traction loss
- Black Substance: Copper, Zinc, Silver, Sulfur, Brake Fluid.
- Understand TC/ABS Pressure Pulse/
- History of Electrolysis in Brake Fluid.

3713 1400

Sheet1

#	PART NUMBER	FIA	ACT	CYSC	S RELEASE	FUNCRELEASE	VL	MINT	AC	IN:	CODE	NOTICE	OUT:	CODE	NOTICE	REC		
191	F2VC 8W524 AB	F3DC 28195	AA	HC00	60701	0 HC00E10139827000	H	P	R	91/08/09	DA	P	93	A	IN:	54F93A	HC00E10139827000	OUT:				TRUCK	1
196	F2VC 9W524 AB	F3DC 28195	AA	HC00	60701	0 HC00110152467005	H	P	R	91/10/08	DA	P	93	B	IN:	54F93A	HC00E10139827000	OUT:	54F96A	HC00110152467005		TRUCK	2
193	F2VC 9W524 AB	F3DC 28195	AA	HC00	60701	0 HC00E10158028001	H	P	R	92/02/26	DA	P	93		IN:	54F93A	HC00E10139827000	OUT:	54F96A	HC00110152467005		TRUCK	3
194	F2VC 9W524 AB	F3DC 28195	AA	HC00	60701	0 HC00E10203166000	H	P	R	92/04/14	DA	P	93	B	IN:	54F93A	HC00E10139827000	OUT:	54F93A	HC00E10203166000		TRUCK	4
9252	F3DC 9W524 AA	F3DC 28195	AB	HC00	60701	0 HC00E10203166000	H	P	R	92/04/14	DA	P	93	A	IN:	54F93A	HC00E10203166000	OUT:	54F96A	HC00E10203166000		TRUCK	5
256	F3DC 9W524 AA	F3DC 28195	AB	HC00	60701	0 HC00E10191824000	H	P	R	92/06/10	DA	P	93	A	IN:	54F93A	HC00E10203166000	OUT:	54F93A	HC00E10191824000		TRUCK	6
257	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10191824000	H	P	R	92/06/10	DA	P	93	A	IN:	54F93A	HC00E10191824000	OUT:	54F96A	HC00E10191824000		TRUCK	7
254	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10079779010	H	P	R	92/08/27	DA	P	93		IN:	54F93A	HC00E10191824000	OUT:	54F96A	HC00E10191824000		TRUCK	8
259	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10220520000	H	P	R	92/09/01	DA	P	93		IN:	54F93A	HC00E10191824000	OUT:	54F96A	HC00E10191824000		TRUCK	9
254	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10079779010	H	P	R	92/09/08	DA	P	93		IN:	54F93A	HC00E10191824000	OUT:	54F96A	HC00E10191824000		TRUCK	10
261	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10314615000	H	P	R	92/07/30	DA	P	93	B	IN:	54F93A	HC00E10191824000	OUT:	54F96A	HC00E10314615000		TRUCK	11
262	F3DC 9W524 AA	F4DC 28195	AA	HC00	60701	0 HC00E10314615000	H	P	R	92/07/30	DA	P	94	A	IN:	54F96A	HC00E10314615000	OUT:	54F96A	HC00E10314615000		TRUCK	12
215	F2VC 9W524 AB	F4DC 2C320	AA	HC00	60603	0 HC00110152467121	H	P	R	92/08/10	DC	P	96	A	IN:	54F96A	HC00E10152467121	OUT:			GYDAR	DRIVE	13
219	F2VC 9W524 AB	F4DC 2C320	AA	HC00	60603	0 HC00E10152467135	H	P	R	92/08/10	DC	P	96	A	IN:	54F96A	HC00E10152467121	OUT:	54F96A	HC00E10152467135	GYDAR	DRIVE	14
222	F2VC 9W524 AB	F4DC 2C320	AA	HC00	60606	0 HC00E10152467135	H	P	R	92/08/10	DC	P	96	A	IN:	54F96A	HC00E10152467135	OUT:			GYDAR	DRIVE	15
220	F2VC 9W524 AB	F4DC 2C320	AA	HC00	60605	0 HC00E10248723000	H	P	R	92/11/10	DC	P	96	A	IN:	54F96A	HC00E10152467135	OUT:	54F96A	HC00E10248723000	GYDAR	DRIVE	16
193	F2VC 9W524 AB	F3DC 28195	AA	HC00	60701	0 HC00E10158028001	H	P	R	92/02/26	DA	P	94	A	IN:	54F96A	HC00E10158028001	OUT:	54F96A	HC00E10158028001		SHAFT	17
196	F2VC 9W524 AB	F3DC 28195	AA	HC00	60701	0 HC00E10203166000	H	P	R	92/04/14	DA	P	94	A	IN:	54F96A	HC00E10158028001	OUT:	54F96A	HC00E10203166000		SHAFT	18
193	F2VC 9W524 AB	F3DC 28195	AA	HC00	60701	0 HC00E10203166000	H	P	R	92/04/14	DA	P	94	A	IN:	54F96A	HC00E10203166000	OUT:	54F96A	HC00E10203166000		SHAFT	19
251	F3DC 9W524 AA	F3DC 28195	AB	HC00	60701	0 HC00E10191824000	H	P	R	92/06/10	DA	P	94	B	IN:	54F96A	HC00E10203166000	OUT:	54F96A	HC00E10191824000		SHAFT	20
258	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10191824000	H	P	R	92/08/10	DA	P	94	A	IN:	54F96A	HC00E10191824000	OUT:	54F96A	HC00E10191824000		SHAFT	21
254	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10079779010	H	P	R	92/08/27	DA	P	94		IN:	54F96A	HC00E10191824000	OUT:	54F96A	HC00E10191824000		SHAFT	22
259	F3DC 9W524 AA	F3DC 28195	AC	HC00	60701	0 HC00E10220520000	H	P	R	92/09/01	DA	P	94	A	IN:	54F96A	HC00E10191824000	OUT:	54F96A	HC00E10220520000		SHAFT	23
29	F2VC 9W524 AA	F2EC 2C320	CA	HC00	60605	0 HC00E10028915000	H	P	R	90/08/17	FB	P	92	A	IN:	2S4F92A	HC00E10028915000	OUT:			FEFAA	GYDAR	CROSS	VIC 24
47	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10028915000	H	P	R	90/08/17	FB	P	92	A	IN:	2S4F92A	HC00E10028915000	OUT:			FEFAB	GYDAR	CROSS	VIC 25
78	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10028915000	H	P	R	90/08/17	FB	P	92	A	IN:	2S4F92A	HC00E10028915000	OUT:			FEFAB	GYDAR	CROSS	VIC 26
11	F2VC 9W524 AA	F2EC 2C320	CA	HC00	60605	0 HC00E10028915001	H	P	R	90/08/23	FB	P	92	A	IN:	54F92C	HC00E10028915001	OUT:			FEFAA	GYDAR	CROSS	VIC 27
12	F2VC 9W524 AA	F2EC 2C320	CA	HC00	60605	0 HC00E10028915001	H	P	R	90/08/23	FB	P	92	B	IN:	2S4F92A	HC00E10028915000	OUT:	2S4F92A	HC00E10028915001	FEFAA	GYDAR	CROSS	VIC 28
50	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10028915001	H	P	R	90/08/23	FB	P	92	A	IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 29
51	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10028915001	H	P	R	90/08/23	FB	P	92	B	IN:	2S4F92A	HC00E10028915000	OUT:	2S4F92A	HC00E10028915001	FEFAB	GYDAR	CROSS	VIC 30
81	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10028915001	H	P	R	90/08/23	FB	P	92	A	IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 31
82	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10028915001	H	P	R	90/08/23	FB	P	92	B	IN:	2S4F92A	HC00E10028915000	OUT:	2S4F92A	HC00E10028915001	FEFAB	GYDAR	CROSS	VIC 32
55	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10079044001	H	P	R	90/10/05	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 33
86	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10079044001	H	P	R	90/10/05	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 34
59	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10079044002	H	P	R	90/10/08	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 35
90	F2VC 9W524 AB	F2VC 28091	AA	HC00	60605	0 HC00E10079044002	H	P	R	90/10/08	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 36
38	F2VC 9W524 AA	F2EC 2C320	CA	HC00	60605	0 HC00E10112089000	H	P	R	91/01/10	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAA	GYDAR	CROSS	VIC 37
43	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E00444499336	H	P	R	91/01/10	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 38
69	F2VC 9W524 AA	F2VC 28091	AA	HC00	60605	0 HC00E10112089000	H	P	R	91/01/10	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 39
74	F2VC 9W524 AB	F2VC 28091	AA	HC00	60605	0 HC00E00444499216	H	P	R	91/01/10	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 40
94	F2VC 9W524 AB	F2VC 28091	AA	HC00	60605	0 HC00E10112089000	H	P	R	91/01/10	FB	P	92		IN:	54F92C	HC00E10028915001	OUT:			FEFAB	GYDAR	CROSS	VIC 41

#	FEAT NUMBER	FIA	ACT	CPSC	S	RELEASE	FUN	RELEASE	VL	M	MT	M	IN:	CODE	SOURCE	OUT:	CODE	MODIFIER	MFC			
19	F2VC 98924	AA F2AC	2C320	CA	HC00	60605	0	HC00I1018072332002	H	P	R	91/07/02	FB	P	92	R	IN:	84F92C	HC00E10028915001	OUT:	84F95A	HC00I1018072332002	FEFAA	GYDAB	CHOHH	VIC42
70	F2VC 98924	AA F2VC	28091	AA	HC00	60605	0	HC00I1018072332002	H	P	R	91/07/02	FB	P	92	R	IN:	84F92C	HC00E10028915001	OUT:	84F95A	HC00I1018072332002	FEFAA	GYDAB	CHOHH	VIC43
101	F2VC 98924	AB F2VC	28091	AA	HC00	60605	0	HC00I1018072332002	H	P	R	91/07/02	FB	P	92	R	IN:	84F92C	HC00E10028915001	OUT:	84F95A	HC00I1018072332002	FEFAA	GYDAB	CHOHH	VIC44
17	F2VC 98924	AA F2AC	2C320	CA	HC00	60605	0	HC00E10128004001	H	P	R	91/07/11	FB	P	92	R	IN:	84F92C	HC00E10028915001	OUT:	84F92C	HC00E10128004001	FEFAA	GYDAB	CHOHH	VIC45
65	F2VC 98924	AA F2VC	28091	AA	HC00	60605	0	HC00E10128004001	H	P	R	91/07/11	FB	P	92	R	IN:	84F92C	HC00E10028915001	OUT:	84F92C	HC00E10128004001	FEFAA	GYDAB	CHOHH	VIC46
97	F2VC 98924	AB F2VC	28091	AA	HC00	60605	0	HC00E10128004001	H	P	R	91/07/11	FB	P	92	R	IN:	84F92C	HC00E10028915001	OUT:	84F92C	HC00E10128004001	FEFAA	GYDAB	CHOHH	VIC47
144	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004001	H	P	R	91/07/11	FB	P	92	A	IN:	84F92C	HC00E10128004001	OUT:	84F95A	HC00E10128004001	FEFAA	GYDAB	CHOHH	VIC48
187	F2VC 98924	AB F2AC	2C320	CA	HC00	60605	0	HC00E10128004001	H	P	R	91/07/11	FB	P	92	A	IN:	84F92C	HC00E10128004001	OUT:	84F95A	HC00E10128004001	FEFAA	GYDAB	CHOHH	VIC49
147	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	91/08/29	FB	P	92	X	IN:	84F92C	HC00E10128004001	OUT:	84F92C	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC50
168	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	91/08/29	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC51
199	F2VC 98924	AB F2AC	2C320	CA	HC00	60605	0	HC00E10128004000	H	P	R	91/08/29	FB	P	92	X	IN:	84F92C	HC00E10128004001	OUT:	84F92C	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC52
208	F2VC 98924	AB F2AC	2C320	CA	HC00	60605	0	HC00E10128004000	H	P	R	91/08/29	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC53
286	F2VC 98924	AB F2AC	2C320	CA	HC00	60605	0	HC00I1018072332032	H	P	R	91/10/21	FB	P	92	X	IN:	84F92C	HC00E10128004000	OUT:		HC00I1018072332032	FEFAA	GYDAB	CHOHH	VIC54
130	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	92/01/21	FB	P	92		IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC55
134	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	92/03/24	FB	P	92		IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC56
153	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004001	H	P	R	92/04/25	FB	P	92		IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC57
1	F2AC 98924	AA F2AC	2C320	CC	HC00	60605	0	HC00E10128004000	H	P	R	92/05/02	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:			FEFAA	GYDAB	CHOHH	VIC58
116	F2VC 98924	AB F2AC	2C320	CC	HC00	60605	0	HC00E10128004000	H	P	R	92/05/02	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:			FEFAA	GYDAB	CHOHH	VIC59
183	F2VC 98924	AB F2AC	2C320	CB	HC00	60605	0	HC00E10128004000	H	P	R	92/05/02	FB	P	92	X	IN:	84F92C	HC00E10128004000	OUT:	84F92C	HC00E10206103000	FEFAA	GYDAB	CHOHH	VIC60
158	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	92/05/26	FB	P	92		IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC61
139	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	92/07/21	FB	P	92		IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC62
184	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	92/08/13	FB	P	92		IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC63
169	F2VC 98924	AB F2AC	28091	BA	HC00	60605	0	HC00E10128004000	H	P	R	92/08/21	FB	P	92		IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10128004000	FEFAA	GYDAB	CHOHH	VIC64
9	F2AC 98924	AA F2AC	2C320	CC	HC00	60605	0	HC00I1018072313195	H	P	R	92/02/09	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00I1018072313195	FEFAA	GYDAB	CHOHH	VIC65
118	F2VC 98924	AB F2AC	2C320	CC	HC00	60605	0	HC00I1018072313195	H	P	R	92/02/09	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00I1018072313195	FEFAA	GYDAB	CHOHH	VIC66
7	F2AC 98924	AA F2AC	2C320	BA	HC00	60605	0	HC00E10128004000	H	P	R	92/12/17	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:			FEFAA	GYDAB	CHOHH	VIC67
9	F2AC 98924	AA F2AC	2C320	BA	HC00	60605	0	HC00E10128004000	H	P	R	93/10/27	FB	P	92	A	IN:	84F92C	HC00E10128004000	OUT:	84F95A	HC00E10537002001	FEFAA	GYDAB	CHOHH	VIC68
30	F2VC 98924	AA F2AC	2C320	CA	HC00	60605	0	HC00E10028915000	H	P	R	90/08/17	FB	P	92	A	IN:	84F92A	HC00E10028915000	OUT:			FEFAA	GYDAB	CHOHH	VIC69
68	F2VC 98924	AA F2AC	28091	AA	HC00	60605	0	HC00E10028915000	H	P	R	90/08/17	FB	P	92	A	IN:	84F92A	HC00E10028915000	OUT:			FEFAA	GYDAB	CHOHH	VIC70
79	F2VC 98924	AB F2VC	28091	AA	HC00	60605	0	HC00E10028915000	H	P	R	90/08/17	FB	P	92	A	IN:	84F92A	HC00E10028915000	OUT:			FEFAA	GYDAB	CHOHH	VIC71
33	F2VC 98924	AA F2AC	2C320	CA	HC00	60605	0	HC00E10028915001	H	P	R	90/08/23	FB	P	92	A	IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC72
34	F2VC 98924	AA F2AC	2C320	CA	HC00	60605	0	HC00E10028915001	H	P	R	90/08/23	FB	P	92	R	IN:	84F92A	HC00E10028915000	OUT:	84F92A	HC00E10028915001	FEFAA	GYDAB	CHOHH	VIC73
52	F2VC 98924	AA F2VC	28091	AA	HC00	60605	0	HC00E10028915001	H	P	R	90/08/23	FB	P	92	A	IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC74
53	F2VC 98924	AA F2VC	28091	AA	HC00	60605	0	HC00E10028915001	H	P	R	90/08/23	FB	P	92	R	IN:	84F92A	HC00E10028915000	OUT:	84F92A	HC00E10028915001	FEFAA	GYDAB	CHOHH	VIC75
83	F2VC 98924	AB F2VC	28091	AA	HC00	60605	0	HC00E10028915001	H	P	R	90/08/23	FB	P	92	A	IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC76
84	F2VC 98924	AB F2VC	28091	AA	HC00	60605	0	HC00E10028915001	H	P	R	90/08/23	FB	P	92	R	IN:	84F92A	HC00E10028915000	OUT:	84F92A	HC00E10028915001	FEFAA	GYDAB	CHOHH	VIC77
86	F2VC 98924	AA F2VC	28091	AA	HC00	60605	0	HC00E10079044001	H	P	R	90/10/05	FB	P	92		IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC78
87	F2VC 98924	AB F2VC	28091	AA	HC00	60605	0	HC00E10079044001	H	P	R	90/10/05	FB	P	92		IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC79
60	F2VC 98924	AA F2VC	28091	AA	HC00	60605	0	HC00E10079044002	H	P	R	90/10/08	FB	P	92		IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC80
91	F2VC 98924	AB F2VC	28091	AA	HC00	60605	0	HC00E10079044002	H	P	R	90/10/08	FB	P	92		IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC81
36	F2VC 98924	AA F2AC	2C320	CA	HC00	60605	0	HC00E10112089000	H	P	R	91/01/18	FB	P	92		IN:	84F92C	HC00E10028915001	OUT:			FEFAA	GYDAB	CHOHH	VIC82

#	PART	NUMBER	PIA	ACT	CPSC	S	RELEASE	FUNC	RELEASE	VL	M	NO	AC	IN:	CODE	NOTICE	OUT:	CODE	NOTICE	MFC			
64	F2NC	9F924	AA	F2NC	2B891	AA	MC00	68605	0	MC00E804444993136	H	P	R	91/01/18	FP	P	92		IN:	84F92C	MC00E10028915861	OUT:			FEFAB	QYDAB	QBJHD	MBF83
84	F2NC	9F924	AA	F2NC	2B891	AA	MC00	68605	0	MC00E10612080000	H	P	R	91/01/18	FP	P	92		IN:	84F92C	MC00E10028915861	OUT:			FEFAB	QYDAB	QBJHD	MBF84
75	F2NC	9F924	AB	F2NC	2B891	AA	MC00	68605	0	MC00E804444993136	H	P	R	91/01/18	FP	P	92		IN:	84F92C	MC00E10028915861	OUT:			FEFAB	QYDAB	QBJHD	MBF85
95	F2NC	9F924	AB	F2NC	2B891	AA	MC00	68605	0	MC00E10112080000	H	P	R	91/01/18	FP	P	92		IN:	84F92C	MC00E10028915861	OUT:			FEFAB	QYDAB	QBJHD	MBF86
48	F2NC	9F924	AA	F2NC	2C320	CA	MC00	68605	0	MC00E10107232882	H	P	R	91/07/02	FP	P	92	R	IN:	84F92C	MC00E10028915861	OUT:	84F95A	MC00E10107232882	FEFAB	QYDAB	QBJHD	MBF87
71	F2NC	9F924	AA	F2NC	2B891	AA	MC00	68605	0	MC00E10107232882	H	P	R	91/07/02	FP	P	92	R	IN:	84F92C	MC00E10028915861	OUT:	84F95A	MC00E10107232882	FEFAB	QYDAB	QBJHD	MBF88
102	F2NC	9F924	AB	F2NC	2B891	AA	MC00	68605	0	MC00E10107232882	H	P	R	91/07/02	FP	P	92	R	IN:	84F92C	MC00E10028915861	OUT:	84F95A	MC00E10107232882	FEFAB	QYDAB	QBJHD	MBF89
38	F2NC	9F924	AA	F2NC	2C320	CA	MC00	68605	0	MC00E10128804001	H	P	R	91/07/11	FP	P	92	R	IN:	84F92C	MC00E10028915861	OUT:	84F92C	MC00E10128804001	FEFAB	QYDAB	QBJHD	MBF90
87	F2NC	9F924	AA	F2NC	2B891	AA	MC00	68605	0	MC00E10128804001	H	P	R	91/07/11	FP	P	92	R	IN:	84F92C	MC00E10028915861	OUT:	84F92C	MC00E10128804001	FEFAB	QYDAB	QBJHD	MBF91
88	F2NC	9F924	AB	F2NC	2B891	AA	MC00	68605	0	MC00E10128804001	H	P	R	91/07/11	FP	P	92	R	IN:	84F92C	MC00E10028915861	OUT:	84F92C	MC00E10128804001	FEFAB	QYDAB	QBJHD	MBF92
145	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E10128804001	H	P	R	91/07/11	FP	P	92	A	IN:	84F92C	MC00E10128804001	OUT:	84F95A	MC00E10128804001	FEFAB	QYDAB	QBJHD	MBF93
198	F2NC	9F924	AB	F2NC	2C320	CB	MC00	68605	0	MC00E10128804001	H	P	R	91/07/11	FP	P	92	A	IN:	84F92C	MC00E10128804001	OUT:	84F95A	MC00E10128804001	FEFAB	QYDAB	QBJHD	MBF94
149	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E10128804001	H	P	R	91/08/29	FP	P	92	X	IN:	84F92C	MC00E10128804001	OUT:	84F92C	MC00E10128804001	FEFAB	QYDAB	QBJHD	MBF95
150	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E10128804000	H	P	R	91/08/29	FP	P	92	A	IN:	84F92C	MC00E10128804001	OUT:	84F95A	MC00E10128804001	FEFAB	QYDAB	QBJHD	MBF96
201	F2NC	9F924	AB	F2NC	2C320	CB	MC00	68605	0	MC00E10128804000	H	P	R	91/08/29	FP	P	92	X	IN:	84F92C	MC00E10128804001	OUT:	84F92C	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF97
202	F2NC	9F924	AB	F2NC	2C320	CB	MC00	68605	0	MC00E10128804000	H	P	R	91/08/29	FP	P	92	A	IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF98
206	F2NC	9F924	AB	F2NC	2C320	CB	MC00	68605	0	MC00E10107232832	H	P	R	91/10/31	FP	P	92	X	IN:	84F92C	MC00E10128804048	OUT:		MC00E10107232832	FEFAB	QYDAB	QBJHD	MBF99
131	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E804444993531	H	P	R	92/01/21	FP	P	92		IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF100
135	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E804444993532	H	P	R	92/01/24	FP	P	92		IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF101
154	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E10129983681	H	P	R	92/04/25	FP	P	92		IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF102
2	F2NC	9F924	AA	F2NC	2C320	CC	MC00	68605	0	MC00E10206181000	H	P	R	92/05/01	FP	P	92	A	IN:	84F92C	MC00E10206181000	OUT:			FEFAB	QYDAB	QBJHD	MBF103
117	F2NC	9F924	AB	F2NC	2C320	CC	MC00	68605	0	MC00E10206181000	H	P	R	92/05/02	FP	P	92	A	IN:	84F92C	MC00E10206181000	OUT:			FEFAB	QYDAB	QBJHD	MBF104
204	F2NC	9F924	AB	F2NC	2C320	CB	MC00	68605	0	MC00E10206181000	H	P	R	92/05/03	FP	P	92	R	IN:	84F92C	MC00E10206181000	OUT:	84F92C	MC00E10206181000	FEFAB	QYDAB	QBJHD	MBF105
153	F2NC	9F924	AA	F2NC	2B891	BA	MC00	68605	0	MC00E10129983684	H	P	R	92/05/26	FP	P	92		IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF106
188	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E804444993625	H	P	R	92/07/21	FP	P	92		IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF107
155	F2NC	9F924	AA	F2NC	2B891	BA	MC00	68605	0	MC00E10221801000	H	P	R	92/08/13	FP	P	92		IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF108
170	F2NC	9F924	AB	F2NC	2B891	BA	MC00	68605	0	MC00E10221801000	H	P	R	92/08/21	FP	P	92		IN:	84F92C	MC00E10128804000	OUT:	84F95A	MC00E10128804000	FEFAB	QYDAB	QBJHD	MBF109
4	F2NC	9F924	AA	F2NC	2C320	CC	MC00	68605	0	MC00E10107213195	H	P	R	92/02/09	FP	P	92	R	IN:	84F92C	MC00E10206181000	OUT:	84F95A	MC00E10107213195	FEFAB	QYDAB	QBJHD	MBF110
119	F2NC	9F924	AB	F2NC	2C320	CC	MC00	68605	0	MC00E10107213195	H	P	R	92/02/09	FP	P	92	R	IN:	84F92C	MC00E10206181000	OUT:	84F95A	MC00E10107213195	FEFAB	QYDAB	QBJHD	MBF111
8	F2NC	9F924	AA	F2NC	2C320	BB	MC00	68605	0	MC00E10161505000	H	P	R	92/12/17	FP	P	92	A	IN:	84F95A	MC00E10161505000	OUT:			FEFAB	QYDAB	QBJHD	MBF112
10	F2NC	9F924	AA	F2NC	2C320	BB	MC00	68605	0	MC00E10537001001	H	P	R	93/10/27	FP	P	92	A	IN:	84F95A	MC00E10161505000	OUT:	84F95A	MC00E10537001001	FEFAB	QYDAB	QBJHD	MBF113
41	F2NC	9F924	AA	F2NC	2C320	CA	MC00	68605	0	MC00E10121269002	H	P	R	93/03/27	FZ	P	92	A	IN:	84F92B	MC00E10121269003	OUT:			QYDAB		QH	(MEXIC114
42	F2NC	9F924	AA	F2NC	2C320	CA	MC00	68605	0	MC00E10153275000	H	P	R	91/08/09	FZ	P	92	A	IN:	84F92B	MC00E10121269003	OUT:	84F92B	MC00E10153275000	QYDAB		QH	(MEXIC115
207	F2NC	9F924	AB	F2NC	2C320	CB	MC00	68605	0	MC00E10153275000	H	P	R	91/08/09	FZ	P	92	A	IN:	84F92B	MC00E10153275000	OUT:			QYDAB		QH	(MEXIC116
5	F2NC	9F924	AA	F2NC	2C320	CC	MC00	68605	0	MC00E10217095000	H	P	R	92/05/27	FZ	P	93	A	IN:	84F93A	MC00E10217095000	OUT:			CYDAB		QH	(MEXIC117
120	F2NC	9F924	AB	F2NC	2C320	CC	MC00	68605	0	MC00E10217095000	H	P	R	92/05/27	FZ	P	93	A	IN:	84F93A	MC00E10217095000	OUT:			CYDAB		QH	(MEXIC118
208	F2NC	9F924	AB	F2NC	2C320	CB	MC00	68605	0	MC00E10217095000	H	P	R	92/05/27	FZ	P	92	R	IN:	84F92B	MC00E10153275000	OUT:	84F93A	MC00E10217095000	QYDAB		QH	(MEXIC119
6	F2NC	9F924	AA	F2NC	2C320	CC	MC00	68605	0	MC00E10191802000	H	P	R	94/03/29	FZ	P	93	R	IN:	84F93A	MC00E10217095000	OUT:	84F95A	MC00E10191802000	QYDAB		QH	(MEXIC120
121	F2NC	9F924	AB	F2NC	2C320	CC	MC00	68605	0	MC00E10191802000	H	P	R	94/03/29	FZ	P	93	R	IN:	84F93A	MC00E10217095000	OUT:	84F95A	MC00E10191802000	QYDAB		QH	(MEXIC121
123	F2NC	9F924	AA	F2LC	2B891	AA	MC00	68605	0	MC00E10023760100	H	P	R	91/04/30	LB	P	93	A	IN:	84F93A	MC00E10023760100	OUT:						MARK VIII122
122	F2NC	9F924	AB	F2LC	2B891	AA	MC00	68605	0	MC00E10137323000	H	P	R	91/07/17	LB	P	93	R	IN:	84F93A	MC00E10023760100	OUT:	84F93A	MC00E10137323000				MARK VIII123

#	PART NUMBER	PEA	ACT	CPEC	# RELEASE	STOR RELEASE	VR	AL	HT	AC	IN:	CODE	ROUTECE	OUT:	CODE	ROUTECE	SPC		
181	F2VC 9F924 AB F3LC	28091	BA	HC00	60605	0 HC00E10137323000	H	P	R	91/07/17	LB	P	93	A	IN:	84F93A	HC00E10137323000	OUT:					MARK VIII124
182	F2VC 9F924 AB F3LC	28091	BA	HC00	60605	0 HC00E10157976000	H	P	R	91/11/05	LB	P	93	A	IN:	84F93A	HC00E10137323000	OUT:	84F93A	HC00E10157976000			MARK VIII125
183	F2VC 9F924 AB F3LC	28091	BA	HC00	60605	0 HC00E10157976000	H	P	R	91/11/05	LB	P	93	A	IN:	84F93A	HC00E10157976000	OUT:					MARK VIII126
185	F2VC 9F924 AB F3LC	28091	BA	HC00	60605	0 HC00E10851891003	H	P	R	92/01/10	LB	P	93	H	IN:	84F93A	HC00E10157976000	OUT:	84F94A	HC00E10851891003			MARK VIII127
73	F2VC 9F924 AB F3LC	28091	BC	HC00	60605	0 HC00E10206100000	H	P	R	92/04/15	LB	P	93	A	IN:	84F93A	HC00E10206100000	OUT:	84F94A	HC00E10206200000			MARK VIII128
184	F2VC 9F924 AB F3LC	28091	BB	HC00	60605	0 HC00E10206200000	H	P	R	92/04/15	LB	P	93	H	IN:	84F93A	HC00E10157976000	OUT:	84F93A	HC00E10206200000			MARK VIII129
213	F2VC 9F924 AB F4LC 2C320	AA	HC00	60603	0 HC00E10161813000	H	P	R	92/05/06	LB	P	94	A	IN:	84F94A	HC00E10161813000	OUT:					MARK VIII130	
214	F2VC 9F924 AB F4LC 2C320	AA	HC00	60603	0 HC00E10152467121	H	P	R	92/08/10	LB	P	94		IN:	84F94A	HC00E10161813000	OUT:					MARK VIII131	
216	F2VC 9F924 AB F4LC 2C320	AA	HC00	60603	0 HC00E10152467136	H	P	R	92/08/10	LB	P	94	A	IN:	84F94A	HC00E10161813000	OUT:	84F94A	HC00E10152467175			MARK VIII132	
221	F2VC 9F924 AB F4LC 2C320	AA	HC00	60605	0 HC00E10152467136	H	P	R	92/08/10	LB	P	94	A	IN:	84F94A	HC00E10152467135	OUT:					MARK VIII133	
215	F2VC 9F924 AB F4LC 2C320	AA	HC00	60605	0 HC00E10240733000	H	P	R	92/11/30	LB	P	94		IN:	84F94A	HC00E10152467135	OUT:					MARK VIII134	
218	F2VC 9F924 AB F4LC 2C320	AA	HC00	60605	0 HC00E10224878000	H	P	R	92/12/10	LB	P	94	H	IN:	84F94A	HC00E10152467135	OUT:	84F94A	HC00E10224878000			MARK VIII135	
224	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10224878000	H	P	R	92/12/10	LB	P	94	A	IN:	84F94A	HC00E10224878000	OUT:					MARK VIII136	
223	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10279779036	H	P	R	93/08/05	LB	P	94		IN:	84F94A	HC00E10224878000	OUT:					MARK VIII137	
229	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10283465037	H	P	R	93/10/29	LB	P	94		IN:	84F94A	HC00E10224878000	OUT:					MARK VIII138	
231	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10283465045	H	P	R	93/11/12	LB	P	94	H	IN:	84F94A	HC00E10224878000	OUT:	84F97A	HC00E10283465045			MARK VIII139	
225	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10351398011	H	P	R	94/06/27	LB	P	94		IN:	84F94A	HC00E10224878000	OUT:	84F97A	HC00E10283465045			MARK VIII140	
227	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10413691000	H	P	R	94/08/10	LB	P	94	E	IN:	84F94A	HC00E10224878000	OUT:		HC00E10413691000			MARK VIII141	
228	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10419865000	H	P	R	94/10/21	LB	P	94	H	IN:	84F94A	HC00E10224878000	OUT:	84F94A	HC00E10419865000			MARK VIII142	
230	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10283465037	H	P	R	93/10/29	LQ	U	89	A	IN:	84F89A	HC00E10283465037	OUT:					DHP90	143
232	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10283465045	H	P	R	93/11/12	LQ	U	89		IN:	84F89A	HC00E10283465037	OUT:					DHP90	144
226	F2VC 9F924 AB F4LC 2C320	AB	HC00	60605	0 HC00E10351398011	H	P	R	94/06/27	LQ	U	89	H	IN:	84F89A	HC00E10283465037	OUT:	84F94A	HC00E10351398011			DHP90	145
28	F2VC 9F924 AA F2VC 2C320	AA	HC00	60606	0 HC00E10014063000	H	P	R	90/05/24	VB	P	92	A	IN:	84F92A	HC00E10014063000	OUT:			AAEAA	FEAAA	FH116	146
69	F2VC 9F924 AA F2VC 2C320	AA	HC00	60606	0 HC00E10014063000	H	P	R	90/05/24	VB	P	92	A	IN:	84F92A	HC00E10014063000	OUT:			FEAAB		FH116	147
100	F2VC 9F924 AB F2VC 2C320	AA	HC00	60605	0 HC00E10014063000	H	P	R	90/05/24	VB	P	92	A	IN:	84F92A	HC00E10014063000				FEAAB		FH116	148
54	F2VC 9F924 AA F2VC 2C320	AA	HC00	60606	0 HC00E10020915000	H	P	R	90/08/17	VB	P	92		IN:	84F92A	HC00E10014063000	OUT:			AAEAA	FEAAA	FH116	149
49	F2VC 9F924 AA F2VC 2C320	AA	HC00	60605	0 HC00E10020915000	H	P	R	90/08/17	VB	P	92		IN:	84F92A	HC00E10014063000	OUT:			FEAAB		FH116	150
60	F2VC 9F924 AB F2VC 2C320	AA	HC00	60605	0 HC00E10020915000	H	P	R	90/08/17	VB	P	92		IN:	84F92A	HC00E10014063000	OUT:			FEAAB		FH116	151
52	F2VC 9F924 AA F2VC 2C320	AA	HC00	60606	0 HC00E10020915001	H	P	R	90/08/23	VB	P	92		IN:	84F92A	HC00E10014063000	OUT:			FEAAB		FH116	152
85	F2VC 9F924 AB F2VC 2C320	AA	HC00	60605	0 HC00E10020915001	H	P	R	90/08/23	VB	P	92		IN:	84F92A	HC00E10014063000	OUT:			FEAAB		FH116	153
233	F2VC 9F924 BA F2VC 2C320	BA	HC00	60605	0 HC00E10079844000	H	P	R	90/09/24	VB	P	92	A	IN:	84F92A	HC00E10079844000	OUT:					FH116	154
243	F2VC 9F924 BB F2VC 2C320	BA	HC00	60605	0 HC00E10079844000	H	P	R	90/09/24	VB	P	92	A	IN:	84F92A	HC00E10079844000	OUT:					FH116	155
25	F2VC 9F924 AA F2VC 2C320	AA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	B	IN:	84F92A	HC00E10014063000	OUT:	84F92A	HC00E10079844001	AAEAA	FEAAA	FH116	156
26	F2VC 9F924 AA F2VC 2C320	AA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	A	IN:	84F92A	HC00E10079844001	OUT:			AAEAA	FEAAA	FH116	157
57	F2VC 9F924 AA F2VC 2B091	AA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	R	IN:	84F92A	HC00E10014063000	OUT:	84F92A	HC00E10079844001	FEAAB		FH116	158
59	F2VC 9F924 AA F2VC 2B091	AA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	A	IN:	84F92A	HC00E10079844001	OUT:			FEAAB		FH116	159
58	F2VC 9F924 AB F2VC 2B091	AA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	R	IN:	84F92A	HC00E10014063000	OUT:	84F92A	HC00E10079844001	FEAAB		FH116	160
89	F2VC 9F924 AB F2VC 2B091	AA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	A	IN:	84F92A	HC00E10079844001	OUT:			FEAAB		FH116	161
234	F2VC 9F924 BA F2VC 2C320	BA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	R	IN:	84F92A	HC00E10079844000	OUT:	84F92A	HC00E10079844001			FH116	162
235	F2VC 9F924 BA F2VC 2C320	BA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	A	IN:	84F92A	HC00E10079844001	OUT:	84F92A	HC00E10079844001	AAEAA	FEAAA	FH116	163
244	F2VC 9F924 BB F2VC 2B091	BA	HC00	60605	0 HC00E10079844001	H	P	R	90/10/05	VB	P	92	R	IN:	84F92A	HC00E10079844000	OUT:	84F92A	HC00E10079844001			FH116	164

#	FROM	NUMBER		FIA		ACT	CPUC	S	RELEASE	FUNC	RELEASE	VL	M	NT	K	IN:	CODE	NOTICE	OUT:	CODE	NOTICE	NPC		
145	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X10079044001	H	P	R	90/10/00	VB	P	92	A	IN:	X54P92A	HC00X10079044001	OUT:	X54P92A	HC00X10079044001	FEAAB		98116	165
61	F2VC	99924	AA	F2VC	28091	AA	HC00	60605	0	HC00X10079044002	H	P	R	90/10/00	VB	P	92	A	IN:	X54P92A	HC00X10079044001	OUT:	X54P92A	HC00X10079044002	FEAAB		98116	166
62	F2VC	99924	AA	F2VC	28091	AA	HC00	60605	0	HC00X10079044002	H	P	R	90/10/00	VB	P	92	A	IN:	X54P92A	HC00X10079044002	OUT:			FEAAB	FEFAB	98116	167
92	F2VC	99924	AB	F2VC	28091	AA	HC00	60605	0	HC00X10079044002	H	P	R	90/10/00	VB	P	92	A	IN:	X54P92A	HC00X10079044002	OUT:	X54P92A	HC00X10079044002	FEAAB		98116	168
93	F2VC	99924	AB	F2VC	28091	AA	HC00	60605	0	HC00X10079044002	H	P	R	90/10/00	VB	P	92	A	IN:	X54P92A	HC00X10079044002	OUT:			FEAAB	FEFAB	98116	169
146	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X10079044002	H	P	R	90/10/00	VB	P	92	A	IN:	X54P92A	HC00X10079044001	OUT:	54P92A	HC00X10079044002	FEAAB		98116	170
147	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X10079044002	H	P	R	90/10/00	VB	P	92	A	IN:	54P92A	HC00X10079044002	OUT:	X54P92A	HC00X10079044002	FEAAB	FEFAB	98116	171
137	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X00444499328	H	P	R	91/01/14	VB	P	92	A	IN:	54P92A	HC00X00444499328	OUT:	X54P92A	HC00X00444499328	FEAAB	FEFAB	98116	172
138	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X00444499328	H	P	R	91/01/14	VB	P	92	X	IN:	54P92A	HC00X10079044002	OUT:	54P92A	HC00X00444499328	FEAAB	FEFAB	98116	173
139	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X00444499328	H	P	R	91/01/14	VB	P	92	A	IN:	54P92A	HC00X00444499328	OUT:	X54P92A	HC00X00444499326	FEFAB		98116	174
85	F2VC	99924	AA	F2VC	28091	AA	HC00	60605	0	HC00X00444499336	H	P	R	91/01/18	VB	P	92	A	IN:	X54P92A	HC00X00444499336	OUT:			FEAAB		98116	175
68	F2VC	99924	AA	F2VC	28091	AA	HC00	60605	0	HC00X00444499336	H	P	R	91/01/18	VB	P	92	A	IN:	X54P92A	HC00X00444499336	OUT:	X54P92A	HC00X00444499336	FEAAB	FEFAB	98116	176
65	F2VC	99924	AA	F2VC	28091	AA	HC00	60605	0	HC00X10113000000	H	P	R	91/01/18	VB	P	92		IN:	X54P92A	HC00X10079044002	OUT:			FEAAB	FEFAB	98116	177
76	F2VC	99924	AB	F2VC	28091	AA	HC00	60605	0	HC00X00444499336	H	P	R	91/01/18	VB	P	92	A	IN:	X54P92A	HC00X00444499336	OUT:			FEAAB		98116	178
77	F2VC	99924	AB	F2VC	28091	AA	HC00	60605	0	HC00X00444499336	H	P	R	91/01/18	VB	P	92	A	IN:	X54P92A	HC00X10079044002	OUT:	X54P92A	HC00X00444499336	FEAAB	FEFAB	98116	179
96	F2VC	99924	AB	F2VC	28091	AA	HC00	60605	0	HC00X10113000000	H	P	R	91/01/18	VB	P	92		IN:	X54P92A	HC00X10079044002	OUT:			FEAAB	FEFAB	98116	180
140	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X00444499336	H	P	R	91/01/18	VB	P	92	X	IN:	54P92A	HC00X00444499336	OUT:	X54P92A	HC00X00444499336	FEAAB		98116	181
141	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X00444499336	H	P	R	91/01/18	VB	P	92	X	IN:	54P92A	HC00X00444499336	OUT:	54P92A	HC00X00444499336	FEAAB	FEFAB	98116	182
142	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X00444499336	H	P	R	91/01/18	VB	P	92	X	IN:	54P92A	HC00X00444499328	OUT:	54P92A	HC00X00444499336	FEFAB		98116	183
148	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X10113000000	H	P	R	91/01/18	VB	P	92		IN:	54P92A	HC00X00444499328	OUT:	X54P92A	HC00X00444499328	FEAAB	FEFAB	98116	184
149	F2VC	99924	BB	F2VC	28091	BA	HC00	60605	0	HC00X10113000000	H	P	R	91/01/18	VB	P	92		IN:	54P92A	HC00X00444499328	OUT:	X54P92A	HC00X00444499328	FEFAB		98116	185
27	F2VC	99924	AA	F2VC	2C320	AA	HC00	60605	0	HC00X10113000000	H	P	R	91/02/07	VB	P	92	A	IN:	X54P92A	HC00X10079044001	OUT:	X54P92A	HC00X10113000000	AAFAB	FEAAB	98116	186
236	F2VC	99924	BA	F2VC	2C320	BA	HC00	60605	0	HC00X10113000000	H	P	R	91/02/07	VB	P	92	A	IN:	54P92A	HC00X10079044001	OUT:	54P92A	HC00X10113000000	AAFAB	FEAAB	98116	187
172	F2VC	99924	AB	F2VC	28091	CA	HC00	60605	0	HC00X10117000000	H	P	R	91/03/15	VB	P	92	X	IN:	X54P92A	HC00X10117000000	OUT:			AAFAB		98116	188
111	F2VC	99924	AB	F2VC	28091	CB	HC00	60605	0	HC00X10117000001	H	P	R	91/03/20	VB	P	92	A	IN:	54P92A	HC00X10117000001	OUT:			AAFAB		98116	189
173	F2VC	99924	AB	F2VC	28091	CA	HC00	60605	0	HC00X10117000001	H	P	R	91/03/20	VB	P	92	A	IN:	54P92A	HC00X10117000000	OUT:	54P92A	HC00X10117000001	AAFAB		98116	190
72	F2VC	99924	AA	F2VC	28091	AA	HC00	60605	0	HC00X10107232002	H	P	R	91/07/02	VB	P	92	X	IN:	X54P92A	HC00X00444499336	OUT:	54P95A	HC00X10107232002	FEAAB		98116	191
143	F2VC	99924	BB	F2VC	28091	AA	HC00	60605	0	HC00X10107232002	H	P	R	91/07/02	VB	P	92	X	IN:	X54P92A	HC00X00444499336	OUT:	54P95A	HC00X10107232002	FEAAB		98116	192
115	F2VC	99924	AB	F2VC	28091	CB	HC00	60605	0	HC00X10107232002	H	P	R	91/07/02	VB	P	92	X	IN:	54P92A	HC00X10117000001	OUT:	54P95A	HC00X10107232002	AAFAB		98116	193
88	F2VC	99924	AA	F2VC	28091	AA	HC00	60605	0	HC00X10120004001	H	P	R	91/07/11	VB	P	92	X	IN:	X54P92A	HC00X00444499336	OUT:	X54P92A	HC00X10120004001	FEAAB		98116	194
90	F2VC	99924	AB	F2VC	28091	AA	HC00	60605	0	HC00X10120004001	H	P	R	91/07/11	VB	P	92	X	IN:	X54P92A	HC00X00444499336	OUT:	X54P92A	HC00X10120004001	FEAAB		98116	195
144	F2VC	99924	AB	F2VC	28091	BA	HC00	60605	0	HC00X10120004001	H	P	R	91/07/11	VB	P	92	A	IN:	X54P92A	HC00X10120004001	OUT:	54P95A	HC00X10120004001	FEAAB		98116	196
113	F2VC	99924	AB	F2VC	28091	CB	HC00	60605	0	HC00X10120004001	H	P	R	91/07/23	VB	P	92	X	IN:	54P92A	HC00X10117000001	OUT:	X54P92A	HC00X10120004001	AAFAB		98116	197
174	F2VC	99924	AB	F2VC	28091	CC	HC00	60605	0	HC00X10120004002	H	P	R	91/07/23	VB	P	92	A	IN:	X54P92A	HC00X10120004002	OUT:	54P95A	HC00X10120004002	AAFAB		98116	198
113	F2VC	99924	AB	F2VC	28091	CB	HC00	60605	0	HC00X10120004004	H	P	R	91/07/25	VB	P	92	X	IN:	54P92A	HC00X10117000001	OUT:	54P92A	HC00X10120004004	AAFAB		98116	199
114	F2VC	99924	AB	F2VC	28091	CB	HC00	60605	0	HC00X10120004004	H	P	R	91/07/25	VB	P	92	A	IN:	54P92A	HC00X10120004004	OUT:	X54P92A	HC00X10120004004	AAFAB		98116	200
171	F2VC	99924	AB	F2VC	28091	CC	HC00	60605	0	HC00X10120004004	H	P	R	91/07/25	VB	P	92	X	IN:	X54P92A	HC00X10120004002	OUT:	X54P92A	HC00X10120004004	AAFAB		98116	201
170	F2VC	99924	AB	F2VC	28091	CC	HC00	60605	0	HC00X10120004004	H	P	R	91/07/25	VB	P	92	A	IN:	X54P92A	HC00X10120004004	OUT:	54P95A	HC00X10120004004	AAFAB		98116	202
151	F2VC	99924	AB	F2VC	28091	BA	HC00	60605	0	HC00X10120004008	H	P	R	91/08/29	VB	P	92	X	IN:	X54P92A	HC00X10120004001	OUT:	X54P92A	HC00X10120004008	FEAAB		98116	203
152	F2VC	99924	AB	F2VC	28091	BA	HC00	60605	0	HC00X10120004008	H	P	R	91/08/29	VB	P	92	A	IN:	X54P92A	HC00X10120004008	OUT:	54P95A	HC00X10120004008	FEAAB		98116	204
175	F2VC	99924	AB	F2VC	28091	CC	HC00	60605	0	HC00X10120004008	H	P	R	91/08/29	VB	P	92		IN:	X54P92A	HC00X10120004004	OUT:	54P95A	HC00X10120004004	AAFAB		98116	205

Sheet1

#	PART NUMBER				VIA		ACT	CPSC	S	RELEASE	FUR			RELEASE	VL	ALMY		AC	IN:	CODE	NOTICE	OUT:	CODE	NOTICE	MFC			
132	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00000444499521	N	P	R	92/01/21	VB	F	92	A	IN:	94F93A	HC00000444499521	OUT:	94F95A	HC00000444499521			FN116	206
133	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00000444499521	N	P	R	92/01/21	VB	F	92	X	IN:	XX4F92A	HC00010120004000	OUT:	94F93A	HC00000444499521	F8AA0		FN116	207
180	F2VC	9F924	AA	F2VC	20091	CC	HC00	60605	0	[illegible]	N	P	R	92/02/11	VB	F	92	R	IN:	XX4F92A	HC00010120004004	OUT:	94F93A	[illegible]	AAXXX		FN116	208
190	F2VC	9F924	AA	F2VC	20091	AA	HC00	60605	0	[illegible]	N	P	R	92/02/11	VB	F	93	A	IN:	94F93A	HC00010104330000	OUT:	94F93A	[illegible]	AAXXX		FN116	209
175	F2VC	9F924	AA	F2VC	20091	CC	HC00	60707	0	[illegible]	N	P	R	92/03/20	VB	F	92	A	IN:	XX4F92A	HC00010104330001	OUT:	94F93A	[illegible]	AAXXX		FN116	210
136	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	[illegible]	N	P	R	92/03/24	VB	F	93	X	IN:	94F93A	HC00000444499521	OUT:	94F93A	HC00000444499552			FN116	211
137	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00000444499552	N	P	R	92/03/24	VB	F	93	A	IN:	94F93A	HC00000444499552	OUT:	94F95A	HC00000444499552	AAXXA		FN116	212
138	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00000444499552	N	P	R	92/03/24	VB	F	92		IN:	XX4F92A	HC00010120004000	OUT:	94F93A	HC00000444499521	F8AA0		FN116	213
174	F2VC	9F924	AA	F2VC	20091	CC	HC00	60707	0	[illegible]	N	P	R	92/04/08	VB	F	92		IN:	XX4F92A	HC00010104330001	OUT:	94F93A	HC00010104330001	AAXXX		FN116	214
135	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010129983001	N	P	R	92/04/25	VB	F	93	X	IN:	94F93A	HC00000444499552	OUT:	94F93A	HC00010129983001	AAXXA		FN116	215
164	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010129983001	N	P	R	92/04/25	VB	F	93	A	IN:	94F93A	HC00010129983001	OUT:	94F93A	HC00010129983001	AAXAA	F8AA0	FN116	216
157	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010129983001	N	P	R	92/04/25	VB	F	92		IN:	XX4F92A	HC00010120004000	OUT:	94F93A	HC00000444499521	F8AA0		FN116	217
186	F2VC	9F924	AA	F3VC	20091	AA	HC00	60605	0	HC00010129983001	N	P	R	92/04/25	VB	F	93	X	IN:	94F93A	HC00010104330000	OUT:	94F93A	HC00010129983001	AAXXX		FN116	218
187	F2VC	9F924	AA	F3VC	20091	AA	HC00	60605	0	HC00010129983001	N	P	R	92/04/25	VB	F	93	A	IN:	94F93A	HC00010129983001	OUT:	94F93A	HC00010129983001	AAXXX	F8AA0	FN116	219
160	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	[illegible]	N	P	R	92/05/26	VB	F	92		IN:	94F93A	HC00000444499552	OUT:	94F93A	HC00010129983001	AAXAA		FN116	220
161	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010129983004	N	P	R	92/05/26	VB	F	94	A	IN:	94F94A	HC00010129983004	OUT:	94F95A	HC00010129983004	AAXAA		FN116	221
162	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010129983004	N	P	R	92/05/26	VB	F	93	X	IN:	94F93A	HC00010129983001	OUT:	94F94A	HC00010129983004	AAXAA	F8AA0	FN116	222
163	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010129983004	N	P	R	92/05/26	VB	F	92		IN:	XX4F92A	HC00010120004000	OUT:	94F93A	HC00000444499521	F8AA0		FN116	223
141	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00000444499625	N	P	R	92/07/21	VB	F	93		IN:	94F93A	HC00000444499552	OUT:	94F93A	HC00010129983001	AAXAA		FN116	224
142	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00000444499625	N	P	R	92/07/21	VB	F	94		IN:	94F94A	HC00010129983004	OUT:	94F95A	HC00010129983004	AAXAA		FN116	225
143	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00000444499625	N	P	R	92/07/21	VB	F	93		IN:	94F93A	HC00010129983001	OUT:	94F94A	HC00010129983004	AAXAA	F8AA0	FN116	226
166	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010221001003	N	P	R	92/08/13	VB	F	93		IN:	94F93A	HC00000444499552	OUT:	94F93A	HC00010129983001	AAXAA		FN116	227
167	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010221001003	N	P	R	92/08/13	VB	F	94	X	IN:	94F94A	HC00010129983004	OUT:	94F94A	HC00010221001003	AAXAA		FN116	228
168	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	HC00010221001003	N	P	R	92/08/13	VB	F	93	X	IN:	94F93A	HC00010129983001	OUT:	94F93A	HC00010221001003	AAXAA	F8AA0	FN116	229
209	F2VC	9F924	AA	F3VC	2C320	AA	HC00	60605	0	HC00010221001003	N	P	R	92/08/13	VB	F	94	A	IN:	94F94A	HC00010221001003	OUT:	94F95A	HC00010221001003	AAXAA		FN116	230
210	F2VC	9F924	AA	F3VC	2C320	AA	HC00	60605	0	HC00010221001003	N	P	R	92/08/13	VB	F	93	A	IN:	94F93A	HC00010221001003	OUT:	94F94A	HC00010221001003	AAXAA	F8AA0	FN116	231
171	F2VC	9F924	AA	F2AC	20091	AA	HC00	60605	0	[illegible]	N	P	R	92/08/21	VB	F	93		IN:	94F93A	HC00000444499552	OUT:	94F93A	HC00010129983001	AAXAA		FN116	232
188	F2VC	9F924	AA	F3VC	20091	AA	HC00	60605	0	[illegible]	N	P	R	92/08/21	VB	F	93		IN:	94F93A	HC00010104330000	OUT:	94F93A	HC00010129983001	AAXAA		FN116	233
189	F2VC	9F924	AA	F3VC	20091	AA	HC00	60605	0	[illegible]	N	P	R	92/08/21	VB	F	93	X	IN:	94F93A	HC00010129983001	OUT:	94F93A	HC00010129983005	AAXXX	F8AA0	FN116	234
134	F2VC	9F924	AA	F3VC	2C320	AA	HC00	60605	0	[illegible]	N	P	R	92/09/04	VB	F	94	A	IN:	94F94A	HC00010236663000	OUT:	94F95A	HC00010236663000	AAXAA		FN116	235
135	F2VC	9F924	AA	F3VC	2C320	AA	HC00	60605	0	HC00010236663000	N	P	R	92/09/04	VB	F	93	A	IN:	94F93A	HC00010236663000	OUT:	94F94A	HC00010236663000	AAXAA	F8AA0	FN116	236
211	F2VC	9F924	AA	F3VC	2C320	AA	HC00	60605	0	[illegible]	N	P	R	92/09/04	VB	F	94	R	IN:	94F94A	HC00010221001003	OUT:	94F94A	HC00010236663000	AAXAA		FN116	237
212	F2VC	9F924	AA	F3VC	2C320	AA	HC00	60605	0	HC00010236663000	N	P	R	92/09/04	VB	F	93	R	IN:	94F93A	HC00010221001003	OUT:	94F93A	HC00010236663000	AAXAA	F8AA0	FN116	238
12	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	HC00010405295000	N	P	R	94/05/17	VB	F	95	A	IN:	94F95A	HC00010405295000	OUT:			F8F8A		FN116	239
11	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	[illegible]	N	P	R	94/11/15	VB	F	95		IN:	94F95A	HC00010405295000	OUT:			F8F8A		FN116	240
22	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	HC00110487555000	N	P	R	95/03/21	VB	F	95	R	IN:	94F95A	HC00010405295000	OUT:	94F98A	HC00110487555000	F8F8A		FN116	241
13	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	[illegible]	N	P	R	95/06/14	VB	F	95		IN:	94F95A	HC00010405295000	OUT:	94F98A	HC00110487555000	F8F8A		FN116	242
16	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	[illegible]	N	P	R	95/10/18	VB	F	95		IN:	94F95A	HC00010405295000	OUT:	94F98A	HC00110487555000	F8F8A		FN116	243
19	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	[illegible]	N	P	R	95/10/27	VB	F	95		IN:	94F95A	HC00010405295000	OUT:	94F98A	HC00110487555000	F8F8A		FN116	244
23	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	[illegible]	N	P	R	95/03/21	VC	F	98	A	IN:	94F98A	HC00110487555000	OUT:			F8F8A		FN146	245
14	F2AC	9F924	AA	F3VC	2C320	AC	HC00	60605	0	[illegible]	N	P	R	95/06/14	VC	F	98		IN:	94F98A	HC00110487555000	OUT:			F8F8A		FN146	246

3713 1406

#	PART NUMBER	PIA	ACT	CPSC	S RELEASE	FUNC RELEASE	VL	M/HF	AC	IN: CODE	NOTICE	OUT: CODE	NOTICE	REC		
15	F2AC 8F824 AA F5VC 2C320 AC HC00 60605 0 HC00E10487567013 H	P	R	95/05/10	VC	P	50	A	IN:	S4F98A	HC00E10487567013	OUT:		FEFAA J5R6B	FEL65	247
17	F2AC 8F824 AA F5VC 2C320 AC HC00 60605 0 HC00E10487567025 H	P	R	95/10/18	VC	P	50		IN:	S4F98A	HC00I10487555000	OUT:		FEFAA	FEL65	248
18	F2AC 8F824 AA F5VC 2C320 AC HC00 60605 0 HC00E10487567025 H	P	R	95/10/18	VC	P	50	R	IN:	S4F98A	HC00E10487567013	OUT:	S4F98A HC00E10487567025	FEFAA J5R6B	FEL65	249
20	F2AC 8F824 AA F5VC 2C320 AC HC00 60605 0 HC00E10537002000 H	P	R	95/10/27	VC	P	60		IN:	S4F98A	HC00I10487555000	OUT:		FEFAA	FEL65	250
21	F2AC 8F824 AA F5VC 2C320 AC HC00 60605 0 HC00E10543366000 H	P	R	98/03/27	VC	P	50	R	IN:	S4F98A	HC00I10487555000	OUT:	S4F98A HC00E10834366000	FEFAA	FEL65	251
126 F2VC 8F824 AB F2AC 28B91 BA HC00 60282 0 [redacted] H	P	R	93/08/31							LIND CONVERSION						252
127 F2VC 8F824 AB F2AC 28B91 BA HC00 60282 0 HC00E10218428001 H	P	R	93/06/03							LIND CONVERSION						253
128 F2VC 8F824 AB F2AC 28B91 BA HC00 60282 0 HC00E10218428002 H	P	R	93/10/07							LIND CONVERSION						254
129 F2VC 8F824 AB F2AC 28B91 BA HC00 60282 0 HC00E10218428003 H	P	R	93/10/07							LIND CONVERSION						255
104 F2VC 8F824 AB F5VC 28B91 AA HC00 60282 0 HC00E10357598000 H	P	R	94/03/15							LIND CONVERSION						256
105 F2VC 8F824 AB F5VC 28B91 AA HC00 60282 0 HC00E10430496000 H	P	R	94/08/25							LIND CONVERSION						257
106 F2VC 8F824 AB F5VC 28B91 AA HC00 60282 0 HC00E10515295000 H	P	R	95/05/11							LIND CONVERSION						258
107 F2VC 8F824 AB F5VC 28B91 AA HC00 60282 0 HC00E10534987000 H	P	R	95/08/11							LIND CONVERSION						259
108 F2VC 8F824 AB F5VC 28B91 AA HC00 60282 0 HC00E10596699000 H	P	R	96/05/31							LIND CONVERSION						260
109 F2VC 8F824 AB F5VC 28B91 AA HC00 60282 0 HC00E10772416000 H	P	R	97/03/16							LIND CONVERSION						261
110 F2VC 8F824 AB F5VC 28B91 AA HC00 60282 0 HC00E10798326000 H	P	R	97/11/10							LIND CONVERSION						262

3713 1407

****
* Note printed by FPORTER on 30 Mar 1999 at 17:30:19 *
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From: JNEME --DRBN005 Date and time 03/30/99 14:22:40
To: JKAPATI --DRBN004 TMASTERS--DRBNC05
FPORTER --DRBN007 WABRAMCS--DRBNG05
RNEVI --DRBN005 TBAZIL --DRBNG05
RENGLI81--DRBN005 SREIMERS--DRBNC07
cc: JMCINERN--DRBN005

FROM: Joseph S. Neme USART(UTC -05:00)
SUBJECT: got another inspection report
Stop by and check it out... it is in the green folder on my desk... fuse #12 blown...

John... while I am out of the office... please check my desk for other reports and send out a similar notice if required... thanks

Joseph S. Neme
LVC - Safety
Phone: 39-08133, Fax:62-18147, E-Mail:jneme@ford.com
Location: MD1255/Cube 2M37, Building #2 Textpager:313-795-7003

TEXAS INSTRUMENTS

Materials & Controls Group
Automotive Business Unit

Low Cost Automotive Hydraulic Line Mount Pressure Switches

TI's pressure switches provide low cost, on/off controls for many automotive systems. The snap action disc reacts to changing pressure by reversing its curvature and activating electrical switch contacts.

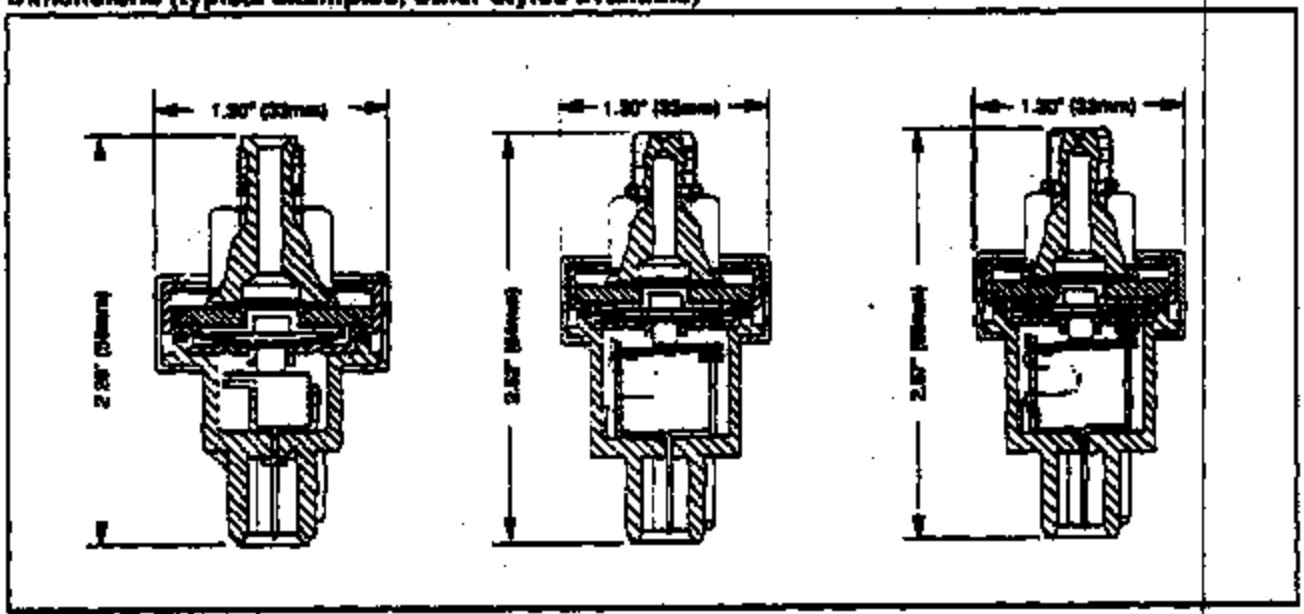
Key Features Include:

- Designed for underhood environment
- Low weight
- Custom packaging for specific application needs
- Automotive temperature range of -40 to 135°C
- Normally open and normally closed contact logic
- Industry proven since 1984

Typical Applications

- Power Steering Systems
- Cruise Control Systems
- Brake Systems
- Transmissions
- Suspension

Dimensions (typical examples, other styles available)



3713 1409

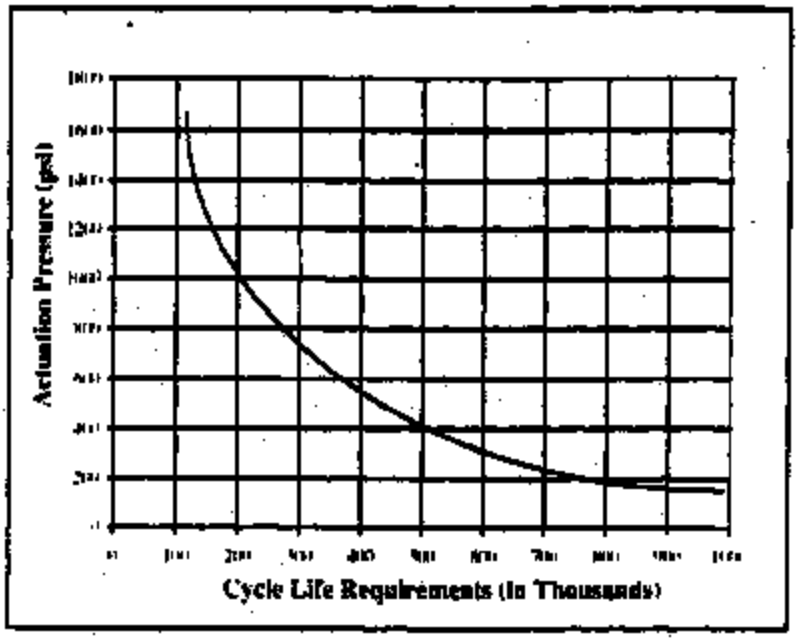
TEXAS INSTRUMENTS

Technical Specifications

Electrical		**Durability**	
Supply Voltage	6 - 16 V	Cycle Life	
Supply Current	5 - 35 mA	Low/Mid Pressure Range	up to $1x10^6$ cycles
Response Time[1]	10 ms maximum	High Pressure Range	up to $15x10^4$ cycles
Environmental		Proof Pressure	1400 to 3000 psi
Operating Temperature	-40 to 135°C	Burst Pressure	
Full Scale Pressure Range		Low Pressure Range	7000 psi
Low Pressure Range	0 to 300 psi	Mid Pressure Range	4000 psi
Mid Pressure Range	0 to 800 psi	High Pressure Range	2500 psi
High Pressure Range	0 to 1600 psi		

[1]Applicable on some devices

Pressure Switch Characteristics



For further information please write or call:

Texas Instruments Incorporated
Pressure Switch Marketing MS 23-01
P.O. Box 2964
Attleboro, MA 02703-0964
Phone 508 236-3510
Fax 508 236-1598

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South America
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CEP 13060-901
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Texas Instruments Incorporated
8-D Problem Resolution Report # PS/CAR/93-3 CLOSED 12/1/93

Original Report: July 29, 1993

Update Report: October 18, 1993
Ford Part Number: F3TA-9F924-AA/BA/CA
Part Description: Speed Control Deactivation Switch

(STEP 1) PRODUCT TEAM

Manufacturing Engineering: Matt Sellers
Quality Assurance Engineering: Jim Watt
Product Marketing: Charlie Douglas
Design Engineering: Asif Rahman (Champion)

(STEP 2) PROBLEM DESCRIPTION

Ford Light Truck Division Brake Engineering reported a noticeable increase in warranty returns, related to inoperative speed control systems for 1993 Econoline models during 4QTR'92 and 1QTR'93 time frame. Detailed breakdown of warranty data showed that a number of these claims were reported to be pressure switch related. Attachment "A" shows R/1000 data as collated from Ford warranty data. Texas Instruments and Ford started on 7/22/93 to call dealerships from the Master Claim list contacting over 150 dealerships. As of 10/18/93, (14) switches have been received, analyzed, and characterized.

The following table details the field data on these switches:

VID	Vehicle type	Switch date code
A84642	'93 Econoline	2316 (November '92)
A35294	'93 Econoline	2294
A40855	'93 Econoline	3078
A70383	'93 Econoline	2345
A61611	'93 Econoline	2345
A34137	'93 Econoline	2243
A32268	'93 Econoline	2286
A47374	'93 Econoline	2307
A50451	'93 Econoline	2316
A49359	'93 Econoline	2338
A57954	'93 Econoline	2345
A92609	'93 Econoline	3037
B15536	'93 Econoline	3078
A40855	'93 Econoline	3175

(13) switches were confirmed to be inoperative switches due to liquid ingress resulting in severe corrosion. Switch with date code 2307 was operating normally.

TO FIELD PORTER

3713 1411

(STEP 3) INTERIM CONTAINMENT ACTION

We have completed the following actions in assessing the integrity of our current product:

1. Verified environmental seal integrity and proper function.

2. Verified switch connector base dimensions that could affect the mating connector sealing ability to be within specification.

Based upon Texas Instruments' verification of the critical connector base dimensions, the functionality of the environmental seal, and observation of fluid ingress into the switch cavity through the terminal blades, an analysis/investigation of the mating connector sealing system is warranted.

3. Texas Instruments, in cooperation with Ford Light Truck Engineering, conducted a water ingress test with various component combinations of the mating connector, to determine relative susceptibility of each combination. The following combinations were tested:

Current Light Truck	Light Truck Before 11/92	Current Pass Car
Black UTA shell	Black EPC shell	Black UTA shell
Gray Grommet	Gray Grommet	Gray Grommet
Red Silicon Seal	Red Sponge Seal	Red Sponge Seal

The matrix of components tested and the test sequence is outlined in attached charts. Preliminary data analysis did not show significant differences amongst various matrix elements. It has been concluded that the switches need extended exposure under shower to initiate water ingress. In addition to the above combination of components, 50% of the switches were tested with a "rocked" connector.

The shower test was halted on 10/6/93, when non-normal insulation resistance readings were observed on rocked switches. Upon removal of the connectors, water ingress was observed on all switches with rocked connectors. There was no ingress on correctly latched switches. The attached Table 1 summarizes the matrix of parts and visual observations. The ingress in vertical switches was of a magnitude higher than in horizontal switches. Photographs of the switches were sent to Ford Light Truck Engineering for review. The switches were calibrated for functionality. The attached Table 2 confirms the effect of ingress as seen in the reduction of insulation resistance and intermittent operation of the switches. The switches were then disassembled for internal inspection. It was observed that the ingress had proceeded through the connector cavity into the contact zone. Photographs are attached.

The ingress activity on the rocked switches was similar to that observed on parts returned from the field, albeit of a lesser magnitude. It is believed that, given sufficient time (to allow current to pass though the contacts), the ingress on the rocked switches would exhibit exactly the same failure as that observed on the warranty parts.

(STEP 4) ROOT CAUSE

The switches analyzed were inoperative since there was no electrical continuity between the terminals. Attachment "B" shows the fishbone diagram for a stuck open switch. The lack of continuity was due to presence of large amounts of corrosion products inside the switch cavity and, in some cases, failure of contact elements due to corrosion. The large quantity of corrosion products is due to fluid that entered the switch cavity. Because of the severe amount of corrosion observed, it is believed that the corrosion is accelerated by the potential difference between the grounded body of the switch and current carrying members.

Thorough visual observation concluded the fluid entry to be through the mating connector end of the switch as evidenced by brass corrosion products along the terminal blades in the connector cavity (see attached photographs). Two of the switches exhibited blue/green corrosion by-products covering more than one half of the connector cavity. The others showed similar corrosion products but in lesser amounts. None of the switches showed any evidence of fluid ingress by the environmental seal.

The snap acting disc in all the returned switches was functioning normally.

The following observations were made by Texas Instruments on '93 Econoline and F-Series Trucks at a local Ford dealership:

1. Econoline: The wire leads coming out of the switch were routed below and touching the rear A/C line. This will create a propensity for water/condensation traveling along the line to flow along the wire leads to the grommet.

2. F-Series: The observed vehicles had a Red Sponge seal inside the mating connector, as opposed to the expected Red Silicone seal.

Additional observations regarding face seal variations:

1. The target zone for pressure switch sealing surface is smaller on the sponge seal, than the silicone seal. The smaller target zone, may lead to a sub-optimal sealing condition under worst case dimensional stack-up.

2. It has been seen that during the mating connector assembly process, there is an opportunity for the silicone seal to be rolled over. This can happen during insertion of the plastic terminal separator. The insertion is done after the silicone seal is placed in the plastic shell. A rolled over silicone seal would not provide protection against water ingress.

3. The silicone seal, by design, has a lower percent compression than the sponge seal. The design limits for the silicone seal are 10 - 15%, whereas the limits for the sponge seal are 38 - 50%. The reduction in percent compression was intended to maintain similar loading forces. It has been observed that there is a tendency for the mating connector to 'rock' in the latched position. The rocking tendency would lead to a higher percent change in the level of compression of the silicone seal than on the sponge seal.

The shower test detailed above, leads to the conclusion that a "rocked" connector was the most probable root cause of the observed problem. The impact of the problem is magnified in the Econoline platform due to the mounting location and vertical mounting position, both of which are unfavorable from a ingress point of view.

(STEP 5) PERMANENT CORRECTIVE ACTION

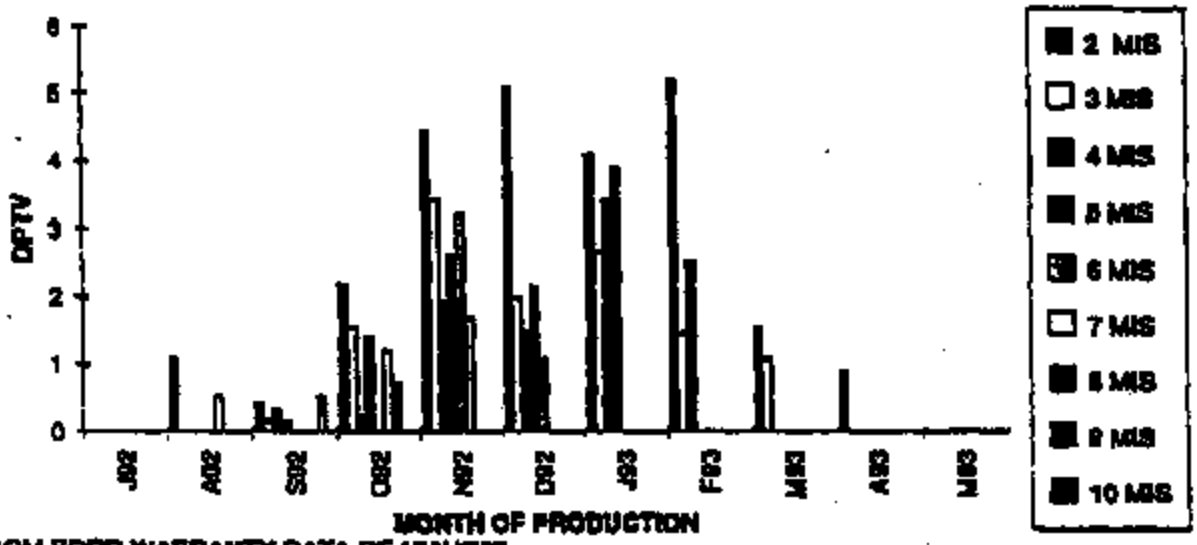
No corrective action is required from Texas Instruments at this point.

(STEP 6) VERIFY CORRECTIVE ACTION

(STEP 7) PREVENT RECURRENCE

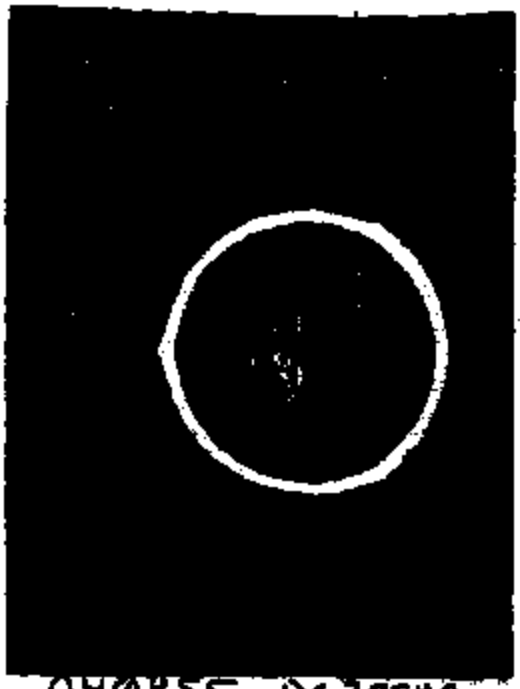
WARR3_U.XLC

93 ECONOLINE

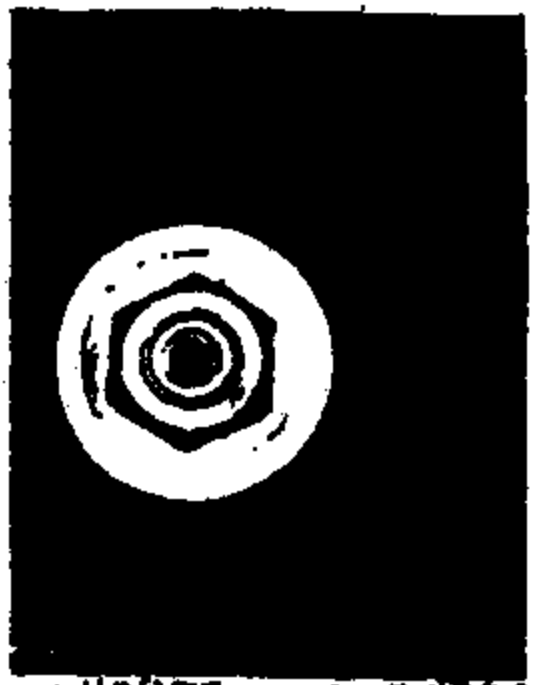


FROM FORD WARRANTY DATA OF 17AUG93

3713 1415



A40855 DC3078A



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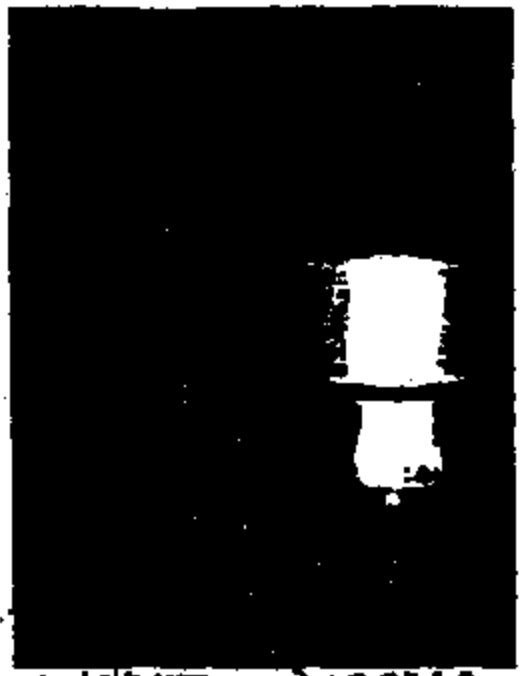

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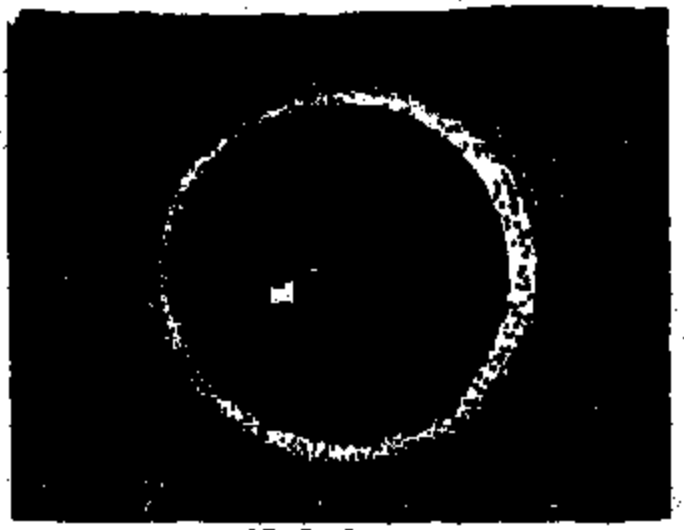
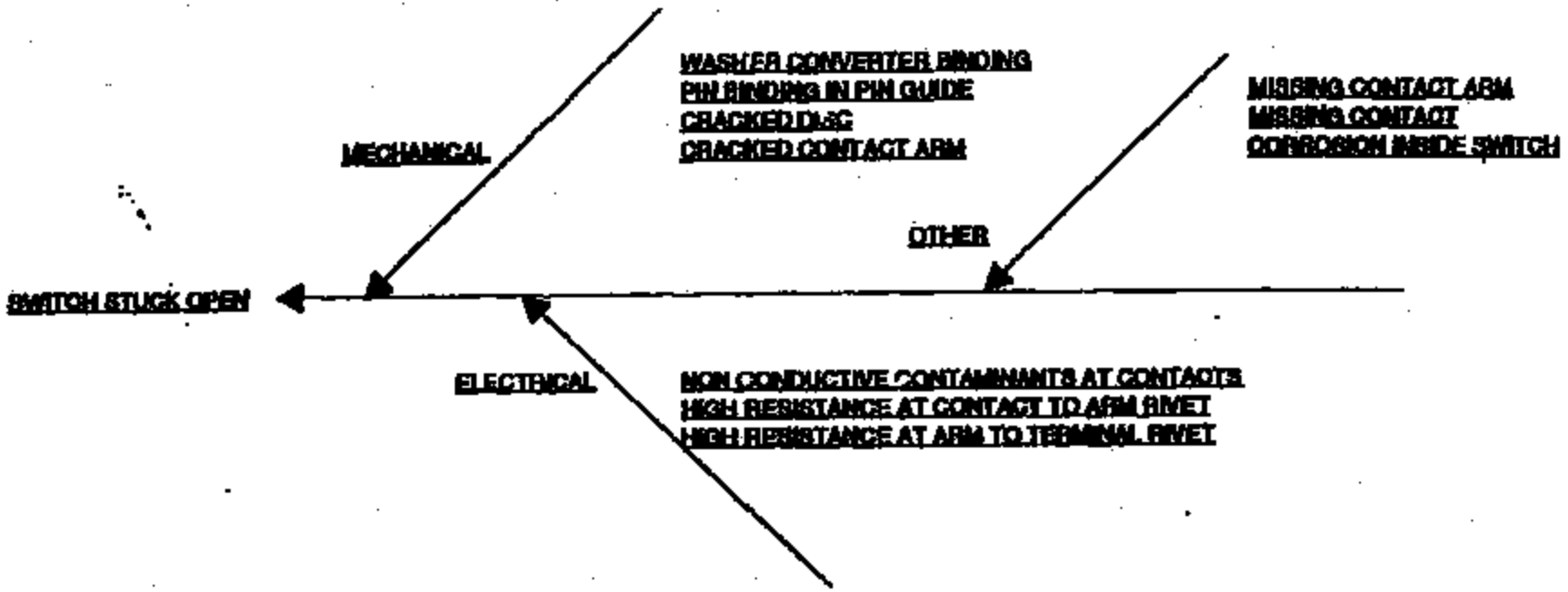


A35294

A35294

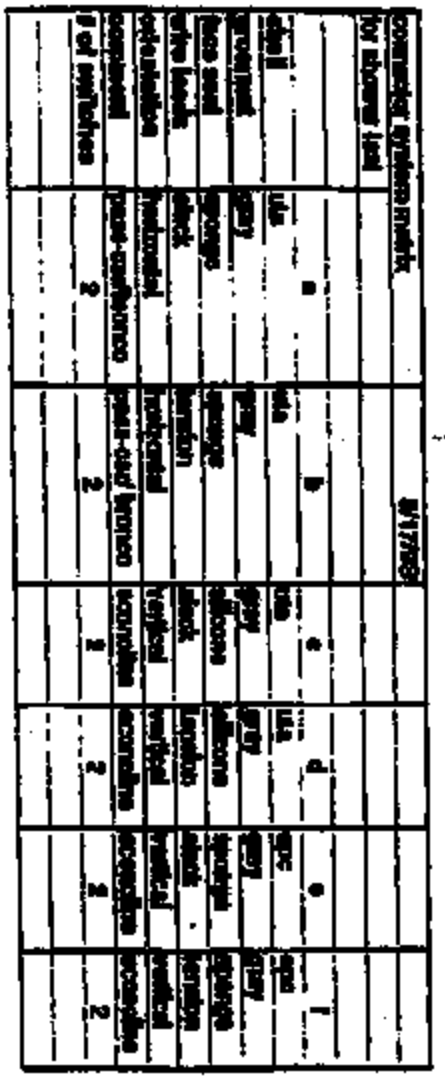
A35294

ATTACHMENT "B"



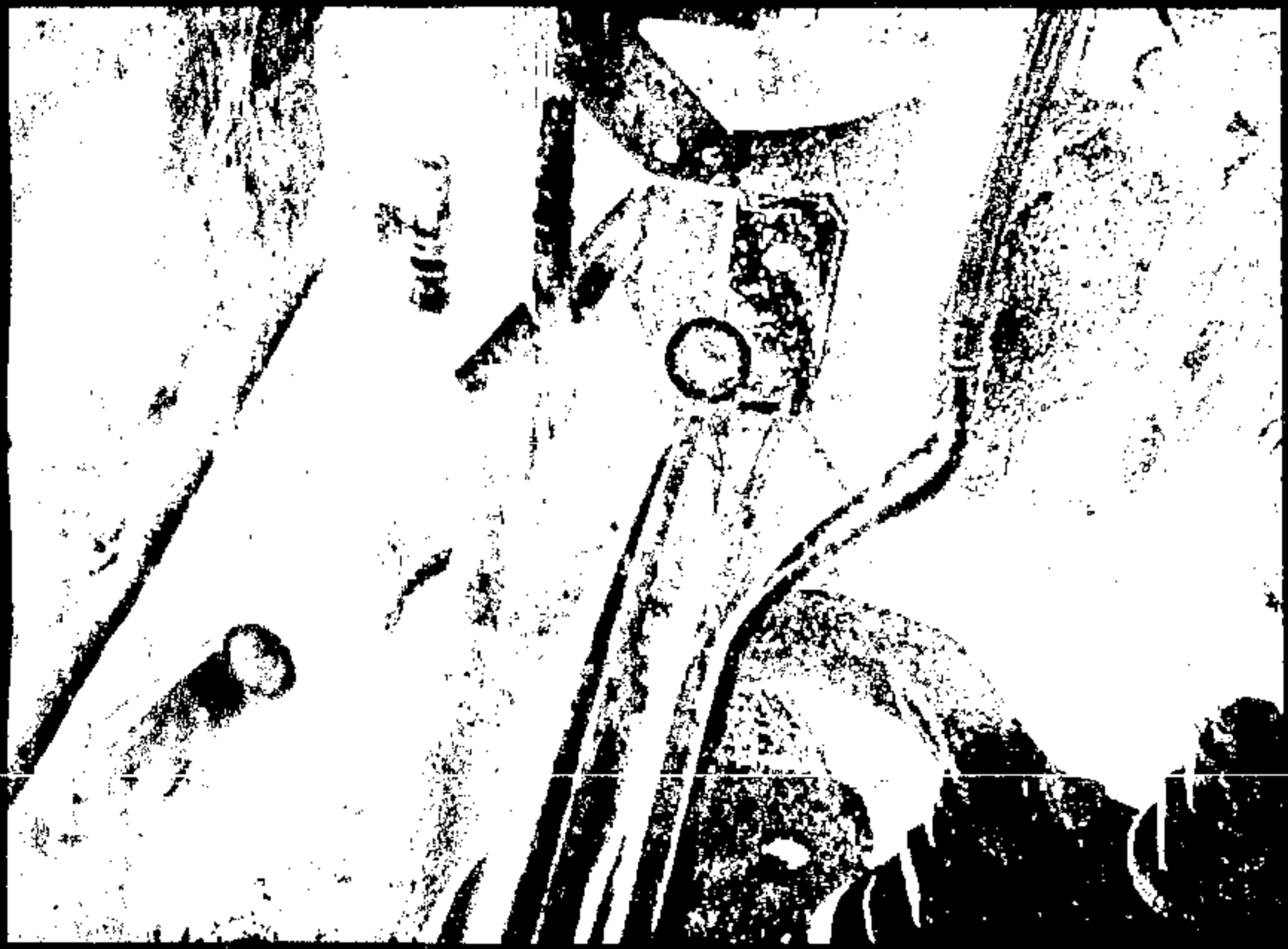
8713 1418

PSCAR99-4



ULLA CASSEL 408 136

ULLA CASSEL 408 136



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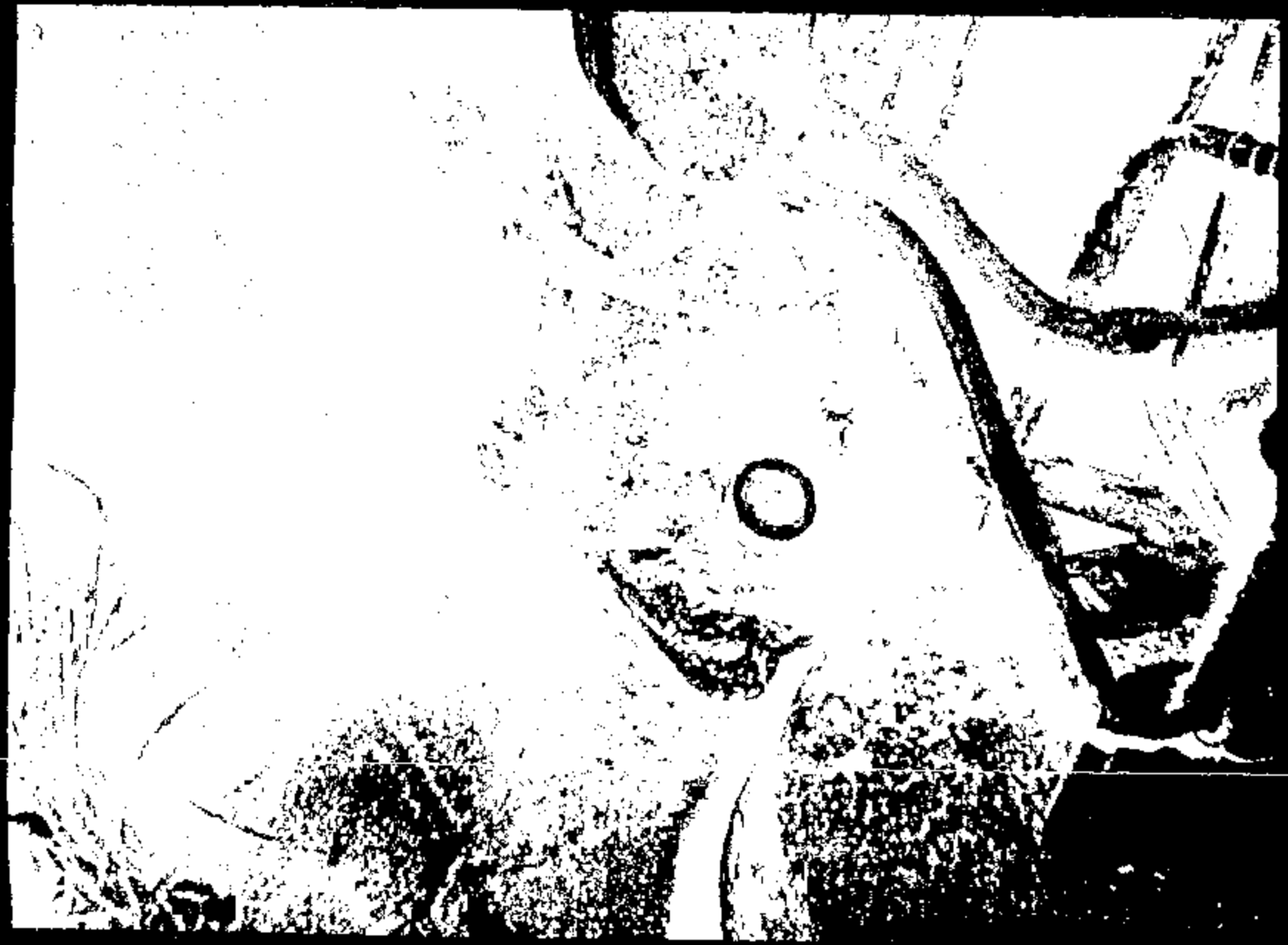


ULLA CASSER 408 136

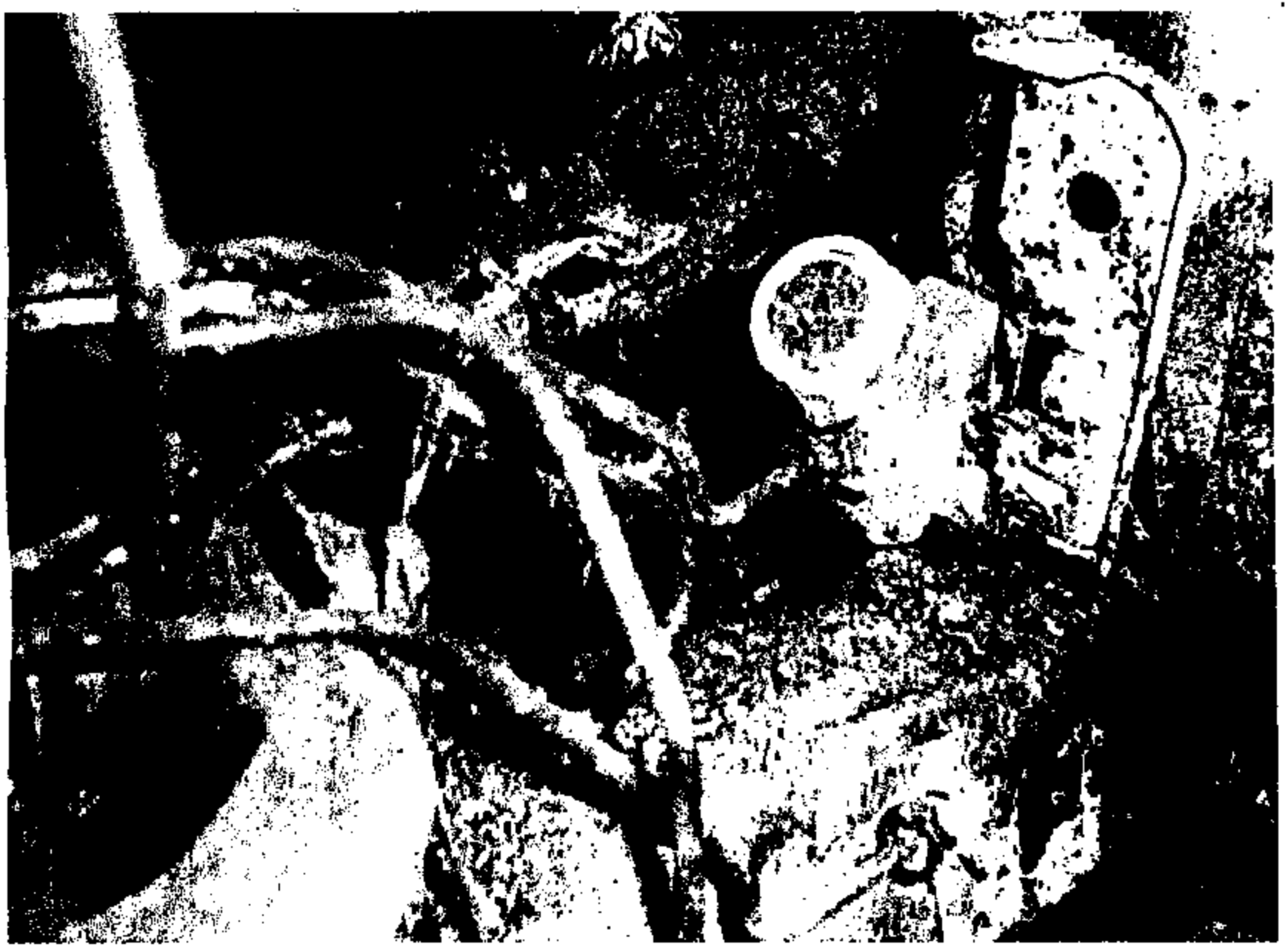
VILLA CASSEL 408 136

Vela Cassel 408 136

Villa Cassa 408 136

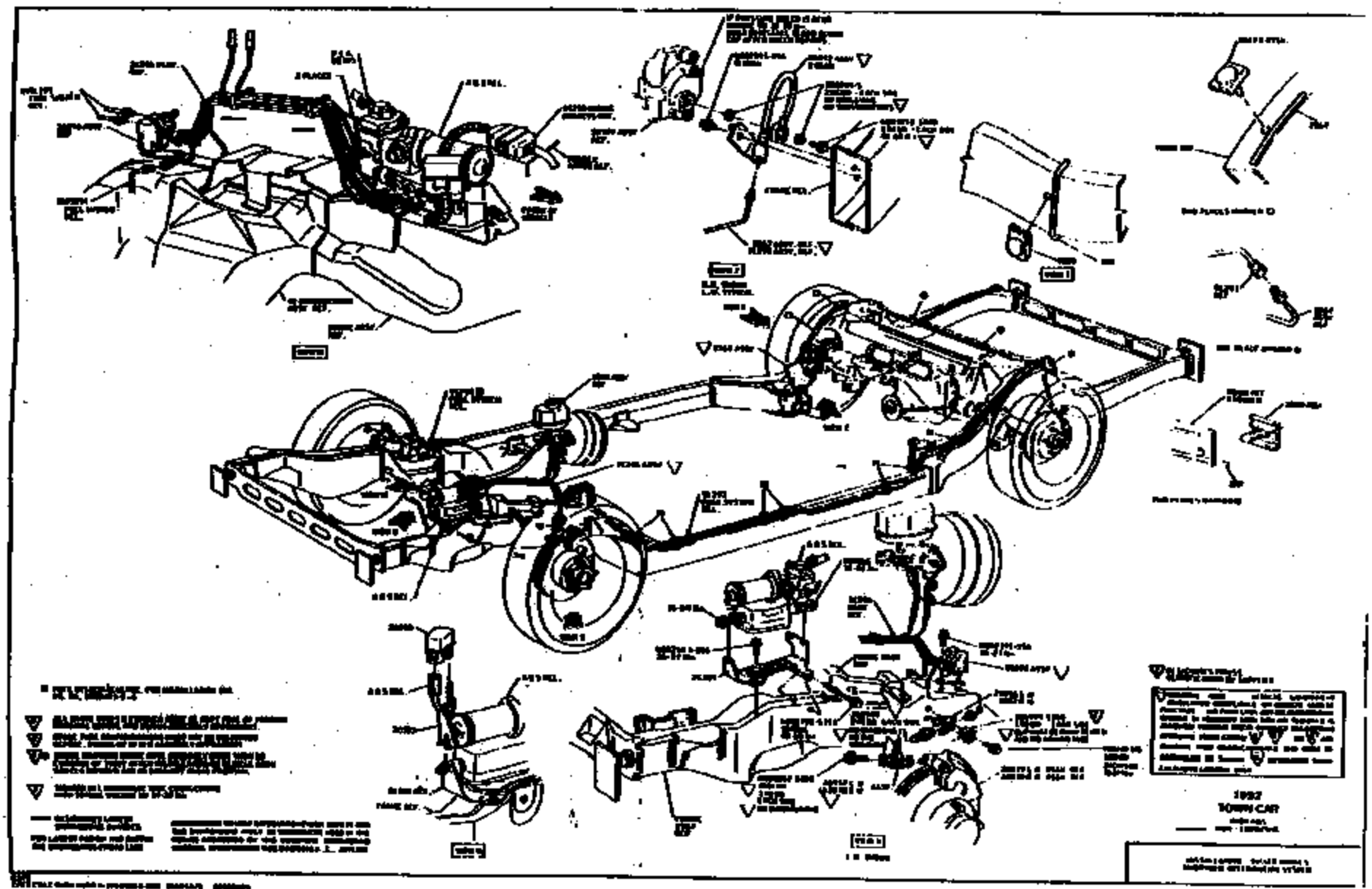
3713 1428

ULLA CASSEL 40B 136

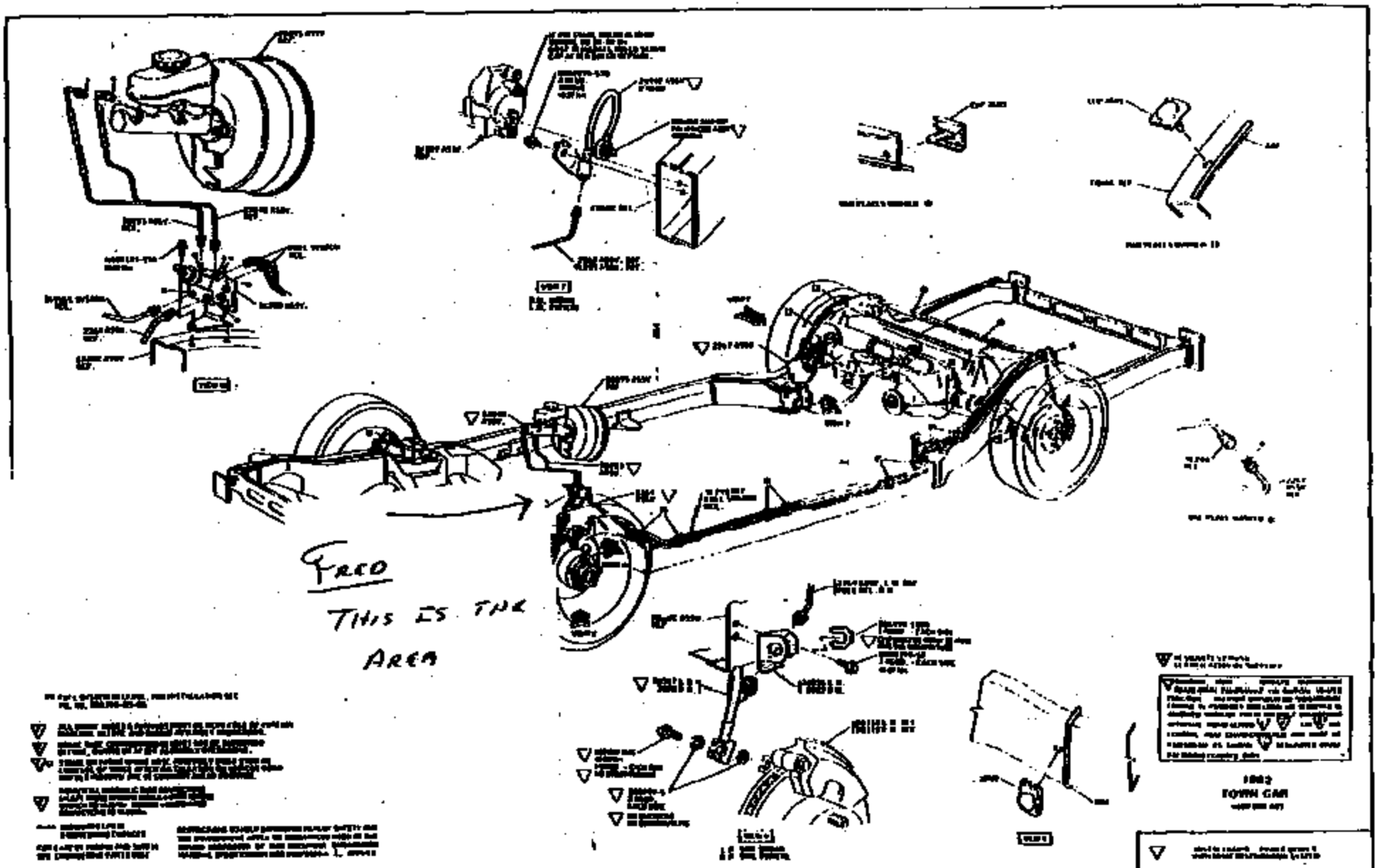


8719 1427

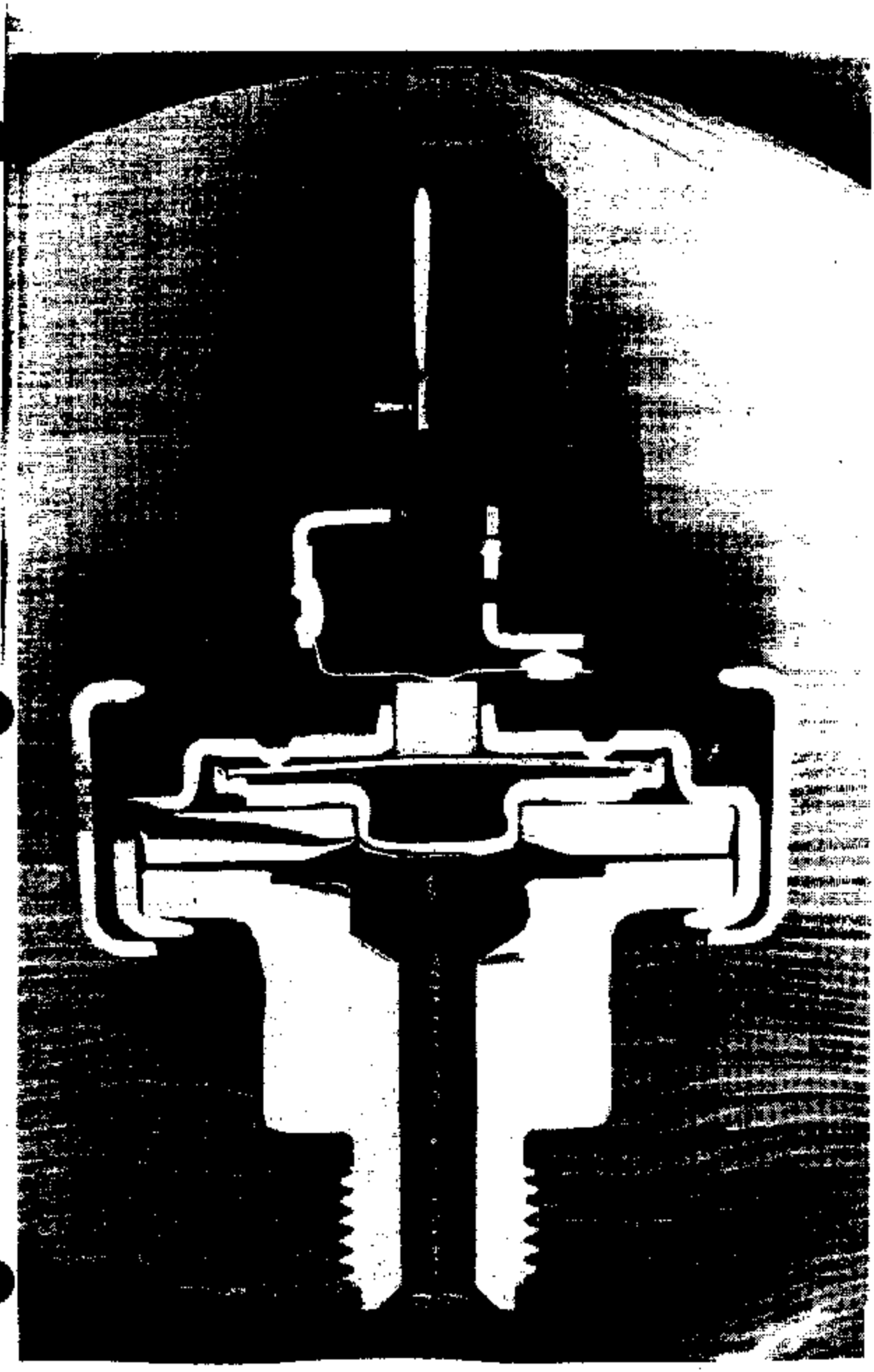
CASSET
Vila 408 136



1992
TOWN CAR



3713 1430



3713 1431

Sharpe, Robert

From: Douglas, Charles
Sent: Friday, December 18, 1998 10:37 AM
To: Porter, Fred (Ford)
Cc: Sharpe, Robert
Subject: Usage Matrix - Speed Control Deactivation Pressure Switch

Fred,

The following represents a rough usage matrix over time:

MY92	MY93	MY94	MY95	MY96	MY97	MY98
Econoline	Econoline	Econoline	Econoline	Econoline	Econoline	Econoline
Club Wagon	Club Wagon	Club Wagon	Club Wagon	Club Wagon	Club Wagon	Club Wagon
Town Car	Town Car	Town Car	Town Car	Town Car	Town Car	
Crown Vic	Crown Vic	Crown Vic	Crown Vic	Crown Vic	Crown Vic	
Grand Marquis	Grand Marquis	Grand Marquis	Grand Marquis	Grand Marquis	Grand Marquis	
	F Series	F Series	F Series	F Series	F Series	F Series
	Bronco	Bronco	Bronco	Bronco		
	SHO Taurus	SHO Taurus	SHO Taurus??			
		Capri	Capri	Capri??		
		Win95	Win95	Win95	Win95	Win95
			Falcon	Falcon	Falcon	Falcon
				Explorer??	Explorer	Explorer
				Ranger??	Ranger	Ranger
					Expedition	Expedition
						Navigator

To be quite honest, I think we actually have more of a grasp on the application matrix in the MY92 - MY95 timeframe than MY96 on. Where you see ??, this means the actual starting or ending model year for a program may be +/- 1 model year. Also, it is conceivable that as of the MY95 timeframe, we are actually released on more platforms than what is shown above. I say this because our actual shipped volumes which are in the 2MU range, would indicate either 100% penetration for cruise control on all of the platforms listed or we are on more than the listed platforms.

One additional note, during our discussion yesterday, you talked about the switch being hot on the Town Car. I think I misunderstood the context of your statement. At the time of our discussion, I was thinking thermal hot but upon further reflection believe you may have meant wired hot. If this is the case, I am pretty sure the switch is wired hot in virtually all of the above applications. This issue can be discussed further on Tuesday as we will be prepared to provide a brief overview on our understanding of how the switch is electrically plumbed into the system.

Any additional questions, please let me know me at your convenience. Also, if the above application matrix does not come across legible, please let me know and I will have this faxed to your attention.

Regards,

Charlie

Charlie Douglas
(508) 236-3657 (P)
(508) 236-1598 (F)
c-douglas2@ti.com

12/21 (From C. Douglas)

Fred,

I believe that your list includes some service part numbers, older rev levels, as well as pre-production or prototype part numbers. Overall, including Ford Australia, there are eight different production parts. Differences from part to part are fairly minor and include, actuation calibration, release pressure, hexport style, position tab / color of connector base, thread style, and snap noise associated with the pressure disc. The following matrix, helps summarize this information:

Part Number	Actuation	Release	Base	Hexport	Thread	S or Q
F2VC 9F924 AB	90-160 (1)	20 min	Brown / pos 2	J512	3/8-24M	Snap
F6LC 9F924 AA	200-300 (2)	40 min	Black / pos 1	J512	3/8-24M	Snap
F2AC 9F924 AA	90-160 (3)	20 min	Natural / pos 2	J512	3/8-24M	Quiet
F58A 9F924 AA	90-160 (4)	20 min	Grey / pos 1	J512	3/8-24M	Quiet
F3TA 9F924 CA	200-300 (5)	40 min	Red / pos 1	J512	3/8-24M	Snap
94DA 9F924 AA	90-160 (6)	20 min	Natural / pos 2	o-ring	M10x1.0M	Quiet
F3DC 9F924 AA	90-160 (7)	20 min	Natural / pos 2	Rubber	3/8-24M	Quiet
94JA 9F924 AB	90-160 (8)	20 min	Grey / pos 1	o-ring	3/8-24M	Quiet

Vehicle – Part Number Correlation

(1) Crown Vic, Grand Marquis, Mark, Town Car
(2) Econoline, Club Wagon
(3) Crown Vic, Grand Marquis, Mark, Town Car
(4) Winstar
(5) Bronco, F-Series, Ranger, Explorer, Navigator, Expedition, Econoline, Club Wagon
(6) Falcon
(7) SHO Taurus
(8) Capri

Chemtec
Douglas
B3-C1

TEXAS INSTRUMENTS INC. ! MATERIALS & CONTROLS GROUP ! SITE

PARTS LIST ! PROJECT !PART NUMBER: 77PSL2-1 !REV LTR: L CLS: 650
EXPLOSION ! NUM: 3423 !DWG PFX: NUM:77PSL2-1 !ECN INC.DT: 98/02/24

TITLE: PRESSURE SWITCH (CUST P/N F2VC-9F924-AB)

LV	CNT	QTY/UM	BITM	PART/DRAWING NUMBER	RV	NOMENCLATURE/PARM DATA
01	1	REF		36952-1		FINAL ASSEMBLY
				36952-1	A	
01	2	1	27	27759-10		BASE ASSEMBLY
				27759SH1	L	
02	3	1	2	46515-2		BASE (BROWN)
				46515	N	
02	4	1	3	36888-1		STATIONARY TERMINAL
				36888	D	
02	5	1	4	36897-2		MOVABLE TERMINAL ASM
				36897SH1	H	
03	6	1	2	36887-1		MOVABLE TERMINAL
				36887	D	
03	7	1	3	74916-1		RIVET
				74916	G	
03	8	1	4	36889-1		SPRING ARM
				36889	B	
04	9	AR	2	27716-1		SPR MAT'L STR SPEC(.216 LBS/K
				27716SH1	D	
03	10	1	5	28744-1		MOVABLE CONTACT
				28744	D	
01	11	1	24	27293-13		SENSOR ASSEMBLY
				27293SH2	W	
02	12	1	2	36900-1		MOD SAE J512 HEXPUNT
				36900	H	
02	13	1	3	74353-1		GASKET
				74353	M	
02	14	1	4	27713-1		CUP
				27713	F	
02	15	3	5	74176-1		SEAL
				74176	C	
03	16	AR		27225-1		KAPTON STRIP SPEC (.175 LBS/K
				27225	MB	
02	17	1	6	27639-1		WASHER
				27639	F	
02	18	1	7	27406-1		CONVERTER
				27406	F	
02	19	1	8	73958-2		SPACER
				73958	J	
02	20	OR	8	73958-3		SPACER
				73958	J	
03	21	AR		74224-1		KAPTON TAPE (.100 LBS/K
				74224	F	
02	22	1	9	36656-27		3/4" FORMED DISC
				36656SH1	BM	
02	23	OR	9	36656-28		3/4" FORMED DISC
				36656SH1	BM	
				74797-1		CRIMP RING

3718 1434

				74075	G	
01	26	1	21	74247-4		ENVIRONMENTAL SEAL
				74247	L	
01	27	1	22	74088-1		THREAD CAP
				74088	H	
01	28	AR		27318-1		CARTON ASM.
				27318	D	
02	29	1	2	74219-1		CARTON
				74219	D	
02	30	3	3	74218-1		ROW SEPARATOR
				74218	D	
02	31	2	4	27317-1		DEVICE SEPARATOR
				27317	D	
02	32	AR	5	13608-4		CLOSURE TAPE
				13608-4		

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

EV DESC: CHG 74408-1 TO 28744-1 ! CCB APPROVAL DATE: 98/02/24

FTG WORK GROUP: PRECISION CONTROLS ! ECN ORIGINATOR: DI T MA

OTES:

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

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

3 - DEVICE TO BE MARKED PER CODING SPECIFICATION 75871-1

ETAILED REVISION DESCRIPTION:

99 CR MS9209, 28744-1 CONTACT (MOV) WAS 74408-1
STOCK DISPOSITION
FINISHED DEVICES - USE
PARTS & SUB ASMS - USE SUBS, HOLD PARTS

DRAWINGS AVAILABLE UPON REQUEST

PROJ.# 3500 | TITLE: ATPS-DISC PROCEDURE | REV A | 75755 SH.1

INITIAL SYSTE LOGON:

FROM A BLA IMS SCREEN TYPE IN

TSSON ATPSDA <USERID> <PASSWORD>
WHERE <USERID> IS YOUR IMS USERID
AND <PASSWORD> IS YOUR IMS PASSWORD.

EX. TSSON ATPSDA A99999 PPPP

THEN PRESS THE ENTER KEY

THE RETURN SCREEN SHOULD BE THE ROUTE CARD SYSTEM MENU

AFTER INITIAL LOGON, YOU MAY ACCESS THE MENU FROM A BLANK IMS SCREEN BY TYPING IN

ATPSDDO

THEN HIT ENTER

OPTION 20:
OPTION 20 OF THE MENU (OR ATPS020 FROM A BLANK SCREEN) WILL ALLOW YOU TO DISPLAY A LIST OF DISC PARTS FOR A GIVEN DRAWING NUMBER.

FOR QUICK ACCESS TO THIS INFORMATION YOU MAY ENTER THE FOLLOWING ON A BLANK IMS SCREEN:

ATPS020 <DRAWING_NUMBER>
WHERE <DRAWING_NUMBER> IS THE PART II DRAWING THAT YOU WANT TO DISPLAY.

EX. ATPS020 9769SH245

THEN HIT ENTER

OPTION 30:
OPTION 30 OF THE MENU (OR ATP030 FROM A BLANK SCREEN) WILL ALLOW YOU TO ACCESS CHARACTERISTIC DATA FOR A SPECIFIED DISC PART NUMBER.

FOR QUICK ACCESS TO THIS INFORMATION YOU MAY ENTER THE FOLLOWING ON A BLANK IMS SCREEN:

ATPS030 <PART_NUMBER>
WHERE <PART_NUMBER> IS THE DISC PART THAT YOU WANT TO DISPLAY

EX. ATPS030 9769-6-900

THEN HIT ENTER

IF YOU HAVE ANY QUESTIONS OR PROBLEMS, PLEASE CONTACT DRAFTING

A LISTING OF PEOPLE TO CONTACT FOR HELP OR INFORMATION ON THIS SYSTEM WILL BE MAINTAINED ON TIOLR AND CAN BE ACCESSED AS FOLLOWS:

T DA;RDS.USERDOC.CONTACTS

3713 1446

REV A | 1ST ISSUE 9-13-93, CRW14298, J.H.G.

REV														
											P37	03	04	P1

BY CHAS.FLEURANT 8-13-93
CH. JHGale 9-14-9.
ENG.

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

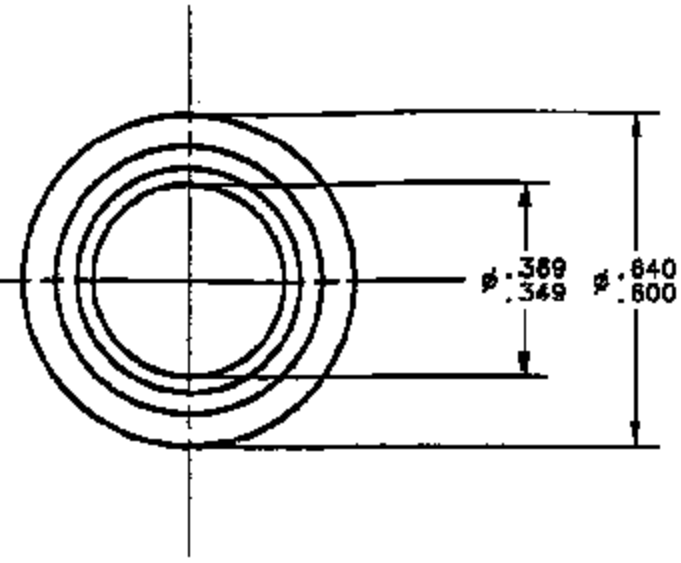
KLIXON® CONTROL PRODUCTS DIVISION

DWG. SIZE A

DWG. NO. 75755 SH.1

DEVICE # 77PSL	TITLE	REV	
PROJ. # 335E	THREAD CAP	A	74888

74888



FOR REFERENCE ONLY
CHECK LATEST REVISION
BEFORE USE
Parts Made To This Print Must Conform To-
ENG. STD. E9898 REV. E
Date JAN 19 1999

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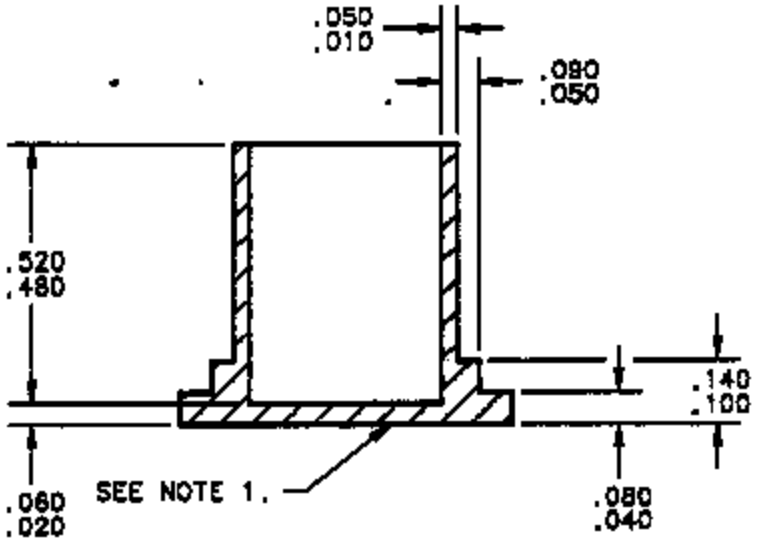


NOTE:
1. GATE MARK AND MANUFACTURER IDENTIFICATION IN RAISED LETTERS ON THIS SURFACE.

3713 1447

74888-1	CAPLUGS	EC-6	LDPE	RED	
PART NO.	VENDOR	STOCK NO.	MATERIAL	COLOR	

REV														
										RS*	A13	03R*	M01	D77-3	USA

A 1ST ISSUE 1-30-92, CR#07857

BY CHAS. FLEURANT 1-30-92
CH. 2-12-92
ENG. 960227

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KLIXON CONTROL PRODUCTS DIVISION

SIZE A

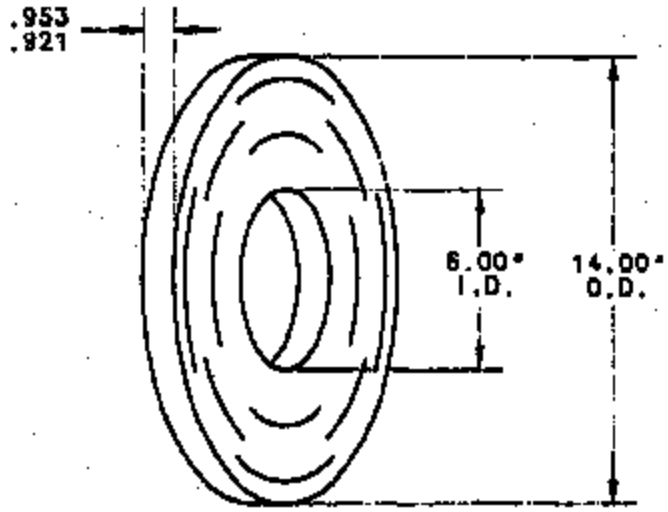
DWG. NO. 74888

TITLE: KAPTON TAPE | REV. F | 74224

74224

NOTES:

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



3713 1449

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

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

ADDED MATERIAL, ECN OR.153371, 10-12-90 CF | F

REV. | IRS# 127-3013 [illegible]

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

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

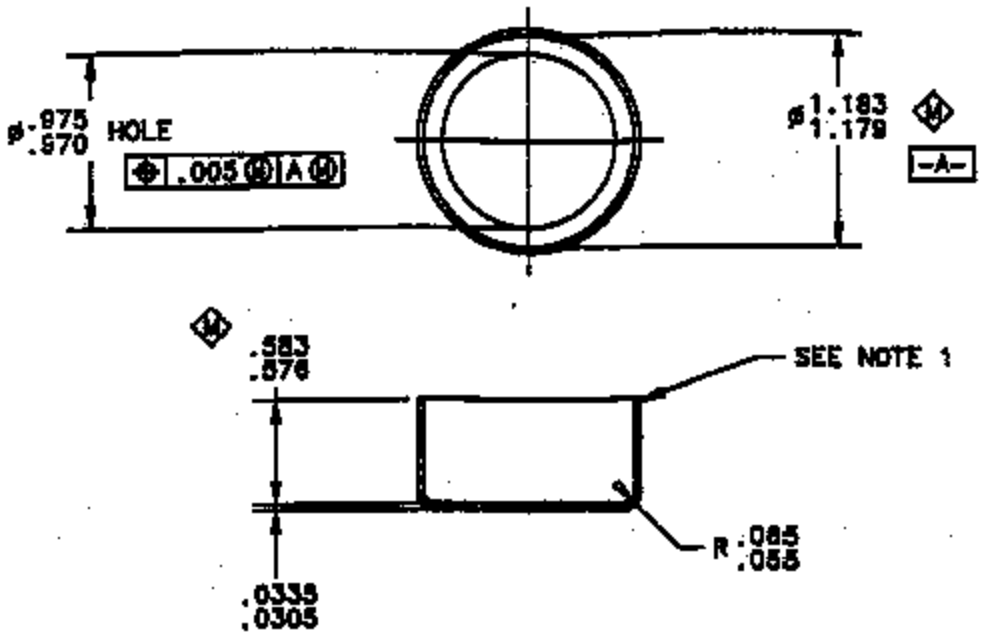
KULICKE & SOFFA
CONTROL PRODUCTS DIVISION

DWG. SIZE: A

DWG. NO. 74224

CRIMP RING | B | 74797

74797



3713 149

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

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Date JAN 19 1999

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

PART NO.	MATERIAL	FINISH
74797-1	ALUMINUM 5052	

REV															
B										ITS# 413					

BY
CH.
ENG.

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KLIXON
CONTROL PRODUCTS DIVISION

DWG. SIZE A

DWG. NO. 74797

CODE IDENT. NO. 03547

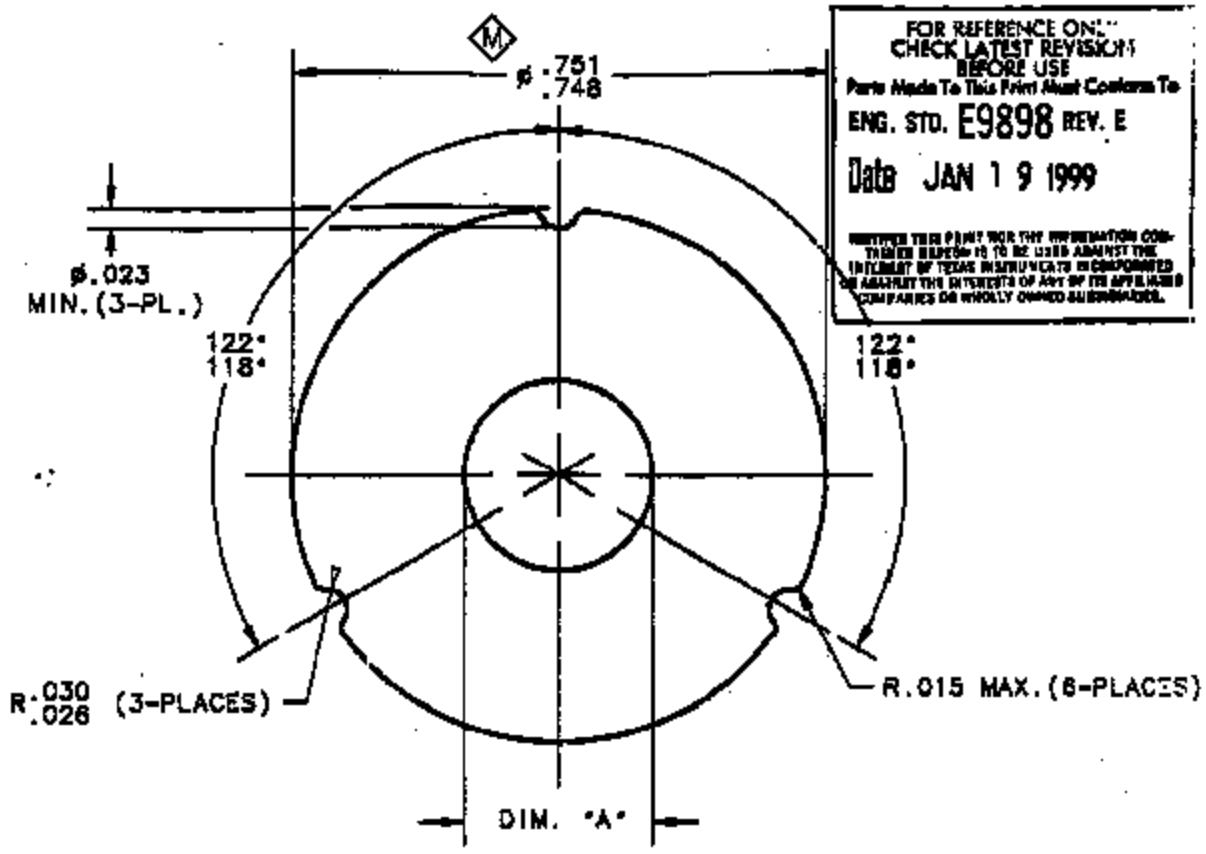
DEVICE # 51PS
PROJ. # 3355

TITLE: SPACER

REV J

73958

73958



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NOTES:

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

3713 1460

PART NO.	MATERIAL	DIM "A"
73958-4	KAPTON .0017 - .0023 THICK (FORD RCS)	.260/.270
73958-3	MADE FROM 74224-1 (KAPTON TAPE)	NO HOLE
73958-2	DUPONTS, KAPTON 200H. .0017 - .0023 THICK	NO HOLE
73958-1	KAPTON .0017 - .0023 THICK	.260/.270

THIS DWG. SUPERSEDES 73958 REV. "H" DATED 3-02-93.

J — CHANGED THE SECOND NOTE THREE TO NOTE FOUR. 3-30-93 CRM12792, D.P.

	RS*	T5*	Q13	Q1	M21	P37-3	P35

BY TOM DAIL 10-10-88
CH.
DWG.

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KLIXON
CONTROL PRODUCTS DIVISION

SIZE A

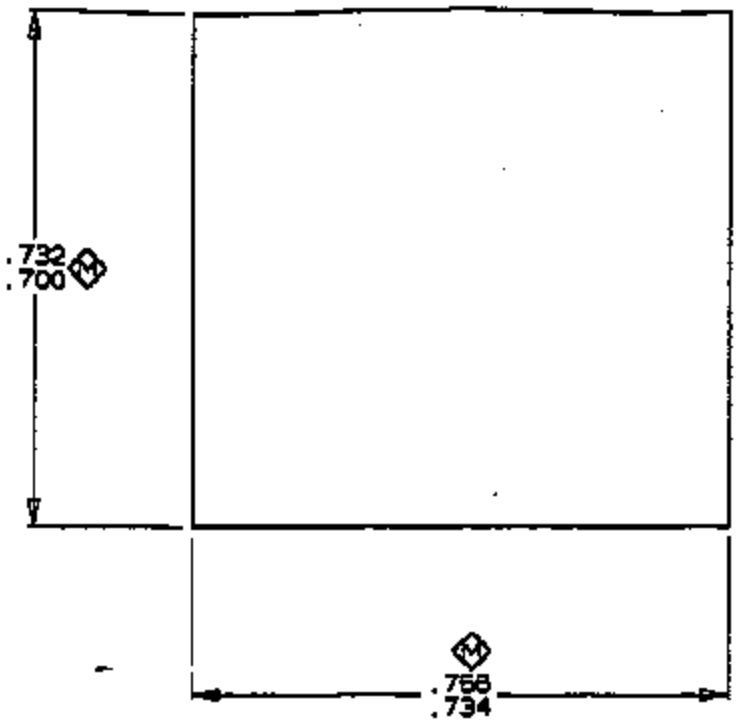
DWG. NO. 73958

DEV.# 52PSL
PROJ.# 335F

TITLE
SEAL

REV C

74176



8713 1461

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NOTES:
1. .001 MAX. BURR ALLOWED.
2. ALL CONTAINERS OF PARTS MUST BE DATE CODED. DATE CODE IS TO REFLECT ANY MATERIAL LOT, TOOL OR PROCESS CHANGE.
3. MATERIAL CERTIFICATION REQUIRED WITH EACH SHIPMENT.

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

SIGNATURES ON FILE, PRIOR TO ELECTRONIC CHANGE NOTICE

THIS IS A CAD DRAWING. THE GEOMETRY IN THE ASSOCIATED CAD COMPUTER FILE IS DIMENSIONALLY ACCURATE. WHEN DRAWING IS BEING REVISED, THE GEOMETRY MUST BE UPDATED IN ALL VIEWS AND ON ALL SHEETS.

REV									
A	151 153F 52PSL 02/01/84 H.H. CR32798 D.S.							TSC 8/3	A1 M2 P25 RS
B	27225 WAS 27287 04/24/85 H.H. CR42952 S.L.								
C	ADD SAME NOTE AS DN 74075 03/17/88 MF ECN#389730 D.H.								

DRAWN H.H 02/01/84
DESIGNED D. STRAT 02/11/84
APPROVED C.H. WERNER 02/13/84

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KLIXON
CONTROL PRODUCTS DIVISION

SIZE A

DWG. NO. 74176

TITLE: GASKET

PART NO. H 74353

FOR REFERENCE ONLY
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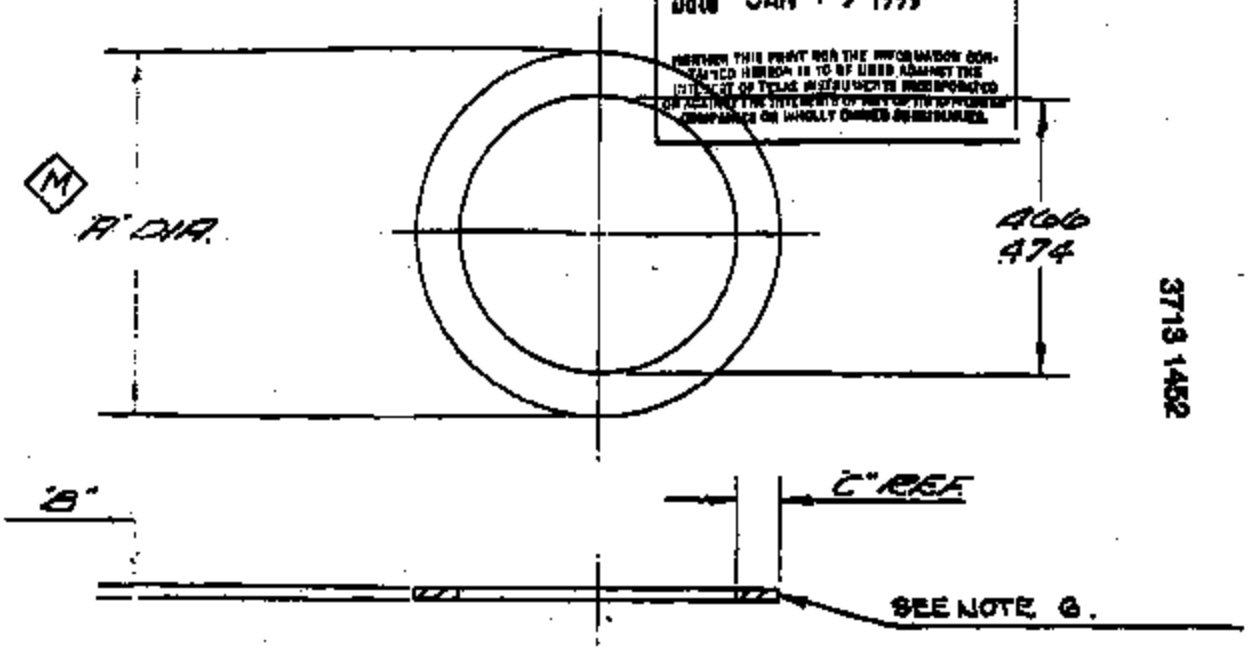
ENG. STD. E9898 REV. E
Date JAN 19 1999



3713 1452

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

PART NO.	MATERIAL	DUROMETER	COLOR	A Ⓜ	B Ⓜ	C
74353-4	ETYLENE PROPYLENE T&L COMPOUND E-7104-70 T&L PART NO. G197E	70	BLACK	.670-.662	.030-.036	.065
74353-3	ETHYLENE PROPYLENE T&L COMPOUND E-7054	70	WHITE	.670-.662	.030-.036	.065
74353-2	ETHYLENE PROPYLENE T&L COMPOUND E-7054	70	WHITE	.599-.591	.030-.036	.065
74353-1	ETHYLENE PROPYLENE T&L COMPOUND E-7104-70 T&L PART NO. G197E	70	BLACK	.599-.591	.030-.036	.065

REV. A: ADDED -3 CR96519 DCF 4/22/85 JJ
REV. B: ADDED -4 CR96519 DCF 4/22/85 JJ
REV. C: ADDED -3 CR96519 DCF 4/22/85 JJ
REV. D: ADDED -4 CR96519 DCF 4/22/85 JJ
REV. E: SEE C.N. 1-32-W CR 9/27/13 MC
REV. F: SEE C.N. 1-36-W CR 1/26/16 GM
REV. G: CHG NOTE 6 PER CR H05365 MC
REV. H: ENG. NOTE 1 PER CR H06899 MC

BY T. Dail SUB BE
CH. [illegible]
ENG. [illegible]

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

KIDDON CONTROL PRODUCTS DIVISION

DWG. SIZE A

PARTS LIST 74353

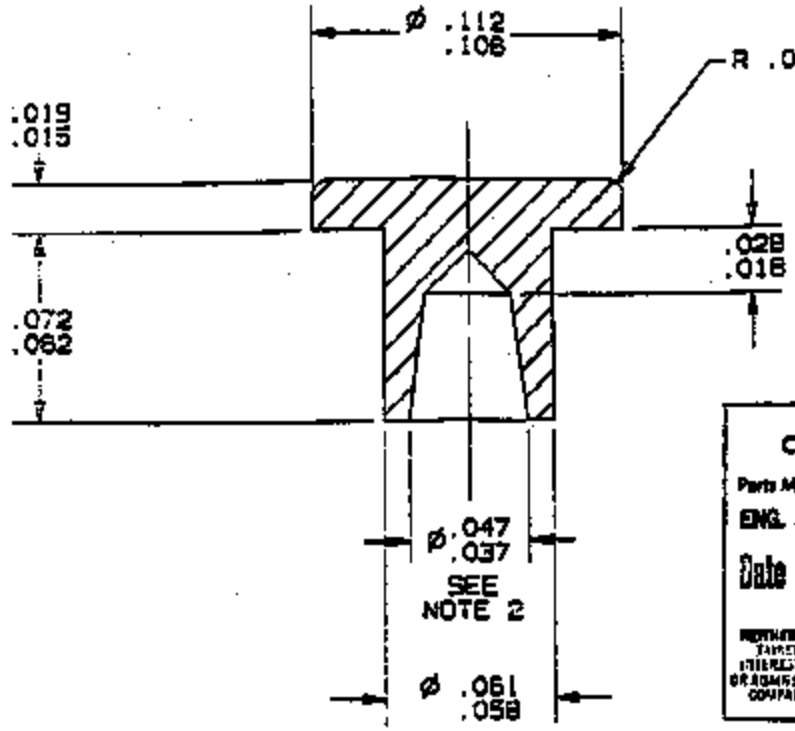
DEVICE # 77/87PS
PROJ.# 3423

TITLE
SWITCH RIVET

LOT G

74916

74916



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ENG. STD. E9898 REV. E
Date JAN 19 1999

NOTES:
1. MATERIAL CERTIFICATION REQUIRED, TO BE KEPT BY SUPPLIER AND PROVIDED UPON TI'S REQUEST.
2. TAPERED HOLE IS ALLOWED.
3. PARTS MUST BE PACKAGED CLEAN AND DRY.

3713 1453

SEE ECN & MARK UP FOR CHG.
8/21/98 L.B.M.
CRN42191 J.G.

PART NO.	MATERIAL	FINISH
74916-2	OBSOLETE PER CRM15079	
74916-1	CDA 260 BRASS	NONE

SUPERSEDES DWG. 74916 REV. "F", DATED 9-30-93

G — SIGNATURES ON FILE, REFER TO ELECTRONIC CHANGE NOTICE.

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REV												
								G2-3	M5-3	Q13	Q38	M21 P37 P35

DRAWN CHAS. FLEURANT 9-30-93
CHECKED JOANNE HAREK 9-30-93
APPROVED MATT SELLERS 9-30-93
APPROVED

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

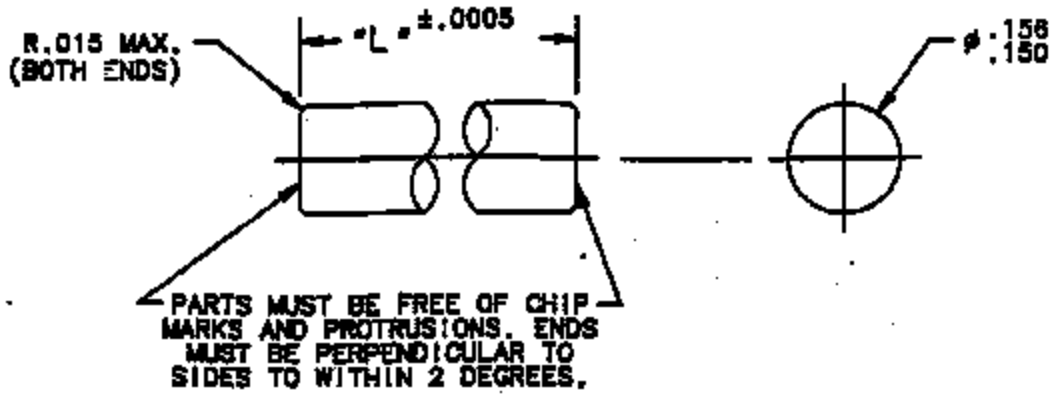
KLIXON
CONTROL PRODUCTS DIVISION

DWG. SIZE A

DWG. NO. 74916

TITLE: TRANSFER PIN | REV. D | 74078

74078



3713 1454

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

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

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

NOTES:

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

MATERIAL: L-3 GRADE STEATITE (DC-16E5) OR
L-3 GRADE STEATITE (DC-144E)

CUTS PER SPEC.—— 50502-2

SHRINKAGE SPEC.—— 50501-1

THIS DWG. SUPERSEDES 74078 REV. "E" DATED 6-4-88

REV									TSI	013	01	M21	A35

BY TOM DAIL 10-17-88
CH.
ENG.

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KLIXON
CONTROL PRODUCTS DIVISION

DWG. SIZE A

DWG. NO. 74078

CLOSURE TAPE 13608-4

13608-4

3" 60# TAPE

COLOR NATURAL

WATER ACTIVATED ADHESIVE

NON-ASPHALTIC .

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CLOSURE TAPE 2-16-72 TJE

REVS	JRT		14	JS-1	WL-S	TC-1	VS	RK-S	VC-1	MC-1	VM-1	MM-1	PT-1	PC-1

BY T. BOARDMAN 2-15-72
CH.
ENG. [illegible] 2-21-72

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

KENDON CONTROL PRODUCTS DIVISION

DWG. SIZE A

DRG. NO. 13608

SCALE [illegible] SHT. NO. 02

DEV. # 82/57?S
PROJ. # 335

CARTON

REV. D

74219

CONSTRUCTION TO BE RSC FROM 275 LB. CORRUGATED CARDBOARD WITH TAPE CLOSURE, TAPE OTHER THAN ASPHALTIC TYPE.

INSIDE DIMENSIONS

LENGTH	22 9/16" MIN.
WIDTH	10 9/16" MIN.
HEIGHT	6 5/16" MIN.

OUTSIDE DIMENSIONS

LENGTH	23" MAX.
WIDTH	11" MAX.
HEIGHT	7 1/2" MAX.

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3713 1456

THIS DWG. SUPERSEDES 74219 REV. "C" DATED 10-16-90

REV D: I.D. LENGTH WAS 22 1/2; I.D. WIDTH WAS 10 1/2; I.D. HEIGHT WAS 6 3/4; CR.1?????, CF 3-19-91

74219

BY ~~TEN DAIL 10-11-88~~
CK.
ENG. Stan Howl 4/2/91

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KLIXON
CONTROL PRODUCTS DIVISION

DWG. SIZE A

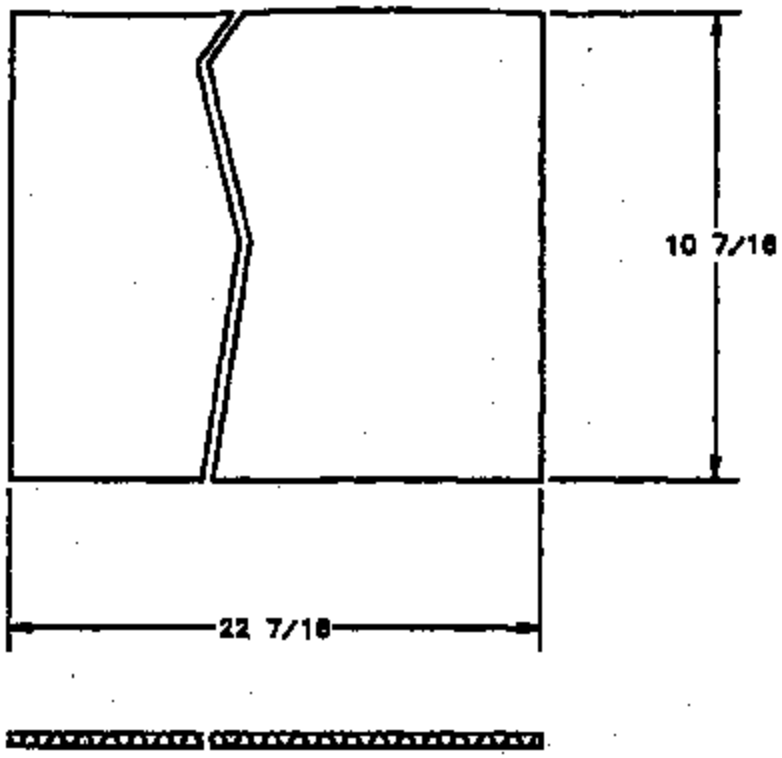
DWG. NO. 74219

DEV. # 82/57PS
PROJ. # 3358

TITLE
ROW SEPARATOR

REV. D

74218



MATERIAL: 200 LB. CORRUGATED CARDBOARD

3713 1467

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Date JAN 1 9 1999

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THIS DWG. SUPERSEDES 74218 REV. "C" DATED 10-16-90

REV.													
D											1/13	01	P323 P15

BY
CK. TDH DATE 10-16-90
ENG. [signature] 4/15

TEXAS INSTRUMENTS
ATTLEBORO, MASSACHUSETTS 02703

KELDON
MECHANICAL PRODUCTS DIVISION

SIZE A

DWG. NO. 74218

74218

F2VC-9F524

1992/93 LINCOLN TOWN CAR/CROWN VIC/GRAND MARQUIS
BRAKE PRESSURE SWITCH FIELD AUDIT

VEHICLE TYPE		BUILD DATE		VIN		MILEAGE	PART #
Town Car		May-93		1LNM82W4PY[redacted]		42621	/AB
Town Car		Jun-92		1LNM82WXNY[redacted]		53237	AB
Town Car		Jan-93		1LNM81W3PY6[redacted]		unknown	AB
Grand Marquis		Nov-92		2MELM74W3PX[redacted]		68302	AB
Town Car		Oct-92		1LNLM83W7PY[redacted]		72114	AB
Grand Marquis		Dec-92		2MELM74W4PX[redacted]		55333	AA
Grand Marquis		Apr-93		2MELM74W5PX[redacted]		66689	AA
Grand Marquis		Dec-92		2MELM74W9PX[redacted]		43531	AA
Grand Marquis		Oct-92		2MELM75W4PX[redacted]		94145	AB
Town Car		Jan-93		1LNLM82W5PY[redacted]		unknown	AB
Grand Marquis		Jul-92		2MELM75WONX[redacted]		57800	AA
Town Car		Sep-93		1LNLM81WXBY[redacted]		97199	AB

3713 1459

01/15/1999

1/15/99

OF 48 [redacted] VEHICLES, 1 IDENTIFIED A+ BRAKE PRESSURE SWITCH.

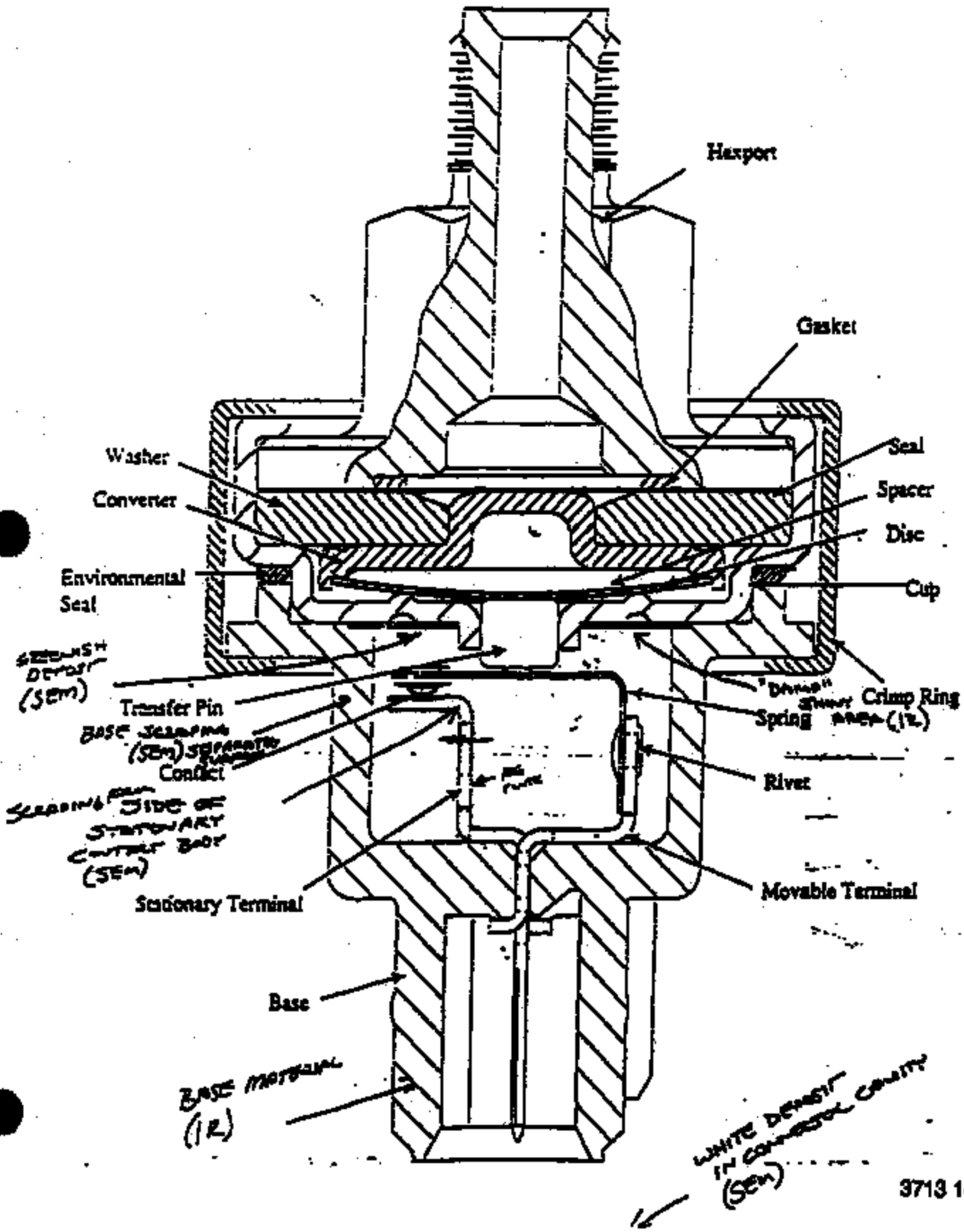
T1 INVESTIGATION. PERFORATION OF ALL THREE DIAPHRAMS

CAN CONTAMINATION REACH TEMPERATURE FOR BRAKE FLUID?
CAN T1 RUN THE TEST?

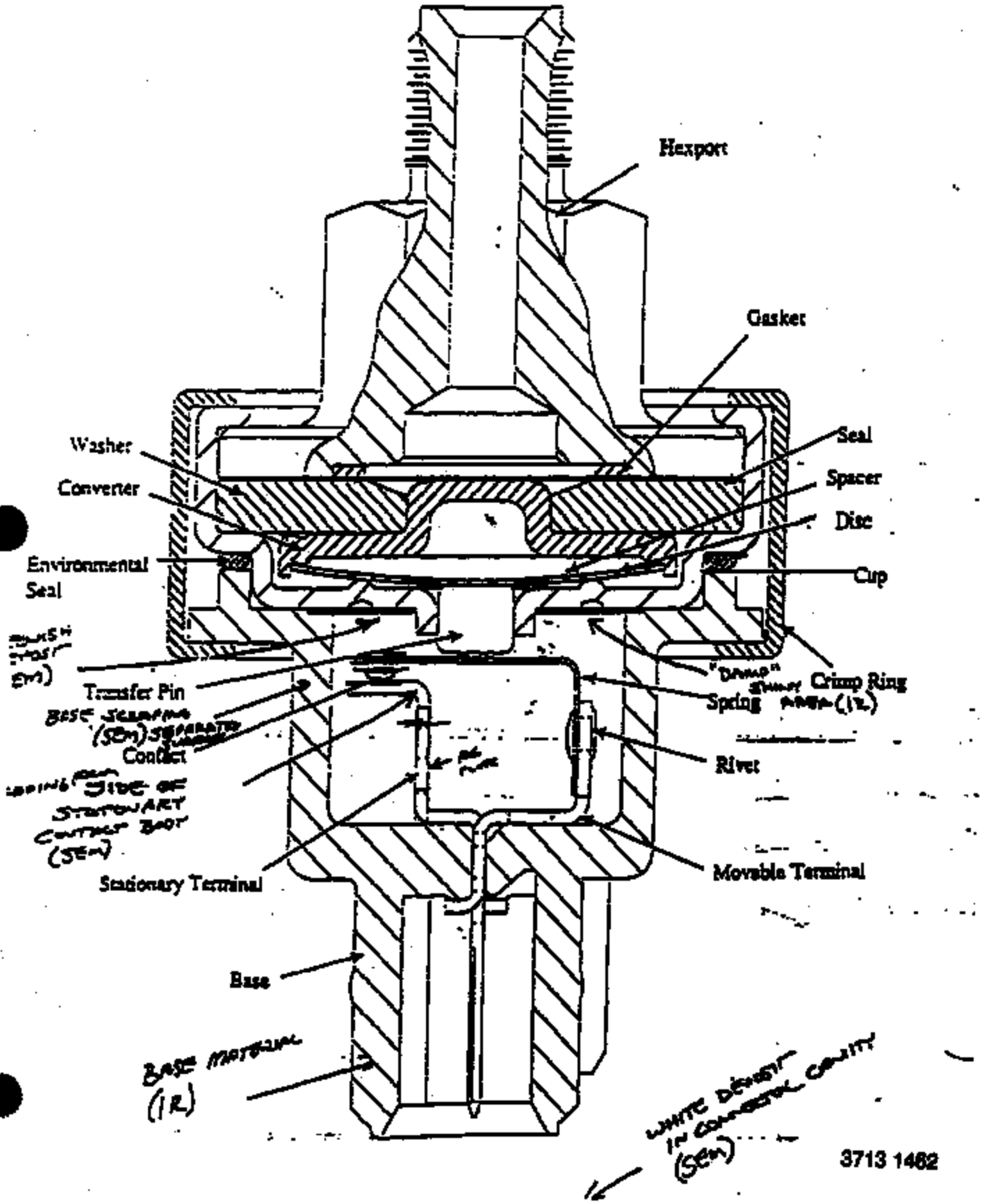
92-93 TOWN CAR
JAN 15, 1999

NAME	AREA	PHONE	PROPS
FRED PORTER	RVT CHASSIS ELEC	84-53722	FPORTER
BARRY EGAN	AVT CHASSIS - BRAKES	32-39512	BEGAN
[illegible]	[illegible]	[illegible]	[illegible]
ROB ENGLISH	AVT-EESE-EOS	53-73225	RENGLISH
CLARK THOMAS	AVT MATERIALS	59-41313	CTHOMAS5
[illegible]	[illegible]	[illegible]	[illegible]
STEVE LA RANCHE	COMPUTER LAB	84 54876	SLAROCHE
PETE KLAUS	[illegible]	[illegible]	PKLAUS
GREG STEVENS	AVT MATERIALS	32-36686	GSTEVEN1
KEN BRIBBLE	" "	32-39657	KBRIBBLE
TOM BAZIL	HVC OPD CHASSIS	59-47547	TBAZIL
JOE [illegible]	RVT CHASSIS BRAKES	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
SANDRA DEERING	" "	41686	SDEERING

Hydraulic Pressure Switch Cross Section



Hydraulic Pressure Switch Cross Section



Central Laboratory
16000 Century Drive
Dearborn, MI 48120-1267

January 15, 1999

Preliminary Findings:

The cup is partially covered with a greenish residue. Residue appears to be primarily an oxide of the brass contact material with possibly a sulfur compound. This suggests transfer of oxide or corrosion product from the brass contacts to the cup.

The stationary contact exhibits intergranular cracks which indicate stress corrosion cracking (SCC). SCC is caused by combination of a specific corrosive environment and a sustained tensile stress (can be localized). Ammonia, ammonia compounds, sulfur compounds, and moisture are known to cause SCC in brass. The contact material has been reported to be 360 brass, which is highly susceptible to SCC.

The presence of brake fluid on the switch side of the diaphragm has been determined. Black residues in the hex port and on the cup, converter, and disc appear to be compounds which may have formed from a reaction between decomposition products (acids) of the polyester base, the brake fluid, and metals in the switch. This suggests that the brake fluid was present on both sides of the diaphragm during the thermal event.

All three diaphragms exhibit what appears to be mechanical damage. The damage does not match up with any mating parts of the switch. This suggests that damage may have occurred prior to assembly. The diaphragm has become brittle and cracked in the vicinity of the damage. Brake fluid has become entrained between the layers (Teflon and capton) of the diaphragms.

The post of the movable contact melted back into the bulkhead between the switch and terminal cavities of the base. There is also arc damage (localized melting) to one corner of the bridge of the stationary contact. This damage appears fresh (surfaces bright and shiny) which suggests that it may have occurred in the later stages of the thermal event.

The terminals exhibit deposits which appear to be primarily sulfur compounds of the terminal material (tin plated brass). Although these deposits appear visually similar to the deposit found on the cup, they appear to be of different composition.

The white residue found in the connector cavity contains elements found in dry chemical fire extinguishers (Muscovite and phosphorus)

Steve LaRouche

Central Laboratory
15000 Century Drive
Dearborn, MI 48120-1267

January 15, 1999

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. Steve LaRoche

Central Laboratory
15000 Century Drive
Dearborn, MI 48120-1257

January 15, 1999

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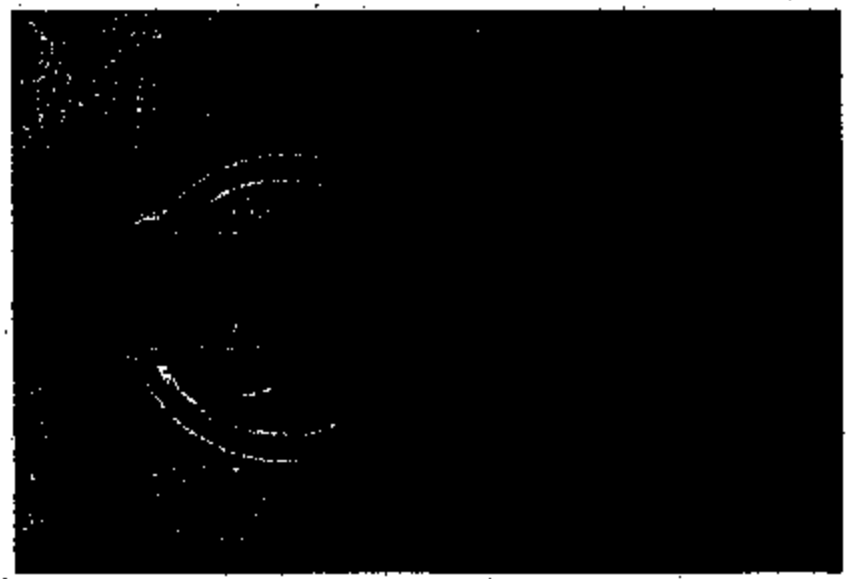
Steve LaRouche

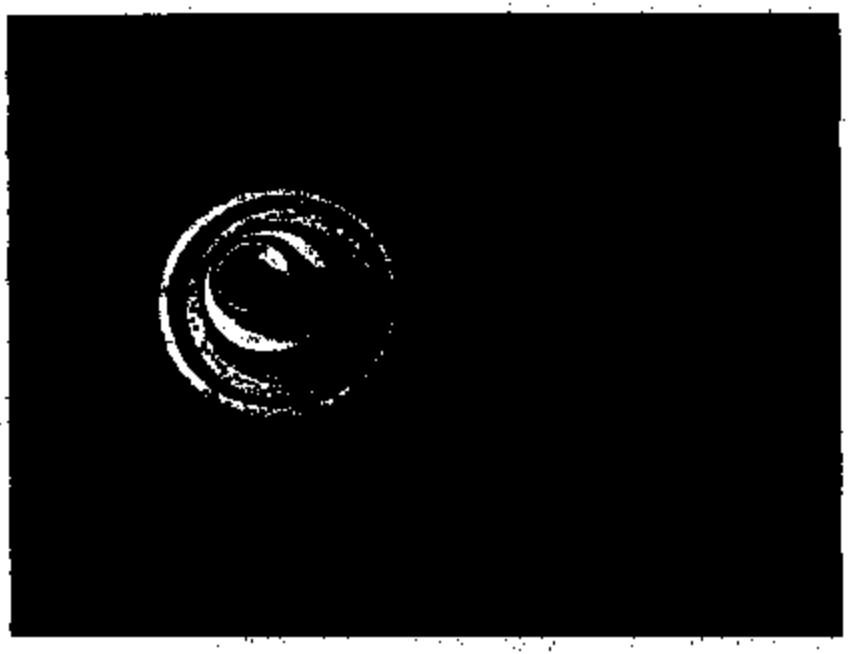


3713 1468

Switch D
F2VC-9F924-AA 6329A

MINERSTY
LIGHT SWITCH

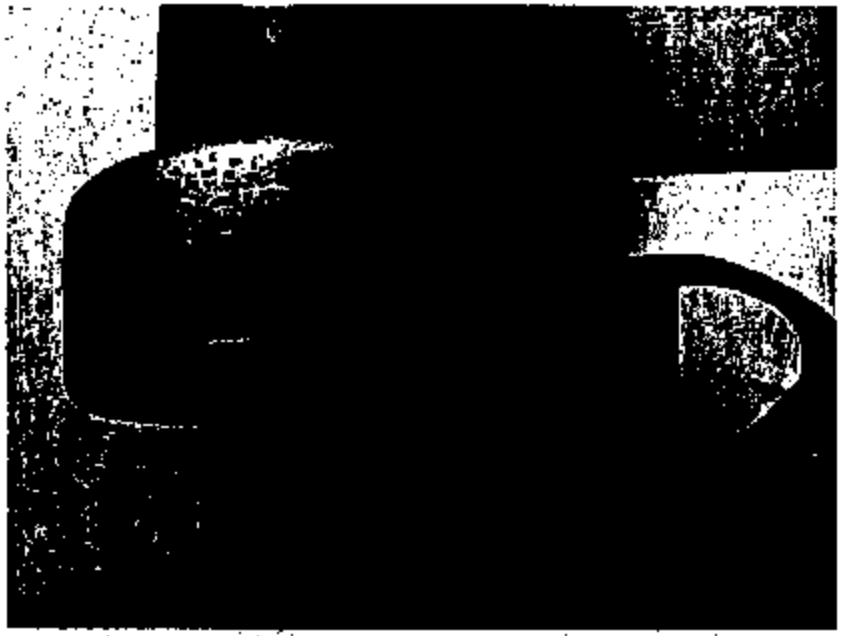
2FALP71W1VX[redacted] 1997 Crown Victoria - Police - Vero Beach, FL 99-Jan-20 · PE 98-055

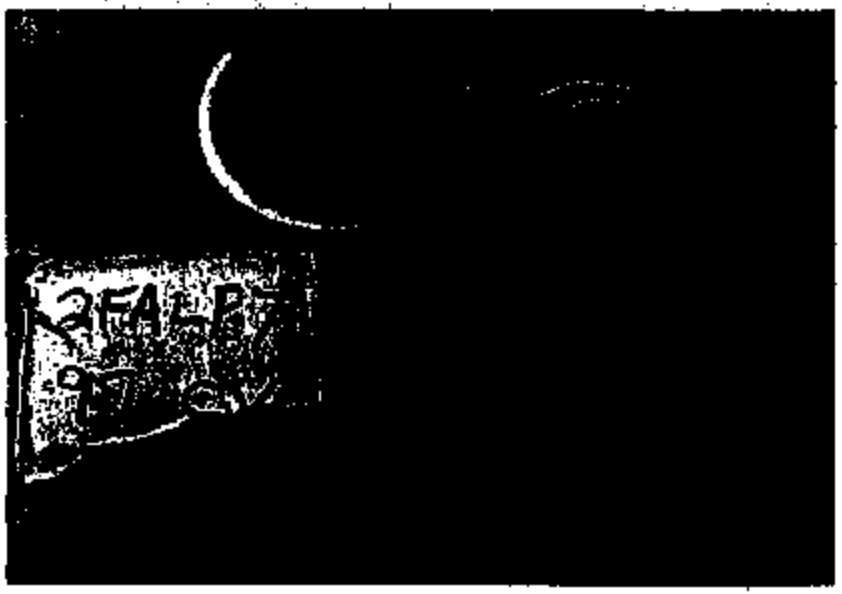


Switch D
F2VC-9F924-AA 6329A

3713 1487

2FALP71W1VX[redacted] 1997 Crown Victoria - Police - Vero Beach, FL 99-Jan-20

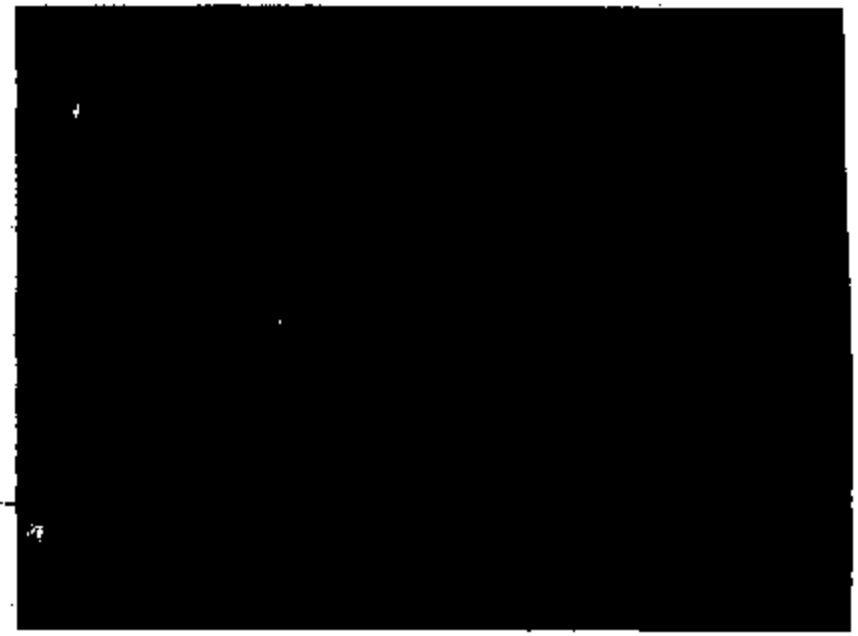




Switch D
F2VC-9F924-AA 6329A

8713 1488

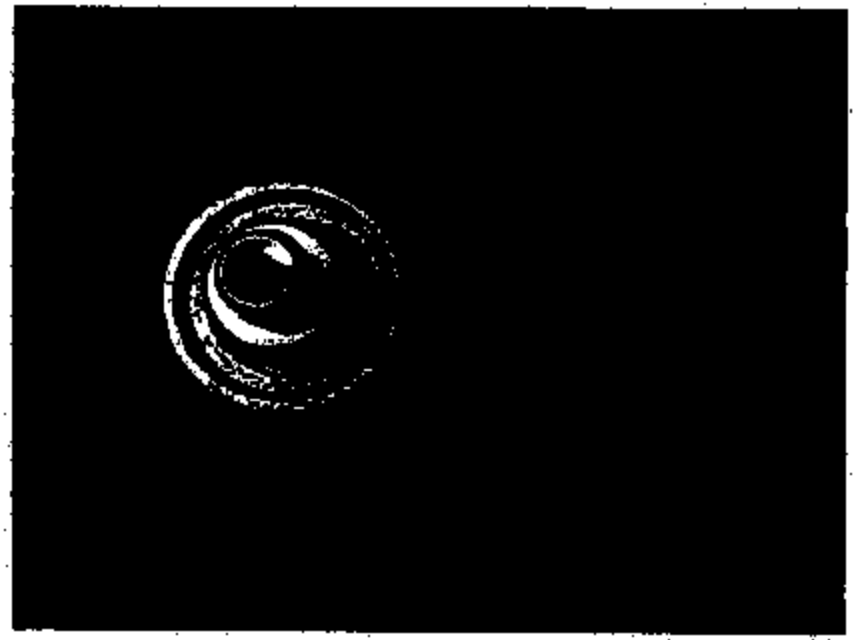
2FALP71W1VX[redacted] 1997 Crown Victoria - Police - Vero Beach, FL 99-Jan-20

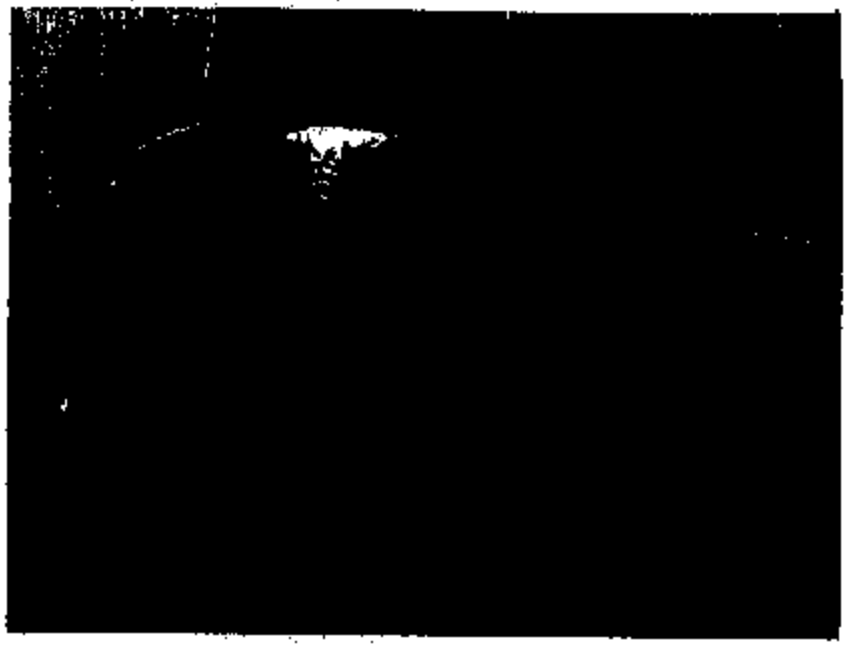


Switch D
F2VC-9F924-AA 6329A

3713 1469

2FALP71W1VX[redacted] 1997 Crown Victoria - Police - Vero Beach, FL 99-Jan-20 NE 98-055





Switch D
F2VC-9F924-AA 6329A

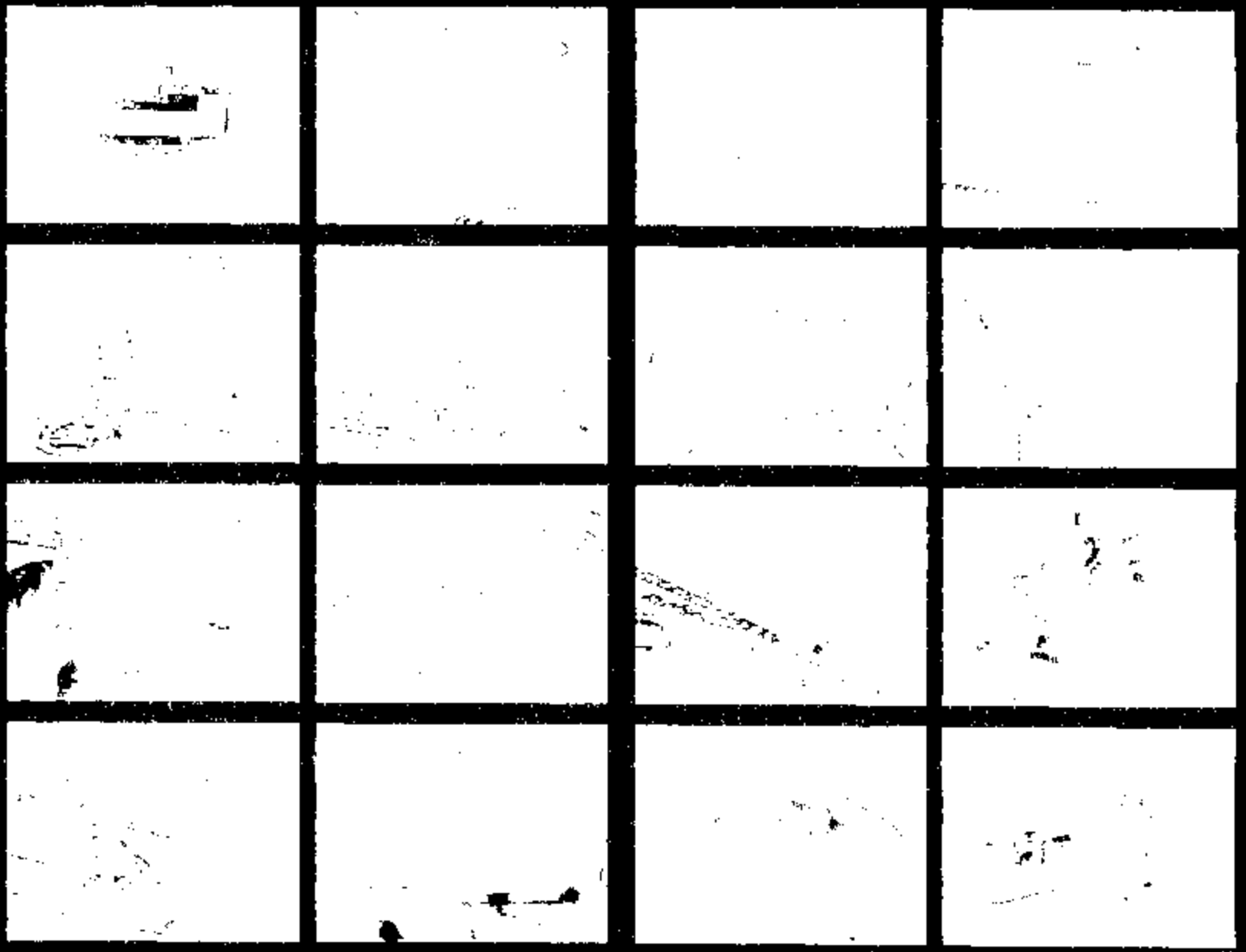
8718 170

2FALP71W1VX[redacted] 1997 Crown Victoria - Police - Vero Beach, FL 99-Jan-20

Switch D
F2VC-9F924-AA 6329A

8713 1471

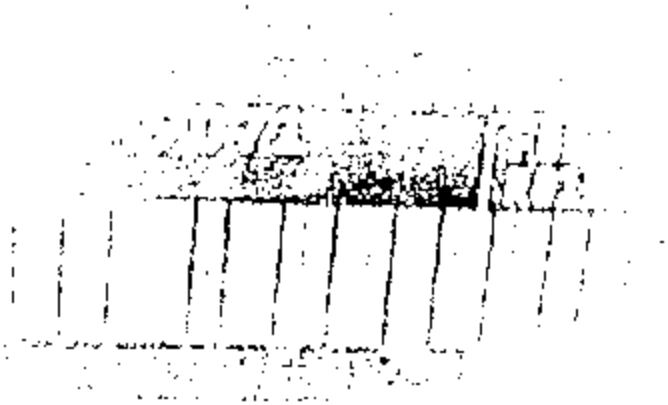
2FALP71W1VX[redacted] 1997 Crown Victoria - Police - Vero Beach, FL 99-Jan-20



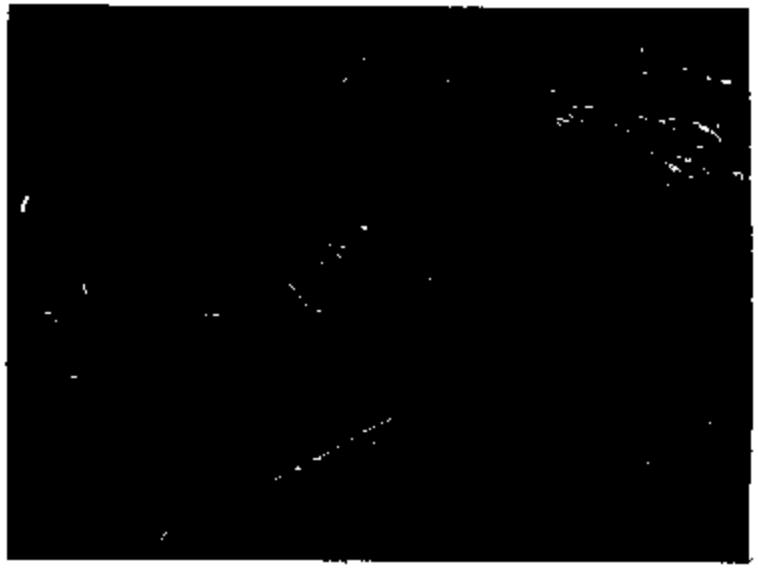
1LNLM92WXNY[redacted] 1992 Lincoln Town Car - Dallas, TX, 99-Jan-13

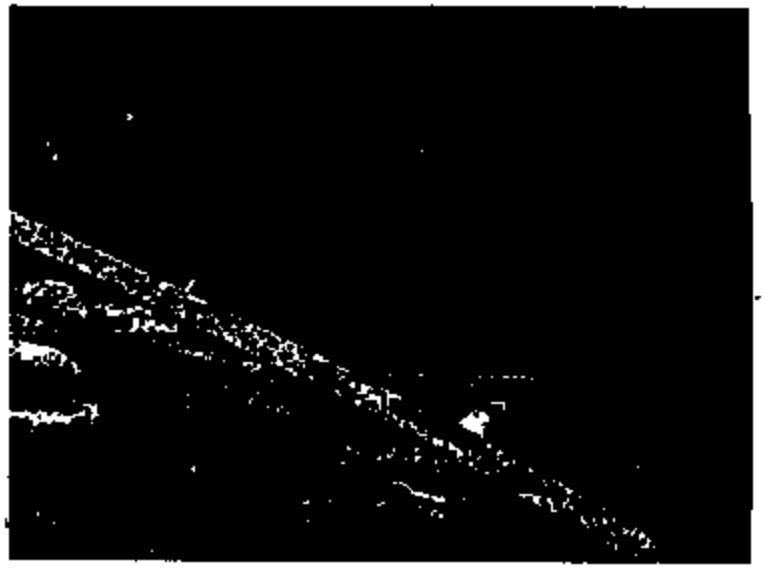
8713 1472

PE 98-055



1LNLM92WXNY[redacted] 1992 Lincoln Town Car - Dallas TX, 99-Jan-13

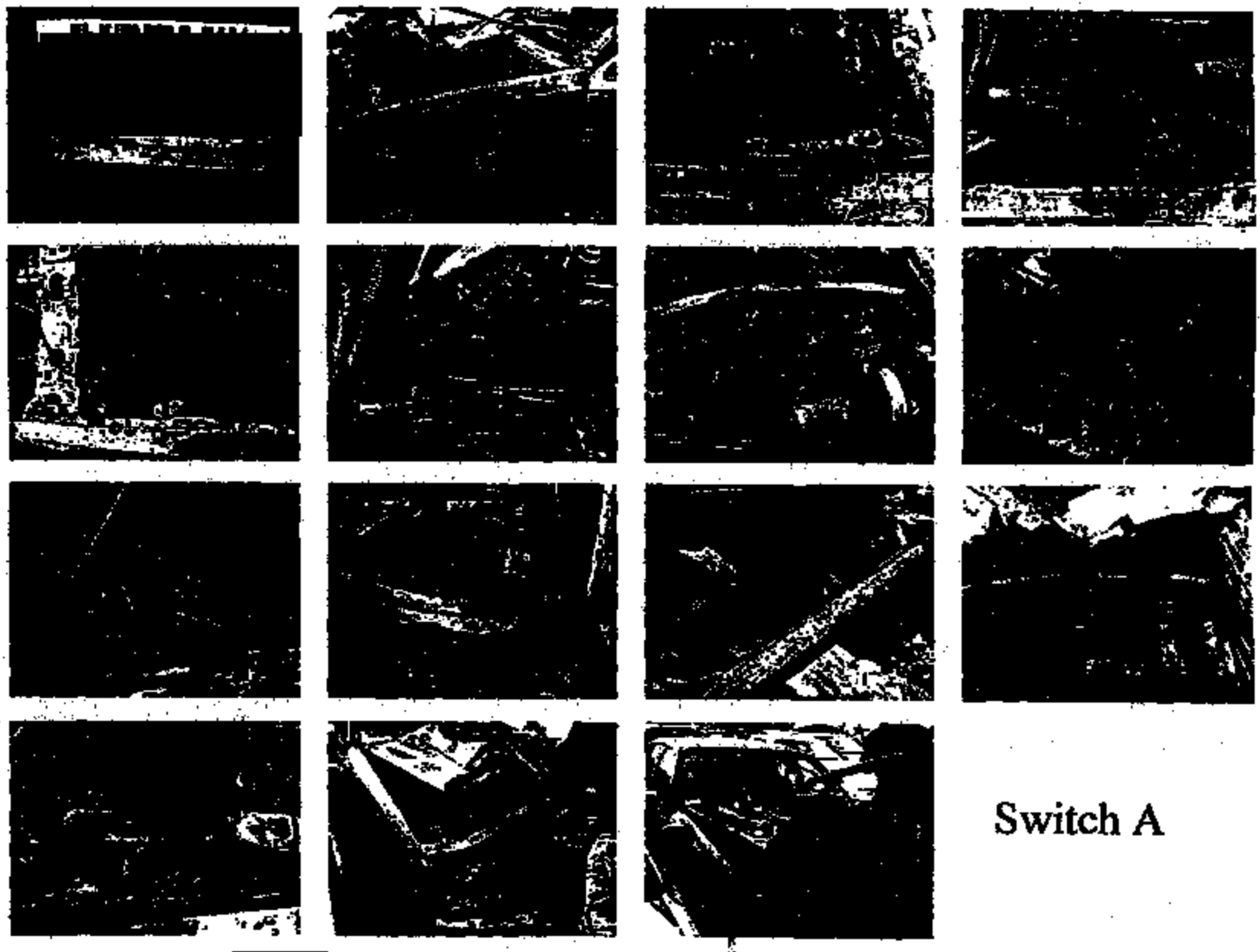




8718 1474

1LNLM92WXNY[redacted]1992 Lincoln Town Car - Dallas, TX, 99-Jan-13

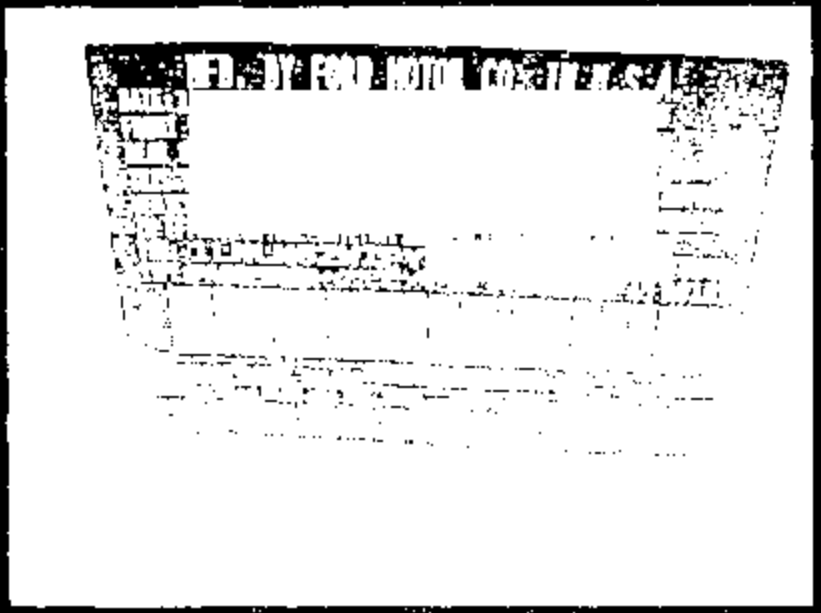
PE 98-055



Switch A

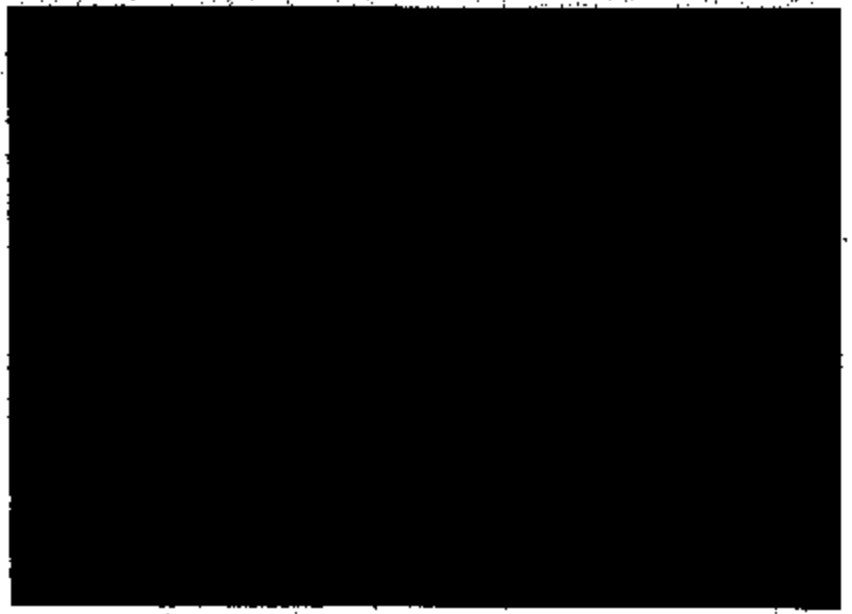
8718 1478

1LNLM92W1PY[redacted] 1993 Lincoln Town Car - Houston, Tx 99-Jan-14 PE98-055



1LNLM92W1PY[redacted] 1993 Lincoln Town Car - Houston, Tx 99-Jan-14 PE98-055

8718 1478



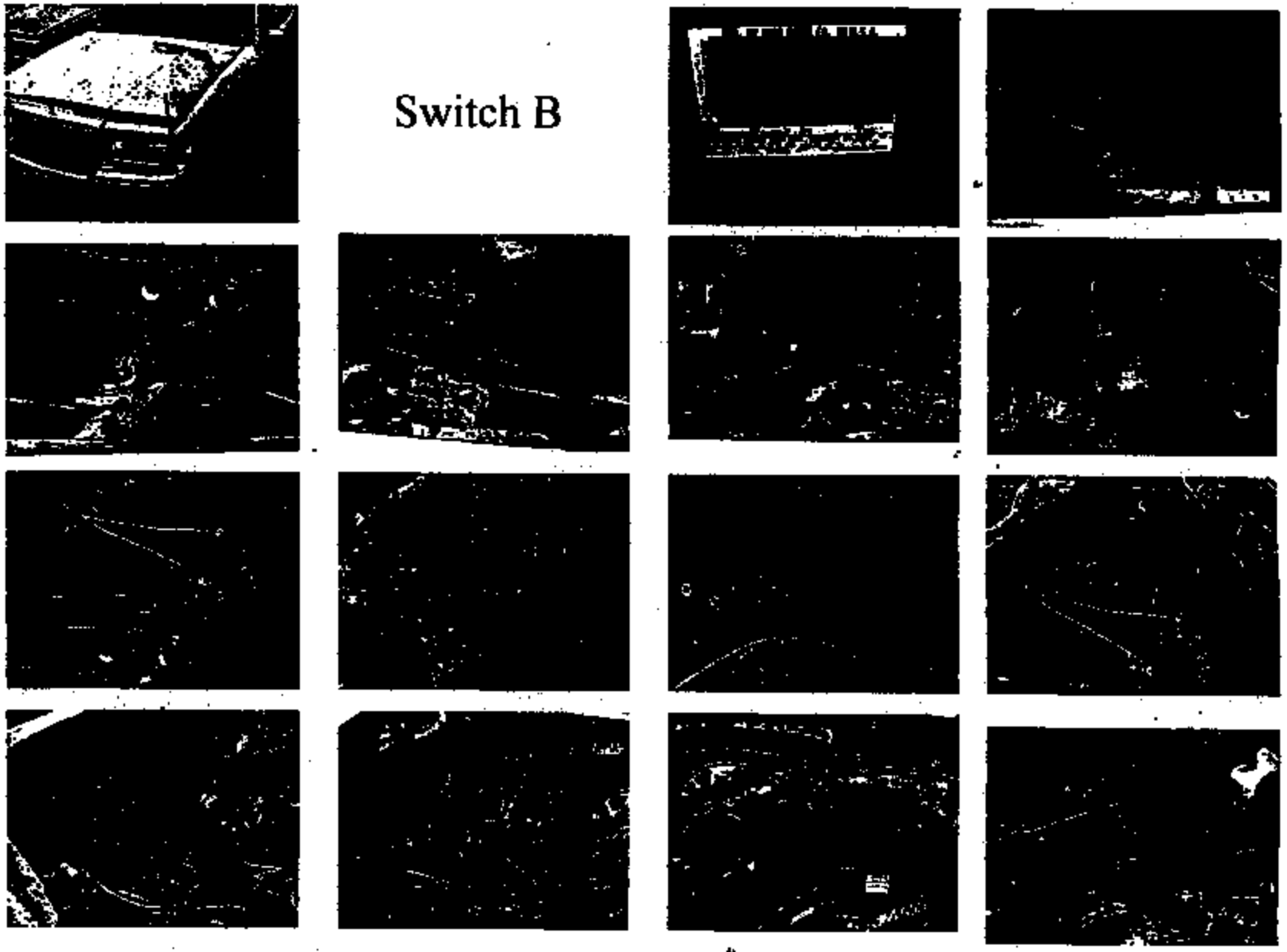
Switch A

F2VC-9F924-AB 2281

8713 1477

1LNLM92W1PY[redacted] 1993 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055

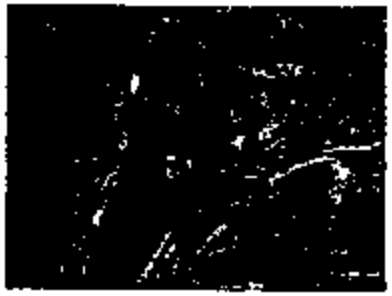
Switch B

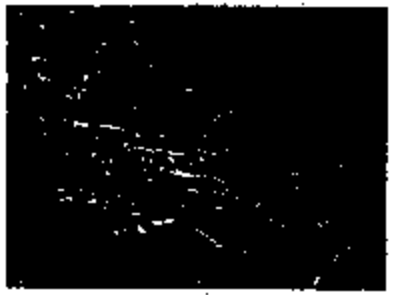


3713 1478

1LNLM83W5NY745119 1992 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055

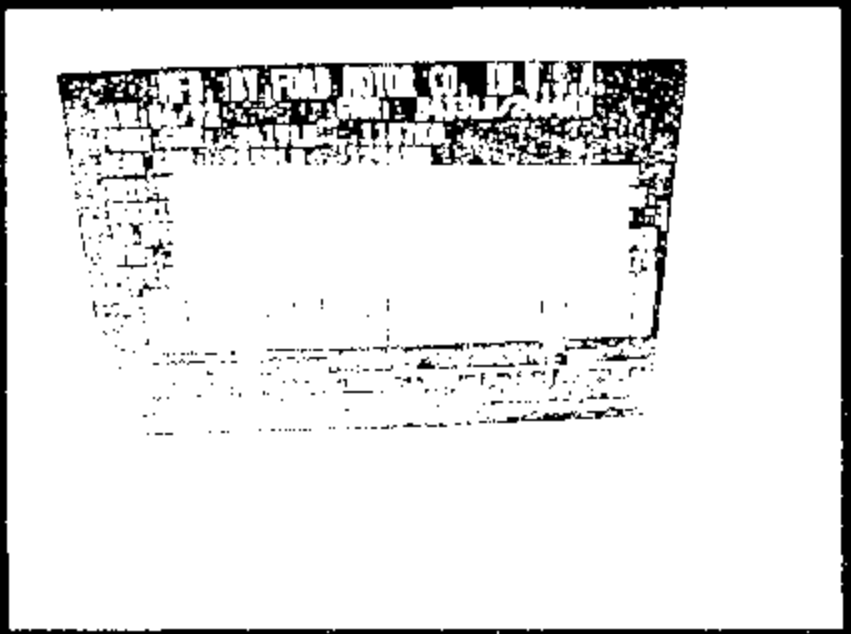


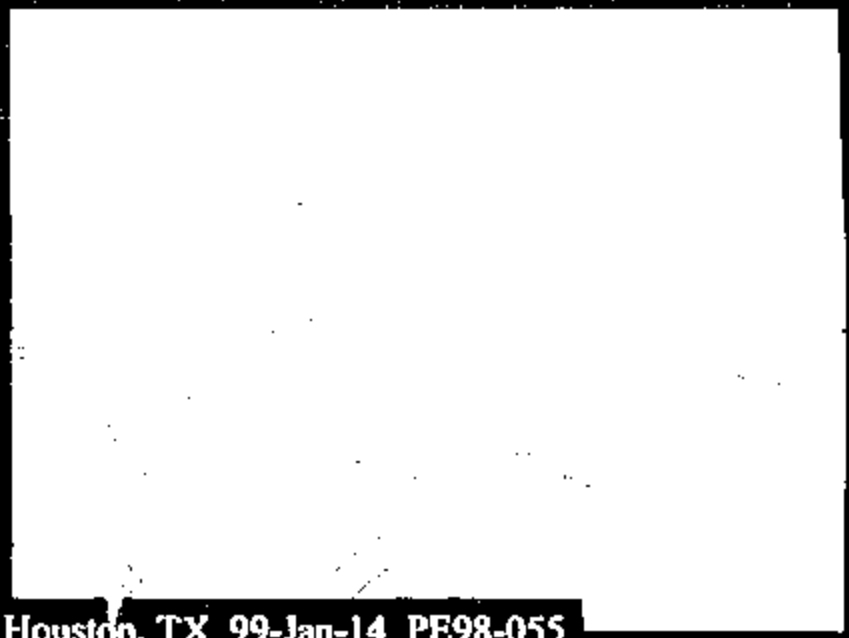




3713 1479

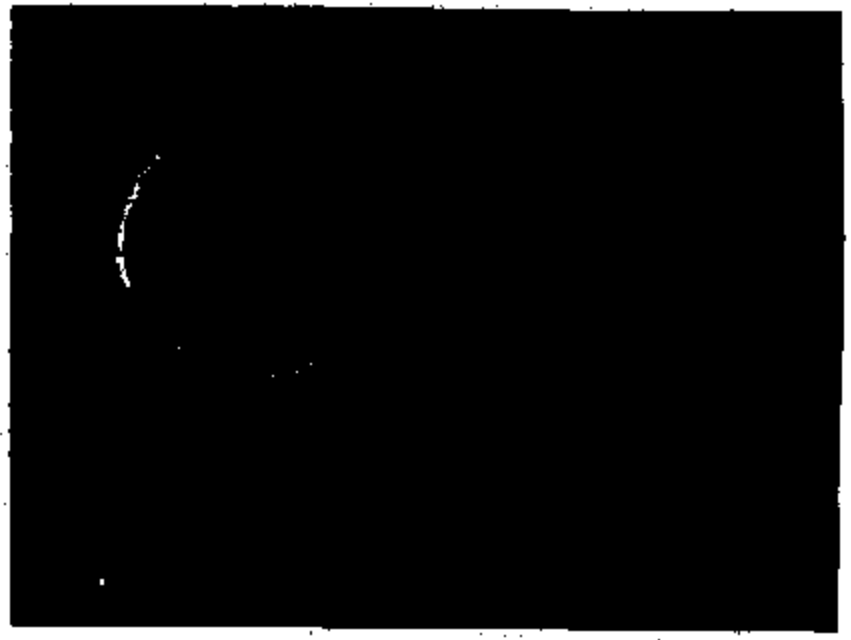
1LNLM83W5NY[redacted] 1992 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055

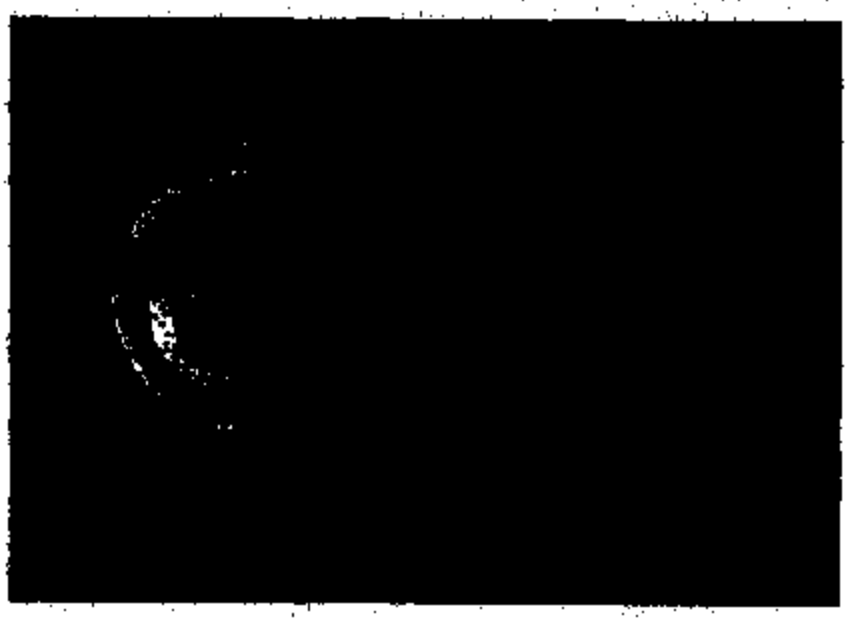




3718 1480

1LNLM83W5NY[redacted]1992 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055





Switch B

F2VC-9F924-AB 2114

3713 1481

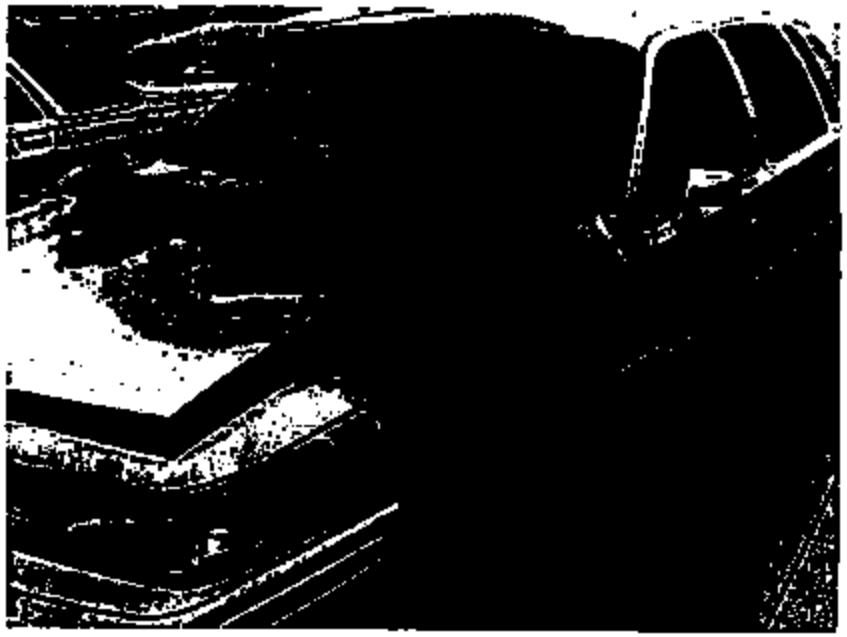
1LNLM83W5NY[redacted]1992 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055

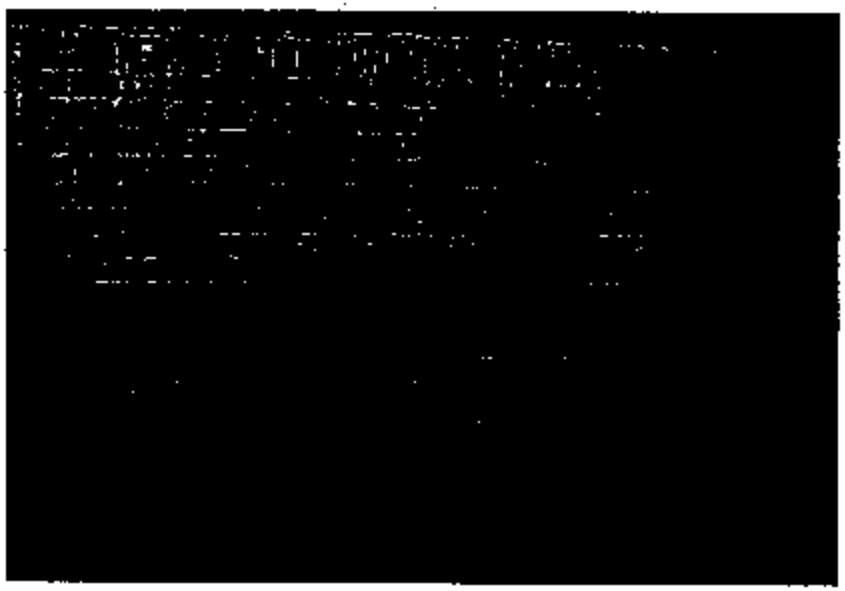
Switch B

F2VC-9F924-AB 2114

3713 1482

1LNLM83W5NY[redacted] 1992 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055

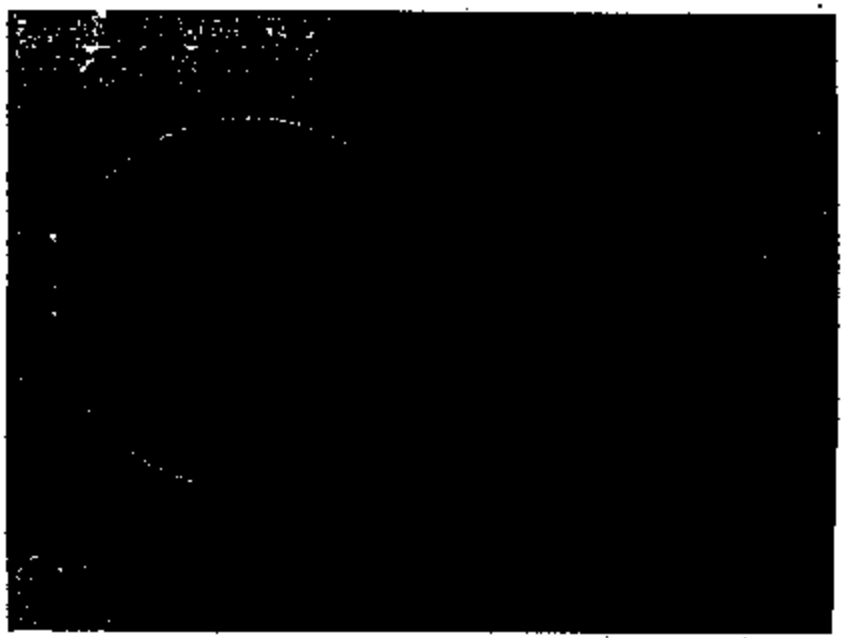




Switch C

3713 1493

1LNLM81W2NY[redacted] 1992 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055

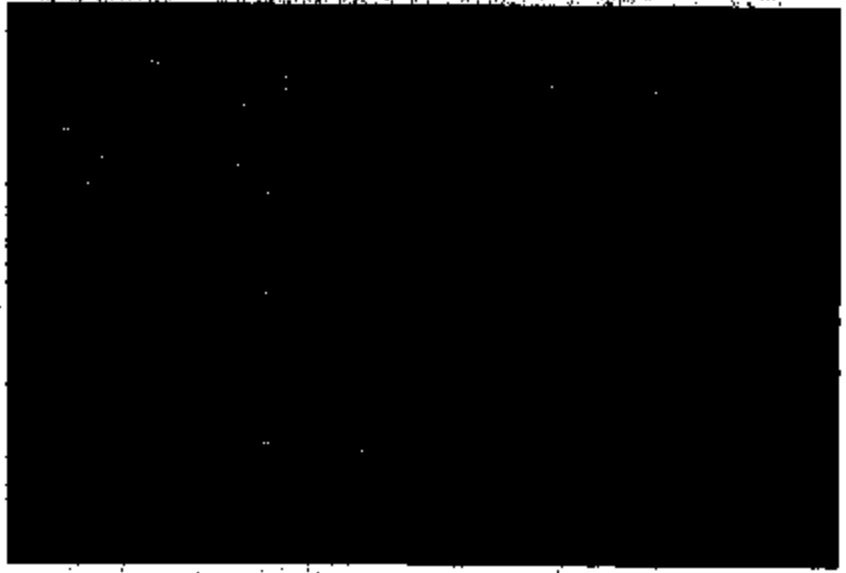


Switch C

F2VC-9F924-AB 2003

3718 1484

1LNLM81W2NY[redacted] 1992 Lincoln Town Car - Houston, TX 99-Jan-14 PE98-055



1LNLM82W7NY[redacted] 1992 Lincoln Town Car - Houston, TX 99-Jan-14 DE98-055

9718 1485

12/16/98

IS SWITCH STILL IN USE ?

WHAT OTHER VEHICLES USE THIS SWITCH

(1) BRAKE FLUID LEAK - HIGH RESISTANCE TO GROUND

(2) TABS CORRODED - INNER LEAK — "

(3) EXTERNAL LEAK INTO

- 21 INITIALLY SITED ON 30 NOV 98
- 20 ADDITIONAL CLAIMS SINCE REPORT

SOUTHERN STATES 9F924

FAULT CODES? ARE THERE ANY WHEN FAILURE OCCURS?

CAN THIS ~~OF~~ AFFECT BRAKE LAMPS

TI PRINT ? NOW FREON

BUYER ? [redacted]

[redacted]

3713 1486

BBNS PROBLEM SWITCH MTG 12-16-98

ROB ENGLISH	AVT-ESR-ECS	73225	RENGLIS1
NORM LAPOINTE	AVT - DES. ANAL.	42686	N LAPOINT
Jim Gregoire	AVT ESE OPE	79962	JGREGOIR
FRED PORTER	AVT- EESE	53722	FPORTER
WILLIAM ADAMCZYK	ASA	23284	WADAMCZY
[illegible]	[illegible]	C2133	[illegible]
CHARLES KELLY	LLC SAFETY	32 2 276	JMCINELL

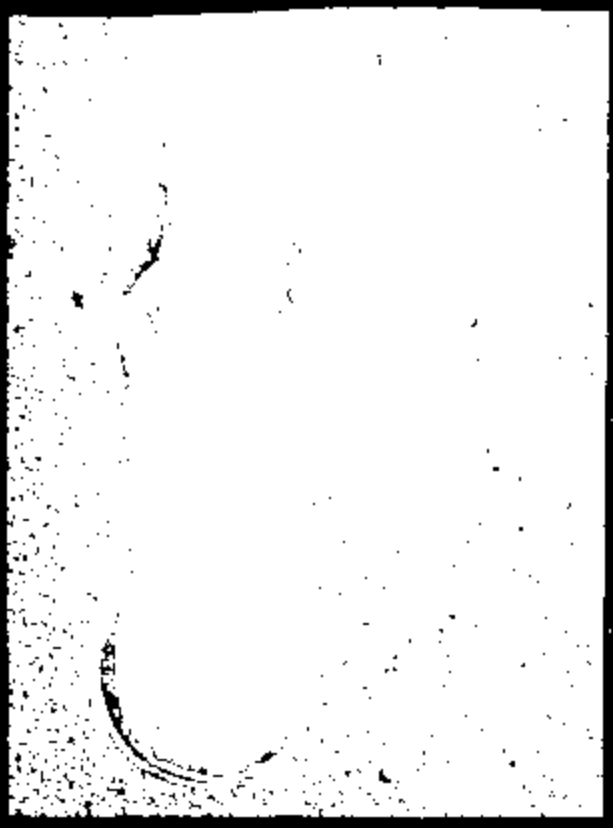
RAY NEVI — CENTRAL LAB NLR — X-RAY

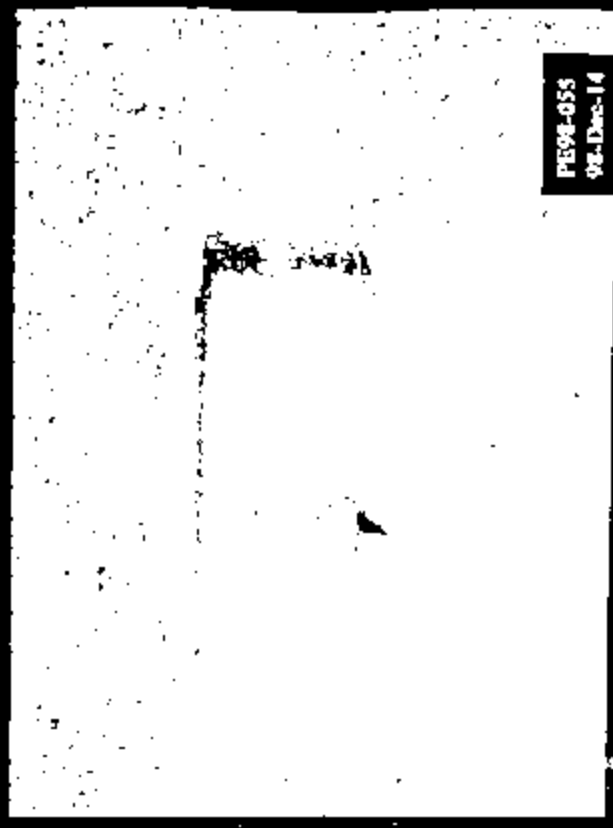
KEN GRIBBLE AVT MATLS
CLARK THOMAS

3713 1487

9713 1488

PE98-055
98-Dec-14




PB98-055
98-Dec-14

FE98-055
98-Dec-14

8713 480

PE98-055
98-Dec-14

8713 1491

PI98-055
98-Dec-14

3713 1492

PE98-055
98-Dec-14

3713 1483

PF98-055
98-Dec-14

8713 1454

3713 1495

PE98-055
98-Dec-14

CQIS Report Number: WJIAA135 Program Type: Q Orig Apt #: 223951-98
Report Source: MSS - PCSD - QSFS Report Date: 10/09/1998

REPORT SUMMARY

VEHICLE: 1993 TOWN CAR,SIGN ,SEDAN VIN : 1LNLM82W0PY622977
Engine : 4.6L ROMEO BASE EFI Odometer: 51,500 MILES
Operating Environ: WCC : 3D05
Vehicle Use : Rep. Act:

SYMPTOM: 3 01 0 00 CHASSIS SERVICE BRAKE SYSTEM
OTHER (CODE NOT AVAILABLE) OTHER (CODE NOT AVAILABLE)
Additional Symptom:
Other Veh. With Concern: Severity Rating - Customer: Engineering:

Causal Component: 28264 SWITCH BRK PRES WRN L
Causal Factor: Feature: Loc:
Causal Condition: Photo: Images: 0
Component Test Status: ----- Return Loc:
Vehicle Fixed?: YES Customer satisfied?: Repair Effectiveness (%): 100

COMMENTS

--TYPE--	COMMENT TEXT
CONCER	INITIALLY THE CUSTOMERS CONCERN WAS THAT THE VEHICLE WOULD NOT COME OUT OF PARK. WHILE IN THE DEALERSHIP, AN UNDERHOOD FIRE STARTED, CAUSED BY A LEAKING BRAKE FLUID THROUGH THE SWITCH INTO THE CONNECTOR.
REPAIR	REPLACED THE SPEED CONTROL SWITCH AND CONNECTOR. REPLACED THE STOP LAMP SWITCH FOR THE ORIGINAL CUSTOMERS CONCERN. PER TECHNICIAN, THIS IS THE THIRD UNIT THAT HAD AN UNDERHOOD FIRE THAT APPEARED TO ORIGINATE FROM THIS AREA. THE OTHER TWO WERE TOO DAMAGED TO DETERMINE THE SPECIFIC LOCATION OF THE POINT OF THE ORIGIN. THE SWITCH AND CONNECTOR ARE PRESENTLY IN MY POSSESSION IN THE MEMPHIS REGIONAL OFFICE.
AUDIT	10/14/1998 09:56AM RWENDEL MSS - PCSD - QSFS
	DEALER ID 68523 CHANGED TO 12098 BY RWENDEL

CONCERN DETAILS

DIAGNOSTIC INFORMATION

Symp. Verif?: Base of Diagnosis: Level of Assistance:
Comp. Timing: Base Timing : MIL light on? :
Test Stand : Road Test : SD Number:
Prior Repair Attempts: Repair Prior to Call: NO
DTCs KOEO: KOEC:
KOER: CB:

Equipment/Procedure Used	Effective?	Equipment/Procedure Used	Effective?

SERVICE ACTIONS

Repair Type	Component Number	Number Type	Description	Causal Comp.
RPL	28264	SERVICE	SWITCH BRK PRES WRN L	YES

VEHICLE DETAILS

Vehicle Build Date: 09/10/1992 Warranty Start Date: 02/08/1993
Date of Sale: 02/08/1993 Selling Dlr (Mkt,Dlr,Sub): 12098
Dealer Special Order: Gross Vehicle Weight:
LH/RH Drive:

- - - ENGINE - - -

Engine: 4.6L ROMEO BASE EFI Tag: 3G 812 AA
Bld Dt: Calb: 318J8L0 A Serial #: W

REDACTED

CQIS Report Number: WJIAA135 Program Type: Q Orig Rpt #: 225951-98
Report Source: MSS - FCSD - OSPE Report Date: 10/09/1998

---TRANSMISSION---

Trans: ADD-E 4SP ELEC O/D Part #:
Bld Dt: Serial #:
Model: Plt: Shft:

---AXLE---

Axle: 8.8 3.08 CONVENTIONAL Id Tag Code: Bld Dt:
Serial #: Plt:

---ADDITIONAL---

Tire : P215/70R15 WSW Brand :
Radio : ELETR PREMIUM AM/FM STRO/CSTE A/C : ATC AIR CONDITIONER
Paint : BLUE EXTERIOR PAINT FAMILY --------- AQUAMARINE FROST C/C

---------- AFTER MARKET MODIFICATIONS ----------

NO AFTER MARKET MODIFICATIONS DATA AVAILABLE FOR THIS VEHICLE

--------- REPORT ORIGINATOR - REPAIR FACILITY - CUSTOMER INFORMATION ----------
Orig/Caller : [redacted] Title: OTHER

Rpair Dlr: 12098 - SCHILLING L-M/MENDENHALL INC Phn:(901) 794-4000
City: Memphis State : Tennessee
Country: UNITED STATES Region : Memphis - 22

Claim #/Date : [redacted]07/19/1998

Customer name [redacted] City :

---------- CQIS VIN HISTORY ----------

NO CQIS VIN HISTORY AVAILABLE FOR THIS VEHICLE

--- SUPPLEMENTAL SURVEY: NONE ---

---------- VEHICLE'S WARRANTY HISTORY (365 days only) ----------

NO VEHICLE WARRANTY HISTORY AVAILABLE FOR THIS VEHICLE

CQIS Report Number: VDUAA322 Program Type: Q Orig Rpt #: 134596-97
Report Source: MSS - PCSD - QSPS Report Date: 04/21/1997

REPORT SUMMARY

VEHICLE: 1992 TOWN CAR,STAND ,SEDAN VIN : 1LNLM81W8NY714787
Engine : 4.6L ROMEO BASE EFI Odometer: 56,802 MILES
Operating Environ: WCC : 5F07
Vehicle Use : Rsp. Act:

SYMPTOM: 7 04 2 45 UNKNOWN SOURCE CONCERNS FIRE/SMOKE
SMOKE UNDERHOOD
Additional Symptom:
Other Veh. With Concern: Severity Rating - Customer: Engineering:

Causal Component: 2A574 SWITCH ASY LOW AIR P
Causal Factor: Feature: Loc:
Causal Condition: Photo: Images: 0
Component Test Status: ---- Return Loc:
Vehicle Fixed?: YES Customer satisfied?: Repair Effectiveness (%): 100

COMMENTS

--TYPE--	COMMENT TEXT
CONCER	THERE WAS SMOKE FROM UNDER THE HOOD.
REPAIR	THE BRAKE PRESSURE SWITCH CAUGHT ON FIRE AND BURNT THE WIRING WITH THE KEY OFF. PREVIOUS VEHICLES WITH FIRES STARTING IN THIS AREA WERE BURNT TO THE DEGREE THAT WE COULD ONLY GUESS WHAT CAUSED THE FIRE. THIS VEHICLE FIRE STOPPED SOON ENOUGH. WE REPLACED THE BRAKE PRESSURE SWITCH.
AUDIT	04/23/1997 10:25AM DATA ENTRY5 MSS - PCSD - QSPS
	SYMPTOM 3 01 0 00 CHANGED TO 7 04 2 45 BY NBAKER6

CONCERN DETAILS

DIAGNOSTIC INFORMATION

Symp. Verif?: Ease of Diagnosis: Level of Assistance:
Comp. Timing: Base Timing : MIL light on? :
Test Stand : Road Test : SD Number:
Prior Repair Attempts: Repair Prior to Call: NO
DTCs KOEO: KOEC:
KOER: CB:

Equipment/Procedure Used	Effective?	Equipment/Procedure Used	Effective?

SERVICE ACTIONS

Repair Type	Component Number	Number Type	Description	Causal Comp.
RPL	2A574	SERVICE	SWITCH ASY LOW AIR P	YES

VEHICLE DETAILS

Vehicle Build Date: 04/07/1992 Warranty Start Date: 10/02/1992
Date of Sale: 10/02/1992 Selling Dlr (Nat,Dlr,Sub): 11627
Dealer Special Order: Gross Vehicle Weight:
LH/RH Drive:

- - - ENGINE - - -

Engine: 4.6L ROMEO BASE EFI Tag: 2G 812 BA
Bld Dt: Calb: 218JRG5 A Serial #: N

- - - TRANSMISSION - - -

Trans: AOD-E 4SP ELEC O/D Part #:
Bld Dt: Serial #:
Model: Plt: Shft:

CQIS Report Number: VDUAA322 Program Type: Q Orig Rpt #: 134596-97
Report Source: MSS - FCSD - QSFS Report Date: 04/21/1997

---AXLE---
Axle: 8.8 3.08 CONVENTIONAL Id Tag Code: Bld Dt:
Serial #: Plt:

---ADDITIONAL---
Tire : P215/70R15 WSW Brand :
Radio : ELETR PREMIUM AM/FM STRO/CSTE A/C : AIC AIR CONDITIONER
Paint : BLUE EXTERIOR PAINT FAMILY CLEAR CRYSTAL BLUE FROST C/C

---AFTER MARKET MODIFICATIONS---

NO AFTER MARKET MODIFICATIONS DATA AVAILABLE FOR THIS VEHICLE

---REPORT ORIGINATOR - REPAIR FACILITY - CUSTOMER INFORMATION---
Orig/Caller : GEORGE TAYLOR Title: OTHER

Repair Dlr: 11627 - Ft Lauderdale L-M Inc Ph#:(954) 779-2060
City: Ft Lauderdale State : Florida
Country: UNITED STATES Region : Orlando - 24

Claim #/Date : [redacted]

Customer name : [redacted] City :

---CQIS VIN HISTORY---

Date	CQIS Report #	Prog Type	Symp Cat	Causal Part Description	Dealer Id
04/22/1997	VDVAA114	EDSR	ELECT.	VALVE-PRT DISC BRK F	11627

--- SUPPLEMENTAL SURVEY: NONE ---

---VEHICLE'S WARRANTY HISTORY (365 days only)---

Dealer ID	Repair Date	Repair Order	Odometer (Miles)	Rpr Cond.	Causal Pfx	Service Part Number Base	Sfx	Labor Operation
11627	04/21/1997		56802					

** TOTAL PAGE.04 **

** TX CONFIRMATION REPORT ** AS OF DEC 10 '98 15:22 PAGE.01

AGREE (SUB EAST)

	DATE	TIME	TO/FROM	MODE	MIN/SEC	POS	CHN	STATUS
20	12/10	15:20	313+390+6882	EC-S	02'07"	005	010	OK

Ford

Ford Motor Company
Environmental and
Safety Engineering

330 Town Center Drive
Dearborn, Michigan 48126

3M EMIT™ 9163 TRANSMISSION
TELEPHONE: (313) 594-2256

AUTOMOTIVE SAFETY OFFICE
PRODUCTION VEHICLE SAFETY
AND COMPLIANCE
FAIRLANE PLAZA SOUTH, Suite 300
DEARBORN, MI 48126

DATE: 98-DEC-10

TIME: 3:15 PM EST

Please deliver to:

Name: JOHN McINERNEY / JOE NEME

Organization: OPD

Room # and Building:

Telephone:

FAX: 06007

Number of Sheets being Transmitted (including this one): 5

Special Instructions/Notes:

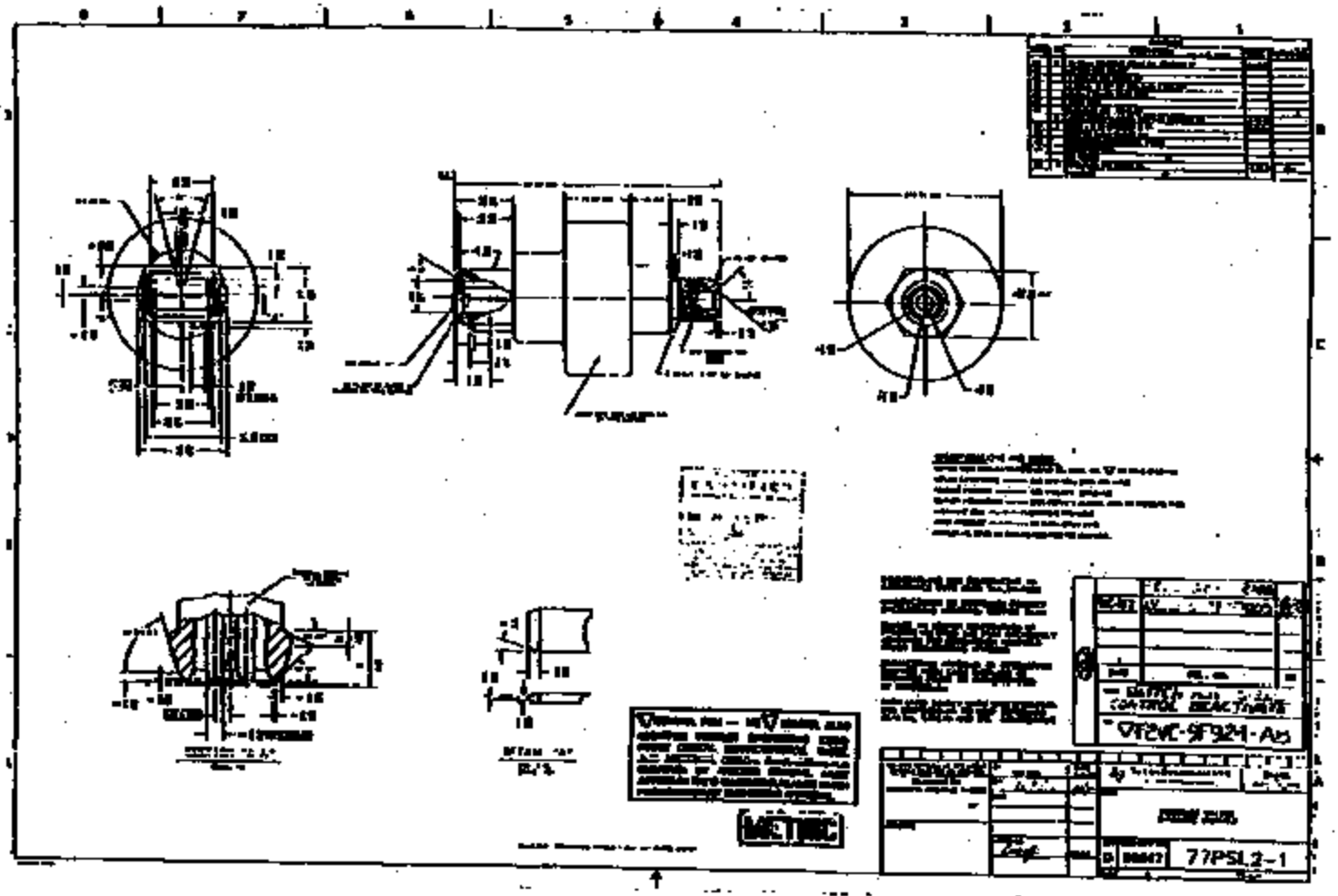
I TALKED TO JAMES FARRIS, SEVICE TECH AT SCHILLING L/M REGARDING THE 3 FIRES. HE INDICATED DISTRICT SERVICE ENGINEER TOM MESSELY 901-787 7037 HAS THE PARTS. PLEASE ASSIST ME IN GETTING THESE PARTS.

Transmission sent by (Name/Telephone):

W.M. ABRAMCZYK

x 23784

3713 1600

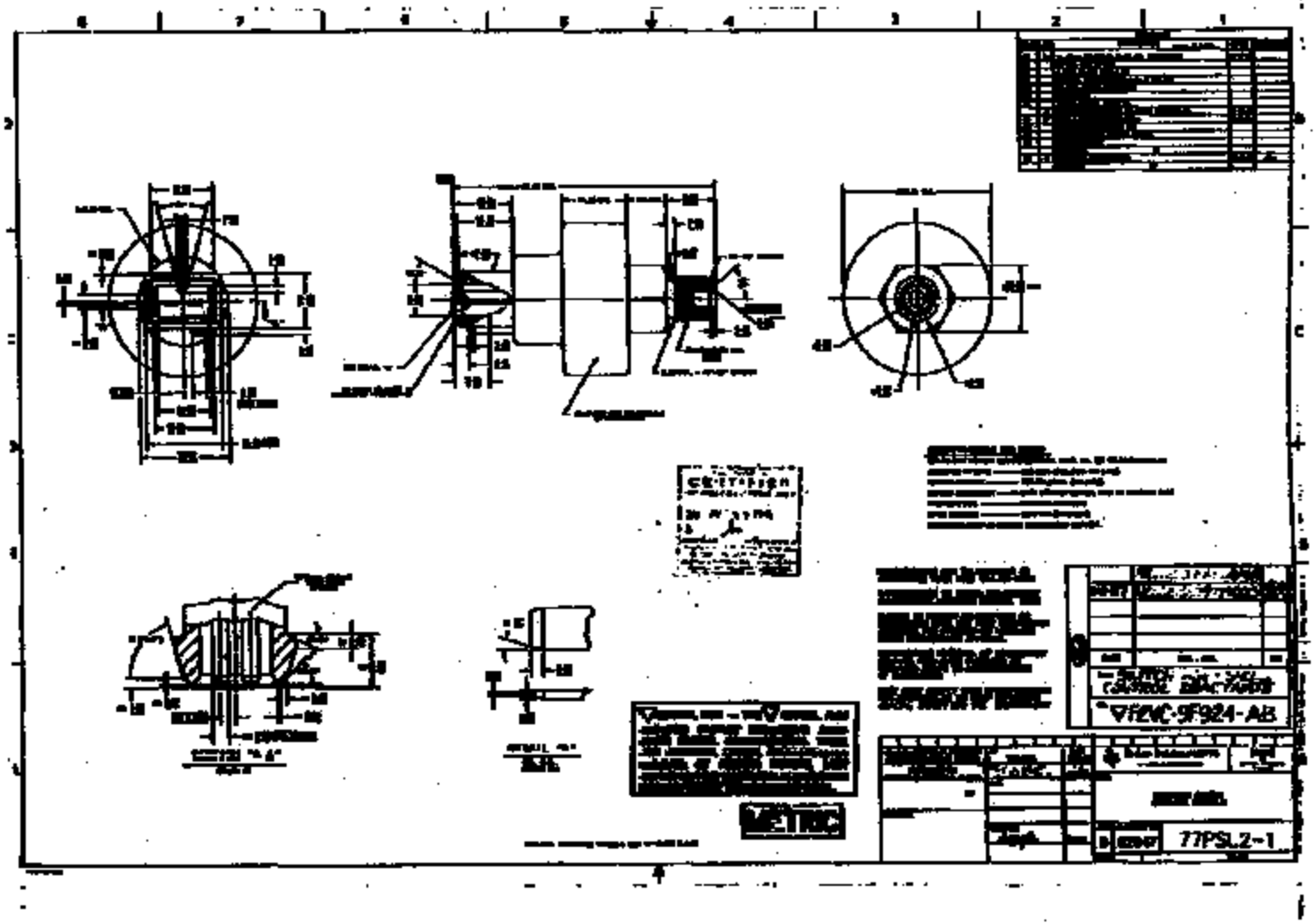


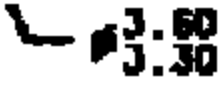
9713 1501

RGB image 1024x768 pixels

File: A_PK300010.jpg

37/3 1603


METRIC
77PSL2-1



SPECIFICATIONS AND NOTES

DEVICE MUST CONFORM TO FORD MOTOR CO. SPEC. NO. ▽ ES-F2VC-9F924-AA

ACTUATION PRESSURE ——— 862 ±241 kPag (125 ±35 psig)

RELEASE PRESSURE ——— 138 kPag MIN. (20 psig)

CONTACT ARRANGEMENT ——— SPST NORMALLY CLOSED, OPEN ON PRESSURE RISE

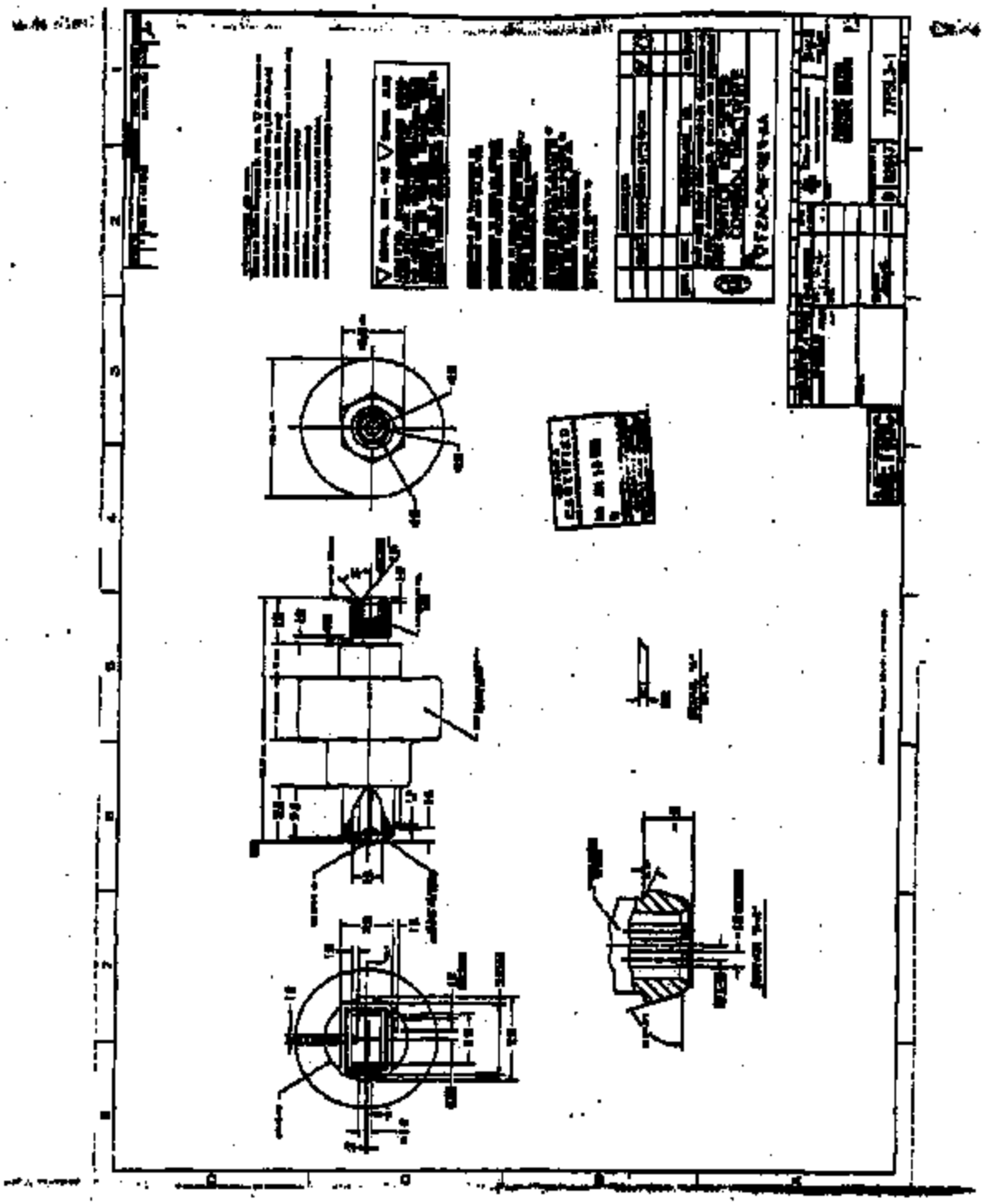
HYDRAULIC SEAL ——— ETHYLENE PROPYLENE

PROOF PRESSURE ——— 20.7 MPa (3000 psi)

PROTECTIVE COVER ON THREADS REQUIRED FOR SHIPMENT.

8718 1808

IONING AND TOLERANCING IN
ANCE WITH ANSI Y14.5M-1982



Engineering Specification

PART NAME	PART NUMBER
SENSOR ASSEMBLY – SPEED CONTROL DEACTIVATOR	▽ XR-8Z10-9F924-AA

DATE	LET	FR	REVISION	DR	CK
			ADDED DATA TO COMPLETE SPEC. & RELEASED		
9/6/82			NCA/KIO2277/8602		JF

REFERENCE

PREPARED/CHECKED BY

ISSUED BY | APPROVED BY

CONFIGURATION/FUNCTIONAL AUTHORITY

DESIGN ENGINEERING SUPERVISOR

ENGINEERING MATERIAL

QUALITY CONTROL

SUPPLIER QUALITY ASSURANCE

ELECTRONICS DIVISION

▽CONTROL ITEM – SEE ▽SYMBOL ALSO
ENSURE PRODUCT CONFORMS WITH APPLICABLE ENGINEERING SPECIFICATIONS AND ADDITIONAL CRITICAL CHARACTERISTICS IDENTIFIED BY FORD, WHICH REQUIRE PRODUCT CONFORMANCE VERIFICATION BY PROCESS CONTROL PLANS WHICH REQUIRE PRODUCT ENGINEERING APPROVAL

FRAME 1 OF 15	REV	▽ XR-8Z10-9F924-AA

FORM PD 3947-a1

3713 1508

Engineering Specification

SWITCH ASSEMBLY - SPEED CONTROL, DEACTIVATE

I. General

This specification covers the test requirements for the speed control deactivate switch -XXXX- used in the electronic speed control system. Design changes on the switch assembly or its components shall not be made without compliance to Section V of this specification and written approval from the releasing Production Engineering Office.

This engineering specification is a supplement to the released drawing on the above part, and all requirements herein must be met in addition to all other requirements of the part drawing. Minimum measures necessary for demonstrating compliance to these requirements are given in each section.

The engineering tests, sample sizes, and test frequencies contained within this engineering specification reflect the minimum requirements established to provide a regular evaluation of conformance to design intent. The engineering test program is intended as a supplement to normal material inspections, dimensional checking and in-process controls, and should in no way adversely influence other inspection operations.

QS suppliers may implement different test sample sizes and frequencies providing these changes have been included in an alternate Control Plan approved by the design responsible Product Engineering Office and concurred in by SQA.

II. PRODUCTION VALIDATION AND IN-PROCESS TESTS

- Production Validation (PV) Tests must be completed satisfactorily with parts from production tooling (and processes where possible) before ISIR approval and authorization for shipment of production parts can be effected. Parts must be revalidated completely, or per Section V whenever any change is made which could possibly affect part function or performance.

- In-Process Test Phase 1 (IP-1) - IP-1 tests are used to demonstrate process capability and must be completed using initial production parts from production tooling and processes prior to first production shipment approval. IP-1 tests are to continue in effect until process capability is demonstrated.

- In-Process Tests Phase 2 (IP-2) - IP-2 test program may be implemented only after process capability has been established. Tests must be completed with production parts on a continuing basis. Samples for these tests must be selected on a random basis to represent the entire production population as much as possible. In the event that any of the requirements in these tests is not met, the reaction plan specified in Ford Q101 Sect. 3.9, "Engineering Specification (ES) Test Performance Requirements" shall be invoked.

PAGE 2 OF 18		REVISED		▽ ES-F2VC-99524-AA NUMBER

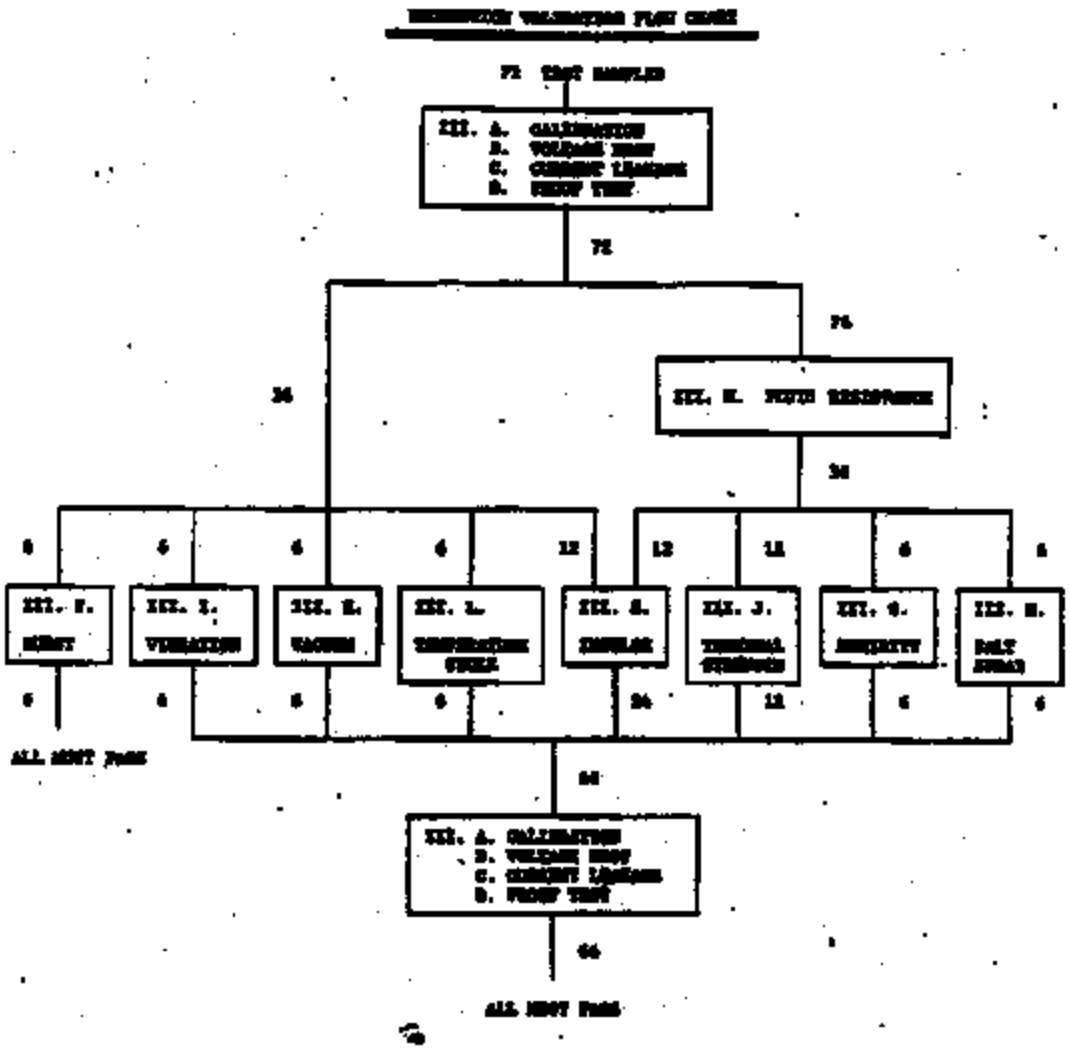
FORM PD 3947-s2 (previous editions are OBSOLETE)

SECTION III. TABLE OF TESTS

Item	Test Name / Functional Tests	Production Validation Minimum Sample Size	Production Validation Statistical Test Acceptance Criteria	In-Process IP-1 Minimum Sample Size	In-Process IP-1 Statistical Test Acceptance Criteria	In-Process IP-2 Minimum Sample Size	In-Process IP-2 Statistical Test Acceptance Criteria
III.							
▽ A	Calibration	72	P90-.95	100%	All Must Pass	100%	All Must Pass
B	Voltage Drop	72	P90-.95	12/Mo.	P90-.84	4/Lot	" " "
C	Current Leakage	72	P90-.95	3/Mo.	P90-.56	4/Lot	" " "
D	Proof Test	72	P90-.95	12/Mo.	P90-.84	4/Lot	" " "
F	Burst	6	P90-.72	3/Mo.	P90-.56	4/Lot	" " "
I	Vibration	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72
J	Terminal Strength	12	P90-.84	6/Mo.	P90-.72	4/Lot	All Must Pass
K	Vacuum	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72
L	Temperature Cycle	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72
M	Fluid Resistance	36	P90-.94	36/12Mo	P90-.94	36/12Mo.	P90-.94
	Durability Tests						
III.							
E	Impulse	24	P90-.90	12/Mo.	P90-.84	3/3 Mo.	P90-.56
G	Humidity	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72
H	Salt Spray	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72

▽ MS-820-8904-AA

SMB 1510



SHEET 4 OF 18	REVISED		NUMBER

III. TEST REQUIREMENTS AND PROCEDURES

▽ A. Calibration

1. Test Requirements

a. Switch calibration is to be checked at room temperature (15°C-35°C) using ambient air or equivalent.

b. Calibration settings shall be specified on the part drawing with the settings checked after 2 or more pressure cycles with ambient air, or equivalent. Pressure cycle range is to be determined by the manufacturer to insure switch calibration stability. The cut-in and differential set points are to be measured while conducting 750 ± 50 milliamperes while 13.0 ± 1.0 volts D.C. is applied. The cut-in point is to be checked with increasing pressure.

c. The cut-out point is to be checked with decreasing pressure, and the differential set point is to be calculated using the cut-in pressure minus the cut-out pressure.

2. Acceptance Requirements

a. Nonconformance is defined as any switch point which falls outside the tolerance band specified on the part drawing.

B. Voltage Drop

1. Test Requirements

a. Voltage drop is to be measured after 2 or more cycles with ambient air or equivalent from 0 to 10,000 ± 172 KPa (1450 ± 25 PSI) while conducting 750 ± 50 milliamps and 13.0 ± 1.0 volts D.C. is applied to the switch. Under these conditions with the switch closed the voltage drop is to be measured. Millivolt connection interfaces at terminals to be less than 10 millivolts.

2. Acceptance Requirements

a. Nonconformance is defined as a voltage drop in excess of 200 millivolts.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

C. Current Leakage

1. Test Requirements

a. Current leakage is to be checked with 500 volts, 60 Hz alternating current.

b. Current leakage is to be checked:

(1) Between the switch leads with the contacts open.
(2) Between the lead and the switch housing with contacts closed.
(3) Between either lead and switch housing with the contacts open.

2. Acceptance Requirements

a. Nonconformance is defined as any leakage current in excess of one hundred (100) microamperes.

D. Proof Test

1. Test Requirements

a. Subject sample switches to Section A to establish their initial switching pressures.

b. Proof test is to be conducted using brake fluid or equivalent as the pressure medium. Test procedure shall be as specified on the part drawing. Test pressure shall be isolated from pressure source and held for not less than 30 seconds.

c. Recheck the switches to Section A.

2. Acceptance Requirements

a. No evidence of fluid leakage, seepage, or drop in test pressure greater than 430 KPa.(62 PSI) is permitted.

b. A change in cut-in and cut-out pressures greater than ± 5% from the initial value is not permitted.

c. The test samples must be destroyed after testing.

III. TEST REQUIREMENTS AND REQUIREMENTS (cont'd)

E. Impulse

1. Test Requirements

a. Test the switch for a total of 500,000 cycles. Cycle pressure between (low) 0-276 KPa (0-40 psi) and (high) 10,000 ± 345 KPa (1450 ± 50 psi).

1) 0 - 475,00 cycles: 13 ± 1 volts, cross current to monitor function.

2) 475,001 - 500,000 cycles: 13 ± 1 volts D.C., 750 ± 50 ma., per figure 4.

b. Brake fluid temperature to be 135 ± 14°C and ambient temperature to be 107°C min.

c. Cycle rate is to be 110-130 cycles per minute.

d. Switch must open and close each cycle.

2. Acceptance Requirements

a. After impulse test check 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, & D.

c. Samples used for this test must be destroyed after all testing is completed.

F. Burst

1. Test Requirement

a. Burst strength is to be checked using brake fluid or equivalent as the pressure medium.

b. Pressurize the switch to 48.3 MPa (7000 PSI) minimum and hold for 30 seconds minimum.

2. Acceptance Requirements

a. Nonconformance is defined as any evidence of fluid leakage or seepage from the switch or threads. Samples used for this test must be destroyed after testing is completed.

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 +10/-2 °C over 2.5 hours; at 90-98% relative humidity.

(2) Hold 3 hours at 65 +10/-2 °C at 90-98% relative humidity.

(3) Lower temperature to 25 +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.

III. [illegible] (cont'd)

I. Vibration

1. Test Requirements

a. Mount the switch in the test port and attach the customary delivered 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.

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.

d. Vibrate the switch at 1.5 cm displacement (peak-to-peak) while varying the frequency uniformly from 9 to 50 to 9 Hz over a 3 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 cycle, 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.

3713 1516

III. [illegible] (cont'd)

J. Terminal Strength

1. Test Requirements

a. Mount the switch in the test port.

(1) Apply a 88 ± 9 N axial force to each terminal.

(2) With a pendulum apply a 45 ± 5 N impact force to the switch housing at the connector end, perpendicular to the connecting axis of the switch. See Figure 2 for force application point and direction.

2. Acceptance Requirements

a. Check the switch to sections A, B, C, and D using the procedures established in each section.

b. Nonconformance is defined as any terminal or housing fracture, or any switch not meeting the criteria in sections A, B, C, or D.

K. Vacuum

1. Test Requirements

a. Mount the switch in the test port. Vacuum tests are to be conducted at room temperature using ambient air as the pressure medium.

b. Subject the switch to 5 cycles of vacuum from atmospheric pressure (760 mm Hg) to an absolute pressure of 3-4 mm Hg. Maintain the vacuum for a minimum of 60 seconds.

2. Acceptance Requirements

a. Check the switch to sections A, B, C, and D using the procedure established in each section.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, and D.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

L. Temperature Cycle

1. Test Requirements

a. Mount switches in test ports; test to be run using currently released brake fluid.

b. Repeat the following procedure 25 times.

(1) Lower the switch and fluid temperature to at least -40°C.

(2) Cycle the switches ten times at 10 seconds/cycles. One cycle consists of a pressure variation from 0 - 276 KPa.G (0-40 psi) to 10,000 ± 345 KPa.G (1450 ± 50 PSI). Note: Switch must open and close each cycle.

(3) Raise switch and fluid temperature to 38°C minimum.

(4) Repeat Step 2.

c. At completion of Step b, check switches per sections A, B, C, and D.

2. Acceptance Requirements

a. Nonconformance is defined as any evidence of switch fluid leakage, seepage, or not passing the criteria of sections A, B, C, and D.

M. Fluid Resistance

1. Test Requirements

a. Mount the switch in the test port and orient as installed in the vehicle.

b. Install the currently released mating electrical connector (with wire leads) to the switch.

c. Sequentially, immerse the switch into each of the specified fluids, at a temperature of 23 ± 2 °C, for 5 ± 1 second. Remove the switch and drain and store the switch for the specified time at room temperature, prior to immersing into the next fluid.

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III. TEST SEQUENCES AND REQUIREMENTS (cont'd)

Fluid	Drain Time	Storage Time
Reference Fuel C ASTM D471	60 ± 5 min.	none
10W40 Engine Oil	24 ± 1 hour	14 days
Ethylene Glycol/ Water 50/50 by Volume	24 ± 1 hour	24 ± 1 hour
Brake Fluid DOT 3	24 ± 1 hour	48 ± 1 hour
Automatic Transmission/ Power Steering Fluid (name) XSP-M2C138-CJ	24 ± 1 hour	14 days
Isopropyl Alcohol/ Water 50/50 by Volume	24 ± 1 hour	none
Reference Fuel C, ASTM D471 with Methyl Alcohol 85/15 by Volume	24 ± 1 hour	none

4. Per the Flow Chart, subject the prescribed number of immersed switches to the post immersion tests specified below:

   III. E. Impulse
   III. G. Humidity
   III. H. Salt Spray
   III. J. Terminal Strength

Acceptance Requirements

a. Switches must fully meet the requirements of the specified post immersion test.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D. Samples used for this test may be destroyed after all testing is completed.

IV. [illegible]

A. For PV, IP-1 and IP-2 tests, all samples tested must pass. Having all the required sample size pass will provide data to support the conclusion that the switch has a minimum reliability R, at a given confidence of C. The notation Pa-R is interpreted as minimum reliability equal to R, at a confidence C; thus P90-.80 means a minimum reliability of 80% at 90% confidence.

B. All samples must pass in the statistical test acceptance criteria stated for tests with 100% frequency; or samples from lots; which could have a variable size.

V. [illegible]

A. No change in design, material, process or component supplier shall be made without prior approval from the releasing Product Engineering Office. As part of approving a change, the releasing Product Engineering Office will establish the portion of the Product Validation tests required to be run to revalidate the switch. The following table is to be used as a guide in determining the type of tests required for revalidation requirements.

[illegible]

Component	Process or Material Change or New Supplier
1. Terminals, Contacts, or Contactor	III, B, C, E, G, H, I, J, L, M.
2. Case or Housing	All Tests
3. Disc or Diaphragm	III, A, D, E, F, I, K, L
4. Fitting or Fluid Connection	III, D, E, F, H, I, M.

B. Annual revalidation is not required on carryover switches.

VI. [illegible]

A lot is defined as no more than eight (8) hours of production up to 4,000 pieces. If shifts extend beyond eight (8) hours, or more than 4,000 pieces are produced in a shift, the product must be separated into at least two lots.

VII. [redacted]

A. Recording and record retention shall conform with Ford Q-101.

B. Production Validation test results and analysis are to be forwarded to the releasing Product Engineering Office before approval for shipment of production parts can be granted.

C. In-Process test results shall be available at the supplier's manufacturing facility for the releasing Product Engineering Office and Ford SQA or its representatives to review on request.

VIII. [redacted]

All switches are to be identified with the Ford part number, supplier identification, and a date code indicating final assembly.

All test equipment and test procedures for testing to this specification must be approved by the releasing Product Engineering Office and no change in equipment or procedure may be made without their written concurrence.

Test port configuration is shown in Figure 5.

O-rings, if used in the design, shall be free from cuts, nicks, abrasions or any other damage which would result in a fluid leak.

All switches must have a shipping cap installed over the port threads to prevent contamination. All shipping caps must be approved by the releasing Product Engineering Office prior to production interpretation.

All switches that do not pass the calibration test are to either be readjusted and rechecked, or scrapped. (Salvage of component parts permitted with 100% reinspection).

If product nonconformance occurs for test Sections III. B, C, D, E, F, and J, production shall be stopped and the problem corrected. All production lots shall be sorted 100% prior to shipment. Suspected nonconformance of any shipped parts shall be reported immediately to the releasing Product Engineering Office.

If nonconformance of the statistical acceptance criteria occurs for test Sections III. G, H, I, K, L and M, a cause to recall the subject weeks production and to stop production may result.

PAGE 14 OF 18	REVISED		▽ ER-F2VC-9F924-AA NUMBER

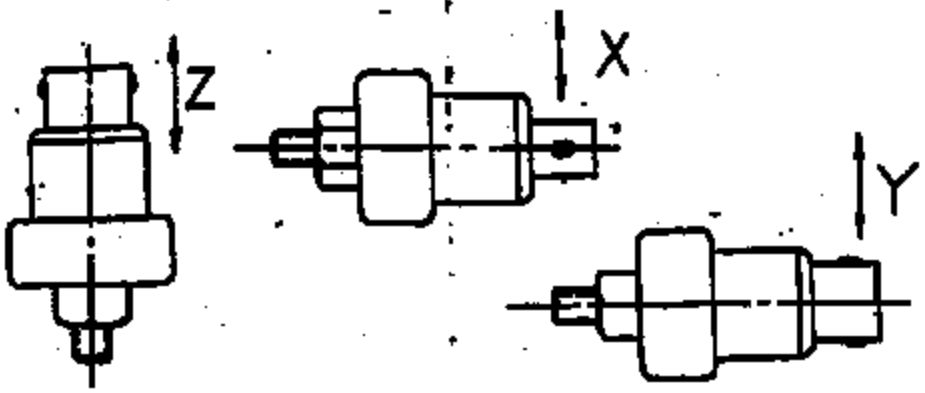
IX. [illegible]

ASTM B-117, Salt Spray Testing

Ford Q-101, Quality System Standard - 1990 Edition

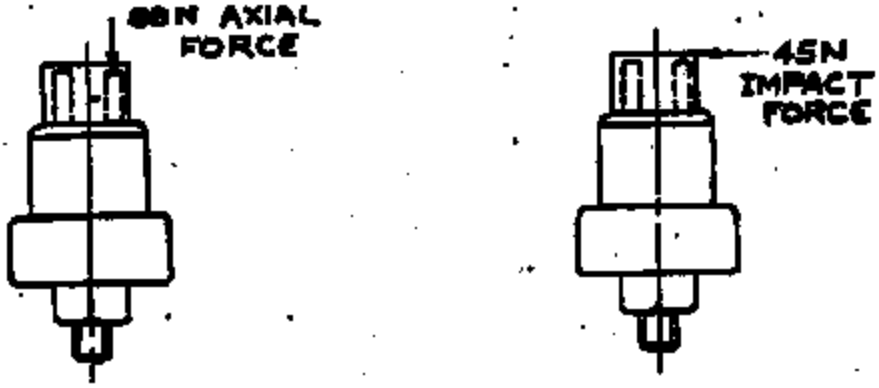
XS-F0ZB-2AA464-AA, Specification - SLP Assy'- Wire Connector

XS-F2YP-9C735-AA, Specification - Servo Assembly Speed Control



VIBRATION TEST - SWITCH ORIENTATION

FIGURE 1.



TERMINAL STRENGTH - LOAD ORIENTATION

FIGURE 2.

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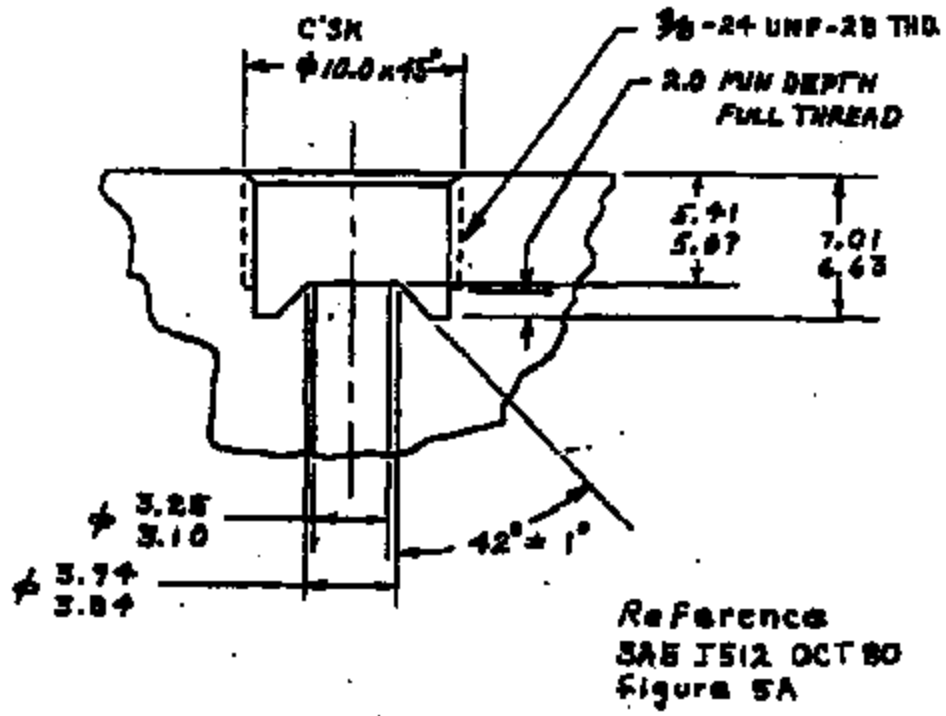
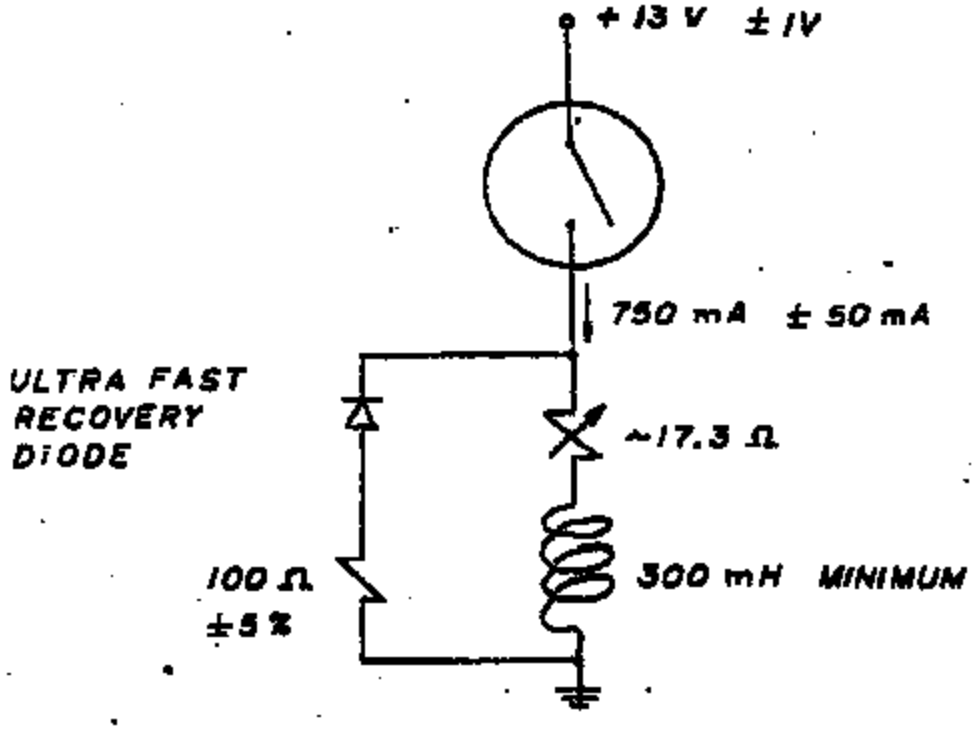


TEST FIXTURE PORT CONFIGURATION

FIGURE 3



DEACTIVATE SWITCH
TEST SET UP

FIGURE 4

DRAKE PRESSURE SWITCH REVIEW

12/22/98

	NAME	ORGANIZATION	PHONE
	FRED PORTER	FORD AVT EESE	(313)84-53722
	JOLA LOTT	AVT MATLS ENGINEERING	(313)24-88641
ZDEERING	ZANDRA DEERING	LVC - SAFETY ENGR.	(313) 97-41163
	Jim Gregoire	AVT EESE OPD	(313) 33-79962
	Steve LaRoche	Ford Central Labs	313 8454876
	NORMAN LAPOINTE	AVT-DES. ANAL.	313 99/42686
	Robert Sharpe	Field Sales - TI	(248) 305-5729
	Bryan Dague	Design Eng. Sup	(508) 236-3234

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12/10/98

Switch current ? — Speed control deactivat switch

Brake fluid ignition?

Are Service Parts Involved ?

Was cruise control standard in Town Car

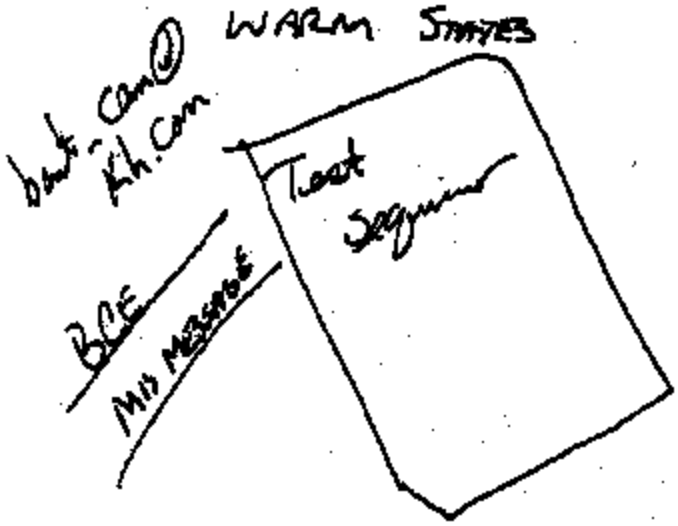
Repairs are ambiguous

Is speed control standard / optional on CVGM

Contact for future NHTSA MEETINGS

CARS ON ROAD

WARM STATES



92 Town Car Mtg - brake issues discussed
Jim Lindgren & TOM MASTERS
Joe Quasny
Mike Fodera
Fred Porter
3 GEN
→ Planned on brake training in EVTM
Brake Warning Switch called Speed Control Deactivation Switch
Locate in PER Tb prop Tahoe
Supplier = Sunfaces

QUESTIONS
- Is brake fluid Hygroscopic — brake pressure switch
- will brake fluid explode if brake light at all times and overheated?
- Is Speed control ETD on Town Car
- How similar is Town Car + Sable per quoted P/N, packaging, etc
- Does Town Car VIN's with infinity issue bad passive service repair.
- Need single point contact for chassis brake switch.
- Why is this part 92 only

IS SPEED CONTROL SWITCH HOT ON ALL VEHICLES

92 Town Car Mfg – brake pressure switch
Dim Endgame of TOM MASTERS
Joe Quigg
Mike Fodera
Fred Porter
SEEN
→ Plowed on Bright Evening for EVTM
Brake Warning buckof called Speed Control Deactivation switch
Combo in PER for prop failed
Supplies = Surfacer

QUESTIONS
- Is brake fluid flammable
- will brake fluid splatter if combo hot at all times brake pressure switch and interconnections

- Is Speed control STD on Town Car
- Need circuits in Town Car + Sable for switch P/N, packaging, etc.

- Does Town Car VIN with safety issues had previous service repairs.
- Need single point contact for chassis brake switch.
- Why is this part 92 only

IS SPEED CONTROL SWITCH HOT ON ALL VEHICLES

12/10/98

Switch current ? — Speed control deactivation switch

Brake fluid ignition?

Are Service Parts Involved ?

Was cruise control standard on Town Car

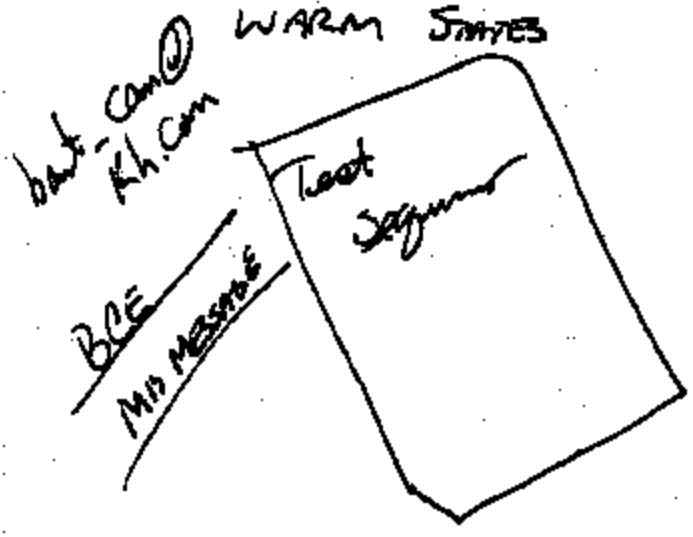
Reports are ambiguous

Is speed control standard optional on CVGM

Contact for future NHTSA MEETINGS

CARS ON ROAD

WARM STATES



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* Note printed by FPORTER on 17 Dec 1998 at 08:46:16 *
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From: FPORTER --DRBN007 Date and time 12/17/98 08:46:37
To: LBROWN --DRBN005

FROM: F. J. Porter USART(UTC -05:00)
Subject: (U)

FYI.

Regards,
Fred Porter CV - fporter fporter@ford.com
Chassis H/E Systems Applications (313)845-3722
Bldg 5 - Mail Drop 5030 - Cubicle 3E004 fax: 390-4145
*** Forwarding note from FPORTER --DRBN007 12/17/98 00:48 ***
To: WABRAMCZ--DRBN005 RCLAYTON--DRBN008
BEGEN --DRBN007 RENGLIS1--DRBN005
JEVANS8 --DRBN005 JGREGOIR--DRBN005
KGRIBBLE--DRBN008 NLAPOINT--DRBN005
JMCINERN--DRBN008 JNEME --DRBN005
RNEVI --DRBN005 GSTEVEN1--DRBN005
CTHOMAS5--DRBN005 DGOEL --DRBN005
HWELFER3--DRBN006

FROM: F. J. Porter USART(UTC -05:00)
Subject: (U)

1992-1993 Town Car F2VC-9F924-A Brake Pressure Switch Investigation

TEAM:

AVT EESE Chassis Electronics:	Fred Porter	x84-53722	fporter
AVT Chassis Engineering:	Joe Evans	x32-23832	jevans8
	Barry Egen	x32-39512	begen
AVT EESE EOS:	Rob English	x33-73225	renglis1
AVT Design Analysis:	Norm LaPointe	x59-42686	nlapoint
AVT EESE OPE:	Jim Gregoire	x33-79962	jgregoir
EESE Prod. Veh. Safety:	William Abramczyk	x32-23284	wabramcz
	Ray Nevi	x59-47688	rnevi
Large Luxury VC:	Joe Neme	x39-08133	jneme
	Ron Clayton	x32-24025	rclayton
Large Luxury VC Safety:	John McInerney	x32-20276	jmcinern
AVT Materials Engineering:	Ken Gribble	x32-38658	kgribble
	Clark Thomas	x59-41313	cthomas5
	Greg Stevens	x32-36686	gstaven1

INFORMATION:

NHTSA letter: PE98-055

Vehicles identified: 21 initially identified.
20 additional vehicles reported since publication of the investigation.

Warranty: A total of 89 warranty claims are identified in AWS on the F2VY-9F924-A for 1992 and 1993 Town Cars.

Two CQIS reports [redacted] mention underhood fire

in connection with the brake pressure switch.
NJTAA135 occurred at 51,500 miles.
VDUAA322 occurred at 56,802 miles.

Supplier: The pressure switch was manufactured by Texas Instruments. The switch was purchased in assembly with the brake proportioning valve bought from Surfaces.

Contacts: Surfaces - Mike Thomas (248)543-6520 [HILITE Industries]
TI - Andy McGuirk (508)236-3080.

Function: The brake pressure switch is a redundant switch for turning off the speed control function.

ON-GOING ACTIVITY:

Norm LaPointe and Clark Thomas will meet with engineers from Central Laboratory to X-ray one part on 12/17/1998.

QUESTIONS: (in no particular order)

1) What is the normal current in the brake pressure switch?

2) Was cruise control standard on Town Car in 1992 and 1993?

3) Under what circumstances is brake fluid flammable?

4) What is the repair history for vehicles that have exhibited a problem?

5) What other vehicles use this brake pressure switch? What are their electrical configurations?

6) Is this switch still in use? If not, why not? If so, what design changes have been implemented since 1992/1993?

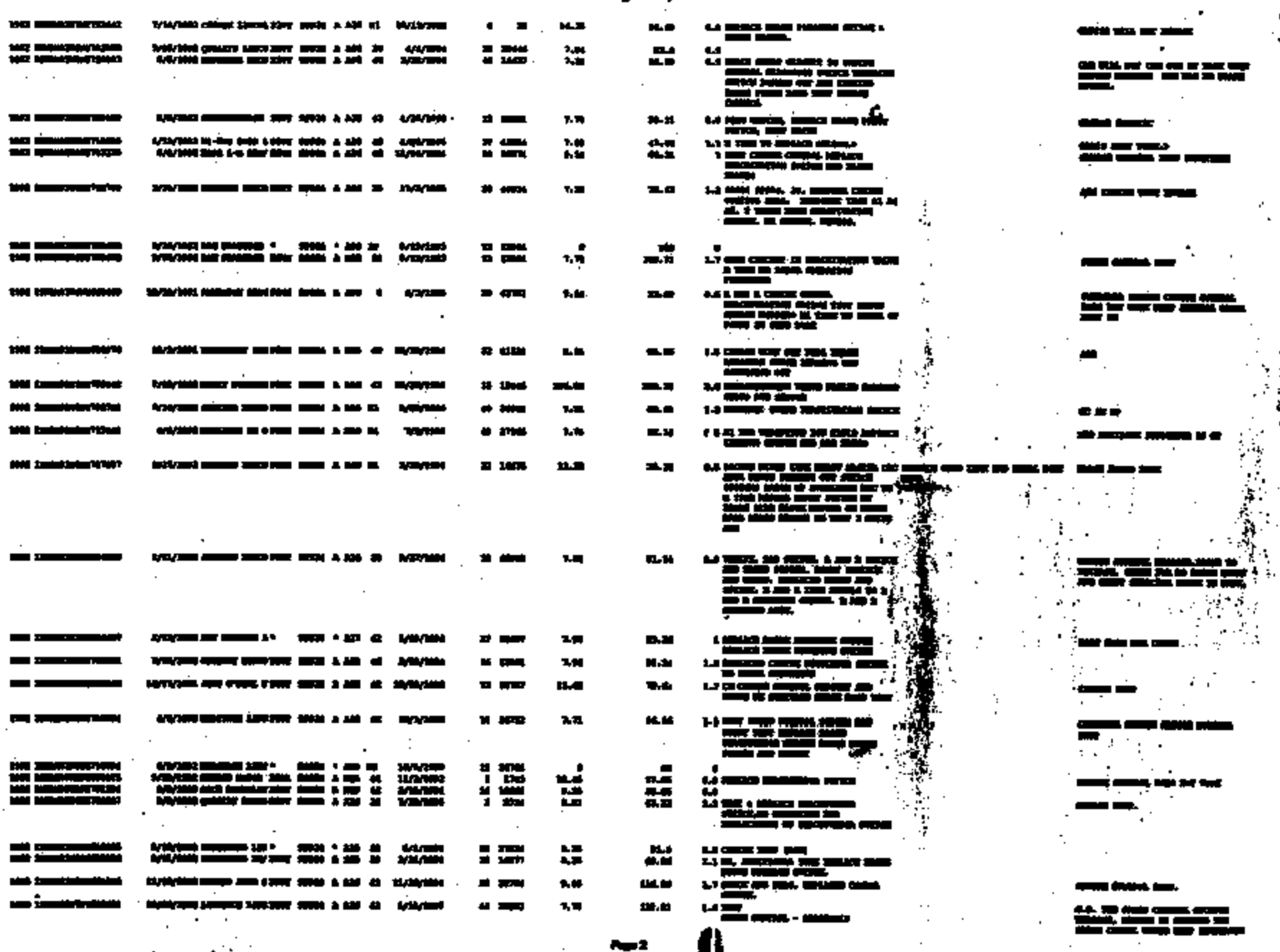
7) What fault codes are stored if the brake pressure switch fails?

Regards,
Fred Porter OV - fporter fporter@ford.com
Chassis E/E Systems Applications (313)845-3722
Bldg S - Mail Drop 5030 - Cubicle 3E004 fax: 390-4145

[illegible]

[redacted]

[redacted]



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