EA02-025

FORD 10/27/03

APPENDIX N

BOOK 25 OF 61

PART 2 OF 5

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Calendar for SREIMERS

SREIMERS

February 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 3:15PM - 5:15PM C3P Commodity Reviews w/C.Wilson & EHSE Mgrs. Bldg 5, Conf Rm 1B010	**2** 07:00AM - 5:00PM U152 RAS Design Review for IPP FTDC 245	**3** 07:00AM - 5:00PM U152 Ras FMEA FTDC rm 169	**4** 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 NOON - 2:00PM U222/228 Air Suspension System FMEA development & review. Bldg.#5, 3A-039 2:00PM - 3:00PM Brake Pressure Switch building 5 conf rm 3A039 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 2C062	**5** 08:00AM - 10:00AM U222/228 Air Suspension System FMEA. Bldg.#5, 3A-039 10:00AM - 11:00AM Section Mtg BL53A019 2:00PM - 3:00PM Brake Pressure Switch building 5 3A039	*6*
7	**8** 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 10:00AM - 11:00AM Panther Chassis PMT LVC, CR. 24G14A 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 2:30PM - 3:30PM Air Suspension On/Off Switch Elimination BLI Team Meeting BL53A019	**9** 08:15AM - 09:00AM Don Robertson, Speed Control @ my desk 09:00AM - 10:00AM FN145 Steering Systems. BL53A079 10:00AM - 11:00AM Meet Aziz Rehman from TI Fred's Desk 2:00PM - 3:30PM U152/U231 Air PDC2PC52	**10** 11:00AM - NOON CVSA Status on U231 PDC 2:00PM - 3:00PM Brake Pressure Switch bldg 5 3A017 2:30PM - 3:30PM 4WAS tools 3a019 floros	**11** 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 11:00AM - NOON Section Lunch Cafe HAWAII 4:00PM - 5:00PM Technical Review Meeting Building #1, Executive Conf. Rm. 13E112	**12** 07:00AM - 5:00PM pers 09:00AM - 10:00AM U152 Freezer Truck Testing Overview PDC2DM10 10:00AM - 11:00AM Section Mtg BL53A019 1:00PM - 2:30PM V-184 Air Suspension S/W Design specification BL53A019	*13* 08:00AM - 6:00PM Reviewed Town car, Grand Marquis, Crown Vic and COntinental Owner manuals for MY2000 and submitted changes.
14	**15** 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019	**16** 2:00PM - 3:30PM EH52/U231 Air PDC2PC52 2:00PM - 4:00PM Dome Switch, Alternative	**17** 10:30AM - NOON 2e062 D Goel staff mtg 1:00PM - 2:00PM Chassis E/E SDS BL53A019	**18** 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 NOON - 2:30PM	**19** 10:00AM - 11:00AM Section Mtg BL53A019 1:00PM - 2:30PM V-184 (Air Suspension) S/W Design	*20*

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	10:00AM - 11:00AM Paulus Chassis PMT LVC, CR 24G14A 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 2:30PM - 4:00PM U152 FMEA	3a017, bldg 5	2:00PM - 4:00PM Brake Pressure Switch building 5 3A039 3:00PM - 5:00PM vistcon sw process 3a019	u222 strategy 3a019 1:00PM - 1:30PM Town Car Investigation #5, 2A019 3:00PM - 5:00PM C3P IE Methods Meeting Bld 5, CR# 2C062	Specification development BL53A019 4:00PM - 5:00PM 1992-93 Lttc. Town Car Underhood Fires (NHTSA Inq. PE98-055) Bldg. #1 ECR 1JE112	
21	22 9:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 2:30PM - 3:30PM Air Suspension On/Off Switch Elimination HLJ Team Meeting BL53A019	23 9:00AM - 11:00AM DOW Rep Meeting bldg 5 3A017 2:00PM - 3:30PM U152/U231 Air PDC2FC52	24 12:30PM - 3:00PM U222/U228 Air Suspension Strategy B#5, 3A017 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	25 9:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 3:00PM - 4:00PM Deepak and Fred 3:00PM - 5:00PM C3P IE Methods Meeting Bld 5, CR# 2C062	26 10:00AM - 11:00AM Section Mtg BL53A019 1:00PM - 2:30PM V-184 Air Suspension S/W Design specification BL53A019	27
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Calendar for SREIMERS

SREIMERS

March 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 06:45AM - 5:00PM MPG Joe Gwisdalla 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 10:00AM - 11:00AM Panther Chassis PMT LVC, CR 24G14A 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	2 08:00AM - 5:00PM mpg town car testing Joe Gwisdalla 2:00PM - 3:30PM U152/U231 Air PDC2FC52	3 10:30AM - 11:30AM Profit Sharing Celebration BLS2C062 12:30PM - 3:00PM U222/U228 Air Suspension Strategy B#5, 3A017 1:00PM - 2:00PM Chassis E/E SDS BL53A019 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	4 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 12:30PM - 2:00PM Air Suspension Sub-System FMEA My Desk 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 2C062	5 10:00AM - 11:00AM Section Mtg BL53A019 NOON - 2:00PM U222 System FMEA review. Bldg. #5, 3A-039 1:00PM - 2:30PM V-184 (Air Suspension) S/W Design Specification development BL53A019	6
7	8 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 09:15AM - 4:45PM U152/U231 Chassis Design Review PDC GH-A32 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 2:30PM - 3:30PM Air Suspension On/Off Switch Elimination BLI Team Meeting BL53A019 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	9 09:00AM - 10:45AM Brake Pressure Switch Connector Bldg 5 3A017 1:30PM - 3:00PM Air Susp Voltage Drop Simulation -Rescheduled Tuyen's desk 2:00PM - 3:30PM U152/U231 Air PDC2FC52	10 10:00AM - 11:00AM SIT and brake switch overheating SRL-1513 (Ed Sickafus office) 12:30PM - 3:00PM U222/U228 Air Suspension Strategy B#5, 3A017 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	11 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 2:00PM - 4:00PM SIT and brake switch overheating SRL-1529 (near Ed Sickafus office) 3:00PM - 4:00PM RAS Module Relocation (2002 FN145) 11B045	12 09:00AM - 10:00AM Brake Pressure Switch Connector bldg 5 3a017 (tentative) 10:00AM - 11:00AM 3a017 H khalaf 2002 EN114 RAS mtg	13

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14	15	16	17	18	19	20
	09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 10:00AM - 11:00AM Panther Chassis PMT LVC, CR 24G14A 3:30PM - 4:00PM 1992 93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	12:30PM - 2:30PM 2001 / 2002 Panther Design Aid Meeting LVC 2:00PM - 3:30PM U152/U231 Air PDC2FC52	07:00AM - 6:00PM Brake Pressure Switch Investigation 1:00PM - 2:00PM Chassis E/E SDS BL53A019 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	07:00AM - 6:00PM Brake Pressure Switch Investigation 12:30PM - 1:30PM Ground Fault Circuit Interupter bldg 5 3a019 (west end of bldg) or FRL 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 2C062	07:00AM - 6:00PM Brake Pressure Switch Investigation 10:00AM - 11:00AM Section Mtg BL53A019	
21	22	23	24	25	26	27
	07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 2:30PM - 3:30PM Air Suspension On/Off Switch Elimination BLI Team Meeting BL53A019	07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 3:30PM U152/U231 Air PDC2FC52	07:00AM - 6:00PM Brake Pressure Switch Investigation 11:15AM - 12:45PM Group Lunch Mongolian Barbeque 1:00PM - 1:30PM BLI - Replace gold plated wheel speed sensor terminals Bldg #5, 3A019 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 09:30AM - 11:00AM Program review for UN93 Height Sensor Bldg 5, CR 3A017 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 2A055	07:00AM - 6:00PM Brake Pressure Switch Investigation 08:00AM - 5:00PM Spirit of Ford FTDC, Room 262 (South)	
28	29	30	31			
	07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 10:00AM - 11:00AM Panther Chassis PMT LVC, CR 24G14A 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM U152 Rear Air Suspension Voltage Drop Analysis PDC Conference Table @ 1DF60 2:00PM - 3:30PM U152/U231 Air PDC2FC52	07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039			

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Calendar for SREIMERS

SREIMERS

April 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 07:00AM - 6:00PM Brake Pressure Switch Investigation 08:30AM - 10:00AM Tukico., Thermal Breaker 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 20062	2 07:00AM - 6:00PM Brake Pressure Switch Investigation 10:00AM - 11:00AM Section Mtg BL53A019 1:00PM - 2:30PM V-184 (Air Suspension) S/W Design Specification development BL53A019	3
4	5 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 10:00AM - 11:00AM Panther Chassis PMT LVC, CR 24G14A 1:00PM - 2:00PM U222/U22# Chassis E/E Subsystem PAT. Bldg.#5 3A-047 2:30PM - 3:30PM Air Suspension On/Off Switch Elimination BLI Team Meeting BL53A019 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	6 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 3:30PM U152/U231 Air PDC/PC52	7 07:00AM - 6:00PM Brake Pressure Switch Investigation 07:30AM - 08:00AM Speed Control Deact. switch CCRG Update T. Donovan's Office 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	8 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 20062	9 07:00AM - 6:00PM Brake Pressure Switch Investigation 10:00AM - 11:00AM Section Mtg BL53A019 1:00PM - 2:30PM V-184 Air Suspension S/W Design specification BL53A019	10
11	12 07:00AM - 6:00PM Brake Pressure Switch Investigation	13 07:00AM - 6:00PM Brake Pressure Switch	14 07:00AM - 6:00PM Brake Pressure Switch	15 07:00AM - 6:00PM Brake Pressure Switch Investigation	16 07:00AM - 6:00PM Brake Pressure Switch Investigation	17

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	09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 5:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	Investigation 2:00PM - 3:30PM U152/U231 Air PDC2PC52	Investigation 10:00AM - NOON Speed Control De-Activation Switch T. Donovan's Office #5 Rm 1A043 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 10:00AM - NOON Speed Control De-Activation Switch T. Donovan's Office #5 Rm 1A043	10:00AM - 11:00AM Section Mtg BL53A019 10:00AM - NOON Speed Control De-Activation Switch Concern T. Donovan's Office #5 Rm 1A043 2:20PM - 3:40PM MY2002 EN114/FN145 Air suspension' VISTEON 22A01	
18	19 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 10:00AM - 11:00AM Speed Control De-Activation Switch Concern T. Donovan's Office #5 Rm 1A043 2:30PM - 3:30PM Air Suspension On/Off Switch Elimination BLI Team Meeting BL53A019 3:30PM - 4:30PM Technical Review Meeting Bldg. #1, Executive Conference Room 13E112	20 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 3:30PM U152/U231 Air PDC2PC52	21 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	22 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 11:15AM - 12:15PM BTR Compressor thermo TRip BLDG#5 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 2C062	23 07:00AM - 6:00PM Brake Pressure Switch Investigation 07:30AM - NOON All Hands Meeting World Headquarter Auditorium 10:00AM - 11:00AM Section Mtg BL53A019 10:00AM - NOON Rear Air Suspension Voltage Drop PDC, ID-J58 or Conf.task ID-F60 1:00PM - 2:30PM V-184 Air Suspension S/W Design specification BL53A019	24
25	26 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 1:00PM - 2:00PM Proposed Revisions to CE-SDS Details 8772 8785 BL53A039 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	27 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 3:30PM U152/U231 Air PDC2PC52	28 07:00AM - 6:00PM Brake Pressure Switch Investigation 1:00PM - 2:00PM Chassis E/E SDS BL53A019 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	29 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 2C062	30 07:00AM - 6:00PM Brake Pressure Switch Investigation 08:30AM - 09:30AM '92-'93 Underhood TownCar Deact Switch Bldg#5 10:00AM - 11:00AM Section Mtg BL53A019	

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Calendar for SREIMERS

SREIMERS

May 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 BCR 13E112	4 07:00AM - 6:00PM Brake Pressure Switch Investigation 12:30PM - 2:30PM 2001 / 2002 Panther Design Aid Meeting LVC 2:00PM - 3:30PM U132/U231 Air PDC2PC52	5 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 4:00PM Brake Pressure Switch Bldg S 3A039	6 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 11:00AM - NOON Notice of a meeting La Riviera (Tullio's) 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 20062 3:30PM - 4:30PM Technical Review Meeting Bldg. #1, Executive Conference Room 13E112	7 07:00AM - 6:00PM Brake Pressure Switch Investigation 10:00AM - 11:00AM Section Mtg BL53A019 3:00PM - 4:30PM Contingency Action Team Meeting - Brake Pressure Switch DSC1-A	8
9	10 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 BCR 13E112	11 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 3:30PM U132/U231 Air PDC2PC52	12 07:00AM - 6:00PM Brake Pressure Switch Investigation 1:00PM - 2:00PM Chassis E/E SDS BL53A019 2:00PM - 4:00PM Brake Pressure Switch Bldg S 3A039	13 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24E01 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, CR# 20062	14 07:00AM - 6:00PM Brake Pressure Switch Investigation 10:00AM - 11:00AM Section Mtg BL53A019	15
16	17 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS	18 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 3:30PM	19 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 4:00PM	20 07:00AM - 6:00PM Brake Pressure Switch Investigation 11:00AM - NOON **Rescheduled**	21 07:00AM - 6:00PM Brake Pressure Switch Investigation 10:00AM - 11:00AM Section Mtg BL53A019	22

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	Anita Malhotra BL53A019 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	U152/U231 Air PDC2FC52	Brake Pressure Switch Bldg 5 3A039	Tullio's	1:00PM - 2:00PM Notice of a meeting QMP-555	
23	24 07:00AM - 6:00PM Brake Pressure Switch Investigation 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047 1:30PM - 2:30PM 3a017, U231 CVSA, Winsted 3:30PM - 4:00PM 1992-93 Town Car Underhood Fires (NHTSA Inquiry PE98-055) Bldg. #1 ECR 13E112	25 07:00AM - 6:00PM Brake Pressure Switch Investigation 2:00PM - 3:30PM U152/U231 Air PDC2FC52	26 07:00AM - 6:00PM Brake Pressure Switch Investigation 1:00PM - 2:00PM Chassis E/E SDS BL53A019 2:00PM - 4:00PM Brake Pressure Switch Bldg 5 3A039	27 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:30AM - 11:00AM FN145/EN114 Electrical PMT Meeting Building #2, Conference Room 24ED1 3:00PM - 5:00PM C3P EE Methods Meeting Bld 5, Clk# 2E062	28 07:00AM - 6:00PM Brake Pressure Switch Investigation 10:00AM - 11:00AM Section Mtg BL53A019	29
30	31 07:00AM - 6:00PM Brake Pressure Switch Investigation 09:00AM - 10:00AM CHASSIS E/E SDS Anita Malhotra BL53A019 10:00AM - 11:00AM Panther Chassis PMT LVC, CK 24G14A 1:00PM - 2:00PM U222/U228 Chassis E/E Subsystem PAT. Bldg.#5 3A-047					

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Evaluation Process
Brake Pressure switch / Harness

Brake Pressure Switch Plan Updated 2/18/99
Evaluation Plan for Field Returns

Sw #		Date of update	
Mileage		Sw Date Code	
Sw P/N			

Category	Step #	Action	Notes/Data	Comments
Field Info	1	Log Field Info into Switch Log.xls		
	2	Photograph Switch		
	3	Record any unusual external visual observations		
	4	Check for Connector engagement		If not correct conduct X-Ray to determine fit-up between base lip and red seal
Switch + Connector Assembly	5	Wire 1(LG/R)to Wire 2(ORANGE) Resistance		
	6	Wire 1(LG/R) to Hexport Resistance		
	7	Wire 2(ORANGE) to Hexport Resistance		
	8	Separate Harness from Switch		
Connector Only	9	Verify Connector Seal		Visual check of Red Seal, Dirt lines, Indentation mark.. Indentation mark must be 360 degrees.
	10	Wire 1(LG/R) to Wire 2(ORANGE) resistance		
	11	Current Leakage Wire 1(LG/R) to Wire 2(ORANGE)		
	12	Check for full engagement of connector		Visual check of dirt lines on mated switch base
	13	Check wire insulation		
	14	Check wire gray seals		
	15	Cut wire insulation to check for corrosion		Cut insulation longitudinally to check for wicking along wires. If signs of corrosion, identify color, save samples for chem l.d.
Switch External Unpressurized	16	Assemble Switch to Calibration Stand		
	17	Spring Terminal to Stationary Terminal Resistance		Stationary Terminal is closest to the outside connector keying tab.
	18	Spring Terminal to Hexport Resistance		
	19	Stationary Terminal to Hexport resistance		

Steve Reimers, 313 390 3286,
sreimers@ford.com
file evalproc.xls

original 2/18/99
revised tbd

3713 6443

Evaluation Process
Brake Pressure switch / Harness

	20 Base to Hexport Resistance	
	21 Current Leakage Spring Terminal to Hexport	
	22 Current Leakage Stationary Terminal to Hexport	
	23 Voltage drop at 750 mA	
Switch External Pressurized	24 Switch Opening Pressure	Do not perform on parts from underhood fires, as may disturb diaphragm/other condition
	25 Switch Closing Pressure	Do not perform on parts from underhood fires, as may disturb diaphragm/other condition
	26 Proof Test for Leakage	Do not perform on parts from underhood fires, as may disturb diaphragm/other condition
	27 Repeat Steps 17 through 23 at 180 psig	
Switch Internal	Procedure to remove aluminum crimp ring	
	Use aluminum foil (or plastic if Ford prefers) to mask the analysis surface.	
	Also create a paper/tape shield to further reduce chance of contamination during cutting of crimp ring.	
	Place a piece of tape over the area to be cut.	
	Cut crimp ring using jewelers saw or Dremel cutoff wheel	
	Cut corners of ring at 180 degree orientation	
	Unfold crimp ring	
	Optically examine revealed surfaces. Take optical photographs (Digital camera with macro lens plus instant microphotography) and document observations where appropriate.	
	Inside surface of crimp ring.	
	Seal area and underside of base	
	Top of cup	
Analytical Techniques SEM/EDX/IR	Assess Need for Analytical Techniques	
	Start SEM-EDX (Scanning Electron Microscope with Energy Dispersive Analysis of X-rays) analysis on the inside of the ring and on various surfaces of the plastic base.	
	Reprotect the top surface and remove the cup	
	Optically document all revealed surfaces starting with cup.	
	Meanwhile, start SEM-EDX analysis on top side of cup. . Particularly look for evidence of corrosion or arcing	
	Particularly focus in on the edges of the ceramic pin guide and on the indented ring that lines up with interior wall of the switch cavity	
	Particularly look for evidence of corrosion or arcing	
	Decide if we should try to flake off any of the overlaying debris to try to examine the underlying metal surface.	
	Proceed to perform SEM-EDX analysis on other component surfaces revealed by removal of cup.	
Data Entry	Log All data from this sheet into Switch Log	
	Photographs, Elemental maps etc must be retained and	
	referenced by Switch #	

3713 6444

Data Log
Brake Pressure Switch

C	2003		2003	Mar-92	NY703705	Underhood Fire								Analysis in Progress	
1	2006				NX762858	Reference		79164	OPEN						
1	2028	no leak			PY638990	Reference									
8	2045		2045	May-92	NY733191	Underhood Fire		106610							
4	2048	no leak			PY628170	Reference		88087	OPEN						
Memphis	2056	leak		Sep-92	PY622977	Sw. Fire					crack	crack	crack	Analysis Complete	
7	2059	no leak			NX728439	Reference		86922	OPEN						
Baton Rouge, LA	2062	leak			PY605826	Dealership Return		83003		yes	crack	crack	crack	Analysis in Progress	Switch
5	2063	no leak			PY610384	Reference		73115							
5	2064	no leak			py632329	Reference		98349						Analysis in Progress	
14	2071				PX623672	Reference		94145	OPEN						
Davenport, FL	2080		2080	May-92	NY736847	Underhood Fire	100000+			?	burned	burned	burned	Analysis in Progress	Switch
13	2080				NY740208	Reference		53237	OPEN						
Aurora, IL	2089	abstic		Aug-92	PY614995	Underhood Fire	?			?	burned	burned	burned	Analysis in Progress	Switch, #12 15A Fuse
8	2114		2114	Jun-92	NY745119	Underhood Fire								Sw. not available	
11	2115	no leak			NY757408	Reference	??								
F	2126	leak			NY760055	Cruise Inop			4MEGAOHM	yes	crack	crack	crack	Analysis Complete	
Memphis, TN	2128				PY734410	Dealership Return		156688		yes	crack	crack	crack	Analysis in Progress	Switch
E	2137	noleak			NX758774	Reference			OPEN	no	worn, no crack	worn, no crack	worn, no crack	Analysis Complete	
12	2233				PX665270	Reference		66689	OPEN						
9	2260	no leak			PX637768	Reference	??		OPEN						
10	2272	no leak			PX151140	Reference		72814							
22	2274				??	Reference	??								
A	2281		2281	Nov-92	PY665224	Underhood Fire					no info	no info	no info	Analysis Complete	
10	2281	no leak			PY669375	Reference		82224	OPEN						
18	2308				PY688795	Reference			OPEN						
3	3015	no leak			PY724043	Reference		71337	OPEN						
8	3025	no leak			PX160223	Reference		65614	OPEN						
4	3025	no leak			PX163312	Reference		40642							
6	3025	no leak			py729611	Reference		47325						Analysis in Progress	
11	3026	no leak			PY726066	Reference		91358	OPEN						
2	3053	no leak			PX163920	Reference		199999							
15	3081				PY695374	Reference	??		OPEN						
7	3081	no leak			PY750172	Reference	??								
12	3085	no leak			PY742858	Reference	??								
13	3089	no leak			PY7433413	Reference		105048							
9	3098	no leak			PY758158	Reference	??								
3	3295	no leak			RX841595	Reference	??								
Gibonston, FL	?		2003	Mar-92	NX714559	Underhood Fire	58 - 60,000			?	tbd	tbd	tbd	to be started	Switch, Portion of Master Cyl, Wiring Harness
Naples, FL	?		2003	Mar-92	NY706341	Underhood Fire		73925		?					Brake Fluid Only
16	??				BY639884	Reference		97199	OPEN						
6	??		2020	Apr-92	NY724366	Underhood Fire	??								
23	??				PX629934	Reference		68302	OPEN						
21	??				PX643515	Reference		43531	OPEN						
17	??				PY650225	Reference		72114	OPEN						

3713 6445

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revised 2/15/99

Data Log
Brake Pressure Switch

20	??			PY754575	Reference		42821	OPEN					
19	??			PY774256	Reference		87549	OPEN					
Sw ID	Sw Date Code			VIN	Event	Mileage	Term-Hexport	Leaker?	Kapton #1	Kapton #2	Kapton #3	Present Status	Parts Received
ID		leak		VX145373	Cruise Inop		4.8MEGAOHMS	yes	crack	crack	crack	Analysis Complete	

Log Updated 3/30/1999 build data

Resistance

From TX trip of 2/10 to 2/12, John McInerney Group
OASIS

EAA

3713 6446

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revised 2/18/99

Summary of Brake Switch Analysis

Sample Information						
VIN	Sample	MY/Vehicle	Prefix/ Date Code	Condition	Conclusion/Comments	
[redacted]	Memphis (Reddish)	1993 TC	F2VC22686	Partially burned	Embrittlement and subsequent cracks in Kapton seal formed leak path for brake fluid to enter switch cavity. Transfer of brass contact material to the cup suggests that an electrical cell formed between the hot (+) contacts and the grounded (-) cup.	Brake fluid in switch cavity may have acted as electrolyte for the cell. Dezincification and stress corrosion cracking of stationary contact indicates that moisture and other corrodents may have been present with brake fluid.
	A	1993 TC	????/2261	Burned	Transfer of brass contact material to cup suggests that electrical cell may have occured. Too badly damaged to determine if Kapton leaked or if brake fluid was present in switch cavity.	
	B	1992 TC	F2VC2214	Burned	Transfer of brass contact material to cup suggests that electrical cell may have occured. Too badly damaged to determine if Kapton leaked or if brake fluid was present in switch cavity.	
	C	1992 TC	F2VC22003	Burned	Transfer of brass contact material to cup suggests that electrical cell may have occured. Too badly damaged to determine if Kapton leaked or if brake fluid was present in switch cavity.	
	D	1997 CV	F2AC7777?	Apparent leakage	Embrittlement and subsequent cracks in Kapton seal formed leak path for brake fluid to enter switch cavity. Transfer of brass contact material to the cup suggests that an electrical cell formed between the hot (+) contacts and the grounded (-) cup.	Brake fluid in switch cavity may have acted as electrolyte for the cell. Failure mode appears similar to Memphis switch.
	E (#11)	TC	F2AC2137	No leaks or other apparent problems	No apparent problem with switch other than incipient damage to Kapton seals.	

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Summary of Brake Switch Analysis

Sample Information					Conclusion/Comments	
VIN	Sample	MY/Vehicle	Prefix/ Date Code	Condition		
[redacted]	F	TC	FZVC/2128	Apparent leakage	Embrittlement and subsequent cracks in Kapton seal formed leak path for brake fluid to enter switch cavity. Transfer of brass contact material to the cap suggests that an electrical cell formed between the hot (+) contacts and the grounded (-) cup.	Brake fluid in switch cavity may have acted as electrolyte for the cell. Stress corrosion cracking of stationary contact indicates that moisture and other corrodants may have been present with brake fluid. Failure mode appears similar to Memphis switch.
	3	TC	3015	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	4	TC	2048	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	5	TC	2084	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	6	TC	3025	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	7	TC	2089	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	8	TC	3025	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	9	TC	2281	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	10	TC	2281	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	11	TC	3025	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	

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Summary of Brake Switch Analysis

Sample Information					
VIN	Sample	MY/Vehicle	Prefix/ Date Code	Condition	Conclusion/Comments
[redacted]	2	CV-PC	3063	No leaks or other apparent problems	Switch did not open when pressurized. Cup appears to have been corroded by water intrusion. Transfer pin frozen in place by corrosion product. No evidence of brake fluid leakage or formation of electrical cell.
	3	GM	3295	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.
	4	CV-PC	3026	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.
	5	TC	3053	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.
	6	TC	??	Underhood fire.	Severely damaged by fire. No further analyses performed.
	7	TC	3063	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.
	8	TC	2046	Underhood fire.	Severely damaged by fire. No further analyses performed.

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Summary of Brake Switch Analysis

Sample Information					Conclusion/Comments	
VIN	Sample	MY/Vehicle	Prod'n Date Code	Condition		
[redacted]	9	TC	3066	No leaks or other apparent problems	Switch did not open when pressurized. Shows current leak path between contacts and ground. Cup has been corroded. Transfer pin fosses in place by corrosion products. Moisture in cavity appears to have formed current leak path.	No evidence of material transfer from contacts to cup. No evidence of leak in Kapton seals. Appears to be different failure mode than Memphis switch.
	10	CV	2272	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	11	TC	2116	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	12	TC	3068	No leaks or other apparent problems	Switch did not open when pressurized. Shows current leak path between contacts and ground. Analyzed by SRL.	
	13	TC	3068	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	
	Oasis	TC	3062	Dealership return, apparent brake fluid leak.	Resistance measurements show current leak path between contacts and between contacts and ground. Kapton seals appear to have formed leak path for brake fluid to enter switch cavity. Transfer of contact material to cup suggests electrical cell may	occurred between the hot (+) contacts and the grounded (-) cup. Brake fluid may have acted as electrolyte. Failure mode similar to Memphis switch.

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Summary of Brake Switch Analysis

Sample Information					Conclusion/Comments	
VIN	Sample	MY/Vehicle	Prefix/ Date Code	Condition		
[redacted]	Dealership return, apparent brake fluid leak.	TC	2129	Dealership return, apparent brake fluid leak.	Resistance measurements show current leak path between contacts and between contacts and ground. Kapton seals appear to have formed leak path for brake fluid to enter switch cavity. Transfer of contact material to cup suggests electrical cell may	occurred between the hot (+) contacts and the grounded (-) cup. Brake fluid may have acted as electrolyte. Failure mode similar to Memphis switch.
	EAA	TC	2099	Underhood fire.	Analysis in progress.	
	EAA	TC	2880	Underhood fire.	Analysis in progress.	
	EAA	Lincoln	?	Underhood fire.	Brake fluid only. No switch to analyze.	
	EAA	GM	?	Underhood fire.	Analysis in progress.	
	?	TC	2829	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.	

3713 8451

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Summary of Brake Switch Analysis

Sample Information					Resistance Measurement, Ω												Function		
					Switch and Connector			Connector Only	Switch				Switch at 180 psi						
VIN	Sample	MY/Vehicle	Prefix/ Date Code	Condition	GRN/RD to OR	GRN/RD to Hexport	OR to Hexport	GRN/RD to OR	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Opening Pressure	Closing Pressure	Proof Test at 500psi
[redacted]	Memphis (Reddish)	1993 TC	F2VC2055	Partially burned	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	A	1993 TC	7777/2281	Burned	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	B	1992 TC	F2VC2114	Burned	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	C	1992 TC	F2VC2005	Burned	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	D	1997 CV	F2NC/7777	Apparent leaking	NP	NP	NP	NP	0.6	4.6M	NP	1.1	NP	NP	NP	NP	NP	NP	NP
	E (911)	TC	F3NC2137	No leaks or other apparent problems	NP	NP	NP	NP	0.2	Infinity	NP	6.8M	NP	NP	NP	NP	NP	NP	NP

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Summary of Brake Switch Analysis

Sample Information					Resistance Measurement, Ω															
					Switch and Connector			Connector Only	Switch				Switch at 150 psi				Function			
VIN	Sample	MY/Vehicle	Prebd Date Code	Condition	GRN/RD to OR	GRN/RD to Hexport	OR to Hexport	GRN/RD to OR	Spdmtr Term. to Stat. Term.	Spdmtr Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Spdmtr Term. to Stat. Term.	Spdmtr Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Opening Pressure	Closing Pressure	Proof Test at 300psi
[redacted]	F	TC	F2VC2125	Apparent leakage	NP	NP	NP	NP	NP	2M	NP	NP	NP	NP	NP	NP	NP	NP	NP
	2	TC	3018	No leaks or other apparen	NP	NP	NP	NP	0.2	Infinity	Infinity	11.4	Infinity	Infinity	Infinity	Infinity	134	68	No apparent leak
	4	TC	2845	No leaks or other apparen	NP	NP	NP	NP	0.3	Infinity	Infinity	1.8M	Infinity	Infinity	Infinity	Infinity	180	68	No apparent leak
	6	TC	2994	No leaks or other apparen	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	8	TC	3025	No leaks or other apparen	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	7	TC	2036	No leaks or other apparen	NP	NP	NP	NP	0.2	Infinity	Infinity	7.6M	Infinity	Infinity	Infinity	Infinity	147	70	No apparent leak
	9	TC	3035	No leaks or other apparen	NP	NP	NP	NP	0.3	Infinity	Infinity	16.5	Infinity	Infinity	Infinity	Infinity	135	68	No apparent leak
	1	TC	2280	No leaks or other apparen	NP	NP	NP	NP	6.3	Infinity	Infinity	7.5M	Infinity	Infinity	Infinity	Infinity	140	112	No apparent leak
	10	TC	2281	No leaks or other apparen	NP	NP	NP	NP	2.3	Infinity	Infinity	1.4M	Infinity	Infinity	Infinity	Infinity	137	68	No apparent leak
	11	TC	3022	No leaks or other apparen	NP	NP	NP	NP	0.2	Infinity	Infinity	Infinity	Infinity	Infinity	Infinity	Infinity	136	71	No apparent leak

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Summary of Brake Switch Analysis

Sample Information					Resistance Measurement, Ω														
					Switch and Connector			Connector Only	Switch				Switch at 180 psi				Function		
VIN	Sample	Mdl/Vehicle	Prefix/ Date Code	Condition	GRN/RD to OR	GRN/RD to Hexport	OR to Hexport	GRN/RD to OR	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Opening Pressure	Closing Pressure	Proof Test at 500psi
[redacted]	2	CV-PC	3053	No leaks or other apparent probems	0.4	Infinity	Infinity	Infinity	0.1	Infinity	Infinity	Infinity	0.1	Infinity	Infinity	Infinity	127	62	No apparent leak
	3	GM	3256	No leaks or other apparent probems	0.2	Infinity	Infinity	Infinity	0.2	Infinity	Infinity	17.7K	Infinity	Infinity	Infinity	Infinity	126	64	No apparent leak
	4	CV-PC	3026	No leaks or other apparent probems	NP	NP	NP	NP	0.1	Infinity	Infinity	Infinity	Infinity	Infinity	Infinity	Infinity	138	63	No apparent leak
	5	TC	2083	No leaks or other apparent probems	0.2	Infinity	Infinity	NP	0.2	Infinity	Infinity	160K	Infinity	Infinity	Infinity	Infinity	151	62	No apparent leak
	6	TC	??	Undershod tire.	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	7	TC	2081	No leaks or other apparent probems	Infinity	Infinity	Infinity	Infinity	0.3	Infinity	Infinity	463K	Infinity	Infinity	Infinity	Infinity	136	66	No apparent leak
	8	TC	2046	Undershod tire.	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP

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Summary of Brake Switch Analysis

Sample Information					Resistance Measurement, Ω														
					Switch and Connector			Domestic Only	Switch				Switch at 160 psi				Pendles		
VIN	Sample	MY/Vehicle	Prefix/ Date Code	Condition	GRN/RD to OR	GRN/RD to Hexport	OR to Hexport	GRN/RD to OR	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Opening Pressure	Closing Pressure	Proof Test at 600psi
[redacted]	9	TC	3096	No leaks or other apparent problems	2	6.6M	6.1M	Infinity	1.5	6.3M	6.4M	0.4	0.1	~970K	~970K	Infinity	154	93	No apparent leak
	10	CV	2272	No leaks or other apparent problems	0.4	Infinity	Infinity	Infinity	0.4	Infinity	Infinity	6.6	Infinity	Infinity	Infinity	Infinity	139	108	No apparent leak
	11	TC	2115	No leaks or other apparent problems	NP	NP	NP	NP	0.1	Infinity	Infinity	Infinity	Infinity	Infinity	Infinity	Infinity	135	74	No apparent leak
	12	TC	3085	No leaks or other apparent problems	0.3	20.2M	21.6M	Infinity	0.2	34M	39M	68.4K	0.1	Infinity	Infinity	Infinity	146	61	No apparent leak
	13	TC	3086	No leaks or other apparent problems	0.3	Infinity	Infinity	Infinity	0.2	Infinity	Infinity	7.5M	Infinity	Infinity	Infinity	Infinity	160	70	No apparent leak
	Dealer	TC	2082	Dashes hip rotors, apparent brake fluid leak.	NP	NP	NP	NP	>750K	>250K	>360K	Infinity	>1M	>800K	>400K	Infinity	152	92	No apparent leak

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Summary of Brake Switch Analysis

Sample Information					
VIN	Sample	MY/Vehicle	Prefix/ Date Code	Condition	Conclusion/Comments
[redacted]	9	TC	3098	No leaks or other apparent problems	Switch did not open when pressurized. Shows current leak path between contacts and ground. Cup has been corroded. Transfer pin frozen in place by corrosion products. Moisture in cavity appears to have formed current leak path. No evidence of material transfer from contacts to cup. No evidence of leak in Kapton seals. Appears to be different failure mode than Memphis switch.
	10	CV	3272	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.
	11	TC	2115	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.
	12	TC	3098	No leaks or other apparent problems	Switch did not open when pressurized. Shows current leak path between contacts and ground. Analyzed by SRL.
	13	TC	3098	No leaks or other apparent problems	Examination, resistance and functional testing revealed no apparent problem with switch. No further analysis performed.
	Onsite	TC	2052	Dealership reborn, apparent brake fluid leak.	Resistance measurements show current leak path between contacts and between contacts and ground. Kapton seals appear to have formed leak path for brake fluid to enter switch cavity. Transfer of contact material to cup suggests electrical cell may occurred between the hot (+) contacts and the grounded (-) cup. Brake fluid may have acted as electrolyte. Failure mode similar to Memphis switch.

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Summary of Brake Switch Analysis

Sample Information					Resistance Measurement, Ω												Function		
					Switch and Connector			Connector Only	Switch				Switch at 180 psi						
VIN	Sample	MY/Vehicle	Pedal Date Code	Condition	GRN/RD to OR	GRN/RD to Hexport	OR to Hexport	GRN/Rb to OR	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Spring Term. to Stat. Term.	Spring Term. to Hexport	Stat. Term. to Hexport	Base to Hexport	Opening Pressure	Closing Pressure	Proof Test at 650psi
[redacted]	Oasis	7C	2139	Dealership return, apparent brake fluid leak.	NP	NP	NP	NP	>130K	>17K	>95K	Infinity	175K	>140K	>15K	Infinity	No sound	No sound	No apparent leak
	EAA	TC	2099	Undisclosed fire.	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	EAA	TC	2099	Undisclosed fire.	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	EAA	Lincoln	?	Undisclosed fire.	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	EAA	GM	?	Undisclosed	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	1	TC	2028	No leaks or other apparent problems	0.3	Infinity	Infinity	Infinity	0.3	Infinity	Infinity	6.6	Infinity	Infinity	Infinity	Infinity	165	65	No apparent leak

3719 6458

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Summary of Brake Switch Analysis

	Observations/Findings									
	Connector/Wire				Switch					
VIN	Engagement	Wires	Red Seal	Grey Seal	Hexport, Washer, Converter, Spacer, and Disc	Environmental Seal	Gasket/Kapton Seals	Cup	Base, Switch Cavity, Contacts, Terminals	
[redacted]	Could not determine.	Short length (~10 mm) no apparent exterior damage. Oxidation or tarnish beneath insulation.	Could not determine.	Appears intact. White residue in cavity contains elements typically found in dry chemical fire extinguishers.	Black residue containing glycol based material (probably brake fluid) and a metal oxalate. Indicates presence of brake fluid on fluid and switch sides of seals.	Intact. Appears to to have had good sealing.	Gasket intact; appears to have had good sealing. All Kapton seals buckled and exhibit brittle cracks which most likely formed a leak path. Damage appears to have initiated in seal closest to washer. Kapton darkened and embrittled by unknown mechanism.	Green deposits on face of cup contain elements from brass contacts, indicating transfer of contact material to cup, possibly as a result of an electrical call. Glycol based material (probably brake fluid) also present.	Base separated below crimp ring. Transfer pin and movable arm contact missing. Movable contact mailed back into switch (possibly due to sealing); appears to have occurred in later stages of arcing. Black deposit on terminal of movable contact	appears to be a sulfur compound. Stationary contact exhibits delamination, loss of material due to corrosion, and stress corrosion cracking. Green deposit on terminal of stationary contact appears to be a sulfur compound.
	Missing	Missing	Missing	Missing	Elements from contact material detected at fitting end of hexport. Silicone also detected.	Missing	Gasket missing. Charred fragments of Kapton seals remain.	Deposits on face of cup contain elements from brass contacts, indicating transfer of contact material to cup probably as an oxide, sulfide, or corrosion product.	Base, stationary contact, movable contact, transfer pin, and terminals missing.	
	Missing	Missing	Missing	Missing	Elements from contact material detected at fitting end of hexport.	Not permitted to disassemble switch.	Not permitted to disassemble switch.	Deposits on face of cup contain elements from brass contacts, indicating transfer of contact material to cup probably as an oxide, sulfide, or corrosion product.	Transfer pin and movable contact missing. Stationary contact exhibits crack in similar location as that in Memphis (Reddick) sample.	
	Missing	Missing	Missing	Missing	Elements from contact material detected at fitting end of hexport. Black residue in cavity contains traces of hydrocarbon and silicone.	Missing	Gasket appears charred. Kapton seals present, but melted together. Could not evaluate for cracks/leaks.	Deposits on face of cup contain elements from brass contacts, indicating transfer of contact material to cup probably as an oxide, sulfide, or corrosion product.	Base, stationary contact, movable contact, transfer pin, and terminals missing.	
	Missing	Missing	Missing	Missing	Black residue in hexport cavity, cs washer, and converter contain glycol based material (probably brake fluid) and a metal oxalate.	Intact and appears to have had good seal.	Gasket intact and appears to have had good seal. Kapton seals exhibit damage similar to that found in Memphis (Reddick) sample. All three exhibit brittle cracks which probably formed leak path.	Dark green deposits on face of cup contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product. Liquid in interior and on face is glycol based (probably brake fluid).	Switch cavity and terminal cavity contain glycol based material (probably brake fluid). Contacts appear intact. Dark green deposits	on movable and stationary contact contain elements from brass contact material.Terminals are clean (no apparent deposits or corrosion).
	Missing	Missing	Missing	Missing	Black residue in hexport contains glycol based material (probably brake fluid) and a metal oxalate. No apparent fluid on components inside cup.	Intact and appears to have had good seal.	Gasket intact and appears to have had good seal. Kapton seals exhibit deformation and buckling similar to that found in Memphis (Reddick) sample. Crazing on surfaces suggest incipient cracking is occurring.	Face and interior of cup appear clean and dry.	Switch and terminal cavities appear clean and dry. No apparent deposits or corrosion on terminals.	

[redacted] 9716 9457

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Summary of Brake Switch Analysis

VIN	Observations/Findings: Connector/Wires: Engagement	Connector/Wires: Wires	Connector/Wires: Red Seal	Connector/Wires: Grey Seal	Switch: Hexport, Washer, Converter, Spacer, and Disc	Switch: Environmental Seal	Switch: Gasket/Kapton Seals	Switch: Cup	Switch: Base, Switch Cavity, Contacts, Terminals
[redacted]	Missing	Missing	Missing	Missing	Black residue in hexport cavity, on washer, and converter contains glycol based material (probably brake fluid) and a metal oxide.	Intact and appears to have had good seal.	Gasket intact and appears to have had good seal. Kapton seals exhibit cleavage similar to that found in Memphis (Reddick) sample. All three exhibit brittle cracks which probably formed leak path.	Dark green deposits on face of cup contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product. Liquid in interior and on face is glycol based (probably brake fluid).	Switch and terminal cavities contain glycol based material (probably brake fluid). Stationary contact intact; shows stress corrosion cracking in progress in same location as Memphis sample. Movable contact separated, apparently due to loss of material (~25% of thickness). No evidence of heating or arc damage. Dark green deposits on contacts contain elements from brass material, as well as sulfur. Terminals exhibit green deposits that extend in from switch and terminal cavities, but do not meet.
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP
[redacted]	Missing	Missing	Missing	Missing	NP	NP	NP	NP	NP

NP = Not Performed
TBP = To Be Performed
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GM = Grand Marquis
CV = Crown Victoria
PC = Police

3713 6458

Summary of Brake Switch Analysis

VIN	Observations/Findings									
	Connector/Wires				Switch					
	Engagement	Wires	Red Seal	Grey Seal	Hexport, Washer, Converter, Spacer, and Disc	Environmental Seal	Gasket/Kapton Seals	Cup	Base, Switch Cavity, Contacts, Terminals	
[redacted]	OPNR D side not fully engaged	TBP	Intact. Impression uneven and off-center	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in wire insulation.	Black residue in fitting end of hexport. Did not analyze. Apparent rust deposits on converter, washer, and disc, as well as on interior surface of cup.	Environmental seal intact, in place, appears to have good adhesion.	Gasket intact and appears to have had good seal. Kapton seal nearest hexport exhibits deterioration and tears in teflon, but no apparent cracks in substrate. Other Kapton seals show no tears, cracks, or deterioration. No apparent leak path.	Face of cup covered with rust colored deposits containing iron and zinc (probably corrosion product of cup material). Transfer pin frozen in place by corrosion product. No evidence of a coil occurring.	Base contains what appears to be moisture (evaporated quickly once exposed to atmosphere). Movable contact discolored, but not heavily corroded near cup.	Rest of contacts and their bases appear clean. No apparent deposits or corrosion on terminals.
	Fully engaged	TBP	Intact. Impression even and deep all the way around	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in	Black residue in fitting end of hexport. Did not analyze residue. Did not disassemble switch.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).	
	OR side of connector not fully engaged	TBP	Intact. Impression even and deep all the way around	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in	Black residue with copper or rust colored globules in fitting end of hexport. Did not analyze residue. Did not disassemble switch.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).	
	Fully engaged	TBP	Intact. Impression even and deep ~80% around. Witness mark from drainage to edge of	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in wire insulation.	Rust colored deposit in fitting end of hexport. Did not analyze deposit. Did not disassemble switch.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).	
	Missing	Missing	Missing	Missing	Black residue in fitting end of hexport; did not analyze.	Missing	Did not disassemble	Exposed face covered with rust and greenish colored deposits; did not analyze.	Missing.	
	Fully engaged	TBP	Intact. Impression even and deep all the way around	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in	Black residue with copper or rust colored globules in fitting end of hexport. Did not analyze residue. Did not disassemble switch.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).	
	Missing	Missing	Missing	Missing	Still attached to prop. valve did not disassemble.	Did not disassemble	Did not disassemble	Exposed face covered with rust and greenish colored deposits; did not analyze.	Missing.	

9713 6459

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Summary of Brake Switch Analysis

PY758158	Observations/Findings									
	Connector/Wires				Switch					
VIN	Engagement	Wires	Red Seal	Grey Seal	Hexport, Washer, Converter, Spacer, and Disc	Environmental Seal	Gasket/Kapton Seals	Cup	Base, Switch Cavity, Contacts, Terminals
[redacted]	Fully engaged	TBP	Intact. Impression even, but not deep or sharp. Not as compressed as in other	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in wire insulation.	Still attached to prop. valve. Black residue in hexport cavity; did not analyze. White deposits on washer, converter, disc, and interior of cup; did not analyze - probably corrosion product of zinc plating.	Intact and appears to have had good seal.	Gasket intact and appears to have had good seal. Kapton seal around hexport exhibits delamination and possible tear in teflon, but no apparent cracks in substrate. Other Kapton seals show no tears, cracks, or delamination. No apparent leak path.	Face of cup covered with rust and white colored deposits containing iron and zinc (probably corrosive product of cup material). Transfer pin frozen in place by corrosion product. Appears moist (evaporated quickly). No evidence of a cell occurring.	Movable contact discolored, but not heavily corroded near cup. Rest of contacts and their bases appear clean. Terminals exhibit some corrosion.
	Fully engaged	TBP	Intact. Impression even and deep.	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in	Still attached to prop. valve. Did not disassemble.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).
	Fully engaged	TBP	Intact. Impression even and deep.	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in	Still attached to prop. valve. Did not disassemble.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).
	Fully engaged	TBP	Intact. Impression even and deep.	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in	Black residue in fitting end of hexport; did not analyzed at Ctl. Disassembled and analyzed by SRL.	Disassembled and analyzed by SRL.	Disassembled and analyzed by SRL.	Disassembled and analyzed by SRL.	Disassembled and analyzed by SRL. Terminals have light deposits on them.
	Fully engaged	TBP	Intact. Impression even and deep.	Intact. Wires and cavity clean below seal except for trace of oil from seal. Seal left impressions in	Black residue in fitting end of hexport; did not analyze.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).
	Missing	Missing	Missing	Missing	Black residue in fitting and contains glycol ether based material (probably brake fluid), ash residue, and other material; possibly a hydrocarbon. No apparent burn on converter, washer, or hexport.	Intact and appears to have had good seal.	Gasket is intact and appears to have had good seal. Kapton seals exhibit circumferential tears in Teflon with radial and circumferential cracking in substrate. Appears to have formed leak path. Damage appears similar to that in Memphis sample.	Face of cup covered with black residue and copper colored globules. Residue contains glycol based material (probably brake fluid) and possibly a hydrocarbon. Additional analyses of residue pending.	Switch cavity of base contains black sludge. Movable contact appears to have been corroded away. Black residue is present in terminal cavity and at bases of terminals. Terminals appear clean otherwise.

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Summary of Brake Switch Analysis

FY758158	Observations/Findings									
	Connector/Wires				Switch					
VIN	Engagement	Wires	Red Seal	Gray Seal	Hexport, Washer, Converter, Spacer, and Disc	Environmental Seal	Gasket/Kapton Seals	Cap	Base, Switch Cavity, Contacts, Terminals
[redacted]	Missing	Missing	Missing	Missing	Black residue in filling end of hexport contains glycol based material (probably brake fluid) and tan crystals. Copper colored globules also present. No apparent burns on converter, washer, or hexport.	Intact and appears to have had good seal.	Gasket is intact and appears to have had good seal. Kapton seals exhibit circumferential tears in Teflon with radial and circumferential cracking in substrate. Appears to have formed leak path. Damage appears similar to that in Memphis sample.	Face of cup covered with black residue and copper colored globules. Residue contains glycol based material (probably brake fluid) and possibly a hydrocarbon. Additional analyses of residue pending.	Switch cavity of base contains black sludge with copper colored globules. Moveable contact appears to have been corroded away. Black residue is present in terminal cavity and on the terminals.
[redacted]	Missing	Missing	Missing	Missing	Black residue in filling end of hexport. Washer, converter, disc, and interior of cup are covered with rust colored deposits.	Missing	Gasket missing. Charred fragments of Kapton seals remain.	Face of cup covered with rust colored deposits. Analysis pending.	Missing.
[redacted]	Missing	Missing	Missing	Missing	Black residue in filling end of hexport. Washer, converter, disc, and interior of cup are covered with rust colored deposits.	Missing	Gasket missing. Charred fragments of Kapton seals remain.	Face of cup covered with rust colored deposits. Analysis pending.	Missing.
[redacted]	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing.
[redacted]	Missing	Missing	Missing	Missing	TBP	TBP	TBP	TBP	Missing.
[redacted]	Fully engaged	TBP	Intact. Impression even and deep all the way around	Cavity clean below seal except for trace of oil from seal. Seal left impressions in wire insulation.	Black residue in filling end of hexport. Did not analyze.	Did not disassemble	Did not disassemble	Did not disassemble	Did not disassemble. Terminals clean (no apparent deposits or corrosion).

3713 6461

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C = COMPLETE
NA = NOT APPLICABLE
TBP = TO BE PERFORMED

Brake Switch Testing Checklist

INF = INFINITY (OPEN)
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NRCLS = NOT RECD AT CEN. LAB.

			Memphis	A	B	C	D	E	F	I
			PY622977	PY885224	NY745119	NY703705	VX145373	NX758774	NY760055	NX762858
Field Info	1	Log Field Info into Switch Logsht	C	C	C	C	C	C	C	C
		Condition	FIRE	FIRE	FIRE	FIRE	BF LEAK	NO FIRE/LEAK	BF LEAK	NO FIRE/LEAK
	2	Photograph Switch	C	C	C	C	C	C	C	NP
	3	Record any unusual external visual observations	C	C	C	C	C	C	C	C
	4	Check for Connector engagement	C	NA	NA	NA	NA	NA	NA	NA
		X-ray if appropriate	C	NA	NA	NA	NA	NA	NA	NA
Switch + Connector Assembly	5	Wire 1(LG/R)to Wire 2(ORANGE) Resistance	NA	NA	NA	NA	NA	NA	NA	NA
	6	Wire 1(LG/R) to Hexport Resistance	NA	NA	NA	NA	NA	NA	NA	NA
	7	Wire 2(ORANGE) to Hexport Resistance	NA	NA	NA	NA	NA	NA	NA	NA
	8	Separate Harness from Switch	C	NA	NA	C	NA	NA	NA	NA
Connector Only	9	Verify Connector Seal	C	NA	NA	C	NA	NA	NA	NA
	10	Wire 1(LG/R) to Wire 2(ORANGE) resistance	NA	NA	NA	NA	NA	NA	NA	NA
	12	Check for full engagement of connector	NA	NA	NA	NA	NA	NA	NA	NA
	13	Check wire insulation	C	NA	NA	NA	NA	NA	NA	NA
	14	Check wire grey areas	C	NA	NA	NA	NA	NA	NA	NA
	15	Cut wire insulation to check for corrosion	C	NA	NA	NA	NA	NA	NA	NA
Switch External Unpressurized	16	Assemble Swtch to Calibration Stand	NA	NA	NA	NA	NA	NA	NA	C
	17	Spring Terminal to Stationary Terminal Resistance	NA	NA	NA	NA	0.4	0.2	NP	0.3
	18	Spring Terminal to Hexport Resistance	NA	NA	NA	NA	4.8M	INF	2M	INF
	19	Stationary Terminal to Hexport resistance	NA	NA	NA	NA	NP	NP	NP	INF
	20	Case to Hexport Resistance	NA	NA	NA	NA	1.1	6.8M	NP	3.3M
Switch External Pressurized	24	Switch Opening Pressure	NA	NA	NA	NA	NA	NA	NA	122
	25	Switch Closing Pressure	NA	NA	NA	NA	NA	NA	NA	59
	26	Final Test for Leakage	NA	NA	NA	NA	NA	NA	NA	NO LEAK
	27	Repeat Steps 17 through 20 at 100 psig	NA	NA	NA	NA	NA	NA	NA	C
			NA	NA	NA	NA	NA	NA	NA	INF
			NA	NA	NA	NA	NA	NA	NA	INF
			NA	NA	NA	NA	NA	NA	NA	INF
			NA	NA	NA	NA	NA	NA	NA	INF
Switch	28	Remove aluminum crimp ring	C	C	NP	C	C	C	C	NP
	29	Examine revealed surfaces. Photograph	C	C	NP	C	C	C	C	NP
	30	Remove cap	C	C	NP	C	C	C	C	NP
	31	Examine revealed surfaces. Photograph	C	C	NP	C	C	C	C	NP
Techniques	31	SEM-EDX /FTIR base, contacts, terminals	C	C	NP	C	C	C	C	NP
	32	SEM-EDX /FTIR cup, hexport, washer seals, etc.	C	C	C	C	C	C	C	NP
	33	Metallographic analysis of contacts.	C	NA	NP	C	C	C	C	NP
		Look for evidence of corrosion or arcing	C	NA	NP	C	C	C	C	NP

3713 6482

C = COMPLETE
NA = NOT APPLICABLE
TBP = TO BE PERFORMED

Brake Switch Testing Checklist

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			3	4	5	6	7	8	9	10
			PY724043	PY628170	PY532329	PY729611	NX728439	PX180223	PX637766	PY889375
Field Info	1	Log Field Info into Switch Log.xls	C	C	C	C	C	C	C	C
		Condition	NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK
	2	Photograph 8x4ck	NP	NP	NP	NP	NP	NP	NP	NP
	3	Record any unusual external visual observations	C	C	C	C	C	C	C	C
	4	Check for Connector engagement	NA	NA	NA	NA	NA	NA	NA	NA
		X-ray if appropriate	NA	NA	NA	NA	NA	NA	NA	NA
Switch + Connector Assembly	5	Wire 1(LG/R)to Wire 2(ORANGE) Resistance	NA	NA	NA	NA	NA	NA	NA	NA
	6	Wire 1(LG/R) to Hexport Resistance	NA	NA	NA	NA	NA	NA	NA	NA
	7	Wire 2(ORANGE) to Hexport Resistance	NA	NA	NA	NA	NA	NA	NA	NA
	8	Separate Hardware from Switch	NA	NA	NA	NA	NA	NA	NA	NA
Connector Only	9	Modify Connector Seal	NA	NA	NA	NA	NA	NA	NA	NA
	10	Wire 1(LG/R) to Wire 2(ORANGE) resistance	NA	NA	NA	NA	NA	NA	NA	NA
	12	Check for full engagement of connector	NA	NA	NA	NA	NA	NA	NA	NA
	13	Check wire insulation	NA	NA	NA	NA	NA	NA	NA	NA
	14	Check wire gray seals	NA	NA	NA	NA	NA	NA	NA	NA
	15	Cut wire insulation to check for corrosion	NA	NA	NA	NA	NA	NA	NA	NA
Switch External Unpressurized	16	Assemble Switch to Calibration Stand	C	C	NA	NA	C	C	C	C
	17	Spring Terminal to Stationary Terminal Resistance	0.2	0.3	NA	NA	0.2	0.2	0.2	2.2
	18	Spring Terminal to Hexport Resistance	INF	INF	NA	NA	INF	INF	INF	INF
	19	Stationary Terminal to Hexport resistance	INF	INF	NA	NA	INF	INF	INF	INF
	20	Case to Hexport Resistance	11.4	1.6M	NA	NA	7.8M	18.6	7.5M	1.4M
Switch External Pressurized	24	Switch Opening Pressure	134	160	NA	NA	147	132	140	137
	25	Switch Closing Pressure	59	89	NA	NA	70	65	112	66
	26	Proof Test for Leakage	NO LEAK	NO LEAK	NA	NA	NO LEAK	NO LEAK	NO LEAK	NO LEAK
	27	Repeat Steps 17 through 20 at 150 psig	C	C	NA	NA	C	C	C	C
			INF	INF	NA	NA	INF	INF	INF	INF
			INF	INF	NA	NA	INF	INF	INF	INF
			INF	INF	NA	NA	INF	INF	INF	INF
			INF	INF	NA	NA	INF	INF	INF	INF
Switch	28	Remove stainless steel ring	NP	NP	C	C	NP	NP	NP	NP
	29	Examine revealed surfaces. Photograph	NP	NP	C	C	NP	NP	NP	NP
	30	Remove cap	NP	NP	C	C	NP	NP	NP	NP
	31	Examine revealed surfaces. Photograph	NP	NP	C	C	NP	NP	NP	NP
Techniques	31	SEM-EDX /FTIR case, contacts, terminals	NP	NP	NP	NP	NP	NP	NP	NP
	32	SEM-EDX /FTIR cap, hexport, washer seals, etc.	NP	NP	NP	NP	NP	NP	NP	NP
	33	Metallographic analysis of contacts	NP	NP	NP	NP	NP	NP	NP	NP
		Look for evidence of corrosion or arcing	NP	NP	NP	NP	NP	NP	NP	NP

3713 6483

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TBP = TO BE PERFORMED

Brake Switch Testing Checklist

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NRCLS = NOT RECD AT CEN. LAB.

			11	12	13	14	15	16	17	18
			PY726068	PX885270	NY740296	PX823572	PY695374	BY639884	PY650225	PY688785
Field Info	1	Log Field Info into Switch Log.xls	C	C	C	C	C	C	C	C
		Condition	NO FIRE/LEAK							
	2	Photograph Switch	NP							
	3	Record any unusual external visual observations	C							
	4	Check for Connector engagement	NA							
		X-ray if it appropriate	NA							
Switch + Connector Assembly	5	Wire 1(LGR)to Wire 2(ORANGE) Resistance	NA							
	6	Wire 1(LGR) to Hexport Resistance	NA							
	7	Wire 2(ORANGE) to Hexport Resistance	NA							
	8	Separate Harness from Switch	NA							
Connector Only	9	Verify Connector Seal	NA							
	10	Wire 1(LGR) to Wire 2(ORANGE) resistance	NA							
	12	Check for full engagement of connector	NA							
	13	Check wire ins./outs	NA							
	14	Check wire gray seals	NA							
	15	Cut wire insulation to check for corrosion	NA							
Switch External Unpressurized	16	Assemble Switch to Calibration Stand	C							
	17	Spring Terminal to Stationary Terminal Resistance	0.2							
	18	Spring Terminal to Hexport Resistance	INF							
	19	Stationary Terminal to Hexport resistance	INF							
	20	Case to Hexport Resistance	INF							
Switch External Pressurized	24	Switch Opening Pressure	139							
	25	Switch Closing Pressure	71							
	26	Proof Test for Leakage	NO LEAK							
	27	Repeat Steps 17 through 26 at 150 psig	C							
			INF							
			INF							
			INF							
			INF							
Switch	28	Remove aluminum crimp ring	NP							
	29	Examine revealed surfaces. Photograph	NP							
	30	Remove cap	NP							
	31	Examine revealed surfaces. Photograph	NP							
Techniques	31	SEM-EDX /FTIR base, contacts, terminals	NP							
	32	SEM-EDX /FTIR cap, hexport, washer seals, etc.	NP							
	33	Metallographic analysis of contacts.	NP							
		Look for evidence of corrosion or sealing	NP							

3713 6464

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Brake Switch Testing Checklist

INF = INFINITY (OPEN)
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NRCLS = NOT RECD AT CEN. LAB.

			19 PY774258	20 PY754576	21 PX843516	22 77	23 PX828934	1 PY838980	2 PX163820	3 RX841595
Field Info	1	Log Field Info into Switch Log.xls						C	C	C
		Condition						NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK
	2	Photograph Switch						C	C	C
	3	Record any unusual external visual observations						C	C	C
	4	Check for Connector engagement						C	C	C
		X-ray if if appropriate						NA	C	NA
Switch + Connector Assembly	5	Wire 1(Single Wire 2(ORANGE) Resistance						0.3	0.4	0.2
	6	Wire 1(LGR) to Hexport Resistance						INF	INF	INF
	7	Wire 2(ORANGE) to Hexport Resistance						INF	INF	INF
	8	Separate Harness from Switch						C	C	C
Connector Only	9	Verify Connector Seal						C	C	C
	10	Wire 1(LGR) to Wire 2(ORANGE) resistance						INF	INF	INF
	12	Check for full engagement of connector						C	C	C
	13	Check wire insulation						C	C	C
	14	Check wire grey seals						C	C	C
	15	Cut wire insulation to check for corrosion						TBP	TBP	TBP
Switch External Unpressurized	16	Assemble Switch to Calibration Stand						C	C	C
	17	Swing Terminal to Stationary Terminal Resistance						0.3	0.1	0.2
	18	Swing Terminal to Hexport Resistance						INF	INF	INF
	19	Stationary Terminal to Hexport resistance						INF	INF	INF
	20	Base to Hexport Resistance						5.5	INF	17.7K
Switch External Pressurized	24	Switch Opening Pressure						158	127	126
	25	Switch Closing Pressure						86	82	84
	26	Proof Test for Leakage						NO LEAK	NO LEAK	NO LEAK
	27	Repeat Steps 17 through 20 at 180 psig						C	C	C
								INF	0.1	INF
								INF	INF	INF
								INF	INF	INF
								INF	INF	INF
Switch	28	Remove aluminum crimp ring						NP	C	NP
	29	Examine mounted surfaces. Photograph						NP	C	NP
	30	Remove cup						NP	C	NP
	31	Examine mounted surfaces. Photograph						NP	C	NP
Techniques	31	SEM-EDX /FTIR base, contacts, terminals						NP	C	NP
	32	SEM-EDX /FTIR cup, hexport, washer seals, etc.						NP	C	NP
	33	Metallographic analysis of contacts.						NP	NP	NP
		Look for evidence of corrosion or arcing						NP	C	NP

3713 6465

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TBP = TO BE PERFORMED

Brake Switch Testing Checklist

INF = INFINITY (OPEN)
NP = NOT PERFORMED
NRCLB = NOT REC'D AT CEN. LAB.

			4	5	6	7	8	9	10	11
			PX163312	PY610384	NY724366	PY750172	NY733191	PY758158	PX151140	NY757408
Field Info	1	Log Field Info into Switch Log.xls	C	C	C	C	C	C	C	C
		Condition	NO FIRE/LEAK	NO FIRE/LEAK	FIRE	NO FIRE/LEAK	FIRE	NO FIRE/LEAK	NO FIRE/LEAK	NO FIRE/LEAK
	2	Photograph Switch	C	C	C	C	C	C	C	C
	3	Record any visceral external visual observations	C	C	C	C	C	C	C	C
	4	Check for Connector engagement	C	C	NA	C	NA	C	NA	C
		X-ray if if appropriate	C	NA	NA	NA	NA	C	NA	NA
Switch + Connector Assembly	5	Wire 1(LG/Blk Wire 2(ORANGE) Resistance	NP	0.2	NA	INF	NA	2	0.4	NP
	6	Wire 1(LG/B) to Hexport Resistance	NP	INF	NA	INF	NA	6.0M	INF	NP
	7	Wire 2(ORANGE) to Hexport Resistance	NP	INF	NA	INF	NA	6.1M	INF	NP
	8	Separate Harness from Switch	C	C	NA	C	NA	C	C	C
Connector Only	9	Verify Connector Seal	C	C	NA	C	NA	C	C	C
	10	Wire 1(LG/B) to Wire 2(ORANGE) resistance	NP		NA	INF	NA	INF	INF	NP
	12	Check for full engagement of connector	C	C	NA	C	NA	C	C	C
	13	Check wire insulation	C	C	NA	C	NA	C	C	C
	14	Check wire grey mark	C	C	NA	C	NA	C	C	C
	15	Cut wire insulation to check for corrosion	TBP	TBP	NA	TBP	NA	TBP	TBP	TBP
Switch External Unpressurized	16	Assemble Switch to Calibration Stand	C	C	NA	C	NA	C	C	C
	17	Spring Terminal to Stationary Terminal Resistance	0.1	0.2	NA	0.3	NA	1.6	0.4	0.1
	18	Spring Terminal to Hexport Resistance	INF	INF	NA	INF	NA	6.3M	INF	INF
	19	Stationary Terminal to Hexport resistance	INF	INF	NA	INF	NA	5.4M	INF	INF
	20	Case to Hexport Resistance	INF	100K	NA	463K	NA	0.4	8.8	INF
Switch External Pressurized	24	Switch Opening Pressure	139	151	NA	136	NA	184	139	135
	25	Switch Closing Pressure	88	82	NA	86	NA	98	108	74
	26	Proof Test for Leakage	NO LEAK	NO LEAK	NA	NO LEAK	NA	NO LEAK	NO LEAK	NO LEAK
	27	Repeat Steps 17 through 20 at 160 psig	C	C	NA	C	NA	C	C	C
			INF	INF	NA	INF	NA	0.1	INF	INF
			INF	INF	NA	INF	NA	~970K	INF	INF
			INF	INF	NA	INF	NA	~970K	INF	INF
			INF	INF	NA	INF	NA	INF	INF	INF
Switch	28	Remove aluminum clamp ring	NP	NP	NP	NP	NP	C	NP	NP
	29	Examine revealed surfaces. Photograph	NP	NP	NP	NP	NP	C	NP	NP
	30	Remove cup	NP	NP	NP	NP	NP	C	NP	NP
	31	Examine revealed surfaces. Photograph	NP	NP	NP	NP	NP	C	NP	NP
Techniques	31	SEM-EDX /FTIR base, contacts, terminals	NP	NP	NP	NP	NP	C	NP	NP
	32	SEM-EDX /FTIR cup, hexport, weather seals, etc.	NP	NP	NP	NP	NP	C	NP	NP
	33	Metallographic analysis of contacts.	NP	NP	NP	NP	NP	NP	NP	NP
		Look for evidence of corrosion or arcing	NP	NP	NP	NP	NP	C	NP	NP

3713 6466

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			12	13	OASIS	OASIS	EAA	EAA	EAA	EAA
			PY742858	PY7433413	NY734410	PY6058626	PY614995	NY736847	NY706341	NX714569
Field Info	1	Log Field Info into Switch Logula	C	C	C	C	C	C	C	C
		Condition	NO FIRE/LEAK	NO FIRE/LEAK	BF LEAK	BF LEAK	FIRE	FIRE	FIRE	FIRE
	2	Photograph Switch	C	C	C	C	C	C	NA	TBP
	3	Record any external external visual observations	C	C	C	C	C	C	NA	TBP
	4	Check for Connector engagement	C	C	NA	NA	NA	NA	NA	NA
		X-ray if if appropriate	C	NA	NA	NA	NA	NA	NA	NA
Switch + Connector Assembly	5	Wire 1(LG/R)to Wire 2(ORANGE) Resistance	0.8	0.3	NA	NA	NA	NA	NA	NA
	6	Wire 1(LG/R) to Hexport Resistance	20.2M	INF	NA	NA	NA	NA	NA	NA
	7	Wire 2(ORANGE) to Hexport Resistance	21.6M	INF	NA	NA	NA	NA	NA	NA
	8	Separate Harness from Switch	C	C	NA	NA	NA	NA	NA	NA
Connector Only	9	Verify Connector Seal	C	C	NA	NA	NA	NA	NA	NA
	10	Wire 1(LG/R) to Wire 2(ORANGE) resistance	INF	INF	NA	NA	NA	NA	NA	NA
	12	Check for full engagement of connector	C	C	NA	NA	NA	NA	NA	NA
	13	Check wire insulation	C	C	NA	NA	NA	NA	NA	NA
	14	Check wire gray spots	C	C	NA	NA	NA	NA	NA	NA
	15	Cut wire insulation to check for corrosion	TBP	TBP	NA	NA	NA	NA	NA	NA
Switch External Unpressurized	16	Assemble Switch to Calibration Head	C	C	C	C	NA	NA	NA	NA
	17	Spring Terminal to Stationary Terminal Resistance	0.2	0.2	>700K	>190K	NA	NA	NA	NA
	18	Spring Terminal to Hexport Resistance	34M	INF	>250K	>17K	NA	NA	NA	NA
	19	Stationary Terminal to Hexport resistance	39M	INF	>350K	>120K	NA	NA	NA	NA
	20	Case to Hexport Resistance	63.4K	7.5M	INF	INF	NA	NA	NA	NA
Switch External Pressurized	24	Switch Opening Pressure	148	150	162	NO SOUND	NA	NA	NA	NA
	25	Switch Closing Pressure	51	70	92	NO SOUND	NA	NA	NA	NA
	26	Proof Test for Leakage	NO LEAK	NO LEAK	NO LEAK	NO LEAK	NA	NA	NA	NA
	27	Repeat Steps 17 through 20 at 150 psig	C	C	C	C	NA	NA	NA	NA
			0.1	INF	>1.0M	170K	NA	NA	NA	NA
			INF	INF	>600K	>140K	NA	NA	NA	NA
			INF	INF	>400K	>15K	NA	NA	NA	NA
			INF	INF	INF	INF	NA	NA	NA	NA
Switch	28	Remove aluminum crimp ring	SCI LAB	NP	C	C	C	C	NA	TBP
	29	Examine revealed surfaces. Photograph	SCI LAB	NP	C	C	C	C	NA	TBP
	30	Remove cap	SCI LAB	NP	C	C	C	C	NA	TBP
	31	Examine revealed surfaces. Photograph	SCI LAB	NP	C	C	C	C	NA	TBP
Techniques	31	SEM-EDX /FTIR fibers, contacts, basalnuts	SCI LAB	NP	TBP	TBP	TBP	TBP	NA	TBP
	32	SEM-EDX /FTIR cap, hexport, washer seals, etc.	SCI LAB	NP	TBP	TBP	TBP	TBP	NA	TBP
	33	Metallographic analysis of contacts.	SCI LAB	NP	NA	NA	NA	NA	NA	TBP
		Look for evidence of corrosion or arcing	SCI LAB	NP	C	C	C	C	NA	TBP

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C = COMPLETE
NA = NOT APPLICABLE
TBP = TO BE PERFORMED

Brake Switch Testing Checklist

INF = INFINITY (OPEN)
NP = NOT PERFORMED
NRCLS = NOT RECD AT CEN. LAB.

Field Info	1	Log Field Info into Switch Log.xls							
	2	Photograph Switch							
	3	Record any unusual external visual observations							
	4	Check for Connector engagement							
		X-ray if appropriate							
Switch + Connector Assembly	5	Wire 1(LG/BK)to Wire 2(ORANGE) Resistance							
	6	Wire 1(LG/BK) to Hexport Resistance							
	7	Wire 2(ORANGE) to Hexport Resistance							
	8	Separate Harness from Switch							
Connector Only	9	Visify Connector Seal							
	10	Wire 1(LG/BK) to Wire 2(ORANGE) resistance							
	12	Check o/d seal for full engagement of connector							
	13	Check wire insulation							
	14	Check wire gray seals							
	15	Cut wire insulation to check for corrosion							
Switch External Unpressurized	16	Reassemble Switch to Calibration Stand							
	17	Spring Terminal to Stationary Terminal Resistance							
	18	Spring Terminal to Hexport Resistance							
	19	Stationary Terminal to Hexport resistance							
	20	Base to Hexport Resistance							
Switch External Pressurized	24	Switch Opening Pressure							
	25	Switch Closing Pressure							
	26	Proof Test for Leakage							
	27	Repeat Steps 17 through 20 at 150 psig							
Switch	28	Remove stainless crimp ring							
	29	Examine revealed wetness. Photograph							
	30	Remove cap							
	31	Examine revealed wetness. Photograph							
Techniques	31	SEM-EDX IFTIR base, electrode, terminals							
	32	SEM-EDX IFTIR cap, hexport, washer seals, etc.							
	33	Metallographic analysis of contacts.							
		Look for substance of corrosion or arcing							

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Sheet1

	PMF2AC-2B091-BA	F2AC-2B091-BA	F2VC-9F924-AB	DANA	PITTS	kh	F2AC-9F924-AA
Oct-91	3140						
Nov-91	5390						
Dec 91	8924						
Jan-92	5842		73770	31890	40930		
Feb-92	1656	14352	110420	67110	43310		
Mar-92		19596	63850	63380	470		
Apr-92		12558	31890	0	31890		
May-92		13294	32360	0	32360		22840
Jun-92		13938	3330	0	3330		0
Jul 92		12880	35220	0	35220		74730
Aug-92		19182	53780	0	53780		39980
Sep-92		8280	21880	0	21080		50
Oct-92		7841	43790	0	43790		29960
Nov-92		7130	44740	0	44740		0
Dec-92		4738	18560	0	18560		0
Jan-93		4462	20460	0	15470	4990	0
Feb-93		5750	19270	0	15230	4040	0
Mar-93		8779	28790	0	23560	5230	0
Apr-93		9292	25210	0	22610	2600	0
May-93		9936	17110	0	14510	2600	0
Jun-93		9062	26180	0	22610	3570	0
Jul-93							
Aug-93		181070	590840	130490	443320	23030	167580

TE	2B091	9F924
2	3140	0
3	5390	0
3	8924	0
4	5842	146590
5	16008	220840
24	19596	127700
22	12558	63780
19	13294	87560
19	13938	6660
9	12880	145170
7	19182	147540
7	8280	43810
10	7841	117560
3	7130	89480
0	4738	37120
0	4462	40920
0	5750	38540
2	8779	57580
1	9292	50420
0	9936	34220
4	9062	52360
132	182726	1361260

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Brake Pressure Switch Table:

DEFINITIONS:

Resistance Measurement #1 = Resistance reading between connector terminals (NC switch)

Resistance Measurement #2 = Resistance reading between sensor case and threaded fitting.

Resistance Measurement #3 = Resistance reading between both connector pins and sensor case.

Sensor M Code:	Date:	Zig Code:	Res. #1.	Res. #2	Res.#3
PY754575	5-93	42621	0.2 Ohm	167.0 Ohms	Inf. Ohm
NY740208	6-92	53237	0.3 Ohm	0.3 Ohm	Inf. Ohm
PY688795	1-93	NA	0.3 Ohm	4.48 M Ohm	Inf. Ohm
PX629934	11-92	68302	0.2 Ohm	1.5 Ohms	Inf. Ohm
PY650225	10-92	72114	0.2 Ohm	1.7 Ohm	Inf. Ohm
PX638867	12-92	55333	0.3 Ohm	17 K Ohm	Inf. Ohm
PX666270	4-93	66685	0.3 Ohm	2.50 Ohm	Inf. Ohm
PX643515	12-92	43531	0.2 Ohm	0.4 Ohms	Inf. Ohm
PX623672	10-92	94145	0.2 Ohm	24 M Ohm	Inf. Ohm
PY695374	1-93	NA	0.2 Ohm	11.30 M Ohm	Inf. Ohm
NX758774	7-92	97199	0.2 Ohm	6.79 M Ohm	Inf. Ohm
BY639984	9-93	97199	0.2 Ohm	0.2 Ohm	Inf. Ohm
'Leaking Sensor' VIN 2FALP71W1VX145373			0.4 Ohm	1.1 Ohms	4.80 M Ohms
New sensor #1			0.2 Ohm	0.4 Ohm	Inf. Resistance
New sensor #2			0.2 Ohm	1.1 Ohm	Inf. Resistance

Brake Pressure Switch Table:

DEFINITIONS:

Resistance Measurement #1 = Resistance reading between connector terminals (NC switch)

Resistance Measurement #2 = Resistance reading between sensor case and threaded fitting.

Resistance Measurement #3 = Resistance reading between both connector pins and sensor case.

Sensor Id Codes	Dates	Zip Codes	Res. #1.	Res. #2	Res.#3
2MELM75W7NX762858	7-92	79164	0.4 Ohm	11.60 M Ohms	Inf. Ohm
ILNLM13W2PY774256	7-93	67549	0.4 Ohm	1.0 Ohm	Inf. Ohm
ILNLM12W8PY724043	3-93	71337	0.4 Ohm	3.5 Ohm	Inf. Ohm
ILNLM13W8PY628170	9-92	88087	0.4 Ohm	16 M Ohms	Inf. Ohm
ILNLM12W4PY632329	9-92	98349	0.5 Ohm	Inf. Ohm	Inf. Ohm
ILNLM12W0PY729611	3-93	47325	0.4 Ohm	111.9 Ohm	Inf. Ohm
2MECM74WXNX728439	4-92	86923	0.4 Ohm	6.80 Ohm	Inf. Ohm
2FALP74W4PX160223	3-93	63614	0.4 Ohm	3.2 Ohms	Inf. Ohm
2MELM74W4PX637766	12-92	58132	0.6 Ohm	Inf. Ohm	Inf. Ohm
ILNLM11W7PY660375	12-92	82224	0.4 Ohm	Inf. Ohm	Inf. Ohm
ILNLM12W8PY726066	3-93	91358	0.4 Ohm	Inf. Ohm	Inf. Ohm
ILNLM11W3PY727899	3-93	88135	0.4 Ohm	0.6 Ohm	Inf. Ohm

Sample	VIN	Paplz/ Date Code	Condition	Findings			
				Hexport, Washer, Converter, and Spacer	Seals	Cap	Base/Switch Cavity/Terminals
Reddick (Memphis, 1993 Town Car)	[redacted]	P2VCJ 2056	Partially burned.	Black residue containing glycol based material (probably brake fluid) and a metal oxalate. Indicates presence of brake fluid on fluid and switch sides of seals.	Environmental seal and gasket intact and appear to have had good sealing. All three Kapton seals are buckled and exhibit brittle cracks which most likely formed leak path. Damage appears to have initiated in seal closest to washer. Damaged Kapton darkened and embrittled by unknown mechanism.	Green Deposits on face of cap contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product. Glycol based material (probably brake fluid) also detected in this area.	Base separated below clamp ring. Transfer pin and movable contact missing. Stationary contact exhibits loss of material due to corrosion, evidence of dezincification, stress corrosion cracking. Base of movable contact melted back into bulkhead between switch and terminal cavities. Appears to have occurred in later stages of event. Surfaces of terminals covered with black and green deposits which appear to be sulfur compounds of the terminal materials.
A (1993 Town Car, Houston)	[redacted]	72752 281	Burned	Elements from contact material detected at filling end of hexport. Indicate possible flow of fluid back through seals. Traces of silicone detected.	Gasket and environmental seal missing. Charred fragments Kapton seals remain.	Deposits on face of cap contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product.	Base, stationary contact, movable contact, and terminals missing.
B (1992 Town Car, Houston)	[redacted]	P2VCJ 2114	Burned	Elements from contact material detected at filling end of hexport. Indicate possible flow of fluid back through seals.	Not permitted to disassemble switch.	Deposits on face of cap contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product.	Transfer pin and movable contact missing. Stationary contact exhibits crack in similar location as that in Reddick sample.
C (1992 Town Car, Houston)	[redacted]	P2VCJ 2003	Burned	Elements from contact material detected at filling end of hexport. Indicate possible flow of fluid back through seals. Black deposit in cavity contains traces of hydrocarbon and silicone.	Gasket appears charred. Environmental seal missing. Damage to Kapton seals currently being evaluated.	Deposits on face of cap contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product.	Base, stationary contact, movable contact, and terminals missing.
D (1997 Crown Victoria)	[redacted]	P2ACJ 7777	Apparent leakage.	Black residue containing glycol based material (probably brake fluid) and a metal oxalate. Indicates presence of brake fluid on fluid and switch sides of seals.	Environmental seal and gasket intact and appear to have had good sealing. Kapton seals exhibit damage similar to that found in Reddick sample. All three exhibit brittle cracks which most likely formed a leak path.	Dark green deposits on face of cap contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product. Deposits appear to have formed a bridge between movable contact and cup. Liquid in interior and on face of cup is glycol based (probably brake fluid).	Switch cavity and terminal cavity contain glycol based material (probably brake fluid). Contacts appear intact. Dark green deposits on movable and stationary contacts contain elements from brass contact material. Terminals appear clean (no apparent deposits or corrosion).
E (#11 from survey)	[redacted]	P2VCJ 2137	No leaks or other apparent problems.	Black residue containing glycol based material (probably brake fluid) and a metal oxalate. Indicates presence of brake fluid on fluid and switch sides of seals.	Environmental seal and gasket intact and appear to have had good sealing. Kapton seals exhibit deformation and buckling similar to that found in Reddick sample. Crazing on surfaces suggest incipient damage is occurring.	Face of cap appears clean and dry.	Switch cavity and terminal cavity appear clean and dry. No apparent deposits or corrosion.
F	[redacted]	P2VCJ 2128	Apparent leakage	Black residue containing glycol based material (probably brake fluid) and a metal oxalate. Indicates presence of brake fluid on fluid and switch sides of seals.	Environmental seal and gasket intact and appear to have had good sealing. Kapton seals exhibit damage similar to that found in Reddick sample. All three exhibit brittle cracks which most likely formed a leak path.	Dark green deposits on face of cap contain elements from brass contacts indicating transfer of contact material to cup probably as oxide, sulfide, or corrosion product. Liquid in interior and on face of cup is glycol based (probably brake fluid).	Switch cavity and terminal cavity contain glycol based material (probably brake fluid). Stationary contact is intact, but does show stress corrosion cracking in progress in bridge area (same location as in Reddick switch). Movable contact appears to have separated as a result of loss of material (~50% of thickness) due to corrosion. No evidence of heating or arc damage. Dark green deposits on movable and stationary contacts contain elements from brass contact material, as well as sulfur. Terminals exhibit green deposits (currently being analyzed). Deposits evident in from both sides of bulkhead between switch and terminal cavities, but do not meet.

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Ford	Relocate to Pedal	ABS Switch (DPDT)	Pilot Relay + Drip Loop	Insulate from Prop Valve + Drip Loop + In-Line Fuse
Concept	21	26	16a + 26	24 + 26 + 22
Effectiveness Rank	1000	1000	360	320
Prevents Corrosion	10	10	4	5
Increase Path from B+ to Ground	10	10	10	8
Reduces Power in Switch	10	10	9	8
Factors				
Connector Seal Ingress of corrosives causes ground path	X	X		
Kapton Seal Ingress of corrosives causes ground path	X	X		
Continuous Power				
To ground circuit	X	X	X	XZ
To Load circuit	X	X	X	Z
Switch Orientation				
Internal path to ground	X	X	X	X
Susceptibility to fluid ingress	X	X	Y	Y
Terminals form cell to ground	X	X	X	X
Current Capability	X	X	X	X
Grounded Hexport	X	X	X	X
Plastic Params				
Hot Wire Ignition	X	X		
Oxylic Acid	X	X		

Ford Concept	Relocate to Pedal 21	Jumper Switch Out 27	ABS Switch (DPDT) 26	Pilot Relay 18a	Move to N93C load ground 19a	Break N93C ground 19b	Insulate from Prop Valve 24	Electronics Pins Down 17	On Mentor Cyl 20	RUN Circuit Power 23	GFI circuit 18b	Negative T/C Device 16	In-Line Fuse 22	Boot 25	Drip Loop 28
Effectiveness Rank	1000	1000	1000	270	210	180	32	28	25	12	8	6	6	4	4
Prevents Corrosion	10	10	10	3	3	3	4	5	5	3	1	1	1	4	4
Increase Path from B+ to Ground	10	10	10	10	10	10	8	5	6	1	1	1	1	1	1
Reduces Power in Switch	10	10	10	9	7	6	1	1	1	4	6	6	6	1	1
Factors															
Connector Seal Ingress of corrosives causes ground path	X	X	X					X	X						
Kapton Seal Ingress of corrosives causes ground path	X	X	X												
Continuous Power															
To ground circuit	X	X	X	X	X	X	X			X	X	X	X		
To Load circuit	X	X	X	X	X	X				X	X	X	X		
Switch Orientation															
Internal path to ground	X	X	X	X			X	X							
Susceptibility to fluid ingress	X	X	X					X						X	X
Terminate fore coil to ground	X	X	X	X			X	X							
Current Capability	X	X	X	X	X	X	X				X		X		
Grounded Hexport	X	X	X	X			X								
Plastic Parens															
Hot Wire Ignition	X	X	X												
Oxylic Acid	X	X	X												

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Effectiveness

Texas Inst Concept	Transducer 6	Coat Arm 11	Coat Cup 1	Non-Conductive cup 2	Diaphragm btwn cap & arm 3	Insulator btwn Cup & arm 4	Thermal Link 9	Potting 13	Teflon Diaph 5	Sliding Seal 6	Converter Topology 7	4th Layer kapton 15	Gold Plate arm 12	Polarity 10	Meryl 14
Effectiveness Rank	64	24	24	24	24	6	8	7	5	5	5	5	4	3	1
Prevents Corrosion	3	4	3	3	3	1	1	7	3	6	5	5	4	1	1
Increase Path from B+ to Ground	8	5	8	8	8	8	1	1	1	1	1	1	1	3	1
Reduces Power in Switch	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1
Factors															
Connector Seal Ingress of corrosives causes ground path		X						X					X		
Kapton Seal Ingress of corrosives causes ground path	X	X			X				X	X	X	X	X		
Continuous Power		X	X	X	X	X	X							X	
To ground circuit	X						X								
To Load circuit	X														
Switch Orientation		X	X	X	X	X									
Internal path to ground		X													
Susceptibility to fluid ingress			X	X	X										
Terminate form coil to ground							X								
Current Capability															
Grounded Heatport		X	X	X	X	X								X	
Plastic Params							X								X
Hot Wire Ignition															X
Oxylic Acid															

Relocate Deactivation Switch to Brake Pedal

		21	
Effectiveness Rank		1000	rationale
Prevents Corrosion		10	
Increase Path from B+ to Ground		10	
Reduces Power in Switch		10	
Factors			
Connector Seal		X	Seal no longer needed
Ingress of corrosives causes ground path			
Kapton Seal		X	Seal no longer needed
Ingress of corrosives causes ground path			
Continuous Power			
	To ground circuit	X	No ground inside new switch
	To Load circuit	X	No corrosion of contacts to cause heating.
Switch Orientation			
	Internal path to ground	X	No ground inside new switch
	Susceptibility to fluid ingress	X	New switch orinted properly
	Terminals face coil to ground	X	No ground inside new switch
Current Capability		X	No corrosion of contacts to cause heating.
Grounded Hexport		X	No Hydraulic interface.
Plastic Params			
	Hot Wire Ignition	X	No corrosion of contacts to cause heating.
	Oxylic Acid	X	Not exposed to external cleaning agents
Manufacturing Study			
Service Study			
Part(s) Availability			
Customer Impact		10	Transparent to customer
Rank		10	

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Use ABS Pedal Switch DPDT

	26	
Effectiveness Rank	1000	automatic
Prevents Corrosion	10	Removes BP switch from system
Increase Path from B+ to Ground	10	No ground paths in switch
Reduces Power in Switch	10	No more power thru BP switch.

Factors

Connector Seal Ingress of corrosives causes ground path	X	
Kapton Seal Ingress of corrosives causes ground path	X	
Continuous Power		
To ground circuit	X	
To Load circuit	X	
Switch Orientation		
Internal path to ground	X	
Susceptibility to fluid ingress	X	
Terminals form cell to ground	X	
Current Capability	X	
Grounded Hexport	X	
Plastic Params		
Hot Wire Ignition	X	
Oxylic Acid	X	
Manufacturing Study		Must ensure power in new switch does not create new problem.
Service Study		
Part(s) Availability		
Customer Impact	10	
Technical Rank		
Total Rank	10	

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Pilot Relay

	18a	
Effectiveness Rank	270	
Prevents Corrosion	3	
Increase Path from B+ to Ground	10	
Reduces Power in Switch	9	

Factors

Connector Seal			Ground path current limited to relay control current.
Ingress of corrosives causes ground path			
Kapton Seal			Ground path current limited to relay control current.
Ingress of corrosives causes ground path			
Continuous Power			
	To ground circuit	X	Ground path current limited to relay control current.
	To Load circuit	X	
Switch Orientation			
	Internal path to ground	X	Ground path current limited to relay control current
	Susceptibility to fluid ingress		
	Terminals form cell to ground	X	
Current Capability		X	Ground path current limited to relay control current
Grounded Hotspot		X	Ground path current limited to relay control current.
Plastic Porous			
	Hot Wire Ignition		
	Oxylic Acid		
Manufacturing Study			
Service Study			
Part(s) Availability			
Customer Impact		7	If switch shorts to ground the Secondary Speed Control Desc is not functional.
Rank		7	

Isolate Hexport from Ground

	36	
Effectiveness Rank	32	
Prevents Corrosion	4	
Increase Path from B+ to Ground	8	
Reduces Power in Switch	1	

Factors

Connector Seal Ingress of corrosives causes ground path		Ground path current limited to Speed Control Clutch current.
Kapton Seal Ingress of corrosives causes ground path		Ground path current limited to Speed Control Clutch current.
Continuous Power To ground circuit To Load circuit	X	Ground current leakage only thru Brake Fluid or Isolator Load circuit power is still continuous and may provide a heat source.
Switch Orientation Internal path to ground Susceptibility to fluid ingress Terminals form cell to ground	X X	Ground current leakage only thru Brake Fluid or Isolator Ground current leakage only thru Brake Fluid or Isolator
Current Capability	X	Limits current to ground but not current thru contacts.
Grounded Hexport	X	Will only be grounded thru conductivity of Brake Fluid and Isolator
Plastic Params Hot Wire Ignition Oxylic Acid		
Manufacturing Study		
Service Study		
Part(s) Availability		
Customer Impact	10	Transparent to customer
Rank	10	

Add Drip loop to Harness at Switch

25

Effectiveness Rank	4	[illegible]
Prevents Corrosion	4	Reduces but does not eliminate external fluid ingress only.
Increase Path from B+ to Ground	1	No Effect
Reduces Power in Switch	1	No Effect

Factors

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power
To ground circuit
To Load circuit

Switch Orientation
Internal path to ground
Susceptibility to fluid ingress X
Terminals form cell to ground

Current Capability

Grounded Hexport

Plastic Params
Hot Wire Ignition
Oxylic Acid

Manufacturing Study

Service Study

Part(s) Availability

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

In-line Fuse between 15amp fuse and switch.

22

Effectiveness Rank	8	rationale
Prevents Corrosion	1	
Increase Path from B+ to Ground	1	
Reduces Power in Switch	8	Removes power if current reaches 1 Amp

Factors

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power

To ground circuit	X
To Load circuit	X

Switch Orientation

Internal path to ground	
Susceptibility to fluid ingress	
Terminals form cell to ground	

Current Capability X

Grounded Heatport

Plastic Params

Hot Wire Ignition	
Oxylic Acid	

Manufacturing Study 1 Amp may still cause ignition

Service Study

Part(s) Availability

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

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Add Boot to Harness at Switch

	25	
Effectiveness Rank	4	rationale
Prevents Corrosion	4	Reduces but does not eliminate ingress from Spill from above.
Increase Path from B+ to Ground	1	
Reduces Power in Switch	1	

Factors

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power
To ground circuit
To Load circuit

Switch Orientation
Internal path to ground
Susceptibility to fluid ingress X
Terminals form cell to ground

Current Capability

Grounded Hexport

Plastic Params
Hot Wire Ignition
Oxylic Acid

Manufacturing Study

Service Study

Part(s) Availability

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

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Reroute Power Source thru RUN circuit

23

Effectiveness Rank	12	rationale
Prevents Corrosion	3	Reduces time that coil is energized. But does not reduce amount of corrosives.
Increase Path from B+ to Ground	1	No Effect.
Reduces Power in Switch	4	Removes power when key is off

Factors

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power

To ground circuit	X
To Load circuit	X

Switch Orientation
Internal path to ground
Susceptibility to fluid ingress
Terminals form coil to ground

Current Capability

Grounded Hexport

Plastic Params
Hot Wire Ignition
Oxylic Acid

Manufacturing Study

Service Study

Part(s) Availability

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

3713 6483

Move Switch to Master Cyclinder to Re-Orient Pins Down

	29	
Effectiveness Rank	25	rationale
Prevents Corrosion	5	Fluid now pools away from Spring arm. Corrosion can still cause circuit path resistance to increase.
Increase Path from B+ to Ground	6	Contaminants and debris now collect away from ground
Reduces Power in Switch	1	

Factors

Connector Seal	X
Ingress of corrosives causes ground path	
Kapton Seal	
Ingress of corrosives causes ground path	
Continuous Power	
To ground circuit	
To Load circuit	
Switch Orientation	
Internal path to ground	
Susceptibility to fluid ingress	
Terminals form cell to ground	
Current Capability	
Grounded Hexport	
Plastic Params	
Hot Wire Ignition	
Oxylic Acid	
Manufacturing Study	
Service Study	
Part(s) Availability	

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

Turn Switch to Point Connector Pins Down

17

Effectiveness Rank	25	optional
Prevents Corrosion	5	
Increase Path from B+ to Ground	8	
Reduces Power in Switch	1	

Factors

Connector Seal Ingress of corrosives causes ground path	X	Seal now needs to let fluid out.
Kapton Seal Ingress of corrosives causes ground path		Fluid now pools away from ground
Continuous Power		
To ground circuit		Fluid now pools away from ground
To Load circuit		Corrosion can still cause circuit path resistance to increase.
Switch Orientation		
Internal path to ground		Contaminants and debris now collect away from ground
Susceptibility to fluid ingress		Fluids can now drain out
Terminals form coil to ground		Contaminants and debris now collect away from ground
Current Capability		Current limited to Speed Control Clutch current.
Grounded Hexport		Contaminants and debris now collect away from ground
Plastic Params		
Hot Wire Ignition		Current limited to Speed Control Clutch current.
Oxylic Acid		
Manufacturing Study		
Service Study		
Part(s) Availability		
Customer Impact	10	Transparent to customer
Rank	10	

3713 6485

Move Switch to Ground circuit of Speed Control-Redesign

Effectiveness Rank		216	
Prevents Corrosion		3	
Increase Path from B+ to Ground		10	
Reduces Power in Switch		7	

Factors

Connector Seal			Ground path current limited to Speed Control Clutch current.
Ingress of corrosives causes ground path			
Kapton Seal			Ground path current limited to Speed Control Clutch current.
Ingress of corrosives causes ground path			
Continuous Power			
	To ground circuit	X	Power only when Speed Control Engaged
	To Load circuit	X	Power only when Speed Control Engaged
Switch Orientation			
	Internal path to ground		Ground path current limited to Speed Control Clutch current.
	Susceptibility to fluid ingress		
	Terminals form cell to ground		Only while Speed Control is engaged
Current Capability		X	Ground path current limited to Speed Control Clutch current.
Grounded Hexport			Ground path current limited to Speed Control Clutch current.
Plastic Perms			
	Hot Wire Ignition		Ground path current limited to Speed Control Clutch current.
	Oxylic Acid		
Manufacturing Study		-1000	Requires redesign of Speed Control, etc.
Service Study			
Part(s) Availability		10	
Customer Impact		7	If switch shorts to ground the Secondary Speed Control Deac is not functional.
Rank		-853	

3713 6489

Disconnect Speed Control Ground with Switch.

		100	
Effectiveness Rank		100	
Prevents Corrosion		5	
Increase Path from B+ to Ground		10	
Reduces Power to Switch		6	
Factors			
Connector Seal			Ground path current limited to Speed Control Clutch current.
ingress of corrosives causes ground path			
Kapton Seal			Ground path current limited to Speed Control Clutch current.
ingress of corrosives causes ground path			
Continuous Power			
	To ground circuit	X	Power only when Speed Control Engaged
	To Load circuit	X	Power only when Speed Control Engaged
Switch Orientation			
	Internal path to ground		Ground path current limited to Speed Control Clutch current.
	Susceptibility to fluid ingress		
	Terminals form coil to ground		Only while Speed Control is engaged
Current Capability		X	Ground path current limited to Speed Control Clutch current.
Grounded Hexpert			Ground path current limited to Speed Control Clutch current.
Plastic Params			
	Hot Wire Ignition		Ground path current limited to Speed Control Clutch current.
	Oxytic Acid		
Manufacturing Study		10	
Service Study			
Part(s) Availability		10	
Customer Impact		-50	Speed Control will shut-off everytime brake is pressed.
Rank		-30	

Ground Fault Interupter circuit

16b

Effectiveness Rank	8	rationale
Prevents Corrosion	1	
Increase Path from B+ to Ground	1	
Reduces Power in Switch	8	

Factors

Connector Seal		Sealing to prohibit contamination is no longer a factor if current is removed.
Ingress of corrosives causes ground path		
Kapton Seal		Sealing to prohibit contamination is no longer a factor if current is removed.
Ingress of corrosives causes ground path		
Continuous Power		
To ground circuit	X	Continuous power is removed if ground leakage current is detected.
To Load circuit	X	Load circuit power is still continuous and may provide a heat source.
Switch Orientation		Orientation for contamination is no longer an issue if power is removed.
Internal path to ground		Debris providing current path to ground is no longer an issue if power is removed.
Susceptibility to fluid ingress		
Terminals form cell to ground		
Current Capability	X	Limits current to ground but not current thru contacts.
Grounded Heatport		No longer a factor if current is removed.
Plastic Params		
Hot Wire Ignition		
Oxylic Acid		
Manufacturing Study		
Service Study		
Part(s) Availability	-1000	no parts identified
Customer Impact	10	Transparent to customer
Rank	-990	

Use Negative Temp Coef. Device to Blow Fuse

16

Effectiveness Rank	8	rationale
Prevents Corrosion	1	
Increase Path from B+ to Ground	1	
Reduces Power in Switch	8	

Factors

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power			
	To ground circuit	X	Blows fuse when temp gets high enough. Trip tolerance questionable.
	To Load circuit	X	Blows fuse when temp gets high enough. Trip tolerance questionable.
Switch Orientation			
	Internal path to ground		Blows fuse when temp gets high enough. Trip tolerance questionable.
	Susceptibility to fluid ingress		
	Terminals form cell to ground		Blows fuse when temp gets high enough. Trip tolerance questionable.
Current Capability			Blows fuse when temp gets high enough. Trip tolerance questionable.
Grounded Hexport			Not a factor after fuse blows.
Plastic Params			
	Hot Wire Ignition		Not a factor if trip temp is low enough.
	Oxylic Acid		Not a factor if trip temp is low enough.
Manufacturing Study			
Service Study			
Part(s) Availability		-1000	
Customer Impact		10	Transparent to customer
Technical Rank			
Total Rank		-980	

3713 6489

Put Short circuit in place of Switch

27

Effectiveness Rank	1000	rationale
Prevents Corrosion	10	Removes BP switch from system
Increase Path from B+ to Ground	10	No ground paths in switch
Reduces Power in Switch	10	No more power thru BP switch.

Factors

Connector Seal Ingress of corrosives causes ground path	X	No longer a factor due to elimination of switch
Kapton Seal Ingress of corrosives causes ground path	X	No longer a factor due to elimination of switch
Continuous Power		
To ground circuit	X	No longer a factor due to elimination of switch
To Load circuit	X	No longer a factor due to elimination of switch
Switch Orientation		
Internal path to ground	X	No longer a factor due to elimination of switch
Susceptibility to fluid ingress	X	No longer a factor due to elimination of switch
Terminals form cell to ground	X	No longer a factor due to elimination of switch
Current Capability	X	No longer a factor due to elimination of switch
Grounded Heatport	X	No longer a factor due to elimination of switch
Plastic Params		
Hot Wire Ignition	X	No longer a factor due to elimination of switch
Oxylic Acid	X	No longer a factor due to elimination of switch
Manufacturing Study		
Service Study		
Part(s) Availability		
Customer Impact	-1000	Secondary Speed Control Deactivation disabled
Technical Rank		
Total Rank	-1000	

Concept

Factors

rationale

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power
To ground circuit
To Load circuit

Switch Orientation
Internal path to ground
Susceptibility to fluid ingress
Terminals form cell to ground

Current Capability

Grounded Hexport

Plastic Params
Hot Wire Ignition
Oxylic Acid

Manufacturing Study

Service Study

Part(s) Availability

Customer Impact
Technical Rank
Total Rank

3713 6491

Add a 4th layer of Kapton to diaphragm

	15	
Effectiveness Rank	5	[illegible]
Prevents Corrosion	5	May Lengthens life by preventing internal brake fluid leak but no effect on external leak.
Increase Path from B+ to Ground	1	No effect
Reduces Power in Switch	1	No effect

Factors

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal	X	May improve life of diaphragm
Ingress of corrosives causes ground path		

Continuous Power
To ground circuit
To Load circuit

Switch Orientation
Internal path to ground
Susceptibility to fluid ingress
Terminals form cell to ground

Current Capability

Grounded Hexport

Plastic Params
Hot Wire Ignition
Oxylic Acid

Manufacturing Study — Feasibility incomplete

Service Study

Part(s) Availability

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

Change Switch plastic to improve ignition parameters

14

Effectiveness Rank	1	rationale
Prevents Corrosion	1	No Effect
Increase Path from B+ to Ground	1	No Effect
Reduces Power in Switch	1	No Effect

Factors

Connector Seal
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power
To ground circuit
To Load circuit

Switch Orientation
Internal path to ground
Susceptibility to fluid ingress
Terminals form cell to ground

Current Capability

Grounded Hexport

Plastic Params

Hot Wire Ignition	X	Raise temperature required for ignition
Oxylic Acid	X	

Manufacturing Study	10	Noryl already being used on other Ford vehicles
Service Study		
Part(s) Availability		
Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	20	

3713 9403

Fill Switch cavity with Potting to seal terminals

13

Effectiveness Rank	7	rationale
Prevents Corrosion	7	External Fluid ingress stopped but not internal brake fluid leak
Increase Path from B+ to Ground	1	No Effect
Reduces Power in Switch	1	No Effect

Factors

Connector Seal X
Ingress of corrosives causes ground path

Kapton Seal
Ingress of corrosives causes ground path

Continuous Power
To ground circuit
To Load circuit

Switch Orientation
Internal path to ground
Susceptibility to fluid ingress
Terminals form cell to ground

Current Capability

Grounded Hexport

Plastic Params
Hot Wire Ignition
Oxylic Acid

Manufacturing Study Feasibility incomplete

Service Study

Part(s) Availability

Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

Gold Plate Spring Contact

12

Effectiveness Rank	4	rationale
Prevents Corrosion	4	Makes Spring Arm less susceptible to corrosion but not Rivet & terminals
Increase Path from B+ to Ground	1	No effect
Reduces Power in Switch	1	No effect

Factors

Connector Seal Ingress of corrosives causes ground path	X	
Kapton Seal Ingress of corrosives causes ground path	X	
Continuous Power		
To ground circuit		
To Load circuit		
Switch Orientation		
Internal path to ground		
Susceptibility to fluid ingress		
Terminals form cell to ground		
Current Capability		
Grounded Hexport		
Plastic Params		
Hot Wire Ignition		
Oxylic Acid		
Manufacturing Study		Feasibility incomplete
Service Study		
Part(s) Availability		
Customer Impact	10	Transparent to customer
Technical Rank		
Total Rank	10	

3713 6495

Insulate the Spring arm

	11	
Effectiveness Rank	24	rationale
Prevents Corrosion	4	Makes Spring Arm less susceptible to corrosion but not Rivet & terminals
Increase Path from B+ to Ground	6	Reduces probability of short to ground
Reduces Power in Switch	1	No effect

Factors

Connector Seal Ingress of corrosives causes ground path	X
Kapton Seal Ingress of corrosives causes ground path	X
Continuous Power	
To ground circuit	X
To Load circuit	
Switch Orientation	
Internal path to ground	X
Susceptibility to fluid ingress	X
Terminals form cell to ground	
Current Capability	
Grounded Hexport	X
Plastic Params	
Hot Wire Ignition	
Oxylic Acid	
Manufacturing Study	
Service Study	
Part(s) Availability	
Customer Impact	10
Technical Rank	
Total Rank	10

Transparent to customer