

2010 ELECTRICAL

wiring systems and power management - component connector end views - A3 To B52B -
Equinox & Terrain

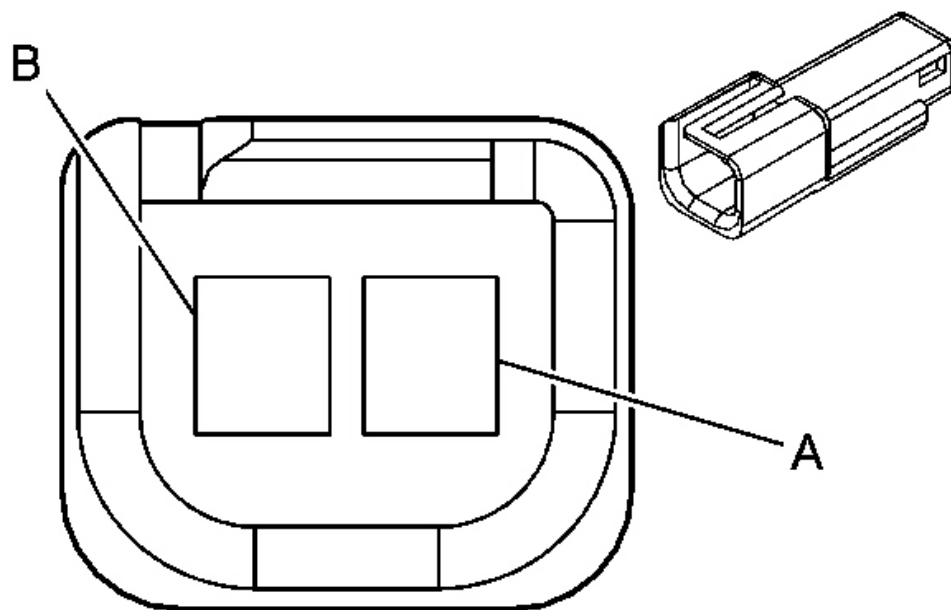
COMPONENT CONNECTOR END VIEWS - A3 TO B52B**A3L SUNSHADE - LEFT FRONT**

Fig. 1: A3L Sunshade - Left Front

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 12047663
- Service Connector: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C

A3L Sunshade - Left Front

Pin	Wire	Circuit	Function
A	0.5 OG	6815	Inadvertent Power Supply Voltage
B	0.5 BK	550	Ground

A3R SUNSHADE - RIGHT FRONT

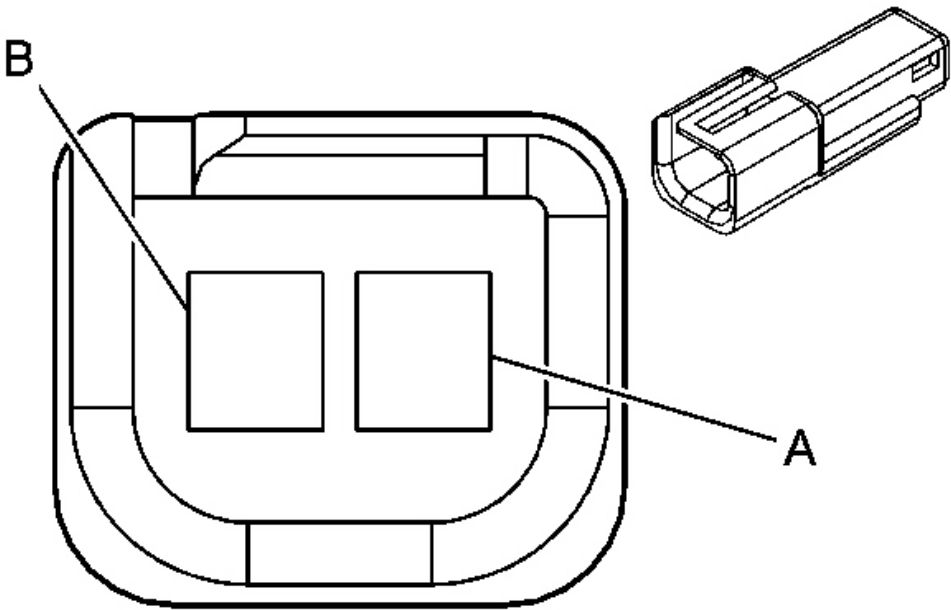


Fig. 2: A3R Sunshade - Right Front
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 12047663
- Service Connector: 12085481

- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C

A3R Sunshade - Right Front

Pin	Wire	Circuit	Function
A	0.5 OG	6815	Inadvertent Power Supply Voltage
B	0.5 BK	550	Ground

A6C FUEL PUMP AND LEVEL SENSOR ASSEMBLY - PRIMARY

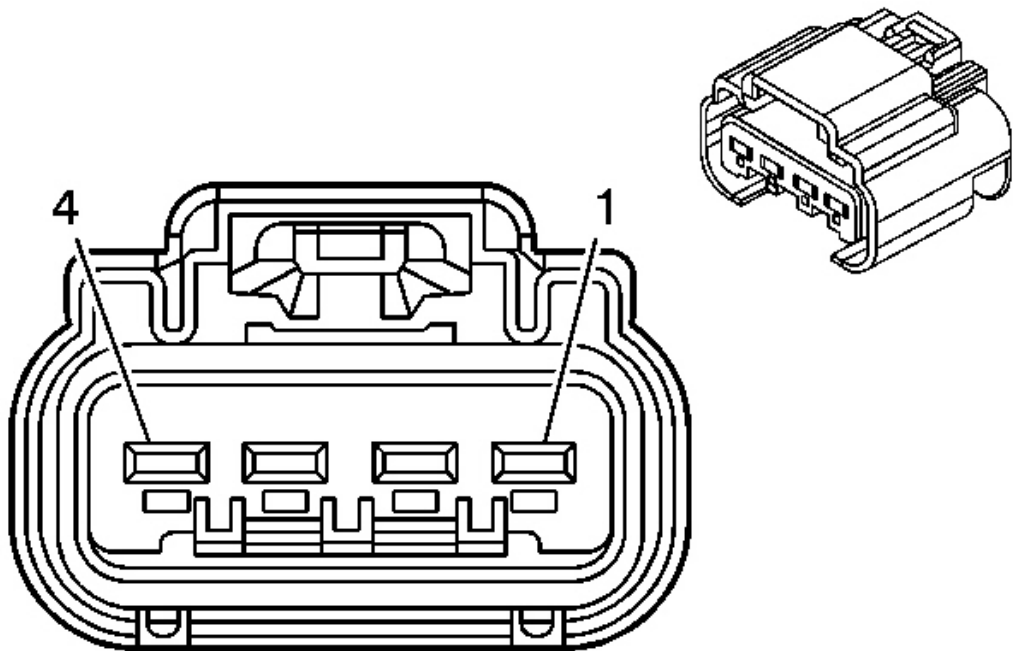


Fig. 3: A6C Fuel Pump and Level Sensor Assembly - Primary
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Tank
- OEM Connector: 88988992
- Service Connector: 19178173
- Description: 4-Way F GT 280 Series, Sealed (NA)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 88988992
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 88988992
- Core/Insulation Crimp: Not Available

A6C Fuel Pump and Level Sensor Assembly - Primary

Pin	Wire	Circuit	Function
1	2 GY	120	Fuel Pump Supply Voltage
2	2 PK	1580	Fuel Pump Motor Low Reference
3	0.35 BN/WH	6281	Sensor Low Reference
4	0.35 D-BU	1936	Primary Fuel Level Sensor Signal

A9A OUTSIDE REARVIEW MIRROR - DRIVER

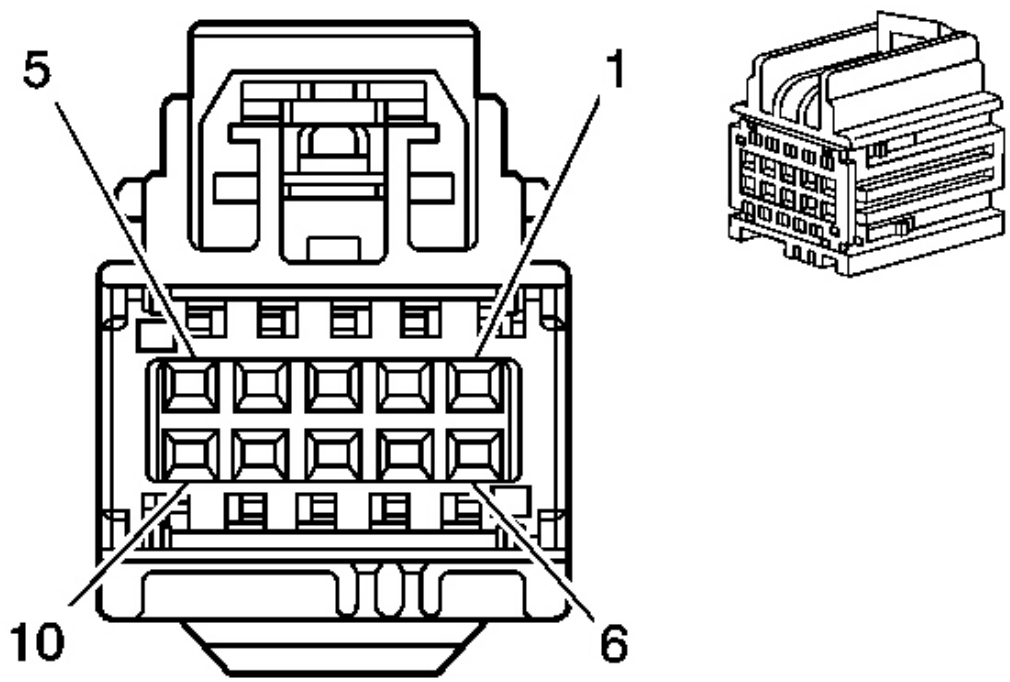


Fig. 4: A9A Outside Rearview Mirror - Driver
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door
- OEM: 15127042
- Service: 15127042
- Description: 10-Way F 0.64 YESC Kaizen Series (BK)

Terminal Part Information

- Terminated Lead: 15375826
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-65B (L-BU)
- Terminal/Tray: 7114-4618-02/27
- Core/Insulation Crimp: P/P

A9A Outside Rearview Mirror - Driver

Pin	Wire	Circuit	Function
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1	0.35 OG	2267	Mirror Heating Element Supply Voltage (DL8)
2	-	-	Not Used
3	0.5 D-GN/WH	6159	Left Mirror Horizontal Position Control (LTZ or SLT)
	0.5 D-GN/WH	3389	Outside Rearview Mirror Left/Right Control (without LTZ or SLT)
4	0.5 WH	7197	Outside Right Mirror Drive Motor Common (LTZ or SLT)
	0.5 TN	3391	Outside Rearview Mirror Control Switch Common (without LTZ or SLT)
5	0.5 D-BU/WH	6160	Left Mirror Horizontal Position Control (LTZ or SLT)
	0.5 BK	3390	Outside Rearview Mirror Up/Down Control (without LTZ or SLT)
6	0.5 BN	673	Low Reference (LTZ or SLT)
7	0.5 GY	786	Driver Mirror Horizontal Position Sensor Signal (LTZ or SLT)
8	0.5 D-GN	784	Driver Mirror Vertical Position Sensor Signal (LTZ or SLT)
9	0.5 D-BU	672	5-Volt Reference (LTZ or SLT)
10	0.5 BK	750	Ground (DL8)

A9B OUTSIDE REARVIEW MIRROR - PASSENGER

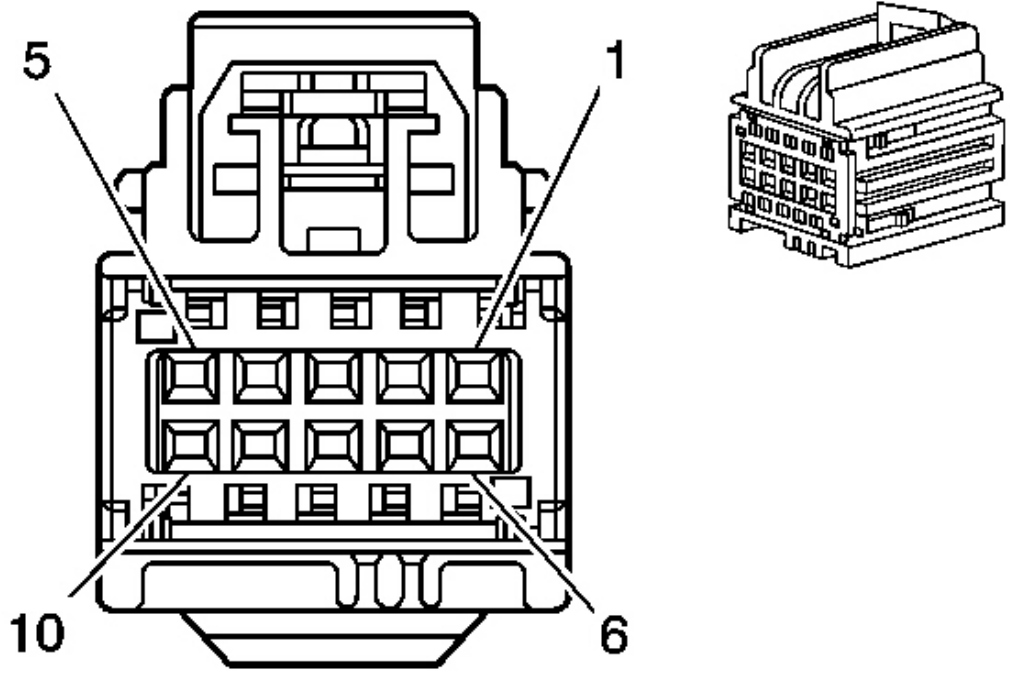


Fig. 5: A9B Outside Rearview Mirror - Passenger
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door
- OEM: 15127042
- Service: 15127042
- Description: 10-Way F 0.64 YESC Kaizen Series (BK)

Terminal Part Information

- Terminated Lead: 15375826
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-65B (L-BU)
- Terminal/Tray: 7114-4618-02/27
- Core/Insulation Crimp: P/P

A9B Outside Rearview Mirror - Passenger

Pin	Wire	Circuit	Function
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1	0.35 OG	2267	Mirror Heating Element Supply Voltage (DL8)
2	-	-	Not Used
3	0.5 GY/BK	3396	Outside Rearview Mirror Left/Right Control (without LTZ or SLT)
	0.5 GY/BK	6161	Outside Right Mirror Horizontal Position Control (LTZ or SLT)
4	0.5 WH	3398	Outside Rearview Mirror Control Switch Common (without LTZ or SLT)
	0.5 WH	7196	Outside Right Mirror Drive Motor Common (LTZ or SLT)
5	0.5 OG/BK	3397	Outside Rearview Mirror Up/Down Control (without LTZ or SLT)
	0.5 OG/BK	6162	Outside Right Mirror Horizontal Position Control (LTZ or SLT)
6	0.5 L-GN	675	Low Reference (LTZ or SLT)
7	0.5 L-BU/BK	785	Passenger Mirror Horizontal Position Sensor Signal (LTZ or SLT)
8	0.5 BN	787	Passenger Mirror Vertical Position Sensor Signal (LTZ or SLT)
9	0.5 YE	674	5-Volt Reference (LTZ or SLT)
10	0.5 BK	750	Ground (DL8)

A10 INSIDE REARVIEW MIRROR (UVC WITH UYS OR PCJ OR WITHOUT UVC OR UYS OR PCJ)

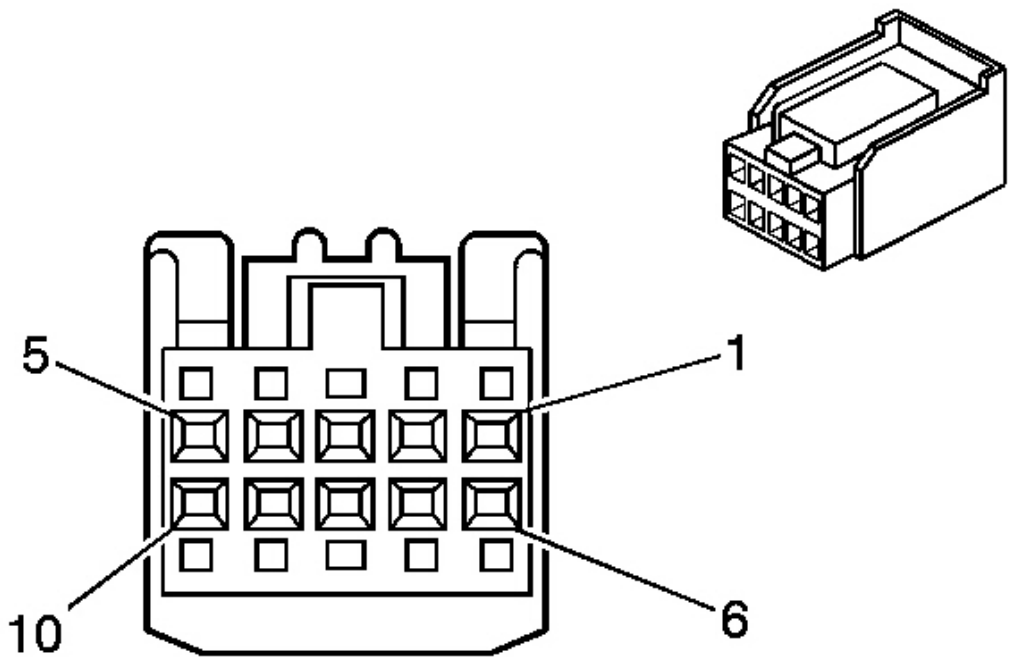


Fig. 6: A10 Inside Rearview Mirror (UVC with UYS or PCJ or without UVC or UYS or PCJ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: AIT2PB-10A-2AK
- Service Connector: 19177676
- Description: 10-Way F Kaizen 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

A10 Inside Rearview Mirror (UVC with UYS or PCJ or without UVC or UYS or PCJ)

Pin	Wire	Circuit	Function

1	0.35 L-GN	24	Backup Lamp Supply Voltage (DD8)
2	0.35 PK	339	Ignition Voltage (DD8)
3	0.35 D-GN/WH	2514	Keypad Signal (UE1)
4	0.35 L-GN/BK	2515	Keypad Supply Voltage (UE1)
5	0.35 BK/WH	651	Ground (DD8)
6	0.35 YE/BK	2516	Keypad Green LED Signal (UE1)
7	0.35 BN/WH	2517	Keypad Red LED Signal (UE1)
8-10	-	-	Not Used

A10 INSIDE REARVIEW MIRROR (UVC WITHOUT UYS OR PCJ)

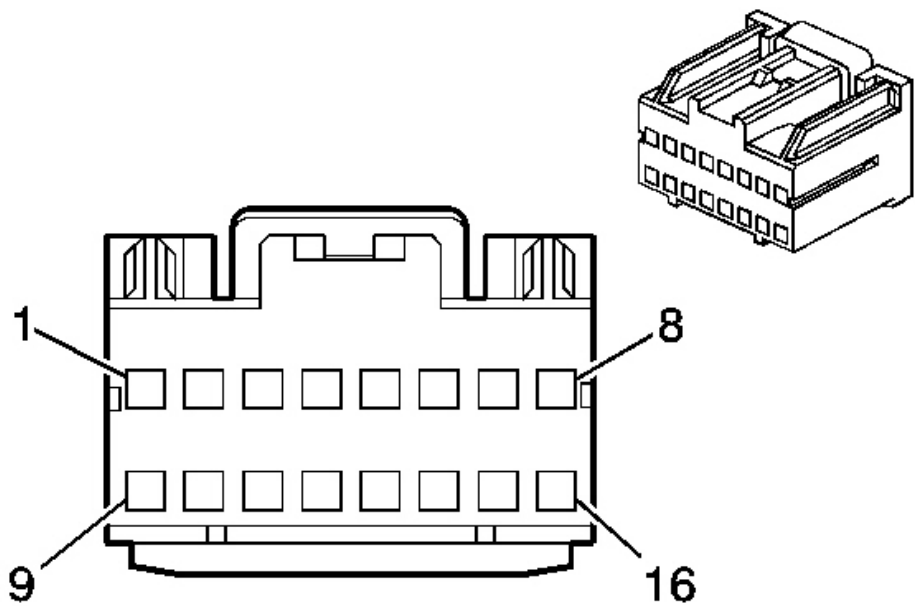


Fig. 7: A10 Inside Rearview Mirror (UVC without UYS or PCJ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information
• Harness: Headliner • OEM Connector: 917981-2 • Service Connector: 15306351 • Description: 16-Way F 040/070 Hybrid Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12180559
- Diagnostic Test Probe: J-35616-16 (L-GN)
- Terminal/Tray: 15445905/23
- Core/Insulation Crimp: J/J

A10 Inside Rearview Mirror (UVC without UYS or PCJ)

Pin	Wire	Circuit	Function
1-5	-	-	Not Used
6	0.35 PK	6972	Camera Signal +
7	0.35 L-BU	6973	Camera Signal -
8	0.35 BK/WH	651	Ground (DD8)
9	0.35 L-GN	24	Backup Lamp Supply Voltage (DD8)
10	-	-	Not Used
11	0.35 D-GN/WH	2514	Keypad Signal (UE1)
12	0.35 L-GN/BK	2515	Keypad Supply Voltage (UE1)
13	0.35 PK	339	Ignition Voltage (DD8)
14	0.35 YE/BK	2516	Keypad Green LED Signal (UE1)
15	0.35 BN/WH	2517	Keypad Red LED Signal (UE1)
16	-	-	Not Used

A11 RADIO X1

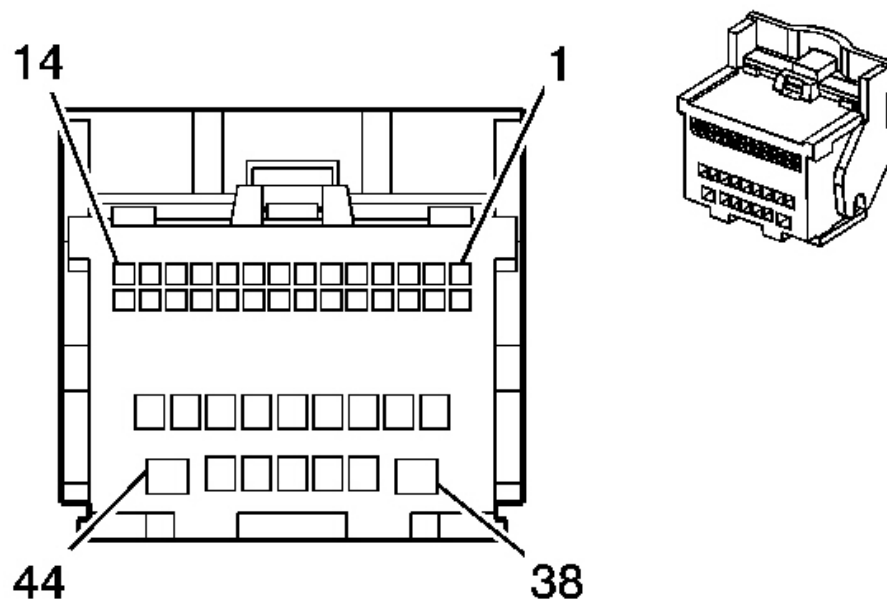


Fig. 8: A11 Radio X1

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: RADPB-44-1AK
- Service Connector: 88988902
- Description: 44-Way F GT 64 Series (BK)

Terminal Part Information

- Pins: 1-3, 6, 9-13, 16, 20, 23-34, 37, 39-43
- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P
- Pins: 38, 44
- Terminated Lead: Pending

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: 2/A

A11 Radio X1

Pin	Wire	Circuit	Function
1	0.35 BARE	5332	Infra Red Audio Drain Wire (UWG)
2	0.35 YE	7459	CGI -
3	0.35 BARE	7460	Integrated Center Stack Serial Data Shield
4-5	-	-	Not Used
6	0.35 L-BU/BK	659	Cellular Telephone Voice Signal (UE1)
7-8	-	-	Not Used
9	0.35 BARE	5842	Auxiliary Audio Screen (2) (without KTA)
10	0.35 TN/WH	3378	Auxiliary Audio Jack Right + (KTA)
	0.35 D-GN/WH	5841	Video Mode Signal (without KTA)
11	0.35 PK	2060	Auxiliary Detection Signal (without KTA)
12	0.35 D-BU/WH	3360	Audio Common (UWG)
13	0.35 L-GN	3291	Center Stack Wake-Up Signal
14-15	-	-	Not Used
16	0.35 TN	7458	CGI +
17-19	-	-	Not Used
20	0.35 D-BU	658	Cellular Telephone Voice Signal (UE1)
21-22	-	-	Not Used
23	0.35 D-BU	5843	Auxiliary Audio Common Signal (without KTA)
	0.35 D-GN/WH	3376	Auxiliary Audio Common Signal (KTA)
24	0.35 YE	3377	Auxiliary Audio Jack Left + (KTA)
	0.35 L-GN	5839	Video Bright Signal (without KTA)
25	0.35 OG/BK	5329	Left Infrared Audio Signal (UWG)
26	0.35 PU/WH	5330	Right Infrared Audio Signal (UWG)
27	0.35 PK	3290	Center Stack Reset Signal
28	0.35 D-GN	5060	Low Speed GMLAN Serial Data
29	0.35 BARE	2011	Left Front Audio Drain Wire
30	0.35 BARE	2099	Left Rear Audio Drain Wire
31	0.35 OG/BK	1546	Front Low Level Audio Signal -
32	0.35 D-GN	1947	Left Front Low Level Audio Signal -
33	0.35 TN	1946	Right Rear Low Level Audio Signal -
34	0.35 BN	1999	Left Rear Low Level Audio Signal -
35-36	-	-	Not Used
37	0.35 OG	6978	DVD Audio Common (UZ8 or VQN)

38	0.8 BK/WH	1551	Ground
39	0.35 L-GN/WH	512	Right Front Low Level Audio Signal +
40	0.35 TN	511	Left Front Low Level Audio Signal +
41	0.35 D-BU	546	Right Rear Low Level Audio Signal +
42	0.35 BN/WH	599	Left Rear Low Level Audio Signal +
43	0.35 WH	7066	Remote Enable
44	0.8 RD/WH	340	Battery Positive Voltage

A11 RADIO X3 (UWG)

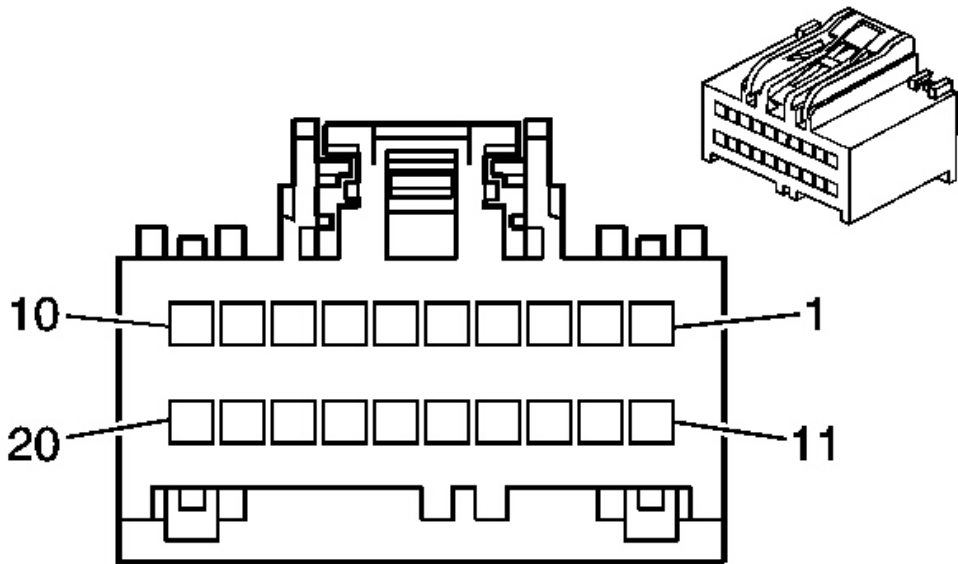


Fig. 9: A11 Radio X3 (UWG)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 31410-1200
- Service Connector: 15126711
- Description: 20-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

A11 Radio X3 (UWG)

Pin	Wire	Circuit	Function
1	0.35 L-BU	5826	Left DVD Audio Signal +
2	0.35 PU	6979	DVD Audio Common
3	0.35 YE	2059	Auxiliary Audio Left Signal
4	0.35 PK/BK	5844	Video Bright Signal
5	0.35 L-GN/BK	5845	Video Mode Signal
6	0.35 OG/BK	5831	Low Reference
7	0.35 PU	2056	Auxiliary Video High Signal
8	0.35 L-GN	7396	DVD Video Signal 2 +
9	0.35 BARE	6976	DVD Video Drain Wire
10	0.35 D-GN	6975	DVD Video Signal +
11	0.35 WH	5828	Right DVD Audio Signal +
12	0.35 BARE	6980	DVD Audio Shield
13	0.35 WH	2058	Auxiliary Audio Right Signal
14	0.35 BARE	5345	Auxiliary Audio Drain Wire (1)
15	0.35 D-GN/WH	7395	Video Mode 2 Signal
16	0.35 TN/WH	5830	Right Infrared Audio Signal
17	0.35 BARE	5346	Video Drain Wire
18	0.35 WH	7394	DVD Video Signal 2 -
19	0.35 BARE	5818	DVD Video Drain Wire
20	0.35 WH/BK	5335	DVD Video Signal -

A11 RADIO X4 (UYS OR PCJ)

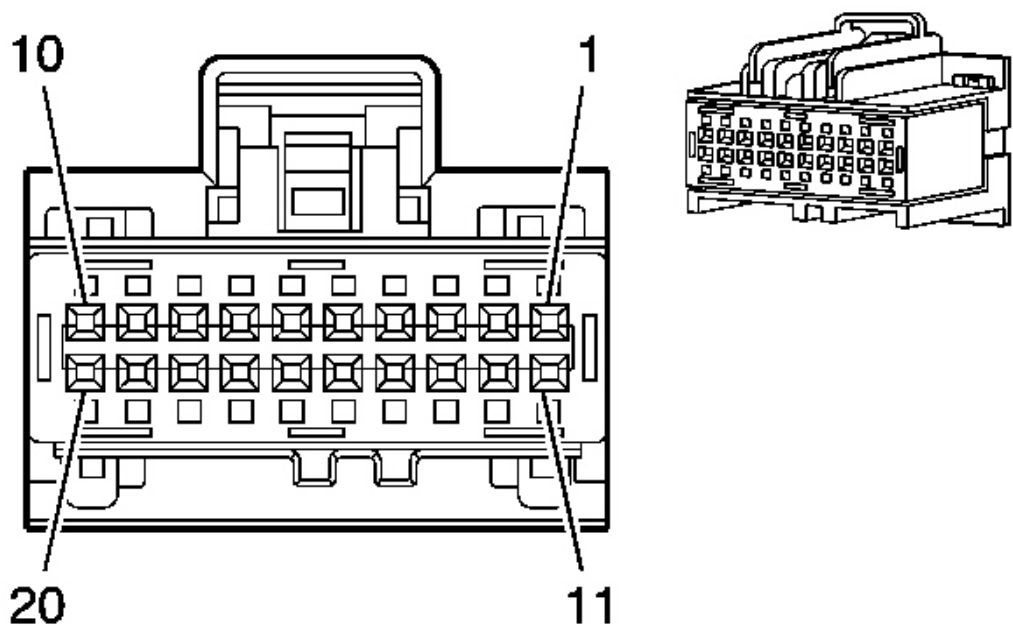


Fig. 10: A11 Radio X4 (UYS or PCJ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 31410-1201
- Service Connector: 15126710
- Description: 20-Way F 64 Series, Sealed (GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

A11 Radio X4 (UYS or PCJ)

Pin	Wire	Circuit	Function
1-4	-	-	Not Used

5	0.35 PK	6972	Camera Signal + (UVC)
6	0.35 GY	655	Cellular Microphone Signal (without UE1)
	0.35 PK	5149	Voice Recognition Audio Signal (UE1)
7	-	-	Not Used
8	0.35 BARE	3368	Touch Screen Display Drain Wire
9	0.35 PK	3369	Touch +
10	0.35 L-GN	3364	Navigation Reset Signal
11-14	-	-	Not Used
15	0.35 L-BU	6973	Camera Signal - (UVC)
16	0.35 PK/BK	5152	Voice Recognition Audio Low Reference (UE1)
	0.35 BARE	654	Cellular Microphone Signal (without UE1)
17-18	-	-	Not Used
19	0.35 PU	3370	Touch -
20	0.35 D-GN/WH	817	Vehicle Speed Signal

A20 RADIO/HVAC CONTROLS

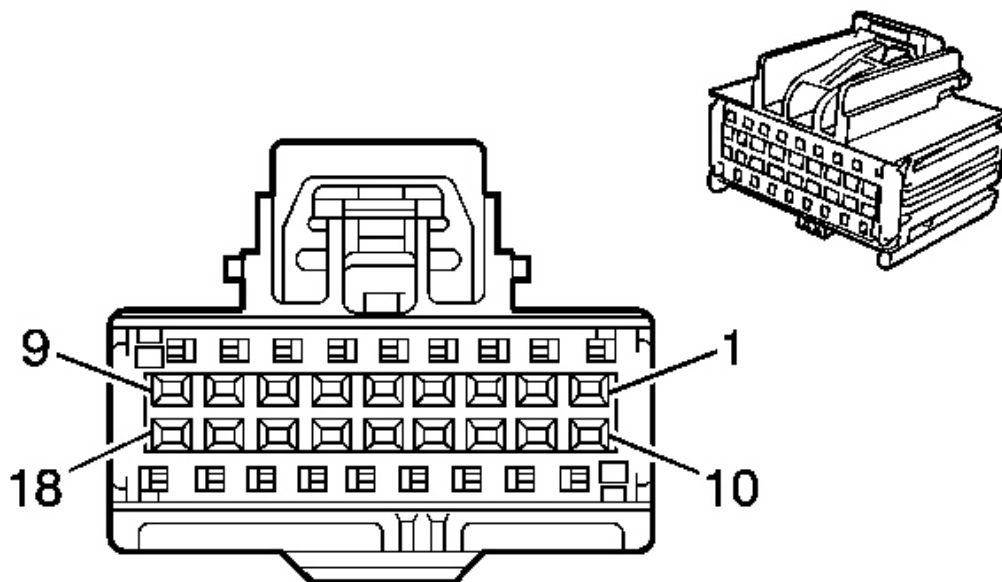


Fig. 11: A20 Radio/HVAC Controls
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 7283-4544-30
- Service Connector: 89047360
- Description: 18-Way F 0.64 Kaizen Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

A20 Radio/HVAC Controls

Pin	Wire	Circuit	Function
1	0.35 TN	7458	CGI + (UYS or PCJ)
2	0.35 YE	7459	CGI - (UYS or PCJ)
3	0.35 BARE	7460	Integrated Center Stack Serial Data Shield (UYS or PCJ)
4	0.35 L-GN	3291	Center Stack Wake-Up Signal (UYS or PCJ)
5	0.35 PK	893	DIC Select Menu Switch Signal
6	0.35 BN	897	DIC Switch Low Reference
7	0.35 L-BU	7532	Local Interconnect Network 10 (without UYS or PCJ)
8	0.35 YE	7531	Local Interconnect Network 9
9	-	-	Not Used
10	0.5 RD/WH	3240	Battery Positive Voltage
11	0.35 L-BU	3265	Child Security Switch Signal
12	0.35 PK/BK	780	Driver Door Lock Switch Lock Signal
13	0.35 OG/BK	781	Driver Door Lock Switch Unlock Signal
14	0.35 GY	5697	Child Security Indicator Control
15	0.35 PK	3290	Center Stack Reset Signal (UYS or PCJ)
16	0.35 WH	111	Hazard Switch Signal
17	0.35 BK/WH	1551	Ground
18	0.35 D-GN/WH	1358	DIC Switch Signal

A23C LIFTGATE LATCH ASSEMBLY (TB4)

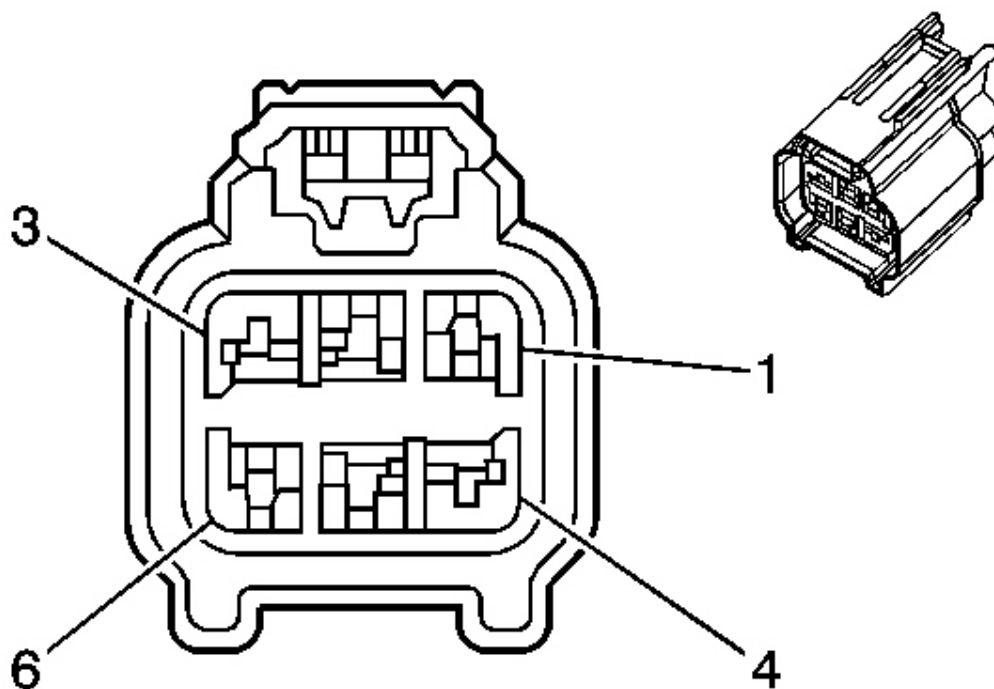


Fig. 12: A23C Liftgate Latch Assembly (TB4)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 15476199
- Service Connector: 88988358
- Description: 6-Way F GT 280 Series, Sealed (GN)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304719/19
- Core/Insulation Crimp: Pins 1 - 2/5
- Core/Insulation Crimp: Pins 3, 5, 6 - E/5

A23C Liftgate Latch Assembly (TB4)

Pin	Wire	Circuit	Function
1	0.8 L-BU	6128	Rear Closure Unlatch Motor Unlatch Control
2	-	-	Not Used
3	0.5 BK	2550	Ground
4	-	-	Not Used
5	0.35 BK	2550	Ground
6	0.35 PK/BK	1303	Liftgate Ajar Switch Signal

A23C LIFTGATE LATCH ASSEMBLY (TB5)

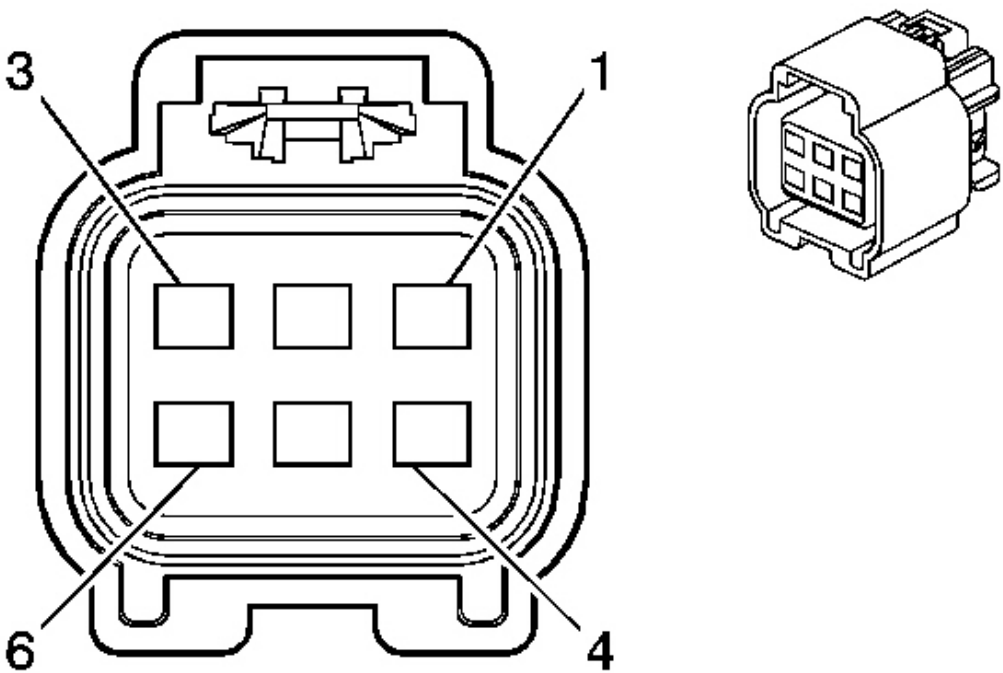


Fig. 13: A23C Liftgate Latch Assembly (TB5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 15476196
- Service Connector: 88988498

- Description: 6-Way F GT 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pins 1, 3 - 15375404
- Terminated Lead: Pins 2, 4-6 - Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304719/19
- Core/Insulation Crimp: Pins 1, 3 - 2/5
- Core/Insulation Crimp: Pins 2, 4-6 - E/5

A23C Liftgate Latch Assembly (TB5)

Pin	Wire	Circuit	Function
1	1 BN	5790	Liftgate Latch Motor Open Control
2	0.35 PU/WH	5801	Low Reference
3	1 D-BU	5791	Liftgate Latch Motor Close Control
4	0.35 D-GN	5512	Liftgate Latch Sector Switch Signal
5	0.35 GY	7000	Liftgate Latch Pawl Switch Signal
6	0.35 PK/BK	6000	Liftgate Latch Ratchet Switch Signal

A23D DOOR LATCH ASSEMBLY - DRIVER

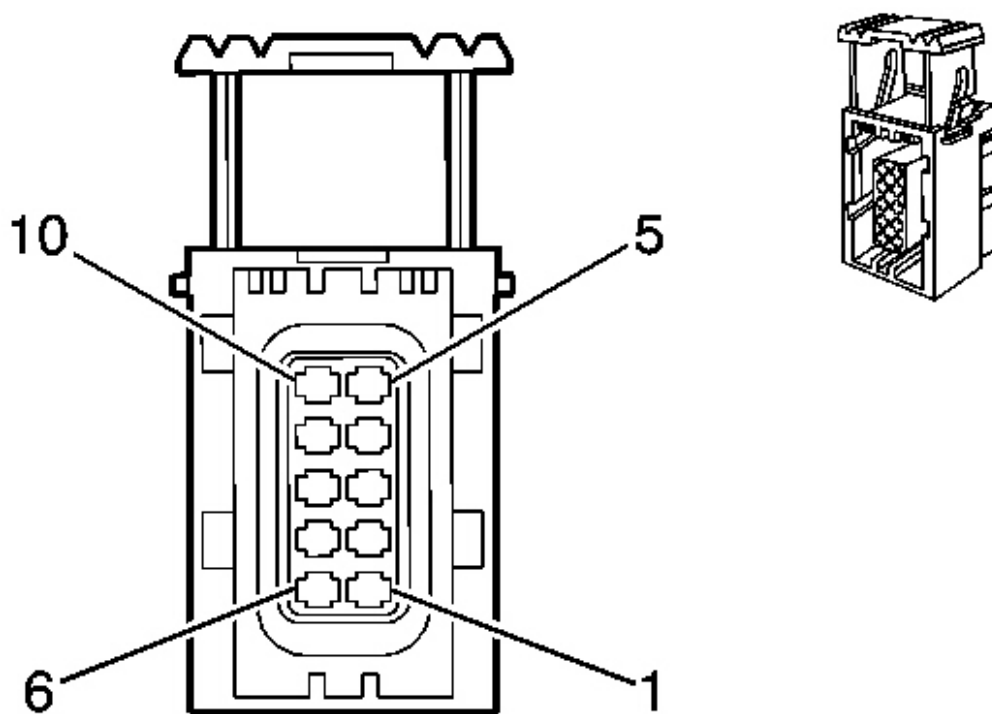


Fig. 14: A23D Door Latch Assembly - Driver
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door
- OEM Connector: 6-1355688-1
- Service Connector: 88952463
- Description: 10-Way F (BK)

Terminal Part Information

- Pins: 4, 6, 8
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1

- Pins: 2, 3
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 964274-2/16
- Core/Insulation Crimp: E/1

A23D Door Latch Assembly - Driver

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.8 TN	294	Door Lock Actuator Unlock Control
3	0.8 GY	5911	Driver Door Lock Motor Lock Control
4	0.35 D-GN	3270	Driver Door Lock Status Signal
5	-	-	Not Used
6	0.35 GY/BK	745	Left Front Door Ajar Switch Signal
7	-	-	Not Used
8	0.35 BK	750	Ground
9-10	-	-	Not Used

A23LR DOOR LATCH ASSEMBLY - LEFT REAR

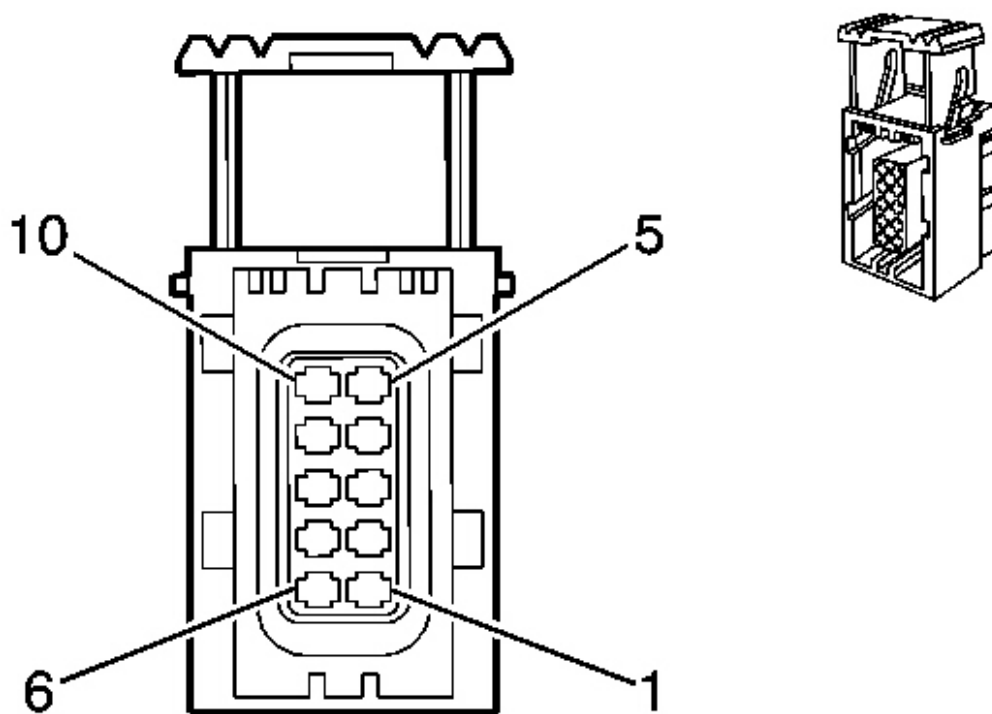


Fig. 15: A23LR Door Latch Assembly - Left Rear
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Left Rear Door
- OEM Connector: 6-1355688-1
- Service Connector: 88952463
- Description: 10-Way F (BK)

Terminal Part Information

- Pins 6, 8, 9
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1

- Pins 2-4, 7
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 964274-2/16
- Core/Insulation Crimp: E/1

A23LR Door Latch Assembly - Left Rear

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.8 TN	294	Door Lock Actuator Unlock Control
3	0.8 GY	295	Door Lock Actuator Lock Control
4	0.8 TN	294	Door Lock Actuator Unlock Control
5	-	-	Not Used
6	0.35 L-BU/BK	747	Left Rear Door Ajar Switch Signal
7	0.8 D-BU/WH	3266	Rear Door Latch Control
8	0.35 BK	2550	Ground
9	0.35 BN/WH	3269	Left Rear Door Ajar Switch Signal
10	-	-	Not Used

A23P DOOR LATCH ASSEMBLY - PASSENGER

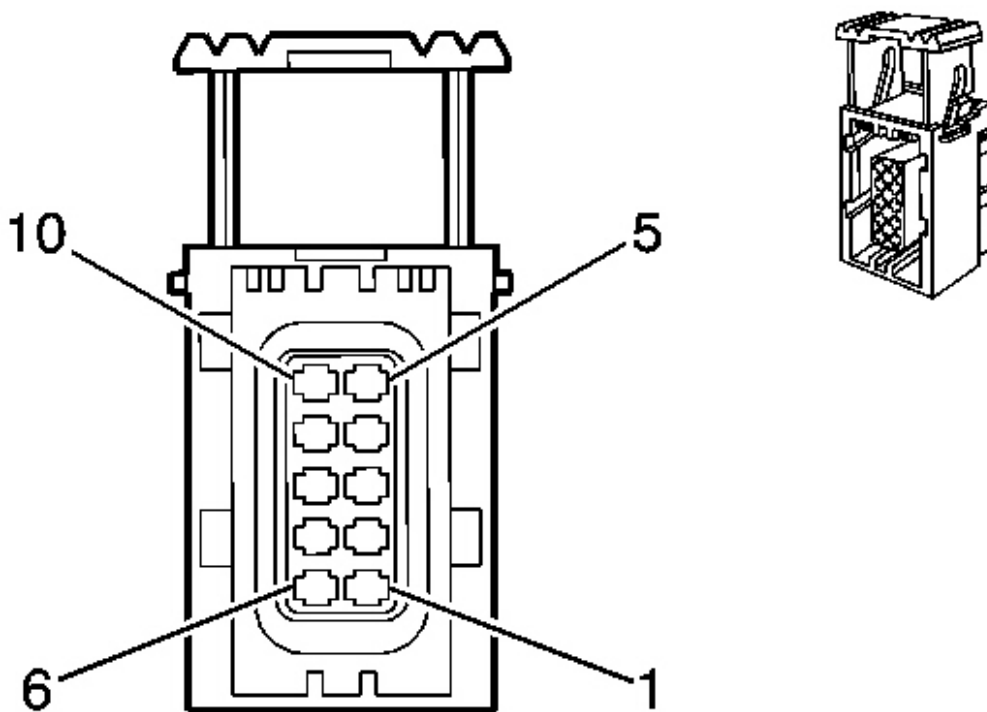


Fig. 16: A23P Door Latch Assembly - Passenger
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door
- OEM Connector: 6-1355688-1
- Service Connector: 88952463
- Description: 10-Way F (BK)

Terminal Part Information

- Pins 1, 3
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1

- Pins 7, 8
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 964274-2/16
- Core/Insulation Crimp: E/1

A23P Door Latch Assembly - Passenger

Pin	Wire	Circuit	Function
1	0.35 TN/WH	746	Right Front Door Ajar Switch Signal
2	-	-	Not Used
3	0.35 BK	750	Ground
4-6	-	-	Not Used
7	0.8 TN	294	Door Lock Actuator Unlock Control
8	0.8 GY	295	Door Lock Actuator Lock Control
9-10	-	-	Not Used

A23RR DOOR LATCH ASSEMBLY - RIGHT REAR

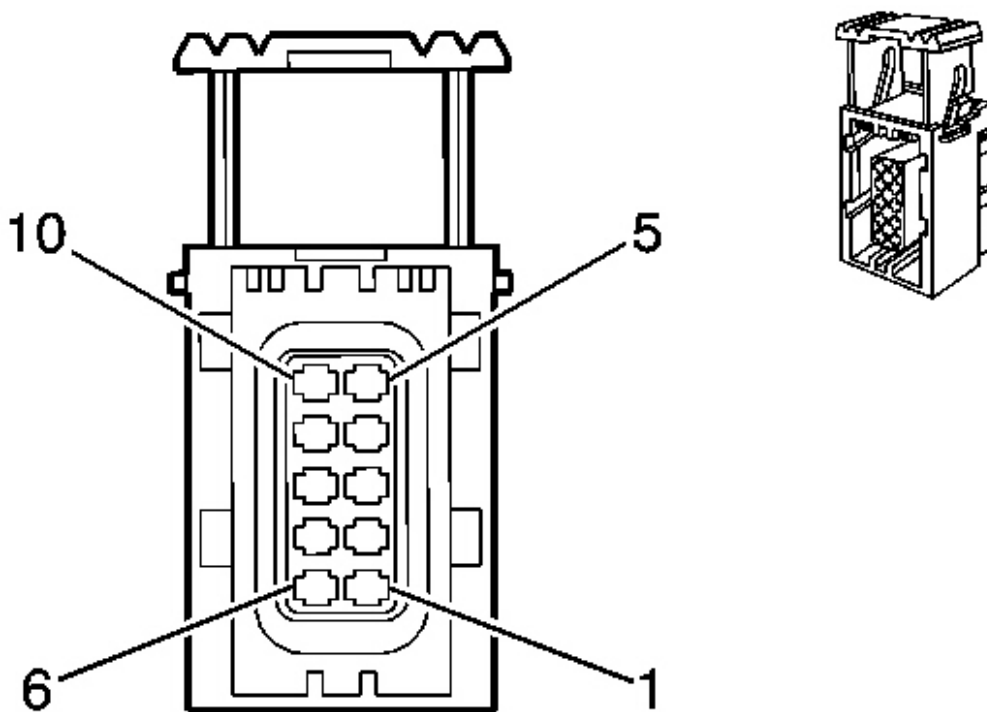


Fig. 17: A23RR Door Latch Assembly - Right Rear
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Right Rear Door
- OEM Connector: 6-1355688-1
- Service Connector: 88952463
- Description: 10-Way F (BK)

Terminal Part Information

- Pins 1, 3, 4
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1

- Pins 2, 7-9
- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 964274-2/16
- Core/Insulation Crimp: E/1

A23RR Door Latch Assembly - Right Rear

Pin	Wire	Circuit	Function
1	0.35 L-GN/BK	748	Right Rear Door Ajar Switch Signal
2	0.8 D-BU/WH	3266	Rear Door Latch Control
3	0.35 BK	550	Ground
4	0.35 GY/BK	3268	Right Rear Door Ajar Switch Signal
5-6	-	-	Not Used
7	0.8 TN	294	Door Lock Actuator Unlock Control
8	0.8 GY	295	Door Lock Actuator Lock Control
9	0.8 TN	294	Door Lock Actuator Unlock Control
10	-	-	Not Used

B1 A/C REFRIGERANT PRESSURE SENSOR

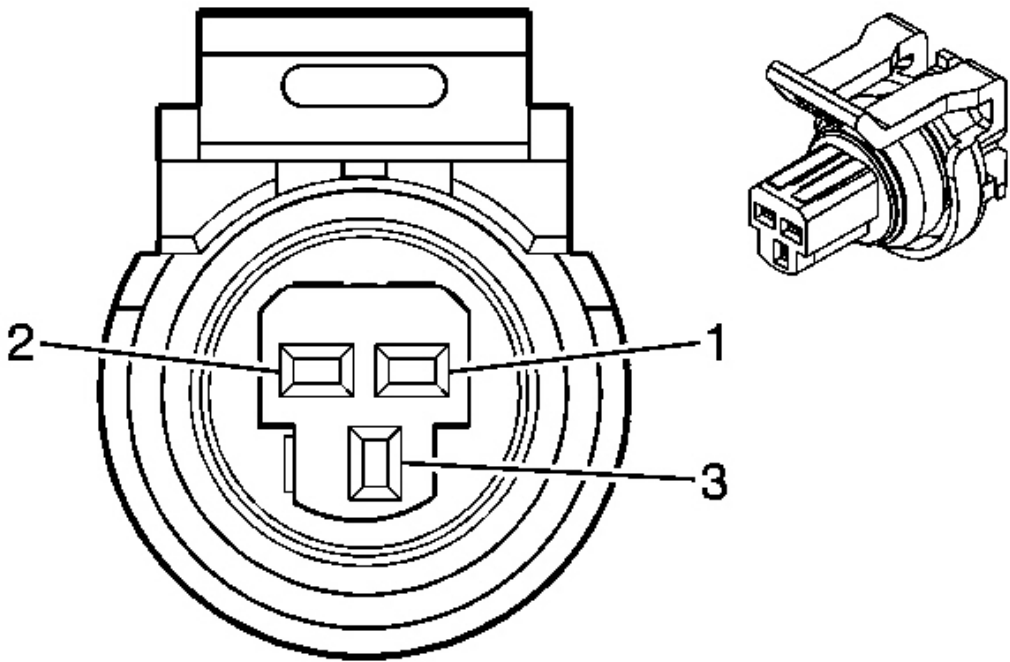


Fig. 18: B1 A/C Refrigerant Pressure Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15477863
- Service Connector: 88988301
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

B1 A/C Refrigerant Pressure Sensor

Pin	Wire	Circuit	Function

1	0.5 TN	5514	Low Reference
2	0.5 GY	2700	5-Volt 1 Reference
3	0.5 OG/BK	380	A/C Refrigerant Pressure Sensor Signal

B5LF WHEEL SPEED SENSOR - LEFT FRONT

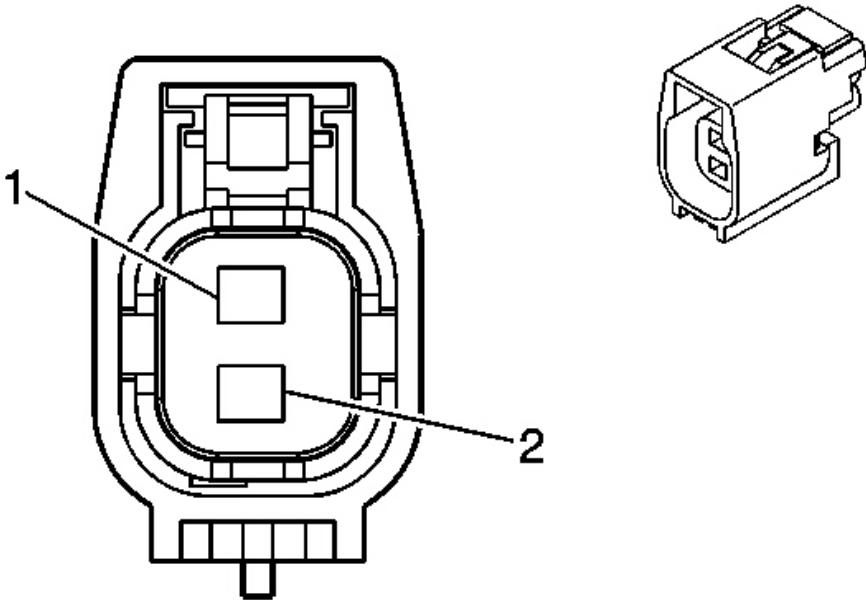


Fig. 19: B5LF Wheel Speed Sensor - Left Front
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 7287-0973-30
- Service Connector: 19178097
- Description: 2-Way F GT 1.5 Series Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)

- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B5LF Wheel Speed Sensor - Left Front

Pin	Wire	Circuit	Function
1	0.5 L-BU	830	Left Front Wheel Speed Sensor Signal
2	0.5 YE	873	Left Front Wheel Speed Sensor Low Reference

B5LR WHEEL SPEED SENSOR - LEFT REAR

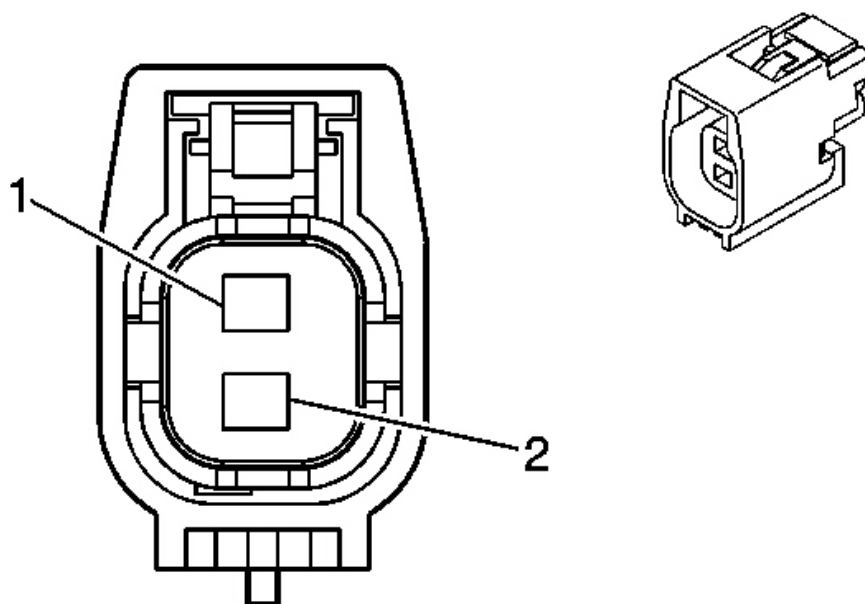


Fig. 20: B5LR Wheel Speed Sensor - Left Rear
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Left Rear Wheel Extension
- OEM Connector: 7287-0973-30
- Service Connector: 19178097
- Description: 2-Way F GT 1.5 Series Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B5LR Wheel Speed Sensor - Left Rear

Pin	Wire	Circuit	Function
1	0.5 TN	884	Left Rear Wheel Speed Sensor Signal
2	0.5 OG	885	Left Rear Wheel Speed Sensor Low Reference

B5RF WHEEL SPEED SENSOR - RIGHT FRONT

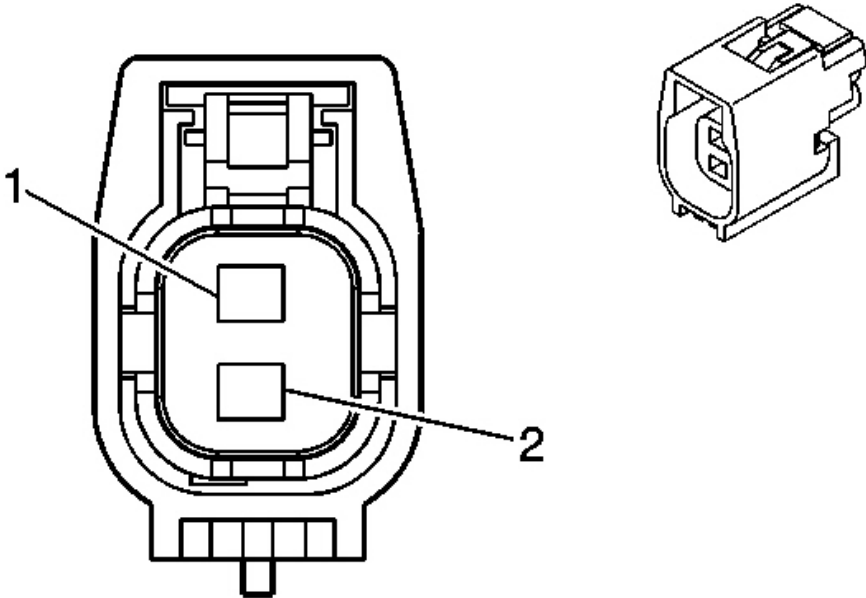


Fig. 21: B5RF Wheel Speed Sensor - Right Front
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 7287-0973-30
- Service Connector: 19178097
- Description: 2-Way F GT 1.5 Series Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B5RF Wheel Speed Sensor - Right Front

Pin	Wire	Circuit	Function
1	0.5 D-GN	872	Right Front Wheel Speed Sensor Signal
2	0.5 TN	833	Right Front Wheel Speed Sensor Low Reference

B5RR WHEEL SPEED SENSOR - RIGHT REAR

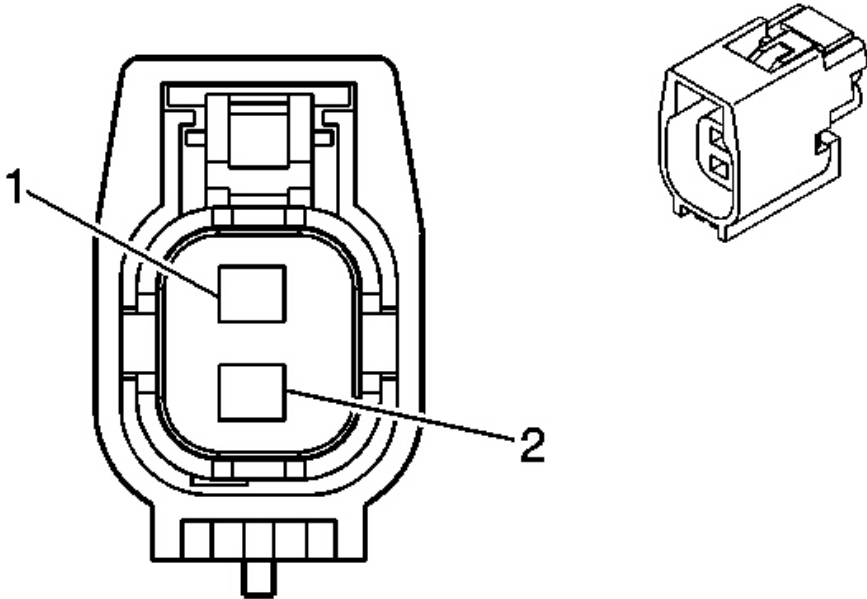


Fig. 22: B5RR Wheel Speed Sensor - Right Rear
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Right Rear Wheel Extension
- OEM Connector: 7287-0973-30
- Service Connector: 19178097
- Description: 2-Way F GT 1.5 Series Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B5RR Wheel Speed Sensor - Right Rear

Pin	Wire	Circuit	Function
1	0.5 BK	882	Right Rear Wheel Speed Sensor Signal
2	0.5 WH	883	Right Rear Wheel Speed Sensor Low Reference

B7E AIR TEMPERATURE SENSOR - DUCT RIGHT LOWER (C68)

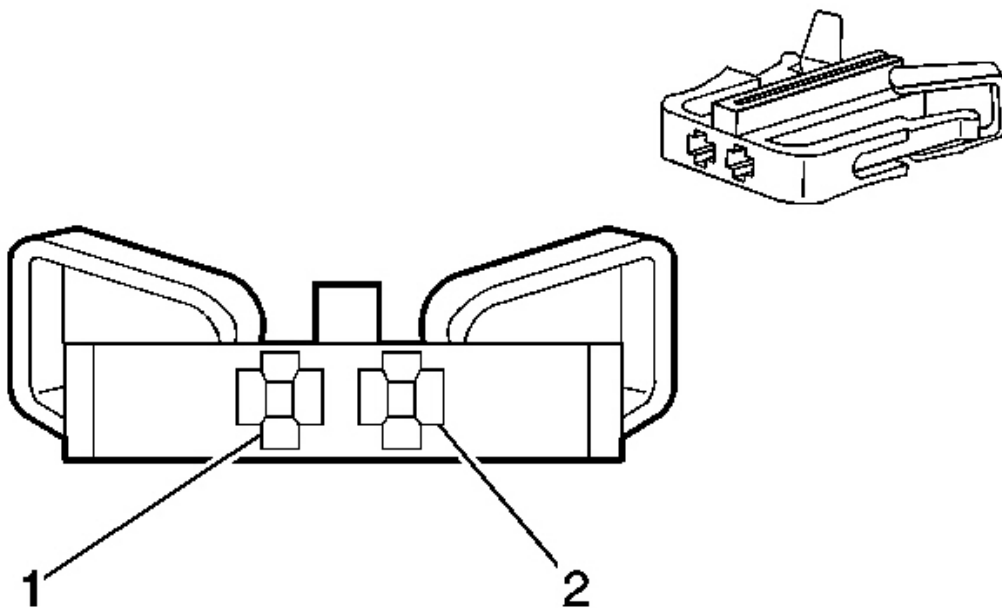


Fig. 23: B7E Air Temperature Sensor - Duct Right Lower (C68)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA HVAC
- OEM Connector: 13069669696
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 13069669696
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 13069669696
- Core/Insulation Crimp: Not Available

B7E Air Temperature Sensor - Duct Right Lower (C68)

Pin	Wire	Circuit	Function
1	0.35 TN	520	Lower Right Air Temperature Sensor Signal
2	0.35 TN	407	Low Reference

& Terrain

B7J AIR TEMPERATURE SENSOR - DUCT RIGHT UPPER (C68)

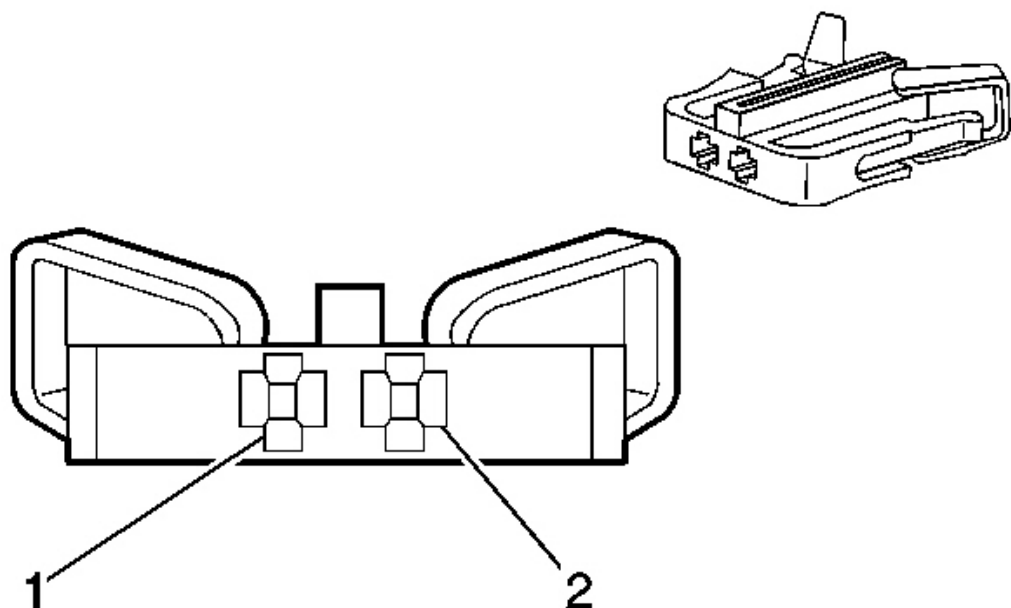


Fig. 24: B7J Air Temperature Sensor - Duct Right Upper (C68)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA HVAC
- OEM Connector: 13069669696
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 13069669696
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 13069669696
- Core/Insulation Crimp: Not Available

B7J Air Temperature Sensor - Duct Right Upper (C68)

Pin	Wire	Circuit	Function
-----	------	---------	----------

1	0.35 TN	517	Upper Right Air Temperature Sensor Signal
2	0.35 TN	407	Low Reference

B9 AMBIENT AIR TEMPERATURE SENSOR

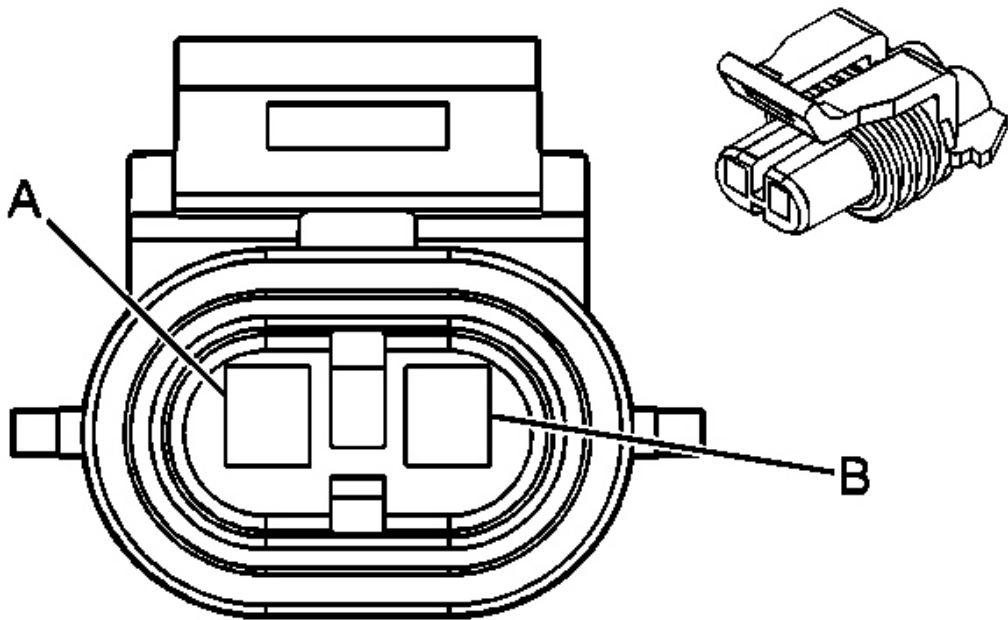


Fig. 25: B9 Ambient Air Temperature Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information • Harness: Forward Lamp • OEM Connector: 13543521 • Service Connector: 12101856 • Description: 2-Way F Metri-Pack 150 Series, Sealed (BK) Terminal Part Information • Terminated Lead: Pending • Release Tool: 12094429 • Diagnostic Test Probe: J-35616-14 (GN) • Terminal/Tray: 12048074/2

- Core/Insulation Crimp: E/1

B9 Ambient Air Temperature Sensor

Pin	Wire	Circuit	Function
A	0.35 D-GN/WH	636	Ambient Air Temperature Sensor Signal
B	0.35 YE	61	Low Reference

B10 AMBIENT LIGHT SENSOR (C67)

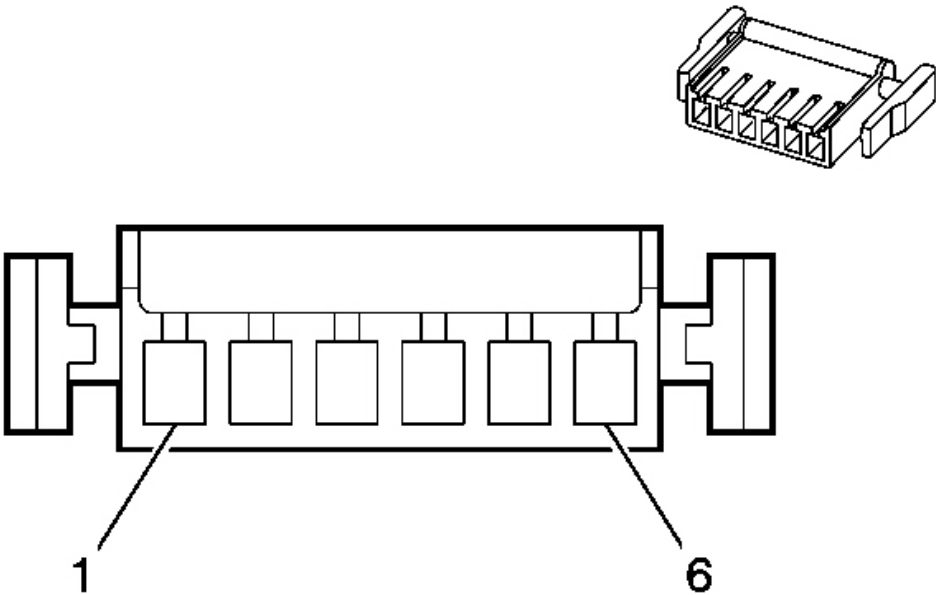


Fig. 26: B10 Ambient Light Sensor (C67)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 15344190
- Service Connector: 13316153
- Description: 6-Way F 0.64 Micro Quadlok Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

B10 Ambient Light Sensor (C67)

Pin	Wire	Circuit	Function
1	0.35 GY	728	Security Indicator Control
2-4	-	-	Not Used
5	0.35 WH	278	Ambient Light Sensor Signal
6	0.35 BN	6102	Low Reference

B10B AMBIENT LIGHT/SUNLOAD SENSOR (C68)

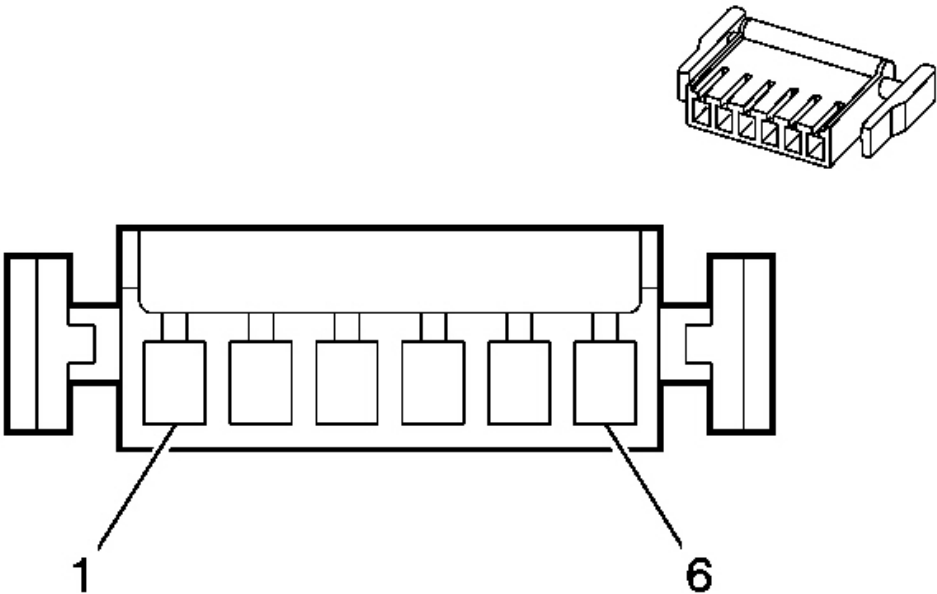


Fig. 27: B10B Ambient Light/Sunload Sensor (C68)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 15344190
- Service Connector: 13316153
- Description: 6-Way F 0.64 Micro Quadlok Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

B10B Ambient Light/Sunload Sensor (C68)

Pin	Wire	Circuit	Function
1	0.35 GY	728	Security Indicator Control
2	-	-	Not Used
3	0.35 D-GN	734	Inside Air Temperature Control Signal
4	0.35 PU	1783	Twilight Sentinel Delay Signal
5	0.35 WH	278	Ambient Light Sensor Signal
6	0.35 BN	6102	Low Reference

B17 BAROMETRIC PRESSURE SENSOR (LF1)

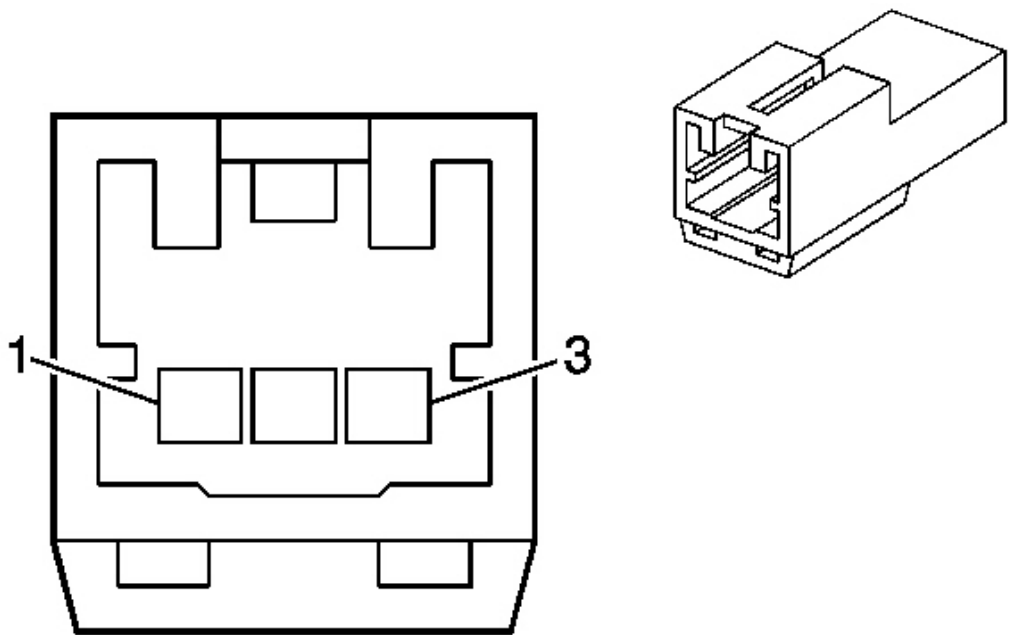


Fig. 28: B17 Barometric Pressure Sensor (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 13639747
- Service Connector: 19181248
- Description: 3-Way F 2.8 Timer Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-36
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 4-964286-1/16
- Core/Insulation Crimp: E/1

B17 Barometric Pressure Sensor (LF1)

Pin	Wire	Circuit	Function
1	0.5 GY/WH	3201	5-Volt 1 Reference

& Terrain			
2	0.5 TN/WH	3202	Low Reference
3	0.5 YE/WH	3200	Throttle Position Sensor Signal

B18 BATTERY CURRENT SENSOR

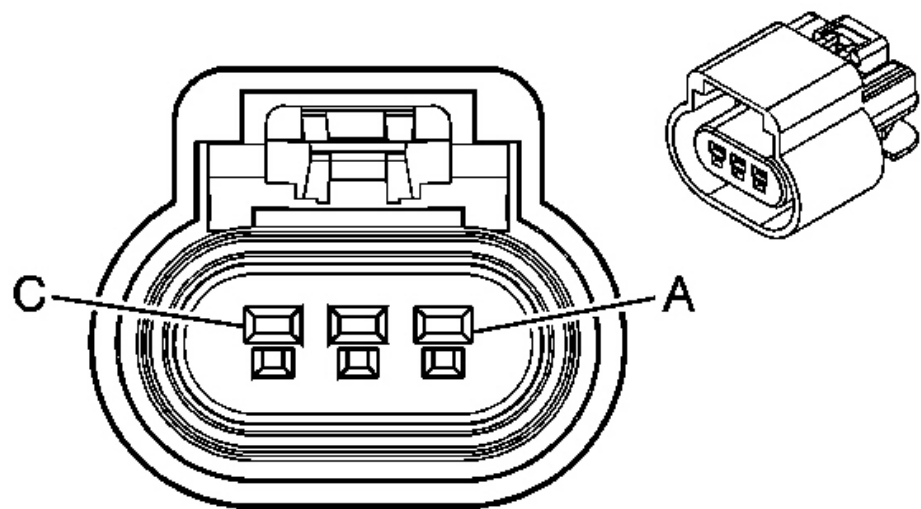


Fig. 29: B18 Battery Current Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 13519047
- Service Connector: 15306388
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8

- Core/Insulation Crimp: E/A

B18 Battery Current Sensor

Pin	Wire	Circuit	Function
A	0.5 PK	5076	Current Sensor Voltage
B	0.5 BN	5077	Low Reference
C	0.5 WH	5075	Current Sensor Signal

B19B BRAKE BOOSTER VACUUM SENSOR

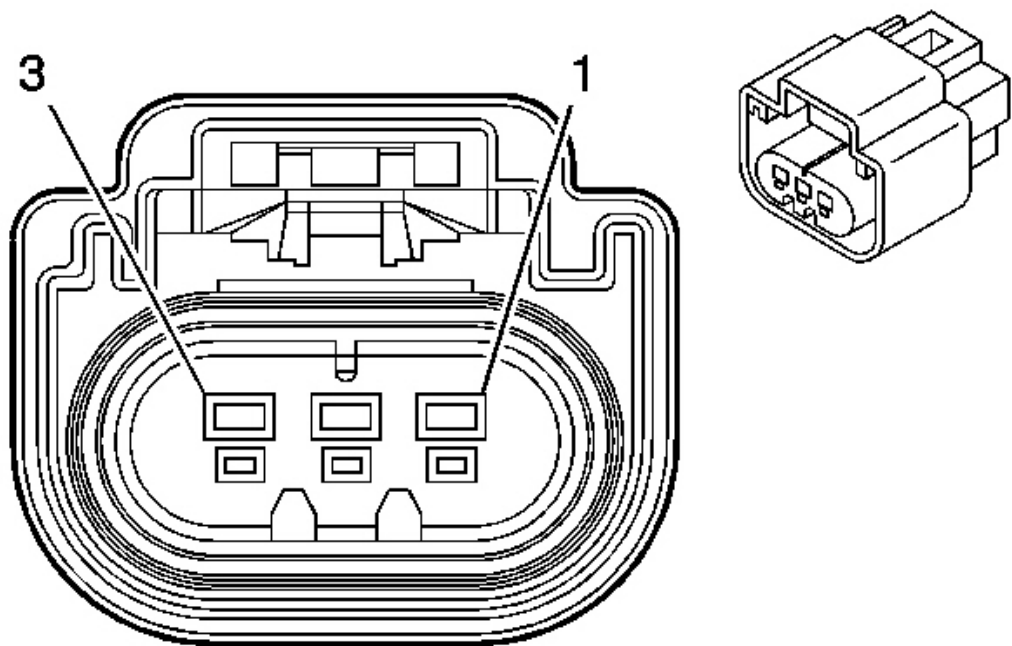


Fig. 30: B19B Brake Booster Vacuum Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 13511996
- Service Connector: 19149288
- Description: 3-Way F GT 150 Series, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B19B Brake Booster Vacuum Sensor

Pin	Wire	Circuit	Function
1	0.5 OG	6030	Brake Booster Vacuum Sensor Signal
2	0.5 YE/BK	6032	Low Reference
3	0.5 GY	6031	5-Volt Reference

B20 BRAKE FLUID LEVEL SWITCH

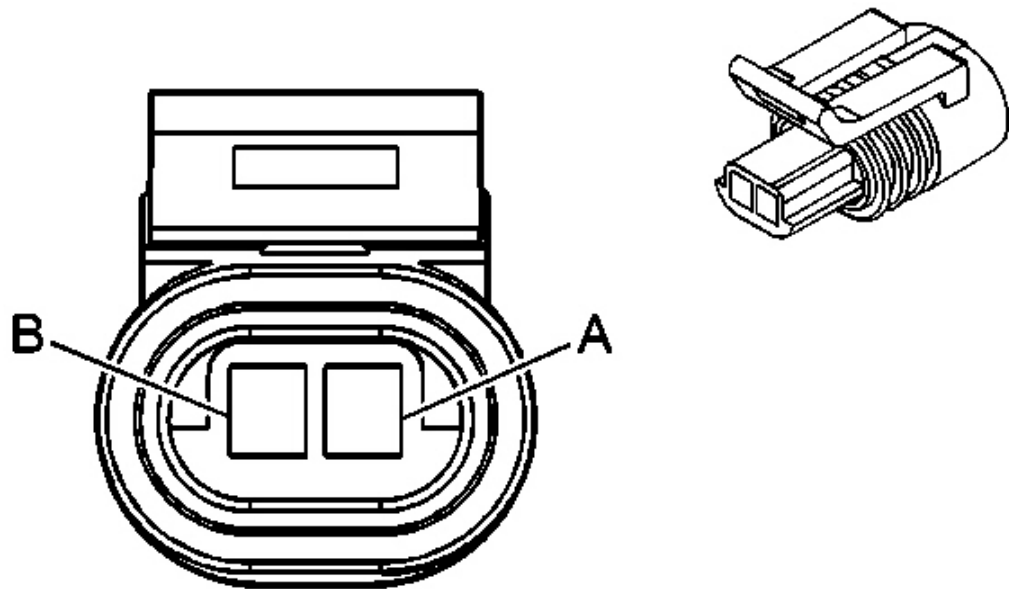


Fig. 31: B20 Brake Fluid Level Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body

- OEM Connector: 12162195
- Service Connector: 88987993
- Description: 2-Way F Metri-Pack 150.2 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12180559-1
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 12124075/5
- Core/Insulation Crimp: E/C

B20 Brake Fluid Level Switch

Pin	Wire	Circuit	Function
A	0.5 BK	750	Ground
B	0.5 PU	333	Brake Fluid Level Sensor Signal

B22 BRAKE PEDAL POSITION SENSOR

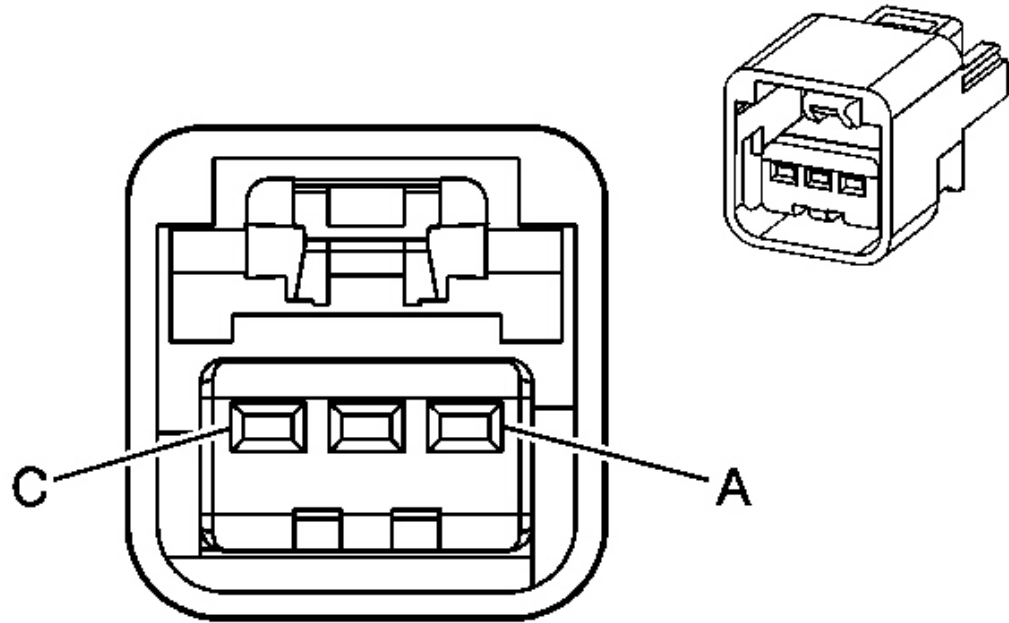


Fig. 32: B22 Brake Pedal Position Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 15332132
- Service Connector: 88953364
- Description: 3-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: 13575479
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C

B22 Brake Pedal Position Sensor

Pin	Wire	Circuit	Function
A	0.35 BN	5360	Low Reference
B	0.35 YE	5361	Brake Pedal Position Sensor Signal
C	0.35 WH	5359	5-Volt Reference

B23A CAMSHAFT POSITION SENSOR - BANK 1 EXHAUST (LF1)

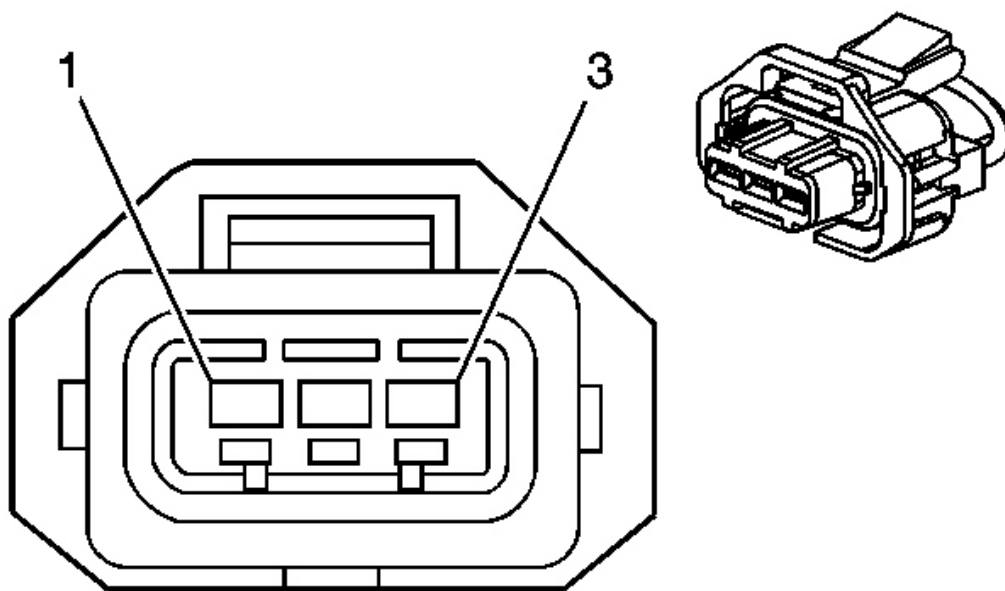


Fig. 33: B23A Camshaft Position Sensor - Bank 1 Exhaust (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 1928403968
- Service Connector: 88988595
- Description: 3-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-561
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 1928498056/8
- Core/Insulation Crimp: E/1

B23A Camshaft Position Sensor - Bank 1 Exhaust (LF1)

Pin	Wire	Circuit	Function
1	0.5 GY	5296	Low Reference
2	0.5 D-GN	5273	Camshaft Position Sensor - Exhaust Bank 1

& Terrain			
			Signal
3	0.5 YE/BK	5297	5-Volt 1 Reference

B23B CAMSHAFT POSITION SENSOR - BANK 1 INTAKE (LF1)

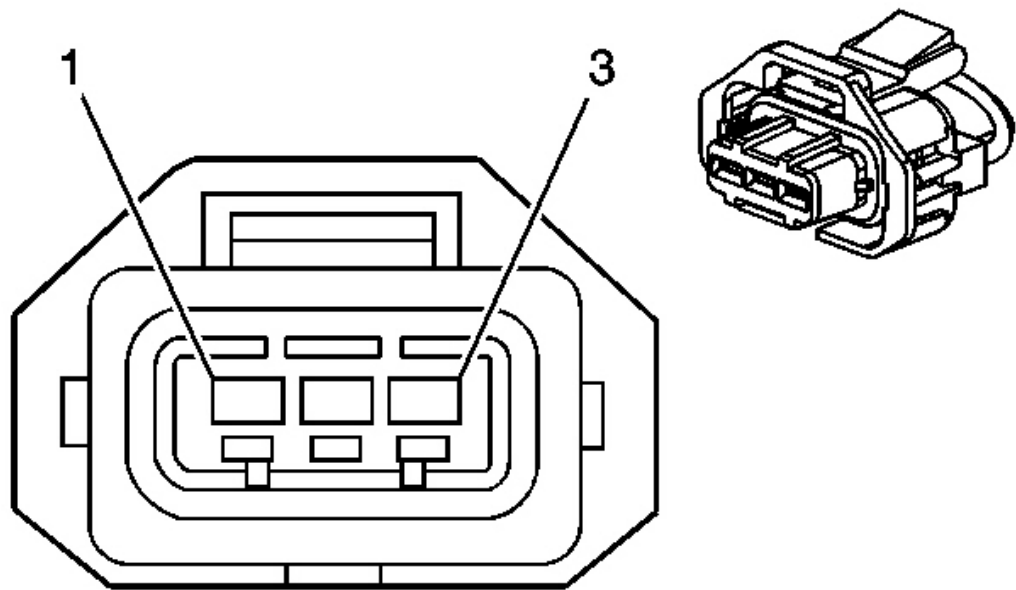


Fig. 34: B23B Camshaft Position Sensor - Bank 1 Intake (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 1928403968
- Service Connector: 88988595
- Description: 3-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-561
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 1928498056/8
- Core/Insulation Crimp: E/1

B23B Camshaft Position Sensor - Bank 1 Intake (LF1)

Pin	Wire	Circuit	Function
1	0.5 TN	5301	Low Reference
2	0.5 OG	5275	Camshaft Position (CMP) Sensor - Intake Bank 1 Signal
3	0.5 D-BU	5300	5-Volt 1 Reference

B23C CAMSHAFT POSITION SENSOR - BANK 2 EXHAUST (LF1)

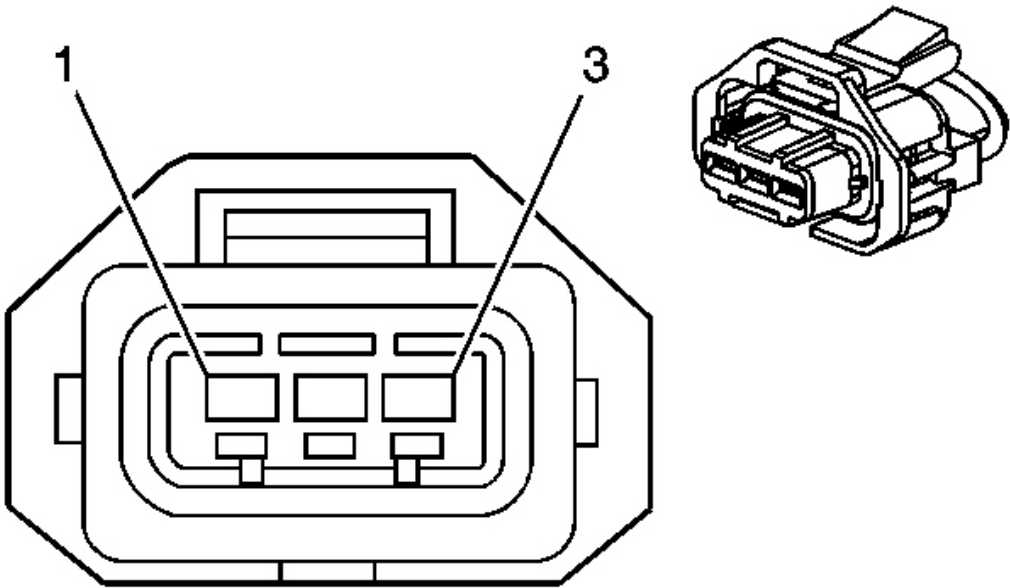


Fig. 35: B23C Camshaft Position Sensor - Bank 2 Exhaust (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 1928403968
- Service Connector: 88988595
- Description: 3-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-561

- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 1928498056/8
- Core/Insulation Crimp: E/1

B23C Camshaft Position Sensor - Bank 2 Exhaust (LF1)

Pin	Wire	Circuit	Function
1	0.5 BN	5299	Low Reference
2	0.5 PU	5274	Camshaft Position (CMP) Sensor - Exhaust Bank 2 Signal
3	0.5 L-GN	5298	5-Volt 1 Reference

B23D CAMSHAFT POSITION SENSOR - BANK 2 INTAKE (LF1)

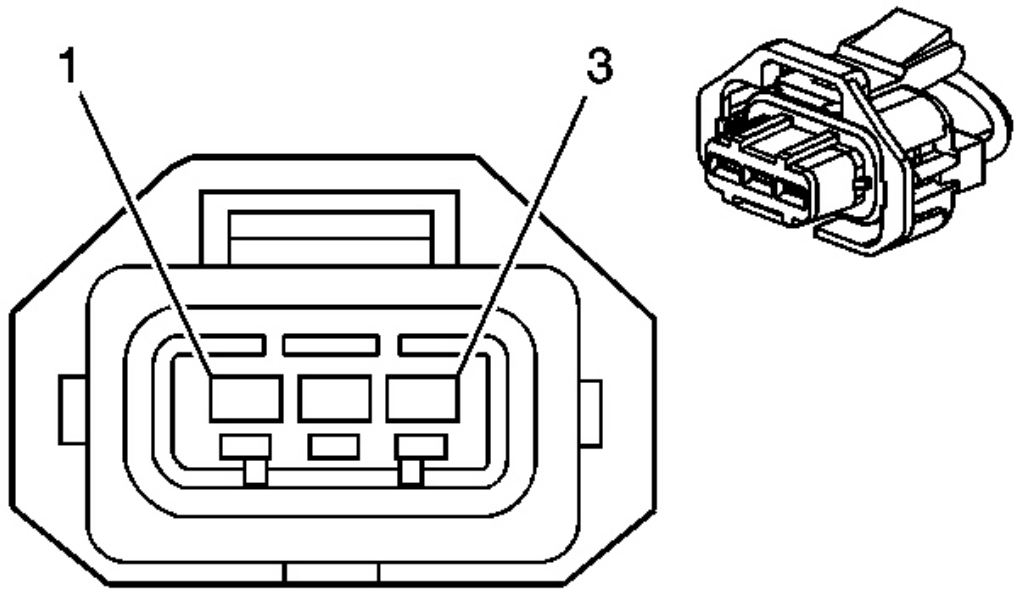


Fig. 36: B23D Camshaft Position Sensor - Bank 2 Intake (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 1928403968
- Service Connector: 88988595

- Description: 3-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-561
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 1928498056/8
- Core/Insulation Crimp: E/1

B23D Camshaft Position Sensor - Bank 2 Intake (LF1)

Pin	Wire	Circuit	Function
1	0.5 BN/WH	5303	Low Reference
2	0.5 YE	5276	Camshaft Position (CMP) Sensor - Intake Bank 2 Signal
3	0.5 L-BU	5302	5-Volt 1 Reference

B23E CAMSHAFT POSITION SENSOR - EXHAUST (LAF)

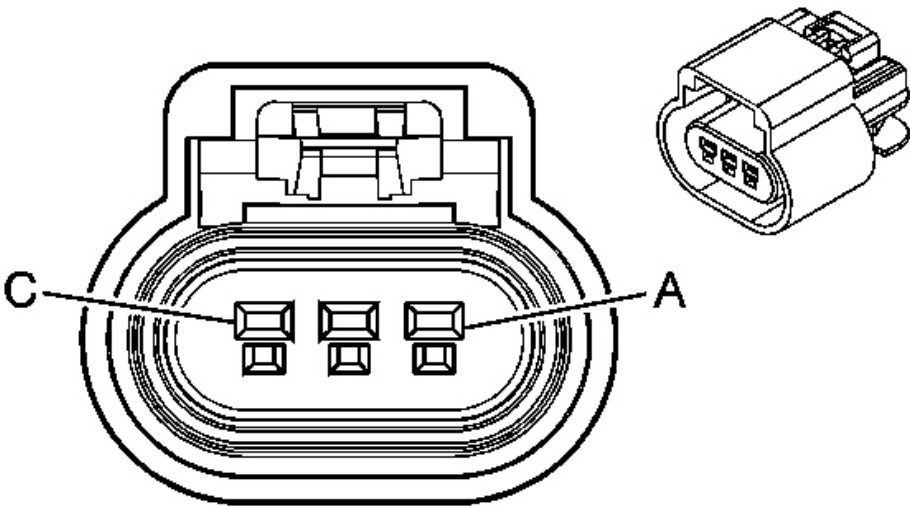


Fig. 37: B23E Camshaft Position Sensor - Exhaust (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15326808
- Service Connector: 15306388
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326427/5
- Core/Insulation Crimp: E/A

B23E Camshaft Position Sensor - Exhaust (LAF)

Pin	Wire	Circuit	Function
A	0.5 YE/BK	5297	5-Volt 1 Reference
B	0.5 GY	5296	Low Reference
C	0.5 D-GN	5273	Camshaft Position (CMP) Sensor - Exhaust Bank 1 Signal

B23F CAMSHAFT POSITION SENSOR - INTAKE (LAF)

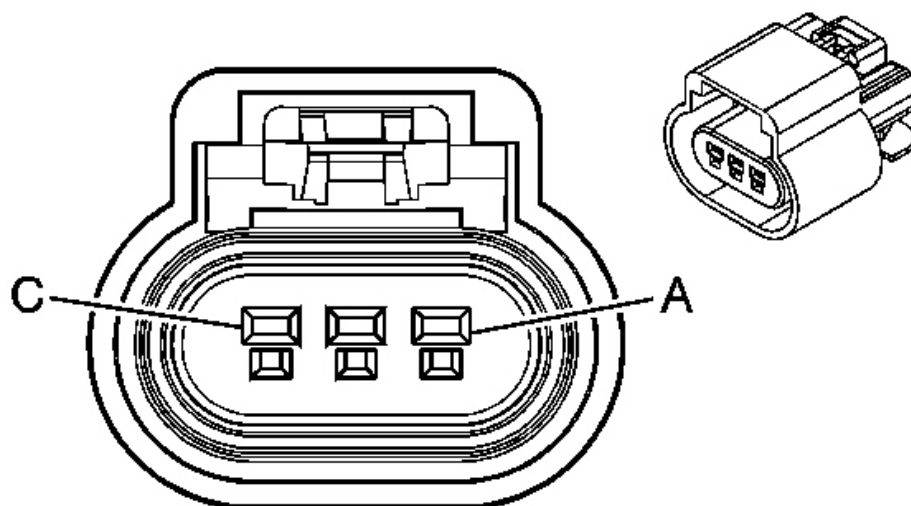


Fig. 38: B23F Camshaft Position Sensor - Intake (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15326808
- Service Connector: 15306388
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326427/5
- Core/Insulation Crimp: E/A

B23F Camshaft Position Sensor - Intake (LAF)

Pin	Wire	Circuit	Function
A	0.5 D-BU	5300	5-Volt 1 Reference

& Terrain			
B	0.5 TN	5301	Low Reference
C	0.5 OG	5275	Camshaft Position (CMP) Sensor - Intake Bank 1 Signal

B24 CELLULAR PHONE MICROPHONE (UE1)

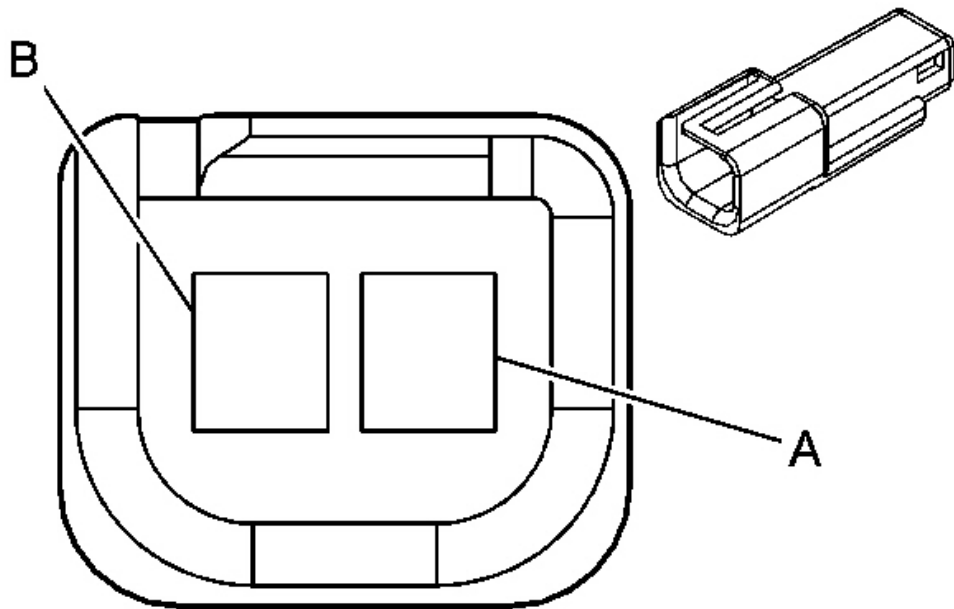


Fig. 39: B24 Cellular Phone Microphone (UE1)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information • Harness: Headliner • OEM Connector: 12047663 • Service Connector: 12085481 • Description: 2-Way M Metri-Pack 150 Series (BK) Terminal Part Information • Terminated Lead: Pending • Release Tool: 12094429 • Diagnostic Test Probe: J-35616-3 (GY)
--

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C

B24 Cellular Phone Microphone (UE1)

Pin	Wire	Circuit	Function
A	0.35 BARE	654	Cellular Microphone Low Reference
B	0.35 GY	655	Cellular Microphone Signal

B26 CRANKSHAFT POSITION SENSOR

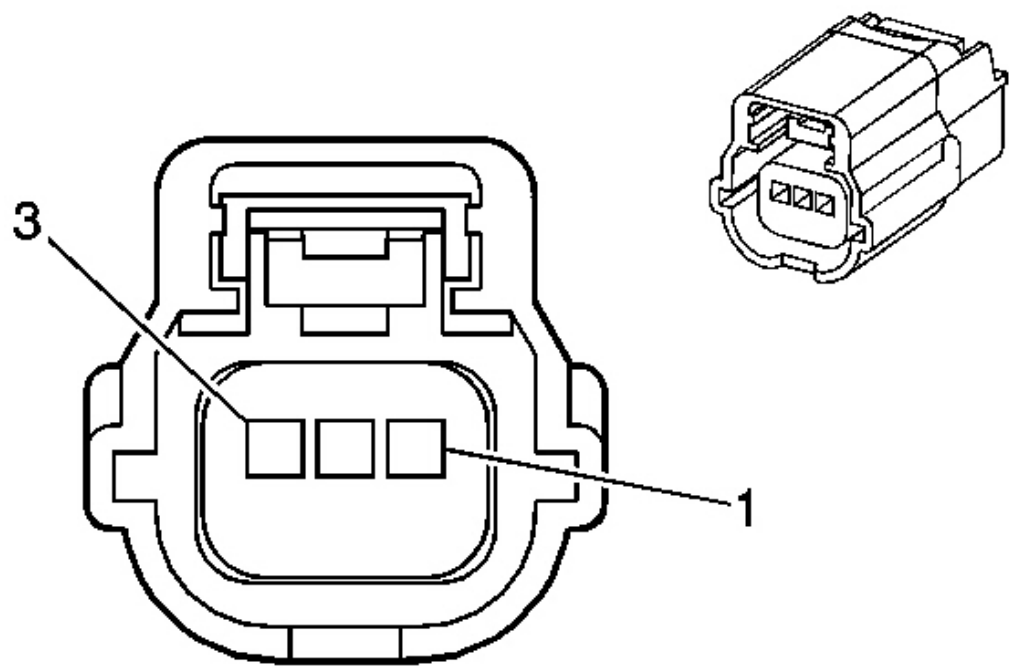


Fig. 40: B26 Crankshaft Position Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 31403-3710
- Service Connector: 88988337
- Description: 3-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33467-0005/23
- Core/Insulation Crimp: J/J

B26 Crankshaft Position Sensor

Pin	Wire	Circuit	Function
1	0.5 PU/WH	6270	5-Volt 2 Reference (LAF)
	0.5 GY/BK	6272	Low Reference (LF1)
2	0.5 GY/BK	6272	Low Reference (LAF)
	0.5 WH/BK	6271	Crankshaft Position Sensor Signal (LF1)
3	0.5 WH/BK	6271	Crankshaft Position Sensor Signal (LAF)
	0.5 PU/WH	6270	5-Volt 2 Reference (LF1)

B34 ENGINE COOLANT TEMPERATURE SENSOR (LAF)

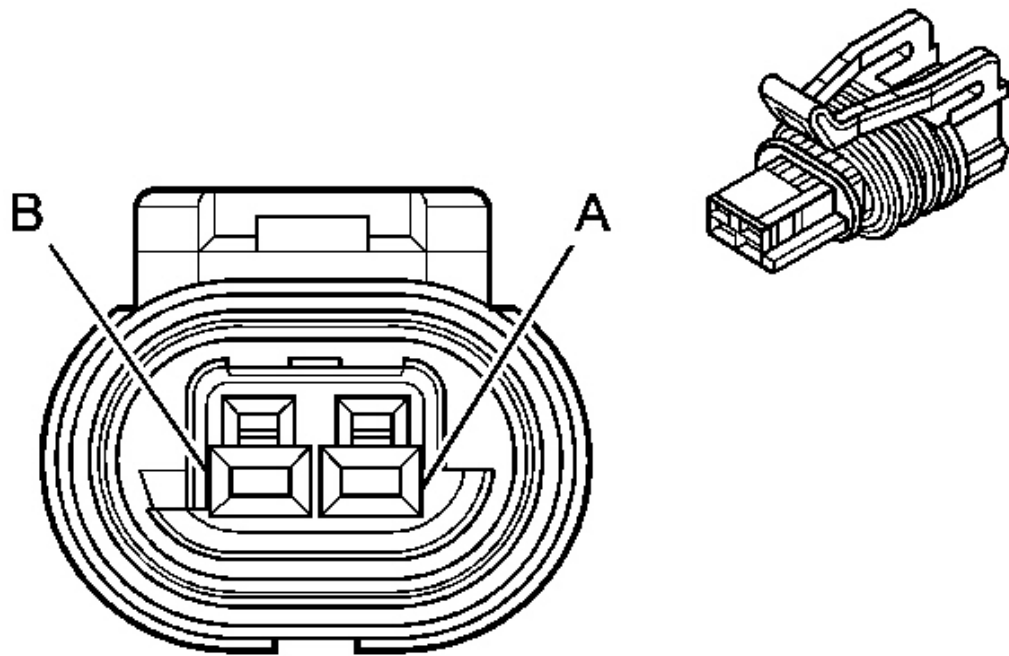


Fig. 41: B34 Engine Coolant Temperature Sensor (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15449028
- Service Connector: 88987993
- Description: 2-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

B34 Engine Coolant Temperature Sensor (LAF)

Pin	Wire	Circuit	Function
A	0.5 TN	2761	Low Reference
B	0.5 YE	410	ECT Sensor Signal

B34 ENGINE COOLANT TEMPERATURE SENSOR (LF1)

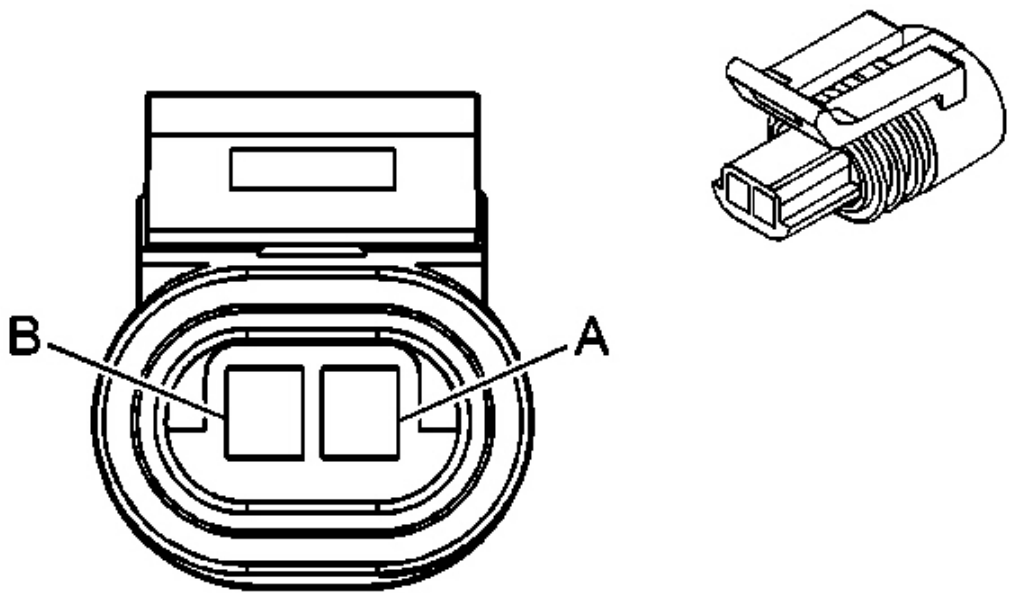


Fig. 42: B34 Engine Coolant Temperature Sensor (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 13584122
- Service Connector: 19181237
- Description: 2-Way F Metri-Pack 150.2 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12180559-1
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 12176860/3
- Core/Insulation Crimp: E/C

B34 Engine Coolant Temperature Sensor (LF1)

Pin	Wire	Circuit	Function
A	0.5 TN	476	Low Reference
B	0.5 YE	410	ECT Sensor Signal

B37 ENGINE OIL PRESSURE SWITCH (LAF)

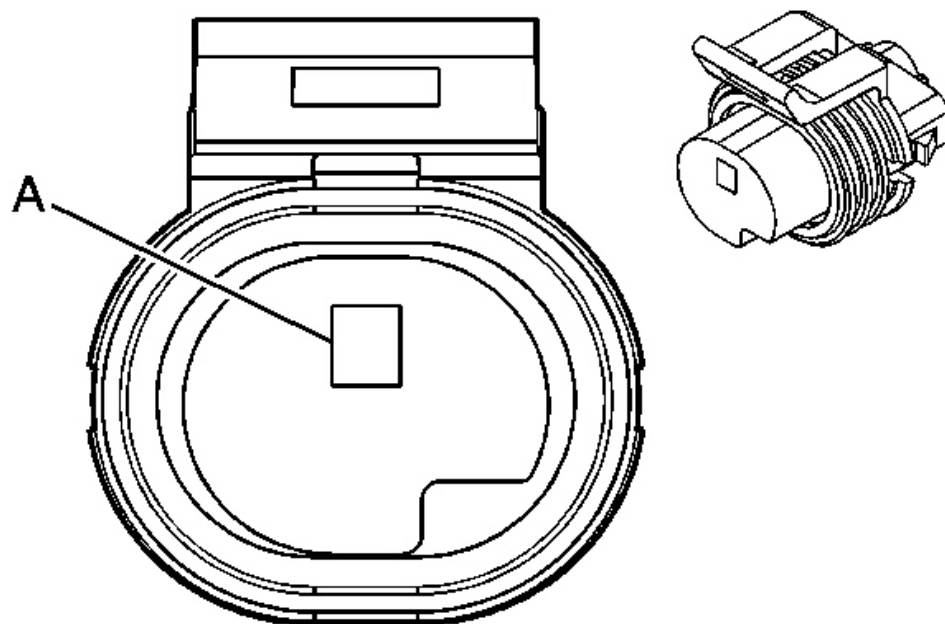


Fig. 43: B37 Engine Oil Pressure Switch (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12065299
- Service Connector: 12085500
- Description: 1-Way F Metri-Pack 150 Series, Sealed (L-GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1

B37 Engine Oil Pressure Switch (LAF)

Pin	Wire	Circuit	Function
A	0.5 TN/BK	231	Oil Pressure Switch Signal

B37 ENGINE OIL PRESSURE SWITCH (LF1)

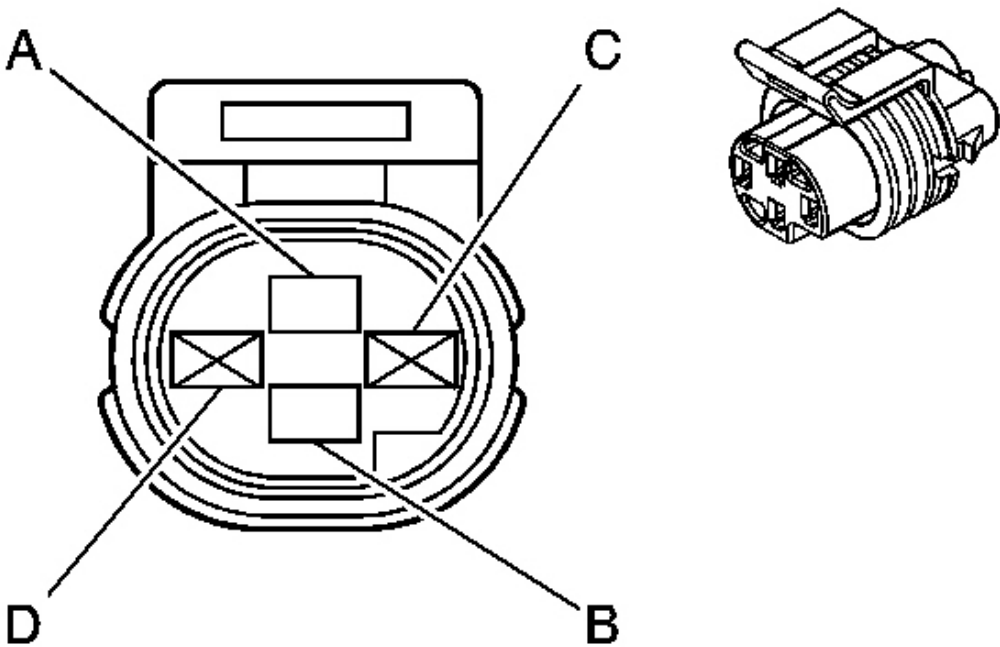


Fig. 44: B37 Engine Oil Pressure Switch (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information
• Harness: Engine • OEM Connector: 12065400 • Service Connector: 12126436 • Description: 4-Way F Metri-Pack 150 Series (GN)
Terminal Part Information
• Terminated Lead: Pending • Release Tool: 12094429 • Diagnostic Test Probe: J-35616-14 (GN)

- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1

B37 Engine Oil Pressure Switch (LF1)

Pin	Wire	Circuit	Function
A	0.5 TN/BK	231	Oil Pressure Switch Signal
B	0.5 TN	407	Low Reference
C-D	-	-	Not Available

B39 A/C EVAPORATOR TEMPERATURE SENSOR

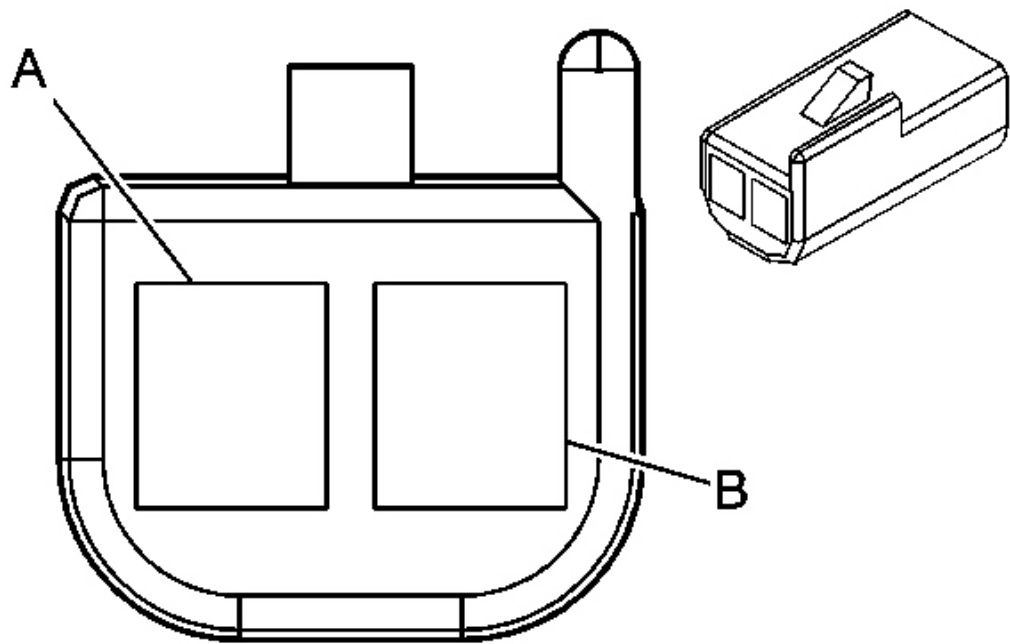


Fig. 45: B39 A/C Evaporator Temperature Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA HVAC
- OEM Connector: 12047662
- Service Connector: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

B39 A/C Evaporator Temperature Sensor

Pin	Wire	Circuit	Function
A	0.35 WH	2622	EVAP Core Temperature Sensor Signal
B	0.35 BK/WH	551	Low Reference

B46B FUEL LEVEL SENSOR - SECONDARY

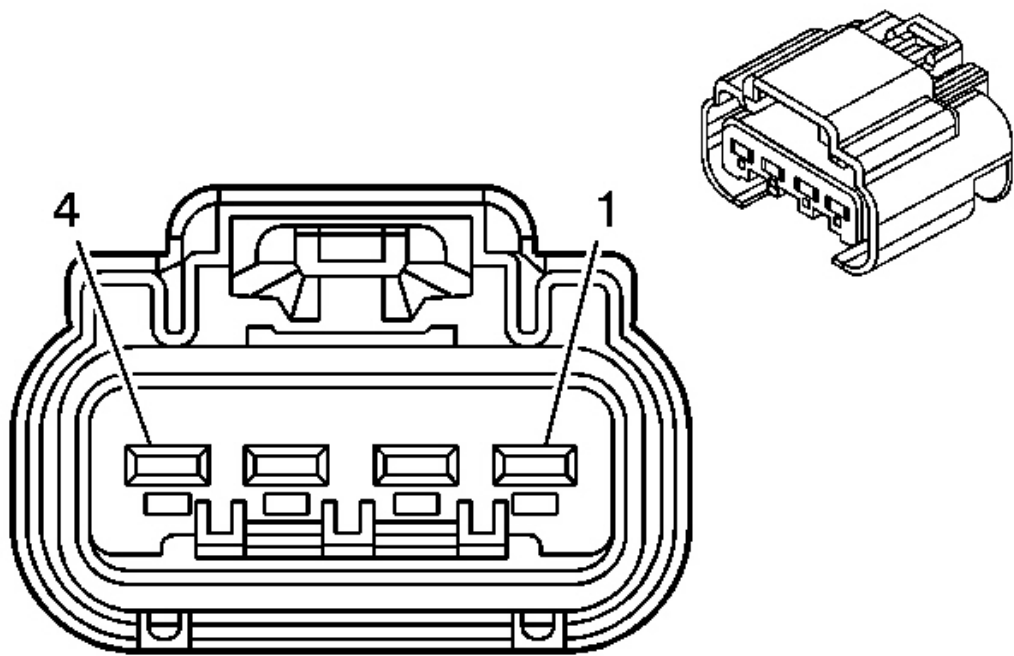


Fig. 46: B46B Fuel Level Sensor - Secondary
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Tank
- OEM Connector: 88988992
- Service Connector: 19178173
- Description: 4-Way F GT 280 Series, Sealed (NA)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 88988992
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 88988992
- Core/Insulation Crimp: Not Available

B46B Fuel Level Sensor - Secondary

Pin	Wire	Circuit	Function
1-2	-	-	Not Used
3	0.35 BN/WH	6281	Sensor Low Reference
4	0.35 L-BU	1937	Secondary Fuel Level Sensor Signal

B47 FUEL PRESSURE SENSOR

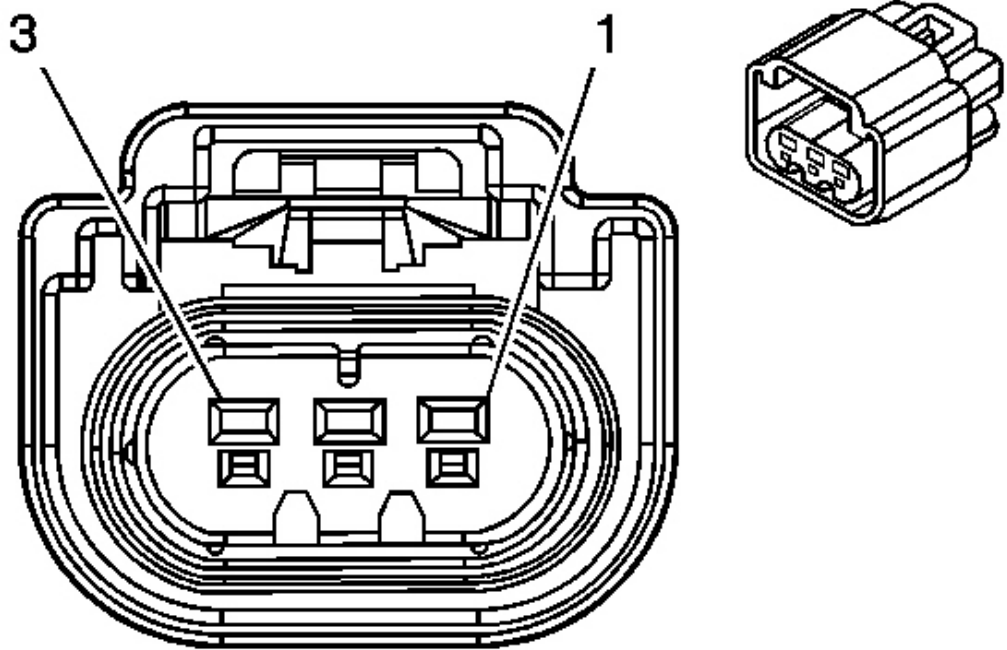


Fig. 47: B47 Fuel Pressure Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 13511131
- Service Connector: 19168035
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B47 Fuel Pressure Sensor

Pin	Wire	Circuit	Function
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1	0.35 PU	7446	Fuel Pressure Sensor Signal
2	0.35 GY	7447	Low Reference
3	0.35 BN	7445	5-Volt Reference

B47B FUEL RAIL PRESSURE SENSOR

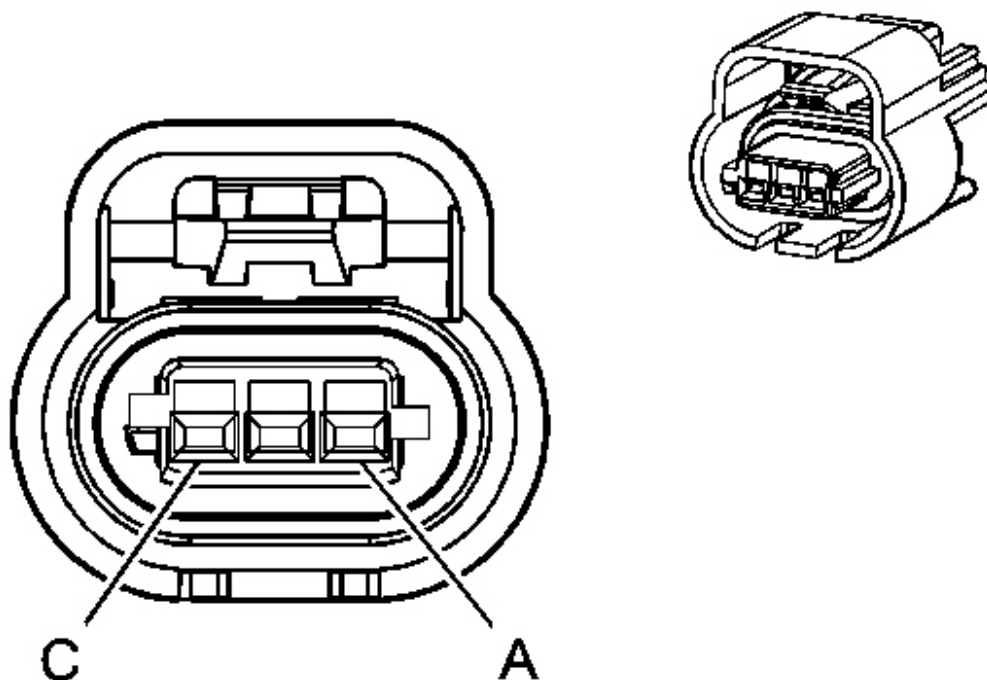


Fig. 48: B47B Fuel Rail Pressure Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM Connector: 15326556
- Service Connector: 88953359
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

B47B Fuel Rail Pressure Sensor

Pin	Wire	Circuit	Function
A	0.5 GY	598	5 Volt 1 Reference
B	0.5 YE	2918	Fuel Rail Pressure Sensor Signal
C	0.5 TN	808	Sensor Low Reference

B52A HEATED OXYGEN SENSOR 1 (LAF)

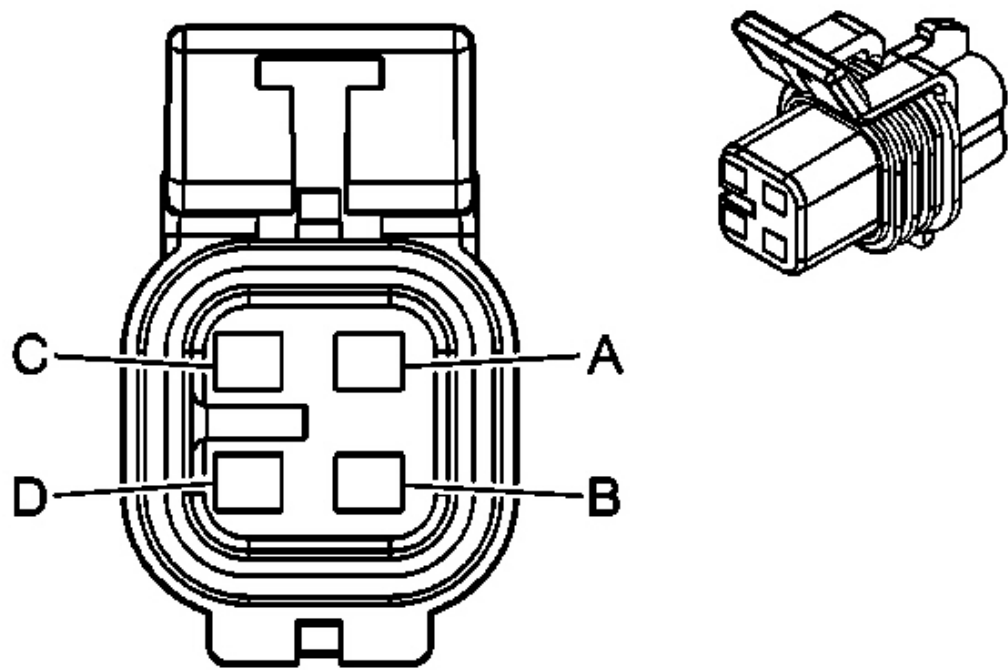


Fig. 49: B52A Heated Oxygen Sensor 1 (LAF)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine

- OEM Connector: 12160482
- Service Connector: 88988598
- Description: 4-Way F Metri-Pack 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1

B52A Heated Oxygen Sensor 1 (LAF)

Pin	Wire	Circuit	Function
A	0.5 TN/WH	3111	HO2S Low Reference (Bank 1 Sensor 1)
B	0.5 PU/WH	3110	HO2S Reference Voltage (Bank 1 Sensor 1)
C	0.5 GY/WH	3113	HO2S Heater Low Control (Bank 1 Sensor 1)
D	0.5 PK/BK	5293	Ignition Voltage

B52B HEATED OXYGEN SENSOR 2 (LAF)

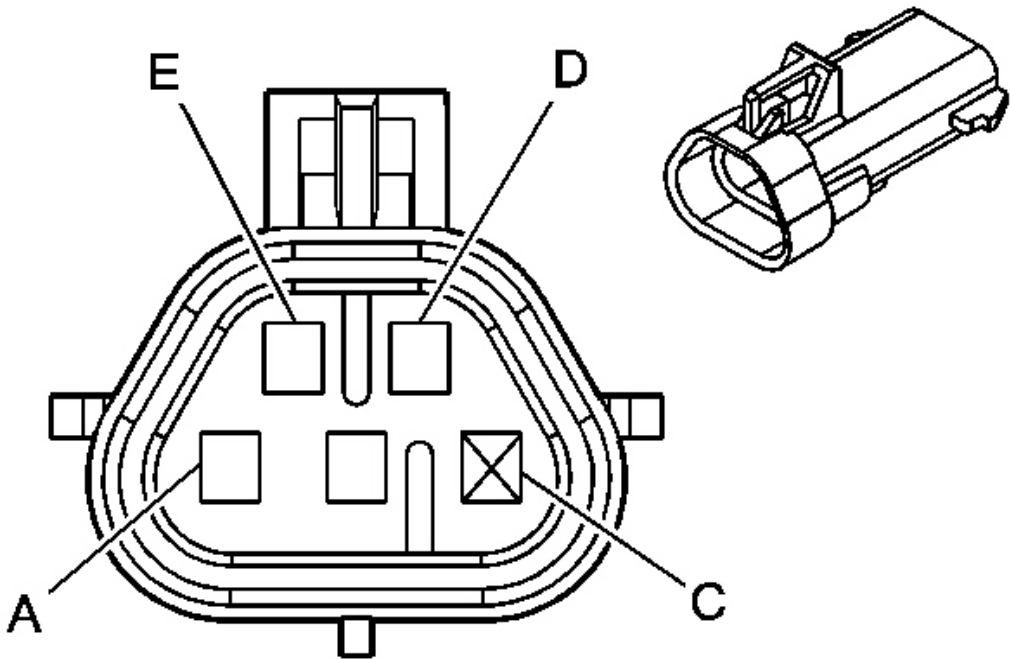


Fig. 50: B52B Heated Oxygen Sensor 2 (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12092840
- Service Connector: 15306311
- Description: 5-Way M Metri-Pack 150 Series, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12045773/2
- Core/Insulation Crimp: E/1

B52B Heated Oxygen Sensor 2 (LAF)

Pin	Wire	Circuit	Function

A	0.5 TN/WH	3121	HO2S Low Signal (Bank 1 Sensor 2)
B	0.5 PU	3120	HO2S High Signal (Bank 1 Sensor 2)
C	-	-	Not Used
D	0.5 PK/BK	5293	Ignition Voltage
E	0.5 GY/WH	3122	HO2S Heater Low Control (Bank 2 Sensor 1)

2010 ELECTRICAL

Wiring Systems and Power Management - Component Locator - Component Connector End Views - G24 To K108 - Equinox & Terrain

COMPONENT CONNECTOR END VIEWS - G24 TO K108

G24 WINDSHIELD WASHER PUMP

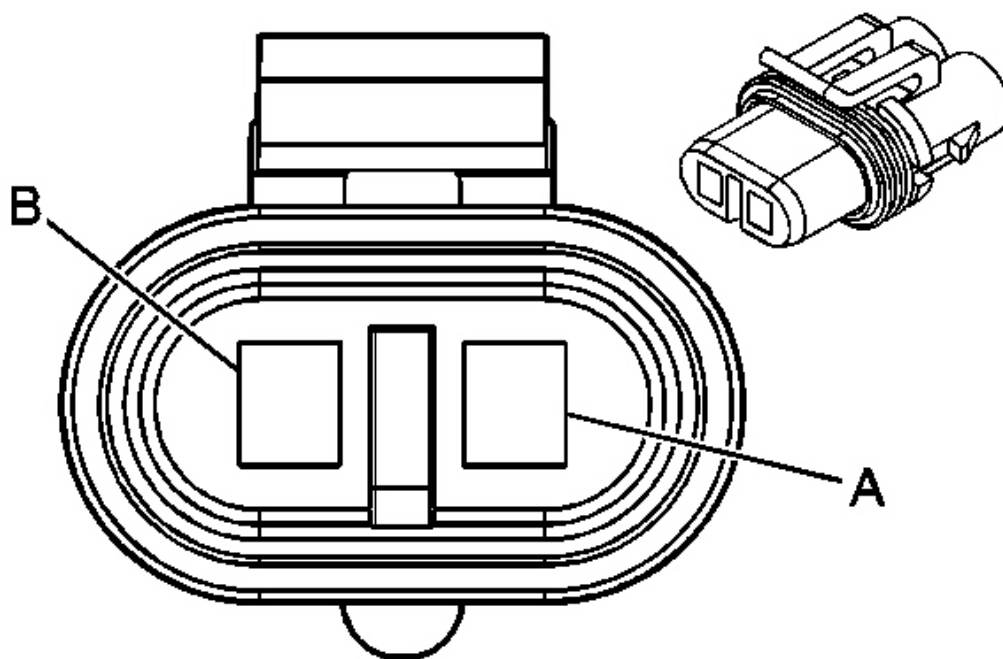


Fig. 1: G24 Windshield Washer Pump
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM Connector: 12020599
- Service Connector: 12102664
- Description: 2-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12077411/2
- Core/Insulation Crimp: 2/5

G24 Windshield Washer Pump

Pin	Wire	Circuit	Function
A	0.8 OG	228	Windshield Washer Pump Control
B	0.8 D-GN	392	Rear Window Washer Pump Control

K8 BLOWER MOTOR CONTROL MODULE X1

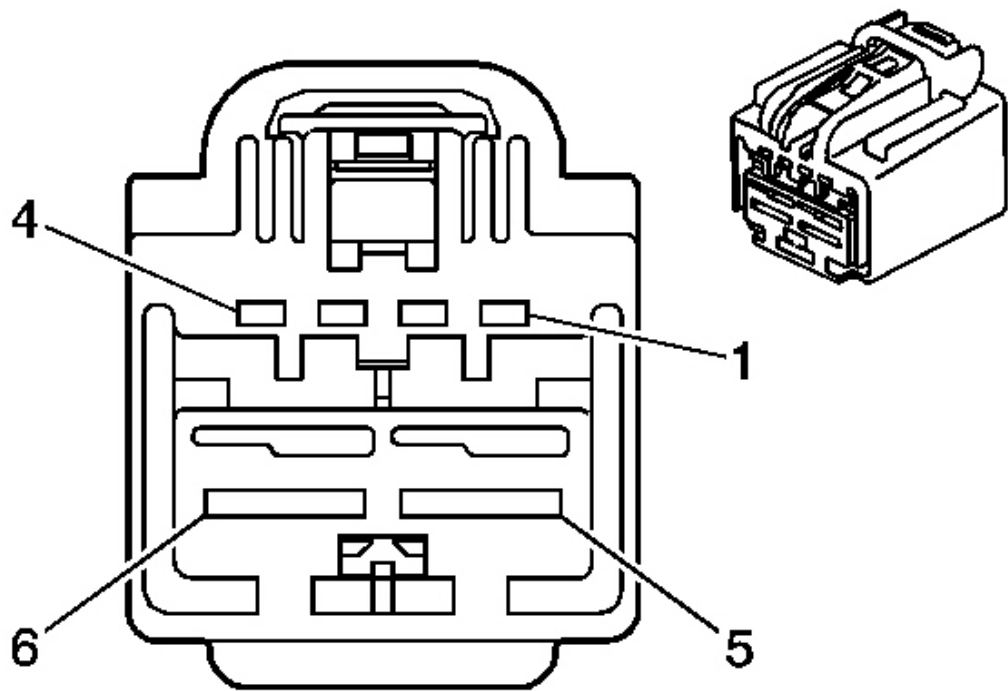


Fig. 2: K8 Blower Motor Control Module X1
Courtesy of GENERAL MOTORS CORP.

- Harness: Instrument Panel
- OEM Connector: 7283-9749-30
- Service Connector: 88988512
- Description: 6-Way F YESC Kaizen Series (BK)

Terminal Part Information

- Pins: 3
- Terminated Lead: 13575479
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C

- Pins: 5, 6
- Terminated Lead: 13575289
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-4122-02/10
- Core/Insulation Crimp: D/G

K8 Blower Motor Control Module X1

Pin	Wire	Circuit	Function
1-2	-	-	Not Used
3	0.35 GY/BK	754	Blower Motor Speed Control
4	-	-	Not Used
5	5 BK	1550	Ground
6	5 RD/BK	542	Battery Positive Voltage

K8 BLOWER MOTOR CONTROL MODULE X2

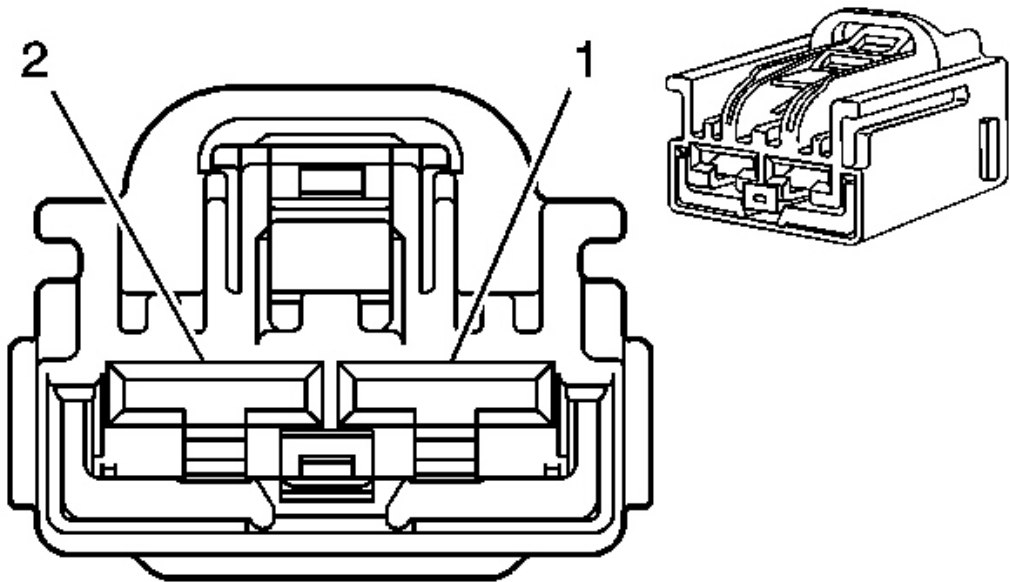


Fig. 3: K8 Blower Motor Control Module X2
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 7283-6458-40
- Service Connector: 88988507
- Description: 2-Way F Receptacle 6.3 Series (L-GY)

Terminal Part Information

- Terminated Lead: 13575289
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-4122-02/10
- Core/Insulation Crimp: D/G

K8 Blower Motor Control Module X2

Pin	Wire	Circuit	Function
1	5 PU	65	Blower Motor Supply Voltage
2	5 OG	5987	Low Reference

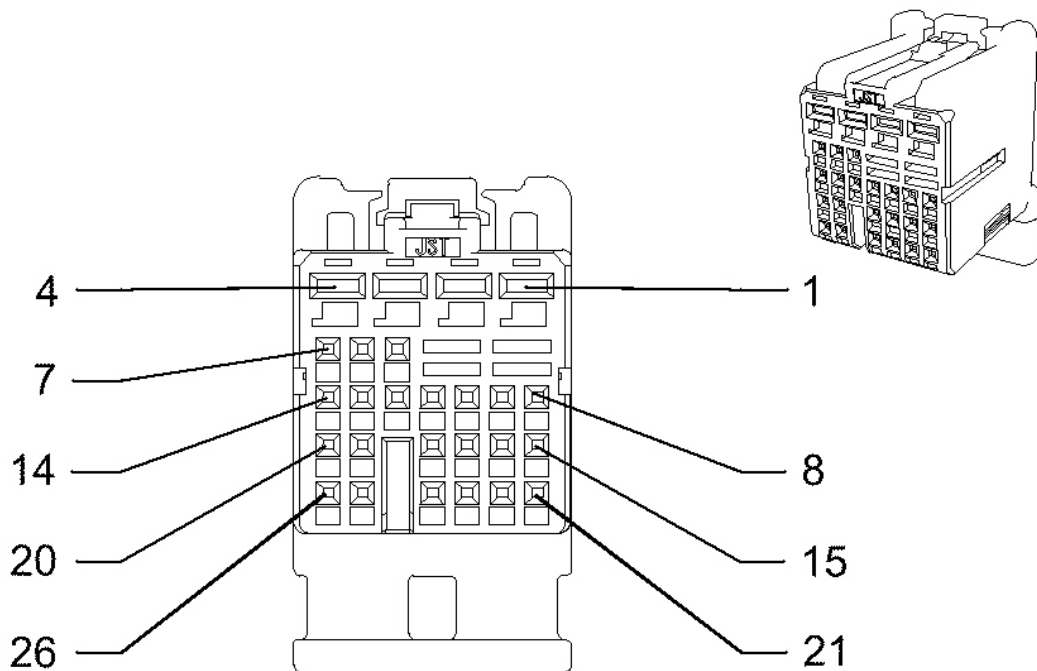
K9 BODY CONTROL MODULE X1

Fig. 4: K9 Body Control Module X1
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: HIT2PB-26-3B-S
- Service Connector: 13317829
- Description: 26-Way F 64 Series (WH)

Terminal Part Information

- Pins: 6, 7, 11, 13, 14, 16, 19, 21-26
- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J
- Pins: 1-4

- Terminated Lead: 13575871
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A061T-M2.8/20
- Core/Insulation Crimp: Pins 1, 2 - C/A
- Core/Insulation Crimp: Pins 3, 4 - E/A

K9 Body Control Module X1

Pin	Wire	Circuit	Function
1	1 BK/WH	651	Ground
2	1 RD/WH	2540	Battery Positive Voltage
3	0.8 RD/WH	2740	Battery Positive Voltage
4	0.8 RD/WH	2240	Battery Positive Voltage
5	-	-	Not Used
6	0.35 YE	143	Accessory Voltage
7	0.35 YE	5005	Low Reference
8-10	-	-	Not Used
11	0.35 D-GN	306	Headlamp Switch Headlamps Off Signal/Automatic Headlamp Low Control
12	-	-	Not Used
13	0.35 L-BU/BK	1688	5-Volt Reference
14	0.35 OG	192	Front Fog Lamp Switch Signal/Fog Lamps Enable (T96)
15	-	-	Not Used
16	0.35 WH	103	Headlamp Switch Headlamps On Signal
17-18	-	-	Not Used
19	0.35 BN	5360	Low Reference
20	-	-	Not Used
21	0.35 GY	728	Security Indicator Control
22	0.35 L-BU	13	Headlamp Switch Park Lamps Signal
23	0.35 PU	7558	Accent Lamps Control
24	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
25	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
26	0.35 PK/WH	3272	RCDLR Data Transmit

K9 BODY CONTROL MODULE X2

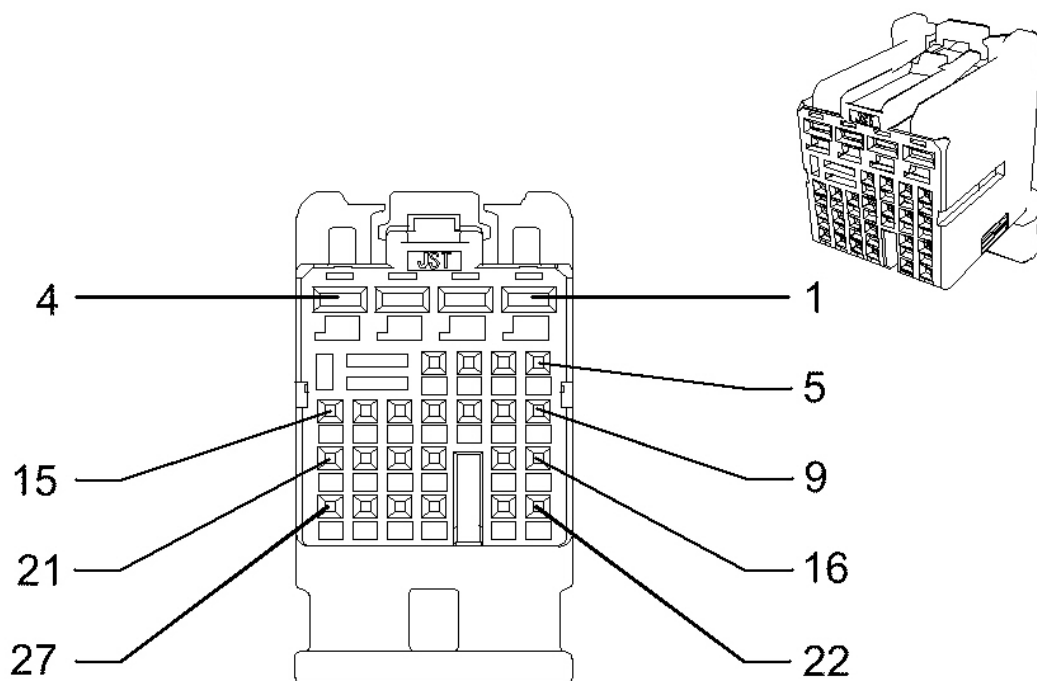


Fig. 5: K9 Body Control Module X2
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: HIT2PB-27-3C-LE
- Service Connector: 13576637
- Description: 27-Way F 64 Series (L-BU)

Terminal Part Information

- Pins: 5-16, 18, 19, 21-27
- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J
- Pins: 4
- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A081T-M2.8/20
- Core/Insulation Crimp: A/D
- Pins: 1-3
- Terminated Lead: 13575871
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A061T-M2.8/20
- Core/Insulation Crimp: Pins 1, 3 - E/A
- Core/Insulation Crimp: Pin 2 - C/A

K9 Body Control Module X2

Pin	Wire	Circuit	Function
1	0.8 RD/WH	2140	Battery Positive Voltage
2	1 BK/WH	651	Ground
3	0.8 RD/WH	2940	Battery Positive Voltage
4	3 RD/WH	4040	Battery Positive Voltage
5	0.5 GY	157	Courtesy Lamp Control
6	0.35 GY	5697	Child Security Indicator Control
7	0.35 YE	5361	Brake Pedal Position Sensor Signal
8	0.5 YE	6817	LED Backlight Dimming Control
9	0.35 D-GN	44	Instrument Panel Lamps Dimmer Switch Signal
10	0.35 WH	278	Ambient Light Sensor Signal
11	0.35 PU	5526	Tap Up/Tap Down Switch Signal
12	0.35 GY	391	Rear Window Wiper Switch Signal
13	0.35 WH	5359	5-Volt Reference
14	0.35 L-BU	1788	Traction Control Switch Signal
15	0.35 OG/BK	781	Driver Door Lock Switch Unlock Signal
16	0.35 L-BU/WH	3275	RCDLR Ground
17	-	-	Not Used
18	0.35 L-BU	3265	Child Security Switch Signal
19	0.35 PK/BK	780	Driver Door Lock Switch Lock Signal
20	-	-	Not Used
21	0.35 GY	6135	Local Interconnect Network 4
22	0.35 D-GN	5060	Low Speed GMLAN Serial Data
23	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
24	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +

25	0.35 L-GN	3274	RCDLR Power
26	0.35 WH	111	Hazard Switch Signal
27	0.35 GY	3273	RCDLR Data Receive

K9 BODY CONTROL MODULE X3

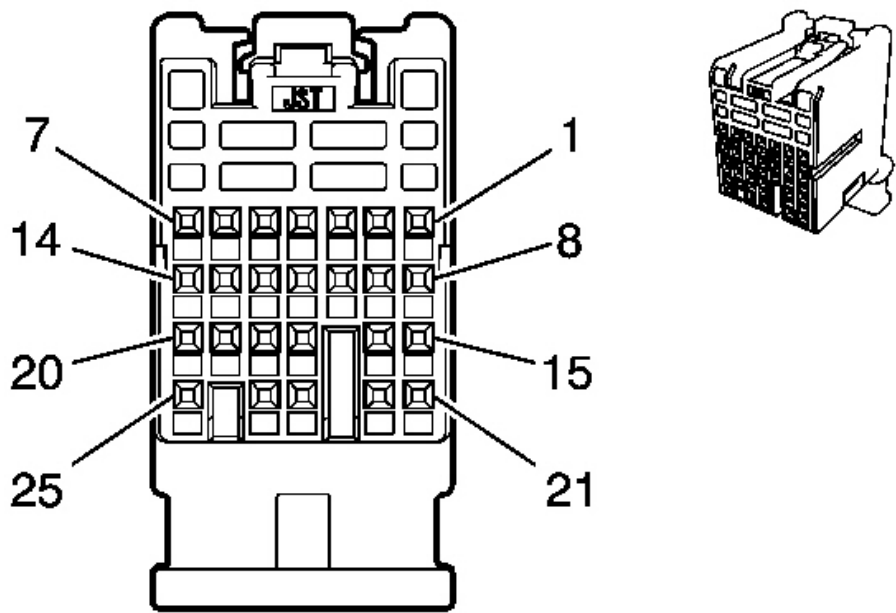


Fig. 6: K9 Body Control Module X3
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: HIT2PB-25-3A-LM
- Service Connector: 13317833
- Description: 25-Way F 64 Series (L-GN)

Terminal Part Information

- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)

- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J

K9 Body Control Module X3

Pin	Wire	Circuit	Function
1	0.35 D-GN/WH	3277	Immobilizer Ground
2	0.35 L-BU	7533	Local Interconnect Network 11
3	0.35 PK/BK	3276	Theft Deterrent Module Power
4	0.35 PK	1444	12-Volt Reference
5	0.35 BN	4	Accessory Voltage
6	0.35 PK	3	Ignition Voltage
7	0.35 TN/WH	816	A/T Shift Lock Solenoid Supply Voltage
8	0.35 L-GN	6818	Steering Wheel Control Switch Signal (UK3)
9	0.35 GY	1884	Cruise Control Switch Signal
10	0.35 TN/BK	6009	Low Reference
11	0.35 YE	525	Headlamp Dimmer Switch Low Beam Signal
12	0.35 D-GN	663	Hazard Switch Left Turn Signal
13	0.35 L-BU	1714	Windshield Wiper Switch Low Signal
14	-	-	Not Used
15	0.35 PK	1020	Ignition Voltage
16	-	-	Not Used
17	0.35 YE	307	Headlamp Switch Flash to Pass Signal
18	0.35 D-GN	1329	Horn Fuse Supply Voltage
19	-	-	Not Used
20	0.35 L-GN	1715	Windshield Wiper Switch High Signal
21	-	-	Not Used
22	0.35 WH/BK	1073	5-Volt Reference
23	-	-	Not Used
24	0.35 TN	664	Hazard Switch Turn Right Signal
25	0.35 PK	94	Windshield Washer Switch Signal

K9 BODY CONTROL MODULE X4

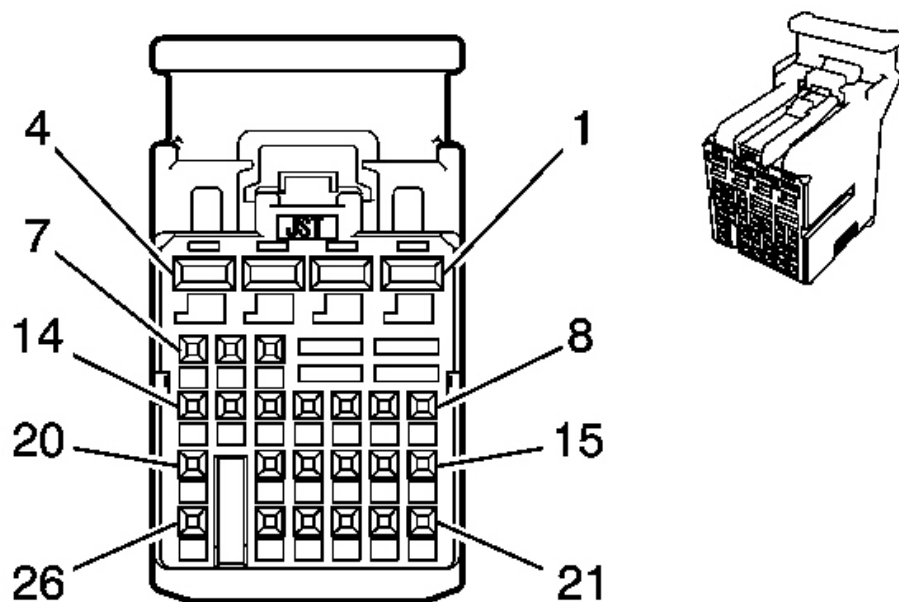


Fig. 7: K9 Body Control Module X4
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: HIT2PB-26-2D-K
- Service Connector: 13317830
- Description: 26-Way F 64 Series (BK)

Terminal Part Information

- Pins: 5-18, 20-24, 26
- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J
- Pins: 1-4
- Terminated Lead: 13575871

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A061T-M2.8/20
- Core/Insulation Crimp: Pins 1, 3 - C/A
- Core/Insulation Crimp: Pins 2, 4 - E/A

K9 Body Control Module X4

Pin	Wire	Circuit	Function
1	1 TN/WH	312	Right Headlamp Low Beam Supply Voltage
2	0.8 YE	712	Left Headlamp Low Beam Supply Voltage
3	1 D-BU/WH	1315	Right Front Turn Signal Lamp Supply Voltage
4	0.8 D-GN/WH	1335	Right Rear Turn Signal Lamp Supply Voltage
5	0.5 BN/WH	309	Right Park Lamp Supply Voltage
6	0.5 PU	709	Left Park Lamp Supply Voltage
7	0.5 BN	2509	Left Rear Park Lamps Supply Voltage
8	0.35 D-GN	5706	5-Volt Reference (without TB5)
9	0.35 YE	7546	Logistics Relay Control (EXP)
10	0.35 YE	5420	Rear Wiper Relay Control
11	0.35 WH	5065	Center High Mounted Stop Lamp (CHMSL) Control
12	0.5 PK	70	RAP Relay Switch Supply Voltage
13	0.35 D-GN/RD	6846	Rear License Lamp Control
14	0.35 OG	2268	Washer Fluid Pump Relay Control
15	0.35 YE	5199	Ignition Voltage
16	0.35 GY	91	Wiper Relay Control
17	0.5 YE	196	Windshield Wiper Motor Park Switch Signal
18	0.5 WH	5075	Current Sensor Signal
19	-	-	Not Used
20	0.5 RD/WH	2340	Battery Positive Voltage
21	0.5 PK	5076	Current Sensor Voltage
22	0.5 D-BU	5985	Serial Data Wake-Up Signal
23	0.35 L-BU	5986	Serial Data Communication Enable
24	0.35 PK/BK	109	Hood Ajar Switch Signal (BTV)
25	-	-	Not Used
26	0.5 BK	50	Ground

K9 BODY CONTROL MODULE X5

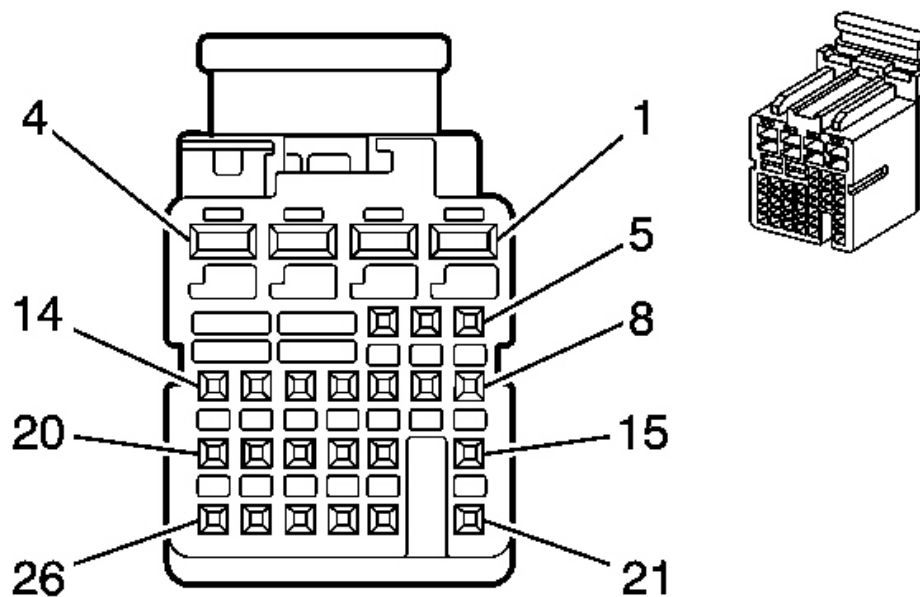


Fig. 8: K9 Body Control Module X5
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: HIT2PB-26-2E-N
- Service Connector: 13317831
- Description: 26-Way F 64 Series (TN)

Terminal Part Information

- Pins: 5-8, 10-12, 17-21, 24
- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J
- Pins: 1-4
- Terminated Lead: 13575871

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A061T-M2.8/20
- Core/Insulation Crimp: Pins 1, 3, 4 - E/A
- Core/Insulation Crimp: Pin 2 - C/A

K9 Body Control Module X5

Pin	Wire	Circuit	Function
1	0.8 YE/BK	1334	Left Rear Turn Signal Lamp Supply Voltage
2	1 L-BU/WH	1314	Left Front Turn Signal Lamp Supply Voltage
3	0.8 RD/WH	3840	Battery Positive Voltage
4	0.8 RD/WH	3440	Battery Positive Voltage
5	0.35 L-GN/BK	3267	Child Security Door Latch Relay Control
6	0.5 BN	5077	Low Reference
7	0.5 BN	2609	Park Lamps Supply Voltage
8	0.35 OG	5186	Left Trailer Turn Signal Lamp Control (V92)
9	-	-	Not Used
10	0.35 D-GN/WH	1317	Fog Lamp Relay Control (T96)
11	0.35 L-GN	2270	Rear Window Washer Relay Control
12	0.35 L-BU/WH	6311	Brake Pedal Switch Signal
13-16	-	-	Not Used
17	0.35 YE	5187	Right Trailer Turn Signal Lamp Control (V92)
18	0.5 TN/WH	1969	Headlamp High Beam Relay Control
19	0.35 TN	28	Horn Relay Control
20	0.35 YE	5704	5-Volt Reference (without TB5)
21	0.35 D-BU	45	Park Lamp Supply Voltage/Marker Lamp Supply Voltage
22-23	-	-	Not Used
24	0.5 TN	860	Front Windshield Wiper Switch High Signal
25-26	-	-	Not Used

K9 BODY CONTROL MODULE X6

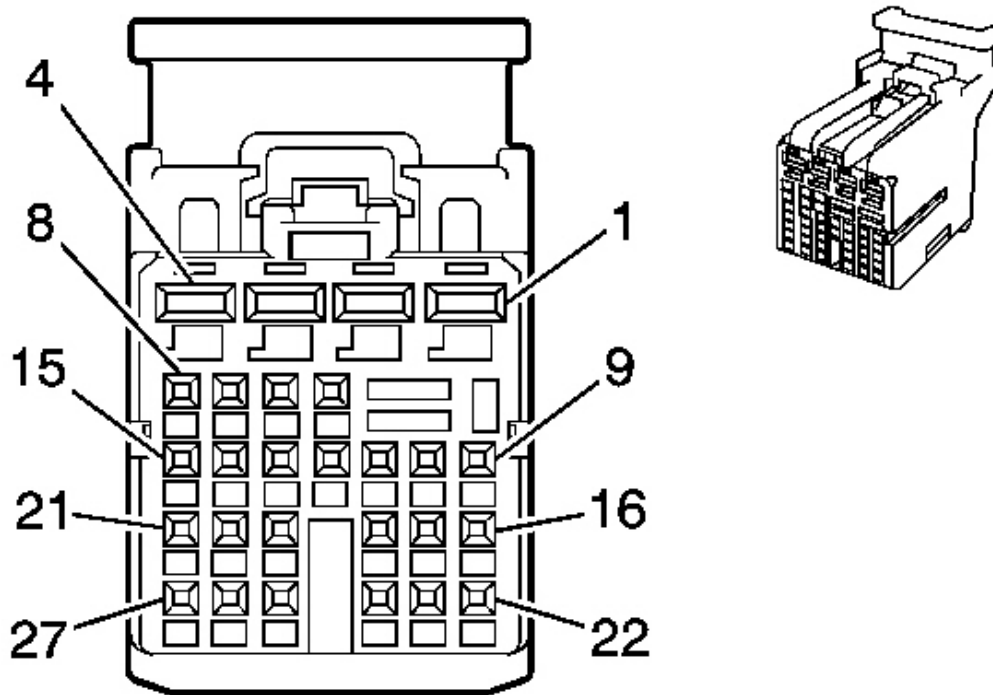


Fig. 9: K9 Body Control Module X6
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: HIT2PB-27-2F-PK
- Service Connector: 13317828
- Description: 27-Way F 64 Series (PK)

Terminal Part Information

- Pins: 5, 9, 10, 12, 15, 16, 24, 25
- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J

- Pins: 2, 3
- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A081T-M2.8/20
- Core/Insulation Crimp: A/D
- Pins: 1, 4
- Terminated Lead: 13575871
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A061T-M2.8/20
- Core/Insulation Crimp: Pin 1 - E/A
- Core/Insulation Crimp: Pin 4 - C/A

K9 Body Control Module X6

Pin	Wire	Circuit	Function
1	0.8 GY	5911	Driver Door Lock Motor Lock Control
2	2 TN	294	Door Lock Actuator Unlock Control
3	2 BK	750	Ground
4	1 D-GN	3271	Door Latch Control
5	0.35 PK/BK	1303	Liftgate Ajar Switch Signal (without TB5)
6-8	-	-	Not Used
9	0.35 D-BU	6133	Local Interconnect Network 2
10	0.35 D-GN	6134	Local Interconnect Network 3
11	-	-	Not Used
12	0.5 L-BU	1134	Park Brake Switch Signal
13-14	-	-	Not Used
15	0.35 GY	5797	Liftgate Open/Close Switch Signal - Rear (without TB5)
16	0.35 BN	6132	Local Interconnect Network 1 (CF5)
17-23	-	-	Not Used
24	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
25	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
26-27	-	-	Not Used

K9 BODY CONTROL MODULE X7

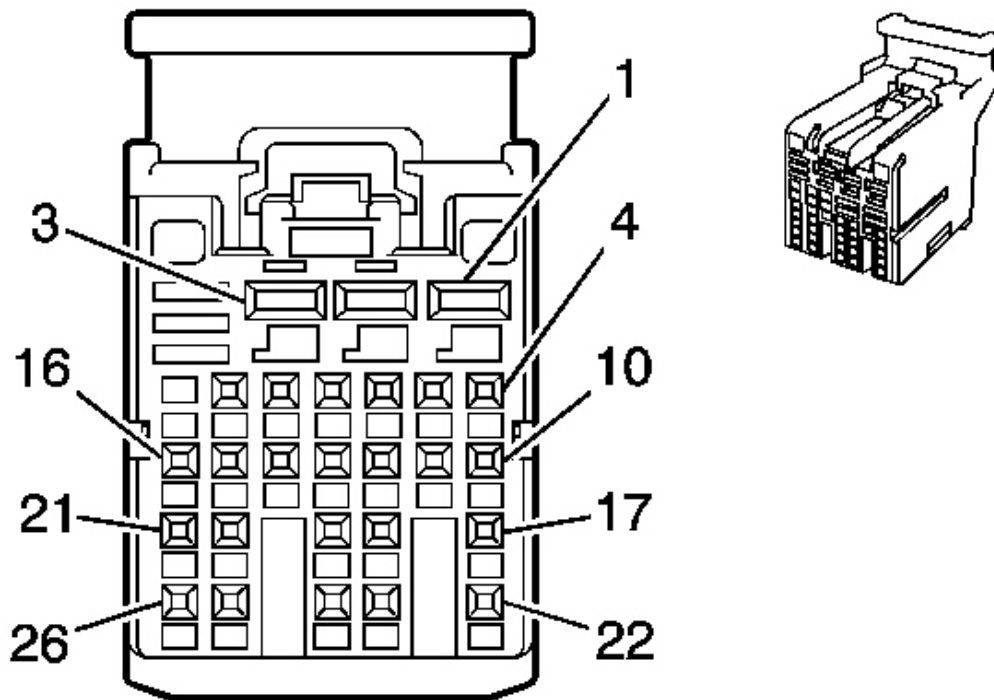


Fig. 10: K9 Body Control Module X7
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: HIT2PB-26-2G-H
- Service Connector: 13317832
- Description: 26-Way F 64 Series (GY)

Terminal Part Information

- Pins: 1-3
- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: SNAC-A061T-M2.8/20
- Core/Insulation Crimp: E/A

- Pins: 9, 12, 16, 18, 19, 22-24
- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J

K9 Body Control Module X7

Pin	Wire	Circuit	Function
1	0.8 GY	157	Courtesy Lamp Control (TSQ)
2	0.8 OG	6815	Inadvertent Power Supply Voltage
3	0.8 L-GN	24	Backup Lamp Supply Voltage
4-8	-	-	Not Used
9	0.35 YE	6817	LED Backlight Dimming Control
10-11	-	-	Not Used
12	0.35 BN/WH	3269	Left Rear Door Ajar Switch Signal
13-15	-	-	Not Used
16	0.35 YE/BK	9231	Logistics Relay Control (EXP)
17	-	-	Not Used
18	0.35 GY/BK	3268	Right Rear Door Ajar Switch Signal
19	0.35 WH	156	Courtesy Lamp Switch Signal
20-21	-	-	Not Used
22	0.35 PK	7557	Lamp Illumination (TSQ or TSP)
23	0.35 D-GN	5060	Low Speed GMLAN Serial Data
24	0.35 PU	328	Interior Lamp Defeat Switch Signal
25-26	-	-	Not Used

K17 ELECTRONIC BRAKE CONTROL MODULE

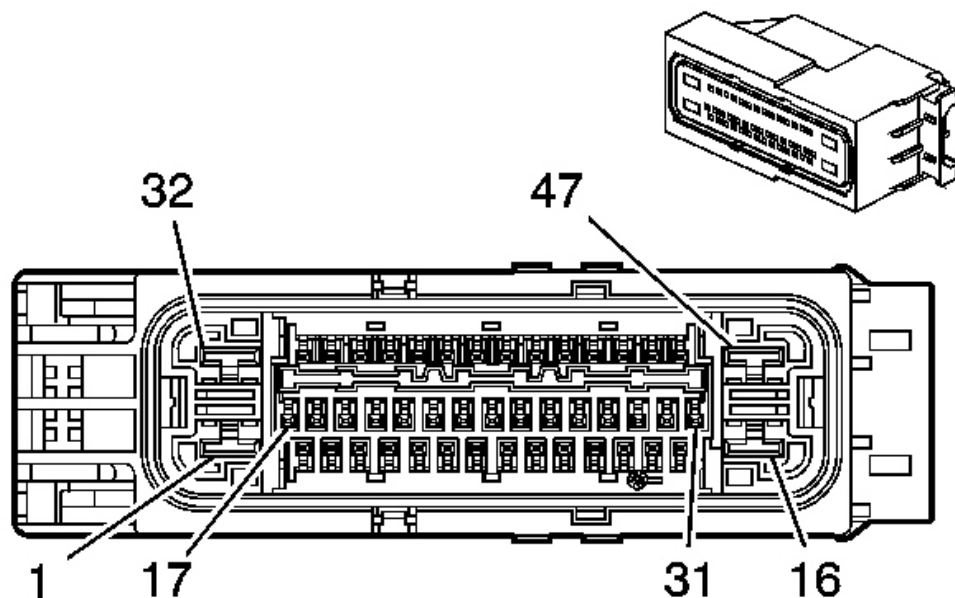


Fig. 11: K17 Electronic Brake Control Module
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM: 8-1355628-8
- Service: 19115598
- Description: 47-Way F, Sealed (BK)

Terminal Part Information

- Pins: 1, 16
- Terminated Lead: Service by Connector Assembly - 8-1355628-8
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 8-1355628-8
- Core/Insulation Crimp: Not Available
- Pins: 32
- Terminated Lead: 13576390

- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-4140-02/10
- Core/Insulation Crimp: E/5
- Pins: 3, 8, 11-14, 17, 20, 22, 26, 27, 33-37, 39, 41-43, 45, 46
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 638551-1/16
- Core/Insulation Crimp: Pins 3, 8, 11-14, 17, 20, 22 - J/J
- Core/Insulation Crimp: Pins 26, 27, 33-37, 39, 41-43, 45, 46 - K/K

K17 Electronic Brake Control Module

Pin	Wire	Circuit	Function
1	3 RD/BK	442	Battery Positive Voltage
2	-	-	Not Used
3	0.35 D-GN/WH	817	Vehicle Speed Signal
4-7	-	-	Not Used
8	0.35 L-BU	5986	Serial Data Communication Enable
9-10	-	-	Not Used
11	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
12	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
13	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
14	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
15	-	-	Not Used
16	5 BK	350	Ground
17	0.35 D-BU	6105	High Speed GMLAN Serial Data +
18-19	-	-	Not Used
20	0.35 L-BU	6106	High Speed GMLAN Serial Data -
21	-	-	Not Used
22	0.35 D-GN	2087	Steering Wheel Position Sensor 5V Reference
23-25	-	-	Not Used
26	0.5 GY	6031	5-Volt Reference
27	0.5 YE/BK	6032	Low Reference
28-31	-	-	Not Used
32	0.8 RD/BK	1042	Battery Positive Voltage
33	0.5 TN	833	Right Front Wheel Speed Sensor Low Reference
34	0.5 D-GN	872	Right Front Wheel Speed Sensor Signal

35	0.5 BN	6305	Vacuum Pump Relay Control
36	0.5 TN	884	Left Rear Wheel Speed Sensor Signal
37	0.5 OG	885	Left Rear Wheel Speed Sensor Low Reference
38	-	-	Not Used
39	0.5 PU	333	Brake Fluid Level Sensor Signal
40	-	-	Not Used
41	0.5 OG	6030	Brake Booster Vacuum Sensor Signal
42	0.5 WH	883	Right Rear Wheel Speed Sensor Low Reference
43	0.5 BN	882	Right Rear Wheel Speed Sensor Signal
44	-	-	Not Used
45	0.5 L-BU	830	Left Front Wheel Speed Sensor Signal
46	0.5 YE	873	Left Front Wheel Speed Sensor Low Reference
47	-	-	Not Used

K20 ENGINE CONTROL MODULE X1 (LAF)

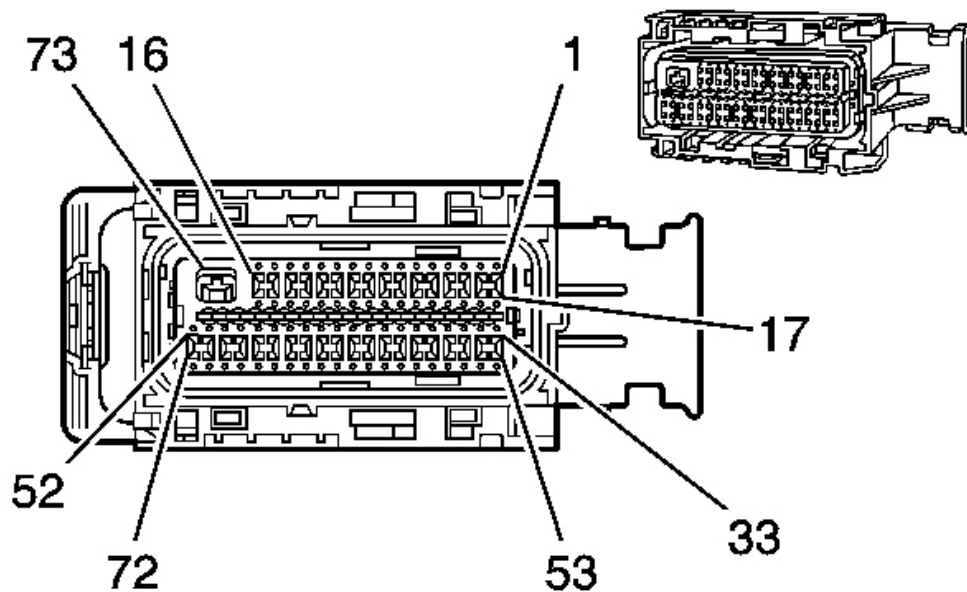


Fig. 12: K20 Engine Control Module X1 (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 34566-2593
- Service: 13574782
- Description: 73-Way F MX123 Series, Sealed (Connector-BK; TPA-BU)

Terminal Part Information

- Pins: 73
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 7116-4151-02/9
- Core/Insulation Crimp: C/1

- Pins: 39, 40
- Terminated Lead: 13575810
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33467-0003/23
- Core/Insulation Crimp: H/H

- Pins: 6, 9, 10, 14, 15, 21, 22, 25-27, 30, 32-34, 42, 44, 46, 51-53, 57, 59, 62, 63, 66, 70, 72
- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33467-0005/23
- Core/Insulation Crimp: Pin: 6, 9, 10, 14, 15, 21, 22, 25-27, 30, 32-34, 42, 44, 46, 51-53, 57, 59, 63, 66, 70, 72 - J/J
- Core/Insulation Crimp: Pin 62 - K/K

K20 Engine Control Module X1 (LAF)

Pin	Wire	Circuit	Function
1-5	-	-	Not Available
6	0.5 OG/BK	380	A/C Refrigerant Pressure Sensor Signal
7-8	-	-	Not Available
9	0.5 D-GN	890	Fuel Tank Pressure Sensor Signal
10	0.5 GY	2709	5-Volt 1 Reference
11-13	-	-	Not Available
14	0.5 WH/BK	1164	5-Volt 4 Reference

15	0.5 D-BU	1161	APP Sensor 1 Signal
16-20	-	-	Not Available
21	0.5 GY	2700	5-Volt 1 Reference
22	0.5 TN	5514	Low Reference
23-24	-	-	Not Available
25	0.5 D-BU	1936	Fuel Level Sensor Signal
26	0.5 BN/WH	6281	Sensor Low Reference
27	0.5 L-BU	1937	Fuel Level Sensor Signal - Secondary
28-29	-	-	Not Available
30	0.5 BN	1271	Low Reference
31	-	-	Not Available
32	0.5 D-GN/WH	459	A/C Compressor Clutch Relay Control
33	0.5 TN	1274	5-Volt 3 Reference
34	0.5 L-BU	1162	APP Sensor 2 Signal
35-38	-	-	Not Available
39	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
40	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
41	-	-	Not Available
42	0.5 D-BU	473	High Speed Cooling Fan Relay Control
43	-	-	Not Available
44	0.5 D-GN/WH	465	Fuel Pump Relay Control
45	-	-	Not Available
46	0.5 BN/WH	419	MIL Control
47-50	-	-	Not Available
51	0.5 PK	439	Ignition Voltage
52	0.5 RD/WH	440	Battery Positive Voltage
53	0.5 PU	1272	Low Reference
54-56	-	-	Not Available
57	0.5 L-BU/WH	6311	Brake Pedal Switch Signal
58	-	-	Not Available
59	0.5 D-GN	335	Low Speed Cooling Fan Relay Control
60-61	-	-	Not Available
62	0.8 PK/BK	5291	Ignition Voltage
63	0.5 PU/WH	6386	Starter Relay Control
64-65	-	-	Not Available
66	0.5 WH	1310	EVAP Canister Vent Solenoid Control
67-69	-	-	Not Available
70	0.5 D-BU	5985	Serial Data Wake-Up Signal
71	-	-	Not Available
72	0.5 YE	5991	Powertrain Relay Control
73	1 PK/BK	5290	Ignition Voltage

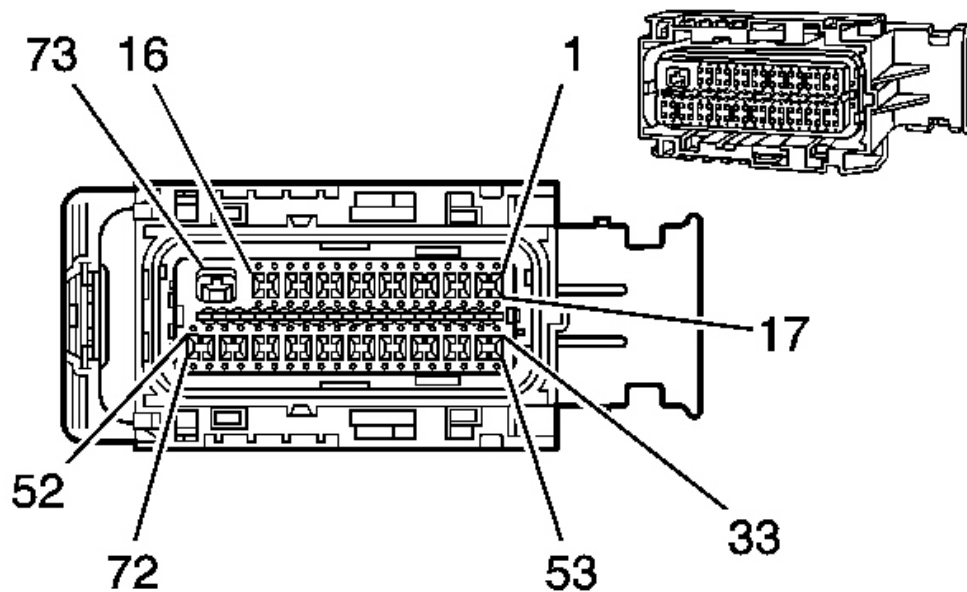
K20 ENGINE CONTROL MODULE X1 (LF1)

Fig. 13: K20 Engine Control Module X1 (LF1)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 34566-1873
- Service: 13574782
- Description: 73-Way F MX123 Series, Sealed (Connector-BK; TPA-BU)

Terminal Part Information

- Pins: 73
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 7116-4152-02/9
- Core/Insulation Crimp: 2/5

- Pins: 39, 40
 - Terminated Lead: 13575810
 - Release Tool: J-38125-213
 - Diagnostic Test Probe: J-35616-64B (L-BU)
 - Terminal/Tray: 33467-0003/23
 - Core/Insulation Crimp: H/H
-
- Pins: 4-6, 9, 10, 14, 15, 20-22, 25-27, 30, 32-34, 38, 42, 44, 46, 51-53, 57, 59, 62, 63, 66, 67, 70, 72
 - Terminated Lead: Pending
 - Release Tool: J-38125-213
 - Diagnostic Test Probe: J-35616-64B (L-BU)
 - Terminal/Tray: 33467-0005/23
 - Core/Insulation Crimp: Pins 4-6, 9, 10, 14, 15, 20-22, 25-27, 30, 32-34, 38, 42, 44, 46, 51-53, 57, 59, 63, 66, 70, 72 - J/J
 - Core/Insulation Crimp: Pins 62, 67 - K/K

K20 Engine Control Module X1 (LF1)

Pin	Wire	Circuit	Function
1-3	-	-	Not Available
4	0.5 YE/WH	3200	Throttle Position Sensor Signal
5	0.5 GY/WH	3201	5-Volt 1 Reference
6	0.5 OG/BK	380	A/C Refrigerant Pressure Sensor Signal
7-8	-	-	Not Available
9	0.5 D-GN	890	Fuel Tank Pressure Sensor Signal
10	0.5 GY	2709	5-Volt 1 Reference
11-13	-	-	Not Available
14	0.5 WH/BK	1164	5-Volt 4 Reference
15	0.5 D-BU	1161	APP Sensor 1 Signal
16-19	-	-	Not Available
20	0.5 TN/WH	3202	Low Reference
21	0.5 GY	2700	5-Volt 1 Reference
22	0.5 TN	5514	Low Reference
23-24	-	-	Not Available
25	0.5 D-BU	1936	Fuel Level Sensor Signal
26	0.5 BN/WH	6281	Sensor Low Reference
27	0.5 L-BU	1937	Fuel Level Sensor Signal - Secondary
28-29	-	-	Not Available
30	0.5 BN	1271	Low Reference
31	-	-	Not Available

32	0.5 D-GN/WH	459	A/C Compressor Clutch Relay Control
33	0.5 TN	1274	5-Volt 3 Reference
34	0.5 L-BU	1162	APP Sensor 2 Signal
35-38	-	-	Not Available
39	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
40	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
41	-	-	Not Available
42	0.5 D-BU	473	High Speed Cooling Fan Relay Control
43	-	-	Not Available
44	0.5 D-GN/WH	465	Fuel Pump Relay Control
45	-	-	Not Available
46	0.5 BN/WH	419	MIL Control
47-50	-	-	Not Available
51	0.5 PK	439	Ignition Voltage
52	0.5 RD/WH	440	Battery Positive Voltage
53	0.5 PU	1272	Low Reference
54-56	-	-	Not Available
57	0.5 L-BU/WH	6311	Brake Pedal Switch Signal
58	-	-	Not Available
59	0.5 D-GN	335	Low Speed Cooling Fan Relay Control
60-61	-	-	Not Available
62	0.8 PK/BK	5291	Ignition Voltage
63	0.5 PU/WH	6386	Starter Relay Control
64-65	-	-	Not Available
66	0.5 WH	1310	EVAP Canister Vent Solenoid Control
67	0.8 PK/BK	5292	Ignition Voltage
68-69	-	-	Not Available
70	0.5 D-BU	5985	Serial Data Wake-Up Signal
71	-	-	Not Available
72	0.5 YE	5991	Powertrain Relay Control
73	2 PK/BK	5290	Ignition Voltage

K20 ENGINE CONTROL MODULE X2 (LAF)

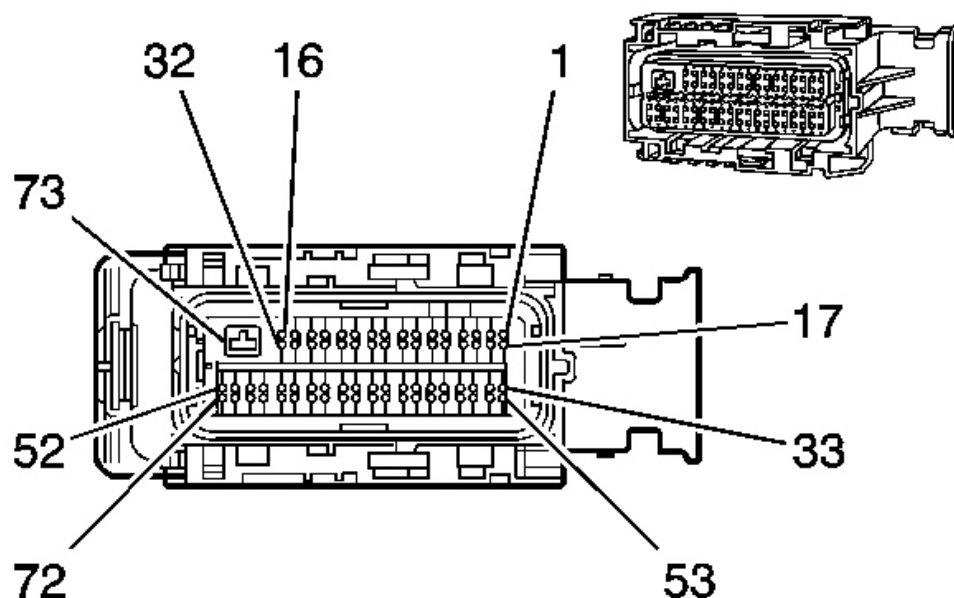


Fig. 14: K20 Engine Control Module X2 (LAF)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 34566-2583
- Service: 88988931
- Description: 73-Way F 64 2.8 Series, Sealed (Connector-BK; TPA-BK)

Terminal Part Information

- Pins: 3, 10, 12, 14, 16, 18, 19, 26, 28, 32-36, 39, 41-44, 49, 50-56, 58, 63, 69
- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33467-0005/23
- Core/Insulation Crimp: J/J
- Pins: 73
- Terminated Lead: Pending

- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 7116-4152-02/9
- Core/Insulation Crimp: 2/5

K20 Engine Control Module X2 (LAF)

Pin	Wire	Circuit	Function
1-2	-	-	Not Available
3	0.5 TN	808	Low Reference
4-9	-	-	Not Available
10	0.5 PU/WH	3110	HO2S Reference Voltage (Bank 1 Sensor 1)
11	-	-	Not Available
12	0.5 PU	3120	HO2S High Signal (Bank 1 Sensor 2)
13	-	-	Not Available
14	0.5 GY	2093	5-Volt 2 Reference
15	-	-	Not Available
16	0.5 BN	582	TAC Motor Control - 2
17	-	-	Not Available
18	0.5 GY	598	5-Volt 1 Reference
19	0.5 YE	2918	FRP Sensor Signal
20-25	-	-	Not Available
26	0.5 TN/WH	3111	HO2S Low Reference (Bank 1 Sensor 1)
27	-	-	Not Available
28	0.5 TN/WH	3121	HO2S Low Signal (Bank 1 Sensor 2)
29-31	-	-	Not Available
32	0.5 YE	581	TAC Motor Control - 1
33	0.5 D-GN	485	TP Sensor 1 Signal
34	0.5 GY	2701	5-Volt 4 Reference
35	0.5 PU	486	TP Sensor 2 Signal
36	0.5 D-BU	496	Knock Sensor (KS) 1 Signal
37-38	-	-	Not Available
39	0.5 L-GN/BK	3633	Noise Cancellation (LAF with VQN)
40	-	-	Not Available
41	0.5 GY/WH	3113	HO2S Heater Low Control (Bank 1 Sensor 1)
42	0.5 GY/WH	3122	HO2S Heater Low Control (Bank 2 Sensor 1)
43	0.5 L-GN	432	MAP Sensor Signal
44	0.5 GY	2704	5-Volt 3 Reference
45-48	-	-	Not Available
49	0.5 L-BU	6289	Intake Air Temperature Sensor Signal
50	0.5 PK/WH	2092	Fuel Economy Mode Switch Signal
51	0.5 D-GN/WH	428	EVAP Canister Purge Solenoid Control

52	0.5 YE	492	MAF Sensor Signal
53	0.5 BN	25	Charge Indicator Control/Charge Indicator Signal
54	0.5 TN	2752	Low Reference
55	0.5 GY	23	Generator Field Duty Cycle Signal
56	0.5 GY	1716	Knock Sensor (KS) 1 Signal
57	-	-	Not Available
58	0.5 D-GN	6307	Clutch Start Neutral Start Signal (MH7 or MHC)
59-62	-	-	Not Available
63	0.5 OG/BK	469	Low Reference
64-68	-	-	Not Available
69	0.5 TN	2760	Low Reference
70-72	-	-	Not Available
73	2 BK/WH	451	Ground

K20 ENGINE CONTROL MODULE X2 (LF1)

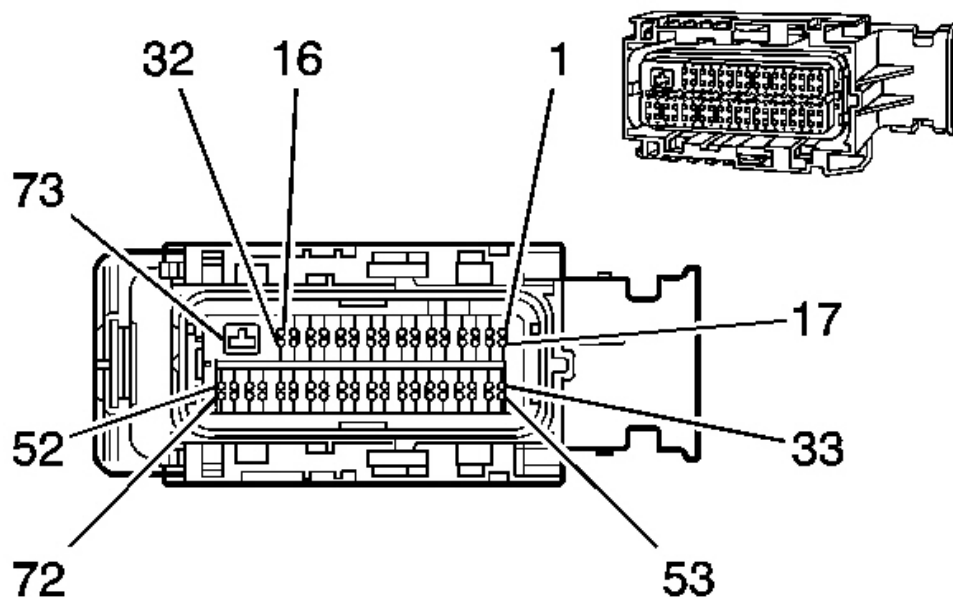


Fig. 15: K20 Engine Control Module X2 (LF1)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 34566-2273
- Service: 88988931
- Description: 73-Way F 64 2.8 Series, Sealed (Connector-BK; TPA-BU)

Terminal Part Information

- Pins: 3, 10-14, 16, 18, 19, 26-29, 32-37, 41-44, 49-58, 61-63, 69
- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33467-0005/23
- Core/Insulation Crimp: J/J
- Pins: 73
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 7116-4152-02/9
- Core/Insulation Crimp: 2/5

K20 Engine Control Module X2 (LF1)

Pin	Wire	Circuit	Function
1-2	-	-	Not Available
3	0.5 TN	808	Low Reference
4-9	-	-	Not Available
10	0.5 PU/WH	3110	HO2S Reference Voltage (Bank 1 Sensor 1)
11	0.5 PU/WH	3210	HO2S Reference Voltage (Bank 2 Sensor 1)
12	0.5 PU	3120	HO2S High Signal (Bank 1 Sensor 2)
13	0.5 PU	3220	HO2S High Signal (Bank 2 Sensor 2)
14	0.5 GY	2093	5-Volt 2 Reference
15	-	-	Not Available
16	0.5 BN	582	TAC Motor Control - 2
17	-	-	Not Available
18	0.5 GY	598	5-Volt 1 Reference
19	0.5 YE	2918	FRP Sensor Signal
20-25	-	-	Not Available
26	0.5 TN/WH	3111	HO2S Low Reference (Bank 1 Sensor 1)
27	0.5 TN/WH	3211	HO2S Low Reference (Bank 2 Sensor 1)
28	0.5 TN/WH	3121	HO2S Low Signal (Bank 1 Sensor 2)

29	0.5 TN	3221	HO2S Low Signal (Bank 2 Sensor 2)
30-31	-	-	Not Available
32	0.5 YE	581	TAC Motor Control - 1
33	0.5 D-GN	485	TP Sensor 1 Signal
34	0.5 GY	2701	5-Volt 4 Reference
35	0.5 PU	486	TP Sensor 2 Signal
36	0.5 D-BU	496	Knock Sensor (KS) 1 Signal
37	0.5 L-BU	1876	Knock Sensor (KS) 2 Signal
38-40	-	-	Not Available
41	0.5 GY/WH	3113	HO2S Heater Low Control (Bank 1 Sensor 1)
42	0.5 GY/WH	3122	HO2S Heater Low Control (Bank 2 Sensor 1)
43	0.5 L-GN	432	MAP Sensor Signal
44	0.5 GY	2704	5-Volt 3 Reference
45-48	-	-	Not Available
49	0.5 L-BU	6289	Intake Air Temperature Sensor Signal
50	0.5 PK/WH	2092	Fuel Economy Mode Switch Signal
51	0.5 D-GN/WH	428	EVAP Canister Purge Solenoid Control
52	0.5 YE	492	MAF Sensor Signal
53	0.5 BN	25	Charge Indicator Control/Charge Indicator Signal
54	0.5 TN	2752	Low Reference
55	0.5 GY	23	Generator Field Duty Cycle Signal
56	0.5 GY	1716	Knock Sensor (KS) 1 Signal
57	0.5 GY	2303	Knock Sensor (KS) 2 Signal
58	0.5 D-GN	6307	Clutch Start Neutral Start Signal
59-60	-	-	Not Available
61	0.5 L-GN	3212	HO2S Heater Low Control (Bank 2 Sensor 1]
62	0.5 OG/WH	3223	HO2S Heater Low Control (Bank 2 Sensor 2)
63	0.5 OG/BK	469	Low Reference
64-68	-	-	Not Available
69	0.5 TN	2760	Low Reference
70-72	-	-	Not Available
73	2 BK/WH	451	Ground

K20 ENGINE CONTROL MODULE X3 (LAF)

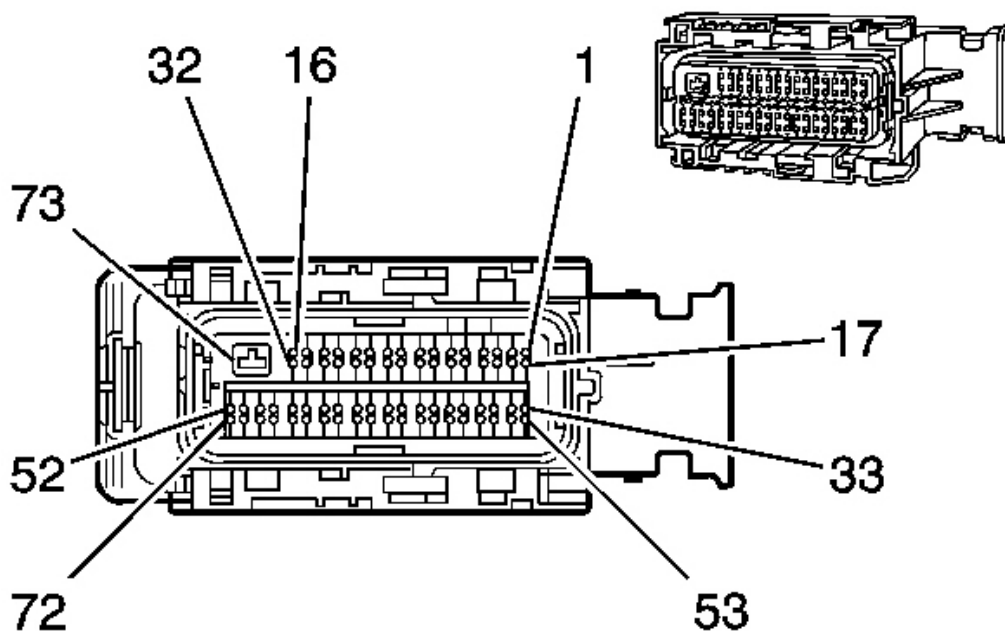


Fig. 16: K20 Engine Control Module X3 (LAF)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 34566-1913
- Service: 88988372
- Description: 73-Way F 64 2.8 Series, Sealed (Connector-BK; TPA-GY)

Terminal Part Information

- Pins: 73
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 7116-4152-02/9
- Core/Insulation Crimp: 2/5
- Pins: 8-10, 16, 24-35, 39, 40, 46, 48, 50, 52-55, 59, 60, 66, 68, 70, 72
- Terminated Lead: Pending

- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33467-0005/23
- Core/Insulation Crimp: Pins 8-10, 16, 24-35, 39, 40, 53-55, 59, 60 - J/J
- Core/Insulation Crimp: Pins 46, 48, 50, 52, 66, 68, 70, 72 - K/K

K20 Engine Control Module X3 (LAF)

Pin	Wire	Circuit	Function
1-7	-	-	Not Available
8	0.5 YE	410	ECT Sensor Signal
9	0.5 TN/BK	231	Oil Pressure Switch Signal
10	0.5 PU/WH	6270	5-Volt 2 Reference
11-15	-	-	Not Available
16	0.5 YE	7301	High Pressure Fuel Pump Actuator High Control
17-23	-	-	Not Available
24	0.5 TN	2761	Low Reference
25	0.5 GY/BK	6272	Low Reference
26	0.5 WH/BK	6271	Crankshaft Position Sensor Signal
27	0.5 OG/WH	2122	IC 2 Control
28	0.5 D-GN/WH	2124	IC 4 Control
29	0.5 L-BU	2123	IC 3 Control
30	0.5 PU	2121	IC 1 Control
31	0.5 BN	2129	Low Reference
32	0.5 PU	7300	High Pressure Fuel Pump Actuator Low Control
33	0.5 OG	5275	Camshaft Position (CMP) Sensor - Intake Bank 1 Signal
34	0.5 D-BU	5300	5-Volt 1 Reference
35	0.5 D-GN	5273	Camshaft Position (CMP) Sensor - Exhaust Bank 1 Signal
36-38	-	-	Not Available
39	0.5 PK/BK	6395	Cam Phaser Control
40	0.5 WH/BK	6396	Cam Phaser Control
41-45	-	-	Not Available
46	0.75 D-BU	4802	Fuel Injector 2 Control
47	-	-	Not Available
48	0.75 L-GN	4803	Fuel Injector 3 Control
49	-	-	Not Available
50	0.75 L-BU	4804	Fuel Injector 4 Control
51	-	-	Not Available

52	0.75 BN	4801	Fuel Injector 1 Control
53	0.5 TN	5301	Low Reference
54	0.5 YE/BK	5297	5-Volt 1 Reference
55	0.5 GY	5296	Low Reference
56-58	-	-	Not Available
59	0.5 BN	6753	Low Reference
60	0.5 BN/WH	6754	Low Reference
61-65	-	-	Not Available
66	0.75 D-BU/WH	4902	Fuel Injector 2 Control
67	-	-	Not Available
68	0.75 L-GN/PU	4903	Fuel Injector 3 Control
69	-	-	Not Available
70	0.75 L-BU/WH	4904	Fuel Injector 4 Control
71	-	-	Not Available
72	0.75 BN/WH	4901	Fuel Injector 1 Control
73	2 BK/WH	451	Ground

K20 ENGINE CONTROL MODULE X3 (LF1)

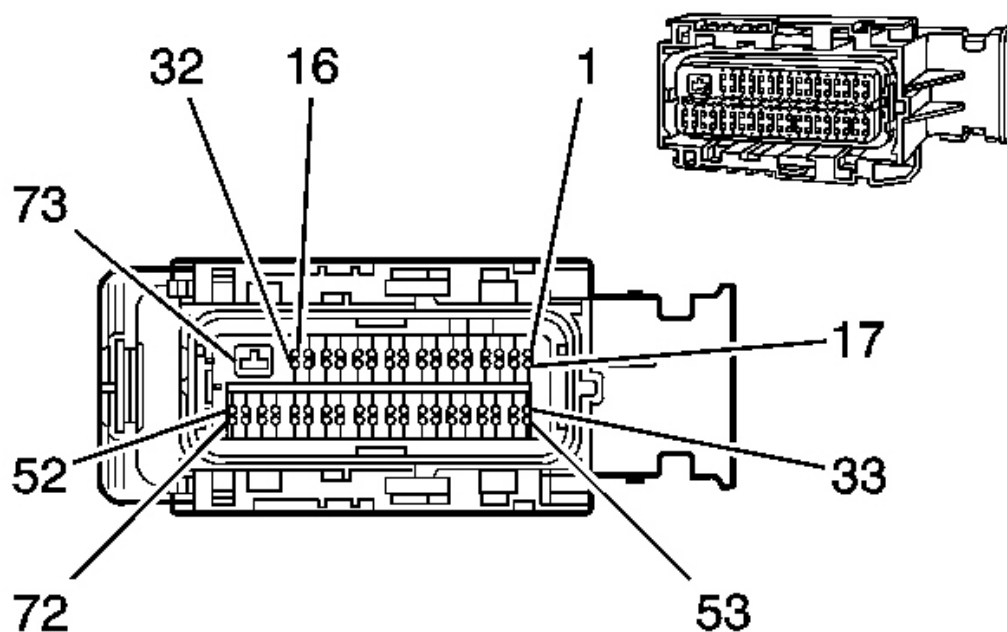


Fig. 17: K20 Engine Control Module X3 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 34566-1813
- Service: 88988372
- Description: 73-Way F 64 2.8 Series, Sealed (Connector-BK; TPA-GY)

Terminal Part Information

- Pins: 73
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 7116-4152-02/9
- Core/Insulation Crimp: 2/5
- Pins: 8-10, 13-16, 23-42, 46-48, 50-62, 66-68, 70-72
- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33467-0005/23
- Core/Insulation Crimp: Pins 8-10, 13-16, 23-42, 53-62 - J/J
- Core/Insulation Crimp: Pins 46-48, 50-52, 66-68, 70-72 - K/K

K20 Engine Control Module X3 (LF1)

Pin	Wire	Circuit	Function
1-7	-	-	Not Available
8	0.5 YE	410	ECT Sensor Signal
9	0.5 TN/BK	231	Oil Pressure Switch Signal
10	0.5 PU/WH	6270	5-Volt 2 Reference
11-12	-	-	Not Available
13	0.5 L-BU/WH	2126	IC 6 Control
14	0.5 D-GN	2125	IC 5 Control
15	0.5 BN/WH	2130	Low Reference
16	0.5 YE	7301	High Pressure Fuel Pump Actuator High Control
17-22	-	-	Not Available
23	0.5 TN	407	Low Reference
24	0.5 TN	476	Low Reference
25	0.5 GY/BK	6272	Low Reference

26	0.5 WH/BK	6271	Crankshaft Position Sensor Signal
27	0.5 D-GN/WH	2124	IC 4 Control
28	0.5 L-BU	2123	IC 3 Control
29	0.5 OG/WH	2122	IC 2 Control
30	0.5 PU	2121	IC 1 Control
31	0.5 BN	2129	Low Reference
32	0.5 PU	7300	High Pressure Fuel Pump Actuator Low Control
33	0.5 OG	5275	Camshaft Position (CMP) Sensor - Intake Bank 1 Signal
34	0.5 D-BU	5300	5-Volt 1 Reference
35	0.5 D-GN	5273	Camshaft Position (CMP) Sensor - Exhaust Bank 1 Signal
36	0.5 YE	5276	Camshaft Position (CMP) Sensor - Intake Bank 2 Signal
37	0.5 L-BU	5302	5-Volt 1 Reference
38	0.5 PU	5274	Camshaft Position (CMP) Sensor - Exhaust Bank 2 Signal
39	0.5 PK/BK	6395	Cam Phaser Control
40	0.5 WH/BK	6396	Cam Phaser Control
41	0.5 TN/BK	6397	Cam Phaser Control
42	0.5 GY/BK	6394	Cam Phaser Control
43-45	-	-	Not Available
46	0.75 L-BU	4804	Fuel Injector 4 Control
47	0.75 WH/D-GN	4805	Fuel Injector 5 Control
48	0.75 D-BU	4802	Fuel Injector 2 Control
49	-	-	Not Available
50	0.75 L-GN	4803	Fuel Injector 3 Control
51	0.75 PU	4806	Fuel Injector 6 Control
52	0.75 BN	4801	Fuel Injector 1 Control
53	0.5 TN	5301	Low Reference
54	0.5 YE/BK	5297	5-Volt 1 Reference
55	0.5 GY	5296	Low Reference
56	0.5 BN/WH	5303	Low Reference
57	0.5 L-GN	5298	5-Volt 1 Reference
58	0.5 BN	5299	Low Reference
59	0.5 BN	6753	Low Reference
60	0.5 BN/WH	6754	Low Reference
61	0.5 D-BU	6755	Low Reference
62	0.5 D-BU/WH	6756	Low Reference
63-65	-	-	Not Available
66	0.75 L-BU/WH	4904	Fuel Injector 4 Control

67	0.75 L-GN/WH	4905	Fuel Injector 5 Control
68	0.75 L-BU/WH	4902	Fuel Injector 2 Control
69	-	-	Not Available
70	0.75 L-GN/PU	4903	Fuel Injector 3 Control
71	0.75 PU/WH	4906	Fuel Injector 6 Control
72	0.75 BN/WH	4901	Fuel Injector 1 Control
73	2 BK/WH	451	Ground

K27 FUEL PUMP CONTROL MODULE

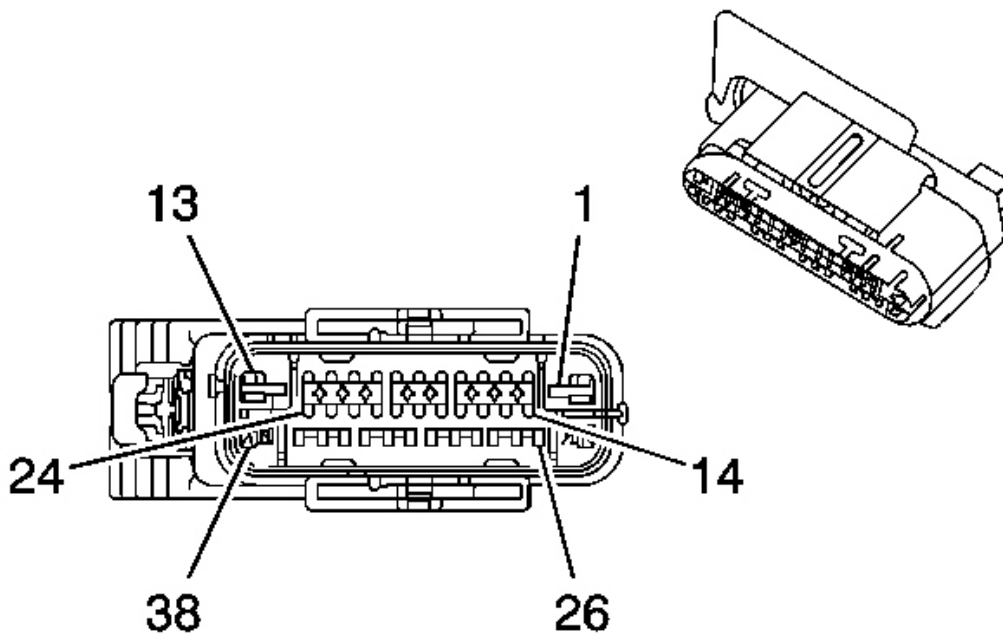


Fig. 18: K27 Fuel Pump Control Module
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM: 88988965
- Service: 13574909
- Description: 38-Way F USCAR 2.8 Series, Sealed (BK)

Terminal Part Information

- Pins: 5, 6, 8, 10, 17, 18, 20-24
- Terminated Lead: Pending
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAITS-A03T-M064/14
- Core/Insulation Crimp: 9/9
- Pins: 1, 25
- Terminated Lead: 13575404
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304719/19
- Core/Insulation Crimp: 2/5
- Pins: 13, 38
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304720/19
- Core/Insulation Crimp: 4/5

K27 Fuel Pump Control Module

Pin	Wire	Circuit	Function
1	1 RD/WH	2640	Battery Positive Voltage
2-4	-	-	Not Used
5	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
6	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
7	-	-	Not Used
8	0.35 L-BU	5986	Serial Data Communication Enable
9	-	-	Not Used
10	0.35 PU	7446	Fuel Pressure Sensor Signal
11-12	-	-	Not Used
13	2 GY	120	Fuel Pump Supply Voltage
14-16	-	-	Not Used
17	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
18	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
19	-	-	Not Used
20	0.35 D-GN/WH	465	Fuel Pump Relay Control
21	0.5 PK	1739	Ignition Voltage
22	0.35 BN	7445	5-Volt Reference

23	0.35 GY	7447	Low Reference
24	0.35 BARE	7444	Drain Wire
25	1 BK	2550	Ground
26-37	-	-	Not Used
38	2 PK	1580	Fuel Pump Motor Low Reference

K29 SEAT HEATING CONTROL MODULE X1 (KA1 WITHOUT LTZ OR SLT)

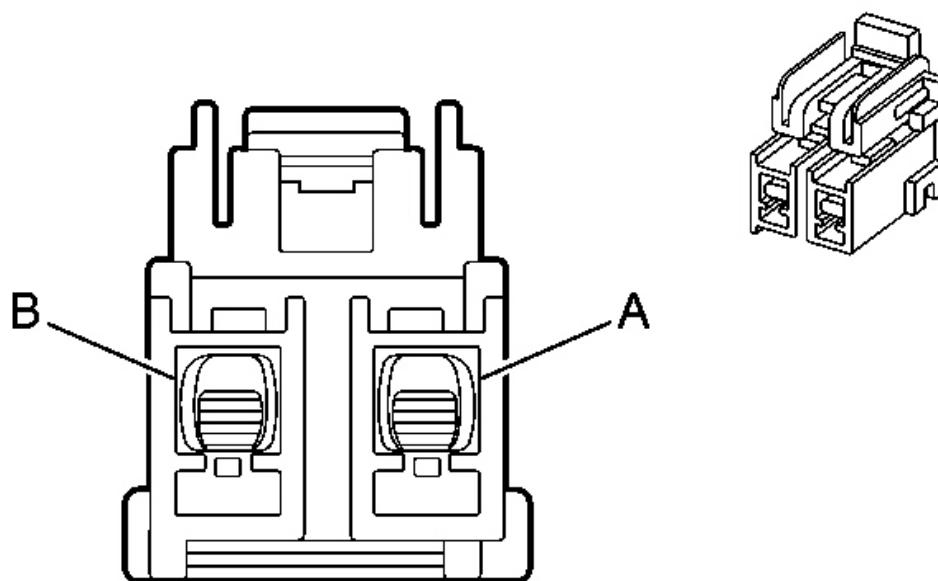


Fig. 19: K29 Seat Heating Control Module X1 (KA1 without LTZ or SLT)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 13527997
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110842/4
- Core/Insulation Crimp: C/A

K29 Seat Heating Control Module X1 (KA1 without LTZ or SLT)

Pin	Wire	Circuit	Function
A	1 BK	750	Ground
B	1 RD/WH	5140	Battery Positive Voltage

K29 SEAT HEATING CONTROL MODULE X1 (SPO ACCESSORY)

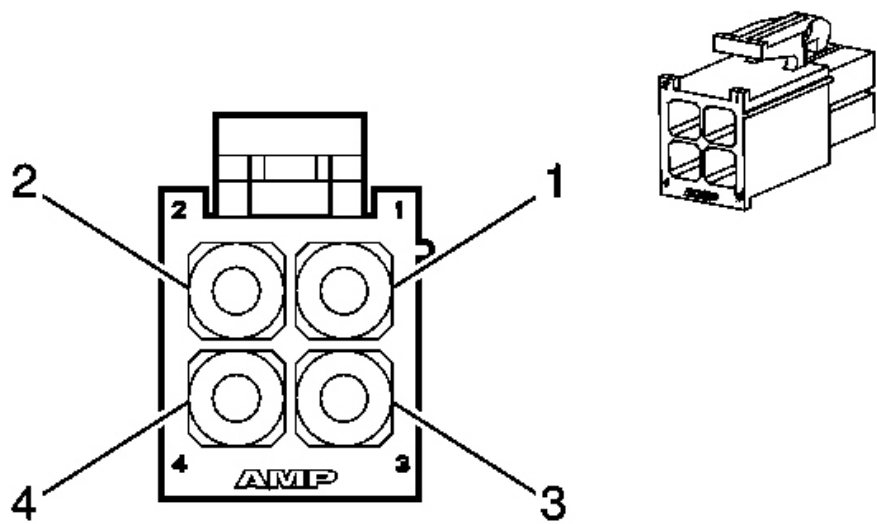


Fig. 20: K29 Seat Heating Control Module X1 (SPO Accessory)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness Type: SPO Seat Heating Extension
- OEM Connector: 172338-1
- Service Connector: Pending

- Description: 4-Way F Mini-Universal MATE-N-LOK (NA)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 172338-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 172338-1
- Core/Insulation Crimp: Not Available

K29 Seat Heating Control Module X1 (SPO Accessory)

Pin	Wire	Circuit	Function
1	0.8 RD	-	Driver Heated Seat Cushion Element Supply Voltage
2	0.8 D-BU	-	Driver Heated Seat Back Element Control
3	0.8 GY	-	Driver Heated Seat Cushion Temperature Sensor Signal
4	0.8 GY	-	Driver Heated Seat Cushion Temperature Sensor Low Reference

K29 SEAT HEATING CONTROL MODULE X2 (KA1 WITHOUT LTZ OR SLT)

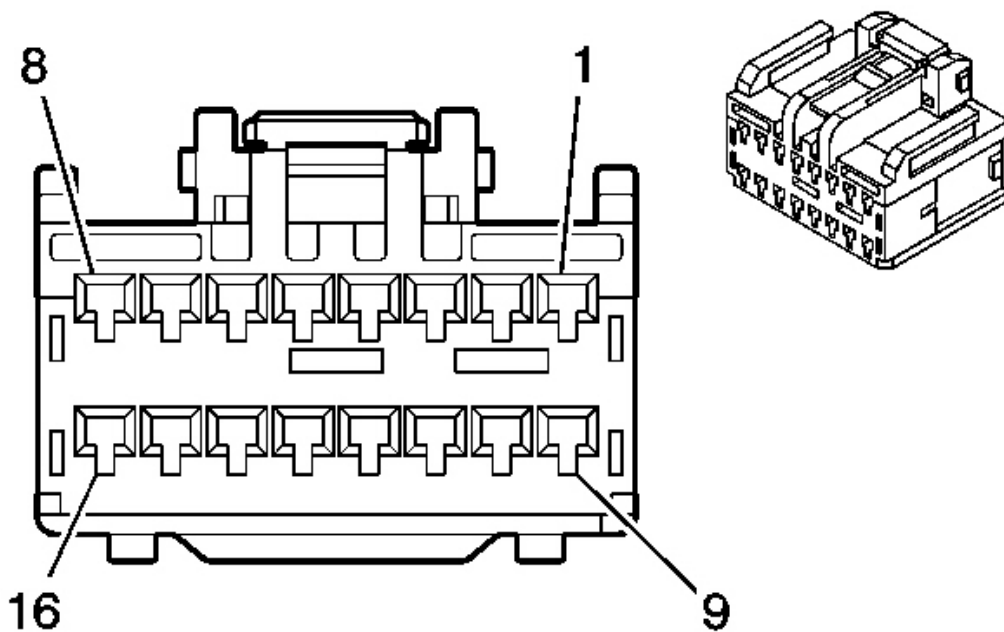


Fig. 21: K29 Seat Heating Control Module X2 (KA1 without LTZ or SLT)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 6098-4611
- Service Connector: 15134091
- Description: 16-Way F 1.5 Series (BK)

Terminal Part Information

- Pins: 1-3, 5
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0128/22
- Core/Insulation Crimp: C/A
- Pins: 13, 14
- Terminated Lead: 13575855

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

K29 Seat Heating Control Module X2 (KA1 without LTZ or SLT)

Pin	Wire	Circuit	Function
1	0.8 PU	2424	Driver Heated Seat Back Element Control
2	0.8 L-BU	2433	Passenger Heated Seat Back Element Control
3	0.8 PK	2077	Heated Seat Cushion Element Supply Voltage
4	-	-	Not Used
5	0.8 D-BU	2479	Passenger Heated Seat Element Supply Voltage
6-12	-	-	Not Used
13	0.35 YE	2080	Driver Heated Seat Cushion Temperature Sensor Low Reference
14	0.35 PK	2435	Passenger Heated Seat Cushion Temperature Sensor Low Reference
15-16	-	-	Not Used

K29 SEAT HEATING CONTROL MODULE X3 (KA1 WITHOUT LTZ OR SLT)

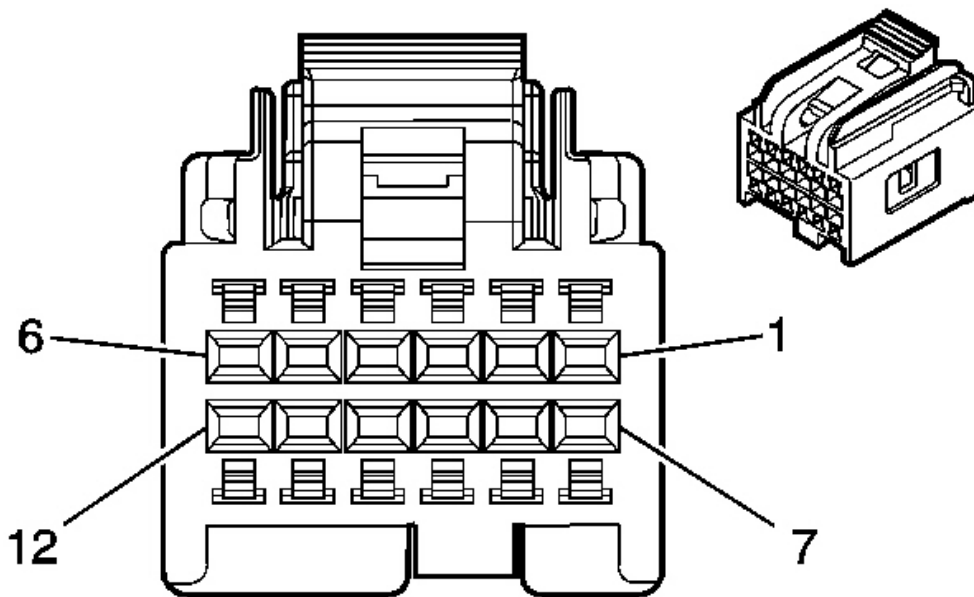


Fig. 22: K29 Seat Heating Control Module X3 (KA1 without LTZ or SLT)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 31410-1120
- Service Connector: 89047364
- Description: 12-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K29 Seat Heating Control Module X3 (KA1)

Pin	Wire	Circuit	Function
1-2	-	-	Not Used

3	0.35 YE/BK	2079	Heated Seat Cushion Temperature Sensor Signal
4	0.35 GY	2434	Passenger Heated Seat Cushion Temperature Sensor Signal
5-10	-	-	Not Used
11	0.35 D-GN	5060	Low Speed GMLAN Serial Data
12	-	-	Not Used

K29 SEAT HEATING CONTROL MODULE X3 (SPO ACCESSORY)

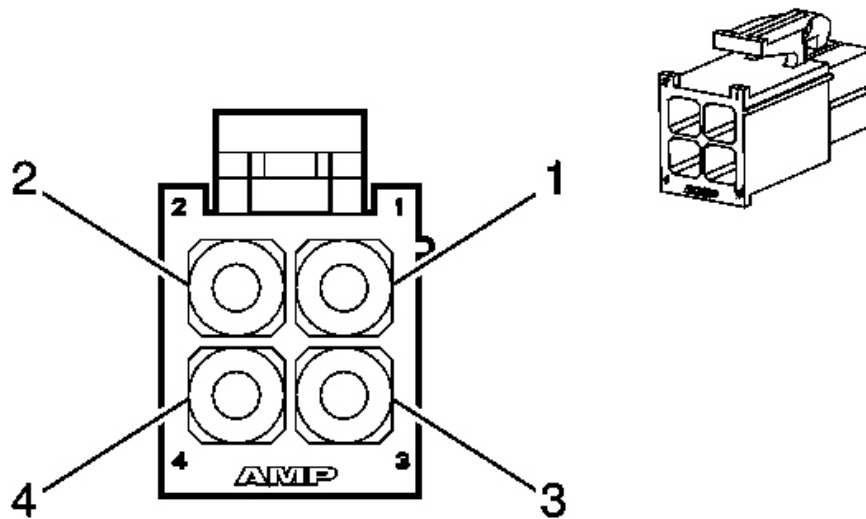


Fig. 23: K29 Seat Heating Control Module X3 (SPO Accessory)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness Type: SPO Seat Heating Extension
- OEM Connector: 172338-1
- Service Connector: Pending
- Description: 4-Way F Mini-Universal MATE-N-LOK (NA)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 172338-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 172338-1
- Core/Insulation Crimp: Not Available

K29 Seat Heating Control Module X3 (SPO Accessory)

Pin	Wire	Circuit	Function
1	0.8 RD	-	Heated Seat Cushion Element Supply Voltage
2	0.8 D-BU	-	Passenger Heated Seat Back Element Control
3	0.8 GY	-	Heated Seat Cushion Temperature Sensor Signal
4	0.8 GY	-	Passenger Heated Seat Cushion Temperature Sensor Low Reference

K29 SEAT HEATING CONTROL MODULE X4 (SPO ACCESSORY)

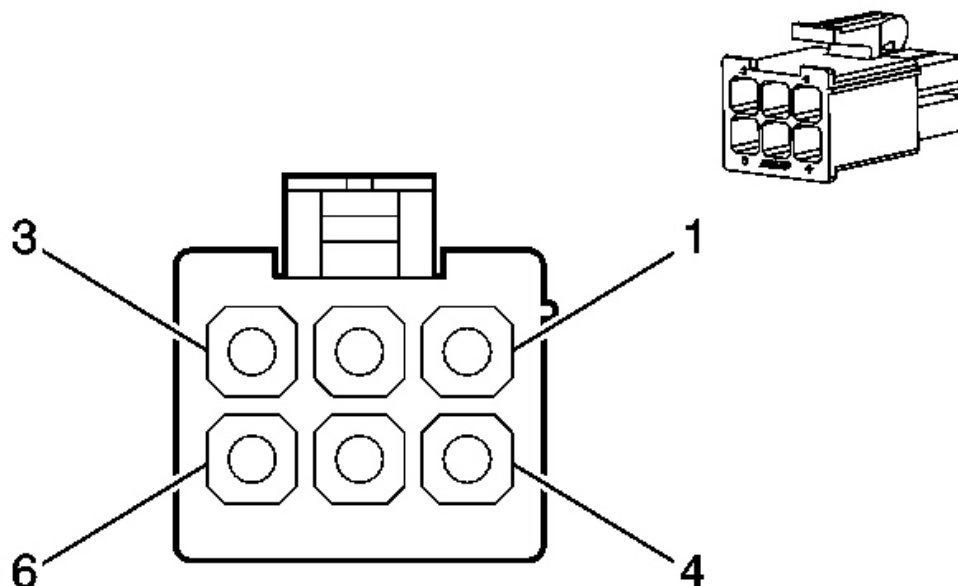


Fig. 24: K29 Seat Heating Control Module X4 (SPO Accessory)
 Courtesy of GENERAL MOTORS CORP.

- Harness Type: SPO Seat Heating Power Extension
- OEM Connector: 172339-1
- Service Connector: Pending
- Description: 6-Way F Mini-Universal MATE-N-LOK (NA)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 172339-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 172339-1
- Core/Insulation Crimp: Not Available

K29 Seat Heating Control Module X4 (SPO Accessory)

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.8 OG	-	Retained Accessory Power Fuse Supply Voltage
3	0.8 RD	-	Retained Accessory Power Fuse Supply Voltage
4	0.8 BK	-	Ground
5	0.8 BK	-	Ground
6	0.8 RD	-	Retained Accessory Power Fuse Supply Voltage

K29 SEAT HEATING CONTROL MODULE X5 (SPO ACCESSORY)

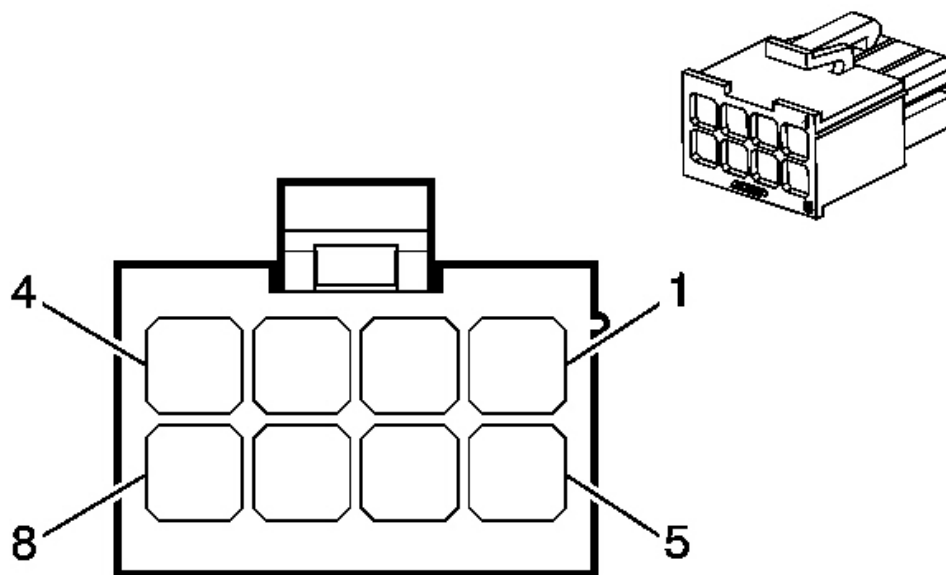


Fig. 25: K29 Seat Heating Control Module X5 (SPO Accessory)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

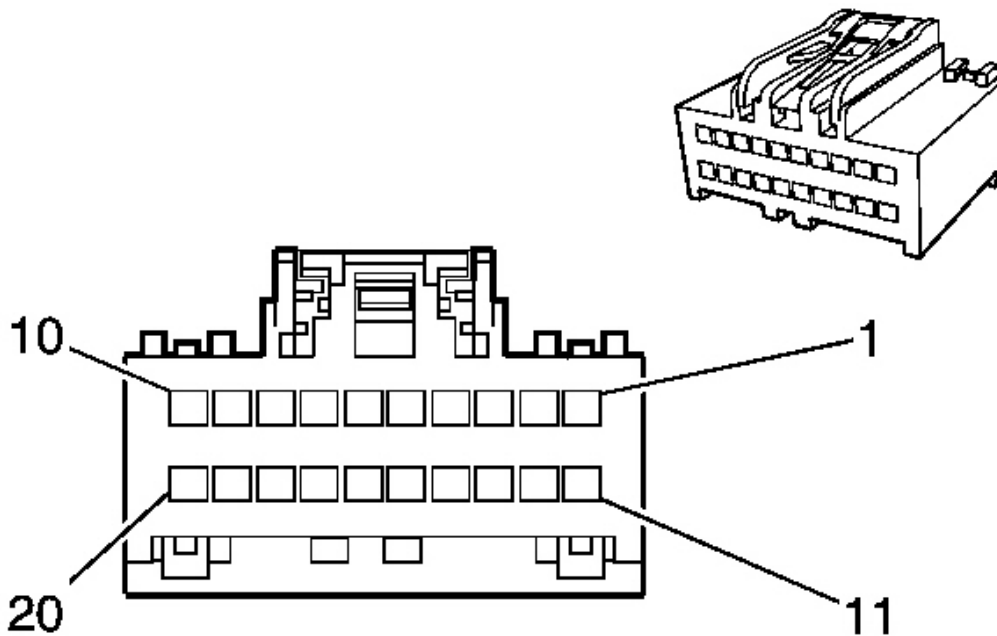
- Harness Type: SPO Seat Heating Switch Extension
- OEM Connector: 770579-1
- Service Connector: Pending
- Description: 8-Way F Mini-Universal MATE-N-LOK (NA)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 770579-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 770579-1
- Core/Insulation Crimp: Not Available

K29 Seat Heating Control Module X5 (SPO Accessory)

Pin	Wire	Circuit	Function
1	0.35 BN	-	Heated Seat Indicator Supply Voltage



- Harness: Instrument Panel
- OEM Connector: 31410-1203
- Service Connector: 13317839
- Description: 20-Way F USCAR 64 Series (GN)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K33 HVAC Control Module X1 (C68)

Pin	Wire	Circuit	Function
1-3	-	-	Not Used
4	0.35 D-GN	734	Inside Air Temperature Control Signal
5-6	-	-	Not Used
7	0.35 BN	6102	Low reference
8-12	-	-	Not Used
13	0.35 PU	1783	Twilight Sentinel Delay Signal
14-17	-	-	Not Used
18	0.35 TN	520	Lower Right Air Temperature Sensor Signal
19-20	-	-	Not Used

K33 HVAC CONTROL MODULE X2

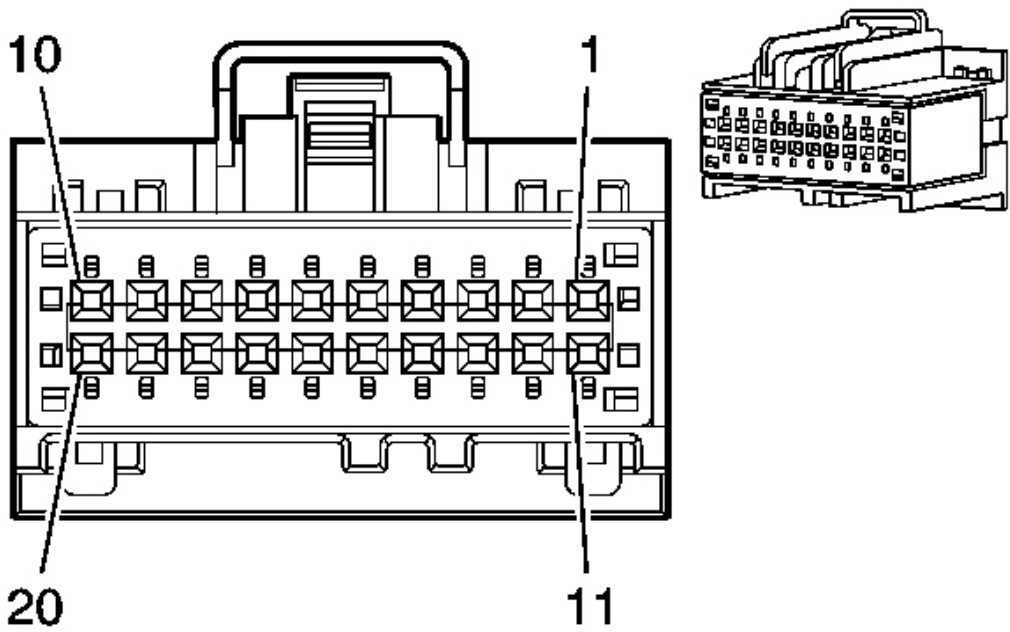


Fig. 27: K33 HVAC Control Module X2
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 31410-1202
- Service Connector: 15126709
- Description: 20-Way F 64 Series, Sealed (BN)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: Pins 2, 4, 9, 15, 18, 19 - P/P
- Core/Insulation Crimp: Pins 1, 8 - Not Available

K33 HVAC Control Module X2

Pin	Wire	Circuit	Function
-----	------	---------	----------

1	0.8 RD/WH	3340	Battery Positive Voltage
2	0.35 D-GN	5060	Low Speed GMLAN Serial Data
3	-	-	Not Used
4	0.35 YE	7531	Local Interconnect Network 9
5-7	-	-	Not Used
8	0.8 BK	1550	Ground
9	0.35 PK	539	Ignition Voltage
10-14	-	-	Not Used
15	0.35 GY/BK	754	Blower Motor Speed Control
16-17	-	-	Not Used
18	0.35 YE	1791	Low Reference
19	0.35 WH	193	Rear Defog Relay Control
20	-	-	Not Used

K33 HVAC CONTROL MODULE X3

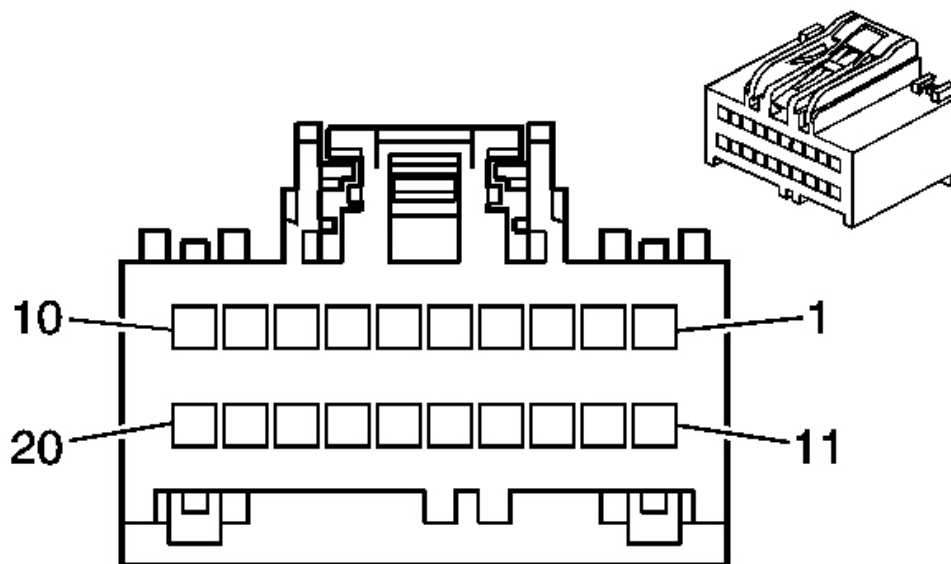


Fig. 28: K33 HVAC Control Module X3
 Courtesy of GENERAL MOTORS CORP.

- Harness: Instrument Panel
- OEM Connector: 31410-1200
- Service Connector: 15126711
- Description: 20-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K33 HVAC Control Module X3

Pin	Wire	Circuit	Function
1	0.35 TN	517	Upper Right Air Temperature Sensor Signal (C68)
2	0.35 TN	2273	Mode Door Control
3	0.35 WH	119	Mode Door Control
4	0.35 L-GN	2275	Mode Door Position Signal
5	-	-	Not Used
6	0.35 D-GN	1614	Recirculation Door Control
7	0.35 TN/BK	2274	Recirculation Door Control Circuit
8	0.35 PU	1838	Recirculation Door Position Signal
9	0.35 BK/WH	551	Low Reference
10	0.35 GY	598	5-Volt Reference
11	0.35 D-BU	1199	Auxiliary Air Temperature Door Position Signal
12	0.35 L-BU	1316	Air Temperature Door Control
13	0.35 L-BU	733	Left Air Temperature Door Control
14-19	-	-	Not Used
20	0.35 WH	2622	EVAP Core Temperature Sensor Signal

K36 INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE X1

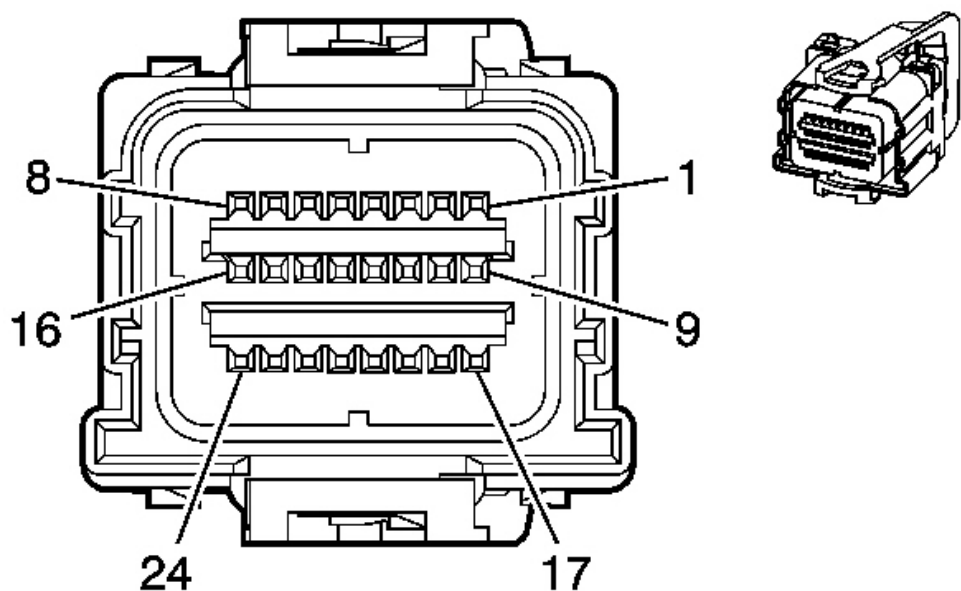


Fig. 29: K36 Inflatable Restraint Sensing and Diagnostic Module X1
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM: 776773-9
- Service: 13317834
- Description: 24-Way F, Sealed (YE)

Terminal Part Information

- Terminated Lead: Service by Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

K36 Inflatable Restraint Sensing and Diagnostic Module X1

Pin	Wire	Circuit	Function
			Steering Wheel Module - Stage 2 - High

1	0.35 WH	3023	Control
2	0.35 PK	3022	Steering Wheel Module - Stage 2 - Low Control
3	0.35 BN	3020	Steering Wheel Module - Stage 1 - Low Control
4	0.35 TN	3021	Steering Wheel Module - Stage 1 - High Control
5	0.35 YE	3025	I/P Module - Stage 1 - High Control
6	0.35 OG	3024	I/P Module - Stage 1 - Low Control
7	0.35 PU	3026	I/P Module - Stage 2 - Low Control
8	0.35 GY	3027	I/P Module - Stage 2 - High Control
9	0.5 RD/WH	4440	Battery Positive Voltage
10	0.35 PU	5234	Front Passenger Seat Belt Indicator Control
11	0.35 D-BU	2307	Passenger Air Bag On Indicator Control
12	0.35 D-GN	2308	Passenger Air Bag Off Indicator Control
13-14	-	-	Not Available
15	0.35 D-GN	5060	Low Speed GMLAN Serial Data
16	-	-	Not Available
17	0.35 PK	1139	Ignition Voltage
18	-	-	Not Available
19	0.5 BK/WH	1651	Ground
20-24	-	-	Not Available

K36 INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE X2

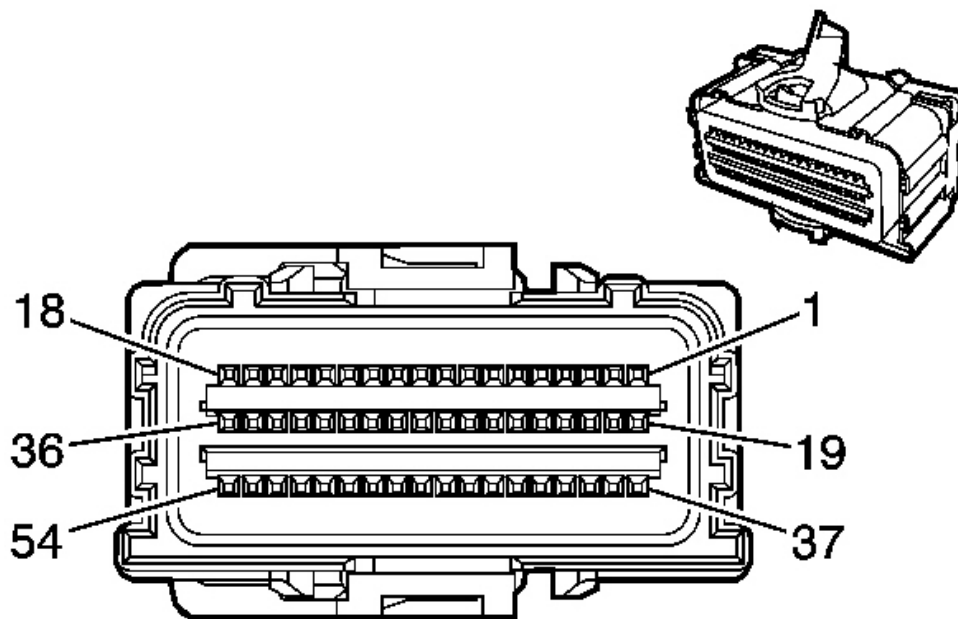


Fig. 30: K36 Inflatable Restraint Sensing and Diagnostic Module X2
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM: 2035023-9
- Service: 13316188
- Description: 54-Way F, Sealed (YE)

Terminal Part Information

- Terminated Lead: 13575864
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03GF-M064/27
- Core/Insulation Crimp: P/P

K36 Inflatable Restraint Sensing and Diagnostic Module X2

Pin	Wire	Circuit	Function
1-8	-	-	Not Available

9	0.35 L-BU	3481	Driver Seat Belt Anchor Pretensioner +
10	0.35 D-GN	3482	Driver Seat Belt Anchor Pretensioner -
11	0.35 D-GN/WH	3480	Passenger Seat Belt Anchor Pretensioner -
12	0.35 BN	3479	Passenger Seat Belt Anchor Pretensioner +
13	0.35 L-BU	3068	Side Air Bag +
14	0.35 L-GN/BK	3069	Side Air Bag -
15	0.35 TN/BK	3067	Side Air Bag -
16	0.35 PU	3066	Side Air Bag +
17	0.5 PU/WH	5019	Roof Rail Module - Left - High Control
18	0.5 PK	5020	Roof Rail Module - Left - Low Control
19	0.35 WH	2132	Side Impact Sensing Module - Left - Signal
20	0.35 PU/WH	6628	Low Reference
21	0.35 GY/BK	6621	Low Reference
22	0.35 D-GN/WH	6620	Left Middle Side Impact Sensing Module Signal
23	0.35 YE	354	Front End Sensor - Left - Signal
24	0.35 TN/OG	5045	Low Reference
25	0.35 GY	5600	Low Reference
26	0.35 D-GN	1409	Front End Sensor - Right - Signal
27	0.35 D-GN	2134	Side Impact Sensing Module - Right - Signal
28	0.35 WH/BK	6629	Low Reference
29	0.35 L-GN/WH	6625	Low Reference
30	0.35 L-BU/BK	6624	Right Middle Side Impact Sensing Module Signal
31-36	-	-	Not Available
37	0.5 TN/WH	3477	Driver Seat Belt Retractor Pretensioner +
38	0.5 PK/BK	3478	Driver Seat Belt Retractor Pretensioner -
39	0.5 PK	3476	Passenger Seat Belt Retractor Pretensioner -
40	0.5 L-GN	3475	Passenger Seat Belt Retractor Pretensioner +
41	0.35 TN/WH	238	Seat Belt Switch - Left
42	-	-	Not Available
43	0.35 D-BU	1363	Seat Belt Switch - Left - Low Reference
44	0.35 L-BU	1361	Seat Belt Switch - Right - Low Reference
45	0.35 OG	1362	Seat Belt Switch - Right - Signal
46-52	-	-	Not Available
53	0.5 YE/BK	5021	Roof Rail Module - Right - High Control
54	0.5 WH/BK	5022	Roof Rail Module - Right - Low Control

K39 LIFTGATE CONTROL MODULE X1 (TB5)

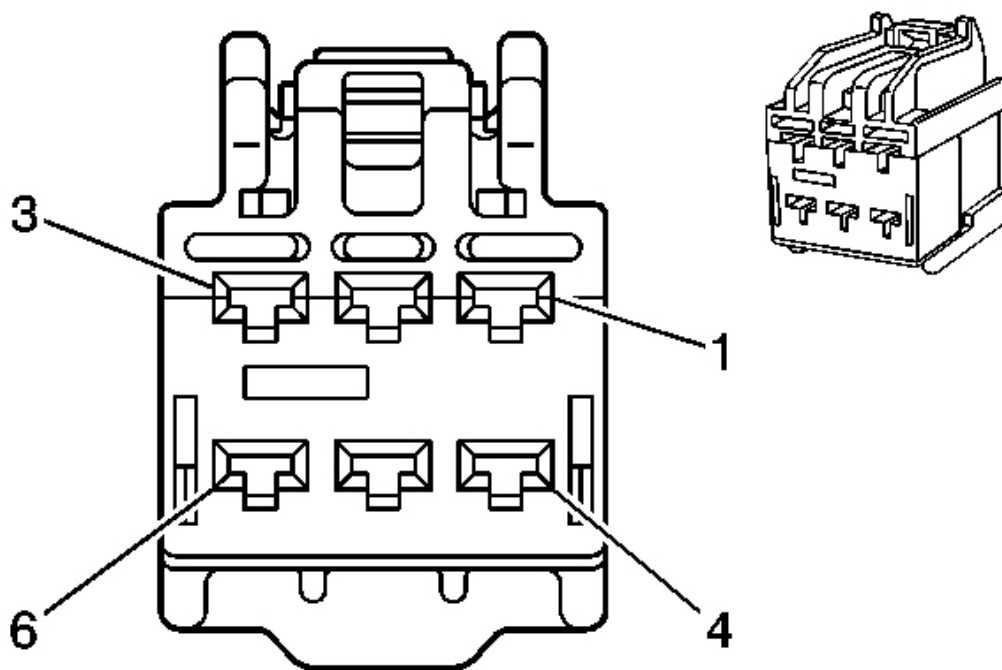


Fig. 31: K39 Liftgate Control Module X1 (TB5)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 6098-4607
- Service Connector: 88988497
- Description: 6-Way F (BK)

Terminal Part Information

- Pin: 5
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Pins: 1, 2, 4

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4444/22
- Core/Insulation Crimp: 2/A
- Pins: 3, 6
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: F/D

K39 Liftgate Control Module X1 (TB5)

Pin	Wire	Circuit	Function
1	1 BN	5790	Liftgate Latch Motor Open Control
2	1 D-BU	5791	Liftgate Latch Motor Close Control
3	3 RD/WH	1540	Battery Positive Voltage
4	1 RD/WH	840	Battery Positive Voltage
5	0.5 BARE	3016	Drain Wire
6	3 BK	2550	Ground

K39 LIFTGATE CONTROL MODULE X2 (TB5)

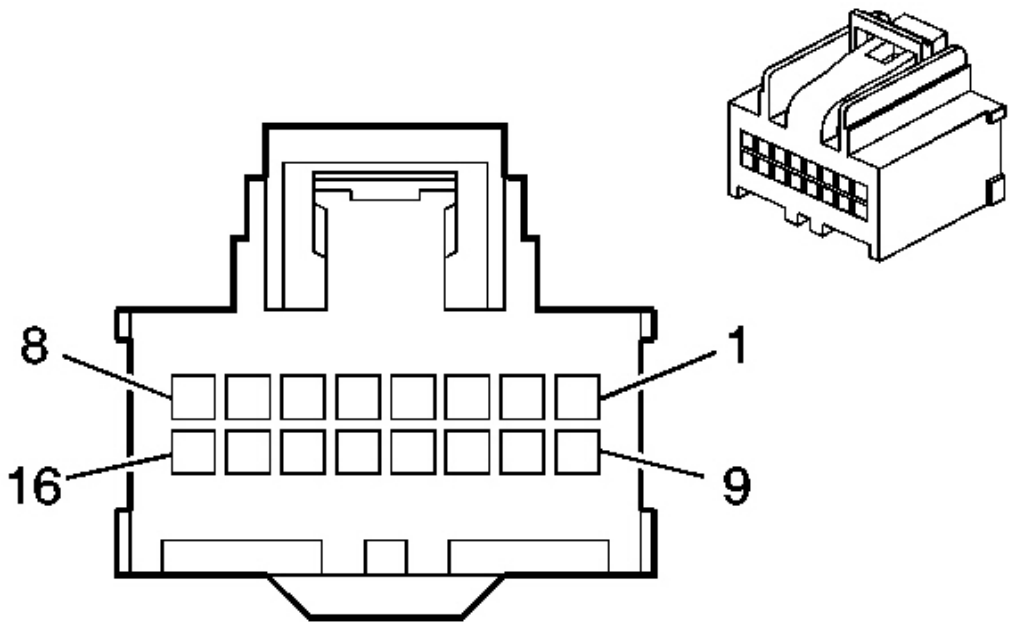


Fig. 32: K39 Liftgate Control Module X2 (TB5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 7283-9076-30
- Service Connector: 15136073
- Description: 16-Way F Kaizen 64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K39 Liftgate Control Module X2 (TB5)

Pin	Wire	Circuit	Function
1	0.35 D-GN	6112	Liftgate On/Off Switch Signal

2	-	-	Not Used
3	0.35 D-GN	3033	Liftgate Latch Sector Switch Signal
4	0.35 D-GN	5512	Liftgate Latch Sector Switch Signal
5	0.35 PK/BK	6000	Liftgate Latch Ratchet Switch Signal
6	0.35 GY	7000	Liftgate Latch Pawl Switch Signal
7	0.35 D-GN	5060	Low Speed GMLAN Serial Data
8	0.35 WH/BK	6126	Liftgate Side Upper Sensor Signal
9-11	-	-	Not Used
12	0.35 GY/BK	6113	Rear Liftgate Open/Close Switch Signal
13	-	-	Not Used
14	0.35 GY	5797	Liftgate Open/Close Switch Signal-Rear
15	-	-	Not Used
16	0.35 PU/WH	5801	Low Reference

K39 LIFTGATE CONTROL MODULE X3 (TB5)

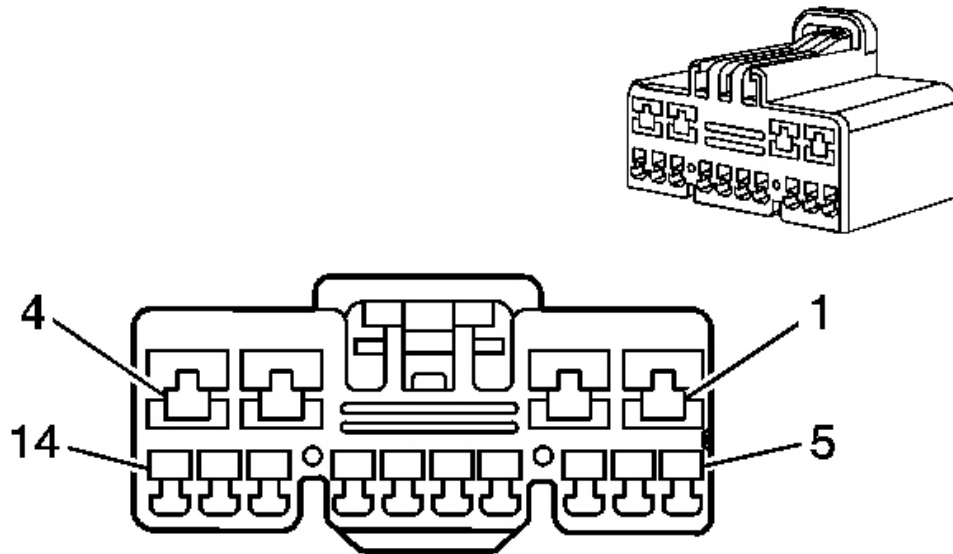


Fig. 33: K39 Liftgate Control Module X3 (TB5)
 Courtesy of GENERAL MOTORS CORP.

- Harness: Liftgate
- OEM Connector: 7283-8398-40
- Service Connector: 19179972
- Description: 14-Way F 64 2.8 YESC Series (L-GY)

Terminal Part Information

- Pins: 1, 2
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 7116-4112-02/9
- Core/Insulation Crimp: C/D
- Pin: 6
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 7116-4720-02/14
- Core/Insulation Crimp: J/J

K39 Liftgate Control Module X3 (TB5)

Pin	Wire	Circuit	Function
1	3 WH	5798	Liftgate Motor Open Control
2	3 BN/WH	5799	Liftgate Motor Close Control
3-5	-	-	Not Used
6	0.5 BARE	701	Ground Distribution Drain Wire
7-14	-	-	Not Used

K40 SEAT MEMORY CONTROL MODULE X1 (LTZ OR SLT)

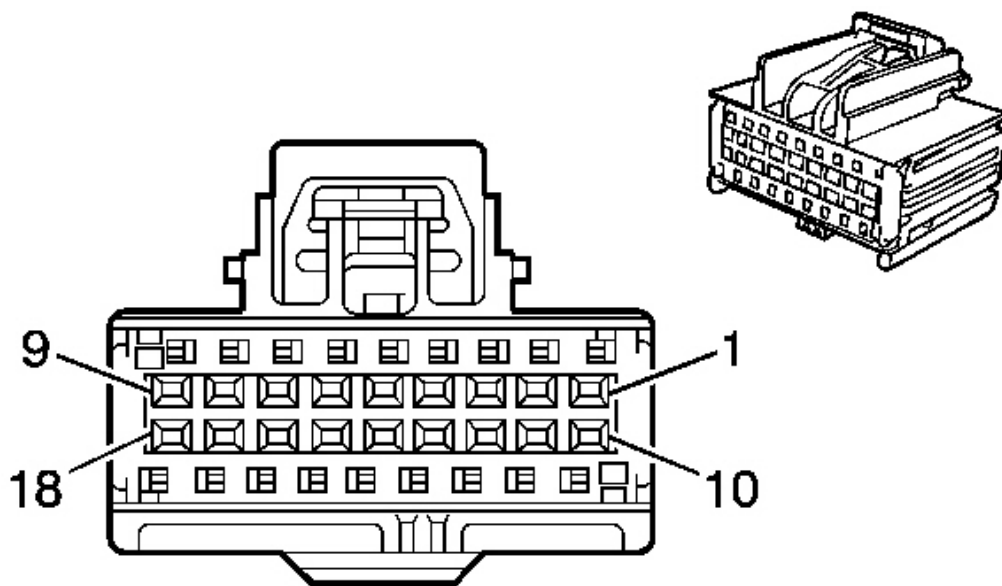


Fig. 34: K40 Seat Memory Control Module X1 (LTZ or SLT)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 7283-4544-30
- Service Connector: 89047360
- Description: 18-Way F 0.64 Kaizen Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K40 Seat Memory Control Module X1 (LTZ or SLT)

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.5 D-GN	1518	Power Seat Front Vertical Up Switch Signal

3	0.5 YE	1519	Power Seat Rear Vertical Up Switch Signal
4	0.5 L-BU	1521	Power Seat Rear Vertical Down Switch Signal
5-6	-	-	Not Used
7	0.5 GY/BK	1269	Power Seat Recline Forward Switch Signal
8	0.5 D-GN/WH	1270	Power Seat Recline Rearward Switch Signal
9-10	-	-	Not Used
11	0.35 WH	7530	Local Interconnect Network 8
12	0.5 D-BU	1520	Power Seat Front Vertical Down Switch Signal
13	0.5 OG/WH	3298	Seat Recline Position Signal
14	-	-	Not Used
15	0.5 D-GN	569	Horizontal Seat Motor Position Sensor Signal
16	0.5 TN	568	Rear Vertical Seat Motor Position Sensor Signal
17	0.5 BN/WH	557	Front Vertical Seat Motor Position Sensor Signal
18	0.5 WH/BK	570	Driver Seat Recline Motor Position Sensor Signal

K40 SEAT MEMORY CONTROL MODULE X2 (LTZ OR SLT)

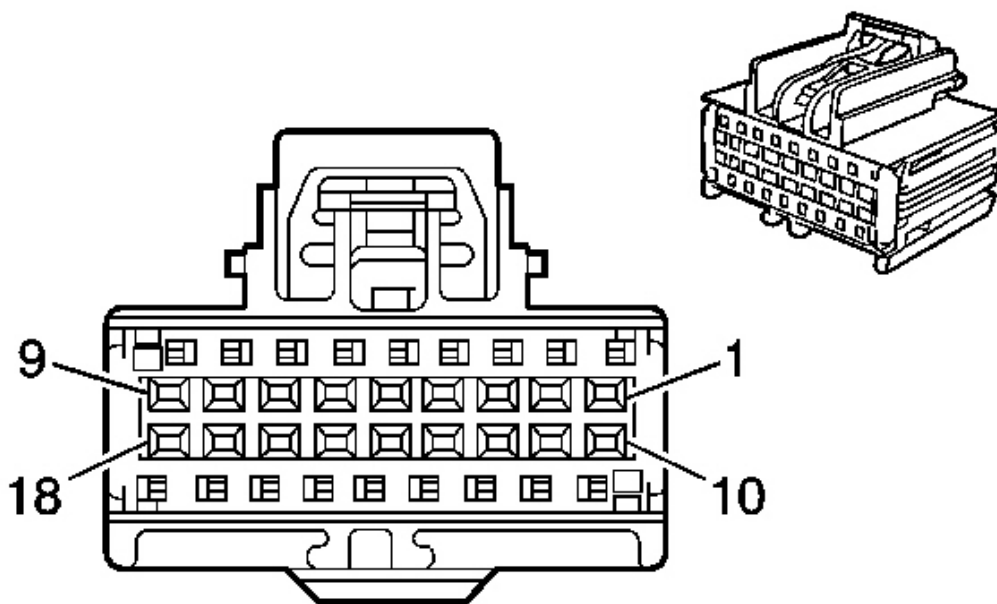


Fig. 35: K40 Seat Memory Control Module X2 (LTZ or SLT)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 7283-4548-60
- Service Connector: 89047361
- Description: 18-Way F 0.64 Kaizen Series (GN)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K40 Seat Memory Control Module X2 (LTZ or SLT)

Pin	Wire	Circuit	Function
1	0.5 TN	1522	Power Seat Horizontal Forward Switch Signal

2-3	-	-	Not Used
4	0.35 OG	614	Memory Set Switch Signal
5-6	-	-	Not Used
7	0.35 GY	2434	Passenger Heated Seat Cushion Temperature Sensor Signal (KA1)
8-10	-	-	Not Used
11	0.5 L-GN	1523	Power Seat Horizontal Rearward Switch Signal
12-13	-	-	Not Used
14	0.35 WH	615	Memory 1 Switch Signal
15	-	-	Not Used
16	0.35 YE/BK	2079	Heated Seat Cushion Temperature Sensor Signal (KA1)
17	-	-	Not Used
18	0.35 D-GN	5060	Low Speed GMLAN Serial Data

K40 SEAT MEMORY CONTROL MODULE X3 (KA1 WITH LTZ OR SLT)

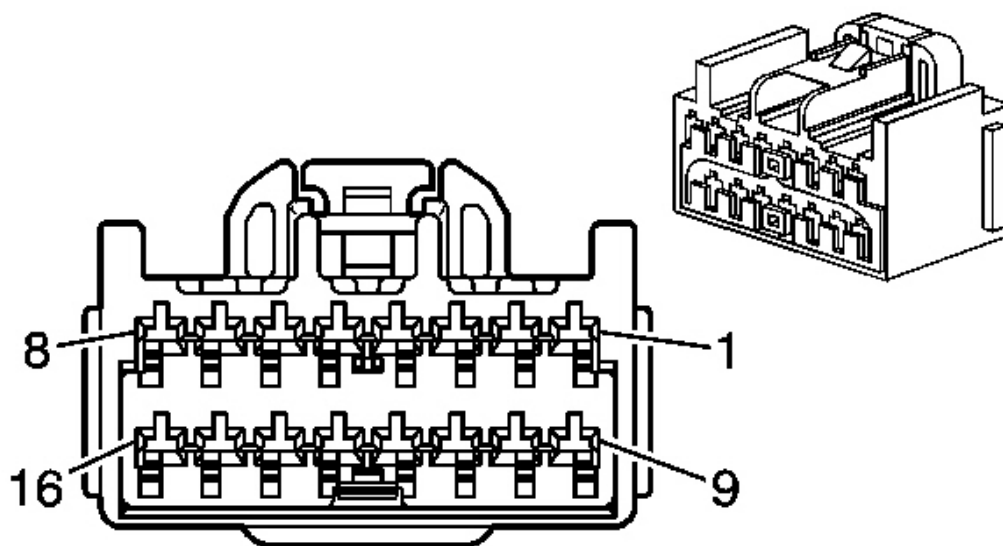


Fig. 36: K40 Seat Memory Control Module X3 (KA1 with LTZ or SLT)
 Courtesy of GENERAL MOTORS CORP.

- Harness: Driver Seat Cushion
- OEM Connector: 6098-4611
- Service Connector: 15134091
- Description: 16-Way F 1.5 Series (BK)

Terminal Part Information

- Pins: 1, 12
- Terminated Lead: 13575855
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C
- Pins: 4, 6, 10, 11
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0128/22
- Core/Insulation Crimp: C/A

K40 Seat Memory Control Module X3 (KA1 with LTZ or SLT)

Pin	Wire	Circuit	Function
1	0.35 PK	2435	Passenger Heated Seat Cushion Temperature Sensor Low Reference
2-3	-	-	Not Used
4	0.8 L-BU	2433	Passenger Heated Seat Back Element Control
5	-	-	Not Used
6	0.8 PU	2424	Driver Heated Seat Back Element Control
7-9	-	-	Not Used
10	0.8 D-BU	2479	Passenger Heated Seat Element Supply Voltage
11	0.8 PK	2077	Heated Seat Cushion Element Supply Voltage
12	0.35 YE	2080	Driver Heated Seat Cushion Temperature Sensor Low Reference
13-16	-	-	Not Used

K40 SEAT MEMORY CONTROL MODULE X4 (LTZ OR SLT)

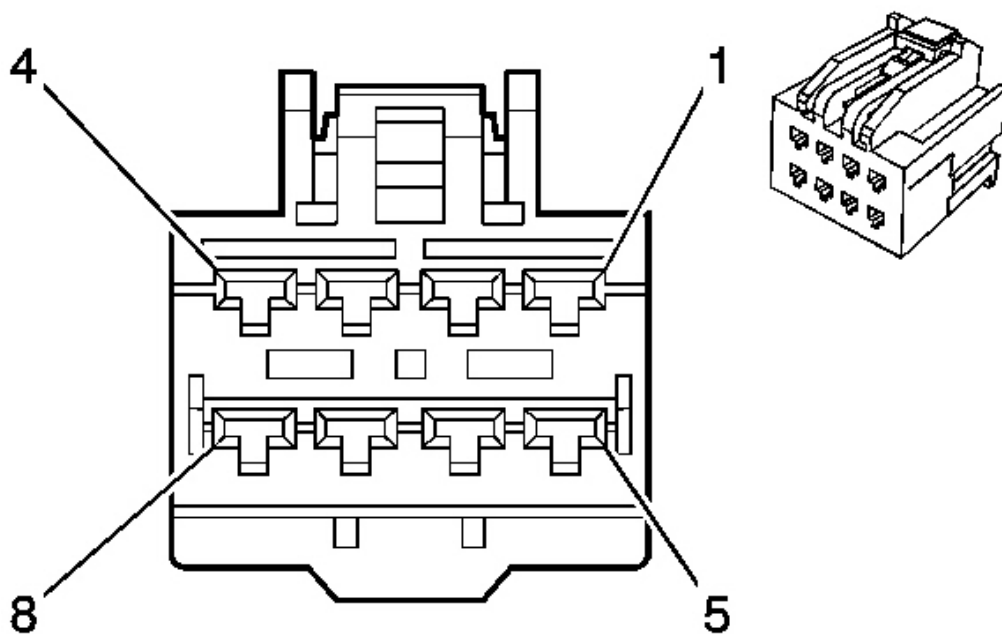


Fig. 37: K40 Seat Memory Control Module X4 (LTZ or SLT)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 6098-4798
- Service Connector: 19115652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Pins: 2
- Terminated Lead: 13575576
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Pins: 1
- Terminated Lead: Pending

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4444/22
- Core/Insulation Crimp: 2/A
- Pins: 5-8
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: F/D

K40 Seat Memory Control Module X4 (LTZ or SLT)

Pin	Wire	Circuit	Function
1	1 RD/WH	5140	Battery Positive Voltage
2	0.35 D-BU/WH	5978	Low Reference
3-4	-	-	Not Used
5	3 RD/BK	1342	Battery Positive Voltage
6	3 BK	750	Ground
7	3 D-GN	286	Driver Seat Front Vertical Motor Up Control
8	3 D-BU	287	Driver Seat Front Vertical Motor Down Control

K40 SEAT MEMORY CONTROL MODULE X5 (LTZ OR SLT)

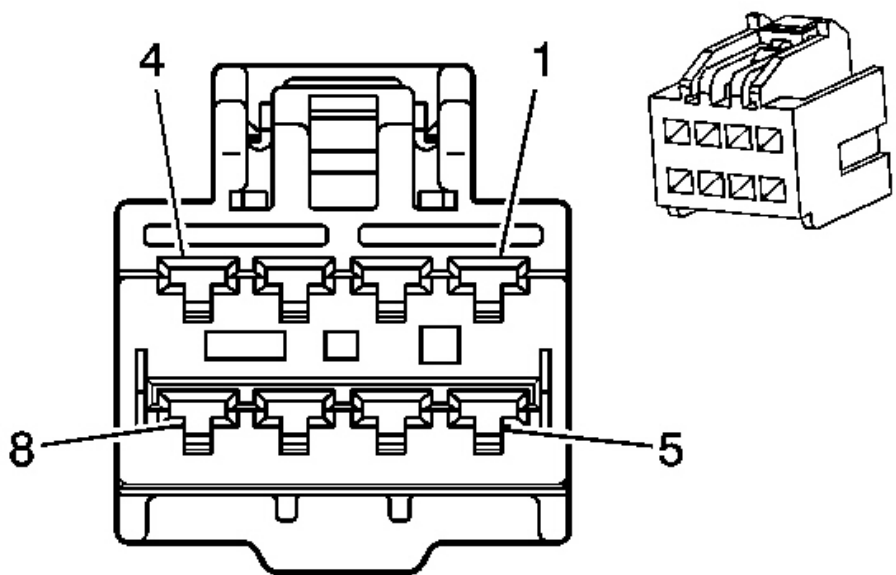


Fig. 38: K40 Seat Memory Control Module X5 (LTZ or SLT)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 6098-4713
- Service Connector: 88988652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: F/D

K40 Seat Memory Control Module X5 (LTZ or SLT)

Pin	Wire	Circuit	Function
			Driver Seat Horizontal Motor Rearward

1	3 L-GN	284	Control
2	3 TN	285	Driver Seat Horizontal Motor Forward Control
3	3 L-BU	283	Driver Seat Rear Vertical Motor Down Control
4	3 YE	282	Driver Seat Rear Vertical Motor Up Control
5	3 L-GN	276	Driver Seat Recline Motor Forward Control
6	3 L-BU	277	Driver Seat Recline Motor Rearward Control
7-8	-	-	Not Used

K41 PARKING ASSIST CONTROL MODULE X1 (UD7)

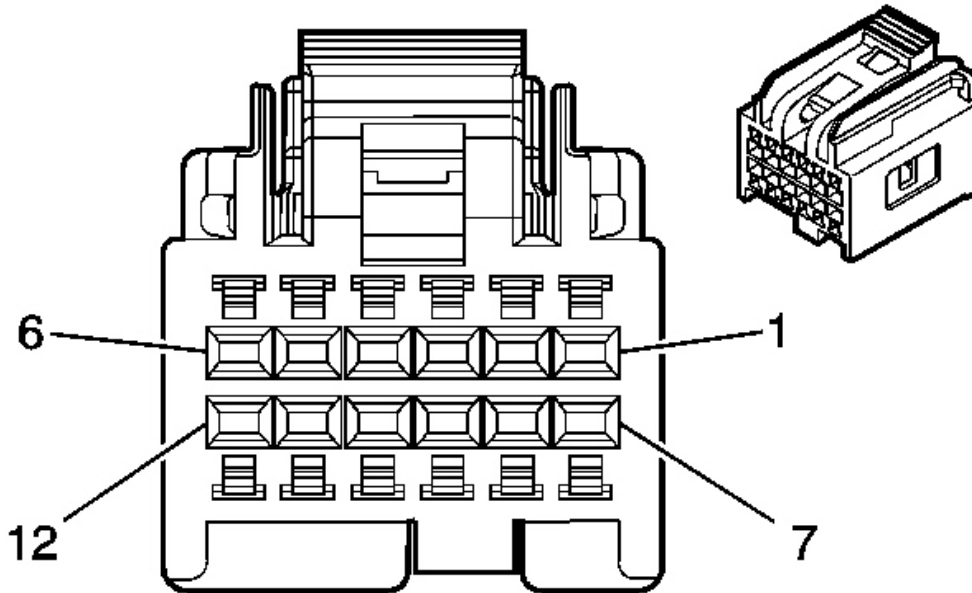


Fig. 39: K41 Parking Assist Control Module X1 (UD7)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 31410-1120
- Service Connector: 89047364

- Description: 12-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K41 Parking Assist Control Module X1 (UD7)

Pin	Wire	Circuit	Function
1	0.35 RD/WH	3140	Battery Positive Voltage
2	0.35 WH	2370	Telltale Assembly Supply Voltage
3	-	-	Not Used
4	0.35 OG	2371	Left Amber Indicator Control
5	-	-	Not Used
6	0.35 D-GN	5060	Low Speed GMLAN Serial Data
7	0.5 BK	2550	Ground
8	-	-	Not Used
9	0.35 D-BU	2372	Center Amber Indicator Control
10	0.35 GY	2373	Red Indicator Control
11-12	-	-	Not Used

K41 PARKING ASSIST CONTROL MODULE X2 (UD7)

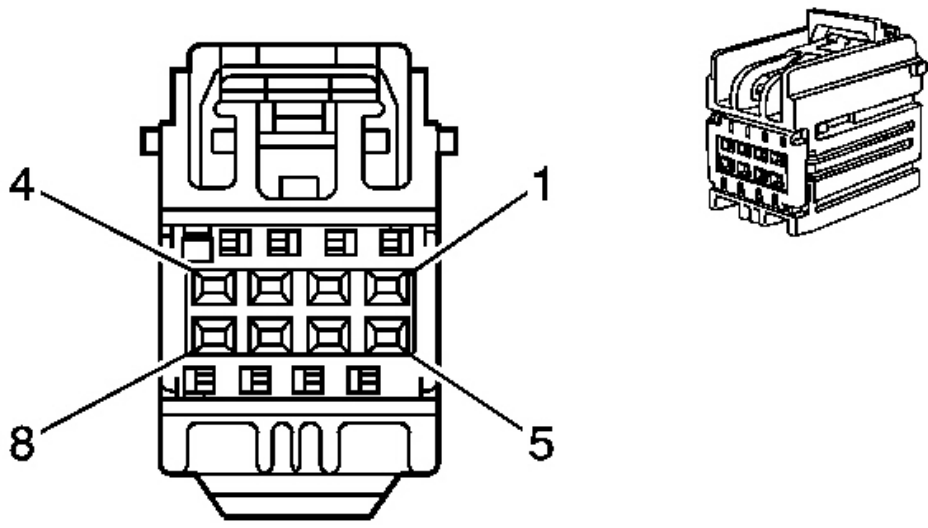


Fig. 40: K41 Parking Assist Control Module X2 (UD7)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 7283-9029-40
- Service Connector: 19115653
- Description: 8-Way F YESC Kaizen Series (L-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K41 Parking Assist Control Module X2 (UD7)

Pin	Wire	Circuit	Function
1	0.35 PU	2378	Right Rear Corner Object Sensor Signal

2	0.35 D-GN	2377	Right Rear Middle Object Sensor Signal
3	0.35 OG	2376	Left Rear Middle Object Sensor Signal
4	0.35 D-BU	2374	Object Sensor Supply Voltage
5	0.35 YE	2375	Left Rear Corner Object Sensor Signal
6-7	-	-	Not Used
8	0.35 GY	2379	Object Sensor Low Reference

K43 POWER STEERING CONTROL MODULE X1 (LAF)

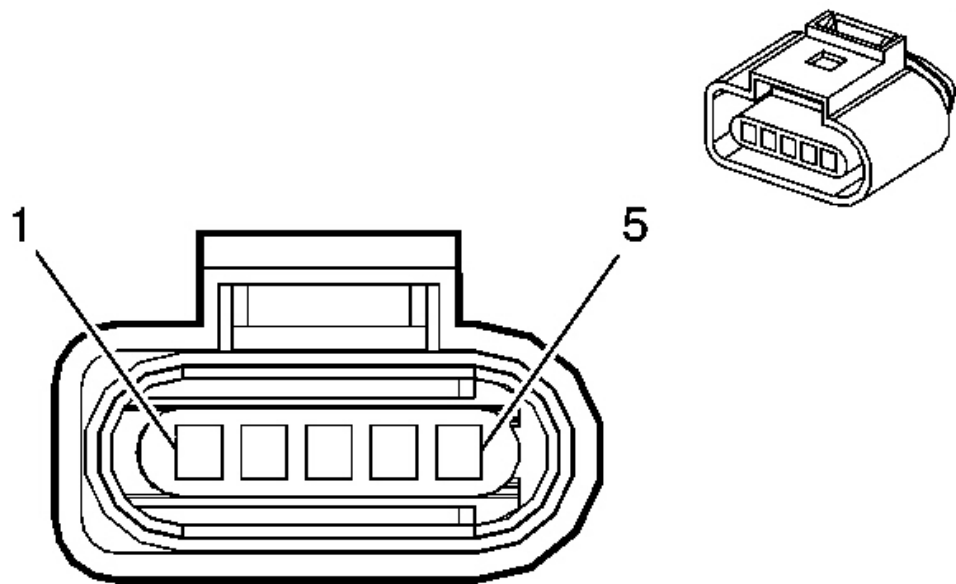


Fig. 41: K43 Power Steering Control Module X1 (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 42123000
- Service: 13574906
- Description: 5-Way F, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-560
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1

K43 Power Steering Control Module X1 (LAF)

Pin	Wire	Circuit	Function
1	0.35 L-BU	5986	Serial Data Communication Enable
2	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
3	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
4	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
5	0.35 TN	2501	High Speed GMLAN Serial Data Bus -

K43 POWER STEERING CONTROL MODULE X2 (LAF)

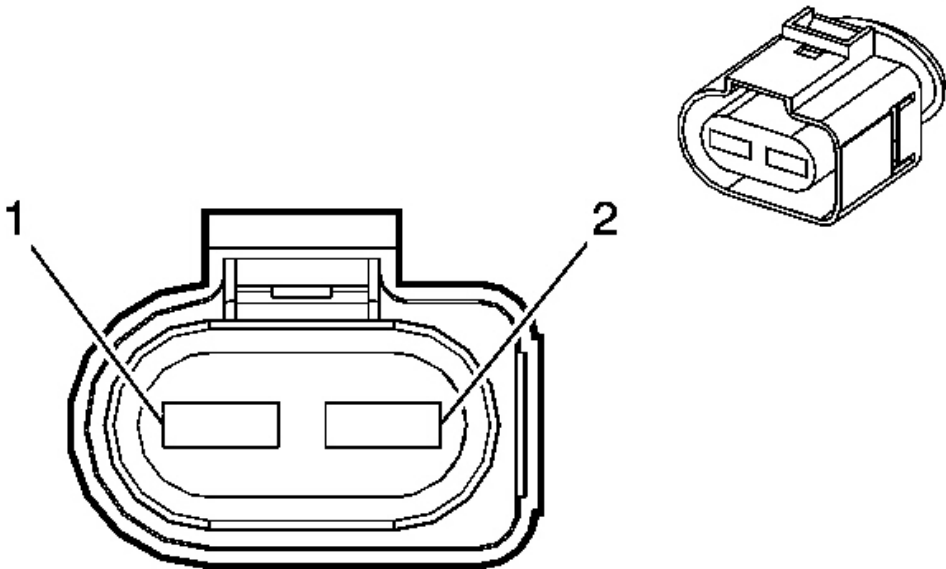


Fig. 42: K43 Power Steering Control Module X2 (LAF)
Courtesy of GENERAL MOTORS CORP.

- Harness: EPS
- OEM: 12782937
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F, Sealed (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 12782937
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 12782937
- Core/Insulation Crimp: Not Available

K43 Power Steering Control Module X2 (LAF)

Pin	Wire	Circuit	Function
1	13 BK	850	Ground
2	13 RD/BK	42	Battery Positive Voltage

K43 POWER STEERING CONTROL MODULE X3 (LAF)

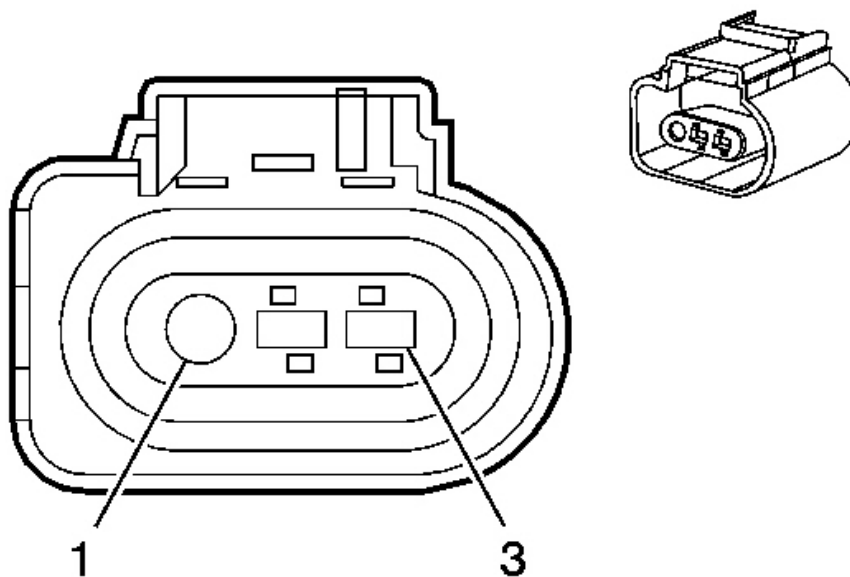


Fig. 43: K43 Power Steering Control Module X3 (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: EPS
- OEM: 2-1563453-1
- Service: Service by Harness - See Part Catalog
- Description: 3-Way F, Sealed (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 2-1563453-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 2-1563453-1
- Core/Insulation Crimp: Not Available

K43 Power Steering Control Module X3 (LAF)

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.5 D-GN	-	Power Steering Shaft Torque Sensor Signal
3	0.5 BN	-	Power Steering Shaft Torque Sensor Return

K47 REAR DIFFERENTIAL CLUTCH CONTROL MODULE (F46)

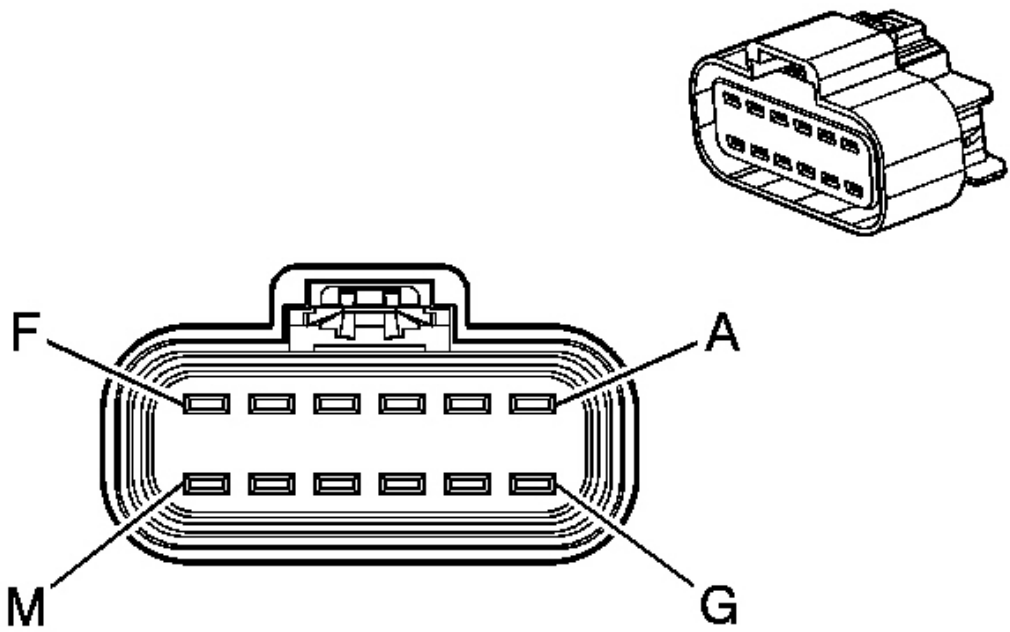


Fig. 44: K47 Rear Differential Clutch Control Module (F46)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Chassis
- OEM Connector: 19153740
- Service Connector: 13504588
- Description: 12-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

K47 Rear Differential Clutch Control Module (F46)

Pin	Wire	Circuit	Function
A	0.35 L-BU	5986	Serial Data Communication Enable

B	0.35 L-BU	6106	High Speed GMLAN Serial Data (2) -
C	0.35 L-BU	6106	High Speed GMLAN Serial Data (2) -
D	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
E	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
F	0.5 BK	2550	Ground
G	0.5 RD/BK	1542	Battery Positive Voltage
H	0.35 D-BU	6105	High Speed GMLAN Serial Data +
J	0.35 D-BU	6105	High Speed GMLAN Serial Data +
K	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
L	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
M	-	-	Not Used

K73 TELEMATICS COMMUNICATION INTERFACE CONTROL MODULE X1 (UE1)

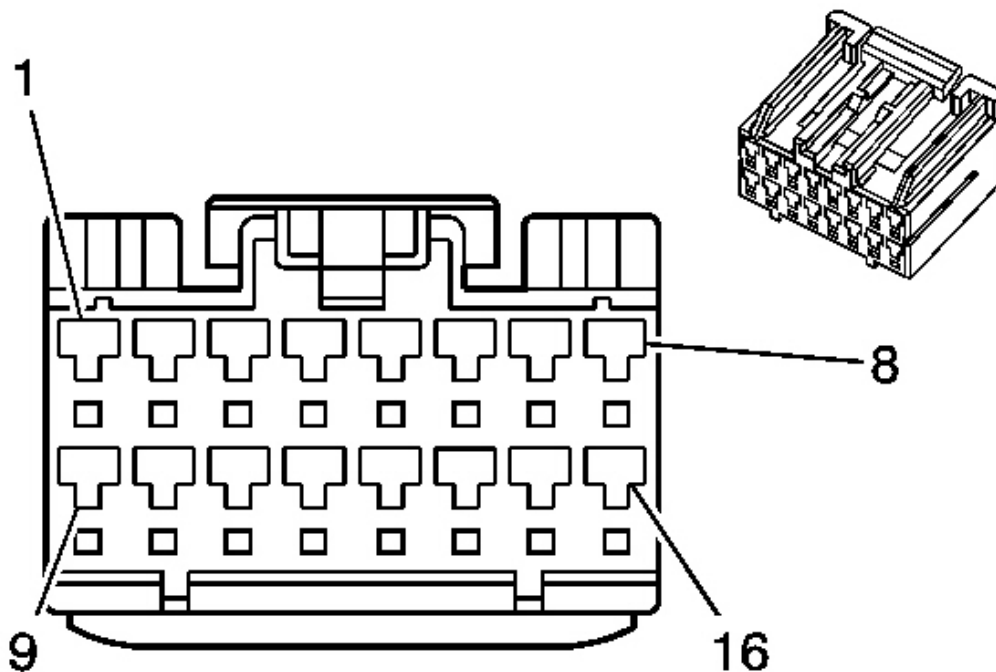


Fig. 45: K73 Telematics Communication Interface Control Module X1 (UE1)
 Courtesy of GENERAL MOTORS CORP.

- Harness: Instrument Panel
- OEM Connector: 917981-1
- Service Connector: 15306351
- Description: 16-Way F 040/070 Hybrid Series (WH)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12180559
- Diagnostic Test Probe: J-35616-16 (L-GN)
- Terminal/Tray: 15445905/23
- Core/Insulation Crimp: J/J

K73 Telematics Communication Interface Control Module X1 (UE1)

Pin	Wire	Circuit	Function
1	0.35 D-GN	5060	Low Speed GMLAN Serial Data
2	0.35 BN/WH	2517	Keypad Red LED Signal
3	0.35 YE/BK	2516	Keypad Green LED Signal
4-5	-	-	Not Used
6	0.35 L-GN/BK	2515	Keypad Supply Voltage
7	0.35 BK/WH	1551	Ground
8-9	-	-	Not Used
10	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
11	0.35 D-GN/WH	2514	Keypad Signal
12	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
13-14	-	-	Not Used
15	0.5 RD/WH	5340	Battery Positive Voltage
16	-	-	Not Used

K73 TELEMATICS COMMUNICATION INTERFACE CONTROL MODULE X2 (UE1)

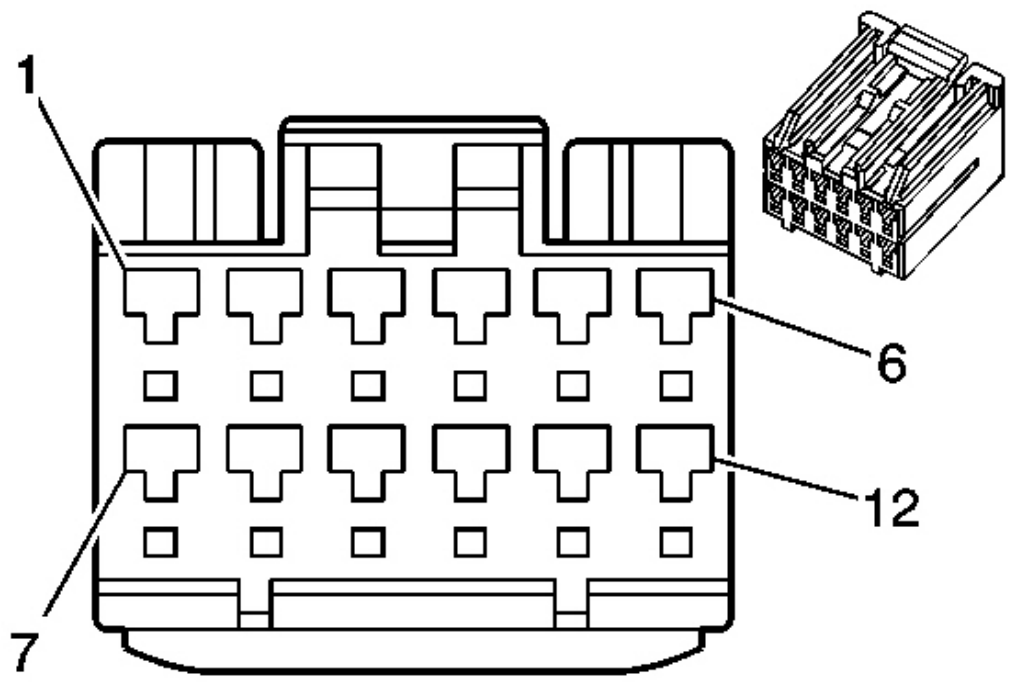


Fig. 46: K73 Telematics Communication Interface Control Module X2 (UE1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 917975-1
- Service Connector: 88952886
- Description: 12-Way F 040/070 Hybrid Series (WH)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12180559
- Diagnostic Test Probe: J-35616-16 (L-GN)
- Terminal/Tray: 15445905/23
- Core/Insulation Crimp: J/J

K73 Telematics Communication Interface Control Module X2 (UE1)

Pin	Wire	Circuit	Function
-----	------	---------	----------

1	0.35 D-BU	658	Cellular Telephone Voice Signal
2	0.35 L-BU/BK	659	Cellular Telephone Voice Low Reference
3	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
4	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
5	0.35 BARE	1792	Drain Wire (UYS or PCJ)
6	0.35 PK	5149	Microphone Signal + (UYS or PCJ)
7	-	-	Not Used
8	0.35 BARE	1782	Drain Wire
9	0.35 GY	655	Cellular Microphone Signal
10	0.35 BARE	654	Cellular Microphone Low Reference
11	-	-	Not Used
12	0.35 PK/BK	5152	Microphone Signal - (UYS or PCJ)

K77 REMOTE CONTROL DOOR LOCK RECEIVER

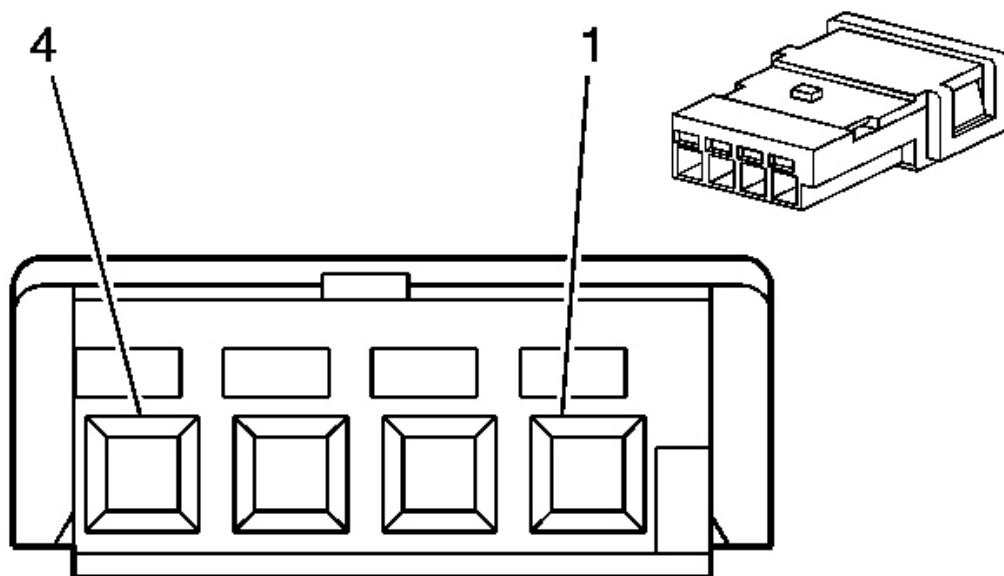


Fig. 47: K77 Remote Control Door Lock Receiver
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 968943-1

- Service Connector: 13316143
- Description: 4-Way F 64 MQS Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

K77 Remote Control Door Lock Receiver

Pin	Wire	Circuit	Function
1	0.35 L-BU/WH	3275	RCDLR Ground
2	0.35 GY	3273	RCDLR Data Receive
3	0.35 PK/WH	3272	RCDLR Data Transmit
4	0.35 L-GN	3274	RCDLR Power

K85 PASSENGER PRESENCE DETECTION MODULE

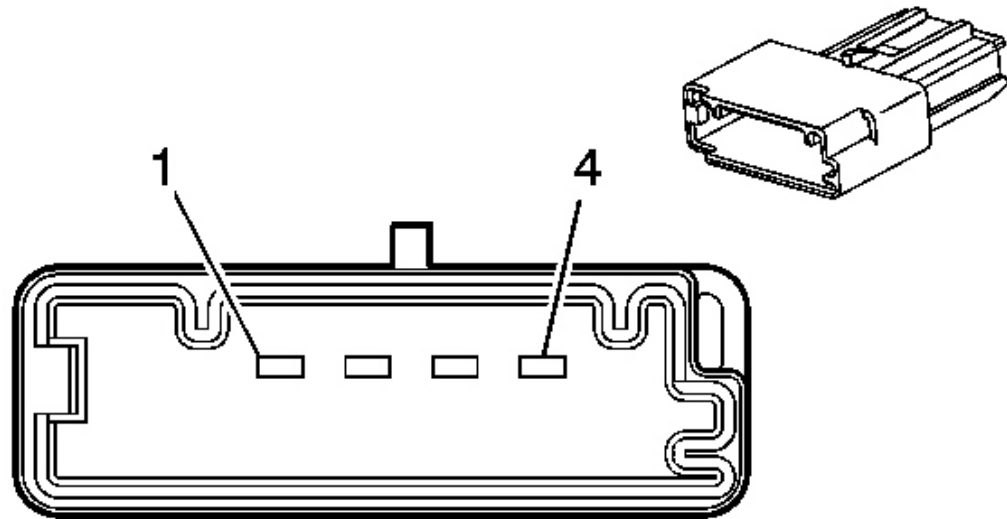


Fig. 48: K85 Passenger Presence Detection Module
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Seat Cushion
- OEM Connector: 6098-5519
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M Low Profile 1.5 Series (BK)

Terminal Part Information

- Terminated Lead: 13575750
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 15304702/19
- Core/Insulation Crimp: E/C

K85 Passenger Presence Detection Module

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.35 D-GN	5060	Low Speed GMLAN Serial Data
3	0.35 RD/WH	2040	Battery Positive Voltage
4	0.35 BK/WH	1651	Ground

K96L MIRROR CONTROL MODULE - LEFT (LTZ OR SLT)

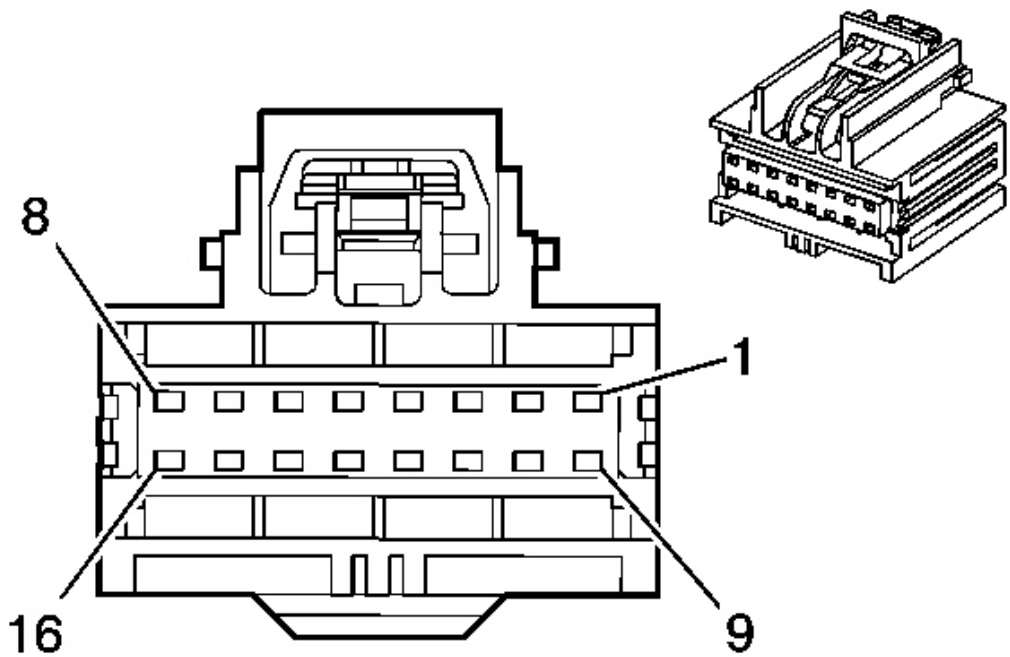


Fig. 49: K96L Mirror Control Module - Left (LTZ or SLT)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door Trim
- OEM Connector: 7283-9077-40
- Service Connector: 13504589
- Description: 16-Way F Kaizen 64 Series (L-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K96L Mirror Control Module - Left (LTZ or SLT)

Pin	Wire	Circuit	Function

1	0.5 RD/WH	1940	Battery Positive Voltage
2-3	-	-	Not Used
4	0.5 GY	786	Driver Mirror Horizontal Position Sensor Signal
5	0.5 D-BU	672	5-Volt Reference
6	0.5 BN	673	Low Reference
7	0.35 D-BU/WH	3390	Outside Rearview Mirror Up/Down Control
8	-	-	Not Used
9	0.5 D-BU/WH	6160	Left Mirror Horizontal Position Control
10	0.5 D-GN/WH	6159	Left Mirror Horizontal Position Control
11	0.5 WH	7197	Outside Right Mirror Drive Motor Common
12	0.35 WH	7530	Local Interconnect Network 8
13	0.5 D-GN	784	Driver Mirror Vertical Position Sensor Signal
14	-	-	Not Used
15	0.5 BK	750	Ground
16	0.35 D-BU/WH	3390	Outside Rearview Mirror Up/Down Control

K108 ACTIVE NOISE CANCELLATION MODULE (VQN)

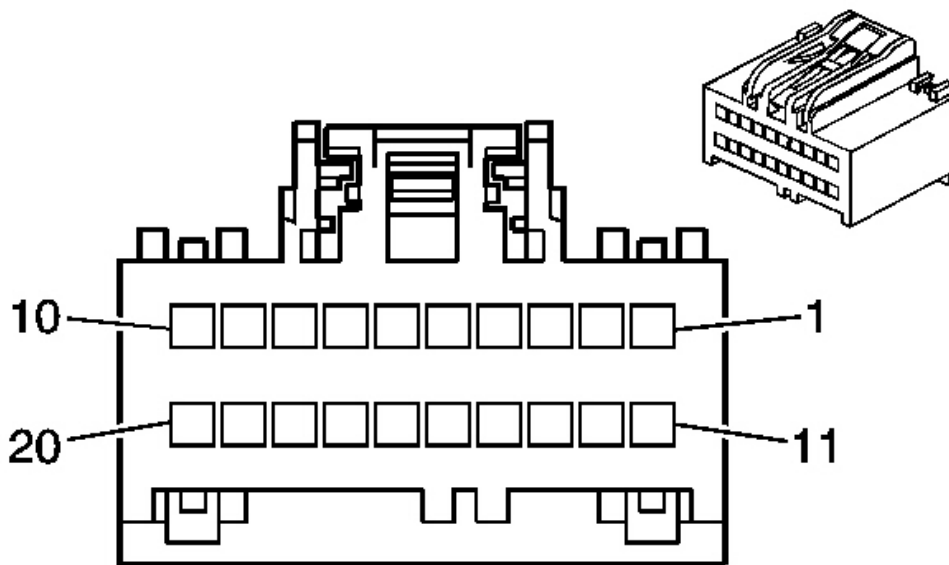


Fig. 50: K108 Active Noise Cancellation Module (VQN)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 31410-1200
- Service Connector: 15126711
- Description: 20-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

K108 Active Noise Cancellation Module (VQN)

Pin	Wire	Circuit	Function
1	0.35 RD/WH	4340	Battery Positive Voltage
2	0.35 WH	7066	Remote Enable
3	-	-	Not Used
4	0.35 PU	5747	Radio Amplifier Sense Signal
5	0.5 L-GN/BK	3633	Replicated Cam Frequency Out
6	0.35 WH	824	Audio Diagnostic Signal
7	0.5 L-BU	3006	Noise Reduction Microphone #2 Signal
8	0.5 PK	3007	Noise Reduction Microphone #3 Signal
9	0.35 BN/WH	9100	Noise Cancellation Reference - Rear
10	0.35 D-BU	9102	Noise Cancellation Reference - Front
11	0.5 BK/WH	1551	Ground
12	0.35 BARE	9104	Shield
13-16	-	-	Not Used
17	0.5 L-BU/BK	3009	Noise Reduction Microphone #2 Return
18	0.5 PK/BK	3010	Noise Reduction Microphone #3 Return
19	0.35 BN	9101	Noise Cancellation Signal - Rear
20	0.35 TN	9103	Noise Cancellation Signal - Front

2010 ELECTRICAL

Wiring Systems and Power Management - Component Locator - Component Connector End Views - Index - Equinox & Terrain

COMPONENT CONNECTOR END VIEWS (INDEX)

NOTE: Connector end views are sorted in alpha sequence based upon the manufacturer X??? naming convention ID. Connectors are identified as A3L to X88

COMPONENT CONNECTOR END VIEWS - A3 TO B52B

Description
<u>A3L Sunshade - Left Front</u>
<u>A3R Sunshade - Right Front</u>
<u>A6C Fuel Pump and Level Sensor Assembly - Primary</u>
<u>A9A Outside Rearview Mirror - Driver</u>
<u>A9B Outside Rearview Mirror - Passenger</u>
<u>A10 Inside Rearview Mirror (UVC with UYS or PCJ or without UVC or UYS or PCJ)</u>
<u>A10 Inside Rearview Mirror (UVC without UYS or PCJ)</u>
<u>A11 Radio X1</u>
<u>A11 Radio X3 (UWG)</u>
<u>A11 Radio X4 (UYS or PCJ)</u>
<u>A20 Radio/HVAC Controls</u>
<u>A23C Liftgate Latch Assembly (TB4)</u>
<u>A23C Liftgate Latch Assembly (TB5)</u>
<u>A23D Door Latch Assembly - Driver</u>
<u>A23LR Door Latch Assembly - Left Rear</u>
<u>A23P Door Latch Assembly - Passenger</u>
<u>A23RR Door Latch Assembly - Right Rear</u>
<u>B1 A/C Refrigerant Pressure Sensor</u>
<u>B5LF Wheel Speed Sensor - Left Front</u>
<u>B5LR Wheel Speed Sensor - Left Rear</u>
<u>B5RF Wheel Speed Sensor - Right Front</u>
<u>B5RR Wheel Speed Sensor - Right Rear</u>
<u>B7E Air Temperature Sensor - Duct Right Lower (C68)</u>
<u>B7J Air Temperature Sensor - Duct Right Upper (C68)</u>
<u>B9 Ambient Air Temperature Sensor</u>
<u>B10 Ambient Light Sensor (C67)</u>
<u>B10B Ambient Light/Sunload Sensor (C68)</u>
<u>B17 Barometric Pressure Sensor (LF1)</u>

B18 Battery Current Sensor**B19B Brake Booster Vacuum Sensor****B20 Brake Fluid Level Switch****B22 Brake Pedal Position Sensor****B23A Camshaft Position Sensor - Bank 1 Exhaust (LF1)****B23B Camshaft Position Sensor - Bank 1 Intake (LF1)****B23C Camshaft Position Sensor - Bank 2 Exhaust (LF1)****B23D Camshaft Position Sensor - Bank 2 Intake (LF1)****B23E Camshaft Position Sensor - Exhaust (LAF)****B23F Camshaft Position Sensor - Intake (LAF)****B24 Cellular Phone Microphone (UE1)****B26 Crankshaft Position Sensor****B34 Engine Coolant Temperature Sensor (LAF)****B34 Engine Coolant Temperature Sensor (LF1)****B37 Engine Oil Pressure Switch (LAF)****B37 Engine Oil Pressure Switch (LF1)****B39 A/C Evaporator Temperature Sensor****B46B Fuel Level Sensor - Secondary****B47 Fuel Pressure Sensor****B47B Fuel Rail Pressure Sensor****B52A Heated Oxygen Sensor 1 (LAF)****B52B Heated Oxygen Sensor 2 (LAF)****COMPONENT CONNECTOR END VIEWS - B52C TO E4E****Description****B52C Heated Oxygen Sensor - Bank 1 Sensor 1 (LF1)****B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (LF1)****B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (LF1)****B52F Heated Oxygen Sensor - Bank 2 Sensor 2 (LF1)****B55 Hood Ajar Switch (BTV)****B59L Front Impact Sensor - Left****B59R Front Impact Sensor - Right****B63LF Side Impact Sensor - Left Front****B63LR Side Impact Sensor - Left Rear****B63RF Side Impact Sensor - Right Front****B63RR Side Impact Sensor - Right Rear****B68 Knock Sensor (LAF)****B68A Knock Sensor 1 (LF1)****B68B Knock Sensor 2 (LF1)****B70 Liftgate Close Switch (TB5)**

<u>B71L Liftgate Object Sensor - Left (TB5)</u>
<u>B71R Liftgate Object Sensor - Right (TB5)</u>
<u>B74 Manifold Absolute Pressure Sensor</u>
<u>B75B Mass Air Flow/Intake Air Temperature Sensor</u>
<u>B77F Radio Volume Compensator Interior Noise Microphone - Front (VQN)</u>
<u>B77R Radio Volume Compensator Interior Noise Microphone - Rear (VQN)</u>
<u>B78E Rear Object Sensor - Left Middle (UD7)</u>
<u>B78F Rear Object Sensor - Right Middle (UD7)</u>
<u>B78G Rear Object Sensor - Left Outer (UD7)</u>
<u>B78H Rear Object Sensor - Right Outer (UD7)</u>
<u>B80 Park Brake Switch</u>
<u>B87 Rearview Camera (UVC)</u>
<u>B88D Seat Belt Switch - Driver</u>
<u>B88P Seat Belt Switch - Passenger</u>
<u>B99 Steering Wheel Angle Sensor</u>
<u>B101 Immobilizer Antenna</u>
<u>B107 Accelerator Pedal Position Sensor</u>
<u>B119 Multi-axis Acceleration Sensor</u>
<u>B150 Fuel Tank Pressure Sensor</u>
<u>C1 Battery -</u>
<u>C1 Battery -</u>
<u>C1 Battery +</u>
<u>E1C Accent Lamp - Driver Door Handle (TSQ)</u>
<u>E1D Accent Lamp - Driver Door (TSQ)</u>
<u>E1J Accent Lamp - Left Lower Instrument Panel</u>
<u>E1K Accent Lamp - Right Lower Instrument Panel</u>
<u>E1L Accent Lamp - Overhead Console (TSQ)</u>
<u>E1M Accent Lamp - Passenger Door Handle (TSQ)</u>
<u>E1P Accent Lamp - Passenger Door (TSQ)</u>
<u>E1S Accent Lamp - Console Cupholder Right</u>
<u>E2LF Side Marker Lamp - Left Front</u>
<u>E2LR Side Marker Lamp - Left Rear</u>
<u>E2RF Side Marker Lamp - Right Front</u>
<u>E2RR Side Marker Lamp - Right Rear</u>
<u>E4E Head Lamp - Left High Beam</u>

COMPONENT CONNECTOR END VIEWS - E4F TO G18

Description
<u>E4F Head Lamp - Right High Beam</u>
<u>E4G Head Lamp - Left Low Beam</u>

E4H Head Lamp - Right Low BeamE4N Park/Turn Signal Lamp - LeftE4P Park/Turn Signal Lamp - RightE5A Backup Lamp - LeftE5AC Tail/Turn Signal Lamp - LeftE5AD Tail/Turn Signal Lamp - RightE5B Backup Lamp - RightE5J Tail Lamp - Left Lower (GMC)E5K Tail Lamp - Right Lower (GMC)E5M Tail Lamp - Left Upper (GMC)E5N Tail Lamp - Right Upper (GMC)E6 Center High Mounted Stop LampE7L License Plate Lamp - LeftE7R License Plate Lamp - RightE8J Instrument Panel Courtesy Lamp - Left (TSQ)E8K Instrument Panel Courtesy Lamp - Right (TSQ)E14A Seat Heating Element - Driver Back (KA1 or SPO Accessory)E14B Seat Heating Element - Driver Cushion (KA1 or SPO Accessory)E14C Seat Heating Element - Passenger Back (KA1 or SPO Accessory)E14D Seat Heating Element - Passenger Cushion (KA1 or SPO Accessory)E18 Rear Defogger Grid X1E18 Rear Defogger Grid X2E28 Center Console Compartment Lamp (TSP or TSQ)E29LF Fog Lamp - Left Front (T96)E29RF Fog Lamp - Right Front (T96)E37EL Dome/Reading Lamps - Front Overhead Console LeftE37ER Dome/Reading Lamps - Front Overhead Console RightE37M Dome/Reading Lamps - MiddleE37R Dome/Reading Lamps - RearF105 Passenger Instrument Panel Air Bag X1F105 Passenger Instrument Panel Air Bag X2F105L Roof Rail Air Bag - LeftF105R Roof Rail Air Bag - RightF106L Side Air Bag - LeftF106R Side Air Bag - RightF107 Steering Wheel Air Bag X1F107 Steering Wheel Air Bag X2F112D Seat Belt Retractor Pretensioner - DriverF112P Seat Belt Retractor Pretensioner - PassengerF113D Seat Belt Anchor Pretensioner - DriverF113P Seat Belt Anchor Pretensioner - PassengerG6 Brake Booster Pump - Auxiliary

<u>G10 Cooling Fan Motor (LAF)</u>
<u>G10L Cooling Fan Motor - Left (LF1)</u>
<u>G10R Cooling Fan Motor - Right (LF1)</u>
<u>G13 Generator X1</u>
<u>G13 Generator X2</u>
<u>G18 High Pressure Fuel Pump</u>

COMPONENT CONNECTOR END VIEWS - G24 TO K108

Description
<u>G24 Windshield Washer Pump</u>
<u>K8 Blower Motor Control Module X1</u>
<u>K8 Blower Motor Control Module X2</u>
<u>K9 Body Control Module X1</u>
<u>K9 Body Control Module X2</u>
<u>K9 Body Control Module X3</u>
<u>K9 Body Control Module X4</u>
<u>K9 Body Control Module X5</u>
<u>K9 Body Control Module X6</u>
<u>K9 Body Control Module X7</u>
<u>K17 Electronic Brake Control Module</u>
<u>K20 Engine Control Module X1 (LAF)</u>
<u>K20 Engine Control Module X1 (LF1)</u>
<u>K20 Engine Control Module X2 (LAF)</u>
<u>K20 Engine Control Module X2 (LF1)</u>
<u>K20 Engine Control Module X3 (LAF)</u>
<u>K20 Engine Control Module X3 (LF1)</u>
<u>K27 Fuel Pump Control Module</u>
<u>K29 Seat Heating Control Module X1 (KA1 without LTZ or SLT)</u>
<u>K29 Seat Heating Control Module X1 (SPO Accessory)</u>
<u>K29 Seat Heating Control Module X2 (KA1 without LTZ or SLT)</u>
<u>K29 Seat Heating Control Module X3 (KA1 without LTZ or SLT)</u>
<u>K29 Seat Heating Control Module X3 (SPO Accessory)</u>
<u>K29 Seat Heating Control Module X4 (SPO Accessory)</u>
<u>K29 Seat Heating Control Module X5 (SPO Accessory)</u>
<u>K33 HVAC Control Module X1 (C68)</u>
<u>K33 HVAC Control Module X2</u>
<u>K33 HVAC Control Module X3</u>
<u>K36 Inflatable Restraint Sensing and Diagnostic Module X1</u>
<u>K36 Inflatable Restraint Sensing and Diagnostic Module X2</u>
<u>K39 Liftgate Control Module X1 (TB5)</u>

<u>K39 Liftgate Control Module X2 (TB5)</u>
<u>K39 Liftgate Control Module X3 (TB5)</u>
<u>K40 Seat Memory Control Module X1 (LTZ or SLT)</u>
<u>K40 Seat Memory Control Module X2 (LTZ or SLT)</u>
<u>K40 Seat Memory Control Module X3 (KA1 with LTZ or SLT)</u>
<u>K40 Seat Memory Control Module X4 (LTZ or SLT)</u>
<u>K40 Seat Memory Control Module X5 (LTZ or SLT)</u>
<u>K41 Parking Assist Control Module X1 (UD7)</u>
<u>K41 Parking Assist Control Module X2 (UD7)</u>
<u>K43 Power Steering Control Module X1 (LAF)</u>
<u>K43 Power Steering Control Module X2 (LAF)</u>
<u>K43 Power Steering Control Module X3 (LAF)</u>
<u>K47 Rear Differential Clutch Control Module (F46)</u>
<u>K73 Telematics Communication Interface Control Module X1 (UE1)</u>
<u>K73 Telematics Communication Interface Control Module X2 (UE1)</u>
<u>K77 Remote Control Door Lock Receiver</u>
<u>K85 Passenger Presence Detection Module</u>
<u>K96L Mirror Control Module - Left (LTZ or SLT)</u>
<u>K108 Active Noise Cancellation Module (VQN)</u>

COMPONENT CONNECTOR END VIEWS - M6 TO Q6D

Description
<u>M6 Air Temperature Door Actuator</u>
<u>M8 Blower Motor</u>
<u>M17 Liftgate Motor Assembly (TB5)</u>
<u>M37 Mode Door Actuator</u>
<u>M45 Rear Wiper Motor</u>
<u>M46 Air Recirculation Door Motor</u>
<u>M50D Seat Front Vertical Motor - Driver (AE8)</u>
<u>M51D Seat Horizontal Motor - Driver (AE8)</u>
<u>M52D Seat Lumbar Support Horizontal Motor - Driver</u>
<u>M55D Seat Rear Vertical Motor - Driver</u>
<u>M56D Seat Recline Motor - Driver (AE8)</u>
<u>M64 Starter Motor X1</u>
<u>M64 Starter Motor X2 (Positive Battery Cable) (LAF)</u>
<u>M64 Starter Motor X2 (Positive Battery Cable) (LF1)</u>
<u>M64 Starter Motor X2 (Generator Harness) (LAF)</u>
<u>M64 Starter Motor X2 (Generator Harness) (LF1)</u>
<u>M69 Sunroof Motor (CF5)</u>
<u>M74D Window Motor - Driver</u>

<u>M74LR Window Motor - Left Rear</u>
<u>M74P Window Motor - Passenger</u>
<u>M74RR Window Motor - Right Rear</u>
<u>M75 Windshield Wiper Motor</u>
<u>M93 Ignition Cylinder Lock Control Solenoid Actuator</u>
<u>P2 Transmission Shift Lever Position Indicator</u>
<u>P12A Horn - High Note</u>
<u>P12B Horn - Low Note</u>
<u>P14 Passenger Air Bag Disable Indicator</u>
<u>P15 Rear Parking Assist Rear Indicators (UD7)</u>
<u>P16 Instrument Cluster</u>
<u>P17 Info Display Module (UYS or PCJ)</u>
<u>P17 Info Display Module (without UYS or PCJ)</u>
<u>P19AC Speaker - Subwoofer (UZ8)</u>
<u>P19B Speaker - Center Instrument Panel (UZ8)</u>
<u>P19G Speaker - Left Front (UW6)</u>
<u>P19G Speaker - Left Front (UZ8)</u>
<u>P19H Speaker - Left Front Tweeter</u>
<u>P19K Speaker - Left Rear (UW6)</u>
<u>P19K Speaker - Left Rear (UZ8)</u>
<u>P19U Speaker - Right Front (UW6)</u>
<u>P19U Speaker - Right Front (UZ8)</u>
<u>P19V Speaker - Right Front Tweeter</u>
<u>P19X Speaker - Right Rear (UW6)</u>
<u>P19X Speaker - Right Rear (UZ8)</u>
<u>P22E Video Display - Driver Seatback (UWG)</u>
<u>P22F Video Display - Passenger Seatback (UWG)</u>
<u>Q2 A/C Compressor Clutch</u>
<u>Q6A Camshaft Position Actuator Solenoid Valve - Bank 1 Exhaust (LF1)</u>
<u>Q6B Camshaft Position Actuator Solenoid Valve - Bank 1 Intake (LF1)</u>
<u>Q6C Camshaft Position Actuator Solenoid Valve - Bank 2 Exhaust (LF1)</u>
<u>Q6D Camshaft Position Actuator Solenoid Valve - Bank 2 Intake (LF1)</u>

COMPONENT CONNECTOR END VIEWS - Q6E TO T3

Description
<u>Q6E Camshaft Position Actuator Solenoid Valve - Exhaust (LAF)</u>
<u>Q6F Camshaft Position Actuator Solenoid Valve - Intake (LAF)</u>
<u>Q8 Control Solenoid Valve Assembly X1 (MH7 or MHC)</u>
<u>Q8 Control Solenoid Valve Assembly X1 (MH2 or MH4)</u>
<u>Q8 Control Solenoid Valve Assembly X2</u>

<u>Q8 Control Solenoid Valve Assembly X3</u>
<u>Q8 Control Solenoid Valve Assembly X4</u>
<u>Q12 Evaporative Emission Purge Solenoid Valve (LAF)</u>
<u>Q12 Evaporative Emission Purge Solenoid Valve (LF1)</u>
<u>Q13 Evaporative Emission Vent Solenoid Valve</u>
<u>Q17A Fuel Injector 1 (LAF)</u>
<u>Q17A Fuel Injector 1 (LF1)</u>
<u>Q17B Fuel Injector 2 (LAF)</u>
<u>Q17B Fuel Injector 2 (LF1)</u>
<u>Q17C Fuel Injector 3 (LAF)</u>
<u>Q17C Fuel Injector 3 (LF1)</u>
<u>Q17D Fuel Injector 4 (LAF)</u>
<u>Q17D Fuel Injector 4 (LF1)</u>
<u>Q17E Fuel Injector 5 (LF1)</u>
<u>Q17F Fuel Injector 6 (LF1)</u>
<u>Q38 Throttle Body</u>
<u>R6 Data Link Resistor</u>
<u>R10 Cooling Fan Resistor (LAF)</u>
<u>S3 Transmission Shift Lever</u>
<u>S12 Dome Lamp Switch</u>
<u>S32D Seat Heating Switch - Driver (SPO Accessory)</u>
<u>S33 Horn Switch</u>
<u>S36 Instrument Panel Dimmer Switch</u>
<u>S39 Ignition Switch</u>
<u>S45B Liftgate Control Switch - Interior (TB5)</u>
<u>S46 Liftgate Handle Switch</u>
<u>S47D Seat Memory Switch - Driver (LTZ or SLT)</u>
<u>S52 Outside Rearview Mirror Switch</u>
<u>S64D Seat Adjuster Switch - Driver (AE8 or LTZ or SLT)</u>
<u>S64D Seat Adjuster Switch - Driver (without AE8 or LTZ or SLT)</u>
<u>S65D Seat Lumbar Support Switch - Driver</u>
<u>S70L Steering Wheel Controls Switch - Left</u>
<u>S70R Steering Wheel Controls Switch - Right (UK3)</u>
<u>S72 Sunroof Switch (CF5)</u>
<u>S75 Traction Control Switch</u>
<u>S78 Turn Signal/Multifunction Switch</u>
<u>S79D Window Switch - Driver</u>
<u>S79LR Window Switch - Left Rear</u>
<u>S79P Window Switch - Passenger X1</u>
<u>S79P Window Switch - Passenger X2 (LTZ or SLT)</u>
<u>S79RR Window Switch - Right Rear</u>
<u>S82 Windshield Wiper/Washer Switch</u>

S88 Sunroof Tilt Switch (CF5)S112 Fuel Economy Mode SwitchT3 Audio Amplifier X1**COMPONENT CONNECTOR END VIEWS - T3 TO X88****Description**T3 Audio Amplifier X2T3 Audio Amplifier X3T8A Ignition Coil 1 (LAF)T8A Ignition Coil 1 (LF1)T8B Ignition Coil 2 (LAF)T8B Ignition Coil 2 (LF1)T8C Ignition Coil 3 (LAF)T8C Ignition Coil 3 (LF1)T8D Ignition Coil 4 (LAF)T8D Ignition Coil 4 (LF1)T8E Ignition Coil 5 (LF1)T8F Ignition Coil 6 (LF1)T11 Multimedia Player Interface Module (KTA)X80A Accessory Power Receptacle - Center Console 1X80B Accessory Power Receptacle - Center Console 2X80G Accessory Power Receptacle - Instrument PanelX80R Accessory Power Receptacle - Rear CompartmentX82 Audio/Video Input Adapter (UWG)X83 Auxiliary Audio Input (without UWG)X84 Data Link ConnectorX85 Steering Wheel Air Bag Coil X1X85 Steering Wheel Air Bag Coil X2X85 Steering Wheel Air Bag Coil X3X88 Trailer Connector (V92)

2010 ELECTRICAL

Wiring Systems and Power Management - Component Locator - Component Connector End Views - Equinox & Terrain

COMPONENT CONNECTOR END VIEWS

E4F HEAD LAMP - RIGHT HIGH BEAM

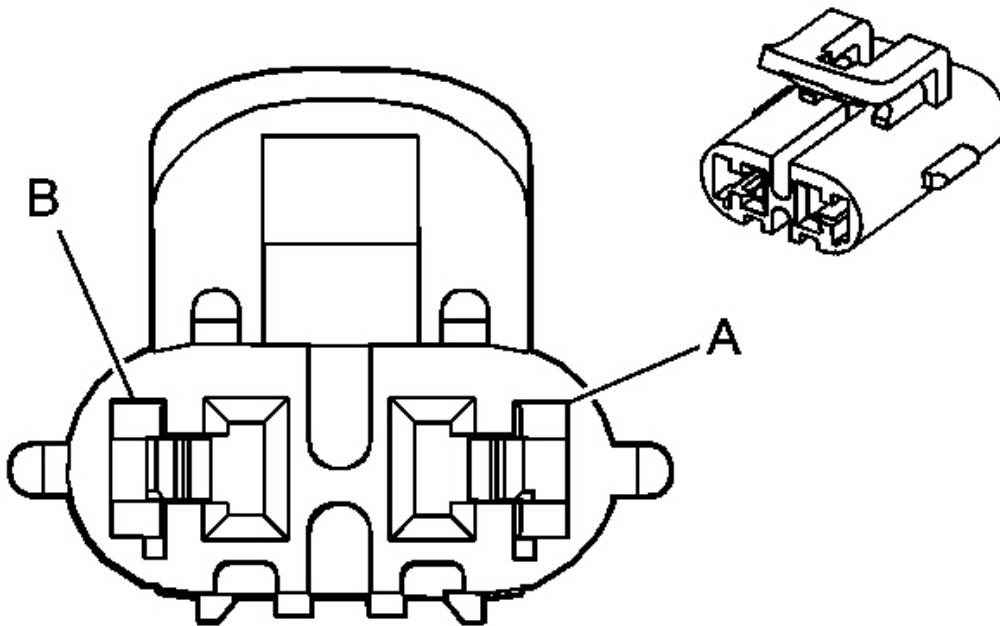


Fig. 1: E4F Head Lamp - Right High Beam
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Front
- OEM Connector: H9
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: 2-Way F Bulb Connector (GY)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog

- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E4F Head Lamp - Right High Beam

Pin	Wire	Circuit	Function
A	0.8 D-GN/WH	311	Right Headlamp High Beam Supply Voltage
B	0.8 BK	1050	Ground

E4G HEAD LAMP - LEFT LOW BEAM

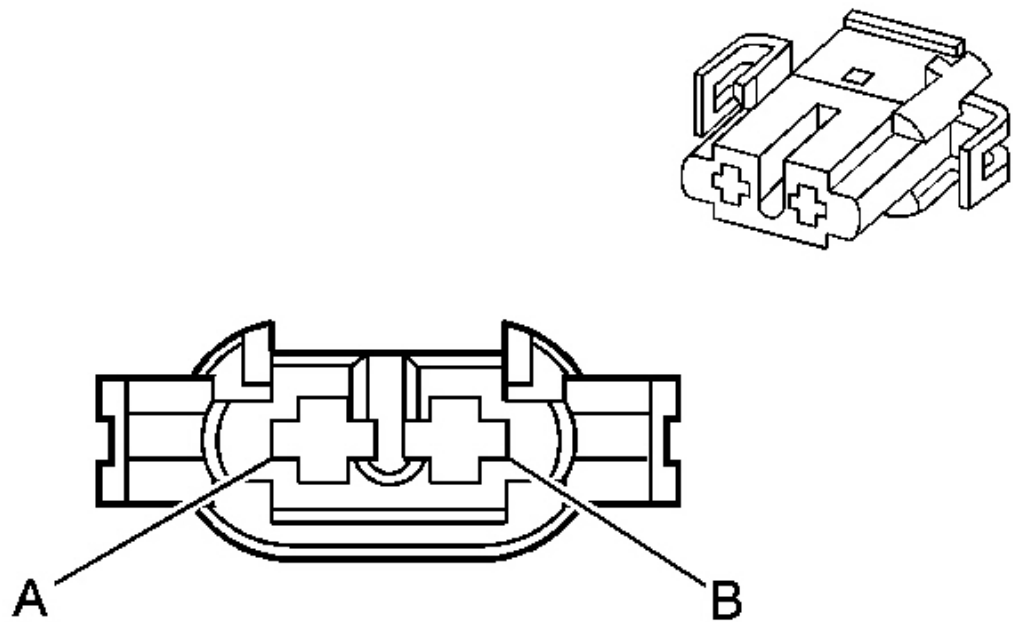


Fig. 2: E4G Head Lamp - Left Low Beam
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Front
- OEM Connector: 1444
- Service Connector: Service by Component Assembly - See Part Catalog

- Description: 2-Way F Bulb Connector (GY)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E4G Head Lamp - Left Low Beam

Pin	Wire	Circuit	Function
A	0.8 YE	712	Left Headlamp Low Beam Supply Voltage
B	0.8 BK	1150	Ground

E4H HEAD LAMP - RIGHT LOW BEAM

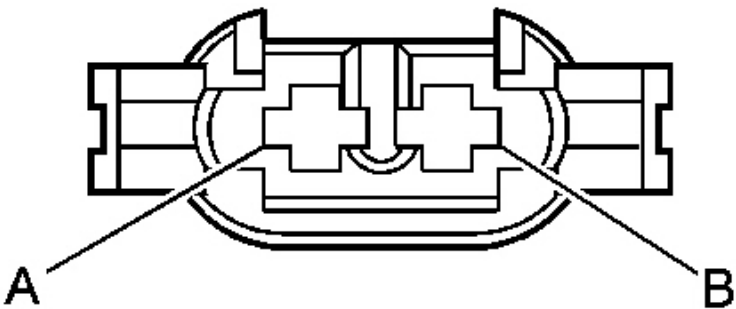
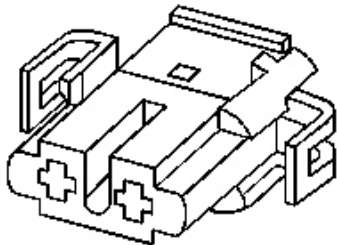


Fig. 3: E4H Head Lamp - Right Low Beam
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Front
- OEM Connector: 1444
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: 2-Way F Bulb Connector (GY)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E4H Head Lamp - Right Low Beam

Pin	Wire	Circuit	Function
A	0.8 YE	312	Right Headlamp Low Beam Supply Voltage
B	0.8 BK	1050	Ground

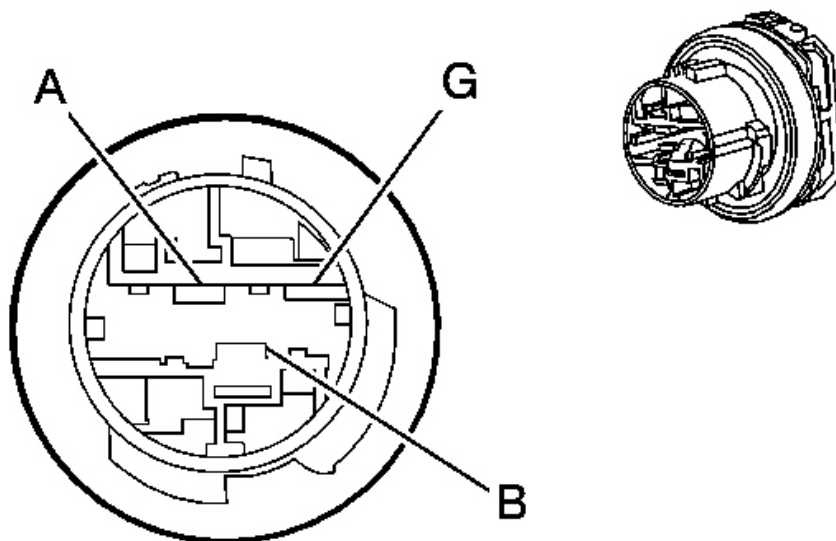
E4N PARK/TURN SIGNAL LAMP - LEFT

Fig. 4: E4N Park/Turn Signal Lamp - Left
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Front
- OEM: E628
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F, Sealed (GY)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E4N Park/Turn Signal Lamp - Left

Pin	Wire	Circuit	Function
A	0.5 L-BU	1314	Left Front Turn Signal Lamp Supply Voltage
B	0.5 BN	709	Left Park Lamp Supply Voltage
G	0.5 BK	1150	Ground

E4P PARK/TURN SIGNAL LAMP - RIGHT

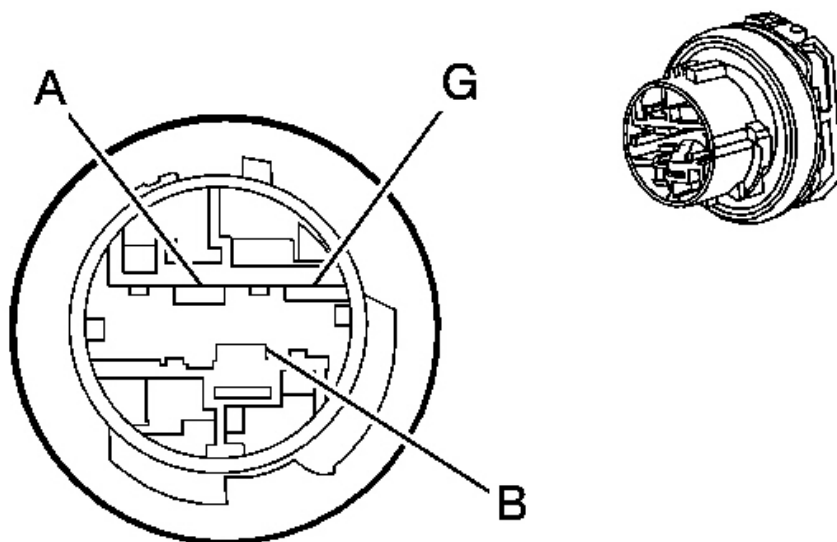


Fig. 5: E4P Park/Turn Signal Lamp - Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Front
- OEM: E628
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F, Sealed (GY)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E4P Park/Turn Signal Lamp - Right

Pin	Wire	Circuit	Function
			Right Front Turn Signal Lamp Supply

A	0.5 L-BU	1315	Voltage
B	0.5 BN	309	Right Park Lamp Supply Voltage
G	0.5 BK	1150	Ground

E5A BACKUP LAMP - LEFT

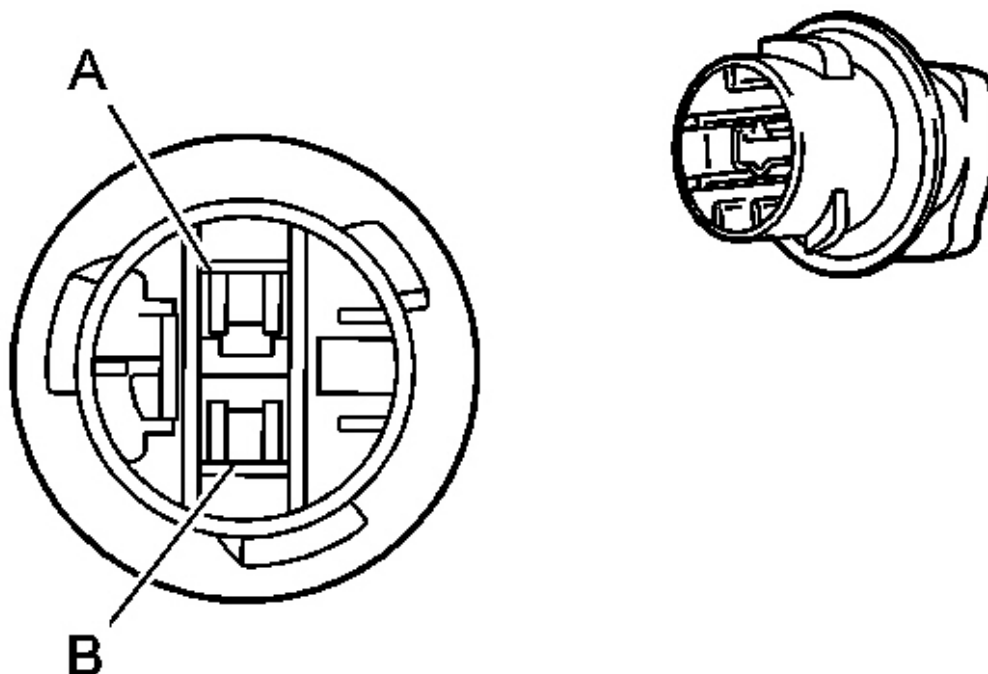


Fig. 6: E5A Backup Lamp - Left

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp
- OEM: 09441956
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Wedge Base Standard Bulb Socket, Sealed (GY)

Terminal Part Information

- Terminated Lead: Serviced as Harness - See Part Catalog
- Release Tool: Not Available

- Diagnostic Test Probe: Pending
- Terminal/Tray: Serviced as Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

E5A Backup Lamp - Left

Pin	Wire	Circuit	Function
A	0.5 L-GN	24	Backup Lamp Supply Voltage
B	0.5 BK	2550	Ground
	0.5 BK	2550	Ground

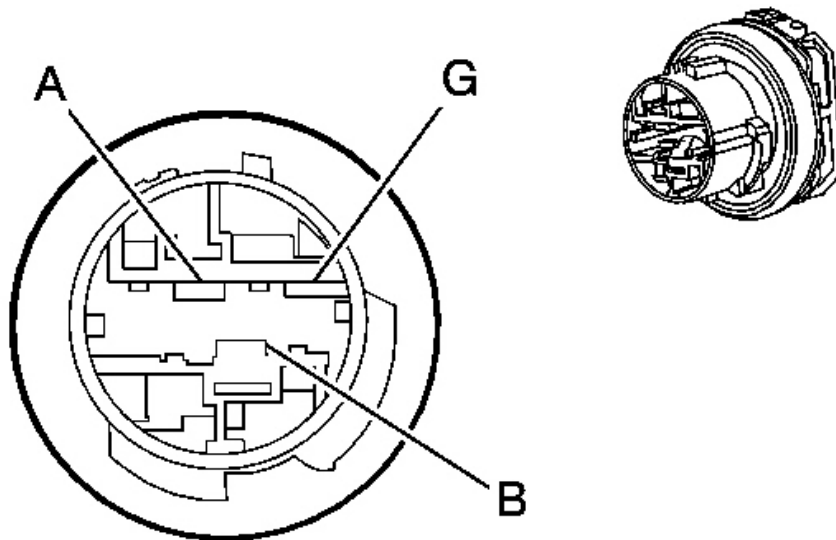
E5AC TAIL/TURN SIGNAL LAMP - LEFT

Fig. 7: E5AC Tail/Turn Signal Lamp - Left
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Rear
- OEM: E628
- Service: Pending

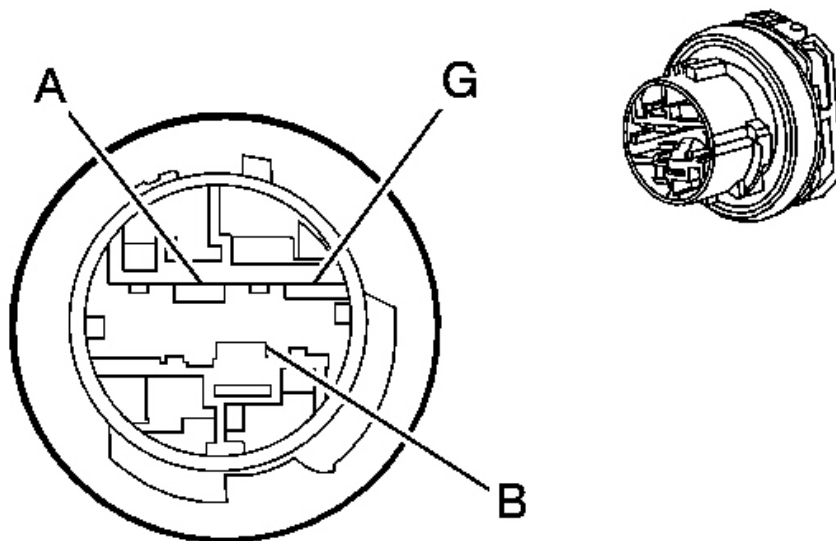
- Description: 2-Way F

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E5AC Tail/Turn Signal Lamp - Left

Pin	Wire	Circuit	Function
A	0.8 L-GN/WH	1334	Left Rear Turn Signal Lamp Supply Voltage
B	0.5 RD	2509	Left Tail Lamp Supply Voltage
	0.5 RD	2509	Left Tail Lamp Supply Voltage
G	0.8 BK	2550	Ground
	0.8 BK	2550	Ground

E5AD TAIL/TURN SIGNAL LAMP - RIGHT**Fig. 8: E5AD Tail/Turn Signal Lamp - Right**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Rear
- OEM: E628
- Service: Pending
- Description: 2-Way F

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E5AD Tail/Turn Signal Lamp - Right

Pin	Wire	Circuit	Function
A	0.8 L-GN/WH	1334	Right Rear Turn Signal Lamp Supply Voltage
B	0.5 RD	2509	Right Tail Lamp Supply Voltage
	0.5 RD	2509	Right Tail Lamp Supply Voltage
G	0.8 BK	2550	Ground
	0.8 BK	2550	Ground

E5B BACKUP LAMP - RIGHT

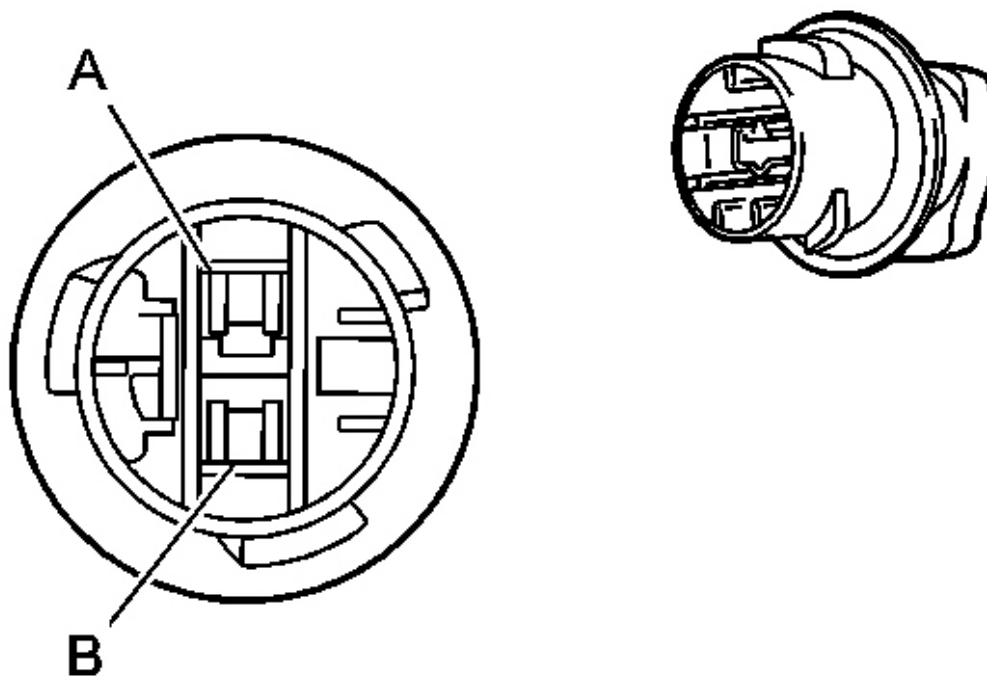


Fig. 9: E5B Backup Lamp - Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Wedge Base Standard Bulb Socket, Sealed (GY)

Terminal Part Information

- Terminated Lead: Serviced as Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Serviced as Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

E5B Backup Lamp - Right

Pin	Wire	Circuit	Function

A	0.5 L-GN	24	Backup Lamp Supply Voltage
B	0.5 BK	2550	Ground
	0.5 BK	2550	Ground

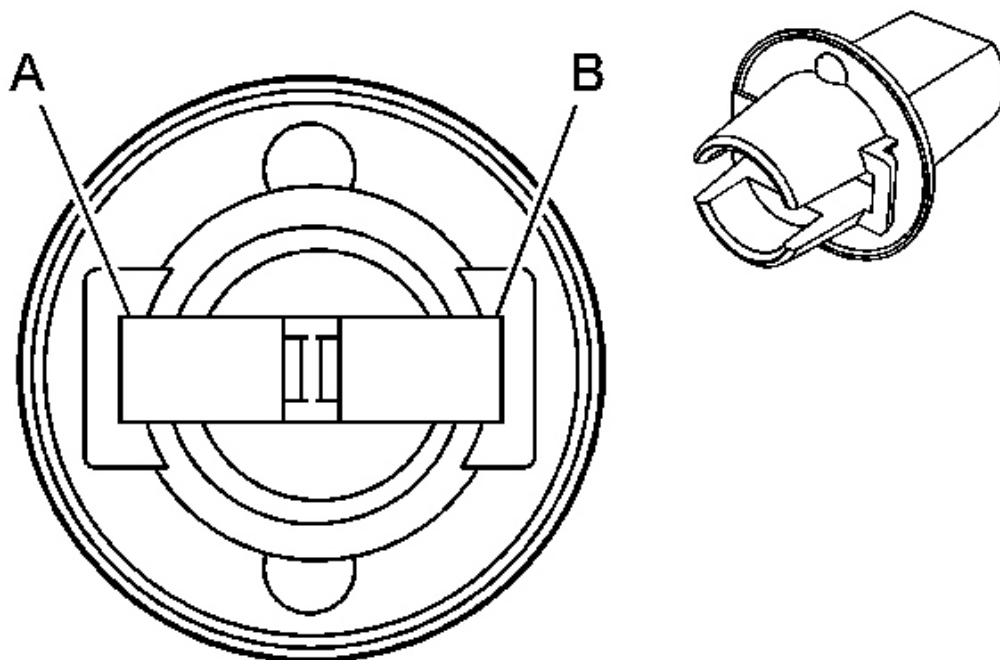
E5J TAIL LAMP - LEFT LOWER (GMC)

Fig. 10: E5J Tail Lamp - Left Lower (GMC)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Rear
- OEM: 12084388
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Connectors, Bulb Bases, Type W-2 (BK)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available

- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E5J Tail Lamp - Left Lower (GMC)

Pin	Wire	Circuit	Function
A	0.5 D-GN/WH	2509	Left Tail Lamp Supply Voltage
B	0.5 BK	2550	Ground

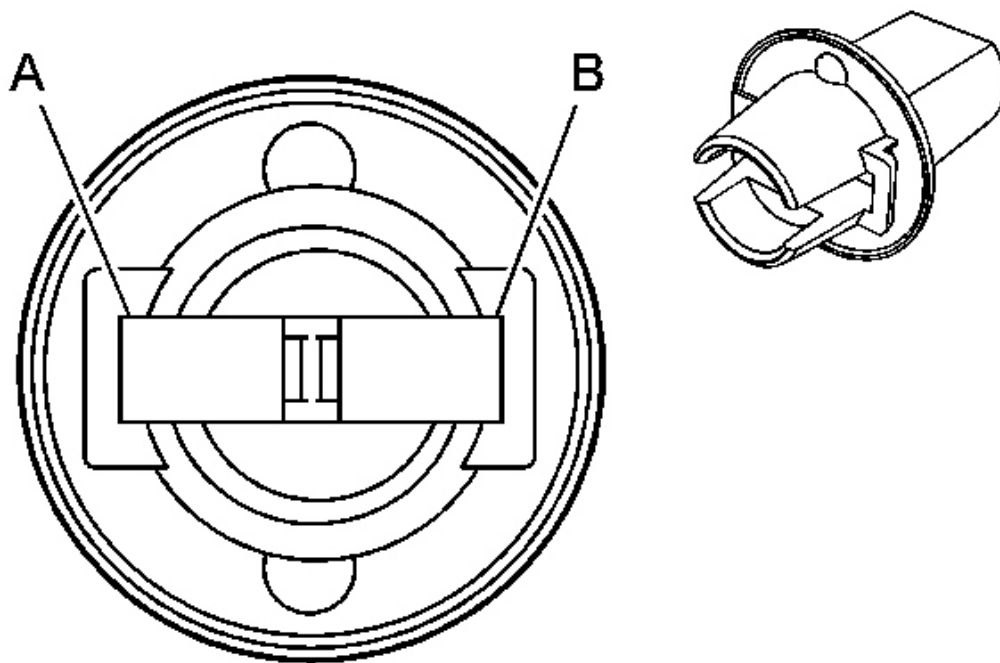
E5K TAIL LAMP - RIGHT LOWER (GMC)

Fig. 11: E5K Tail Lamp - Right Lower (GMC)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Rear
- OEM: 12084388
- Service: Service by Harness - See Part Catalog

- Description: 2-Way F Lamp Socket Connectors, Bulb Bases, Type W-2 (BK)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E5K Tail Lamp - Right Lower (GMC)

Pin	Wire	Circuit	Function
A	0.5 D-GN/WH	2609	Right Tail Lamp Supply Voltage
B	0.5 BK	2550	Ground

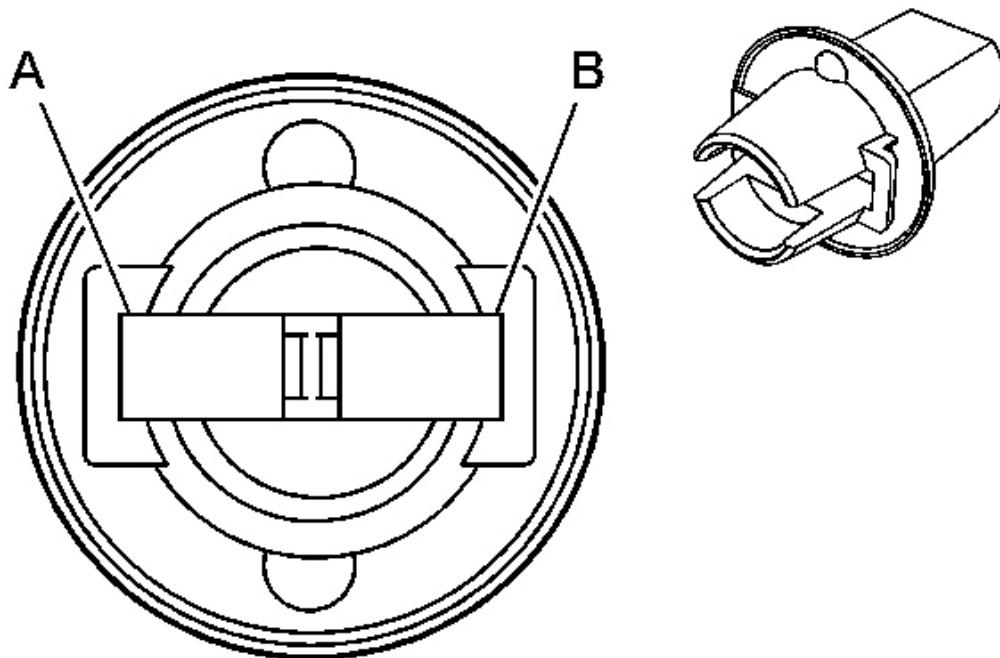
E5M TAIL LAMP - LEFT UPPER (GMC)

Fig. 12: E5M Tail Lamp - Left Upper (GMC)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Rear
- OEM: 12084388
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Connectors, Bulb Bases, Type W-2 (BK)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E5M Tail Lamp - Left Upper (GMC)

Pin	Wire	Circuit	Function
A	0.5 D-GN/WH	2509	Left Tail Lamp Supply Voltage
B	0.5 BK	2550	Ground

E5N TAIL LAMP - RIGHT UPPER (GMC)

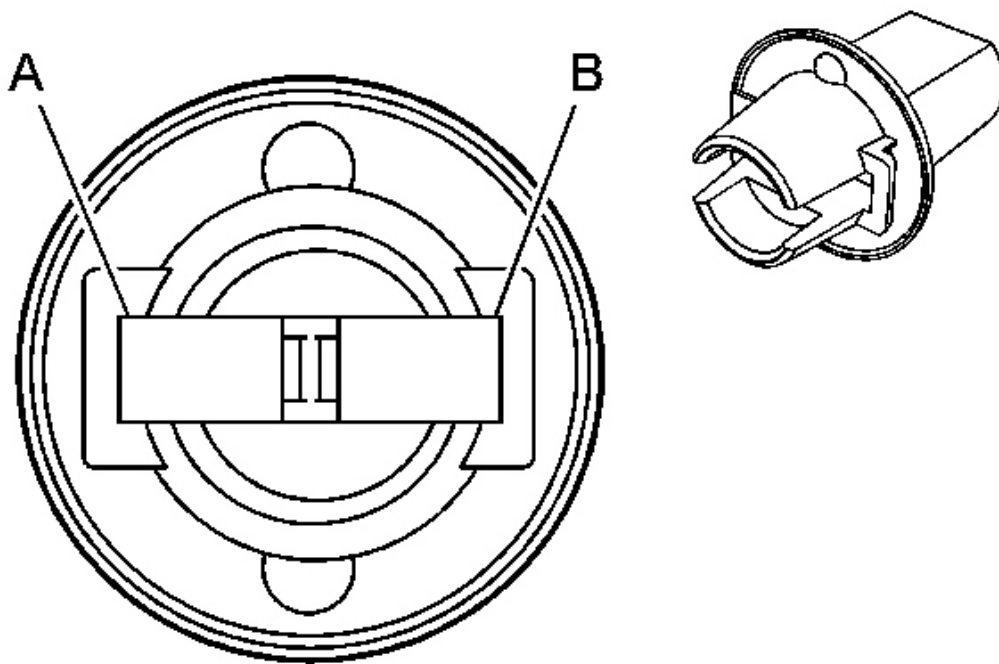


Fig. 13: E5N Tail Lamp - Right Upper (GMC)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Rear
- OEM: 12084388
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Connectors, Bulb Bases, Type W-2 (BK)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E5N Tail Lamp - Right Upper (GMC)

Pin	Wire	Circuit	Function

A	0.5 D-GN/WH	2609	Right Tail Lamp Supply Voltage
B	0.5 BK	2550	Ground

E6 CENTER HIGH MOUNTED STOP LAMP

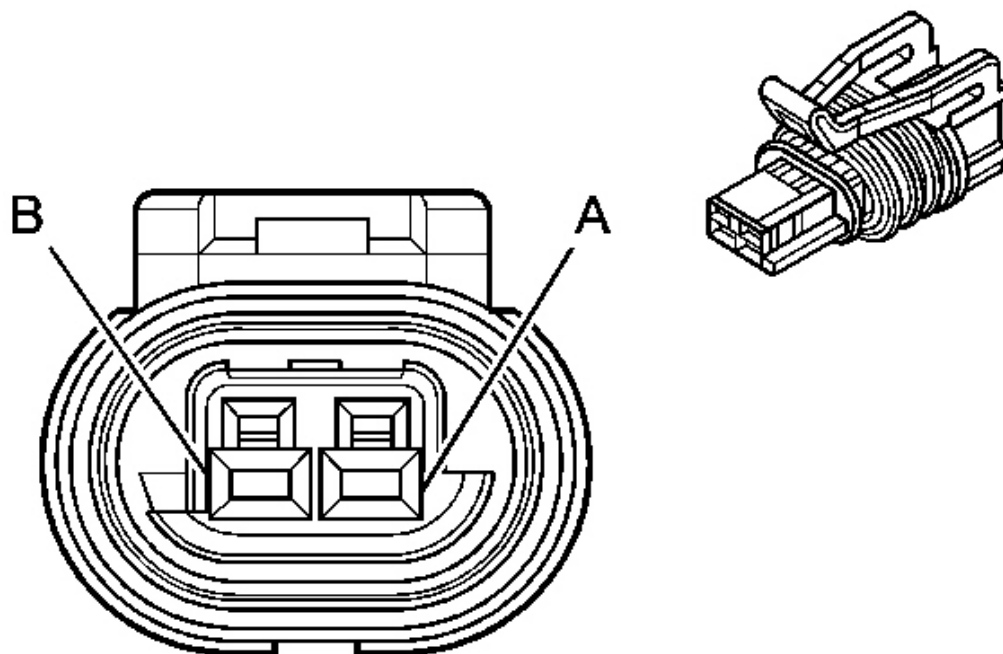


Fig. 14: E6 Center High Mounted Stop Lamp
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 15449028
- Service Connector: 88987993
- Description: 2-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)

- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

E6 Center High Mounted Stop Lamp

Pin	Wire	Circuit	Function
A	0.35 BK	2550	Ground
B	0.35 WH	5065	Center High Mounted Stop Lamp (CHMSL) Control

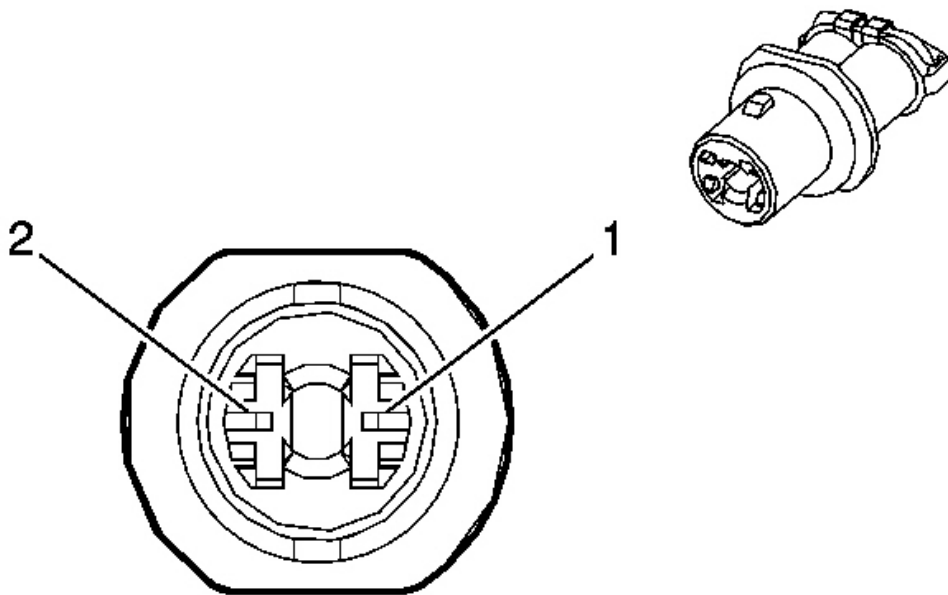
E7L LICENSE PLATE LAMP - LEFT

Fig. 15: E7L License Plate Lamp - Left
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: License Lamp
- OEM: 15345129
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket, Sealed (BN)

Terminal Part Information

- Terminated Lead: Serviced as Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Serviced as Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

E7L License Plate Lamp - Left

Pin	Wire	Circuit	Function
1	0.35 D-GN/RD	6846	Rear License Lamp Control
2	0.35 BK	2550	Ground

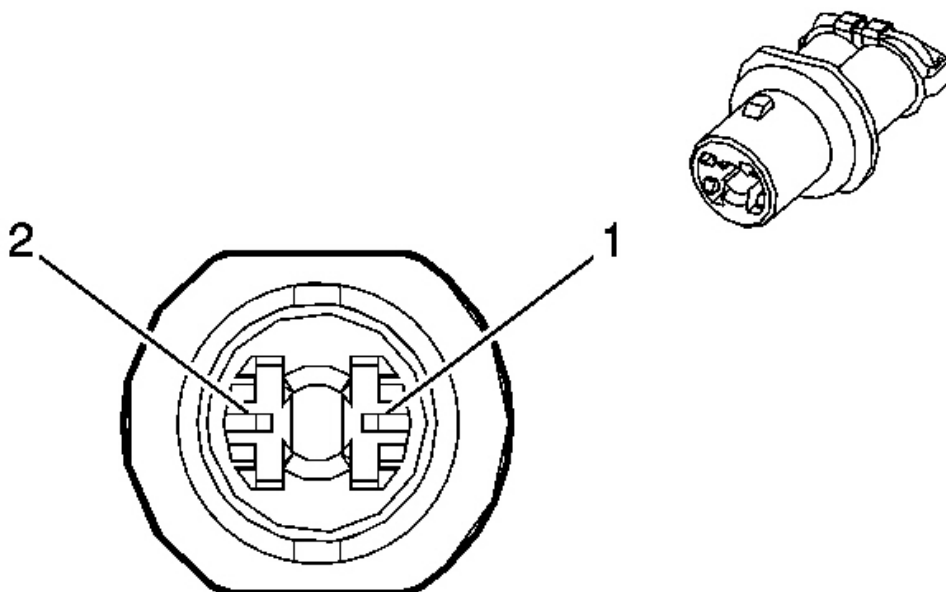
E7R LICENSE PLATE LAMP - RIGHT

Fig. 16: E7R License Plate Lamp - Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: License Lamp
- OEM: 15345129
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket, Sealed (BN)

Terminal Part Information

- Terminated Lead: Serviced as Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Serviced as Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

E7R License Plate Lamp - Right

Pin	Wire	Circuit	Function
1	0.35 D-GN/RD	6846	Rear License Lamp Control
2	0.35 BK	2550	Ground

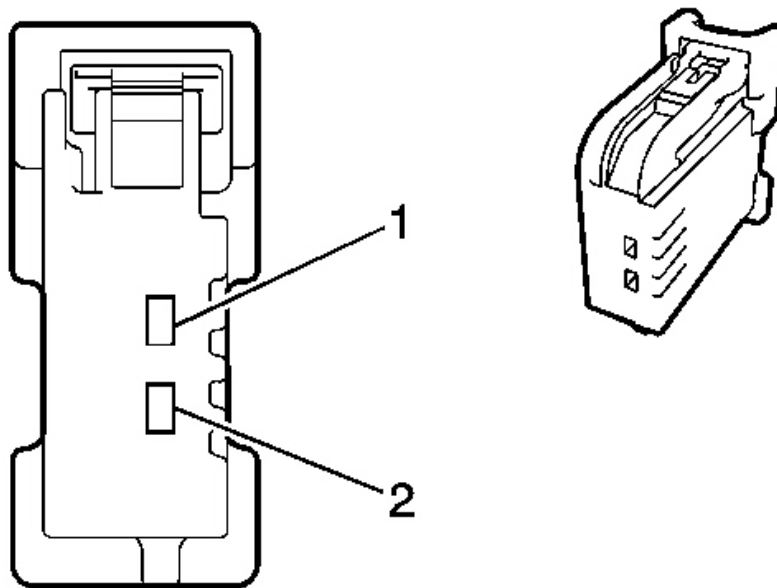
E8J INSTRUMENT PANEL COURTESY LAMP - LEFT (TSQ)

Fig. 17: E8J Instrument Panel Courtesy Lamp - Left (TSQ)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 6098-5510
- Service Connector: 19179373
- Description: 2-Way F 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

E8J Instrument Panel Courtesy Lamp - Left (TSQ)

Pin	Wire	Circuit	Function
1	0.5 GY	157	Courtesy Lamp Control
2	0.5 BK	1550	Ground

E8K INSTRUMENT PANEL COURTESY LAMP - RIGHT (TSQ)

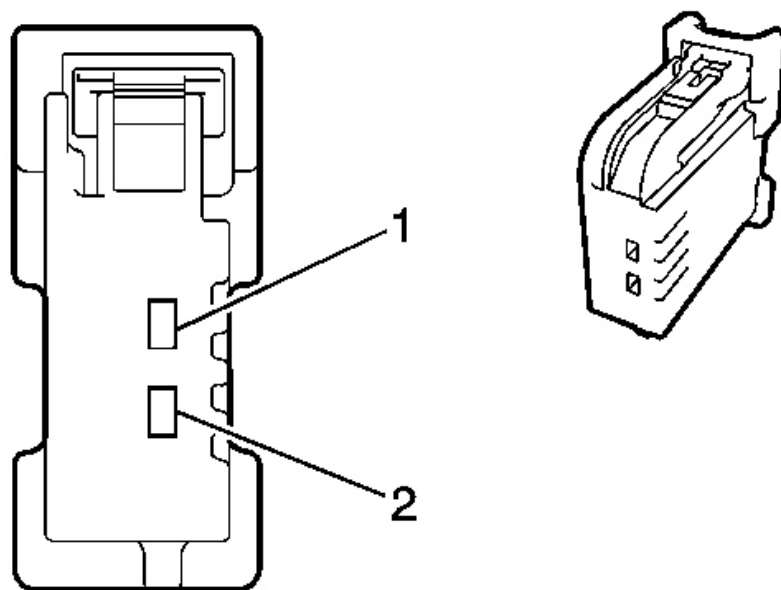


Fig. 18: E8K Instrument Panel Courtesy Lamp - Right (TSQ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 6098-5510
- Service Connector: 19179373
- Description: 2-Way F 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

E8K Instrument Panel Courtesy Lamp - Right (TSQ)

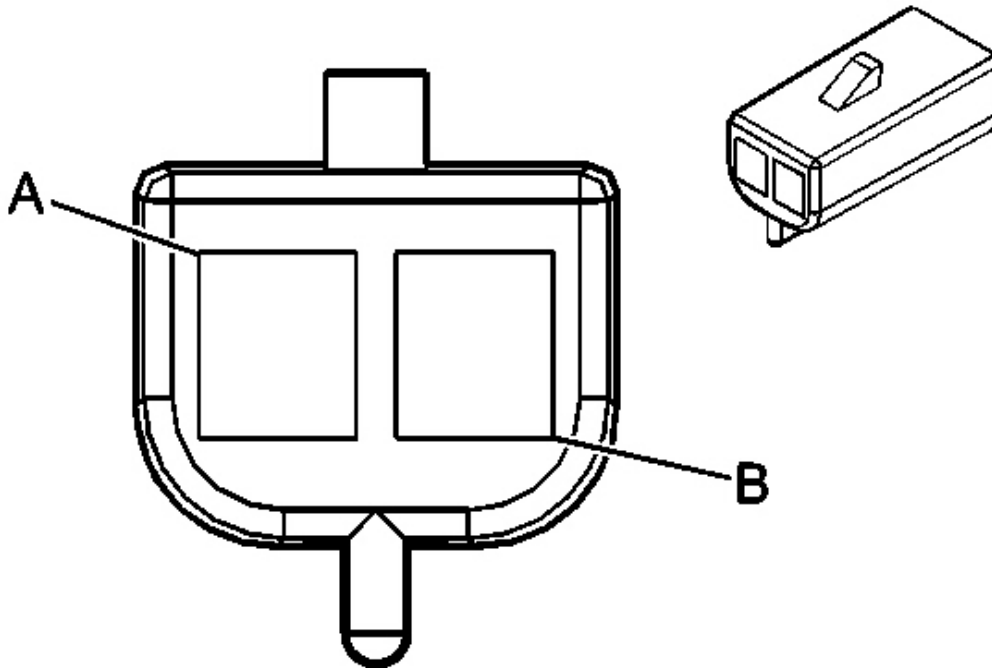
Pin	Wire	Circuit	Function
1	0.5 GY	157	Courtesy Lamp Control

2

0.5 BK

1550

Ground

E14A SEAT HEATING ELEMENT - DRIVER BACK (KA1 OR SPO ACCESSORY)**Fig. 19: E14A Seat Heating Element - Driver Back (KA1 or SPO Accessory)****Courtesy of GENERAL MOTORS CORP.****Connector Part Information**

- Harness: Driver Seat Cushion (KA1)
- Harness: Seat Heating Extension (SPO Accessory)
- OEM Connector: 12059253
- Service Connector: 12125690
- Description: 2-Way F Metri-Pack 150 Series (L-GN)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)

- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/A

E14A Seat Heating Element - Driver Back (KA1 or SPO Accessory)

Pin	Wire	Circuit	Function
A	0.8 L-GN	2078	Heated Seat Cushion Element Control (KA1)
	0.8 BK	-	Heated Seat Cushion Element Control (SPO Accessory)
B	0.8 PU	2424	Driver Heated Seat Back Element Control (KA1)
	0.8 D-BU	-	Driver Heated Seat Back Element Control (SPO Accessory)

E14B SEAT HEATING ELEMENT - DRIVER CUSHION (KA1 OR SPO ACCESSORY)

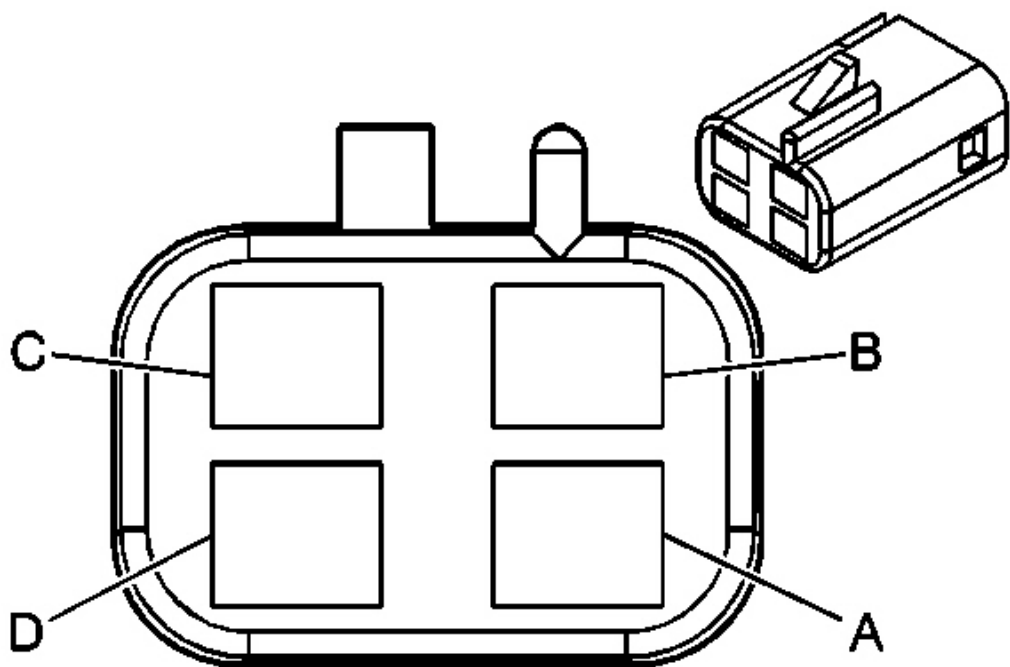


Fig. 20: E14B Seat Heating Element - Driver Cushion (KA1 or SPO Accessory)
Courtesy of GENERAL MOTORS CORP.

- Harness: Driver Seat Cushion (KA1)
- Harness: Seat Heating Extension (SPO Accessory)
- OEM Connector: 12047785
- Service Connector: 12102900
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: Pins A, C - E/C
- Core/Insulation Crimp: Pins B, D - E/A

E14B Seat Heating Element - Driver Cushion (KA1 or SPO Accessory)

Pin	Wire	Circuit	Function
A	0.35 YE/BK	2079	Heated Seat Cushion Temperature Sensor Signal (KA1)
	0.8 GY	-	Heated Seat Cushion Temperature Sensor Signal (SPO Accessory)
B	0.8 PK	2077	Heated Seat Cushion Element Supply Voltage (KA1)
	0.8 RD	-	Heated Seat Cushion Element Supply Voltage (SPO Accessory)
C	0.35 YE	2080	Driver Heated Seat Cushion Temperature Sensor Low Reference (KA1)
	0.8 GY	-	Driver Heated Seat Cushion Temperature Sensor Low Reference (SPO Accessory)
D	0.8 L-GN	2078	Heated Seat Cushion Element Control (KA1)
	0.8 BK	-	Heated Seat Cushion Element Control (SPO Accessory)

E14C SEAT HEATING ELEMENT - PASSENGER BACK (KA1 OR SPO ACCESSORY)

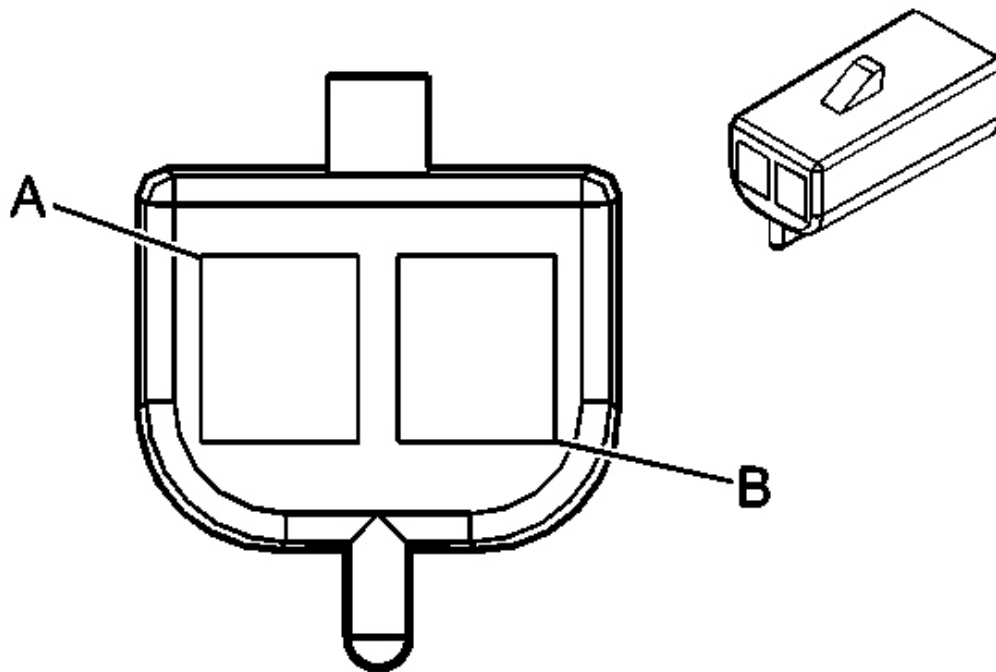


Fig. 21: E14C Seat Heating Element - Passenger Back (KA1 or SPO Accessory)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Seat Cushion (KA1)
- Harness: Seat Heating Extension (SPO Accessory)
- OEM Connector: 12059253
- Service Connector: 12125690
- Description: 2-Way F Metri-Pack 150 Series (L-GN)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/A

Pin	Wire	Circuit	Function
A	0.8 PK	2480	Passenger Heated Seat Cushion Element Control (KA1)
	0.8 BK	-	Passenger Heated Seat Cushion Element Control (SPO Accessory)
B	0.8 L-BU	2433	Passenger Heated Seat Back Element Control (KA1)
	0.8 D-BU	-	Passenger Heated Seat Back Element Control (SPO Accessory)

E14D SEAT HEATING ELEMENT - PASSENGER CUSHION (KA1 OR SPO ACCESSORY)

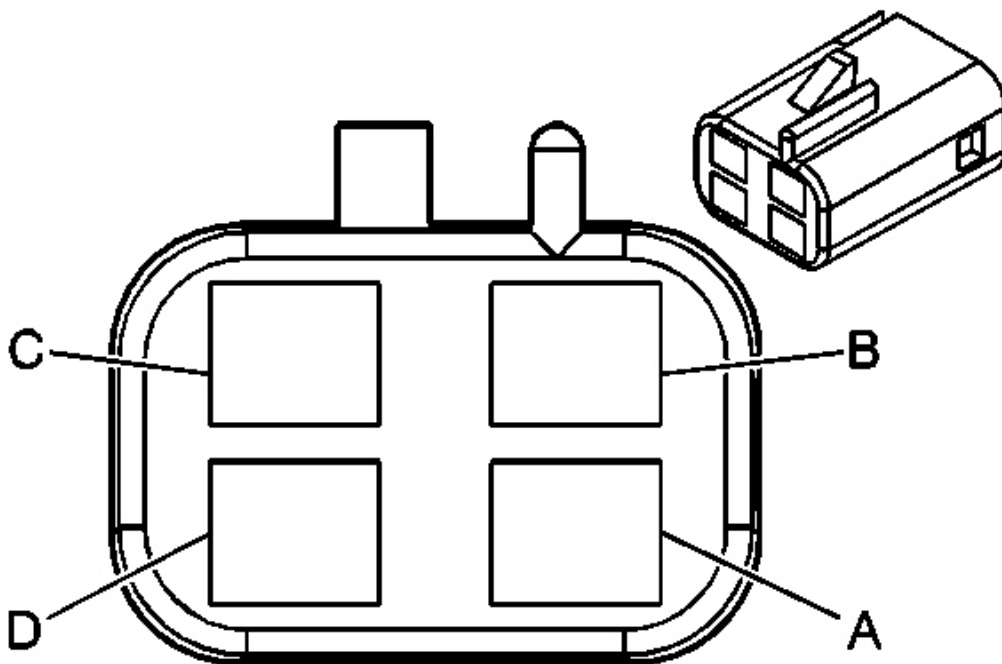


Fig. 22: E14D Seat Heating Element - Passenger Cushion (KA1 or SPO Accessory)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Seat Cushion (KA1)
- Harness: Seat Heating Extension (SPO Accessory)
- OEM Connector: 12047785

- Service Connector: 12102900
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: Pins A, C - E/C
- Core/Insulation Crimp: Pins B, D - E/A

E14D Seat Heating Element - Passenger Cushion (KA1 or SPO Accessory)

Pin	Wire	Circuit	Function
A	0.35 GY	2434	Passenger Heated Seat Cushion Temperature Sensor Signal (KA1)
	0.8 GY	-	Passenger Heated Seat Cushion Temperature Sensor Signal (SPO Accessory)
B	0.8 D-BU	2479	Passenger Heated Seat Element Supply Voltage (KA1)
	0.8 RD	-	Passenger Heated Seat Element Supply Voltage (SPO Accessory)
C	0.35 PK	2435	Passenger Heated Seat Cushion Temperature Sensor Low Reference (KA1)
	0.8 GY	-	Passenger Heated Seat Cushion Temperature Sensor Low Reference (SPO Accessory)
D	0.8 PK	2480	Passenger Heated Seat Cushion Element Control (KA1)
	0.8 BK	-	Passenger Heated Seat Cushion Element Control (SPO Accessory)

E18 REAR DEFOGGER GRID X1

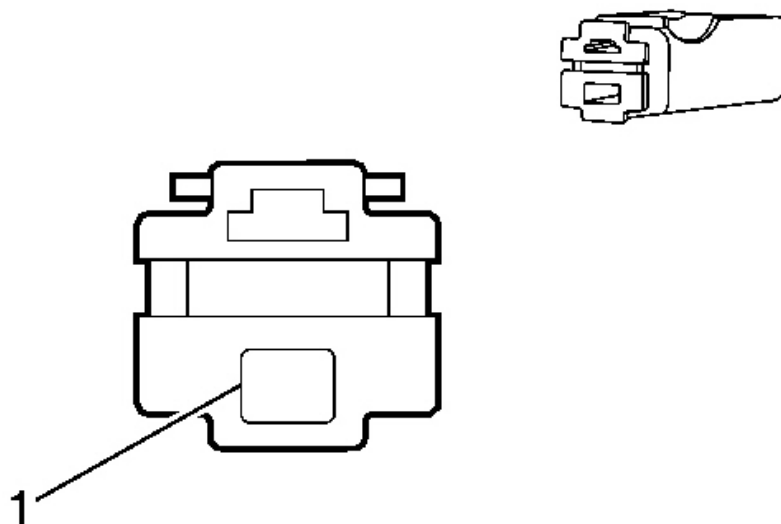


Fig. 23: E18 Rear Defogger Grid X1
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 7123-5014-30
- Service Connector: 88988465
- Description: 1-Way F (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-2951-02/27
- Core/Insulation Crimp: C/B

E18 Rear Defogger Grid X1

Pin	Wire	Circuit	Function
1	2 PU	293	Rear Defog Element Supply Voltage

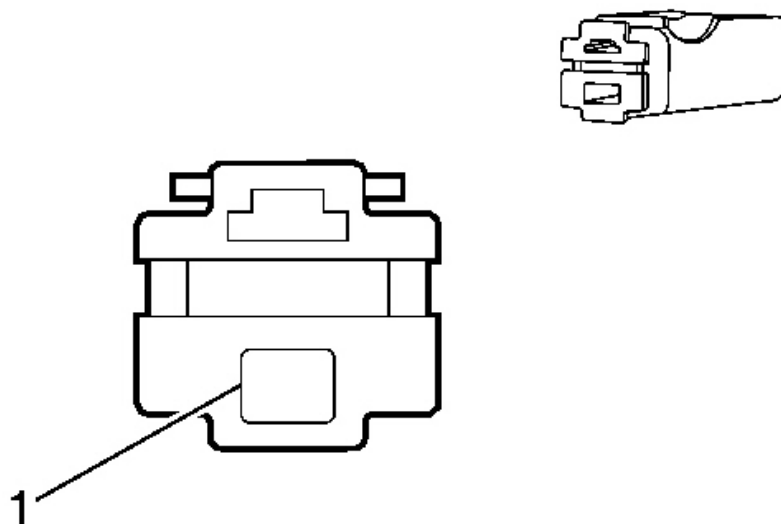
E18 REAR DEFOGGER GRID X2

Fig. 24: E18 Rear Defogger Grid X2
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 7123-5014-30
- Service Connector: 88988465
- Description: 1-Way F (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-2951-02/27
- Core/Insulation Crimp: C/B

E18 Rear Defogger Grid X2

Pin	Wire	Circuit	Function
1	2 BK	2550	Ground

E28 CENTER CONSOLE COMPARTMENT LAMP (TSP OR TSQ)

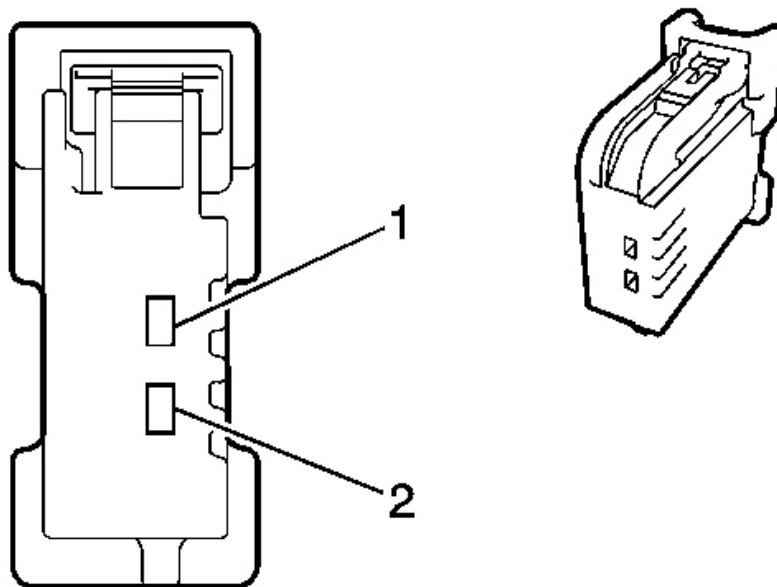


Fig. 25: E28 Center Console Compartment Lamp (TSP or TSQ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: 6098-5510
- Service Connector: 19179373
- Description: 2-Way F 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575855
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22

- Core/Insulation Crimp: E/C

E28 Center Console Compartment Lamp (TSP or TSQ)

Pin	Wire	Circuit	Function
1	0.5 OG	6815	Inadvertent Power Supply Voltage
2	0.5 BK	1550	Ground

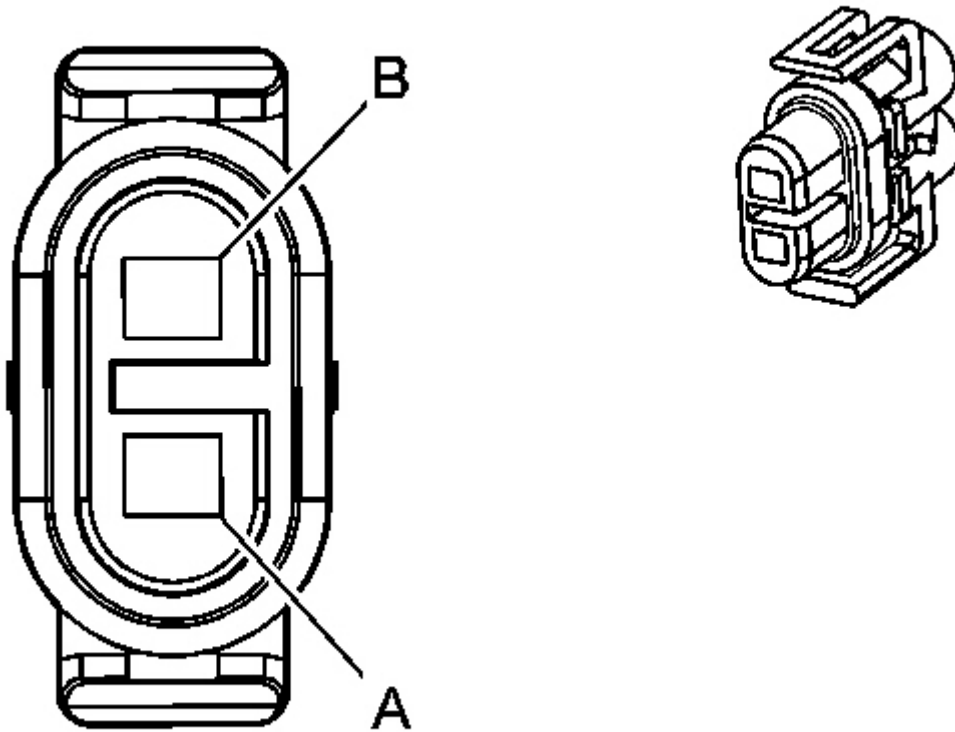
E29LF FOG LAMP - LEFT FRONT (T96)

Fig. 26: E29LF Fog Lamp - Left Front (T96)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM: 12124819
- Service: 12085498

- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12077411/2
- Core/Insulation Crimp: 2/5

E29LF Fog Lamp - Left Front (T96)

Pin	Wire	Circuit	Function
A	0.5 PU	2234	Front Fog Lamp Supply Voltage
B	0.5 BK	1050	Ground

E29RF FOG LAMP - RIGHT FRONT (T96)

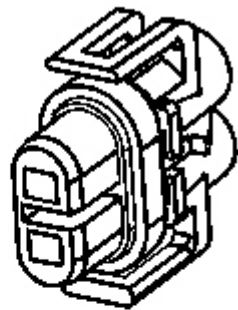
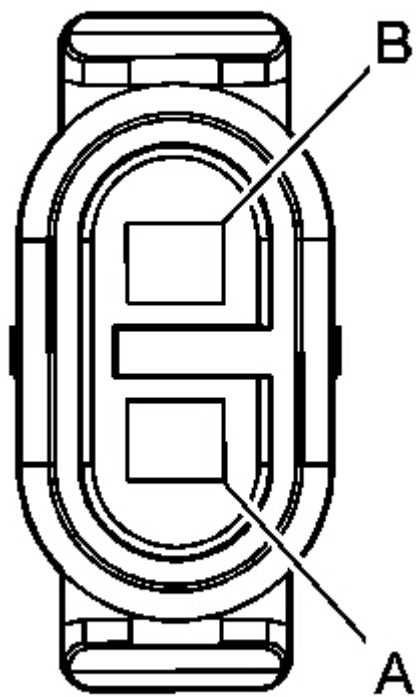


Fig. 27: E29RF Fog Lamp - Right Front (T96)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM: 12124819
- Service: 12085498
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12077411/2
- Core/Insulation Crimp: 2/5

E29RF Fog Lamp - Right Front (T96)

Pin	Wire	Circuit	Function
A	0.5 PU	2234	Front Fog Lamp Supply Voltage
B	0.5 BK	1150	Ground

E37EL DOME/READING LAMPS - FRONT OVERHEAD CONSOLE LEFT

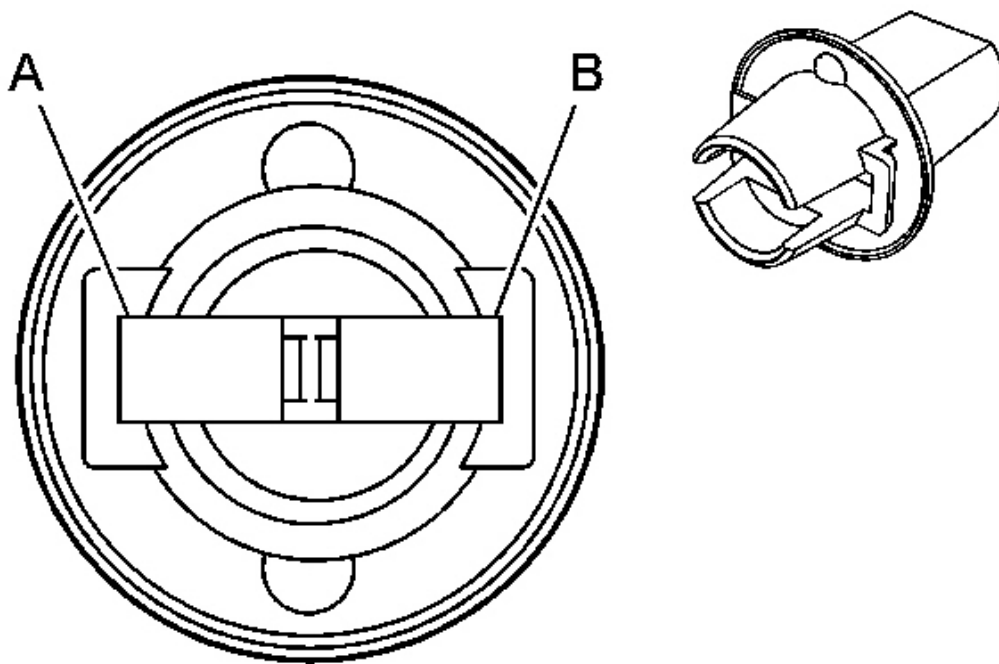


Fig. 28: E37EL Dome/Reading Lamps - Front Overhead Console Left
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Dome/Reading Lamps
- OEM: 12084388
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Connectors, Bulb Bases, Type W-2 (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 12084388
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 12084388
- Core/Insulation Crimp: Not Available

E37EL Dome/Reading Lamps - Front Overhead Console Left

Pin	Wire	Circuit	Function

A	0.5 WH	-	Inadvertent Power Supply Voltage
B	0.5 BK	-	Ground

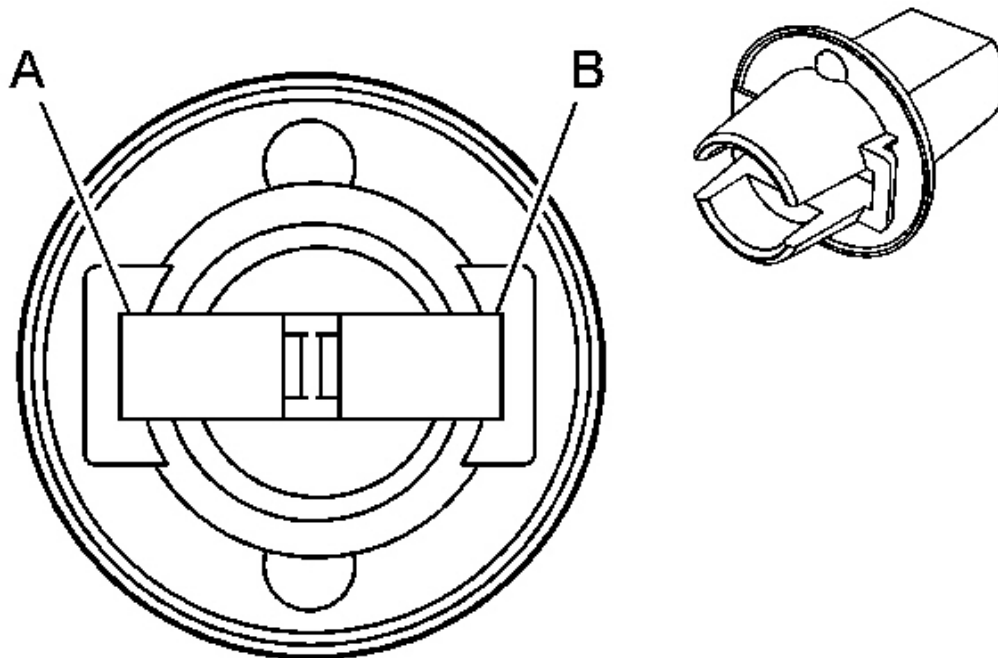
E37ER DOME/READING LAMPS - FRONT OVERHEAD CONSOLE RIGHT

Fig. 29: E37ER Dome/Reading Lamps - Front Overhead Console Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Dome/Reading Lamps
- OEM: 12084388
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Connectors, Bulb Bases, Type W-2 (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 12084388
- Release Tool: Not Available
- Diagnostic Test Probe: Pending

- Terminal/Tray: Service by Connector Assembly - 12084388
- Core/Insulation Crimp: Not Available

E37ER Dome/Reading Lamps - Front Overhead Console Right

Pin	Wire	Circuit	Function
A	0.5 WH	-	Inadvertent Power Supply Voltage
B	0.5 BK	-	Ground

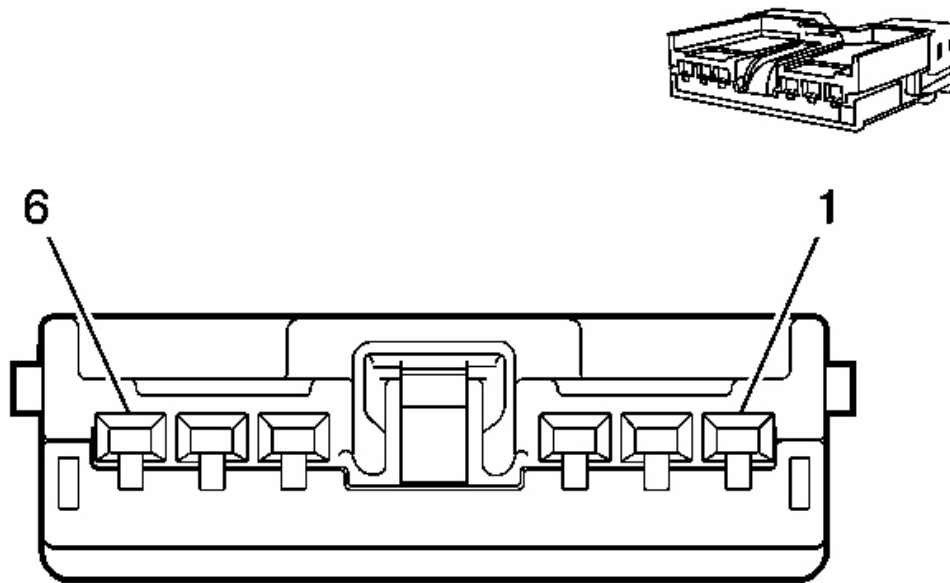
E37M DOME/READING LAMPS - MIDDLE

Fig. 30: E37M Dome/Reading Lamps - Middle
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 6098-5985
- Service Connector: 13316151
- Description: 6-Way F 1.5 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

E37M Dome/Reading Lamps - Middle

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.5 GY	157	Courtesy Lamp Control
3-5	-	-	Not Used
6	0.5 BK	550	Ground

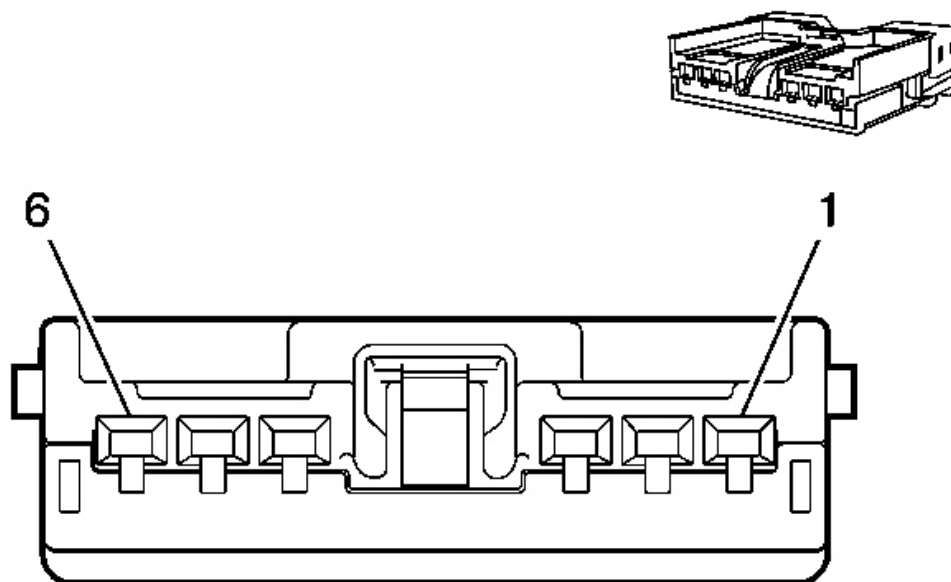
E37R DOME/READING LAMPS - REAR

Fig. 31: E37R Dome/Reading Lamps - Rear
Courtesy of GENERAL MOTORS CORP.

- Harness: Headliner
- OEM Connector: 6098-5985
- Service Connector: 13316151
- Description: 6-Way F 1.5 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

E37R Dome/Reading Lamps - Rear

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.5 GY	157	Courtesy Lamp Control
3-5	-	-	Not Used
6	0.5 BK	550	Ground

F105 PASSENGER INSTRUMENT PANEL AIR BAG X1

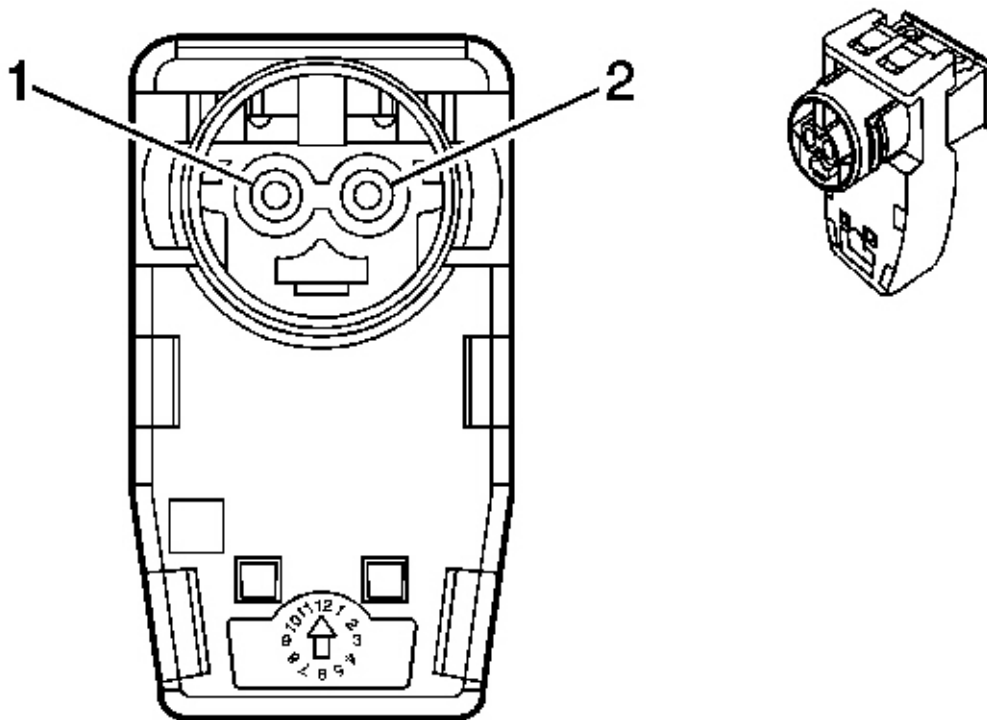


Fig. 32: F105 Passenger Instrument Panel Air Bag X1
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Airbag Inflator
- OEM Connector: 19153417
- Service Connector: Pending
- Description: 2-Way F (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 19153417
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 19153417
- Core/Insulation Crimp: Not Available

F105 Passenger Instrument Panel Air Bag X1

Pin	Wire	Circuit	Function
1	0.35 YE	3025	I/P Module - Stage 1 - High Control
2	0.35 OG	3024	I/P Module - Stage 1 - Low Control

F105 PASSENGER INSTRUMENT PANEL AIR BAG X2

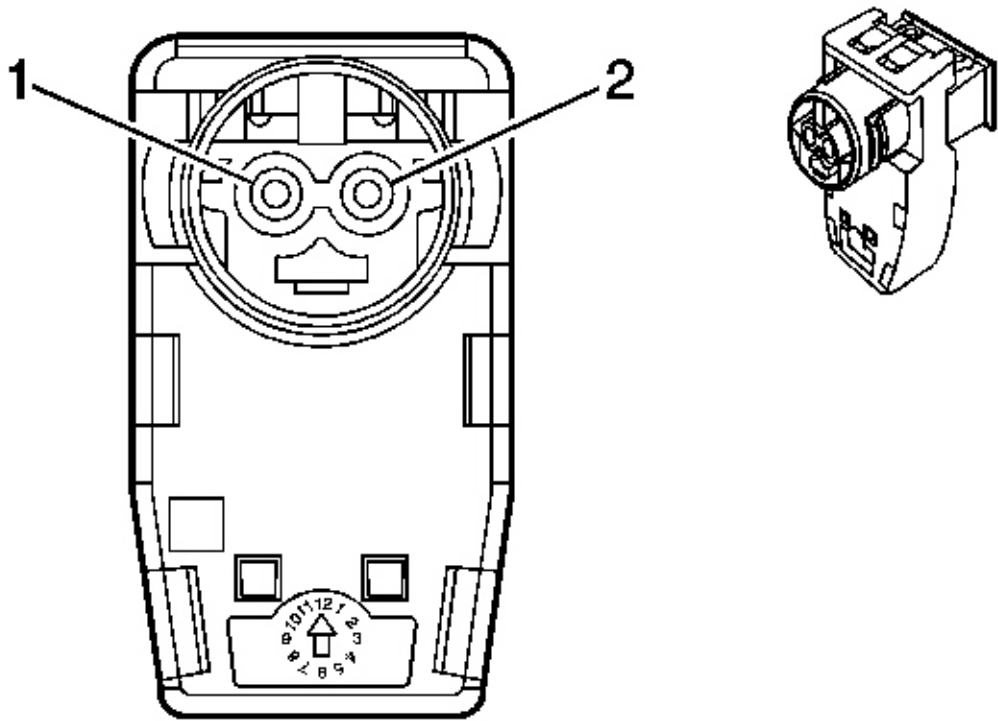


Fig. 33: F105 Passenger Instrument Panel Air Bag X2
Courtesy of GENERAL MOTORS CORP.

Connector Part Information • Harness: Airbag Inflator • OEM Connector: 19153418 • Service Connector: Pending • Description: 2-Way F (YE) Terminal Part Information
--

- Terminated Lead: Service by Connector Assembly - 19153418
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 19153418
- Core/Insulation Crimp: Not Available

F105 Passenger Instrument Panel Air Bag X2

Pin	Wire	Circuit	Function
1	0.35 GY	3027	I/P Module - Stage 2 - High Control
2	0.35 PU	3026	I/P Module - Stage 2 - Low Control

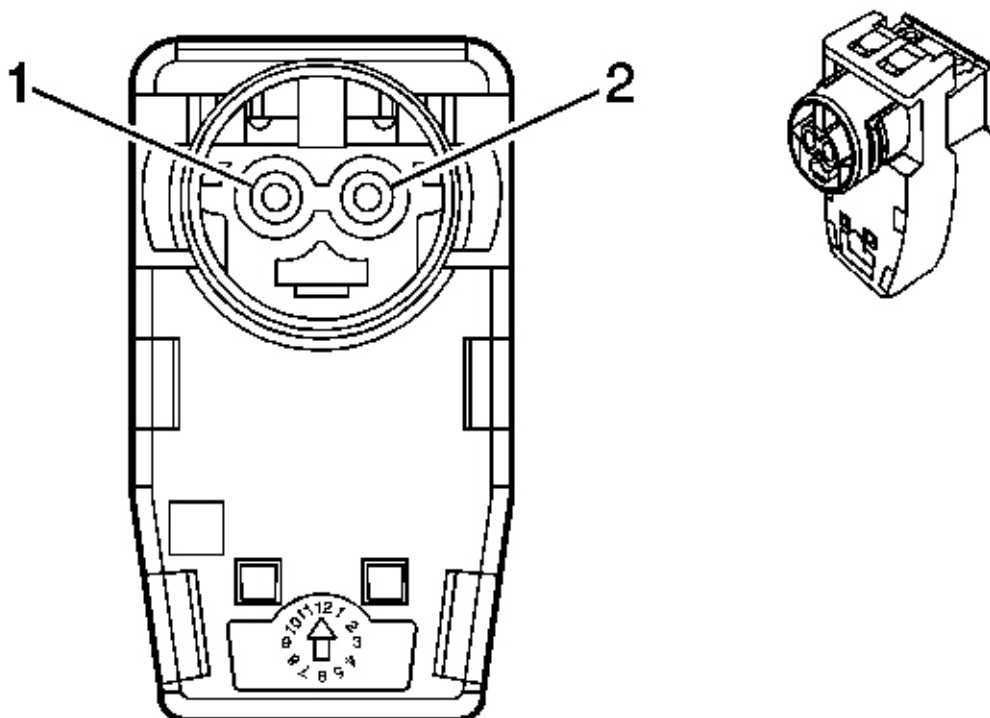
F105L ROOF RAIL AIR BAG - LEFT

Fig. 34: F105L Roof Rail Air Bag - Left
Courtesy of GENERAL MOTORS CORP.

- Harness: Body
- OEM Connector: PPI0001460
- Service Connector: 19180246
- Description: 2-Way F (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - PPI0001460
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - PPI0001460
- Core/Insulation Crimp: Not Available

F105L Roof Rail Air Bag - Left

Pin	Wire	Circuit	Function
1	0.5 PU/WH	5019	Roof Rail Module Left - High Control
2	0.5 PK	5020	Roof Rail Module Left - Low Control

F105R ROOF RAIL AIR BAG - RIGHT

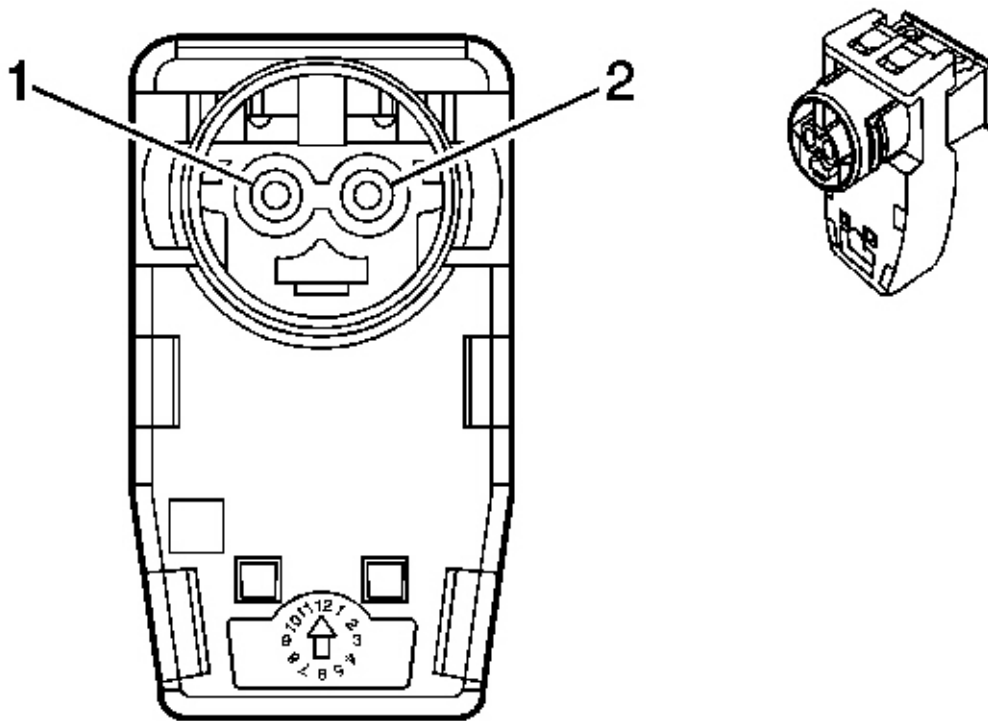


Fig. 35: F105R Roof Rail Air Bag - Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

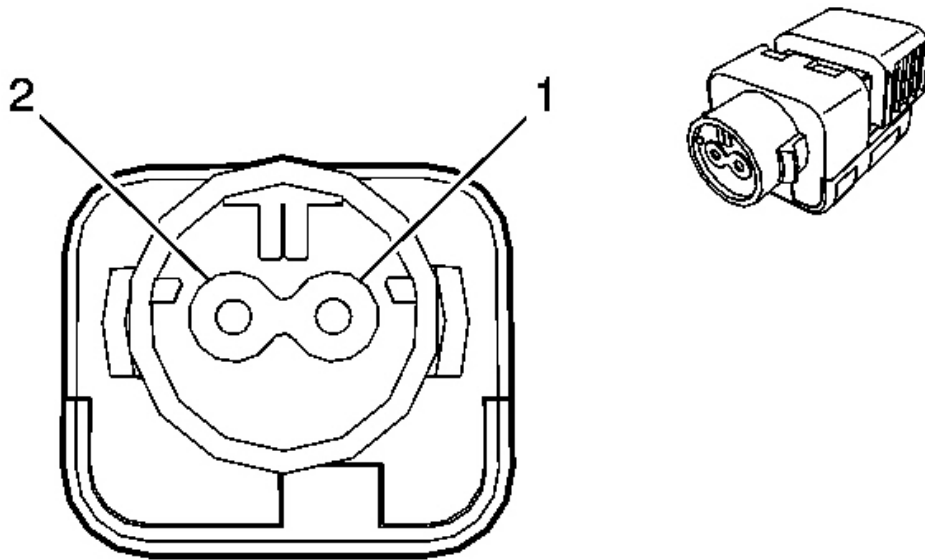
- Harness: Body
- OEM Connector: PPI0001460
- Service Connector: 19180246
- Description: 2-Way F (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - PPI0001460
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - PPI0001460
- Core/Insulation Crimp: Not Available

F105R Roof Rail Air Bag - Right

Pin	Wire	Circuit	Function
1	0.5 YE/BK	5021	Roof Rail Module Right - High Control
2	0.5 WH/BK	5022	Roof Rail Module Right - Low Control

F106L SIDE AIR BAG - LEFT**Fig. 36: F106L Side Air Bag - Left**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Back
- OEM: PPI0001454
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F (YE)

Terminal Part Information

- Terminated Lead: Serviced as Harness - See Part Catalog
- Release Tool: Not Available

- Diagnostic Test Probe: Pending
- Terminal/Tray: Serviced as Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

F106L Side Air Bag - Left

Pin	Wire	Circuit	Function
1	0.5 L-BU	3068	Side Air Bag +
2	0.5 L-GN/BK	3069	Side Air Bag -

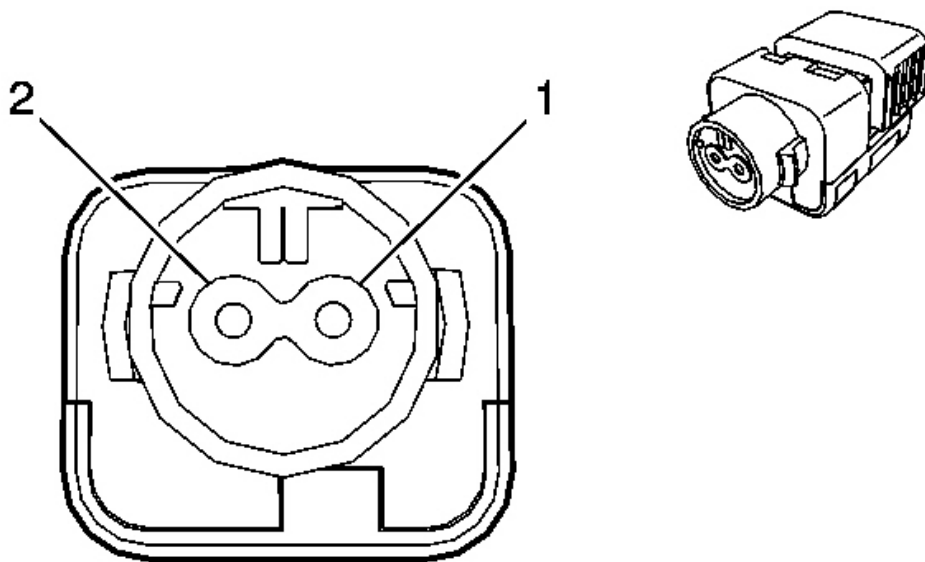
F106R SIDE AIR BAG - RIGHT

Fig. 37: F106R Side Air Bag - Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Seat Back
- OEM: PPI0001454
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F (YE)

Terminal Part Information

- Terminated Lead: Serviced as Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Serviced as Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

F106R Side Air Bag - Right

Pin	Wire	Circuit	Function
1	0.5 PU	3066	Side Air Bag +
2	0.5 TN/BK	3067	Side Air Bag -

F107 STEERING WHEEL AIR BAG X1

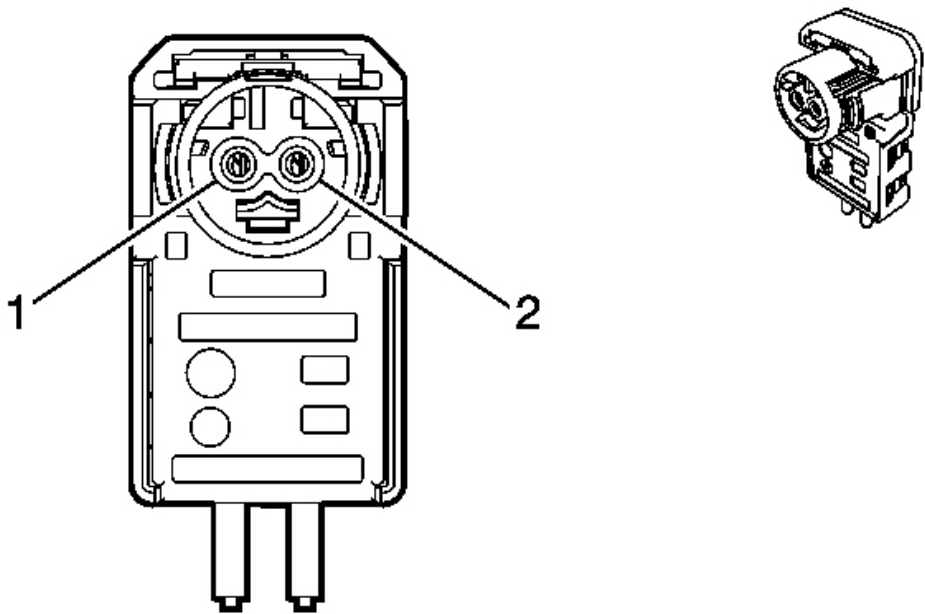


Fig. 38: F107 Steering Wheel Air Bag X1
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Steering Wheel Module Coil
- OEM Connector: 19153417
- Service Connector: Pending
- Description: 2-Way F (L-BU)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 19153417
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 19153417
- Core/Insulation Crimp: Not Available

F107 Steering Wheel Air Bag X1

Pin	Wire	Circuit	Function
1	0.35 TN	3021	Steering Wheel Module - Stage 1 - High Control
2	0.35 BN	3020	Steering Wheel Module - Stage 1 - Low Control

F107 STEERING WHEEL AIR BAG X2

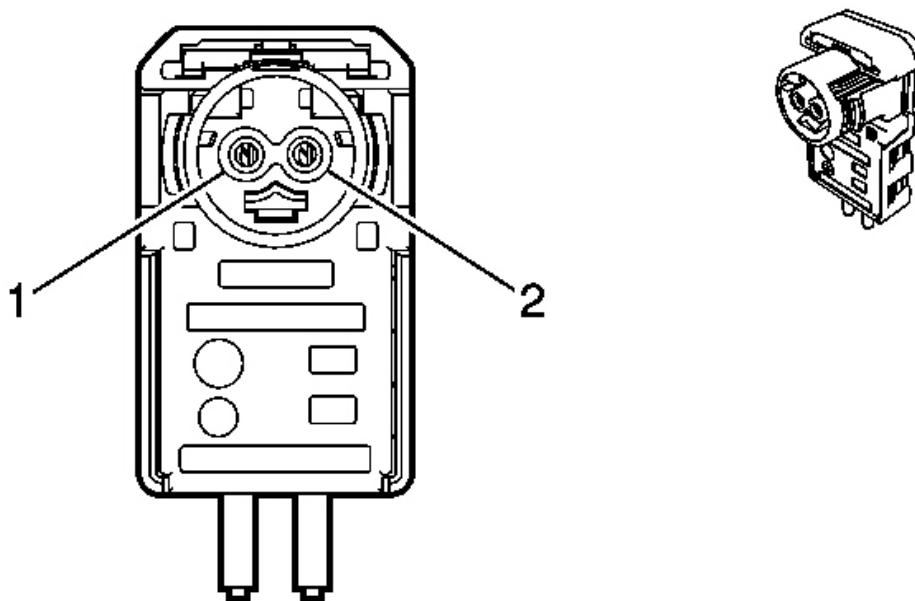


Fig. 39: F107 Steering Wheel Air Bag X2
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Steering Wheel Module Coil
- OEM Connector: 19153418
- Service Connector: Pending
- Description: 2-Way F (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 19153418
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 19153418
- Core/Insulation Crimp: Not Available

F107 Steering Wheel Air Bag X2

Pin	Wire	Circuit	Function
			Steering Wheel Module - Stage 2 - High

1	0.35 WH	3023	Control
2	0.35 PK	3022	Steering Wheel Module - Stage 2 - Low Control

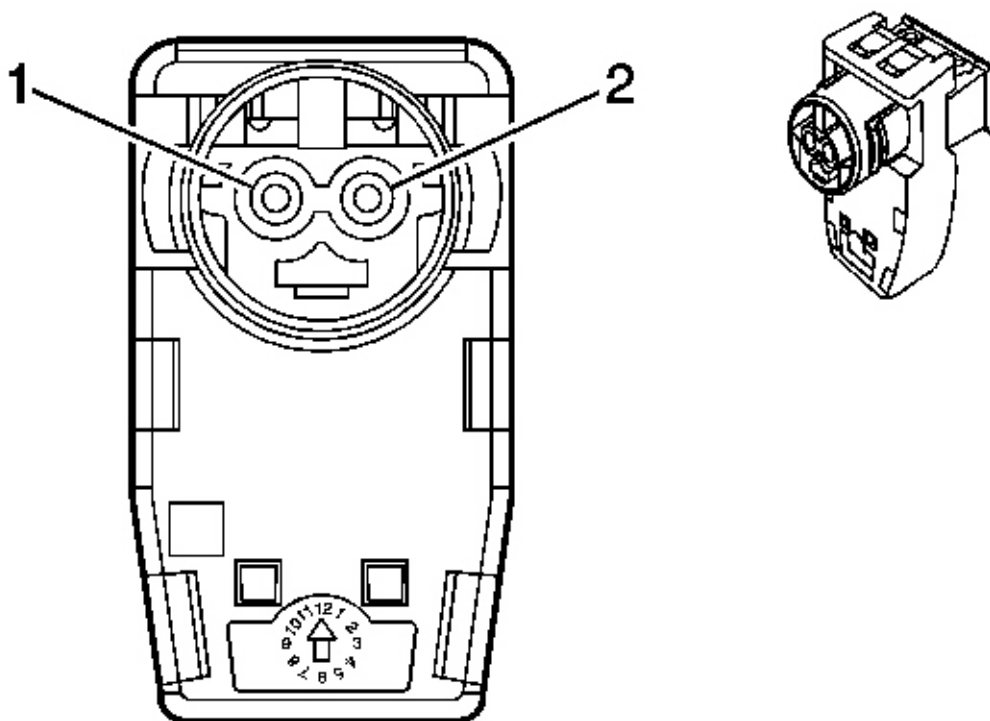
F112D SEAT BELT RETRACTOR PRETENSIONER - DRIVER

Fig. 40: F112D Seat Belt Retractor Pretensioner - Driver
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: PPI0001460
- Service Connector: 19180246
- Description: 2-Way F 90 degree Squib, Unsealed (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - PPI0001460

- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - PPI0001460
- Core/Insulation Crimp: Not Available

F112D Seat Belt Retractor Pretensioner - Driver

Pin	Wire	Circuit	Function
1	0.5 TN/WH	3477	Driver Seat Belt Pretensioner +
2	0.5 PK/BK	3478	Driver Seat Belt Pretensioner -

F112P SEAT BELT RETRACTOR PRETENSIONER - PASSENGER

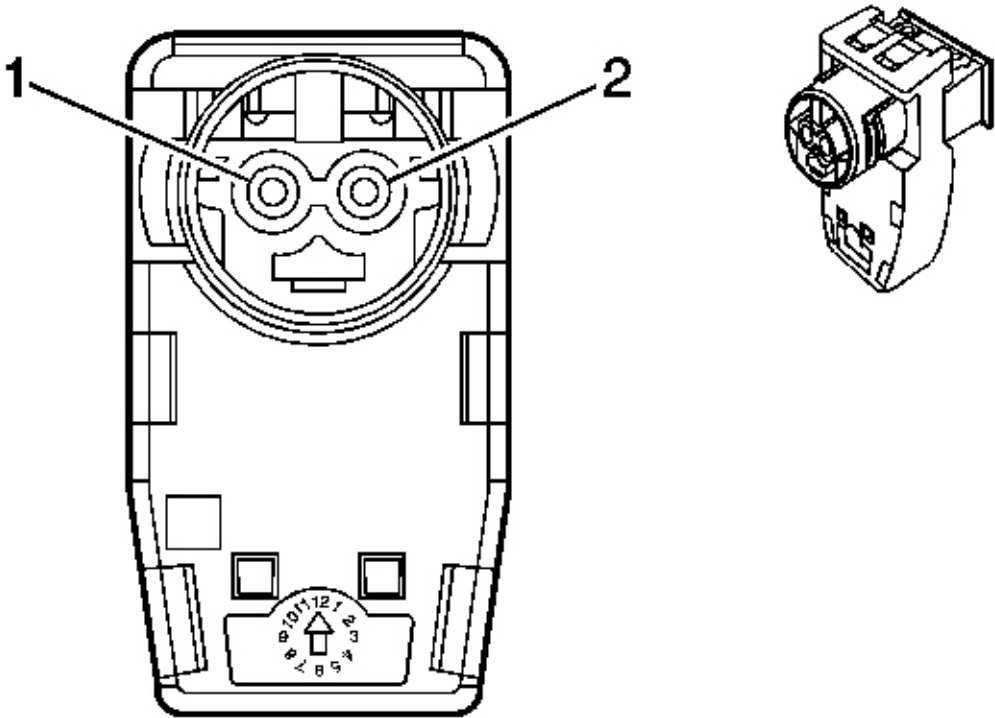


Fig. 41: F112P Seat Belt Retractor Pretensioner - Passenger
Courtesy of GENERAL MOTORS CORP.

- Harness: Body
- OEM Connector: PPI0001460
- Service Connector: 19180246
- Description: 2-Way F 90 degree Squib, Unsealed (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - PPI0001460
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - PPI0001460
- Core/Insulation Crimp: Not Available

F112P Seat Belt Retractor Pretensioner - Passenger

Pin	Wire	Circuit	Function
1	0.5 L-GN	3475	Passenger Seat Belt Pretensioner +
2	0.5 PK	3476	Passenger Seat Belt Pretensioner -

F113D SEAT BELT ANCHOR PRETENSIONER - DRIVER

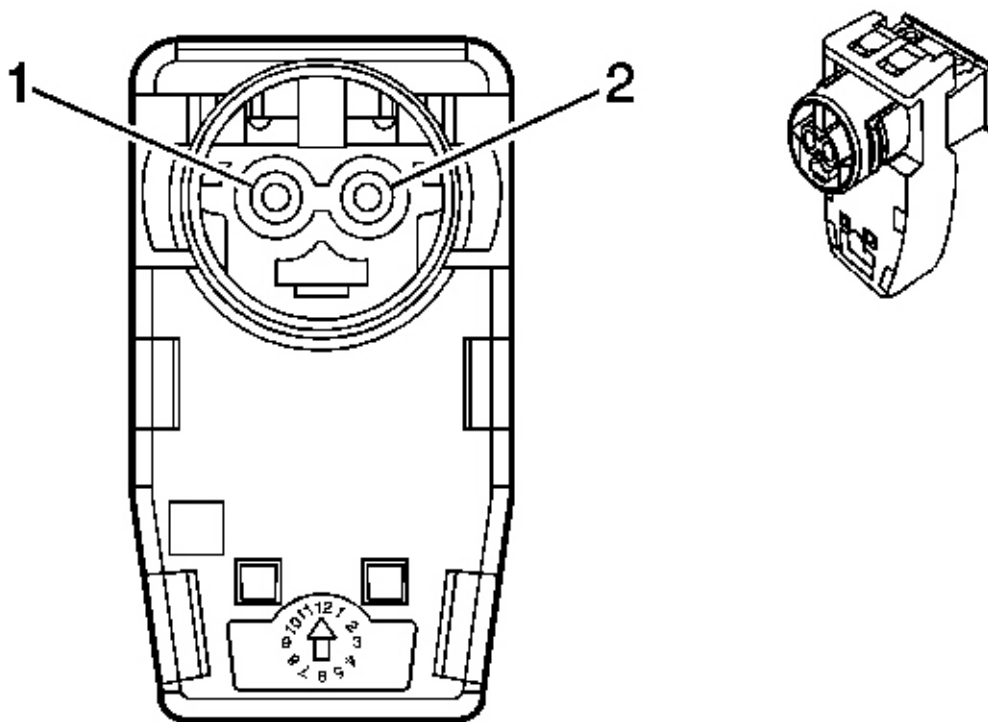


Fig. 42: F113D Seat Belt Anchor Pretensioner - Driver
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: PPI0001460
- Service Connector: 19180246
- Description: 2-Way F 90 degree Squib, Unsealed (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - PPI0001460
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - PPI0001460
- Core/Insulation Crimp: Not Available

F113D Seat Belt Anchor Pretensioner - Driver

Pin	Wire	Circuit	Function
1	0.5 L-BU	3481	Driver Seat Belt Pretensioner +
2	0.5 D-GN	3482	Driver Seat Belt Pretensioner -

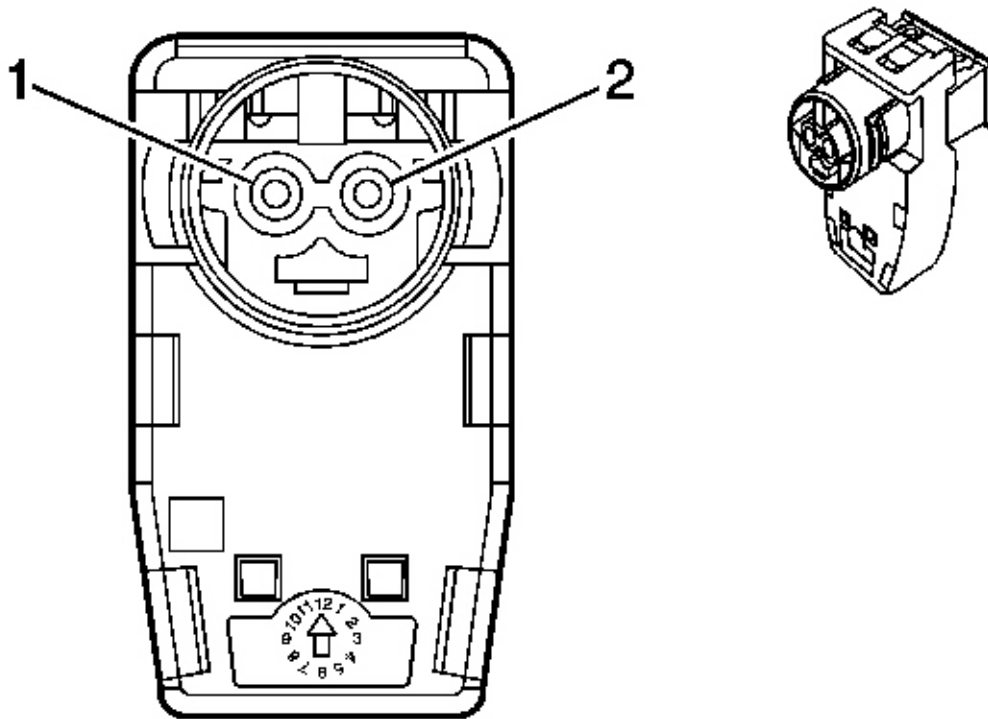
F113P SEAT BELT ANCHOR PRETENSIONER - PASSENGER

Fig. 43: F113P Seat Belt Anchor Pretensioner - Passenger
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passsenger Seat Cushion
- OEM Connector: PPI0001460
- Service Connector: 19180246
- Description: 2-Way F 90 degree Squib, Unsealed (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - PPI0001460
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - PPI0001460
- Core/Insulation Crimp: Not Available

F113P Seat Belt Anchor Pretensioner - Passenger

Pin	Wire	Circuit	Function
1	0.5 BN	3479	Passenger Seat Belt Pretensioner +
2	0.5 D-GN/WH	3480	Passenger Seat Belt Pretensioner -

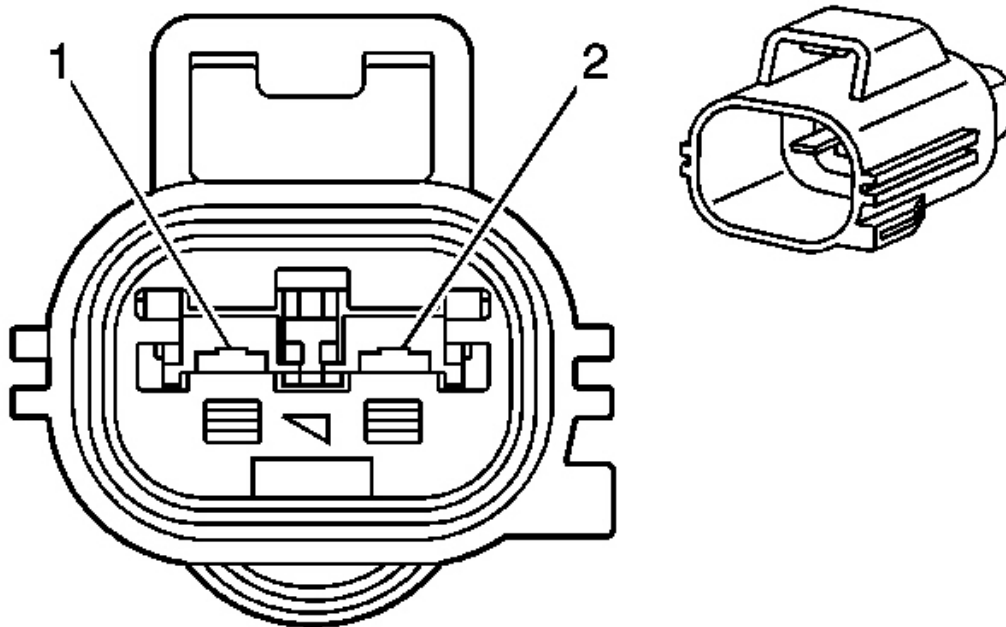
G6 BRAKE BOOSTER PUMP - AUXILIARY

Fig. 44: G6 Brake Booster Pump - Auxiliary
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7282-5575-10

- Service Connector: 19115602
- Description: 2-Way M 2.8 Series, Sealed (D-GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-5 (PU)
- Terminal/Tray: 7114-4151-02/9
- Core/Insulation Crimp: C/1

G6 Brake Booster Pump - Auxiliary

Pin	Wire	Circuit	Function
1	1 OG	1470	Brake Booster Pump Motor Supply Voltage
2	1 BK	450	Ground

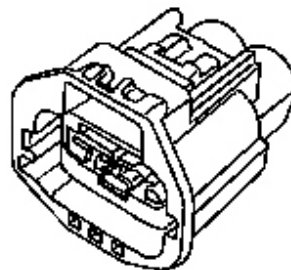
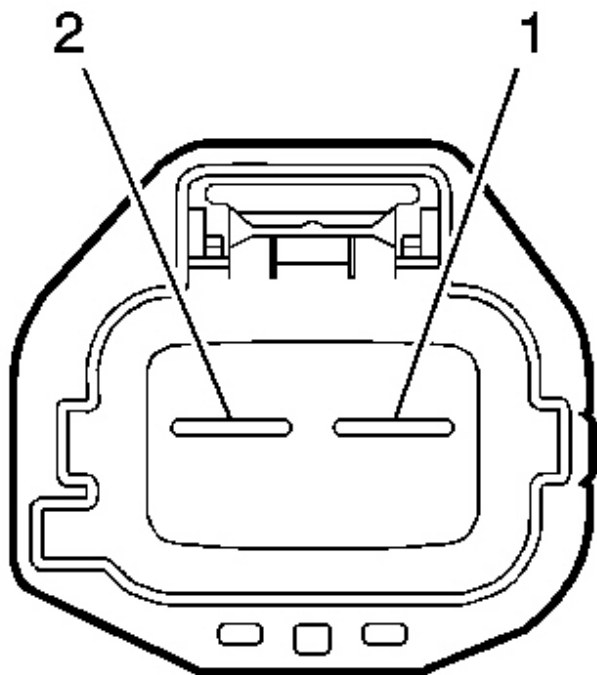
G10 COOLING FAN MOTOR (LAF)

Fig. 45: G10 Cooling Fan Motor (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Cooling Fan
- OEM Connector: 7283-5596-10
- Service Connector: 88953307
- Description: 2-Way F YESC/USCAR Class III (D-GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-4142-02/10
- Core/Insulation Crimp: A/3

G10 Cooling Fan Motor (LAF)

Pin	Wire	Circuit	Function
1	3 GY	532	Cooling Fan Motor Supply Voltage
2	3 BK	1150	Ground

G10L COOLING FAN MOTOR - LEFT (LF1)

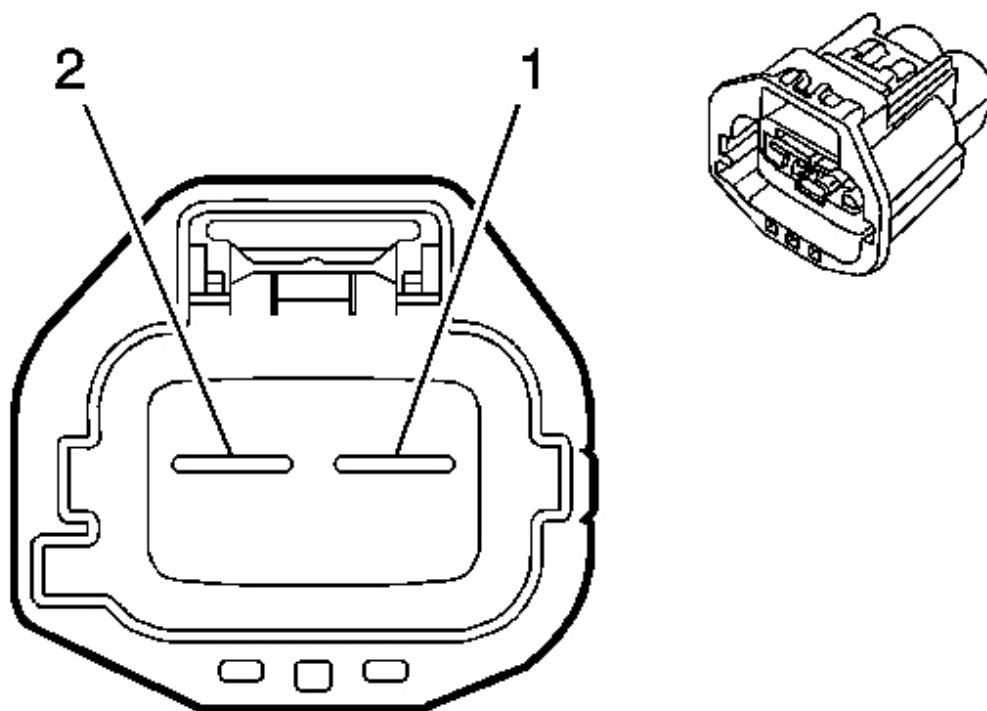


Fig. 46: G10L Cooling Fan Motor - Left (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM Connector: 7283-5596-10
- Service Connector: 88953307
- Description: 2-Way F YESC/USCAR Class III (D-GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-4141-02/10
- Core/Insulation Crimp: 4/3

G10L Cooling Fan Motor - Left (LF1)

Pin	Wire	Circuit	Function
1	2 L-BU	409	Cooling Fan Motor Supply Voltage
2	2 WH	504	Cooling Fan Low Reference

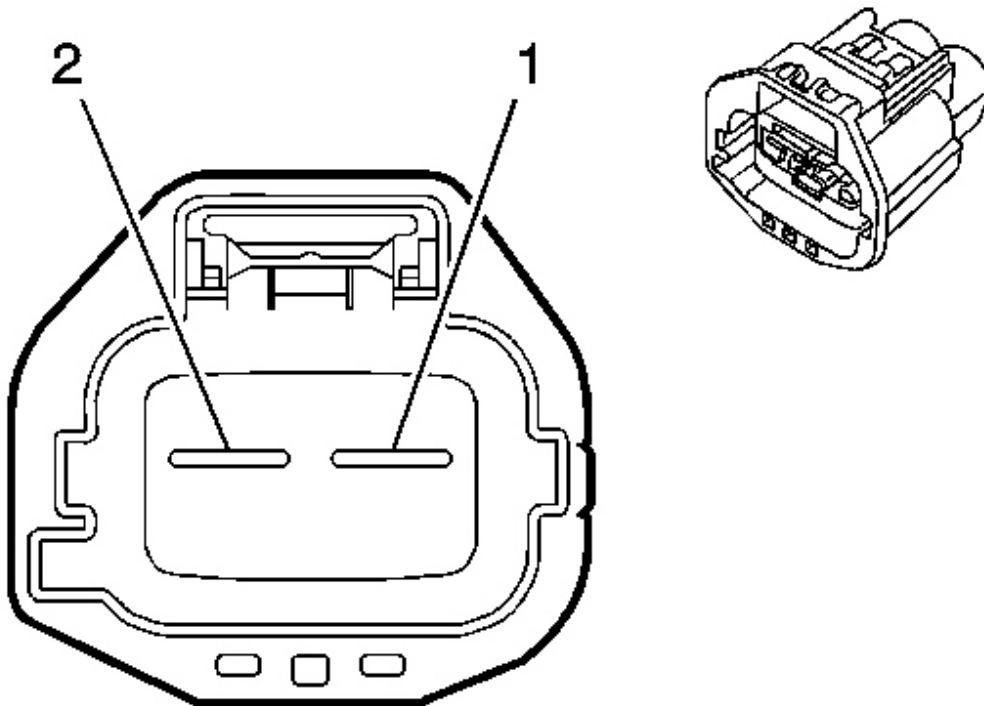
G10R COOLING FAN MOTOR - RIGHT (LF1)

Fig. 47: G10R Cooling Fan Motor - Right (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Cooling Fan
- OEM Connector: 7283-5596-10
- Service Connector: 88953307
- Description: 2-Way F YESC/USCAR Class III (D-GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-4141-02/10
- Core/Insulation Crimp: 4/3

G10R Cooling Fan Motor - Right (LF1)

Pin	Wire	Circuit	Function
1	2 GY	532	Cooling Fan Motor Supply Voltage
2	2 BK	1150	Ground

G13 GENERATOR X1**Terminal Part Information**

- Terminal: 12146365
- Core/Insulation Crimp: N/A
- Description: Ring Terminal

G13 Generator X1

Pin	Wire	Circuit	Function
A	19 RD	2	Battery Positive Voltage

G13 GENERATOR X2

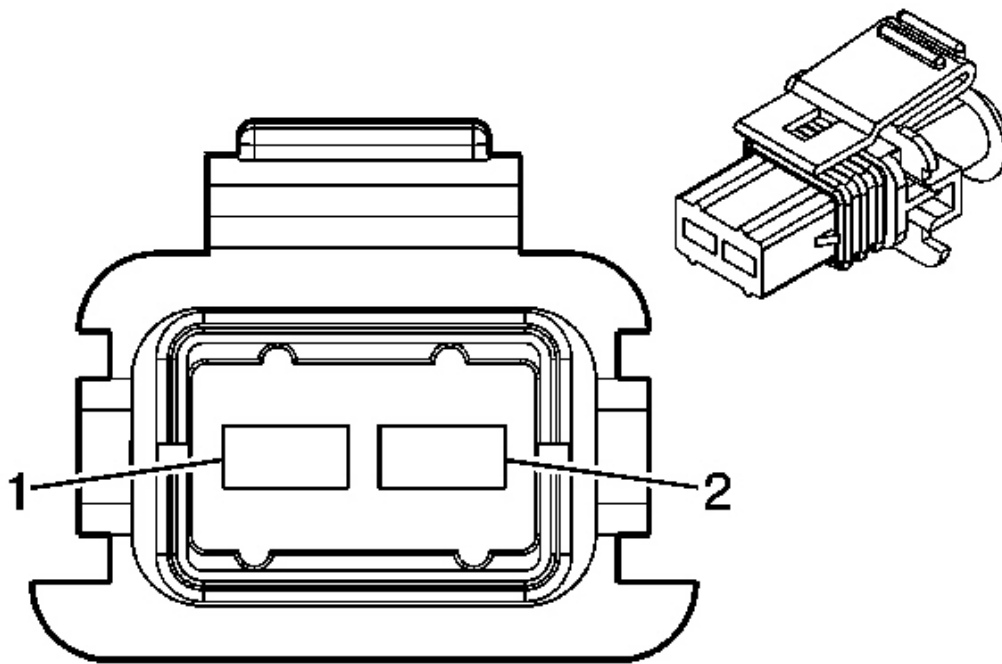


Fig. 48: G13 Generator X2

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 1928403137
- Service Connector: 89046837
- Description: 2-Way F Junior Power Timer Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-36
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 4-964286-1/16
- Core/Insulation Crimp: E/1

G13 Generator X2

Pin	Wire	Circuit	Function

1	0.5 BN	25	Charge Indicator Control/Charge Indicator Signal
2	0.5 GY	23	Generator Field Duty Cycle Signal

G18 HIGH PRESSURE FUEL PUMP

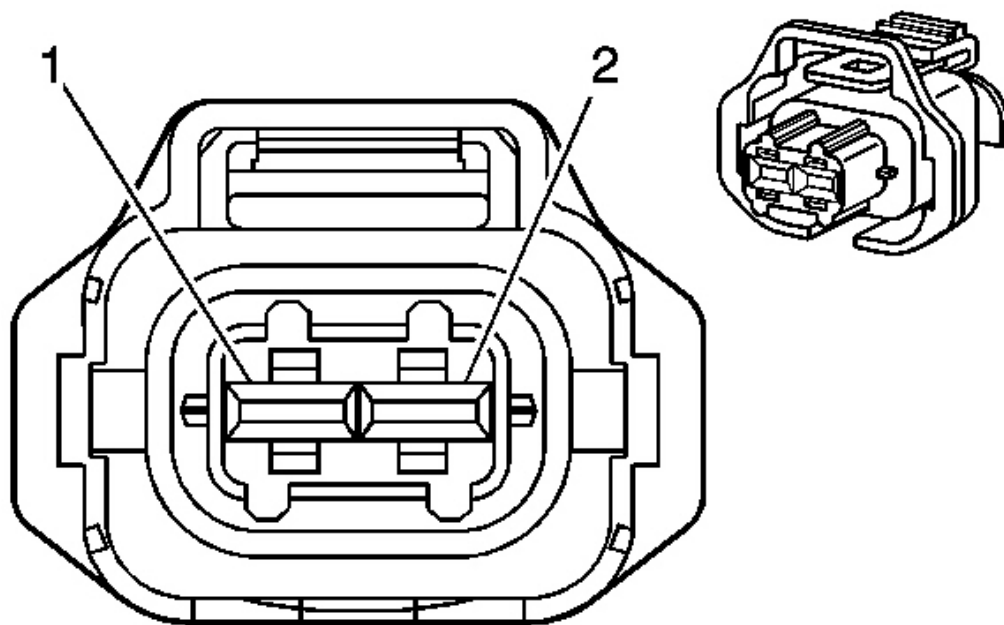


Fig. 49: G18 High Pressure Fuel Pump
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 1928403874
- Service Connector: 88988963
- Description: 2-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-561
- Diagnostic Test Probe: J-35616-35 (VT)

- Terminal/Tray: 1928498056/8
- Core/Insulation Crimp: E/1

G18 High Pressure Fuel Pump

Pin	Wire	Circuit	Function
1	0.5 PU	7300	High Pressure Fuel Pump Actuator Low Control
2	0.5 YE	7301	High Pressure Fuel Pump Actuator High Control

2010 ELECTRICAL

Wiring Systems and Power Management - Component Locator - Component Connector End Views - Equinox & Terrain

COMPONENT CONNECTOR END VIEWS

M6 AIR TEMPERATURE DOOR ACTUATOR

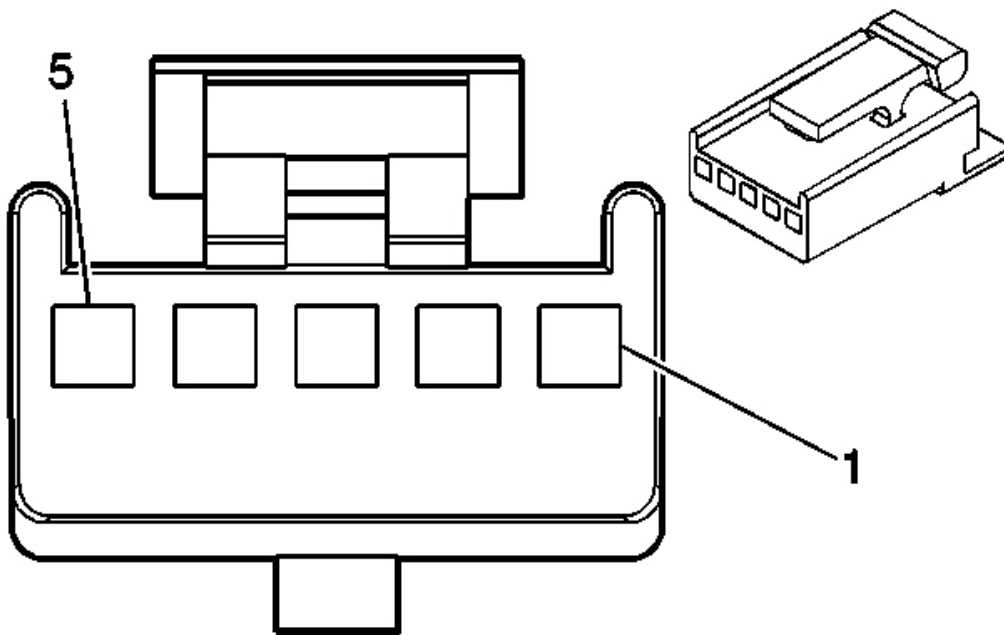


Fig. 1: M6 Air Temperature Door Actuator
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA HVAC
- OEM Connector: 12064982
- Service Connector: 12102633
- Description: 5-Way F Micro-Pack 100 Series (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 12031876-1
- Diagnostic Test Probe: J-35616-6 (BN)
- Terminal/Tray: 12146447/3
- Core/Insulation Crimp: E/C

M6 Air Temperature Door Actuator

Pin	Wire	Circuit	Function
1	0.35 YE	1791	Low Reference
2	0.35 L-BU	733	Air Temperature Door Position Signal
3	0.35 GY	598	5-Volt Reference
4	0.35 L-BU	1316	Air Temperature Door Control
5	0.35 D-BU	1199	Air Temperature Door Control

M8 BLOWER MOTOR

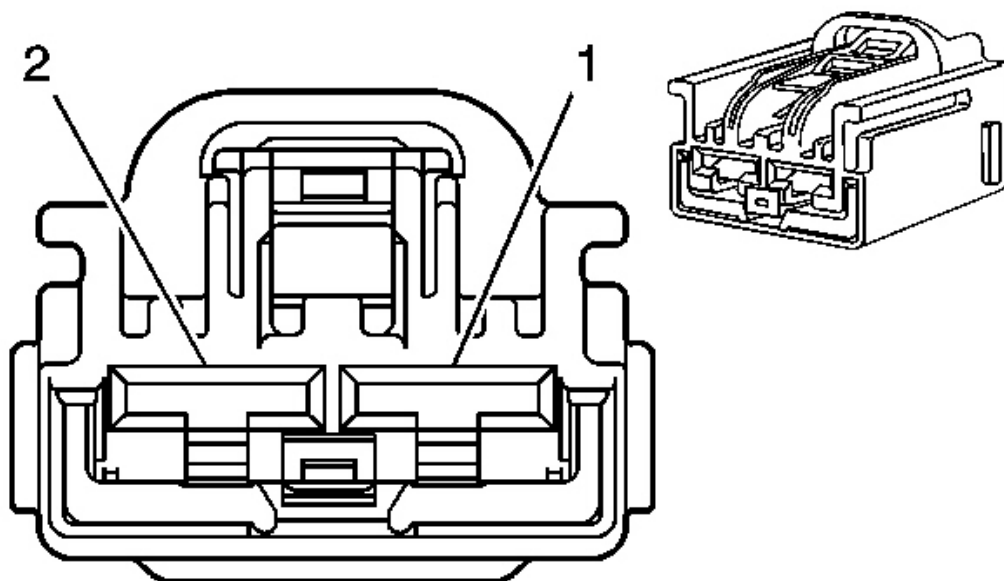


Fig. 2: M8 Blower Motor

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel

- OEM Connector: 7283-6458-40
- Service Connector: 88988507
- Description: 2-Way F Receptacle 6.3 Series (L-GY)

Terminal Part Information

- Terminated Lead: 13575289
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 7116-4122-02/10
- Core/Insulation Crimp: D/G

M8 Blower Motor

Pin	Wire	Circuit	Function
1	5 OG	5987	Low Reference
2	5 PU	65	Blower Motor Supply Voltage

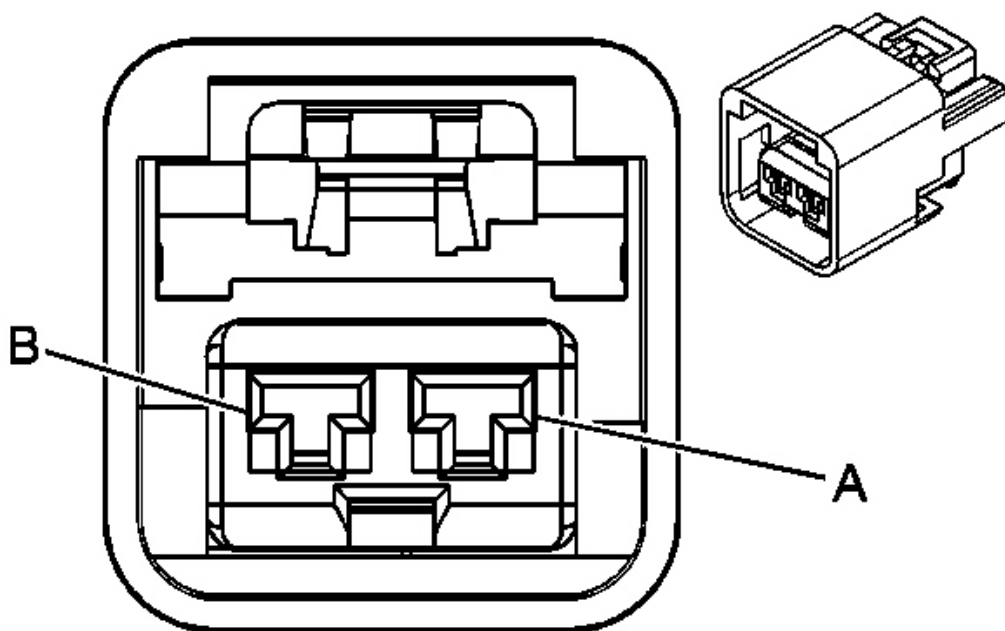
M17 LIFTGATE MOTOR ASSEMBLY (TB5)

Fig. 3: M17 Liftgate Motor Assembly (TB5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 15326870
- Service Connector: 88953160
- Description: 2-Way F GT 280 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: F/D

M17 Liftgate Motor Assembly (TB5)

Pin	Wire	Circuit	Function
A	3 WH	5798	Liftgate Motor Open Control
B	3 BN/WH	5799	Liftgate Motor Close Control

M37 MODE DOOR ACTUATOR

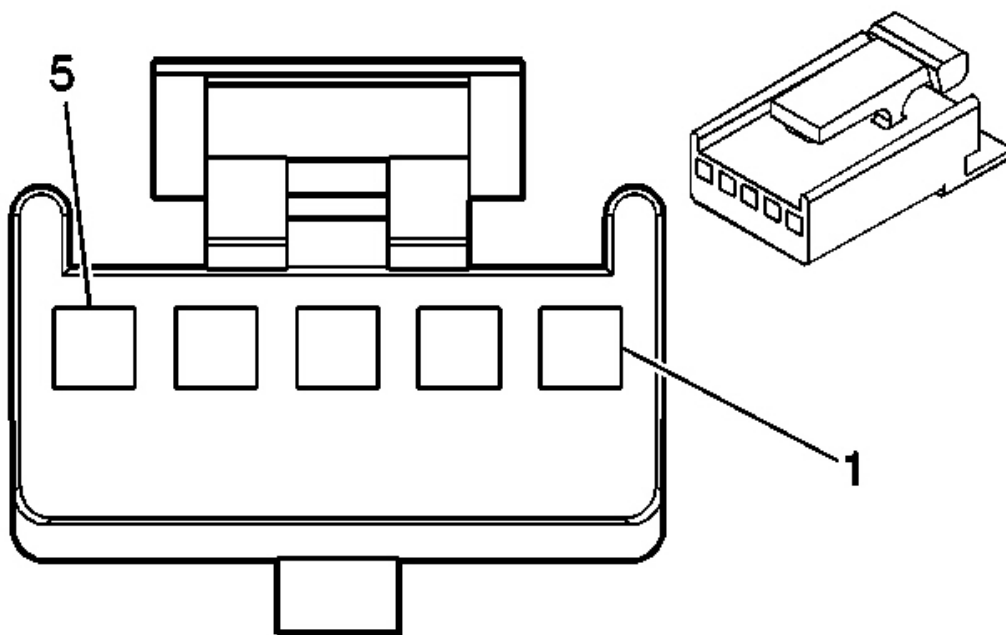


Fig. 4: M37 Mode Door Actuator
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA HVAC
- OEM Connector: 12064982
- Service Connector: 12102633
- Description: 5-Way F Micro-Pack 100 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12031876-1
- Diagnostic Test Probe: J-35616-6 (BN)
- Terminal/Tray: 12146447/3
- Core/Insulation Crimp: E/C

M37 Mode Door Actuator

Pin	Wire	Circuit	Function
1	0.35 YE	1791	Low Reference

2	0.35 L-GN	2275	Mode Door Position Signal
3	0.35 GY	598	5-Volt Reference
4	0.35 WH	119	Mode Door Control
5	0.35 TN	2273	Mode Door Control

M45 REAR WIPER MOTOR

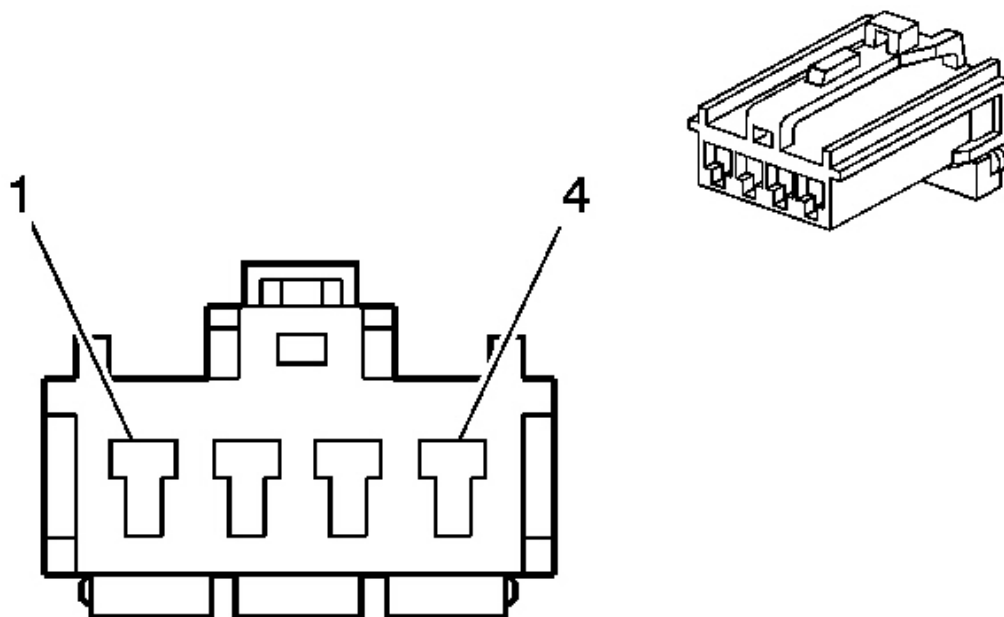


Fig. 5: M45 Rear Wiper Motor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM: 7123-8345
- Service: Pending
- Description: 4-Way F (WH)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247

- Diagnostic Test Probe: J-35616-33 (YE)
- Terminal/Tray: 7116-1474/10
- Core/Insulation Crimp: E/A

M45 Rear Wiper Motor

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	1 RD/WH	3040	Battery Positive Voltage
3	1 BK	2550	Ground
4	1 WH	393	Rear Window Wiper Motor Control

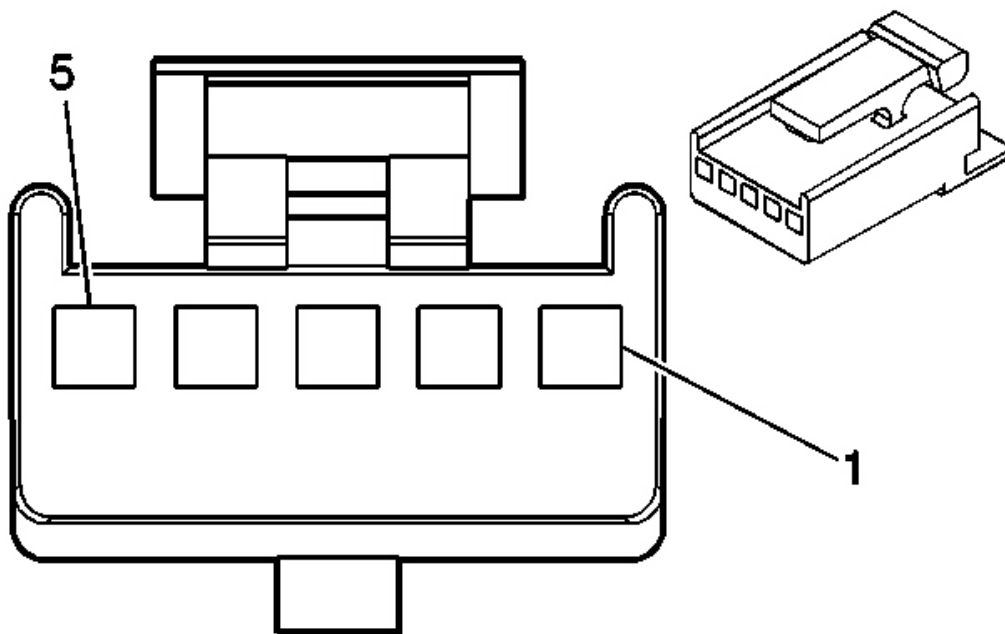
M46 AIR RECIRCULATION DOOR MOTOR

Fig. 6: M46 Air Recirculation Door Motor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA HVAC
- OEM Connector: 12064982

- Service Connector: 12102633
- Description: 5-Way F Micro-Pack 100 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12031876-1
- Diagnostic Test Probe: J-35616-6 (BN)
- Terminal/Tray: 12146447/3
- Core/Insulation Crimp: E/C

M46 Air Recirculation Door Motor

Pin	Wire	Circuit	Function
1	0.35 YE	1791	Low Reference
2	0.35 PU	1838	Recirculation Door Position Signal
3	0.35 GY	598	5-Volt Reference
4	0.35 TN/BK	2274	Recirculation Door Control
5	0.35 D-GN	1614	Recirculation Door Control

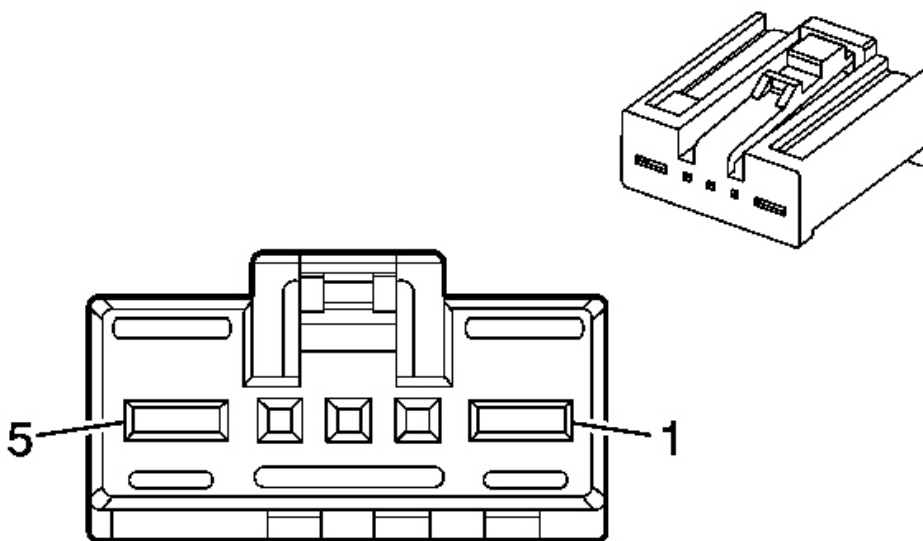
M50D SEAT FRONT VERTICAL MOTOR - DRIVER (AE8)

Fig. 7: M50D Seat Front Vertical Motor - Driver (AE8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 1379217-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way F MQS/MCP Mixed Series (BK)

Terminal Part Information

- Pins: 1, 5
- Terminated Lead: Service by Connector Assembly - 1379217-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 1379217-1
- Core/Insulation Crimp: Not Available
- Pins: 2, 4
- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

M50D Seat Front Vertical Motor - Driver (AE8)

Pin	Wire	Circuit	Function
1	3 D-GN	286	Driver Seat Front Vertical Motor Up Control
2	0.5 BN/WH	557	Front Vertical Seat Motor Position Sensor Signal
3	-	-	Not Used
4	0.5 OG/WH	3298	Memory Sensor High Reference (2) (LTZ or SLT)
5	3 D-BU	287	Driver Seat Front Vertical Motor Down Control

M51D SEAT HORIZONTAL MOTOR - DRIVER (AE8)

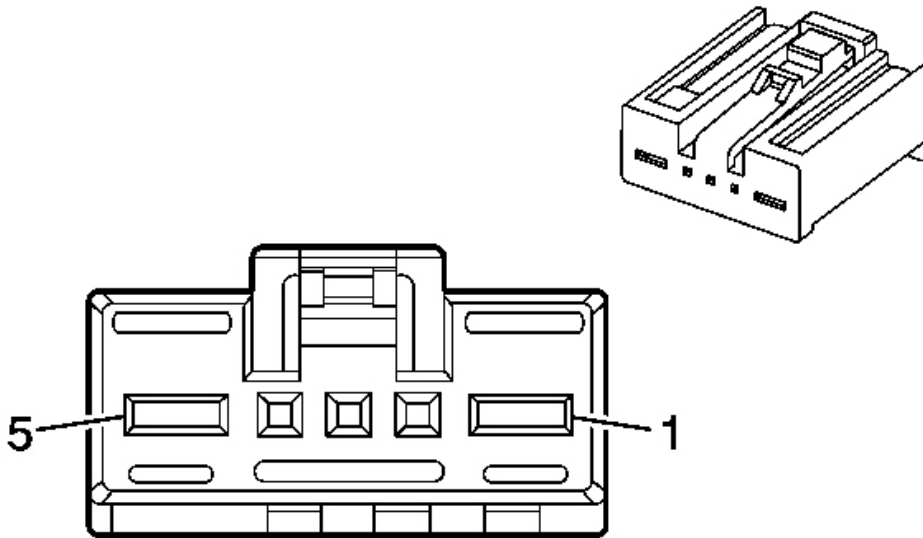


Fig. 8: M51D Seat Horizontal Motor - Driver (AE8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 1379217-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way F MQS/MCP Mixed Series (BK)

Terminal Part Information

- Pins: 1, 5
- Terminated Lead: Service by Connector Assembly - 1379217-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 1379217-1
- Core/Insulation Crimp: Not Available
- Pins: 2, 4
- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

M51D Seat Horizontal Motor - Driver (AE8)

Pin	Wire	Circuit	Function
1	3 TN	285	Driver Seat Horizontal Motor Forward Control
2	0.5 D-GN	569	Horizontal Seat Motor Position Sensor Signal (LTZ or SLT)
3	-	-	Not Used
4	0.5 OG/WH	3298	Memory Sensor High Reference (2) (LTZ or SLT)
5	3 L-GN	284	Driver Seat Horizontal Motor Rearward Control

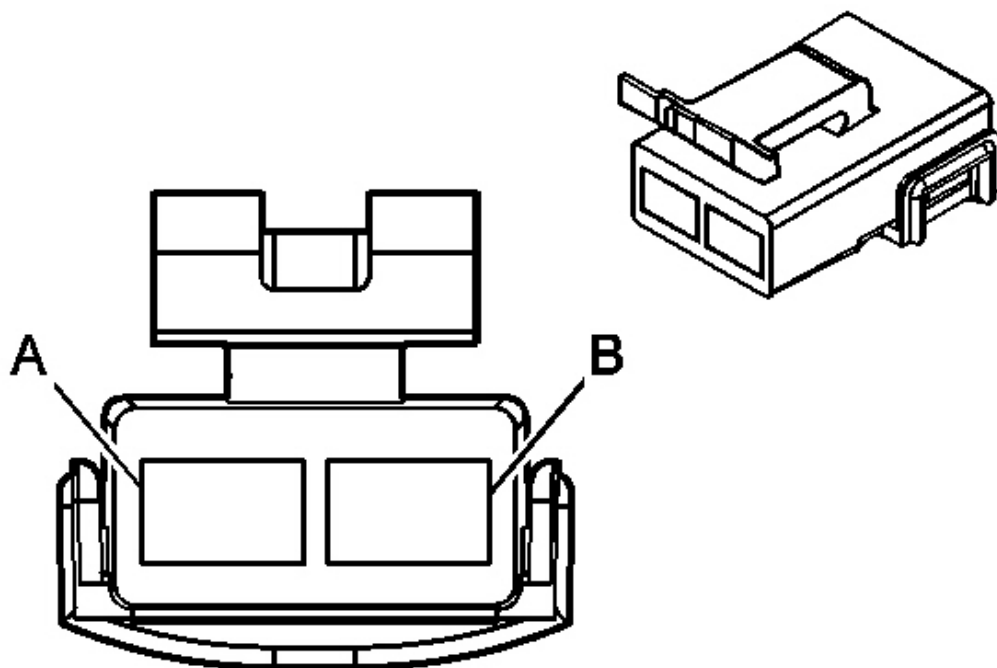
M52D SEAT LUMBAR SUPPORT HORIZONTAL MOTOR - DRIVER

Fig. 9: M52D Seat Lumbar Support Horizontal Motor - Driver
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Back
- OEM Connector: 12020556
- Service Connector: 12101820
- Description: 2-Way F Metri-Pack 480 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-40 (BU)
- Terminal/Tray: 12015860/4
- Core/Insulation Crimp: C/A

M52D Seat Lumbar Support Horizontal Motor - Driver

Pin	Wire	Circuit	Function
A	0.8 PK	610	Driver Seat Lumbar Motor Rearward Control
B	0.8 D-BU	611	Driver Seat Lumbar Motor Forward Control

M55D SEAT REAR VERTICAL MOTOR - DRIVER

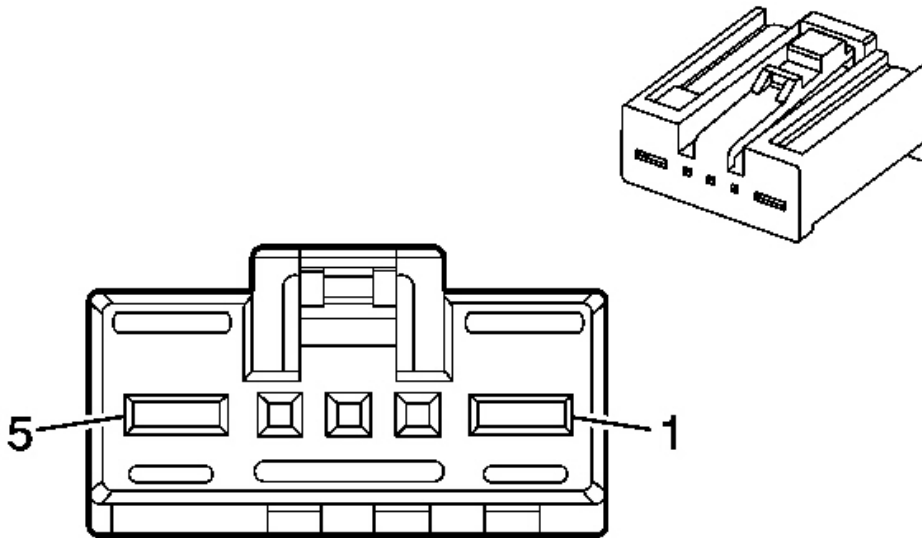


Fig. 10: M55D Seat Rear Vertical Motor - Driver
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 1379217-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way F MQS/MCP Mixed Series (BK)

Terminal Part Information

- Pins: 1, 5
- Terminated Lead: Service by Connector Assembly - 1379217-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 1379217-1
- Core/Insulation Crimp: Not Available
- Pins: 2, 4
- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

M55D Seat Rear Vertical Motor - Driver

Pin	Wire	Circuit	Function
1	3 L-BU	283	Driver Seat Rear Vertical Motor Down Control
2	0.5 TN	568	Rear Vertical Seat Motor Position Sensor Signal
3	-	-	Not Used
4	0.5 OG/WH	3298	Memory Sensor High Reference (2)
5	3 YE	282	Driver Seat Rear Vertical Motor Up Control

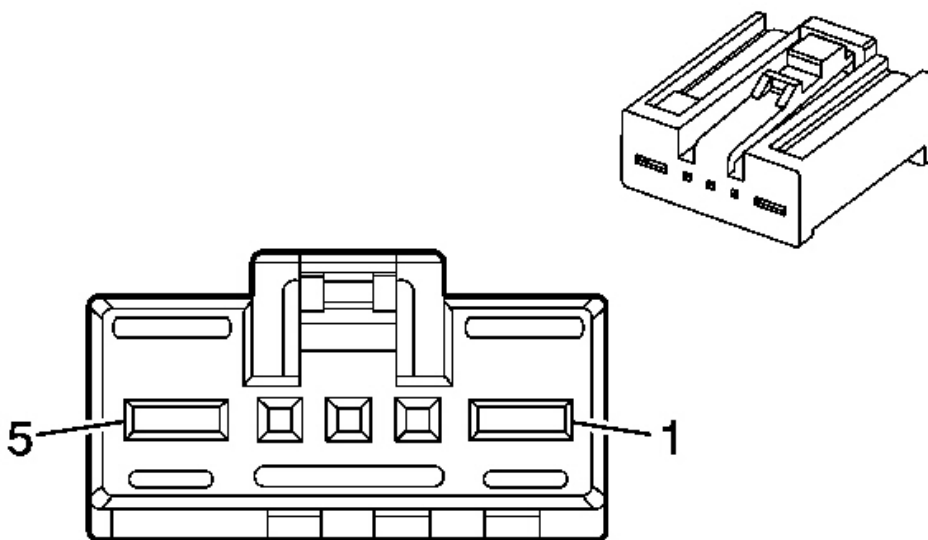
M56D SEAT RECLINE MOTOR - DRIVER (AE8)

Fig. 11: M56D Seat Recline Motor - Driver (AE8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Back
- OEM Connector: 1379217-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way F MQS/MCP Mixed Series (BK)

Terminal Part Information

- Pins: 1, 5
- Terminated Lead: Service by Connector Assembly - 1379217-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 1379217-1
- Core/Insulation Crimp: Not Available
- Pins: 2, 4
- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

M56D Seat Recline Motor - Driver (AE8)

Pin	Wire	Circuit	Function
1	3 L-BU	277	Driver Seat Recline Motor Rearward Control
2	0.5 WH/BK	570	Driver Seat Recline Motor Position Sensor Signal (LTZ or SLT)
3	-	-	Not Used
4	0.5 OG/WH	3298	Memory Sensor High Reference (2) (LTZ or SLT)
5	3 L-GN	276	Driver Seat Recline Motor Forward Control

M64 STARTER MOTOR X1

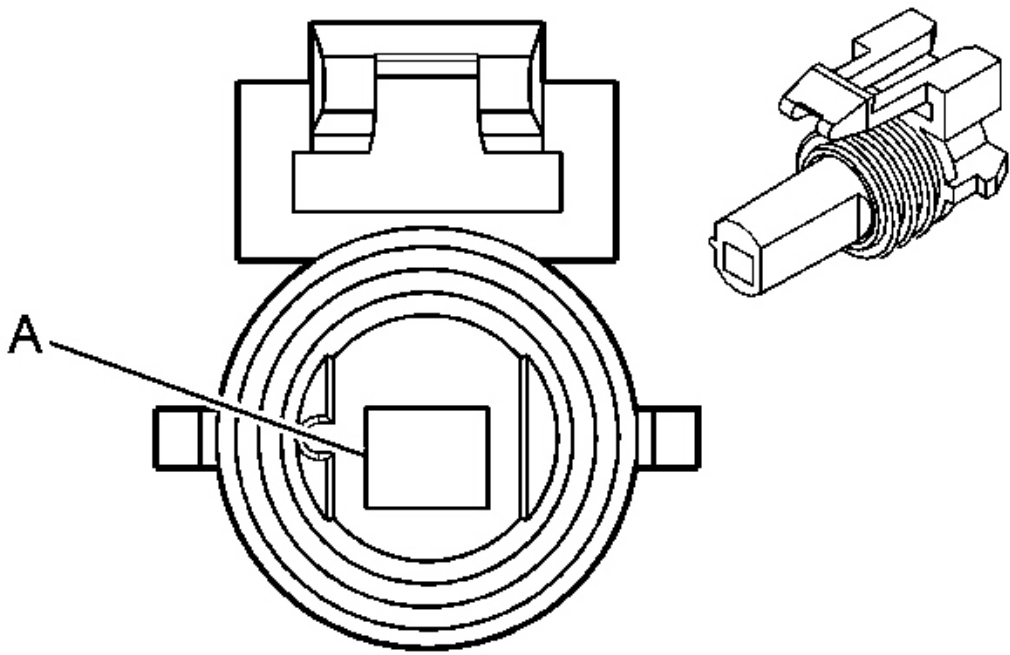


Fig. 12: M64 Starter Motor X1
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12089916
- Service Connector: 12101763
- Description: 1-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12077413/4
- Core/Insulation Crimp: F/5

M64 Starter Motor X1

Pin	Wire	Circuit	Function

A	3 PU	6	Starter Solenoid Crank Voltage
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M64 STARTER MOTOR X2 (POSITIVE BATTERY CABLE) (LAF)

Terminal Part Information			
• Harness: Positive Battery Cable • Terminal: 12146716 • Core/Insulation Crimp: N/A • Description: Ring Terminal			

M64 Starter Motor X2 (Positive Battery Cable) (LAF)

Pin	Wire	Circuit	Function
A	32 RD	1	Battery Positive Voltage

M64 STARTER MOTOR X2 (POSITIVE BATTERY CABLE) (LF1)

Terminal Part Information			
• Harness: Positive Battery Cable • Terminal: 7003-1849-02 • Core/Insulation Crimp: N/A • Description: Ring Terminal			

M64 Starter Motor X2 (Positive Battery Cable) (LF1)

Pin	Wire	Circuit	Function
A	32 RD	1	Battery Positive Voltage

M64 STARTER MOTOR X2 (GENERATOR HARNESS) (LAF)

Terminal Part Information			
• Harness: Generator • Terminal: 15425095 • Core/Insulation Crimp: N/A • Description: Ring Terminal			

M64 Starter Motor X2 (Generator Harness) (LAF)

Pin	Wire	Circuit	Function
A	19 RD	2	Battery Positive Voltage

M64 STARTER MOTOR X2 (GENERATOR HARNESS) (LF1)

Terminal Part Information

- Harness: Generator
- Terminal: 7003-1849-02
- Core/Insulation Crimp: N/A
- Description: Ring Terminal

M64 Starter Motor X2 (Generator Harness) (LF1)

Pin	Wire	Circuit	Function
A	19 RD	2	Battery Positive Voltage

M69 SUNROOF MOTOR (CF5)

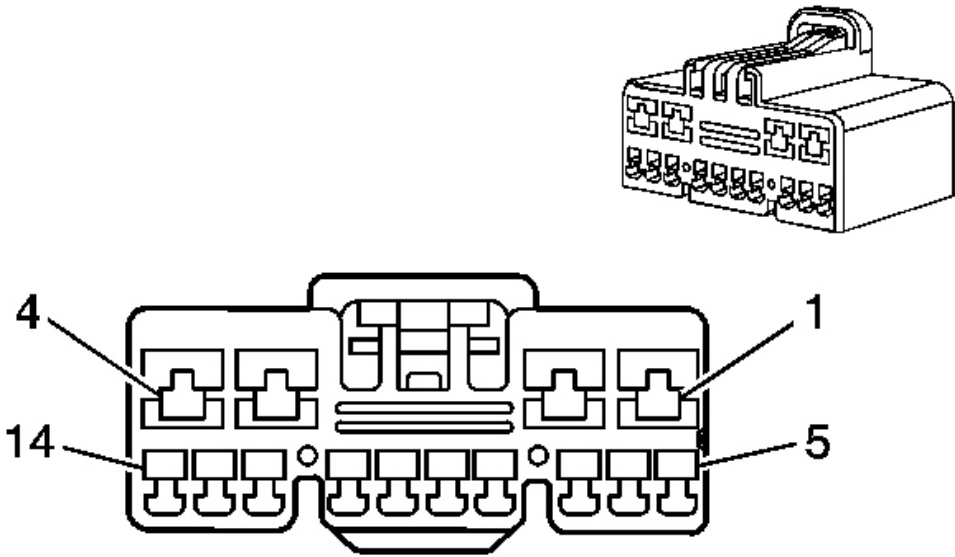


Fig. 13: M69 Sunroof Motor (CF5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Sunroof
- OEM: 7283-8398-40

- Service: 19179972
- Description: 14-Way F 64 2.8 YESC Series (L-GY)

Terminal Part Information

- Terminated Lead: Service by Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

M69 Sunroof Motor (CF5)

Pin	Wire	Circuit	Function
1	2 RD/WH	3540	Battery Positive Voltage
2-3	-	-	Not Used
4	0.35 BK	550	Ground
5-6	-	-	Not Used
7	0.35 PK	5027	Sunroof Switch Data 1
8	0.35 L-BU	128	Sunroof Switch Low Reference
9	0.35 PU	144	Sunroof Switch Open Vent Signal
10	0.35 D-BU	2075	Sunroof Switch Close Vent Signal
11	0.35 YE	6132	Local Interconnect Network 1
12-14	-	-	Not Used

M74D WINDOW MOTOR - DRIVER

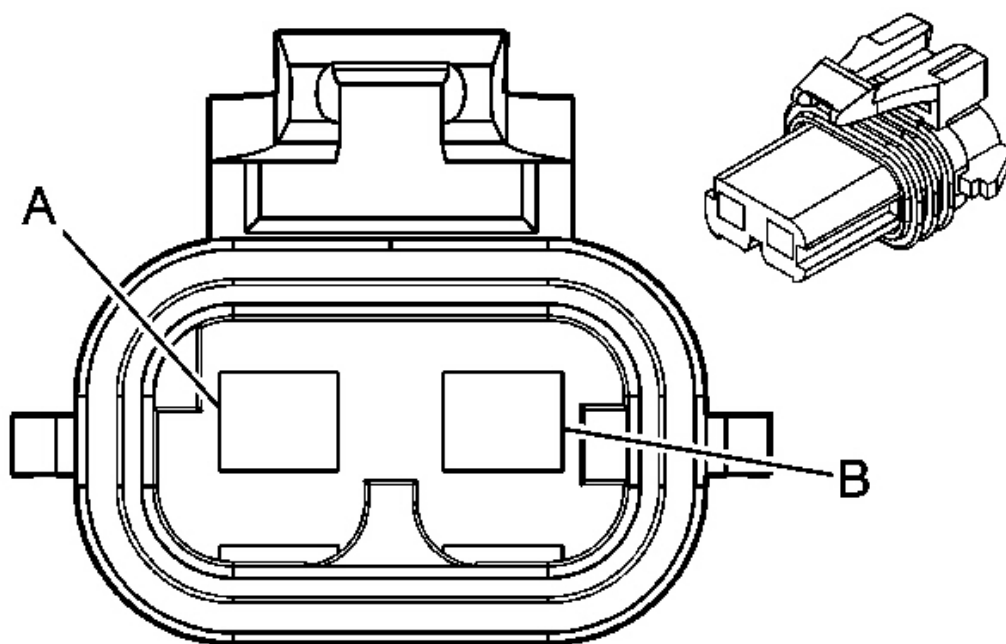


Fig. 14: M74D Window Motor - Driver
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door
- OEM Connector: 12129487
- Service Connector: 88988609
- Description: 2-Way F Metri-Pack 280 Series, Flexlock, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110845/4
- Core/Insulation Crimp: A/5

M74D Window Motor - Driver

Pin	Wire	Circuit	Function
A	2 D-BU	164	Power Window Motor Left Front Up Control

B	2 BN	165	Power Window Motor Left Front Down Control
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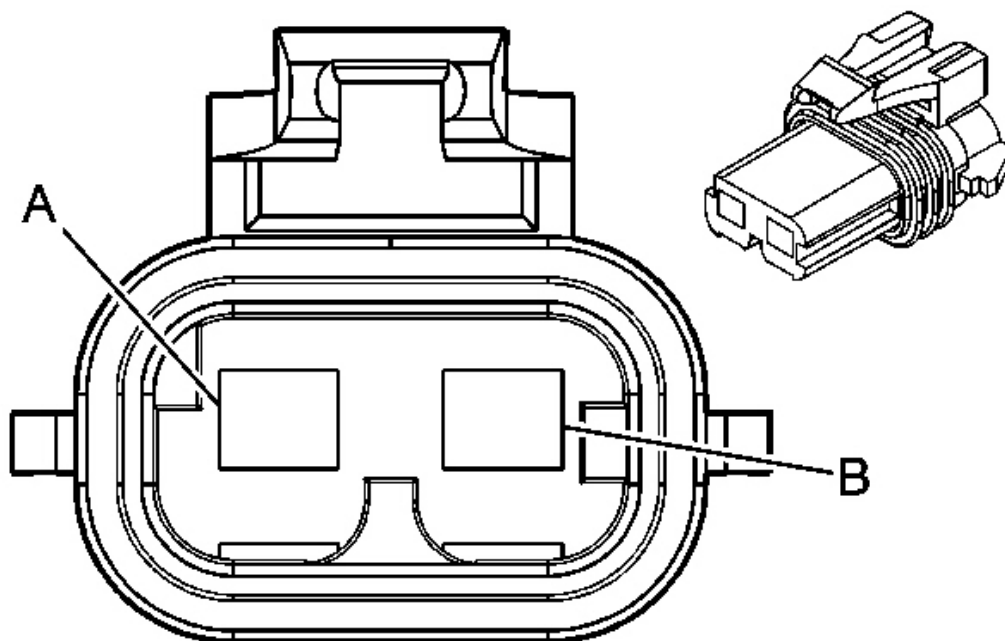
M74LR WINDOW MOTOR - LEFT REAR

Fig. 15: M74LR Window Motor - Left Rear
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Left Rear Door
- OEM Connector: 12129487
- Service Connector: 88988609
- Description: 2-Way F Metri-Pack 280 Series, Flexlock, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110845/4

- Core/Insulation Crimp: A/5

M74LR Window Motor - Left Rear

Pin	Wire	Circuit	Function
A	2 D-BU	668	Power Window Motor Left Rear Up Control
B	2 BN	669	Power Window Motor Left Rear Down Control

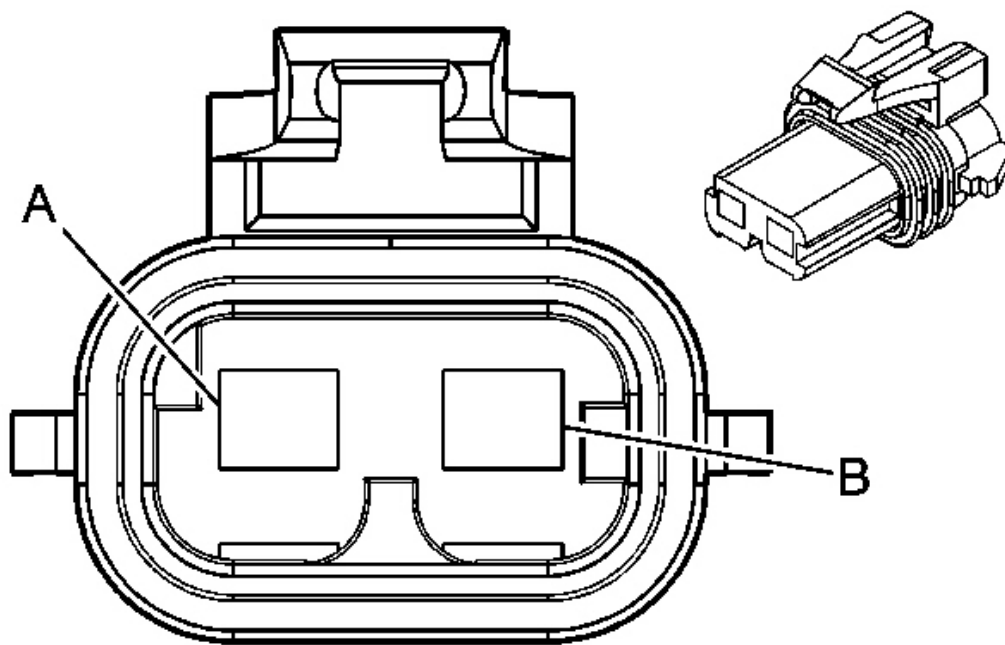
M74P WINDOW MOTOR - PASSENGER

Fig. 16: M74P Window Motor - Passenger
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door
- OEM Connector: 12129487
- Service Connector: 88988609
- Description: 2-Way F Metri-Pack 280 Series, Flexlock, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110845/4
- Core/Insulation Crimp: A/5

M74P Window Motor - Passenger

Pin	Wire	Circuit	Function
A	2 D-BU	666	Power Window Motor Right Front Up Control
B	2 BN	667	Power Window Motor Right Front Down Control

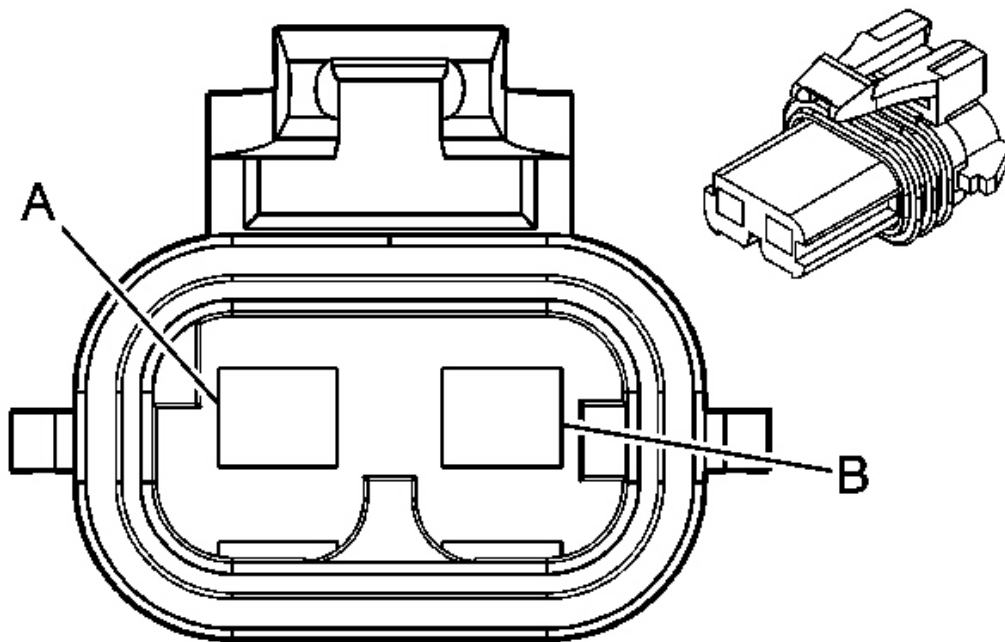
M74RR WINDOW MOTOR - RIGHT REAR

Fig. 17: M74RR Window Motor - Right Rear
Courtesy of GENERAL MOTORS CORP.

- Harness: Right Rear Door
- OEM Connector: 12129487
- Service Connector: 88988609
- Description: 2-Way F Metri-Pack 280 Series, Flexlock, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110845/4
- Core/Insulation Crimp: A/5

M74RR Window Motor - Right Rear

Pin	Wire	Circuit	Function
A	2 D-BU	670	Power Window Motor Right Rear Up Control
B	2 BN	671	Power Window Motor Right Rear Down Control

M75 WINDSHIELD WIPER MOTOR

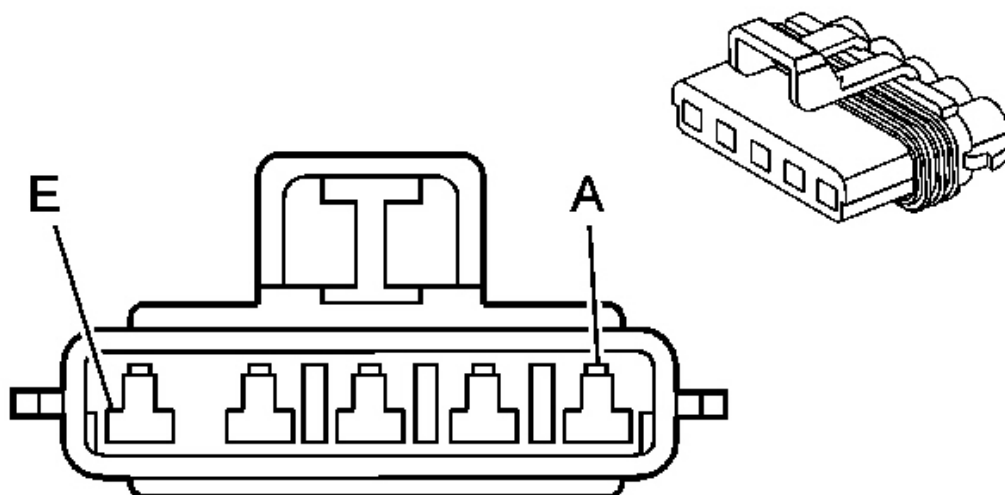


Fig. 18: M75 Windshield Wiper Motor
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 12084891
- Service Connector: 15305874
- Description: 5-Way F Metri-Pack 280 Series, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12077411/2
- Core/Insulation Crimp: 2/5

M75 Windshield Wiper Motor

Pin	Wire	Circuit	Function
A	-	-	Not Used
B	0.5 YE	196	Windshield Wiper Motor Park Switch Signal
C	1 BK	350	Ground
D	1 PU	92	Windshield Wiper Motor High Speed
E	1 D-GN	95	Windshield Wiper Motor Low Speed

M93 IGNITION CYLINDER LOCK CONTROL SOLENOID ACTUATOR

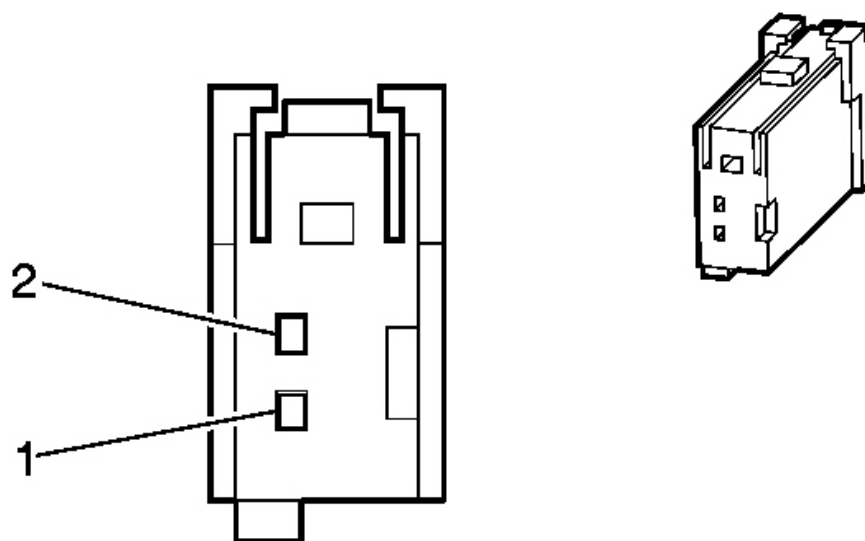


Fig. 19: M93 Ignition Cylinder Lock Control Solenoid Actuator
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: AIT2PB-02A-1AK
- Service Connector: 13314093
- Description: 2-Way F 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

M93 Ignition Cylinder Lock Control Solenoid Actuator

Pin	Wire	Circuit	Function
1	0.35 YE	143	Accessory Voltage

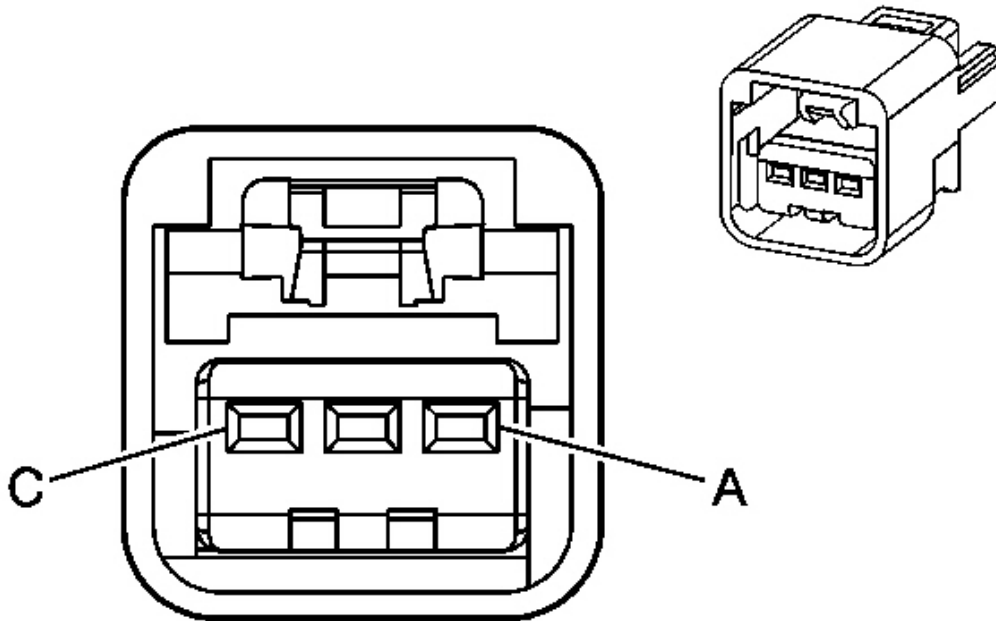
P2 TRANSMISSION SHIFT LEVER POSITION INDICATOR

Fig. 20: P2 Transmission Shift Lever Position Indicator
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

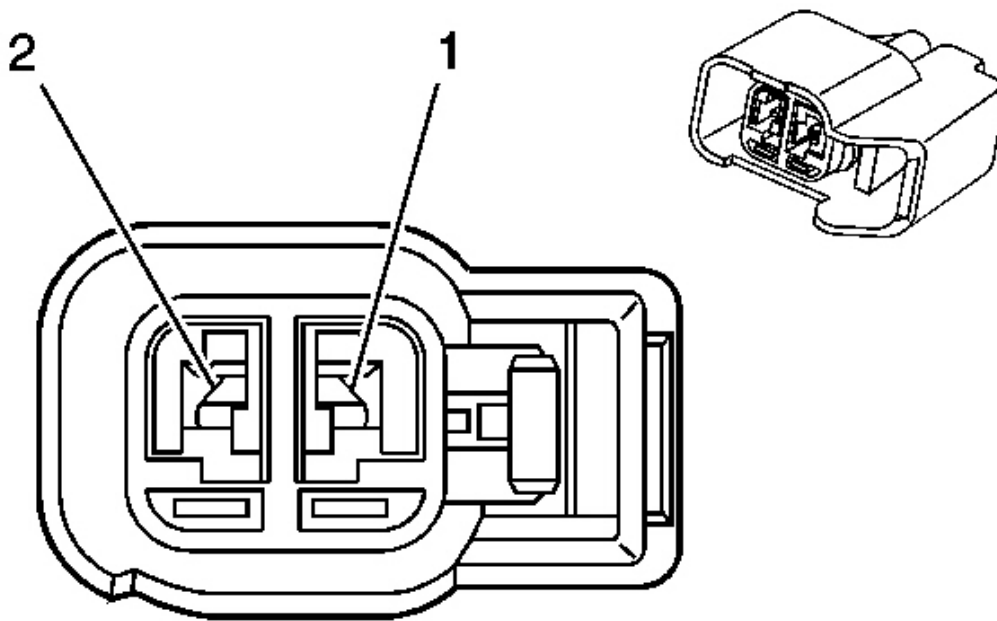
- Harness: Console
- OEM Connector: 15332132
- Service Connector: 88953364
- Description: 3-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: 13575479
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C

P2 Transmission Shift Lever Position Indicator

Pin	Wire	Circuit	Function
A	0.35 RD/BK	1002	RAP 1 Fuse Supply Voltage
B	0.35 D-BU	6133	Local Interconnect Network 2
C	0.5 BK/WH	651	Ground

P12A HORN - HIGH NOTE**Fig. 21: P12A Horn - High Note**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM Connector: E-6171-001
- Service Connector: 13314096
- Description: 2-Way F GT 150 Series, Sealed (BK)

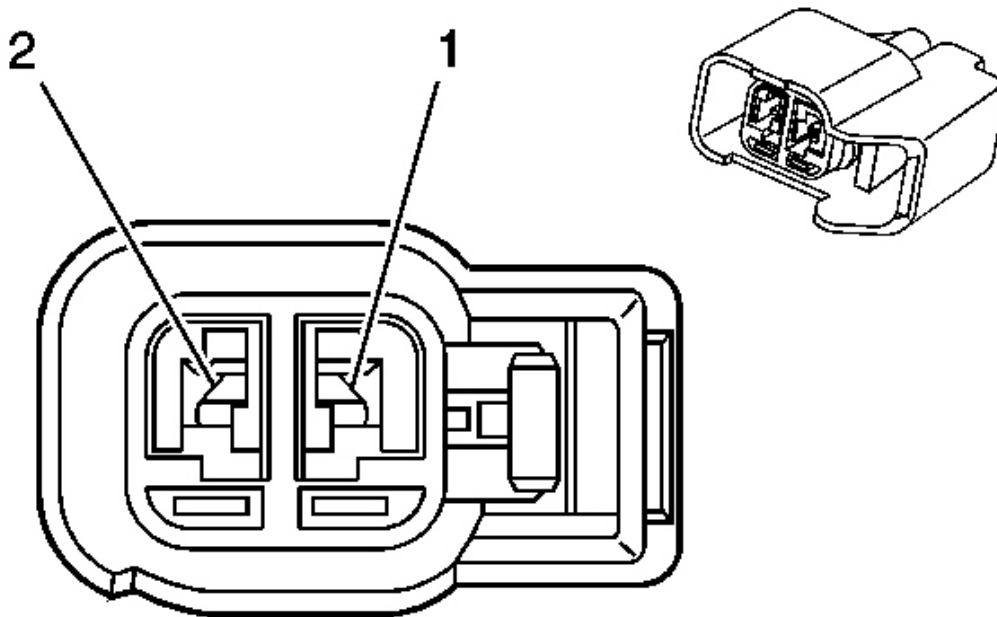
Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247

- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: 2/1

P12A Horn - High Note

Pin	Wire	Circuit	Function
1	0.8 BK	1150	Ground
2	0.8 D-GN	29	Horn Control

P12B HORN - LOW NOTE**Fig. 22: P12B Horn - Low Note**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM Connector: E-6171-001
- Service Connector: 13314096
- Description: 2-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: 2/1

P12B Horn - Low Note

Pin	Wire	Circuit	Function
1	0.8 BK	1150	Ground
2	0.8 D-GN	29	Horn Control

P14 PASSENGER AIR BAG DISABLE INDICATOR

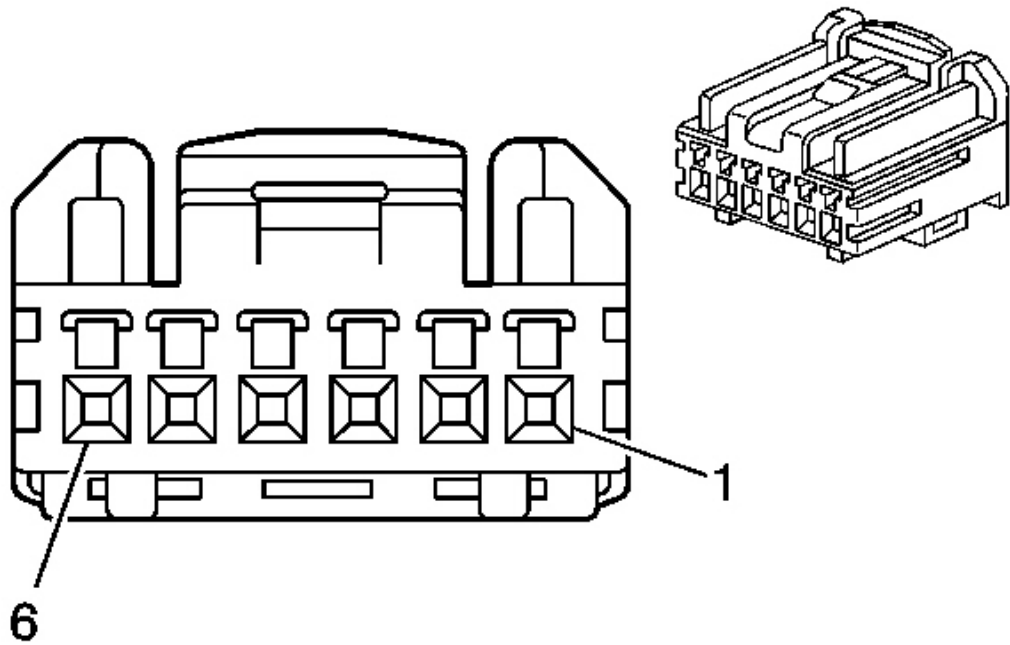


Fig. 23: P14 Passenger Air Bag Disable Indicator
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: HCMPB-C06-S
- Service Connector: 19153174
- Description: 6-Way F HCM Series (NA)

Terminal Part Information

- Terminated Lead: Service by Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

P14 Passenger Air Bag Disable Indicator

Pin	Wire	Circuit	Function
1	0.35 D-BU	2307	Passenger Air Bag On Indicator Control
2	0.35 BK/WH	651	Ground
3	0.35 D-GN	2308	Passenger Air Bag Off Indicator Control
4	0.35 PK	339	Ignition Voltage
5	0.35 PU	5234	Front Passenger Seat Belt Indicator Control
6	-	-	Not Used

P15 REAR PARKING ASSIST REAR INDICATORS (UD7)

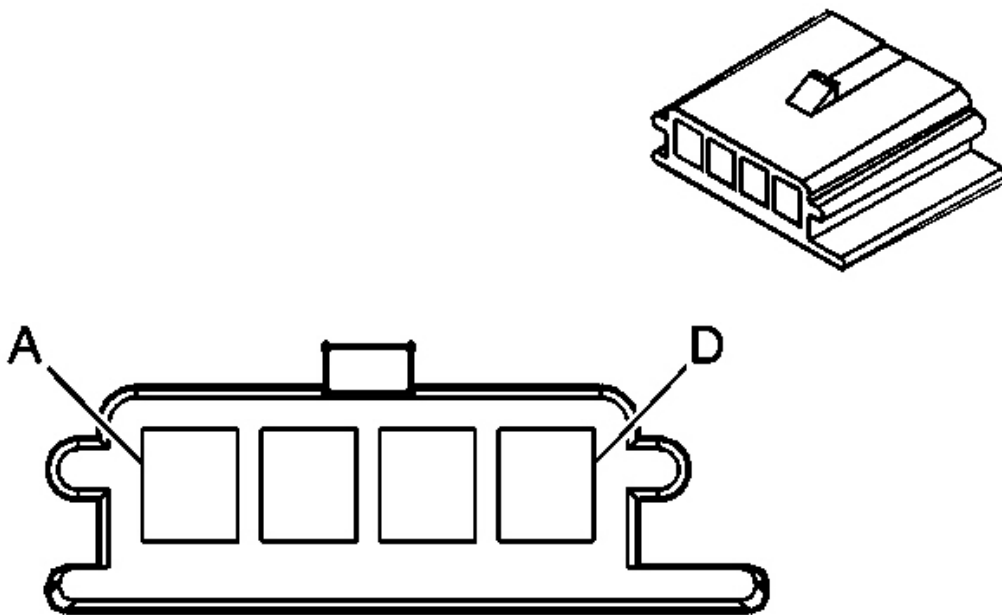


Fig. 24: P15 Rear Parking Assist Rear Indicators (UD7)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 12045813
- Service Connector: 12101889
- Description: 4-Way F Metri-Pack 150 Series (CR)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

P15 Rear Parking Assist Rear Indicators (UD7)

Pin	Wire	Circuit	Function
A	0.35 WH	2370	Telltale Assembly Supply Voltage

B	0.35 OG	2371	Left Amber Indicator Control
C	0.35 D-BU	2372	Center Amber Indicator Control
D	0.35 GY	2373	Red Indicator Control

P16 INSTRUMENT CLUSTER

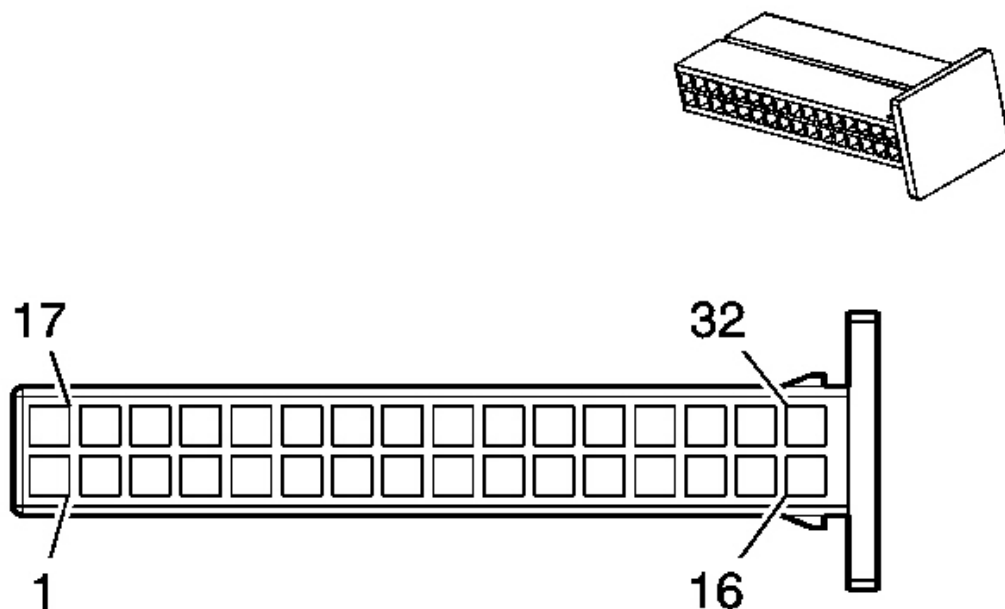


Fig. 25: P16 Instrument Cluster

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 968265-1
- Service Connector: 88988405
- Description: 32-Way F 0.64 Quadlock Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15

- Core/Insulation Crimp: H/H

P16 Instrument Cluster

Pin	Wire	Circuit	Function
1-8	-	-	Not Used
9	0.35 BN	897	DIC Switch Low Reference
10	0.35 D-GN/WH	1358	DIC Switch Signal
11	0.35 YE	61	Low Reference
12	0.35 D-GN/WH	636	Ambient Air Temperature Sensor Signal
13-15	-	-	Not Used
16	0.35 BK/WH	651	Ground
17-24	-	-	Not Used
25	0.35 BN/WH	419	MIL Control
26	0.35 D-GN	5060	Low Speed GMLAN Serial Data
27	-	-	Not Used
28	0.35 PK	893	DIC Select Menu Switch Signal
29-30	-	-	Not Used
31	0.35 PK	139	Ignition 1 Voltage
32	0.35 RD/WH	2840	Battery Positive Voltage

P17 INFO DISPLAY MODULE (UYS OR PCJ)

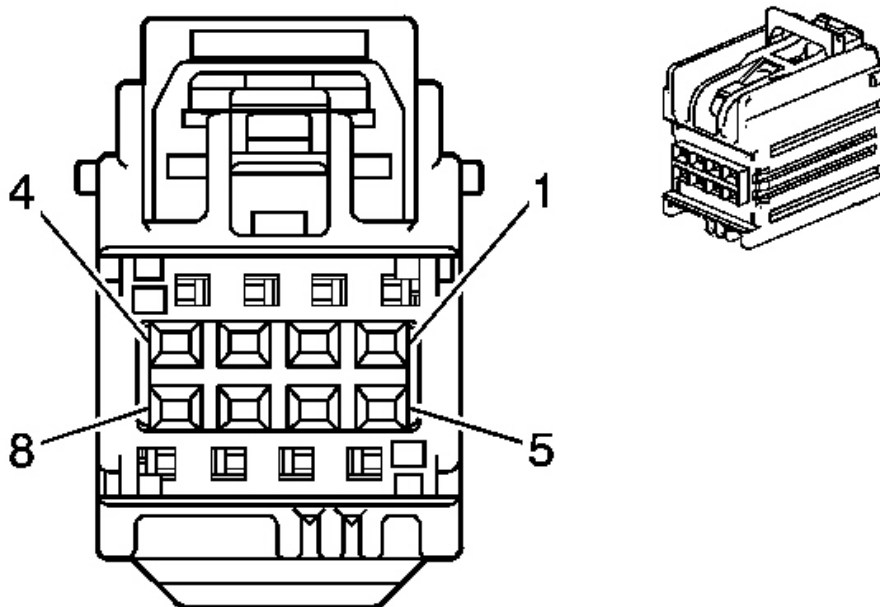


Fig. 26: P17 Info Display Module (UYS or PCJ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 7283-9028-30
- Service Connector: 13316159
- Description: 8-Way F YESC Kaizen Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

P17 Info Display Module (UYS or PCJ)

Pin	Wire	Circuit	Function
1	0.5 RD/WH	3240	Battery Positive Voltage

2	0.35 BK/WH	1551	Ground
3	-	-	Not Used
4	0.35 PK	3369	Touch +
5	0.35 L-GN	3364	Navigation Reset Signal
6	0.35 WH	7066	Remote Enable
7	0.35 BARE	3368	Touch Screen Display Drain Wire
8	0.35 PU	3370	Touch -

P17 INFO DISPLAY MODULE (WITHOUT UYS OR PCJ)

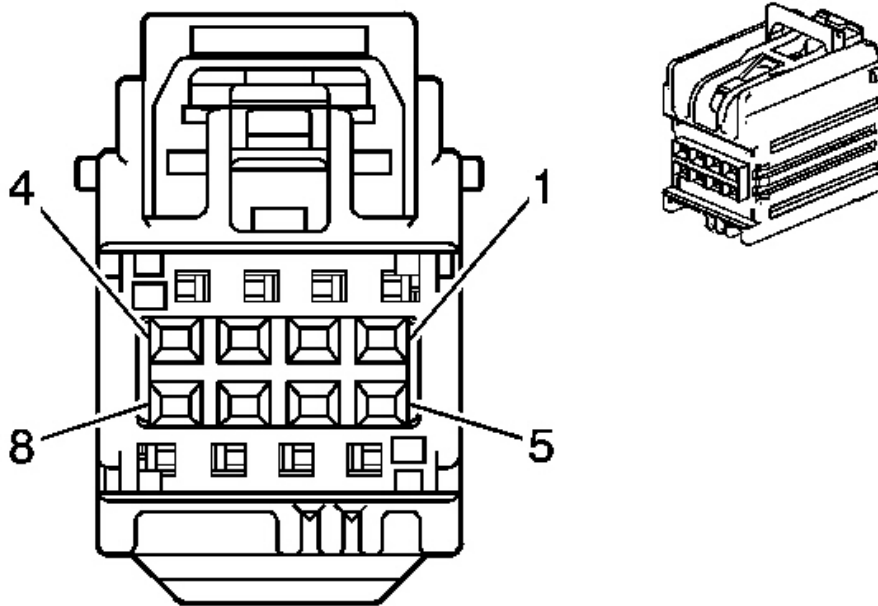


Fig. 27: P17 Info Display Module (without UYS or PCJ)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 7283-9028-30
- Service Connector: 13316159
- Description: 8-Way F YESC Kaizen Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

P17 Info Display Module (without UYS or PCJ)

Pin	Wire	Circuit	Function
1	0.5 RD/WH	3240	Battery Positive Voltage
2	0.35 BK/WH	1551	Ground
3	0.35 L-BU	7532	Local Interconnect Network 10
4	0.35 L-GN	3291	Center Stack Wake-Up Signal
5	0.35 PK	3290	Center Stack Reset Signal
6	0.35 BARE	7460	Integrated Center Stack Serial Data Shield
7	0.35 TN	7458	CGI +
8	0.35 YE	7459	CGI -

P19AC SPEAKER - SUBWOOFER (UZ8)

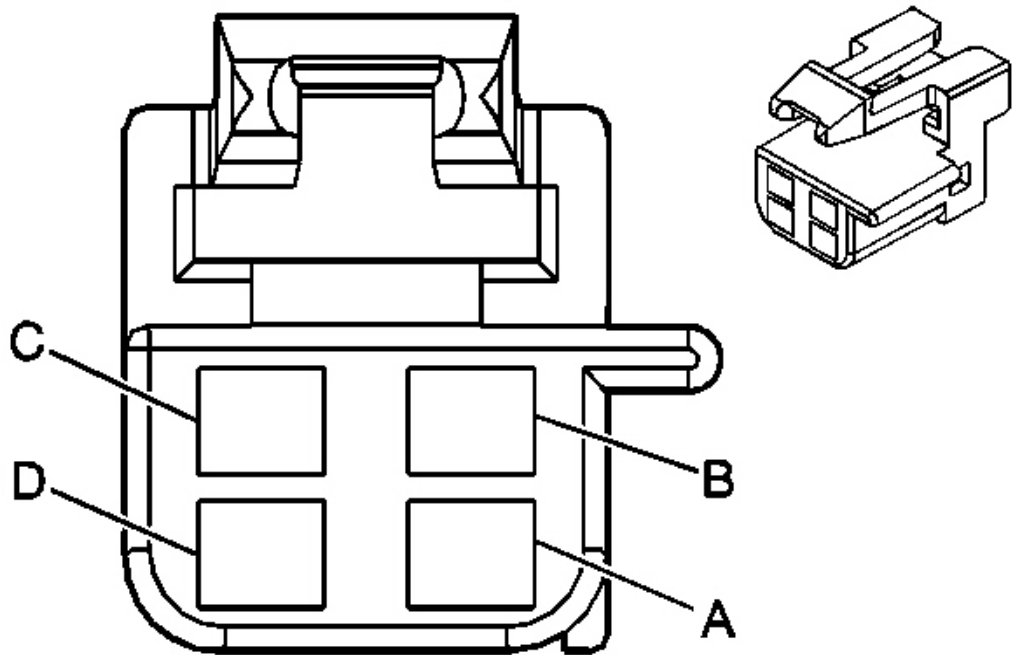


Fig. 28: P19AC Speaker - Subwoofer (UZ8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 12064760
- Service Connector: 12085208
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/A

P19AC Speaker - Subwoofer (UZ8)

Pin	Wire	Circuit	Function
A	1 L-GN/BK	1794	Left Subwoofer Speaker Output -
B	1 D-BU/WH	346	Left Subwoofer Speaker Output +
C	1 L-BU/BK	315	Right Subwoofer Speaker Output -
D	1 D-GN	1795	Right Subwoofer Speaker Output +

P19B SPEAKER - CENTER INSTRUMENT PANEL (UZ8)

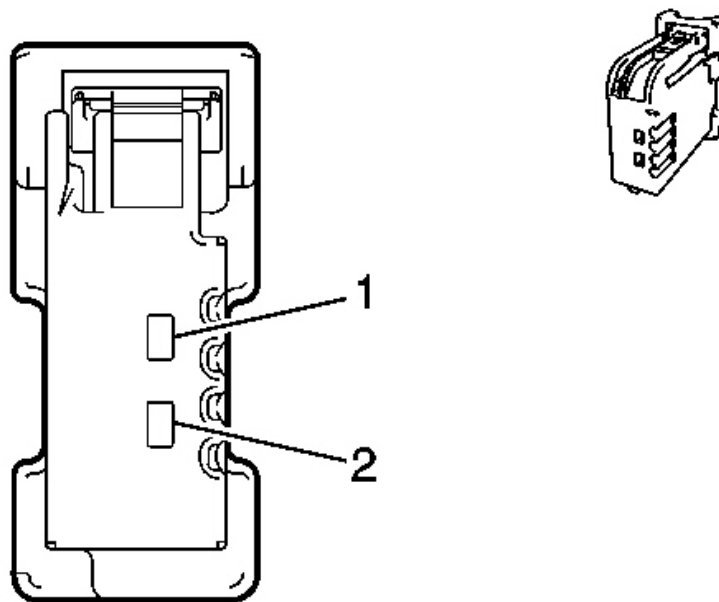


Fig. 29: P19B Speaker - Center Instrument Panel (UZ8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 6098-6183
- Service Connector: 13505908
- Description: 2-Way F 1.5 Series (BK)

Terminal Part Information

- Terminated Lead: 13575855
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

P19B Speaker - Center Instrument Panel (UZ8)

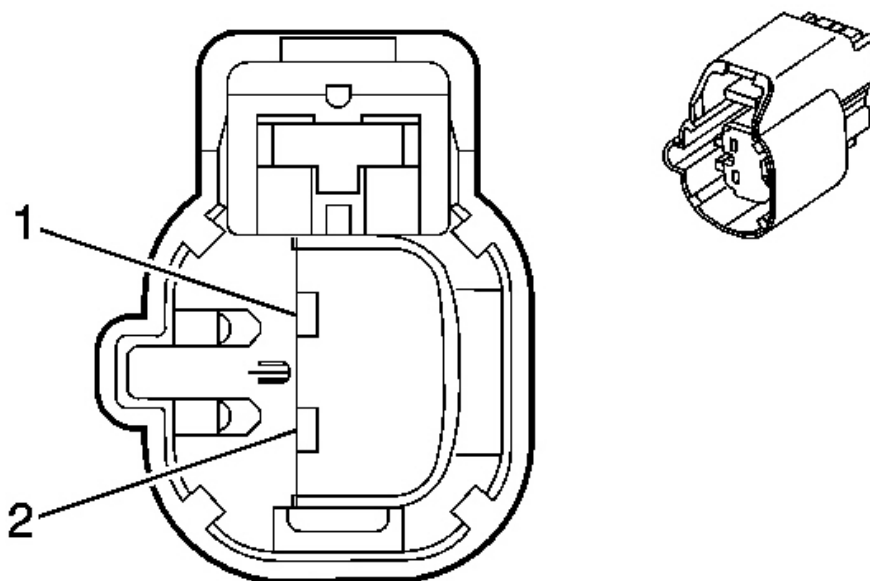
Pin	Wire	Circuit	Function
1	0.35 L-BU	1960	Front Center Speaker Output -

2

0.35 YE

1860

Front Center Speaker Output +

P19G SPEAKER - LEFT FRONT (UW6)**Fig. 30: P19G Speaker - Left Front (UW6)**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door
- OEM Connector: R63461-003
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19G Speaker - Left Front (UW6)

Pin	Wire	Circuit	Function
1	0.8 GY	118	Left Front Speaker Output -
2	0.8 TN	201	Left Front Speaker Output +

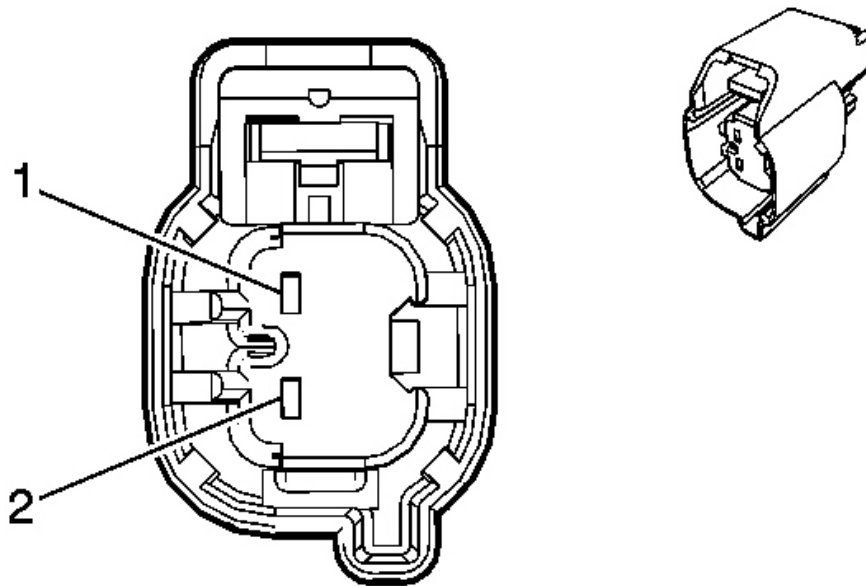
P19G SPEAKER - LEFT FRONT (UZ8)

Fig. 31: P19G Speaker - Left Front (UZ8)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door
- OEM Connector: R63461-004
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247

- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19G Speaker - Left Front (UZ8)

Pin	Wire	Circuit	Function
1	0.8 GY	118	Left Front Speaker Output -
2	0.8 TN	201	Left Front Speaker Output +

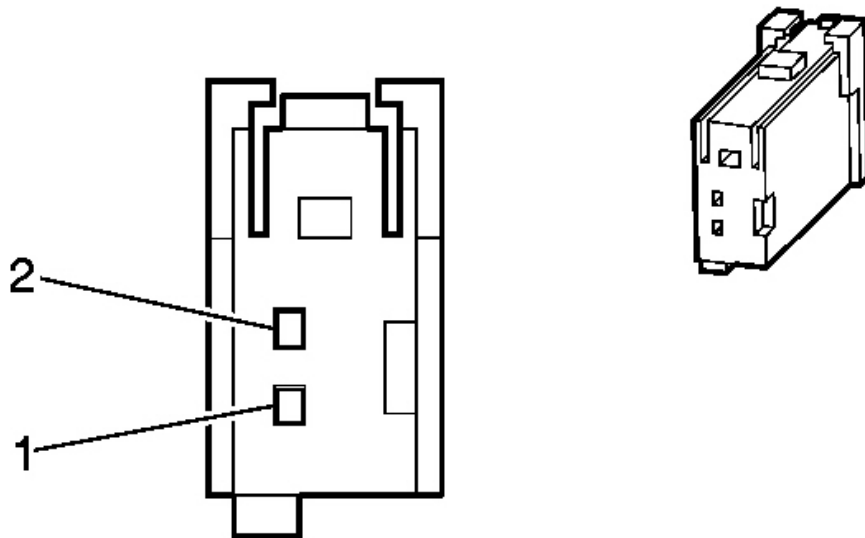
P19H SPEAKER - LEFT FRONT TWEETER

Fig. 32: P19H Speaker - Left Front Tweeter
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM: AIT2PB-02A-1AK
- Service Connector: 13505908
- Description: 2-Way F 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

P19H Speaker - Left Front Tweeter

Pin	Wire	Circuit	Function
1	0.5 GY	118	Left Front Speaker Output -
2	0.5 TN	201	Left Front Speaker Output +

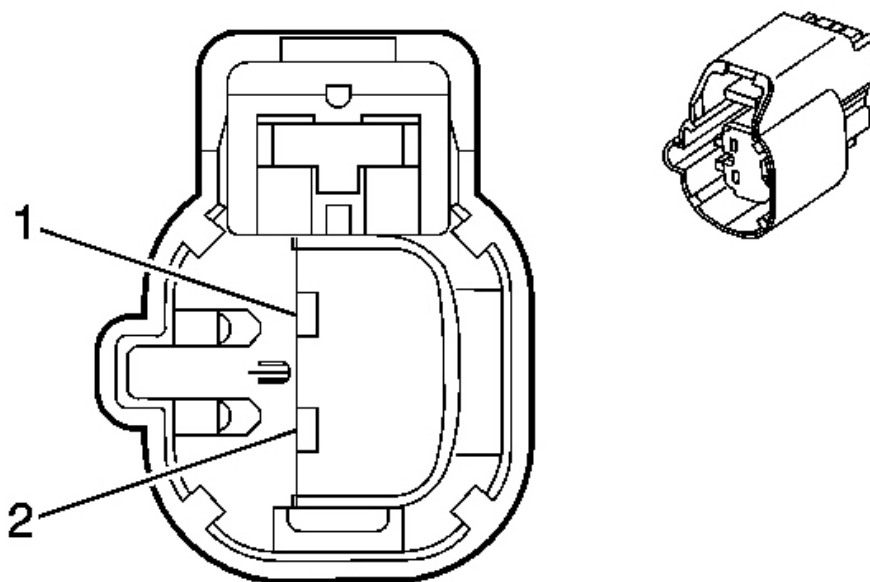
P19K SPEAKER - LEFT REAR (UW6)

Fig. 33: P19K Speaker - Left Rear (UW6)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Left Rear Door
- OEM Connector: R63461-003
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19K Speaker - Left Rear (UW6)

Pin	Wire	Circuit	Function
1	0.8 YE	116	Left Rear Speaker Output -
2	0.8 BN	199	Left Rear Speaker Output +

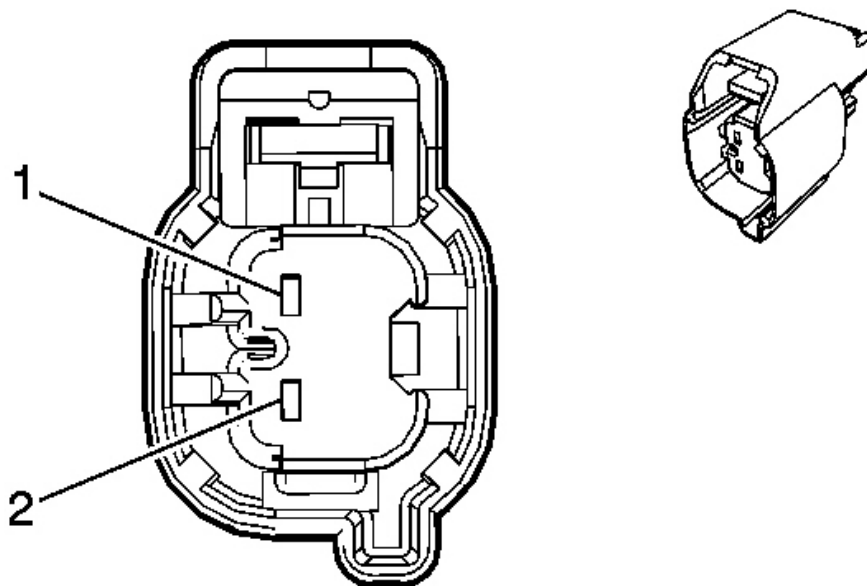
P19K SPEAKER - LEFT REAR (UZ8)

Fig. 34: P19K Speaker - Left Rear (UZ8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Left Rear Door
- OEM Connector: R63461-004
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19K Speaker - Left Rear (UZ8)

Pin	Wire	Circuit	Function
1	0.8 YE	116	Left Rear Speaker Output -
2	0.8 BN	199	Left Rear Speaker Output +

P19U SPEAKER - RIGHT FRONT (UW6)

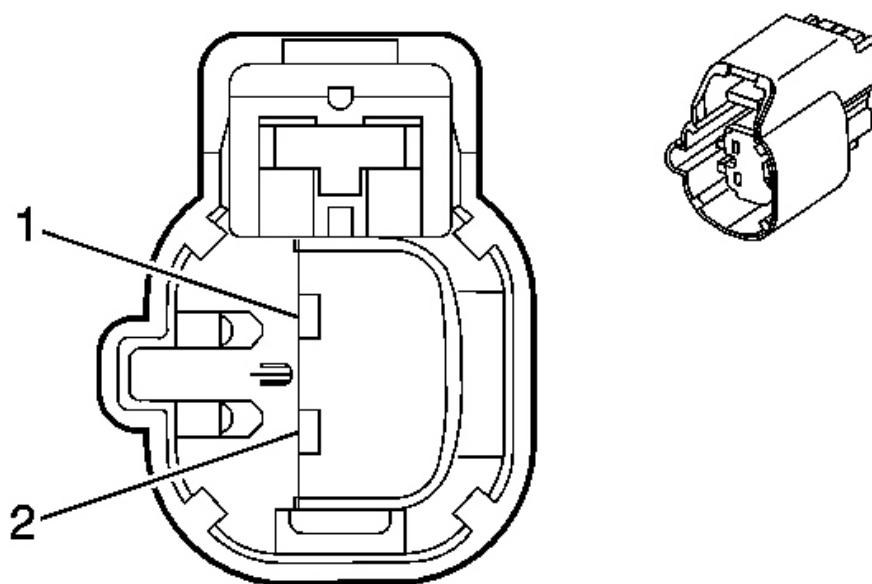


Fig. 35: P19U Speaker - Right Front (UW6)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door
- OEM Connector: R63461-003
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19U Speaker - Right Front (UW6)

Pin	Wire	Circuit	Function
1	0.8 D-GN	117	Right Front Speaker Output -

2

0.8 L-GN

200

Right Front Speaker Output +

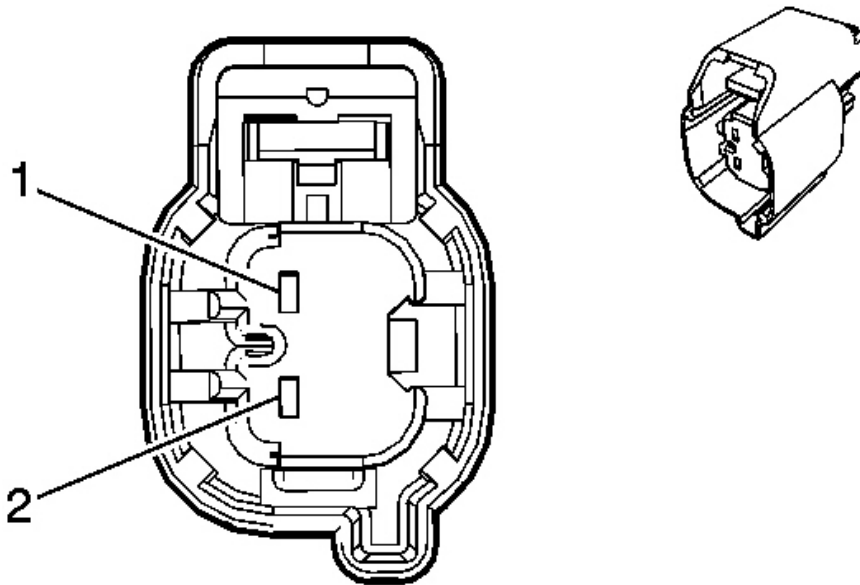
P19U SPEAKER - RIGHT FRONT (UZ8)

Fig. 36: P19U Speaker - Right Front (UZ8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door
- OEM Connector: R63461-004
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19U Speaker - Right Front (UZ8)

Pin	Wire	Circuit	Function
1	0.8 D-GN	117	Right Front Speaker Output -
2	0.8 L-GN	200	Right Front Speaker Output +

P19V SPEAKER - RIGHT FRONT TWEETER

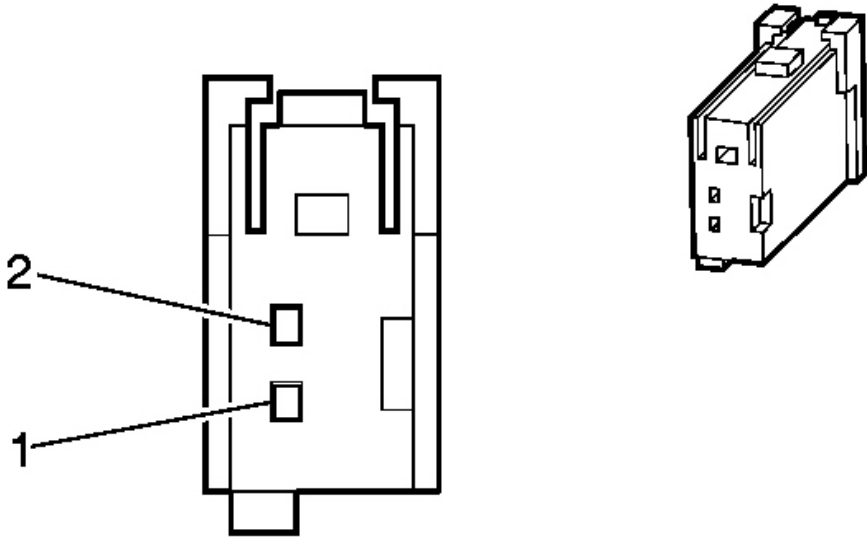


Fig. 37: P19V Speaker - Right Front Tweeter
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM: AIT2PB-02A-1AK
- Service Connector: 13505908
- Description: 2-Way F 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-215A

- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

P19V Speaker - Right Front Tweeter

Pin	Wire	Circuit	Function
1	0.5 D-GN	117	Right Front Speaker Output -
2	0.5 L-GN	200	Right Front Speaker Output +

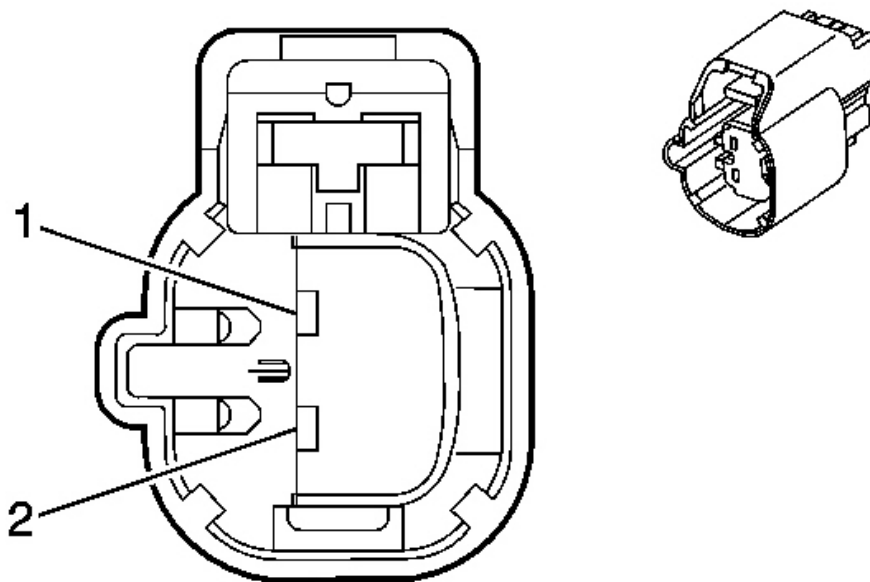
P19X SPEAKER - RIGHT REAR (UW6)

Fig. 38: P19X Speaker - Right Rear (UW6)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Right Rear Door
- OEM Connector: R63461-003
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19X Speaker - Right Rear (UW6)

Pin	Wire	Circuit	Function
1	0.8 L-BU	115	Right Rear Speaker Output -
2	0.8 D-BU	46	Right Rear Speaker Output +

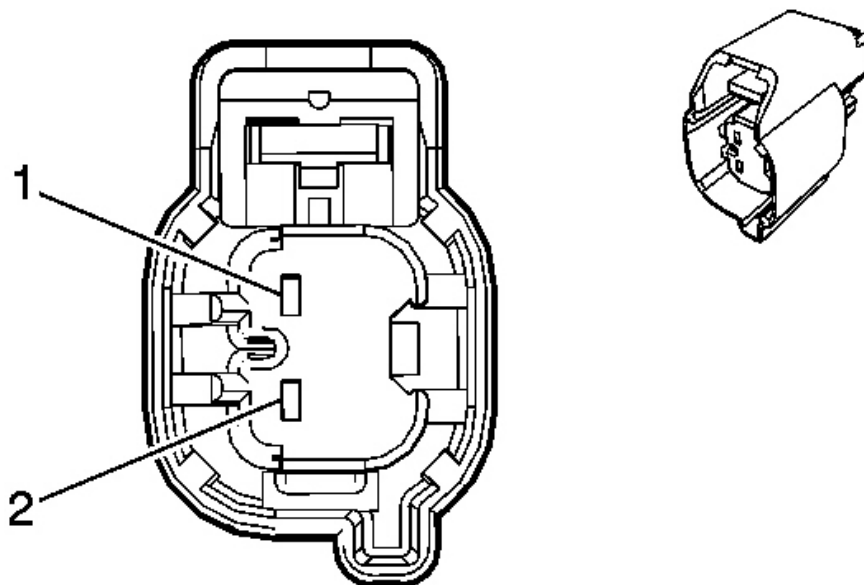
P19X SPEAKER - RIGHT REAR (UZ8)

Fig. 39: P19X Speaker - Right Rear (UZ8)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Right Rear Door
- OEM Connector: R63461-004
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: C/A

P19X Speaker - Right Rear (UZ8)

Pin	Wire	Circuit	Function
1	0.8 L-BU	115	Right Rear Speaker Output -
2	0.8 D-BU	46	Right Rear Speaker Output +

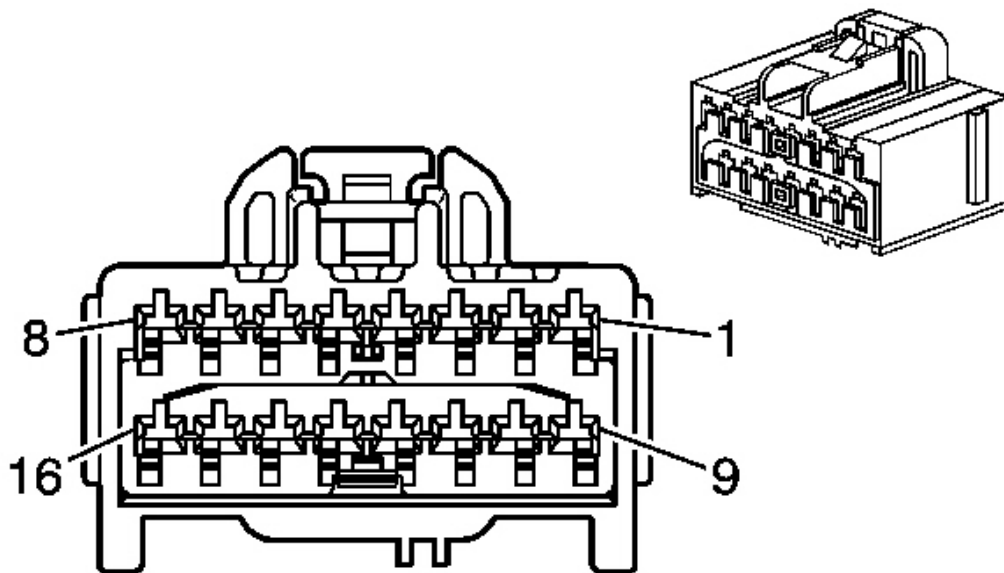
P22E VIDEO DISPLAY - DRIVER SEATBACK (UWG)

Fig. 40: P22E Video Display - Driver Seatback (UWG)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Back
- OEM Connector: 7283-9076-30
- Service Connector: 15136073
- Description: 16-Way F Kaizen 64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

P22E Video Display - Driver Seatback (UWG)

Pin	Wire	Circuit	Function
1	0.35 RD/WH	4240	Battery Positive Voltage
2	0.35 WH	7066	Remote Enable
3	0.35 OG/BK	5329	Left Infrared Audio Signal
4	0.35 PU/WH	5330	Right Infrared Audio Signal
5	0.35 PU	6979	DVD Audio Common
6	0.35 L-BU	5826	Left DVD Audio Signal +
7	0.35 WH	5828	Right DVD Audio Signal +
8	0.35 BK/WH	1551	Ground
9	0.35 D-GN	6975	DVD Video Signal +
10	0.35 WH/BK	5335	DVD Video Signal -
11	0.35 D-BU/WH	3360	Audio Common
12	0.35 OG/BK	5831	Low Reference
13	0.35 TN/WH	5830	Right Infrared Audio Signal
14	0.35 BK/WH	1551	Ground
15	0.35 L-GN/BK	5845	Video Mode Signal
16	0.35 PK/BK	5844	Video Bright Signal

P22F VIDEO DISPLAY - PASSENGER SEATBACK (UWG)

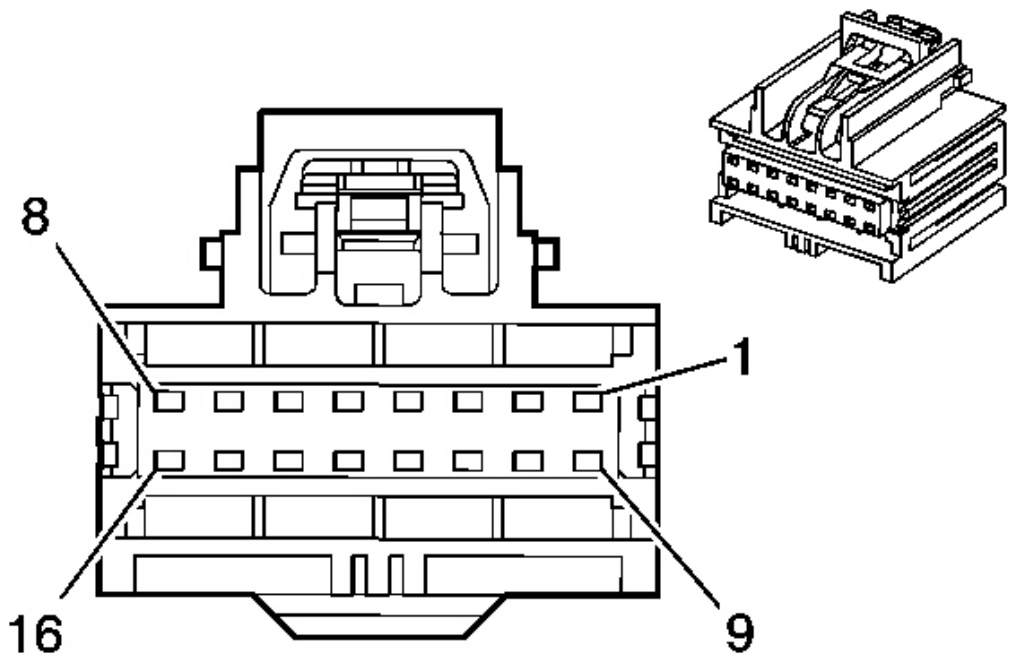


Fig. 41: P22F Video Display - Passenger Seatback (UWG)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Seat Back
- OEM Connector: 7283-9077-40
- Service Connector: 13504589
- Description: 16-Way F Kaizen 64 Series (L-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

P22F Video Display - Passenger Seatback (UWG)

Pin	Wire	Circuit	Function

1	0.35 RD/WH	4240	Battery Positive Voltage
2	0.35 WH	7066	Remote Enable
8	0.35 BK/WH	1551	Ground
9	0.35 L-GN	7396	DVD Video Signal 2 +
10	0.35 WH	7394	DVD Video Signal 2 -
12	0.35 OG/BK	5831	Low Reference
13	0.35 TN/WH	5830	Right Infrared Audio Signal
14	0.35 BK/WH	1551	Ground
15	0.35 WH	7395	Video Mode 2 Signal
16	0.35 PK/BK	5844	Video Bright Signal

Q2 A/C COMPRESSOR CLUTCH

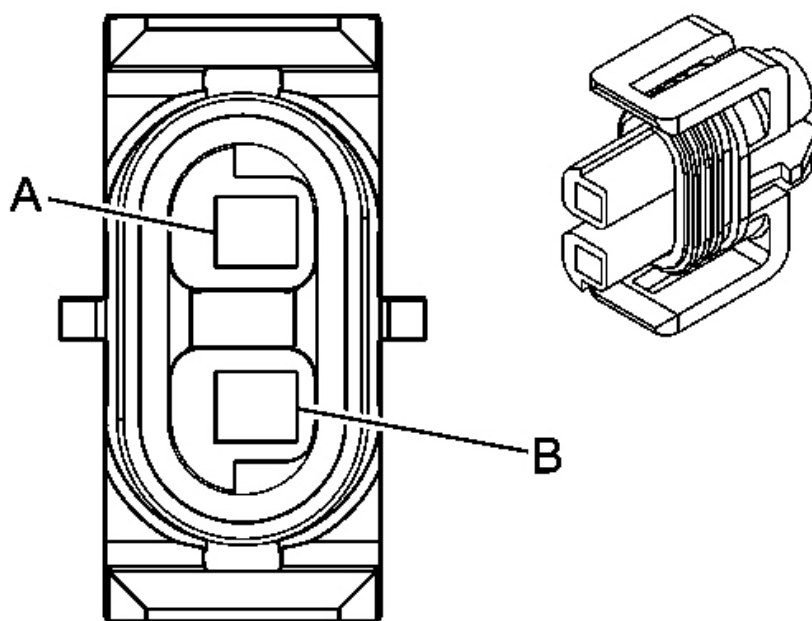


Fig. 42: Q2 A/C Compressor Clutch
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12162017

- Service Connector: 12101937
- Description: 2-Way F Metri-Pack 150 Series, Sealed (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1

Q2 A/C Compressor Clutch

Pin	Wire	Circuit	Function
A	0.35 BK	250	Ground
B	0.5 D-GN	59	A/C Compressor Clutch Supply Voltage

Q6A CAMSHAFT POSITION ACTUATOR SOLENOID VALVE - BANK 1 EXHAUST (LF1)

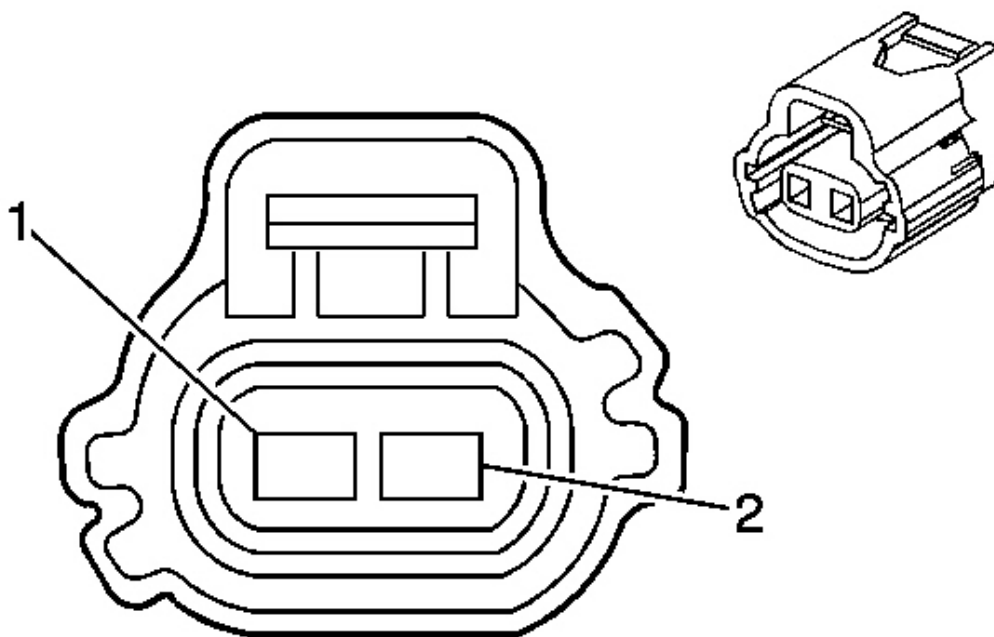


Fig. 43: Q6A Camshaft Position Actuator Solenoid Valve - Bank 1 Exhaust (LF1)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-7526-30
- Service Connector: 88988588
- Description: 2-Way F Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15313892
- Diagnostic Test Probe: J-35616-18 (BK)
- Terminal/Tray: 7116-4025/11
- Core/Insulation Crimp: E/1

Q6A Camshaft Position Actuator Solenoid Valve - Bank 1 Exhaust (LF1)

Pin	Wire	Circuit	Function
1	0.5 WH/BK	6396	Cam Phaser Control
2	0.5 BN/WH	6754	Low Reference

Q6B CAMSHAFT POSITION ACTUATOR SOLENOID VALVE - BANK 1 INTAKE (LF1)

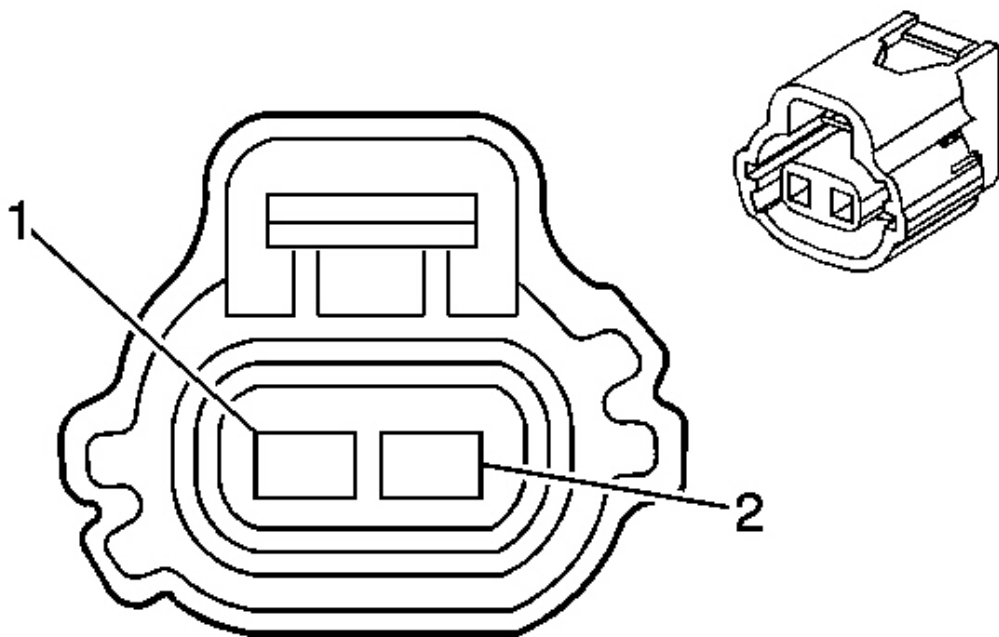


Fig. 44: Q6B Camshaft Position Actuator Solenoid Valve - Bank 1 Intake (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-7526-30
- Service Connector: 88988588
- Description: 2-Way F Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15313892
- Diagnostic Test Probe: J-35616-18 (BK)
- Terminal/Tray: 7116-4025/11
- Core/Insulation Crimp: E/1

Q6B Camshaft Position Actuator Solenoid Valve - Bank 1 Intake (LF1)

Pin	Wire	Circuit	Function

1	0.5 PK/BK	6395	Cam Phaser Control
2	0.5 BN	6753	Low Reference

Q6C CAMSHAFT POSITION ACTUATOR SOLENOID VALVE - BANK 2 EXHAUST (LF1)

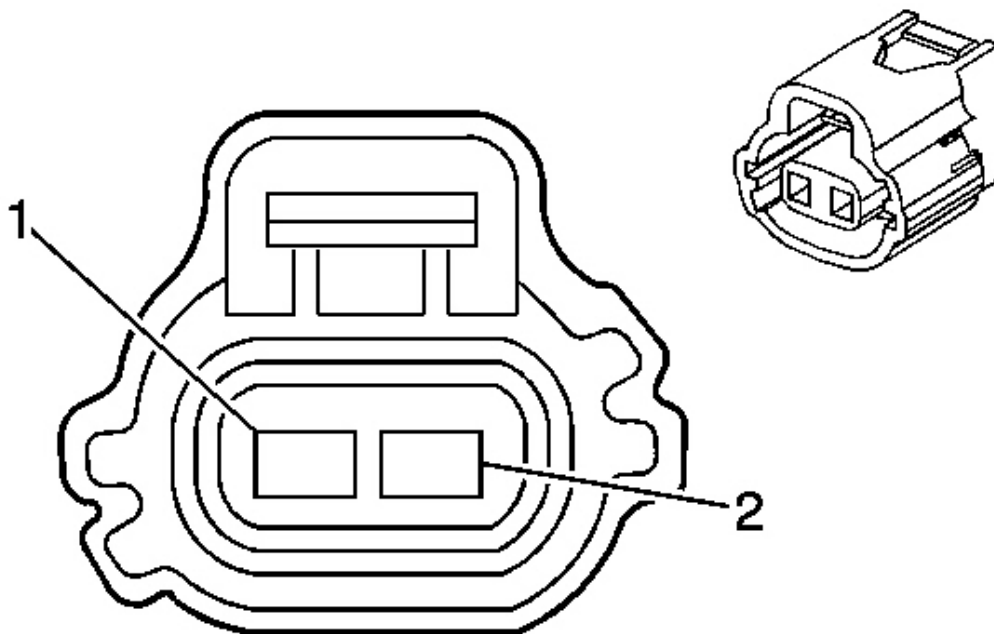


Fig. 45: Q6C Camshaft Position Actuator Solenoid Valve - Bank 2 Exhaust (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-7526-30
- Service Connector: 88988588
- Description: 2-Way F Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15313892
- Diagnostic Test Probe: J-35616-18 (BK)
- Terminal/Tray: 7116-4025/11

- Core/Insulation Crimp: E/1

Q6C Camshaft Position Actuator Solenoid Valve - Bank 2 Exhaust (LF1)

Pin	Wire	Circuit	Function
1	0.5 GY/BK	6394	Cam Phaser Control
2	0.5 D-BU/WH	6756	Low Reference

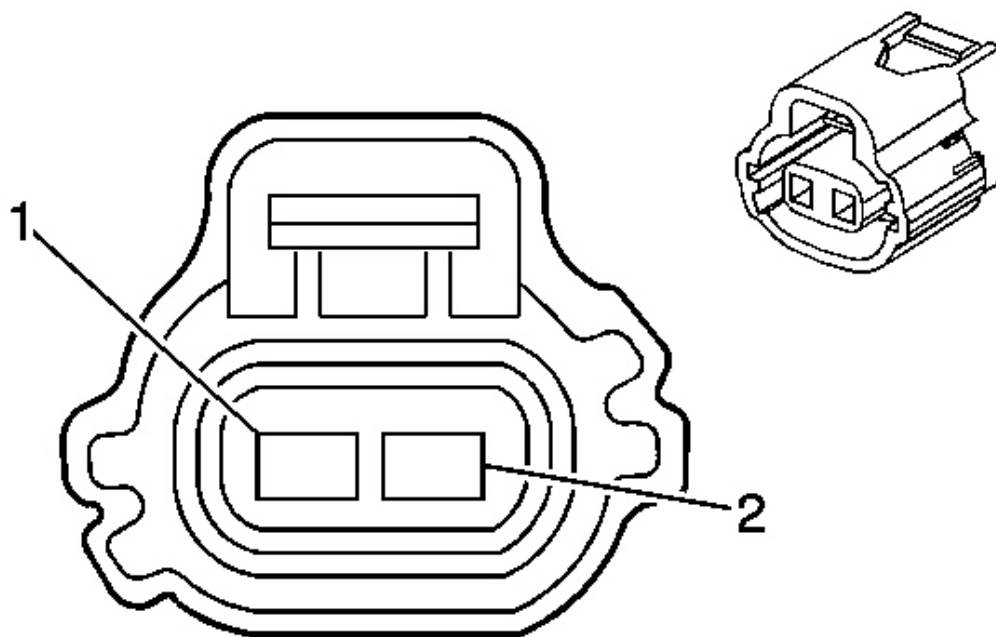
Q6D CAMSHAFT POSITION ACTUATOR SOLENOID VALVE - BANK 2 INTAKE (LF1)

Fig. 46: Q6D Camshaft Position Actuator Solenoid Valve - Bank 2 Intake (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-7526-30
- Service Connector: 88988588
- Description: 2-Way F Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15313892
- Diagnostic Test Probe: J-35616-18 (BK)
- Terminal/Tray: 7116-4025/11
- Core/Insulation Crimp: E/1

Q6D Camshaft Position Actuator Solenoid Valve - Bank 2 Intake (LF1)

Pin	Wire	Circuit	Function
1	0.5 TN/BK	6397	Cam Phaser Control
2	0.5 D-BU	6755	Low Reference

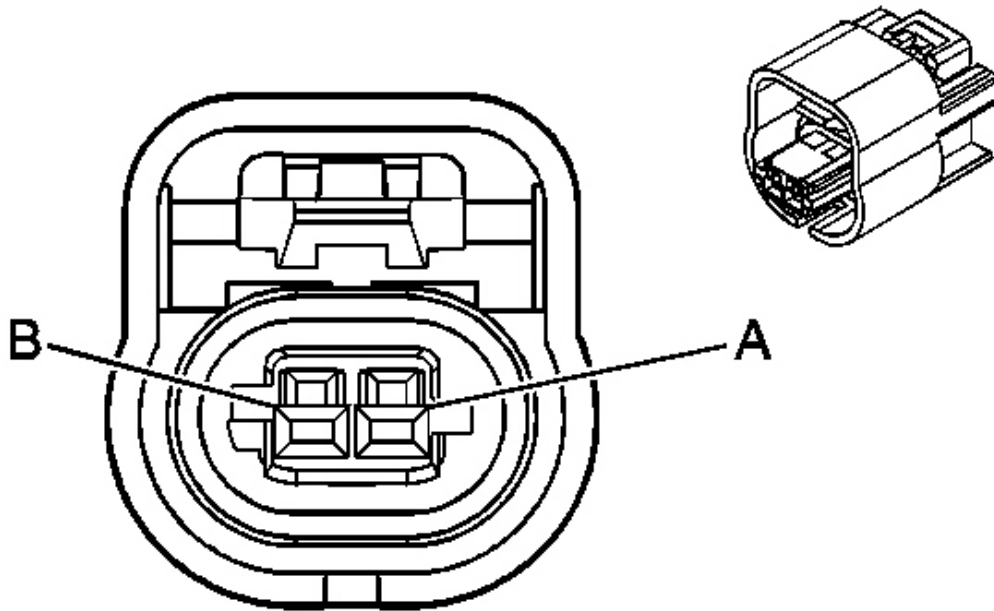
2010 ELECTRICAL**Wiring Systems and Power Management - Component Locator - Component Connector End Views - Equinox & Terrain****COMPONENT CONNECTOR END VIEWS****Q6E CAMSHAFT POSITION ACTUATOR SOLENOID VALVE - EXHAUST (LAF)**

Fig. 1: Q6E Camshaft Position Actuator Solenoid Valve - Exhaust (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 15336004
- Service: 19178093
- Description: 2-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

Q6E Camshaft Position Actuator Solenoid Valve - Exhaust (LAF)

Pin	Wire	Circuit	Function
A	0.5 WH/BK	6396	Cam Phaser Control
B	0.5 BN/WH	6754	Low Reference

Q6F CAMSHAFT POSITION ACTUATOR SOLENOID VALVE - INTAKE (LAF)

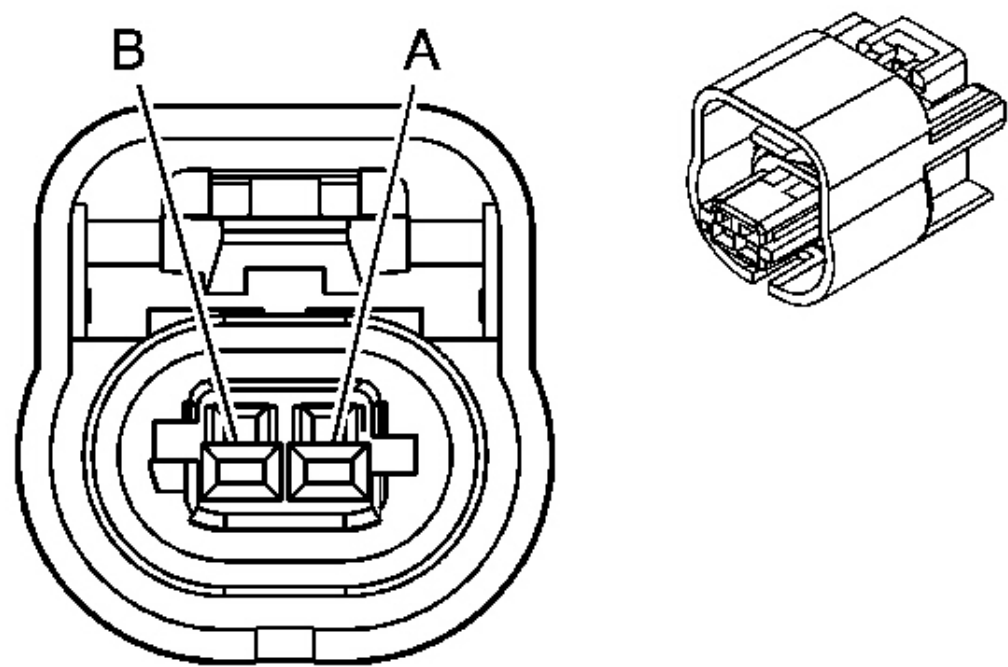


Fig. 2: Q6F Camshaft Position Actuator Solenoid Valve - Intake (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15335987

- Service Connector: 15306430
- Description: 2-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

Q6F Camshaft Position Actuator Solenoid Valve - Intake (LAF)

Pin	Wire	Circuit	Function
A	0.5 PK/BK	6395	Cam Phaser Control
B	0.5 BN	6753	Low Reference

Q8 CONTROL SOLENOID VALVE ASSEMBLY X1 (MH7 OR MHC)

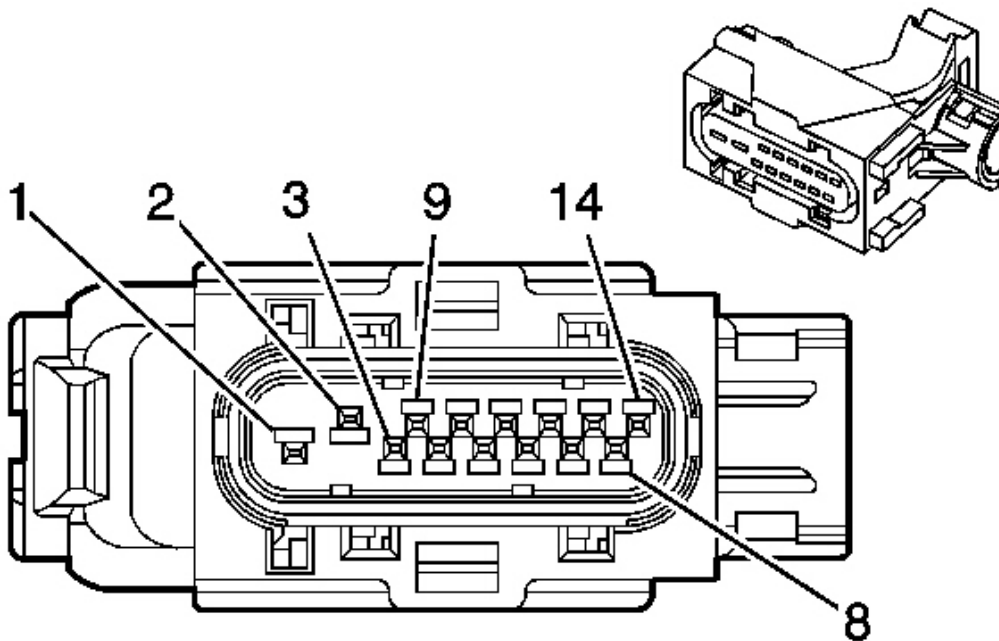


Fig. 3: Q8 Control Solenoid Valve Assembly X1 (MH7 or MHC)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 13522378
- Service Connector: 13503939
- Description: 14-Way F GT 150 280 Series, Sealed (L-GY)

Terminal Part Information

- Pins: 1, 2
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304719/19
- Core/Insulation Crimp: E/5
- Pins: 3, 6-8, 12-14
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

Q8 Control Solenoid Valve Assembly X1 (MH7 or MHC)

Pin	Wire	Circuit	Function
1	0.5 RD/WH	1840	Battery Positive Voltage
2	0.35 BK/WH	451	Ground
3	0.5 D-GN	6307	Clutch Start Neutral Start (PPEI_#3) Signal
4-5	-	-	Not Used
6	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
7	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
8	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
9-11	-	-	Not Used
12	0.5 PK	2139	Ignition Voltage
13	0.5 D-BU	5985	Serial Data Wake-Up Signal
14	0.35 TN	2501	High Speed GMLAN Serial Data Bus -

Q8 CONTROL SOLENOID VALVE ASSEMBLY X1 (MH2 OR MH4)

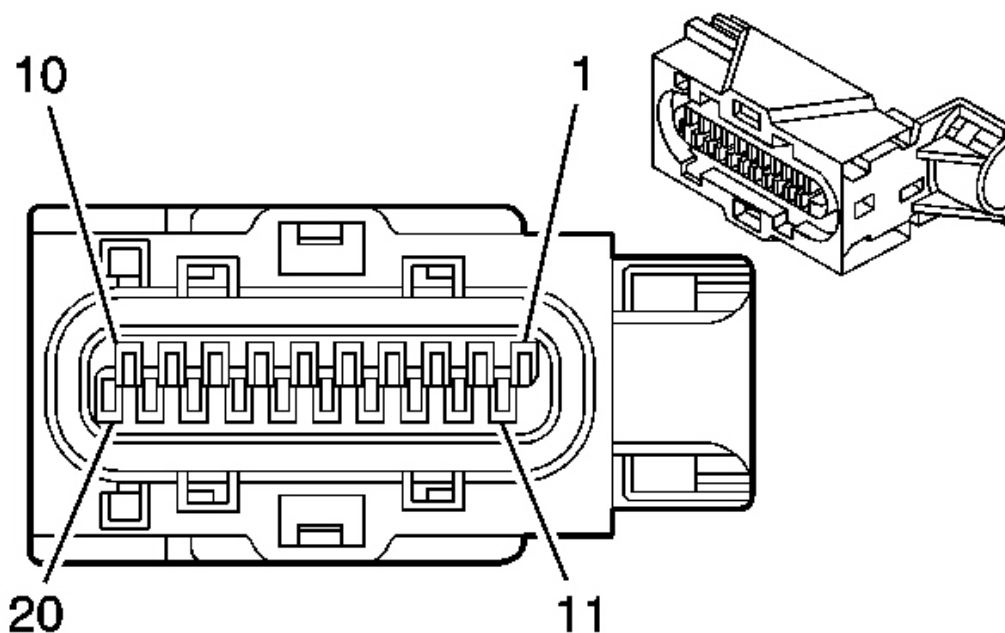


Fig. 4: Q8 Control Solenoid Valve Assembly X1 (MH2 or MH4)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15476346
- Service Connector: 19151494
- Description: 20-Way F GT 150 Sealed (L-GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326267/19
- Core/Insulation Crimp: E/4

Q8 Control Solenoid Valve Assembly X1 (MH2 or MH4)

Pin	Wire	Circuit	Function
1	0.35 BK/WH	451	Ground

2	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
3-4	-	-	Not Used
5	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus+
6-9	-	-	Not Used
10	0.5 RD/WH	1840	Battery Positive Voltage
11	-	-	Not Used
12	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
13	0.5 PK	2139	Ignition Voltage
14	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
15	0.5 D-BU	5985	Serial Data Wake-Up Signal
16-17	-	-	Not Used
18	0.35 BK/WH	451	Ground
19	-	-	Not Used
20	0.5 D-GN	6307	Clutch Start Neutral Start (PPEI_#3) Signal

Q8 CONTROL SOLENOID VALVE ASSEMBLY X2

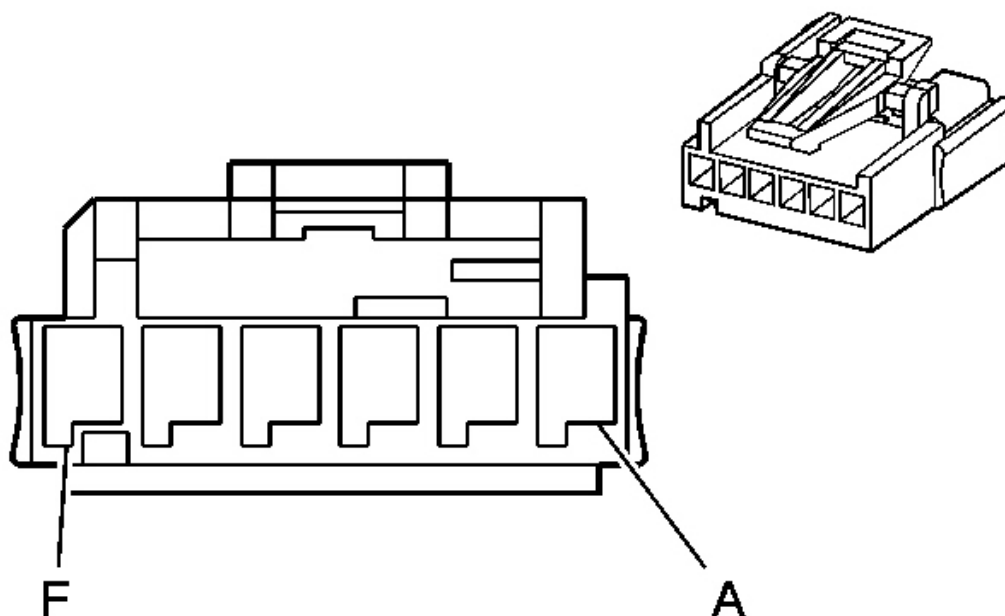


Fig. 5: Q8 Control Solenoid Valve Assembly X2
 Courtesy of GENERAL MOTORS CORP.

- Harness: Automatic Transmission
- OEM: 15336500
- Service: Non-Serviceable
- Description: 6-Way F Metri-Pack 150.2 Series (GN)

Terminal Part Information

- Terminated Lead: Non-Serviceable
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Non-Serviceable
- Core/Insulation Crimp: Not Available

Q8 Control Solenoid Valve Assembly X2

Pin	Wire	Circuit	Function
A	0.5 GY	-	Low Reference
B	0.5 BK	-	Transmission Range Switch Signal P
C	0.5 YE	-	Transmission Range Switch Signal C
D	0.5 RD	-	Transmission Range Switch Signal B
E	0.5 D-GN	-	Transmission Range Switch Signal A
F	0.5 WH	-	Park/Neutral Switch Signal

Q8 CONTROL SOLENOID VALVE ASSEMBLY X3

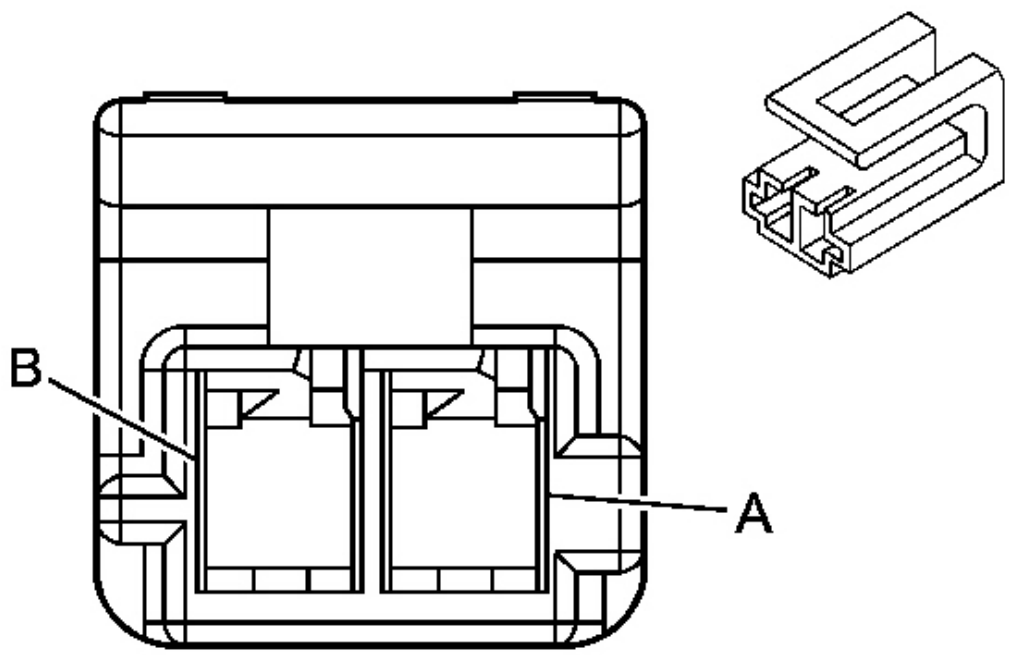


Fig. 6: Q8 Control Solenoid Valve Assembly X3
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Automatic Transmission
- OEM: 15467085
- Service: Non-Serviceable
- Description: 2-Way F Metri-Pack 150.2 Series (L-GY)

Terminal Part Information

- Terminated Lead: Non-Serviceable
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Non-Serviceable
- Core/Insulation Crimp: Not Available

Q8 Control Solenoid Valve Assembly X3

Pin	Wire	Circuit	Function

A	0.5 WH	-	ISS High Signal
B	0.5 BK	-	ISS Low Signal

Q8 CONTROL SOLENOID VALVE ASSEMBLY X4

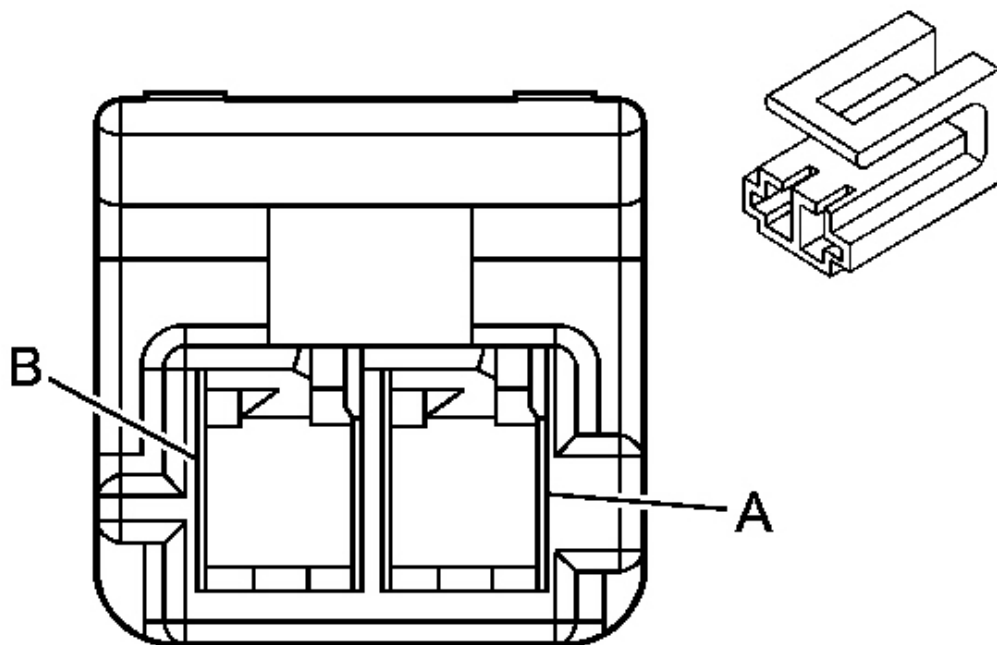


Fig. 7: Q8 Control Solenoid Valve Assembly X4
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Automatic Transmission
- OEM: 15467085
- Service: Non-Serviceable
- Description: 2-Way F Metri-Pack 150.2 Series (L-GY)

Terminal Part Information

- Terminated Lead: Non-Serviceable
- Release Tool: Not Available
- Diagnostic Test Probe: Pending

- Terminal/Tray: Non-Serviceable
- Core/Insulation Crimp: Not Available

Q8 Control Solenoid Valve Assembly X4

Pin	Wire	Circuit	Function
A	0.5 WH	-	OSS High Signal
B	0.5 BK	-	OSS Low Signal

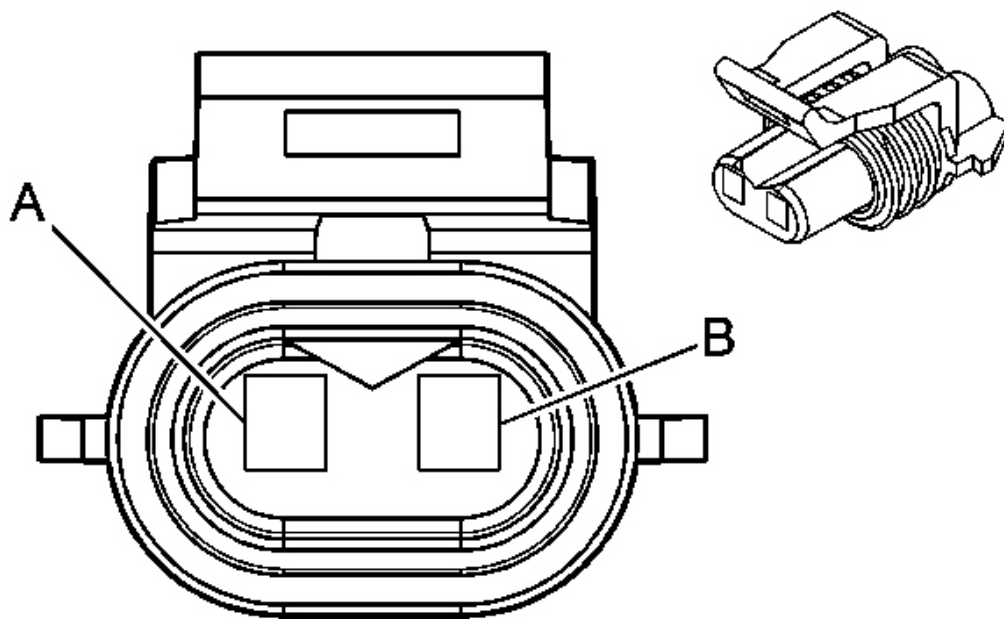
Q12 EVAPORATIVE EMISSION PURGE SOLENOID VALVE (LAF)

Fig. 8: Q12 Evaporative Emission Purge Solenoid Valve (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12052643
- Service Connector: 12101858
- Description: 2-Way F Metri-Pack 150 Series, Sealed (RD)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1

Q12 Evaporative Emission Purge Solenoid Valve (LAF)

Pin	Wire	Circuit	Function
A	0.5 PK/BK	5293	Ignition Voltage
B	0.5 D-GN/WH	428	EVAP Canister Purge Solenoid Control

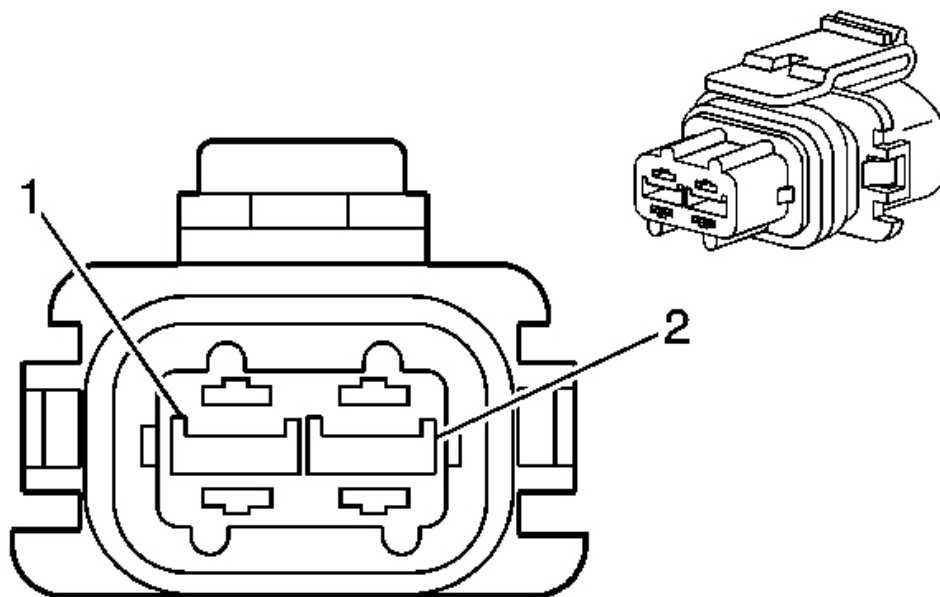
Q12 EVAPORATIVE EMISSION PURGE SOLENOID VALVE (LF1)

Fig. 9: Q12 Evaporative Emission Purge Solenoid Valve (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM: 1928404072

- Service: 88988586
- Description: 2-Way F 2.8 Junior Power Timer Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-561
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 1928498056/8
- Core/Insulation Crimp: E/1

Q12 Evaporative Emission Purge Solenoid Valve (LF1)

Pin	Wire	Circuit	Function
1	0.5 PK/BK	5293	Ignition Voltage
2	0.5 D-GN/WH	428	EVAP Canister Purge Solenoid Control

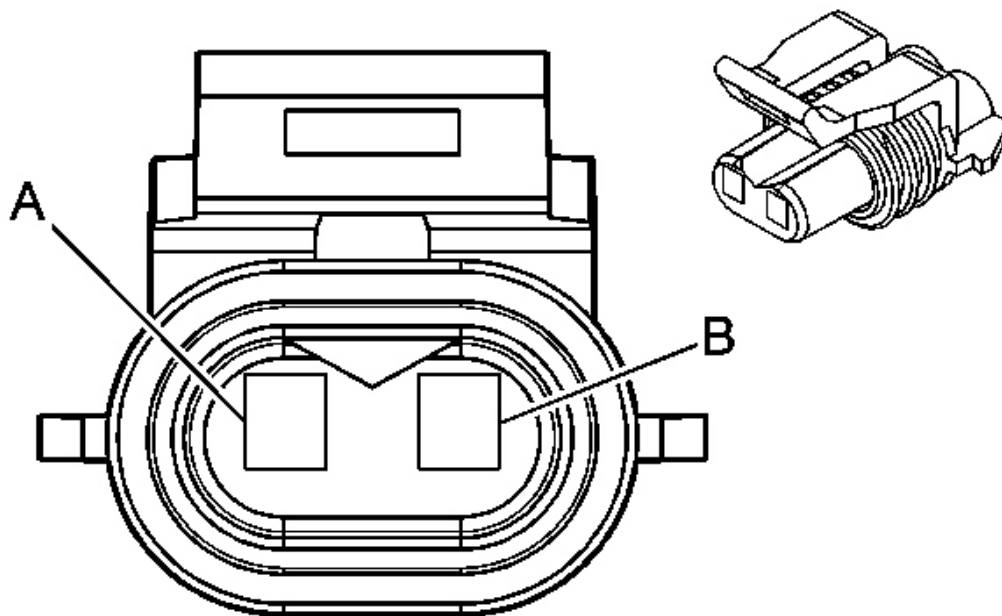
Q13 EVAPORATIVE EMISSION VENT SOLENOID VALVE

Fig. 10: Q13 Evaporative Emission Vent Solenoid Valve
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Tank
- OEM Connector: 12052643
- Service Connector: 12101858
- Description: 2-Way F Metri-Pack 150 Series, Sealed (RD)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1

Q13 Evaporative Emission Vent Solenoid Valve

Pin	Wire	Circuit	Function
A	0.35 RD/WH	2440	Battery Positive Voltage
B	0.35 WH	1310	EVAP Canister Vent Solenoid Control

Q17A FUEL INJECTOR 1 (LAF)

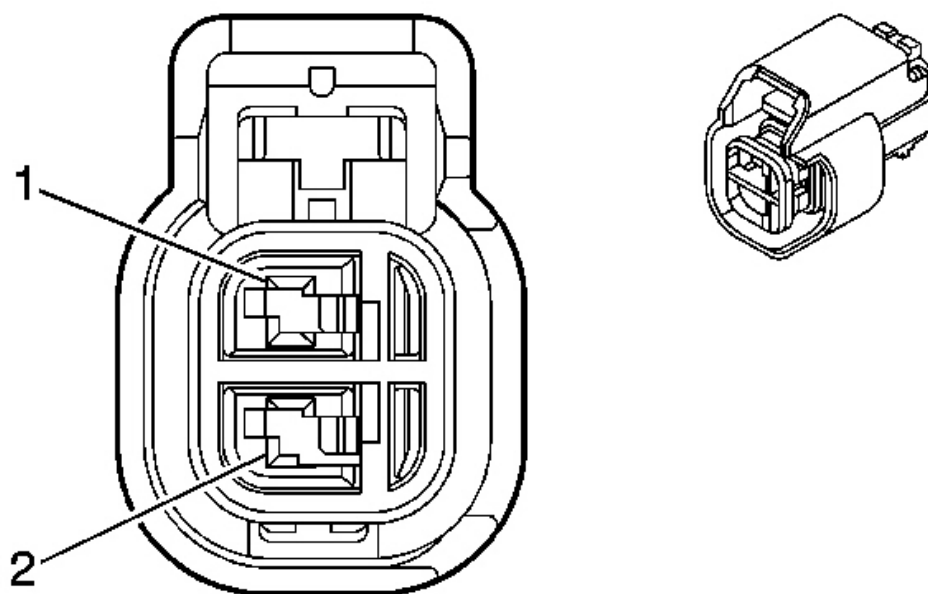


Fig. 11: Q17A Fuel Injector 1 (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM: E-2157
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Sleeve Assembly Wire Connector, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17A Fuel Injector 1 (LAF)

Pin	Wire	Circuit	Function
1	0.8 BN	4801	Fuel Injector 1 Control -

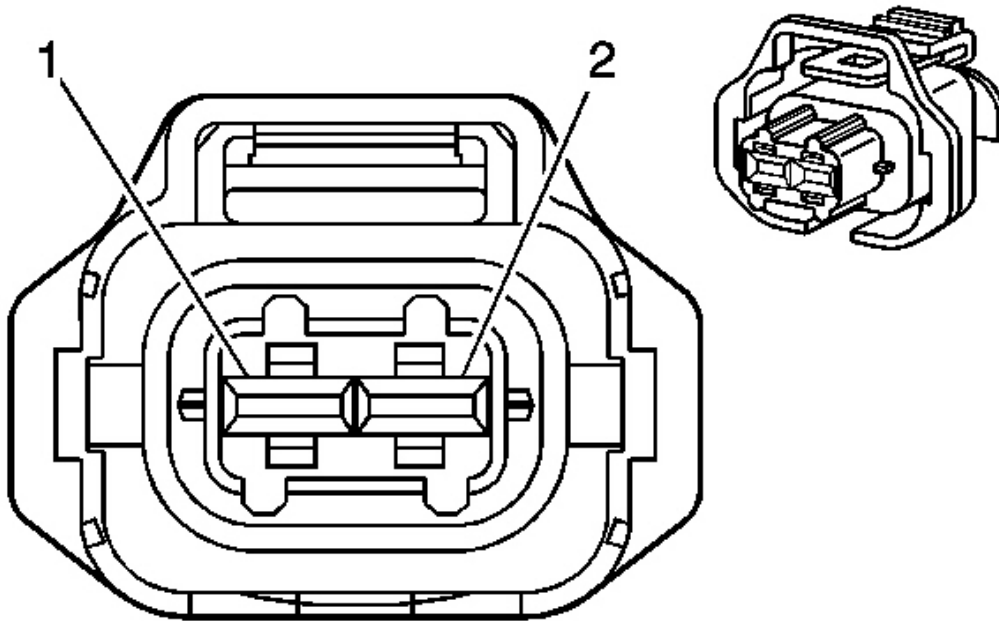
Q17A FUEL INJECTOR 1 (LF1)

Fig. 12: Q17A Fuel Injector 1 (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

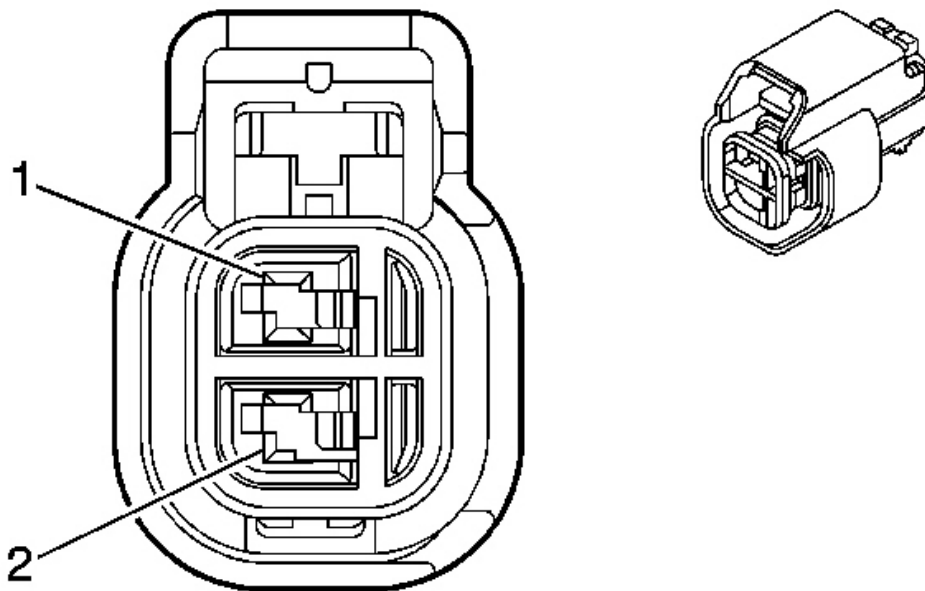
- Harness: POA Fuel Injector
- OEM Connector: 1928403874
- Service Connector: 88988963
- Description: 2-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17A Fuel Injector 1 (LF1)

Pin	Wire	Circuit	Function
1	0.8 BN	4801	Fuel Injector 1 Control -
2	0.8 BN/WH	4901	Fuel Injector 1 Control +

Q17B FUEL INJECTOR 2 (LAF)**Fig. 13: Q17B Fuel Injector 2 (LAF)**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM: E-2157
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Sleeve Assembly Wire Connector, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430

- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17B Fuel Injector 2 (LAF)

Pin	Wire	Circuit	Function
1	0.8 D-BU	4802	Fuel Injector 2 Control -
2	0.8 D-BU/WH	4902	Fuel Injector 2 Control +

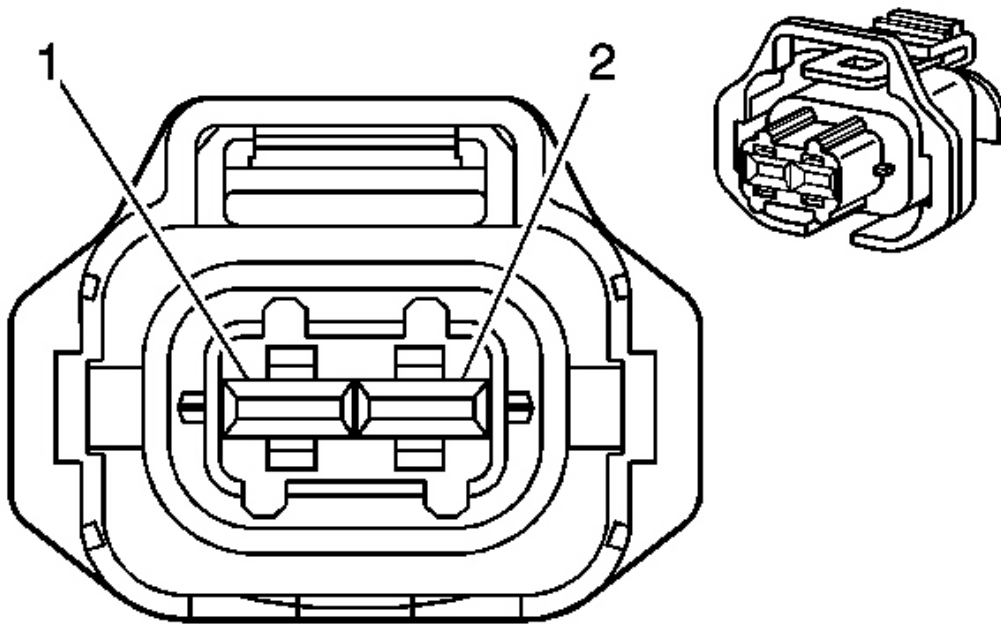
Q17B FUEL INJECTOR 2 (LF1)

Fig. 14: Q17B Fuel Injector 2 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM Connector: 1928403874
- Service Connector: 88988963
- Description: 2-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17B Fuel Injector 2 (LF1)

Pin	Wire	Circuit	Function
1	0.8 D-BU	4802	Fuel Injector 2 Control -
2	0.8 D-BU/WH	4902	Fuel Injector 2 Control +

Q17C FUEL INJECTOR 3 (LAF)

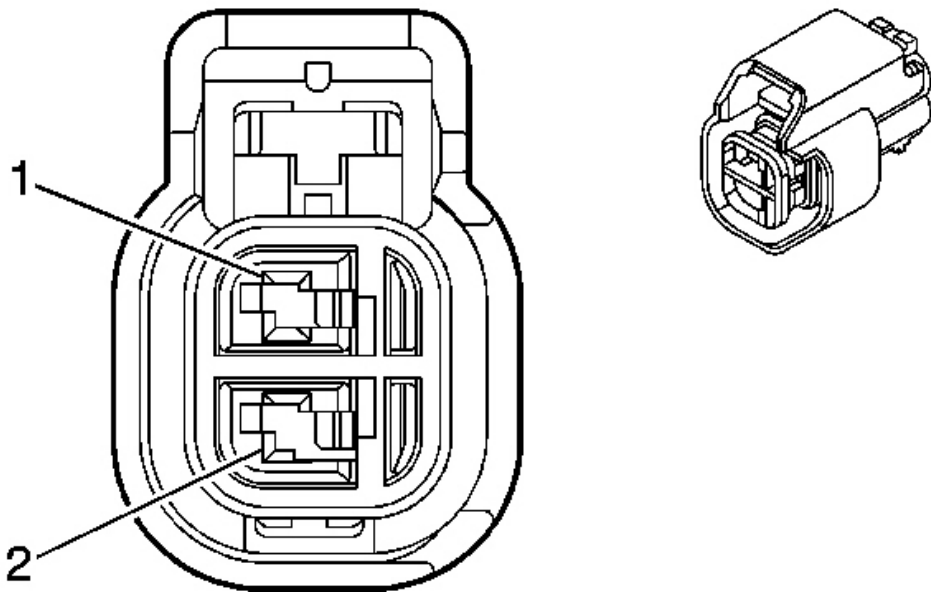


Fig. 15: Q17C Fuel Injector 3 (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM: E-2157
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Sleeve Assembly Wire Connector, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17C Fuel Injector 3 (LAF)

Pin	Wire	Circuit	Function
1	0.8 D-GN	4803	Fuel Injector 3 Control -
2	0.8 D-GN/WH	4903	Fuel Injector 3 Control +

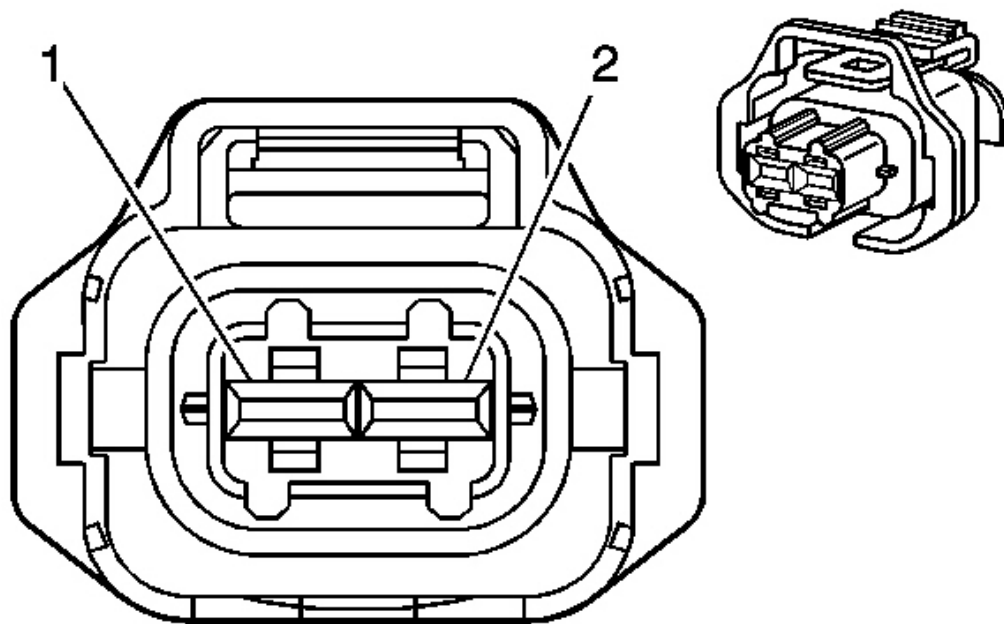
Q17C FUEL INJECTOR 3 (LF1)

Fig. 16: Q17C Fuel Injector 3 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM Connector: 1928403874
- Service Connector: 88988963
- Description: 2-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17C Fuel Injector 3 (LF1)

Pin	Wire	Circuit	Function
1	0.8 D-GN	4803	Fuel Injector 3 Control -
2	0.8 D-GN/WH	4903	Fuel Injector 3 Control +

Q17D FUEL INJECTOR 4 (LAF)

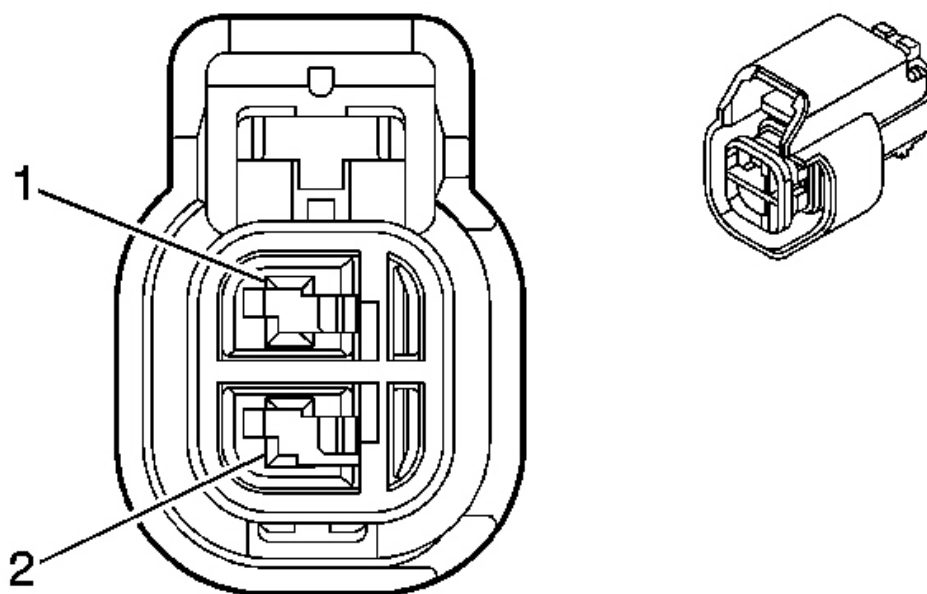


Fig. 17: Q17D Fuel Injector 4 (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM: E-2157
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F Sleeve Assembly Wire Connector, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17D Fuel Injector 4 (LAF)

Pin	Wire	Circuit	Function
1	0.8 L-BU	4804	Fuel Injector 4 Control -

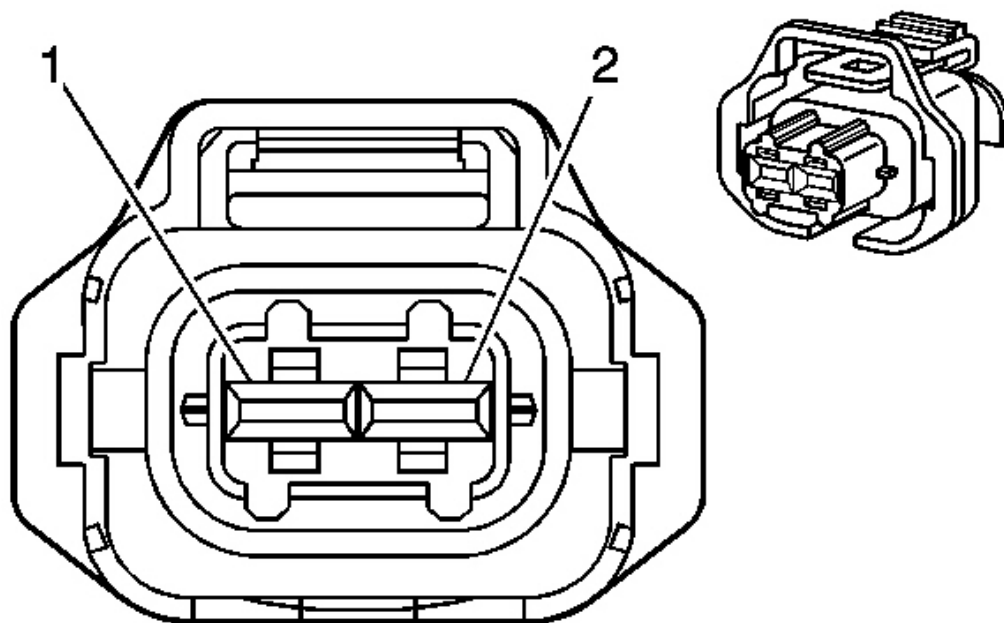
Q17D FUEL INJECTOR 4 (LF1)

Fig. 18: Q17D Fuel Injector 4 (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

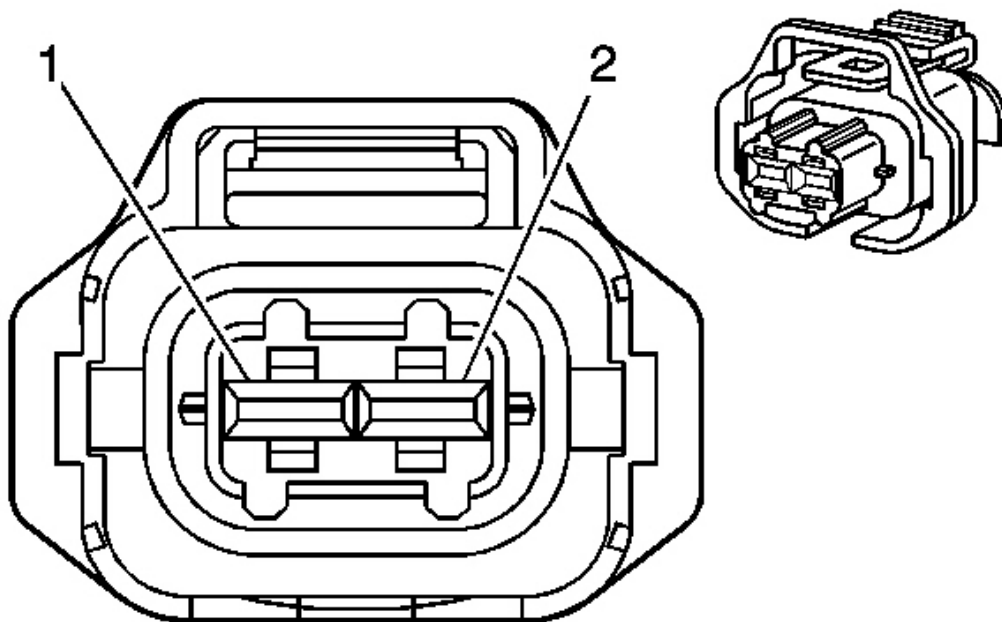
- Harness: POA Fuel Injector
- OEM Connector: 1928403874
- Service Connector: 88988963
- Description: 2-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17D Fuel Injector 4 (LF1)

Pin	Wire	Circuit	Function
1	0.8 L-BU	4804	Fuel Injector 4 Control -
2	0.8 L-BU/WH	4904	Fuel Injector 4 Control +

Q17E FUEL INJECTOR 5 (LF1)**Fig. 19: Q17E Fuel Injector 5 (LF1)**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Injector
- OEM Connector: 1928403874
- Service Connector: 88988963
- Description: 2-Way F Kompakt 280 Series, Sealed (BK)

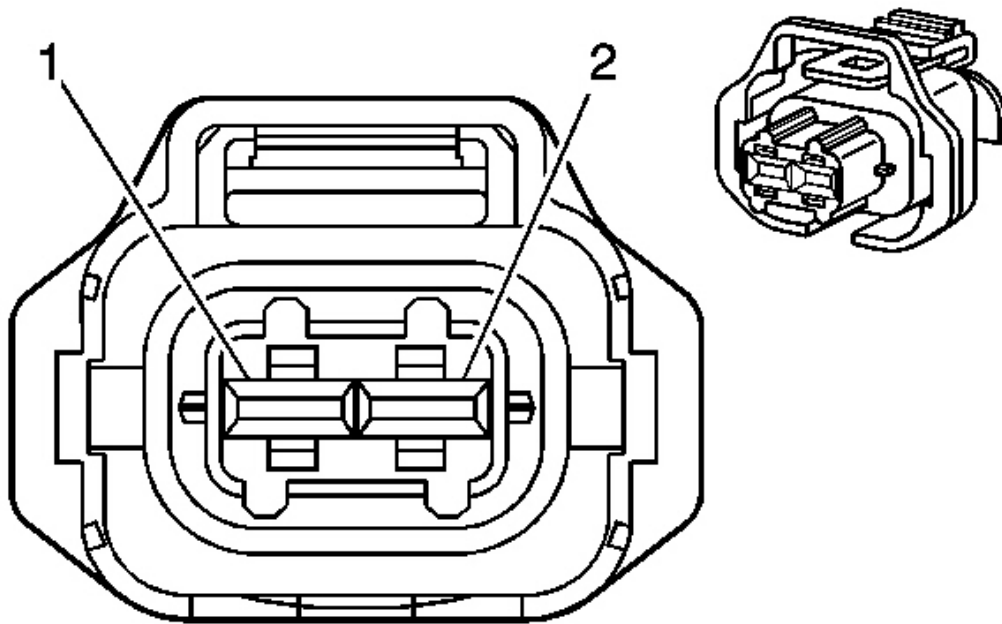
Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430

- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17E Fuel Injector 5 (LF1)

Pin	Wire	Circuit	Function
1	0.8 L-GN	4805	Fuel Injector 5 Control -
2	0.8 L-GN/WH	4905	Fuel Injector 5 Control +

Q17F FUEL INJECTOR 6 (LF1)**Fig. 20: Q17F Fuel Injector 6 (LF1)**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

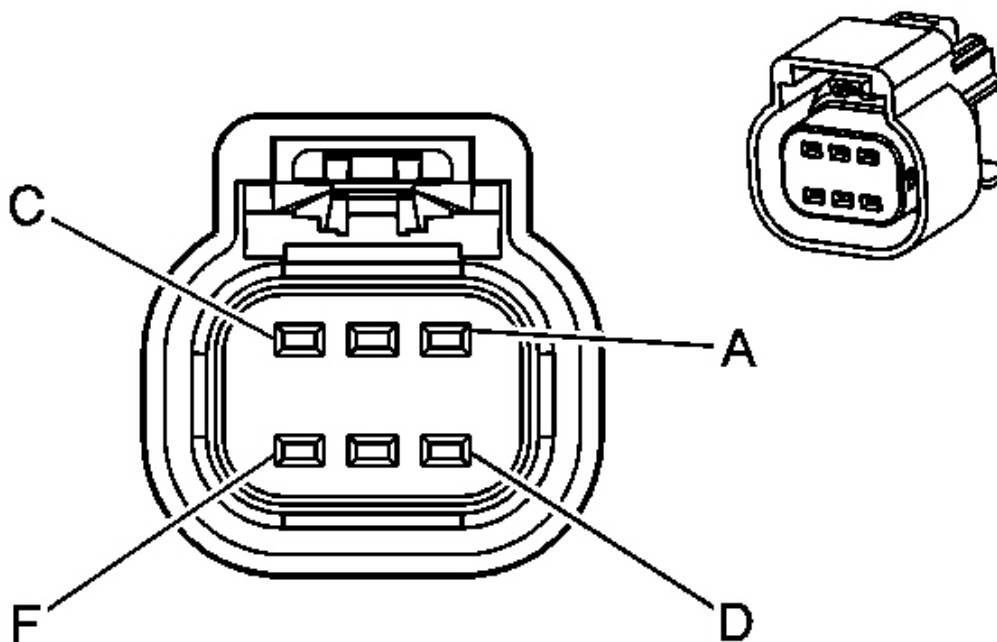
- Harness: POA Fuel Injector
- OEM Connector: 1928403874
- Service Connector: 88988963
- Description: 2-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

Q17F Fuel Injector 6 (LF1)

Pin	Wire	Circuit	Function
1	0.8 PU	4806	Fuel Injector 6 Control -
2	0.8 PU/WH	4906	Fuel Injector 6 Control +

Q38 THROTTLE BODY**Fig. 21: Q38 Throttle Body**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15355297
- Service Connector: 13504128
- Description: 6-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326427/5
- Core/Insulation Crimp: E/A

Q38 Throttle Body

Pin	Wire	Circuit	Function
A	0.5 BN	582	TAC Motor Control 2
B	0.5 YE	581	TAC Motor Control 1
C	0.5 TN	2752	Low Reference
D	0.5 D-GN	485	TP Sensor 1 Signal
E	0.5 GY	2701	5-Volt 4 Reference
F	0.5 PU	486	TP Sensor 2 Signal

R6 DATA LINK RESISTOR

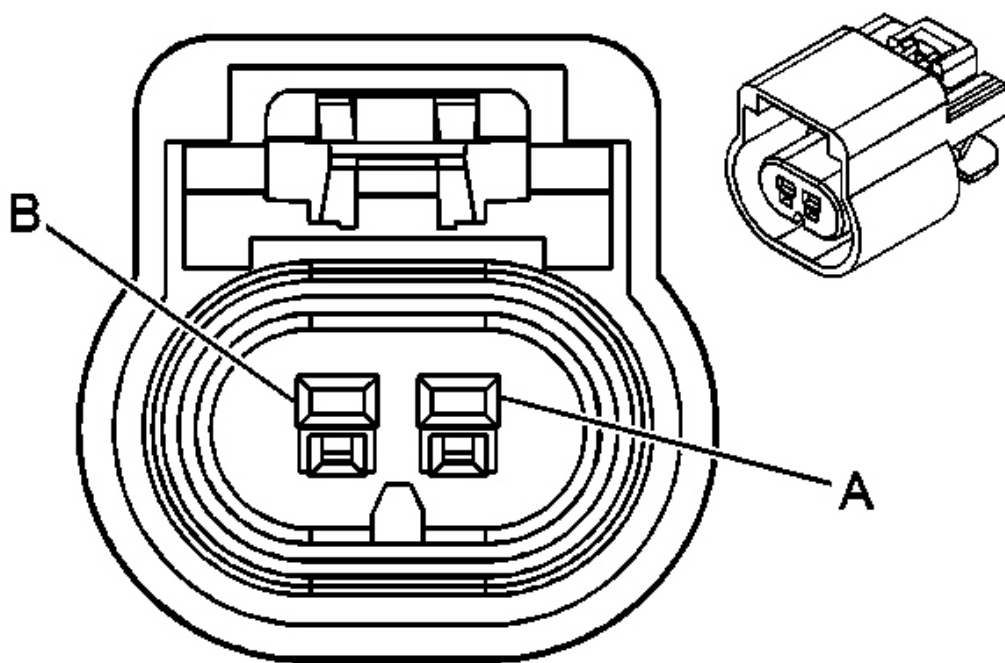


Fig. 22: R6 Data Link Resistor

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Chassis
- OEM Connector: 13510085
- Service Connector: 19179278
- Description: 2-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326427/5
- Core/Insulation Crimp: E/A

R6 Data Link Resistor

Pin	Wire	Circuit	Function

A	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
B	0.35 TN	2501	High Speed GMLAN Serial Data Bus -

R10 COOLING FAN RESISTOR (LAF)

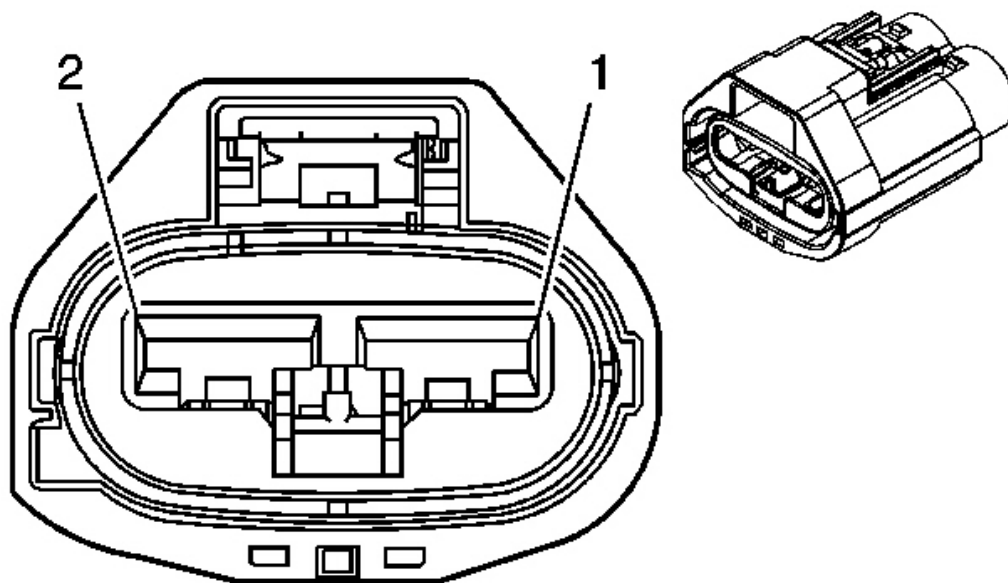


Fig. 23: R10 Cooling Fan Resistor (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Cooling Fan
- OEM: 7283-3214-30
- Service: 19179378
- Description: 2-Way F Y-Type 9.5 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-22 (RD)
- Terminal/Tray: 7116-3251/10
- Core/Insulation Crimp: F/3

R10 Cooling Fan Resistor (LAF)

Pin	Wire	Circuit	Function
1	3 L-BU	409	Cooling Fan Motor Supply Voltage (1)
2	3 GY	532	Cooling Fan Motor Supply Voltage (2)

S3 TRANSMISSION SHIFT LEVER

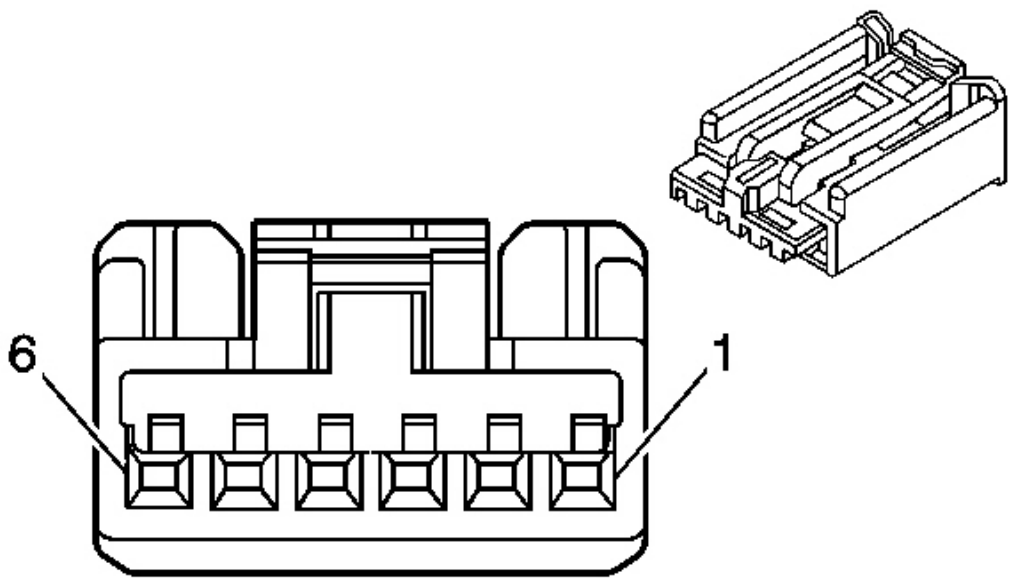


Fig. 24: S3 Transmission Shift Lever
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: AIT2PB-06-1AK
- Service Connector: 19167753
- Description: 6-Way F AIT II Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)

- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

S3 Transmission Shift Lever

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.35 BK	1550	Ground
3	0.35 PU	5526	Tap Up/Tap Down Switch Signal
4	0.35 TN/WH	816	A/T Shift Lock Solenoid Supply Voltage
5	-	-	Not Used
6	0.35 PU/WH	5905	Key Capture Signal

S12 DOME LAMP SWITCH

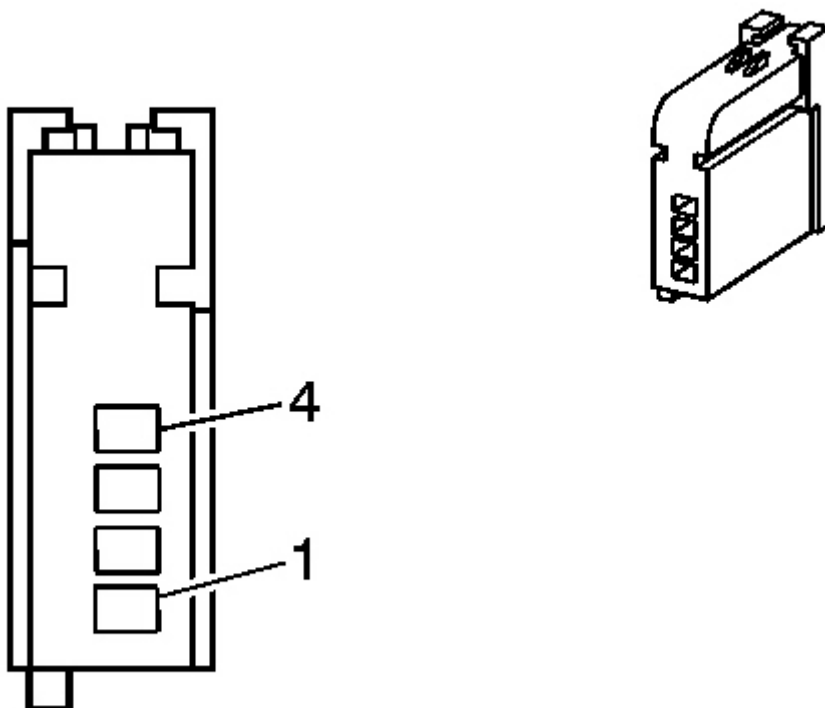


Fig. 25: S12 Dome Lamp Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: AIT2PB-04A-1AK
- Service Connector: 19179273
- Description: 4-Way F AIT II Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

S12 Dome Lamp Switch

Pin	Wire	Circuit	Function
1	0.35 BK	550	Ground
2	0.35 PU	328	Interior lamp Defeat Switch Signal
3	0.35 WH	156	Courtesy Lamp Switch Signal
4	0.35 YE	6817	LED Backlight Dimming Control

S32D SEAT HEATING SWITCH - DRIVER (SPO ACCESSORY)

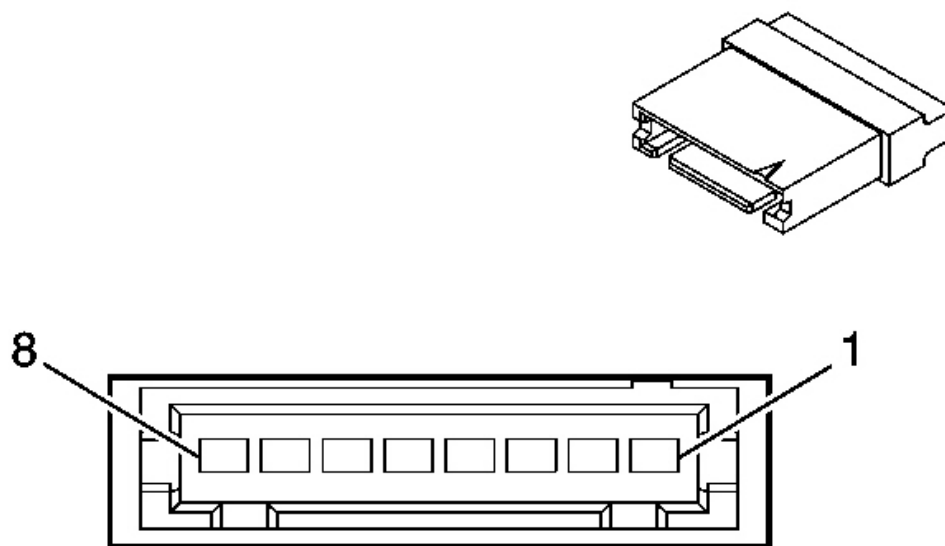


Fig. 26: S32D Seat Heating Switch - Driver (SPO Accessory)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness Type: SPO Seat Heating Switch Extension
- OEM Connector: 485893-5
- Service Connector: Pending
- Description: 8-Way F (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 485893-5
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 485893-5
- Core/Insulation Crimp: Not Available

S32D Seat Heating Switch - Driver (SPO Accessory)

Pin	Wire	Circuit	Function
1	0.35 BN	-	Heated Seat Indicator Supply Voltage

2	0.35 RD	-	Driver Heated Seat Switch Signal
3	0.35 OG	-	Driver Heated Seat High Indicator Control
4	0.35 YE	-	Driver Heated Seat Low Indicator Control
5	0.35 D-BU	-	Passenger Heated Seat Switch Signal
6	0.35 PU	-	Passenger Heated Seat High Indicator Control
7	0.35 GY	-	Passenger Heated Seat Low Indicator Control
8	-	-	Not Used

S33 HORN SWITCH

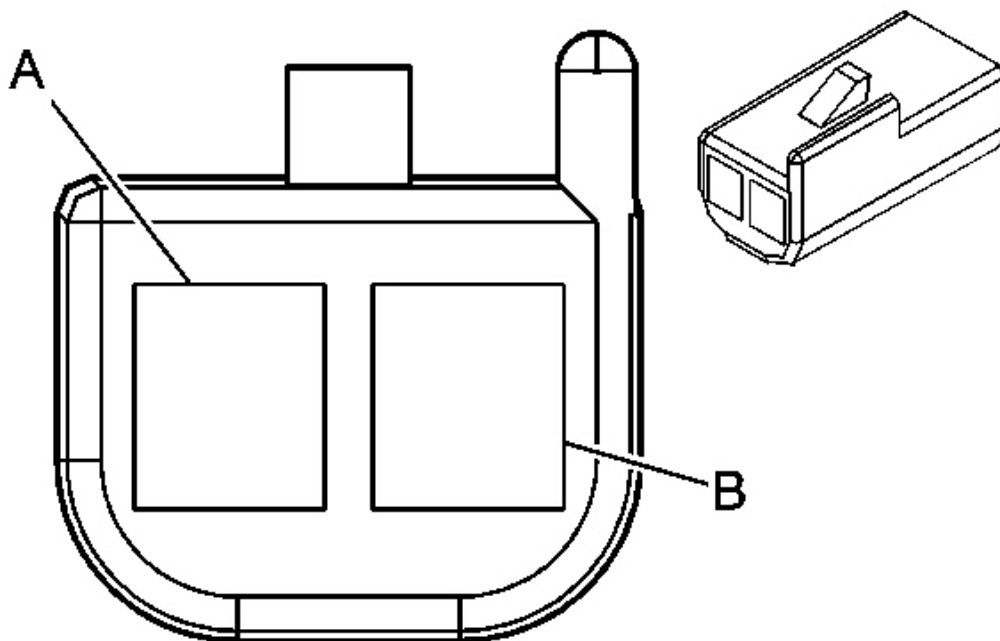


Fig. 27: S33 Horn Switch

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Steering Wheel
- OEM Connector: 12047662
- Service Connector: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

S33 Horn Switch

Pin	Wire	Circuit	Function
A	0.5 RD	1329	Horn Fuse Supply Voltage
B	0.5 PK	1550	Ground

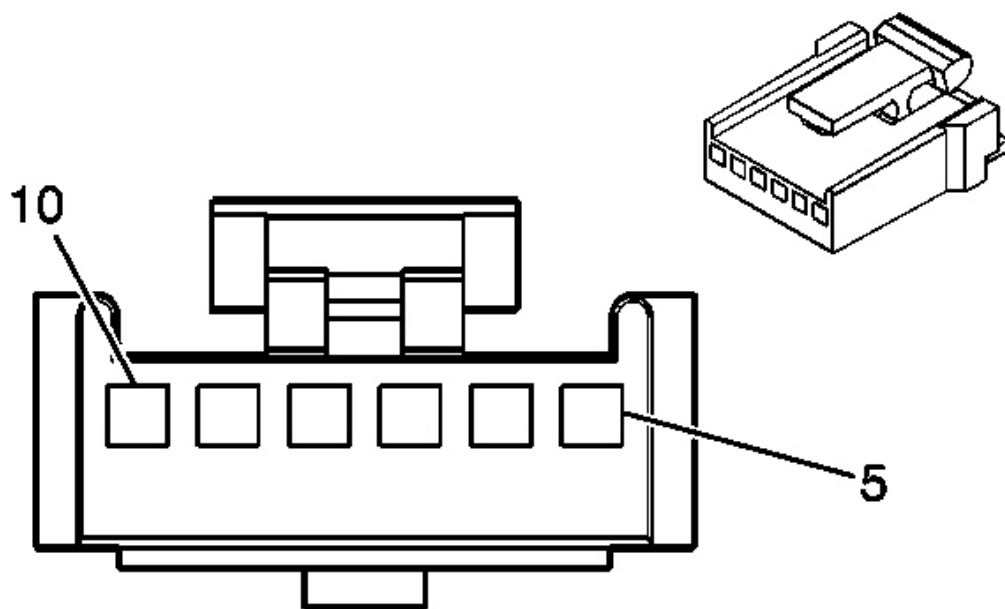
S36 INSTRUMENT PANEL DIMMER SWITCH

Fig. 28: S36 Instrument Panel Dimmer Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel

- OEM Connector: 12064993
- Service Connector: 12102485
- Description: 6-Way F Micro-Pack 100 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12031876-1
- Diagnostic Test Probe: J-35616-6 (BN)
- Terminal/Tray: 12146447/3
- Core/Insulation Crimp: E/C

S36 Instrument Panel Dimmer Switch

Pin	Wire	Circuit	Function
5	0.35 L-BU/BK	1688	5-Volt Reference
6	0.35 YE	6817	LED Backlight Dimming Control
7	0.35 BK	1550	Ground
8	-	-	Not Used
9	0.35 D-GN	44	Instrument Panel Lamps Dimmer Switch Signal
10	0.35 YE	5005	Low Reference

S39 IGNITION SWITCH

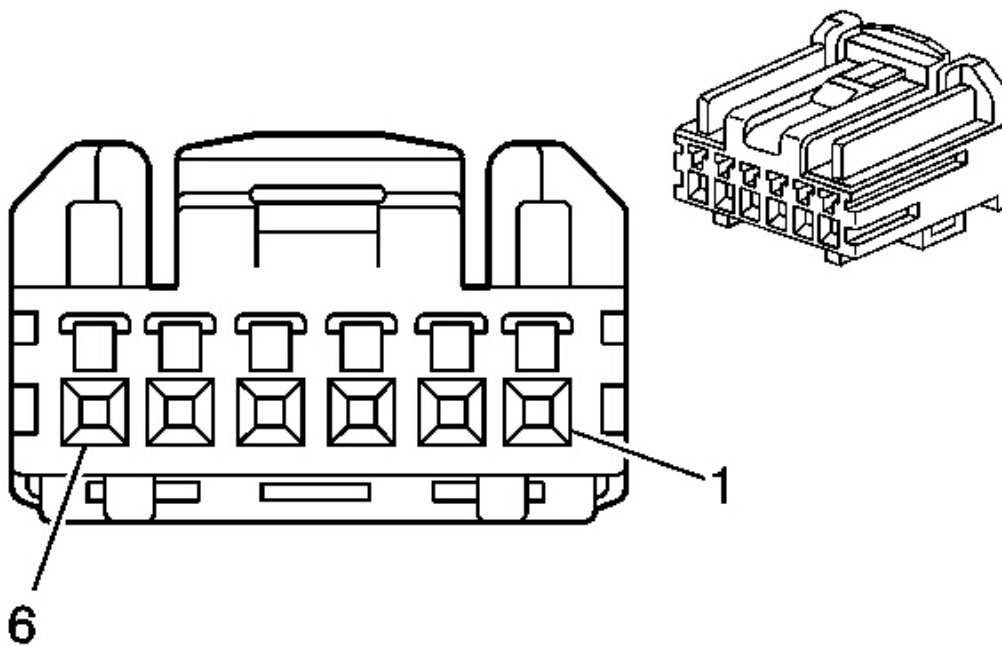


Fig. 29: S39 Ignition Switch

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: HCMPB-C06-S
- Service Connector: 19153174
- Description: 6-Way F HCM Series (NA)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SHCM-A03T-P025/20
- Core/Insulation Crimp: J/J

S39 Ignition Switch

Pin	Wire	Circuit	Function
1	0.35 PK	3	Ignition Voltage

2	0.35 RD/WH	540	Battery Positive Voltage
3	0.35 BN	4	Accessory Voltage
4	0.35 PK	1020	Ignition Voltage
5	-	-	Not Used
6	0.35 WH/BK	1073	5-Volt Reference

S45B LIFTGATE CONTROL SWITCH - INTERIOR (TB5)

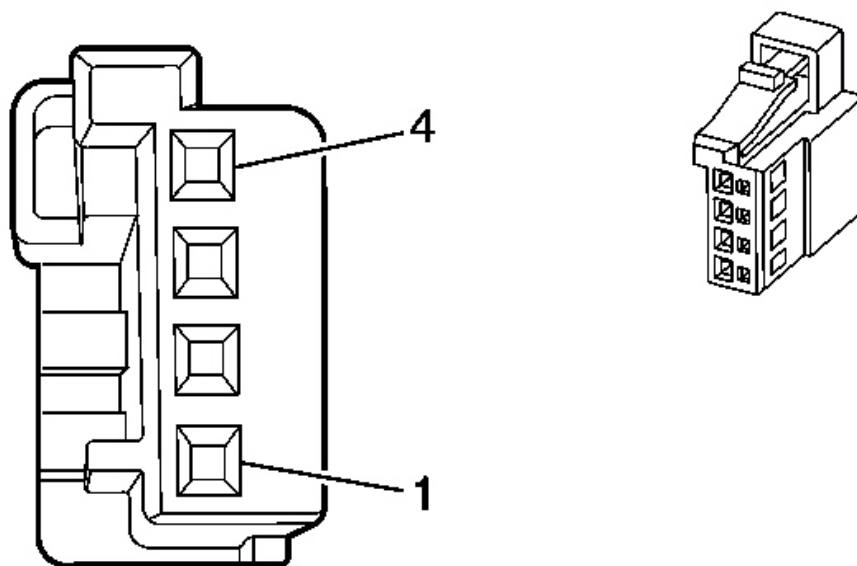


Fig. 30: S45B Liftgate Control Switch - Interior (TB5)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 1379029-1
- Service Connector: 13316145
- Description: 4-Way F 0.64 Micro Quadlok Series (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

S45B Liftgate Control Switch - Interior (TB5)

Pin	Wire	Circuit	Function
1	0.35 BK	550	Ground
2	0.35 YE	6817	LED Backlight Dimming Control
3	0.35 D-GN	6112	Liftgate On/Off Switch Signal
4	0.35 GY/BK	6113	Rear Liftgate Open/Close Switch Signal

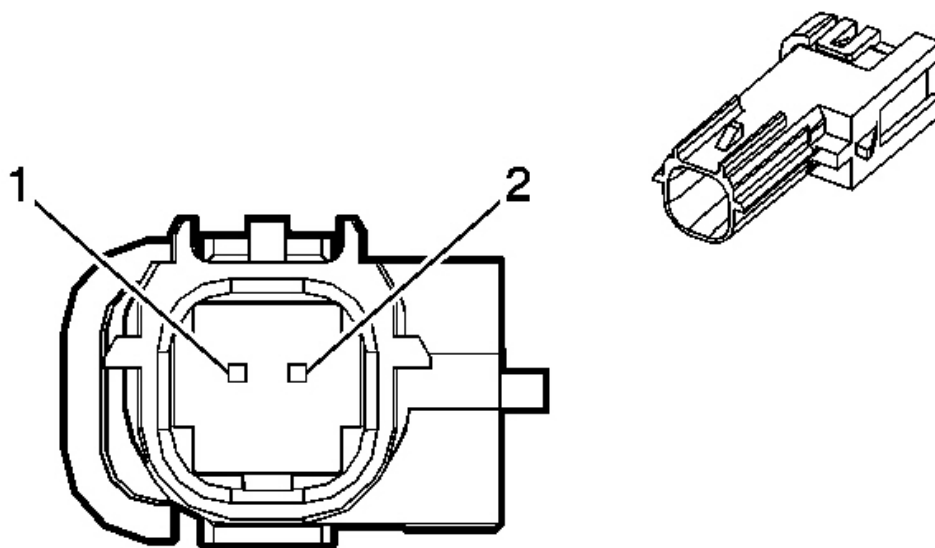
S46 LIFTGATE HANDLE SWITCH

Fig. 31: S46 Liftgate Handle Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: License Lamp

- OEM: 13640461
- Service: Service by Harness - See Part Catalog
- Description: 2-Way M 064 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

S46 Liftgate Handle Switch

Pin	Wire	Circuit	Function
1	0.35 GY	5797	Liftgate Open/Close Switch Signal - Rear
2	0.35 BK	2550	Ground (TB4)
	0.35 PU/WH	5801	Low Reference (TB5)

S47D SEAT MEMORY SWITCH - DRIVER (LTZ OR SLT)

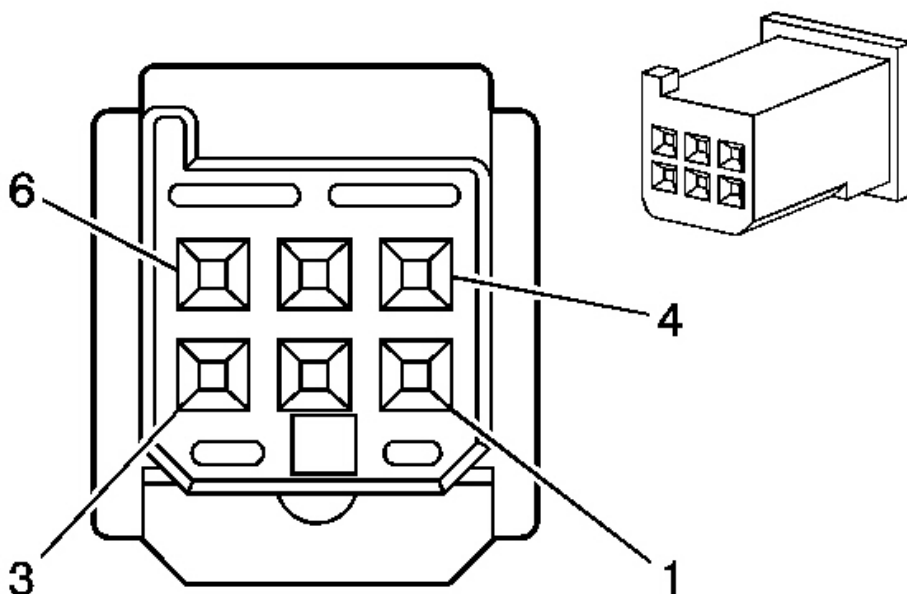


Fig. 32: S47D Seat Memory Switch - Driver (LTZ or SLT)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 1-968291-2
- Service Connector: 88988105
- Description: 6-Way F Micro Quadlok Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

S47D Seat Memory Switch - Driver (LTZ or SLT)

Pin	Wire	Circuit	Function
1	0.35 D-BU/WH	5978	Low reference
2-4	-	-	Not Used
5	0.35 OG	614	Memory Set Switch Signal
6	0.35 WH	615	Memory 1 Switch Signal

S52 OUTSIDE REARVIEW MIRROR SWITCH

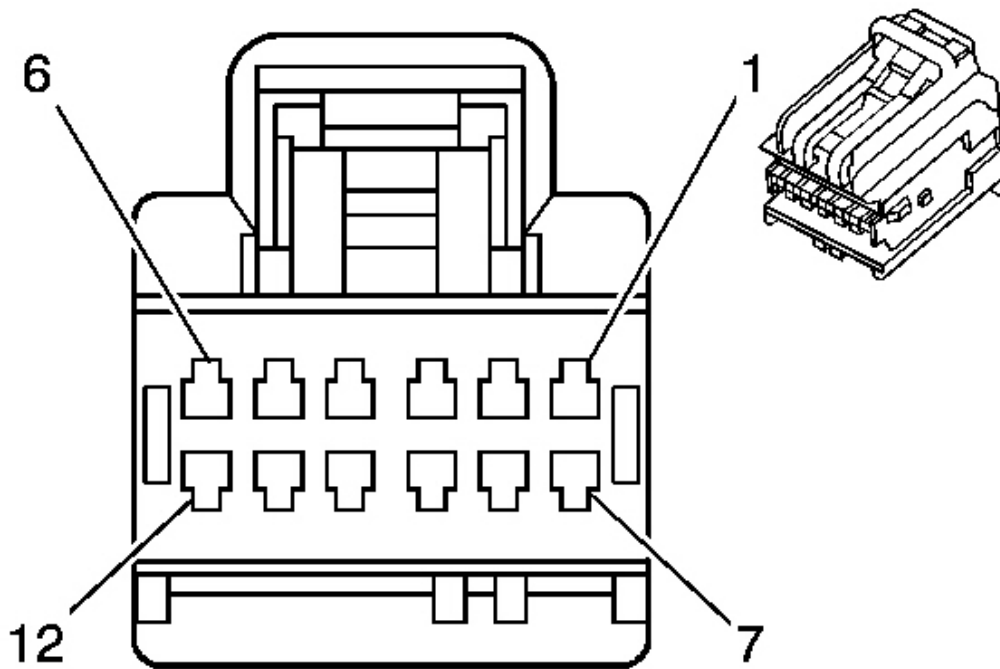


Fig. 33: S52 Outside Rearview Mirror Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door Trim
- OEM Connector: 31410-1121
- Service Connector: 19151154
- Description: 12-Way F 64 Series, Sealed (GY)

Terminal Part Information

- Terminated Lead: 13575899
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

S52 Outside Rearview Mirror Switch

Pin	Wire	Circuit	Function
-----	------	---------	----------

1-4	-	-	Not Used
5	0.5 WH	3398	Outside Rearview Mirror Control Switch Common (without LTZ or SLT)
	0.35 D-BU/WH	3390	Outside Rearview Mirror Up/Down Control (LTZ or SLT)
6	0.5 TN	3391	Outside Rearview Mirror Control Switch Common (without LTZ or SLT)
7	0.5 OG/BK	3397	Outside Rearview Mirror Up/Down Control (without LTZ or SLT)
8	0.5 D-BU/WH	3390	Outside Rearview Mirror Up/Down Control (without LTZ or SLT)
9	0.5 GY/BK	3396	Outside Rearview Mirror Left/Right Control (without LTZ or SLT)
10	0.5 D-GN/WH	3389	Outside Rearview Mirror Left/Right Control (without LTZ or SLT)
11	0.5 BK	750	Ground
12	0.35 D-BU/WH	3390	Outside Rearview Mirror Up/Down Control (LTZ or SLT)
	0.5 RD/WH	1940	Battery Positive Voltage (without LTZ or SLT)

S64D SEAT ADJUSTER SWITCH - DRIVER (AE8 OR LTZ OR SLT)

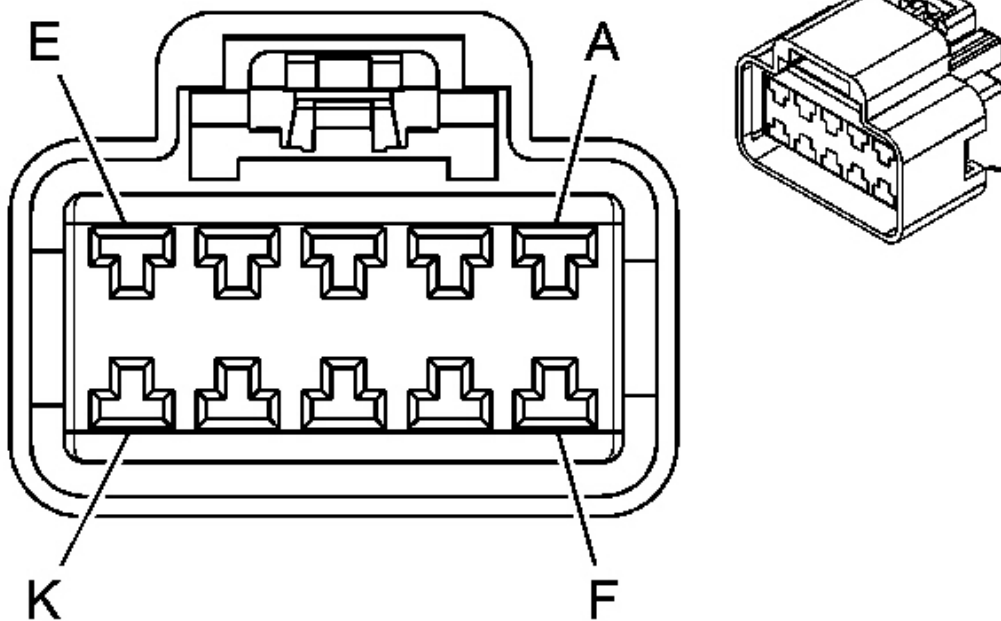


Fig. 34: S64D Seat Adjuster Switch - Driver (AE8 or LTZ or SLT)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 15326931
- Service Connector: 15306309
- Description: 10-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A-K (AE8)
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: F/D
- Pins: A, C-K (LTZ or SLT)

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A

S64D Seat Adjuster Switch - Driver (AE8 or LTZ or SLT)

Pin	Wire	Circuit	Function
A	3 D-GN	286	Driver Seat Front Vertical Motor Up Control (AE8)
	0.5 D-GN	1518	Power Seat Front Vertical Up Switch Signal (LTZ or SLT)
B	3 BK	750	Ground (AE8)
C	0.5 L-GN	1523	Power Seat Horizontal Rearward Switch Signal (LTZ or SLT)
	3 L-GN	284	Driver Seat Horizontal Motor Rearward Control (AE8)
D	0.5 TN	1522	Power Seat Horizontal Forward Switch Signal (LTZ or SLT)
	3 TN	285	Driver Seat Horizontal Motor Forward Control (AE8)
E	3 RD/WH	5040	Battery Positive Voltage (AE8)
	0.5 BK	750	Ground (LTZ or SLT)
F	3 YE	282	Driver Seat Rear Vertical Motor Up Control (AE8)
	0.5 YE	1519	Power Seat Rear Vertical Up Switch Signal (LTZ or SLT)
G	3 L-BU	277	Driver Seat Recline Motor Rearward Control (AE8)
	0.5 D-GN/WH	1270	Power Seat Recline Rearward Switch Signal (LTZ or SLT)
H	3 L-GN	276	Driver Seat Recline Motor Forward Control (AE8)
	0.5 GY/BK	1269	Power Seat Recline Forward Switch Signal (LTZ or SLT)
J	0.5 L-BU	1521	Power Seat Rear Vertical Down Switch Signal (LTZ or SLT)
	3 L-BU	283	Driver Seat Rear Vertical Motor Down Control (AE8)
K	0.5 D-BU	1520	Power Seat Front Vertical Down Switch Signal (LTZ or SLT)
	3 D-BU	287	Driver Seat Front Vertical Motor Down Control (AE8)

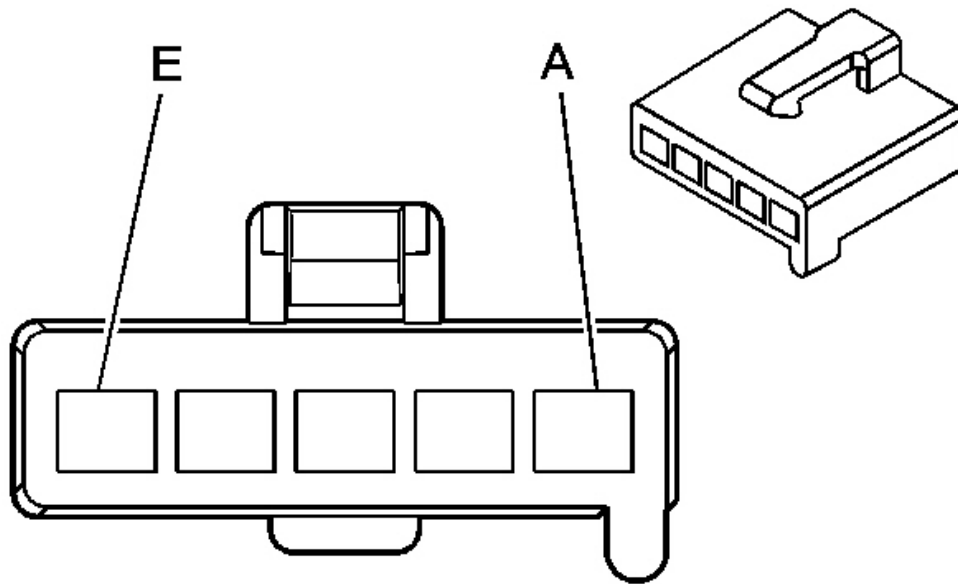
S64D SEAT ADJUSTER SWITCH - DRIVER (WITHOUT AE8 OR LTZ OR SLT)

Fig. 35: S64D Seat Adjuster Switch - Driver (without AE8 or LTZ or SLT)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 12041429
- Service Connector: 12167129
- Description: 5-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12015858/4
- Core/Insulation Crimp: F/G

S64D Seat Adjuster Switch - Driver (without AE8 or LTZ or SLT)

Pin	Wire	Circuit	Function
A	3 BK	750	Ground
B	3 D-BU	287	Driver Seat Front Vertical Motor Down Control
C	3 BK	750	Ground
D	3 RD/WH	5040	Battery Positive Voltage
E	3 D-GN	286	Driver Seat Front Vertical Motor Up Control

S65D SEAT LUMBAR SUPPORT SWITCH - DRIVER

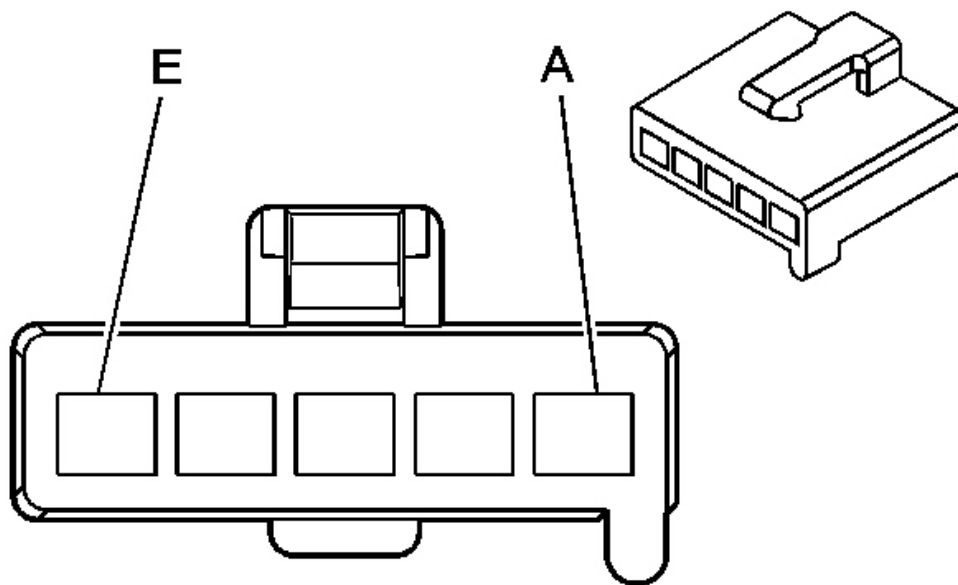


Fig. 36: S65D Seat Lumbar Support Switch - Driver
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 12041429
- Service Connector: 12167129
- Description: 5-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12034046/2
- Core/Insulation Crimp: E/A

S65D Seat Lumbar Support Switch - Driver

Pin	Wire	Circuit	Function
A	0.8 BK	750	Ground
B	0.8 PK	610	Driver Seat Lumbar Motor Rearward Control
C	0.8 BK	750	Ground
D	0.8 RD/WH	5240	Battery Positive Voltage
E	0.8 D-BU	611	Driver Seat Lumbar Motor Forward Control

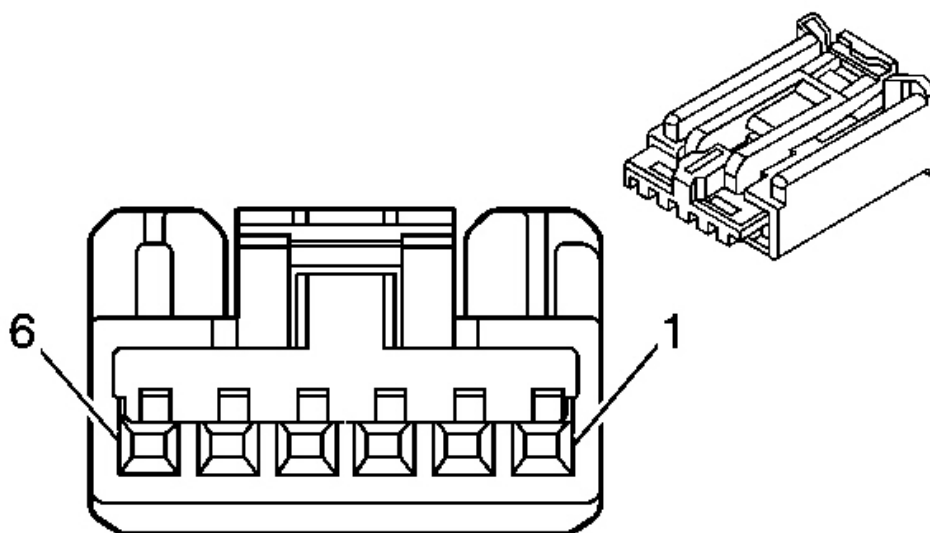
S70L STEERING WHEEL CONTROLS SWITCH - LEFT

Fig. 37: S70L Steering Wheel Controls Switch - Left
Courtesy of GENERAL MOTORS CORP.

- Harness: POA Steering Wheel
- OEM: S07B-AIT2-1FS
- Service: Service by Harness - See Part Catalog
- Description: 8-Way F (WH)

Terminal Part Information

- Terminated Lead: Service by Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

S70L Steering Wheel Controls Switch - Left

Pin	Wire	Circuit	Function
1	0.35 WH	1444	12 Volt Reference
2	-	-	Not Used
3	0.35 GY	1884	Cruise Control Set/Coast/Resume/Accelerate Switch Signal
4-5	-	-	Not Used
6	0.35 YE	6817	LED Backlight Dimming Control
7	0.35 PK	1550	Ground

S70R STEERING WHEEL CONTROLS SWITCH - RIGHT (UK3)

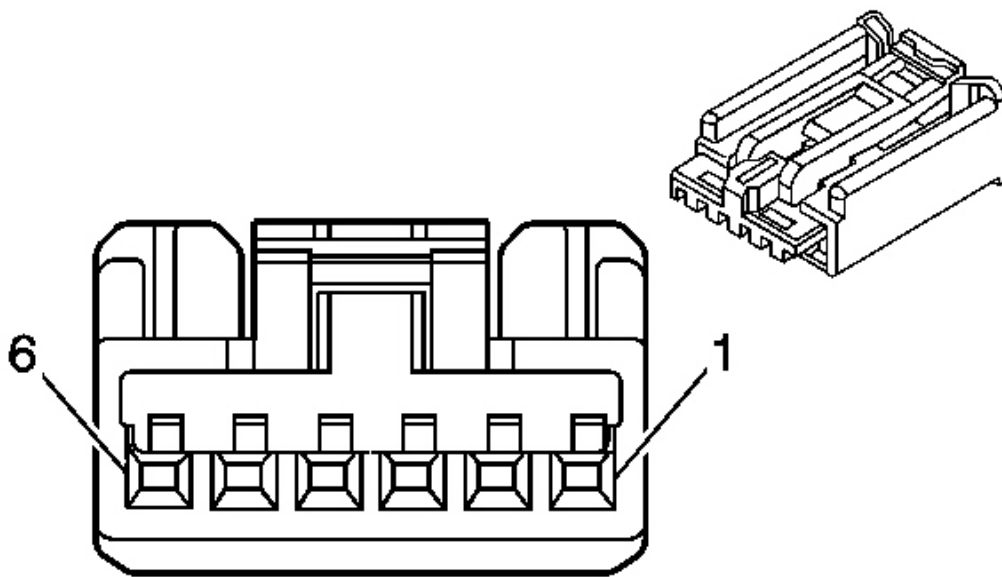


Fig. 38: S70R Steering Wheel Controls Switch - Right (UK3)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Steering Wheel
- OEM Connector: 15269798
- Service Connector: 19167753
- Description: 6-Way F AIT II Series (BK)

Terminal Part Information

- Terminated Lead: Service by Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

S70R Steering Wheel Controls Switch - Right (UK3)

Pin	Wire	Circuit	Function
1	0.35 WH	1444	12 Volt Reference
2	0.35 OG	6818	Steering Wheel Resistor Ladder Signal #1

3	-	-	Not Used
4	0.35 YE	6817	LED Backlight Dimming Control
5	0.35 PK	1550	Ground
	0.35 PK	1550	Ground
6	-	-	Not Used

S72 SUNROOF SWITCH (CF5)

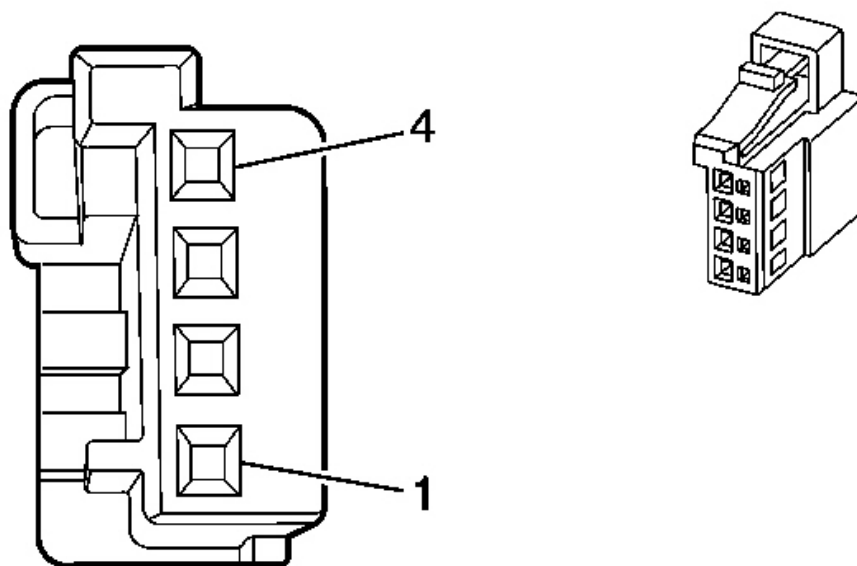


Fig. 39: S72 Sunroof Switch (CF5)
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 1379029-1
- Service Connector: 13316145
- Description: 4-Way F 0.64 Micro Quadlok Series (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

S72 Sunroof Switch (CF5)

Pin	Wire	Circuit	Function
1	0.35 D-BU	128	Sunroof Switch Low Reference
2	0.35 YE	6817	LED Backlight Dimming Control
3	0.35 BK	550	Ground
4	0.35 L-BU	5027	Sunroof Switch Data 1

S75 TRACTION CONTROL SWITCH

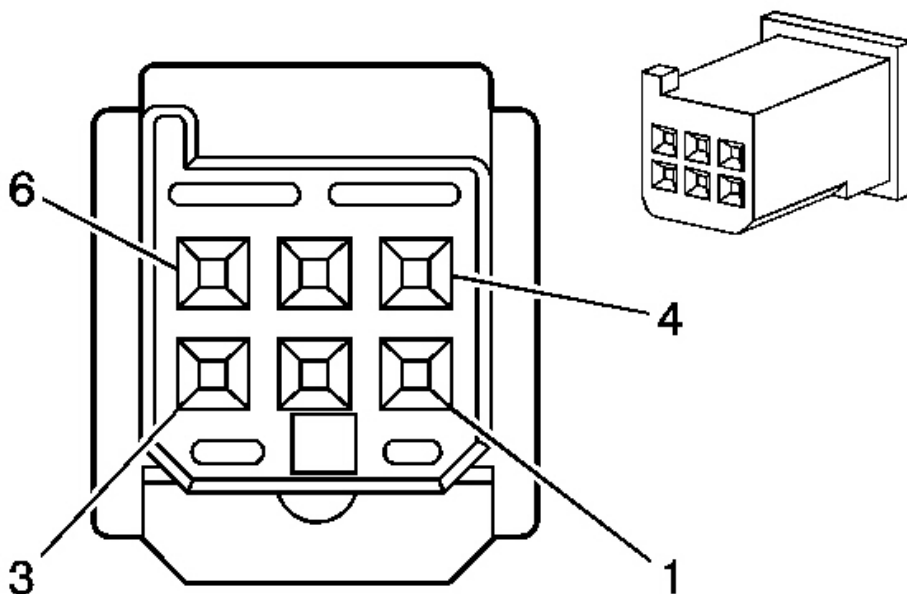


Fig. 40: S75 Traction Control Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console

- OEM Connector: 1-968291-2
- Service Connector: 88988105
- Description: 6-Way F Micro Quadlok Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

S75 Traction Control Switch

Pin	Wire	Circuit	Function
1	0.35 BK	1550	Ground
2	0.35 YE	6817	LED Backlight Dimming Control
3	0.35 L-BU	1788	Traction Control Switch Signal
4-6	-	-	Not Used

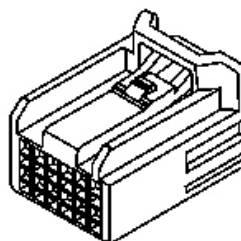
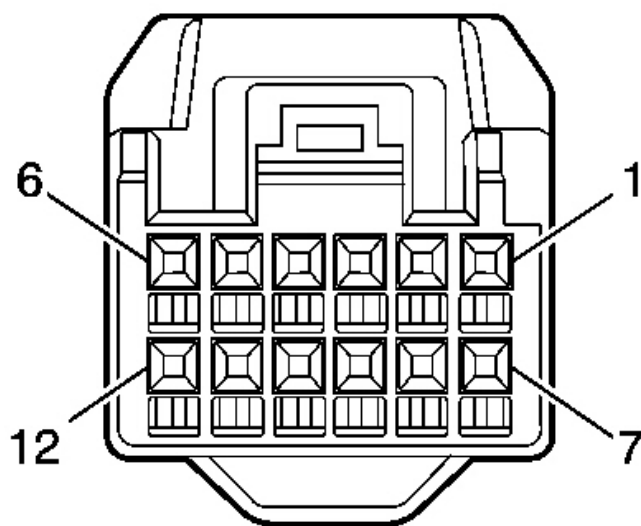
S78 TURN SIGNAL/MULTIFUNCTION SWITCH

Fig. 41: S78 Turn Signal/Multifunction Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: SHC2PB-12-2AK
- Service Connector: 13316195
- Description: 12-Way F 0.64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575869
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SNAC3-A021T-M0.64/20
- Core/Insulation Crimp: J/J

S78 Turn Signal/Multifunction Switch

Pin	Wire	Circuit	Function
1	0.35 OG	192	Front Fog Lamp Switch Signal/Fog Lamps Enable (T96)
2	0.35 WH	103	Headlamp Switch Headlamps On Signal
3	-	-	Not Used
4	0.35 TN	664	Hazard Switch Turn Right Signal
5	0.35 D-GN	663	Hazard Switch Left Turn Signal
6	0.35 BK	1550	Ground
7	0.35 L-BU	13	Headlamp Switch Park Lamps Signal
8	-	-	Not Used
9	0.35 D-GN	306	Headlamp Switch Headlamps Off Signal/Automatic Headlamp Low Control
10	-	-	Not Used
11	0.35 YE	525	Headlamp Dimmer Switch Low Beam Signal
12	0.35 YE	307	Headlamp Switch Flash to Pass Signal

S79D WINDOW SWITCH - DRIVER

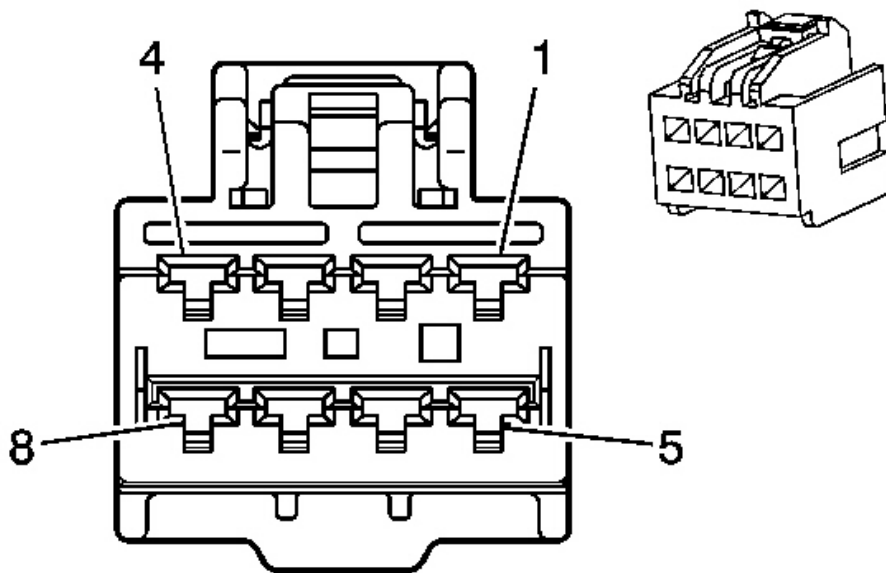


Fig. 42: S79D Window Switch - Driver
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door Trim
- OEM Connector: 6098-4713
- Service Connector: 88988652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Pins: 1-4
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: 4/4
- Pins: 5-7
- Terminated Lead: 13575576

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A

S79D Window Switch - Driver

Pin	Wire	Circuit	Function
1	2 BK	750	Ground
2	2 D-BU	164	Power Window Motor Left Front Up Control
3	2 BN	165	Power Window Motor Left Front Down Control
4	2 RD/WH	1240	Battery Positive Voltage
5	0.35 D-GN	6134	Local Interconnect Network 3
6	0.35 GY/BK	745	Left Front Door Ajar Switch Signal
7	0.35 D-GN	3270	Driver Door Lock Status Signal
8	-	-	Not Used

S79LR WINDOW SWITCH - LEFT REAR

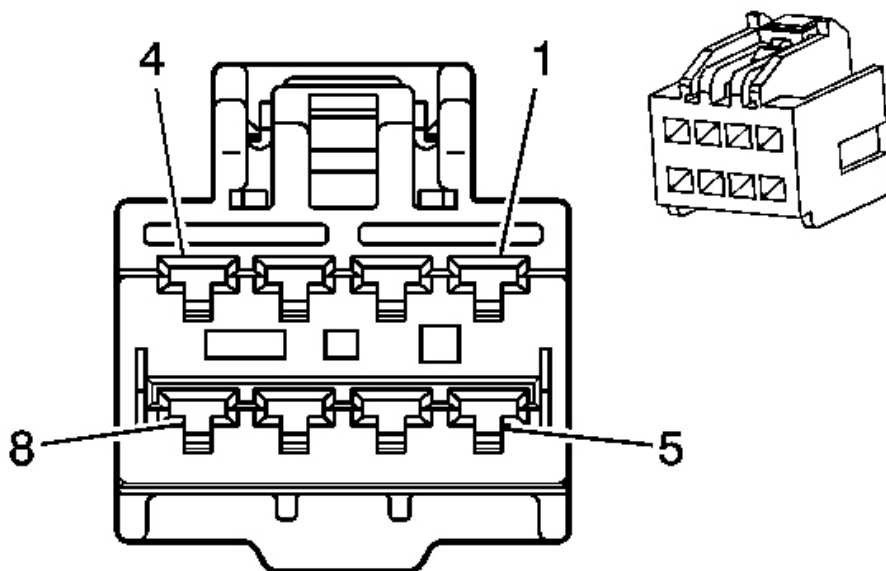


Fig. 43: S79LR Window Switch - Left Rear

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Left Rear Door
- OEM Connector: 6098-4713
- Service Connector: 88988652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Pins: 1-3
- Terminated Lead: 13575576
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A

- Pins: 5-8
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: 4/4

S79LR Window Switch - Left Rear

Pin	Wire	Circuit	Function
1	0.35 GY	6135	Local Interconnect Network 4
2	0.35 L-BU/BK	747	Left Rear Door Ajar Switch Signal
3	0.35 BK	2550	Ground
4	-	-	Not Used
5	2 BK	2550	Ground
6	2 D-BU	668	Power Window Motor Left Rear Up Control
7	2 BN	669	Power Window Motor Left Rear Down Control
8	2 RD/WH	1240	Battery Positive Voltage

S79P WINDOW SWITCH - PASSENGER X1

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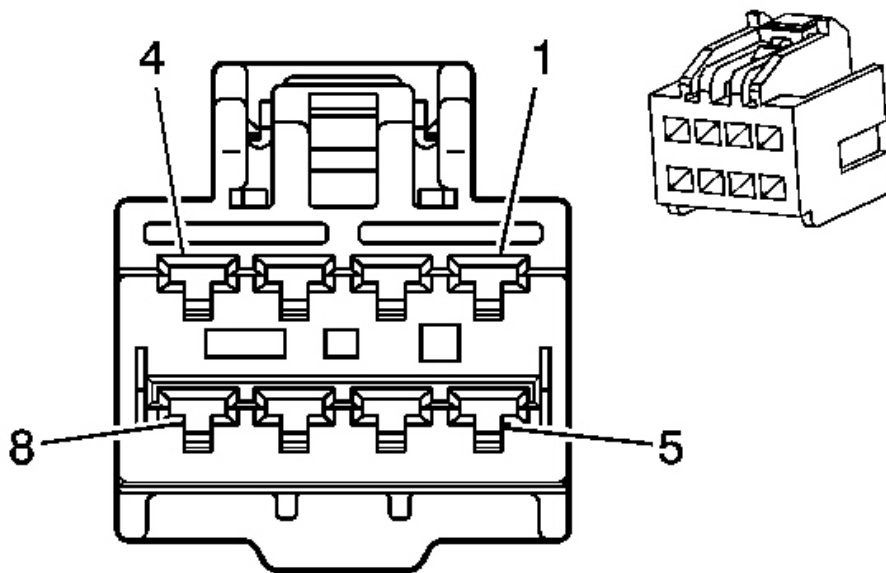


Fig. 44: S79P Window Switch - Passenger X1
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door Trim
- OEM Connector: 6098-4713
- Service Connector: 88988652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Pins: 1-4
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: 4/4
- Pins: 5, 6
- Terminated Lead: 13575576

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A

S79P Window Switch - Passenger X1

Pin	Wire	Circuit	Function
1	2 BK	750	Ground
2	2 D-BU	666	Power Window Motor Right Front Up Control
3	2 BN	667	Power Window Motor Right Front Down Control
4	2 RD/WH	1340	Battery Positive Voltage
5	0.35 D-GN	6134	Local Interconnect Network 3
6	0.35 TN/WH	746	Right Front Door Ajar Switch Signal
7-8	-	-	Not Used

S79P WINDOW SWITCH - PASSENGER X2 (LTZ OR SLT)

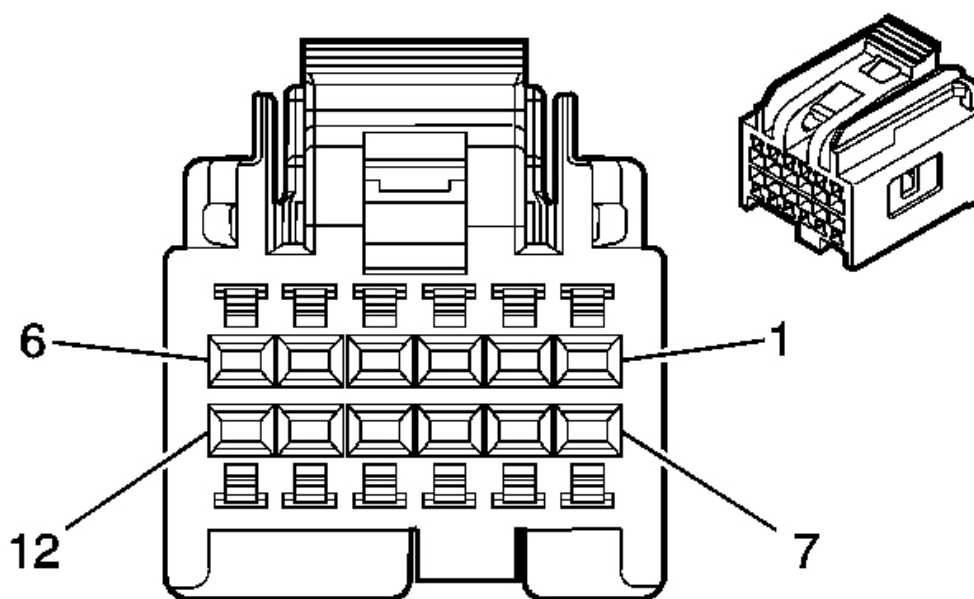


Fig. 45: S79P Window Switch - Passenger X2 (LTZ or SLT)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door Trim
- OEM Connector: 6098-4713
- Service Connector: 88988652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

S79P Window Switch - Passenger X2 (LTZ or SLT)

Pin	Wire	Circuit	Function
1	-	-	Not Used
2	0.5 OG/BK	6162	Outside Right Mirror Horizontal Position Control
3	0.5 WH	7196	Outside Right Mirror Drive Motor Common
4	0.5 YE	674	5-Volt Reference
5	0.5 BN	787	Passenger Mirror Vertical Position Sensor Signal
6	0.5 L-GN	675	Low Reference
7	-	-	Not Used
8	0.5 GY/BK	6161	Outside Right Mirror Horizontal Position Control
9	0.35 WH	7530	Local Interconnect Network 8
10	-	-	Not Used
11	0.5 L-BU/BK	785	Passenger Mirror Horizontal Position Sensor Signal
12	-	-	Not Used

S79RR WINDOW SWITCH - RIGHT REAR

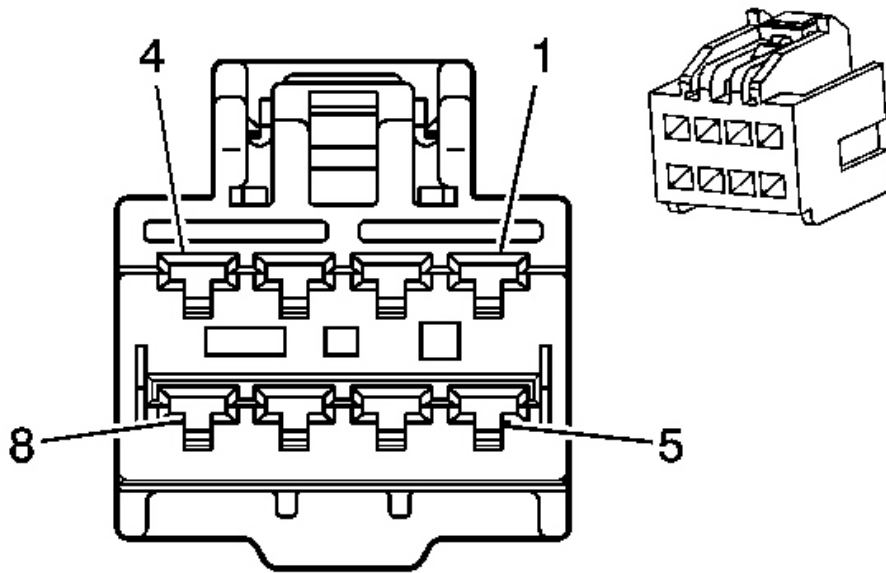


Fig. 46: S79RR Window Switch - Right Rear
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Right Rear Door
- OEM Connector: 6098-4713
- Service Connector: 88988652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Pins: 1, 2
- Terminated Lead: 13575576
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Pins: 5-8
- Terminated Lead: Pending

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: 4/4

S79RR Window Switch - Right Rear

Pin	Wire	Circuit	Function
1	0.35 GY	6135	Local Interconnect Network 4
2	0.35 L-GN/BK	748	Right Rear Door Ajar Switch Signal
3-4	-	-	Not Used
5	2 BK	550	Ground
6	2 D-BU	670	Power Window Motor Right Rear Up Control
7	2 BN	671	Power Window Motor Right Rear Down Control
8	2 RD/WH	1340	Battery Positive Voltage

S82 WINDSHIELD WIPER/WASHER SWITCH

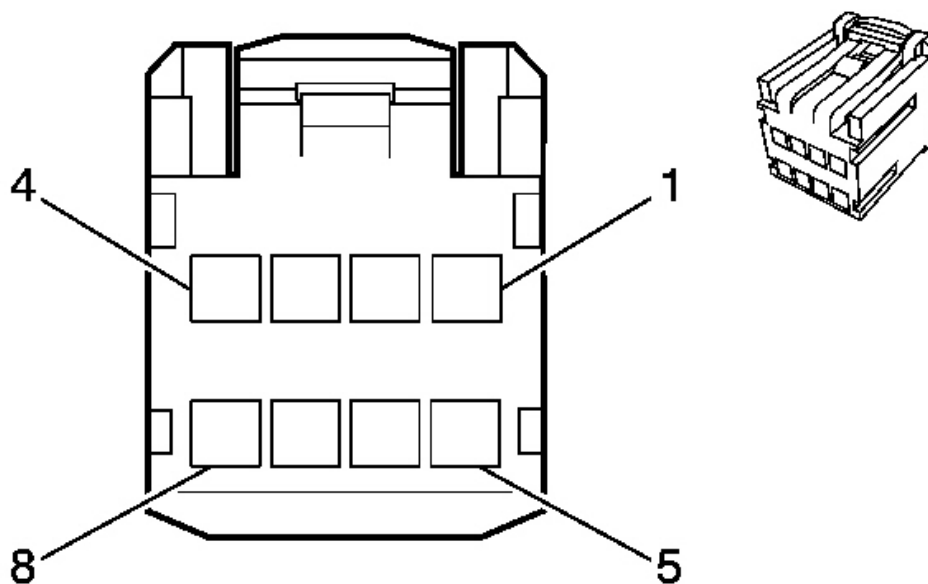


Fig. 47: S82 Windshield Wiper/Washer Switch

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: HCMDPB-08-K
- Service Connector: 13316157
- Description: 8-Way F 1.2 HCM Series (WH)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SHCM-A03T-P025/20
- Core/Insulation Crimp: J/J

S82 Windshield Wiper/Washer Switch

Pin	Wire	Circuit	Function
1	0.35 L-GN	1715	Windshield Wiper Switch High Signal
2	0.35 TN/BK	6009	Low Reference
3	0.35 L-BU	1714	Windshield Wiper Switch Low Signal
4	0.35 GY	391	Rear Window Wiper Switch Signal
5	0.35 PK	94	Windshield Washer Switch Signal
6-8	-	-	Not Used

S88 SUNROOF TILT SWITCH (CF5)

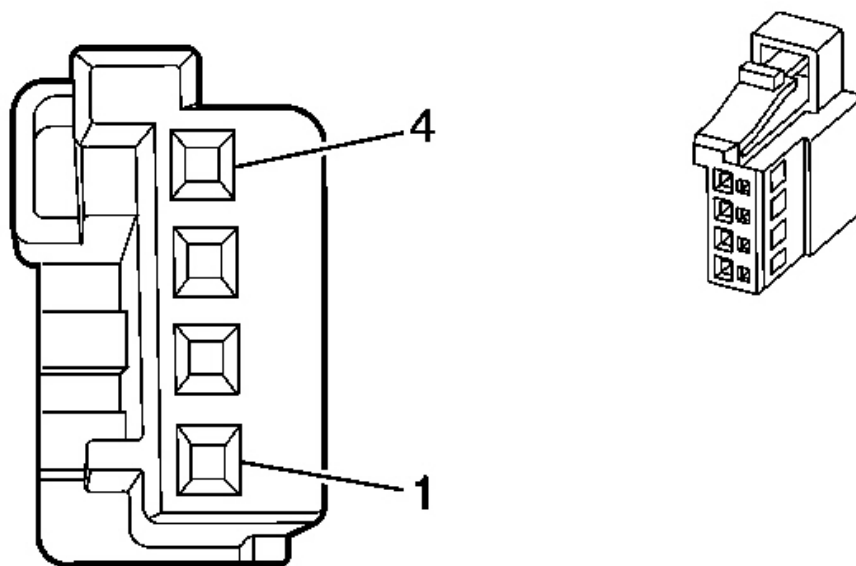


Fig. 48: S88 Sunroof Tilt Switch (CF5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 1379029-2
- Service Connector: 13316146
- Description: 4-Way F 0.64 MQS Series (WH)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

S88 Sunroof Tilt Switch (CF5)

Pin	Wire	Circuit	Function
1	0.35 PK	2075	Sunroof Switch Close Vent Signal

2	0.35 YE	6817	LED Backlight Dimming Control
3	0.35 BK	550	Ground
4	0.35 OG/BK	144	Sunroof Switch Open Vent Signal

S112 FUEL ECONOMY MODE SWITCH

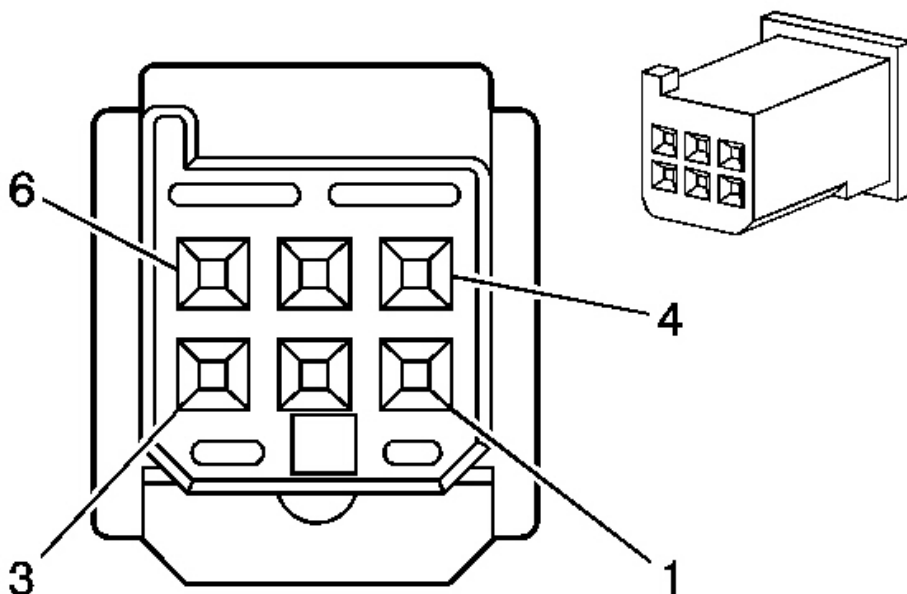


Fig. 49: S112 Fuel Economy Mode Switch
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: 1-968291-2
- Service Connector: 88988105
- Description: 6-Way F Micro Quadlok Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)

- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: Pins 1, 3, 4 - J/J
- Core/Insulation Crimp: Pin 2 - H/H

S112 Fuel Economy Mode Switch

Pin	Wire	Circuit	Function
1	0.5 BK	1550	Ground
2	0.35 YE	6817	LED Backlight Dimming Control
3	0.5 GY	2093	5-Volt 2 Reference
4	0.5 PK/WH	2092	Fuel Economy Mode Switch Signal
5-6	-	-	Not Used

T3 AUDIO AMPLIFIER X1

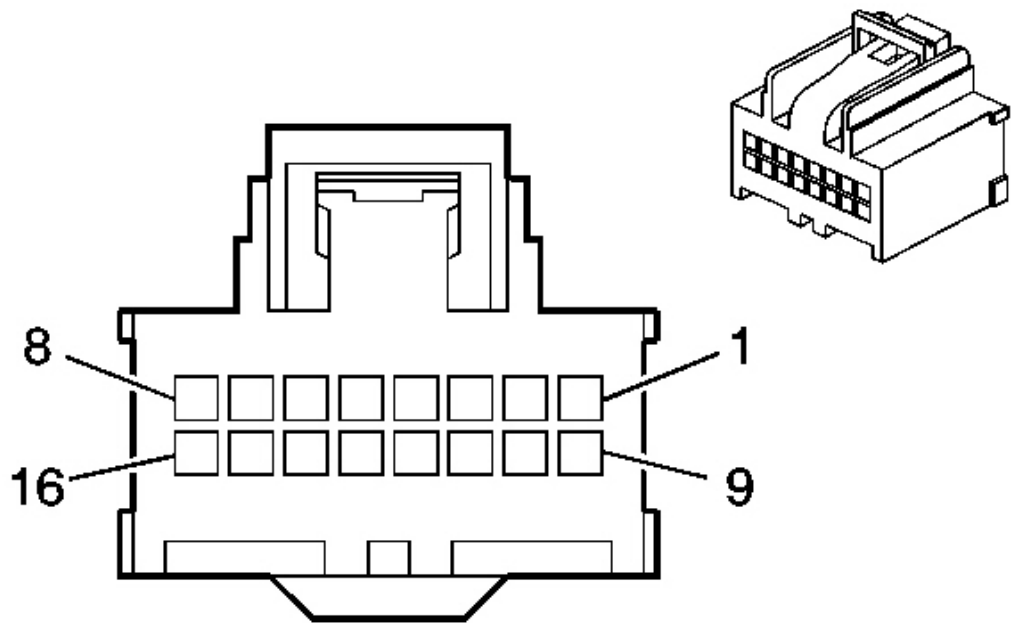


Fig. 50: T3 Audio Amplifier X1
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel

- OEM Connector: 7283-9076-30
- Service Connector: 15136073
- Description: 16-Way F Kaizen 64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

T3 Audio Amplifier X1

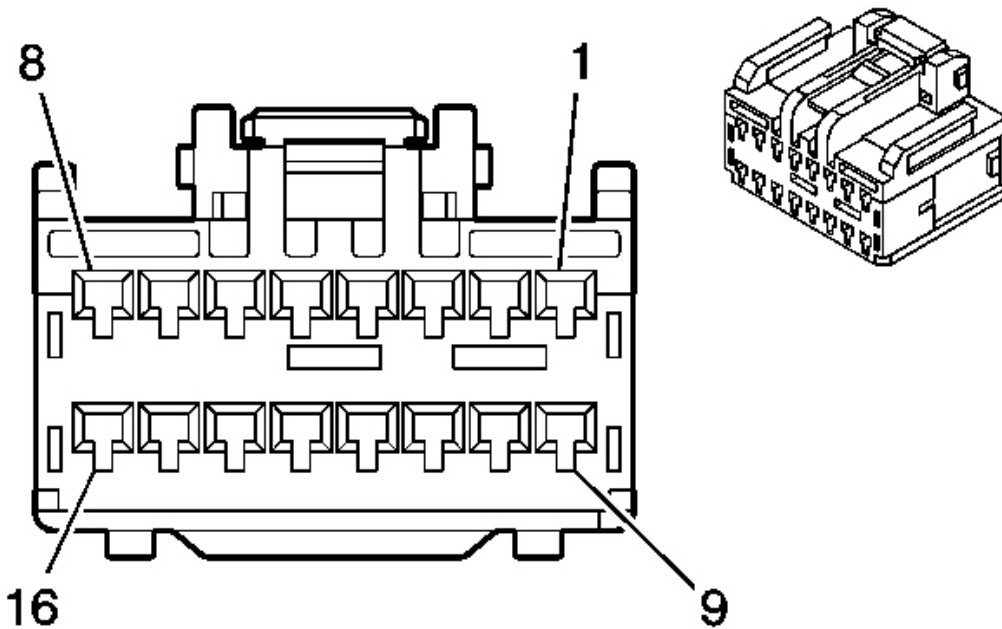
Pin	Wire	Circuit	Function
1	0.35 BN/WH	599	Left Rear Low Level Audio Signal +
2	0.35 BN	1999	Left Rear Low Level Audio Signal -
3	0.35 TN	1946	Right Rear Low Level Audio Signal -
4	0.35 D-BU	546	Right Rear Low Level Audio Signal +
5-7	-	-	Not Used
8	0.35 WH	7066	Remote Enable
9	0.35 L-GN/WH	512	Right Front Low Level Audio Signal +
10	0.35 OG/BK	1546	Front Low Level Audio Signal -
11	0.35 D-GN	1947	Left Front Low Level Audio Signal -
12	0.35 TN	511	Left Front Low Level Audio Signal +
13-15	-	-	Not Used
16	0.35 OG	6978	DVD Audio Common

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COMPONENT CONNECTOR END VIEWS

T3 AUDIO AMPLIFIER X2

**Fig. 1: T3 Audio Amplifier X2**

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 6098-4611
- Service Connector: 15134091
- Description: 16-Way F 1.5 Series (BK)

Terminal Part Information

- Pins: 1-4, 9-12

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0128/22
- Core/Insulation Crimp: C/A
- Pins: 7, 8, 13-16
- Terminated Lead: 13575855
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

T3 Audio Amplifier X2

Pin	Wire	Circuit	Function
1	0.8 TN	201	Left Front Speaker Output +
2	0.8 GY	118	Left Front Speaker Output -
3	0.8 BN	199	Left Rear Speaker Output +
4	0.8 YE	116	Left Rear Speaker Output -
5	0.35 PU	5747	Radio Amplifier Sense Signal (VQN)
6	-	-	Not Used
7	0.35 YE	1860	Front Center Speaker Output + (UZ8)
8	0.35 L-BU	1960	Front Center Speaker Output - (UZ8)
9	0.8 L-BU	115	Right Rear Speaker Output -
10	0.8 D-BU	46	Right Rear Speaker Output +
11	0.8 L-GN	200	Right Front Speaker Output +
12	0.8 D-GN	117	Right Front Speaker Output -
13	0.35 TN	9103	Noise Cancellation Signal - Front (VQN)
14	0.35 D-BU	9102	Noise Cancellation Reference - Front (VQN)
15	0.35 BN/WH	9100	Noise Cancellation Reference - Rear (VQN)
16	0.35 BN	9101	Noise Cancellation Signal - Rear (VQN)

T3 AUDIO AMPLIFIER X3

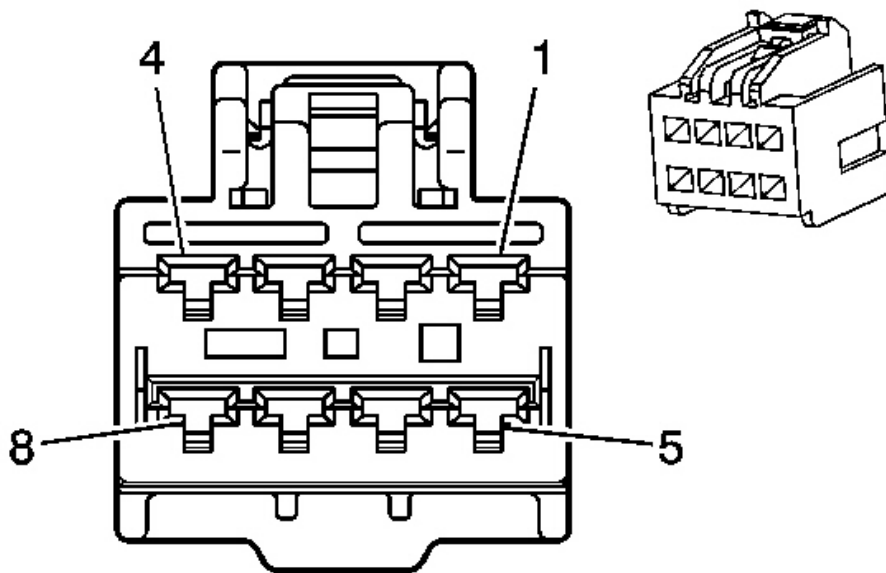


Fig. 2: T3 Audio Amplifier X3
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 6098-4713
- Service Connector: 88988652
- Description: 8-Way F 2.8 Series (BK)

Terminal Part Information

- Pins: 1-3, 5
- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4444/22
- Core/Insulation Crimp: 2/A
- Pins: 4, 8
- Terminated Lead: Pending

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: 4/4

T3 Audio Amplifier X3

Pin	Wire	Circuit	Function
1	1 D-BU/WH	346	Left Subwoofer Speaker Output + (UZ8)
2	1 L-BU/BK	315	Right Subwoofer Speaker Output - (UZ8)
3	1 D-GN	1795	Right Subwoofer Speaker Output + (UZ8)
4	2 RD/WH	3740	Battery Positive Voltage
5	1 L-GN/BK	1794	Left Subwoofer Speaker Output - (UZ8)
6-7	-	-	Not Used
8	2 BK/WH	1551	Ground

T8A IGNITION COIL 1 (LAF)

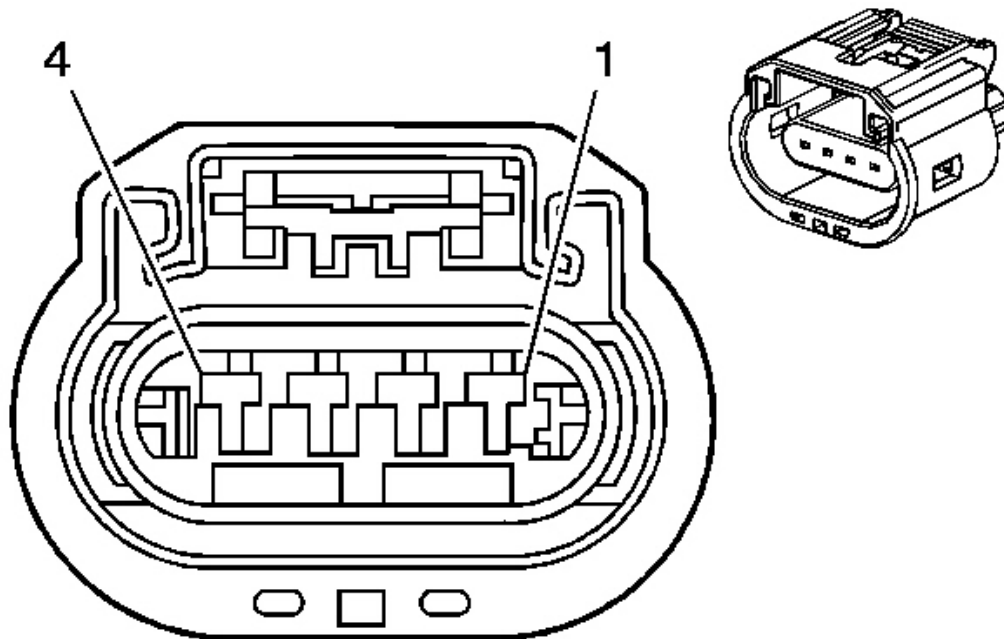


Fig. 3: T8A Ignition Coil 1 (LAF)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-3392-30
- Service Connector: 88988338
- Description: 4-Way F 150 Series, Sealed (BK)

Terminal Part Information

- Pins: 2, 3
 - Terminated Lead: Pending
 - Release Tool: 12094430
 - Diagnostic Test Probe: J-35616-2A (GY)
 - Terminal/Tray: 7116-4102-08/9
 - Core/Insulation Crimp: E/1
-
- Pins: 1, 4
 - Terminated Lead: Pending
 - Release Tool: 12094430
 - Diagnostic Test Probe: J-35616-2A (GY)
 - Terminal/Tray: 7116-4103-08/9
 - Core/Insulation Crimp: E/1

T8A Ignition Coil 1 (LAF)

Pin	Wire	Circuit	Function
1	0.8 BK	250	Ground
2	0.5 BN	2129	Low Reference
3	0.5 PU	2121	IC 1 Control
4	1 PK/BK	5291	Ignition Voltage

T8A IGNITION COIL 1 (LF1)

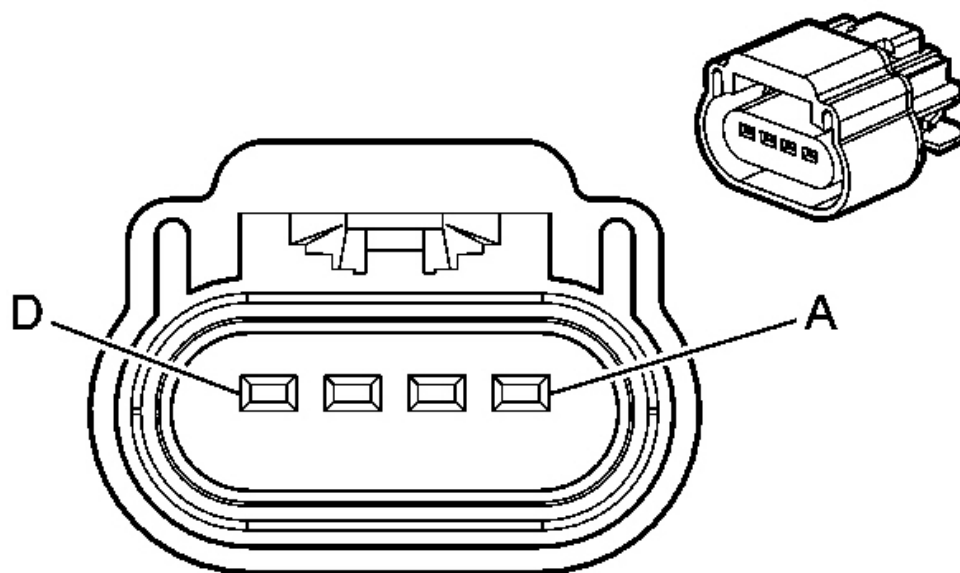


Fig. 4: T8A Ignition Coil 1 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15466325
- Service Connector: 88988737
- Description: 4-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575412
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: Pins A, D - 2/1
- Core/Insulation Crimp: Pins B, C - E/1

T8A Ignition Coil 1 (LF1)

Pin	Wire	Circuit	Function
-----	------	---------	----------

A	1 BK	350	Ground
B	0.5 BN	2129	Low Reference
C	0.5 PU	2121	IC 1 Control
D	1 PK/BK	5291	Ignition Voltage

T8B IGNITION COIL 2 (LAF)

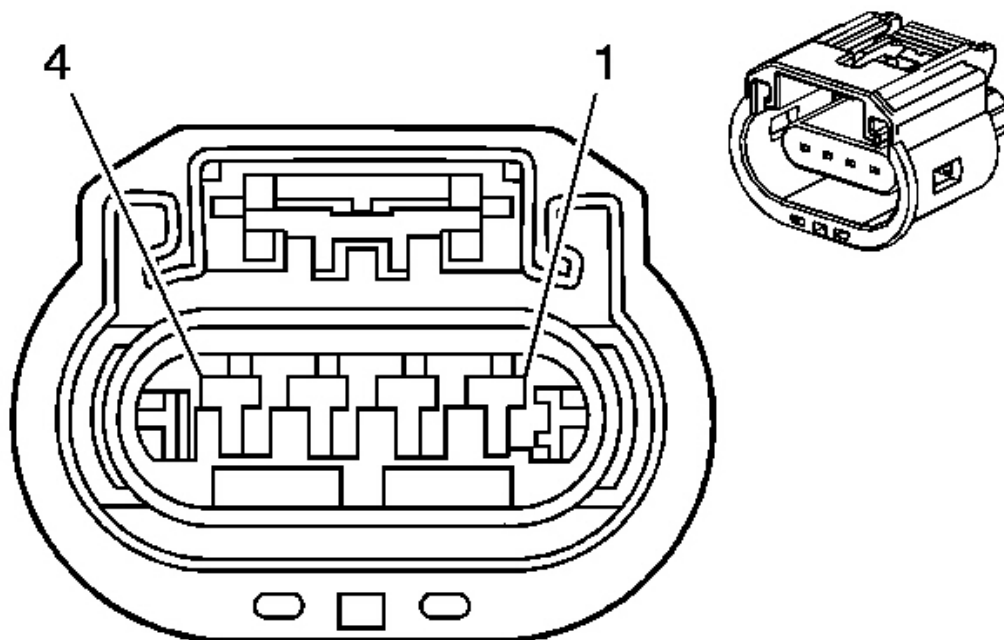


Fig. 5: T8B Ignition Coil 2 (LAF)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-3392-30
- Service Connector: 88988338
- Description: 4-Way F 150 Series, Sealed (BK)

Terminal Part Information

- Pins: 2, 3
- Terminated Lead: Pending

- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4102-08/9
- Core/Insulation Crimp: E/1

- Pins: 1, 4
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

T8B Ignition Coil 2 (LAF)

Pin	Wire	Circuit	Function
1	0.8 BK	250	Ground
2	0.5 BN	2129	Low Reference
3	0.5 OG/WH	2122	IC 2 Control
4	1 PK/BK	5292	Ignition Voltage

T8B IGNITION COIL 2 (LF1)

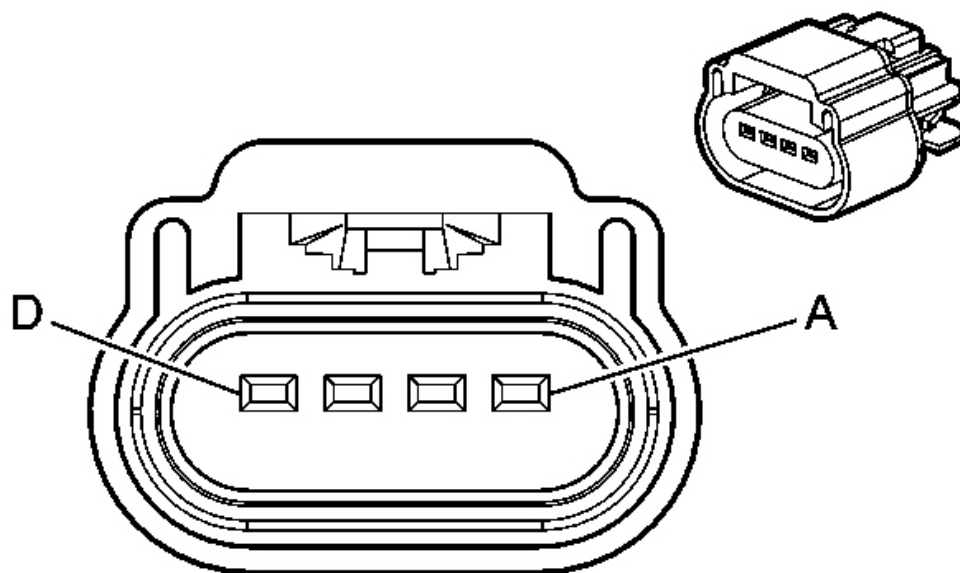


Fig. 6: T8B Ignition Coil 2 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15466325
- Service Connector: 88988737
- Description: 4-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575412
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: Pins A, D - 2/1
- Core/Insulation Crimp: Pins B, C - E/1

T8B Ignition Coil 2 (LF1)

Pin	Wire	Circuit	Function
-----	------	---------	----------

A	1 BK	250	Ground
B	0.5 BN/WH	2130	Low Reference
C	0.5 OG/WH	2122	IC 2 Control
D	1 PK/BK	5292	Ignition Voltage

T8C IGNITION COIL 3 (LAF)

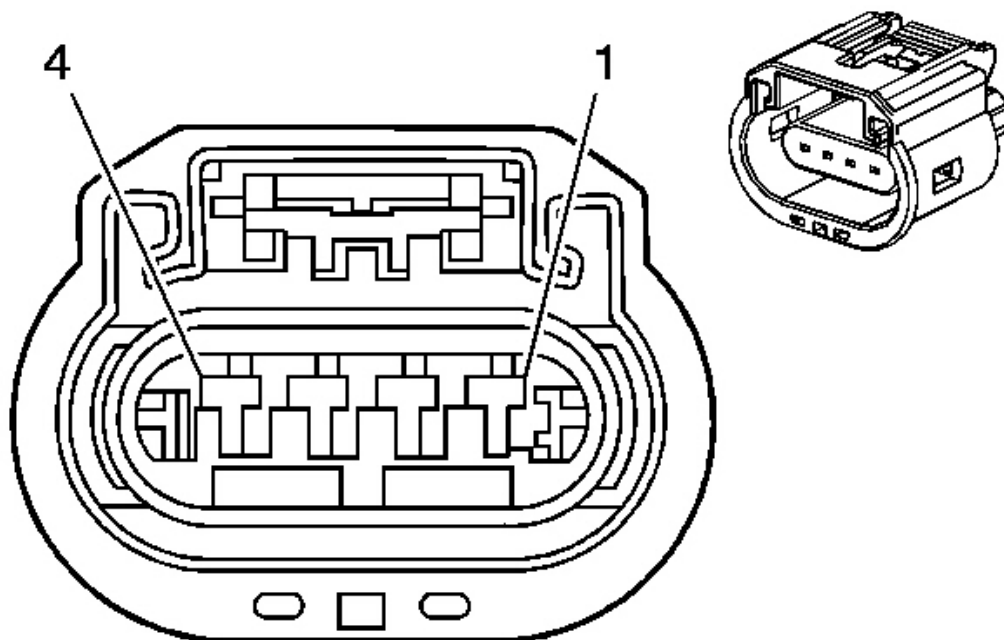


Fig. 7: T8C Ignition Coil 3 (LAF)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-3392-30
- Service Connector: 88988338
- Description: 4-Way F 150 Series, Sealed (BK)

Terminal Part Information

- Pins: 2, 3
- Terminated Lead: Pending

- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4102-08/9
- Core/Insulation Crimp: E/1

- Pins: 1, 4
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

T8C Ignition Coil 3 (LAF)

Pin	Wire	Circuit	Function
1	0.8 BK	250	Ground
2	0.5 BN	2129	Low Reference
3	0.5 L-BU	2123	IC 3 Control
4	1 PK/BK	5291	Ignition Voltage

T8C IGNITION COIL 3 (LF1)

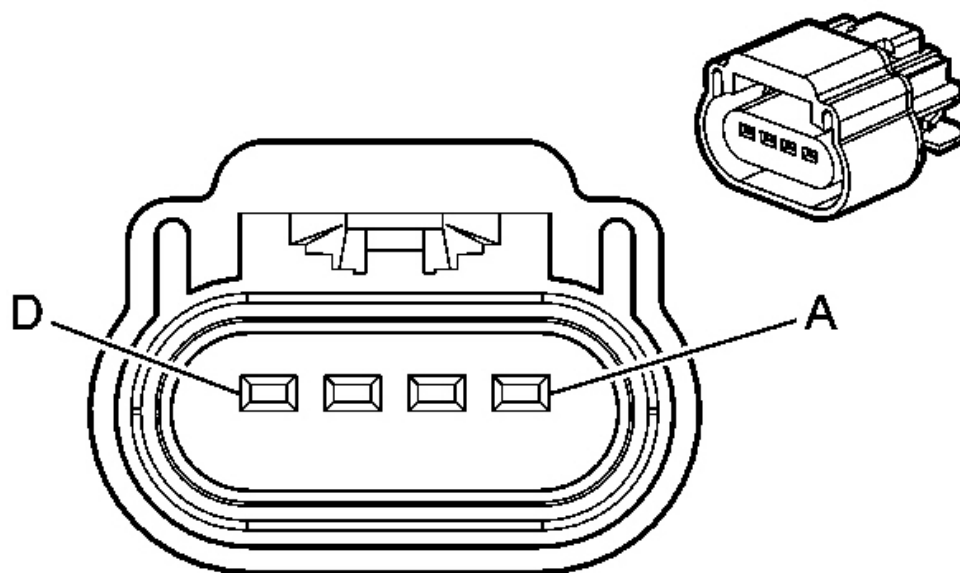


Fig. 8: T8C Ignition Coil 3 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15466325
- Service Connector: 88988737
- Description: 4-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575412
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: Pins A, D - 2/1
- Core/Insulation Crimp: Pins B, C - E/1

T8C Ignition Coil 3 (LF1)

Pin	Wire	Circuit	Function
-----	------	---------	----------

A	1 BK	350	Ground
B	0.5 BN	2129	Low Reference
C	0.5 L-BU	2123	IC 3 Control
D	1 PK/BK	5291	Ignition Voltage

T8D IGNITION COIL 4 (LAF)

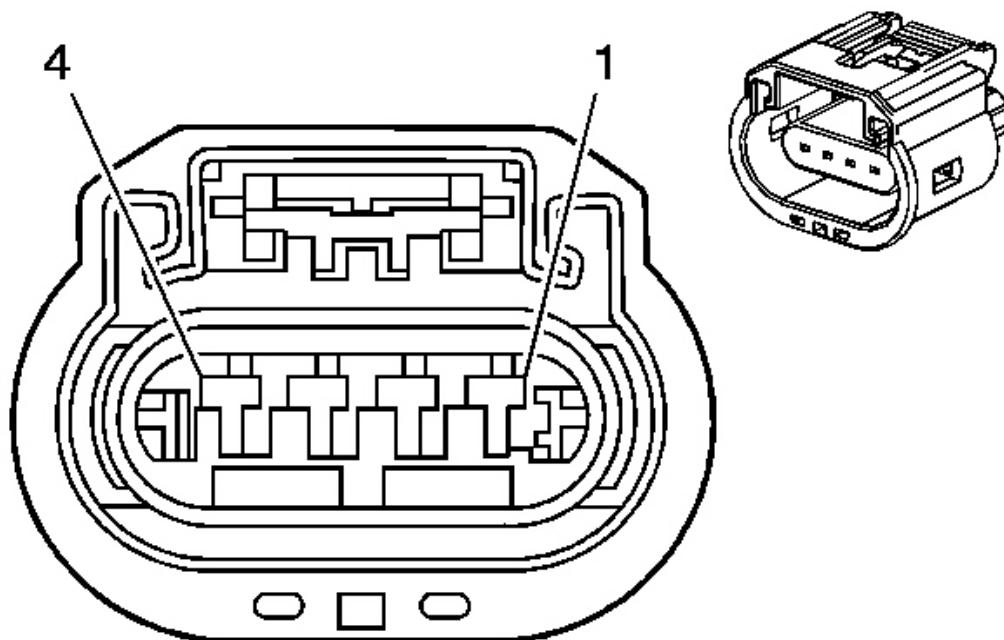


Fig. 9: T8D Ignition Coil 4 (LAF)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 7283-3392-30
- Service Connector: 88988338
- Description: 4-Way F 150 Series, Sealed (BK)

Terminal Part Information

- Pins: 2, 3
- Terminated Lead: Pending

- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4102-08/9
- Core/Insulation Crimp: E/1
- Pins: 1, 4
- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 7116-4103-08/9
- Core/Insulation Crimp: E/1

T8D Ignition Coil 4 (LAF)

Pin	Wire	Circuit	Function
1	0.8 BK	250	Ground
2	0.5 BN	2129	Low Reference
3	0.5 D-GN/WH	2124	IC 4 Control
4	1 PK/BK	5292	Ignition Voltage

T8D IGNITION COIL 4 (LF1)

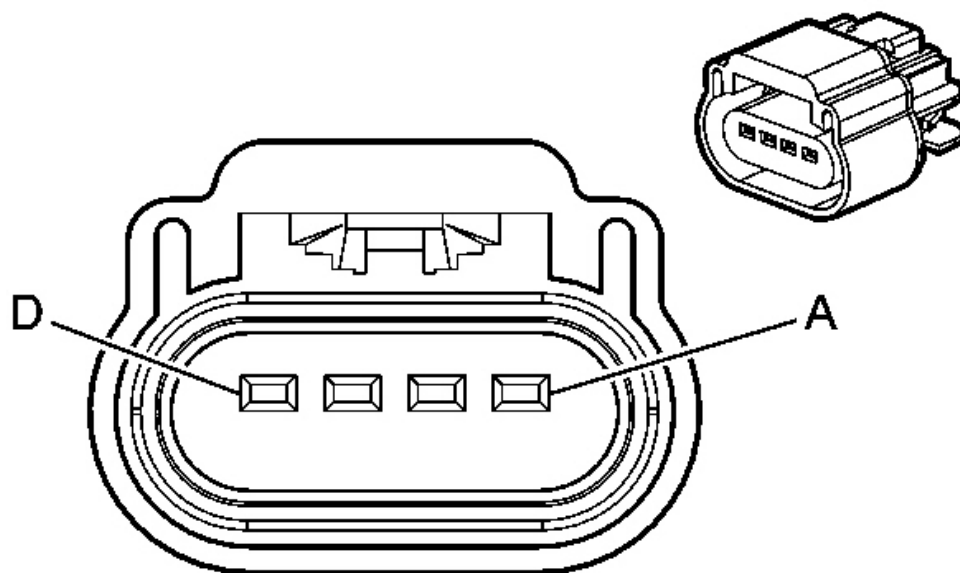


Fig. 10: T8D Ignition Coil 4 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15466325
- Service Connector: 88988737
- Description: 4-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575412
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: Pins A, D - 2/1
- Core/Insulation Crimp: Pins B, C - E/1

T8D Ignition Coil 4 (LF1)

Pin	Wire	Circuit	Function
-----	------	---------	----------

A	1 BK	250	Ground
B	0.5 BN/WH	2130	Low Reference
C	0.5 D-GN/WH	2124	IC 4 Control
D	1 PK/BK	5292	Ignition Voltage

T8E IGNITION COIL 5 (LF1)

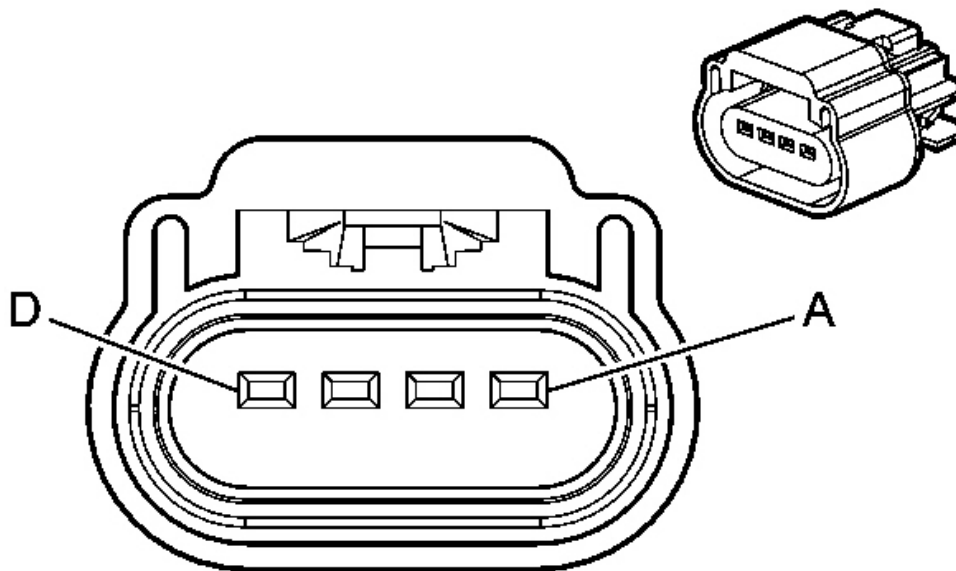


Fig. 11: T8E Ignition Coil 5 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15466325
- Service Connector: 88988737
- Description: 4-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575412
- Release Tool: 15315247

- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: Pins A, D - 2/1
- Core/Insulation Crimp: Pins B, C - E/1

T8E Ignition Coil 5 (LF1)

Pin	Wire	Circuit	Function
A	1 BK	350	Ground
B	0.5 BN	2129	Low Reference
C	0.5 D-GN	2125	IC 5 Control
D	1 PK/BK	5291	Ignition Voltage

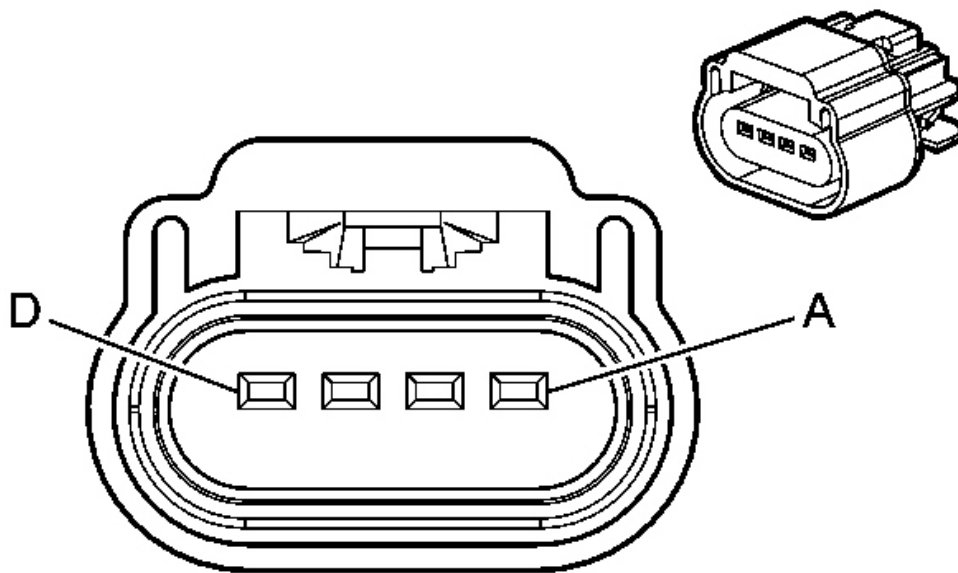
T8F IGNITION COIL 6 (LF1)

Fig. 12: T8F Ignition Coil 6 (LF1)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine

- OEM Connector: 15466325
- Service Connector: 88988737
- Description: 4-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575412
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: Pins A, D - 2/1
- Core/Insulation Crimp: Pins B, C - E/1

T8F Ignition Coil 6 (LF1)

Pin	Wire	Circuit	Function
A	1 BK	250	Ground
B	0.5 BN/WH	2130	Low Reference
C	0.5 L-BU/WH	2126	IC 6 Control
D	1 PK/BK	5292	Ignition Voltage

T11 MULTIMEDIA PLAYER INTERFACE MODULE (KTA)

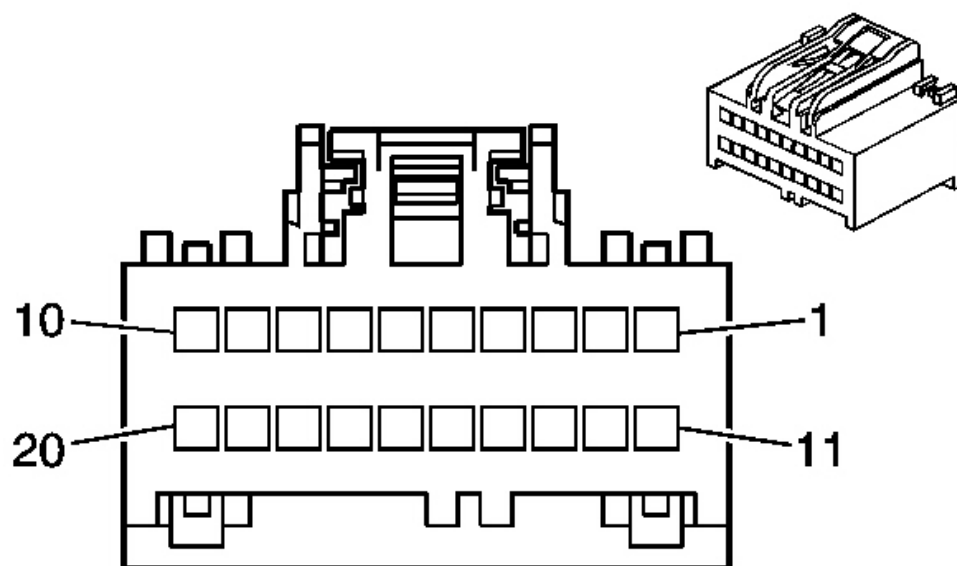


Fig. 13: T11 Multimedia Player Interface Module (KTA)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: 31410-1200
- Service Connector: 15126711
- Description: 20-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

T11 Multimedia Player Interface Module (KTA)

Pin	Wire	Circuit	Function
1	0.5 RD/WH	4140	Battery Positive Voltage

2	0.35 PK	2060	Auxiliary Detection Signal
3	0.35 D-BU	5843	Auxiliary Audio Common Signal
4	0.35 D-GN/WH	3376	Auxiliary Audio Common Signal
5	0.35 BARE	3375	Auxiliary Audio Drain Wire
6-7	-	-	Not Used
8	0.35 D-GN	5060	Low Speed GMLAN Serial Data
9-10	-	-	Not Used
11	0.5 BK/WH	1551	Ground
12	0.35 L-GN	5839	Video Bright Signal
13	0.35 D-GN/WH	5841	Video Mode Signal
14	0.35 YE	3377	Auxiliary Audio Jack Left +
15	0.35 TN/WH	3378	Auxiliary Audio Jack Right +
16-17	-	-	Not Used
18	0.35 BARE	5842	Auxiliary Audio Screen Drain Wire
19-20	-	-	Not Used

X80A ACCESSORY POWER RECEPTACLE - CENTER CONSOLE 1

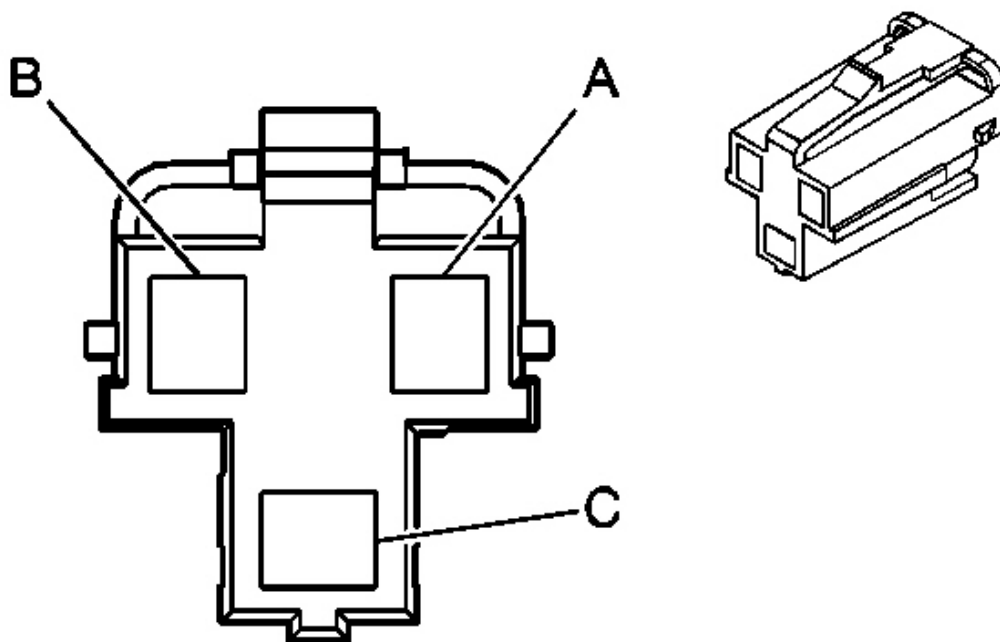


Fig. 14: X80A Accessory Power Receptacle - Center Console 1
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: 12176836
- Service Connector: 15305923
- Description: 3-Way F Metri-Pack 280 Series (GY)

Terminal Part Information

- Terminated Lead: 13575721
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110844/4
- Core/Insulation Crimp: C/A

X80A Accessory Power Receptacle - Center Console 1

Pin	Wire	Circuit	Function
A	1 D-GN	1001	RAP 1 Fuse Supply Voltage
B	-	-	Not Used
C	1 BK	1550	Ground

X80B ACCESSORY POWER RECEPTACLE - CENTER CONSOLE 2

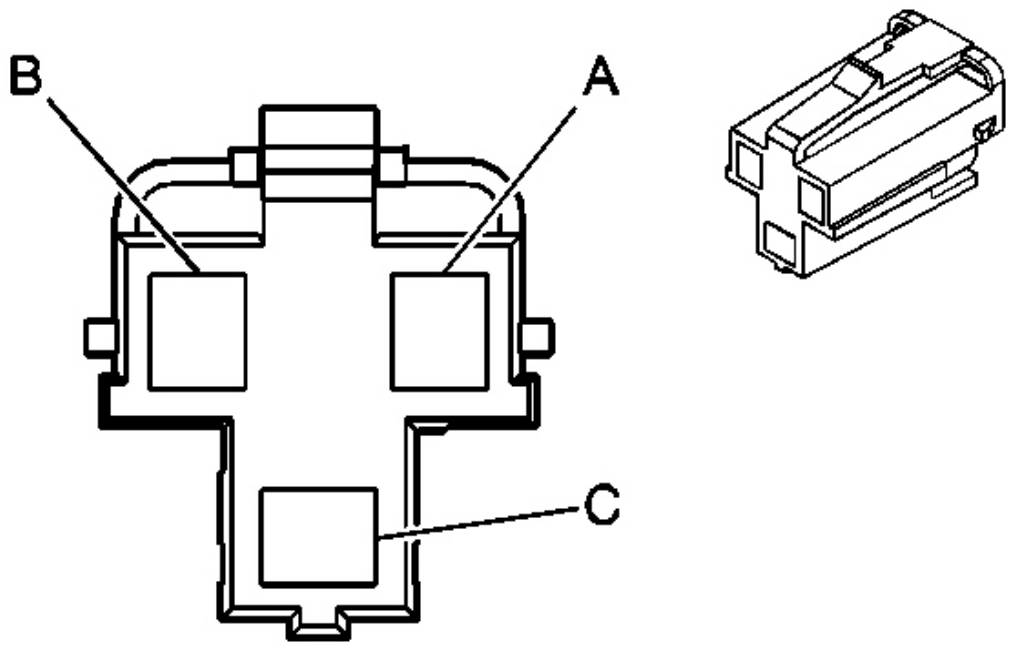


Fig. 15: X80B Accessory Power Receptacle - Center Console 2
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: 12176836
- Service Connector: 15305923
- Description: 3-Way F Metri-Pack 280 Series (GY)

Terminal Part Information

- Terminated Lead: 13575721
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110844/4
- Core/Insulation Crimp: C/A

X80B Accessory Power Receptacle - Center Console 2

Pin	Wire	Circuit	Function

A	1 D-GN	1001	RAP 1 Fuse Supply Voltage
B	-	-	Not Used
C	1 BK	1550	Ground

X80G ACCESSORY POWER RECEPTACLE - INSTRUMENT PANEL

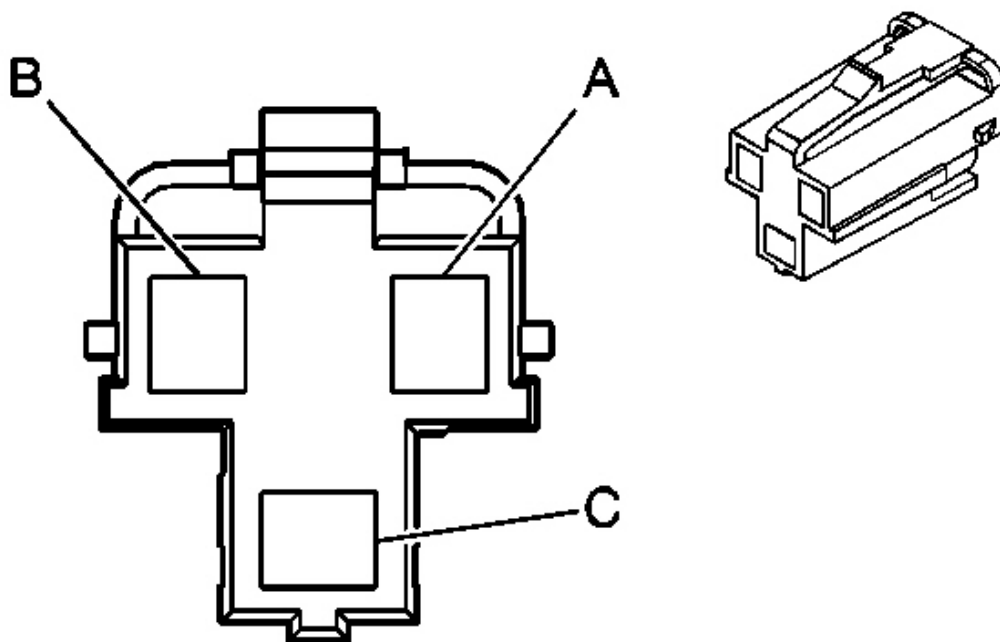


Fig. 16: X80G Accessory Power Receptacle - Instrument Panel
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: 12176836
- Service Connector: 15305923
- Description: 3-Way F Metri-Pack 280 Series (GY)

Terminal Part Information

- Terminated Lead: 13575721
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)

- Terminal/Tray: 12110844/4
- Core/Insulation Crimp: C/A

X80G Accessory Power Receptacle - Instrument Panel

Pin	Wire	Circuit	Function
A	1 D-GN	801	RAP 2 Fuse Supply Voltage
B	-	-	Not Used
C	1 BK	1550	Ground

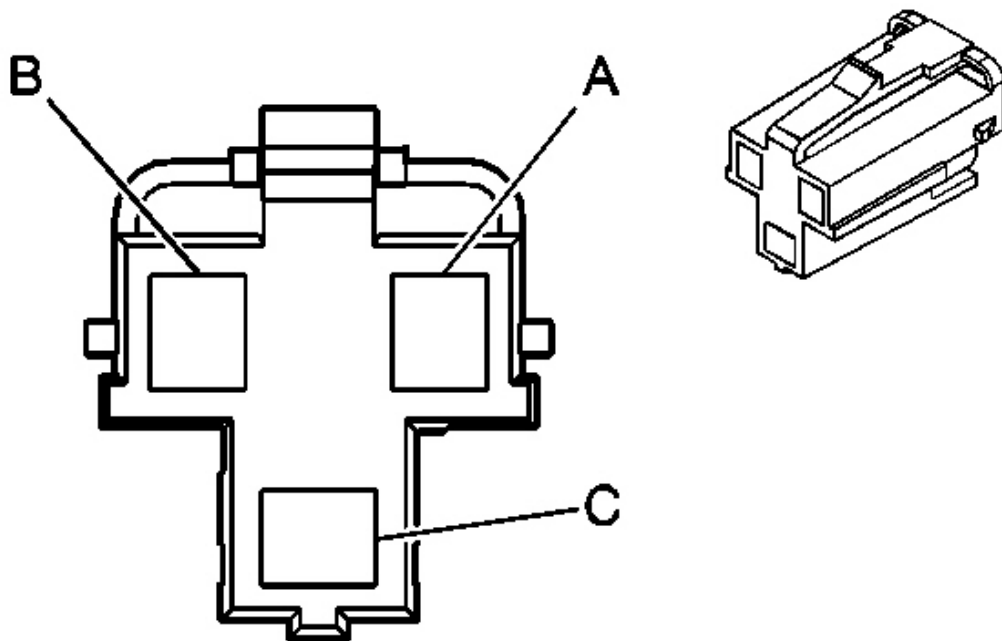
X80R ACCESSORY POWER RECEPTACLE - REAR COMPARTMENT

Fig. 17: X80R Accessory Power Receptacle - Rear Compartment
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 12176836
- Service Connector: 15305923

- Description: 3-Way F Metri-Pack 280 Series (GY)

Terminal Part Information

- Terminated Lead: 13575721
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-4A (PU)
- Terminal/Tray: 12110844/4
- Core/Insulation Crimp: C/A

X80R Accessory Power Receptacle - Rear Compartment

Pin	Wire	Circuit	Function
A	1 RD/WH	4940	Battery Positive Voltage
B	-	-	Not Used
C	1 BK	2550	Ground

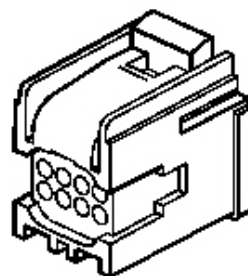
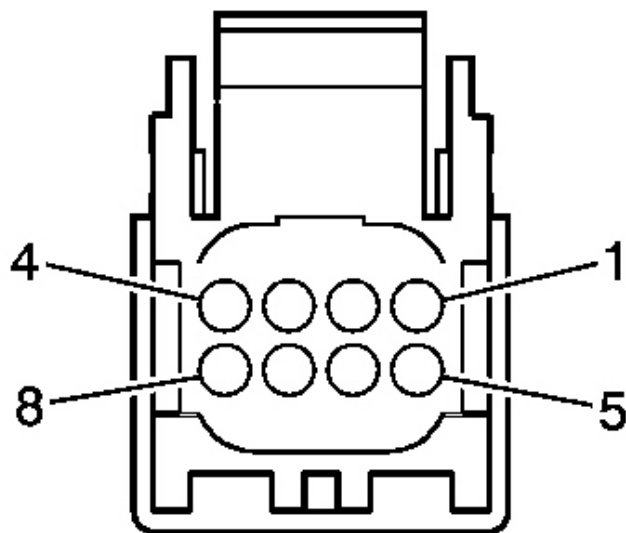
X82 AUDIO/VIDEO INPUT ADAPTER (UWG)

Fig. 18: X82 Audio/Video Input Adapter (UWG)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: 15480082
- Service Connector: 19149303
- Description: 8-Way F Micro 64 Series (GY)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15381651-2
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 15359541/4
- Core/Insulation Crimp: M/M

X82 Audio/Video Input Adapter (UWG)

Pin	Wire	Circuit	Function
1	0.35 BARE	5346	Video Drain Wire
2	-	-	Not Used
3	0.35 PU	2056	Auxiliary Video High Signal
4	-	-	Not Used
5	0.35 WH	2058	Auxiliary Audio Right Signal
6	0.35 YE	2059	Auxiliary Audio Left Signal
7	0.35 BARE	5345	Auxiliary Audio Drain Wire
8	-	-	Not Used

X83 AUXILIARY AUDIO INPUT (WITHOUT UWG)

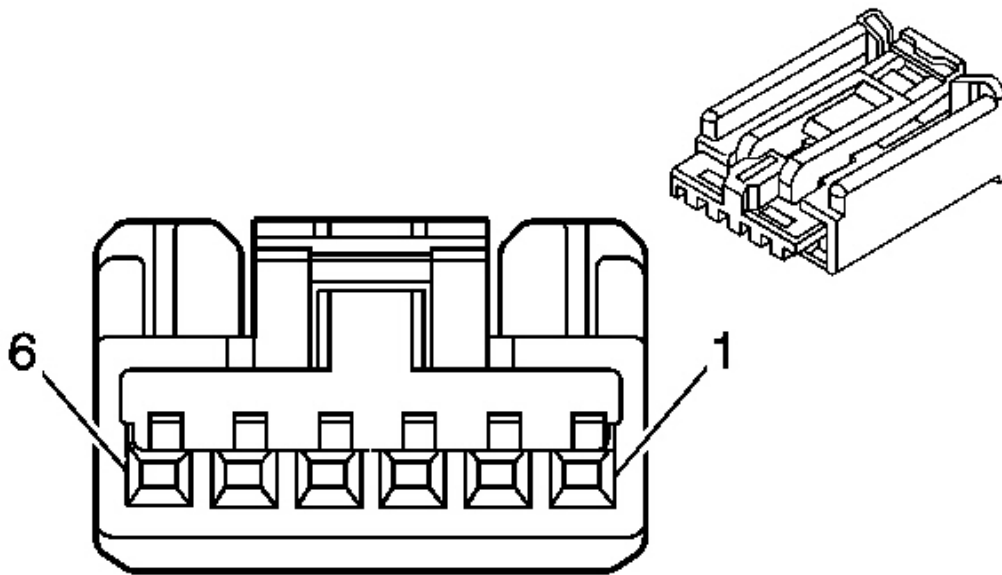


Fig. 19: X83 Auxiliary Audio Input (without UWG)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM Connector: AIT2PB-06-1AK
- Service Connector: 19167753
- Description: 6-Way F AIT II Series (BK)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

X83 Auxiliary Audio Input (without UWG)

Pin	Wire	Circuit	Function
1	0.35 L-GN	5839	Video Bright Signal
2	0.35 D-GN/WH	5841	Video Mode Signal

3	0.35 D-BU	5843	Auxiliary Audio Common Signal
4	-	-	Not Used
5	0.35 PK	2060	Auxiliary Detection Signal
6	-	-	Not Used

X84 DATA LINK CONNECTOR

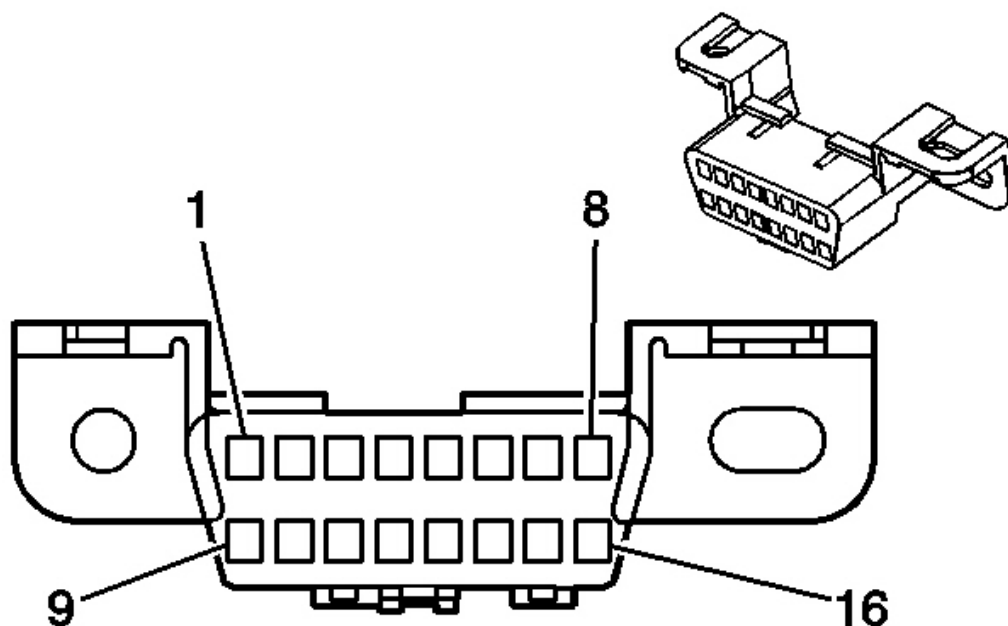


Fig. 20: X84 Data Link Connector
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 19177614
- Service Connector: 12110250
- Description: 16-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)

- Terminal/Tray: 12129484/19
- Core/Insulation Crimp: E/C

X84 Data Link Connector

Pin	Wire	Circuit	Function
1	0.35 D-GN	5060	Low Speed GMLAN Serial Data
2-3	-	-	Not Used
4	0.35 BK	1550	Ground
5	0.35 BK/WH	1551	Ground
6	0.35 TN/BK	2500	High Speed GMLAN Serial Data Bus +
7-11	-	-	Not Used
12	0.35 D-BU	6105	High Speed GMLAN Serial Data +
13	0.35 L-BU	6106	High Speed GMLAN Serial Data -
14	0.35 TN	2501	High Speed GMLAN Serial Data Bus -
15	-	-	Not Used
16	0.35 RD/WH	40	Battery Positive Voltage

X85 STEERING WHEEL AIR BAG COIL X1

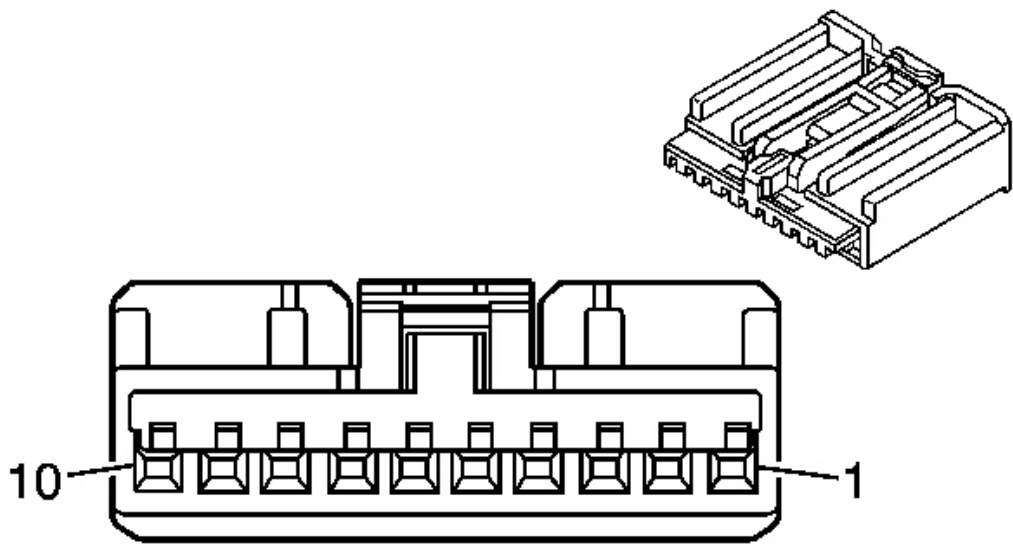


Fig. 21: X85 Steering Wheel Air Bag Coil X1
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Steering Wheel
- OEM Connector: 15269795
- Service Connector: 13316186
- Description: 10-Way F AIT II Series (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 15269795
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 15269795
- Core/Insulation Crimp: Not Available

X85 Steering Wheel Air Bag Coil X1

Pin	Wire	Circuit	Function
1-4	-	-	Not Used
5	0.35 YE	6817	LED Backlight Dimming Control
	0.35 YE	6817	LED Backlight Dimming Control
6	0.35 WH	1444	12-Volt Reference
	0.35 WH	1444	12-Volt Reference
7	0.35 OG	6818	Steering Wheel Control Switch Signal (UK3)
8	0.35 GY	1884	Cruise Control Switch Signal
9	0.5 PK	1550	Ground
	0.5 PK	1550	Ground
10	0.35 RD	1329	Horn Fuse Supply Voltage

X85 STEERING WHEEL AIR BAG COIL X2

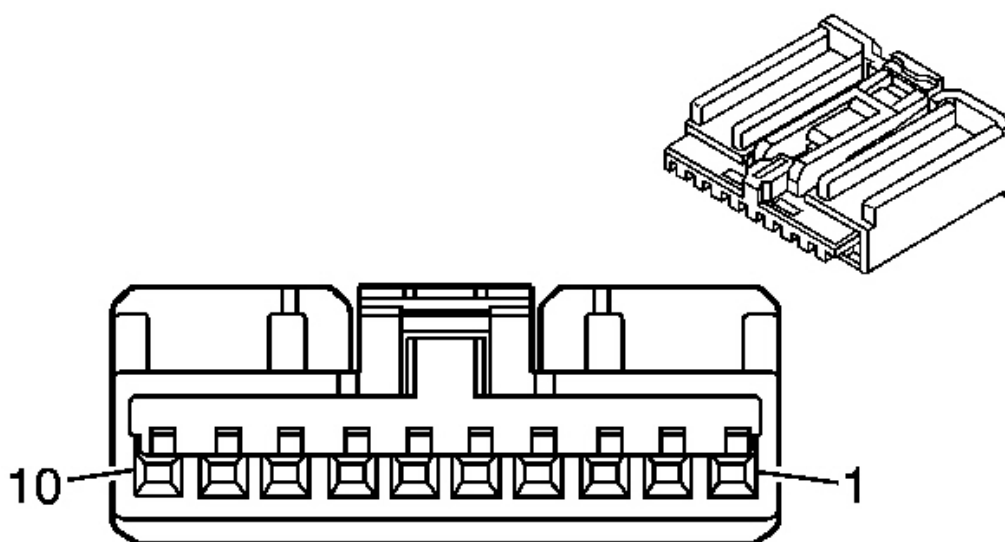


Fig. 22: X85 Steering Wheel Air Bag Coil X2
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 15269795
- Service Connector: 13316186
- Description: 10-Way F AIT II Series (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 15269795
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 15269795
- Core/Insulation Crimp: Not Available

X85 Steering Wheel Air Bag Coil X2

Pin	Wire	Circuit	Function
1	0.35 D-GN	1329	Horn Fuse Supply Voltage
2	0.5 BK	1550	Ground
3	0.35 GY	1884	Cruise Control Switch Signal

4	0.35 L-GN	6818	Steering Wheel Control Switch Signal (UK3)
5	0.35 PK	1444	12-Volt Reference
6	0.35 YE	6817	LED Backlight Dimming Control
7-10	-	-	Not Used

X85 STEERING WHEEL AIR BAG COIL X3

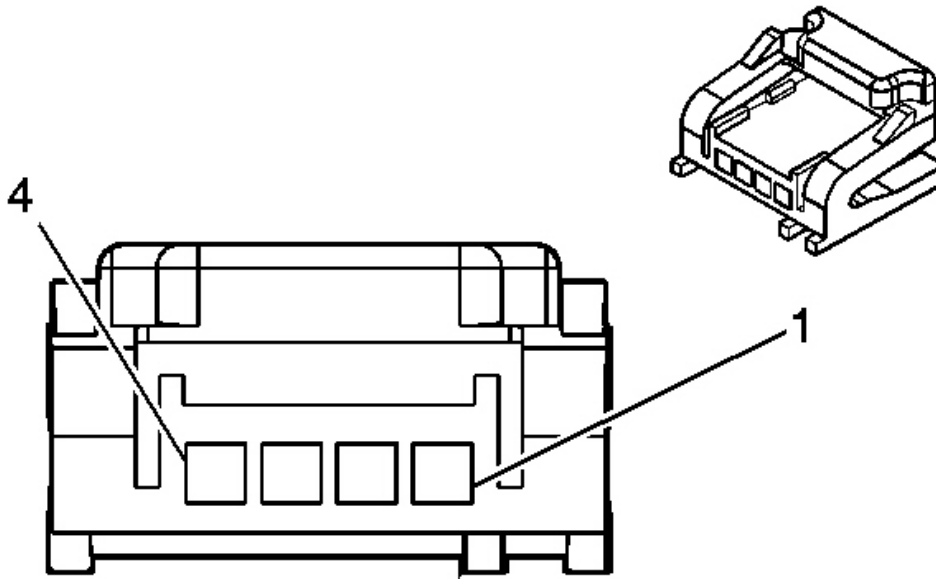


Fig. 23: X85 Steering Wheel Air Bag Coil X3
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 15393421
- Service Connector: 88987853
- Description: 4-Way F Micro-Pack 064 Series (YE)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 15393421
- Release Tool: Not Available

- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 15393421
- Core/Insulation Crimp: Not Available

X85 Steering Wheel Air Bag Coil X3

Pin	Wire	Circuit	Function
1	0.35 TN	3021	Steering Wheel Module - Stage 1 - High Control
2	0.35 BN	3020	Steering Wheel Module - Stage 1 - Low Control
3	0.35 WH	3023	Steering Wheel Module - Stage 2 - High Control
4	0.35 PK	3022	Steering Wheel Module - Stage 2 - Low Control

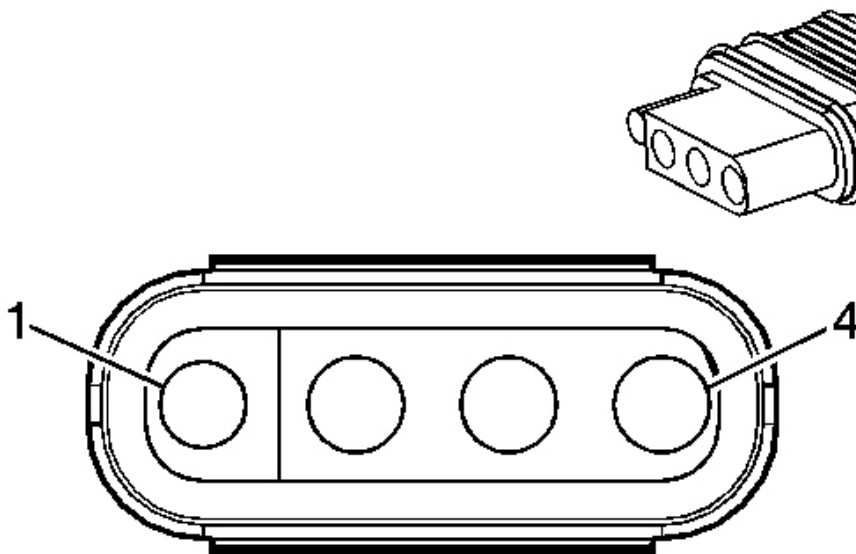
X88 TRAILER CONNECTOR (V92)

Fig. 24: X88 Trailer Connector (V92)
Courtesy of GENERAL MOTORS CORP.

- Harness: Trailer Pigtail
- OEM Connector: 15A416
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F (BK)

Terminal Part Information

- Terminated Lead: Service by Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

X88 Trailer Connector (V92)

Pin	Wire	Circuit	Function
1	0.8 WH	2550	Ground
2	0.8 BN	2109	Trailer Park Lamps Supply Voltage
3	0.8 YE	318	Left Rear Trailer Stop/Turn Lamp Supply Voltage
4	0.8 D-GN	319	Right Rear Trailer Stop/Turn Lamp Supply Voltage

2010 ELECTRICAL

Wiring Systems and Power Management - Component Locator - Component Connector End Views - Equinox & Terrain

COMPONENT CONNECTOR END VIEWS

B52C HEATED OXYGEN SENSOR - BANK 1 SENSOR 1 (LF1)

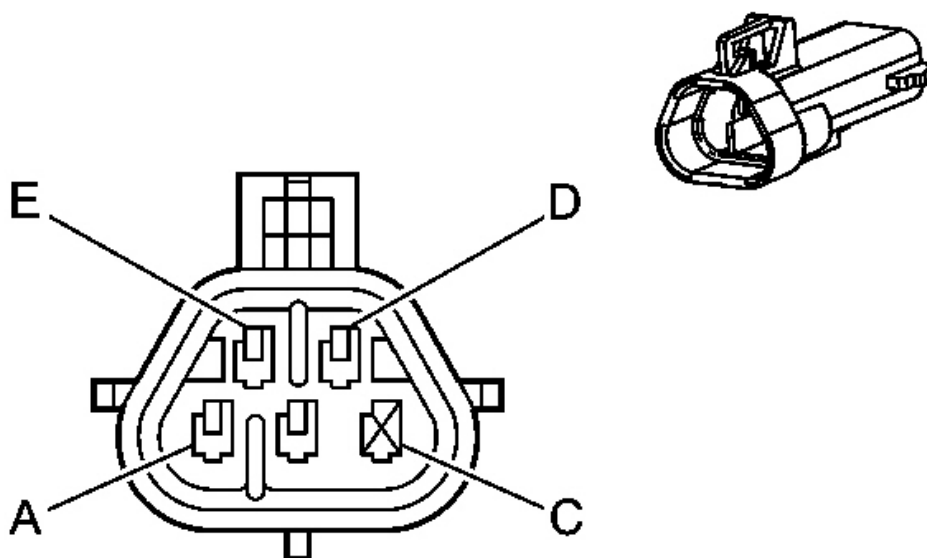


Fig. 1: B52C Heated Oxygen Sensor - Bank 1 Sensor 1 (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12092839
- Service Connector: 88987991
- Description: 5-Way M Metri-Pack 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12045773/2
- Core/Insulation Crimp: E/1

B52C Heated Oxygen Sensor - Bank 1 Sensor 1 (LF1)

Pin	Wire	Circuit	Function
A	0.5 TN/WH	3111	HO2S Low Reference (Bank 1 Sensor 1)
B	0.5 PU/WH	3110	HO2S Reference Voltage (Bank 1 Sensor 1)
C	-	-	Not Used
D	0.5 PK/BK	5293	Ignition Voltage
E	0.5 GY/WH	3113	HO2S Heater Low Control (Bank 1 Sensor 1)

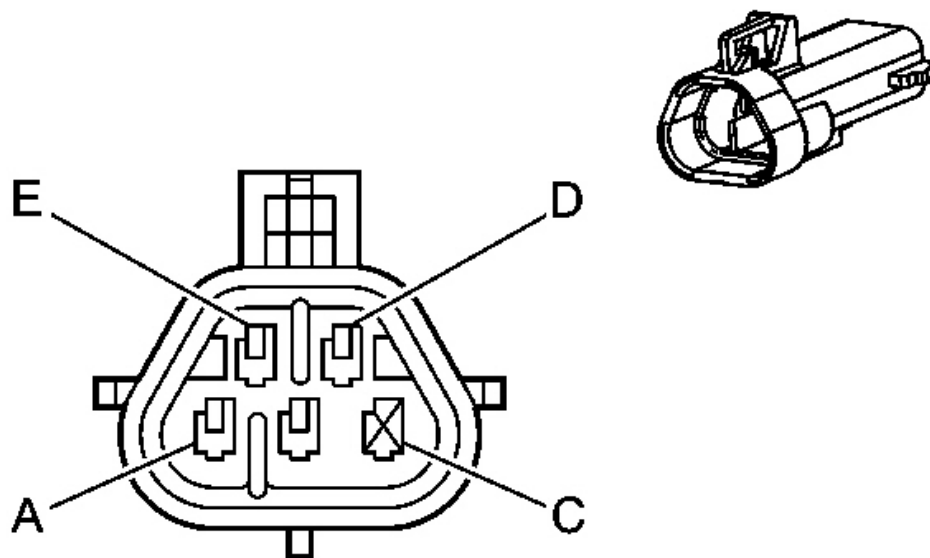
B52D HEATED OXYGEN SENSOR - BANK 1 SENSOR 2 (LF1)

Fig. 2: B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (LF1)
Courtesy of GENERAL MOTORS CORP.

- Harness: Engine
- OEM Connector: 12092839
- Service Connector: 88987991
- Description: 5-Way M Metri-Pack 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12045773/2
- Core/Insulation Crimp: E/1

B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (LF1)

Pin	Wire	Circuit	Function
A	0.5 TN/WH	3121	HO2S Low Signal (Bank 1 Sensor 2)
B	0.5 PU	3120	HO2S High Signal (Bank 1 Sensor 2)
C	-	-	Not Used
D	0.5 PK/BK	5294	Battery Positive Voltage
E	0.5 GY/WH	3122	HO2S Heater Low Control (Bank 2 Sensor 1)

B52E HEATED OXYGEN SENSOR - BANK 2 SENSOR 1 (LF1)

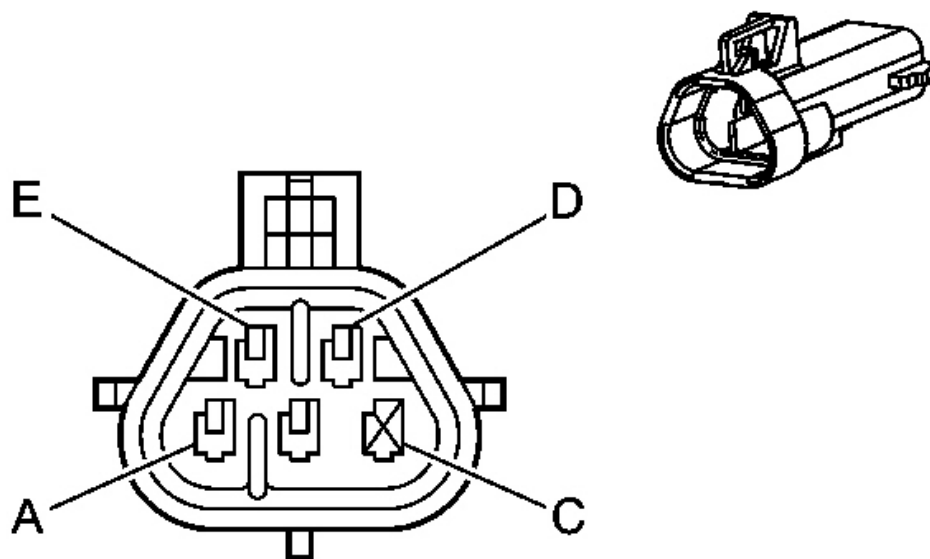


Fig. 3: B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12092839
- Service Connector: 88987991
- Description: 5-Way M Metri-Pack 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12045773/2
- Core/Insulation Crimp: E/1

B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (LF1)

Pin	Wire	Circuit	Function
A	0.5 TN/WH	3211	HO2S Low Reference (Bank 2 Sensor 1)

B	0.5 PU/WH	3210	HO2S Reference Voltage (Bank 2 Sensor 1)
C	-	-	Not Used
D	0.5 PK/BK	5293	Ignition Voltage
E	0.5 L-GN	3212	HO2S Heater Low Control (Bank 2 Sensor 1)

B52F HEATED OXYGEN SENSOR - BANK 2 SENSOR 2 (LF1)

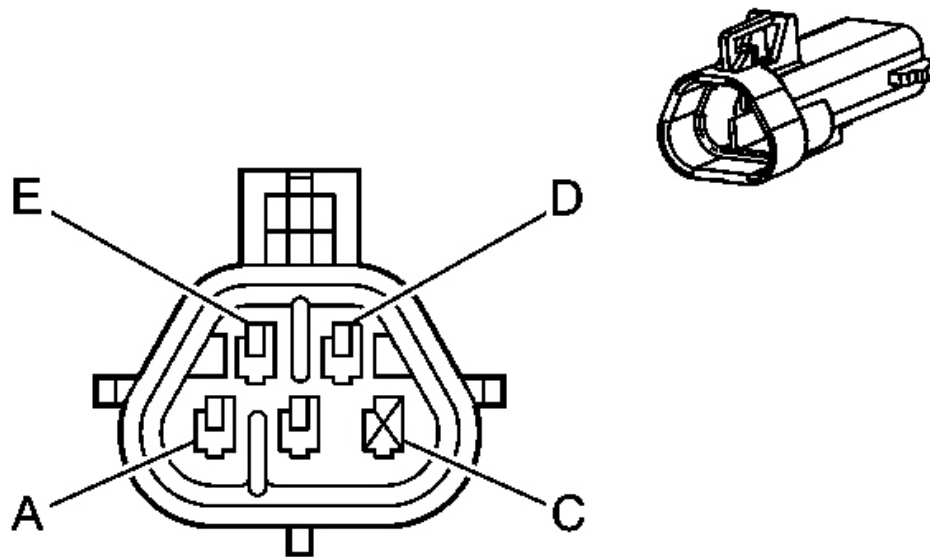


Fig. 4: B52F Heated Oxygen Sensor - Bank 2 Sensor 2 (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12092839
- Service Connector: 88987991
- Description: 5-Way M Metri-Pack 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429

- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12045773/2
- Core/Insulation Crimp: E/1

B52F Heated Oxygen Sensor - Bank 2 Sensor 2 (LF1)

Pin	Wire	Circuit	Function
A	0.5 TN	3221	HO2S Low Signal (Bank 2 Sensor 2)
B	0.5 PU	3220	HO2S High Signal (Bank 2 Sensor 2)
C	-	-	Not Used
D	0.5 PK/BK	5294	Battery Positive Voltage
E	0.5 OG/WH	3223	HO2S Heater Low Control (Bank 2 Sensor 2)

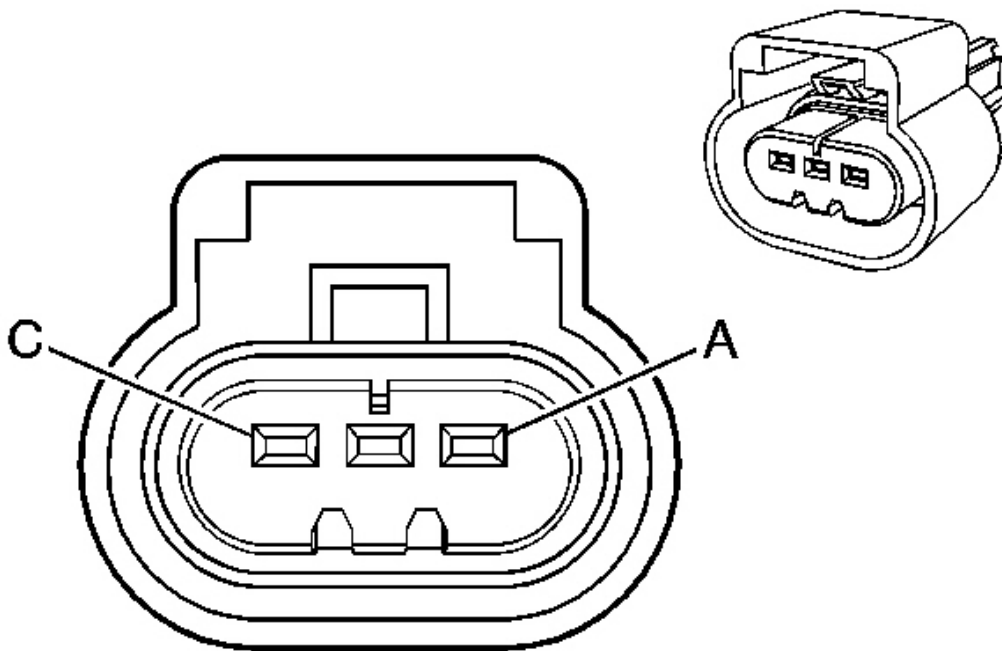
B55 HOOD AJAR SWITCH (BTV)

Fig. 5: B55 Hood Ajar Switch (BTV)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp

- OEM Connector: 15326808
- Service Connector: 15306388
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B55 Hood Ajar Switch (BTV)

Pin	Wire	Circuit	Function
A	-	-	Not Used
B	0.35 PK/BK	109	Hood Ajar Switch Signal
C	0.35 BK	1150	Ground

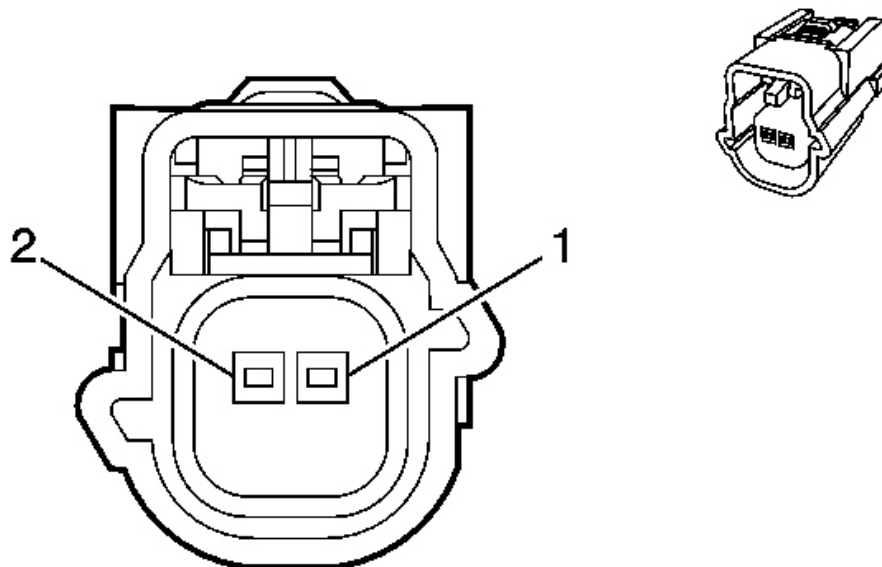
B59L FRONT IMPACT SENSOR - LEFT

Fig. 6: B59L Front Impact Sensor - Left

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM Connector: 54390242
- Service Connector: 13314084
- Description: 2-Way F Kaizen 0.64 Series, Sealed (D-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

B59L Front Impact Sensor - Left

Pin	Wire	Circuit	Function
1	0.35 YE	354	Front End Sensor - Left - Signal
2	0.35 TN/OG	5045	Low Reference

B59R FRONT IMPACT SENSOR - RIGHT

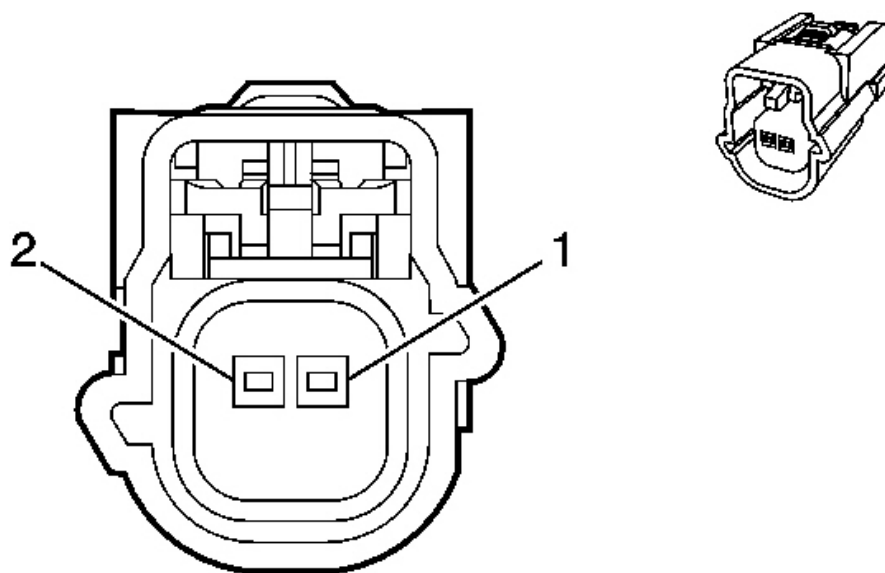


Fig. 7: B59R Front Impact Sensor - Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Forward Lamp
- OEM Connector: 54390242
- Service Connector: 13314084
- Description: 2-Way F Kaizen 0.64 Series, Sealed (D-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

B59R Front Impact Sensor - Right

Pin	Wire	Circuit	Function
1	0.35 D-GN	1409	Front End Sensor - Right - Signal

2

0.35 GY

5600

Low Reference

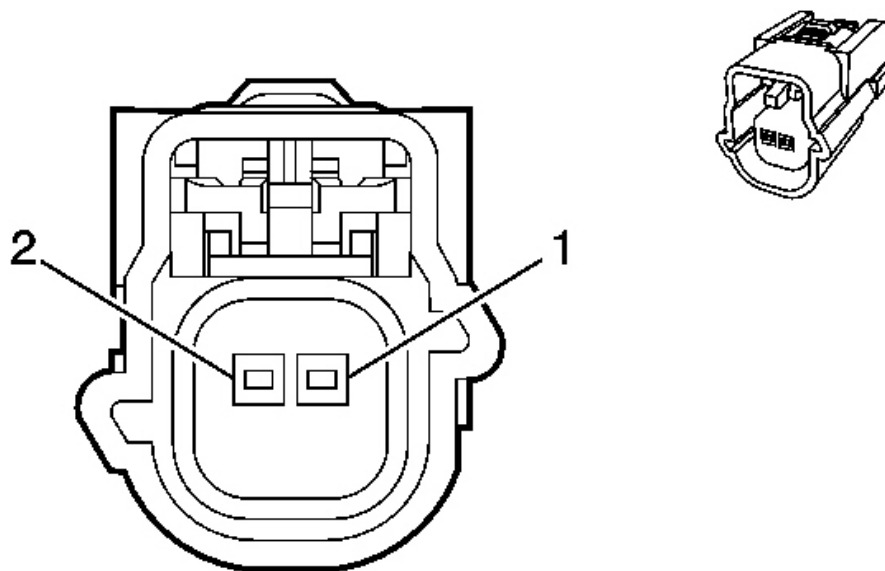
B63LF SIDE IMPACT SENSOR - LEFT FRONT

Fig. 8: B63LF Side Impact Sensor - Left Front
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door
- OEM Connector: 54390242
- Service Connector: 13314084
- Description: 2-Way F Kaizen 0.64 Series, Sealed (D-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

B63LF Side Impact Sensor - Left Front

Pin	Wire	Circuit	Function
1	0.35 WH	2132	Side Impact Sensing Module - Left - Signal
2	0.35 PU/WH	6628	Low Reference

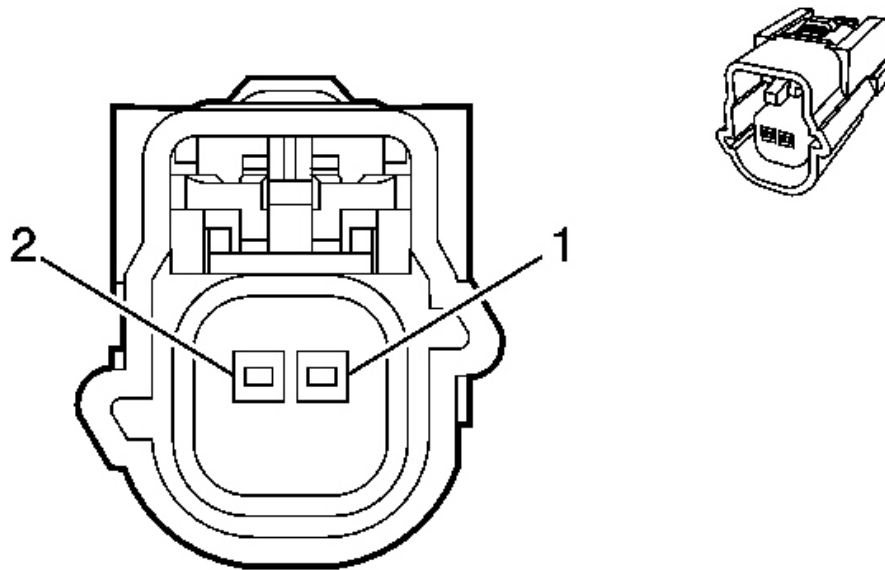
B63LR SIDE IMPACT SENSOR - LEFT REAR

Fig. 9: B63LR Side Impact Sensor - Left Rear
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Left Rear Door
- OEM Connector: 54390242
- Service Connector: 13314084
- Description: 2-Way F Kaizen 0.64 Series, Sealed (D-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A

- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

B63LR Side Impact Sensor - Left Rear

Pin	Wire	Circuit	Function
1	0.35 D-GN/WH	6620	Left Middle Side Impact Sensing Module Signal
2	0.35 GY/BK	6621	Low Reference

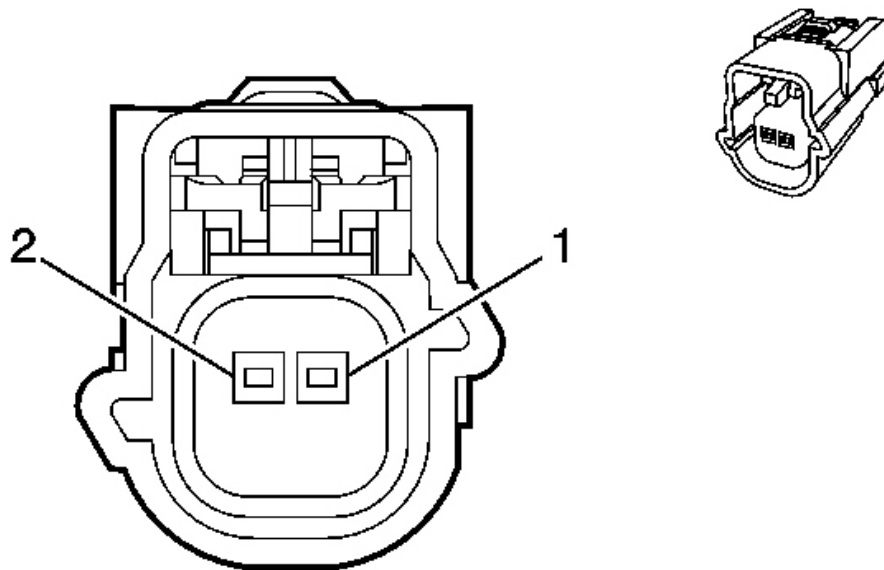
B63RF SIDE IMPACT SENSOR - RIGHT FRONT

Fig. 10: B63RF Side Impact Sensor - Right Front
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door
- OEM Connector: 54390242
- Service Connector: 13314084

- Description: 2-Way F Kaizen 0.64 Series, Sealed (D-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

B63RF Side Impact Sensor - Right Front

Pin	Wire	Circuit	Function
1	0.35 D-GN	2134	Side Impact Sensing Module - Right - Signal
2	0.35 WH/BK	6629	Low Reference

B63RR SIDE IMPACT SENSOR - RIGHT REAR

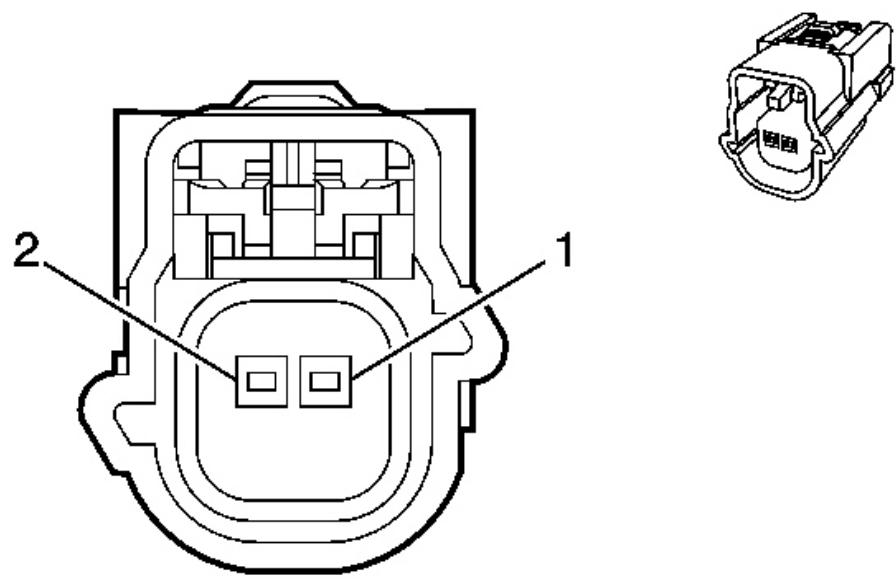


Fig. 11: B63RR Side Impact Sensor - Right Rear
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Right Rear Door
- OEM Connector: 54390242
- Service Connector: 13314084
- Description: 2-Way F Kaizen 0.64 Series, Sealed (D-GY)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

B63RR Side Impact Sensor - Right Rear

Pin	Wire	Circuit	Function
1	0.35 L-BU/BK	6624	Right Middle Side Impact Sensing Module Signal
2	0.35 L-GU/WH	6625	Low Reference

B68 KNOCK SENSOR (LAF)

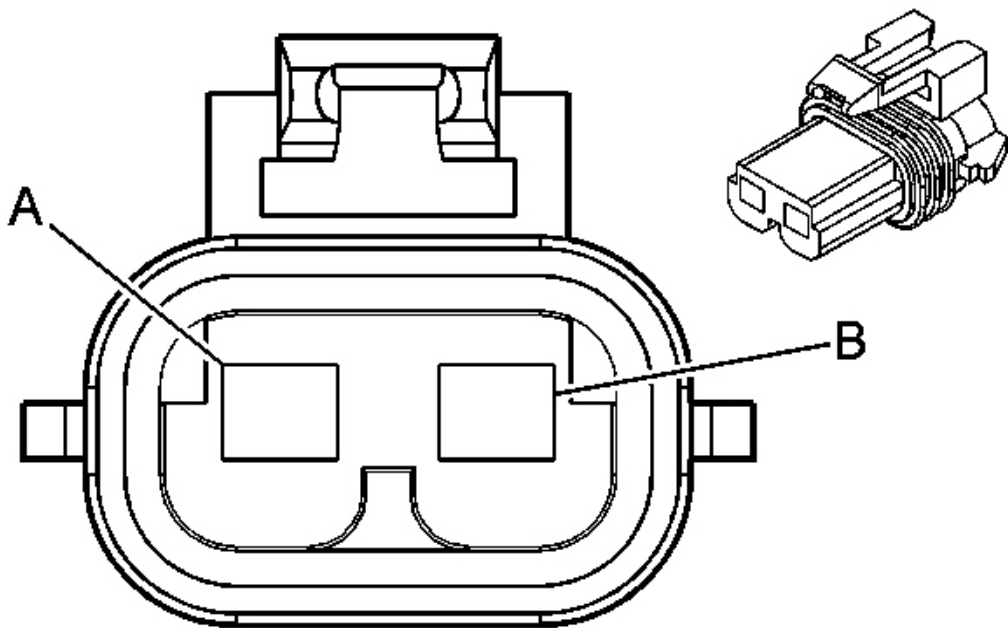


Fig. 12: B68 Knock Sensor (LAF)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 12077900
- Service Connector: 12116247
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326427/5
- Core/Insulation Crimp: E/A

B68 Knock Sensor (LAF)

Pin	Wire	Circuit	Function
A	0.5 D-BU	496	Knock Sensor (KS) 1 Signal
B	0.5 GY	1716	Knock Sensor (KS) 1 Signal

B68A KNOCK SENSOR 1 (LF1)

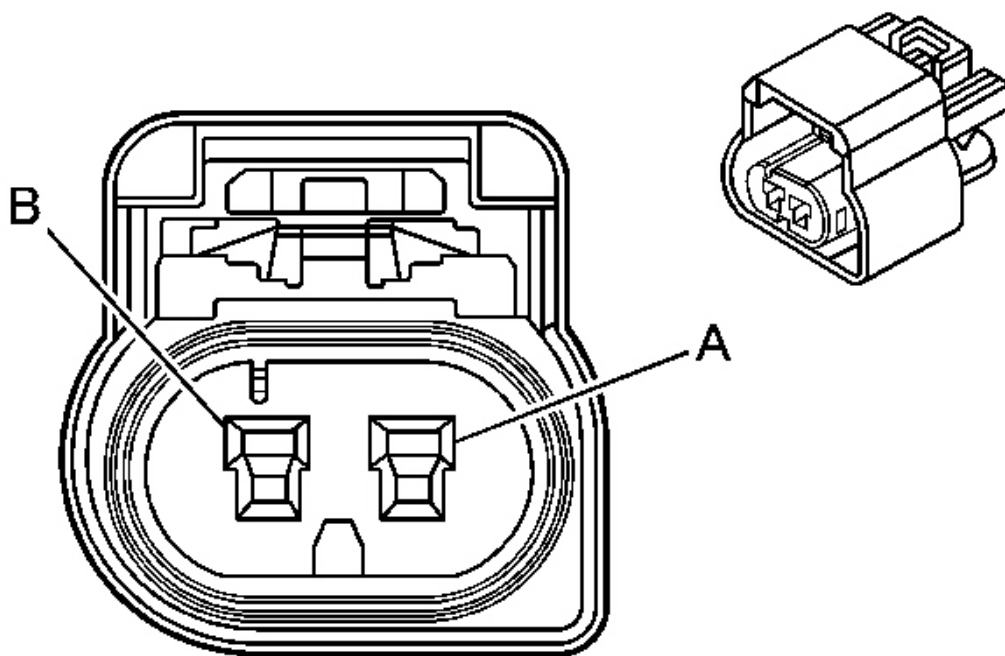


Fig. 13: B68A Knock Sensor 1 (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15374222
- Service Connector: 88953268
- Description: 2-Way F GT 150 Sealed (NA)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326427/5
- Core/Insulation Crimp: E/A

B68A Knock Sensor 1 (LF1)

Pin	Wire	Circuit	Function

A	0.5 D-BU	496	Knock Sensor (KS) 1 Signal
B	0.5 GY	1716	Knock Sensor (KS) 1 Signal

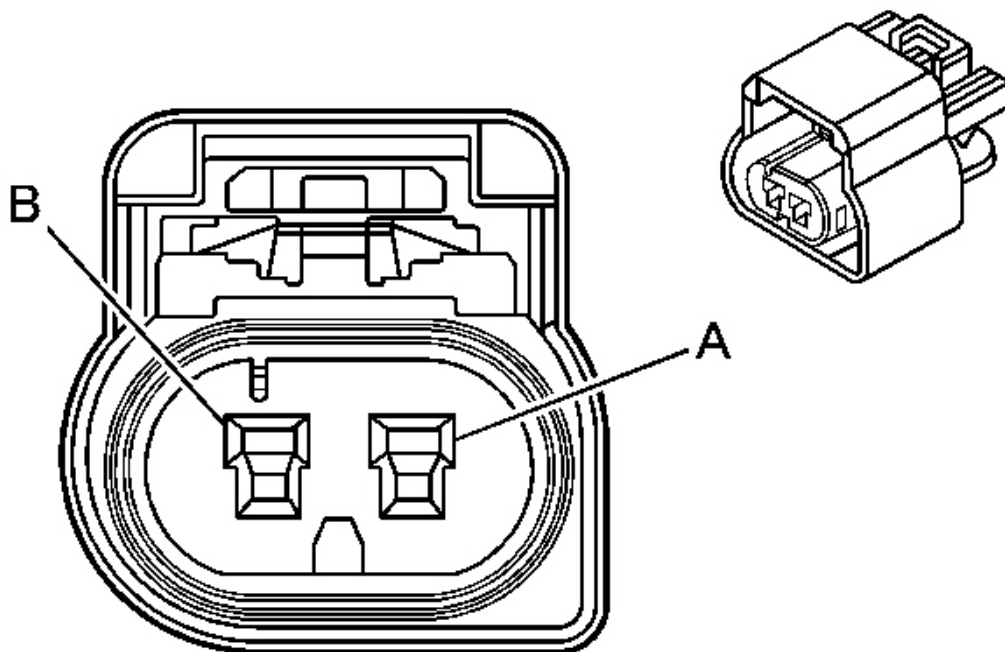
B68B KNOCK SENSOR 2 (LF1)

Fig. 14: B68B Knock Sensor 2 (LF1)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15374222
- Service Connector: 88953268
- Description: 2-Way F GT 150 Sealed (NA)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 15326427/5

- Core/Insulation Crimp: E/A

B68B Knock Sensor 2 (LF1)

Pin	Wire	Circuit	Function
A	0.5 L-BU	1876	Knock Sensor (KS) 2 Signal
B	0.5 GY	2303	Knock Sensor (KS) 2 Signal

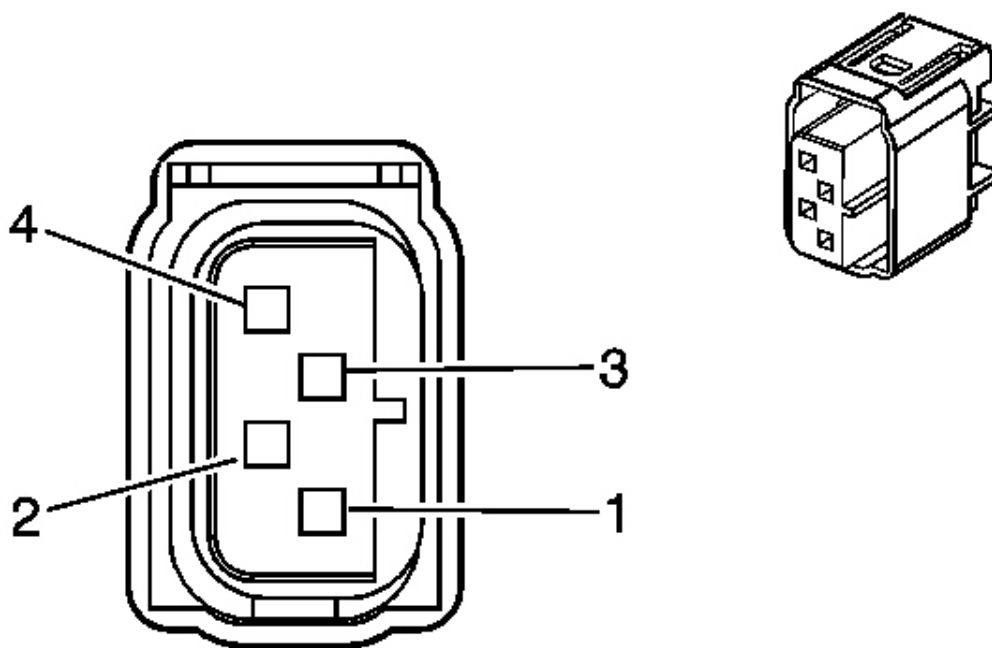
B70 LIFTGATE CLOSE SWITCH (TB5)

Fig. 15: B70 Liftgate Close Switch (TB5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 1-967640-1
- Service Connector: 88953370
- Description: 4-Way F MQS Socket Housing, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 962885-5/15
- Core/Insulation Crimp: 6/6

B70 Liftgate Close Switch (TB5)

Pin	Wire	Circuit	Function
1-2	-	-	Not Used
3	0.35 D-GN	3033	Liftgate Latch Sector Switch Signal
4	0.35 PU/WH	5801	Low Reference

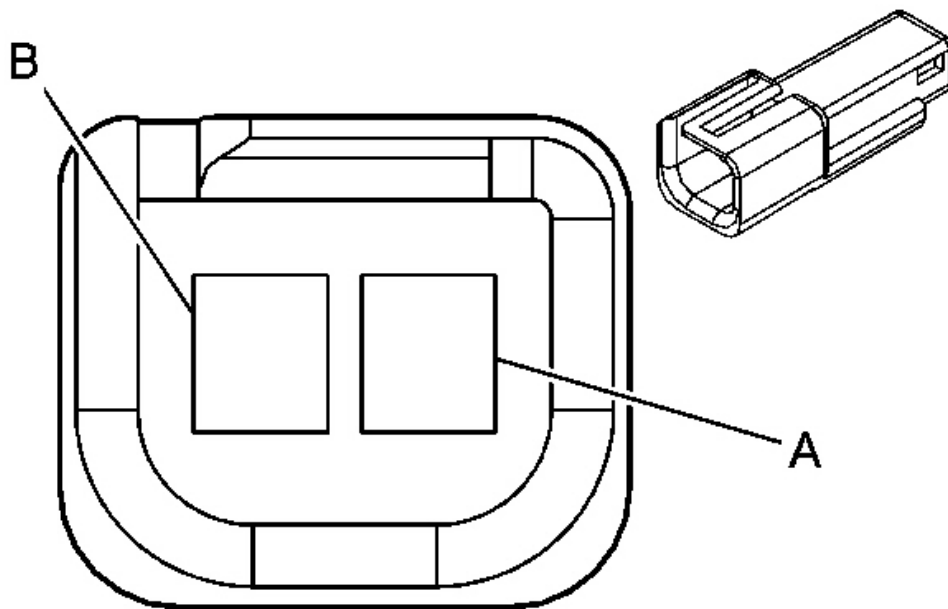
B71L LIFTGATE OBJECT SENSOR - LEFT (TB5)

Fig. 16: B71L Liftgate Object Sensor - Left (TB5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate

- OEM Connector: 12047663
- Service Connector: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C

B71L Liftgate Object Sensor - Left (TB5)

Pin	Wire	Circuit	Function
A	0.35 PK/BK	5802	5-Volt Reference
B	0.35 PU/WH	5801	Low Reference

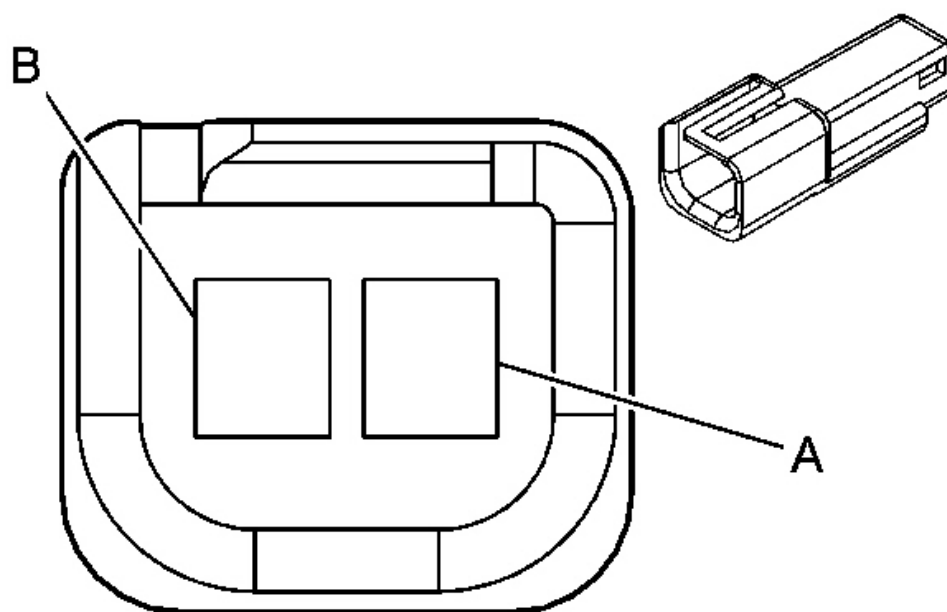
B71R LIFTGATE OBJECT SENSOR - RIGHT (TB5)

Fig. 17: B71R Liftgate Object Sensor - Right (TB5)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Liftgate
- OEM Connector: 12047663
- Service Connector: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C

B71R Liftgate Object Sensor - Right (TB5)

Pin	Wire	Circuit	Function
A	0.35 WH/BK	6126	Liftgate Side Upper Sensor Signal
B	0.35 PK/BK	5802	5-Volt Reference

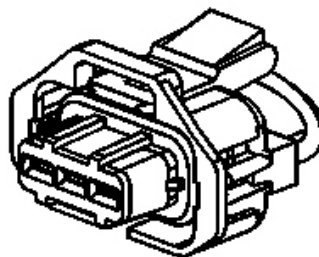
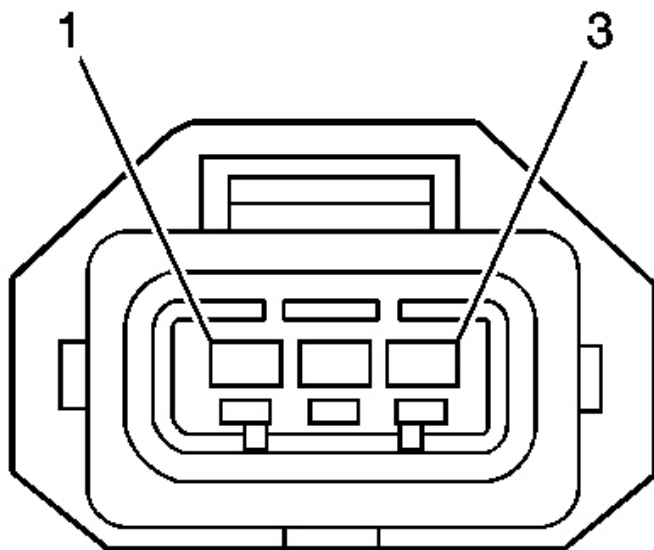
B74 MANIFOLD ABSOLUTE PRESSURE SENSOR

Fig. 18: B74 Manifold Absolute Pressure Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 1928403966
- Service Connector: 88988583
- Description: 3-Way F Kompakt 280 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-561
- Diagnostic Test Probe: J-35616-35 (VT)
- Terminal/Tray: 1928498056/8
- Core/Insulation Crimp: E/1

B74 Manifold Absolute Pressure Sensor

Pin	Wire	Circuit	Function
1	0.5 GY	2704	5-Volt 3 Reference
2	0.5 OG/BK	469	Low Reference
3	0.5 L-GN	432	MAP Sensor Signal

B75B MASS AIR FLOW/INTAKE AIR TEMPERATURE SENSOR

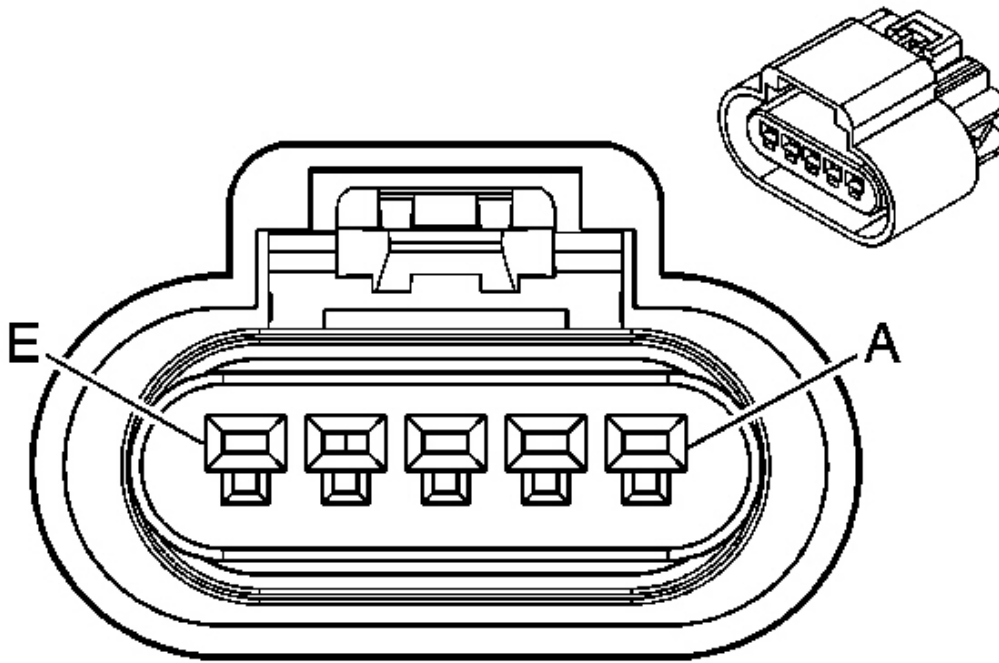


Fig. 19: B75B Mass Air Flow/Intake Air Temperature Sensor
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Engine
- OEM Connector: 15326822
- Service Connector: 19151498
- Description: 5-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B75B Mass Air Flow/Intake Air Temperature Sensor

Pin	Wire	Circuit	Function
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A	0.5 YE	492	MAF Sensor Signal
B	0.5 BK/WH	451	Ground
C	0.5 PK/BK	5293	Ignition Voltage
D	0.5 TN	2760	Low Reference
E	0.5 L-BU	6289	Intake Air Temperature Sensor Signal

B77F RADIO VOLUME COMPENSATOR INTERIOR NOISE MICROPHONE - FRONT (VQN)

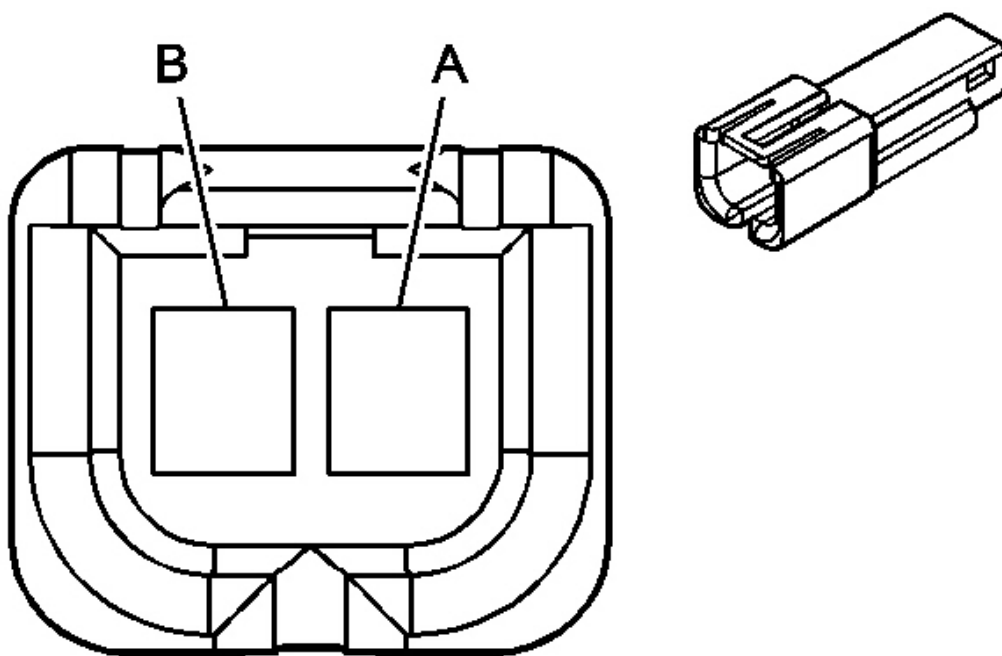


Fig. 20: B77F Radio Volume Compensator Interior Noise Microphone - Front (VQN)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 12059254
- Service Connector: 12126020
- Description: 2-Way M Metri-Pack 150 Series (GN)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C

B77F Radio Volume Compensator Interior Noise Microphone - Front (VQN)

Pin	Wire	Circuit	Function
A	0.5 PK/BK	3010	Noise Reduction Microphone #3 Return
B	0.5 PK	3007	Noise Reduction Microphone #3 Signal

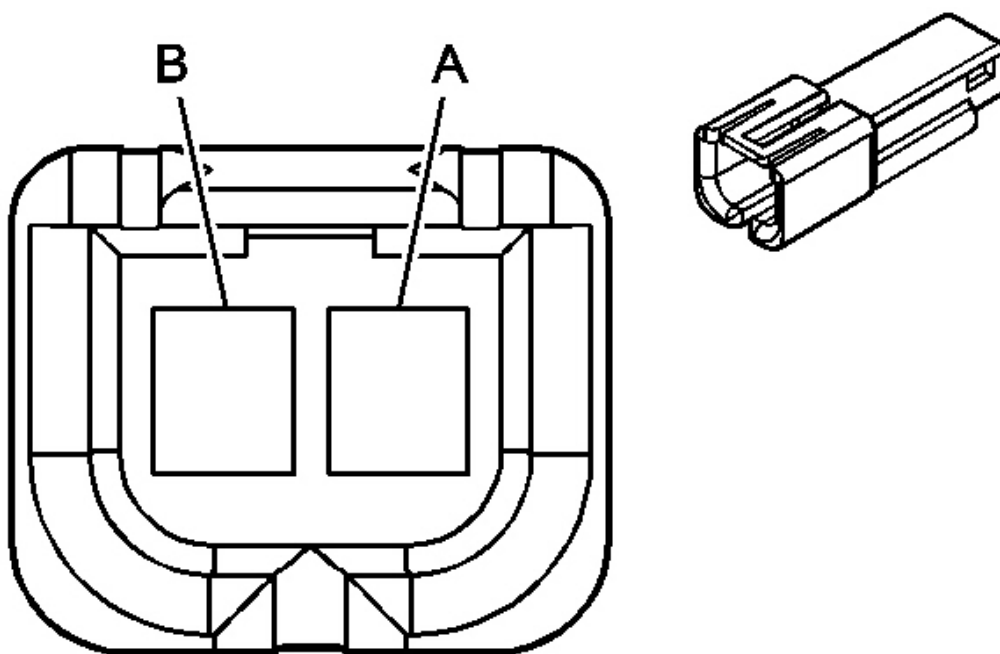
B77R RADIO VOLUME COMPENSATOR INTERIOR NOISE MICROPHONE - REAR (VQN)

Fig. 21: B77R Radio Volume Compensator Interior Noise Microphone - Rear (VQN)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Headliner
- OEM Connector: 12059254

- Service Connector: 12126020
- Description: 2-Way M Metri-Pack 150 Series (GN)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-3 (GY)
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C

B77R Radio Volume Compensator Interior Noise Microphone - Rear (VQN)

Pin	Wire	Circuit	Function
A	0.5 L-BU/BK	3009	Noise Reduction Microphone #2 Return
B	0.5 L-BU	3006	Noise Reduction Microphone #2 Signal

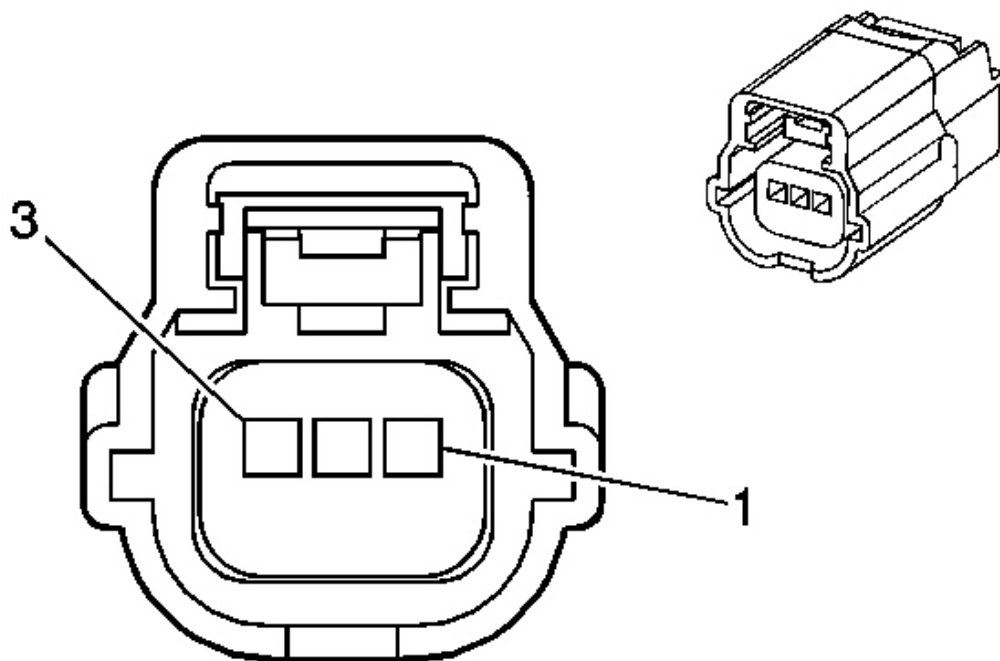
B78E REAR OBJECT SENSOR - LEFT MIDDLE (UD7)

Fig. 22: B78E Rear Object Sensor - Left Middle (UD7)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Rear Bumper
- OEM Connector: 31403-3710
- Service Connector: 88988337
- Description: 3-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33468-0001/23
- Core/Insulation Crimp: H/H

B78E Rear Object Sensor - Left Middle (UD7)

Pin	Wire	Circuit	Function
1	0.35 D-BU	2374	Object Sensor Supply Voltage
2	0.35 GY	2379	Object Sensor Low Reference
3	0.35 OG	2376	Left Rear Middle Object Sensor Signal

B78F REAR OBJECT SENSOR - RIGHT MIDDLE (UD7)

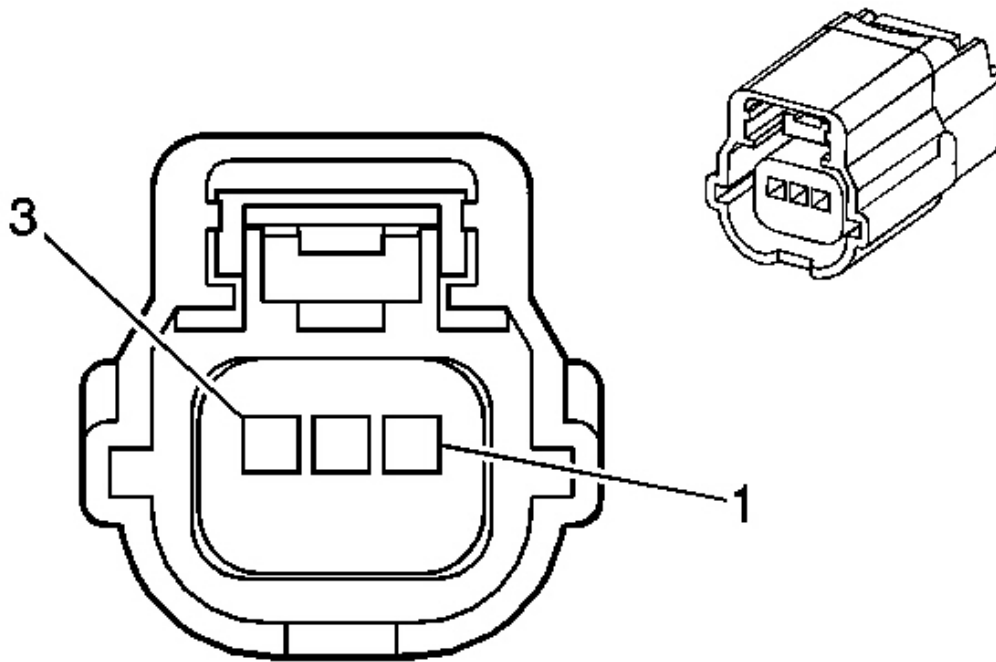


Fig. 23: B78F Rear Object Sensor - Right Middle (UD7)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Rear Bumper
- OEM Connector: 31403-3710
- Service Connector: 88988337
- Description: 3-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33468-0001/23
- Core/Insulation Crimp: H/H

B78F Rear Object Sensor - Right Middle (UD7)

Pin	Wire	Circuit	Function
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1	0.35 D-BU	2374	Object Sensor Supply Voltage
2	0.35 GY	2379	Object Sensor Low Reference
3	0.35 D-GN	2377	Right Rear Middle Object Sensor Signal

B78G REAR OBJECT SENSOR - LEFT OUTER (UD7)

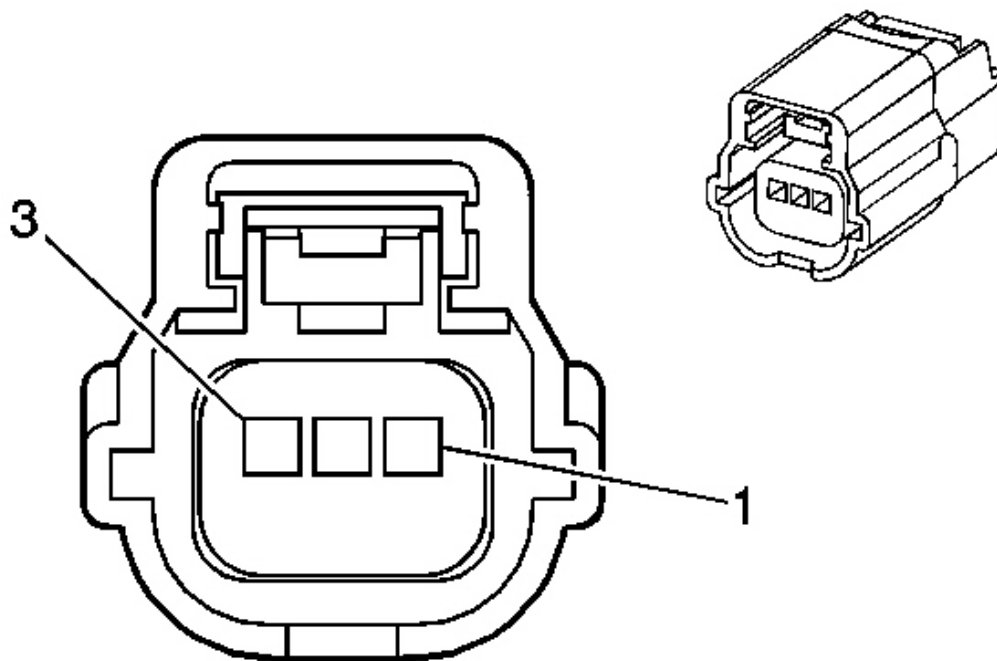


Fig. 24: B78G Rear Object Sensor - Left Outer (UD7)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Rear Bumper
- OEM Connector: 31403-3710
- Service Connector: 88988337
- Description: 3-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-213

- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33468-0001/23
- Core/Insulation Crimp: H/H

B78G Rear Object Sensor - Left Outer (UD7)

Pin	Wire	Circuit	Function
1	0.35 D-BU	2374	Object Sensor Supply Voltage
2	0.35 GY	2379	Object Sensor Low Reference
3	0.35 YE	2375	Left Rear Corner Object Sensor Signal

B78H REAR OBJECT SENSOR - RIGHT OUTER (UD7)

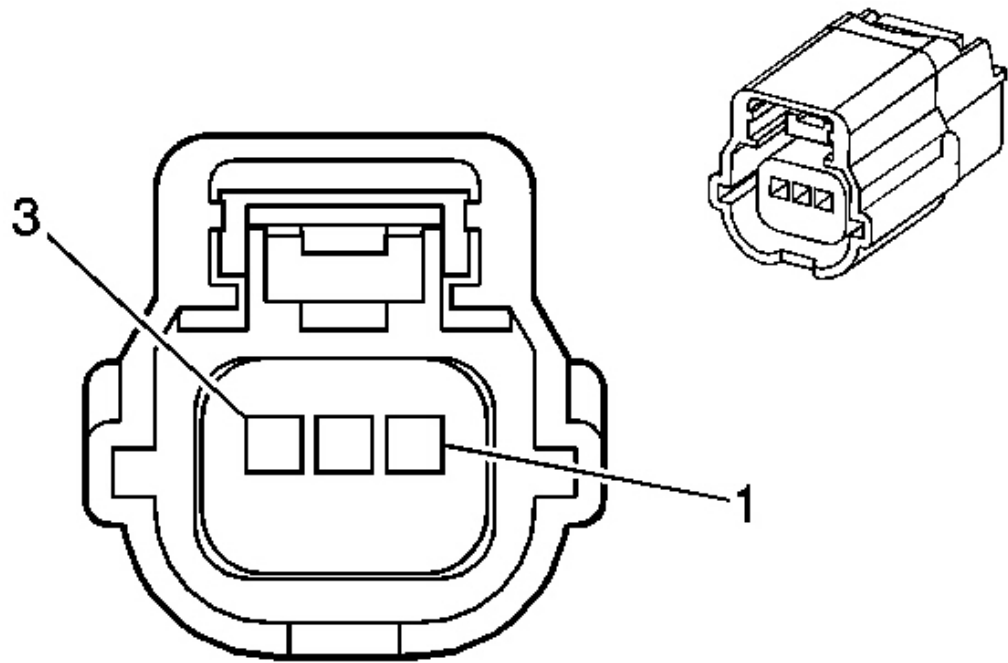


Fig. 25: B78H Rear Object Sensor - Right Outer (UD7)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Rear Bumper
- OEM Connector: 31403-3710

- Service Connector: 88988337
- Description: 3-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: J-38125-213
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 33468-0001/23
- Core/Insulation Crimp: H/H

B78H Rear Object Sensor - Right Outer (UD7)

Pin	Wire	Circuit	Function
1	0.35 D-BU	2374	Object Sensor Supply Voltage
2	0.35 GY	2379	Object Sensor Low Reference
3	0.35 PU	2378	Right Rear Corner Object Sensor Signal

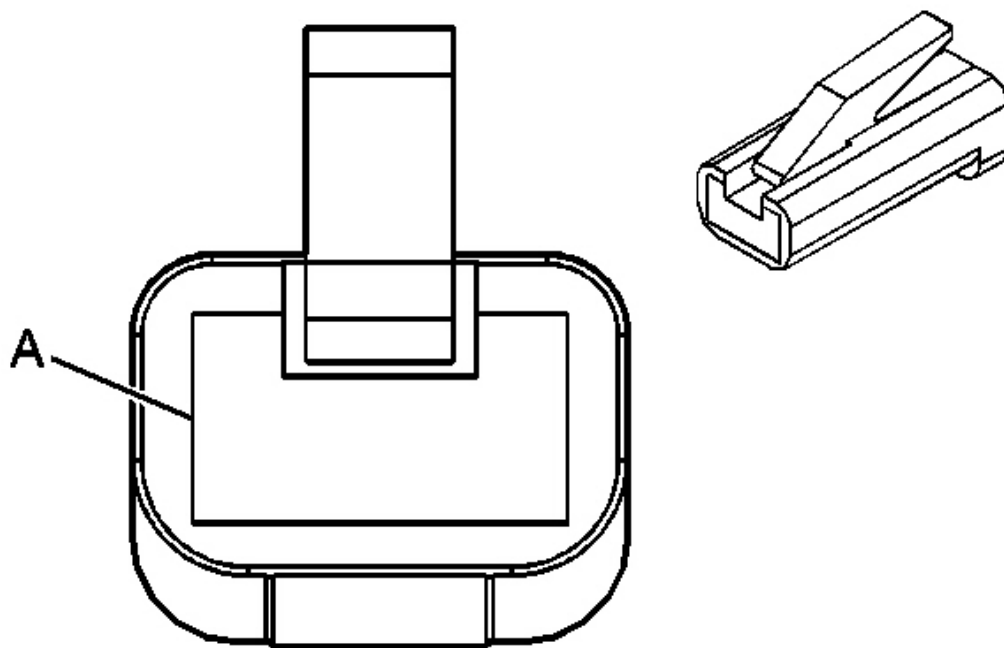
B80 PARK BRAKE SWITCH

Fig. 26: B80 Park Brake Switch

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 12004267
- Service Connector: 12102561
- Description: 1-Way F 56 Series Lock Type (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094430
- Diagnostic Test Probe: J-35616-42 (RD)
- Terminal/Tray: 12124515/1
- Core/Insulation Crimp: C/D

B80 Park Brake Switch

Pin	Wire	Circuit	Function
A	0.5 L-BU	1134	Park Brake Switch Signal

B87 REARVIEW CAMERA (UVC)

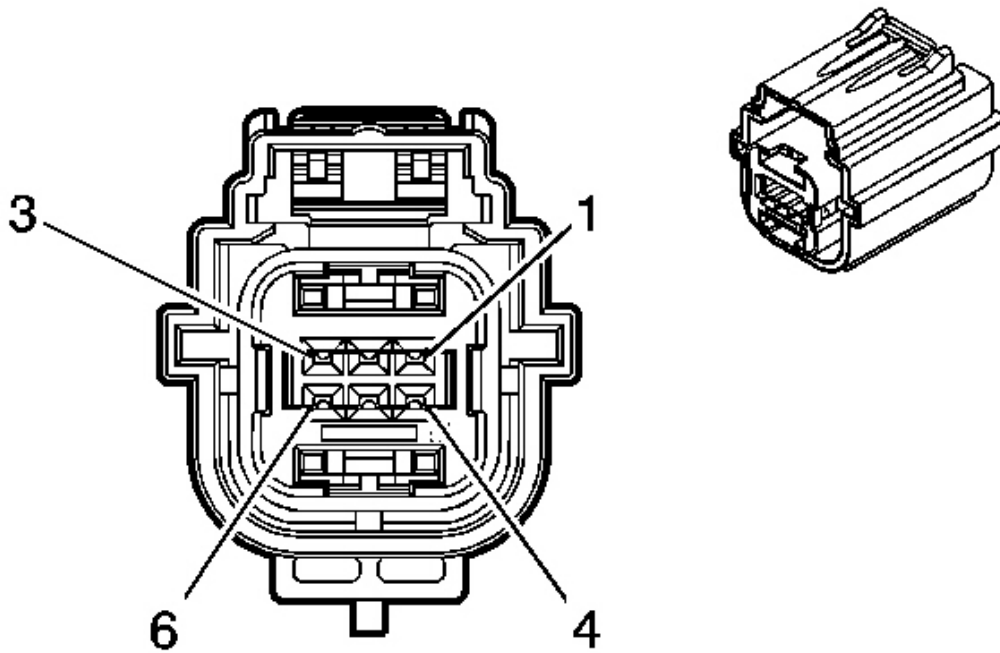


Fig. 27: B87 Rearview Camera (UVC)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: License Lamp
- OEM Connector: 1924211-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Series Sealed (NA)

Terminal Part Information

- Terminated Lead: 13575866
- Release Tool: J-38125-215A
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: SAIT-A03T-M064/14
- Core/Insulation Crimp: P/P

B87 Rearview Camera (UVC)

Pin	Wire	Circuit	Function

1	0.35 PK	6972	Camera Signal +
2	0.35 BARE	6974	Drain Wire
3	0.35 L-GN	24	Backup Lamp Supply Voltage
4	0.35 L-BU	6973	Camera Signal - (Early Production)
	0.35 PK/BK	6973	Camera Signal - (Late Production)
5	0.35 BK/WH	1651	Ground
6	0.35 PK	1339	Ignition Voltage

B88D SEAT BELT SWITCH - DRIVER

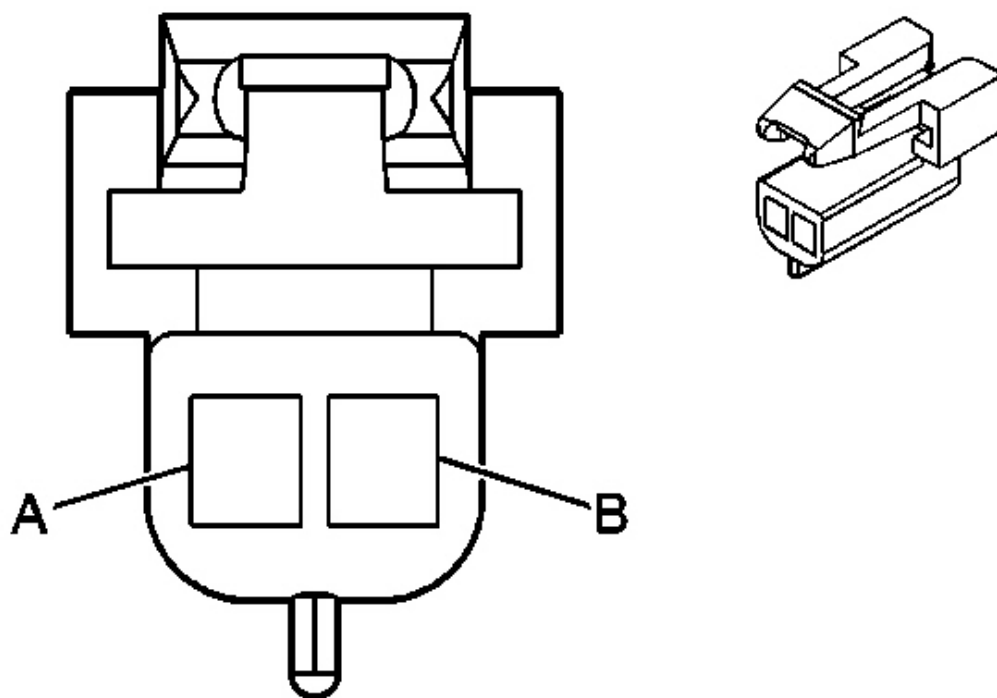


Fig. 28: B88D Seat Belt Switch - Driver
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Seat Cushion
- OEM Connector: 12052832
- Service Connector: 12101825

- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

B88D Seat Belt Switch - Driver

Pin	Wire	Circuit	Function
A	0.35 TN/WH	238	Seat Belt Switch - Left
B	0.35 D-BU	1363	Seat Belt Switch - Left - Low Reference

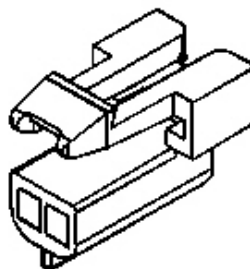
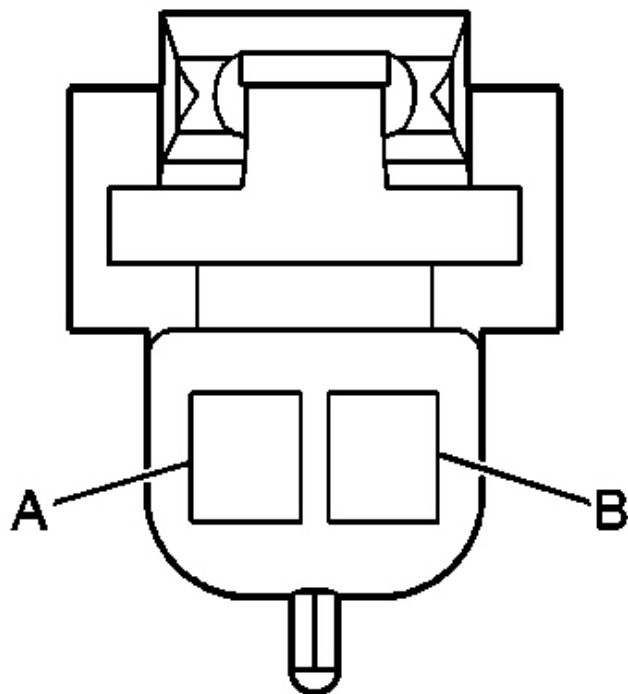
B88P SEAT BELT SWITCH - PASSENGER

Fig. 29: B88P Seat Belt Switch - Passenger
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Seat Cushion
- OEM Connector: 12052832
- Service Connector: 12101825
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

B88P Seat Belt Switch - Passenger

Pin	Wire	Circuit	Function
A	0.35 OG	1362	Seat Belt Switch - Right - Signal
B	0.35 L-BU	1361	Seat Belt Switch - Right - Low Reference

B99 STEERING WHEEL ANGLE SENSOR

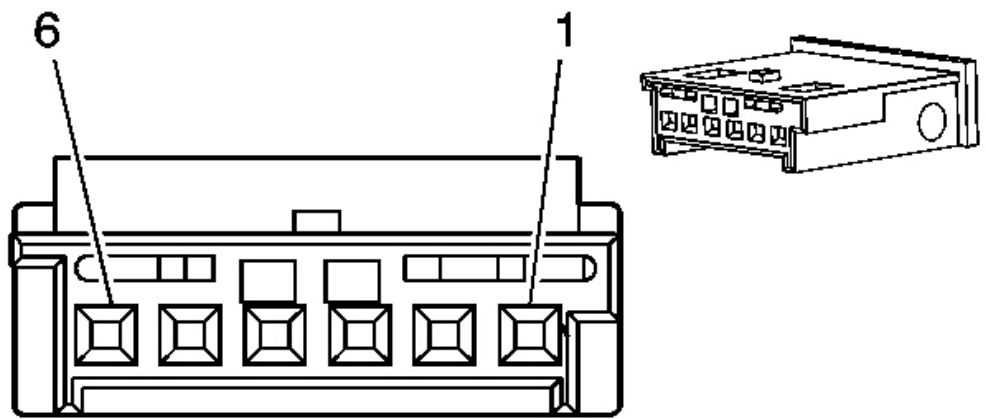


Fig. 30: B99 Steering Wheel Angle Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 1-1241370-3
- Service Connector: 13505903
- Description: 6-Way F MQS Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

B99 Steering Wheel Angle Sensor

Pin	Wire	Circuit	Function
1	0.35 L-BU	6106	High Speed GMLAN Serial Data -

2	0.35 L-BU	6106	High Speed GMLAN Serial Data -
3	0.35 D-BU	6105	High Speed GMLAN Serial Data +
4	0.35 D-BU	6105	High Speed GMLAN Serial Data +
5	0.35 D-GN	2087	Steering Wheel Position Sensor 5V Reference
6	0.35 BK/WH	651	Ground

B101 IMMOBILIZER ANTENNA

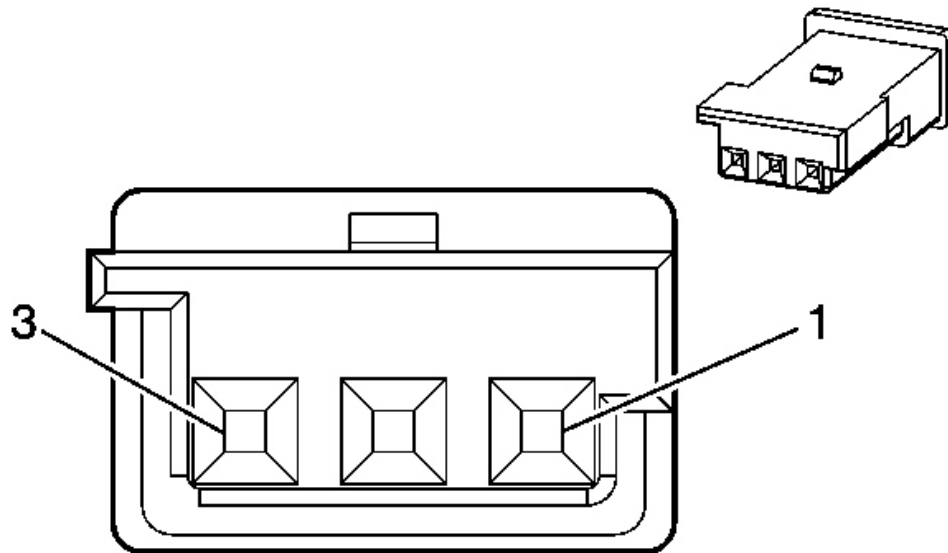


Fig. 31: B101 Immobilizer Antenna
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 4-1718346-1
- Service Connector: 13316117
- Description: 3-Way F Micro Quadlok Series (PU)

Terminal Part Information

- Terminated Lead: Pending

- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-64B (L-BU)
- Terminal/Tray: 928999-5/15
- Core/Insulation Crimp: H/H

B101 Immobilizer Antenna

Pin	Wire	Circuit	Function
1	0.35 D-GN/WH	3277	Immobilizer Ground
2	0.35 L-BU	7533	Local Interconnect Network 11
3	0.35 PK/BK	3276	Theft Deterrent Module Power

B107 ACCELERATOR PEDAL POSITION SENSOR

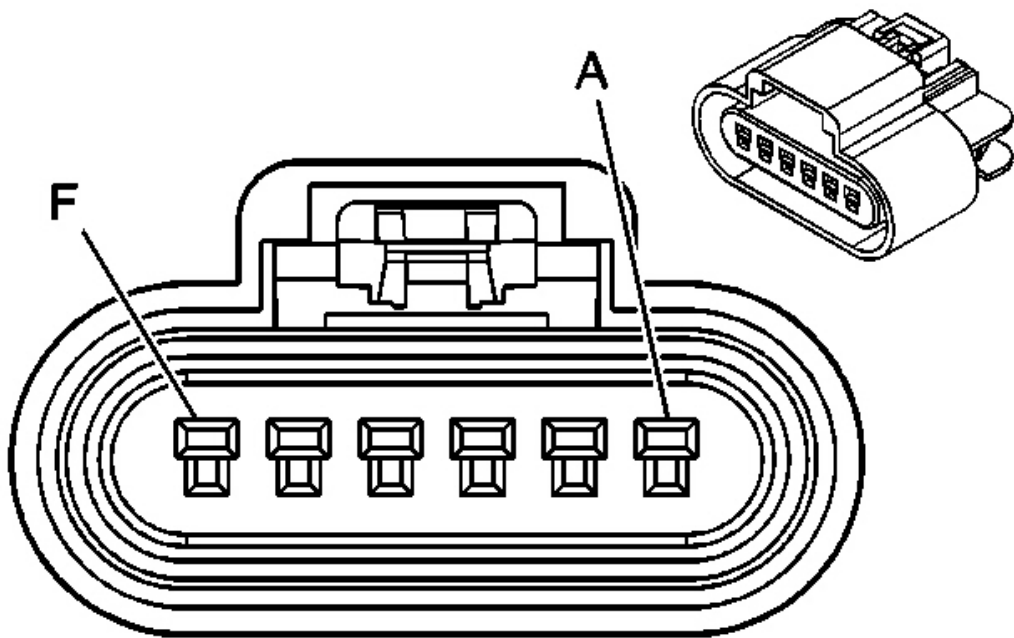


Fig. 32: B107 Accelerator Pedal Position Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Instrument Panel
- OEM Connector: 15326829

- Service Connector: 88988944
- Description: 6-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A

B107 Accelerator Pedal Position Sensor

Pin	Wire	Circuit	Function
A	0.35 PU	1272	Low Reference
B	0.35 L-BU	1162	APP Sensor 2 Signal
C	0.35 TN	1274	5-Volt 3 Reference
D	0.35 BN	1271	Low Reference
E	0.35 D-BU	1161	APP Sensor 1 Signal
F	0.35 WH/BK	1164	5-Volt 4 Reference

B119 MULTI-AXIS ACCELERATION SENSOR

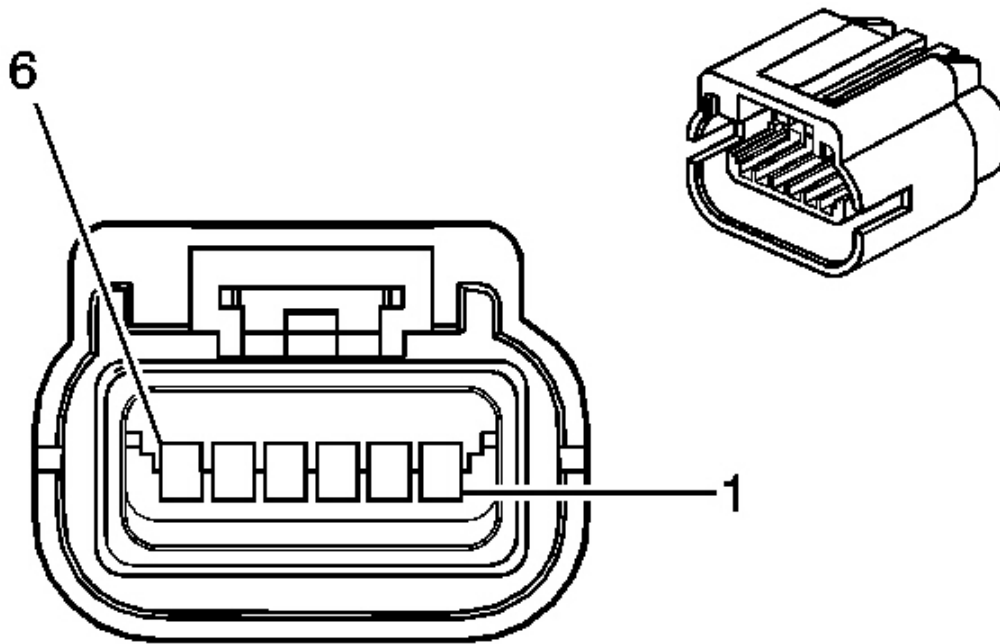


Fig. 33: B119 Multi-axis Acceleration Sensor
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Body
- OEM Connector: 6189-7011
- Service Connector: 19179377
- Description: 6-Way F 64 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: Service by Harness - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Harness - See Part Catalog
- Core/Insulation Crimp: Not Available

B119 Multi-axis Acceleration Sensor

Pin	Wire	Circuit	Function

1	0.35 L-BU	6106	High Speed GMLAN Serial Data -
2-3	-	-	Not Used
4	0.35 D-BU	6105	High Speed GMLAN Serial Data +
5	0.35 D-GN	2087	Steering Wheel Position Sensor 5V Reference
6	0.35 BK/WH	1651	Ground

B150 FUEL TANK PRESSURE SENSOR

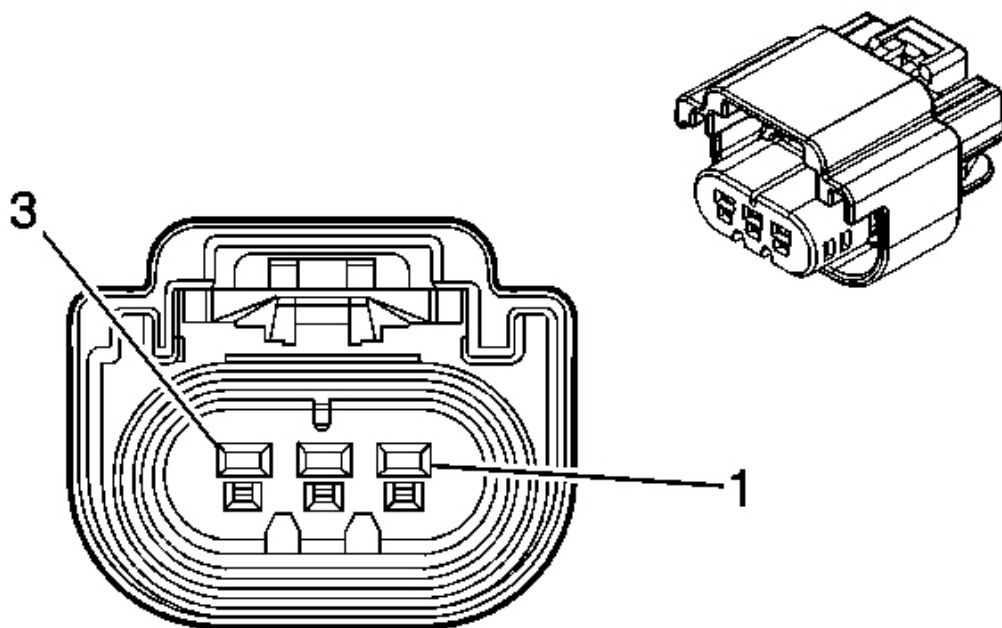


Fig. 34: B150 Fuel Tank Pressure Sensor
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Fuel Tank
- OEM Connector: 88988720
- Service Connector: 19149288
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminated Lead: 13575479

- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C

B150 Fuel Tank Pressure Sensor

Pin	Wire	Circuit	Function
1	0.35 D-GN	890	Fuel Tank Pressure Sensor Signal
2	0.35 BN/WH	6281	Sensor Low Reference
3	0.35 GY	2709	5-Volt 1 Reference

C1 BATTERY -**Terminal Part Information**

- Terminal: 12162100
- Core/Insulation Crimp: N/A
- Description: Battery Terminal

C1 Battery -

Pin	Wire	Circuit	Function
-	0.8 BK	50	Ground

C1 BATTERY -**Terminal Part Information**

- Terminal: RS916RHM6TDF
- Core/Insulation Crimp: N/A
- Description: Battery Terminal

C1 Battery -

Pin	Wire	Circuit	Function
-	19 BK	150	Ground
	32 BK	50	Ground

C1 BATTERY +**Terminal Part Information**

- Terminal: RS915
- Core/Insulation Crimp: N/A

- Description: Battery Terminal

C1 Battery +

Pin	Wire	Circuit	Function
+	19 RD	1	Battery Positive Voltage
	32 RD	1	Battery Positive Voltage

E1C ACCENT LAMP - DRIVER DOOR HANDLE (TSQ)

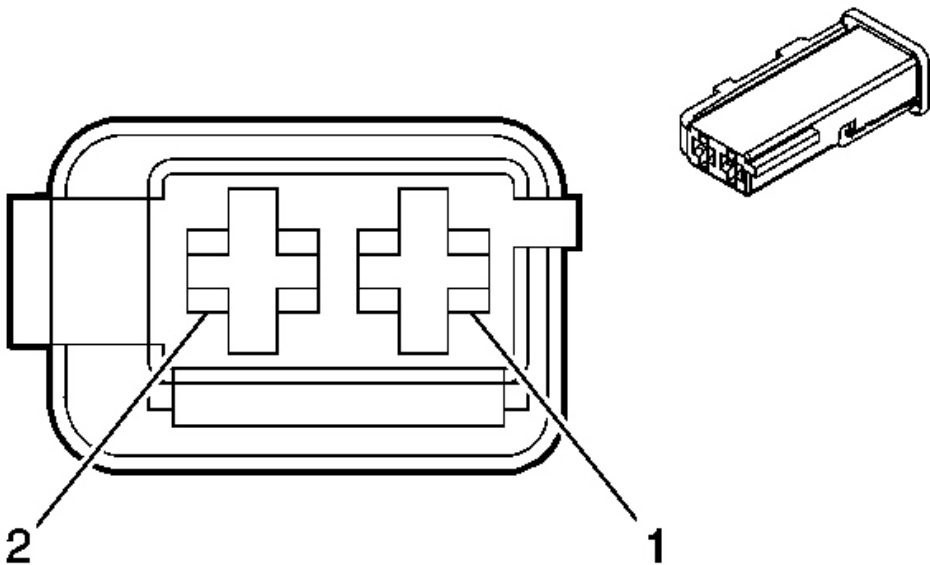


Fig. 35: E1C Accent Lamp - Driver Door Handle (TSQ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door Trim
- OEM: 0-1563189-1
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F 1.6 Timer Series (BK)

Terminal Part Information

- Terminated Lead: 13575855
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

E1C Accent Lamp - Driver Door Handle (TSQ)

Pin	Wire	Circuit	Function
1	0.35 PK	7557	Lamp Illumination
2	0.35 BK	750	Ground

E1D ACCENT LAMP - DRIVER DOOR (TSQ)

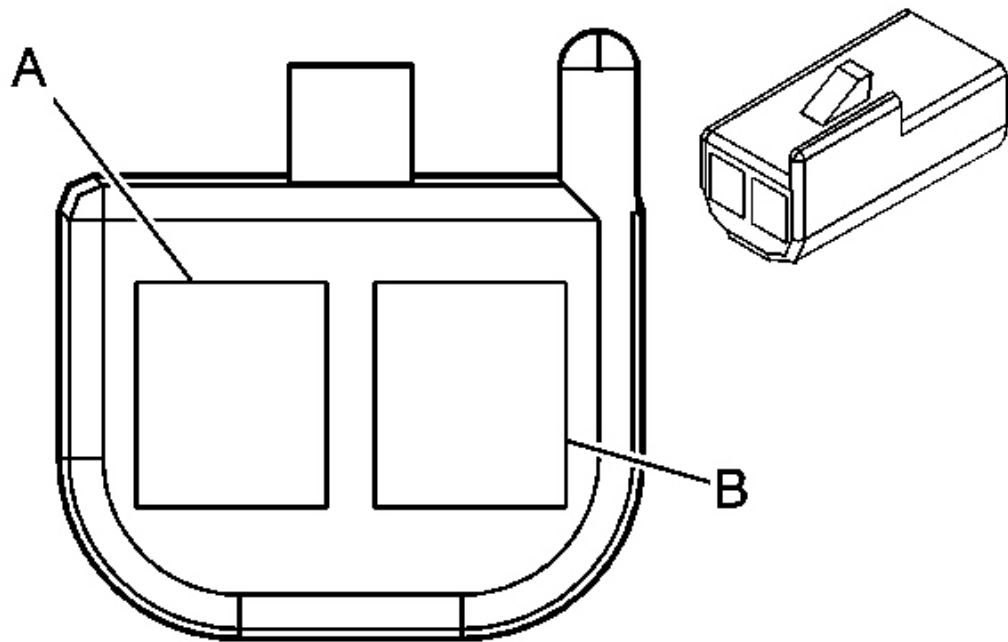


Fig. 36: E1D Accent Lamp - Driver Door (TSQ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Driver Door Trim

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

E1D Accent Lamp - Driver Door (TSQ)

Pin	Wire	Circuit	Function
A	0.35 PK	7557	Lamp Illumination
B	0.35 BK	750	Ground

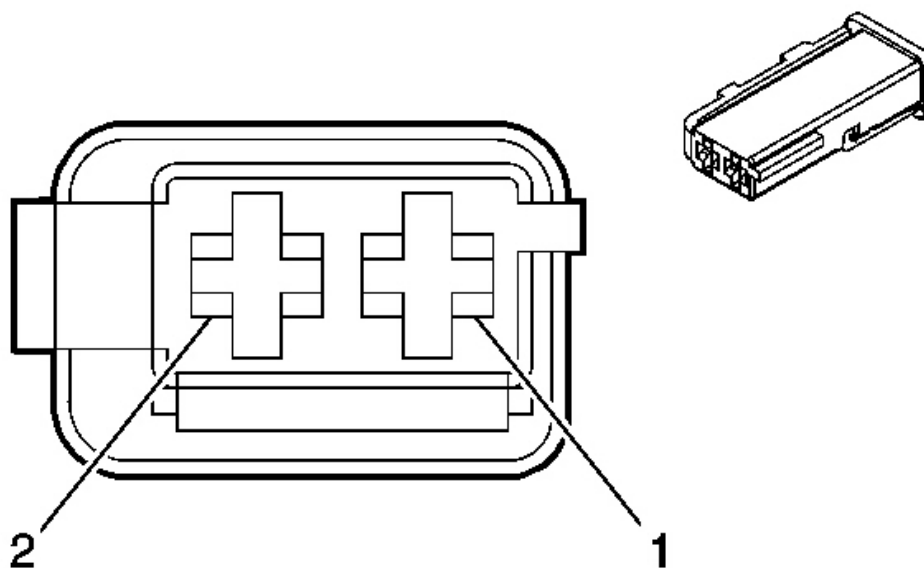
E1J ACCENT LAMP - LEFT LOWER INSTRUMENT PANEL

Fig. 37: E1J Accent Lamp - Left Lower Instrument Panel
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: CD Slot
- OEM Connector: 1563189-1
- Service Connector: Pending
- Description: 2-Way F (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 1563189-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 1563189-1
- Core/Insulation Crimp: Not Available

E1J Accent Lamp - Left Lower Instrument Panel

Pin	Wire	Circuit	Function
1	0.35 PU	7558	Accent Lamps Control
2	0.35 BK	1550	Ground

E1K ACCENT LAMP - RIGHT LOWER INSTRUMENT PANEL

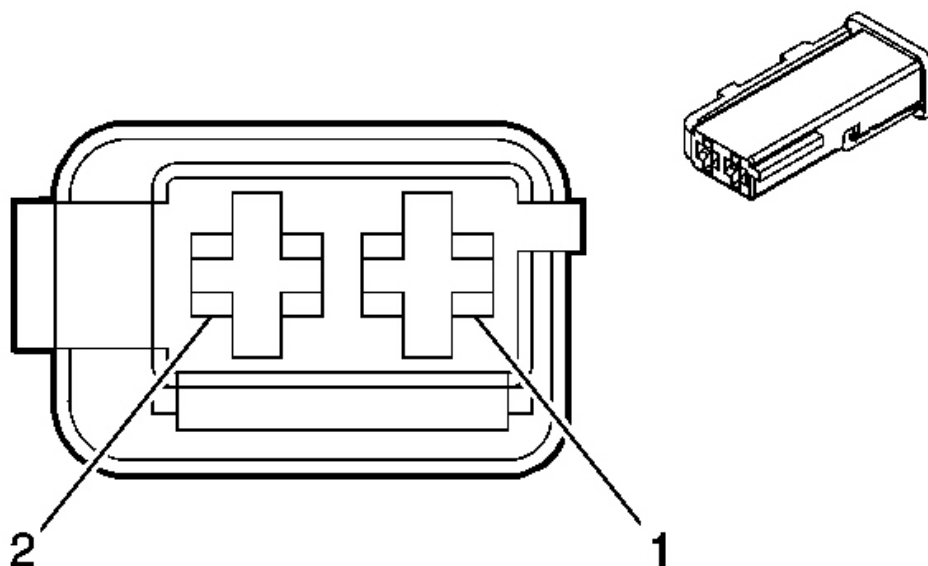


Fig. 38: E1K Accent Lamp - Right Lower Instrument Panel
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: CD Slot
- OEM Connector: 1563189-1
- Service Connector: Pending
- Description: 2-Way F (BK)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 1563189-1
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 1563189-1
- Core/Insulation Crimp: Not Available

E1K Accent Lamp - Right Lower Instrument Panel

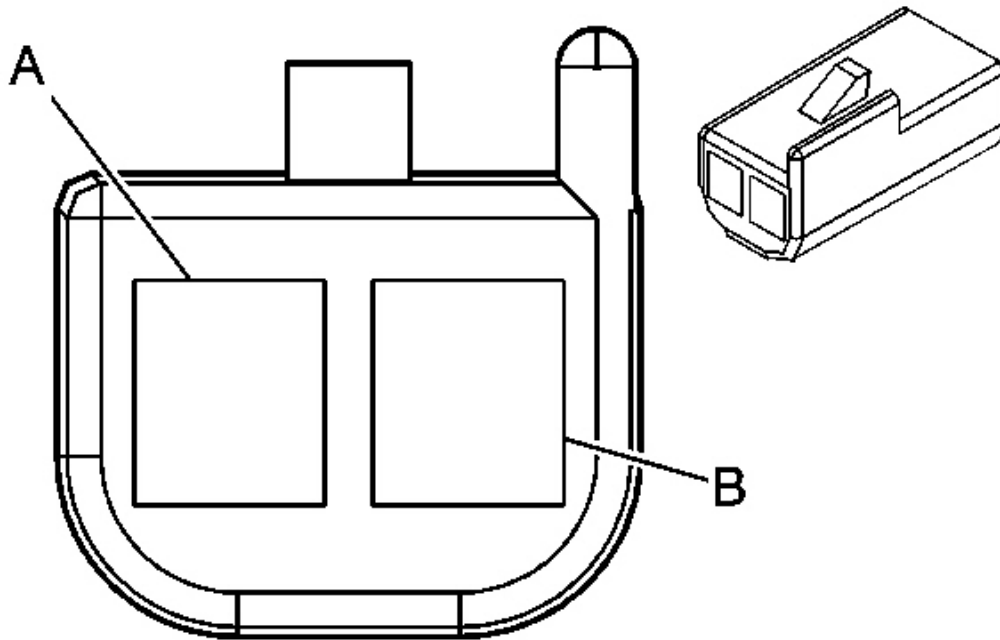
Pin	Wire	Circuit	Function
1	0.35 PU	7558	Accent Lamps Control

2

0.35 BK

1550

Ground

E1L ACCENT LAMP - OVERHEAD CONSOLE (TSQ)**Fig. 39: E1L Accent Lamp - Overhead Console (TSQ)****Courtesy of GENERAL MOTORS CORP.****Connector Part Information**

- Harness: Overhead Console
- OEM Connector: 12047662
- Service Connector: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

E1L Accent Lamp - Overhead Console (TSQ)

Pin	Wire	Circuit	Function
A	0.35 BK	750	Ground
B	0.35 PK	7557	Lamp Illumination

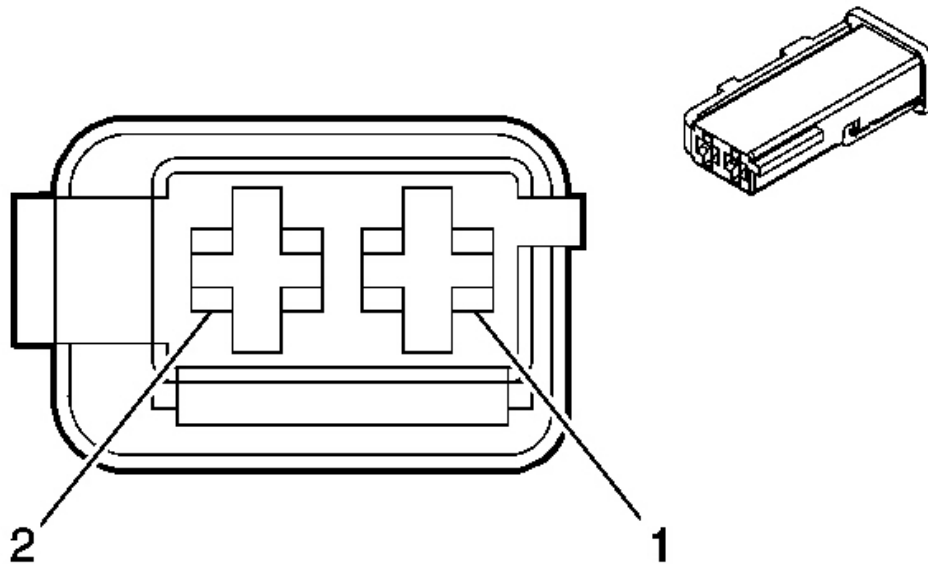
E1M ACCENT LAMP - PASSENGER DOOR HANDLE (TSQ)

Fig. 40: E1M Accent Lamp - Passenger Door Handle (TSQ)

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door Trim
- OEM: 0-1563189-1
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F 1.6 Timer Series (BK)

Terminal Part Information

- Terminated Lead: 13575855
- Release Tool: 15315247

- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

E1M Accent Lamp - Passenger Door Handle (TSQ)

Pin	Wire	Circuit	Function
1	0.35 PK	7557	Lamp Illumination
2	0.35 BK	750	Ground

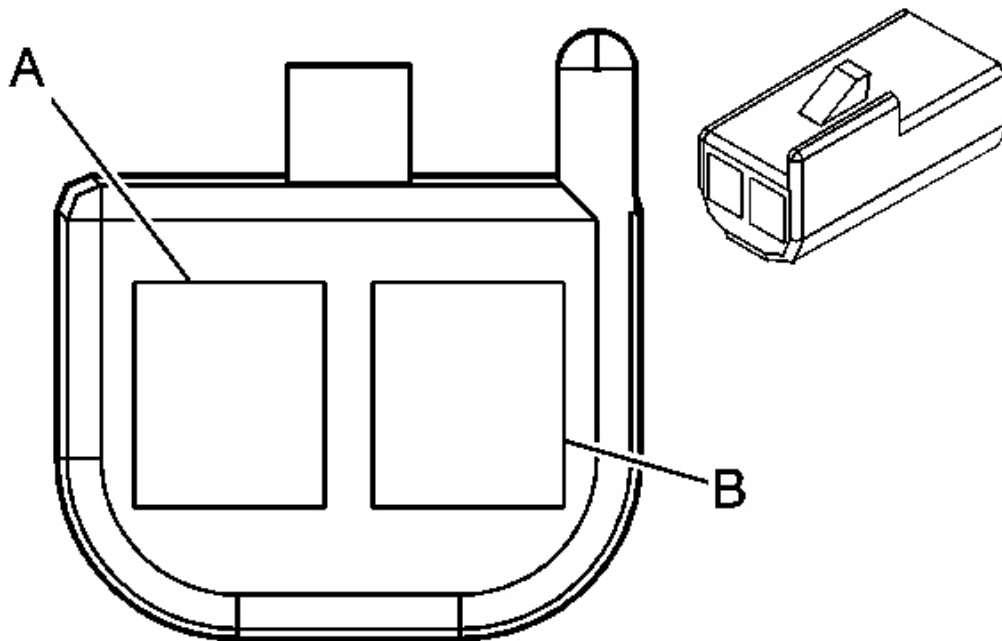
E1P ACCENT LAMP - PASSENGER DOOR (TSQ)

Fig. 41: E1P Accent Lamp - Passenger Door (TSQ)
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Passenger Door Trim
- OEM Connector: 12047662
- Service Connector: 12085535

- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminated Lead: Pending
- Release Tool: 12094429
- Diagnostic Test Probe: J-35616-14 (GN)
- Terminal/Tray: 15326030/2
- Core/Insulation Crimp: E/C

E1P Accent Lamp - Passenger Door (TSQ)

Pin	Wire	Circuit	Function
A	0.35 PK	7557	Lamp Illumination
B	0.35 BK	750	Ground

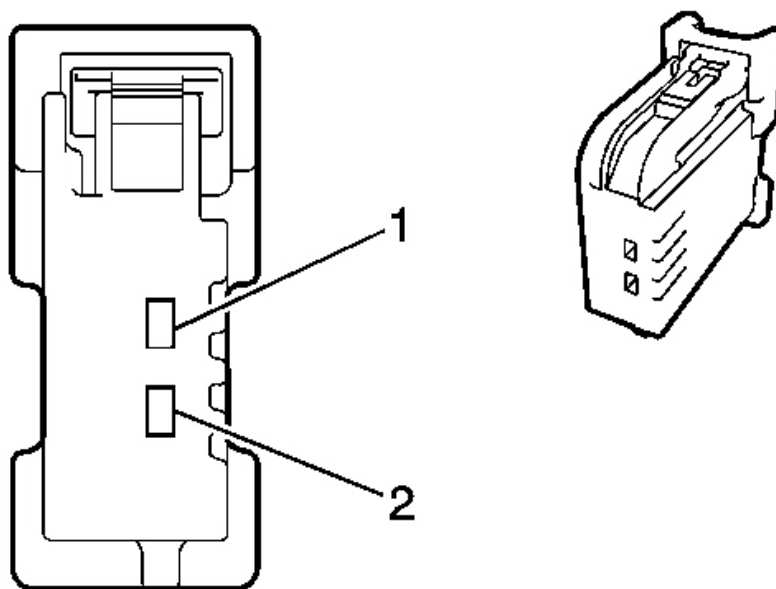
E1S ACCENT LAMP - CONSOLE CUPHOLDER RIGHT

Fig. 42: E1S Accent Lamp - Console Cupholder Right
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: Console
- OEM: 19115613
- Service: 19179373
- Description: 2-Way F 1.5/0.64 Series (BK)

Terminal Part Information

- Terminated Lead: 13575855
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 8240-0127/22
- Core/Insulation Crimp: E/C

E1S Accent Lamp - Console Cupholder Right

Pin	Wire	Circuit	Function
1	0.35 BK	1550	Ground
2	0.35 PU	7558	Accent Lamps Control

E2LF SIDE MARKER LAMP - LEFT FRONT

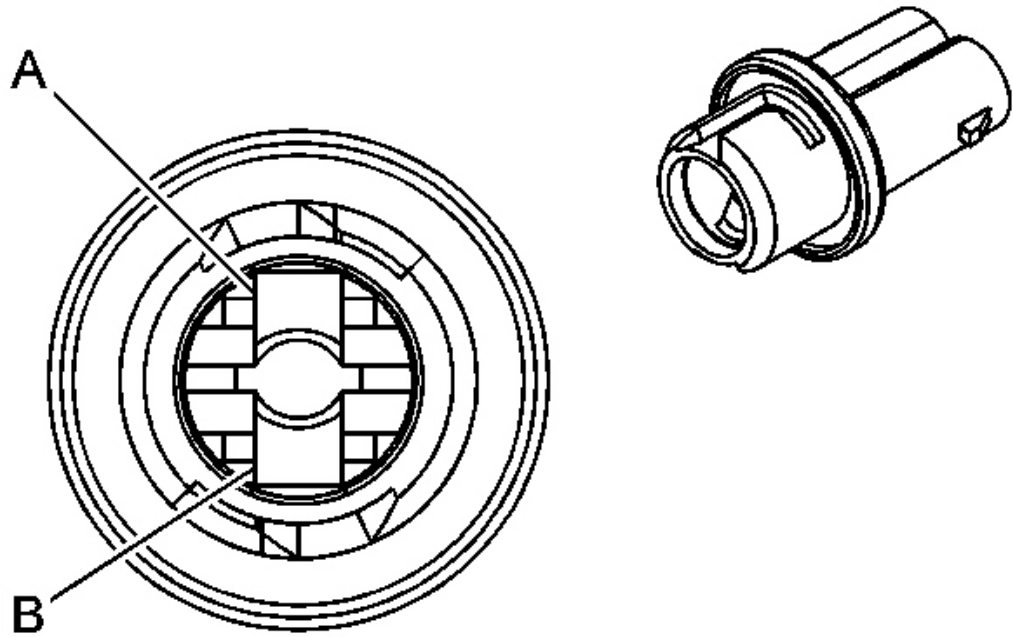


Fig. 43: E2LF Side Marker Lamp - Left Front
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Front
- OEM: 15317651
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F LP Socket WGE BSE W2 (GY)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 15317651
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 15317651
- Core/Insulation Crimp: Not Available

E2LF Side Marker Lamp - Left Front

Pin	Wire	Circuit	Function
A	0.5 BN	709	Left Front Turn Signal Lamp Supply Voltage
B	1 BK	1150	Ground

E2LR SIDE MARKER LAMP - LEFT REAR

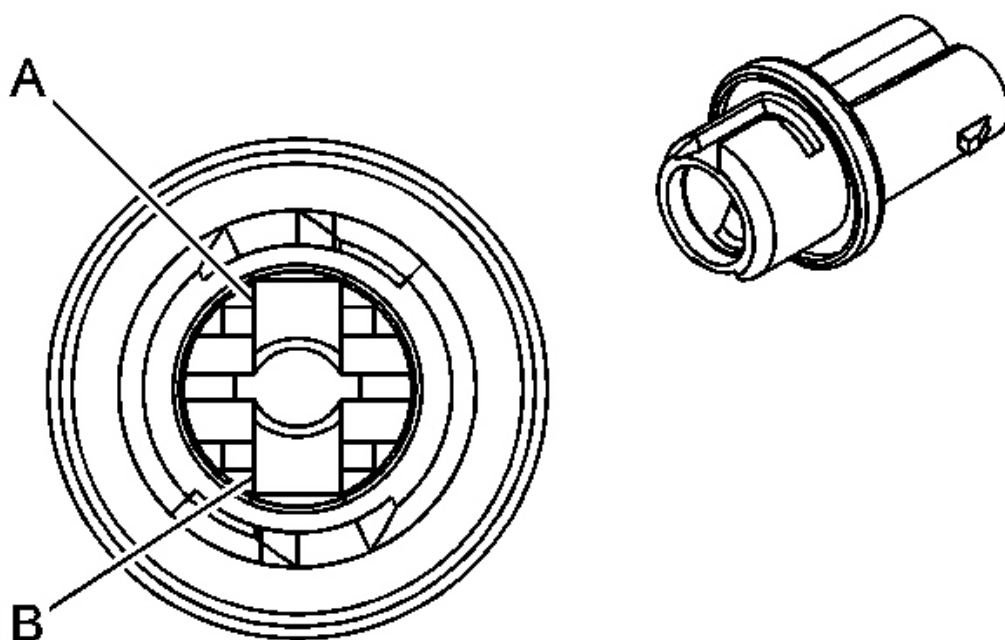


Fig. 44: E2LR Side Marker Lamp - Left Rear
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Rear
- OEM: 15317651
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F LP Socket WGE BSE W2 (GY)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 15317651
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 15317651
- Core/Insulation Crimp: Not Available

E2LR Side Marker Lamp - Left Rear

Pin	Wire	Circuit	Function
A	0.5 RD	2509	Left Tail Lamp Supply Voltage

B

0.8 BK

2550

Ground

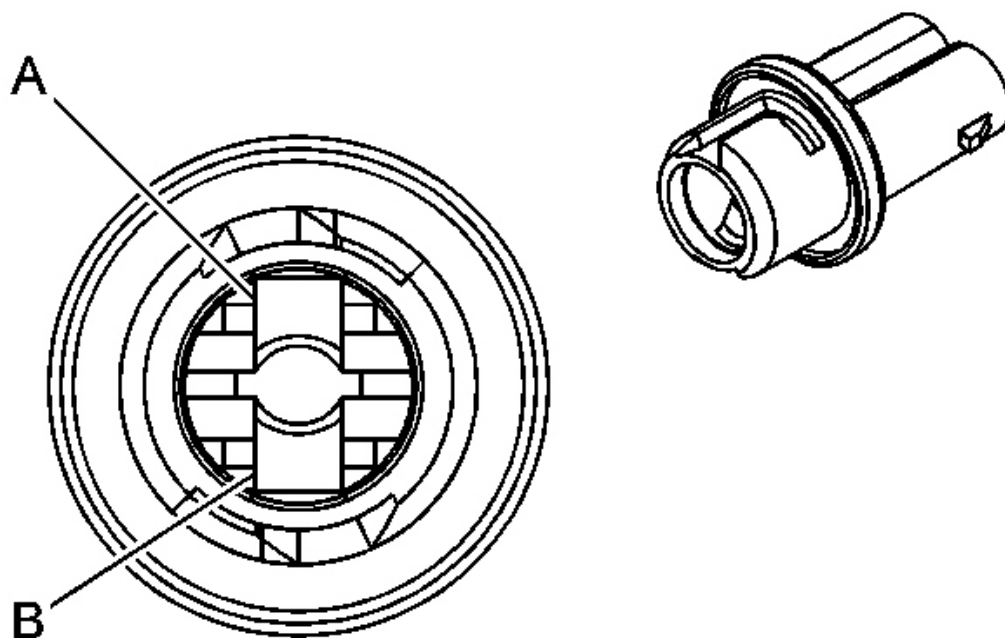
E2RF SIDE MARKER LAMP - RIGHT FRONT

Fig. 45: E2RF Side Marker Lamp - Right Front
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Front
- OEM: 15317651
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F LP Socket WGE BSE W2 (GY)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 15317651
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 15317651
- Core/Insulation Crimp: Not Available

E2RF Side Marker Lamp - Right Front

Pin	Wire	Circuit	Function
A	0.5 BN	309	Right Front Park Lamp Supply Voltage
B	1 BK	1050	Ground

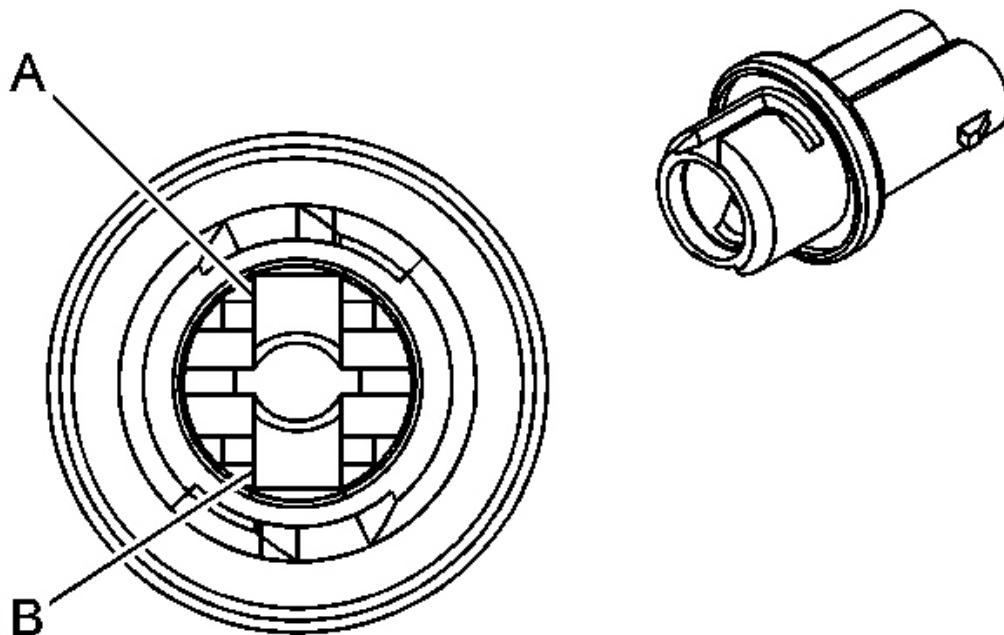
E2RR SIDE MARKER LAMP - RIGHT REAR

Fig. 46: E2RR Side Marker Lamp - Right Rear
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Right Rear
- OEM: 15317651
- Service: Service by Harness - See Part Catalog
- Description: 2-Way F LP Socket WGE BSE W2 (GY)

Terminal Part Information

- Terminated Lead: Service by Connector Assembly - 15317651
- Release Tool: Not Available

- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Connector Assembly - 15317651
- Core/Insulation Crimp: Not Available

E2RR Side Marker Lamp - Right Rear

Pin	Wire	Circuit	Function
A	0.5 RD	2609	Right Tail Lamp Supply Voltage
B	0.8 BK	550	Ground

E4E HEAD LAMP - LEFT HIGH BEAM

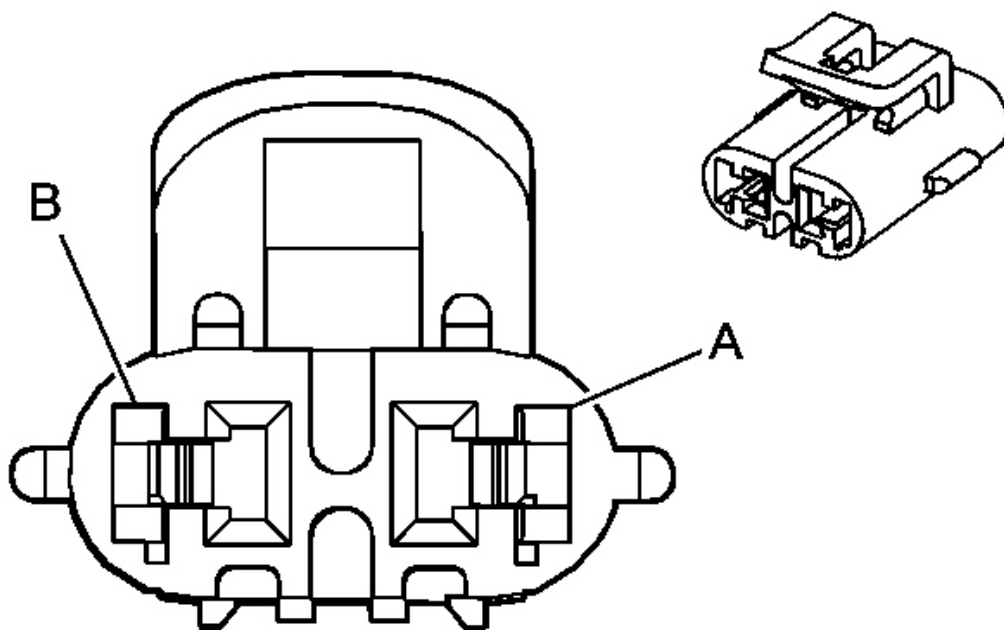


Fig. 47: E4E Head Lamp - Left High Beam
 Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness: POA Lamp Left Front
- OEM Connector: H9
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: 2-Way F Bulb Connector (GY)

Terminal Part Information

- Terminated Lead: Service by Component Assembly - See Part Catalog
- Release Tool: Not Available
- Diagnostic Test Probe: Pending
- Terminal/Tray: Service by Component Assembly - See Part Catalog
- Core/Insulation Crimp: Not Available

E4E Head Lamp - Left High Beam

Pin	Wire	Circuit	Function
A	0.8 D-GN/WH	711	Left Headlamp High Beam Supply Voltage
B	0.8 BK	1150	Ground

2010 ELECTRICAL

Wiring Systems and Power Management - Component Locator - Equinox & Terrain

SPLICE PACK CONNECTOR END VIEWS

JX201

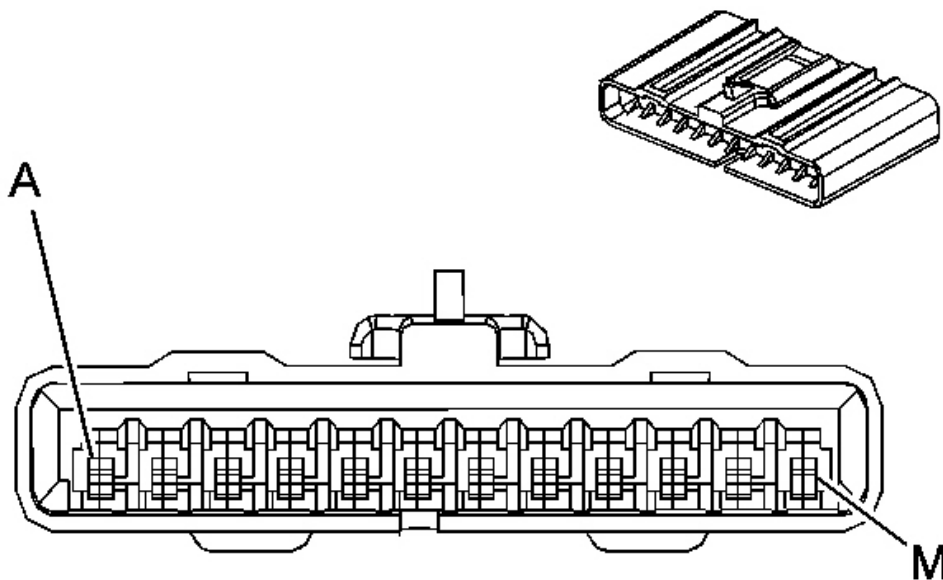


Fig. 1: View Of JX201

Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness Type: Instrument Panel
- OEM Connector: 12176461
- Service Connector: 15305914
- Description: 12-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: 13575479
- Release Tool: 15315247

- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C

JX201

Pin	Wire	Circuit	Function
A	0.35 D-GN	5060	Low Speed GMLAN Serial Data
B	-	-	Not Used
C	0.35 D-GN	5060	Low Speed GMLAN Serial Data (KTA)
D	0.35 D-GN	5060	Low Speed GMLAN Serial Data
E	0.35 D-GN	5060	Low Speed GMLAN Serial Data (UZ8)
F-G	-	-	Not Used
H	0.35 D-GN	5060	Low Speed GMLAN Serial Data (UE1)
J	0.35 D-GN	5060	Low Speed GMLAN Serial Data
K	0.35 D-GN	5060	Low Speed GMLAN Serial Data
L	0.35 D-GN	5060	Low Speed GMLAN Serial Data
M	0.35 D-GN	5060	Low Speed GMLAN Serial Data

JX202

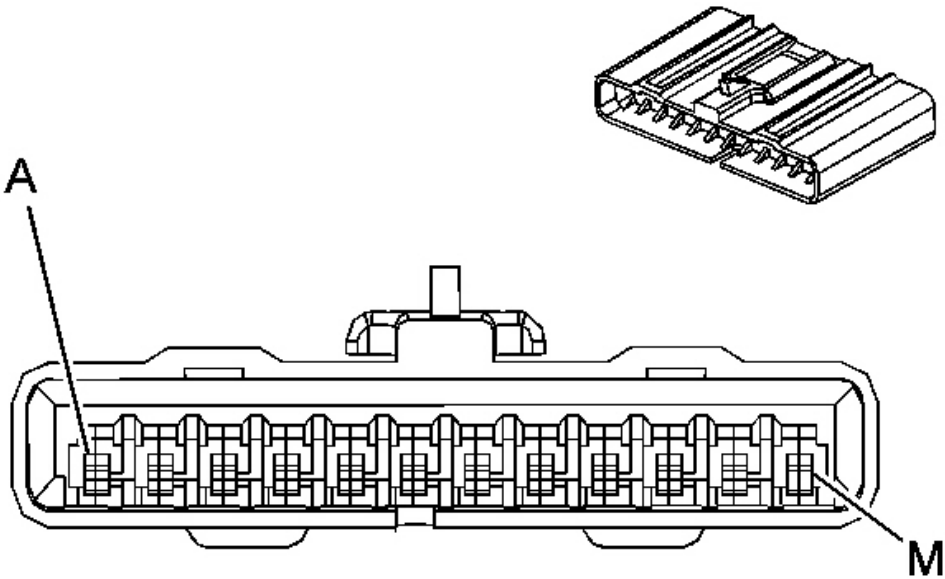


Fig. 2: View Of JX202
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

- Harness Type: Instrument Panel
- OEM Connector: 12176461
- Service Connector: 15305914
- Description: 12-Way F GT 150 Series (BK)

Terminal Part Information

- Terminated Lead: 13575479
- Release Tool: 15315247
- Diagnostic Test Probe: J-35616-2A (GY)
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C

JX202

Pin	Wire	Circuit	Function
A	0.35 D-GN	5060	Low Speed GMLAN Serial Data
B-D	-	-	Not Used
E	0.35 D-GN	5060	Low Speed GMLAN Serial Data (UD7)
F	0.35 D-GN	5060	Low Speed GMLAN Serial Data
G	0.35 D-GN	5060	Low Speed GMLAN Serial Data (KA1 without LTZ or SLT)
H-K	-	-	Not Used
L	0.35 D-GN	5060	Low Speed GMLAN Serial Data (KA1 with LTZ or SLT)
M	0.35 D-GN	5060	Low Speed GMLAN Serial Data (TB5)

2010 ELECTRICAL

Wiring Systems and Power Management - Equinox & Terrain

REPAIR INSTRUCTIONS

RELAY REPLACEMENT (ATTACHED TO WIRE HARNESS)

Removal Procedure

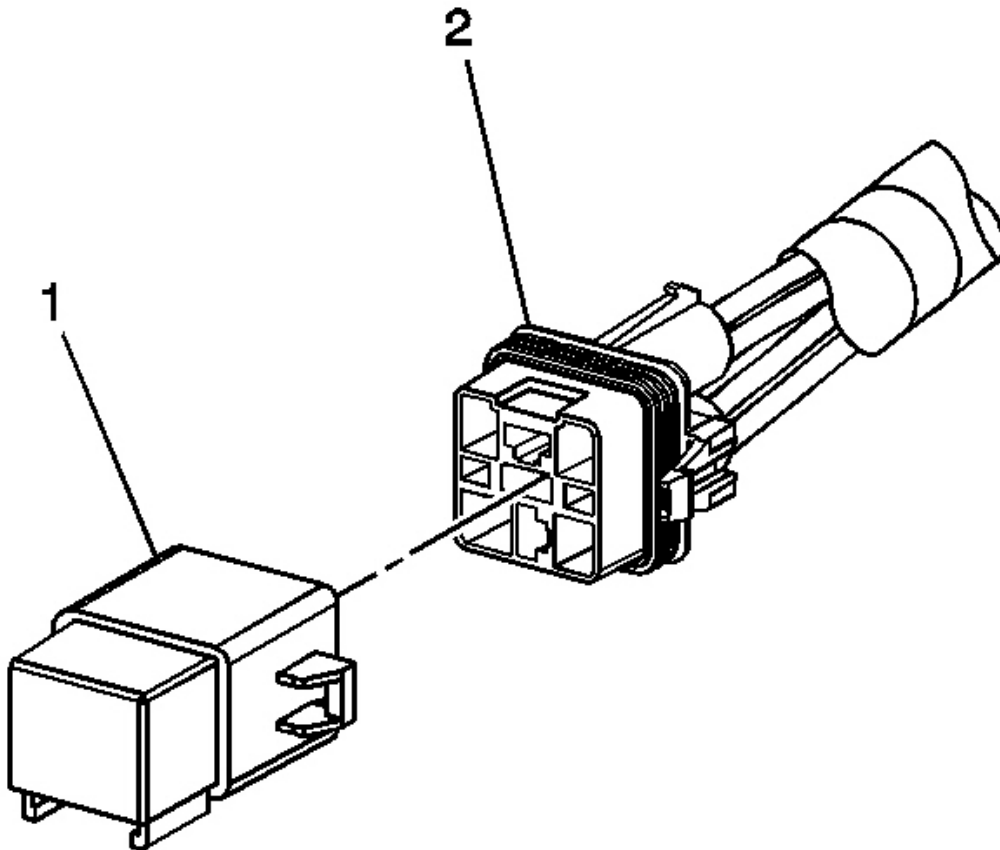


Fig. 1: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS CORP.

1. Locate the relay. Refer to the **Master Electrical Component List** to locate the relay in the vehicle.
2. Remove any fasteners which hold the relay in place.
3. Remove any connector position assurance (CPA) devices or secondary locks.

NOTE: Use care when removing a relay in a wiring harness when the relay is secured by fasteners or tape.

4. Separate the relay (1) from the wire harness connector (2).

Installation Procedure

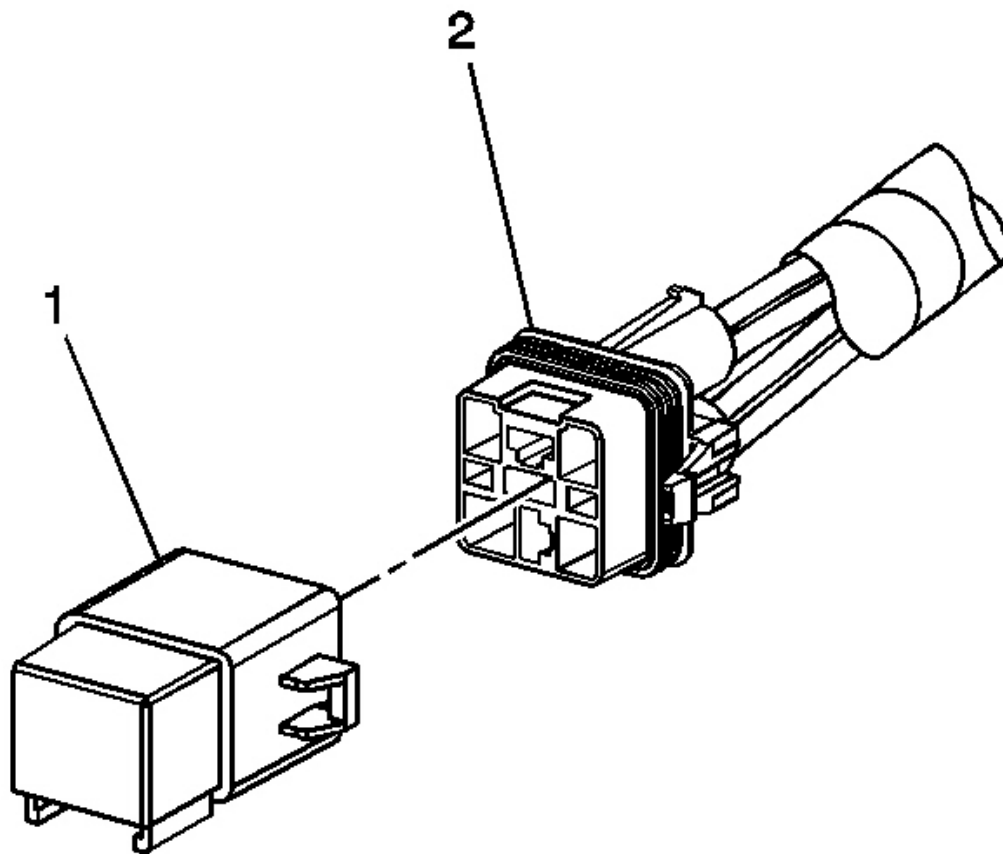


Fig. 2: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS CORP.

1. Connect the relay (1) to the wire harness connector (2).
2. Install any connector position assurance (CPA) devices or secondary locks.
3. Install the relay using any fasteners or tape that originally held the relay in place.

RELAY REPLACEMENT (WITHIN AN ELECTRICAL CENTER)

Special Tools

J 43244 Relay Puller Pliers

Removal Procedure

1. Remove the electrical center cover.
2. Locate the relay. Refer to **Electrical Center Identification Views** to locate the electrical center where the relay exists.

NOTE:

- Always note the orientation of the relay.
- If equipped with a notch style relay; observe the location of the notch on the old relay to verify the new relay is installed with the notch in the same location.
- Ensure that the electrical center is secure, as not to put added stress on the wires or terminals.

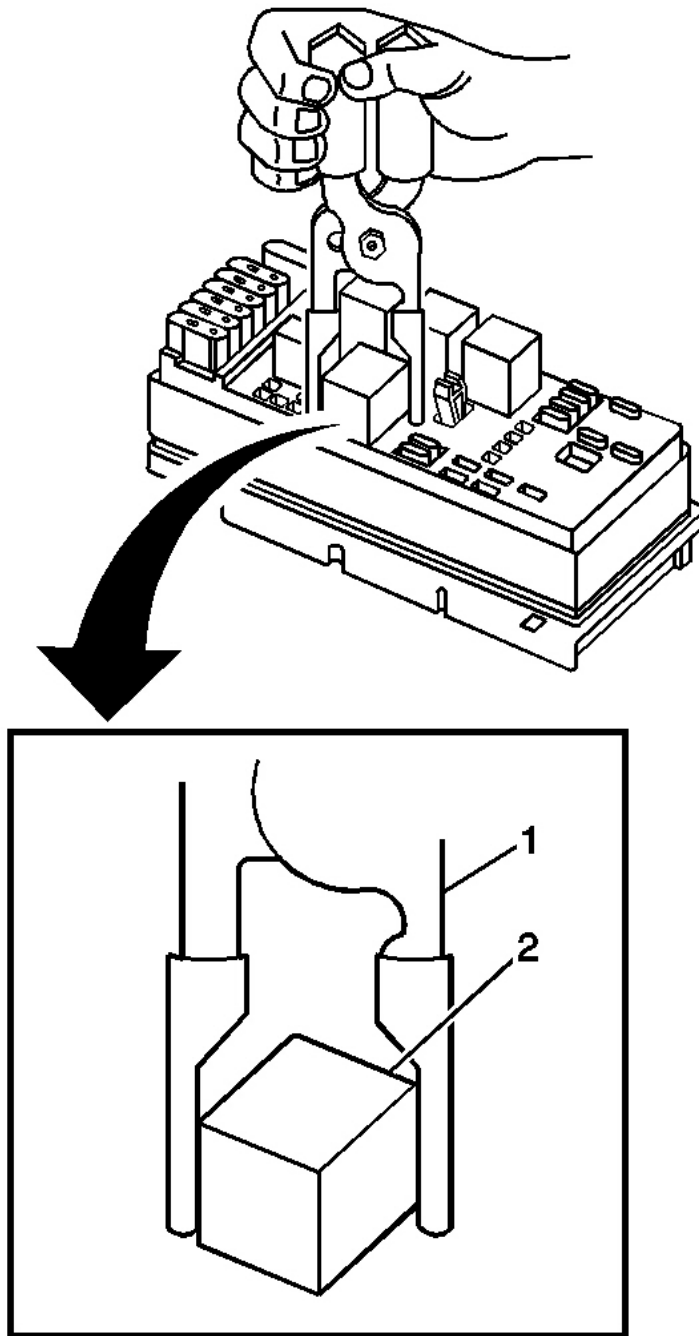


Fig. 3: Removing/Installing Relay Using J 43244
Courtesy of GENERAL MOTORS CORP.

3. Using the **J 43244** (1) position the tool on opposing corners of the relay (2).

CAUTION: Use J43244 to pull the relay straight out from the electrical center terminals. The use of pliers or a flat bladed tool could damage the electrical center.

4. Remove the relay (2) from the electrical center.

Installation Procedure

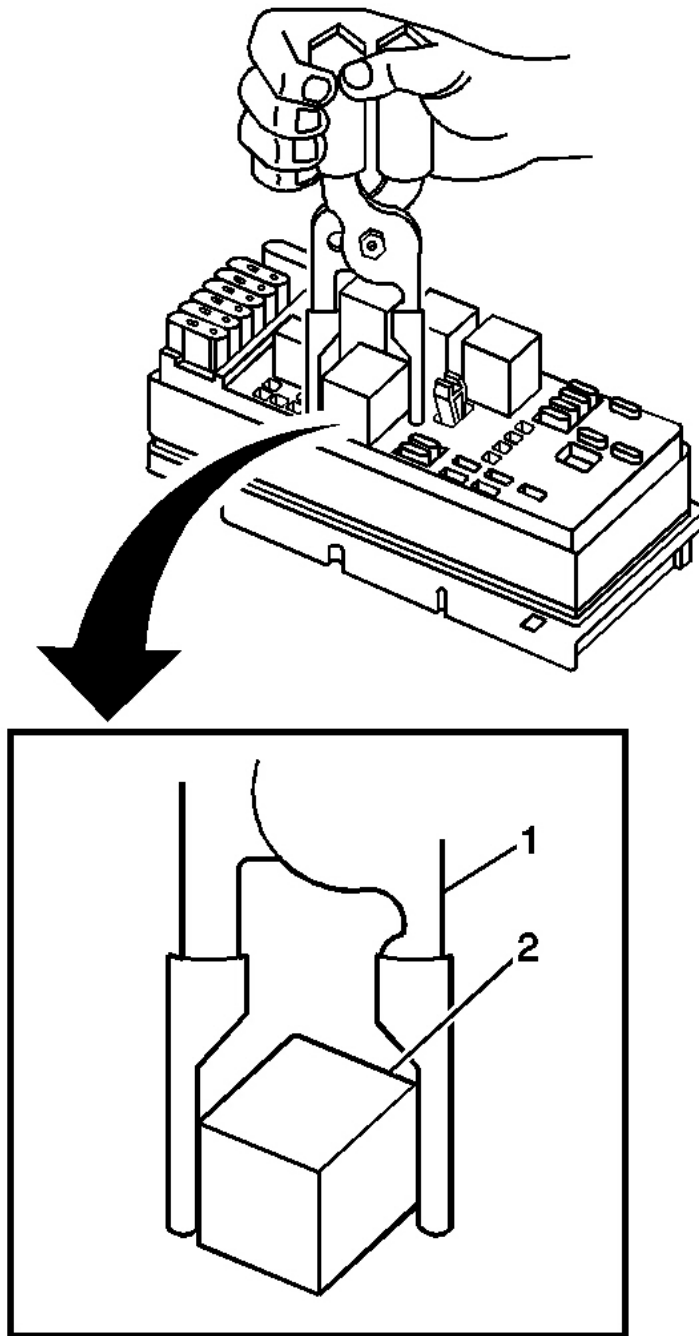


Fig. 4: Removing/Installing Relay Using J 43244
Courtesy of GENERAL MOTORS CORP.

1. Install the relay (2) in the same position as removed.
2. Install the electrical center cover.

GROUND REPAIR

Electrical Grounds

Proper electrical system function relies on secure, positive, corrosion-free ground connections. Loose, stripped, or corroded connections increase the possibility of improper system function and loss of module communication. These conditions may also lead to unnecessary repairs and component replacements.

In general, electrical ground connections are accomplished using one, or a combination of, three attachment methods:

- Welded M6 stud and nut
- Welded M6 nut and bolt
- Welded M8 nut and bolt

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

Determine which attachment method is used, and carry out the appropriate repair.

M6 Weld Stud Replacement

1. Select a location adjacent the damaged or missing M6 ground stud having 20 mm (0.79 in) clearance behind the panel surface and 20 mm (0.79 in) clearance surrounding the M6 rivet stud flange.
2. Using GM approved residue-free solvent or equivalent, remove any grease from the repair site and allow to dry.

NOTE: Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.

3. Drill a 10 mm (0.40 in) diameter hole through the panel.
4. Carefully remove paint and primer from the area surrounding the rivet stud flange until bare metal is visible.

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

5. Select a replacement conductive M6 rivet stud. Refer to GM parts catalog for the correct part number and application.
6. Using a rivet stud installer, install the replacement conductive M6 rivet stud.
7. Ensure the new rivet stud is securely fastened, with no detectable movement.

NOTE: The rivet stud and surrounding panel area must be properly refinished prior to the installation of the ground terminal and nut to maintain positive

electrical grounding.

8. Completely wrap the threads of the rivet stud with painters tape or equivalent.
9. Refinish the repair area using an anti-corrosion primer. Refer to **Anti-Corrosion Treatment and Repair**.
10. Allow the refinished repair area to cure sufficiently before removing the protective material applied to the rivet stud threads.
11. Remove the painters tape or equivalent from the rivet stud threads.
12. Using GM approved residue-free solvent or equivalent, thoroughly clean the rivet stud threads to remove any adhesive and allow to dry.
13. Carefully remove any corrosion from the electrical ground wire terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
14. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new conductive M6 rivet stud threads.
15. Install the ground terminal to the new rivet stud.
16. Select a new, conductive M6 nut. Refer to GM parts catalog for the correct part number and application.

CAUTION: Refer to Fastener Caution.

17. Install the M6 nut and tighten to 8 N.m (71 lb in).
18. Check for proper system operation.

M6 Weld Nut

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

1. If the M6 weld nut at the electrical ground location is damaged or stripped, a new, conductive self-threading M7 bolt may be used to secure the ground terminal. Refer to GM parts catalog for the correct part number and application.
2. Using GM approved residue-free solvent or equivalent, remove any grease from the surface surrounding the weld nut and allow to dry.
3. Remove any loose metal particles from the damaged or stripped weld nut with a stiff brush.
4. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new, conductive, self-threading M7 bolt threads.
5. Carefully remove any corrosion from the electrical ground terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
6. Install the electrical ground terminal to the new, conductive M7 bolt.

CAUTION: Refer to Fastener Caution.

7. Install the M7 bolt and tighten to 9 N.m (80 lb in).
8. Check for proper system operation.

M6 Weld Nut (Alternative Repair)

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

1. If the electrical ground location is accessible from both sides of the panel, a conductive M6 bolt and a conductive M6 nut may be used to secure the electrical ground terminal. Refer to GM parts catalog for the correct part number and application.
2. Select a location adjacent the damaged M6 weld nut having 20 mm (0.79) clearance behind the panel surface and 20 mm (0.79) clearance surrounding the new electrical ground site.
3. Using GM approved residue-free solvent or equivalent, remove any grease from the surface surrounding the ground location and allow to dry.

NOTE: Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.

4. Drill a 10 mm (0.40 in) diameter hole through the panel.
5. Carefully remove paint and primer from the area surrounding the new ground site until bare metal is visible.
6. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new, conductive M6 bolt threads.
7. Carefully remove any corrosion from the electrical ground terminal. Refer to **Testing for Intermittent Conditions and Poor Connections** .
8. Install the electrical ground terminal and new, conductive M6 bolt to the ground location.

CAUTION: Refer to Fastener Caution .

9. Install the conductive M6 nut and tighten to 8 N.m (71 lb in).

NOTE: The repair area must be properly refinished to maintain positive electrical grounding.

10. Refinish the repair area using an anti-corrosion primer. Refer to **Anti-Corrosion Treatment and Repair** .
11. Check for proper system operation.

M8 Weld Nut

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

1. If the M8 weld nut electrical ground location is accessible from both sides of the panel, a conductive M8 bolt and a conductive M8 nut may be used to secure the ground terminal. Refer to GM parts catalog for the correct part numbers and application.
2. Select a location adjacent to M8 weld nut having 20 mm (0.79 in) clearance behind the panel surface and 20 mm (0.79 in) clearance surrounding the new electrical ground site.
3. Using GM approved residue-free solvent or equivalent, remove any grease from the surface surrounding the ground location and allow to dry.

NOTE: Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.

4. Drill a 10 mm (0.40 in) diameter hole through the panel.
5. Carefully remove paint and primer from the area surrounding the new ground site until bare metal is visible.
6. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new, conductive M8 bolt threads.
7. Carefully remove any corrosion from the electrical ground terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
8. Install the electrical ground terminal and new, conductive M8 bolt to the ground location.

CAUTION: Refer to Fastener Caution.

9. Install the conductive M8 nut and tighten to 22 N.m (16 lb ft).

NOTE: The repair area must be properly refinished to maintain positive electrical grounding.

10. Refinish the repair area using an anti-corrosion primer. Refer to **Anti-Corrosion Treatment and Repair**.
11. Check for proper system operation.

M8 Weld Nut (Alternative Repair)

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

1. If the M8 weld nut electrical ground location is not accessible from both sides of the panel, a conductive M6 rivet stud and a conductive M6 nut may be used to secure the ground terminal. Refer to GM parts catalog for the correct part numbers and application.

2. Select a location adjacent the damaged M8 weld nut having 20 mm (0.79 in) clearance behind the panel surface and 20 mm (0.79 in) clearance surrounding the new, conductive M6 rivet stud flange.
3. Using GM approved residue-free solvent or equivalent, remove any grease from the repair site and allow to dry.

NOTE: **Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.**

4. Drill a 10 mm (0.40 in) diameter hole through the panel.
5. Carefully remove paint and primer from the area surrounding the rivet stud flange until bare metal is visible.
6. Using a rivet stud installer, install the replacement conductive M6 rivet stud.
7. Ensure the new rivet stud is securely fastened, with no detectable movement.

NOTE: **The rivet stud and surrounding panel area must be properly refinished prior to the installation of the ground terminal and nut to maintain positive electrical grounding.**

8. Completely wrap the threads of the rivet stud with painters tape or equivalent.
9. Refinish the repair area using an anti-corrosion primer. Refer to **Anti-Corrosion Treatment and Repair**.
10. Allow the refinished repair area to cure sufficiently before removing the protective material applied to the rivet stud threads.
11. Remove the painters tape or equivalent from the rivet stud threads.
12. Using GM approved residue-free solvent or equivalent, thoroughly clean the rivet stud threads to remove any adhesive and allow to dry.
13. Carefully remove any corrosion from the electrical ground wire terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
14. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new conductive M6 rivet stud threads.
15. Install the ground terminal to the new, conductive M6 rivet stud.

CAUTION: Refer to Fastener Caution.

16. Install the conductive M6 nut and tighten to 8 N.m (71 lb in).
17. Check for proper system operation.

INSTRUMENT PANEL WIRING HARNESS JUNCTION BLOCK REPLACEMENT

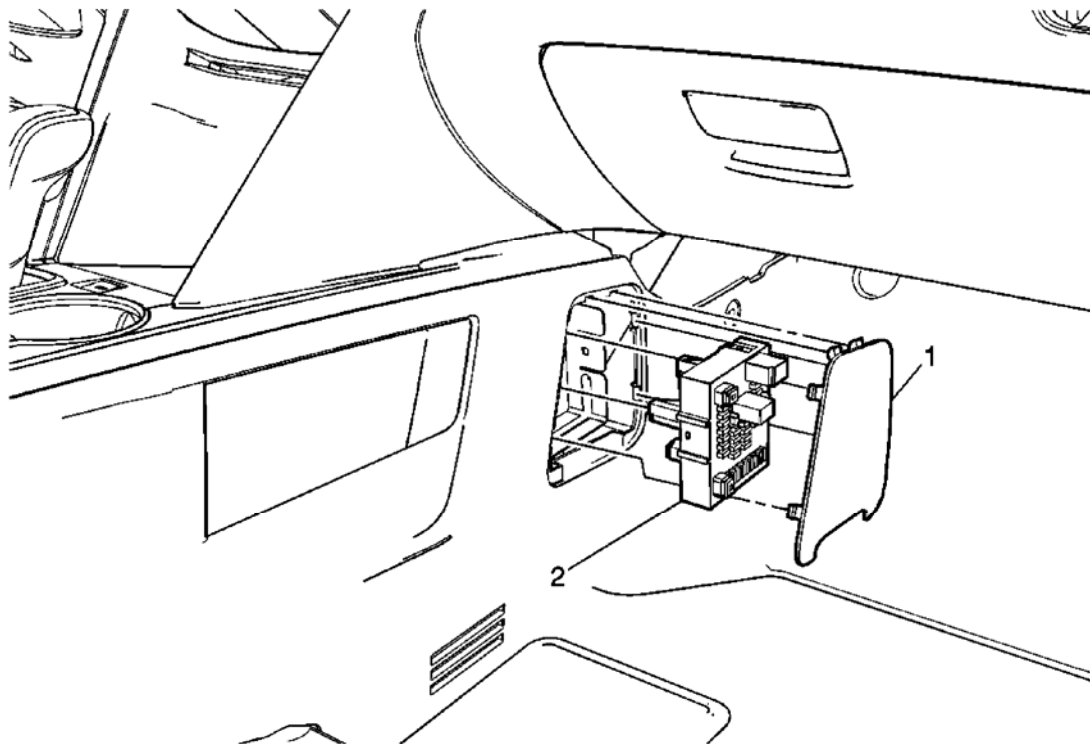


Fig. 5: Identifying Instrument Panel Wiring Harness Junction Block Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Disconnect the battery. Refer to <u>Battery Negative Cable Disconnection and Connection</u> .	
1	Front Floor Lower Console Side Finish Cover
2	Instrument Panel Wiring Harness Junction Block Procedure 1. Extract terminals from block housing. 2. For replacement of terminals, Refer to <u>Electrical Center Identification Views</u> .

ACCESSORY WIRING JUNCTION BLOCK REPLACEMENT

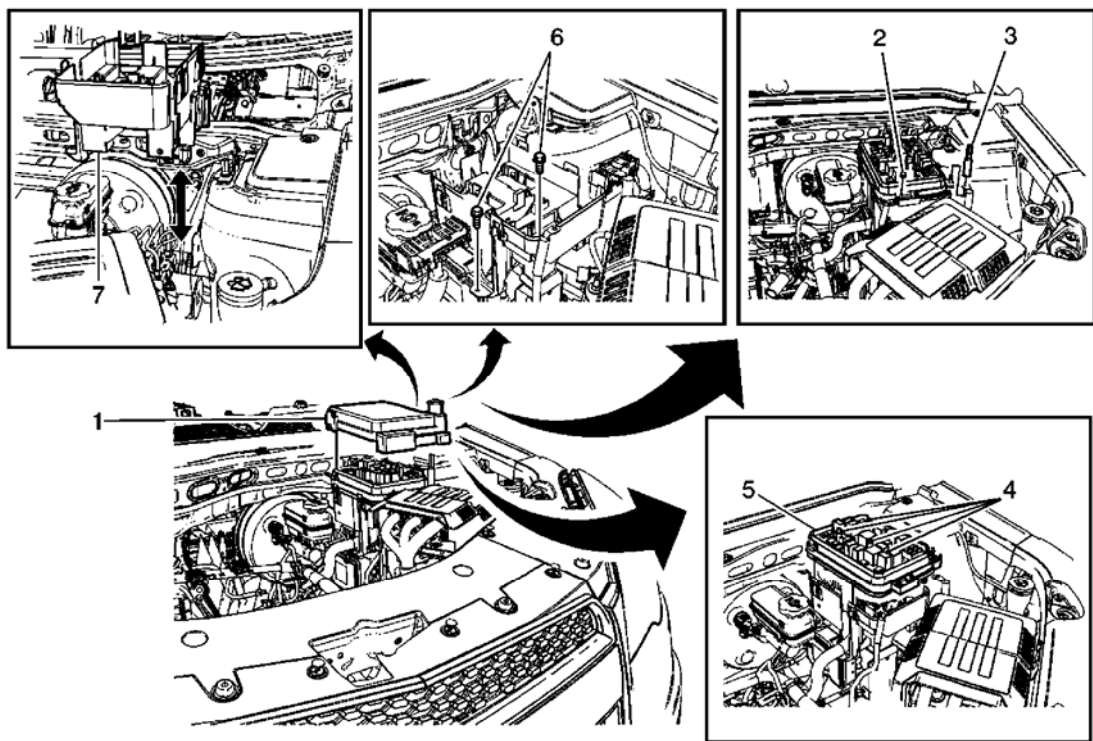


Fig. 6: Identifying Accessory Wiring Junction Block Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures: Disconnect the battery. Refer to Battery Negative Cable Disconnection and Connection .	
1	Accessory Wiring Junction Block Cover Procedure: Remove the accessory wiring junction block cover by pushing in on the 2 retainer tabs located on the sides of the cover and lift. To reinstall, fit together the retainer tabs located on the ends of the cover and push down on the cover until the tabs on the ends of the cover lock into place.
2	Accessory Wiring Junction Block Battery Cable Nut CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 7 N.m (62 lb in)
3	Accessory Wiring Junction Block Battery Cable Nut Tighten: 7 N.m (62 lb in)
4	Accessory Wiring Junction Block Harness Connector Bolt (Qty: 4)

	Tighten: 10 N.m (89 lb in)
5	Accessory Wiring Junction Block Procedure 1. Reposition the accessory wiring harness from the accessory wiring junction block retainer. 2. Remove the accessory wiring junction block by pushing in on the 4 retainer tabs located on the sides of the block and lift. To reinstall, fit together the retainer tabs located on the ends of the cover and push down on the cover until the tabs on the ends of the cover lock into place.
6	Accessory Wiring Junction Block Retainer Base Bolt Procedure 1. Disconnect the battery cable retainer. 2. Position the junction block retainer base alignment tab to the bracket first, then install the bolt. Tighten: 10 N.m (89 lb in)
7	Accessory Wiring Junction Block Retainer Base

IGNITION LOCK CYLINDER REPLACEMENT

Removal Procedure

1. Disconnect the battery negative cable. Refer to **Battery Negative Cable Disconnection and Connection** .
2. Remove the steering column shroud. Refer to **Steering Column Shroud Replacement** .
3. Insert the key into the ignition lock cylinder and turn the key to the RUN position.

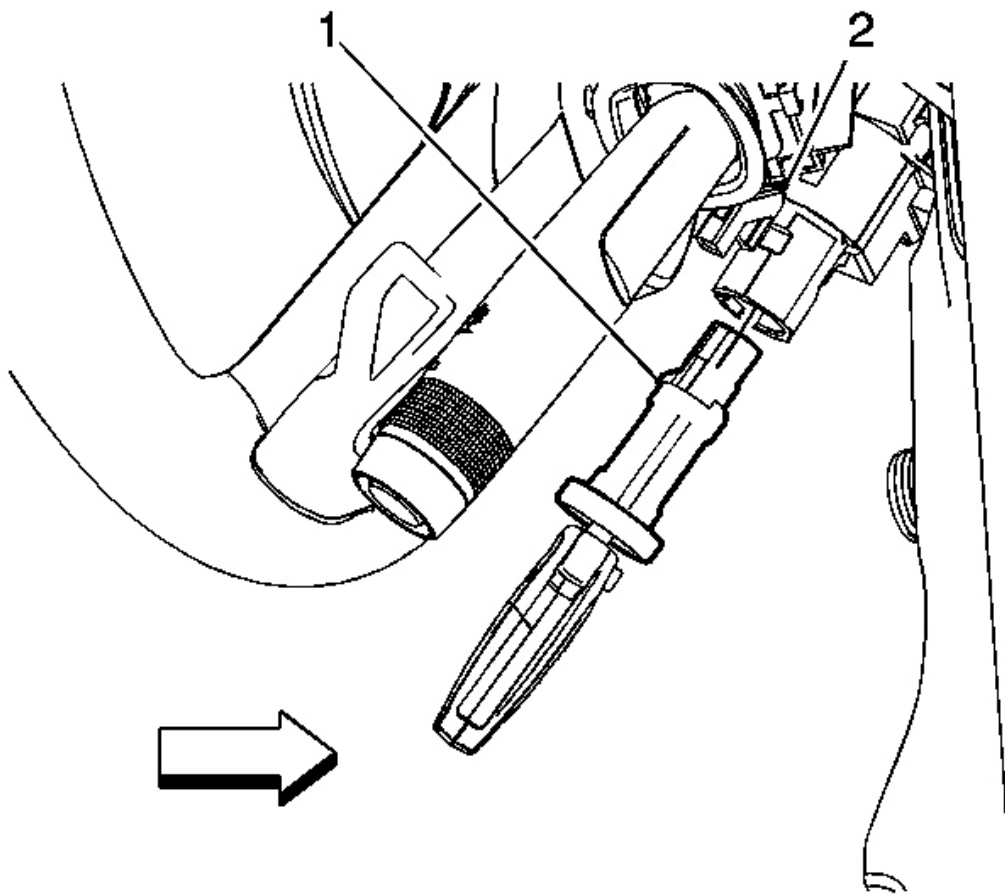


Fig. 7: View Of Ignition Lock Cylinder
Courtesy of GENERAL MOTORS CORP.

4. Depress the retainer through the lock housing access hole (2) with a small Allen wrench or similar pick-type tool.
5. Remove the ignition lock cylinder (1) from the ignition and start switch housing.

Installation Procedure

1. If you are installing a new ignition lock cylinder, code the lock cylinder. Refer to **Lock Cylinder Coding - Ignition**.

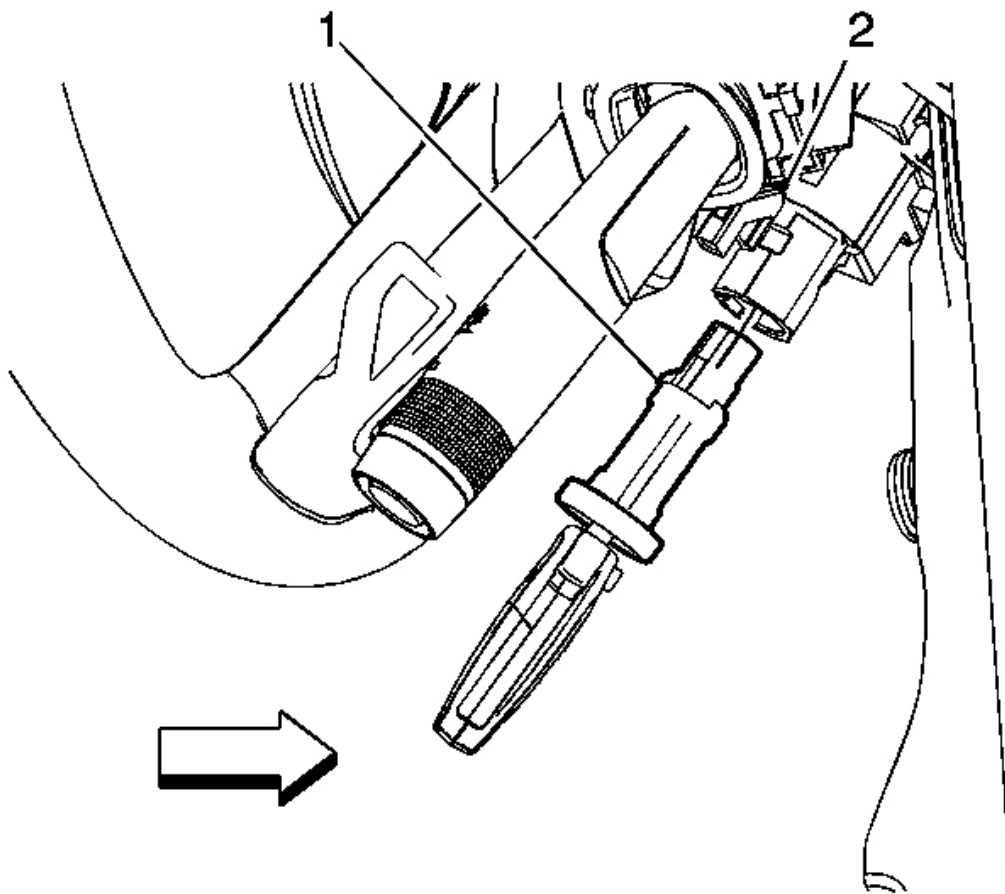


Fig. 8: View Of Ignition Lock Cylinder
Courtesy of GENERAL MOTORS CORP.

2. Turn the key to the RUN position and insert ignition lock cylinder (1) into the ignition and start switch housing.
3. Turn the key to the LOCK position and remove the key from the ignition lock cylinder.
4. Install the steering column shroud. Refer to **Steering Column Shroud Replacement** .
5. Connect the battery negative cable. Refer to **Battery Negative Cable Disconnection and Connection** .

IGNITION AND START SWITCH REPLACEMENT

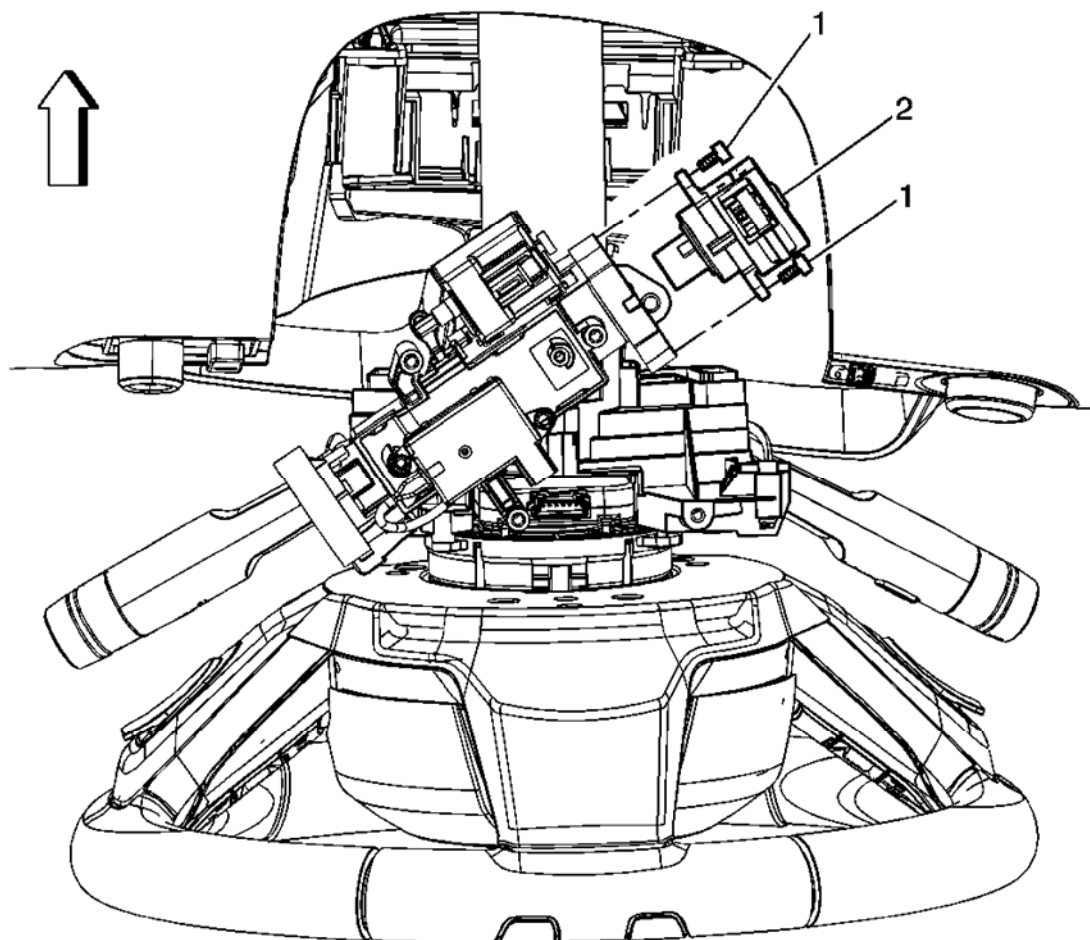


Fig. 9: Identifying Ignition & Start Switch Components
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Disconnect the battery negative cable. Refer to <u>Battery Negative Cable Disconnection and Connection</u> . 2. Disable the supplemental inflatable restraint (SIR) system. Refer to <u>SIR Disabling and Enabling</u> . 3. Remove the steering column shroud. Refer to <u>Steering Column Shroud Replacement</u> .	
1	Ignition and Start Switch Bolt (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 2 N.m (18 lb in)
	Ignition and Start Switch

Procedure:

Disconnect the ignition switch electrical connector.

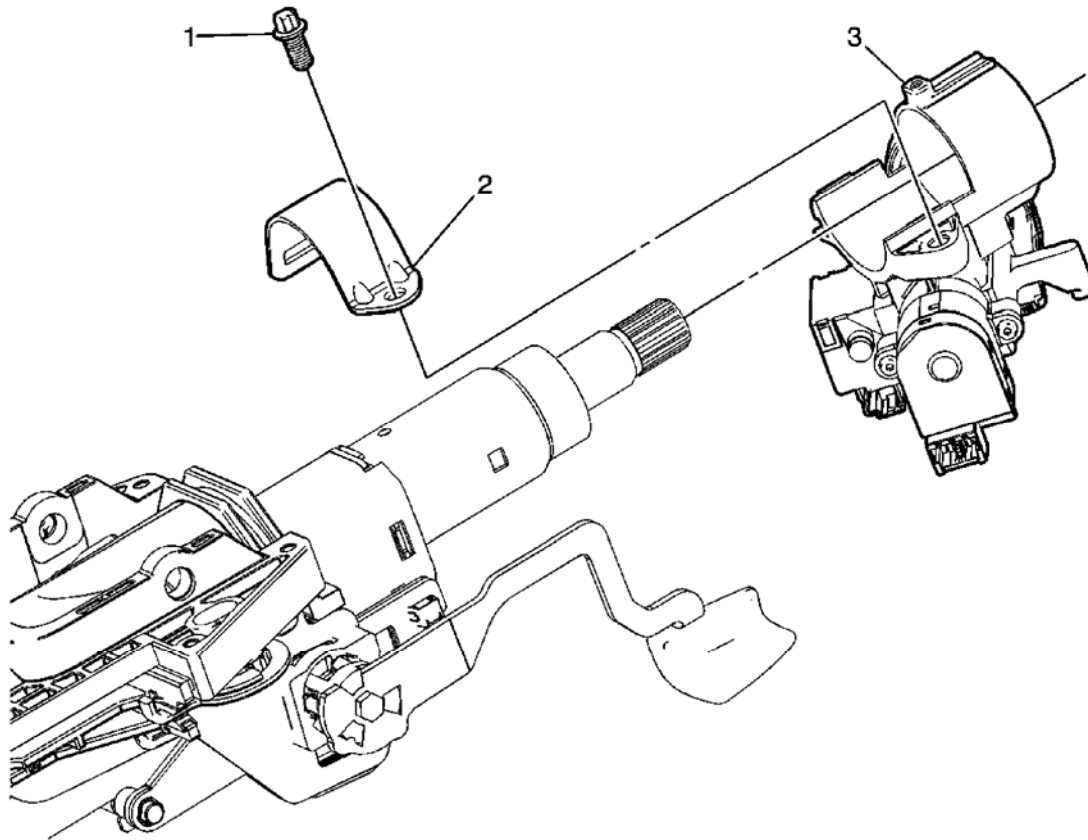
IGNITION AND START SWITCH HOUSING REPLACEMENT

Fig. 10: Identifying Start Switch Housing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the turn signal switch bracket. Refer to <u>Turn Signal Switch Bracket Replacement</u> .	
1	Ignition and Start Switch Housing Bolt (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Use any of the following common tools in order to remove the ignition and start switch housing bolts:

	• An angle grinder and a screwdriver • A chisel • A screw extractor • A center punch 2. Discard the old ignition and start switch housing bolts. 3. Install 2 NEW ignition and start switch housing bolts and tighten until the bolt heads break off.
2	Ignition and Start Switch Housing Strap
3	Ignition and Start Switch Housing Procedure 1. Disconnect any electrical connectors as necessary. 2. Transfer any parts as necessary.

2010 ELECTRICAL

Wiring Systems and Power Management - Equinox & Terrain

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B1370-B1379, B1380-B1389, or B1440-B1443</u>	B1370 01: Control Module Ignition On and Start Circuit Short to Battery B1370 04: Control Module Ignition On and Start Circuit Open B1380 01: Control Module Ignition Accessory Circuit Short to Battery B1380 04: Control Module Ignition Accessory Circuit Open B1441 01: Control Module Ignition Off, Run, and Start Circuit Short to Battery B1441 04: Control Module Ignition Off, Run, and Start Circuit Open
<u>DTC B1445</u>	B1445 02: Control Module Voltage Output Circuit Short to Ground
<u>DTC B144A</u>	B144A 02: RUN Power Relay Circuit Short to Ground
<u>DTC B144B</u>	B144B 02: RUN/CRNK Relay Circuit Short to Ground
<u>DTC B147E</u>	B147E 02: Battery Saver Relay Set Secondary Circuit Short to Ground
<u>DTC B147F</u>	B147F 02: Battery Saver Relay Reset Secondary Circuit Short to Ground

DTC B1370-B1379, B1380-B1389, OR B1440-B1443

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B1370 01

Control Module Ignition On and Start Circuit Short to Battery

DTC B1370 04

Control Module Ignition On and Start Circuit Open

DTC B1380 01

Control Module Ignition Accessory Circuit Short to Battery

DTC B1380 04

Control Module Ignition Accessory Circuit Open

DTC B1441 01

Control Module Ignition Off, Run, and Start Circuit Short to Battery

DTC B1441 04

Control Module Ignition Off, Run, and Start Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	B1370 04, B1380 04	B1370 04, B1380 04	-	-
Ignition Terminal 1	B1370 04, B1380 04	B1370 04, B1380 04	B1370 01	-
Ignition Terminal 3	B1370 04, B1380 04	B1380 04	B1380 01	-
Ignition Terminal 4	B1370 04, B1380 04, B1441 04	B1441 04	B1441 01	-
5 V REF	-	1	-	-
1. Power Mode Mismatch				

Circuit/System Description

The vehicle power mode master is the body control module (BCM). The ignition switch is a low current switch with multiple discrete circuits to the BCM. The BCM logic uses the ignition switch positions to identify the operator's desired power mode and activate specific discrete signals, and serial data messages for the operation of different subsystems as necessary. Other modules which have switched voltage inputs may operate in a default mode if the power mode master serial data message does not match what the individual module can detect from its own connections.

The power mode master will activate relays and other direct outputs of the power mode master as needed according to the calculated power mode. Some relays controlled by the BCM are switched ignition voltage outputs that are pass through circuits within the BCM directly from the ignition switch. If these circuits short to ground, the B+ circuit fuse to the ignition switch will open.

Conditions for Running the DTC

B1370 01, B1370 04

Ignition switch is in the RUN or CRANK positions.

B1380 01, B1380 04

Ignition switch is in the RUN or ACCESSORY positions.

B1441 01, B1441 04

Ignition switch is in the CRANK position.

Conditions for Setting the DTC

B1370 01

Ignition circuit is shorted to voltage.

B1370 04

- Ignition circuit is open.
- Ignition, accessory, or off/run/crank circuit shorted to ground.
- B+ circuit of the ignition switch is open or shorted to ground.
- Ignition relay control circuit open, including relay coil and ground.

B1380 01

Ignition, accessory circuit is shorted to voltage.

B1380 04

- Ignition, accessory circuit is open.
- Ignition, accessory, or off/run/crank circuit shorted to ground.
- B+ circuit of the ignition switch is open or shorted to ground.

B1441 01

Ignition, off/run/crank signal circuit is shorted to voltage.

B1441 04

Ignition, off/run/crank signal circuit is open.

Actions Taken When the DTC Sets

- The BCM operates in a fail-safe power mode dependent on the last valid power mode detected and the state of the engine run flag data on the serial data communications circuits.
- The other modules on the vehicle operate in a fail-safe power mode dependent on the last valid power mode transmitted by the BCM and the state of the engine run flag on the serial data communications circuits.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

- **Body Control System Schematics**
- **Power Distribution Schematics**
- **Power Moding Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Power Mode Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

With a scan tool, access Power Mode data display list and compare all parameters listed with the corresponding ignition key position. The Power Mode Parameters table below illustrates the correct state of these input parameters in correspondence to the S39 ignition switch position. The circuits which the individual parameters are related to are in parentheses.

Power Mode Parameters

Ignition Switch Position	5 V IGN (Ignition Switch, Terminal 4 and 6)	Accessory (Ignition Switch, Terminal 3)	Run/Crank (Ignition Switch, Terminal 1)
Off Key Out	Key Out/ACC	Inactive	Inactive
Off Key IN	Key In/Off	Inactive	Inactive
Accessory	Key Out/ACC	Active	Inactive
Run	Run	Active	Active

Start	Crank Request	Inactive	Active
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Circuit/System Testing

1. Disconnect the harness connector at the S39 ignition switch.
2. Verify that a test lamp illuminates between B+ circuit terminal 2 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the ignition circuits listed below for a short to ground.

NOTE: To help isolate a short to ground, it may be necessary to disconnect modules that are connected to the following circuits:

- terminal 1
 - terminal 3
 - terminal 4
 - terminal 6
3. Ignition ON, test for 4.8-5.2 V between the 5 V reference circuit terminal 6 and ground.
 - If less than 4.8 V, test the 5 V reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 - If greater than 5.2 V, test the 5 V reference circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 4. Verify the scan tool ignition 5 V reference signal is less than 4.2 V.
 - If greater than 4.2 V, test the ignition signal circuit terminal 4 for a short to voltage. If the circuit tests normal, replace the BCM.
 5. Install a 3 A fused jumper wire between the ignition signal circuit terminal 4 and the 5 V reference circuit terminal 6. Verify the scan tool Ignition Signal Voltage parameter is greater than 4.2 V.
 - If less than 4 V, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 6. Connect the harness connector at the S39 ignition switch.
 7. Ignition OFF, key out, disconnect the X3 harness connector at the K9 BCM. Verify that a test lamp does not illuminate between the ignition circuit terminals listed below and ground:
 - terminal 5
 - terminal 6
 - terminal 15
 - terminal 22
 - If the test lamp illuminates, test the ignition circuits for a short to voltage. If the circuit tests normal, replace the S39 ignition switch.
 8. Ignition in the ACCESSORY position, verify that a test lamp illuminates between the terminal 5 and ground.
 - If the test lamp does not illuminate, test the ignition circuit for an open/high resistance. If the circuit

tests normal, replace the S39 ignition switch.

9. Ignition in the CRANK position, verify that a test lamp illuminates between terminal 6 and ground.
 - If the test lamp does not illuminate, test the ignition circuit for an open/high resistance. If the circuit tests normal, replace the S39 ignition switch.
10. If all of the circuits test normal, replace the K9 BCM.

Component Testing

Ignition Switch

1. Ignition OFF, disconnect the harness connector at the S39 ignition switch.
2. Verify the resistance between the terminals listed below match for each S39 ignition switch position.
 - If not the specified value, replace the S39 ignition switch.

Resistance Test

Ignition Switch Position	Terminals 1 and 2	Terminals 2 and 3	Terminals 2 and 4	Terminals 2 and 6	Terminals 4 and 6
Off Key Out	Infinite	Infinite	Infinite	Infinite	Infinite
Off Key IN	Infinite	Infinite	< 5.0 ohms	Infinite	Infinite
Accessory	Infinite	< 5.0 ohms	Infinite	Infinite	Infinite
Run	< 5.0 ohms	< 5.0 ohms	Infinite	Infinite	< 5.0 ohms
Start	< 5.0 ohms	Infinite	Infinite	Infinite	1275-1325 ohms

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Ignition and Start Switch Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B1445

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B1445 02

Control Module Voltage Output Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Auxiliary Power Relay Switch B+	1	1	1	-
Auxiliary Power Relay Control	B1445 02	1	1	-
Auxiliary Power Relay Ignition	1	1	1	-
Auxiliary Power Relay Ground	-	1	-	-
1. Retained Accessory Power Malfunction				

Circuit/System Description

The body control module (BCM) controls the wired accessory power components by applying voltage to the ignition voltage circuit at harness connector X4 terminal 12. Voltage is applied when the ignition switch is in the ACCESSORY or the ON position.

Conditions for Running the DTC

- The system voltage is between 9-16 V.
- The DTC can only set when the output is actively being requested by the module. Refer to Circuit/System Description for specific conditions.

Conditions for Setting the DTC

The DTC will set only when the module requests the output and there is a short to ground in the ignition voltage circuit.

Action Taken When the DTC Sets

The module output driver will be shut down and not supply voltage to the circuit.

Conditions for Clearing the DTC

- The current DTC will clear when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold of 50, without a repeat of the malfunction.

Reference Information

Schematic Reference

Power Distribution Schematics

Power Moding Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Retained Accessory Power Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

1. Ignition OFF, disconnect the KR70 auxiliary power relay.
2. Test for less than 10 ohms between the control circuit and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the relay control circuit terminal 2 and ground.
4. Cycle the ignition ON and OFF. The test lamp should turn ON and OFF when changing ignition switch positions.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the K9 BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the K9 BCM.
5. If all circuits test normal, test or replace the KR70 auxiliary power relay.

Component Testing

1. Ignition OFF, disconnect the KR70 auxiliary power relay.
2. Test for 70 - 150 ohms between terminals control circuit terminal 2 and ground terminal 1.
 - If not within the specified range, replace the KR70 auxiliary power relay.
3. Test for infinite resistance between the following terminals:
 - 1 and 3
 - 1 and 5
 - 2 and 3
 - 3 and 5
 - If not the specified value, replace the KR70 auxiliary power relay.
4. Install a 3 A fused jumper wire between relay terminal 1 and 12 V. Install a jumper wire between relay

- terminal 2 and ground. Test for less than 2 ohms between terminals 3 and 5.
- If greater than the specified range, replace the KR70 auxiliary power relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for BCM replacement, setup, and programming

DTC B144A

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B144A 02

RUN Power Relay Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition 1 Relay Control	B144A 02	1	2	-
1. No Start. 2. Vehicle will start and continue to run after the ignition key is removed.				

Circuit/System Description

The body control module (BCM) controls the ignition 1 relay through the control circuit by applying voltage to the circuit. The ignition 1 relay is energized when the ignition switch is in ON or START, or when a remote start is requested.

Conditions for Running the DTC

- The system voltage is between 9-16 V.
- The DTC can only run when the output is activated.

Conditions for Setting the DTC

The BCM detects a short to ground in the ignition 1 relay control circuit.

Action Taken When the DTC Sets

The module output driver will be shut down and not supply voltage to the ignition 1 relay control circuit.

Conditions for Clearing the DTC

- The current DTC will clear when the module request for the output is removed or the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold of 50, without a repeat of the malfunction.

Diagnostic Aids

Short to voltage in the ignition 1 relay control circuit will cause the malfunction indicator lamp (MIL) to illuminate with the ignition key OFF, and the engine will remain running if started and the ignition key is removed.

Reference Information

Schematic Reference

- **Body Control System Schematics**
- **Power Distribution Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Power Mode Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

1. Ignition OFF, disconnect the KR73 ignition main relay.
2. Connect a test lamp between the relay control circuit terminal 1 and ground.
3. Cycle the ignition ON and OFF. The test lamp should turn ON and OFF when changing S39 ignition

switch positions.

- If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the K9 BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the K9 BCM.
4. If all circuits test normal, test or replace the KR73 ignition main relay.

Component Testing

1. Ignition OFF, disconnect the KR73 ignition main relay.
2. Test for 70-150 ohms between terminals 1 and 2.
 - If the resistance is not within the specified range, replace the KR73 ignition main relay.
3. Test for infinite resistance between the following terminals:
 - 1 and 3
 - 2 and 3
 - 2 and 5
 - 3 and 5
 - If less than specified, replace the KR73 ignition main relay.
4. Install a 3 A fused jumper wire between relay terminal 2 and 12 V. Install a jumper wire between relay terminal 1 and ground. Measure for less than 5 ohms between terminals 3 and 5.
 - If greater than specified, replace the KR73 ignition main relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B144B

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B144B 02

RUN/CRNK Relay Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
RUN/CRNK Relay Control	B144B 02	1	2	-
1. No Start. 2. Vehicle will start and continue to run after the ignition key is removed.				

Circuit/System Description

The body control module (BCM) controls the RUN/CRNK relay through the control circuit by applying voltage to the circuit. The ignition RUN/CRNK is energized when the ignition switch is in ON or START, or when a remote start is requested.

Conditions for Running the DTC

- The system voltage is between 9-16 V.
- The DTC can only run when the output is activated.

Conditions for Setting the DTC

The BCM detects a short to ground in the RUN/CRNK relay control circuit.

Action Taken When the DTC Sets

The module output driver will be shut down and not supply voltage to the RUN/CRNK relay control circuit.

Conditions for Clearing the DTC

- The current DTC will clear when the module request for the output is removed or the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold of 50, without a repeat of the malfunction.

Diagnostic Aids

Short to voltage in the RUN/CRNK relay control circuit will cause the malfunction indicator lamp (MIL) to illuminate with the ignition key OFF, and the engine will remain running if started and the ignition key is removed.

Reference Information

Schematic Reference

- Body Control System Schematics
- Power Distribution Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Power Mode Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

1. Ignition OFF, disconnect the KR73 RUN/CRNK relay.
2. Connect a test lamp between the relay control circuit terminal 85 and terminal 86.
3. Cycle the ignition ON and OFF. The test lamp should turn ON and OFF when changing S39 ignition switch positions.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the K9 BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the K9 BCM.
4. If all circuits test normal, test or replace the KR73 RUN/CRNK relay.

Component Testing

1. Ignition OFF, disconnect the KR73 RUN/CRNK relay.
2. Test for 70-150 ohms between terminals 85 and 86.
 - If the resistance is not within the specified range, replace the KR73 RUN/CRNK relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86
 - 30 and 87
 - 30 and 85
 - 85 and 87
 - If less than specified, replace the KR73 RUN/CRNK relay.
4. Install a 3 A fused jumper wire between relay terminal 86 and 12 V. Install a jumper wire between relay

terminal 85 and 86. Measure for less than 5 ohms between terminals 87 and 85.

- If greater than specified, replace the KR73 RUN/CRNK relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B147E

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B147E 02

Battery Saver Relay Set Secondary Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Battery Saver Relay - Control Circuit	B147E 02	-	-	-

Circuit/System Description

The battery saver mode reduces the parasitic load of some modules during overseas shipment or during vehicle storage conditions. This improves the drain time on the battery of up to 70 days without the battery going dead. When the vehicle is in transport/storage, some features may have reduce functionality as a result being in the battery saver mode, such as disabling the Remote Function Actuator or content theft features.

The battery saver mode incorporates a latching relay that when enabled disconnects some modules from their ignition off power or memory power sources. Battery saver mode is initiated by starting the vehicle and then turning the ignition key into the crank position for greater than 15 seconds. The mode is disengaged by repeating the previous process causing the relay to latch in the other direction. This feature can be used as many times as necessary if the vehicle is to be stored for an extended period of time.

Conditions for Running the DTC

- The system voltage is between 9-16 V.

- The DTC can only run when the output is activated.

Conditions for Setting the DTC

The BCM detects a short to ground in the battery saver relay set circuit.

Action Taken When the DTC Sets

The module output driver will be shut down and not supply voltage to the battery saver relay set circuit.

Conditions for Clearing the DTC

- The current DTC will clear when the module request for the output is removed or the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold of 50, without a repeat of the malfunction.

Reference Information

Schematic Reference

- **Body Control System Schematics**
- **Power Distribution Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Power Mode Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

1. Ignition OFF, disconnect the KR104A battery saver relay.

2. Connect a test lamp between the relay control circuit and ground.
3. Enable and disable the batter saver mode. The test lamp should turn ON and OFF when changing the relay latch positions.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the K9 BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the K9 BCM.
4. If all circuits test normal, test or replace the KR104A battery saver relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B147F

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B147F 02

Battery Saver Relay Reset Secondary Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Battery Saver Relay - Control Circuit	B147F 02	-	-	-

Circuit/System Description

The battery saver mode reduces the parasitic load of some modules during overseas shipment or during vehicle storage conditions. This improves the drain time on the battery of up to 70 days without the battery going dead. When the vehicle is in transport/storage, some features may have reduce functionality as a result being in the battery saver mode, such as disabling the Remote Function Actuator or content theft features.

The battery saver mode incorporates a latching relay that when enabled disconnects some modules from their

ignition off power or memory power sources. Battery saver mode is initiated by starting the vehicle and then turning the ignition key into the crank position for greater than 15 seconds. The mode is disengaged by repeating the previous process causing the relay to latch in the other direction. This feature can be used as many times as necessary if the vehicle is to be stored for an extended period of time.

Conditions for Running the DTC

- The system voltage is between 9-16 V.
- The DTC can only run when the output is activated.

Conditions for Setting the DTC

The BCM detects a short to ground in the battery saver relay reset circuit.

Action Taken When the DTC Sets

The module output driver will be shut down and not supply voltage to the battery saver relay reset circuit.

Conditions for Clearing the DTC

- The current DTC will clear when the module request for the output is removed or the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold of 50, without a repeat of the malfunction.

Reference Information

Schematic Reference

- **Body Control System Schematics**
- **Power Distribution Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Power Mode Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

1. Ignition OFF, disconnect the KR104A battery saver relay.
2. Connect a test lamp between the relay control circuit and ground.
3. Enable and disable the batter saver mode. The test lamp should turn ON and OFF when changing the battery saver relay latch positions.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the K9 BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the K9 BCM.
4. If all circuits test normal, test or replace the KR104A battery saver relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

SYMPTOMS - WIRING SYSTEMS

NOTE: **The following steps must be completed before using the symptom tables.**

1. Perform the **Diagnostic System Check - Vehicle** before using the symptom tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data links.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to:
 - **Power Mode Description and Operation**
 - **Retained Accessory Power Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the systems. Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections**.

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Power Mode Mismatch**
- **Retained Accessory Power Malfunction**

IGNITION CAN/CANNOT BE TURNED OFF WITH TRANSMISSION IN ANY GEAR

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Accessory Voltage	2	2	-	-
Steering Column Key Cylinder Lock Solenoid Control	2	1	1	-
1. Ignition key will not turn to OFF with vehicle in park. 2. Ignition key will turn to OFF with vehicle out of park.				

Circuit/System Description

If the vehicle is equipped with automatic transmission and a floor mounted console gear shift, it has an electronic park lock (EPL) system. The EPL system purpose is to prevent the ignition key from being turned to the OFF position when the transmission is in any position other than PARK and the vehicle may still be moving. The EPL system consists of an ignition lock cylinder solenoid, and a park position switch that is located in the A/T shift lock control switch. The ignition lock cylinder solenoid contains a pin that is spring loaded to mechanically prevent the ignition key cylinder from being turned to the lock position when it is not energized. The park position switch receives voltage from the body control module (BCM) when the ignition is turned ON. When the transmission shift selector is in PARK, the park position switch closes and energizes the ignition lock cylinder solenoid (actuator) retracting the pin, allowing the ignition switch to be turned OFF. If vehicle power is lost, and/or the transmission is not in the Park position the operator will not be able to turn the ignition key to the lock position and will not be able to remove the ignition key from the column.

Diagnostic Aids

Verify that the transmission shift selector indicator matches the position of the gear shift lever while selecting between the Park, Reverse, Drive and Low positions.

Reference Information

Schematic Reference

Ignition Lock Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Electronic Park Lock Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Circuit/System Verification

1. Ignition OFF, with the gear shift selector in the PARK position, turn the ignition to the ON position. The automatic transmission shift lock control solenoid should allow the ignition to be turned to the ON position.
2. Ignition ON, with the gear shift selector in any position except the PARK position, turn the ignition to the OFF and to the LOCK positions. The automatic transmission shift lock control solenoid should not allow the ignition to be turned to the LOCK position.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the M93 ignition cylinder lock control actuator.
2. Ignition ON, verify that a test lamp illuminates between the ignition circuit terminal 1 and ground.
 - If the test lamp does not illuminate, test the ignition circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the K9 BCM.
3. With the gear shift selector in any position except the PARK position, verify that a test lamp does not illuminate between the ignition circuit terminal 1 and the control circuit terminal 2.
 - If the test lamp illuminates, test the control circuit for a short to ground. If the circuit tests normal, test or replace the S3 transmission shift lever.
4. With the gear shift selector in the PARK position, verify that a test lamp illuminates between the ignition circuit terminal 1 and the control circuit terminal 2.
 - If the test lamp does not illuminate, test the control circuit for a short to voltage or open/high resistance. If the circuit tests normal, test or replace the S3 transmission shift lever.
5. If all circuits test normal, test or replace the M93 ignition cylinder lock control actuator.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Ignition and Start Switch Replacement**
- **Automatic Transmission Range Selector Lever Replacement**
- **Control Module References** for the BCM replacement, setup, and programming

POWER MODE MISMATCH

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B1370 01

Control Module Ignition On and Start Circuit Short to Battery

DTC B1370 04

Control Module Ignition On and Start Circuit Open

DTC B1380 01

Control Module Ignition Accessory Circuit Short to Battery

DTC B1380 04

Control Module Ignition Accessory Circuit Open

DTC B1441 01

Control Module Ignition Off, Run, and Start Circuit Short to Battery

DTC B1441 04

Control Module Ignition Off, Run, and Start Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance

B+	B1370 04, B1380 04	B1370 04, B1380 04	-	-
5 V REF	-	1	-	-
Ignition Terminal 1	B1370 04, B1380 04	B1370 04, B1380 04	B1370 01	-
Ignition Terminal 3	B1370 04, B1380 04	B1380 04	B1380 01	-
Signal Terminal 4	B1370 04, B1380 04, B1441 04	B1441 04	B1441 01	-
1. Power Mode Mismatch				

Circuit/System Description

The vehicle power mode master is the body control module (BCM). The ignition switch is a low current switch with multiple discrete circuits to the BCM. The BCM logic uses the ignition switch positions to identify the operator's desired power mode and activate specific discrete signals, and serial data messages for the operation of different subsystems as necessary. Other modules which have switched voltage inputs may operate in a default mode if the power mode master serial data message does not match what the individual module can detect from its own connections.

The power mode master will activate relays and other direct outputs of the power mode master as needed according to the calculated power mode. Some relays controlled by the BCM are switched ignition voltage outputs that are pass through circuits within the BCM directly from the ignition switch. If these circuits short to ground, the B+ circuit fuse to the ignition switch will open.

Conditions for Running the DTC

B1370 01, B1370 04

Ignition switch is in the RUN or CRANK positions.

B1380 01, B1380 04

Ignition switch is in the RUN or ACCESSORY positions.

B1441 01, B1441 04

Ignition switch is in the CRANK position.

Conditions for Setting the DTC

B1370 01

Ignition circuit is shorted to voltage.

B1370 04

- Ignition circuit is open.
- Ignition, accessory, or off/run/crank circuit shorted to ground.
- B+ circuit of the ignition switch is open or shorted to ground.
- Ignition relay control circuit open, including relay coil and ground.

B1380 01

Accessory circuit is shorted to voltage.

B1380 04

- Accessory circuit is open.
- Ignition, accessory, or off/run/crank circuit shorted to ground.
- B+ circuit of the ignition switch is open or shorted to ground.

B1441 01

Off/run/crank signal circuit is shorted to voltage.

B1441 04

Off/run/crank signal circuit is open.

Actions Taken When the DTC Sets

- The BCM operates in a fail-safe power mode dependent on the last valid power mode detected and the state of the engine run flag data on the serial data communications circuits.
- The other modules on the vehicle operate in a fail-safe power mode dependent on the last valid power mode transmitted by the BCM and the state of the engine run flag on the serial data communications circuits.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

- **Body Control System Schematics**
- **Power Distribution Schematics**
- **Power Moding Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Power Mode Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

With a scan tool, access Power Mode data display list and compare all parameters listed with the corresponding ignition key position. The Power Mode Parameters table below illustrates the correct state of these input parameters in correspondence to the S39 ignition switch position. The circuits which the individual parameters are related to are in parentheses.

Power Mode Parameters

Ignition Switch Position	5 V IGN (Ignition Switch, Terminal 4 and 6)	Accessory (Ignition Switch, Terminal 3)	Run/Crank (Ignition Switch, Terminal 1)
Off Key Out	Key Out/ACC	Inactive	Inactive
Off Key IN	Key In/Off	Inactive	Inactive
Accessory	Key Out/ACC	Active	Inactive
Run	Run	Active	Active
Start	Crank Request	Inactive	Active

Circuit/System Testing

1. Disconnect the harness connector at the S39 ignition switch.
2. Verify that a test lamp illuminates between B+ circuit terminal 2 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the ignition circuits listed below for a short to ground.

NOTE: **To help isolate a short to ground, it may be necessary to disconnect modules that are connected to the following circuits:**

- Terminal 1
 - Terminal 3
 - Terminal 4
 - Terminal 6
3. Ignition ON, test for 4.8-5.2 V between the 5 V reference circuit terminal 6 and ground.
 - If less than 4.8 V, test the 5 V reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 - If greater than 5.2 V, test the 5 V reference circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 4. Verify the scan tool ignition switch signal voltage is less than 4.2 V.
 - If greater than 4.2 V, test the ignition switch signal circuit terminal 4 for a short to voltage. If the circuit tests normal, replace the BCM.
 5. Install a 3 A fused jumper wire between the ignition switch signal circuit terminal 4 and the 5 V reference circuit terminal 6. Verify the scan tool Ignition Switch Signal Voltage parameter is greater than 3 V.
 - If less than 3 V, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 6. Connect the harness connector at the S39 ignition switch.
 7. Ignition OFF, key out, disconnect the X3 harness connector at the K9 BCM. Verify that a test lamp does not illuminate between the ignition circuit terminals listed below and ground:
 - Terminal 5
 - Terminal 6
 - Terminal 15
 - Terminal 22
 - If the test lamp illuminates, test the ignition circuits for a short to voltage. If the circuit tests normal, replace the S39 ignition switch.
 8. Ignition in the ACCESSORY position, verify that a test lamp illuminates between the terminal 5 and ground.
 - If the test lamp does not illuminate, test the ignition circuit for an open/high resistance. If the circuit tests normal, replace the S39 ignition switch.
 9. Ignition in the CRANK position, verify that a test lamp illuminates between terminal 6 and ground.
 - If the test lamp does not illuminate, test the ignition circuit for an open/high resistance. If the circuit tests normal, replace the S39 ignition switch.
 10. If all of the circuits test normal, replace the K9 BCM.

Component Testing

Ignition Switch

1. Ignition OFF, disconnect the harness connector at the S39 ignition switch.
2. Verify the resistance between the terminals listed below match for each S39 ignition switch position.
 - If not the specified value, replace the S39 ignition switch.

Resistance Test

S39 Ignition Switch Position	Terminals 1 and 2	Terminals 2 and 3	Terminals 2 and 4	Terminals 2 and 6	Terminals 4 and 6
Off Key Out	Infinite	Infinite	Infinite	Infinite	Infinite
Off Key IN	Infinite	Infinite	< 5.0 ohms	Infinite	Infinite
Accessory	Infinite	< 5.0 ohms	Infinite	Infinite	Infinite
Run	< 5.0 ohms	< 5.0 ohms	Infinite	Infinite	< 5.0 ohms
Start	< 5.0 ohms	Infinite	Infinite	Infinite	1275-1325 ohms

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Ignition and Start Switch Replacement**
- **Control Module References** for BCM replacement, setup, and programming

RETAINED ACCESSORY POWER MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
RAP/ACCY Relay Switch B+	3	4	2	-
RAP/ACCY Relay Control	B1445 02	1	1	-
RAP/ACCY Relay Ignition	3	4	2	-
RAP/ACCY Relay Ground	-	1	-	-

1. All relay controlled retained power accessory functions inoperative.

2. Relay retained power accessory remains on past the timer limit after key out and will not turn off when a vehicle door is opened.

3. Partial relay controlled retained power accessory functions inoperative with open fuse.

4. Partial relay controlled retained power accessory functions inoperative with fuse OK.

Circuit/System Description

The retained accessory power system allows specific vehicle functions to operate after the ignition is turned OFF for a predetermined time. Relay retained accessory power is controlled by the body control module (BCM) using inputs from the door ajar switches to determine control of the relay when the ignition is turned OFF. Serial data controlled retained accessory power is controlled by a serial data message from the BCM using

inputs from the driver door open switch. Refer to **Retained Accessory Power Description and Operation** for more detail on subsystems using retained accessory power.

Diagnostic Aids

The serial data controlled retained accessory power mode is a separate function and will still operate properly. The serial data controlled retained accessory power function is controlled by serial data and the specific module. These functions are not affected by the BCM retained accessory power relay circuits.

Reference Information

Schematic Reference

- **Power Distribution Schematics**
- **Power Moding Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Retained Accessory Power Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

NOTE: **Battery voltage must remain above 9.6 V for retained accessory power to operate properly.**

Serial Data Controlled Retained Accessory Power

1. With all passenger doors closed, observe the courtesy lamps while opening and closing the driver door. The courtesy lamps should illuminate when the door is opened and turn off approximately 30 seconds after closing the door.
 - If the courtesy lamp operation is incorrect from the drivers door, refer to **Courtesy Lamps**

Malfunction

2. Close all vehicle doors.
3. Turn the ignition to RUN and then to OFF. The serial data controlled retained accessory power components should enter into accessory power mode for 10 minutes. Attempt to operate any serial data controlled retained accessory power component within the 10 minute operation time. The component should operate. During the 10 minute operation, open the drivers door. The component should not operate.
 - If one component does not respond as specified, replace the component.
 - If all the components do not respond as specified, replace the K9 BCM.

Relay Retained Accessory Power

1. Ignition ON, observe the appropriate scan tool parameters listed below while opening and closing each vehicle door. The reading should change between Door Closed/Door Ajar.
 - Driver Door Ajar Switch
 - Left Rear Door Ajar Switch
 - Passenger Door Ajar Switch
 - Right Rear Door Ajar Switch
 - If any parameter does not change as specified, refer to **Door Ajar Indicator Malfunction**.
2. Command the scan tool Accessory/Retained Accessory Power Relay Command OFF. Attempt to operate any retained accessory power relay controlled component within 5 seconds. The component should not operate.
3. Command the scan tool Accessory/Retained Accessory Power Relay Command ON. Attempt to operate any retained accessory power relay controlled component within 5 seconds. The component should operate.
4. Ignition ON, all doors closed. Observe the scan tool parameter Accessory/Retained Accessory Power Relay Command. Ignition OFF, key removed, the reading should be ON for approximately 10 minutes then change to OFF.
 - If the parameter does not respond as specified, replace the K9 BCM.

Circuit/System Testing

1. Ignition OFF, disconnect the KR70 RAP/ACCY relay.
2. Test for less than 10 ohms between the ground control circuit terminal 86 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Verify that a test lamp illuminates between the B+ circuit terminal 30 and ground.
 - If the test does not illuminate, test the B+ circuit for short to ground or an open/high resistance.
4. Connect a test lamp between the control circuit terminal 85 and the ground circuit terminal 86.
5. Command the RAP/ACCY relay ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the command states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the K9 BCM.

- If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
- 6. Connect the RAP/ACCY relay. Disconnect the harness connector at the center console accessory power outlet.
- 7. Connect a test lamp between the ignition circuit terminal A and ground.
- 8. Command the RAP/ACCY relay ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the command states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, test or replace the KR70 RAP/ACCY relay.
 - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, test or replace the KR70 RAP/ACCY relay.

Component Testing

1. Ignition OFF, disconnect the KR70 RAP/ACCY relay.
2. Test for 70-150 ohms between terminals control circuit terminal 85 and ground terminal 86.
 - If not within the specified range, replace the KR70 RAP/ACCY relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86
 - 30 and 87
 - 30 and 85
 - 85 and 87
 - If not the specified value, replace the KR70 RAP/ACCY relay.
4. Install a 2 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms between terminals 30 and 87.
 - If greater than the specified range, replace the KR70 RAP/ACCY relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for module replacement, setup, and programming

GENERAL ELECTRICAL DIAGNOSIS

Basic Knowledge Required

Without a basic knowledge of electricity, it will be difficult to use the diagnostic procedures contained in the service manual. You should understand the basic theory of electricity, and know the meaning of voltage (V), current (A), and resistance (ohms). You should also be able to read and understand a wiring diagram, as well as understand what happens in a circuit with an open or a shorted wire.

CHECKING AFTERMARKET ACCESSORIES

WARNING: Refer to SIR Warning .

CAUTION: The OBD II symbol is used on the circuit diagrams in order to alert the technician that the circuit is essential for proper OBD II emission control circuit operation. Any circuit which fails and causes the malfunction indicator lamp (MIL) to turn ON, or causes emissions-related component damage, is identified as an OBD II circuit.

Do not connect aftermarket accessories into the following circuits:

- SIR circuits, all such circuits are indicated on circuit diagrams with the SIR symbol.
- OBD II circuits, all such circuits are indicated on circuit diagrams with the OBD II symbol.

Always check for aftermarket accessories (non-OEM) as the first step in diagnosing electrical problems. If the vehicle is so equipped, disconnect the system to verify that these add-on accessories are not the cause of the problems.

Possible causes of vehicle problems related to aftermarket accessories include:

- Power feeds connected to points other than the battery
- Antenna location
- Transceiver wiring located too close to vehicle electronic modules or wiring
- Poor shielding or poor connectors on antenna feed line
- Check for recent service bulletins detailing installation guidelines for aftermarket accessories.

CIRCUIT TESTING

The Circuit Testing section contains the following diagnostic testing information. Using this information along with the diagnostic procedures will identify the cause of the electrical malfunction.

- Using Connector Test Adapters
- Probing Electrical Connectors
- Troubleshooting with a Digital Multimeter
- Troubleshooting with a Test Lamp
- Using Fused Jumper Wires
- Measuring Voltage
- Measuring Voltage Drop
- Measuring Frequency
- Testing Ground and Low Reference Circuits
- Testing for Continuity

- Testing for Short to Ground
- Testing for a Short to Voltage
- Testing for Intermittent Conditions and Poor Connections
- Inducing Intermittent Fault Conditions
- Testing for Electrical Intermittents
- Scan Tool Snapshot Procedure
- Circuit Protection - Fuses
- Circuit Protection - Circuit Breakers
- Circuit Protection - Fusible Links

BASIC DIGITAL MULTIMETER REQUIREMENTS

Digital Multimeter (DMM) Basic Requirements

Service information is validated using digital multimeters that meet or exceed the following requirements. Using a multimeter that does not meet these basic requirements may give inaccurate readings which could lead to an incorrect diagnosis.

Display and Settings

1. Four digits displayed
2. Voltage, amperage, resistance, frequency, diode test settings, and min-max function
3. Display positive and negative values

Voltage

1. Have at least 10 Mohms input impedance
2. Test a DC voltage range of 0.1-1000 V.
3. Test an AC voltage range of 0.1-1000 V.

Amperage

1. Test a DC amperage range of 0.1 μ A-10 A.
2. Test an AC amperage range of 0.1 μ A-10 A.

Resistance

Test a resistance range of 0.1 ohms-40 Mohms and displays infinite for a value greater than 40 Mohms (O.L. (Over-load))

Frequency

Test for a frequency range of 0.5 HZ-199 K HZ

Diode Test

1. Apply at least 1 mA when performing the diode bias test
2. Display the break over voltage drop (0-3 V) of a forward biased diode
3. Display infinite (O.L. (Over-load)) when a diode is reverse biased

Min-Max Readings

1. Can update at a 1 ms sample rate
2. Saves and displays minimum and maximum values

USING CONNECTOR TEST ADAPTERS

Special Tools

EL 35616: Terminal Test Probe Kit

For equivalent regional tools, refer to **Special Tools** .

CAUTION: Do not insert test equipment probes (DMM etc.) into any connector or fuse block terminal. The diameter of the test probes will deform most terminals. A deformed terminal will cause a poor connection, which will result in a system failure. Always use the EL-38125-580 GM Approved Terminal Release Tool Kit in order to front probe terminals. Do not use paper clips or other substitutes to probe terminals.

When using the EL-38125-580 GM Approved Terminal Release Tool Kit, ensure the terminal test adapter choice is the correct size for the connector terminal. Do not visually choose the terminal test adapter because some connector terminal cavities may appear larger than the actual terminal in the cavity. Using a larger terminal test adapter will damage the terminal. Refer to the EL-38125-580 GM Approved Terminal Release Tool Kit label on the inside of the EL-38125-580 GM Approved Terminal Release Tool Kit for the correct adapter along with the connector end view for terminal size.

PROBING ELECTRICAL CONNECTORS

NOTE: Always be sure to reinstall the connector position assurance (CPA) and terminal position assurance (TPA) when reconnecting connectors or replacing terminals.

Front probe

Disconnect the connector and probe the terminals from the mating side (front) of the connector.

CAUTION: Refer to **Test Probe Caution** .

NOTE: When probing female 0.64 terminals, it is important to use the correct adapter. There have been some revisions to the test adapter for 0.64 terminals. The proper adapter for 0.64 terminals is the EL-35616-64B which has a gold terminal and a black wire between the base and tip. Failure to use the proper test adapter may result in damage to the terminal being tested and improper diagnosis.

NOTE: The proper adapter for probing the terminals for fuses, relays, or diodes in an electrical center is EL-35616-35. Using any other tool or adapter may damage the terminal being tested.

Refer to the following table as a guide in selecting the correct test adapter for front probing connectors:

Test Adapter	Description
J-35616-2A	150 Male Probe Adapter (gray)
J-35616-3	150 Female Probe Adapter (gray)
J-35616-4A	280 Male Probe Adapter (purple)
J-35616-5	280 Female Probe Adapter (purple)
J-35616-6	100W Male (round) Probe Adapter (brown)
J-35616-7	100W Female (round) Probe Adapter (brown)
J-35616-8	Weather Pack Male Probe Adapter (orange)
J-35616-9	Weather Pack Female Probe Adapter (orange)
J-35616-10	100W Male (round) Probe Adapter (green)
J-35616-11	100W Female (round) Probe Adapter (green)
J-35616-12	130 Male Probe Adapter (blue)
J-35616-13	130 Female Probe Adapter (blue)
J-35616-14	150 Male Probe Adapter (green)
J-35616-16	100 Male Probe Adapter (lt green)
J-35616-17	100 Female Probe Adapter (lt green)
J-35616-18	220 Male Probe Adapter (black)
J-35616-19	220 Female Probe Adapter (black)
J-35616-21	950 Female Probe Adapter (red)
J-35616-22	950 Male Probe Adapter (red)
J-35616-31	500 Male Probe Adapter (orange)
J-35616-32	500 Female Probe Adapter (orange)
J-35616-33	160/180 Male Probe Adapter (yellow)
J-35616-34	160/180 Female Probe Adapter (yellow)
J-35616-35	280 Male Probe Adapter (violet)
J-35616-40	480 Male Probe Adapter (dk blue)
J-35616-41	480 Female Probe Adapter (dk blue)
J-35616-42	630 Male Probe Adapter (red)
J-35616-43	630 Female Probe Adapter (red)
J-35616-44	800 Male Probe Adapter (yellow)

J-35616-45	800 Female Probe Adapter (yellow)
J-35616-54	280 Male (round) Probe Adapter (tan)
J-35616-55	280 Female (round) Probe Adapter (tan)
J-35616-64B	0.64 Male Probe Adapter (lt blue)
J-35616-65B	0.64 Female Probe Adapter (lt blue)
J-35616-66	150 Male (round) Probe Adapter (yellow)
J-35616-67	150 Female (round) Probe Adapter (yellow)

Backprobe

NOTE:

- Backprobe connector terminals only when specifically required in diagnostic procedures.
- Do not backprobe a sealed (Weather Pack®) connector, less than a 280 series Metri-Pack connector, a Micro-Pack connector, or a flat wire (dock and lock) connector.
- Backprobing can be a source of damage to connector terminals. Use care in order to avoid deforming the terminal, either by forcing the test probe too far into the cavity or by using too large of a test probe.
- After backprobing any connector, inspect for terminal damage. If terminal damage is suspected, test for proper terminal contact.

Do not disconnect the connector and probe the terminals from the harness side (back) of the connector.

TROUBLESHOOTING WITH A DIGITAL MULTIMETER

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to [Special Tools](#) .

CAUTION: Refer to [Test Probe Caution](#) .

Digital Multimeter (DMM) Basic Requirements

Service information is validated using digital multimeters that meet or exceed the following requirements. Using a multimeter that does not meet these basic requirements may give inaccurate readings which could lead to an incorrect diagnosis.

Display and Settings

1. Four digits displayed
2. Voltage, amperage, resistance, frequency, diode test settings, and min-max function

3. Display positive and negative values

Voltage

1. Have at least 10 Mohms input impedance
2. Test a DC voltage range of 0.1-1000 V.
3. Test an AC voltage range of 0.1-1000 V.

Amperage

1. Test a DC amperage range of 0.1 μ A-10 A.
2. Test an AC amperage range of 0.1 μ A-10 A.

Resistance

Test a resistance range of 0.1 ohms-40 Mohms and displays infinite for a value greater than 40 Mohms (O.L. (Over-load))

Frequency

Test for a frequency range of 0.5 HZ-199 K HZ

Diode Test

1. Apply at least 1 mA when performing the diode bias test
2. Display the break over voltage drop (0-3 V) of a forward biased diode
3. Display infinite (O.L. (Over-load)) when a diode is reverse biased

Min-Max Readings

1. Can update at a 1 ms sample rate
2. Saves and displays minimum and maximum values

Supplemental Information

NOTE: **Circuits which include any solid state control modules, such as the engine control module (ECM), should only be tested with a 10 Mohms or higher impedance digital multimeter such as the EL-39200.**

The EL-39200 instruction manual is a good source of information and should be read thoroughly upon receipt of the DMM as well as kept on hand for future reference.

A DMM should be used instead of a test lamp in order to test for voltage in high impedance circuits. While a test lamp shows whether voltage is present if the impedance is low enough, a DMM indicates how much voltage is present. In other words, if there is not enough current, the test lamp will not illuminate even though voltage is present.

The ohmmeter function on a DMM shows how much resistance exists between 2 points along a circuit. Low resistance in a circuit means good continuity.

NOTE: **Disconnect the power feed from the suspect circuit when measuring resistance with a DMM. This prevents incorrect readings. DMMs apply such a small voltage to measure resistance that the presence of voltages can upset a resistance reading.**

Diodes and solid state components in a circuit can cause a DMM to display a false reading. To find out if a component is affecting a measurement take a reading once, then reverse the leads and take a second reading. If the readings differ the solid state component is affecting the measurement.

Following are examples of the various methods of connecting the DMM to the circuit to be tested:

- Probe both ends of the connector and either hold the leads in place while manipulating the connector or tape the leads to the harness for continuous monitoring while you perform other operations or test driving. Refer to [Probing Electrical Connectors](#).
- Disconnect the harness at both ends of the suspected circuit where it connects either to a component or to other harnesses.
- If the system that is being diagnosed has a specified pinout or breakout box, it may be used in order to simplify connecting the DMM to the circuit or for testing multiple circuits quickly.

TROUBLESHOOTING WITH A TEST LAMP

Special Tools

EL-35616-200: Test Light - Probe Kit

For equivalent regional tools, refer to [Special Tools](#) .

CAUTION: Refer to [Test Probe Caution](#) .

A test lamp can simply and quickly test a low impedance circuit for voltage. A Digital Multimeter (DMM) should be used instead of a test lamp in order to test for voltage in high impedance circuits. While a test lamp shows whether voltage is present if the impedance is low enough, a DMM indicates how much voltage is present. In other words, if there is not enough current, the test lamp will not illuminate even though voltage is present.

The **EL-35616-200:** kit is Micro-Pack compatible and comprised of a 12-volt light bulb with an attached pair of leads.

To properly operate this tool use the following procedures.

When testing for voltage:

1. Attach one lead to ground.
2. Touch the other lead to various points along the circuit where voltage should be present.
3. When the bulb illuminates, there is voltage at the point being tested.

When testing for ground:

1. Attach one lead to battery positive voltage.
2. Touch the other lead to various points along the circuit where ground should be present.
3. When the bulb illuminates, there is ground at the point being tested.

USING FUSED JUMPER WIRES

Special Tools

J 36169-A Fused Jumper Wire. See Special Tools .

NOTE: **A fused jumper may not protect solid state components from being damaged.**

The **J 36169-A** includes small clamp connectors that provide adaptation to most connectors without damage. See Special Tools . This fused jumper wire is supplied with a 20-A fuse which may not be suitable for some circuits. Do not use a fuse with a higher rating than the fuse that protects the circuit being tested.

MEASURING VOLTAGE

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to Special Tools .

CAUTION: Refer to Test Probe Caution .

The following procedure measures the voltage at a selected point in a circuit.

1. Disconnect the electrical harness connector for the circuit being tested, if necessary.
2. Enable the circuit and/or system being tested. Use the following methods:
 - Turn ON the ignition, with the engine OFF.
 - Turn ON the engine.
 - Turn ON the circuit and/or system with a scan tool in Output Controls.
 - Turn ON the switch for the circuit and/or system being tested.
3. Select the V (AC) or V (DC) position on the Digital Multimeter (DMM).
4. Connect the positive lead of the DMM to the point of the circuit to be tested.

5. Connect the negative lead of the DMM to a good ground.
6. The DMM displays the voltage measured at that point.

MEASURING VOLTAGE DROP

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to **Special Tools** .

CAUTION: Refer to **Test Probe Caution** .

The following procedure determines the difference in voltage potential between 2 points.

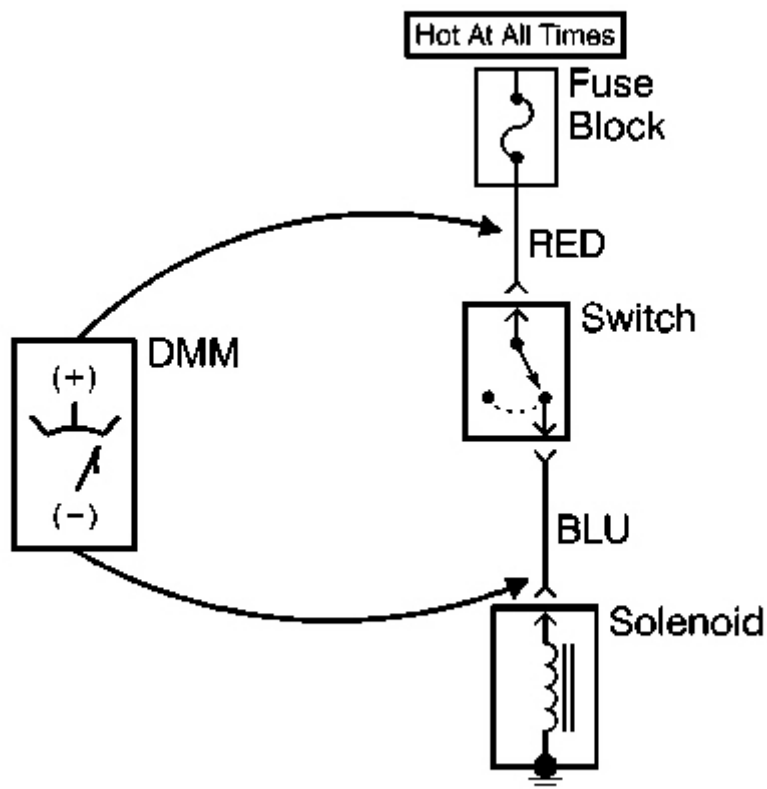


Fig. 1: Measuring Voltage Drop

Courtesy of GENERAL MOTORS CORP.

1. Set the rotary dial of the Digital Multimeter (DMM) to the V (DC) position.
2. Connect the positive lead of the DMM to one point of the circuit to be tested.
3. Connect the negative lead of the DMM to the other point of the circuit.
4. Operate the circuit.
5. The DMM displays the difference in voltage between the 2 points.

MEASURING FREQUENCY

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to **Special Tools** .

CAUTION: Refer to **Test Probe Caution** .

The following procedure determines the frequency of a signal.

NOTE: **Connecting the Digital Multimeter (DMM) to the circuit before pressing the Hz button will allow the DMM to autorange to an appropriate range.**

1. Apply power to the circuit.
2. Set the rotary dial of the DMM to the V (AC) position.
3. Connect the positive lead of the DMM to the circuit to be tested.
4. Connect the negative lead of the DMM to a good ground.
5. Press the Hz button on the DMM.
6. The DMM will display the frequency measured.

TESTING GROUND AND LOW REFERENCE CIRCUITS

Because a test lamp can light with up to 200 ohms in a ground or low reference circuit they are not recommended to be used for this type of test. A low impedance test lamp can light and indicate the circuit is good when there is as much as 20-30 ohms present, while a high impedance test lamp can light with up to 200 ohms present in the circuit. This is why the Digital Multi-Meter (DMM) is used when validating a ground or low reference circuit continuity.

When using the DMM there are many vehicle conditions that can affect the ground and low reference continuity testing. If these conditions are not met, a ground or low reference circuit test can fail on a good circuit. This may cause longer diagnosis time and incorrect component replacement.

Any current flow through a ground or low reference circuit, while being tested, will skew the DMM continuity reading, or display a reading higher than when there is no current flowing. Performing a ground or low reference circuit continuity test, in reference to the vehicles battery negative terminal, will have the highest risk of failing a good ground or low reference circuit test than any other ground reference point. The best ground test points would be a control module housing (if the control modules housing is metal and grounded), door jamb striker (if attached to metal), under dash metal frame work, engine block, or body ground studs (other than where the negative battery cable is attached).

A typical DMM ground or low reference circuit continuity reading can be as high as 100 ohms with the ignition ON, and drop to 15-25 ohms after the ignition is turned OFF. The reading will drop below 10 ohms after 30-40 seconds, then below 5 ohms after 60 seconds. Once the vehicle completely goes to sleep (generally 3-10 minutes) the reading will drop below 0.3 ohms.

The following list of conditions may need to be met to ensure a valid continuity reading on a ground or low reference circuit:

- Ignition OFF
- Key out of the ignition switch (when not equipped with keyless entry and remote start)
- Retained Accessory Power (RAP) OFF (open and close the driver door after ignition OFF)
- Battery charger set at a 2 A or less charge rate
- Scan tool not communicating with any vehicle control module (in some cases it may need to be disconnected from the DLC)
- All entry doors closed
- Headlamps OFF (auto headlamps disabled)
- Any delay lighting OFF
- HVAC after blow OFF
- Any accessory that can work when the ignition is OFF
- Wait up to 60 seconds (after all other listed conditions are met)

Activating the DOOR LOCK function with a key fob can greatly reduce the time to achieve a valid ground or low reference continuity test result.

TESTING FOR CONTINUITY

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to **Special Tools** .

CAUTION: Refer to **Test Probe Caution** .

The following procedures verify good continuity in a circuit.

With a Digital Multimeter (DMM)

1. Set the rotary dial of the DMM to the ohms position.
2. Disconnect the power feed (i.e. fuse, control module) from the suspect circuit.
3. Disconnect the load.
4. Press the MIN MAX button on the DMM.
5. Connect one lead of the DMM to one end of the circuit to be tested.
6. Connect the other lead of the DMM to the other end of the circuit.
7. If the DMM displays low or no resistance, the circuit has good continuity.

With a Test Lamp

NOTE: Only use the test lamp procedure on low impedance power and ground circuits.

1. Remove the power feed (i.e. fuse, control module) from the suspect circuit.
2. Disconnect the load.
3. Connect one lead of the test lamp to one end of the circuit to be tested.
4. Connect the other lead of the test lamp to battery positive voltage.
5. Connect the other end of the circuit to ground.
6. If the test lamp illuminates (full intensity), then the circuit has good continuity.

TESTING FOR SHORT TO GROUND

Special Tools

- **EL 39200:** Digital Multimeter (DMM)
- **EL 35616-200:** Test Light-Probe Kit

For equivalent regional tools, refer to **Special Tools** .

CAUTION: Refer to **Test Probe Caution** .

The following procedures test for a short to ground in a circuit.

With a Digital Multimeter (DMM)

1. Remove the power feed (i.e. fuse, control module) from the suspect circuit.
2. Disconnect the load.
3. Set the rotary dial of the DMM to the ohms position.
4. Connect one lead of the DMM to one end of the circuit to be tested.
5. Connect the other lead of the DMM to a good ground.

6. If the DMM does NOT display infinite resistance (OL), there is a short to ground in the circuit.

With a Test Lamp

1. Remove the power feed (i.e. fuse, control module) from the suspect circuit.
2. Disconnect the load.
3. Connect one lead of the test lamp to battery positive voltage.
4. Connect the other lead of the test lamp to one end of the circuit to be tested.
5. If the test lamp illuminates, there is a short to ground in the circuit.

Fuse Powering Several Loads

1. Review the system schematic and locate the fuse that is open.
2. Open the first connector or switch leading from the fuse to each load.
3. Connect a DMM across the fuse terminals (be sure that the fuse is powered).
 - When the DMM displays voltage the short is in the wiring leading to the first connector or switch.
 - If the DMM does not display voltage refer to the next step.
4. Close each connector or switch until the DMM displays voltage in order to find which circuit is shorted.

TESTING FOR A SHORT TO VOLTAGE

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to **Special Tools** .

CAUTION: Refer to **Test Probe Caution** .

The following procedure tests for a short to voltage in a circuit.

1. Remove the power feed (i.e. fuse, control module) from the suspect circuit.
2. Disconnect the load.
3. Set the rotary dial of the Digital Multimeter (DMM) to the V (DC) position.
4. Connect the positive lead of the DMM to one end of the circuit to be tested.
5. Connect the negative lead of the DMM to a good ground.
6. Turn ON the ignition and operate all accessories.
7. If the voltage measured is greater than 1 V, there is a short to voltage in the circuit.

TESTING FOR INTERMITTENT CONDITIONS AND POOR CONNECTIONS

Special Tools

For equivalent regional tools, refer to **Special Tools** .

When the condition is not currently present, but is indicated in DTC history, the cause may be intermittent. An intermittent may also be the cause when there is a customer complaint, but the symptom cannot be duplicated. Refer to the Symptom Table of the system that is suspect of causing the condition before trying to locate an intermittent condition.

Most intermittent conditions are caused by faulty electrical connections or wiring. Inspect for the following items:

- Wiring broken inside the insulation
- Poor connection between the male and female terminal at a connector
- Poor terminal to wire connection-Some conditions which fall under this description are poor crimps, poor solder joints, crimping over the wire insulation rather than the wire itself, and corrosion in the wire to terminal contact area, etc.
- Pierced or damaged insulation can allow moisture to enter the wiring causing corrosion. The conductor can corrode inside the insulation, with little visible evidence. Look for swollen and stiff sections of wire in the suspect circuits.
- Wiring which has been pinched, cut, or its insulation rubbed through may cause an intermittent open or short as the bare area touches other wiring or parts of the vehicle.
- Wiring that comes in contact with hot or exhaust components
- Refer to **Inducing Intermittent Fault Conditions** in order to duplicate the conditions required, in order to verify the customer concern.
- Refer to **Testing for Electrical Intermittents** for test procedures to detect intermittent open, high resistance, short to ground, and short to voltage conditions.
- Refer to **Scan Tool Snapshot Procedure** for advanced intermittent diagnosis and Vehicle Data Recorder operation.

Testing for Terminal Fretting

Some intermittent conditions can be caused by wire terminal fretting corrosion. Fretting corrosion is a build-up of insulating, oxidized wear debris that can form when there is a small motion between electrical contacts. The oxidized wear debris can pile up enough at the electrical contact spots that the electrical resistance across the connection increases. Movement between the contacting surfaces as small as 10 to 100 microns can cause fretting. To put this in perspective, a sheet of paper is about 100 microns thick, so fretting motion is small and hard to see. Vibration and thermal expansion/contraction are the main sources that create fretting motion. Since vehicles vibrate and can experience large temperature swings, they are a good source for fretting motion. Tin, copper, nickel, and iron surfaces are all susceptible to fretting corrosion. Fretting corrosion can be difficult to see but it looks like small, dark smudges on the terminals contact surface.

To correct a fretting condition disconnect the suspect connector and add Nyogel lubricant 760G (dielectric grease) to both sides of the connector terminals. Then reconnect the connector and wipe away any excess lubricant. This will correct the additional terminal contact resistance due to the terminal fretting corrosion.

Testing for Proper Terminal Contact

It is important to test terminal contact at the component and any inline connectors before replacing a suspect component. Mating terminals must be inspected to ensure good terminal contact. A poor connection between the male and female terminal at a connector may be the result of contamination or deformation.

Contamination may be caused by the connector halves being improperly connected. A missing or damaged connector seal, damage to the connector itself, or exposing the terminals to moisture and dirt can also cause contamination. Contamination, usually in the underhood or underbody connectors, leads to terminal corrosion, causing an open circuit or intermittently open circuit.

Deformation is caused by probing the mating side of a connector terminal without the proper adapter. Always use the EL-35616 when probing connectors. Other causes of terminal deformation are improperly joining the connector halves, or repeatedly separating and joining the connector halves. Deformation, usually to the female terminal contact tang, can result in poor terminal contact causing an open or intermittently open circuit.

Testing for Proper Terminal Contact in Bussed Electrical Centers

It is very important to use the correct test adapter when testing for proper terminal contact of fuses and relays in a bussed electrical center. Use EL-35616-35 to test for proper terminal contact. Failure to use EL-35616-35 can result in improper diagnosis of the bussed electrical center.

Follow the procedure below in order to test terminal contact:

1. Separate the connector halves.
2. Visually inspect the connector halves for contamination. Contamination may result in a white or green build-up within the connector body or between terminals. This causes high terminal resistance, intermittent contact, or an open circuit. An underhood or underbody connector that shows signs of contamination should be replaced in its entirety: terminals, seals, and connector body.
3. Using an equivalent male terminal / terminated lead, verify that the retention force is significantly different between a known good terminal and the suspect terminal. Replace the female terminal in question.

Flat Wire (Dock and Lock) Connectors

There are no serviceable parts for flat wire (dock and lock) connectors on the harness side or the component side.

Follow the procedure below in order to test terminal contact:

1. Remove the component in question.
2. Visually inspect each side of the connector for signs of contamination. Avoid touching either side of the connector as oil from your skin may be a source of contamination as well.
3. Visually inspect the terminal bearing surfaces of the flat wire circuits for splits, cracks, or other imperfections that could cause poor terminal contact. Visually inspect the component side connector to ensure that all of the terminals are uniform and free of damage or deformation.
4. Insert the appropriate adapter from the on the flat wire harness connector in order to test the circuit in

question.

Control Module/Component Voltage and Grounds

Poor voltage or ground connections can cause widely varying symptoms.

- Test all control module voltage supply circuits. Many vehicles have multiple circuits supplying voltage to a control module. Other components in the system may have separate voltage supply circuits that may also need to be tested. Inspect connections at the module/component connectors, fuses, and any intermediate connections between the voltage source and the module/component. A test lamp or a DMM may indicate that voltage is present, but neither tests the ability of the circuit to carry sufficient current. Ensure that the circuit can carry the current necessary to operate the component. Refer to **Circuit Testing** and **Power Distribution Schematics**.
- Test all control module ground and system ground circuits. The control module may have multiple ground circuits. Other components in the system may have separate grounds that may also need to be tested. Inspect grounds for clean and tight connections at the grounding point. Inspect the connections at the component and in splice packs, where applicable. Ensure that the circuit can carry the current necessary to operate the component. Refer to **Circuit Testing** and **Ground Distribution Schematics**.

Temperature Sensitivity

- An intermittent condition may occur when a component/connection reaches normal operating temperature. The condition may occur only when the component/connection is cold, or only when the component/connection is hot.
- Freeze Frame, Failure Records, Snapshot, or Vehicle Data Recorder data may help with this type of intermittent condition, where applicable.
- If the intermittent is related to heat, review the data for a relationship with the following:
 - High ambient temperatures
 - Underhood/engine generated heat
 - Circuit generated heat due to a poor connection, or high electrical load
 - Higher than normal load conditions, towing, etc.
- If the intermittent is related to cold, review the data for the following:
 - Low ambient temperatures-In extremely low temperatures, ice may form in a connection or component. Inspect for water intrusion.
 - The condition only occurs on a cold start.
 - The condition goes away when the vehicle warms up.
- Information from the customer may help to determine if the trouble follows a pattern that is temperature related.
- If temperature is suspected of causing an intermittent fault condition, attempt to duplicate the condition. Refer to **Inducing Intermittent Fault Conditions** in order to duplicate the conditions required.

Electromagnetic Interference and Electrical Noise

Some electrical components/circuits are sensitive to electromagnetic interference or other types of electrical noise. Inspect for the following conditions:

- A misrouted harness that is too close to high voltage/high current devices such as secondary ignition components, motors, generator etc.-These components may induce electrical noise on a circuit that could interfere with normal circuit operation.
- Electrical system interference caused by a malfunctioning relay, or a control module driven solenoid or switch-These conditions can cause a sharp electrical surge. Normally, the condition will occur when the malfunctioning component is operating.
- Improper installation of non-factory or aftermarket add on accessories such as lights, 2-way radios, amplifiers, electric motors, remote starters, alarm systems, cell phones, etc.-These accessories may lead to interference while in use, but do not fail when the accessories are not in use. Refer to **Checking Aftermarket Accessories**.
- Test for an open diode across the A/C compressor clutch and for other open diodes. Some relays may contain a clamping diode.
- The generator may be allowing AC noise into the electrical system.

Incorrect Control Module

- There are only a few situations where reprogramming a control module is appropriate:
 - A new service control module is installed.
 - A control module from another vehicle is installed.
 - Revised software/calibration files have been released for this vehicle.

NOTE: **DO NOT re-program the control module with the SAME software/calibration files that are already present in the control module. This is not an effective repair for any type of concern.**

- Verify that the control module contains the correct software/calibration. If incorrect programming is found, reprogram the control module with the most current software/calibration. Refer to **Control Module References** for replacement, setup, and programming.

INDUCING INTERMITTENT FAULT CONDITIONS

Special Tools

J-25070: Heat Gun

For equivalent regional tools, refer to **Special Tools** .

Many intermittent open or shorted circuits are affected by harness/connector movement that is caused by vibration, engine torque, bumps/rough pavement, etc. In order to duplicate the customer's concern, it may be necessary to manipulate the wiring harness if the malfunction appears to be vibration related. Manipulation of a circuit can consist of a wide variety of actions, including:

- Wiggling the harness
- Disconnecting a connector and reconnecting
- Stressing the mechanical connection of a connector

- Pulling on the harness or wire in order to identify a separation/break inside the insulation
- Relocating a harness or wires

All these actions should be performed with some goal in mind. For instance, with a scan tool connected, wiggling the wires may uncover a faulty input to the control module. The snapshot option would be appropriate here. Refer to **Scan Tool Snapshot Procedure**. Another option is, with the component commanded ON and OFF by the scan tool, move related connectors and wiring and observe the component operation. With the engine running, move related connectors and wiring while monitoring engine operation. If harness or connector movement affects the data displayed, component/system operation, or engine operation, inspect and repair the harness/connections as necessary.

You may need to load the vehicle in order to duplicate the concern. This may require the use of weights, floor jacks, jackstands, frame machines, etc. In these cases you are attempting to duplicate the concern by manipulating the suspension or frame. This method is useful in finding harnesses that are too short and their connectors pull apart enough to cause a poor connection. A DMM set to Peak Min/Max mode and connected to the suspect circuit while testing can yield desirable results. Refer to **Testing for Electrical Intermittents**.

Certainly, using the senses of sight, smell, and hearing while manipulating the circuit can provide good results as well.

There may be instances where circuit manipulation alone will not meet the required criteria for the fault condition to appear. In such cases it may be necessary to expose the suspect circuit to other conditions while manipulating the harness. Such conditions would include high moisture conditions, along with exceptionally high or low temperatures. The following discusses how to expose the circuit to these kinds of conditions.

Salt Water Spray

Some compounds possess the ability to conduct electricity when dissolved in water such as ordinary salt. By mixing table salt with water in sufficient quantities, you can enhance the conductive properties of water so that any circuit which may be sensitive to moisture will more readily fail when liberally sprayed with this mixture.

Mixing 0.35L (12 oz) of water with approximately 1 tablespoon of salt will yield a salt solution of 5 percent. Fill a normal spray bottle with this mixture. This mixture is sufficient to enhance the water's own conductivity. This may cause the circuit to fail more easily when sprayed. Once the mixture is completed, spray the suspect area liberally with the solution. Then, while monitoring either a scan tool or DMM, manipulate the harness as discussed previously.

High Temperature Conditions

If the complaint tends to be heat related, you can simulate the condition using the **J-25070**: heat gun.

Using the heat gun, you can heat up the suspected area or component. Manipulate the harnesses under high temperature conditions while monitoring the scan tool or DMM to locate the fault condition.

The high temperature condition may be achieved simply by test driving the vehicle at normal operating temperature. If a heat gun is unavailable, consider this option to enhance your diagnosis. This option does not allow for the same control, however.

Low Temperature Conditions

Depending on the nature of the fault condition, placing a fan in front of the vehicle while the vehicle is in the shade can have the desired effect.

If this is unsuccessful, use local cooling treatments such as ice or a venturi type nozzle (one that provides hot or cold air). This type of tool is capable of producing air stream temperatures down to -18°C (0°F) from one end and $+71^{\circ}\text{C}$ (160°F) from the other. This is ideally suited for localized cooling needs.

Once the vehicle, component, or harness has been sufficiently cooled, manipulate the harness or components in an effort to duplicate the concern.

Duplicating Failure Conditions

- If none of the previous tests are successful, attempt to duplicate and/or capture the failure conditions.
- Freeze Frame/Failure Records data, where applicable, contains the conditions that were present when the DTC set.
 1. Review and record Freeze Frame/Failure Records data.
 2. Clear the DTCs using the scan tool.
 3. Turn the key to OFF and wait 15 seconds.
 4. Operate the vehicle under the same conditions that were noted in Freeze Frame/Failure Records data, as closely as possible. The vehicle must also be operating within the Conditions for Running the DTC. Refer to Conditions for Running the DTC in the supporting text if a DTC is being diagnosed.
 5. Monitor DTC Status for the DTC being tested. The scan tool will indicate Ran, when the enabling conditions have been satisfied long enough for the DTC to run. The scan tool will also indicate whether the DTC passed or failed.
- An alternate method is to drive the vehicle with the DMM connected to a suspected circuit. An abnormal reading on the DMM when the concern occurs, may help you locate the concern.

TESTING FOR ELECTRICAL INTERMITTENTS

Special Tools

EL-39200 Digital Multimeter

For equivalent regional tools, refer to **Special Tools** .

Perform the following procedures while wiggling the harness from side to side. Continue this at convenient points (about 6 inches apart) while watching the test equipment.

- **Testing for Short to Ground**
- **Testing for Continuity**
- **Testing for a Short to Voltage**

If the fault is not identified, perform the procedure below using the MIN MAX feature on the EL-39200 DMM. This feature allows you to manipulate the circuit without having to watch the EL-39200. The EL-39200 will generate an audible tone when a change is detected.

NOTE: **The EL-39200 must be used in order to perform the following procedure since the EL-39200 can monitor current, resistance or voltage while recording the minimum (MIN), and maximum (MAX) values measured.**

1. Connect the EL-39200 to both sides of a suspected connector (still connected), or from one end of a suspected circuit to the other. Refer to **Troubleshooting with a Digital Multimeter** for information on connecting the EL-39200 to the circuit.
2. Set the rotary dial of the EL-39200 to the V (AC) or V (DC) position.
3. Press the range button of the EL-39200 in order to select the desired voltage range.
4. Press the MIN MAX button of the EL-39200. The EL-39200 displays 100 ms RECORD and emits an audible tone (beep).

NOTE: **The 100 ms RECORD mode is the length of time an input must stay at a new value in order to record the full change.**

5. Simulate the condition that is potentially causing the intermittent connection, either by wiggling the connections or the wiring, test driving, or performing other operations. Refer to **Inducing Intermittent Fault Conditions**.
6. Listen for the audible Min Max Alert which indicates that a new minimum or maximum value has been recorded.
7. Press the MIN MAX button once in order to display the MAX value and note the value.
8. Press the MIN MAX button again in order to display the MIN value and note the value.
9. Determine the difference between the MIN and MAX values.
 - If the variation between the recorded MIN and MAX voltage values is 1 V or greater an intermittent open or high resistance condition exists. Repair the condition as necessary.
 - If the variation between the recorded MIN and MAX voltage values is less than 1 V, an intermittent open or high resistance condition does not exist.

SCAN TOOL SNAPSHOT PROCEDURE

Using Snapshots in Global Diagnostic System (GDS)

Overview

A snapshot is a recording of what a control module on the vehicle was receiving for information while the snapshot is being made. A snapshot may be used to analyze the data during the time a vehicle condition is current. This allows you to concentrate on making the condition occur, rather than trying to view all the data in anticipation of the fault. To record a snapshot in GDS, select, Record Snapshot, from the options at the top right portion of any of the various pages that allow snapshots to be taken (e.g. Data Display, Control Functions, etc.). When you are finished recording, select, Stop Snapshot recording. The snapshot will now be available for replay.

Snapshot Replay

The Snapshot Replay function allows reviews of previously recorded vehicle snapshot data. This information can be used in analysis of vehicle problems and detection of trigger error conditions. The graph function can be used to compare parameters to see if a component is functioning properly. Recorded snapshots can be selected for viewing by the following three methods:

- Selecting a snapshot file from the Vehicle Home Page and clicking on the Review selection.
- Double clicking on the selected snapshot from the Vehicle Home Page.
- Entering the Tools selection from the Menu selection and selecting Snapshot replay. Next, open the Snapshot Manager. Double click on the snapshot file you wish to view or click on the Load Snapshot selection and select a snapshot file.

Regardless of selection method, a File Loaded pop-up window will be displayed from the Snapshot Replay screen. Select OK from the pop-up window.

Snapshot Play Functions

There are several snapshot play functions that are used to replay recorded snapshots

- The Play function is used to play the snapshot forward by clicking on this selection. A marker will move across the screen when this selection is used. All selections in this area turn grey when they are active.
- The Pause function is used to pause play of the snapshot. When this selection is clicked a second time the snapshot will start playing where it left off.
- The Stop function is used to stop playing the snapshot. The snapshot will start from the beginning, if Play is selected after using the Stop function.

Time Control

Time control is used to control the snapshot replay. This function allows selection of a specific time frame, display of different views, and control of display speed. The following functions can be selected directly under Time Control.

- The Bookmark selection allows you to add a specific comment in the current display and return to this point in the future. When this option is selected, a pop-up window is displayed. Enter a bookmark name and select OK.
- The Note Pad can be selected to add comments to the snapshot replay file at the current point of time. When this option is selected, a pop-up window is displayed. Enter a comment for the snapshot file and select OK.
- The Load Snapshot (blue folder) opens a snapshot file and makes it ready for further analysis. This function is also available by clicking on an available snapshot file from the Snapshot Manager.
- The Down Arrow displays all Time Control options when selected. Individual options can also be selected by clicking on the item you want.
- The Snapshot Display Speed can be controlled by selecting this option. Slow speeds of 1/8X, 1/4X, and 1/2X can be selected. The real time speed can also be selected at 1. Faster speeds of 2X, 4X, and 8X can also be obtained by using this selection.

View Selections

Each View Selection provides a different way of displaying vehicle data for analysis. The following functions can be selected under Available Views:

NOTE: **The parameter name will be shown in the original language used for capture if no translation is available for the name.**

- Parameter List View - Displays incoming information from the snapshot file. The current value of the parameters is displayed on the screen.
- Log View - Contains all the information from the snapshot file. All parameter values are listed in the order they were recorded. Specific parameters can be added or removed from a watchlist by clicking on the appropriate item.
- State View - Shows the values of all parameters in a specific time frame. These values can be used for comparison with the trigger view.
- Trigger View - Displays all system and user defined triggers. This function can be used when there is a combination of factors involved in a diagnostic problem. When a Trigger condition is met a caution triangle will be displayed on the screen.

Triggers:

- Load Triggers - Allows you to load a file containing trigger definitions.
- Save Triggers - Allows you to save the trigger to your computer's hard drive.
- Remove Trigger - Allows you to remove the current trigger. It will no longer be present.
- Edit Trigger - Displays a pop-up window where you can modify the limits and parameters contained within a trigger.
- Adds Trigger - Displays a pop-up window to configure a trigger.
- DTC View - After the Play function is selected and this option is selected this function opens the list of recorded DTCs.
- Line Graph View - Displays data that can be visualized against the time-axis. From this view, specific parameters can be selected for graphing by checking the box under Selected. At the bottom of the graph there are four functions Zoom In (increase size), Zoom Out (decrease size), Bookmarks, and Pause Scrolling. Each of these functions can be accessed by clicking on them.

CIRCUIT PROTECTION - FUSES

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to Special Tools.

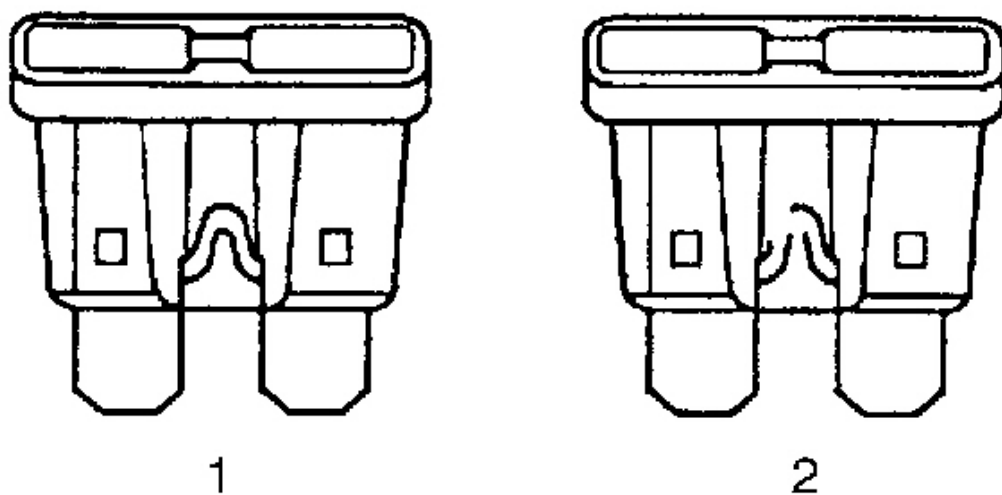


Fig. 2: Identifying Open Fuse Element
Courtesy of GENERAL MOTORS CORP.

The fuse is the most common method of an automotive wiring circuit protection. Whenever there is an excessive amount of current flowing through a circuit the fusible element will melt and create an open or incomplete circuit. Fuses are a one time protection device and must be replaced each time the circuit is overloaded. To determine if a fuse is open, remove the suspected fuse and examine if the element in the fuse is broken (2). If not broken (1), also check for continuity using a Digital Multimeter (DMM) or a continuity tester. If the element is broken or continuity is suspect, replace the fuse with one of equal current rating.

Fuse Types

Current Rating Amperes	Color
Auto Fuses, Mini Fuses	
2	Gray
3	Violet
5	Tan
7.5	Brown
10	Red
15	Blue
20	Yellow
25	White or Natural
30	Green
Maxi Fuses	
20	Yellow

30	Light Green
40	Orange or Amber
60	Blue
50	Red
J-Case Fuses	
20	Blue
30	Pink
40	Green
50	Red
60	Yellow

CIRCUIT PROTECTION - CIRCUIT BREAKERS

A circuit breaker is a protective device that is designed to open the circuit when a current load is in excess of the rated breaker capacity. If there is a short or other type of overload condition in the circuit, the excessive current will open the circuit between the circuit breaker terminals. Two types of circuit breakers are used.

Circuit Breaker

This type opens when excessive current passes through it for a period of time. It closes again after a few seconds, and if the cause of the high current is still present, it will open again. The circuit breaker will continue to cycle open and closed until the condition causing the high current is removed.

Positive Temperature Coefficient (PTC) Circuit Breaker

This type greatly increases its resistance when excessive current passes through it. The excessive current heats the PTC device, as the device heats its resistance increases. Eventually the resistance gets so high that the circuit is effectively open. Unlike the ordinary circuit breaker the PTC unit will not reset until the circuit is opened, by removing the voltage from its terminals. Once the voltage is removed the circuit breaker will re-close within a second or 2.

CIRCUIT PROTECTION - FUSIBLE LINKS

Special Tools

EL 39200: Digital Multimeter (DMM)

For equivalent regional tools, refer to **Special Tools** .

Fusible link is wire designed to melt and break continuity when excessive current is applied. It is often located between or near the battery and starter or electrical center. Use a continuity tester or a Digital Multimeter (DMM) at each end of the wire containing the fusible link in order to determine if it is broken. If broken, it must be replaced with fusible link of the same gauge size.

Repairing a Fusible Link

NOTE: Fusible links cut longer than 225 mm (approximately 9 in) will not provide sufficient overload protection.

WIRING REPAIRS

The Wiring Repairs section contains the following types of wiring repair information. Using these elements together will make wiring repair faster and easier:

- **Testing for Intermittent Conditions and Poor Connections**
- **Flat Wire Repairs**
- **GMLAN Wiring Repairs**
- **High Temperature Wiring Repairs**
- **Heated Oxygen Sensor Wiring Repairs**
- **Splicing Copper Wire Using Splice Sleeves**
- **Splicing Twisted or Shielded Cable**
- **Splicing Inline Harness Diodes**
- **SIR/SRS Wiring Repairs**

REPAIRING DAMAGED WIRE INSULATION

If the wire insulation has been chafed, or broken, enough to show the conductive portion of the wire, and the wire is not damaged, determine the length of insulation that needs to be repaired. If the repair is less than 280 mm (11 in), cut the wire within the damaged area. Than slide the appropriate heat shrink tubing (listed below) over the wire, and repair the wire by splicing the wires together. Refer to **Splicing Copper Wire Using Splice Sleeves**. Once the wire is spliced together slide heat shrink tubing over the damaged area and apply heat to seal the repaired wire.

If the wire is damaged, or the damaged area is larger than 280 mm (11 in), than replace the damaged wire by splicing in a new section of wire. Refer to **Splicing Copper Wire Using Splice Sleeves**.

GM Part Number	Diameter		Description	Color	Length	
	Metric	English			Metric	English
12355003	9.5 mm	0.375 in	Tubing, Shrink 3/8	Black	305 mm	12 in
12355005	12.7 mm	0.5 in	Tubing, Shrink 1/2	Black	305 mm	12 in
12355011	19.1 mm	0.75 in	Tubing, Shrink 3/4	Black	305 mm	12 in
12355008	25.4 mm	1.0 in	Tubing, Shrink 1.00	Black	305 mm	12 in

Wire Size Conversion

Metric Wire Sizes (mm 2)	AWG Sizes
0.13	26
0.21	24
0.32	22
0.52	20

0.83	18
1.31	16
2.09	14
3.31	12
5.27	10
8.37	8
13.3	6
21.2	4
33.6	2
53.5	1/0

FLAT WIRE REPAIRS

The flat wire within the flex wiring harness is not serviceable. If an open or short exists within the flex wiring harness the complete harness must be replaced.

GMLAN WIRING REPAIRS

Special Tools

- **EL-38125-10:** Splice Sleeve Crimping Tool
- **J 38125-5:** Ultra Torch Special Tool
- DuraSeal splice sleeves
- A wire stripping tool

For equivalent regional tools, refer to **Special Tools** .

The DuraSeal splice sleeves have the following 2 critical features:

- A special heat shrink sleeve environmentally seals the splice. The heat shrink sleeve contains a sealing adhesive inside.
- A cross hatched (knurled) core crimp provides necessary contact integrity for the sensitive, low energy circuits.

The GM Local Area Network (GMLAN) System requires special wiring repair procedures due to the sensitive nature of the circuitry. Follow the specific procedures and instructions when working on GMLAN connectors and terminals.

GMLAN Repairs

NOTE: When making a repair to any GMLAN network, the original wire length after the repair must be the same length as before the repair. If the network is a twisted pair, the twist must be maintained after the repair is completed.

GMLAN has 2 types of networks, low speed and high speed. Low speed GMLAN has a single wire and works at slow speeds. High speed GMLAN has 2 wires in a twisted pair and works at higher speeds. For more information on GMLAN, refer to **Data Link Communications Description and Operation** .

GMLAN Connector Terminal Repair

NOTE: **A terminated lead can be used to replace damaged connector terminals for both high speed and low speed GMLAN systems. When making a connector terminal repair on a GMLAN high speed system with twisted pair wires, do not untwist the wires more than necessary to make the repair.**

If the individual terminals are damaged on any GMLAN connection, use the appropriate connector repair procedure in order to repair the terminal. Refer to **Connector Repairs** for the appropriate connector repair procedure.

GMLAN Wire Repair

NOTE: **Refer to Wiring Repairs in order to determine the correct wire size for the circuit you are repairing. You must obtain this information in order to ensure circuit integrity.**

If any wire except the pigtail is damaged, repair the wire by splicing in a new section of wire of the same gauge size (0.5 mm, 0.8 mm, 1.0 mm etc.). Use the DuraSeal splice sleeves and **EL-38125-10**: tool. Use the following wiring repair procedures in order to ensure the integrity of the DuraSeal splice sleeves.

Splice Sleeve Color	Crimp Tool Nest Color	Wire Gauge mm ² / (AWG)
Salmon (Yellow-Pink) 12089189	Red (1)	0.035-0.8/(18-20)
Blue 12089190	Blue (2)	1-2/(14-16)
Yellow 12089191	Yellow (3)	3-5/(10-12)
Green 88988379	Red (1)	0.22-0.35/(22-26)

NOTE: **You must perform the following procedures in the listed order. Repeat the procedure if any wire strands are damaged. You must obtain a clean strip with all of the wire strands intact.**

1. Open the harness by removing any tape:
 - Use a sewing seam ripper, available from sewing supply stores, in order to cut open the harness in order to avoid wire insulation damage.
 - Use the DuraSeal splice sleeves on all types of insulation except tefzel and coaxial.
 - Do not use the crimp and DuraSeal splice sleeve to form a splice with more than 2 wires coming together.

2. Cut as little wire off the harness as possible. You may need the extra length of wire in order to change the location of a splice.

Adjust splice locations so that each splice is at least 40 mm (1.5 in) away from the other splices, harness branches, or connectors.

3. Strip the insulation:

- When adding a length of wire to the existing harness, use the same size wire as the original wire.
- Perform one of the following items in order to find the correct wire size:
 - Find the wire on the schematic and convert to regional wiring gauge size.
 - If you are unsure of the wire size, begin with the largest opening in the wire stripper and work down until achieving a clean strip of the insulation.
- Strip approximately 7.5 mm (0.313 in) of insulation from each wire to be spliced.
- Do not nick or cut any of the strands. Inspect the stripped wire for nicks or cut strands.
- If the wire is damaged, repeat this procedure after removing the damaged section.

4. Select the proper DuraSeal splice sleeve according to the wire size. Refer to the above table at the beginning of the repair procedure for the color coding of the DuraSeal splice sleeves and the crimp tool nests.

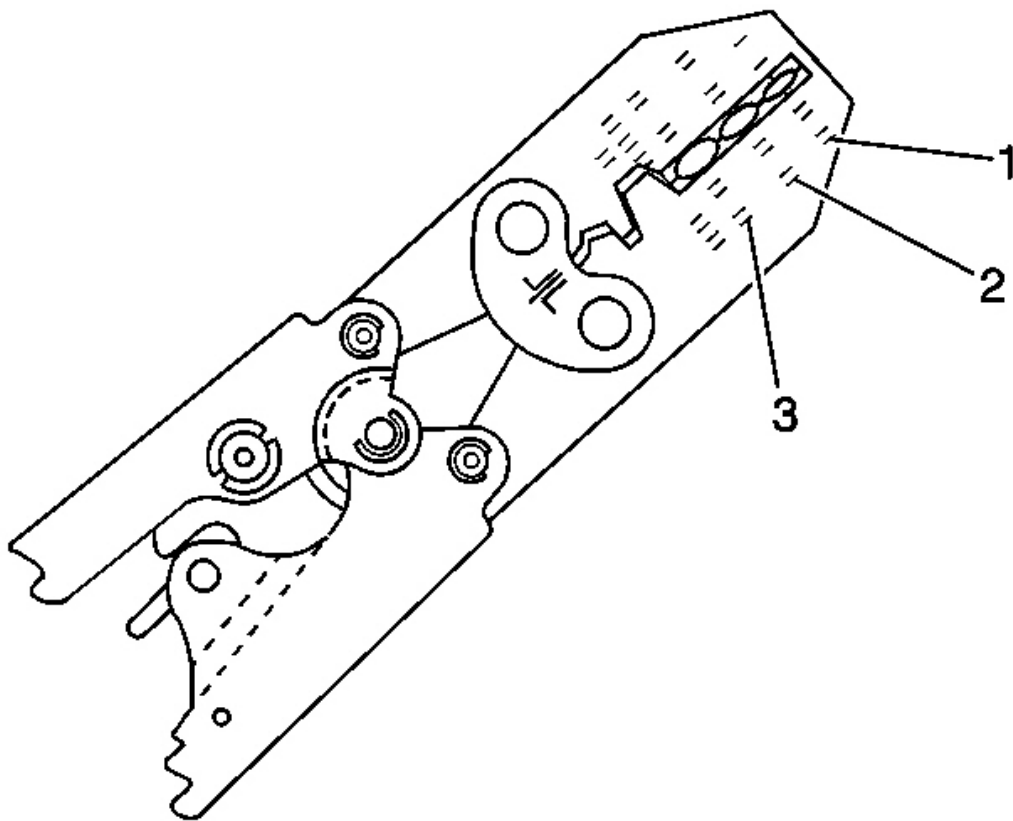


Fig. 3: Identifying Splice Crimp Tool Nests Terminal Identification
Courtesy of GENERAL MOTORS CORP.

5. Use the **EL-38125-10**: tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. The crimp tool has four nests, one for each color.

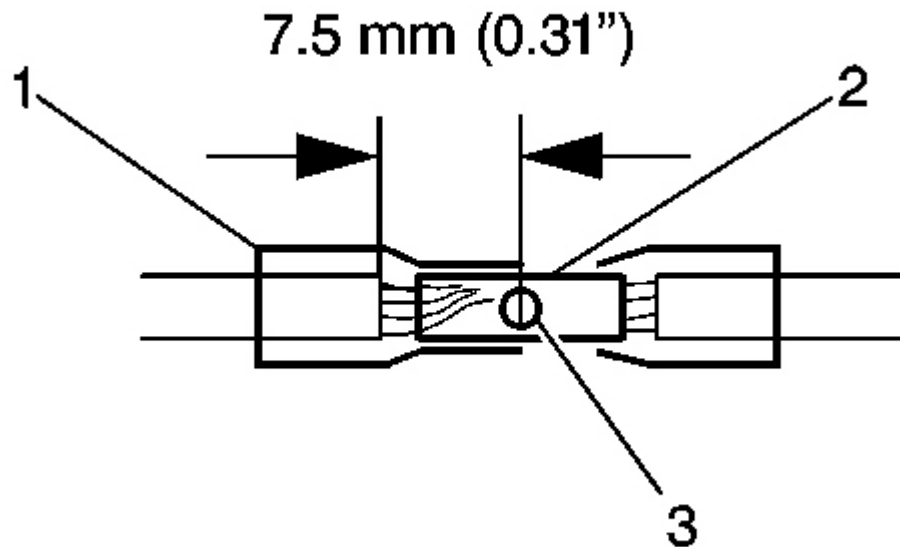


Fig. 4: Identifying Duraseal Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

6. Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.



Fig. 5: Identifying Crimped Duraseal Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

7. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop.

8. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 5 for the opposite end of the splice.



Fig. 6: Identifying Heated Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

9. Using the heat torch, apply heat to the crimped area of the barrel.
10. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

HIGH TEMPERATURE WIRING REPAIRS

Special Tools

- **EL-38125-10:** Splice Sleeve Crimping Tool
- **J 38125-5:** Ultra Torch
- DuraSeal splice sleeves, in order to repair the SIR/SRS wiring

For equivalent regional tools, refer to **Special Tools** .

High Temperature Wiring

Wiring that is exposed to high temperatures, 135°C (275°F) or higher, for prolonged periods of time may use materials i.e. wires, connectors, and shielding that has a higher heat rating than typical wiring. When making a repair in a high temperature area observe the following:

- Use high temperature bulk wire rated at 150°C (302°F) continuous temperature to replace any damaged wire.
- Replace any heat shielding that is removed.
- Cover any DuraSeal splice sleeves with SCT1 shrink tubing.

- After making a wiring repair, ensure that the location of the wiring is not moved closer to the heat source.

Identifying High Temperature Wiring

Wiring that is exposed to high temperature, 135°C (275°F) or higher, for prolonged periods of time need special considerations when making wiring repairs. Areas that may be exposed to higher temperatures can be identified by heat resistant materials that are being used in those areas. These materials may include heat reflective tape, moon tape, and high temperature shrink tubing. Also conduit and other protective coverings may be used. Because conduit or similar coverings are used throughout the vehicle regardless of the temperature, it may be necessary for the technician to determine if an area is exposed to excessive heat before making a wiring repair. Obvious areas of consideration would be any area located near the exhaust manifolds, catalytic converter, and exhaust pipes.

Items Required

- DuraSeal splice sleeves to crimp and seal connections
- High temperature SCT1 shrink tubing to protect the splice sleeves
- Terminated leads or pigtails
- The correct tools to remove the terminals from the connectors

Use high temperature bulk wire rated at 150°C (302°F) continuous temperature of the same or larger gauge size as the original wire when repair damage wire. Also replace any reflective tape that you remove during the repair.

High Temperature Wire Repair

NOTE: Refer to Wiring Repairs in order to determine the correct wire size for the circuit you are repairing. You must obtain this information in order to ensure circuit integrity.

If any wire except the pigtail is damaged, repair the wire by splicing in a new section of wire rated at 150°C (302°F) continuous temperature rating of the same gauge size (0.5 mm, 0.8 mm, 1.0 mm etc.). Use the DuraSeal splice sleeves and the **EL-38125-10**: tool and then encapsulate the splice sleeve using the high temperature SCT1 shrink tubing. Use the following wiring repair procedures in order to ensure the integrity of the sealed splice.

Splice Sleeve Color	Crimp Tool Nest Color	Wire Gauge mm ² / (AWG)
Salmon (Yellow-Pink) 12089189	Red (1)	0.035-0.8/(18-20)
Blue 12089190	Blue (2)	1-2/(14-16)
Yellow 12089191	Yellow (3)	3-5/(10-12)
Green 88988379	Red (1)	0.22-0.35/(22-26)

NOTE: **You must perform the following procedures in the listed order. Repeat the procedure if any wire strands are damaged. You must obtain a clean strip with all of the wire strands intact.**

1. Open the harness by removing any tape:
 - Use a sewing seam ripper, available from sewing supply stores, in order to cut open the harness in order to avoid wire insulation damage.
 - Use the DuraSeal splice sleeves on all types of insulation except tefzel and coaxial.
 - Do not use the crimp and DuraSeal splice sleeve to form a splice with more than 2 wires coming together.
2. Cut as little wire off the harness as possible. You may need the extra length of wire in order to change the location of a splice.

Adjust splice locations so that each splice is at least 40 mm (1.5 in) away from the other splices, harness branches, or connectors.

3. Strip the insulation:
 - When adding a length of wire to the existing harness, use the same size wire as the original wire.
 - Perform one of the following items in order to find the correct wire size:
 - Find the wire on the schematic and convert to regional wiring gauge size.
 - If you are unsure of the wire size, begin with the largest opening in the wire stripper and work down until achieving a clean strip of the insulation.
 - Strip approximately 7.5 mm (0.313 in) of insulation from each wire to be spliced.
 - Do not nick or cut any of the strands. Inspect the stripped wire for nicks or cut strands.
 - If the wire is damaged, repeat this procedure after removing the damaged section.
4. Slide a section of high temperature SCT1 shrink tubing down the length of wire to be spliced. Ensure that the shrink tubing will not interfere with the splice procedure.
5. Select the proper DuraSeal splice sleeve according to the wire size. Refer to the above table at the beginning of the repair procedure for the color coding of the DuraSeal splice sleeves and the crimp tool nests.

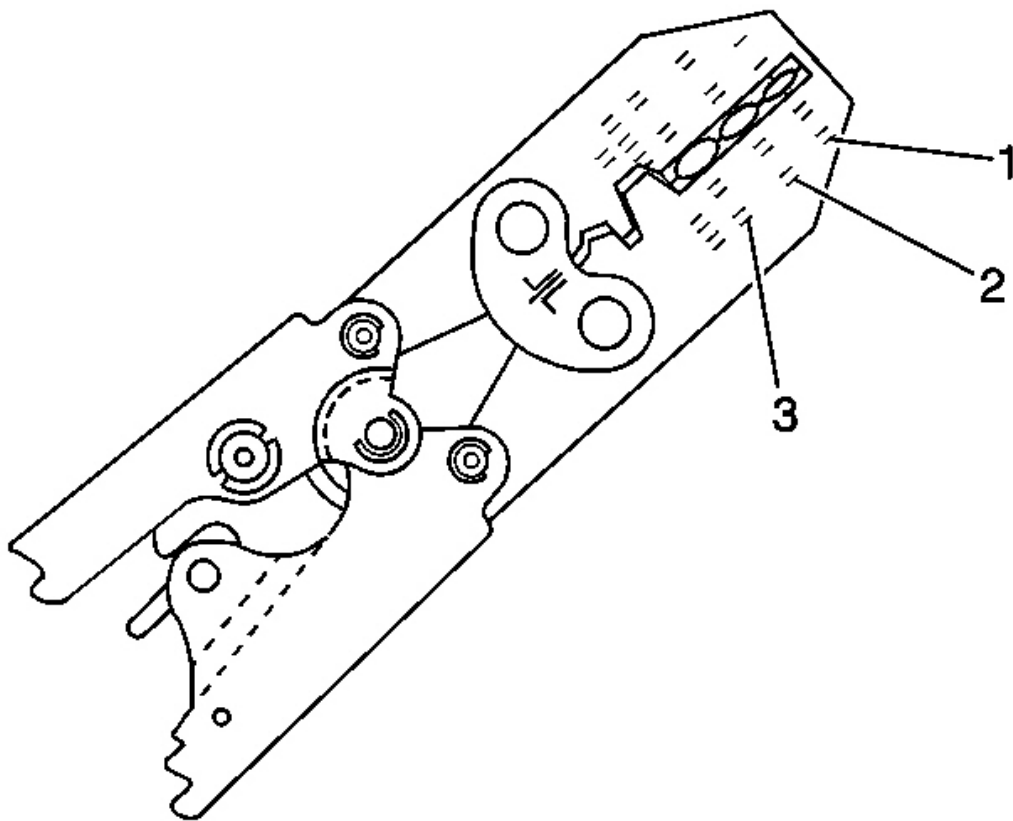


Fig. 7: Identifying Splice Crimp Tool Nests Terminal Identification
Courtesy of GENERAL MOTORS CORP.

6. Use the **EL-38125-10**: tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. The crimp tool has four nests, one for each color.

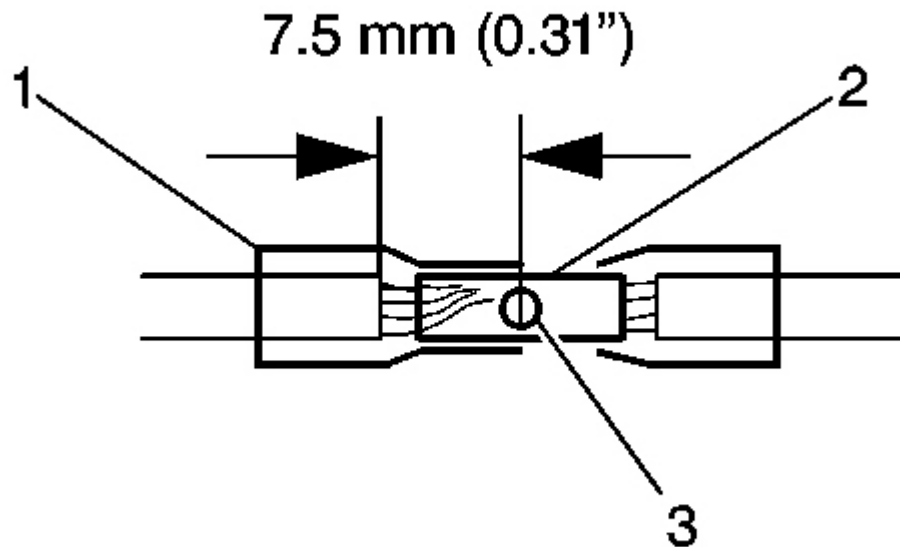


Fig. 8: Identifying Duraseal Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

7. Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.



Fig. 9: Identifying Crimped Duraseal Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

8. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop.

9. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 5 for the opposite end of the splice.



Fig. 10: Identifying Heated Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

10. Using the heat torch, apply heat to the crimped area of the barrel.
11. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

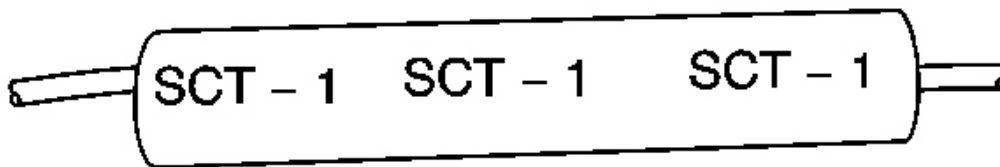


Fig. 11: View Of High Temperature SCT1 Shrink Tube
Courtesy of GENERAL MOTORS CORP.

12. Center the high temperature SCT1 shrink tube over the DuraSeal splice sleeve.
13. Using the heat torch, apply heat to the high temperature heat shrink tubing.
14. Gradually move the heat from the center to the open end of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is

achieved.

15. Replace any reflective tape and clips that may have been removed during the repair.

HEATED OXYGEN SENSOR WIRING REPAIRS

CAUTION: Do not solder repairs under any circumstances as this could result in the air reference being obstructed.

If the heated oxygen sensor pigtail wiring, connector, or terminal is damaged the entire oxygen sensor assembly must be replaced. Do not attempt to repair the wiring, connector, or terminals. In order for the sensor to function properly it must have a clean air reference. This clean air reference is obtained by way of the oxygen sensor signal and heater wires. Any attempt to repair the wires, connectors or terminals could result in the obstruction of the air reference and degrade oxygen sensor performance.

The following guidelines should be used when servicing the heated oxygen sensor:

- Do not apply contact cleaner or other materials to the sensor or vehicle harness connectors. These materials may get into the sensor, causing poor performance. Also, the sensor pigtail and harness wires must not be damaged in such a way that the wires inside are exposed. This could provide a path for foreign materials to enter the sensor and cause performance problems.
- Neither the sensor nor vehicle lead wires should be bent sharply or kinked. Sharp bends, kinks, etc., could block the reference air path through the lead wire.
- Do not remove or defeat the oxygen sensor ground wire (where applicable). Vehicles that utilize the ground wire sensor may rely on this ground as the only ground contact to the sensor. Removal of the ground wire will also cause poor engine performance.
- To prevent damage due to water intrusion, be sure that the peripheral seal remains intact on the vehicle harness connector.

SPLICING COPPER WIRE USING SPLICE SLEEVES

Special Tools

- **EL-38125-10:** Splice Sleeve Crimping Tool
- **J 38125-5:** Ultra Torch
- DuraSeal splice sleeves, in order to repair the SIR/SRS wiring

For equivalent regional tools, refer to **Special Tools**.

NOTE: Use only DuraSeal splice sleeves. Other splice sleeves may not protect the splice from moisture or provide a good electrical connection.

Use DuraSeal splice sleeves to form a one-to-one splice on all types of insulation except tefzel and coaxial. Use DuraSeal splice sleeves where there are special requirements such as moisture sealing. Follow the instructions below in order to splice copper wire using DuraSeal splice sleeves.

Splice Sleeve Color	Crimp Tool Nest Color	Wire Gauge mm ² / (AWG)
Salmon (Yellow-Pink) 12089189	Red (1)	0.35-0.8/(18-20)
Blue 12089190	Blue (2)	1-2/(14-16)
Yellow 12089191	Yellow (3)	3-5/(10-12)
Green 88988379	Red (1)	0.22-0.35/(22-26)

NOTE: You must perform the following procedures in the listed order. Repeat the procedure if any wire strands are damaged. You must obtain a clean strip with all of the wire strands intact.

1. Open the harness by removing any tape:
 - Use a sewing seam ripper, available from sewing supply stores, in order to cut open the harness in order to avoid wire insulation damage.
 - Use the DuraSeal splice sleeves on all types of insulation except tefzel and coaxial.
 - Do not use the crimp and DuraSeal splice sleeve to form a splice with more than 2 wires coming together.
2. Cut as little wire off the harness as possible. You may need the extra length of wire in order to change the location of a splice.

Adjust splice locations so that each splice is at least 40 mm (1.5 in) away from the other splices, harness branches, or connectors.

3. Strip the insulation:
 - When adding a length of wire to the existing harness, use the same size wire as the original wire.
 - Perform one of the following items in order to find the correct wire size:
 - Find the wire on the schematic and convert to regional wiring gauge size.
 - If you are unsure of the wire size, begin with the largest opening in the wire stripper and work down until achieving a clean strip of the insulation.
 - Strip approximately 7.5 mm (0.313 in) of insulation from each wire to be spliced.
 - Do not nick or cut any of the strands. Inspect the stripped wire for nicks or cut strands.
 - If the wire is damaged, repeat this procedure after removing the damaged section.
4. Select the proper DuraSeal splice sleeve according to the wire size. Refer to the above table at the beginning of the repair procedure for the color coding of the DuraSeal splice sleeves and the crimp tool nests.

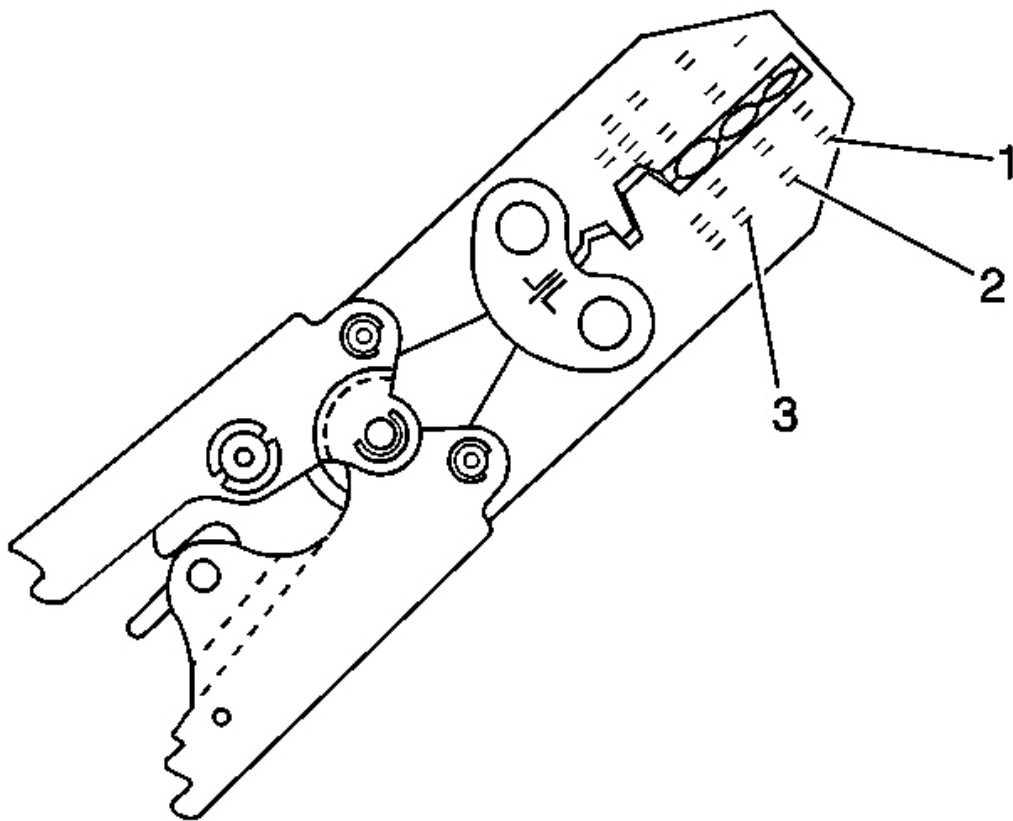


Fig. 12: Identifying Splice Crimp Tool Nests Terminal Identification
Courtesy of GENERAL MOTORS CORP.

5. Use the **EL-38125-10**: tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. The crimp tool has four nests, one for each color.

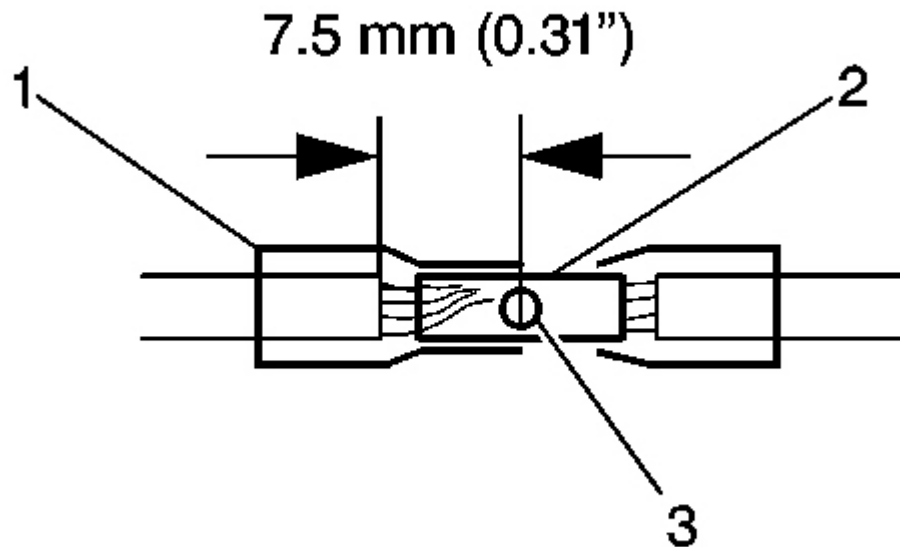


Fig. 13: Identifying Duraseal Splice Sleeve
 Courtesy of GENERAL MOTORS CORP.

6. Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.



Fig. 14: Identifying Crimped Duraseal Splice Sleeve
 Courtesy of GENERAL MOTORS CORP.

7. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop.

8. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 5 for the opposite end of the splice.



Fig. 15: Identifying Heated Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

9. Using the heat torch, apply heat to the crimped area of the barrel.
10. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

SPLICING TWISTED OR SHIELDED CABLE

Twisted/shielded cable is used in order to protect wiring from electrical noise. Two-conductor cable of this construction is used between the radio and the Delco-Bose® speaker/amplifier units and other applications where low level, sensitive signals must be carried. Follow the instructions below in order to repair the twisted/shielded cable.

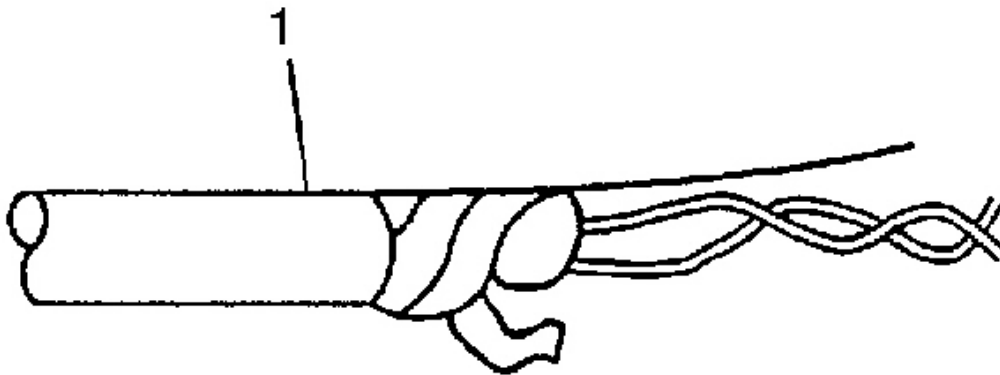


Fig. 16: View Of Outer Wiring Jacket
Courtesy of GENERAL MOTORS CORP.

1. Remove the outer jacket (1). Use care not to cut into the drain wire of the mylar tape.
2. Unwrap the tape. Do not remove the tape. Use the tape in order to rewrap the twisted conductors after the splice is made.



Fig. 17: Preparing The Splice
Courtesy of GENERAL MOTORS CORP.

3. Prepare the splice. Untwist the conductors and follow the instructions for **Splicing Copper Wire Using Splice Sleeves**. Staggering the splices by 65 mm (2.5 in) is recommended.

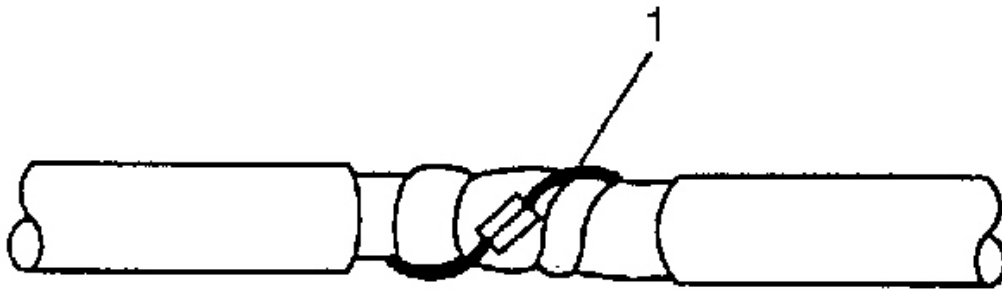


Fig. 18: Identifying Diode On Wire
 Courtesy of GENERAL MOTORS CORP.

NOTE: **Apply the mylar tape with the aluminum side inward. This ensures good electrical contact with the drain wire.**

4. Re-assemble the cable.
 - Rewrap the conductors with the mylar tape. If the mylar tape is damaged, use 3M product AL-36FR to replace the damaged mylar tape.
 - Use caution not to wrap the drain wire in the tape (1).
 - Follow the splicing instructions for copper wire and splice the drain wire.
 - Wrap the drain wire around the conductors and tape with electrical tape to replace the outer insulation.



Fig. 19: View Of Repaired Wire Covered With Electrical Tape
 Courtesy of GENERAL MOTORS CORP.

5. Tape over the entire cable. Use a winding motion when you apply the tape.

SPLICING INLINE HARNESS DIODES

Many vehicle electrical systems use a diode to isolate circuits and protect the components from voltage spikes. When installing a new diode use the following procedure.

1. Open the harness.
 - If the harness is taped, remove the tape.
 - To avoid wiring insulation damage, use a sewing seam ripper (available from sewing supply stores) in order to cut open the harness.
 - If the harness has a black plastic conduit, pull out the diode.
2. If the diode is taped to the harness, remove all of the tape.
3. Check and record the current flow direction and orientation of diode.
4. Remove the inoperative diode from the harness with a suitable soldering tool.

NOTE: **If the diode is located next to a connector terminal remove the terminal(s) from the connector to prevent damage from the soldering tool.**

5. Carefully strip away a section of insulation next to the old soldered portion of the wire(s). Do not remove any more than is needed to attach the new diode.
6. Check current flow direction of the new diode, being sure to install the diode with correct bias. Reference the appropriate service manual wiring schematic to obtain the correct diode installation position.
7. Attach the new diode to the wire(s) using 60/40 rosin core solder. Before soldering attach some heat sinks (aluminum alligator clips) across the diode wire ends to protect the diode from excessive heat. Follow the manufacturer's instruction for the soldering equipment.
8. Reinstall terminal(s) into the connector body if previously removed.

NOTE: **To prevent shorts to ground and water intrusion, completely cover all exposed wire and diode attachment points with tape.**

9. Tape the diode to the harness or connector using electrical tape.

SIR/SRS WIRING REPAIRS

Special Tools

- **EL-38125-10:** Splice Sleeve Crimping Tool
- **J 38125-5:** Ultra Torch
- DuraSeal splice sleeves, in order to repair the SIR/SRS wiring

For equivalent regional tools, refer to **Special Tools** .

The DuraSeal splice sleeves have the following 2 critical features:

- A special heat shrink sleeve environmentally seals the splice. The heat shrink sleeve contains a sealing

adhesive inside.

- A cross hatched (knurled) core crimp provides the necessary low resistance contact integrity for these sensitive, low energy circuits.

The Supplemental Inflatable Restraint (SIR) System/Supplemental Restraint System (SRS) requires special wiring repair procedures due to the sensitive nature of the circuitry. Follow the specific procedures and instructions when working with the SIR/SRS, and the wiring components, such as connectors and terminals.

SIR/SRS Connector Repair (Plastic Body and Terminal Metal Pin)

NOTE: **Do not use the terminals in the kit in order to replace damaged SIR/SRS system terminals. Use either an SIR/SRS pigtail or a terminated lead from the SIR Repair Kit Tray.**

The terminals in the SIR/SRS system are made with a special plating. This plating provides the necessary contact integrity for the sensitive, low energy circuits.

Pigtail repair packs are available for SIR/SRS connectors with eight or less terminals. Only the connector body is available for connectors with more than eight terminals. Terminated leads can be used to replace damaged terminals when replacing the connector body.

SIR/SRS Component Wire Pigtail Repair

NOTE: **Do not make wire, connector, or terminal repairs on components with wire pigtails.**

A wire pigtail is a wire or wires attached directly to the device, not by a connector. If a wiring pigtail is damaged, you must replace the entire component, with pigtail. The inflatable restraint steering wheel module coil is an example of a pigtail component.

SIR/SRS Wire Repair

NOTE: **Refer to Wiring Repairs in order to determine the correct wire size for the circuit you are repairing. You must obtain this information in order to ensure circuit integrity.**

If any wire except the pigtail is damaged, repair the wire by splicing in a new section of wire of the same gauge size (0.5 mm, 0.8 mm, 1.0 mm etc.). Use the DuraSeal splice sleeves and **EL-38125-10**: tool. Use the following wiring repair procedures in order to ensure the integrity of the DuraSeal splice sleeves.

Splice Sleeve Color	Crimp Tool Nest Color	Wire Gauge mm ² / (AWG)
Salmon (Yellow-Pink) 12089189	Red (1)	0.035-0.8/(18-20)
Blue 12089190	Blue (2)	1-2/(14-16)
Yellow		

12089191	Yellow (3)	3-5/(10-12)
Green 88988379	Red (1)	0.22-0.35/(22-26)

NOTE: You must perform the following procedures in the listed order. Repeat the procedure if any wire strands are damaged. You must obtain a clean strip with all of the wire strands intact.

1. Open the harness by removing any tape:
 - Use a sewing seam ripper, available from sewing supply stores, in order to cut open the harness in order to avoid wire insulation damage.
 - Use the DuraSeal splice sleeves on all types of insulation except tefzel and coaxial.
 - Do not use the crimp and DuraSeal splice sleeve to form a splice with more than 2 wires coming together.
2. Cut as little wire off the harness as possible. You may need the extra length of wire in order to change the location of a splice.

Adjust splice locations so that each splice is at least 40 mm (1.5 in) away from the other splices, harness branches, or connectors.

3. Strip the insulation:
 - When adding a length of wire to the existing harness, use the same size wire as the original wire.
 - Perform one of the following items in order to find the correct wire size:
 - Find the wire on the schematic and convert to regional wiring gauge size.
 - If you are unsure of the wire size, begin with the largest opening in the wire stripper and work down until achieving a clean strip of the insulation.
 - Strip approximately 7.5 mm (0.313 in) of insulation from each wire to be spliced.
 - Do not nick or cut any of the strands. Inspect the stripped wire for nicks or cut strands.
 - If the wire is damaged, repeat this procedure after removing the damaged section.
4. Select the proper DuraSeal splice sleeve according to the wire size. Refer to the above table at the beginning of the repair procedure for the color coding of the DuraSeal splice sleeves and the crimp tool nests.

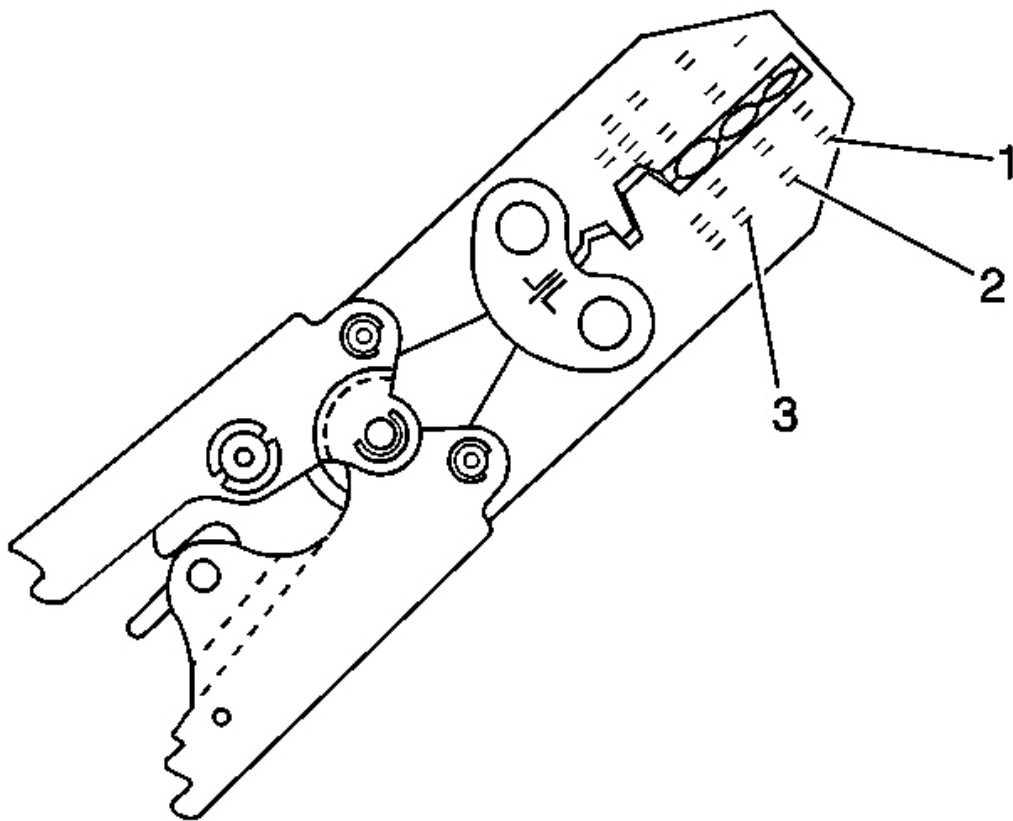


Fig. 20: Identifying Splice Crimp Tool Nests Terminal Identification
Courtesy of GENERAL MOTORS CORP.

5. Use the **EL-38125-10**: tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. The crimp tool has four nests, one for each color.

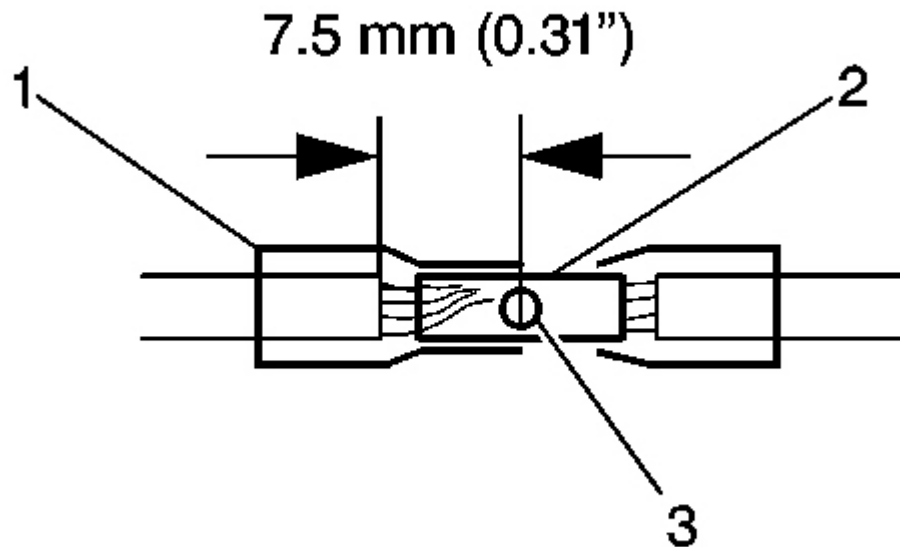


Fig. 21: Identifying Duraseal Splice Sleeve
 Courtesy of GENERAL MOTORS CORP.

6. Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.



Fig. 22: Identifying Crimped Duraseal Splice Sleeve
 Courtesy of GENERAL MOTORS CORP.

7. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop.

8. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 5 for the opposite end of the splice.



Fig. 23: Identifying Heated Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

9. Using the heat torch, apply heat to the crimped area of the barrel.
10. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

Connector Position Assurance (CPA)

The connector position assurance (CPA) is a small plastic insert that fits through the locking tabs of a connector. CPAs are used in all SIR System connectors and also in some connectors of other systems. The CPA ensures that the connector halves cannot vibrate apart. You must have the CPA in place in order to ensure good contact between the mating terminals of a connection.

Terminal Position Assurance (TPA)

The terminal position assurance (TPA) insert resembles the plastic combs used in the control module connectors. The TPA keeps the terminal securely seated in the connector body. Do not remove the TPA from the connector body unless you remove a terminal for replacement.

CONNECTOR REPAIRS

Connector Repairs contains a list of all connector repairs. The connector repairs are listed by the connector manufacturer and then by connector type. If the technician cannot identify the manufacturer of the connector, refer to Identifying Connectors below. Knowing the connector manufacturer will assist in finding the correct connector repair from the following list:

- **Connector Position Assurance Locks**

- **Terminal Position Assurance Locks**
- **AFL/EPC Connectors**
- **Bosch Connectors (BSK)** or **Bosch Connectors (0.64)** or **Bosch Connectors (2.8 JPT)** or **Bosch Connectors (ECM)**
- **Delphi Connectors (Weather Pack)** or **Delphi Connectors (Push To Seat)** or **Delphi Connectors (Pull To Seat)** or **Delphi Connectors (Micro-Pack 100W)** or **Delphi Connectors (Micro .64)** or **Delphi Connectors (12-Way)** or **Delphi Connectors (Steering Gear)**
- **FCI Connectors (Lever Lock)** or **FCI Connectors (SIR)**
- **FEP Connectors (Steering Gear)**
- **JST Connectors**
- **Kostal Connectors (Glow Plug Control Module)** or **Kostal Connectors (Transmission)**
- **Molex Connectors**
- **Sumitomo Connectors**
- **Tyco/AMP Connectors (CM 42-Way)** or **Tyco/AMP Connectors (Sensor)** or **Tyco/AMP Connectors (0.25 Cap)** or **Tyco/AMP Connectors (43-Way)** or **Tyco/AMP Connectors (Door Module)**
- **Yazaki Connectors (2-Way)** or **Yazaki Connectors (16-Way)**
- **Repairing Connector Terminals**

Connector Anatomy

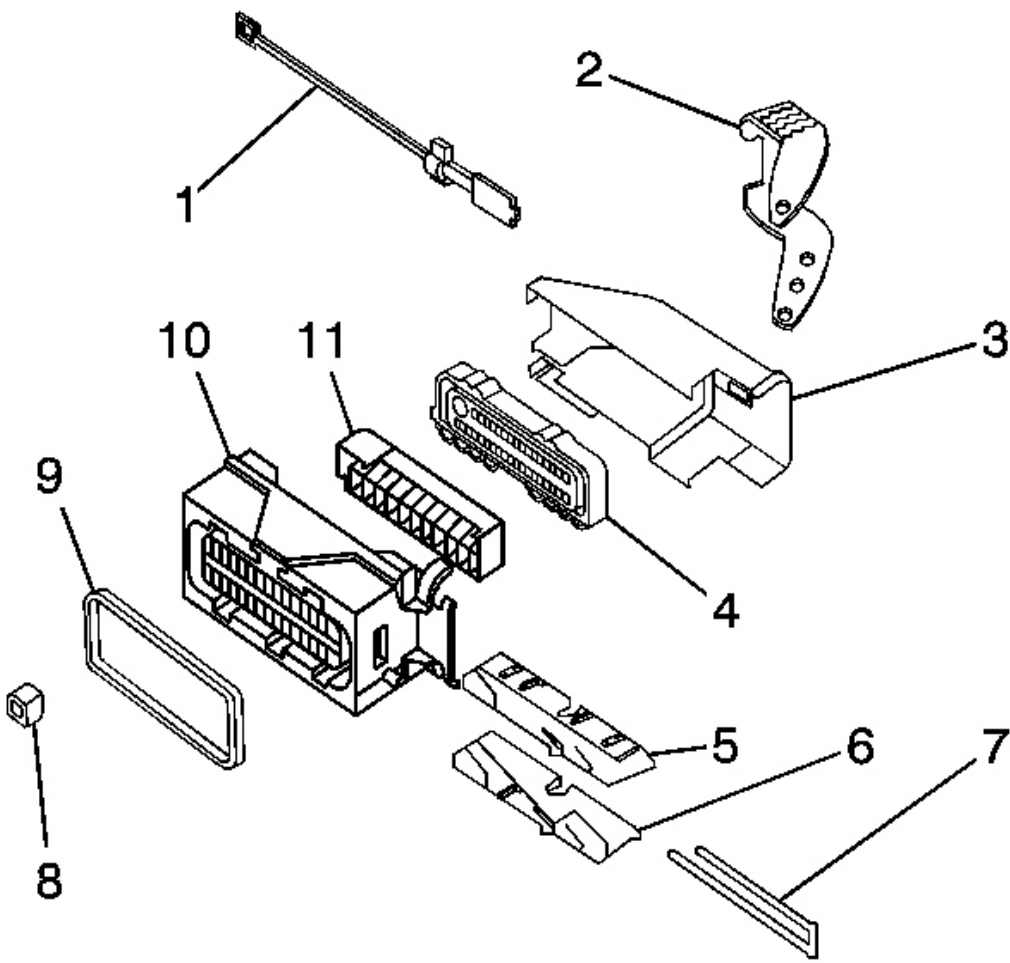


Fig. 24: Connector Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Connector Positive Assurance (CPA)
2	Assist Lever
3	Wire Dress Cover
4	Seal Strain/Relief
5	Slide Left Hand
6	Slide Right Hand
7	Terminal Positive Assurance (TPA)
8	Terminal Positive Assurance (TPA)

9	Connector Seal
10	Connector Housing
11	Inner Connector

Identifying Connectors

Knowing the connector manufacturer is helpful when trying to locating the correct connector repair procedure. There are many different connector designs used on GM vehicles and it is sometimes difficult to identify the connector manufacturer. The information in this document should help with the identification of connector manufactures.

The following connector manufacturers make most of the connectors found in GM vehicles:

- AFL/EPC (Alcoa Fujikura Ltd./Engineered Plastics Components)
- Bosch
- Delphi
- FCI (Framatome Connectors International)
- JAE (Japan Aviation Electronics)
- JST (Japan Solderless Terminals)
- Kostel
- Molex
- Sumitomo
- Tyco/AMP
- Yazaki

Identifying the manufacturer of a connector is often difficult. When trying to determine the manufacturer of a connector, look for specific identifying marks that are unique to that connector supplier. Most of these identify marks are hard to find or see. Check the connector carefully and refer to the information below for pictures and descriptions of connector identification markings.

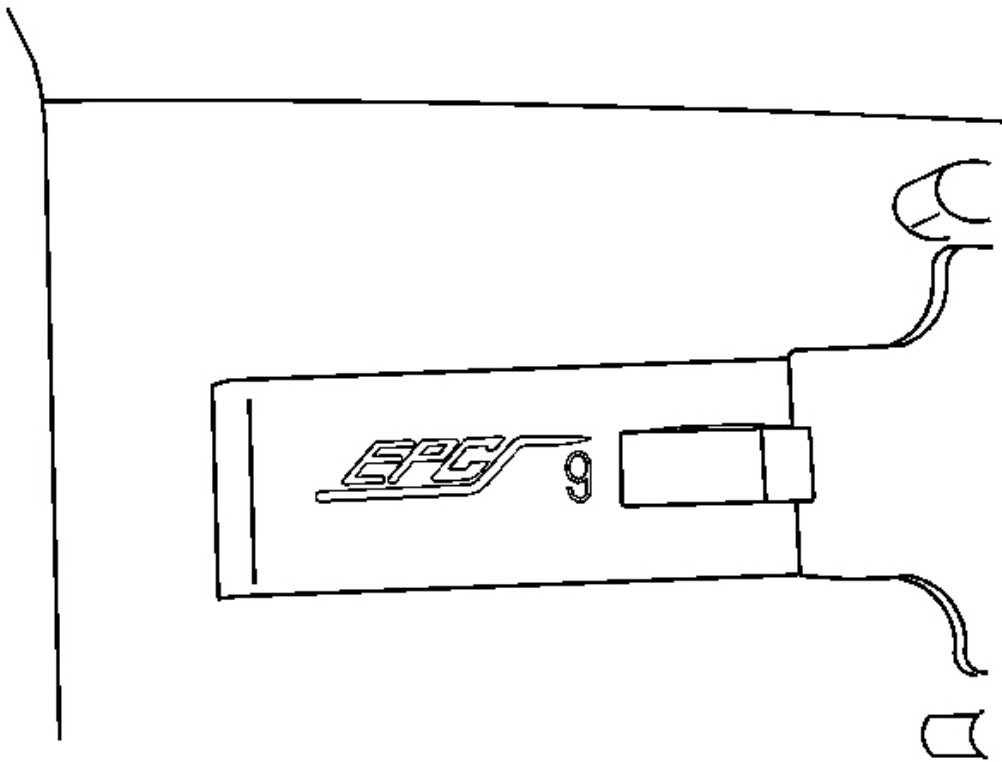


Fig. 25: View Of EPC Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- Most of AFLs connectors have EPC on their connector body. Some of the smaller connectors will not have any markings on them.

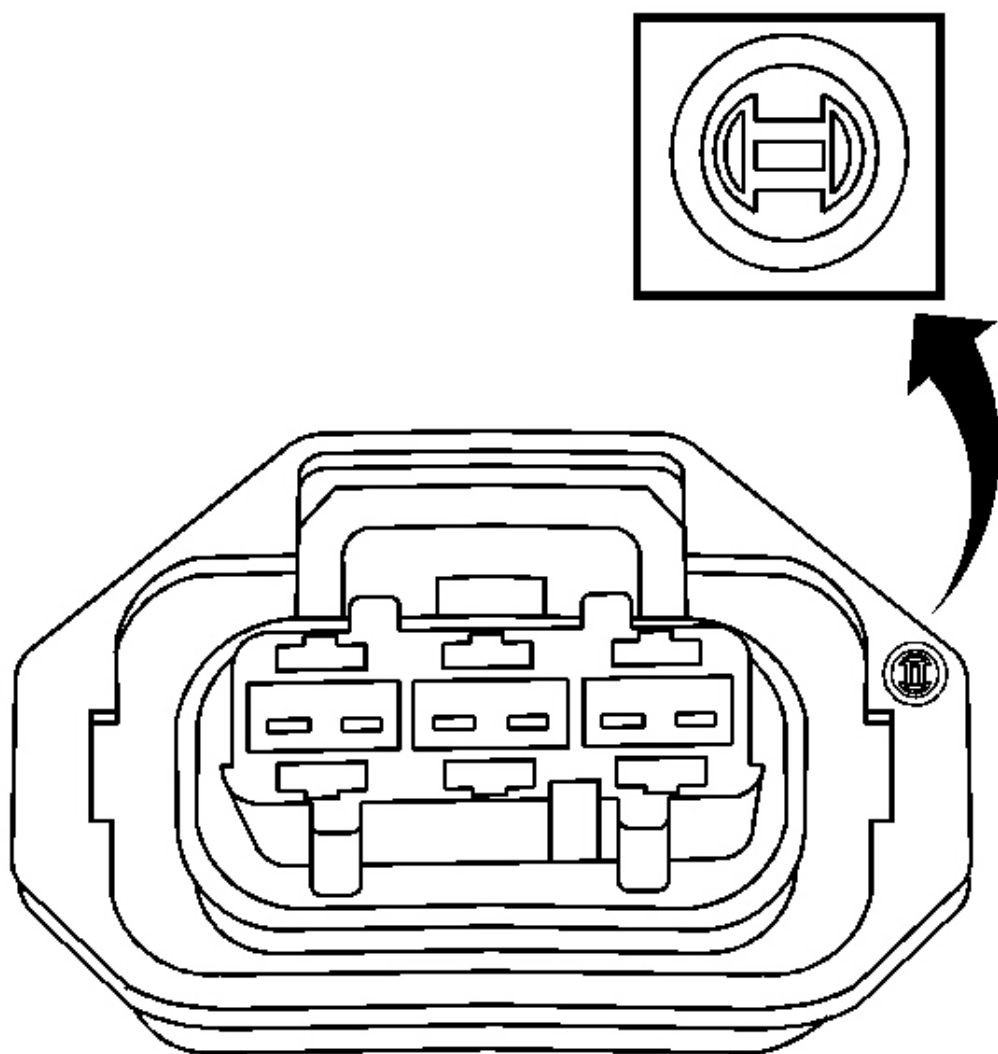


Fig. 26: View Of Bosch Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- In some cases Bosch will actually be printed on the connector. If Bosch does not appear on the connector, look for the Bosch logo. The Bosch logo is a circle with a blunted arrow inside. This logo can appear anywhere on the connector and is often very small.

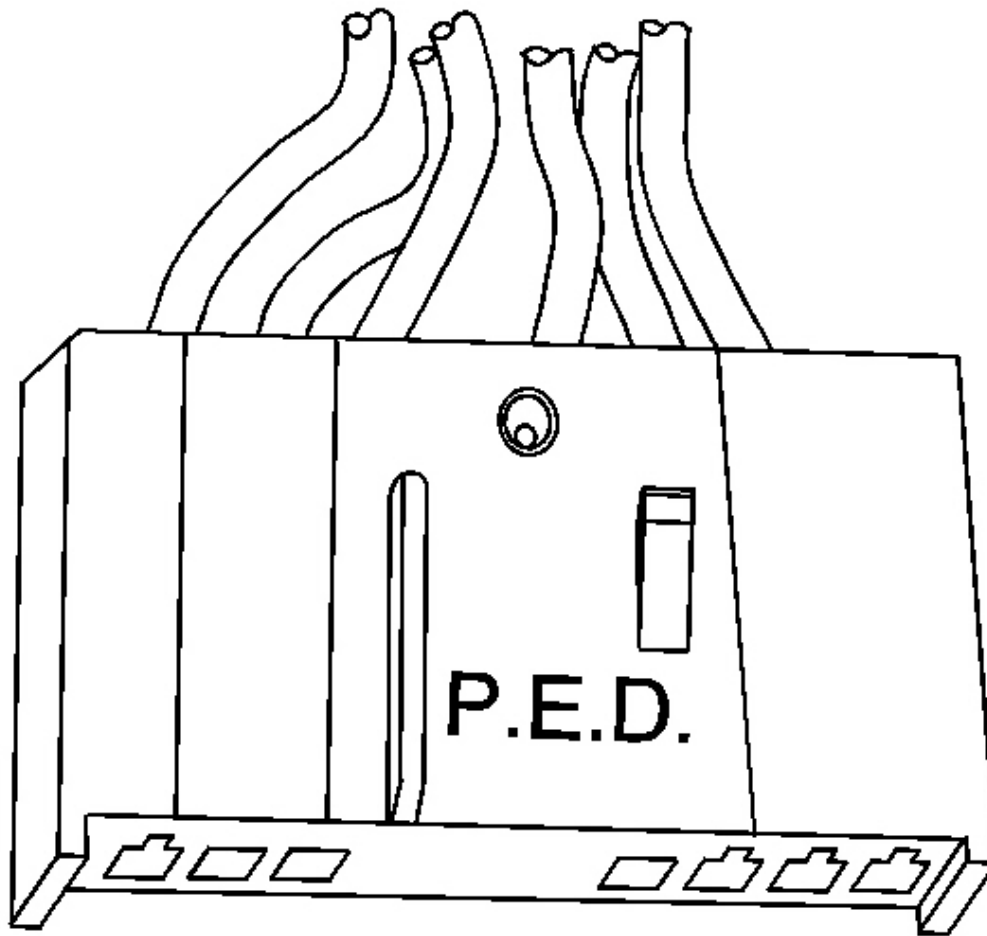


Fig. 27: View Of PED Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- In some cases Delphi will actually be printed on the connector. If Delphi is not printed on the connector, look for PED. In both cases there is no specific orientation for Delphi or PED and they can appear anywhere on the connector.

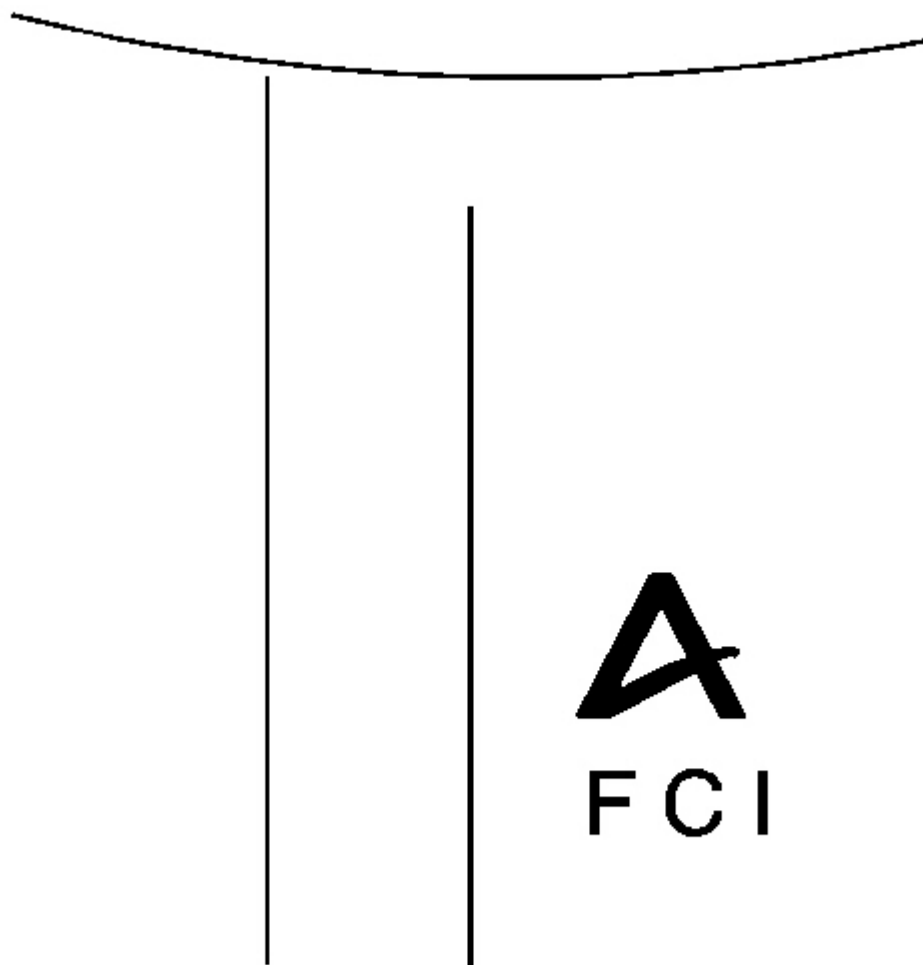


Fig. 28: View Of FCI Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- FCI connectors may have the FCI logo on their connectors. The logo is the letters FCI with an "A" above it.

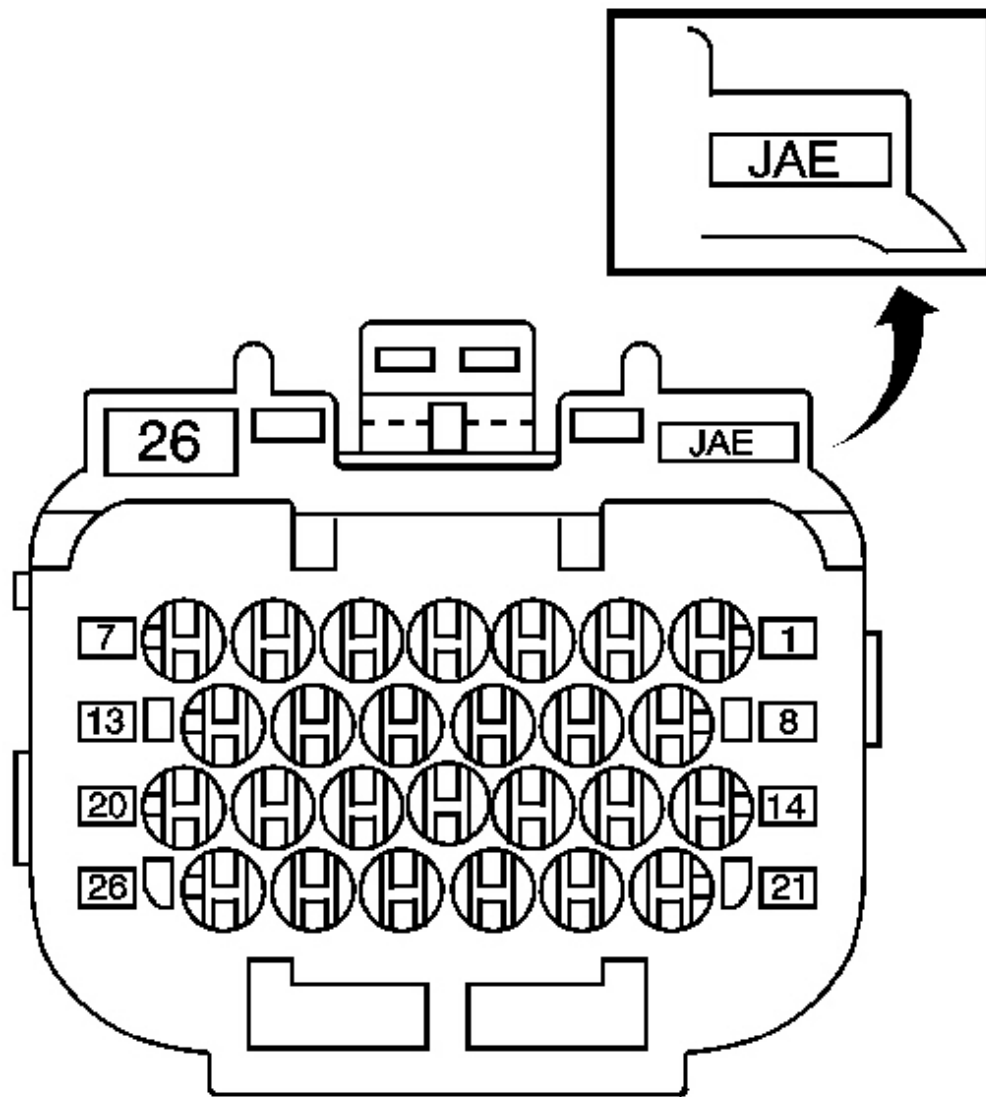


Fig. 29: View Of JAF Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- JAE connector have JAE in small letters on their connectors.

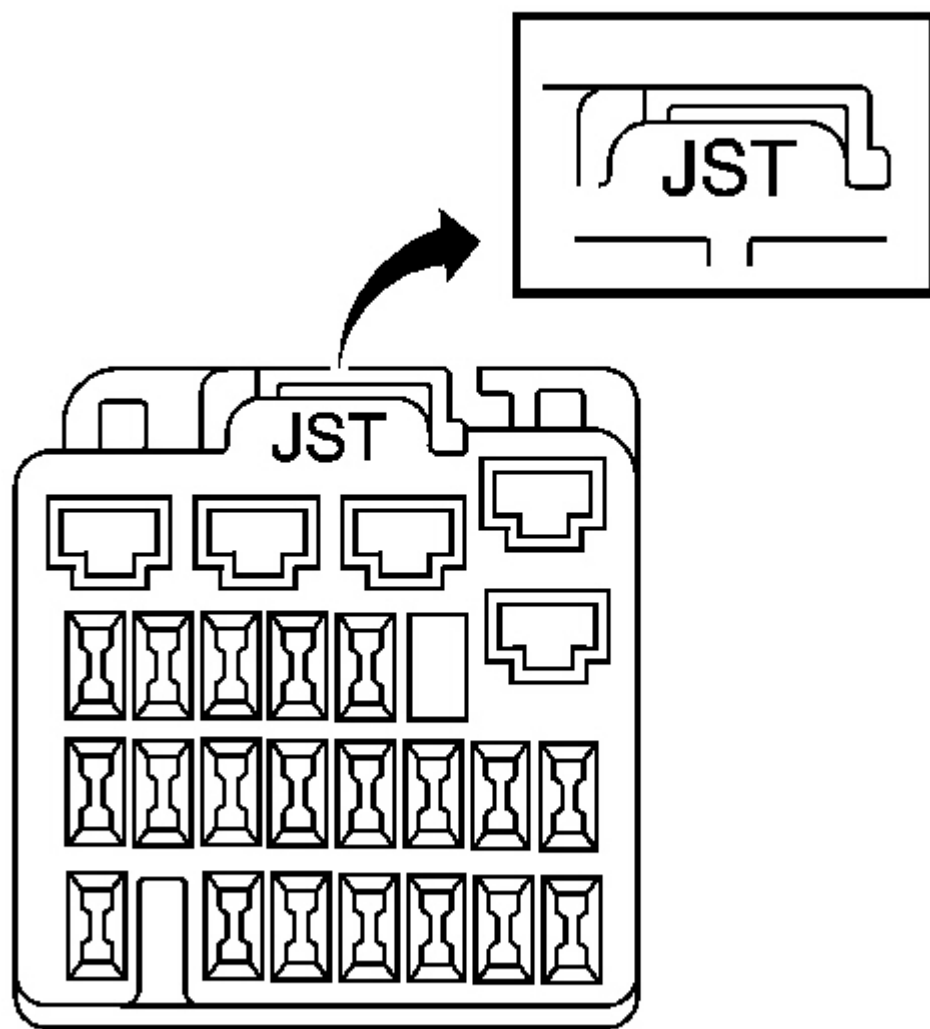


Fig. 30: View Of JST Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- JST connectors have JST in small letters on their connectors, similar to that above. The location of the logo will vary with the connector size and style.

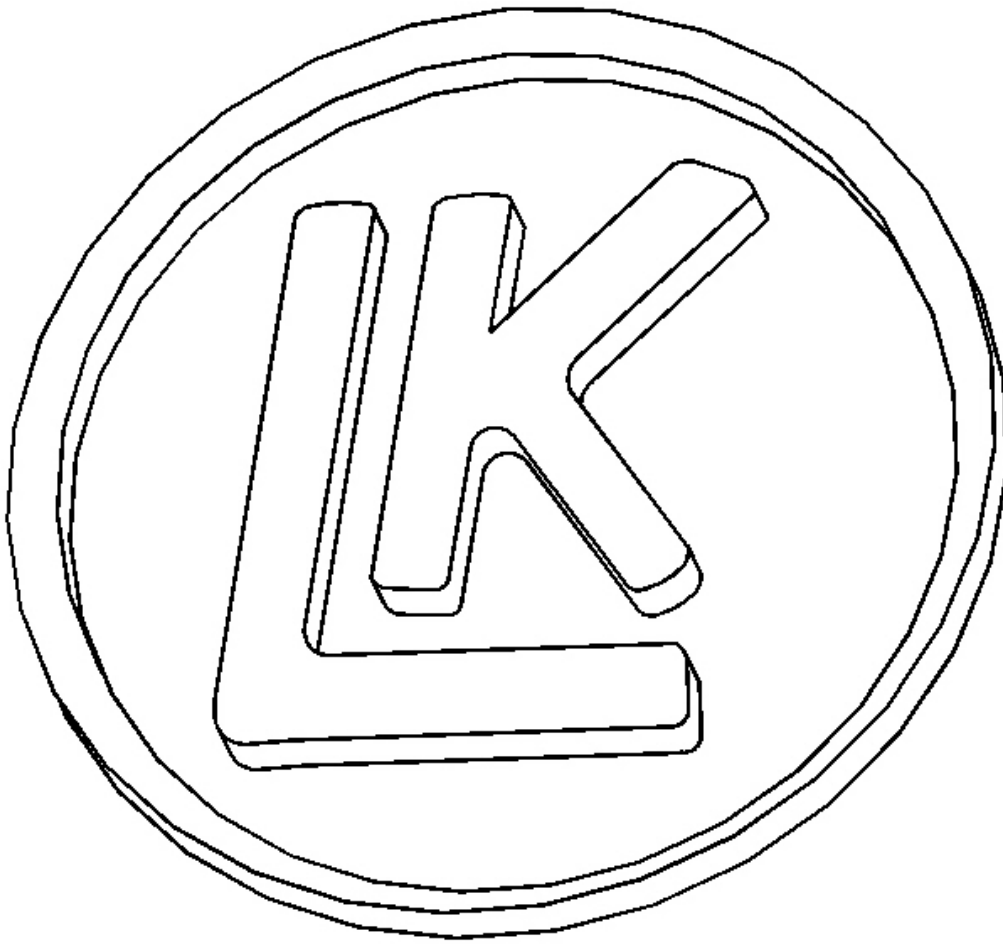


Fig. 31: View Of Kostel Connector Identifier
Courtesy of GENERAL MOTORS CORP.

- Kostel has an "LK" with a circle around it. These connector are usually used as a transmissions connection.

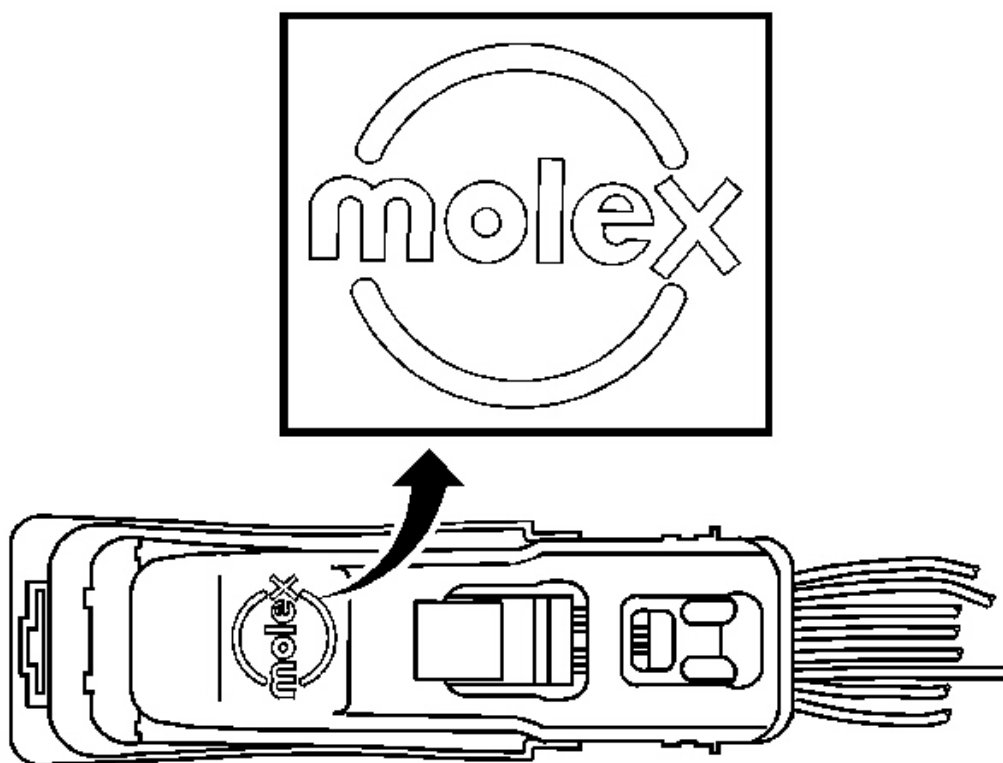


Fig. 32: View Of Molex Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

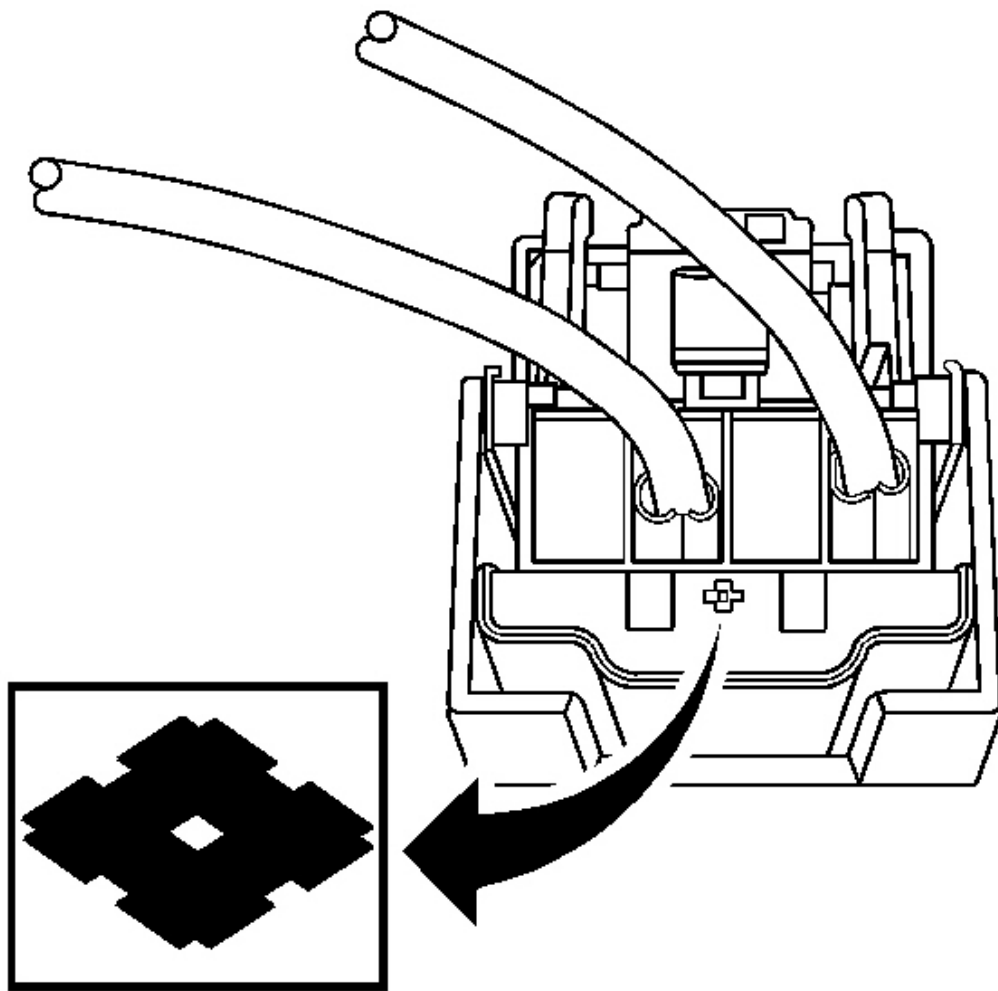


Fig. 33: View Of Sumitono Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- Most Molex connectors will have the Molex logo on the dresscover of the connector. In some cases the connectors may have MX followed by another letter. The third letter indicates where the connector was made. A connector with MXD is a Molex connector made in Detroit.

Sumitomo has a unique symbol on their connector and possibly a part number. The symbol is similar to that of a diamond lying on its side, similar to that shown. The logo could appear anywhere but the most common place is at the wire side of the housing.

- Tyco/AMP has many different and unique connector designs. Some may or may not have identifiable marks on them.

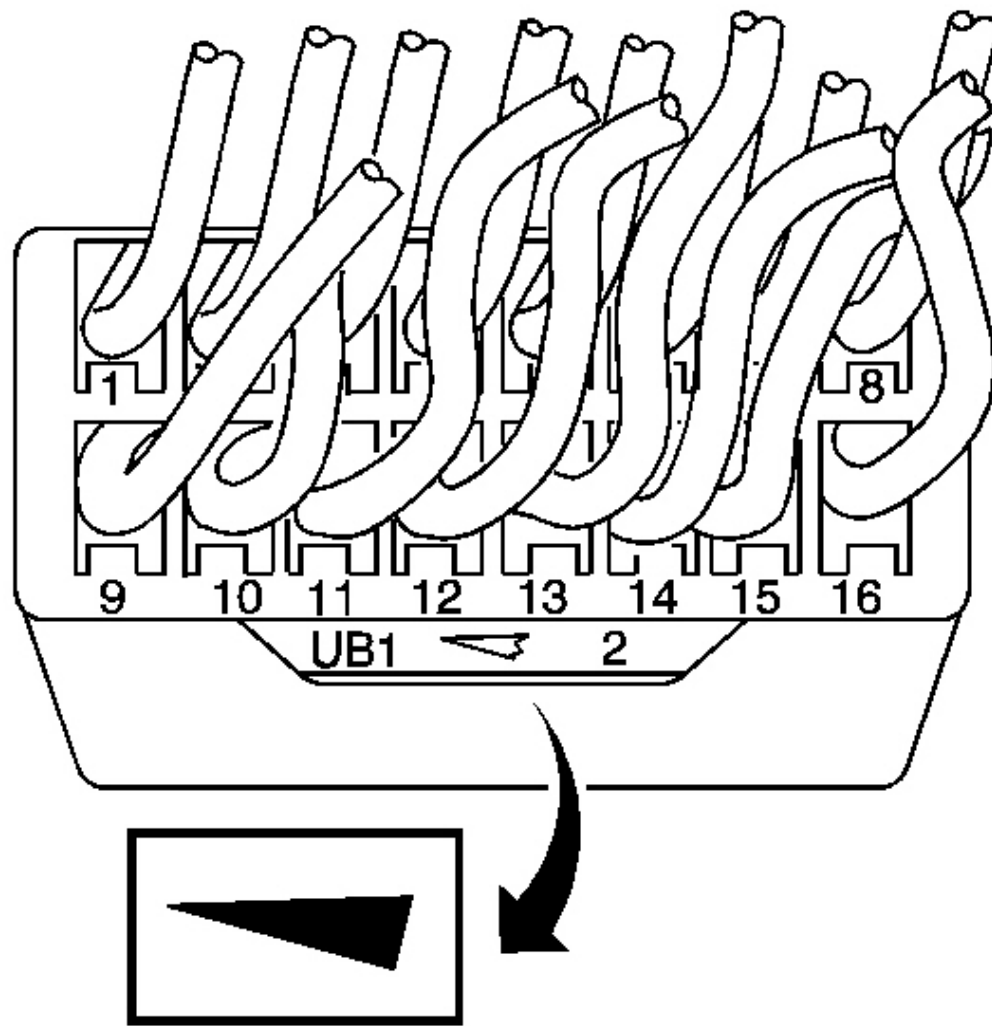


Fig. 34: View Of Yazaki Identification On Connector Body
Courtesy of GENERAL MOTORS CORP.

- Yazaki has a wedge or arrow shape, similar to that shown.

CONNECTOR POSITION ASSURANCE LOCKS

The connector position assurance (CPA) is a small plastic insert that fits through the locking tabs of the connector. CPAs are used in various connectors throughout the vehicle. CPAs are also used in all SIR system electrical connectors. The CPA ensures that the connector halves cannot vibrate apart. You must have the CPA in place in order to ensure good contact between the mating terminals, of the connector.

TERMINAL POSITION ASSURANCE LOCKS

The terminal position assurance (TPA) insert resembles the plastic combs used in the control module connectors. The TPA keeps the terminal securely seated in the connector body. Do not remove the TPA from the connector body unless you remove a terminal for replacement.

AFL/EPC CONNECTORS

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

Follow the steps below in order to remove terminals from the connector.

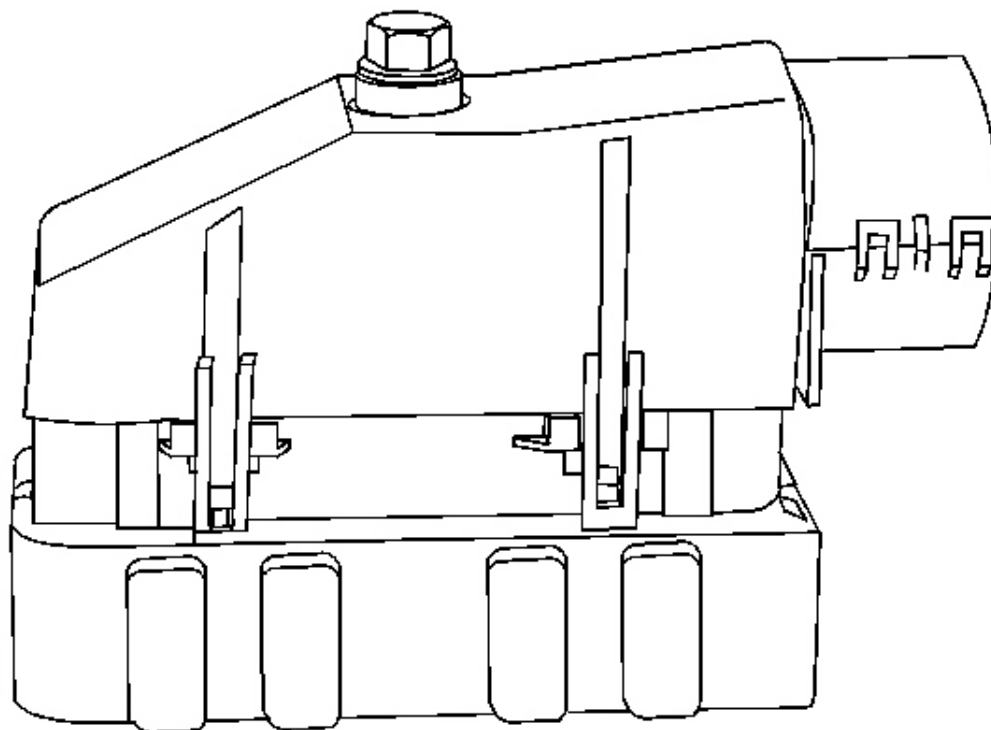


Fig. 35: View Of Bolt On Connector Cover
Courtesy of GENERAL MOTORS CORP.

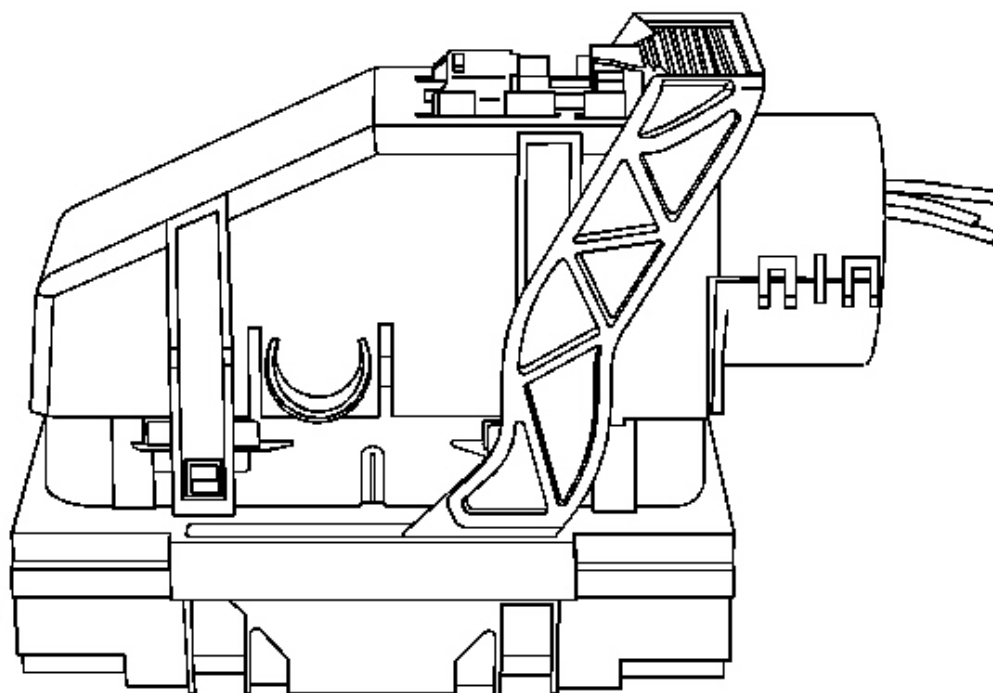


Fig. 36: Identifying Connector Position Assurance (CPA)

Courtesy of GENERAL MOTORS CORP.

1. For connectors with a bolt in the dress cover, turn the bolt counterclockwise to remove the connector from the component.
2. Locate the connector position assurance (CPA) on the top of the wire dress cover. Slide the CPA forward.

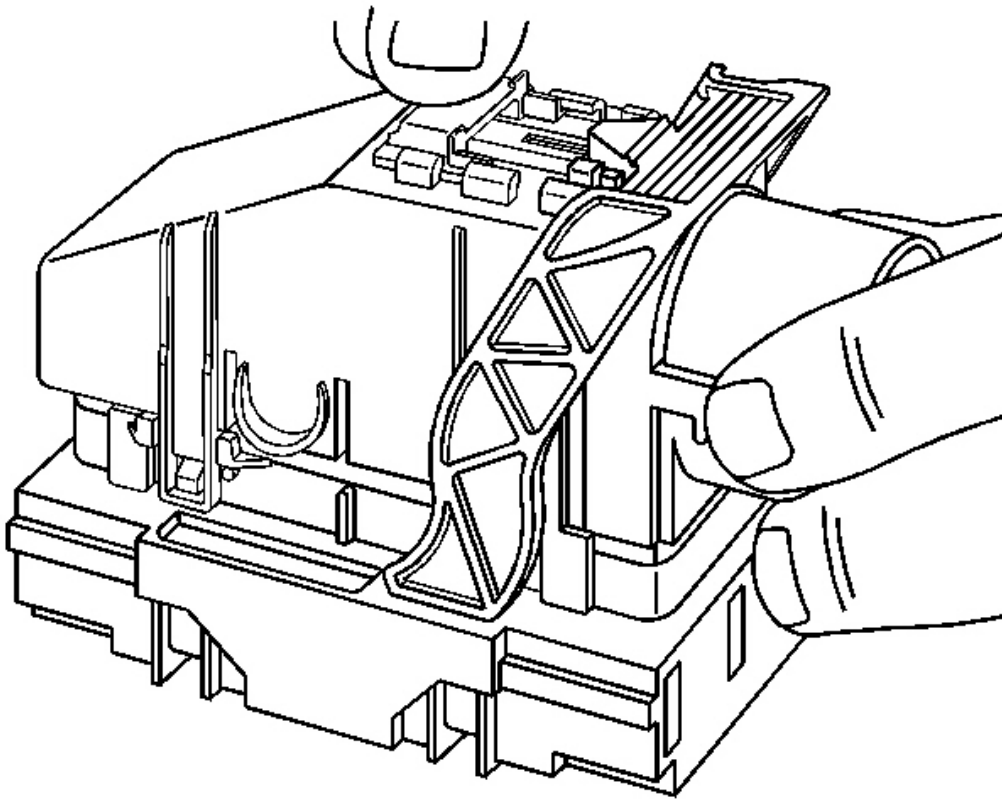


Fig. 37: Identifying Lever Lock & Lever Lock Release Tab
Courtesy of GENERAL MOTORS CORP.

3. Slide the lever lock forward while pressing down on the lever lock release tab.

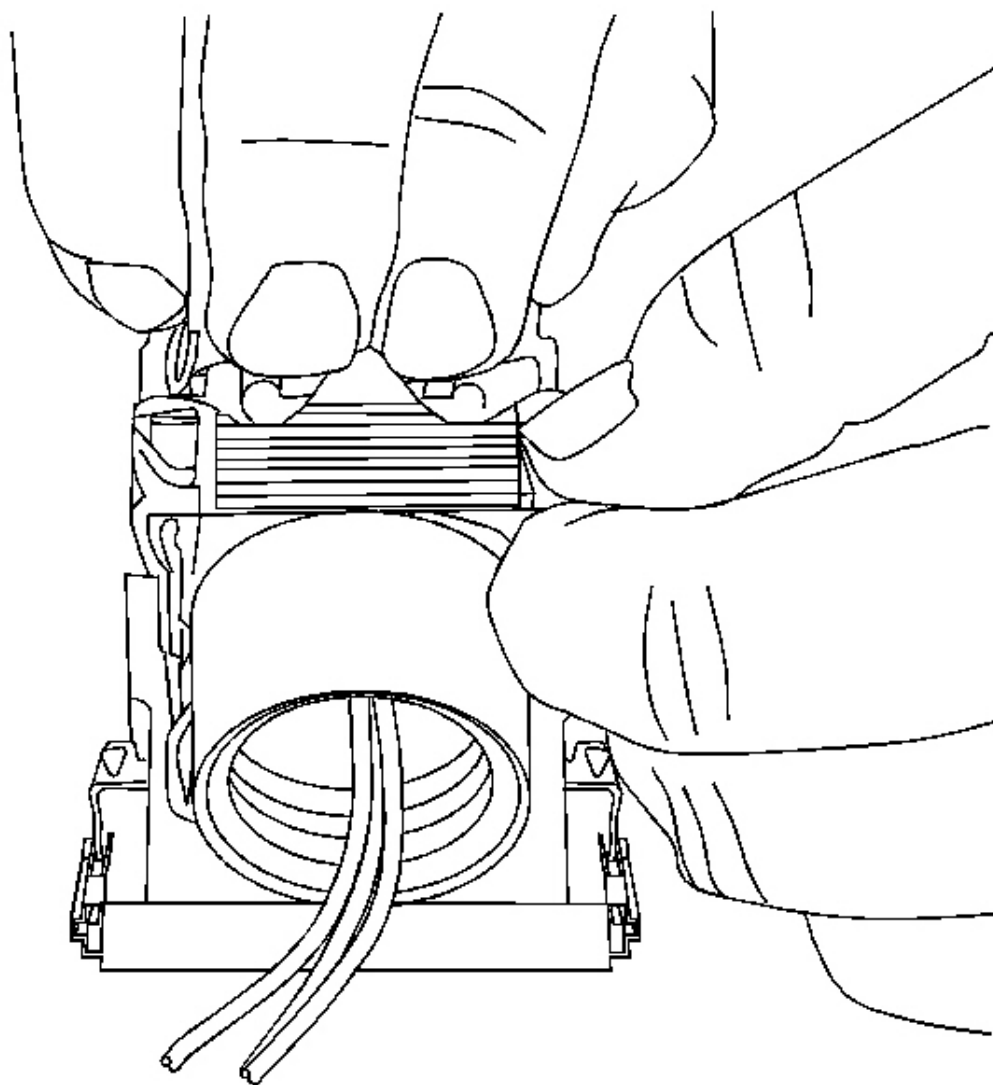


Fig. 38: Depressing Lever Lock Release Tab
Courtesy of GENERAL MOTORS CORP.

View showing depressing of the lever lock release tab.

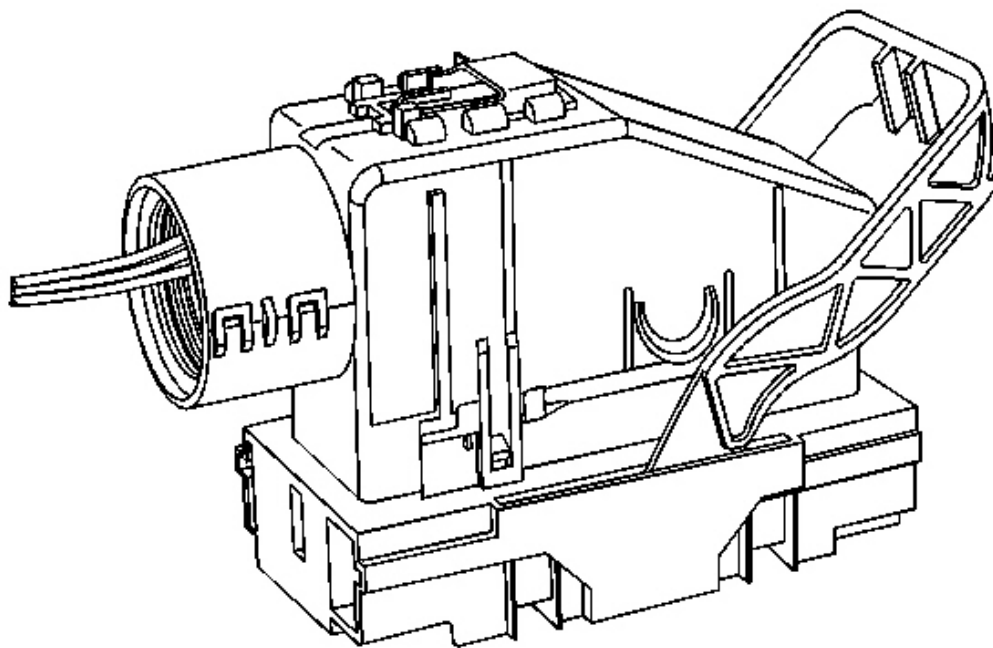


Fig. 39: View Of Connector In Released Position
Courtesy of GENERAL MOTORS CORP.

View of connector in released position.

4. Disconnect the connector from the component.
5. Locate the dress cover locking tabs at the corners of the dress cover. Use a small flat-blade tool to release the locking tabs and remove the dress cover.

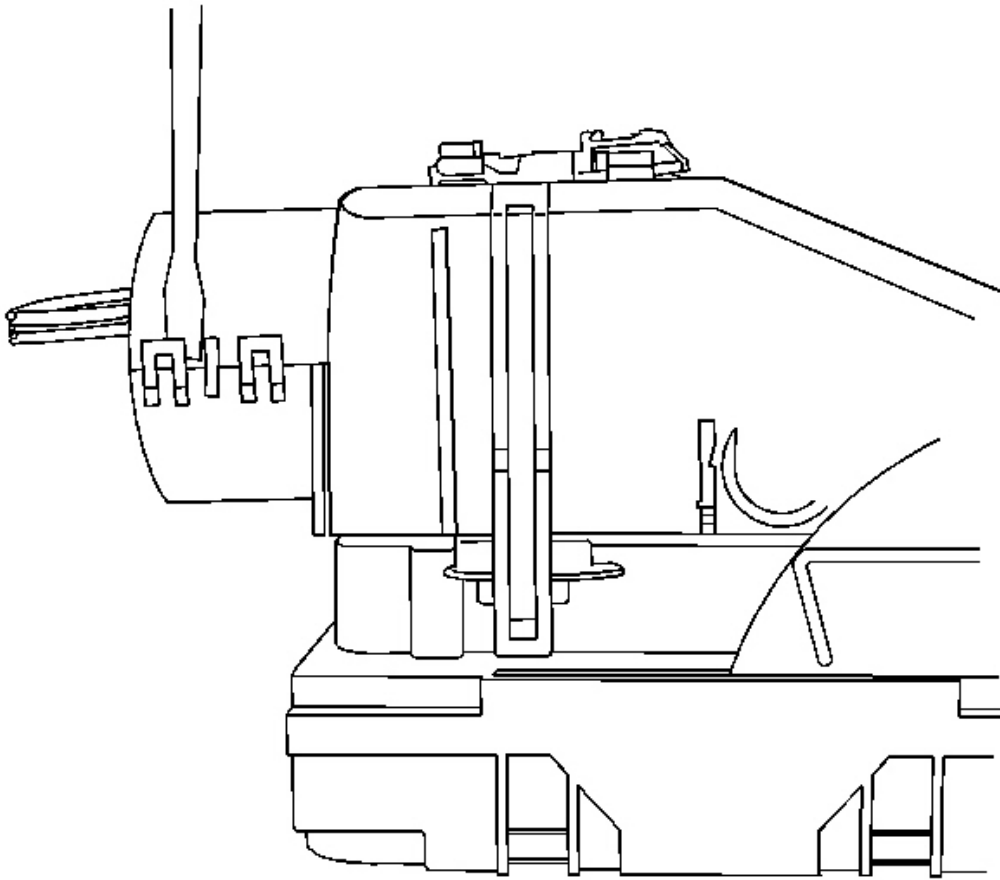


Fig. 40: View Of Connector In Released Position
Courtesy of GENERAL MOTORS CORP.

6. Release the rear lower half of the wiredress cover.

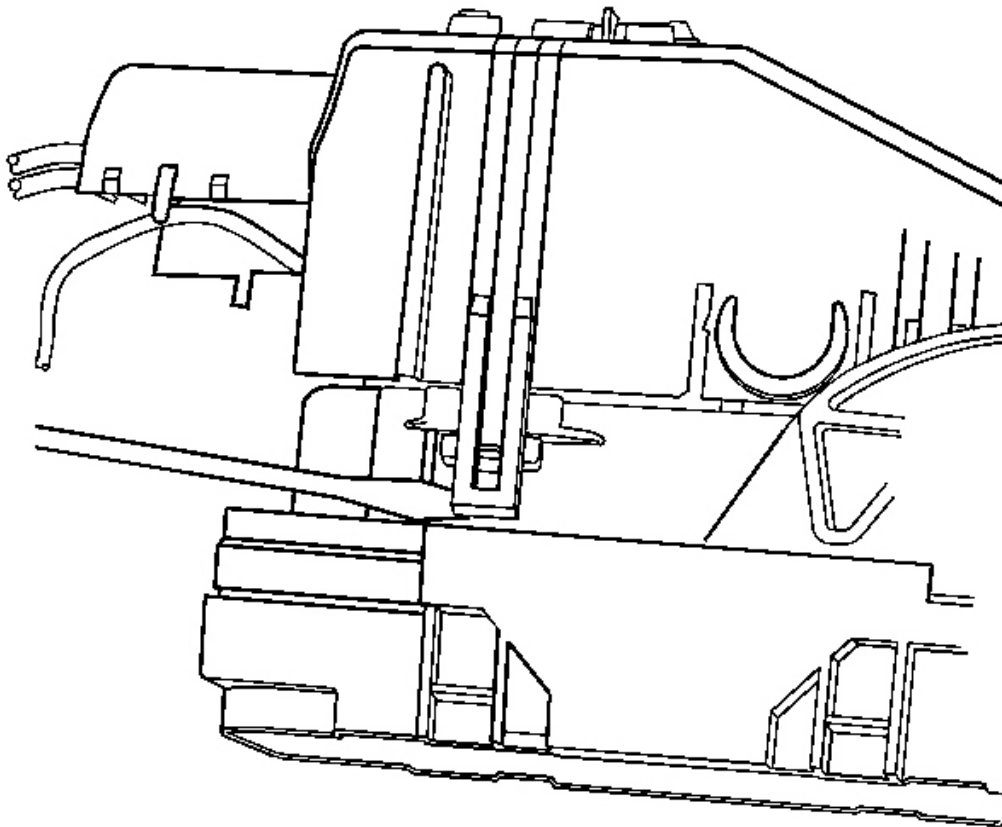


Fig. 41: Identifying Tabs Holding Wiredress Cover
Courtesy of GENERAL MOTORS CORP.

7. Release the tabs that are holding the wiredress cover to the connector body.
8. Remove the nose piece by inserting a small flat-blade tool into the slots on both ends of the connector body. Gently pry the nose piece out of the connector. J 38125-216 can also be used to remove the nose piece.

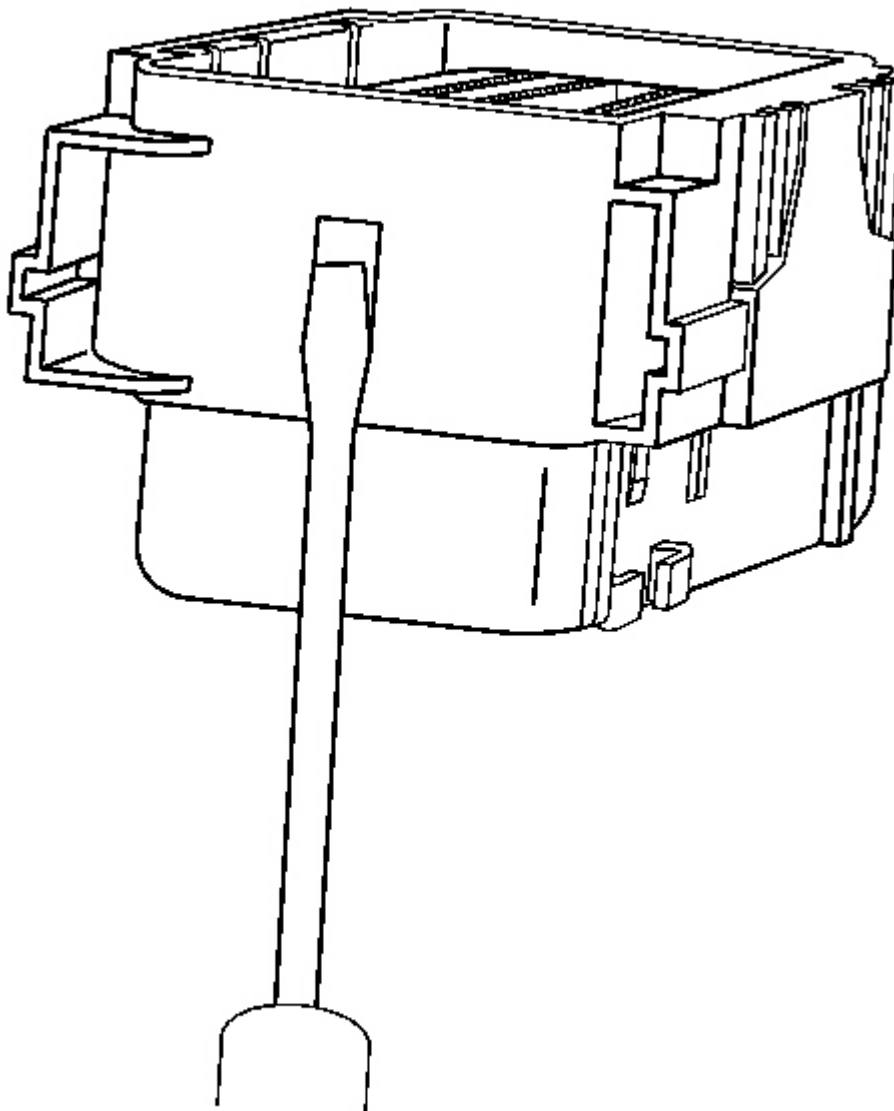


Fig. 42: Identifying Special Tool - J 38125-12A
Courtesy of GENERAL MOTORS CORP.

9. Use the J 38125-12A tool to release the terminals by lifting the terminal retaining tabs on the inside of the connector. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

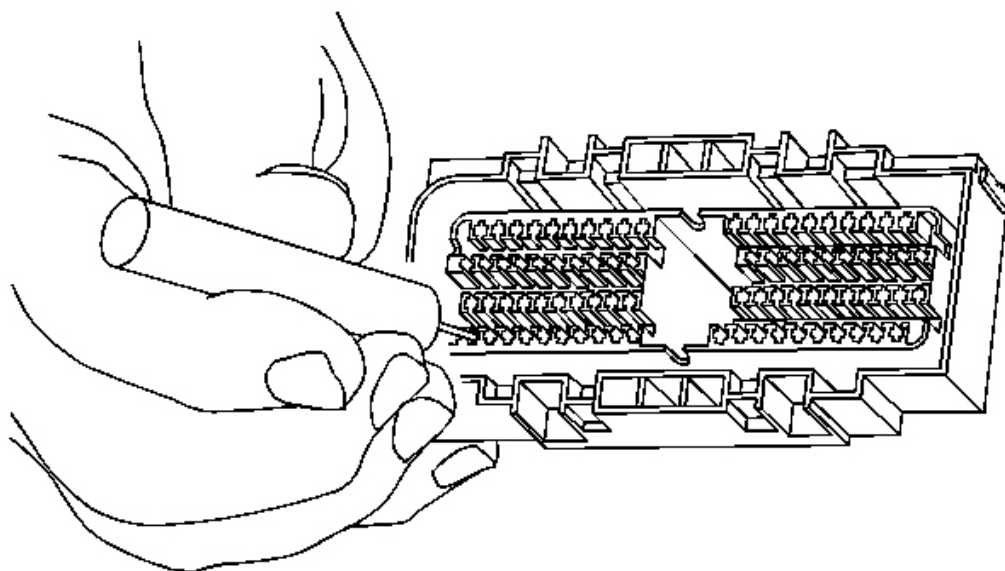


Fig. 43: J-38125-12A Removal Tool
Courtesy of GENERAL MOTORS CORP.

10. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

BOSCH CONNECTORS (BSK)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

1. Disconnect the connector from the component.
2. Remove the wire dress cover, if necessary.
3. Push the wire side of the terminal that is being removed toward the connector and hold it in position.

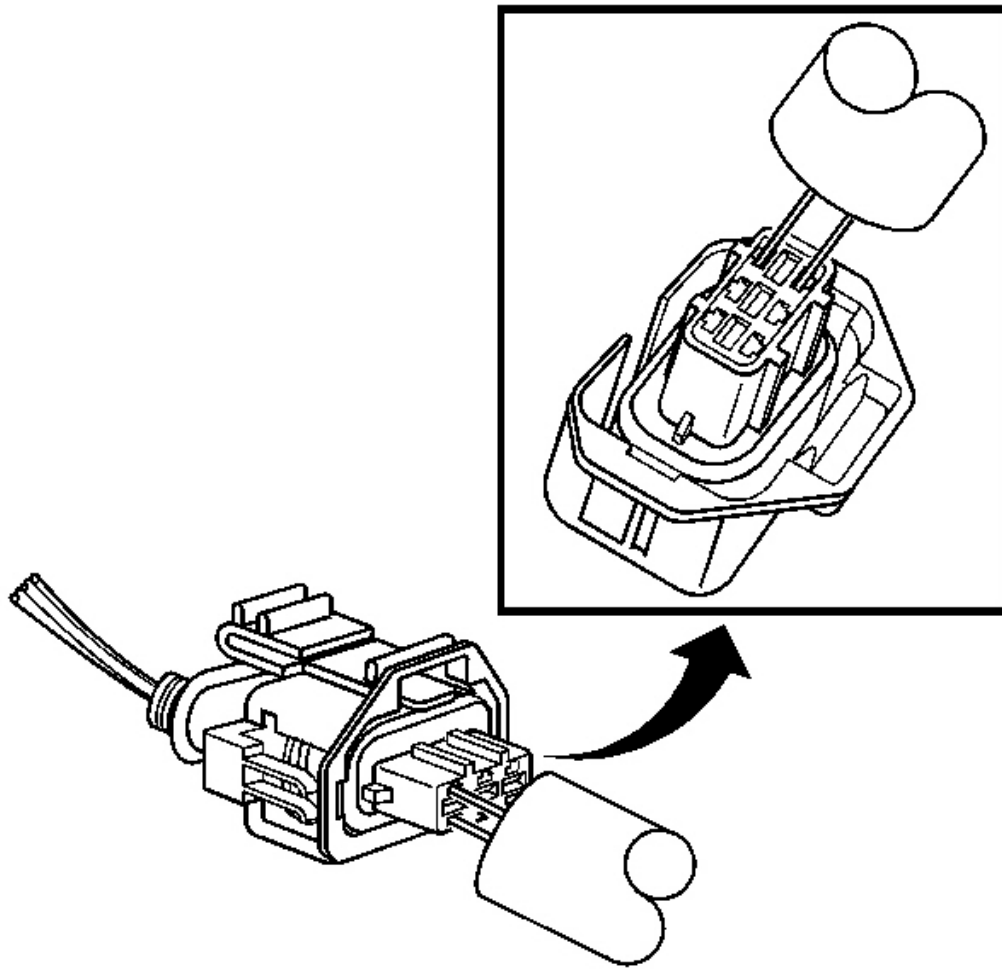


Fig. 44: View Of Bosch Connector Terminals (BSK)
Courtesy of GENERAL MOTORS CORP.

4. Insert the J 38125-561 tool into the 2 cavities on each side of the terminal at the front of the connector and push until you feel the tool disengage the terminal retainers. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
5. Carefully pull the terminal out of the connector. Always remember never use force when pulling a terminal out of a connector. If the terminal is difficult to remove, repeat the entire procedure.

Terminal Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

BOSCH CONNECTORS (0.64)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

1. Locate the lever lock on the wire dress cover. While pressing the lock, pull the lever over and past the lock until the lever is at the end of its travel.
2. Disconnect the connector from the component.
3. Pull the rubber boot that covers the wires back to expose the end of the connector dress cover.
4. Place the connector locking lever in the center of the connector.

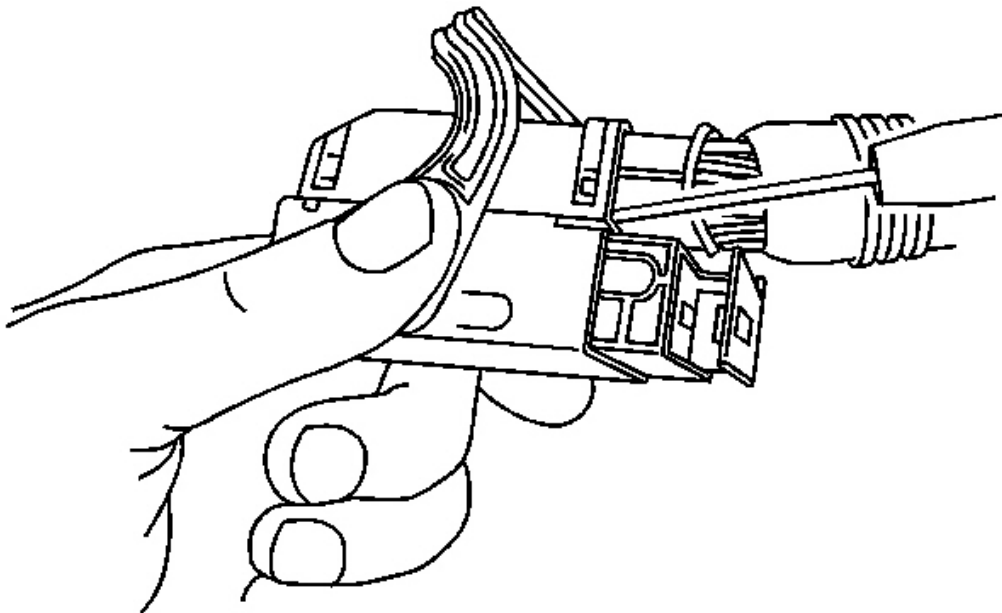


Fig. 45: Inserting Flat-Bladed Tool Between Cover And Connector Body
Courtesy of GENERAL MOTORS CORP.

5. Locate the 2 dress cover locking tabs that are on the wire end of the connector. Insert a small flat-bladed tool between the cover and connector body and pry up.

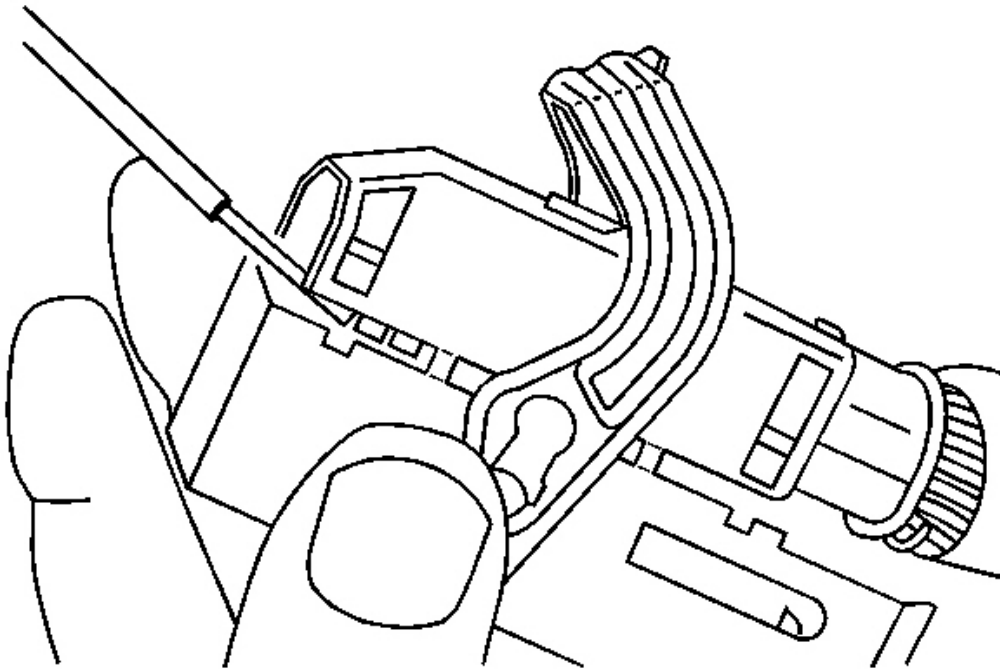


Fig. 46: Inserting Flat-Bladed Tool Between Cover & Connector End
Courtesy of GENERAL MOTORS CORP.

6. Locate the 2 dress cover locking tabs located on the opposite side of the connector. Insert a small flat-bladed tool between the cover at the connector end and pry up.
7. Remove the dress cover.
8. Cut the tie wrap on the wire bundle.

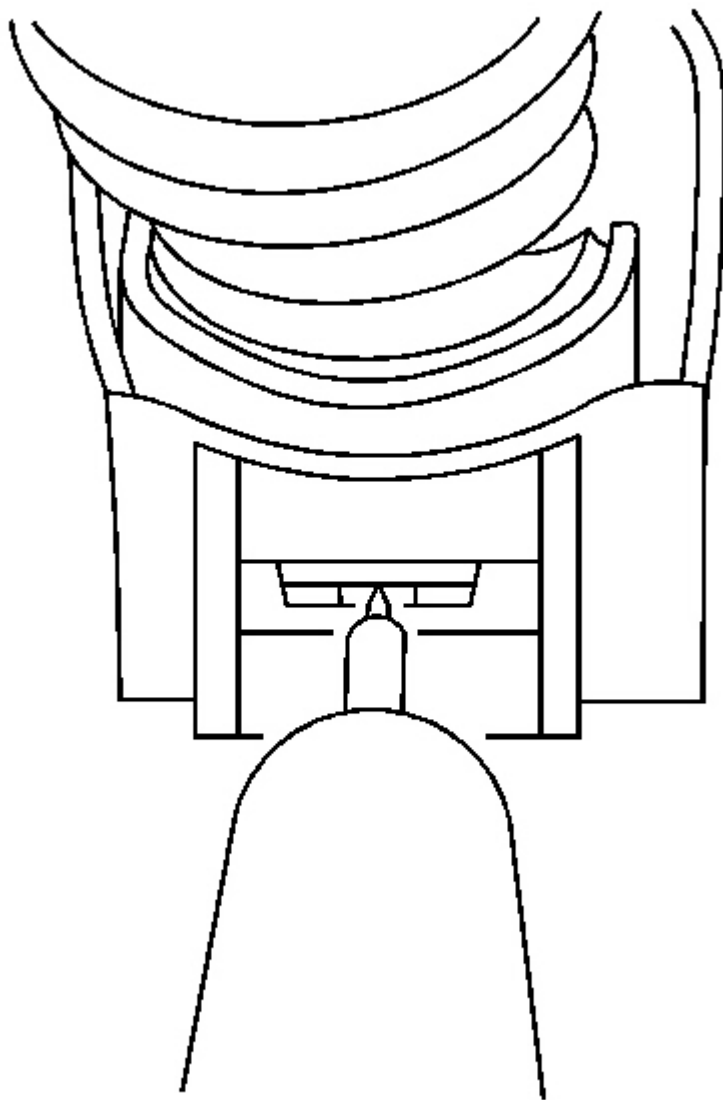


Fig. 47: View Of Terminal Position Assurance (TPA)
Courtesy of GENERAL MOTORS CORP.

9. Remove the terminal position assurance (TPA) by inserting a small flat-bladed tool into the small slot in the end of the slider and pushing on the TPA until it comes out of the connector. When the TPA exits the opposite side of the connector, grasp the TPA and pull it completely out of the connector.
10. Push the wire side of the terminal that is being removed toward the connector and hold it in position.

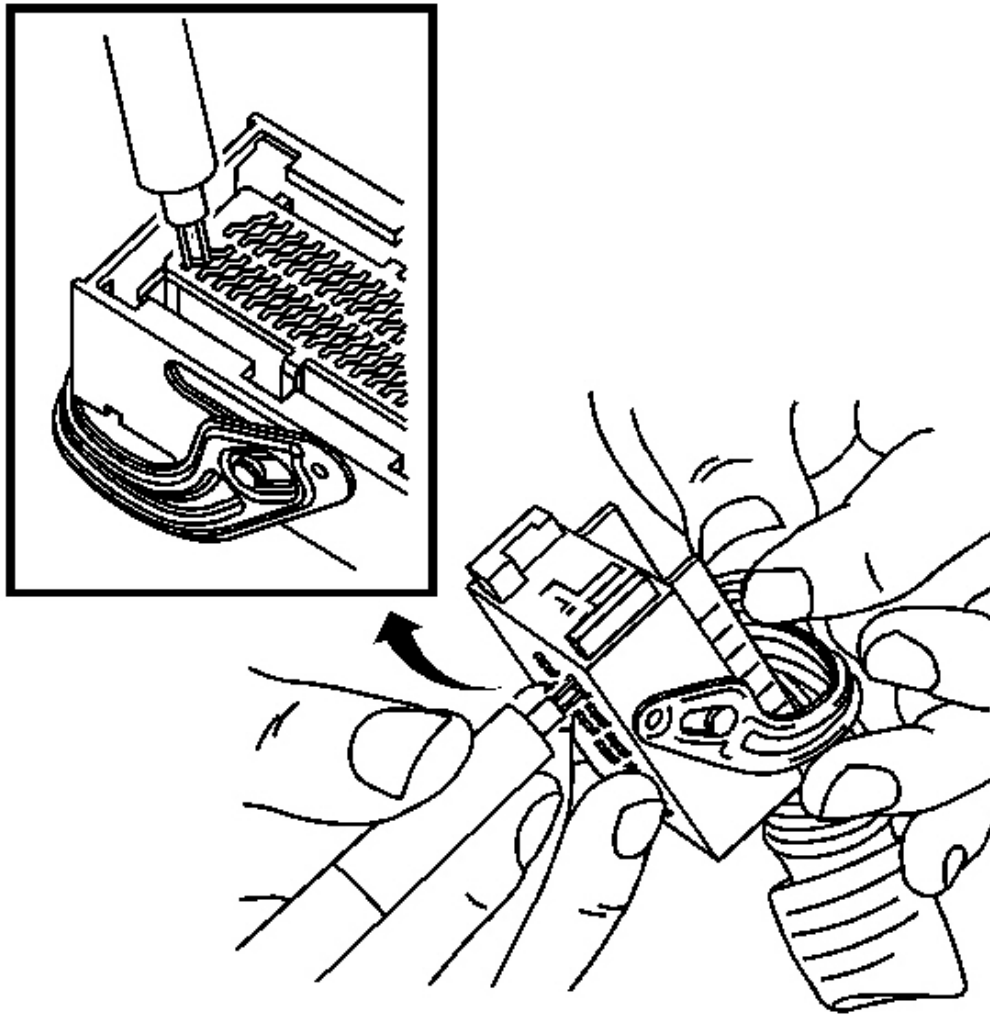


Fig. 48: Pulling Terminal Out Of Connector
Courtesy of GENERAL MOTORS CORP.

11. Insert the J 38125-560 into the 2 triangular cavities on each side of the terminal at the front of the connector. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
12. Carefully pull the terminal out of the connector. Always remember never use force when pulling a terminal out of a connector. If the terminal is difficult to remove, repeat the entire procedure.

Terminal Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Terminal Replacement Procedure

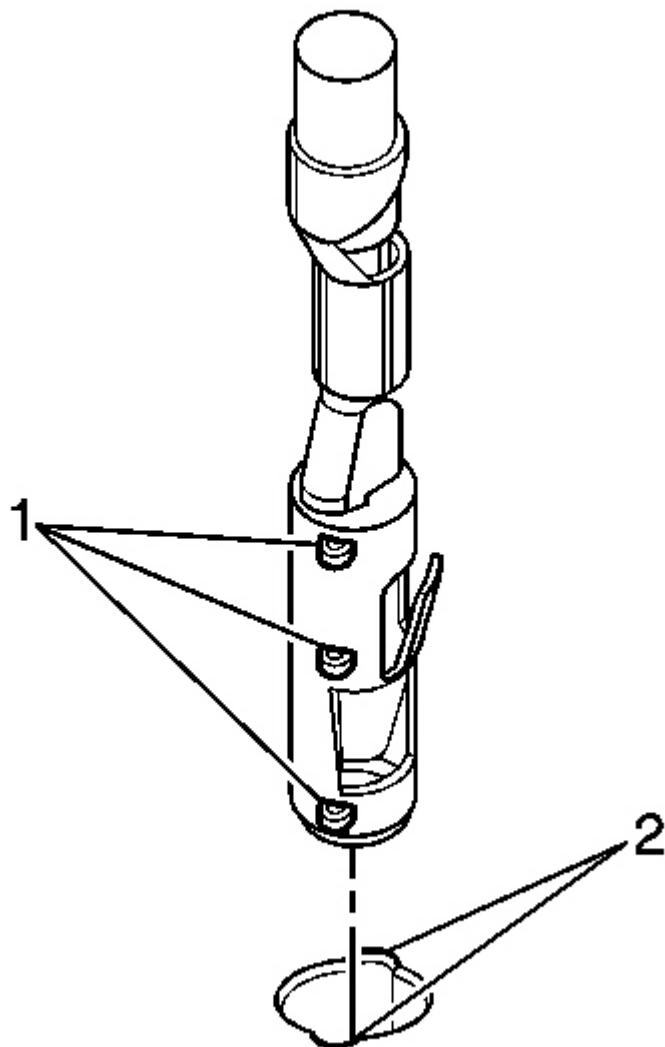


Fig. 49: Aligning Coding Lugs With Connector Coding Grooves
Courtesy of GENERAL MOTORS CORP.

1. Prior to installation the terminal must be aligned so the (1) coding lugs align with the (2) coding grooves on the connector.
2. Once the terminal is aligned, slide the terminal into the cavity until the retainer has engaged in the cavity

of the connector.

3. Slide the TPA in the connector body and seat it using a small flat bladed tool. The TPA is seated when it is flush with the contact housing.
4. Secure the wires to the connector body using a tie wrap and replace the dress cover and grommet.

BOSCH CONNECTORS (2.8 JPT)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

1. Pull out the slider on the connector position assurance (CPA) until it is at the end of its travel.
2. Disconnect the connector from the component.
3. Remove the wire dress cover, if necessary.
4. Push the wire side of the terminal that is being removed toward the connector and hold it in position.

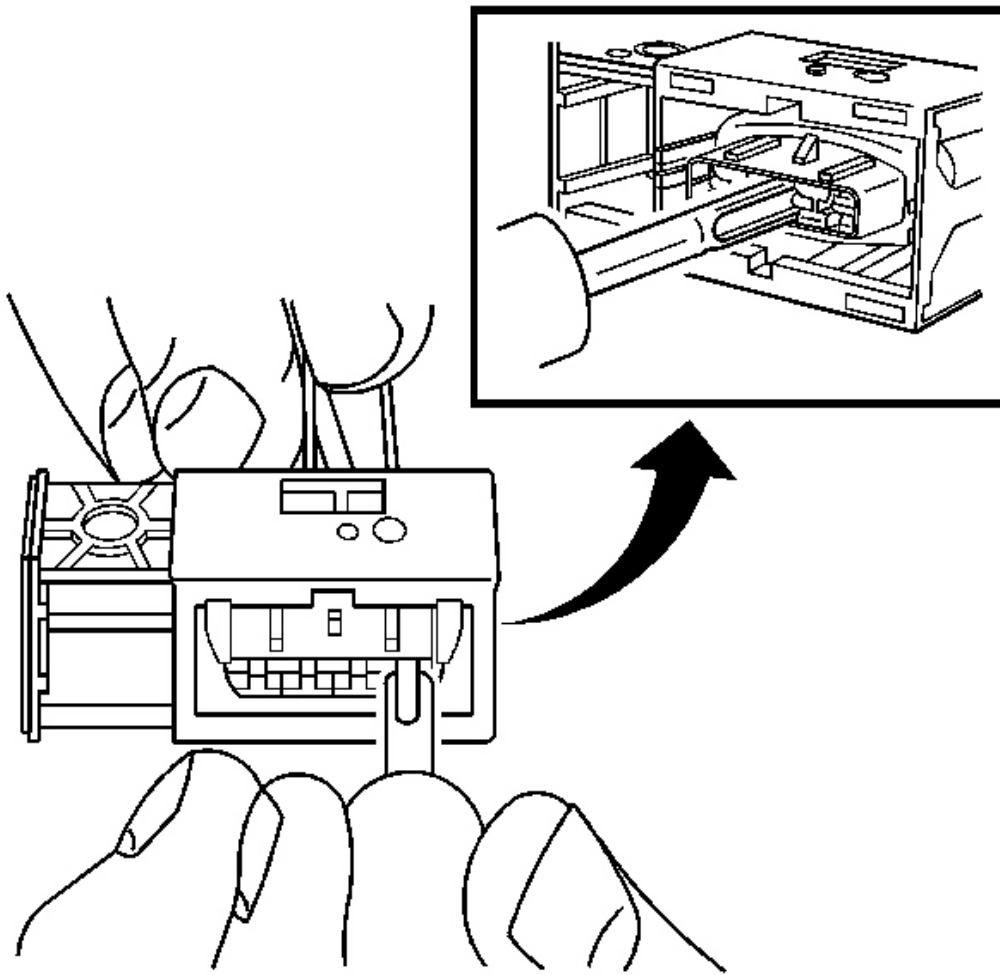


Fig. 50: View Of Bosch Connector Terminals (2.8 JPT)
Courtesy of GENERAL MOTORS CORP.

5. Insert the J 38125-557 into the 2 cavities on each side of the terminal at the front of the connector and push until you feel the tool disengage the terminal retainers. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
6. Carefully pull the terminal out of the connector. Always remember never use force when pulling a terminal out of a connector. If the terminal is difficult to remove, repeat the entire procedure.

Terminal Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

BOSCH CONNECTORS (ECM)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

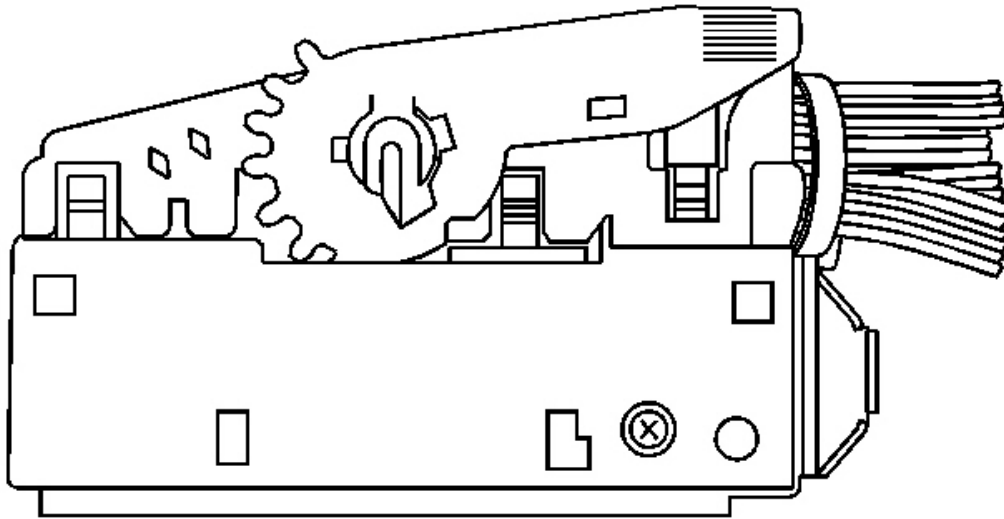


Fig. 51: View Of Bosch Connectors

Courtesy of GENERAL MOTORS CORP.

1. Locate the assist lever on the top of the connector. Move the assist lever to the forward position.

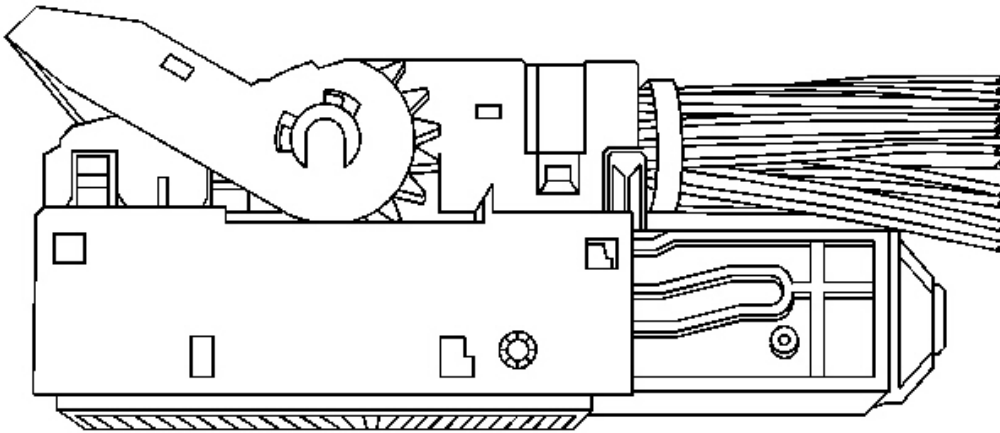


Fig. 52: Identifying Assist Lever In Forward Position
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the connector from the component.

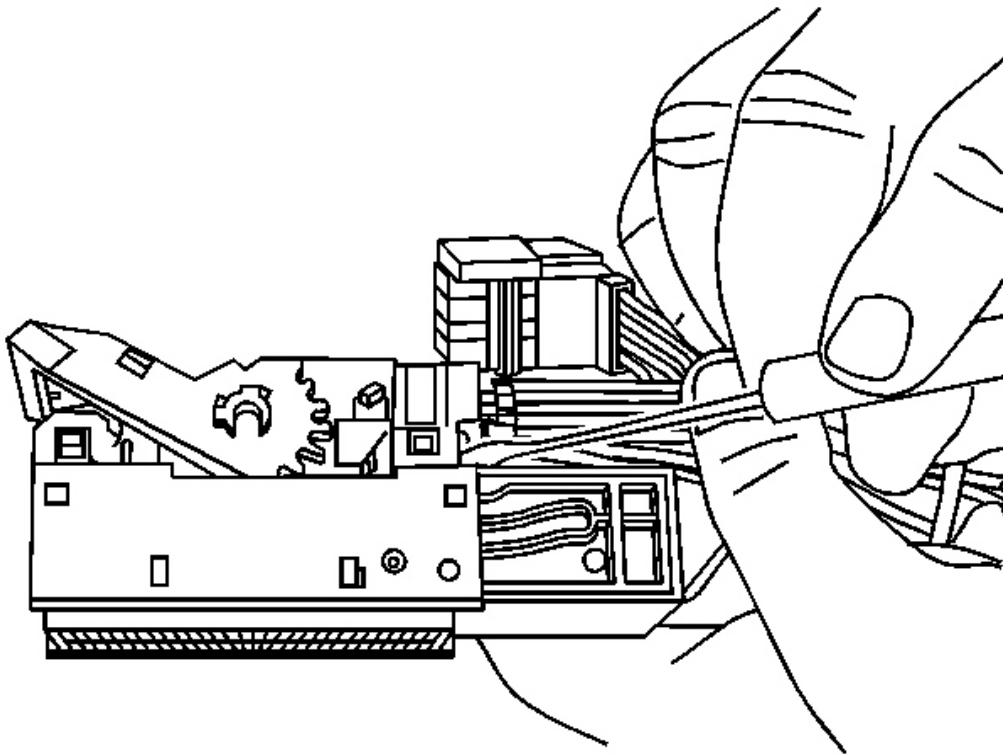


Fig. 53: Releasing Locking Tabs
Courtesy of GENERAL MOTORS CORP.

3. Locate the dress cover locking tabs at the corners of the connector. Use a small flat-bladed tool to release the locking tabs and remove the dress cover.

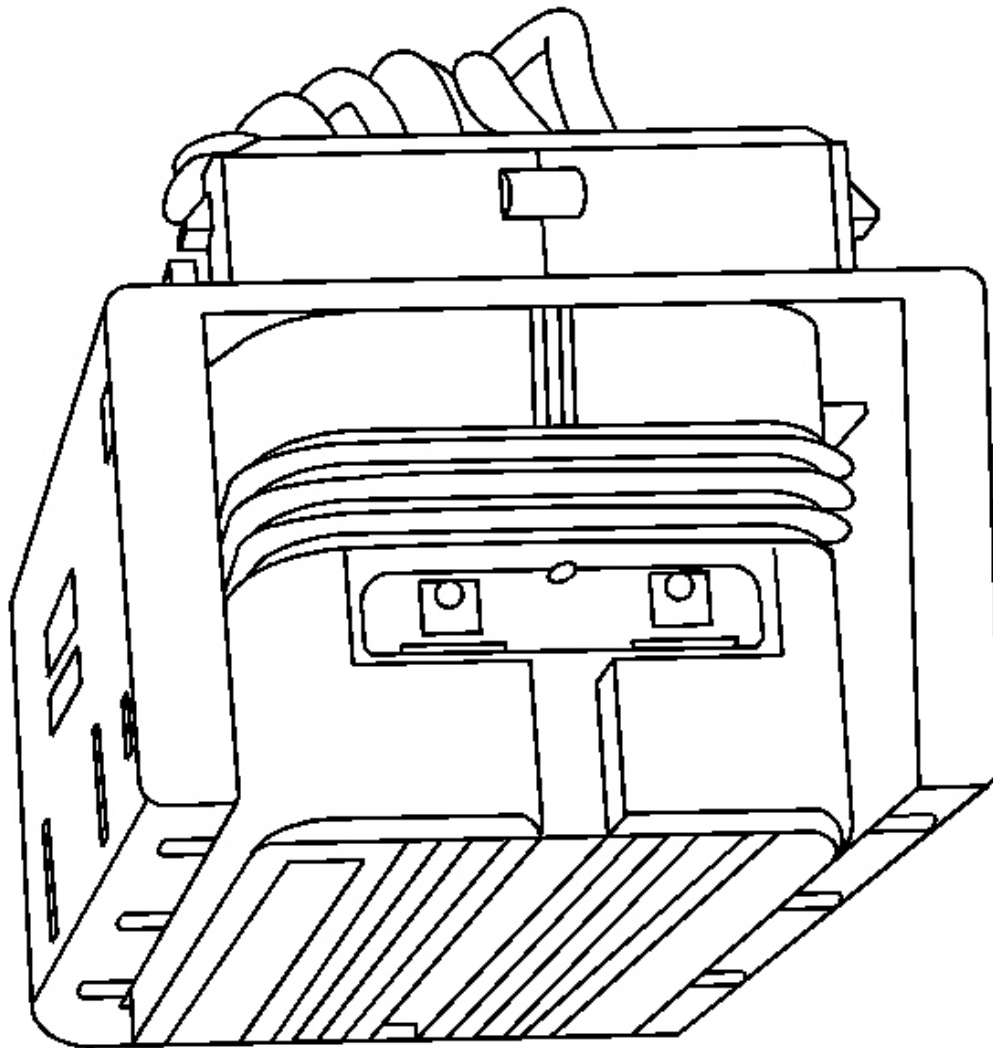


Fig. 54: View Of Terminal Positive Assurance (TPA) Connector
Courtesy of GENERAL MOTORS CORP.

4. The terminal positive assurance (TPA) is located in the front of the connector.

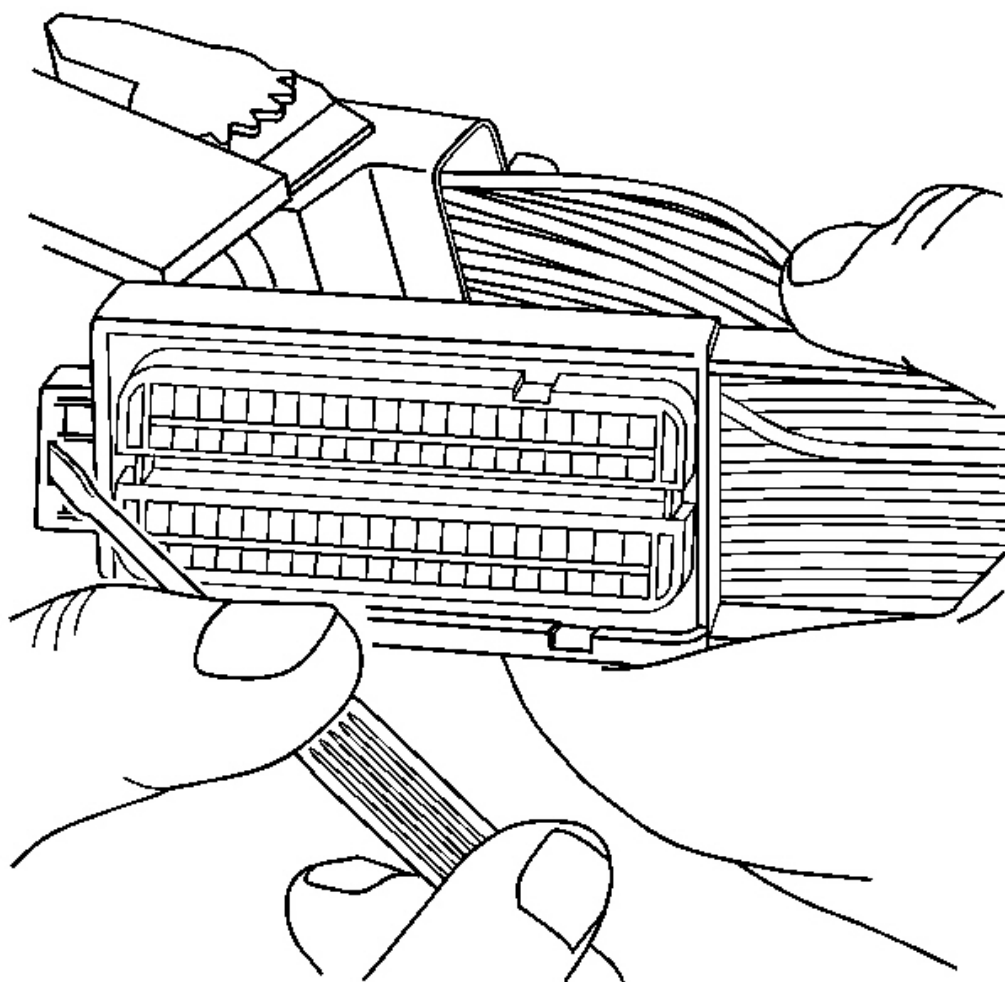


Fig. 55: View Of Removing TPA From Connector
Courtesy of GENERAL MOTORS CORP.

5. Use a small flat-blade tool to remove TPA from the connector.

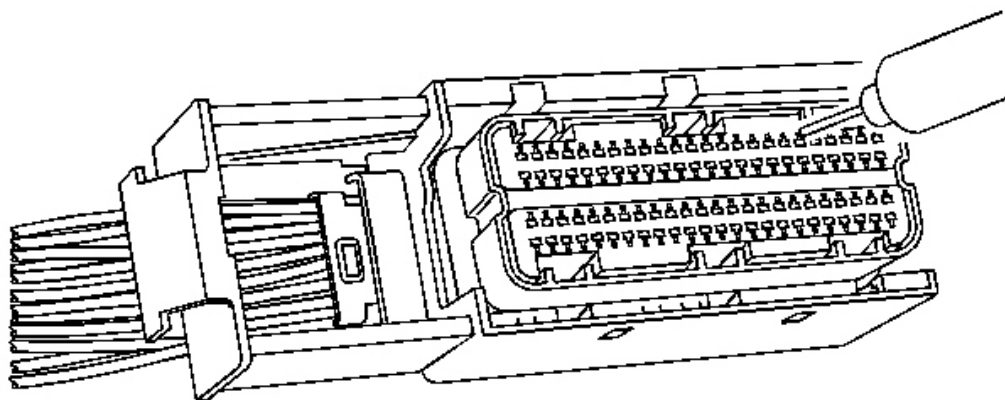


Fig. 56: View Of Special Tools And Terminals
Courtesy of GENERAL MOTORS CORP.

6. Use the J 38125-213 or the J 38125-556 tool to release the terminals by inserting the tool into the terminal release cavity. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
7. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

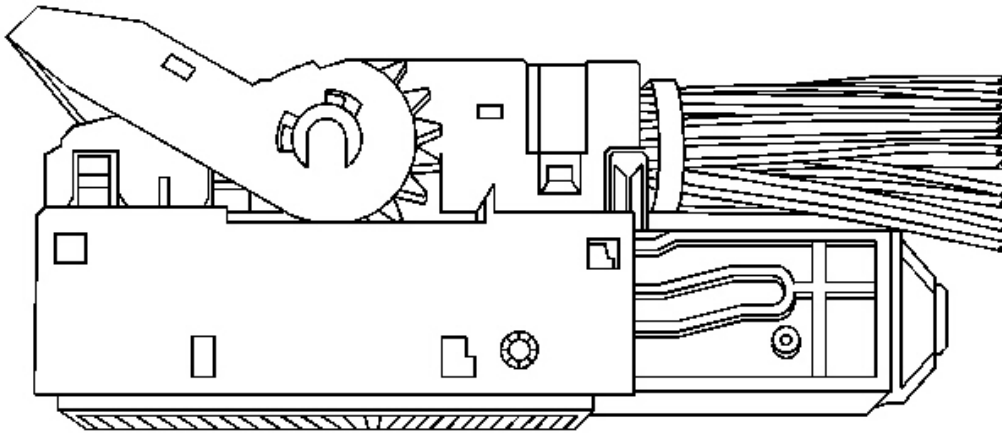


Fig. 57: Identifying Assist Lever In Forward Position
Courtesy of GENERAL MOTORS CORP.

NOTE: **Ensure that the dress cover and connector body are both in the released position before reassembling. Failure to do so may cause damage to the connector and component.**

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

DELPHI CONNECTORS (WEATHER PACK)

Special Tools

J-38125 Terminal Repair Kit

The following is the proper procedure for the repair of Weather Pack® Connectors.

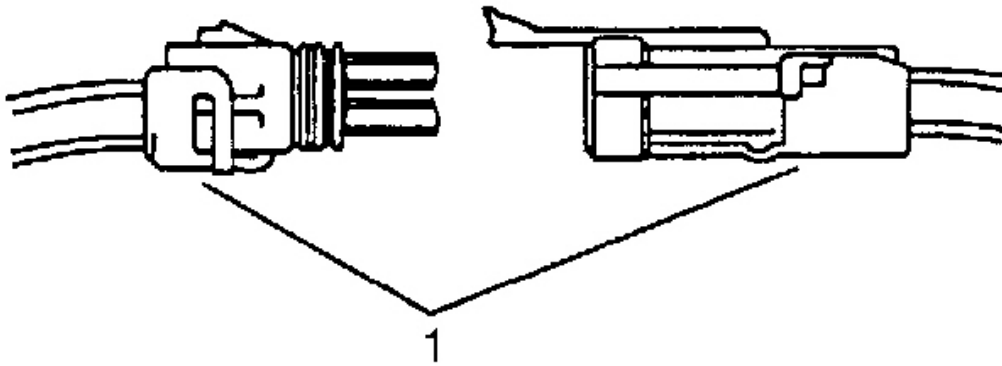


Fig. 58: View Of Connector Halves
Courtesy of GENERAL MOTORS CORP.

1. Separate the connector halves (1).
2. Open the secondary lock. A secondary lock aids in terminal retention and is usually molded to the connector (1).
3. Grasp the wire and push the terminal to the forward most position. Hold the wire in this position.

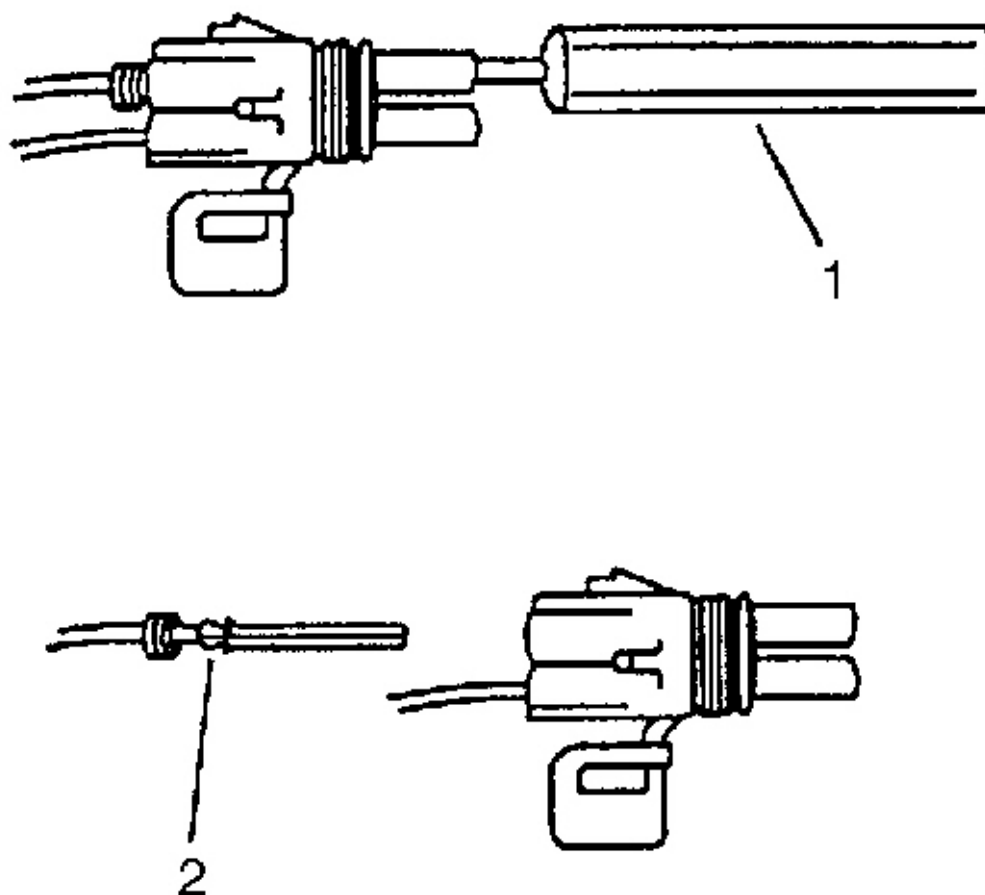


Fig. 59: Identifying Removal Tool & Terminal
Courtesy of GENERAL MOTORS CORP.

4. Insert the Weather Pack® terminal removal tool J 38125-10A into the front (mating end) of the connector cavity until it rests on the cavity shoulder (1).
5. Gently pull on the wire to remove the terminal through the back of the connector (2).

NOTE: **Never use force to remove a terminal from a connector.**

6. Inspect the terminal and connector for damage. Repair as necessary. Refer to **Repairing Connector Terminals**.
7. Reform the lock tang (2) and reset terminal in connector body.
8. Close secondary locks and join connector halves.

9. Verify that circuit is complete and working satisfactorily.
10. Perform system check.

DELPHI CONNECTORS (PUSH TO SEAT)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal

Follow the steps below in order to repair push to seat connectors.

1. Remove the terminal position assurance (TPA) device, the connector position assurance (CPA) device, and/or the secondary lock.

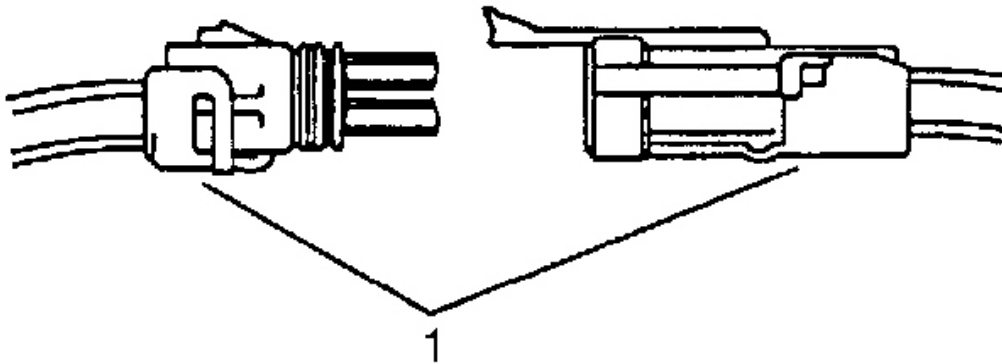


Fig. 60: View Of Connector Halves
Courtesy of GENERAL MOTORS CORP.

2. Separate the connector halves (1).

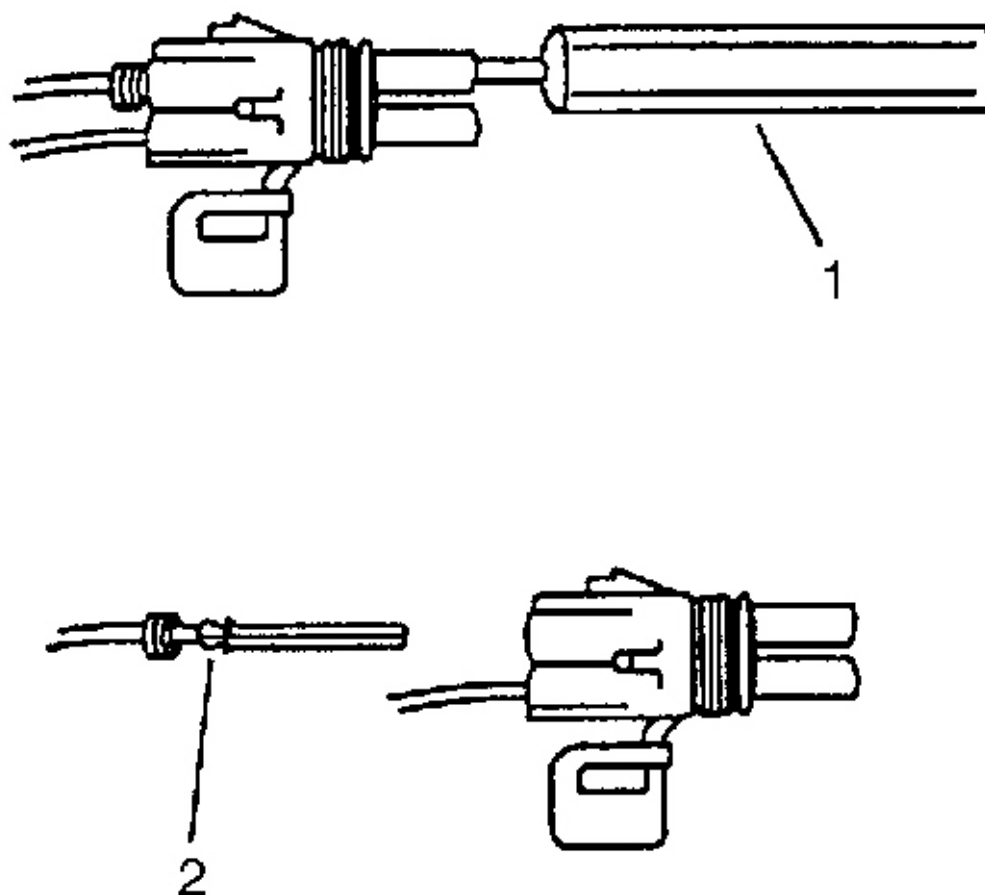


Fig. 61: Identifying Removal Tool & Terminal
Courtesy of GENERAL MOTORS CORP.

3. Use the proper pick or removal tool (1) in order to release the terminal. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
4. Gently pull the cable and the terminal (2) out of the back of the connector.

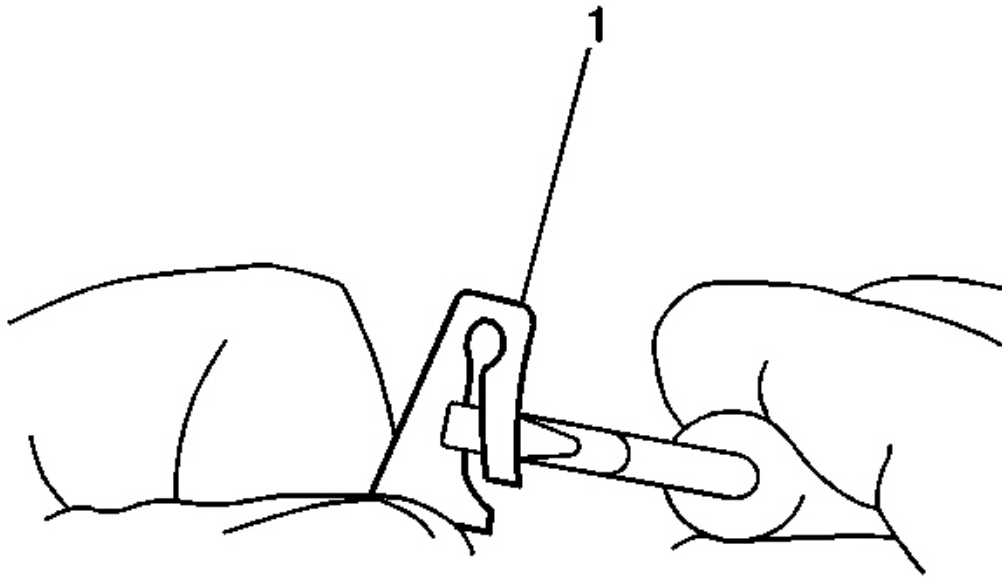


Fig. 62: Identifying Locking Device
Courtesy of GENERAL MOTORS CORP.

5. Re-form the locking device if you are going to reuse the terminal (1).
6. To repair the terminal, refer to Terminal Repair.

Terminal Repair

1. Slip the cable seal away from the terminal.
2. Cut the wire as close to the terminal as possible.
3. Slip a new cable seal onto the wire.
4. Strip 5 mm (3/16 in) of insulation from the wire.
5. Crimp a new terminal to the wire.
6. Solder the crimp with rosin core solder.
7. Slide the cable seal toward the terminal.
8. Crimp the cable seal and the insulation.
9. If the connector is outside of the passenger compartment, apply grease to the connector.

Reinstalling Terminal

1. In order to reuse a terminal or lead assembly, refer to **Wiring Repairs**.
2. Ensure that the cable seal is kept on the terminal side of the splice.

3. Insert the lead from the back until it catches.
4. Install the TPA, CPA, and/or the secondary locks.

Terminated Lead Repair

1. Remove the terminal.
2. Find the appropriate terminated lead.
3. Use the appropriate splice sleeves depending on the gauge size.
4. Refer to **Splicing Copper Wire Using Splice Sleeves**.

DELPHI CONNECTORS (PULL TO SEAT)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal

If the terminal is visibly damaged or is suspected of having a faulty connection, the terminal should be replaced.

Follow the steps below in order to repair pull-to-seat connectors:

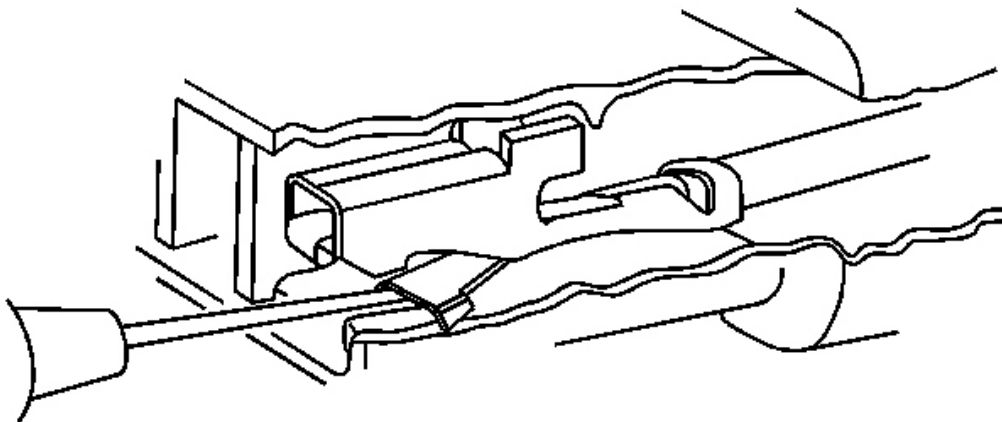


Fig. 63: Aligning Removal Tool

Courtesy of GENERAL MOTORS CORP.

1. Remove the connector position assurance (CPA) device and/or the secondary lock.
2. Disconnect the connector from the component or separate the connectors for in-line connectors.

3. Remove the terminal position assurance (TPA) device.
4. Insert the proper pick or removal tool into the front of the connector body.

NOTE: On connectors with more than one terminal the service loop may not be large enough to remove the terminal and crimp on a new one. If the terminal wire does not have a large enough service loop for removal, cut the wire 5 cm (2 in) behind the connector before removal.

5. Grasp the wire at the back of the connector body and gently push the terminal out the front of the connector body.

Terminal Repair

1. If the wire needed to be cut in order to remove the terminal, gently push a small length of the same size wire through the back of the connector cavity until there is enough wire exposed in order to crimp on a new terminal. If the wire was not cut, cut the existing wire as close to the old terminal as possible.
2. Strip 5 mm (3/16 in) of insulation from the wire.
3. Crimp a new terminal to the wire.
4. Solder the crimp with rosin core solder.

Terminal Installation

1. Align the terminal and pull the wire from the back of the connector in order to seat the terminal.
2. If necessary, cut the new wire to proper length and splice with existing circuit. Refer to **Splicing Copper Wire Using Splice Sleeves**.
3. If the connector is outside of the passenger compartment, apply dielectric grease to the connector.
4. Install the TPA, CPA, and/or the secondary locks.

DELPHI CONNECTORS (MICRO-PACK 100W)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

There are 2 styles of Micro-Pack 100W connectors. These connectors are very similar but use different terminals and have some minor physical differences also.

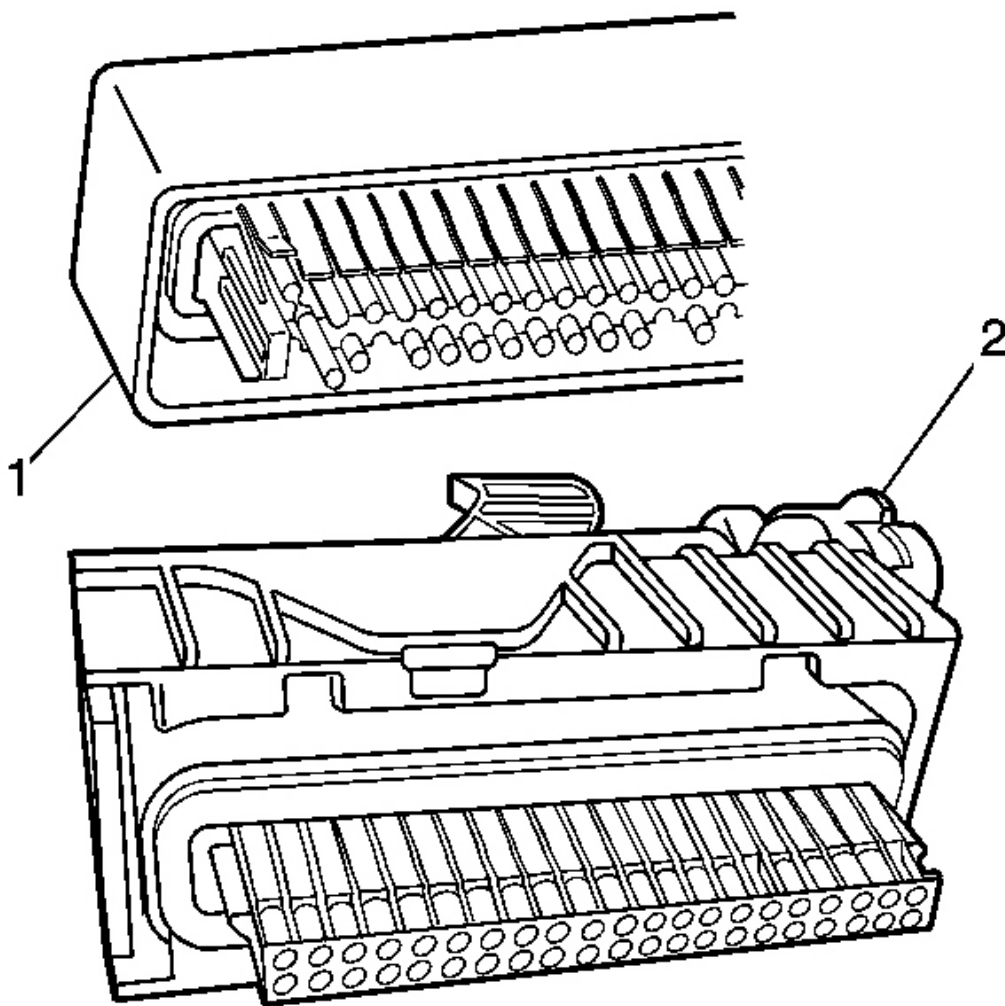


Fig. 64: Identifying Micro-Pack 100W First & Second Connector Designs
Courtesy of GENERAL MOTORS CORP.

The first connector design of the Micro-Pack 100W (1) has a white connector interface that holds the terminals. The second design of the Micro-Pack 100W (2) has a gray interface to hold the terminals. Also, the first design has terminal cavities that are further apart (3 mm centerline) and offset from the other row of terminal cavities in the connector. The second design has terminals cavities that are closer together (2.54 mm centerline) and aligned vertically. One other way to identify the second design is the thin strip of material that runs along the outside of the cavities.

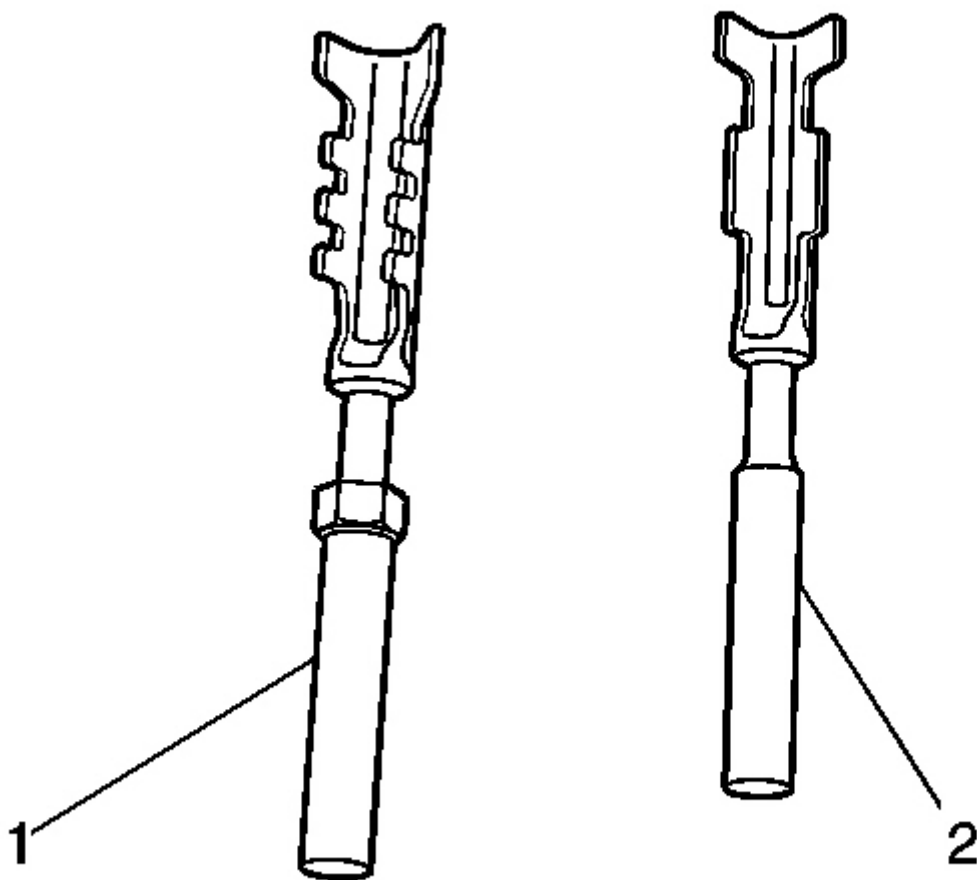


Fig. 65: Identifying Micro-Pack 100W Short & Long Terminals
Courtesy of GENERAL MOTORS CORP.

NOTE: There are 2 styles of Micro-Pack 100W terminals which are very similar. Ensure that you have the correct terminal before crimping the new terminal to the wire. The first design connector uses the longer terminal (1) that has a raised area in front of the recess in the terminal. The second design connector uses the shorter terminal without the raised area.

Follow the steps below in order to remove terminals from Micro-Pack 100W connectors. Some Micro-Pack 100W connector disassembly procedures will vary. Use this procedure as a guide.

1. Disconnect the connector from the component.

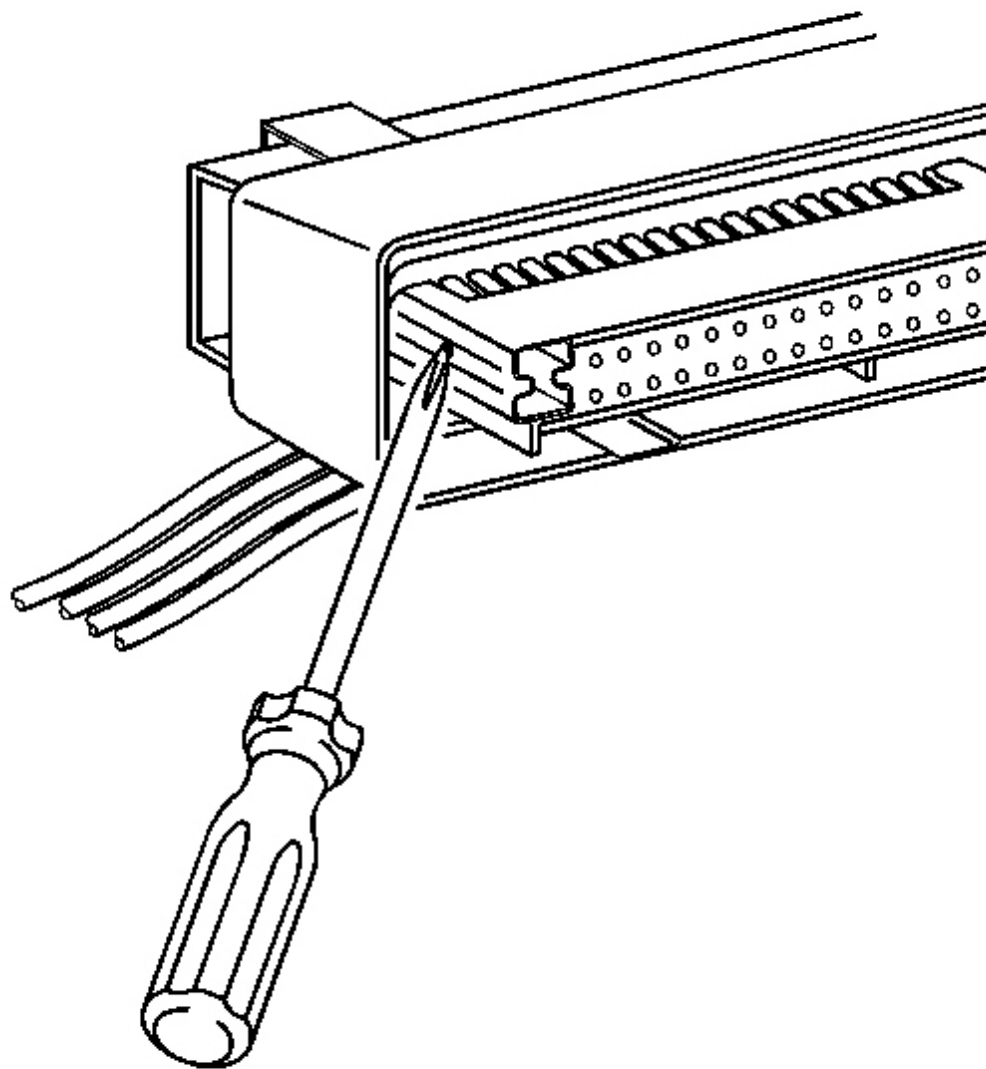


Fig. 66: Locating Nose Piece Locking Tabs
Courtesy of GENERAL MOTORS CORP.

2. Locate the nose piece locking tabs that are positioned on the side of the connector nose piece. The connector nose piece acts as a terminal positive assurance (TPA) and may be referred to as such.

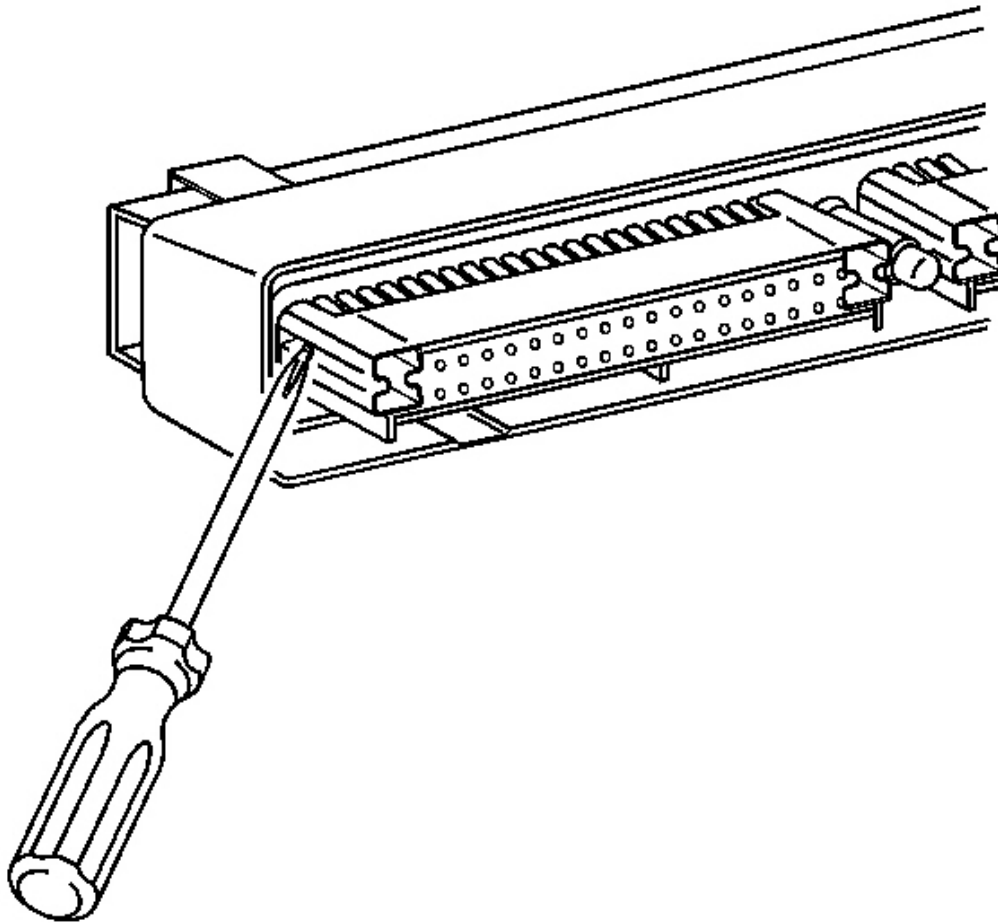


Fig. 67: Loosening Nose Piece Locking Tabs
Courtesy of GENERAL MOTORS CORP.

3. Use a small flat-blade tool to push in one of the locking tabs while gently pulling on the same side of the nose piece.
4. Repeat the procedure for the other locking tab and remove the nose piece.
5. Remove the wire dress cover. The following is a general procedure for wire dress cover removal. Use this procedure as a guide, some dress cover removal procedures may vary.

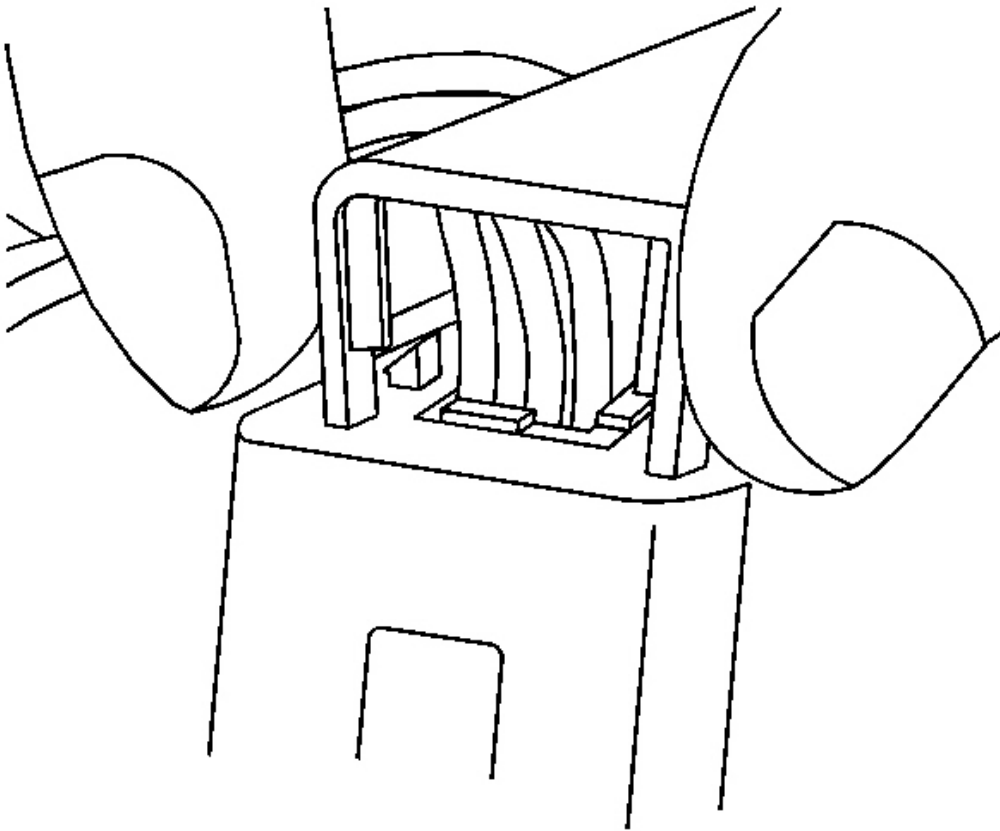


Fig. 68: Squeezing Cover Locking Legs
Courtesy of GENERAL MOTORS CORP.

6. Use fingers to squeeze the 2 locking legs of the cover.

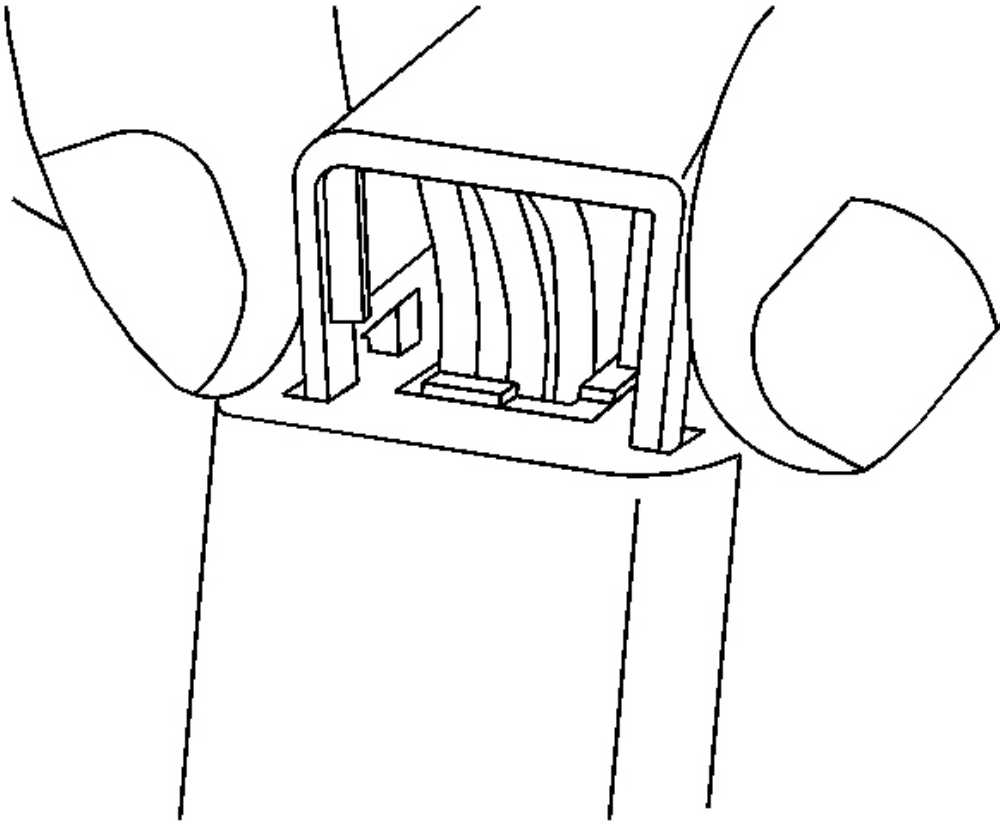


Fig. 69: Unseating Locking Leg
Courtesy of GENERAL MOTORS CORP.

7. Apply pressure and gently rock the cover until one locking leg is unseated.

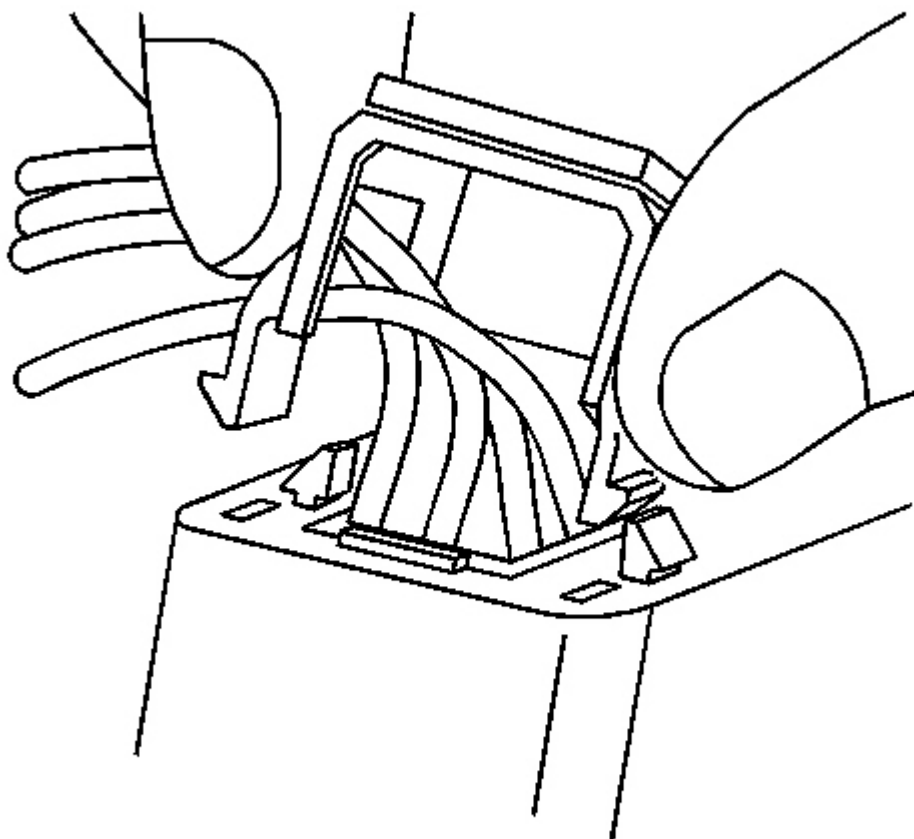


Fig. 70: Removing Cover

Courtesy of GENERAL MOTORS CORP.

8. Continue to apply pressure and rock the cover until the second locking leg is unseated. Repeat procedure for the other side of the dress cover and remove the cover.

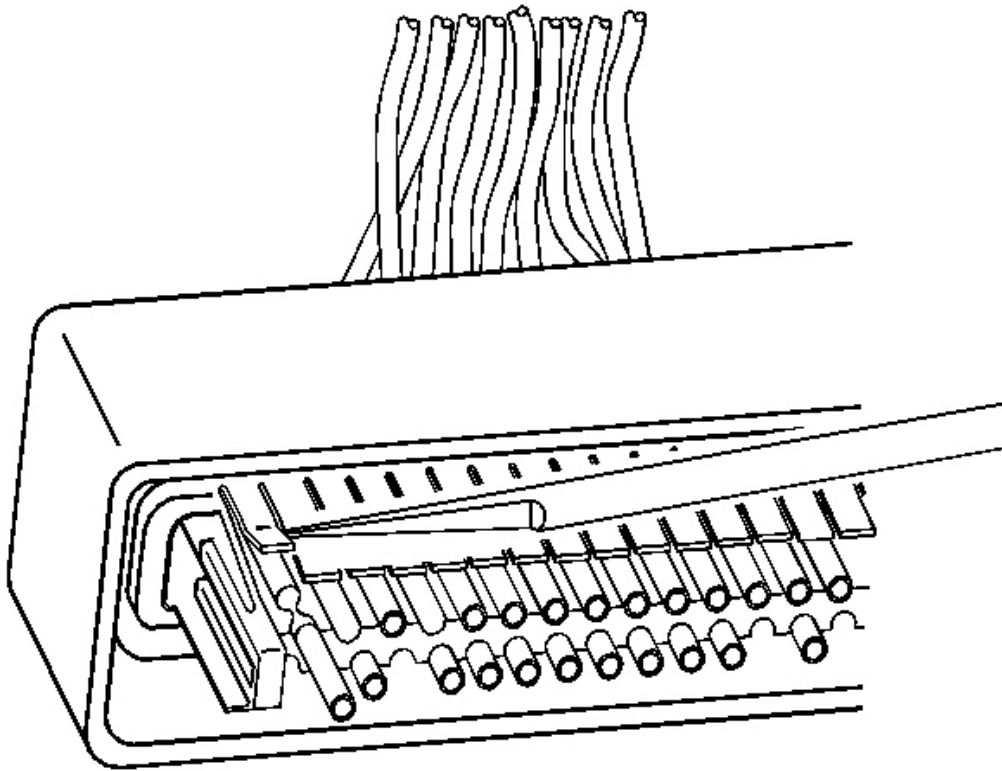


Fig. 71: Identifying Terminal Retaining Tab
Courtesy of GENERAL MOTORS CORP.

9. Use J 38125-12A to gently lift the terminal retaining tab while gently pulling the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
10. If the terminal is severely bent or damaged, it may be possible on some connectors to push the wire out of the front of the connector instead of pulling it through. This will prevent damage to the internal seals of the connector. Once the terminal is pushed out of the connector, cut the wire as close to the terminal as possible and pull the wire through the connector.

Terminal Repair Procedure

The Micro-Pack 100W connectors have small terminals that are difficult to handle and hold when crimping. In order to aid the technician when crimping these terminals, a new crimping tool was developed. The J 38125-101 (W jaw) crimping tool was developed to crimp Micro-Pack 100W terminals. The J 38125-101 (W jaw) crimping tool has a terminal holding block that will hold the terminal in place while the terminal is being crimped. After the terminal is removed from the connector perform the following procedure in order to repair

Micro-Pack 100 terminals.

1. Cut the wire as close to the terminal as possible.

NOTE: After cutting the damaged terminal from the wire, determine if the remaining wire is long enough to reach the connector without putting a strain on the wire. If the wire is not long enough, splice a small length of the same gauge wire to the existing wire, then crimp the new terminal on the added wire.

2. Strip 5 mm (3/16 in) of insulation from the wire.

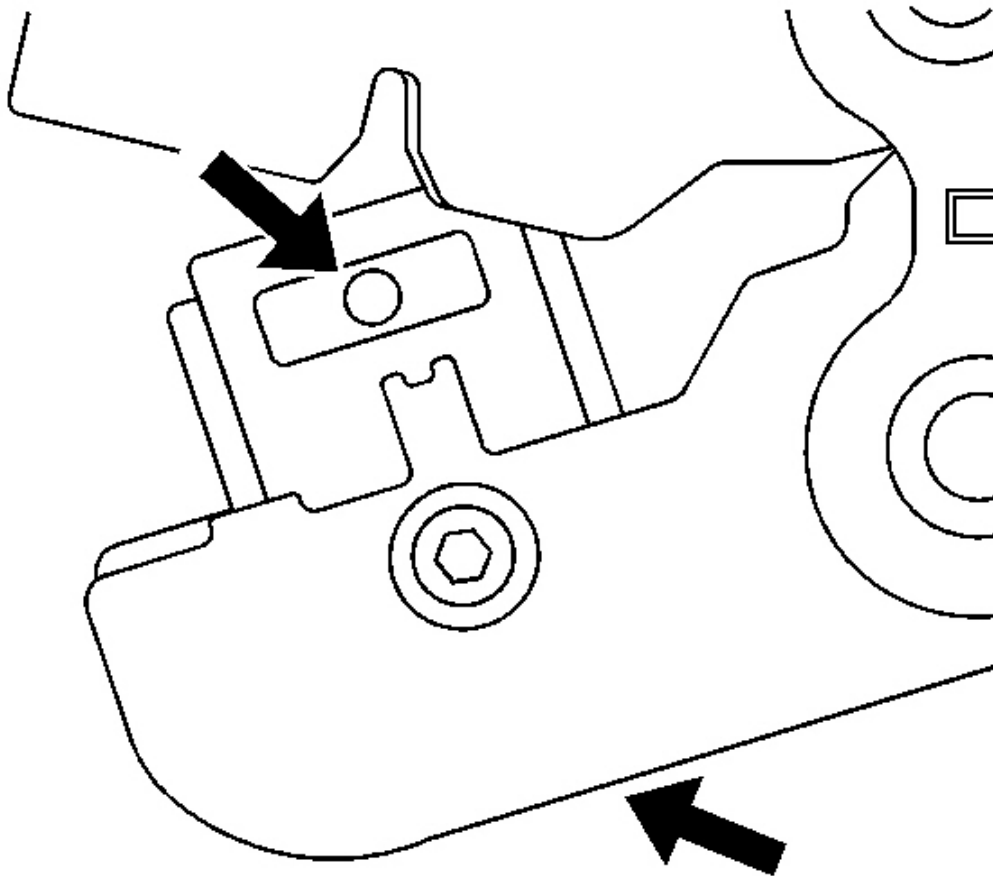


Fig. 72: Identifying Crimping Tool Spring Loaded Locator
Courtesy of GENERAL MOTORS CORP.

3. Depress the spring loaded locator of the J 38125-101 (W jaw) crimping tool until the terminal holder is completely visible.

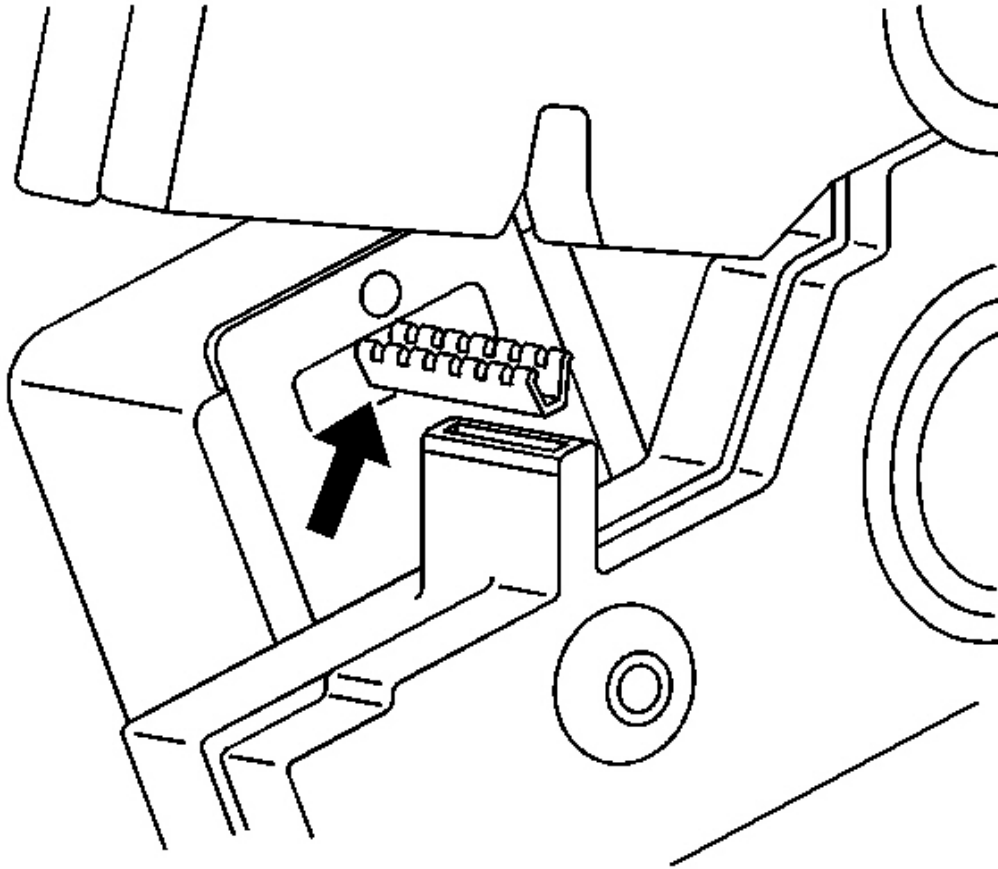


Fig. 73: Locating Terminal In Crimping Tool
Courtesy of GENERAL MOTORS CORP.

4. Insert the terminal into the crimp tool until the core wings are flush with the anvil on the crimp tool. Be sure that the wings are pointed toward the crimp tool former and release the spring locator. The locator will hold the terminal in place. Inspect the alignment of the terminal wings with the crimp tool former. If the terminal wings are wider than the crimp tool former, remove the terminal and bend the terminal wings in slightly.
5. Place stripped wire into terminal.
6. Crimp the new terminal to the wire. If a jam occurs, press the emergency release to open applicator.

Terminal Replacement Procedure

After the terminal is crimped to the wire perform the following procedure in order to replace Micro-Pack 100 terminals.

1. Slide the new terminal into the correct cavity at the back of the connector.
2. Push the terminal into the connector until it locks into place. The new terminal should be even with the other terminals. Ensure that the terminal is locked in place by gently pulling on the wire.
3. To assemble the connector, reverse the Terminal Removal Procedure.

DELPHI CONNECTORS (MICRO .64)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

Follow the steps below in order to remove terminals from Micro .64 connectors.

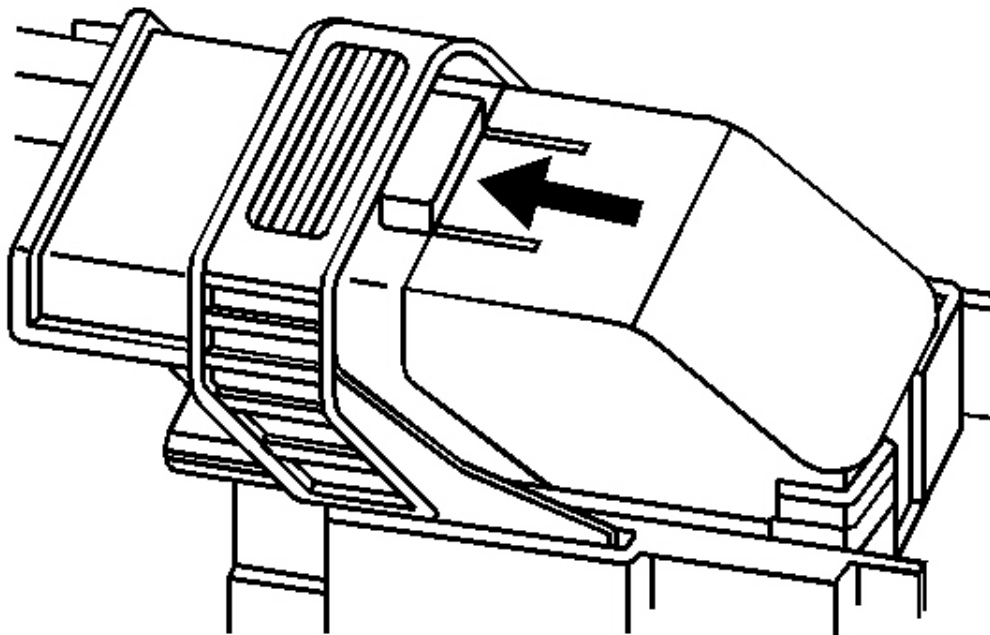


Fig. 74: Identifying Wire Dress Cover Lever Lock
Courtesy of GENERAL MOTORS CORP.

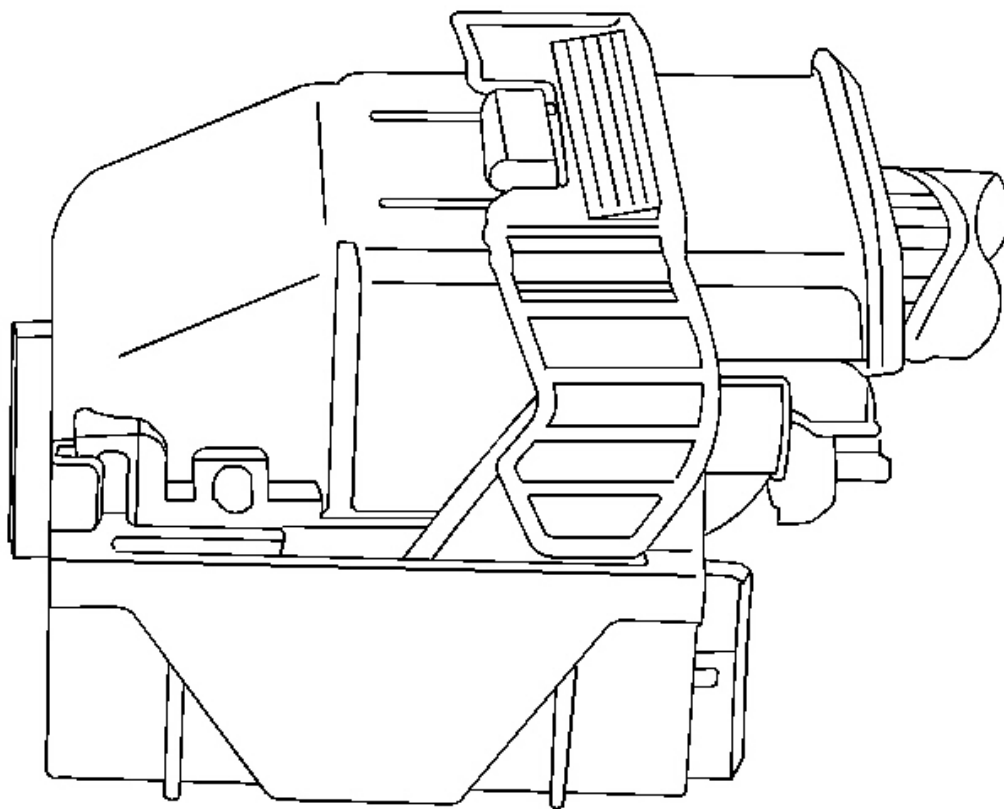


Fig. 75: View Of Typical Micro 64 Connector
Courtesy of GENERAL MOTORS CORP.

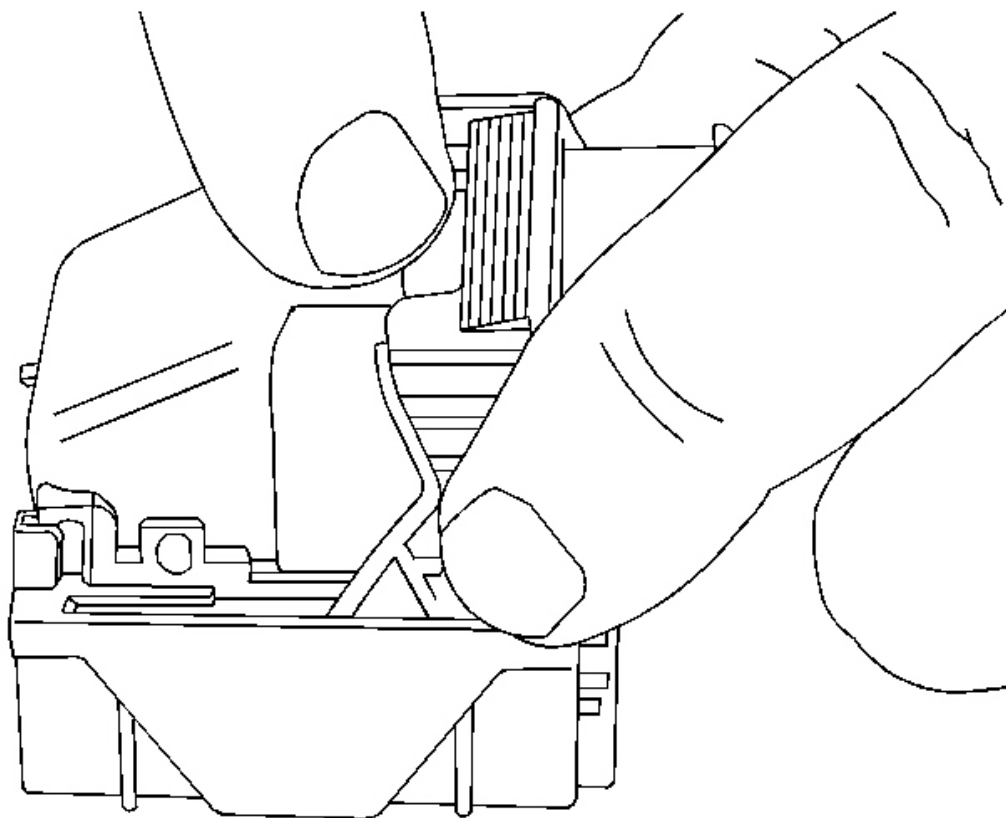


Fig. 76: Depressing Lock And Pulling Lever
Courtesy of GENERAL MOTORS CORP.

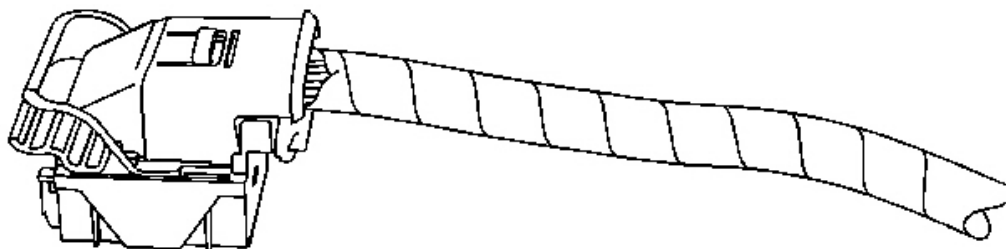


Fig. 77: View Of Connector When Released From Component

Courtesy of GENERAL MOTORS CORP.

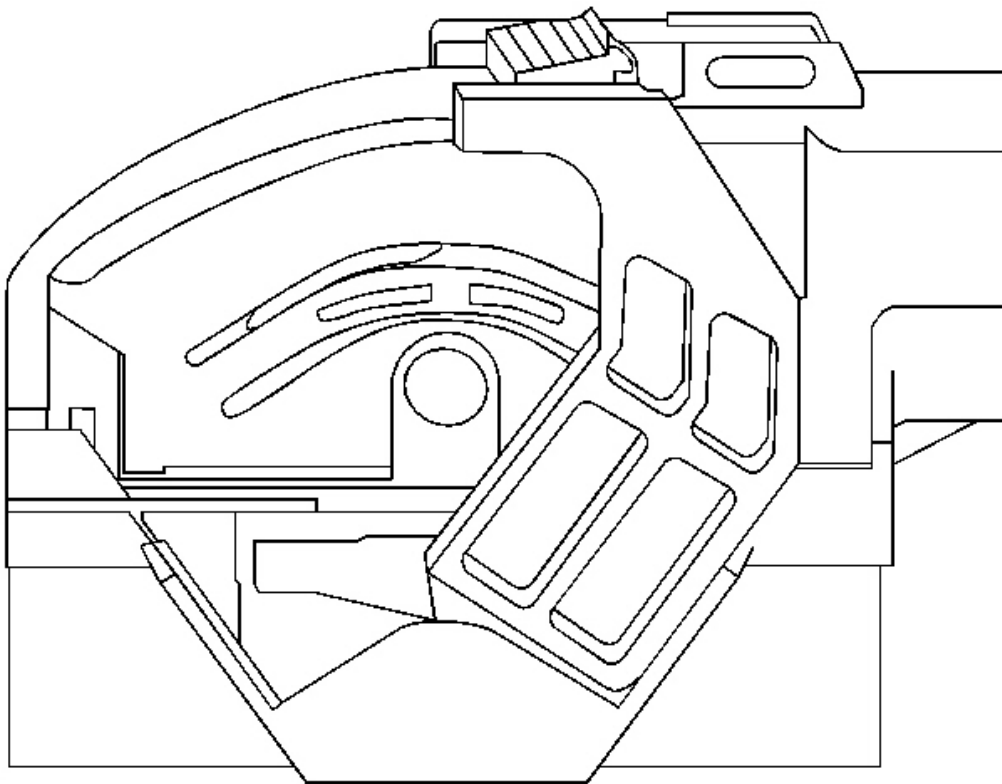


Fig. 78: View Of Another Type Of Micro 64 Connector
Courtesy of GENERAL MOTORS CORP.

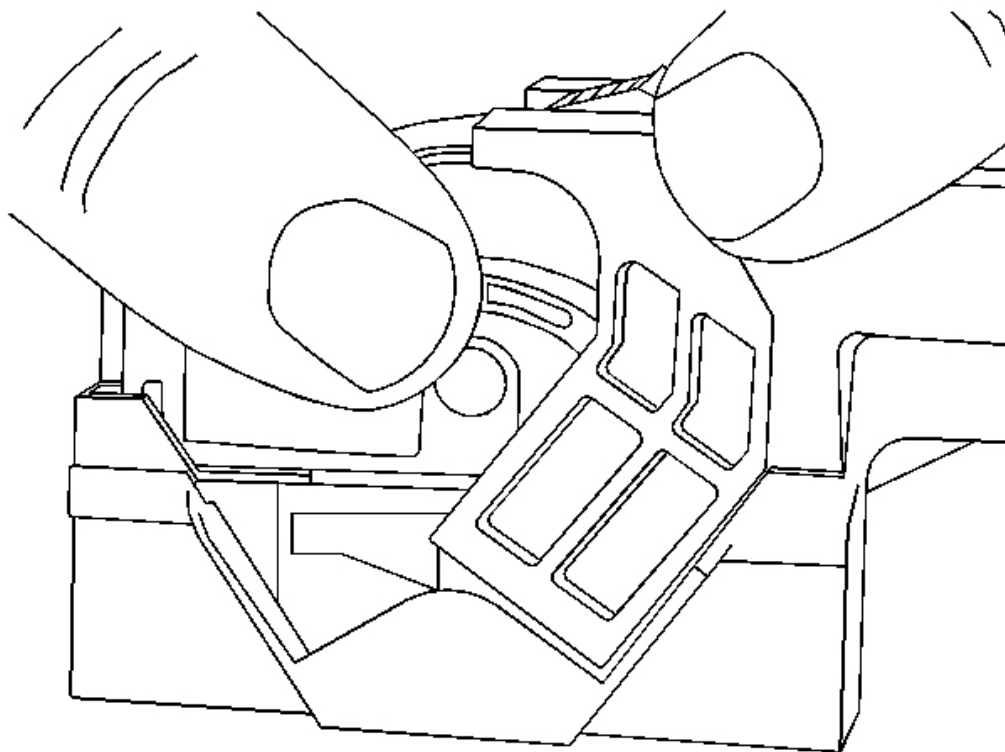


Fig. 79: Locating Locks On Both Sides Of Wiredress Cover
Courtesy of GENERAL MOTORS CORP.

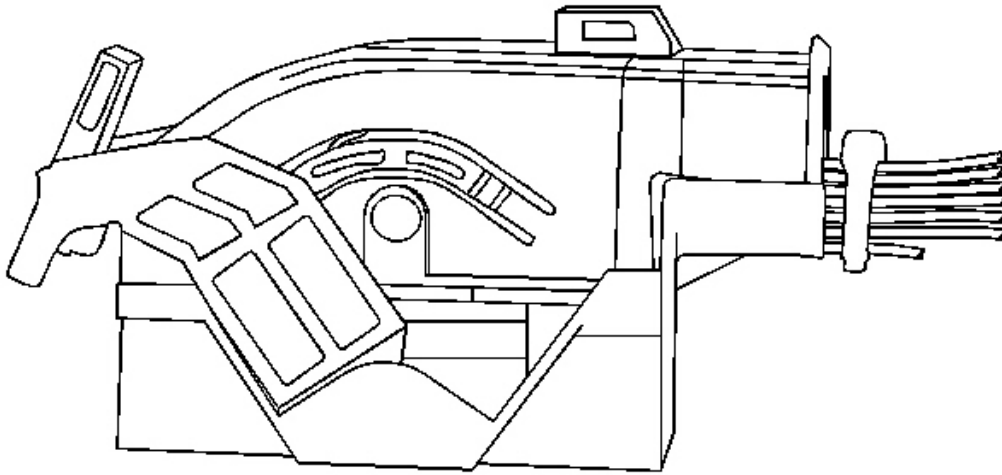


Fig. 80: View Of Connector When Released From Component
Courtesy of GENERAL MOTORS CORP.

1. Locate the lever lock on the wire dress cover. While depressing the lock, pull the lever over and past the lock. The lever lock may be located on the top or sides of the wire dress cover.

View of a typical Micro 64 connector.

Depress the lock and pull the lever over and past the lock.

View of the connector when released from the component.

View of another type of Micro 64 connector.

Depress the locks that are located on both sides of the wiredress cover and pull the lever over and past the locks.

View of the connector when released from the component.

2. Disconnect the connector from the component.

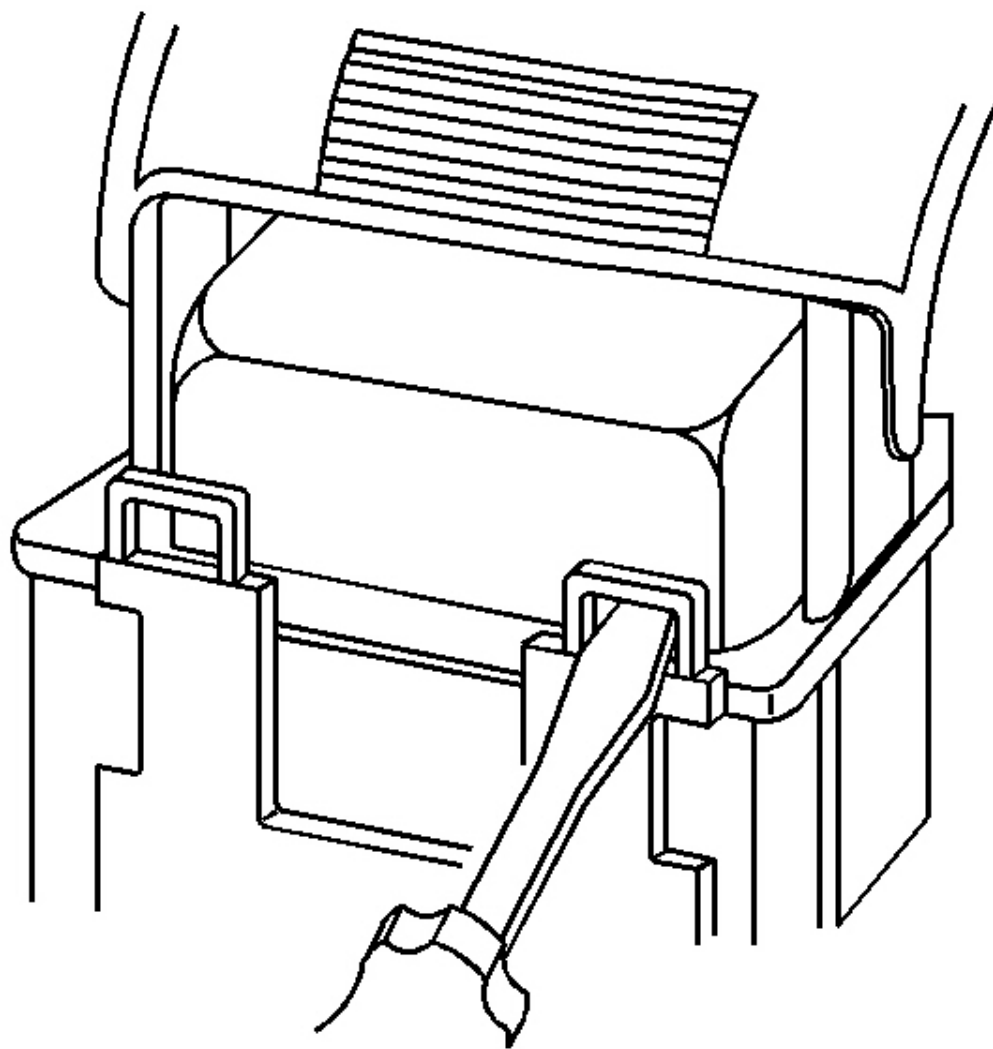


Fig. 81: View Of Releasing Locking Tabs
Courtesy of GENERAL MOTORS CORP.

3. Locate the dress cover locking tabs at the front of the connector. Using a small flat-blade tool push down on one of the locking tabs and pull the cover up until the dress cover releases. Repeat this procedure for the other locking tab.
4. Once the front 2 locks are unlocked, lift the front of the dress cover and pull it forward.

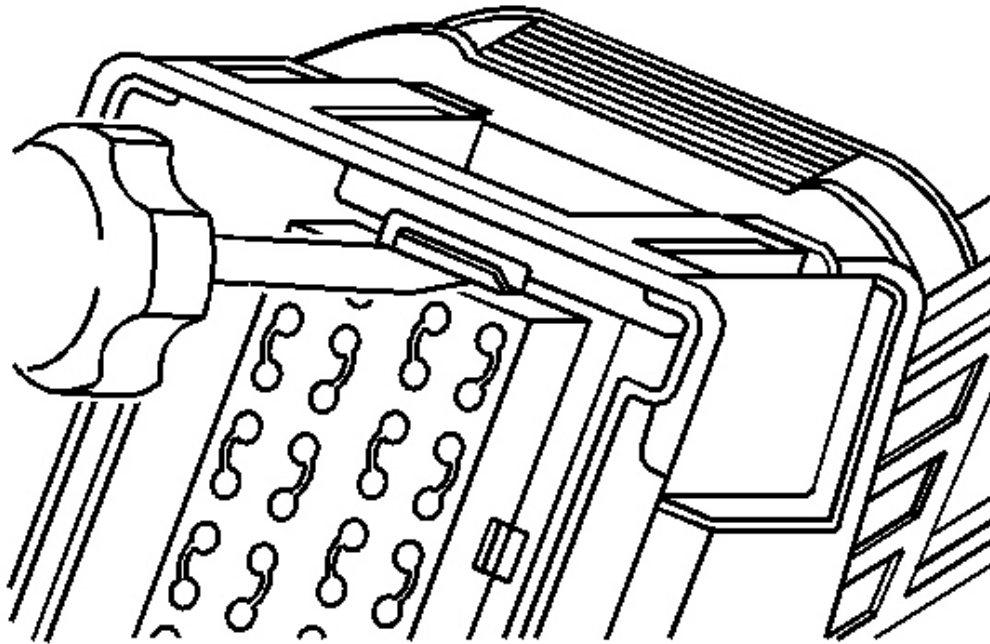


Fig. 82: View Of Removing Terminal Position Assurance
Courtesy of GENERAL MOTORS CORP.

NOTE: Always use care when removing a terminal position assurance (TPA) in order to avoid damaging it.

5. Remove the TPA by inserting a small flat-blade tool into the small slot on the TPA and pushing down until the TPA releases. Gently pry the TPA out of the connector.

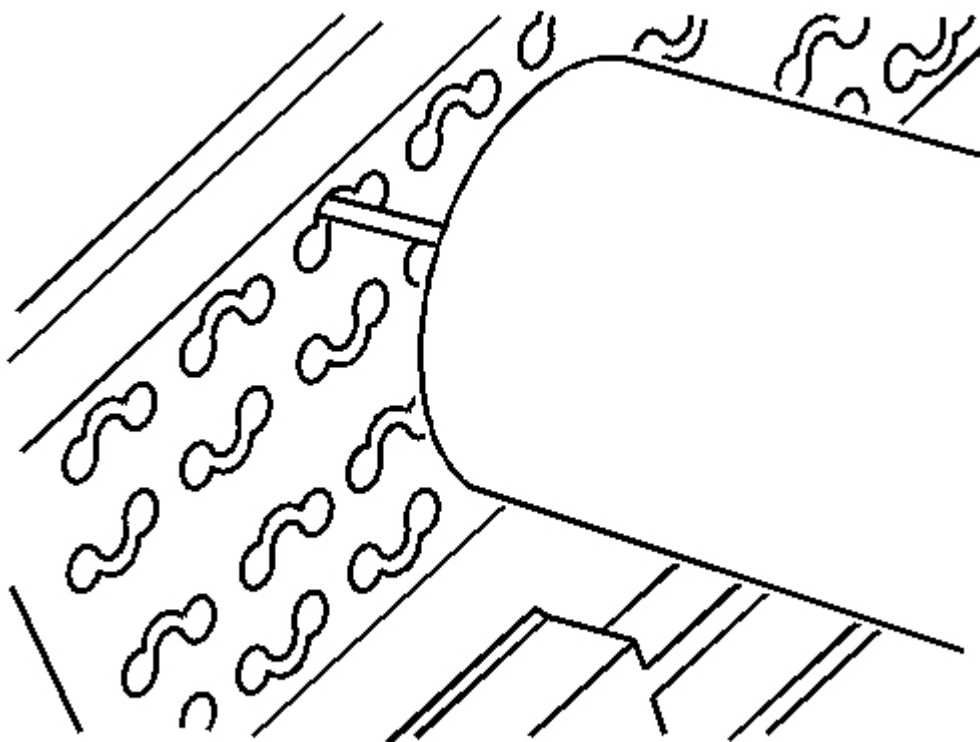


Fig. 83: Identifying Terminal Release Tool
Courtesy of GENERAL MOTORS CORP.

NOTE: Be careful not to angle or rock the J 38125-21 tool when inserting it into the connector or the tool may break.

6. Insert the J 38125-21 tool into the round canal between the terminals cavities at the front of the connector. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

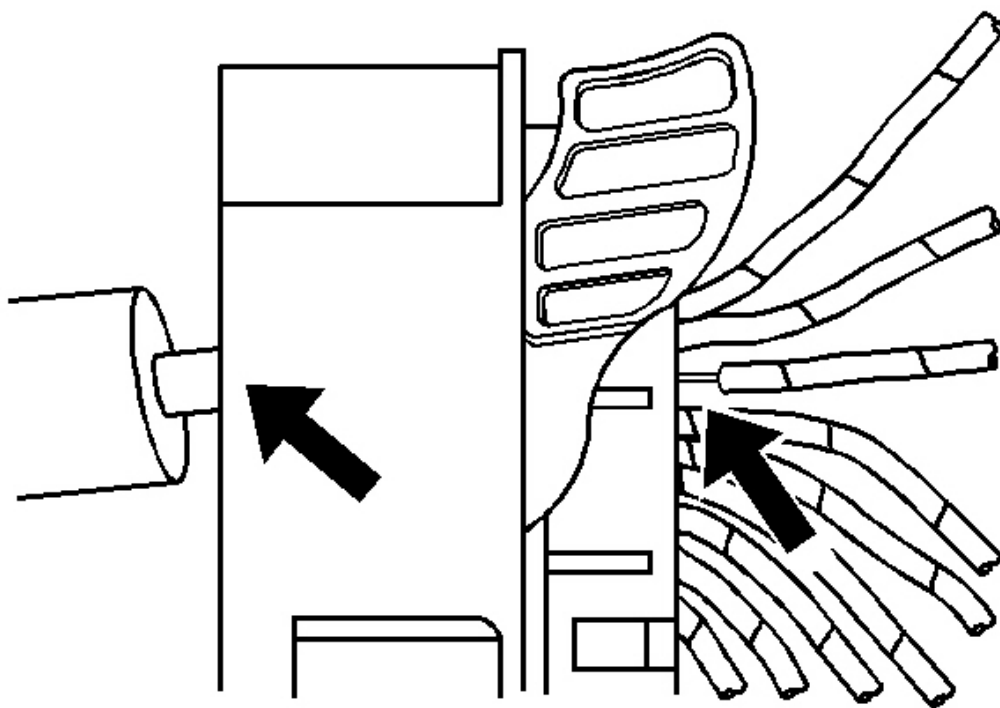


Fig. 84: Removing Wire From Back Of Connector
Courtesy of GENERAL MOTORS CORP.

7. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Follow the steps below in order to repair Micro 64 connector terminals.

The Micro 64 connectors have small terminals that are difficult to handle and hold when crimping. In order to aid the technician when crimping these terminals, a new crimping tool was developed. The J 38125-64 (M jaw) was developed to crimp Micro 64 terminals. The J 38125-64 crimping tool has a terminal holding block that will hold the terminal in place while the terminal is being crimped. The J 38125-64 crimping tool is also designed to crimp both the wire and the insulation at the same time.

After the terminal is removed from the connector perform the following procedure in order to repair Micro 64 terminals.

NOTE: After cutting the damaged terminal from the wire, determine if the remaining

wire is long enough to reach the connector without putting a strain on the wire. If the wire is not long enough, splice a small length of the same gauge wire to the existing wire, then crimp the new terminal on the added wire.

1. Cut the wire as close to the damaged terminal as possible.
2. Strip 5 mm (3/16 in) of insulation from the wire.

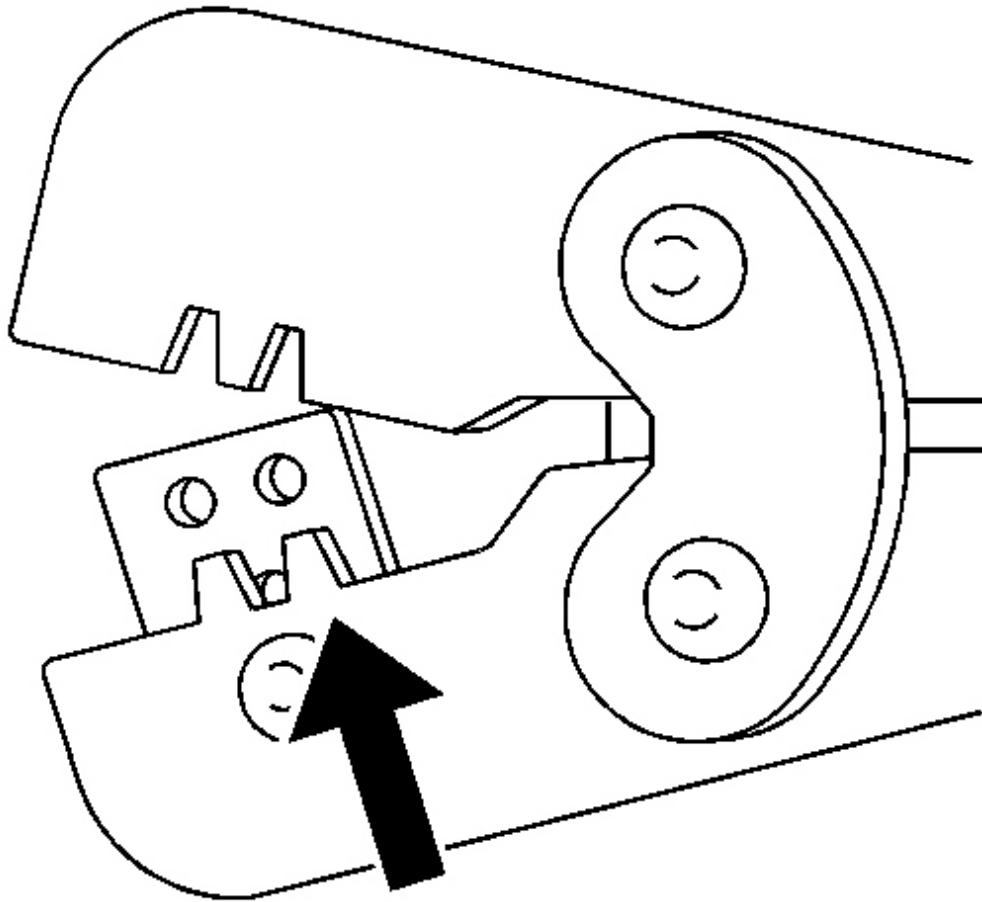


Fig. 85: Identifying Crimping Tool Spring Loaded Locator
Courtesy of GENERAL MOTORS CORP.

3. Depress the spring loaded locator of the crimping tool until the terminal holder is completely visible.

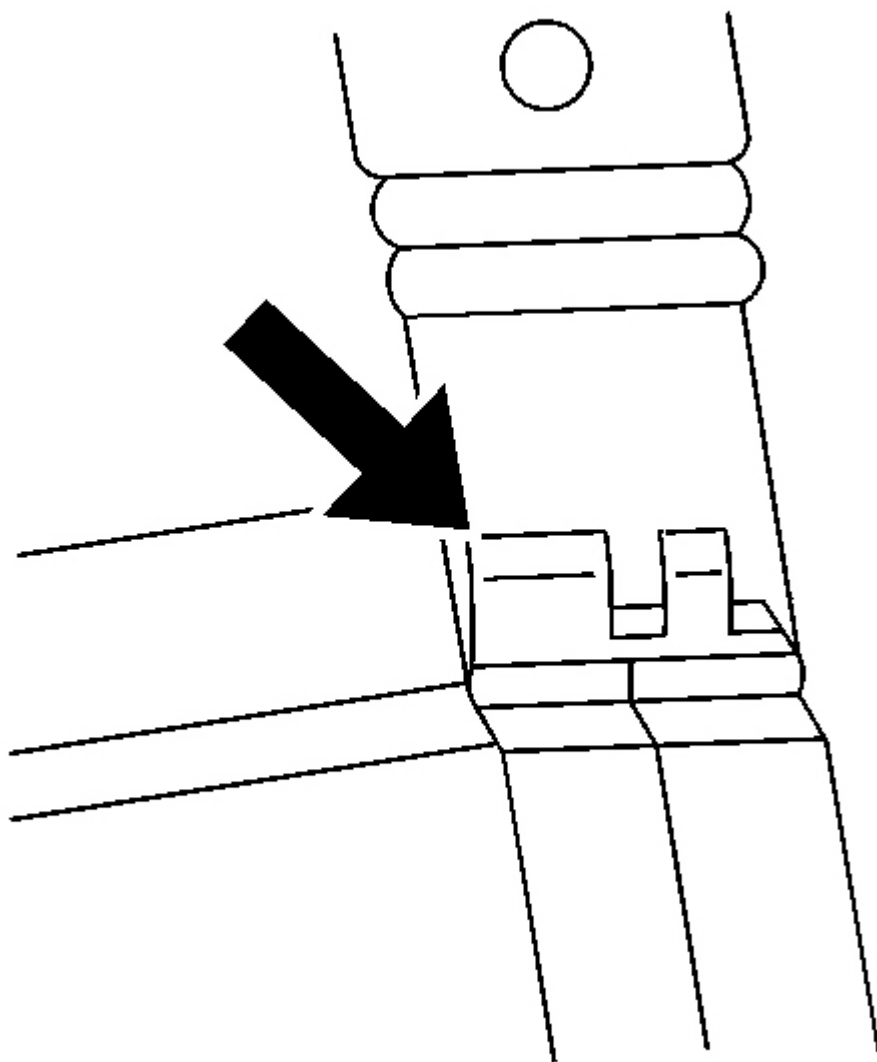


Fig. 86: Identifying Terminal Holder
Courtesy of GENERAL MOTORS CORP.

4. Insert terminal into the appropriate terminal holder until it hits bottom and stops. The correct terminal holder is determined by the wire size. Also ensure that the terminal wings are pointing towards the former on the tool and the release locator.
5. Insert the stripped cable into the terminal. Insulation should be visible on both sides of the terminal insulation wings.
6. Compress the handles until the ratchet automatically releases.

7. Place the terminal into the appropriate cavity and assemble the connector.

DELPHI CONNECTORS (12-WAY)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

Follow the steps below in order to remove terminals from the connector.

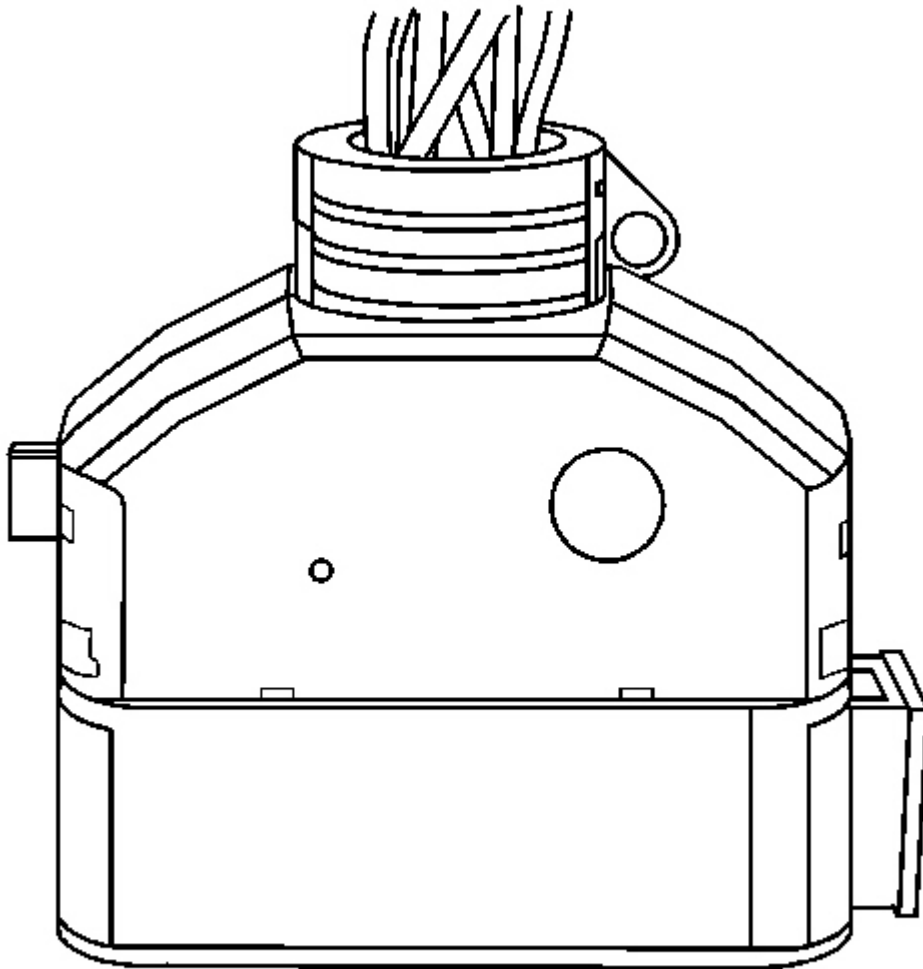


Fig. 87: Identifying Lever Lock
Courtesy of GENERAL MOTORS CORP.

1. Locate the lever lock on the wire dress cover. Remove the connector position assurance (CPA) and slide the lever lock away from the connector body.
2. Disconnect the connector from the component.

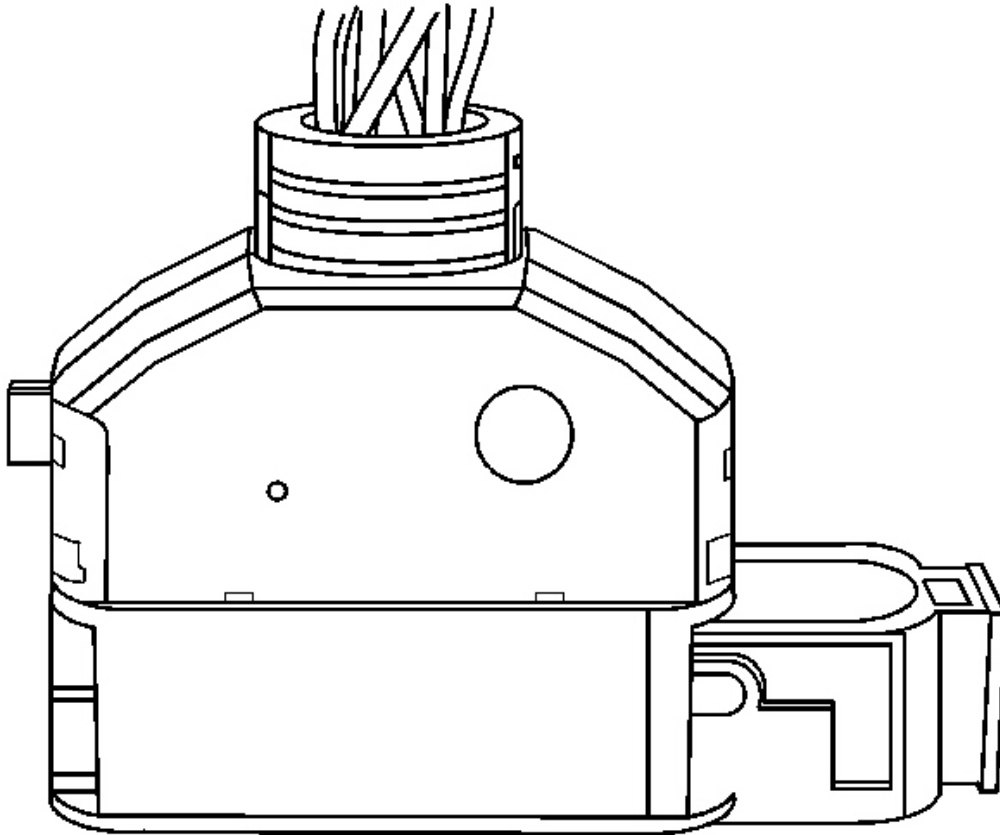


Fig. 88: Identifying Dress Cover Locking Tabs
Courtesy of GENERAL MOTORS CORP.

3. Locate the dress cover locking tabs on the dress cover of the connector. Using a small flat-blade tool release all of the locking tabs.

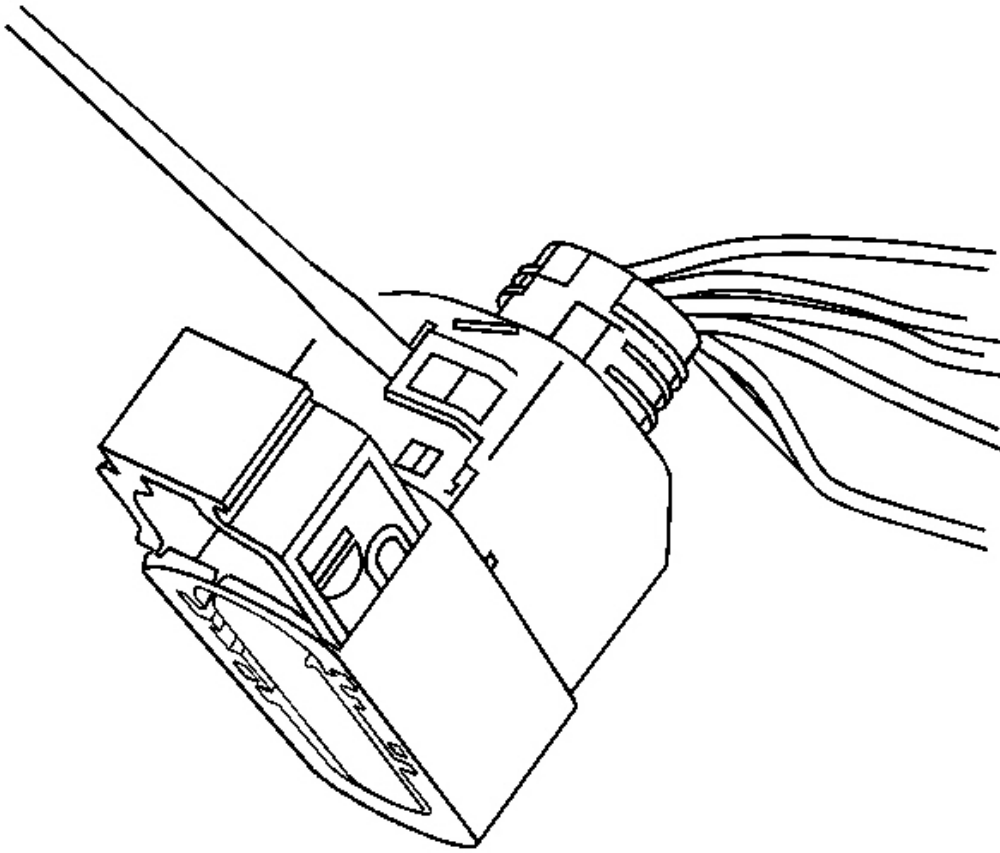


Fig. 89: Identifying Lower Wire Dress Cover Locking Tab
Courtesy of GENERAL MOTORS CORP.

4. Release the lower wire dress cover locking tab.

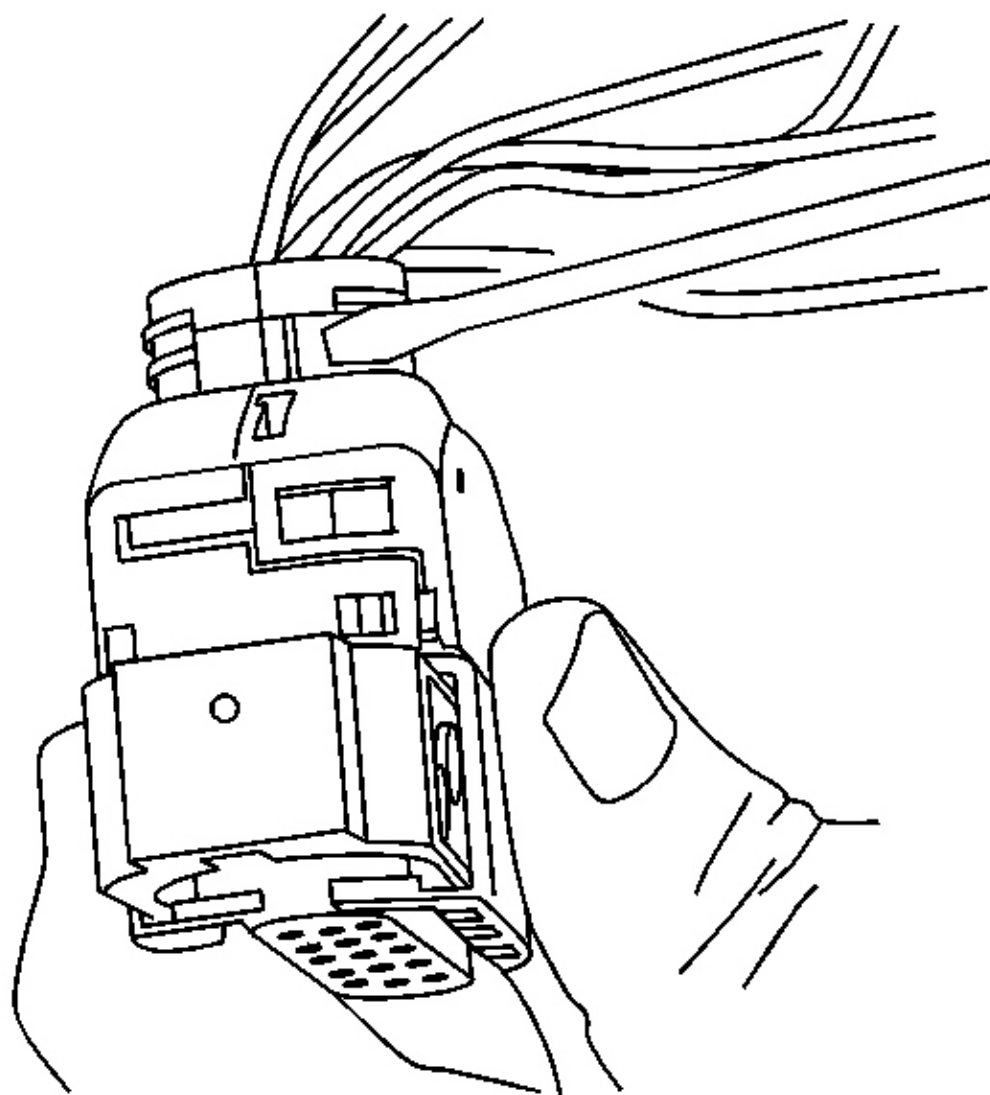


Fig. 90: Identifying Upper Wire Dress Cover Locking Tab
Courtesy of GENERAL MOTORS CORP.

5. Release the upper wire dress cover locking tab.
6. Once the locks are unlocked, lift the dress cover off.

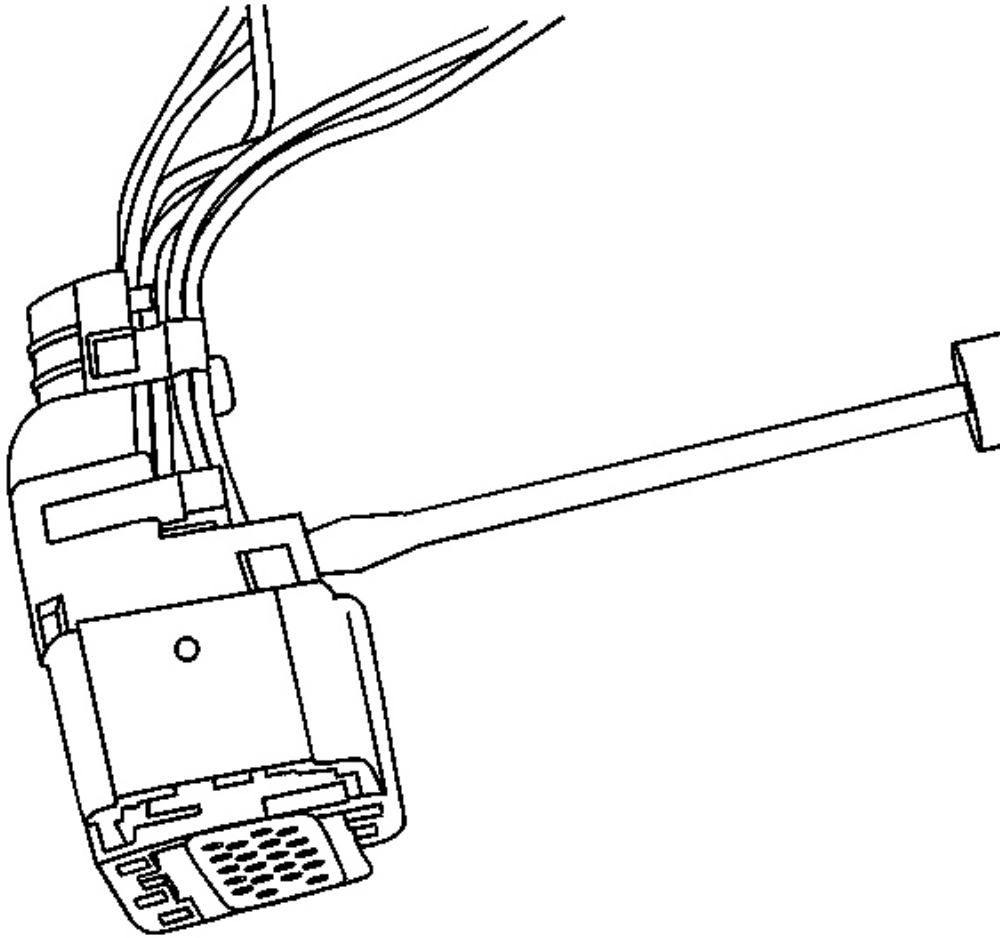


Fig. 91: Prying TPA Out Of Connector
Courtesy of GENERAL MOTORS CORP.

NOTE: Always use care when removing a terminal position assurance (TPA) in order to avoid damaging it.

7. Remove the TPA by inserting a small flat-blade tool into the locking tabs on both sides of the TPA. Gently pry the TPA out of the connector.

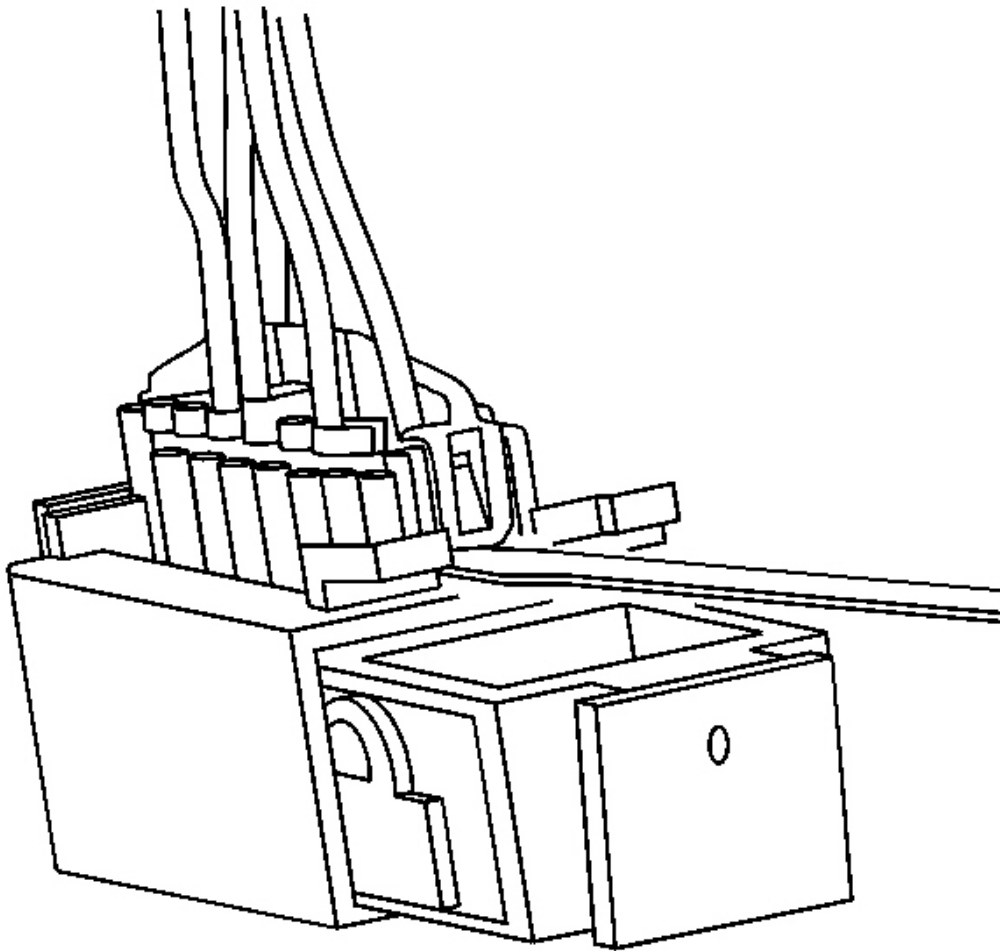


Fig. 92: Removing Nose Piece

Courtesy of GENERAL MOTORS CORP.

8. Remove the nose piece by inserting a small flat-blade tool into the locking tabs on both sides of the nose piece. Gently pry the nose piece out of the connector.

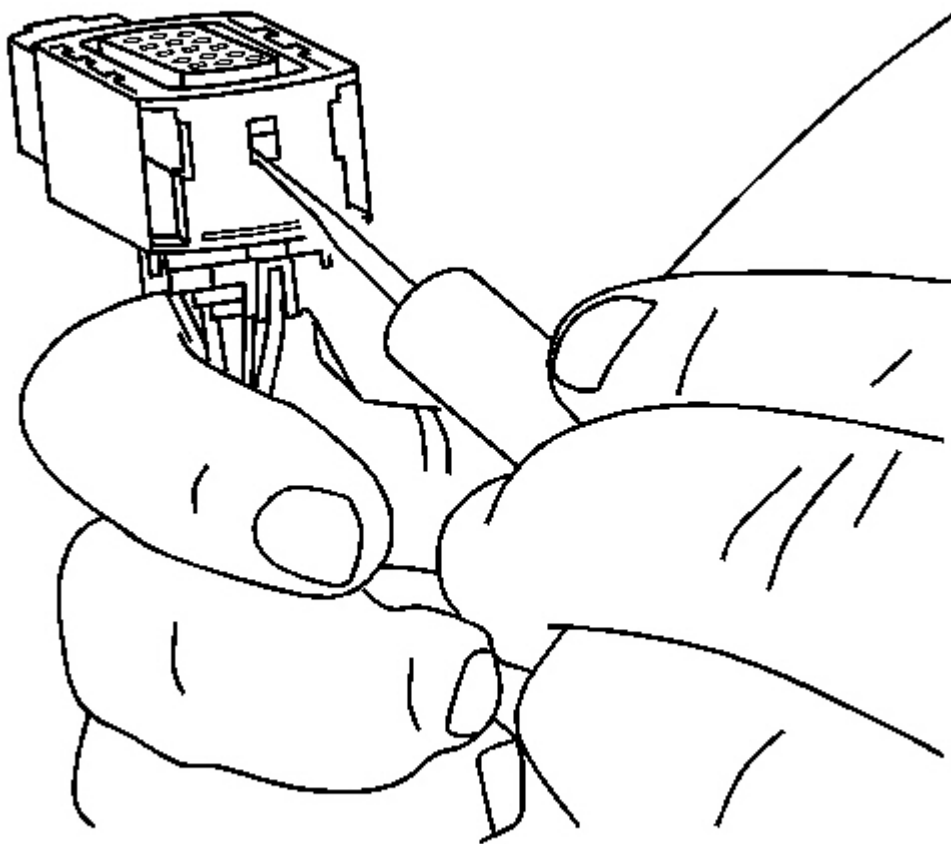


Fig. 93: Inserting J 38125-12A Into Terminal Release Cavity
Courtesy of GENERAL MOTORS CORP.

9. Insert the J 38125-12A tool to release the terminals by inserting the tool into the terminal release cavity. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

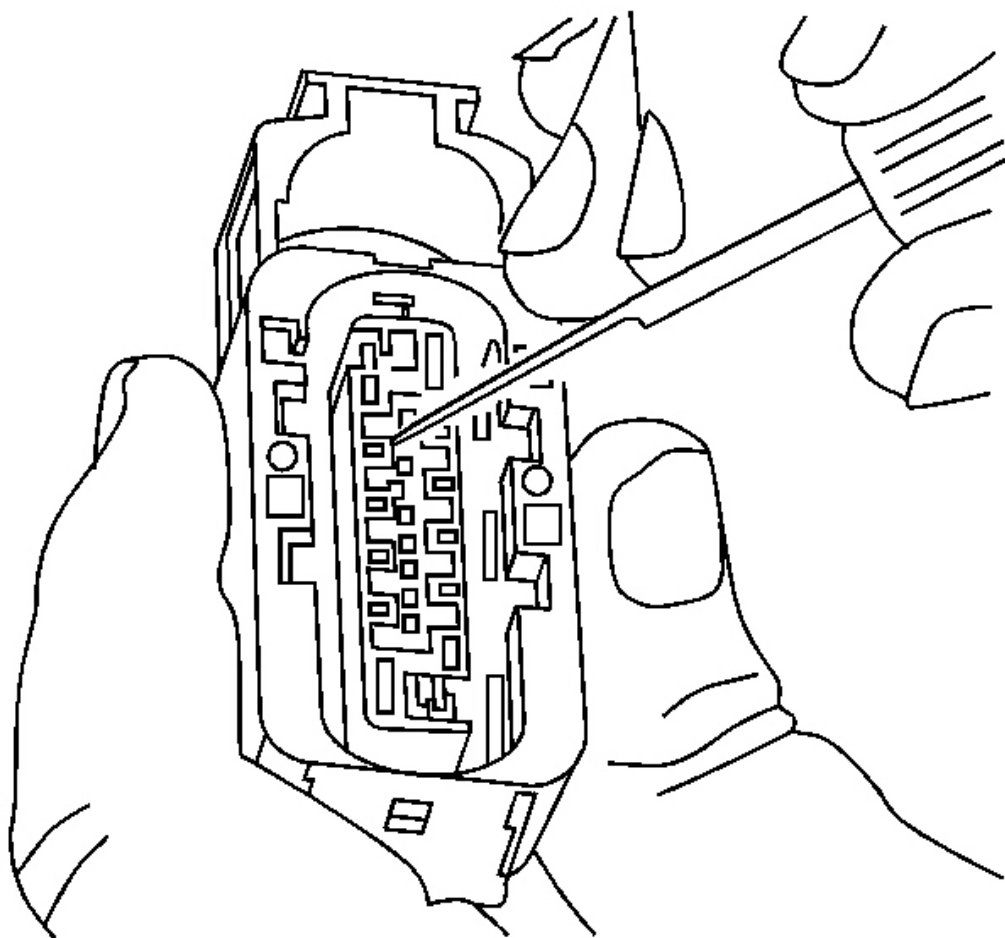


Fig. 94: Pulling Wire Out Of Back Of Connector
Courtesy of GENERAL MOTORS CORP.

10. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

DELPHI CONNECTORS (STEERING GEAR)

Removal Procedure

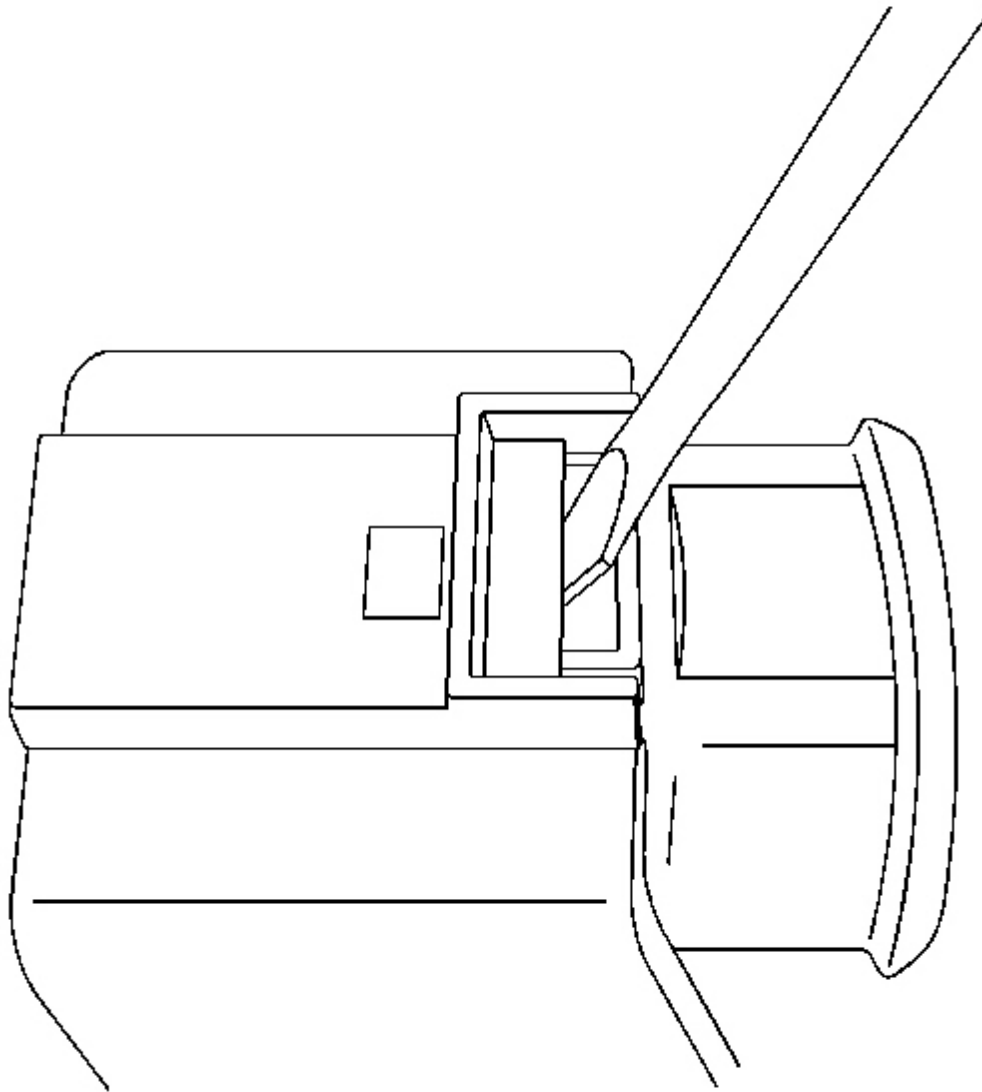


Fig. 95: Releasing Locking Tab On Connector
Courtesy of GENERAL MOTORS CORP.

1. Use a small flat-bladed tool to release the locking tab on the connector.

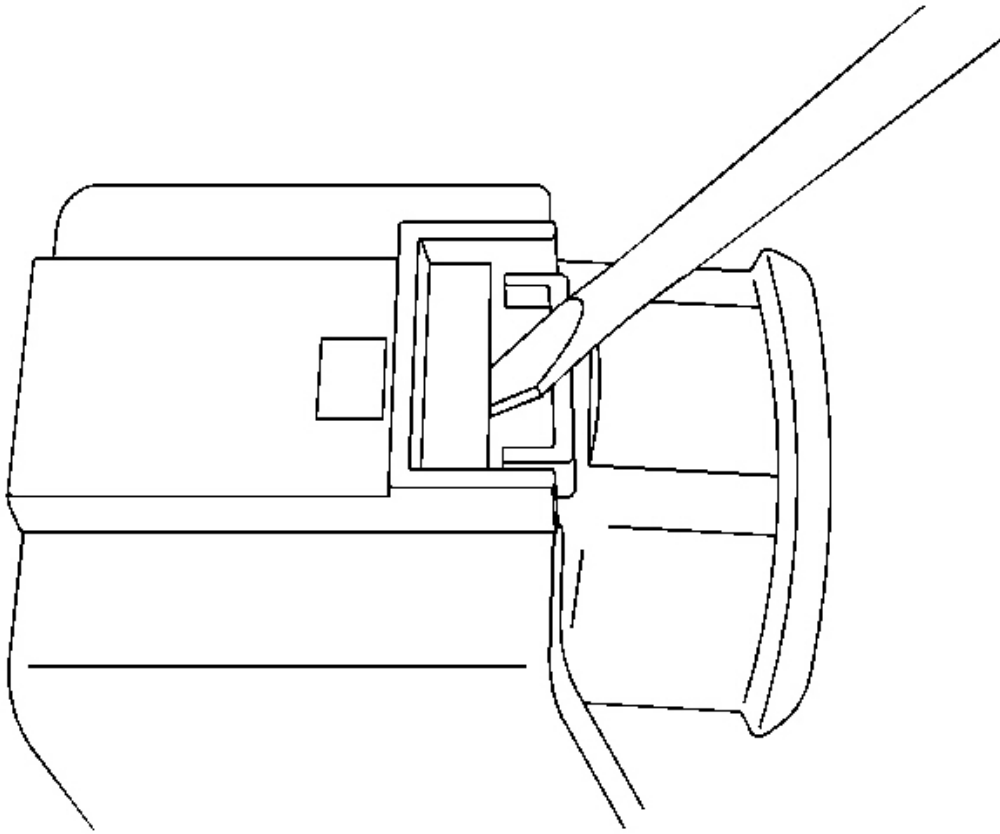


Fig. 96: Releasing Connector

Courtesy of GENERAL MOTORS CORP.

2. Push down the locking tab to release the connector. The small flat-bladed tool may need to be pushed down and angled back slightly to depress the locking tab. Pull on the connector body while releasing the locking tab to disconnect the connector.

FCI CONNECTORS (LEVER LOCK)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

Follow the steps below in order to remove terminals from the connector.

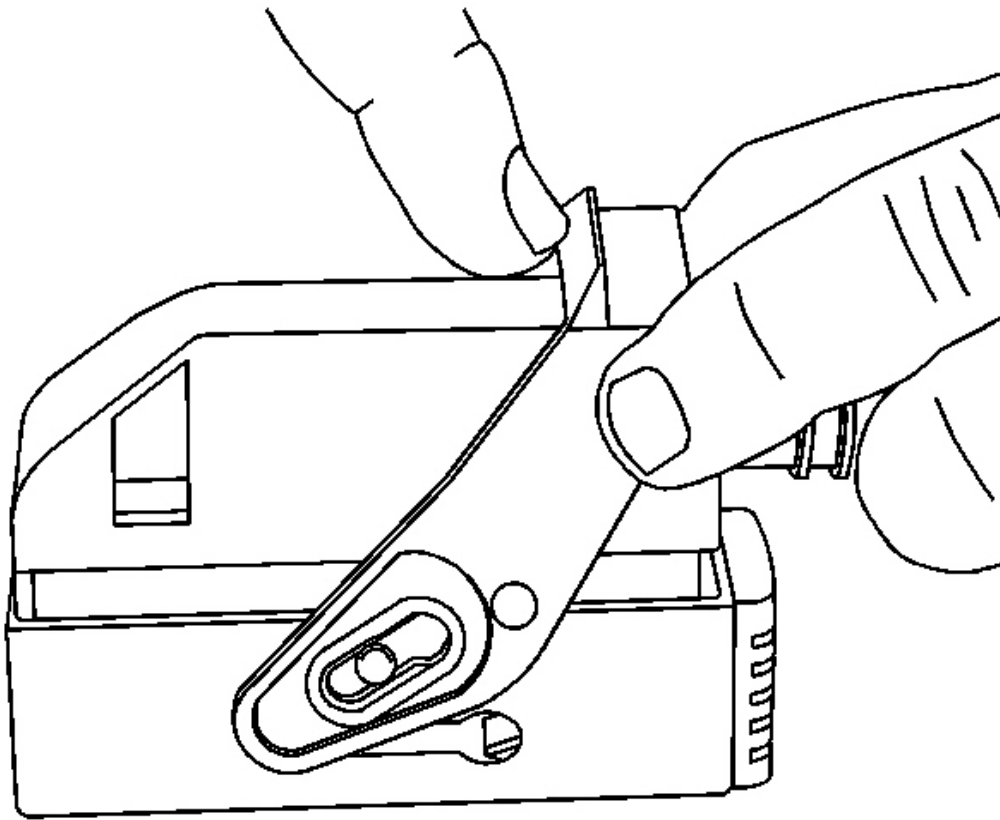


Fig. 97: Identifying Release Tab
Courtesy of GENERAL MOTORS CORP.

1. Slide the lever lock forward while pressing down on the lever lock release tab.
2. The release tab is located on the top of the wiredress cover.

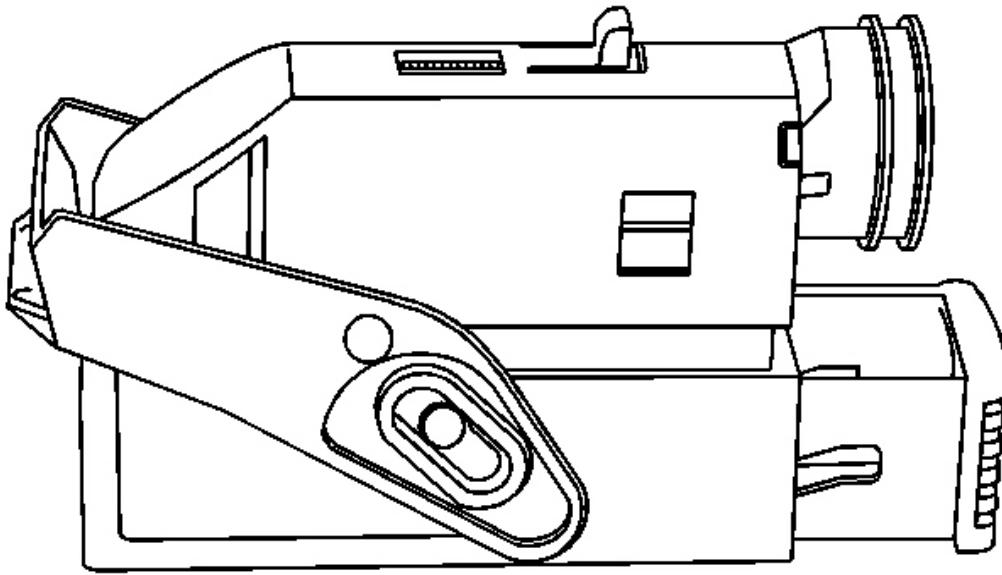


Fig. 98: View Of Connector In Released Position
Courtesy of GENERAL MOTORS CORP.

3. View of connector in released position.
4. Disconnect the connector from the component.
5. Locate the dress cover locking tabs at the corners of the dress cover. Use a small flat-blade tool to release the locking tabs and remove the dress cover.

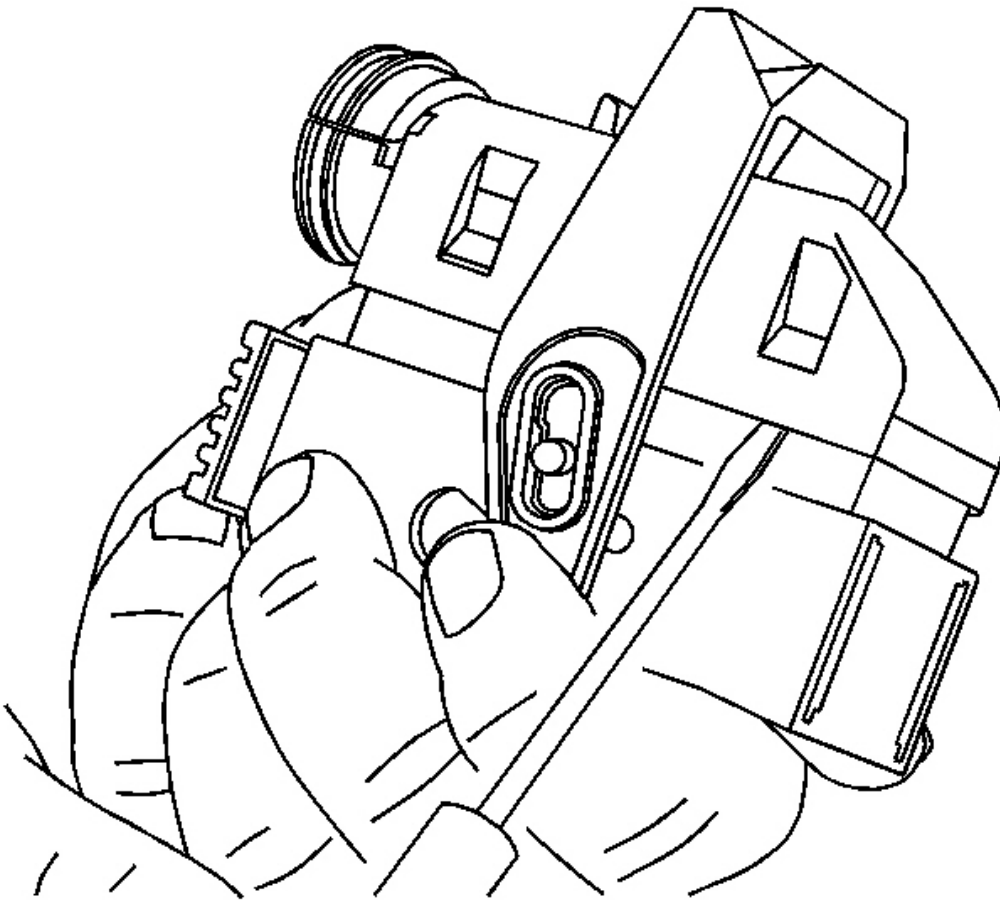


Fig. 99: View Of Sliding Terminal Position Assurance (TPA) Up One Notch
Courtesy of GENERAL MOTORS CORP.

6. Use a small flat-blade tool to slide the terminal position assurance (TPA) up one notch on both ends of the connector. The TPA is located underneath the wire dress cover.

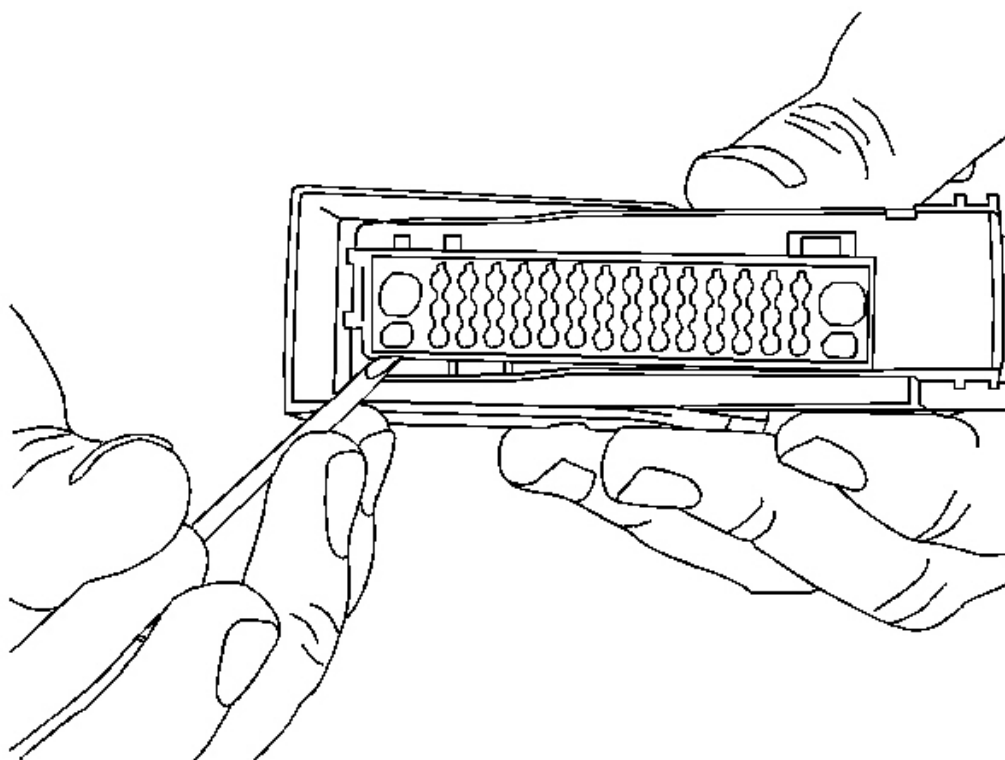


Fig. 100: View Of Releasing Terminals
Courtesy of GENERAL MOTORS CORP.

For the larger terminals insert the J 38125-556 tool to release the terminals by inserting the tool into the terminal release cavity. For the smaller terminals insert the J 38125-560 tool to release the terminals by inserting the tool into the terminal release cavity. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

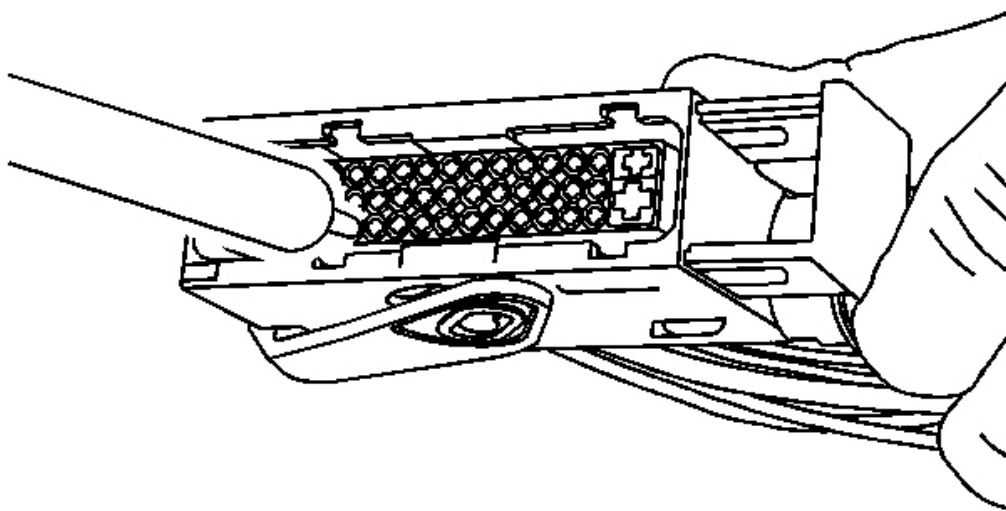


Fig. 101: Holding Removal Tool In Place
Courtesy of GENERAL MOTORS CORP.

7. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

FCI CONNECTORS (SIR)

Removal Procedure

NOTE: **The orange CPA must be released first to disconnect or to connect the connector.**

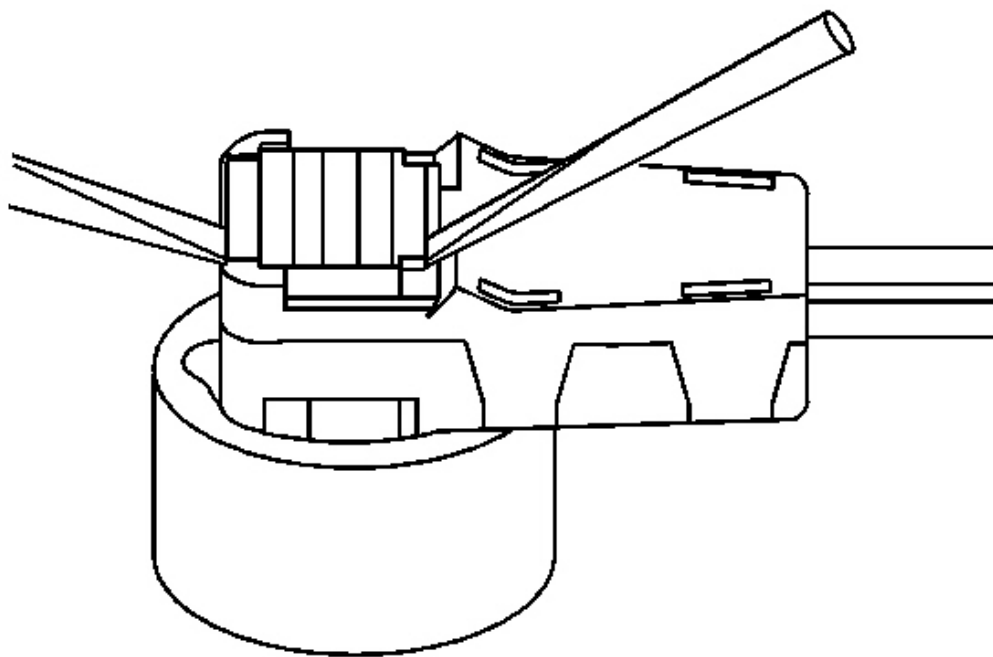


Fig. 102: Lifting Orange CPA

Courtesy of GENERAL MOTORS CORP.

1. Lift the orange CPA vertically (avoid lifting on an angle to the connector) approximately 4 mm to release the connector. Use a small flat-bladed tool to help release the orange CPA. The orange CPA can also be released manually without any tools.

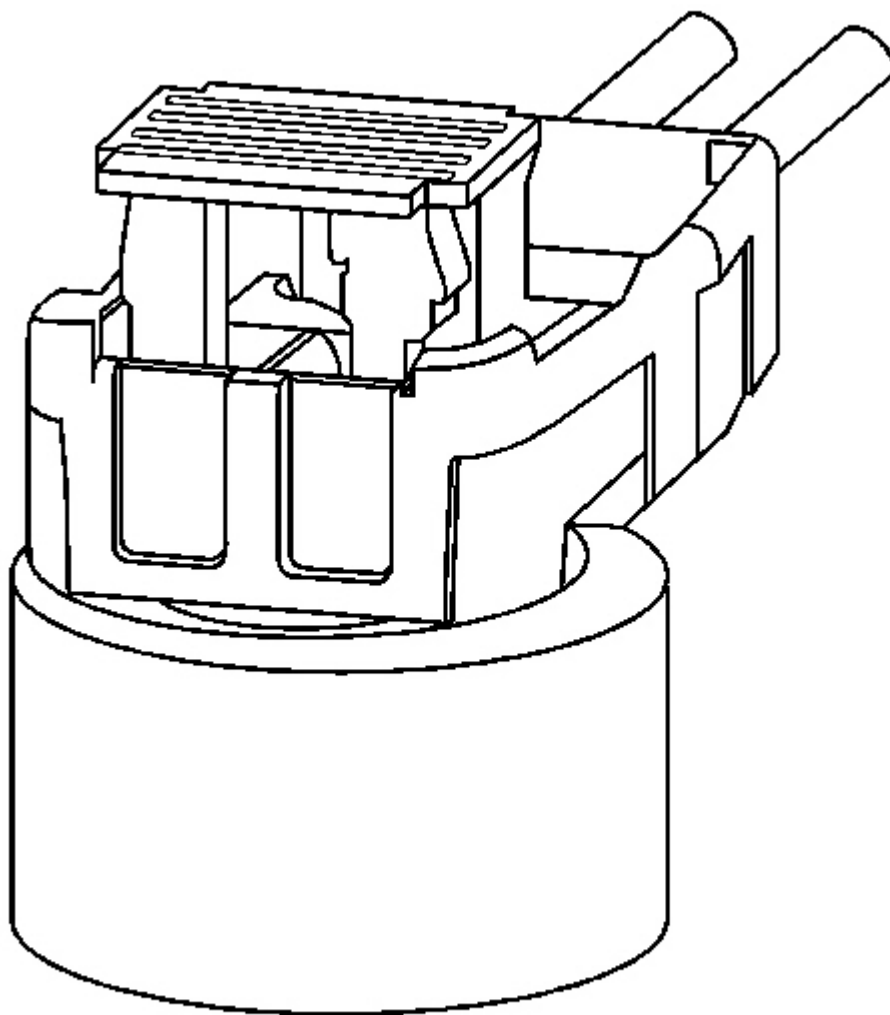


Fig. 103: Disconnecting Connector
Courtesy of GENERAL MOTORS CORP.

2. Grab the connector on both sides and lift the connector vertically to disconnect the connector.

Installation Procedure

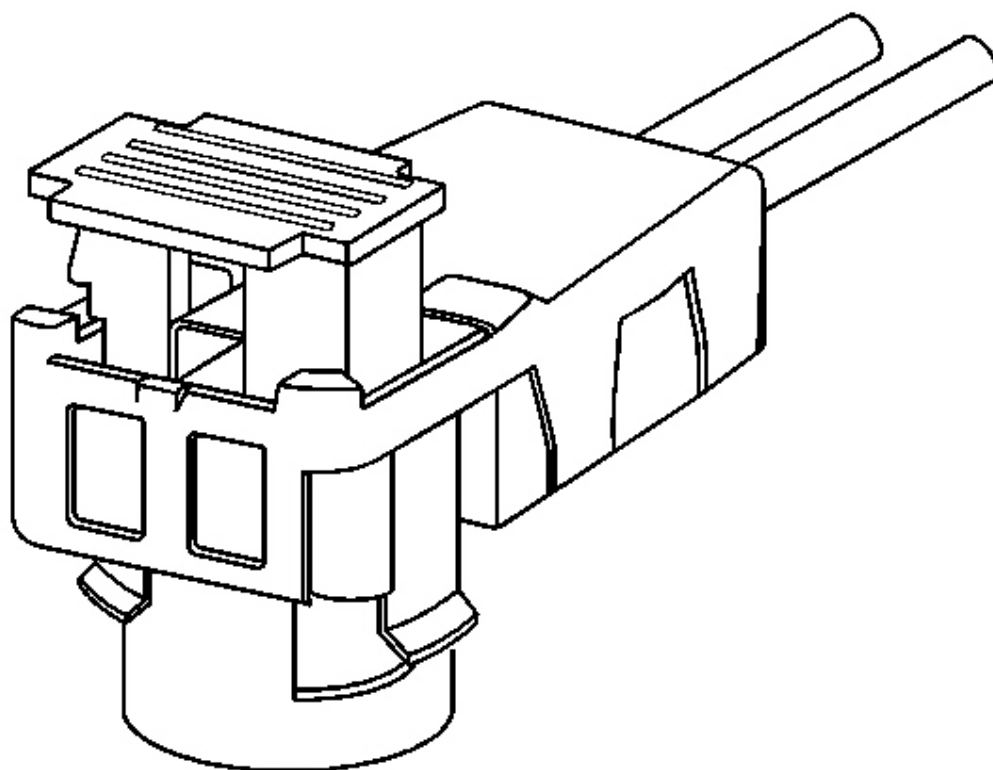


Fig. 104: Lifting Orange CPA
Courtesy of GENERAL MOTORS CORP.

1. Lift the orange CPA vertically approximately 4 mm before installing the connector. Use a small flat-bladed tool to help release the orange CPA. The orange CPA can also be released manually without any tools.

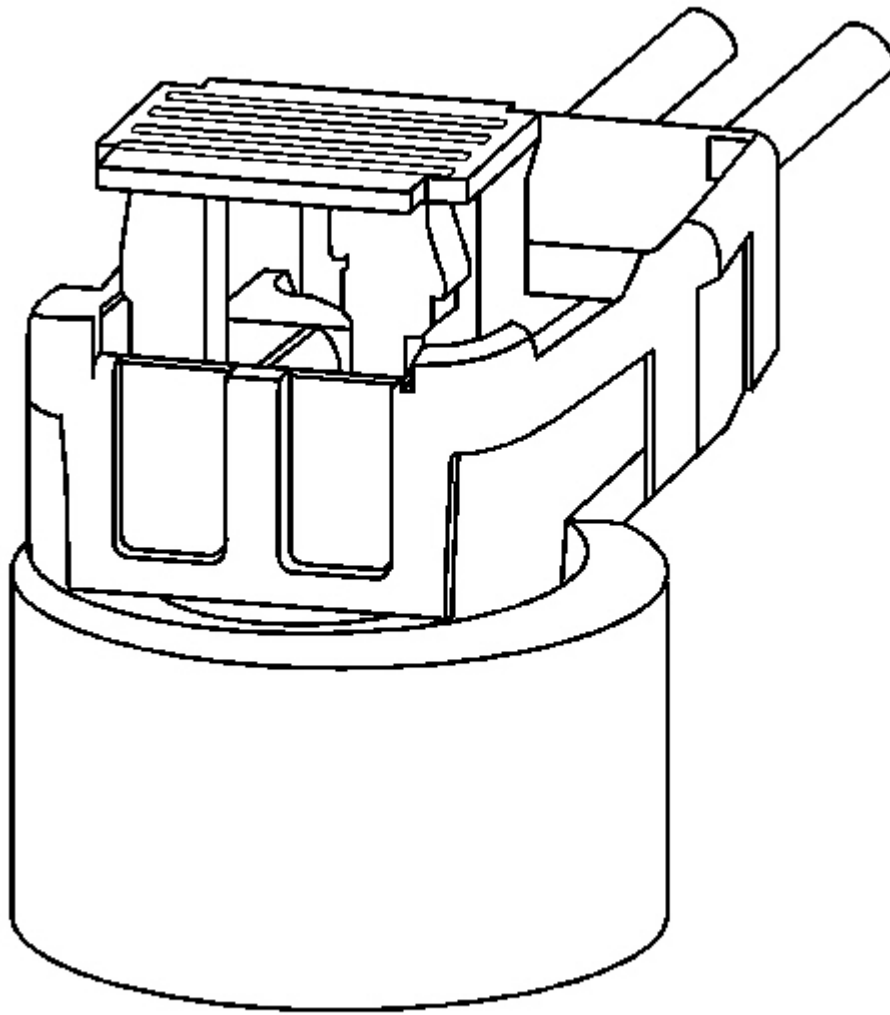


Fig. 105: Disconnecting Connector
Courtesy of GENERAL MOTORS CORP.

2. Line up the connector key tabs with the initiator key slots. Grab the connector on both sides and push the connector down into the initiator connector sub assembly until fully seated.

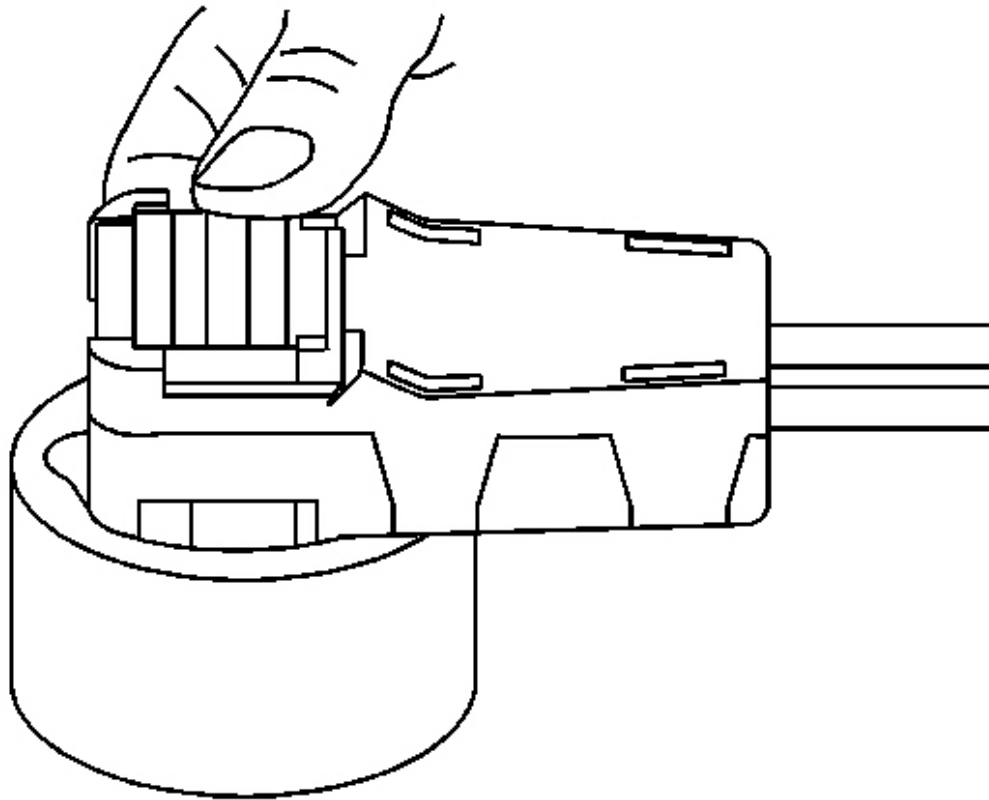


Fig. 106: Pushing Down Orange CPA
Courtesy of GENERAL MOTORS CORP.

3. After the connector is fully seated, push down the orange CPA with your thumb. Push down until the orange CPA is touching the yellow cover on the connector.

FEP CONNECTORS (STEERING GEAR)

Removal Procedure

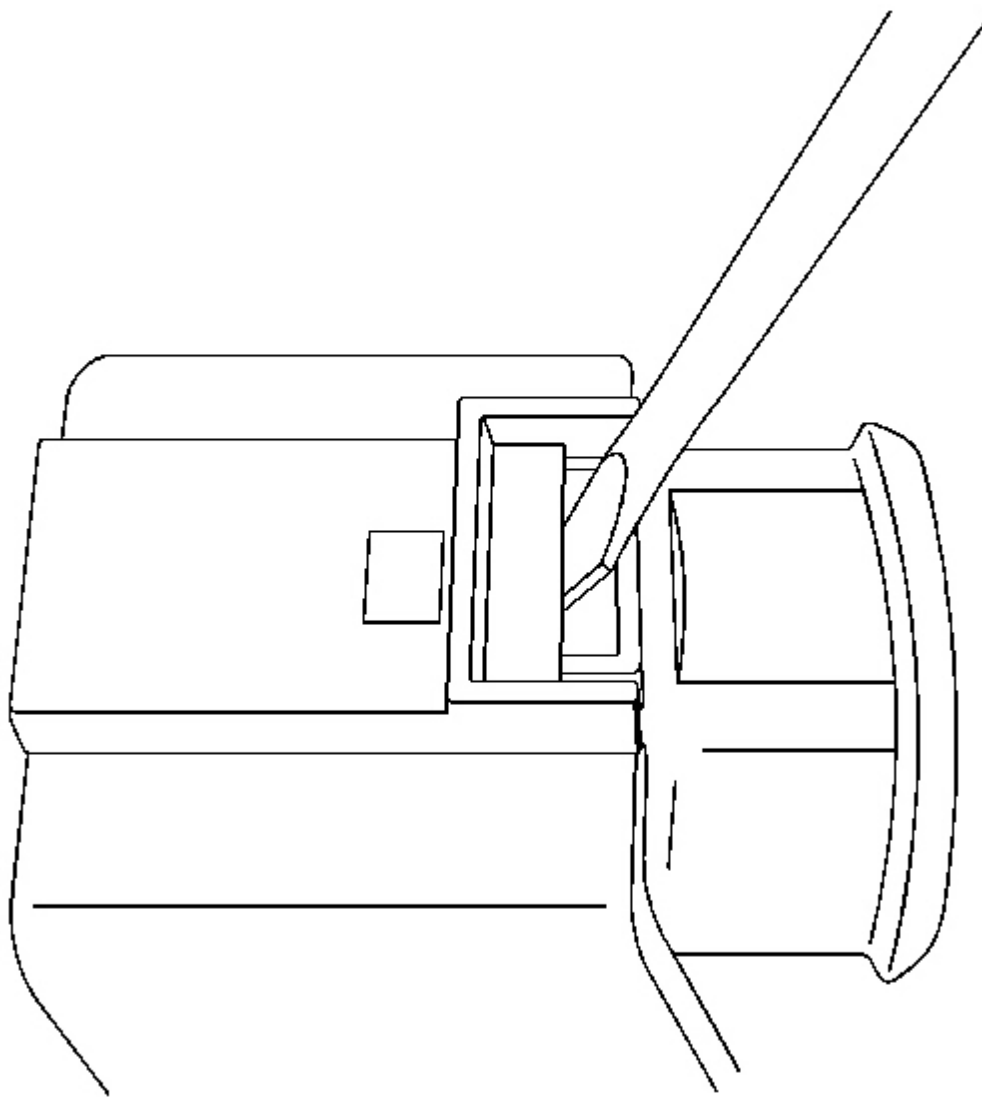


Fig. 107: Releasing Locking Tab On Connector
Courtesy of GENERAL MOTORS CORP.

1. Use a small flat-bladed tool to release the locking tab on the connector.

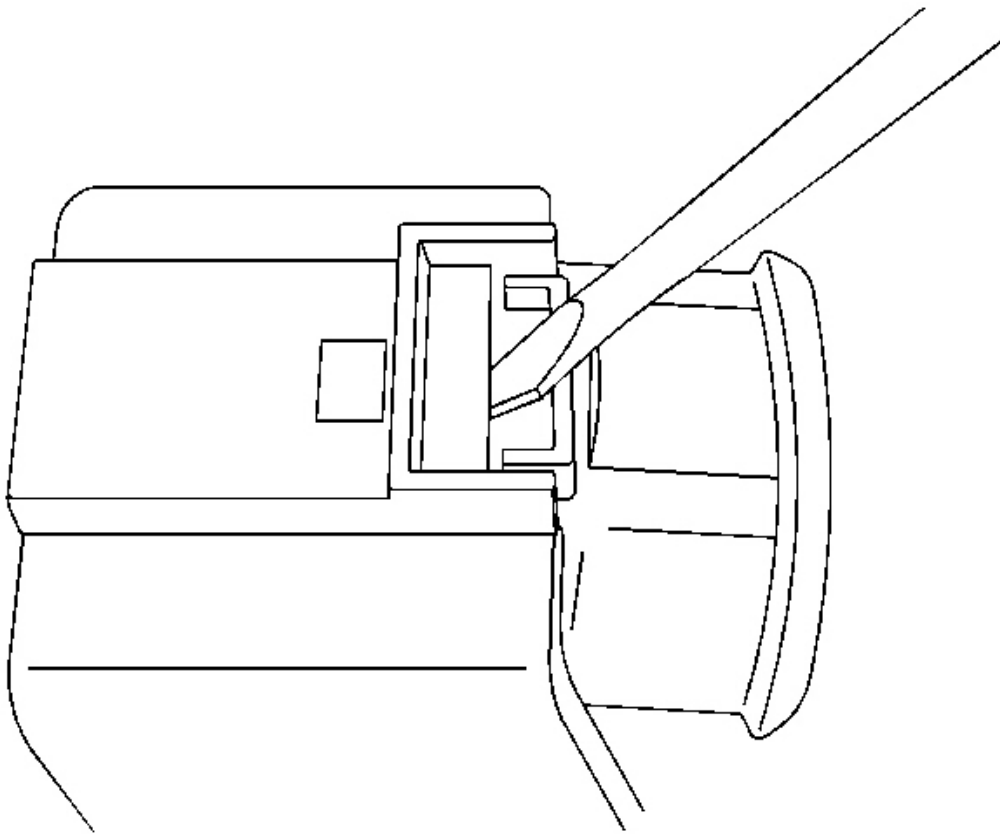


Fig. 108: Releasing Connector
Courtesy of GENERAL MOTORS CORP.

2. Push down the locking tab to release the connector. The small flat-bladed tool may need to be pushed down and angled back slightly to depress the locking tab. Pull on the connector body while releasing the locking tab to disconnect the connector.

JST CONNECTORS

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

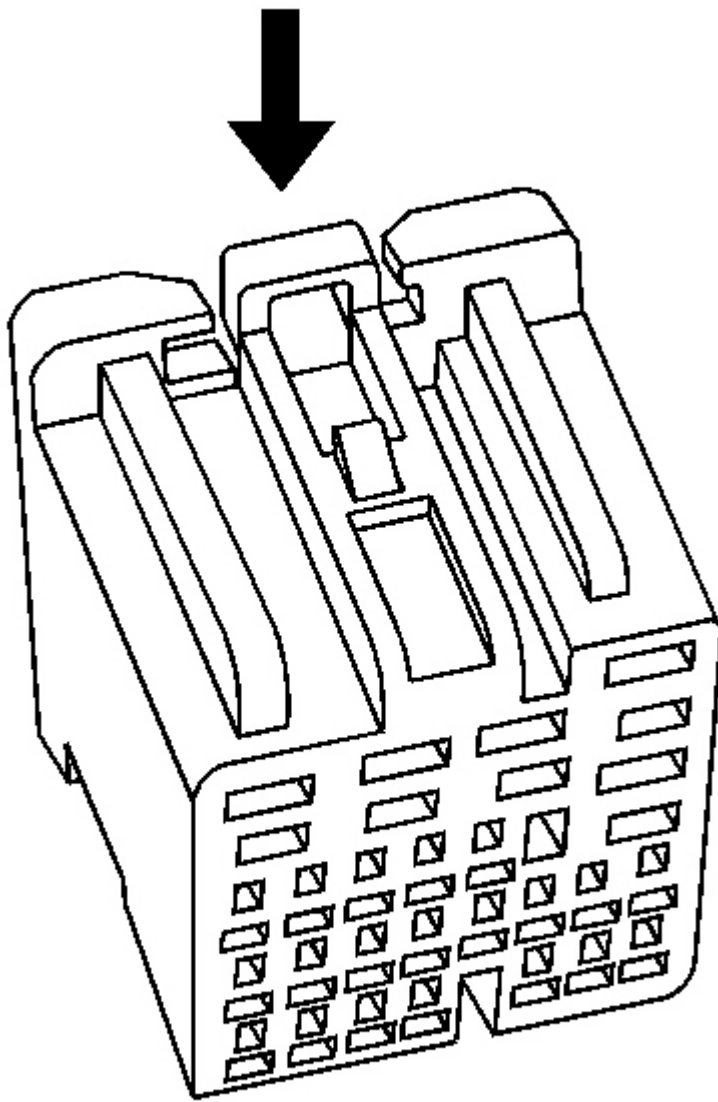


Fig. 109: Locating Connector Lock
Courtesy of GENERAL MOTORS CORP.

1. While depressing the lock, remove the connector from the component.

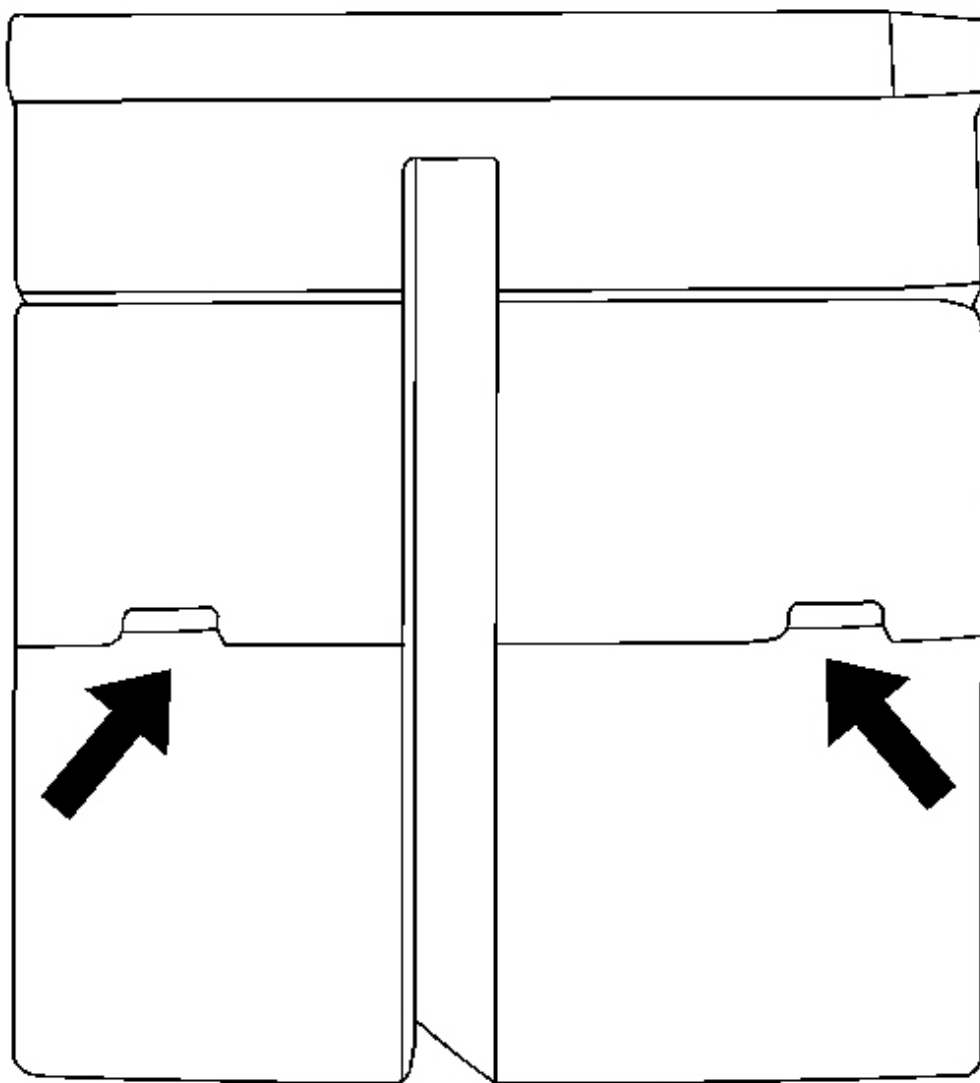


Fig. 110: Identifying TPA On Both Sides Of Connector
Courtesy of GENERAL MOTORS CORP.

2. Locate the two indents of the terminal position assurance (TPA) located on the bottom of the connector body.

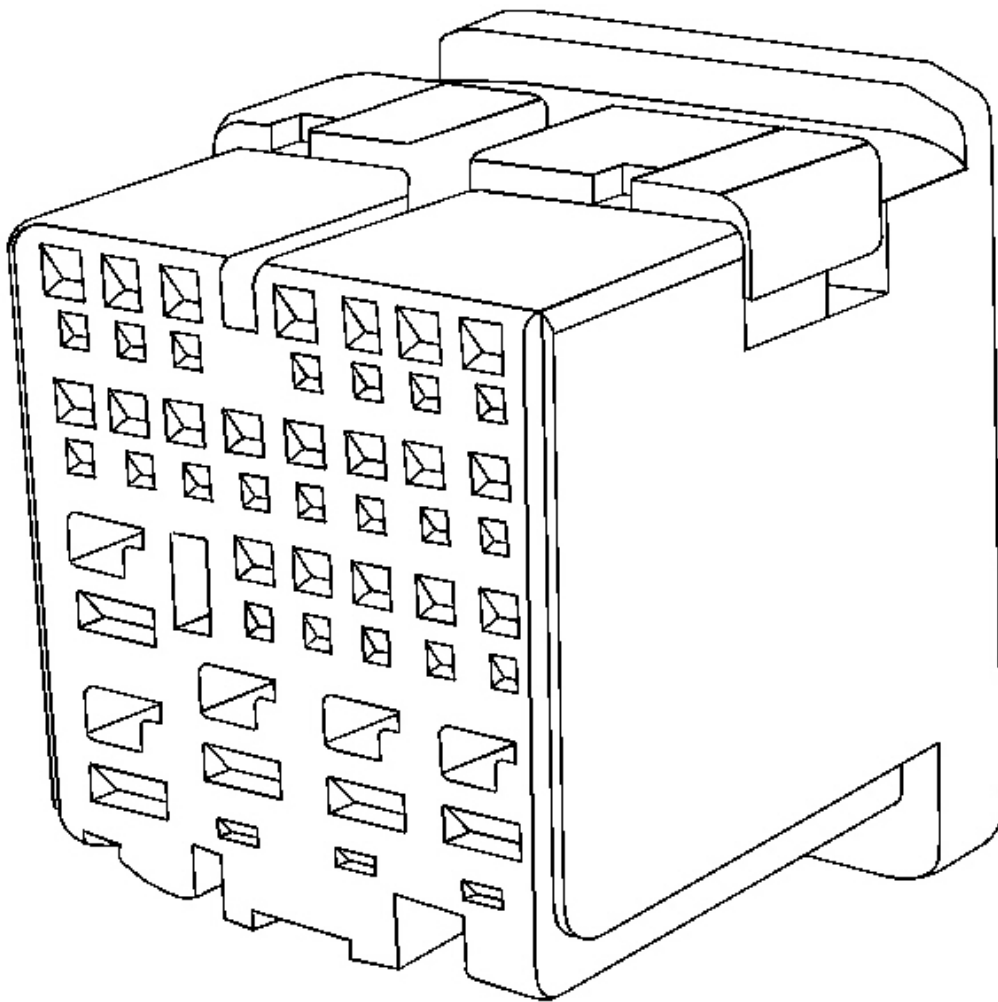


Fig. 111: Raising TPA On Both Sides Of Connector
Courtesy of GENERAL MOTORS CORP.

NOTE: The TPA cannot be removed from the connector while there are terminals present in the connector body.

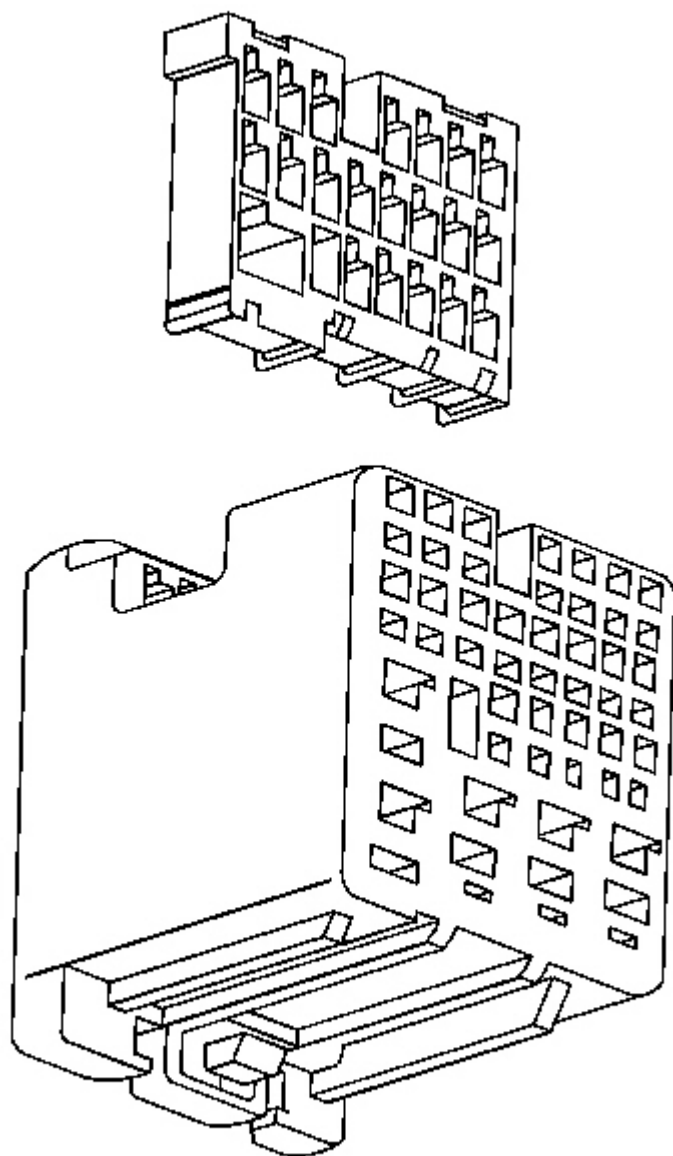


Fig. 112: View Of TPA Removed From Connector Body
Courtesy of GENERAL MOTORS CORP.

3. Use a small flat-blade tool to very carefully raise the TPA on both sides of the connector.
4. View of the TPA when removed from the connector body.

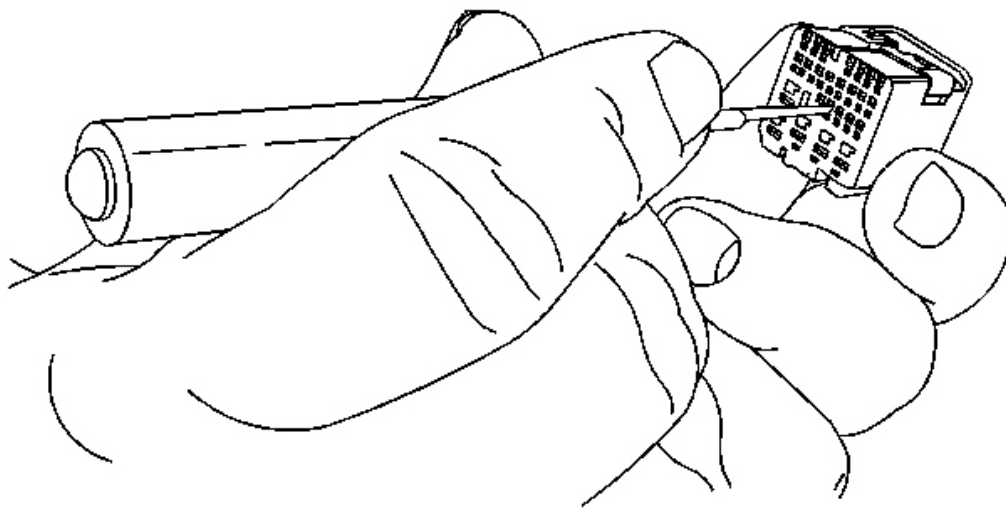


Fig. 113: Pulling Wire Out Of Back Of Connector
Courtesy of GENERAL MOTORS CORP.

5. Use the J 38125-12A tool to release the terminals by inserting the tool into the left side of the terminal release cavity as shown in the graphic. Use the tool to move the terminal release to the right with a gentle prying motion. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
6. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

KOSTAL CONNECTORS (GLOW PLUG CONTROL MODULE)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

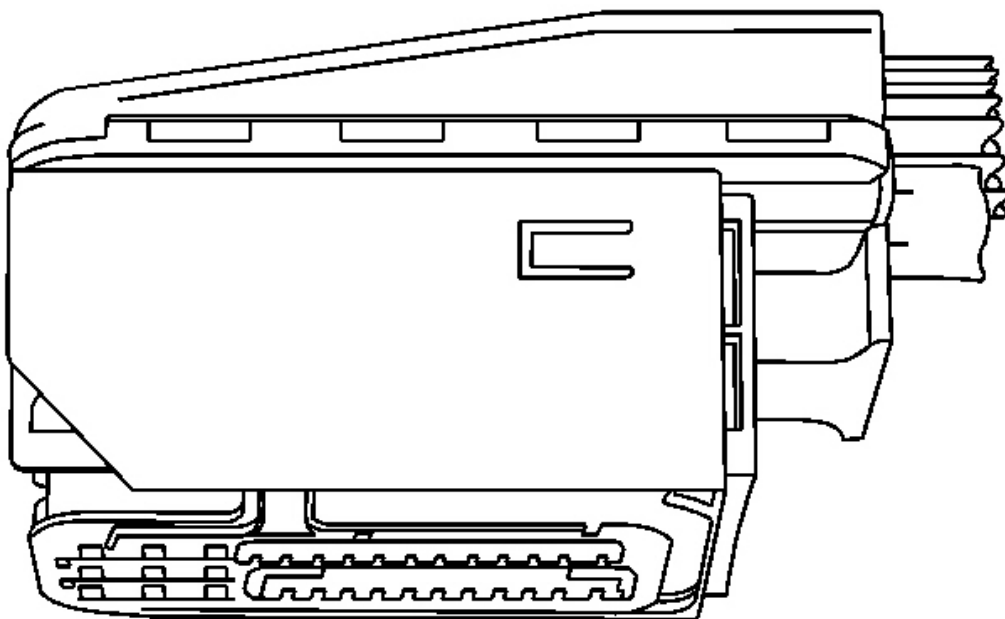


Fig. 114: View Of Typical Kostal Connector
Courtesy of GENERAL MOTORS CORP.

View of typical connector.

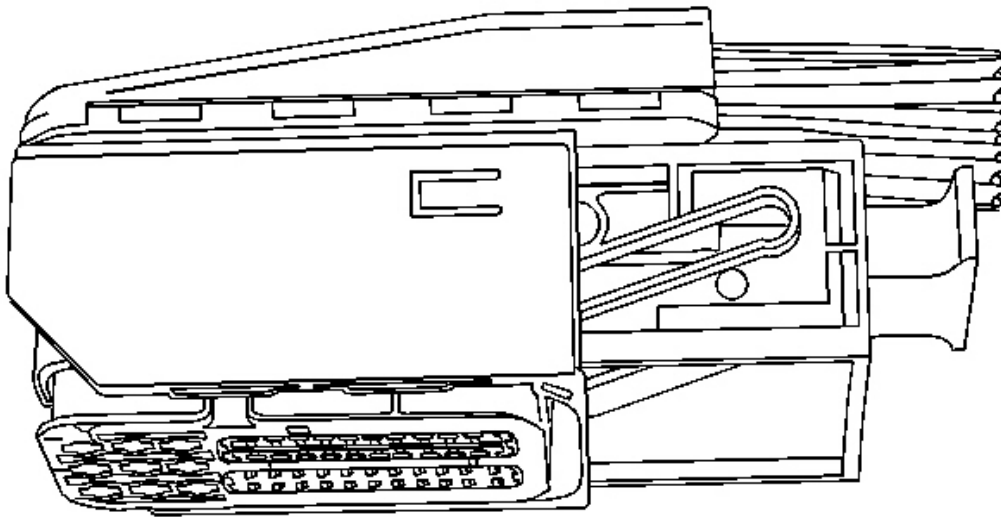


Fig. 115: View Of Connector In Released Position
Courtesy of GENERAL MOTORS CORP.

View of connector in released position.

1. Locate the assist lever at the back of the connector. Move the assist lever to the rear position.
2. Disconnect the connector from the component.

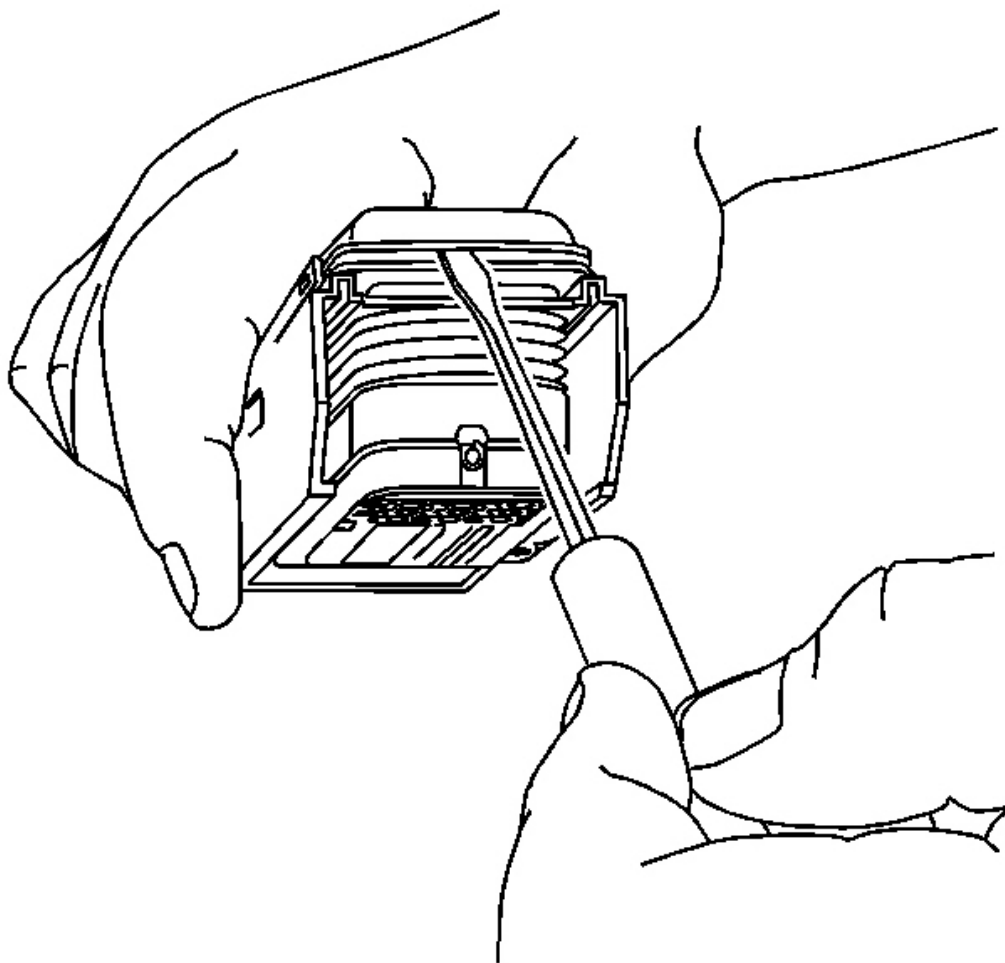


Fig. 116: Removing Dress Cover
Courtesy of GENERAL MOTORS CORP.

3. Use a small flat-blade tool to remove the dress cover.

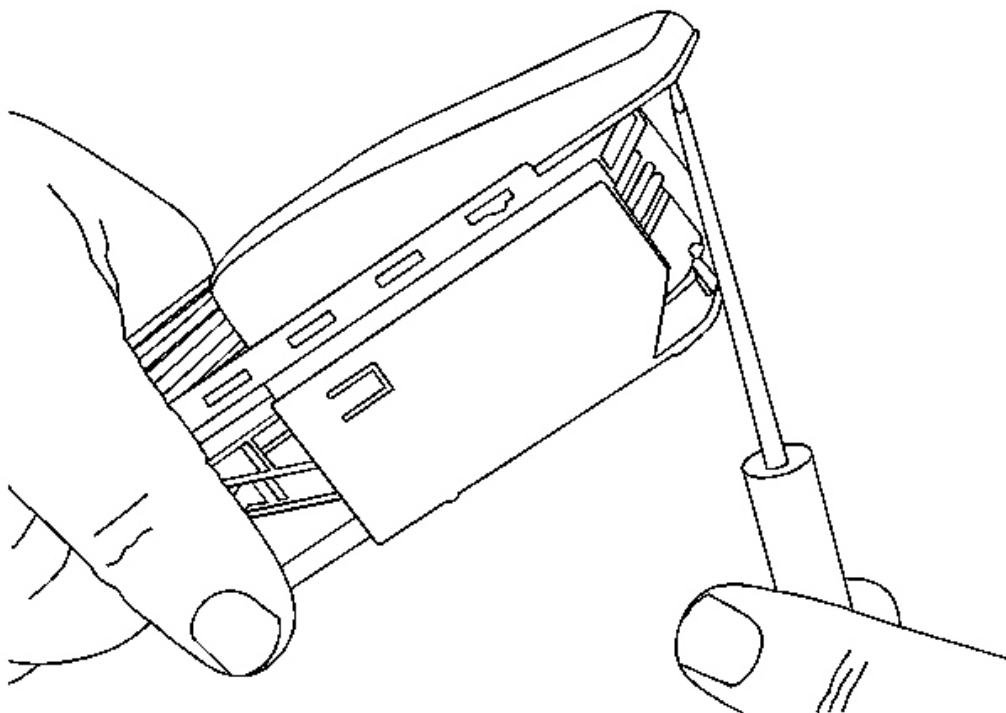


Fig. 117: Sliding Dress Cover Forward & Off Of Connector
Courtesy of GENERAL MOTORS CORP.

4. Slide the dress cover forward and off of the connector.

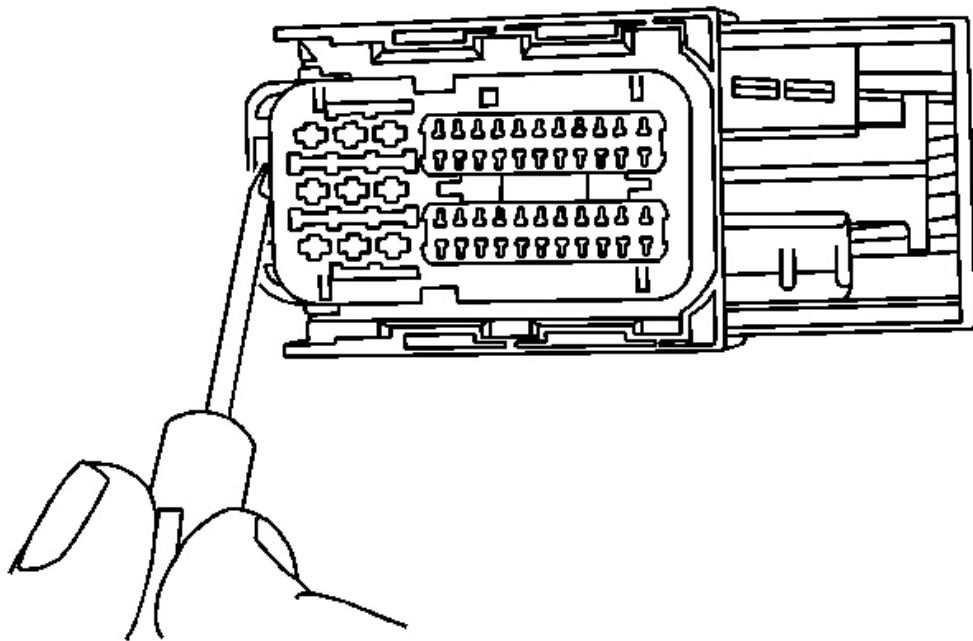


Fig. 118: Locating TPA In Front & Rear Of Connector
Courtesy of GENERAL MOTORS CORP.

5. The terminal positive assurance (TPA) is located in the front and rear of the connector.

NOTE: **The front TPA cannot be removed from the connector. Only move it to the preset position.**

6. Use a small flat-blade tool to move the front TPA to the preset position, outboard approximately 0.125 in. (3 mm).

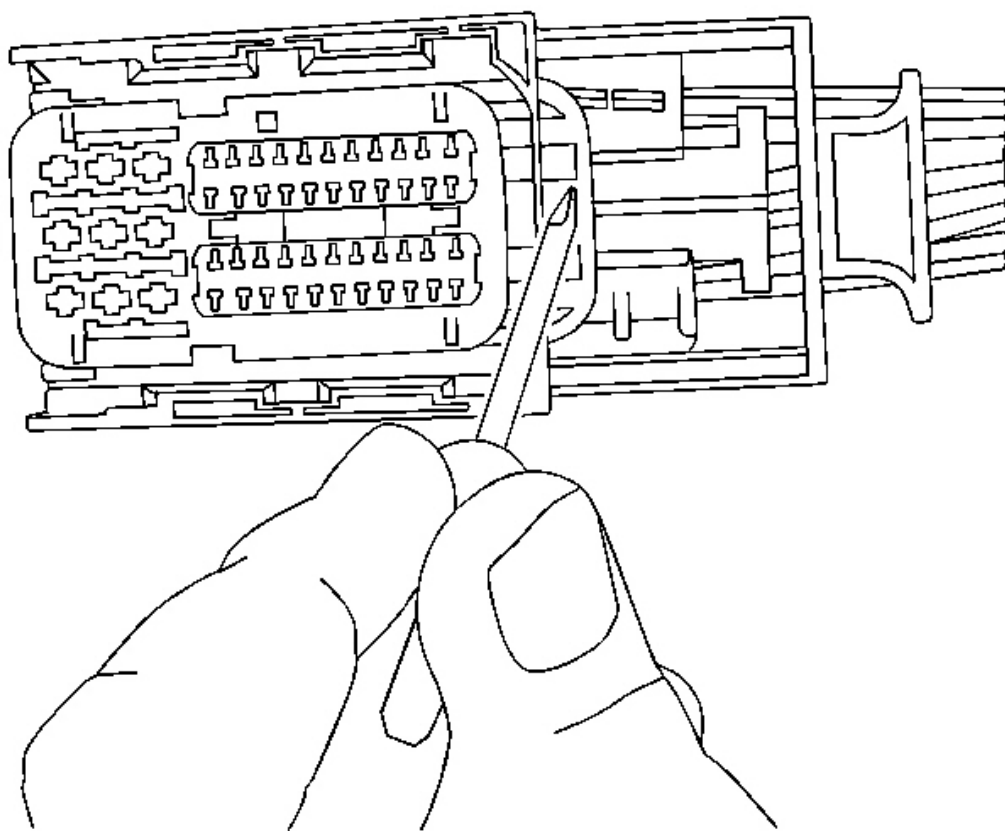


Fig. 119: Removing Rear TPA

Courtesy of GENERAL MOTORS CORP.

7. Use a small flat-blade tool to completely remove the rear TPA from the connector.

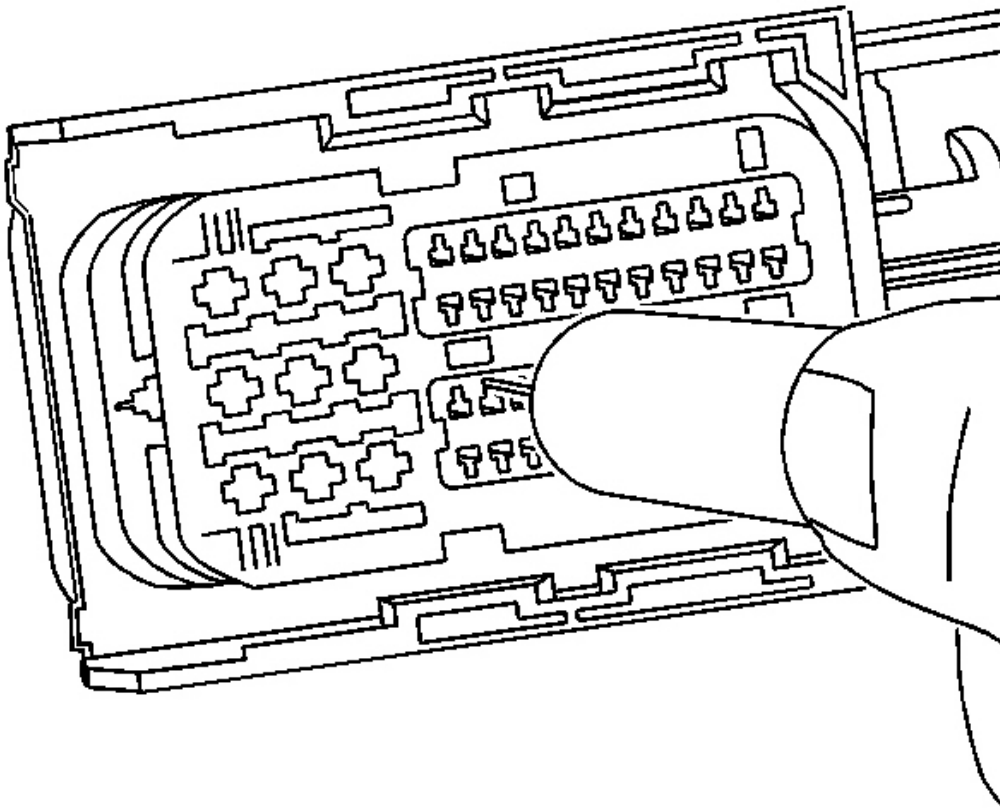


Fig. 120: Releasing Terminals

Courtesy of GENERAL MOTORS CORP.

8. Use the J 38125-24 or the J 38125-560 tool to release the terminals by inserting the tool into the terminal release cavity. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
9. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

KOSTAL CONNECTORS (TRANSMISSION)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

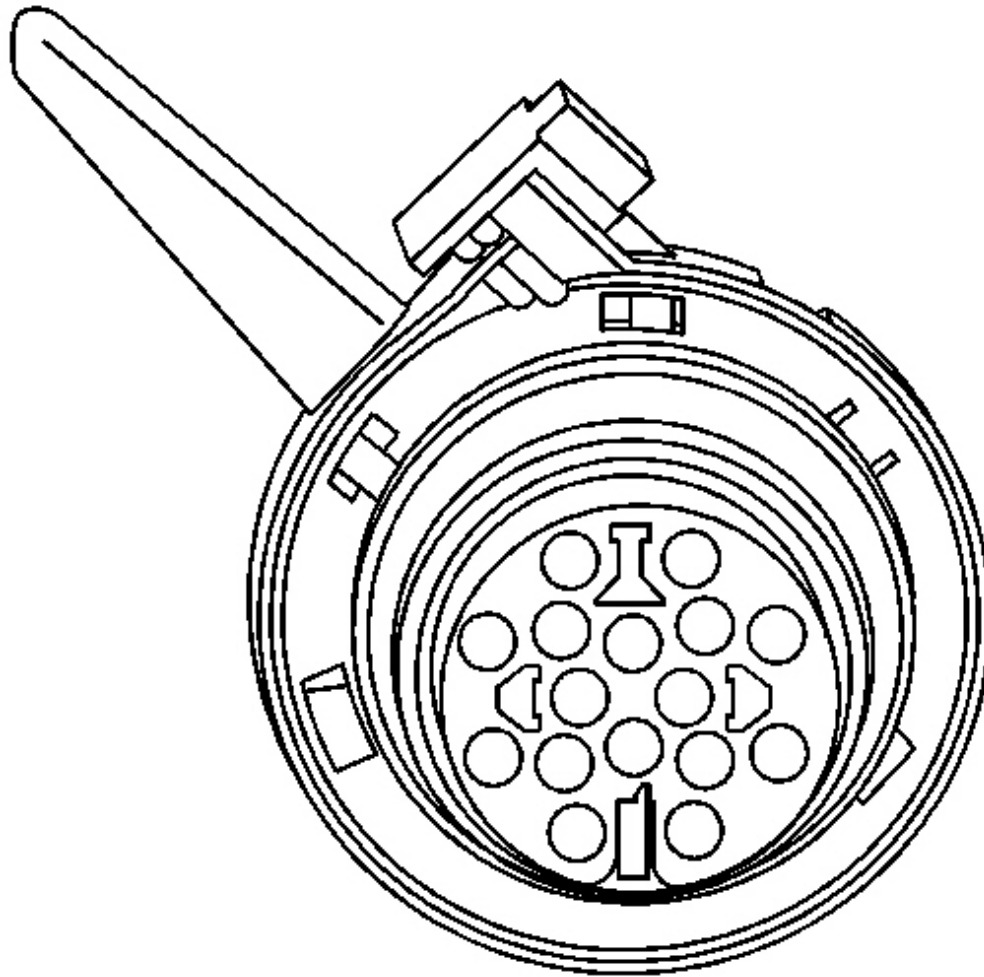


Fig. 121: View Of Connector & Lock
Courtesy of GENERAL MOTORS CORP.

1. While depressing the lock, twist and remove the connector from the component.

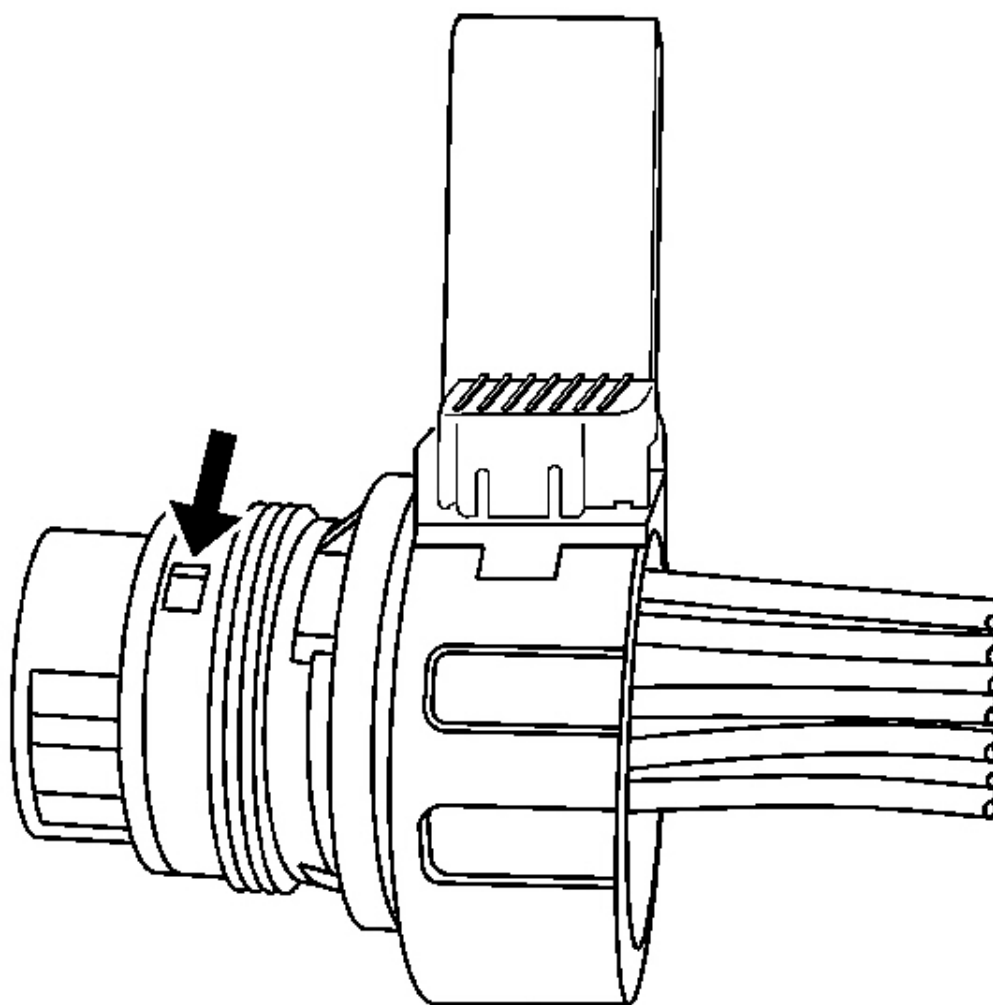


Fig. 122: View Of Terminal Position Assurance (TPA)
Courtesy of GENERAL MOTORS CORP.

2. Locate the terminal position assurance (TPA).

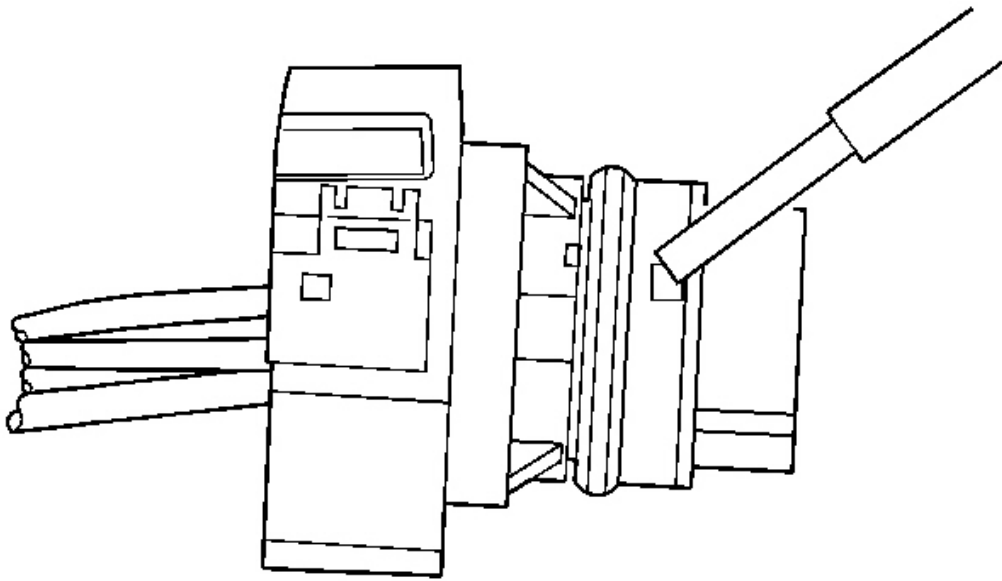


Fig. 123: View Of TPA & Flat-Bladed Tool
Courtesy of GENERAL MOTORS CORP.

NOTE: **The TPA cannot be removed from the connector while there are terminals present in the connector body.**

3. Use a small flat-blade tool to push the TPA until it bottoms out.

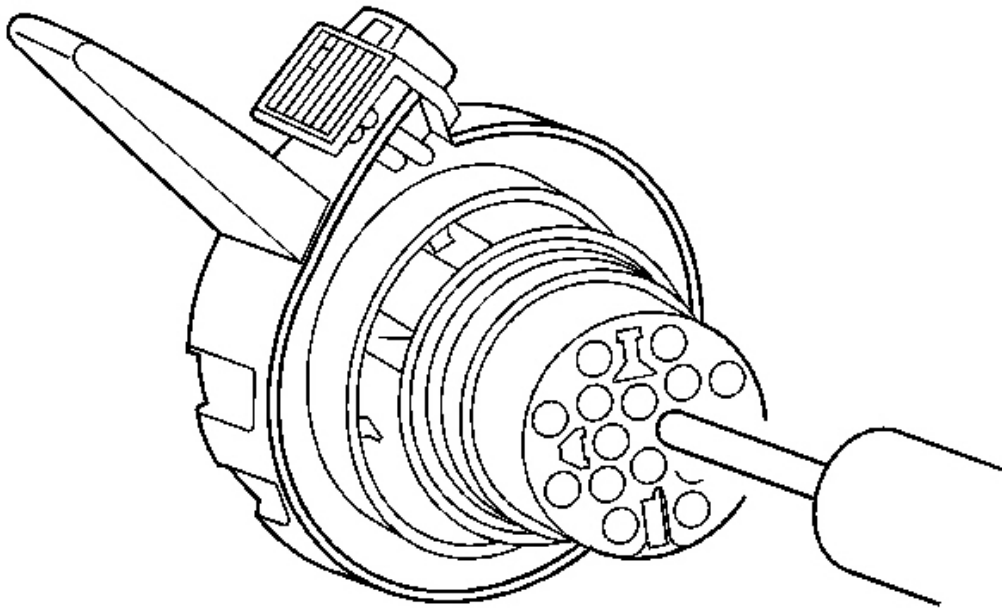


Fig. 124: Releasing Terminals

Courtesy of GENERAL MOTORS CORP.

4. Use the J 38125-28 tool to release the terminals by inserting the tool into the terminal cavity as shown in the graphic. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
5. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

Terminal Replacement Procedure

After the terminal is crimped to the wire, perform the following procedure in order to replace the terminal.

1. Slide the new terminal into the correct cavity at the back of the connector.
2. Push the terminal into the connector until it locks into place. The new terminal should be even with the other terminals. Ensure that the terminal is locked in place by gently pulling on the wire.

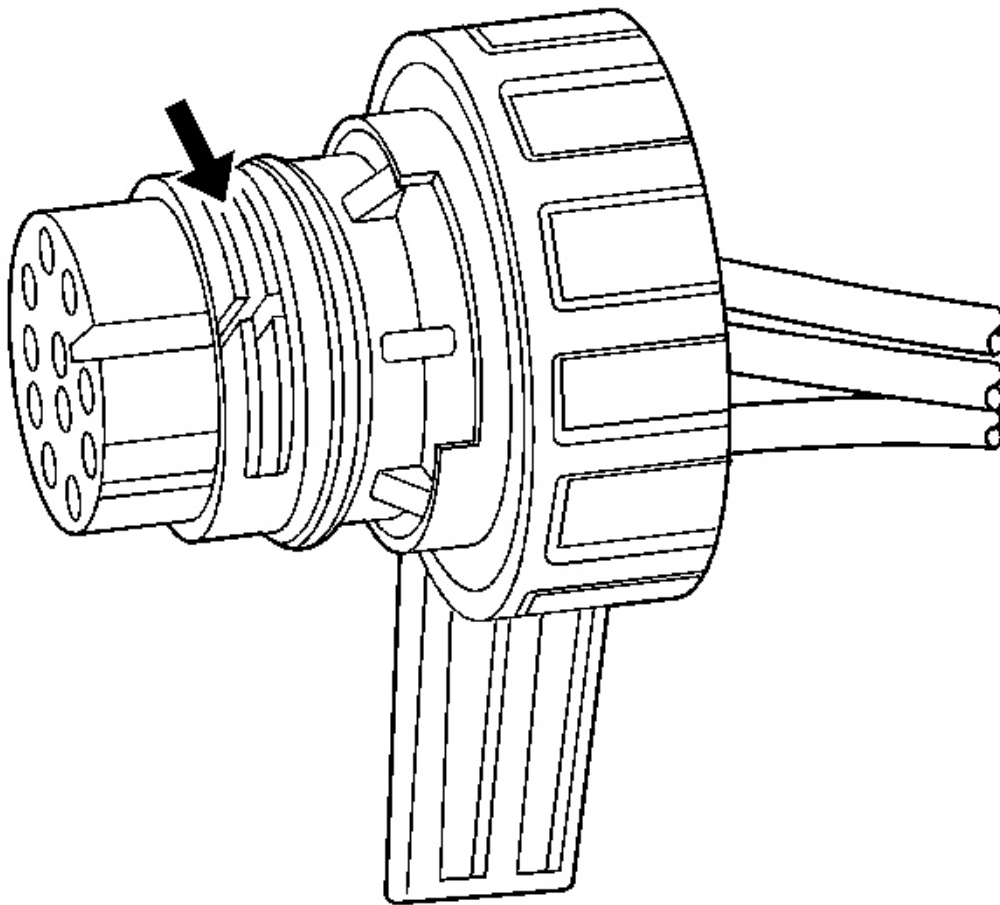


Fig. 125: Locating Terminal Position Assurance (TPA)
Courtesy of GENERAL MOTORS CORP.

3. Locate the terminal position assurance (TPA).

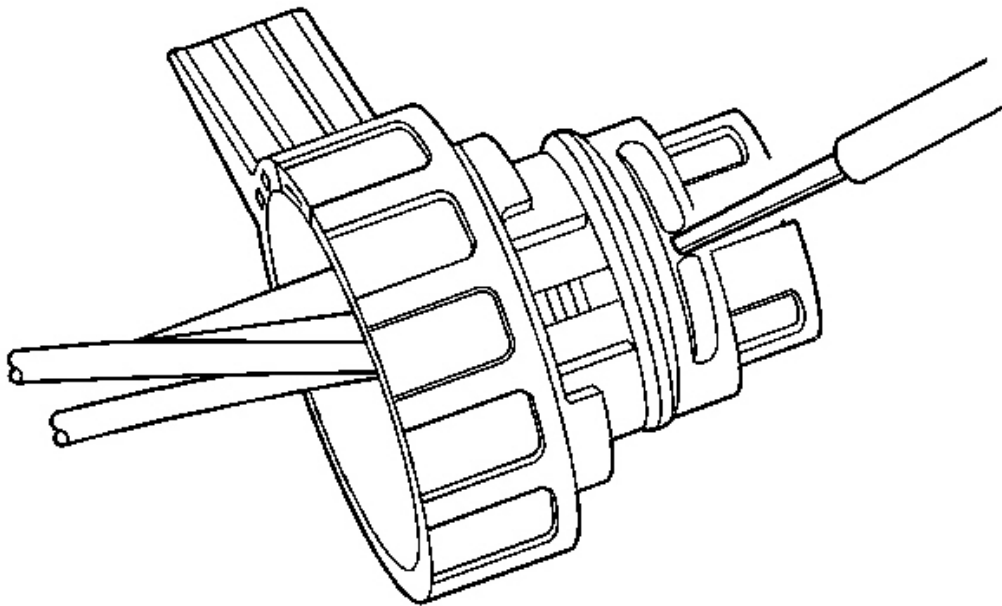


Fig. 126: View Of TPA & Flat-Bladed Tool
Courtesy of GENERAL MOTORS CORP.

4. Use a small flat-blade tool to push the TPA until it bottoms out.

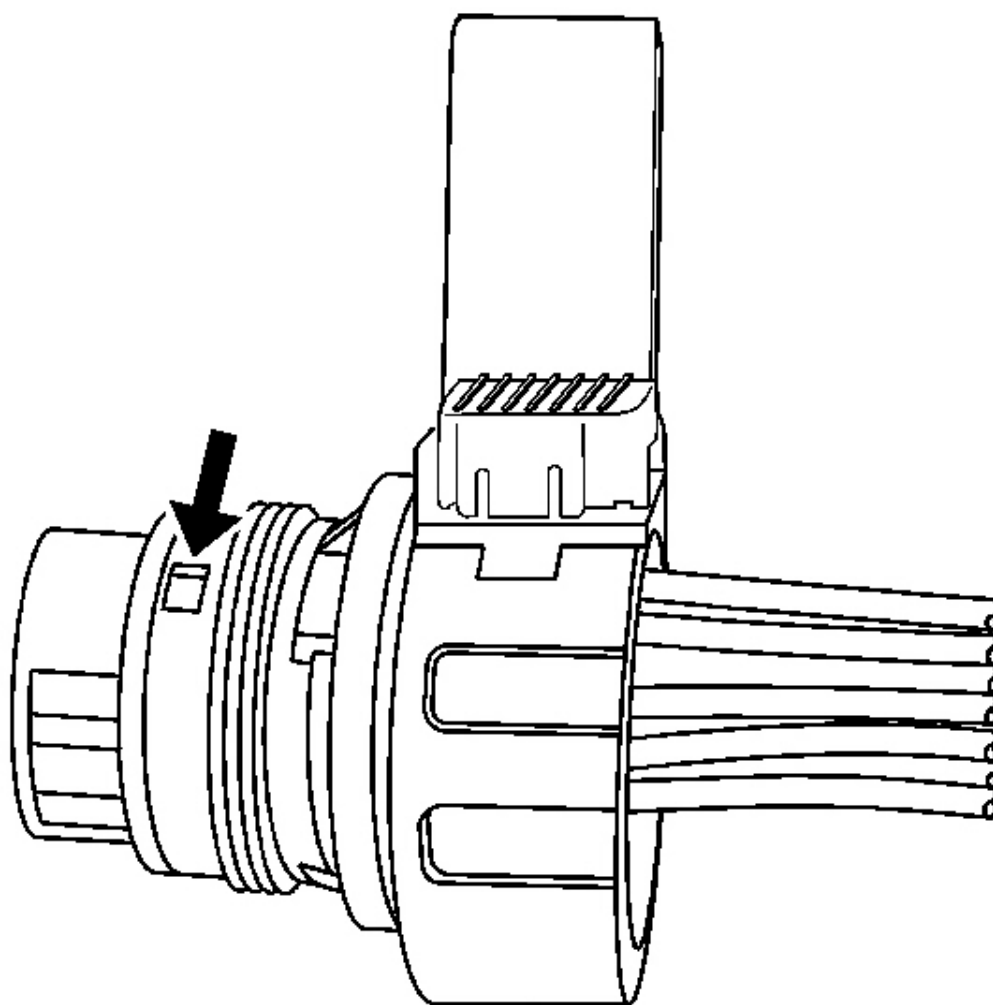


Fig. 127: View Of Terminal Position Assurance (TPA)
Courtesy of GENERAL MOTORS CORP.

5. Ensure the TPA is fully seated. The TPA should be centered and flush with the connector body when viewed.

MOLEX CONNECTORS

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

1. Locate the connector position assurance (CPA) on the top of the wire dress cover. Slide the CPA forward.

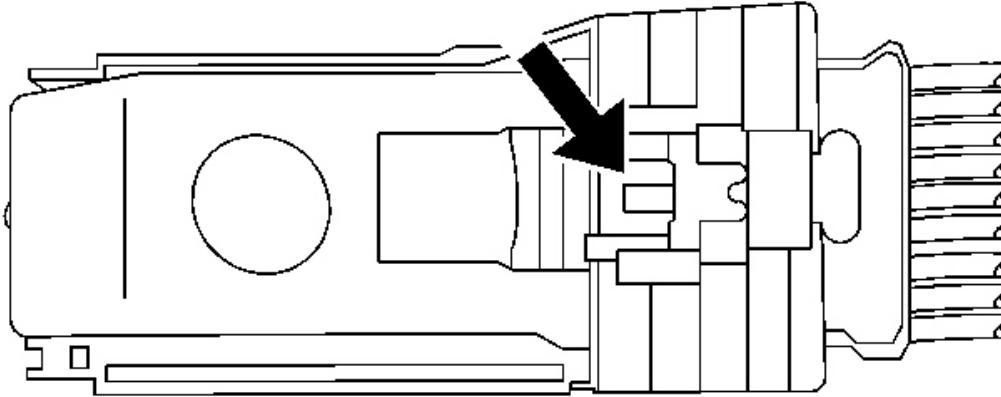


Fig. 128: Identifying Lever Lock Release Tab
Courtesy of GENERAL MOTORS CORP.

2. Slide the lever lock forward while pressing down on the lever lock release tab.

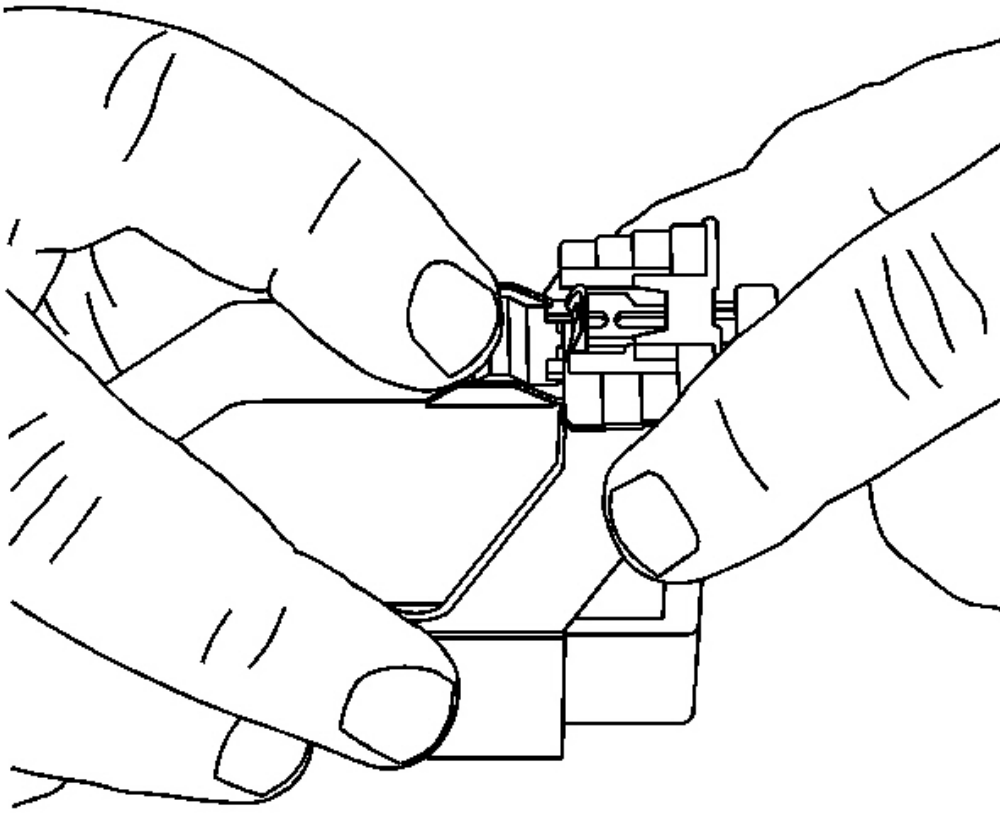


Fig. 129: View Of Lever In Full Forward Position
Courtesy of GENERAL MOTORS CORP.

3. The lever should be in the full forward position.

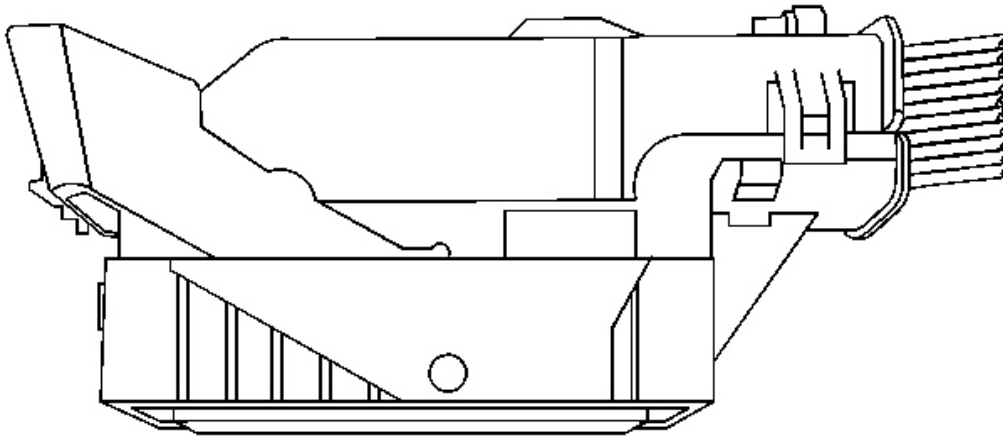


Fig. 130: View Of CPA Connector
Courtesy of GENERAL MOTORS CORP.

4. Disconnect the connector from the component.

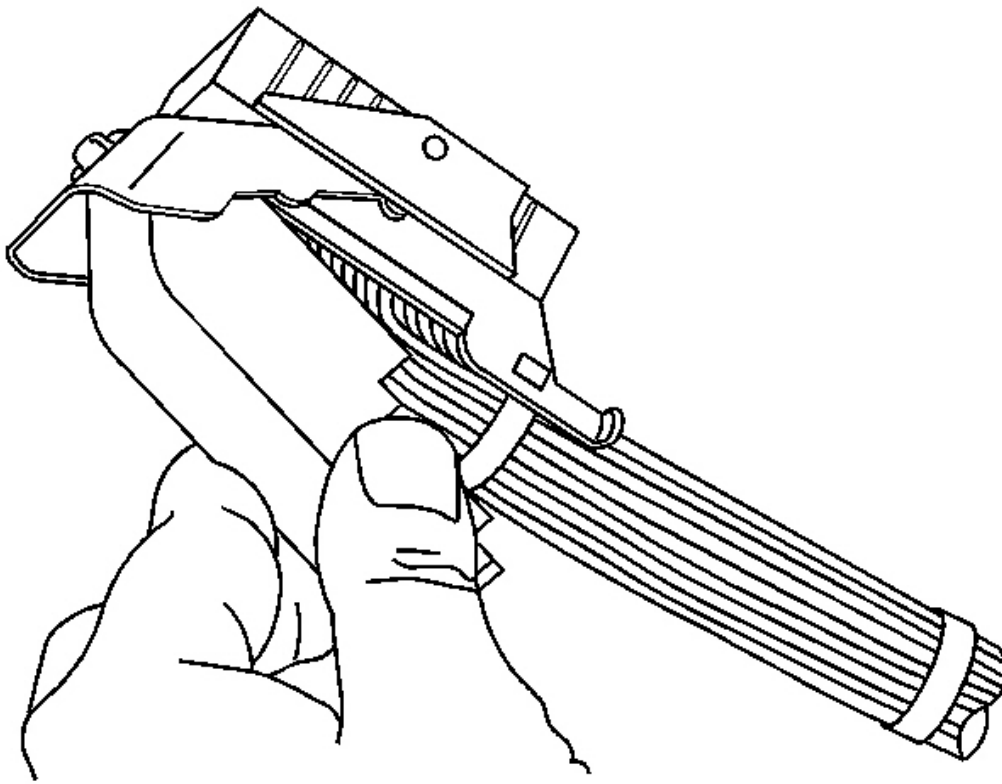


Fig. 131: Removing Dress Cover
Courtesy of GENERAL MOTORS CORP.

5. Remove the dress cover by using a flat bladed tool to release the dress cover locking tabs and lift up on the dress cover.
6. Cut the tie wrap that holds the wires to the connector body.

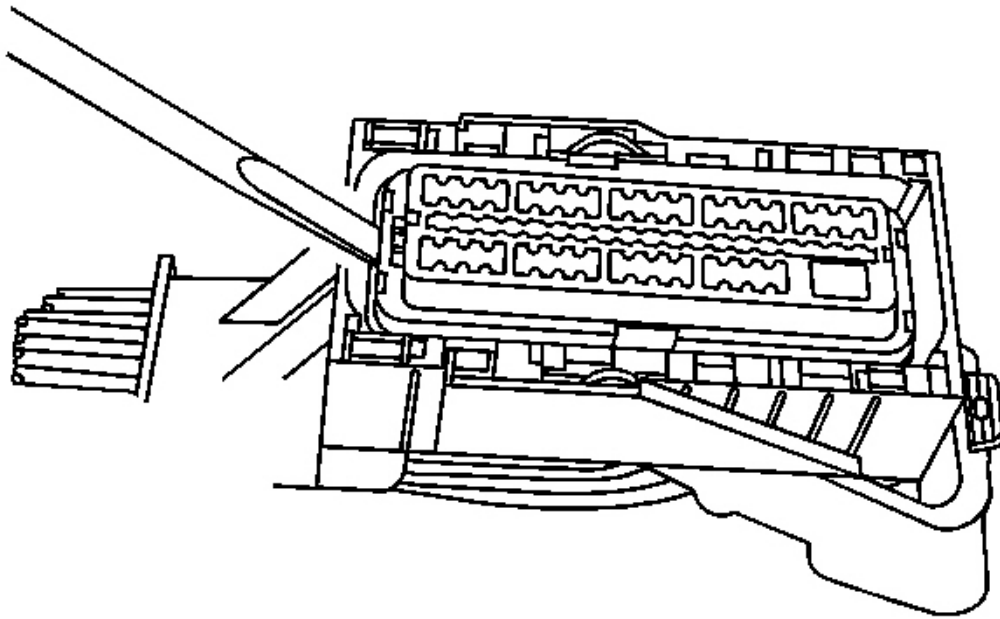


Fig. 132: Prying One Side Of Nose Piece
Courtesy of GENERAL MOTORS CORP.

7. Use a small flat-blade tool to pry one side of the nose piece up to the pre-stage position. When the nose piece is in the pre-staged position, the nose piece will be raised above the connector body the length of the step in the nose piece.

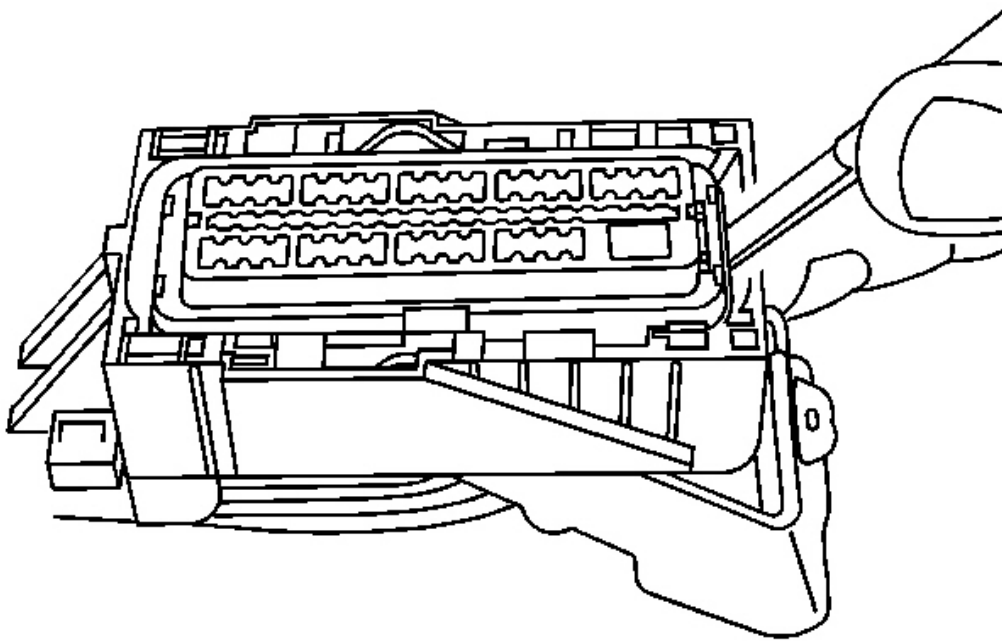


Fig. 133: Prying Side Of Nose Piece

Courtesy of GENERAL MOTORS CORP.

8. Use a small flat-blade tool to pry the other side of the piece to the pre-stage position. If the nose piece is higher than the first step in the nose piece, gently push down on the nose piece until it meets with resistance from the connector body, you should feel the nose piece click into position.

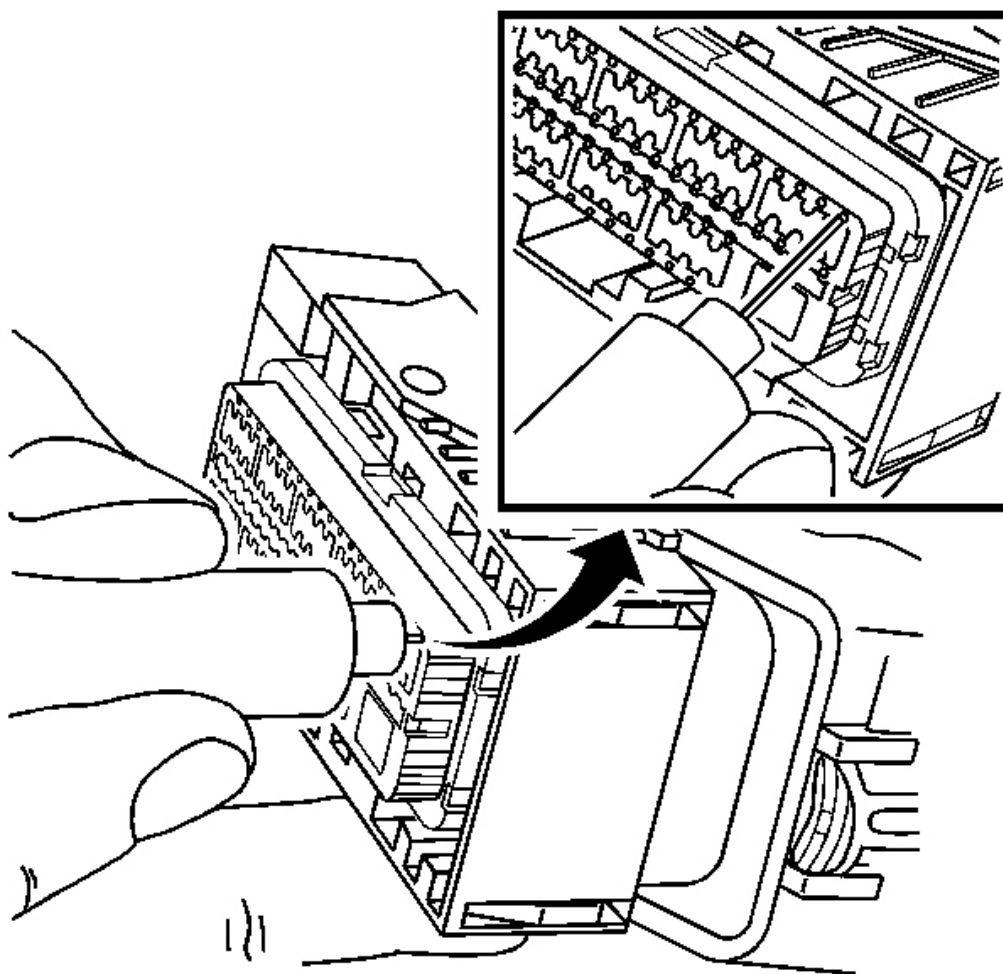


Fig. 134: Inserting J 38125-213 Into Small Terminal Release Hole
Courtesy of GENERAL MOTORS CORP.

9. Insert the J 38125-213 into the small terminal release hole on the nose piece and gently pull on the back of the wire.
10. See the release tool cross reference in the Reference Guide of the **J-38125** Terminal Repair Kit to ensure that the correct release tool is used.

Terminal Repair Procedure

Refer to the terminal crimping procedure in the Reference Guide of the **J-38125** Terminal Repair Kit.

Terminal Replacement Procedure

After the terminal is crimped to the wire, perform the following procedure in order to replace the terminal.

1. Slide the new terminal into the correct cavity at the back of the connector.
2. Push the terminal into the connector until it locks into place. The new terminal should be even with the other terminals. Ensure that the terminal is locked in place by gently pulling on the wire.
3. To assemble the connector, reverse the connector disassembly procedure.

SUMITOMO CONNECTORS

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

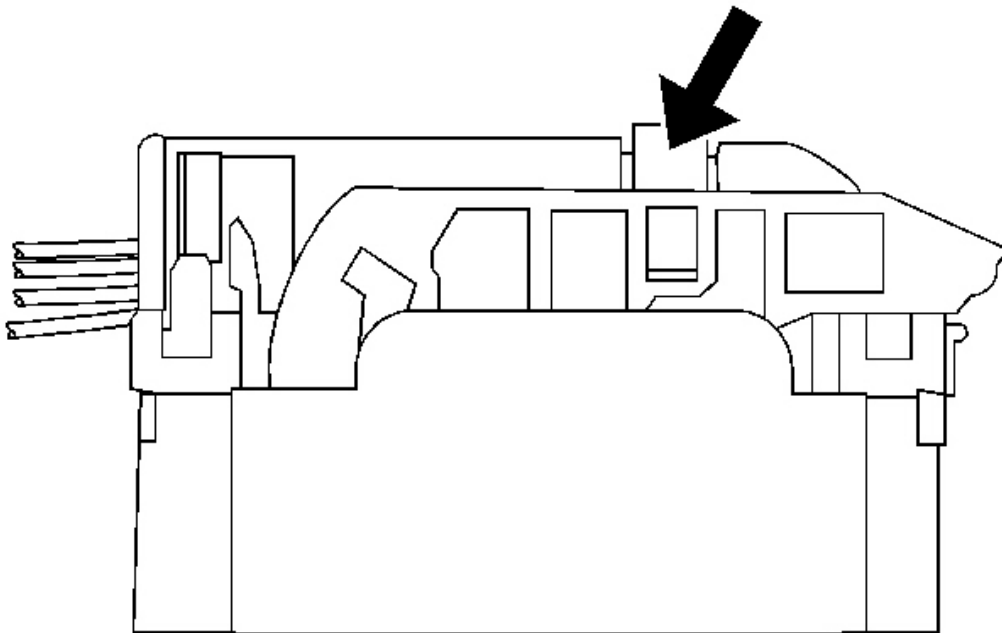


Fig. 135: Identifying Lever Lock
Courtesy of GENERAL MOTORS CORP.

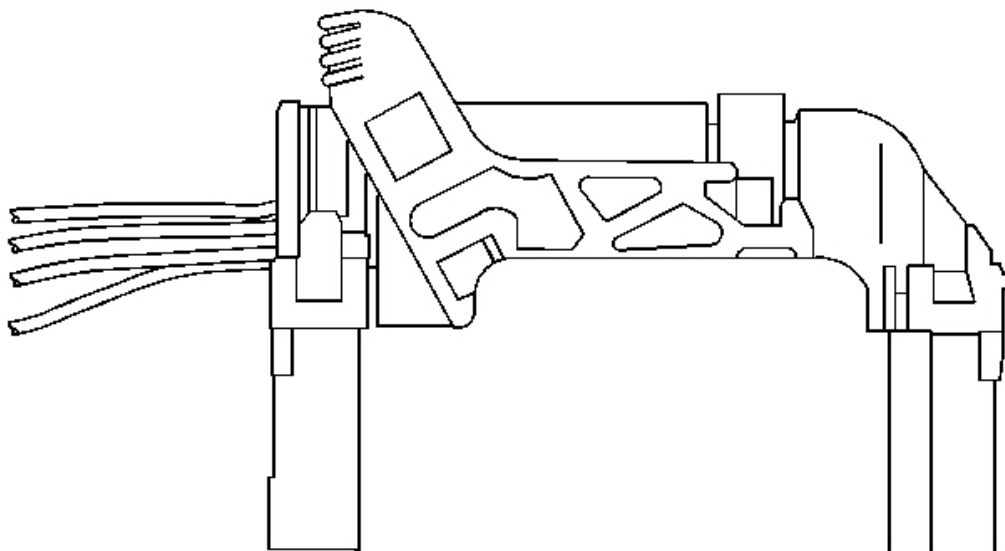


Fig. 136: View Of Lever Lock In Forward Position
Courtesy of GENERAL MOTORS CORP.

1. Slide the lever lock forward while pressing down on the lever lock release tab.
2. Disconnect the connector from the component.

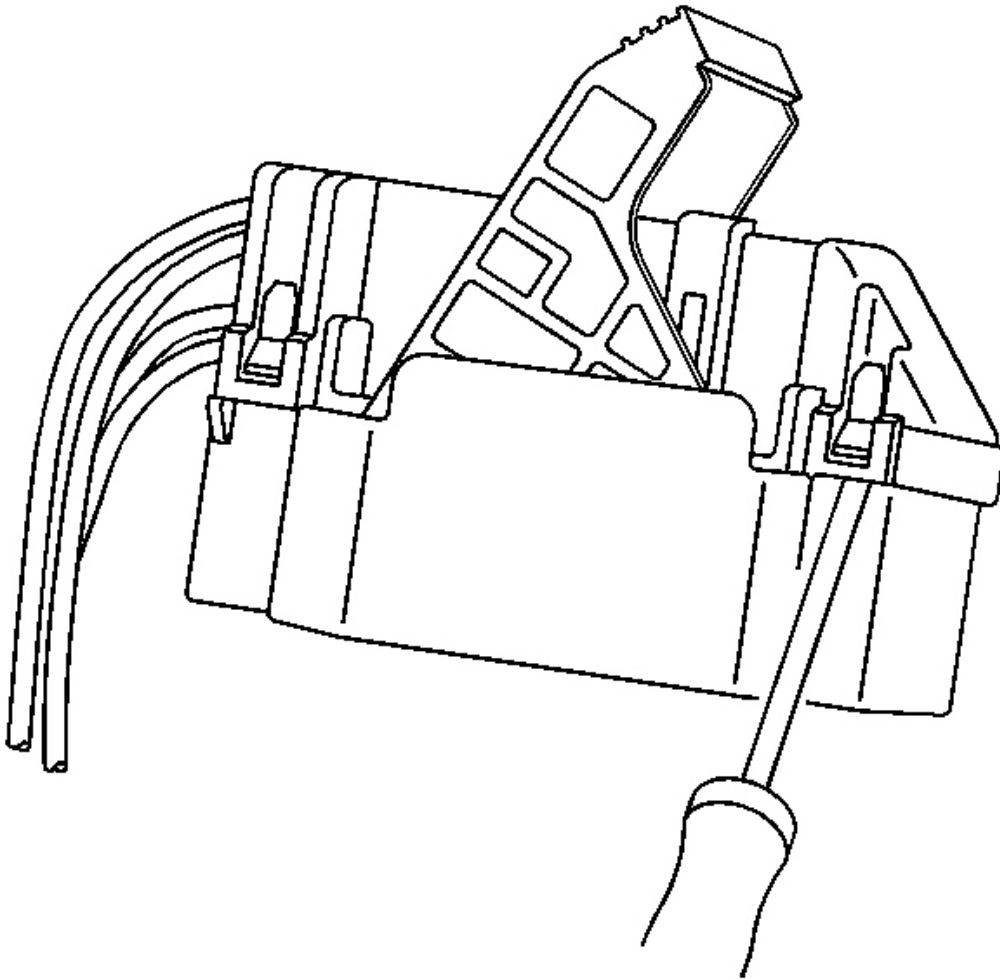


Fig. 137: Releasing Connector Locking Tabs
Courtesy of GENERAL MOTORS CORP.

3. Remove the dress cover by using a flat-blade tool to release the connector locking tabs and pulling off the dress cover.

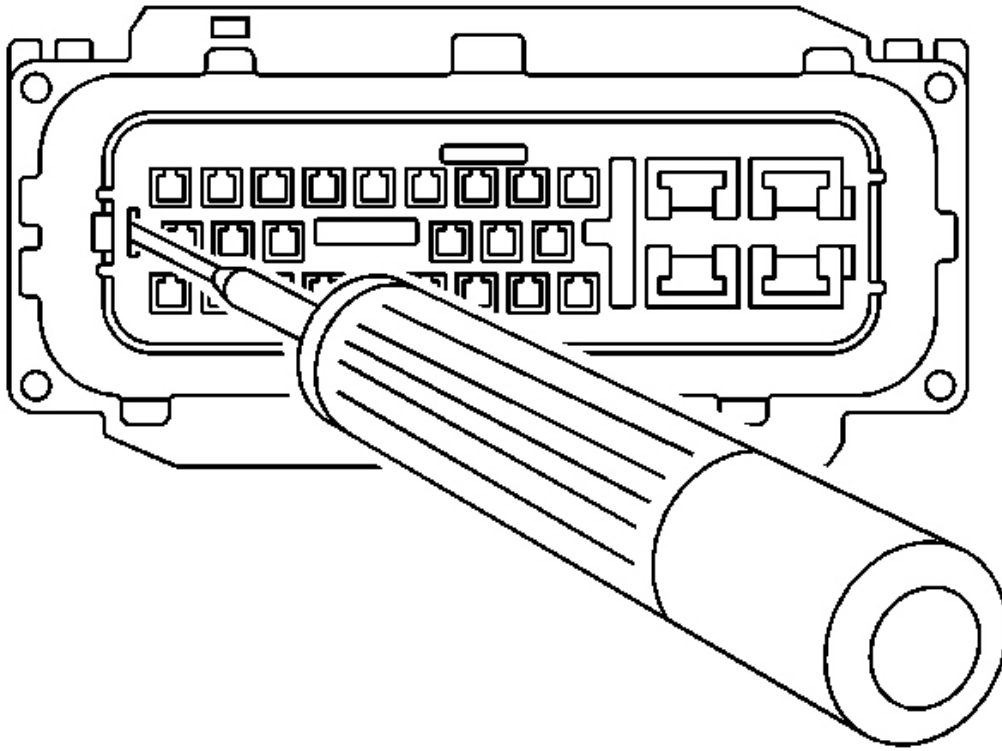


Fig. 138: Inserting J-38125-12A (12094429) Into Single Retainer Slot
Courtesy of GENERAL MOTORS CORP.

4. Relieve the tension on the nose piece retainers by inserting J 38125-12A into the single retainer slot on the end of the nose piece and gently prying out the locking tab. Repeat the process for both of the nose piece locking tabs on the opposite side of the nose piece.

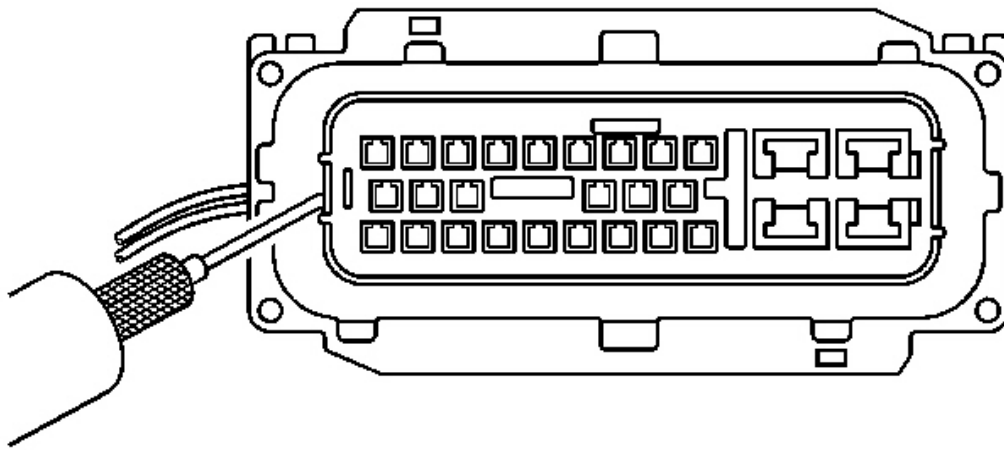


Fig. 139: Pulling Up One End Of Nose Piece (1st Side)
Courtesy of GENERAL MOTORS CORP.

5. Once the nose piece retainers are relaxed, use the J 38125-552 to pull up the nose piece by hooking the tool under the nose piece and pulling up. The nose piece should raise slightly.

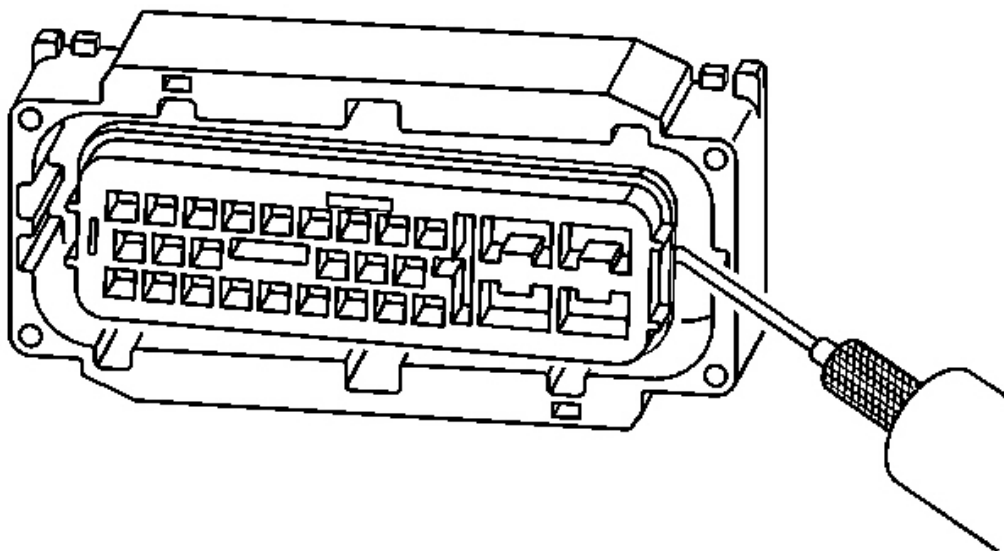


Fig. 140: Pulling Up One End Of Nose Piece (2nd Side)

Courtesy of GENERAL MOTORS CORP.

6. On the opposite side of the nose piece, use the J 38125-552 to pull up the nose piece by hooking the tool under the nose piece and pulling up. The nose piece should release completely. If the nose piece does not come off, repeat the procedure on the opposite side.

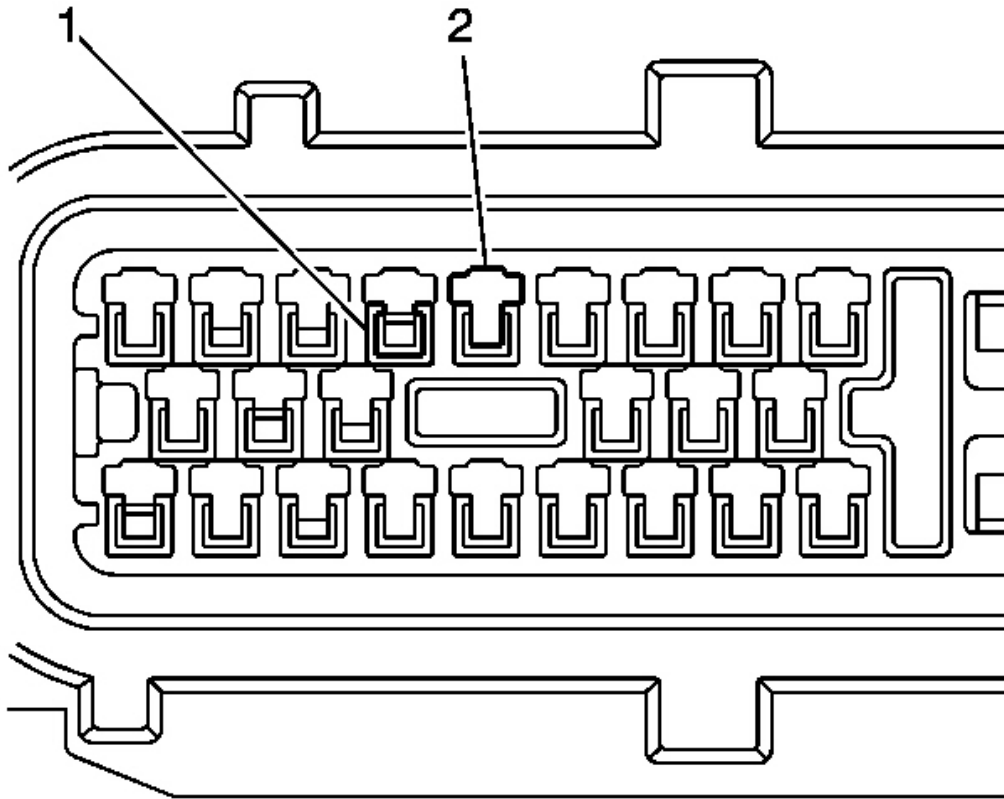


Fig. 141: View Of Terminal & Entry Canal

Courtesy of GENERAL MOTORS CORP.

7. The illustration above identifies the entry canal where the terminal release tool will be inserted, and the terminal cavity.
 - Terminal (1)
 - Entry Canal (2)

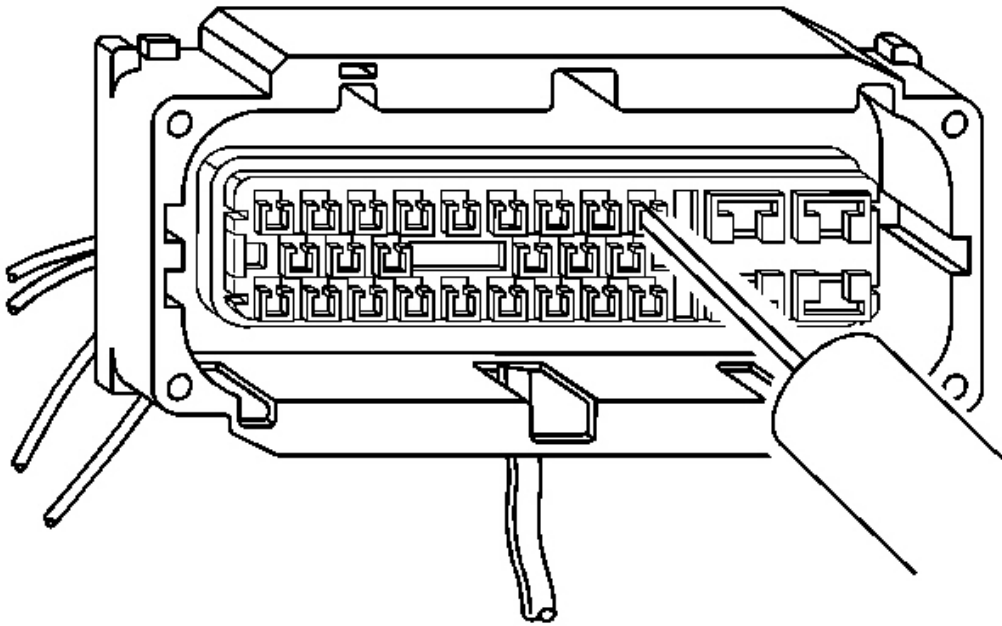


Fig. 142: Inserting J-38125-553 (15315247) Tool Into Entry Canal
Courtesy of GENERAL MOTORS CORP.

8. Insert the J 38125-553 tool into the entry canal and pry up on the terminal retainer. The terminal retainer is a small plastic piece on the top of the terminal. The terminal retainer must be held up while the terminal is pulled out of the connector.

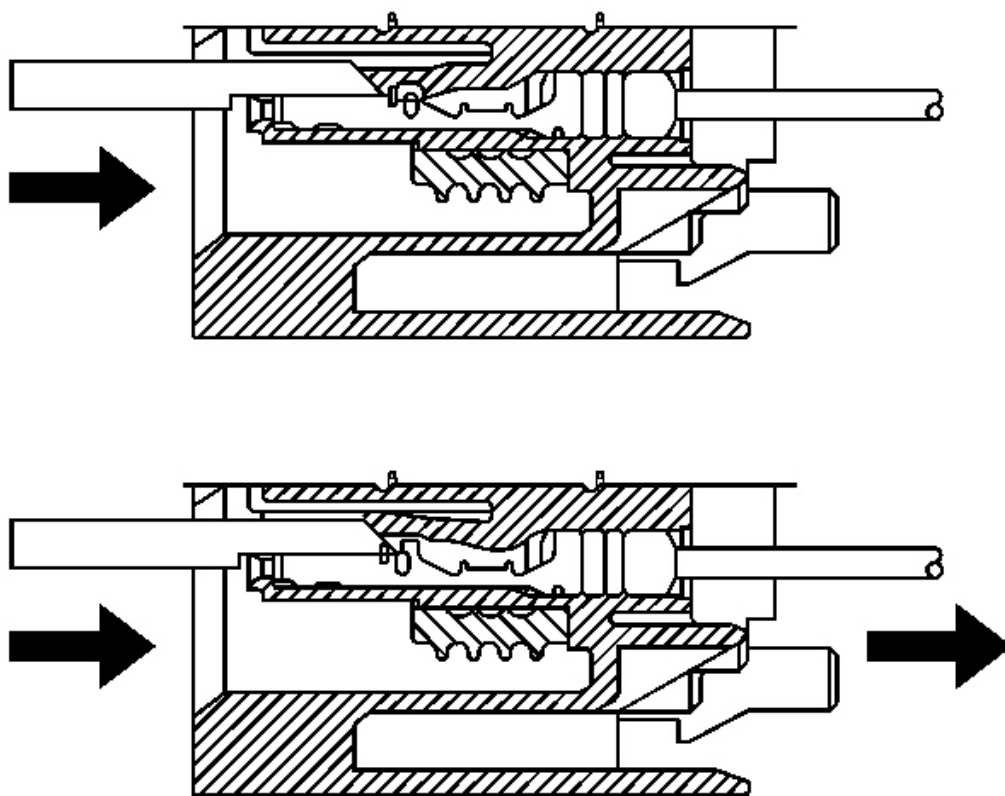


Fig. 143: Cutaway View Of Connector
Courtesy of GENERAL MOTORS CORP.

9. The illustration shows a cutaway view of the connector to aid the technician in releasing the terminal retainer.
10. See the release tool cross reference in the Reference Guide of the **J-38125** Terminal Repair Kit to ensure that the correct release tool is used.

Terminal Repair Procedure

Refer to the terminal crimping procedure in the Reference Guide of the **J-38125** Terminal Repair Kit.

Terminal Replacement Procedure

After the terminal is crimped to the wire, perform the following procedure in order to replace the terminal.

1. Slide the new terminal into the correct cavity at the back of the connector.
2. Push the terminal into the connector until it locks into place. The new terminal should be even with the

other terminals. Ensure that the terminal is locked in place by gently pulling on the wire.

3. To assemble the connector, reverse the connector disassembly procedure.

TYCO/AMP CONNECTORS (CM 42-WAY)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

1. Locate the connector position assurance (CPA) on the connector body and pull the CPA out. The CPA is on the wire harness side of connector.
2. Disconnect the connector from the component.

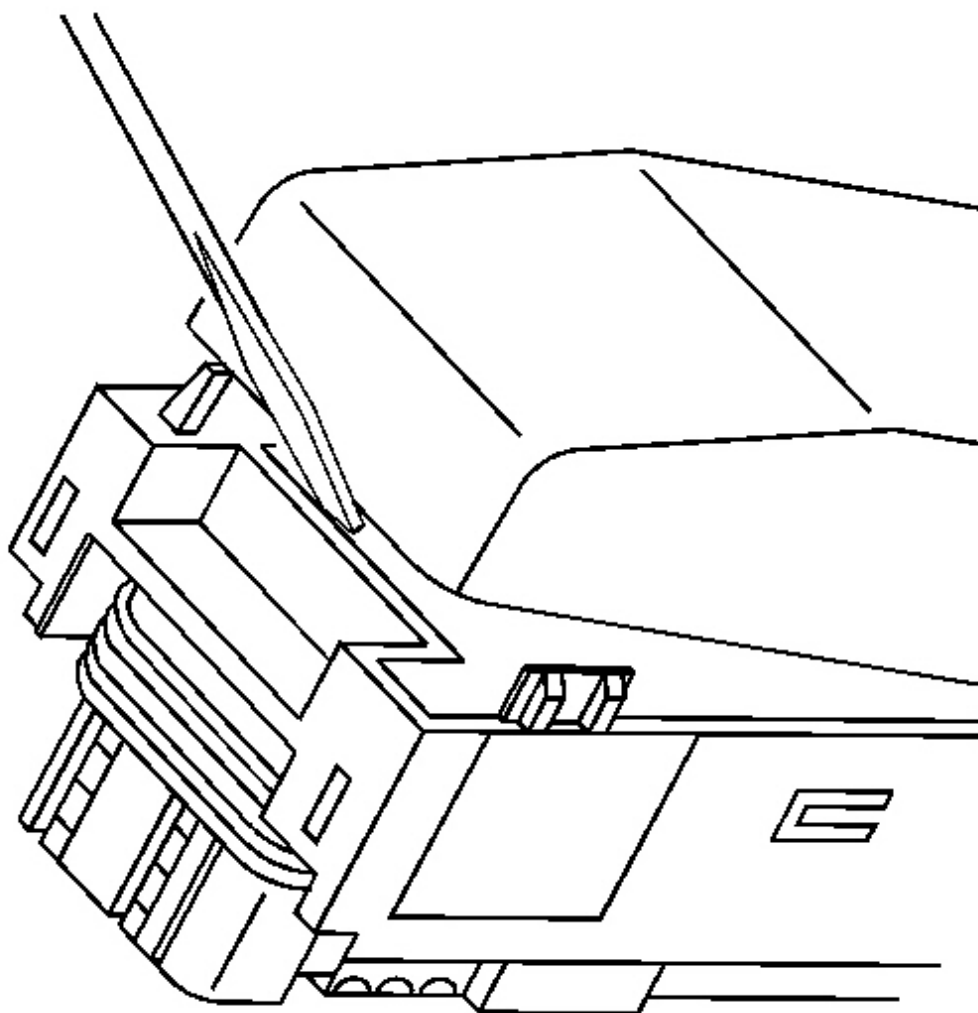


Fig. 144: Prying Off Dress Cover
Courtesy of GENERAL MOTORS CORP.

3. Use a small flat-bladed tool to gently pry off the dress cover by inserting the tool under the cover opposite the harness side and prying up.
4. Remove the cover.

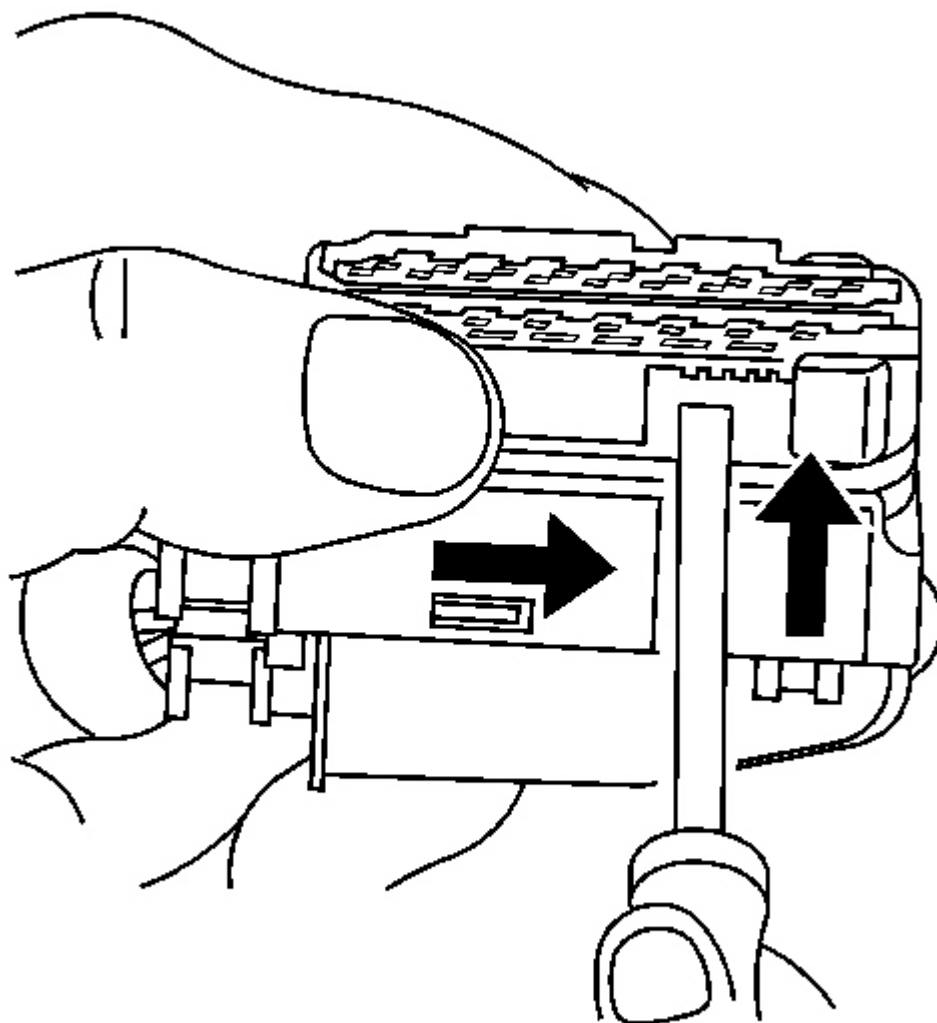


Fig. 145: View Of Terminal Position Assurance (TPA)
Courtesy of GENERAL MOTORS CORP.

5. Using a small flat-bladed tool, push on the side of the nose piece retainer while pushing the nose piece forward with your thumb. This will release the terminal position assurance (TPA).

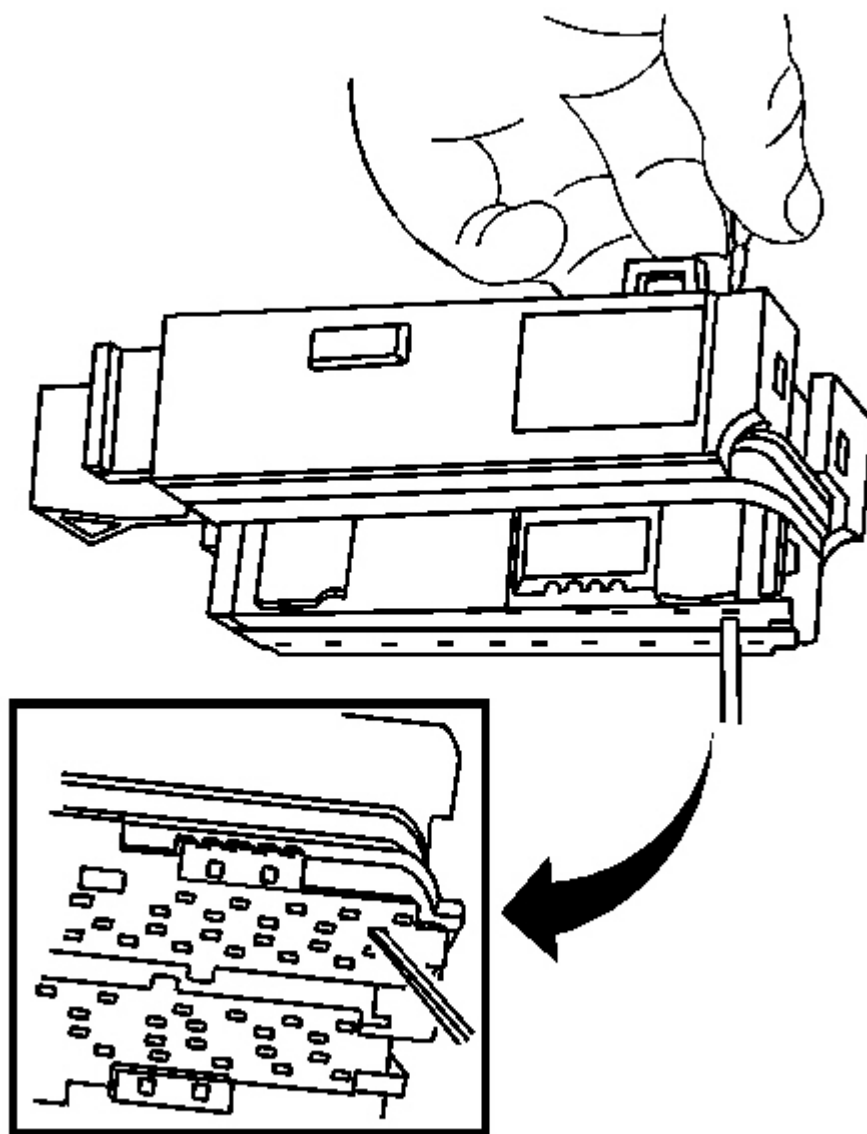


Fig. 146: Inserting J 38125-12A Into Terminal Release Cavity
Courtesy of GENERAL MOTORS CORP.

6. Insert the J 38125-12A into the corresponding terminal release cavity. The release cavities are the 2 center rows of cavities on one half of the connector.

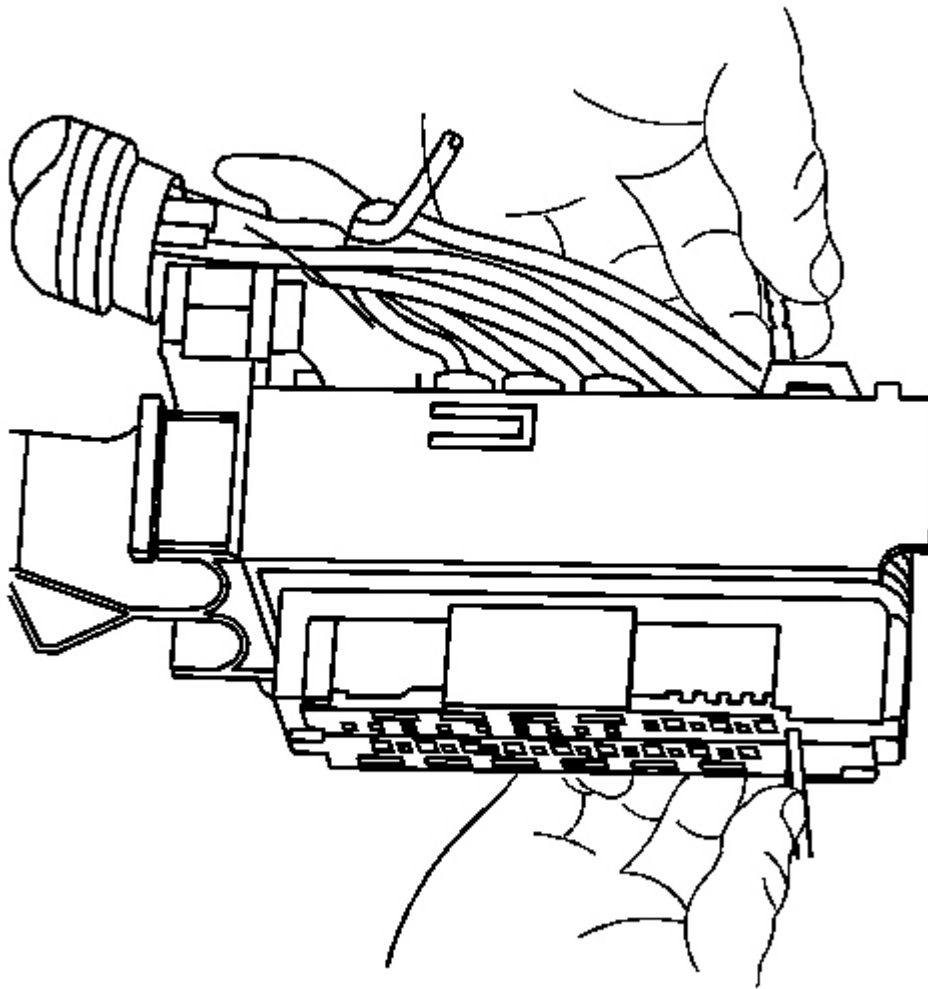


Fig. 147: Pulling Wire Out Of Back Of Connector
Courtesy of GENERAL MOTORS CORP.

7. Pressing the J 38125-12A tool in the release cavity of the terminal you are removing, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

Terminal Repair Procedure

Use the appropriate terminal and crimper in the **J-38125** in order to replace the terminal.

TYCO/AMP CONNECTORS (SENSOR)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

1. Disconnect the connector from the component.

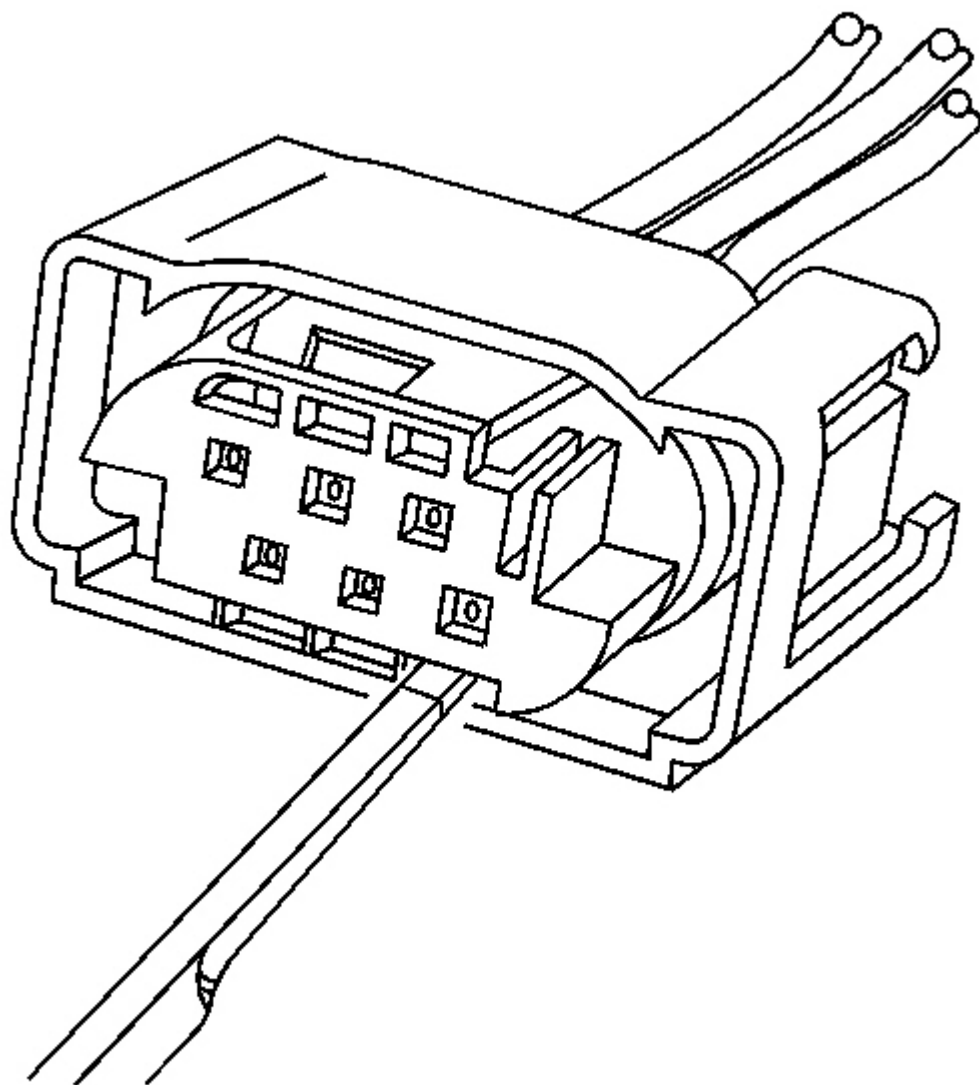


Fig. 148: Inserting Special Tool Into Lower Right Face Cavity
Courtesy of GENERAL MOTORS CORP.

2. Insert the J 38125-11A tool into the cavity on the lower right hand face of the connector until the terminal release tang access panel slides over.

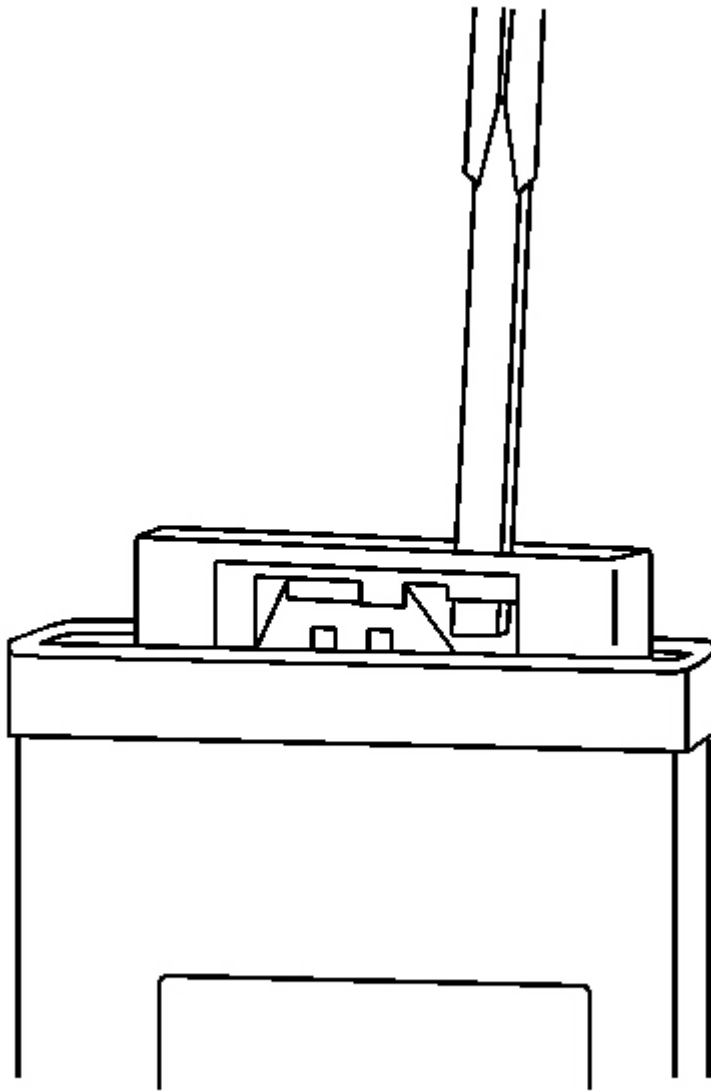


Fig. 149: Pushing Wire Side Of Terminal Toward Connector
Courtesy of GENERAL MOTORS CORP.

3. Ensure that the terminal release tang access panel is in the correct location to access the terminals.
4. Push the wire side of the terminal that is being removed toward the connector and hold it in position.

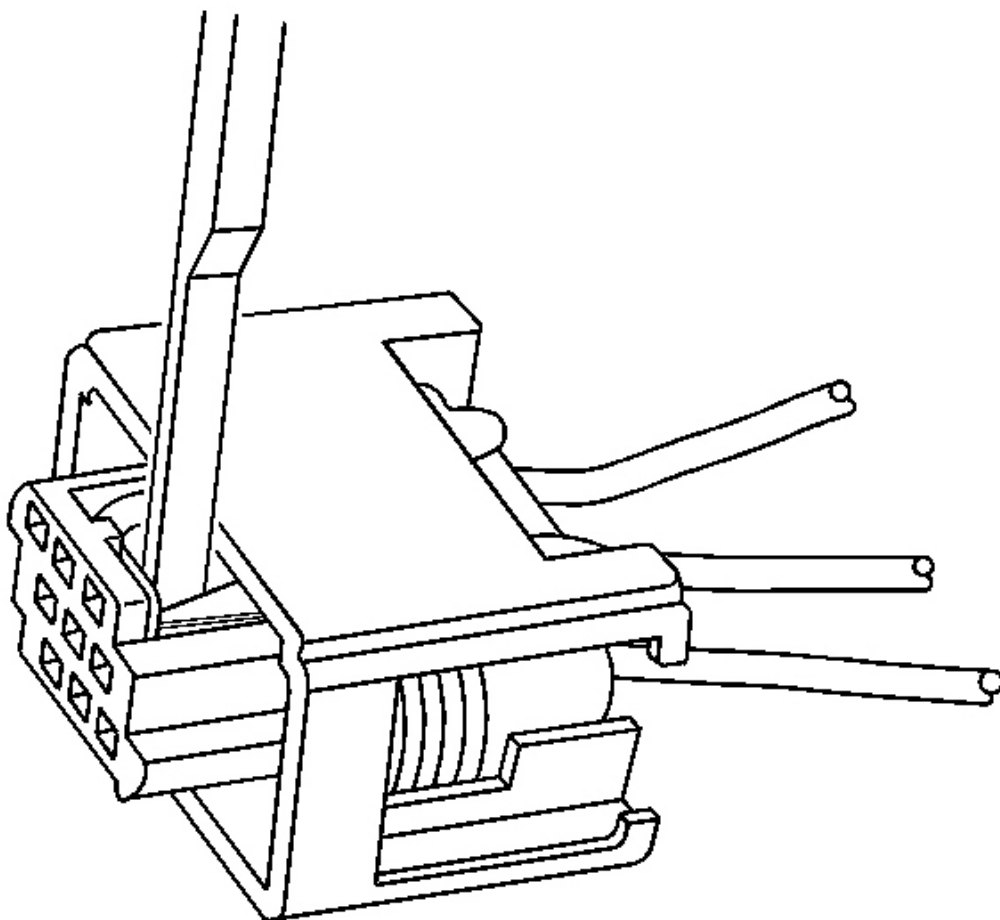


Fig. 150: Inserting Tool Into Terminal Release Tang Access Slot (Sensor)
Courtesy of GENERAL MOTORS CORP.

5. Insert the J 38125-11A into the terminal release tang access slot located behind the access panel of the connector and press down on the terminal while carefully pulling the terminal out of the connector. Always remember never use force when pulling a terminal out of a connector. If the terminal is difficult to remove, repeat the entire procedure.

Terminal Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

TYCO/AMP CONNECTORS (0.25 CAP)

Special Tools

Terminal Removal Procedure

1. Disconnect the connector from the component by pressing down on the connector position assurance (CPA).

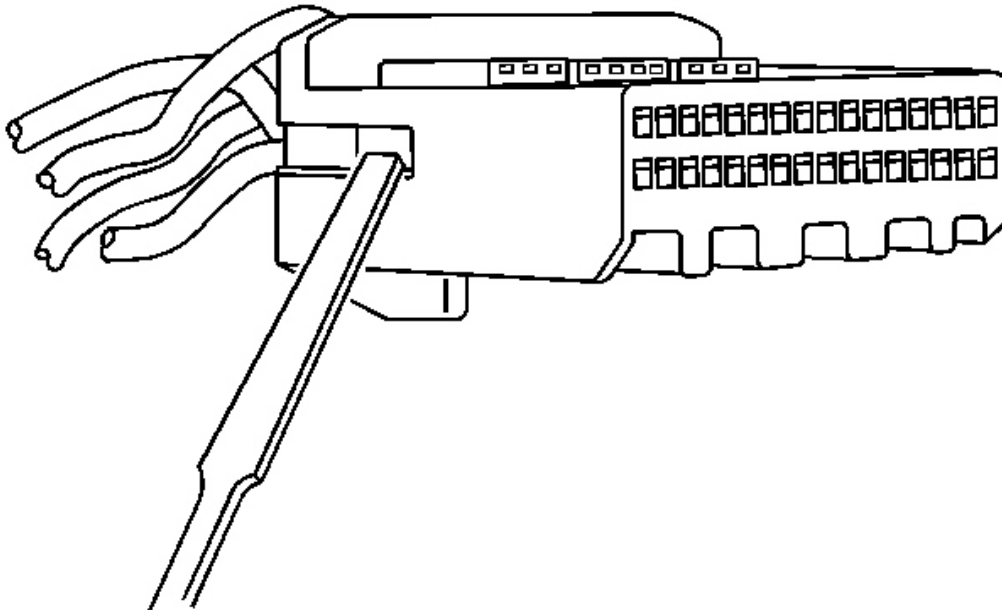


Fig. 151: Releasing TPA

Courtesy of GENERAL MOTORS CORP.

NOTE: The TPA on this connector cannot be removed unless the terminals are removed first. The TPA will come out of the connector body, but only slightly. When the TPA is slightly raised the terminals can be removed. Using excessive force to remove the TPA with the terminals still in the connector will damage the connector.

2. Use a small flat-bladed tool to release the terminal position assurance (TPA) by inserting the tool in the small recess on the side of the connector and pushing up until the TPA releases from the connector body. The TPA should raise just slightly. Do not try to remove the TPA.
3. Repeat the process for the other side of the connector.

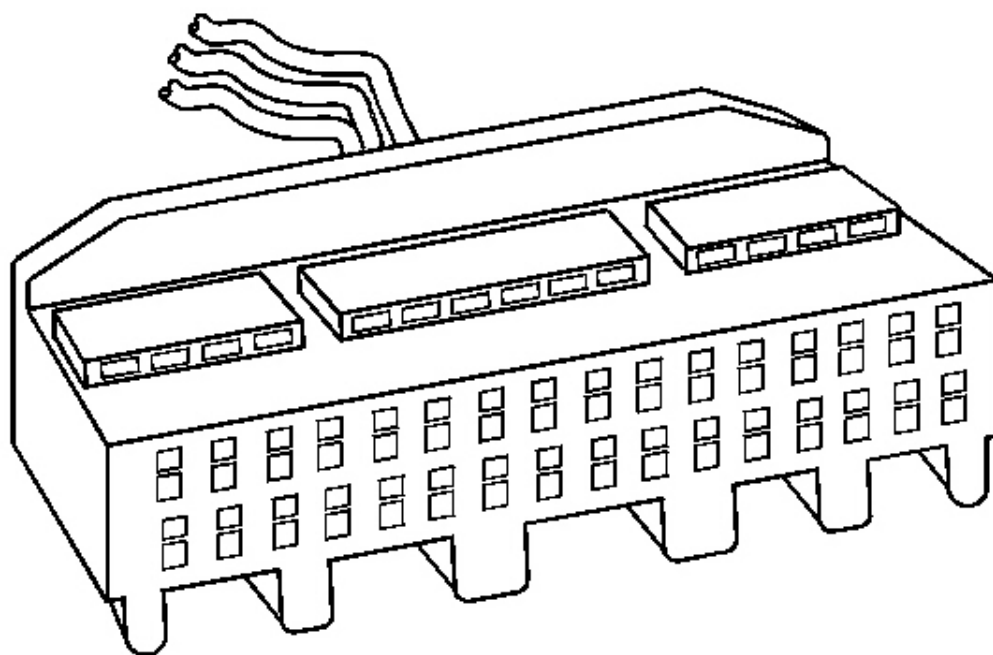


Fig. 152: View Of TPA

Courtesy of GENERAL MOTORS CORP.

4. Ensure that the TPA is in the proper position to remove the terminals.

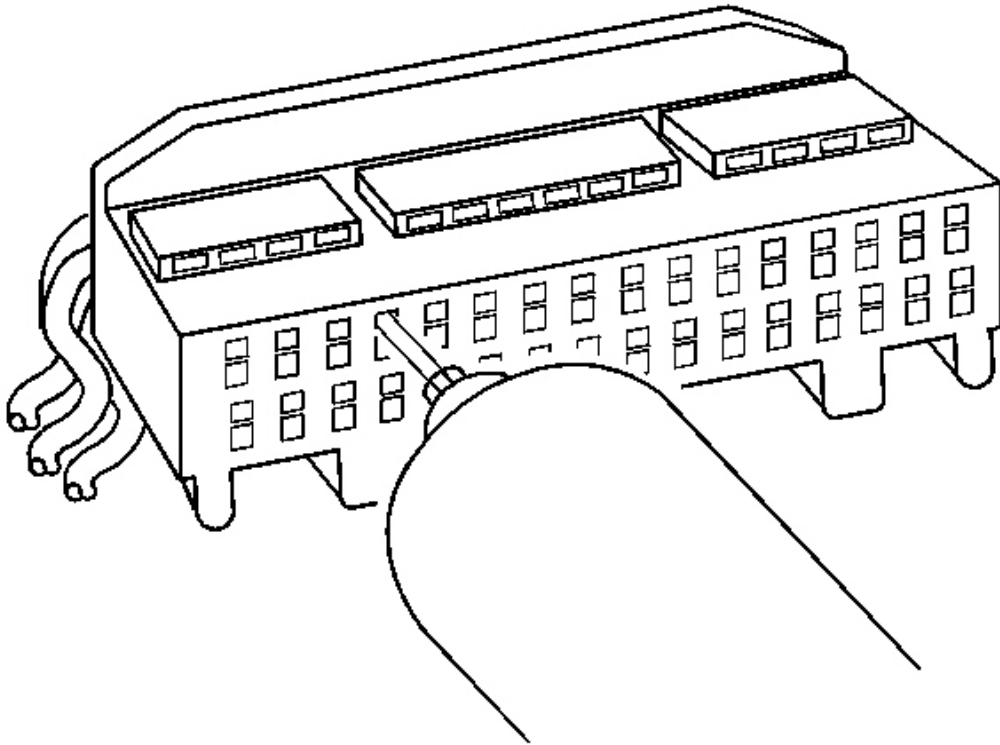


Fig. 153: Inserting Special Tool Into Release Cavity
Courtesy of GENERAL MOTORS CORP.

5. While pushing the terminal forward, insert the J 38125-24 in the release cavity above the terminal you are removing, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

Terminal Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** in order to replace the terminal.

TYCO/AMP CONNECTORS (43-WAY)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

Follow the steps below in order to remove terminals from the connector.

1. Locate the lever lock on the wire dress cover. Slide the lever lock away from the connector body.
2. Disconnect the connector from the component.
3. Locate the dress cover locking tabs on the dress cover of the connector. Using a small flat-blade tool release all of the locking tabs.
4. Once the locks are unlocked, lift the dress cover off.

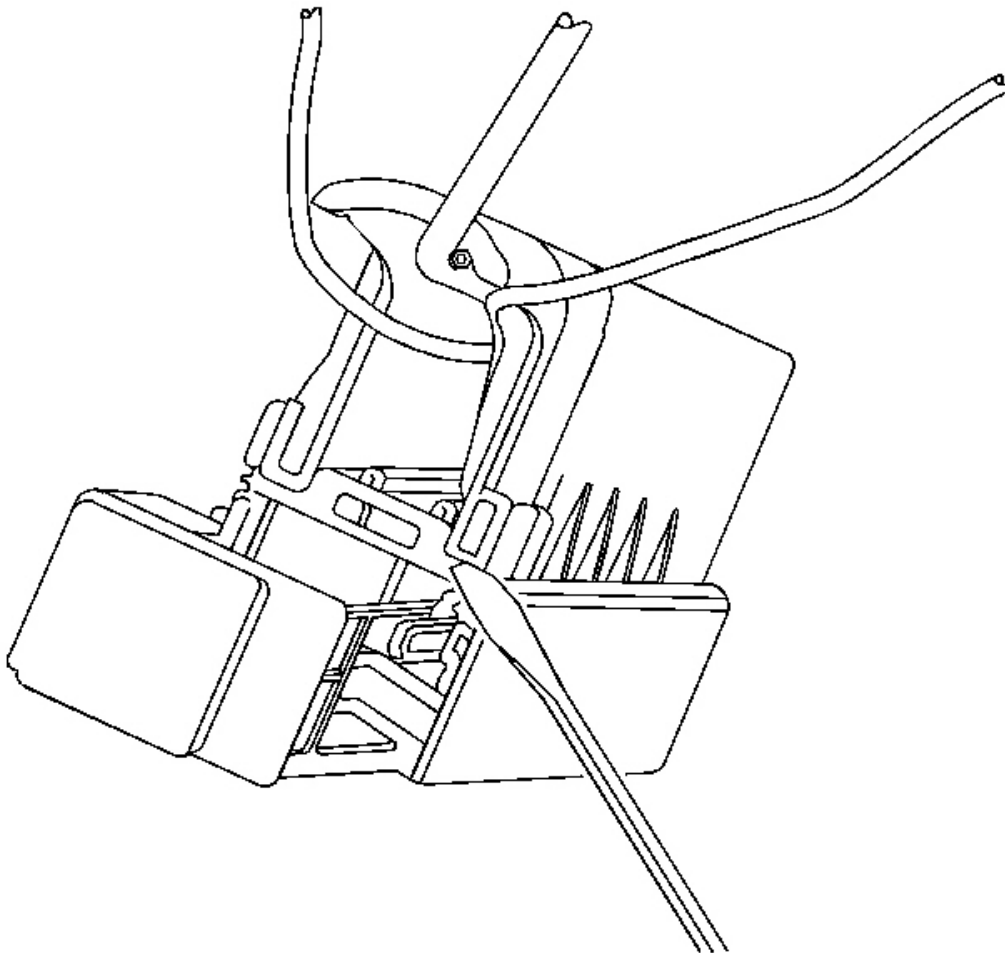


Fig. 154: Releasing TPA

Courtesy of GENERAL MOTORS CORP.

NOTE: Always use care when removing a terminal position assurance (TPA) in order to avoid damaging it.

5. Release the TPA by inserting a small flat-blade tool into the blue locking tabs on both ends of the connector. Gently slide the TPA up to the released position on both ends.

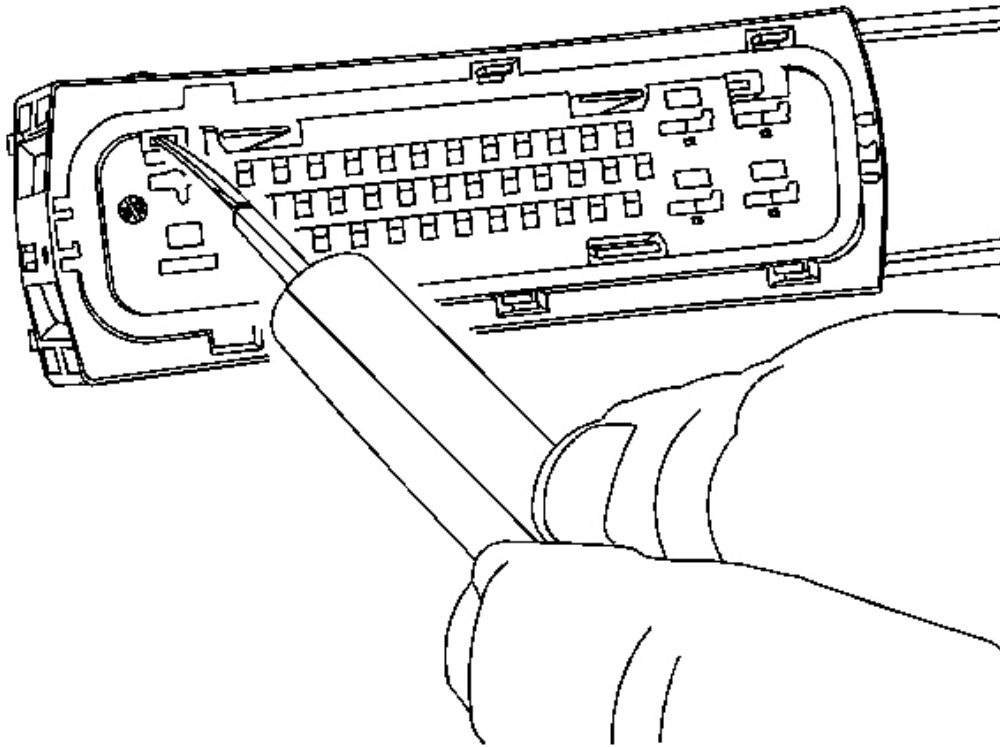


Fig. 155: Inserting Tool Into Terminal Release Cavity
Courtesy of GENERAL MOTORS CORP.

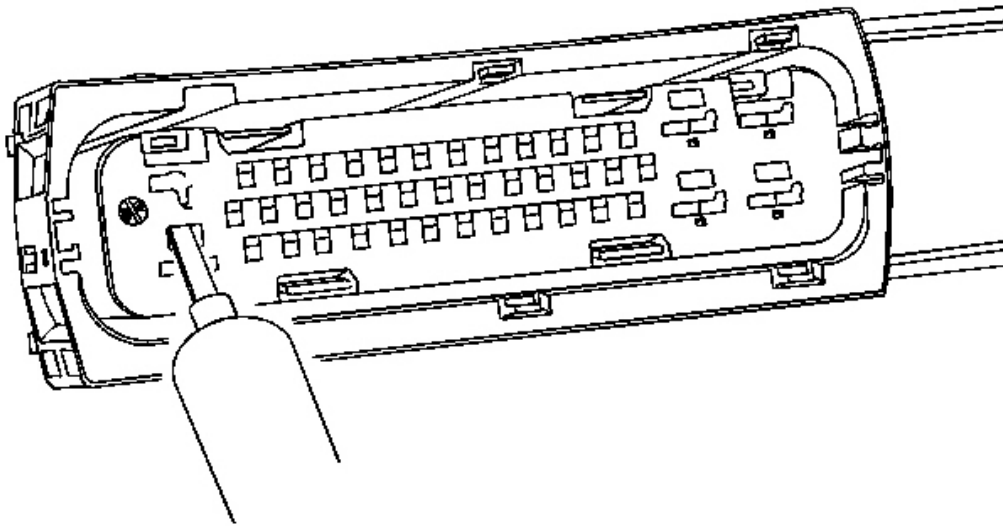


Fig. 156: View Of Release Tool Being Used For Larger Terminals
Courtesy of GENERAL MOTORS CORP.

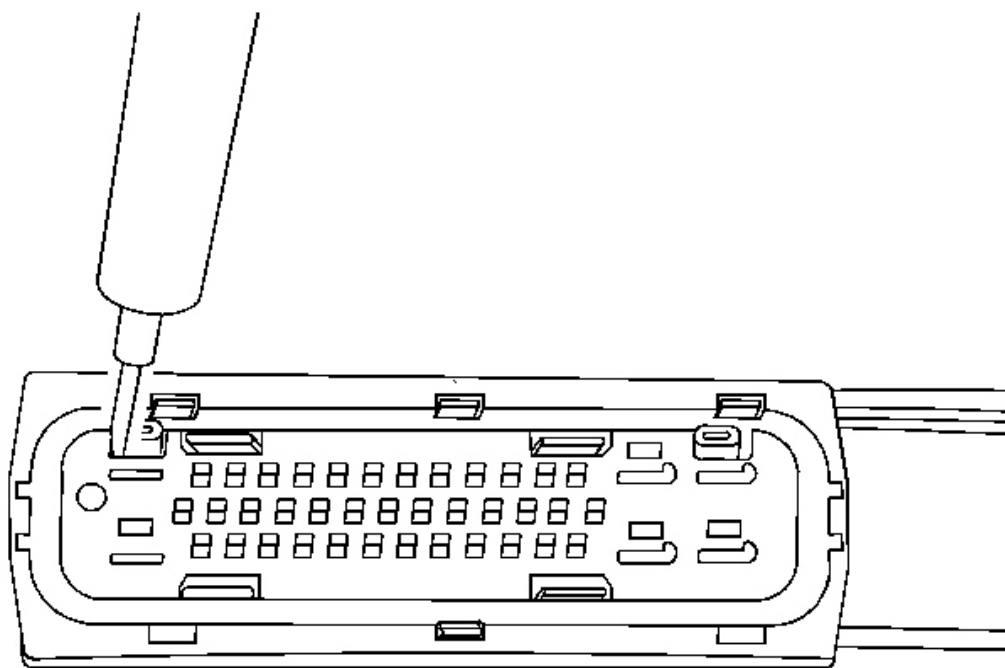


Fig. 157: View Of Release Tool Being Used For Larger Terminals
Courtesy of GENERAL MOTORS CORP.

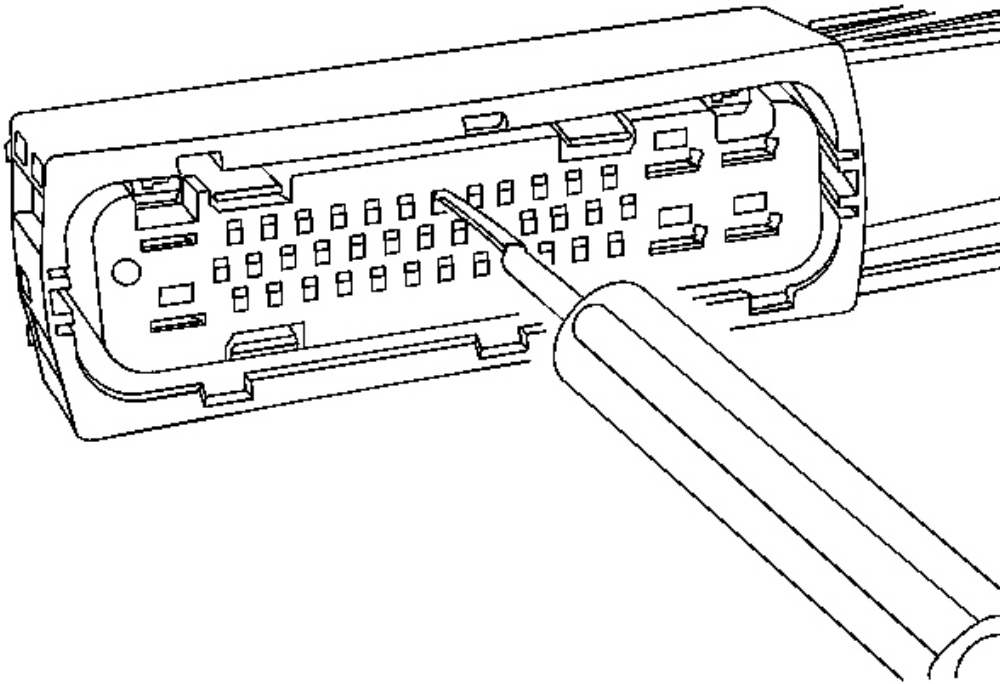


Fig. 158: View Of Release Tool Being Used For Smaller Terminals
Courtesy of GENERAL MOTORS CORP.

6. For the larger terminals insert the J 38125-13A tool to release the terminals by inserting the tool into the terminal release cavity. For the smaller terminals insert the J 38125-12A tool to release the terminals by inserting the tool into the terminal release cavity. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

View of the release tool being used for the larger terminals.

View of the release tool being used for the larger terminals.

View of the release tool being used for the smaller terminals.

7. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

TYCO/AMP CONNECTORS (DOOR MODULE)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

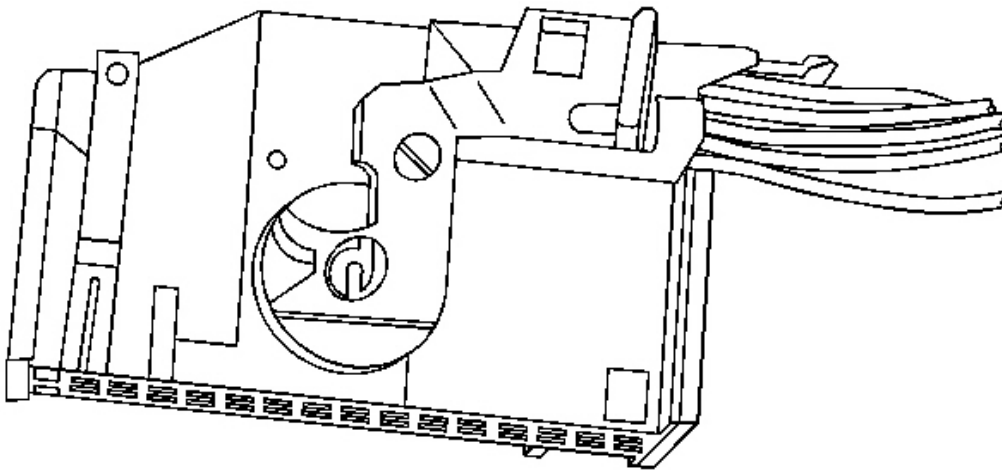


Fig. 159: Side View Of Tyco/AMP Connector
Courtesy of GENERAL MOTORS CORP.

Side view of connector.

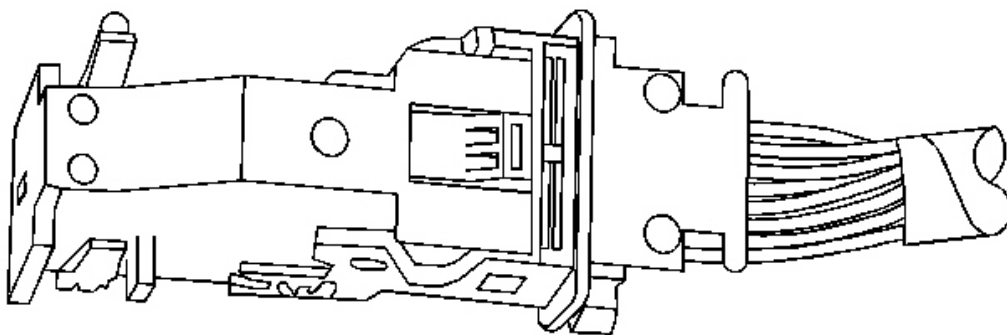


Fig. 160: Top View Of Tyco/AMP Connector
Courtesy of GENERAL MOTORS CORP.

View of top of connector.

1. Locate the assist lever and lock on the top of the connector.

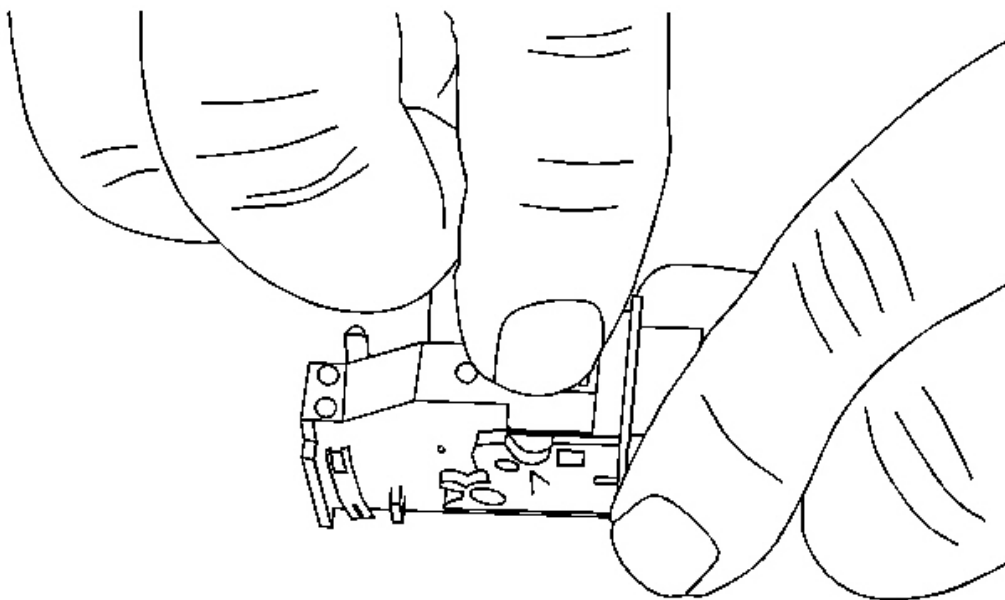


Fig. 161: Depressing Lock & Pulling Assist Lever

Courtesy of GENERAL MOTORS CORP.

2. While depressing the lock, pull the lever over and past the lock.

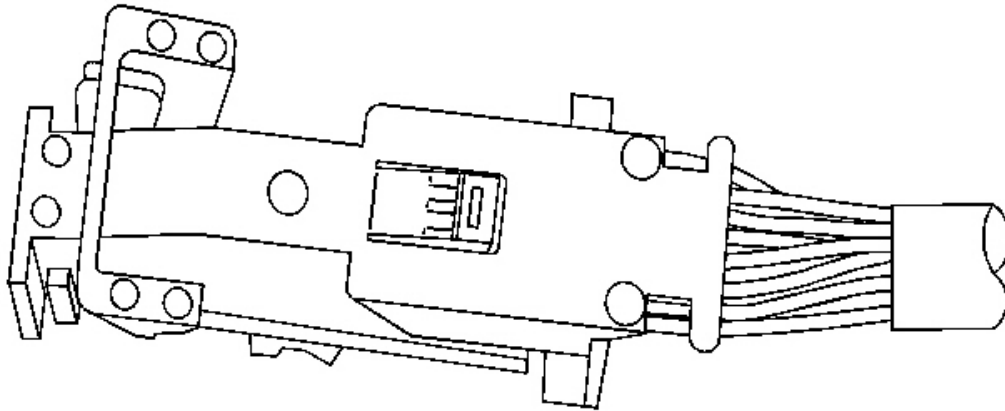


Fig. 162: View Of Component Connector
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the connector from the component.

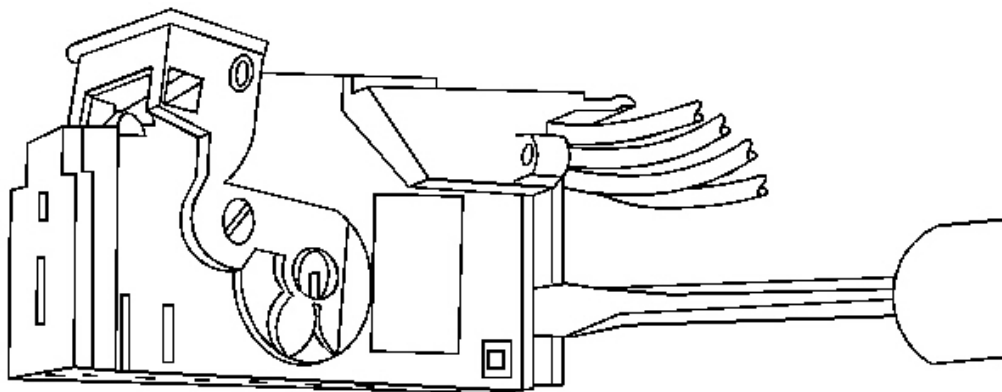


Fig. 163: Identifying Locking Tabs
Courtesy of GENERAL MOTORS CORP.

4. Locate the dress cover locking tabs at the rear of the connector. Use a small flat-blade tool to release the locking tabs. Repeat this procedure for the other locking tab.

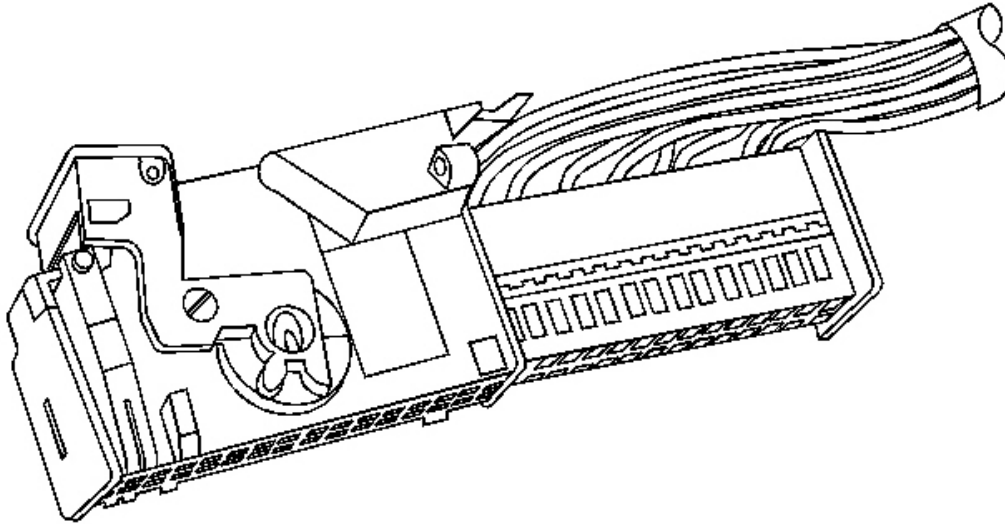


Fig. 164: Sliding Inner Connector Out Of Connector Housing
Courtesy of GENERAL MOTORS CORP.

5. Once the locking tabs are unlocked, slide the inner connector out of the rear of the connector housing.

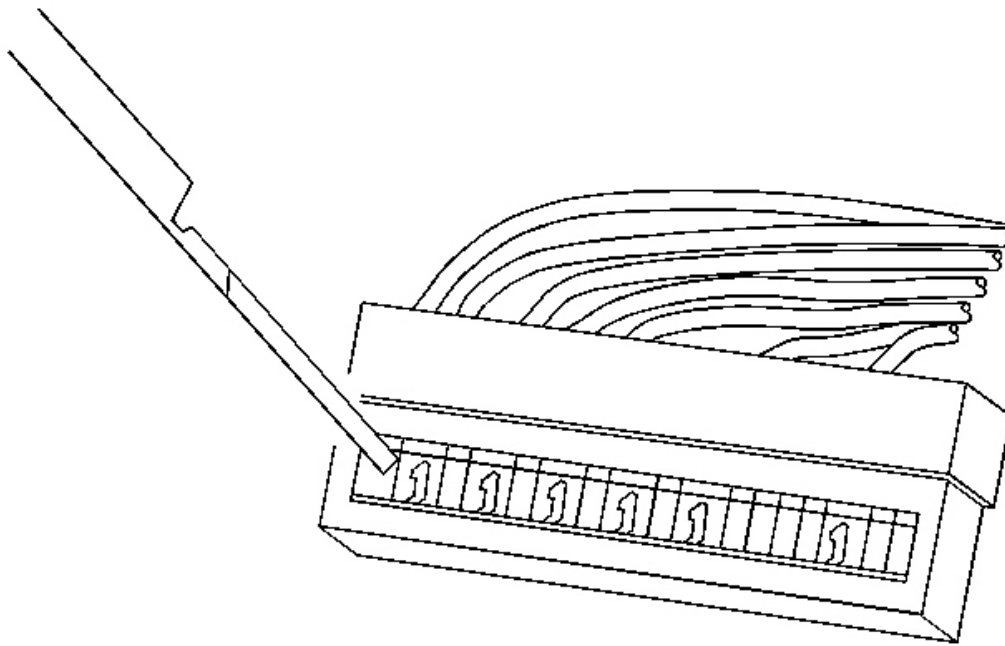


Fig. 165: Releasing Terminals
Courtesy of GENERAL MOTORS CORP.

6. Use the J 38125-12A tool to release the terminals by pressing on the tang. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.
7. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

YAZAKI CONNECTORS (2-WAY)

Special Tools

J-38125 Terminal Repair Kit

Terminal Removal Procedure

1. Disconnect the connector from the component.

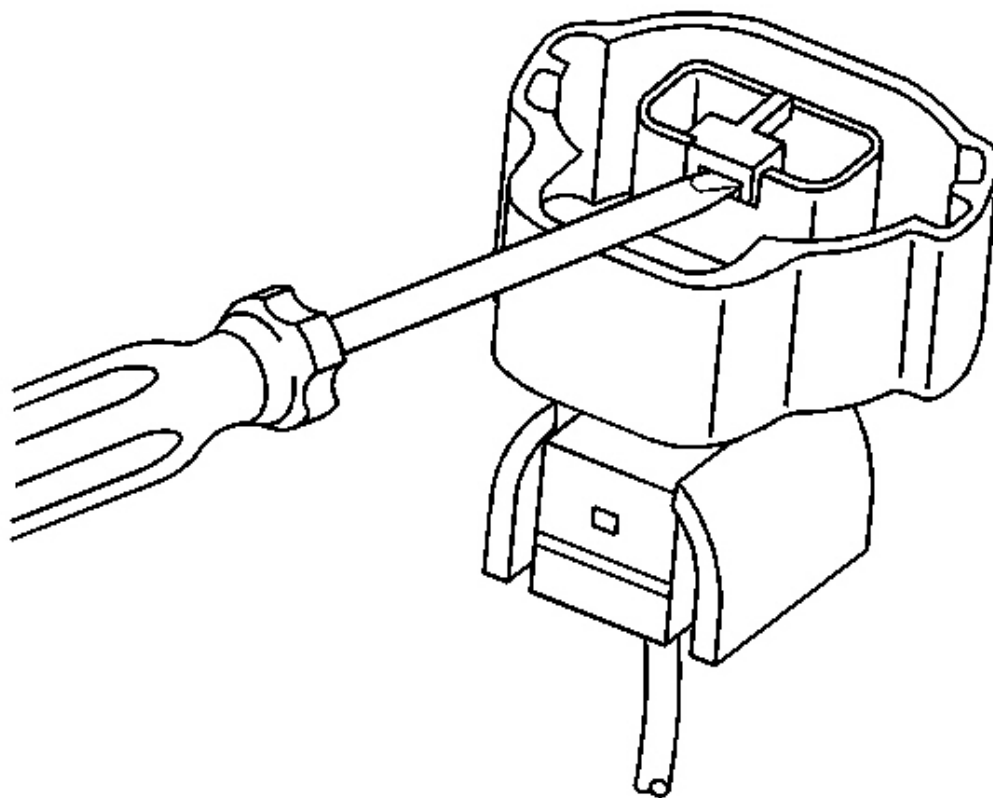


Fig. 166: Identifying Terminal Position Assurance (Yakazi)
Courtesy of GENERAL MOTORS CORP.

2. Insert a small flat-blade tool in the slot below the front loaded terminal position assurance (TPA) and pry up.
3. Remove the TPA by pulling it out of the connector.
4. Push the wire side of the terminal that is being removed toward the connector and hold it in position.

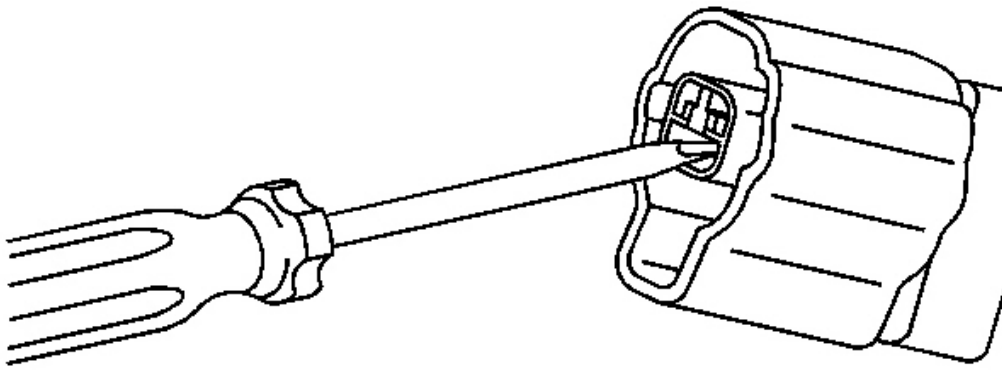


Fig. 167: Inserting Tool Into Terminal Cavity (Yakazi)
Courtesy of GENERAL MOTORS CORP.

5. Insert the J 38125-553 on a slight upward angle into the cavity below the terminal to be removed. Ensure that the pointed on the end of the tool is facing the bottom of the terminal and it stays in contact with the terminal until it stops on the plastic terminal retainer. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

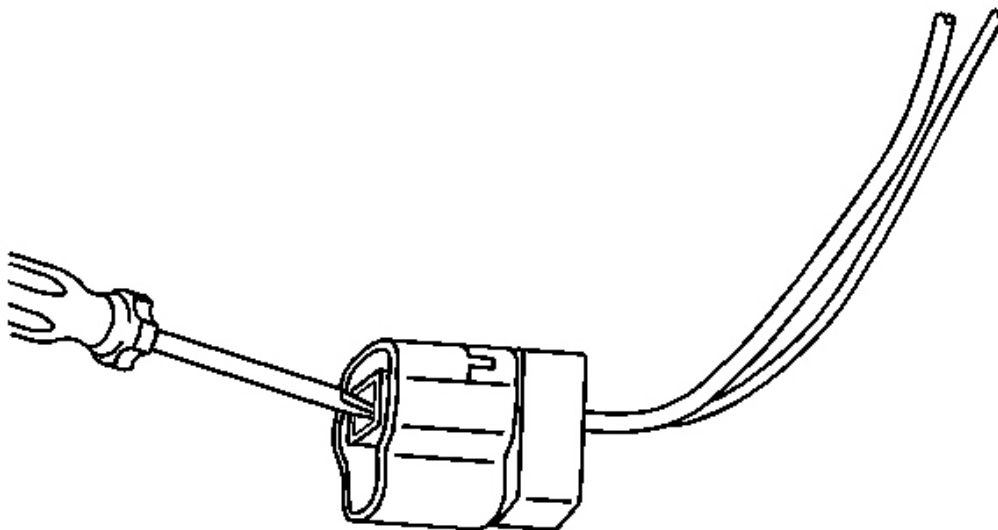


Fig. 168: Pulling Terminal Out Of Connector (Yakazi)
Courtesy of GENERAL MOTORS CORP.

6. Gently pry the plastic terminal retainer down and carefully pull the terminal out of the connector. Always remember never use force when pulling a terminal out of a connector. If the terminal is difficult to remove, repeat the entire procedure.

Terminal Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

YAZAKI CONNECTORS (16-WAY)

Special Tools

J-38125 Terminal Repair Kit

Removal Procedure

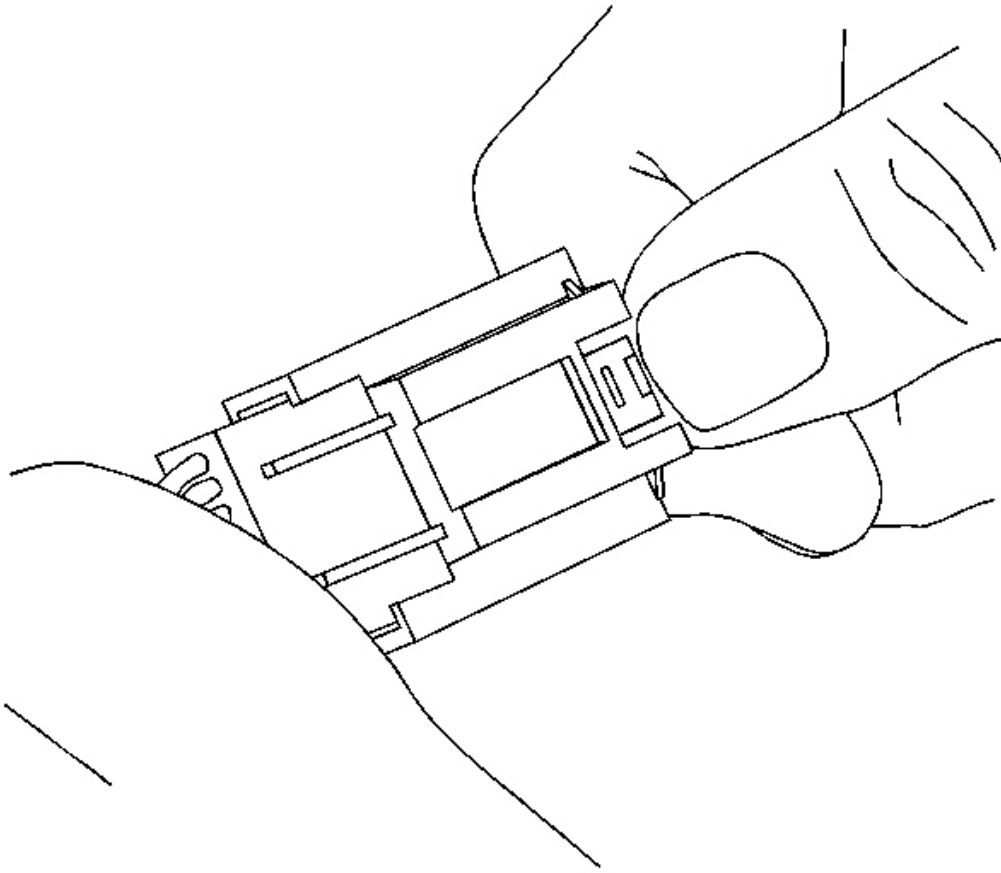


Fig. 169: Pulling Connector Halves Apart
Courtesy of GENERAL MOTORS CORP.

1. While depressing the lock, pull the two connector halves apart.

NOTE: **The TPA is fragile and may break if not done carefully.**

2. Use a small flat-blade tool to very carefully push the terminal position assurance (TPA) towards the face of the connector on both sides of the connector.

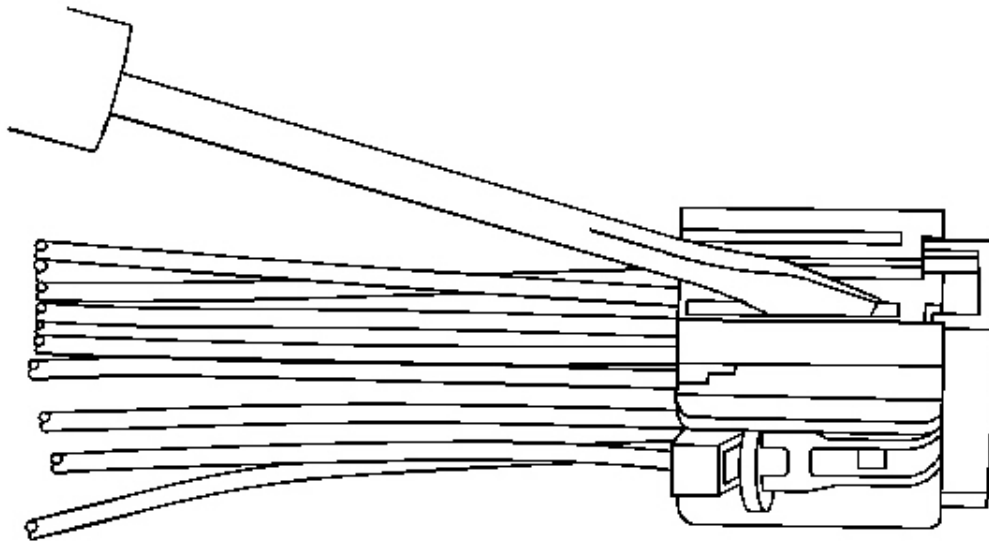


Fig. 170: View Of Male Connector Half & Female Terminals
Courtesy of GENERAL MOTORS CORP.

3. View of the male half of the connector with female terminals.

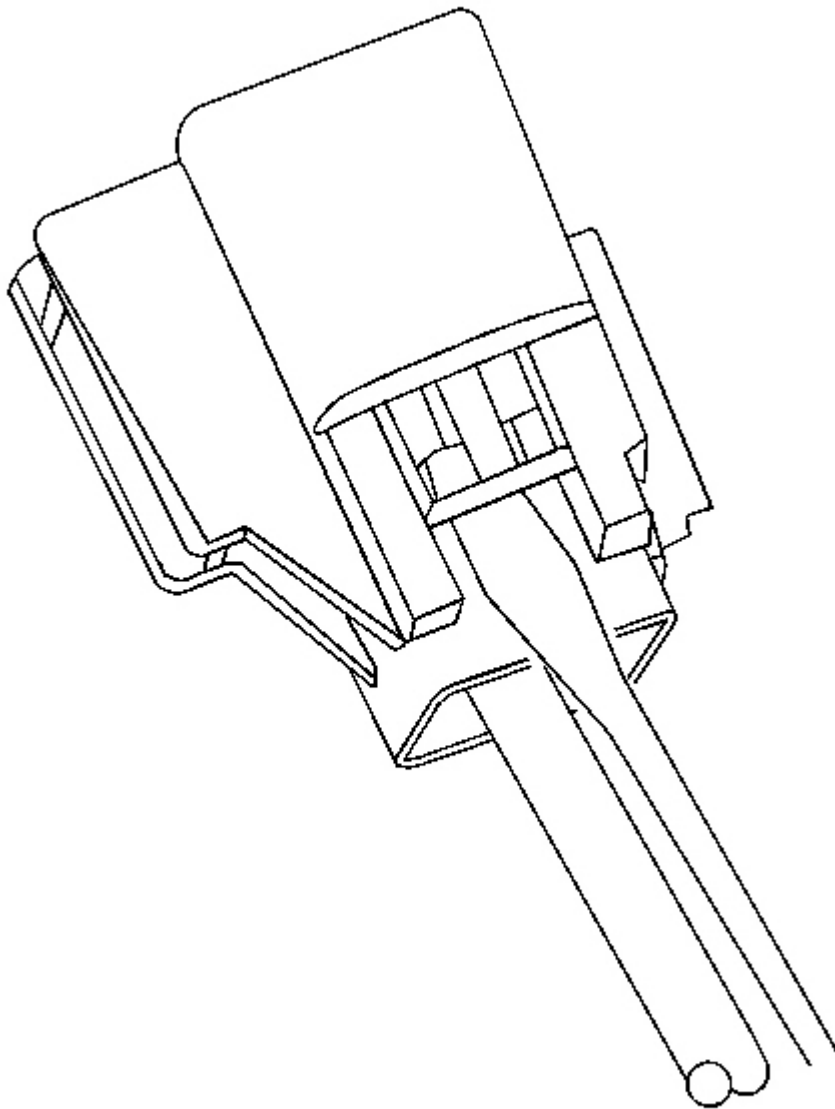


Fig. 171: View Of Female Half Of Connector With Male Terminals
Courtesy of GENERAL MOTORS CORP.

4. View of the female half of the connector with male terminals.
5. Use the J 38125-215 tool to release the terminals by inserting the tool into the terminal release cavity. See the release tool cross reference in the Reference Guide of the **J-38125** to ensure that the correct release tool is used.

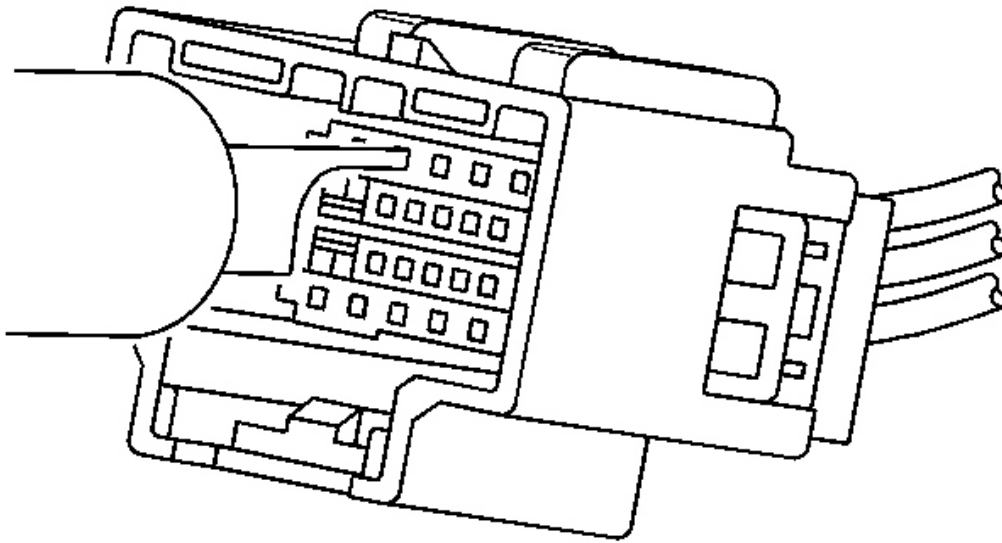


Fig. 172: Using Removal Tool On Female Half Of Connector
Courtesy of GENERAL MOTORS CORP.

6. View of the female half of the connector with male terminals.

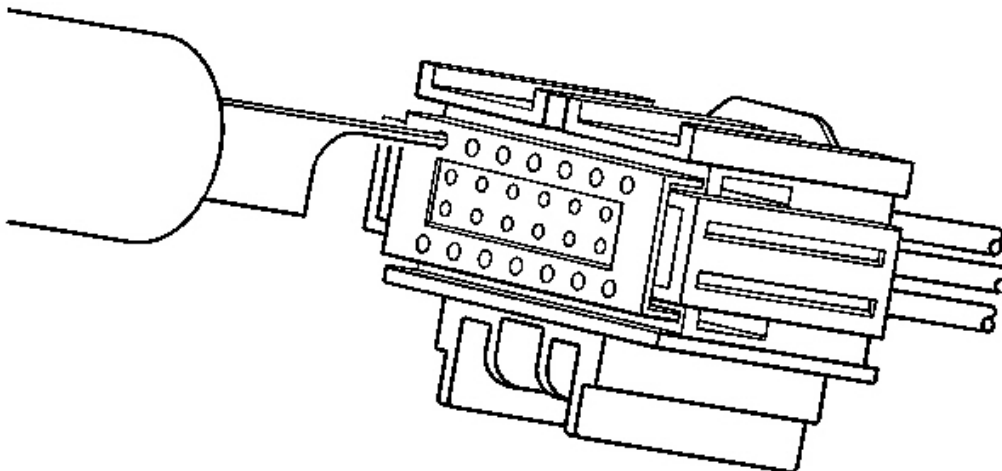


Fig. 173: Using Removal Tool On Male Half Of Connector
Courtesy of GENERAL MOTORS CORP.

7. View of the male half of the connector with female terminals.
8. While holding the removal tool in place, gently pull the wire out of the back of the connector. Always remember never use force when pulling a terminal out of a connector.

Repair Procedure

Use the appropriate terminal and follow the instructions in the **J-38125** .

Location of the terminal in the repair tray and the proper crimp tool can be found in the appropriate connector end view.

REPAIRING CONNECTOR TERMINALS

Special Tools

J-38125 Terminal Repair Kit

Use the following repair procedures in order to repair the following:

- Push to Seat terminals
- Pull to Seat terminals

Some terminals do not require all of the steps shown. Skip the steps that do not apply for your terminal repair. The **J-38125** contains further information.

1. Cut off the terminal between the core and the insulation crimp. Minimize any wire loss.

For cable seal terminals, remove the seal.

2. Apply the correct cable seal per gauge size of the wire, if used.

Slide the seal back along the wire in order to enable insulation removal.

3. Remove the insulation.
4. For sealed terminals only, align the seal with the end of the cable insulation.
5. Position the strip in the terminal.

For sealed terminals, position the strip and seal in the terminal.

6. Hand crimp the core wings.
7. Hand crimp the insulation wings.

For sealed terminals, hand crimp the insulation wings around the seal and the cable.

8. Solder all of the hand crimp terminals excepting Micro-Pack 100 .64 size. Soldering Micro-Pack 100 World terminals may damage the terminal.

TERMINAL WIRING REPAIR

Special Tools

- **EL-38125-10:** Splice Sleeve Crimp Tool
- **EL-38125-580:** Terminal Release Tool Kit
- **J-38125-5:** Ultra Torch
- **EL-35616:** Connector Test Adapter Kit

For equivalent regional tools, refer to Special Tools .

NOTE: **All repairs near the engine manifold, turbo engine and all exhaust pipes should follow the High Temperature Wiring Repair procedures.**

1. Find the appropriate connector end view within the connector end view section. The connector end view has the following information:
 - Diagnostic probe tool
 - Terminal release tool
 - Terminal/terminated lead part numbers
2. Determine if a terminal is damaged.

NOTE: **Not using the proper test kit probe may cause damage to the terminal(s) that are probed.**

- Locate the diagnostic probe tool from the connector end view. The connector end view describes the color and part number to help the technician find and use the correct tool.
 - Connect the probe tool to the Digital Multimeter.
 - Insert the probe tool into the cavity and follow the procedures from the Troubleshooting with a Digital Multimeter .
3. Disconnect the connector body to perform the repair.

NOTE: **Several procedures for specific connector bodies are called out in Wiring Repairs.**

Use the following repair procedures to repair the following terminals:

Delphi Connectors (Weather Pack) or Delphi Connectors (Push To Seat) or Delphi Connectors (Pull To Seat) or Delphi Connectors (Micro-Pack 100W) or Delphi Connectors (Micro .64) or Delphi Connectors (12-Way) or Delphi Connectors (Steering Gear)

- The TPA and CPA should be removed before releasing the terminal for the connector body.
- Look at the connector end view to locate the cavity of the damaged terminal and find the proper terminal release tool from the terminal release tool kit.

NOTE: Using the incorrect terminal release tool can damage the connector body.

- Insert the terminal release tool into the cavity.

NOTE: Some terminals have a lever that must be disengaged before the terminal can be released.

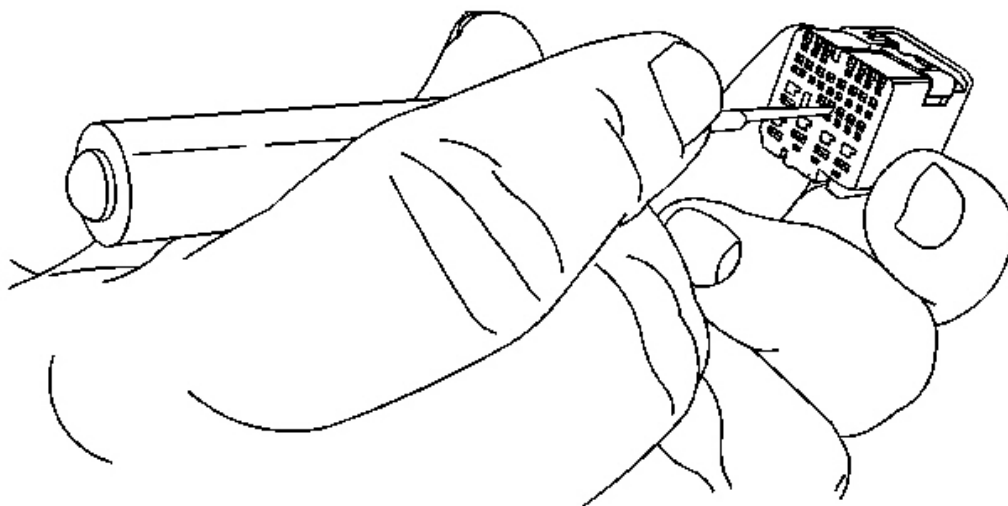


Fig. 174: Pulling Wire Out Of Back Of Connector
Courtesy of GENERAL MOTORS CORP.

Gently pull the wire out of the back of the connector.

TERMINATED LEAD REPAIR

Special Tools

- **EL-38125-10:** Splice Sleeve Crimp Tool
- **EL-38125-580:** Terminal Release Tool Kit
- **J-38125-5:** Ultra Torch
- **EL-35616:** Connector Test Adapter Kit

For equivalent regional tools, refer to **Special Tools** .

NOTE: **All repairs near the engine manifold, turbo engine and all exhaust pipes should follow the High Temperature Wiring Repairs procedures.**

Terminated leads are terminals that are crimped onto wires. The terminated lead can be used throughout the vehicle since it is designed for temperatures up to 150°C. The length of the wire is 450 mm.

The DuraSeal splice sleeve has the following 2 critical features:

- A special heat shrink tubing that environmentally seals the splice. The shrink tubing contains a sealing adhesive inside the shrink tubing.
- A cross hatched (knurled) core crimp that provides the necessary contact integrity for sensitive low energy circuits.

Part Number	Color	0.18-0.35	>0.35-1	>1-2.5	>2.5-5
19169142	Green (1)	X	-	-	-
12089189	Red (2)	-	X	-	-
12089190	Blue (3)	-	-	X	-
12089191	Yellow (4)	-	-	-	X

1. Use the connector end view to identify the correct terminated lead.
2. The terminated lead package should include a DuraSeal splice sleeve. If not, use the chart to identify the correct part.
3. Open the harness by removing any tape:

Use a sewing seam ripper, or a comparable tool, to cut open the harness, to avoid wire insulation damage.

4. Depending on how many terminals need repairs, cut the terminal and wire back at least 40 mm. Try to keep the harness wire length the same.

If more than one terminated lead is required, stagger the lengths by 40 mm. This helps reduce the bundle size of the wire harness.

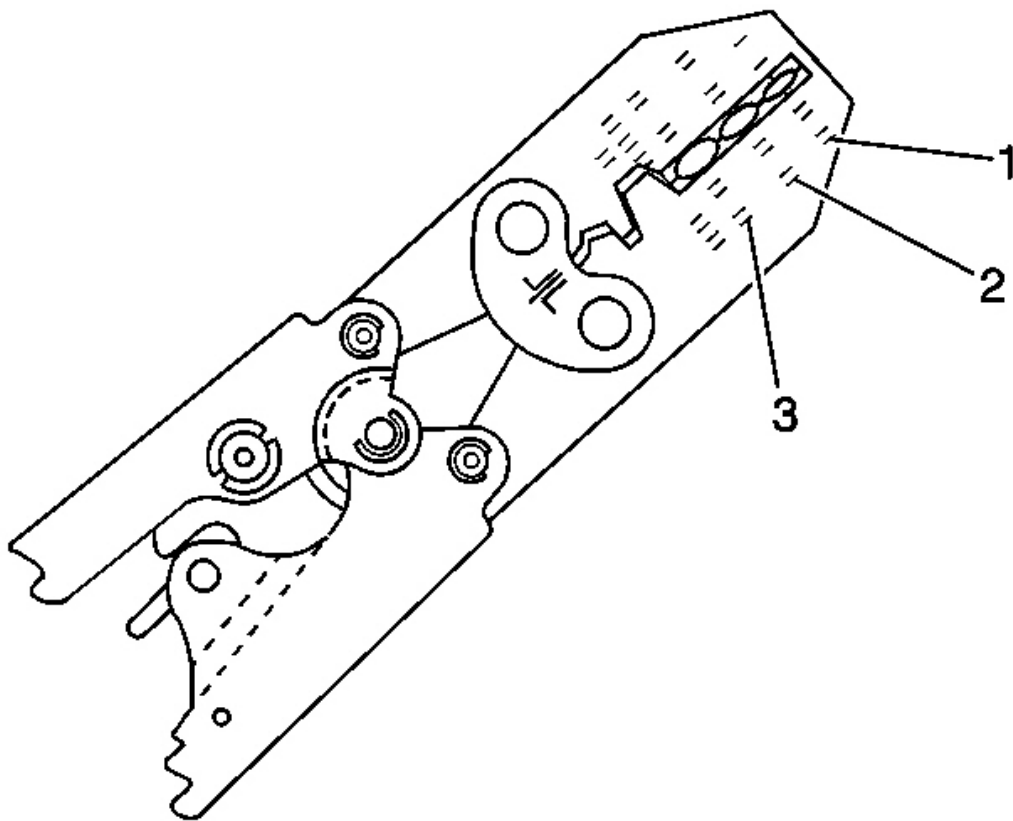


Fig. 175: Identifying Splice Crimp Tool Nests Terminal Identification
Courtesy of GENERAL MOTORS CORP.

5. Use the **EL-38125-10**: tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. The crimp tool has four nests, one for each color.

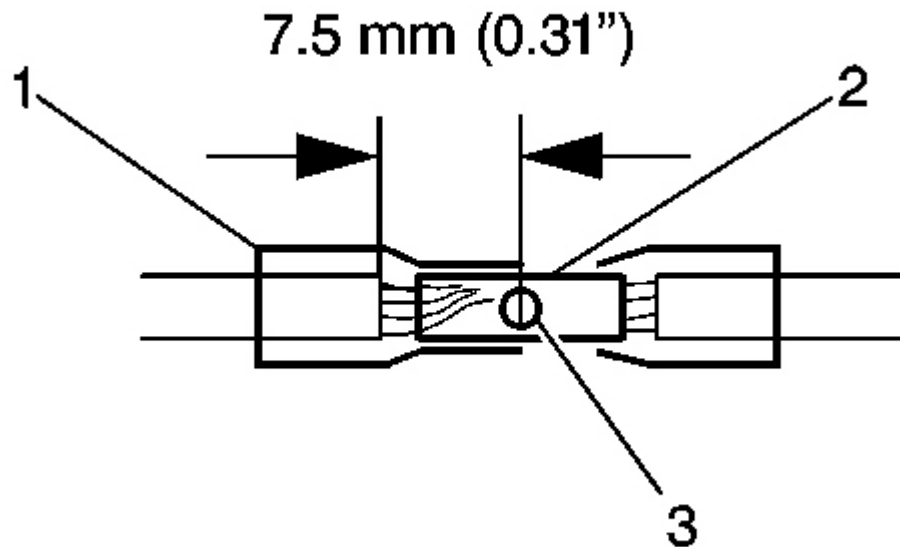


Fig. 176: Identifying Duraseal Splice Sleeve
 Courtesy of GENERAL MOTORS CORP.

6. Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.



Fig. 177: Identifying Crimped Duraseal Splice Sleeve
 Courtesy of GENERAL MOTORS CORP.

7. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop.

8. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 5 for the opposite end of the splice.



Fig. 178: Identifying Heated Splice Sleeve
Courtesy of GENERAL MOTORS CORP.

9. Using the **J-38125-5**: ultra torch, apply heat to the crimped area of the barrel.
10. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.
 - A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

IGNITION KEY CANNOT BE REMOVED FROM THE IGNITION LOCK CYLINDER

Step	Action	Yes	No
1	Did you review the Steering Wheel and Column Description and Operation and perform the necessary inspections?	Go to Step 2	Go to <u>Symptoms - Steering Wheel and Column</u>
2	Verify the ignition key cannot be removed from the ignition lock cylinder. Is the ignition key stuck in the lock cylinder?	Go to Step 3	System OK
3	Is the vehicle equipped with a manual transmission?	Go to Step 8	Go to Step 4
4	Turn the ignition key to the OFF position. Can the ignition key be turned to the OFF position and be removed?	Go to Step 8	Go to Step 5
5	Verify the adjustment of the shift control linkage. Refer to <u>Range Selector Lever Cable Adjustment</u> for RPO MH7 or MHC. Refer to <u>Range Selector Lever Cable Adjustment</u> for RPO MH2 or MH4. Can the ignition key be turned to the OFF position and be removed?	System OK	Go to Step 6

6	Inspect for a faulty ignition lock cylinder. Is the ignition lock cylinder damaged?	Go to Step 8	Go to Step 7
7	Inspect the ignition/start switch housing. Is the housing worn, damaged or loose?	Go to Step 9	Go to Step 10
8	Replace the ignition lock cylinder. Refer to <u>Ignition Lock Cylinder Replacement</u> . Did you complete the repair?	Go to Step 10	-
9	Replace the ignition/start switch housing. Refer to <u>Ignition and Start Switch Housing Replacement</u> . Did you complete the repair?	Go to Step 10	-
10	Operate the system to verify the repair. Did you correct the condition?	System OK	-

IGNITION KEY CANNOT TURN OR STICKS IN ANY POSITION

Step	Action	Yes	No
1	Did you review the Steering Wheel and Column System Description and perform the necessary inspections?	Go to Step 2	Go to <u>Steering Wheel and Column Description and Operation</u>
2	Verify that the ignition key sticks or cannot turn in any position. Is the key functioning correctly?	System OK	Go to Step 3
3	Inspect for an incorrect, worn, or damaged ignition key. Is the ignition key incorrect, worn, or damaged?	Go to Step 7	Go to Step 4
4	Inspect for a faulty ignition lock cylinder. Is the ignition lock cylinder damaged?	Go to Step 8	Go to Step 5
5	Inspect the ignition and start switch assembly for damage. Is the ignition and start switch assembly damaged?	Go to Step 9	Go to Step 6
6	Inspect the ignition and start switch housing for looseness. Is the ignition and start switch housing loose?	Go to Step 10	Go to Step 11
7	Replace the ignition key. Did you complete the repair?	Go to Step 11	-
8	Replace the ignition lock cylinder. Refer to <u>Ignition Lock Cylinder Replacement</u> . Did you complete the repair?	Go to Step 11	-
9	Replace the ignition and start switch. Refer to <u>Ignition and Start Switch Replacement</u> . Did you complete the repair?	Go to Step 11	-
	Tighten or replace the ignition and start switch		

10	housing. Refer to <u>Ignition and Start Switch Housing Replacement</u> Did you complete the repair?	Go to Step 11	-
11	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

SCHEMATIC AND ROUTING DIAGRAMS

HARNESS ROUTING VIEWS

Engine Harness Routing - Top (LAF)

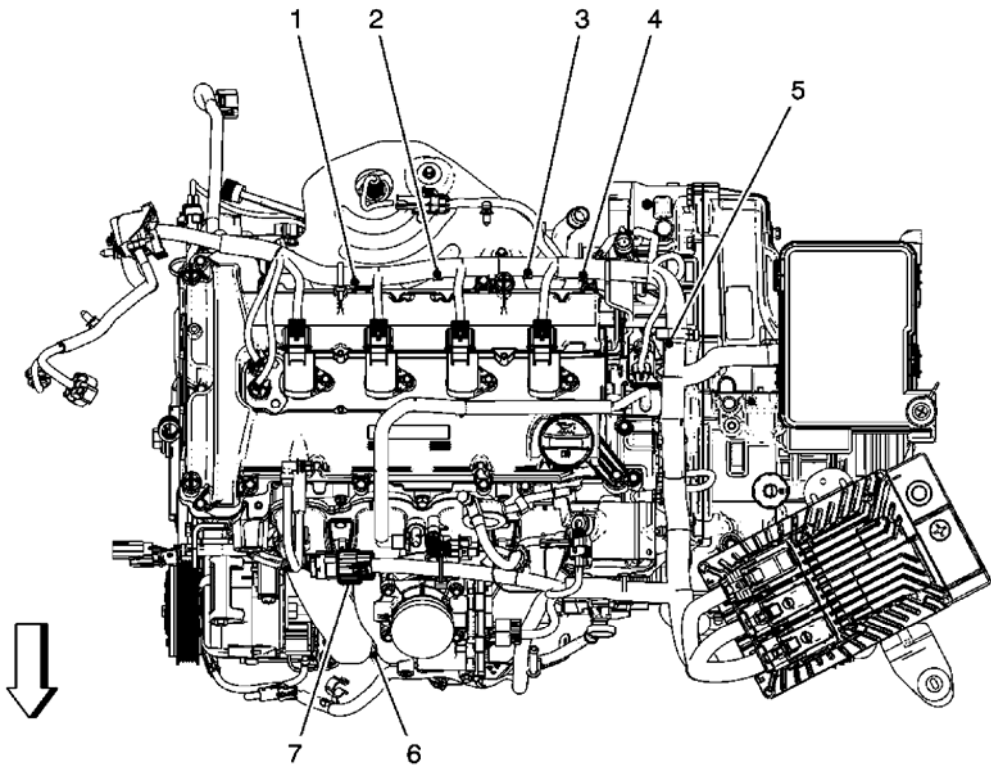


Fig. 1: Engine Harness Routing - Top (LAF)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	J106
2	J104
3	J101
4	J107
5	J108
6	J103
7	X136

Engine Harness Routing - Left Front (LF1)

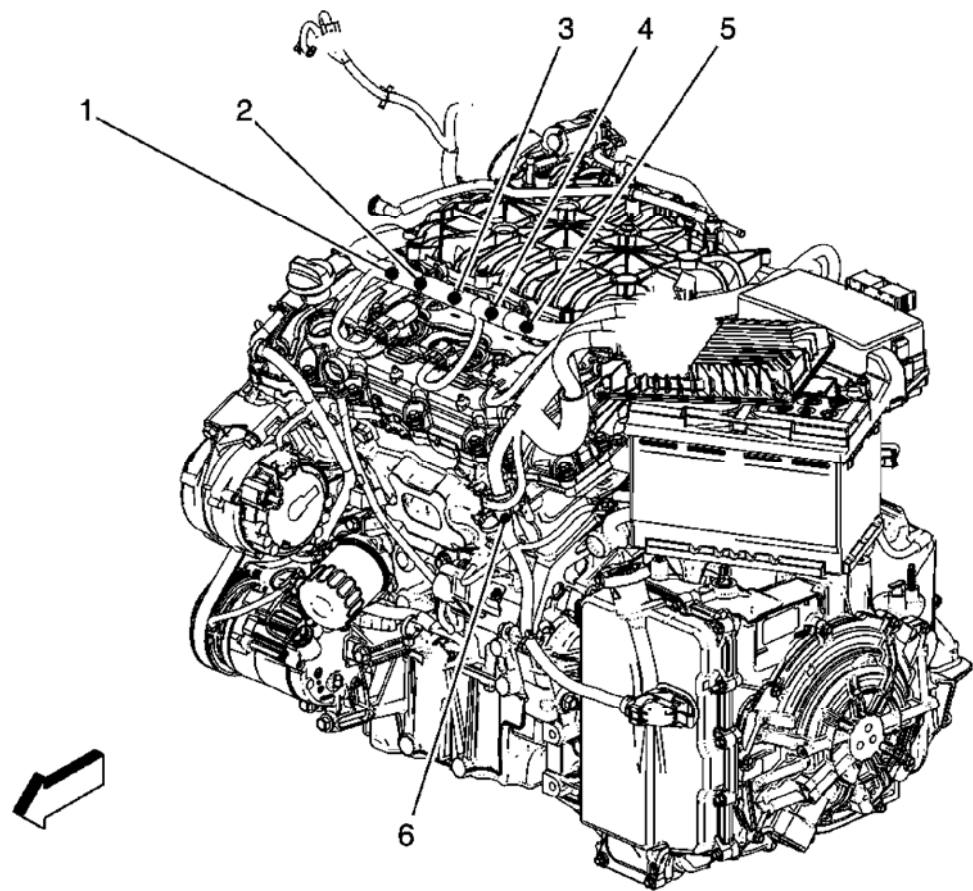


Fig. 2: Engine Harness Routing - Left Front (LF1)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	J101
2	J109
3	J108
4	J105
5	J107
6	J103

Engine Harness Routing - Right Rear (LF1)

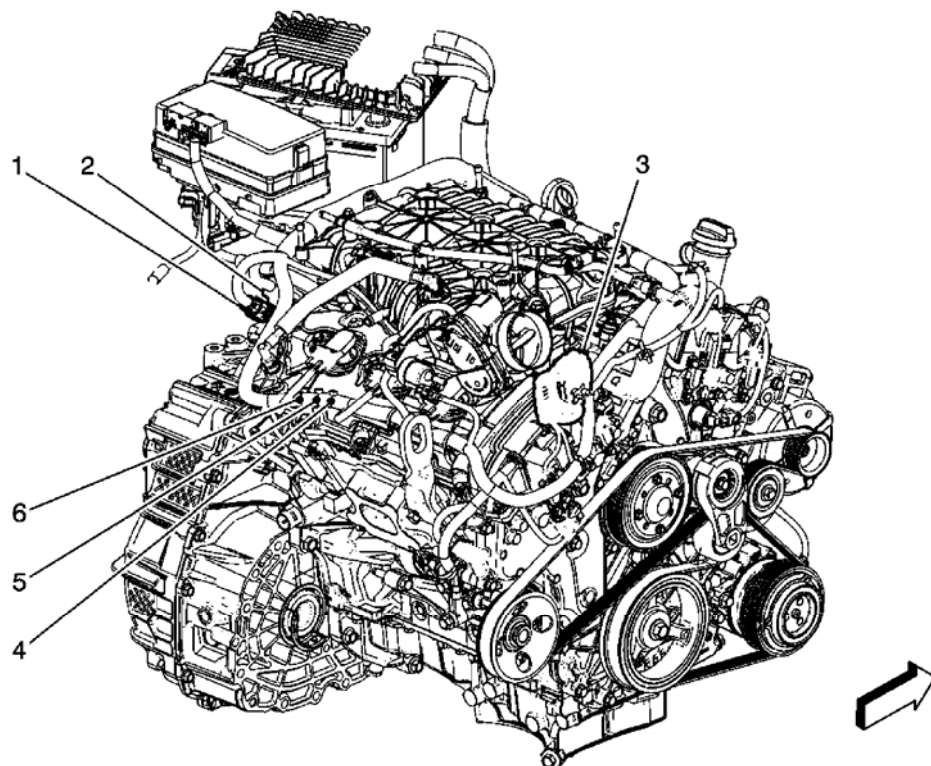


Fig. 3: Engine Harness Routing - Right Rear (LF1)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X108
2	X109
3	X112
4	J104
5	J102
6	J106

Front of Vehicle Harness Routing

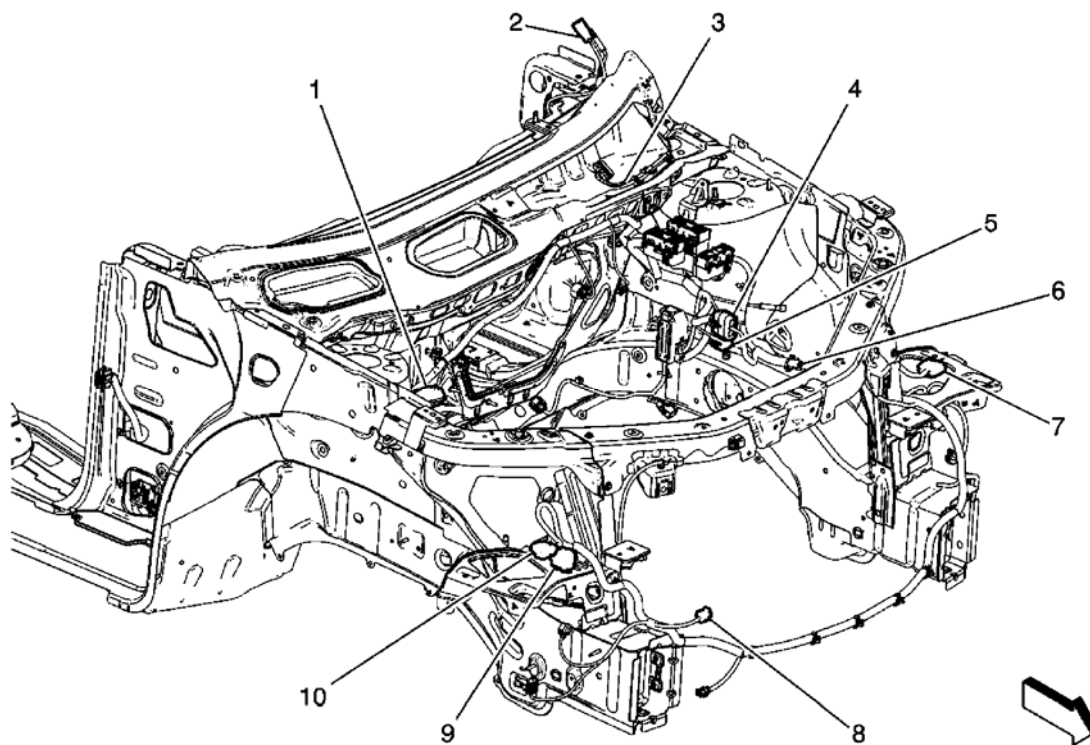


Fig. 4: Front of Vehicle Harness Routing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X112
2	X300
3	J117
4	X115
5	X121
6	J111
7	X110
8	X116 (LF1)
9	X116 (LAF)
10	X120

Instrument Panel Harness Routing - Front

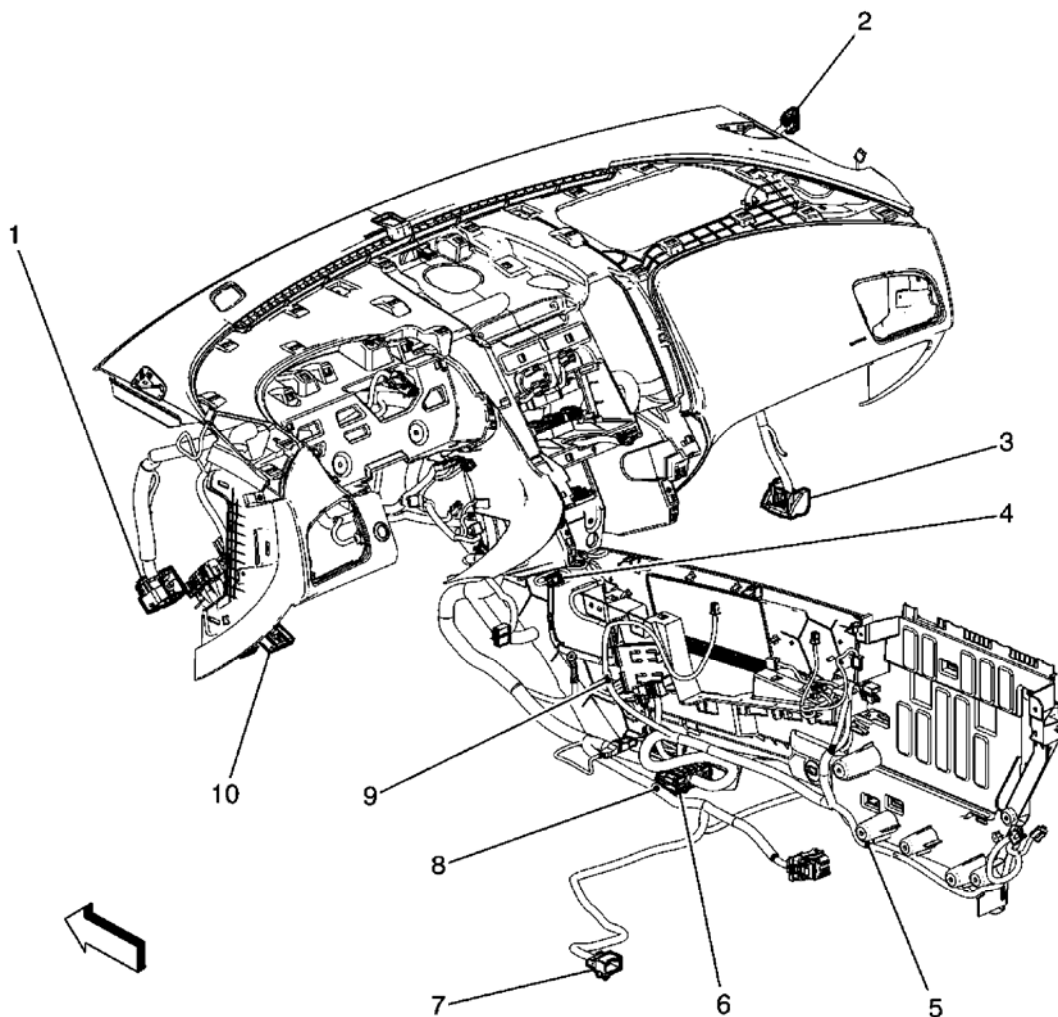


Fig. 5: Instrument Panel Harness Routing - Front
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X206
2	X209
3	X210
4	X214
5	J317
6	X211
7	X307 (UWG)
8	J204 (UWG)
9	J318
10	JX201

Instrument Panel Harness Routing - Rear

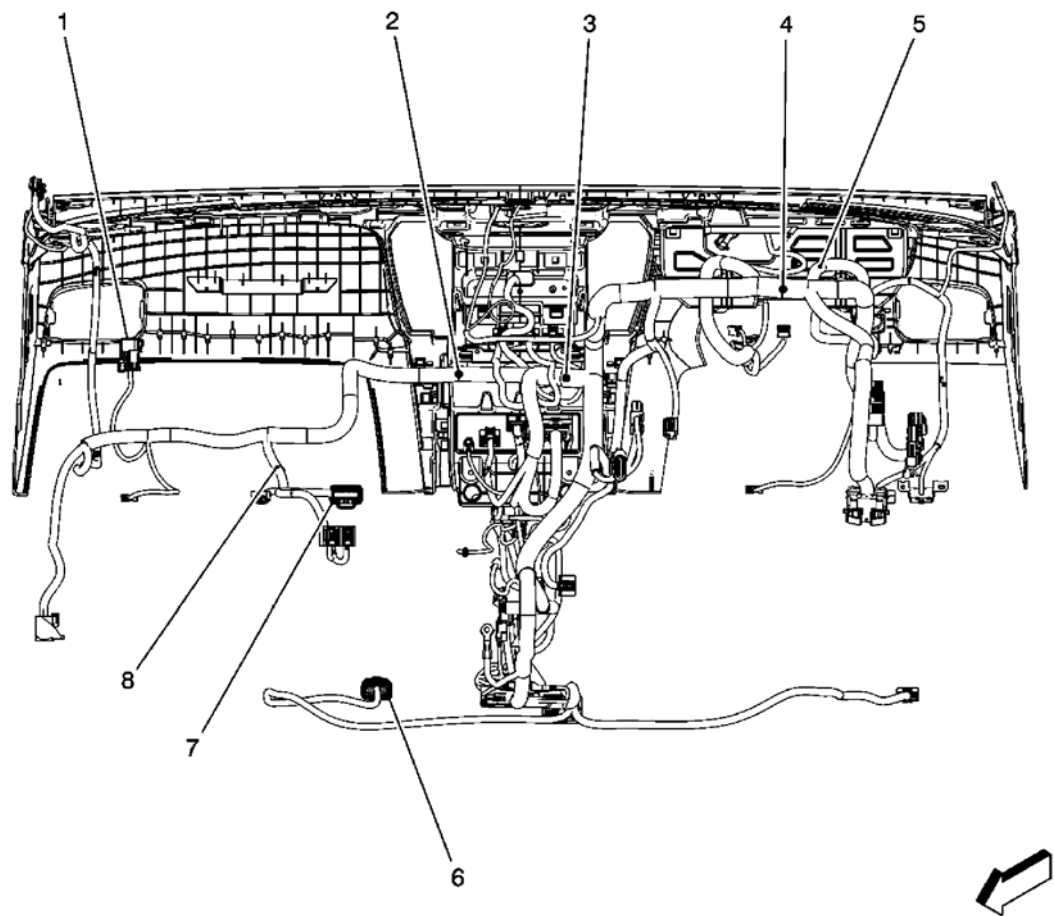


Fig. 6: Instrument Panel Harness Routing - Rear
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X203
2	J203
3	J206
4	J201 (LTZ or SLT)
5	J205
6	X309 (UWG)
7	X213
8	J202 (C68)

Passenger Compartment Harness Routing

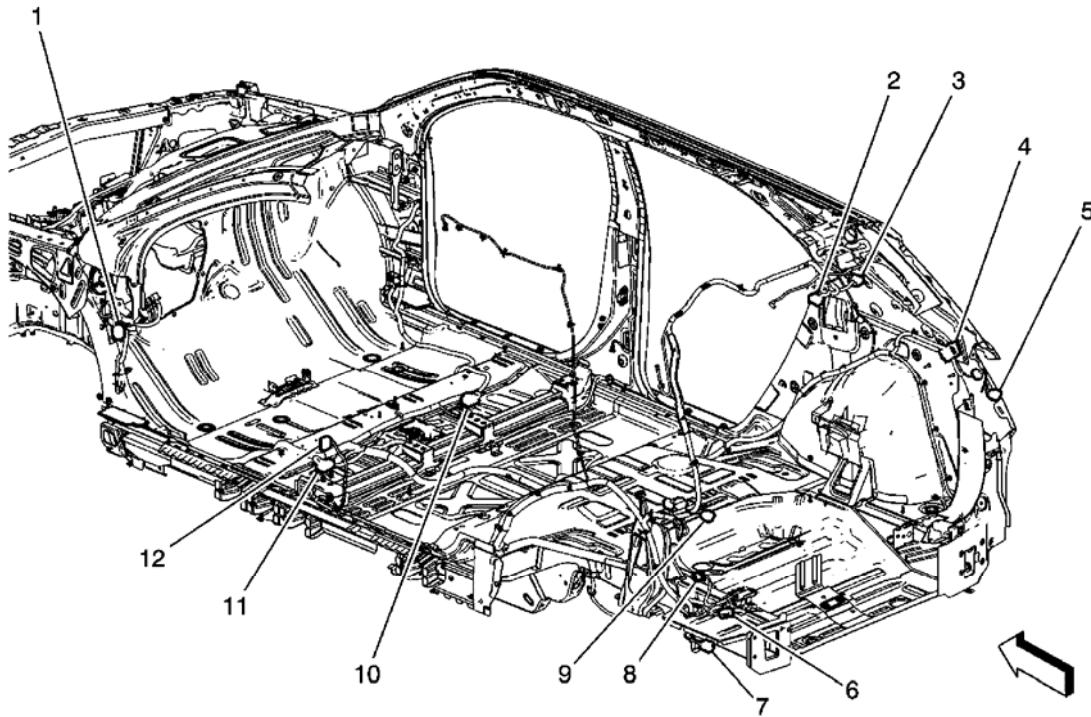


Fig. 7: Passenger Compartment Harness Routing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X500
2	X900
3	X901
4	X401
5	X408
6	X444
7	X406
8	X405
9	X407
10	X310
11	X308
12	X700

Passenger Compartment Splice Routing

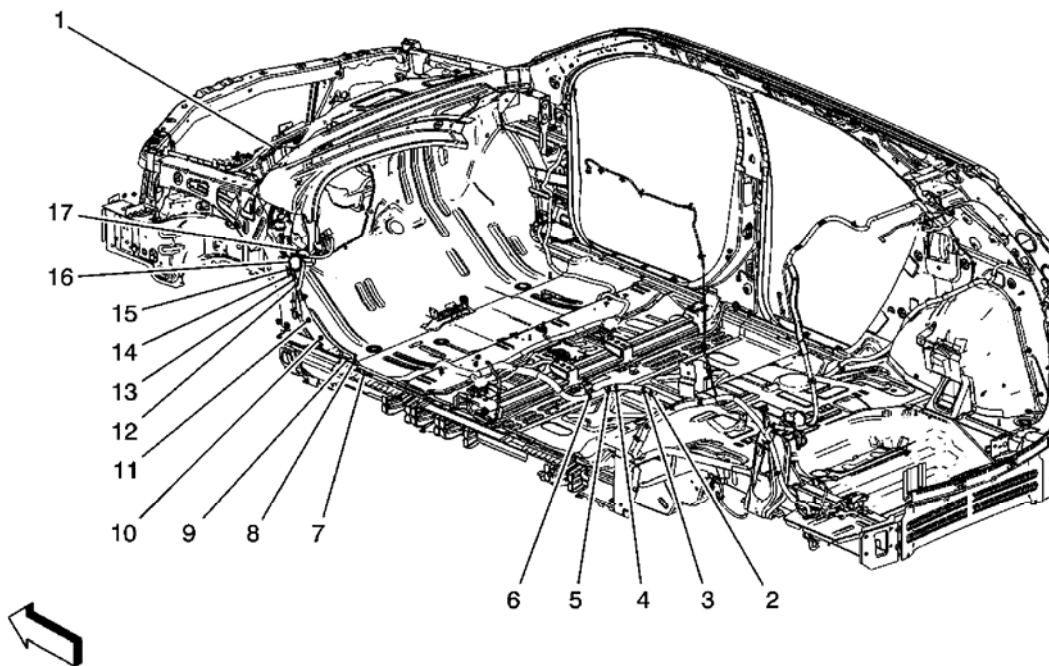


Fig. 8: Passenger Compartment Splice Routing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	J117
2	J310
3	J303
4	J309
5	J302
6	J308
7	J307
8	J315 (LTZ or SLT)
9	J311
10	J316 (LTZ or SLT)
11	J313
12	J218
13	J219
14	J217
15	J216
16	JX202
17	J215 (LT or LTZ or SLE2 or SLT)

Driver Door Harness Routing

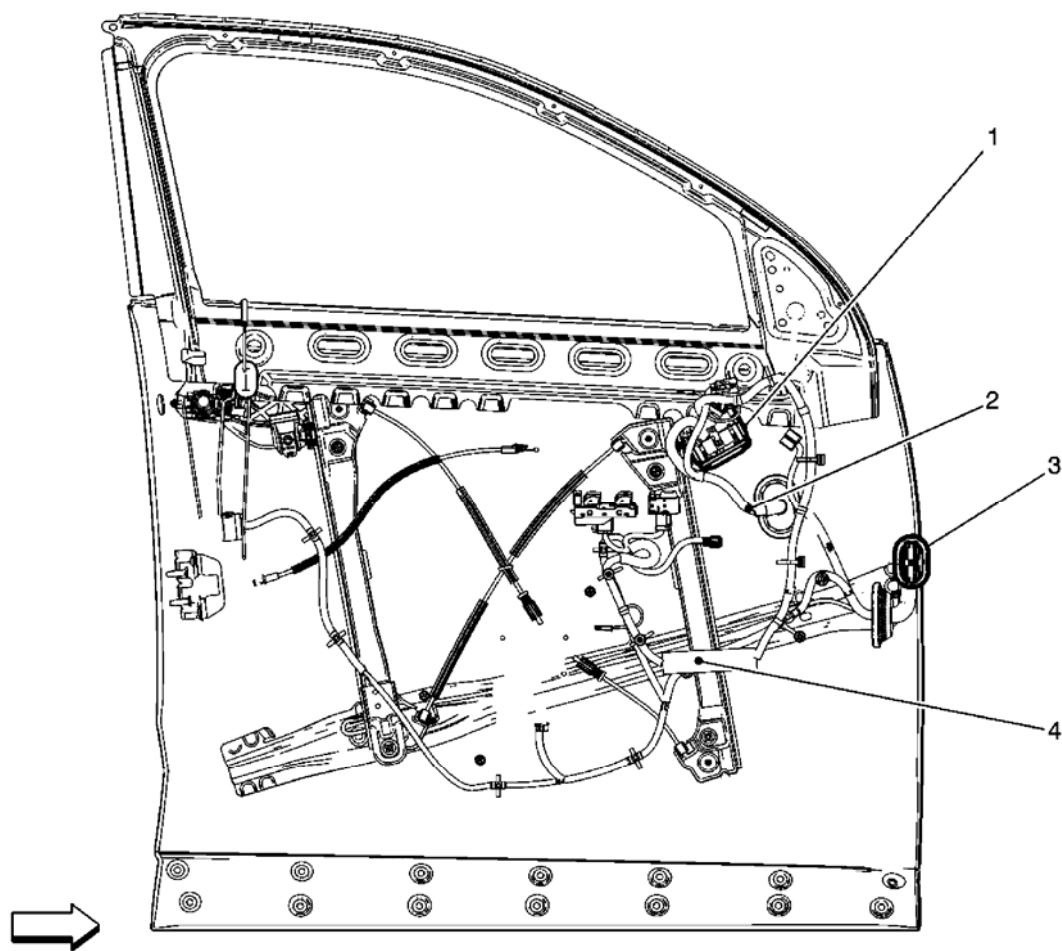


Fig. 9: Driver Door Harness Routing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X505
2	J502
3	X500
4	J501

Passenger Door Harness Routing

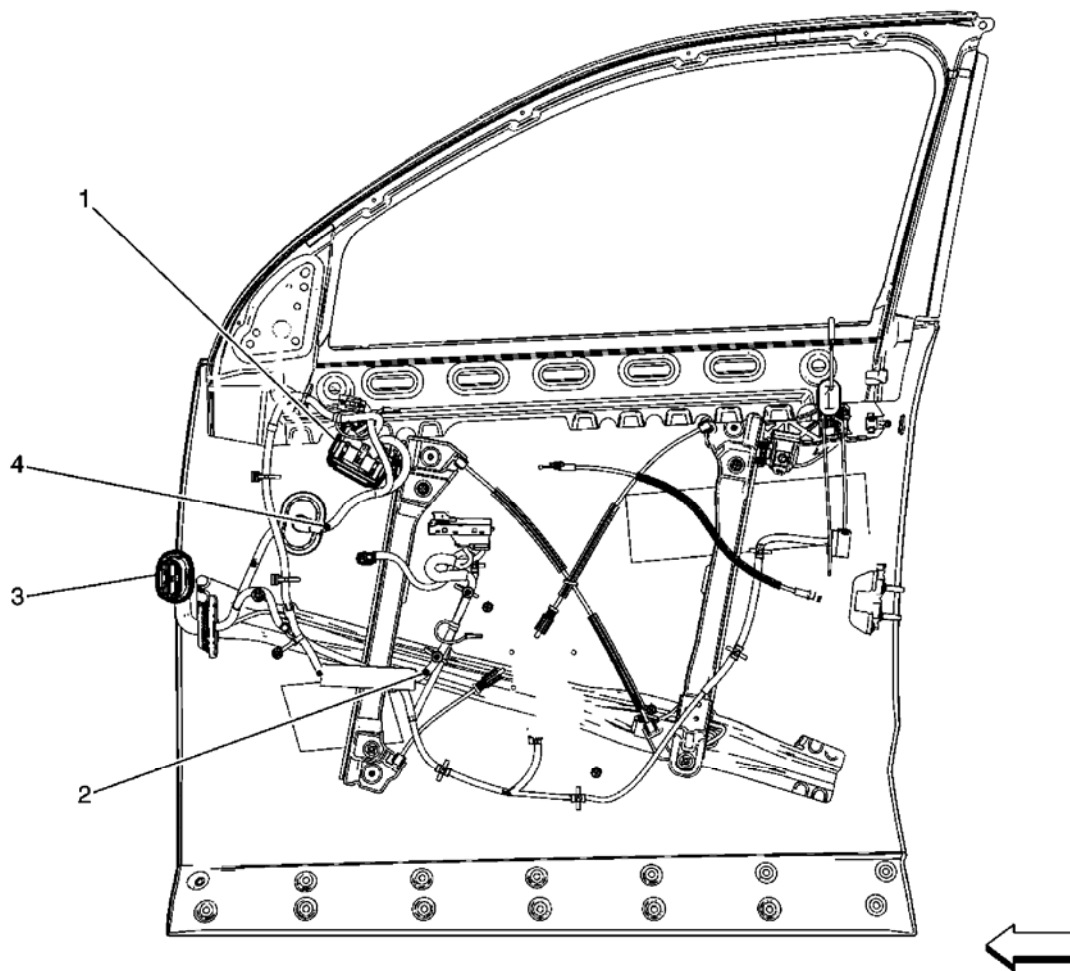


Fig. 10: Passenger Door Harness Routing
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X605
2	J602
3	X600
4	J601

Left Rear Door Harness Routing

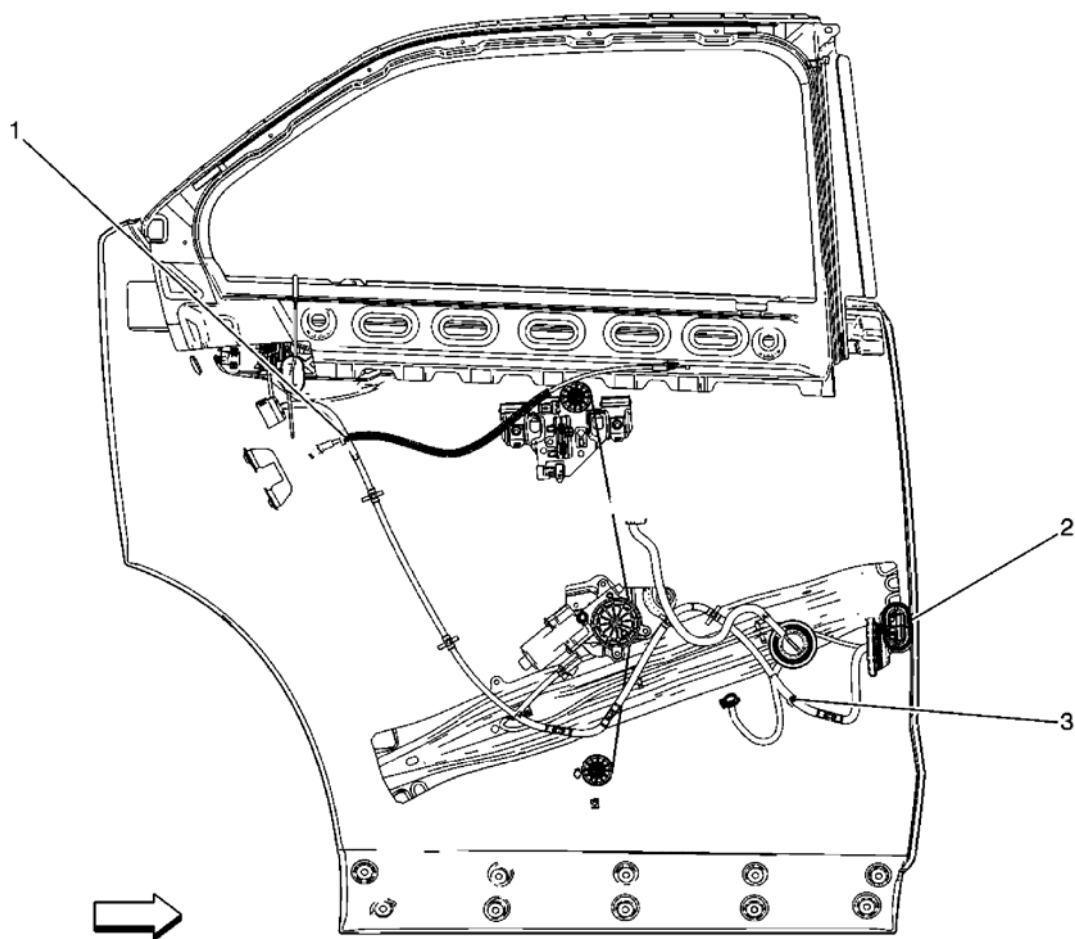


Fig. 11: Left Rear Door Harness Routing
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	J702
2	X700
3	J701

Right Rear Door Harness Routing

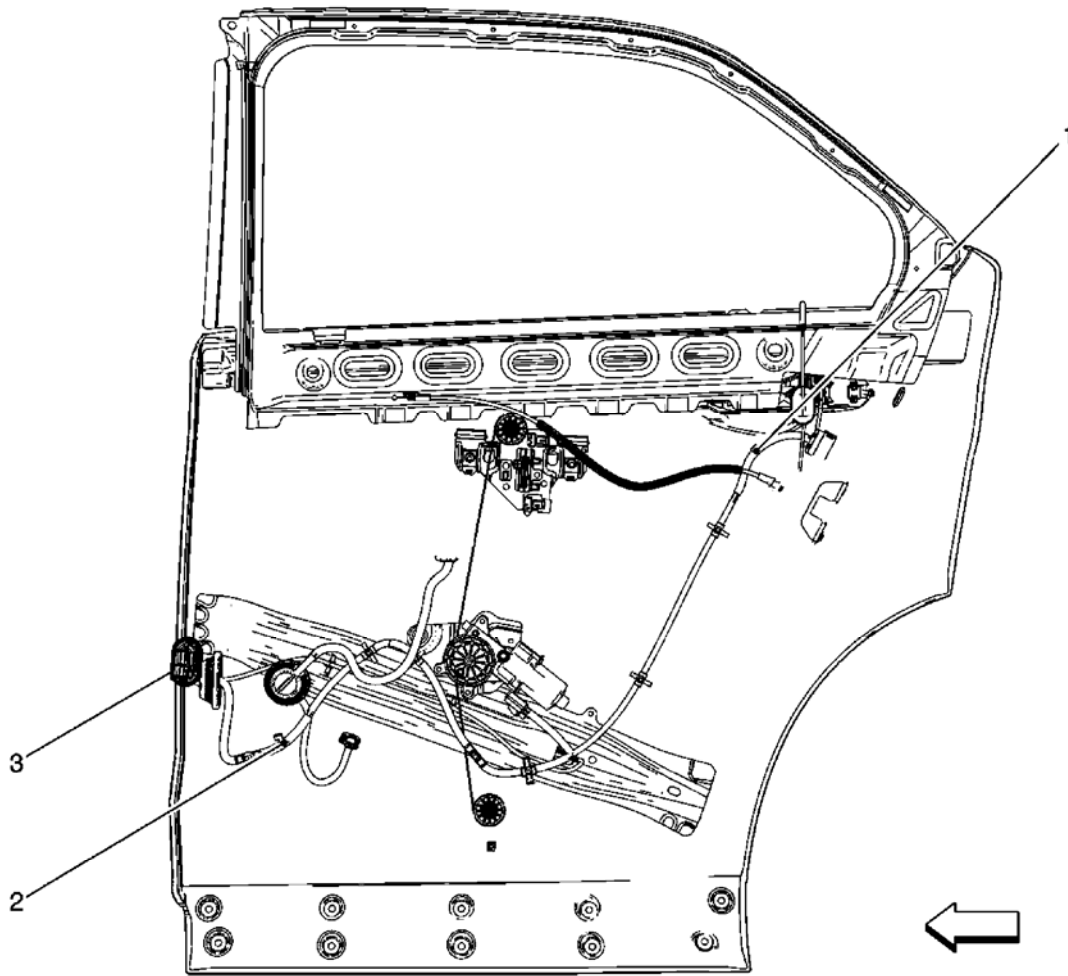


Fig. 12: Right Rear Door Harness Routing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	J802
2	J801
3	X800

Luggage Compartment Harness Routing

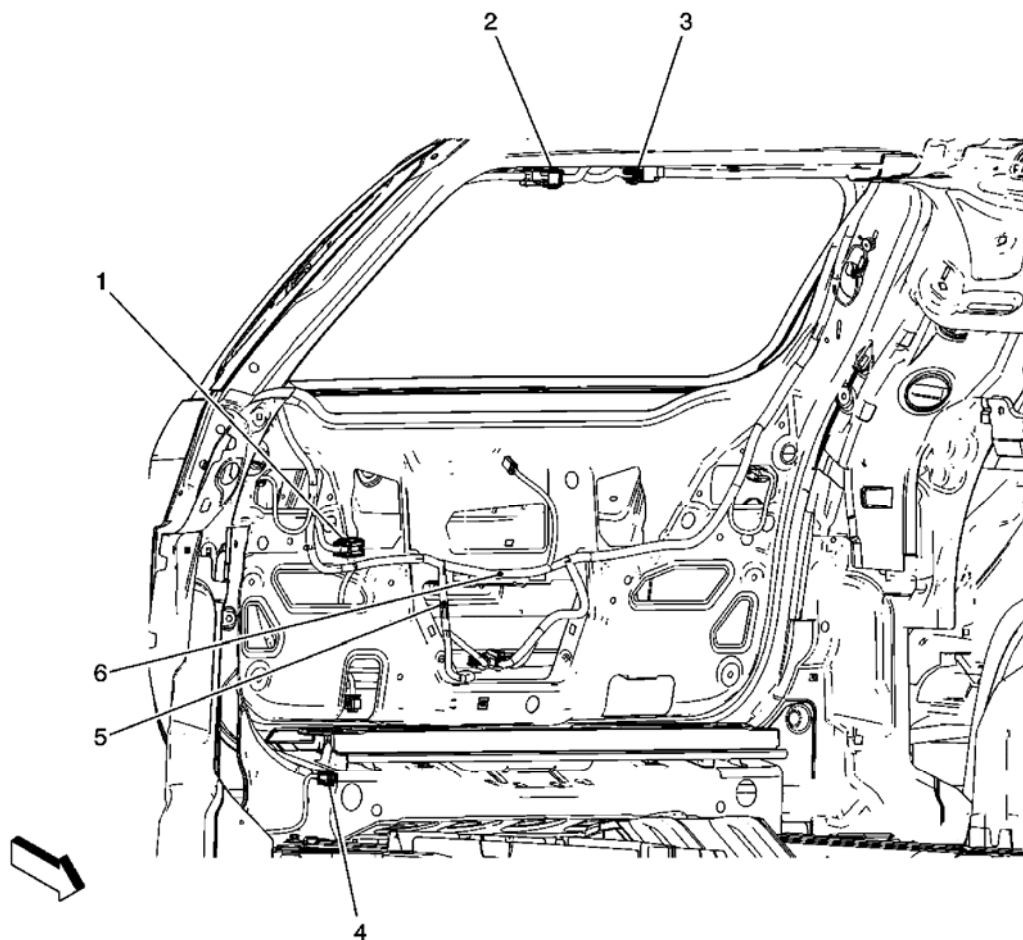


Fig. 13: Luggage Compartment Harness Routing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X904
2	X900
3	X901
4	X444 (V92)
5	J905
6	J904

Liftgate Harness Routing (GMC)

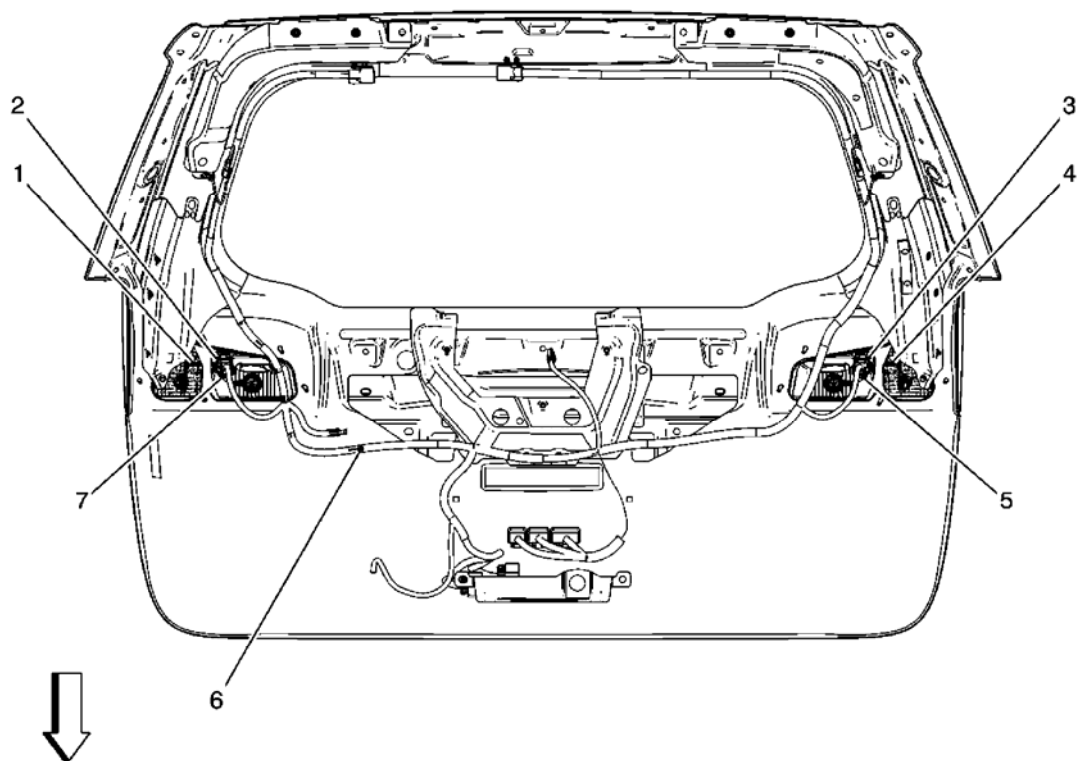


Fig. 14: Liftgate Harness Routing (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	J407
2	J907
3	J906
4	J406
5	X902
6	J903
7	X903

Rear of Vehicle Harness Routing (Chevrolet)

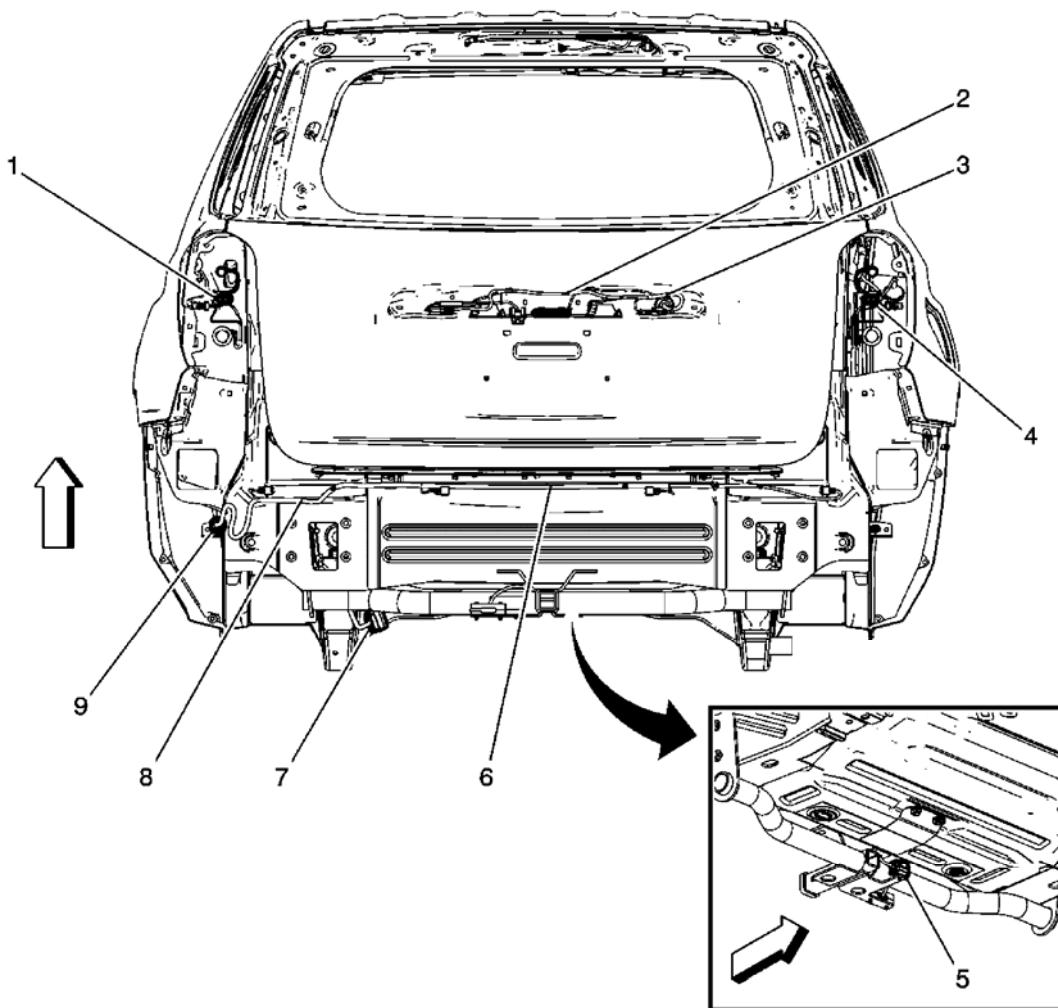


Fig. 15: Rear of Vehicle Harness Routing (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	X407
2	J902
3	J901
4	X408
5	X450 (V92)
6	J404 (UD7)
7	X411
8	J405 (UD7)
9	X406

Voltage Indicators

Symbol	Description
	Battery Voltage
	Ignition Switch - Off Position
	Ignition Switch - Accessory Position
	Ignition Switch - Run Position



Ignition Switch - Start Position

General Icons

Symbol	Description
	Master Component List Icon This icon is used on the schematic to link to the Master Electrical Component List.
	Description and Operation Icon This icon is used on the schematic to link to the Description and Operation of that particular system.



Computer Programming Icon

This icon is used on the schematic to link to Control Module References, which identifies which components need programming upon replacement.

Next Schematic Page Icon

This icon is used on the schematic to navigate to the next schematic in the subsystem.

Previous Schematic Page Icon

This icon is used on the schematic to navigate to the previous schematic in the subsystem.



Supplemental Inflatable Restraint (SIR) or Supplemental Restraint System (SRS) Icon
This icon is used to alert the technician that the system contains SIR/SRS components that require certain precautions before servicing.



Information Icon
This icon is used to alert the technician that there is additional information that will aid in servicing a system.

Danger - High Voltage Icon
This icon is used to alert the technician that a component/system contains 300 volt circuits.



High Voltage Icon

This icon is used to alert the technician that a component/system contains voltage greater than 42 volts but less than 300 volts.

Caution Icon

This icon is used to advise the technician to use caution when servicing this component.

Functional Serial Data Communication

This icon is used to show the technician that the serial data circuit detail is shown incomplete. It also provides an active link to the Data Communication Schematics were the circuit is shown complete.



Switch Position Icons

Symbol	Description
↑ ^ Δ	Generic Up Arrows
↓ ∨ ▽	Generic Down Arrows
	Generic Left Arrows



Generic Right Arrows



Generic Express Down Arrows



On/Off Icon



Generic Lock Icon



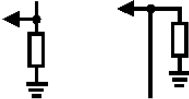
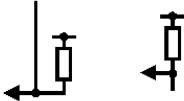
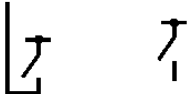
Generic Unlock Icon



Generic Window Switch Positions - 4 Door

	Generic Window Switch Positions - 2 Door
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Module Circuit Function Icons

Symbol	Description
	I/O Pull-Down Resistors (-)
	I/O Pull-Up Resistors (+)
	I/O High-Side Drive Switch (+)



I/O Low-Side Drive Switch (+)



I/O Bidirectional Switch (+/-)



Pulse-Width Modulation Symbol

B+

Battery Voltage

IGN

Ignition Voltage

5V

Voltage Reference

5V AC

A/C Voltage



Low Reference

 	Ground
	Serial Data
 	Antenna Signal - In
 	Antenna Signal - Out



Brake Apply

Harness Components

Symbol	Description
	Fuse
PWR/TRN Relay	Fuse Supplied by a Relay



Circuit Breaker



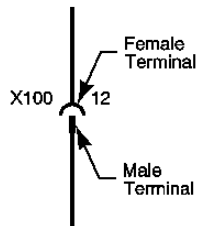
Fusible Link



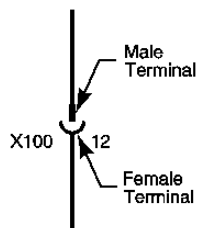
Ground



Case Ground

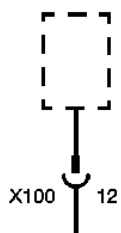
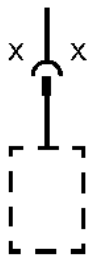


Inline Harness Connector



Inline Harness Connector

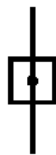
Pigtail Connection



Pigtail Connection

Provisional or Diagnostic Connector

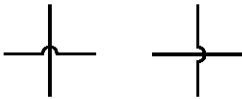
Blunt Cut Wire



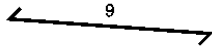
Incomplete Physical Splice

Complete Physical Splice - 2 Wires

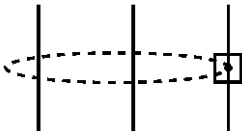
Complete Physical Splice - 3 or more wires



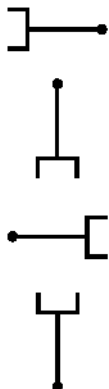
Wire Crosses



Twisted Wires



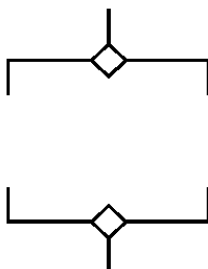
Shield



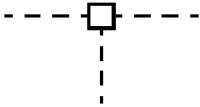
Circuit References



Circuit Continuation Arrowheads

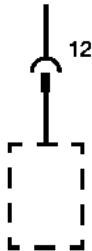
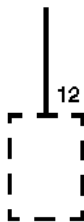
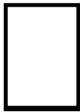


Option Breakpoint

	Ground Circuit Connection
	Connector Shorting Clip

Component Parts

Symbol	Description
	Partial Component When a component is represented in a dashed box, the component or its wiring is not shown in its entirety.
	Entire Component When a component is represented in a solid box the component or its wiring is shown in its entirety.



Connector Directly Attached to Component

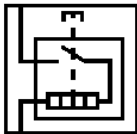
Pigtail Connector

Switches and Relays

Symbol	Description



Accessory Power Outlet

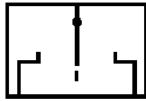


Cigar Lighter



Switch - 2 Position Normally Open

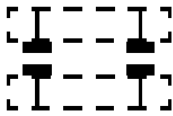
Switch - 2 Position Normally Closed



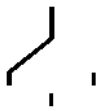
Switch - Rocker

Switch - Contact Plate (1 Wire)

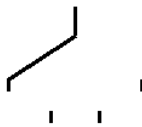
Switch - Contact Plate (2 Wire)



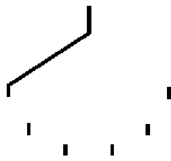
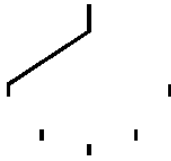
Switch - 3 Position



Switch - 4 Position



Switch - 5 Position



Switch - 6 Position



Switch Actuator - Push (Momentary)



Switch Actuator - Push (Latching)

}]---

Switch Actuator - Pull (Momentary)

]v---

Switch Actuator - Pull (Latching)

]---

Switch Actuator - Rotate (Momentary)

Switch Actuator - Rotate (Latching)

h_v---

I---

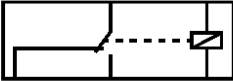
h_v---

P---

Switch Actuator - Slide (Momentary)

Switch Actuator - Slide (Latching)

Switch Actuator - Pressure (Momentary)

	Switch Actuator - Temperature (Momentary)
	Switch Actuator - Volume (Latching)
	4-Pin Single Pole/Throw Relay - Normally Open
	5-Pin Relay - Normally Closed

Devices and Sensors

Symbol	Description



Battery

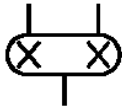


Battery Assembly - Hybrid



Single Filament Light Bulb

Double Filament Light Bulb

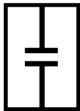
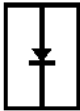


Light Emitting Diode (LED)



Photo Sensor

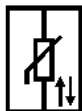
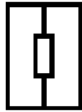
Gauge



Diode

Capacitor

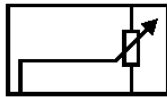
Resistor



Variable Resistor

Variable Resistor - NTC

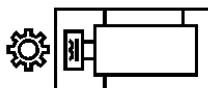
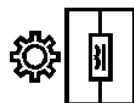
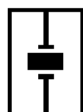
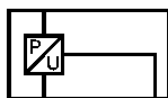
Breakable Wire



Heating Element

Position Sensor

Pressure Sensor



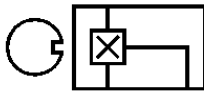
Knock Sensor

Inductive Type Sensor - 2-Wire

Inductive Type Sensor - 3-Wire



Hall Effect Sensor - 2-Wire



Hall Effect Sensor - 3-Wire



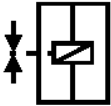
Oxygen Sensor - 2-Wire



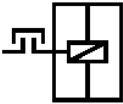
Heated Oxygen Sensor - 4-Wire



Solenoid - Actuator

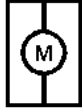


Solenoid - Valve



Clutch

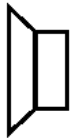
Motor



Motor with PTC

Antenna

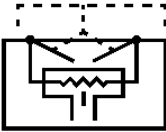
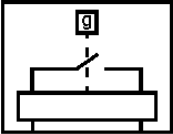
Speaker



Horn

Microphone

Airbag

	
	SIR Coil
	SIR Impact Sensor

VEHICLE ZONING STRATEGY

All grounds, in-line connectors, and splices have identifying numbers that correspond to where they are located in the vehicle. The following table explains the numbering system.

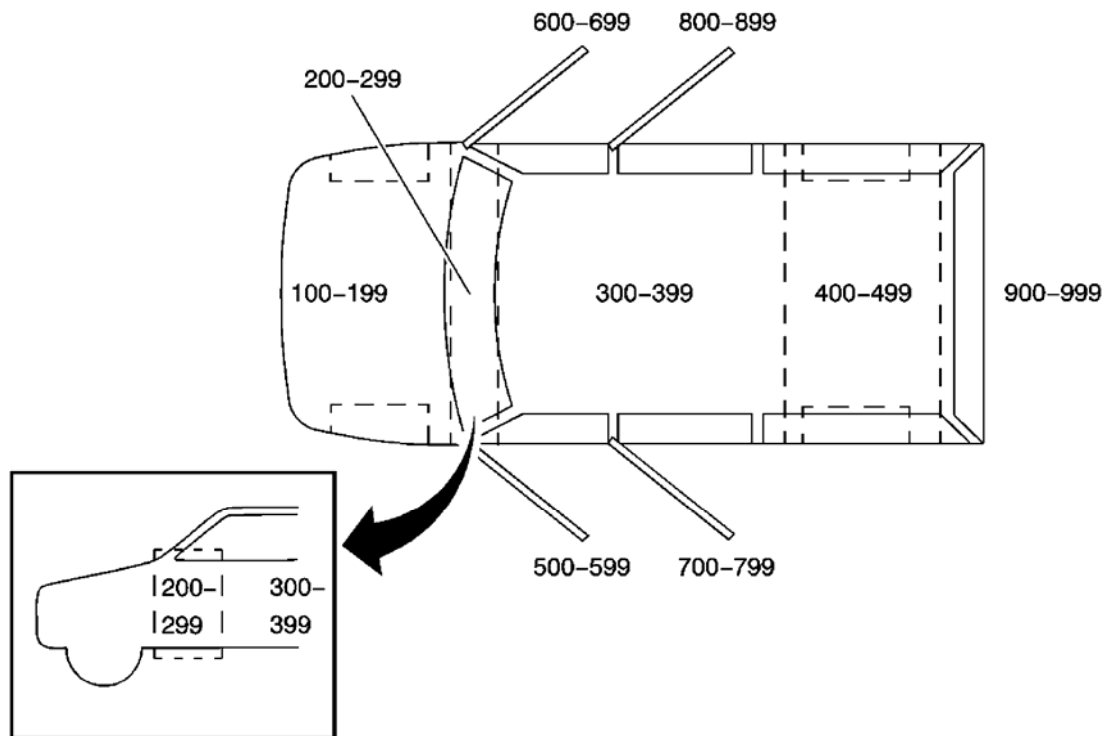


Fig. 16: View Of Utility/Van Zoning
 Courtesy of GENERAL MOTORS CORP.

Callout Numbers	Zone Description
100-199	Engine compartment (All forward of the dash panel)
200-299	Within the instrument panel area
300-399	Passenger compartment (From instrument panel to the rear of the passenger area)
400-499	Luggage compartment (From the rear of the passenger area to the rear of the vehicle)
500-599	Within the driver door
600-699	Within the front passenger door
700-799	Within the left rear door
800-899	Within the right rear door
900-999	Within the liftgate, endgate, or rear compartment lid

POWER DISTRIBUTION SCHEMATICS

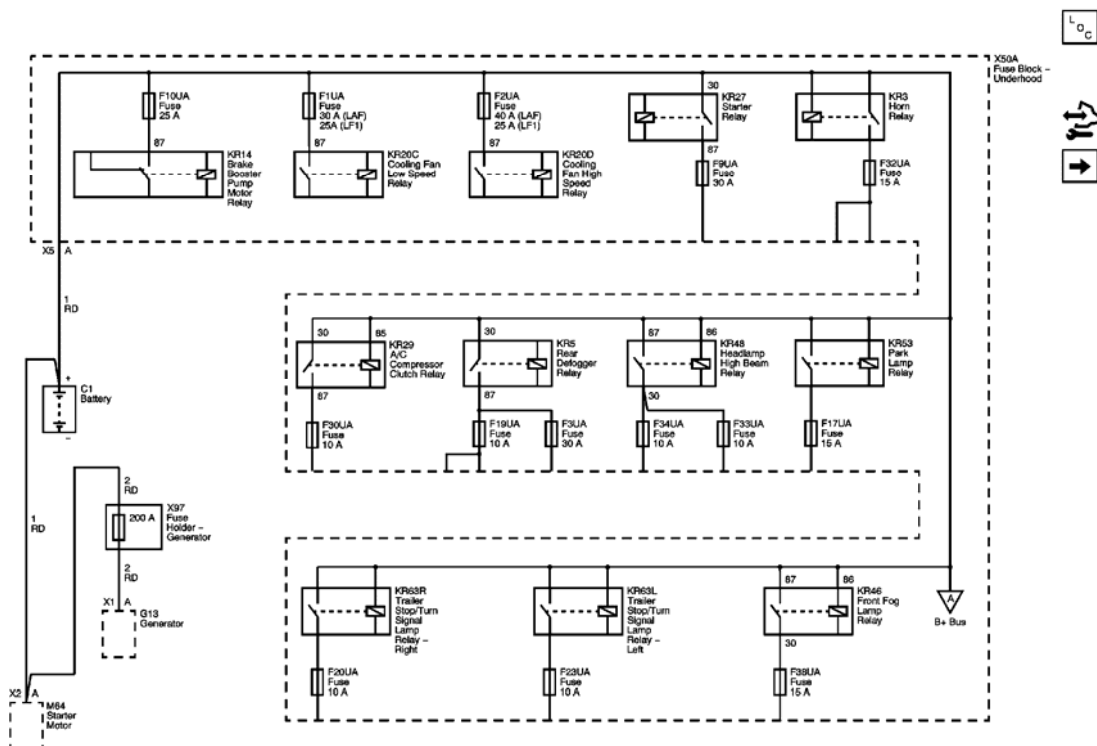


Fig. 17: B+ Bus (1 of 6)

Courtesy of GENERAL MOTORS CORP.

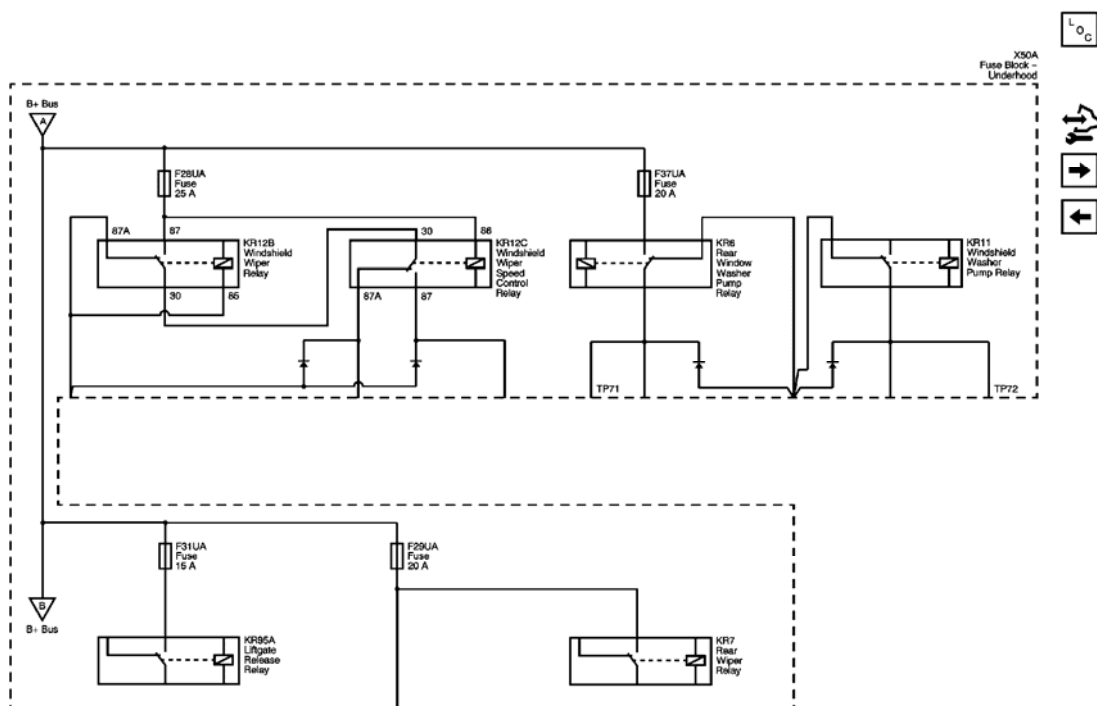


Fig. 18: B+ Bus (2 of 6)
Courtesy of GENERAL MOTORS CORP.

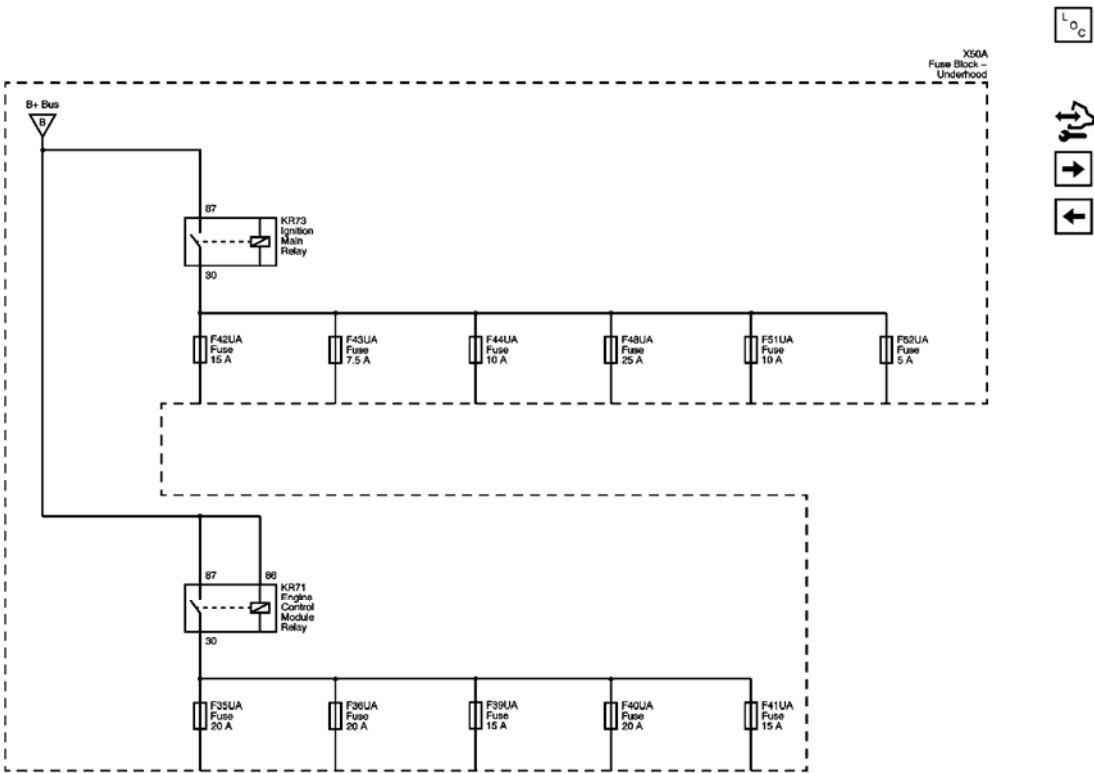


Fig. 19: B+ Bus (3 of 6)
Courtesy of GENERAL MOTORS CORP.

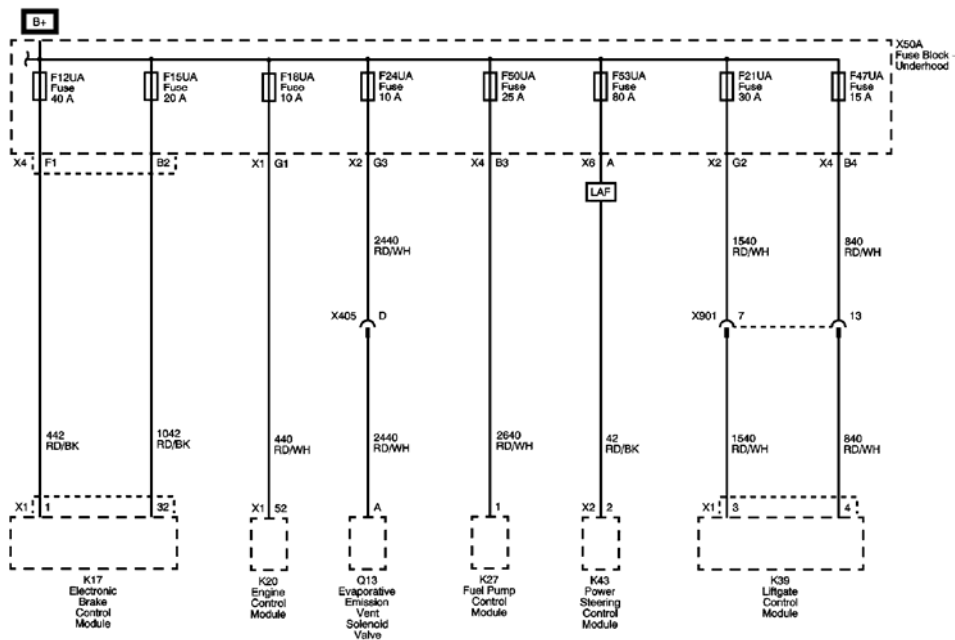


Fig. 20: B+ Bus (4 of 6)
Courtesy of GENERAL MOTORS CORP.

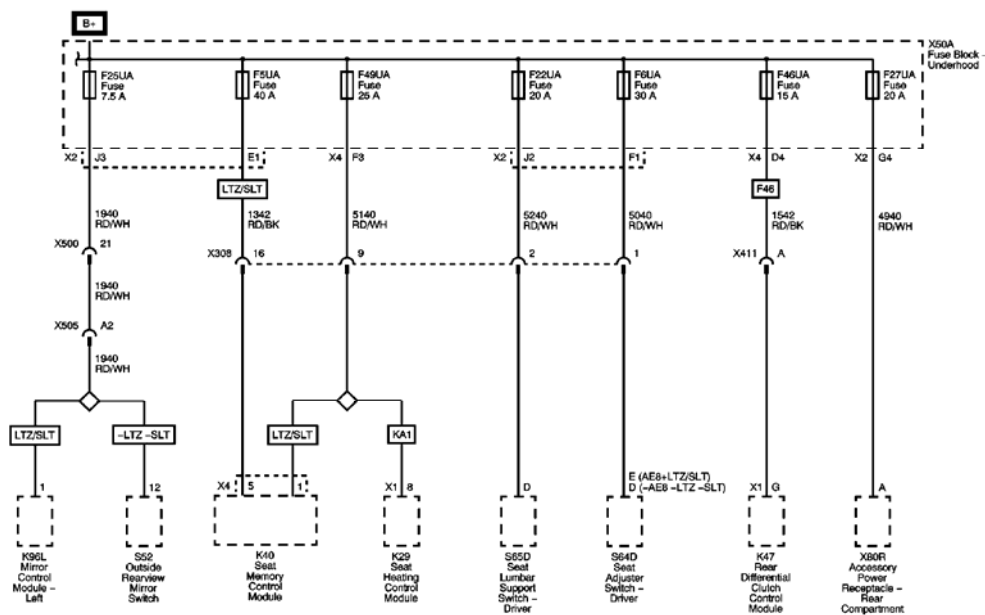


Fig. 21: B+ Bus (5 of 6)

Courtesy of GENERAL MOTORS CORP.

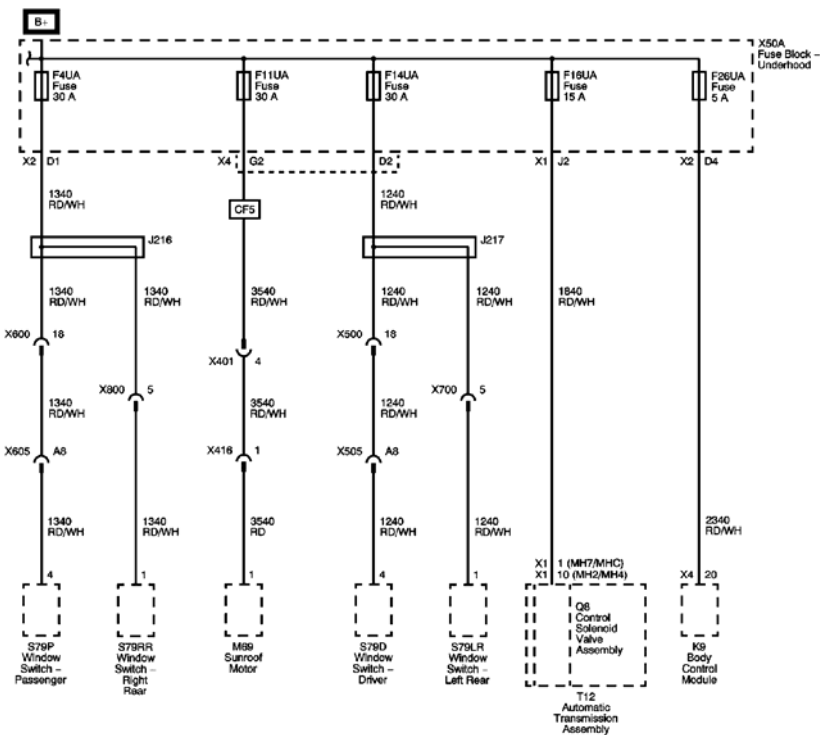


Fig. 22: B+ Bus (6 of 6)
Courtesy of GENERAL MOTORS CORP.

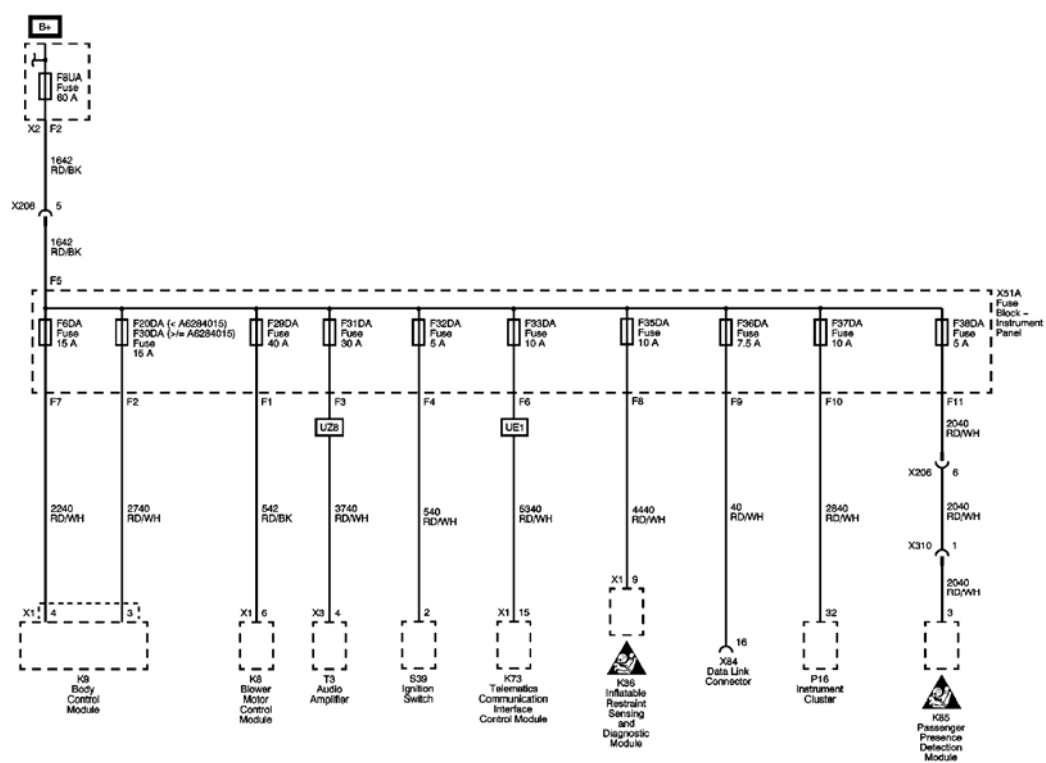


Fig. 24: F8UA, F6DA, F20DA, F29DA, F31DA, F32DA, F33DA, F35DA, F36DA, F37DA, and F38DA Fuses

Courtesy of GENERAL MOTORS CORP.

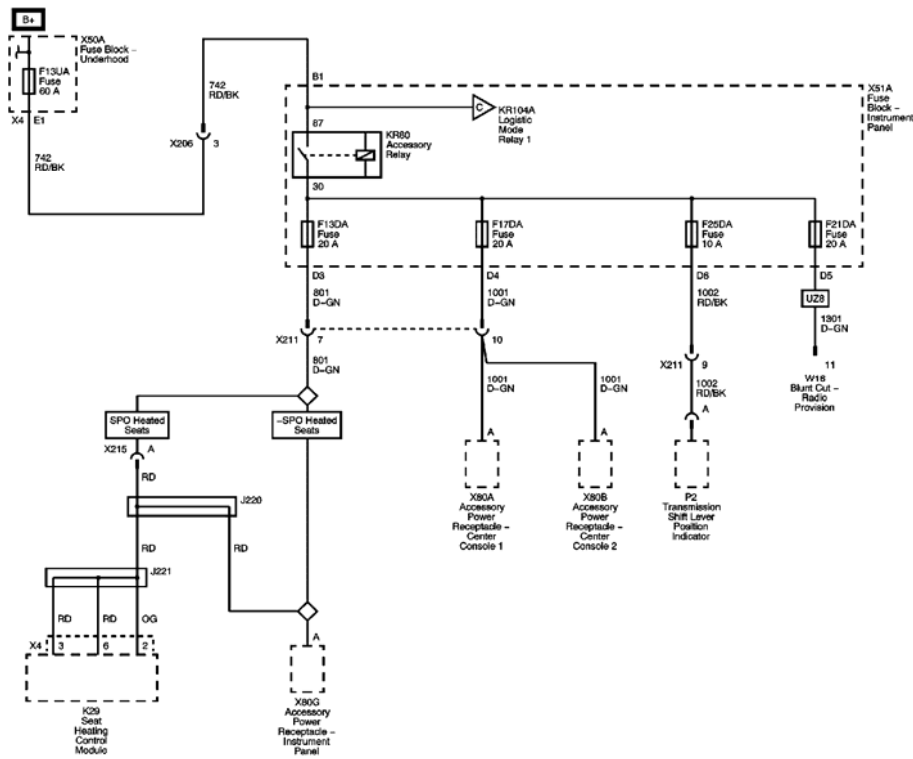


Fig. 25: F13UA, F13DA, F17DA, F21DA, and F25DA Fuses and Accessory Relay
Courtesy of GENERAL MOTORS CORP.

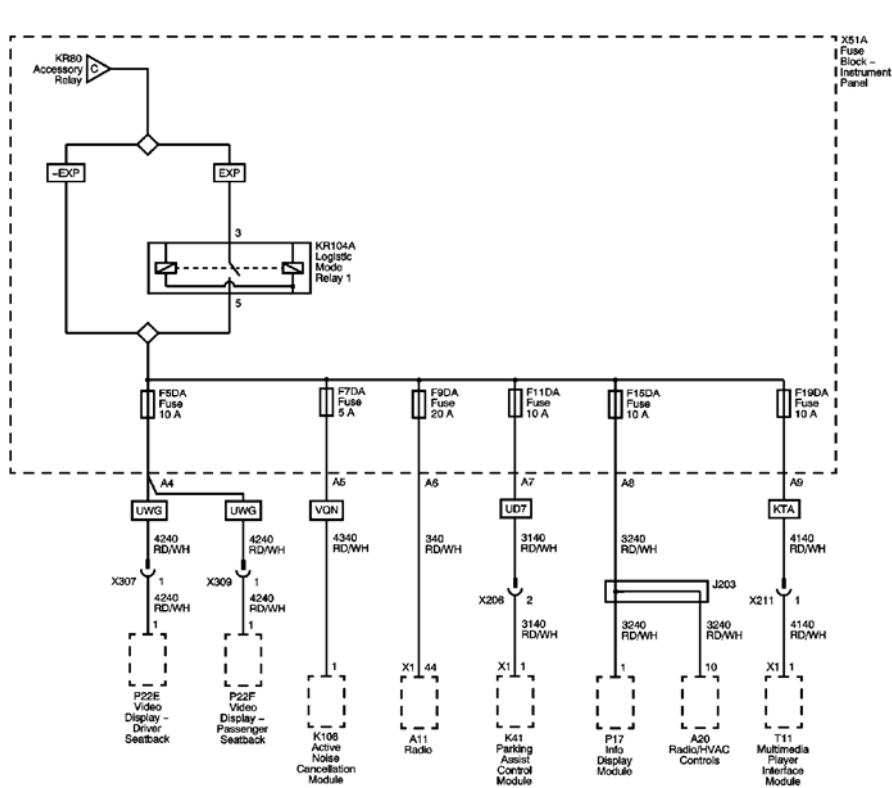
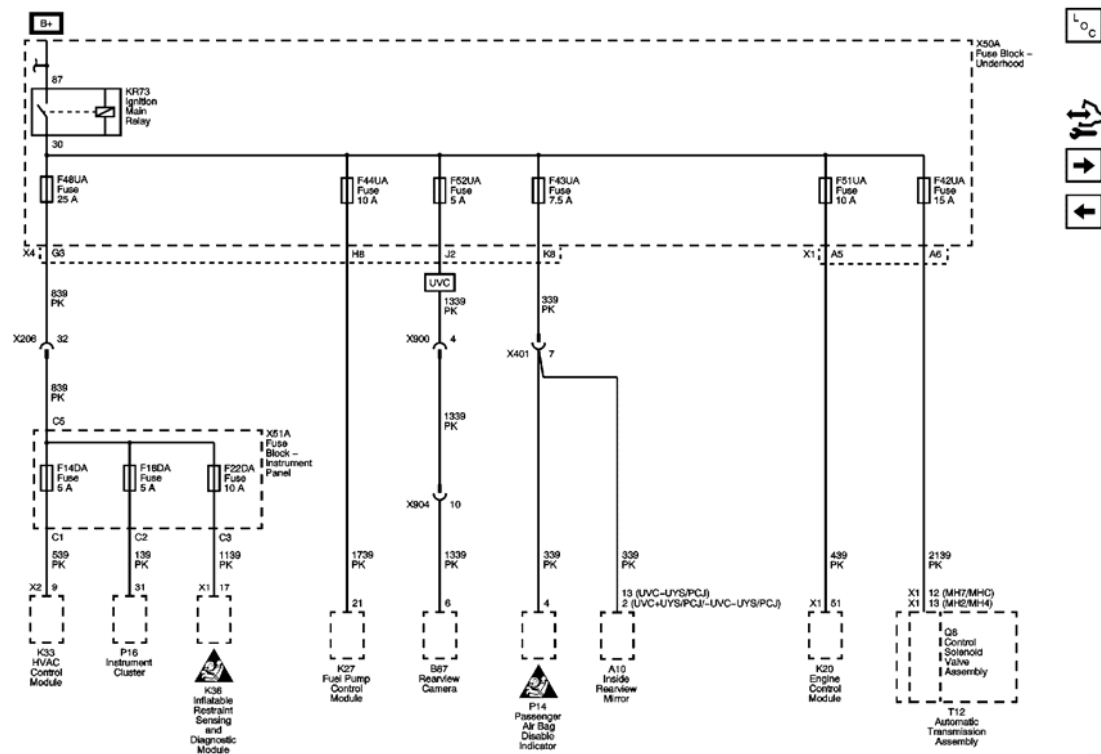


Fig. 26: F5DA, F7DA, F9DA, F11DA, F15DA, and F19DA Fuses and Logistic Mode Relay 1
 Courtesy of GENERAL MOTORS CORP.



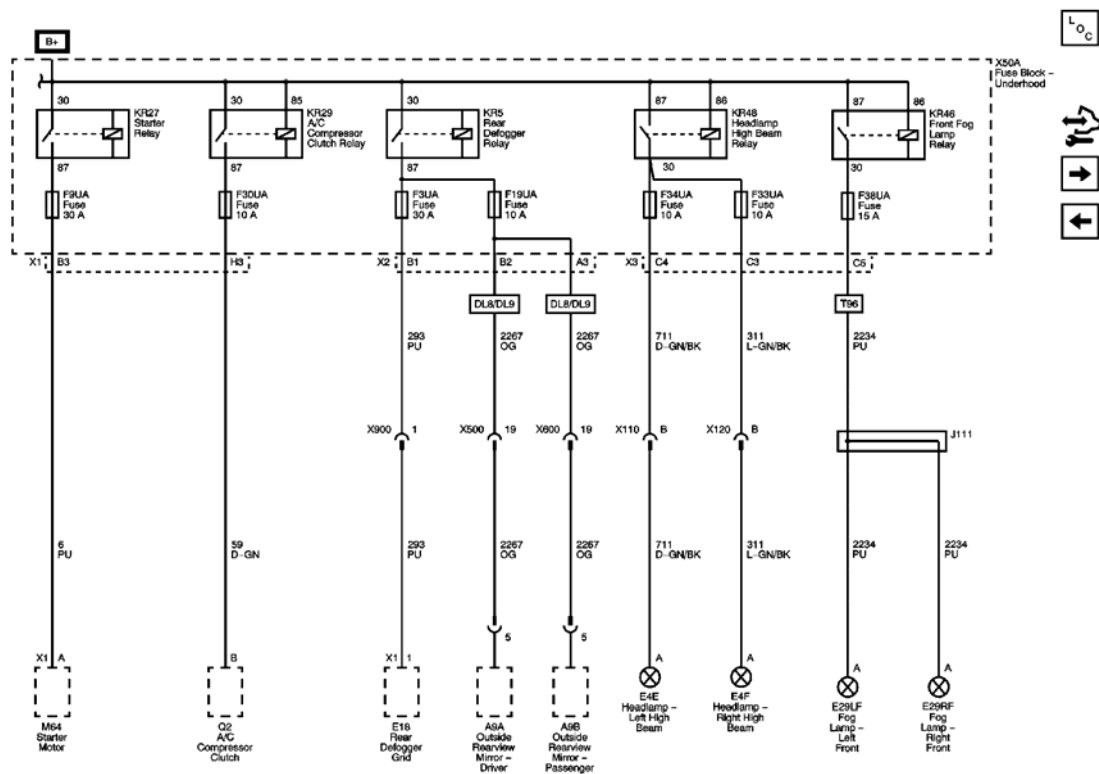


Fig. 28: F3UA, F9UA, F19UA, F30UA, F33UA, F34UA, and F38UA Fuses
 Courtesy of GENERAL MOTORS CORP.

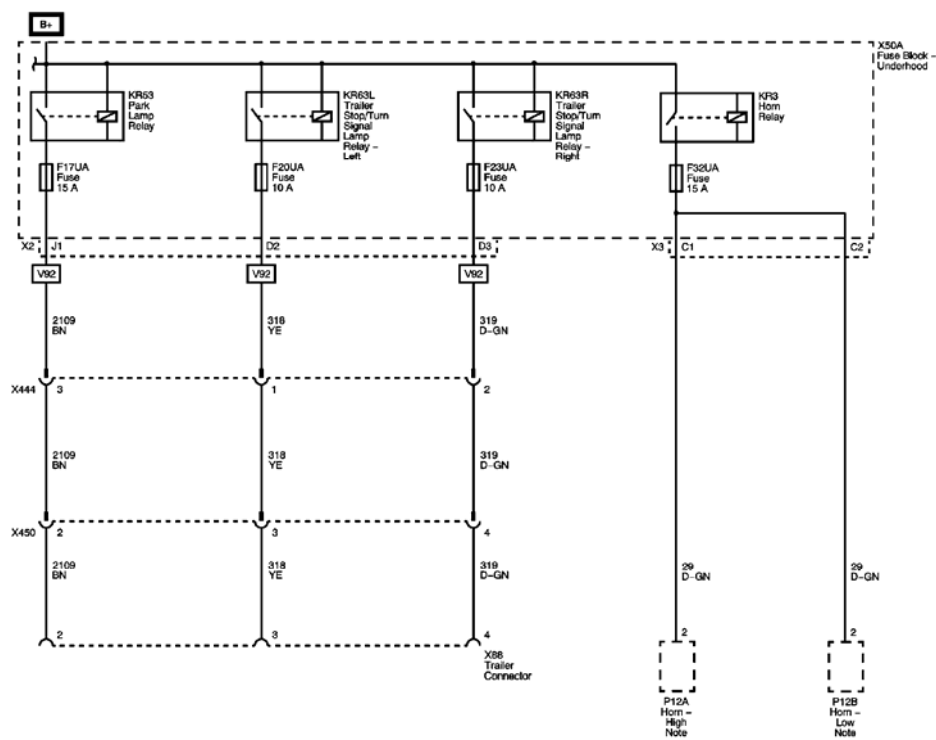


Fig. 29: F17UA, F20UA, F23UA, and F32UA Fuses
 Courtesy of GENERAL MOTORS CORP.

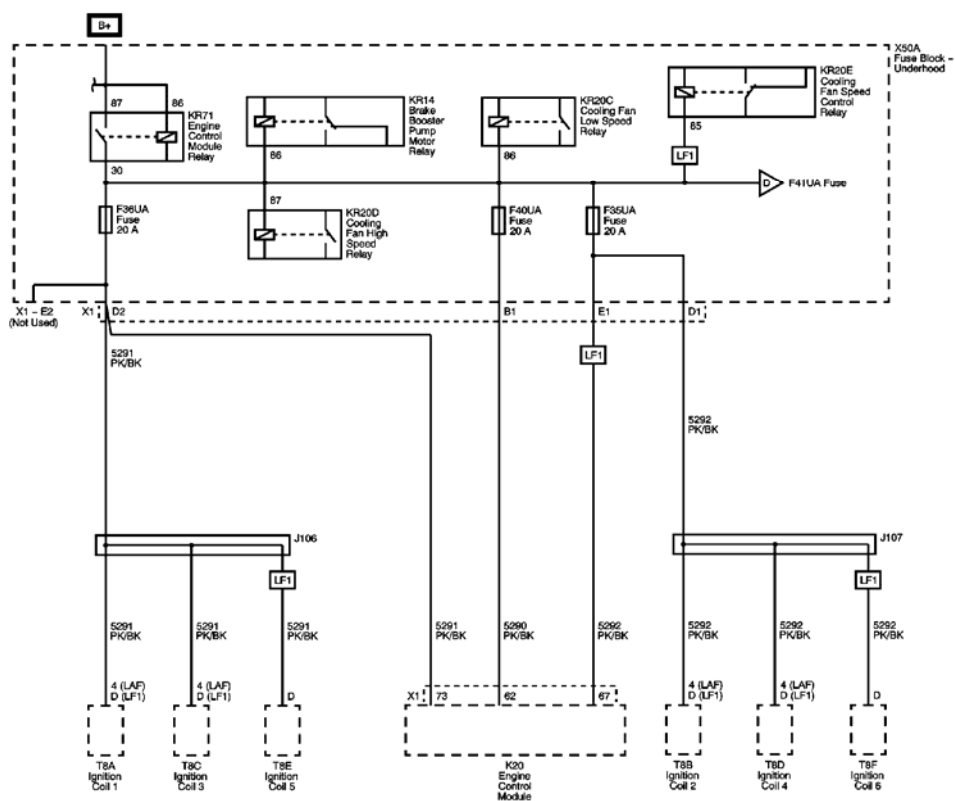


Fig. 30: F35UA, F36UA, and F40UA Fuses
Courtesy of GENERAL MOTORS CORP.

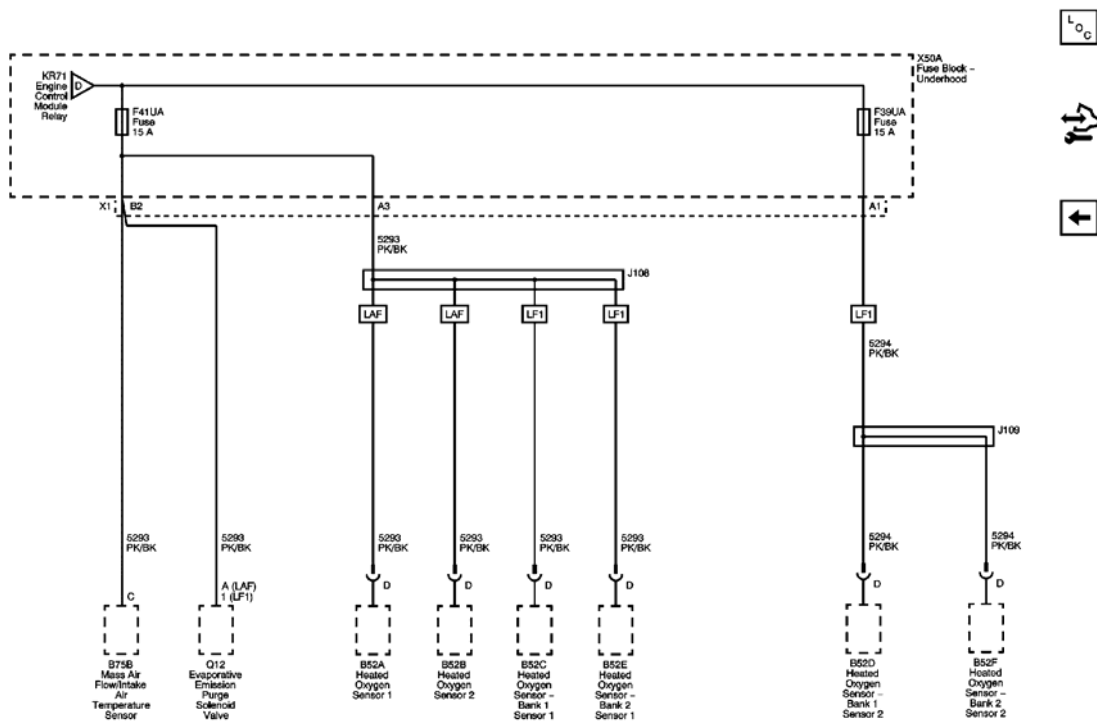


Fig. 31: F39UA and F41UA Fuses
 Courtesy of GENERAL MOTORS CORP.

POWER MODING SCHEMATICS

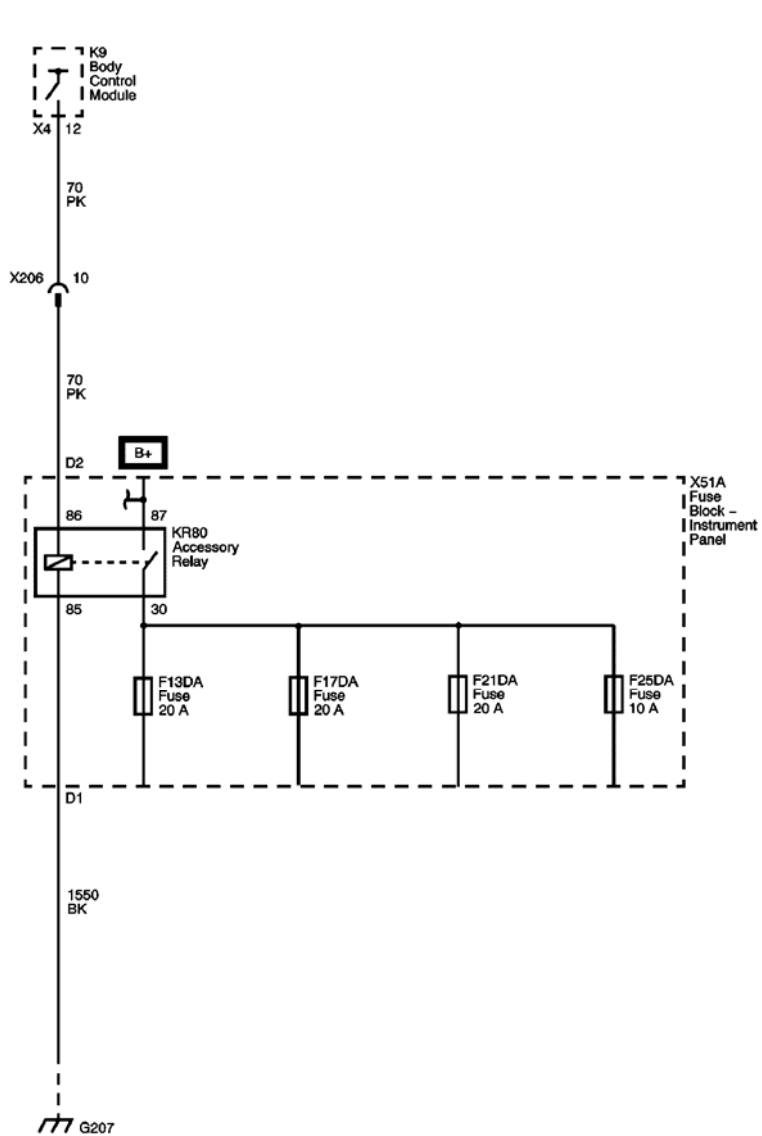


Fig. 32: Retained Accessory Power Relay
 Courtesy of GENERAL MOTORS CORP.

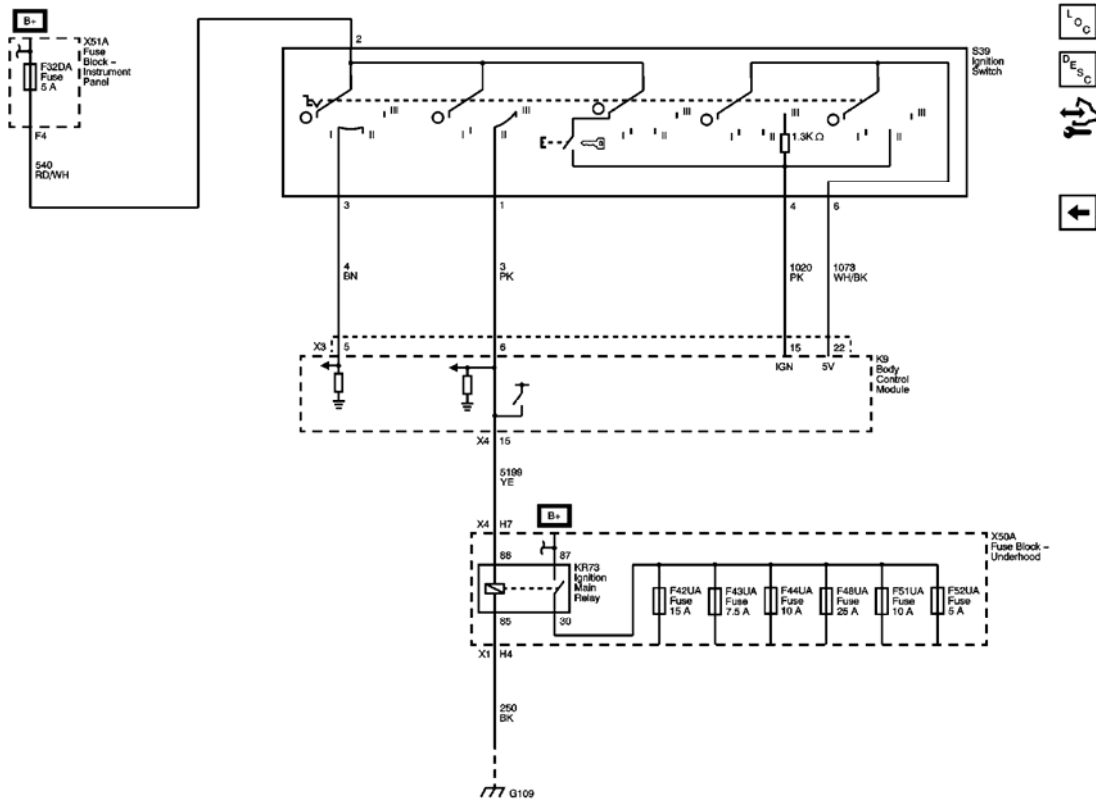


Fig. 33: Ignition Switch and Ignition Main Relay
 Courtesy of GENERAL MOTORS CORP.

IGNITION LOCK SCHEMATICS

L O C

D E S C

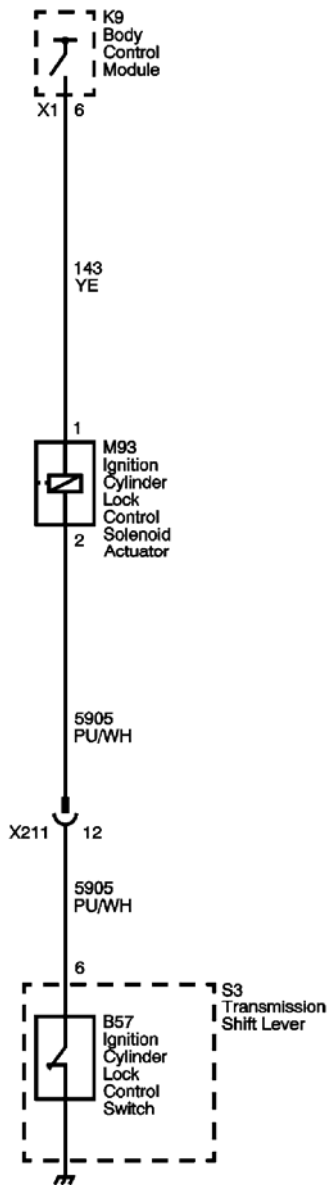


Fig. 34: Ignition Lock

Courtesy of GENERAL MOTORS CORP.

GROUND DISTRIBUTION SCHEMATICS

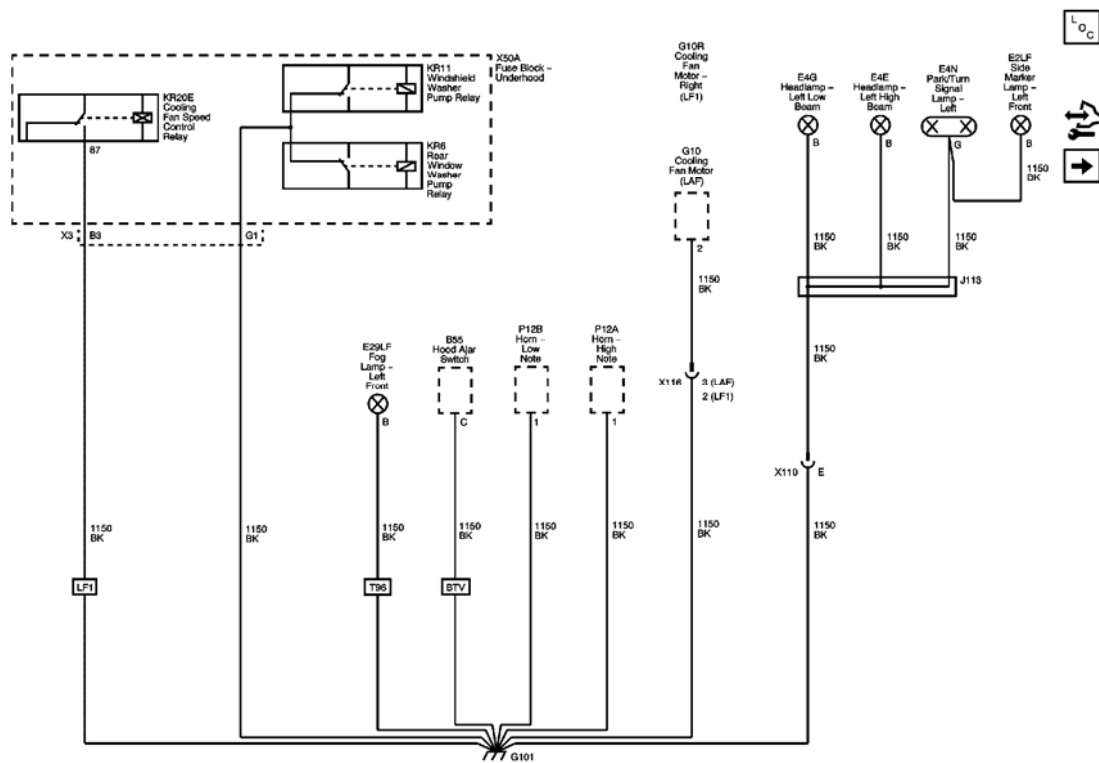


Fig. 35: G101
 Courtesy of GENERAL MOTORS CORP.

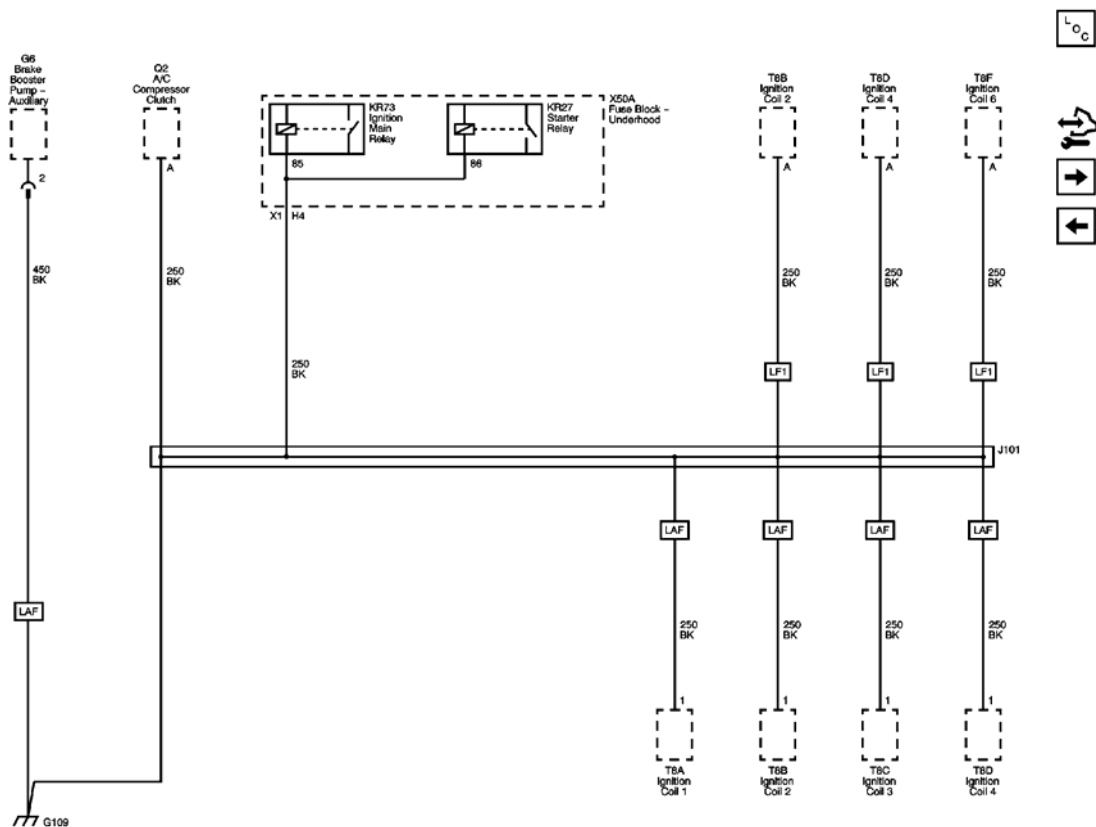


Fig. 37: G109

Courtesy of GENERAL MOTORS CORP.

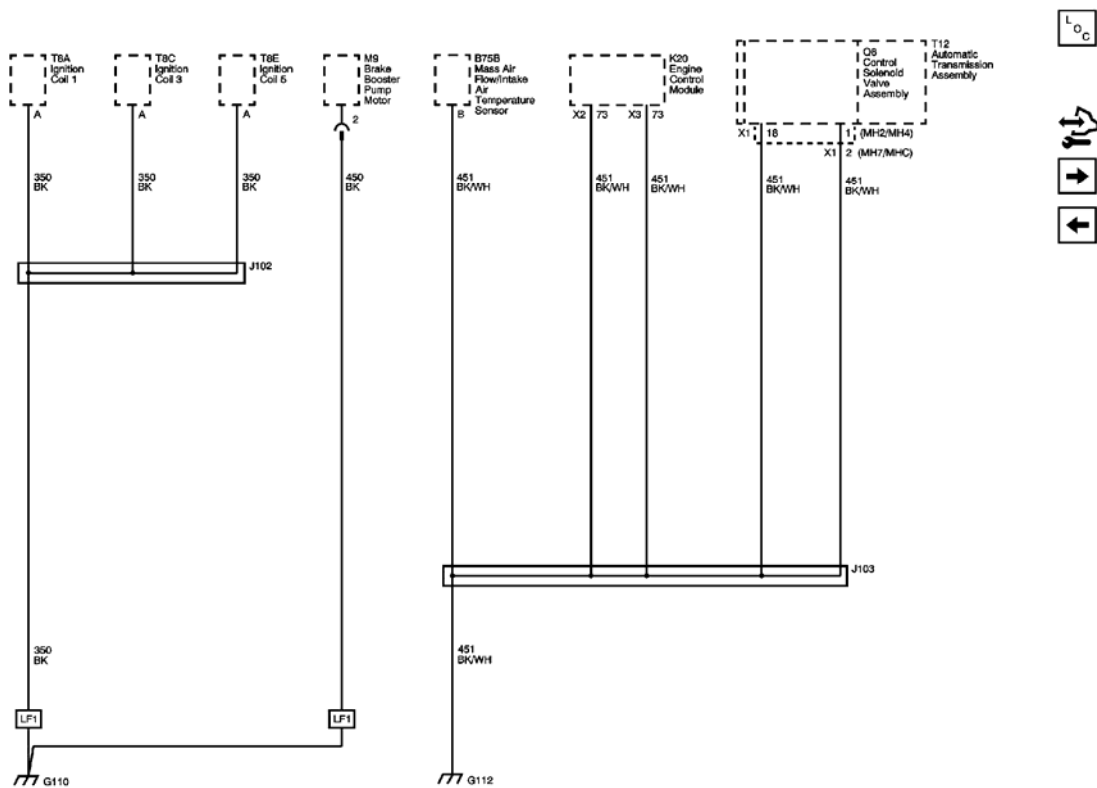


Fig. 38: G110 and G112
 Courtesy of GENERAL MOTORS CORP.

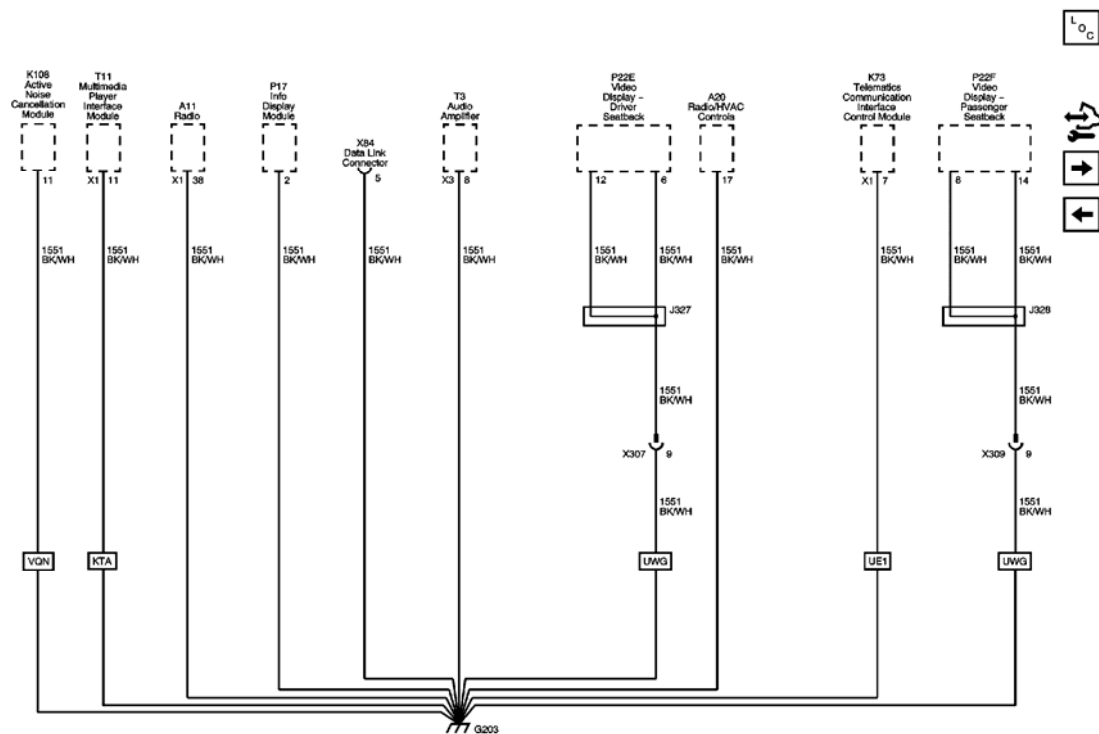


Fig. 39: G203

Courtesy of GENERAL MOTORS CORP.

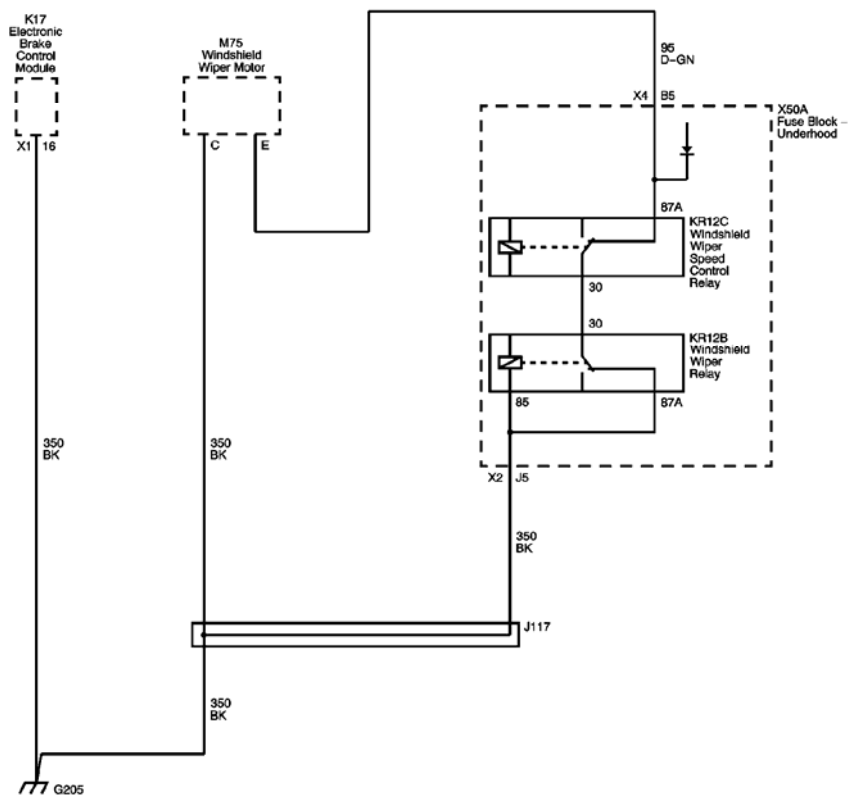


Fig. 40: G205
 Courtesy of GENERAL MOTORS CORP.

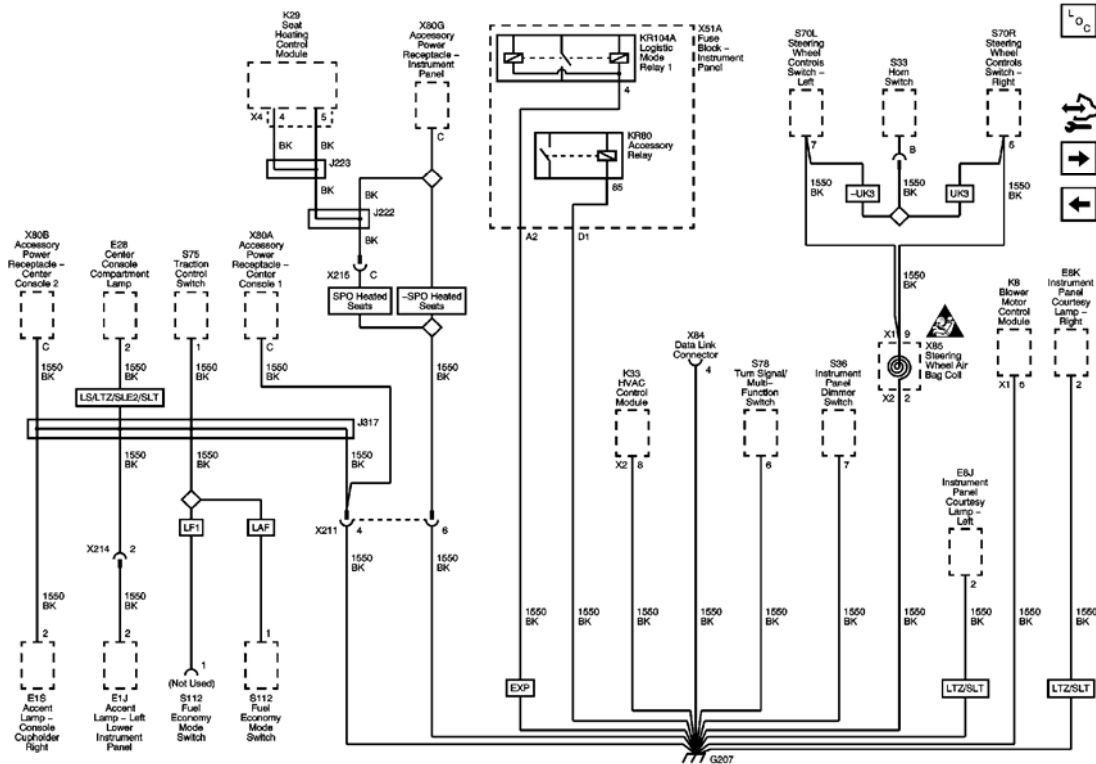


Fig. 41: G207
Courtesy of GENERAL MOTORS CORP.

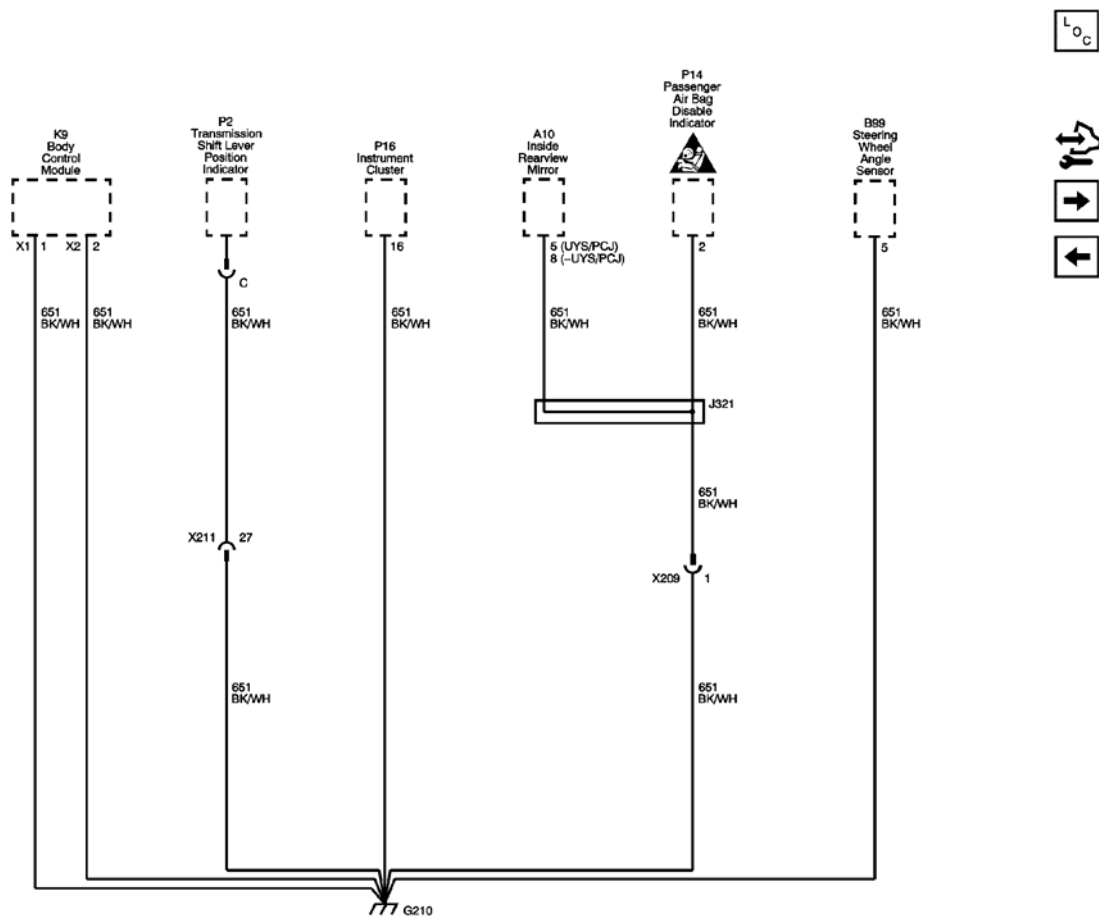


Fig. 42: G210
 Courtesy of GENERAL MOTORS CORP.

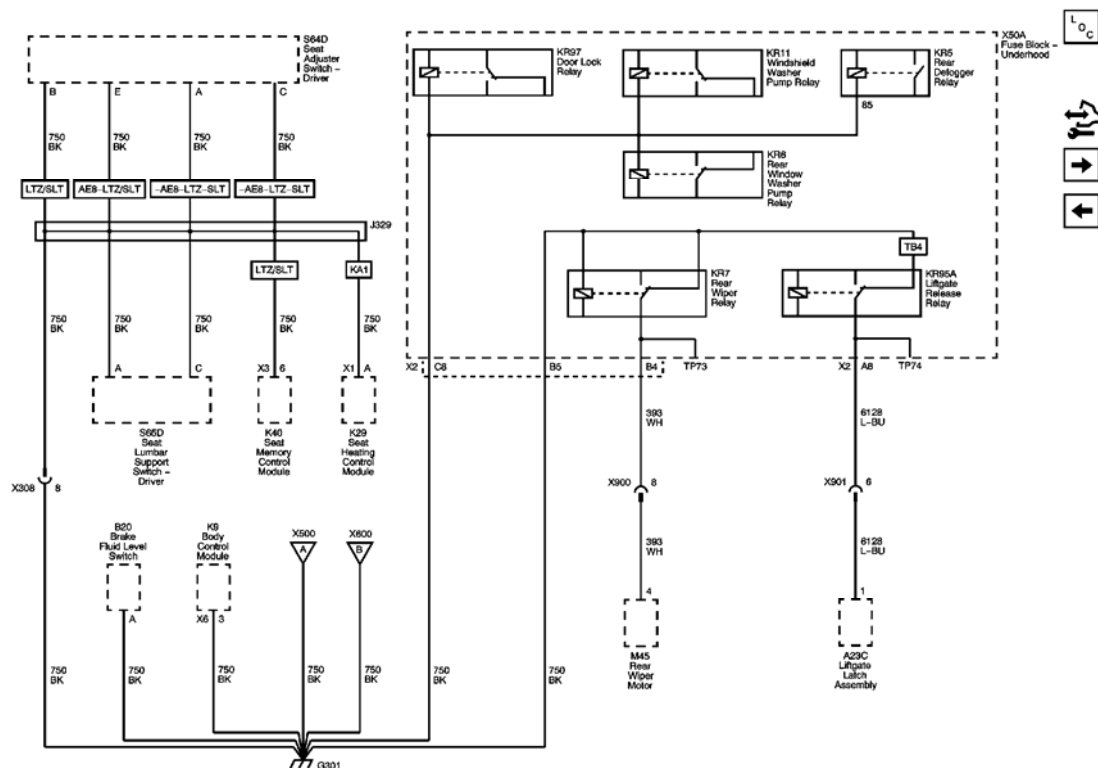


Fig. 43: G301 (1 of 2)

Courtesy of GENERAL MOTORS CORP.

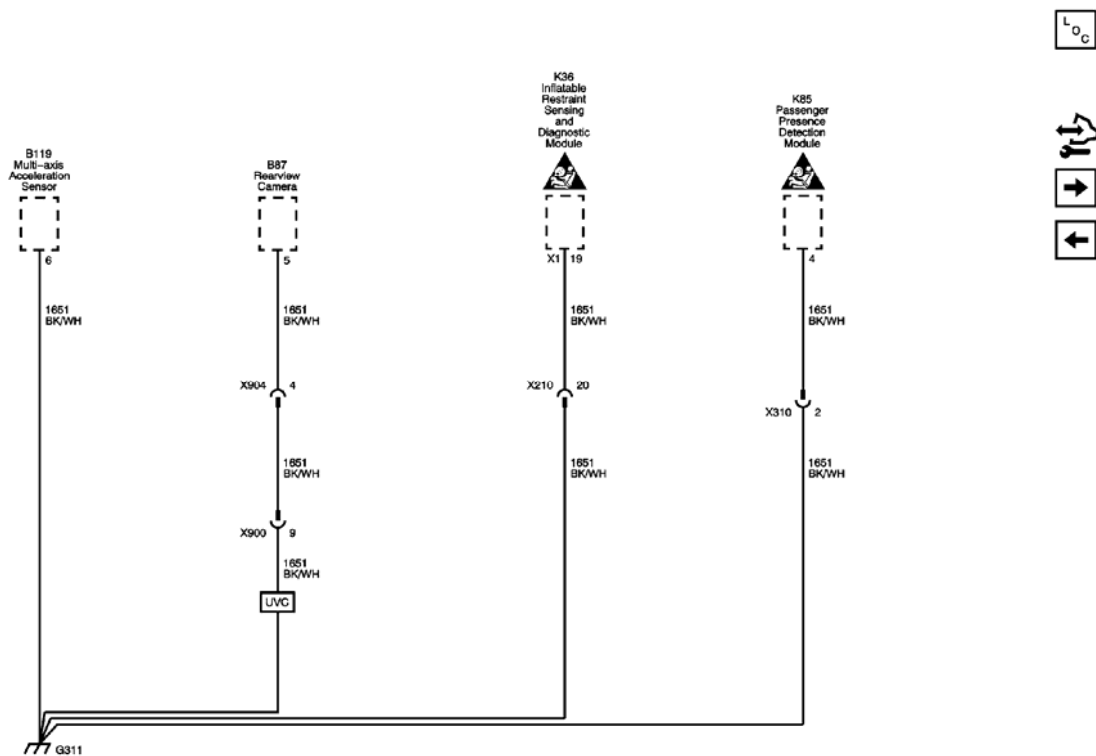


Fig. 45: G311
 Courtesy of GENERAL MOTORS CORP.

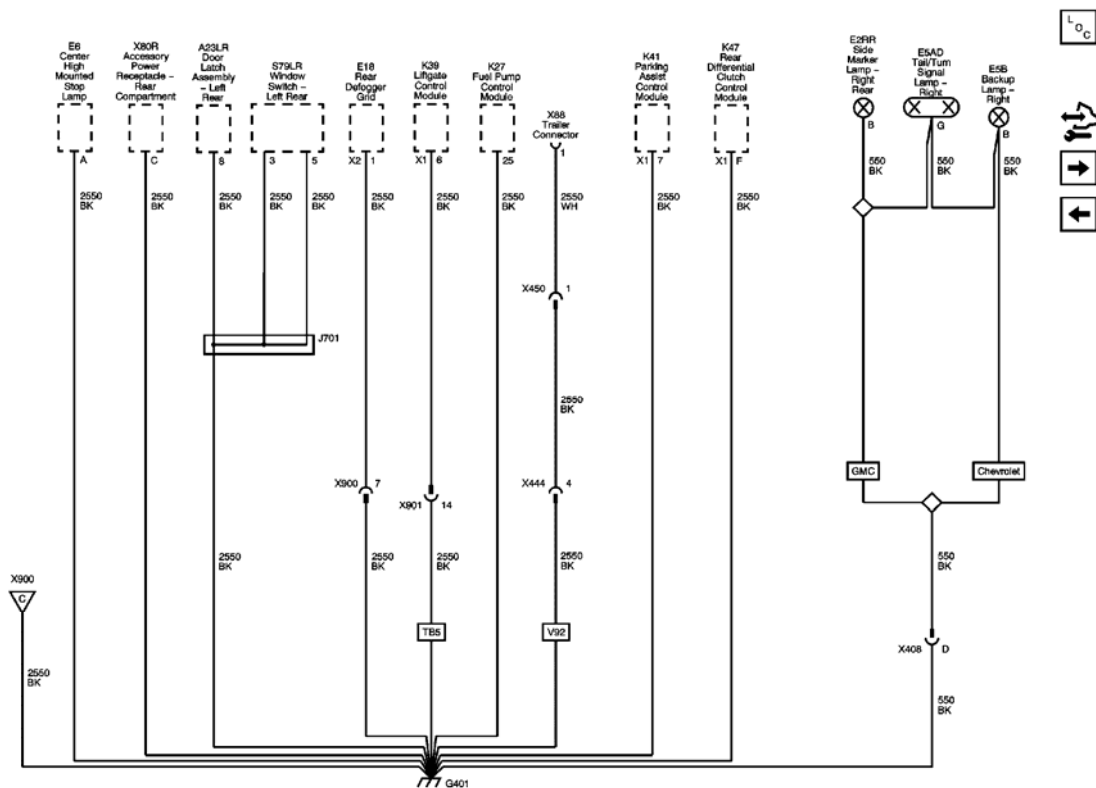


Fig. 46: G401 (1 of 2)

Courtesy of GENERAL MOTORS CORP.

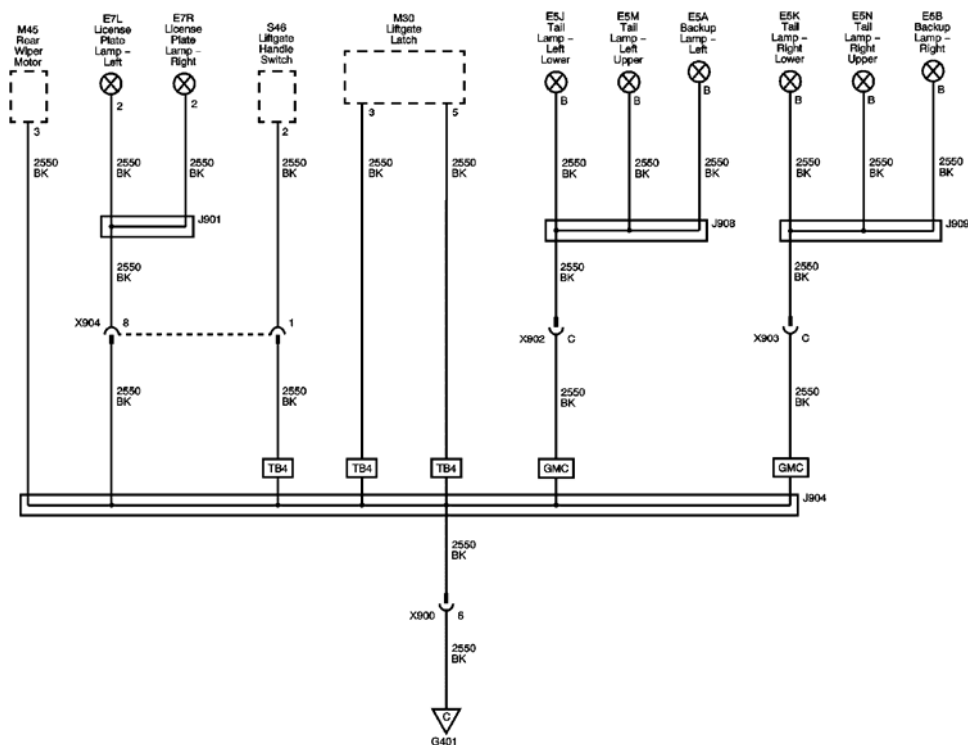


Fig. 47: G401 (2 of 2)

Courtesy of GENERAL MOTORS CORP.

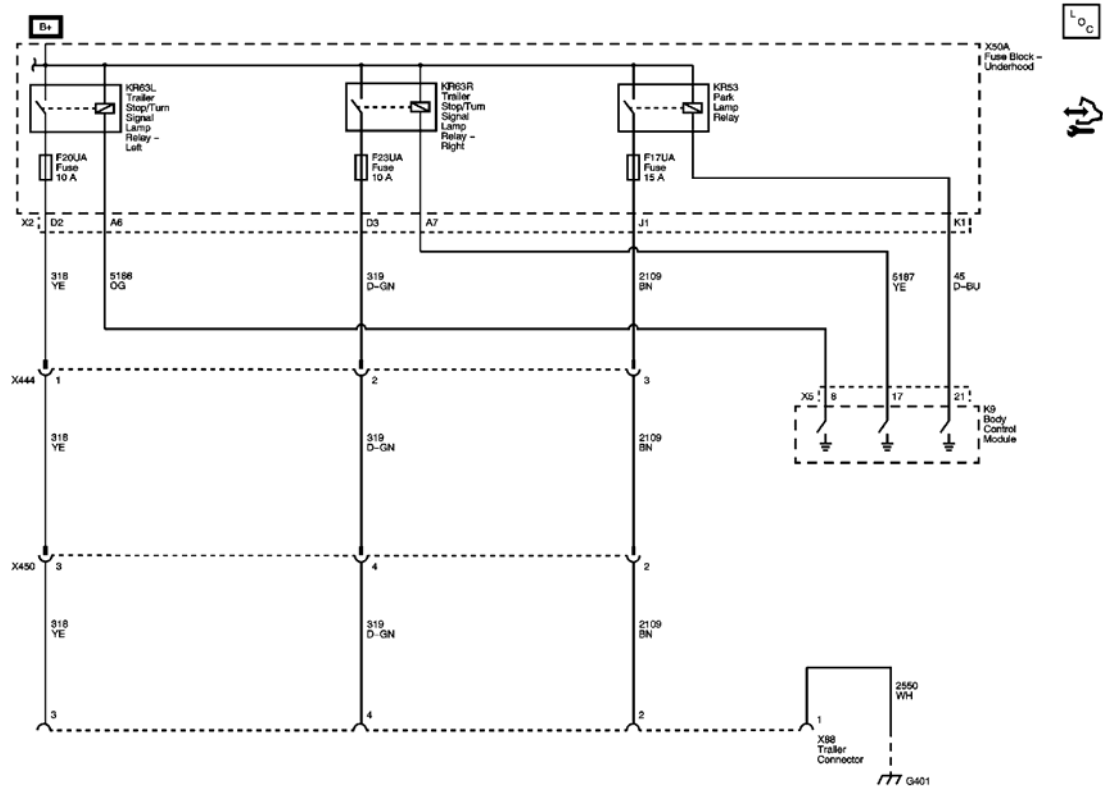


Fig. 49: Trailer Connector/Provision
 Courtesy of GENERAL MOTORS CORP.