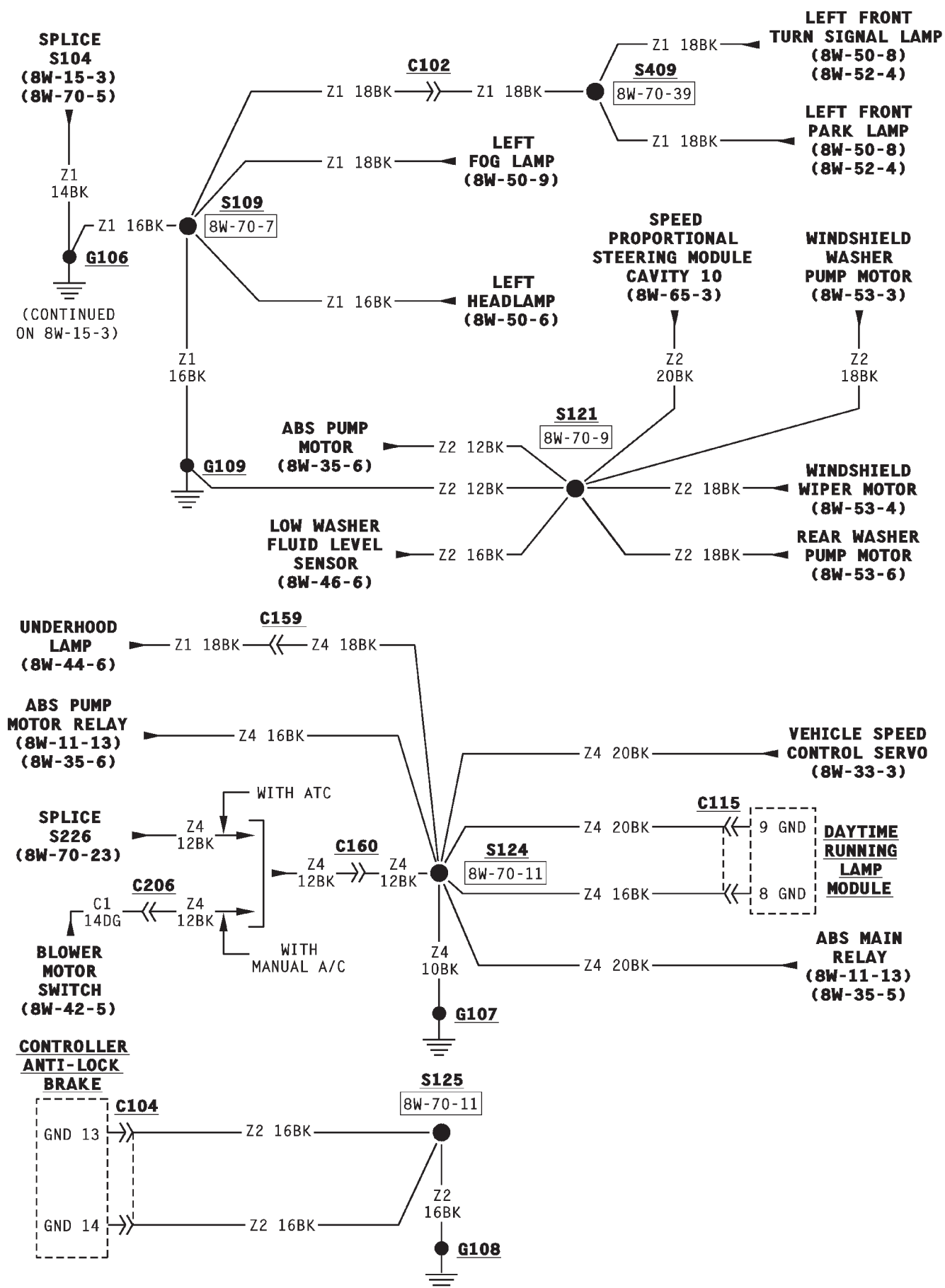
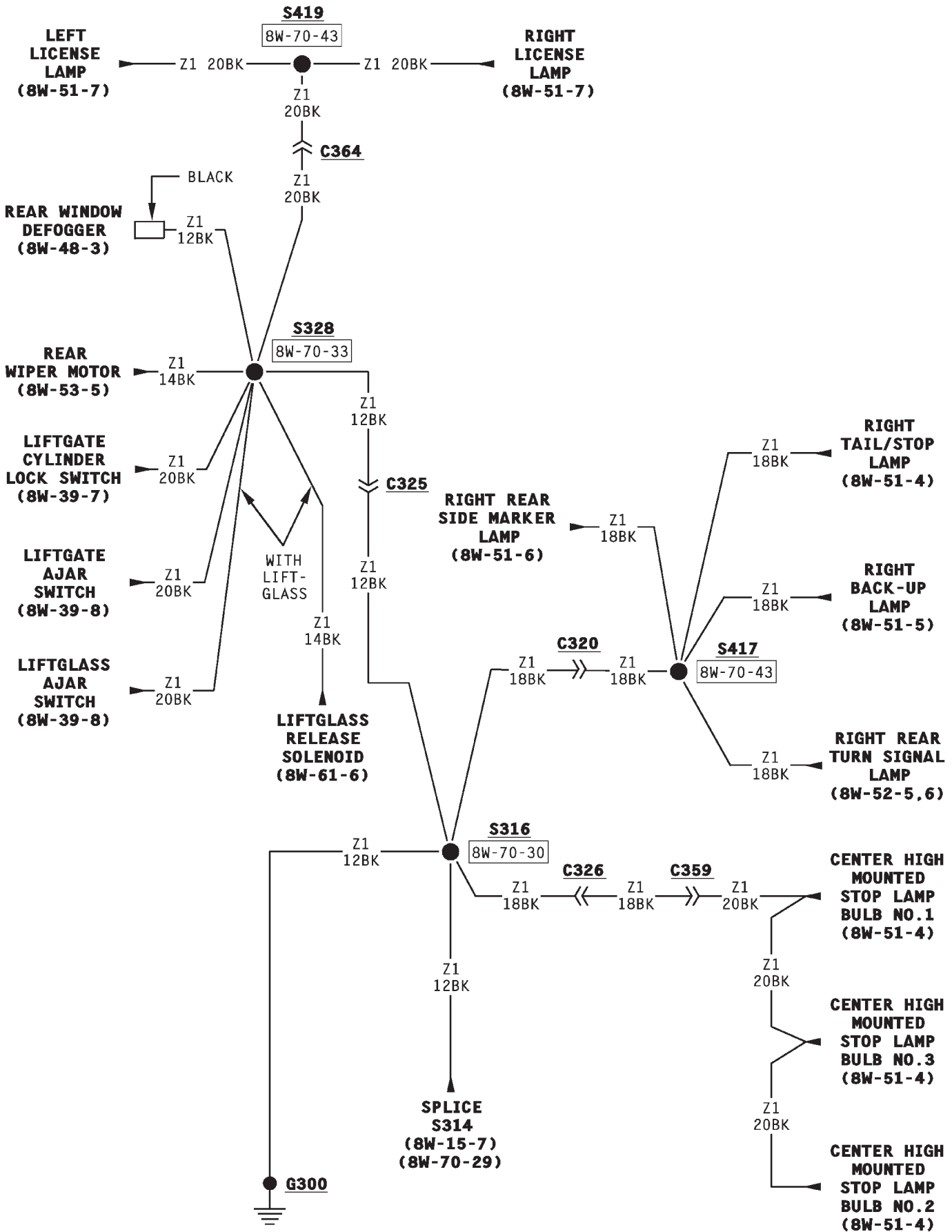
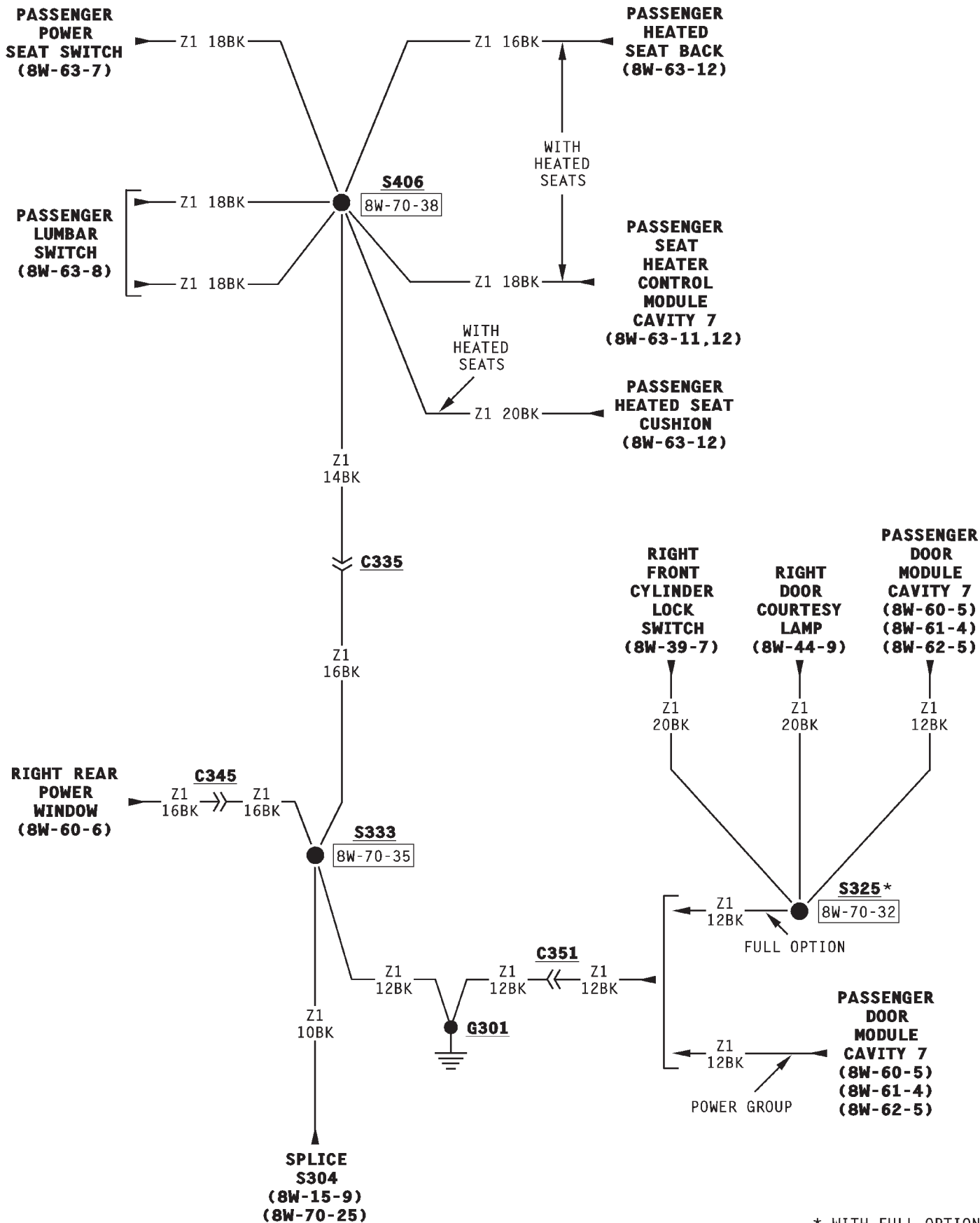
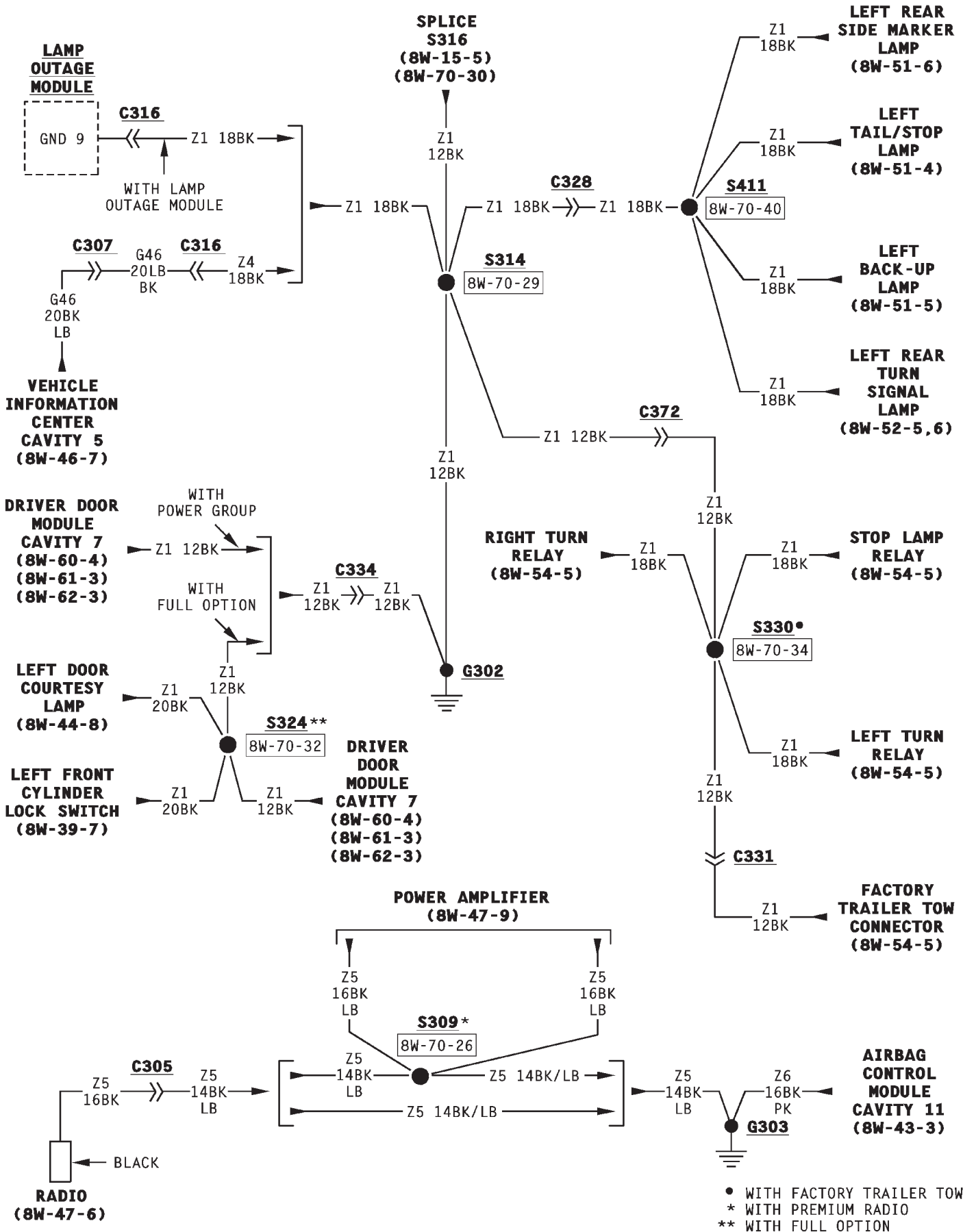


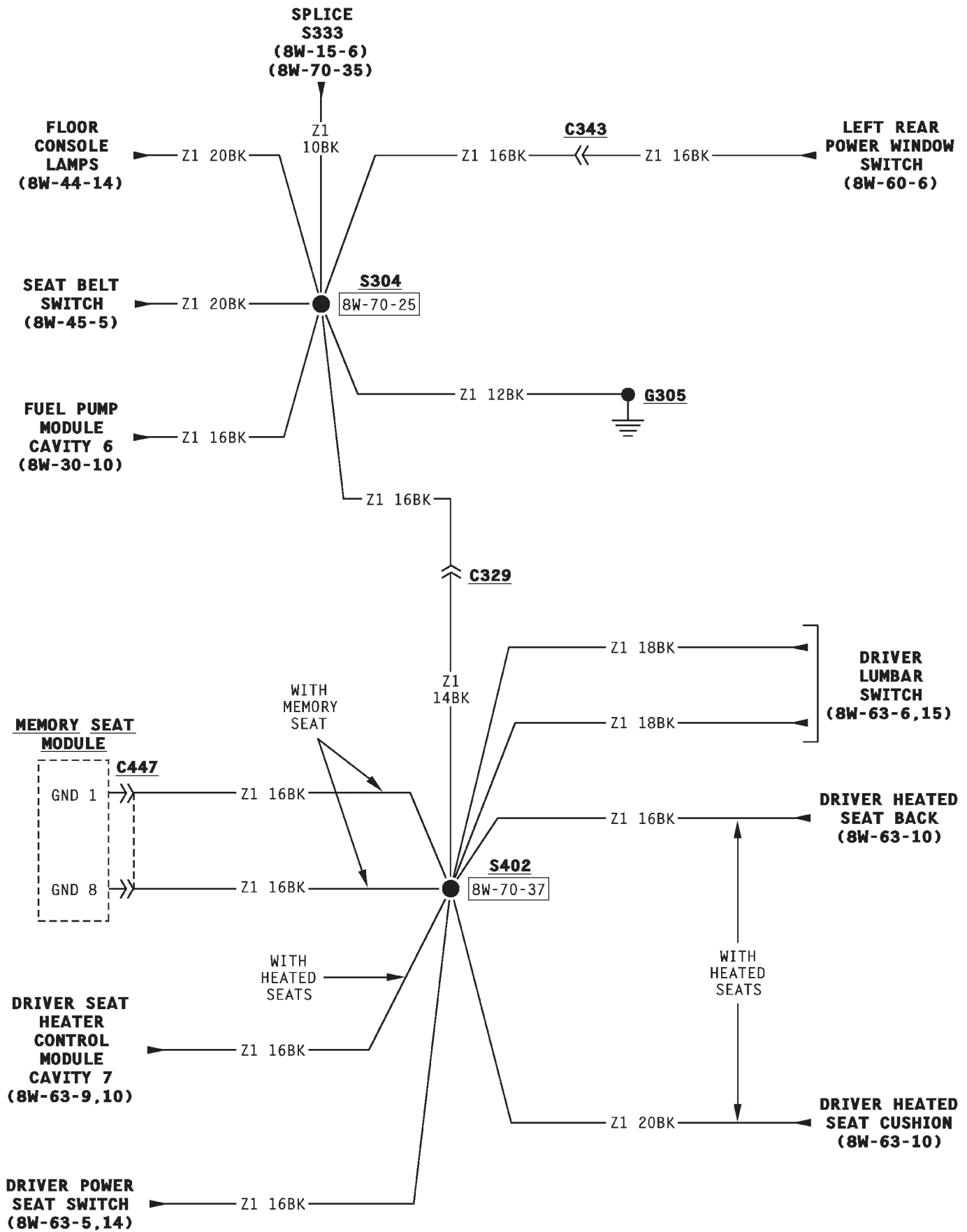












8W-20 CHARGING SYSTEM

DESCRIPTION AND OPERATION

CHARGING SYSTEM

The charging system is an integral part of the battery and starting systems. Because all these systems work in conjunction, diagnose and test them together.

Circuit A11 connects to the generator output terminal and the Power Distribution Center (PDC). Circuit A0 connects the battery to the PDC. Circuit Z0 provides ground for the generator.

When the ignition switch is in either the START or RUN positions, it connects circuit A1 from fuse 8 in the PDC to circuit A21. Circuit A21 powers circuit F99 through fuse 18 in the PDC. Circuit F99 splices to supply current to the coil side of the Automatic Shut Down (ASD) relay. The Powertrain Control Module (PCM) provides ground for the relay on circuit K900. Circuit K900 connects to cavity C3 of the PCM.

When the PCM grounds the ASD relay, contacts inside the relay close and connect circuit F5 from the fuse 20 in the PDC to circuit A142. Circuit A142 splices to the generator field terminal.

The PCM has an internal voltage regulator that controls generator output. The PCM controls the gen-

erator field on circuit K20. Circuit K20 connects to PCM cavity B10.

When the engine operates and there is current in the generator field, the generator produces a B+ voltage. The generator supplies B+ voltage to the battery through the A11 and A0 circuits.

HELPFUL INFORMATION

- Circuit A21 passes through the junction block before reaching fuse 18 in the PDC.
- The ASD relay supplies battery voltage for the fuel injectors, ignition coil, and the heated oxygen sensors.

SCHEMATICS AND DIAGRAMS

WIRING DIAGRAM INDEX

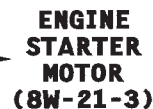
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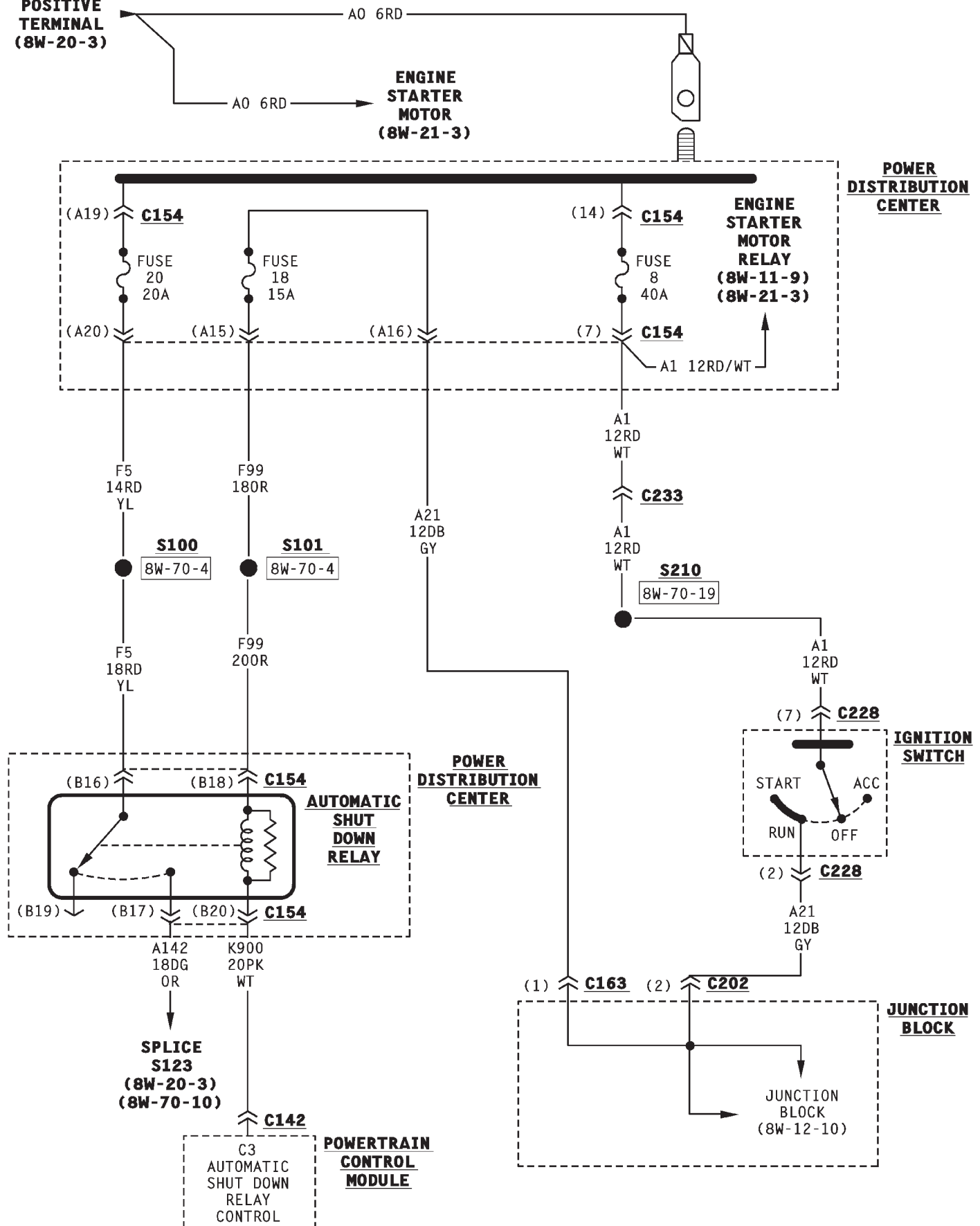
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**BATTERY
POSITIVE
TERMINAL
(8W-20-3)**

**ENGINE
STARTER
MOTOR
(8W-21-3)**



8W-21 STARTING SYSTEM

DESCRIPTION AND OPERATION

STARTING SYSTEM

Circuit A0 from the battery is double crimped at the positive battery post. One branch of circuit A0 (battery positive cable) connects to the engine starter motor. The other A0 branch supplies voltage to the Power Distribution Center (PDC).

Circuit A1 from fuse 8 in the PDC supplies battery voltage to the contact side of the engine starter motor relay. When the coil side of the engine starter motor relay energizes, the contacts close and connect circuit A1 to circuit T40. Circuit T40 supplies battery voltage to the starter motor solenoid.

The ignition switch supplies battery voltage to the coil side of the starter motor relay on circuit A41 when the key is moved to the START position and the PARK/NEUTRAL position switch is closed. Ground for the coil side of the starter motor relay is

supplied by the case grounded PARK/NEUTRAL position switch. Circuit T41 connects the coil side of the relay to the PARK/NEUTRAL position switch.

When the starter motor relay energizes and the contacts close, circuit T40 supplies battery voltage to the starter motor solenoid. Circuit A0 from the battery supplies voltage to the starter motor when the solenoid energizes.

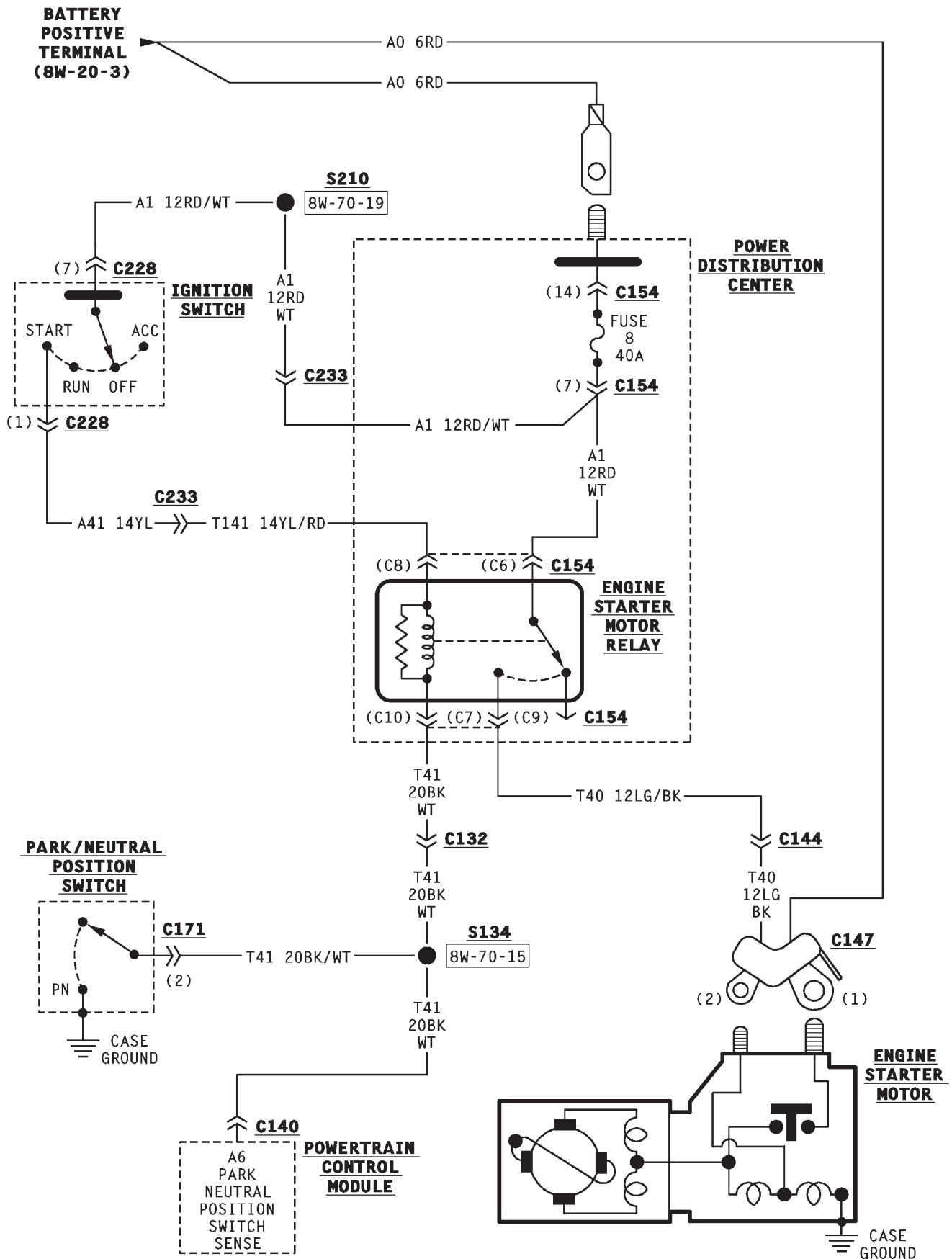
SCHEMATICS AND DIAGRAMS

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The following index covers all components found in this section of the wiring diagrams. If the component you are looking for is not found here, refer to section 8W-02 for a complete list of all components shown in the wiring diagrams.

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8W-30 FUEL/IGNITION SYSTEMS

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DESCRIPTION AND OPERATION

IGNITION SWITCH

Circuit A1 from fuse 8 in the Power Distribution Center (PDC) powers four different circuits through the ignition switch. When the ignition switch is in the START or RUN position, it connects circuit A1 to circuit A21.

In the ACCESSORY or RUN position, the ignition switch connects to circuit A31. In the START position, the ignition switch connects circuit A1 to circuit A41. When the ignition switch is in the RUN position it connects circuit A1 to circuit A22.

Also in the START position, the case grounded ignition switch grounds circuit G9 from the brake warning switch.

BATTERY FEED

Circuit F5 from fuse 20 in the Power Distribution Center (PDC) supplies battery voltage to cavity A22 of the Powertrain Control Module (PCM). Circuit A7 from PDC fuse 15 also powers the PDC at cavity A14.

HELPFUL INFORMATION

Circuit F5 also supplies power to the contact sides of the Automatic Shut Down (ASD) relay.

GROUND

Circuit Z12 connects to cavities A31 and A32 of the PCM. The Z12 circuit provides ground for PCM internal drivers that operate high current devices like the injectors and ignition coil.

Internal to the PCM, the ground circuit connects to the PCM sensor return circuit (from circuit K4).

HELPFUL INFORMATION

- If the system loses ground for the Z12 circuits, the vehicle will not operate. Check the connection at the ganged-ground circuit eyelet.

DATA LINK CONNECTOR

Circuit A250 from fuse 11 in the Power Distribution Center (PDC) powers circuit F75 through fuse 7 in the junction block. Circuit F75 supplies battery voltage to the data link connector.

Circuit D84 connects to cavity C29 of the PCM. Circuit D84 is the SCI transmit circuit for the Powertrain Control Module (PCM). Circuit D83 connects to cavity C27 of the PCM and cavity A3 of the Controller- Anti Lock Brakes. Circuit D83 is the SCI receive circuit for the PCM.

Circuits D98 and D99 from the speed proportional steering module connect to the data link connector.

Circuits Z1 and Z2 provide ground for the data link connector.

AUTOMATIC SHUT DOWN (ASD) RELAY

When the ignition switch is in either the START or RUN position, it connects circuit A1 from fuse 8 in the Power Distribution Center (PDC) to circuit A21. Circuit A21 powers circuit F99 through PDC fuse 18. Circuit F99 feeds the coil side of the Automatic Shut Down (ASD) relay. The Powertrain Control Module (PCM) provides ground for the relay on circuit K900. Circuit K900 connects to cavity C3 of the PCM.

DESCRIPTION AND OPERATION (Continued)

When the PCM grounds the ASD relay, contacts inside the relay close and connect circuit F5 from fuse 20 in the PDC to circuit A142. Circuit A142 splices to the generator field terminal, fuel injectors, ignition coil and the upstream and downstream heated oxygen sensors. Circuit A142 also connects to cavity C12 of the PCM.

HELPFUL INFORMATION

Along with supplying voltage to the coil side of the ASD relay, circuit F99 also supplies voltage to the coil side of the fuel pump relay.

FUEL PUMP RELAY

When the ignition switch is in either the START or RUN positions, it connects circuit A1 from fuse 8 in the Power Distribution Center (PDC) to circuit A21. Circuit A21 powers circuit F99 through PDC fuse 18. Circuit F99 supplies battery voltage to the coil side of the fuel pump relay. The Powertrain Control Module (PCM) provides ground for the relay on circuit K81. Circuit K81 connects to cavity C19 of the PCM.

When the PCM grounds the fuel pump relay, contacts inside the relay close and connect circuit A61 from fuse 16 in the PDC to circuit A64. Circuit A64 feeds the fuel pump motor (part of the in-tank fuel pump module).

HELPFUL INFORMATION

Circuit F99 also powers the coil side of the Automatic Shut Down (ASD) relay.

FUEL PUMP MODULE

The in-tank fuel pump module contains the fuel pump motor and fuel level sensor.

FUEL PUMP MOTOR

When the fuel pump relay contacts close, the relay feeds the fuel pump motor. Circuit A64 from the relay powers the fuel pump module. Circuit Z1 provides ground for the fuel pump motor.

FUEL LEVEL SENSOR

The fuel level sensor is a variable resistor. Circuit G40 provides the fuel level input to cavity C26 of the Powertrain Control Module (PCM). The PCM broadcasts fuel level data on the CCD bus. The micro-processor in the instrument cluster receives the message on the CCD bus, calculates fuel gauge needle position and adjusts the gauge.

VEHICLE SPEED SENSOR

Circuit K6 supplies 5 volts from the Powertrain Control Module (PCM) to the vehicle speed sensor. The K6 circuit connects to cavity B31 of the PCM.

Circuit G7 from the vehicle speed sensor provides an input signal to the PCM. The G7 circuit connects to cavity B27 of the PCM.

The PCM provides a ground for the vehicle speed sensor signal (circuit G7) through circuit K4. Circuit K4 connects to cavity A4 of the PCM.

HELPFUL INFORMATION

Circuit K4 splices to supply ground for the signals from the following:

- Heated oxygen sensor
- Camshaft position sensor
- Crankshaft position sensor
- Throttle position sensor
- Manifold absolute pressure sensor
- Engine coolant temperature sensor
- Intake air temperature sensor

HEATED OXYGEN SENSORS

When the Automatic Shut Down (ASD) relay contacts close, circuit A142 supplies voltage to the upstream and downstream heated oxygen sensors.

Circuit K41 delivers the signal from the upstream heated oxygen sensor to the Powertrain Control Module (PCM). Circuit K41 connects to cavity A24 of the PCM. Circuit K141 supplies the signal from the downstream heated oxygen sensor to the PCM. Circuit K141 connects to PCM cavity A25.

The PCM provides a ground for the heated oxygen sensor signals (circuits K41 and K141) through circuit K4. Circuit K4 connects to cavity A4 of the PCM connector.

Circuit Z12 provides ground for the heater circuit in each sensor.

HELPFUL INFORMATION

Circuit A142 also supplies battery voltage to the fuel injectors, ignition coil, and generator.

Circuit K4 splices to supply ground for the signals from the following:

- Camshaft position sensor
- Crankshaft position sensor
- Intake air temperature sensor
- Throttle position sensor
- Manifold absolute pressure sensor
- Engine coolant temperature sensor
- Vehicle speed sensor

BATTERY TEMPERATURE SENSOR

The Powertrain Control Module (PCM) determines battery temperature on circuit T222. Circuit T222 connects the PCM to the battery temperature sensor. Circuit T222 connects to cavity C15 of the PCM. Circuit K4 provides ground for the sensor and connects to PCM cavity A4.

DESCRIPTION AND OPERATION (Continued)

CRANKSHAFT POSITION SENSOR

The Powertrain Control Module (PCM) supplies 5 volts to the crankshaft position sensor on circuit K25. Circuit K25 connects to cavity A17 of the PCM.

The PCM receives the crankshaft position sensor signal on circuit K27. Circuit K27 connects to cavity A8 of the PCM.

The PCM provides a ground for the crankshaft position sensor (circuit K27) through circuit K4. Circuit K4 connects to cavity A4 of the PCM.

HELPFUL INFORMATION

- Circuit K25 splices to supply 5 volts to the camshaft position sensor, manifold absolute pressure sensor and throttle position sensor.

Circuit K4 splices to supply ground for the signals from the following:

- Upstream and downstream heated oxygen sensor
- Camshaft position sensor
- Intake air temperature sensor
- Throttle position sensor
- Manifold absolute pressure sensor
- Engine coolant temperature sensor
- Vehicle speed sensor

CAMSHAFT POSITION SENSOR

The Powertrain Control Module (PCM) supplies 5 volts to the camshaft position sensor (in distributor) on circuit K25. Circuit K25 connects to cavity A17 of the PCM.

The PCM receives the camshaft position sensor signal on circuit K24. Circuit K24 connects to cavity A18 of the PCM.

The PCM provides a ground for the camshaft position sensor signal (circuit K24) through circuit K4. Circuit K4 connects to cavity A4 of the PCM.

HELPFUL INFORMATION

- Circuit K25 splices to supply 5 volts to the crankshaft position sensor, manifold absolute pressure sensor, and throttle position sensor.

Circuit K4 splices to supply ground for the signals from the following:

- Upstream and downstream heated oxygen sensors
- Crankshaft position sensor
- Intake air temperature sensor
- Throttle position sensor
- Manifold absolute pressure sensor
- Engine coolant temperature sensor
- Vehicle speed sensor

ENGINE COOLANT TEMPERATURE SENSOR

The engine coolant temperature sensor provides an input to the Powertrain Control Module (PCM) on circuit K2. From circuit K2, the engine coolant tem-

perature sensor draws up to 5 volts from the PCM. The sensor is a variable resistor. As coolant temperature changes, the resistance in the sensor changes, causing a change in current draw. The K2 circuit connects to cavity A16 of the PCM.

The PCM provides a ground for the engine coolant temperature sensor signal (circuit K2) through circuit K4. Circuit K4 connects to cavity A4 of the PCM connector.

HELPFUL INFORMATION

Circuit K4 splices to supply ground for the signals from the following:

- Battery temperature sensor
- Camshaft position sensor
- Crankshaft position sensor
- Intake air temperature sensor
- Throttle position sensor
- Manifold absolute pressure sensor
- Upstream and downstream heated oxygen sensor
- Vehicle speed sensor

EVAPORATIVE SYSTEM LEAK DETECTION PUMP

Vehicle built for sale in the State of California are equipped with an evaporative system leak detection pump.

When the ignition switch is in the START or RUN position, it connects circuit A1 from fuse 8 in the Power Distribution Center (PDC) to circuit A21. Circuit A21 powers circuit F99 through PDC fuse 18. Circuit F99 feeds the leak detection pump.

On circuits J96 and J95, the PCM operates the leak detection pump. Circuit J96 connects to cavity C14 of the PCM. Circuit J95 connects to PCM cavity C10.

THROTTLE POSITION SENSOR

From the Powertrain Control Module (PCM), circuit K25 supplies 5 volts to the throttle position sensor (TPS). Circuit K25 connects to cavity A17 of the PCM.

Circuit K22 delivers the TPS signal to the PCM. Circuit K22 connects to cavity A23 of the PCM.

The PCM provides a ground for the throttle position sensor signal (circuit K22) through circuit K4. Circuit K4 connects to cavity A4 of the PCM.

HELPFUL INFORMATION

Refer to Group 14 for throttle position sensor operation.

Circuit K25 splices to supply 5 volts to the manifold absolute pressure sensor, camshaft position sensor, and crankshaft position sensor.

Circuit K4 splices to supply ground for the signals from the following:

DESCRIPTION AND OPERATION (Continued)

- Upstream and downstream heated oxygen sensors
- Camshaft position sensor
- Crankshaft position sensor
- Intake air temperature sensor
- Manifold absolute pressure sensor
- Engine coolant temperature sensor
- Vehicle speed sensor

MANIFOLD ABSOLUTE PRESSURE SENSOR

From the Powertrain Control Module (PCM), circuit K25 supplies 5 volts to the manifold absolute pressure (MAP) sensor. Circuit K25 connects to cavity A17 of the PCM.

Circuit K70 delivers the MAP signal to the PCM. Circuit K70 connects to cavity A27 of the PCM.

The PCM provides a ground for the MAP sensor signal (circuit K70) through circuit K4. Circuit K4 connects to cavity A4 of the PCM.

HELPFUL INFORMATION

Refer to Group 14 for MAP sensor operation.

Circuit K25 splices to supply 5 volts to the camshaft position sensor, crankshaft position sensor and throttle position sensor.

Circuit K4 splices to supply ground for the signals from the following:

- Upstream and downstream heated oxygen sensors
- Camshaft position sensor
- Crankshaft position sensor
- Intake air temperature sensor
- Throttle position sensor
- Engine coolant temperature sensor
- Vehicle speed sensor

INTAKE AIR TEMPERATURE SENSOR

The intake air temperature sensor provides an input to the Powertrain Control Module (PCM) on circuit K21. Circuit K21 connects to cavity A15 of the PCM.

From circuit K21, the intake air temperature sensor draws voltage from the PCM. The sensor is a variable resistor. As intake air temperature changes, the resistance in the sensor changes, causing a change in current draw.

The PCM provides a ground for the intake air temperature sensor signal (circuit K21) through circuit K4. Circuit K4 connects to cavity A4 of the PCM.

HELPFUL INFORMATION

Circuit K4 splices to supply ground for the signals from the following:

- Upstream and downstream heated oxygen sensors
- Camshaft position sensor
- Crankshaft position sensor

- Throttle position sensor
- Manifold absolute pressure sensor
- Engine coolant temperature sensor
- Vehicle speed sensor

OIL PRESSURE SENSOR

The oil pressure sensor is a variable resistor. A change in engine oil pressure changes the resistance in the sending unit which alters the signal sensed by the Powertrain Control Module on circuit G6. Circuit G6 connects to cavity B23 of the PCM.

The PCM provides ground for the oil pressure sensor on circuit K4. Circuit K4 connects to cavity A4 of the PCM.

The PCM broadcasts the oil pressure data on the CCD bus. The micro-processor in the instrument cluster receives the signal from the CCD bus, calculates oil pressure and adjusts the gauge needle position.

The Body Control Module (BCM) also receives the oil pressure data broadcast by the PCM on the CCD bus. If oil pressure drops below a calibrated pressure, the BCM sounds an audible chime and illuminates the oil pressure warning lamp.

FUEL INJECTORS

When the Automatic Shut Down (ASD) relay contacts close, they connect circuit A142 supplies voltage to the fuel injectors. Each injector has a separate ground circuit controlled by the Powertrain Control Module (PCM).

Circuit K11 provides ground for injector number one. The K11 circuit connects to cavity B4 of the PCM.

Circuit K12 provides ground for injector number two. The K12 circuit connects to cavity B15 of the PCM.

Circuit K13 provides ground for injector number three. The K13 circuit connects to cavity B5 of the PCM.

Circuit K14 provides ground for injector number four. The K14 circuit connects to cavity B16 of the PCM.

Circuit K38 provides ground for injector number five. The K38 circuit connects to cavity B6 of the PCM.

Circuit K58 provides ground for injector number six. The K58 circuit connects to cavity B12 of the PCM.

On the 5.2L engine, circuit K17 provides ground for injector number seven. The K17 circuit connects to cavity B2 of the PCM.

Also on the 5.2L engine, circuit K18 provides ground for injector number eight. The K18 circuit connects to cavity B13 of the PCM.

DESCRIPTION AND OPERATION (Continued)

HELPFUL INFORMATION

- Circuit A142 splices to supply voltage to the fuel injectors, ignition coil, PCM, generator, and heated oxygen sensors.
- For information about fuel injector operation, refer to Group 14.

IGNITION COIL

When the Automatic Shut Down (ASD) relay contacts close, circuit A142 supplies voltage to the ignition coil. The Powertrain Control Module (PCM) controls the ground path for the ignition coil on circuit K19. Circuit K19 connects to cavity A7 of the PCM.

HELPFUL INFORMATION

Circuit A142 splices to supply voltage to the fuel injectors, PCM, heated oxygen sensors, and generator.

IDLE AIR CONTROL (IAC) MOTOR

The Powertrain Control Module (PCM) operates the idle air control motor through 4 circuits; K39, K40, K59, and K60. Each circuit connects to separate cavities in the PCM connector.

- Circuit K39 connects to cavity A20 of the PCM
- Circuit K40 connects to cavity A11 of the PCM
- Circuit K59 connects to cavity A10 of the PCM
- Circuit K60 connects to cavity A19 of the PCM

DUTY CYCLE EVAP/PURGE SOLENOID

When the ignition switch is in the START or RUN position, it connects circuit A1 from fuse 8 in the Power Distribution Center (PDC) to circuit A21. Circuit A21

powers circuit F99 through PDC fuse 18. Circuit F99 powers to the Duty Cycle EVAP/Purge solenoid.

The Powertrain Control Module (PCM) provides the ground path for the solenoid on circuit K52. Circuit K52 connects to cavity C20 of the PCM.

CCD BUS

Circuits D1 and D2 connect the Powertrain Control Module (PCM) to the CCD Bus. Circuit D1 connects to cavity C30 of the PCM. Circuit D2 connects to cavity C28 of the PCM. Circuits D1 and D2 are a twisted pair of wires.

Several modules and controllers broadcast and receive data on the CCD Bus. Each module or controller is enabled to receive only certain messages. The PCM broadcasts the following messages on the CCD bus.

- Engine RPM
- Injector on-time and distance pulses
- Vehicle speed
- Engine temperature
- Battery temperature
- Oil pressure

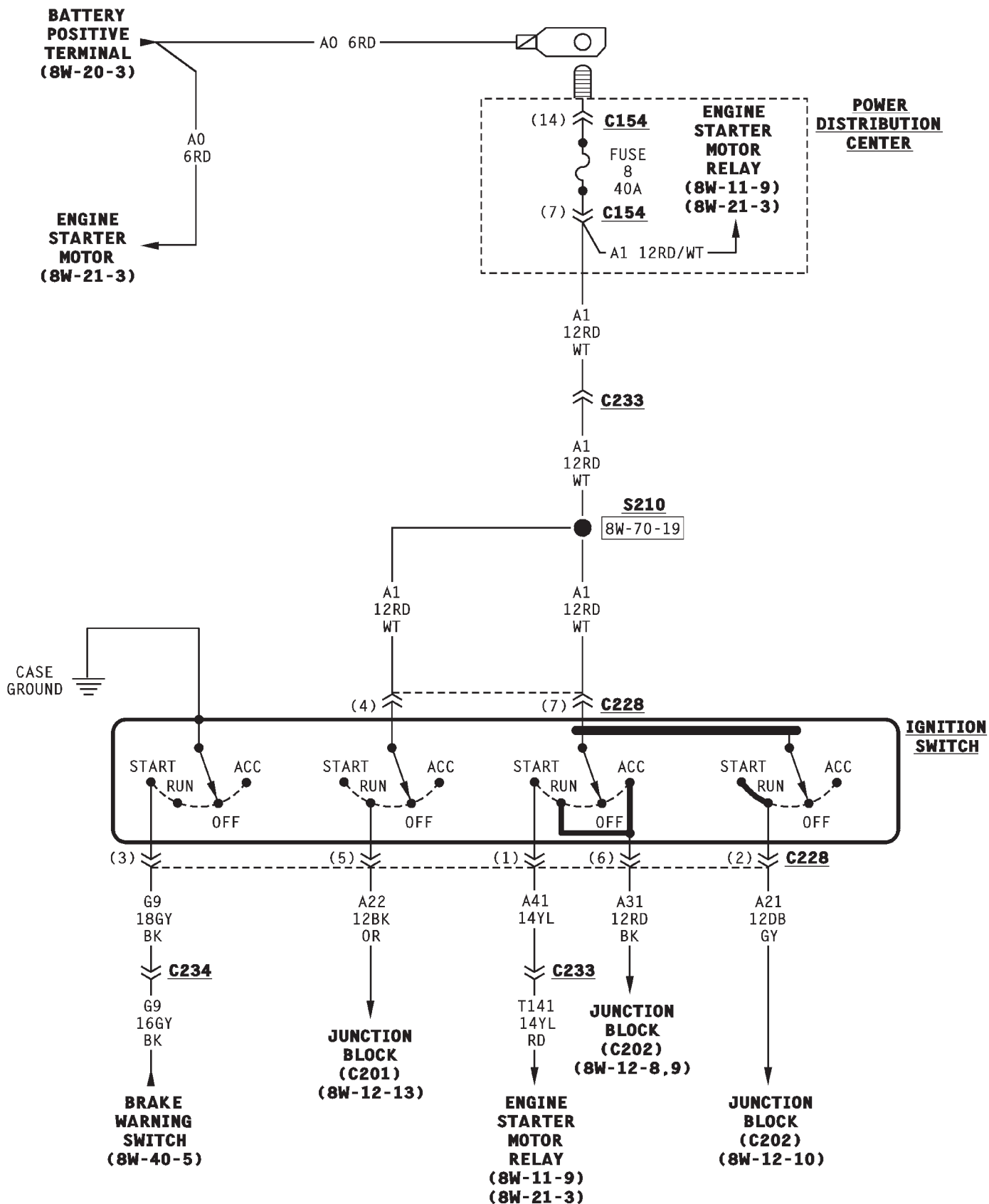
SCHEMATICS AND DIAGRAMS**WIRING DIAGRAM INDEX**

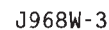
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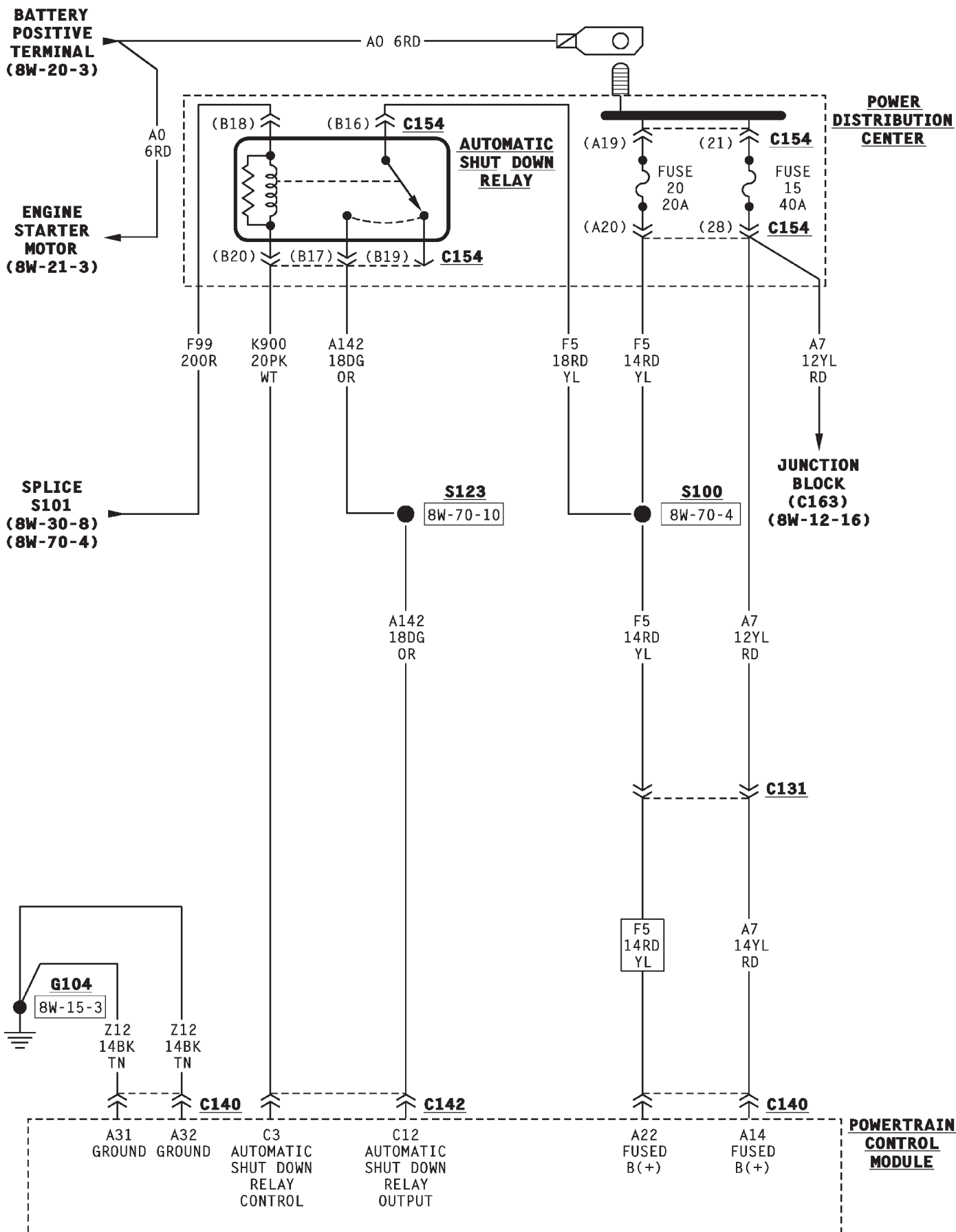
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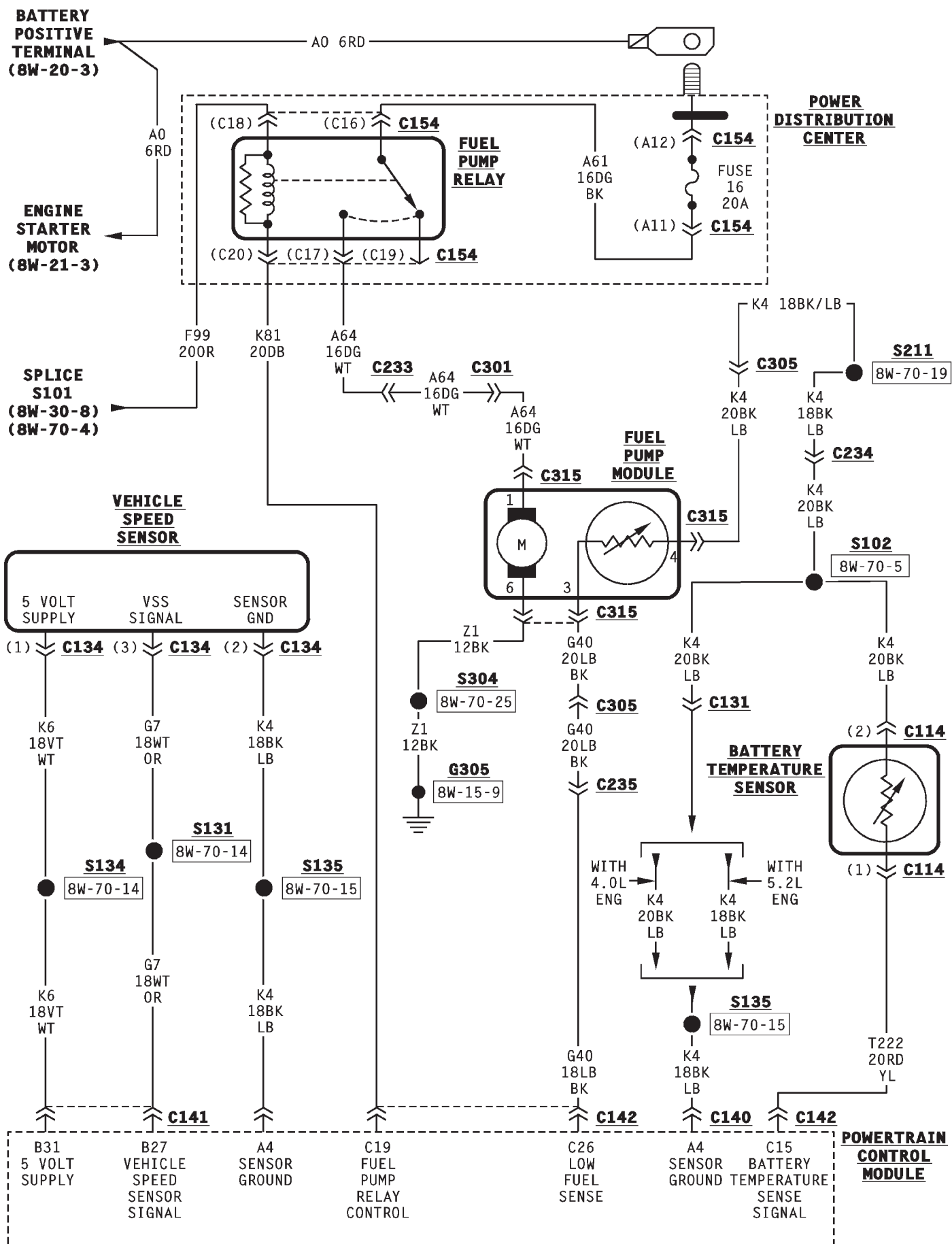
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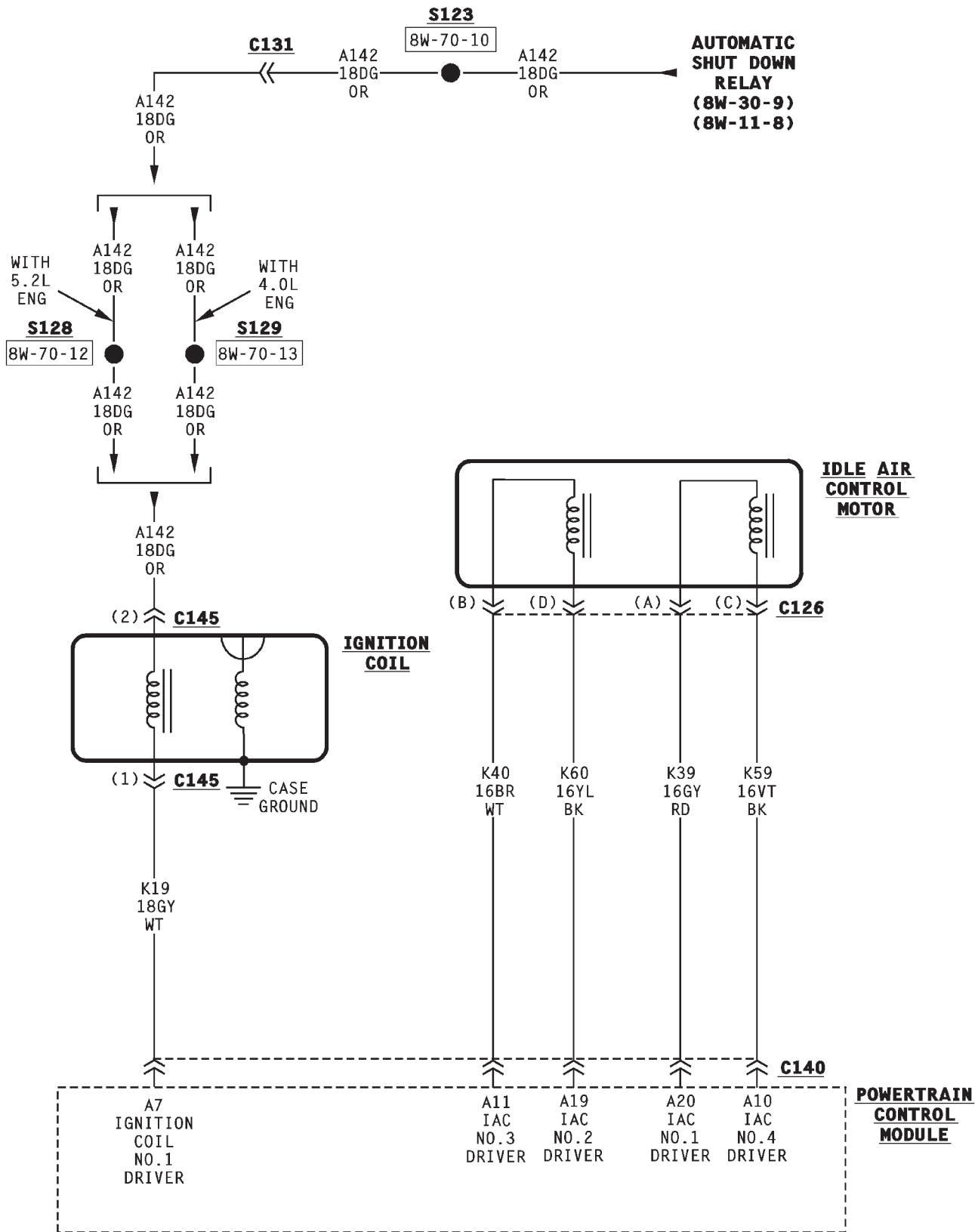
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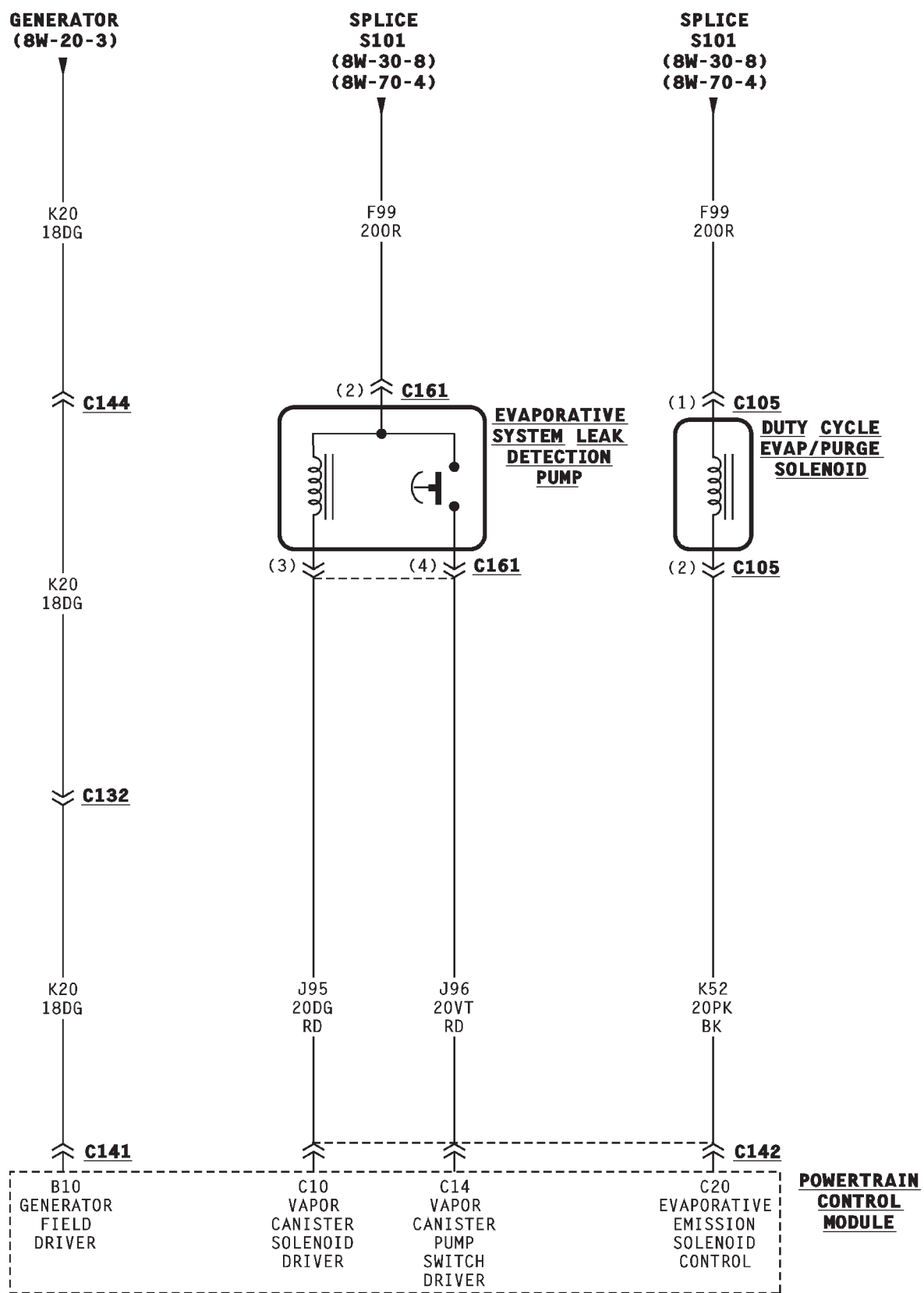


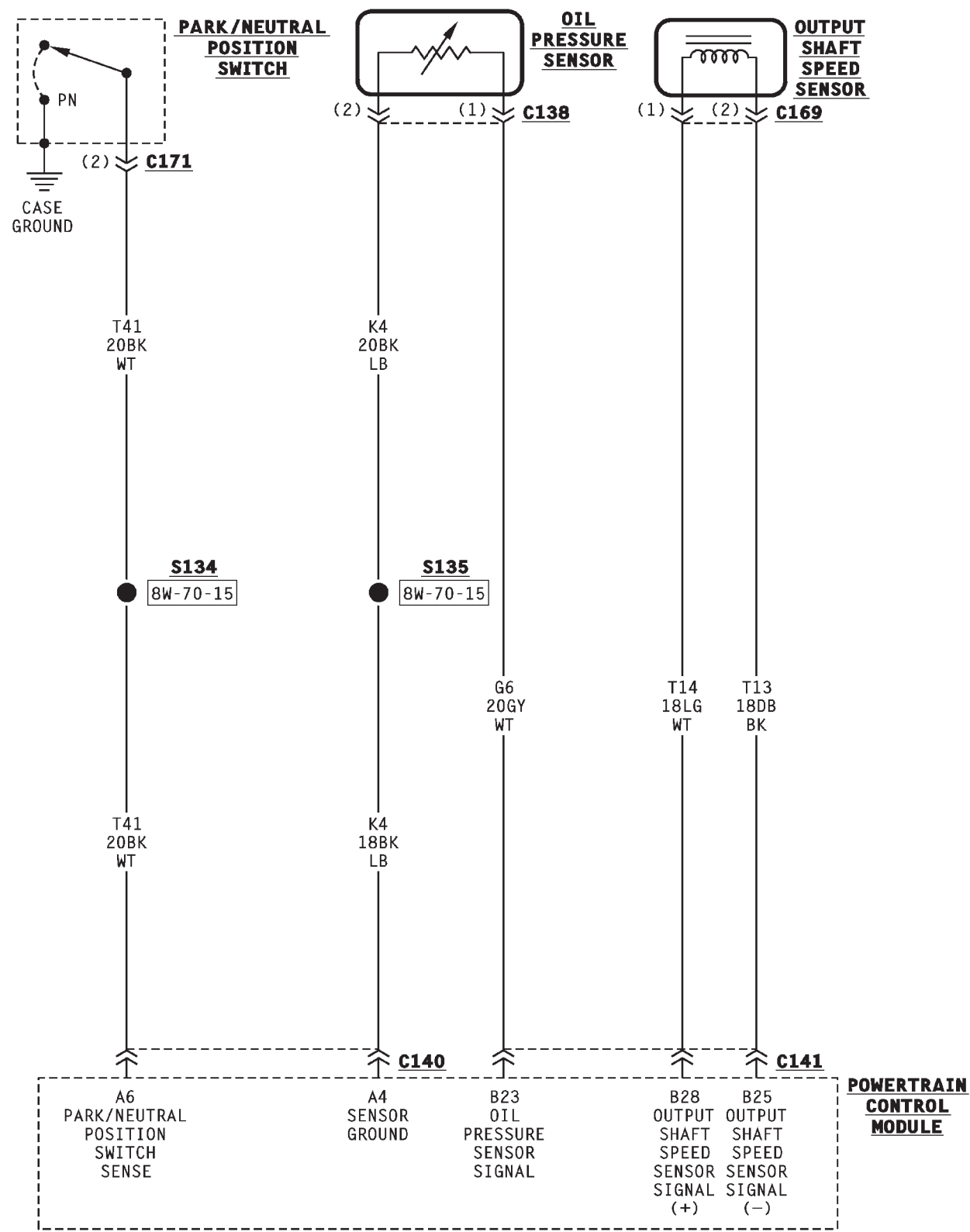


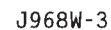


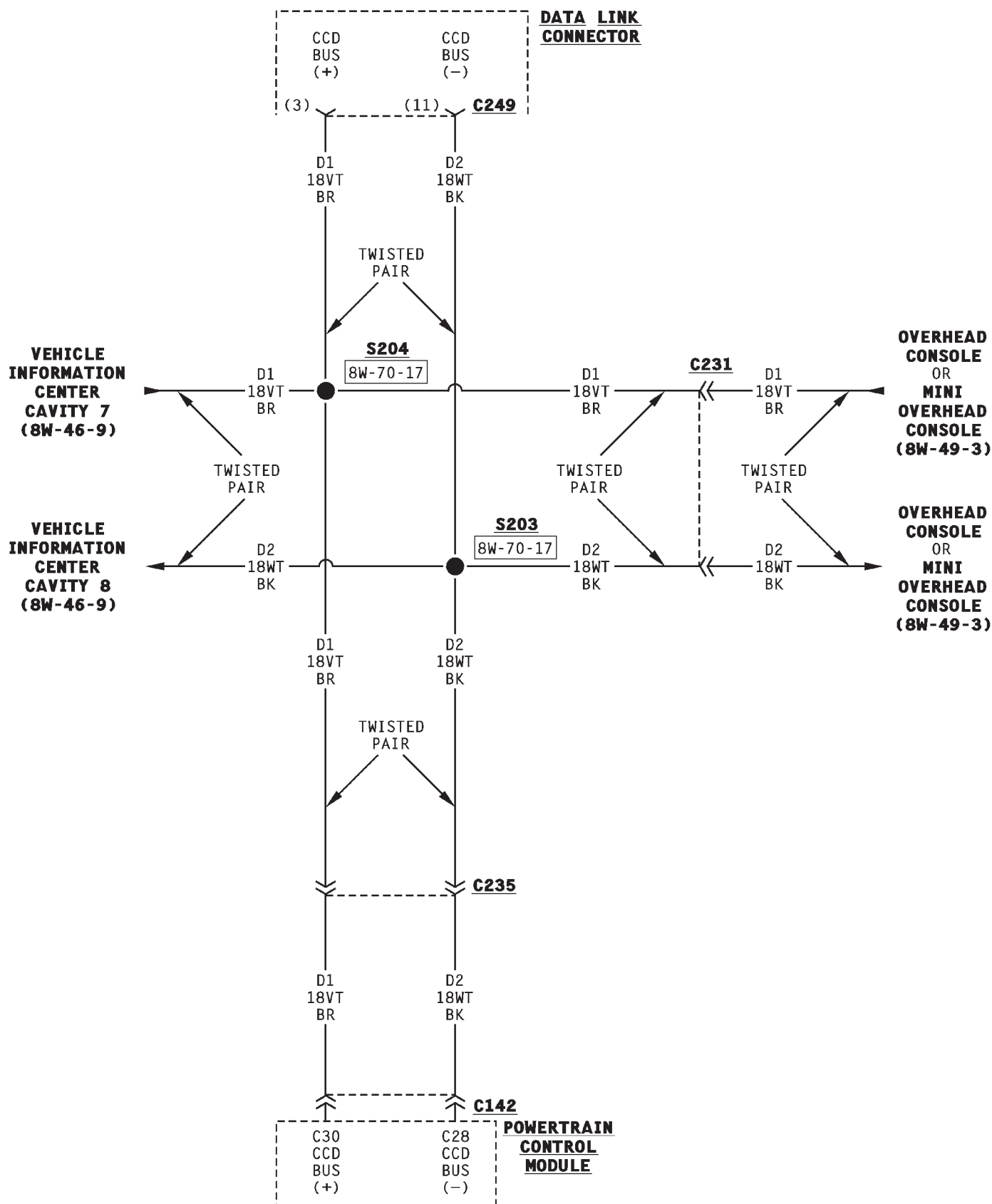


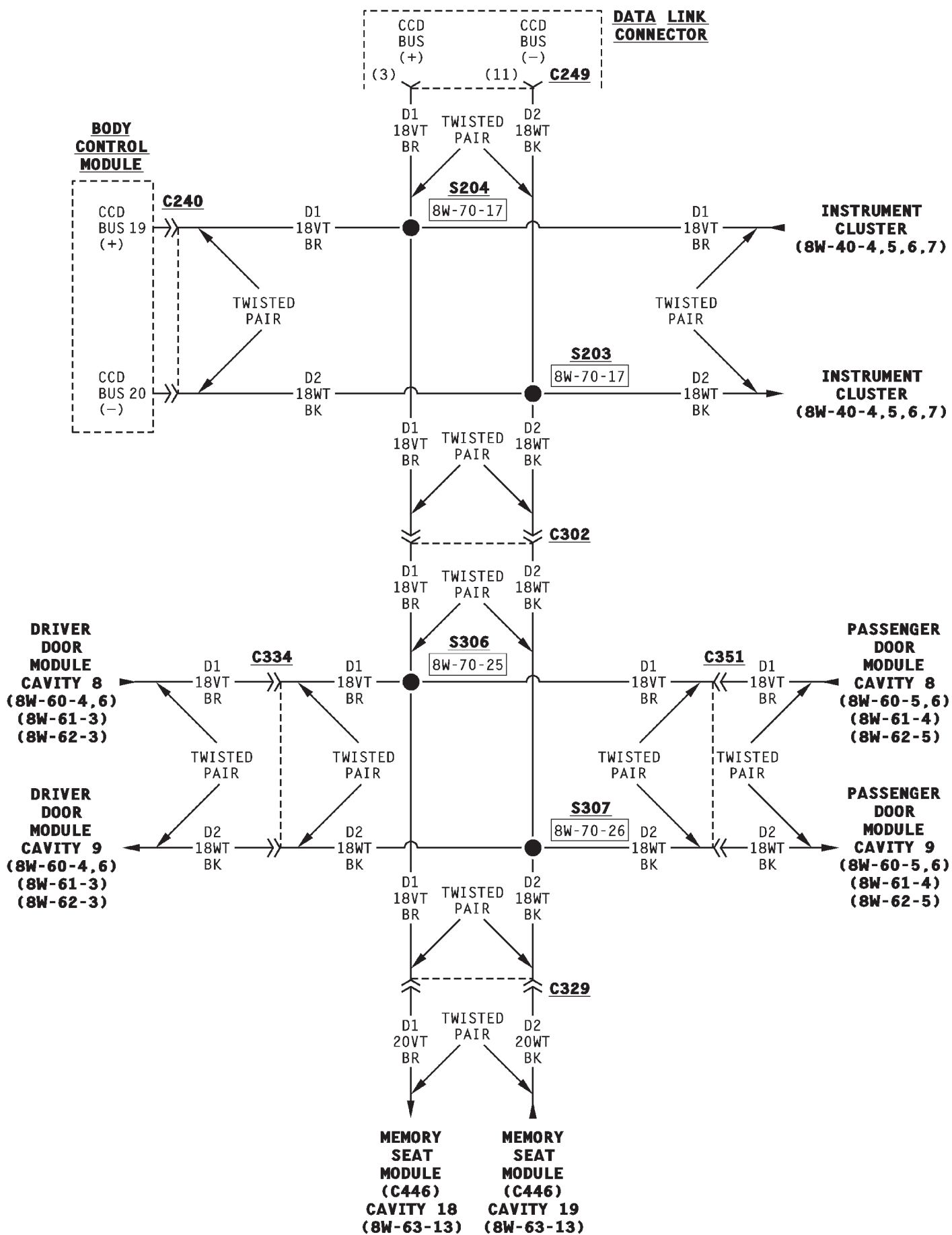


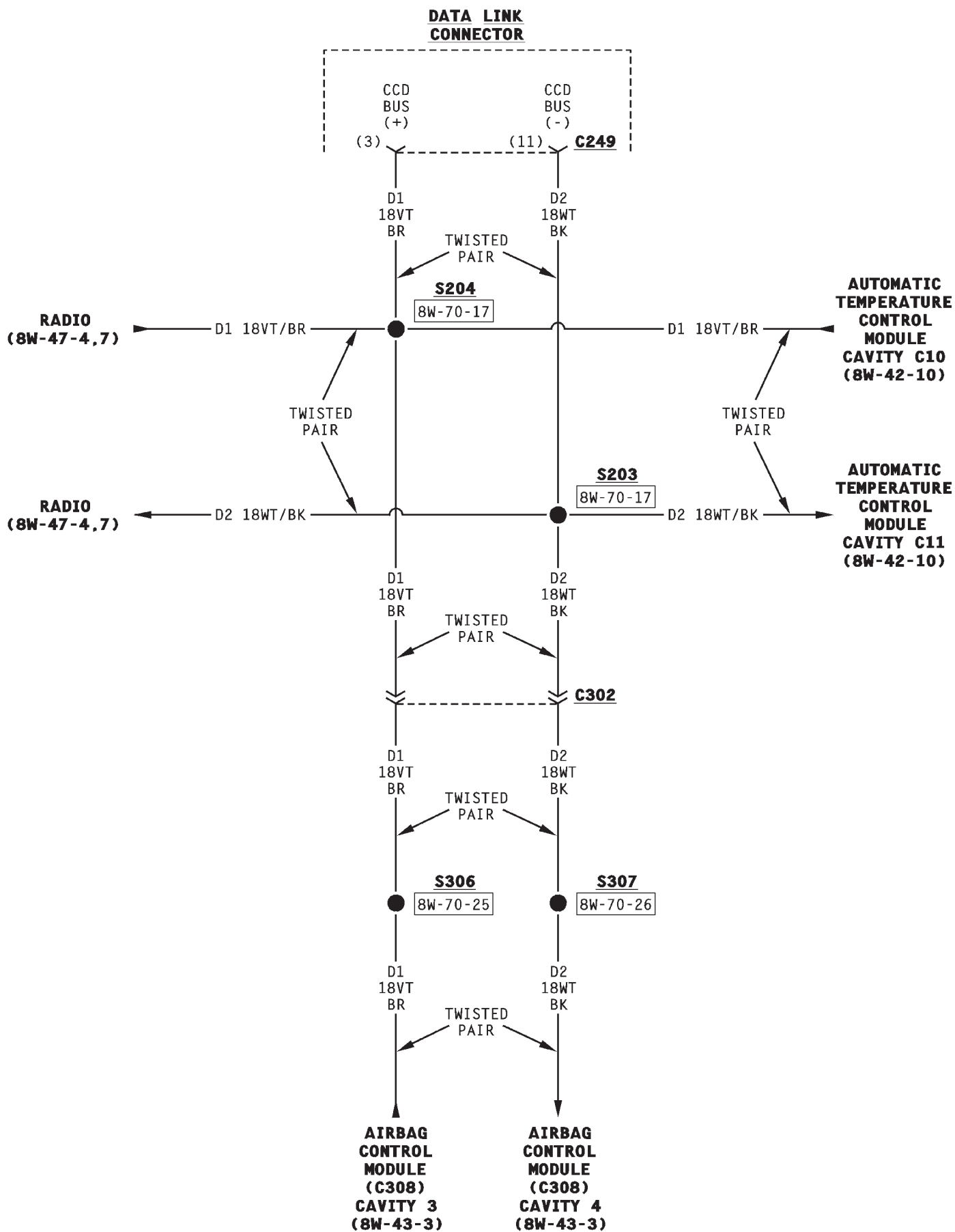


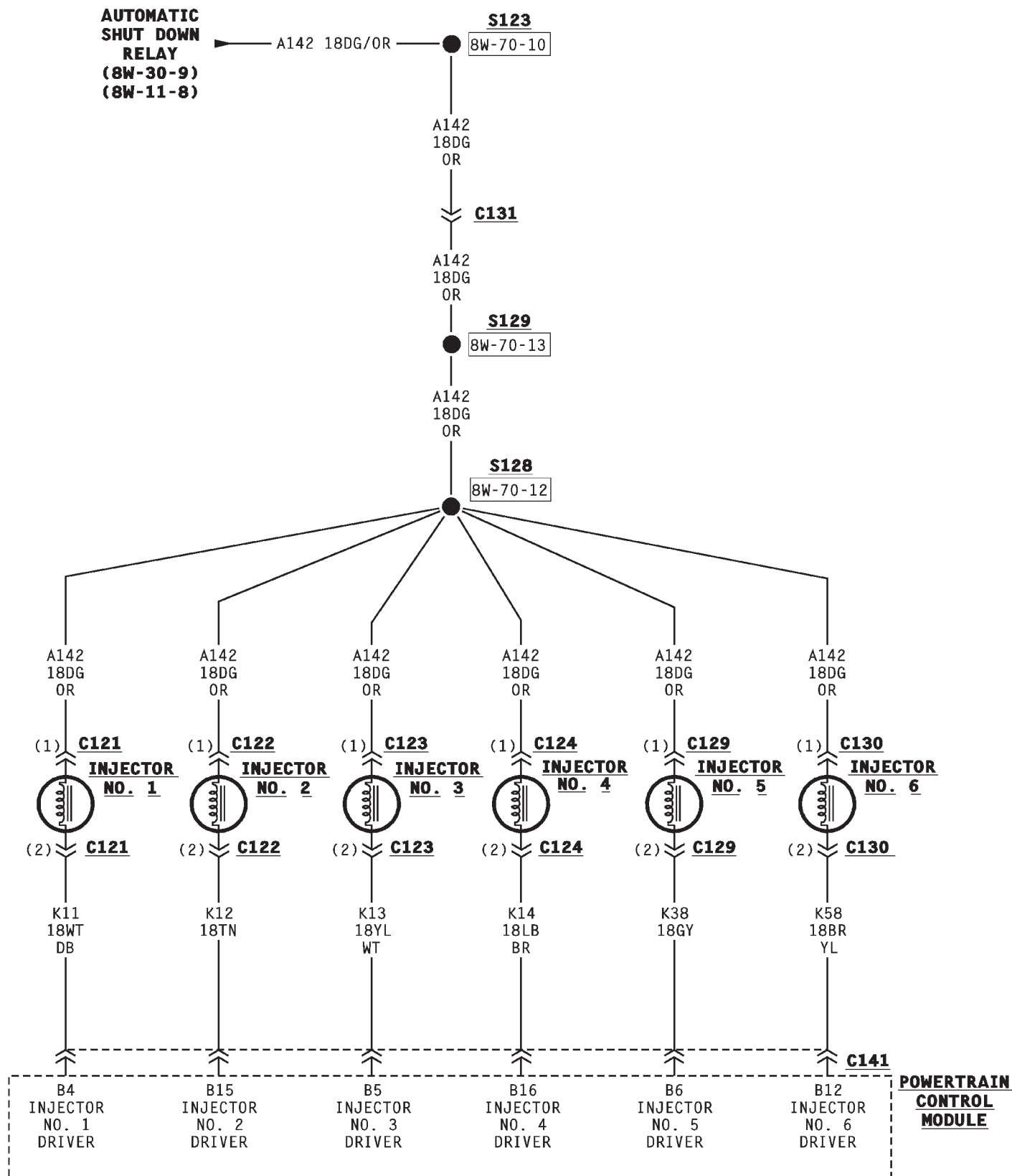


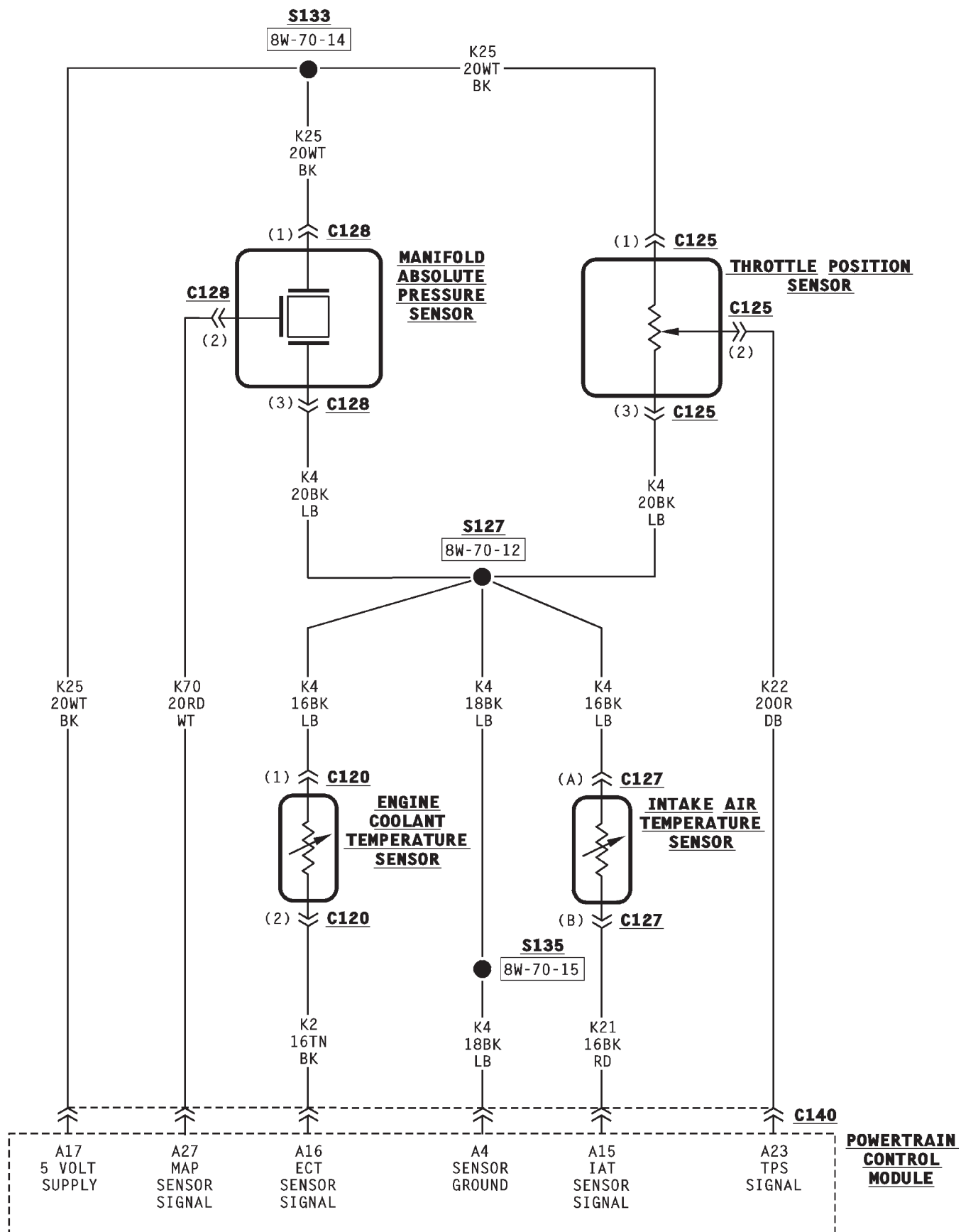


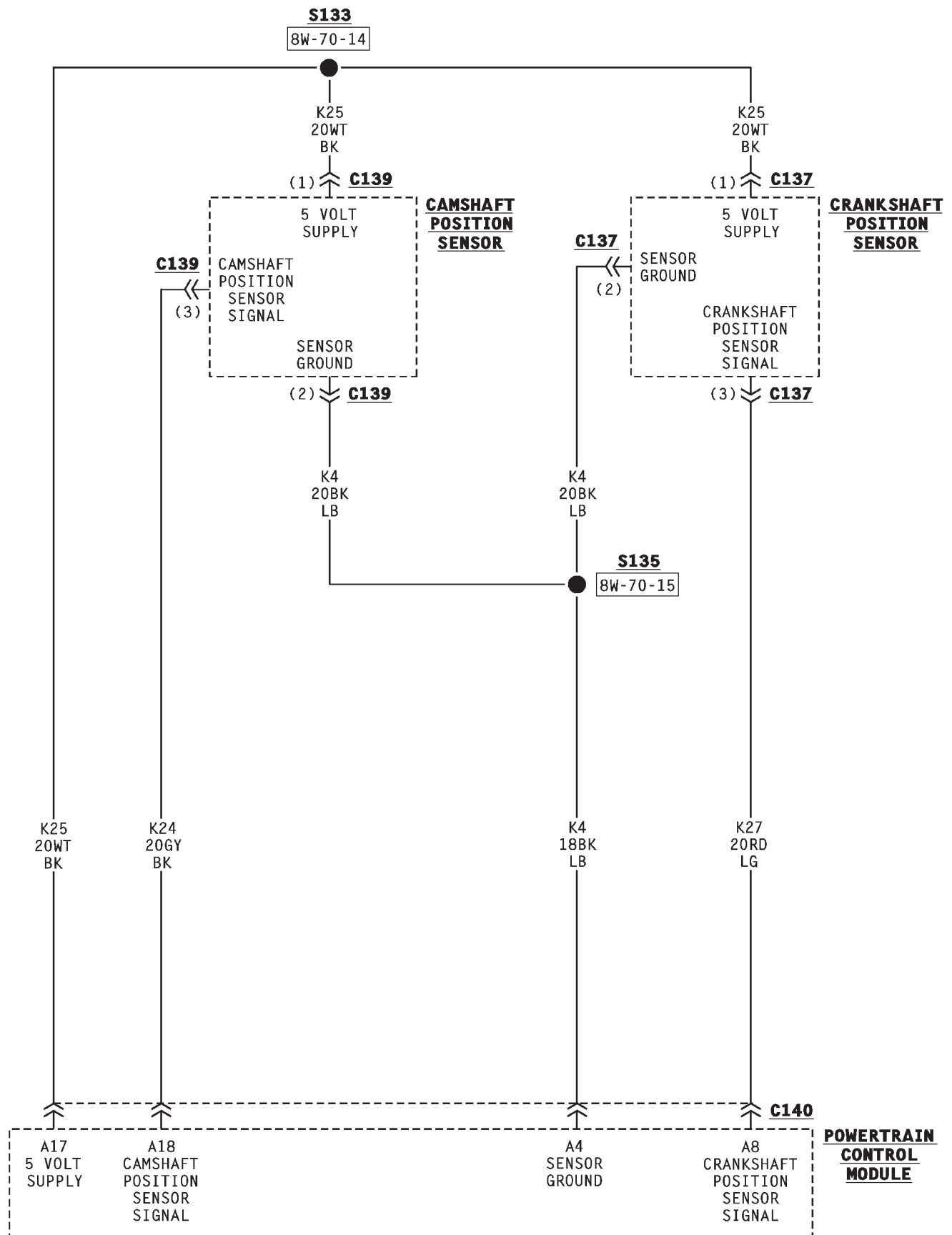


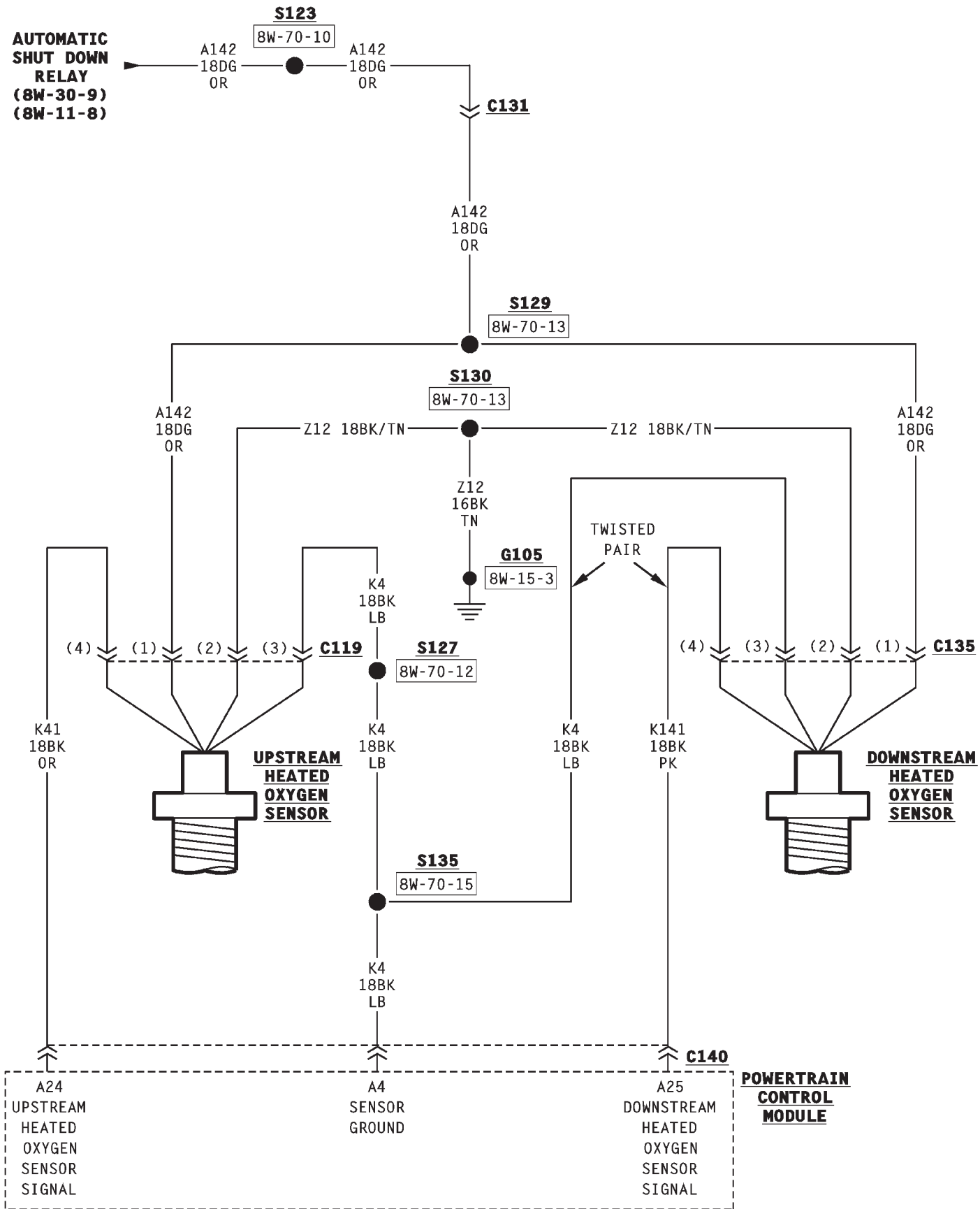


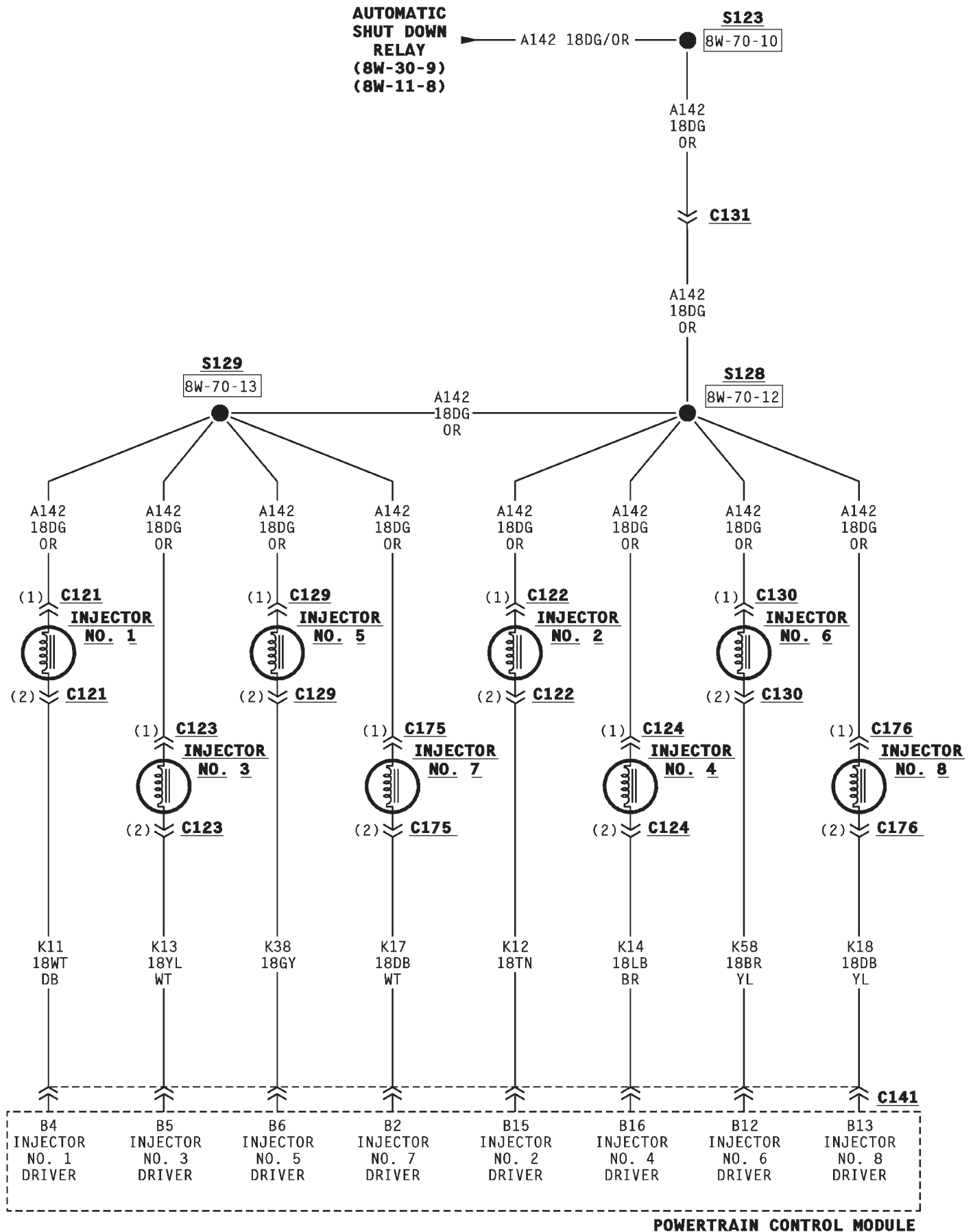


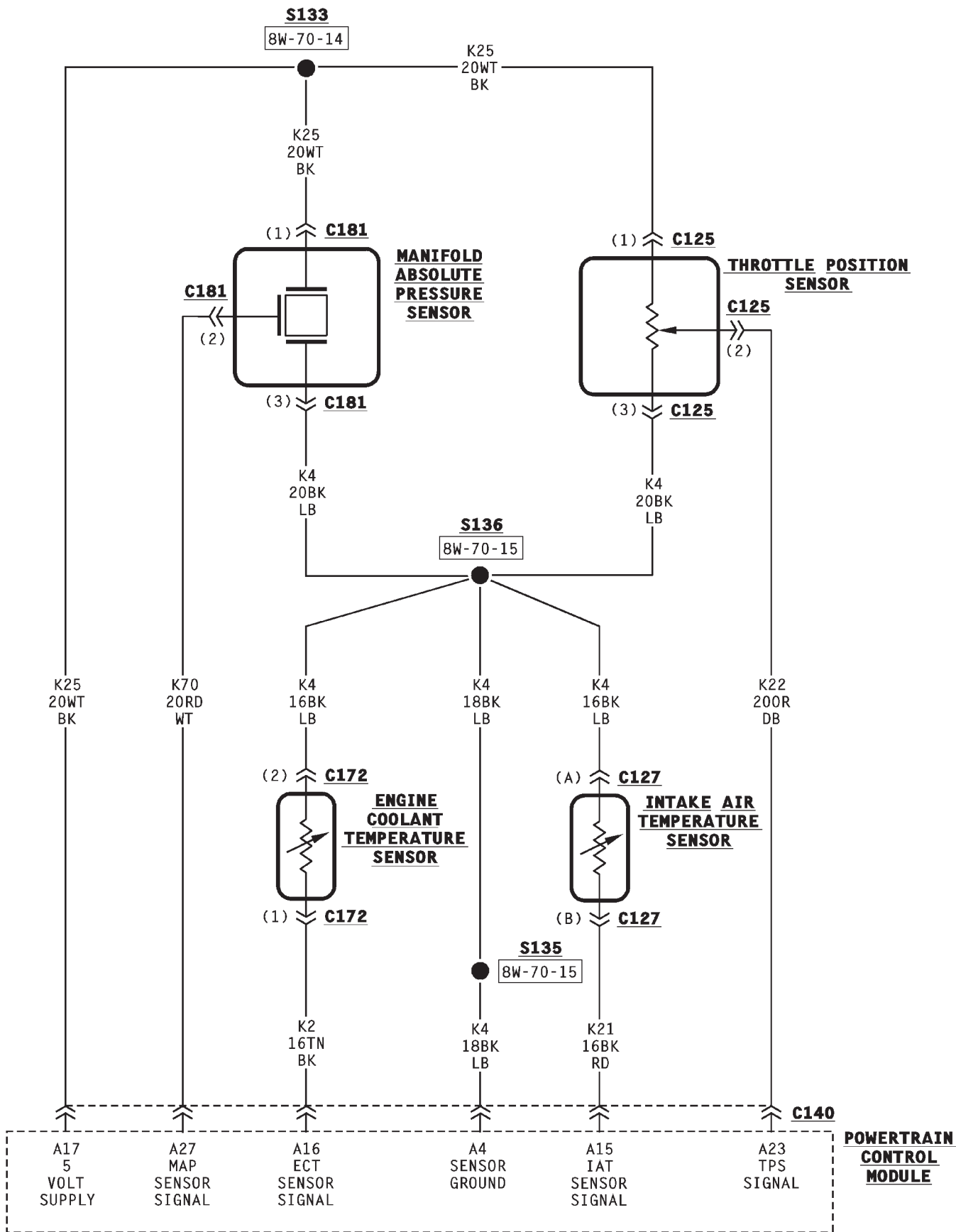


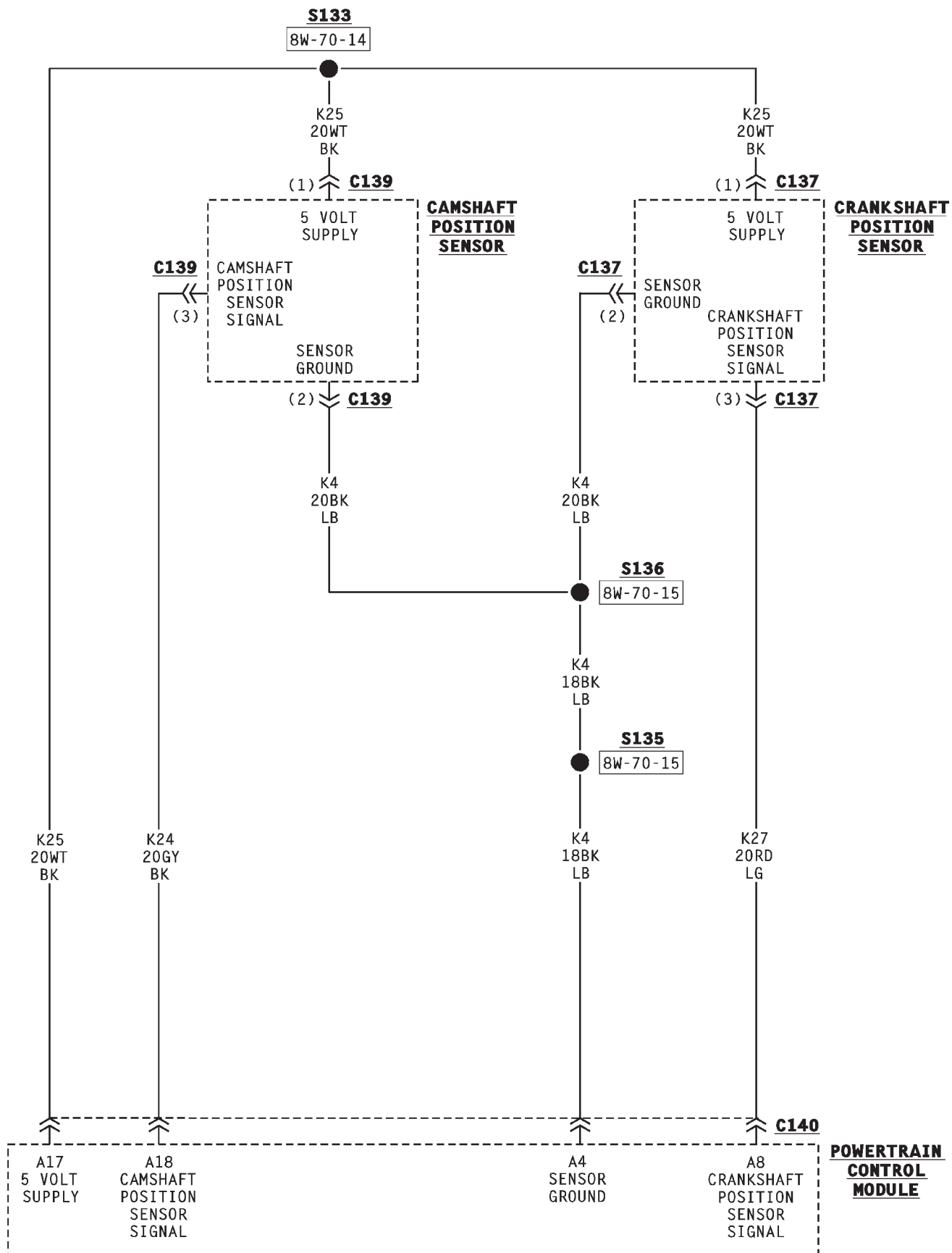


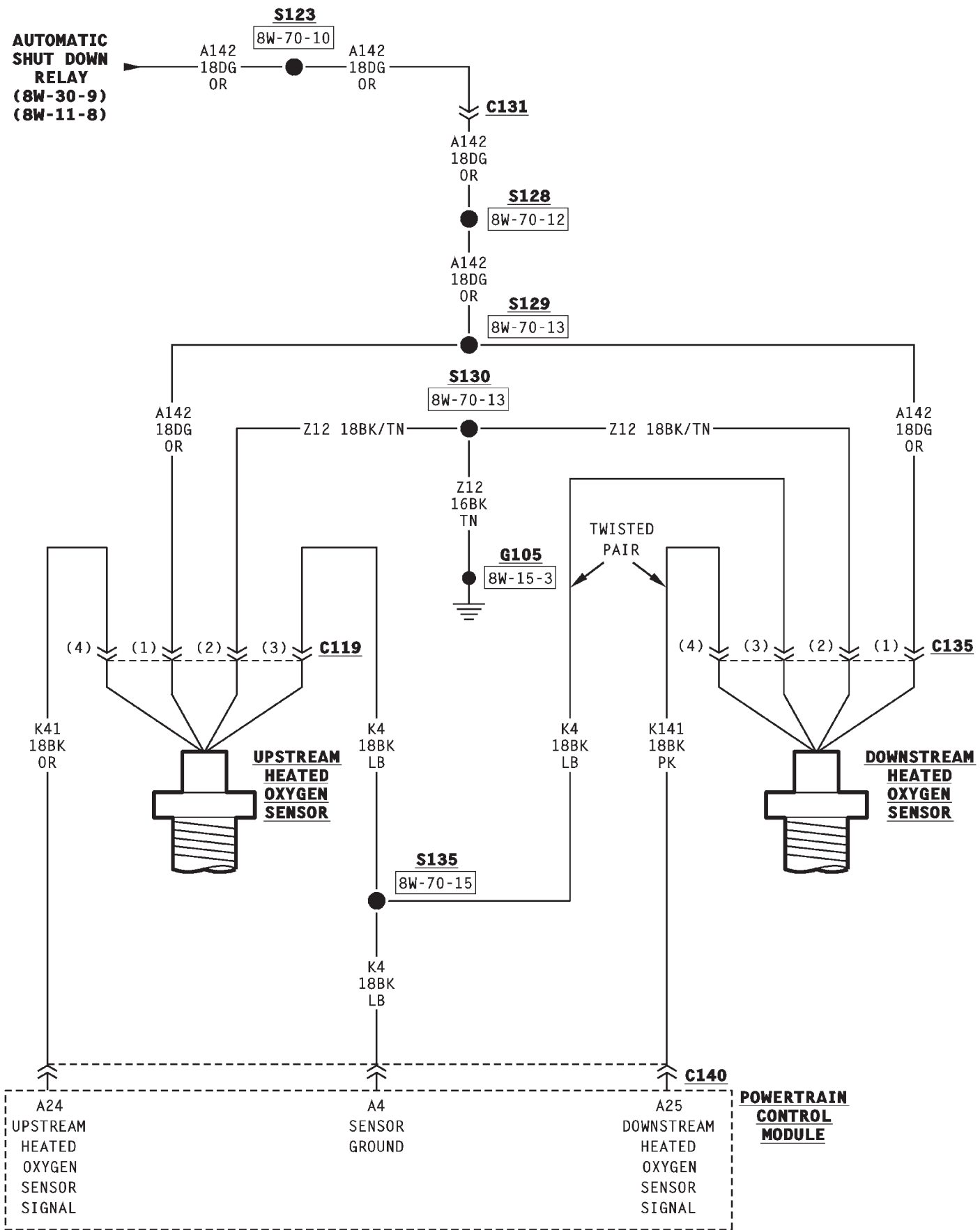












8W-31 TRANSMISSION CONTROL SYSTEM

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DESCRIPTION AND OPERATION		TRANSMISSION CONTROL RELAY	1
GOVERNOR PRESSURE SENSOR	1	TRANSMISSION SOLENOID ASSEMBLY	1
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OVERDRIVE SWITCH	1	SCHEMATICS AND DIAGRAMS	
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DESCRIPTION AND OPERATION

OVERDRIVE SWITCH

Automatic transmission equipped vehicles have an overdrive switch. The operator disables or enables overdrive when the switch is depressed.

The overdrive system consists of a switch connected to the Powertrain Control Module (PCM) and a Light Emitting Diode (LED) which illuminates for the overdrive ON/OFF indicator.

If overdrive is currently enabled, it is disabled when the operator depresses the overdrive switch. Also, if the operator already disabled overdrive, it is enabled when the switch is depressed.

Circuit T9 from the overdrive switch connects to cavity C13 of the PCM and provides the overdrive signal. Circuit Z1 provides ground for the switch.

In the RUN position, the ignition switch connects circuit A1 from fuse 8 in the Power Distribution Center (PDC) with circuit A22. Circuit A22 powers circuit F71 through fuse 12 in the junction block. Circuit F71 supplies power for the overdrive ON/OFF indicator LED. The PCM turns the overdrive ON/OFF indicator ON or OFF by providing ground on circuit G68. Circuit G68 connects to cavity C6 of the PCM.

TRANSMISSION CONTROL RELAY

The transmission control relay powers the overdrive solenoid, torque convertor clutch solenoid, and variable force solenoid. All three solenoids are molded together.

When the ignition switch is in the START or RUN positions, it connects circuit A1 from fuse 8 in the Power Distribution Center (PDC) to circuit A21. Circuit A21 powers circuit F99 through fuse 18 in the PDC. Circuit F99 powers the coil side of the electronic transmission relay. The Powertrain Control Module (PCM) provides ground for the relay on circuit T66. Circuit T66 connects to cavity B30 of the PCM.

When the PCM grounds the relay, the relay contacts connect circuit F92 from fuse 17 in the PDC to circuit T20. Circuit T20 powers the solenoids.

TRANSMISSION SOLENOID ASSEMBLY

The Torque Converter Clutch (TCC) solenoid, overdrive solenoid and variable force solenoid are molded together. Circuit T20 from the electronic transmission relay supplies power for the solenoids. The Powertrain Control Module (PCM) operates each solenoid individually by providing ground for each solenoid on separate circuits.

- The PCM provides ground for the TCC solenoid on circuit T22. Circuit T22 connects to cavity B11 of the PCM.

- The PCM supplies ground for the overdrive solenoid on circuit T60. Circuit T60 connects to cavity B21 of the PCM.

- On circuit T59, the PCM provides ground for the variable force solenoid. Circuit T59 connects to cavity B8 of the PCM.

SHIFT INTERLOCK

The shift interlock prevents the operator from shifting the vehicle out of PARK unless the brake pedal is pressed. When the ignition switch is in the START or RUN position, circuit A21 feeds circuit F87 through fuse 5 in the junction block. Circuit F87 splices to power the shift interlock.

When the brake pedal is not depressed, the stop lamp switch provides ground for interlock by connecting circuit L53 to ground. When grounded, the interlock prevents shifting the transmission out of PARK. When the brake pedal is pressed, the stop lamp switch disconnects circuit L53 from ground.

OUTPUT SHAFT SPEED SENSOR

The output shaft speed sensor generates a signal indicating the speed of the transmission output shaft. Circuits T13 and T14 connect the sensor to the Powertrain Control Module (PCM). Circuit T13 connects to cavity B25 of the PCM. Circuit T14 connects to cavity B28.

GOVERNOR PRESSURE SENSOR

The governor pressure sensor supplies the transmission pressure input to the Powertrain Control

DESCRIPTION AND OPERATION (Continued)

Module on circuit T25. Circuit T25 connects to cavity B29 of the PCM. Circuit K6 from cavity B31 of the PCM supplies 5 volts to the sensor. The PCM provides ground for the governor pressure sensor on circuit K4. Circuit K4 connects to cavity A4 of the PCM.

The governor pressure sensor is part of the transmission solenoid assembly.

TRANSMISSION TEMPERATURE SENSOR

The transmission temperature sensor is located in the transmission solenoid assembly. The Powertrain Control Module (PCM) supplies 5 volts to the sensor on circuit K6. Circuit T54 from the sensor connects to cavity B1 of the PCM and provides the transmission temperature input. The PCM provides ground for the sensor on cavity K4.

If transmission temperature exceeds a calibrated temperature, the PCM sends a signal to the Vehicle Information Center (VIC) over the CCD bus. In response, the VIC displays a message to the driver.

HELPFUL INFORMATION

Circuit K6 also supplies 5 volts to the vehicle speed sensor.

Circuit K4 also provides ground for the signals from the following:

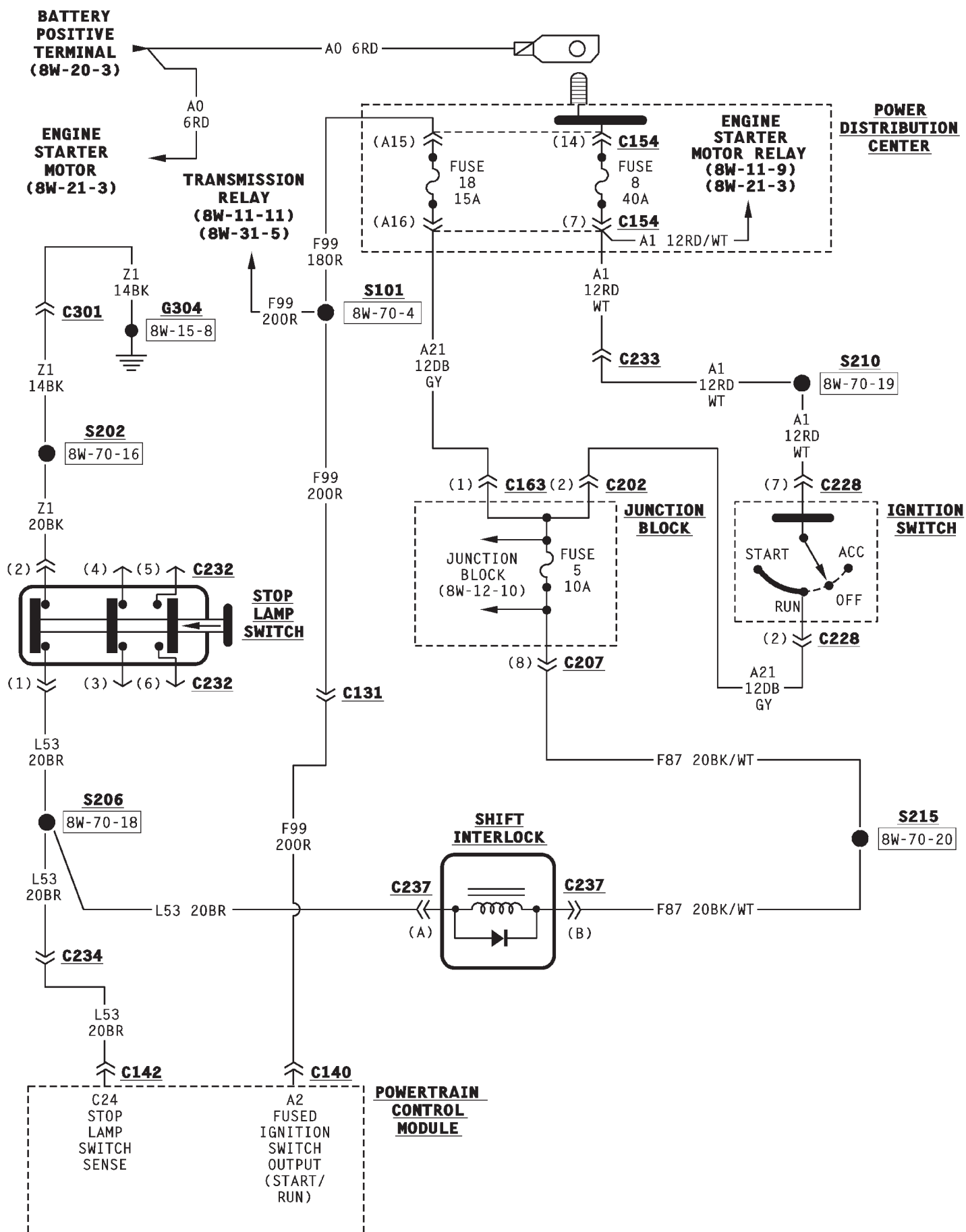
- Heated oxygen sensors
- Crankshaft position sensor
- Camshaft position sensor
- Engine coolant temperature sensor
- Intake air temperature sensor
- Throttle position sensor
- Manifold absolute pressure sensor
- Vehicle speed sensor

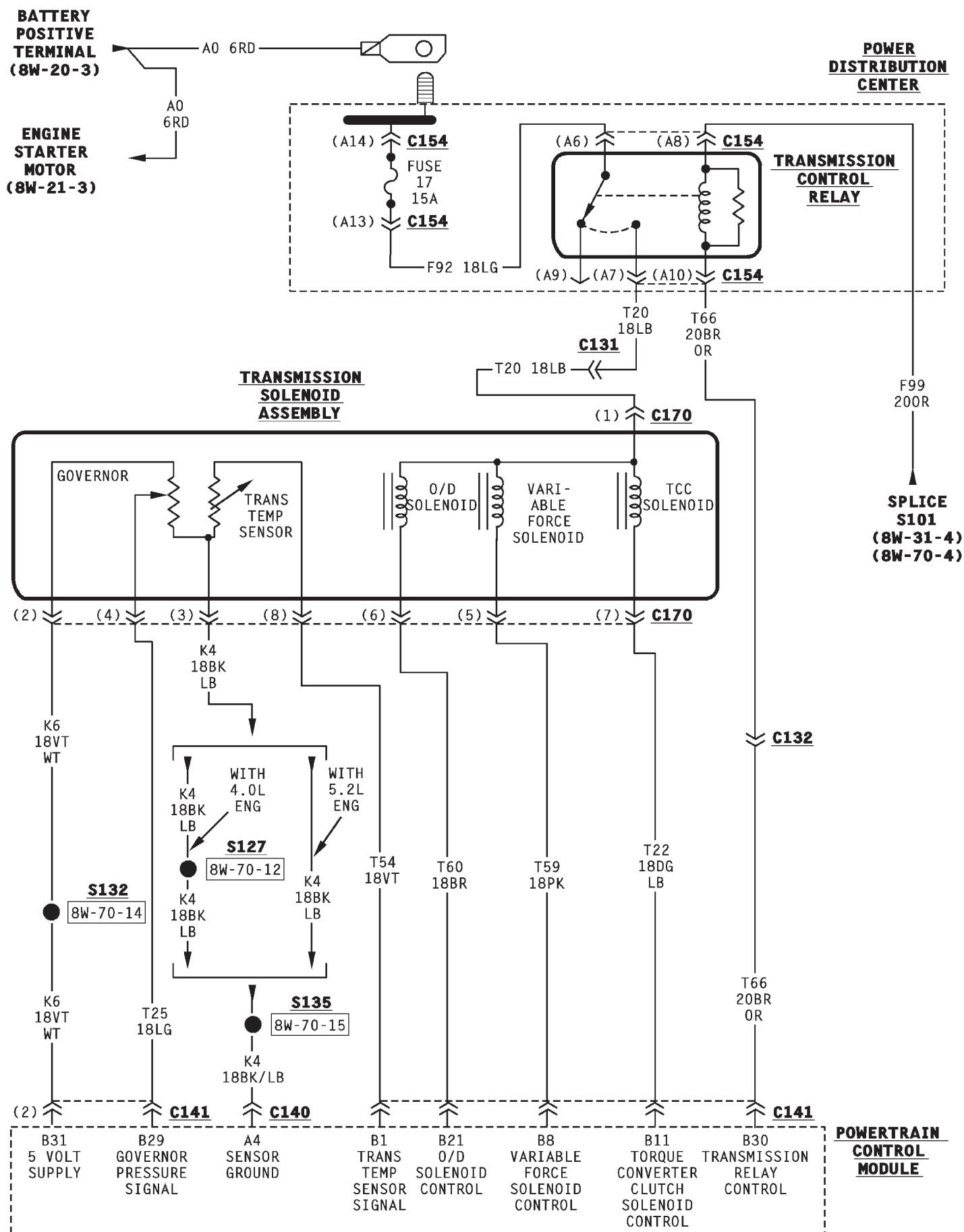
SCHEMATICS AND DIAGRAMS**WIRING DIAGRAM INDEX**

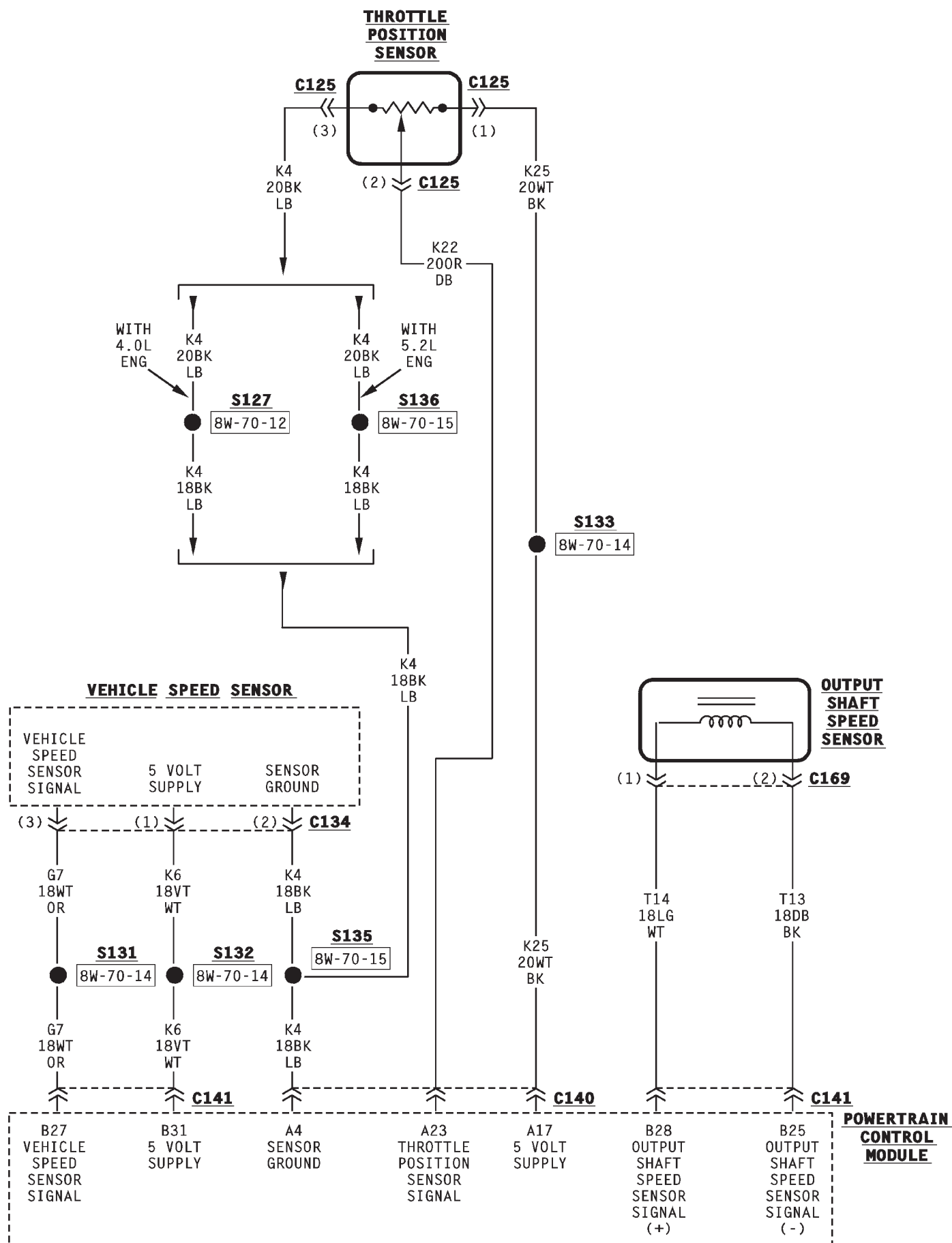
The following index covers all components found in this section of the wiring diagrams. If the component you are looking for is not found here, refer to section 8W-02 for a complete list of all components shown in the wiring diagrams.

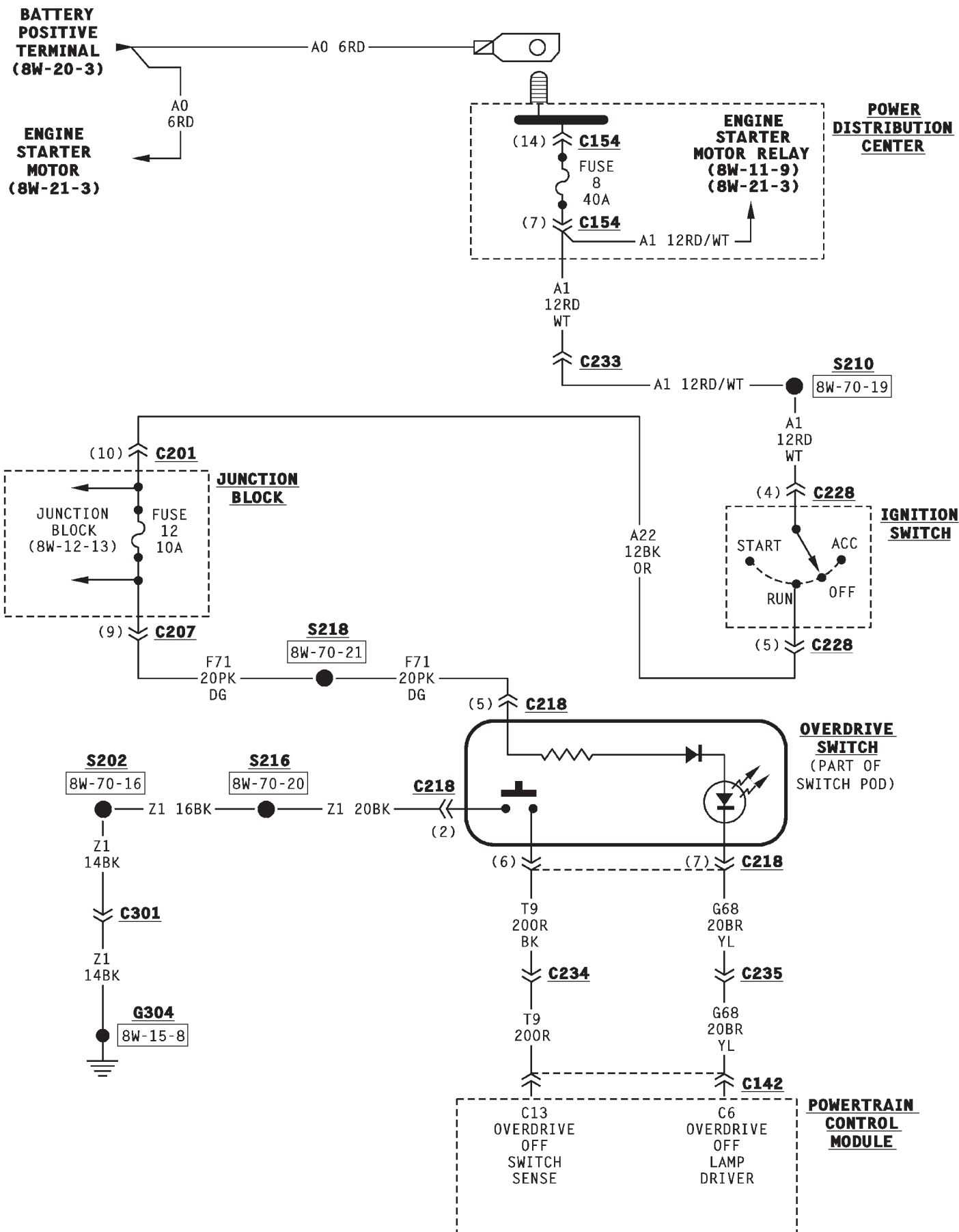
DIAGRAM INDEX

Component	Page	Component	Page
Fuse 5	8W-31-4	Powertrain Control Module	8W-31-4, 5, 6, 7
Fuse 8 (PDC)	8W-31-4, 7	Shift Interlock	8W-31-4
Fuse 12	8W-31-7	Stop Lamp Switch	8W-31-4
Fuse 17 (PDC)	8W-31-5	Throttle Position Sensor	8W-31-6
Fuse 18 (PDC)	8W-31-4	Transmission Control Relay	8W-31-5
Ignition Switch	8W-31-4, 7	Transmission Solenoid Assembly	8W-31-5
Output Shaft Speed Sensor	8W-31-6	Vehicle Speed Sensor	8W-31-6
Overdrive Switch	8W-31-7		









8W-33 VEHICLE SPEED CONTROL

DESCRIPTION AND OPERATION

VEHICLE SPEED CONTROL

The Powertrain Control Module (PCM) operates the vehicle speed control system. The vehicle speed control switches are located in the steering wheel.

Circuit V32 from cavity C11 of the PCM connects to circuit V30 through the stop lamp switch. Circuit V30 powers the vehicle speed control servo.

Circuit K95 from PCM cavity C32 connects to the vehicle speed control switches. The switches are wired in parallel and each contains a separate resistor. The voltage level present on circuit K95 (at PCM cavity C32) depends on which speed control switch is selected. Circuit K4 from PCM cavity A4 supplies ground for the speed control switches.

- When the ON/OFF switch is open, the voltage level on circuit K95 at PCM cavity C32 has a nominal value of 5.0 volts with a range from 4.8 to 5.0 volts.

- When the ON/OFF switch closes, the voltage level on circuit K95 at PCM cavity C32 has nominal value of 1.51 volts with a range from 1.31 to 1.61 volts.

- When the SET switch closes, the voltage level on circuit K95 at PCM cavity C32 has nominal value of 3.8 volts with a range from 3.6 to 3.9 volts.

- When the RESUME/ACCEL switch closes, the voltage level on circuit K95 at PCM cavity C32 has nominal value of 4.4 volts with a range from 4.2 to 4.5 volts.

- When the COAST switch closes, the voltage level on circuit K95 at PCM cavity C32 has nominal value of 2.92 volts with a range from 2.72 to 3.02 volts.

- When the CANCEL switch closes, the voltage level on circuit K95 at PCM cavity C32 has is 0.1 volts or less.

The PCM controls the vent and vacuum functions of the vehicle speed control servo on circuits V35 and V36. Depending on the signal it receives from vehicle speed control switches, the PCM either applies vacuum to or vents vacuum from the servo. Circuit V36 from cavity C4 of the PCM sends the vacuum signal to the servo. Circuit V35 from cavity C5 sends the vent signal.

Circuit L53 provides the stop lamp switch sense input to the PCM at cavity C24. The stop lamp switch connects circuit L53 to ground on circuit Z1. When the brake pedal is depressed, the stop lamp switch opens and disconnects circuits L53 and Z1, and circuits V32 and V30. When the stop lamp switch disconnects circuits V32 and V30, power is removed from the speed control servo.

HELPFUL INFORMATION

Circuit K4 also provides ground for some of the engine control sensors that provide inputs to the PCM.

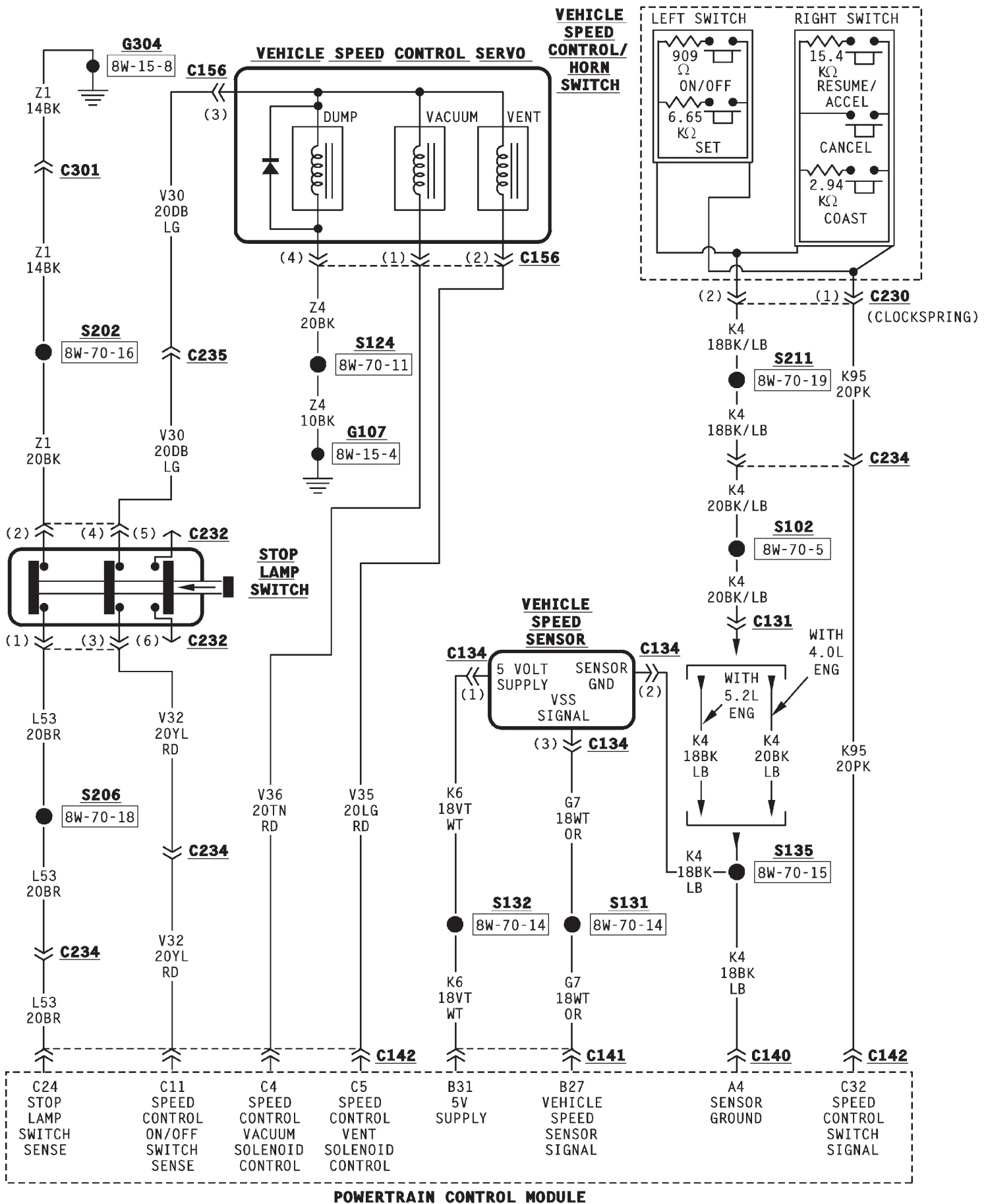
SCHEMATICS AND DIAGRAMS

WIRING DIAGRAM INDEX

The following index covers all components found in this section of the wiring diagrams. If the component you are looking for is not found here, refer to section 8W-02 for a complete list of all components shown in the wiring diagrams.

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Component	Page	Component	Page
Powertrain Control Module	8W-33-3	Vehicle Speed Control Servo	8W-33-3
Stop Lamp Switch	8W-33-3	Vehicle Speed Sensor	8W-33-3
Vehicle Speed Control/Horn Switch	8W-33-3		



8W-35 ALL-WHEEL ANTI-LOCK BRAKES

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ABS WARNING LAMP	2	WHEEL SPEED SENSORS	1
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G-SWITCH	1	WIRING DIAGRAM INDEX	2

DESCRIPTION AND OPERATION

INTRODUCTION

Several fuses supply power for the Anti-Lock Brake System (ABS); fuses 5, 8, 11 and 14 in the Power Distribution Center (PDC) and fuses 5, 9, 11 in the junction block. Fuses 5, 8, 11 and 14 in the PDC are connected directly to battery voltage and are HOT all times. Fuse 5 in the junction block is HOT when the ignition switch is the START or RUN position. Fuse 11 in the junction block is HOT when the ignition switch is in the RUN position. Fuse 9 in the junction block is HOT at all times.

In the RUN position, the ignition switch connects circuit A1 from fuse 8 in the PDC with circuit A22. Circuit A22 feeds circuit F12 through fuse 11 in the junction block. Circuit F12 connects to the coil side of the ABS main relay and the Controller, Anti-Lock Brakes (CAB).

Circuit Z2 provides ground for the CAB. Circuit Z2 connects to cavities 14 and 13 of the CAB.

Refer to group 5, Brakes for operational descriptions of ABS system components.

WHEEL SPEED SENSORS

The all wheel anti-lock system uses four wheel speed sensors; one for each wheel. Each sensor converts wheel speed into an electrical signal that it transmits to the Controller, Anti-Lock Brakes (CAB). A pair of twisted wires connect to each sensor to provide signals to the CAB.

Circuits B6 and B7 provide signals to the CAB from the right front wheel speed sensor. Circuit B6 which provides the LOW signal connects to cavity 2 of the CAB. Circuit B7 connects to cavity 1 of the CAB and provides the HIGH signal.

Circuits B8 and B9 provide signals to the CAB from the left front wheel speed sensor. Circuit B8, which provides the HIGH signal, connects to cavity 10 of the CAB. Circuit B9 connects to cavity 9 of the CAB and provides the LOW signal.

Circuits B1 and B2 provide signals to the CAB from right rear wheel speed sensor. Circuit B1 which provides the LOW signal connects to cavity A11 of the CAB. Circuit B2 connects to cavity A12 and provides the HIGH signal.

Circuits B4 and B3 provide signals to the CAB from the left rear wheel speed sensor. Circuit B3, which provides the LOW signal, connects to cavity A9 of the CAB. Circuit B4 connects to cavity A10 and provides the HIGH signal.

G-SWITCH

During four-wheel drive operation, the G-switch provides deceleration data to the Controller, Anti-Lock Brakes (CAB). Refer to Group 5, Brakes for additional information.

Circuits B41, B42, and B43 connect the G-switch to the CAB. Circuits B41 and B42 provide switch states while circuit B43 provides ground. At the CAB, circuit B41 connects to cavity A6, circuit B42 connects to cavity A7 and circuit B43 connects to cavity A2.

ABS MAIN RELAY

The ABS main relay is located in the Power Distribution Center (PDC). When the Controller, Anti-Lock Brakes (CAB) grounds the ABS main relay coil on circuit B58, the relay switches to connect circuit A20 from PDC fuse 14 to circuit B47. Circuit F12 from fuse 11 in the junction block splices to feed the coil side of the ABS main relay. Circuit B58 connects to cavity 11 of the CAB.

Circuit B47 splices to power to the coil side of the ABS pump motor relay. Other branches of circuit B47 connects to cavity 5 of the CAB and to the hydraulic control unit.

ABS PUMP MOTOR RELAY

The ABS pump motor relay in the power distribution center (PDC) supplies voltage to the ABS pump motor. When the ABS main relay energizes, circuit B47 supplies battery voltage to the coil side of the ABS pump motor relay. The Controller, Anti-Lock

DESCRIPTION AND OPERATION (Continued)

Brakes (CAB) provides ground for the relay on circuit B116. Circuit B116 connects to cavity 7 of the CAB.

When the ABS pump motor energizes, it connects circuit A10 from PDC fuse 5 to circuit B82. Circuit B82 supplies battery voltage to the pump motor. Circuit Z2 provides ground for the pump motor.

HYDRAULIC CONTROL UNIT

When the ABS main relay energizes, two branches of circuit B47 splice to supply voltage to the isolation and dump solenoids in the hydraulic control unit. The hydraulic control unit contains three separate inlet valves and three separate outlet valves. The Controller, Anti-Lock Brakes (CAB) activates the inlet and outlet valves by providing separate ground paths for each.

The CAB provides a ground path for the rear inlet valve on circuit B251. Circuit B251 connects to cavity 4 of the CAB.

For the right front inlet valve, the CAB provides a ground path on circuit B249. Circuit B249 connects to cavity 15 of the CAB.

On circuit B245, the CAB provides ground for the left front inlet valve. Circuit B245 connects to cavity 18 of the CAB.

The CAB provides a ground path for the rear outlet valve on circuit B254. Circuit B254 connects to cavity 12 of the CAB.

For the right front outlet valve, the CAB provides a ground path on circuit B248. Circuit B248 connects to cavity 6 of the CAB.

On circuit B243, the CAB provides ground for the left outlet valve. Circuit B243 connects to cavity 8 of the CAB.

ABS WARNING LAMP

Circuit F87 from fuse 5 in the junction block provides power for the ABS warning lamp in the instrument cluster. Ground for the ABS warning lamp is provided by either the Controller, Anti-Lock Brakes (CAB) or by the ABS main relay when the relay is not energized. The CAB illuminates the lamp by providing ground on circuit B205.

Circuit B205 splices to connect to circuit B47 through a diode. When the ABS main relay is not

energized, it connects circuit B47 to ground on circuit Z4. The ground path for the warning lamp is through the diode to circuit B47, through the ABS main relay to ground on circuit Z4.

The diode between circuit B205 and B47 prevents voltage from flowing to the CAB when the ABS main relay switches to supply power on circuit B47.

HELPFUL INFORMATION

When the ignition switch is in the START or RUN position, it connects circuit A1 from fuse 8 in the Power Distribution Center (PDC) to circuit A21. Circuit A21 powers circuit F87 through fuse 5 in the junction block.

STOP LAMP SWITCH INPUT

Circuit L50 from the stop lamp switch provides the brake switch input to the Controller, Anti-Lock Brakes (CAB). When the brake pedal is depressed, the stop lamp switch closes to supply battery voltage from circuit L16 to circuit L50. Circuit L50 connects to cavity A8 of the CAB. Circuit L16 originates at fuse 9 in the junction block. Circuit A250 from fuse 11 in the Power Distribution Center (PDC) supplies power to junction block fuse 9.

DATA LINK CONNECTOR

Circuit D83 from cavity A3 of the Controller, Anti-Lock Brakes (CAB) transmits data to the DRB scan tool through the data link connector. Through the data link connector, circuits Z1 and Z1 provide ground for the DRB scan tool.

Circuit F75 supplies battery voltage to the scan tool through the diagnostic connector.

SCHEMATICS AND DIAGRAMS**WIRING DIAGRAM INDEX**

The following index covers all components found in this section of the wiring diagrams. If the component you are looking for is not found here, refer to section 8W-02 for a complete list of all components shown in the wiring diagrams.

DIAGRAM INDEX

Component	Page	Component	Page
ABS Diode	8W-35-4	Fuse 11 (PDC)	8W-35-4
ABS Main Relay	8W-35-5	Fuse 14 (PDC)	8W-35-5
ABS Pump Motor	8W-35-6	G Switch	8W-35-6
ABS Pump Motor Relay	8W-35-6	Hydraulic Control Unit	8W-35-7
Controller Anti-Lock Brake	8W-35-4 thru 8	Ignition Switch	8W-35-4, 5
Data Link Connector	8W-35-6	Instrument Cluster	8W-35-4
Fuse 5	8W-35-4	Left Front Wheel Speed Sensor	8W-35-8
Fuse 5 (PDC)	8W-35-6	Left Rear Wheel Speed Sensor	8W-35-8
Fuse 8 (PDC)	8W-35-4, 5	Right Front Wheel Speed Sensor	8W-35-8
Fuse 9	8W-35-4	Right Rear Wheel Speed Sensor	8W-35-8
Fuse 11	8W-35-5	Stop Lamp Switch	8W-35-4

