Ford Motor Company

2001 Wiring Diagrams

DEMO

This DEMO contains only a few pages of the entire manual/product.

Not all Bookmarks work on the Demo, but they do on the full version.

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F-150

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Note from the Publisher

This product was created from the original Ford Motor Company's publication. Every effort has been made to use the original scanned images, however, due to the condition of the material; some pages have been modified to remove imperfections.

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WIRING DIAGRAMS
FCS-12263-01

FORD CUSTOMER SERVICE DIVISION

Quality is Job 1

Ford Customer Service Division has developed a new format for the 2001 F-150 Wiring Diagrams. Our goal is to provide accurate and timely electrical information.

2001 Wiring Diagrams Features

- Schematic pages now contain **Component Location** references to full-view illustrations and **Component Descriptions** that describe the system function of a component.
- **"COMPONENT TESTING"** procedures (CELL 149) that tell the user how to perform diagnostic tests on various circuits.
- **Connector End Views** are now located at the end of individual cells and are shown for connectors with five or more cavities; a circuit function chart is provided.
- **NOTES, CAUTIONS and WARNINGS** contain important safety information.
- Full view **"COMPONENT LOCATION VIEWS"** (CELL 151) to help locate on-vehicle components.
- Circuit voltages have been added to schematic pages to help simplify troubleshooting. Nonessential troubleshooting hints have been deleted.
- **Cellular Pagination:** A specific section (or cell) in all Wiring Diagrams is numbered by cell and starts with page 1. For example: **"HOW TO USE THIS MANUAL"** is CELL 2 and begins with page 2-1.
- **"IN-LINE CONNECTOR FACES"** (CELL 150) has been added for in-line connectors with six or more terminals, to aid in servicing electrical wiring.
- "C" numbers have been assigned for all electrical connectors. "C" numbers are listed in the **"LOCATION INDEX"** (CELL 152).
- **"HARNESS CAUSAL PART NUMBERS"** (CELL 153) has been added to aid in identifying warranty concerns.
- **In-line connector numbers** contain a suffix to denote connector "gender" type (F-socket, M-prior blade).

NOTE: The descriptions and specifications contained in this manual were in effect at the time this manual was approved for printing. Ford Motor Company reserves the right to discontinue models at any time, or change specifications or design without notice and without incurring any obligation.

ORDERING INFORMATION

To obtain information about ordering additional copies of this publication or to order any other Ford or Lincoln/Mercury publications, call 1-800-782-4356. Available publications include workshop manuals, wiring diagrams, PC/ED Manuals and Owner Guides.

In addition, you can obtain a publications order form by writing to: Ford Publications, care of Helm Inc., P.O. Box 07150, Detroit, MI 48207.

1-1 TABLE OF CONTENTS/INDEX

Table of Contents

Index

IMPORTANT SAFETY NOTICE

Appropriate service methods and proper repair procedures are essential for the safe, reliable operation of all motor vehicles, as well as the personal safety of the individual doing the work. This Manual provides general directions for accomplishing service and repair work with tested, effective techniques. Following them will help to assure reliability.

There are numerous variations in procedures, techniques, tools, and parts for servicing vehicles, as well as in the skill of the individual doing the work. This Manual cannot possibly anticipate all such variations and provide advice or cautions as to each. Accordingly, anyone who departs from the instructions provided in this Manual must first establish that the choice of methods, tools or parts does not compromise personal safety or the vehicle integrity.

2-1 HOW TO USE THIS MANUAL

The purpose of this manual is to show electrical circuits in a clear and simple fashion to make troubleshooting easier. **NOTES, CAUTIONS** and **WARNINGS** contain important information.

- **NOTES** describe how switches and other components operate to help complete a particular procedure.
- **CAUTIONS** provide information that could prevent making an error that may damage the vehicle.
- **WARNINGS** provide information to prevent personal injury.

The **WARNINGS** list on page 2-2 contains general warnings to follow when servicing a vehicle.

Components that work together are shown together. All electrical components used in a specific system are shown on one diagram. The circuit breaker or fuse is shown at the top of the page. All wires, connectors, components and splices are shown in the flow of current to ground at the bottom of the page. If a component is used in several different systems, it is shown in several places. For example, the Main Light Switch is electrically a part of many systems and is repeated on many pages.

In some cases, a component may seem (by its name) to belong to a system where it has no electrical connection. For example, Radio Illumination is electrically part of Instrument Illumination, but because it has no electrical connection to the Radio system, it is not shown on the Radio diagram.

Schematic pages contain references to full-view illustrations and description notes for various components. The references are reverse-text blocks located next to each component and connector and refer the user to the appropriate illustration page and zone. The description notes describe the operation of the component.

Schematic pages contain circuit voltages to help simplify troubleshooting hints. 12V is used to imply battery voltage on a component connector terminal, and 0V is used to show that there should be continuity to ground on that particular terminal. Conditional voltages such as "12V with the ignition switch in RUN" will also be provided. Troubleshooting hints that can't be simplified with circuit voltages will be shown at the end of each cell.

Component connector face information specific to a certain cell is found at the end of that cell. A Connector Face Reference List is provided to locate connector faces that are shown in different cells. Component connectors with five or more terminals are illustrated and are accompanied by a pinout chart that lists the function of all circuitry associated with that component.

"GROUNDS" (Cell 10) contains ground circuitry shown in complete detail. This information is useful for checking interconnections of the ground circuits of different systems.

"POWER DISTRIBUTION" (Cell 13) contains power distribution circuitry shown in complete detail. This section displays how the various fuses are powered and, in tum, how each system is powered.

"COMPONENT TESTING" (Cell 149) contains testing procedures for various switches. This information includes schematics, component terminal locations and step-by-step procedures.

"IN-LINE CONNECTOR FACES" (Cell 150) contains illustrations of all the in-line connectors that have 6 or more terminals. The terminals have pin numbers assigned to them.

"COMPONENT LOCATION VIEWS" (Cell 151) contains full-view illustrations which show the location of components and connectors in the vehicle.

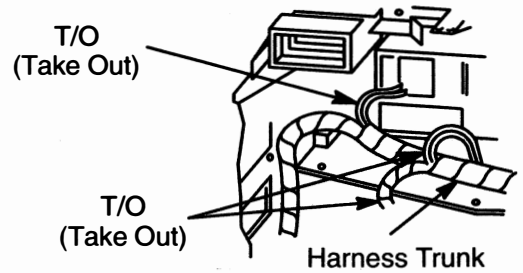
The **"LOCATION INDEX"** (Cell 152) provides the base part numbers, locations, connector face references and illustration references for all components, connectors, splices and grounds.

HELPFUL REMINDERS

Before using the wiring diagrams for troubleshooting, refer to these HELPFUL REMINDERS:

1. The abbreviation T/O, for take out, used in the Location Index (Cell 152), refers to the point at which a group of wires branch off the harness trunk. Refer to the wiring hamess illustration.

Wiring harness at back of Instrument Panel, showing typical T/O (Take Out) locations



2. If a connector serves the same purpose in two separate versions (e.g., Automatic/Manual), but is physically different, *two* connector numbers are used. However, if a connector serves the same purpose in two separate versions (e.g., Automatic/Manual) and is physically the same, but the wire colors are different, only *one* connector number is used. If the same physical connector is used more than once, then more than *one* connector number is used.

3. Wiring schematics provide a picture of how and under what conditions the circuit is powered, of the current path to circuit components, and of how a circuit is grounded. Each circuit component is named (underlined titles). Wire and connector colors are listed as follows (standard Ford color abbreviations are used):

COLOR ABBREVIATIONS

BU	**Blue**	**NA**	**Natural**
BK	**Black**	**OG**	**Orange**
BN	**Brown**	**PK**	**Pink**
DB	**Dark Blue**	**VT**	**Purple**
DG	**Dark Green**	**RD**	**Red**
GN	**Green**	**SR**	**Silver**
GY	**Gray**	**TN**	**Tan**
LB	**Light Blue**	**WH**	**White**
LG	**Light Green**	**YE**	**Yellow**

Note: Whenever a wire is labeled with two colors, the first color listed is the basic color of the wire, and the second color listed is the stripe marking of the wire.

4. When reporting Vehicle Repair Location Codes to Ford Customer Service Division, refer to Cell 160 (beginning on page 160-1). Note: Do *not* use the illustrations in Cell 151 (beginning on page 151-1) for reporting Vehicle Repair Location Codes.

5. **WARNINGS**

- *Always wear safety glasses for eye protection.*
- *Use safety stands whenever a procedure requires being under a vehicle.*
- *Be sure that the* **Ignition Switch** *is always in the OFF position, unless otherwise required by the procedure.*
- *Set the parking brake when working on any vehicle. An automatic transmission should be in PARK. A manual transmission should be in NEUTRAL.*
- *Operate the engine only in a well-ventilated area to avoid danger of carbon monoxide.*
- *Keep away from moving parts, especially the fan and belts, when the engine is running.*
- *To prevent serious burns, avoid contact with hot metal parts such as the radiator, exhaust manifold, tail pipe, catalytic converter and muffler.*
- *Do not allow flame or sparks near the battery. Gases are always present in and around the battery cell. An explosion could occur.*
- *Do not smoke when working on a vehicle.*
- *To avoid injury, always remove rings, watches, loose hanging jewelry and avoid wearing loose clothing.*

HOW TO FIND ELECTRICAL CONCERNS

TROUBLESHOOTING STEPS

These six steps present an orderly method of troubleshooting.

Step 1. Verify the concern.

- Operate the complete system to check the accuracy and completeness of the customer's complaint.

Step 2. Narrow the concern.

- Using the wiring diagrams, narrow down the possible causes and locations of the concern to pinpoint the exact cause.
- Read the description notes at the components and study the wiring schematic. You should then know enough about the circuit operation to determine where to check for the trouble. Further information can be found by referring to the Service Manual pages listed in the box at the top of the page.

Step 3. Test the suspected cause.

- Use electrical test procedures to find the specific cause of the symptoms.
- The component location reference bars and the pictures will help you find components. The Location Index (at the end of the manual) gives component location information for connectors, diodes, resistors, splices and grounds.

Step 4. Verify the cause.

- Confirm that you have found the correct cause by connecting jumper wires and/or temporarily installing a known good component and operating the circuit.

Step 5. Make the repair.

- Repair or replace the inoperative component.

Step 6. Verify the repair.

- Operate the system as in Step 1 and check that your repair has removed all symptoms without creating any new symptoms.

Some engine circuits may need special test equipment and special procedures. See the *Workshop Manual* and other service books for details. You will find the circuits in this manual to be helpful with those special test procedures.

TROUBLESHOOTING TOOLS

JUMPER WIRE

This is a test lead used to connect two points of a circuit. A Jumper Wire can bypass an open to complete a circuit.

WARNING

Never use a jumper wire across loads (motors, etc.) connected between hot and ground. This direct battery short may cause injury or fire.

VOLTMETER

A DC Voltmeter measures circuit voltage. Connect negative (- or black) lead to ground, and positive (+ or red) lead to voltage measuring point.

OHMMETER

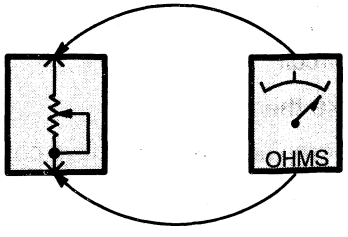


Figure 1 – Resistance Check

An Ohmmeter shows the resistance between two connected points (Figure 1).

TEST LAMP

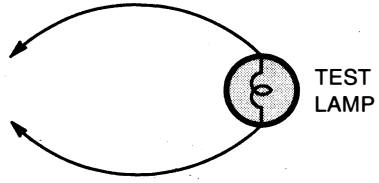


Figure 2 – Test Lamp

A Test Light is a 12-volt bulb with two test leads (Figure 2).

Uses: Voltage Check, Short Check.

SELF-POWERED TEST LAMP

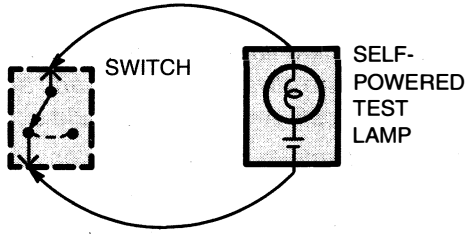


Figure 3 – Continuity Check

The Self-Powered Test Lamp is a bulb, battery and set of test leads wired in series (Figure 3). When connected to two points of a continuous circuit, the bulb glows.

Uses: Continuity Check, Ground Check.

CAUTION

When using a self-powered test lamp or ohmmeter, be sure power is off in circuit during testing. Hot circuits can cause equipment damage and false readings.

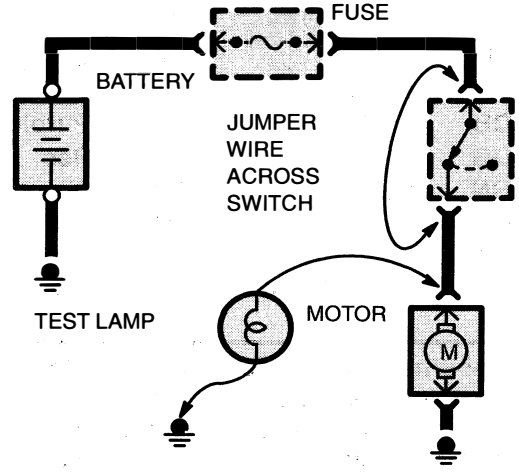


Figure 4 – Switch Circuit Check and Voltage Check

In an inoperative circuit with a switch in series with the load, jumper the terminals of the switch to power the load. If jumpering the terminals powers the circuit, the switch is inoperative (Figure 4).

CONTINUITY CHECK (Locating open circuits)

Connect one lead of Self-Powered Test Lamp or Ohmmeter to each end of circuit (Figure 3). Lamp will glow if circuit is closed. Switches and fuses can be checked in the same way.

VOLTAGE CHECK

Connect one lead of test lamp to a known good ground or the negative (-) battery terminal. Test for voltage by touching the other lead to the test point. Bulb goes on when the test point has voltage (Figure 4).

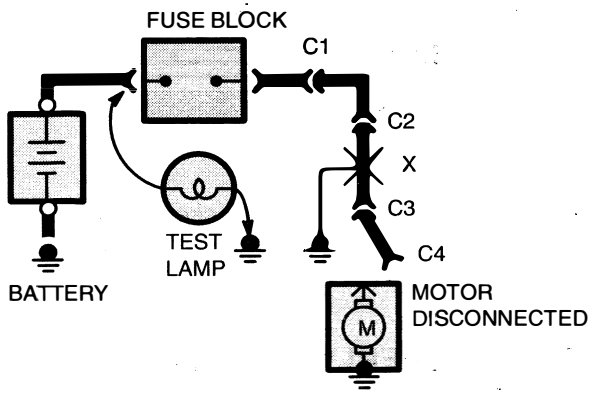


Figure 5 – Short Check

A fuse that repeatedly blows is usually caused by a short to ground. It's important to be able to locate such a short quickly (Figure 5).

1. Turn off everything powered through the fuse.
2. Disconnect other loads powered through the fuse:
   - Motors: disconnect motor connector (Connector C4 in Figure 5).
   - Lights: remove bulbs.
3. Turn Ignition Switch to RUN (if necessary) to power fuse.
4. Connect one Test Lamp lead to hot end of blown fuse. Connect other lead to ground. Bulb should glow, showing power to fuse. *(This step is just a check to be sure you have power to the circuit.)*
5. Disconnect the test lamp lead that is connected to ground, and reconnect it to the load side of the fuse at the connector of the disconnected component. (In Figure 5, connect the test lamp lead to connector C4.)
   - If the Test Lamp is off, the short is in the disconnected component.
   - If the Test Lamp goes on, the short is in the wiring. You must find the short by disconnecting the circuit connectors, one at a time, until the Test Lamp goes out. For example, in Figure 5 with a ground at X, the bulb goes out when C1 or C2 is disconnected, but not after disconnecting C3. This means the short is between C2 and C3.

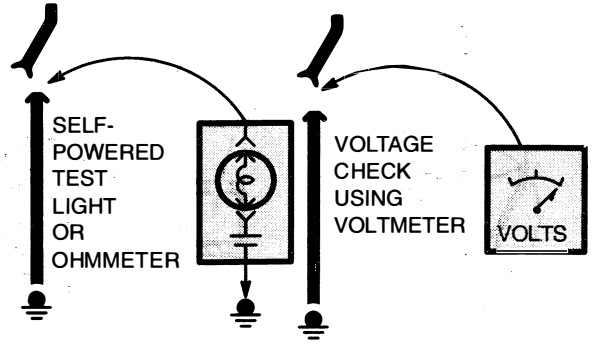


Figure 6 – Ground Check

Turn on power to the circuit. Perform a Voltage Check between the suspected inoperative ground and the frame. Any indicated voltage means that the ground is inoperative (Figure 6).

Turn off power to the circuit. Connect one lead of a Self-Powered Test Lamp or Ohmmeter to the wire in question and the other lead to a known ground. If the bulb glows, the circuit ground is OK (Figure 6).

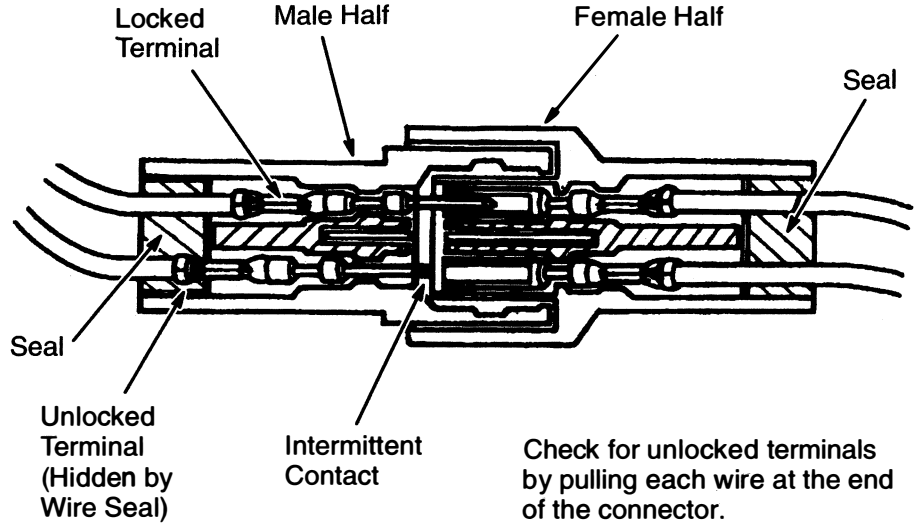
The circuit schematics in this manual make it easy to identify common points in circuits. This knowledge can help narrow the concern to a specific area. For example, if several circuits fail at the same time, check for a common power or ground connection (see *Power Distribution* or *Grounds*). If part of a circuit fails, check the connections between the part that works and the part that doesn't work.

For example, if the low beam headlamps work, but the high beams and the indicator lamp don't work, then power and ground paths must be good. Since the dimmer switch is the component that switches this power to the high beam lights and indicator, it is most likely the cause of failure.

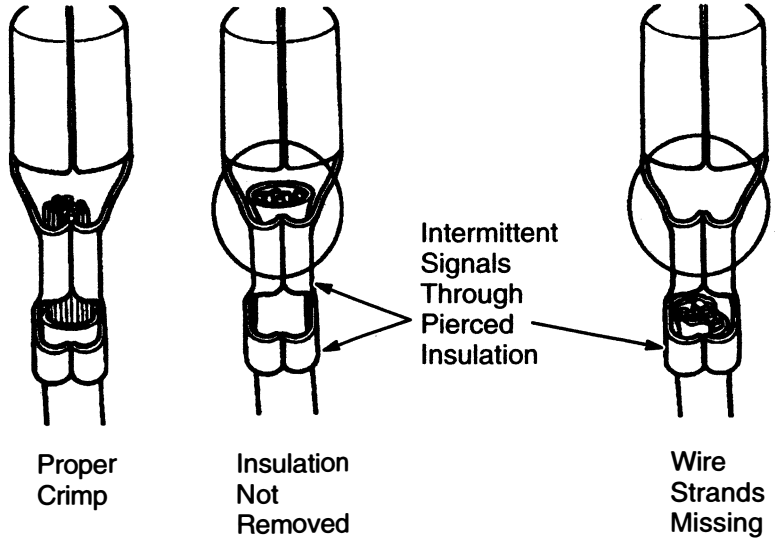
TROUBLESHOOTING WIRING HARNESS AND CONNECTOR HIDDEN CONCERNS

The following illustrations are known examples of wiring harness, splices and connectors that will create intermittent electrical concerns. The concerns are hidden and can only be discovered by a physical evaluation as shown in each illustration.

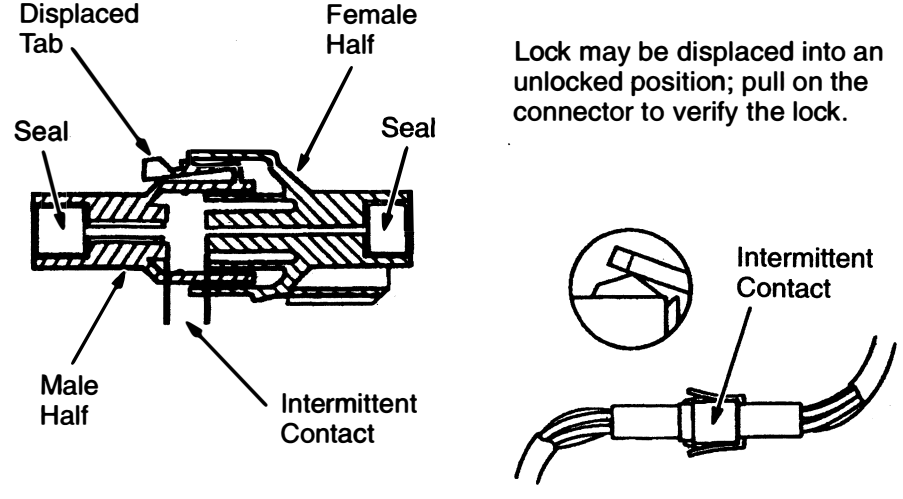
NOTE: Several components, such as the PCM, utilize gold plated terminals in their connections to the wiring harness. If those terminals need to be replaced, they must be replaced with a gold plated terminal.



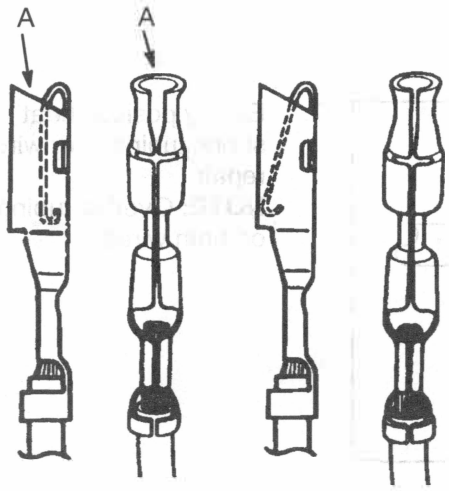
TERMINAL NOT PROPERLY SEATED



DEFECTIVE INSULATION STRIPPING

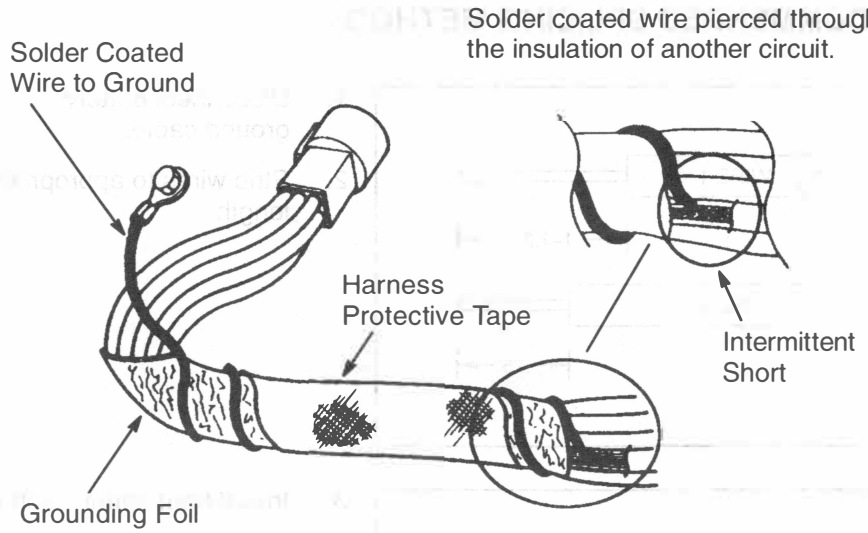


PARTIALLY MATED CONNECTORS

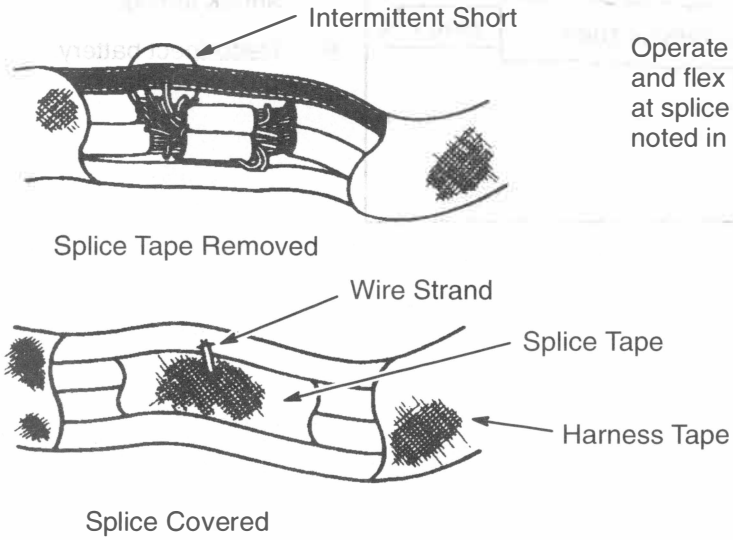


Any probe entering the terminal may enlarge the contact spring opening creating an intermittent signal. Insert the correct mating terminal (Location A) from the service kit and feel for a loose fit.

DEFORMED (ENLARGED) FEMALE TERMINALS

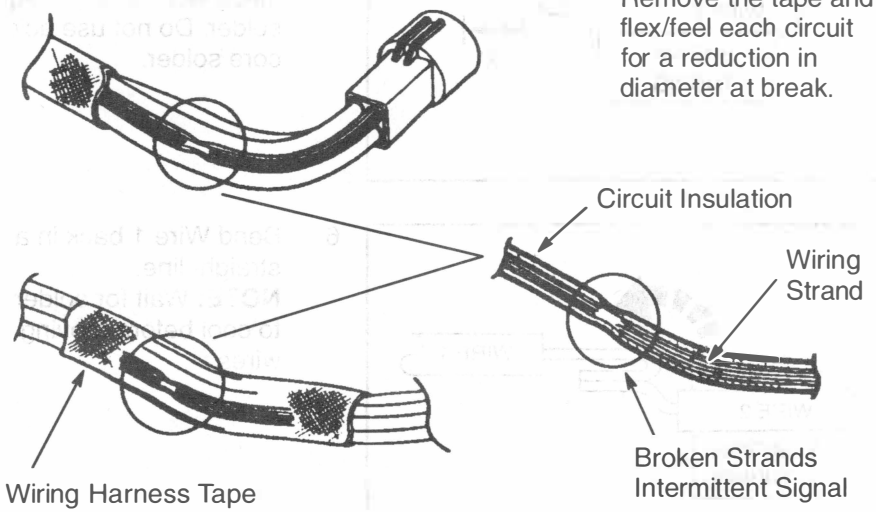


ELECTRICAL SHORT INSIDE THE HARNESS



Operate the system and flex the harness at splice location noted in Section 152.

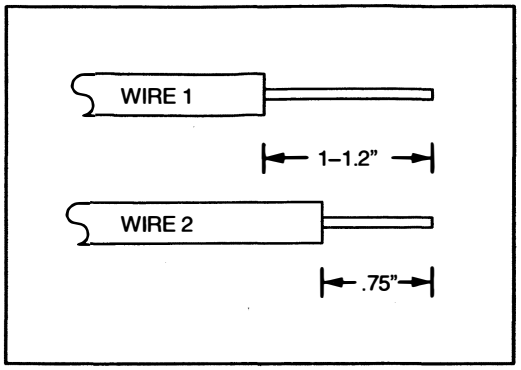
ELECTRICAL SHORT WITHIN THE HARNESS



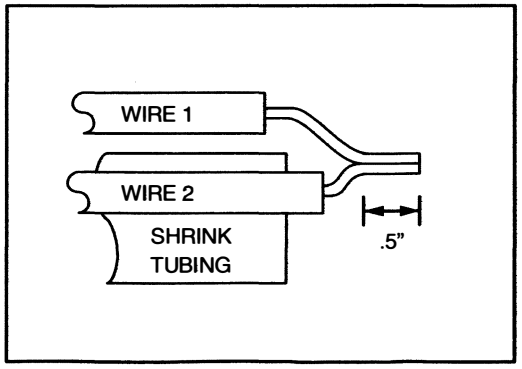
Remove the tape and flex/feel each circuit for a reduction in diameter at break.

BROKEN WIRE STRANDS IN HARNESS

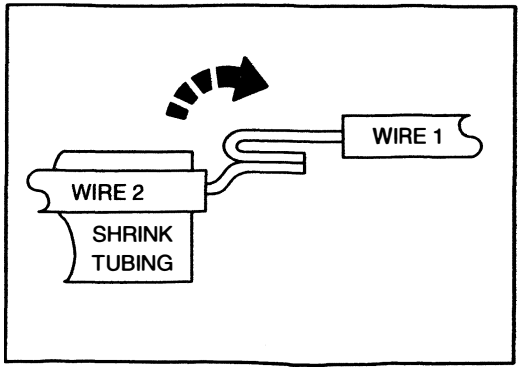
RECOMMENDED SPLICING METHOD:



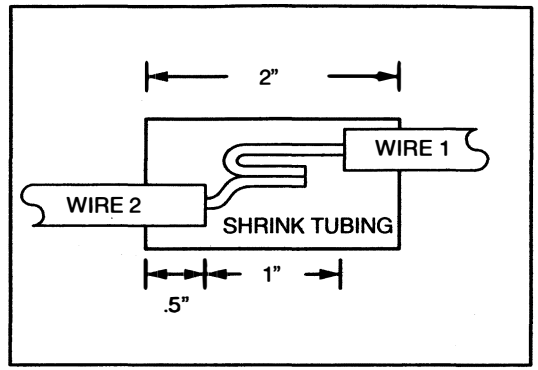
1. Disconnect battery ground cable.
2. Strip wires to appropriate length.



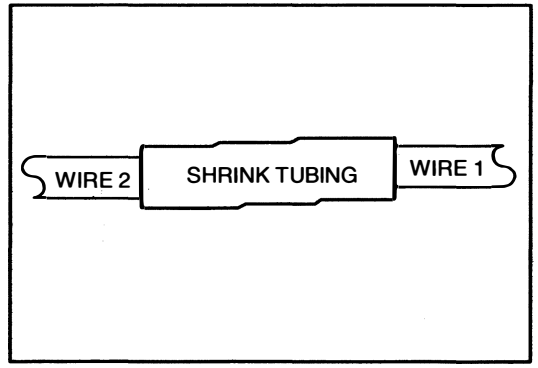
3. Install heat shrink tubing.
4. Twist wires together.
5. Solder wires together. **NOTE:** Use rosin core mildly-activated (RMA) solder. Do not use acid core solder.



6. Bend Wire 1 back in a straight line. **NOTE:** Wait for solder to cool before moving wires.



7. Evenly position heat shrink tubing over wire repair. **NOTE:** Overlap tubing on both wires.

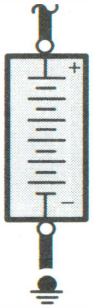


8. Use heat gun to heat the repaired area until adhesive flows out of both ends of heat shrink tubing.
9. Reconnect battery ground cable.

ELECTRICAL SYMBOLS

DASHED COMPONENT BOX
ONLY PART OF THE COMPONENT IS SHOWN ON THE PAGE; THE COMPONENT IS SHOWN COMPLETE IN ANOTHER LOCATION

COMPONENT WITH CONNECTORS



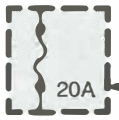
BATTERY

SCREW TERMINAL ON COMPONENT

SOLID STATE

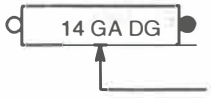
SEALED ELECTRONIC COMPONENT
ANY CIRCUITRY SHOWN INSIDE THE BOX IS A FUNCTIONAL EQUIVALENT ONLY AND IS NOT EXACT

GROUND CONNECTION



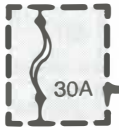
FUSE

CURRENT RATING



FUSIBLE LINK

WIRE SIZE AND COLOR



MAXI-FUSE
or
FUSIBLE LINK CARTRIDGE

CURRENT RATING

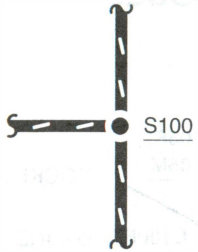
CIRCUIT BREAKER

CURRENT RATING

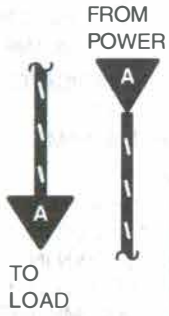
SOLID WIRES

STRIPED WIRES

SHORTING BAR



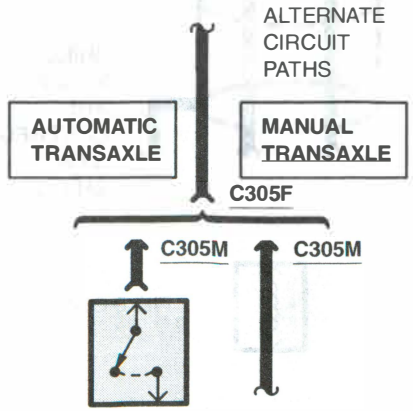
SPLICE OR CRIMP TERMINAL



"CUT" WIRES REFERENCED BETWEEN PAGES ARROWS SHOW CURRENT FLOW FROM POWER TO GROUND

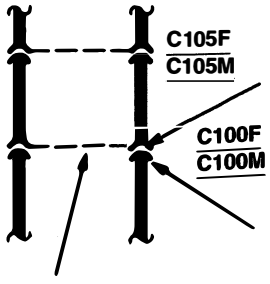
REVERSING LAMPS

"REFERENCE" WIRES COMPLETE WIRING SHOWN ON ANOTHER PAGE



ALTERNATE CIRCUIT PATHS

ELECTRICAL SYMBOLS



SOCKET

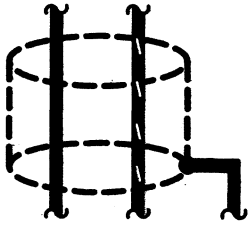
IN-LINE CONNECTOR

PIN OR BLADE

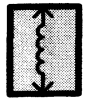
SINGLE DASHED LINE INDICATES THAT WIRE ON LEFT ALSO PASSES THROUGH THE SAME CONNECTOR

SEE GROUNDS *PAGES 10-1, 10-2*

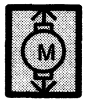
DASHED WIRE CIRCUITRY IS NOT SHOWN IN COMPLETE DETAIL, BUT IS COMPLETE ON ANOTHER PAGE



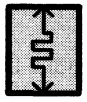
SHIELD WIRES ARE COVERED BY A SHIELD



FIELD COIL



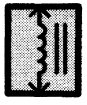
MOTOR



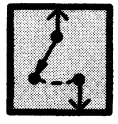
HEATING ELEMENT

THERMISTOR

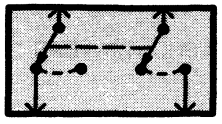
RHEOSTAT OR POTENTIOMETER



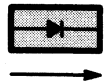
SOLENOID



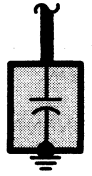
SWITCH



GANGED SWITCHES CONTACTS MOVE AT THE SAME TIME

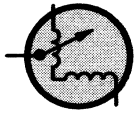


DIODES CURRENT FLOWS IN DIRECTION OF ARROW ONLY



CAPACITOR

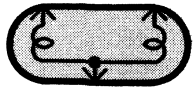
TRANSISTOR



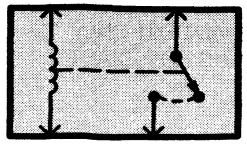
GAUGE

LIGHT EMITTING DIODE (LED)

LIGHT BULB

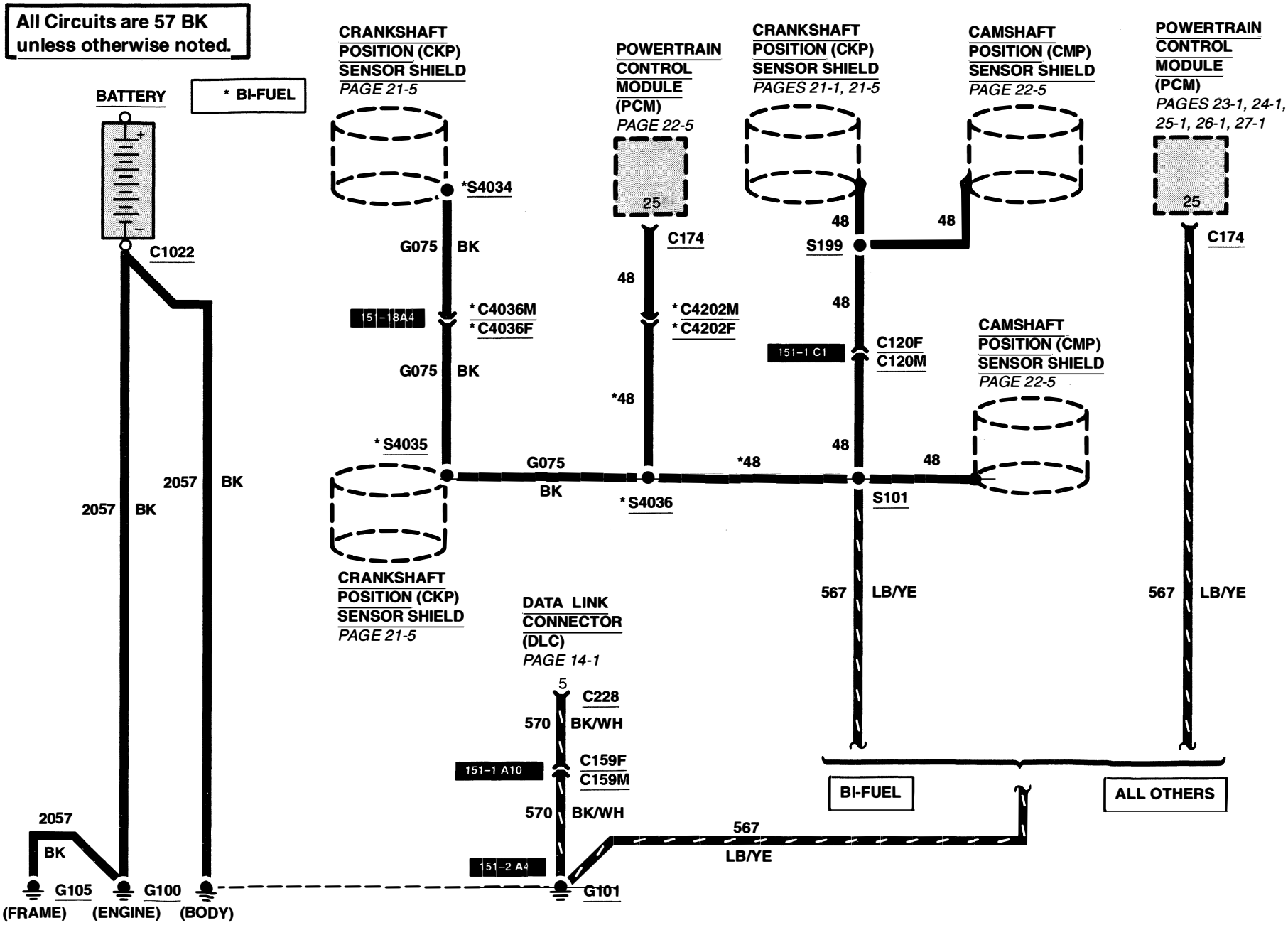


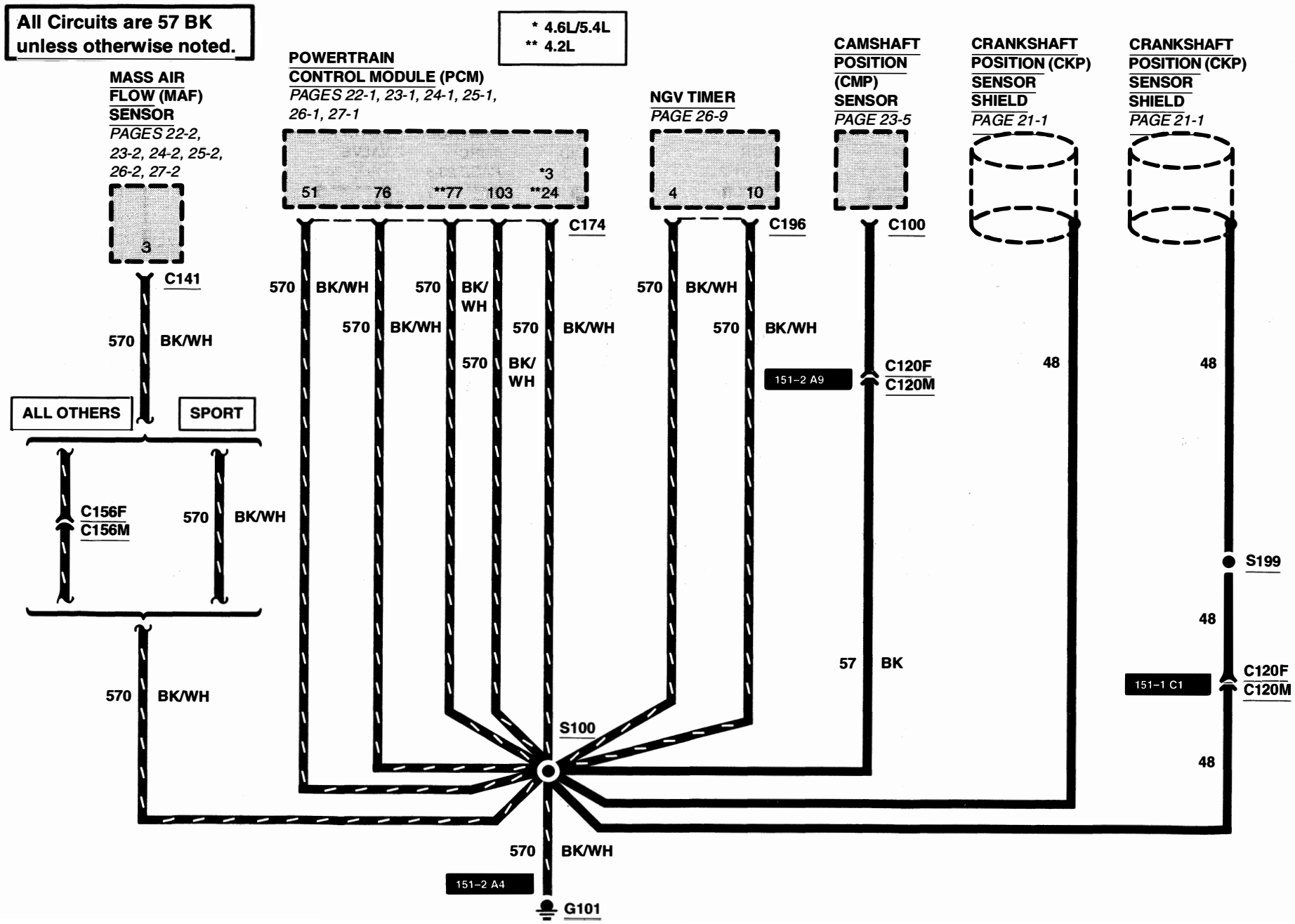
DUAL FILAMENT LIGHT BULB

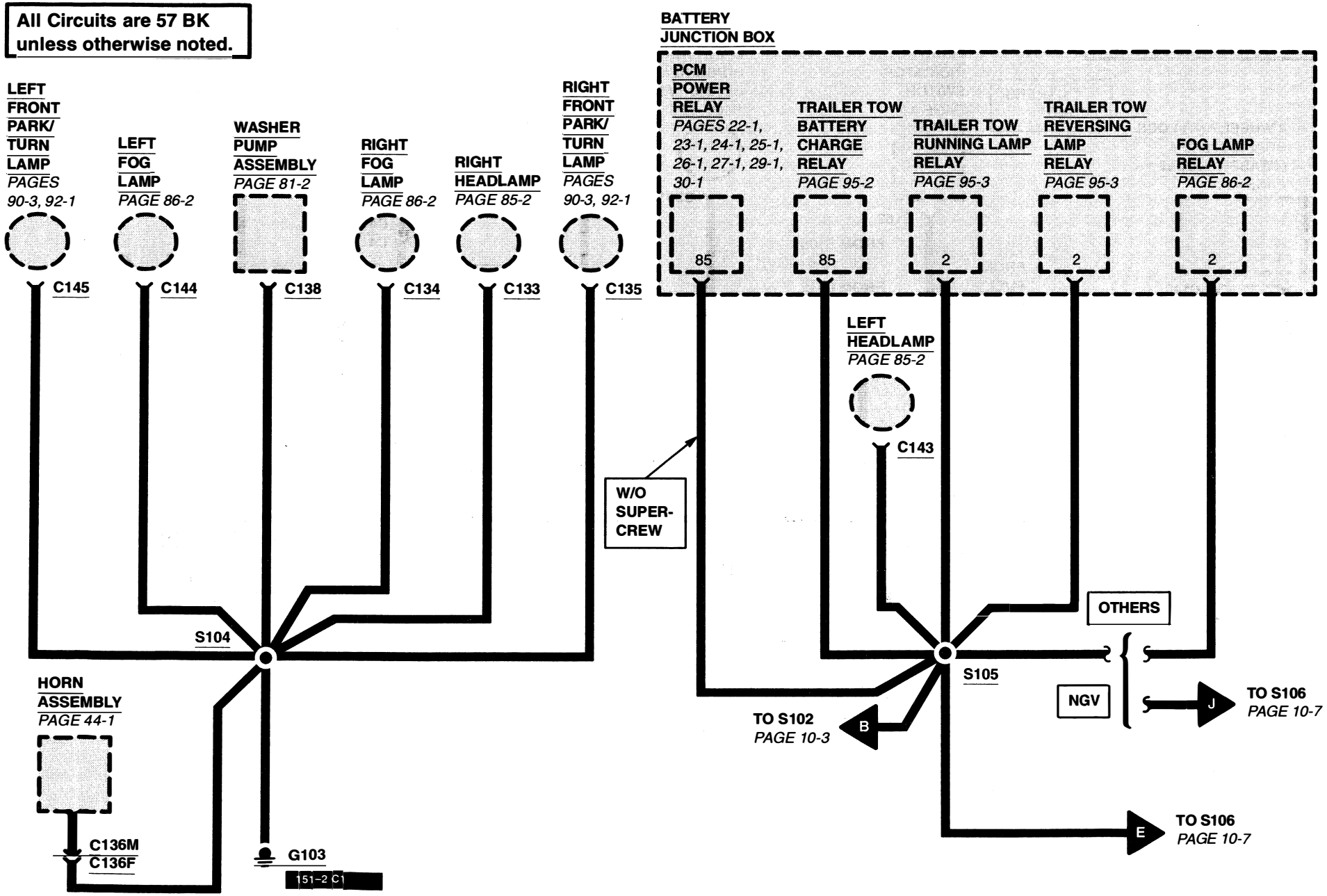


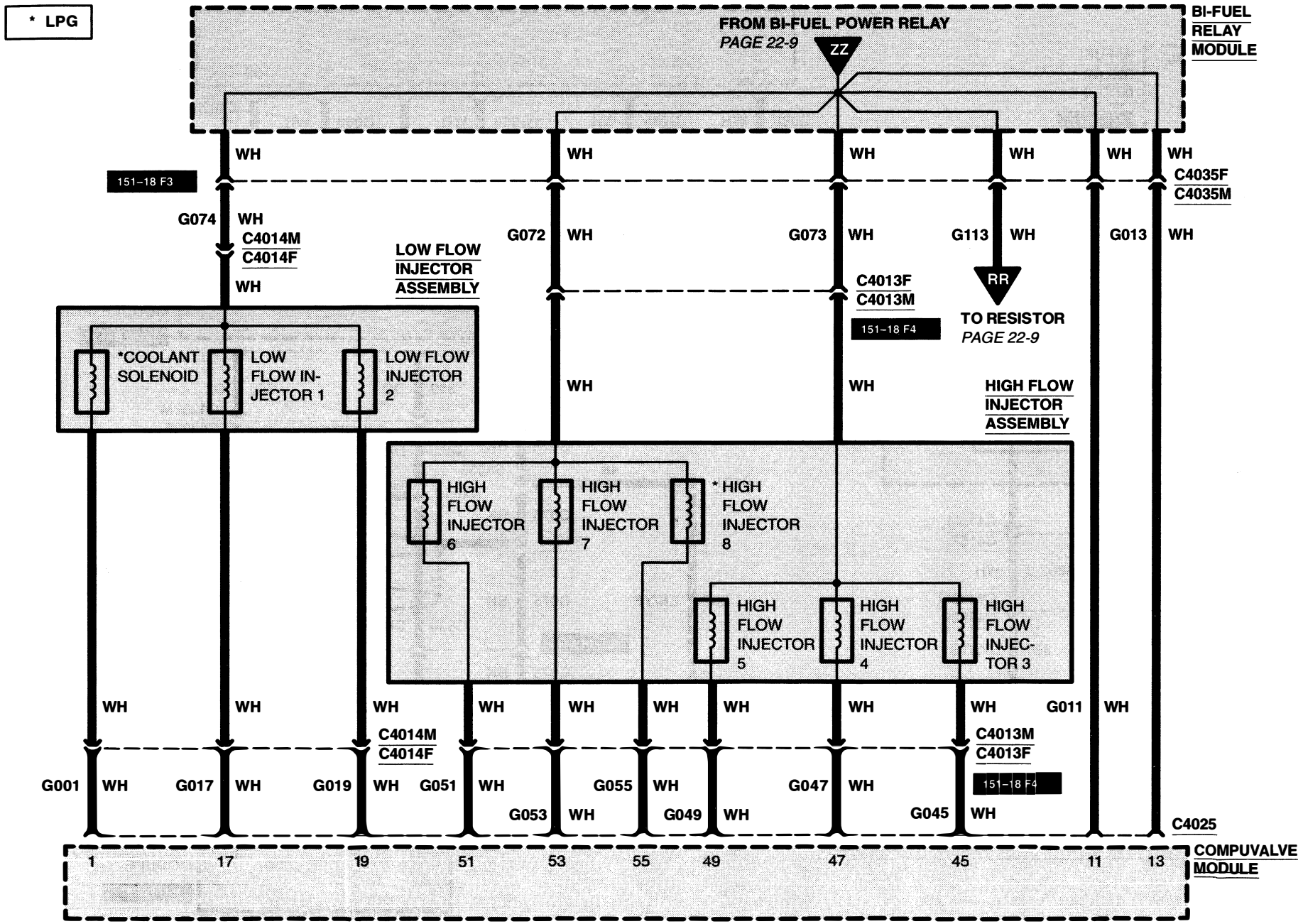
RELAY CONTACTS CHANGE POSITION WITH CURRENT THROUGH COIL

10-1 GROUNDS


All Circuits are 57 BK unless otherwise noted.
* BI-FUEL
BATTERY
C1022
2057 BK
2057 BK
2057 BK
G105 (FRAME)
G100 (ENGINE)
(BODY)
CRANKSHAFT POSITION (CKP) SENSOR SHIELD
PAGE 21-5
*S4034
G075 BK
151-18 A4
*C4036M
*C4036F
G075 BK
*S4035
CRANKSHAFT POSITION (CKP) SENSOR SHIELD
PAGE 21-5
POWERTRAIN CONTROL MODULE (PCM)
PAGE 22-5
25
C174
48
*C4202M
*C4202F
*48
G075 BK
*S4036
CRANKSHAFT POSITION (CKP) SENSOR SHIELD
PAGES 21-1, 21-5
48
S199
48
151-1 C1
C120F
C120M
48
*48
48
S101
567 LB/YE
CAMSHAFT POSITION (CMP) SENSOR SHIELD
PAGE 22-5
48
CAMSHAFT POSITION (CMP) SENSOR SHIELD
PAGE 22-5
POWERTRAIN CONTROL MODULE (PCM)
PAGES 23-1, 24-1, 25-1, 26-1, 27-1
25
C174
567 LB/YE
DATA LINK CONNECTOR (DLC)
PAGE 14-1
5
C228
570 BK/WH
151-1 A10
C159F
C159M
570 BK/WH
151-2 A4
G101
567 LB/YE
BI-FUEL
ALL OTHERS


All Circuits are 57 BK unless otherwise noted.
* 4.6L/5.4L
** 4.2L
MASS AIR FLOW (MAF) SENSOR
PAGES 22-2, 23-2, 24-2, 25-2, 26-2, 27-2
3
C141
570 BK/WH
ALL OTHERS
SPORT
C156F
C156M
570 BK/WH
570 BK/WH
POWERTRAIN CONTROL MODULE (PCM)
PAGES 22-1, 23-1, 24-1, 25-1, 26-1, 27-1
51
76
**77
103
*3
**24
C174
570 BK/WH
570 BK/WH
570 BK/WH
570 BK/WH
570 BK/WH
570 BK/WH
NGV TIMER
PAGE 26-9
4
10
C196
570 BK/WH
570 BK/WH
151-2 A9
CAMSHAFT POSITION (CMP) SENSOR
PAGE 23-5
C100
C120F
C120M
57 BK
CRANKSHAFT POSITION (CKP) SENSOR SHIELD
PAGE 21-1
48
CRANKSHAFT POSITION (CKP) SENSOR SHIELD
PAGE 21-1
48
S199
48
151-1 C1
C120F
C120M
48
S100
570 BK/WH
151-2 A4
G101


All Circuits are 57 BK unless otherwise noted.
BATTERY JUNCTION BOX
PCM POWER RELAY
PAGES 22-1, 23-1, 24-1, 25-1, 26-1, 27-1, 29-1, 30-1
TRAILER TOW BATTERY CHARGE RELAY
PAGE 95-2
TRAILER TOW RUNNING LAMP RELAY
PAGE 95-3
TRAILER TOW REVERSING LAMP RELAY
PAGE 95-3
FOG LAMP RELAY
PAGE 86-2
85
85
2
2
2
LEFT FRONT PARK/ TURN LAMP
PAGES 90-3, 92-1
LEFT FOG LAMP
PAGE 86-2
WASHER PUMP ASSEMBLY
PAGE 81-2
RIGHT FOG LAMP
PAGE 86-2
RIGHT HEADLAMP
PAGE 85-2
RIGHT FRONT PARK/ TURN LAMP
PAGES 90-3, 92-1
C145
C144
C138
C134
C133
C135
LEFT HEADLAMP
PAGE 85-2
C143
W/O SUPER-CREW
S104
S105
OTHERS
NGV
J
TO S106
PAGE 10-7
TO S102
PAGE 10-3
B
E
TO S106
PAGE 10-7
HORN ASSEMBLY
PAGE 44-1
C136M
C136F
G103
151-2 C1


* LPG
FROM BI-FUEL POWER RELAY
PAGE 22-9
ZZ
BI-FUEL RELAY MODULE
WH
151-18 F3
C4035F
C4035M
G074
C4014M
C4014F
LOW FLOW INJECTOR ASSEMBLY
G072
G073
G113
G013
C4013F
C4013M
151-18 F4
RR
TO RESISTOR
PAGE 22-9
*COOLANT SOLENOID
LOW FLOW IN-JECTOR 1
LOW FLOW INJECTOR 2
HIGH FLOW INJECTOR ASSEMBLY
HIGH FLOW INJECTOR 6
HIGH FLOW INJECTOR 7
* HIGH FLOW INJECTOR 8
HIGH FLOW INJECTOR 5
HIGH FLOW INJECTOR 4
HIGH FLOW INJEC-TOR 3
G011
G001
G017
G019
G051
G053
G055
G049
G047
G045
C4025
COMPUVALVE MODULE
1
17
19
51
53
55
49
47
45
11
13

GFI – Ford Electrical Connections

Taps and Intercepts

There are two ways of making the electrical connections that are required by the GFI system.

A TAP is made by splicing a wire to a signal in the vehicle allowing the original connections to remain in place. With a TAP, the signal stays connected to the vehicle in all modes of operation. The GFI system can read the signal (e.g. a sensor) and modify it if necessary (e.g. a bi-directional data bus). A TAP is usually implemented by pulling a wire out of a connector and joining it to a GFI harness. A wire from the GFI harness is then inserted into the connector. The harnesses are designed to provide matching wire colors for TAPped connections.

An INTERCEPT is made by cutting a signal path so that the source and load are routed independently to the GFI system. An INTERCEPT is made when the GFI system must completely disable a device (e.g. fuel pump) or drive a device independently of the vehicle's normal method (e.g. fuel gauge) during alternate fuel mode. During other modes, the original connections are restored. An INTERCEPT is usually implemented by disconnecting a pair of connectors in the vehicle's harness system and joining them to a matching pair of connectors included in the GFI harness. The signals of interest are routed to the GFI system. Any remaining signals are routed directly between the new connectors.

Taps

Tach or Crank Position Sensor (2 wires)

MIL

Bus + and Bus –

Left Front HEGO, Right Front HEGO

Throttle Position Sensor

Signal Return

Switched Battery (Hot start and run)

Battery

Intercepts

Fuel Pump Power

Fuel Gauge

Instrument Cluster Power

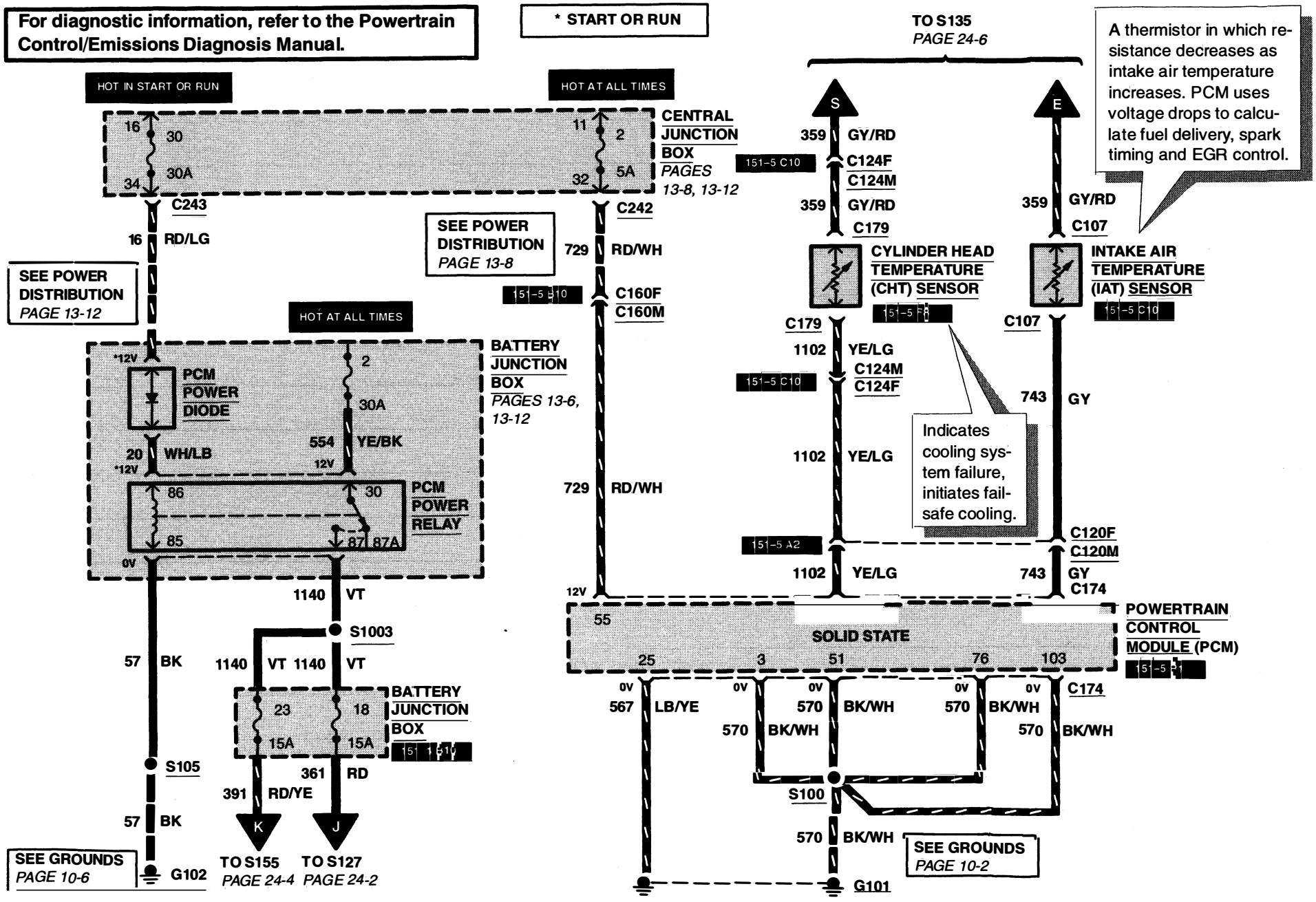
Notes about Fuel Gauges

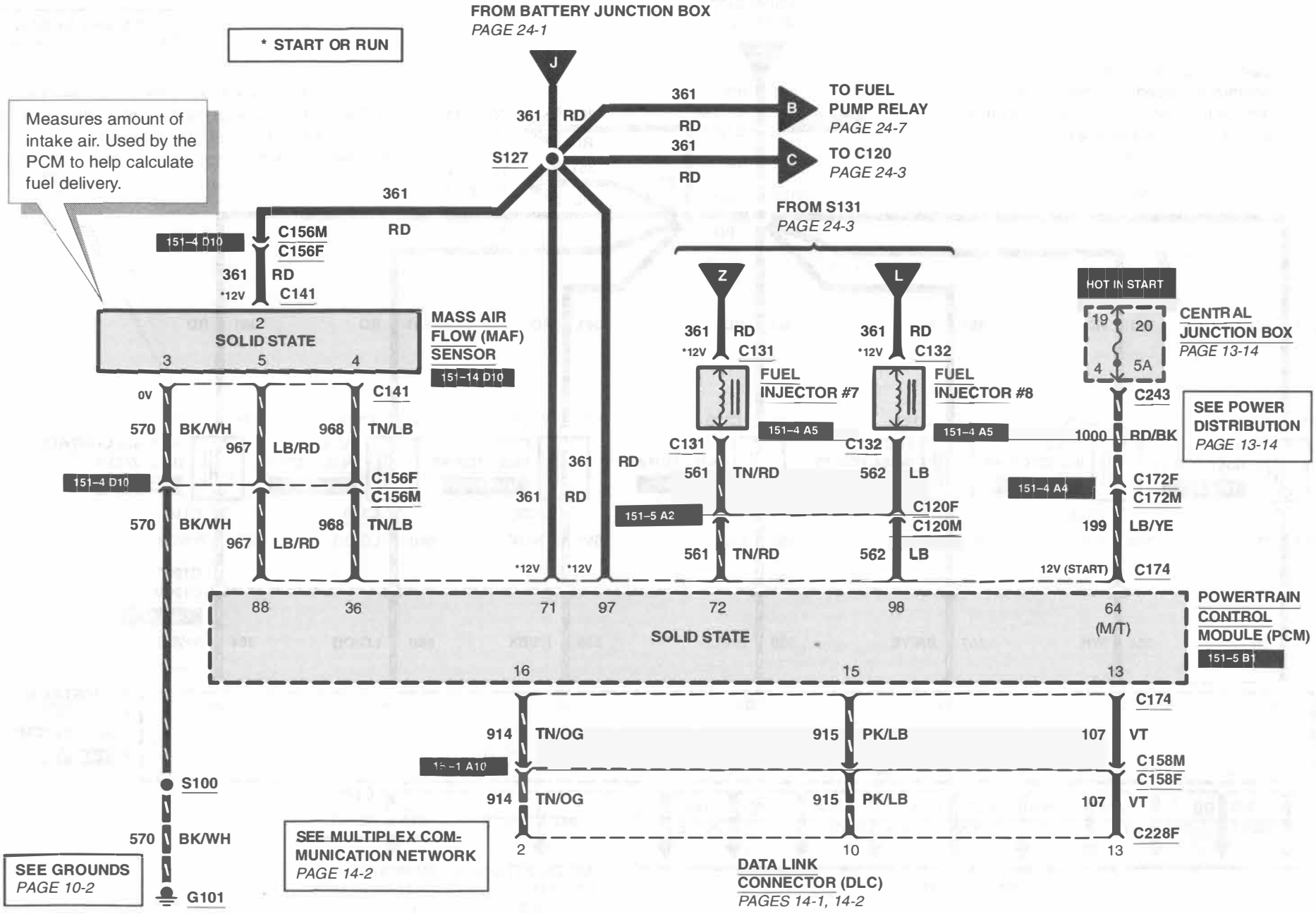
These are handled in two ways.

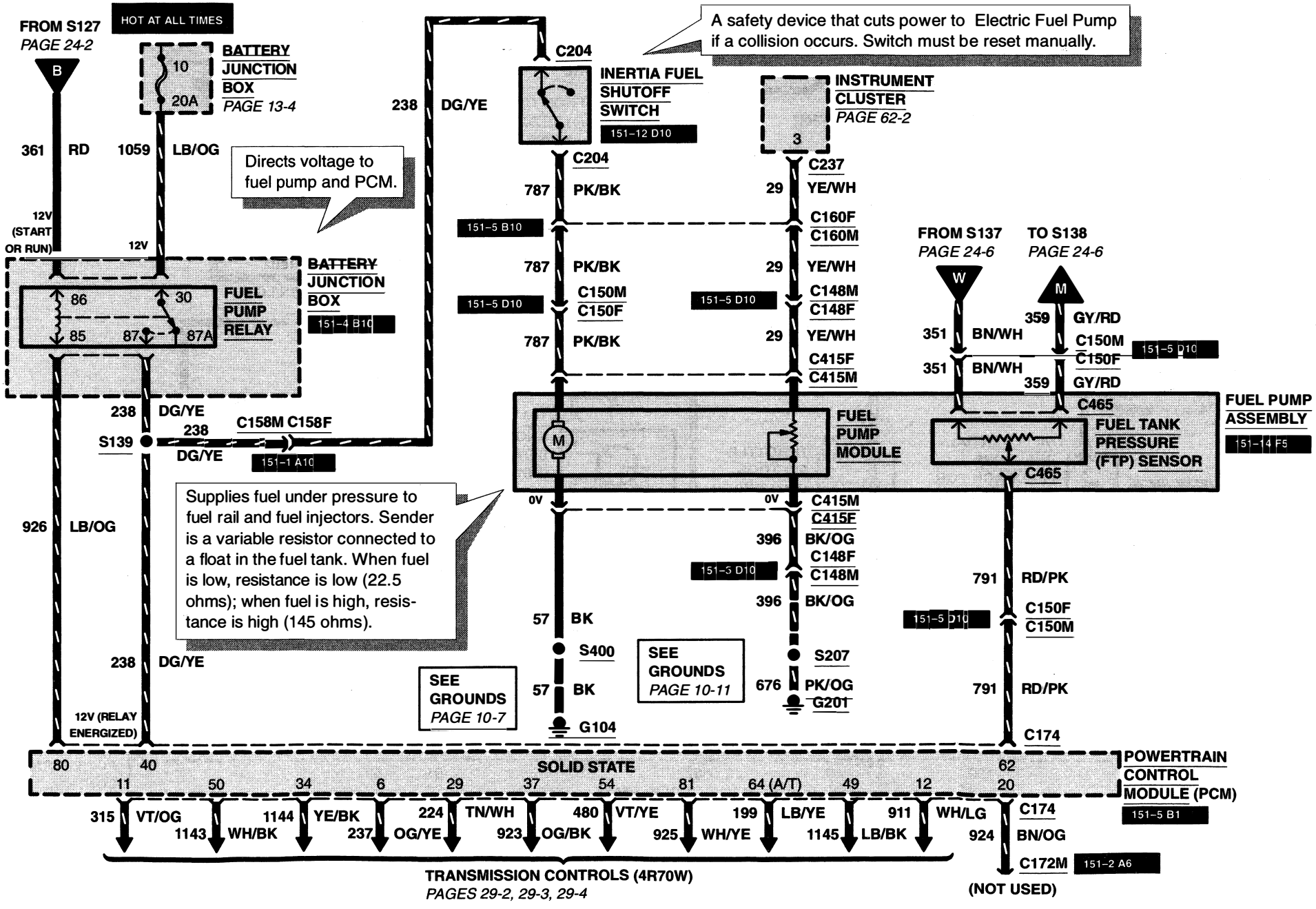
1999 and later F-Series vehicles have their instrument cluster connected to the SCP bus (Bus + and Bus –). These vehicles do not require intercepts in the fuel gauge and instrument cluster power signals because the GFI system can send fuel level data over the SCP bus.

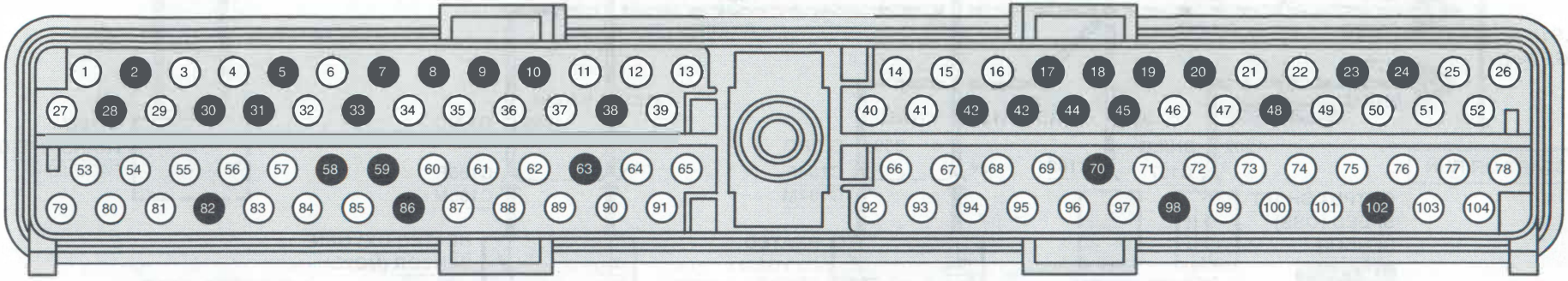
All other vehicles (earlier F-Series, P131, Econoline vans, Contour) require fuel gauge and cluster power intercepts to allow GFI to control the fuel gauge in alternate fuel mode and reset the cluster at fuel switchover.

For diagnostic information, refer to the Powertrain Control/Emissions Diagnosis Manual.




FROM BATTERY JUNCTION BOX
PAGE 24-1
* START OR RUN
J
361 RD
S127
361 RD
B
TO FUEL PUMP RELAY
PAGE 24-7
361 RD
C
TO C120
PAGE 24-3
Measures amount of intake air. Used by the PCM to help calculate fuel delivery.
361 RD
151-4 D10
C156M
C156F
361 RD
*12V
C141
2
SOLID STATE
3 5 4
MASS AIR FLOW (MAF) SENSOR
151-14 D10
FROM S131
PAGE 24-3
Z
L
361 RD
*12V
C131
361 RD
*12V
C132
FUEL INJECTOR #7
FUEL INJECTOR #8
151-4 A5
151-4 A5
HOT IN START
19 20
4 5A
CENTRAL JUNCTION BOX
PAGE 13-14
C243
1000 RD/BK
SEE POWER DISTRIBUTION
PAGE 13-14
0V
570 BK/WH
967 LB/RD
968 TN/LB
C141
151-4 D10
C156F
C156M
570 BK/WH
967 LB/RD
968 TN/LB
361 RD
*12V
361 RD
*12V
C131
561 TN/RD
C132
562 LB
151-4 A4
C172F
C172M
199 LB/YE
151-5 A2
C120F
C120M
561 TN/RD
562 LB
12V (START)
C174
88 36 71 97 72 98 64 (M/T)
SOLID STATE
POWERTRAIN CONTROL MODULE (PCM)
151-5 B1
16 15 13
C174
914 TN/OG
915 PK/LB
107 VT
151-1 A10
C158M
C158F
914 TN/OG
915 PK/LB
107 VT
C228F
S100
570 BK/WH
G101
SEE GROUNDS
PAGE 10-2
SEE MULTIPLEX COMMUNICATION NETWORK
PAGE 14-2
2 10 13
DATA LINK CONNECTOR (DLC)
PAGES 14-1, 14-2


FROM S127
PAGE 24-2
HOT AT ALL TIMES
B
BATTERY JUNCTION BOX
PAGE 13-4
10
20A
361 RD
1059 LB/OG
12V (START OR RUN)
12V
Directs voltage to fuel pump and PCM.
BATTERY JUNCTION BOX
151-4 B10
FUEL PUMP RELAY
86
30
85
87
87A
238 DG/YE
S139
238 DG/YE
C158M C158F
238 DG/YE
151-1 A10
926 LB/OG
238 DG/YE
12V (RELAY ENERGIZED)
Supplies fuel under pressure to fuel rail and fuel injectors. Sender is a variable resistor connected to a float in the fuel tank. When fuel is low, resistance is low (22.5 ohms); when fuel is high, resistance is high (145 ohms).
SEE GROUNDS PAGE 10-7
238 DG/YE
C204
INERTIA FUEL SHUTOFF SWITCH
151-12 D10
A safety device that cuts power to Electric Fuel Pump if a collision occurs. Switch must be reset manually.
INSTRUMENT CLUSTER
PAGE 62-2
3
C204
787 PK/BK
151-5 B10
C160F
C160M
787 PK/BK
151-5 D10
C150M
C150F
787 PK/BK
C237
29 YE/WH
C148M
C148F
29 YE/WH
C415F
C415M
FROM S137
PAGE 24-6
TO S138
PAGE 24-6
W
M
351 BN/WH
359 GY/RD
C150M
C150F
151-5 D10
351 BN/WH
359 GY/RD
C465
FUEL PUMP ASSEMBLY
151-14 F5
FUEL PUMP MODULE
FUEL TANK PRESSURE (FTP) SENSOR
C465
0V
0V
C415M
C415F
396 BK/OG
C148F
C148M
151-3 D10
396 BK/OG
791 RD/PK
C150F
C150M
151-5 D10
57 BK
S400
57 BK
G104
SEE GROUNDS PAGE 10-11
S207
676 PK/OG
G201
791 RD/PK
C174
SOLID STATE
80 40 62
11 50 34 6 29 37 54 81 64 (A/T) 49 12 20
POWERTRAIN CONTROL MODULE (PCM)
151-5 B1
315 VT/OG
1143 WH/BK
1144 YE/BK
237 OG/YE
224 TN/WH
923 OG/BK
480 VT/YE
925 WH/YE
199 LB/YE
1145 LB/BK
911 WH/LG
C174
924 BN/OG
C172M
151-2 A6
(NOT USED)
TRANSMISSION CONTROLS (4R70W)
PAGES 29-2, 29-3, 29-4

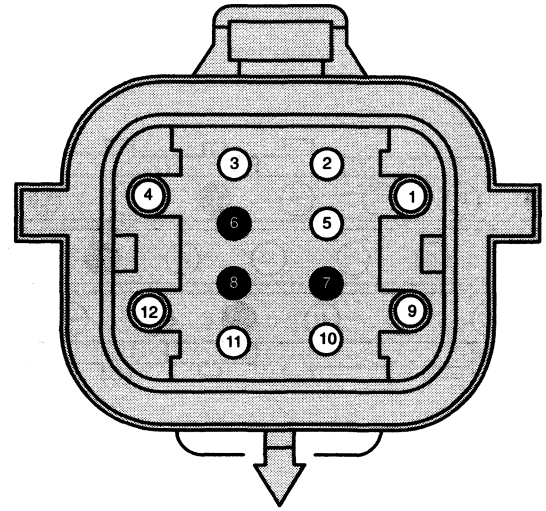


C174 (GRAY)
POWERTRAIN CONTROL MODULE (PCM)

PIN	CIRCUIT	CIRCUIT FUNCTION	PIN	CIRCUIT	CIRCUIT FUNCTION
1	1025 (OG/YE)	Coil on Plug #6	17	–	NOT USED
2	–	NOT USED	18	–	NOT USED
3	570 (BK/WH)	Ground	19	–	NOT USED
4	1496 (PK)	Transfer Case Speed Sensor	20	924 (BN/OG)	NOT USED
5	–	NOT USED	21	349 (DB)	Crankshaft Position (CKP) (+) Sensor
6	237 (OG/YE)	Shift Solenoid A (SSA)	22	350 (GY)	Crankshaft Position (CKP) (–) Sensor
7	–	NOT USED	23	–	NOT USED
8	–	NOT USED	24	–	NOT USED
9	–	NOT USED	25	567 (LB/YE)	Ground
10	–	NOT USED	26	1024 (LG/WH)	Ignition Coil #1
11	315 (VT/OG)	Shift Solenoid B (SSB)	27	1021 (LG/YE)	Coil on Plug #5
12	911 (WH/LG)	Transmission Control Indicator Lamp (TCIL)	28	–	NOT USED
13	107 (VT)	Data Link Connector (DLC)	29	224 (TN/WH)	Transmission Control Switch (TCS)
14	784 (LB/BK)	4X4 Low Indicator Switch	30	–	NOT USED
15	915 (PK/LB)	J1850 Bus (–)	31	–	NOT USED
16	914 (TN/OG)	J1850 Bus (+)	32	311 (DG/VT)	Knock Sensor (–) (KS)

PIN	CIRCUIT	CIRCUIT FUNCTION	PIN	CIRCUIT	CIRCUIT FUNCTION
36	968 (TN/LB)	Mass Air Flow (MAF) Sensor	64	199 (LB/YE)	TR3A
37	923 (OG/BK)	Transmission Fluid Temperature (TFT) Sensor	65	48	NOT USED
			66	1102 (YE/LG)	Cylinder Head Temperature (CHT) Sensor
38	–	NOT USED	67	–	NOT USED
39	743 (GY)	Intake Air Temperature (IAT) Sensor	68	679 (GY/BK)	Vehicle Speed Output Sensor
40	238 (DG/YE)	Fuel Pump Monitor	69	331 (PK/YE)	WOT Relay
41	347 (BK/YE)	A/C High Pressure Cutoff Switch Input	70	–	NOT USED
42	–	NOT USED	71	361 (RD)	Vehicle Power (VPWR)
43	–	NOT USED	72	1171 (WH)	NGV Module
44	–	NOT USED	73	1169 (WH/LB)	NGV Module
45	–	NOT USED	74	1167 (WH/BK)	NGV Module
46	–	NOT USED	75	1165 (WH/RD)	NGV Module
47	–	NOT USED	76	570 (BK/WH)	Power Ground
48	–	NOT USED	77	–	NOT USED
49	1145 (LB/BK)	TR2	78	1027 (PK/LB)	Coil on Plug #7
50	1143 (WH/BK)	TR4	79	1029 (WH/RD)	Coil on Plug #8
51	570 (BK/WH)	Power Ground	80	926 (LB/OG)	Fuel Shutoff Valve Control
52	1028 (WH/PK)	Coil on Plug #3	81	925 (WH/YE)	Electronic Pressure Control (EPC) Solenoid
53	1030 (DG/VT)	Coil on Plug #4			
54	480 (VT/YE)	Torque Converter Clutch (TCC) Solenoid	82	–	NOT USED
55	729 (RD/WH)	Keep Alive Power (KAPWR)	83	264 (WH/LB)	Idle Air Control (IAC) Valve Control
56	–	NOT USED	84	136 (DB/YE)	Output Shaft Speed (OSS) Sensor
57	–	NOT USED	85	795 (DG)	Camshaft Position (CMP) Sensor
58	–	NOT USED	86	–	NOT USED
59	970 (DG/WH)	Turbine Shaft Speed (TSS) Sensor	87	94 (RD/BK)	Heated Oxygen Sensor #21 (HO2S)
60	74 (GY/LB)	Heated Oxygen Sensor #11 (HO2S) Input	88	967 (LB/RD)	Mass Air Flow (MAF) Sensor
			89	355 (GY/WH)	Throttle Position (TP) Sensor
61	–	NOT USED	90	351 (BN/WH)	Reference Voltage
62	1164 (LB)	Engine Fuel Temperature (EFT) Sensor	91	359 (GY/RD)	Signal Return
63	141 (RD/PK)	Injector Pressure Transducer	92	810 (RD/LG)	Brake Pedal Position (BPP) Switch

PIN	CIRCUIT	CIRCUIT FUNCTION
93	387 (RD/WH)	Heated Oxygen Sensor #11 (HO2S) Heater
94	388 (YE/LB)	Heated Oxygen Sensor #21 (HO2S) Heater
95	–	NOT USED
96	–	NOT USED
97	361 (RD)	Vehicle Power (VPWR)
98	1172 (YE)	NGV Module
99	1170 (YE/LB)	NGV Module
100	1168 (YE/BK)	NGV Module
101	1166 (YE/RD)	NGV Module
102	–	NOT USED
103	570 (BK/WH)	Power Ground
104	1026 (PK/WH)	Coil on Plug #2

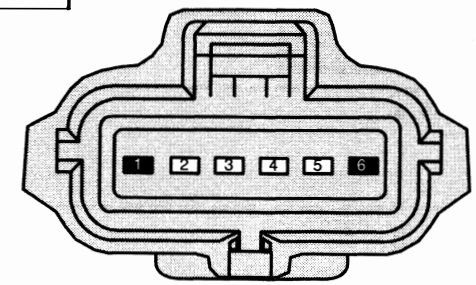


C196
NGV TIMER

PIN	CIRCUIT	CIRCUIT FUNCTION
1	1501 (BK)	Ground
2	396 (BK/OG)	Ground
3	1503 (BK/LB)	Ground
4	570 (BK/WH)	Ground
5	1093 (TN/RD)	Starter Relay Enable
6	–	NOT USED
7	–	NOT USED
8	–	NOT USED
9	16 (RD/LG)	Power
10	570 (BK/WH)	Ground
11	1502 (BK/YE)	Ground
12	1500 (RD/WH)	Power

PIN	CIRCUIT	CIRCUIT FUNCTION
33	559 (TN/BK)	Fuel Injector #5
34	–	NOT USED
35	558 (BN/LB)	Fuel Injector #4
36	–	NOT USED
37	361 (RD)	Power Input
38	29 (YE/WH)	Fuel Gauge Signal
39	557 (BN/YE)	Fuel Injector #3
40	1502 (BK/YE)	Ground
41	–	NOT USED
42	560 (LG/OG)	Fuel Injector #6
43	1171 (WH)	Injector Input #7
44	1172 (YE)	Injector Input #8
45	–	NOT USED
46	1163 (BN)	Sensor Signal Return
47	1162 (LG/RD)	Fuel Tank Temperature Sensor Signal
48	–	NOT USED
49	–	NOT USED
50	–	NOT USED
51	–	NOT USED
52	–	NOT USED
53	561 (TN/RD)	Fuel Injector #7
54	562 (LB)	Fuel Injector #8
55	–	NOT USED
56	–	NOT USED
57	361 (RD)	Power Input
58	555 (TN)	Fuel Injector #1
59	556 (WH)	Fuel Injector #2
60	1501 (BK)	Ground

5.4L NGV



C141

MASS AIR FLOW (MAF) SENSOR

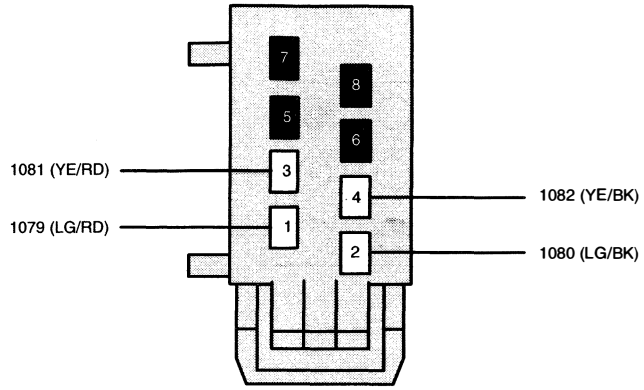
PIN	CIRCUIT	CIRCUIT FUNCTION
1	–	NOT USED
2	361 (RD)	Power (Hot in Start or Run)
3	570 (BK/WH)	Ground
4	968 (TN/LB)	MAF Sensor Signal Return
5	967 (LB/RD)	MAF Signal Out
6	–	NOT USED

CONNECTOR REFERENCE LIST

CONNECTOR	SECTION-PAGE
C157	31-4
C182	29-5, 30-5
C224	130-5
C236	62-6
C237	62-6
C267	59-6

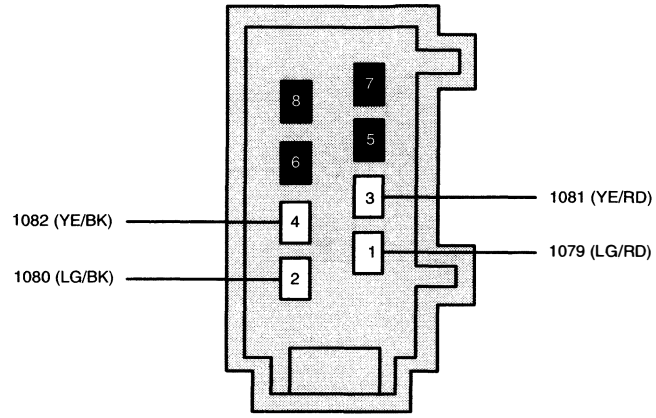
150-15 IN-LINE CONNECTOR FACES

14401

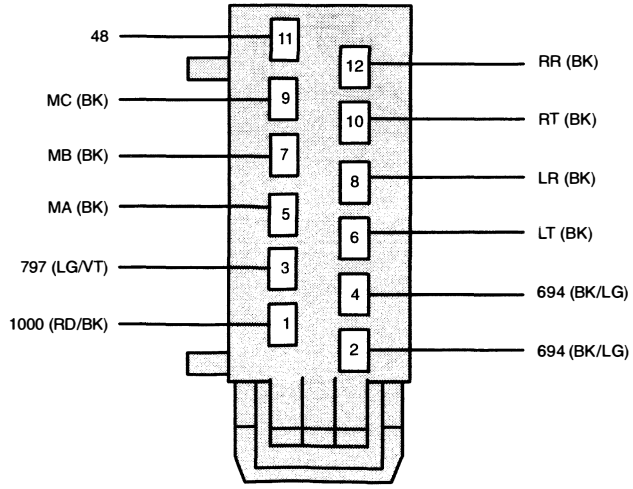


C319F

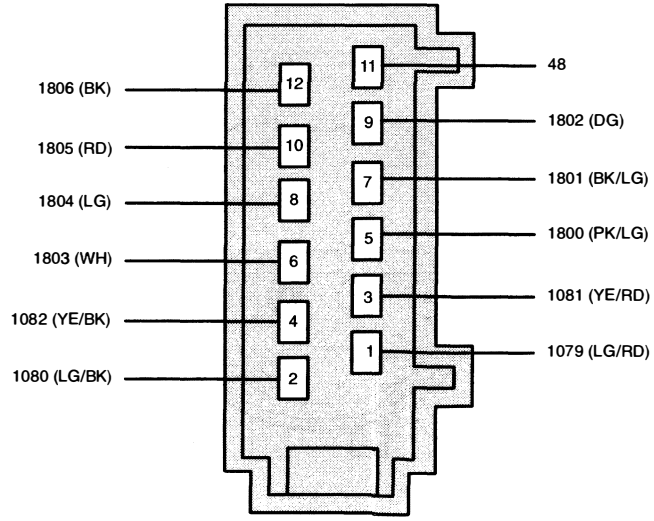
14A504



C319M

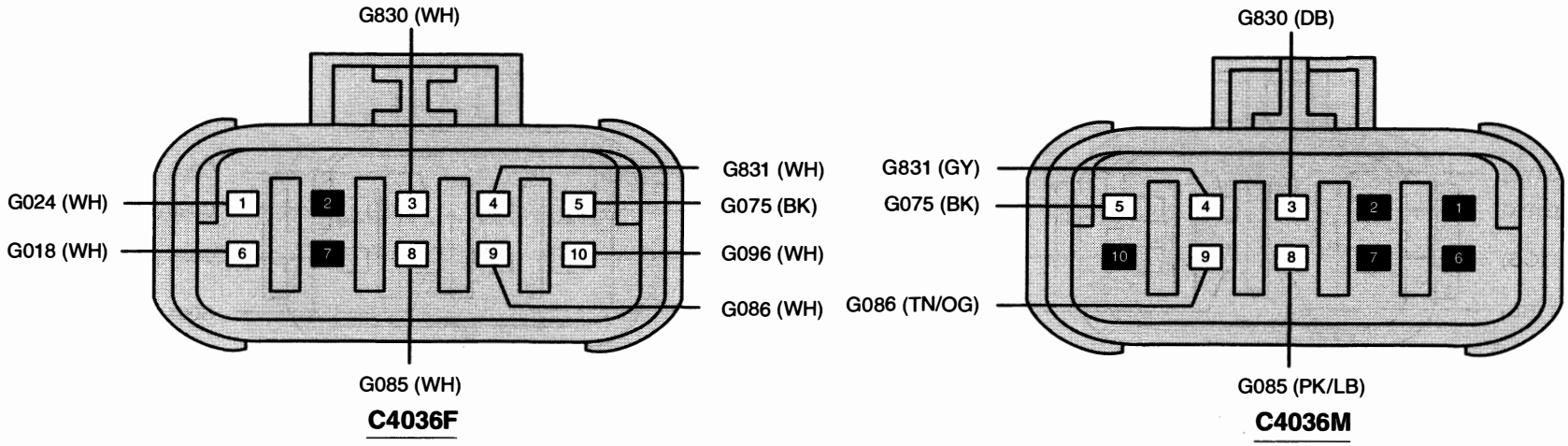


C379F



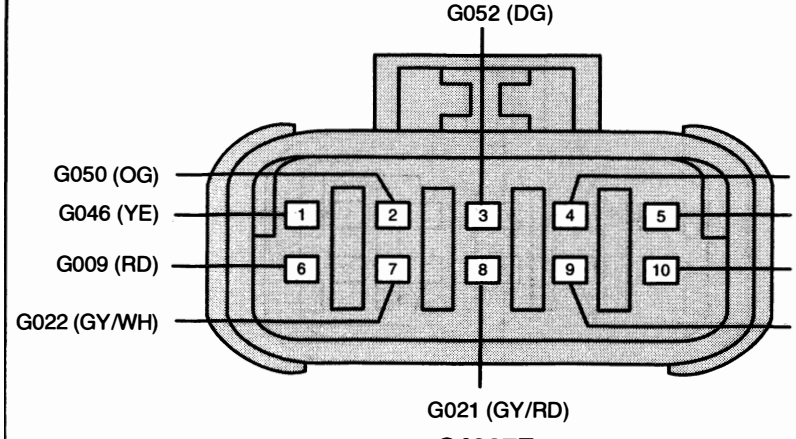
C379M

150-19 IN-LINE CONNECTOR FACES

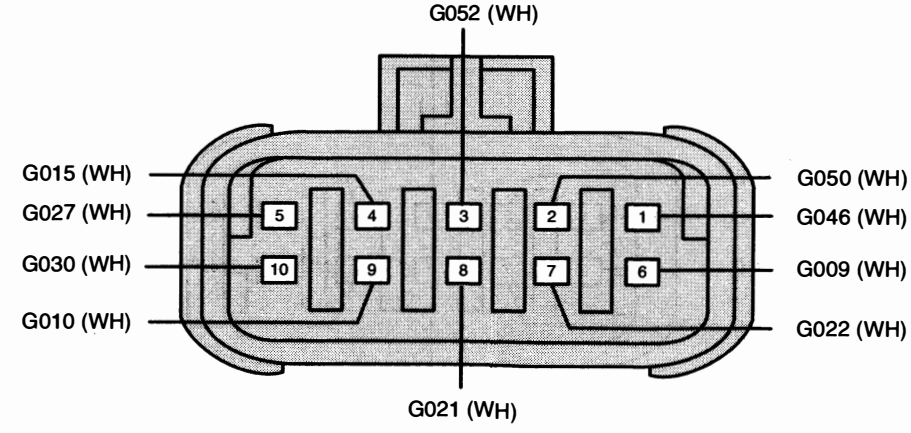


C4036F

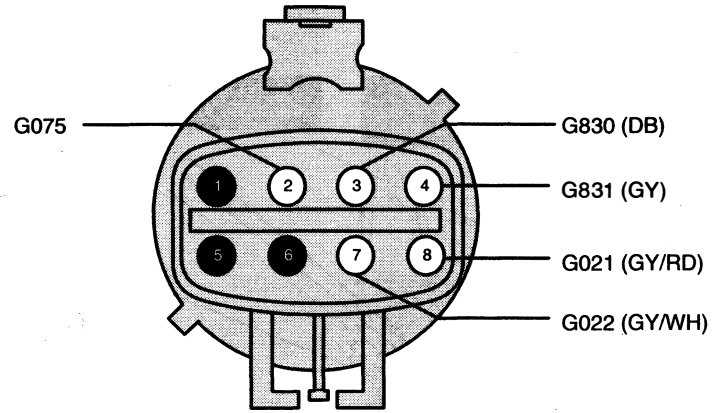
C4036M



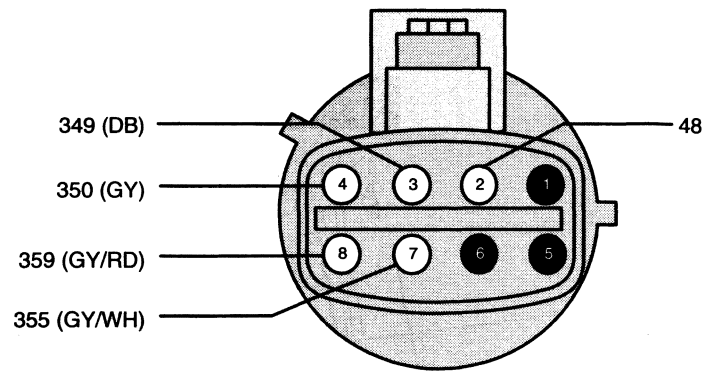
C4037F



C4037M



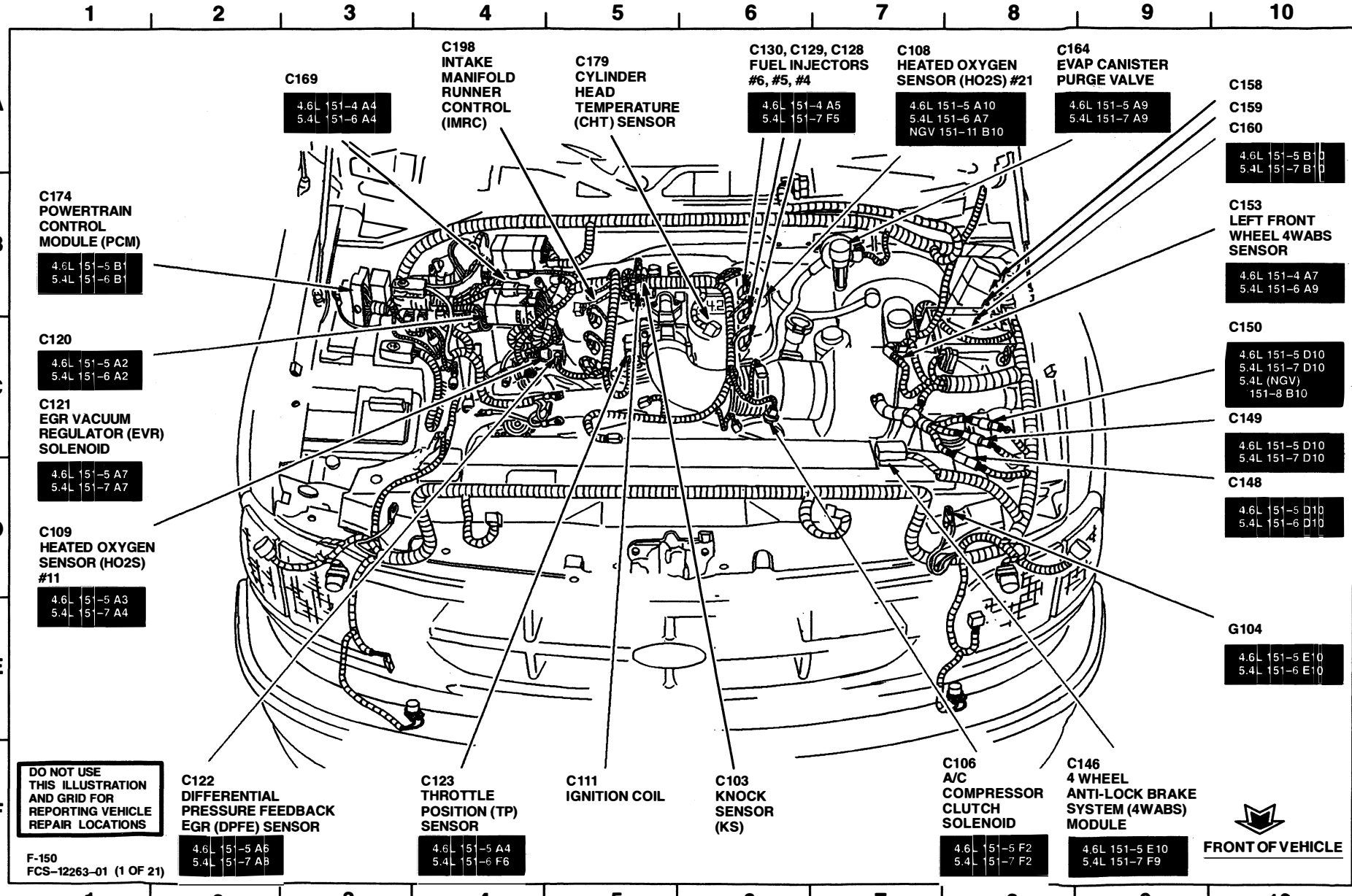
C4202F



C4202M

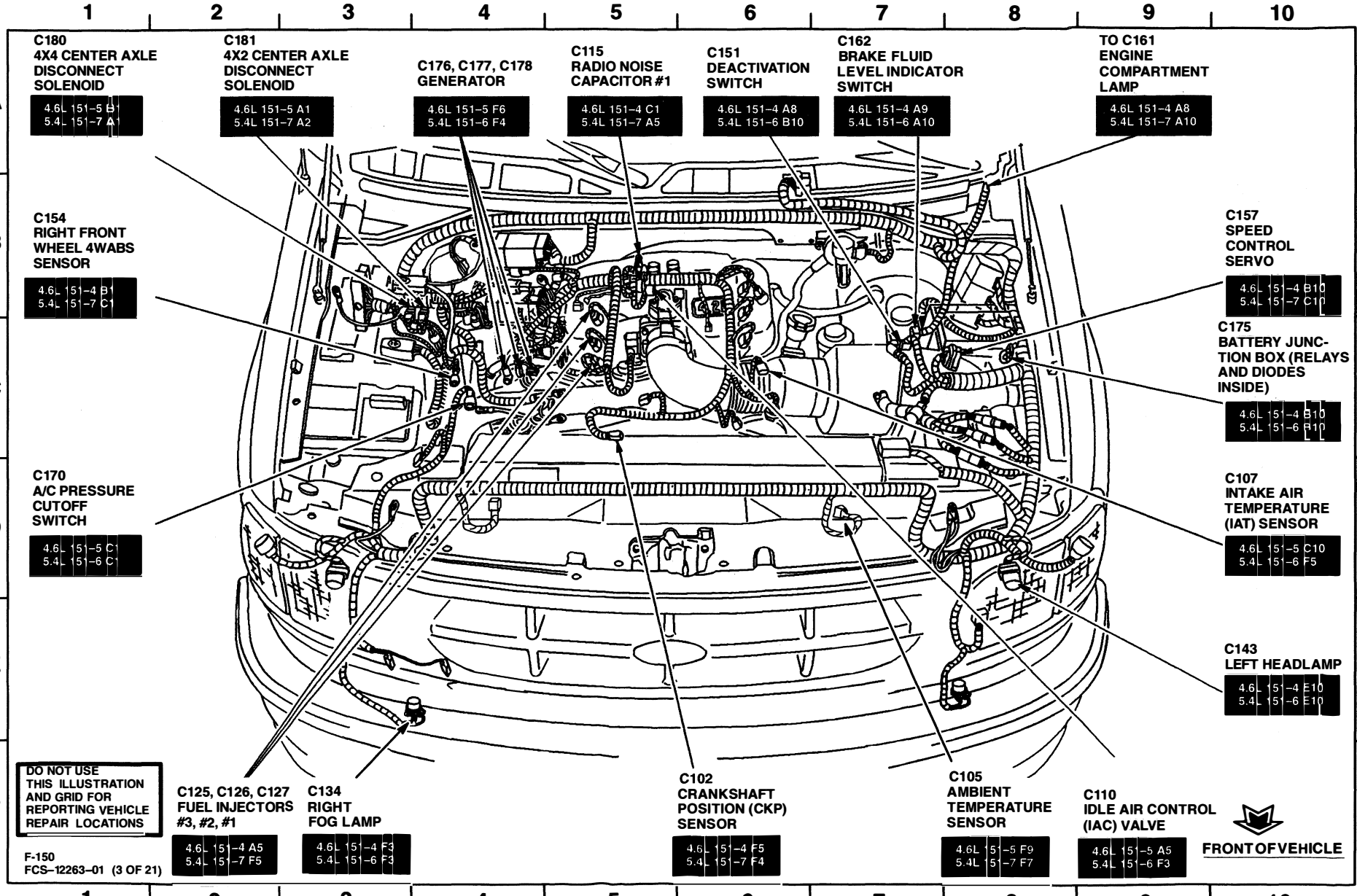
151-1 COMPONENT LOCATION VIEWS

2001 F-150

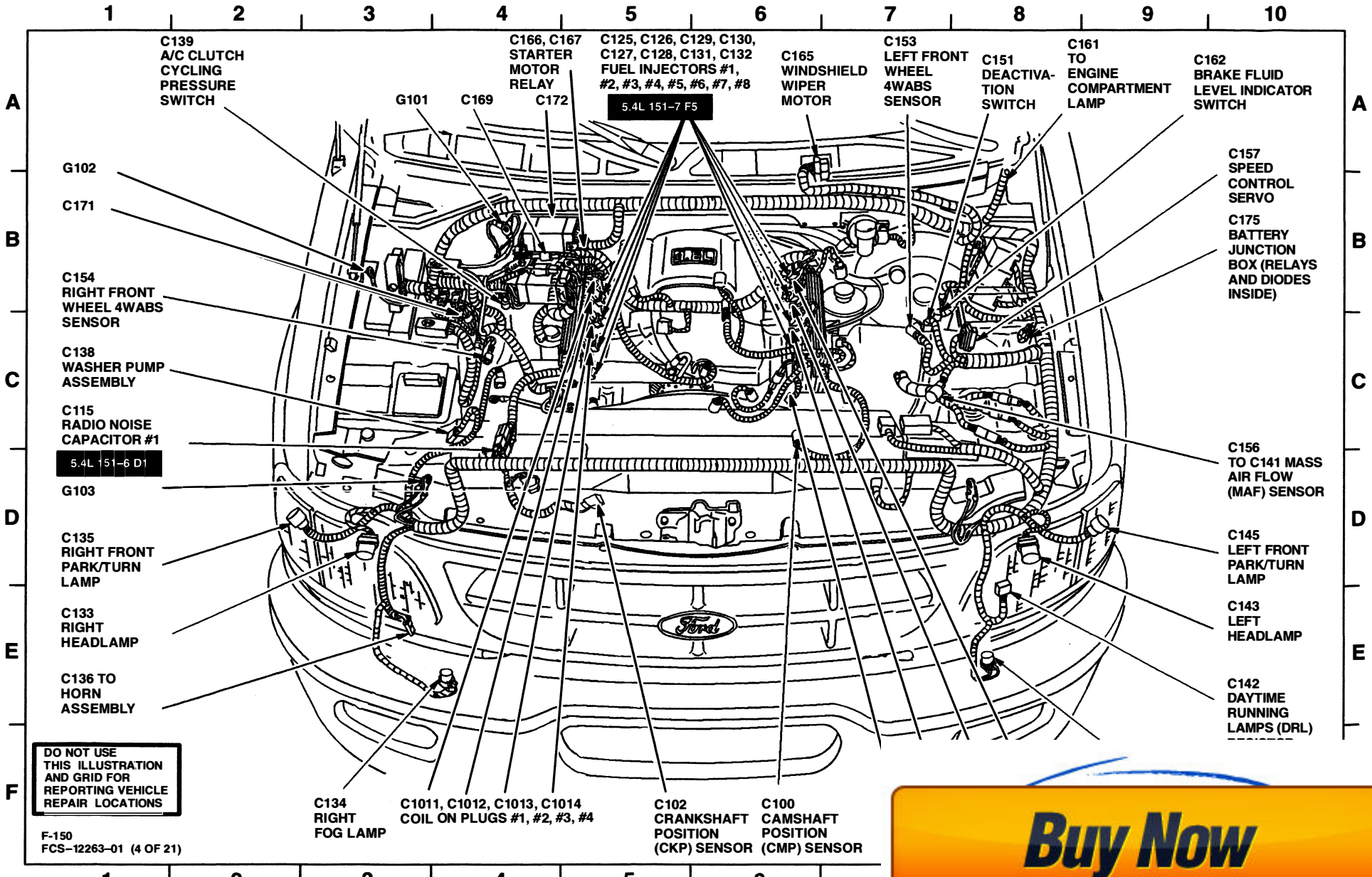


4.2L ENGINE (1 OF 3)

151-3 COMPONENT LOCATION VIEWS



4.2L ENGINE (3 OF 3)



4.6L ENGINE (1 OF 2)