

1993

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*Electrical & Vacuum Troubleshooting Manual*

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# ELECTRICAL AND VACUUM TROUBLESHOOTING MANUAL

## FPS-12121-93

### FORD PARTS and SERVICE DIVISION

## Quality is Job 1

Ford Parts and Service Division has developed a new format for the 1993 Mustang EVTm. Our goal is to provide accurate and timely electrical and vacuum service information.

### 1993 EVTm FEATURES

- **"CIRCUIT OPERATION"** descriptions (CELL 7) that explain how each circuit works. These descriptions are designed to be used in conjunction with the Electrical Schematic.
- **Schematic pages** now contain **COMPONENT LOCATION** references to full-view illustrations.
- **"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; for connectors with ten or more cavities, a circuit function chart is provided.
- **NOTES, CAUTIONS and WARNINGS** that 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. Starting with this edition of the EVTm nonessential troubleshooting hints have been deleted.
- **Cellular Pagination:** A specific section (or cell) in all EVTms 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.
- **"C"** numbers have been assigned for all electrical connectors. **"C"** numbers are listed in numerical order in the **"LOCATION INDEX"** (CELL 152).

### ORDERING INFORMATION

Information about how to order additional copies of this publication or other Ford publications may be obtained by writing to Helm Incorporated at the address shown below or by calling 1-800-782-4356. Other publications available include:

- Service Manuals
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## 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 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 he compromises neither his personal safety nor the vehicle integrity by his choice of methods, tools or parts.*

# 2-1 HOW TO USE THIS MANUAL

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The purpose of this manual is to show electrical and vacuum circuits in a clear and simple fashion to make troubleshooting easier. **NOTES, CAUTIONS** and **WARNINGS** containing important information appear in boxes on text pages.

- **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 now contain references to full-view illustrations. These references

are reverse-text blocks located next to each component and connector and refer the user to the appropriate illustration page and zone.

Schematic pages now 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.

Connector face information specific to a certain cell is now 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. Component Connectors with 10 or more terminals are accompanied by a pinout chart that lists the function of all circuitry associated with that component.

"**CIRCUIT OPERATION**" (Cell 7) contains descriptions of **HOW THE CIRCUIT WORKS** for each system as well as references to the appropriate diagnostic section of the Service Manual. The beginning of each section has a reverse-text block identifying the page on which the corresponding schematic appears.

"**GROUNDINGS**" (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 turn, 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.

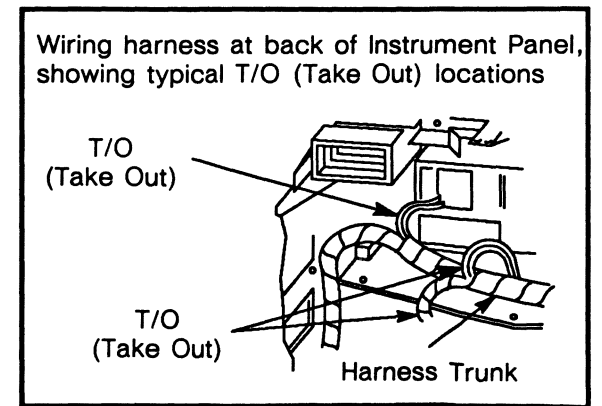
"**COMPONENT LOCATION VIEWS**" (Cell 151) contains full-view illustrations which show the location of all components and connectors in the vehicle.

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 EVTM 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 harness illustration.



## HELPFUL REMINDERS (CONTINUED)

- If a connector serves the same purpose in two separate versions (e.g., EFI/Carb), but is physically different, two connector numbers are used. However, if a connector serves the same purpose in two separate versions (e.g., EFI/Carb) 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.
- 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 (standard Ford color abbreviations are used):

### COLOR ABBREVIATIONS

|    |             |    |         |
|----|-------------|----|---------|
| BL | Blue        | N  | Natural |
| BK | Black       | O  | Orange  |
| BR | Brown       | PK | Pink    |
| DB | Dark Blue   | P  | Purple  |
| DG | Dark Green  | R  | Red     |
| GN | Green       | T  | Tan     |
| GY | Gray        | W  | White   |
| LB | Light Blue  | Y  | Yellow  |
| LG | Light Green |    |         |

**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.

- When reporting Vehicle Repair Location Codes to Ford Parts and 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 park 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.*
- To avoid injury, always remove rings, watches, loose hanging jewelry and 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 EVTMM, narrow down the possible causes and locations of the concern to pinpoint the exact cause.
- Read the description of *How the Circuit Works* 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 after *How the Circuit Works*.

#### Step 3. Test the 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.

# 2-3 HOW TO USE THIS MANUAL

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## HOW TO FIND ELECTRICAL CONCERNS

### 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 *Service 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

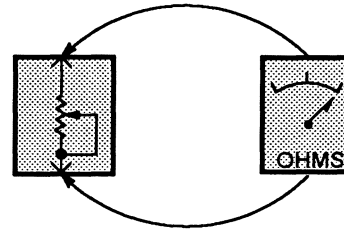


Figure 1—Resistance Check

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

### TEST LAMP

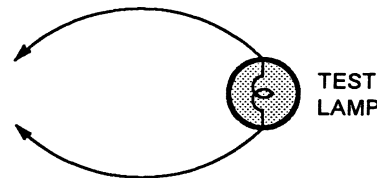


Figure 2—Test Lamp

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

Uses: Voltage Check, Short Check.

### SELF-POWERED TEST LAMP

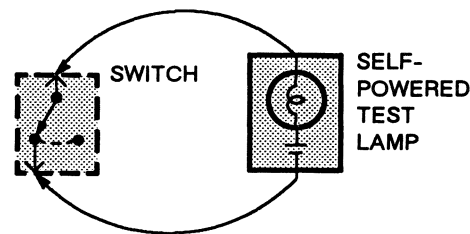


Figure 3—Continuity Check

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.

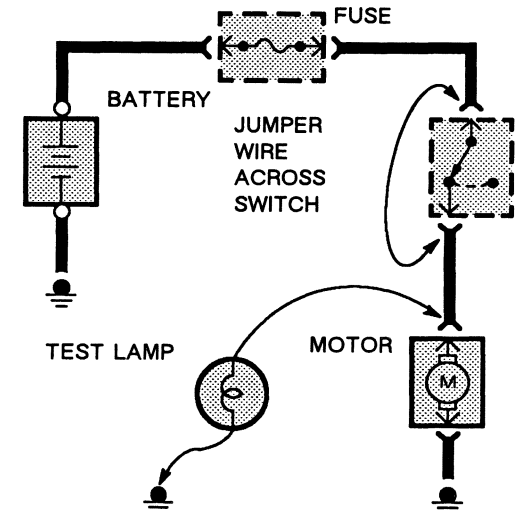


Figure 4—Switch Circuit Check and Voltage Check

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).

## HOW TO FIND ELECTRICAL CONCERNS (CONTINUED)

### 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).

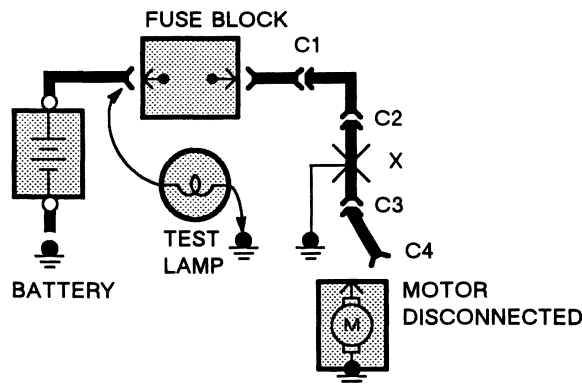


Figure 5—Short Check

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.

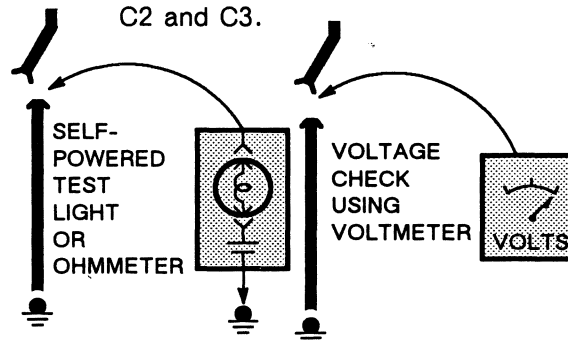


Figure 6—Ground Check

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 headlights 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.

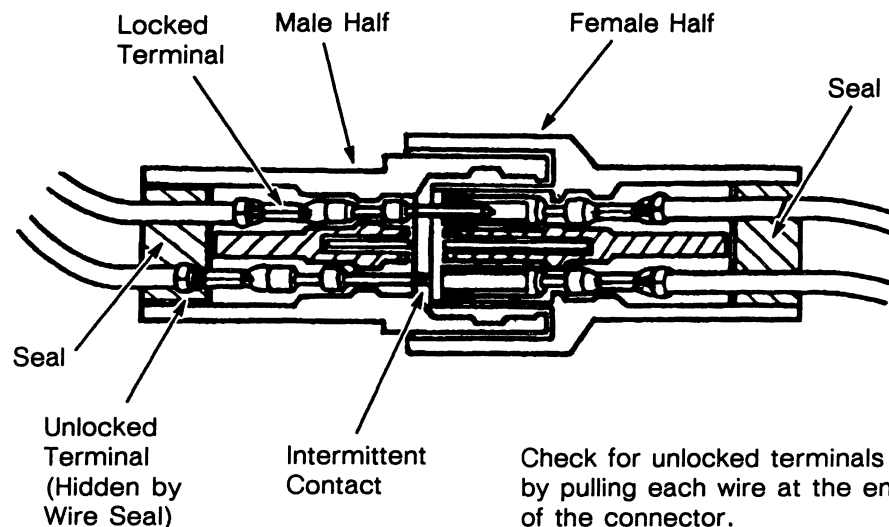


# 2-5 HOW TO USE THIS MANUAL

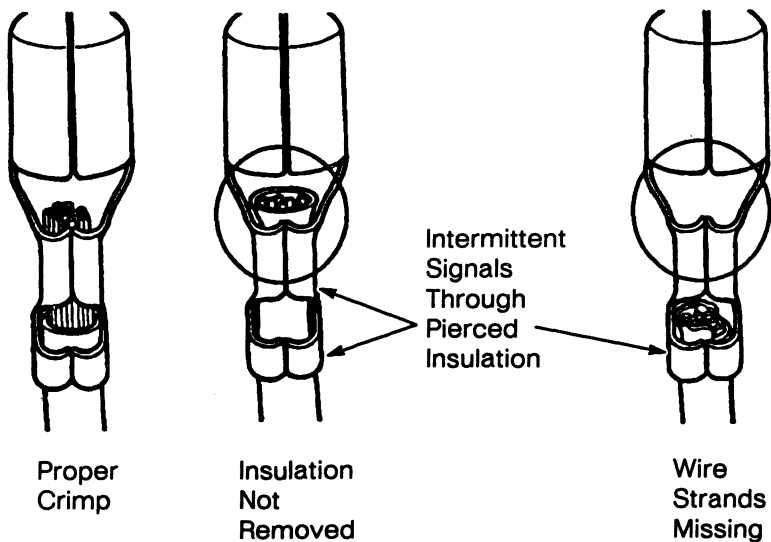
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## TROUBLESHOOTING WIRING HARNESS AND CONNECTOR HIDDEN CONCERNS

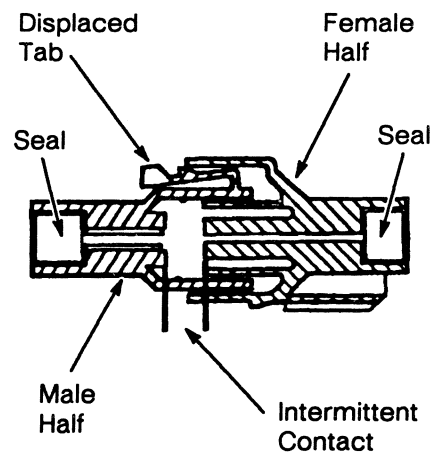
The following illustrations are known examples of wiring harnesses, splices and connectors that will create intermittent electrical concerns. The concerns are hidden and can only be discovered by a physical evaluation as shown in each illustration.



### TERMINAL NOT PROPERLY SEATED

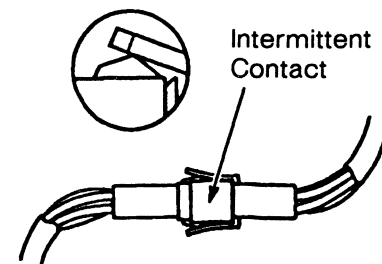


### DEFECTIVE INSULATION STRIPPING



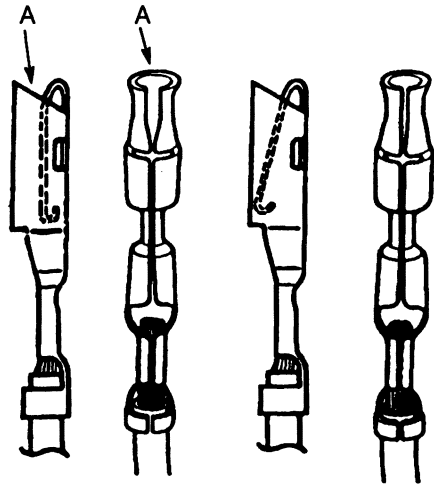
Type A

Lock may be displaced into an unlocked position; pull on the connector to verify the lock.



Type B

### PARTIALLY MATED CONNECTORS



Enlarged

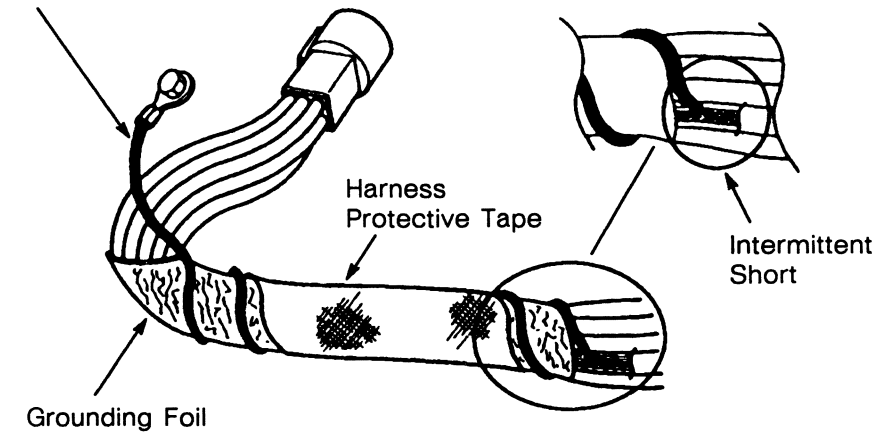
Normal

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.

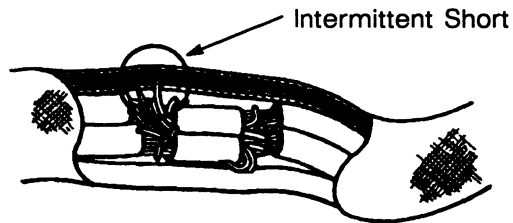
## DEFORMED (ENLARGED) FEMALE TERMINALS

Solder Coated Wire to Ground

Solder coated wire pierced through the insulation of another circuit.

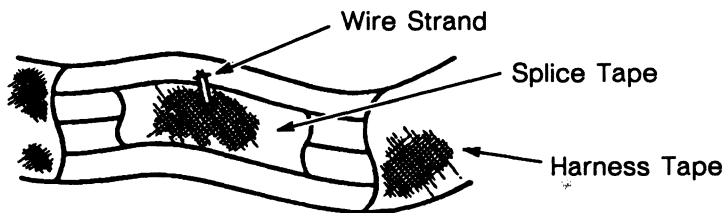


## ELECTRICAL SHORT INSIDE THE HARNESS



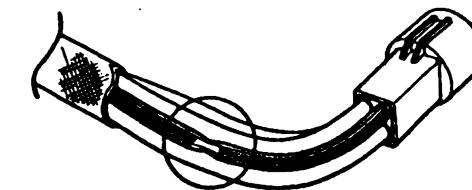
Operate the system and flex the harness at splice location noted in Section 152.

Splice Tape Removed

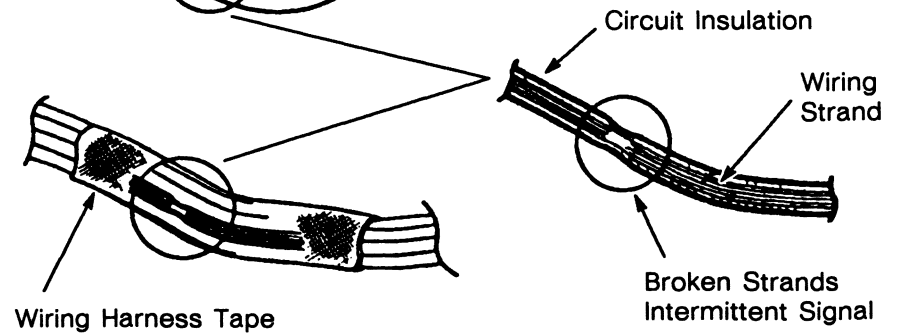


Splice Covered

## 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

## 2-7 HOW TO USE THIS MANUAL

1993 MUSTANG

### HOW TO FIND THE VACUUM CONCERNS

These six steps present an orderly method of troubleshooting.

#### Step 1. Verify the concern.

- Operate the system and observe all symptoms to check the accuracy and completeness of the customer's complaint.

#### Step 2. Narrow the concern.

- Narrow down the possible causes and locations of the concern to pinpoint the exact cause.

#### Step 3. Test the cause.

- Use test procedures to find the specific cause of the symptoms.

#### Step 4. Verify the cause.

- Confirm that you have found the right cause by operating the parts of the circuit you think are good.

#### Step 5. Make the repair.

- Repair or replace the inoperative component.

#### Step 6. Verify the repair.

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

**NOTE: Vacuum system problems fall into three groups.**

1. Leaks in hoses, connectors or motor diaphragms.
2. Pinched lines or clogged valves.
3. Inoperative parts driven by vacuum motors.

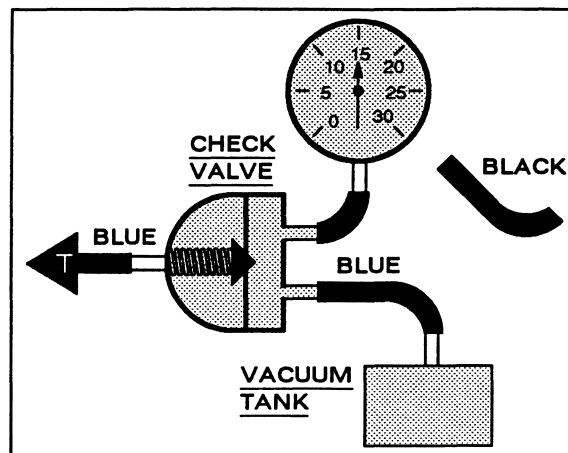


Figure 1 - System Supply Test

#### Vacuum Supply Test

1. Connect Vacuum Tester to system side of Check Valve (Figure 1).
2. Start engine. Gauge should show approximately 15 inches of vacuum.
3. Turn off engine, and observe gauge:
  - If vacuum holds, supply OK.
  - If vacuum fails, replace Check Valve or Tank.

#### Leak Test

1. Connect Vacuum Gauge and Vacuum Pump (Figure 2) to system hose in place of tank.
2. Open valve and start pump. Operate control in all modes.
3. Listen for hiss and observe gauge.

**NOTE: Hissing is normal at Function Control when changing modes.**

If system hisses or loses vacuum, find system leak as follows:

1. Turn on Vacuum Pump and check vacuum build-up.
2. Stop pump; vacuum should drop.
3. Clamp supply hoses with needlenose pliers, one at a time, until vacuum stops dropping (Figure 2).
4. Check vacuum schematic to find components in that line.
5. Clamp hoses through circuit to find leak.

#### Component Test

1. Connect Vacuum Tester to component.
2. Pump Vacuum Tester. Check that all components operate correctly and vacuum holds.
3. Replace component if vacuum does not hold.

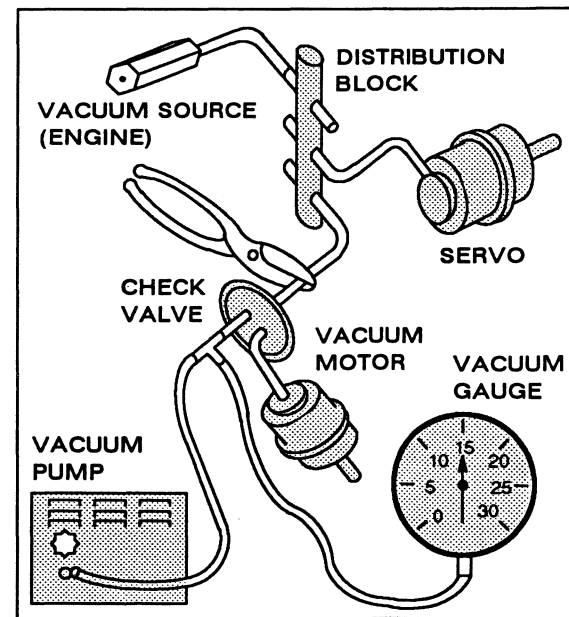


Figure 2 - Testing For Leaks In Typical Vacuum System

# HOW TO USE THIS MANUAL 2-8

1993 MUSTANG

## SAE J1930 NOMENCLATURE STANDARDS

Certain Ford component names have been changed in this EVTM to conform to Society of Automotive Engineers (SAE) directive J1930.

SAE J1930 standardizes automotive component names for all vehicle manufacturers.

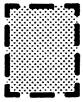
A table lists new 1993 SAE J1930 component names and the obsolete 1992 component names.

| 1993 MUSTANG COMPONENT NAMES                     | 1992 MUSTANG COMPONENT NAMES                                 |
|--|--|
| Barometric Pressure (BARO) Sensor                | Barometric Absolute Pressure (BAP) Sensor                    |
| Brake On/Off (BOO) Switch                        | Stop Lamp Switch   |
| Canister Purge (CANP) Solenoid                   | Canister Purge Solenoid                                      |
| Clutch Pedal Position (CPP) Switch #1            | (2.5L) Clutch Pedal Switch (5.0L) Clutch Engage Switch (CES) |
| Clutch Pedal Position (CCP) Switch #2            | Clutch Switch  |
| Constant Control Relay Module                    | Integrated Relay Control Module                              |
| Crankshaft Position (CKP) Sensor                 | Crankshaft Position Sensor                                   |
| Data Link Connector (DLC) C198                   | VIP Test Connector C198                                      |
| Data Link Connector (DLC) C199                   | VIP Test Connector C199                                      |
| Heated Oxygen Sensor (HO2S)                      | Heated Exhaust Gas Oxygen (HEGO) Sensor                      |
| Idle Air Control (IAC) Valve                     | Idle Air Bypass Valve  |
| Ignition Control Module (ICM)                    | Distributorless Ignition System (DIS) Module                 |
| Ignition Control Module (ICM)                    | TFI Ignition Module  |
| Inertia Fuel Shut-off Switch                     | Inertia Switch   |
| Intake Air Temperature (IAT) Sensor              | Air Charge Temperature (ACT) Sensor                          |
| Left Heated Oxygen Sensor (HO2S)                 | Left Heated Exhaust Gas Oxygen (HEGO) Sensor                 |
| Park/Neutral Position Switch                     | Neutral Gear Switch (NGS)                                    |
| Park/Neutral Position Switch                     | Backup/Neutral Safety Switch                                 |
| PCM Power Relay                                  | EEC Power Relay  |
| Power Steering Pressure (PSP) Switch             | Power Steering Pressure Switch                               |
| Powertrain Control Module (PCM)                  | Electronic Engine Control (EEC) Module                       |
| Right Heated Oxygen Sensor (HO2S)                | Right Heated Exhaust Gas Oxygen (HEGO) Sensor                |
| Secondary Air Injection Bypass (AIRB) Solenoid   | Thermactor Air Bypass (TAB) Solenoid                         |
| Secondary Air Injection Diverter (AIRD) Solenoid | Thermactor Air Diverter (TAD) Solenoid                       |
| Starter Clutch Pedal Position (SCPP) Switch      | Clutch Interrupt Switch                                      |
| Throttle Position (TP) Sensor                    | Throttle Position Sensor                                     |

# 2-9 HOW TO USE THIS MANUAL

1993 MUSTANG

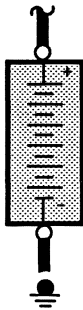
## ELECTRICAL SYMBOLS



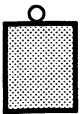
**DASHED COMPONENT BOX**  
ONLY PART OF THE COMPONENT IS SHOWN ON THE PAGE; THE COMPONENT IS SHOWN COMPLETE IN ANOTHER LOCATION



**COMPONENT WITH CONNECTORS**



**BATTERY**



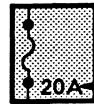
**SCREW TERMINAL ON COMPONENT**

**SOLID STATE**

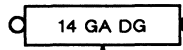
**SEALED ELECTRONIC COMPONENT**  
ANY CIRCUITRY SHOWN INSIDE THE BOX IS A FUNCTIONAL EQUIVALENT ONLY AND IS NOT EXACT



**GROUND CONNECTION**



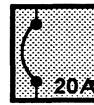
**FUSE**  
CURRENT RATING



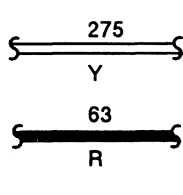
**FUSIBLE LINK**  
WIRE SIZE AND COLOR



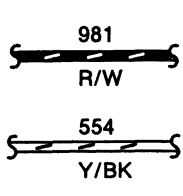
**MAXI-FUSE or FUSIBLE LINK CARTRIDGE**  
CURRENT RATING



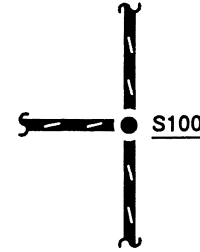
**CIRCUIT BREAKER**  
CURRENT RATING



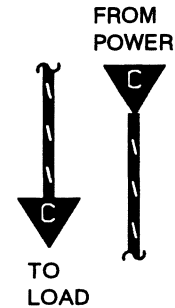
**SOLID WIRES**



**STRIPED WIRES**



**SPLICE OR CRIMP TERMINAL**

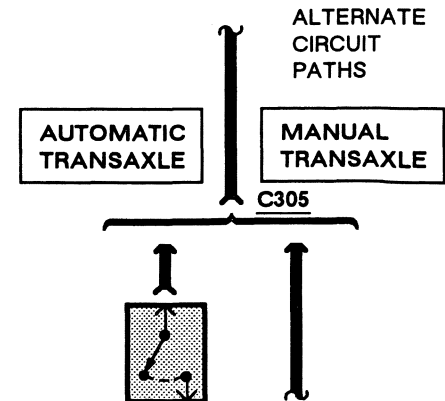


**"CUT" WIRES REFERENCED BETWEEN PAGES**  
ARROWS SHOW CURRENT FLOW FROM POWER TO GROUND



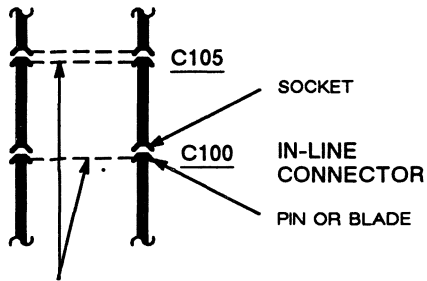
**BACKUP LIGHTS**

**"REFERENCE" WIRES**  
COMPLETE WIRING SHOWN ON ANOTHER PAGE



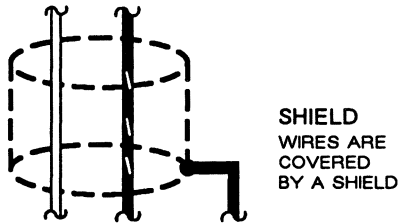
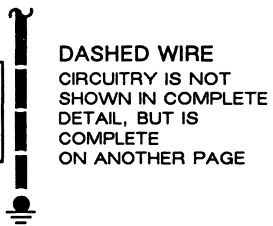


## ELECTRICAL SYMBOLS



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

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



MOTOR



HEATING ELEMENT



THERMISTOR



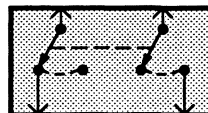
RHEOSTAT OR POTENTIOMETER



SOLENOID



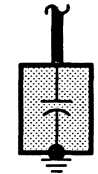
SWITCH



GANGED SWITCHES  
CONTACTS MOVE AT THE SAME TIME



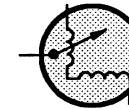
DIODES  
CURRENT FLOWS IN DIRECTION OF ARROW ONLY



CAPACITOR



TRANSISTOR



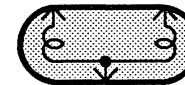
GAUGE



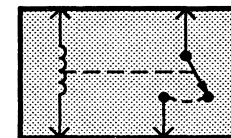
LIGHT EMITTING DIODE (LED)



LIGHT BULB



DUAL FILAMENT LIGHT BULB



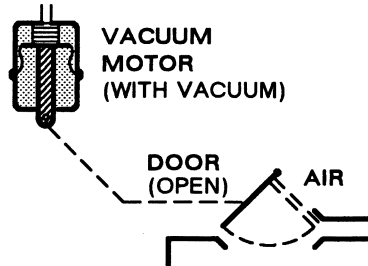
RELAY  
CONTACTS CHANGE POSITION WITH CURRENT THROUGH COIL

# 2-11 HOW TO USE THIS MANUAL

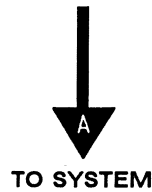
1993 MUSTANG

## VACUUM SYMBOLS

"T" JUNCTION



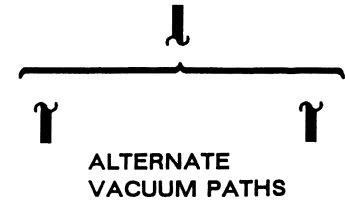
VACUUM ON VACUUM MOTOR PULLS DOOR OPEN TO LET AIR PASS THROUGH



TO SYSTEM

"CUT" HOSES REFERENCED BETWEEN PAGES  
ARROW SHOWS FROM MANIFOLD FITTING TO COMPONENT

FROM VACUUM DISTRIBUTION

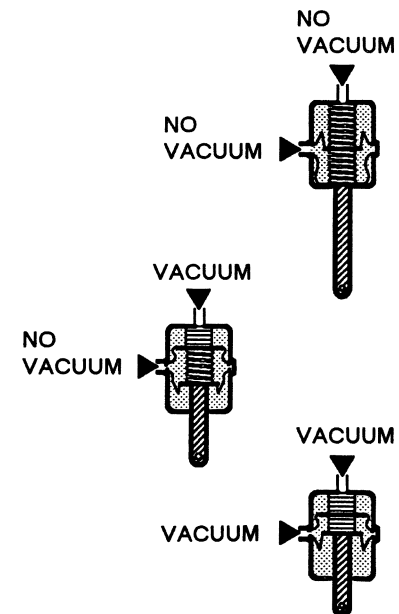


ALTERNATE VACUUM PATHS

### NOTE

Other vacuum symbols used on vacuum system diagrams are fully explained on those pages.

## DOUBLE DIAPHRAGM MOTOR



## VACUUM MOTOR OPERATION

### SINGLE DIAPHRAGM MOTOR

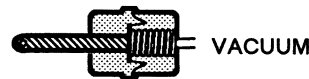
NO VACUUM



VACUUM



### SERVO MOTOR



Some vacuum motors, such as the Servo Motor in the Speed Control, can position the actuating arm at any position between fully extended and fully retracted. The Servo is operated by a control valve that applies varying amounts of vacuum to the motor. The higher the vacuum level, the greater the retraction of the motor arm. Servo Motors work nearly the same way as two-position motors, except for the way the vacuum is applied. Servo Motors are generally larger and provide a calibrated control.

Vacuum motors operate like electrical solenoids, mechanically pushing or pulling a shaft between two fixed positions. When vacuum is not applied, the shaft is pushed all the way out by a spring.

A double diaphragm motor has three positions (it is actually two motors in one housing). When the top port gets vacuum, the shaft pulls halfway in. When both ports get vacuum, the shaft pulls all the way in.

# 7-1 CIRCUIT OPERATION

1993 MUSTANG

## SECTION 10

### GROUNDS

#### HOW THE CIRCUIT WORKS

The ground circuits show how many different systems may share a common ground point.

While all of the ground circuits shown are shown complete, additional ground circuits may exist in the vehicle. Any ground circuit not shown in Cell 10 is shown complete in the appropriate system schematic.

All wires are 57 (BK) unless otherwise noted.

## SECTION 12

### CHARGING SYSTEM

#### HOW THE CIRCUIT WORKS

The Alternator is belt-driven by the engine. Field current is supplied from the Integral Alternator Regulator (IAR), mounted on the rear of the Alternator, to the rotating field of the Alternator, through two brushes and two slip rings.

The Alternator produces power in the form of alternating current. The alternating current is rectified to direct current by six diodes. The Alternator Regulator automatically adjusts the Alternator field current to maintain the Alternator output voltage within prescribed limits to correctly charge the Battery. The Alternator is self-current limiting.

The regulator voltage control circuit is turned on when the Ignition Switch is in START or RUN and voltage is applied to Regulator terminal I through a resistor in parallel with the Charge Indicator. When the Ignition Switch is OFF, the control circuit is turned OFF and no field current flows to the Alternator.

The Charge Indicator is connected across the terminals of a 500-ohm resistor in the Instrument Cluster. Current passes through the Indicator when the Ignition Switch is in START or RUN and there is no voltage at terminal S. When voltage at terminal S rises to a preset value, the regulator switching circuits stop the

flow of current into terminal I and the indicator turns OFF.

System voltage is "sensed" at Regulator terminal A. The regulator switching circuits turn the warning indicator ON to indicate a system fault if terminal A voltage is excessively high or low or if the voltage at terminal S is below a preset value.

A Fuse Link is included in the charging system wiring on all models. The Fuse Link prevents damage to the wiring harness and Alternator if the wiring harness should become grounded or if a booster battery is improperly connected to the charging system.

For further diagnostic information, refer to Section 14-00 of the Service Manual.

## SECTION 13

### POWER DISTRIBUTION

#### HOW THE CIRCUIT WORKS

The Power Distribution circuits show how several systems may receive power through the same fuse, circuit breaker or fuse link.

The circuits shown also indicate whether a particular fuse, circuit breaker or fuse link receives power directly from the Battery or through the Ignition Switch contacts.

## SECTION 13 (cont'd)

For further diagnostic information, refer to Section 18-01 of the Service Manual.

## SECTION 20

### STARTING SYSTEM

#### HOW THE CIRCUIT WORKS

The Battery, Starter Motor, Starter Relay and Ignition Switch make up the Starting System. On vehicles with automatic transmis-

sions, the Park/Neutral Position Switch must be closed (PARK or NEUTRAL) to operate the Starter Motor. On vehicles with manual transmissions, the Starter Clutch Pedal Position (SCPP) Switch must be closed (clutch fully depressed) to operate the Starter Motor.

Turning the Ignition Switch to START sends current through the Starter Relay coil and the relay operates. Current from the Battery then flows directly through the Starter Relay to the Starter Motor to start the engine.

For further diagnostic information, refer to Section 03-06 of the Service Manual.

## SECTION 21

### IGNITION SYSTEM

#### HOW THE CIRCUIT WORKS

#### DISTRIBUTION IGNITION (DI) SYSTEM (5.0L)

The Distributor Ignition (DI) System contains an Ignition Control Module (ICM), which is mounted on the side of the Distributor.

When the engine is cranking or running:

- The pickup in the Distributor provides the signal input through the Ignition Control

Module (ICM) to the Powertrain Control Module (PCM), which returns a signal to the Ignition Control Module (ICM). The Ignition Control Module switches current on and off in the primary circuit of the ignition coil, according to the signal from the Powertrain Control Module (PCM).

- Each interruption of primary current makes the Ignition Coil secondary circuit

produce an open circuit high-voltage pulse of up to 40,000 volts.

High-voltage pulses are transmitted to the Distributor, which sends them to fire the spark plugs.

Two signal circuits, 395 (GY/O) and 929 (PK), are connected between the Ignition Control Module (ICM) and the Powertrain Control Module (PCM).

## SECTION 21 (cont'd)

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

## SECTION 23

### ELECTRONIC ENGINE CONTROL (2.3 EFI)

#### HOW THE CIRCUIT WORKS

The Electronic Engine Control System uses a Powertrain Control Module (PCM) to control fuel flow, exhaust gas recirculation (EGR), ignition system functions, evaporative emission, idle speed, A/C cutout, and engine cooling.

#### Fuel Flow

The 2.3L Multiport Fuel Injection System (MFI) is classified as a multi-point, pulse time, fuel injection system. A metered amount of fuel is injected into each cylinder in accordance with engine demand. The PCM Module determines the required fuel flow rate from various engine sensors.

The Fuel Pump supplies fuel under pressure to the Fuel Injectors. When the Ignition Switch is turned to RUN or START, voltage is applied to the Fuel Pump from the Constant Control Relay Module through the Inertia Fuel Shut-off Switch. The Inertia Fuel Shut-off Switch is a safety device which cuts off voltage to the Fuel Pump in the event of a collision. Once the Iner-

tia Fuel Shut-off Switch opens, it must be reset manually.

**NOTE:** If the engine does not operate after a collision, it may be that the Inertia Fuel Shut-off Switch has opened. To reset the switch, put your finger through the hole in front of the trunk trim line and push down on the plunger.

#### WARNING

*If you see or smell gasoline, do not reset the Inertia Fuel Shut-off Switch.*

#### Exhaust Gas Recirculation (EGR)

The EGR Vacuum Regulator controls the EGR valve movement. The PCM Module receives data from various sensors and also checks the existing valve position through the EGR Valve Position Sensor. The PCM Module calculates if the present EGR flow should be increased, maintained or decreased, and determines how to operate the EGR Valve to control emissions.

#### Canister Purge

The carbon canister collects fuel vapors from the fuel tank to be burned later in the engine. The Canister Purge (CANP) Solenoid is controlled by the PCM Module. When the PCM Module grounds the Canister Purge (CANP) Solenoid, the vapors are released to the engine for burning.

#### Ignition

The PCM System has a special Electronic Ignition (EI) System that has no centrifugal or vacuum advance mechanisms. Instead, all ignition timing is controlled by the PCM Module.

#### Powertrain Control Module (PCM) Inputs

The Powertrain Control Module (PCM) uses information from various sensors to determine engine operating conditions.

#### Mass Air Flow (MAF) Sensor

The Mass Air Flow (MAF) Sensor directly measures the mass of the air flowing into the engine. The sensor output is used by the PCM Module to calculate the injector pulse width for proper air/fuel ratio.



# 7-5 CIRCUIT OPERATION

1993 MUSTANG

## SECTION 23 (cont'd)

### A4LD Transmission

The A4LD Transmission is an electronically controlled four speed automatic transmission. The Powertrain Control Module (PCM) uses inputs from various sensors to control the operation of the A4LD Transmission.

The A4LD Transmission has self-test capabilities much like those in other electronic control systems.

The Constant Control Relay Module (CCRM) supplies power to the PCM and PCM system related components. When the Ignition Switch is turned to RUN or START, voltage is applied to the 3-4 Shift Solenoid and the Torque Converter Clutch (TCC) Solenoid.

The Throttle Position (TP) Sensor is a potentiometer. The sensor output is a DC voltage that varies with throttle angle. By monitoring the TP Sensor output and other sensors, the PCM calculates the proper transmission line pressure, shift scheduling, and Torque Converter Clutch.

The Profile Ignition Pickup (PIP) signal is produced by Electronic Ignition (EI). It sends RPM and Crankshaft position information to the PCM to determine shift scheduling and torque converter operation.

The 3-4 Shift Solenoid provides gear selection of third and fourth gears by controlling the pressure to the shift valves.

The Torque Converter Clutch (TCC) Solenoid provides the torque converter clutch con-

trol by shifting the converter clutch control valve to apply or release the torque converter clutch.

The Vehicle Speed Sensor generates an AC signal that is proportional to vehicle speed.

The PCM uses this speed signal and other inputs to determine the shift scheduling and converter clutch control.

The Brake On/Off (BOO) Switch is used to prevent converter clutch operation when the brake has been depressed.

This input is ignored if the Throttle Position Sensor indicates more than one third throttle position.

The Engine Coolant Temperature Sensor is a thermistor in which resistance decreases as engine coolant temperature increases. The PCM measures the voltage drop across the Engine Coolant Temperature Sensor and uses this information to help calculate fuel delivery, spark timing and EGR control and clutch converter operation.

### Idle Air Control (IAC) Valve

The Idle Air Control (IAC) Valve controls engine idle speed by regulating the amount of air allowed to pass around the throttle plates. This permits the PCM Module to make idle speed corrections to prevent engine stall during cold engine warm-ups as engine load changes.

### Barometric Pressure (BARO)

The Barometric Pressure (BARO) Sensor measures the barometric pressure and provides this information as a variable frequency signal to the PCM Module.

### Throttle Position (TP) Sensor

The Throttle Position (TP) Sensor is a potentiometer. The sensor output is a DC voltage that varies with throttle plate angle. By monitoring the Throttle Position (TP) Sensor output, the PCM Module calculates fuel delivery requirements based on driver demand and assists automatic transmission operation.

### Heated Oxygen Sensor (HO2S)

The Heated Oxygen Sensor (HO2S) provides a voltage for regulating the air/fuel ratio to the PCM Module by sensing the oxygen content of the exhaust gases. Too much oxygen indicates a lean mixture, while too little oxygen indicates a rich mixture.

### Power Steering Pressure (PSP) Switch

The Power Steering Pressure (PSP) Switch is used to indicate increased engine load to the PCM Module. The switch will signal increased engine load to the PCM Module when power steering fluid pressure increases (when the steering is turned from lock to lock). The PCM Module will then increase engine idle speed to prevent engine stall.

## SECTION 23 (cont'd)

### Engine Coolant Temperature (ECT) Sensor

The Engine Coolant Temperature (ECT) Sensor is a thermistor whose resistance decreases as engine coolant temperature increases and increases as engine coolant temperature decreases (Negative Temperature Coefficient). The PCM Module measures the voltage drop across the Engine Coolant Temperature (ECT) Sensor and uses this information to calculate fuel delivery, spark timing, EGR and automatic transmission operation.

### Intake Air Temperature (IAT) Sensor

The Intake Air Temperature (IAT) Sensor is a thermistor whose resistance decreases as manifold air temperature increases and increases as manifold air temperature decreases (Negative Temperature Coefficient). The PCM Module measures the voltage drop across the Intake Air Temperature (IAT) Sensor and uses this information to calculate fuel delivery, spark timing and EGR control.

### Vehicle Speed Sensor (VSS)

The Vehicle Speed Sensor (VSS) generates an AC signal that is proportional to vehicle speed. The AC signal is sent to the PCM Module and is used for engine management and automatic transmission operation.

### Constant Control Relay Module (CCRM)

The Constant Control Relay Module (CCRM) supplies power to the A/C Clutch, Electric Cooling Fan, Fuel Pump and PCM Module. Their functions are integrated into the module.

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

## SECTION 24

### ELECTRONIC ENGINE CONTROL (5.0L)

#### HOW THE CIRCUIT WORKS

The Electronic Engine Control System uses a Powertrain Control Module (PCM) to control fuel flow, exhaust gas recirculation (EGR), ignition system functions, evaporative emission, idle speed, A/C cutout, and air management.

#### Fuel Flow

Fuel injectors, mounted in the intake manifold at the intake port, meter the flow of fuel into the engine. The PCM Module fires the injectors.

Fuel is supplied to the engine by an in-tank Electric Fuel Pump. When the Ignition Switch is turned to the RUN position, voltage is applied to the Fuel Pump Relay Coil. The Coil is grounded by the PCM Module and the relay contacts close. Voltage is now applied to the Fuel Pump.

When the Fuel Pump Relay is grounded by the PCM Module and the Inertia Fuel Shut-off Switch is closed, power is supplied to the Fuel Pump. Fuel flow is produced by the Fuel Pump, and fuel pressure is built up in the fuel delivery system. Fuel pressure is controlled by a fuel pressure regulator.

**NOTE:** If the engine does not operate after a collision, it may be that the Inertia Fuel Shut-off Switch has opened. To reset the switch, put your finger through the hole in front of the trunk trim line and push down on the plunger.

#### WARNING

*If you see or smell gasoline, do not reset the Inertia Fuel Shut-off Switch.*

# 7-9 CIRCUIT OPERATION

1993 MUSTANG

## SECTION 33

### COOLING FANS

#### HOW THE CIRCUIT WORKS

The Cooling Fan System consists of a one-speed fan and an electric motor. The Electric

Cooling Fan operates only when the Ignition Switch is in RUN.

The Constant Control Relay Module and the Powertrain Control Module (PCM) control the Electric Cooling Fan.

The Electric Cooling Fan turns on when the engine temperature is higher than normal (on at 102°C, off at 99°C), or A/C is on and vehicle speed does not provide enough airflow (on at 52 mph or below, off at 45 mph).

For further diagnostic information, refer to Section 03-03 of the Service Manual.

## SECTION 37

### SHIFT LOCK

#### HOW THE CIRCUIT WORKS

With the Ignition Switch in RUN, the Shift Lock Actuator prevents the driver from shifting the automatic transmission out of PARK unless the brake pedal is depressed.

**NOTE:** If the gear selector cannot be shifted out of Park with the Ignition Switch in RUN and the brake pedal depressed, follow these steps:

- Turn Ignition Switch to OFF
- Move shift lever to NEUTRAL
- Start the engine
- Shift into DRIVE

For further diagnostic information, refer to Section 17-05 of the Service Manual.

## SECTION 44

### HORN/CIGAR LIGHTER HOW THE CIRCUIT WORKS

#### Horn

A Horn Switch is mounted in each of the upper steering wheel spokes. With a Horn Switch depressed, the Horn Relay is energized and

current flows from Fuse 16 through the Horn Relay contacts to the Low and High Pitch Horns. The horns sound.

#### Cigar Lighter

Voltage is applied, at all times, through Fuse 16 to the Cigar Lighter. When the Cigar

Lighter is depressed, the contacts close and current flows through the heating element to ground.

For further diagnostic information, refer to Sections 11-04 and 13-06 of the Service Manual.

## SECTION 46

### AIR BAG RESTRAINT SYSTEM HOW THE CIRCUIT WORKS

The Air Bag Restraint System consists of a driver air bag, an Air Bag Diagnostic Module and Crash Sensors.

#### Air Bag Diagnostic Module

The Air Bag Diagnostic Module contains a microcomputer that monitors electrical system components and connections. The assembly performs a self-check of the microcomputer's internal circuits and energizes the Air Bag Indicator lamp during prove out and whenever a fault occurs. Eleven different faults can be detected and translated into a coded lamp display. If certain faults occur, the system will be

disarmed by a firing disarm device built into the Diagnostic Module. If a system fault exists and the lamp is malfunctioning, an audible tone will be heard, indicating the need for service.

#### Sensors

The Sensor assembly is an electrical switch that reacts to impacts according to direction and force. It discriminates between impacts that require air bag inflation and impacts that do not require air bag inflation. When an impact occurs that requires air bag inflation, the sensor contacts close, completing the electrical circuit, and the system then operates.

Four crash sensors are mounted in the vehicle. At least two sensors, one safing, one

forward, must be activated to inflate the air bag.

#### Warning

Do not attempt to diagnose or troubleshoot air bag circuitry without consulting the shop manual. Improper troubleshooting could cause the air bag to fire inadvertently, causing injury.

For further diagnostic information, refer to Section 01-20 of the Service Manual.

## SECTION 60 (cont'd)

If the oil level is adequate, the Indicator will turn off when the Ignition Switch is released to the RUN position. If the oil level is low (approximately 1.4 liters [1.5 quarts] or less), the Relay will ground circuit 208 (GY) to turn on the lamp. The lamp remains on until the Ignition Switch is turned to the OFF position.

### Check Low Coolant Indicator (5.0L)

The Low Coolant Switch, mounted on the recovery bottle, is used to illuminate the Low Coolant Indicator. Located in the instrument cluster, the Indicator informs the driver of a low coolant condition. When the ignition is turned to the START or RUN position, the CHECK COOLANT light illuminates for a couple of seconds and then turns OFF after the engine is started, which indicates adequate coolant fill.

The Low Coolant Indicator illuminates when the coolant level drops 2 inches below the FULL COLD mark, located on the side of the recovery bottle. When indicating a low coolant condition, the Low Coolant Indicator stays illuminated. The CHECK COOLANT light stays illuminated until the coolant is filled to the FULL HOT mark and the vehicle ignition is turned to the OFF position and then cycled back to START or RUN.

After the Ignition Switch is turned off, five minutes will pass before the Relay will take a new reading. This delay allows time for oil drainback to prevent false readings. If the engine is restarted during this 5 minute period, the last reading will be indicated.

### Low Coolant Level

When the Ignition Switch is turned to the RUN position, the CHECK COOLANT light will illuminate for a couple of seconds and then turn off when the engine is started, indicating adequate coolant fill. If the coolant level in the recovery bottle is low (below the FULL COLD line when the engine is cold), the CHECK COOLANT light will illuminate, delay for about five seconds, then turn back on, indicating a low coolant condition. When indicating a low coolant condition, the CHECK COOLANT light will latch to the ON position. The CHECK COOLANT light will remain on until the coolant is filled to the FULL HOT line and the vehicle ignition is turned to the off position and then cycled back on.

For further diagnostic information, refer to Section 13-01 of the Service Manual.

## SECTION 64

### VEHICLE SPEED SENSOR (VSS)

#### HOW THE CIRCUIT WORKS

The Vehicle Speed Sensor (VSS) is a small signal generator that is turned by a gear inside

the transmission assembly. The Vehicle Speed Sensor (VSS) produces a signal that is proportional to vehicle road speed.

The Vehicle Speed Sensor (VSS) supplies this signal to the components that require ve-

hicle speed information including the Speed Control Amplifier (on Speed Control equipped vehicles) and Powertrain Control Module (PCM).

For further diagnostic information, refer to Section 17 (Test DP) in the Powertrain Control/Emissions Diagnosis Manual.



# 7-15 CIRCUIT OPERATION

1993 MUSTANG

## SECTION 66

### WARNING CHIME

#### HOW THE CIRCUIT WORKS

##### Key Warning

The Warning Chime sounds when the driver's door is open and the key is in the Ignition Switch, and keeps sounding until the door is closed or the key is removed. When the driver's door is open, power is supplied to the Warning Chime Module through circuit 159 (R/PK). When the key is in the ignition, ground is supplied to the Warning Chime Module through circuit 158 (BK/PK).

##### Fasten Belts

When the Ignition Switch is turned to the START or RUN position, power is supplied through circuit 640 (R/Y) to the Warning Chime Module, which supplies power through circuit 450 (DG/LG) to illuminate the Fasten Belts indicator for approximately six seconds.

If the driver's safety belt is not fastened, ground is supplied from the Seat Belt Switch through circuit 85 (BR/LB) to the Warning Chime Module and it sounds during the six sec-

onds that the Fasten Belts Indicator is illuminated.

##### Lights On

The Warning Chime will sound when opening the driver's door with the Main Light Switch in PARK or HEAD, until the door is closed or the Headlamps are turned OFF. When the driver's door is open, power is supplied through circuit 159 (R/PK) to the Warning Chime Module. When the Main Light Switch is in PARK or HEAD, power is supplied through circuit 14 (BR) to the Warning Chime Module.

For further diagnostic information, refer to Section 13-09 of the Service Manual.

## SECTION 71

### INSTRUMENT ILLUMINATION

#### HOW THE CIRCUIT WORKS

Voltage is applied, at all times, to the Main Light Switch through Fuse 4. When the Main

Light Switch is set to PARK or HEAD, voltage is applied through Fuse 13 to the Instrument Illumination Lamps. The Instrument Panel Dimming Rheostat adjusts the voltage applied to the Instrument Illumination Lamps.

For further diagnostic information, refer to Section 13-01 of the Service Manual.

## SECTION 81

### INTERVAL WIPER/WASHER

#### HOW THE CIRCUIT WORKS

The Interval Wiper/Washer allows the driver to select LO speed, HI speed or Interval wipe.

With the wipers in the interval position, wipes are spaced two to ten seconds apart.

The Interval Wiper/Washer Switch has a momentary Washer Switch, a four-position

Wiper Switch and a Variable Resistor which sets interval time.

## SECTION 81 (cont'd)

### Washer Operation

Pushing the wiper/washer control knob sends current from Fuse 2 through the Washer Switch to the Washer Pump.

### LO/Hi Speed Wiper Operation

When the Wiper Switch is in the LO or HI position, section A of the Wiper Switch powers the interval override input so that the Electronic Switch and the Governor Relay are pulled in continuously. Wiper Motor current then flows through Fuse 2 and the energized Governor Relay contacts to the L terminal of the Wiper Motor. Power is applied to the H terminal of the Wiper Motor through section B of the Wiper Switch for HI speed operation.

### Interval Wiper Operation

During interval operation, the wipers make single wipes at lo speed separated by a variable length pause.

When first switched to INT position, section B of the Wiper Switch activates the Interval Timer. The Interval Timer momentarily closes the Electronic Switch, energizing the Governor Relay. Current flows to the Wiper Motor L terminal through the contacts of the energized Governor Relay. Ground is connected to terminal C of the Wiper Motor.

As the Wiper Motor turns, the Wiper Motor Switch changes from the grounded PARK posi-

tion contact, which is not powered, and the Wiper Motor stops. After a pause (controlled by the variable resistor), the Interval Timer pulls in the Governor Relay to start another wipe.

When parking is complete, the Wiper Motor is braked to a stop by shunting the L and C terminals through the Wiper Motor Switch. Braking takes place when the Wiper Motor Switch moves to the PARK position. The Wiper Motor L terminal is connected to terminal C through the PARK contact of the Wiper Motor Switch and the deenergized contact of the Governor Relay.

For further diagnostic information, refer to Section 01-16 of the Service Manual.

## SECTION 85

### HEADLAMPS

#### HOW THE CIRCUIT WORKS

Power to operate the Headlamps flows through the Main Light Switch and the Dimmer

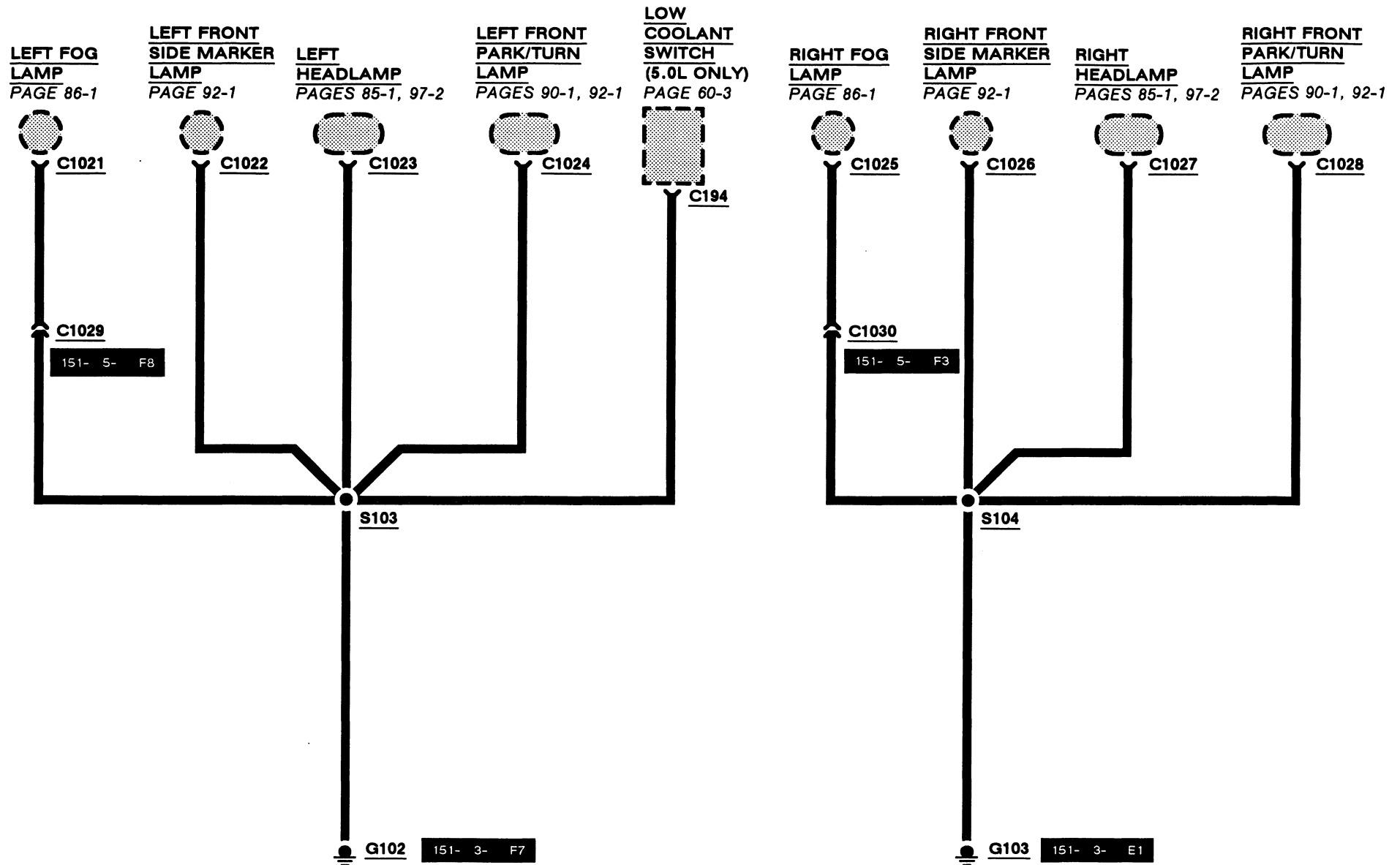
Switch. When the Dimmer Switch lever is pulled partway toward the driver, the Flash-to-pass Switch closes, providing power to the Hi Beam Headlamps from Fuse 10.

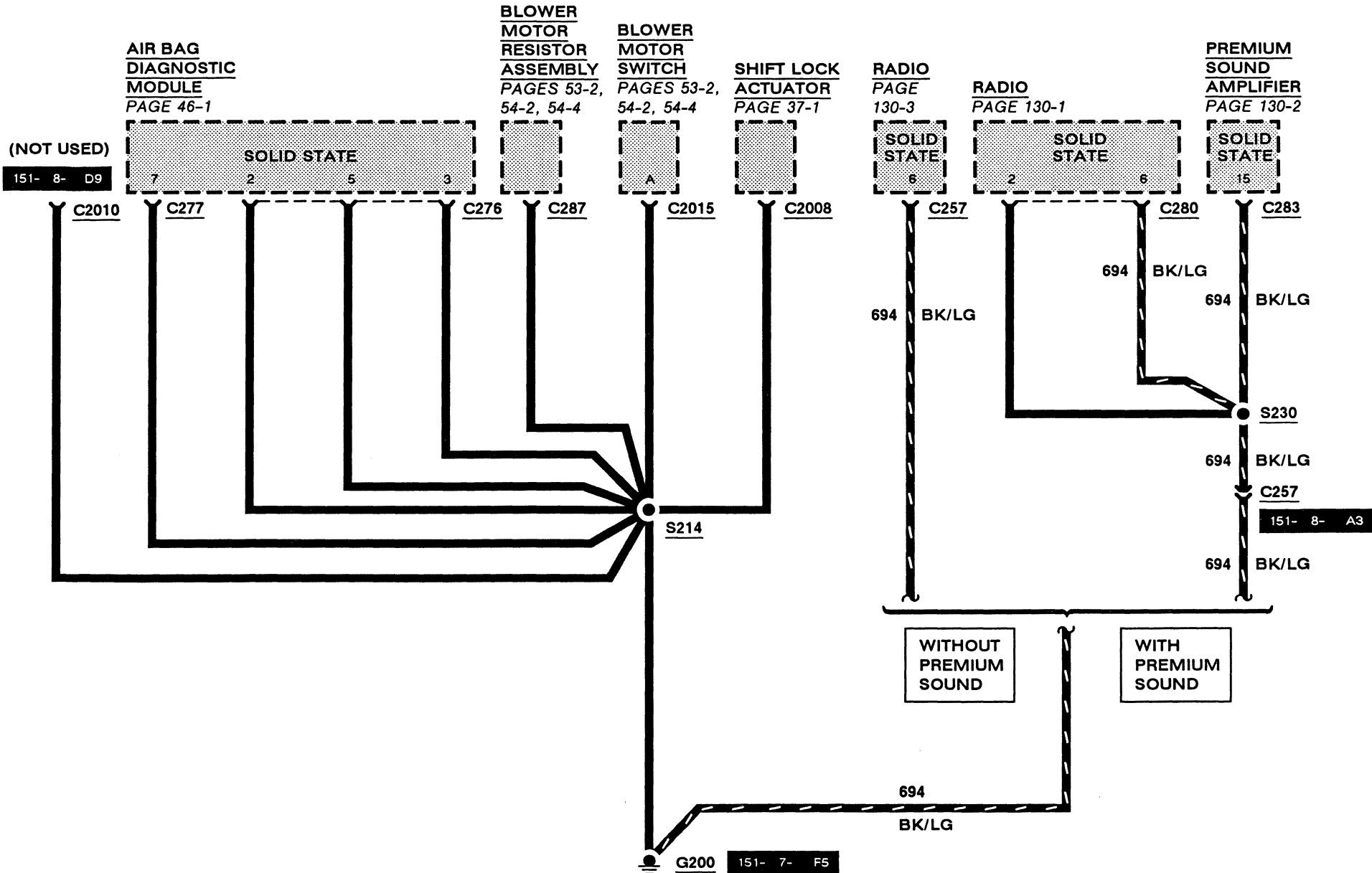
For further diagnostic information, refer to Section 17-01 of the Service Manual.

# 10-1 GROUNDS

1993 MUSTANG

For Circuit Operation, refer to page 7-1.





# 10-3 GROUNDS

1993 MUSTANG

## 2.3L

**CONSTANT CONTROL RELAY MODULE**  
PAGES 33-2, 54-3

**IGNITION SHIELD #2**  
PAGE 21-2

**CRANKSHAFT POSITION (CKP) SENSOR**  
PAGE 21-2

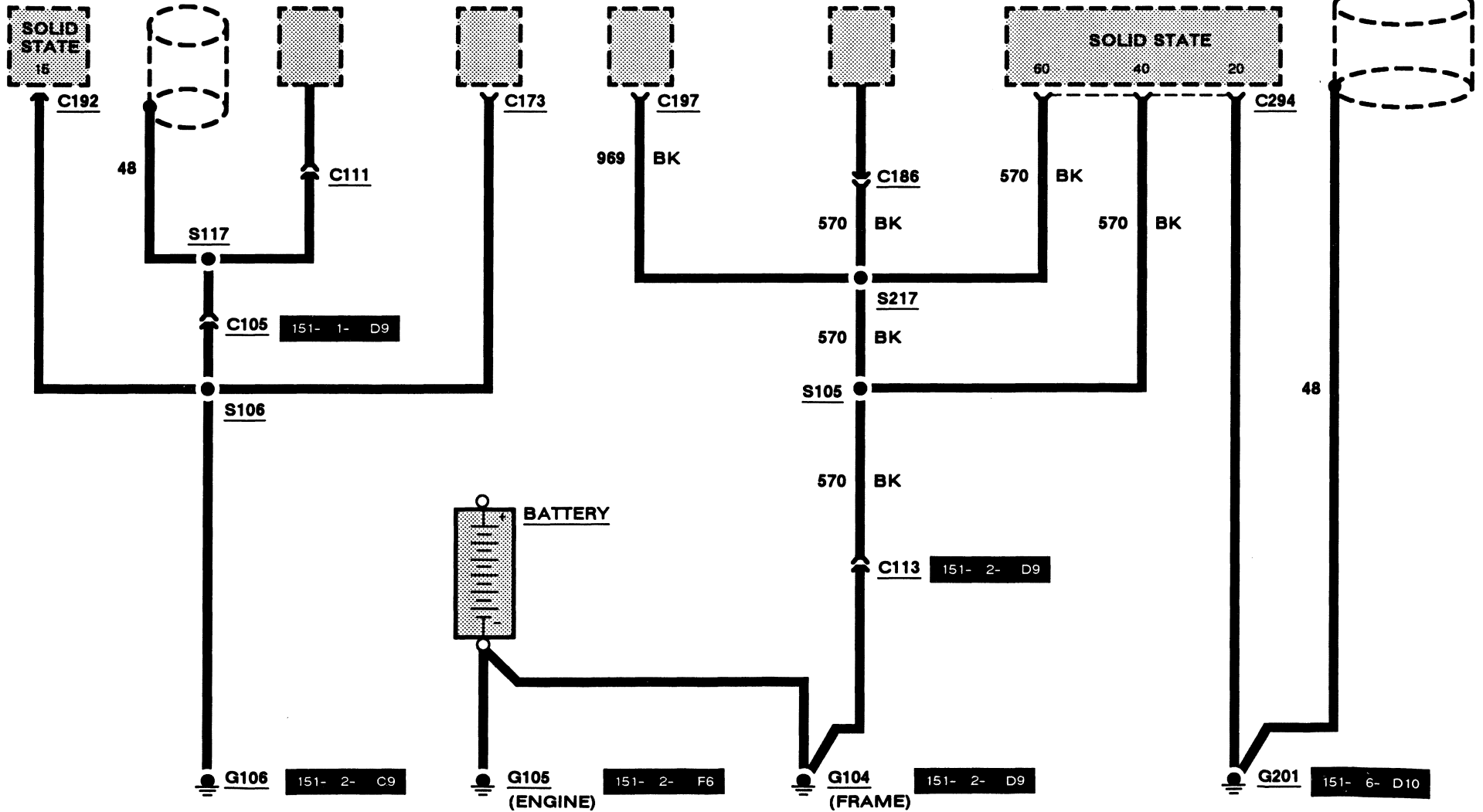
**ELECTRIC COOLING FAN**  
PAGE 33-1

**MASS AIR FLOW (MAF) SENSOR**  
PAGE 23-1

**HEATED OXYGEN SENSOR (HO2S)**  
PAGE 23-1

**POWERTRAIN CONTROL MODULE (PCM)**  
PAGES 23-1, 23-2

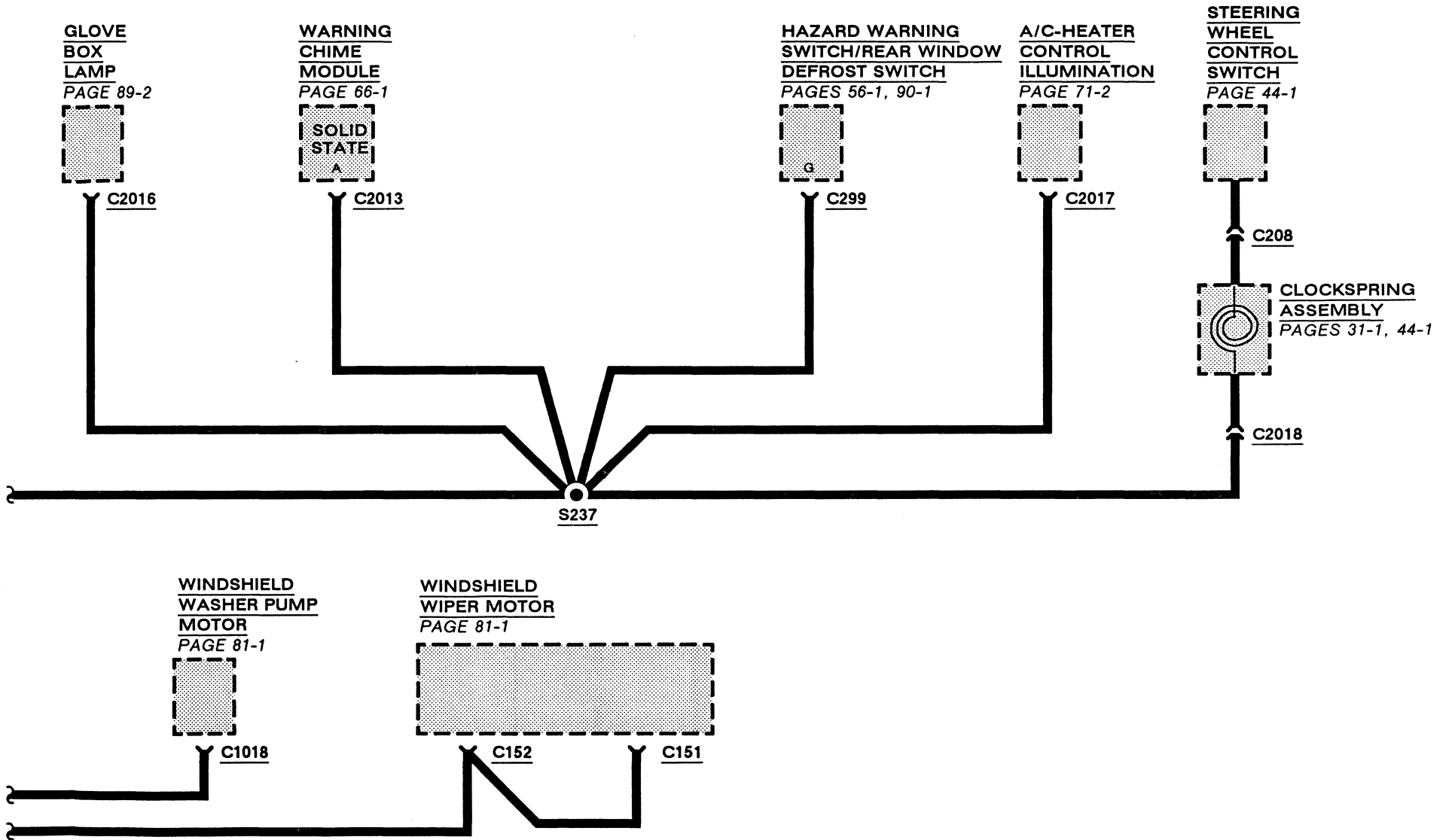
**IGNITION SHIELD #1**  
PAGE 21-2





# GROUNDS 10-6

1993 MUSTANG



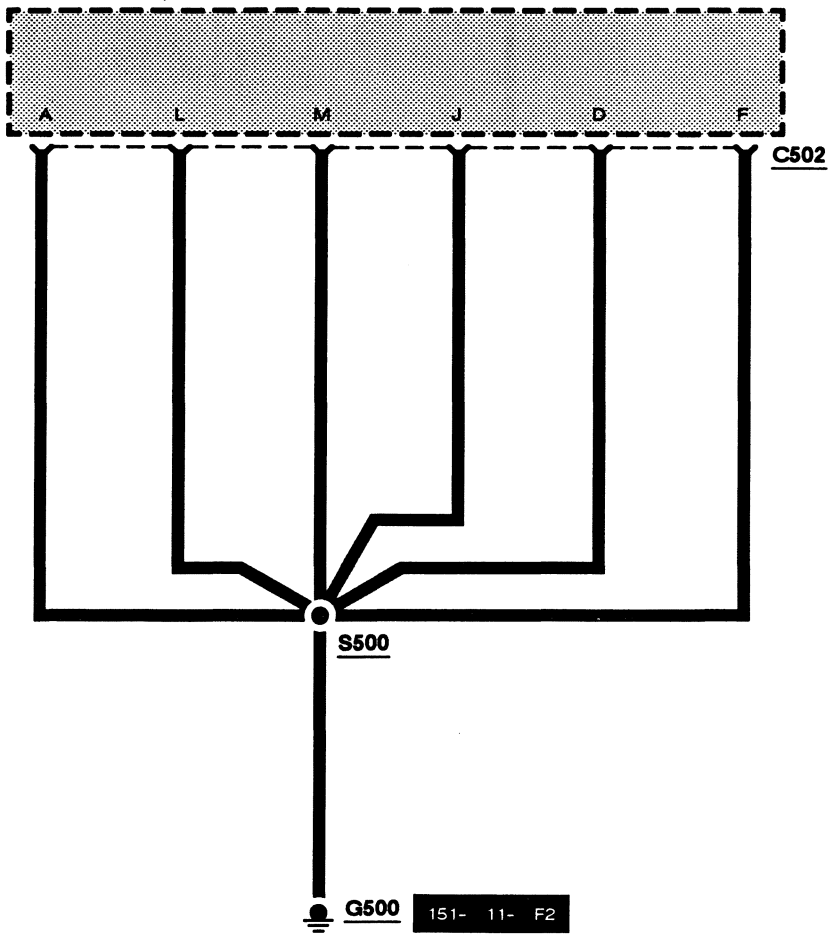
# 10-7 GROUNDS

1993 MUSTANG

**2 AND 3 DOOR**

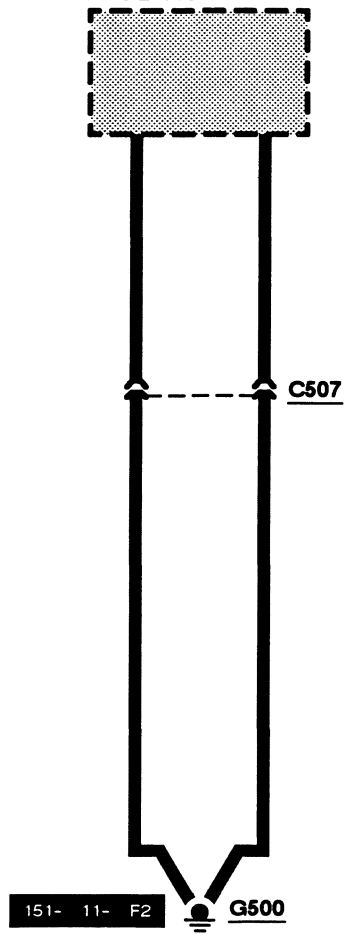
**WITH POWER WINDOWS**

**MASTER WINDOW/  
DOOR LOCK  
CONTROL SWITCH**  
PAGES 100-3, 110-1



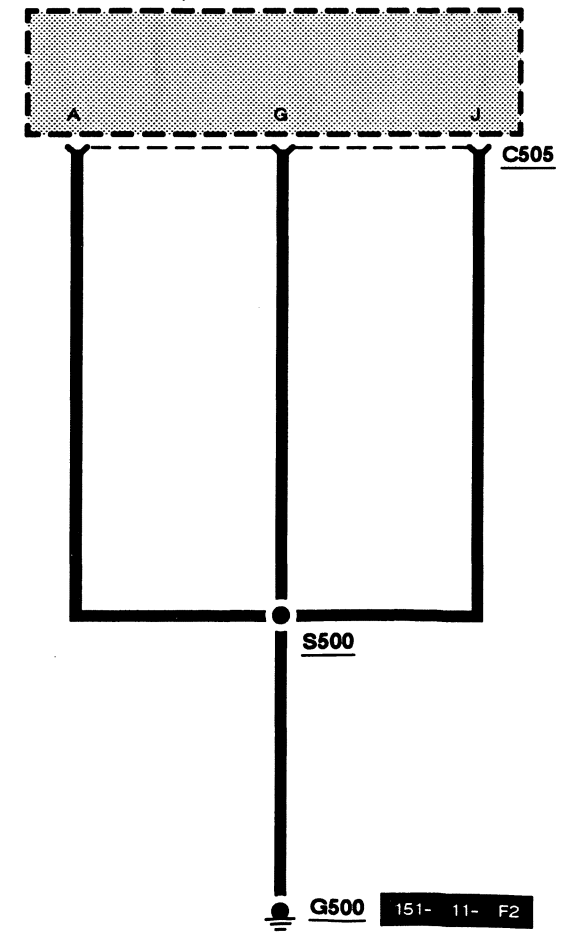
**WITHOUT POWER WINDOWS**

**LEFT DOOR  
LOCK SWITCH**  
PAGE 110-2



**CONVERTIBLE**

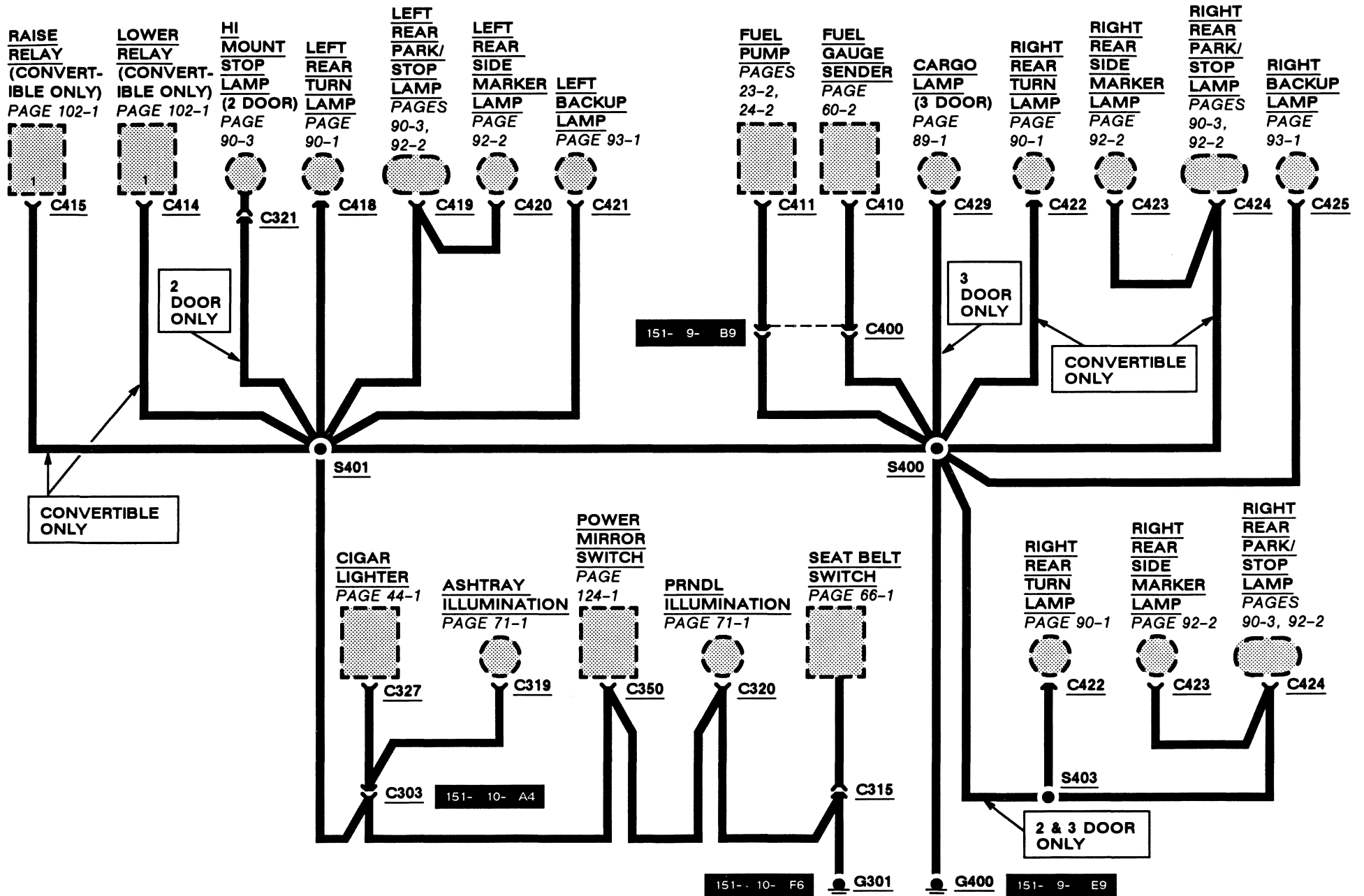
**MASTER WINDOW/  
DOOR LOCK  
CONTROL SWITCH**  
PAGES 100-1, 110-3

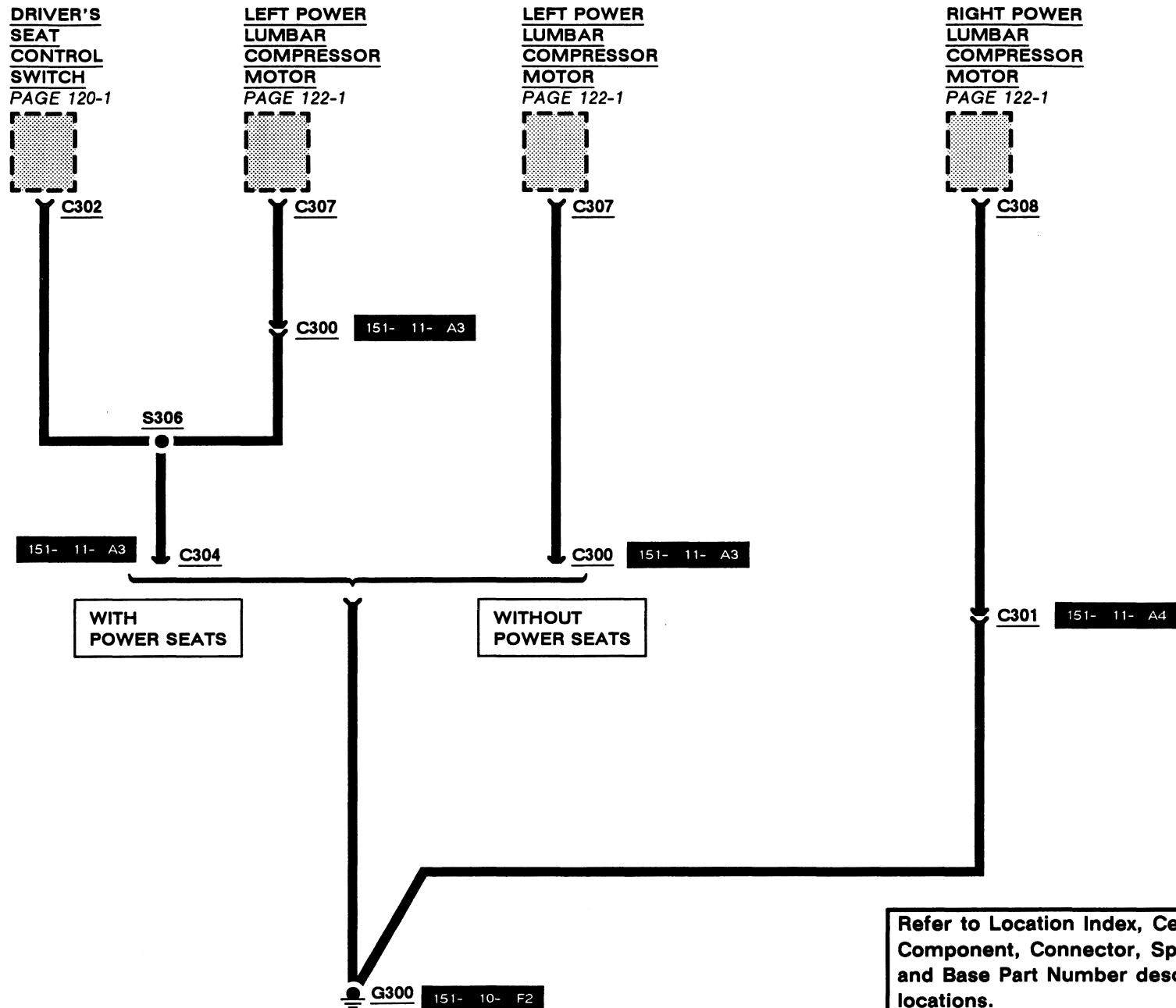


151- 11- F2

151- 11- F2

151- 11- F2





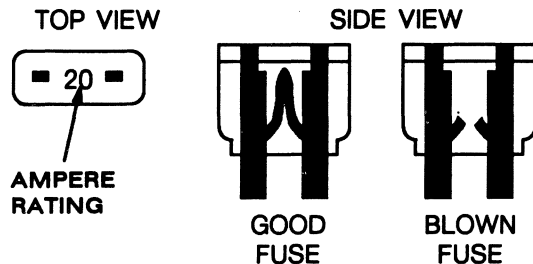
# 11-1 CIRCUIT PROTECTION/FUSE PANEL

1993 MUSTANG

## CIRCUIT PROTECTION DEVICES

Electrical circuits on this vehicle may be protected by fuses, fusible links, maxi-fuse cartridges, circuit breakers, or a combination of these devices.

### BLADE TYPE FUSE

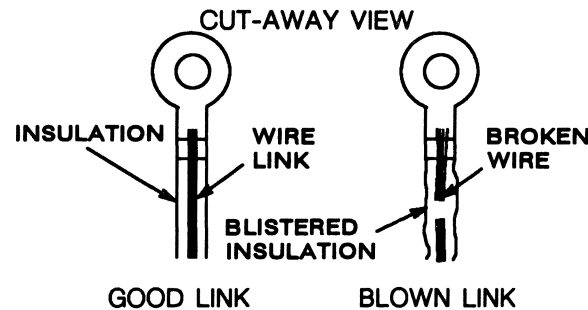


Blade type fuses have a transparent plastic housing. To check a fuse, pull it from the fuse panel and look at the fuse element through the housing. Always replace a blown fuse with a new fuse that has the same ampere rating.

The ampere rating of a blade type fuse can also be determined by following the color code shown here:

| BLADE FUSE COLOR CODING |               |
|-------------------------|---------------|
| AMPERE RATING           | HOUSING COLOR |
| 4                       | Pink          |
| 5                       | Tan           |
| 10                      | Red           |
| 15                      | Light Blue    |
| 20                      | Yellow        |
| 25                      | Natural       |
| 30                      | Light Green   |

### FUSIBLE LINK



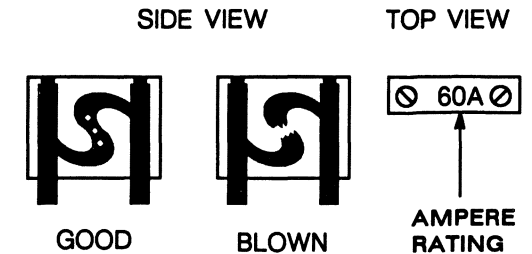
Fusible links are short lengths of wire that are smaller in diameter than the wires they are protecting. Fusible link wire is covered with a special thick, non-flammable insulation. An overload condition causes the insulation to blister. If the overload condition continues, the wire link will melt. To check a fusible link, look for blistered insulation. If the insulation is okay, pull lightly on the wire; if the fusible link stretches, the wire has melted.

When replacing fusible links, first cut the protected wire where it is connected to the fusible link. Then, tightly crimp or solder the new link to the protected wire.

Fusible links are often identified by color coding of the insulation, as shown here:

| FUSIBLE LINK COLOR CODING |                  |
|---------------------------|------------------|
| WIRE LINK SIZE            | INSULATION COLOR |
| 20 GA                     | Blue             |
| 18 GA                     | Brown or Red     |
| 16 GA                     | Black or Orange  |
| 14 GA                     | Green            |
| 12 GA                     | Gray             |

### MAXI-FUSE CARTRIDGE



Maxi-fuse cartridges have a transparent colored plastic housing. To check a maxi-fuse cartridge, look at the fuse element through the side of the housing.

To replace a maxi-fuse cartridge, pull it from the fuse box or panel. Always replace a blown maxi-fuse cartridge with a new one having the same ampere rating.

The ampere rating of a maxi-fuse cartridge can also be determined by following the color code shown here:

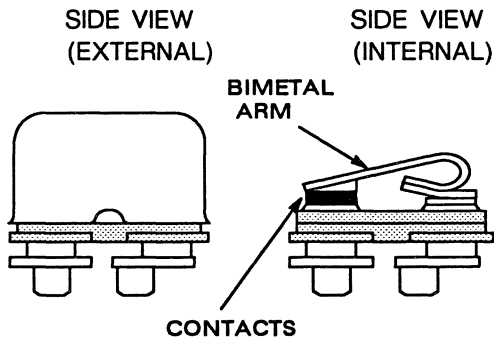
| FUSIBLE LINK CARTRIDGE COLOR CODING |               |
|-------------------------------------|---------------|
| AMPERE RATING                       | HOUSING COLOR |
| 30                                  | Light Green   |
| 40                                  | Amber         |
| 50                                  | Red           |
| 60                                  | Blue          |

## CIRCUIT BREAKER

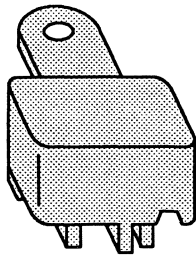
Some circuits are protected by circuit breakers (abbreviated "c. b." in fuse chart). They can be Fuse Panel mounted or in-line. Like fuses, they are rated in amperes.

Each circuit breaker conducts current through an arm made of two types of metal bonded together (bimetal arm). If the arm starts to carry too much current, it heats up. As one metal expands faster than the other the arm bends, opening the contacts. Current flow is broken. A circuit breaker can be the cycling or non-cycling type.

### FUSE PANEL MOUNTED CYCLING TYPE

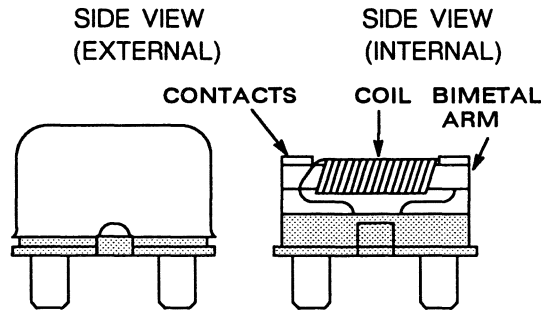


### IN-LINE MOUNTED CYCLING TYPE

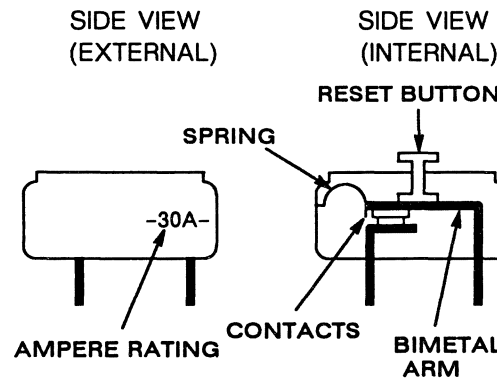


In the cycling type, the bimetal arm cools and straightens out. This cycle repeats as long as the overcurrent exists and power is applied.

### FUSE PANEL MOUNTED NON-CYCLING TYPE



### FUSE PANEL MOUNTED MANUAL RESET TYPE



Two types of non-cycling circuit breakers are used; one is reset by removing power from the circuit, and the other is reset by depressing a reset button.

In the first type, there is a coil wrapped around the bimetal arm. When an overcurrent exists and the contacts open, a small current passes through the coil. This current through the coil is not enough to operate a load, but it does heat up both the coil and the bimetal arm. This keeps the arm in the open position until power is removed.

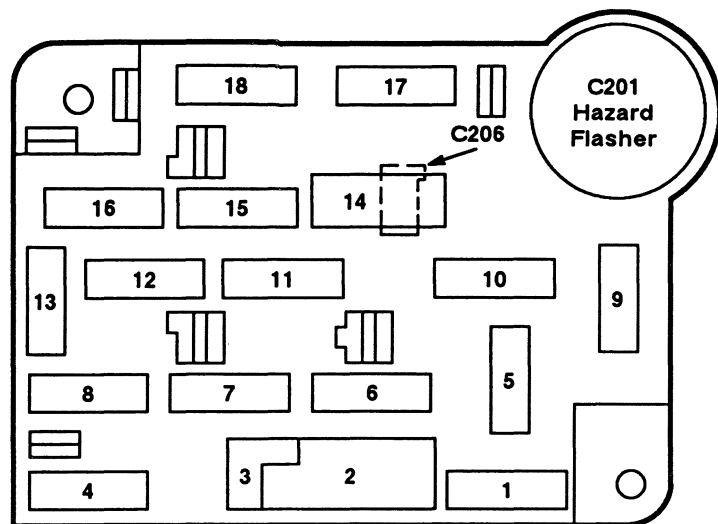
In the second type, a spring pushes the bimetal arm down and holds the contacts together. When an overcurrent condition exists and the bimetal arm heats up, the bimetal arm bends enough to overcome the spring and the contacts snap open. The contacts stay open until the reset button is pushed and the contacts snap together again.



Diodes are electrical devices that permit current to flow in one direction only. The current flows in the direction indicated by the arrow.

# 11-3 CIRCUIT PROTECTION/FUSE PANEL

1993 MUSTANG



| Fuse Value Amps | Color Code  |
|-----------------|-------------|
| 4               | Pink        |
| 5               | Tan         |
| 10              | Red         |
| 15              | Light Blue  |
| 20              | Yellow      |
| 25              | Natural     |
| 30              | Light Green |

## Power Distribution

The Alternator and Battery are connected together at the Starter Relay hot terminal. Other circuits originate at the Starter Relay hot terminal and are protected by fuse links. Low power circuits are also protected by fuses.

The Ignition Switch and Headlamp Switch are powered at all times, as are fuses 1, 4, 7, 8, 10, 12 and 16. The other fuses are powered through the Ignition Switch or the Main Light Switch.

Position 3 is not used.

| Fuse Position | Amps    | Circuits Protected  |
|---------------|---------|---|
| 1             | 15      | Turn/Stop/Hazard Lamps, Speed Control, Shift Lock   |
| 2             | 15      | Interval Wiper/Washer   |
| 3             | —       | (Not Used)  |
| 4             | 15      | Exterior Lamps, Instrument Illumination, Warning Chime  |
| 5             | 15      | Turn Signals, Backup Lamps, Rear Window Defrost, Convertible Top, Daytime Running Lamps (DRL), Shift Lock |
| 6             | 20      | Instrument Illumination, A/C-Heater, Trunk Lid Release, Speed Control                                     |
| 7             | 15      | Air Bag Restraint System  |
| 8             | 15      | Courtesy Lamps, Radio, Warning Chime, Power Mirror  |
| 9             | 30      | A/C-Heater  |
| 10            | 20      | Flash-to-Pass, Daytime Running Lamps (DRL)  |
| 11            | 15      | Radio   |
| 12            | 15      | Convertible Top   |
| 13            | 5       | Instrument Illumination   |
| 14            | 20 c.b. | Power Windows   |
| 15            | 15      | Fog Lamps   |
| 16            | 20      | Cigar Lighter, Horn   |
| 17            | 20      | Premium Sound Amplifier   |
| 18            | 15      | Instrument Cluster, Air Bag Restraint System, Warning Chime, Low Oil Level Warning Relay                  |

# 12-1 CHARGING SYSTEM

1993 MUSTANG

For Circuit Operation, refer to page 7-1. For diagnostic information, refer to Section 14-00 of the Service Manual.

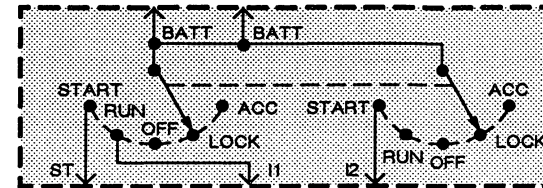
STARTER MOTOR/SOLENOID  
PAGE 20-2

SEE POWER DISTRIBUTION  
PAGE 13-1

STARTER RELAY  
PAGE 20-2

FUSE LINK F  
14 GA GREEN

HOT AT ALL TIMES

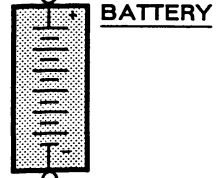
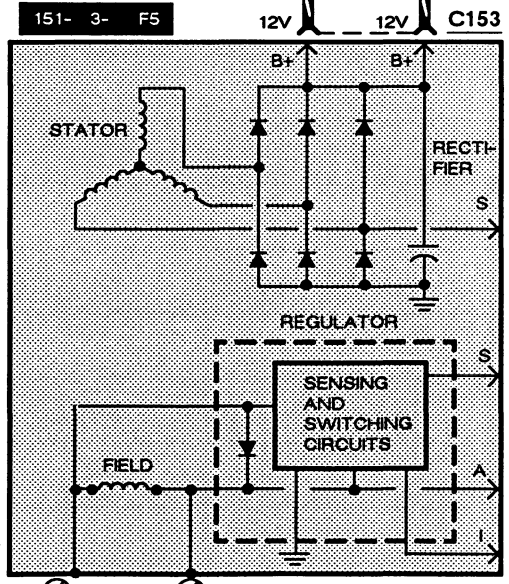


IGNITION SWITCH  
PAGE 13-3  
SEE PAGE 149-2  
FOR SWITCH TESTING  
151- 7- A8

FUSE LINK E  
18 GA BROWN

POWER DISTRIBUTION  
PAGE 13-3

INTEGRAL ALTERNATOR REGULATOR (IAR)  
151- 3- F5

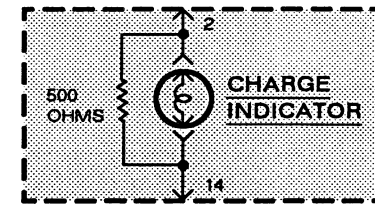


SEE GROUNDS  
PAGES 10-3, 10-4

GROUND F SCREW TO FULL FIELD ALTERNATOR

F SCREW A SCREW

12V (START/RUN) C251



INSTRUMENT CLUSTER  
PAGE 60-1  
151- 8- A6

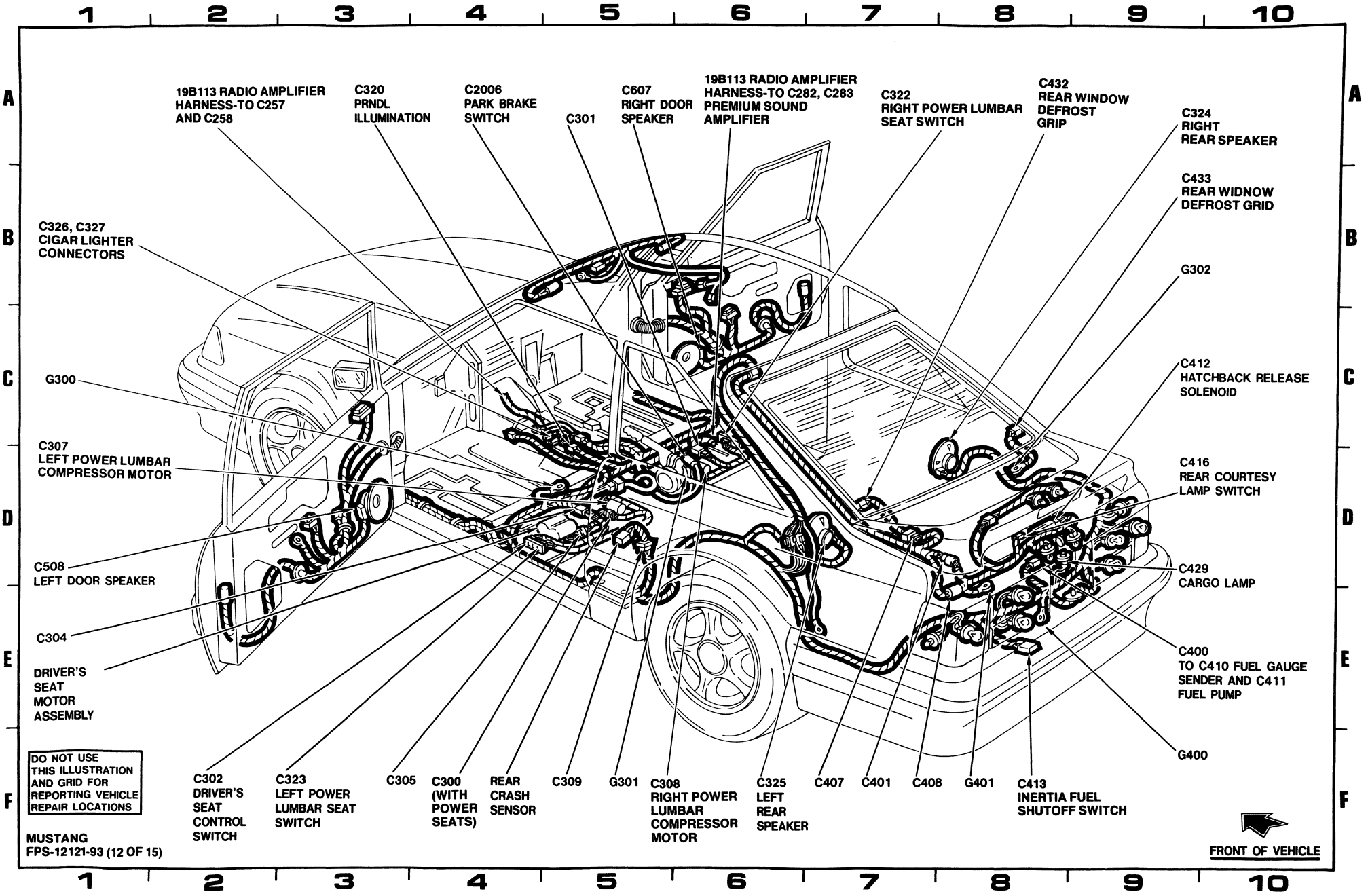
151- 1- F9

Refer to Location Index, Cell 152, for Component, Connector, Splice, Ground and Base Part Number descriptions and locations.



# COMPONENT LOCATION VIEWS 151-12

1993 MUSTANG



19B113 RADIO AMPLIFIER HARNESS-TO C257 AND C258

C320 PRNDL ILLUMINATION

C2006 PARK BRAKE SWITCH

C301

C607 RIGHT DOOR SPEAKER

19B113 RADIO AMPLIFIER HARNESS-TO C282, C283 PREMIUM SOUND AMPLIFIER

C322 RIGHT POWER LUMBAR SEAT SWITCH

C432 REAR WINDOW DEFROST GRIP

C324 RIGHT REAR SPEAKER

C433 REAR WINDOW DEFROST GRID

C326, C327 CIGAR LIGHTER CONNECTORS

G300

C307 LEFT POWER LUMBAR COMPRESSOR MOTOR

G302

C412 HATCHBACK RELEASE SOLENOID

C416 REAR COURTESY LAMP SWITCH

C508 LEFT DOOR SPEAKER

C429 CARGO LAMP

C304

DRIVER'S SEAT MOTOR ASSEMBLY

C400 TO C410 FUEL GAUGE SENDER AND C411 FUEL PUMP

G400

DO NOT USE THIS ILLUSTRATION AND GRID FOR REPORTING VEHICLE REPAIR LOCATIONS

C302 DRIVER'S SEAT CONTROL SWITCH

C323 LEFT POWER LUMBAR SEAT SWITCH

C305

C300 (WITH POWER SEATS)

REAR CRASH SENSOR

C309

G301

C308 RIGHT POWER LUMBAR COMPRESSOR MOTOR

C325 LEFT REAR SPEAKER

C407

C401

C408

G401

C413 INERTIA FUEL SHUTOFF SWITCH

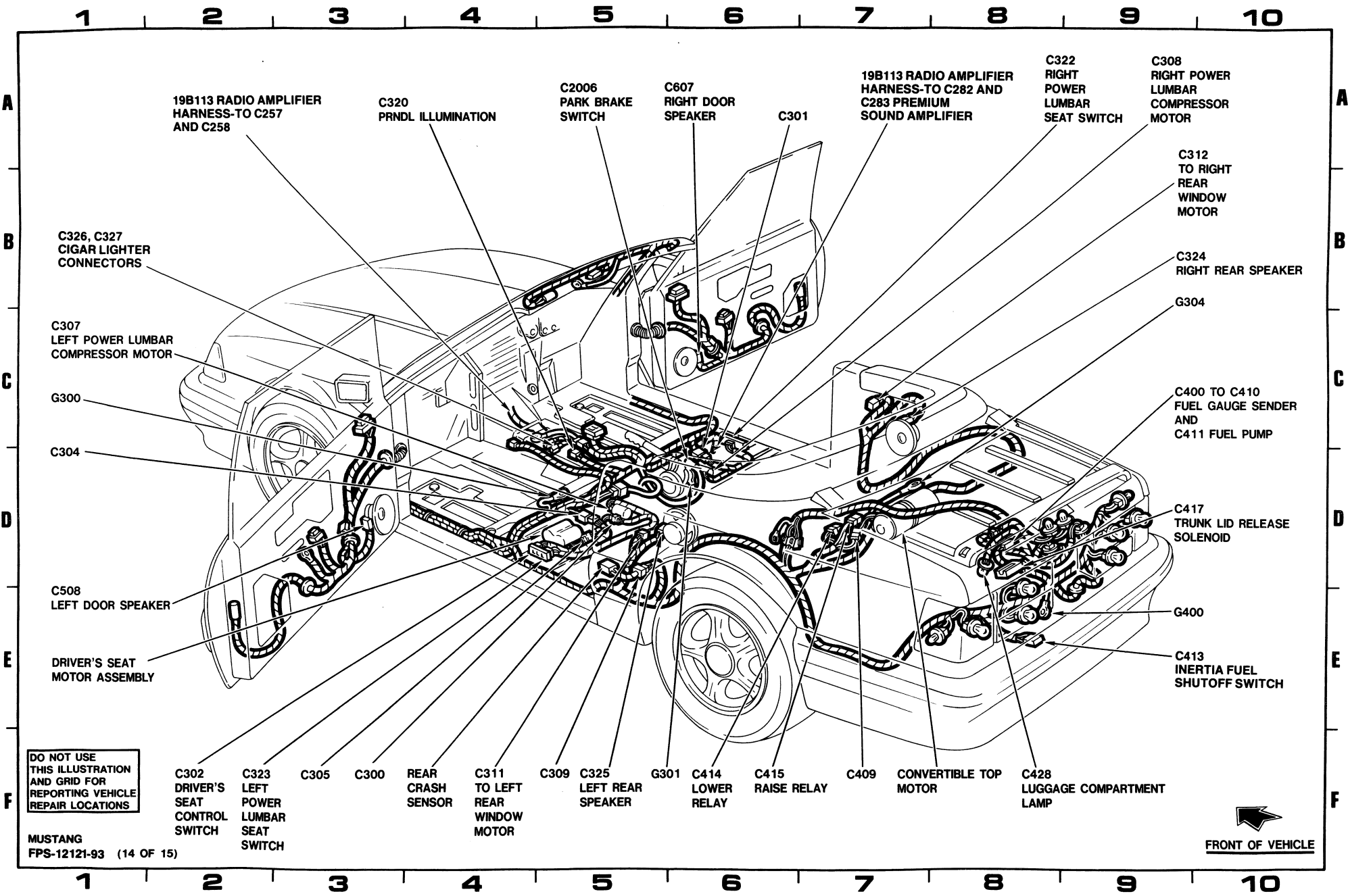
MUSTANG  
FPS-12121-93 (12 OF 15)

FRONT OF VEHICLE

FULL BODY VIEW (3 DOOR)(1 of 2)

# COMPONENT LOCATION VIEWS 151-14

1993 MUSTANG



19B113 RADIO AMPLIFIER  
HARNES-TO C257  
AND C258

C320  
PRNDL ILLUMINATION

C2006  
PARK BRAKE  
SWITCH

C607  
RIGHT DOOR  
SPEAKER

C301

19B113 RADIO AMPLIFIER  
HARNES-TO C282 AND  
C283 PREMIUM  
SOUND AMPLIFIER

C322  
RIGHT  
POWER  
LUMBAR  
SEAT SWITCH

C308  
RIGHT POWER  
LUMBAR  
COMPRESSOR  
MOTOR

C312  
TO RIGHT  
REAR  
WINDOW  
MOTOR

C324  
RIGHT REAR SPEAKER

G304

C400 TO C410  
FUEL GAUGE SENDER  
AND  
C411 FUEL PUMP

C417  
TRUNK LID RELEASE  
SOLENOID

G400

C413  
INERTIA FUEL  
SHUTOFF SWITCH

C326, C327  
CIGAR LIGHTER  
CONNECTORS

C307  
LEFT POWER LUMBAR  
COMPRESSOR MOTOR

G300

C304

C508  
LEFT DOOR SPEAKER

DRIVER'S SEAT  
MOTOR ASSEMBLY

C302  
DRIVER'S  
SEAT  
CONTROL  
SWITCH

C323  
LEFT  
POWER  
LUMBAR  
SEAT  
SWITCH

C305

C300

REAR  
CRASH  
SENSOR

C311  
TO LEFT  
REAR  
WINDOW  
MOTOR

C309

C325  
LEFT REAR  
SPEAKER

G301

C414  
LOWER  
RELAY

C415  
RAISE RELAY

C409

CONVERTIBLE TOP  
MOTOR

C428  
LUGGAGE COMPARTMENT  
LAMP

DO NOT USE  
THIS ILLUSTRATION  
AND GRID FOR  
REPORTING VEHICLE  
REPAIR LOCATIONS

MUSTANG  
FPS-12121-93 (14 OF 15)

FRONT OF VEHICLE

FULL BODY VIEW (CONVERTIBLE)(1 of 2)

# 152-1 LOCATION INDEX

1993 MUSTANG

| <u>Component</u>                         | <u>Base Part No.</u> | <u>Location</u>  | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|--|----------------------|--|------------------|------------------|-----------------------|
| A4LD Transmission                        | 7005                 | Under center of car, on transmission                                   | C157             | 151- 2- A5       |                       |
| A/C Clutch Diode (2.3L)                  | 14A604               | RH side of engine compartment, taped to engine harness                 |                  | 151- 3- C1       |                       |
| A/C Clutch Diode (5.0L)                  | 14A604               | LH side of engine compartment, taped to air conditioner jumper harness |                  | 151- 4- F6       |                       |
| A/C Clutch Field Coil (2.3L)             | 19703                | Lower RH front of engine, part of A/C compressor assembly              | C159             | 151- 3- D1       |                       |
| A/C Clutch Field Coil (5.0L)             | 19703                | Top LH front of engine, part of A/C compressor assembly                | C159             | 151- 4- F5       |                       |
| A/C-Heater Control Assembly              | 19980                | Center of I/P  | C285             | 151- 7- F2       |                       |
| A/C-Heater Control Illumination          | 18549/19980          | Center of I/P, on A/C-heater control assembly                          | C2017            | 151- 7- A3       |                       |
| Air Bag Diagnostic Module                | 14B056               | Behind lower center of I/P   | C276, 277        | 151- 8- E1       | 46-3                  |
| Ashtray Illumination                     | 15055                | Center console, in ashtray   | C319             | 151-10- C1       |                       |
| Backup Lamp Switch                       | 15520                | LH side of manual transmission   | C161             | *                |                       |
| Backup Lamps                             | 13465                | Rear of car, on respective sides                                       | C421, C425       | 151-11- F8       |                       |
| Barometric Pressure (BARO) Sensor (2.3L) | 12B583               | Top center of safety wall  | C163             | 151- 1- A6       |                       |
| Barometric Pressure (BARO) Sensor (5.0L) | 12B583               | Top center of safety wall  | C163             | 151- 4- A5       |                       |
| Blower Motor                             | 19805                | Behind RH side of I/P, in A/C-heater plenum                            | C286             | 151- 7- B1       |                       |
| Blower Motor Resistor Assembly           | 19A706               | Behind RH side of I/P, in A/C-heater plenum                            | C287             | 151- 7- C1       |                       |
| Blower Motor Switch                      | 19A642               | Center of I/P  | C2015            | 151- 7- A4       |                       |
| Brake Fluid Level Switch (2.3L)          | 2L414                | LH rear of engine compartment, on brake fluid reservoir                | C164             | 151- 3- B9       |                       |
| Brake Fluid Level Switch (5.0L)          | 2L414                | LH rear of engine compartment, on brake fluid reservoir                | C164             | 151- 5- A8       |                       |
| Brake On/Off (BOO) Switch                | 13480                | Behind LH side of I/P, on brake pedal support                          | C2011            | 151- 7- F4       |                       |

\* No Figure Available

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| <u>Component</u>                                   | <u>Base Part No.</u> | <u>Location</u>  | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|--|----------------------|--|------------------|------------------|-----------------------|
| Canister Purge (CANP) Solenoid (2.3L) .....        | 9C915 .....          | RH side of engine compartment, forward of shock tower .....    | C1032 .....      | 151- 1- C1       |                       |
| Canister Purge (CANP) Solenoid (5.0L)              | 9C915 .....          | Lower RH front of engine compartment ....                      | C1032 .....      | 151- 5- E1       |                       |
| Cargo Lamp .....                                   | 13776 .....          | Center rear of cargo area .....                                | C429 .....       | 151-12- D9       |                       |
| Center Line Crash Sensor (2.3L) .....              | 14B006 .....         | Top center of upper radiator support .....                     | C166 .....       | 151- 2- F5       |                       |
| Center Line Crash Sensor (5.0L) .....              | 14B006 .....         | Top center of upper radiator support .....                     | C166 .....       | 151- 5- F5       |                       |
| Cigar Lighter .....                                | 15052 .....          | Center console, in ashtray .....                               | C326, C327 ..    | 151-10- C1       |                       |
| Clockspring Assembly .....                         | 14A664 .....         | In top of steering column, below steering wheel .....          | C2010, C2018     | 151- 8- D9       |                       |
| Clutch Cycling Pressure Switch (2.3L)              | 19E561 .....         | RH rear corner of engine compartment, on A/C accumulator ..... | C167 .....       | 151- 3- A2       |                       |
| Clutch Cycling Pressure Switch (5.0L)              | 19E561 .....         | RH rear corner of engine compartment, on A/C accumulator ..... | C167 .....       | 151- 4- A2       |                       |
| Clutch Pedal Position (CPP) Switch #1              | 11A152 .....         | Behind LH side of I/P, on clutch pedal support .....           | C290 .....       | 151- 7- A6       |                       |
| Clutch Pedal Position (CPP) Switch #2              | 9A837 .....          | Behind LH side of I/P, on clutch pedal support .....           | C291 .....       | 151- 7- F6       |                       |
| Clutch Pedal Position (CPP) Switch #2 Jumper ..... | 9D821 .....          | Behind center of I/P, on I/P support brace .....               | C291 .....       | 151- 7- F6       |                       |
| Constant Control Relay Module .....                | 12B581 .....         | Mounted on side of RH front strut tower ....                   | C192 .....       | 151- 3- A1       | ..... 33-3            |
| Convertible Top Motor .....                        | 533A00 .....         | Behind top center of rear seat .....                           | C409 .....       | 151-14- F7       |                       |
| Convertible Top Switch .....                       | 13A350 .....         | Top LH side of I/P, right of instrument cluster .....          | C2023 .....      | 151- 7- A7       |                       |
| Coolant Temperature Sender (2.3L) ..               | 10884 .....          | LH rear of engine, below oil pressure switch .....             | C168 .....       | 151- 3- A6       |                       |
| Coolant Temperature Sender (5.0L) ..               | 10884 .....          | Top LH front of engine, LH side of distributor                 | C168 .....       | 151- 4- A5       |                       |
| Crankshaft Position (CKP) Sensor ....              | 6C315 .....          | Center front of engine, near timing chain cover .....          | C111, C112 ..    | 151- 1- F5       | ..... 21-5            |

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| <u>Component</u>                                   | <u>Base Part No.</u> | <u>Location</u>  | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|--|----------------------|--|------------------|------------------|-----------------------|
| Data Link Connector (DLC) C198<br>(2.3L) .....     | 14489 .....          | LH rear of engine compartment, mounted<br>on rear of strut tower ..... | C198 .....       | 151- 2- A9 ..... | 23-6                  |
| Data Link Connector (DLC) C198<br>(5.0L) .....     | 14489 .....          | LH rear of engine compartment, mounted<br>on rear of strut tower ..... | C198 .....       | 151- 5-B10 ..... | 24-7                  |
| Data Link Connector (DLC) C199<br>(2.3L) .....     | 14489 .....          | LH rear of engine compartment, mounted<br>on rear of strut tower ..... | C199 .....       | 151- 2- A9 ..... | 23-6                  |
| Data Link Connector (DLC) C199<br>(5.0L) .....     | 14489 .....          | LH rear of engine compartment, mounted<br>on rear of strut tower ..... | C199 .....       | 151- 5-B10 ..... | 24-7                  |
| Daytime Running Lamps (DRL) Module<br>(2.3L) ..... | 15A272 .....         | In front of LH front fender, below horns ....                          | C170 .....       | 151- 3- E9 ..... | 97-3                  |
| Daytime Running Lamps (DRL) Module<br>(5.0L) ..... | 15A272 .....         | In front of LH front fender, below horns ....                          | C170 .....       | 151- 4- E9 ..... | 97-3                  |
| Distributor .....                                  | 12127 .....          | Top front of engine .....  |                  | 151- 4- F3       |                       |
| Dome Lamp (With Moonroof) .....                    | 13776 .....          | Center of windshield header .....                                      | C927 .....       | 151- 9- A1       |                       |
| Dome Lamp (Without Moonroof) .....                 | 13776 .....          | Center of roof .....   | C926 .....       | 151- 9- A5       |                       |
| Driver's Seat Control Switch .....                 |                      | LH side of LH front seat .....   | C302 .....       | 151-11- F4 ..... | 120- 2                |
| Driver's Seat Motor Assembly .....                 |                      | Under LH front seat .....  | C305 .....       | 151-11- F5 ..... | 120- 2                |
| DRL Shorting Connector (2.3L) .....                | 14A624 .....         | In front of LH front fender, below horns ....                          | C170 .....       | 151- 3- E9       |                       |
| DRL Shorting Connector (5.0L) .....                | 14A624 .....         | In front of LH front fender, below horns ....                          | C170 .....       | 151- 4- E9       |                       |
| EGR Vacuum Regulator Solenoid (2.3L) .....         | 9J472 .....          | RH rear of engine compartment, on rear<br>of strut tower .....         | C171 .....       | 151- 1- B1       |                       |
| EGR Vacuum Regulator Solenoid (5.0L) .....         | 9J459 .....          | RH rear of engine compartment, on rear<br>of strut tower .....         | C171 .....       | 151- 5- A2       |                       |
| EGR Valve Position Sensor (2.3L) ....              | 9G428 .....          | Top LH rear of engine, on rear of intake<br>manifold .....             | C172 .....       | 151- 1- A8       |                       |
| EGR Valve Position Sensor (5.0L) ....              | 9G428 .....          | Top RH rear of engine, on rear of intake<br>manifold .....             | C172 .....       | 151- 4- A3       |                       |

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| <u>Component</u>                               | <u>Base Part No.</u> | <u>Location</u>  | <u>Connector</u>                               | <u>Page Zone</u> | <u>Connector Page</u> |
|--|----------------------|--|--|------------------|-----------------------|
| Electric Cooling Fan                           | 8K621                | Center front of engine compartment, behind radiator                        | C173   | 151- 3- F4       |                       |
| Engine Compartment Lamp                        | 15702                | Underside of engine compartment hood                                       | C158   | 151- 3- A9       |                       |
| Engine Coolant Temperature (ECT) Sensor (2.3L) | 12A648               | RH rear of engine, below throttle body                                     | C174   | 151- 1- A3       |                       |
| Engine Coolant Temperature (ECT) Sensor (5.0L) | 12A648               | Top RH front of engine, RH side of fuel injector No. 1                     | C174   | 151- 4- E1       |                       |
| Engine Indicator Diode                         | 14A604               | Behind LH side of I/P, taped in main harness, near speed control amplifier |  | 151- 8- F8       |                       |
| Fog Lamp Switch                                | 11654                | Top LH side of I/P, left of instrument cluster                             | C298   | 151- 7- B9       |                       |
| Fog Lamps                                      | 15200                | Lower front of car, on respective sides                                    | C1021, C1025                                   | 151- 5- F7       |                       |
| Front Park/Turn Lamps                          | 13200                | Front of car, on respective sides  | C1024, C1028                                   | 151- 3- F8       |                       |
| Front Side Marker Lamps                        | 15A424               | Front of respective front fenders  | C1022, C1026                                   | 151- 3- F9       |                       |
| Fuel Gauge Sender                              | 9H307                | Below rear of car, top LH side of fuel tank                                | C410   | 151- 9- B9       |                       |
| Fuel Injectors (2.3L)                          | 9F593                | Top of each cylinder   | C178, C179<br>C180, C181                       | 151- 1- F4       |                       |
| Fuel Injectors (5.0L)                          | 9F593                | Top of each cylinder   | C178, C179<br>C181, C182<br>C183, C184<br>C185 | 151- 4- B9       |                       |
| Fuel Pump                                      | 9350                 | Below rear of car, top RH side of fuel tank                                | C411   | 151- 9- B9       |                       |
| Fuel Pump Relay                                | 14N089               | RH side of engine compartment, on lower front of wheel well                | C103   | 151- 5- D1       | 24-7                  |
| Fuse Link A (2.3L)                             | 14526                | Front of LH fender apron, at starter relay                                 |  | 151- 3- D9       |                       |
| Fuse Link A (5.0L)                             | 14526                | Front of LH fender apron, at starter relay                                 |  | 151- 4- D9       |                       |
| Fuse Link B (2.3L)                             | 14526                | Front of LH fender apron, at starter relay                                 |  | 151- 3- D9       |                       |
| Fuse Link B (5.0L)                             | 14526                | Front of LH fender apron, at starter relay                                 |  | 151- 4- D9       |                       |
| Fuse Link C (2.3L)                             | 14526                | Front of LH fender apron, at starter relay                                 |  | 151- 3- D9       |                       |
| Fuse Link C (5.0L)                             | 14526                | Front of LH fender apron, at starter relay                                 |  | 151- 4- D9       |                       |
| Fuse Link D                                    | 14526                | Front of LH fender apron, at starter relay                                 |  | 151- 4- D9       |                       |



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| <u>Component</u>                   | <u>Base Part No.</u> | <u>Location</u>   | <u>Connector</u>   | <u>Page Zone</u> | <u>Connector Page</u> |
|------------------------------------|----------------------|---|--------------------|------------------|-----------------------|
| Fuse Link E (2.3L) .....           | 14526 .....          | LH side of engine compartment, taped to dash panel to headlamp junction harness, behind battery ..... |                    | 151- 3- F6       |                       |
| Fuse Link E (5.0L) .....           | 14526 .....          | LH side of engine compartment, behind battery .....   |                    | 151- 4- F9       |                       |
| Fuse Link F (2.3L) .....           | 14526 .....          | Front of LH fender apron, at starter relay .....  |                    | 151- 3- D9       |                       |
| Fuse Link F (5.0L) .....           | 14526 .....          | Front of LH fender apron, at starter relay .....  |                    | 151- 4- D9       |                       |
| Fuse Link G (2.3L) .....           | 14526 .....          | Front of LH fender apron, at starter relay .....  |                    | 151- 3- C9       |                       |
| Fuse Link G (5.0L) .....           | 14526 .....          | Front of LH fender apron, at starter relay .....  |                    | 151- 4- D9       |                       |
| Fuse Link H .....                  | 14526 .....          | Front of LH fender apron, at starter relay .....  |                    | 151- 3- C9       |                       |
| Fuse Link J .....                  | 14526 .....          | Front of LH fender apron, at starter relay .....  |                    | 151- 3- C9       |                       |
| Fuse Link K (2.3L) .....           | 14526 .....          | RH rear corner of engine compartment, taped to engine harness .....                                   |                    | 151- 2- B1       |                       |
| Fuse Link K (5.0L) .....           | 14526 .....          | RH rear corner of engine compartment, taped to engine harness .....                                   |                    | 151- 4- A1       |                       |
| Fuse Link N (2.3L) .....           | 14526 .....          | LH rear corner of engine compartment, taped to main harness .....                                     |                    | 151- 2- A9       |                       |
| Fuse Link N (5.0L) .....           | 14526 .....          | LH rear corner of engine compartment, taped in main harness .....                                     |                    | 151- 4- B9       |                       |
| Fuse Panel .....                   | 14A067 .....         | Behind LH side of I/P, left of steering column .....  | C206 .....         | 151- 7- E9       |                       |
| Glove Box Lamp .....               | 14413 .....          | RH side of I/P, in glove box .....  | C2016 .....        | 151- 8- B1       |                       |
| Hatchback Release Solenoid .....   | 14030 .....          | Center rear of hatchback, near latch assembly .....   | C412 .....         | 151-12- C9       |                       |
| Hazard Flasher .....               | 13350 .....          | Behind LH side of I/P, on fuse panel .....  | C201 .....         | 151- 7- F8       |                       |
| Hazard Warning Switch .....        | 13A350 .....         | Top LH side of I/P, RH side of instrument cluster .....   | C299 .....         | 151- 7- A6       | ..... 90-4            |
| Headlamps .....                    | 13005 .....          | Front of car, on respective sides .....   | C1023, C1027 ..... | 151- 3- F9       |                       |
| Heated Oxygen Sensor (HO2S) .....  | 9F472 .....          | Lower RH rear of engine, in exhaust manifold .....  | C186 .....         | 151- 1- C1       |                       |
| Heater Control Assembly .....      | 18549 .....          | Center of I/P .....   | C285 .....         | 151- 7- F2       |                       |
| Hi Mount Stop Lamps (2 Door) ..... | 13A613 .....         | Center of rear package tray .....   | C321 .....         | 151-10- E9       |                       |

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| <u>Component</u>                                    | <u>Base Part No.</u> | <u>Location</u>  | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|---|----------------------|--|------------------|------------------|-----------------------|
| Hi Mount Stop Lamps (3 Door) .....                  | 13A613 .....         | In center of rear spoiler .....  | C430 .....       | 151-13- C9       |                       |
| Hi Mount Stop Lamps (Convertible) ..                | 13A613 .....         | Center rear of trunk lid .....   | C431 .....       | 151-15- A9       |                       |
| Horn Relay .....                                    | 13853 .....          | Behind RH center of I/P, above warning<br>chime module .....                 | C187 .....       | 151- 7- A3 ..... | 44-2                  |
| Horns (2.3L) .....                                  | 13A803 .....         | In front of LH front fender, near windshield<br>washer fluid reservoir ..... | C188, C189 ..    | 151- 2- E9       |                       |
| Horns (5.0L) .....                                  | 13A803 .....         | In front of LH front fender, near windshield<br>washer fluid reservoir ..... | C188, C189 ..    | 151- 5-E10       |                       |
| Idle Air Control (IAC) Valve (2.3L) ...             | 9F715 .....          | Top rear of engine, above valve cover .....                                  | C190 .....       | 151- 1- A5       |                       |
| Idle Air Control (IAC) Valve (5.0L) ...             | 9F715 .....          | Top RH side of engine, forward of throttle<br>body .....                     | C190 .....       | 151- 4- C1       |                       |
| Ignition Coil .....                                 | 12029 .....          | LH side of engine compartment, on front<br>of strut tower .....              | C191 .....       | 151- 5-C10       |                       |
| Ignition Control Module (ICM) (2.3L) ..             | 12A199 .....         | Top LH front of engine, forward of intake<br>manifold .....                  | C155, C156 ..    | 151- 2- A2 ..... | 21-5                  |
| Ignition Control Module (ICM) (5.0L) ..             | 12A297 .....         | Center front of engine, on LH side of<br>distributor .....                   | C155, C156 ..    | 151- 4- F4 ..... | 21-5                  |
| Ignition Key Warning Switch .....                   | 11A127 .....         | Top RH side of steering column, part<br>of ignition lock cylinder .....      | C2026 .....      | 151- 7- A9       |                       |
| Ignition Suppression Resistor .....                 | 14A601 .....         | LH rear corner of engine compartment,<br>taped to engine harness .....       |                  | 151- 4- A8       |                       |
| Ignition Switch .....                               | 11572 .....          | Top RH side of steering column .....   | C2001 .....      | 151- 7- A8 ..... | 13-12                 |
| In-line Circuit Breaker (2.3L) .....                | 14A065 .....         | Front of LH fender apron, on starter relay .....                             |                  | 151- 3- B9       |                       |
| In-line Circuit Breaker (5.0L) .....                | 14A065 .....         | Front of LH fender apron, on starter relay .....                             |                  | 151- 4- C9       |                       |
| Inertia Fuel Shut-off Switch .....                  | 9341 .....           | Lower LH center rear of trunk .....  | C413 .....       | 151- 9- E9       |                       |
| Instrument Cluster .....                            | 10849 .....          | Top LH side of I/P .....   | C250, C251 ..    | 151- 8- A6 ..... | 60-4                  |
| Instrument Panel Dimming Rheostat ..                | 11691 .....          | LH side of I/P, left of steering column .....                                | C2022 .....      | 151- 8- C9       |                       |
| Intake Air Temperature (IAT) Sensor<br>(2.3L) ..... | 12A697 .....         | RH side of engine compartment, on air<br>cleaner assembly .....              | C160 .....       | 151- 1- E1       |                       |



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| <u>Component</u>                                    | <u>Base Part No.</u> | <u>Location</u>  | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|---|----------------------|--|------------------|------------------|-----------------------|
| Intake Air Temperature (IAT) Sensor<br>(5.0L) ..... | 12A697 .....         | Top LH front of engine, behind coolant<br>temperature sender ..... | C160 .....       | 151- 4- F8       |                       |
| Integral Alternator Regulator (IAR)<br>(2.3L) ..... | 10300/10346 ...      | Top LH front of engine .....                                       | C153, C154 ...   | 151- 3- F5       | ..... 12-2            |
| Integral Alternator Regulator (IAR)<br>(5.0L) ..... | 10300/10346 ...      | RH front of engine .....   | C153, C154 ...   | 151- 4- F2       | ..... 12-2            |
| Interval Governor .....                             | 6C625 .....          | Behind LH side of I/P, LH side of steering<br>column brace .....   | C2002 .....      | 151- 8- F9       | ..... 81-2            |
| Left Dash Speaker .....                             | 18808 .....          | Behind top LH corner of I/P .....                                  | C2025 .....      | 151- 8- B9       |                       |
| Left Door Lock Motor .....                          | 218A42 .....         | In rear of LH front door .....                                     | C503 .....       | 151-11- E1       |                       |
| Left Door Lock Switch .....                         | 14A509 .....         | Center of LH front door, on armrest .....                          | C507 .....       | 151-11- E1       | ..... 110- 5          |
| Left Door Speaker .....                             | 18808 .....          | In lower front of LH front door .....                              | C508 .....       | 151-10- D1       |                       |
| Left Forward Crash Sensor (2.3L) ....               | 14B005 .....         | LH side of upper radiator support, behind<br>headlamp .....        | C177 .....       | 151- 2- F8       |                       |
| Left Forward Crash Sensor (5.0L) ....               | 14B005 .....         | LH side of upper radiator support, behind<br>headlamp .....        | C177 .....       | 151- 5- F8       |                       |
| Left Front Courtesy Lamp Switch .....               | 13713 .....          | In front of LH front door jamb .....                               | C297 .....       | 151- 6- F5       |                       |
| Left Front Window Motor .....                       | 23394 .....          | In lower front of LH front door .....                              | C504 .....       | 151-11- F3       |                       |
| Left Heated Oxygen Sensor (HO2S) ..                 | 9F472 .....          | Lower LH rear of engine, in exhaust<br>manifold .....              | C193 .....       | 151- 5- A6       |                       |
| Left Power Lumbar Compressor Motor                  | 65530 .....          | Under RH side of LH front seat .....                               | C307 .....       | 151-10- F4       |                       |
| Left Power Lumbar Seat Switch .....                 | 14C715 .....         | On LH side of LH front seat .....                                  | C323 .....       | 151-10- F3       |                       |
| Left Power Mirror .....                             | 17682 .....          | Top front of LH front door .....                                   | C509 .....       | 151-11- C1       |                       |
| Left Rear Speaker (2 Door) .....                    | 18971 .....          | LH side of rear package tray .....                                 | C325 .....       | 151-10- F8       |                       |
| Left Rear Speaker (3 Door) .....                    | 18932 .....          | LH front of cargo area .....                                       | C325 .....       | 151-12- F6       |                       |
| Left Rear Speaker (Convertible) .....               | 18971 .....          | Front of LH rear quarter panel, in trim<br>panel .....             | C325 .....       | 151-14- F5       |                       |
| Left Rear Window Motor .....                        | 23394 .....          | In front of LH rear quarter panel .....                            | C311 .....       | 151-14- F4       |                       |
| Left Vanity Mirror Lamp .....                       | 17A679 .....         | At LH vanity mirror .....  | C917 .....       | 151- 9- C1       |                       |
| License Lamps (2 Door And Convertible)              | 13550 .....          | Center rear of trunk lid .....                                     | C426, C427 ...   | 151-11- E9       |                       |
| License Lamps (3 Door) .....                        | 13550 .....          | Center rear of hatchback .....                                     | C426, C427 ...   | 151-13- E9       |                       |

# LOCATION INDEX 152-8

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| <u>Component</u>                                      | <u>Base Part No.</u> | <u>Location</u>   | <u>Connector</u>   | <u>Page Zone</u> | <u>Connector Page</u> |
|---|----------------------|---|--------------------|------------------|-----------------------|
| Low Coolant Switch                                    | 10D968               | LH front of engine compartment, in coolant reservoir                  | C194               | 151- 4- F9       |                       |
| Low Oil Level Sensor                                  | 6C624                | Lower LH rear of engine, on side of oil pan                           | C195               | 151- 5- A6       |                       |
| Low Oil Warning Relay                                 | 6C625                | Behind LH side of I/P, LH side of steering column brace               | C200               | 151- 8- D9       | 60-5                  |
| Lower Relay   | 9345                 | Behind top center of rear seat, LH side of convertible top motor      | C414               | 151-14- F6       | 102- 2                |
| Luggage Compartment Lamp (2 Door)                     | 19B516               | Center rear of trunk lid  | C428               | 151- 9- D9       |                       |
| Luggage Compartment Lamp (Convertible)                | 19B516               | LH rear of trunk lid  | C428               | 151-14- F8       |                       |
| Main Light Switch                                     | 11654                | Top LH side of I/P, LH side of instrument cluster                     | C2005              | 151- 7- B9       | 13-12                 |
| Map Lamp (2 And 3 Door)                               | 13776                | Center of roof  | C918               | 151- 9- A7       |                       |
| Map Lamp (Convertible)                                | 13776                | Center of windshield header   | C900               | 151-15- A4       |                       |
| Mass Air Flow (MAF) Sensor (2.3L)                     | 12B579               | RH side of engine compartment, on rear of air cleaner assembly        | C197               | 151- 1- D1       |                       |
| Mass Air Flow (MAF) Sensor (5.0L)                     | 12B579               | RH side of engine compartment, on air intake assembly                 | C197               | 151- 4- D1       |                       |
| Master Window/Door Lock Control Switch (2 And 3 Door) | 14A509               | Center of LH front door, on armrest                                   | C502               | 151-11- D1       | 100- 4                |
| Master Window/Door Lock Control Switch (Convertible)  | 14A509               | Center of front LH door, on armrest                                   | C505               | 151-15- C1       | 100- 4                |
| Multi-function Switch                                 | 13K359               | Inside top of steering column   | C268, C269<br>C270 | 151- 8- A8       | 90-4                  |
| Octane Adjust Shorting Bar                            | 14A464               | RH rear of engine compartment   | C1000              | 151- 2- A4       |                       |
| Oil Pressure Sender                                   | 9D290                | Lower LH front of engine, above oil filter                            | C1001              | 151- 5- F6       |                       |
| Oil Pressure Switch                                   | 9278                 | LH rear of engine, below valve cover                                  | C1002              | 151- 3- A5       |                       |
| Park Brake Switch                                     | 15852                | Below rear of center console, on RH rear of park brake lever assembly | C2006              | 151-10- F6       |                       |

# 152-9 LOCATION INDEX

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| <u>Component</u>                          | <u>Base Part No.</u> | <u>Location</u>  | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|---|----------------------|--|------------------|------------------|-----------------------|
| Park/Neutral Position Switch (Automatic)  | 7A247                | LH side of automatic transmission  | C162             | *                |                       |
| Park/Neutral Position Switch (Manual)     | 7A247                | Top front of manual transmission   | C117             | 151-11-          | B1                    |
| PCM Power Relay                           | 12A646               | Behind RH cowl panel, on bracket, above<br>powertrain control module (PCM) | C293             | 151- 6-          | A6 24-8               |
| Power Mirror Switch                       | 17B676               | On center console  | C350             | 151- 9-          | D1 124- 2             |
| Power Steering Pressure (PSP) Switch      | 3N824                | Lower LH side of engine, near power<br>steering pump                       | C1003            | 151- 1-          | F7                    |
| Powertrain Control Module (PCM)<br>(2.3L) | 12A650               | Behind RH cowl panel   | C294             | 151- 6-          | F7 23-5               |
| Powertrain Control Module (PCM)<br>(5.0L) | 12A650               | Behind RH cowl panel   | C294             | 151- 6-          | F7 24-6               |
| Premium Sound Amplifier                   | 18B849               | Below RH front seat  | C282, C283       | 151-10-          | A7 130- 5             |
| Primary Coil (RH)                         | 12029                | Top RH side of engine, right of valve cover                                | C1004            | 151- 2-          | C1                    |
| PRNDL Illumination                        | 15A808               | Center console, near gearshift lever                                       | C320             | 151-10-          | E1                    |
| Radio (With Premium Sound)                | 18806                | Center of I/P  | C280, C281       | 151- 8-          | F4 130- 4             |
| Radio (Without Premium Sound)             | 18806                | Center of I/P  | C257, C258       | 151- 8-          | F4 130- 4             |
| Radio Noise Capacitor                     | 18801                | Top RH front of engine, near secondary<br>coil (LH)                        | C1006            | 151- 2-          | F4                    |
| Raise Relay                               | 9345                 | Behind top center of rear seat, LH side<br>of convertible top motor        | C415             | 151-14-          | F6 102- 2             |
| Rear Courtesy Lamp Switch                 | 13713                | Center rear of hatchback   | C416             | 151-12-          | D9                    |
| Rear Crash Sensor                         | 14B007               | In lower front of LH rear quarter panel                                    | C309             | 151- 9-          | F3 46-3               |
| Rear Park/Stop Lamps                      | 13465                | Rear of car, on respective sides   | C419, C424       | 151-11-          | C9                    |
| Rear Side Marker Lamps                    | 13465                | Rear of car, on respective sides   | C420, C423       | 151-11-          | C9                    |
| Rear Turn Lamps                           | 13465                | Rear of car, on respective sides   | C418, C422       | 151-11-          | F9                    |
| Rear Window Defrost Control Relay         | 18C641               | Behind LH side of I/P, on RH side of<br>fuse panel                         | C2007            | 151- 7-          | E9 56-2               |
| Rear Window Defrost Grid                  | 42006                | Inside rear window   | C432, C433       | 151- 9-          | A8                    |
| Rear Window Defrost Switch                | 13A350               | Top LH side of I/P, right of instrument<br>cluster                         | C2020            | 151- 7-          | A7                    |

★ No Figure Available

# LOCATION INDEX 152-10

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| <u>Component</u>                                 | <u>Base Part No.</u> | <u>Location</u>                                       | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|--|----------------------|---|------------------|------------------|-----------------------|
| Right Dash Speaker                               | 18808                | Behind top RH corner of I/P                           | C2024            | 151- 8- A2       |                       |
| Right Door Lock Motor                            | 218A42               | In rear of RH front door                              | C603             | 151-11- B9       |                       |
| Right Door Lock Switch                           | 14A265               | Center of RH front door, on armrest                   | C606             | 151-11- A8       | 110- 5                |
| Right Door Speaker                               | 18808                | Lower front of RH front door                          | C607             | 151-10- A5       |                       |
| Right Forward Crash Sensor (2.3L)                | 14B004               | RH side of upper radiator support, behind headlamp    | C176             | 151- 2- F3       |                       |
| Right Forward Crash Sensor (5.0L)                | 14B004               | RH side of upper radiator support, behind headlamp    | C176             | 151- 5- F2       |                       |
| Right Front Courtesy Lamp Switch                 | 13713                | In front of RH front door jamb                        | C296             | 151- 6-C10       |                       |
| Right Front Window Motor                         | 23394                | In lower front of RH front door                       | C604             | 151-11- B9       |                       |
| Right Heated Oxygen Sensor (HO2S)                | 9F472                | Lower RH rear of engine, in exhaust manifold          | C1005            | 151- 5- A4       |                       |
| Right Power Lumbar Compressor Motor              | 65530                | Under LH side of RH front seat                        | C308             | 151-10- B9       |                       |
| Right Power Lumbar Seat Switch                   | 14C715               | On RH side of RH front seat                           | C322             | 151-10- B9       |                       |
| Right Power Mirror                               | 17682                | Top front of RH front door                            | C608             | 151-11- A5       |                       |
| Right Rear Speaker (2 Door)                      | 18971                | RH side of rear package tray                          | C324             | 151-10- D9       |                       |
| Right Rear Speaker (3 Door)                      | 18932                | RH front of cargo area                                | C324             | 151-12- A9       |                       |
| Right Rear Speaker (Convertible)                 | 18971                | Front of RH rear quarter panel, in trim panel         | C324             | 151-14- B9       |                       |
| Right Rear Window Motor                          | 23394                | In front of RH rear quarter panel                     | C312             | 151-14- A9       |                       |
| Right Vanity Mirror Lamp                         | 17A679               | At RH vanity mirror                                   | C916             | 151- 9- A3       |                       |
| Right Window/Door Lock Control Switch            | 14A265               | Center of RH front door, on armrest                   | C602             | 151-11- A6       | 100- 5                |
| Seat Belt Switch                                 | 10B924               | Inside LH front seat belt buckle assembly             | C315             | 151-10- A4       |                       |
| Secondary Air Injection Bypass (AIRB) Solenoid   | 95448                | RH rear of engine compartment, on rear of strut tower | C1013            | 151- 5- B1       |                       |
| Secondary Air Injection Diverter (AIRD) Solenoid | 95448                | RH rear of engine compartment, on rear of strut tower | C1014            | 151- 5- A1       |                       |

# 152-11 LOCATION INDEX

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| <u>Component</u>                               | <u>Base Part No.</u> | <u>Location</u>   | <u>Connector</u> | <u>Page Zone</u> | <u>Connector Page</u> |
|--|----------------------|---|------------------|------------------|-----------------------|
| Secondary Coil (LH)                            | 12029                | Top RH front of engine, right of valve cover                  | C1007            | 151- 2- E1       |                       |
| Shift Lock Actuator                            | 3F719                | Top RH side of steering column, near ignition switch          | C2008            | 151- 8- A7       |                       |
| Speed Control Amplifier                        | 9D843                | Behind LH side of I/P, near top of cowl panel                 | C214, C215       | 151- 7- F7       | 31-3                  |
| Speed Control Servo (2.3L)                     | 9C735                | In rear of LH front fender                                    |                  | 151- 3- A9       | 31-3                  |
| Speed Control Servo (5.0L)                     | 9C735                | In rear of LH front fender                                    |                  | 151- 4- A9       | 31-3                  |
| SPOUT Check Connector C1009 (2.3L)             | 14A464               | Top LH front of engine, near ignition control module (ICM)    | C1009            | 151- 2- E9       |                       |
| SPOUT Check Connector C1009 (5.0L)             | 14A464               | LH front of engine, taped to engine harness, near distributor | C1009            | 151- 4- F5       |                       |
| Starter Clutch Pedal Position (SCPP)<br>Switch | 11A152               | Behind LH side of I/P, on clutch pedal support                | C288             | 151- 7- A5       |                       |
| Starter Motor/Solenoid (2.3L)                  | 11001                | Lower RH rear of engine                                       |                  | 151- 3- A4       |                       |
| Starter Motor/Solenoid (5.0L)                  | 11001                | Lower RH rear of engine                                       |                  | 151- 4- C1       |                       |
| Starter Relay (2.3L)                           | 11450                | Front of LH fender apron                                      |                  | 151- 3- C9       |                       |
| Starter Relay (5.0L)                           | 11450                | Front of LH fender apron                                      |                  | 151- 4- C9       |                       |
| Steering Column Air Bag                        | 043B13               | In center of steering wheel                                   | C2009            | 151- 6- F6       |                       |
| Steering Wheel Control Switch                  | 9C888                | Center of steering wheel                                      | C208             | 151- 6- A5       |                       |
| Tachometer Service Connector C1001             | 14A624               | LH front of engine, near ignition control module (ICM)        | C1001            | 151- 2- A6       |                       |
| Throttle Position (TP) Sensor (2.3L)           | 9B989                | Top rear of engine, on throttle body                          | C1031            | 151- 1- A5       |                       |
| Throttle Position (TP) Sensor (5.0L)           | 9B989                | Top RH side of engine, on rear of throttle body               | C1015            | 151- 5- A3       |                       |
| Trunk Lid Release Solenoid (2 Door)            | 14030                | Center rear of trunk lid, near latch assembly                 | C417             | 151- 9- C9       |                       |
| Trunk Lid Release Solenoid<br>(Convertible)    | 14030                | Center rear of trunk lid, near latch assembly                 | C417             | 151-14- D9       |                       |
| Trunk Lid/Hatchback Release Switch             | 19B514               | RH side of I/P, in glove box                                  | C2019            | 151- 7- A1       |                       |

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## Splice

## Location

- S600 (With Power Windows) . . . . . Window regulator right front door harness, near T/O to right window/door lock control switch
- S600 (Without Power Windows) . . . . . Right front door lock harness, near T/O to C606
- S601 (With Power Windows) . . . . . Window regulator right front door harness, near T/O to right window/door lock control switch
- S601 (Without Power Windows) . . . . . Right front door lock harness, near T/O to C606
-

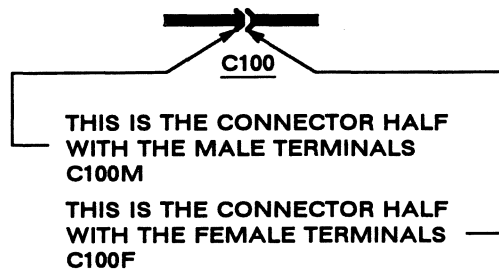
# 153-1 HARNESS CAUSAL PART NUMBER

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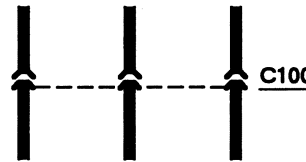
## HOW TO IDENTIFY A BASIC HARNESS NUMBER BY USING A "C" NUMBER

Understand these symbols before you use the following listing:

### THIS MEANS A HARNESS CONNECTION

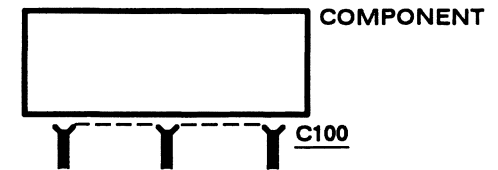


### THE DASHED LINE MEANS THAT ALL OF THESE TERMINALS ARE IN THE SAME CONNECTION



THE UPPER FEMALE TERMINALS ARE IN C100F;  
THE LOWER MALE TERMINALS ARE IN C100M

### THIS MEANS A COMPONENT CONNECTION



THE F AND M IS NOT USED WITH THE "C" NUMBER

Identify the basic harness part number by:

1. If the problem is in a connector, find the connector "C" number in the EVTM schematics. Then locate the "C" number in the following listing and read the basic harness part number.
2. If the problem is **not** in a connector (such as a short or broken wire), then choose a connector **located on the same harness** that has the problem. Identify the "C" number of that connector. Locate the "C" number in the following listing and read the basic part number of the harness that has the problem.

# HARNES CAUSAL PART NUMBER 153-2

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| <u>Connector<br/>Number</u> | <u>Wire<br/>Assembly</u> | <u>Connector<br/>Number</u> | <u>Wire<br/>Assembly</u> | <u>Connector<br/>Number</u> | <u>Wire<br/>Assembly</u> |          |        |
|-----------------------------|--------------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|----------|--------|
| C100 (F)                    | 12A581                   | C154                        | 14290                    | C183                        | 9D930                    | C1016    | 7E443  |
| C100 (M)                    | 14A666                   | C155                        | 12A690                   | C184                        | 9D930                    | C1018    | 14401  |
| C100 (M)                    | 19D887                   | C156                        | 12A690                   | C185                        | 9D930                    | C1019    | 14401  |
| C101 (F)                    | 12A690                   | C157                        | 12A690                   | C186                        | 12A581                   | C1020    | 12A581 |
| C101 (M)                    | 12A581                   | C158                        | 15A702                   | C187                        | 14401                    | C1021    | P.I.A. |
| C102 (F)                    | 15A702                   | C159                        | 19D887                   | C188                        | 14290                    | C1022    | 14290  |
| C102 (M)                    | 14401                    | C160 (2.3L)                 | 12A581                   | C189                        | 14290                    | C1023    | 14290  |
| C103                        | 12A581                   | C160 (5.0L)                 | 9D930                    | C190 (2.3L)                 | 12A690                   | C1024    | 14290  |
| C104 (F)                    | 9D930                    | C161                        | 15525                    | C190 (5.0L)                 | 9D930                    | C1025    | P.I.A. |
| C104 (M)                    | 12A581                   | C162                        | 7C078                    | C191                        | 12A581                   | C1026    | 14290  |
| C105 (F)                    | 12A690                   | C163                        | 12A581                   | C192                        | 12A581                   | C1027    | 14290  |
| C105 (M)                    | 12A581                   | C164                        | 14401                    | C193                        | 12A690                   | C1028    | 14290  |
| C106 (F) (Automatic)        | 7C078                    | C165                        | 9D930                    | C194                        | 14290                    | C1029    | 14290  |
| C106 (F) (Manual)           | 15525                    | C166 (F)                    | P.I.A.                   | C195                        | 12A690                   | C1030    | 14290  |
| C106 (M)                    | 7E443                    | C166 (M)                    | 12A581                   | C197                        | 12A581                   | C1031    | 12A581 |
| C107 (F)                    | 14290                    | C167                        | 12A581                   | C198                        | 12A581                   | C1032    | 12A581 |
| C107 (M)                    | 14401                    | C168 (2.3L)                 | 12A690                   | C199                        | 12A581                   | C200     | 14401  |
| C108 (F)                    | 14290                    | C168 (5.0L)                 | 9D930                    | C1000                       | 12A581                   | C201     | 14401  |
| C108 (M)                    | 14401                    | C170                        | 14401                    | C1001                       | 9D930                    | C203 (F) | 14405  |
| C110 (F) (2.3L)             | 12A690                   | C171                        | 12A581                   | C1002                       | 12A690                   | C203 (M) | 14401  |
| C110 (F) (5.0L)             | 12A581                   | C172                        | 9D930                    | C1003                       | 12A581                   | C204 (F) | 14A200 |
| C110 (M)                    | 14401                    | C173                        | 12A581                   | C1004                       | 12A690                   | C204 (M) | 14401  |
| C111                        | 12A690                   | C174 (2.3L)                 | 12A581                   | C1005                       | 12A690                   | C205 (F) | 14401  |
| C112                        | 12A690                   | C174 (5.0L)                 | 9D930                    | C1006                       | 12A690                   | C205 (M) | 14334  |
| C113                        | 12A581                   | C176 (F)                    | P.I.A.                   | C1007                       | 12A690                   | C206     | 14401  |
| C117                        | 7E443                    | C176 (M)                    | 12A581                   | C1008                       | P.I.A.                   | C207 (F) | 14405  |
| C118 (F)                    | 9D930                    | C177 (F)                    | P.I.A.                   | C1009 (2.3L)                | 12A690                   | C207 (M) | 14401  |
| C118 (M)                    | 12A581                   | C177 (M)                    | 14401                    | C1009 (5.0L)                | 12A581                   | C208     | P.I.A. |
| C119 (F)                    | 9D930                    | C178                        | 9D930                    | C1011                       | 12A690                   | C212 (F) | 7E443  |
| C119 (M)                    | 12A581                   | C179                        | 9D930                    | C1012                       | 12A581                   | C212 (M) | 14401  |
| C151                        | 14401                    | C180                        | 9D930                    | C1013                       | 12A581                   | C213 (F) | 14401  |
| C152                        | 14401                    | C181                        | 9D930                    | C1014                       | 12A581                   | C213 (M) | 12A581 |
| C153                        | 14290                    | C182                        | 9D930                    | C1015                       | 9D930                    | C214     | P.I.A. |



# 153-3 HARNESS CAUSAL PART NUMBER

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| <u>Connector<br/>Number</u> | <u>Wire<br/>Assembly</u> | <u>Connector<br/>Number</u> | <u>Wire<br/>Assembly</u> | <u>Connector<br/>Number</u> | <u>Wire<br/>Assembly</u> |                   |        |
|-----------------------------|--------------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|-------------------|--------|
| C215                        | 14401                    | C228 (F) (With              |                          | C270                        | 14401                    | C2012             | 14401  |
| C216 (F)                    | 14401                    | Power Windows)              | 14630                    | C276                        | 14401                    | C2013             | 14401  |
| C216 (M)                    | 12A581                   | C228 (F) (Without           |                          | C277                        | 14401                    | C2014             | 14A200 |
| C217 (F)                    | 14401                    | Power Windows And Door      |                          | C280                        | 19B113                   | C2015             | 14401  |
| C217 (M)                    | 14405                    | Locks)                      | 19A044                   | C281                        | 19B113                   | C2016             | 14401  |
| C221 (F) (Without           |                          | C228 (M)                    | 14401                    | C282                        | 19B113                   | C2017             | 14401  |
| Power Windows)              | 14025                    | C229 (F)                    | 14631                    | C283                        | 19B113                   | C2018             | 14401  |
| C221 (F) (With              |                          | C229 (M)                    | 14405                    | C285                        | 14401                    | C2019             | 14401  |
| Power Windows)              | 14631                    | C230 (F) (Without           |                          | C286                        | 14401                    | C2020             | 14401  |
| C221 (M)                    | 14A200                   | Power Windows)              | 14025                    | C287                        | 14401                    | C2022             | 14401  |
| C222 (F) (Without           |                          | C230 (F) (With              |                          | C288                        | 14401                    | C2023             | 14401  |
| Power Windows)              | 14024                    | Power Windows)              | 14631                    | C289                        | 14401                    | C2024             | 14401  |
| C222 (F) (With              |                          | C230 (F) (Without           |                          | C290                        | 14401                    | C2025             | 14401  |
| Power Windows)              | 14630                    | Power Windows And           |                          | C291                        | 14401                    | C2026             | 14401  |
| C222 (M)                    | 14A200                   | Door Locks)                 | 19A044                   | C293                        | 12A581                   | C300 (F) (Without |        |
| C224 (F)                    | 14631                    | C230 (M)                    | 14405                    | C294                        | 12A581                   | Power Seats)      | 14B084 |
| C224 (M)                    | 14A200                   | C231 (F) (Without           |                          | C296                        | 14334                    | C300 (F) (With    |        |
| C225 (F)                    | 14A200                   | Power Windows)              | 14024                    | C297                        | 14405                    | Power Seats)      | 14B723 |
| C225 (M)                    | 14631                    | C231 (F) (With              |                          | C298                        | 14401                    | C300 (M)          | 14405  |
| C227 (F) (Without           |                          | Power Windows)              | 14630                    | C299                        | 14401                    | C301 (F)          | 14B084 |
| Power Windows)              | 14025                    | C231 (M)                    | 14405                    | C2001                       | 14401                    | C301 (M)          | 14405  |
| C227 (F) (With              |                          | C250                        | 14401                    | C2002                       | 14401                    | C302              | 14B723 |
| Power Windows)              | 14631                    | C251                        | 14401                    | C2005                       | 14401                    | C303 (F)          | 14A318 |
| C227 (F) (Without           |                          | C257 (F)                    | 14401                    | C2006                       | 14405                    | C303 (M)          | 14405  |
| Power Windows And           |                          | C257 (M)                    | 19B113                   | C2007                       | 14401                    | C304 (F)          | 14B723 |
| Door Locks)                 | 19A044                   | C258 (F)                    | 14401                    | C2008                       | 14401                    | C304 (M)          | 14405  |
| C227 (M)                    | 14401                    | C258 (M)                    | 19B113                   | C2009                       | P.I.A.                   | C305              | 14B723 |
| C228 (F) (Without           |                          | C268                        | 14401                    | C2010                       | 14401                    | C307              | 14B084 |
| Power Windows)              | 14024                    | C269                        | 14401                    | C2011                       | 14401                    | C308              | 14B084 |

# HARNESS CAUSAL PART NUMBER 153-4

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| <u>Connector<br/>Number</u> | <u>Wire<br/>Assembly</u> | <u>Connector<br/>Number</u>           | <u>Wire<br/>Assembly</u> | <u>Connector<br/>Number</u>           | <u>Wire<br/>Assembly</u> |
|-----------------------------|--------------------------|---------------------------------------|--------------------------|---------------------------------------|--------------------------|
| C309 (F) .....              | P.I.A.                   | C410 .....                            | 9A340                    | C507 .....                            | 14025                    |
| C309 (M) .....              | 14405                    | C411 .....                            | 9A340                    | C508 (Without<br>Power Windows) ..... | 14025                    |
| C311 .....                  | 14405                    | C412 .....                            | 13412                    | C508 (With<br>Power Windows) .....    | 14631                    |
| C312 .....                  | 14405                    | C413 .....                            | 14405                    | C509 (Without<br>Power Windows) ..... | 14025                    |
| C315 .....                  | 14405                    | C414 .....                            | 14405                    | C509 (With<br>Power Windows) .....    | 14631                    |
| C319 .....                  | 14A318                   | C415 .....                            | 14405                    | C602 .....                            | 14630                    |
| C320 .....                  | 14405                    | C416 .....                            | 13412                    | C603 (Without<br>Power Windows) ..... | 14024                    |
| C321 (F) .....              | 14405                    | C417 .....                            | 19B516                   | C603 (With<br>Power Windows) .....    | 14630                    |
| C321 (M) .....              | P.I.A.                   | C418 .....                            | 14405                    | C604 .....                            | 14630                    |
| C322 .....                  | 14B084                   | C419 .....                            | 14405                    | C606 .....                            | 14024                    |
| C323 .....                  | 14B084                   | C420 .....                            | 14405                    | C607 (Without<br>Power Windows) ..... | 14024                    |
| C324 .....                  | 14405                    | C421 .....                            | 14405                    | C607 (With<br>Power Windows) .....    | 14630                    |
| C325 .....                  | 14405                    | C422 .....                            | 14405                    | C608 (Without<br>Power Windows) ..... | 14024                    |
| C326 .....                  | 14A318                   | C423 .....                            | 14405                    | C608 (With<br>Power Windows) .....    | 14630                    |
| C327 .....                  | 14A318                   | C424 .....                            | 14405                    | C900 .....                            | 14334                    |
| C350 .....                  | 14405                    | C425 .....                            | 14405                    | C916 .....                            | 14334                    |
| C400 (F) .....              | 14405                    | C426 .....                            | 13412                    | C916 .....                            | 14335                    |
| C400 (M) .....              | 9A340                    | C426 .....                            | 19B516                   | C917 .....                            | 14334                    |
| C401 (F) .....              | 13B440                   | C427 .....                            | 13412                    | C917 .....                            | 14335                    |
| C401 (M) .....              | 13412                    | C427 .....                            | 19B516                   | C918 .....                            | 14335                    |
| C403 (F) .....              | 13B440                   | C428 .....                            | 19B516                   | C926 .....                            | 14335                    |
| C403 (F) .....              | 19B516                   | C429 .....                            | 14405                    | C927 .....                            | 14334                    |
| C403 (M) .....              | 14405                    | C430 .....                            | 13412                    |                                       |                          |
| C405 (F) .....              | 13B440                   | C431 .....                            | 19B516                   |                                       |                          |
| C405 (F) .....              | 19B516                   | C432 .....                            | 18C618                   |                                       |                          |
| C405 (M) .....              | 14405                    | C433 .....                            | 18C619                   |                                       |                          |
| C406 (F) .....              | 18C618                   | C502 .....                            | 14631                    |                                       |                          |
| C406 (M) .....              | 14405                    | C503 (Without<br>Power Windows) ..... | 14025                    |                                       |                          |
| C407 (F) .....              | 13B440                   | C503 (Without<br>Power Windows) ..... | 14631                    |                                       |                          |
| C407 (M) .....              | 18C619                   | C504 .....                            | 14631                    |                                       |                          |
| C408 (F) .....              | 13B440                   | C505 .....                            | 14631                    |                                       |                          |
| C408 (M) .....              | 13412                    |                                       |                          |                                       |                          |
| C409 .....                  | 14405                    |                                       |                          |                                       |                          |

# 160-1 VEHICLE REPAIR LOCATION CODES

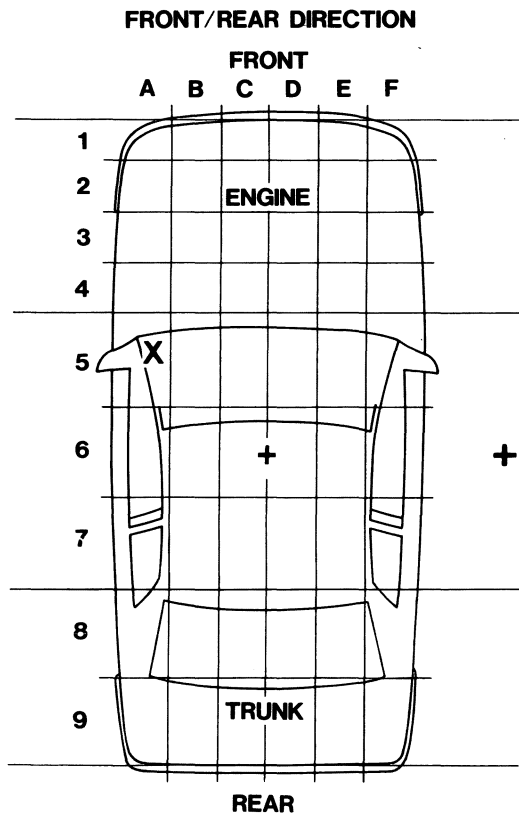
1993 MUSTANG

## VEHICLE REPAIR LOCATION CODES

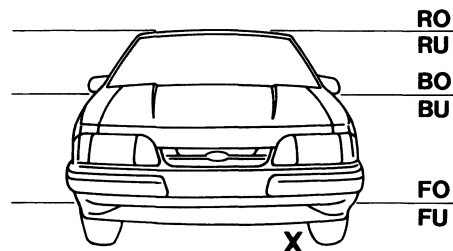
TO PINPOINT THE ACTUAL VEHICLE LOCATION OF A REPAIR, THE VEHICLE REPAIR LOCATION CODE IS REQUIRED.

FOR EXAMPLE, AN "X" HAS BEEN PLACED IN THE QUADRANT OF THE VEHICLE DIAGRAMS INDICATING THE LOCATION OF THE REPAIR. SEE DIAGRAMS.

LOCATION CODE, FOR THE EXAMPLE IS: A5/FU —  
(UNDER THE FLOOR OF DRIVER'S LEFT FOOT.)

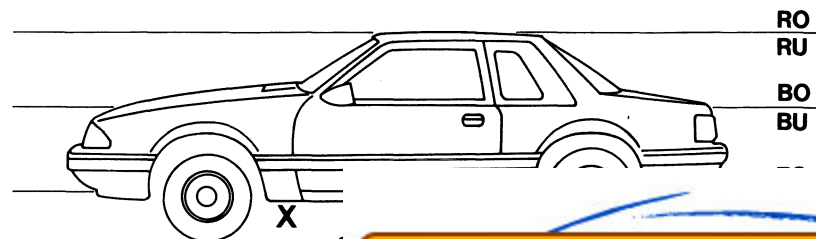


### OVER/UNDER DIRECTION



- R = ROOF LINE
- RO = ROOF OVER
- RU = ROOF UNDER
- B = BELT LINE
- BO = BELT OVER
- BU = BELT UNDER
- F = FLOOR PAN
- FO = FLOOR OVER
- FU = FLOOR UNDER

+ CENTER OF VEHICLE



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