

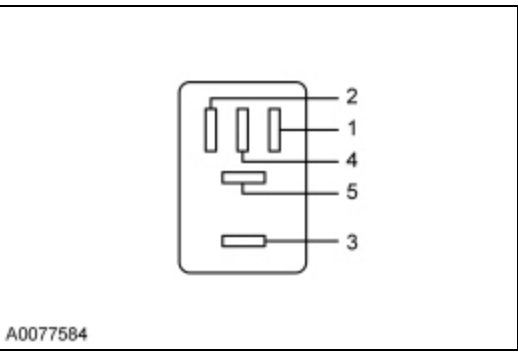
B: Powertrain Control Module (PCM) Power Relay

This pinpoint test is intended to diagnose the following:

- Harness Circuit(s):
- Vehicle Power
- Ignition Start/Run
- PCM Power Relay Ground
- Battery positive voltage
- PCM Power Relay (12A646)

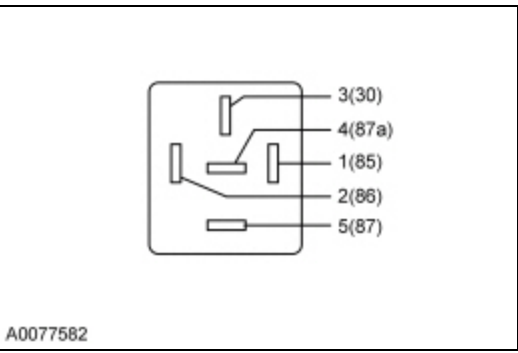
Powertrain Control Module Power (PCMPWR) Relay Connector

A



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B

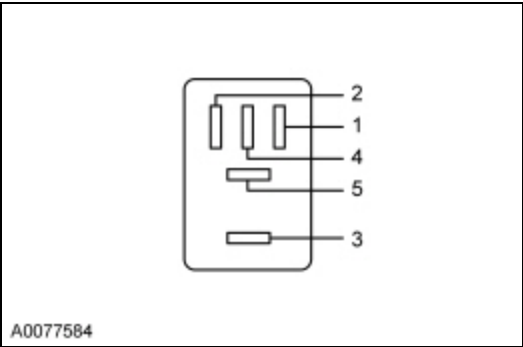


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| Vehicle | Connector | Pin | Circuit |
|--|-----------|----------------------|------------------------------------|
| Crown Victoria, Escape, Focus, Grand Marquis, Sable, Taurus | A | 5 2 1 3 | VPWR GND IGN START/RUN B+ |
| All other vehicles | B | 87 85 86 30 | VPWR GND IGN START/RUN B+ |

Note: The IGN START/RUN and ground circuits, and/or the B+ and VPWR circuits may be reversed in the harness connector. Refer to the Wiring Diagrams Manual for additional information.

Powertrain Control Module Power - 2 (PCMPWR-2) Relay Connector



| Pin | Circuit |
|-----|-------------------------------|
| 1 | GND (Ground) |
| 2 | IGN START/RUN |
| 3 | B+ (Battery Positive Voltage) |
| 5 | VPWR (Vehicle Power) |

Powertrain Control Module (PCM) Connector

| Vehicle | Connector | Pin | Circuit |
|---|--------------------|---------------|---------|
| Aviator, LS, Thunderbird | 150 (60-32-58) Pin | B32, B33 | VPWR |
| E-Series 4.6L, E-Series 5.4L 4R75E, Mustang | 170 Pin | B35, B36 | VPWR |
| E-Series 6.8L, E-Series 5.4L 5R100, F-Super Duty | 170 Pin | B35, B36, T39 | VPWR |
| Excursion, Explorer Sport Trac, Freestar/Monterey, Ford GT, Ranger, Sable, Taurus | 104 Pin | 71, 97 | VPWR |
| Expedition, F-150, Navigator | 190 Pin | B51, B52, B53 | VPWR |
| All other vehicles | 150 (50-50-50) Pin | B35, B36 | VPWR |

B1 CHECK THE B+ AND IGN START/RUN VOLTAGE TO PCM POWER RELAY

- Key in OFF position.
- PCMPWR Relay connector disconnected.
- Key ON, engine OFF.
- Measure the voltage between:

| (+) PCMPWR Relay Connector, Harness Side | (-) |
|--|--------|
| B+ | Ground |
| IGN START/RUN | Ground |

Are the voltages greater than 10.5 V?

| | |
|-----|----------------------------|
| Yes | GO to B2 . |
| No | REPAIR the open circuit. |

B2 CHECK THE PCM POWER RELAY GROUND CIRCUIT FOR AN OPEN

- Measure the voltage between:

| (+) PCMPWR Relay Connector, Harness Side | (-) PCMPWR Relay Connector, Harness Side |
|--|--|
| B+ | GND |

Is the voltage greater than 10.5 V?

| | |
|-----|----------------------------|
| Yes | GO to B3 . |
| No | REPAIR the open circuit. |

B3 CHECK FOR AN OPEN VPWR CIRCUIT BETWEEN THE PCM AND POWER RELAY

- Key in OFF position.
- PCM connector disconnected.
- Measure the resistance between:

| (+) PCMPWR Relay Connector, Harness Side | (-) PCM Connector, Harness Side |
|--|-----------------------------------|
| VPWR | VPWR |

Is the resistance less than 5 ohms?

| | |
|-----|-----------------------------|
| Yes | INSTALL a new PCMPWR relay. |
| No | REPAIR the open circuit. |

B4 CHECK FOR VEHICLES THAT HAVE 2 PCM POWER RELAYS

Note: The PCM power relay No. 2 (also referred to as the COPS and HO2S relay) supplies VPWR to two separately fused circuits. REFER to the applicable Wiring Diagrams section to determine fuse locations.

- Inspect the VPWR circuit fuse that goes to the component where the VPWR check failed.

Is the fuse OK?

| | |
|------------|--|
| Yes | GO to B5 . |
| No | CHECK the VPWR circuit for short to ground. INSTALL a new fuse. |

B5 CHECK FOR VPWR TO BOTH FUSES CONNECTED TO THE PCMPWR-2 RELAY

- Key ON, engine OFF.
- Measure the voltage between:

| | |
|--|--------------|
| (+) Component: Fuse Connector, Harness Side | (-) |
| VPWR | Ground |

- Remove and inspect the other VPWR circuit fuse that goes to the components supplied by the PCMPWR-2 relay. Repair as necessary.
- Measure the voltage between:

| | |
|--|--------------|
| (+) Component: Fuse Connector, Harness Side | (-) |
| VPWR | Ground |

Is the voltage to both fuses greater than 10.5 volts?

| | |
|------------|---|
| Yes | REPAIR the open circuit. (The open circuit is between the fuse and the component where the VPWR check failed). |
| No | If only 1 voltage is less than 10.5 volts, repair the open circuit between the fuse and the splice. Otherwise, GO to B6 . |

B6 CHECK VPWR CIRCUIT CONTINUITY BETWEEN THE FUSE AND PCM POWER RELAY NO. 2

- Key in OFF position.
- PCMPWR-2 Relay connector disconnected.
- Measure the resistance between:

| | |
|---|--|
| (+) PCMPWR-2 Relay Connector, Harness Side | (-) Component: Fuse Connector, Harness Side |
| VPWR - Pin 5 | FUSE |

Is the resistance less than 5 ohms?

| | |
|------------|--|
| Yes | GO to B7 . |
| No | REPAIR the open circuit. (The open is between the splice and the PCMPWR-2 relay). |

B7 CHECK THE B+ AND IGN START/RUN VOLTAGE TO PCMPWR-2

- Key ON, engine OFF.
- Measure the voltage between:

| (+) PCMPWR-2 Relay Connector, Harness Side | (-) |
|--|--------|
| B+ - Pin 3 | Ground |
| IGN START/RUN - Pin 2 | Ground |

Are the voltages greater than 10.5 V?

| | |
|------------|----------------------------|
| Yes | GO to B8 . |
| No | REPAIR the open circuit. |

B8 CHECK THE PCMPWR-2 GND CIRCUIT FOR AN OPEN IN THE HARNESS

- Measure the voltage between:

| (+) PCMPWR-2 Relay Connector, Harness Side | (-) PCMPWR-2 Relay Connector, Harness Side |
|--|--|
| B+ - Pin 3 | GND - Pin 1 |

Is the voltage greater than 10.5 V?

| | |
|------------|-------------------------------|
| Yes | INSTALL a new PCMPWR-2 relay. |
| No | REPAIR the open circuit. |

