

Year = 2007

Model = F-150

Engine =

VIN =

IDS Version = Not Available

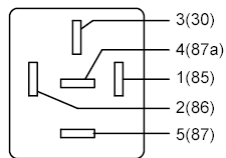
Fuel Pump (FP) Relay

This pinpoint test is intended to diagnose the following:

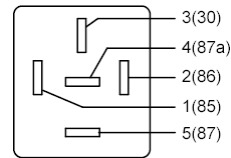
- fuel pump relay (9345)
 - inertia fuel shutoff (IFS) switch (9341)
 - harness circuits: B+, VPWR, FP, GND, FPM, and FP PWR
 - powertrain control module (PCM) (12A650)
-

Fuel Pump (FP) Relay Connector -

The VPWR and FP circuits may be reversed in the harness connector. Refer to the Wiring Diagrams Manual for schematic and connector information.



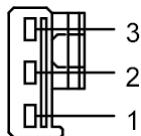
Harness Side



Component side

Circuit	Pin
VPWR (Vehicle Power)	2
FP (Fuel Pump)	1
FPPWR (Fuel Pump Power)	5
B+ (Battery Positive Voltage)	3

Inertia Fuel Shutoff (IFS) Switch Connector

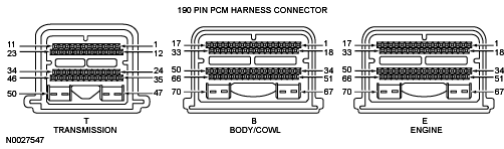


Harness Side

Circuit	Pin
FPPWR-A (Fuel Pump Power - A)	2
FPPWR-B (Fuel Pump Power - B)	1

Powertrain Control Module (PCM) Connector -

For PCM connector views or reference values, refer to Section 6.



Harness Side

Circuit	Pin
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KA1 : CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

- Are DTCs P0230, P0231, P0232, or P1641 present?

Yes	No
For KOEO and KOER DTCs P0230 or P1641, Go to KA2. For Continuous Memory DTCs P0230 or P1641, Go to KA32. For KOEO and KOER DTC P0231, Go to KA24. For Continuous Memory DTC P0231, Go to KA31. For KOEO and KOER DTC P0232, Go to KA12. For Continuous Memory DTC P0232, Go to KA29.	For all others, GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions.

KA2 : KOEO and KOER DTCs P0230 and P1641: CHECK FOR THE PRESENCE OF DTC P0685 OR P0690

- Carry out the self-test.
- Are DTCs P0685 or P0690 present?

Yes	No
Disregard the current DTC at this time. GO to DTC Index to address the next DTC.	Go to KA3.

Yes	No
Go to KA4.	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

KA4 : CHECK THE FUEL PUMP RELAY

- Ignition OFF.
- Carry out the FP relay component test. Refer to the Wiring Diagrams Cell 149 Component Testing.
- **Does the FP relay pass the component test?**

Yes	No
Go to KA5.	INSTALL a new FP relay. CLEAR the DTCs. REPEAT the self-test.

KA5 : CHECK THE FP CIRCUIT FOR A SHORT TO VOLTAGE IN THE HARNESS

- PCM connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+)	(-)
FP Relay Connector, Harness Side	
FP - Pin 1	Ground

- **Is the voltage less than 1 V?**

Yes	No
Go to KA6.	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

KA6 : CHECK THE FUEL PUMP CIRCUIT FOR A SHORT TO GROUND IN THE HARNESS

- Ignition OFF.
- Measure the resistance between:

(+)	(-)
FP Relay Connector, Harness Side	
FP - Pin 1	Ground

- **Is the resistance greater than 10 kOhm?**

Yes	No
Go to KA7.	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

- Measure the resistance between:

(+)	(-)
FP Relay Connector, Harness Side	PCM Connector, Harness Side
FP - Pin 1	FP

- **Is the resistance less than 5 Ohm?**

Yes	No
Go to KA8.	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

KA8 : CHECK FOR KOEO DTCS

- Carry out the KOEO self-test.
- **Are DTCs P0231 or P0232 present?**

Yes	No
Go to KA9.	Go to KA34.

KA9 : CHECK THE FP PRIMARY CIRCUIT INSIDE THE PCM

- PCM connector connected.
- FP Relay connector connected.
- Ignition ON, engine OFF.
- Access the PCM and monitor the FP_F (MODE) PID.
- **Is the PID state YES?**

Yes	No
Go to KA34.	Go to KA10.

KA10 : CHECK THE FUEL PUMP PRIMARY CIRCUIT INSIDE THE PCM WHILE CRANKING THE ENGINE

- Access the PCM and monitor the FP_F (MODE) PID.
- While observing the PID, crank the engine
- **Does the PID display indicate a concern during crank?**

Yes	No
Go to KA34.	The fuel pump primary circuit is OK in the harness and PCM. Go to KA11.

Yes	No
Go to KA24.	Go to KA12.

KA12 : KOEO and KOER DTC P0232: DOES THE ENGINE START

- Does the engine start

Yes	No
Go to KA13.	Go to KA18.

KA13 : VERIFY THE FUEL PUMP IS OFF

- Ignition ON, engine OFF.
- Wait for 5 seconds.
- The fuel pump is located above the fuel tank. Listen for the sound of the fuel pump operating which can be heard from outside the vehicle.
- **Is fuel pump off with the key ON?**

Yes	No
Go to KA15.	Go to KA14.

KA14 : CHECK FOR FUEL PUMP RELAY CONTACTS ALWAYS CLOSED

- FP Relay connector disconnected.
- Ignition ON, engine OFF.
- **Is fuel pump off with the key ON?**

Yes	No
INSTALL a new FP relay. CLEAR the DTCs. REPEAT the self-test.	REPAIR the short circuit. The short circuit is between the FPPWR and FPM circuits or in the INJPWRM circuit. CLEAR the DTCs. REPEAT the self-test.

Yes	No
Go to KA16.	REPAIR the open circuit. The concern is between the splice and the PCM. CLEAR the DTCs. REPEAT the self-test.

KA16 : IS KOEO DTC P0231 PRESENT?

- Carry out the KOEO self-test.
- **Is DTC P0231 present?**

Yes	No
Go to KA34.	Go to KA17.

KA17 : CHECK THE FPM PRIMARY CIRCUIT INSIDE THE PCM

- PCM connector connected.
- FP Relay connector connected.
- Ignition ON, engine OFF.
- Access the PCM and monitor the FPM (MODE) PID.
- **Is the PID state OFF?**

Yes	No
The concern is not present at this time. The FPM circuit is OK in the harness and PCM . Disregard DTC P0232 at this time. Concern is elsewhere. RETURN to Symptom Charts for further direction.	Go to KA34.

KA18 : CHECK IF THE INERTIA FUEL SHUTOFF (IFS) SWITCH IS TRIPPED

- **Is the IFS switch tripped?**

Yes	No
RESET the IFS switch. CLEAR the DTCs. REPEAT the self-test.	Go to KA19.

Yes	No
Go to KA20.	INSTALL a new IFS switch. REFER to the Workshop Manual Section 310-01, Fuel Tank and Lines. CLEAR the DTCs. REPEAT the self-test.

KA20 : CHECK THE FP PWR CIRCUIT FOR AN OPEN IN THE HARNESS

- FP Relay connector disconnected.
- Measure the resistance between:

(+)	(-)
IFS Switch Connector, Harness Side	FP Relay Connector, Harness Side
FPPWR-A - Pin 2	FPPWR - Pin 5

- Is the resistance less than 5 Ohm?

Yes	No
Go to KA21.	REPAIR the open circuit.CHECK for an open circuit between the IFS switch and the FPM splice. REFER to the Wiring Diagrams Manual for schematic and connector information. CLEAR the DTCs. REPEAT the self-test.

KA21 : CHECK THE FUEL PUMP GROUND CIRCUIT FOR AN OPEN IN THE HARNESS

- FP connector disconnected.
- Measure the resistance between:

(+)	(-)
FP Connector, Harness Side	
FPGND	Ground

- Is the resistance less than 5 Ohm?

Yes	No
Go to KA22.	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

Go to KA23.

CLEAR the DTCs. REPEAT the self-test.

KA23 : CHECK THE INTERNAL RESISTANCE OF THE FUEL PUMP

- Measure the resistance between:

(+)	(-)
FP Connector, Harness Side FPPWR	FP Connector, Harness Side FPGND

- **Is the resistance less than 10 Ohm?**

Yes	No
The fuel pump circuit is OK in the harness and PCM . Disregard DTC P0232 at this time. Concern is elsewhere. RETURN to Symptom Charts for further direction.	INSTALL a new FP. REFER to the Workshop Manual Section 310-01, Fuel Tank and Lines. CLEAR the DTCs. REPEAT the self-test.

KA24 : KOEO and KOER DTC P0231: IS KOEO DTC P0230 ALSO PRESENT?

- Carry out the KOEO self-test.
- **Is DTC P0230 present?**

Yes	No
Go to KA3.	Go to KA25.

KA25 : DOES THE ENGINE START

- **Does the engine start**

Yes	No
Go to KA15.	Go to KA26.

KA26 : CHECK IF THE IFS SWITCH IS TRIPPED

- **Is the IFS switch tripped?**

Yes	No
RESET the IFS switch. CLEAR the DTCs. REPEAT the self-test.	Go to KA27.

(+)	(-)
FP Relay Connector, Harness Side	
B+ - Pin 3	Ground

- **Is the voltage greater than 10 V?**

Yes	No
Go to KA28.	A B+ circuit concern is present. CHECK the condition of the related fuse/fuse links. If OK, REPAIR the open circuit. If the fuse/fuse link is damaged, CHECK the circuit for a short to ground before installing a new fuse/fuse link. CLEAR the DTCs. REPEAT the self-test.

KA28 : CHECK THE FP PWR CIRCUIT FOR AN OPEN IN THE HARNESS

- Measure the resistance between:

(+)	(-)
FP Relay Connector, Harness Side	
FPPWR - Pin 5	Ground

- **Is the resistance less than 10 Ohm?**

Yes	No
INSTALL a new FP relay. CLEAR the DTCs. REPEAT the self-test.	REPAIR the open circuit. The open is between the splice and the FP relay. CLEAR the DTCs. REPEAT the self-test.

KA29 : Continuous Memory DTC P0232: IS A CONTINUOUS DTC P0230 PRESENT?

- Retrieve the continuous memory DTCs.
- **Is DTC P0230 present?**

Yes	No
Go to KA33.	Go to KA30.

—Lightly tap on the FP , IFS , and FP RLY to simulate road shock

- **Is a concern present?**

Yes	No
ISOLATE the concern and REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.	Unable to duplicate or identify the concern at this time. GO to Pinpoint Test Z.

KA31 : Continuous Memory DTC P0231: CHECK THE HARNESS

- PCM connector disconnected.
- Connect a 5 amp fused jumper wire between the following:

Point A	Point B
PCM Connector, Harness Side	
FP	Ground

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

(+)	(-)
PCM Connector, Harness Side	
FPM	Ground

- The FP turns on and the voltage will be greater than 10 V
- Check for an indication of a concern while carrying out the following. The voltage changes suddenly when a concern is present.
 - Shake, wiggle, and bend the B+ supply to the FP relay
 - Shake, wiggle, and bend the FP PWR circuit between the FP relay and the FPM splice
 - Lightly tap on the FP relay to simulate road shock
- Ignition OFF.
- Visually inspect the FP relay and its loom connector for damage and corrosion.
- **Is a concern present?**

Yes	No
ISOLATE the concern and REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.	Unable to duplicate or identify the concern at this time. GO to Pinpoint Test Z.

KA32 : Continuous Memory DTC P0230: CHECK FOR THE PRESENCE OF DTC P0685 OR P0690

- Carry out the self-test.
- **Are DTCs P0685 or P0690 present?**

Yes	No
Disregard the current DTC at this time. GO to DTC Index to address the next DTC.	Go to KA33.

- Wait for 5 seconds.
- Access the PCM and monitor the FP_F (MODE) PID.
- Observe the FP_F PID for an indication of a concern while carrying out the following:
 - Shake, wiggle, and bend the FP circuit between the PCM and the FP relay
 - Shake, wiggle, and bend the VPWR circuit between the electronic engine control power relay and the FP relay
 - Lightly tap on the FP relay to simulate road shock
- Ignition OFF.
- Visually inspect the PCM connector and wires as far back as the main loom for damage.
- Visually inspect the FPR connector and wires as far back as the main loom for damage.
- **Is a concern present?**

Yes	No
ISOLATE the concern and REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.	Unable to duplicate or identify the concern at this time. GO to Pinpoint Test Z.

KA34 : CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test and verify the concern is still present.
- **Is the concern still present?**

Yes	No
INSTALL a new PCM. REFER to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.
