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2001 FORD Focus 5 Doors OEM Service and Repair Workshop Manual

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C220A-10	Ω	C4330-2

Is the resistance less than 3 ohms?

Yes	GO to C8

No	REPAIR the circuit.

C8 CHECK THE FUEL LEVEL RETURN CIRCUIT FOR AN OPEN BETWEEN THE IPC (INSTRUMENT PANEL CLUSTER) AND THE FUEL PUMP AND SENDER UNIT

- Measure:
  Diesel

Positive Lead	Measurement / Action	Negative Lead
C220A-2	Ω	C4331-1

Gas or HEV (hybrid electric vehicle)

Positive Lead	Measurement / Action	Negative Lead
C220A-2	Ω	C4330-1

Is the resistance less than 3 ohms?

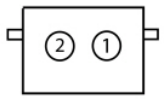
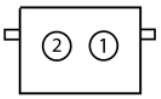
Yes	GO to C15

No	REPAIR the circuit.

Yes	GO to C12

No	The system is operating correctly at this time. The concern may have been caused by component connections. ADDRESS the root cause of any connector or pin issues.

C12 CHECK THE FUEL PUMP MODULE

Positive Lead	Measurement / Action	Negative Lead
 E180153 Fuel Level Sender (Component Side) - Pin 1	Ω	 E180153 Fuel Level Sender (Component Side) - Pin 2

Does the resistance slowly decrease from approximately 180 ± 4 ohms at the lower stop to 10 ± 2 ohms at the upper stop?

Yes	INSTALL a new fuel pump and sender unit. REFER to the appropriate 310-01 section.

No	INSTALL a new fuel level sender (float and card). REFER to the appropriate 310-01 section.

C14 CHECK THE FUEL PUMP SENDER UNIT SIGNAL AND RETURN CIRCUITS FOR HIGH RESISTANCE

- Ignition OFF.
- Disconnect IPC (instrument panel cluster) C220 .
- Connect a fused jumper wire:

Diesel

Lead 1	Measurement / Action	Lead 2
C4331-1		C4331-2

Gas or HEV (hybrid electric vehicle)

Lead 1	Measurement / Action	Lead 2

	(413-01 Instrumentation, Message Center and Warning Chimes, Removal and Installation).

No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST D : INCORRECT ANALOG ENGINE OIL PRESSURE GAUGE INDICATION

Refer to Wiring Diagrams Cell 60for schematic and connector information.

Normal Operation and Fault Conditions See Engine Oil Pressure Gauge. REFER to: Instrument Panel Cluster (IPC) - System Operation and Component Description (413-01 Instrumentation, Message Center and Warning Chimes, Description and Operation).

If the oil pressure warning indicator request is missing for less than 5 seconds from the PCM (powertrain control module) , the IPC (instrument panel cluster) defaults the engine oil pressure gauge to the last indication state based on the last message received. If the IPC (instrument panel cluster) does not receive the oil pressure warning indicator request from the PCM (powertrain control module) for 5 seconds or longer, the IPC (instrument panel cluster) defaults the engine oil pressure gauge to 0 PSI. **Possible Sources**

- Communication concern
- Engine oil pressure sensor
- PCM (powertrain control module) concern
- GWM (gateway module A) concern
- IPC (instrument panel cluster)

D1 PERFORM THE IPC (INSTRUMENT PANEL CLUSTER) SELF-TEST

- Using a diagnostic scan tool, perform the IPC (instrument panel cluster) self-test.
- Check for recorded Diagnostic Trouble Codes (DTCs) from the IPC (instrument panel cluster) self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to DTC (diagnostic trouble code) Chart: IPC (instrument panel cluster) in this section.

No	GO to D2

D2 PERFORM THE PCM (POWERTRAIN CONTROL MODULE) KOEO (KEY ON, ENGINE OFF) SELF-TEST

Command the engine oil pressure gauge on and off while monitoring the engine oil pressure gauge.

Does the engine oil pressure gauge move to high (H) when commanded on and return to low (L) when commanded off?

Yes	GO to D5
No	GO to D6

D5 CHECK THE ENGINE OIL PRESSURE

- Test the engine oil pressure.

Was an engine oil pressure concern detected?

Yes	REPAIR the engine oil pressure concern. REFER to the appropriate 303-01 section.
No	INSTALL a new engine oil pressure sensor. REFER to the appropriate 303-01 section.

D6 CHECK FOR CORRECT IPC (INSTRUMENT PANEL CLUSTER) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPC (instrument panel cluster) connector.
- Repair:
  - corrosion (install new connector or terminals – clean module pins)
  - damaged or bent pins – install new terminals/pins
  - pushed-out pins – install new pins as necessary
- Reconnect the IPC (instrument panel cluster) connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new IPC (instrument panel cluster) . REFER to: Instrument Panel Cluster (IPC)

Yes	REFER to: Anti-Lock Brake System (ABS) and Stability Control(206-09 Anti-Lock Brake System (ABS) and Stability Control, Diagnosis and Testing).

No	GO to E3

E3 CHECK THE GWM (GATEWAY MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, check the GWM (gateway module A) Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Controller Area Network (CAN) Module Communications Network(418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

No	GO to E4

E4 PERFORM THE SPEEDOMETER ACTIVE COMMAND USING A DIAGNOSTIC SCAN TOOL

- Using a diagnostic scan tool, view the IPC (instrument panel cluster) Parameter Identifications (PIDs).
- Access the IPC (instrument panel cluster) and control the SPDOMETER (Speedometer) (%) PID (parameter identification)
- Command the speedometer on and off while monitoring the speedometer.

Does the speed begin at 0 km/h (0 mph) move to 161 km/h (100 mph) and return to 0 km/h (0 mph)?

Yes	DIAGNOSE all PCM (powertrain control module) Diagnostic Trouble Codes (DTCs). REFER to the appropriate 303-14 section.

No	GO to E5

E5 CHECK FOR CORRECT IPC (INSTRUMENT PANEL CLUSTER) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPC (instrument panel cluster) connector.

or the neddle to potentially stick or bind. Reference General Service Bulletin (GSB) Instrument Panel Cluster Mask/Lens Warrantable Versus Non-Warrantable Conditions.

F1 CHECK THE AXLE RATIO CONFIGURATION

- **NOTE**

  The vehicle build axle ratio can be found in PTS (Professional Technician System) under the OASIS tab.

  Locate and determine the vehicle build axle ratio.

Does the vehicle axle ratio match the vehicle build axle ratio?

Yes	GO to F2

No	CONFIGURE the correct axle ratio as required.

F2 CHECK THE TIRE SIZE

- **NOTE**

  The correct tire size can be found on the VC (vehicle certification) label.

  Verify the size of the tires installed on the vehicle matches the VC (vehicle certification) label.
  REFER to: Identification Codes(100-01 Identification Codes, Description and Operation).
- Verify the tire size is correctly configured.

Does the tire size match the VC (vehicle certification) label and is the tire size correctly configured?

Yes	GO to F3

No	INSTALL the correct size tires or CONFIGURE the tire size.

F3 PERFORM THE IPC (INSTRUMENT PANEL CLUSTER) SELF-TEST

- Using a diagnostic scan tool, perform the IPC (instrument panel cluster) self-test.
- Check for recorded Diagnostic Trouble Codes (DTCs) from the IPC (instrument panel cluster) self-test.

70% (113 km/h [70 mph])	109-121 km/h (68-75 mph)
80% (129 km/h [80 mph])	126-138 km/h (78-86 mph)
90% (145 km/h [90 mph])	140-154 km/h (87-96 mph)
100% (161 km/h [100 mph])	156-172 km/h (97-107 mph)

Does the speedometer increase within the specified range?

Yes	GO to F6

No	GO to F8

F6 CHECK THE PCM (POWERTRAIN CONTROL MODULE) VEHICLE SPEED PID (PARAMETER IDENTIFICATION)

- Using a diagnostic scan tool, view the IPC (instrument panel cluster) Parameter Identifications (PIDs).
- Access the PCM (powertrain control module) and monitor the VSS (Vehicle Speed) (Kph) PID (parameter identification)
- Drive the vehicle at 32 km/h (20 mph), 64 km/h (40 mph) and 97 km/h (60 mph) while monitoring the PID (parameter identification) ..

Does the speedometer indicate between 31-34 km/h (19-21 mph), 63-69 km/h (39-43 mph) and 93-103 km/h (58-64 mph) at the 3 PCM (powertrain control module) PID (parameter identification) values?

Yes	GO to F7

No	GO to F8

F7 OBSERVE THE SPEEDOMETER OPERATION

- Observe the speedometer while operating at various speeds and stopping frequently.

Does the speedometer begin at 0 km/h (0 mph) and fully return to the 0 km/h (0 mph) position when the vehicle is stopped?

Yes	The speedometer is operating correctly at this time.

becomes corrupted or if any NVM (non-volatile memory) failure occurs, odometer displays ERROR.

Possible Sources

- Communication concern
- PCM (powertrain control module) concern
- GWM (gateway module A) concern
- IPC (instrument panel cluster)

G1 CHECK FOR CORRUPTED NON-VOLATILE MEMORY (NVM)

- Ignition ON.
- Observe the message center display area.

Does the odometer display ERROR?

Yes	INSTALL a new IPC (instrument panel cluster) . REFER to: Instrument Panel Cluster (IPC) (413-01 Instrumentation, Message Center and Warning Chimes, Removal and Installation).

No	GO to G2

G2 PERFORM THE IPC (INSTRUMENT PANEL CLUSTER) SELF-TEST

- Using a diagnostic scan tool, perform the IPC (instrument panel cluster) self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to DTC (diagnostic trouble code) Chart: IPC (instrument panel cluster) in this section.

No	GO to G3

G3 CHECK THE GWM (GATEWAY MODULE A) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, check the GWM (gateway module A) Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Controller Area Network (CAN) Module Communications Network(418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).