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2002 FORD Focus Wagon OEM Service and Repair Workshop Manual

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C2039-1	Ω	C242A-14

Is the resistance less than 3 ohms?

Yes	GO to E5

No	REPAIR the circuit.

E4 CHECK THE LED (LIGHT EMITTING DIODE) CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect IPMA (image processing module A) C242A .
- Disconnect Instrument panel center stack middle switch C2039 .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2039-1	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to E5

No	REPAIR the circuit.

E5 CHECK THE LED (LIGHT EMITTING DIODE) WITH THE IPMA (IMAGE PROCESSING MODULE A) BYPASSED

- Connect Instrument panel center stack middle switch C2039 .
- Connect a fused jumper wire:

	REFER to: Active Park Assist Switch (413-13C Parking Aid - Vehicles With: Active Park Assist, Removal and Installation).

No	REPAIR the circuit.

E7 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition OFF.
- Disconnect and inspect all IPMA (image processing module A) connectors.
- 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 IPMA (image processing module A) connectors. Make sure they seat and latch 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 IPMA (image processing module A) . REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).

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

PINPOINT TEST F : B1B44:08

NOTE

F2 CHECK THE REAR BUMPER WIRING HARNESS

- Inspect the rear bumper wiring harness for opens, shorts, grounds or corrosion.

Is the rear bumper wiring harness OK?

Yes	GO to F3

No	REPAIR or INSTALL a new rear bumper wiring harness.

F3 CHECK FOR VOLTAGE TO THE SENSOR

- Ignition OFF.
- Disconnect RHR (right-hand rear) outer parking aid sensor C4011 .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4011-1	V⎓	Ground

Is the voltage greater than 9 volts?

Yes	GO to F4

No	REPAIR the circuit.

F4 CHECK FOR GROUND AT THE SENSOR

- Measure:

Positive Lead	Measurement / Action	Negative Lead

C4011-2	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to F7

No	REPAIR the circuit.

F7 CHECK THE SENSOR FOR A SHORT TO VREF OR SIGNAL RETURN CIRCUITS

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4011-2	Ω	C4011-1
C4011-2	Ω	C4011-3

Are the resistances greater than 10,000 ohms?

Yes	GO to F8

No	REPAIR the affected circuits.

F8 CHECK THE SENSOR CIRCUITS FOR AN OPEN

- Ignition OFF.
- Measure:

F10 CHECK FOR CORRECT IPMA (IMAGE PROCESSING MODULE A) OPERATION

- Ignition OFF.
- Disconnect and inspect all IPMA (image processing module A) connectors.
- 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 IPMA (image processing module A) connectors. Make sure they seat and latch 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 IPMA (image processing module A) . REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST G : B1B46:08

NOTE

Before disconnecting the IPMA (image processing module A) or any of the parking aid sensors, verify the connectors are properly seated and latched.

Refer to Wiring Diagrams Cell 145for schematic and connector information.

Normal Operation and Fault Conditions REFER to: Parking Aid - System Operation and Component Description
(413-13A Parking Aid - Vehicles With: Rear Parking Aid, Description and Operation).

DTC Fault Trigger Conditions

- Inspect the rear bumper wiring harness for opens, shorts, grounds or corrosion.

Is the rear bumper wiring harness OK?

Yes	GO to G3

No	REPAIR or INSTALL a new rear bumper wiring harness.

G3 CHECK FOR VOLTAGE TO THE SENSOR

- Ignition OFF.
- Disconnect RHR (right-hand rear) inner parking aid sensor C4012 .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4012-1	V	Ground

Is the voltage greater than 9 volts?

Yes	GO to G4

No	REPAIR the circuit.

G4 CHECK FOR GROUND AT THE SENSOR

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4012-1	V	C4012-3

Is the resistance greater than 10,000 ohms?

Yes	GO to G7

No	REPAIR the circuit.

G7 CHECK THE SENSOR FOR A SHORT TO VREF OR SIGNAL RETURN CIRCUITS

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4012-2	Ω	C4012-1
C4012-2	Ω	C4012-3

Are the resistances greater than 10,000 ohms?

Yes	GO to G8

No	REPAIR the affected circuits.

G8 CHECK THE SENSOR CIRCUITS FOR AN OPEN

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4012-1	Ω	C242A-15

- 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 IPMA (image processing module A) connectors. Make sure they seat and latch 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 IPMA (image processing module A) . REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).

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

PINPOINT TEST H : B1B48:08

NOTE

Before disconnecting the IPMA (image processing module A) or any of the parking aid sensors, verify the connectors are properly seated and latched.

Refer to Wiring Diagrams Cell 145for schematic and connector information.

Normal Operation and Fault Conditions REFER to: Parking Aid - System Operation and Component Description
(413-13A Parking Aid - Vehicles With: Rear Parking Aid, Description and Operation).

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

H3 CHECK FOR VOLTAGE TO THE SENSOR

- Ignition OFF.
- Disconnect LHR (left-hand rear) outer parking aid sensor C4009 .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4009-1	V	Ground

Is the voltage greater than 9 volts?

Yes	GO to H4

No	REPAIR the circuit.

H4 CHECK FOR GROUND AT THE SENSOR

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4009-1	V	C4009-3

Is the voltage greater than 9 volts?

Yes	GO to H5

No	REPAIR the circuit.