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2016 FORD Focus ST 5 Doors OEM Service and Repair Workshop Manual

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Normal Operation and Fault Conditions The video signals are transmitted from each camera to the IPMA (image processing module A) on a coaxial cable. The IPMA (image processing module A) processes the image data and sends a single video image to the APIM (SYNC module) via coaxial cable. REFER to: [Parking Aid - System Operation and Component Description](#) (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Description and Operation).

Possible Sources

- Dirty or scratched camera lens
- Fuse
- Wiring, terminals or connectors
- Coaxial cable
- Camera
- IPMA (image processing module A)
- APIM (SYNC module) concern

Visual Inspection and Pre-checks

- Inspect the camera lenses for damage, dirt, debris and scratches.

I1 INSPECT THE CAMERA IMAGES

- Ignition ON.
- Press the camera selection switch.

No

- For a front camera concern, GO to [I2](#)
- For a rear camera concern, GO to [I6](#)
- For a LH (left-hand) side camera concern, GO to [I10](#)
- For a RH (right-hand) side camera concern, GO to [I14](#)

I2 CHECK THE FRONT CAMERA COAXIAL CABLE CORE AND SHIELD FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect IPMA (image processing module A) C242E .
- Disconnect Front parking aid camera C1663 .
- Ignition ON.
- Measure VDC (voltage direct current) :

Positive Lead	Measurement / Action	Negative Lead
C242E-1 coaxial cable core	\overline{V}	Ground
C242E-1 coaxial cable shield	\overline{V}	Ground

Is any DC (direct current) voltage present?

Yes

REPLACE the affected coaxial cable.

No

GO to [I3](#)

I3 CHECK THE FRONT CAMERA COAXIAL CABLE CORE FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
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C242E-1 coaxial cable core	Ω	C242E-1 coaxial cable shield
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Is the resistance greater than 10,000 ohms?

Yes	<p>INSTALL a new front parking aid camera.</p> <p>REFER to: Front Parking Aid Camera (413-13B Parking Aid - Vehicles With: Parking Aid Camera, Removal and Installation).</p> <p>If the concern is still present after camera replacement, GO to I18</p>
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No	REPLACE the affected coaxial cable.
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I6 CHECK THE REAR CAMERA COAXIAL CABLE CORE AND SHIELD FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect IPMA (image processing module A) C242E .
- Disconnect Rear parking aid camera C4357 .
- Ignition ON.
- Measure VDC (voltage direct current) :

Positive Lead	Measurement / Action	Negative Lead
C242E-2 coaxial cable core	$\overline{\text{V}}$	Ground
C242E-2 coaxial cable shield	$\overline{\text{V}}$	Ground

Is any DC (direct current) voltage present?

Yes	REPLACE the affected coaxial cable.
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No	GO to I7
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- Measure:

Positive Lead	Measurement / Action	Negative Lead
C242E-2 coaxial cable core	Ω	C4357-1 coaxial cable core
C242E-2 coaxial cable shield	Ω	C4357-1 coaxial cable shield

Are the resistances less than 3 ohms?

Yes	GO to I9
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No	REPLACE the affected coaxial cable.
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I9 CHECK THE REAR CAMERA COAXIAL CABLE CORE AND SHIELD FOR A SHORT TOGETHER

Yes REPLACE the affected coaxial cable.

No GO to [I11](#)

I11 CHECK THE LH (LEFT-HAND) SIDE CAMERA COAXIAL CABLE CORE FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C242E-3 coaxial cable core	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes GO to [I12](#)

No REPLACE the affected coaxial cable.

I12 CHECK THE LH (LEFT-HAND) SIDE CAMERA COAXIAL CABLE CORE AND SHIELD FOR AN OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C242E-3 coaxial cable core	Ω	C5104-1 coaxial cable core
C242E-3 coaxial cable shield	Ω	C5104-1 coaxial cable shield

Positive Lead	Measurement / Action	Negative Lead
C242E-4 coaxial cable core	\bar{V}	Ground
C242E-4 coaxial cable shield	\bar{V}	Ground

Is any DC (direct current) voltage present?

Yes	REPLACE the affected coaxial cable.
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No	GO to I15
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I15 CHECK THE RH (RIGHT-HAND) SIDE CAMERA COAXIAL CABLE CORE FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C242E-4 coaxial cable core	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to I16
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No	REPLACE the affected coaxial cable.
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I16 CHECK THE RH (RIGHT-HAND) SIDE CAMERA COAXIAL CABLE CORE AND SHIELD FOR AN OPEN

- Measure:

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

- Ignition OFF.
- Disconnect and inspect the 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 J : THE REAR PARKING AID CAMERA IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY - VEHICLES EQUIPPED WITH 360 DEGREE VIEW CAMERA

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

Normal Operation and Fault Conditions REFER to: [Parking Aid - System Operation and Component Description](#)

(413-13B Parking Aid - Vehicles With: Parking Aid Camera, Description and Operation).

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
IPMA (image processing)	Camera Module: Bus Signal/Message	A continuous and on-demand DTC (diagnostic trouble code) that sets in the IPMA (image processing module A) when

No	DIAGNOSE the PRNDL indicator. REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
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J2 CHECK FOR CORRECT SPEEDOMETER OPERATION

- Verify the operation of the speedometer.

Does the speedometer operate correctly?

Yes	GO to J3
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No	DIAGNOSE the speedometer. REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
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J3 CARRY OUT A NETWORK TEST

- Using a diagnostic scan tool, carry out a network test.

Do all modules pass the network test?

Yes	GO to J4
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No	See the Symptom Chart: Communication Network.
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J4 CHECK THE DISPLAY

- **NOTE**

Some fault conditions may cause the actual camera image(s) not to be displayed.

Observe the audio system display.

- Select REVERSE.
- Wait 30 seconds.

Positive Lead	Measurement / Action	Negative Lead
C242E-2 coaxial cable core	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to J7
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No	REPLACE the affected coaxial cable.
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J7 CHECK THE REAR CAMERA COAXIAL CABLE CORE AND SHIELD FOR AN OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C242E-2 coaxial cable core	Ω	C4357-1 coaxial cable core
C242E-2 coaxial cable shield	Ω	C4357-1 coaxial cable shield

Are the resistances less than 3 ohms?

Yes	GO to J8
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No	REPLACE the affected coaxial cable.
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J8 CHECK THE REAR CAMERA COAXIAL CABLE CORE AND SHIELD FOR A SHORT TOGETHER

- Measure: