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## 2022 Mazda CX-5 Service and Repair Manual

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DTC U2300:55 [FORWARD SENSING CAMERA (FSC)]

SM2899769

id1502a300460

Description	Instrument cluster configuration not implemented		
Detection condition	• Forward sensing camera (FSC) received a signal which indicates the instrument cluster configuration is not performed with the ignition switched ON (engine off or on).		
Fail-safe	• Inhibits the lane departure warning system (LDWS). • Inhibits the lane-keep assist system. • Inhibits the high beam control (HBC) system. • Inhibits the smart city brake support (SCBS). • Inhibits the traffic jam assist (TJA).		
Possible cause	<b>Note</b>  • To correctly write the configuration data sent from the instrument cluster to the forward sensing camera (FSC) to the forward sensing camera (FSC), 30 s or more need to have elapsed since the ignition was switched ON (engine off or on). • Instrument cluster configuration is not completed. • Instrument cluster malfunction • Forward sensing camera (FSC) malfunction		
System wiring diagram	Not applicable		

Diagnostic Procedure

Step	Inspection		Action
1	<b>VERIFY ALL SYSTEM DTCs</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)]</b> .) • Switch the ignition ON (engine off or on) and wait for 31.5 s or more. • Perform a CMDTC self-test using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)]</b> .) • Are there any modules other than the forward sensing camera (FSC) displaying DTC U2300:55?	Yes	Using the M-MDS, perform the instrument cluster configuration (using As-Built data) again, then go to the next step. (See <b>INSTRUMENT CLUSTER CONFIGURATION (USING AS-BUILT DATA)</b> .)
		No	Go to Step 3.
2	<b>VERIFY ALL SYSTEM DTCs AGAIN</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)]</b> .) • Switch the ignition ON (engine off or on) and wait for 31.5 s or more. • Perform a CMDTC self-test using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)]</b> .) • Are there any modules other than the forward sensing camera (FSC) displaying DTC U2300:55?	Yes	Replace the instrument cluster, then go to the next step. (See <b>INSTRUMENT CLUSTER REMOVAL/INSTALLATION</b> .)
		No	Go to the next step.

DTC U2300:56 [FORWARD SENSING CAMERA (FSC)]

SM2899770

id1502a300470

Description	Configuration data unmatched with instrument cluster
Detection condition	<ul style="list-style-type: none"><li>• Configuration data of the forward sensing camera (FSC) and instrument cluster are not matched with the ignition switched ON (engine off or on).</li></ul>
Fail-safe	<ul style="list-style-type: none"><li>• Inhibits the lane departure warning system (LDWS).</li><li>• Inhibits the lane-keep assist system.</li><li>• Inhibits the high beam control (HBC) system.</li><li>• Inhibits the smart city brake support (SCBS).</li><li>• Inhibits the traffic jam assist (TJA).</li></ul>
Possible cause	<p><b>Note</b></p> <ul style="list-style-type: none"><li>• To correctly write the configuration data sent from the instrument cluster to the forward sensing camera (FSC) to the forward sensing camera (FSC), 30 s or more need to have elapsed since the ignition was switched ON (engine off or on).</li><li>• DTCs are stored in the instrument cluster.<ul style="list-style-type: none"><li>— Instrument cluster configuration not implemented</li><li>— Instrument cluster internal memory malfunction</li></ul></li><li>• Instrument cluster configuration data error</li><li>• Forward sensing camera (FSC) malfunction</li></ul>
System wiring diagram	Not applicable

Diagnostic Procedure

Step	Inspection		Action
1	<b>VERIFY INSTRUMENT CLUSTER DTCs</b> <ul style="list-style-type: none"><li>• Retrieve the instrument cluster DTCs using the M-MDS. (See <b>DTC INSPECTION [INSTRUMENT CLUSTER].</b>)</li><li>• Are any DTCs displayed?</li></ul>	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [INSTRUMENT CLUSTER].</b> )
		No	Go to the next step.
2	<b>RESET INSTRUMENT CLUSTER CONFIGURATION DATA</b> <ul style="list-style-type: none"><li>• Using the M-MDS, perform the instrument cluster configuration (using As-Built data). (See <b>INSTRUMENT CLUSTER CONFIGURATION (USING AS-BUILT DATA).</b>)</li><li>• Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)].</b>)</li><li>• Switch the ignition ON (engine off or on) and wait for 31.5 s or more.</li><li>• Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)].</b>)</li><li>• Is the same DTC displayed?</li></ul>	Yes	Using the M-MDS, perform the instrument cluster configuration (using As-Built data) again, then go to the next step. (See <b>INSTRUMENT CLUSTER CONFIGURATION (USING AS-BUILT DATA).</b> )
		No	Go to Step 4.

# DTC INSPECTION [FORWARD SENSING CAMERA (FSC)]

SM2899773

id1502a301020

## CMDTC Self Test

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

(1)Select "Self Test".

(2)Select "All CMDTCs".

3.Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection after recording the snapshot data. (See **DTC TABLE [FORWARD SENSING CAMERA (FSC)]**.)

4.After completion of repairs, clear all DTCs stored in the forward sensing camera (FSC). (See **CLEARING DTC [FORWARD SENSING CAMERA (FSC)]**.)

## ODDTC Self Test

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

(1)Select "Self Test".

(2)Select "Modules".

(3)Select "FSC".

3.Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection after recording the snapshot data. (See **DTC TABLE [FORWARD SENSING CAMERA (FSC)]**.)

4.After completion of repairs, clear all DTCs stored in the forward sensing camera (FSC). (See **CLEARING DTC [FORWARD SENSING CAMERA (FSC)]**.)



# CLEARING DTC [FORWARD SENSING CAMERA (FSC)]

SM2899774

id1502a301030

## CMDTC Memory Clearing Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
  - (1) Select "Self Test".
  - (2) Select "All CMDTCs".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition off.
6. Switch the ignition ON (engine off or on) and wait for 5 s or more.
7. Perform DTC inspection. (See **DTC INSPECTION [FORWARD SENSING CAMERA (FSC)]**.)
8. Verify that no DTCs are displayed.

## ODDTC Memory Clearing Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
  - (1) Select "Self Test".
  - (2) Select "Modules".
  - (3) Select "FSC".
3. Verify the DTC according to the directions on the screen.

DTC No.	Smart brake support/smart city brake support (SBS/SCBS) warning light	HBC warning light (amber)	Traffic jam assist (TJA) warning light (amber)	Description	Fail-safe	Drive cycle	Self test type <sup>*1</sup>	Memory function	Page
U0401:68	Illuminated	Illuminated	Illuminated	Error signal received from PCM	×	—	C, D	×	(See U04 [FOR SEN CAM (FSC
U0405:68 <sup>*2</sup>	Illuminated	—	—	Error signal received from radar unit	×	—	C, D	×	(See U04 [FOR SEN CAM (FSC
U0415:68	Illuminated	Illuminated	Illuminated	Error signal received from DSC HU/CM	×	—	C, D	×	(See U04 [FOR SEN CAM (FSC
U0420:68	Illuminated	—	Illuminated	Error signal received from electric power steering (EPS) control module	×	—	C, D	×	(See U04 [FOR SEN CAM (FSC
U0423:68	Illuminated	Illuminated	Illuminated	Error signal received from instrument cluster	×	—	C, D	×	(See U04 [FOR SEN CAM (FSC
U0452:4A	Illuminated	Illuminated	Illuminated	SAS control module serial number mismatch	×	—	C, D	×	(See U04 [FOR SEN CAM (FSC
U0515:68	Illuminated	Illuminated	Illuminated	Error signal received from start stop unit	×	—	C, D	×	(See U05 [FOR SEN CAM (FSC
U2100:00	Illuminated	Illuminated	Illuminated	Forward sensing camera (FSC) configuration error	×	—	C, D	×	(See U21 [FOR SEN CAM (FSC
U2300:51	Illuminated	Illuminated	Illuminated	Vehicle identification number (VIN) mismatch	×	—	C, D	×	(See U23 [FOR SEN CAM (FSC

DTC B13A6:11 [FORWARD SENSING CAMERA (FSC)]

SM2899777

id1502a301060

Description	LDWS OFF switch circuit malfunction
Detection condition	• Forward sensing camera (FSC) detects that LDWS OFF switch is held pressed for 10 s or more.
Fail-safe	• Inhibits the lane departure warning system (LDWS). • Inhibits the lane-keep assist system. • Inhibits the traffic jam assist (TJA).
Possible cause	• DTCs are stored in the instrument cluster. • LDWS OFF switch malfunction • Forward sensing camera (FSC) malfunction • Instrument cluster malfunction
System wiring diagram	Not applicable

Diagnostic Procedure

Step	Inspection	Action
1	<b>VERIFY INSTRUMENT CLUSTER DTCs</b> • Retrieve the instrument cluster DTCs using the M-MDS. (See <b>DTC INSPECTION [INSTRUMENT CLUSTER].</b> ) • Are any DTCs displayed?	Yes Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [INSTRUMENT CLUSTER].</b> )
		No Go to the next step.
2	<b>INSPECT LDWS OFF SWITCH</b> • Inspect the LDWS OFF switch. (See <b>LDWS OFF SWITCH INSPECTION.</b> ) • Is the LDWS OFF switch normal?	Yes Go to the next step.
		No Replace the cluster switch, then go to Step 4. (See <b>CLUSTER SWITCH REMOVAL/INSTALLATION.</b> )
3	<b>VERIFY IF MALFUNCTIONING LOCATION IS INSTRUMENT CLUSTER DEPENDING ON REPEATABILITY</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)].</b> ) • Switch the ignition ON (engine off or on) and wait for 11.5 s or more. • Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)].</b> ) • Is the same DTC displayed?	Yes Replace the instrument cluster, then go to the next step. (See <b>INSTRUMENT CLUSTER REMOVAL/INSTALLATION.</b> )
		No Go to Step 5.
4	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)].</b> ) • Switch the ignition ON (engine off or on) and wait for 11.5 s or more. • Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)].</b> ) • Is the same DTC displayed?	Yes Replace the forward sensing camera (FSC), then go to the next step. (See <b>FORWARD SENSING CAMERA (FSC) REMOVAL/INSTALLATION.</b> )
		No Go to the next step.

# DTC C1001:97 [FORWARD SENSING CAMERA (FSC)]

SM2899779

id1502a301080

Description	Forward sensing camera (FSC) poor visibility
Detection condition	• Forward sensing camera (FSC) detects that its field of view is obstructed for a certain period of time.
Fail-safe	• Inhibits the lane departure warning system (LDWS). • Inhibits the lane-keep assist system. • Inhibits the high beam control (HBC) system. • Inhibits the smart city brake support (SCBS). • Inhibits the Mazda Radar Cruise Control system. • Inhibits the traffic jam assist (TJA).
Possible cause	• Windshield is dirty • Forward sensing camera (FSC) lens is dirty • Forward sensing camera (FSC) malfunction • Driving in heavy rain, fog or snow, or driving towards the sun • Frosted windshield • Nighttime, roads without street lights or reflective objects
System wiring diagram	Not applicable

## Diagnostic Procedure

Step	Inspection	Action
1	<b>VERIFY FORWARD SENSING CAMERA (FSC) OPERATION RECORD</b> • Verify the forward sensing camera (FSC) operation record using the M-MDS. • Is the warning light turned on?	Yes Go to the next step.
		No Explain the conditions to the customer referring to the forward sensing camera (FSC) operation record.
2	<b>VERIFY WINDSHIELD FOGGING OR SOILING</b> • Verify if the windshield is fogged or dirty. • Is the windshield fogged or dirty?	Yes Clean the windshield, then go to Step 4.
		No Go to the next step.
3	<b>VERIFY FORWARD SENSING CAMERA (FSC) LENS DIRT</b> • Verify if the forward sensing camera (FSC) lens is dirty. • Is the forward sensing camera (FSC) lens dirty?	Yes Clean the forward sensing camera (FSC) lens, then go to the next step.
		No Go to the next step.
4	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)]</b> .) • Drive the vehicle at 10 km/h {6.2 mph} or more for 10 min or more with the LDWS switch on. • Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)]</b> .) • Is the same DTC displayed?	Yes Repeat the inspection from Step 1. • If the malfunction recurs, replace the forward sensing camera (FSC). (See <b>FORWARD SENSING CAMERA (FSC) REMOVAL/INSTALLATION</b> .) Go to the next step.
		No Go to the next step.

# DTC U0415:68 [FORWARD SENSING CAMERA (FSC)]

SM2899781

id1502a301110

Description	Error signal received from DSC HU/CM
Detection condition	• Forward sensing camera (FSC) receives the error signal from the DSC HU/CM for 5 s or more.
Fail-safe	• Inhibits the lane departure warning system (LDWS). • Inhibits the lane-keep assist system. • Inhibits the high beam control (HBC) system. • Inhibits the smart city brake support (SCBS). • Inhibits the traffic jam assist (TJA).
Possible cause	• DTCs are stored in the DSC HU/CM. • DSC HU/CM malfunction • Forward sensing camera (FSC) malfunction
System wiring diagram	Not applicable

## Diagnostic Procedure

Step	Inspection	Action
1	<b>VERIFY DSC HU/CM DTCs</b> • Retrieve the DSC HU/CM DTCs using the M-MDS. (See <b>DTC INSPECTION [DSC HU/CM].</b> ) • Are any DTCs displayed?	Yes Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [DSC HU/CM].</b> )
		No Go to the next step.
2	<b>VERIFY IF MALFUNCTIONING LOCATION IS DSC HU/CM DEPENDING ON REPEATABILITY</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)].</b> ) • Switch the ignition ON (engine off or on) and wait for 6.5 s or more. • Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)].</b> ) • Is the same DTC displayed?	Yes Replace the DSC HU/CM, then go to the next step. (See <b>DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].</b> ) (See <b>DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].</b> ) (See <b>DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].</b> ) (See <b>DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].</b> )
		No Go to Step 4.
3	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)].</b> ) • Switch the ignition ON (engine off or on) and wait for 6.5 s or more. • Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)].</b> ) • Is the same DTC displayed?	Yes Replace the forward sensing camera (FSC), then go to the next step. (See <b>FORWARD SENSING CAMERA (FSC) REMOVAL/INSTALLATION.</b> )
		No Go to the next step.

DTC U0423:68 [FORWARD SENSING CAMERA (FSC)]

SM2899783

id1502a301130

Description	Error signal received from instrument cluster
Detection condition	• Forward sensing camera (FSC) receives the error signal from the instrument cluster for 5 s or more.
Fail-safe	• Inhibits the lane departure warning system (LDWS). • Inhibits the lane-keep assist system. • Inhibits the smart city brake support (SCBS). • Inhibits the traffic jam assist (TJA).
Possible cause	• DTCs are stored in the instrument cluster. • Instrument cluster malfunction • Forward sensing camera (FSC) malfunction
System wiring diagram	Not applicable

Diagnostic Procedure

Step	Inspection	Action
1	<b>VERIFY INSTRUMENT CLUSTER DTCs</b> • Retrieve the instrument cluster DTCs using the M-MDS. (See <b>DTC INSPECTION [INSTRUMENT CLUSTER].</b> ) • Are any DTCs displayed?	Yes Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [INSTRUMENT CLUSTER].</b> )
		No Go to the next step.
2	<b>VERIFY IF MALFUNCTIONING LOCATION IS INSTRUMENT CLUSTER DEPENDING ON REPEATABILITY</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)].</b> ) • Switch the ignition ON (engine off or on) and wait for 6.5 s or more. • Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)].</b> ) • Is the same DTC displayed?	Yes Replace the instrument cluster, then go to the next step. (See <b>INSTRUMENT CLUSTER REMOVAL/INSTALLATION.</b> )
		No Go to Step 4.
3	<b>VERIFY THAT REPAIRS HAVE BEEN COMPLETED</b> • Clear the DTC for the forward sensing camera (FSC) using the M-MDS. (See <b>CLEARING DTC [FORWARD SENSING CAMERA (FSC)].</b> ) • Switch the ignition ON (engine off or on) and wait for 6.5 s or more. • Retrieve the forward sensing camera (FSC) DTCs using the M-MDS. (See <b>DTC INSPECTION [FORWARD SENSING CAMERA (FSC)].</b> ) • Is the same DTC displayed?	Yes Replace the forward sensing camera (FSC), then go to the next step. (See <b>FORWARD SENSING CAMERA (FSC) REMOVAL/INSTALLATION.</b> )
		No Go to the next step.
4	<b>VERIFY IF OTHER DTCs DISPLAYED</b> • Are any other DTCs displayed?	Yes Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See <b>DTC TABLE [FORWARD SENSING CAMERA (FSC)].</b> )
		No DTC troubleshooting completed.