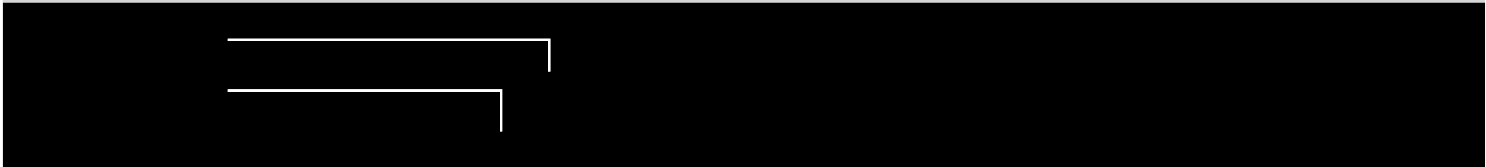


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## 2016 FORD Fiesta ST OEM Service and Repair Workshop Manual

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## Warning Chimes - Electric - System Operation and Component Description

<i>413-01 Instrumentation, Message Center and Warning Chimes</i>	<i>2022 F-150</i>
<i>Description and Operation</i>	<i>Procedure revision date: 04/20/2022</i>

### Warning Chimes - Electric - System Operation and Component Description

System Operation

**System Diagram**

Sample

6	Door ajar switches
7	BCM (body control module)
8	Driver seatbelt buckle
9	Passenger seatbelt buckle
10	RCM (restraints control module)
11	SCCM (steering column control module)
12	DSM (driver front seat module)
13	RGTM (rear gate trunk module)
14	GWM (gateway module A)
15	IPC (instrument panel cluster) chime arbitrator
16	Turn signal on tick-tock tone
17	Chime sounder
18	6- speaker system
19	ACM (audio front control module)
20	Front/rear speakers
21	8- or 18-speaker system
22	DSP (audio digital signal processing module)
23	Front/rear speakers

### Network Message Chart - Warning Chimes

#### NOTE

Auto hitch	Trailer hitch chime request	IPMA (image processing module A)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
Belt-Minder®	<ul style="list-style-type: none"> <li>• Driver seatbelt buckle status</li> <li>• Passenger seatbelt buckle status</li> </ul>	RCM (restraints control module)	HS-CAN2 (high-speed controller area network 2)	IPC (instrument panel cluster)
	Vehicle speed	PCM (powertrain control module)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
	Gear lever position	SOBDMC (secondary on-board diagnostic control module C)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
Chime control	<ul style="list-style-type: none"> <li>• IPC (instrument panel cluster) chime request</li> <li>• Chime source</li> <li>• Chime module power up</li> <li>• Chime controls</li> </ul>	IPC (instrument panel cluster)	HS-CAN3 (high-speed controller area network 3)	<ul style="list-style-type: none"> <li>• IPC (instrument panel cluster)</li> <li>• DSP (audio digital signal processing module) (if equipped)</li> </ul>
Chime status feedback	Audio chime status	ACM (audio front control module)	HS-CAN3 (high-speed controller area network 3)	<ul style="list-style-type: none"> <li>• IPC (instrument panel cluster)</li> <li>• DSP (audio digital signal processing module) (if equipped)</li> </ul>
Chime volume	Engine rpm data	PCM (powertrain control module)	FD-CAN (Flexible Data Rate)	<ul style="list-style-type: none"> <li>• IPC (instrument panel cluster)</li> </ul>

Headlamps on	Headlamps on warning chime	BCM (body control module)	HS-CAN1 (high-speed controller area network 1)	IPC (instrument panel cluster)
Highway assist (hard takeover)	Traffic jam assist warning request	IPMA (image processing module A)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
Hood ajar	Hood ajar status	BCM (body control module)	HS-CAN1 (high-speed controller area network 1)	IPC (instrument panel cluster)
Ignition-engine on	Vehicle speed	PCM (powertrain control module)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
	<ul style="list-style-type: none"> <li>Transmission gear display mode</li> <li>Power pack status</li> </ul>	SOBDMC (secondary on-board diagnostic control module C)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
	Driver door ajar status	BCM (body control module)	HS-CAN1 (high-speed controller area network 1)	IPC (instrument panel cluster)
Lane centering aid	Traffic jam assist warning request	IPMA (image processing module A)	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
Max Recline seat chime (sleeper seat)	Sleeper seat position message request	DSM (driver front seat module)	MS-CAN (medium speed-controller area network)	IPC (instrument panel cluster)
Memory stored feedback (memory seat)	Memory feedback request	DSM (driver front seat module)	MS-CAN (medium speed-	IPC (instrument panel cluster)

Service AdvanceTrac	Brake chime request	ABS (anti-lock brake system) module	FD-CAN (Flexible Data Rate Controller Area Network)	IPC (instrument panel cluster)
Turn signal-hazard on tick-tock	<ul style="list-style-type: none"> <li>• Left turn lamp on request</li> <li>• Right turn lamp on request</li> </ul>	BCM (body control module)	HS-CAN1 (high-speed controller area network 1)	IPC (instrument panel cluster)
Turn signal left on	Turn signal switch status	SCCM (steering column control module)	HS-CAN2 (high-speed controller area network 2)	IPC (instrument panel cluster)

## Warning Chimes

### Adaptive Cruise Control

The ACC (adaptive cruise control) warning chime supplements the message center displays to draw the driver's attention to the need to intervene and take control of the vehicle. There are 2 levels of chime output (high priority and low priority) based upon the nature and urgency of the warning. The ACC (adaptive cruise control) warning chime sounds through the front speakers. The audio system sounds the appropriate warning chime when it receives the ACC (adaptive cruise control) warning request message from the IPMA (image processing module A).

The low priority ACC (adaptive cruise control) warning chime is a single-tone, 1-second chime that alerts the driver the ACC (adaptive cruise control) system has shut itself off due to low vehicle speed (approximately 32 km/h [20 mph]) and the driver needs to intervene if further braking is required or to resume the ACC (adaptive cruise control) operation.

The high priority ACC (adaptive cruise control) warning chime is a 0.25-second chime that sounds 12 times. The chime alerts the driver the vehicle is approaching the vehicle ahead at a faster rate than the ACC (adaptive cruise control) system can brake the vehicle and the driver needs to apply the brakes to slow the vehicle down.

### Airbag Secondary Warning

The airbag secondary warning chime warns the airbag warning indicator LED (light emitting diode) is inoperative. The airbag secondary warning chime sounds through the front speakers. If the IPC (instrument panel cluster) detects a fault with the airbag warning indicator LED (light emitting diode) during the bulb prove out, the airbag secondary warning chime sounds. If the IPC (instrument panel cluster) detects a fault in the airbag warning indicator when a SRS (supplemental restraint system) fault condition exists and the RCM

## **Forward Collision**

The forward collision warning chime warns that a forward collision potential has been detected or the CCM (cruise control module) detects a forward collision warning system concern. Once the forward collision system detects a possible forward collision, the CCM (cruise control module) sends a message to the IPMA (image processing module A) over a private CAN (controller area network). The IPMA (image processing module A) sends a message to the IPC (instrument panel cluster) to flash the forward collision warning in the message center and a chime request to the IPC (instrument panel cluster) to sound a 0.25-second chime tone 12 times.

The forward collision warning system and chime can be disabled or turned off using the center stack display. When MyKey® is in use, the driver cannot configure the forward collision warning system or chime off. When the driver disables the forward collision warning chime, the IPMA (image processing module A) sends the IPC (instrument panel cluster) the forward collision chime request through the GWM (gateway module A) to sound a 0.25-second chime tone 12 times at 50% volume. The forward collision warning chime and confirmation chime are both sounded through the front speakers.

## **Headlamps On**

The headlamps on warning chime warns the headlamps are on when exiting the vehicle. When the driver exits the vehicle with the driver door ajar, the headlamp switch is in the PARK or HEADLAMP position and the ignition is OFF, the IPC (instrument panel cluster) sounds the headlamps on chime. The headlamps on chime sounds a 1-second chime tone continuously.

## **Highway Assist (Hard Takeover)**

The highway assist warning chime informs the driver that the system has determined that the driver has diverted attention away from vehicle control, road conditions demand driver control (such as merge lanes, construction, etc.) or the predetermined time for hands off driving has elapsed. If the driver has not taken control of the vehicle (hands on the steering wheel), a warning chime will sound.

## **Hood Ajar**

The hood (front luggage compartment) chime sounds if there is a problem with the open or close request, along with a displayed message in the message center, or if an object or obstacle is detected and the luggage compartment lid (hood) cannot close. If the front luggage compartment lid (hood) starts to close after it is fully opened, a repetitive chime sounds, and the compartment lid (hood) closes.

## **Ignition-Engine On**

The ignition-engine on chime informs the driver they are exiting the vehicle when the ignition has been left on (engine off) or the engine is running. When the driver exits the vehicle with the ignition on or with the engine running, the ignition-engine on warning chime sounds five 1-second chime tones. The ignition-engine on warning chime sounds through the front speakers.

## **Max Recline (Sleeper Seat)**

The power tailgate chime sounds when the power tailgate opens when selected from inside the vehicle. The power tailgate chime will also sound if the power tailgate is in manual mode.

### **PRND Not In Park**

The IPC (instrument panel cluster) provides a transmission not in park warning chime that sounds along with the transmission not in park message center warning message to inform the driver the vehicle is not in PARK (P). The IPC (instrument panel cluster) displays the shift to park message and the transmission not in park warning chime sounds three 0.5-second chime tones if the selector lever is not in PARK (P), the ignition is OFF and the driver door is open or ajar.

### **Rear Occupant Alert**

The rear occupant alert warning chime sounds to alert the driver to check of an occupant in the rear seat before exiting the vehicle. A message will also appear in the center touchscreen. The rear occupant alert system will sound the chime when:

- the ignition is switched off after a rear door is opened or closed while the ignition is on.
- the ignition is switched on within 15 minutes of a rear door opening.
- the ignition is switched on within 15 minutes of the message being displayed or the chime sounding.

### **Seatbelt**

The seatbelt warning chime warns the seatbelt is not fastened. The seatbelt warning chime sounds a repetitive 1-second chime tone for 6 seconds through the front speakers when the driver or passenger seatbelt is not fastened and the ignition is transitioned from OFF or ACC to ON or START. The seatbelt warning chime stops sounding when the seatbelt is fastened, when the ignition is transitioned from ON or START to OFF or ACC, or when the chime has sounded for 6 seconds.

### **Service AdvanceTrac**

The service AdvanceTrac warning chime warns the ABS (anti-lock brake system) module has detected a fault condition in the stability-traction control system. If a fault condition exists in the stability-traction control system, the ABS (anti-lock brake system) module sends the IPC (instrument panel cluster) the brake chime request to sound the warning chime. The service AdvanceTrac warning chime sounds 3 0.5-second chime tones through the front speakers.

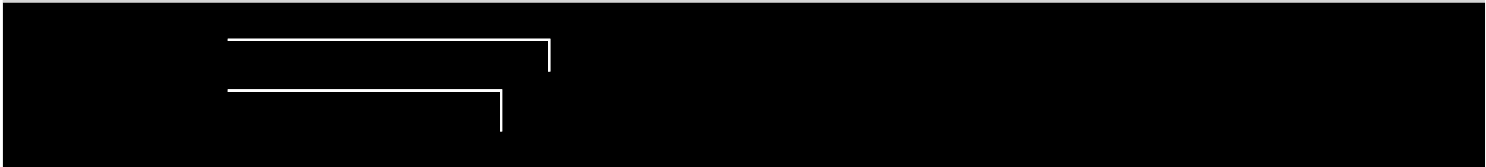
### **Tailgate Step**

The tailgate step warning chime sounds when the tailgate step is open while attempting to close the power tailgate. The power tailgate cannot close with the with step in the open position.

### **Turn Signal-Hazard Tick-Tock**

The IPC (instrument panel cluster) provides a repetitive 1-second on/off tick-tock chime tone along with visual RH (right-hand) or LH (left-hand) turn indicators to inform the driver the turn signal or hazard lamp function





## Warning Chimes - System Operation and Component Description

<i>413-01 Instrumentation, Message Center and Warning Chimes</i>	<i>2022 F-150</i>
<i>Description and Operation</i>	<i>Procedure revision date: 07/16/2021</i>

### Warning Chimes - System Operation and Component Description

System Operation

System Diagram

Sample

2	IPMA (image processing module A)
3	PCM (powertrain control module)
4	TCM (transmission control module) (diesel)
5	Parking brake switch
6	Door ajar switches
7	BCM (body control module)
8	Driver seatbelt buckle
9	RCM (restraints control module)
10	SCCM (steering column control module)
11	Passenger seatbelt buckle
12	DSM (driver front seat module)
13	IPC (instrument panel cluster) chime arbitrator
14	Chime sounder
15	Turn signal on tick-tock tone
16	Key-in-ignition switch
17	GWM (gateway module A)
18	4-, 5-, 6- or 7-speaker system
19	ACM (audio front control module)
20	Front/rear speakers
21	8- or 10-speaker system
22	DSP (audio digital signal processing module)