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1981 FORD Fiesta 3 Doors OEM Service and Repair Workshop Manual

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Seatbelt Systems - System Operation and Component Description

501-20A Seatbelt Systems	2022 F-150
Description and Operation	Procedure revision date: 04/28/2021

Seatbelt Systems - System Operation and Component Description

System Operation

Emergency Locking Retractor (ELR)

All retractors have an Emergency Locking Retractor (ELR) mode, which is a vehicle-sensitive feature designed to activate and lock the seatbelt webbing during hard braking, cornering, or an impact of approximately 24 km/h (15 mph). The Emergency Locking Retractor (ELR) feature helps reduce the forward movement of the driver and passengers. For testing, see Functional Test - Seatbelt Retractor, Road Test Inspection.

Refer to: [Seatbelt System Functional Tests](#)

(501-20A Seatbelt Systems, General Procedures).

When evaluating seatbelt retractor Emergency Locking Retractor (ELR) mode, test the vehicle on level ground, with the seatbelt retractor installed on the vehicle at in-vehicle-position.

Automatic Locking Retractor (ALR)

The Automatic Locking Retractor (ALR) mode is used when locking a child seat in any passenger seating position. The Automatic Locking Retractor (ALR) mode automatically activates when the seatbelt webbing is fully extracted from the retractor and then allowed to retract. As the seatbelt webbing retracts back onto the spool, an audible clicking sound is made, indicating the seatbelt retractor is in Automatic Locking Retractor (ALR) mode and the seatbelt webbing cannot pull back out of the seatbelt retractor. The Automatic Locking Retractor (ALR) mode disengages when the webbing is allowed to fully retract back into the retractor. For testing, see Functional Test - Seatbelt Retractor, Automatic Locking Retractor (ALR) Mode.

Refer to: [Seatbelt System Functional Tests](#)

(501-20A Seatbelt Systems, General Procedures).

should be attempted. Refer to the Owner's Literature and rear occupant alert system for system operation and turning the system on and off.

Component Description

Seatbelt Buckle Switch

The seatbelt buckles contain integrated sensors that are Hall-effect switches. The seatbelt buckle sensor is serviced with the seatbelt buckle.

Child Safety Seat Tether Anchor

Child safety seat tether anchors are mounted to the cab back wall at both regular cab passenger seating positions and at all rear seating positions on SuperCab and SuperCrew. All are serviced separately.

If a child safety seat was in use during a collision, inspect the child safety seat tether anchor and mounting areas and restore the vehicle to the original production configuration.

Child Safety Seat Tether Anchor - Lower Anchors and Tethers for Children (LATCH)

Lower Anchors and Tethers for Children (LATCH) are located at the rear seating positions of the SuperCab and SuperCrew. They are serviced with the seat cushion frame.

If a child safety seat was in use during a collision, inspect the LATCH and restore the vehicle to the original production configuration.

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	Test C
The rear seatbelt RTT (reconfigurable telltale) warning indicator is never or always displayed	GO to Pinpoint Test D

Pinpoint Tests

PINPOINT TEST A : THE SEATBELT BUCKLE AND TONGUE DOES NOT LATCH CORRECTLY

Normal Operation and Fault Conditions

REFER to: [Seatbelt System Functional Tests](#)(501-20A Seatbelt Systems, General Procedures).
and the Seatbelt Buckle and Tongue Functional Test

Possible Sources

- Seatbelt buckle
- Seatbelt tongue (part of seatbelt retractor or seatbelt)
- Foreign debris

A1 CHECK THE SEATBELT BUCKLE AND TONGUE LATCHING AND RELEASE

- Check the affected seatbelt buckle and tongue for latching and release. Carry out the Seatbelt Buckle and Tongue Functional Test.

REFER to: [Seatbelt System Functional Tests](#)(501-20A Seatbelt Systems, General Procedures).

Did the seatbelt buckle and tongue pass the functional test?

Yes	If the concern can't be duplicated, the seatbelt system is working correctly. Return the vehicle to the customer.
No	INSTALL new parts as directed by the Seatbelt Buckle and Tongue Functional Test. RECHECK the system.

PINPOINT TEST B : SEATBELT RETRACTOR EXTRACTION/RETRACTION CONCERNS

Normal Operation and Fault Conditions

REFER to: [Seatbelt Systems - System Operation and Component Description](#)(501-20A Seatbelt Systems, Description and Operation).

Possible Sources

- Interior trim, wiring harness or insulation is not installed correctly

Do **NOT** extract the seatbelt webbing all the way out to prevent the seatbelt retractor from engaging ALR (Automatic Locking Retractor) mode.

Extract the seatbelt webbing from the seatbelt retractor.

Does the seatbelt retractor allow extraction of the seatbelt?

Yes	Attempt to duplicate the customer's concern. Carry out the Seatbelt Retractor Functional Test and the Seatbelt Retractor, Automatic Locking Retractor (ALR) Mode Functional Test. REFER to: Seatbelt System Functional Tests (501-20A Seatbelt Systems, General Procedures). If the concern was confirmed, CORRECT the concern. If not, GO to B3
No	If the seatbelt retractor is in web sensing mode, unlock the locked seatbelt retractor. REFER to: Locked Seatbelt Retractor Releasing (501-20A Seatbelt Systems, General Procedures). If the concern was confirmed, CORRECT the concern. If not, GO to B3

B3 CHECK THE SEATBELT RETRACTOR EXTRACTION

- Allow the seatbelt webbing to retract back onto the seatbelt retractor spool.

- **NOTE**

Do **NOT** extract the seatbelt webbing all the way out to prevent the seatbelt retractor from engaging ALR (Automatic Locking Retractor) mode.

Extract the seatbelt webbing from the seatbelt retractor.

Does the seatbelt retractor allow extraction of the seatbelt?

Yes	If the concern can't be duplicated, the seatbelt system is working correctly. Return the vehicle to the customer.
No	If the seatbelt retractor is locked in Automatic Locking Retractor (ALR) mode, carry out the Automatic Locking Retractor (ALR) Mode Functional Test. REFER to: Seatbelt System Functional Tests (501-20A Seatbelt Systems, General Procedures).

If the seatbelt webbing is incorrectly routed, correct the installation. REFER to section 501-05 or section 501-20A and the appropriate procedure.

If the concern was confirmed, CORRECT the concern. If not, GO to [B6](#)

B5 CHECK THE INBOARD SEATBELT RETRACTOR RETRACTION

- For an **inboard**

seatbelt retractor, carry out the following:

1. Allow the seatbelt webbing to retract back onto the seatbelt retractor spool.

2. NOTE

Do **NOT** extract the seatbelt webbing all the way out to prevent the seatbelt retractor from engaging ALR (Automatic Locking Retractor) mode.

Extract the seatbelt webbing from the **affected** seatbelt retractor.

3. Allow the seatbelt webbing to retract back onto the seatbelt retractor spool noting the amount of time it takes to retract the seatbelt webbing.

4. NOTE

Do **NOT** extract the seatbelt webbing all the way out to prevent the seatbelt retractor from engaging ALR (Automatic Locking Retractor) mode.

On a similar vehicle

, extract the seatbelt webbing from a **non-affected**

seatbelt retractor at the same position and compare the speed at which the seatbelt webbing is retracted.

Do the 2 seatbelt retractors retract the seatbelt webbing at approximately the same time?

Yes

Attempt to duplicate the customer's concern. Carry out the Seatbelt Retractor Functional Test and the Seatbelt Retractor, Automatic Locking Retractor (ALR) Mode Functional Test.

REFER to: [Seatbelt System Functional Tests](#)
(501-20A Seatbelt Systems, General Procedures).

- REFER to: [Seatbelt Tongue Rotated On Belt](#)(501-20A Seatbelt Systems, General Procedures).

The seatbelt webbing is twisted at the seatbelt guide

- REFER to: [Seatbelt Twisted at the Seatbelt Guide](#)(501-20A Seatbelt Systems, General Procedures).

The seatbelt webbing is dirty or soiled

- REFER to: [Seatbelt Cleaning](#)(501-20A Seatbelt Systems, General Procedures).

Possible Sources

- Twisted or incorrectly routed seatbelt webbing
- Dirty or soiled seatbelt webbing

Diagnostic steps are not provided for this symptom or DTC. REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

PINPOINT TEST D : THE REAR SEATBELT RTT (RECONFIGURABLE TELLTALE) WARNING INDICATOR IS NEVER OR ALWAYS DISPLAYED

WARNING

Incorrect repair techniques or actions can cause an accidental Supplemental Restraint System (SRS) deployment. Never compromise or depart from these instructions. Failure to precisely follow all instructions could result in serious personal injury from an accidental deployment.

NOTE

Always make sure the correct SRS (supplemental restraint system) component is being installed. Parts released for other vehicles may not be compatible even if they appear physically similar. Check the part number listed in the Ford parts catalog to make sure the correct component is being installed. If an incorrect SRS (supplemental restraint system) component is installed, Diagnostic Trouble Codes (DTCs) may set.

NOTE

The SRS (supplemental restraint system) must be fully operational and free of faults before releasing the vehicle to the customer.

Normal Operation and Fault Conditions

The RCM (restraints control module) monitors the second row seatbelt buckle switches for buckled/unbuckled status.

Possible Sources



Locked Seatbelt Retractor Releasing

501-20A Seatbelt Systems	2022 F-150
General Procedures	Procedure revision date: 03/29/2021

Locked Seatbelt Retractor Releasing

Repair

NOTE

If the seatbelt webbing does not extract from the seatbelt retractor from the stowed position, this may be due to a normal condition which happens when the seatbelt retracts at a high rate of speed. Follow these steps to release the seatbelt.

Front row seatbelt retractor

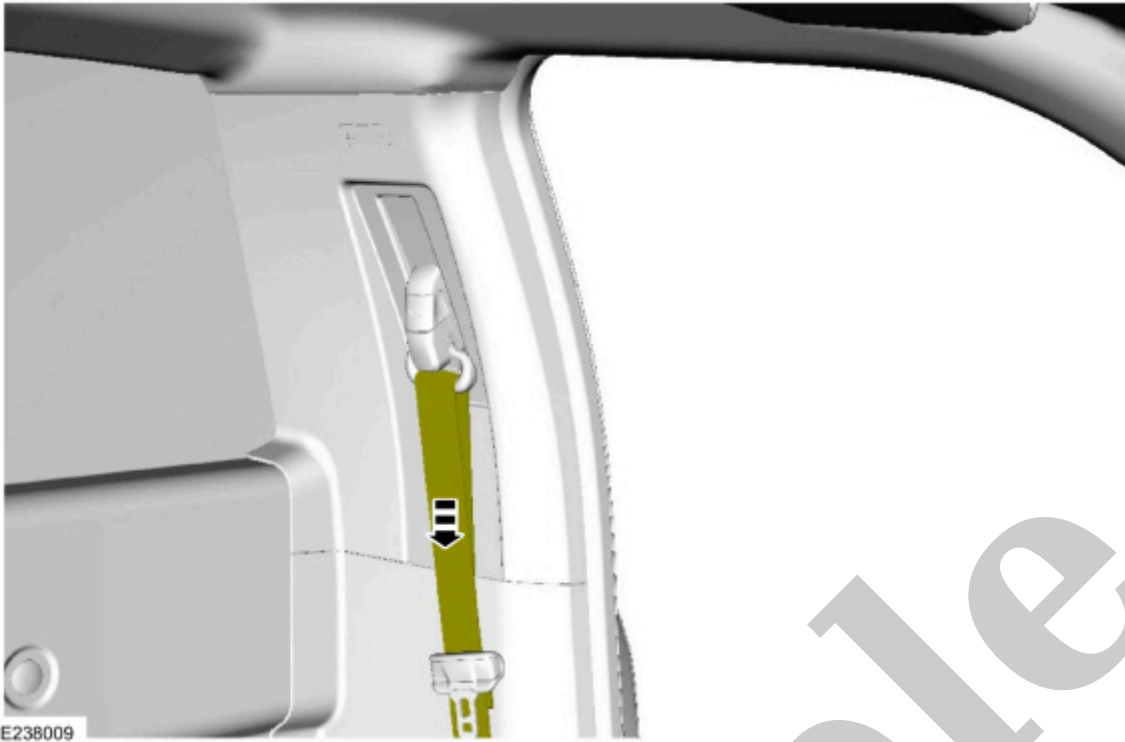
NOTE

Typical front outboard seatbelt retractor shown, other configurations similar.

NOTE

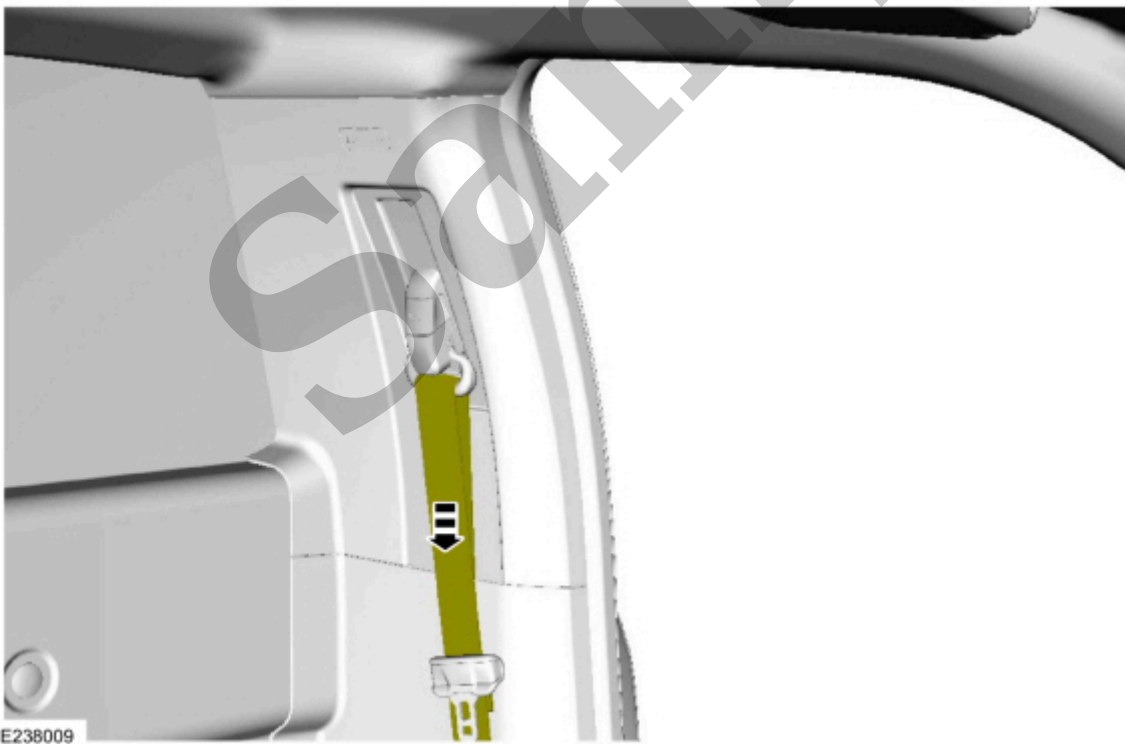
To unlock the seatbelt retractor, only a few millimeters of seatbelt are necessary to retract back onto the seatbelt retractor spool.

1. Slowly lower the seatbelt shoulder height adjuster allowing the seatbelt to retract back onto the seatbelt retractor spool. If the seatbelt shoulder height adjuster is all the way down, proceed to step 3. Otherwise, proceed to the next step.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

3. Firmly pull and extract as much seatbelt from the seatbelt retractor as possible.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

- If the seatbelt

does

extract, install all fasteners that were removed and tighten them to specification. REFER to the appropriate removal and installation procedure. Proceed to the next step.

8. Check the active restraint system for correct operation by carrying out the seatbelt retractor functional test.

Refer to: [Seatbelt System Functional Tests](#)(501-20A Seatbelt Systems, General Procedures).

Rear seatbelt retractor

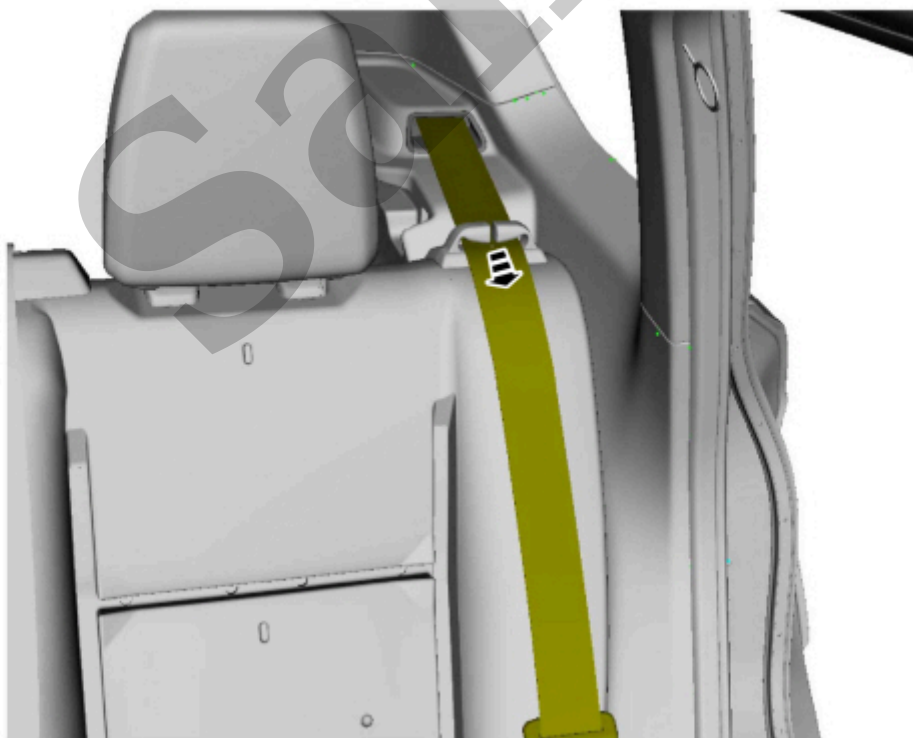
NOTE

Typical rear outboard seatbelt retractor shown, other configurations similar.

NOTE

To unlock the seatbelt retractor, only a few millimeters of seatbelt are necessary to retract back onto the seatbelt retractor spool.

9. Slowly pull the seatbelt out as far out as possible.



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