

Seatbelt Systems

Symptom Chart(s)

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Preliminary Inspection

Before diagnosing or repairing the seatbelt system, inspect the following items:

- Seatbelt webbing integrity (torn, frayed, cut or stretched)
- Seatbelt buckle and tongue assembly

Symptom Chart: Seatbelt System

Symptom Chart

Condition	Possible Sources	Actions
The seatbelt warning indicator does not operate	• Burned-out indicator • Wiring, terminals or connectors • IPC • RCM	• If the airbag warning indicator is illuminated, REFER to: Airbag Supplemental Restraint System (SRS) - Raptor (501-20B Supplemental Restraint System, Diagnosis and Testing). If the airbag warning indicator is not illuminated, REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes) .

The seatbelt warning chime does not operate	• Wiring, terminals or connectors • Seatbelt switch • IPC • RCM	• If the airbag warning indicator is illuminated, REFER to: Airbag Supplemental Restraint System (SRS) - Raptor (501-20B Supplemental Restraint System, Diagnosis and Testing). If the airbag warning indicator is not illuminated, REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes) .
The seatbelt retractor webbing does not extract or exhibits excessive pressure on the occupant during use	• Seatbelt retractor is in web sensing mode	UNLOCK the locked seatbelt retractor. REFER to: Locked Seatbelt Retractor Releasing (501-20A Seatbelt Systems, General Procedures).
	• Interior trim is not installed correctly	CORRECT the interior trim installation. REFER to section 501-05.
	• Seatbelt retractor is in Automatic Locking Retractor (ALR) mode • Seatbelt retractor binding internally	CARRY OUT the appropriate functional test. REFER to Functional Test - Seatbelt Retractor, Functional Test - Seatbelt Retractor, Automatic Locking Retractor (ALR) Mode or Functional Test - Seatbelt Retractor, Road Test Inspection, as appropriate. INSTALL new components as directed.
The seatbelt retractor webbing does not retract or has excessive slack during use	• Twisted or incorrectly routed seatbelt webbing	CORRECT the twisted seatbelt webbing. REFER to: Seatbelt Tongue Rotated On Belt (501-20A Seatbelt Systems, General Procedures). REFER to: Seatbelt Twisted at the Seatbelt Guide (501-20A Seatbelt Systems, General Procedures).
	• Interior trim is not installed correctly	CORRECT the interior trim installation. REFER to section 501-05.

	• Seatbelt retractor binding internally	CARRY OUT the appropriate functional test. REFER to Functional Test - Seatbelt Retractor, Functional Test - Seatbelt Retractor, Automatic Locking Retractor (ALR) Mode or Functional Test - Seatbelt Retractor, Road Test Inspection, as appropriate. INSTALL new components as directed.
The Belt-Minder® feature is inoperative	• Belt-Minder® feature is deactivated • Wiring, terminals or connectors	• To activate the Belt-Minder® feature, REFER to the Seating and Safety Restraints section of the Owner's Literature or REFER to: Seatbelt Minder Deactivating/Activating (413-01 Instrumentation, Message Center and Warning Chimes, General Procedures). • If the Belt-Minder® is activated, DIAGNOSE the inoperative Belt-Minder® feature. REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes) .
The seatbelt tongue is rotated on the seatbelt webbing	• Twisted or incorrectly routed seatbelt webbing	• REFER to: Seatbelt Tongue Rotated On Belt (501-20A Seatbelt Systems, General Procedures).
The seatbelt webbing is twisted at the seatbelt guide	• Twisted or incorrectly routed seatbelt webbing	• REFER to: Seatbelt Twisted at the Seatbelt Guide (501-20A Seatbelt Systems, General Procedures).

The seatbelt webbing is dirty or soiled	• Dirty or soiled seatbelt webbing	• REFER to: Seatbelt Cleaning (501-20A Seatbelt Systems, General Procedures).
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Functional Test - Seatbelt Buckle and Tongue

 **WARNING:** All safety belt components must be inspected and corrected as part of any collision repair. Inspect all safety belt components as prescribed by Safety Belt Inspection and Repair After a Collision found in Section 501-20A General Procedures of this manual. Failure to follow this instruction may result in incorrect operation of the safety belt system and increase the risk of serious personal injury or death in a crash.

NOTE: Make sure the seatbelt buckle and tongue assembly operate freely during the latching and unlatching function. Fasten the seatbelt by inserting the tongue (male portion) into the buckle (female portion).

1. Verify the following during the latching sequence:
 - Tongue insertion does not require excessive effort.
 - A click is heard when the seatbelt buckle latches the tongue.
2. Verify the system integrity by forcefully pulling on the seatbelt webbing.
3. Unlatch the seatbelt by fully pressing the seatbelt buckle release button and allowing the seatbelt to release and retract.
4. Verify the following during the unlatching process:
 - Pressing the push button does not require excessive effort.
 - The tongue can be removed easily from the buckle.
5. Repeat the above steps 3 times.
6. If the functional test reveals a concern(s), install a new seatbelt buckle or seatbelt retractor as required.

Functional Test - Seatbelt Retractor



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NOTE: Make sure the seatbelt retractor is freely operational for extraction and retraction of the seatbelt webbing between full extension and in-vehicle stowed positions.

1. Extract and retract the seatbelt between the full extension and stowed positions.
2. Verify the seatbelt retractor operates without excessive effort or binding.
3. Install a new seatbelt retractor if any concern is found or the complaint has been verified.

Functional Test - Seatbelt Retractor, Automatic Locking Retractor (ALR) Mode



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1. Position the seat backrest fully upright (if adjustable).
2. Position the seatbelt shoulder height adjuster (if equipped) in the full down or up position.
3. Fasten the seatbelt.
4. Pull out the seatbelt webbing until the Automatic Locking Retractor (ALR) feature is activated.
5. Allow the seatbelt webbing to retract until it stops.
6. Pull on the seatbelt webbing to make sure the seatbelt retractor has remained in the Automatic Locking Retractor (ALR) mode. If the seatbelt retractor is not locked, install a new seatbelt retractor.
7. Unfasten the seatbelt and allow the seatbelt webbing to retract to its stowed position.
8. Pull out and retract the seatbelt webbing to verify the seatbelt retractor has converted

automatically out of Automatic Locking Retractor (ALR) mode. If the seatbelt retractor remains locked in the Automatic Locking Retractor (ALR) mode, install a new seatbelt retractor.

Functional Test - Seatbelt Retractor, Road Test Inspection

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NOTE: *Make sure there is no excessive slack in the seatbelt webbing across the torso during testing.*

NOTE: *Do not jerk on the seatbelt webbing when carrying out this test.*

1. Fasten the seatbelts and proceed to a safe area.
2. Reach a speed of 24 km/h (14.9 mph).

3.  **WARNING:** Apply maximum brake force only on dry concrete or equivalent hard surface, never on wet pavement or gravel. Failure to follow this instruction may result in serious personal injury.

Grasp the shoulder harness, lean forward and apply the brakes, making a maximum braking application without a skid.

4. The seatbelts should lock up with minimum webbing extension.
5. If there is a lockup of all seatbelt retractors being tested, the seatbelt retractors are functioning correctly. If any seatbelt retractor fails to lock up, install a new seatbelt retractor(s).

Functional Test - Seatbelt Retractor, Automatic Locking Retractor (ALR) Mode, Inflatable Seatbelt

 **WARNING:** All safety belt components must be inspected and corrected as part of any collision repair. Inspect all safety belt components as prescribed by Safety Belt Inspection and Repair After a Collision found in Section 501-20A General Procedures of this manual. Failure to follow this instruction may result in incorrect operation of the safety belt system and increase the risk of serious personal injury or death in a crash.

NOTE: *The inflatable shoulder belt retractor is not an Automatic Locking Retractor (ALR). Only the lap belt retractor is an Automatic Locking Retractor (ALR).*

1. Fasten the seatbelt.
2. Pull out the lap belt webbing until the Automatic Locking Retractor (ALR) feature is activated.
3. Allow the seatbelt webbing to retract until it stops.
4. Pull on the seatbelt webbing to check that the seatbelt lap belt retractor has remained in the Automatic Locking Retractor (ALR) mode. If the seatbelt lap belt retractor is not locked, install a new seatbelt lap belt retractor.
5. Unfasten the seatbelt and allow the seatbelt webbing to retract to its stowed position.
6. Pull out and retract the seatbelt lap belt webbing to verify the seatbelt lap belt retractor has converted automatically out of Automatic Locking Retractor (ALR) mode. If the seatbelt lap belt retractor remains locked in the Automatic Locking Retractor (ALR) mode, install a new seatbelt lap belt retractor.

Functional Test - Seatbelt Retractor, Road Test Inspection, Inflatable Seatbelt



WARNING: All safety belt components must be inspected and corrected as part of any collision repair. Inspect all safety belt components as prescribed by Safety Belt Inspection and Repair After a Collision found in Section 501-20A General Procedures of this manual. Failure to follow this instruction may result in incorrect operation of the safety belt system and increase the risk of serious personal injury or death in a crash.

NOTE: *Make sure there is no excessive slack in the seatbelt webbing across the torso during testing.*

NOTE: *Do not jerk on the seatbelt webbing when carrying out this test.*

1. Move the seat in front of the seating position being tested as far forward as is safely possible.
2. Fasten the seatbelts and proceed to a safe area.
3. Reach a speed of 24 km/h (14.9 mph).



4. WARNING: Apply maximum brake force only on dry concrete or equivalent hard surface, never on wet pavement or gravel. Failure to follow this instruction may result in

serious personal injury.

Grasp the shoulder harness, lean forward and apply the brakes, making a maximum braking application without a skid.

5. The inflatable seatbelt shoulder harness should lock up with minimum webbing extension.
6. Safely bring the vehicle to a stop.
7. Pull about 152.4 mm (6 in) of inflatable seatbelt lap belt webbing off of the lap. Hold the belt off of the lap.
8. Reach a speed of 24 km/h (14.9 mph).
9.  **WARNING: Apply maximum brake force only on dry concrete or equivalent hard surface, never on wet pavement or gravel. Failure to follow this instruction may result in serious personal injury.**

While holding the inflatable seatbelt lap belt, apply the brakes, making a maximum braking application without a skid.

10. The inflatable seatbelt lap belt should lock up with minimum webbing extension.
11. If there is a lockup of all inflatable seatbelt retractors being tested, the inflatable seatbelt retractors are functioning correctly. If any inflatable seatbelt retractor fails to lock up, install a new inflatable seatbelt retractor(s).