

## Safety Belt System

### Principles of Operation



**WARNING:** After any crash, all of the following safety belt assemblies and attaching hardware must be inspected by an authorized dealer to verify correct function:

- Retractors
- Buckles
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- Front safety belt buckle support assemblies (slide bar) (if equipped)
- Safety belt shoulder belt height adjusters (if equipped)
- Child safety seat tether bracket assemblies
- Automatic locking retractor (ALR) feature for child safety seats (passenger seating positions only)

If any safety belt assembly is damaged, does not operate correctly or does not pass all of the Functional Tests in the Diagnosis and Testing portion of this section, a new safety belt assembly must be installed. If any safety belt assembly attaching areas are damaged or distorted, the sheet metal must be restored to its original structural integrity and new safety belt assembly and attaching hardware must be installed. Failure to install new safety belt assemblies and attaching hardware may increase the risk of serious personal injury or death in a crash.

After any crash that results in deployment of the driver and/or front outboard passenger safety belt pretensioners, new driver and/or front outboard passenger safety belt systems (including retractors, buckles and height adjusters) must be installed. Failure to install new safety belt systems increases the risk of serious personal injury or death in a crash.

### Safety Belt Warning System

The driver safety belt warning indicator illuminates and a chime sounds to remind the occupants to fasten their safety belts.

The conditions of operation for the driver safety belt warning indicator and chime are as follows:

- If the driver safety belt is not buckled before the ignition switch is turned to ON, then the safety belt warning indicator illuminates for 1 to 2 minutes and the warning chime sounds for 4 to 8 seconds.
- If the driver safety belt is buckled while the warning indicator is illuminated and the warning chime is sounding, then the safety belt warning indicator and warning chime turn off.
- If the driver safety belt is buckled before the ignition switch is turned to ON, the safety belt warning indicator and warning chime will remain off.

### Belt-Minder®

The Belt-Minder® feature is a supplemental warning to the safety belt warning function. This feature provides an additional reminder to the driver that the driver and/or front passenger safety belt is unbuckled by intermittently sounding a chime and illuminating the safety belt warning indicator in the instrument cluster.

Either the driver or front passenger safety belt systems may activate the Belt-Minder®. If the Belt-Minder® warnings have expired (warnings for approximately 5 minutes) for one occupant (driver or front passenger), the other occupant can still activate the Belt-Minder® feature.

The passenger Belt-Minder® feature is activated only when the Occupant Classification Sensor (OCS) system detects a passenger in the right front seat and the passenger weight exceeds a programmed limit. For information on the [OCS](#) system, refer to [Section 501-20B](#).

To activate or deactivate the Belt-Minder® feature, refer to [Section 413-01](#).

If...	Then...
the driver and/or front passenger safety belt is buckled before the ignition switch is turned to the ON position or less than 1-2 minutes have elapsed since the ignition switch has been turned ON...	the Belt-Minder® feature will not activate.
the driver and/or front passenger safety belt is not buckled before the vehicle has reached at least 5 km/h (3 mph) and 1-2 minutes have elapsed since the ignition switch has been turned to ON...	the Belt-Minder® feature is activated — the safety belt warning indicator illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until the safety belt(s) is buckled.
the driver or front passenger safety belt becomes unbuckled for approximately 1 minute while the vehicle is traveling at least 5 km/h (3 mph) and more than 1-2 minutes have elapsed since the ignition switch has been turned to ON...	the Belt-Minder® feature is activated — the safety belt warning indicator illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until the safety belt(s) is buckled.

### Inspection and Verification

1. Verify the customer's concern by operating the active restraint system to duplicate the condition.
2. Inspect to determine if any of the following mechanical or electrical concerns apply:

### Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> <li>• Cut, frayed or incorrectly routed safety belt webbing</li> <li>• Safety belt buckle and tongue assembly</li> <li>• Safety belt retractor</li> </ul>	<ul style="list-style-type: none"> <li>• Bare, broken or disconnected wire</li> <li>• Connector not tightly engaged</li> <li>• Safety belt warning indicator burned out or broken</li> </ul>

3. If the inspection reveals an obvious concern(s) that can be readily identified, service as required. With the exception of removing a twist from the safety belt webbing, do not attempt to repair a component of the safety belt system; new components must be installed.
4. If the concern remains after the inspection, determine the symptom. GO to [Symptom Chart](#).
5. To check the active restraint system for correct operation, carry out the appropriate Functional Test(s).

### Symptom Chart

#### Symptom Chart

Condition	Possible Sources	Action
<ul style="list-style-type: none"> <li>• The safety belt warning indicator</li> </ul>	<ul style="list-style-type: none"> <li>• Burned-out indicator</li> </ul>	<ul style="list-style-type: none"> <li>• If the air bag warning indicator is illuminated, REFER to <a href="#">Section 501-</a></li> </ul>

<p>lamp does not operate</p>	<ul style="list-style-type: none"> <li>• Circuitry</li> <li>• Instrument Cluster (IC) module</li> <li>• Restraints Control Module (RCM)</li> </ul>	<p><a href="#">20B</a> . If the air bag warning indicator is not illuminated, REFER to <a href="#">Section 413-01</a> .</p>
<ul style="list-style-type: none"> <li>• The safety belt warning chime does not operate</li> </ul>	<ul style="list-style-type: none"> <li>• Safety belt switch</li> <li>• <a href="#">IC</a> module</li> <li>• <a href="#">RCM</a></li> <li>• Wiring, terminals or connectors</li> </ul>	<ul style="list-style-type: none"> <li>• If the air bag warning indicator is illuminated, REFER to <a href="#">Section 501-20B</a> . If the air bag warning indicator is not illuminated, REFER to <a href="#">Section 413-01</a> .</li> </ul>
<ul style="list-style-type: none"> <li>• The safety belt retractor webbing does not extract or exhibits excessive pressure on the occupant during use</li> </ul>	<ul style="list-style-type: none"> <li>• Safety belt retractor is in Automatic Locking Retractor (ALR) mode</li> <li>• Safety belt retractor is binding internally</li> </ul>	<ul style="list-style-type: none"> <li>• CARRY OUT the Functional Test — Safety Belt Retractor and Functional Test — Safety Belt Retractor, <a href="#">ALR</a> mode. REFER to Component Test in this section. INSTALL new components as directed.</li> </ul>
<ul style="list-style-type: none"> <li>• The safety belt retractor webbing does not retract or has excessive slack during use</li> </ul>	<ul style="list-style-type: none"> <li>• Twisted or incorrectly routed safety belt webbing</li> <li>• Safety belt retractor is binding internally</li> <li>• Safety belt retractor</li> </ul>	<ul style="list-style-type: none"> <li>• CORRECT the twisted safety belt webbing. REFER to <a href="#">Safety Belt Twisted at the Safety Belt Guide</a> or <a href="#">Safety Belt Tongue Rotated on Belt</a> in this section. CARRY OUT the appropriate Function Test. REFER to Component Test in this section.</li> <li>• INSTALL a new safety belt retractor. REFER to <a href="#">Safety Belt Retractor and Pretensioner</a> or <a href="#">Safety Belt Retractor — Rear</a> in this section.</li> </ul>
<ul style="list-style-type: none"> <li>• The Belt-Minder® feature is inoperative</li> </ul>	<ul style="list-style-type: none"> <li>• Belt-Minder® feature is deactivated</li> </ul>	<ul style="list-style-type: none"> <li>• REFER to <a href="#">Section 413-01</a> or the Seating and Safety Restraints section of the Owner's Literature to activate the Belt-Minder® feature. If the Belt-Minder® is activated, REFER to <a href="#">Section 413-01</a> to diagnose.</li> </ul>
<ul style="list-style-type: none"> <li>• Safety belt procedure after a collision</li> </ul>	<ul style="list-style-type: none"> <li>• Safety belt retractors</li> <li>• Safety belt buckles</li> <li>• Safety belt shoulder height adjuster(s)</li> <li>• Center seat safety belt and buckle (lap belt, if equipped)</li> <li>• Child safety seat attachment components</li> </ul>	<ul style="list-style-type: none"> <li>• REFER to <a href="#">Safety Belt Procedure After a Collision</a> in this section.</li> </ul>
<ul style="list-style-type: none"> <li>• The safety belt tongue is rotated on the safety belt webbing</li> </ul>	<ul style="list-style-type: none"> <li>• Twisted or incorrectly routed safety belt webbing</li> </ul>	<ul style="list-style-type: none"> <li>• REFER to <a href="#">Safety Belt Tongue Rotated on Belt</a> in this section.</li> </ul>
<ul style="list-style-type: none"> <li>• The safety belt webbing is twisted at the safety belt guide</li> </ul>	<ul style="list-style-type: none"> <li>• Twisted or incorrectly routed safety belt webbing</li> </ul>	<ul style="list-style-type: none"> <li>• REFER to <a href="#">Safety Belt Twisted at the Safety Belt Guide</a> in this section.</li> </ul>
<ul style="list-style-type: none"> <li>• The safety belt webbing is dirty or soiled</li> </ul>	<ul style="list-style-type: none"> <li>• Dirty or soiled safety belt webbing</li> </ul>	<ul style="list-style-type: none"> <li>• REFER to <a href="#">Safety Belt Cleaning</a> in this section.</li> </ul>

## Component Test



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Carry out the appropriate Functional Test(s) as determined in Inspection and Verification.

### Functional Test — Safety Belt Buckle and Tongue

The safety belt buckle and tongue assembly must operate freely during the latching and unlatching function. Fasten the safety belt by inserting the tongue (male portion) into the buckle (female portion).

1. Verify the following during the latching sequence:
  - Tongue insertion is not hindered by excessive effort.
  - A click is heard when the safety belt buckle latches the tongue.
2. Verify the system integrity by forcefully pulling on the safety belt webbing.
3. Unlatch the safety belt by fully depressing the safety belt buckle release button and allowing the safety belt to release and retract.
4. Verify the following during the unlatching process:
  - Push-button depression 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 safety belt buckle or safety belt retractor as required.

### Functional Test — Safety Belt Retractor

The safety belt retractor must be freely operational for extraction and retraction of the safety belt webbing between full extension and in-vehicle stowed positions.

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

### Functional Test — Safety Belt Retractor, Automatic Locking Retractor (ALR) Mode

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


### Functional Test — Safety Belt Retractor, Road Test Inspection



**WARNING: The driver and passenger must be prepared to brace themselves in the event the safety belt retractor does not lock. Failure to follow this instruction may result in serious personal injury.**

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

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

1. Test the safety belts in the following sequence:
  1. Fasten the safety belts and proceed to a safe area.
  2. Attain a speed of 24 km/h (15 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 safety belts should lock up with minimum webbing extension.
  5. If there is a lockup of all safety belt retractors being tested, the safety belt retractors are functioning correctly. If any safety belt retractor fails to lock up, install a new safety belt retractor(s).
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