



3-Point Seat Belt Installation, Usage and Maintenance

NEED HELP? CALL US FIRST: 314-732-0338

Please read and understand this entire document before beginning installation and using the Seat Belts. The instructions and information in this document are recommended guidelines for 90°/90° 3-Point seat belts. This document is not all-inclusive and will not cover every seat and vehicle configuration. Call us with any questions.

OVERVIEW: Congratulations! By purchasing GWR Seat Belts, you have chosen a sophisticated safety restraint system that represents the best in restraint technology. Extensive research, testing and field experience have shown it to offer, when properly installed and used, high levels of protection in vehicle crashes.

GWR 3-Point Seat Belt Systems come with a retractor, buckle, shoulder loop, and webbing. The type of retractor used is an automotive dual sensitive Emergency Locking Retractor (ELR), which has two advantages. First, the retractor is sensitive to angle changes, as well as rapid webbing withdrawal, providing two systems that lock the Seat Belt when the vehicle slows down rapidly or during impacts. Second, the ELR increases comfort by allowing the driver and passengers much more freedom of movement in the seat.

NOTE: Because this seat belt uses a dual sensitive retractor, the retractor locks not only when the webbing is pulled out rapidly, but also when the retractor rotates outside of its operating angle. Therefore, the retractors on this seat belt only release webbing when at the defined operating angle, and must be installed properly at this angle.

This seat belt uses a 90° (A)/90° (B) retractor, so the retractor must be installed so the webbing is coming out vertically. An example of a 90°-90° retractor is shown here in Fig. 1.

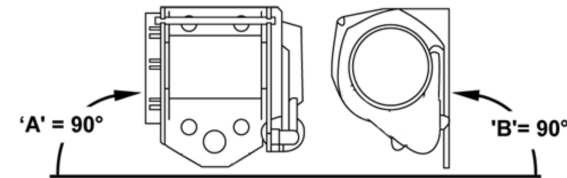


Fig. 1

As shown in Fig. 1., the first angle 'A' is measured from the spring cassette side, starting from the horizontal plane (0°) up, and the second angle 'B' is measured on the mounting side of the retractor starting from the horizontal plane (0°) up. Positioning the retractor within +/- 2° of its operating angle ensures optimum performance.

If the retractor is mounted or operated at other angles it will lock – this is by design per Federal Regulation FMVSS 209. Additionally, as a result of the mechanisms that increase safety and comfort in the ELR, certain actions can also cause the retractor to lock before installation.

To minimize locking before installation, ELR retractors might come with a foam stop wedged between the webbing spool and the metal frame, or a plastic fork around the webbing near the retractor. During shipping and installation, the foam stop or plastic fork prevents the belt from retracting fully into the retractor and locking the retractor. **It is important to leave the foam stop or plastic fork in place until the retractor is completely installed in the seat or vehicle.** We recommend the retractors be installed first in order to prevent retractor lock-up.



Unlocking the Retractor

If your retractor does become blocked before or during installation, just follow the instructions below:

1. To unlock the retractor, position the retractor at its correct working angle (90°/90°) throughout this procedure. For the best results place the retractor against the side of a table to provide stability.

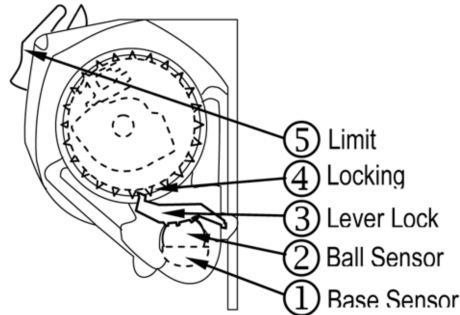


Fig. 2

2. Once positioned correctly, the Ball Sensor will become aligned in the Base Sensor allowing the Lever Lock to fall, disengaging the Locking Wheel (Fig. 2 & 3).

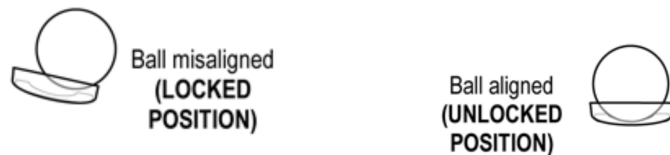


Fig. 3

3. If the Lever Lock remains engaged while the retractor is positioned correctly, grab the webbing spool with your fingers and roll it in

tighter. This should unlock the internal mechanism and allow the Lever Lock to fall. Now the webbing can be pulled out.

4. You can also unlock the retractor in this position by pulling the webbing with enough force to tighten the belt on the spool, then releasing the webbing to allow ~1/2" of webbing back into the retractor, unlocking the retractor.
5. Slowly pull the webbing out of the retractor. Repeat these steps if necessary, especially if the webbing is fully wound up on the spool.
6. Place the foam stop back into position to allow for easier installation.

INSTALLATION GUIDELINES:

Below are guidelines not specific to any Seat Belt model, but general instructions for mounting retractors, buckles, and pillar loops to common attachment points.

WARNING!

- *Seat Belts only offer protection if they are properly installed and used.*
- *Failure to install and use GWR 3-point Seat Belts in accordance with GWR's instructions and the vehicle manufacturer's instructions specific to your vehicle could result in serious injury or death.*
- *To assure proper function of GWR Seat Belts, your seat and/or vehicle must meet special technical requirements.*
- *Different installation instructions are required for different vehicle and seat types. Check with GWR or the vehicle manufacturer to confirm proper installation.*



- *Proper Seat Belt geometry requires that Seat Belt anchor points be located within narrowly defined areas. Therefore GWR Seat Belts may only be installed in vehicles for which proper anchorage points and Seat Belt geometry has been determined to exist.*
- *Any work carried out relating to the modification or creation of new structural Seat Belt mounting points needs to be checked and approved by an authorized or qualified engineer.*
- *GWR Seat Belts should be installed by a competent mechanic or an authorized Seat Belt restraint fitter.*
- *Do not drill additional mounting holes in vehicles with inbuilt anchorages.*

Mounting Retractors

NOTE:

The retractor must be handled with care. It must never be dropped, adjusted, lubricated, taken apart or tampered with.

We recommend installing the retractor first.

1. When the retractor is removed from the box it will have a certain amount of webbing drawn from the spool and will be kept in place by a foam stop or plastic fork. Do not remove the foam stop or plastic fork until the retractor has been mounted in the correct position.
2. Mounting bolts for all retractors must be minimum 7/16" and Grade 8.8 quality or better, and a locknut may be required.
3. Make sure the retractor is in a location where it is protected from being hit, and the plastic covers are not being pressured.
4. Figure 4 diagrams mounting a 90°-90° retractor directly to a vertical structure.
5. Tighten bolt to 25-30 ft. lbs (35-40 Nm) torque.

6. Once retractor is bolted do not turn retractor by pushing on its cover.
7. Remove and dispose of the foam stop or plastic fork.
8. All retractors must be mounted at the retractor's operating angle before the Seat Belt webbing can be extracted from the retractor. In order to secure the correct functioning of the sensing mechanism, the retractor must be mounted $\pm 2^\circ$ of the X and Y planes (**Fig. 5**).

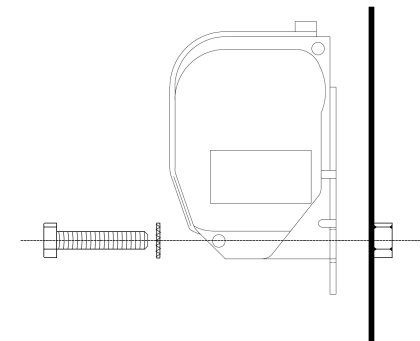


Fig. 4

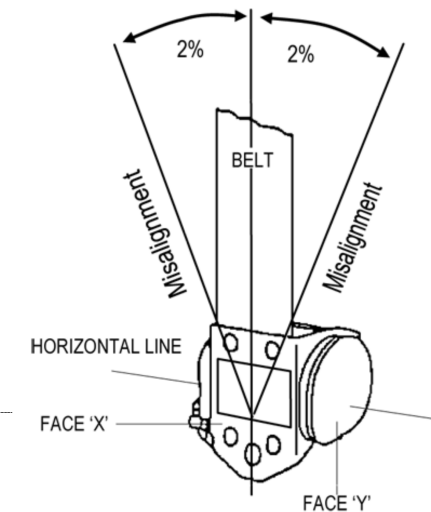


Fig. 5

9. Test the Seat Belt for satisfactory extraction and retraction of the webbing. If unsatisfactory, check retractor installation and alignment.
10. If any part of the Seat Belt has been incorrectly installed and needs to be changed, make sure the bolts are loosened before making changes.



Mounting Cable Buckles to vertical surface

1. Assemble hardware as shown in **Fig. 6** (below).
2. Before mounting the cable to vehicle or seat structure, confirm the buckle head is at or behind the position of the occupant's hipbone when the seat is in the lowest and farthest rear position, (Fig. 9 below).
3. The buckle release button must face away from the occupant
4. Use only SAE Grade 8.8 or better, 7/16-20 UNF fasteners
5. Tighten bolts to 25-30 ft. lbs (35-40 Nm) torque.

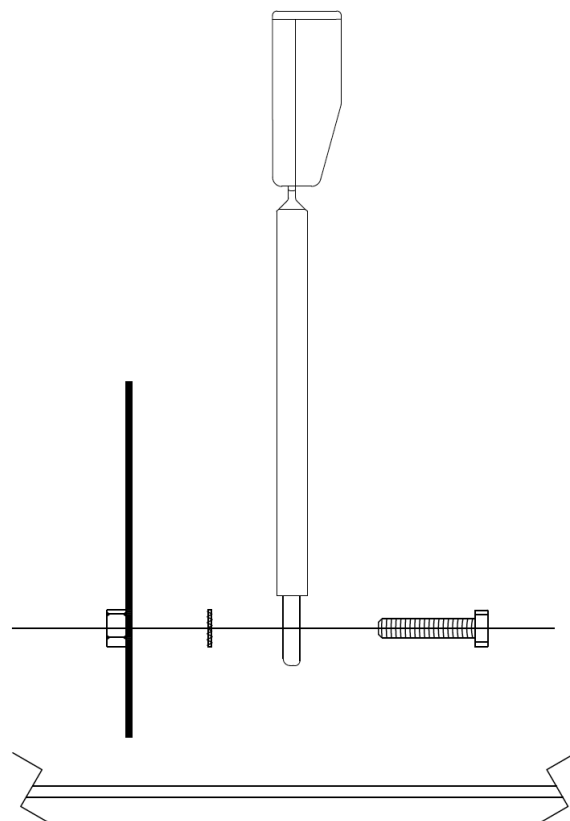


Fig. 6

Mounting Bracket Buckles to vertical surface

1. Assemble hardware as shown in **Fig. 7** (below).
2. Before mounting the bracket to vehicle or seat structure, confirm the buckle head is at or behind the position of the occupant's hipbone when the seat is in the lowest and farthest rear position, (Fig. 9 below).
3. The buckle release button must face away from the occupant
4. Use only SAE Grade 8.8 or better, 7/16-20 UNF fasteners
5. Tighten bolts to 25-30 ft. lbs (35-40 Nm) torque.

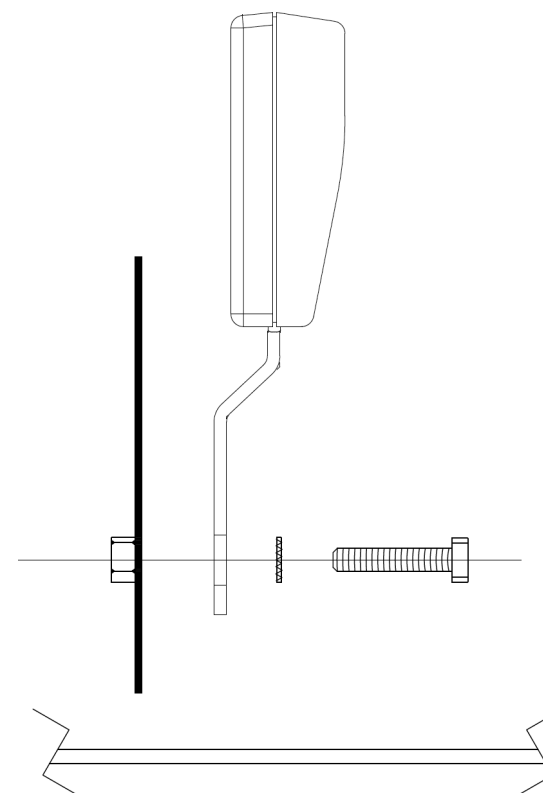


Fig. 7



Mounting Webbing Buckles

1. Assemble hardware as shown in **Fig. 8** (below)
2. Before mounting the bracket to vehicle or seat structure, confirm the buckle head is at or behind the position of the occupant's hipbone when the seat is in the lowest and farthest rear position, (Fig. 9 below).
3. The buckle release buttons must face away from the occupant
4. Use only SAE Grade 8.8 or better, 7/16-20 UNF fasteners
5. Tighten bolts to 25-30 ft. lbs (35-40 Nm) torque.

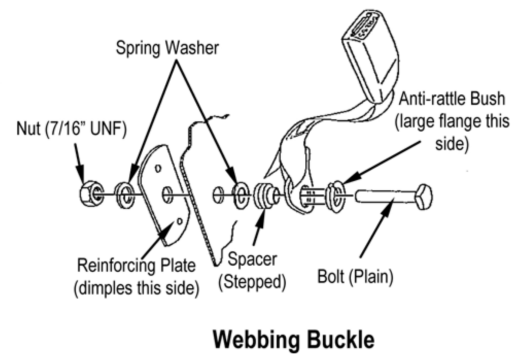


Fig. 8 (Above)

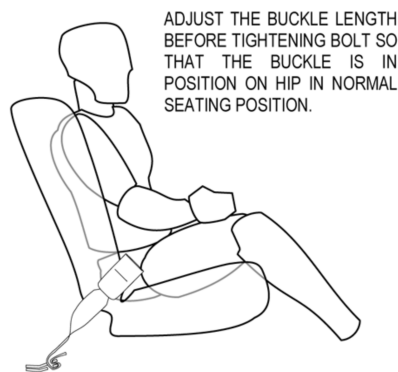


Fig. 9 (Above)

Mounting Pillar Loops to vertical surface

1. Assemble hardware as shown in **Fig. 10** (below)

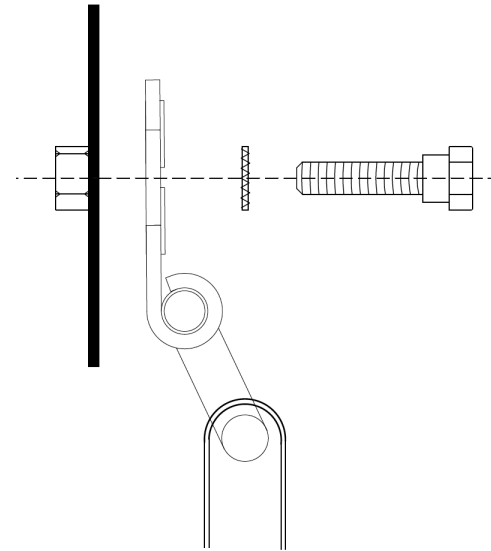


Fig. 10 (Above)

Final Seat Belt System Inspection Required after complete installation:

1. Remove foam stop or plastic fork from retractor
2. Check the security of the mounting at all anchorage points
3. Check for the proper retractor angle
4. Check shoulder belt pillar loop for full range of motion.
5. Be sure the Seat Belt webbing was not twisted during installation
6. Check buckle for proper latching
7. Check that the Seat Belt fully retracts—confirm there are no interferences.

**WARNING!**

Failure to perform final inspection steps can reduce the effectiveness of the Seat Belt during a crash and could result in serious injury or death.

NOTE:

Interior trim must not interfere with the flow of the Seat Belt. The Seat Belt webbing must freely pull out of the retractor once the Seat Belt tongue is latched to the buckle, and fully retract when it is unlatched.

The Seat Belt must not be allowed to rub against any sharp edges. Excessive wear of the Seat Belt could occur, potentially affecting the ability of the Seat Belt to save lives.

WARNING: NO MODIFICATION OF SEAT BELT SYSTEM

No changes should be made to a GWR Seat Belt System. For example, do not modify any Seat Belt pieces, add or remove material, or install devices that may change the Seat Belt routing or tension. Modification could affect its performance, safety or durability, and may result in serious personal injury or death. Modifying or tampering with the Seat Belt System may even violate government regulations. Additionally, damage or performance problems resulting from modifications may not be covered under the GWR product warranty.

If the Seat Belt is damaged or there is any doubt that the Seat Belt functions properly, replace it immediately with an entirely new system.

SEAT BELT USAGE:

To use this 3-Point seat belt, hold the tongue and pull the seat belt across your body. The Seat Belt retractor is sensitive, and may lock if the tongue is pulled too quickly. Do not twist the webbing. Insert the tongue into the buckle until you hear a “click.” Give a tug on the tongue to ensure the buckle is locked. The seat belt should be tight across the lap belt and shoulder belt, and there should not be any slack. If there is any slack, tighten the seat belt by pulling up on the shoulder belt, which will take up the additional slack. The shoulder belt must lay flat across your chest, and the lap belt must lay flat across your pelvis.

With the tongue installed in the buckle, the 3-point seat belt must have a lap belt and a shoulder belt. If the seat belt system includes a type 2a shoulder harness that only offers a shoulder belt without a lap belt component, then the occupant must wear a lap belt in addition to the shoulder belt. Without a lap belt the occupant could submarine in the event of a crash, potentially causing serious injury or death.

Seat Belts are designed so that when they are latched and properly worn, the webbing bears upon the skeletal structure of the body, and therefore the lap belt should be worn across the front of the pelvis, and the shoulder belt should be worn across the chest and shoulder. Wearing the lap section of the Seat Belt across the abdominal area must be avoided. A lap belt worn too high could increase the risk of internal injuries in an accident.

To unlatch the Seat Belt, push the red button on the end of the buckle to release the tongue. You must hold the tongue while pushing the red button and accompany the tongue to its starting position, allowing the webbing to be retracted all the way and be stored for the next use.



CORRECT

Proper location of shoulder belt. Belt must be centered and lying flat across the chest, between neck and edge of shoulder.



WRONG

Shoulder belt must not touch face or neck.



WRONG

Shoulder belt must not hang off shoulder.

WARNING!

The 3-Point Seat Belt should be properly adjusted to a snug fit across the lap and torso. Failure to do so may reduce the protection offered by the entire restraint system, as slack in the belt may greatly increase the chance of serious injury during a collision. Serious injury or death can occur if the Seat Belt is not worn properly.

WARNING!

A 3-Point seat belt configuration with a 2a shoulder harness (a shoulder belt with no lap belt) must be worn together with a lap belt at all times!

WARNING!

Improper use of any Seat Belt can cause serious personal injury or death. To help reduce the risk of serious injury in an accident:

- Never strap more than one person in place with each Seat Belt.
- Always make sure that lap belts and shoulder belts are not twisted when worn.
- Not latching the buckle correctly can result in injuries in an accident, as the seat belt might be unlocked. Make sure you hear the “click”.
- Never use the Seat Belt system for children under the age of 12 years or to install an infant seat or child seat.
- Never use the Seat Belt system for persons who weigh less than 88 lbs or those who are less than 4’ – 11” tall, regardless of age.



CARE AND MAINTENANCE:

For safety, the condition of Seat Belts in vehicles should be checked regularly, but not less than once a month. Due to high mileage associated with these vehicles, continual movement of the seats, and sometimes more severe environmental conditions, Seat Belts in commercial vehicles can wear sooner than those in passenger cars. If you have any doubts about the condition or ability of a Seat Belt to function, replace it immediately. If any component or part of the Seat Belt system requires replacement, the entire Seat Belt system should be replaced.

To check the Seat Belt System, pull each belt out to confirm that it works smoothly and that the lap and shoulder belts retract fully. The Seat Belt should move freely through the shoulder loop. Look for frays, cuts, burns, and wear. The entire Seat Belt should be replaced if webbing is frayed, cut, contaminated or damaged in any way. One indication that the belt was exposed to excess strain and therefore requires replacement is when the stitches on the belt are ripped open or are protruding.

Inspect the buckle for proper operation by checking that the tongue inserts smoothly into the buckle, and listening for the sound of it clicking in place. Verify that the tongue stays inserted upon tugging on the belt. Upon pressing the push button, the buckle should release the tongue with action. Verify the buckle is not damaged, cracked or broken, and that the tongue is not deformed or corroded.

Check the mounting hardware at every anchorage point. The hardware should be tightly fastened, and not rusted, corroded or damaged.

Seat Belt Safety Inspection Checklist

Tongue and Buckle Assembly

- Check the engagement of tongue and buckle
- The buckle and tongue assembly should securely latch together
- The tongue should eject actively when released
- There should be no cracks on the buckle, and the buckle cover must be intact
- The tongue should have no metal deformation, webbing marks, or visible cracks on metal or plastic sections

Retractor

- Pull the belt out as far as it will go then release it. The belt should return all the way to the retractor without sticking, gripping, stalling or locking
- The retractor should lock if the webbing is pulled out suddenly

Webbing

- The webbing should be securely attached to its end fittings displaying no stretching or pulled stitching
- The webbing should be flat throughout its entire length
- Look for plastic burn marks, frayed stitching and any signs of rippling
- Look for fading as exposure to sunlight can reduce the strength by up to 50%

Anchorage

- Ensure all anchorages are free from corrosion and securely fastened to the vehicle structure
- All mounting points should not show any signs of deformation.

**WARNING:**

If any Seat Belt is not working properly, has loose parts, extreme or unusual wear/deterioration, shows cuts, fraying, or abrasion on the webbing, damage to the buckle, tongue, retractor or other hardware, or any other damage is found, the entire Seat Belt assembly should be replaced.

WARNING:

Not inspecting, maintaining and replacing Seat Belts as needed can result in serious injury or death if the Seat Belts do not work properly when needed. Check your Seat Belts regularly and have any problem corrected as soon as possible. Never use any Seat Belt that does not function properly.

WARNING:

Never modify, disassemble or repair the Seat Belts yourself.

Care should be taken to avoid contamination of the webbing with polishes, oils, and chemicals, and particularly battery acid. Cleaning may be carried out using mild soap and water, or any solution recommended for cleaning upholstery or carpet. Do not use solvents, bleach, or dyes. After cleaning wipe with a cloth and allow the Seat Belts to dry in the shade. Do not dry the belt in the sun or near a heat source. Do not allow the Seat Belts to retract until they are completely dry.

Never lubricate the buckle or retractor.

If dirt builds up in the shoulder belt guide of the Seat Belt anchors, the Seat Belts may retract slowly. Wipe the shoulder belt guide with a clean, dry cloth.

If a Seat Belt is worn during a crash or collision, you should replace the Seat Belt. A Seat Belt that has been worn during a crash may not provide the same level of protection in a subsequent crash. Seat Belt assemblies not in use

during a collision should be inspected and replaced if either damage or improper operation is noted.

After an accident, in addition to replacing Seat Belts which were in use, also ask the vehicle manufacturer to carefully check all Seat Belt attachment points for deformation or cracks. Always make sure that the guidelines of the vehicle manufacturer are followed if repair is necessary.

GWR U.S. Seat Belts have been tested in accordance with performance parameters of Federal Motor Vehicle Safety Standard 209.

GWR Seat Belts, when properly installed and used according to applicable instructions can mitigate injury. The ability of any restraint system to mitigate or prevent injury is directly related to the type and severity of the accident.

GWR reserves the right to incorporate any technical changes or further development in this product without notice.

If you need additional information or have any comments or questions about GWR Seat Belts, please contact us or visit our website: www.gwrco.com