



SEAT BELT Installation Manual



You have purchase a premium set of Simpson Seat Belts. They are designed with attention to detail, just like your entire Simpson safety system.

WARNING: THIS ARTICLE IS SOLD WITHOUT WARRANTY, EXPRESSED OR IMPLIED. NO WARRANTY OR REPRESENTATION IS MADE AS TO THIS PRODUCTS ABILITY TO PROTECT THE USER FROM ANY INJURY OR DEATH. THE USER ASSUMES THAT RISK.

Restraint System Mounting Zones (Side View)

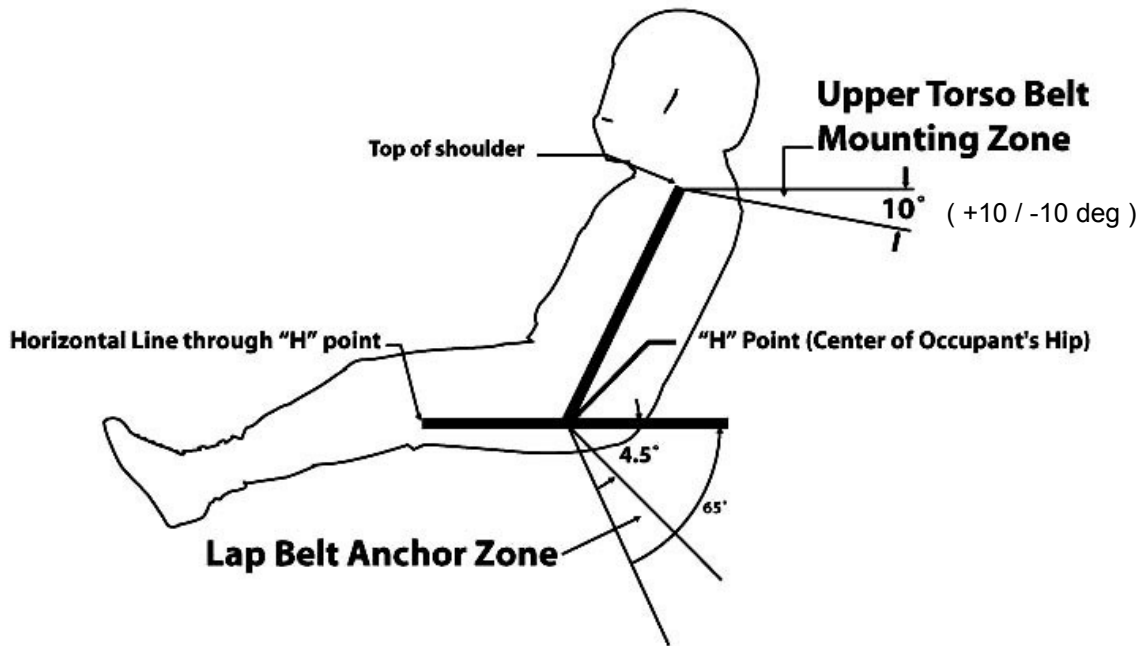


Figure 1: Shoulder and Lap Belt Mounting Zones – Upright Seating Position

The Lap Belts should be mounted off the center of the drivers' hip at an angle of 45 to 65 degrees down from the horizontal. (see Figure 1) All seat belt mounts need to be as close to the seat system as possible. In some cases, it is advantageous to mount the belts inside the seat. The lap belts should be mounted with a double shear type mount and the lap anchor should be allowed to rotate freely.

It is advantageous to have the Pull Up style adjuster on the lap belt inside the seat, just on top of the leg radius. Custom size anchors can be ordered to facilitate this. In some cases, this may not be a viable option because of driver size. If this is the case, the adjuster must be mounted outside the seat with a short pull up mount.

The path that the lap belt takes from the anchor to the buckle must be free of obstruction. If the belt routes through a seat opening, it must allow for the belt to rotate forward by at least 30 degrees without being cut or frayed.

The lap belt mount needs to have a secure anchor to the chassis or frame of the vehicle. The mount should be capable of withstanding a 3500 lb shock load.

Lap Belt Mounting for a Reclined Seating Position (Less than 65 Degrees of back angle) For Lap Belt mounts in a reclined seating position it is necessary to change the lap belt mounting zone to 0 degrees, vertical, +/- 10 degrees. This is because of the lower angle of the pelvis. The belt should route over the flats on your pelvis on both sides.

The Shoulder Belts should be mounted at an angle of 0 to 20 degrees down from the top of the shoulder.(see Figure 1) The shoulder belts need to be mounted as close to the driver as possible. They may also angle

inboard from each side by as much as 45 degrees. This has been seen to help the head restraints stay in place better in multiple and high angle side impacts. (see Figure 1a) Each shoulder belt needs to be mounted with its own anchor, not routed to a single anchor. Each anchor needs to be able to withstand at least a 2500# shock load.

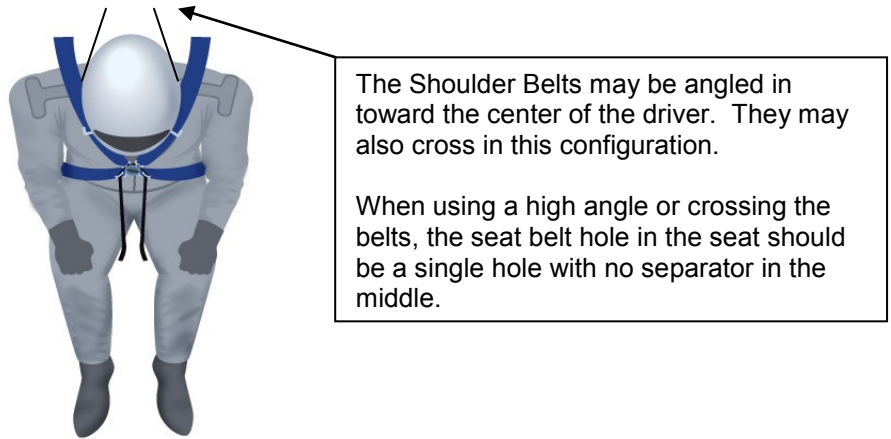


Figure 1a: Shoulder Belt Mounts – Top View

The **shoulder belt adjusters** need to be located low on the chest. In a frontal impact, the torso will slide under the shoulder belts, making the adjusters rise up the chest. It is undesirable to have the adjusters contact the sides of the neck.

The Shoulder Belt Mounting for a Reclined Seating Position (Less than 65 Degrees of back angle)

The shoulder belts should be mounted similarly to the upright seating position with the exception that the angle off the shoulder should be moved with the increased back angle to be 90 +20 - 0 degrees to the back angle at the shoulder.

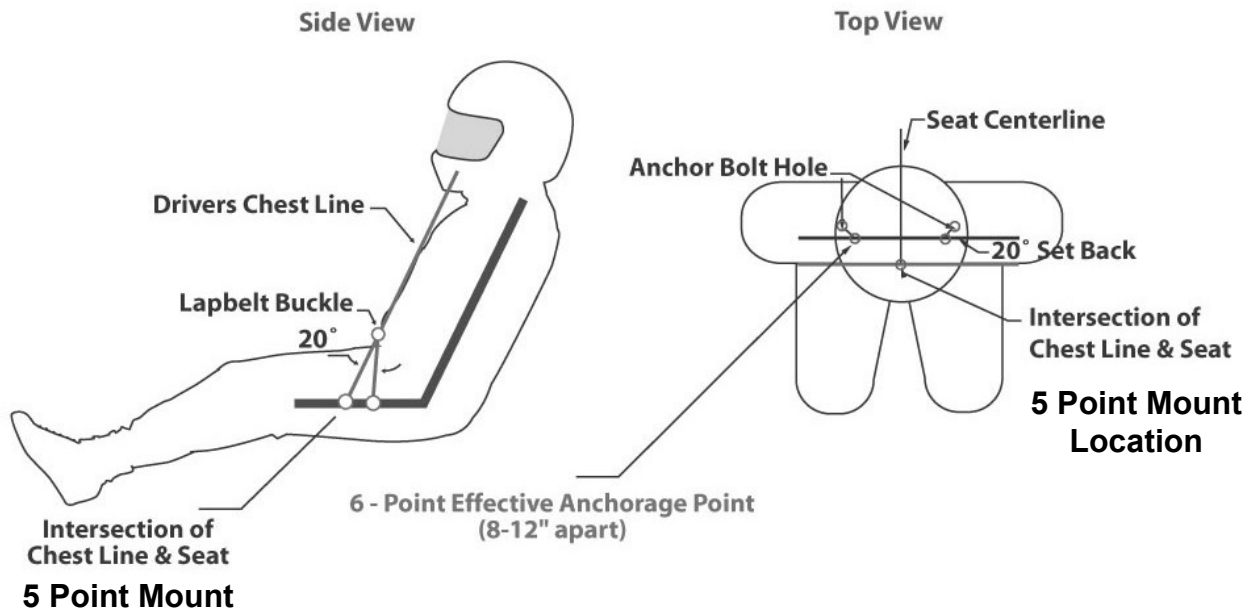


Figure 2: 5 & 6 Point Mounts

The 5 Point Belt should be mounted directly off the chest line. (see Figure 2) The chest line is found by making a straight line off the chest of the driver, through the buckle. Where the chest line intersects the seat, is where the 5 point should be mounted or have an effective anchorage point.

The 6 Point Mounts are located 3.5" to 4.5" in back of the 5 point mount and at an 8 to 12 inch separation. (4" to 6" off the driver's center line) (see Figure 2) The webbing should come off the anchor at this point. The 6 points should be centered under the driver's legs when in a normal seating position and be just in back of the front of the pelvis. In a seat belt system that only uses the 6 points and not the 5 point, the vertical buckle location is determined by the 6 points. They should be tensioned so that they apply mild pressure to the insides of the legs. The shoulder belts are used to set the final tension on the 6 points and vertical buckle location.

Most issues with belt system tension or buckle walk can be solved by adjusting the 6 points tighter.

7-Point Seat Belts. A 7-Point belt system is simply the use of the 5 point belt in conjunction with the 6 point belts. Follow the mounting instructions for both of these systems. The 5 point belt now becomes the primary belt for holding the vertical position on the lap belt buckle. The 6 points then need to be tensioned as previously explained.

The 7 point configuration is extremely stable. It has shown to be very important in keeping control of the pelvis in major impacts and in normal driving. Simpson highly recommends the use of 7 point systems.

Seat Belt System Care: Your seatbelt system should be treated delicately. It must be covered or removed when welding near the belts. Seat belt material is polyester and will melt when exposed to a high temperature heat source. Always protect the belts from high temperature heat sources.

Wash with small amounts of a mild detergent mixed in a bucket of water. Never use a power washer or directly spray the belts.

Mounting of Restraints to the vehicle: The mounting of your belt system is extremely important to the function of the product. There are a number of mounting types that are acceptable. Some general rules to follow when placing mounts in the car are:

- 1) Always mount the anchors in the direction of pull when in use.
- 2) If a wrap around mount is used, make sure that there are stops on both sides of the belt to stop the belt from moving side to side in an accident.
- 3) Use grade 5 or better hardware to bolt in your seat belt system. Mount all hardware outside the seat system where possible.
- 4) Make sure that the locking adjusters are as close to the anchor as possible and that the anchors have been properly lock to insure the ability to take load.
- 5) Keep the belt routing clear of obstruction and if the belt needs to go over an edge, take care to insure that the belt will not fray or cut on anything on or near the belt.
- 6) Belts will move with you in a wreck, make sure that the belt motion will not make the belt come in contact with a rough or sharp surface.

3-Bar Adjuster Routing

The 3-bar adjusters must be locked down to insure that they will lock down the webbing at the anchors. The adjusters need to be located as close to the anchor as possible. If the adjuster does slide, it will quickly lock down on the anchor or cross bar. Follow the routing Figures 3a through 3d.



Figure 3a: 3-Bar Initial Lacing with Anchor.



Figure 3b: Place the anchor as close as possible to the 3-bar to reduce slipping. Lace the free end of the webbing through both sides of the 3-Bar.



Figure 3c: Lace the free end of the webbing through the 3-Bar to LOCK the webbing.



Figure 3d: Lock Down the 3-Bar. Make sure to leave lace the free end of the webbing back through the 3-bar to lock it down. Leave about 2-3" of webbing after the 3-bar.

2-Bar Adjuster Routing

The 2-bar adjusters must be locked down to insure that they will lock down the webbing at the anchors. The adjusters need to be located as close to the anchor as possible. Follow the routing Figures 4a through 4d.



Figure 4a: 2-Bar Initial Lacing with Anchor.



Figure 4b: Lace the webbing over the top of the 2-bar and back into the middle of the webbing loop.



Figure 4c: Continue to lace the free end of the webbing through the top side of the anchor.



Figure 4d: The free end of the webbing then routes through the 2-bar in the middle of the two pieces of webbing already there.



Figure 4e: Pull the excess webbing through the anchor and adjuster to tighten and lock down.



Figure 4f: Side Profile of 2-bar adjuster.



Figure 4g: The 2-bar adjuster may also be used around a bar in the same manner.

Double Anchor Pinch Clamp: The double anchor pinch clamp is mostly used in the 6-point mounts. Make sure to bolt the anchors down against a flat surface with the webbing coming off the anchors under the anchors.



Figure 5a: Initial Lacing of the two anchors. Lace the webbing through both tongues.



Figure 5b: Bring the free end of the webbing back through ONE of the anchors.



Figure 5c: Tighten the belt around the anchors at the desired length.



Figure 5d: The anchor should then be mounted against a flat surface with the webbing routing under the anchors.