

## Safety Devices Fitting Instructions for 6 Point Bolt-in Roll Cages

Due to the many differing vehicles to which Safety Devices roll cages can be fitted, these instructions are of a general nature and not specific to your vehicle.

### Important Note

Roll bars and/or front cages **must not** be fitted to any car with significant rusting of the bodyshell near where the bar will be bolted down. For the main bar this usually applies to the rear wheel arches, base of centre pillars and adjacent floor or sills and to the floor toe-board or sills near the front door pillars for the front cage. Further, if the vehicle has ever suffered any accident damage, the bodyshell may be distorted and therefore may not fit the roll-over bar or front cage. It is usually easier to straighten the car than modify our bars! Slight floor damage is usually simply rectified before fitting starts.

***Please read these instructions all the way through before starting, since the order of work is important.***

1. Unwrap the bar and check the fitting kit.
2. If still in place, remove from the car the following:
  - A. The front and rear seats.
  - B. The carpets, underfelt and rear wheel arch trim where the rear cage will stand.
  - C. The seat belts and, if necessary, the 'B' post trim, to enable the rear cage to pass between the 'B' posts.
  - D. If a front cage is being installed, sunvisors or interior mirrors in that area may need removing.

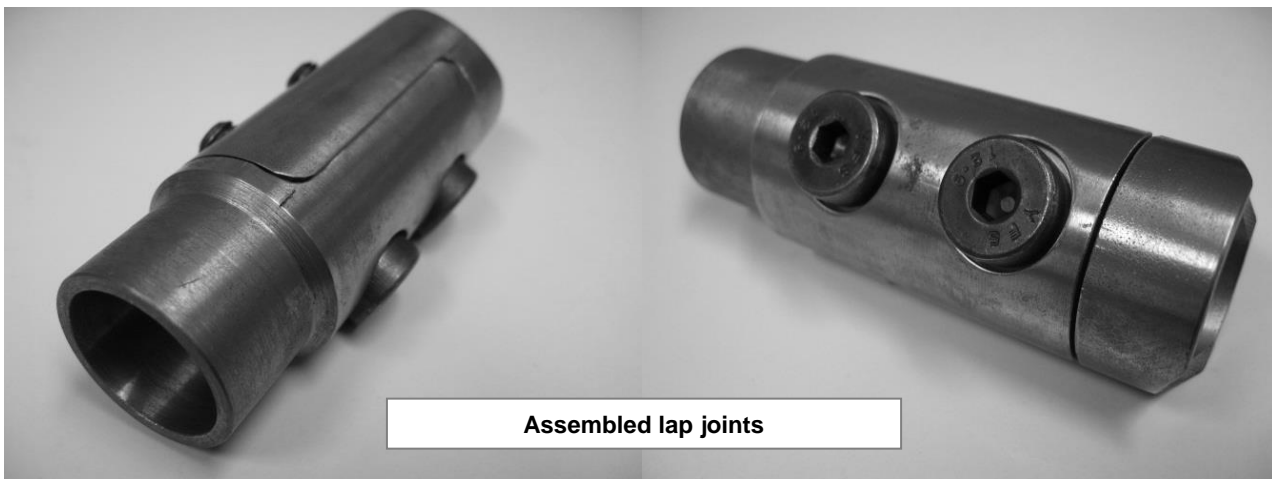
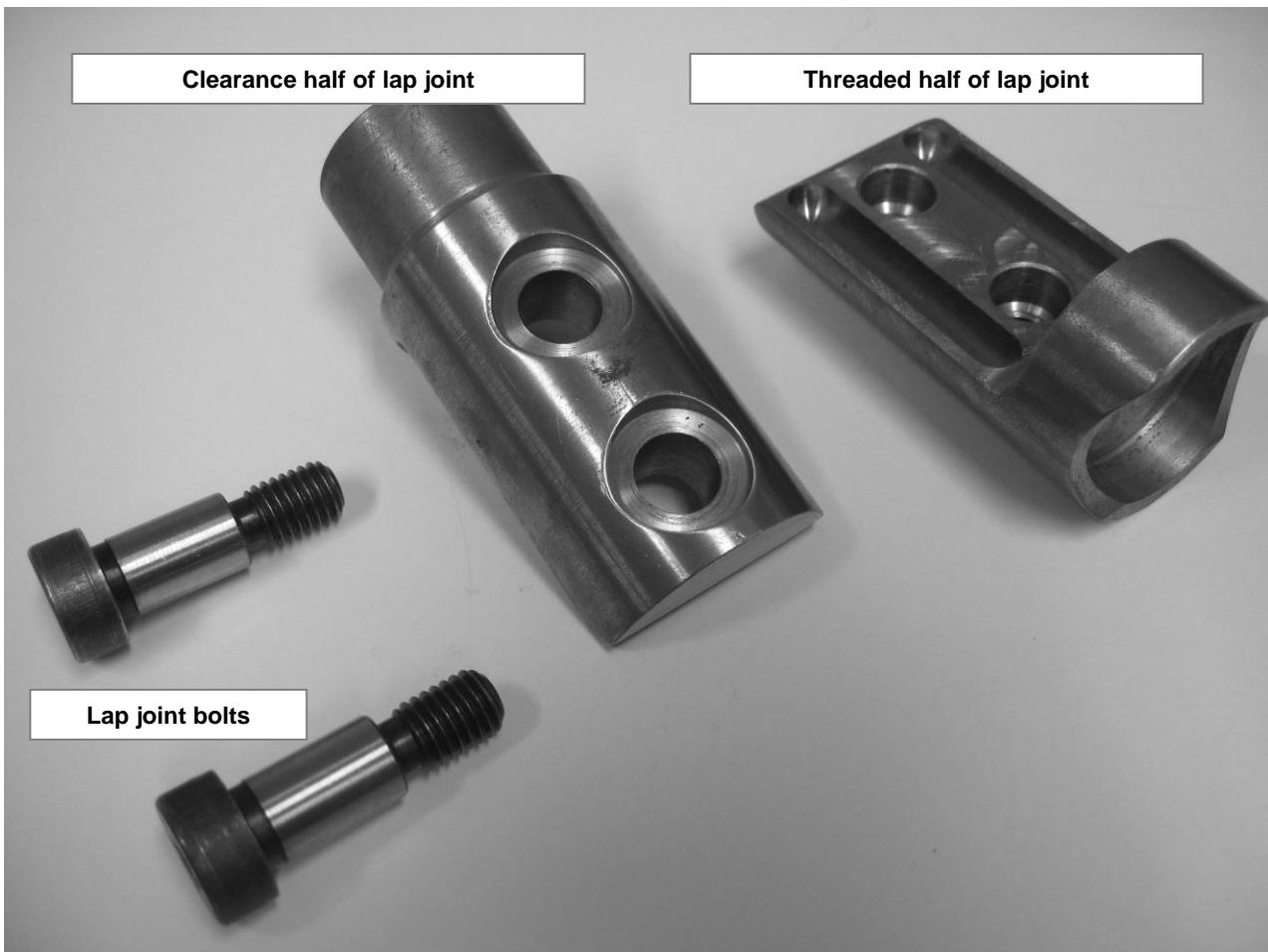
The cage must **never** be fitted on top of carpets or felt: it must be bolted directly to the body.

3. For safe welding to take place and to minimise damage to the vehicle, disconnect the battery and remove the fuel tank.
4. Stand the rear cage on its four feet beside the car, with its main hoop towards the front of the car and the backstays towards the rear. If the cage you are fitting has a removable diagonal, this must be fitted in position before installation.
5. With an assistant, if necessary, place the rear roll cage inside the car so that it sits inside, on its four feet. It may be necessary to remove the vehicle door and the steering wheel.
6. Since the cage is intended to be a tight fit inside the car, the main hoop or backstays may be difficult to get past the 'B' posts. If so, tourniquet them together just enough to allow clearance. Move the rear cage backwards in an upright position. Release tourniquet if used. The rear cage should finish up standing with the main hoop approximately upright and the backstay feet on the rear wheel arches or floor between the wheel arches, depending on the cage.
7. If a front cage is also to be fitted, this must be done before proceeding further. If not, skip this step and continue at instruction number 8. Do not attempt to assemble the front cage outside the car. Assemble one front leg to the main hoop saddle bracket or lap joint if applicable (see lap joint procedure in point 8) with two bolts but only put the nuts on enough to stop the bolts dropping out - the rear cage may need tilting to achieve this. Assemble the top rail to the front leg in a similar manner. Assemble the other front leg to the rear cage, then to the top rail - it may be necessary to temporarily place the legs away from their final positions to achieve this.

As some front cages are bent differently, inside the car, you may need to assemble the front legs to the top rail first, then assemble the front legs to the rear cage, tilting rear cage as necessary. **Do not tighten any bolts yet.**

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8. If lap joints are fitted, fully align both halves before bolting (as per photos below):



This can be done with a G clamp. DO NOT use a pry bar to align the joints - it may damage the threads. To bolt together, insert and start/tighten both bolts part of the way in to their threads. Start all of the lap joints (there will be 4, 6 or more, depending on the cage) by inserting all the bolts and starting/tightening loosely before any joints are tightened fully. Warning: the threads are fragile - carefully align both halves of the lap joint before carefully inserting the bolts.

**Under no circumstances, should air powered or electric powered nut guns be used. Only use hand tools.**

**Ensure bolts are torqued to the following settings:**

**M10 Bolts: 45Nm**

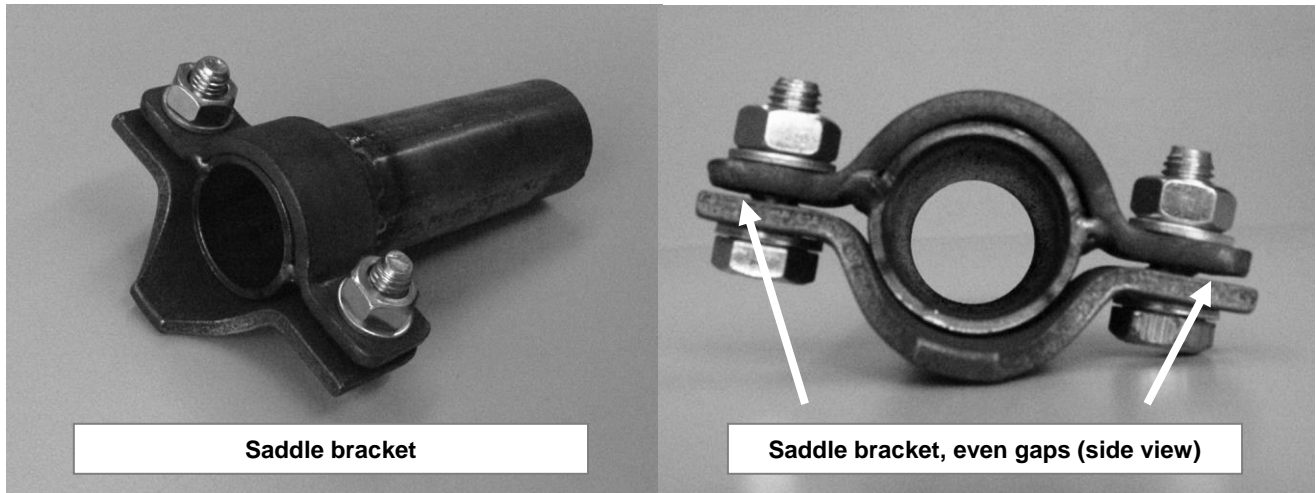
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If the roll cage has saddle brackets, when tightening the saddle bracket joints, it is critical that the each side of the saddle bracket is tightened equally to ensure that the gaps on each side are kept even. When fully tightened, the tabs should not be in contact with each other (see picture below).

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**Ensure bolts are torqued to the following settings:**

**M10 Bolts: 30Nm**

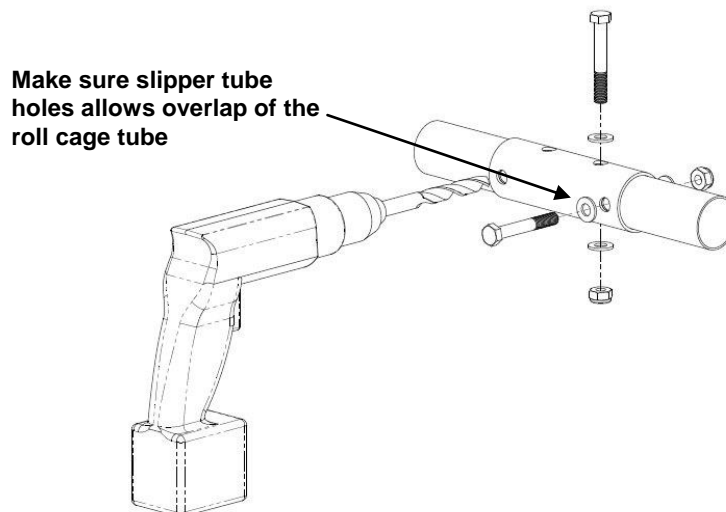


**Slipper Tubes:** some roll cages require the use of slipper tubes, which are already cross-drilled. When you loosely assemble the cage as described in points 6 and 7 it is necessary to drill through the slipper tube to allow cross bolting of the slipper tube joint.

**Under no circumstances, should air powered or electric powered nut guns be used. Only use hand tools.**

**Ensure bolts are torqued to the following settings:**

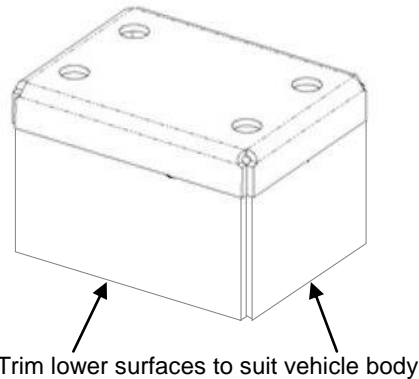
**M10 Bolts: 45Nm**



**9. If fitting a cage for road use only,** competition regulations do not apply so it is optional whether you weld the reinforcing plates inside the car. However, some reinforcing plates, especially those which have weld-nuts, are designed to fit above hollow sections such as sills and these need to be welded in position (see instruction point 11). If fitting a cage or roll bar for road use only, plain plates without nuts may be used as backing plates, fitted to the exterior of the vehicle.

Now that the roll cage is in position, drill through each foot plate hole. Reinforcing plates can now be fitted externally. Ensure the nuts are on the inside of the vehicle to avoid possible tyre damage and corrosion of bolt threads.

**10. If fitting a cage for competition use**, start with the rear cage and fit the main hoop reinforcing plates first. Locate the plates into their intended position beneath each cage foot on the **INSIDE** of the car. Position the cage so that the feet are flush on to the body work or reinforcing plates - each should have complete contact (ie. no gaps). However, some reinforcing plates, especially those which have weld-nuts, are designed to fit above hollow sections such as sills and these need to be welded in position (see instruction point 11). Due to the production tolerances on body shells and the fact that many of the reinforcing plates are universal, it is essential to 'fit' them, which may require some trimming. The plates may need correcting by bending slightly in a vice, or grinding or filing of metal to ensure a snug fit (see following illustration).



If your cage has box type fitting kit plates as illustrated above, it may be necessary to trim the lower edge of the plate to suit the "best fit" situation regarding the height of the main hoop.

This situation usually occurs in older vehicles where the tolerances between the floor and the roof are not as accurately maintained during production as modern cars.

**11.** Cages with plates that mount to closed sections, such as sills, will already have nuts welded to them. To fit these 'nut plates', mark the hole centres through the three matching holes in the foot plate. Drill 25mm holes to accommodate the nuts, which then sit in these holes. Locate all plates by bolting through the foot plate. The plates should fit flush to the body and are ready for tack-welding in to position if only fitting a rear cage. If fitting a front cage, **DO NOT** tack-weld any plates yet.

Reinforcing plates without nuts should be placed in position under the foot plates and using the three matching holes in the foot plate as guides, drill through with a 11mm drill. These plates are now ready to be tack-welded in position. The bolts can now be inserted to secure the position of the plates. Drill through the backstay feet matching the holes and bolt in position. The plates should fit flush to the body and are ready for tack-welding in to position if only fitting a rear cage. If fitting a front cage, **DO NOT** tack-weld any plates yet.

**12.** Now that the rear cage is correctly positioned, ensure that the front cage is also correctly positioned (as per instruction point 7). If unique doorbars are to be fitted (the main hoop and front legs will have saddle bracket mountings welded in to position) the doorbars should be loosely bolted in to position now to ensure correct spacing between the front and rear cages.

**13.** Locate the reinforcing plates under the front leg feet. Fit these to the vehicle in the same manner as the rear cage. **Now tack-weld all reinforcing plates.**

**14.** Remove the cage from the car and fully weld all the reinforcing plates to the vehicle. Any cleaning up and painting should now be done.

**15.** The cage may now be installed in the vehicle. Loosely assemble it in the car. Evenly bolt the feet to the car first. Only then may the bolts joining the cage components together be tightened. **Do not overtighten.**

**16.** In some cases it is necessary to re-site the mirror and sun visor onto the front cage top rail with clips. **Do not drill the roll cage.**

**17.** Finally, replace the seats and trim that you removed at the start.

### **DO NOT DRILL HOLES IN THE CAGE**

***NOTICE TO PURCHASERS:*** Safety Devices roll cages are a homologated design structure, therefore any alteration to the assembly by welding, repositioning, removal or addition of fittings, drilling or enlarging of holes etc., incorrect fitment to vehicle, or use of assembly other than its design purpose, releases the producer from any and all responsibility in the event of performance failure of these goods. Remember: a roll cage is no substitute for careful and considered driving.