

Land Rover Defender Station Wagon

External Roll Cage (L242)

Fitting Instructions

Unwrap the roll cage and unpack the individual fitting kits. At this point it is recommended that all the main components are checked against the assembly drawing provided on page 11 of these instructions. Should any parts or fixings be missing at this stage, or during installation, please contact your stockist.

Throughout the assembly we shall use a variety of different fasteners; the torque setting for each different size is listed below:

M8 - 25Nm M10 - 45Nm M12 - 70Nm M14 - 95Nm 7/16th - 55Nm

During the installation, it will be necessary to cut and drill the vehicle. It is important to primer and paint the exposed areas to prevent rust and corrosion.

During the installation, you will find it beneficial and in some cases essential to have the following tools/consumables:

- A comprehensive socket set with star drives, hex heads and extension bars
- A comprehensive set of ring and open spanners
- A selection of screwdrivers and trim removal tools
- A drill with a variety of drill bit sizes, hole saws and a step drill
- An air saw or equivalent as well as an angle grinder
- Taps make to be a useful tool on tight fitting threads
- Masking tape, a tape measure, marking implements and scissors
- Sealant, copper grease, primer and paint to suit the vehicle
- Safety equipment- goggles, gloves, ear defenders and steel toe capped boots.

Fitting Kit – Labelling Matrix

Bag / Box Number	Description	Quantity
RBL1727-FK1	Front Corner Upright (LH &RH) Fitting Kit	1
RBL1727-FK3	C Hoop Fitting Kit	1
RBL1727-FK4	D Hoop Fitting Kit	1
RBL1727-FK5	Front Leg (LH & RH) Fitting Kit	1
RBL1727-FK6	Rear Corner Upright & Support (LH & RH) Fitting Kit	1

The assembly process of this roll cage is separated into several different sections, each section having its own fitting kit containing all nuts, bolts, washers and fitting plates required:

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Section 1 – Saddle Bracket Fitting Instructions

If the roll cage has saddle brackets, when tightening the saddle bracket joints, it is critical that 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). **Saddle brackets to be torqued to 30Nm.**



Saddle bracket



Saddle bracket, even gaps (side view)

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

Section 2 – Mid & Rear Chassis Body Mountings

- 2.1 Remove the rear interior, side trims, speaker boxes, and steel closing panels from Rear side door shuts if fitted. The first step when installing the roll cage is to prepare all mounting points on the curved section of the body, just below the waist rail.
- 2.2 Using Drawing A (located at the end of the document) and through locating the slave plate, position masking tape onto the body and mark holes for the C hoop chassis mounts (see Fig 2.2b), and D hoop chassis mounts (see fig 2.2c). Once marked, the four holes can be drilled out to 12mm and the centre cut out – Please note only the centre dimensions of the slave plate should be cut out, not the outer profile. The images below show the process for the rearmost 'D' hoop, though the process is the same for the 'C' hoop. Repeat this process for all 4 holes in the N/S and O/S rear panels (2 on each side).



Fig 2.2 a



Fig 2.2b



Fig 2.2 c



Fig 2.2 d



Fig 2.2 e

NOTE: Steps 2.3 – 2.5 applies only to Puma (post 2007) vehicles If your vehicle is Pre-2007 then please skip to step 2.5.

2.3 Remove the cover restricting access of installation of C hoop support, shown in Fig 2.3a.



Fig 2.3a

- 2.4 Mark cut line approximately 3-4mm from the holes and trim excess material.



Fig 2.4a



Fig 2.4b

- 2.5 With the holes completed, insert the C hoop support from the inside of the vehicle, removing and rivets causing obstruction. The inner edge which mates against the inside of the body should have sealant (sikaflex 25oz or equivalent) applied before manoeuvring into position. From the outside the gripper/slave plate should be bolted and tightened to hold the mount in place. Care should be taken not to get too much sealer oozing through onto slave slates as you will not be able to get slave plate off later if you do. Reinstall black cover trimmed in Step 2.4 (if necessary).



Fig 2.5a



Fig 2.5b

- 2.6 With the C Hoop plate supported in the correct location, the two angle brackets should be positioned as required. They should then be attached and bolted through to the bulkhead and doorframe using the nut plate, washers, nuts and bolts provided in the specific fitting kit (Fig 2.6a).

Note: add packers/spacer as needed to fill the gap between the studs and the two brackets (between blue and red parts highlighted)



Fig 2.6a

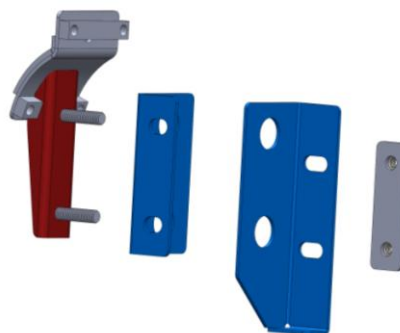


Fig 2.6b

- 2.7 Repeat process 2.5 for the D hoop support. The upper part of the upright mounts to the floor. However, due to manufacturing tolerances between vehicles it may be necessary to insert some spacers as shown in Fig 2.7a. The spacers are provided in several different thicknesses as part of the fitting kit. Using the D hoop support as a template, the two holes should be marked and drilled through the floor. This will aid the positioning of the corresponding bracket below the vehicle floor.



Fig 2.7a



Fig2.7b

- 2.8 Temporarily remove the rear chassis cross member plastic cover to allow access to the upper mounting flange. The upper mounting flange should then be cut vertically alongside the last captive fastening on this plate and along the top as required (marked in yellow in Fig 2.7b).

IMPORTANT NOTE: On later vehicles with forward facing seats in the rear load area, there will be a tubular bracket already mounted in this position which will need to be removed. Our tubular bracket can then be fitted along with the extra bracket shown below (Fig 2.8a) to reinstate the seat belt fixings. If you do not have forward facing seats then the brackets can be discarded.



Fig 2.8a

- 2.9 The rear cross member bracket can now be located against the rear cross member and aligned with the holes drilled through the vehicle floor in step 2.7. The spacer tube assembly can be inserted into the end of the chassis and the bolts inserted loosely. As per 2.7, spacers should be used if required.



Fig 2.9a



Fig2.9b

- 2.10 The D hoop support bracket and rear cross member brackets should be bolted together and tightened up fully. Only when this assembly has been fully tightened against the floor should the chassis bolts be tightened.
- 2.11 The plastic cover should then be reinstalled to fit around the lower mounting bracket and fastened into position using original fixings.

Section 3 – Front Chassis Bulkhead Mountings

- 3.1 Remove front wing eyebrows and outer skins (split wing) as shown in Fig 3.1a.
- 3.2 Located in the top corner of the outer wing skin is a gusset pop riveted to the wing itself. Drill these pop rivets and remove the gusset as illustrated in Fig 3.2a.



Fig 3.1a



Fig 3.2a

- 3.3 Mask the upper rear corner of the front wings. The square hole for the front roll cage leg should be marked using the front leg gripper/slave plate. The edges of the mounting plate should be aligned with the edge of the outer wing skin at the top and rear, with the slot at the bottom.
- 3.4 Mark all 4 holes in the front wing, then drill to 12mm before removing the centre section, creating a square hole.



Fig 3.4a



Fig 3.4b

- 3.5 On the vehicle there is a lower flange that runs rearwards under the doors. The edge of this flange should be cut away completely from just rearward of the hole for the retaining strap, all the way back to the hinge pillar. Leave 6mm (0.25") on the top of flange, i.e. cut 6mm (0.25") away from the bend. The corresponding material can now be cut out of the wing flange also.



Fig 3.5a

- 3.6 With the front wing supported on a work bench, locate the under wing support into position to achieve the best fit, the square mount should protrude through the square hole. Mount and tighten the gripper plate to ensure the support is positioned correctly. Drill a 3mm hole through both the lower part of the rear wing flange and under wing support. This should then be pop riveted to attach the two parts together.



Fig 3.6a



Fig 3.6b

- 3.7 To allow fitment of the lower chassis outrigger bracket you will first need to remove the long bolt that passes through the outrigger from front to rear. At this point you may find a selection of washers between the outrigger and the bulkhead, or on more recent vehicles a tube welded to the outrigger. If washers are present they should be removed to create sufficient clearance for the bracket. If a welded tube is present then it must be trimmed down to allow the bracket to drop into position.

- 3.8 The bolt can now be reinserted loosely; it will be tightened fully when the wing is back in position.

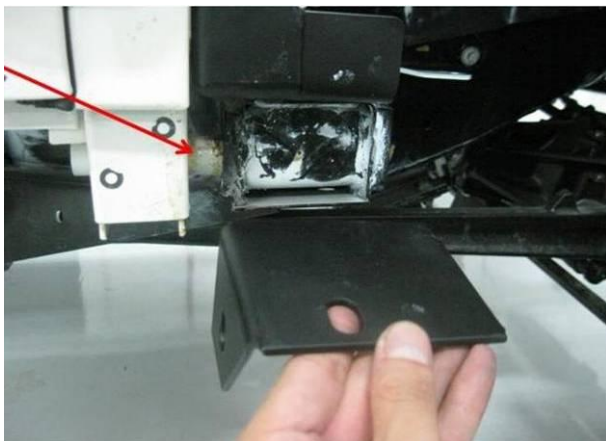


Fig 3.8a



Fig 3.8b

- 3.9 Replace the spire clips in the front bulkhead ('A' Post) with the 'J' nuts provided in the kit.



Fig 3.9a

- 3.10 Bolt the wings back onto the vehicle using the existing mounting positions as well as the new chassis mounting on the outrigger. You may find that there is a slight gap between the lower part of the wing bracket and the chassis bracket due to vehicle variances. If so we have supplied several M10 Heavy Penny washers which can be used to fill the gap if required.
- 3.11 The chassis front outrigger bolt can now be fully tightened.

Section 4 – Cage Installation

- 4.1 Remove all 6 gripper plates from the front wings, C hoop and D hoop mountings.
- 4.2 Apply copper slip to all stainless steel bolts (not included).
- 4.3 Locate the C hoop into position and insert the bolts loosely.
- 4.4 Locate the left hand front leg onto the wing support and into the front of C hoop. Insert but do not fully tighten bolts.

- 4.5 Position upper and lower screen rails and the roof connecting rail to front left leg. Insert but do not fully tighten bolts.
- 4.6 Locate right hand front leg onto front wing support, upper and lower screen rails and roof connecting rail. Insert but do not fully tighten bolts.
- 4.7 The D hoop can be positioned onto its mountings and the bolts inserted loosely.
- 4.8 The roof section of the roll cage has a small rack which should be mounted with the 2 small lamp brackets closest to the C hoop. There are 4 side rails that interconnect the C and D hoops. These side rails are the same so may be fitted in any of the locations. These should all be bolted loosely to hold them in place.
- 4.9 With all components installed, the next task is to tighten all bolts on the roll cage. Due to vehicle tolerances it is not uncommon for the cage to be sitting slightly to one side or another, so the order in which bolts are tightened is critical in the final cage alignment.
To correct any misalignment on the vehicle the external joints should all be tightened gradually whilst checking the cage is central on the vehicle when viewed from front/rear and from the side. In the side view it is important to ensure that the hoops are upright and that there is sufficient clearance between the cage and the vehicle body at all points.

The installation of your Safety Devices roll cage is now complete.

Section 5 – Roll Cage Maintenance

The roll cage should be kept clean and the fasteners checked regularly - if this is not carried out then you may find it difficult to remove the roll cage from the vehicle if required at some point. The roll cage should also be inspected for damage if in regular use.

Industrial coatings are no different to the paint on your car – they need cleaning and maintaining.

Accumulated dirt may affect the design life of the system, and any mechanical damage almost certainly will. Therefore regular inspections should take place and minor damage must be touched up. The roll cage is powder coated with zinc primer followed by a topcoat so does provide a hardwearing surface. Should you damage the surface and expose bare metal this needs to be repaired to prevent rust spreading under the powder coat.

Damaged areas must be clean and free of grease or rust. Dry sand the area with 600-grade paper until the metal is exposed. The area must be completely free of dust and cleaned with a non-aggressive solvent before proceeding. Spray zinc based primer onto the area and allow it to dry fully. An acrylic or polyurethane topcoat of matching colour (RAL9005 Black Satin) should then be applied and allowed to dry.

