1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

Mitsubishi Pajero 4th Generation Internal/External Roll Cage (U045) 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 22 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

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:

Section 1 – Front Under-wing Mount installation

1.1 Remove the bonnet with hinges, the front wings, the wiper panel, the wipers, the front bumper and the front lights and store safely for refitting later.

1.2 Ensure both doors are shut and locked to prevent them being opened during installation. Remove the bolt from the top door hinge which is furthest forward on the vehicle on both sides (Circled in red in Figure 1).

1.3 To aid fitment of the under-wing mounts to the vehicle, it is necessary to drill two 25mm holes through an inner wing section of the vehicle (Circled in yellow in Figure 1).

1.4 For the top hole in Figure 1, follow the measurements shown in Figure 3 to get the centre of the hole, this is 25mm from the bulkhead and 25mm from the inner wing. Once the

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

centre has been found, with a 25mm hole saw, drill all of the way through the top surface of the material.

Figure 1

Figure 2

1.5 For the bottom hole in Figure 1, follow the measurements shown in Figure 4 to get the centre of the hole. This is 30mm horizontally from the centre of the vertical slot and 75mm vertically from the centre of the horizontal slot. Once the centre has been found, with a 25mm hole saw, drill all of the way through the front surface of the material.

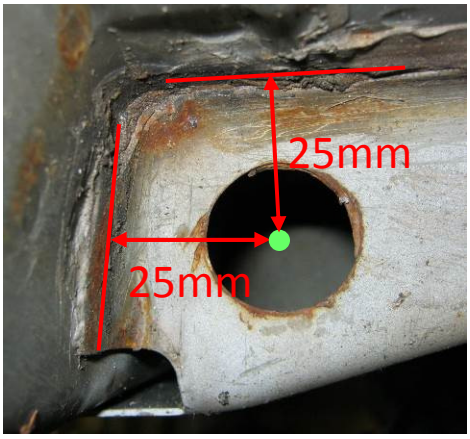


Figure 3

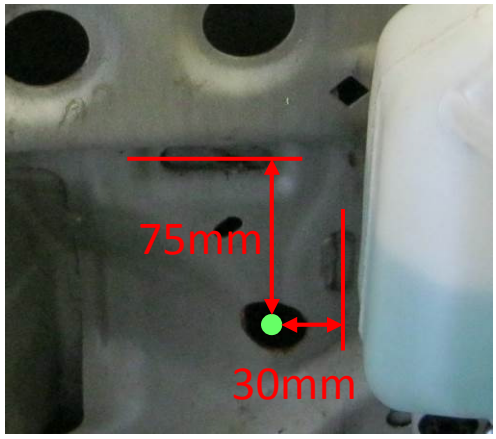


Figure 4

1.6 Once these holes have been drilled on both sides of the vehicle, obtain the first under-wing mount from the kit. Position it up against the inner wing panels of the vehicle so that the bushes on the back side of the under-wing mount slot into the newly drilled holes and also one of the original holes.

1.7 Ensure that the hole in the tab on the side of the under-wing mount lines up with hole on the door hinge where the bolt was removed from. Obtain an M8x25 bolt from the kit and place into the hole where the original was removed from the door hinge. Do not tighten this yet.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

1.8 Place two M8x20 bolts from the fitting kit into the top of the under-wing mount and into the original bonnet hinge mountings. Do not tighten these bolts but ensure that the under wing mount cannot move around (Figure 5).

Figure 5

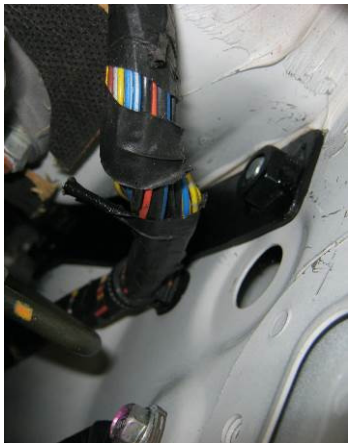


Figure 6

1.9 Obtain the single nut plate provided in the under-wing mount fitting kit. Pass one of the M10x80 bolts through a washer and into the rear most bushed hole on the under wing mount. On the inside of the vehicle, align the nut plate with the bolt. Thread the bolt into the nut plate until the nut plate is in contact with the inside of the wing of the vehicle but do not tighten.

1.10 Obtain the double nut plate provided in the under-wing mount fitting kit. Pass one of the M10x60 bolts through a washer and into one of the remaining two bushed holes on the under wing mount. On the inside of the vehicle, align the nut plate with the first bolt. Thread the bolt into the nut plate until the nut plate is in contact with the inside of the wing of the vehicle but do not tighten (Figure 6).

1.11 Pass a second M10x60 bolt through a washer and into the other remaining hole and into the nut plate on the inside of the wing but again do not tighten.

1.12 Repeat the processes to fit the under-wing mount to the other side of the vehicle.

1.13 Once all of the bolts are in position, refer to the beginning of these instructions and tighten all of the bolts up to 10Nm apart from the bolts in the top of the plates which will need to be removed and refitted when rebuilding the vehicle.

Section 2 – Legs and Roof Assembly installation

2.1 Before positioning any of the ROPS parts on the roof it is recommended to lay some cardboard over the entire roof surface to prevent any damage from scratches.

2.2 Bring the first leg to the vehicle and lay the rear end of the leg onto the cardboard on the roof of the vehicle.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

2.3 At the front of the vehicle, place the spacer plate on top of the mounting point on the under-wing mount as shown in the GA drawing then rest the leg foot plate on top of this spacer plate.

2.4 Ensure that the holes are aligned through the foot plate, spacer and the under wing mount. Pass an M10 bolt through a washer and into the rear most hole in the leg foot plate. This will go through the foot plate, through the spacer plate and into a captive nut on the underside of the under-wing mount.

2.5 Pass an M10 bolt through a washer and into the forward most hole in the leg foot plate. This will go through the foot plate and therefore through the spacer plate. On the underside of the under-wing mount plate, place another washer and an M10 nyloc nut onto the end of the thread. Do not tighten at this stage.

2.6 Through the slot on the vertical of the front leg foot plate, pass an M10 bolt through a washer and into the slot. This will thread through and into a captive nut on the other side of the under-wing mount plate. Again, do not tighten.

2.7 Bring the front section of roof of the ROPS onto the vehicle and align the two saddle brackets with their other half.

2.8 Ensure that the holes in the saddle bracket are aligned, and then place an M10x25 through an M10 flat washer and through both halves of the saddle bracket. On the underside of the saddle bracket, place another M10 flat washer onto the thread followed by loosely applying an M10 nyloc nut, again not tightening. Repeat for the other hole in the saddle bracket with another M10 bolt sequence.

2.9 Repeat the bolt process for the other saddle bracket on the leg ensuring that the front roof section is loosely bolted to the leg with the saddle brackets.

2.10 Bring the rear section of roof of the ROPS onto the vehicle and slot the squashed ends into the double ear bracket located on the cross rail of the front section. Place the saddle brackets underneath their other half to ensure the rear section is in the correct location.

2.11 Ensure that the holes in the saddle bracket are aligned, and then place an M10x25 through an M10 flat washer and through both halves of the saddle bracket. On the underside of the saddle bracket, place another M10 flat washer onto the thread followed by loosely applying an M10 nyloc nut, again not tightening. Repeat for the other hole in the saddle bracket with another M10 bolt sequence.

2.12 Repeat the bolt process for the other saddle bracket on the leg ensuring that the rear roof section is loosely bolted to the leg with the saddle brackets.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

2.13 Pass an M12 bolt through a washer and into each of the holes in the double ear bracket and through the squashed ends on the tubes. On the underside, place a washer and an M12 nyloc nut but do not tighten at this stage.

2.14 Bring the second leg to the vehicle and lay the rear end of the leg onto the cardboard on the roof of the vehicle.

2.15 At the front of the vehicle, place the spacer plate on top of the mounting point on the under-wing mount as shown in the GA drawing then rest the leg foot plate on top of this spacer plate.

2.16 Ensure that the holes are aligned through the foot plate, spacer and the under wing mount. Pass an M10 bolt through a washer and into the rear most hole in the leg foot plate. This will go through the foot plate, through the spacer plate and into a captive nut on the underside of the under-wing mount.

2.17 Pass an M10 bolt through a washer and into the forward most hole in the leg foot plate. This will go through the foot plate and therefore through the spacer plate. On the underside of the under-wing mount plate, place another washer and an M10 nyloc nut onto the end of the thread. Do not tighten at this stage.

2.18 Through the slot on the vertical of the front leg foot plate, pass an M10 bolt through a washer and into the slot. This will thread through and into a captive nut on the other side of the under-wing mount plate. Again, do not tighten.

2.19 Ensure that the holes in the saddle brackets are aligned, and then place an M10x25 through an M10 flat washer and through both halves of the saddle bracket. On the underside of the saddle bracket, place another M10 flat washer onto the thread followed by loosely applying an M10 nyloc nut, again not tightening. Repeat for the other hole in the first saddle bracket with another M10 bolt sequence.

2.20 Repeat the bolt process for the other saddle brackets along the leg ensuring that the roof sections are now loosely bolted to both legs using the saddle brackets.

2.21 Go around all of the bolts that have just been put into the roof and leg sections and tighten them all to 10Nm to ensure the roll cage is in a rigid position and cannot float. When tightening the saddle brackets, ensure this is done evenly as shown in Figure 7.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

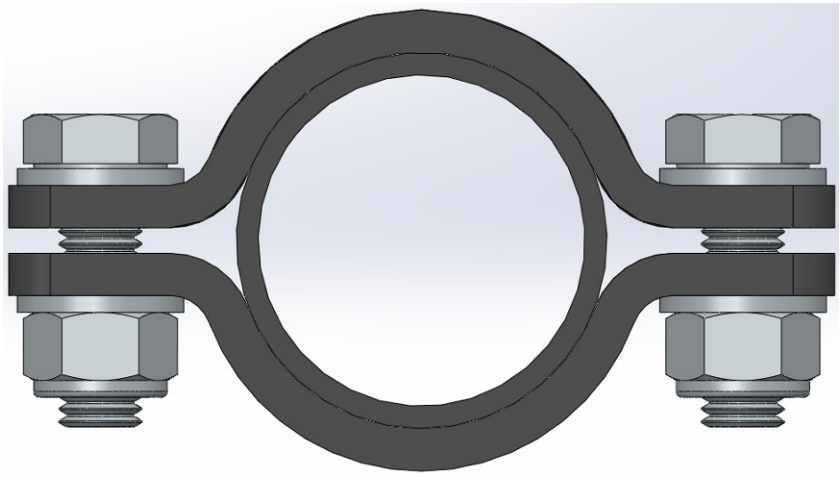


Figure 7

2.22 Measure from the outside of the roof plate to the edge of the vehicle on both sides. These need to be equal so if they are not, carefully manoeuvre the roof section across the vehicle until they are equal both sides without scratching the roof of the vehicle.

2.23 Moving to the rear of the vehicle, inside the rear door, drop the headlining the whole way across the vehicle to provide access to the inner roof skin.

2.24 On the roof of the vehicle, mark the centre of each of the three holes in each of the roof mount plates at the rear of the vehicle and indent the centre using a centre punch.

2.25 Unbolt the left leg from the vehicle, starting from the front and working back along the saddle brackets.

2.26 Remove the leg from the vehicle and store safely to avoid damaging the finish. Carefully rest the centre sections of the roof assembly back down onto the cardboard.

2.27 Move back to the rear of the vehicle and drill a 5mm pilot hole through the centre of each marked holes ensuring the drill passes through both layers of roof skin but does not damage the headlining of the vehicle.

2.28 Using a 19mm hole saw in the two rear most pilot holes, cut through the first layer of roof skin only (circled in red in Figure 8), ensuring that the 6mm hole remains in the inner skin.

2.29 Using a 10mm drill bit, drill all of the way through the front pilot hole to enlarge it in both roof skins. Also, drill through the centre of the two larger holes at the rear to open the 6mm holes in the inner roof skin out to 10mm (Figure 8).

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

Figure 8

Figure 9

2.30 From the front leg fitting kit, obtain one of the angle cut spacers (Figure 9) and place it in the outside hole which was cut using the 19mm hole saw. Rotate the spacer in the hole until the angle in the spacer follows the line of the body.

2.31 Obtain one of the short 5mm spacers from the front leg fitting kit. Place it into the remaining rear hole and ensure it is resting on top of the inner skin.

Figure 10

Figure 11

2.32 Refit the left leg to the vehicle, starting by bolting it back to the under-wing mount and spacer plate. Next, work rearwards along the leg placing the bolts, washers and nuts back into their locations to secure the saddle brackets.

2.33 Starting at the front of the vehicle, tighten all of these bolts up to 10Nm, referring back to Figure 7 when tightening the saddle bracket bolts up.

2.34 Unbolt the right leg from the vehicle, starting from the front and working back along the saddle brackets.

2.35 Remove the leg from the vehicle and store safely to avoid damaging the finish. Carefully rest the centre sections of the roof assembly back down onto the cardboard.

2.36 Move back to the rear of the vehicle and drill a 6mm pilot hole through the centre of each marked holes ensuring the drill passes through both layers of roof skin but does not damage the headlining of the vehicle.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

2.37 Using a 19mm hole saw in the two rear most pilot holes, cut through the first layer of roof skin only (circled in red in Figure 8), ensuring that the 6mm hole remains in the inner skin.

2.38 Using a 10mm drill bit, drill all of the way through the front pilot hole to enlarge it in both roof skins. Also, drill through the centre of the two larger holes at the rear to open the 6mm holes in the inner roof skin out to 10mm (Figure 8).

2.39 From the front leg fitting kit, obtain one of the angle cut spacers (Figure 9) and place it in the outside hole which was cut using the 19mm hole saw. Rotate the spacer in the hole until the angle in the spacer follows the line of the body.

2.40 Obtain one of the short 5mm spacers from the front leg fitting kit. Place it into the remaining rear hole and ensure it is resting on top of the inner skin.

2.41 Refit the left leg to the vehicle, starting by bolting it back to the under-wing mount and spacer plate. Next, work rearwards along the leg placing the bolts, washers and nuts back into their locations to secure the saddle brackets.

2.42 Starting at the front of the vehicle, tighten all of these bolts up to 10Nm, referring back to Figure 7 when tightening the saddle bracket bolts up.

2.43 Ensure that the roll cage is in the correct position on the roof of the vehicle. Gently lift the rear end of the cage, remove the cardboard from underneath and lower it back down carefully into the correct position.

2.44 Through each of the holes in the rear roof mounting plate on the left hand side, pass an M10 bolt through a washer and into each of the holes. From the leg fitting kit, obtain the flat rectangular nut plate and used this to thread the front bolt into. Thread this into the nut until the plate rises up against the inner skin of the vehicle but do not tighten at this stage.

2.45 Onto each of the rear bolts, fasten an angled nut plate onto the underside and again, thread the bolt into the nut until the plate comes up against the inner roof skin but do not tighten.

2.46 Repeat this process for the rear roof mounting plate on the right hand side so that all of the bolts are mounted in the plates and the legs are mounted to the vehicle.

Section 3 – Internal ‘B’ Hoop installation

3.1 Remove the seats, upper and lower front seat belt mounting bolts, lift the carpet and fold over centre console.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

3.2 Drop the headlining across the whole width of the vehicle where the B hoop will sit and remove the sound deadening inside this section of the roof. Replace the headlining into its original position once completed ensuring it is tight to the roof of the vehicle.

3.3 Place the B hoop into the vehicle so that the foot plates go onto the metal of the vehicle and insert the top seat belt bolts through the brackets on the hoop to secure it but do not fully tighten. Settle the B hoop inside the vehicle so that the foot plates sit around the contours of the chassis in the correct locations.

3.4 Place the cross brace into the vehicle and fasten to the hoop using the lap joints and M10 shoulder bolts provided in the fitting kit and tighten to their final torque setting. Pierce through each of the five holes in the B hoop cross foot plates to make a centre hole in the carpet.

3.5 Now that the internal B hoop is secure inside the vehicle, move to the outside. Mark the centre of one of the B hoop roof bracket holes and centre punch.

3.6 Using a 5mm drill bit, drill a pilot hole through the centre of the bracket, through the roof, the headlining and finally through the centre of the slotted bracket.

3.7 Move to the inside of the vehicle and check the alignment of the hole from the external ROPS to the slotted bracket on the internal hoop. Adjust the hoop if there are any discrepancies in the centres of the drilled hole to the brackets.

3.8 Move back to the outside of the vehicle and mark, centre punch then pilot drill the seven remaining B hoop roof bracket holes with the 5mm pilot drill bit.

3.9 Back inside the vehicle, mark the centre of the holes in each base plate. Centre punch all six of these holes.

3.10 Remove the lap joint bolts and take the cross brace out of the vehicle. Remove the seat belt bolts from the hoop and remove the hoop totally from the vehicle and store safely to avoid damaging the powder coat. Using the 5mm drill bit, pilot drill the 3 holes which were marked on each side through the B hoop base plates all of the way through to the underside of the vehicle.

3.11 Ensure that the pilot holes through the headlining are clear, use a ¾” holesaw from inside to open out the holes in the roof (Figure 12). Only go through the headlining and metal work underneath until you reach the outer roof skin, do not drill through this.

3.12 Using a long 19mm drill bit, drill vertically through the two holes on the top surface of the metal work, underneath where circled in red in Figure 13 on the B hoop foot plate. Continue drilling through the corrugated section until just the bottom layer of metal which forms the sill is left. Ensure that the tip of the drill hits this to give you a small hole in the sill.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

Figure 12

Figure 13

3.13 Moving to the roof of the vehicle, use an 11mm drill bit to drill through all of the 8 holes in the B hoop roof brackets. Ensure that the drill bit passes all of the way through the outer roof skin and inter the open section underneath.

3.14 Back inside the vehicle, using the 11mm drill bit, drill horizontally through the hole on the side surfaces of the metal work, underneath where circled in green in Figure 13 on the B hoop foot plate.

3.15 From underneath the vehicle, use the 11mm drill bit to drill up through each location where there is a small hole from step 3.12.

3.16 Inside the vehicle, through each of the five locations pierced through the cross brace foot plate (Figure 14), centre punch each location to give a centre for the holes. Using a 5mm drill bit, pilot drill each of the five locations.

3.17 Using an 11mm drill bit, drill through the four locations underneath where circled in red in figure 14 all of the way through to the underside of the vehicle.

3.18 Using the long 19mm drill bit, drill all of the way through the carpet and chassis to the last layer of material on underside of the vehicle where circled in green in Figure 14. Ensure to again make a small hole through the final layer for a centre mark.

3.19 From the underside of the vehicle, using the 11mm drill bit, drill up through this location and into the hole above.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

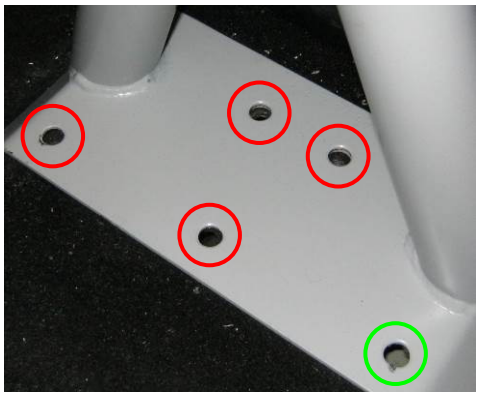


Figure 14

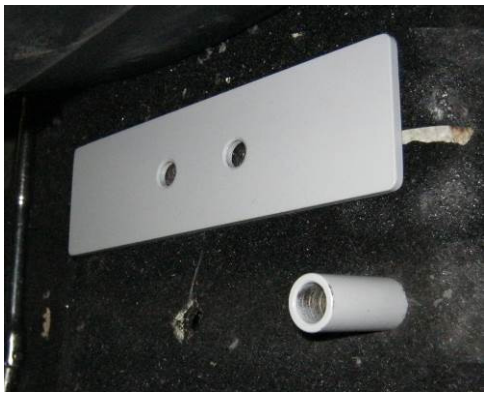


Figure 15

3.20 From the B hoop fitting kit, obtain the 19x44mm spacer tube and the 210x60mm spacer plate with two holes as shown in Figure 15.

3.21 Slot the spacer tube into the hole ensuring that the tube is pushed right down inside the hole and position the spacer plate over the two front holes on top of the carpet.

3.22 From the B hoop fitting kit, obtain the four 19x105mm spacer tubes. Slot one of these into each of the vertical holes that were drilled for the B hoop base plates, circled in red in Figure 13.

3.23 Obtain the four roof spacer plates from the same fitting kit. Ensure that there is two stamped ‘BH OUT’ and two stamped ‘BH IN’.

3.24 Position the two BH OUT roof spacer plates into the two outer pairs of holes in the roof from the inside. Push them up inside the holes until it will rise no further. Repeat this with the two BH IN spacer plates in the inner two pairs of holes so that all four roof spacer plates are sitting in the holes in the roof.

3.25 Bring the B hoop back to the vehicle and reposition in the same location. Ensure when sliding the hoop underneath the roof spacers to tilt and move the hoop slowly to avoid damaging the finish.

3.26 By making slight adjustments to the hoops position, ensure that all of the holes in the hoop base plates align with the holes in the vehicle and that all of the holes in the in the roof spacer plates align with the slots in the brackets on the hoop.

3.27 Bring the cross brace back into position in the centre of the vehicle. Ensure that the cross brace is sitting on top of the carpet and on top of the spacer plate and bush with all of the holes aligned.

3.28 With the holes in the lap joints aligned, use the four M10 shoulder bolts to attach the cross brace to the hoop. Tighten these to their final torque setting.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

3.29 Obtain the M10 bolts, washers and nyloc nuts from the B hoop fitting kit for the through-roof mounting. Apply sealer generously to both the roof brackets (Figure 16) and the underside of the bolt head (Figure 17) to prevent leaking into the vehicle.

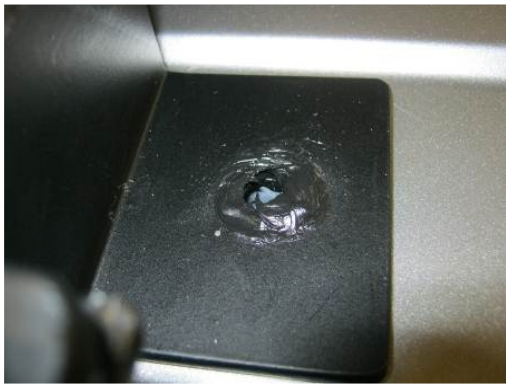


Figure 16

Figure 17

3.30 Pass one of the sealer coated bolts through a washer and through the hole in the roof bracket. The bolt will then pass through the roof spacer and the thread will be visible on the inside of the vehicle. On this, place another washer and a nyloc nut. Ensure the nut it on the thread but do not tighten at this stage.

3.31 Repeat this for all of the other 7 roof bolts until the B hoop is attached to the external roll cage through the roof. Leave all nuts threaded but loose.

3.32 From the fitting kit, locate the four M10x130mm bolts, the associating washers and nyloc nuts and the two 135x40mm two holed backing plates which have a cut out in the side. Pass a bolt through a washer and into each one of the vertical holes in the B hoop foot plate (red in Figure 13).

3.33 On the underside of the vehicle, place one of the backing plates onto the two bolts followed by a washer and nyloc nut onto each thread (Figure 18). Do not tighten these bolt assemblies yet. Repeat for the other side of the vehicle.

Figure 18

Figure 19

3.34 Through the horizontal holes in the B hoop foot plates (green in Figure 13), pass an M10 bolt through a washer and through the foot plate.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

3.35 On the underside of the vehicle, slide one of the bent single hole plates (Figure 19) found in the B hoop fitting kit onto the thread followed by a washer and a nyloc nut. Repeat for the other side of the vehicle ensuring the B hoop is now bolted in position (Figure 20) but again, leave these bolt assemblies loose.

Figure 20

Figure 21

3.36 Moving to the centre of the vehicle, ensure that the holes on the cross brace base plate (Figure 21) are aligned with the holes in the spacer plate, the spacer bush and the holes drilled in the vehicle.

3.37 Through the front two holes of the cross brace base plate, pass an M10 bolt through a washer and into these holes.

3.38 From the B hoop fitting kit, retrieve the 30x70mm two holed backing plate.

3.39 Underneath the vehicle, remove the bolt highlighted in Figure 22.

Figure 22

Figure 23

3.40 Slide the 30x70mm backing plate onto the ends of the two bolts followed by a washer and a nyloc nut on each (Figure 23). Ensure these are attached but do not tighten yet.

3.41 From the B hoop fitting kit, retrieve the 120x70mm backing plate with two holes in.

3.42 Through the two holes circled in red in figure 24, pass an M10 bolt through a washer and through each of the holes.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

3.43 On the underside of the vehicle, slide the backing plate onto the ends of the two bolts followed by a washer and a nyloc nut on each (Figure 25). Ensure these are attached but do not tighten yet.

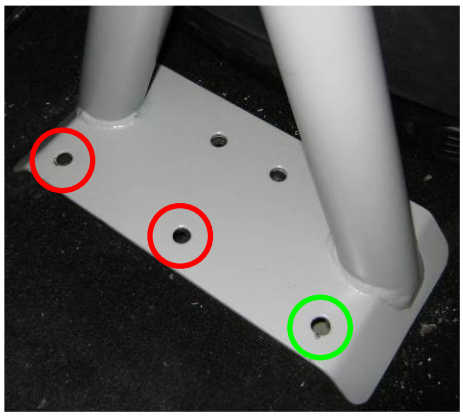


Figure 24

Figure 25

3.44 From the B hoop fitting kit, retrieve the 39x40mm backing plate with one hole in that has a section removed from the edge of the plate.

3.45 Through the hole circled in green in figure 24, pass a longer M10 bolt through a washer and through each of the holes.

3.46 On the underside of the vehicle, slide the backing plate onto the end of the bolt making sure that the section removed from the plate fits around the raised section on the chassis. Follow this with a washer and a nyloc nut on the end (Figure 26). Ensure these are attached but do not tighten yet.

Figure 26

Figure 27

3.47 Replace the bolt circled in Figure 27 and tighten to the manufacturers' original torque setting, ensuring that all other bolts and nuts are left loose until the completion of the installation.

Section 4 - Internal 'C' Hoop and Backstays installation

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

4.1 Remove the rear seats, all sections of the rear trim and the rear carpet and store safely.

4.2 Drop the headlining across the whole width of the vehicle where the C hoop will sit and remove the sound deadening inside this section of the roof. Replace the headlining into its original position once completed ensuring it is tight to the roof of the vehicle.

4.3 On the outside of the vehicle, mark in the centre of each of the C hoop roof brackets. Make an indentation in this centre position using a centre punch.

4.4 Using a 5mm drill bit, drill a pilot hole through the centre of each of the brackets (Figure 28), through the roof and finally through the headlining. Make sure the centre through the headlining is clearly visible inside the vehicle.

4.5 Inside the vehicle, use a ¾" holesaw to open out the holes in the roof (Figure 29). Only go through the headlining and metal work underneath until you reach the outer roof skin, do not drill through this.

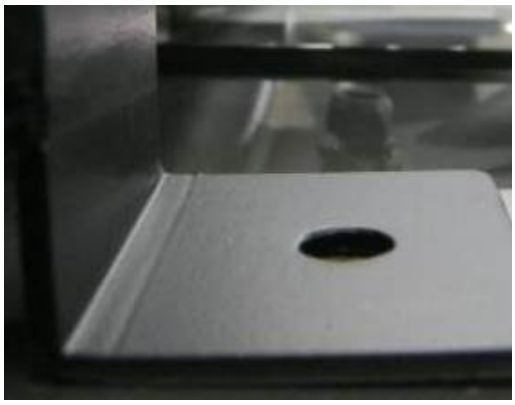


Figure 28

Figure 29

4.6 Moving again to the outside of the vehicle, drill through each of the roof brackets with an 11mm drill bit, ensuring that it passes through the roof skin and into the cavity below.

4.7 Obtain the three roof spacer plates from the C hoop fitting kit. Place the four holed spacer plate marked 'CH IN' into the centre four holes in the roof, ensuring that the plate is pushed up as far as possible against the headlining. Place the two spacer plates marked 'CH OUT' into the outer pairs of holes and again, ensure that the plate is pushed up against the headlining.

4.8 Place the C hoop into the vehicle, taking care not to damage any of the finish on the hoop. Align the slots on the hoop brackets with the holes in the roof spacers.

4.9 Obtain the two C hoop base plates from the kit. Bolt these to the bottom of the C hoop using the lap joints and lap joint shoulder bolts provided so that they are resting on the wheel arch of the vehicle. Tighten these shoulder bolts to their final torque setting once they are both in on each side.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

4.10 Ensure that the hoop is still aligned with the holes in the roof and the foot plate resting securely on the wheel arch.

4.11 From the outside of the vehicle, pass an M10 bolt through a washer and through one of the roof brackets. On the inside of the vehicle, place a washer and M10 nyloc nut onto the end of the visible thread through the roof.

4.12 Repeat the process of passing the M10 bolt through a washer and through the roof for each of the remaining holes on the roof of the vehicle. Place a washer and M10 nyloc nut onto the end of the visible threads through the roof. Tighten all of these bolts to 10Nm to ensure that the C hoop is correctly located in the vehicle.

4.13 Obtain the two backstays from the kit. Place the first backstay into the vehicle through the back door and align the lap joints correctly. Pass an M10 shoulder bolt into each of the holes, manipulating the backstay if necessary. Tighten these to the final torque setting.

4.14 Place the second backstay into the vehicle, align the lap joint holes and place an M10 shoulder bolt into each of the holes. Tighten these to their final torque setting.

4.15 Mark through the centre of each of the holes in the C hoop base plates and the backstay foot plates. Using a centre punch, make an indentation in the centre of all of the 14 locations.

4.16 Unbolt the backstays from the C hoop and remove from the vehicle. Unbolt the C hoop base plates from the hoop and remove it from the vehicle. Store all of these components safely to protect the finish.

4.17 Remove the remaining section of the C hoop from the vehicle and store safely. Use an 11mm drill bit to drill through each of the 14 locations (Figure 30). When drilling through the surfaces, ensure the drill remains perpendicular to the surface being drilled and that the drill bit passes all of the way through to the underside of the vehicle (Figure 31).

Figure 30

Figure 31

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

4.18 From the backstay fitting kit, obtain the two backing plates which match the foot plates on the backstays. Place them on the underside of the vehicle in the same orientation that the backstay foot plates were inside the vehicle.

4.19 Pass a bolt through each of the three holes drilled in the floor pan of the vehicle. Slide the first backing plate onto these bolts on the underside of the vehicle and secure in position using a washer and a nyloc nut.

4.20 Mark through the centre of the remaining un-drilled hole and centre punch this centre.

4.21 Repeat this process for the opposite side of the vehicle so that the two un-drilled holes are now marked and centre punched.

4.22 Using the 11mm drill bit, drill from the underside of the vehicle through the two new locations. Ensure that the drill bit passes all of the way through and into the vehicle.

4.23 Remove the three sets of bolts, nuts and washers from each side of the rear of the vehicle and store the backing plates safely.

Figure 32

Figure 33

4.24 Bring the C hoop base plates back into the vehicle. Pass an M10 bolt through a washer and through each of the holes in the base plate (Figure 32).

4.25 Obtain the two backing plates (Figure 33) from the C hoop fitting kit which have a large cut out in one end. On the underside of the vehicle, place one of these backing plates onto the exposed threads ensuring that the cut out surrounds the existing bolt circled in Figure 33.

4.26 Once the plate is correctly positioned, pass a washer onto each of the exposed threads followed by an M10 nyloc nut onto each.

4.27 Repeat this process for the C hoop base plate and backing plate on the other side of the vehicle. Tighten all 8 of these bolts up to their final torque setting as suggested at the beginning of these instructions.

4.28 Bring the backstays back into the vehicle and align them with the holes drilled in the base of the vehicle. On the underside of the vehicle, position the backstay backing plates as they

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

were previously. From underneath the vehicle, pass an M10 bolt through a washer and into the backing plate. This should then pass through the floor of the vehicle and into the welded nuts on the foot plate of the backstay.

4.29 Repeat this process for all of the other bolts and then the other backstay so that all 8 bolts are in position. Ensure that all bolts are securely in position. Referring to the beginning of these instructions, tighten all of the bolts in the backstay bases up to their final torque settings.

4.30 Bring both large sections of the rear trim back to the vehicle. Create templates to mark through where the tube of the hoop and the backstay are going to pass through each section (Figure 34). Mark through each hole onto the trim below.

Figure 34

Figure 35

4.31 Using a drill and an air saw, cut away the sections marked so that each section of trim has two holes in it, one for the backstay and one for the C hoop bases (Figure 35).

4.32 Once both sections of trim have been cut, slide one section into the vehicle and over the two sections of tube which are bolted into the vehicle on that side.

4.33 Repeat for the trim on the other side of the vehicle so that both sections are back in but do not fasten into position at this stage.

4.34 Return the C hoop to the vehicle and align the lap joints with their other halves, located on the backstays and C hoop bases.

4.35 Place an M10 shoulder bolt into each of these lap joint holes. Once all have been correctly located, tighten each of the bolts to 10Nm to ensure the C hoop is positioned in the vehicle correctly.

4.36 Do not pass any bolts through the roof for the C hoop at this stage.

Section 5 – Completing the installation

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

5.1 Remove all bolts that are passed through the roof and store these appropriately to ensure their original locations will be maintained. Ensure all backing plates are also securely stored to avoid losing them. Ensure that the front under-wing mount bolts are all loosened off also.

5.2 Raise the rear section of the ROPS just off of the roof of the vehicle and using a block of wood across the width of the vehicle, rest the roof section of the ROPS in this elevated position.

5.3 Apply a layer of polyurethane sealant around the hole in the roof brackets on top of the vehicle (Figure 36), a layer underneath the roof mountings at the rear and a layer of the same polyurethane sealant underneath the head of each of the bolts (Figure 37).

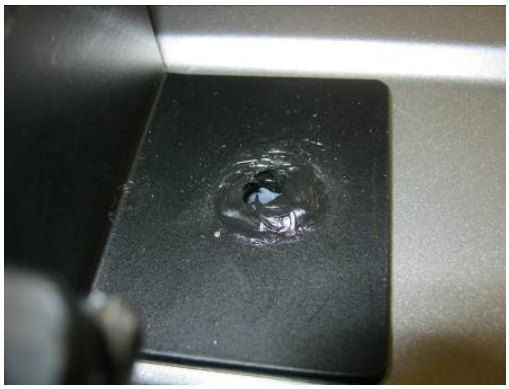


Figure 36

Figure 37

5.4 Ensuring that all of the holes are now generously layered with sealant, raise the rear of the ROPS and remove the wood from the roof. Slowly lower the ROPS back down onto the roof and align appropriately.

5.5 Repeat the previous steps of passing the bolts through the roof of the vehicle and using the appropriate washer and nuts, locate the ROPS back into position, aligning with the fitted internal B and C hoop.

5.6 Ensure that the backing plates at the rear of the vehicle return to their original locations using the bolts removed from these rear through-roof mountings.

5.7 Go around the whole vehicle and check that all of the bolts have now been installed into the vehicle. With a torque wrench set to 10Nm, tighten every bolt on the vehicle to ensure they are all started. It is critical that the saddle brackets are tightened evenly on both sides so that the gap between the two is the same.

5.8 Once all of the nut and bolt assemblies around the vehicle are tightened to 10Nm, refer to the torque settings at the beginning of these fitting instructions and evenly tighten the all of the bolts up to their final specific torque values.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

5.9 Within each fitting kit, there will be nut caps. Go round the vehicle and where there is a nut and/or bolt exposed, place a nut cap over the end, black nut caps on the outside of the vehicle and grey on the inside of the vehicle. Nut caps do not go underneath the vehicle.

5.10 Refit all parts removed from the front of the vehicle at the beginning of the installation apart from the front wings.

5.11 Print out the front wing template, located at the end of these fitting instructions. Place the template onto the first front wing ensuring all edges are aligned and mark the shape to be cut out onto the wing.

5.12 Using a pair of tin snips, carefully cut inside the marked shape. Do not cut all the way to the edges of the shape in one go to begin with as there may be slight variance in the wing between vehicles.

5.13 Apply a layer of masking tape to the roll over protection system to avoid damaging the finish when the wing is offered up to the vehicle.

5.14 Offer the wing up to the vehicle to check fitment of first cut (Figure 37). Ideally there should be a 2-3mm gap all of the way around between the cut edge and the roll over protection system.

5.15 Remove the wing again and take away all of the masking tape placed on the roll over protection system. Primer and paint the edge of the cut wing before applying the edging material onto the cut edges.

5.16 Repeat for the wing on the other side, turning the template over for the other side of the vehicle and refit the front wings to the vehicle.

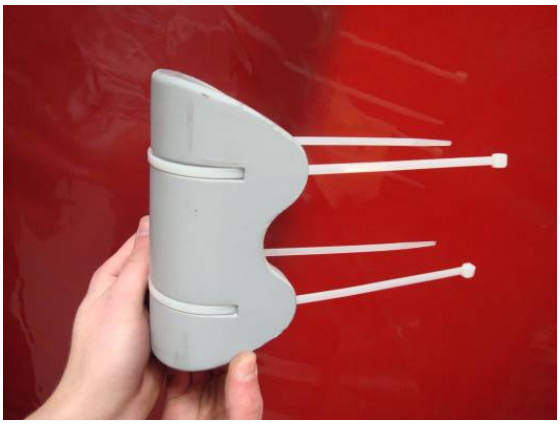
5.17 The interior of the vehicle can now be re-assembled and fastened back into position securely ensuring that all trim misses the hoop and roof linings are fastened back into position where dropped previously.

Section 6 - Padding Installation (if purchased)

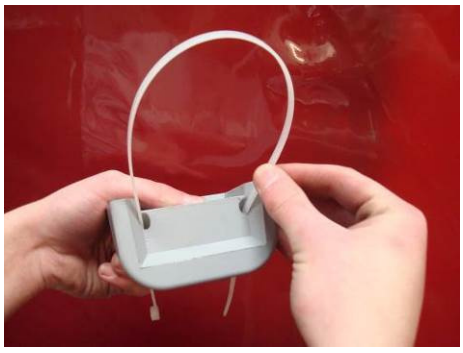
Padding lengths should be fitted to the roll cage using Sikaflex or a similar strength adhesive. The starting point is normally a single length applied in the centre of the B hoop (behind the driver/passenger) and then work down the hoop in both directions towards the floor. The X brace (if present) also needs to be padded along its full length.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

Saddle bracket covers should be fitted over any internal tubes joining together using 2 cable ties as shown in the diagram below. Ensure that the padding lengths are fitted as close to the joint as possible before installing the covers - this will ensure maximum protection.



Roof blocks come in both single and double sizes as they are designed to fit two different types of roof mounting brackets that may be found on your roll cage. Both of them attach in the same way utilising a single cable tie through the holes provided and then around the roof bracket itself. Please remove any nut caps (if fitted) before fitting these roof blocks.



Once installed into position, the cable tie should be tightened fully to one side and then trimmed as shown in the photos below.

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524

Section 7 – 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.

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

1 Enterprise Court
Studlands Park Avenue
Newmarket
Suffolk
CB8 7EP
Tel: 01638 560524