

# GROUP TWO

## STEERING AND PEDALS - LHD

### Assemblies included In this group: -

2:1	K3601205AC	STEERING COLUMN
2:2	K3601204AA	STEERING RACK
2:3	K3601211PA	PEDAL BOX

Tools required for assembly of this group: -	Qty
2mm Allen Key	1
13mm Spanner	1
6mm Allen Key	1
Torque Wrench with range 8 - 50 Nm	1
13mm Socket to fit torque wrench	1
Vernier Calliper or Measuring Tape (mm)	1
Craft Knife	1



Components in this assembly		Qty	Part Number
i	Bolt M8x31	6	M3101353AA
ii	Upper steering shaft	1	M3151071AD
iii	Steering shaft upper bearing retainer	1	M3871040AA
iv	Cap screw M8x20	4	B5358016AA
v	Washer 08mm flat	6	B5358088AA
vi	Nut M8 Nyloc	10	B5358092AA
vii	Bearing	2	B5451711AA
viii	Lower steering shaft bearing housing	1	B5451718AA
ix	Lower steering shaft	1	M3101361AB
x	Centre steering shaft	1	M3101362AA
xi	Upper steering shaft bearing housing	1	M3101381AA
xii	Universal joint - pinion shaft	1	M3101390AA
xiii	Universal joint	2	M3101459AA

### Procedure

**1.** Offer the upper steering shaft to the chassis by passing the small end (short spline) through the bearing retaining bracket attached to the chassis member at the front of the pedal / foot box.



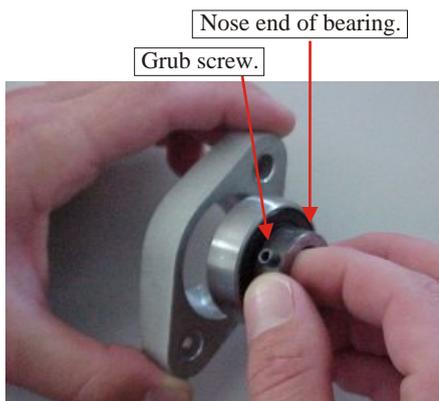
**2.** Place the bearing retainer plate over the top end of the shaft and slide it down to meet the bracket attached to the chassis member.



**3.** Slide the top end of the steering shaft back up through the steering lock housing and top nylon bush.



**4.** Fit the upper shaft bearing into the aluminium bearing housing as illustrated.



**5.** Place the bearing in its housing over the end of the shaft protruding from the front of the pedal / foot box with the grub screw / nose end of the bearing facing the dashboard.

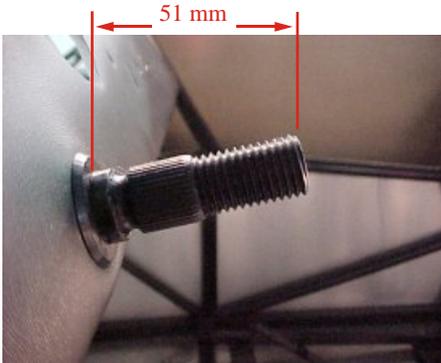


**6.** Use two M8x20 cap screws, flat washers and Nyloc nuts to bolt the bearing housing, mounting bracket and bearing retainer plate together. **Torque to 11 (eleven) Nm.**



## Steering Column Procedure cont.

7. Position the upper shaft to protrude 51mm from the thrust face of the nylon bush in the steering lock housing.



8. Lock the shaft in position by tightening the two grub screws on the nose of the upper shaft bearing.



In the steps that follow, the three universal joints will be installed. It is important to note that not all three are identical. One universal joint has a wider spline at one end only. This universal joint, for the sake of installation, is called the 3rd universal joint and is used to connect the lower steering shaft to the steering rack pinion. The other two identical universal joints are called the 1st and 2nd.

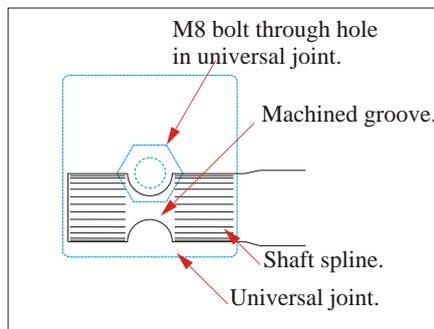


Although all M8x31 bolts and their respective M8 Nyloc nuts are fitted to the universal joints as they are placed in position, they must not be tightened.

Tightening of the universal joint bolts and nuts is done once both the steering column and steering rack installation procedures have been completed. This process is described at the end of 2:2.



The shaft splines have a groove machined in their mid section to allow the M8 bolt passing through the universal joint shoulder to locate the shafts in position.



9. Using a M8x31 bolt and Nyloc nut fit one of the two identical universal joints to the spline on the end of the upper steering shaft protruding through the foot box. (This will be called the 1st universal joint.)



10. Fit the centre steering shaft (235mm long) to the open end of the 1st universal joint using another M8x31 bolt and Nyloc nut.



11. Using an M8x31 bolt and Nyloc nut, fit the 2nd identical universal joint to the end of the centre steering shaft.



Universal joints attached to the same shaft must be aligned so that the connecting ends form a mirror image of each other as pictured below.



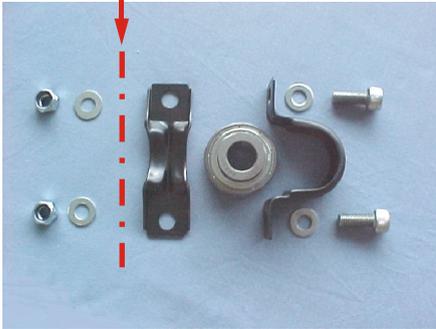
## Steering Column Procedure cont.

12. Using two M8x31 cap-screws, four M8 washers and two Nyloc nuts, fit the second bearing into the bearing housing and then to the bracket welded to the left hand chassis members.



**Make sure the grub screw / nose end of the bearing is facing towards the dashboard.**

Chassis member position



**Do not fully tighten the mounting bolts, this will be done after connection to the steering rack in section 2:2.**

13. Slide the narrow machined end of the lower steering shaft (260mm long) up through the bearing and into the 2nd universal joint.



**Do not insert the M8x31 bolt and its Nyloc nut. This will be done after connection of the steering rack in section 2:2.**

14. Using the end with the fine spline, fit the 3rd universal joint to the opposite end of the lower steering shaft . Attach with one M8x31 bolt and Nyloc nut but do not tighten.



**Again make sure that the 3rd universal joint is aligned with the end of the 2nd universal joint connected to the same shaft. Refer to the note discussing this at the end of the previous page.**



Components in this assembly		Qty	Part Number
i	Capscrew M8 x 100 S/S	4	B5358052AA
ii	Washer 8mm flat	4	B5358088AA
iii	Nut M8 nyloc	4	B5358092AA
iv	Sleeve rack mounting	2	M3851175AA
v	Steering rack mounting	2	M3101021AA
vi	Spacer rack mounting	2	M3251006AA
vii	Steering rack	1	M3101352AA

### Procedure

1. Feed the steering rack through the cut-outs in the front of the chassis as illustrated below.

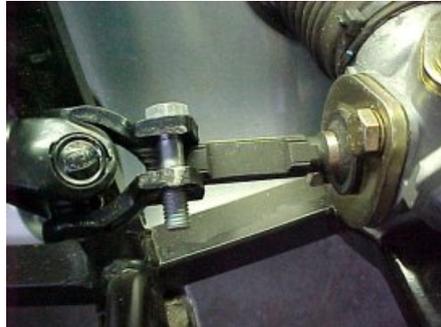


2. Insert the rack pinion into the 3rd Universal joint fitted in the previous section. Make sure the bolt holes of the Universal Joint align with the flat surface of the pinion to enable easy insertion of the M8x31 bolt. This locks the Pinion in the Universal joint.



**Place the M8x31 bolt and M8 Nyloc nut into position through the Universal Joint, But Do not tighten at this stage.**

3. Place the lower halves of the aluminium steering rack mountings (The half without the Embossed BIRKIN logo) under the steering rack and onto the rack platform in the positions illustrated below.

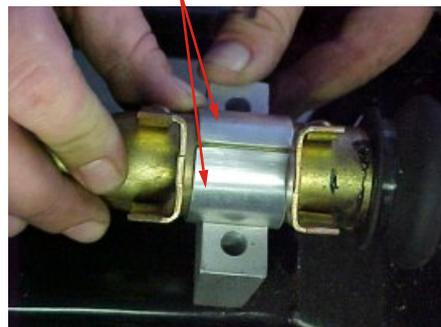


**The rack mountings come in matched pairs indicated by the numbering on their sides.**

4. Fit the two halves of the rack mounting sleeve in the position illustrated below.

5. Fit the two top halves of the rack mountings.

#### Two halves of the Rack Sleeve



## Steering Rack Procedure Continued.

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6. Fit the four M8x100 rack mounting cap screws, washers, spacer plates and Nyloc nuts to the rack mountings as indicated below.

7. Ensure the rack pinion and lower steering shaft form a straight line when viewed from the side. Then torque the rack mounting cap screws to 28 (twenty eight) Nm.



8. Fit the M8x31 bolt and its Nyloc nut, not attached during section 2:1, to the end of the 2nd universal joint connecting the lower steering shaft.

9. Torque all six universal joint bolts to 11(eleven) Nm.

10. Torque the two M8x20 cap screws of the 2nd bearing housing attached during section 2:1 to 11(eleven) Nm. On the same bearing, tighten the grub screws on its nose.



The installation of the steering column and rack is now complete. The bolts, cap screws and grub screws will not need to be loosened at any further stage however, should it be necessary to loosen any of the above, it is important to note the following:

1. It is advisable with any Nyloc nut, once it has been torqued and then loosened, it should not be reused and must be replaced with a new Nyloc nut.
  2. When re-tightening, make sure the respective bolt and nut is re-torqued to its original setting.
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Components in this assembly		Qty	Part Number
i	Rubber strips 300mm	2	B5451232AA
ii	Accelerator cable	1	B5451770AA
iii	Pedal box assembly part of which includes:	1	M3551054PA
	Cap screw M8x25	3	B5358185AA
	Cap screw M8x50	1	B5358237AA
	Washer 8mm mild steel	8	B5358088AA
	Washer 8mm stainless steel	6	B5358208AA
	M8 Nyloc nut.	2	B5358092AA

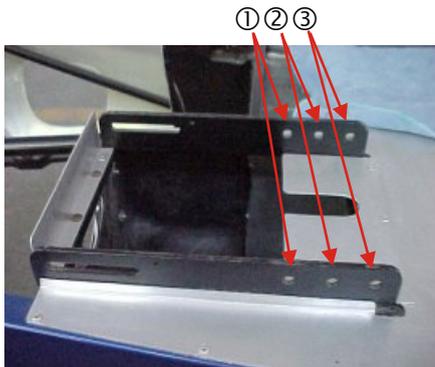
### Procedure



To vary the driving position, the pedal box may be installed in one of three positions according to the length of the driver's legs. The three positions are: ① - Forward, ② - Centre and ③ - Rear. These positions may be adjusted after installation which is explained at the end of this section.

1. Remove the backing on the two rubber strips to reveal the adhesive and apply to the pedal box frame as illustrated below.

2. Using a craft knife, carefully cut away the rubber from the slotted cut outs on the pedal box runners.



3. Remove the three M8x25 and one M8x50 cap screws, washers and Nyloc nuts from the rear and front mounting points on the pedal box assembly.

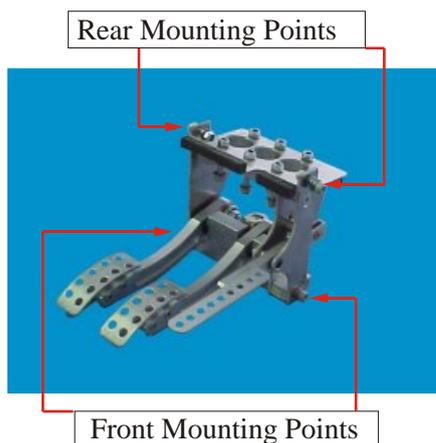


Take note of how the M8x50 cap screw is placed through the accelerator bracket. It will need to be replaced in this position in stage 5. of this procedure.

4. Position the pedal box between the pedal box runners according to the desired driver position.



As the seats need to be fitted to ascertain the correct driving position, an estimate should be made at this stage



Take note of the two different types of washers, There are eight, 8mm mild steel washers which are thinner than the six, 8mm stainless steel washers. It is important to keep the two types separate until step 5. of this procedure.



## Procedure

5. Replace the three M8x25 and one M8x50 cap screws, washers and Nyloc nuts in their original positions.



Make sure the M8x50 cap screw is replaced through the accelerator bracket as illustrated below.



Although the accelerator cable is supplied with this Group, it is not installed until completion of the engine installation.



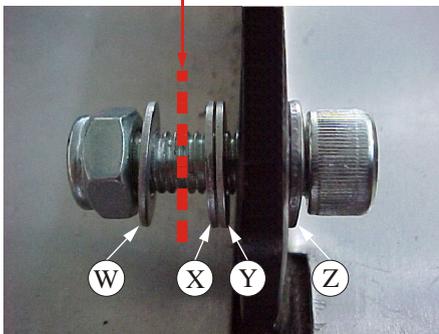
As illustrated below, two 8mm mild steel washers must be placed in the X and Y positions between the pedal box and the runners, then one 8mm stainless steel washer in the W and Z positions. The cap screws used on the front mounting points of the pedal box do not have a washer in the W position.

Accelerator Bracket



Master Cylinders are supplied in Group 10 where the installation is described.

Position of Pedal box.



To protect the Nyloc nuts, the cap screws must not be tightened until the final pedal box position has been ascertained. Final tightening is described in the procedure below.

## Final Pedal Box Position Adjustment Procedure

1. Remove only the M8x25 cap screws, washers and Nyloc nuts from the rear pedal box mounting points. Refer to step 3. of the above procedure to see the different mounting points.



Take care not to lose the washers concealed between the pedal box and the runners.

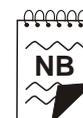
2. Loosen the M8x25 and M8x50 cap screws in the front mounting points until the pedal box is able to slide freely between the pedal box runners to the selected position. Refer to beginning of the above procedure for the three possible pedal box positions.



Do not completely remove the cap screws on the front mounting points when adjusting an installed pedal box.



The positions of the two different types of washers for the rear mounting points are important. Refer to steps 3 and 5. of the above procedure for details on their type and positioning.



Tighten the four cap screws to 11 (eleven) Nm.