

Circulation All Distributors and Retailers

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Bulletin No SY/G47 (I)
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Date 28.1.72CATEGORY CREAR HEIGHT CONTROL VALVE NOISEAPPLICABLE TO:

All Rolls-Royce Silver Shadow and Bentley T Series and all Rolls-Royce and Bentley Corniche cars produced after the following Car Serial Numbers.

Four-door Saloon cars	SRX 9393
Two-door Saloon cars	CRX 9248
Convertible cars	DRX 9247
Long Wheelbase cars	LRX 9281

DESCRIPTION

Over the past few months there has been an increase in the incidence of noisy height control valves in service. This noise has occurred in the form of a creaking or clicking noise low down in the rear quarters of the car.

It has been found that the noise followed a change to the valve installation to increase its sensitivity to wheel movements. This change was introduced to reduce any loss of levelled height occurring in service due to settling of various components.

This change increased the loads on the operating linkage and also the rubbing speed of the internal moving parts resulting in copper being deposited on the cross-shaft with increasing friction and subsequent noise.

A bearing of improved material known as 'Fluorosint' has therefore been developed as a replacement for the present phosphor bronze bearings. These bearings are now available for fitting to valves in service.

Because of the lower friction of these 'Fluorosint' bearings and quicker action of the valve it is possible that hydraulic pipe knocks may be produced. Therefore a new type of inlet/exhaust valve has been developed to provide the correct degree of damping on the action of fluid flow in the valve. The new inlet/exhaust valve is of a composite construction consisting essentially of a steel washer with a nylon insert moulded in its centre.

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It is important that whenever 'Fluorosint' bearings are used in a valve, a new composite inlet/exhaust valve is used also, as described in the fitting instructions. In those cases where this modification is the subject of a warranty claim please quote this Bulletin number.

Because of a pressure difference which can arise between the inner and outer end faces of the bush under certain conditions, it is possible for the 'Fluorosint' bush to be moved longitudinally in its bore. This can result in the outer end of the bush pushing against the shaft seal, thus distorting the seal and allowing leakage at the operating shaft.

This pressure difference is increased by the reduction in clearance between the shaft and the bush such that fluid cannot travel across the bush and thereby equalise the pressure.

In order to overcome this, a shallow slot should be cut across the bearing face of the bush, thus ensuring that any pressure which develops in the valve housing, is felt on both end faces of the bush.

It is important that the slot is placed in the position shown in Figure 2A.

PROCEDURE

Before beginning this procedure it should be ensured that clean facilities are available for the valve overhaul.

1. Place the car on a ramp and depressurise the hydraulic system as described in the Workshop Manual T.S.D. 2476 Section G1.
2. Disengage the lower ball joints of the height control valve linkages.
3. Remove the flexible hoses and steel pipes from the rear adaptors of both height control valves.
4. The pipes from the front end of the valves are connected into junction blocks on the sub-frame crossmember. The pipes should be disconnected from the junction blocks.
5. Remove the nuts and bolts which secure the two valves to the car.
6. Remove the valves, operating linkages and steel pipes from the car as assemblies.
7. Remove the operating linkage from one of the valves after first marking the position of the lever on the shaft.
8. Remove the circlip and reservoir adaptor (see Fig. 1).

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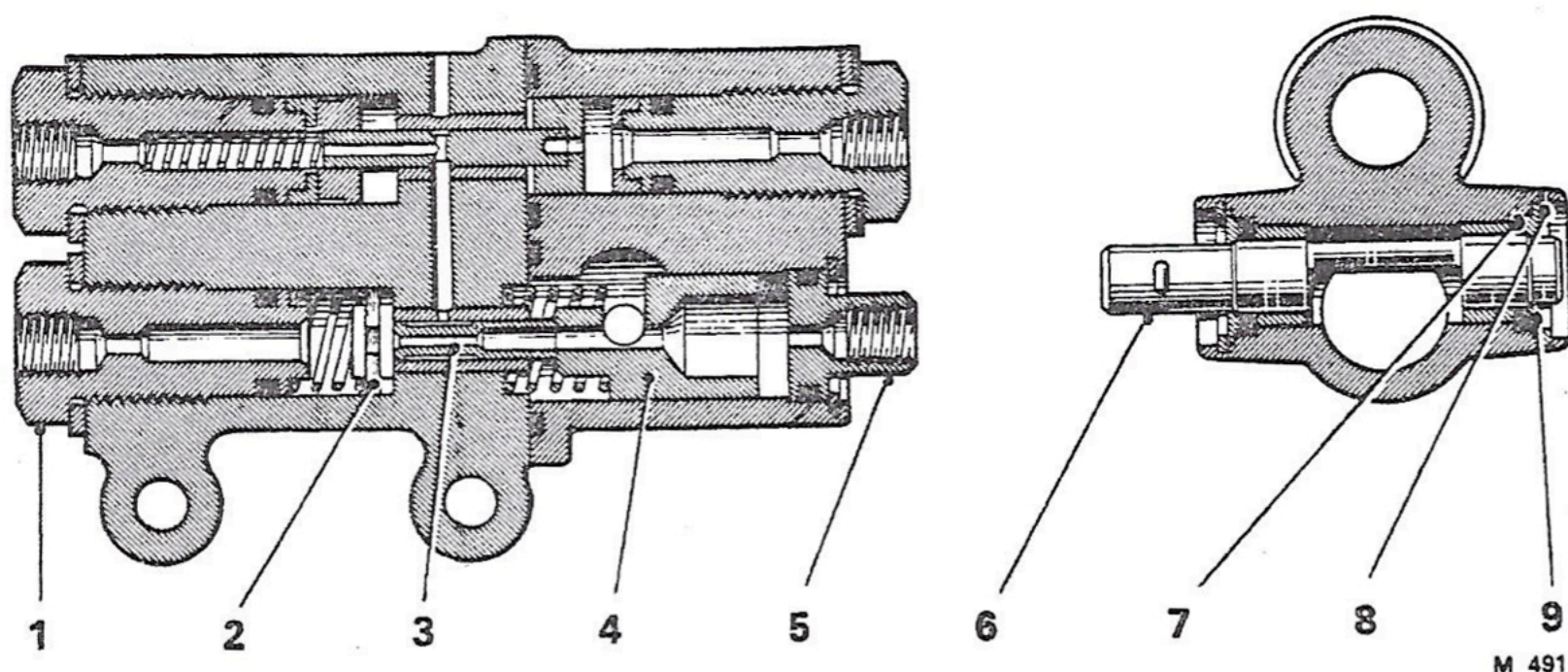


Fig. 1 Sectional View - Rear Height Control Valve

1. Adaptor-high pressure inlet
2. Inlet valve
3. Plunger valve
4. Plunger
5. Adaptor-reservoir connection
6. Operating shaft
7. Sealing ring
8. Circlip
9. Washer

9. Remove the two circlips from the operating shaft bore and remove the backing washers and seals.
10. Remove the four nuts and washers which secure the two parts of the valve together.
11. Rotate the operating shaft through 180° to disengage the shaft from the plunger.
12. Withdraw the plunger.
13. Withdraw the operating shaft from the valve noting the position of the shaft to facilitate re-assembly. Inspect the shaft for any signs of copper being deposited on the two bearing surfaces. Any deposits of copper should be carefully smoothed with fine emery tape, but it will not be necessary to remove the deposits completely.
14. Place a washer (Part Number UA 2051) on the inside edge of one of the bushes and using a suitable piece of bar, carefully tap the bush out of the housing. Repeat this operation on the remaining bush.

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15. Remove the high pressure inlet adaptor, withdrawing the spring; discard the inlet valve.
16. Fit the new inlet valve and spring ensuring that the spring is correctly located on the valve.
17. Refit the high pressure inlet adaptor.

Note The following operations which detail the fitting of the new bushes should be carefully followed. If the bushes are damaged or misaligned the valve may leak from the shaft seal.

18. Place one of the new bushes into the housing (see Fig. 2), ensure that it is square with the bore.

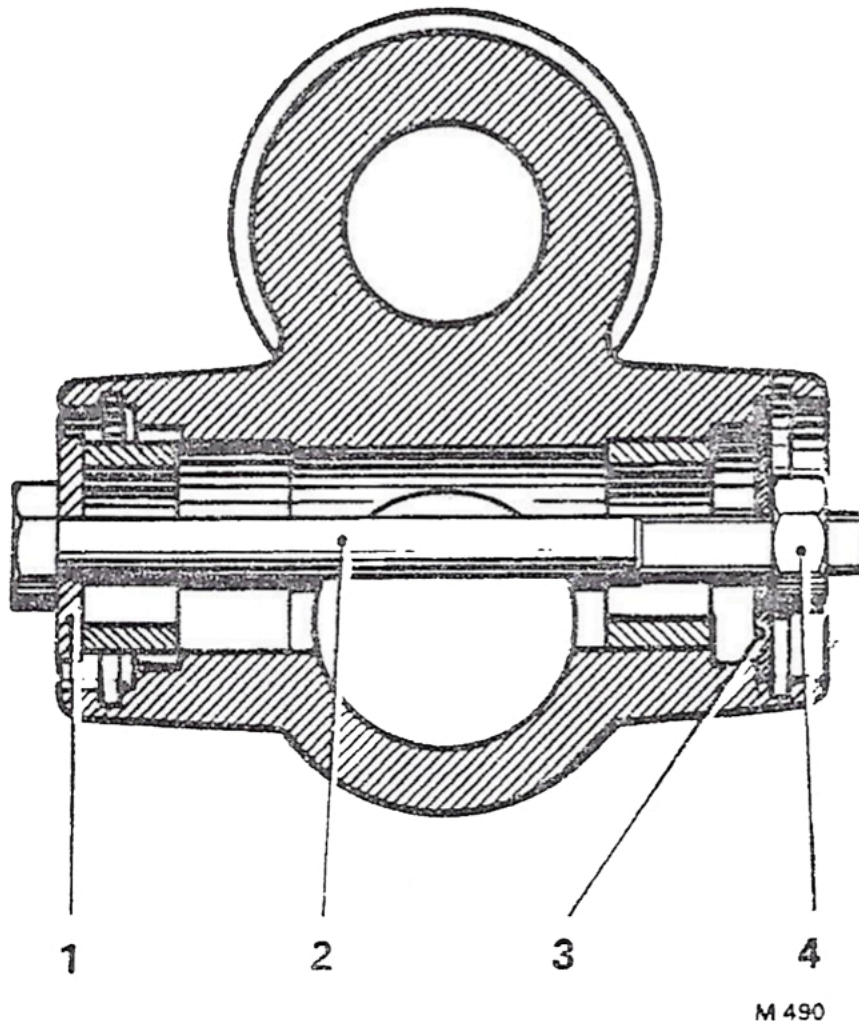


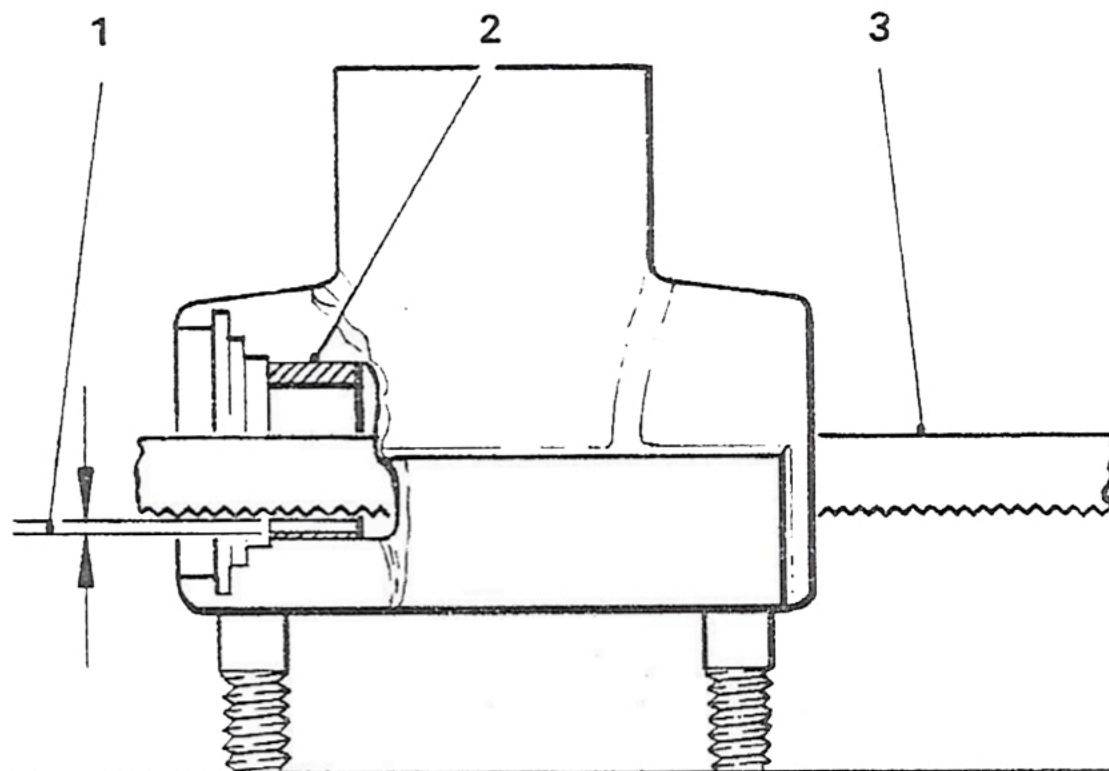
Fig. 2 Method of Fitting New Bushes

1. Small washer (UA 6102)
2. Bolt (UA 118)
3. Large Washer (UA 2053)
4. Nut (UA 301)

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19. Take a washer (Part Number UA 6102) and after ensuring that it is a free fit in the bore, place it on the outer edge of the bush. Pass a bolt (Part Number UA 118) through the washer and fit a washer (Part Number UA 2053) to the other end of the bolt. Using a nut (Part Number UA 301) carefully draw the bush into the housing until the washer (Part Number UA 6102) contacts the end of the bore.
20. Reverse the bolt and the washers and carefully draw the remaining bush into place.
21. Place the levelling valve housing with the studs pointing downwards onto a flat surface.
22. Pass a hacksaw blade through the bore of both bushes and carefully slot both bushes to a maximum depth of 0.020 in. (0,051 mm.) as shown in Figure 2A.
23. Carefully remove all burrs and debris from the bushes.



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Fig. 2A Method of Slotting Bushes

1. Maximum of 0.020 in. (0,051 mm.) slot
2. 'Fluorosint' bush
3. Hacksaw blade

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24. Thoroughly wash all parts with clean methylated spirits and dry off the compressed air.
25. Remove all exposed rubber seals and fit new seals.
26. Fit the operating shaft to the valve noting that the position of the shaft denotes whether the valve assembly will be left or right-hand.
27. Fit new shaft seals, the backing washers and circlips. The seals should be lubricated with brake fluid.
28. Insert the spring and plunger into the bore ensuring that it moves freely. Allow the nose of the plunger to pass the operating shaft then rotate the shaft through 180° to lock the plunger into position.
29. Fit a new sealing ring to the adaptor. Fit the adaptor and circlip previously removed.
30. Fit the two parts of the valve together using new seals on the housing face.
31. Repeat Operations 7 to 30 inclusive on the remaining valve.
32. To identify the valve as having been modified apply a spot of blue paint to the high pressure inlet adaptor of both valves.
33. Ensure that the valve linkage balls are free from cadmium plate, are lubricated and are correctly adjusted. Fit the operating lever in accordance with the marks previously made.
34. Refit the valves to the car, leaving the lower joints of the operating linkage disconnected.
35. Bleed the rear levelling system at the two rear bleed nipples. It is not necessary to bleed any of the braking system.
36. Distribute a weight of approximately 600 lb. (272 kg.) equally between the front and rear seats.
37. Run the engine with the gear range selector lever in the Park position and the gearchange thermal switch removed.
38. Check and adjust the levelled height as necessary; the height from the ground to the centre of the rearmost bottom bolt which attaches the crossmember mounting forging to the body sill should be 0.875 in. \pm 0.125 in. (22,22 mm. \pm 3,175 mm.) less than the distance from the ground to the centre of the rearmost bottom bolt attaching the rear yoke to the trailing arm (see Fig. 3).

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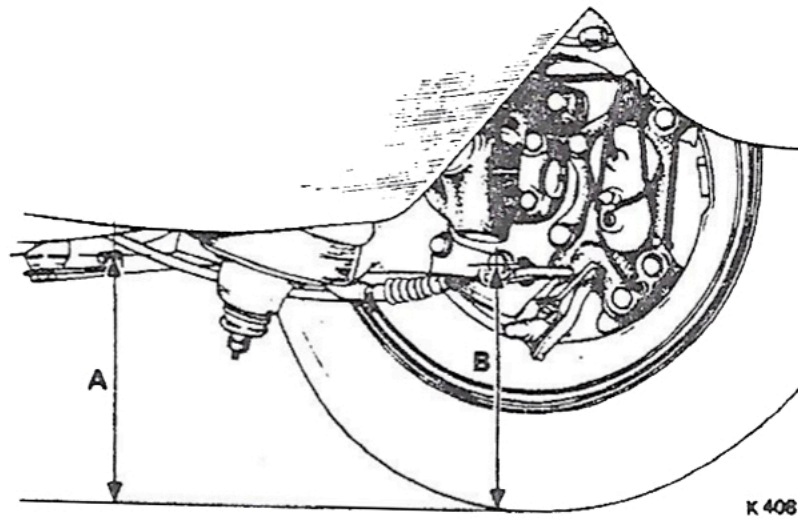


Fig. 3 Car Height Checking Points - Rear

- A. Datum to centre of forging securing bolt
- B. Datum to centre of axle yoke securing bolt

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Parts Required

Kit Number - 16

Time Allowed

3.50 hrs. This time is inclusive of removal, overhaul and refitting the two valves, bleeding, resetting levelled height and road testing.