

Section H2

FRONT 'MONITUBE' SHOCK DAMPER AND BALL JOINT

Service

The front 'Monitube' shock dampers are sealed units for which no servicing is required. Should loss of damping effect be evident, the faulty shock damper must be removed and a new unit fitted. The new unit is supplied together with the coil spring seating rings and upper damper securing nut.

Important The front shock damper supports the road spring, it is necessary to compress the spring in order to lift it from its seating before removing the damper.

Shock damper—To remove

1. Position the car on a ramp, apply the hand brake and chock the rear wheels.
2. Remove the gear range selector thermal cut-out (see Chapter M – Electrical System).
3. On cars fitted with front automatic height control, de-pressurise the hydraulic system (see Chapter G – Hydraulic System, Section G1 – Special precautions).
4. On all cars, remove the height control ram from the appropriate spring pot (see Chapter G – Hydraulic System). Do not remove the spring pot cover.
5. Position a hydraulic jack and extension fitted with a protective hardwood block beneath the pivot points of the lower front triangle levers, then raise the car.
6. Position suitable blocks to support the shaped wooden beams (RH 8920) placed beneath the sill of the body just rearward of the front wheels (see Fig. H10).
7. Carefully lower the car onto the sill boards.
8. Using the special tool (RH 8030) remove the nut and washer from the top of the damper piston rod.
9. Fit the front height control ram in position but do not secure.

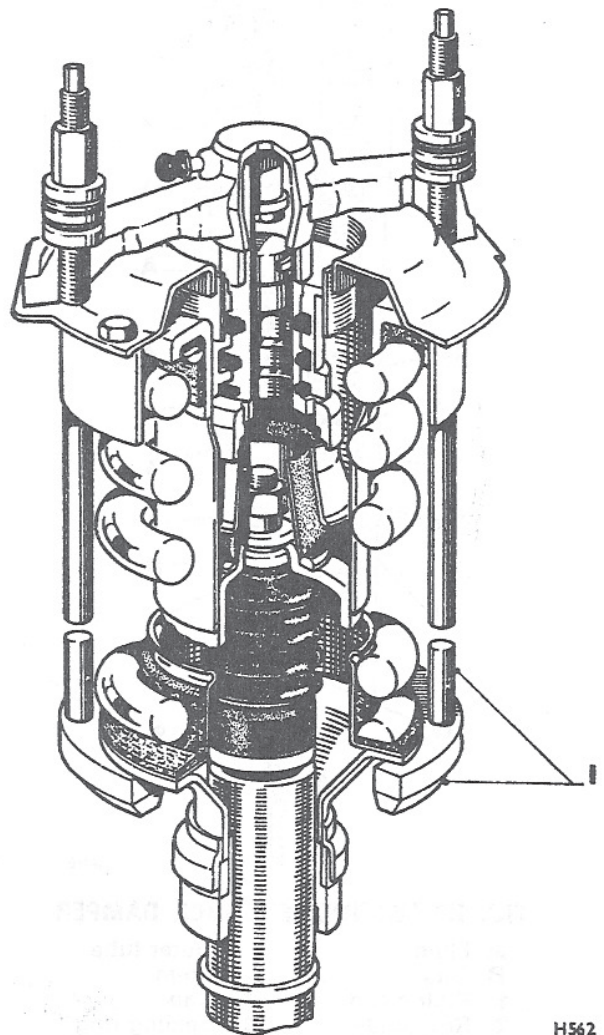


FIG. H7 SPRING COMPRESSING TOOL IN POSITION

1 Compressing tool with long studs and split base plate

Chapter H

10. Fit the road spring compressing tool (RH 7889) (see Fig. H7) in position. It is most important that each long bolt of the compressor is screwed fully into the base plate of the tool.

11. Secure the halves of the base plate by fitting the $\frac{1}{16}$ in. U.N.F. setscrews provided.

12. Using the nuts, thrust races and special washers

provided, compress the spring sufficiently to enable the split adjusting washers to be removed.

13. Remove the split pin, castellated nut and washer which secures the damper ball pin to the lower triangle levers.

14. Use the extractor tool (RH 8100) to separate the seal between the taper of the damper ball pin and the taper bore of the ball joint housing.

15. Remove the bolt which locates the lower triangle levers adjacent to the lower ball joint lever.

16. Slacken the dowel bolt which serves also to align and secure the lower triangle levers to the lower ball joint lever. The lower ball joint lever will then swivel clear.

17. Push the damper upwards until the ball pin is clear of the mating bore in the lever, then lower the damper from the car by moving it sideways and downwards to clear the lever; retain the split washer(s).

Note Different types of shock damper have been fitted to the front suspension.

(a) **Early cars** have a screwed adjustment of the damper stem into the ball pin housing.

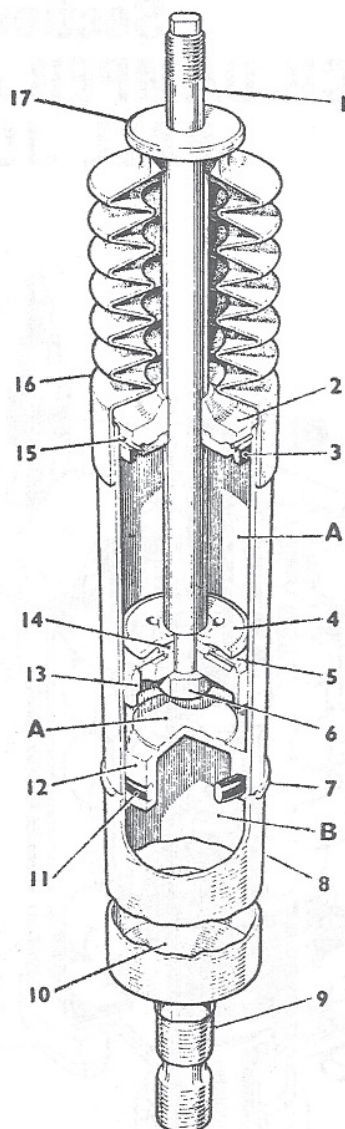
(b) **Later cars** do not have the previous adjustment method, but fine adjustment is achieved by adding distance washers 0.064 in. (1.62 mm.) thick to the existing number of thick washers under the road spring seal.

To determine which type of damper is fitted, a convenient method is to observe the damper lower ball joint. Early dampers have a large lock-nut above the ball joint housing, later dampers having none.

There are different types of dampers to accommodate variable road conditions. Each type of damper is colour coded by a coloured band on the damper surface. Care should be taken to ensure that the correct type of damper is fitted. The colour code for the dampers is given in the following table.

DAMPER IDENTIFICATION

Front	Rear	Use
White	White	All cars including U.S.A. and Canada, except those fitted with heavy duty suspension.
Yellow	Yellow	Cars fitted with heavy duty suspension.



G 188

FIG. H8 'MONITUBE' SHOCK DAMPER

- | | |
|-------------------------|------------------------|
| A Fluid | 8 Outer tube |
| B Gas | 9 Stem |
| 1 Piston rod | 10 Cap |
| 2 Rod guide | 11 Sealing ring |
| 3 Seal | 12 Diaphragm |
| 4 Abutment | 13 Piston |
| 5 Valve | 14 Valve seat |
| 6 Nut | 15 Snap ring |
| 7 Retaining ring | 16 Dust cover |
| | 17 Cap |

Chapter H

Damper ball joint—To remove

Early cars. If a ball joint is found to be faulty or worn, it is recommended to renew both the shock damper and ball joint with those fitted to later cars.

Later cars. Remove the ball joint by unscrewing the ball joint housing from the damper stem.

At this stage the opportunity should be taken to examine the condition of the damper ball joint as described in 'Damper ball joint - To maintain'.

Front shock damper—To fit

Reverse the procedure given for removal, noting the following points.

1. Fit the new damper and the existing split washer(s) necessary to obtain the correct car height adjustment. Avoid all damage to the damper piston rod.
2. Screw the ball joint onto the damper and tighten the joint.
3. Torque tighten the upper damper securing nut.
4. Torque tighten the castellated nut on the tapered end of the ball pin, if necessary further tighten the nut to enable a new split pin to be fitted.
5. Torque tighten the lower ball joint housing dowel bolt and nut. Torque tighten the nut and bolt securing the housing lever adjacent to the lower triangle levers.

Warning (a) Each shock damper contains **NITROGEN** gas under pressure. On no account should the damper be subjected to undue force of any description. Do not clamp the damper in a vice.

If the spring support has seized onto the damper, renew the shock damper and spring support.

(b) To render a shock damper safe for disposal, drill a small hole 1.00 in. (25,4 mm.) from the closed end of the outer tube (see Fig. H9). The escaping gas should not be allowed to come into contact with eyes or skin whilst under pressure.

Immediately the hole has been drilled, stand clear and allow the **NITROGEN** gas to disperse to atmosphere.

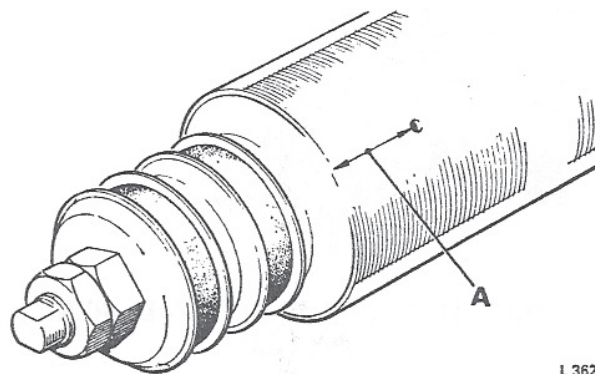
Damper ball joint—To maintain

The ball joint is a sealed unit for which no maintenance is necessary other than to replace the seal. Check the ball joint for wear and play. If it is considered serviceable and only seal replacement is necessary, all parts of the joint visible after the seal

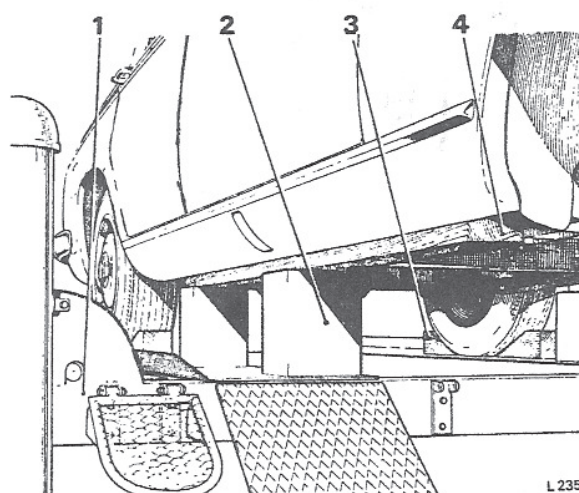
has been removed should be washed in clean petroleum. Do not remove the joint assembly from the housing unless it is necessary to fit a new assembly.

Damper ball joint seal—To fit

1. With the ball pin removed from the lower ball joint housing, remove the retaining clip and seal.
2. Remove all traces of grease and foreign matter from the visible parts of the joint with a little petroleum applied with a stiff brush. Remove all traces of petroleum with compressed air.
3. Fill the joint housing with the approved Dexra-grease Super G.P. to the level of the face of the

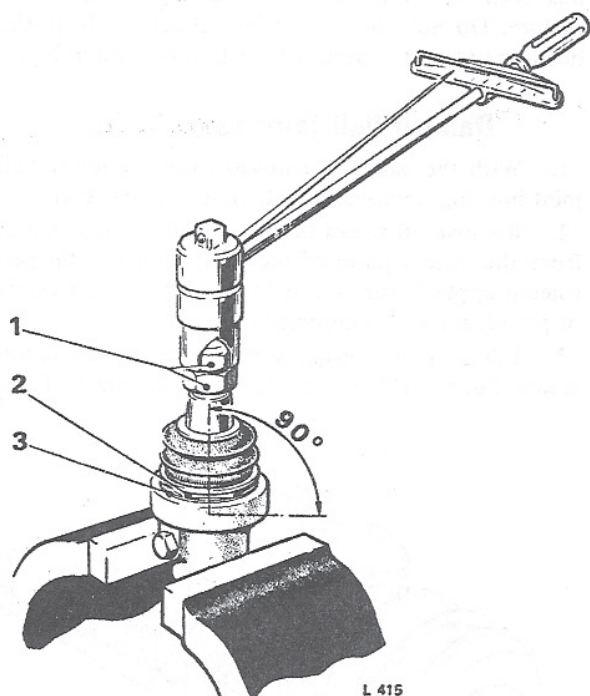
**FIG. H9 DAMPER DISPOSAL**

A 1.00 in. (25,4 mm.) from closed end of damper

**FIG. H10 METHOD OF SUPPORTING CAR BENEATH SILLS**

- | | |
|----------------|--------------|
| 1 Ramp | 3 Chock |
| 2 Wooden block | 4 Sill board |

Chapter H



**FIG. H11 SETTING DAMPER BALL JOINT
PRE-LOAD**

- 1 Two lock-nuts
- 2 Hexagon (normally used for tightening purposes)
- 3 Shim(s)

housing. Smear the inside of the seal with grease, particularly the hole for the ball pin; fit a new seal and spring clip.

4. Fit the ball joint assembly to the damper lower ball joint housing described in 'Damper ball joint - To fit'.

Damper ball joint—To fit

1. Fit and lightly clamp the ball joint housing in a vice as shown in Figure H11.

2. Fit the ball pin to the housing without any distance pieces and carefully tighten until between 30 lb.in. and 60 lb.in. (0,35 kg.m. and 0,69 kg.m.) is necessary to rotate the ball pin in its housing.

This torque figure should be measured after the ball pin has been rotated through four complete revolutions to bed in with the axis of the ball pin at right-angles to the large hexagon face.

3. Measure the gap between the face of the ball hexagon and the housing.

4. Remove the ball pin and fit adjusting shims equal in thickness to the gap measured previously.

5. Fit the ball pin into the housing and torque tighten the assembly to between 120 lb.ft. and 130 lb.ft. (16,6 kg.m. and 18,0 kg.m.) using the special spanner (RH 7874).

6. Check the torque load necessary to rotate the ball pin as described in Operation 2 and if necessary, adjust by adding or removing shims between the face of the ball hexagon and the housing.

Section H2

Front shock dampers, road springs, and damper ball joints

Introduction

The shock dampers are of the sealed unit type and no servicing is required. In the event of a damper becoming faulty, it should be discarded and a new damper fitted.

Each damper contains nitrogen gas under pressure and under no circumstances should it be subjected to undue force. Do not clamp the damper in a vice.

If the road spring support collar has seized to a faulty damper, the collar should be discarded with the damper. Do not attempt to hammer the collar from the damper.

Front road spring and damper - To remove

1. Drive the car onto a ramp; apply the parking brake and chock the rear wheels.
2. Fit the support plate halves of the road spring retention tool (RH 8809), around the lower section of the damper.

Insert the four long studs of the tool through the upper spring plate and screw them securely into the tool support plate. Fit the special nuts, thrust races, and washers to the top of each stud.

Warning

Always examine the spring retention tool components for signs of thread wear or damage prior to their use. If you have doubts concerning any parts of the tool and their ability to withstand spring load you should renew those parts.

It is recommended that the use of the tool is restricted to a maximum of 200 applications.

3. Evenly tighten the four spring retention tool nuts to retain the road spring in its compressed condition.
4. Support the front of the car body on sill blocks.
5. Remove the bolts securing the upper spring plate to the body spring tower. Use hand pressure on the spring plate to counteract any damper lift and to allow removal of the bolts.
6. Remove the split pin, castellated nut, and washer securing the damper ball pin assembly to the lower triangle levers.

Using extractor tool (RH 8100) release the ball pin taper from the triangle levers. Leave the taper loosely in position to support the damper.

7. Carefully lift the road spring and damper assembly from the car.

Place the complete assembly into spring compression tool (RH 7909). Fit and secure the top plate of the tool to retain the spring (see Fig. H10).

8. Remove the nuts securing the damper to the upper spring plate cover. Collect the rubber mount and washers. Withdraw the damper from the spring support plate and collar.

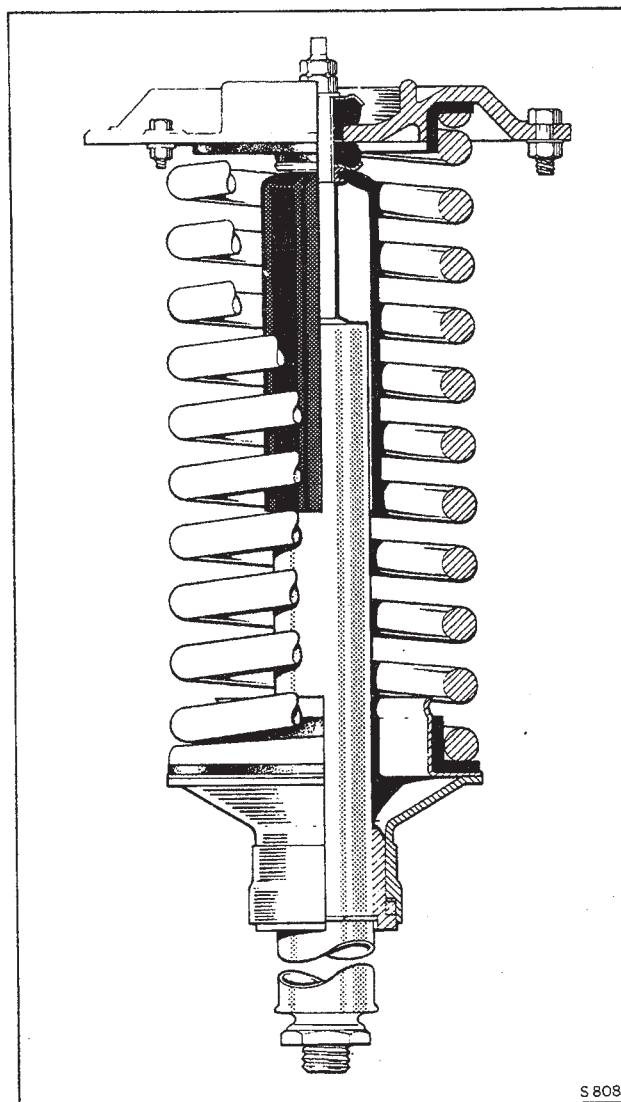


Fig. H8 Front shock damper and road spring arrangement

9. To release the spring from the retention tool, compress the spring until the spring load is relieved from the retention tool, allowing the removal of the four retaining nuts.

Measure the distance between the two plates of the spring compression tool to facilitate assembly.

Evenly release the two nuts on the compression tool until the spring is fully released.

10. Examine all the components for serviceability and renew as necessary.

H2 - 2

Front road spring and damper - To fit

Fit the road spring and damper by reversing the removal procedure. The road spring and damper can be assembled as a bench operation as follows.

1. Ensure that all the components are in a serviceable condition. Renew any components that are faulty.
2. Remove the protective cover from the damper stem.
3. Smear the bore of the spring support collar with grease. Locate the collar onto the damper and fit the protective cover, mounting washer, and rubber to the top of the damper stem.
4. Place the road spring and its associated components (see Fig. H10) into spring compression tool (RH 7909). Compress the spring to the measurement taken on removal.
5. Insert the damper into the spring assembly.

Ensure that all the components are correctly located, then fit the top rubber mount, distance piece, cup washer and plain washer onto the damper stem. Fit and torque tighten the retaining nut and lock-nut.

6. Smear the spring support plate collets with an approved grease and fit them around the damper collar. Carefully release the spring compression tool, thus allowing the damper collar and collets to be drawn into the spring support plate. Do not completely remove the spring compression tool.

Note

Always fit the thinnest collets to the top of those selected (see Fig. H9). The original thickness of collets should be used if the original spring is fitted.

For spring poundage information refer to Page H2-3.

7. Fit the spring retention tool (RH 8809) to the spring assembly to retain the spring in its compressed

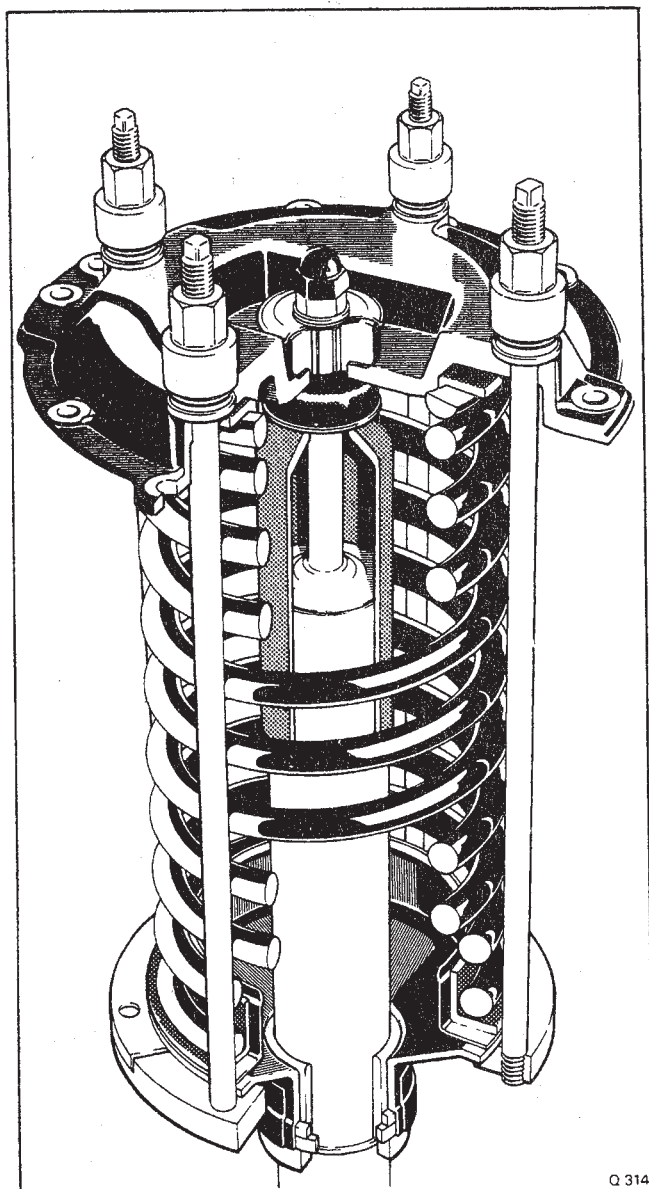


Fig. H9 Spring retaining tool in position

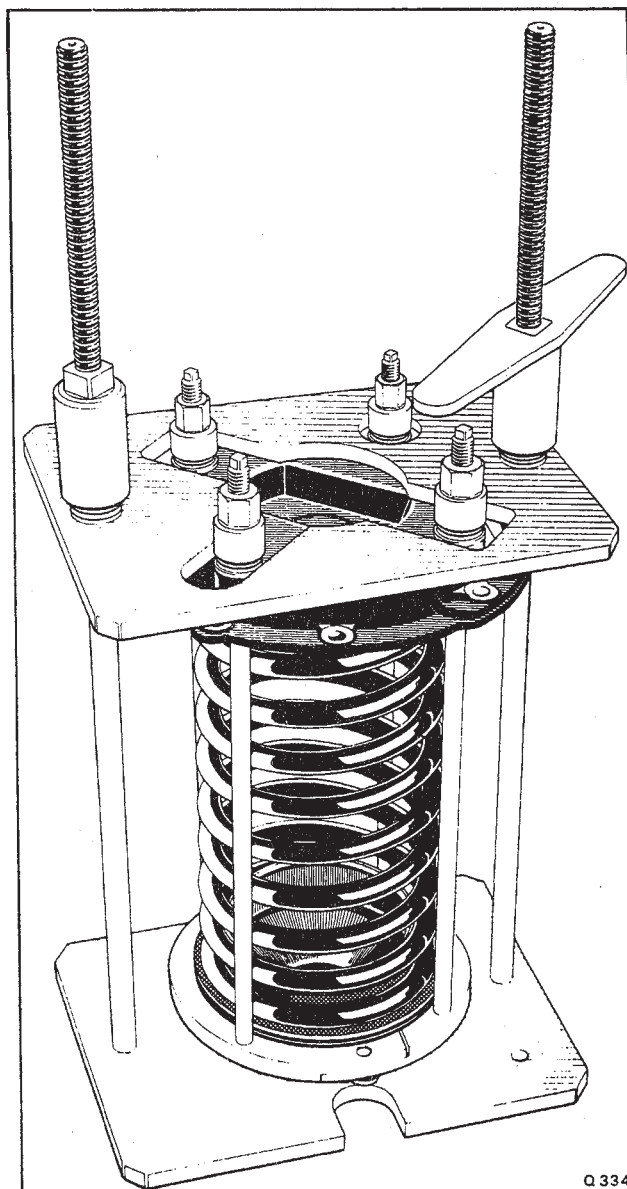


Fig. H10 Spring compression tool

Front spring loading chart	Cars other than those conforming to a North American specification		Cars conforming to a North American specification	
	kgf	lbf	kgf	lbf
Silver Shadow II and Bentley T2	822	1835	846	1865
Silver Wraith II	846	1865	878	1935
Corniche Saloon	822	1835	846	1865
Corniche Convertible	862	1900	878	1935
Camargue	862	1900	878	1935

Equivalent load from packing collets									
Packing thickness	mm in	1,63 0.064	3,25 0.128	4,88 0.192	6,35 0.250	7,98 0.314	9,60 0.378	11,23 0.442	12,70 0.500
Spring load increase	kgf lbf	5,44 12	10,89 24	16,78 37	21,77 48	27,22 60	32,66 72	38,10 84	43,54 96
Packing thickness	mm in	14,33 0.564	15,95 0.628	17,58 0.692	19,05 0.750	20,67 0.814	22,30 0.878	23,93 0.942	25,40 1.00
Spring load increase	kgf lbf	48,99 108	54,43 120	59,87 132	64,86 143	70,31 155	76,20 168	81,65 180	86,64 191

Note

A packing thickness of 6,35 mm. (0.250 in.) will increase or decrease the height of the car by approximately 9,5 mm. (0.375 in.)

condition. Remove compression tool (RH 7909).

8. Fit the ball joint assembly to the damper.

9. Carefully lower the spring and damper assembly into the body.

10. Locate the damper ball joint taper into the triangle levers. Fit and torque tighten the castellated nut and insert a new split pin.

11. Bolt the upper spring plate to the body.

12. Carefully release and then remove the spring retention tool. Ensure that the collets are correctly entered into the spring support plate during removal.

13. Remove all jacks and support blocks.

14. After fitting the spring and damper assembly, remove the car from the ramp and drive it back and forth to allow the assembly to settle.

15. If the road spring has been renewed, check the car standing height as described in Section H5.

Damper ball joint - To remove

1. Carry out Operations 1 to 3 inclusive of Front road spring and damper - To remove.

2. Remove the split pin, castellated nut, and washer securing the ball joint.

3. Using extractor tool (RH 8100) release the ball joint taper from the triangle levers.

4. Raise the front of the car until the ball joint taper clears the ball pin carrier. Remove the ball joint from the damper.

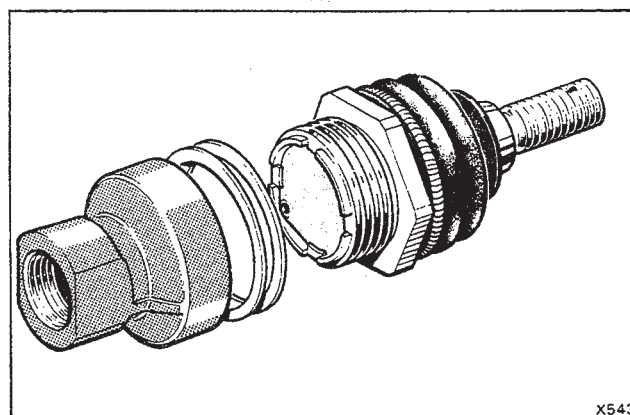


Fig. H11 Damper ball pin assembly

5. Unscrew the ball pin assembly from its housing taking care not to damage the protective rubber boot. Collect the pre-load adjustment shims (see Fig. H11).

6. Examine the ball joint for wear. Pre-load shims should not be removed to take up wear. Always fit a new ball pin assembly.

Damper ball joint - To assemble and fit

1. Ensure the components are in a serviceable condition.

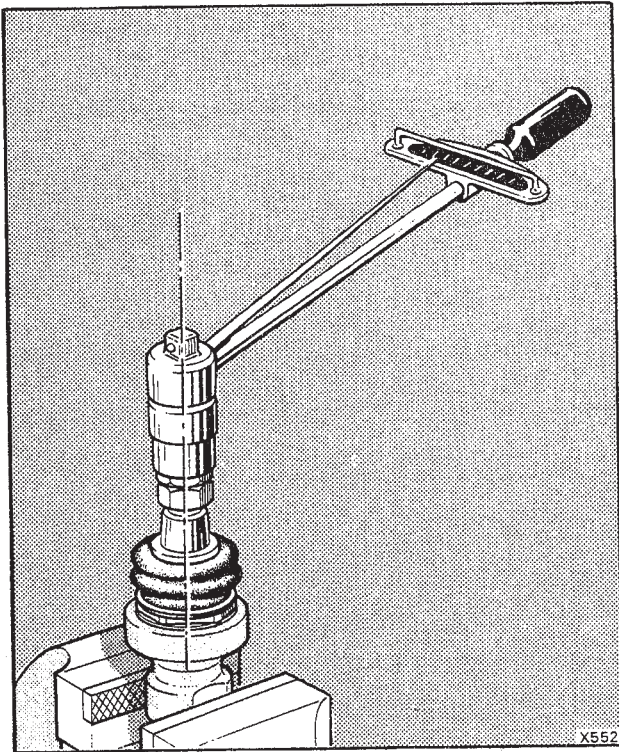


Fig. H12 Checking the ball joint pre-load

2. Hold the ball joint housing in a vice. Screw the new ball joint assembly into the housing without fitting the pre-load shims. Fit and lock together two nuts onto the ball pin (see Fig. H12).
3. Carefully tighten the ball joint into the housing until a torque of between 0,35 kgf. m. and 0,69 kgf. m. (30 lbf. in. and 60 lbf. in.) is required to rotate the ball pin. This torque figure should be measured after the ball pin has been rotated through four complete revolutions and with the ball pin in its vertical position.
4. Measure the gap between the ball joint face and the housing face.
5. Remove the ball joint from the housing and fit shims equivalent to the gap previously measured, onto the ball joint.
6. Fit the ball joint and shims to the housing and torque tighten the assembly to the figure quoted in Chapter P.
7. Check that the torque required to rotate the ball pin is within the limit given in Operation 3. If necessary make adjustments by increasing or decreasing the shim thickness to obtain the correct torque reading.
8. Fit and torque tighten the ball joint assembly onto the damper.
9. Secure the ball joint to the triangle levers and complete the operations by reversing the removal procedure.

Front shock dampers, road springs, and damper ball joints

Introduction

The shock dampers (see fig. H3-1) are of the sealed unit type and no servicing is required. In the event of the damper becoming faulty, it should be discarded and a new damper fitted.

Dampers of varying makes and damping bleed rates have been fitted, dependent on the cars model, type, and year of manufacture. It is important therefore to ensure that dampers of the correct type are fitted when replacement is required.

If only one damper requires renewal the new damper must be of the same type and rating as the damper remaining on the car. In the event of a matching damper becoming obsolete and therefore unobtainable both dampers should be renewed.

Each damper contains nitrogen gas under pressure and under no circumstances should it be subjected to undue force. Do not clamp the damper in a vice.

If the road spring support collar has seized to a

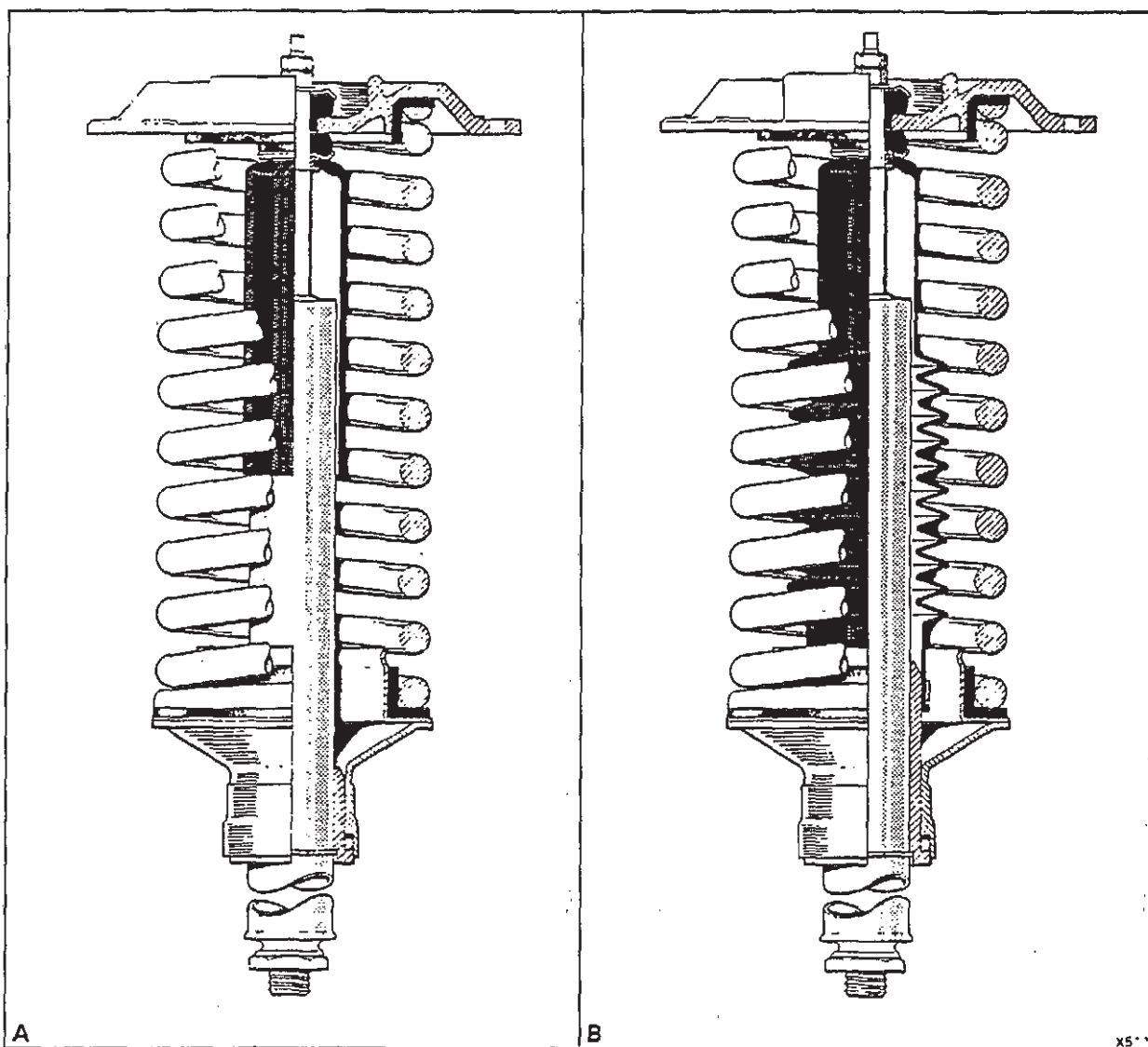


Fig. H3-1 Front shock damper and road spring arrangements

A Early arrangement

B Convolute seal arrangement

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faulty damper, the collar should be discarded with the damper. Do not attempt to hammer the collar from the damper.

Front road spring and damper – To remove

1. Drive the car onto a ramp; apply the parking brake and chock the rear wheels.
2. Fit the support plate halves of the road spring

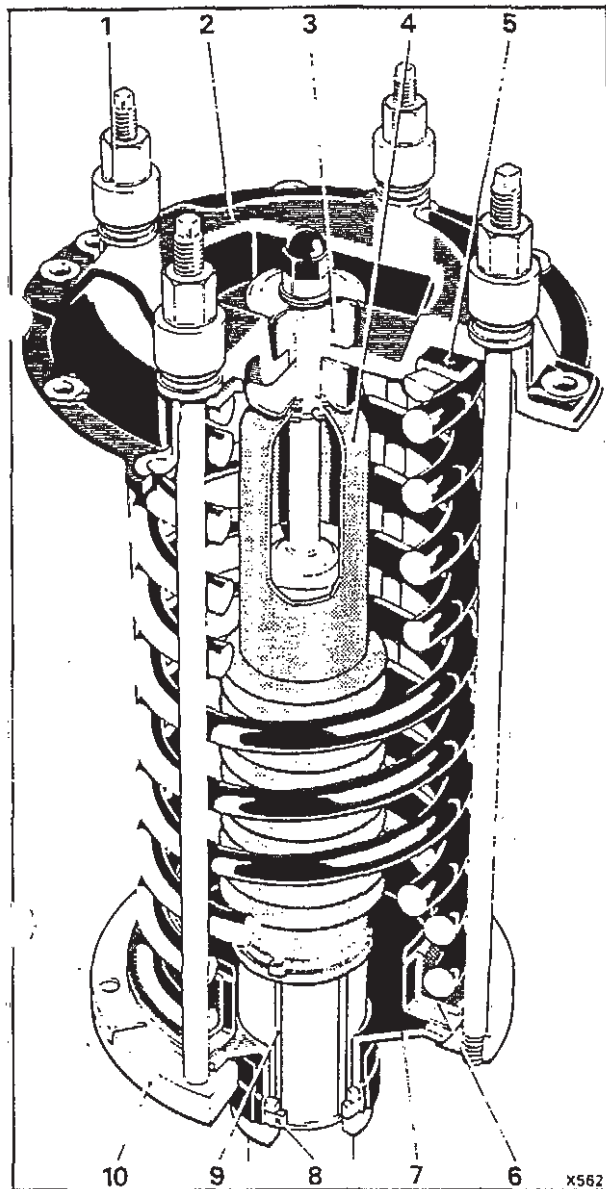


Fig. H3-2 Spring retention tool in position

- 1 Nut and thrust race
- 2 Upper spring plate
- 3 Damper mounting rubbers
- 4 Convoluted rubber sleeve
- 5 Spring seat
- 6 Spring seat
- 7 Spring support plate
- 8 Spring support plate collets
- 9 Spring support collar
- 10 Tool support plate

retension tool RH8809, around the lower section of the damper and secure them together.

Insert the four long studs of the tool through the upper spring plate and screw them securely into the tool support plate. Fit the special nuts, thrust races, and washers to the top of each stud.

Warning

Always examine the spring retention tool components for signs of thread wear or damage prior to its use. Renew any part of the tool that may be liable to fail under spring load.

It is recommended that the use of the tool is restricted to a maximum of 200 applications.

Always take extreme care when handling a road spring in a compressed condition.

3. Evenly tighten the four spring retention tool nuts to retain the road spring in its compressed condition.
4. Support the front of the car body on sill blocks.
5. Remove the bolts securing the upper spring plate to the body spring tower. Use hand pressure on the spring plate to counteract any damper lift and to allow removal of the bolts.
6. Remove the split pin, castellated nut, and washer securing the damper ball pin assembly to the lower triangle levers.

Using extractor tool RH8100, release the ball pin taper from the triangle levers. Leave the taper loosely in position to support the damper.

7. Carefully lift the road spring and damper assembly from the car.

Place the complete assembly into spring compression tool RH7909. Fit and secure the top plate of the tool to retain the spring (see fig. H3-3).

8. Remove the nuts securing the damper to the upper spring plate cover. Collect the rubber mount and washers. Withdraw the damper from the spring support plate and collar.

Note

On cars fitted with a convoluted rubber sleeve between the spring plate collar and the upper damper mount (see figs. H3-1 and H3-2) extra care should be taken to avoid damaging the sleeve during damper withdrawal. This sleeve will also prevent the collar being withdrawn from the spring support plate. In the event of the collar having seized to the damper, remove the nuts securing the top of the damper then carefully release and lift the spring from the spring support plate as described in the following operations.

9. To release the spring from the retention tool compress the spring until the spring load is relieved from the retention tool, allowing the removal of the four retaining nuts.

Measure the distance between the two plates of the spring compression tool to facilitate assembly.

Evenly release the two nuts on the compression tool until the spring is fully released.

Examine all the components for serviceability and renew as necessary.

Front road spring and damper – To fit

Fit the road spring and damper by reversing the removal procedure. The road spring and damper can

Front spring loading chart

Right-hand drive cars									
	Right-hand spring			Left-hand spring					
	N	kgf	lbf	N	kgf	lbf			
Silver Spirit, Mulsanne, and Bentley Eight	8117	828	1825	8050	821	1810			
Mulsanne Turbo and Bentley Turbo R	8763	894	1970	8229	839	1850			
Silver Spur (Non division)	8363	853	1880	8251	841	1855			
Silver Spur (Division)	8563	873	1925	8452	862	1900			
Mulsanne Turbo and Bentley Turbo R (Long Wheelbase)	8874	905	1995	8340	850	1875			
Corniche and Bentley Continental	8407	857	1890	8274	844	1860			
Left-hand drive cars (other than those conforming to a North American specification)									
	Right-hand spring			Left-hand spring					
	N	kgf	lbf	N	kgf	lbf			
Silver Spirit, Mulsanne, and Bentley Eight	8050	821	1810	8117	828	1825			
Mulsanne Turbo and Bentley Turbo R	8696	887	1955	8296	846	1865			
Silver Spur (Non division)	8251	841	1855	8363	853	1880			
Silver Spur (Division)	8452	862	1900	8563	873	1925			
Mulsanne Turbo and Bentley Turbo R (Long Wheelbase)	8807	898	1980	8407	857	1890			
Corniche and Bentley Continental	8452	862	1900	8452	862	1900			
Left-hand drive cars (Conforming to a North American specification)									
	Right-hand spring			Left-hand spring					
	N	kgf	lbf	N	kgf	lbf			
Silver Spirit and Mulsanne	8162	832	1835	8228	839	1850			
Silver Spur (Non division)	8318	848	1870	8385	855	1885			
Corniche and Bentley Continental	8606	878	1935	8606	878	1935			
Equivalent load from packing colllets									
Packing thickness	mm	1,63	3,25	4,88	6,35	7,98	9,60	11,23	12,70
	in	0.064	0.128	0.192	0.250	0.314	0.378	0.442	0.500
Spring load increase	N	53	107	165	214	267	320	374	427
	kgf	5,44	10,89	16,78	21,77	27,22	32,66	38,10	43,54
	lbf	12	24	37	48	60	72	84	96
Packing thickness	mm	14,33	15,95	17,58	19,05	20,67	22,30	23,93	25,40
	in	0.564	0.628	0.692	0.750	0.814	0.878	0.942	1.00
Spring load increase	N	480	534	587	636	690	747	801	850
	kgf	48,99	54,43	59,87	64,86	70,31	76,20	81,65	86,64
	lbf	108	120	132	143	155	168	180	191
Note A packing thickness of 6,35 mm (0.250 in) will increase the height of the car by approximately 9,5 mm (0.375 in)									

be assembled as a bench operation as follows.

1. Ensure that all the components are in a serviceable condition. Renew any components that are faulty.

2. On early type dampers, remove the protective cover from the damper stem.

On dampers fitted with the convoluted type cover, insert the support collar through the spring support

plate. Fit the convoluted cover onto the neck of the collar together with a securing band. Ensure that a distance of 19 mm (0.750 in) exists between the shoulder of the collar and the bottom face of the support (see fig. H3-4) then fasten the cover to the collar with the securing clip using tool RH9733. Smear the bore of the collar with an approved grease.

Note

The support collar on this type of assembly is longer than the one previously used.

3. Using a small amount of Loctite Superbonder or equivalent adhesive secure the location washer into the top of the damper cover. Also secure the damper mounting rubber and washer to the underside of the upper spring plate. This operation is to assist assembly and ensure correct component location.

4. Place the road spring and its associated components (see fig. H3-3) into spring compression tool RH7909 and compress the spring to the measurement taken on removal.

5. Fit the washer onto the damper stem then insert the damper into the spring assembly. Ensure that all the components are correctly located (see fig. H3-1), then fit the top mount rubber, distance piece, cup washer, and plain washer onto the damper stem. Fit and torque tighten the retaining nut and lock-nut.

6. Smear the spring support plate collets with an approved grease and fit them around the damper collar. Carefully release the spring compression tool, thus allowing the damper collar and collets to be drawn into the spring support plate. Do not completely remove the spring compression tool.

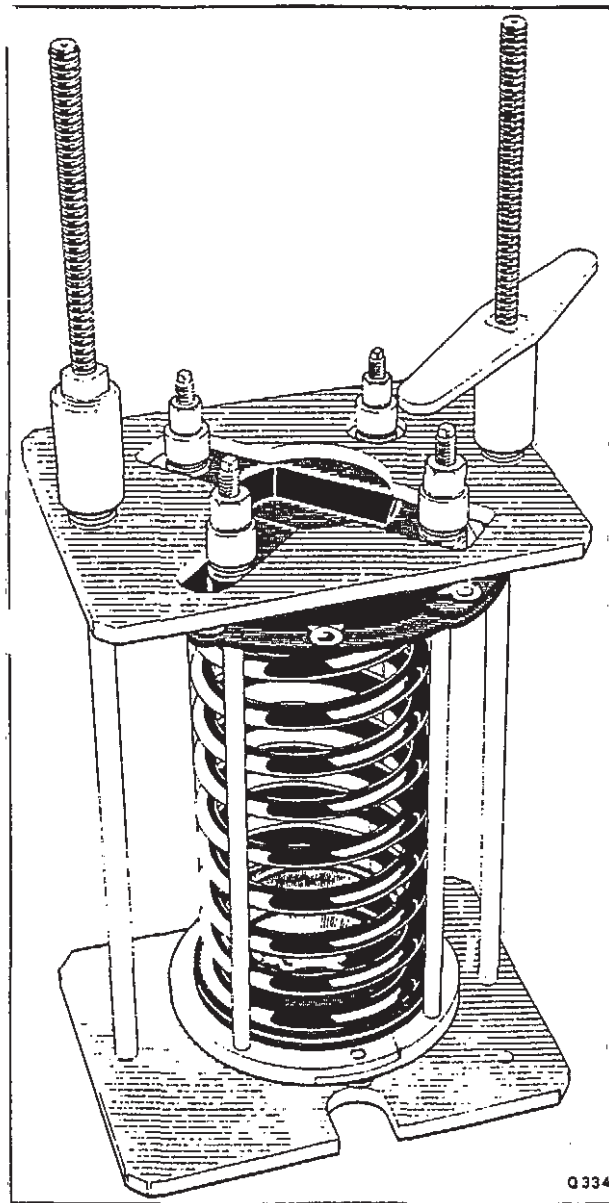


Fig. H3-3 Spring compression tool

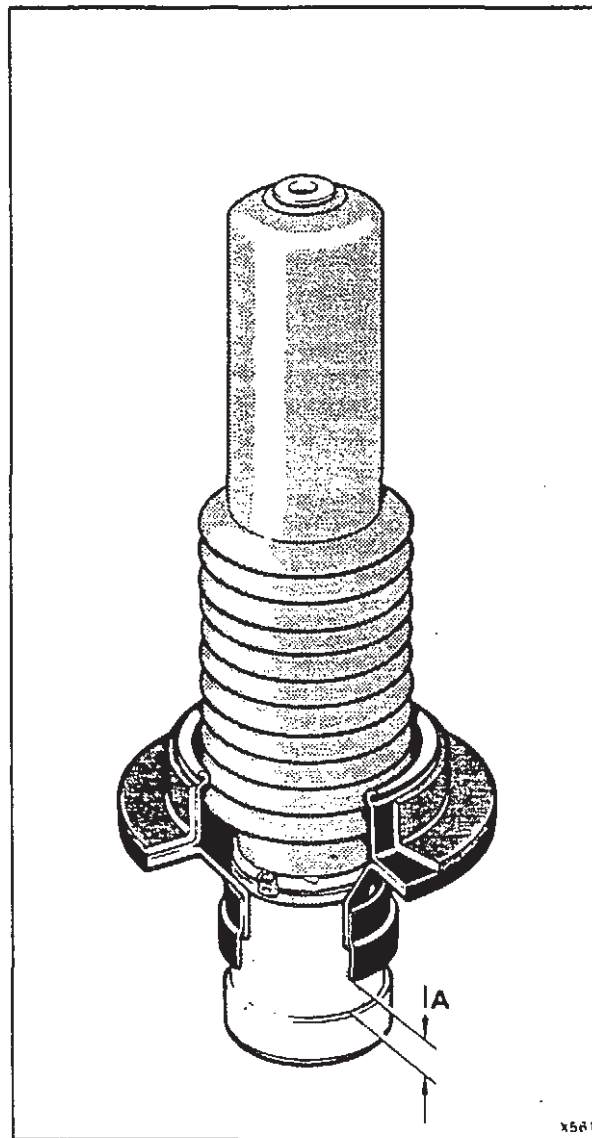


Fig. H3-4 Spring support plate, collar, and sleeve assembly

A 19 mm (0.75 in)

Note

The original thickness of collets should be used if the original spring is fitted.

For spring poundage information refer to the chart on page H3-3.

7. Fit spring retension tool RH8809 to the spring assembly to retain the spring in its compressed condition. Remove compression tool RH7909.

8. Fit the ball joint assembly to the damper.

9. Fit a new gasket (if fitted) to the body spring tower and carefully lower the spring and damper assembly into the body.

10. Locate the damper ball joint taper into the triangle levers. Fit and torque tighten the castellated nut and insert a new split pin.

11. Bolt the upper spring plate to the body.

12. Carefully release and then remove the spring retension tool. Ensure that the collets are correctly entered into the spring support plate during removal.

13. Remove all jacks and support blocks.

14. After fitting the spring and damper assembly, remove the car from the ramp and drive it back and forth to allow the assembly to settle.

15. Check the car ride height as described in Section H6.

Damper ball joint - To remove

1. Carry out Operations 1 to 3 inclusive of Front road spring and damper - To remove.

2. Remove the split pin, castellated nut, and washer securing the ball joint.

3. Using extractor tool RH8100 release the ball joint taper from the triangle levers.

4. Raise the front of the car until the ball joint taper clears the ball pin carrier. Remove the ball joint from the damper.

5. Unscrew the ball pin assembly from its housing, taking care not to damage the protective rubber boot. Collect the pre-load adjustment shims (see fig. H3-5).

6. Examine the ball joint for wear. Pre-load shims should not be removed to take up wear. Always fit a new ball pin assembly.

Damper ball joint - To assemble and fit

1. Ensure that the components are in a serviceable condition.

2. Hold the ball joint housing in a vice. Screw the new ball pin assembly into the housing without fitting the pre-load shims. Fit and lock together two nuts onto the ball pin, (see fig. H3-6).

3. Carefully tighten the ball joint into the housing until a torque of between 3,4 Nm and 6,9 Nm (0,35 kgf m and 0,69 kgf m, 30 lbf in and 60 lbf in) is required to rotate the ball pin. This torque figure should be measured after the ball pin has been rotated through four complete revolutions and with the ball pin in its vertical position.

4. Measure the gap between the ball joint face and the housing face.

5. Remove the ball joint from the housing and fit shims, equivalent to the gap previously measured, onto the ball joint.

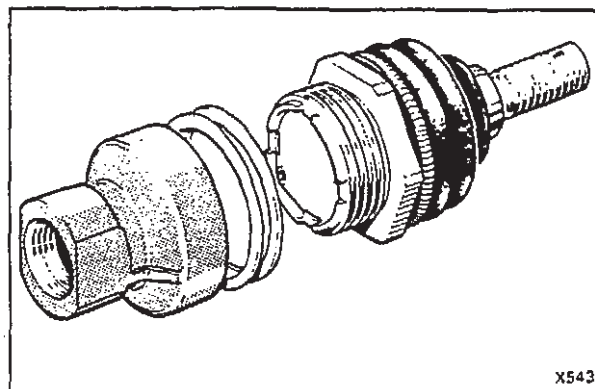


Fig. H3-5 Damper ball pin assembly

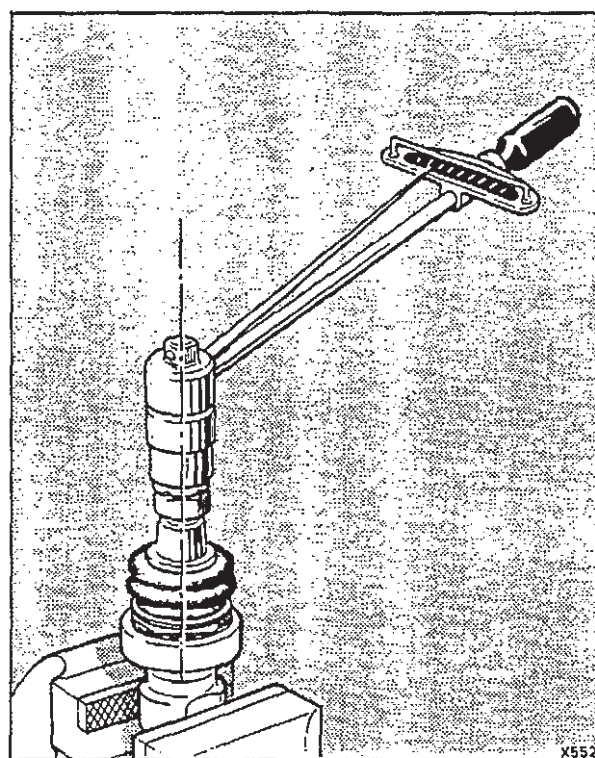


Fig. H3-6 Checking the ball joint pre-load

6. Fit the ball joint and shims to the housing and torque tighten the assembly to the figure quoted in Section H12.

7. Check that the torque required to rotate the ball pin is within the limits given in Operation 3. If necessary make adjustments by increasing or decreasing the shim thickness to obtain the correct torque reading.

8. Fit and torque tighten the ball joint assembly onto the damper.

9. Secure the ball joint to the triangle levers and complete the operations by reversing the removal procedure.