Wheels and Tyres

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Wheels

Introduction

This section incorporates the removal and fitting procedure of individual wheels. If it is necessary to raise the complete car reference must be made to Section A7, Raising and Supporting the car.

Cars other than Bentley Turbo R, including Bentley Mulsanne, Mulsanne Turbo, and Bentley Continental prior to 1986 model year are fitted with 6JK × 15 heavy gauge pressed steel wheels.

Bentley Turbo R cars are fitted with 7½J × 15 aluminium alloy wheels.

Bentley Mulsanne and Bentley Continental cars from 1986 model year are fitted with 6½J × 15 aluminium alloy wheels.

The removal and fitting procedure is identical for each type of wheel, noting that on Bentley cars fitted with aluminium alloy wheels extra care must be taken to prevent damaging the surface coating of the wheels.

Refer to figure R1-1 for the car jacking positions. The car jack is stowed behind the trim panel situated at the front of the luggage compartment (see fig. R1-2).

Workshop safety

Never work beneath the car if it is only supported on a jack. Always ensure that car stands or blocks are used as a safety precaution.

Wheel trims — To remove and fit

One-piece wheel trim (see fig. R1-4, insets A and B).

To remove a wheel trim proceed as follows using the tommy bar provided in the tool kit.

Place the tommy bar in one of the positions indicated, noting the relationship between the removal points and the tyre valve. Then, whilst supporting the wheel trim, press the tommy bar towards the tyre. Do not twist the tommy bar as this could damage the wheel trim.

To fit a wheel trim, position it against the wheel ensuring that the tyre valve is aligned centrally with the hole in the trim. Then, strike the trim firmly with the heel of the free hand until it is seated on the wheel.

Two-piece wheel trim (see fig. R1-4, inset C).

The outer wheel trim is secured by eight equally spaced clips situated around its circumference. The inner wheel trim is a clip-on fit over three equally spaced protrusions on the road wheel.

To remove an outer wheel trim proceed as follows using the tommy bar provided in the tool kit.

Position the tommy bar as indicated, then press towards the tyre. Repeat this operation at several points around the circumference of the wheel until the trim is released. Do not twist the tommy bar as this could damage the wheel trim.

To remove an inner wheel trim, position the tommy bar as indicated. Then, whilst supporting the wheel trim, press the tommy bar in the direction indicated by the arrow.

To fit an inner or outer trim, position it against the wheel then strike it firmly with the heel of the free hand until it is seated on the wheel.

Lockable wheel trim (see fig. R1-4, inset D).

Each road wheel incorporates a locking wheel trim, the lock being concealed by a protective cover. A small tool for

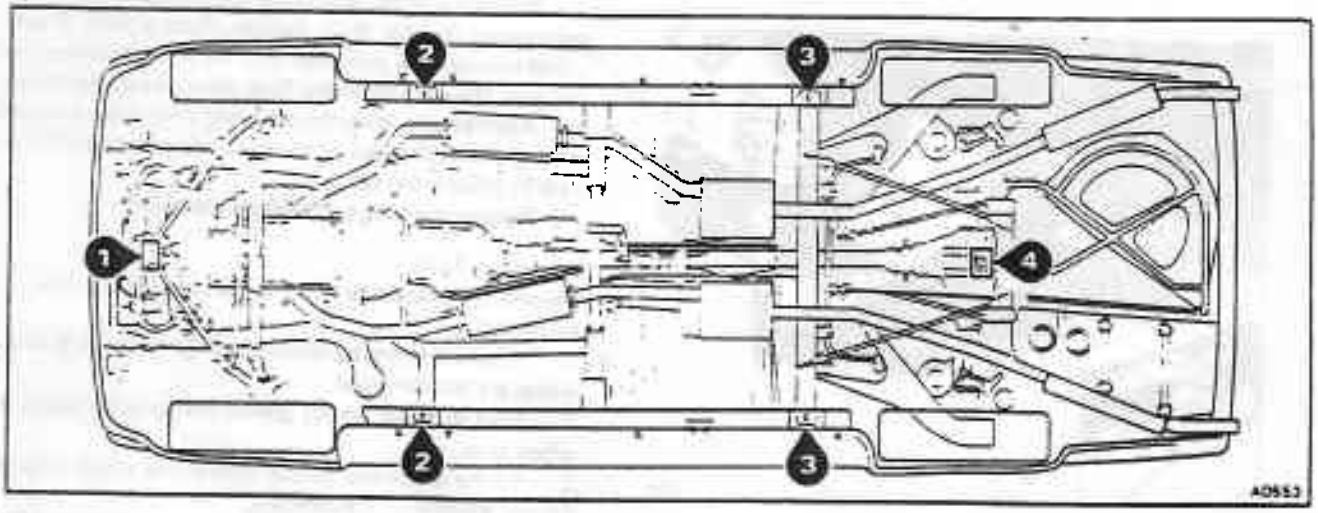


Fig. R1-1 Car jacking positions

1 Front jacking point using a trolley jack
2 Front jacking points using the car jack
3 Rear jacking points using the car jack
4 Rear jacking point using a trolley jack

removing the cover and a key for the wheel trim lock are contained in a pocket on the inside of the tool stowage compartment trim flap (see fig. R1-2).

Note
When removing or fitting a wheel trim, extreme care must be taken to prevent damaging the surface coating of the trim and road wheel.

To remove a wheel trim proceed as follows.

1. Insert the removal tool through the holes in the lock cover, then pull the cover from its location. Note that the cover is retained to the wheel trim by a short strap.
2. Insert the key into the lock and turn it anti-clockwise a quarter of a turn. With the key in this position pull the trim from the wheel.

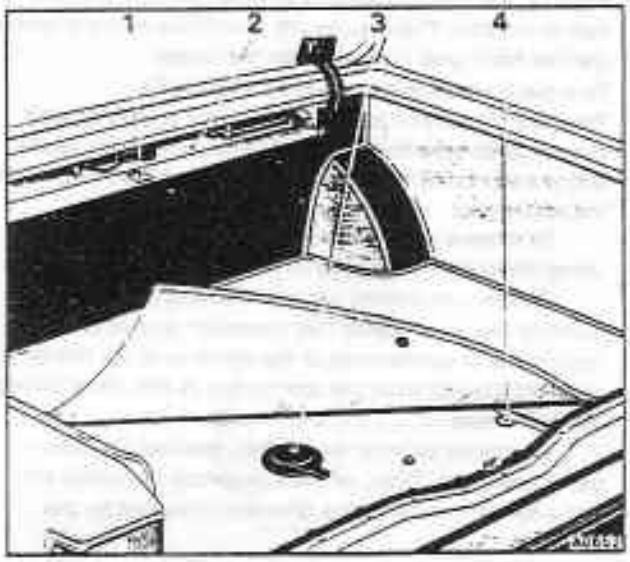


Fig. R1-2 Luggage compartment
1 Location of key and wheel trim removal tool
2 Tools stowage area
3 Rubber plug
4 Lowering bolt for spare wheel carrier

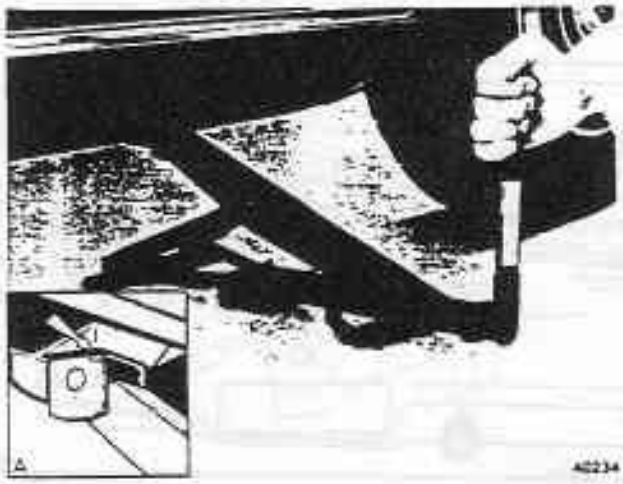


Fig. R1-3 Car jack correctly positioned
A Spigot on the jack head located in the jacking bracket

To fit a wheel trim proceed as follows.

1. Ensure that the rubber seal is correctly located around the circumference of the wheel trim.
2. Locate the lower edge of the trim into its retaining channel in the wheel. Align the spigot on the rear of the trim with one of the recesses situated between the wheel nuts. Then, with the key in the unlocked position, firmly press the wheel trim into the centre of the wheel. Do not apply pressure to the head of the key. When the trim is fully inserted turn the key clockwise to the locked position and remove the key.
3. Press the lock cover into position, then return the key and removal tool to their stowage location.

Wheels — To remove

1. Position the car on a level surface and place the gear range selector lever in the PARK position.
2. Remove the gearchange thermal cut-out from the fuseboard.
3. Apply the parking brake.
4. Remove the wheel trim (see Wheel trims — To remove and fit).
5. Prior to raising the car, slacken the wheel nuts approximately half a turn.

Note
Each wheel nut is marked with an arrow indicating the direction of its removal. Nuts on left-hand wheels have left-hand threads. Nuts on right-hand wheels have right-hand threads.

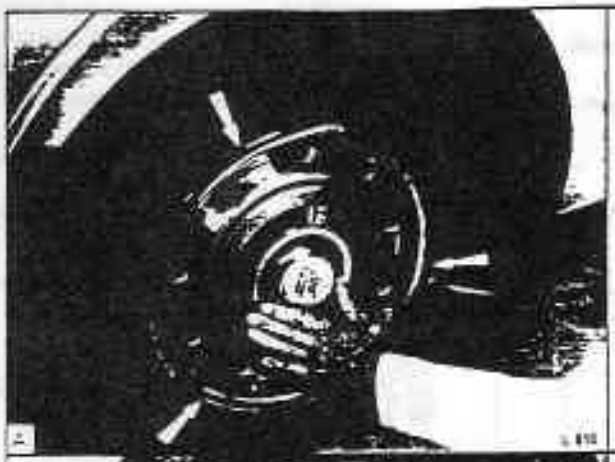
6. To raise the front of the car proceed as follows.
   Chock the rear wheels.
   Position a trolley jack under the front pivot mounting for the lower triangle levers on the sub-frame (see fig. R1-1, item 1). Place a piece of soft wood between the jack head and the mounting.
   Alternatively, raise the car using one of the two front jacking points situated on the car underbody (see fig. R1-1, item 2) utilizing the car jack.
   Release the nuts and remove the wheel.
7. To raise the rear of the car proceed as follows.
   Chock the front wheels.
   Position a trolley jack under the centre of the final drive casing (see fig. R1-1, item 4). Place a piece of soft wood between the jack head and the final drive casing. **Do not jack the car under the final drive crossmember.**
   Alternatively, raise the car using one of the two rear jacking points situated on the car underbody (see fig. R1-1, item 3) utilizing the car jack.
   Release the nuts and remove the wheel.

Wheels — To fit

Reverse the procedure given for removal noting the following.

1. Ensure that the spherical seatings of the nuts and wheel are not damaged.
2. Prior to fitting, lightly grease the spherical seats of the wheel nuts.
3. Fit the wheel and torque tighten the wheel nuts to the figures specified in Section R4.

Failure to observe the torque figures can damage the spherical seating faces and cause difficulty in removing and fitting the wheel nuts.



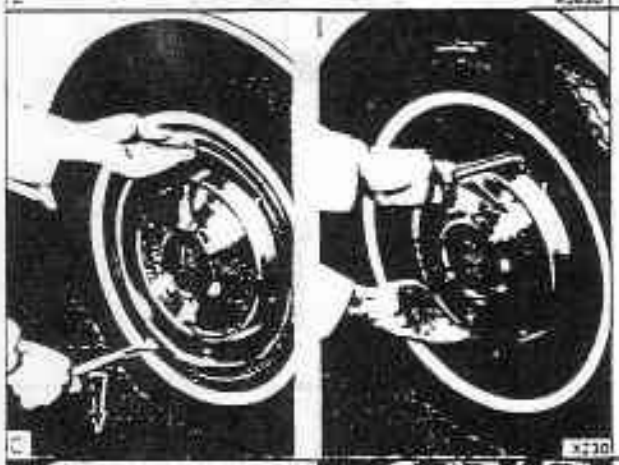
One-piece wheel trim

Prior to 1986 model year
Rolls-Royce Silver Spirit
Bentley Mulsanne
Mulsanne Turbo
Bentley Eight

1986 model year and onwards
Rolls-Royce Silver Spirit
Bentley Eight

One-piece wheel trim

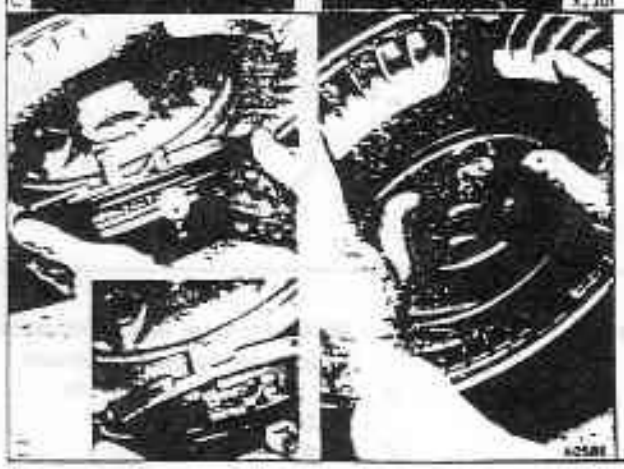
1986 model year and onwards
Rolls-Royce Silver Spur
Rolls-Royce Corniche II *cars conforming to a North American specification*



Two-piece wheel trim

Prior to 1986 model year
Rolls-Royce Silver Spur
Rolls-Royce Corniche
Bentley Continental

1986 model year and onwards
Rolls-Royce Corniche *other than those conforming to a North American specification.*



Lockable wheel trim

Prior to 1986 model year
Bentley Turbo R

1986 model year and onwards
Bentley Turbo R
Bentley Mulsanne
Bentley Continental

Fig. R1-4 Wheel trim removal

Wheel and tyre balance

Wheels can be balanced using either a vertical or horizontal type of balancing machine.

The Dunlop adapter plate AP30 is designed for use in conjunction with the balancing machine WBM 20.

Balancing machines are also obtainable from Hofmann Balancing Techniques Limited, Carl Schenck (UK) Limited and Leycock Engineering Limited.

If the specified balancing equipment is not available, reference should be made to figures R1-5 and R1-6. These illustrations show two types of small adapter collars which convert existing wheel balancing equipment for use on spigotted road wheels.

When fitting the adapter collar, it must be accurately centralized on the adapter plate.

The manufacturer's instructions must be observed

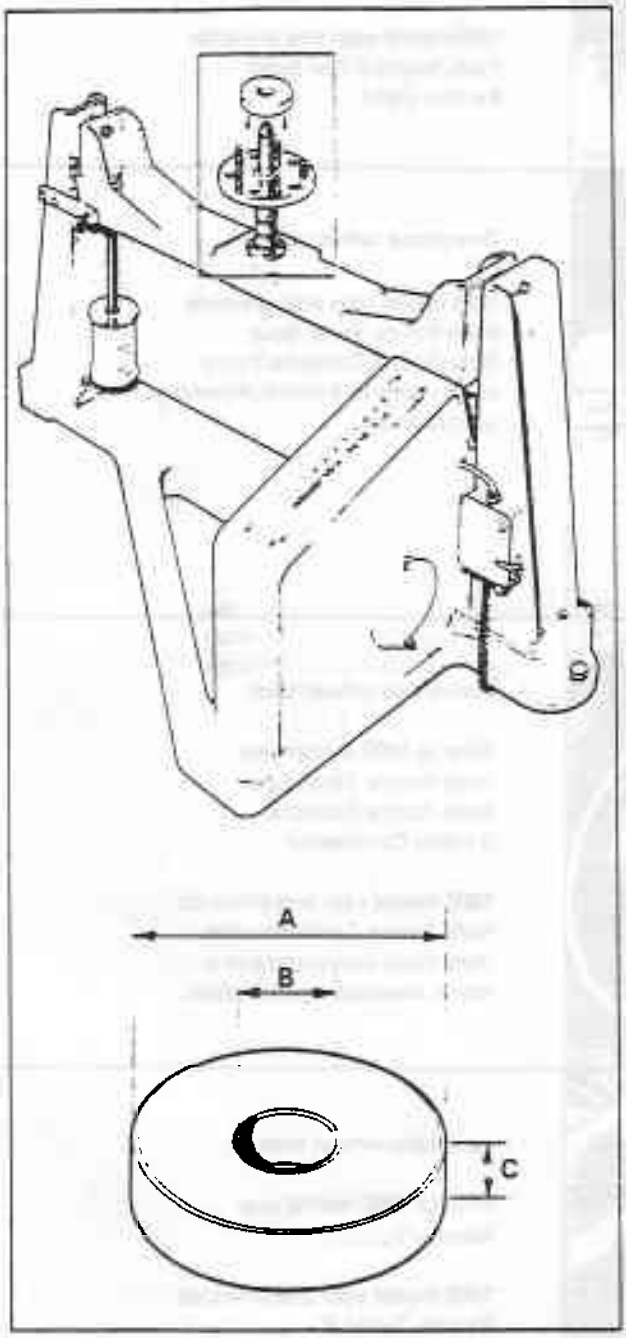


Fig. R1-5 Horizontal type of balancing machine with adapter for spigotted wheels

- A 117,50 mm minus 0,05 mm (4.626 in minus 0.002 in)
- B Bore to give 0,05 mm (0.002 in) to 0,076 mm (0.003 in) clearance on spindle
- C 25,40 mm (1.0 in)

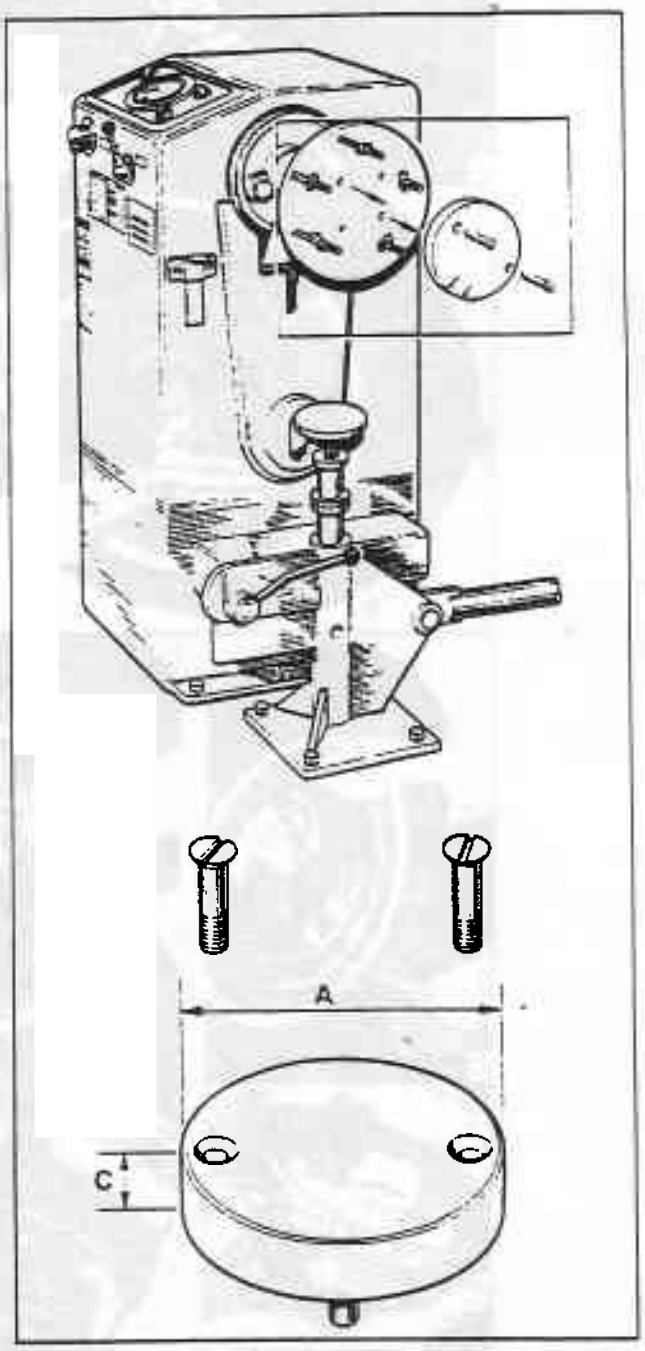


Fig. R1-6 Vertical type of balancing machine with adapter for spigotted wheels

- A 117,50 mm minus 0,05 mm (4.626 in minus 0.002 in)
- C 25,40 mm (1.0 in)

when using the balancing equipment, and the following points noted.

1. Before balancing, ensure that the tyres are inflated to the correct cold inflation pressure (see Section R3).
2. When checking wheel balance on the car, it is essential that, after stopping the car the weight of the car is removed from the tyres as soon as possible. This prevents temporary 'flats' from forming on the tyres. No attempt should be made to balance wheels on which 'flats' have formed, as the static balance may be affected by as much as 720 g cm (10 oz in).
3. The static and dynamic balance of the wheels should be within 216 g cm and 360 g cm (3 oz in and 5 oz in) respectively.
4. Balance weights should be removed and fitted with a special tool supplied by the manufacturer of the wheel balancing machine. When fitting the weights to the rim, only sufficient force should be used to secure them; excessive force will only tend to slacken them.

Note

On cars fitted with aluminium alloy road wheels, coated balance weights matching the surface finish of the wheels must be fitted. Extreme care must be taken when removing and fitting the balance weights to prevent damaging the surface coating of the wheel.

5. If an 'on-the-car' wheel balancing machine is available, it should be used to check the balance of the front wheels after they are fitted to the car. This type of balancing machine enables any small amount of run-out which exists in the tyre, wheel, hub, and brake disc to be removed.

Spare wheel — To remove and fit

Other than Bentley Turbo R

1. Remove the rubber access plug, situated underneath the luggage compartment floor carpet (see fig. R1-2).
2. Disengage the spare wheel retention hook (if fitted). Note that on a number of early cars a spare wheel retaining strap was fitted which comprised of a length of cable with a toggle fastener at each end. To release this type of retainer, turn the uppermost toggle parallel to the cable, then push the toggle down through its securing bracket.
3. Locate the carrier lowering bolt (see fig. R1-2). Then, fully lower the carrier and remove the spare wheel.
4. To fit the spare wheel reverse the removal procedure. Check that when the carrier is fully raised the wheel is securely clamped against the underside of the luggage compartment floor panel. If the wheel is not securely clamped, adjust the position of the carrier as follows.

Lower the carrier slightly by loosening the lowering bolt four or five complete turns.

Support the carrier, then loosen the securing nut (see fig. R1-7A, item 1).

Move the carrier securing bolt to a higher position within the adjustment slot. Tighten the securing nut.

Raise the carrier and check that the spare wheel is securely clamped. If necessary repeat the adjustment operation.

Bentley Turbo R

1. Remove the rubber access plug situated underneath the luggage compartment floor carpet (see fig. R1-2).

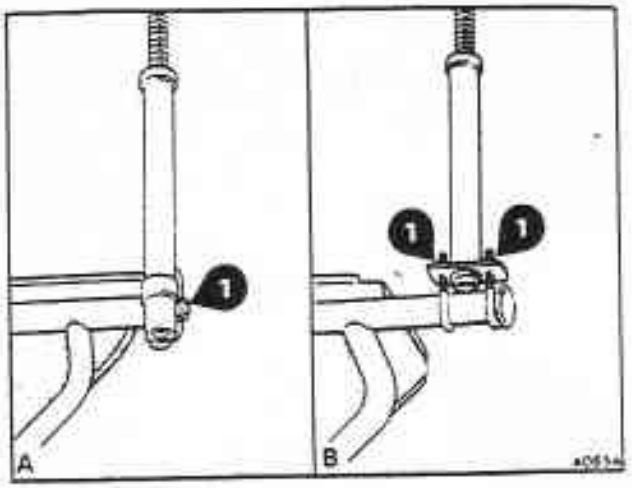


Fig. R1-7 **Spare wheel carrier adjustment points**
- A Other than Bentley Turbo R
- B Bentley Turbo R

Then, disengage the spare wheel retention hook.

2. Locate the carrier lowering bolt (see fig. R1-2). Then, fully lower the spare wheel carrier.
3. Remove the dustcap from the carrier lifting tube. Then, insert the tommy bar and lift the rear of the carrier clear of its support hook. Pivot the lowering tube assembly clear, then lower the rear of the carrier to the ground and remove the tommy bar.
4. Remove the spare wheel.
5. To fit the spare wheel reverse the removal procedure. Check that when the carrier is fully raised the wheel is securely clamped against the underside of the luggage compartment floor panel. If the wheel is not securely clamped, adjust the position of the carrier as follows.

Lower the carrier slightly by loosening the lowering bolt four or five complete turns.

Then, whilst supporting the carrier, raise the support hook by turning each adjustment nut clockwise one or two complete turns (see fig. R1-7B, item 1).

Raise the carrier and check that the spare wheel is securely clamped. If necessary repeat the adjustment operation.

Tyres — General information

Introduction

Silver Spirit, Silver Spur, Bentley Mulsanne, Bentley Eight, and Corniche/Continental cars must be fitted with 235/70 HR15 (HR70 HR15) steel braced radial ply tyres.

Mulsanne Turbo cars must be fitted with 235/70 VR15 (HR70 VR15) steel braced radial ply tyres.

Bentley Turbo R cars must be fitted with 255/65 VR15, or 275/55 VR15 steel braced radial ply tyres.

New tyres

On no account should tyres other than those approved in this Workshop Manual or in subsequent Service Information Sheets be fitted to the car, as this could have undesirable effects on the handling and stability of the car.

When new tyres have been fitted, speeds of 80 km/h (50 mile/h) should not be exceeded during the first 80 km (50 miles). For a further 724 km (450 miles) sustained speeds of 112 km/h (70 mile/h) or over must not be undertaken. Fast cornering, hard braking, and harsh acceleration must also be avoided.

When fitting new tyres, also fit new valve assemblies and balance the wheels.

Tyre characteristics

After fitting new radial ply tyres, wheel vibrations may be felt during the initial running-in period. This is quite normal, but it is recommended that after the initial running-in period the tyres on all four wheels are again balanced, both statically and dynamically.

On Bentley Turbo R cars fitted with Pirelli tyres, high speed driving followed by a prolonged period of parking, may result in a 'flat' forming on the tyres as they cool. This condition is not permanent, but is dependent upon the temperature that the tyres have attained during driving and the length of time the car is parked.

Upon commencement of driving it may take several miles for the temperature of the tyres to rise sufficiently for the 'flats' to disappear. While these flats are present, some harshness and vibration may be felt in the motor car.

Another characteristic of these tyres, is that they are sensitive to ridges and raised lines on the road surface which may result in steering pull. This is not abnormal and may increase slightly as the tyres become worn.

Tyre mixing

Where possible tyres should be fitted in complete sets e.g. five new 235/70 HR15 (HR70 HR15) steel braced tyres of the same make.

The mixing of different makes of tyres is not recommended. However, if the tyres are mixed, the new tyres must be fitted in pairs across the car, preferably at the rear.

New tyres should not be fitted to the front wheels in combination with rear tyres that have less than 3 mm (0.12 in) of tread remaining as rear end car stability could be affected.

Tyre — To remove

Cars other than those fitted with aluminium alloy road wheels.

1. Remove the dustcap and deflate the tyre by removing the valve core.
2. Using a suitable tyre removal/fitting machine, unseat each tyre bead in turn.
3. Lubricate the wheel rim and tyre bead area on both sides of the wheel using bead lubricant Dunlop TBL 1, TBL 2, or Tip Top 593063 mounting paste.
4. Clamp the wheel in position with the inner rim uppermost. Then, roll off each tyre bead in turn and remove the tyre.
5. Remove and discard the valve assembly.

Tyre — To fit

Cars other than those fitted with aluminium alloy road wheels.

1. Inspect the wheel, removing any burrs, high spots, or scale, paying particular attention to the tyre bead seating areas.
2. On cars fitted with rubber bodied tyre valves proceed as follows.

Smear the valve with tyre bead lubricant. Then, using a valve fitting tool, pull the valve into position in the wheel rim.

If the fitting tool is not available the valve can be fitted by applying pressure to the spherical end using a piece of wood, or a similar blunt object, until the valve seats correctly in the wheel rim.

3. On cars fitted with clamp-in metal bodied tyre valves proceed as follows.

Insert the valve into the hole in the wheel rim, then fit the valve securing nut and washer (see fig. R2-1). When fitting a new valve, do not use tyre bead lubricant or grease of any kind. Using a 14 mm (9/16 A/F) long reach socket, torque tighten the nut to the figures specified in Section R4. Do not overtighten.

4. Lubricate the tyre beads, and the rim seat areas of the wheel using bead lubricant Dunlop TBL 1, TBL 2, or Tip Top 593063 mounting paste.
5. Fit the tyre to the wheel, ensuring that the force variation mark, indicated by a green paint spot on the sidewall, is aligned with the letter 'H' stamped on the wheel rim (see fig. R2-2).

Note

Certain tyres are marked with a white paint spot. These tyres should be positioned with the white spot

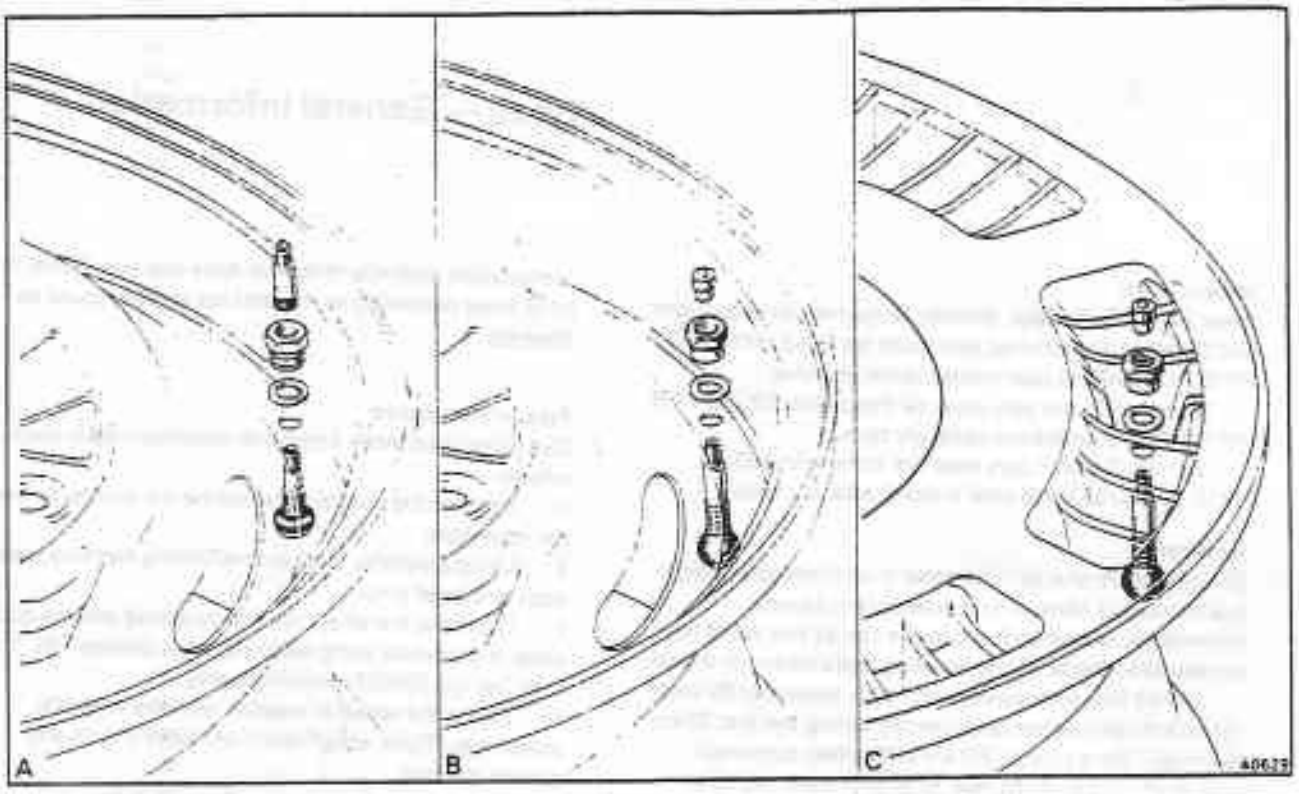


Fig. R2-1 Clamp-in tyre valves
A Cars fitted with a steel valve and extension piece
B Cars fitted with a full one-piece steel valve and dustcap
C Bentley Turbo R cars, also Bentley Mulsanne and Bentley Continental cars from 1986 model year and onwards fitted with an aluminium valve and dustcap.

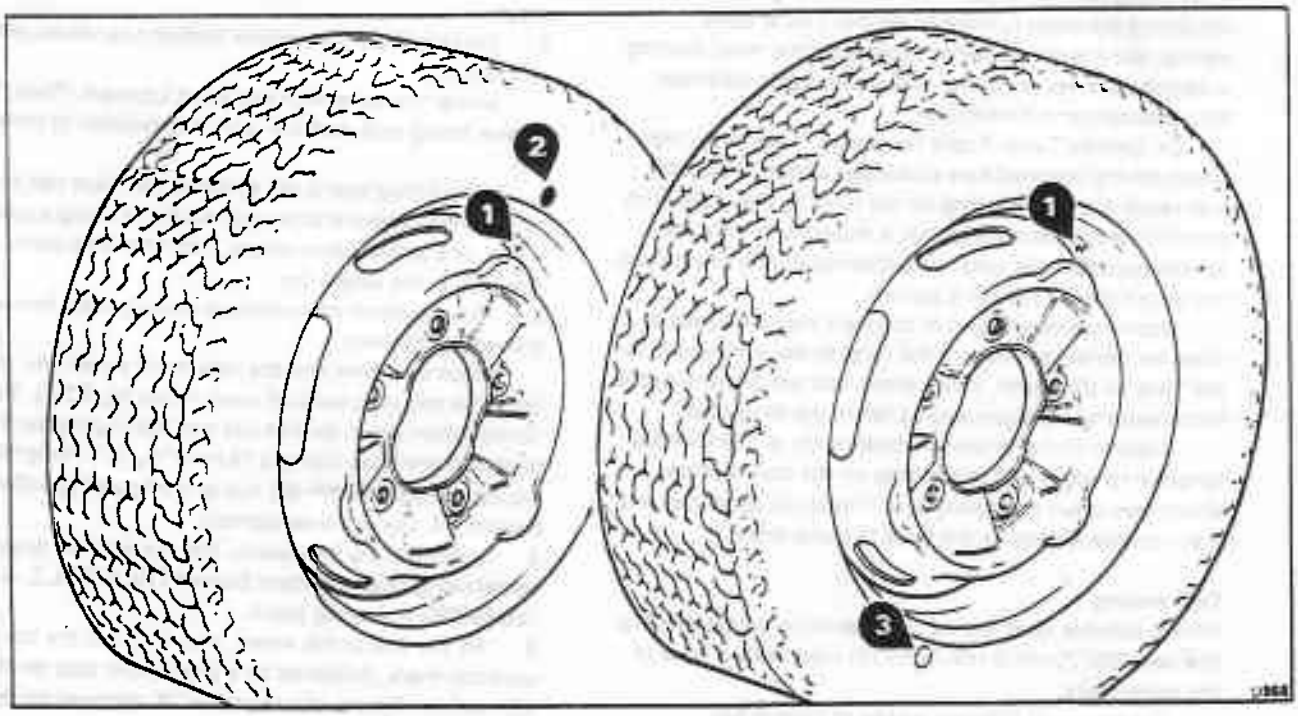


Fig. R2-2 Wheel and tyre markings
1 'H' marking
2 Green spot marking
3 White spot marking

diametrically opposite the letter 'H' stamped on the wheel rim (see fig. R2-2). Any additional colour spot markings should be ignored as they are merely used by tyre manufacturers for inspection purposes.

6. To seat the tyre beads, inflate the tyre to a maximum of 2,1 bar (30 lbf/in²). If the tyre beads do not seat correctly, completely deflate the tyre and re-lubricate the tyre beads and rim seat areas of the wheel. Then, re-inflate the tyre.

7. Adjust the tyre to its correct running pressure (see Section R3). Check that the valve core does not leak, then fit the dustcap.

Note

On cars fitted with clamp-in metal bodied tyre valves it is advisable to re-check the tightness of the tyre valve securing nut.

Tyre — To remove

Cars fitted with aluminium alloy road wheels.

The aluminium alloy road wheels fitted to Bentley Turbo R cars incorporate a 'safety hump' tyre bead location rim. The purpose of the 'safety hump' is to prevent the tyre beads from unseating in the event of sudden deflation.

To assist in the removal and fitting of a tyre, the height of the 'safety hump' is reduced at a point adjacent to the valve on the outer rim and diametrically opposite the valve on the inner rim (see fig. R2-3, arrowed).

When removing or fitting a tyre extreme care must be taken to prevent damaging the surface coating of the wheel.

Note

If it is necessary to replace Pirelli P7 275/55 tyres, fitted to Bentley Turbo R cars, with tyres of a different specification (e.g. Avon Turbospeed 255/65) a new speedometer drive will need to be fitted. Refer to Chapter T, Section T10.

To remove a tyre proceed as follows.

1. Remove the dustcap and deflate the tyre by removing the valve core.

2. Using a suitable tyre removal/fitting machine, (e.g. Corghi Artiglio Automatico or Repco model F68), unseat the outer bead of the tyre at a point adjacent to the valve. Then, progressively unseat the remainder of the bead circumference. Similarly, unseat the inner bead commencing at a point diametrically opposite the valve.

3. Lubricate the wheel rim and tyre bead area on both sides of the wheel using bead lubricant Dunlop TBL 1, TBL 2, or Tip Top 593063 mounting paste.

4. Clamp the wheel in position with the outer rim uppermost. Then, commencing at a point adjacent to the valve, roll off the outer bead. Similarly, roll off the inner bead and remove the tyre commencing at a point diametrically opposite the valve. Care must be taken to prevent damaging the tyre beads and the surface coating of the wheel. **Do not use tyre levers.**

Tyre — To fit

Cars fitted with aluminium alloy road wheels.

1. Always fit a new aluminium clamp-in valve assembly when fitting a new tyre.

2. Insert the valve into the rim, then fit the valve securing nut and washer (see fig. R2-1). When fitting a new valve, do not use tyre bead lubricant or grease of any kind. Using a 14 mm (9/16 A/F) long reach socket, torque tighten the nut to the figures specified in Section R4. **Do not overtighten.**

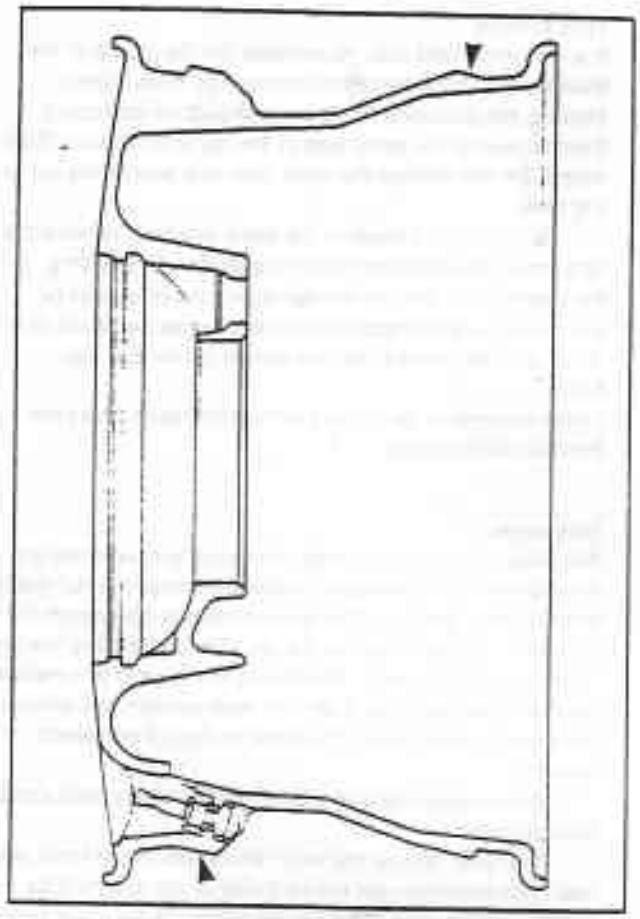


Fig. R2-3 Sectional view of Bentley Turbo R wheel
The arrows indicate the positions on the wheel where the 'safety hump' height is reduced to assist in tyre removal

3. Lubricate the tyre beads, and the rim seat areas of the wheel using bead lubricant Dunlop TBL 1, TBL 2, or Tip Top 593063 mounting paste.

4. Clamp the wheel to the tyre fitting machine with the outer rim uppermost.

5. Position the tyre on the wheel ensuring that the force variation mark on the tyre, indicated by a green spot on the sidewall, is adjacent to the valve. Then, carefully roll each tyre bead in turn over the outer rim of the wheel taking care not to damage the tyre beads or the protective coating of the wheel. **Do not use tyre levers.**

6. To seat the tyre beads, inflate the tyre to a maximum of 2,75 bar (40lbf/in²). If the tyre beads do not seat correctly, completely deflate the tyre and re-lubricate the tyre beads and rim seat areas of the wheel. Then, re-inflate the tyre.

7. Adjust the tyre to its correct running pressure (see Section R3). Check that the valve core does not leak, then fit the dustcap.

Note

It is advisable to re-check the tightness of the tyre valve securing nut.

Tyre service

It is recommended that, to increase the life of any of the steel braced radial ply tyres approved by Rolls-Royce Motors, the positions of the tyres should be alternated front to rear on the same side of the car at 10 000 km (6000 miles). Do not change the tyres from one side of the car to the other.

To carry out a repair in the tread of a tyre, remove the tyre from the wheel and repair the inside of the casing. If the sidewalls of the tyre are damaged, the tyre must be examined by a tyre specialist as damage to the fabric of a radial ply tyre renders the tyre unsafe for further use.

Note

Never attempt to carry out a temporary repair on a steel braced radial ply tyre.

Tyre wear

The wear pattern on partially worn steel braced radial ply tyres should be reasonably consistent across the full width of all primary grooves. The tyres should be alternated front to rear on the same side of the car after completing the first 10 000 km (6000 miles). Alternating the tyres in this manner assists in producing an even tyre wear pattern and should increase the tread life of the tyres by more than twenty percent.

When assessing tyre wear, the following points should also be noted.

1. The wear rate on the outer shoulders of the front and rear tyres which run on the kerb side of the road will be slightly greater than the outer shoulders of the other tyres, particularly if the car is driven on roads with a pronounced camber.
2. Tyre wear is critical to tyre inflation pressures, particularly with respect to under-inflation. Therefore, it is imperative that the recommended tyre pressures are maintained.
3. The higher the speed at which a car is driven through corners, the more the tyres will wear on the inner shoulders. The effects of hard cornering will be shown also by 'feathering' which occurs on the rib edges.

Tread wear indicators

To provide a visual indication that the depth of tread remaining on a tyre is 1,60 mm (0.062 in) or less, tread wear indicators are incorporated into the construction of the tyres.

These indicators are integrally moulded ribs located in the tread grooves. The ribs are spaced at frequent intervals around the circumference of the tyre and at each point they extend across the full width of the tyre tread in all primary grooves.

Tyres with badly worn treads are a safety hazard therefore, when a tyre has worn so that one or more of the indicators are flush with the tread [1,60 mm (0.062) or less, tread depth] a new tyre is required.

It is important to note that the wet grip properties of a tyre rapidly deteriorate when the tread depth approaches that of the tread wear indicators.

Legal requirements

All Franchise Holders are advised to familiarize themselves with the legal requirements covering tyres and tyre wear for the country in which they operate. An example of a requirement which applies in the United Kingdom is as follows.

The original tyre tread pattern must be visible over the complete contact area of the tyre. Tread depth must not be less than 1 mm (0.039 in) in a continuous area extending to a minimum of 75% of the tread width and this must extend around the complete circumference of the tyre.

Remould tyres

In cases where new tyres fail to meet the overall quality standards laid down by the manufacturers, but remain structurally sound and are suitable for sale as a remoulded tyre, the sidewalls will bear one of the following markings, 'Regraded Quality', 'Remould Quality', or 'Seconds'. In addition, the speed rating of the tyre (e.g. the H in HR15) will be obliterated.

Under no circumstances should any tyres be fitted which have been branded 'Regraded Quality', 'Remould Quality', or 'Seconds; or those which have had the speed rating removed or altered.

Winter tyres

Refer to Section R3 for recommended winter tyres.

Always fit winter tyres to all four wheels.

Studded tyres

In certain countries, notice should be taken of the regulations governing the use of studded tyres, particularly regarding the following.

1. The number of studs.
2. The height of the protrusion of studs in the tyres.
3. The maximum permitted speed.

In countries where there is no legislation on the use of studded tyres, it is recommended that, on new tyres, stud protrusion from the tread should be between 1 mm and 2,50 mm (0.039 in and 0.098 in).

The following points should also be noted when fitting studded tyres.

1. Do not exceed a speed of 121 km/h (75 mile/h).
2. Always 'run in' new studded tyres for approximately 322 km (200 miles) at a moderate speed.
3. All running wheels must be fitted with studs, as studded tyres fitted to one axle only can cause instability, for example, on braking, when decelerating on icy roads with studded tyres on the front axle only. Similarly, instability, particularly on bends, can occur with studded tyres on the rear axle only.
4. Heavy braking and rapid acceleration should be avoided.
5. Whenever possible a tyre should be studded from new, however, it is acceptable to stud a partially worn tyre provided that the studs do not protrude beyond 4 mm (0.157 in) when fitted. If this limit is exceeded, the tyre must be considered too worn to be successfully studded.
6. Studded tyres, when refitted, should be mounted so as to turn in the same direction as when previously fitted. Therefore, at the end of the winter season, the direction of rotation or the position of the wheel should be marked on each tyre.

Recommended tyres, tyre pressures, and snow chains

Tyre pressures

To ensure the designed handling characteristics of the car are achieved, it is important to maintain the differential in tyre pressure between the front and rear wheels.

When checking tyre pressures, ensure that the tyres are cold. Do not check the pressures after a journey i.e. when the tyres are hot.

After checking the tyre pressures, ensure that the dustcaps are fitted, as they not only protect the valve from the ingress of water, but also provide a valuable secondary air seal. The dustcaps should be renewed if damaged.

Note

On cars fitted with tyre valve extension pieces, dustcaps are not fitted (see fig. R2-1, inset A). Do not release the extension pieces when checking the tyre pressures.

Recommended tyres

Important Bentley Mulsanne Turbo and Bentley Turbo R cars must be fitted with VR speed rated tyres

Tyre manufacturer	Car model	Country	Tyre construction	Size	Speed rating	Sidewall	Sidewall markings
Avon	Rolls-Royce Silver Spirit Rolls-Royce Silver Spur Rolls-Royce/Bentley Corniche Bentley Eight Bentley Mulsanne (excluding Turbo) Bentley Continental	Other than North America	Radial ply steel	235/70	HR	Available in black or black with white band	AR Turbosteel 70 101H 235/70 HR15
	Bentley Mulsanne Turbo	United Kingdom, Europe, and the Middle East	Radial ply steel	235/70	VR	Available in black or black with white band	AR Turbosteel 70 235/70 VR15
	Bentley Turbo R	United Kingdom, Europe, and the Middle East	Radial ply steel	255/65	VR	Available in black only	AR Turbospeed CR27 255/65 VR 15
Dunlop	Rolls-Royce Silver Spirit Rolls-Royce Silver Spur Rolls-Royce/Bentley Corniche Bentley Eight Bentley Mulsanne (excluding Turbo) Bentley Continental	United Kingdom, Europe, Middle East, South Africa, Malaysia, and Singapore	Radial ply steel	235/70	HR	Available in black or black with white band	Dunlop SP Sport D7 235/70 HR15
Goodyear	Rolls-Royce Silver Spirit Rolls-Royce Silver Spur Rolls-Royce/Bentley Corniche Bentley Eight Bentley Mulsanne (excluding Turbo) Bentley Continental	All markets	Radial ply steel	235/70	HR	Available in black or black with white band	Goodyear NCT HR70 235/70 HR15
Michelin	Rolls-Royce Silver Spirit Rolls-Royce Silver Spur Rolls-Royce/Bentley Corniche Bentley Mulsanne (excluding Turbo) Bentley Continental	North America only	Radial ply steel	235/70	HR	Available in black or black with white band	Michelin XVS 235/70 HR15
Pirelli	Bentley Turbo R	United Kingdom, Europe, and the Middle East	Radial ply steel	275/55	VR	Available in black only	Pirelli P7R 275/55 VR15

Tyre pressures

Rolls-Royce Silver Spirit and Silver Spur (non-division)

Model year	Specification	Loading conditions	Tyre pressures
Prior to 1986	*Cars other than those conforming to a North American specification*	Up to five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
	Cars conforming to a North American specification	Up to five occupants and 136,2 kg (300 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
1986 onwards	*Cars other than those conforming to an Australian and North American specification*	Up to four occupants and 45,3 kg (100 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
		Over four occupants and 45,3 kg (100 lb) of luggage up to a maximum load of five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
	Cars conforming to an Australian specification	Up to five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 140 km/h (87 mph) Front 1,7 bar (24 lbf/in²) Rear 1,9 bar (27 lbf/in²) Sustained speeds in excess of 140 km/h (87 mph) Front 2,2 bar (32 lbf/in²) Rear 2,4 bar (34 lbf/in²)
	Cars conforming to a North American specification	Up to five occupants and 136,2 kg (300 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)

Tyre pressures (continued)

Rolls-Royce Silver Spur (division)

Model year	Specification	Loading conditions	Tyre pressures
All cars	All cars	Up to five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,8 bar (26 lbf/in²) Rear 2,2 bar (32 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,5 bar (36 lbf/in²)

Rolls-Royce Corniche and Corniche II

Model year	Specification	Loading conditions	Tyre pressures
All cars	All cars	Up to four occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)

Tyre pressures (continued)

Bentley Mulsanne

Model year	Specification	Loading conditions	Tyre pressures
Prior to 1986	*Cars other than those conforming to a North American specification*	Up to five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
	Cars conforming to a North American specification	Up to five occupants and 136,2 kg (300 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
1986 onwards	*Cars other than those conforming to an Australian and North American specification*	Up to five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,1 bar (30 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,5 bar (36 lbf/in²)
	Cars conforming to an Australian specification	Up to five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 140 km/h (87 mph) Front 1,7 bar (24 lbf/in²) Rear 1,9 bar (27 lbf/in²) Sustained speeds in excess of 140 km/h (87 mph) Front 2,2 bar (32 lbf/in²) Rear 2,4 bar (34 lbf/in²)
	Cars conforming to a North American specification	Up to five occupants and 136,2 kg (300 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)

Bentley Mulsanne Turbo

Model year	Specification	Loading conditions	Tyre pressures
All cars	All cars	Up to five occupants and 113,5 kg (250 lb) of luggage	Low speed town driving Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Normal inflation pressure Front 1,9 bar (27 lbf/in²) Rear 2,41 bar (35 lbf/in²)

Tyre pressures (continued)

Bentley Eight

Model year	Specification	Loading conditions	Tyre pressures
Prior to 1986	All cars	Up to five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
1986 onwards	All cars	Up to five occupants and 113,5 kg (250 lb) of luggage	Low speed town driving Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Normal inflation pressure Front 1,9 bar (27 lbf/in²) Rear 2,41 bar (35 lbf/in²)

Bentley Corniche

Model year	Specification	Loading conditions	Tyre pressures
All cars	All cars	Up to four occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)

Bentley Continental

Model year	Specification	Loading conditions	Tyre pressures
Prior to 1986	All cars	Up to four occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)
1986 onwards	*Cars other than those conforming to a North American specification*	Up to four occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,1 bar (30 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,5 bar (36 lbf/in²)
	Cars conforming to a North American specification	Up to four occupants and 113,5 kg (250 lb) of luggage	Speeds up to 180 km/h (110 mph) Front 1,7 bar (24 lbf/in²) Rear 2,0 bar (28 lbf/in²) Sustained speeds in excess of 180 km/h (110 mph) Front 2,1 bar (30 lbf/in²) Rear 2,4 bar (34 lbf/in²)

Tyre pressures (continued)

Bentley Turbo R
Avon Turbospeed 255/65 tyres

Model year	Specification	Loading conditions	Tyre pressures
1986 onwards	All cars	Up to four occupants and 22 kg (50 lb) of luggage	Speeds up to 210 km/h (130 mph) Front 2,1 bar (30 lbf/in²) Rear 2,6 bar (37 lbf/in²) Sustained speeds in excess of 210 km/h (130 mph) Front 2,1 bar (30 lbf/in²) Rear 2,6 bar (37 lbf/in²)
		Over four occupants and 22 kg (50 lb) of luggage up to a maximum load of five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 210 km/h (130 mph) Front 2,1 bar (30 lbf/in²) Rear 2,6 bar (37 lbf/in² Sustained speeds in excess of 210 km/h (130 mph) Front 2,3 bar (33 lbf/in²) Rear 3,1 bar (44 lbf/in²)

Bentley Turbo R
Pirelli P7 275/55 tyres

Model year	Specification	Loading conditions	Tyre pressures
All cars	All cars	Up to four occupants and 90 kg (200 lb) of luggage	Speeds up to 210 km/h (130 mph) Front 2,0 bar (28 lbf/in²) Rear 2,41 bar (35 lbf/in²) Sustained speeds in excess of 210 km/h (130 mph) Front 2,0 bar (28 lbf/in²) Rear 2,41 bar (35 lbf/in²)
		Over four occupants and 90 kg (200 lb) of luggage up to a maximum load of five occupants and 113,5 kg (250 lb) of luggage	Speeds up to 210 km/h (130 mph) Front 2,0 bar (28 lbf/in²) Rear 2,41 bar (35 lbf/in² Sustained speeds in excess of 210 km/h (130 mph) Front 2,15 bar (31 lbf/in²) Rear 2,9 bar (42 lbf/in²)

Recommended winter tyres (Applicable to all countries)

Tyre manufacturer	Construction	Size	Sidewall	Tyre/Marking
Dunlop	Radial ply textile	205-15	Black	Dunlop Weathermaster SP44TT/L
Firestone	Radial ply steel	P225/75 — R15	White	Firestone Town & Country Snowbiter
Goodrich	Radial ply steel	P225/75 — R15	White	BF Goodrich MS Trailmaker
Michelin	Radial ply steel	HR78 — 15	White	Michelin X
Goodyear	Radial ply textile	HR70 — 15	Black with white band	Goodyear MS All Winter Radial

Tyre pressures and Snow chains

Tyre manufacturer/ Tyre marking	Size	Tyre pressures		Maximum speed*	Snow chains
		Front	Rear		
Dunlop Weathermaster SP44TT/L	205 — 15	2,0 bar (28 lbf/in²)	2,0 bar (28 lbf/in²)	137 km/h (85 mile/h)	Union S2 3081 Union S2 3082 Rud Kantenspur 07 — 745 Rud Kantenspur 06 — 237 Rud Super Griefsteg S8143 Pewag Austro S/A77S Thiele Nordland Eifelspur Gruppe 351
		2,2 bar (32 lbf/in²)	2,2 bar (32 lbf/in²)	153 km/h (95 mile/h)	
Firestone Town & Country Snowbiter	P225/75 — R15	1,7 bar (24 lbf/in²)	2,0 bar (28 lbf/in²)	121 km/h (75 mile/h)	
BF Goodrich MS Trailmaker	P225/75 — R15	1,7 bar (24 lbf/in²)	2,0 bar (28 lbf/in²)	121 km/h (75 mile/h)	
Michelin X MS	HR78 — 15	1,7 bar (24 lbf/in²)	2,0 bar (28 lbf/in²)	161 km/h (100 mile/h)	
Goodyear MS All Winter Radial	HR70 — 15	1,7 bar (24 lbf/in²)	2,0 bar (28 lbf/in²)	137 km/h (85 mile/h)	

*Note — When studs are fitted the maximum speed should not exceed 121 km/h (75 mile/h)

Spare tyre inflation

1. Lift up the carpet on the luggage compartment floor to expose the rubber plug (see fig. R1-2).
2. Remove the plug to gain access to the tyre valve.
3. Adjust the tyre pressure as necessary.

Snow chains

In certain countries, notice should be taken of the regulations governing the use of snow chains, particularly regarding the following.

1. The road conditions in which the use of snow chains is allowed.
2. The maximum permitted speed in conditions of snow. When snow chains are fitted, a speed limit of 50 km/h (31 mile/h) must not be exceeded on snow free roads.
3. In certain countries, the use of snow chains is compulsory under certain conditions.

Note

The snow chains recommended in this section must not be used on cars fitted with aluminium alloy road wheels.

When fitting snow chains the following points should be observed.

1. Always refer to the manufacturer's fitting and removal procedure. A leaflet providing these details is supplied with each kit.
2. If it is necessary to raise the car reference must be made to Section R1.
3. When plastic gloves are provided with a kit, always ensure that they are used.
4. The spare links supplied with a kit are only intended to permit emergency road side repairs to be carried out if a chain is damaged.
5. On all types of snow chains it is important to note that if the chains are fitted too tightly and the car is driven at fast speeds, or for long distances, on roads which are free from snow, irreparable damage to the tyres and the chains will occur.

Cleaning snow chains

To protect the chains against rust, wash in hot water and dry them as soon as possible after use.

Studded tyres

In certain countries, notice should be taken of the regulations governing the use of studded tyres, particularly regarding the following.

1. The number of studs.
2. The height of the protrusion of studs in the tyres.
3. The maximum permitted speed.

In countries where there is no legislation on the use of studded tyres, it is recommended that, on new tyres, stud protrusion from the tread should be between 1 mm and 2,50 mm (0.039 in and 0.098 in).

The following points should also be noted when fitting studded tyres.

1. Do not exceed a speed of 121 km/h (75 mile/h).
2. Always 'run in' new studded tyres for approximately 322 km (200 miles) at a moderate speed.
3. All running wheels must be fitted with studs, as studded tyres fitted to one axle only can cause instability, for example, on braking, when decelerating on icy roads with studded tyres on the front axle only. Similarly, instability, particularly on bends, can occur with studded tyres on the rear axle only.
4. Heavy braking and rapid acceleration should be avoided.
5. Whenever possible a tyre should be studded from new, however, it is acceptable to stud a partially worn tyre provided that the studs do not protrude beyond 4 mm (0.157 in) when fitted. If this limit is exceeded, the tyre must be considered too worn to be successfully studded.
6. Studded tyres, when refitted, should be mounted so as to turn in the same direction as when previously fitted. Therefore, at the end of the winter season, the direction of rotation or the position of the wheel should be marked on each tyre.

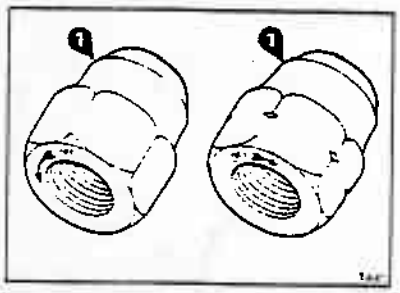
Special torque tightening figures

Introduction
This section contains the special torque tightening figures applicable to Chapter R.

For standard torque tightening figures refer to Chapter P.

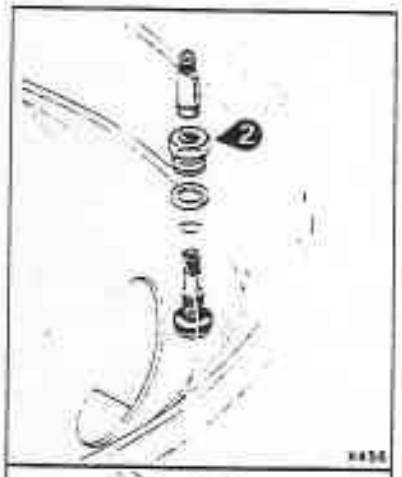
Components used during manufacture of the vehicle have different thread formations (Metric, UNF, UNC, etc.). Therefore, when fitting nuts, bolts and setscrews it is important to ensure that the correct type and size of thread formation is used.

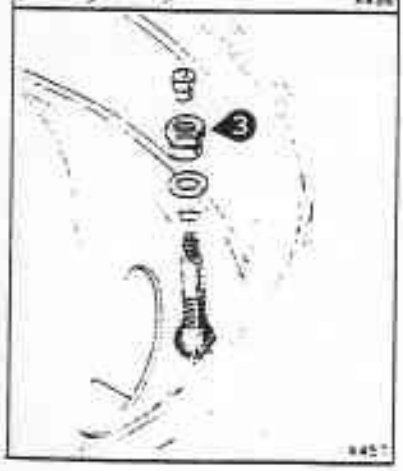
Section R1



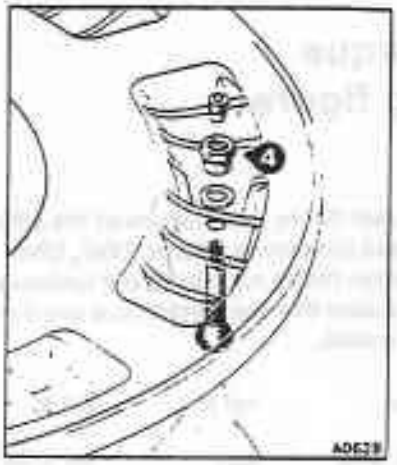
Ref.	Component	Nm	kgf m	lbf ft
1	Road wheel — nut	61 — 68	6—7	45 — 50

Section R2





Ref.	Component	Nm	kgf cm	lbf in
2	Tyre valve retaining nut – Bentley Mulsanne Turbo cars fitted with valve extension piece (steel road wheels)	3,4 — 4,5	34,5—46,0	30 — 40
3	Tyre valve retaining nut – one-piece valve (steel road wheels)	2,3 — 3,4	23,1—34,5	20 — 30

Section R2	Ref.	Component	Nm	kgf cm	lbf in
	4	Tyre valve retaining nut (aluminium alloy road wheels)	2.4 – 2.8	25.3–28.8	22 – 25