SECTION 10

WHEELS, BRAKE DRUMS, HUBS AND TYRES

CONTENTS

SERVICE BULLETIN

RECORD SHEET

No.	Subject	Date	Signature

WHEELS, BRAKE DRUMS, HUBS, AND TYRES

DESCRIPTION

Wheels

The wheels are of the easy-clean, bolt-on type, the wheel disc and rim being riveted together. Three different types of wheel are fitted.

1. Wheel disc of 7 S.W.G. material with a 3.50 D rim. This wheel may have either clips or riveted-in studs to attach the "snap-on" cap and is fitted to type 400 cars only.

2. Wheel disc of 4 S.W.G. material with 3.50 D rims and riveted studs for the "snap-on" cap. These wheels are fitted to type 400 cars only.

3. Wheel disc of 4 S.W.G. material with $4\frac{1}{2}$ J rims and riveted studs for the "snap-on" cap. These are fitted only to type 401 and 402 cars.

It should be noted that the 7 S.W.G. and the 4 S.W.G. wheels on the type 400 cars differ in appearance, the radius on each hole in the wheel of 7 S.W.G. wheels being greater than that of the 4 S.W.G. wheels. The 4 S.W.G. wheels are also spot-faced to provide clearance for the wheel nut and wheel brace; this is not the case on 7 S.W.G. wheels. <u>These points should be noted when ordering replacements</u>. It will be necessary to enlarge slightly the central hole in the spare wheel cover of type 400 cars if a 4 S.W.G. wheel replaces a 7 S.W.G. wheel. Failure to do this will result in distortion of the cover when the three wheel nuts are tightened.

For balancing purposes, wheels of type 400 cars have three equally-disposed studs on the inside of the wheel disc to which lead washers can be attached to obtain the correct balance. The wheels of type 401 and 402 cars have a balancing

weight clipped to the outside and one to the inside of the wheel rim; the weights available vary in increments of ½ ounce.

Hubs

The front wheel hub assembly comprises the hub, the inner and outer races, which are separated by a distance piece, and an inner race retaining nut which carries an oil seal. The retaining nut is screwed into the bore of the hub and is retained by a locking ring. The wheel securing studs are screwed into the hub flange and are secured by peened nuts on the inside of the flange. A dust cap screwed on the outer end of the hub, together with a gasket, completes a sealed chamber for the two races. The hub assembly is secured to the stub axle by a 11/16in. B.S.F. slotted nut which is locked with a ⅛in. split pin.

The rear wheel hub assemblies are described in Section 6 of this Manual.

The front and rear brake drums are carefully balanced. They are located primarily on a register machined on the hub and half shaft respectively. The shoulder portion of the wheel securing studs provides a secondary location against rotation of the drum relative to the hub or half shaft, the drum being retained by two ¼in. B.S.F. countersunk set-screws. Holes drilled at intervals round the outer periphery of the drum provide drainage for any water which may collect. The drums are balanced individually and a spring cap on the drum provides access to the brake shoe adjustment.

Tyres

For the purpose of balancing, various markings are painted on the tyres and tubes, the method used being described under "Maintenance" in this Section.

GENERAL DATA

Rims	
Type 400	3.50 D x 16 well base.
Type 401 and 402	4½ J x 16 well base.
Brake drum diameter	11 ins. (all types).
Tyre sizes	5.50 x 16 or 5.75 x 16.
Tyre pressures	
5.50 x 16	Front 24 p.s.i. Rear 28 p.s.i.
5.75 x 16	Front 22 p.s.i. Rear 26 p.s.i.

MAINTENANCE

Tyres

Tyre maintenance is an extremely important factor in the efficient operation of the car, and the tyre manufacturer's recommendations should be followed strictly. Incorrect pressures will seriously affect tyre life, steering, riding comfort and safe driving.

On refitting or replacing a tyre or tube, it is necessary to balance the wheel and tyre assembly correctly to ensure smooth running and to reduce tyre wear. The following procedure should be adopted. When fitting a "Dunlop" tyre and tube, align the 2 or 3 white spots painted on the wall of the tyre with the similar marks on the tube; these will be found within 3ins. of the valve. In the case of "Michelin" tyres, align the white spot on the tyre wall with the valve; there is no spot on the tube. Do not disturb the balance weights fitted to the rims of type 401 and 402 car wheels unless the wheel assembly is shown to be out of balance. In all cases, balancing should be carried out on an approved wheel balancing machine.

Hubs

At every 12,000 miles (20,000 kms.), remove the front wheel hubs and pack them with the recommended grease. Each hub has a capacity of 4 ozs.

REPLACING WHEEL ATTACHMENT STUDS

These may be removed by releasing the peening which secures the lock-nut at the inner end of the stud, removing the nut and screwing the stud out of the hub. Remove any ragged ends from the stud to make sure that the threads in the hub or half shaft are not damaged when removing the stud. Do not use undue force to unscrew the stud.

After removal, check that the thread in the hub is satisfactory, then fit the new stud and tighten it to a torque of 45 lb.ft. Fit the lock-nut and tighten to a torque of 40 lb.ft., then support the stud and peen to secure the lock-nut.

REMOVING AND REFITTING WHEELS

Detach the "snap-on" cap and loosen the five wheel retaining nuts. If the car jack is used to jack up a type 400 car, fit the spare lifting arm of the jack through the running board into the socket protruding from the middle of the chassis. In the case of type 401 and 402 cars, turn back the carpet and remove the cover fitted over the jacking point, then place the jack between the lugs on the side of the chassis and insert the pin through both lugs and the jack. On later cars the pin is integral with the chassis lugs and the jack has a hook-shaped socket which locates under the pin when the jack is in position. Jack up the car until both wheels on that side of the car are clear of the ground, then remove the wheel retaining nuts and the wheel. Should a garage type jack be

used, avoid damage to the pipelines of the brake and lubrication systems.

To refit the wheel, the reverse procedure is adopted.

REMOVING AND REFITTING BRAKE DRUMS

Make sure that the car cannot move; if either of the rear brake drums have to be removed, release the hand-brake. Remove the wheel, then unscrew the two ¼in. B.S.F. countersunk drum retaining set-screws and remove the drum. It is recommended that the removed brake drums are refitted in their original positions although they are carefully balanced initially and are interchangeable.

Should a brake drum be scored or grooved to such an extent that it is considered unserviceable, it should be replaced by a new brake drum. It is not permissible to regrind this diameter as it is originally ground to a close limit and the brake shoes are ground to the same diameter.

To replace the drum and wheel, reverse the sequence for removal.

REMOVING AND REFITTING FRONT HUBS

Remove the wheel and brake drum as described previously, also the dust cap and gasket from the outer end of the hub. The dust caps have a right-hand thread. Withdraw the split pin and remove the 11/16in. B.S.F. slotted nut and special washer. Fit the hub extractor TFN.5009 to the five wheel securing studs and secure with the five wheel nuts, see Fig. 1. Screw up the extractor bolt to withdraw the hub together with the two bearings, the distance piece, the retaining nut and oil seal.

Before refitting the hub, inspect the oil seal shoulder on the stub axle for burrs or sharp edges, and if necessary, stone such defects.

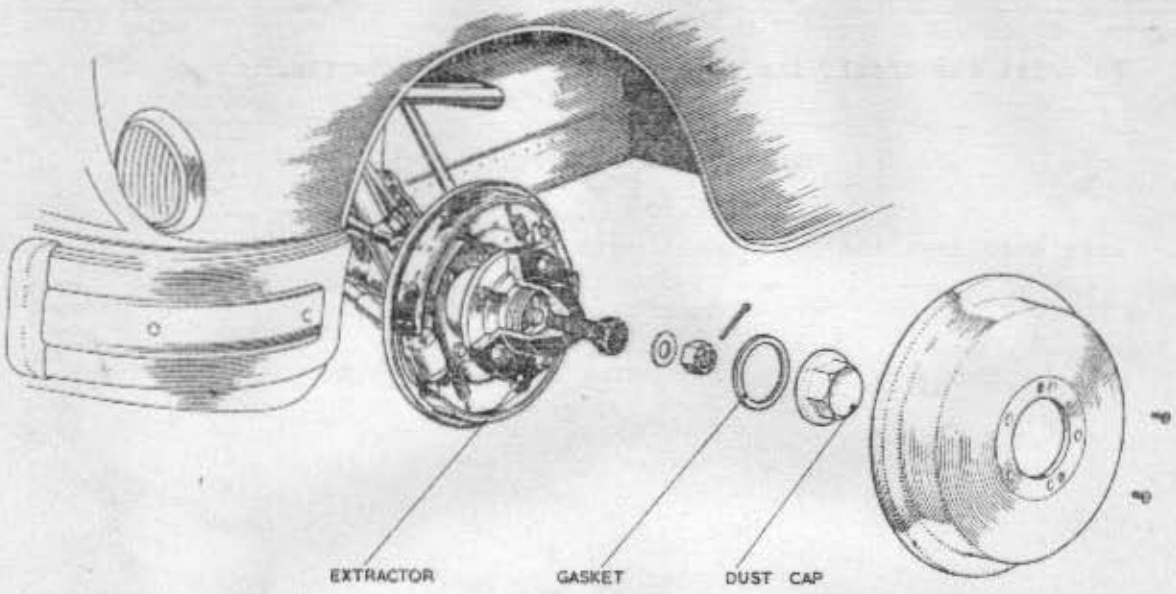


Fig. 1. Extractor for front wheel hubs

To refit, tap the hub assembly over the stub axle, using a tubular mandrel ground square on the end, and positioned so that pressure is applied equally to the inner and outer races of the outer bearing. Fit the special washer and slotted nut to the stub axle and tighten the nut until the new split pin can be fitted; the torque loading of the nut should not exceed 120 lb.ft. Fit the dust cap and its gasket and tighten.

Note :- Do not pack the cap with grease before fitting as tightening the cap may force the grease past the oil seal.

Refit the brake drum and wheel, lower the car and tighten the wheel nuts.

REMOVING AND REPLACING FRONT HUB BEARINGS

Remove the wheel, brake drum and hub. Hold the hub assembly in a soft-jawed vice, remove the locking ring from the hub and, using the spanner TFN.9162, remove the inner bearing retaining nut together with the oil seal.

Note :- The left-hand retaining nut has a left-hand thread.

Place the hub on a suitable hand press and apply pressure to the smaller bearing to push out the two bearings and the distance piece. When fitting bearings, it is most important to avoid damage to the tracks and the balls or rollers. Therefore, the following method is recommended. Before fitting new or the original bearings, wash them thoroughly, pack them with the approved grease, then press the larger bearing into position, applying the pressure to the outer race until it abuts the shoulder in the hub. Screw in and tighten the bearing retaining nut and fit the locking ring. Should it be found necessary to re-drill the nut to receive the leg of the locking ring, take care that the depth of the hole, measured from the outer diameter of the hub, does not exceed $\frac{1}{4}$in. Position the larger end of the distance piece on the larger bearing, pack $\frac{1}{4}$lb. of grease around the distance piece and press the smaller bearing into position by means of a tubular mandrel, ground square on the end, and position so that the pressure is applied to both the inner and outer race outer faces. The distance piece should be kept central during the operation.

Refit the hub assembly to the stub axle followed by the brake drum and wheel in the manner described on pages 8 and 9.

REPLACING FRONT HUB OIL SEAL

Remove the wheel, brake drum and hub assembly, remove the locking ring and, with the spanner TFN.9162, unscrew the bearing retaining nut together with the oil seal. Using a hand press, push out the oil seal. Smear the outer diameter of the new seal with grease and press it into position in the bore of the nut so that the feathered edge of the seal is at the threaded end of the nut. Screw the nut into the hub and tighten; fit the locking ring in position. If the nut has to be re-drilled before locking can be effected, the precaution described previously should be observed.

Refit the hub assembly to the stub axle and the brake drum and the wheel as already described.

REMOVING AND REFITTING REAR HUBS

The hubs of the rear wheels are secured to the half-shafts, and therefore reference should be made to Section 6 for the methods of removal and fitting.

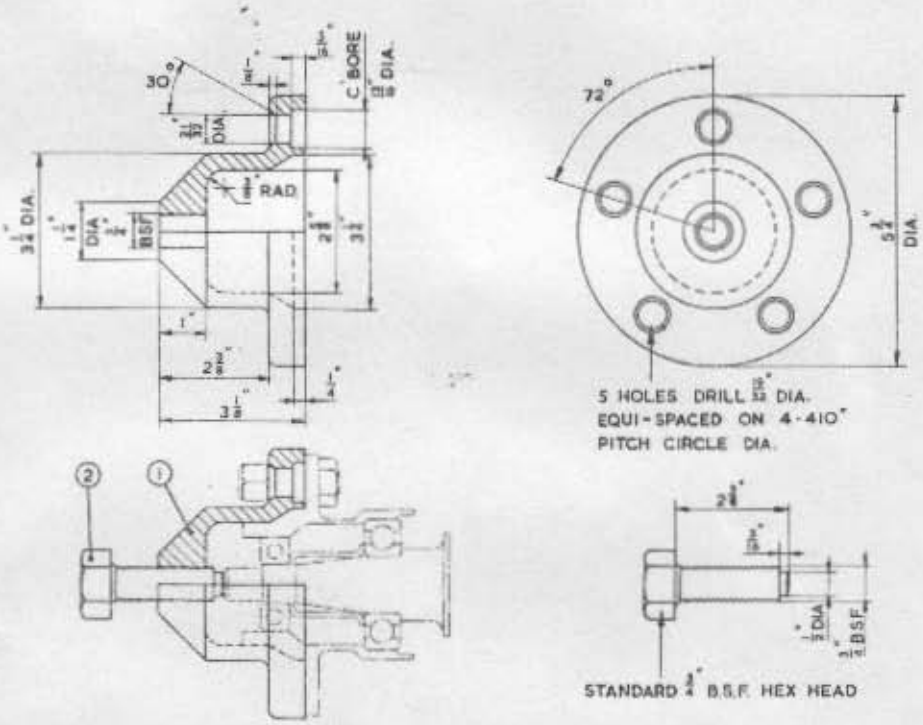
SPARE WHEEL

The spare wheel stowage on the type 400 cars is on the outside of the boot door enclosed by the spare wheel cover. On early type 400 cars, the wheel is stowed vertically inside the boot.

On type 401 and 402 cars, the spare wheel is housed in a compartment beneath the boot floor. The compartment is opened by a toggle lever on each side of the boot floor causing the spare wheel tray to drop thus making the wheel easily accessible. To close the compartment, pull up the tray and press the toggle levers down firmly to lock.

Some earlier type 401 and 402 cars were fitted with a button release for the spare wheel tray, but it is recommended that this type of release should be modified in favour of the toggle levers.

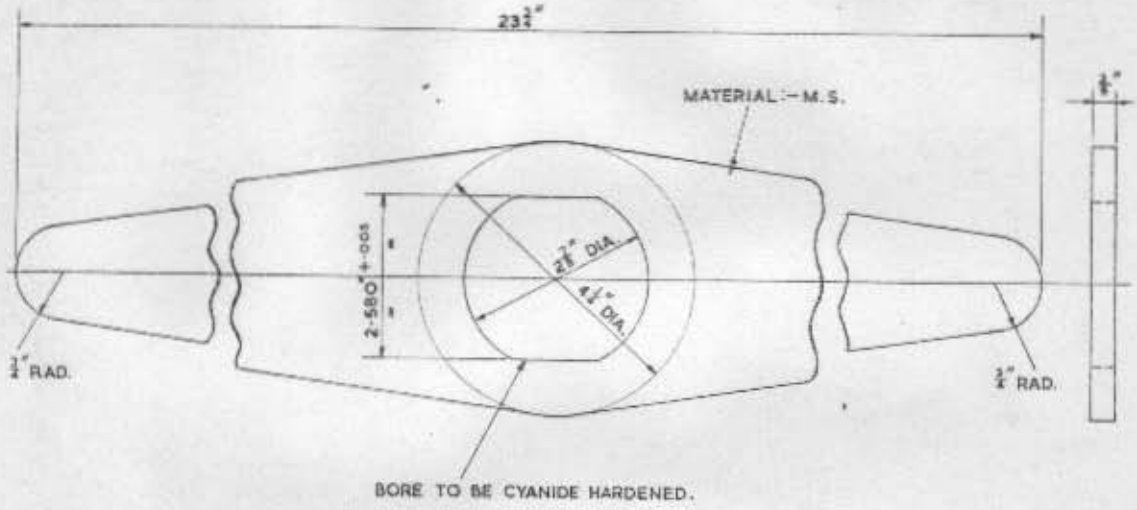
SPECIAL TOOLS



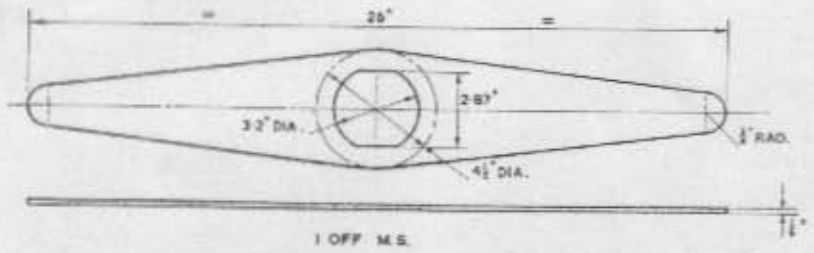
ITEM No.	DESCRIPTION	No. OFF	MATERIAL
1	BODY	1	M.S.
2	EXTRACTING SCREW	1	M.S.

EXTRACTOR T.F.N. 5009

SPECIAL TOOLS



SPANNER FOR RETAINING NUT — FRONT HUB T.F.N. 9162.



SPANNER FOR RETAINING NUTS T.F.N. 5023.
(REAR HUBS)