

SECTION O

THE WHEELS AND TYRES

(TUBELESS TYRES)

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Section O.1

TYRE MAINTENANCE

Even tyre wear is promoted by changing the positions of the tyres on the car at intervals of about 3,000 miles (5000 km.). The spare tyre should be brought into use with the others.

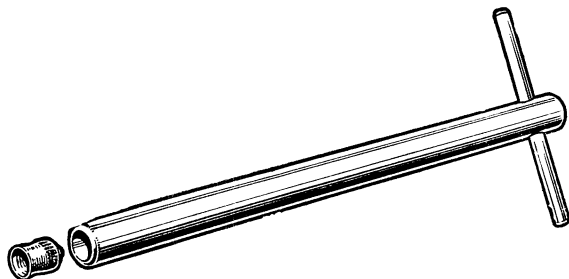


Fig. O.1

Simple tool for fitting tubeless tyre valves

Attention should be paid to the following points with a view to obtaining the maximum mileage from the tyre equipment of the vehicle:

Test the pressures of the tyres every 500 miles (800 km.) by means of a suitable gauge and restore any air lost. It is not sufficient to make a visual inspection of the tyre for correct inflation. Inflate the spare wheel tyre to the correct rear wheel pressure.

Keep the treads free from grit and stones and carry out any necessary repairs. Clean the wheel rims and keep them free from rust. Paint the wheels if necessary.

Keep the clutch and brakes adjusted correctly and in good order. Fierceness or uneven action in either of these units has a destructive effect upon the tyres.

Misalignment is a very costly error. Suspect it if rapid wear of the front tyres is noticed and correct the fault at once. See Section JJ.8 for details on front wheel alignment.

Should the tyres get oily, petrol (gasoline) should be applied sparingly and wiped off at once.

Avoid under- and over-inflation.

Avoid kerbing and other causes of severe impact.

Have any damage repaired immediately.

Remove tyres when smooth for remoulding.

Section O.2

THE VALVES

A mushroom-headed rubber valve is used with tubeless tyres. The valve is secured in the wheel by a small stepped flange on the rubber valve and by the pressure of air inside the tyre.

O.2

A simple but effective tool (Fig. O.1) for fitting the valve can be made up from a 7 in. (177.8 mm.) length of $\frac{1}{2}$ in. (12.7 mm.) steel bar or 13 S.W.G. steel tubing. Using a letter 'S' drill, in one end drill a hole to a depth of approximately $\frac{5}{8}$ in. (15.87 mm.).

Obtain an ordinary valve dust cap and solder the cap in the drilled hole.

The opposite end of the tool requires a hole drilling about $\frac{1}{2}$ in. (12.7 mm.) from the end to accept a short piece of $\frac{1}{4}$ in. (6.35 mm.) diameter rod to provide a handle.

To fit the valve with the aid of the tool first liberally coat the rubber valve and the perimeter of the valve hole in the wheel with soapy water. Insert the valve into the hole and screw on the special tool. A sharp pull will seat the valve correctly.

The valves may be tested for air-tightness by rotating the wheel until the valve is at the top and inserting the end of the valve in a small container of water. If bubbles appear the seating is faulty and the valve interior should be replaced with a new one.

It is advisable to change the valve interiors every 12 months.

Valve caps, in addition to preventing dirt entering the valve, form a secondary air seal and should always be fitted.

Section O.3

REMOVING A WHEEL

Remove the hub cover by inserting the blade of a screwdriver in the recess provided adjacent to the securing lobes. Employ a twisting motion to the screwdriver, not a levering movement.

Slacken the four nuts securing the road wheel to the hub. Lift the vehicle with the jack in accordance with the instructions given in 'GENERAL INFORMATION'.

Remove the nuts, which have right-hand threads, and lift the wheel from the hub.

Refitting a wheel is a reversal of these instructions but ensure that the wheel nuts are fitted with the tapered side towards the wheel and tighten them, using a torque wrench (special tool 18G372) set to 37 to 39 lb. ft. (5.02 to 5.4 kg. m.), in the order 1, 3, 4, 2, imagining them to be numbered 1 to 4 in rotation. **Do not over-tighten.**

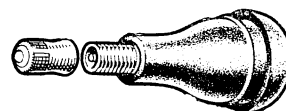


Fig. O.2

Valve for tubeless tyres

Section O.4

TYRE REMOVAL

Remove the valve interior to completely deflate the tyre.

Push both cover edges into the well-base of the wheel, and at a point diametrically opposite lever the cover edge over the rim of the wheel, using two levers at intervals of 6 in. (15 cm.) apart. Continue working round the wheel until the cover on one side is completely free.

NOTE.—Do not attempt to stretch the edges of the tyre cover over the rim edge and only use thin, narrow levers in good condition without rust or burrs. Do not widely space the levers.

Force is entirely unnecessary and is detrimental, as it tends to damage the wire edges. Fitting or removing is quite easy if the tyre edges are carefully adjusted into the rim base; if found difficult, the operation is not being performed correctly.

Stand the tyre and wheel upright, keeping the bead in the base of the rim. Lever the bead over the rim flange and at the same time push the cover away from the wheel with the other hand.

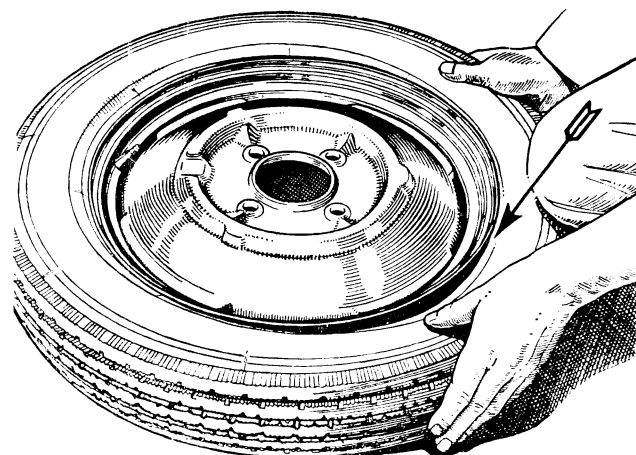


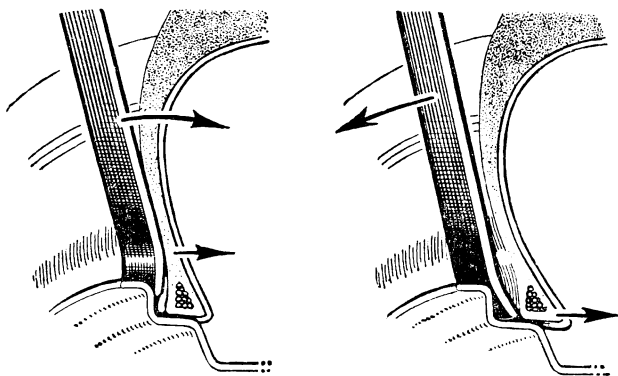
Fig. O.4

Push the cover bead into the well-base of the wheel as indicated by the arrow

Section O.5

TYRE BALANCE

In order to obtain good steering it is of importance to ensure that the wheels with tyres fitted are in good



1. Insert lever between bead and rim, with curved end against tyre. Press lever towards tyre.
2. Insert second lever in space between lever and rim, with curved end outwards, and pull lever away from tyre. Repeat at intervals round tyre until bead is free. Several circuits of tyre may be necessary.

Fig. O.3

The tyres have wired edges and no attempt must be made to stretch them. If the cover fits tightly on the rim seating it should be freed by using the tyre levers as indicated

balance. To assist this the tyre manufacturers are now marking their tyres with a white spot in the neighbourhood of the bead at the lightest point of the cover. When fitting tyres to the wheels ensure that they are assembled with the white spot on the cover in line with the valve.

Special balance weights, which cover a range of weights weighing from $\frac{1}{2}$ to $3\frac{1}{2}$ oz. (14.2 to 99 gm.) in steps of $\frac{1}{2}$ oz. are supplied by the Dunlop Rubber Co. under Part Nos. WBW/1 to 7 for attachment to the wheel rim.

Their use is advised to maintain the correct balance for the wheels, which must be within 12 in. oz. (.85 cm. kg.).

The balance weights are fitted to the outside rim of the wheel.

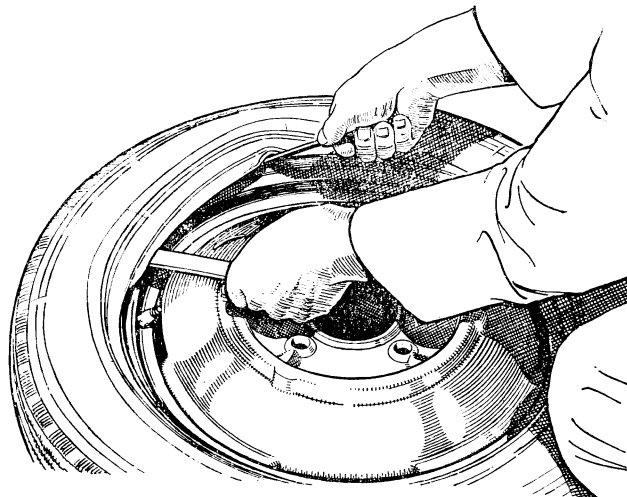


Fig. O.5

Lever the cover edge over the rim all round the wheel

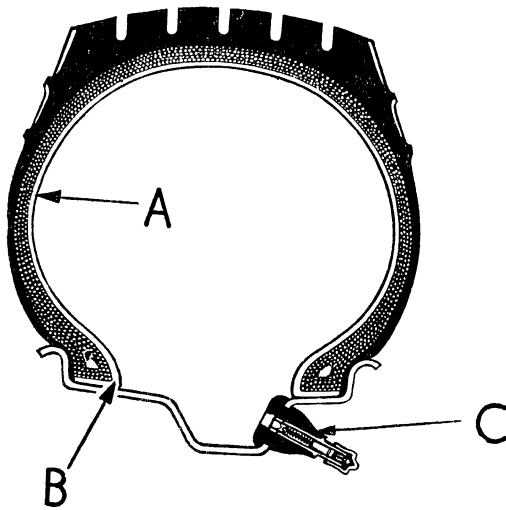


Fig. O.6

A section through a tubeless tyre

- A. Air-retaining liner B. Rubber air sea
C. Rubber-sealed valve

Section O.6

TYRE FITTING

The tubeless tyre relies primarily on a good air seal between the tyre bead and the rim, and also between the rim and the valve. Great care is therefore necessary to avoid the slightest damage to the tyre bead, and the following instructions are of great importance:

Rim preparation

- (1) Remove any visible dents in the flange by careful hammering.
- (2) Clean the flange and rim seat with steel wool, emery, or other cleaning medium and remove all foreign matter, rust, rubber, etc. Paint need not be removed but irregularities in the surface should be smoothed out. In extreme cases of rusting it may be necessary to use a wire brush or a file.
- (3) File or buff away any high-spot at the butt-weld joint.
- (4) Wipe the flange and bead seat with a water-moistened cloth.

Before fitting moisten the beads of the tyre, the rim flange, and the tyre levers with water; **do not use petrol (gasoline)**. Mount the tyre on the rim and push one edge of the cover over the edge of the rim; continue working round the tyre towards the valve position. The portion of the tyre first fitted should be kept pushed into the well-base of the wheel rim and then no difficulty will be encountered in fitting the last portion of the cover. Do not forget that the white balance spot on the tyre must be in line with the valve position.

Before inflation bounce the crown of the tyre on the ground at various points to snap home the beads of the tyre against the rim of the wheel and provide a partial seal.

With the wheel in an upright position inflate the tyre. If a seal cannot be obtained at the first rush of air bounce the tyre again with the air line attached. In cases of difficulty apply a tourniquet of strong cord around the circumference of the tyre and tighten. When a seal is obtained inflate until the beads are completely forced against both rim flanges. Remove the air line, insert the valve interior, and inflate to 50 lb./sq. in. (3.52 kg./cm.²) for testing.

Allow the tyre to stand for a few minutes so that any free air trapped between the flange and the bead clinch can escape. Test the complete assembly in a water tank, paying special attention to the areas at the beads, valve, and wheel rivets.

Sealing leaks located during testing

Loss of air may occur at any or all of the following points:

- (1) The area of the bead seat, showing as a leak at the top of the flange.

This is usually due to a high-spot on the rim and can usually be cured by holding the bead away from the rim to allow further cleaning.

- (2) The wheel rivets. In this case, and in extreme cases of leakage in the area of the bead seat (1), it is necessary to remove the tyre. Before doing so mark the position of the leak on the tyre and rim.

Loss of air at the rivets can be cured by peening over the rivet heads.

- (3) The base of the valve or the valve interior. Provided the valve is correctly fitted, this may be due only to dirt under the valve seat. Clean the area

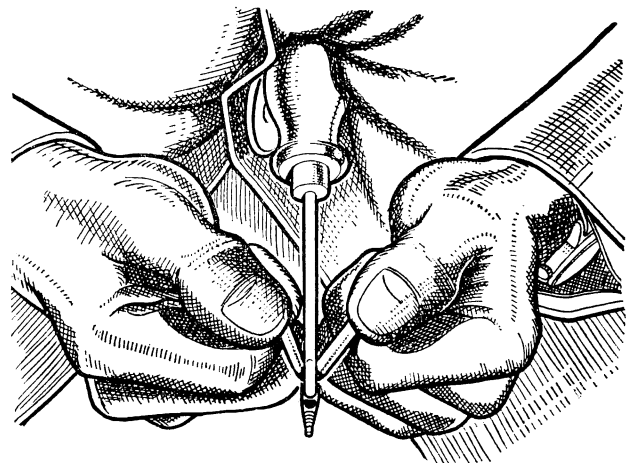


Fig. O.7

Rolling the plug into the needle eye

of the valve seat on the wheel and fit a new valve interior.

Inflate the tyre to the correct pressure before fitting the wheel assembly to the vehicle and driving.

Section O.7

REPAIRING TYRES

Penetrations

Normally a tubeless tyre will not leak as the result of penetration by a nail or other puncturing object provided that it is left in the tyre. It is necessary to examine the tyres after every 2,000 miles (3000 km.) and to withdraw such objects at a time when loss of air pressure will cause least inconvenience.

Use of plugging kit. Location and preparation

If a hole fails to seal mark the spot and extract the puncturing object, taking note of the direction of penetration. If the tyre is leaking and the puncturing object cannot be located by sight it is necessary to immerse the inflated tyre in water.

Dip the plugging kit needle into the flask of solution and insert it into the hole in the tyre, following the same direction as the penetration.

Repeat the operation until the hole is well lubricated with solution.

Repair

Select a plug about twice the diameter of the puncturing object, stretch it, and roll it into the eye of the needle $\frac{1}{4}$ in. (6.35 mm.) from the end (Fig. O.7). After dipping

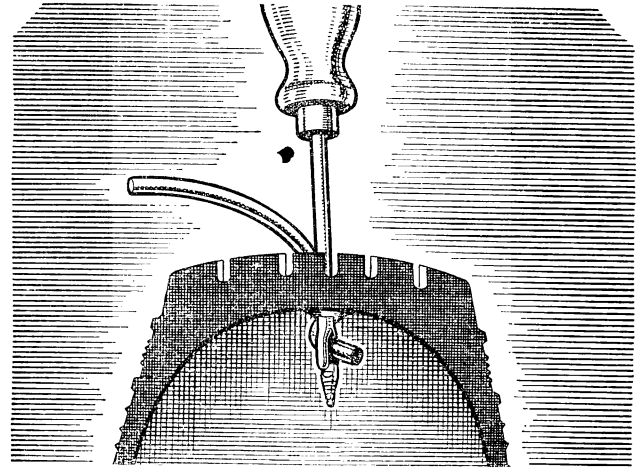


Fig. O.9

The inserted plug prior to withdrawing the needle

the plug into the solution insert the needle into the hole and push the plug through the tyre (Figs. O.8 and O.9).

Withdraw the needle and cut off surplus plug about $\frac{1}{8}$ in. (3.18 mm.) from the surface of the tread. The tyre can now be inflated and used immediately. More severe injuries which are outside the scope of simple puncture repair methods are dealt with in nearly the same way as similar injuries to conventional covers.

If the tyre deflates on the road following an unusually large penetration a tube can be fitted to enable the owner to remain on the road until it is convenient for the necessary repairs to be carried out. (The valve used for the tubeless tyre must be removed before the fitting of the tube.)

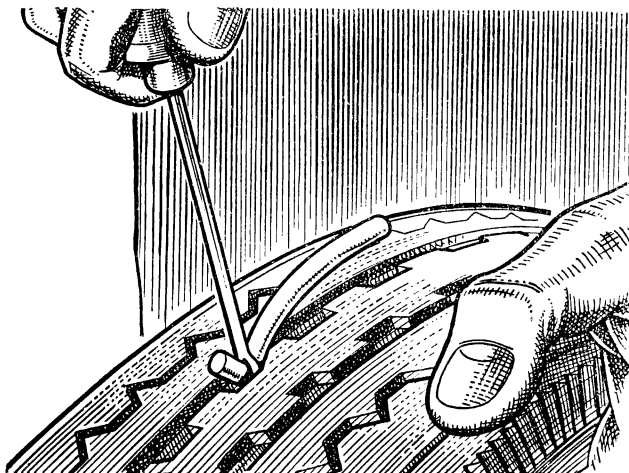


Fig. O.8

Inserting the plug and needle through the hole in the tyre

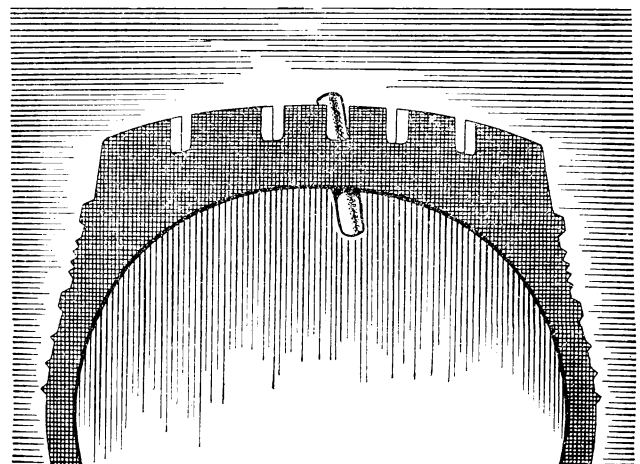


Fig. O.10

Plug inserted in tyre and cut off to the correct length