AVON

TYRES

SYMBOLS OF ENDURANCE

"Fastest and Safest"

The Motor Cyclist's Tyre Manual

Issued by Tyre Division

THE AVON INDIA RUBBER COMPANY LTD
MELKSHAM · WILTS · EST. 1885

Write, telephone or call at any of the addresses below if you are in need of service or advice on any tyre problems. There are Motor Cycle Tyre Experts at every Avon Depot.

THE AVON INDIA RUBBER CO. LTD.

(Established 1885)

Sales Administration & Registered Offices : Melksham, Wilts
Works : Melksham, Wilts and Bridgend, Glamorgan

Wires : Rubber Melksham — Telephone : Melksham 3101 (8 lines)
Rubber Bridgend — Bridgend 1211

Codes : A.B.C. 7th Edition, Lieber's, Western Union, Bentley's

Depots & Sub Depots :

LONDON, W.C.1 : Mabledon Place
'Phone : Euston 2201-5 — *'Grams :* Avonnes

NORWICH (Sub Depot) : 31, Colegate
'Phone : Norwich 23399 — *'Grams :* Avonnes

BRIGHTON (Stock Depot) : c/o Quick Deliveries Ltd., 6a, Clarence Street
'Phone : Brighton 20225

BEDFORD (Stock Depot) : c/o T. C. Ginn Ltd., 135-137 Tavistock Street
'Phone: Bedford 2439

BRISTOL, 2 : Narrow Plain, St. Philips
'Phone : Bristol 25021-2 — *'Grams :* Avonnes

SOUTHAMPTON (Stock Depot) : c/o Victory Transport Ltd., Old Mill Quay, Northam
'Phone : Southampton 3301-2

CARDIFF (Stock Depot) : c/o C. N. Hosken & Co., Gladstone Street
'Phone : Cardiff 21728

BIRMINGHAM, 3 : 41-42, Livery Street
'Phone : Central 8164-6 — *'Grams :* Avonnes

NOTTINGHAM (Sub Depot) : 20, Hollowstone
'Phone : Nottingham 46823 — *'Grams :* Avonnes

MANCHESTER, 1 : 4, Whitworth Street West
'Phone : Central 3654-6 — *'Grams :* Avonnes

LEEDS, 9 (Sub Depot) : Bank Low Mills, East Street
'Phone : Leeds 34471-2 — *'Grams :* Avonnes

NEWCASTLE-ON-TYNE, 1 : 21, Oxford Street
'Phone : Newcastle-on-Tyne 28307-8 — *'Grams :* Avonnes

GLASGOW, C.1. : 205, High Street
'Phone : Bell 2261-3 — *'Grams :* Avonnes

ABERDEEN (Sub Depot) : 36, Froghall Terrace
'Phone : Aberdeen 28811 — *'Grams :* Tyravon

EDINBURGH, 2 (Stock Depot) : c/o W. C. Calderwood Ltd., 61-65 Rose Street
'Phone : Central 4426

BELFAST : Avon Tyres (N.I.) Ltd., 17-21 Glengall Street
'Phone : Belfast 24544, 24937 — *'Grams :* Avonnes

Individually made by craftsmen, Avon Motor Cycle tyres are built to give safety at speed and satisfaction under all conditions. The Avon factory is equipped with the most modern plant and is backed by high technical skill derived from constant research and long experience. The advice in this book will help you to obtain that high performance of which the tyres are capable.

INDEX

THE MOTOR CYCLIST'S TYRE MANUAL

THE EFFECT OF DIFFERING CONDITIONS ON TYRE PERFORMANCE

Variations in tyre performances are primarily due to different conditions of service, such as speeds, road surfaces, and to the varying degree of care which tyres receive during their life.

It is well known for example, that under very severe conditions, such as racing on an abrasive road surface, tread wear is very rapid indeed.

Tyres on any machine will have reduced life if submitted to the worst of all tyre evils, ' under-inflation.'

Through technical progress and by the application of scientific control at each stage of construction, AVON has almost eliminated the possibility of variations in the quality of tyres.

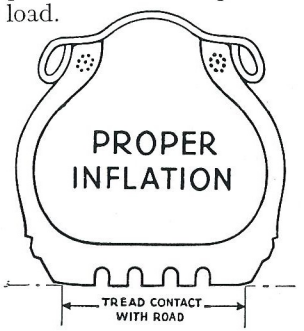
In this booklet we provide information for the Motor Cyclist which will assist him to obtain the utmost satisfaction under any given conditions of service.

THE IMPORTANCE OF CORRECT INFLATION

Tyre pressures govern tyre life. They also have a profound effect on stability and anti-skid properties. The compressed air within the Inner Tube carries the load.

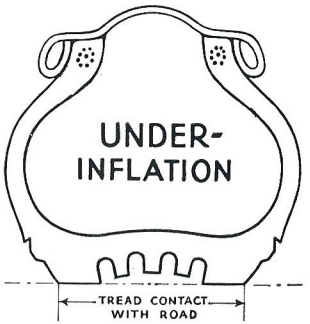
Correct Inflation

The correct pressure ensures maximum mileage with satisfactory cushioning, stability and road holding properties.



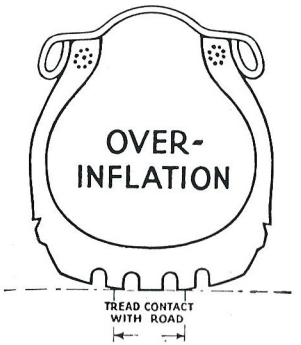
Under-inflation

Insufficient air pressure hastens tread wear, throws undue strain on the tyre casing and absorbs undue power.



Over-inflation

Excessively high pressure causes rapid wear in the centre of the tread. There is also a greater danger of casing fracture and tread cutting.

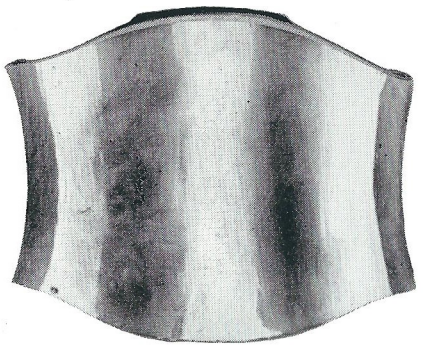


THE EFFECTS OF UNDER-INFLATION

Under-inflation is a common cause of premature tyre failure and irregular tread wear. Tyres should be maintained at the pressures specified by the machine manufacturer in his Maintenance Manual. In the event of recommendations being unobtainable, refer to Pressure Tables on Page 12.

Under-inflation

This photograph shows the darkening of the inside of the tyre casing and is clear evidence of serious Under-inflation. If the condition of Under-inflation persists, the casing will eventually fracture.



Complete Destruction due to Under-inflation

Here is a tyre completely ruined through being run deflated. This has caused the complete separation of the cords of the casing, as shown in the photograph.

TWO COMMON CAUSES OF DAMAGE

Below are described two common causes of accidental damage.

Concussion Fracture

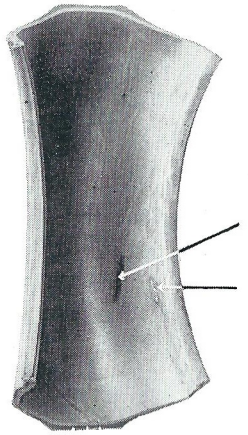
This illustration shows a characteristic Concussion Fracture of the tyre casing due to a severe blow from a road obstruction. Frequently in such a case the tread is undamaged, there is no outward sign of trouble, and failure occurs some time after the impact.

Over-inflation makes tyres more susceptible to concussion fractures.

Double Fracture

In this case the blow has been so severe as to crush the cover wall between the rim and a road obstruction; a double fracture of the casing has resulted.

In failures of this type there is frequently a condition of Under-inflation. Keep your tyres inflated to the correct pressure and the risk of such damage will be minimised.



MECHANICAL IRREGULARITIES

Periodical examination of the machine should include those parts likely to affect tyre wear.

Brakes

High spots on brake drums or distorted drums produce rapid wear at one or more particular places on the circumference of the tread. The illustration shows a typical case; note the localized wear.

Wheel Alignment

Unless a wheel runs exactly true under all conditions, a 'scuffing' action between the tread of the tyre and the road is bound to take place, resulting in very rapid tread wear. Make sure that the wheels are in line.

Buckled Wheels

Even a slight buckle will make the tyre wear unevenly at that point.

Suspension

It is most important that the suspension damping be maintained in perfect condition. Ineffective suspension damping will cause rapid and irregular tread wear.

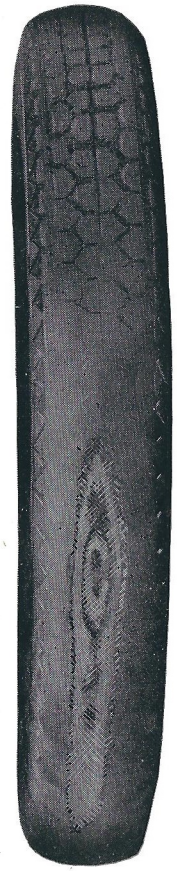


Illustration shows excessive wear through high spots in brake drum.

WHEEL ALIGNMENT

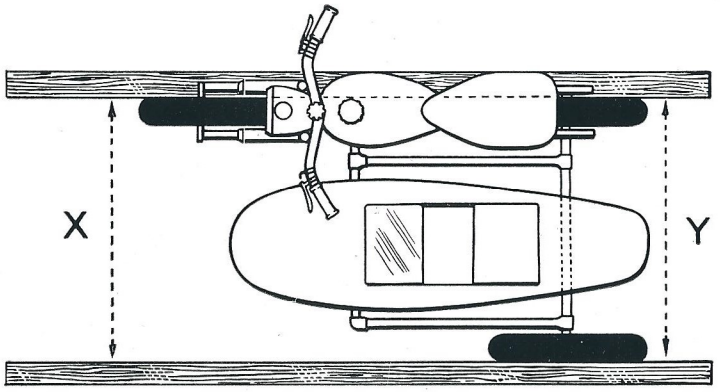
Rapid tread wear will occur unless the front and rear wheels are in alignment, and in the case of a Combination all the wheels must be running in track and the machine upright.

To Check Wheel Alignment

Wheel the machine on to a smooth level floor. Obtain a flat board about 6 feet long with one edge planed straight, and place this on the floor with the straight edge touching the rear tyre, as shown in the sketch below. If the same size tyre is fitted front and rear move the handlebars until the front tyre touches the straight edge of the board. If the front tyre does not touch the board equally, then the alignment is incorrect.

(If a smaller section tyre is fitted on the front, place two straight boards touching the rear tyre, one on each side, with these kept parallel the distance from the centre of the front tyre to the edge of either board should be equal if the wheels are in correct alignment).

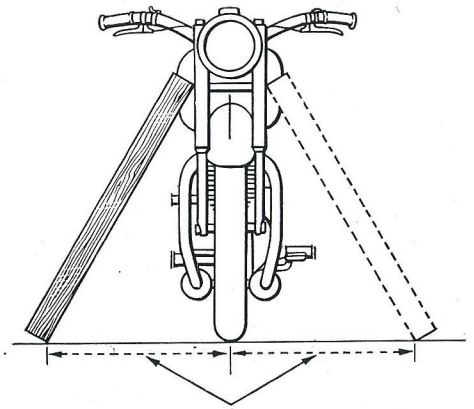
Incorrect alignment is sometimes due to a distorted frame. Many machines, however, have rear chain adjusters and if these have been unequally adjusted the wheels may be put out of alignment.



To check the alignment of a sidecar wheel leave the machine in position against the first board and place another similar board on the floor, touching the outer wall of the sidecar tyre as shown. Measure the distance ' Y ' on the sketch, as close to the rear tyres as possible. Measure the distance ' X ' in a similar manner, as close to the front tyre as possible. The distance ' X ' should be about $\frac{3}{8}$" less than ' Y ' to give suitable " toe-in." If the " toe-in " exceeds $\frac{3}{8}$" or if there is a " toe-out," rapid tread wear will result.

Next check whether the machine is standing upright. This may often be judged by eye but to make certain the following method may be used :—

Take a smaller board and rest it on a chosen point towards the top of the front fork. Mark the point on the ground where the other end touches. Then do the same with the board moved to the other side of the fork. The distances from each of these marks to the centre line of the tyre should be equal. If they are not the combination is not upright and rapid tread wear will take place.



CONDITIONS AFFECTING TREAD WEAR

A summary of the different factors that can cause abnormal wear is given below.

Under-inflation or Over-loading

These conditions cause undue tread distortion, resulting in irregular wear.

Speed

High speed means rapid tread wear, not only because of the speed itself but because of the extra braking entailed.

Climatic Conditions

Tread wear is always more rapid in summer than in winter because of the higher road temperatures, and drier conditions of the roads.

Oil and Grease

Tread rubber rapidly absorbs oil and grease, and its resistance to wear deteriorates in consequence.

Stopping and Starting

Sudden acceleration and hard braking subject the tread to severe strains ; rapid wear results.

Road Surfaces

Abrasive road surfaces mean cut treads and lower mileages.

Mechanical Irregularities

Mechanical irregularities which can cause severe tread wear are wheel misalignment, buckled wheels, snatching brakes and faulty suspension.

HOW TO GET THE BEST RESULTS FROM YOUR TYRES

1. Always keep tyres inflated to the Manufacturers' recommended pressures. Adjust pressures when a pillion passenger is carried. (See Load and Pressure Table on page 12).

2. Test tyre pressures at least once a week, using a Schrader Pressure Gauge.

3. See that wheels are correctly aligned.

4. Remove stones, etc., which may become embedded in the tread of the tyre.

5. Remove any oil, grease or paraffin that may have adhered to tyres by using a cloth dipped in a little petrol.

6. Drive at reasonable speeds, with consequent moderate braking and acceleration.

7. If the front tyre developes uneven wear, reverse the direction of rotation on its rim.

Balanced Tyres

A small yellow spot on the sidewall of an Avon Motor Cycle Cover indicates that the cover has been balanced. The tyre is fitted with the yellow spot at the valve position.

TABLE OF RIM FITMENTS

Rim Designation	Internal Rim Width (inches)	Recommended Tyre Sizes
WM0—19	**1.500**	**2.375—19, 2.50—19**
WM0—21	**1.500**	**2.375—21**
WM1—19	**1.600**	**2.375—19, 2.50—19**
		2.75—19, 3.00—19
WM1—20	**1.600**	**3.00—20**
WM1—21	**1.600**	**2.375—21, 2.75—21, 3.00—21**
WM2—18	**1.850**	**3.25—18**
WM2—19	**1.850**	**2.75—19, 3.00—19**
		3.25—19, 3.50—19
WM2—20	**1.850**	**3.00—20, 3.25—20**
WM2—21	**1.850**	**2.75—21, 3.00—21, 3.50—21**
WM3—18	**2.156**	**3.25—18, 3.50—18, 4.00—18**
WM3—19	**2.156**	**3.25—19, 3.50—19, 4.00—19**
WM3—21	**2.156**	**3.50—21**
3.00D—16	**3.00**	**4.50—16, 4.75—16, 5.00—16**

LOAD AND PRESSURE TABLE

Inflation Pressure lbs.-sq. in.	Nominal Tyre Section (inches)						
	2.25	**2.375 2.50**	**2.75**	**3.00**	**3.25**	**3.50**	**4.00**
	Maximum load per tyre in lbs.						
16	**80**	**120**	**140**	**160**	**200**	**280**	**360**
18	**100**	**140**	**160**	**180**	**240**	**320**	**400**
20	**120**	**160**	**180**	**200**	**280**	**350**	**430**
24	**145**	**185**	**210**	**240**	**350**	**400**	**500**
28	**170**	**210**	**250**	**300**	**400**	**450**	—
32	**200**	**240**	**280**	**350**	**440**	**500**	—

Check Pressures when tyres are cold.

The above Load and Pressure Table is given for guidance only.

The pressure figures given by the manufacturer of your machine should be adhered to.

TO REMOVE AND FIT TYRES

The following hints will help you in the fitting and removal of Tyres.

It is important to avoid undue force with levers as this will damage the inextensible wire beads.

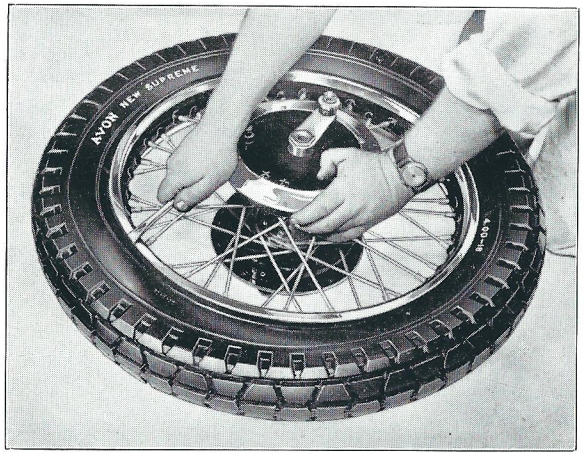
When the tyre is in position and fully inflated the beads rest on the shoulders of the rim. The base of the Motor Cycle Rim facilitates fitting as it allows part of the circumference of the bead to be dropped into the well while the part diametrically opposite is pushed over the flange.

Smearing a little soap solution or French Chalk on the beads will help in fitting and removing.

To Remove Tyre

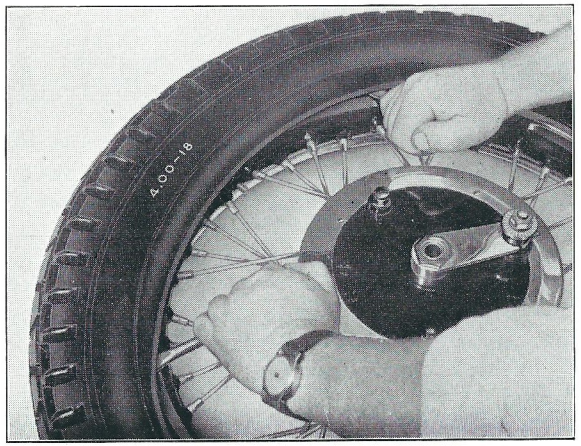
1. Remove valve cap, core and rim nut, and allow tube to deflate.

2. Push each bead off the shoulder of the rim.



A

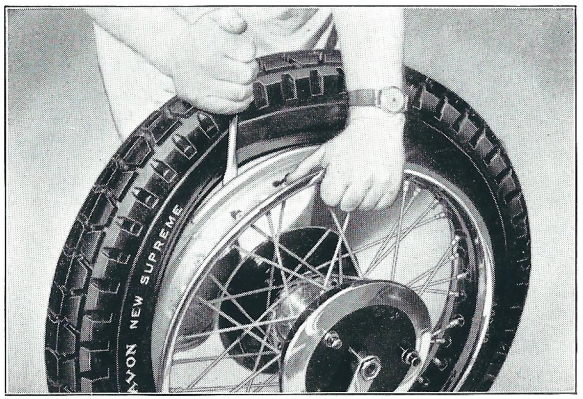
3. At a point diametrically opposite the valve, ease the edge of the cover down into the wellbase of the rim, then push the valve stem in as far as it will go and insert a small tyre lever at the side of the valve and lift up the cover. (illus. A)



B

4. Hold down the lever with one hand, and with the other insert a second lever a short distance away. Lift top bead of the cover over the rim with the lever. (illus. **B**)

5. Repeat this in easy stages until the bead is free of the rim. Withdraw the tube, starting from the side opposite the valve.



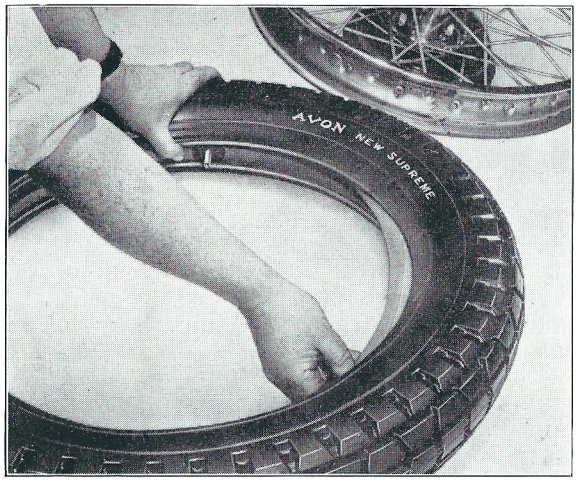
C

6. Finally, lever the second bead from rim in similar manner to first. (illus. **C**)

To Fit Tyre

1. Remember to use small tyre levers, and not to use undue force.

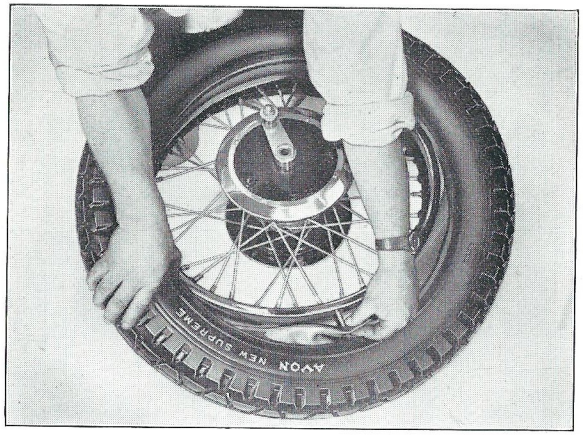
2. Make sure that no wrapping paper or labels are left inside the cover, as they might damage the tube. Fitting is easier if the tube is dusted lightly with French Chalk.



D

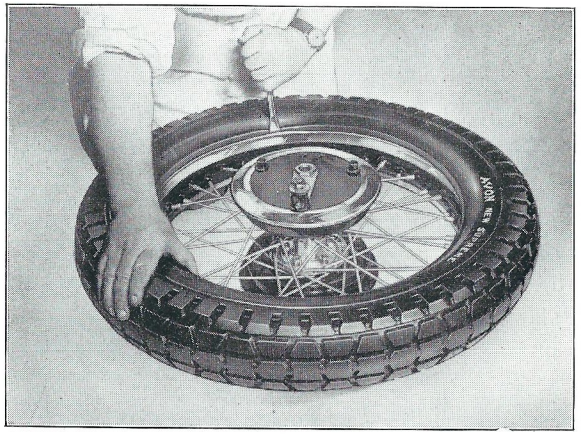
3. Slightly inflate tube and slip it into the cover, making sure that the tube is not creased or twisted. (illus. **D**)

4. Place the cover, with the tube inside, on top of the wheel with the valve in line with the valve hole in the rim.



E

5. Thread the valve through the valve hole. (illus. **E**). Allow the under bead to sink into the centre base of the rim and the upper bead to spring outside.

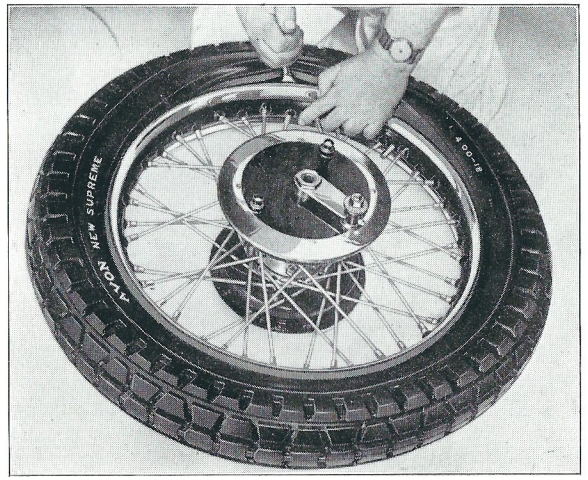


F

6. Working from each side of the valve and using both hands, press the remainder of the under edge of the cover over the rim. A lever may be used to complete the operation. (illus. **F**). It is important to ensure that the bead area diametrically opposite the fitting point is always in the base of the rim.

G

7. To fit the second or top bead, the method is similar to that described for the first or under bead, except that it is important to start from a point diametrically opposite the valve. (illus. **G**). As before, see that the edge of the cover is down in the well of the rim and then work round in both directions until only a small portion of the cover by the valve remains. This last piece may be gently levered over the rim. (illus. **H**).



H

7. (*contd.*) If considerable force is required it means that the opposite edge of the covers is *not* down in the well-base of the rim and the fault should be corrected. Unnecessary force tends to damage the tyre and may break the wire beads.

8. Push valve inwards to make sure that the tube near the valve is not trapped under the bead. Pull valve finally back into position.

9. Make sure that the cover is evenly fitted all round, and that the valve protrudes squarely through the valve hole.

10. Inflate to approximately 20-lbs. pressure.

11. Deflate and check valve for looseness in valve hole. Fit rum nut.

12. Inflate to recommended pressure. Tighten rim nut and fit dust cap.

FOR WHEELS FITTED WITH SECURITY BOLTS

To Remove Tyre

1. Proceed as for normal tyre removal, and deflate tyre.

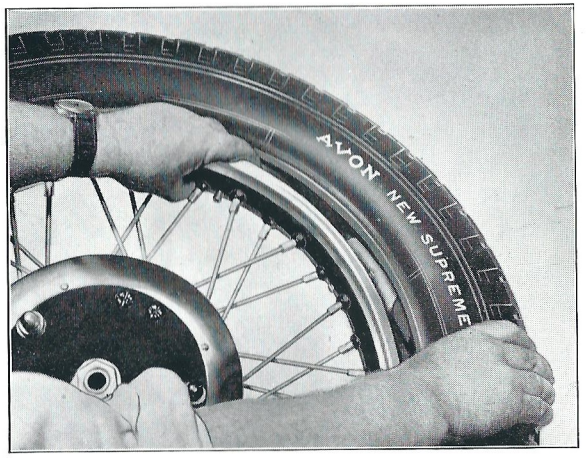
2. Remove security bolt nut and push bolt inside the cover. Where more than one security bolt is fitted deal with each simultaneously.

3. Remove first bead, remove security bolt(s) from rim.

4. Remove tube from cover and cover from rim, as already described.

To Fit Tyre

1. Lay tube over security bolt(s) and insert into cover, as previously described.

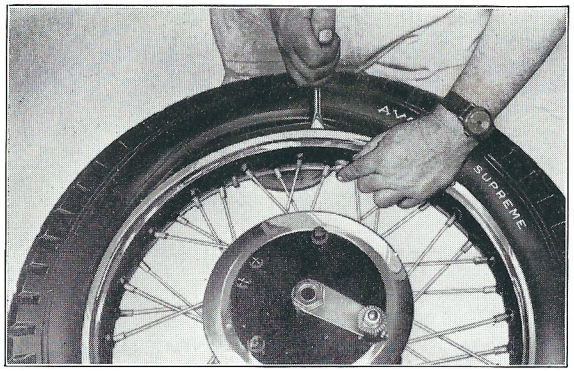


I

2. Fit tube, threading valve and security bolt(s) through their respective holes. The hole for the stem of the security bolt will be found approximately 9″ away from the hole in the well of the rim for the valve. (illus. **I**)

3. Complete fitting as before.

4. When pushing over that section of the second bead near the security bolt and valve, push the security bolt well into the cover and make sure that the tube is resting on the canvas flap of the security bolt and is not overlapping sides. (illus. **J**)



J

5. See that valve and security bolt(s) are ' loose ' on rim by depressing into wheel.

6. Inflate tube to 20-lbs. pressure.

7. Deflate and check valve and bolts for ' looseness.'

8. Fit valve, rim nut, and tighten security bolt nut(s).

9. Inflate to recommended pressure, tighten nuts and fit dust cap.