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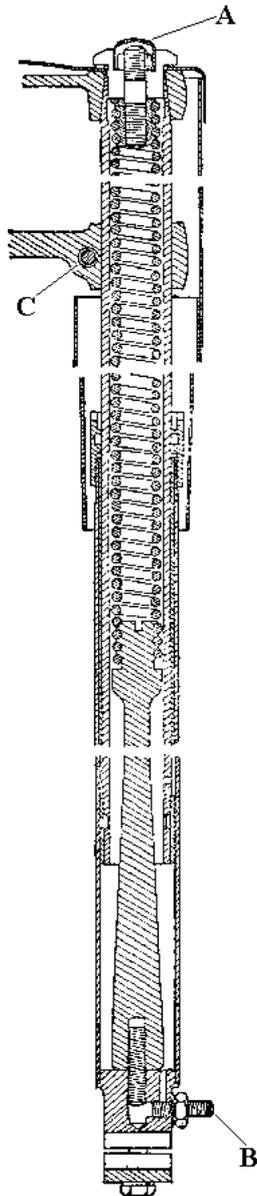
DESCRIPTION

FIG. E1.

There are two basic designs of front fork fitted to the D14 Bantam range. The fork described on this page is fitted to the Supreme, and the fork fitted to the Sports and Bushman models as described on page E4.

**HYDRAULIC DAMPING
(Supreme)**

Figure E1 opposite, is a sectioned illustration of a front fork leg fully extended.

When the fork leg is compressed the lower member rises, forcing the oil upwards around the top of the restrictor rod. The pressure of the oil increases as the gap narrows between the lower bush and the restrictor rod, progressively slowing the fork spring action. Eventually the point of maximum compression is reached and is cushioned by the remaining oil in the main reservoir. As the fork leg begins to extend again, a vacuum is created in the lower member, causing the oil above the restrictor rod to be drawn back into the main reservoir under great pressure, thus providing a smooth cushioned action.

It will be seen therefore, that to ensure a uniform damping action, each fork leg must contain the right amount of the correct grade oil (see page A3).

A holder containing an oil seal is screwed on to the top of the lower sliding member and prevents oil from seeping around the main tube when the forks are compressed.

REMOVING THE FORK LEGS

Before starting work on the forks it is advisable to have the following tools and replacements available:—

(2 off)	90-5230	Upper bush.
(2 off)	90-5229	Lower bush.
(2 off)	97-2557	Oil seal.
	61-3350	Service tool.
	61-3633	Service tool.

Remove the front wheel as described on page F2, then take off the front mudguard and unscrew the front brake cable adjuster. Drain the oil from each fork leg (see page A5) and slacken off the pinch bolts in the bottom yoke. Prise out the cap from the top of each fork leg and unscrew the small nuts holding the top spring scroll.

Remove the large top cap nuts and screw service tool No. 61-3350 (minus the large nut and washer), into the top of the fork leg. Take a firm grasp of the lower sliding member and strike the top of the service tool sharply with a mallet. This will release the leg from its taper-fit in the top yoke, allowing the complete leg to be withdrawn.

The fork leg top cover on Supreme models is secured to the bottom yoke by the pinch bolts and need not be disturbed.

DISMANTLING THE FORK LEGS

To assist in dismantling, hold the fork leg firmly in a soft-jawed vice, on the flats of the wheel spindle lug. Fit service tool No. 61-3633 around the main tube and engage the dogs with the slots in the top of the oil seal holder. Whilst pressing down firmly on the tool, turn anti-clockwise to unscrew the holder. The main tube can now be drawn upwards from the sliding member complete with its two bronze bushes, leaving the restrictor rod and spring still attached to the lower member.

If the fork spring is in need of replacement, it can be unscrewed from the top of the restrictor rod and withdrawn. The restrictor rod should not have been subjected to any wear, but can if necessary be unscrewed from the base of the sliding member.

The lower bush is a press-fit on to the end of the main tube and can be removed by first prising open the joint with a thin-bladed instrument, then tapping it off with a soft mallet. Ensure on replacement, that the holes in the bush coincide with the holes in the tube.

The upper bush is simply a push-fit into the top of the sliding member and is retained by the oil seal holder.

REBUILDING THE FORK LEGS

Before reassembling the fork legs, clean all the components thoroughly and check that the work bench is also clean. It will be assumed that the bushes and oil seal have been renewed as necessary. The oil seal is a press-fit into the holder groove.

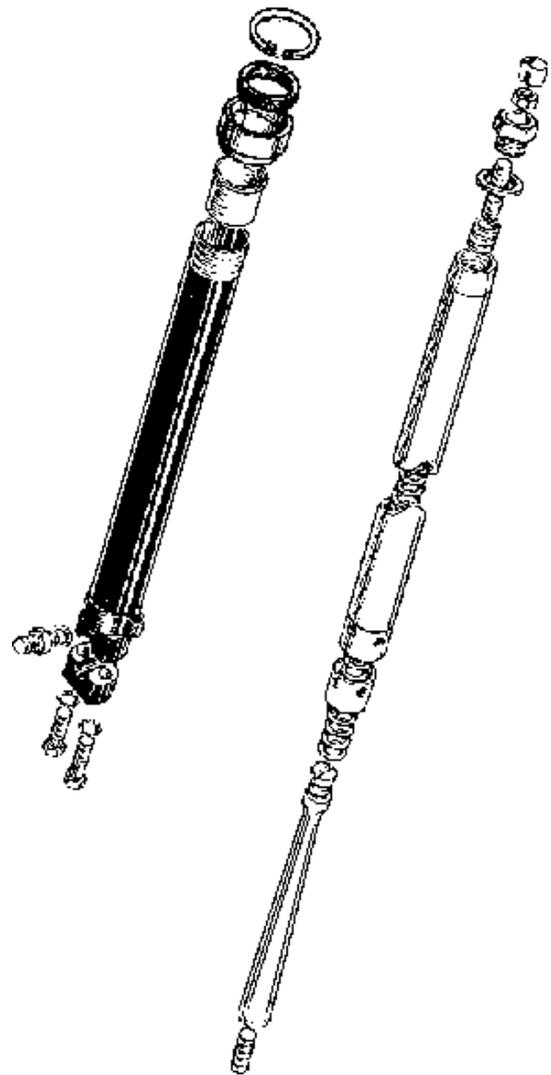


FIG. E2. *Fork leg exploded.*

Later models have a different sealing arrangement, using a thicker seal, retained by a circlip.

Slide the oil seal holder on to the main tube with its slots uppermost then pass the tube over the spring and restrictor rod in the lower sliding member. Holding the assembly in a vice, screw down the oil seal holder on to the top of the lower member with service tool No. 61-3633.

REPLACING THE FORK LEGS

Screw service tool No. 61-3350 (minus the nut and collar) into the top of the leg and pass the assembly up through the two yokes. Fit the collar and nut, then tighten the latter until the leg is drawn firmly home into its taper. Tighten the pinch bolt in the bottom yoke before removing the tool. Replace the large cap nut and its washer, followed by the small spring retaining nut and its cover.

Repeat the operations on the other fork leg and refill with the correct amount of oil (eighth-pint to each leg).

Finally, replace the front mudguard and wheel, adjusting the front brake as necessary.

FRONT FORKS (Bushman and Sports)

The front forks fitted to these models are of an even simpler design than those fitted to the Supreme. The fork spring is on the outside of the main fork tube, which dispenses with the need for restrictor rod and fittings.

HYDRAULIC DAMPING

The hydraulic damping on these forks is similar to that of the other type with the exception that when the lower member rises oil is forced up around the fork shaft and enters it through a small hole in the fork shaft. This hole limits by virtue of its size the quantity of oil that can escape. It is this pressure resistance that slows the fork action. On recoil, the retraction of the main shaft creates a vacuum which sucks the oil back through the hole under great pressure. It is this action that gives the smooth controlled fork action.

FORK DISMANTLING

Before starting work on the forks it is advisable to have the following tools and replacements available:—

(2 off)	65-5451	Oil seal.
(2 off)	65-5424	Top bush.
(2 off)	29-5347	Bottom bush.
	61-3006	Service tool.
	61-3007	Service tool.
	61-3350	Service tool.
		A length of No. 5 twine approximately 15" long.

Remove the front wheel as described on page F2, then remove the mudguard and support stays.

Drain the oil from the fork as described on page A5.

Pull the top of the rubber gaiter off the fork leg.

Slacken off the pinch bolts on the bottom yoke, and screw service tool No. 61-3350 (less the large nut and washer) into the thread at the top of the fork leg.

The tapered end of the fork shaft fits into a corresponding taper in the top yoke.

Hold the lower sliding member in one hand, and strike the top of the service tool with a hammer or mallet. Once the grip of the taper has been broken, it should be possible to draw the complete leg down through the yoke and remove it from the machine.

DISMANTLING THE LEG

To dismantle the lower section of the fork hold the sliding tube by gripping the wheel spindle lug in a soft-jawed vice.

To remove the oil seal holder slide service tool No. 61-3005 over the main tube and enter the dogs in the slots at the bottom of the oil seal holder.

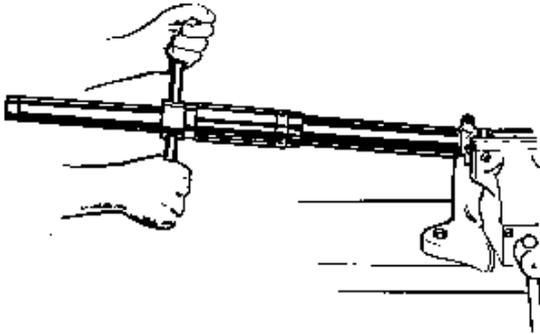


FIG. E3. *Removing oil seal holder.*

Pressing down firmly on the tool and turning anti-clockwise at the same time, unscrew the oil holder complete with the extension tube.

Remove the tool and slide the holder up the shaft until it becomes tight on the tapered section of the shaft, but do not use force or the oil seal may be damaged.

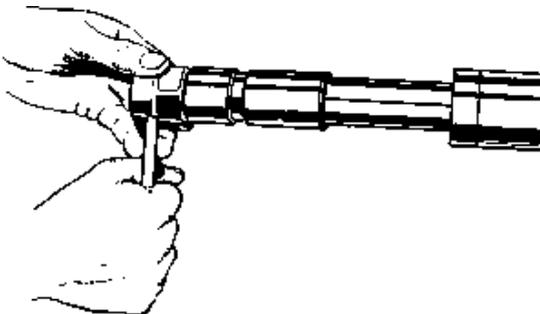


FIG. E4. *Removing lower nut.*

The main tube complete with bushes can now be withdrawn.

Grip the tube in a vice using soft clamps on the unground portion of the shaft and unscrew the nut at the lower end of the shaft.

This nut secures the lower bush and after its removal the oil seal holder, and bushes can be slid off the shaft.

OIL SEALS

If it is necessary to change the oil seal, place the lower edge of the holder on a wooden block and enter service tool No. 61-3006 into the top of the holder. Give the tool a sharp blow with the hammer and the seal will be driven out.

To fit a replacement seal, coat the outside with a good jointing compound and whilst still wet enter the seal squarely into the holder with the open side upwards and drive home with service tool No. 61-3007.

Great care is required to avoid damaging the feather-edge of the oil seal and this should be greased before reassembly.

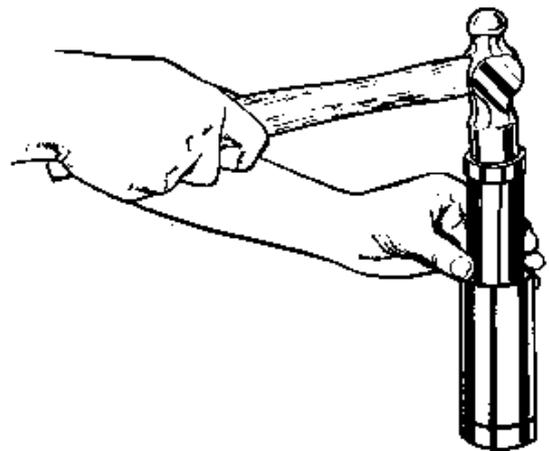


FIG. E5. *Removing oil seal.*

REBUILDING THE FORK LEG

Reassembly is carried out in the reverse order to dismantling.

Cleanliness is essential and before attempting to reassemble, clean all parts thoroughly and clear the work bench on which the fork legs have been dismantled.

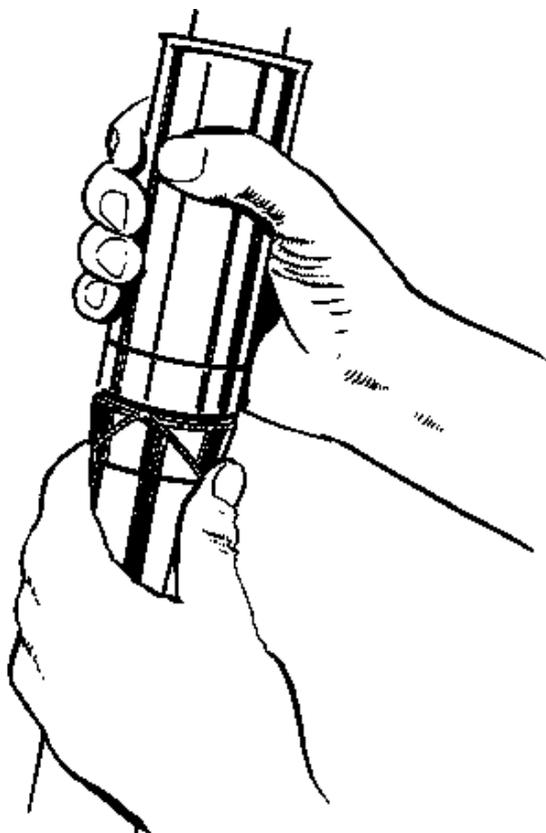


FIG. E6. Using the twine.

Slide the oil seal holder over the shaft until it is on the tapered section but do not use force or the seal may be damaged.

Place the top bush over the shaft followed by the bottom bush and bottom nut.

Tighten the nut securely, grip the lower sliding tube in the vice and enter the mainshaft, with the assembled parts, into the sliding tube.

Using service tool No. 61-3005, screw down the oil seal holder on to one turn of No. 5 twine round the groove at the end of the thread. This will provide an additional seal.

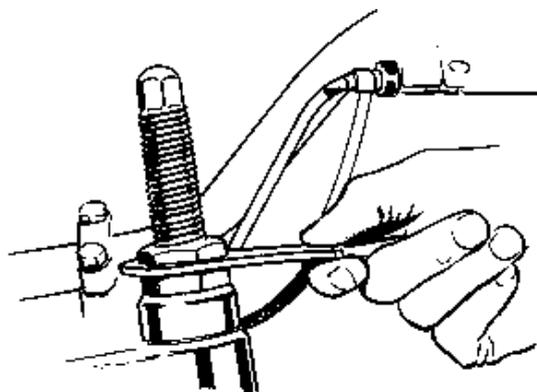


FIG. E7. Using service tool No. 61-3350.

Repeat the operations on the other leg. Before refitting the leg to the steering head, apply a liberal coating of grease to the spring and place the spring in position in the oil seal holder.

REPLACING THE FORK LEG

Now screw service tool No. 61-3350 minus the nut and collar — into the top of the tube and pass the tube up through the two yokes, fit the collar and nut and draw the tube firmly home into its taper.

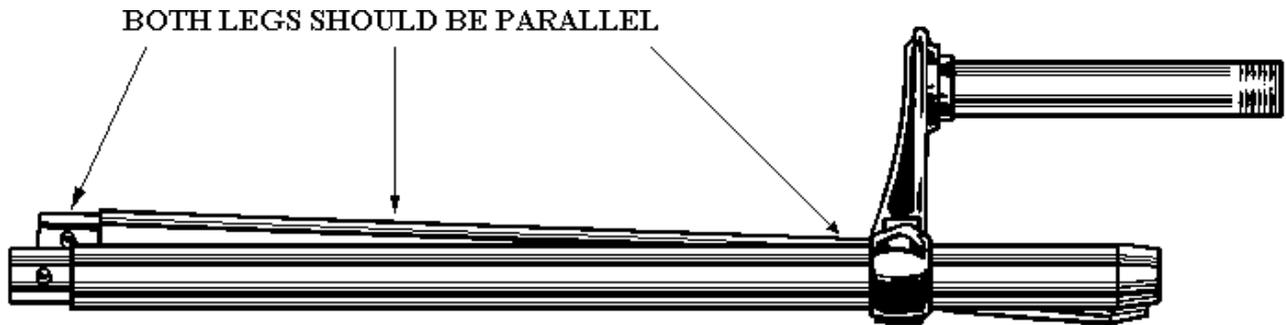
Tighten the pinch bolt in the bottom yoke before removing the tool.

Repeat the operation on the other leg, then refill with the correct amount of oil (third-pint to each leg), see page A3 for grades, and replace the top caps.

Final assembly is simply the reversal of dismantling.

FORK ALIGNMENT

On replacing the fork legs it may be found that the fork assembly is incorrectly aligned, in which case the following instructions should be carried out.

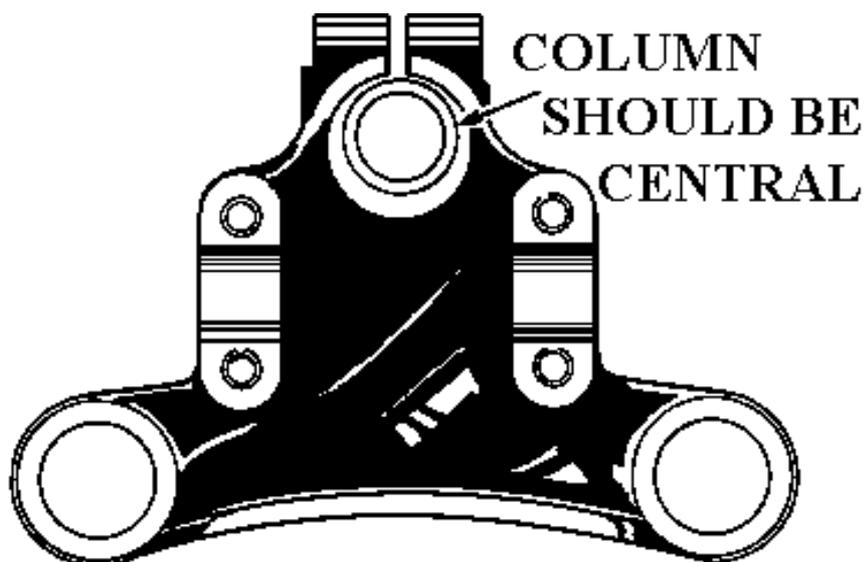
FIG. E8. *Bottom yoke twisted.*

First slacken the top cap nuts and the pinch bolts in both the bottom and top yokes, then loosen the wheel spindle retaining caps. The forks should now be pumped up and down several times to line them up. Tighten up the bolts, from bottom to top, that is, spindle retaining caps, bottom yoke pinch bolts, top cap nuts and finally, the steering stem pinch bolt in the top yoke.

If, after this treatment, the forks still do not function satisfactorily then either the fork main tubes are bent or one of the yokes are twisted.

The tubes can only be accurately checked for straightness with special equipment, including such items as knife-edge rollers and dial gauges. Special gauges are also necessary when checking the yokes. It is possible however, to make a reasonable check of the tubes by rolling them on a good flat surface such as a piece of plate-glass but, it is not a simple operation to straighten a bent tube.

Should the tube be obviously bent but not kinked, then it may be possible to carry out a reasonable repair with a little care and patience. Find the highest point on the bend then, with a wooden block supporting each end, give the tube a sharp blow with a soft mallet and re-check. If a hammer is used, remember to protect the tube with a piece of wood. The measure of success when carrying out a repair of this nature, will of course depend on the extent of damage and the skill of the operator.

FIG. E9. *Bent steering column.*

The repair will be simplified and be very much better if a suitable press is available to the repairer.

Having checked the tubes for straightness and reset as necessary, a check can now be made of the top and bottom yokes. First, assemble both tubes into the bottom yoke so that a straight edge laid across the lower end touches all four edges of the tubes then, tighten the pinch bolts. Now view them from the side; both tubes should be quite parallel. Alternatively, the lower 12" of the tubes can be placed on to a surface plate, when there should be no rocking. Having checked the tubes this way, check the gap between them on the ground portion.

If the tubes are not parallel, as in Fig. E8, then the yoke must be reset, providing the error is not excessive.

To reset, hold one tube in a vice on the unground portion (using soft clamps) and reposition the other tube using a longer and larger diameter tube to obtain sufficient leverage.

The next step is to place the top yoke in position over the tubes, when it will be seen if the steering column is central. Figure E9, shows a bent column.

Finally, check that the tubes remain parallel when assembled into the top yoke only. In this case the bottom yoke can be fitted loosely on the tubes, acting as a pilot only.

Though it is possible to rectify slight errors in alignment by resetting, it is much safer to renew the part affected, especially when the malalignment is excessive.

ADJUSTING STEERING HEAD RACES

It is most important that the steering is always correctly adjusted and a check should be made in the following way.

Place a strong support under the engine so that the front wheel is raised clear of the ground then, standing in front of the wheel, attempt to push the lower fork legs backwards and forwards. Should any play be detected, it will be necessary to adjust the steering head races. It may not be possible to distinguish between play in the head races and play in the fork leg bushes, though in some cases there may be both. If possible, ask a friend to place the fingers of one hand lightly around the top head races whilst the forks are being pushed and pulled. Any play will be felt quite easily by the fingers.

To adjust the steering head races, slacken the clip bolt on each fork leg below the headlamp to enable the bottom yoke to take up a new position. Release the steering head clip bolt and tighten down the adjuster nut until the slackness has been eliminated. Avoid over-tightening the adjuster or the ball bearings will become indented into the races, making the steering extremely difficult and dangerous.

When the correct adjustment has been made, retighten the steering head clip bolt and finally, the fork leg bolts in the bottom yoke.

To check the setting, hold the handlebars lightly and move them round slowly, when the steering should be free and rotate smoothly.

If the movement feels "lumpy", indicating damaged races, the ball bearings, cups and cones must be removed for examination as described in the following section, and be replaced as necessary.

RENEWING STEERING HEAD RACES

If the only attention required is the examination or replacement of the steering head races, it will not be necessary to dismantle the forks completely. However, if sufficient slack can be obtained in the headlamp cable harness to allow the forks to be drawn away from the frame, then the harness must be detached as detailed in the section dealing with headlamp removal on page D10.

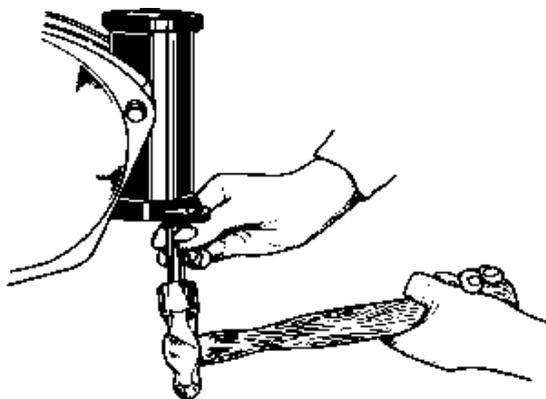


FIG. E10. Removing top cup.

The forks should now be drained as described in the Fork Lubrication section. Any remaining oil should be driven out by applying the front brake, and depressing the forks repeatedly. Replace the drain plugs and fibre washers.

Protecting the fuel tank with a piece of cloth, unscrew the four bolts securing the handlebar clips and place the handlebar on to the tank.

Remove the large nuts holding the main tubes to the top yoke. On the Supreme it will be necessary to prise off the cap at the top of each fork leg, and unscrew the small nut inside.

Slacken the top yoke pinch bolt and take off the steering stem cap nut.

On Supreme models, the top yoke cover must now be taken off. Whilst supporting the fork legs, strike the undersides of the top yoke with a raw-hide mallet to release from the tapered legs. Place the top yoke to one side and draw the steering stem down and out of the head, taking care not to lose the ball bearings which will be released as the stem is withdrawn.

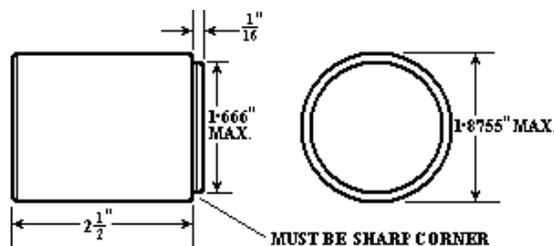


FIG. E11. Cup drift.

Remove the dust cap and prepare to examine the bearings. There should be twenty-four steel balls in each race (see page A3 for details on lubrication). The lower cone can be prised off the column but, when fitting the replacement, care must be taken to see that the cone is seated squarely. For this purpose, a length of heavy gauge steel tubing, long enough to clear the column and $1\frac{1}{4}$ " in diameter is most useful for driving the cone on to its seating.

The cups can be driven out of the steering head using a suitable bar from inside the head tube (as shown in Fig. E10).

When fitting replacement cups, see that they enter their housings squarely. Do not drive the cup in with a drift against the radius of the ball-race as this will impose undue strain and is liable to fracture the cup. If possible, use a piece of steel bar or tube having a diameter slightly less than that of the cup sides. A suitable drift would be as shown in Fig. E11 above.

After replacing the cups and bottom cone, grease the cups and assemble twenty-four balls into each cup. Slide the column back into the head, replace the top cone and dust cover then refit the top yoke.

Reassembly from this point is simply a reversal of the procedure for dismantling. When complete, adjust the steering as detailed on page E8.