

SECTION I

THE STEERING GEAR

To Remove the Steering Wheel and Telescopic Extension.

Remove the clamping nut from the telescopic adjustment clamp and extract the clamping bolt. This will permit the wheel to be withdrawn to its full extent and enable the plated helical sleeve to be contracted towards the wheel to reveal the key at the upper end of the column which engages the long keyway in the splined adjustable shaft.

Remove the key from the column.

This will release the steering wheel and telescopic column assembly which can then be removed to a bench for further dismantling.

Take off the M.G. medallion at the wheel boss. There is a countersunk locating screw which enters from the side.

Undo the large nut holding the wheel to the shaft.

Support the hub of the wheel and with a shouldered copper drift carefully drive the splined shaft out of the wheel, taking care of the flat key locating the wheel to the splined shaft. Alternatively an extractor can be used to part the two components.

To Replace the Top and Bottom Steering Wheel Bushes.

Top:

Remove the wheel and extension and pick out the old felt bush and feed in the new one which should be coated with graphite grease on the face which contacts the inner column.

Bottom:

Remove the thin cover-plate by undoing the three small screws. Then pick out the old felt bush and insert a new one after first coating it with graphite grease on its inner face.

To Take Out the Steering Column.

Remove the steering wheel and take out the bolt and nut from the support clip under the dash. Then take out the bolt and nut holding the steering column to the body steady bracket (this is on the engine side of the bulkhead).

Remove the split pins, take off the nuts and unscrew the three bolts at the universal joint. Do not lose the rubber inserts.

This will free the inner and outer columns, which may be pulled out towards the front in the space between the radiator and the wing.

When reassembling note that the screws on the universal joint should be tightened fully against their shoulders.

Removal and Replacement of the Steering Gearbox.

Raise the car at the front and block up under the chassis. Remove the wheels and disconnect the two track rods at their outer ends.

Detach all electric cables which, it will be found, are secured to the unit by means of clips.

Remove the outer ball joint on the same side as the steering column, taking care not to lose its position for reassembly.

Undo the engine steady rod and remove its mounting bracket from the chassis.

Remove the three screws and nuts at the universal joint on the steering column and then detach the steering gearbox from the frame (four bolts and nuts).

By sliding the complete unit to one side it will be possible to pull the track rod, from which the ball end has been removed, through the large hole in the chassis and then the whole unit may be lifted away to the front.

Replacement is a reversal of this process.

Dismantling the Steering Gearbox.

Undo the clips and remove the concertina rubber dust excluders.

Unscrew the rack damper pad cap and the damper spring. The pressure pad can then be lifted away. A number of shims will be found under the cap.

Remove the pinion shaft cap bolts and cap. Then remove the coupling nut and slide off the coupling.

Take off the circlip against which the coupling locates.

Withdraw the pinion shaft holding the gear with the pinion upwards and leaving behind the thrust washer. This thrust washer is trapped behind the rack teeth.

Hold the rack bar in suitable clamps in a vice, knock back the lock washers and undo the ball joint caps with the special spanner, Tool No. T.114. The ball seat and shims should now drop out.

Screw out the ball seat housing with a special claw spanner, Tool No. T.113.

NOTE: Should the ball joint caps come away complete with the ball seat housing it will be necessary to dismantle them with the use of Tool No. T.122.

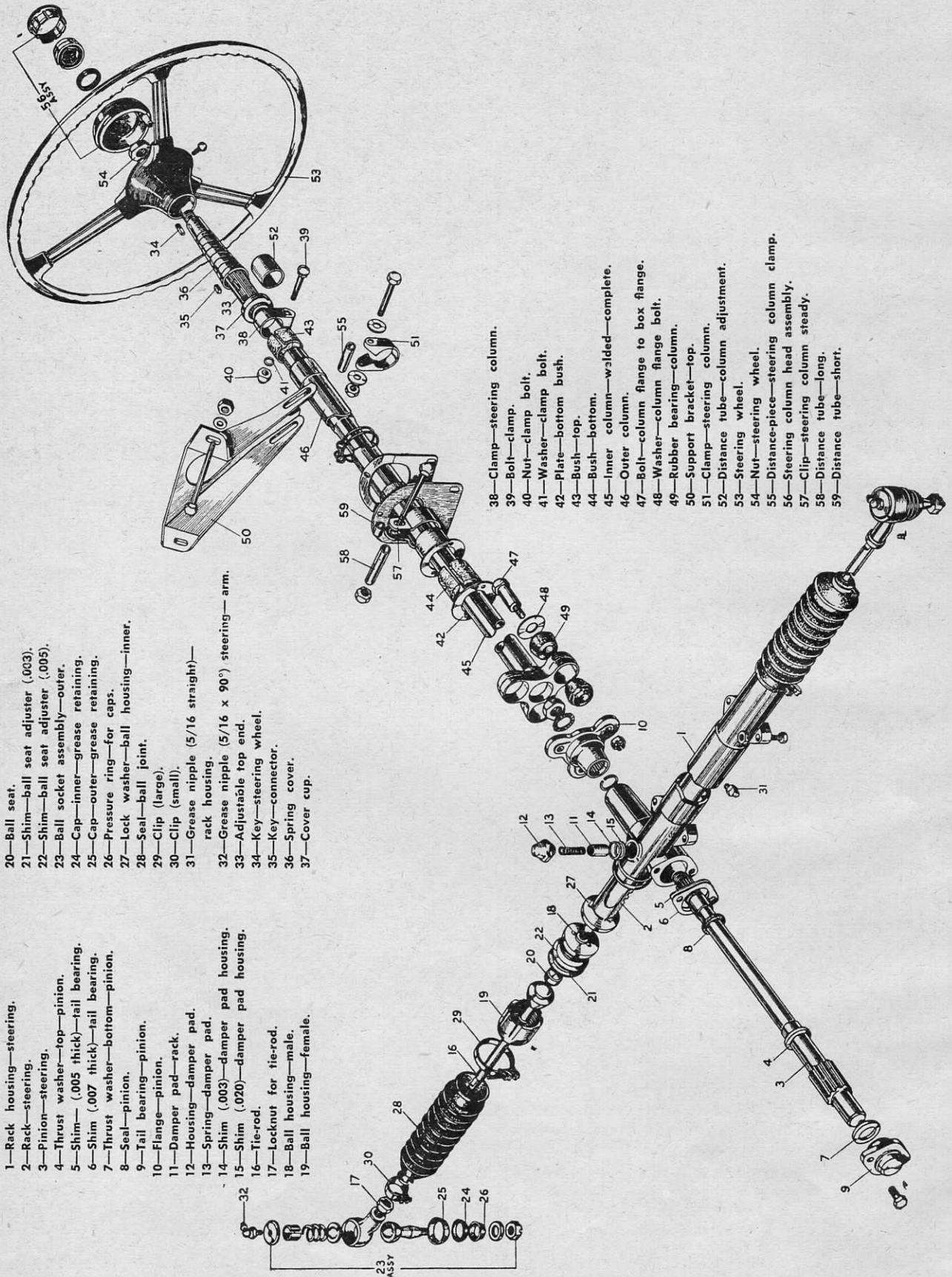
Remove the rack damper and shims and withdraw the rack bar from the housing.

Examination.

Fractures in the teeth, hollows or any roughness on the surfaces of the teeth will render the parts un-serviceable.

Check the rack bar and pinion shaft in the housing for wear or scoring.

FIG. 33.—KEY TO THE STEERING GEAR COMPONENTS.



- 1—Rack housing—steering.
- 2—Rack—steering.
- 3—Pinion—steering.
- 4—Thrust washer—top—pinion.
- 5—Shim—.005 thick—tail bearing.
- 6—Shim—.007 thick—tail bearing.
- 7—Thrust washer—bottom—pinion.
- 8—Seal—pinion.
- 9—Tail bearing—pinion.
- 10—Flange—pinion.
- 11—Damper pad—rack.
- 12—Housing—damper pad.
- 13—Spring—damper pad.
- 14—Shim—.003—damper pad housing.
- 15—Shim—.020—damper pad housing.
- 16—Tie-rod.
- 17—Locknut for tie-rod.
- 18—Ball housing—male.
- 19—Ball housing—female.
- 20—Ball seat.
- 21—Shim—ball seat adjuster (.003).
- 22—Shim—ball seat adjuster (.005).
- 23—Ball socket assembly—outer.
- 24—Cap—inner—grease retaining.
- 25—Cap—outer—grease retaining.
- 26—Pressure ring—for caps.
- 27—Lock washer—ball housing—inner.
- 28—Seal—ball joint.
- 29—Clip (large).
- 30—Clip (small).
- 31—Grease nipple (5/16 straight)—rack housing.
- 32—Grease nipple (5/16 x 90°) steering—arm.
- 33—Adjustable top end.
- 34—Key—steering wheel.
- 35—Key—connector.
- 36—Spring cover.
- 37—Cover cup.

- 38—Clamp—steering column.
- 39—Bolt—clamp.
- 40—Nut—clamp bolt.
- 41—Washer—clamp bolt.
- 42—Plate—bottom bush.
- 43—Bush—top.
- 44—Bush—bottom.
- 45—Inner column—welded—complete.
- 46—Outer column.
- 47—Bolt—column flange to box flange.
- 48—Washer—column flange bolt.
- 49—Rubber bearing—column.
- 50—Support bracket—top.
- 51—Clamp—steering column.
- 52—Distance tube—column adjustment.
- 53—Steering wheel.
- 54—Nut—steering wheel.
- 55—Distance-piece—steering column clamp.
- 56—Steering column head assembly.
- 57—Clip—steering column steady.
- 58—Distance tube—long.
- 59—Distance tube—short.

The diameter of the rack bar is 1.121 to 1.120 and the bore of the housing is 1.136 to 1.130 at the pinion end and 1.124 to 1.126 at the other end.

The pinion shaft is .748 to .7485 diameter at the top and .624 to .6235 at the bottom. The bore of the housing is .7505 to .750 and the bore of the cap .6255 to .626. If a new cap is fitted this will be found to be supplied with an undersize bore and will need reaming in line with the housing with a special reamer, Tool No. T.112. Make sure that the oil groove is fitted to the top when reaming.

Check the felt washer and the rubber bellows and replace if necessary.

Examine the steering rod balls and caps for wear and replace as necessary or readjust as detailed later.

Replacement is a reversal of the above process.

NOTE: When replacing the pinion shaft see that the thrust washers have their chamfered sides towards the pinion. End float should be .002 to .005 and is set by the shims.

The oilway in the cap should be at the top and the damper pad must be adjusted as detailed.

With the rack in the central position engage the pinion with the arrow uppermost.

Refit the coupling with a coupling bolt in line with the arrow on the shaft. This will ensure that the steering wheel spokes are in the correct position in the car.

Adjustment of the Inner Steering Ball Joint.

Fit the lock plate and shims and screw home the ball seat housing into the rack bar. Insert the ball seat and screw the ball cap home against its shoulder after inserting the ball-ended tie-rod. The ball should have no play, but must be a free rolling fit. Adjustment can be altered by varying the shims, which are supplied in .003 and .005 sizes.

Adjustment of the Rack Damper.

This is provided to ensure the required amount of damping in the steering tie-rods, and to maintain the minimum of backlash in the gear teeth.

This should be adjusted in the following manner:

Check the damper spring, which should have a free length of approximately 1.024 and should give a load of 80 lb. when compressed to .75.

When the steering gearbox is completely assembled, fit the cap, spring and plunger but omit the shims. Screw down the cap until the plunger bottoms. While screwing down the plunger rotate the pinion shaft. When it is felt to just lock the rack bar in the housing the plunger has bottomed. With the feeler gauges take a measurement of the gap left and add to this measurement .051.

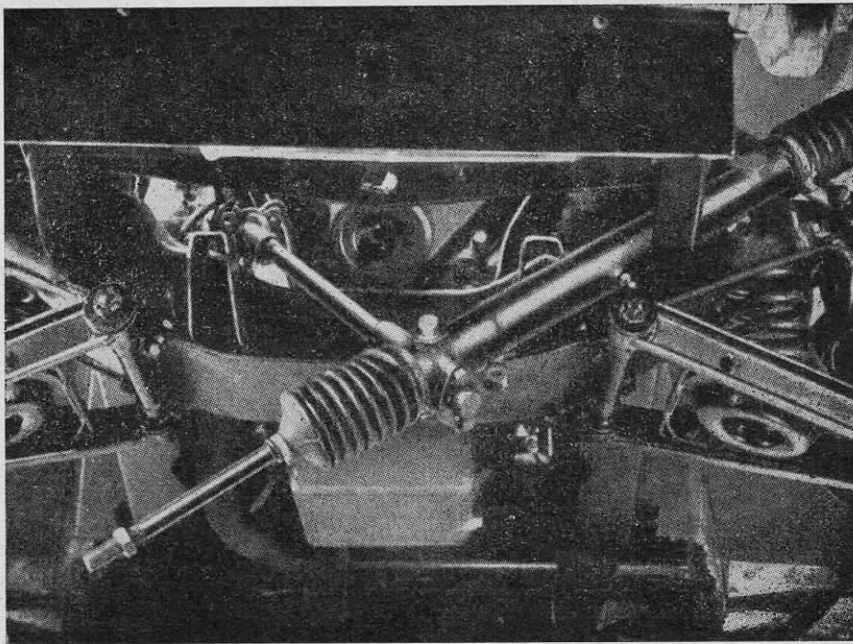


FIG. 34.—Showing the method of withdrawing the steering gearbox assembly from the front underside of the vehicle.

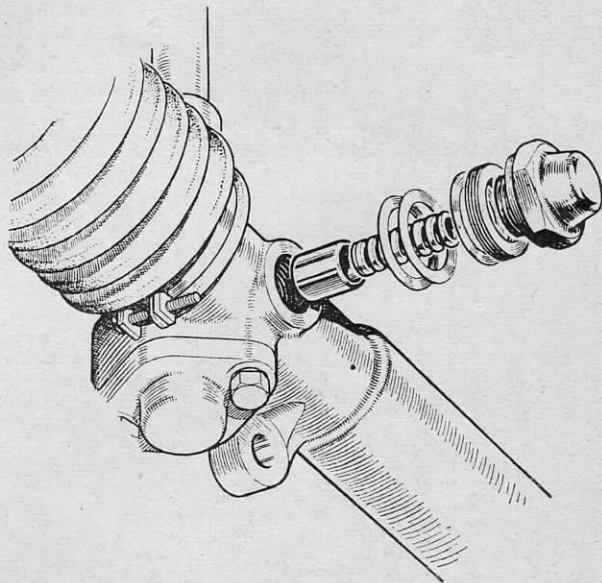


FIG. 35.—The steering gearbox damper assembly, showing its components.

Select shims to this total amount and insert under the cap. This gives the correct standard pre-load. If, when checked on the road, this is found to be too slack or too tight, it is permissible to decrease the added measurement of .051 to .030 or increase to .070.

Steering Arm Ball Joints.

If it is found necessary, through slackness, to replace the ball joints on the outer ends of the tie-rods, the complete assembly must be changed, as no adjustment is provided. If necessary the dirt excluders may be replaced separately.