SECTION J

THE STEERING GEAR

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GENERAL DESCRIPTION

The steering gear is of the rack and pinion type and is secured above the front frame cross-member immediately behind the radiator. Tie-rods, operating the swivel arms, are attached to each end of the steering-rack by ball joints enclosed in rubber gaiters.

The steering-column engages the splined end of a helical-toothed pinion to which it is secured by a clamp bolt.

End-play of the pinion is eliminated by adjustment of the shims fitted beneath the pinion tail end bearings. A damper pad inserted in the steering rack controls the backlash between the pinion and the rack.

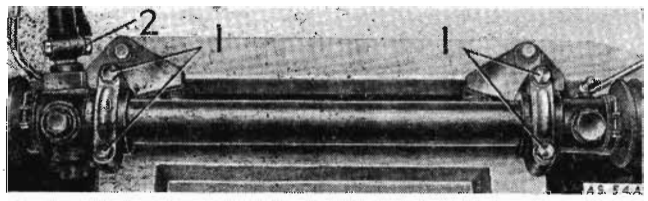


Fig. J.1

Showing the mounting points (1) *of the steering-rack,* (2) *being the steering-column clamp bolt*

Section J.1

FRONT WHEEL ALIGNMENT

When correctly adjusted the front wheels should toe in 0 to $\frac{1}{8}$ in. (0 to 3 mm.). To carry out the necessary adjustment first check that all tyres are inflated to the recommended pressures (see **'GENERAL DATA').**

Turn the wheels to the straight-ahead position. With conventional base-bar-type alignment gauges measurements in front of and behind the wheel centres should be taken at the same points on the tyres or rim flanges. This is achieved by marking the tyres where the first reading is taken and moving the car forward approximately half a road wheel revolution before taking the second reading at the same points.

Wheels and tyres vary laterally within their manufacturing tolerances or as the result of service, and alignment figures obtained without moving the car are unreliable.

If the wheel alignment is incorrect adjust the track by slackening the locknut for each tie-rod ball joint and the clips securing the rubber gaiters to the tie-rods, then rotate each tie-rod equally in the necessary direction. Both tie-rods have right-hand threads.

NOTE.—To ensure that the steering-rack is in the central position and that the steering geometry is correct it is important to adjust the tie-rods to exactly equal lengths.

After adjustment tighten the ball joint locknuts.

Section J.2

STEERING-COLUMN ASSEMBLY

Removing

Remove the connector from the negative battery terminal. Release and remove the clamp bolt nut from the splined lower end of the steering-column. Disconnect the horn wire (brown with black) at its snap connection beneath the fascia. Remove the steering-column surround situated between the fascia panel and the steering-wheel, after removing its securing set screws located behind the fascia. Release the bolts securing the column bracket beneath the fascia panel. The steering-wheel may now be withdrawn. The inner and outer columns can be separated once the steering-wheel motif, steering-wheel securing nut, and steering-wheel have been removed. To avoid damage to the horn switch contact use Service tool 18G562 to unscrew the nut.

Refitting

Refitting of the steering-column assembly is the reverse of the removal procedure. Use Service tool 18G562 when tightening the steering-wheel nut.

Section J.3

STEERING-RACK AND PINION

Remove the clamp nut and bolt from the splined lower end of the steering-column and disengage the column from the splines.

Remove the split pins and castellated nuts from the ball pins and detach the tie-rod ball joint from the swivel arm, using Service tool 18G313.

Remove the set screws securing the steering-rack clamp mounting brackets to the front cross-member. The rack assembly complete with tie-rods and brackets can now be removed.

Dismantling

Measure and record the distance from the spanner flats on the tie-rods to each of the ball joint locknuts; this will be of great assistance when reassembling.

Slacken the ball joint locknuts and unscrew the ball joint assemblies.

Position the rack housing over a receptacle to catch the oil, release the gaiter clips from the rack housing and tie-rods, and remove the rubber gaiters.

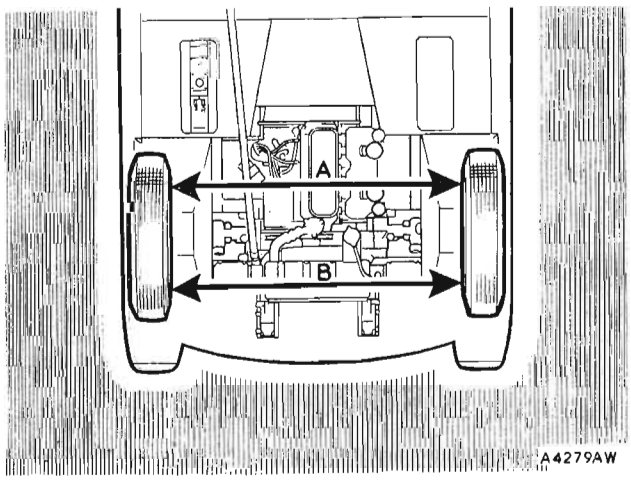


Fig. J.2

The toe-in must be adjusted so that (A) *is* 0 *to* $\frac{1}{8}$ *in.* (0 *to* 3 *mm.) greater than* (B)

Remove the hexagonal cap adjacent to the oil nipple on the housing and withdraw it complete with sealing washer, pressure pad, and spring.

Remove the damper pad housing fitted at the pinion end of the rack housing and withdraw it complete with plunger, spring, and shims.

Extract the bolts securing the pinion shaft tail bearing and remove the bearing and shims. Withdraw the pinion complete with the bottom thrust washer. The top thrust washer (the thickest one) is trapped behind the rack teeth and may be removed after the rack is withdrawn.

Secure the rack housing between suitable clamps in a vice and tap back the washers locking the tie-rod ball housing. Remove the ball joint cap, using Service tool 18G313.

NOTE.—In some cases the latter operation releases the ball seat housing from the ball joint cap; in this case difficulty will be experienced in removing the ball housing from the rack. It is therefore essential to release the ball housing from the rack before the ball seat housing and joint cap are separated.

Remove the lock washer and withdraw the steering-rack from the housing.

Remove the ball seat housing from the ball joint caps, using Service tool 18G313 together with 18G312. The shims and ball seats are now free to be removed: ensure that the shims are kept to their respective sides.

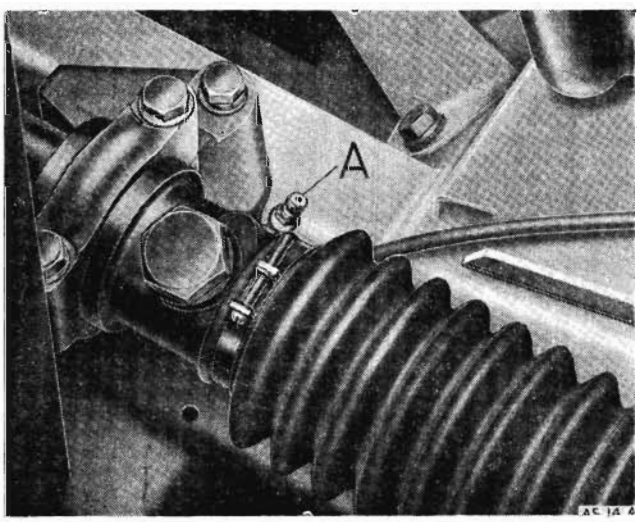


Fig. J.3

Oil nipple provided for lubrication of the steering rack and pinion

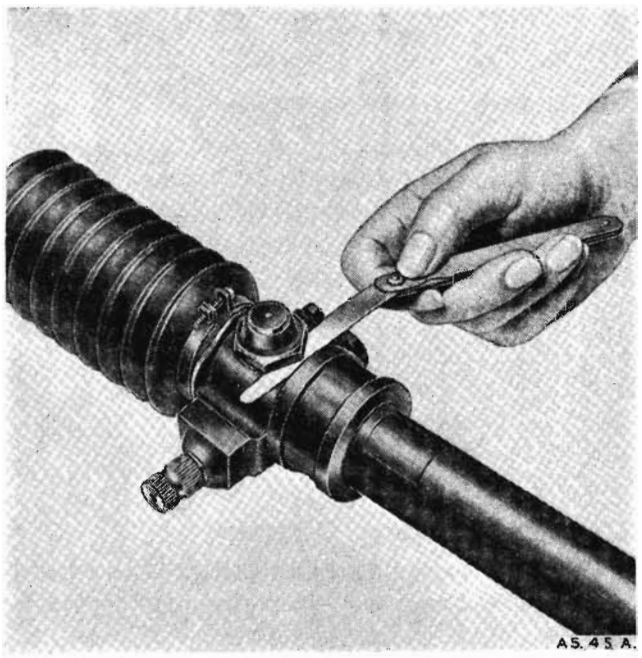


Fig. J.4

Checking the adjustment of the damper cap

Thoroughly clean and examine all parts of the dismantled assembly for wear, and renew if necessary.

Reassembly

Reassemble by reversing the dismantling procedure and pay special attention to the following points.

Place the thickest of the pinion thrust washers in position in the rack housing with its chamfered edge towards the rack. Replace the smaller thrust washer on the plain end of the pinion shaft with the chamfered edge towards the pinion teeth.

Ensure also that the centre tooth on the rack is in line with the mark on the splined end of the pinion shaft when replacing the pinion. Fit a new pinion shaft oil seal and pump 10 fl. oz. (·28 litre) approximately of Hypoid oil into the rack housing through the nipple provided.

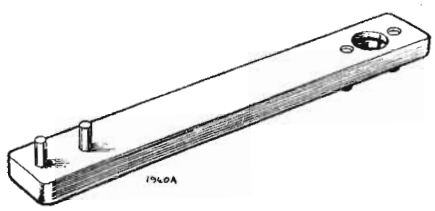
Refitting

Refitting is the reverse of the removal procedure, except that the bolts securing the housing to its mounting brackets should not be fully tightened until the assembly has been replaced. This method of assembly will ensure that the steering-rack pinion is in correct alignment with the column. Finally, tighten the rack housing bolts.

SERVICE TOOLS

18G312. Steering Tie-rod Pin Spanner

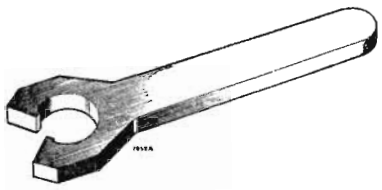
This tool is designed for use with the special 'C' spanner 18G313 for dismantling the steering tie-rod ball housing. In use it is clamped in a vice and the pins of the spanner are engaged with the holes in the housing. Use the spanner 18G313 to unscrew the housing cap.



18G312

18G313. Steering Tie-rod 'C' Spanner

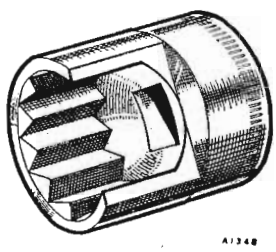
Designed to engage the shallow splines of the steering-rack ball housing cap and remove it without damage.



18G313

18G562. Steering-wheel Nut Spanner

Designed to enable the steering-wheel nut to be tightened without damage to the horn switch contact.



18G562