

Section:- 2, Rear Suspension
Subject:- Setting Torsion Bars
Effective on:- Type 400



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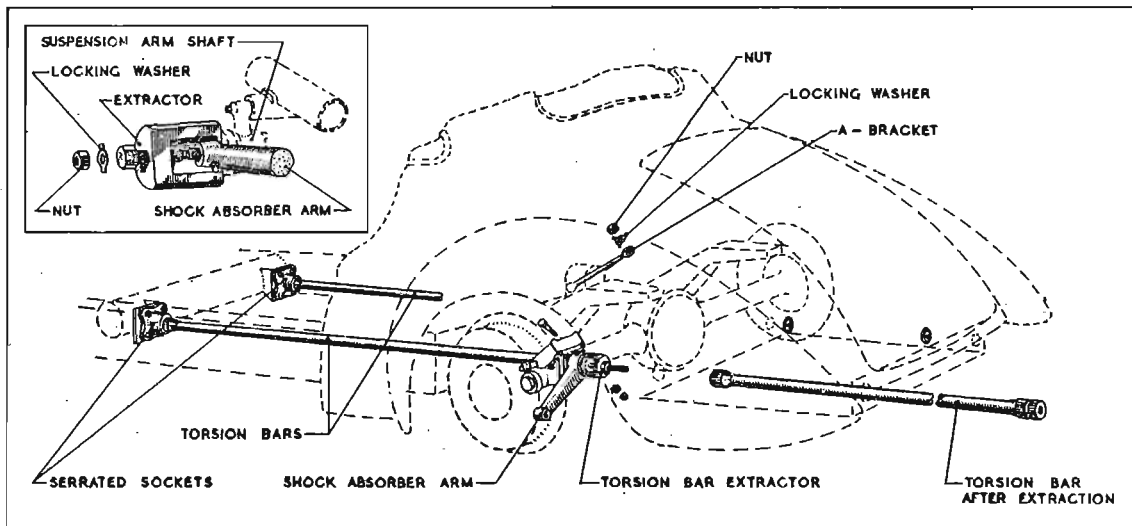


Fig. 1.

SETTING TORSION BARS

1. On all cars fitted with 20 m.m. Torsion Bars it is essential to apply a certain amount of load to the bars when fitting, to ensure correct suspension, and to relieve the rear shock absorbers of unnecessary strain.

2. This pre-loading is applied by twisting the torsion bars during assembly to the chassis, following the instructions given below for both right and left-hand bars.

(a) Removing Torsion Bars: Removing Rear Shock Absorbers

3. Jack up and support the car well towards the rear wheels, care being taken to avoid damaging the petrol feed pipe and the pipes of the hydraulic brake system.

4. Remove both rear wheels.

5. Unscrew and remove the nut and shakeproof washer and the 5/16 in. B.S.F. bolt securing each torsion bar to the main shaft and arm of each rear shock absorber.

6. Using the special torsion bar extractor, T.F.N. 5026, (see fig. 1), withdraw the torsion bars sufficiently to disengage their serrated portions from the sockets at their forward ends and from the shock absorber arms.

NOTE:- Before attempting to withdraw the torsion bars, ensure that the threaded spindle of the extractor is screwed right home in the torsion bar.

P.T.O.

7. Lift and support the rear axle high enough to give sufficient clearance to enable the torsion bars to be completely withdrawn. Also, if the car is fitted with the "dropped boot", remove the cover plates from the four holes provided in the front and rear faces of the boot for withdrawal of the bars, (and for use of the torsion bar drift when assembling).
8. Disconnect the brake rod.
9. Bend back the tab of the locking washer and remove the nut securing the A-bracket to the ball joint assembly on the differential housing.
10. Disconnect the transmission shaft at the universal coupling.
11. Bend back the tab of the locking washer and remove the nut and washer from the suspension arm shaft.
12. Using the special extractor, T.F.N. 5005, (see Inset, fig. 1), break the taper. The back axle can now be pulled back to enable the suspension arm shafts to be withdrawn from the tapered bores in the shock absorber arms.
13. If it is required to remove the shock absorbers, bend back the tabs of the locking washers and detach each shock absorber by removing the six 7/16 in. B.S.F. bolts, nuts, and locking washers.

(b) Fitting Rear Shock Absorbers and Torsion Bars: Setting Torsion Bars

14. If the rear shock absorbers have been removed, they should be replaced and attached to the chassis, each shock absorber being secured by the six 7/16 in. B.S.F. bolts, nuts, and locking washers, bending up the tabs of the locking washers after tightening the nuts.
15. Insert each torsion bar (small end first) through the hollow shaft of the shock absorber arm, sliding it forward until the serrated portions can be engaged with the serrated socket on the chassis and the serrations in the shock absorber arm, leaving the serrated end protruding sufficiently to allow the jig, T.F.N. 5019, to be fitted over the torsion bars, (see fig.2).
16. Adjust the centres of the two large holes in the jig to correspond exactly with those of the torsion bars, by slackening the four clamping bolts in the slotted portion at the centre of the jig, and sliding the halves as necessary to enable the jig to be passed easily over the projecting ends of the torsion bars. Tighten the clamping bolts when this condition is fulfilled, (see fig. 2).

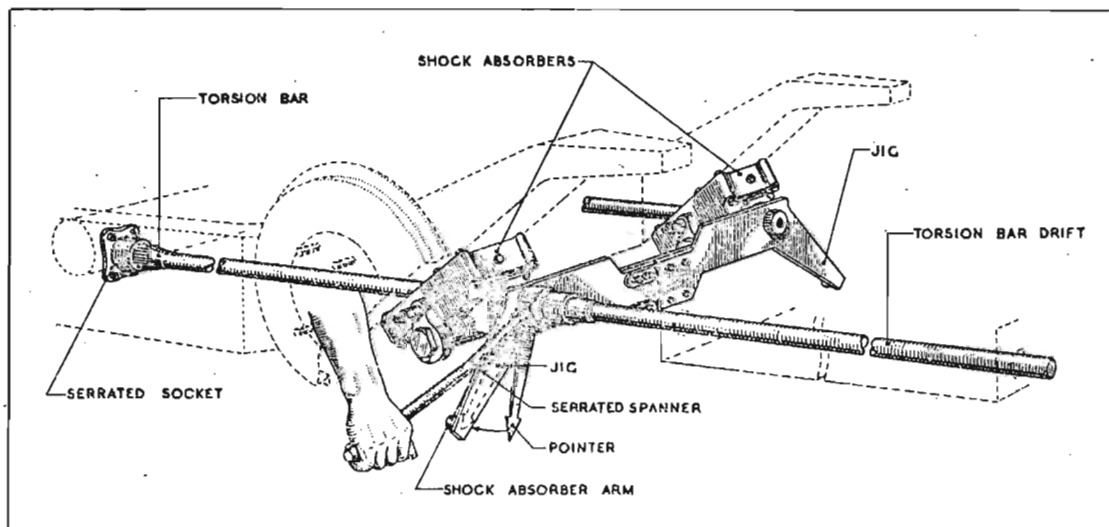


Fig. 2

(continued on Sheet No.2)

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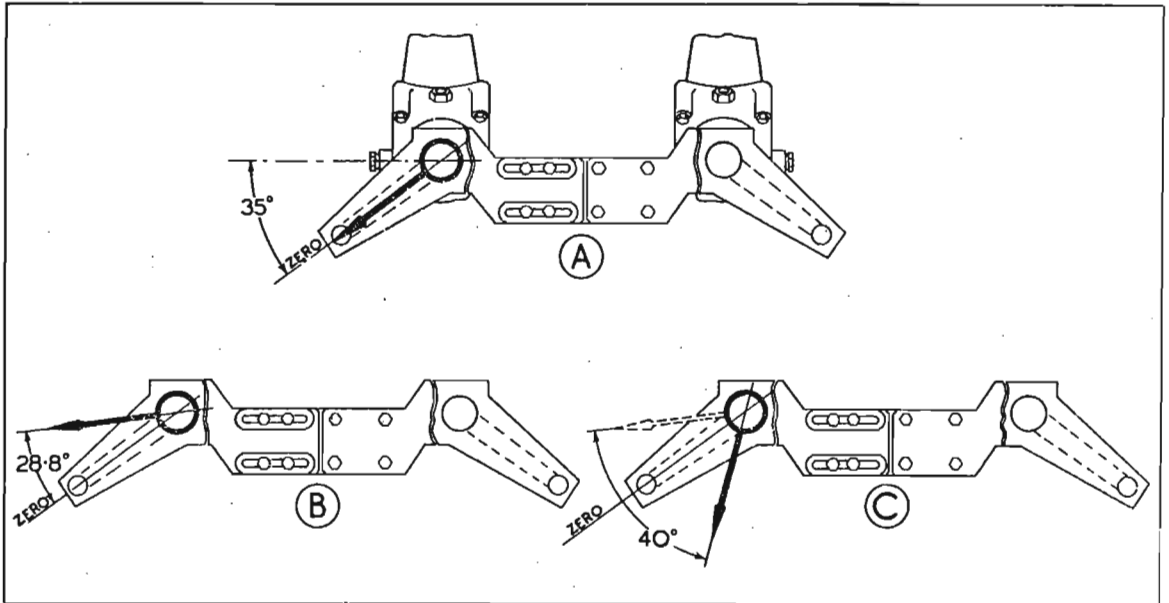


Fig. 3.

17. Withdraw the bars sufficiently to clear the serrated ends from the shock absorber arms. Set the shock absorber arms so that their tapered bores can be engaged with the tapered plugs on the jig when the latter is in position on the torsion bars.

18. Draw the torsion bars back sufficiently to clear the forward serrated sockets, and find by trial, rotating the bars, the "neutral position", i.e., where the bars can be slid into both sets of serrations. (The number of serrations at the forward and aft ends differs by 2, thus giving a vernier adjustment).

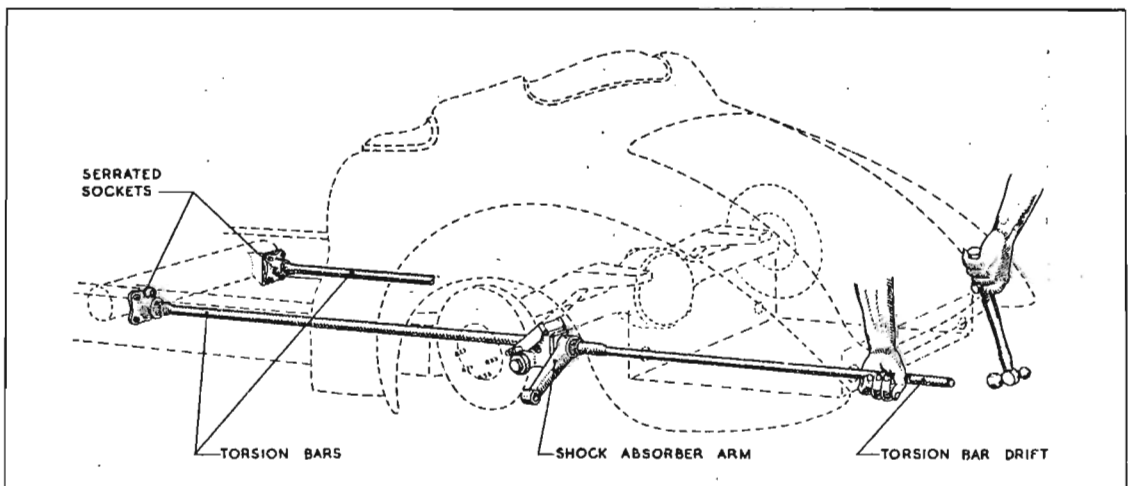


Fig. 4.

P.T.O.

19. Fit a pointer on the end of each torsion bar in the zero position, (see fig. 3, (A)).
20. Withdraw each torsion bar sufficiently to disengage the forward end from the serrated socket on the chassis.
21. Turn the left-hand torsion bar clockwise two forward socket serrations, and the right-hand bar anticlockwise two forward socket serrations. The directions "clockwise" and "anticlockwise" here given assume the observer to be at the rear of the torsion bars looking forward.
22. Slide each torsion bar forward until the serrations on the forward end engage with the serrated socket on the chassis, leaving the rear end still clear of the serrations in the shock absorber arms.
23. The pointers on both torsion bars will now have been moved through 28.8 deg. from the zero position, (see fig. 3 (B)).
24. Detach the pointers and re-set each pointer three serrations lower, i.e. - with the pointers moved through 40 deg. from their last position, (fig. 3, (C)), ensuring that the pointer is slid inwards sufficiently to allow the serrated spanner to be used on the end of the torsion bar.
25. Using the serrated spanner, T.F.N. 5000, twist each torsion bar, (see fig. 2) until its pointer registers zero on the jig. Holding this twist on the torsion bars, and using the drift, T.F.N. 5027, drive them forwards until the serrations on the rear ends are engaged with the serrations in the shock absorber arms.
26. Remove the spanner and pointer from the end of each torsion bar. Remove the jig. Using the torsion bar drift, T.F.N. 5027, drive the torsion bar fully home.
27. Insert each shock absorber arm locking bolt, and secure it with the nut and shakeproof washer.
28. Manipulate the back axle until both suspension arm shafts can be inserted in the bores of the shock absorber arms. Replace the locking washer and nut to secure each suspension arm shaft to the shock absorber arm. Bend up the tabs of the lockwashers after tightening the nuts.
29. Attach the A-bracket to the ball joint of the differential housing by the nut and lockwasher, bending up the tab of the lockwasher after tightening the nut.
30. Connect the transmission shaft at the universal coupling.
31. Connect the brake rod.
32. If the car has the "dropped boot" (see para. 7, 2nd. part), replace the covers of the four holes provided for the withdrawal of the torsion bars.
33. Replace both rear wheels and lower the car.

(continued on Sheet No.3)



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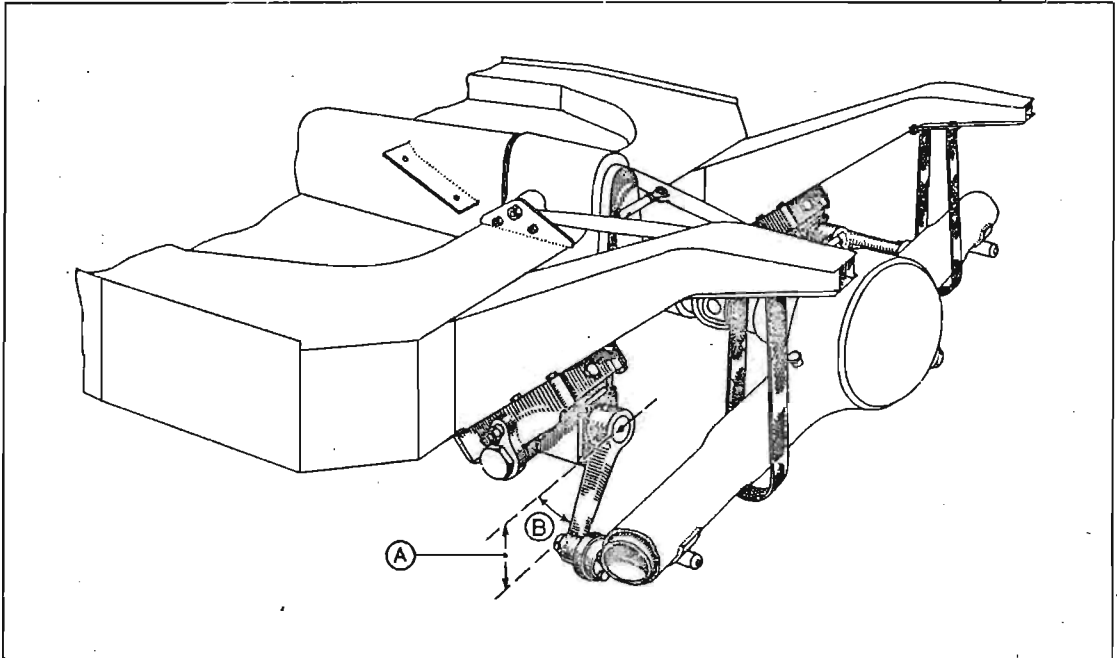


Fig. 5.

(c) Check of correct setting

34. Ensure that the car is in the "kerb weight" condition, namely, 2600 lb. total, 1300 lb. on rear tyres. This weight is given by the furnished car, plus oil, water, tools, and spare wheel, but without petrol.

35. Check the measurements indicated on fig. 5, points A and B, which, if the setting has been correctly determined, should lie within the limits given below:-

A:- Vertical rise over length			
of shock absorber arm	Min. 2.7 in.
			Max. 2.9 in.
B:- Angle of shock absorber arm			
	Min. 20 deg. 18 min.
			Max. 21 deg. 42 min.