

Removal and Installation of Engine with Sub-frame and Flanged- on Transmission

Type 220a

Note: It is definitely not recommended to remove the engine without the subframe; pull the engine only mounted on the sub frame and with clutch and transmission attached.

Figures M 1a/00 and Ma/01 indicate how to jack up the car. In the first case a lifting rig is used in connection with a chain hoist; and in the second case the lifting jack has been provided with a fork as shown in figure M 1a/01 to prevent the subframe from slipping off. If no pit is available, the car must be raised at least 50 cm (20") to provide sufficient room for the mechanic (see fig. M 1a/00). Provide the supports with tops of wood or aluminium so the car will not slip off.

Support the car only at the points shown in figure M 1a/00.



Fig. M 1a/00

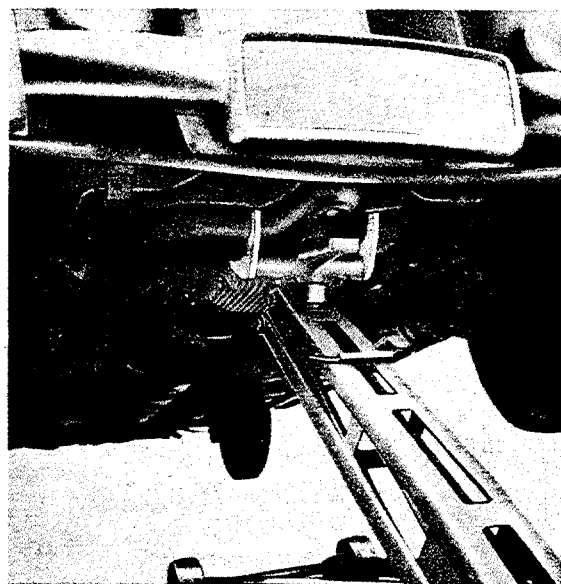


Fig. M 1a/01

Procedure:

1. Open hood and place protective covers on fenders. Unscrew dampening plate and take it out (Fig. M 1a/1).
2. Unscrew vent line at cylinder head cover and take off intake silencer.
3. Drain cooling water and remove radiator. Disconnect heating lines.
4. Detach positive cable at battery and ground cable at engine. Loosen cables 1 and 4 at distributor, cables DF and D + at generator, battery lead at starter and lead to ma-

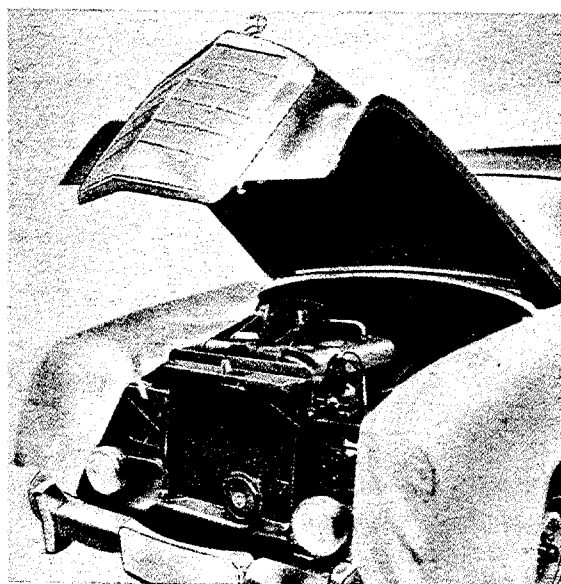


Fig. M 1a/1

gnet switch. Disconnect remote-reading thermometer, oil pressure gauge line (top) and spark advance, unhook carburetor linkage and disconnect fuel line at fuel pump (Fig. M 1a/4).

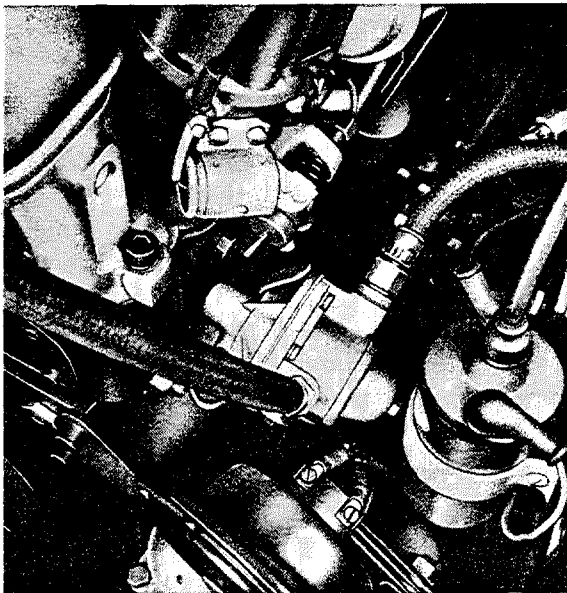


Fig. M 1a/4

5. Unscrew exhaust lines at exhaust manifold and exhaust line fastening at transmission.
6. Take selector lever off the shaft at bracket and unhook gear shift lever linkage.
7. Loosen clamping screw of steering coupling and retaining screw of steering column at jacket tube, detach cable and pull steering column upward. Remove horn in engine compartment.
8. Disconnect speedometer shaft from transmission.
9. Detach propeller shaft from transmission (Fig. M 1a/9) (leave Jurid washer on propeller shaft), loosen intermediate bearing and push propeller shaft back. Watch out that no screws or other small parts fall into the propeller shaft tunnel.
10. Unhook clutch linkage and spring.
11. Loosen left and right torsion bar mount at chassis frame. Disconnect brake hoses at chassis wheel well.

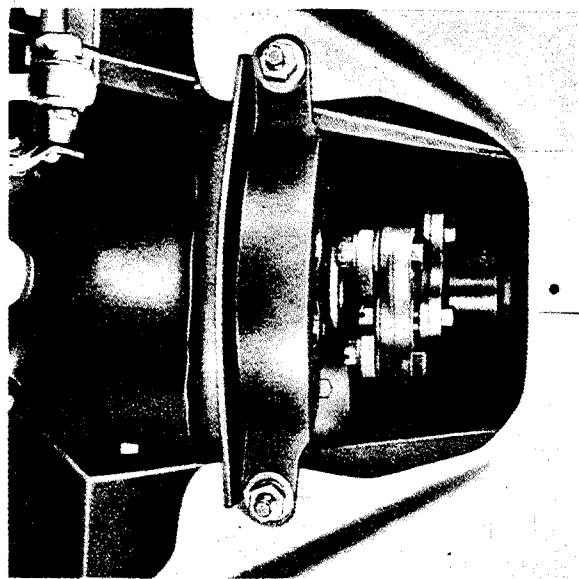


Fig. M 1a/9

12. Lift car somewhat (with a lifting rig, if available), support transmission, unscrew rear engine mount (see Fig. M 1a/9) and attach caster wheel (Fig. M 1a/12).

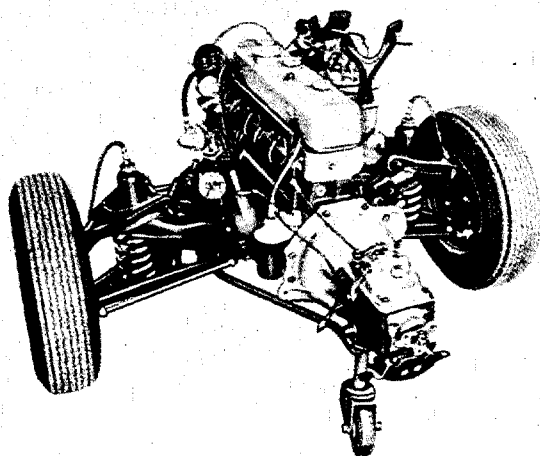


Fig. M 1a/12

13. Unscrew three-point suspension of sub frame at chassis frame.
14. Lift chassis (approx. 1,100 mm = 43.30", measured at lower cover plate), pull sub-frame with engine, clutch and transmission forward (Fig. M 1a/14).

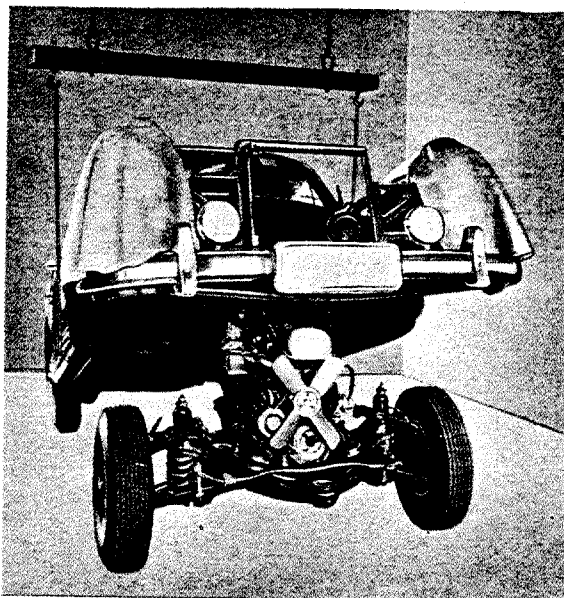


Fig. M 1a/14

Note: When lifting or lowering the chassis be careful that starter and fuel pump cover will not be damaged.

15. Installation is effected in reverse order of removal. Note the following: Hang chassis at car jack supports and lift approx. 1,100 mm (43.30"). See Operation No. M 1a, cf. 14.
16. Move engine with subframe and caster wheel up to rear engine mount. Be sure to provide the subframe suspension rubbers with talcum (see Fig. M 1a/12).
17. Lower chassis on subframe and fasten rear engine mount with both screws to chassis frame, but do not yet tighten.
18. Remove caster wheel and secure subframe to chassis frame (first tighten the two screws on side, then the middle screw in front to 5 mkg (36 ft. lb.); do not forget talcum). Tighten rear engine mount and secure subframe fastening screws. Use new lock washers!
19. Push propeller shaft forward, tighten Jurid washer fastening screws and provide with cotter pins. Connect speedometer shaft to transmission. Tighten intermediate bearing.
20. Attach clutch linkage and fasten spring. Grease ball pins!
21. Fasten exhaust lines at manifold and secure fastening (be careful to avoid any stress).
22. Fasten torsion bar mounted at chassis frame.
23. Connect all electric cables at starter, generator and distributor; attach all heating connections and tighten. Connect remote thermometer and oil pressure gauge lines as well as fuel line.
24. Install second horn in engine compartment and connect cable.
25. Install radiator and fill with water.
26. Slip on selector lever and attach gear shifting and selecting linkages. Set selector lever at transmission and gear shift lever at bracket to reverse. Move gear shift lever at steering wheel up to the stop (with a second mechanic in the car assisting you) and tighten selector lever in this position. Secure ball ends.
27. Pass signal line through steering housing, connect steering column with steering coupling and tighten clamping screw. Connect cable at luster terminal.
28. Tighten retaining screw at jacket tube.
29. Adjust clutch pedal.
30. Check gear shift unit (depressing clutch pedal).
31. Bleed brakes.
32. Attach accelerator linkage, put on intake silencer and install dampening plate.
33. Let engine run and check all connections for tightness and all electric wires for proper passage. Adjust electric clock.

Engine Type 220a

