

# Removal and Installation of Engine together with Transmission

Job No.

01-1

On Models 180 a, 180 b, 190 SL, 220 a, 219, 220 S, and 220 SE the removal and installation operations for the engine together with the transmission are basically the same as for Model 190. In addition, the following points require attention for the various Models:

## I. Model 190 SL (See also Section II)

### a) Engine Hood

Before removing the hood, mark the position of the hinge bearing on the left side and unscrew the hinge bearing. Then push the engine hood toward the left and remove it.

When reinstalling the engine hood, make sure that the hood is properly seated and pay attention to the marks on the hinge bearing made during removal.

### b) Air Intake Silencer

Detach the flexible hose from the air intake pipe and the rubber hose from the vent tube, and remove the cover of the air intake silencer together with the flexible hose. Then loosen the three hexagon screws at the bottom of the silencer base. When lifting the air intake silencer, check the damping plate between the cowl and the air intake silencer. Damaged damping plates should be replaced.

The flexible hose between the air intake silencer and the air intake pipe must not be kinked after it has been installed.

### c) Fuel Overflow Line

Disconnect the rubber hose between the fuel overflow line and the pipe at the air scoop bracket on the cowl.

On installation align the two pipes; the rubber hose must not be kinked.

In addition, make sure that the pipe on the air scoop bracket is fastened in such a way that the distance between the lower end of the pipe and the drain funnel is appr. 10 mm.

### d) Hot-Start Mechanism

Disconnect the control cable for the hot-start mechanism from the rear carburetor.

Connection and disconnection of the control cable are described in Job No. 30-6.

### e) Speedometer Drive

Disconnect the flexible speedometer drive at the front of the engine.

When connecting the drive, make sure that the shaft is not kinked.

### f) Oil Filter

Unscrew the oil filter housing from the crankcase. In order to prevent dirt from getting into the oil passages, close the openings in the crankcase by means of wooden plugs or cover them with textile tape.

Use a new gasket when reinstalling the oil filter.

### g) Gear Shift Mechanism

#### Removal:

1. Fold the rubber mat on the transmission tunnel over to the left. After unscrewing the hexagon tappet screws from the tunnel, remove the cover plate for the gear shift linkage.
2. Engage 1<sup>st</sup> gear and loosen the hexagon nut of the clamping screw on the yoke end of the shifting shaft.
3. By engaging 2<sup>nd</sup> gear push the shifting shaft forward and retain it by holding the yoke end in position. Then pull out the shift tube toward the rear from the splines in the yoke end.

#### Installation:

4. Move the shifting shaft against the reverse gear stop, put the gear shift lever vertical (seen in the direction of travel) and insert it in the splines of the shifting shaft yoke end. In this position the gear shift lever must be absolutely vertical (seen in the direction of travel and at right angles to it). Then tighten the hexagon nut of the clamping screw on the yoke end.

**Note:** To gain better access to the hexagon nut, it is advisable to engage 1<sup>st</sup> gear without, however, displacing the shift tube in the yoke end.

5. Check the gear shift mechanism. To do this, engage the various gears and check whether, when the gear is engaged, there is sufficient clearance between the shift

lever and the upper shift lever bearing. The shift lever must on no account butt against the shift lever bearing, since this may cause the gear to slip out. Always declutch when shifting the individual gears.

6. Screw on the cover plate for the gear shift linkage and put on the rubber mat.

## **II. Models 180 a, 180 b, 190 SL, 220 a, 219, 220 S, and 220 SE**

(For Model 220 SE see also Section III)

### **a) Cylinder Head Cover**

On Models 219 and 220 S with hydraulic automatic clutch it is advisable to remove the cylinder head cover before lifting out the engine. This makes it much easier to remove the engine together with the transmission, since the engine can be lifted higher at the front end.

### **b) Clutch Actuating Mechanism**

Models 190 SL and 220 a have three different versions of the clutch actuating mechanism, whereas Models 180 a, 180 b, 219, 220 S, and 220 SE have only the latest version, which is also installed in Model 190.

The installation and removal procedures for the clutch actuating mechanism are different for the different versions. For details see Job No. 21-1.

### **c) Reversing Light Switch**

On the first cars of Model 220 a the reversing light switch was mounted in the bearing block for the steering wheel shift mechanism, so that it was not necessary to disconnect the cables. On later cars, as also on Models 180 a, 180 b, 190, 190 SL, 219, 220 S, and 220 SE, the switch was mounted on the transmission case cover. For that reason the cables of the reversing light switch must be disconnected and reconnected at the cable connector fastened to the bearing block for the steering wheel gear shift mechanism whenever the transmission is removed or installed.

On the first cars of Models 190 SL and 220 a the cables were directly connected to the switch without any cable connector.

Since in this version the terminals are not easily accessible, the cables must be cut off and must be connected by a cable connector when the transmission has been reinstalled.

### **d) Rear Engine Suspension**

#### **Models 180 a, 180 b, 190 SL, 220 a, and 219 with Three-Point Engine Suspension**

Before the engine together with the transmission is removed from the car, the rear rubber mounting must be disconnected from the chassis base panel. Procedures are as follows:

#### **Removal:**

1. Slightly raise the engine at the transmission by means of a car jack. Loosen the two hexagon screws fastening the rear rubber mounting to the chassis base panel and remove them, paying attention to the washers between rubber mounting and chassis base panel (see para 3).
2. Lower the engine together with the transmission and support it under the oil pan, taking care, however, that the oil pan does not rest on the center tie-rod or the steering shock-absorber. Further removal procedures are the same as in cars with four-point engine suspension.

#### **Installation:**

3. After reinstalling the engine together with the transmission, raise the engine and fasten the rear rubber mounting to the chassis base panel, but do not yet tighten the nuts.

When inserting the hexagon screws, make sure that the same washers are installed

between rubber mounting and chassis base panel as were installed originally. This applies in particular to Model 190 SL. On this Model a 10 mm washer must be installed between chassis base panel and rubber mounting (see also Job No. 24-1).

On older cars, on which the hexagon screws for the rear rubber mounting were secured by lock nuts, only Self-Locking Nuts M 10 AGGN 14 440 should be installed.

4. Allow the engine to settle in the rubber mountings. This is necessary in order to ensure that the engine is seated without forcing. When this has been achieved, tight-

en the two nuts on the rear rubber mounting.

#### **Models 190 SL, 219, 220 S, and 220 SE with Four-Point Engine Suspension**

On Models 190 SL (as from chassis end no. 65 00 376), 219 with hydraulic automatic clutch, 220 S, and 220 SE the rear rubber mountings are provided with a limit stop as on Model 190.

On Model 190 SL, from chassis end nos. 65 00 173 to 65 00 375, the rear rubber mountings have no limit stop.

### **III. Model 220 SE**

(See also Section II)

Before removing the engine together with the transmission, it is advisable to remove the right engine compartment panel, the battery behind it, and the horn on the left fork bracket, in order to prevent damage to these parts. The same applies to the installation procedure. In addition, particular care should be taken to ensure that **the ropes around the engine do not touch and bend the lines, the control linkage, or the control levers. Bent rods and levers change the adjustment of the control linkage and consequently the fuel-to-air ratio.** For this reason the control linkage should always be checked after the engine has been reinstalled in the car (see Workshop Manual Passenger Car Models starting August 1959, Job No. 00-16).