Testing Compression Pressure

Change: Item 6 was changed and note on page 00-5/2 added

In the event of complaints concerning an engine, e.g. poor performance, poor starting ability, high oil consumption, extensive smoking of engine, running out-of-round, etc., the compression pressure should be tested on top of other checks. The compression pressure gives an indication on the condition of the valves and pistons.

The compression test should only be conducted while the engine is warm. With engine cold the obtained values are unreliable, because they do not correspond to operating conditions.

The compression pressure is measured with a pressure gauge or the generally used compression tester.

1. Check valve clearance, adjust if necessary (see Job No. 00–3).

2. Bring engine to normal operating temperature (cooling water temperature 70 to 80° C).

3. Disconnect power leads and remove glow plugs with the Spark Plug Wrench Part No. 136 589 03 36 or Glow Plug Wrench Part No. 136 589 03 09.

4. Crank engine several times with the starter, so that possible oil carbon residues and soot are forced out. This is advisable, because the soot might clog the compression tester.

5. Screw adapter (1) to glow plug hole of the cylinder to be tested. Tighten adapter well to obtain proper sealing. **With Model OM 621,** also connect the angular piece part No. 000 589 00 90 with the union nut to the connection fitting (1), when measuring the 2nd and 3rd cylinder. Then connect the compression pressure recorder (3) with hose (2) to the connection fitting (1) and the angular piece, resp. (Fig. 00–5/1).

6. For testing, turn engine with starter 8 times. Fully open throttle butterfly at the same time to obtain good cylinder charge (throttle wide open).

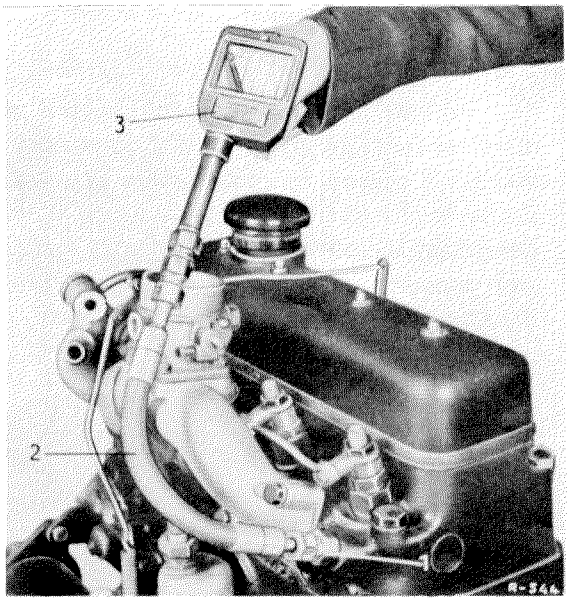

Figure 00–5/1

1 Adapter
2 Flexible hose
3 Compression tester

7. Test with this method all 4 cylinders in the order 1 through 4. Set the test diagram in the compression tester to the new working position corresponding to the cylinder to be tested.

   During the individual tests, maintain similar period of cranking. By using the Compression Tester Part No. 000 589 69 21 the average compression pressure reached is approx. 22 to 23 atm.

The test results of the individual cylinders should not deviate more than 2 atm. from each other (Figure 00–5/2).

If the deviation is larger for one cylinder, then it is practicable to conduct a second test.

A compression pressure of only 17 atm. or less indicates that valves, pistons or piston rings are in need of repair. If considerably lower pressures are registered for two adjacent cylinders as compared to the others, then the cylinder head gasket between these two cylinders is leaking as a rule.

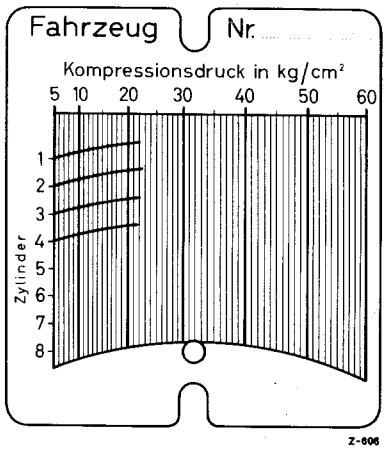

Figure 00–5/2

Test Diagram

Fahrzeug Nr. = Vehicle No.
Kompressionsdruck = compression pressure
Zylinder = cylinder

Note: The engines of types 621.912 and 913 are equipped with a valve turning device for inlet and exhaust valve, which provides for longer life of the valves. If the valve turning device does not function properly, a drop in compression pressure will occur, with the result of leaky valves. If a drop in compression pressure is noticed (rated value of 20 to 23 atü 284-327 psi drops to 13 to 15 atü 185-213 psi) it will be sufficient to install only a new valve turning device (6) for each of the inlet and exhaust valve in the cylinder in which a drop of compression pressure prevails. (Refer to Fig. 01–6/6.) The valves are sealed by turning the device and the compression pressure will rise again.

In order to make double sure, a second check of compression pressure after approx. 3000 km (2000 miles) should be performed. If the result is not fully satisfying, remove cylinder head and check valves, valve seats, pistons, piston rings and cylinder paths for wear, and repair.