

Checking and Repairing of Throttle Duct

Change: Throttle duct for model 190 Dc added
List of throttle ducts now in Job No. 07-21

Job No.

07-23

Loose throttle butterflies and worn butterfly shafts cause sticking of the gas linkage and in some cases an unbalanced running of the engine (sawing).

The connection of the vacuum line and the mounting flange of the throttle duct must be absolutely airtight. A leakage in the vacuum system influences governing. The result would be a retarded beginning of governing, increased fuel consumption, and heavy exhaust smoking.

The throttle butterfly must be checked for tight seating on the throttle butterfly shaft and tightened if necessary. Make sure that the closed throttle butterfly is concentrically mounted in the throttle duct and does not stick. If the seat bores for the throttle shaft are heavily worn, it is necessary to replace the throttle duct or to re-bush the seat bore and ream it. Thereby keep to the clearance between bore and throttle shaft of 0.040 to 0.084 mm.

Check the seat of the air nozzle and of the additional venturi pipe, observing the correct screw-in depth of the air nozzle (Figure 07-23/2). Dimension b should be 5.7 ± 0.2 mm for the OM 636 and 4.5 ± 0.2 mm for the OM 621. The bore of the air nozzle c is 5 mm for all types. The first version of the the air nozzle for the OM 636 had a bore of 3.5 mm, which is no longer installed today. A variation of the measure b or bore diameter of the nozzle influences the governing which results in incorrect adjusting values.

Check the mounting flange of the throttle duct. If necessary, level contact surface on a surface plate. The full-load stop screw (5) must at first be so adjusted that the throttle butterfly is tilted approx. 5 deg in full throttle position; it should not be completely opened. This tilting allows a subsequent adjusting of the max. full load speed and the max. no-load speed (see Figure 07-23/1).

The dimensions a, b, c, the throttle duct housing, the throttle butterfly shaft, the auxiliary ven-

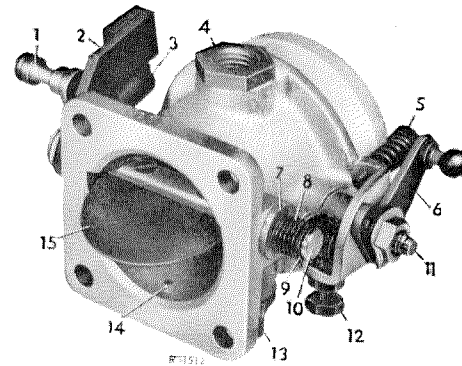


Figure 07-23/1

Throttle Duct with Check Butterfly
for Model 190 Dc

- 1 Throttle butterfly lever for operating tipper of injection pump
- 2 Counterweight of check butterfly
- 3 Damping rubber
- 4 Connection for vacuum line
- 5 Idling stop screw
- 6 Throttle butterfly lever
- 7 Washer
- 8 Spring
- 9 Lock ring
- 10 Check butterfly shaft
- 11 Throttle butterfly shaft
- 12 Full-load stop screw
- 13 Connection for vent line
- 14 Stop for check butterfly
- 15 Check butterfly

turi pipe and the air jet are similar for all engines of Model OM 636 with injection pump with pneumatic governor. Only the throttle butterfly lever and bell-crank lever are different (see Figure 07-23/2).

Engines with injection pump with centrifugal governor have in place of the throttle duct a flanged nipple Part No. 6360940010 with an inner diameter $a = 38$ mm for Model OM 636.

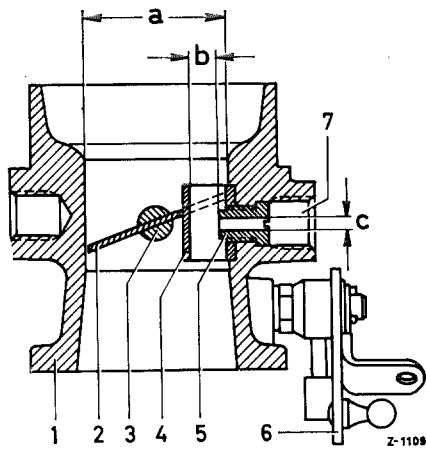


Fig. 07-23/2

Throttle Duct for OM 636

- 1 Throttle duct
 - 2 Throttle butterfly
 - 3 Throttle butterfly shaft
 - 4 Auxiliary venturi pipe
 - 5 Screw insert or air nozzle
 - 6 Bell-crank lever
 - 7 Connector for vacuum line to governor of injection pump
- a 36 mm inner dia. of throttle duct
b 5.7 ± 0.2 (screw-in depth)
c 5.0 mm (bore of air nozzle)

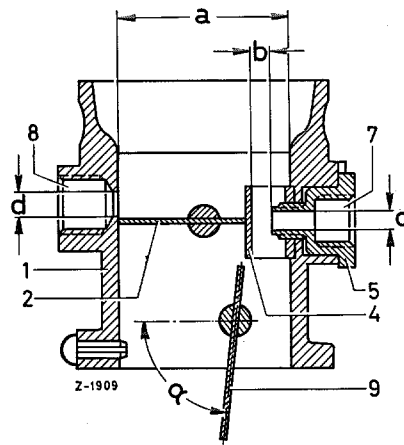


Fig. 07-23/3

Throttle Duct with Check Butterfly for OM 621

- 1 Throttle duct
 - 2 Throttle butterfly
 - 4 Auxiliary venturi pipe
 - 5 Screw insert or air nozzle
 - 7 Connection for vacuum line
 - 8 Connection for vent line
 - 9 Check butterfly
- a 40 mm inner dia. of throttle duct
b $4.5 + 0.3$ mm (screw-in depth)
c 5.0 mm (bore of air nozzle)
d 6.0 to 7.0 mm (refer to note)
α The control dimension for the position of the check butterfly of model 180 Dc = $80^\circ \pm 10^\circ$
for models 190 Dc and L and O 319 Dc = $84^\circ 30' \pm 1^\circ$

Note: If engine 621 ejects oil at the oil dipstick bore (d) of throttle duct can be increased from 6 mm dia. in steps to 6.5 or 7 mm (refer to Fig. 07-23/3) to improve suction effect (engine venting). But please be careful since too big a bore might cut into the space behind the throttle butterfly (with throttle butterfly closed), which might change vacuum conditions.