

Throttle Duct

Change: Sections B and C added

Job No.

07-21

A. Removal and Installation

In principle, the removal and installation procedures for the engines of all types are identical. Engines featuring a centrifugal governor are provided with a flanged nipple only for mounting the air filter, instead of the throttle duct.

Removal:

1. Dismount the air filter or the air hose depending on the type. To do this, loosen the clamp on the air filter and unscrew the mounting screw on the throttle duct.
2. Unhook the linkage and the wire cable for the idling control on the throttle duct.
3. Unscrew the vacuum line (3) on the throttle duct (Figure 07-21/1).
4. Unscrew the throttle duct from the intake line.

Note: Repairing of throttle duct (see Job No. 07-23).

Installation:

5. Mount the throttle duct to the intake line using a new gasket. Uniformly tighten the nuts crosswise to prevent distortion of the mounting flange.
For engines with wire cable for the idling control, the clamp (5) must be fixed with the front nut (Figure 07-21/1).
6. Hook in the linkage and the wire cable for the idling control. Adjustment of idling speed on the throttle duct (see Job No. 00-11, item a) and adjustment of wire cable (see Job No. 00-11, item b).
7. Connect the vacuum line (3) to the throttle duct, if necessary, use new seal rings (Figure 07-21/1).
8. Fit the air filter on the throttle duct and fasten with the clamp and the mounting screw.
9. Measure maximum speed under no load and adjust, if required (refer to Job No. 00-12).

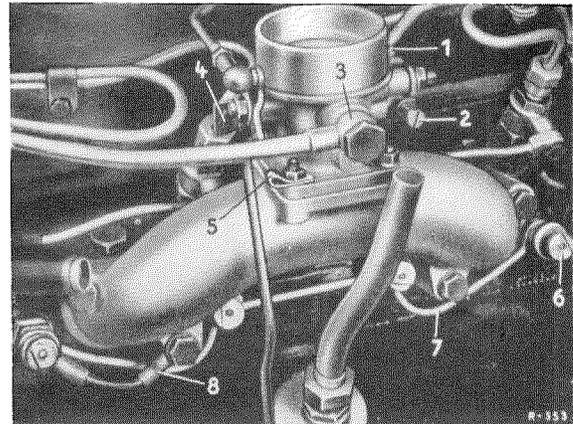


Fig. 07-21/1

- 1 Full load stop screw
- 2 Idling stop screw
- 3 Vacuum connection
- 4 Eye in throttle lever for hooking in wire cable for the idling control
- 5 Mounting clamp for the wire cable
- 6 Glow plug
- 7 Bus rail
- 8 Ground cable

The throttle ducts are different, particularly on type OM 621, and may be installed only together with the pertinent intake pipe and the respective, matched governor of the injection pump, as shown in the list below.

Note: Be sure that after the installation of a throttle duct the maximum speed is measured under no load and that, if required, the throttle flap is adjusted accordingly (specified maximum speed may definitely not be exceeded) (refer to page 0-2/1 and Job No. 00-12). Engines with throttle ducts with solid shaft have approx. 200-400 rpm more, for this reason, the solid shaft has been replaced by set pins.

B. List of Throttle and Flange Ducts

OM 636

Part No.	Installed in Engines of Type	
636 070 05 28 (throttle duct)	636. { 914 932 937 939	
	{ 00 001 021 040 050 090 120 180 190 221 222 223 224 225 252 253 270 271 272 273 274 280 300 310 390 391 440	
	636.917 { 636.917/ { 2 3 4 5 6 9 10 11 12 13 14 17 18 19 20 22 23 29 31 32	
		636.917/0 design A, B, C, F, G, H, J, K, L, M, N, O, P, Q, S, T, U, V, W, X, Y and Z
	636 070 07 28 (throttle duct)	636. { 915 916 918 919 931 934 935 636.917/0 design R

Part No.	Installed in Engines of Type
636 070 10 28 (throttle duct)	636.930
636 070 16 28*) (throttle duct)	636.917- { 240 254 420 430
636 070 17 28*) (throttle duct)	636.917- { 252 or /31 253 or /32 310
636 094 00 10 (flange duct)	636.933 { 290 320 330 340 380 410 411
	636.917- { 636.917/ { 15 16 21 24 26 27 30
636.917/0 design E	
Engines of type designation 636.936-938-940	
636.917/ { 022 023 251 260 350 360 370 400	636.917- { 28 33

*) Throttle duct 636 070 16 28 and 636 070 17 28 differ from throttle duct 636 070 07 28 and 636 070 10 28 solely by the longer cylinder head screw AM 5x20 used instead of the normal full throttle stop screw for regulating engine speed.

Installed in Engines of Type Designation	Throttle Duct Part No.	Remarks
621.910 (190 D, 190 Db)	621 070 11 28	With installed small standard intake pipe 621 140 00 01 and injection pump PES 4 M 50 A 320 RS 3 with governor EP/MN 60 M 4 d
	621 070 24 28 with check flap	
621.912 (190 Dc)	621 070 17 28 or 621 070 20 28 with solid shaft but without check flap	With installed small standard intake pipe 621 140 00 01 and injection pump PES 4 M 50 A 320 RS 14 with governor EP/MN 60 M 7 d or 8 d
	621 070 18 28 with solid shaft but without check flap (the throttle duct differs from the above named throttle duct only by different levers).	With installed swing intake pipe 621 140 02 01 and injection pump PES 4 M 50 A 320 RS 14 with governor EP/MN 60 M 12 d or 13 d
	621 070 22 28 with check flap	With installed swing intake pipe 621 140 02 01 and injection pump PES 4 M 50 A 320 RS 14 with governor EP/MN 60 M 15 d or 16 d
621.913 (L and O 319 D)	621 070 19 28 without solid shaft and without check flap but some engines with solid shaft or 621 070 23 28 with check flap	With installed swing intake pipe 621 140 03 01 and injection pump PES 4 M 50 A 320 RS 14 with governor EP/MN 60 M 9 d or 14 d
621.914 (180 Dc)	621 070 20 28 with solid shaft but without check flap or 621 070 21 28 without shaft for check flap but with holes for eventual shaft closed with set pins or 621 070 24 28 with check flap.	With installed small standard intake pipe 621 140 00 01 and injection pump PES 4 M 50 A 320 RS 14 with governor EP/MN 60 M 11 d

C. Throttle Duct with Check Flap on Type OM 621

a) General

As from engine end No. 6390 (180 Dc), 16856 (190 Dc) and 5078 (L/O 319 D) the OM 621 engine has been provided with a throttle duct with check flap as standard equipment. This will guarantee that the engine is immediately stopped if it would run in the opposite direction of rotation as the result of an operational error. The function of the check flap is as follows:

With the engine running normally the intake air flow will open the check flap (Fig. 07-21/2). If, however, the engine were to start in the opposite direction of rotation the check flap is closed by the accumulating pressure of the exhaust gases and the engine will stop (Fig. 07-21/3).

In the event of complaints, for example, about insufficient output as the result of early governing or because the engine will not attain its maximum speed, the check flap should be examined for ease of operation. The flap should open completely immediately when the throttle is suddenly fully opened.
– To guarantee the required easy running the bearing points of the check flap shaft should be lubricated with engine oil when the service work acc. to voucher D (every 6000 km) is done.

If, on the other hand, the engine should "saw" while governing the check flap will flutter because it moves too easily and can then be somewhat restrained by placing a washer under compression spring (8) (refer to Fig. 07-21/4).

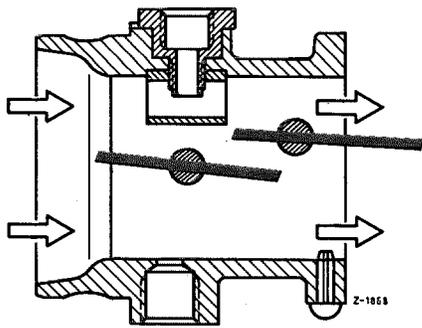


Fig. 07-21/2

Position of Throttle and Check Flap at
Normal Run of Engine

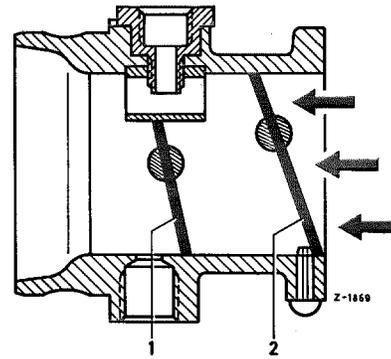


Fig. 07-21/3

Reverse Run of Engine

b) Subsequent Installation of Throttle Duct with Check Flap on Models 180 Dc, 190 D, 190 Db, 190 Dc and L/O 319 D

For the supplementary installation of a throttle duct with check flap the following is required:

Model 180 Dc

Install throttle duct with check flap part No. 621 070 24 28. Run engine and adjust governing peak or maximum speed under no load to **4300 to 4400 rpm**.

Note: The governing peak or maximum speed under no load may positively not be adjusted higher than specified. For measuring and adjusting of maximum speed under no load refer to Job No. 00-12.

speed under no load to **4300 to 4400 rpm** by setting the control flap as required.

Models 190 D und 190 Db

Unless already countersunk the intake pipe can be refinished at the bore on the flange (so that the check flap can swing) using a 30° countersink on a diameter of 46 mm (refer to Figure 07-21/5). If no such countersink is available the bevel can also be machined on a lathe or a new intake pipe part No. 621 140 00 01 can be used.

Attach throttle duct with check flap part No. 621 070 24 28. Set control flap to approx. 15 to 20°. Then start engine and adjust maximum

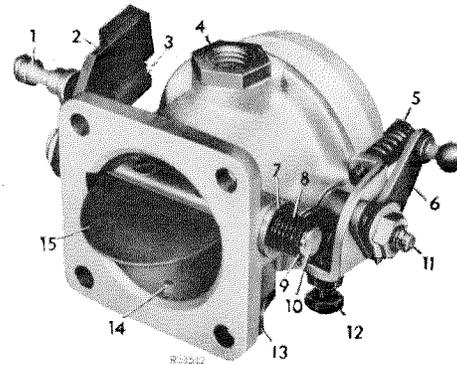


Figure 07-21/4

- 1 Control flap lever for operating the "Stupser" of the injection pump
- 2 Counterweight of check flap
- 3 Cushioning rubber
- 4 Connection for vacuum line
- 5 Idling speed stop screw
- 6 Control flap lever
- 7 Washer
- 8 Spring
- 9 Lock washer
- 10 Check flap shaft
- 11 Control flap shaft
- 12 Full load stop screw
- 13 Connection for vent line
- 14 Stop for check flap
- 15 Check flap

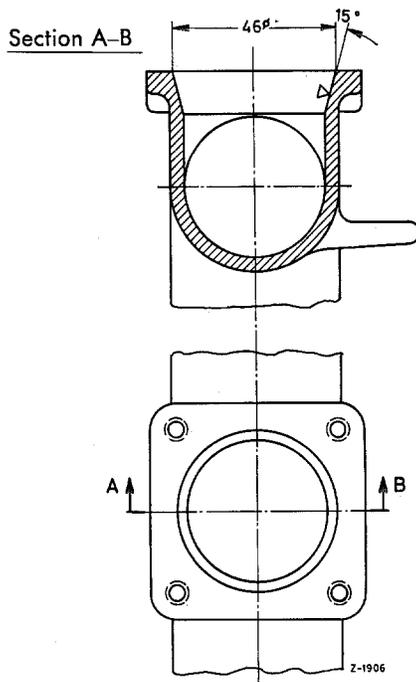


Figure 07-21/5

Model 190 Dc with 1st intake pipe design, part No. 621 140 0001

Install throttle duct with check flap part No. 621 070 2428. Start engine and adjust maximum

speed under no load to **5000 to 5200 rpm** while setting the control flap as required.

Model 190 Dc with Swing Intake Pipe

Install throttle duct with check flap part No. 621 070 2228. Up to engine No. 621.912-10-013 569 remove control spring part No. 000 074 42 93 (Bosch order No. WSF 11 S 16x) and install instead control spring part No. 000 074 45 93 (Bosch order No. WSF 11 P 260x). Start engine and adjust maximum speed under no load to **5000 to 5200 rpm** by setting the control flap as required.

Note: The two control springs differ only in their lengths. The length of the unloaded spring 000 074 42 93 is 95 mm, that of spring 000 074 45 93 = 102 ± 3 mm.

Model L and O 319 D with OM 621 Engine

Install throttle duct with check flap part No. 621 070 2328. Then start engine and adjust maximum speed under no load to **4200 to 4300 rpm** by setting the control flap as required.