



## Overhaul of the mechanical governor (standard and with LDA valve)



### DANGER

- 1 - Prior to overhaul, the governor must be removed from the engine and installed on service tool 5.9030.665.0



### DANGER

- 2 - General adjustments that affect operation of the governor must be carried out on the workbench.



### DANGER

- 3 - Adjustments affecting operation of the engine must be carried out with governor installed.



### DANGER

- 4 - Remove only those parts indicated in this section; other parts that are not mentioned must be left in place because their position is factory set and must remain unchanged for the entire lifetime of the governor and the engine.



### DANGER

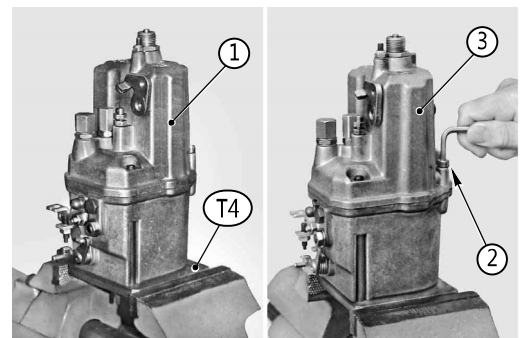
- 5 - If the parts indicated are disassembled by mistake, ship the entire governor to the factory for comprehensive calibration and overhaul.

## Standard governor disassembly

### Separation of lower housing from upper housing

Fit governor (1) on tool T4 (P/N 5.9030.665.0) held in a vice.

Loosen and remove fixing screws (2) of upper housing (3).



1.

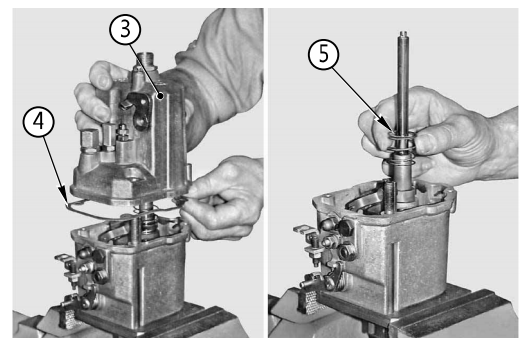
Remove upper housing (3) and gasket (4).



### NOTE

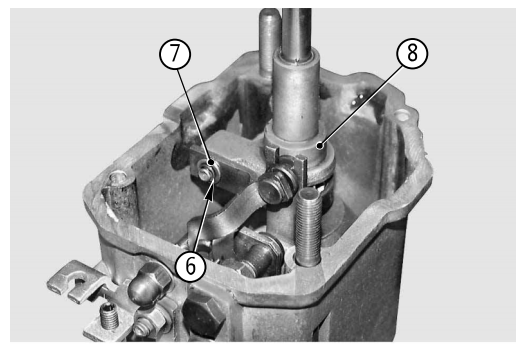
Renew the gasket on reassembly.

Remove spring (5).



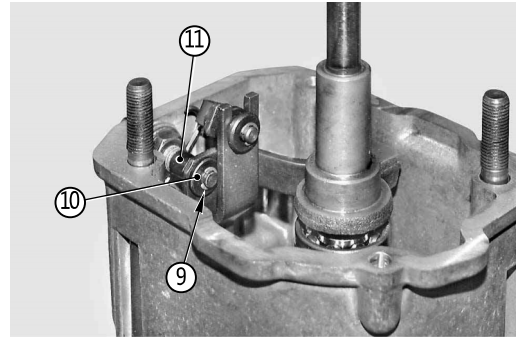
2.

Remove circlip (6) and washer (7) connecting the levers to control sleeve (8).



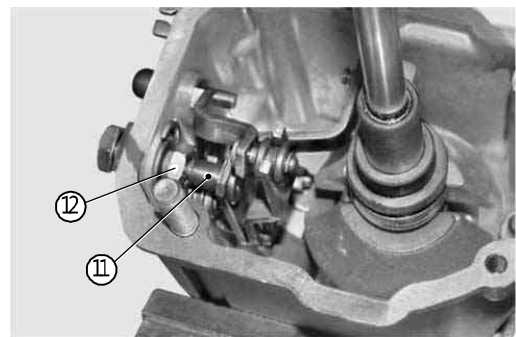
3.

Remove circlip (9) and washer (10) of pivot pin (11).



4.

Loosen and partially unscrew nut (12) of pivot pin (11).



5.

Unscrew pivot pin (11) from the exterior until releasing lever (13).



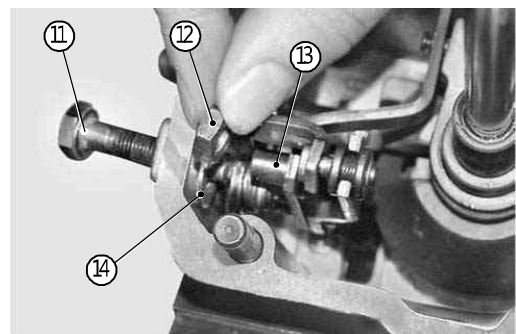
**NOTE**

Recover nut (12) and washer (14).



**NOTE**

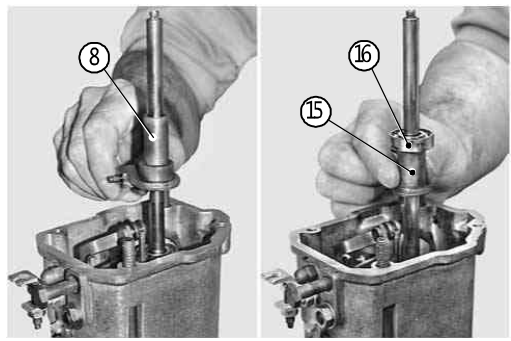
Renew the copper gasket.



6.

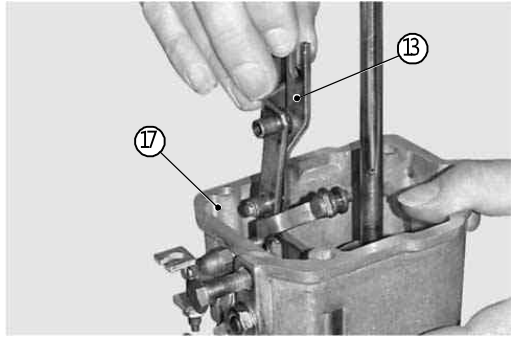
Turn control sleeve (8) to detach it from the levers and remove.

Remove thrust sleeve (15) complete with bearing (16).




7.

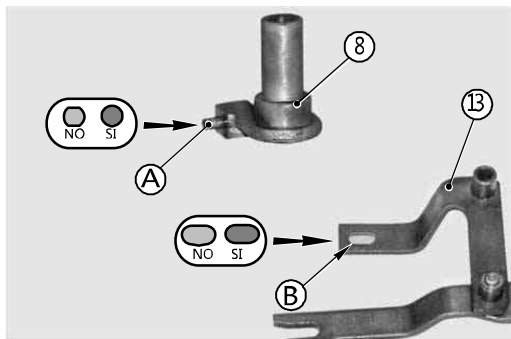
Remove lower housing (17) from tool T4 (P/N) 5.9030.665.0 and remove lever assembly (13).



8.

Carefully check pin (A) of sleeve (8) and slot (B) of lever (13).  
If the pin is worn and the slot has a concave profile, renew the parts.

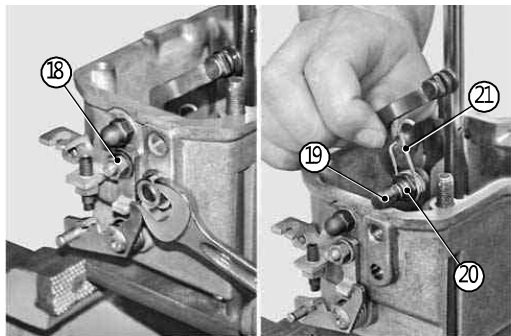
	<b>NOTE</b>
	Remove any burr that has formed on the slot profile.



9.

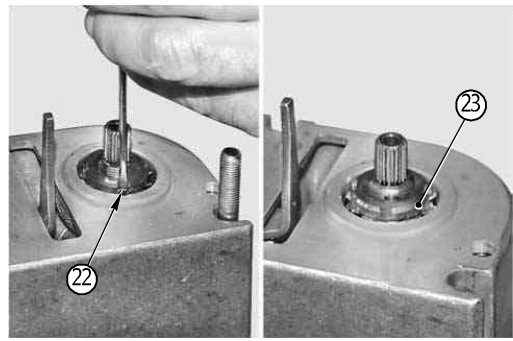
Loosen and remove nut (18) and the relative washer.  
Remove spring pivot pin (19), bush (20) and spring (21) simultaneously.

	<b>NOTE</b>
	Renew the O ring.



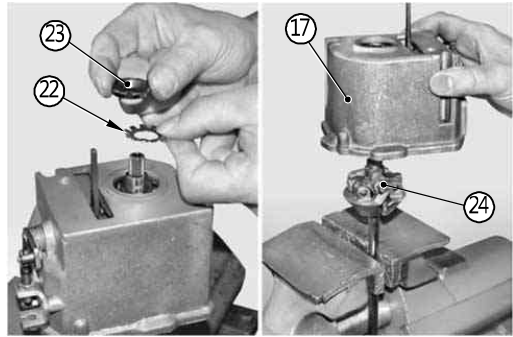
10.

Relieve the staking on lock washer (22) and loosen shaft locking ringnut (23).



11.

Remove ringnut (23) and lock washer (22) and withdraw lower housing (17) from shaft (24).



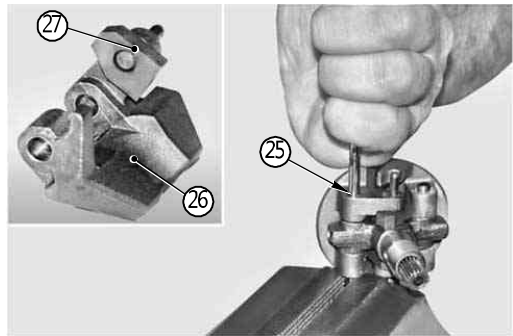
12.

Using a pin punch, remove pivot pins (25) and remove weights (26).



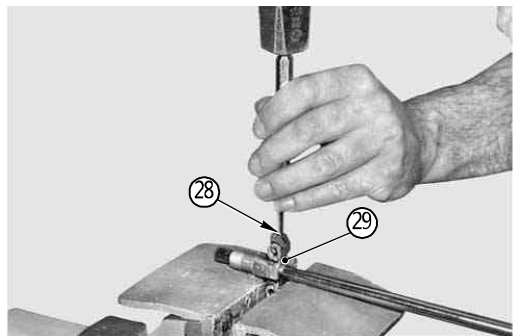
**NOTE**

Note the orientation of the contrast blocks (27).



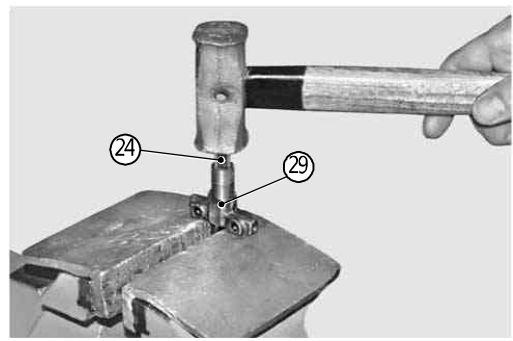
13.

Using a pin punch of suitable diameter, drive out spring pin (28) securing weights support (29).



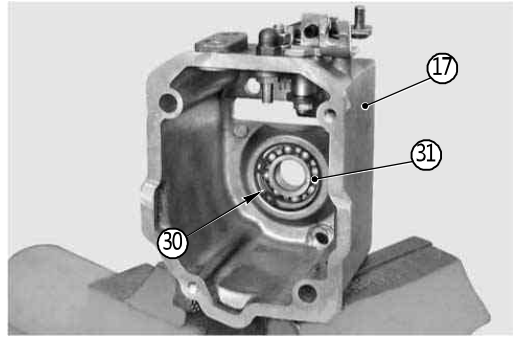
14.

Using a soft mallet (aluminium or copper), drive shaft (24) out of support (29).



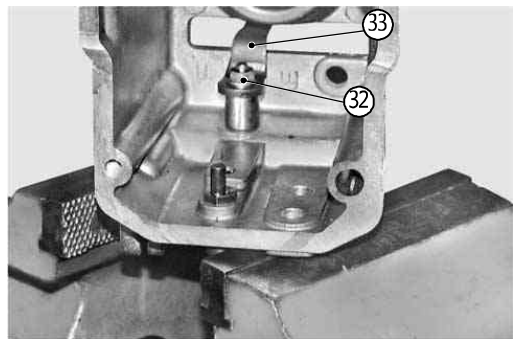
15.

Remove circlip (30) and remove bearing (31) from lower housing (17).



16.

Loosen and remove nut (32), the relative washer and engine stop and automatic fuel boost lever (33).



17.

Remove engine stop control lever (34) and relative spring (35).



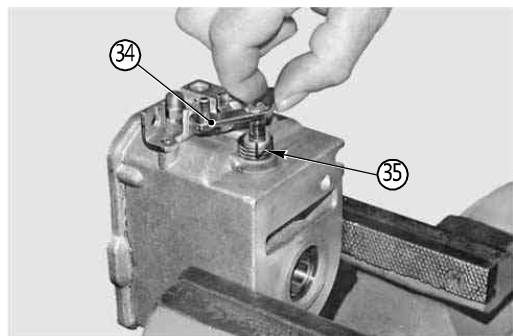
**NOTE**

Renew the O ring.



**NOTE**

Make a note of the engagement positions of the ends of the spring.



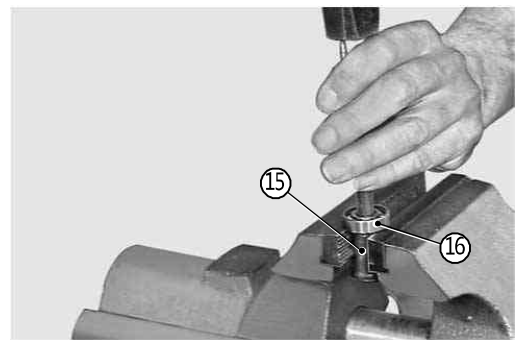
18.

Using a driving tool calibrated on the bearing inner diameter, remove thrust bearing (15) from bearing (16).

**NOTE**




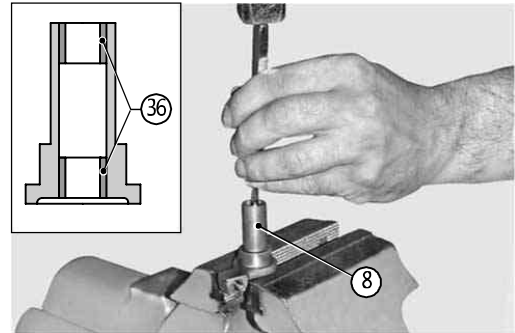
Recover any shims used to adjust axial play of the bearing.



19.

Using a suitable tool, remove bushes (36) from levers control sleeve (8).

	<p><b>NOTE</b></p> <p>Make sure the bushes are flush with the sleeve.</p>
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20.

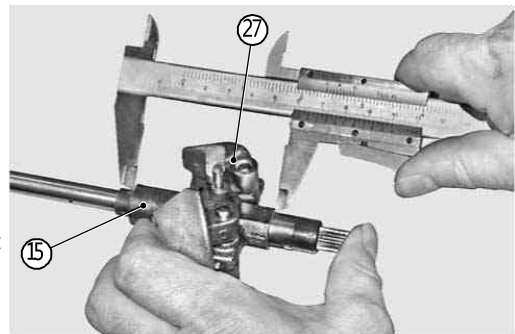
### Lower housing assembly


Repeat the removal steps in reverse order.

- o Stake lock nut (23).
- o Apply Loctite 270 to spring pin (28).
- o Apply Loctite 601 to shaft (24) and support (29).

Calculate the thickness of the shim pack to be installed under the bearing using the following procedure:

1. Install thrust sleeve (15) and, keeping it pressed against contrast blocks (27) measure the distance between the bearing shoulders. Example: measured value 60.5 mm (2.384 in.)
2. Subtract the calculated value from the design fixed value. Resulting value "S" is the shim to be added under the bearing.



	<p><b>NOTE</b></p> <p>Nominal value: <math>61 \pm 0.1</math> (2.403 <math>\pm</math> 0.0039 in.), <math>S = 61 \pm 0.1 - 60.5 = 0.4 \dots 0.6</math> mm</p>
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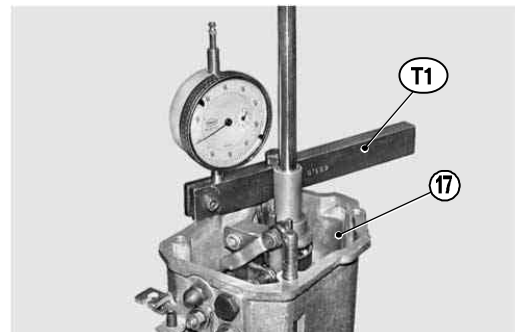
1.

### Bush height adjustment

Position governor lower housing on tool T4 (P/N 5.9030.665.0).

Position a dial gauge on tool T1 (P/N 5.9030.433.0) and install the assembly on the stud, securing it with a nut (hand tightened).

Preload the dial gauge by about 5-6 mm (0.197-0.236 in.) on governor lower housing surface (17) and set it to zero.



1.

Loosen cap nut (37).

Turn the dial gauge stand to bring the gauge tip into contact with the surface of bush (8).

Adjust cam (38) to obtain the design value.



**NOTE**

Design value: 4.5 mm (tolerance + 0.10 mm.)



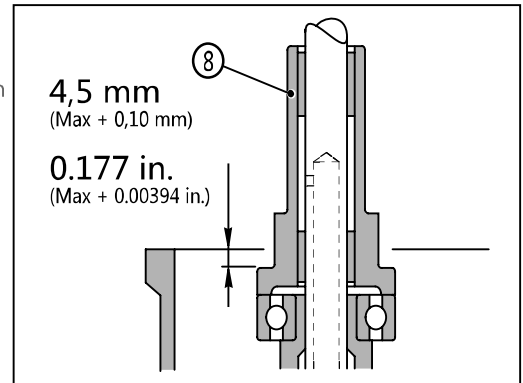
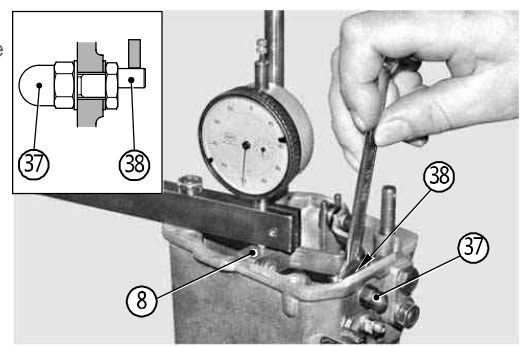
**NOTE**

Make sure that the cam is facing upwards.

2.

Holding the cam (38), tighten cap nut (37) fully down.

Repeat the check and, if necessary, repeat steps 6 and 7 to return to within the permissible range of values.

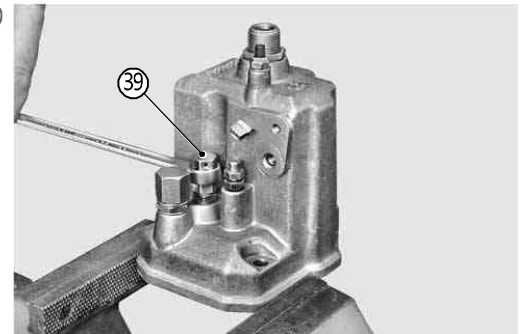


3.

### Upper housing disassembly

After removing anti-tamper protections, loosen and remove safety cap (39) for the stroke adjustment screw of injectors control rod.

Remove also the copper gasket.



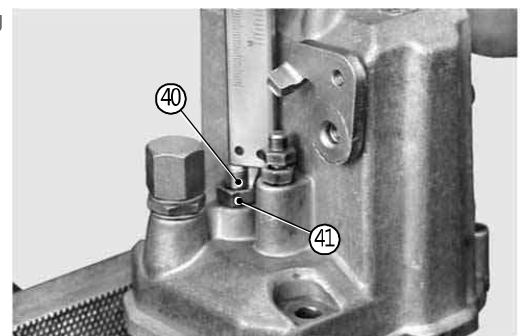
1.

Using a gauge, measure the protrusion of screw (40) with respect to locking nut (41).

**NOTE**



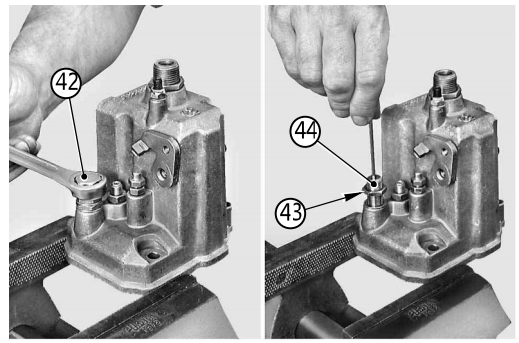
Make a note of the measurement. During fitting, this value must be restored to keep the engine running. The final measurement must be established with the governor installed and the engine running. (for details see "Calibration of mechanical governors").



2.

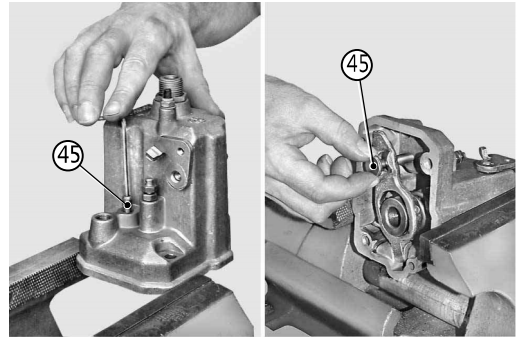
Remove cap (42) of the anti-hunting device and the relative copper gasket.

Loosen nut (43) and remove anti-hunting device (44).



3.


Loosen and remove the nut securing the rod stroke adjustment and remove mushroom head screw (45).

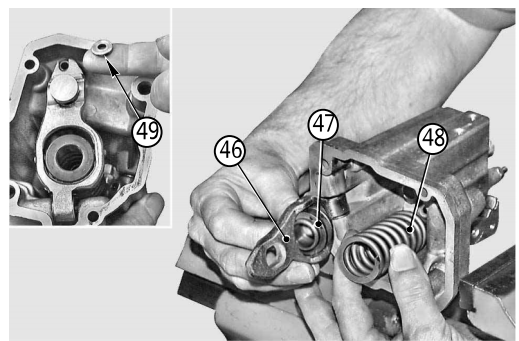


4.

Push lever (46) outwards and remove compression bush (47) and spring (48).

For models with LDA only: recover washer (49) on which the spring of the anti-hunting device rests.

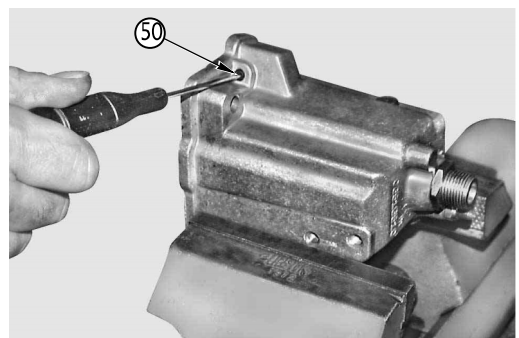
 **NOTE**  
Note the bush lower diameter rests on the spring.



5.


Loosen lever pivot pin (50) fully.

 **NOTE**  
Renew the O ring.



6.

Remove the pivot pin and remove lever (46) and the two thrust washers (51).

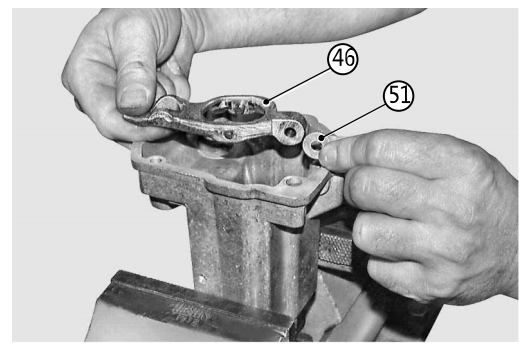
 **NOTE**  
Note the thrust washers are installed on both sides of the lever pivot pin.

**NOTE**



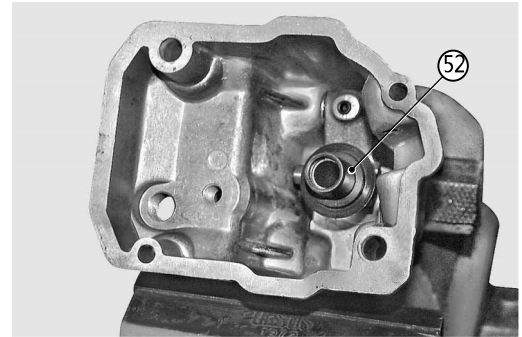


Check that the pins of the lever are perfectly round, and renew the part at the first sign of ovality.



7.

Remove spring guide bush (52).



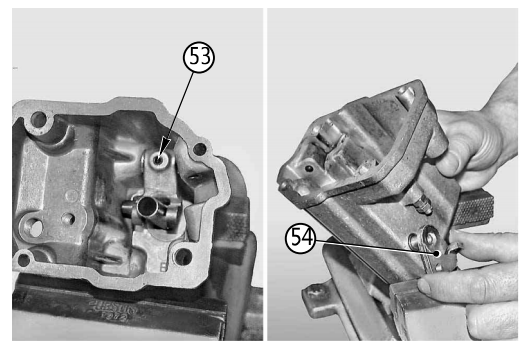
8.

Remove grub screw (53) and drive out accelerator lever (54).



**NOTE**

Renew the O-rings.



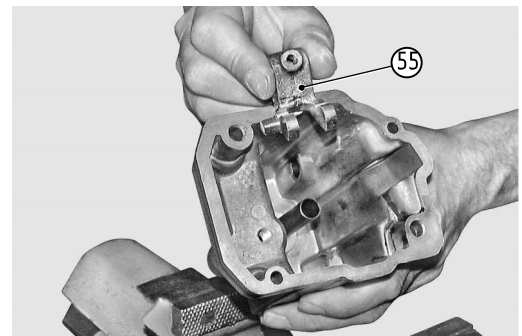
9.

Remove yoke (55) and the relative two thrust washers.



**NOTE**

Note the thrust washers are installed on both sides of the lever pivot pin.



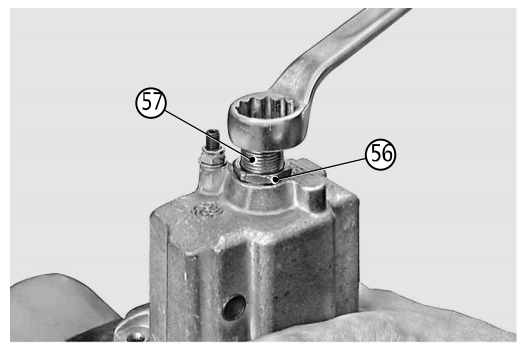
10.

**NOTE**

All the operations indicated below must be performed: 1 - On renewing the counterweights shaft. 2 - When the bush and shaft are worn. 3 - When sleeve and spring guide are worn or seized. 4 - When the accelerator lever bushes are worn. 5 - Renew the oil seal on reassembly also if the upper bush remains installed.

11.

Loosen and remove nut (56) securing shaft upper guide bush (57).



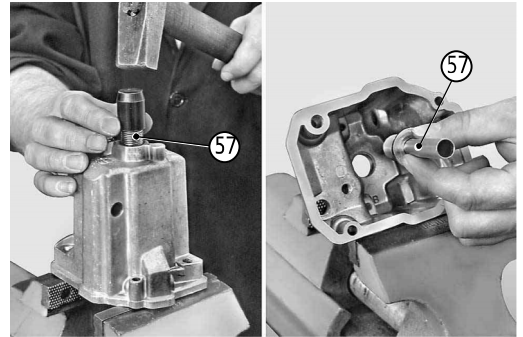
12.

Using a suitable tool, remove guide bush (57).



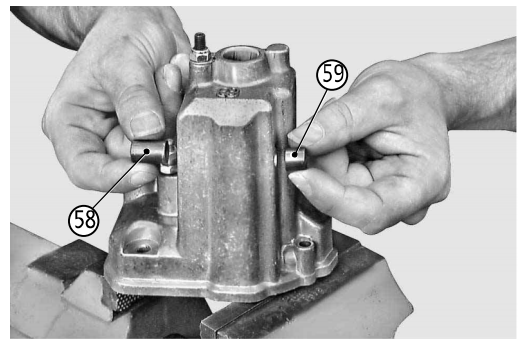
**NOTE**

Always renew the O-ring.



13.

Renew bushes (58) and (59) of the accelerator lever pin.

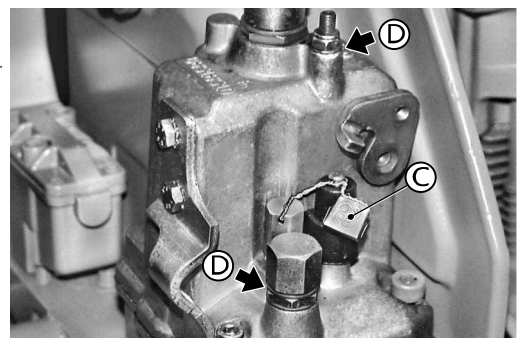


14.

**Upper housing assembly**

Repeat the removal steps in reverse order.

After the final calibrations carried out on the engine apply the anti-tamper seals "C" and a drop of light coloured enamel paint "D" for the adjuster nuts.



1.



**NOTE**

Restore the protrusion dimension of the rod stroke limiting screw.

2.

Apply Loctite 242 to pin (50).

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