

SMCS - 1264

SENR74100019

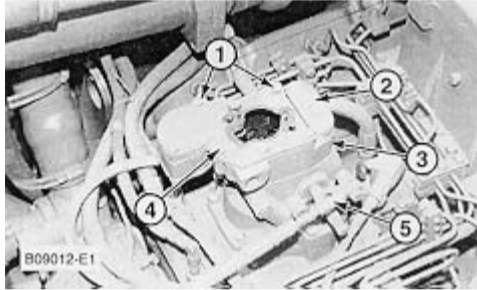
Remove Governor

Tools Needed		A
5P9697	Timing Pin	1

Start By:

a. remove fuel ratio control

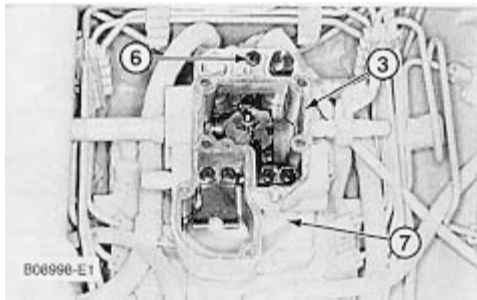
NOTE: Illustrations show 3408 Vehicular Engine, but the Governor and the procedures are the same for 3412 Industrial & Marine Engines.



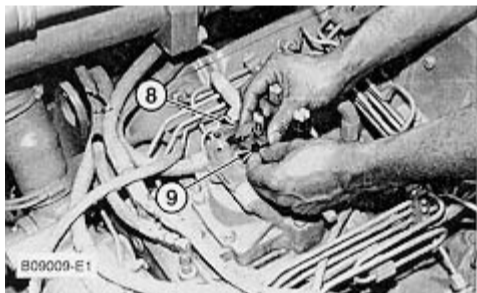
1. Remove rod (5) from the lever.

2. Remove bolts (1) from the plate assembly. Remove plate assembly (4).

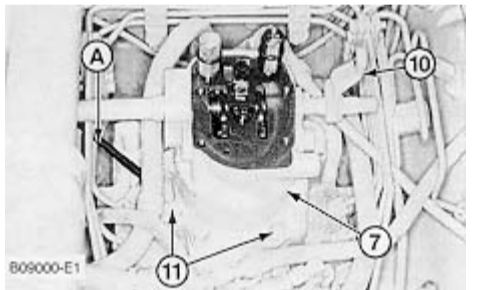
3. Remove the bolt and cover (2) from the cover assembly (3).



4. Remove bolt (6) and cover assembly (3) from the governor housing assembly (7).

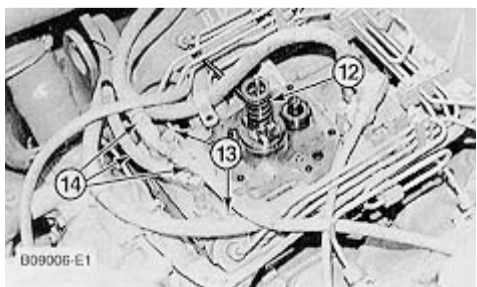


5. Remove bolt (9) from the stop collar. Remove stop collar (8) and spring from below the collar.



6. Install Tool (A) in the fuel injection pump housing. The square end (flat end) must be down. Make sure the correct end of Tool (A) is used. Move governor control lever (10) until Tool (A) is in place and the racks are in the center (zero) position.

7. Remove bolts (11) and governor housing (7).



8. Remove seat and spring (12). Remove four bolts (13) and fuel lines (14) from the governor plate. Remove the governor plate.

NOTE: It is possible to remove the governor and governor plate as a unit. The above steps must be followed before the governor can be installed again on the injection pump housing.

Install Governor

Tools Needed		A
5P9697	Timing Pin	†

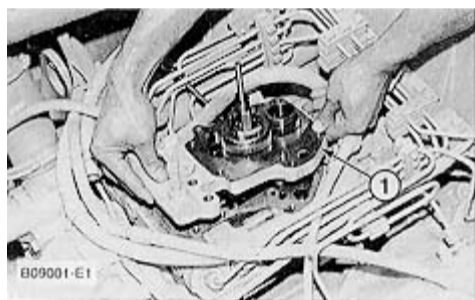
NOTE: Illustrations show 3408 Vehicular Engine, but the Governor and the procedures are the same for 3412 Industrial & Marine Engines.

NOTICE

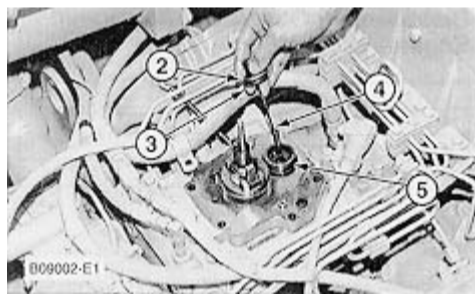
The drive assembly must be removed from the governor plate before the governor plate is installed for correct alignment. The drive assembly can be damaged if it is installed with the governor plate and is not in alignment with the drive pinion assembly.

1. Install Tool (A) in the fuel injection pump housing. The square end (flat end) must be down. Make sure the correct end of Tool (A) is used. Push the fuel rack in until Tool (A) is in place in the slot (groove). The racks are now in the center (zero) position.

2. Install a new gasket on the injection pump housing.

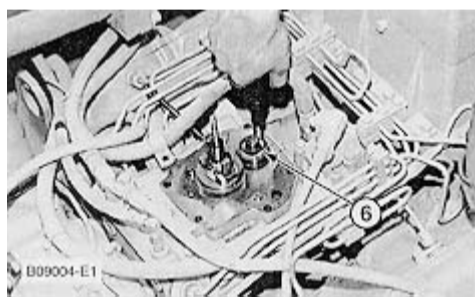


3. Put governor plate (1) into position on the injection pump housing. Be sure the dowels on plate (1) are in alignment with the holes in the injection pump housing and the governor linkage is engaged with the left fuel rack.

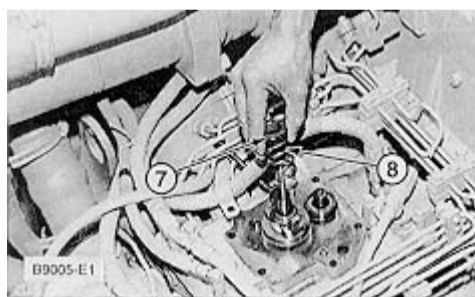


4. Connect three fuel lines to governor plate. Install ring (3), drive assembly (4), spring and ring (2) in gear assembly (5).

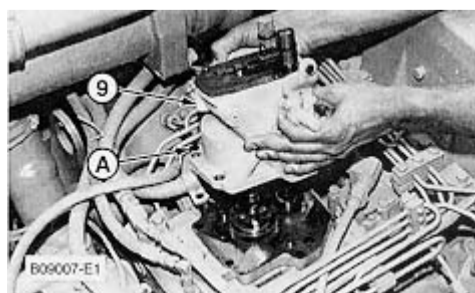
NOTE: Make sure the dowels in gear assembly (5) and the holes in both the ring (3) and the drive assembly (4) are all in alignment.



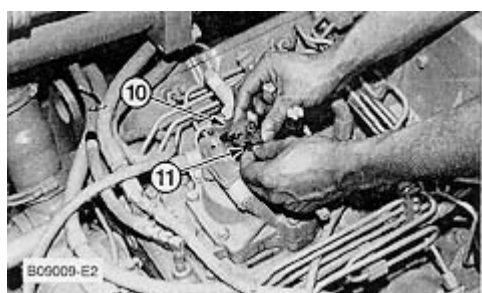
5. Install ring (6) that holds the drive assembly in place.



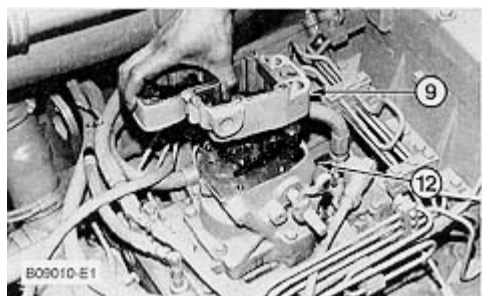
6. Install governor spring (8) and a spring washer on each side of the flat washer. Install seat (7) on the top of spring (8).



7. Use a new gasket and install governor housing (9). Fasten the housing in position with bolts. Remove Tool (A) and install the plug in the hole.

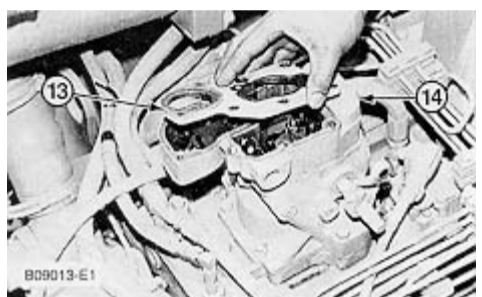


8. Put the spring on the governor bolt. Install the governor stop collar (10) and bolt (11).

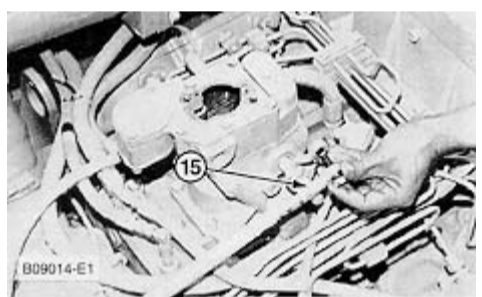


9. Install gasket and cover assembly (12) on governor housing.

NOTE: There is a strainer assembly in the cover assembly. The strainer assembly is installed with the mesh (screen) toward the governor housing.



10. Install plate assembly (13) and cover (14) on the cover assembly.



11. Install rod (15) in position on the governor lever.

12. Check the governor adjustment. See Governor Adjustment in Testing and Adjusting.

End By:

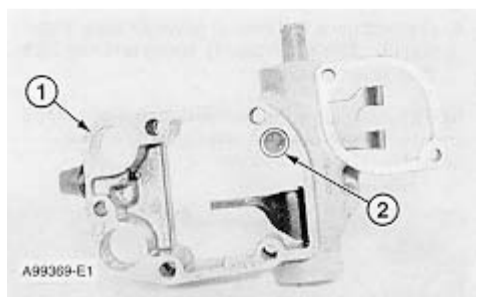
- a. install fuel ratio control

Disassemble Governor (Low Speed Engine)

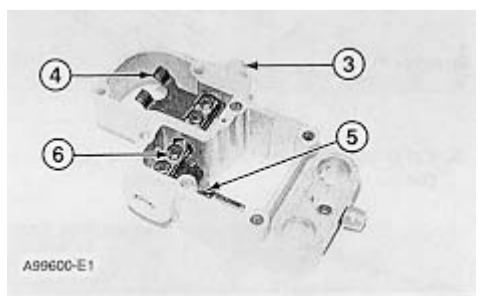
Tools Needed		A	B	C
1P0510	Driver Group	1		
1P1856	Snap Ring Pliers		1	
1P1858	Snap Ring Pliers			1

Start By:

- a. remove governor

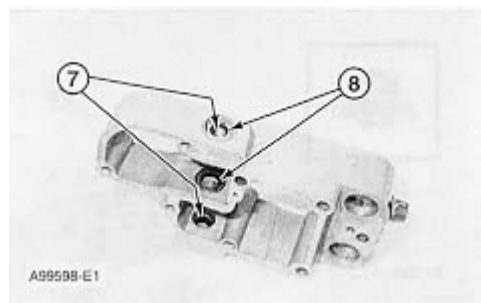


1. Remove strainer (2) from governor cover (1).

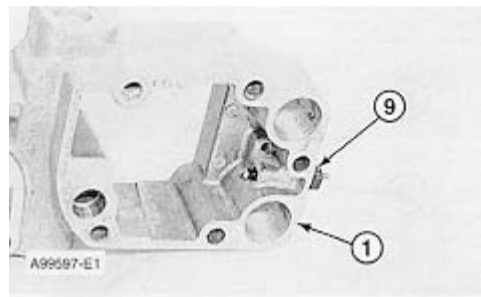


2. Bend the locks back and remove four bolts (6).

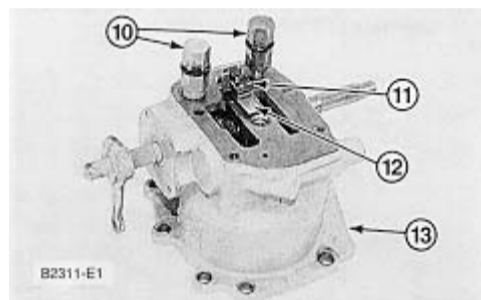
3. Remove shaft (3) and the washer from the governor cover.



4. Remove two bearings (7) and two seals (8) from the governor cover with Tool (A).

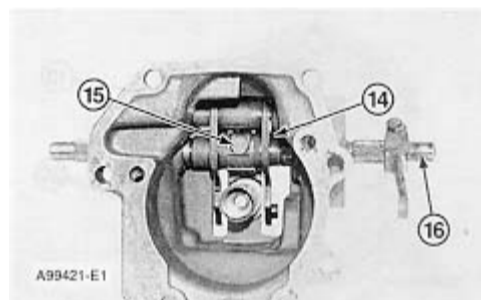


5. Remove insulator (9) from the governor cover (1).

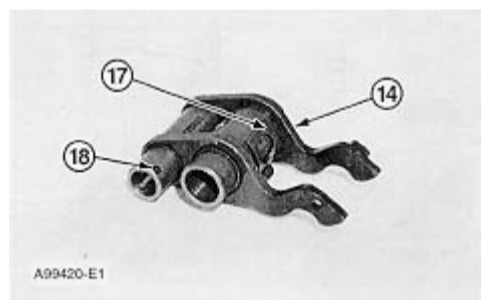


6. Put a mark on low and high screws (10) and make a note of each turn until the idle screws are removed from governor housing (13). This is done to get the approximate setting for assembly purposes. Remove the O-ring seals from the idle screws.

7. Bend lock (11) down and remove the two bolts. Remove torque spring group (12).



8. Bend the lock down and remove bolt (15) from control lever (14). Remove shaft (16) and control lever (14) from the governor housing.

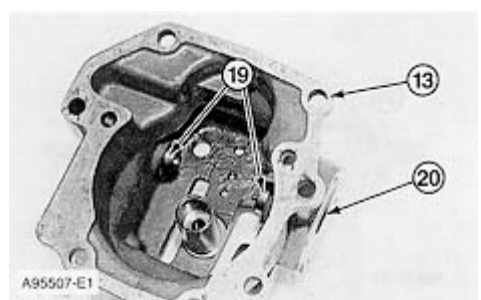


9. Remove band assembly (17) from control lever (14).

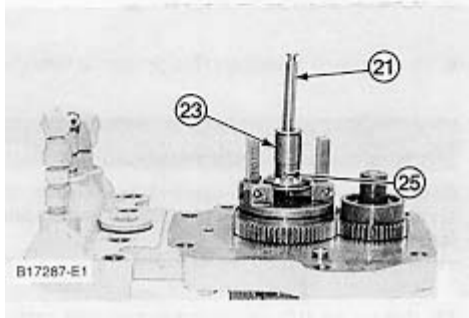
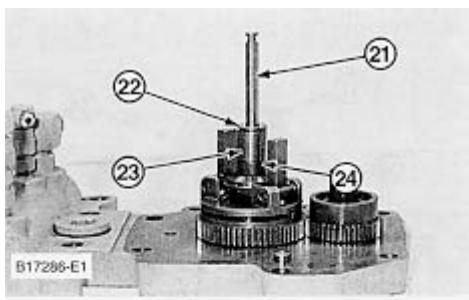
⚠ WARNING

Care must be taken when pin (18) is removed. The spring and plunger behind pin (18) are under spring force.

10. Remove pin (18), spring and plunger from control lever (14).



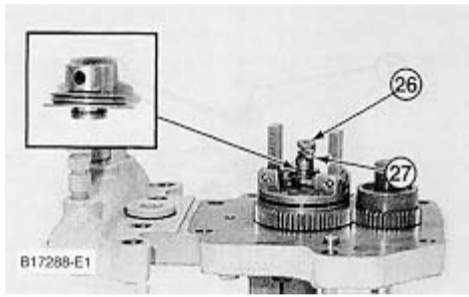
11. Remove bearings (19) and two seals (20) from governor housing (13).



12. Remove washer (22) from governor bolt (21).

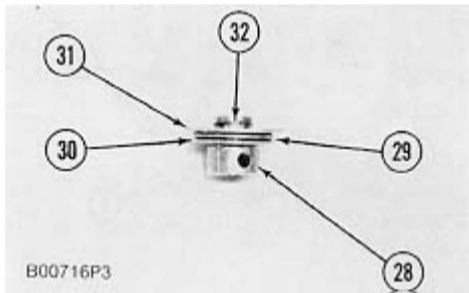
13. Remove ring (24) from seat (23).

14. Remove dowel (25) from seat (23). Remove seat (23) and governor bolt (21) as a unit. Remove bolt (21) from seat (23).

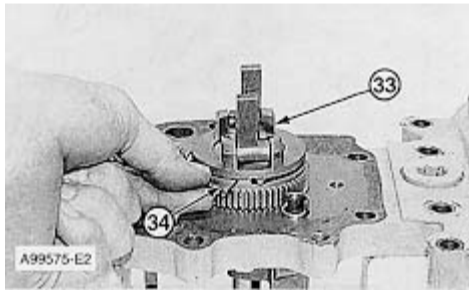


15. Remove spring (27) and washers (26) (one each side of the spring).

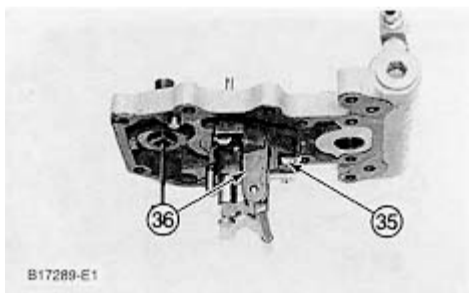
16. Remove sleeve from the servo piston valve.



17. Remove ring (32), large race (31), bearing (29) and small race (30) from sleeve (28).

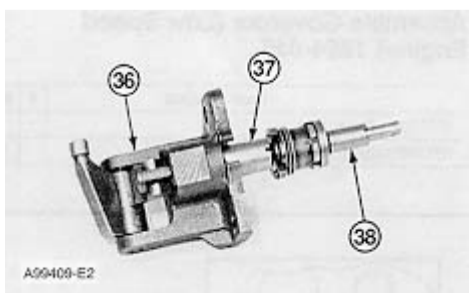


18. Remove lock (34) from flyweight assembly (33). Remove flyweight assembly (34).

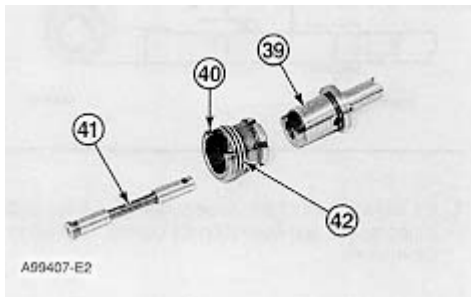


19. Bend the locks from bolts (35) and remove bolts (35).

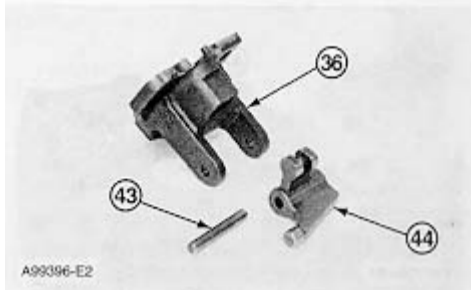
20. Remove bracket (36) and the servo piston assembly as a unit.



21. Remove piston (38) from pin (37). Remove pin (37) from bracket (36).

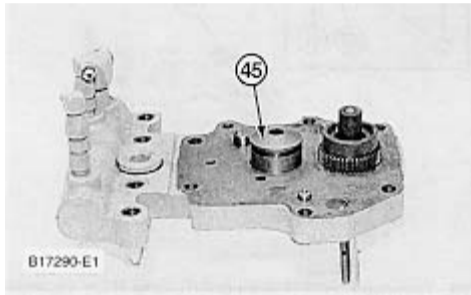


22. Remove sleeve (40) and valve (41) from piston (39). Remove O-ring seal (42) from sleeve (40).

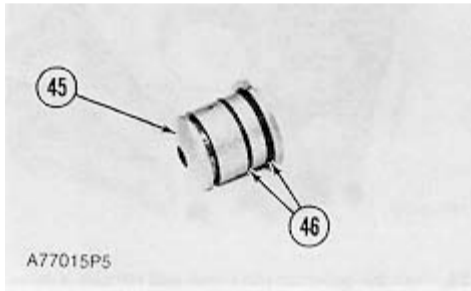


23. Remove shaft (43) from bracket (36) with a hammer and punch.

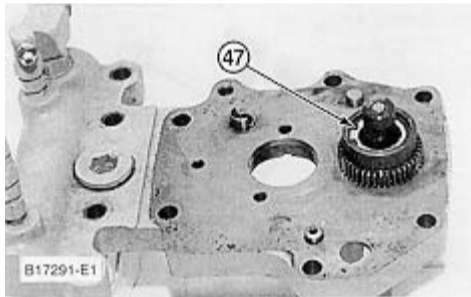
24. Remove lever (44) from bracket (36).



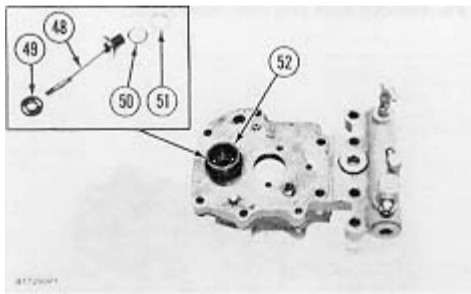
25. Tap lightly on cylinder (45) to remove it from the governor plate.



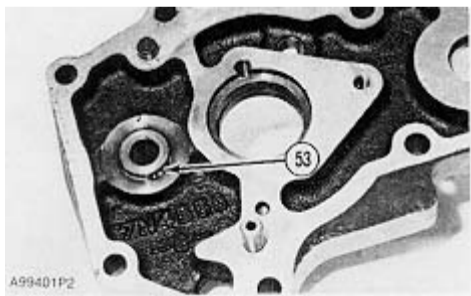
26. Remove O-ring seals (46) from cylinder (45).



27. Remove retaining ring (47) from gear assembly.



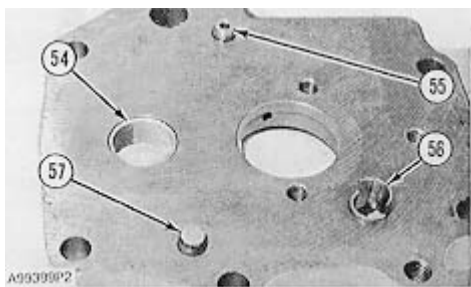
28. Remove ring (51), spring (50), gear drive assembly (48) and ring (49) from gear assembly (52).



29. Turn the governor plate over and remove snap ring (52) from drive gear (52) with Tool (C).

30. Remove drive gear from the governor plate.

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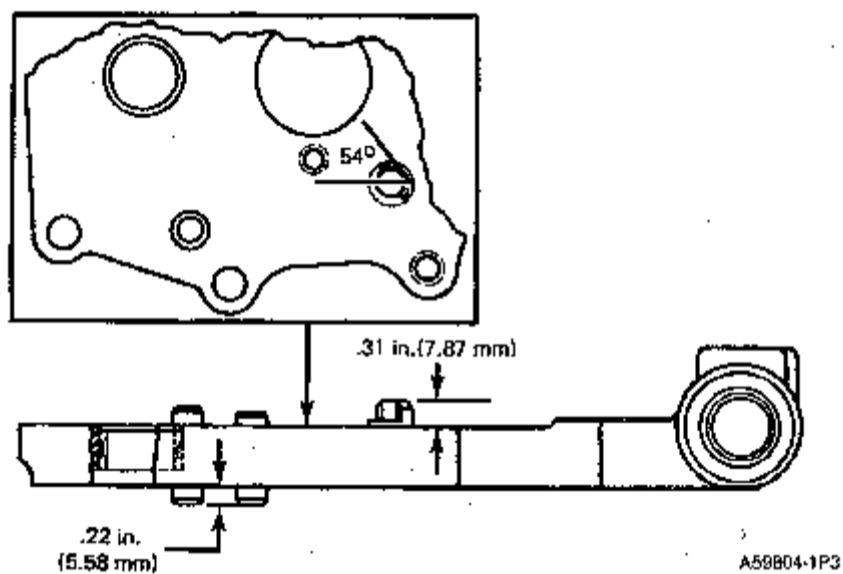


31. If a replacement is needed, remove dowels (55), (56) and (57).

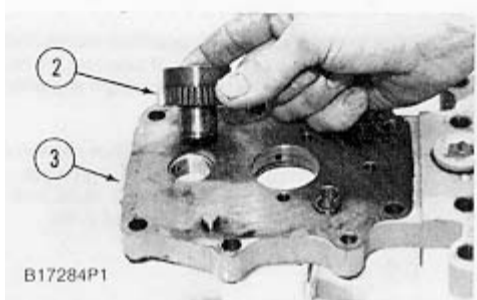
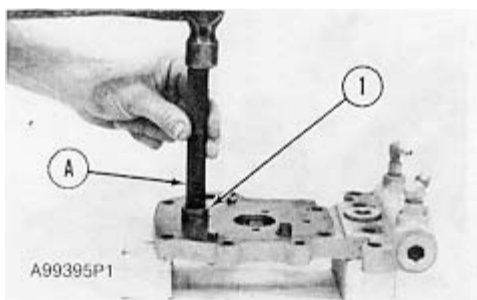
32. Remove bearing (54) from the governor plate with Tool (A).

Assemble Governor (Low Speed Engine)

Tools Needed		A	B
1P0510	Driver Group	1	
1P1856	Snap Ring Pliers		1

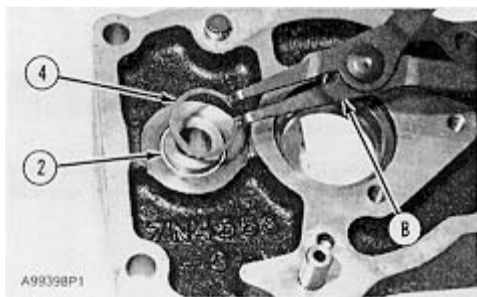


1. If a replacement of the dowels in the governor plate is necessary, see illustration for correct installation dimensions.

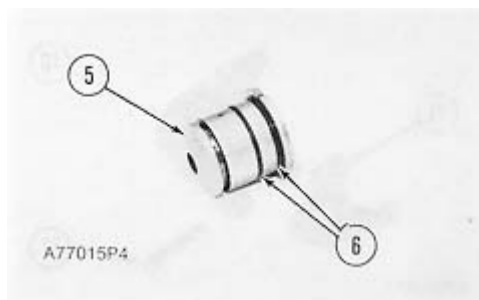


2. Install bearing (1) for drive gear (2) in governor plate (3) with Tool (A) until it is 0.51 ± 0.25 mm ($.020 \pm .010$ in) below the top surface of the governor plate.

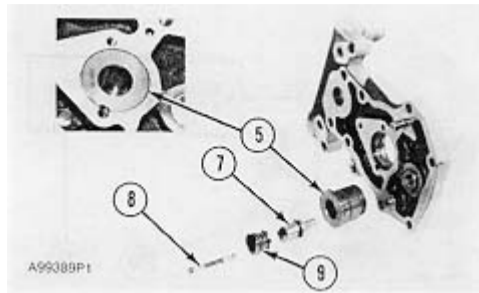
3. Put a small amount of clean engine oil on the inside diameter of bearing (1). Install drive gear (2) in governor plate (3).



4. Turn governor plate (3) over. Use Tool (B) to install snap ring (4) that holds drive gear (2) in place.



5. Install O-ring seals (6) on cylinder (5).

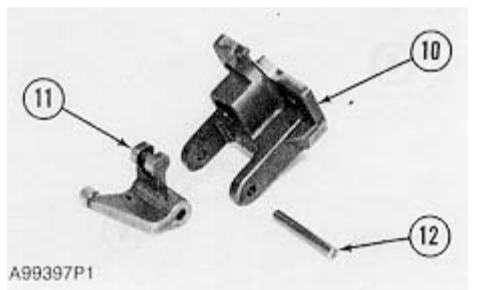


6. Put a small amount of clean engine oil on the O-ring seals on cylinder (5). Install cylinder (5) in the governor plate with the notch in the cylinder in alignment with the bolt hole in the governor plate as shown.

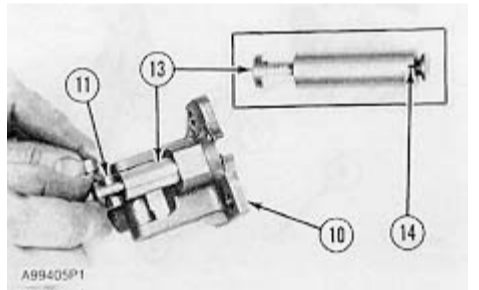
7. Install the O-ring seal on sleeve (9).

8. Put a small amount of clean engine oil on piston (7), sleeve (9) and valve (8). Install sleeve (9) on piston (7) and valve (8) in piston (7) as shown.

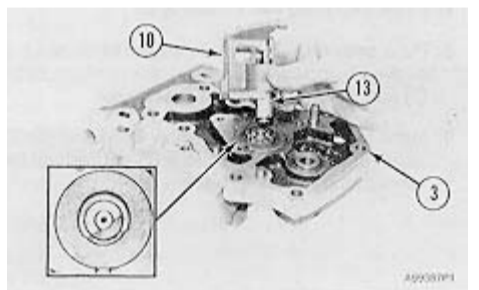
9. Install the servo piston assembly in cylinder (5). The valve (8), sleeve (9) and piston (7) are parts of the servo piston assembly.



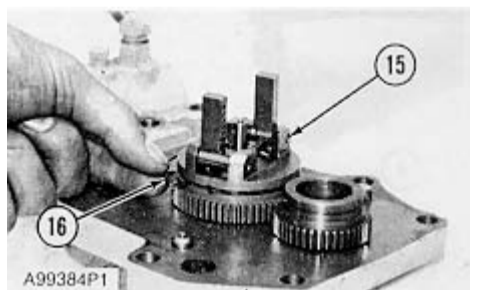
10. Put lever (11) in position in bracket (10) and install pin (12).



11. Install pin (13) in bracket (10) with the grooves in pin (13) engaged with lever (11) and with groove (14) away from bracket (10) as shown.

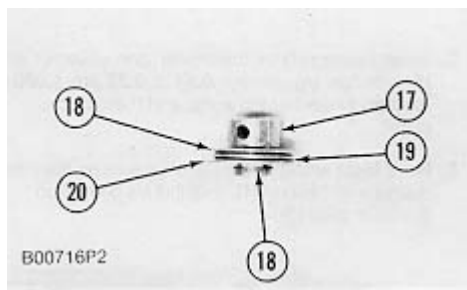


12. Put bracket (10) in position on governor plate (3) with pin (13) engaged with the servo piston assembly as shown. Install the locks and bolts that hold bracket (10) to governor plate.



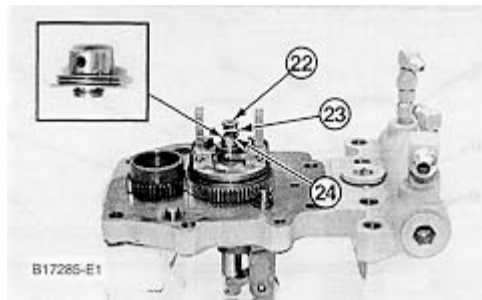
13. Check to make sure weight assembly moves freely on its pin. Put a small amount of clean engine oil on the inside diameter bore of flyweight and gear assembly (15).

14. Put flyweight and gear assembly (15) in position on the servo position cylinder. Install lockring (16) on the flyweight and gear assembly (15). Make sure the ends of lockring (16) are engaged in the groove of the servo piston cylinder.

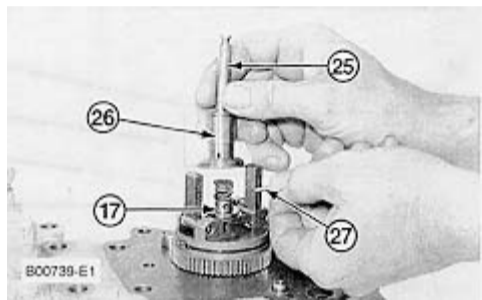


15. Install small race (18) bearing (19) and large race (20) on sleeve (17) as shown. Install ring (21) in the groove in sleeve (17).

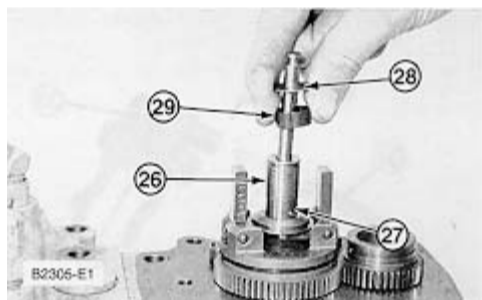
16. Put sleeve (17) in piston on the servo piston valve. Make an alignment of the holes in the sleeve and the servo piston valve.



17. Put washer (24), spring (23) and washer (22) in position on top of the servo piston valve.

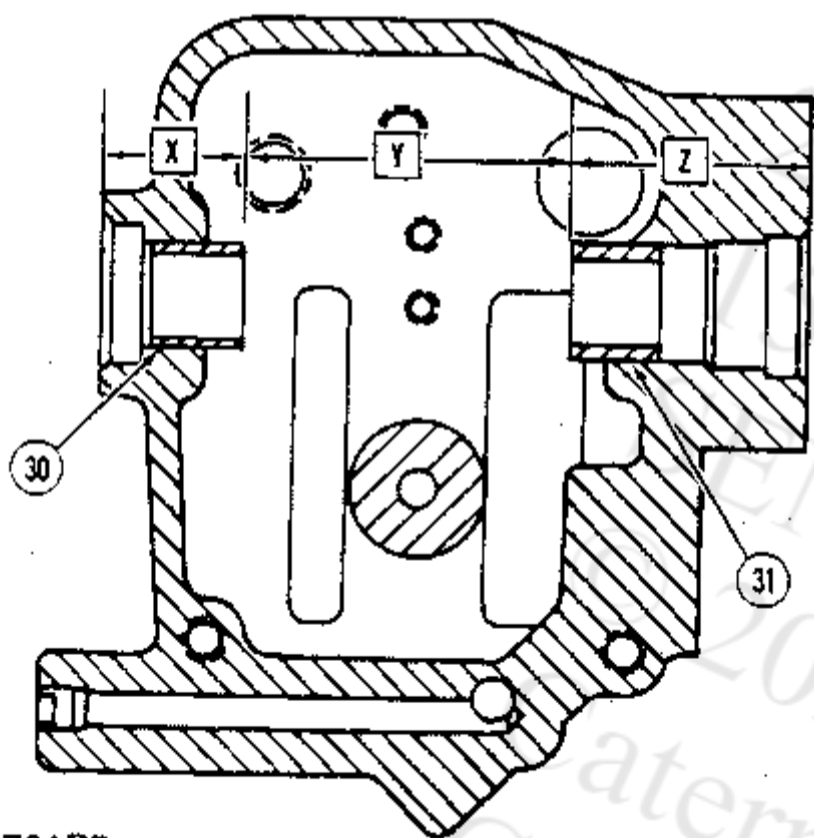


18. Put governor bolt (25) inside seat (26). Put seat (26) and bolt (25) in position on sleeve (17) with the holes in seat (26) in alignment with the holes in sleeve (17) and the servo piston valve. Install dowel (27) in the holes.



19. Install ring (29) over seat (26) that holds dowel (27) in place.

20. Install spring washer (28) over the governor bolt with the side that has a curve toward the inside (concave) away from seat (26).



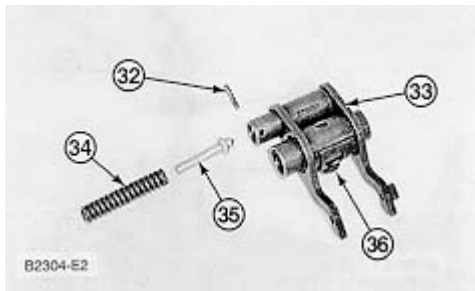
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21. Install bearing (31) until dimension "Z" is $43.38 \pm .015$ mm ($1.708 \pm .006$ in) with Tool (A).

22. Install bearing (30) until dimension "X" is 25.35 ± 0.13 mm ($.998 \pm .005$ in) with Tool (A).

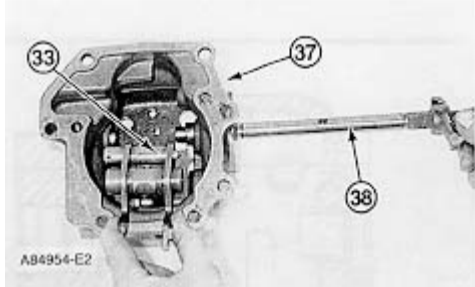
23. Check dimension "Y". Dimension "Y" must be 60.58 ± 0.13 mm ($2.385 \pm .005$ in).

24. Install the lip type seals in the governor housing with Tool (A). Install each seal with the lip toward the inside.

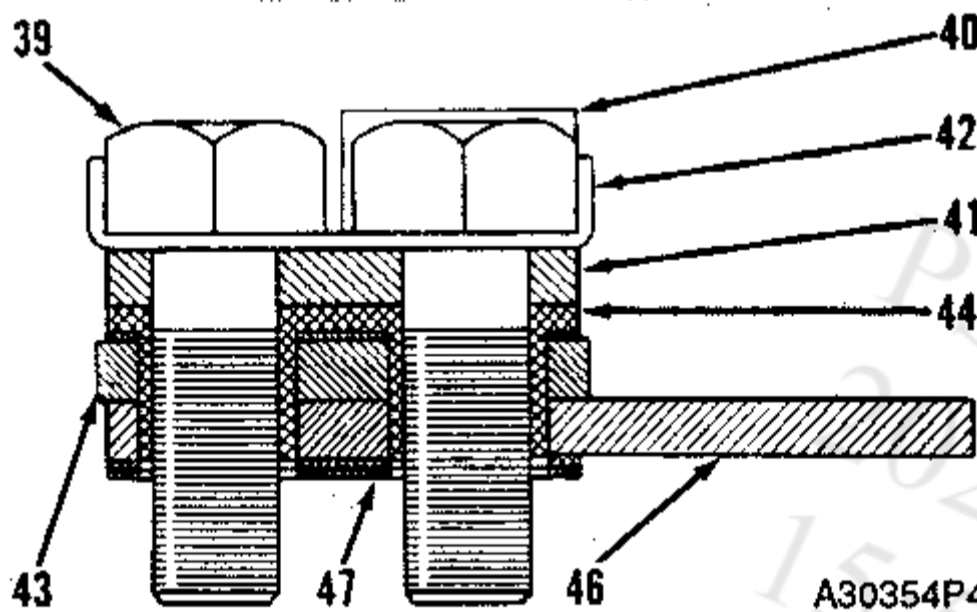
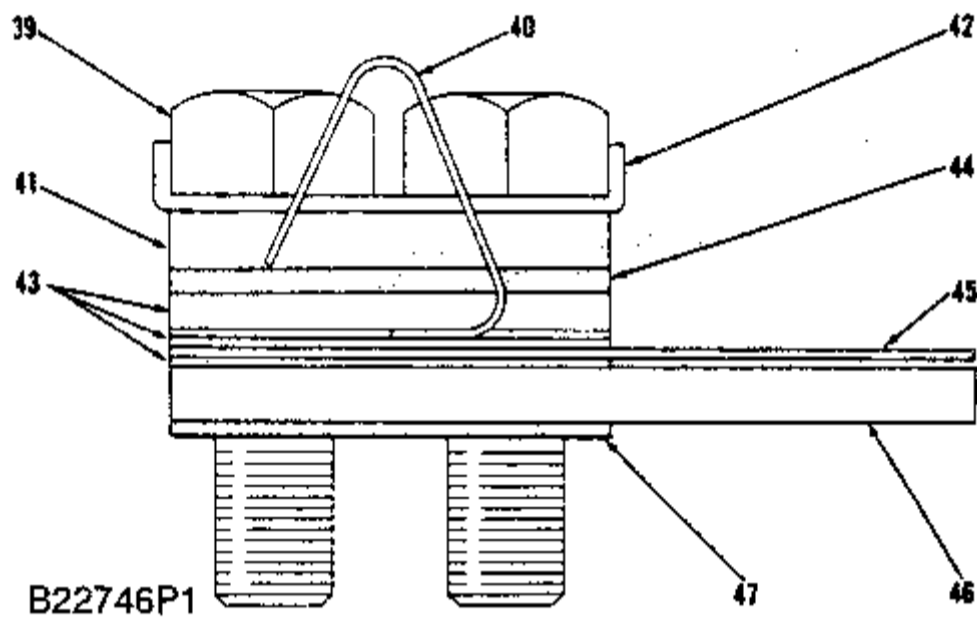


25. Install band assembly (36) on lever assembly (33).

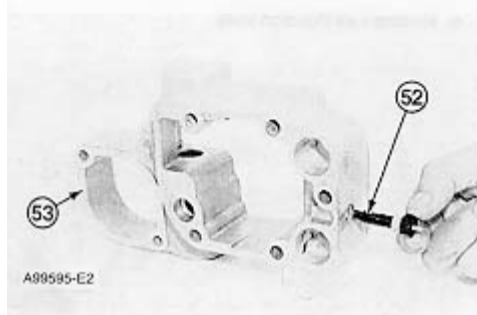
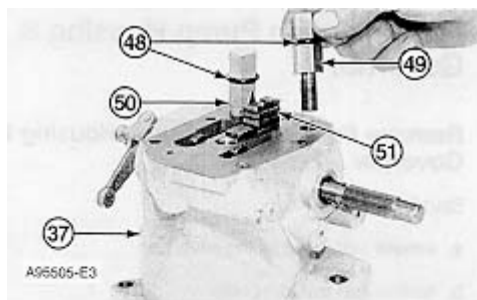
26. Install plunger (35), spring (34) and pin (32) in lever assembly (33).



27. Put lever assembly (33) in position in governor housing (37). Install shaft (38) in housing (37) and lever assembly (33).



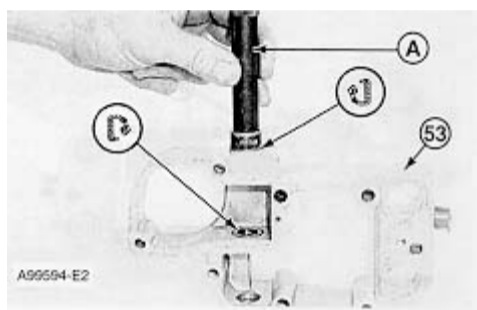
28. Assemble the correct torque control group (torque spring or stop bar type) as shown in illustrations. The parts of the torque control groups are as follows: bolts (39), contact (40), retainer (41), lock (42), spacer (43), insulator (44), spring (45), stop bar (46), and insulator (47).



29. Install torque spring group (51) on governor housing.

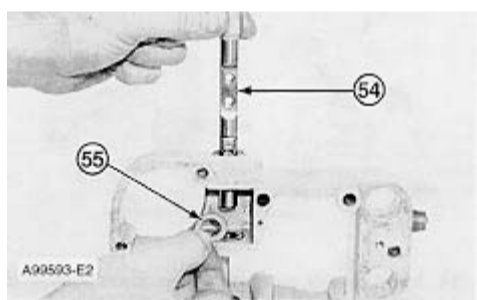
30. Install O-ring seals (48) on high idle screw (49) and low idle screw (50). Install the high and low idle screws in governor housing (37).

31. Install insulator (52) in governor cover (53). Tighten the insulator to a torque of $4.5 \pm 0.6 \text{ N}\cdot\text{m}$ ($40 \pm 5 \text{ lb in}$).

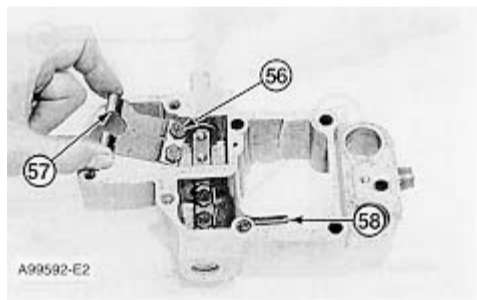


32. Use Tool (A) and install the two bearings and seals in governor cover (53) with the lip toward the outside as shown.

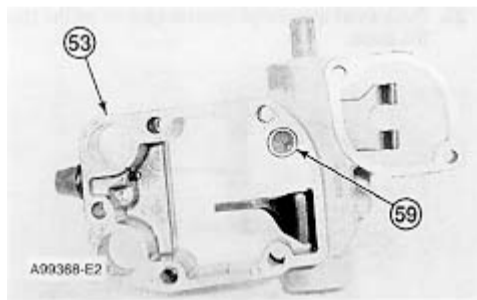
33. Put a small amount of clean engine oil on the lip of the seals.



34. Install washer (55) and shaft (54) in the governor cover.



35. Install levers (57) and (58) with the locks and bolts (56) that hold them in place.



36. Install strainer assembly (59) in governor cover (53) with the screen side away from the cover as shown.

End By:

a. install governor

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