



# Service Repair Manual

## **Models**

**325-A 325 325L EXCAVATOR**

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[Previous Screen](#)

Product: EXCAVATOR

Model: 325-A EXCAVATOR 5WK

Configuration: 325, 325L TRACK TYPE EXCAVATORS 5WK00001-UP (MACHINE) POWERED BY 3116 ENGINE

## Disassembly and Assembly

### MAIN CONTROL VALVE SUPPLEMENT FOR 325, 325 L AND 325 N EXCAV

Media Number -SEN5462-00

Publication Date -01/05/1992

Date Updated -11/10/2001

## Main Control Valve

SMCS - 5451-015; 5451-016

## Disassemble Main Control Valve

Start By:

- a. remove main control valve \*

**NOTE:** The weight of the main control valve is **190 kg (420 lb)**

1. Thoroughly clean the outside of the main control valve prior to disassembling it.

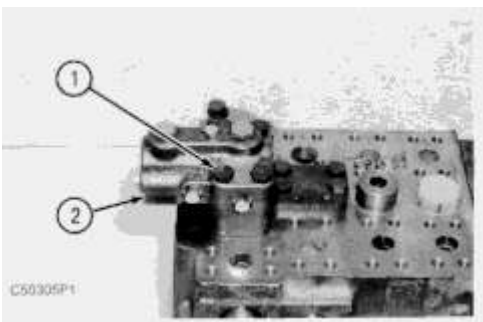
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### NOTICE

**Put identification marks on all components of the main control valve as they are being removed. All parts must be reinstalled in their original locations. Do not damage any of the internal parts during removal. A damaged valve component will result in oil leakage and affect valve performance. Keep all internal parts of the valve clean and lubricated.**

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2. Remove and disassemble pressure control valve (2) as follows:

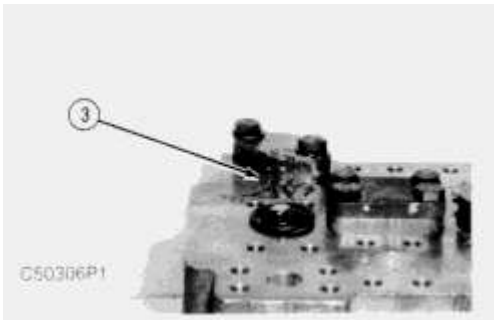




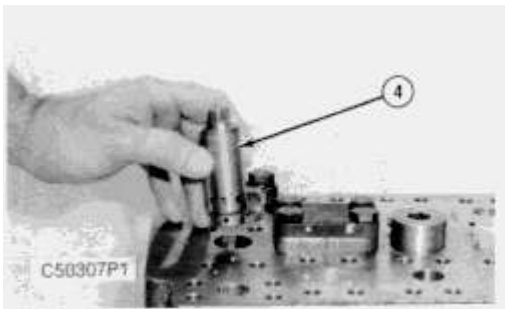
## WARNING

**There is spring force against pressure control valve (2). When four bolts (1) that hold the pressure control valve in place are removed, the spring force will be released. To prevent possible personal injury, hold pressure control valve (2) in place by hand as bolts (1) are being removed.**

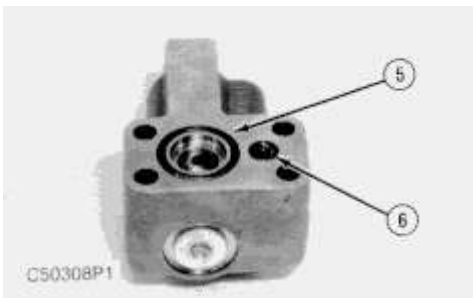
- a. While holding pressure control valve (2) in place by hand, slowly remove four bolts (1). Remove pressure control valve (2) from the main valve body.



- b. Remove spring (3) from the main valve body.



- c. Remove valve assembly (4) from the main valve body.



- d. Remove O-ring seals (5) and (6) from the pressure control valve body.

**<https://www.ebooklibonline.com>**

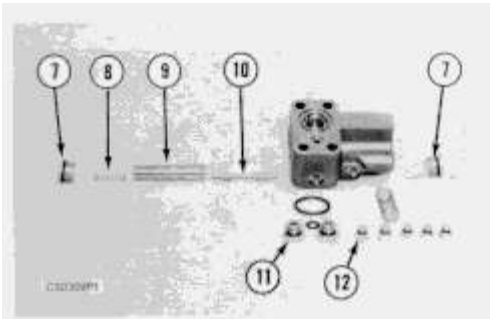
Hello dear friend!

Thank you very much for reading.

Enter the link into your browser.

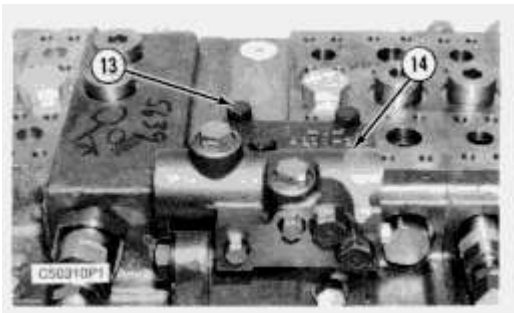
The full manual is available for immediate download.

**<https://www.ebooklibonline.com>**



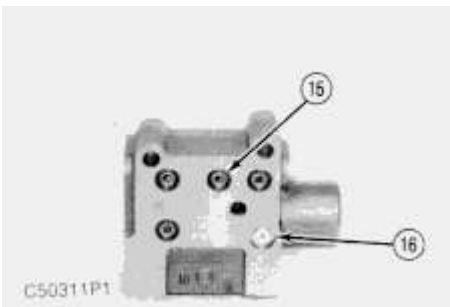
Exploded View Of Pressure Control Valve

e. Remove plug (7) from each end of the valve body. Remove spring (8), valve (9), and spool (10) from the valve body. If necessary, remove two plugs (11) and five plugs (12) from the valve body. Remove the O-ring seal from each plug.

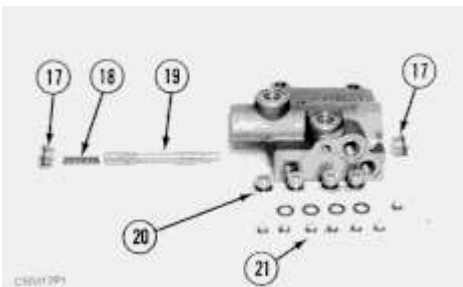


3. Remove and disassemble pressure control valve (14) as follows:

a. Remove three bolts (13) and pressure control valve (14) from the main valve body.

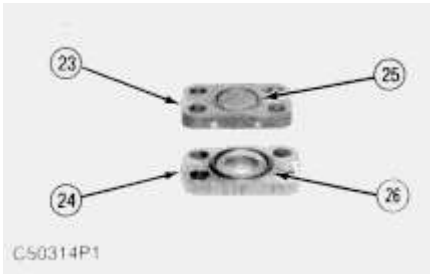
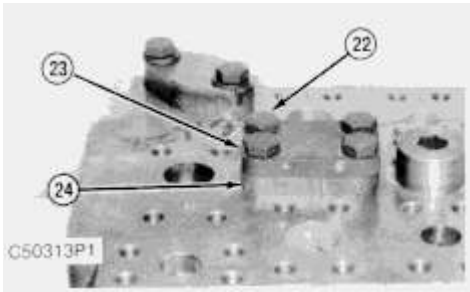


b. Remove O-ring seals (15) from the valve body. Remove plug (16) from the valve body.



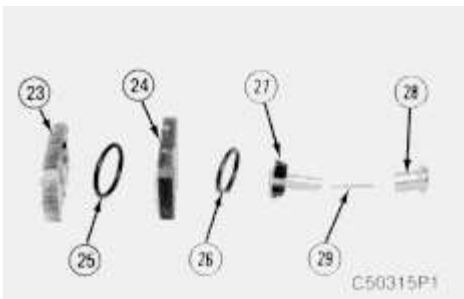
Exploded View Of Pressure Control Valve

c. Remove two plugs (17), spring (18) and spool (19) from the valve body. If necessary, remove four plugs (20) and six plugs (21) from the valve body. Remove the O-ring seal from each plug.

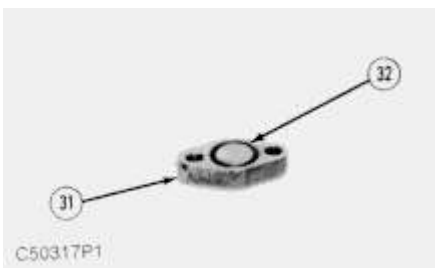
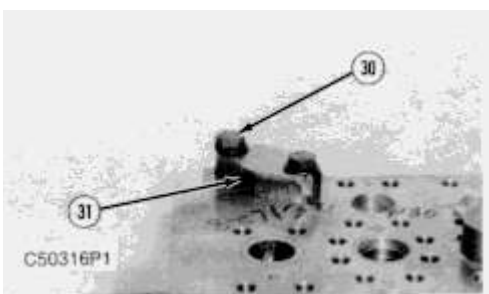


**4. Remove the check valve assembly from the main valve body as follows:**

**a. Remove four bolts (22) and plates (23) and (24) from the main valve body. Remove O-ring seal (25) from plate (23). Remove O-ring seal (26) from plate (24).**

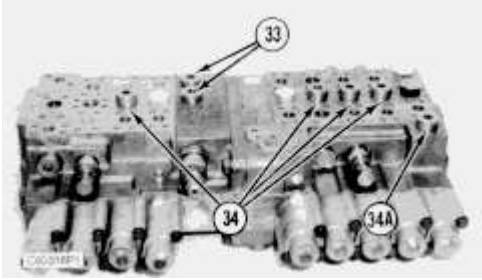


**b. Remove pilot (27), spring (29) and check valve (28) from the main valve body.**



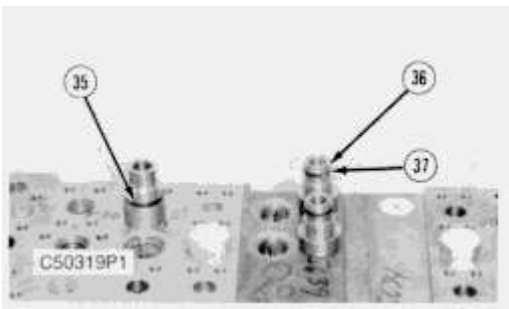
**NOTE:** Plate (31) is only for manufacturing purposes.

5. Remove two bolts (30) and the washers and plate (31) from the main valve body. Remove O-ring seal (32) from plate (31).

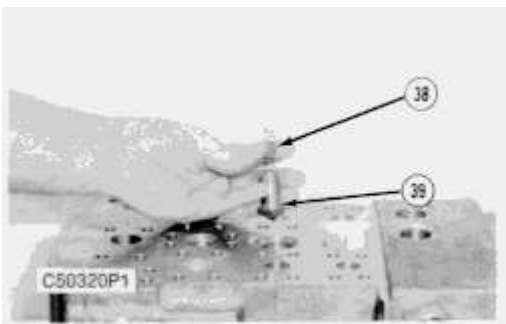


6. Remove the two check valves and five load check valves as follows:

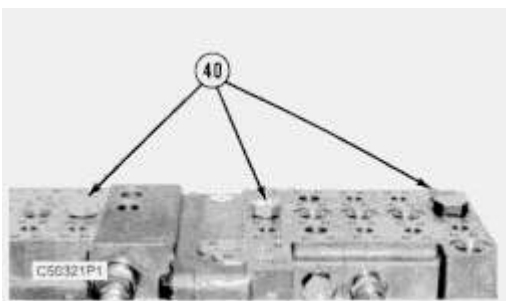
a. Remove two plugs (33) from the main valve body. Remove four plugs (34) and one plug (34A) from the main valve bodies.



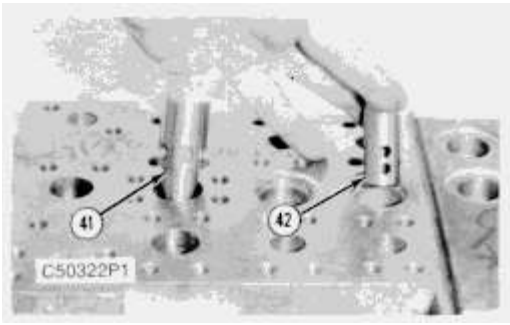
b. Remove O-ring seal (35) from each plug (34). Remove O-ring seal (37) and back-up ring (36) from each plug (33).



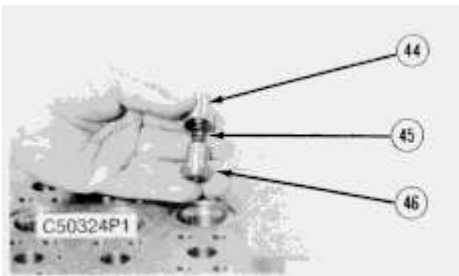
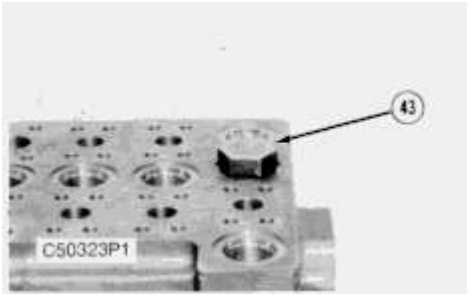
c. Remove spring (38) and plunger (39) for each check valve and load check valve.



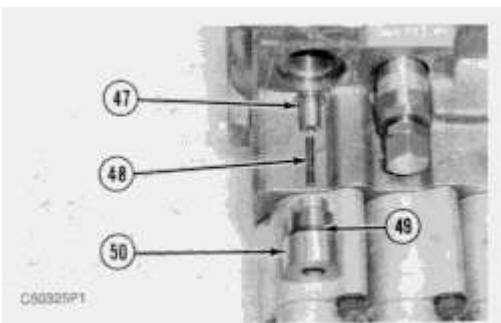
7. Remove three plugs (40) from the main valve bodies. Remove the O-ring seal from each plug.



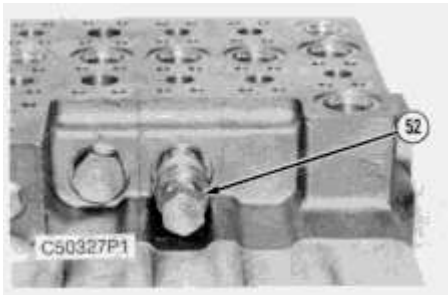
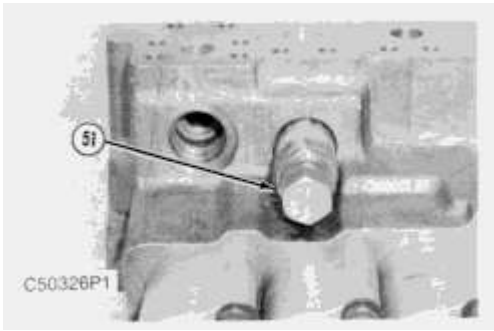
8. Remove sleeve (41) and sleeve (42) from the main valve body.



9. Remove the check valve from the main valve body. Remove plug (43). Remove sleeve bearing (44), spring (45) and valve (46). Remove the O-ring seal from plug (43).



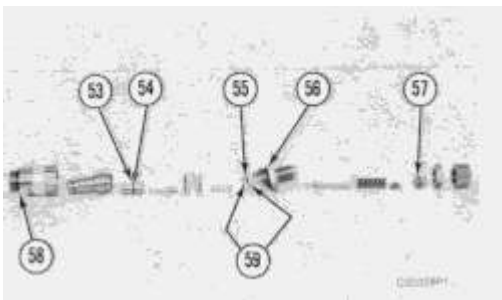
10. Remove plug (50), spring (48) and check valve (47) from the main valve body. Remove O-ring seal (49) from the plug.



**11.** Remove line relief valves (51) and (52) from the main valve bodies.

**12.** Disassemble line relief valves (51) and (52) as follows:

**NOTE:** Only the O-ring seals and back-up rings are serviceable in the line relief valves (51) and (52). However the line relief valves can be disassembled for cleaning.

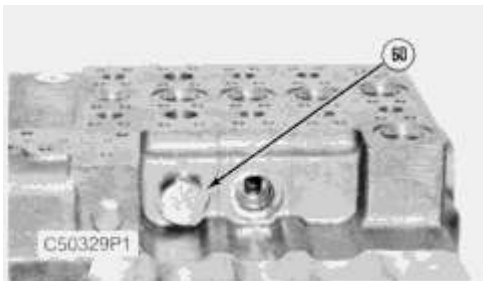


**a.** Disassemble the line relief valves as shown. Remove O-ring seal (58) from the adapter.

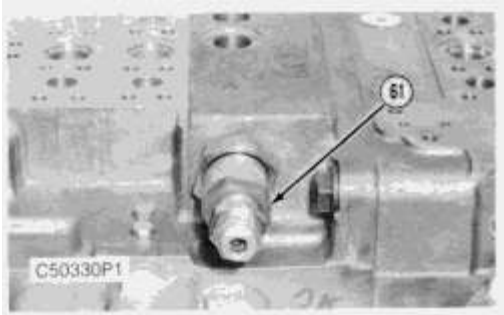
**b.** Remove back-up ring (53) and O-ring seal (54) from the valve.

**c.** Remove O-ring seal (55) and two back-up rings (59) from the seat.

**d.** Remove O-ring seal (57) from the piston.

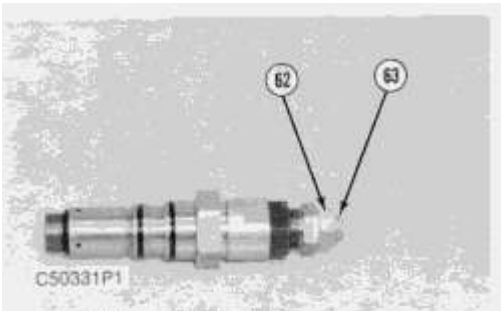


**13.** Remove plug (60) from the main valve body. Remove the O-ring seal from the plug.

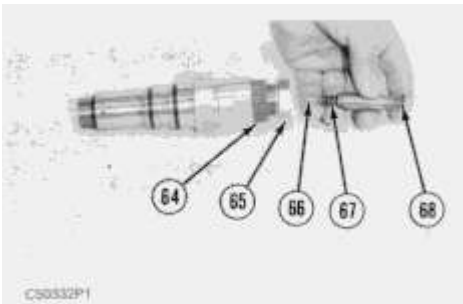


14. Remove main relief valve (61) from the main valve body.

15. Disassemble main relief valve (61) as follows:

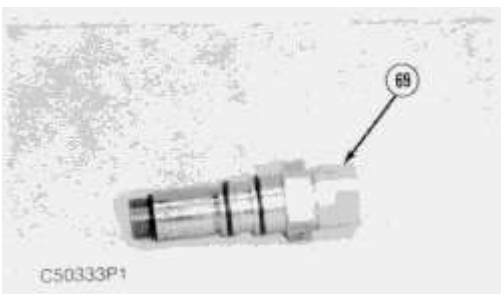


a. Remove nut (62), the washer and plunger assembly (63) from the adjuster.

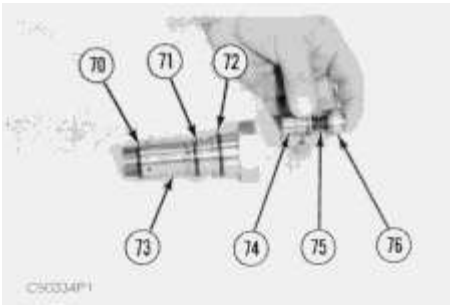


b. Remove piston (68), spring (67) and valve (66) from adjuster (65).

c. Loosen nut (64), and remove adjuster (65) from the valve group. Remove the O-ring seal from each end of the adjuster.

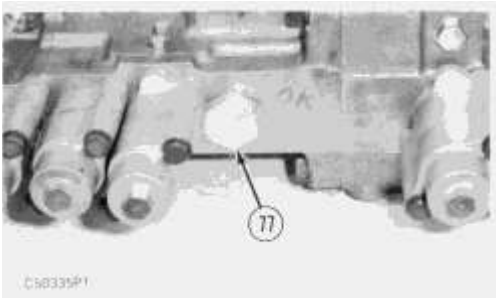


d. Remove insert (69) from the valve body. Remove the two O-ring seals from the insert.

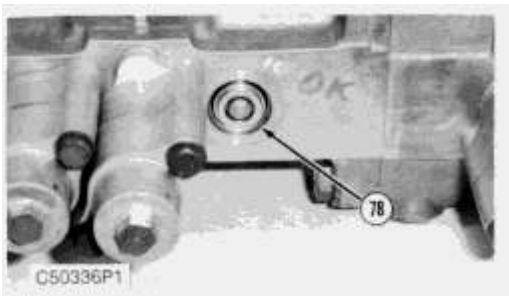


e. Remove seat (76), spring (75) and valve (74) from body (73).

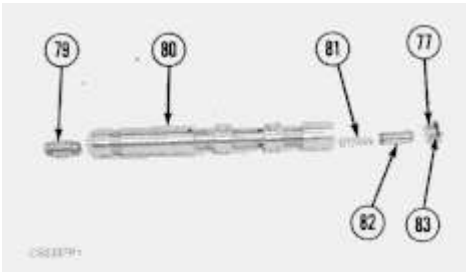
f. Remove O-ring seals (70), (71) and (72) from body (73).



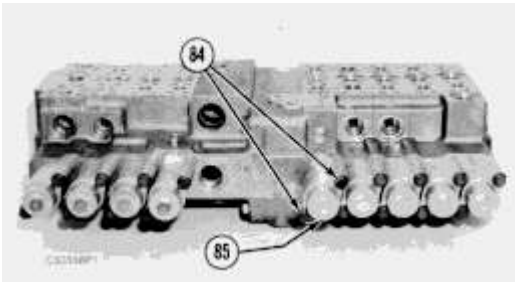
16. Remove plug (77) from the main valve body.



17. Remove straight travel spool assembly (78) from the main valve body.



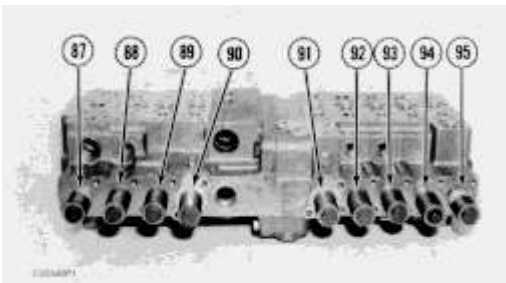
18. Disassemble the straight travel spool assembly. Remove piston (79) from spool (80). Remove dowel (82) and spring (81) from spool (80). Remove O-ring seal (83) from plug (77).



19. Remove bolts (84) that hold nine housings (85) to the main valve bodies. Remove nine housings (85).



20. Remove O-ring seal (86) from each housing (85).

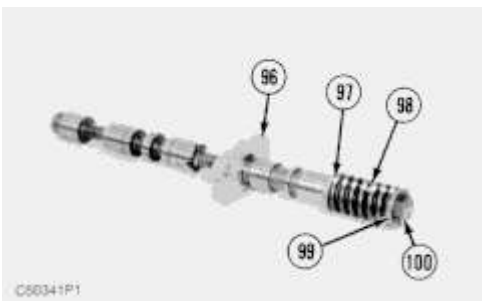


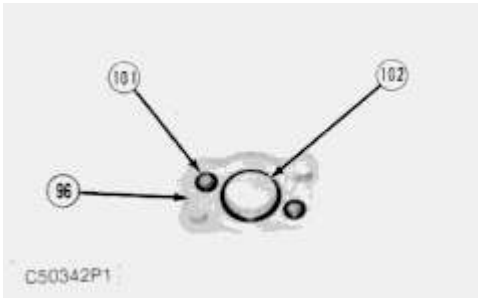
21. Remove boom spool assembly (87), stick spool assembly (88), swing spool assembly (89) and travel spool assembly (90) from the main valve body.

22. Remove travel spool assembly (91), attachment spool assembly (92), bucket spool assembly (93), boom spool assembly (94) and stick spool assembly (95) from the main valve body.

**NOTE:** The disassembly procedure for spool assemblies (87), (88), (89), (90), (91), (92), (93) and (95) is the same. Spool assembly (94) is different in that it contains an internal selector spool.

23. Disassemble spool assemblies (87), (88), (89), (90), (91), (92), (93) and (95) as follows:

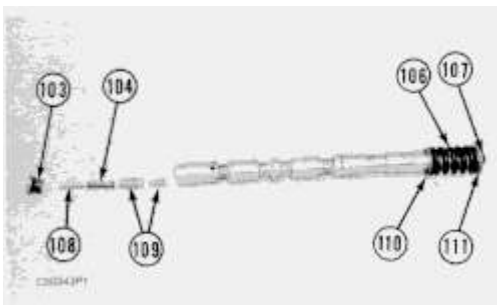




**a.** Slide adapter (96) of the spool assembly if so equipped. Remove O-ring seals (101) and (102) from adapter (96).

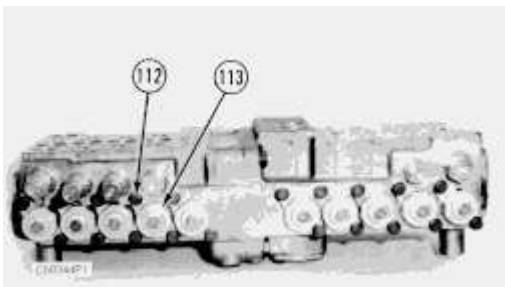
**b.** Remove bolt (100), retainer (99), spring (98) and retainer (97) from the end of the spool.

**24.** Disassemble boom spool assembly (94) as follows:



**a.** Remove plug (103), spring (108), spring (104) and valve group (109) from the end of the boom spool. Remove the O-ring seal from the plug.

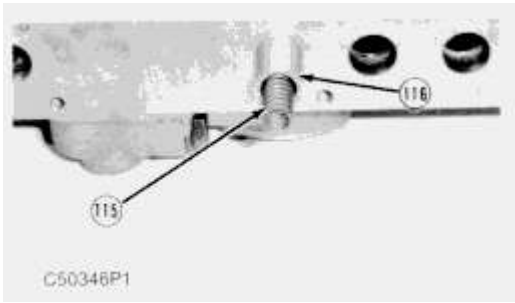
**b.** Remove bolt (107), retainer (111), spring (106) and retainer (110) from the end of the boom spool.



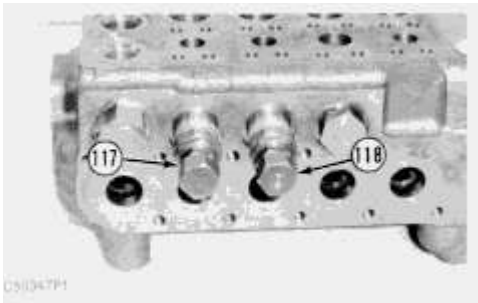
**25.** Remove bolts (112) and the washers that hold ten covers (113) to the main valve bodies. Remove ten covers (113).



**26.** Remove O-ring seal (114) from each cover (113).



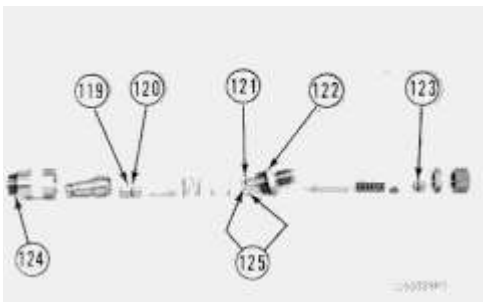
27. Remove spring (115) and seat (116) for the straight travel spool assembly.



28. Remove line relief valves (117) and (118) from the main valve bodies.

29. Disassemble line relief valves (117) and (118) as follows:

**NOTE:** Only the O-ring seals and back-up rings are serviceable in the line relief valves (117) and (118). However, the line relief valves can be disassembled for cleaning.

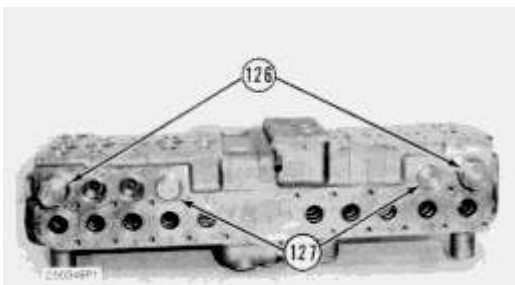


a. Disassemble the line relief valves as shown. Remove O-ring seal (124) from the adapter.

b. Remove back-up ring (119) and O-ring seal (120) from the valve.

c. Remove O-ring seal (121) and two back-up rings (125) from the seat.

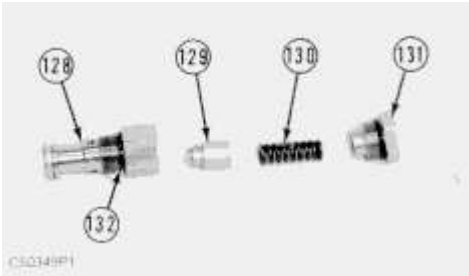
d. Remove O-ring seal (123) from the piston.



**30.** Remove two relief valves (126) from the main valve bodies.

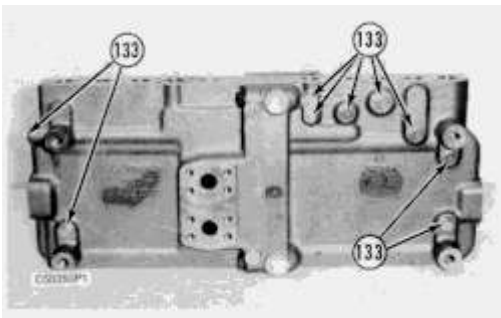
**31.** Remove two plugs (127) from the main valve bodies. Remove the O-ring seals from the plugs.

**32.** Disassemble relief valves (126) as follows:

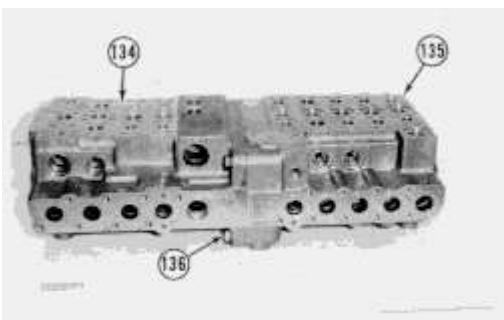


**a.** Remove O-ring seal (132) from body (128).

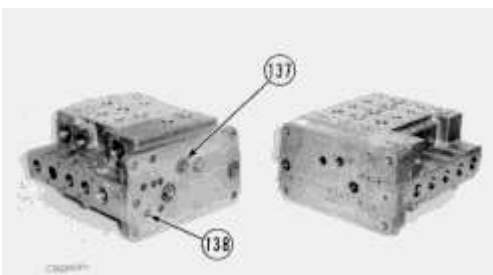
**b.** Remove plug (131) from body (128). Remove the O-ring seal from the plug. Remove spring (130) and valve (129) from body (128).



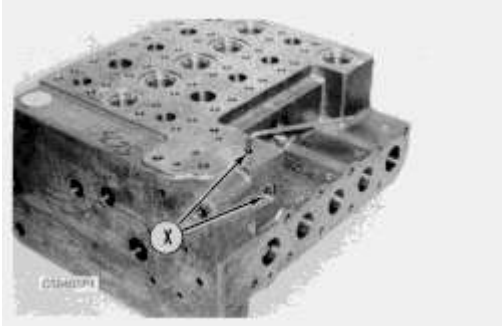
**33.** Remove remaining plugs (133) from bottom side of the main valve bodies. Remove the O-ring seals from the plugs.



**34.** Remove four bolts (136) and the washers that hold main valve bodies (134) and (135) together. Separate the valve bodies.



35. Remove four large O-ring seals (137) and seven small O-ring seals (138) from the main valve body.



36. Using an appropriate size Allen wrench, remove the two plugs from main valve body (135) at locations (X).

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\*For removal of the main control valve, see the 325, 325 L, & 325 N Excavators Vehicle Systems Disassembly & Assembly module, Form No. SENR5408.

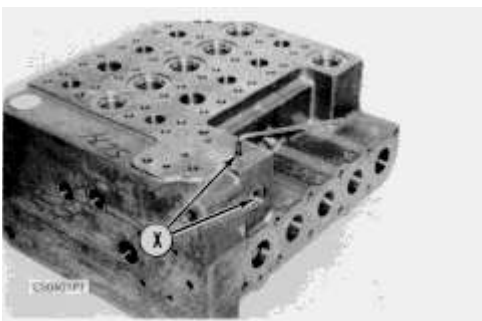
## Assemble Main Control Valve

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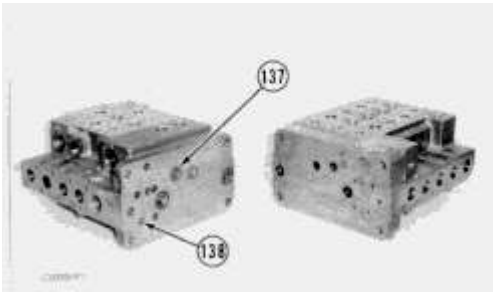
### NOTICE

**Be sure all parts of the main control valve are thoroughly clean and free of dirt and debris. Remove any scratches or burrs from valve components with polishing paper or and oil stone. Check the condition of all O-ring seals, back-up rings and springs. If any of the components are worn or damaged, use new parts for replacement. Put clean hydraulic oil on the components of the valve as they are being installed. Be sure to install all parts in their original locations.**

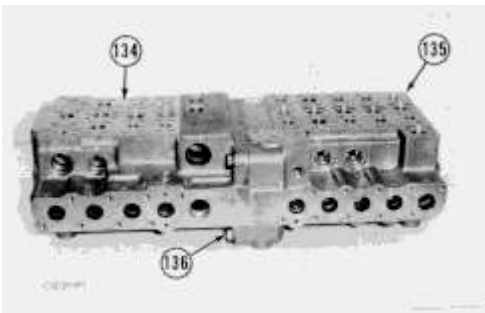
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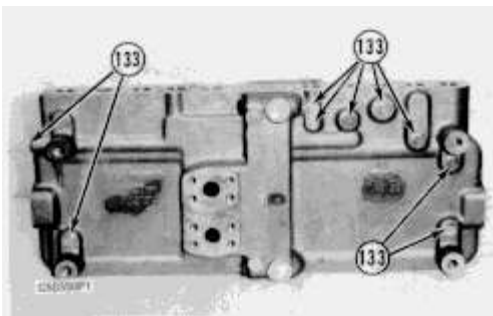
1. Using the an appropriate size Allen wrench, install the two plugs in main valve body (135) at locations (X).



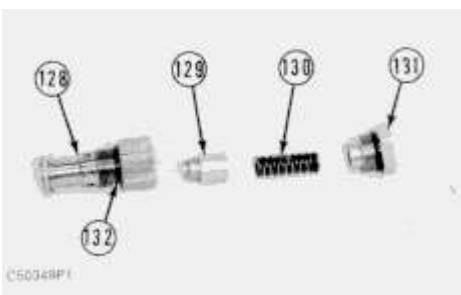
2. Install four large O-ring seals (137) and seven small O-ring seals (138) in the main valve body.



3. Put main valve body (135) in position on main valve body (134). Install four bolts (136) that hold the main valve bodies together. Tighten the four bolts evenly.

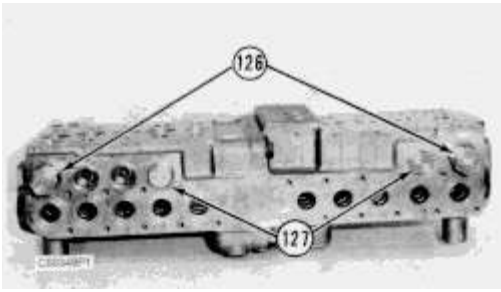


4. Install the O-ring seals on plugs (133). Reinstall plugs (133) in their original locations in the main valve bodies.



5. Assemble two relief valves (126) as follows:

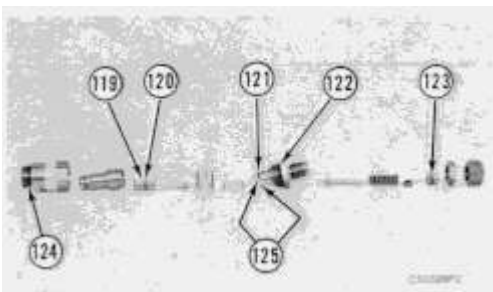
- a. Install O-ring seal (132) on body (128). Install the O-ring seal on plug (131).
- b. Install valve (129), spring (130) and plug (131) in body (128).



6. Install two relief valves (126) in the main valve bodies as shown. Tighten the relief valves to a torque of  $145 \pm 15 \text{ N}\cdot\text{m}$  ( $105 \pm 11 \text{ lb ft}$ ).

7. Install the O-ring seal on each plug (127). Install the two plugs in the main valve bodies as shown.

8. Assemble line relief valves (117) and (118).



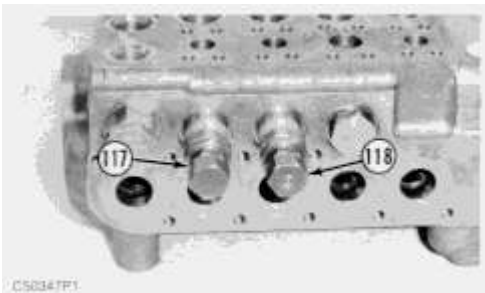
a. Install O-ring seal on the piston.

b. Install two back-up rings (125) and O-ring seal (121) on the seat in the positions shown.

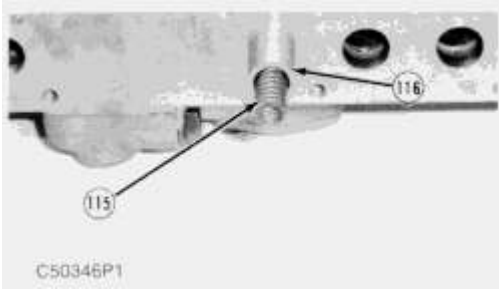
c. Install O-ring seal (120) and back-up ring (119) on the valve in the positions shown.

d. Install O-ring seal (124) on the adapter.

e. Reassemble the line relief valves and as shown.



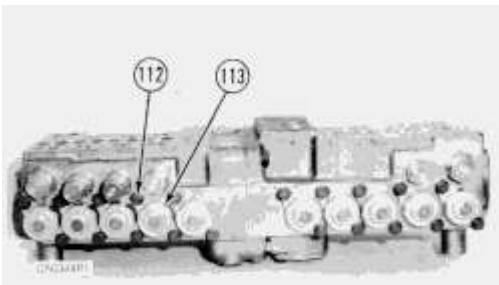
9. Install line relief valves (117) and (118) in the main valve body as shown.



**10.** Install seat (116) and spring (115) for the straight travel spool in the main valve body as shown.



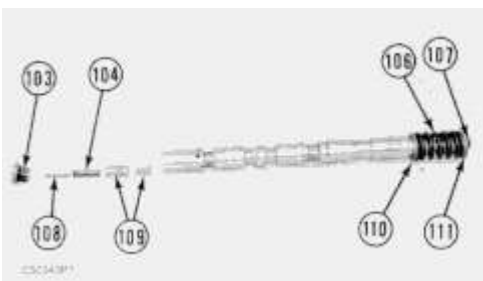
**11.** Install an O-ring seal (114) in each cover (113).



**12.** Reinstall ten covers (113) on the main valve bodies as shown. Use bolts (112) and the washers to hold the covers in place.

**NOTE:** The assembly procedure for spool assemblies (95), (93), (92), (91), (90), (89), (88) and (87) is the same. Spool assembly (94) is different in that it contains an internal selector spool.

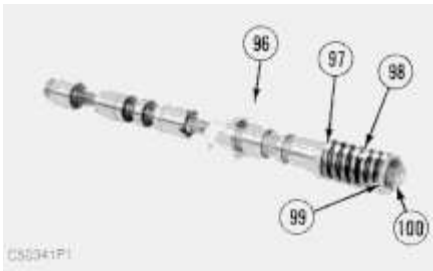
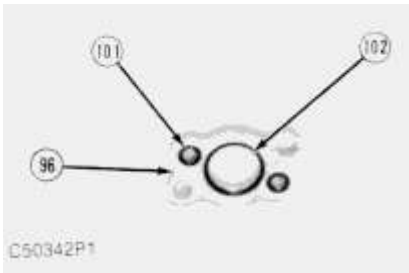
**13.** Assemble boom spool assembly (94) as follows:



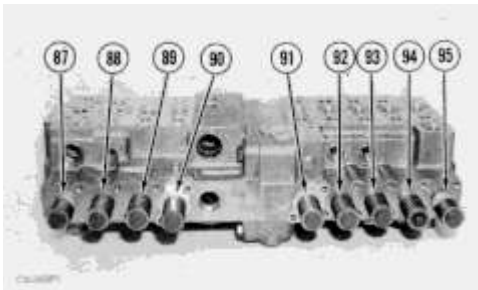
**a.** Install retainer (110), spring (106), retainer (111) and bolt (107) on the end of the valve spool as shown.

**b.** Install the O-ring seal on plug (103). Install valve group (109), spring (104), spring (108) and plug (103) in the end of the valve spool as shown.

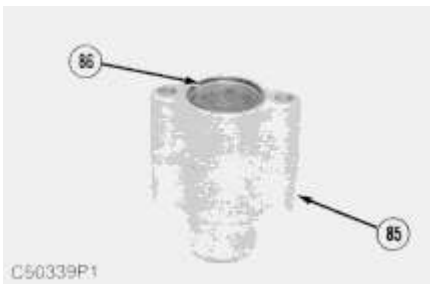
14. Assemble spool assemblies (95), (93), (92), (91), (90), (89), (88) and (87) as follows:



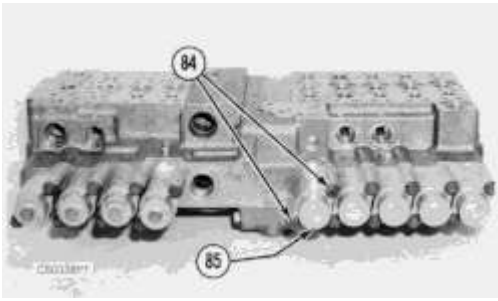
- a. Install O-ring seals (101) and (102) in each adapter (96).
- b. Install retainer (97), spring (98), retainer (99) and bolt (100) on the end of the spool assembly as shown.
- c. Slide adapter (96) on the appropriate spool assemblies.



15. Install stick spool assembly (95), boom spool assembly (94), bucket spool assembly (93), attachment spool assembly (92) and travel spool assembly (91) in the main valve body as shown.
16. Install travel spool assembly (90), swing spool assembly (89), stick spool assembly (88) and boom spool assembly (87) in the main valve body as shown.

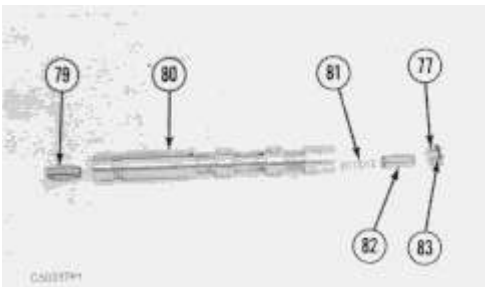


17. Install an O-ring seal (86) in each housing (85).



**18.** Reinstall nine housings (85) on the main valve bodies as shown. Use bolts (84) and the washers to hold the housings in place.

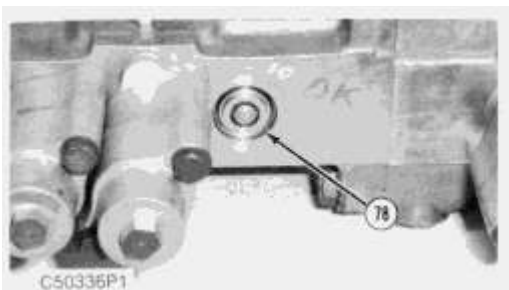
**19.** Reassemble straight travel spool assembly (78) as follows:



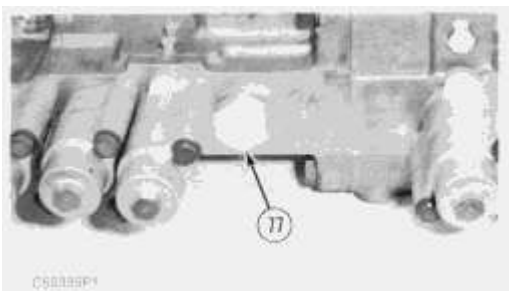
**a.** Install O-ring seal (83) on plug (77).

**b.** Install spring (81), dowel (82) and plug (77) in the end of the spool as shown.

**c.** Install piston (79) in the end of the spool as shown.

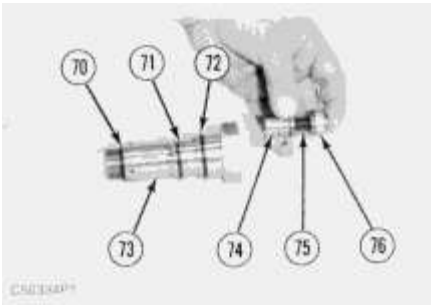


**20.** Install straight travel spool assembly (78) in the main valve body as shown.

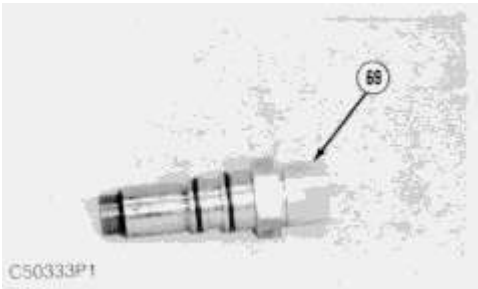


**21.** Install the O-ring seal on plug (77). Install the plug over the end of the straight travel spool assembly as shown.

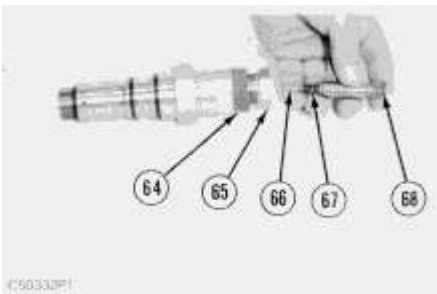
**22.** Assemble main relief valve (61) as follows:



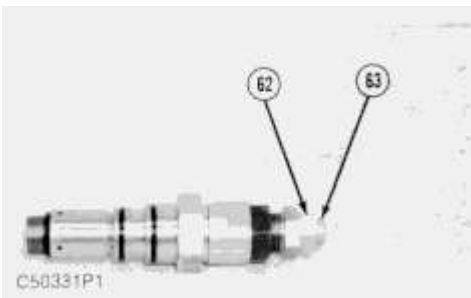
- a. Install O-ring seals (72), (71) and (70) on body (73).
- b. Install valve (74), spring (75) and seat (76) in body (73) as shown.



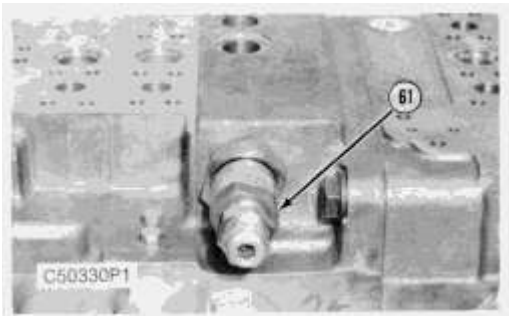
- c. Install the two O-ring seals on insert (69). Install the insert in the valve body.



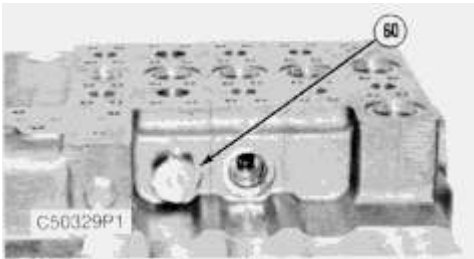
- d. Install the O-ring seal on each end of adjuster (65). Install nut (64) and adjuster (65) in the valve group as shown.
- e. Install valve (66), spring (67) and piston (68) in adjuster (65) as shown.



- f. Install plunger assembly (63), the washer and nut (62) in the adjuster as shown.

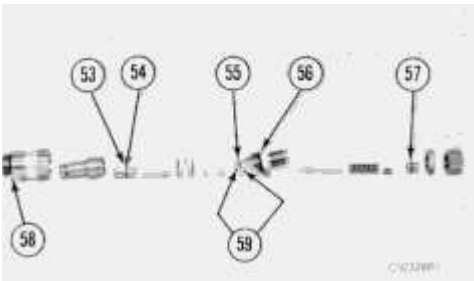


**23.** Install main relief valve (61) in the main valve body. Tighten the main relief valve to a torque of  $135 \pm 10 \text{ N}\cdot\text{m}$  ( $100 \pm 7 \text{ lb ft}$ ).

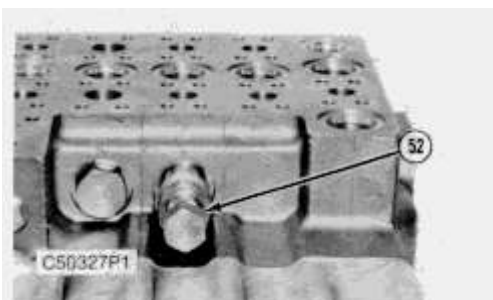


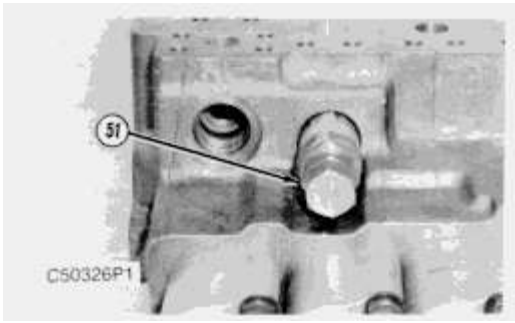
**24.** Install the O-ring seal on plug (60). Install plug (60) in the main valve body. Tighten the plug to a torque of  $95 \pm 14 \text{ N}\cdot\text{m}$  ( $70 \pm 10 \text{ lb ft}$ ).

**25.** Assemble line relief valves (51) and (52).

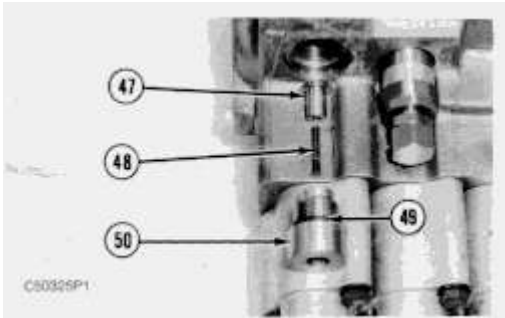


- a. Install O-ring seal on the piston.
- b. Install two back-up rings (59) and O-ring seal (55) on the seat in the positions shown.
- c. Install O-ring seal (54) and back-up ring (53) on the valve in the positions shown.
- d. Install O-ring seal (58) on the adapter.
- e. Reassemble the line relief valves and as shown.

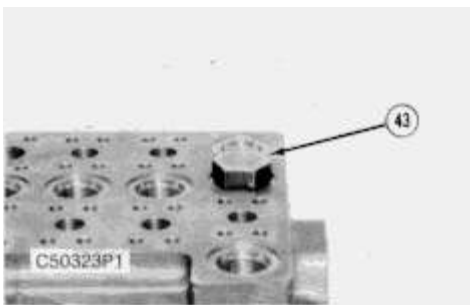
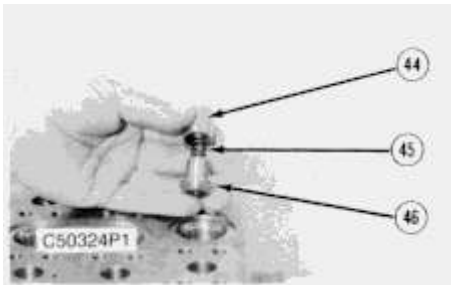




**26.** Install line relief valves (51) and (52) in the main valve bodies as shown. Tighten the line relief valves to a torque of  $95 \pm 14 \text{ N}\cdot\text{m}$  ( $70 \pm 10 \text{ lb ft}$ ).



**27.** Install O-ring seal (49) on plug (50). Install check valve (47), spring (48) and plug (50) in the main valve body. Tighten the plug to a torque of  $200 \pm 25 \text{ N}\cdot\text{m}$  ( $150 \pm 18 \text{ lb ft}$ ).



**28.** Install the O-ring seal on plug (43). Install valve (46), spring (45) and sleeve bearing (44) in the main valve body as shown. Install plug (43). Tighten the plug to a torque of  $200 \pm 25 \text{ N}\cdot\text{m}$  ( $150 \pm 18 \text{ lb ft}$ ).



**Suggest:**

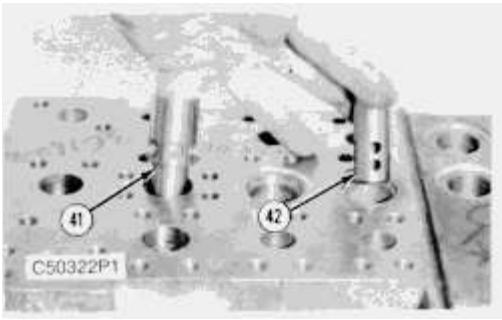
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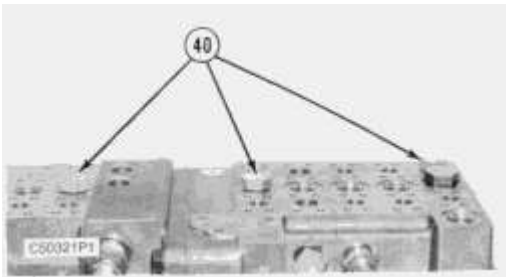
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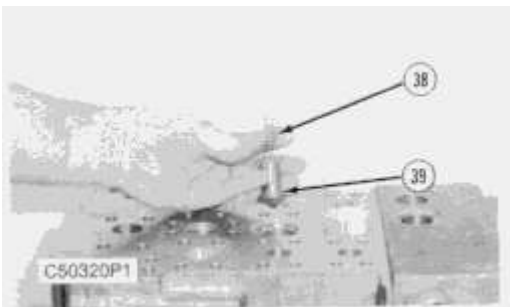


**29.** Install sleeves (41) and (42) in the main valve body as shown.

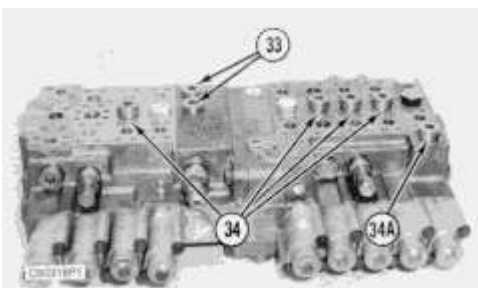
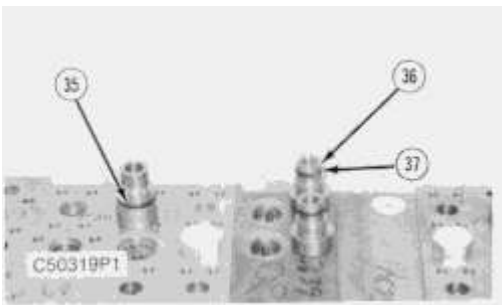


**30.** Install an O-ring seal on each plug (40). Install the plugs in the main valve bodies as shown.

**31.** Install the two check valves and five load check valves in the main valve bodies as follows:



**a.** Install plunger (39) and spring (38) for each check valve and load check valve.



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