

PARTS & SERVICE NEWS

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SUBJECT: INTRODUCTION OF IMPROVED MAIN RELIEF VALVE FOR WA1200-3

PURPOSE: To introduce modification procedure to improve the valve chest of the work equipment control valve ass'y on WA1200-3 wheel loaders

APPLICATION: WA1200-3 Wheel Loaders, Serial Nos. 50001 thru 50009

FAILURE CODE: P110HA

DESCRIPTION:

1. Introduction

Cracks may occur in the valve chest of the work equipment control valve ass'y on the WA1200-3 wheel loaders, leading to occurrence of oil leakage, depending on how the machine is being used.

To prevent occurrence of the aforementioned cracks, the following two improvements have been made:

(1) The material of the valve chest has been changed (to increase the strength):

FCV410 → FCD450

(2) Countermeasure to lower the peak pressure of the main relief valve has been taken.

When the aforementioned failure occurs, make the modification being introduced in this Service News to repair the repair.

2. List of parts

Part No.	Part Name	Purpose of part	Q'ty	Remarks
709-12-14303 (709-12-14302)	Control valve (Control valve)	} Replacement	3 (3)	Control valve ass'y (With lowered peak pressure of the relief valve)
(709-12-14302) (709-12-14303)	(Control valve) (Control valve)		3 (3)	Control valve ass'y (With increased valve chest strength)
709-10-54901 (709-10-54900)	Relief valve (Relief valve)		3 (3)	Main relief valve

3. Phenomenon

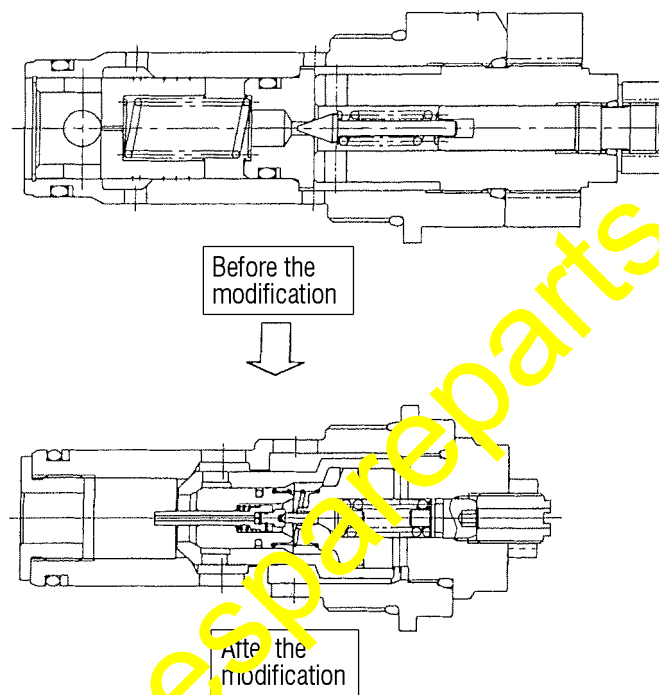
- Oil leakage from cracks in the valve chest of the work equipment control valve ass'y.

4. Cause

- Occurrence of cracks in the valve chest because of insufficient strength of the valve chest of the work equipment control valve ass'y.

5. Contents of the modification

- (1) The material of the valve chest has been changed to increase the strength: FCD410 has been changed to FCD450.
- (2) Countermeasure to lower the peak pressure of the main relief valve has been taken.



(3) Already modified control valve ass'y No.

- ① No. of the control valve ass'y with which the valve chest material has been changed:
LKK00021 and after
 - ② No. of the control valve ass'y with which the valve chest material has been changed
+ the main relief valve has been changed:
LKK00030 and after
- ☆ Use the control valve ass'y of LKK00030 and after when replacing the control valve.

6. Replacement procedure for the work equipment control valve ass'y.

(1) Removing the work equipment control valve ass'y.

⚠ Park the machine on a horizontal place, install the safety bar to the frame, lower the bucket to touch the ground, stop the engine, apply the parking brake and insert chocks under the tires.

★ To protect the hydraulic equipment and devices, pay attention to the following points when making the disassembly work and reassembly work.

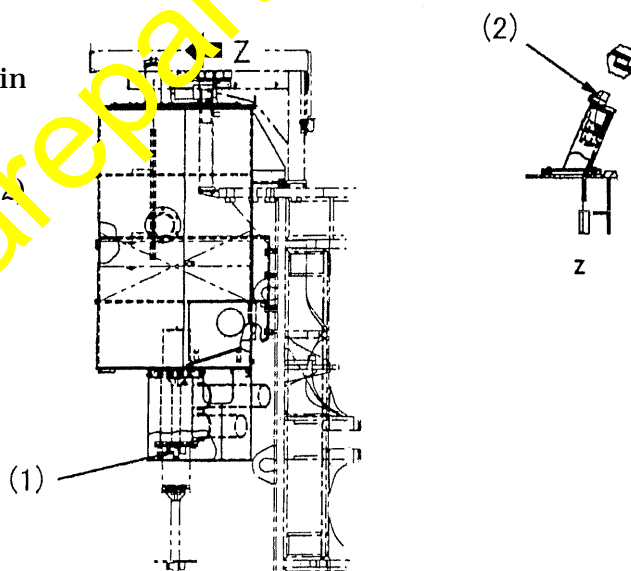
- Before starting the disassembly work, wash the machine body. Especially, wash the area around the disassembling section completely.
- Be careful so that dust, etc. do not enter into the hydraulic circuits when making the disassembly work and reassembly work.
- Wash the disassembled parts completely. Especially, completely wash the circuits and parts where troubles are occurring.
- After finishing the disassembly work and the washing work, mask the openings of the pipings and hydraulic parts completely.

⚠ Referring to the Section "Releasing remaining pressure from hydraulic circuit" in the Shop Manual, release the remaining pressure from the accumulator and the pipings completely.

A. Hydraulic tank

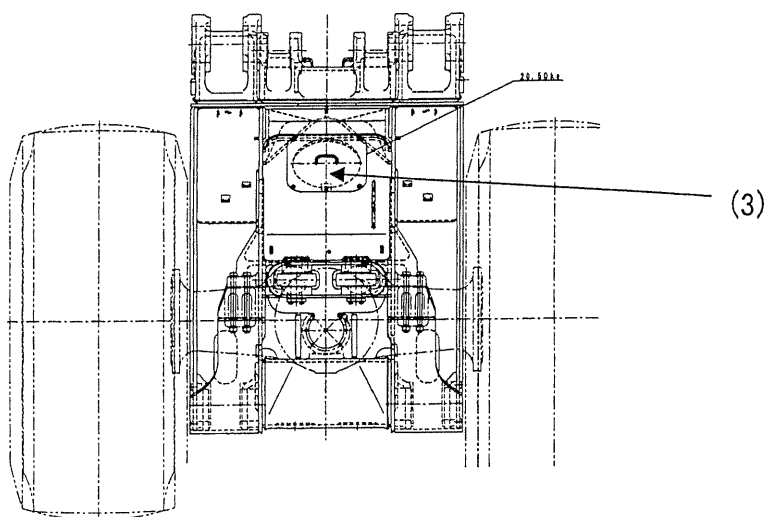
- Drain the hydraulic oil from the drain port (1).

★ At this time, keep the oil filler port (2) open.



B. Cover

- Remove the cover (3) from the front frame.



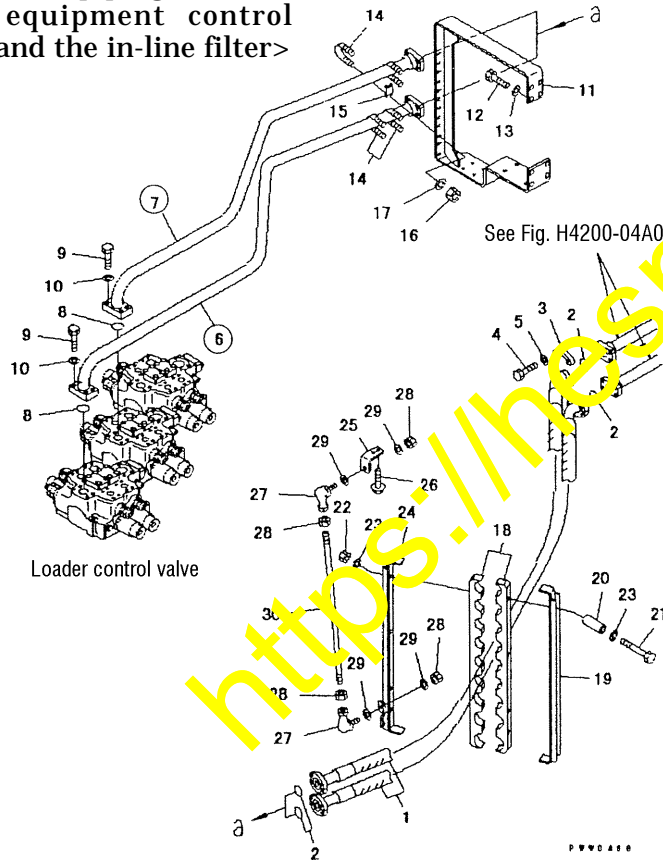
Hereafter, regarding removal of the pipings C thru G, remove the necessary portions for removal of the cracked valve referring to the piping arrangement drawing.

C. Pump piping

(a) Piping between the work equipment control valve ass'y and the in-line filter

- Separate the tubes 6 and 7 connecting between the work equipment control valve ass'y and the in-line filter on the work equipment control valve side.
- ★ Before separating the tubes, remove the clamps in advance.
- ★ Apply blank plugs to the separated pipings so that dust, etc. do not enter into them.
- ★ Attach tags, etc. to the separated tubes for identification of the connecting positions.

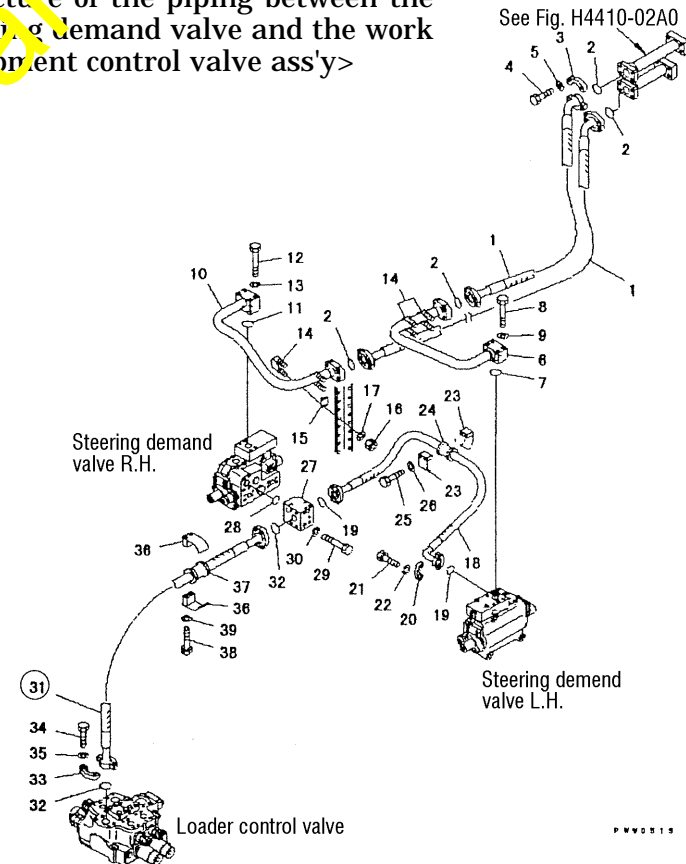
<Structure of the piping between the work equipment control valve ass'y and the in-line filter>



(b) Piping between the steering demand valve and the work equipment control valve ass'y

- Separate the hose 31 connecting between the steering demand valve and the work equipment control valve ass'y at the work equipment control valve side.
- ★ Before separating the hose, remove the clamps in advance.
- ★ Apply blinding plugs to the separated piping so that dust, etc. do not enter into the piping.
- ★ Attach tags, etc. to the separated hose for identification of the connecting positions.

<Structure of the piping between the steering demand valve and the work equipment control valve ass'y>

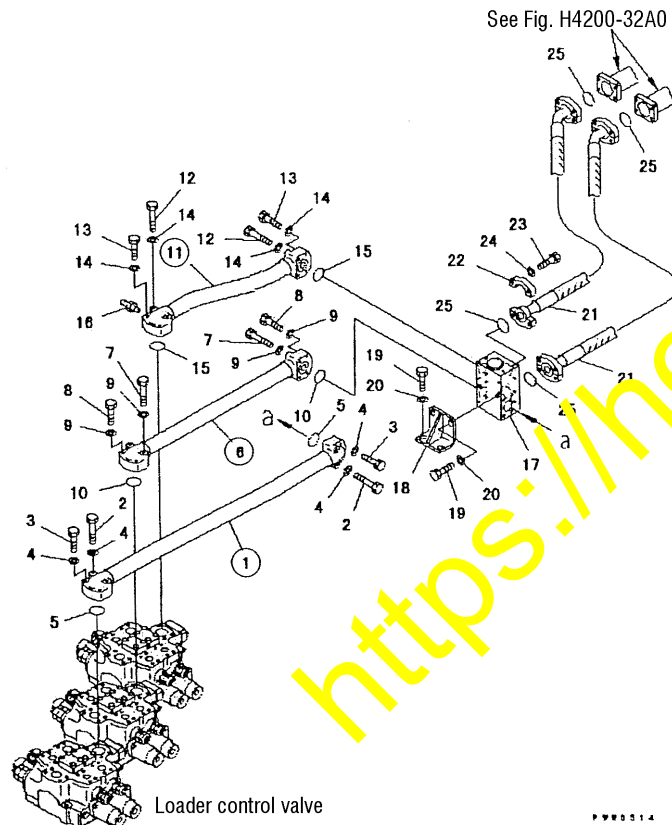


D. Drain piping

(a) Return line to the work equipment control valve ass'y

- Separate the return line tubes 1, 6 and 11 to the work equipment control valve ass'y at the work equipment control valve side and at the relay block section.
- ★ Apply blank plugs to the separated pipings so that dust, etc. do not enter into them.
- ★ Attach tags, etc. to the separated tubes for identification of the connecting positions.

<Structure of the return line pipings to the work equipment control valve ass'y>

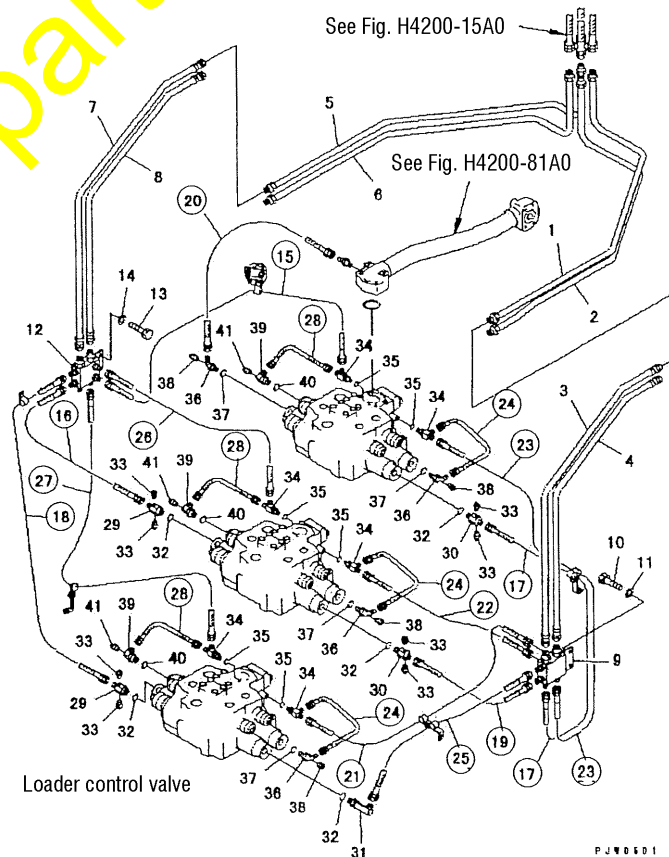


E. PPC piping

(a) PPC valve line

- Separate the hoses 15 thru 28 connecting between the work equipment control valve ass'y and the relay block of the PPC line at the work equipment control valve side.
- ★ Before separating the hoses, remove the clamps in advance.
- ★ Apply blank plugs to the separated pipings so that dust, etc. do not enter into them.
- ★ Attach tags, etc. to the separated hoses for identification of the connecting positions.

<Structure of the PPC valve line>

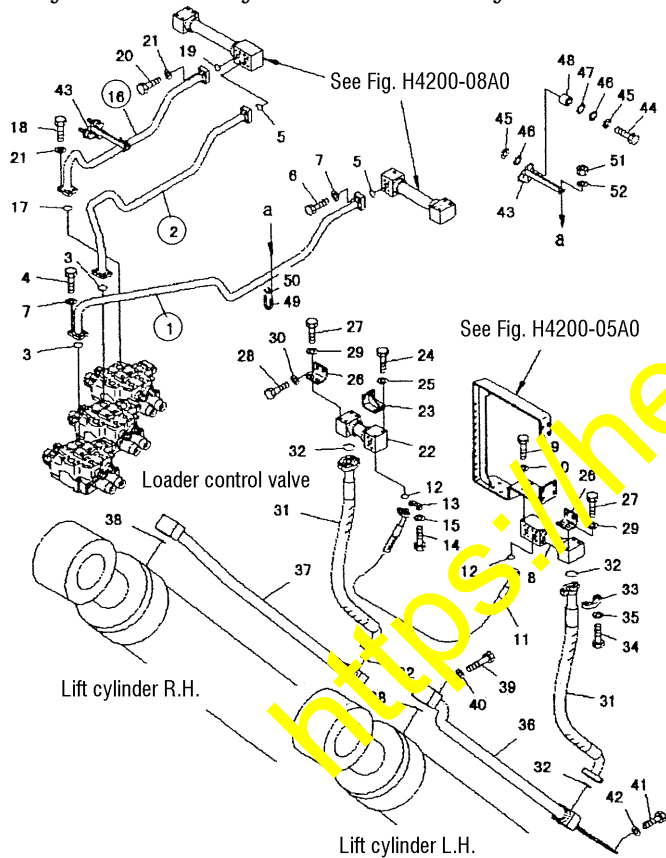


F. Lift cylinder piping

(a) Lift cylinder head line

- Separate the tubes 1, 2 and 16 connecting between the work equipment control valve ass'y and the relay block of the lift cylinder line at the work equipment control valve side and at the relay block section.
- ★ Before separating the tubes, remove the clamps in advance.
- ★ Apply blank plugs to the separated pipings so that dust, etc. do not enter into them.
- ★ Attach tags, etc. to the separated tubes for identification of the connecting positions.

<Structure of the pipings between the work equipment control valve ass'y and the relay block of the lift cylinder line>

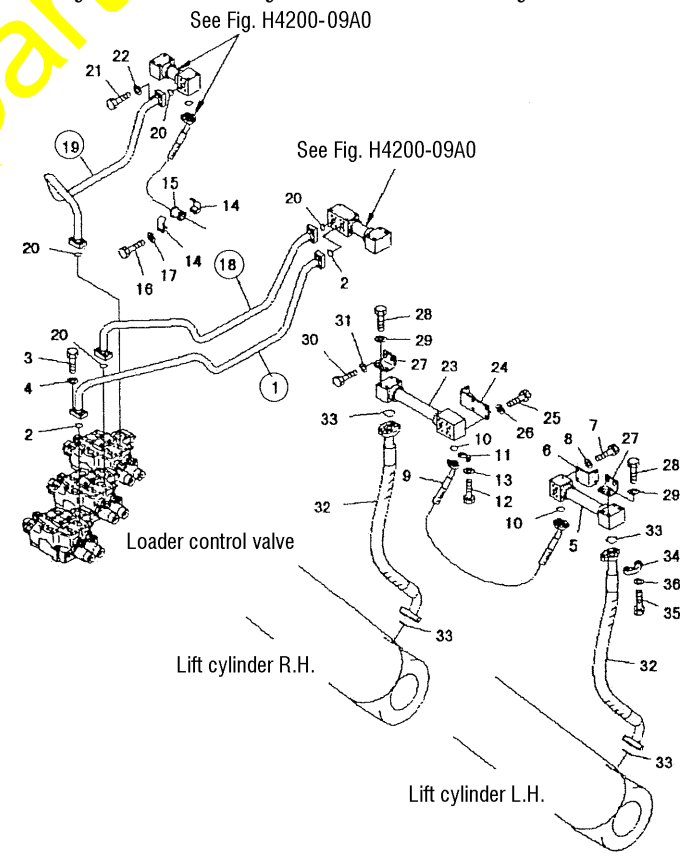


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(b) Lift cylinder bottom line

- Separate the tubes 1, 18 and 19 connecting between the work equipment control valve ass'y and the relay block of the lift cylinder line at the work equipment control valve side and at the relay block section.
- ★ Before separating the tubes, remove the clamps in advance.
- ★ Apply blank plugs to the separated pipings so that dust, etc. do not enter into them.
- ★ Attach tags, etc. to the separated tubes for identification of the connecting positions.

<Structure of the pipings between the work equipment control valve ass'y and the relay block of the lift cylinder line>



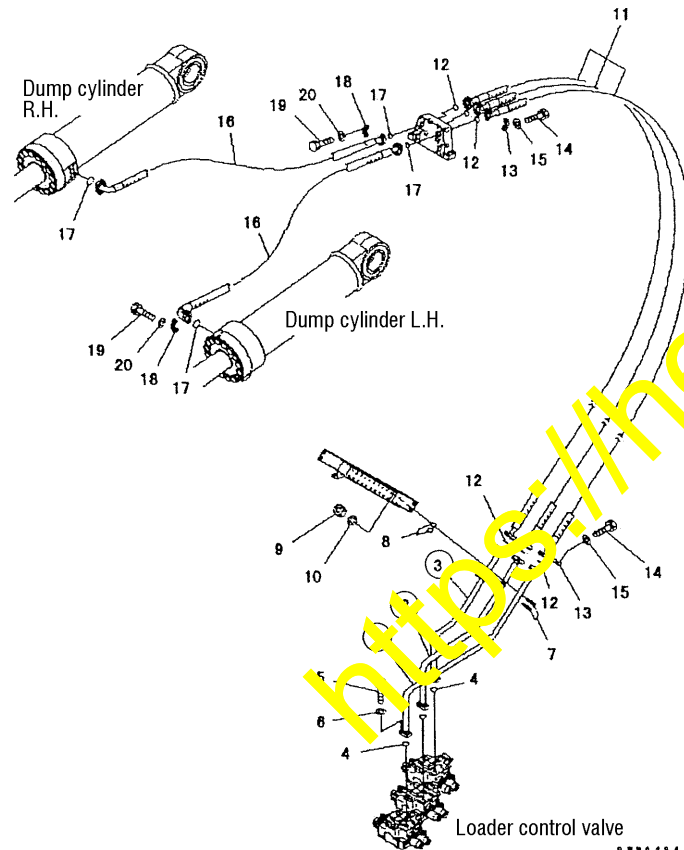
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G. Dump cylinder piping

(a) Dump cylinder head line

- Separate the tubes 1, 2 and 3 connecting between the work equipment control valve ass'y and the dump cylinder at the work equipment control valve side.
- ★ Before separating the tubes, remove the clamps in advance.
- ★ Apply blank plugs to the separated pipings so that dust, etc. do not enter into them.
- ★ Attach tags, etc. to the separated tubes for identification of the connecting positions.

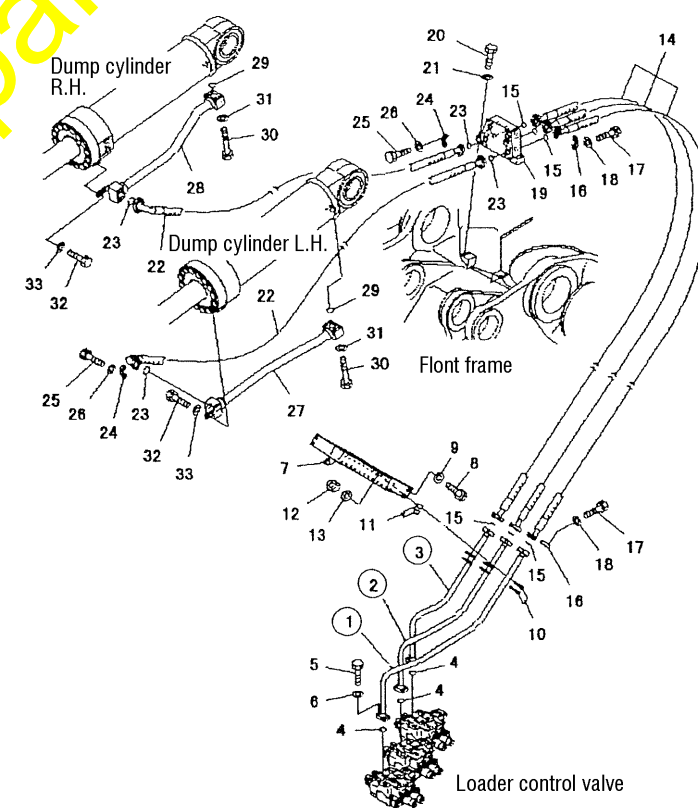
<Structure of the pipings between the work equipment control valve ass'y and the dump cylinder>



(b) Dump cylinder bottom line

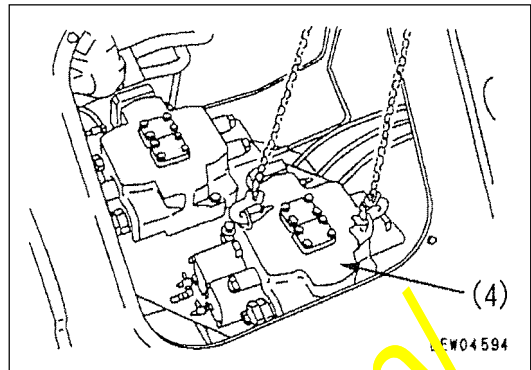
- Separate the tubes 1, 2 and 3 connecting between the work equipment control valve ass'y and the dump cylinder at the work equipment control valve side.
- ★ Before separating the tubes, remove the clamps in advance.
- ★ Apply blank plugs to the separated pipings so that dust, etc. do not enter into them.
- ★ Attach tags, etc. to the separated tubes for identification of the connecting positions.

<Structure of the pipings between the work equipment control valve ass'y and the dump cylinder>



H. Removing the work equipment control valve ass'y

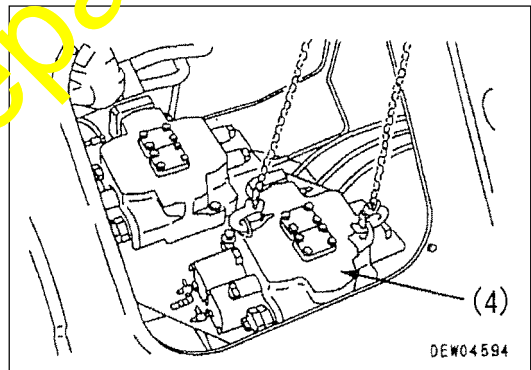
- Insert eye bolts into the work equipment control valve ass'y, remove the mounting bolts and hoist to take out the work equipment control valve ass'y (4) outside the frame.
- ★ At this time, take out the work equipment control valve ass'y wherein cracks are occurring only.
- ★ Weight of the work equipment control valve ass'y: 95 kg/1 ass'y
- ★ When hoisting the work equipment control valve ass'y, be careful so that the work equipment control valve ass'y does not interfere with the frame and your fingers are not pinned under the work equipment control valve ass'y.



(2) Installing the work equipment control valve ass'y

A. Installing the work equipment control valve ass'y

- Hoist the work equipment control valve ass'y (4) using the hanging bolts to lower it on the mounting plate inside the frame and tighten the mounting bolts.
- ★ Weight of the work equipment control valve ass'y: 95 kg/1 ass'y
- ★ When hoisting the work equipment control valve ass'y, be careful so that the work equipment control valve ass'y does not interfere with the frame and your fingers are not pinned under the work equipment control valve ass'y.
- ★ Regarding the mounting bolts, tighten them temporarily and tighten them finally after finishing connections of the PPC pipings.

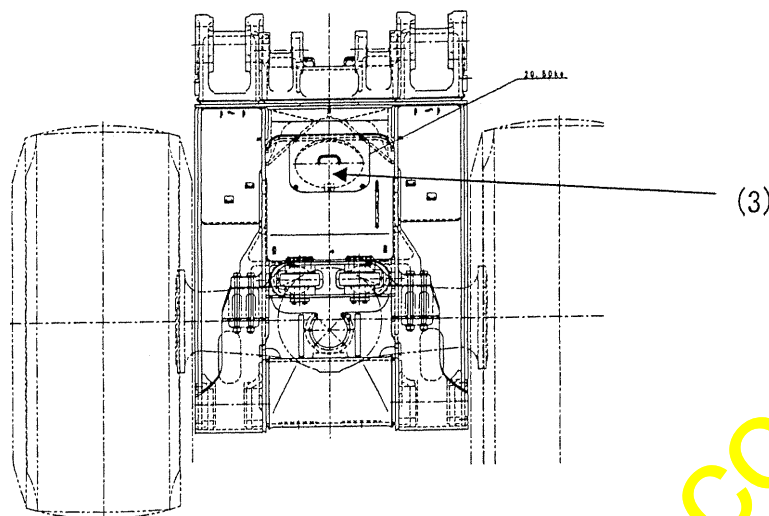


B. Connections of the respective pipings

- When connecting the pump pipings, drain pipings, PPC pipings, lift cylinder pipings and dump cylinder pipings, connect them referring to their separating procedures.

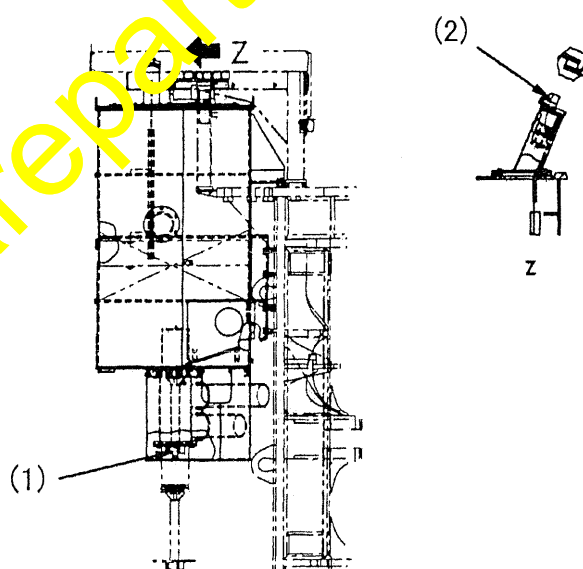
C. Cover

- Install the cover (3) to the front frame.



D. Refilling the oil

- Install the plug to the drain port (1).
- Refill the hydraulic tank with the hydraulic oil through the oil filler port (2) up to the specified level.
- Plug the oil filler port (2).
- ★ Before starting the engine, bleed the air from the piston pump circuits referring to the Section "Bleeding air from each part" in the Shop Manual.
- ★ After finishing the air bleeding from each part, circulate the hydraulic oil and, after that, check the hydraulic oil level once again. If the quantity is in short, add the hydraulic oil.



E. Bleeding the air from each part

- Bleed air from each part referring to the Section "Bleeding air from each part" in the Shop Manual.