SHOP MANUAL

KOMATSU

PC210, 210LC-6K
PC240, 240LC,
PC240NLC-6K

MACHINE MODEL	SERIAL NUMBER
PC210, 210LC-6K	**K30001 and up**
PC240, 240LC, 240NLC-6K	**K30001 and up**

- This shop manual may contain attachments and optional equipment that are not available in your area. Please consult your local Komatsu distributor for those items you may require. Materials and specifications are subject to change without notice.
- PC210, 210LC-6 mount the S6D102L-1 engine;
  PC240, 240LC-6 mount the SA6D102L-1 engine.
  For details of the engine, see the 102 Service Engine Shop Manual.

Printed in Belgium 02-97

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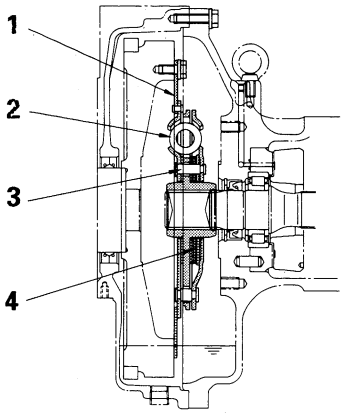
10 STRUCTURE AND FUNCTION

K20506

ENGINE RELATED PARTS



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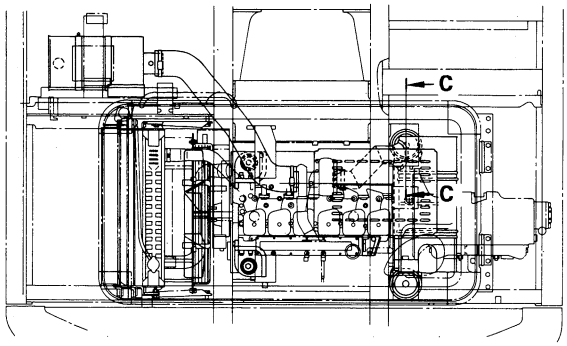

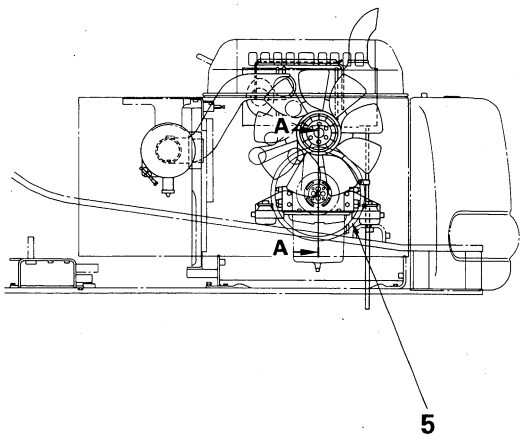

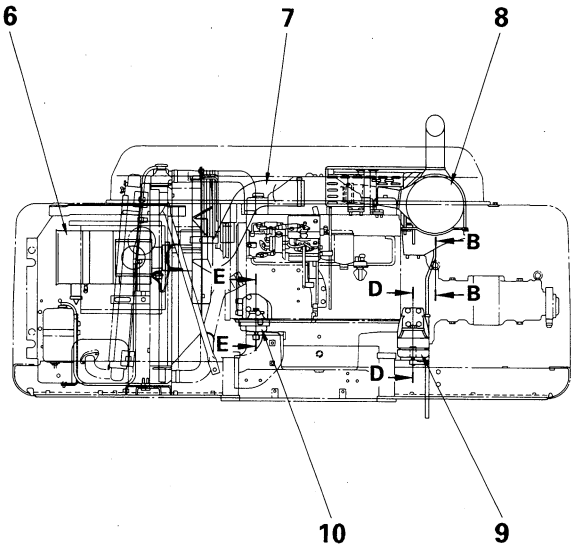

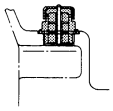

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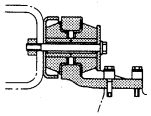

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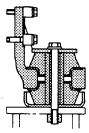

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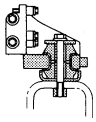


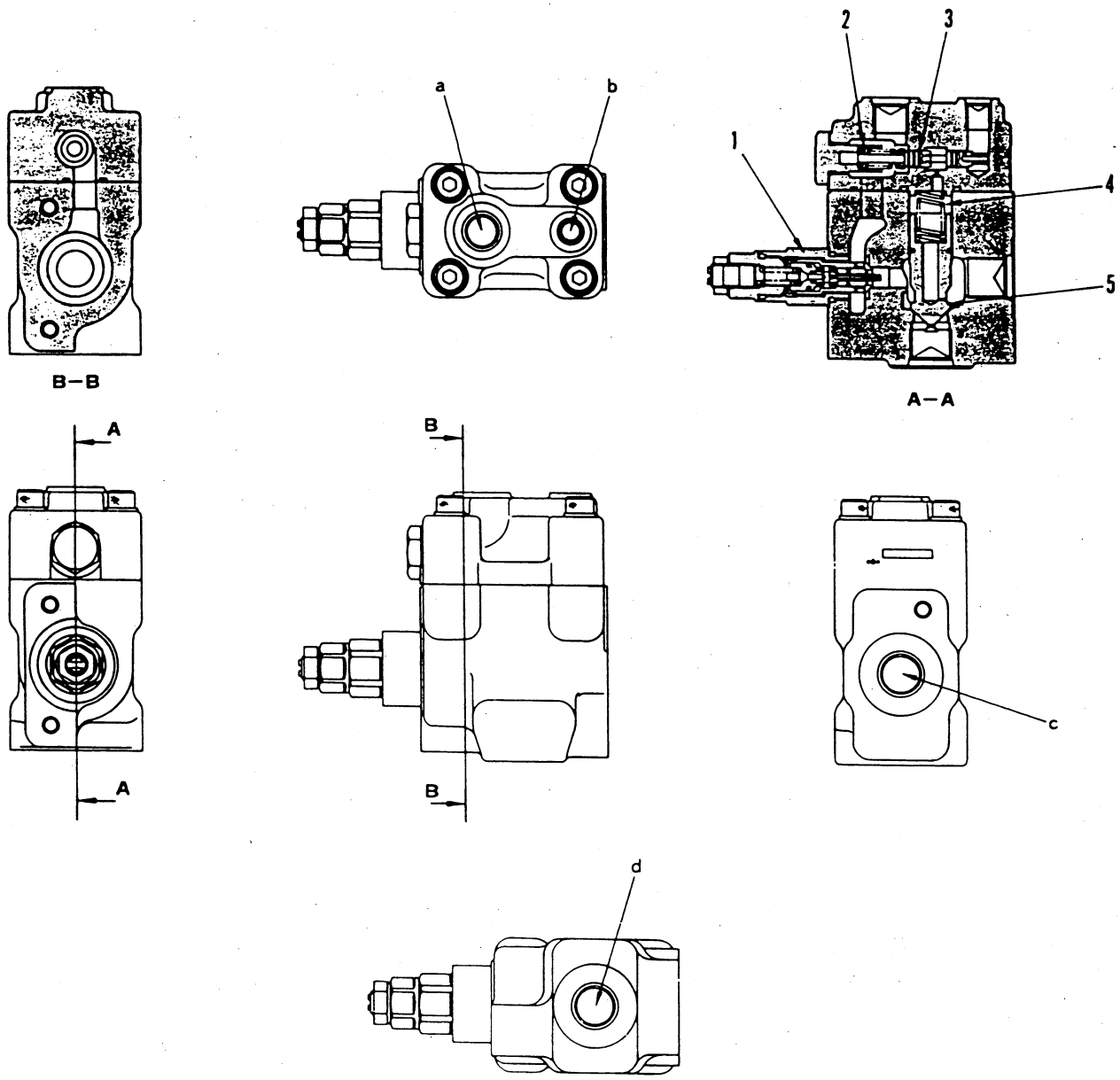
E-E

1. Drive plate
2. Torsion spring
3. Stopper pin
4. Friction plate
5. Damper assembly
6. Air cleaner
7. Intake connector
8. Muffler
9. Rear engine mount
10. Front engine mount

OUTLINE

- The damper assembly is a wet type. Oil capacity: 0.75ℓ

2ND BOOM HOLDING VALVE



a. Port **T** (to tank)
b. Port **Pi** (from boom LOWER PPC valve)
c. Port **Cy** (to boom cylinder bottom)
d. Port **V** (from boom control valve)

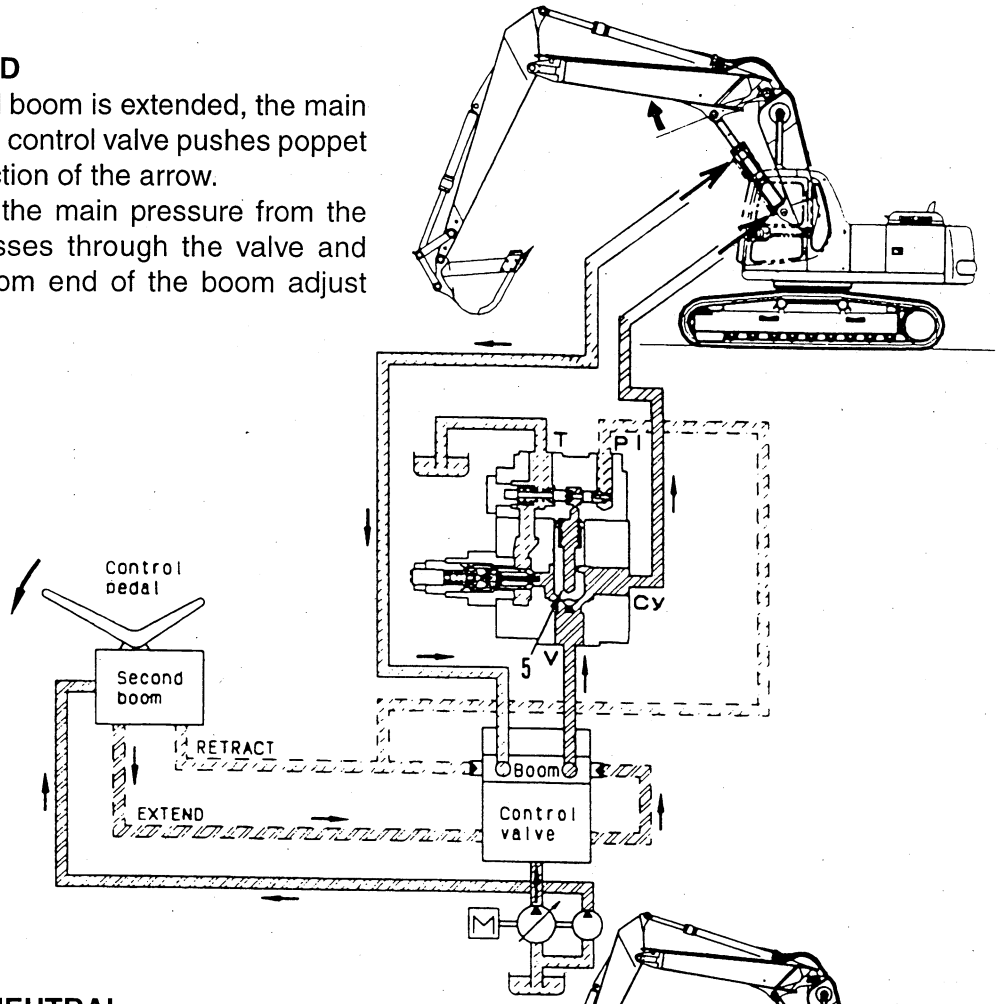
1. Safety-suction valve
2. Pilot spring
3. Pilot spool
4. Poppet spring
5. Poppet

Operation

1) At boom EXTEND

When the second boom is extended, the main pressure from the control valve pushes poppet (5) up in the direction of the arrow.

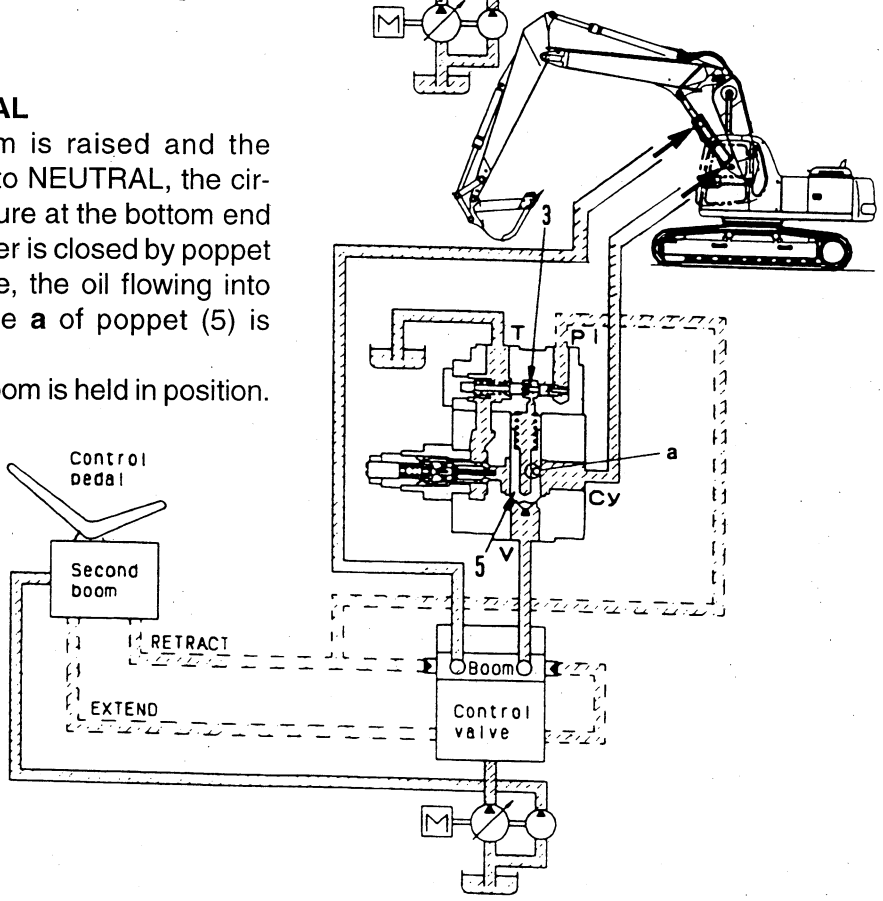
Because of this, the main pressure from the control valve passes through the valve and flows to the bottom end of the boom adjust cylinder.



2) Boom pedal at NEUTRAL

When the second boom is raised and the control lever is returned to NEUTRAL, the circuit for the holding pressure at the bottom end of the boom adjust cylinder is closed by poppet (5) and at the same time, the oil flowing into poppet (5) through orfice **a** of poppet (5) is closed by pilot spool (3).

As a result, the second boom is held in position.

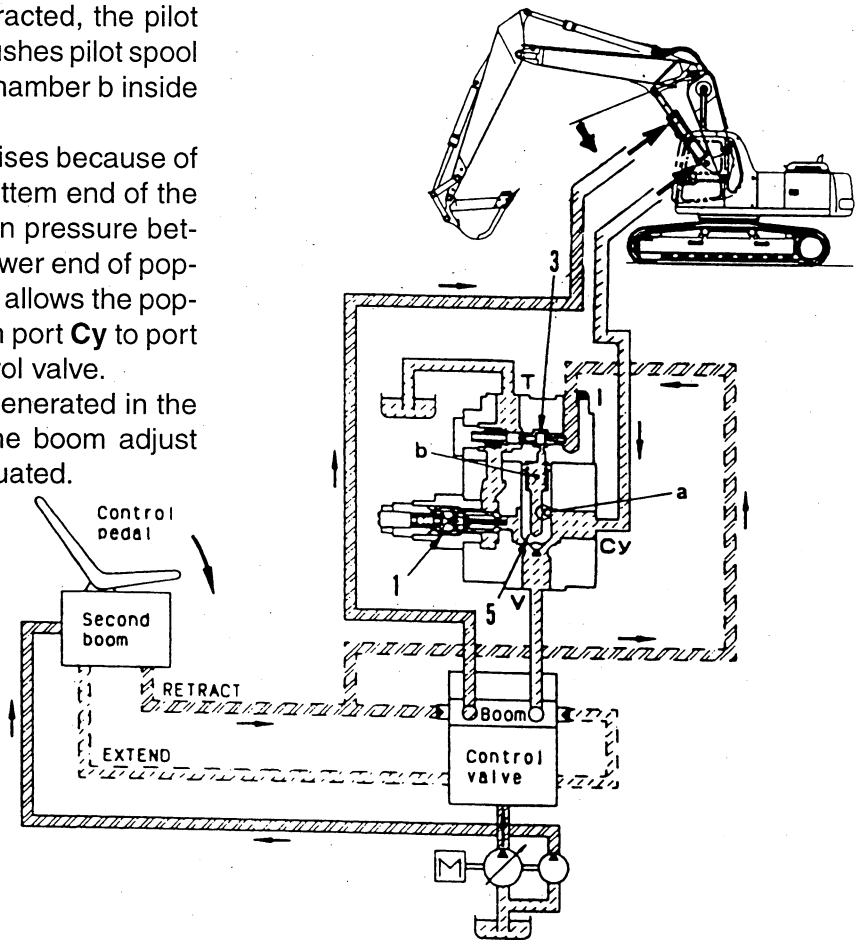


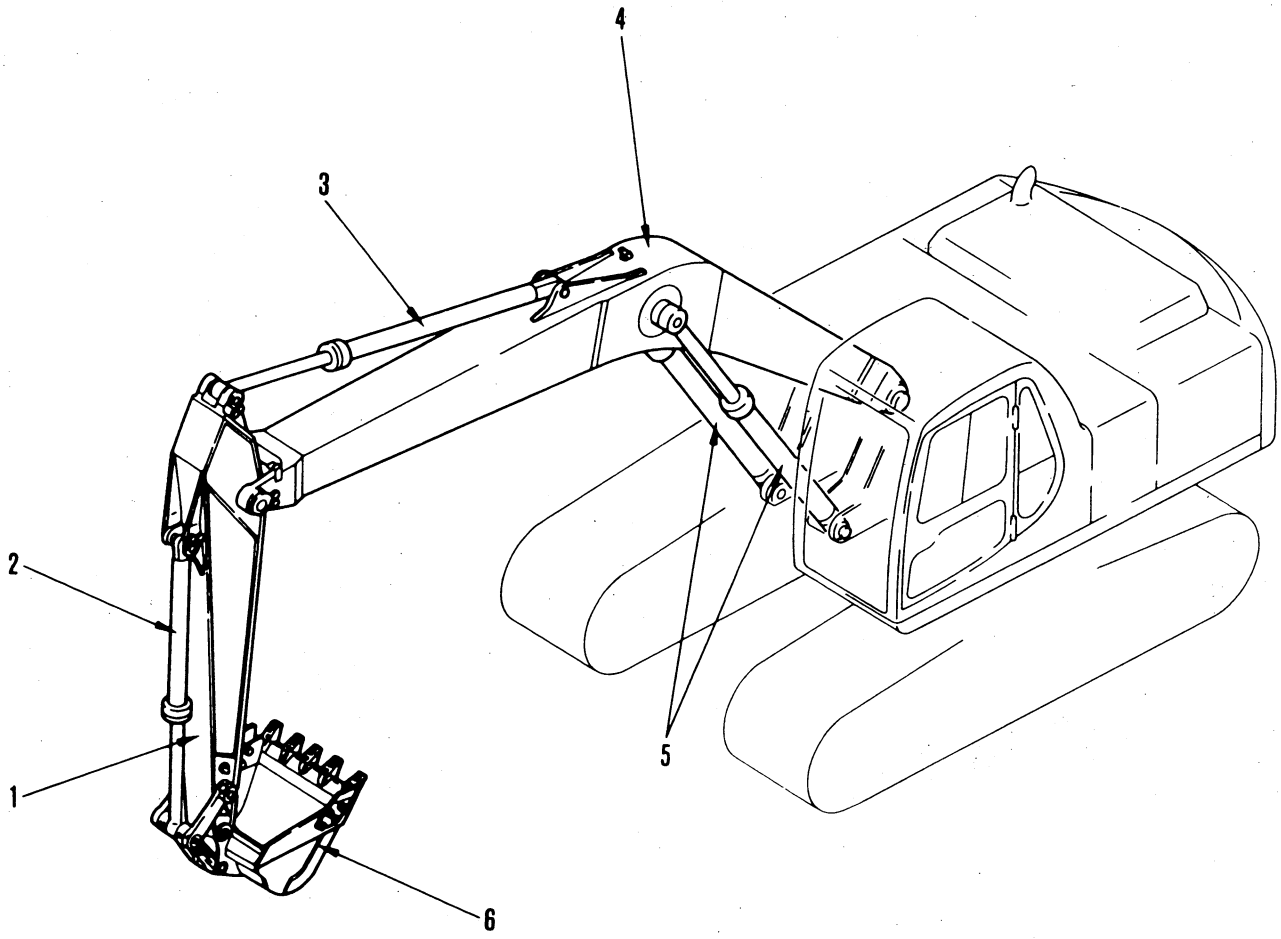
3) At boom RETRACT

When teh second boom is retracted, the pilot pressure from the PPC valve pushes pilot spool (3) and the pressurised oil in chamber b inside the poppet is drained.

When the pressure at port **Cy** rises because of the pressurised oil from the bottem end of the adjust cylinder, the difference in pressure between the oil surrounding the lower end of poppet (5) and the oil in chamber b allows the poppet tot rise allowing to flow from port **Cy** to port **V** which then flows to the control valve.

If anny abnormal pressure is generated in the circuit at the bottom end of the boom adjust cylinder, safaty valve (1) is actuated.





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1. Arm
2. Bucket cylinder
3. Arm cylinder
4. Boom
5. Boom cylinder
6. Bucket

SHOP MANUAL

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PC210,210LC-6K
PC240,240LC,
PC240NLC-6K

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10 STRUCTURE AND FUNCTION

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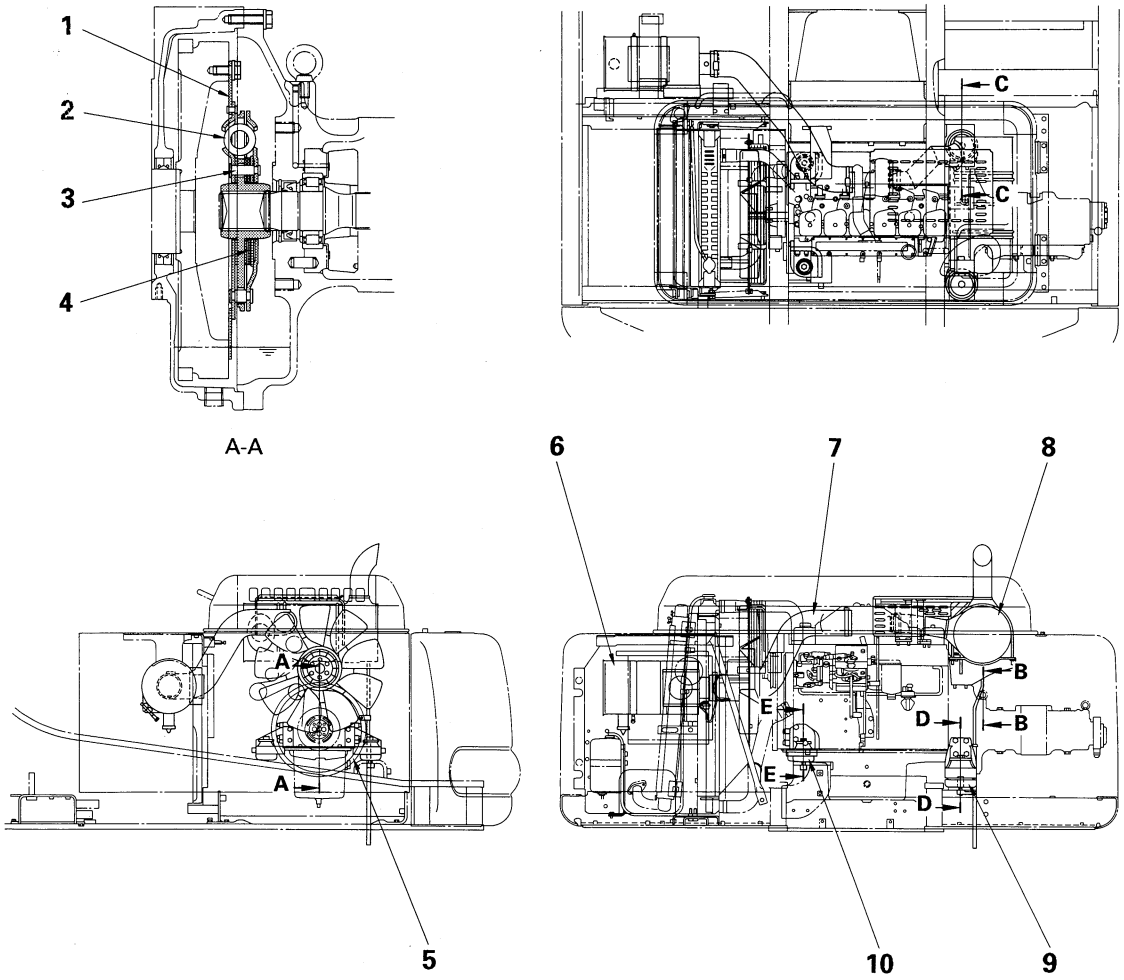
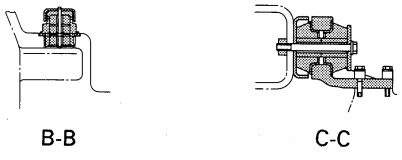
ENGINE RELATED PARTS





1. Drive plate
2. Torsion spring
3. Stopper pin
4. Friction plate
5. Damper assembly
6. Air cleaner
7. Intake connector
8. Muffler
9. Rear engine mount
10. Front engine mount

OUTLINE

- The damper assembly is a wet type. Oil capacity: 0.75ℓ

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2) Pressure compensation

A valve (pressure compensation valve) is installed to the outlet port side of the control valve to balance the load.

When there is compound operation of the actuators, this valve acts to make pressure difference **ΔP** constant for the upstream flow (inlet port) and downstream flow (outlet port) of the spool of each valve.

In this way, the flow of oil from the pump is divided in proportion to area of opening **S1** and **S2** of each valve.

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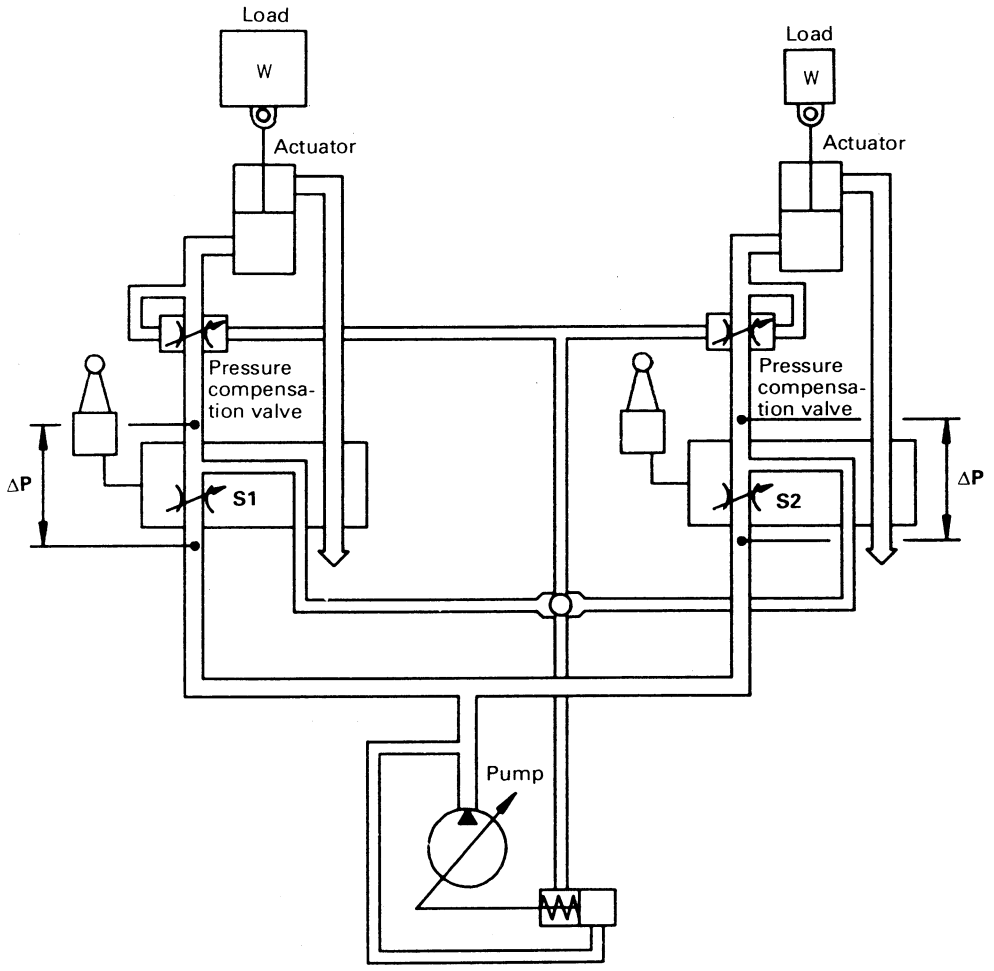

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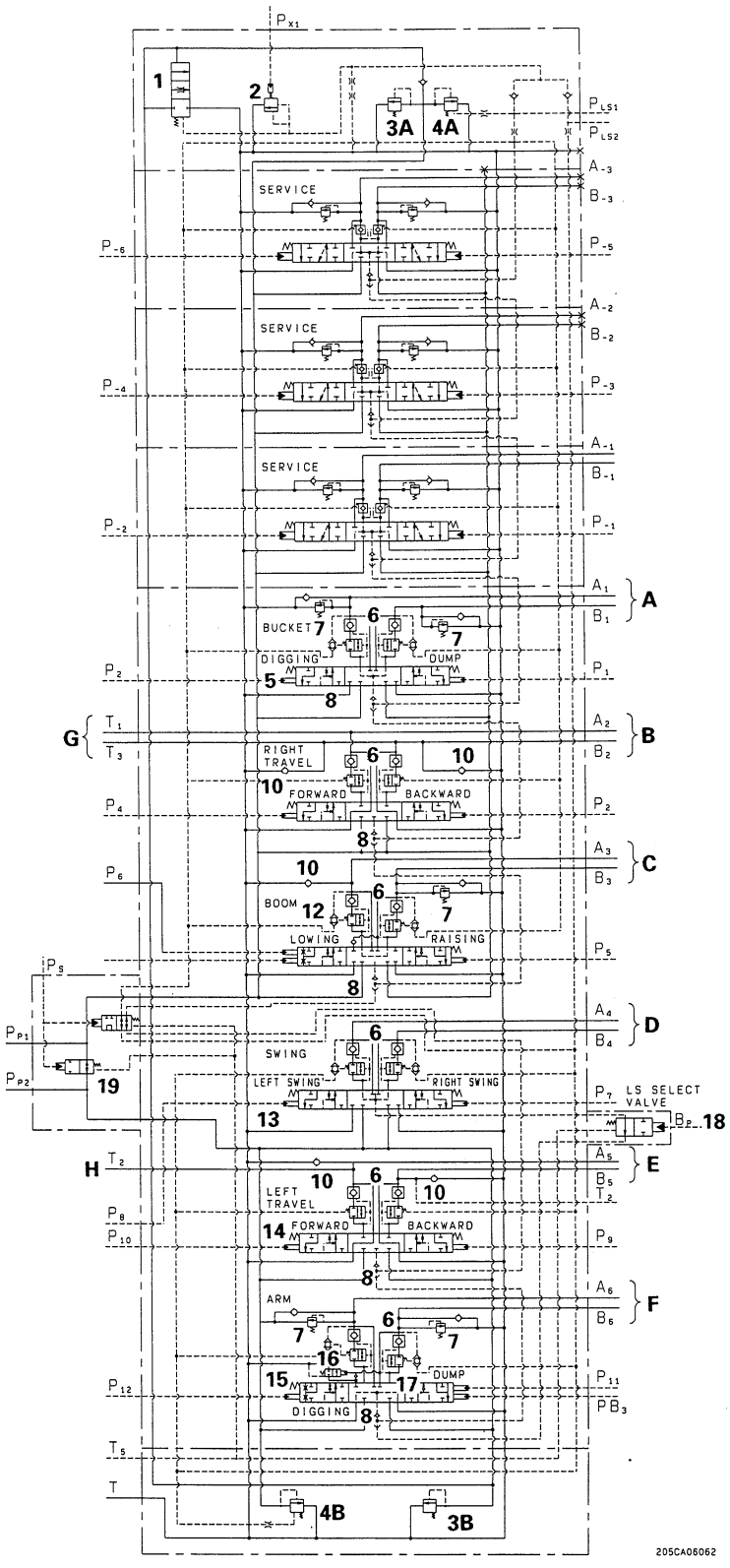
OPERATION FOR EACH FUNCTION OF CLSS

Hydraulic circuit diagram for system



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ADDITIONAL FILTER FOR BREAKER

★ **FOR MACHINE EQUIPPED WITH BREAKER**

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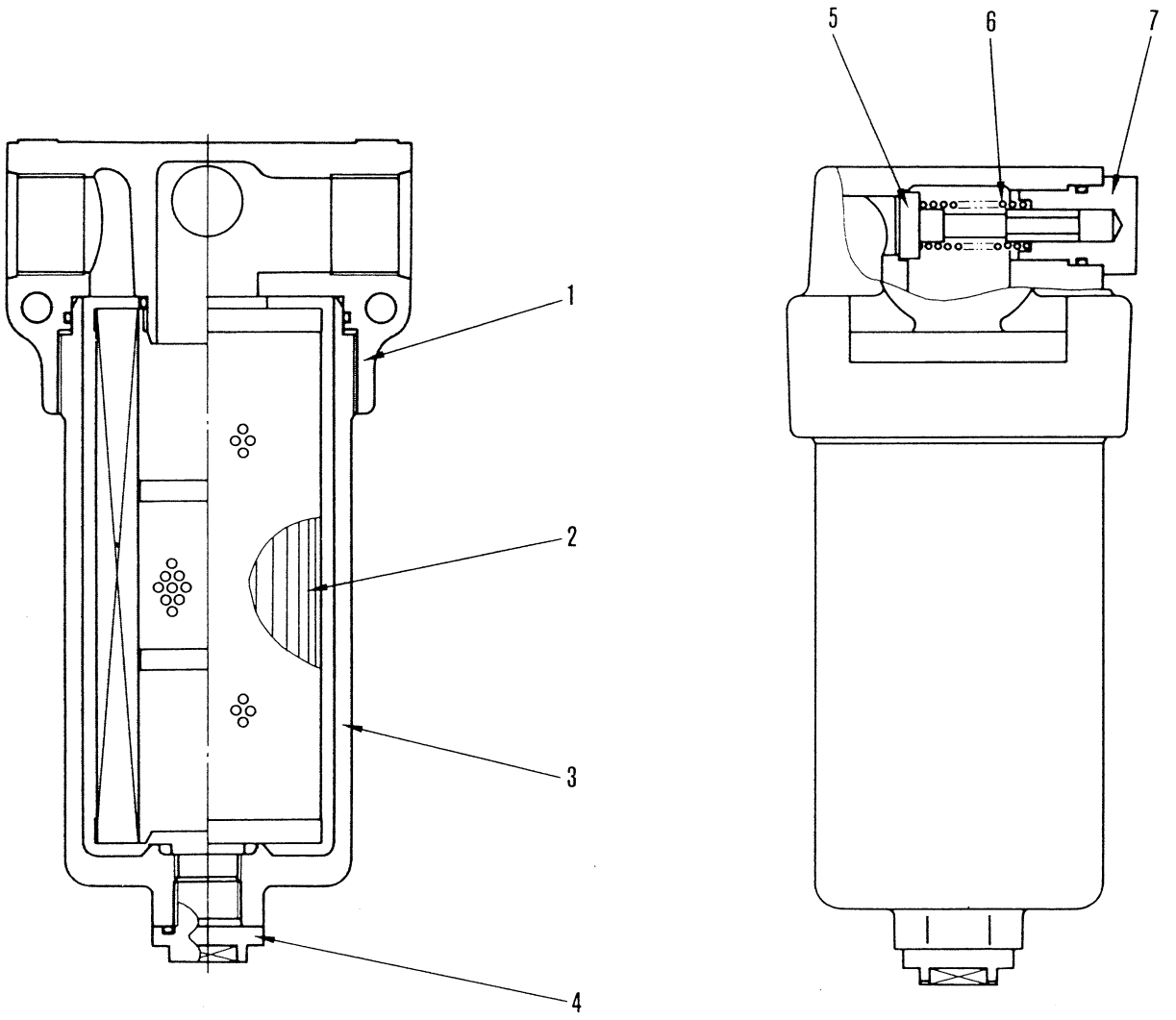


205F06096

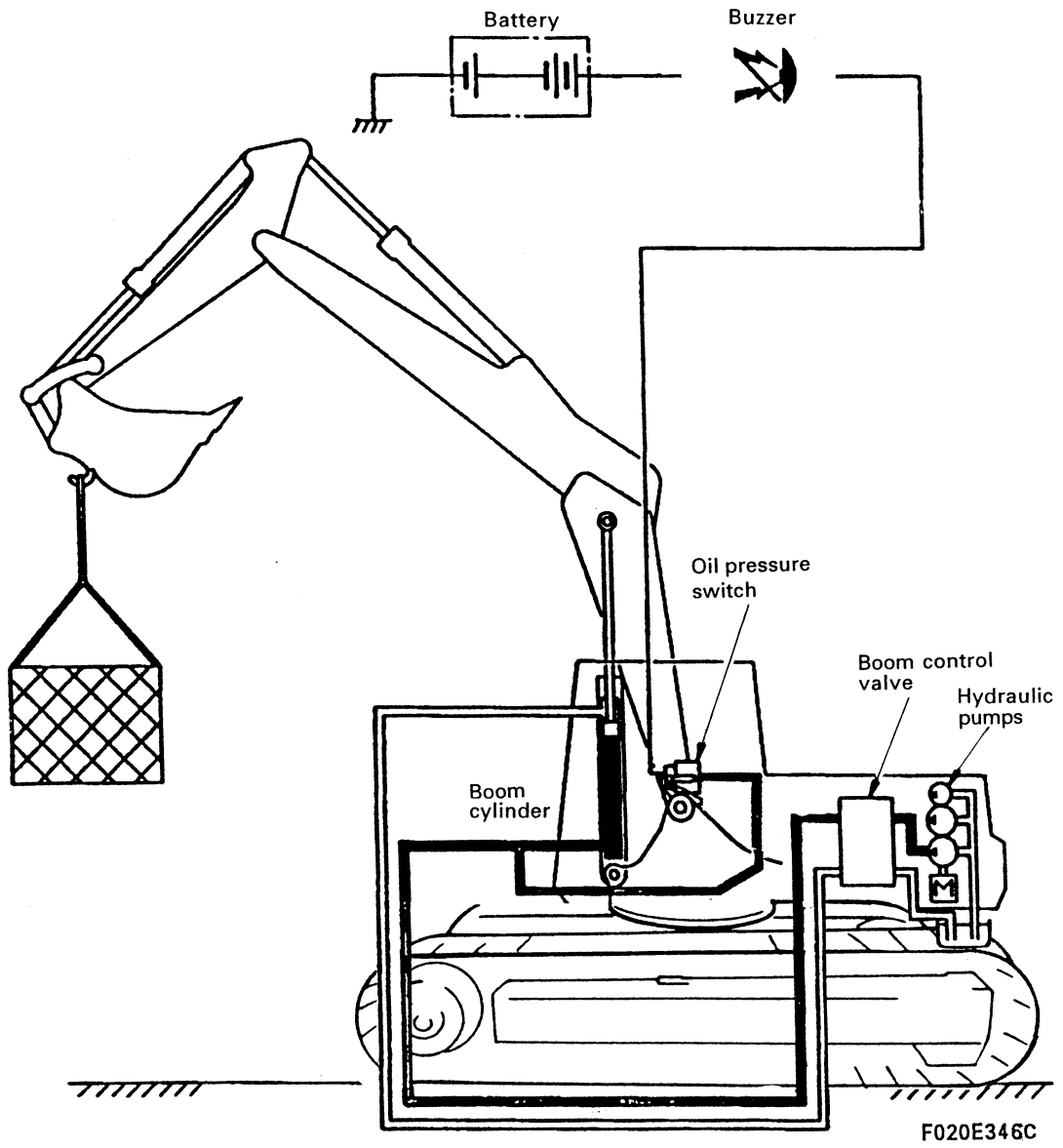
1. Head cover
2. Element
3. Case
4. Drain plug
5. Valve
6. Spring
7. Spring set plug

SPECIFICATIONS

Rated pressure : 6.86 MPa (70 kg/cm²)
Flow : 107ℓ/min
Relief valve cracking pressure: 0.34 ± 0.049 MPa (3.5 ± 0.5 kg/cm²)
Filter mesh size : 6 μm
Filtering area : 3160 cm²

OVERLOAD WARNING DEVICE

1. OUTLINE



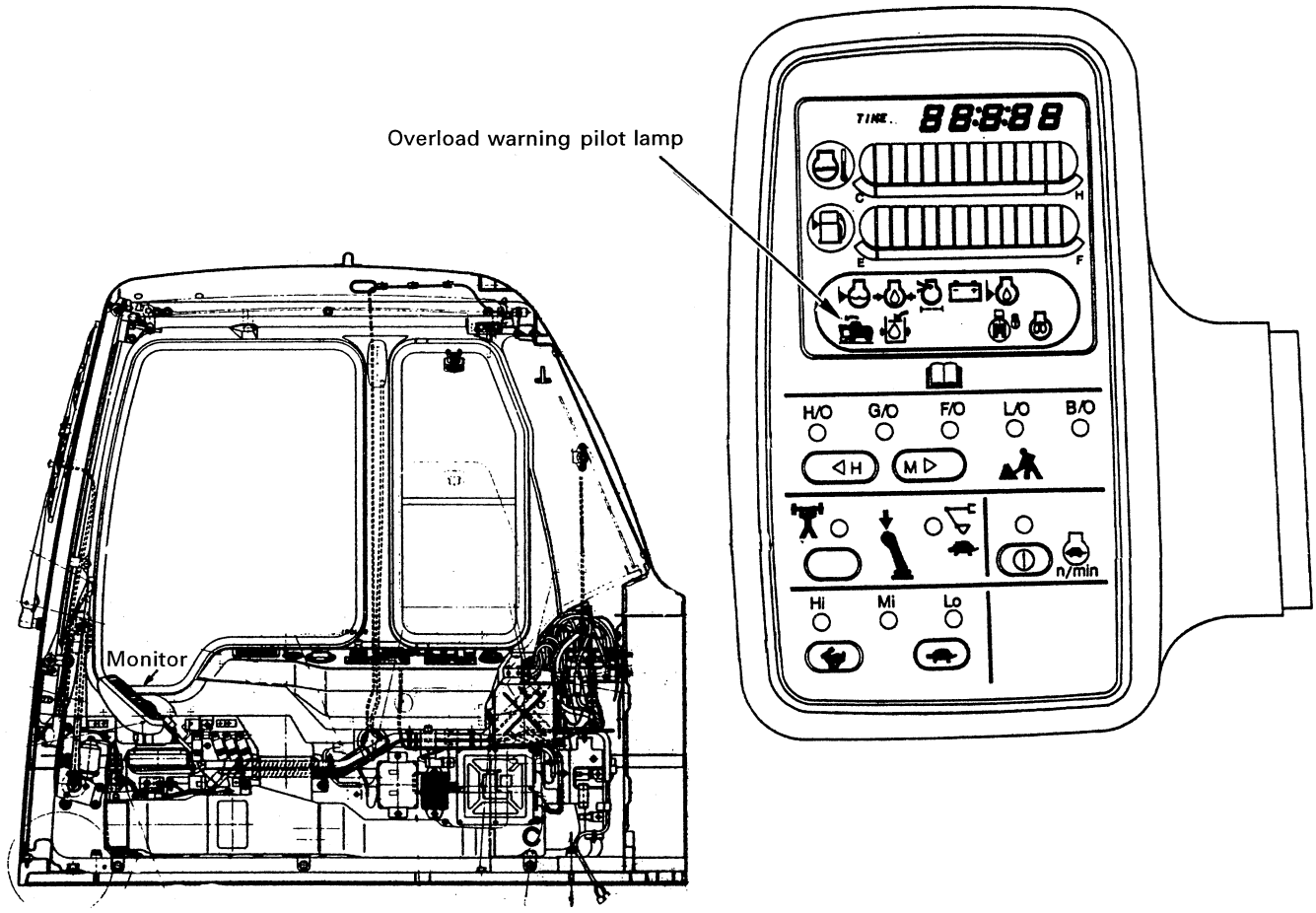
FUNCTION

- This device is installed to warn the operator when the machine is close to tipping over when it lifts an excessive weight while being used as a crane.

STRUCTURE

- When an excessive weight is lifted, the oil pressure goes up at the bottom side of the boom cylinders. When this happens, the pressure switch senses the rising pressure, turns the pressure switch on, and lights the monitor lamp to warm the operator. When the monitor lamp lights, immediately lower the weight to the ground or bring the arm closer in to the operator to prevent the machine from tipping over.

Control panel



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2. OPERATION

- Hose (2) directs the oil pressure from the bottom side of the boom cylinders to pressure switch (3).

a. When the boom is in the lowest position

- When boom (5) is in the lowest position, lever (4) takes position **A** in Fig. 1 and the pressure to activate its switch (closed and open) becomes 60 kg/cm^2.

b. When the boom is in the highest position

- When the boom is in the highest position, lever (4) takes position **B** in Fig. 1 and the pressure to activate the switch becomes 360 kg/cm^2.

c. When the boom is in an arbitrary position

- When the boom is in a position anywhere between the lowest and the highest points, the operating pressure of switch (3) will be somewhere between 60 kg/cm^2 and 360 kg/cm^2, based on the boom position.
  For instance, when the boom is in a certain position between the lowest and the highest points, lever (4) takes a position which corresponds to that boom position.
  If lever (4) is in the position to make the operating pressure of the pressure switch 150 kg/cm^2 (which is the same pressure as the bottom side of the boom cylinder), the pressure switch will turn on when excessive weight is lifted by the boom and the oil pressure of the bottom of the boom cylinders exceeds 150 kg/cm^2.

⚠ When the machine is performing any kind of operation other than lifting loads, fasten the pressure switch lever (4) with the bolt (6) to prolong the life at the pressure switch.

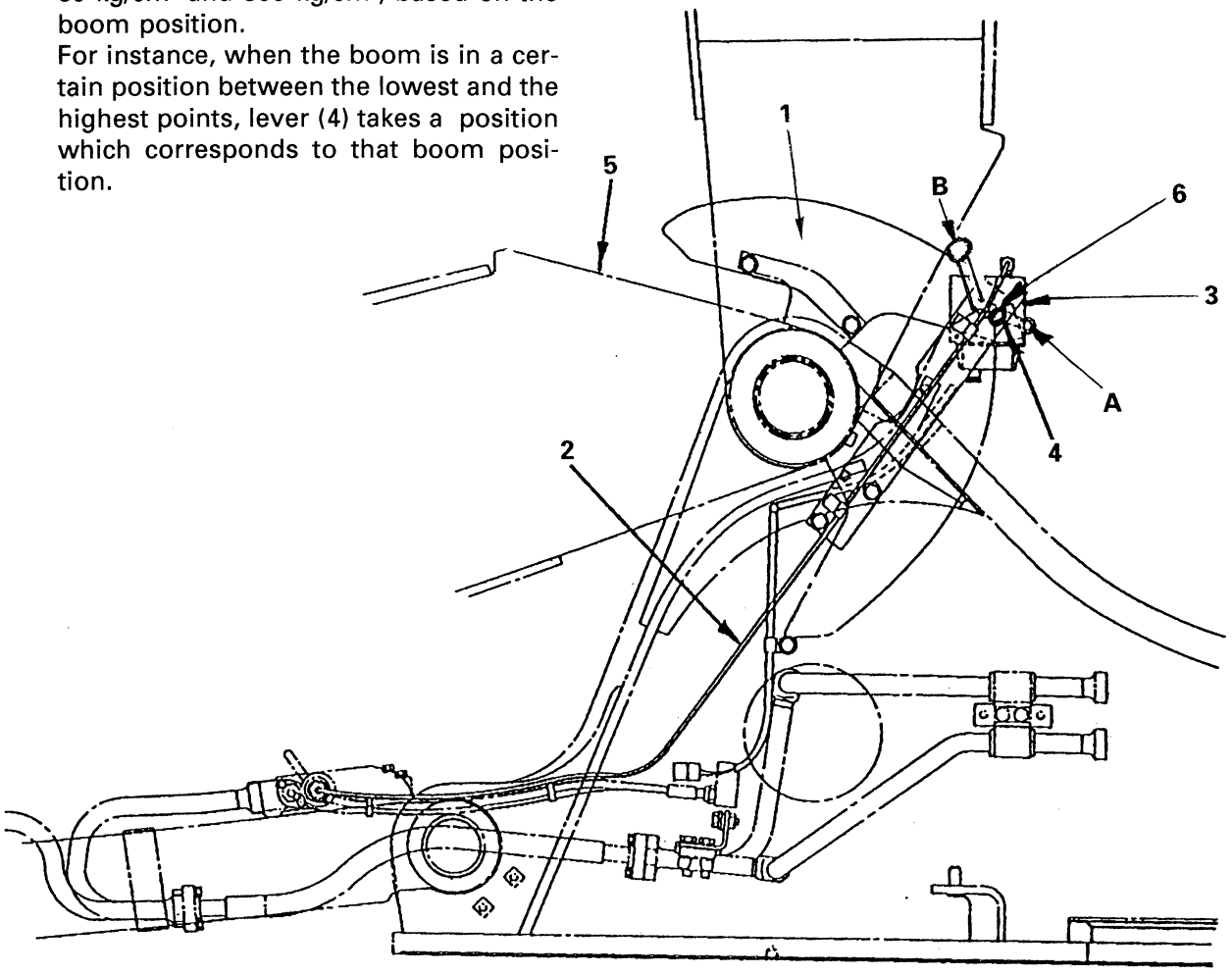

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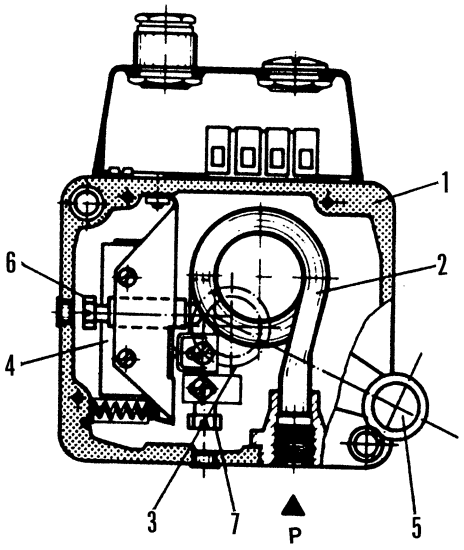
FIG.1

3. ADJUSTING PRESSURE OF THE OIL PRESSURE SWITCH

- **Screw D: Pressure range adjustment screw**
  To make an adjustment so that the oil pressure switch acts normally when checking the operation of the overload warning device.
  Turning to the left makes the pressure range wider.
- **Screw E: Zero point adjustment screw**
  Turning to the right one complete turn raises the pressure by 57 kg/cm².
  Each complete turn to the left lowers the pressure by 57 kg/cm².

⚠ When an adjustment is required, contact your Komatsu distributor and have him make the adjustment.



1. Body
2. Bourdon tube
3. Eccentric disc
4. Microswitch
5. Lever and roller
6. Adjustment screw (E)
7. Adjustment screw (D)

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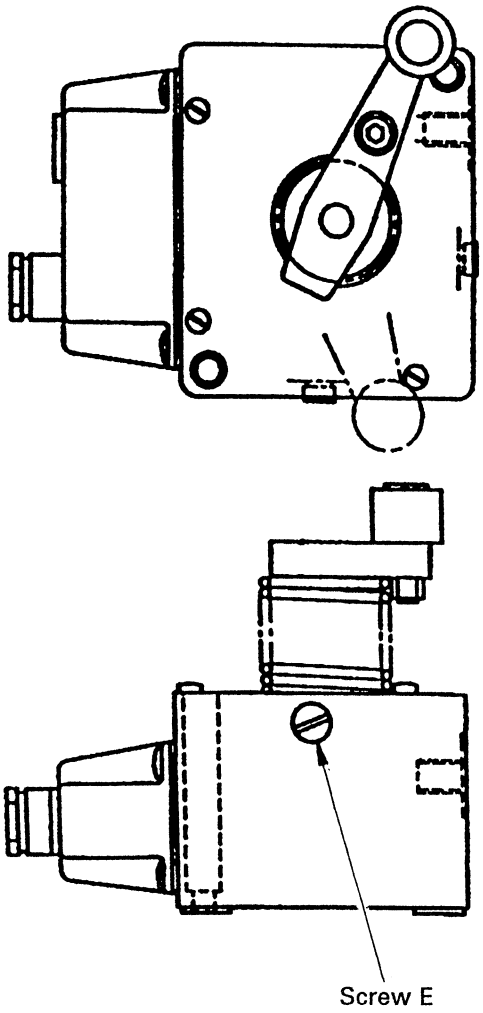

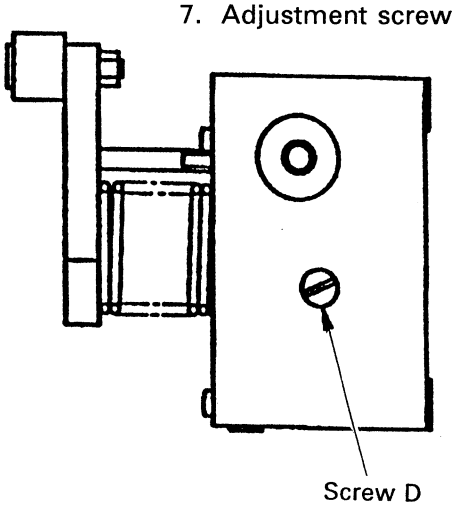

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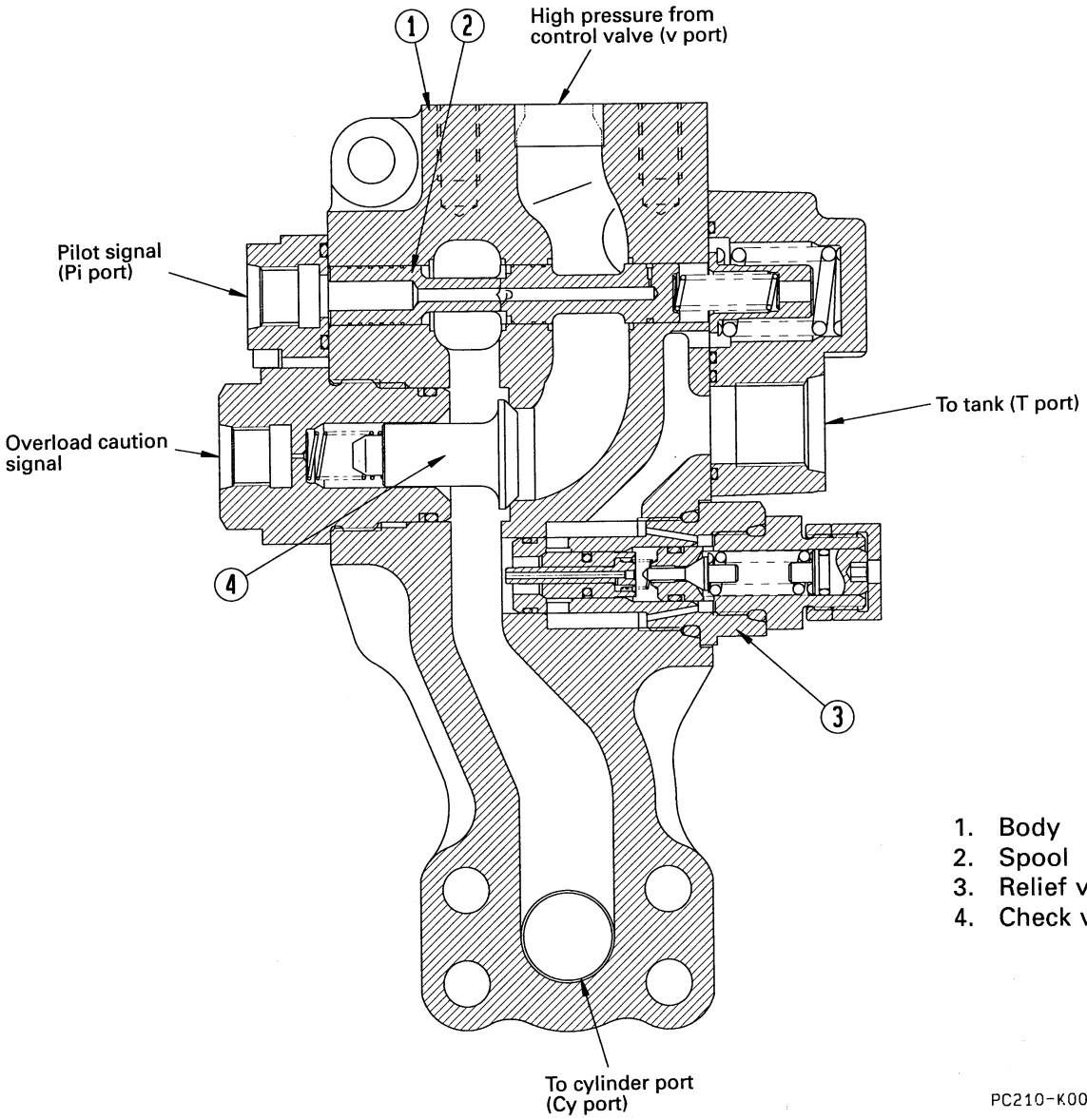
HOSE BURST PROTECTION VALVE (BOOM)



1. Body
2. Spool
3. Relief valve
4. Check valve

PC210-K006

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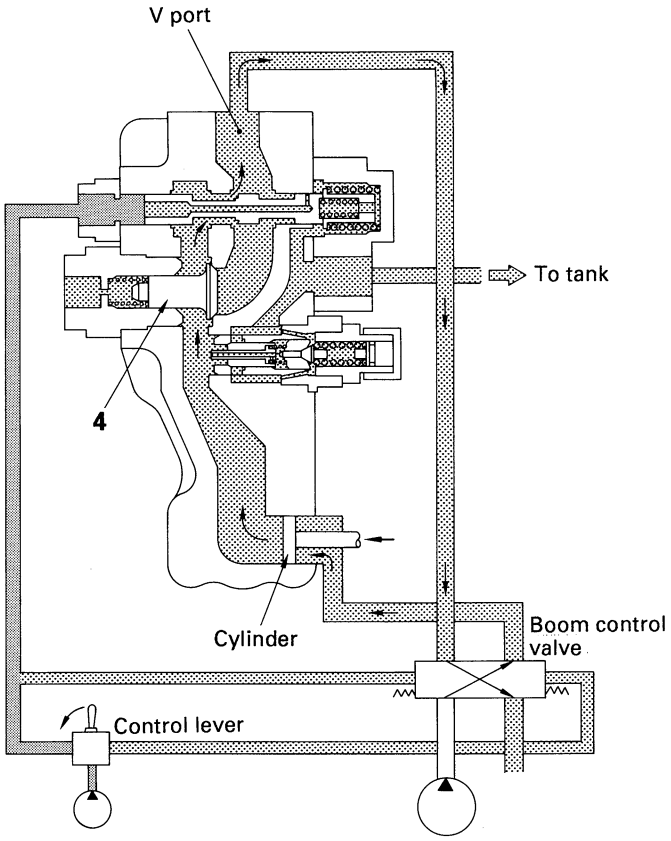
FUNCTION

- This valve prevents sudden uncontrolled lowering of the boom, when lifting, due to the burst of a hose in the boom cylinder line. In such a condition this valve will hold the load until operator lowers the boom in a controlled way using the normal wrist control.

When hose burst occurs
(Operation to lower safety)

- The sudden loss of pressure at port **V** will cause check valve (4) to re-seat and so the valve is locked.
- The boom can be lowered in a controlled way by operating the wrist control in the normal way.



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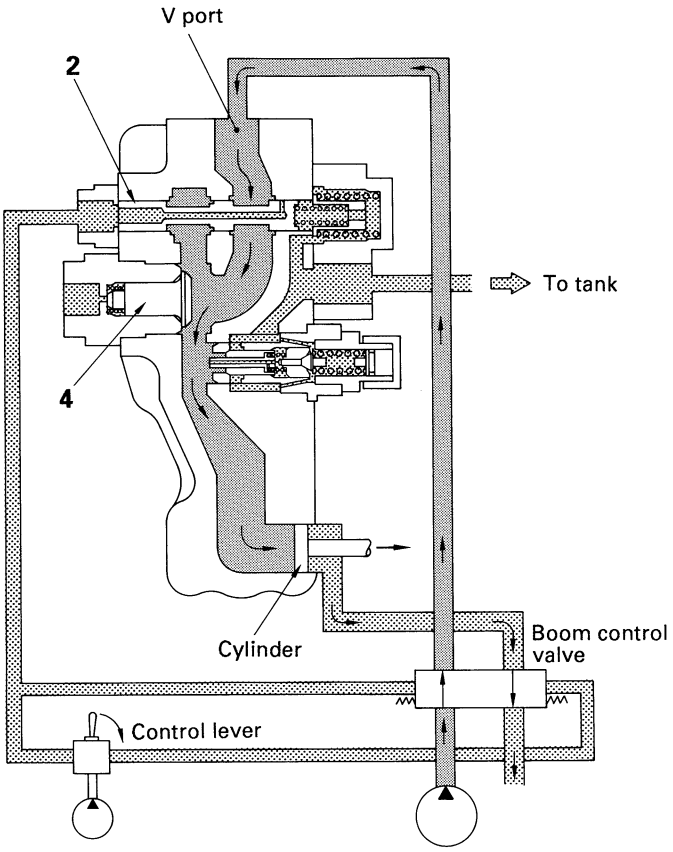
OPERATION

BOOM RAISE

- During boom raising the pilot signal from wrist control operates control valve spool to direct high pressure oil to port **V** of hose burst valve.
- This pressure lifts check valve (4) from seat & high pressure oil flows in the bottom of the cylinder raising the boom.



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BOOM LOWER

- During boom lowering the pilot signal reverses the front through the control valve spool. High pressure oil flows to the head side of the cylinder. Oil in the bottom side of the cylinder flows through the port Cy of the valve but cannot flow past the check valve. The pilot signal also opens the spool (2) of the hose burst valve and allows oil to flow back to tank.