SEBM003405

# SHOP MANUAL

KOMATSU®

# PC200,200LC-6
# PC220,220LC-6

| MACHINE MODEL | SERIAL NUMBER |
|---|---|
| **PC200, 200LC-6** | **80001 and up** |
| **PC220, 220LC-6** | **50001 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.

- PC200-6 mount the S6D95L-1 engine;
  PC220-6 mount the SA6D95L-1 engine.
  For details of the engine, see the 95 Series Engine Shop Manual.

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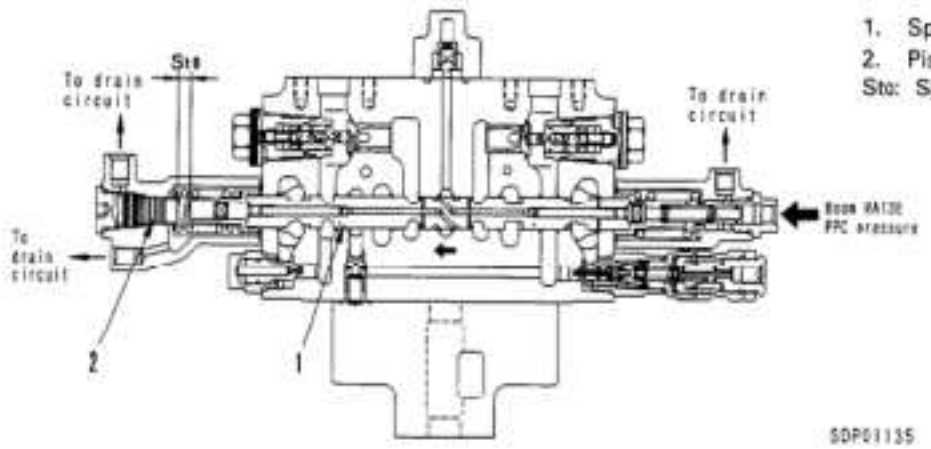


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## 12. Spool stroke modulation

**PC200, 200LC-6 Serial No.: 88000 and up**
**PC220, 220LC-6 Serial No.: 52000 and up**

### (1) Boom RAISE modulation




1. Spool
2. Piston

St0: Spool stroke

**Function**

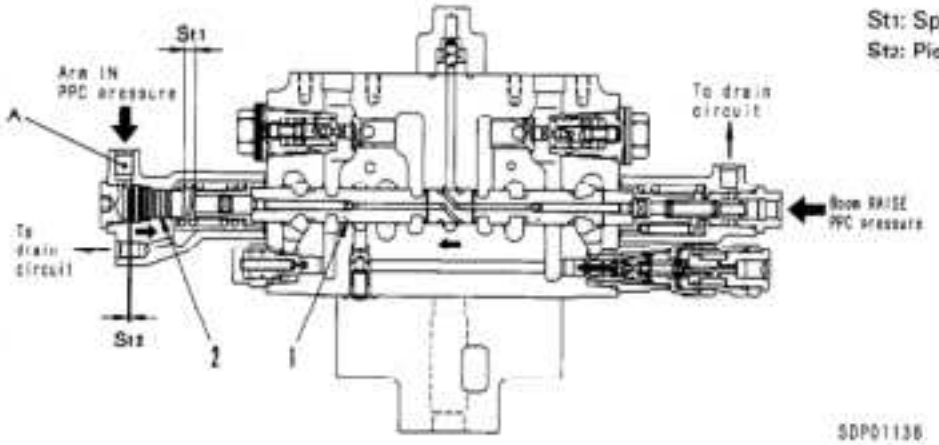
- When the boom RAISE and arm IN are used simultaneously for scooping or other similar work, it is possible to achieve well balanced compound operations by controlling the maximum stroke of the boom spool.

**Operation**

1) **When arm IN is not operated**

When the boom RAISE is operated, spool (1) moves to the left by stroke St0 until it contacts piston (2).

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St1: Spool stroke
St2: Piston stroke

2) **When arm IN is operated**

- The arm IN PPC pressure passes through port **A**, acts on the left end of piston (2) and pushes piston (2) to the left.
- When the boom RAISE is operated, spool (1) moves to the left, but the maximum stroke (St1) of the spool is restricted by the movement (St2) of piston (2).



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# METHOD OF USING TROUBLESHOOTING CHARTS

**PC200-6 Serial No : 80001 – 87999**
**PC220-6 Serial No : 50001 – 51999**

**1. Category of troubleshooting code number**

| Troubleshooting Code No. | Component | Service code |
|---|---|---|
| E-OO | Troubleshooting of electrical system for engine throttle controller | E3: OO |
| S-OO | Troubleshooting of engine related parts | - |
| C-OO | Troubleshooting of electrical system for pump controller | E2: OO |
| F-OO | Troubleshooting of input signal system for pump controller | - |
| H-OO | Troubleshooting of hydraulic, mechanical system for pump controller | - |
| K-OO | Troubleshooting of electrical system for valve controller (HYPER GX) | E4: OO |
| M-OO | Troubleshooting of machine monitor system | E1: OO |

**2. Method of using troubleshooting table for each troubleshooting mode**

1) Troubleshooting code number and problem
The title of the troubleshooting chart gives the troubleshooting code, service code, and failure mode (problem with the machine). (See Example (1))

2) Distinguishing conditions
Even with the same failure mode (problem), the method of troubleshooting may differ according to the model, component, or problem. In such cases, the failure mode (problem) is further divided into sections marked with small letters (for example, a)), so go to the appropriate section to carry out troubleshooting. If the troubleshooting table is not divided into sections, start troubleshooting from the first check item in the failure mode. (See Example (2))

3) Method of following troubleshooting chart
- Check or measure the item inside [ ] — YES / NO and according to the answer follow either the YES line or the NO line to go to the next [ ]. (Note: The number written at the top right corner of the [ ] is an index number; it does not indicate the order to follow.)
- Following the YES or NO lines according to the results of the check or measurement will lead finally to the Cause column. Check the cause and take the action given in the Remedy column on the right.(See Example (3))
- Below the [ ] there are the methods for inspection or measurement, and the judgement values. If the judgement values below the [ ] are correct or the answer to the question inside the [ ] is YES, follow the YES line; if the judgement value is not correct, or the answer to the question is NO, follow the NO line.
- Below the [ ] is given the preparatory work needed for inspection and measurement, and the judgement values. If this preparatory work is neglected, or the method of operation or handling is mistaken, there is danger that it may cause mistaken judgement, or the equipment may be damaged. Therefore, before starting inspection or measurement, always read the instructions carefully, and start the work in order from Item 1).

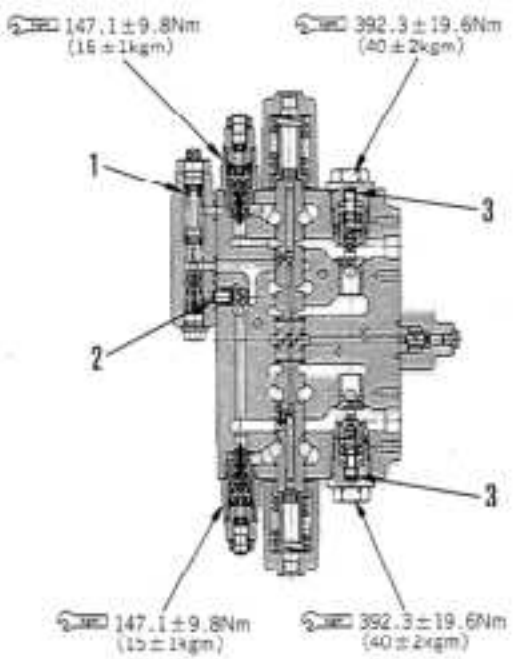
4) General precautions
When carrying out troubleshooting for the failure mode (problem), precautions that apply to all items are given at the top of the page and marked with ★. (See Example (4))
The precautions marked ★ are not given in the [ ], but must always be followed when carrying out the check inside the [ ].

5) Troubleshooting tools
When carrying out the troubleshooting, prepare the necessary troubleshooting tools. For details, see TOOLS FOR TESTING, ADJUSTING, AND TROUBLESHOOTING.

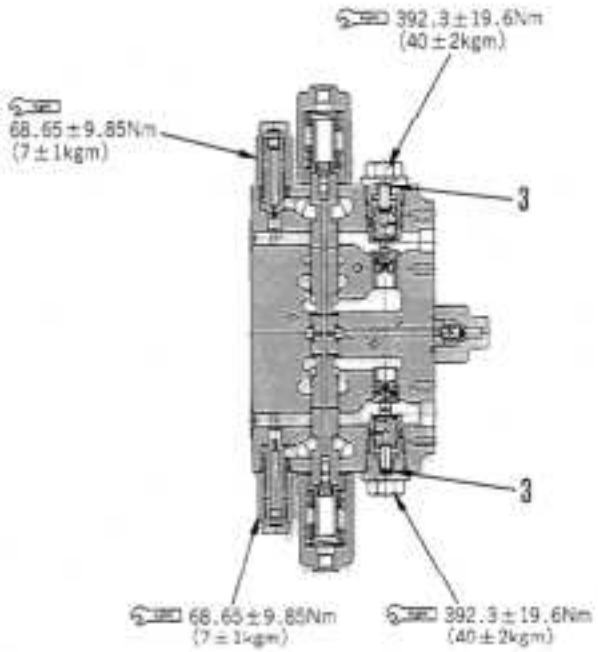
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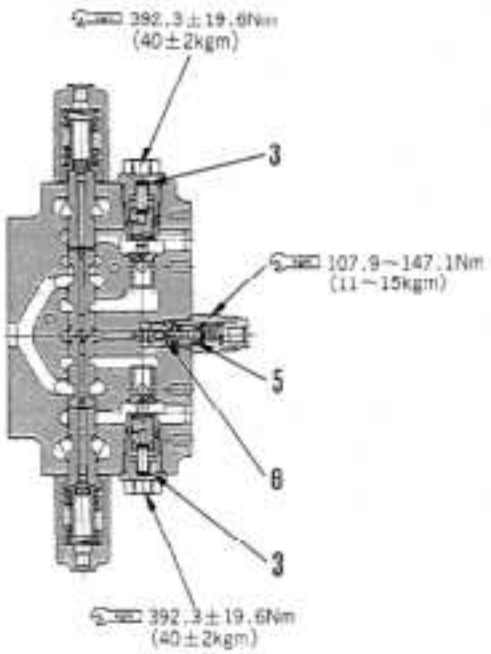



D – D

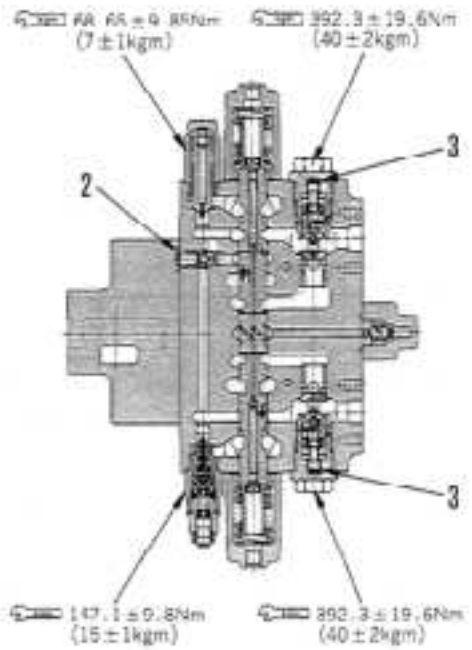



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F – F




G – G

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# JUDGEMENT TABLE FOR PUMP CONTROLLER AND HYDRAULIC RELATED PARTS

Figure in ○ shows position of bit pattern

| Failure mode | | | Abnormality in pump controller power source system | Pump controller (E2: ○○ system) Self-diagnostic display: Short circuit in front pump TVC solenoid system | Short circuit in rear pump TVC solenoid system | Disconnection in front pump TVC solenoid system | Disconnection in rear pump TVC solenoid system | Short circuit in swing brake solenoid system | Disconnection in swing brake solenoid system | Short circuit in LS select solenoid system | Short circuit in pump merge divider solenoid system | Short circuit in 2-stage relief solenoid system | Short circuit in travel speed solenoid system | Disconnection in LS select solenoid system | Disconnection in pump merge-divider solenoid system | Disconnection in 2-stage relief solenoid system | Disconnection in travel speed solenoid system | Model selection input error | Network response overtime error | Short circuit in LS control EPC solenoid system | Disconnection in LS control EPC solenoid system | Abnormality in front pump pressure sensor system | Abnormality in rear pump pressure sensor system | Abnormality in pressure sensor power source system | Abnormality in engine speed sensor system | Abnormality in auto-deceleration output system | Checking, monitoring, check items: Oil pressure switch: Swing (Bit No.0) | Travel (Bit No.1) | Boom LOWER (Bit No.2) | Boom RAISE (Bit No.3) | Arm in (Bit No.4) | Arm OUT (Bit No.5) | Bucket CURL (Bit No.6) | Bucket DUMP (Bit No.7) | Swing lock switch (Bit No.0) | Model code | Engine speed input | Front pump discharge pressure input signal | Rear pump discharge pressure input signal | Front pump TVC output signal | Rear pump TVC output signal | LS control EPC signal | No. 2 throttle signal | Kerosene mode signal (Bit No.5) | L/R Knob switch signal (Bit No.6) | Actuation of solenoid: LS select (Bit No.2) | Swing brake (Bit No.3) | Pump merge-divider (Bit No.4) | 2-stage relief (Bit No.5) | Travel speed (Bit No.6) | Coolant temperature gauge: 102°C or above | 105°C or above | Monitoring code | Is voltage for coolant temperature normal? | Troubleshooting code if no service code is displayed |
|---|---|---