CONTENTS

SAFETY

SAFETY NOTICE

IMPORTANT SAFETY NOTICE

Proper service and repair is extremely important for safe machine operation. The service and repair techniques recommended by Komatsu and described in this manual are both effective and safe. Some of these techniques require the use of tools specially designed by Komatsu for the specific purpose.

To prevent injury to workers, the symbol ⚠ is used to mark safety precautions in this manual. The cautions accompanying these symbols should always be followed carefully. If any dangerous situation arises or may possibly arise, first consider safety, and take the necessary actions to deal with the situation.

GENERAL PRECAUTIONS

Mistakes in operation are extremely dangerous. Read the Operation and Maintenance Manual carefully BEFORE operating the machine.

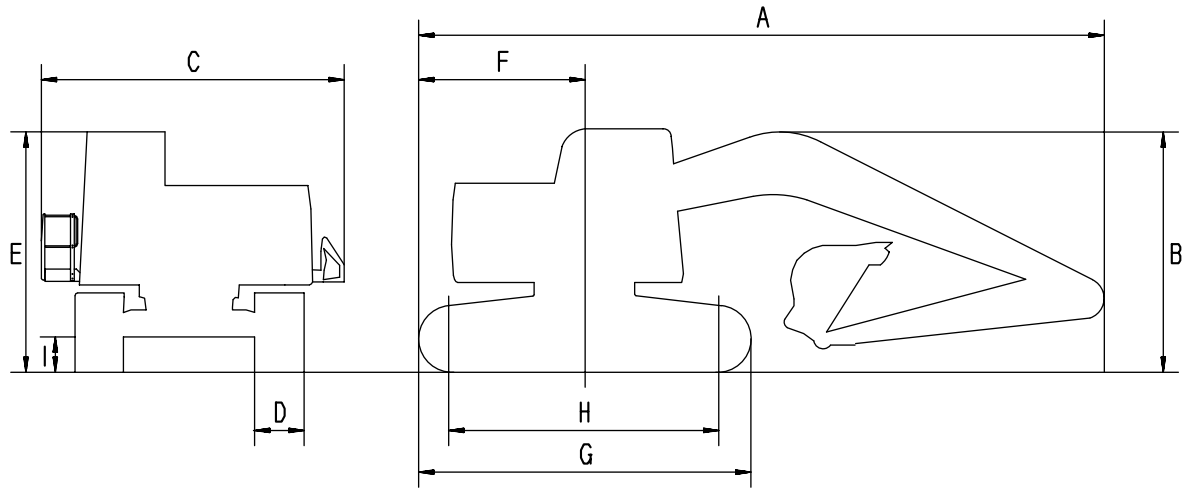
1. Before carrying out any greasing or repairs, read all the precautions given on the decals which are fixed to the machine.
2. When carrying out any operation, always wear safety shoes and helmet. Do not wear loose work clothes, or clothes with buttons missing.
   - Always wear safety glasses when hitting parts with a hammer.
   - Always wear safety glasses when grinding parts with a grinder, etc.
3. If welding repairs are needed, always have a trained, experienced welder carry out the work. When carrying out welding work, always wear welding gloves, apron, hand shield, cap and other clothes suited for welding work.
4. When carrying out any operation with two or more workers, always agree on the operating procedure before starting. Always inform your fellow workers before starting any step of the operation. Before starting work, hang UNDER REPAIR signs on the controls in the operator's compartment.
5. Keep all tools in good condition and learn the correct way to use them.
6. Decide a place in the repair workshop to keep tools and removed parts. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dirt or oil on the floor. Smoke only in the areas provided for smoking. Never smoke while working.

PREPARATIONS FOR WORK

7. Before adding oil or making any repairs, park the machine on hard, level ground, and block the wheels or tracks to prevent the machine from moving.
8. Before starting work, lower blade, ripper, bucket or any other work equipment to the ground. If this is not possible, insert the safety pin or use blocks to prevent the work equipment from falling. In addition, be sure to lock all the control levers and hang warning signs on them.
9. When disassembling or assembling, support the machine with blocks, jacks or stands before starting work.
10. Remove all mud and oil from the steps or other places used to get on and off the machine. Always use the handrails, ladders or steps when getting on or off the machine. Never jump on or off the machine. If it is impossible to use the handrails, ladders or steps, use a stand to provide safe footing.

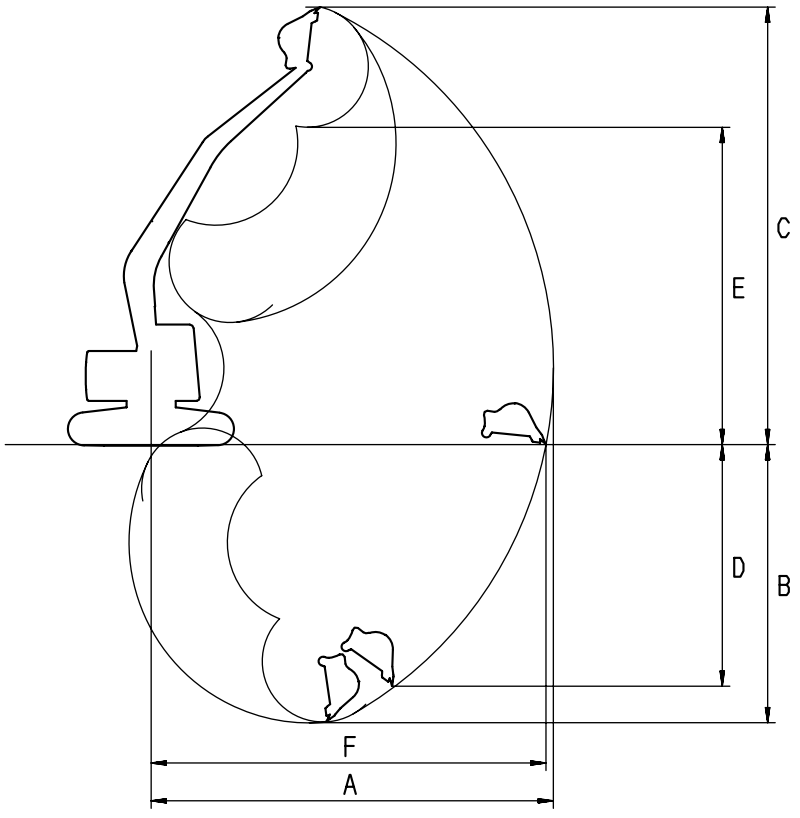
SPECIFICATION DIMENSION DRAWINGS

DIMENSIONS



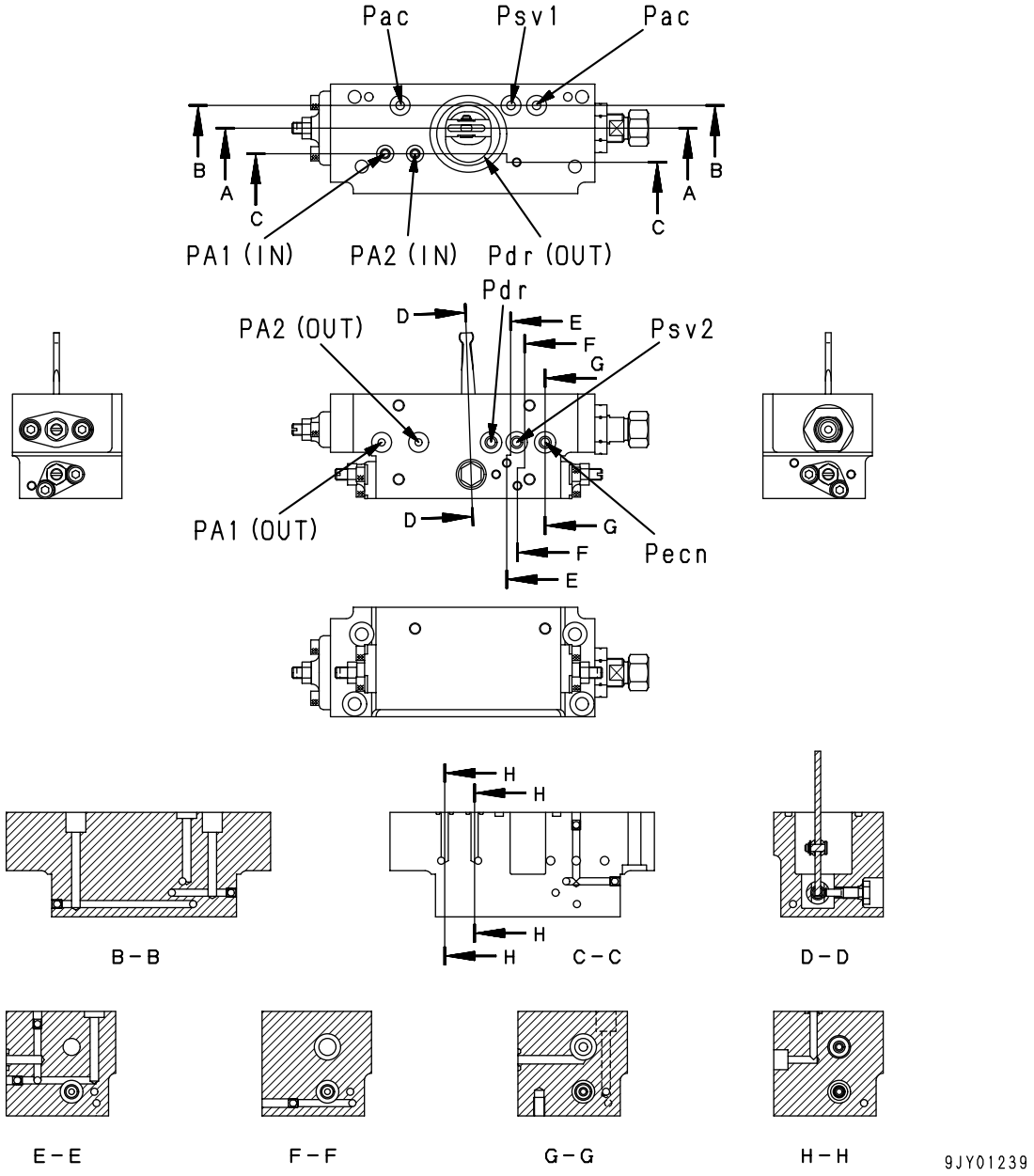
9JG00051

WORKING RANGES



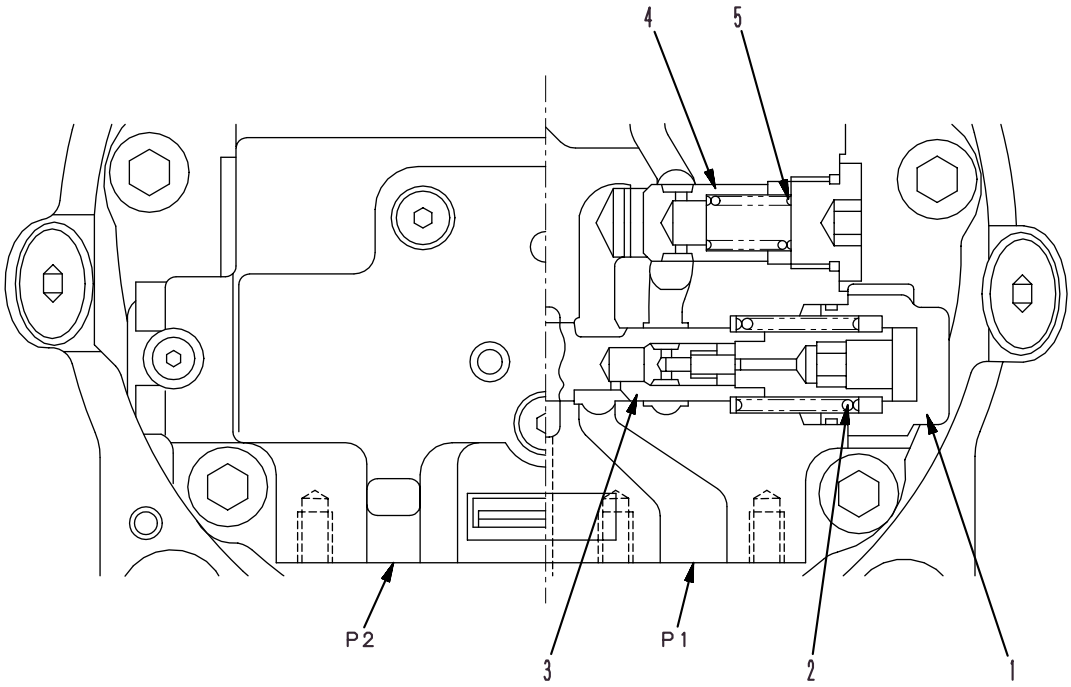
9JG00052

No. 1 pump rear servo valve



PA1(IN) : Main pump pressure IN port
PA1(OUT) : Main pump pressure OUT port
PA2(IN) : Main pump pressure IN port
PA2(OUT) : Main pump pressure OUT port
Pac : Servo actuator port
Pdr : CO, NC valve drain port
Pdr(OUT) : Servo valve drain OUT port
Psv1 : Servo basic pressure IN port
Psv2 : Servo basic pressure OUT port
Pecn : CO, NC valve output pressure IN port

1-5 Travel brake valve



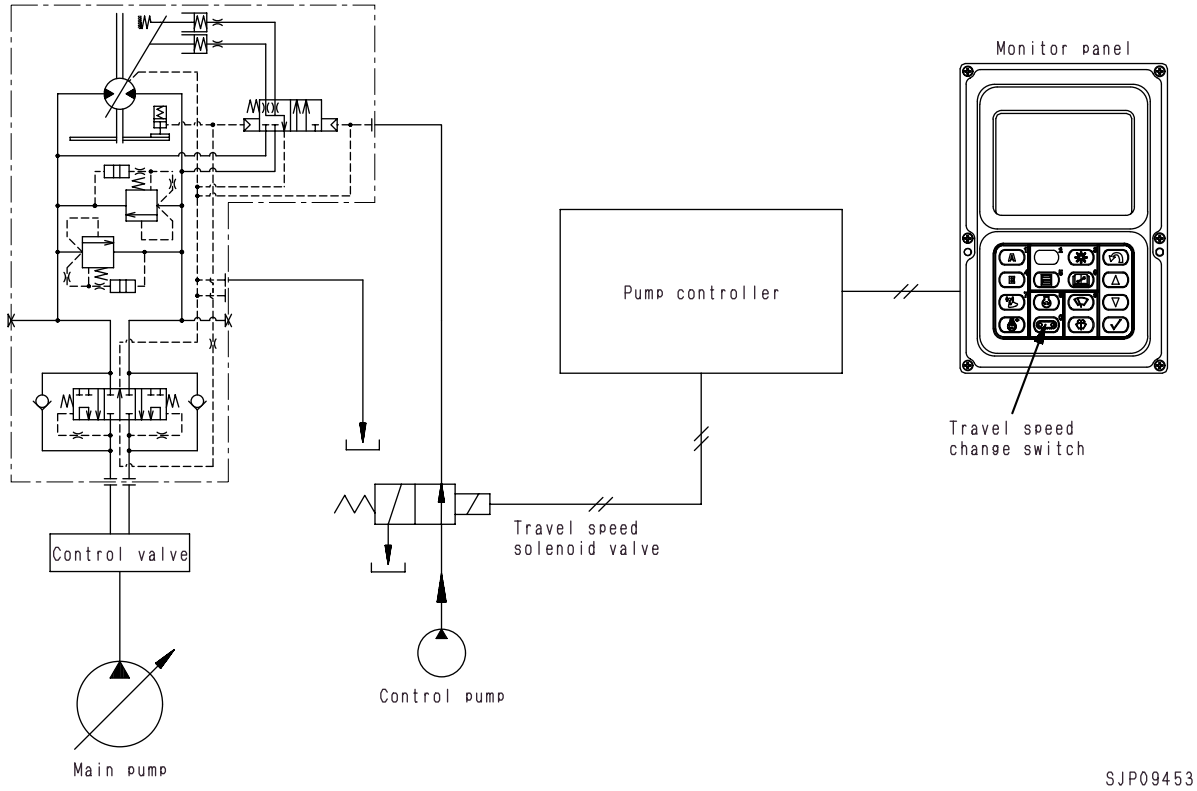
SWP08667

Function
- The brake valve consists of counterbalance valve (3) and check valve (4).
- The counterbalance valve acts to prevent the piston motor from stopping or overrunning.
- When traveling downhill, the weight of the machine makes it try to travel at a speed faster than the rotation of the motor.
  For this reason, if the machine is traveling with the engine running at low speed, the motor will rotate under no load or may run away, which is extremely dangerous.
  To prevent this, this valve controls the amount of oil on the return side in order to keep the valve pressure constant, and makes it possible to carry out travel operations which match the oil delivery from the motor.

1. Cap assembly
2. Return spring
3. Counterbalance valve
4. Check valve
5. Check valve spring

Specification
Safety valve set pressure: 34 MPa {350 kg/cm^2}
Counterbalance switching pressure:
1.0 ± 0.1 MPa {10 ± 1 kg/cm^2}
Check valve switching pressure:
0.02 ± 0.01 MPa {0.2 ± 0.1 kg/cm^2}

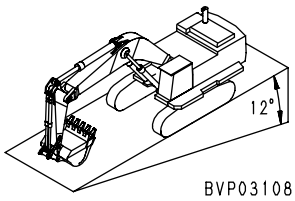
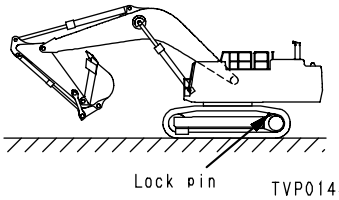
2) Travel speed selector function



The travel pressure (self pressure) changes the swash plate angle of the travel motor and automatically shifts the speed range.

- When traveling at high speed with the travel speed switch at Hi, if the travel pressure goes above 28.4 MPa {290 kg/cm^2}, such as when starting to travel uphill, the self pressure shifts to low speed travel. If the machine continues to travel at low speed and then comes again to a flat area, when the travel pressure drops below 28.4 MPa {290 kg/cm^2}, the speed is switched back to high speed travel.

Travel speed switch	Travel speed solenoid valve	Travel motor swash plate angle	Travel speed	Remarks
Lo	Deenergized	Max.	Low speed (max 2.1 km/h)	Suitable for traveling on rough ground or traveling downhill
Hi	Energized	Max. ↕ Min	Low speed (2.1 km/h) ↔ high speed (3.2 km/h)	Suitable for moving long distances

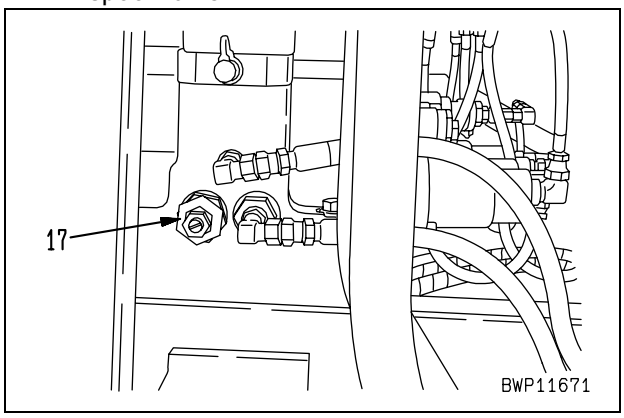
Applicable Model				PC1250-7	
Category	Item	Measuring Conditions	Unit	Standard value for new machine	Service limit value
Travel	Hydraulic drift of travel	Work equipment posture  BVP03108 • Engine stopped • Hydraulic oil temperature: 45 – 55°C • Stop machine on 12° slope with sprocket at uphill end of machine. • Do not place the work equipment on the ground. • Measure the distance the machine moves in 5 minutes.	mm	0	0
	Leakage of travel motor	Work equipment posture  TVP01443 • Engine at full throttle • Hydraulic oil temperature: 45 – 55°C • Lock shoes and relieve travel circuit.	ℓ/min	Max. 20	Max. 40

4. Adjusting R.H. 4-spool valve and L.H. 5-spool valve jet sensor

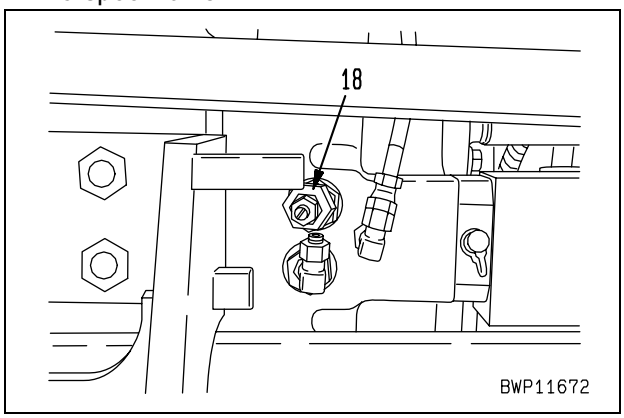
★ If the output differential pressure of the jet sensor is not correct, adjust the jet sensor relief valves (17) and (18) as follows.

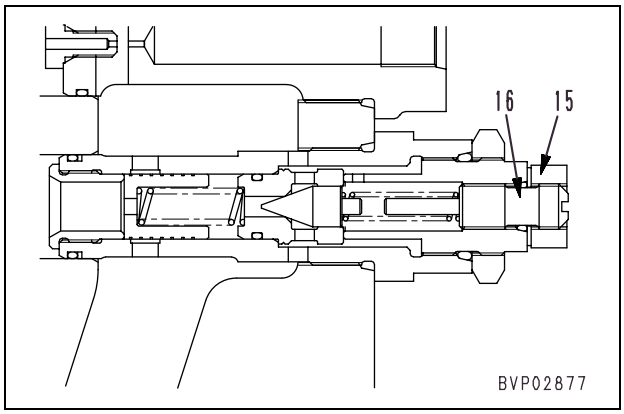
1) Loosen locknut (15).
2) Turn adjustment screw (16) to adjust.
   ★ Turn the adjustment screw to adjust as follows.
      • To INCREASE pressure, turn CLOCKWISE.
      • To DECREASE pressure, turn COUNTERCLOCKWISE.
   ★ Amount of adjustment for one turn of adjustment screw:
      Approx. 0.29 MPa {2.96 kg/cm^2}
      Locknut:
      59 – 78 Nm {6 – 8 kgm}
   ★ After completion of adjustment, repeat the procedure in above to check the set pressure again.

R.H. 4-spool valve



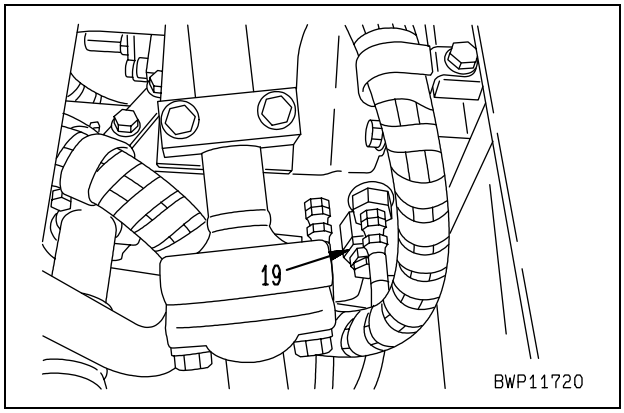
L.H. 5-spool valve





5. Adjusting swing 4-spool valve jet sensor

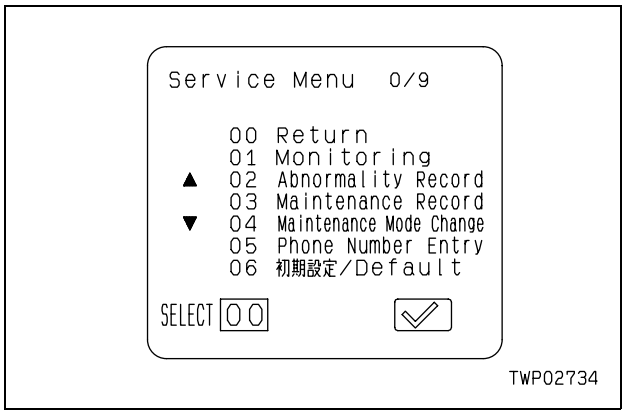
★ If the jet sensor output differential pressure is not correct, adjust the jet sensor relief valve (19) as follows.
★ Adjust in the same way as for the R.H. 4-spool valve and L.H. 5-spool valve jet sensor.



15. Function for Abnormality Record [02]

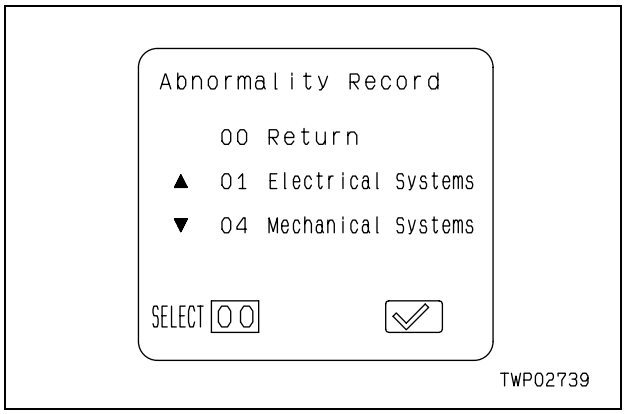
The monitor panel records failures that occurred on the machines in the past after classifying them into failures in the electric system and those in the mechanical system. Information on them can be displayed through the following operation.

1) Selection of menu
Select 02 Abnormality Record in the initial display of Service Menu and depress [✓] switch.

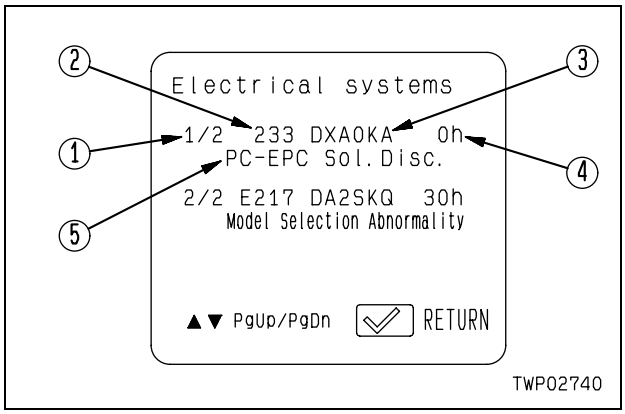


2) Selection of Submenu
Select an appropriate item from Submenu in the Abnormality Record display and depress [✓] switch.

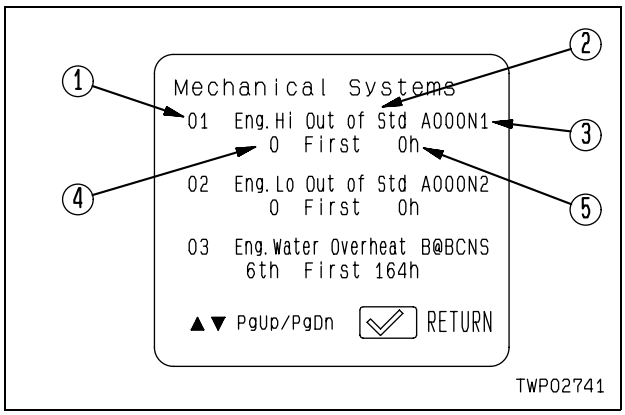
No.	Abnormality Record Submenu
00	Return (termination of Abnormality Record)
01	Electrical Systems
02	Mechanical Systems



3) Information shown in display of Abnormality Record in the electrical system
   ①: The numerator expresses sequence of failure occurrence, counting from the latest one. The denominator expresses the total number of a specific failure recorded.
   ②: Error Code
   ③: Abnormality Code No. (system in 4 digits and phenomenon in 2 digits)
   ④: Time elapsed since the occurrence of the first failure
   ⑤: Contents of failure
   ★ Refer to "Table for Error Code and Abnormality Code" in Operator's Menu.



4) Information shown in display of Failure History in the mechanical systems
   ①: Record No.
   ②: Contents of Abnormality
   ③: Abnormality Code No. (system in 4 digits and phenomenon in 2 digits)
   ④: Total number of occurrence
   ⑤: Service meter reading at the initial occurrence
   ★ Refer to "Table for Error Code and Abnormality Code" in Operator's Menu.



Error Code in Electrical System E112
(Short-circuiting in normal rotation system of windshield wiper motor drive)

User Code	Error Code	Failure Code	Failure phenomenon	Short-circuiting in normal rotation system of windshield wiper motor drive (in monitor panel system)
—	**E112**	**DY2DKB**		
Failure content	• Abnormal current flew to the windshield wiper motor normal rotation circuit, when power is provided.			
Response from Monitor Panel	• Power supply to the windshield wiper motor normal rotation circuit is turned OFF.			
Phenomenon occurring on machine	• The windshield wiper stops moving.			

1. Cab with fixed front window (When 2 wipers are set)

Presumed cause and standard value in normalcy		Cause	Standard value in normalcy and references for troubleshooting			
	1	Windshield wiper motor defective (Internal short-circuiting or grounding fault)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position for the troubleshooting.			
			W05, W04 (female)	Continuity and resistance value		
			Between ③ and ①	Continued		
			Between ③ and grounding	Min. 1 MΩ		
	2	Grounding fault of wiring harness (Contact with grounding circuit)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position for the troubleshooting.			
			Between wiring harnesses between P01 (female) ⑨ and W04 (male) ③ and between P01 (female) ⑩ and W05 (male) ③ and grounding	Resistance value	Min. 1 MΩ	
	3	Monitor panel defective	★Turn the engine starting switch OFF for the preparations, and hold it in the ON position for the troubleshooting.			
			P01	Windshield wiper switch	Voltage	
			Between ⑨ and grounding Between ⑩ and grounding	OFF	Max. 3 V	
				ON	Max. 3 V⇔20 – 30 V (at constant cycle)	

2. Cab with pull-up front window (When 1 wiper is set) (If equipped, for North America)

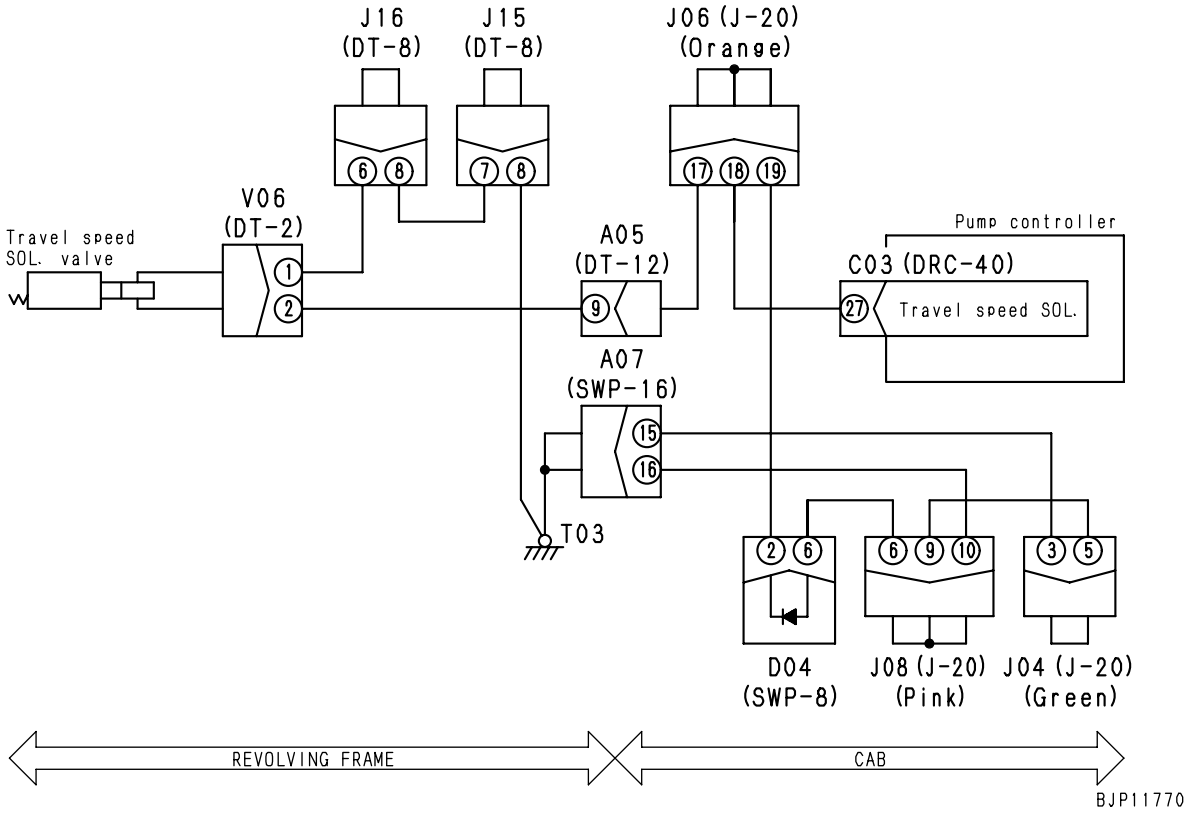
Presumed cause and standard value in normalcy		Cause	Standard value in normalcy and references for troubleshooting			
	1	Windshield wiper motor defective (Internal short-circuiting or grounding fault)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position for the troubleshooting.			
			W04 (female)	Continuity and resistance value		
			Between ③ and ①	Continued		
			Between ③ and grounding	Min. 1 MΩ		
	2	Grounding fault of wiring harness (Contact with grounding circuit)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position for the troubleshooting.			
			Between wiring harnesses between P01 (female) ⑨ and W04 (male) ③ and grounding	Resistance value	Min. 1 MΩ	
	3	Monitor panel defective	★Turn the engine starting switch OFF for the preparations, and hold it in the ON position for the troubleshooting.			
			P01	Windshield wiper switch	Voltage	
			Between ⑨ and grounding	OFF	Max. 3 V	
				ON	Max. 3 V⇔20 – 30 V (at constant cycle)	

Error Code in Electrical System E204 (Short-circuiting in 2-stage relief solenoid)

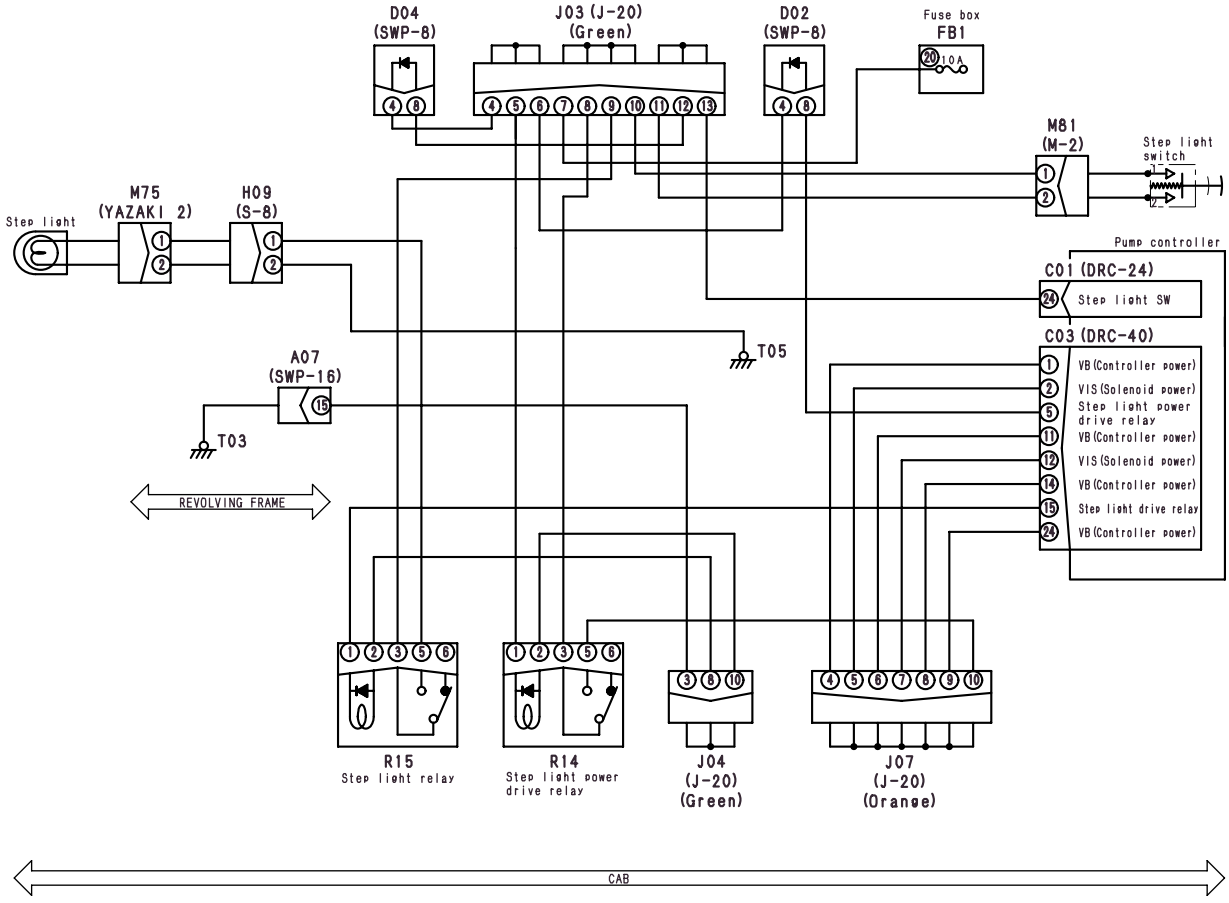
User Code	Error Code	Failure Code	Failure phenomenon	Short-circuiting in 2-stage relief solenoid (in pump controller system)
—	**E204**	**DWK0KB**		
Failure content	• Abnormal current flew to the 2-stage relief solenoid circuit, when power was supplied to the circuit.			
Response from controller	• Power supply to the 2-stage relief solenoid circuit is switched OFF. • Even after the failure cause disappears of itself, the machine operation does not return to normalcy, unless the engine starting switch is once turned OFF.			
Phenomenon occurring on machine	• The heavy-lift function does not work.			
Relative information	• Operation of the 2-stage relief solenoid (ON or OFF) can be checked in the monitoring function. (Code No. 023: Solenoid 1)			

Presumed cause and standard value in normalcy		Cause	Standard value in normalcy and references for troubleshooting			
	1	2-stage relief solenoid defective (Internal short-circuiting or grounding fault)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			V02 (male)	Resistance value		
			Between ① and ②	20 – 60 Ω		
			Between ② and grounding	Min. 1 MΩ		
	2	Assembled-type diode D03 defective (Internal short-circuiting)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			D03 (male)	Resistance value		
			Between ② and ⑥	Min. 1 MΩ		
	3	Grounding fault of wiring harness (Contact with grounding circuit)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			Between wiring harness between C03 (female) ㉘, J06, and V02 (female) ② or between D03 (female) ② and J06 (male) ⑥ and grounding	Resistance value	Min. 1 MΩ	
	4	Pump controller defective	★Turn the engine starting switch OFF for the preparations, and hold it in the ON position during the troubleshooting.			
			C03	Working mode	Voltage	
			Between ㉘ and grounding	Heavy lift mode	Max. 1 V	
				Boom is raised singly in heavy lift mode	20 – 30 V	

Electric circuit diagram related to travel speed solenoid



Electric circuit diagram related to step light



BJP11780

Error code C131 (Abnormally high level in throttle sensor system)

User code	Error code	Failure Code	Trouble	Abnormally high level in throttle sensor system (Engine controller system)
E14	C131	C131KX		
Contents of trouble	• Signal voltage of throttle sensor circuit is above 4.80 V.			
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Keeps engine speed at constant level.			
Problem that appears on machine	• Engine output and speed rise suddenly.			
Related information	• Input of the throttle sensor to the engine controller (Voltage) can be checked in the monitoring mode. (Code 030: Thorottle sensor voltage) • Method of reproducing error code: Turn starting switch ON.			

Possible causes and standard value in normal state

Cause		Standard value in normal state/Remarks on troubleshooting			
1	Defective thorottle sensor (Internal trouble)	★Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
		E06 (male)	Resistance value		
		Between ① – ③	4.0 – 6.0 kΩ		
		Between ① – ②	0.25 – 7.0 kΩ		
		Between ② – ③	0.25 – 7.0 kΩ		
2	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
		Wiring harness between ECMB (female) ㉖ – E06 (female) ①	Resistance value	Max. 10 Ω	
		Wiring harness between ECMB (female) ⑪ – E06 (female) ③	Resistance value	Max. 10 Ω	
		Wiring harness between ECMB (female) ㉙ – E06 (female) ②	Resistance value	Max. 10 Ω	
3	Short circuit in wiring harness (with another wiring harness)	★Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
		Short circuit of wiring harness between ECMB (female) ㉖ – E06 (female) ① with wiring harness around it	Resistance value	Min. 1 MΩ	
		Short circuit of wiring harness between ECMB (female) ⑪ – E06 (female) ③ with wiring harness around it	Resistance value	Min. 1 MΩ	
		Short circuit of wiring harness between ECMB (female) ㉙ – E06 (female) ② with wiring harness around it	Resistance value	Min. 1 MΩ	
4	Defective engine controller	★Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
		ECMB	Voltage		
		Between ㉙ – ⑪	0.30 – 4.80 V		

E-23 "Bucket DUMPING" is not correctly displayed in monitor function

Failure information	• "Bucket DUMPING" is not correctly displayed in the monitor function (special function) on the monitor panel.
Relative information	—

Presumed cause and standard value in normalcy		Cause	Standard value in normalcy and references for troubleshooting			
	1	Bucket DUMPING PPC hydraulic switch fault (Internal disconnection and short-circuiting)	★Turn the engine starting switch OFF for the preparations, and keep the engine running during the troubleshooting.			
			S07 (male)	Bucket control lever	Resistance value	
			Between ① and ②	NEUTRAL	Min. 1 MΩ	
				DUMPING	Max. 1 Ω	
	2	Disconnection of wiring harness (Disconnection or defective contact with connector)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			Wiring harness between C03 (female) ⑲ and S07 (female) ②		Resistance value	Max. 1 Ω
			Wiring harness between S07 (female) ① and grounding		Resistance value	Max. 1 Ω
	3	Grounding fault of wiring harness (Contact with grounding (GND) circuit)	★Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			Between wiring harness between C03 (female) ⑲ and S07 (female) ② and grounding		Resistance value	Min. 1 MΩ
	4	Short-circuiting of wiring harness (Contact with 24 V circuit)	★Turn the engine starting switch OFF for the preparations, and hold it in the ON position during the troubleshooting.			
			Between wiring harness between C03 (female) ⑲ and S07 (female) ② and grounding		Voltage	Max. 1 V
	5	Pump controller defective	★Turn the engine starting switch OFF for the preparations, and hold it in the ON position during the troubleshooting.			
			C03	Bucket control lever	Voltage	
			Between ⑲ and grounding	NEUTRAL	20 – 30 V	
				DUMPING	Max. 1 V	

Electrical Circuit Diagram for Bucket DUMPING PPC hydraulic Switch