SEN02048-26

Shop Manual

HYDRAULIC
EXCAVATOR

PC1250 -8R
PC1250SP -8R

SERIAL NUMBERS PC1250- 35001 and up
PC1250SP- 35001

KOMATSU

Handling of electric equipment and hydraulic component

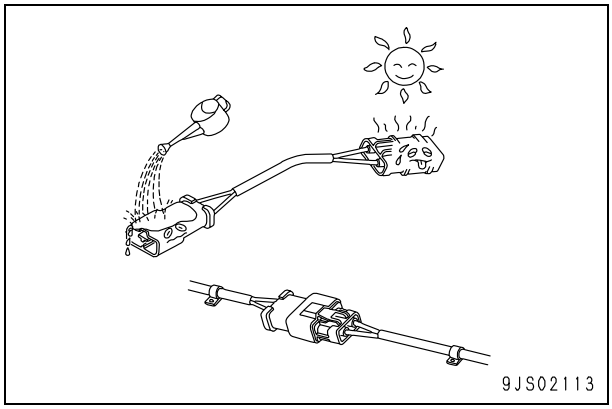
To maintain the performance of the machine over a long period, and to prevent failures or other troubles before they occur, correct “operation“, “maintenance and inspection“, “troubleshooting“, and “repairs” must be carried out. This section deals particularly with correct repair procedures for mechatronics and is aimed at improving the quality of repairs. For this purpose, it gives sections on “Handling electric equipment” and “Handling hydraulic equipment” (particularly gear oil and hydraulic oil).

Points to remember when handling electric equipment

1. Handling wiring harnesses and connectors

Wiring harnesses consist of wiring connecting one component to another component, connectors used for connecting and disconnecting one wire from another wire, and protectors or tubes used for protecting the wiring.

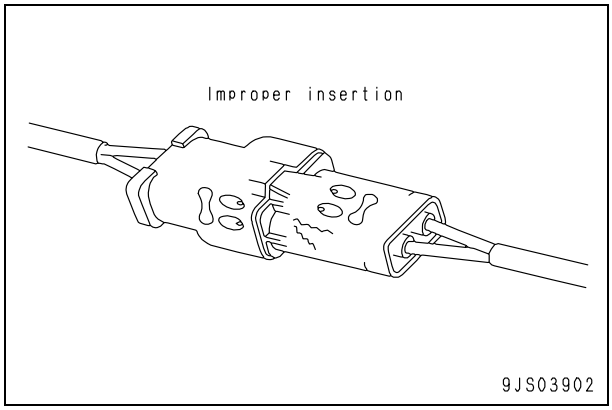
Compared with other electrical components fitted in boxes or cases, wiring harnesses are more likely to be affected by the direct effects of rain, water, heat, or vibration. Furthermore, during inspection and repair operations, they are frequently removed and installed again, so they are likely to suffer deformation or damage. For this reason, it is necessary to be extremely careful when handling wiring harnesses.



2. Main failures occurring in wiring harness

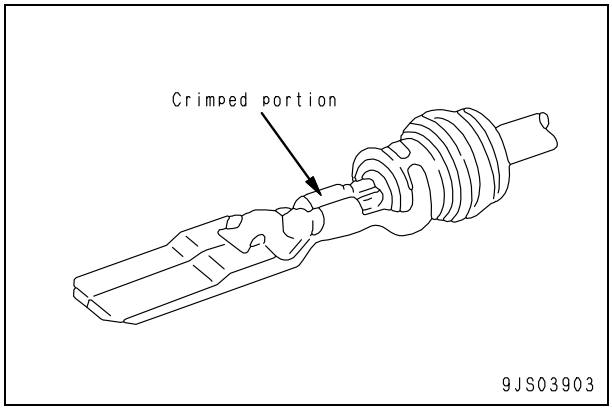
1) Defective contact of connectors (defective contact between male and female)

Problems with defective contact are likely to occur because the male connector is not properly inserted into the female connector, or because one or both of the connectors is deformed or the position is not correctly aligned, or because there is corrosion or oxidization of the contact surfaces. The corroded or oxidized contact surfaces may become shiny again (and contact may become normal) by connecting and disconnecting the connector about 10 times.



2) Defective crimping or soldering of connectors

The pins of the male and female connectors are in contact at the crimped terminal or soldered portion, but if there is excessive force brought to bear on the wiring, the plating at the joint will peel and cause improper connection or breakage.



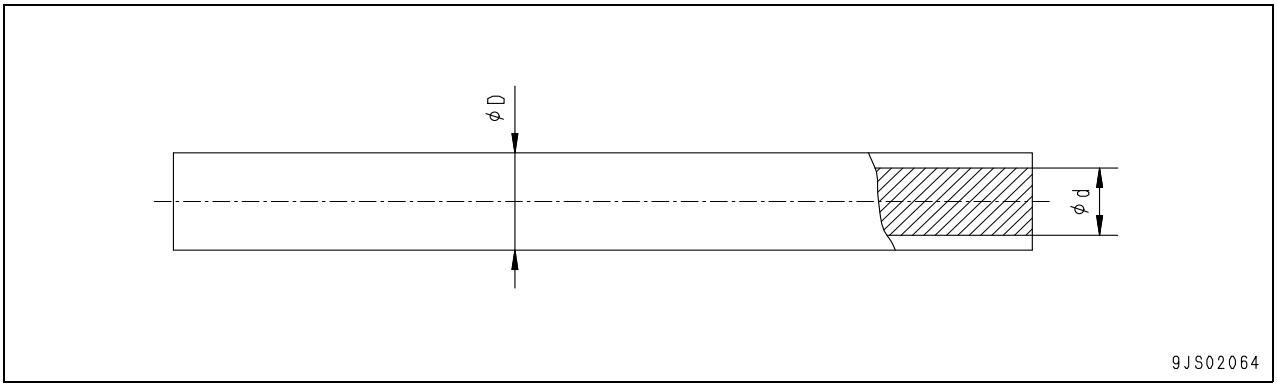
2. Dimensions

(Table 2)

Nominal No.			0.5f	(0.5)	0.75f	(0.85)	1.25f	(1.25)	2f	2	3f	3	5
Conductor		Number of strands/Diameter of strand	20/0.18	7/0.32	30/0.18	11/0.32	50/0.18	16/0.32	37/0.26	26/0.32	58/0.26	41/0.32	65/0.32
		Sectional area (mm^2)	0.51	0.56	0.76	0.88	1.27	1.29	1.96	2.09	3.08	3.30	5.23
		d (approx.)	1.0		1.2		1.5		1.9	1.9	2.3	2.4	3.0
Cover D	AVS	Standard	2.0		2.2		2.5		2.9	2.9	3.5	3.6	–
	AV	Standard	–		–		–		–	–	–	–	4.6
	AEX	Standard	2.0		2.2		2.7		3.0	3.1	–	3.8	4.6

Nominal No.			8	15	20	30	40	50	60	85	100
Conductor		Number of strands/Diameter of strand	50/0.45	84/0.45	41/0.80	70/0.80	85/0.80	108/0.80	127/0.80	169/0.80	217/0.80
		Sectional area (mm^2)	7.95	13.36	20.61	35.19	42.73	54.29	63.84	84.96	109.1
		d (approx.)	3.7	4.8	6.0	8.0	8.6	9.8	10.4	12.0	13.6
Cover D	AVS	Standard	–	–	–	–	–	–	–	–	–
	AV	Standard	5.5	7.0	8.2	10.8	11.4	13.0	13.6	16.0	17.6
	AEX	Standard	5.3	7.0	8.2	10.8	11.4	13.0	13.6	16.0	17.6

"f" of nominal No. denotes flexible".



Millimeters to inches

1 mm = 0.03937 in

	0	1	2	3	4	5	6	7	8	9
0	0	0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354
10	0.394	0.433	0.472	0.512	0.551	0.591	0.630	0.669	0.709	0.748
20	0.787	0.827	0.866	0.906	0.945	0.984	1.024	1.063	1.102	1.142
30	1.181	1.220	1.260	1.299	1.339	1.378	1.417	1.457	1.496	1.536
40	1.575	1.614	1.654	1.693	1.732	1.772	1.811	1.850	1.890	1.929
50	1.969	2.008	2.047	2.087	2.126	2.165	2.205	2.244	2.283	2.323
60	2.362	2.402	2.441	2.480	2.520	2.559	2.598	2.638	2.677	2.717
70	2.756	2.795	2.835	2.874	2.913	2.953	2.992	3.032	3.071	3.110
80	3.150	3.189	3.228	3.268	3.307	3.346	3.386	3.425	3.465	3.504
90	3.543	3.583	3.622	3.661	3.701	3.740	3.780	3.819	3.858	3.898

Kilogram to pound

1 kg = 2.2046 lb

	0	1	2	3	4	5	6	7	8	9
0	0	2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	51.91	55.12	57.32	59.53	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.78	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26

Liters to U.S. Gallons

1 ℓ = 0.2642 U.S.Gal

	0	1	2	3	4	5	6	7	8	9
0	0	0.264	0.528	0.793	1.057	1.321	1.585	1.849	2.113	2.378
10	2.642	2.906	3.170	3.434	3.698	3.963	4.227	4.491	4.755	5.019
20	5.283	5.548	5.812	6.076	6.340	6.604	6.869	7.133	7.397	7.661
30	7.925	8.189	8.454	8.718	8.982	9.246	9.510	9.774	10.039	10.303
40	10.567	10.831	11.095	11.359	11.624	11.888	12.152	12.416	12.680	12.944
50	13.209	13.473	13.737	14.001	14.265	14.529	14.795	15.058	15.322	15.586
60	15.850	16.115	16.379	16.643	16.907	17.171	17.435	17.700	17.964	18.228
70	18.492	18.756	19.020	19.285	19.549	19.813	20.077	20.341	20.605	20.870
80	21.134	21.398	21.662	21.926	22.190	22.455	22.719	22.983	23.247	23.511
90	23.775	24.040	24.304	24.568	24.832	25.096	25.361	25.625	25.889	26.153

Backhoe specification

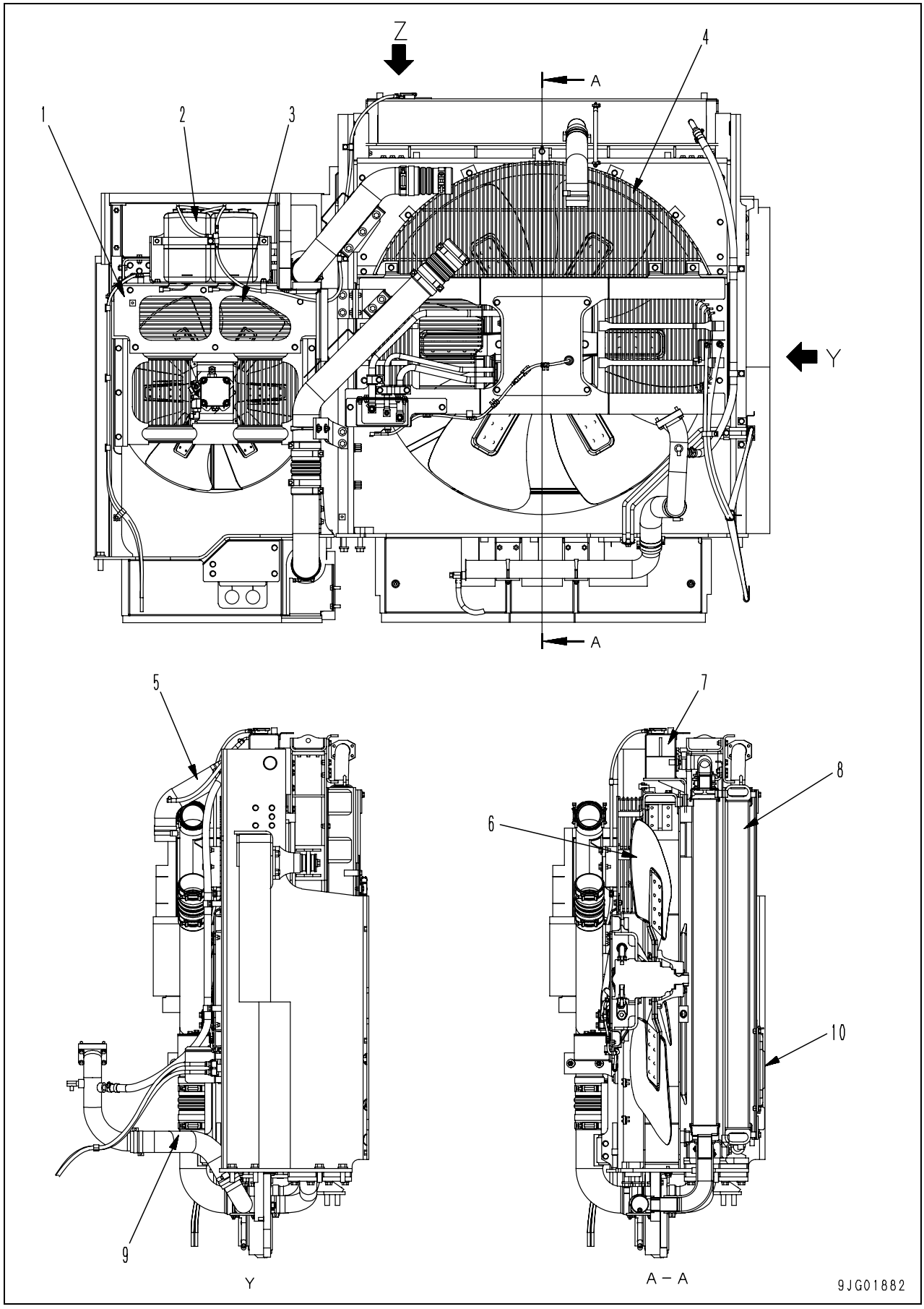
PC1250-8R Serial number 35017 and up

Machine model				PC1250-8R
Bucket capacity			m^3	5.0
Weight of machine			kg	113,400
Performance	Working range	Max. digging depth	mm	9,350
		Max. vertical wall depth	mm	7,610
		Max. digging reach	mm	15,350
		Max. reach at ground level	mm	15,000
		Max. digging height	mm	13,400
		Max. dumping height	mm	8,680
	Max. digging force		kN {kg}	479 {48,800}
	Swing speed		rpm	5.8
	Swing max. slope angle		deg.	12
	Travel speed		km/h	Lo: 2.1 Hi: 3.2
	Gradeability		deg.	35
	Ground pressure [standard double grouser shoe width: 700 mm]		kPa {kg/cm^2}	144 {1.47}
Dimensions	Overall length		mm	16,020
	Overall width		mm	5,600
	Overall width of track		mm	4,965
	Overall height (for transport)		mm	6,040
	Overall height to top of machine		mm	5,180
	Ground clearance of upper structure		mm	1,790
	Min. ground clearance		mm	990
	Tail swing radius		mm	4,870
	Min. swing radius of work equipment		mm	7,965
	Height of work equipment at min. swing radius		mm	11,390
	Length of track on ground		mm	4,995
	Track gauge		mm	3,900
	Height of machine cab		mm	4,075

Unit: kg

Machine model	PC1250-8R	PC1250SP-8R
Serial number	35017 and up	35017 and up
Bucket cylinder top pin	37.9	37.9
Bucket cylinder foot pin	37.9	37.9
Arm-bucket connecting pin	120.4	120.4
Link assembly	817	878
Link connecting pin	103	103

Radiator and oil cooler



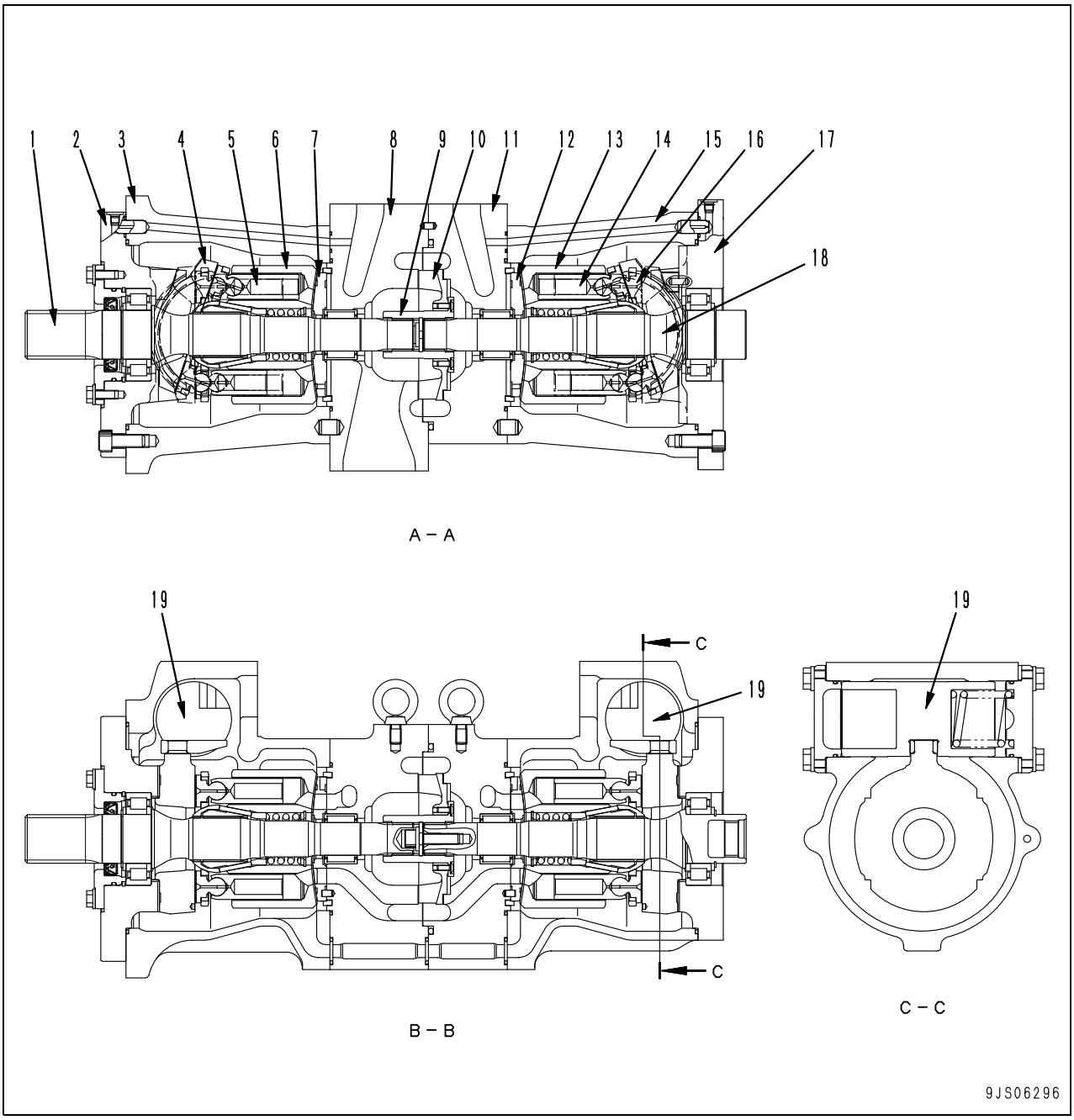
Unit: mm

No.	Check Item	Criteria		Remedy
21	Backlash between No. 3 planetary carrier and case	Standard clearance	Clearance limit	Replace
		0.08 – 0.27	—	
22	Backlash between No. 2 sun gear and No. 2 planetary gear	0.47 – 0.97	—	
23	Backlash between No. 3 sun gear and No. 2 planetary carrier	0.47 – 0.97	—	
24	Backlash between No. 3 sun gear and No. 3 planetary gear	0.25 – 0.82	—	
25	Backlash between No. 3 planetary gear and No. 3 ring gear	0.29 – 0.82	—	
26	Backlash between No. 1 planetary carrier and No. 2 sun gear	0.38 – 0.72	—	
27	Backlash between No. 1 ring gear and case	0.08 – 0.26	—	
28	Backlash between No. 1 sun gear and travel motor coupling	0.07 – 0.85	—	
29	Backlash between No. 1 sun gear and No. 1 planetary gear	0.15 – 0.53	—	
30	Backlash between No.1 ring gear and No. 1 planetary gear	0.19 – 0.62	—	
31	Backlash between No.2 ring gear and No. 2 planetary gear	0.19 – 0.62	—	
32	Wear of sprocket tooth shape	Repair limit: 6		
33	Sprocket tooth width	Standard size	Repair limit	Rebuild or replace
		114	108	

Unit: mm

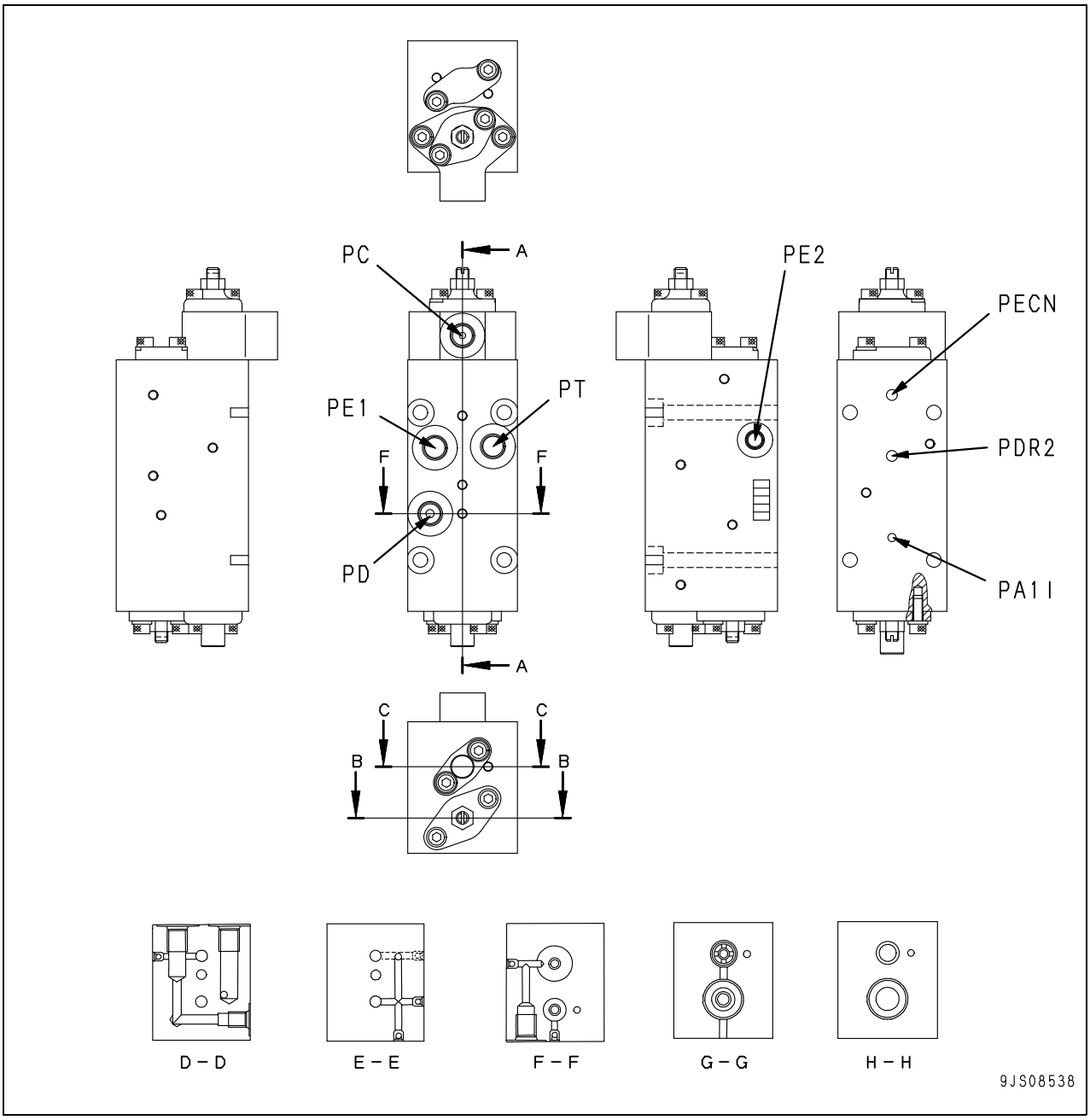
<table>
<tr><th>No.</th><th colspan="2">Check item</th><th colspan="6">Criteria</th><th>Remedy</th></tr>
<tr><td rowspan="4">20</td><td rowspan="4">Shoe bolt</td><td>a. Regular link</td><td colspan="3">Tightening torque (Nm {kgm})</td><td colspan="3">Additional tightening angle (deg.)</td><td rowspan="4">Retighten</td></tr>
<tr><td></td><td colspan="3">1,372 ± 137 {140 ± 14}</td><td colspan="3">150 ± 10</td></tr>
<tr><td rowspan="2">b. Master link</td><td colspan="2">Tightening torque (Nm {kgm})</td><td colspan="2">Additional tightening angle (deg.)</td><td colspan="2">Lower limit torque (Nm {kgm})</td></tr>
<tr><td colspan="2">—</td><td colspan="2">—</td><td colspan="2">—</td></tr>
<tr><td></td><td colspan="2">No. of shoes (each side)</td><td colspan="6">48</td><td>—</td></tr>
<tr><td rowspan="2">21</td><td colspan="2" rowspan="2">Interference between bushing and link</td><td rowspan="2">Standard size</td><td colspan="2">Tolerance</td><td rowspan="2">Standard interference</td><td rowspan="2">Interference limit</td><td rowspan="11">Adjust or replace</td></tr>
<tr><td>Shaft</td><td>Hole</td></tr>
<tr><td></td><td colspan="2"></td><td>98</td><td>+0.622
+0.522</td><td>+0.087
0</td><td>0.435 – 0.622</td><td>1.5</td></tr>
<tr><td>22</td><td colspan="2">Interference between regular pin and link</td><td>60</td><td>+0.042
+0.326</td><td>–0.126
–0.200</td><td>0.452 – 0.626</td><td>—</td></tr>
<tr><td rowspan="2">23</td><td colspan="2" rowspan="2">Clearance between regular pin and bushing</td><td rowspan="2">Standard size</td><td colspan="2">Tolerance</td><td rowspan="2">Standard clearance</td><td rowspan="2">Clearance limit</td></tr>
<tr><td>Shaft</td><td>Hole</td></tr>
<tr><td></td><td colspan="2"></td><td>60.5</td><td>–0.174
–0.074</td><td>+0.666
+0.166</td><td>0.340 – 0.740</td><td>—</td></tr>
<tr><td rowspan="2">*24</td><td colspan="2" rowspan="2">Interference between master pin and link</td><td rowspan="2">Standard size</td><td colspan="2">Tolerance</td><td rowspan="2">Standard interference</td><td rowspan="2">Interference limit</td></tr>
<tr><td>Shaft</td><td>Hole</td></tr>
<tr><td></td><td colspan="2"></td><td>60</td><td>+0.228
+0.198</td><td>–0.126
–0.200</td><td>0.324 – 0.428</td><td>—</td></tr>
<tr><td rowspan="2">*25</td><td colspan="2" rowspan="2">Clearance between master pin and bushing</td><td rowspan="2">Standard size</td><td colspan="2">Tolerance</td><td rowspan="2">Standard clearance</td><td rowspan="2">Clearance limit</td></tr>
<tr><td>Shaft</td><td>Hole</td></tr>
<tr><td></td><td colspan="2"></td><td>60.5</td><td>–0.51
–0.61</td><td>+0.666
+0.166</td><td>0.676 – 1.276</td><td>—</td></tr>
</table>

*Dry type track link



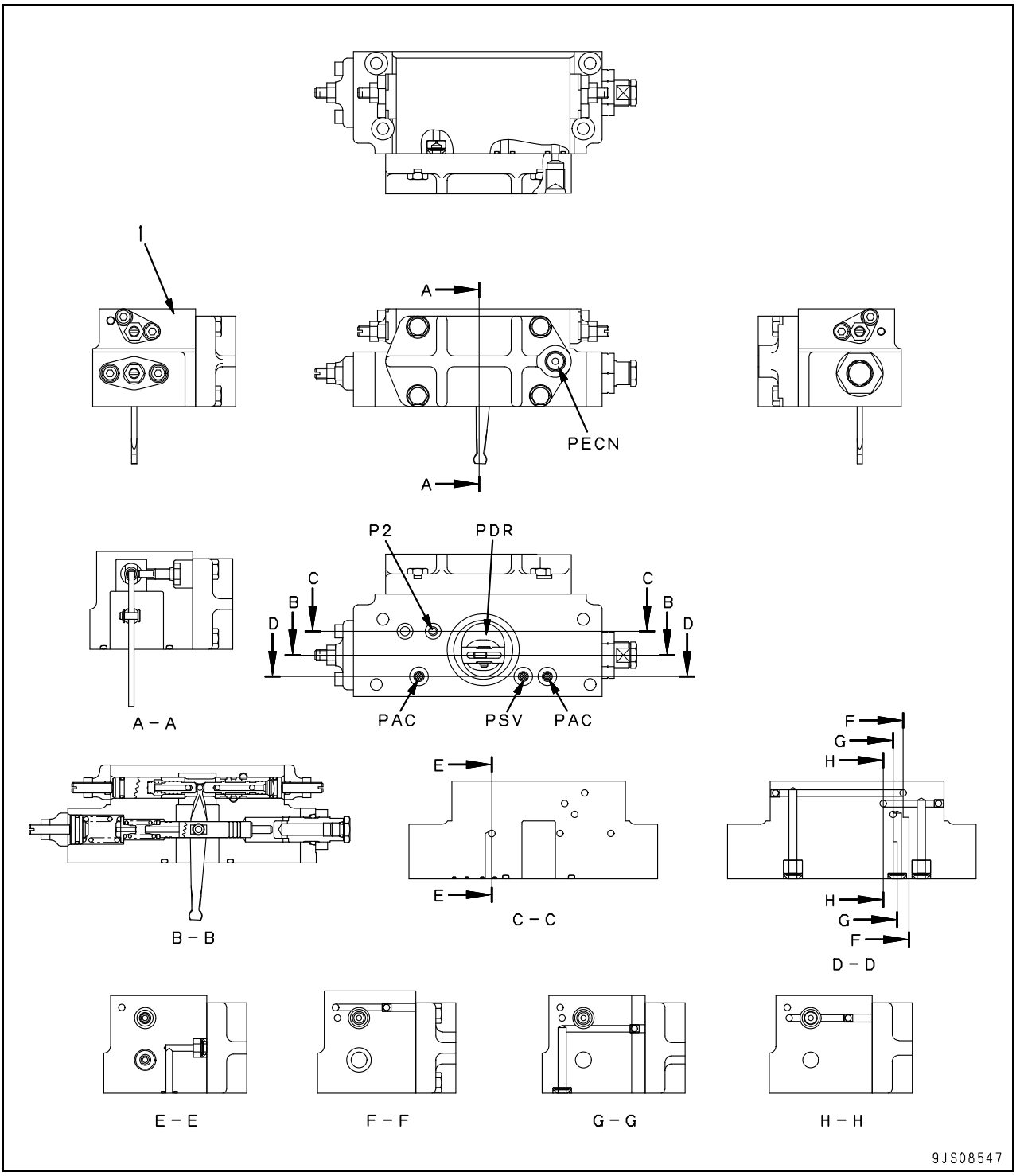
1. Front shaft
2. Front cradle
3. Front case
4. Rocker cam
5. Piston
6. Cylinder block
7. Valve plate
8. Front end cap
9. Coupling
10. Impeller
11. Rear end cap
12. Valve plate
13. Cylinder block
14. Piston
15. Rear case
16. Rocker cam
17. Rear cradle
18. Rear shaft
19. Servo piston

5. No. 1 pump front CO + NC valve



PA1I : Main pump pressure input port
PE1 : TVC valve output pressure front, rear inter-connection port
PC : CO selector pilot port
PD : Jet sensor downstream pressure input port
PDR2 : Servo valve drain output port
PE2 : TVC valve output pressure pick-up port
PECN : CO + NC valve output pressure output port
PT : Jet sensor upstream pressure input port

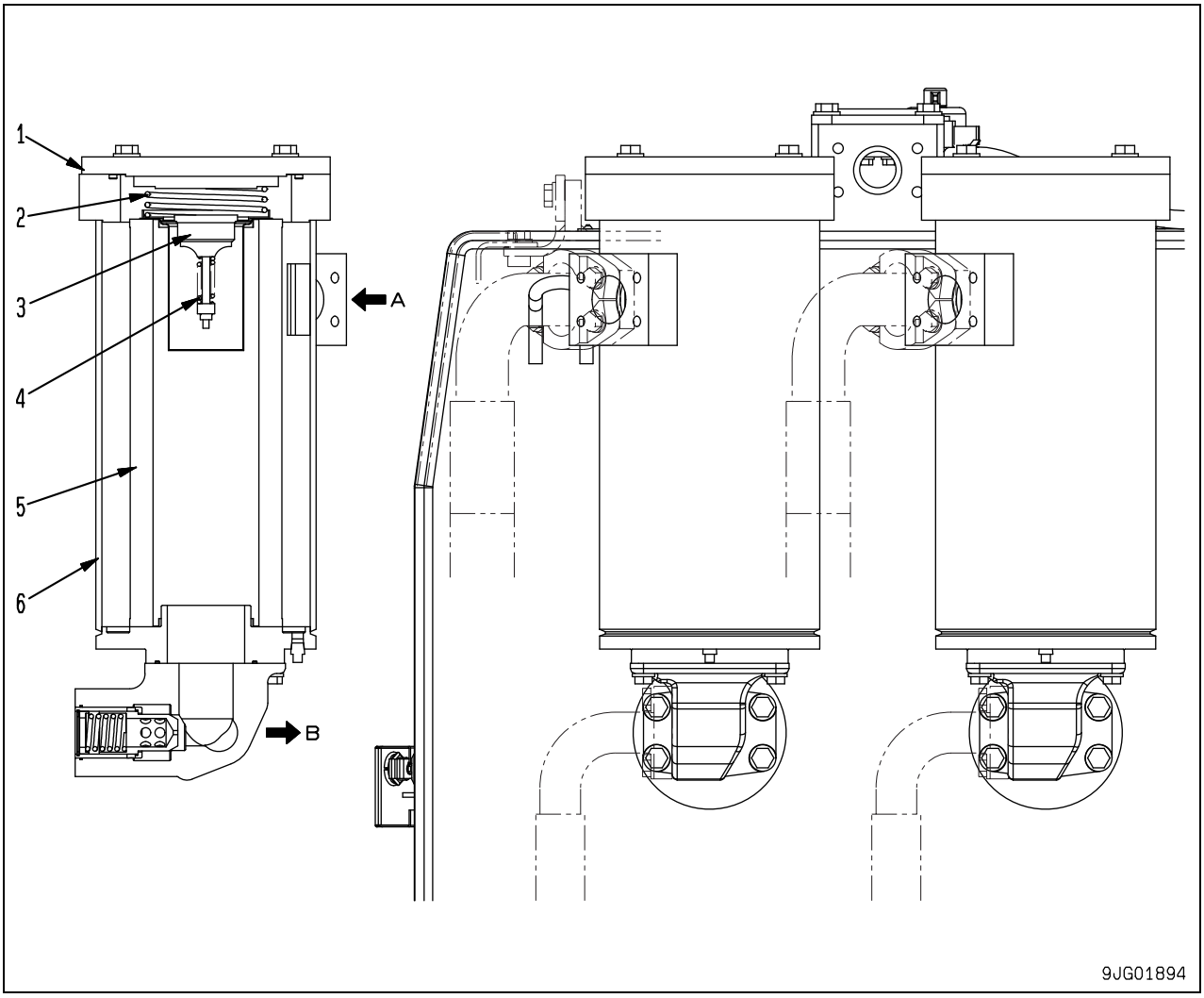
3. No. 2 pump rear servo



P2 : Main pump pressure input port
PAC : Servo actuator port
PDR : Servo valve drain output port
PECN : CO + NC valve output pressure input port
PSV : Servo basic pressure input port

1. Servo valve

Return oil filter



1. Cover
2. Spring
3. Bypass valve
4. Bypass valve spring
5. Element
6. Housing

A: From control valve
B: To hydraulic tank

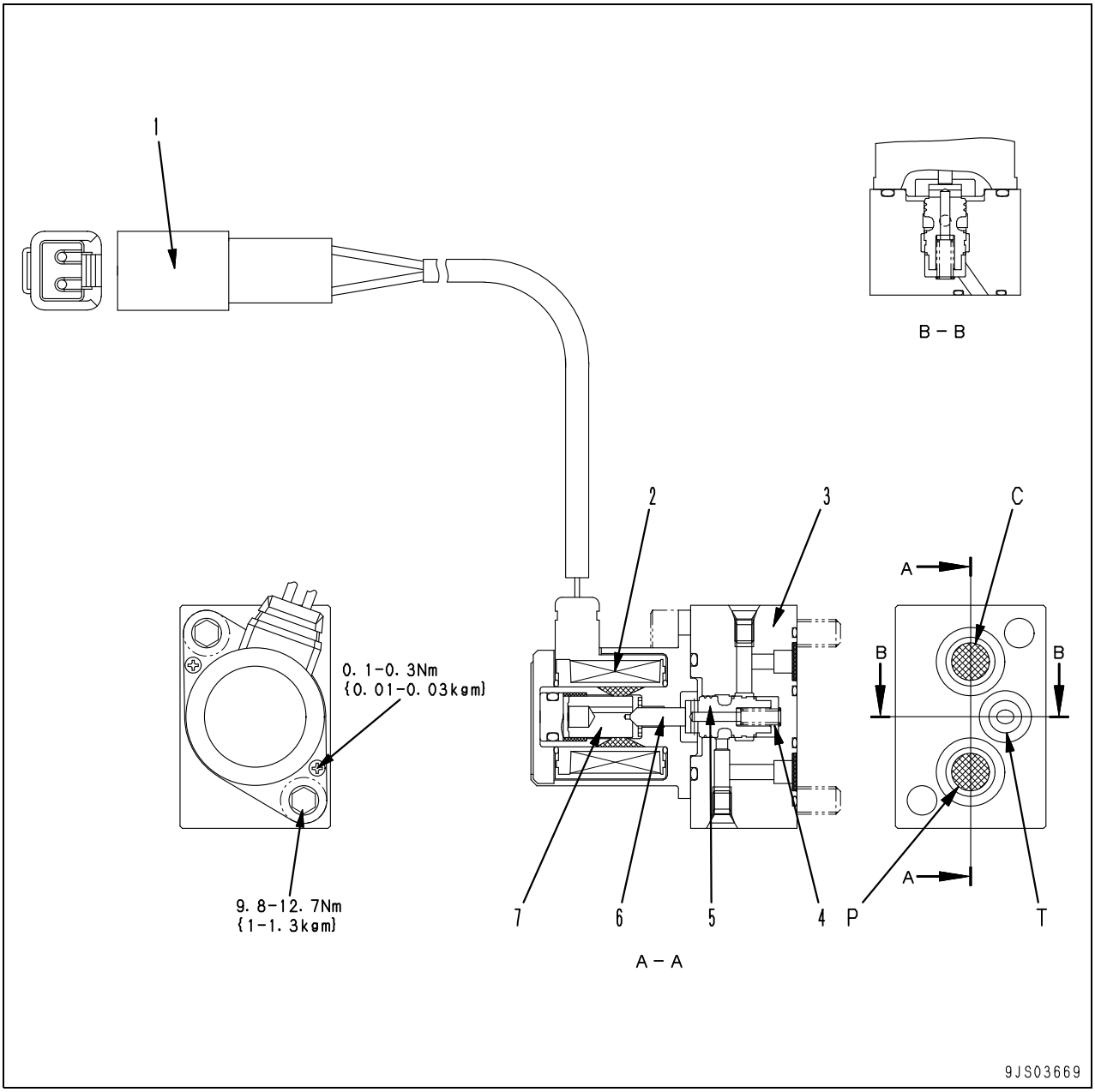
Outline

There are two return oil filters installed to the rear face of the hydraulic tank. They remove the dirt and dust in the return oil.

Specifications

- Bypass valve set pressure:
  1.15 ± 0.03 MPa {1.5 ± 0.3 kg/cm^2}

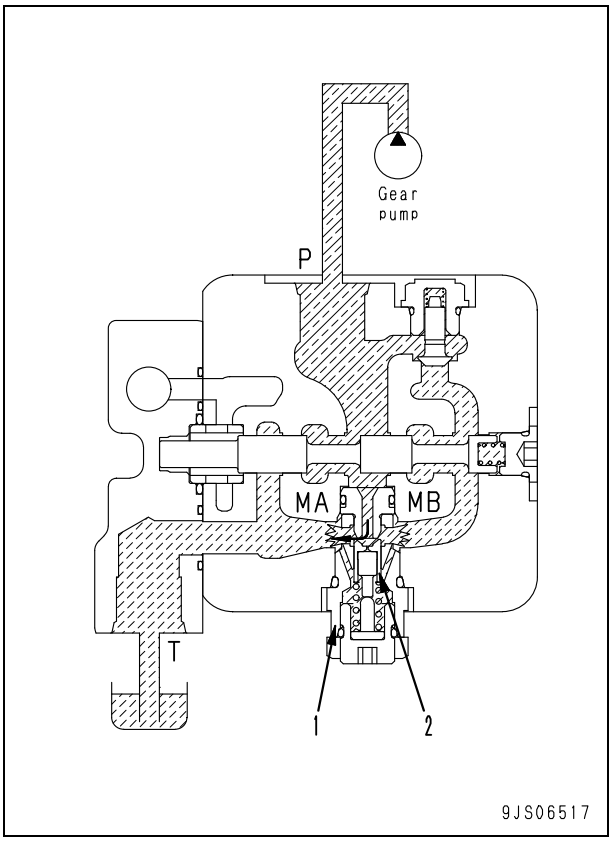
3. EPC valve



C : To PC valve
P : From pilot relief valve
T : To tank

1. Connector
2. Coil
3. Body
4. Spring
5. Spool
6. Rod
7. Plunger

Safety valve



Function

- When the engine is started, the pressure in port (P) of the motor is heightened in some cases.
- Safety valve (1) is installed to protect the fan system circuit.

Operation

- If the pressure in port (P) rises above the cracking pressure of safety valve (1), valve (2) of safety valve (1) opens to release the pressurized oil into port (T).
- By this operation, generation of abnormal pressure in port (P) is prevented.

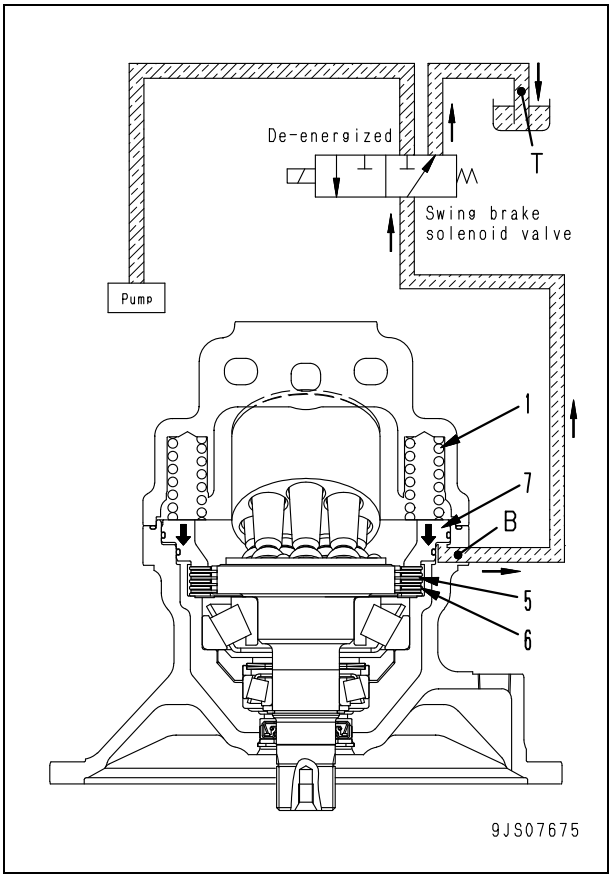
A1 : To boom cylinder
A2 : To swing motor MB
A3 : To bucket cylinder
A4 : To arm cylinder
B1 : Plug
B2 : To swing motor MA
B3 : Plug
B4 : To arm cylinder
NCA : To NC valve at front of No. 3 main pump
NCB : To NC valve at front of No. 3 main pump
P : From No. 3 main pump
PA1 : From control pump
PA2 : From L.H. work equipment, swing PPC valve
PA3 : From R.H. work equipment, swing PPC valve
PA4 : From L.H. work equipment, swing PPC valve
PB1 : From R.H. work equipment, swing PPC valve
PB2 : From L.H. work equipment, swing PPC valve
PB3 : From R.H. work equipment, swing PPC valve
PB4 : From L.H. work equipment, swing PPC valve
PI : From pilot valve
PR : From 2-stage main relief solenoid valve
T : To hydraulic tank

Swing holding brake

1. When solenoid valve is de-energized

Operation

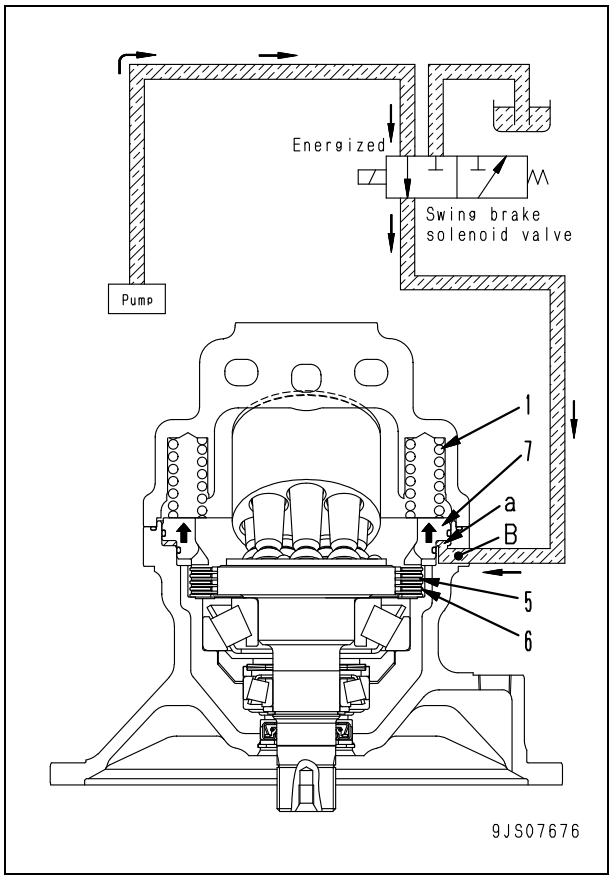
- As the swing brake solenoid valve is de-energized, the pressurized oil from the pump is shut off.
- Port (B) is connected to tank circuit (T).
- Brake piston (7) is pushed down by brake spring (1).
- Disc (5) and plate (6) are pushed together, and the brake is applied.



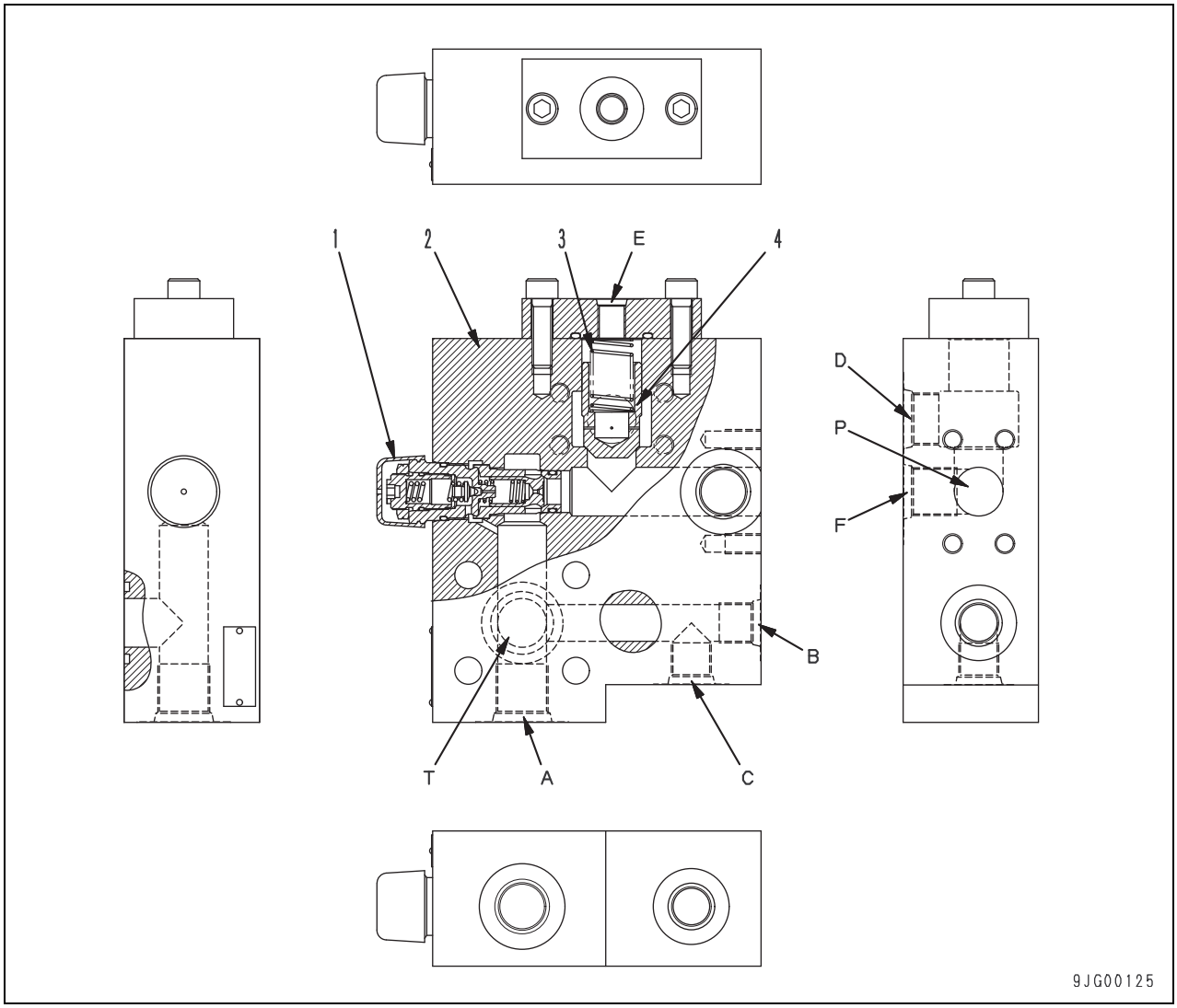
2. When solenoid valve is energized

Operation

- As the swing brake solenoid valve is energized, the valve is switched.
- The pressurized oil from the pump is conducted brake chamber (a) through port (B).
- After entering chamber (a), the pressurized oil compresses brake spring (1) and pushes brake piston (7) up.
- Disc (5) is separated from plate (6), releasing the brake.



PPC control relief valve



A : From PPC valve
B : From solenoid valve
C : From pilot valve
D : To PPC valve
E : To accumulator
F : To solenoid valve
P : From control pump
T : To tank

1. Relief valve
2. Valve body
3. Check valve spring
4. Check valve

Specifications

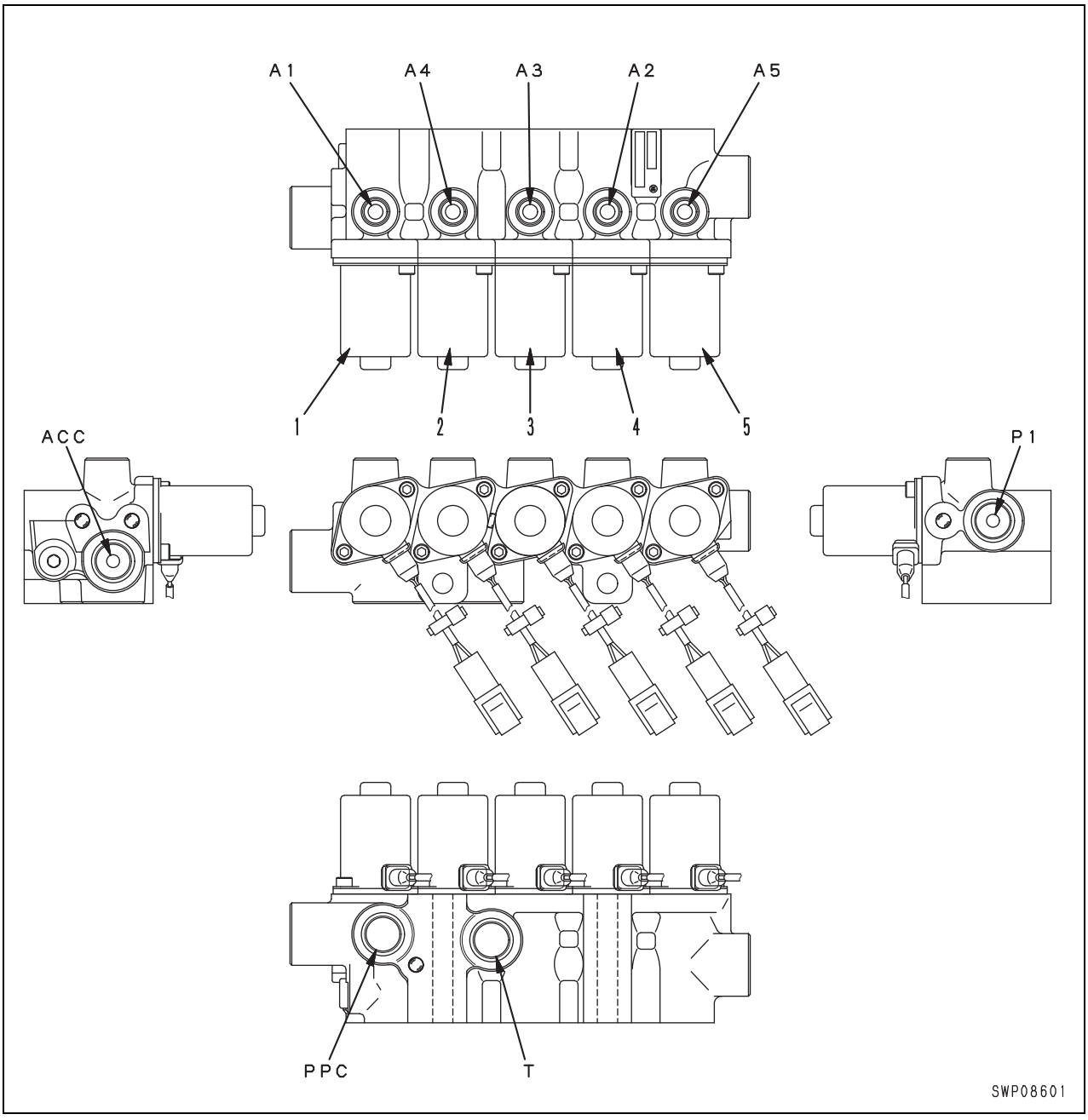
Set pressure: $3.1^{+0.3}_{0}$ MPa {32^{+3}_{0} kg/cm^2}
(at 182 ℓ/min)

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
3	Check valve spring	Free length × outside diameter	Installed length	Installed load	Free length	Installed load	Replace
		56 × 21.4	37	6.9 N {0.7 kg}	—	3.9 N {0.4 kg}	

Solenoid valve

For CO cancel, straight-travel, heavy lift, machine push-up, travel speed



A1 : To No. 1 pump (CO valve)
A2 : To straight-travel valve
A3 : To main valve (Relief valve)
A4 : To boom LOWER 2-stage safety valve
A5 : To left and right travel motor
ACC : Blind
P1 : From control pump
PPC : Blind
T : To tank

1. CO cancel solenoid valve
2. Straight-travel solenoid valve
3. Heavy lift solenoid valve
4. Machine push-up solenoid valve
5. Travel speed solenoid valve

HYDRAULIC EXCAVATOR

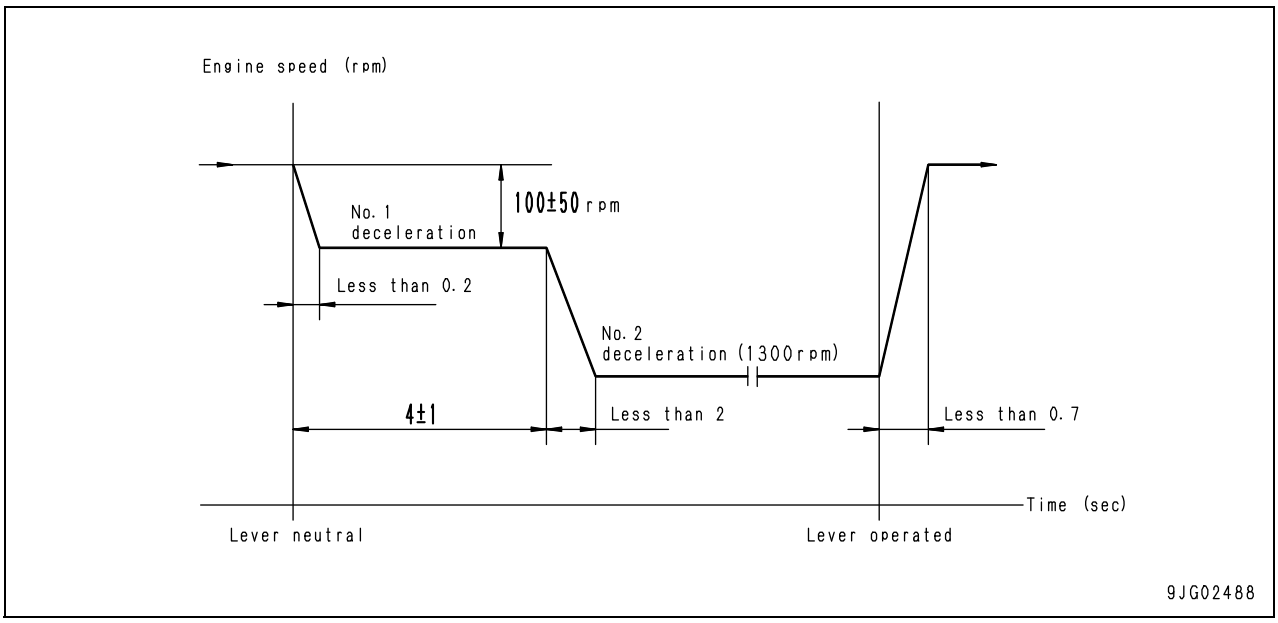
PC1250-8R
PC1250SP-8R

Machine model	Serial number
PC1250-8R	35001 and up
PC1250SP-8R	35001 and up

10 Structure, function and maintenance standard

Work equipment

PC1250-8R, PC1250SP-8R Hydraulic excavator
Form No. SEN02062-01



Operation

Control levers at neutral

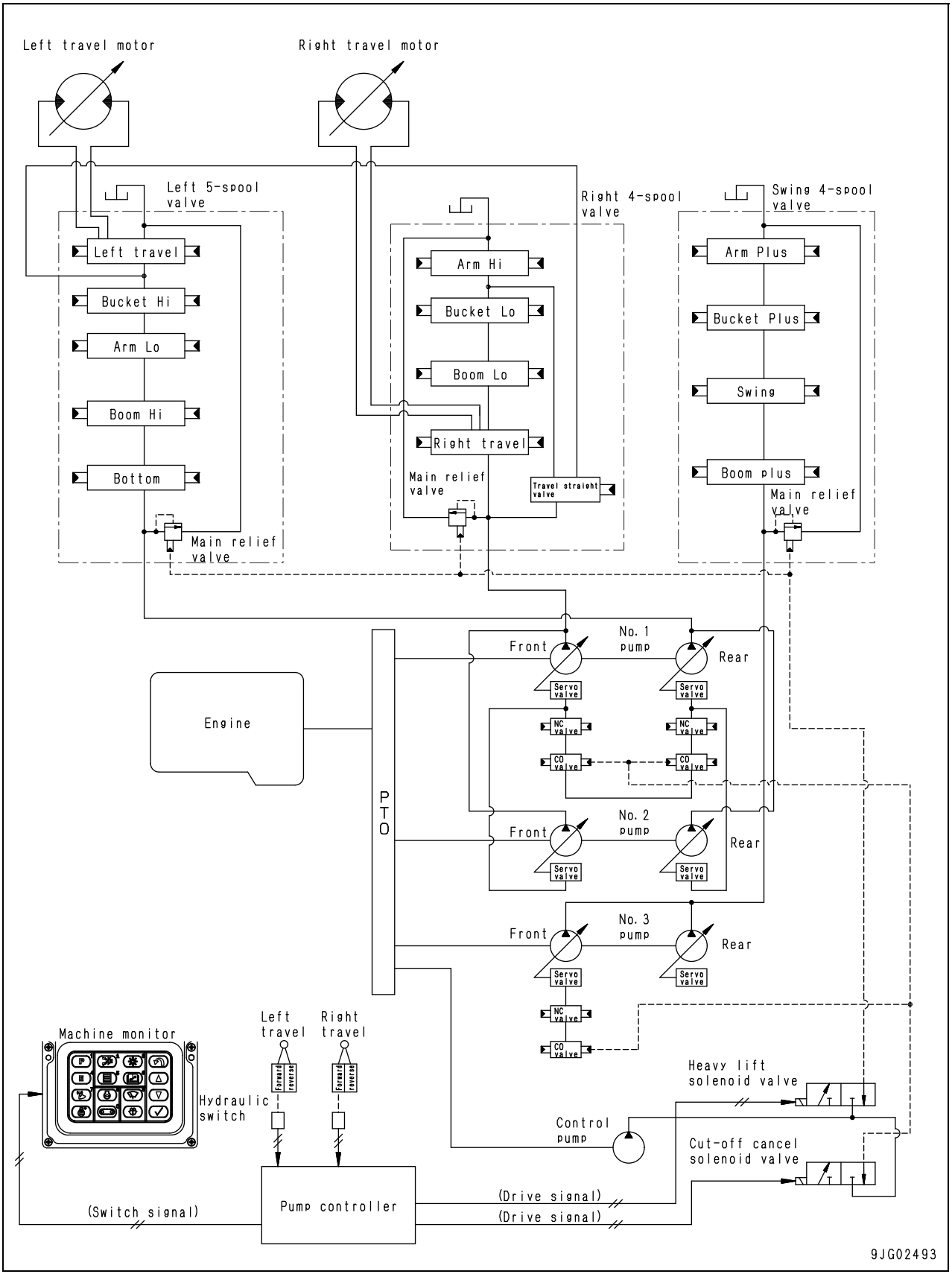
- If the engine is running at above the deceleration actuation speed (approx. 1300 rpm), and all the control levers are returned to neutral, the engine speed drops immediately to approx. 100 rpm below the set speed to the No. 1 deceleration position.
- If another 4 seconds passes, the engine speed is reduced to the No. 2 deceleration position (approx. 1300 rpm), and is kept at that speed until a lever is operated.

When control lever is operated

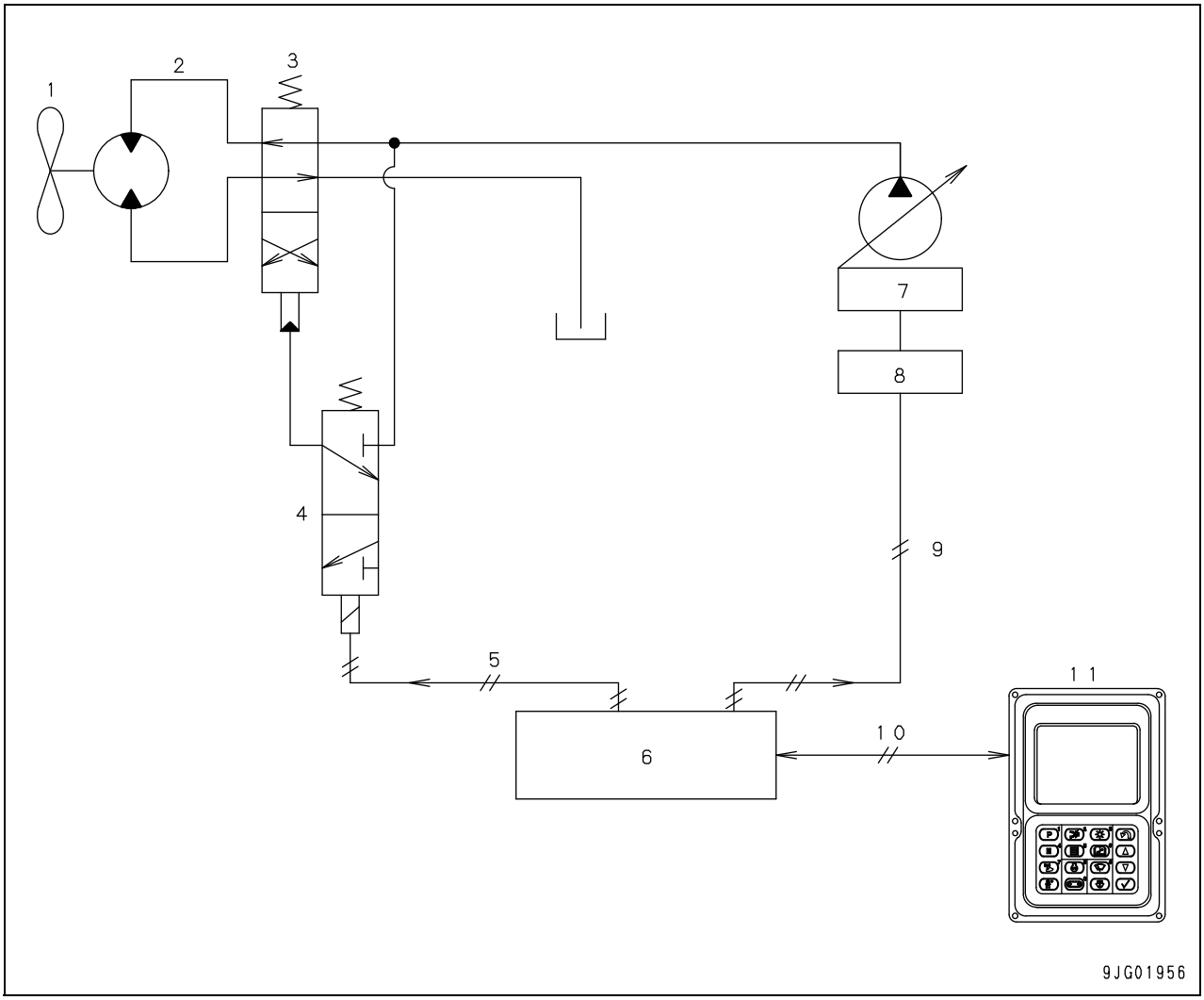
- If any control lever is operated when the engine speed is at No. 2 deceleration, the engine speed will immediately rise to the speed set by the fuel control dial.

Travel speed selector function

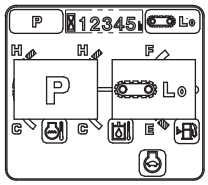
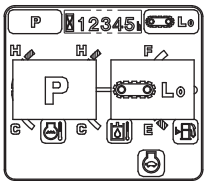
1. Travel pressure rise function



- Upon receiving the signal from the machine monitor, the pump controller outputs the fan reverse signal, which drives the fan reverse solenoid valve of the fan motor to change the fan reverse valve and reverse the fan rotation direction.
  Note) Since the fan reverse function is for cleaning the cooling devices, the fan speed in reverse direction is not controlled by the temperature (hydraulic oil temperature and coolant temperature) but controlled by only the engine speed.



1. Cooling fan
2. Fan motor
3. Fan reverse valve
4. Fan reverse solenoid valve
5. Fan reverse signal
6. Pump controller
7. Servo
8. EPC valve
9. Fan pump flow control signal
10. Network signal
11. Machine monitor

Display category	Symbol	Display item	Display range	Display method
Monitor	 SJP08781	Wiper	ON → INT → OFF	Displays set condition
	 9JG01601	Working mode	 P, E, , 9JG02385	Displays set mode
	 SJP08783	Travel speed	 Lo, Hi 9JG01603	Displays set speed
	 SJP08784	Auto-decelera-tion	ON ⇔ OFF	Displays actuation status
Service meter	 SJP08785	Service meter indicator	When service meter is working	Lights up when service meter is working

CN-3 [CN3 A, B]

Pin No.	Signal name	Input/Output
CN3-A1	NC (*)	—
CN3-A2	NC (*)	—
CN3-A3	NC (*)	—
CN3-A4	NC (*)	—
CN3-A5	Model selection	B
CN3-A6	NC (*)	—
CN3-A7	NC (*)	—
CN3-A8	NC (*)	—
CN3-A9	NC (*)	—
CN3-A10	NC (*)	—
CN3-A11	NC (*)	—
CN3-A12	NC (*)	—
CN3-A13	GND	C
CN3-A14	NC (*)	—
CN3-A15	NC (*)	—
CN3-A16	NC (*)	—
CN3-A17	GND	C
CN3-A18	NC (*)	—
CN3-B1	NC (*)	—
CN3-B2	NC (*)	—
CN3-B3	NC (*)	—
CN3-B4	NC (*)	—
CN3-B5	NC (*)	—
CN3-B6	NC (*)	—
CN3-B7	NC (*)	—
CN3-B8	NC (*)	—
CN3-B9	GND	C
CN3-B10	NC (*)	—
CN3-B11	NC (*)	—
CN3-B12	NC (*)	—

*:Never connect to NC as malfunctions or failures will occur.

CN-4 [CN4 A, B]

Pin No.	Signal name	Input/Output
CN4-A1	NC (*)	—
CN4-A2	NC (*)	—
CN4-A3	RS232C GND	C
CN4-A4	CAN1+	E
CN4-A5	NC (*)	—
CN4-A6	NC (*)	—
CN4-A7	NC (*)	—
CN4-A8	NC (*)	—
CN4-A9	GND	C
CN4-A10	RS232C RX0 (PC Tool)	E
CN4-A11	RS232C TX0 (PC Tool)	E
CN4-A12	CAN1–	E
CN4-A13	CAN Shield 1	C
CN4-A14	NC (*)	—
CN4-B1	NC (*)	—
CN4-B2	NC (*)	—
CN4-B3	GND	C
CN4-B4	RS232C TX1 (Orbcomm)	E
CN4-B5	NC (*)	—
CN4-B6	NC (*)	—
CN4-B7	NC (*)	—
CN4-B8	NC (*)	—
CN4-B9	GND	C
CN4-B10	RS232C RX1 (Orbcomm)	E

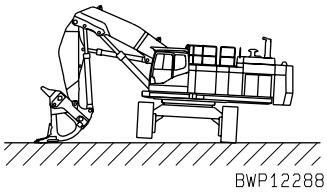
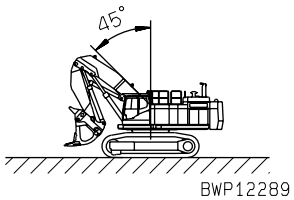
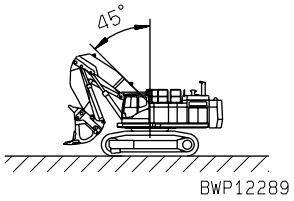
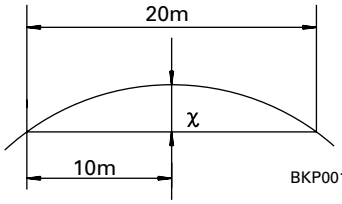
*:Never connect to NC as malfunctions or failures will occur.

CN-5 [CN5]

Pin No.	Signal name	Input/Output
CN5-1	NC (*)	—
CN5-2	NC (*)	—
CN5-3	NC (*)	—
CN5-4	NC (*)	—
CN5-5	NC (*)	—
CN5-6	NC (*)	—
CN5-7	NC (*)	—
CN5-8	NC (*)	—
CN5-9	NC (*)	—
CN5-10	NC (*)	—
CN5-11	NC (*)	—
CN5-12	NC (*)	—

*:Never connect to NC as malfunctions or failures will occur.

Applicable model						PC1250-8R, PC1250SP-8R	
Category	Item	Measurement conditions			Unit	Standard value for new machine	Service limit value
Operating effort of control levers	Boom control lever	• Engine stopped • Oil temperature: 45 – 55°C • Fit push-pull scale to center of control lever knob • Measure max. value to end of travel			N {kg}	15.7 ± 4.9 {1.6 ± 0.5}	15.7 ± 4.9 {1.6 ± 0.5}
	Arm control lever					15.7 ± 4.9 {1.6 ± 0.5}	15.7 ± 4.9 {1.6 ± 0.5}
	Bucket control lever					12.7 ± 3.9 {1.3 ± 0.4}	12.7 ± 3.9 {1.3 ± 0.4}
	Swing control lever					12.7 ± 3.9 {1.3 ± 0.4}	12.7 ± 3.9 {1.3 ± 0.4}
	Travel control lever					21.5 ± 5.9 {2.2 ± 0.6}	21.5 ± 5.9 {2.2 ± 0.6}
Hydraulic pressure	Boom	• Engine at full throttle • Oil temperature: 45 – 55°C • In P-mode • Relieve only circuit being measured	RAISE	Heavy lift OFF	MPa {kg/cm^2}	31.4 $^{+1.0}_{-1.5}$ {320 $^{+10}_{-15}$}	31.4 $^{+1.0}_{-2.5}$ {320 $^{+10}_{-25}$}
				Heavy lift ON		33.3 $^{+1.0}_{-1.5}$ {340 $^{+10}_{-15}$}	33.3 $^{+1.0}_{-2.5}$ {340 $^{+10}_{-25}$}
			LOWER	Machine push-up OFF		18.6 ± 1.9 {190 ± 20}	18.6 ± 1.9 {190 ± 20}
				Machine push-up ON		31.4 $^{+1.0}_{-1.5}$ {320 $^{+10}_{-15}$}	31.4 $^{+1.0}_{-2.5}$ {320 $^{+10}_{-25}$}
	Arm					31.4 $^{+1.0}_{-1.5}$ {320 $^{+10}_{-15}$}	31.4 $^{+1.0}_{-2.5}$ {320 $^{+10}_{-25}$}
	Bucket					31.4 $^{+1.0}_{-1.5}$ {320 $^{+10}_{-15}$}	31.4 $^{+1.0}_{-2.5}$ {320 $^{+10}_{-25}$}
	Travel					34.3 $^{+1.0}_{-1.5}$ {350 $^{+10}_{-15}$}	34.3 $^{+1.0}_{-2.5}$ {350 $^{+10}_{-25}$}
	Swing					30.4 $^{+1.0}_{-1.5}$ {310 $^{+10}_{-15}$}	30.4 $^{+1.0}_{-2.5}$ {310 $^{+10}_{-25}$}
	Control pump	• Engine at full throttle • Oil temperature: 45 – 55°C • All control levers at neutral				3.1 $^{+0.5}_{0}$ {32 $^{+5.0}_{0}$}	3.1 $^{+0.5}_{0}$ {32 $^{+5.0}_{0}$}
	TVC valve output pressure	• Engine at full throttle • Oil temperature: 45 – 55°C • In P-mode	All control levers at neutral			2.3 ± 0.3 {23 ± 3}	Min. 1.8 {18}
			Boom RAISE relief	Heavy lift OFF		1.13 ± 0.2 {11.5 ± 2}	1.08 ± 0.2 {11 ± 2}
				Heavy lift ON		1.03 ± 0.2 {10.5 ± 2}	0.98 ± 0.2 {10 ± 2}

Applicable Model					PC1250-8R (Loading shovel spec.)	
Category	Item	Measuring Conditions		Unit	Standard value for new machine	Service limit value
Travel	Travel speed (1)	Work equipment posture  BWP12288 • Engine at full throttle • Hydraulic oil temperature: 45 – 55°C • In P-mode • Raise track on one side at a time, rotate one turn, then measure time taken for next 5 turns with no load.	Low speed	sec	105 ± 11	105 ± 11
			High speed		73 ± 8	73 ± 8
	Travel speed (2)	Work equipment posture  BWP12289 • Engine at full throttle • Hydraulic oil temperature: 45 – 55°C • In P-mode • Run up for at least 10 m, and measure time taken to travel next 20 m on flat ground.	Low speed	sec	27 – 37	27 – 37
			High speed		20 – 25	20 – 25
	Travel deviation	Work equipment posture  BWP12289 • Engine at full throttle • Hydraulic oil temperature: 45 – 55°C • In P-mode • Use a hard horizontal surface. • Run up for at least 10 m, and measure deviation (χ) when traveling next 20 m on flat ground.  BKP00107		mm	Max. 200	Max. 220

Testing and adjusting item	symbol	Part No.	Part name	Quantity	Remarks
Machine related controller and sensors/wiring harnesses diagnosis	—	799-601-9000 or 799-601-9100 or 799-601-9300	• T-adapter assembly		
		799-601-9320	• T-box	1	For ECONO*1 (Max. 24P)
		799-601-4101	T-adapter assembly		
		799-601-4350	• T-box	1	For DRC60, ECONO*2 (Max. 60P)
		799-601-7000 or 799-601-7100 or 799-601-7400 or 799-601-8000	T-adapter assembly		
		799-601-2600	• T-box	1	For ECONO (Max. 21P) (Does not include in assembly No. 799-601-7000)
		799-601-7210	• T-adapter	1	For AMP040 16P
		799-601-7220	• T-adapter	1	For AMP040 20P
		799-601-7080	• T-adapter	1	For M 1P (Does not include in assembly No. 799-601-7000 and 799-601-7100)
		799-601-7090	• T-adapter	1	For M 2P
		799-601-7110	• T-adapter	1	For M 3P
		799-601-7120	• T-adapter	1	For M 4P
		799-601-7130	• T-adapter	1	For M 6P
		799-601-7340	• T-adapter	1	For M 8P (No assembly No.)
		799-601-7140	• T-adapter	1	For S 8P
		799-601-7350	• T-adapter	1	For S 12P (White) (No assembly No.)
		799-601-7170	• T-adapter	1	For S 16P (Blue)
		799-601-7330	• T-adapter	1	For S 16P (White) (No assembly No.)
		799-601-7060	• T-adapter	1	For SWP 8P (Does not include in assembly No. 799-601-8000)
		799-601-7320	• T-adapter	1	For SWP 16P (No assembly No.)
		799-601-7020	• T-adapter	1	For X 2P
		799-601-7030	• T-adapter	1	For X 3P
		799-601-7040	• T-adapter	1	For X 4P
		799-601-7500	T-adapter assembly		
		799-601-7510	• T-adapter	1	For AMP070 10P
		799-601-7520	• T-adapter	1	For AMP070 12P
		799-601-7530	• T-adapter	1	For AMP070 14P
		799-601-7540	• T-adapter	1	For AMP070 18P
		799-601-7550	• T-adapter	1	For AMP070 20P
		799-601-9000 or 799-601-9200	T-adapter assembly		
		799-601-9040	• T-adapter	1	For DT 4P (Include in assembly No. 799-601-4101 and 799-601-4201, too)
		799-601-9020	• T-adapter	1	For DT 2P

Measuring blow-by pressure

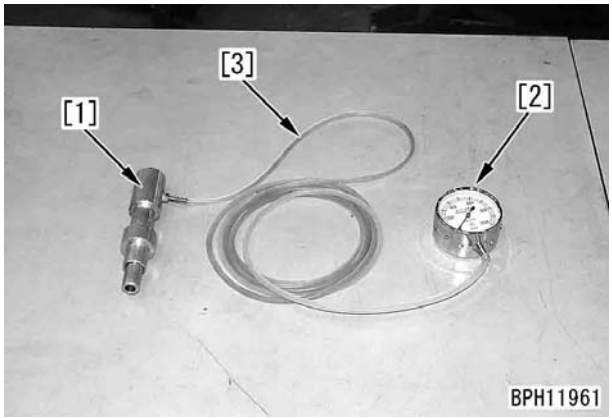
★ Tools for measuring blow-by pressure

Symbol	Part No.	Part name
F	799-201-1504	Blow-by checker

★ Measure the blow-by pressure under the following conditions.
- Coolant temperature: Within operating range
- Hydraulic oil temperature: 45 – 55°C

1. Install nozzle [1] of blow-by checker **F** to blow-by hose (1), then connect gauge [2] with hose [3].

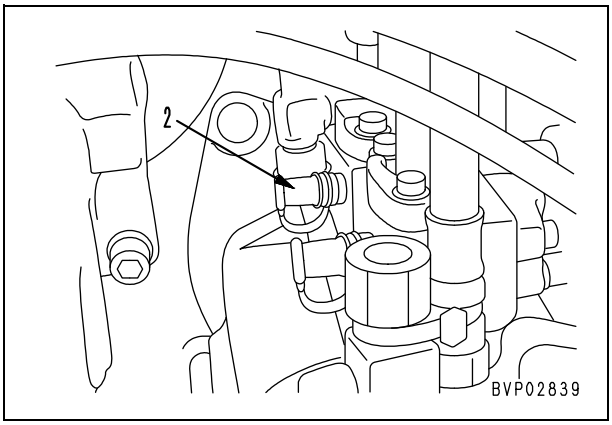
2. Run the engine at high idle under the following condition and measure the blow-by pressure.
   - Working mode switch: P-mode
   - Work equipment, swing, travel: Relieve circuit by digging with arm.
   - ★ Read the gauge when its pointer is stabilized.
   - ★ Blow-by varies greatly according to the condition of the engine. Therefore, if the blow-by value is considered abnormal, check for problems connected with defective blow-by, such as excessive oil consumption, defective exhaust gas color, and prematurely dirty or deteriorated oil.



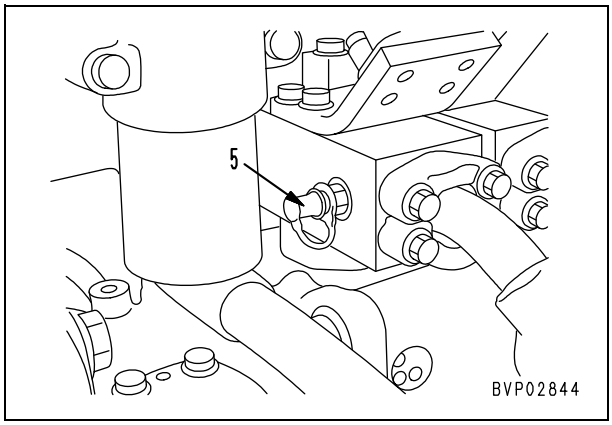
3. After completing the measurement, remove the measuring equipment and set to the original condition.

PC1250-8R, PC1250SP-8R Hydraulic excavator
Form No. SEN02072-03

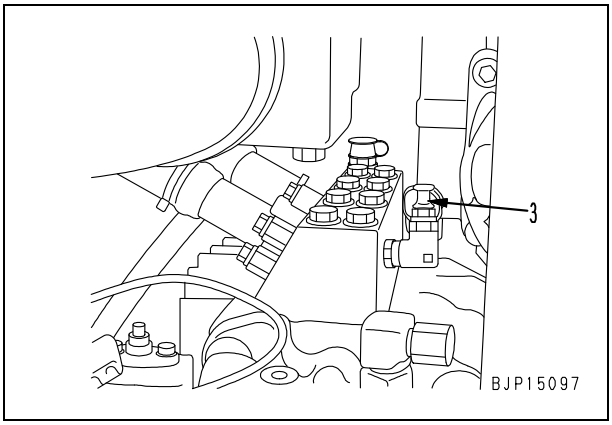
- (2): Quick coupler for No. 2 F pump



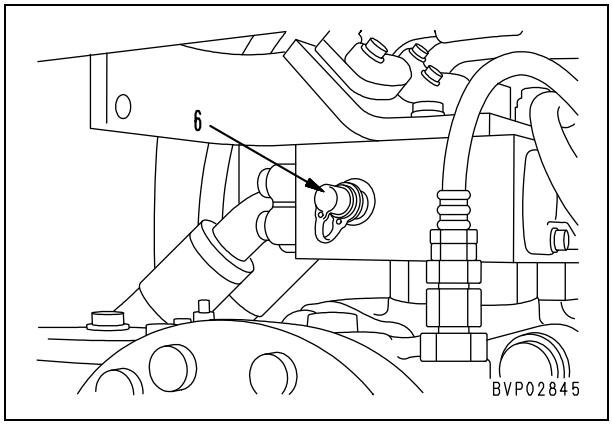
- (5): Quick coupler for No. 3 F pump



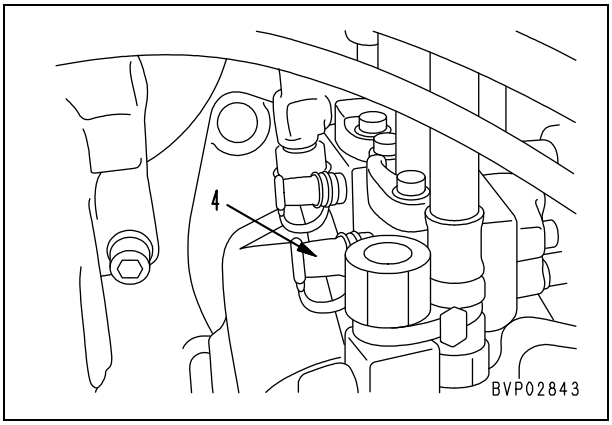
- (3): Quick coupler for No. 1 R pump



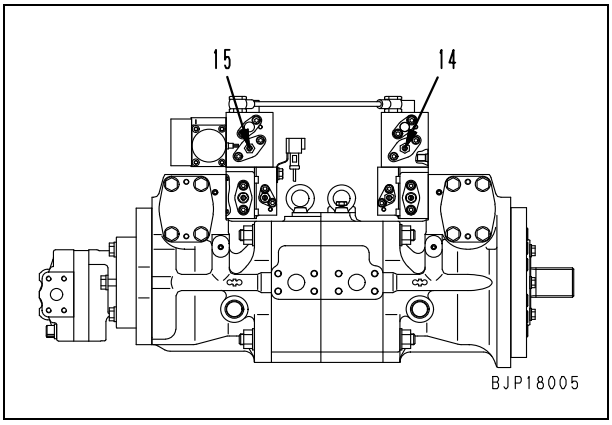
- (6): Quick coupler for No. 3 R pump



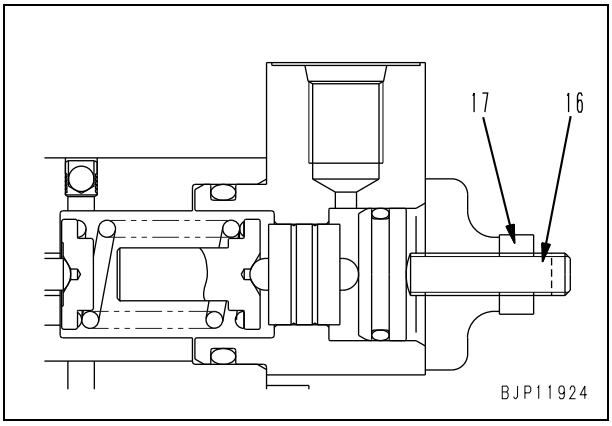
- (4): Quick coupler for No. 2 R pump



- (14): Front NC valve of No. 1 pump
- (15): Rear NC valve of No. 1 pump

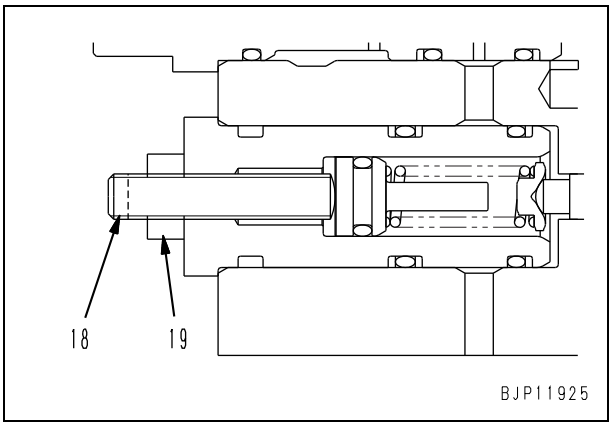


1) Adjusting CO valve side
   i) Fix adjustment screw (16) and loosen locknut (17).
   ii) Turn adjustment screw (16) to adjust the pressure.
      ★ If the adjustment screw is
         - turned to the right, the pressure rises.
         - turned to the left, the pressure lowers.
      ★ Pressure changed by 1 turn of adjustment screw:
      2.20 MPa {22.4 kg/cm^2}
   iii) Fix adjustment screw (16) and tighten locknut (17).
      Locknut:
      5.9 – 9.8 Nm {0.6 – 1.0 kgm}



   iv) After finishing adjustment, check the oil pressure again according to the above described measurement procedure.

2) Adjusting NC valve side
   i) Fix adjustment screw (18) and loosen locknut (19).
   ii) Turn adjustment screw (18) to adjust the pressure.
      ★ If the adjustment screw is
         - turned to the right, the pressure rises.
         - turned to the left, the pressure lowers.
      ★ Pressure changed by 1 turn of adjustment screw: 0.42 MPa {4.3 kg/cm^2}
   iii) Fix adjustment screw (18) and tighten locknut (19).
      Locknut:
      5.9 – 9.8 Nm {0.6 – 1.0 kgm}

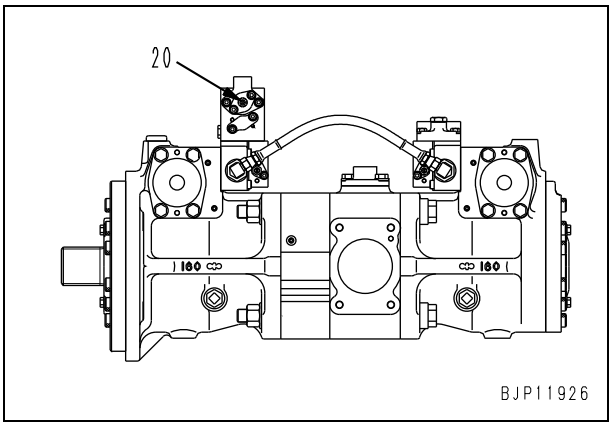


   iv) After finishing adjustment, check the oil pressure again according to the above described measurement procedure.

3. Adjusting CO-NC valves of No. 3 pump

★ If the CO-NC valve output pressure of the No. 3 pump is abnormal, adjust CO valve (20) and NC valve (21) of the No. 3 pump according to the following procedure.

- (20): CO valve of No. 3 pump

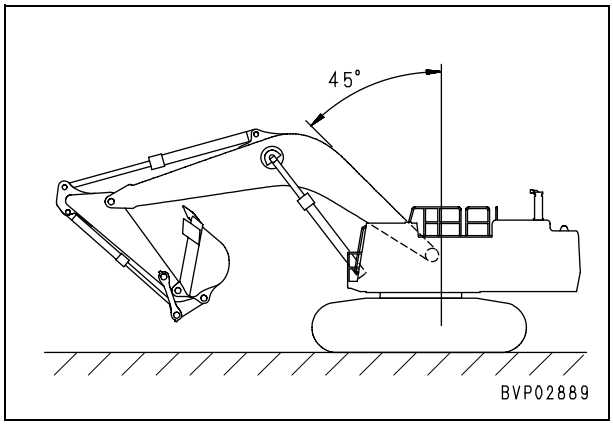


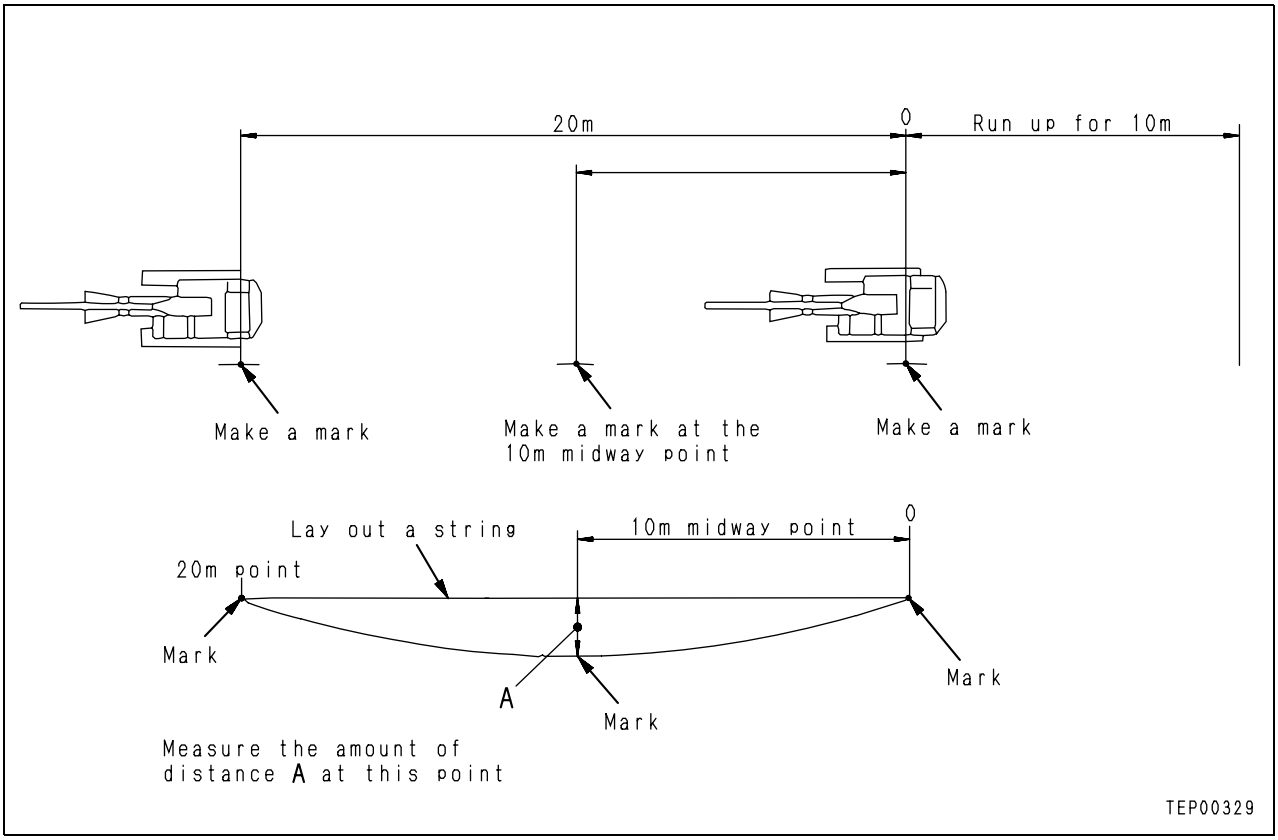
Testing travel deviation

★ When traveling on level ground.

1. Set the machine in the travel posture.
   ★ For the travel posture, extend the bucket and arm cylinder rods fully, and hold the boom angle at 45°.

2. Operate with the engine at full throttle, run up for 10 m, then measure the deviation (A) over the next 20 m.
   ★ Install the oil pressure gauge and measure the pump discharge pressure at the same time.





Measuring fan pump EPC solenoid valve output pressure

★ Measuring instruments for fan pump EPC solenoid valve output pressure

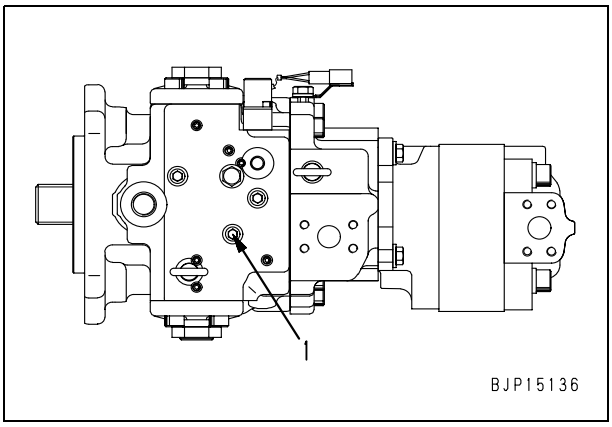
Symbol		Part No.	Part name
U	1	799-101-5002	Hydraulic tester
		790-261-1204	Digital hydraulic tester
	2	799-101-5220	Nipple (M10 x 1.25 mm)
		07002-11023	O-ring

★ Measure the fan pump EPC solenoid valve output pressure
- Hydraulic oil temperature: 45 – 55°C

★ Since the basic pressure of the EPC solenoid valve output pressure is the control circuit pressure, check that the control circuit pressure is normal before measuring the EPC solenoid valve output pressure.

⚠ **Lower the work equipment to the ground and stop the engine. Then, operate the control levers several times to release the residual pressure in the piping and loosen the hydraulic tank cap gradually to release the internal pressure of the hydraulic tank.**

1) Remove oil pressure pickup plug (1) from the top of the fan pump.

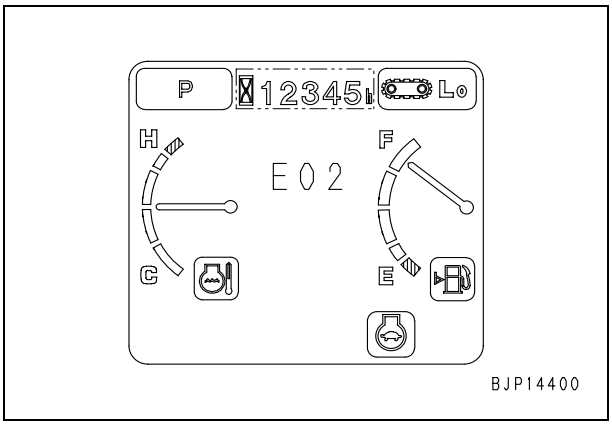


2) Install nipple **U2** and connect it to oil pressure gauge [1] of hydraulic tester **U1**.
   - Use the oil pressure gauge of 6 MPa {60 kg/cm^2}.
3) Run the engine at high idle or high idle down and measure the EPC valve output pressure in the fan 100% speed mode.
4) After finishing measurement, remove the measuring instruments and return the removed parts.

13. Function for showing action code No.

When a trouble occurs on the machine, the action code is automatically displayed depending on the magnitude of the trouble to call attention of the operator for a proper action.

★ Operating any switch while an action code is on the screen, switch the failure code display screen (See Item 14).

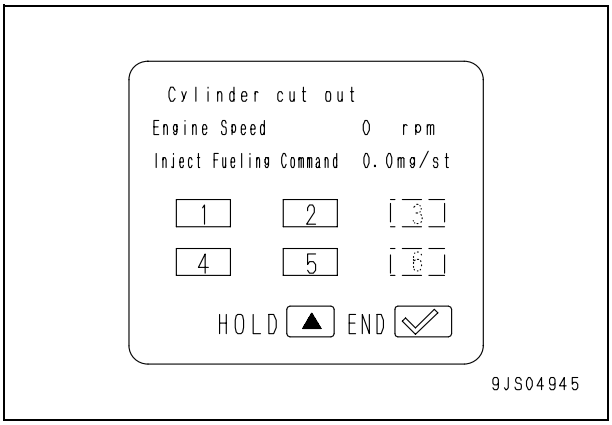


★ Action codes and instructions given to operator

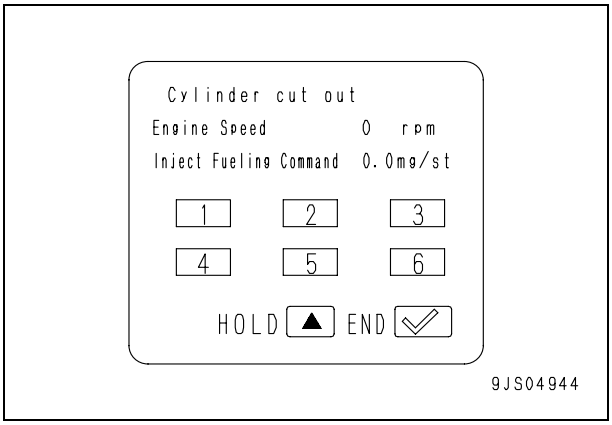
Action code	Failure mode	Instructions given to operator
E02	Error in pump control system	If the drive switch of the emergency pump is turned on, the machine can operate normally. Have it inspected immediately, however.
E03	Error in swing brake system	Have the machine inspected immediately.
E10	Error in engine controller power supply system Abnormality in engine controller drive system circuit (engine stop)	Have the machine inspected immediately.
E11	Error in engine controller system (Engine protection output down)	Set the machine in a safe position and have the machine inspected immediately.
E14	Error in throttle system	Set the machine in a safe position and have the machine inspected immediately.
E15	Error in engine sensor (coolant temperature, fuel temperature and oil pressure)	Ordinary operation is possible. Have the machine inspected immediately, however.
E0E	Error in network	Set the machine in a safe position and have the machine inspected immediately.

Monitoring items list

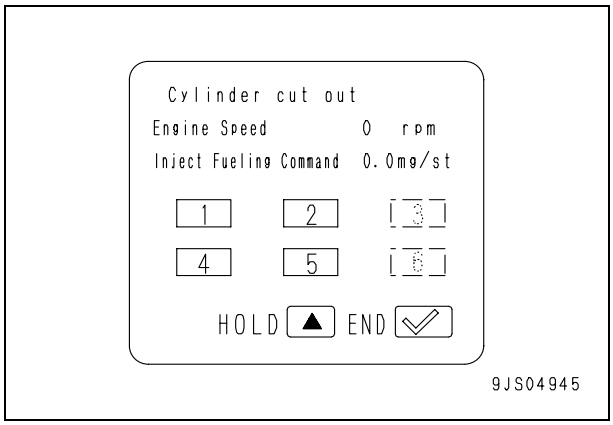
Code No.	Monitoring item	Unit (Default: ISO)			Remarks
		ISO	meter	inch	
00000	Return	(Not displayed)			Ending menu
99999	To Display Screen	(Not displayed)			Display execution menu
00200	Controller Model Select	Numeral			
00201	Machine ID	Numeral			
01002	Engine Speed	r/min	rpm	rpm	
01601	2nd Eng Speed Command	r/min	rpm	rpm	
01100	F Pump Pressure	MPa	kg/cm^2	Psi	
01101	R Pump Pressure	MPa	kg/cm^2	Psi	
09000	Swing Pump Pressure	MPa	kg/cm^2	Psi	
04107	Coolant Temperature	°C	°C	°F	
14200	Fuel Temperature	°C	°C	°F	
04401	Hydr. Oil Temperature	°C	°C	°F	
37502	Ambient Temperature	°C	°C	°F	
01300	TVC Sol. Curr	mA	mA	mA	
31623	Fan Pump EPC Sol. Curr	mA	mA	mA	
03200	Battery Voltage	V	V	V	
03203	Battery Power Supply	V	V	V	
04300	Battery Charge Vol.	V	V	V	
01006	Engine Speed	r/min	rpm	rpm	
37200	Engine Oil Pressure	kPa	kg/cm^2	Psi	
36400	Rail Pressure	MPa	kg/cm^2	Psi	
37400	Ambient Pressure	kPa	kg/cm^2	Psi	
18400	Intake Temperature	°C	°C	°F	
18500	Charge Temperature	°C	°C	°F	
36500	Boost Pressure	kPa	kg/cm^2	Psi	
36700	Engine Torque Ratio	%	%	%	
18700	Engine Output Torque	Nm	Nm	kgfm	
01112	F Pump Pres. Sensor Vol.	V	V	V	
01113	R Pump Pres. Sensor Vol.	V	V	V	
09005	Swing Pump Pressure Sensor Voltage	V	V	V	
03000	Fuel Dial Pos Sens Volt	V	V	V	
04200	Fuel Level Sensor Vol.	V	V	V	
04105	Coolant Temp Sens Volt	V	V	V	
14201	Fuel Temp. Sensor Vol.	V	V	V	
04402	Hydr. Temp. Sensor Vol.	V	V	V	
37503	Ambi. Temp. Sensor Vol.	V	V	V	
37201	Eng Oil Press Sens Volt	V	V	V	
37401	Ambient Press Sens Volt	V	V	V	
18401	Intake Temp Sens Volt	V	V	V	
18501	Charge Temp Sens Volt	V	V	V	
36501	Charge Press Sens Volt	V	V	V	
36401	Rail Pressure Sens Volt	V	V	V	
17201	PCV Close Timing	CA	CA	CA	

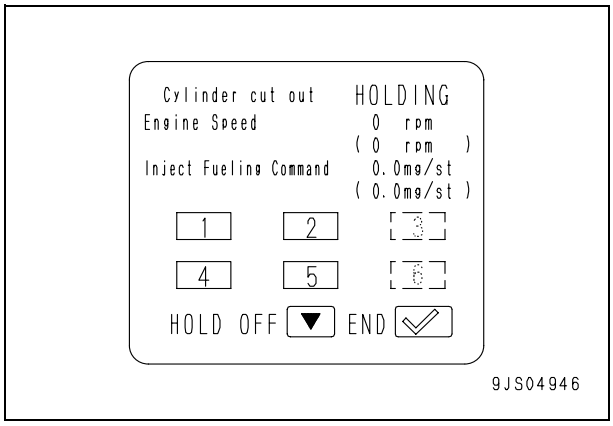


3) Cancellation of disabled cylinders
Press switches [1] – [6] on the machine monitor corresponding to the disabled cylinder Nos. to cancel disabling of those cylinders.
★ After a switch is pressed, if the cylinder No. corresponding to it on the machine monitor is displayed black in a black frame, disabling of the cylinder is cancelled.



4) Function of holding engine speed
If the [△] switch is pressed while the reduced cylinder mode operation screen is used, the engine speed is held and displayed on the lower line.
If the [▽] switch is pressed while the engine speed is held, holding of the engine speed is cancelled and the engine speed displayed on the lower line goes off.
★ If the holding function is used, the held engine speed is displayed in ( ) on the lower line and the current engine speed is displayed on the upper line.
★ The holding function can be used both in and out of the reduced cylinder mode.





VHMS controller initial setting procedure

★ Equipment used for VHMS controller initial setting

Symbol		Part No.	Part name
ZB	1	799-608-3211	Diskette
		799-608-3220	Wiring harness
	2	Commercially available	Note type PC (Windows 98/2000/Me/XP), with RS232C terminal

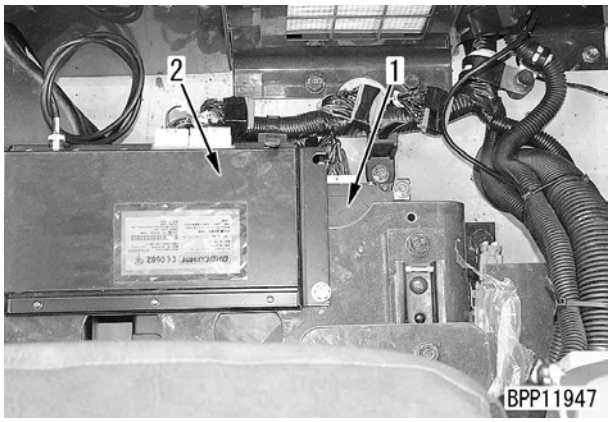
★ Initial setting of VHMS controller shall be done according to the following procedure. This operation is needed prior to a full-scale operation of a machine being delivered and assembled in the field, or prior to resumption of its operation after a long time of storage.
★ Machine data collected with VHMS controller are stored and managed on WebCARE database. In order to endure smooth data processing on WebCARE, consistency must be provided among the settings done on VHMS controller. Inconsistencies in the settings obstruct loading of data to WebCARE, hampering appropriate use of VHMS data. The initial setting, therefore, is a must.
★ For the installation procedure of the VHMS initial setting program to a PC, refer to the operation and maintenance manual being bundled with the service kit **ZB1**.
★ In the procedure, service menus of the machine monitor are used. Thus, it is advisable to reference the information contained in the “Special functions of machine monitor” to understand their procedure beforehand.
★ The initial setting procedure is described in the ORBCOMM installation specification and the ORBCOMM-less specification. When using the ORBCOMM installation specification, implement the procedures needed for VHMS alone, bypassing those prepared only for ORBCOMM installation specification.
★ Check each step of the setting work referencing the VHMS initial setting work check sheet.
★ Information such as models shown in the figures may not be identical with actual ones.

1. Confirmation of machine information, engine information, transmission controller information and controller information

★ This confirmation procedure is targeted at the entire machine.
Confirm and record the machine information, engine information, VHMS controller information and ORBCOMM terminal information.

No.	Information to be confirmed
1	Model name
2	Machine serial No.
3	Current service meter hour
4	Engine serial No.
5	VHMS controller serial No.
6	ORBCOMM terminal serial No. [Only for machines equipped with ORBCOMM]

★ VHMS controller (1) and ORBCOMM terminal (2) are installed in the rear under the operator seat.



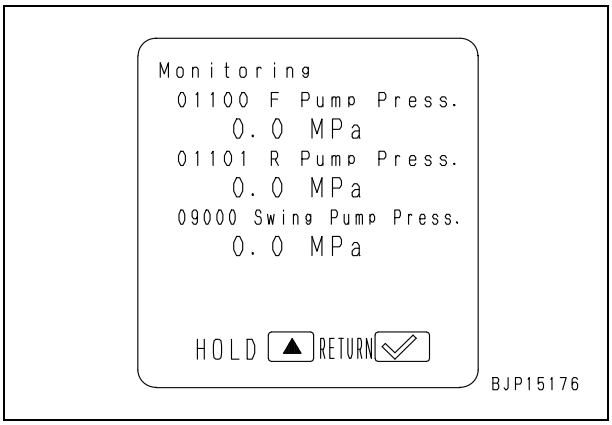
[For storage]
ORBCOMM station opening work check sheet

Date of setting:	
DB/branch office name	
Data entered by:	

Setup step		Check item	Result	
1	Confirmation of machine body and component nameplates	Model name		
		Serial No.		
		Engine serial No.		
		VHMS controller serial No.		
		ORBCOMM terminal serial No.		
2	Connection between PC and VHMS controller	Is the connection secure?	yes	no
3	VHMS controller check for normal operation	Is it operating normally? (Displays counting in ascending-order succeeding to rotation)	yes	no
4	Starting of VHMS initial setting tool	Is "Set up" selected for the setting tool mode?	yes	no
5	Initial setting of VHMS controller 1. Setting of communication (Setting of machine body information and PLM are completed)	Entry of setting to S.Fault History		
		Presence/absence of communication	On	Off
		Number of cases (Default is 8 cases)		
		Entry of setting of S.Trend Analysis setting		
		Presence/absence of communication	On	Off
		Interval (Default is 20H)		
		Entry of setting of S.Payload data		
		Presence/absence of communication	On	Off
		Tabulation start time		
		Interval of tabulation (in days)	day	
	2. Setting for start of communication	Is GCC code set? (130 for Japan)	yes	no
6	Saving of settings	Is LED (7-segment) turned off after data was stored?	yes	no
7	ORBCOMM controller performance check	How is decimal point display in VHMS monitor (7-segment)? (OFF, ON, long/short flashing)	yes	no

6. Setting machine monitor

1) Set the machine monitor to select the “Monitoring” items again.
2) Select and display the following monitoring items.
   - 01100 F pump pressure
   - 01101 R pump pressure
   - 09000 Swing pump pressure



7. Measuring items related to hydraulic equipment and fan

Measure the items related to the hydraulic equipment and fan (Items 4 and 5 on check sheet).

⚠ **Since the operator must operate the work equipment, swing the boom, and drive the machine actually for measurement, take extreme care of safety around the machine during the work.**

8. Stopping engine

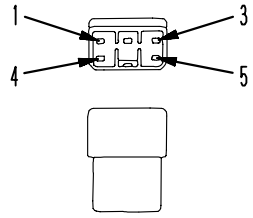
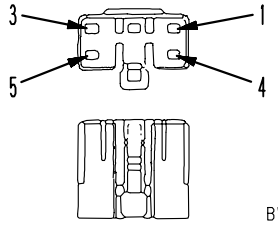
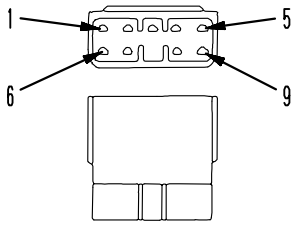
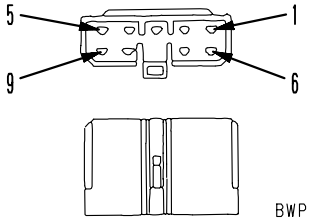
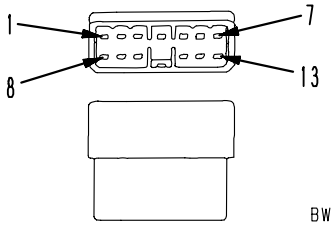
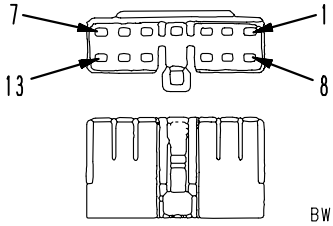
Set the work equipment in the position for measuring the hydraulic drift and stop the engine.

9. Measuring and testing hydraulic drift of work equipment and hydraulic oil return strainer

Measure and test the hydraulic drift of the work equipment and hydraulic oil return strainer (Items 6 and 7 on check sheet).

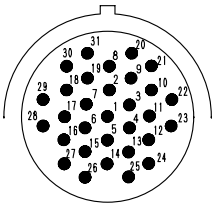
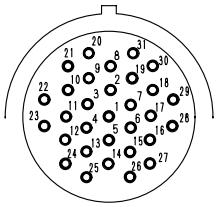
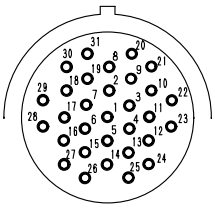
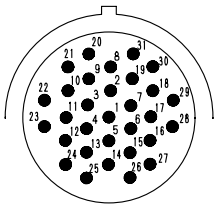
Checks before troubleshooting

	Item	Criterion	Remedy
Lubricating oil, Coolant	1. Check of level and type of fuel	—	Add fuel
	2. Check of fuel for foreign matter	—	Clean and drain
	3. Check of fuel filter	—	Replace
	4. Check of hydraulic oil level	—	Add oil
	5. Check of hydraulic oil strainer	—	Clean and drain
	6. Check of swing machinery oil level	—	Add oil
	7. Check of level and type of engine oil (in oil pan)	—	Add oil
	8. Check of coolant level	—	Add coolant
	9. Check of dust indicator for clogging	—	Clean or replace
	10. Check of hydraulic oil filter	—	Replace
Electrical equipment	1. Check of battery terminals and wiring for looseness and corrosion	—	Retighten or replace
	2. Check of alternator terminals and wiring for looseness and corrosion	—	Retighten or replace
	3. Check of starting motor terminals and wiring for looseness and corrosion	—	Retighten or replace
Hydraulic, Mechanical equipment	1. Check for abnormal noise and smell	—	Repair
	2. Check of oil leakage	—	Repair
	3. Bleeding air	—	Bleed air
Electric, electrical equipment	1. Check of battery voltage (with engine stopped)	20 – 30 V	Replace
	2. Check of electrolyte level	—	Add or replace
	3. Check of wires for discoloration, burn, and removal of cover	—	Replace
	4. Check for released wire clamp and drooping wire	—	Repair
	5. Check of wires for wetness (Check connectors and terminals for wetness, in particular)	—	Disconnect the connectors and dry
	6. Check of fuse for disconnection and corrosion	—	Replace
	7. Check of alternator voltage (while engine speed is at middle or higher)	After operating for several minutes: 27.5 – 29.5 V	Replace
	8. Check of battery relay for operating sound (When starting switch is turned ON or OFF)	—	Replace

No. of pins	MIC type connector		
	Male (female housing)	Female (male housing)	Testing connection use special tool Part No.
7	Body part No. : 79A-222-2640 (Q'ty:5)	Body part No. : 79A-222-2630 (Q'ty:5)	—
11	Body part No. : 79A-222-2680 (Q'ty:5)	Body part No. : 79A-222-2670 (Q'ty:5)	—
5	 BWP04741	 BWP04742	799-601-2710 (T-adapter)
	Body part No. : 79A-222-2620 (Q'ty:5)	Body part No. : 79A-222-2610 (Q'ty:5)	
9	 BWP04743	 BWP04744	799-601-2950 (T-adapter)
	Body part No. : 79A-222-2660 (Q'ty:5)	Body part No. : 79A-222-2650 (Q'ty:5)	
13	 BWP04745	 BWP04746	799-601-2720 (T-adapter)
	Body part No. : 79A-222-2710 (Q'ty:2)	Body part No. : 79A-222-2690 (Q'ty:2)	

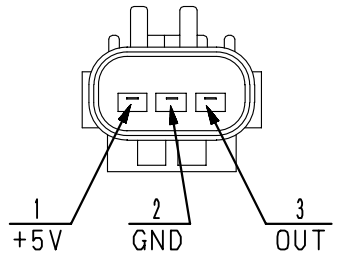
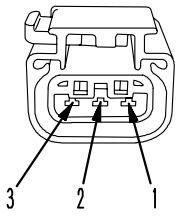
B4D18196

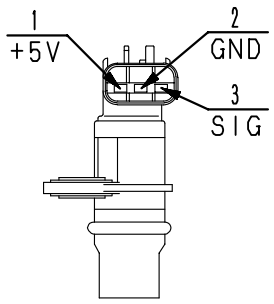
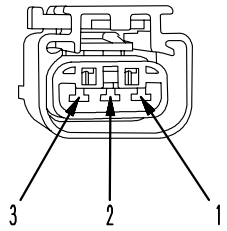
[The pin No. is also marked on the connector (electric wire insertion end)]

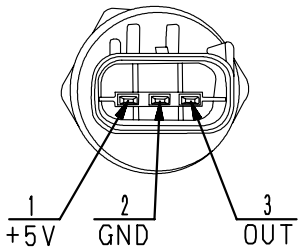
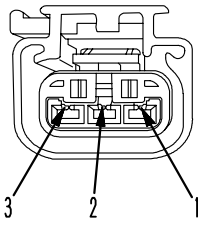
Type (shell size code)	HD30 Series connector		
	Body (plug)	Body (receptacle)	Testing connection use special tool Part No.
24-31 (9)	Pin (male terminal)	Socket (female terminal)	799-601-9290 (T-adapter)
	 BWP05033	 BWP05034	
	Part No. :08191-91203, 08191-91204, 08191-91205, 08191-91206	Part No. :08191-94103, 08191-94104, 08191-94105, 08191-94106	
	Socket (female terminal)	Pin (male termial)	799-601-9290 (T-adapter)
	 BWP05035	 BWP05036	
	Part No. :08191-92203, 08191-92204, 08191-92205, 08191-92206	Part No. :08191-93103, 08191-93104, 08191-93105, 08191-93106	

B4D18409

FRAMATOME connector for engine

No. of pins	Ambient pressure sensor (107, 114 engine)		
	Sensor side (plug)	Harness side (receptacle)	Testing connection use special tool Part No.
3			799-601-4140 (T-adapter) (Kit : 799-601-4101) (Kit : 799-601-4201)
	—	—	

No. of pins	NE speed sensor (95, 107, 114, 125, 140, 170, 12V140 engine) and CAM sensor (95, 107, 114 engine)		
	Sensor side (plug)	Harness side (receptacle)	
3			799-601-4130 (T-adapter) (Kit : 799-601-4101) (Kit : 799-601-4201)
	—	—	

No. of pins	EGR gas pressure sensor (125, 140 engine)		
	Sensor side (plug)	Harness side (receptacle)	
3			799-601-4180 (T-adapter) (Kit : 799-601-4101) (Kit : 799-601-4201)
	—	—	

B4D18422

Failure code [AB00KE] Charge Voltage Low

Action code	Failure code	Trouble	Charge Voltage Low (in mechanical system)
—	**AB00KE**		
Contents of trouble	• Generation signal from the alternator is not inputted, while the engine is running.		
Action of controller	• None in particular		
Problem that appears on machine	• There is a possibility that the battery may not be charged, if charging is continued without corrective action.		
Related information	• If the red charge level monitor of the machine monitor lights up while the engine is running, this failure code is recorded. • Input from the alternator (voltage) can be confirmed in the monitor function. (Code No. 04300: Charging voltage)		

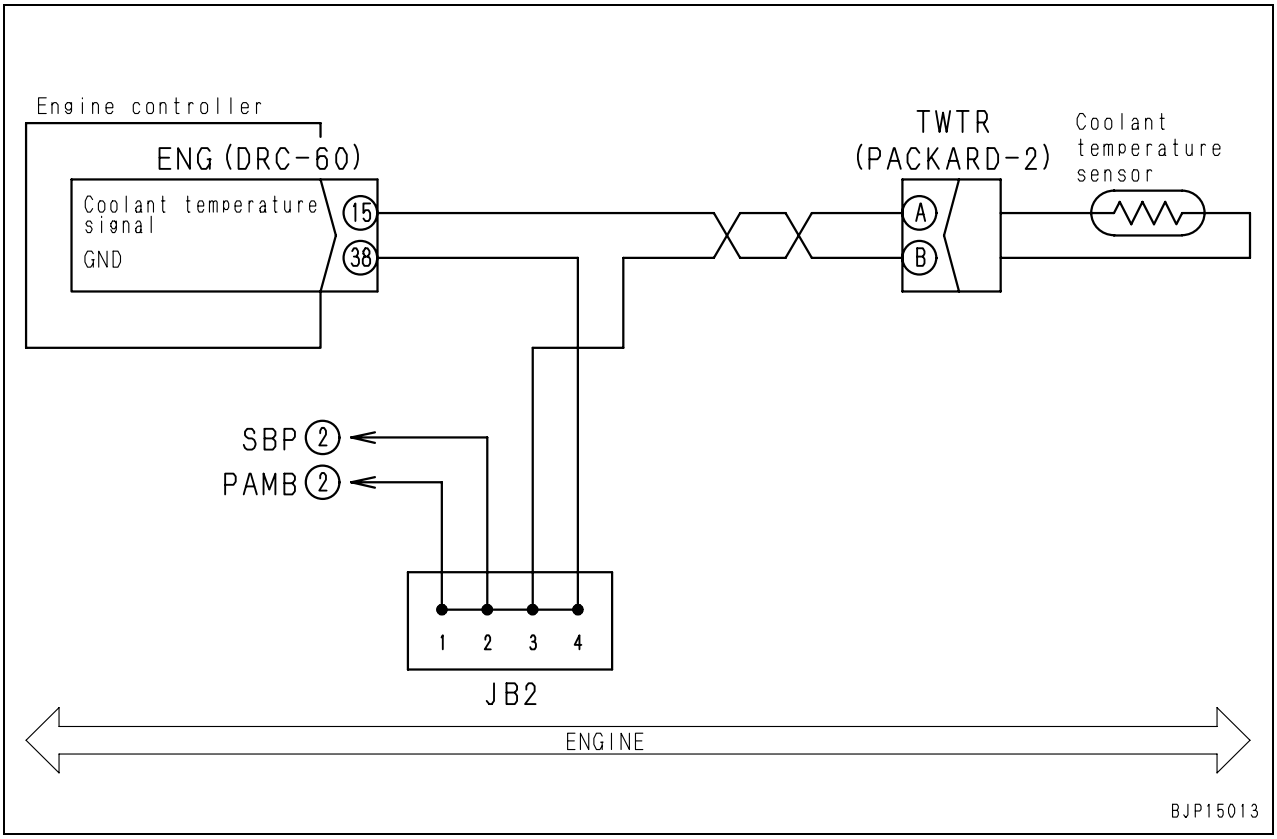
	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Alternator defective (short generating output)	★ Turn the engine starting switch OFF for the preparations, and hold it running during the troubleshooting.			
			Alternator	Engine rotation	Voltage	
			Between terminal R and grounding	Min. medium speed	27.5 – 29.5 V	
	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 from P02 (female) (11) to J02 to J21 to E08 alternator terminal R		Resistance value	Max. 1 Ω
	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 P02 (female) (11), J02, J21, E08 and alternator terminal R, other related circuits and grounding		Resistance value	Min. 1 MΩ
	4	Machine monitor defective	★ Turn the engine starting switch OFF for the preparations, and keep the engine running during the troubleshooting.			
			P02	Engine rotation	Voltage	
			Between (11) and grounding	Min. medium speed	27.5 – 29.5 V	

Failure code [CA111] ECM Critical Internal Failure

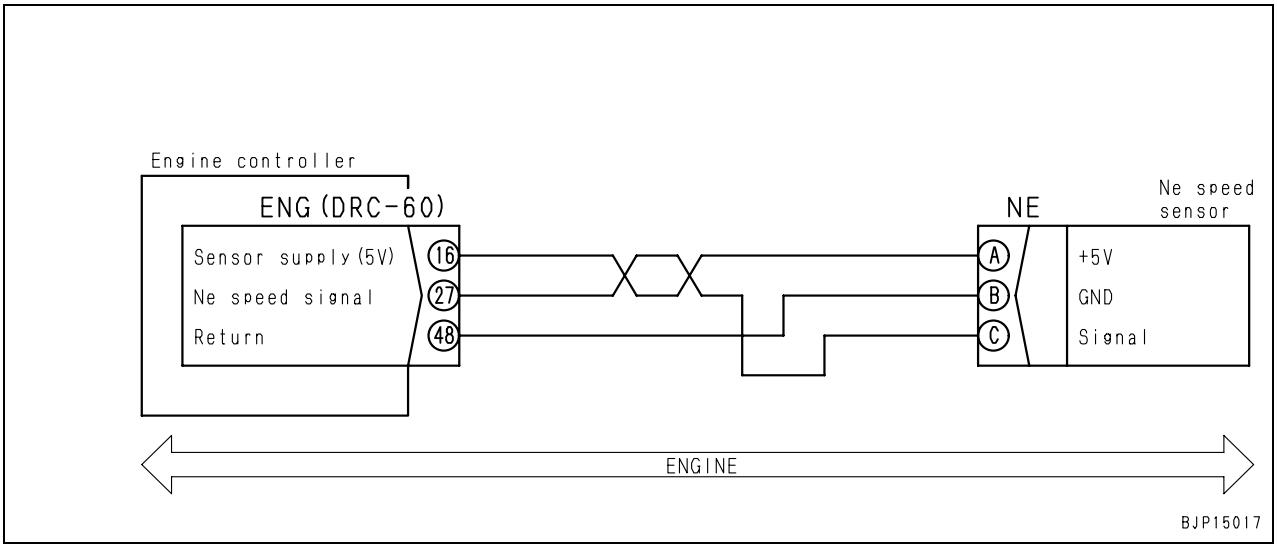
Action code	Failure code	Trouble	ECM Critical Internal Failure (Engine controller system)
E10	**CA111**		
Contents of trouble	• Incompatibility of data occurred in engine controller.		
Action of controller	• None in particular.		
Problem that appears on machine	• Operations are continued, but engine may stop during operations or may not start in stopped state.		
Related information			

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective circuit breaker No.3 and No.9.	Circuit breaker may be defective. Check it directly. (If circuit breaker is turned OFF, circuit probably has ground fault.)		
	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 CE03 (female) (3) – battery (+)	Resistance	Max. 1 Ω
			Wiring harness between CE03 (female) (1) – chassis ground	Resistance	Max. 1 Ω
	3	Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between CE03 (female) (3) – battery (+) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between CE03 (female) (1) – chassis ground	Resistance	Min. 1 MΩ
	4	Defective engine controller	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			CE03	Voltage	
			Between (3) – (1)	20 – 30 V	

Circuit diagram related to coolant temperature sensor



Circuit diagram related to Ne speed sensor power supply



Failure code [CA324] Inj #3 (L#3) Open/Short Error

Action code	Failure code	Trouble	Inj #3 (L#3) Open/Short Error (Engine controller system)
E11	**CA324**		
Contents of trouble	• Opening or short circuit was detected in injector #3 circuit.		
Action of controller	• None in particular.		
Problem that appears on machine	• Engine output lowers. • Speed is unstable.		
Related information	★ As approximate 70 V pulse is applied to the injector terminal during engine running (when it is normal), the measurement cannot be taken with a tester.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective injector #3 (Internal defect)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			INJ (male)	Resistance		
			Between (3) – (10)	0.4 – 1.1 Ω		
			Between (3), (10) – chassis ground	Min. 1 MΩ		
	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 ENG (female) (55) – INJ (female) (3)	Resistance	Max. 1 Ω	
			Wiring harness between ENG (female) (52) – INJ (female) (10)	Resistance	Max. 1 Ω	
	3	Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between ENG (female) (55) – INJ (female) (3) and chassis ground	Resistance	Min. 1 MΩ	
			Wiring harness between ENG (female) (52) – INJ (female) (10) and chassis ground	Resistance	Min. 1 MΩ	
	4	Defective another cylinder injector or wiring harness	If failure codes are displayed for multiple injectors, carry out troubleshooting for them, too.			
	5	Defective engine controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			ENG (female)	Resistance		
			Between (55) – (52)	0.4 – 1.1 Ω		
			Between (55), (52) – chassis ground	Min. 1 MΩ		

HYDRAULIC EXCAVATOR

PC1250-8R
PC1250SP-8R

Machine model	Serial number
PC1250-8R	35001 and up
PC1250SP-8R	35001 and up

40 Troubleshooting

Troubleshooting by failure code (Display of code), Part 2

Check sheet for no-pressure feed

Machine model		Working No.	
Model serial No.	#	Checked on	/ /
Engine		Service meter	h
Engine serial No.	#	Worker name	

A. Visual check		Good	Bad
1	Fuel leakage to outside		
2	Clogged fuel tank breather		

B. Check with machine monitor (Abnormality record, monitoring, cylinder cut-out operation)

			Good	Bad
3	Checking error/failure code	/ / / /		

4 — Checking monitoring information

Code	Display item	Check conditions	Unit	Standard value (Reference value)	Measured value	Good	Bad
*1	Engine Speed	Low idle	rpm	900 ± 25			
		High idle	rpm	2,000 ± 50			
		Rating or equivalent	rpm	1,800			
*2	Throttle speed	Low idle	%	0			
		High idle	%	100			
*3	Injection rate command	Rating or equivalent	mm^3	—		—	—
*4	Common rail pressure command	Rating or equivalent	MPa				
*5	Common rail fuel pressure	Rating or equivalent	MPa				
*6	Injection timing command	Low idle	CA	—		—	—
		High idle	CA	—		—	—
		Rating or equivalent	CA	—		—	—
*7	Boost Pressure	Rating or equivalent	kPa	160 {1,200}		—	—
*8	Engine coolant temperature	Low idle	°C	—		—	—
*9	Fuel temperature	Low idle	°C	—		—	—

5 — Checking cylinder cut-out operation (Engine speed)

Function	Cut-out cylinder	Check conditions	Unit	Standard value (Reference value)	Measured value	Good	Bad
*10	Cylinder 1	Low idle	rpm	—		—	—
	Cylinder 2	Low idle	rpm	—		—	—
	Cylinder 3	Low idle	rpm	—		—	—
	Cylinder 4	Low idle	rpm	—		—	—
	Cylinder 5	Low idle	rpm	—		—	—
	Cylinder 6	Low idle	rpm	—		—	—

C. Checking fuel circuit pressure		Check conditions	Unit	Standard value (Reference value)	Measured value	Good	Bad
6	Pressure in fuel low-pressure circuit	High idle or equivalent to rated load (Pump relief)	MPa {kg/cm^2}	Min. 0.15 {Min. 1.5}			

D. Checking strainer and filter		Good	Bad
7	Visual check of strainer		
8	Visual check of gauze filter		
9	Visual check of fuel filter		
10	Visual check of bypass valve		

E. Checking leakage and fuel return rate		Check conditions	Unit	Standard value (Reference value)	Measured value	Good	Bad
11	Leakage through pressure limiter	No-load, 1600 rpm	cc/min	Max. 10			
12	Return rate from injector	Rating or equivalent 1,600 rpm	cc/min	960	Speed:		
		Rating or equivalent 1,700 rpm	cc/min	1,020			
		Rating or equivalent 1,800 rpm	cc/min	1,080	Return rate:		
		Rating or equivalent 1,900 rpm	cc/min	1,140			
		Rating or equivalent 2,000 rpm	cc/min	1,200			

*1 – *10: Check with the monitoring function of the machine monitor.

Failure code [CA2249] Rail Press Very Low Error

Action code	Failure code	Trouble	Rail Press Very Low Error (Engine controller system)
E11	**CA2249**		
Contents of trouble	• There is rail press very low error (level 2).		
Action of controller	• Limits common rail pressure.		
Problem that appears on machine	• Engine output lowers.		
Related information			

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting
	Carry out troubleshooting for failure code [**CA559**].	

Failure code [DA25KP] Press. Sensor Power Abnormality

Action code	Failure code	Trouble	Press. Sensor Power Abnormality (in pump controller system)
—	**DA25KP**		
Contents of trouble	• Abnormal current flowed in the power supply (5-V) circuit of the pressure sensor.		
Action of controller	• The output to the power supply (5-V) circuit is turned OFF. • Even if the cause of the failure disappears, the system does not reset itself until the starting switch is turned OFF.		
Problem that appears on machine	• The signal of the pressure sensor is not input normally. • The failure code of a pressure sensor trouble is displayed, too.		
Related information			

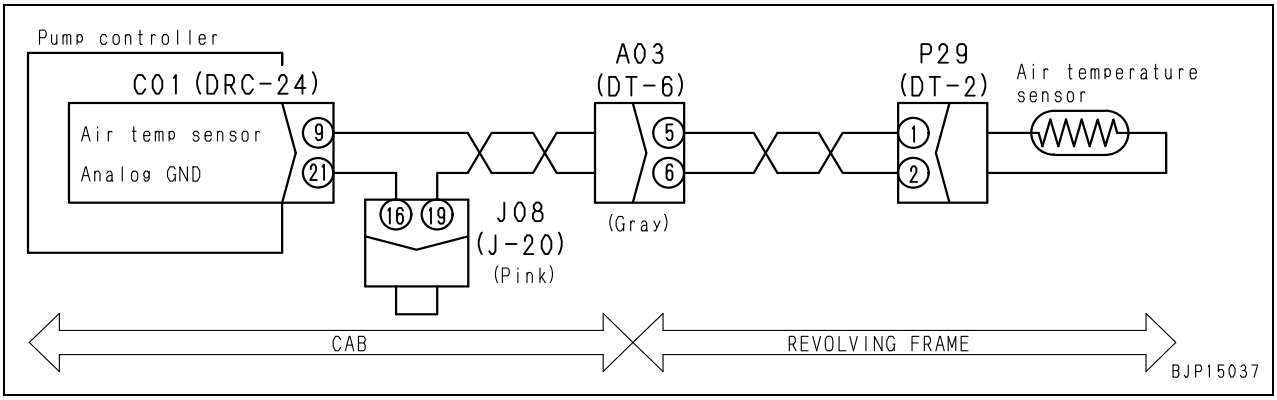
	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Pressure sensor defective (Internal short-circuiting)	★ Turn the engine starting switch OFF for the preparations, and hold it in the ON position during the troubleshooting.			
			Disconnect parts shown at right in order. If failure code disappears when a part is disconnected, that part has internal defect.	F pump pressure sensor	VH02 connector	
				R pump pressure sensor	VH03 connector	
				Swing pump pressure sensor	VH04 connector	
	2	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 C01 (female) (22), JC22, and VH02 (female) (C) and grounding [F pump pressure sensor system]		Resistance value	Min. 1 MΩ
			Between wiring harness between C01 (female) (22), JC22, and VH03 (female) (C) and grounding [R pump pressure sensor system]		Resistance value	Min. 1 MΩ
			Between wiring harness between C01 (female) (22), JC22, and VH04 (female) (C) and grounding [Swing pump pressure sensor system]		Resistance value	Min. 1 MΩ
	3	Pump controller defective	★ Turn the engine starting switch OFF for the preparations, and hold it in the ON position during the troubleshooting.			
			C01		Voltage	
			Between (22) and (21)		4.5 – 5.5 V	

Failure code [DGE5KB] Ambi. Temp. Sensor S/C

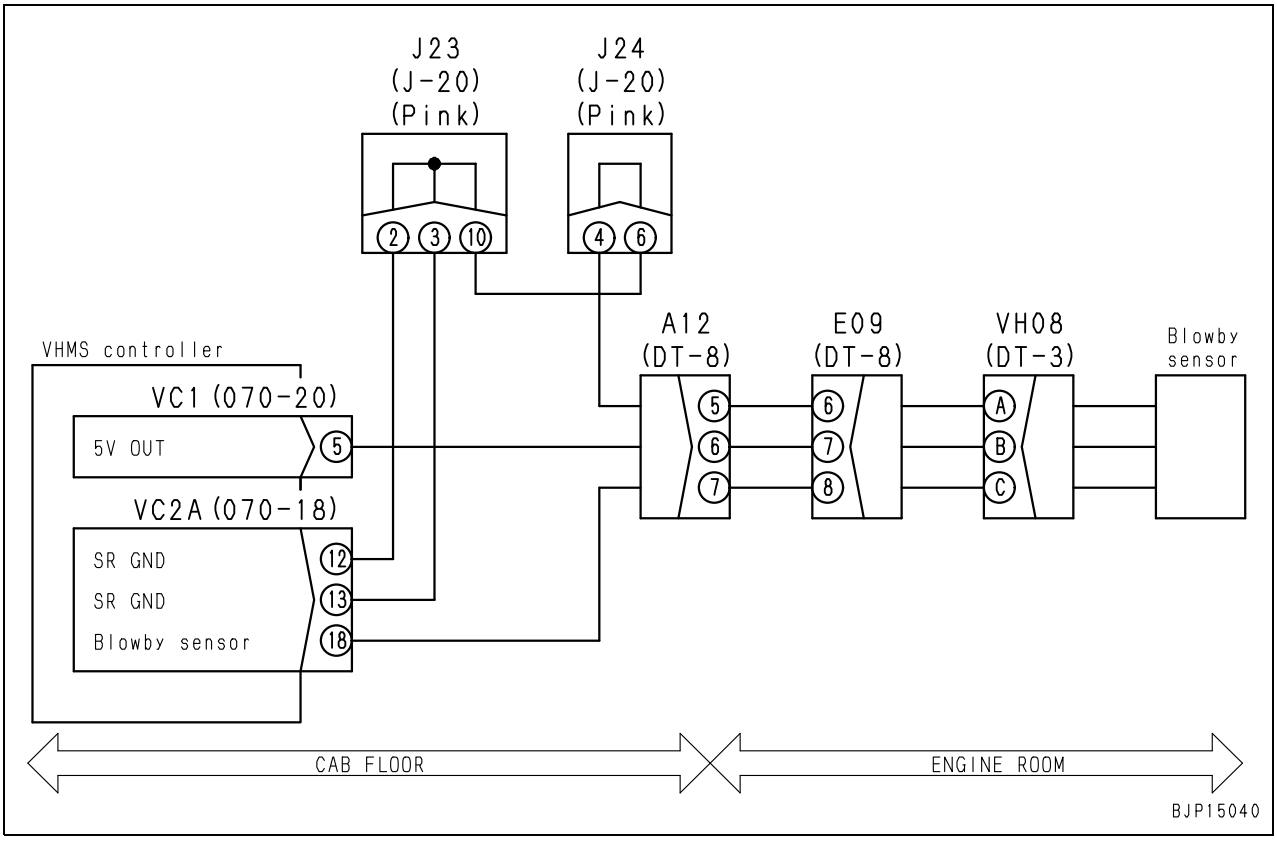
Action code	Failure code	Trouble	Ambi. Temp. Sensor S/C (Pump controller system)
—	**DGE5KB**		
Contents of trouble	• Abnormal current flowed in ambient temperature sensor circuit.		
Action of machine monitor	• None in particular. • If failure disappears, system resets itself.		
Problem that appears on machine	• Fan speed may rise (depending on operating condition).		
Related information	• Input (Temperature) from ambient temperature sensor can be checked with monitoring function. (Code: 37502)		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective ambient temperature sensor	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			P29 (male)	Ambient temperature	Resistance	
			Between (1) – (2)	20°C	4 – 6 Ω	
	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 C01 (female) (9) – P29 (female) (1)		Resistance	Max. 1 Ω
			Wiring harness between C01 (female) (21) – P29 (female) (2)		Resistance	Max. 1 Ω
	3	Hot short (Short circuit with 24V circuit) in wiring harness	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			Wiring harness between C01 (female) (9) – P29 (female) (1) and chassis ground		Voltage	Max. 1 V
	4	Defective pump controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			C01 (male)	Ambient temperature	Resistance	
			Between (9) – (21)	20°C	4 – 6 Ω	

Circuit diagram related to ambient temperature sensor



Electrical diagram related to blow-by pressure sensor

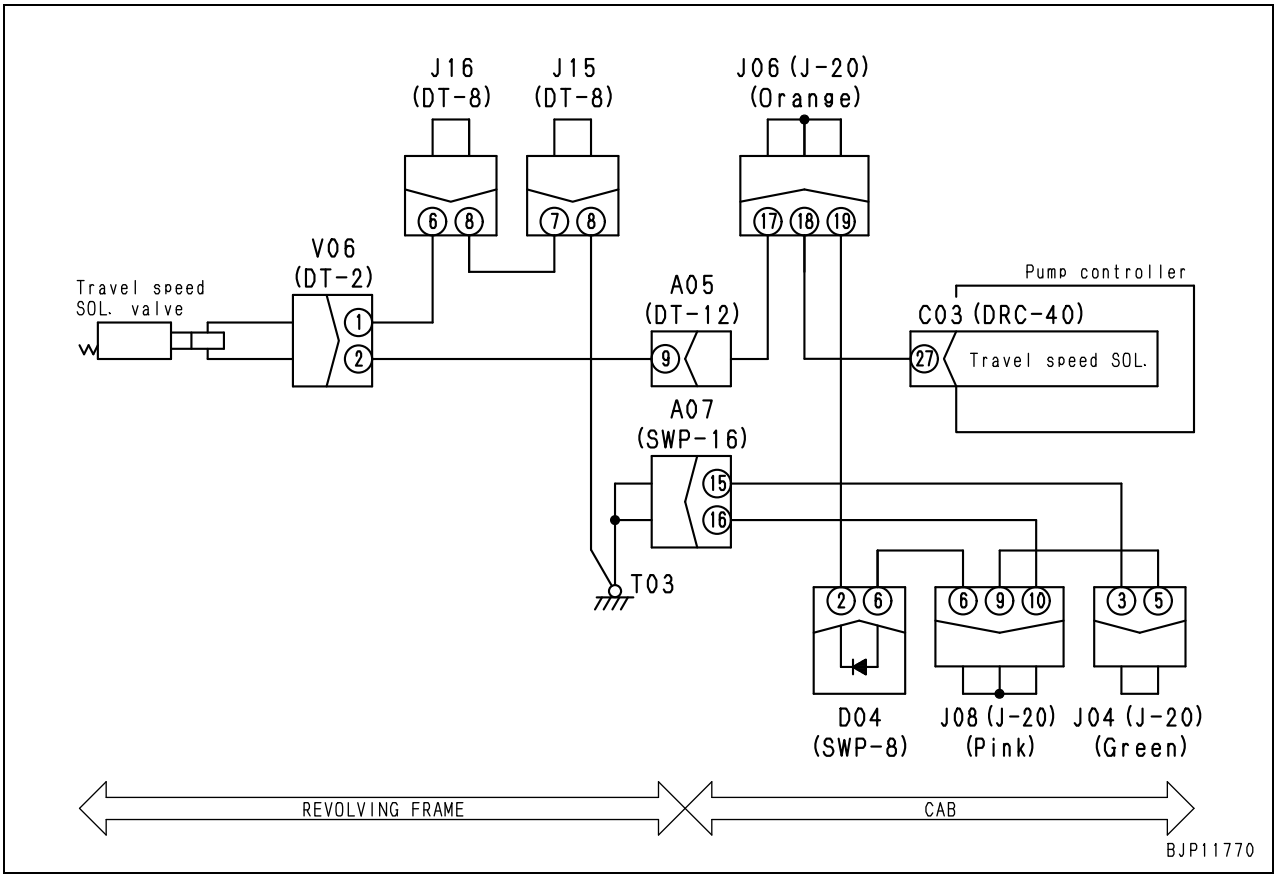


Failure code [DHPTKB] Fan Pump Pre. Sens Failure (or change of VHMS-LED display from n5 to 24)

Action code	Failure code	Trouble	Fan Pump Pre. Sens Failure (VHMS controller system)
—	**DHPTKB**		
Contents of trouble	• Sensor output voltage is out of normal range (0.5 – 4.5 V) and above 4.7 V.		
Action of machine monitor	• None in particular.		
Problem that appears on machine	• Pressure may not be displayed normally.		
Related information	• Failure code of VHMS system is not recorded in failure history of machine monitor. • 7-segment LED display of VHMS controller: **n5 → 24** (Code is displayed 2 letters by 2.) • Fan pump pressure can be checked by downloading data to personal computer after snap shot operation.		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective pressure sensor	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			Between P34 (A) – (C)	Voltage	0.46 – 0.54 V
	2	Ground fault in wiring harness (Contact with GND circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between VC1 (female) (5) – P34 (female) (C) or between VC2A (female) (15) – P34 (female) (B)	Resistance	Min. 1 MΩ
	3	Defective VHMS controller	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			Between P34 (A) – (B) or between VC2A (15) – (12), (13)	Voltage	4.5 – 5.5 V

Electrical diagram related to travel speed solenoid

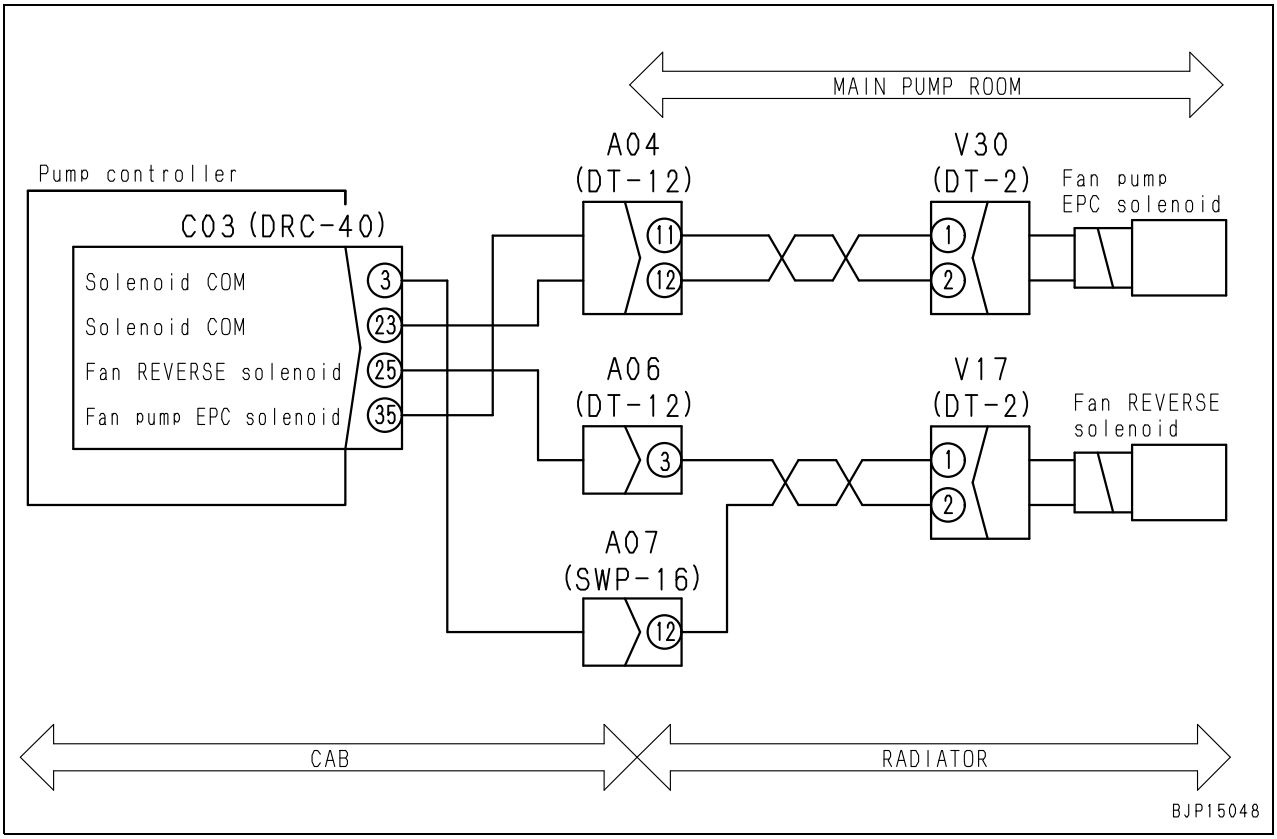


Failure code [DW7BKA] Fan Reverse Sol. Disc.

Action code	Failure code	Trouble	Fan Reverse Sol. Disc. (Pump controller system)
—	**DW7BKA**		
Contents of trouble	• When signal is output to hydraulic fan reverse solenoid circuit, no current flows.		
Action of controller	• None in particular (The solenoid does not function as there is no current flowing to it) • When the failure cause disappears of itself, the machine operation returns to normalcy.		
Problem that appears on machine	• Fan does not rotate in reverse.		
Related information	• Operating condition (ON/OFF) of fan reverse solenoid can be checked with monitoring function. (Code 02301: Solenoid 1) • Since disconnection of solenoid is detected while output is turned ON, be sure to turn output ON (rotate fan in reverse) when checking reproduction of failure after repair.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective hydraulic fan reverse solenoid (Internal disconnection)	★ Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			V17 (male)	Resistance		
			Between (1) – (2)	20 – 60 Ω		
	2	Disconnection of wiring harness (Disconnection of 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) (25) – V17 (female) (1)	Resistance	Max. 1 Ω	
			Wiring harness between V17 (female) (2) – C03 (female) (3)	Resistance	Max. 1 Ω	
	3	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) (25) – V17 (female) (1) and grounding	Voltage	Max. 1 V	
	4	Pump controller defective	★ Turn the engine starting switch OFF for the preparations, and keep the engine running during the troubleshooting.			
			C03 (female)	Resistance		
			Between (25) and grounding	20 – 60 Ω		

Circuit diagram related to hydraulic fan

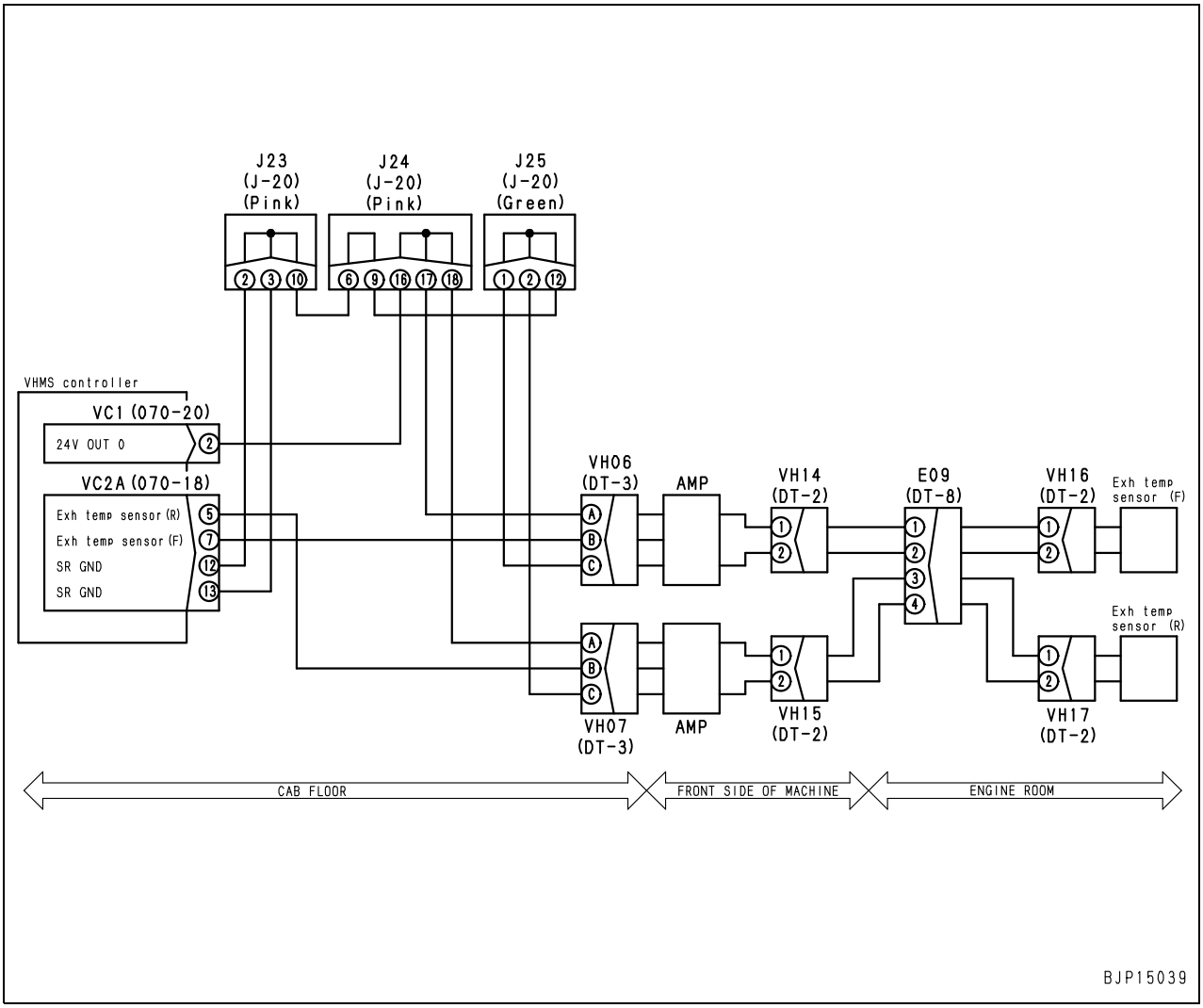


Failure code [DY2CKB] Washer Drive S/C

Action code	Failure code	Trouble	Washer Drive S/C (Machine monitor system)
—	**DY2CKB**		
Contents of trouble	• Abnormal current flew to the window washer drive circuit, when the circuit was grounded and power was switched ON.		
Response from Monitor Panel	• Power supply to the grounding in the window washer motor circuit was switched OFF.		
Problem that appears on machine	• The window washer stopped moving.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Window washer drive motor defective (Internal short-circuiting)	★ Turn the engine starting switch OFF for the preparations, and hold it in the OFF position for the troubleshooting.			
			M95 (male), M28 (male)	Resistance value		
			Between (1) and (2)	5 – 20 Ω		
	2	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 for the troubleshooting.			
			Between wiring harness between P01 (female) (3) and M28 (female) (2), P01 (female) (3) and M96 (female) (2), P01 (female) (3) to D05 (female) (7) and grounding	Voltage	Max. 1 V	
	3	Machine monitor defective	★ Turn the engine starting switch OFF for the preparations, and hold it in the ON position for the troubleshooting.			
			P01	Window washer switch	Voltage	
			Between (3) and grounding	OFF	20 – 30 V	
				ON	Max. 1 V	

Electrical diagram related to exhaust temperature sensor (front and rear)



Failure code [J100KB] Cnt. Pump Pre. Sens Failure (or change of VHMS-LED display from n5 to 12)

Action code	Failure code	Trouble	Cnt. Pump Pre. Sens Failure (VHMS controller system)
—	**J100KB**		
Contents of trouble	• The signal voltage of the control pump pressure sensor is above 4.9 V.		
Action of controller	• None in particular.		
Problem that appears on machine	• The snap shot data downloaded to a personal computer are not displayed normally.		
Related information	• The failure codes of the VHMS system are not recorded in the failure history of the machine monitor. • The 7-segment LED of the VHMS controller displays **n5→12** (displays the code 2 characters by 2). • The control pump pressure can be checked by downloading the data to a personal computer after performing the snap shot operation.		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Sensor 24-V power supply defective	If failure code [**DBB6KP**] is displayed, perform troubleshooting for it first.		
	2	Control pump pressure sensor defective (Internal defect)	★ Turn the engine starting switch OFF for the preparations, and hold it in the ON position or run the engine during the troubleshooting.		
			VH11	Voltage	
			Between (B) and (A)	20 – 30 V	
			Between (C) and (A)	0.5 – 4.9 V	
			The voltage of the pressure sensor is measured with the wiring harness connected. Accordingly, if the voltage is abnormal, check the wiring harness and controller for another cause of the trouble, and then judge.		
	3	Hot short circuit in 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 VC2A (female) (6) and VH11 (female) (C) and grounding	Voltage	Max. 1 V
	4	VHMS controller defective	★ Turn the engine starting switch OFF for the preparations, and hold it in the ON position or run the engine during the troubleshooting.		
			VC2A	Voltage	
			Between (6) and (12), (13)	0.5 – 4.9 V	

Before carrying out troubleshooting of electrical system

Connection table of circuit breakers

★ This connection table shows the devices to which each power supply of the circuit breakers supplies power (A switch power supply is a device which supplies power while the starting switch is at the ON position and a constant power supply is a device which supplies power while the starting switch is at the OFF position).

★ When carrying out troubleshooting related to the electrical system, you should check the circuit breakers first to see if the power is supplied normally.

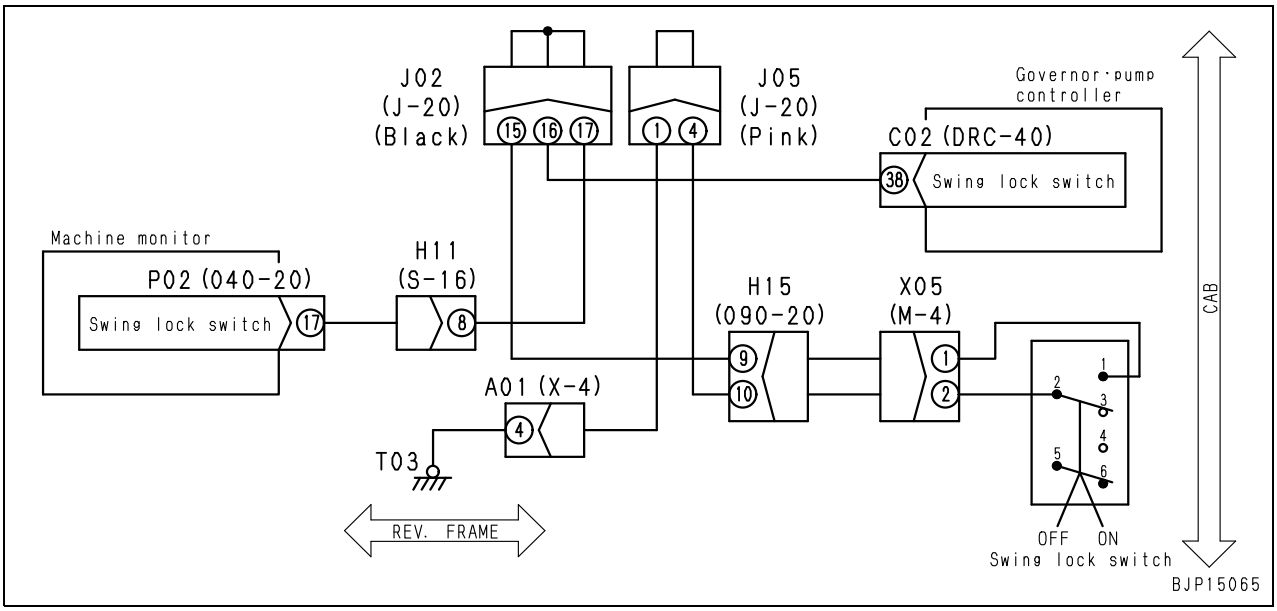
Type of power supply	Circuit breaker No.	Circuit breaker capacity	Destination of power
Switch power supply (Battery relay terminal M)	1	40 A	Fuse box (Fuses No. 1 – 14)
	2	40 A	Breaker (Breaker No.4, 5, 6, and 7)
	4	20 A	Machine monitor
	5	20 A	Lamp switch
	6	20 A	Pump controller (Solenoid power source)
	7	20 A	Lamp relay
	13	20 A	Electric grease pump (Serial number: 36051 and up)
Constant power supply (Battery relay terminal B)	3	40 A	Breaker (Breaker No.8, 9, 10, and 11)
	8	20 A	Pump controller, starting switch
	9	20 A	Engine controller
	10	20 A	Machine monitor
	11	20 A	Fuse box (Fuse No.16 – 20)
	12	20 A	Priming pump
	14	20 A	Grease filling controller (Serial number: 36051 and up)

E-5 All work equipment, swing and travel do not move

Failure information	• All the work equipment, swing and travel do not move.
Related information	—

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Fuse No. 3 fault	If the fuse is blown, there is a big possibility that grounding fault occurred in the circuit.			
	2	PPC lock switch defective (Internal disconnection)	★ Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			S14 (female)	Lock lever	Resistance value	
			Between (1) and (2)	Lock	Min. 1 MΩ	
				Release	Max. 1 Ω	
	3	PPC lock solenoid fault (Internal disconnection or short-circuiting)	★ Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			V08 (male)	Resistance value		
			Between (2) and (1)	20 – 60 Ω		
			Between (2) and grounding	Min. 1 MΩ		
	4	Assembled-type diode D01 fault (Internal short-circuiting)	★ Turn the engine starting switch OFF for the preparations, and hold it in the OFF position during the troubleshooting.			
			D01 (male)	Resistance value		
			Between (4) and (8)	Min. 1 MΩ		
	5	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 FB1-3 outlet and S14 (male) (1)	Resistance value	Max. 1 Ω	
			Wiring harness from S14 (male) (2) to J02 to V08 (female) (2)	Resistance value	Max. 1 Ω	
			Wiring harness between V08 (female) (1) and grounding	Resistance value	Max. 1 Ω	
	6	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 FB1-3 outlet and S14 (male) (1) and grounding	Resistance value	Min. 1 MΩ	
			Wiring harness from S14 (male) (2) to J02 to V02 (female) (2), or between wiring harness between D01 (female) (4) and J02 (male) (18) and grounding	Resistance value	Min. 1 MΩ	

Electrical diagram related to swing lock switch



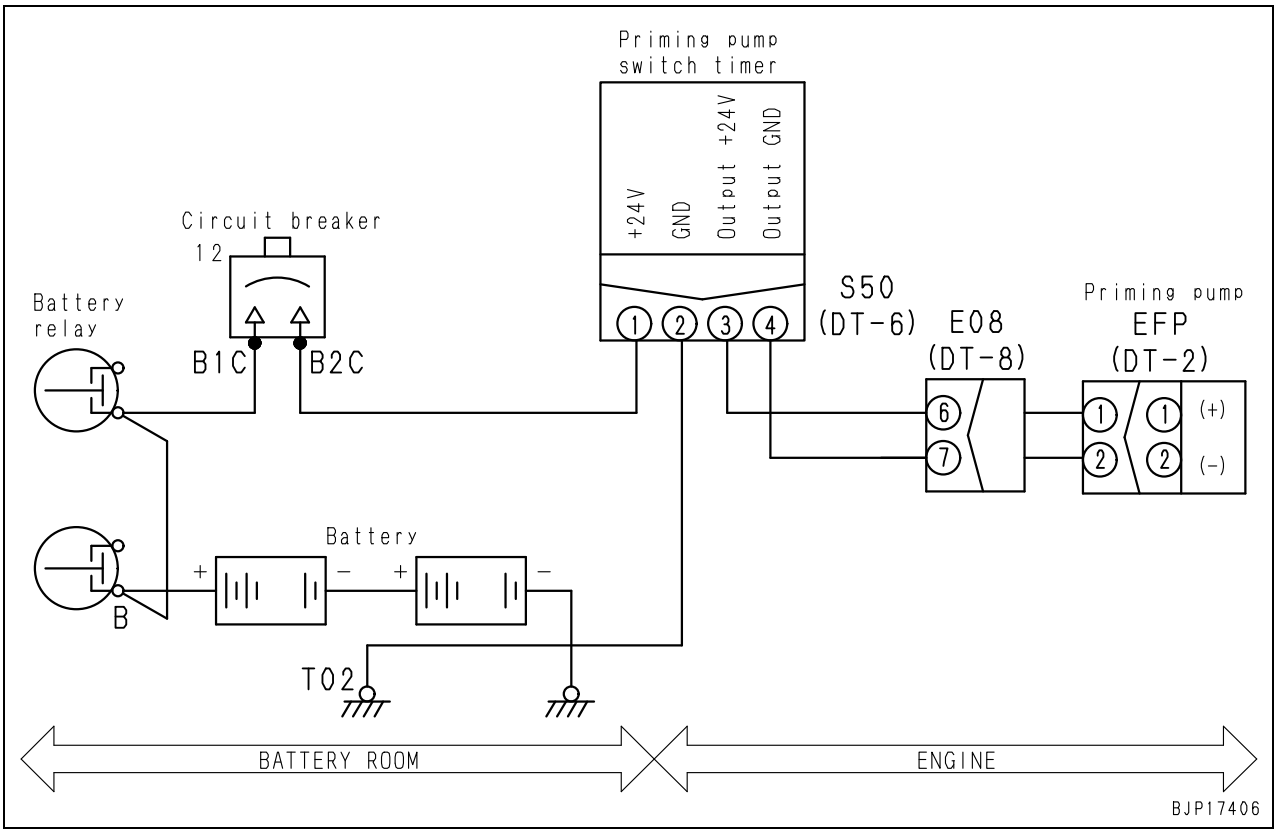
E-24 “TRAVEL” is not correctly displayed in monitor function

Failure information	• “TRAVEL” is not correctly displayed in the monitor function (special function) on the machine monitor.
Related information	—

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Travel PPC hydraulic switch fault (Internal disconnection or short-circuiting)	★ Turn the engine starting switch OFF for the preparations, and keep the engine running during the troubleshooting.			
			S01, S11, S12, S13 (male)	Travel control lever	Resistance value	
			Between (1) and (2)	NEUTRAL	Min. 1 MΩ	
				Forward or reverse	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 from C02 (female) (16) to J18 to S12, S13 (female) (2)		Resistance value	Max. 1 Ω
			Wiring harness from C03 (female) (39) to S01, S11 (female) (2)		Resistance value	Max. 1 Ω
			Wiring harness from S01, S11, S12, S13 (female) (1) to 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.			
			Wiring harness from C02 (female) (16) to J18 to S12, S13 (female) (2) and grounding		Resistance value	Min. 1 MΩ
			Wiring harness from C03 (female) (39) to S01, S11 (female) (2) and grounding		Resistance value	Min. 1 MΩ
	4	Hot short circuit in 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.			
			Wiring harness from C02 (female) (16) to J18 to S12, S13 (female) (2) and grounding		Voltage	Max. 1 V
			Wiring harness from C03 (female) (39) to S01, S11 (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.			
			Controller connector	Travel control lever	Voltage	
			Between C02 (16) and grounding Between C03 (39) and grounding	NEUTRAL	20 – 30 V	
				Forward or backward	Max. 1 V	

Presumed cause and standard value in normalcy	Cause		Standard value in normalcy and references for troubleshooting		
	8	Trouble in electric priming pump	a Prepare with battery ground cable disconnected, then carry out troubleshooting without reconnecting (since power supply is unswitched).		
			Between EFP (male) (1) – (2)	Resis-tance	1 – 3 Ω
			Between EFP (male) (1) – pump body	Resis-tance	Min. 1 MΩ
			Between EFP (male) (2) – pump body	Resis-tance	Min. 1 MΩ

Circuit diagram related to electric priming pump



H-3 All work equipment, travel, and swing systems do not work

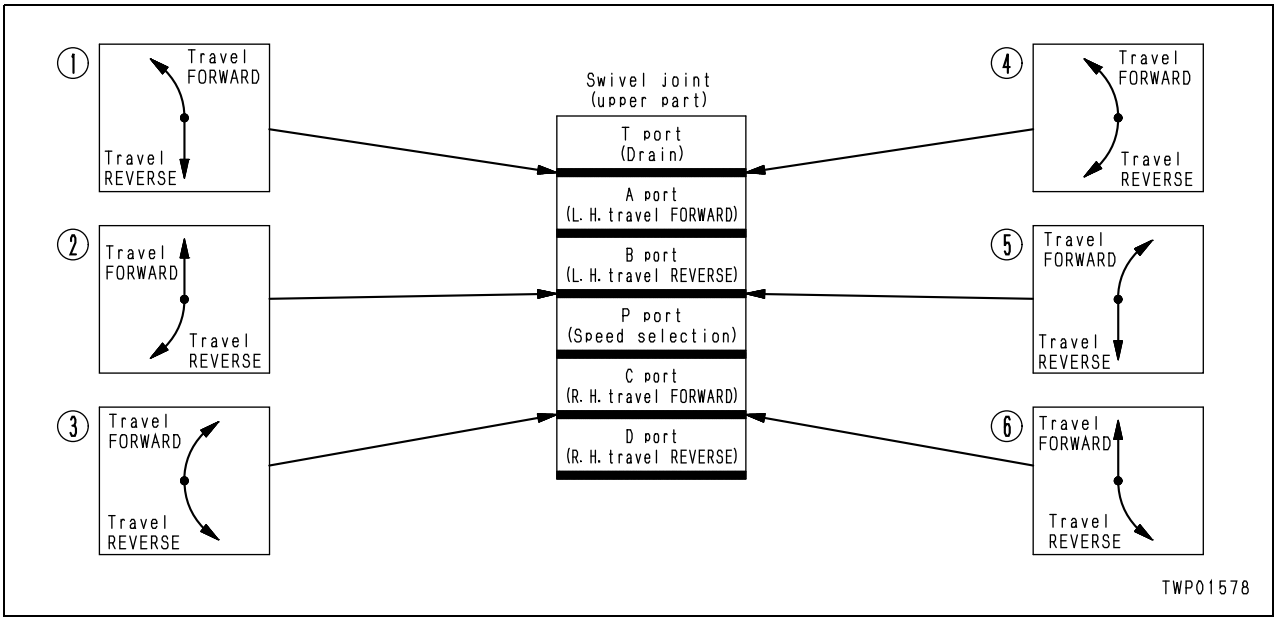
Failure information	• All work equipment, travel, and swing systems do not work
Related information	• Carry out all the troubleshooting in working mode P.

	Cause		Standard value in normal state/Remarks on troubleshooting	
Possible causes and standard value in normal state	1	Defective PPC lock valve linkage	Since the PPC lock valve linkage may be defective, check it directly.	
	2	Internal defect of PTO	Since the control pump may not revolve because of an internal defect of the PTO, check the PTO directly.	
	3	Internal defect of control pump	Since control pump may have a defect in it, check the inside of the pilot filter for metal chips.	
	4	Defective adjustment or malfunction of control relief valve	★ Prepare with the engine stopped, then carry out troubleshooting with the engine at high idle.	
			Work equipment, swing, and travel levers	Control relief pressure
			All levers in neutral	$3.1^{+0.5}_{0}$ MPa {$32^{+5.0}_{0}$ kg/cm^2}
			If the oil pressure cannot be set normally by adjustment, check cause 3. If the result of check of cause 5 is normal, the control relief valve may have a malfunction. Check the control relief valve directly.	
	5	Leakage in control system devices	★ Stop the engine and block (1) – (13) in the drawing in order, then carry out troubleshooting with the engine at high idle.	
			Work equipment, swing, and travel levers	Control relief pressure
			All levers in neutral	$3.1^{+0.5}_{0}$ MPa {$32^{+5.0}_{0}$ kg/cm^2}

Failure information (2)	• Machine deviates in different directions, depending on its travel direction
Related information	• Check that the travel speed is normal. (If it is abnormal, carry out the related troubleshooting.) • Carry out all the troubleshooting in working mode P.

	Cause		Standard value in normal state/Remarks on troubleshooting	
Possible causes and standard value in normal state	1	Malfunction of travel PPC valve	★ Prepare with the engine stopped, then carry out troubleshooting with the engine at high idle.	
			Travel lever	PPC valve output pressure
			Full stroke	$2.9\,^{+0.6}_{-0.2}$ MPa {$30\,^{+5.5}_{-1.5}$ kg/cm^2}
	2	Malfunction of travel control valve (spool)	Since the spool of the travel control valve may have a malfunction, check it directly.	
	3	Defective seal of center swivel joint	★ Prepare with the engine stopped, then carry out troubleshooting with the engine at high idle.	
			Travel lever	Leakage from swivel joint
			Relieved on one side	Max. 100 cc/min
			If seal is defective, the machine deviates as shown in Fig.	
	4	Low set pressure of travel motor safety valve	★ Prepare with the engine stopped, then carry out troubleshooting with the engine at high idle.	
			Travel lever	Travel relief pressure
			Relieved on one side	$34.3\,^{+1.0}_{-2.5}$ MPa {$350\,^{+10}_{-25}$ kg/cm^2}

Figure 2: Defective seals in center swivel joint and travel deviation directions



PC1250-8R, PC1250SP-8R Hydraulic excavator
Form No. SEN02086-02

S-6 Engine lacks output (or lacks power)

General causes why engine lacks output

- Insufficient intake of air
- Insufficient supply of fuel
- Defective injection condition of fuel
- Improper selection of fuel
- There is overheating:
  See “S-14 Coolant temperature becomes too high (Overheating)”
- Controller is controlling in derate mode (limiting injection rate (output) because of an error in electrical system)

			Causes																
			Clogged air cleaner element	Air leakage from air intake piping, aftercooler	Seized turbocharger, interference of turbocharger	Defective contact of valve and valve seat	Improper valve clearance	Worn piston ring, cylinder liner	Clogged air breather hole of fuel tank cap	Leaking, clogged fuel piping	Clogged fuel filter, strainer	Clogged feed pump gauze filter	Stuck, seized supply pump plunger	Clogged injector, defective spray (dirt in injector)	Defective drive of injector (signal, solenoid)	Defective installation of charge pressure sensor (air leakage)	Defective charge pressure sensor, wiring harness	Defective fuel temperature sensor, wiring harness
Questions	Confirm recent repair history																	
	Degree of use of machine	Operated for long period	△			△		△			△	△						
	Power was lost	Suddenly		○											○	○	○	
		Gradually	○			○		○			○	○		○		○		
	Non-specified fuel is being used										○	○						
	Replacement of filters has not been carried out according to Operation and Maintenance Manual		◎															
	Oil must be added more frequently					○	○	○										
Check items	Air breather hole of fuel tank cap is clogged								◎									
	Fuel is leaking from fuel piping									◎								
	Output becomes insufficient after short stop of operation																	◎
	Exhaust smoke color	Black	◎	◎														
		Blue under light load			◎													
	When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low													◎				
	When engine is cranked, interference sound is generated around turbocharger			◎														
	When engine is cranked, abnormal sound is generated around cylinder head						◎											
	High idle speed is too low														○			
	High idle speed under no load is normal, but speed suddenly drops when load is applied										◎	◎	○					
	Engine does not pick up smoothly and combustion is irregular		◎						○	○				◎				
	There is hunting from engine (rotation is irregular)								○	○	○	○						
	Blow-by gas is excessive				◎													
Troubleshooting	Inspect air cleaner directly		●															
	Inspect air intake piping directly			●														
	When boost pressure is measured, it is found to be low		●	●	●													
	When compression pressure is measured, it is found to be low					●		●										
	Inspect valve clearance directly						●											
	Inspect fuel filter, strainer directly										●							
	Inspect feed pump gauze filter directly											●						
	Carry out troubleshooting according to “No-pressure feed by supply pump (*1)” in E-mode												●					
	When a cylinder is cut out for reduced cylinder mode operation, engine speed does not change													●	●			
	Inspect boost pressure sensor mount directly															●		
	Carry out troubleshooting according to “Abnormality in charge pressure sensor (*2)”																●	
	Carry out troubleshooting according to “Abnormality in fuel temperature sensor (*3)”																	●
		Remedy	Clean	Correct	Replace	Replace	Adjust	Replace	Clean	Correct	Replace	Clean	Replace	Replace	Replace	Correct	Replace	Replace

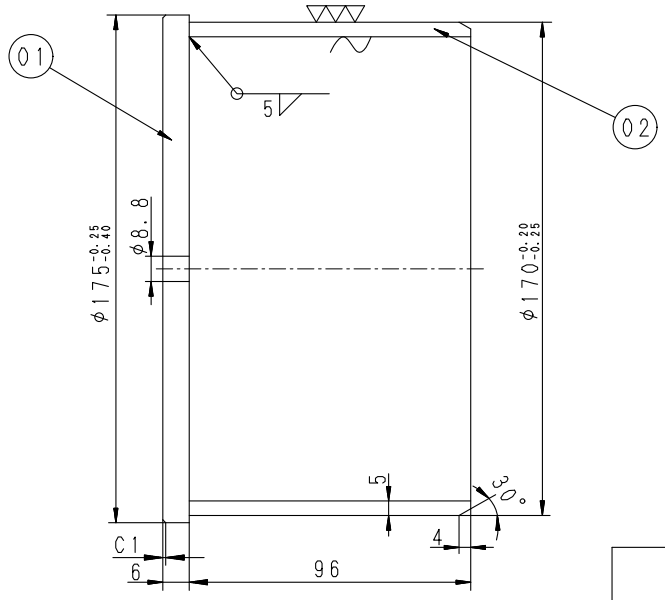
*1: Failure code **[CA559]** and failure code **[CA2249]**
*2: Failure code **[CA122]** and failure code **[CA123]**
*3: Failure code **[CA263]** and failure code **[CA265]**

PC1250-8R, PC1250SP-8R Hydraulic excavator
Form No. SEN02087-02

Component	Symbol		Part number	Part name	Necessity	Q'ty	New/Remodel	Sketch	Nature of work, remarks
Track shoe assembly	R	1	796-832-1100	Remover & installer	■	1			Separation and installation of track shoe assembly
			791-685-9510	• Frame		1			
			791-685-9520	• Frame		1			
			791-685-9530	• Rod		1			
			791-685-9540	• Rod		1			
			791-685-9550	• Nut		3			
			791-685-9560	• Bolt		4			
			791-126-0150	• Adapter		1			
			791-680-5520	• Guide		1			
			791-632-1150	• Pusher		1			
			791-632-1140	• Adapter		1			
			791-832-1110	• Adapter		1			
			790-434-1610	• Grip		1			
			01010-51440	• Bolt		2			
			791-685-9620	• Extension		1			
			791-632-1160	• Guide		1			
			791-680-5543	• Adapter		1			
			791-680-5551	• Guide		1			
			796-832-1120	• Adapter		1			
			791-632-1170	• Guide		1			
			791-680-9630	• Adapter		1			
			790-101-4300	• Cylinder (1,471 kN {150 ton})	■	1			
			790-101-4200	Puller (294.2 kN {30 ton})	■	1			
			790-101-1102	Hydraulic pump	■	1			
Hydraulic pump assembly	S		796-770-1301	Oil stopper	■	1			Stopping oil leak
Center swivel joint assembly	T	1	790-101-2501	Push-puller	■	1			Disassembly of center swivel joint assembly
			790-101-2510	• Block	■	1			
			790-101-2520	• Screw	■	1			
			791-112-1180	• Nut	■	1			
			790-101-2540	• Washer	■	1			
			790-101-2630	• Leg	■	2			
			790-101-2570	• Plate	■	2			
			790-101-2560	• Nut	■	2			
			790-101-2660	• Adapter	■	2			
Travel PPC valve assembly		2	796T-416-1040	Push tool	■	1		○	Disassembly and assembly of travel PPC valve assembly
		3	796T-416-1050	Push tool	■	1		○	
		4	796T-416-1020	Push tool	■	1		○	

Note: Komatsu cannot accept any responsibility for any special tools manufactured according to these sketches.

U4 Push tool (for arm)



1. Machine after welding.
2. OP:Made by machining material.
3. Welding.

Welding rod	Preheating
D5816 D5826	50~200

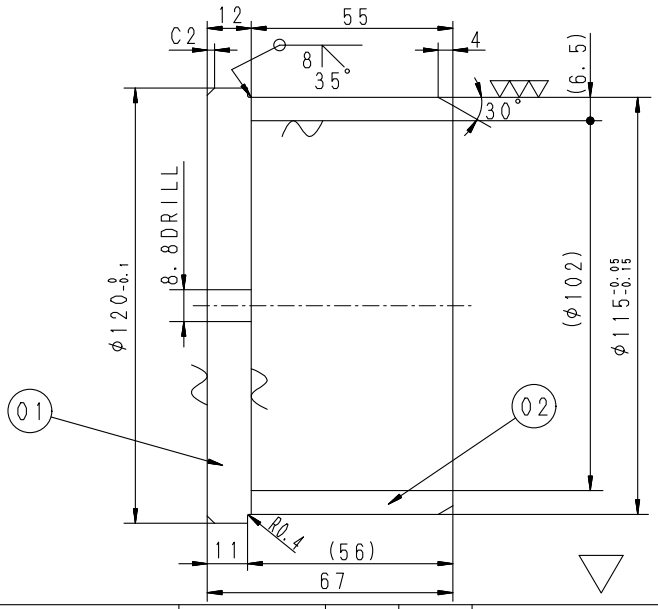
4. Quenching and termpering: HRC 40 min.

CJP15497

HEAT TREATMENT	MATERIAL
----	----
PART NAME	Q'TY
PUSH TOOL	1
790T-201-4010 △	

SYM.	PART NAME	MATERIAL	QTY/SET	MASS (kg)	REMARKS
02	TUBE	STKM16A	1	---	φ177.8Xt9-100
01	PLATE	S45C	1	---	φ180Xt6

U4 Push tool (for bucket (backhoe))



1. Machine after welding.
2. Unless otherwise specified, there shall be no burrs or flushes at the corner.
3. Quenching and termpering: HRC 40 min.

CJP15498

HEAT TREATMENT	MATERIAL
----	----
PART NAME	Q'TY
PUSH TOOL	1
790T-201-4020 △	

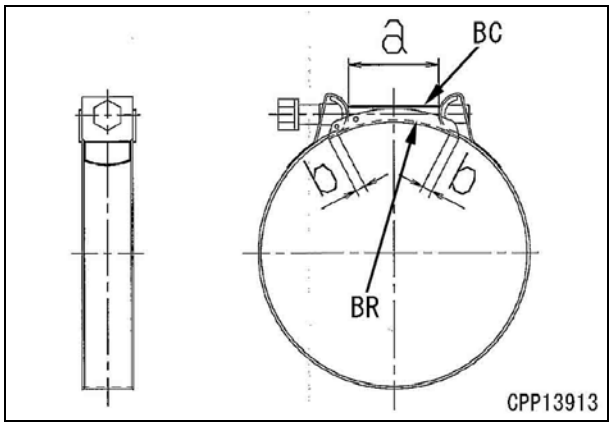
SYM.	PART NAME	MATERIAL	QTY/SET	MASS (kg)	REMARKS
02	TUBE	STKM16A	1	---	φ120Xt9
01	PLATE	S45C	1	---	t12

2) Place the bridge (BR) under the clamping bolt and adjust the overlapping (b) between the bridge (BR) and band to **Min. 5 mm**.
(b) dimension: **Min. 5 mm**
3) Tightening of the clamp.
Threaded portion (BC) of clamping bolt: **Lubricant (PANDO 18B from Three-Bond)**

★ Impact wrench is not applicable to use.

- **When the current hose is reused**
Align the clamp position to the trace of the clamp left on the hose.
Clamp tightening bolt:
Width across flats 13 mm
Clamp tightening bolt:
Min. 6 Nm {0.6 kgm}

- **When a new hose is used**
Tighten the bolt until (a) dimension becomes **7 – 10 mm**. (Common to hoses (E) to (H))



[*6]
Flanged surface: **Gasket sealant (LG-1)**

[*7]
Air hose clamp: **Width across flats 9 mm**
Air hose clamp:
8.8 ± 0.5 Nm {0.9 ± 0.05 kgm}

[*8]
Air cleaner band: **Width across flats 17 mm**
Air cleaner band:
12.8 – 17.7 Nm {1.3 – 1.8 kgm}

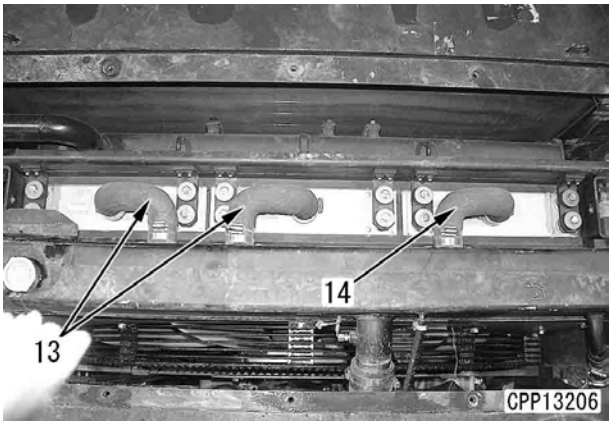
[*9]
Engine mounting bolt: **Width across flats 36 mm**
Engine mounting bolt:
824 – 1,030 Nm (84 – 105 kgm)
Target: 927 Nm (94.5 kgm)

- **Refilling with oil (Hydraulic tank)**
Add oil through oil filler to the specified level. Run the engine to circulate the oil through the system. Then check the oil level again.
Hydraulic tank (Hydraulic tank refill oil capacity):
Approx. 670 ℓ

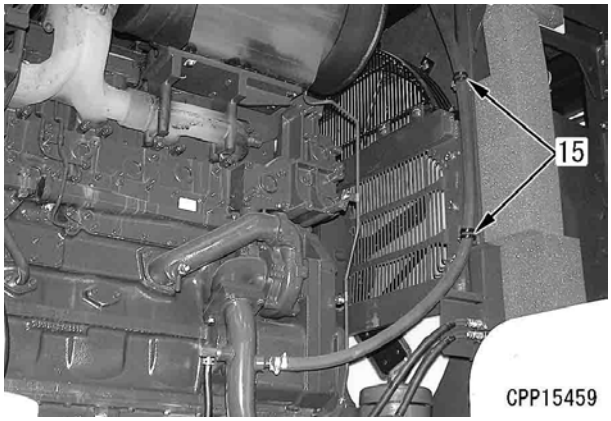
- **Refilling with coolant**
Add coolant through the coolant filler to the specified level. Run the engine to increase coolant temperature and then confirm the coolant level again.
Coolant: **142 ℓ**

- Bleed air from the main pump, referring to “Bleeding air from each part” in Testing and adjusting.

22. Disconnect hoses (13) and (14). [*3]



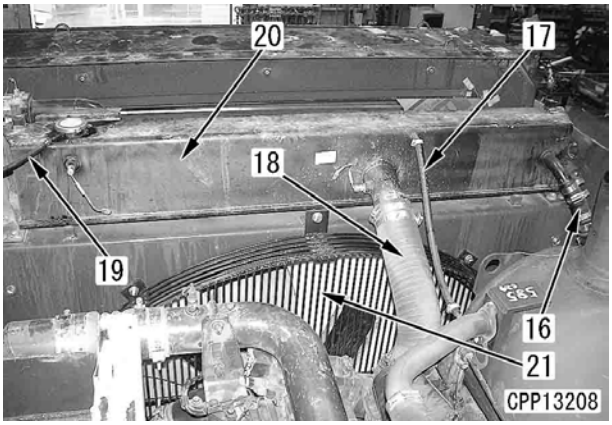
23. Disconnect hose clamps (15).



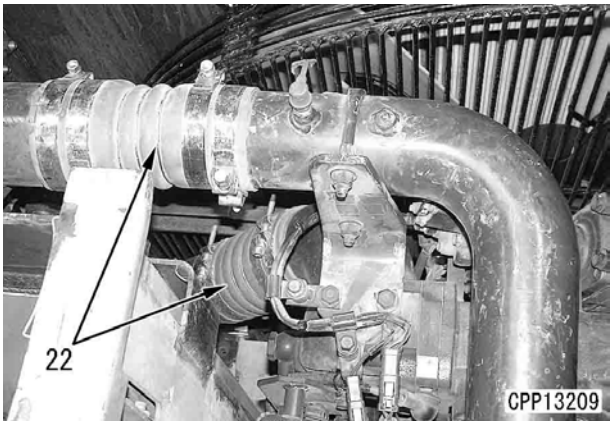
24. Disconnect hoses (16) to (19). [*4]

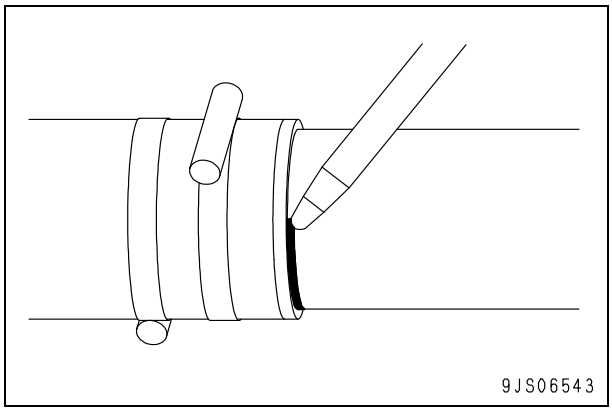
25. Remove upper tank (20).

26. Remove fan guard (21).



27. Disconnect air hoses (22). [*5]
★ Apply a marking to the hose end and tube so that their original insertion positions may be identified in later reference (See the following figure).



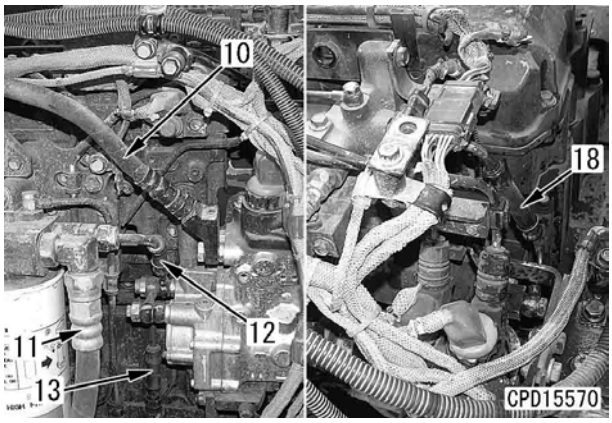


- Carry out the succeeding installation in the reverse order of removal.

[*1]
Filter (3)
Joint bolt (3-1):
24.5 – 34.3 Nm {2.5 – 3.5 kgm}

[*2]
Fuel hose (10)
Joint bolt (Supply pump side):
14.8 – 19.6 Nm {1.51 – 1.99 kgm}
Fuel hose (10) nut:
43 – 47 Nm {4.4 – 4.8 kgm}
Fuel hose (11): **90 – 95 Nm {9.2 – 9.7 kgm}**
Fuel hoses (12) and (13) joint bolt (Supply pump side):
14.8 – 19.6 Nm {1.51 – 1.99 kgm}
Fuel hoses (12) and (13) sleeve nut:
43 – 47 Nm {4.4 – 4.8 kgm}

[*3]
Fuel hose (18)
Joint bolt (Supply pump side):
24.5 – 34.3 Nm {2.5 – 3.5 kgm}
Joint bolt (Overflow valve of supply pump):
14.8 – 19.6 Nm {1.51 – 1.99 kgm}
Sleeve nut (Fuel block side):
24 – 27 Nm {2.4 – 2.7 kgm}



⚠ **Make sure that a clearance of 10 mm minimum is provided between the high-pressure piping and adjacent wiring harness. If not, secure the clearance by adjusting the wiring harness position.**

- **Bleeding air**
  Bleed air from the fuel system, referring to “Bleeding air from fuel system” in Testing and adjusting.

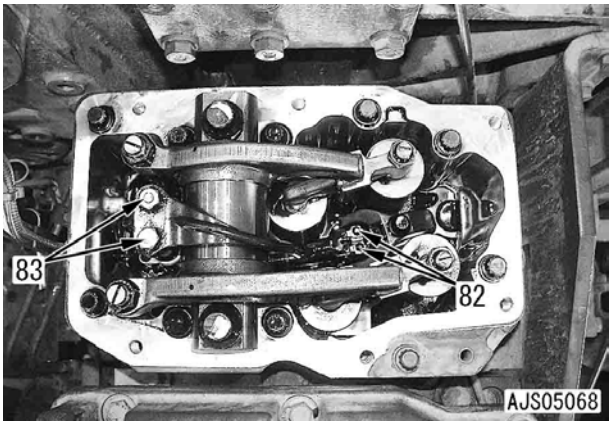
12. Install terminal mounting nuts (82) and wiring harness fixing bolts (83).
    ★ Tighten the terminal mounting nuts alternately.

    Terminal mounting nut:

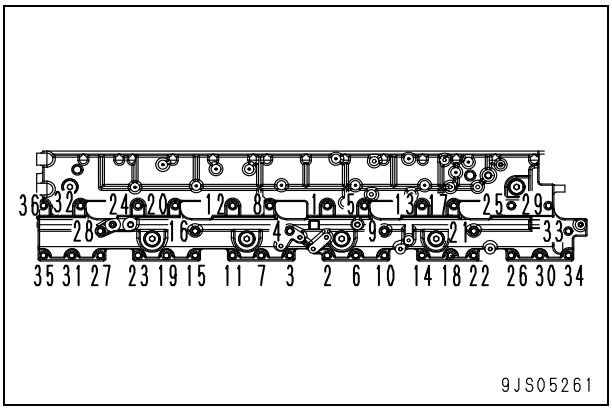
    Width across flats 7 mm

    Terminal mounting nut:

    2 ± 0.2 Nm {0.2 ± 0.02 kgm}



13. Install air intake manifold assembly (72).
    ★ Tighten the mounting bolts in the following order.



High-pressure piping (Between the fuel injector and common rail)

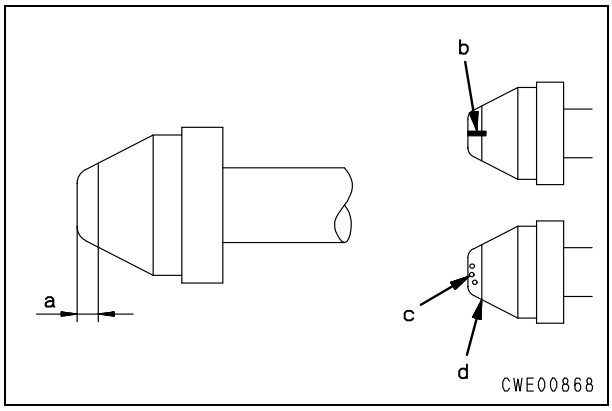
⚠ **When handing the high-pressure piping and clamp, pay attention to the following.**

- It is strictly prohibited to bend the high-pressure piping to use it again or using it in other locations.
- Install the specified clamp securely in the specified position with the specified torque.
- Don't apply lubricant and the like to the high-pressure piping sleeve nut and the threaded portion of the mating side.

★ **Axial force in the tightening can be excessive, potentially damaging the high-pressure piping.**

⚠ **Before installing the high-pressure piping, check it for the following defects. If there is any of these defects, it can cause fuel leakage. Accordingly, replace the high-pressure piping.**

- Check the taper seal of the connecting part (Part (a): Part of 2 mm from the end) for visible lengthwise slit (b) and dent (c).
- Check part (d) (end of the taper seal: Part at 2 mm from the end) for stepped-type wear (fatigue) which your nail can feel.

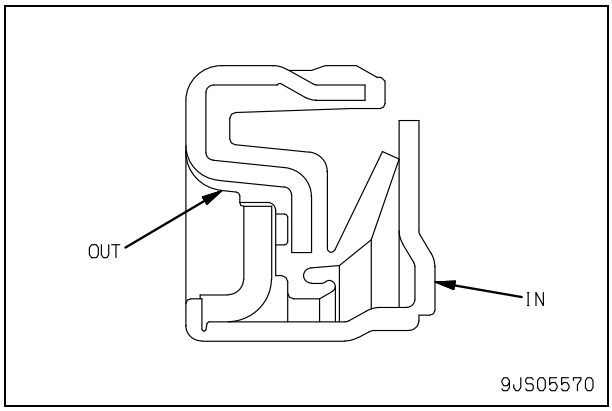


Installation

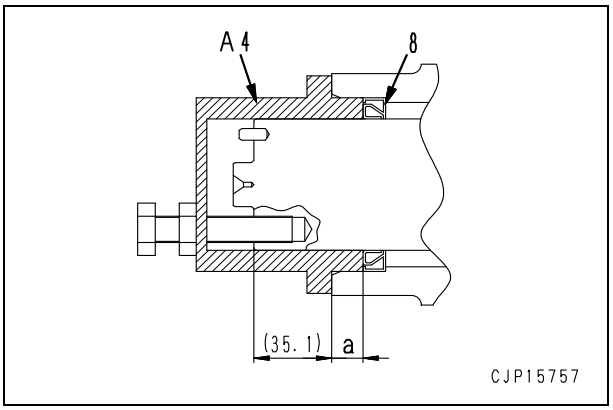
1. Clean, degrease and then dry the contact surface between the front cover and front seal.

2. Using a clean cloth, remove foreign matter deposited the crankshaft flange.
   - ★ Clean foreign matter deposited on the seal lip surface (surface around the crankshaft) and then degrease and dry the surface.
   - ★ Check the crankshaft end face corner and lip siding surface for scratches due to the housing, burrs or rusts.

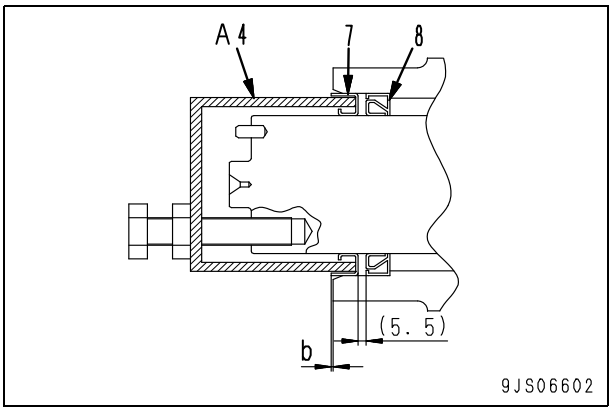
3. Install front oil seal (8) according to the following procedure.
   - ★ Before installing the seal, check that the end corners and lip sliding surfaces of the crankshaft are free from flaw, burr, and rust of the housing.
   - ★ When installing the seal, do not apply oil or grease to the shaft and seal lip. Wipe off the oil from the shaft.
   1) Install the oil seal directing its side stamped with “IN” toward the inside of the engine.
   - ★ The “OUT” stamped side is directed toward the outside of the engine.



   - ★ Take care not to mistake the direction of the plastic inside cylinder.
   2) Using tool **A4**, press fit oil seal (8) to the front case in such that dimension (a) in the figure is met.
   - ★ Oil seal press fitting dimension (a): 18.5 mm (when measured from the front cover end face)



   3) Using tool **A4** (for dust seal), press fit dust seal (7) to the front case in such that dimension (b) in the figure is met.
   - ★ Dust seal press fitting dimension (b): 2 mm (Projection out of the front cover end face)



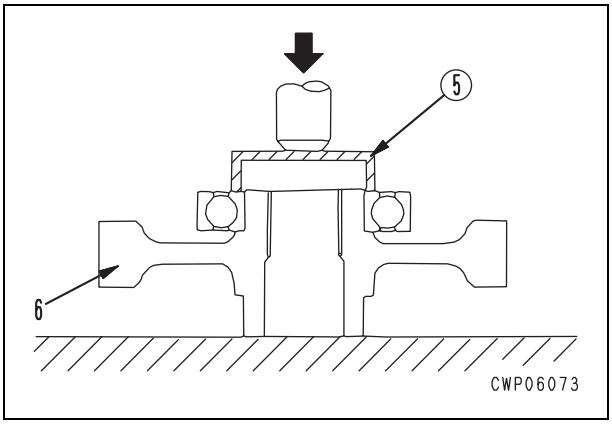
- Carry out the succeeding installation in the reverse order of removal.

[*1]
Pulley and damper mounting bolt:
Width across flats 24 mm

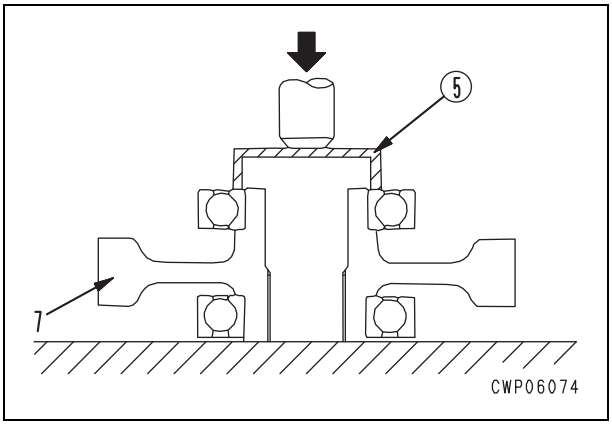
Pulley and damper mounting bolt:
1st time: 53.9 – 93.1 Nm {5.5 – 9.5 kgm}
2nd time: 225.4 – 264.6Nm {23 – 27 kgm}
3rd time: 617.4 – 656.6 Nm {63 – 67 kgm}

2. Press fitting bearing

1) Using tool [5], press fit bearing to gear (6) for No. 1, 2 pump drive.



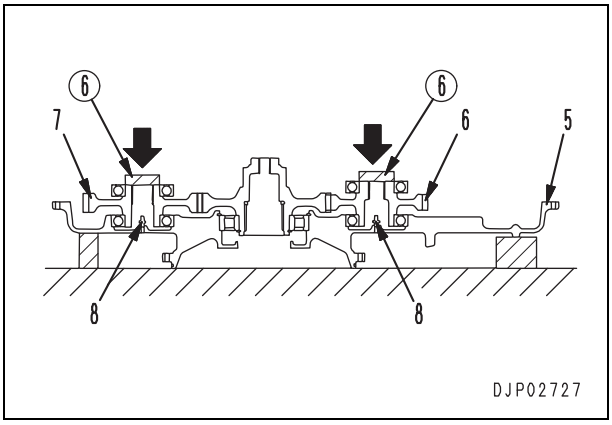
2) Using tool [5], press fit bearing to gear (7) for No. 3 pump drive.



3. Gear assembly

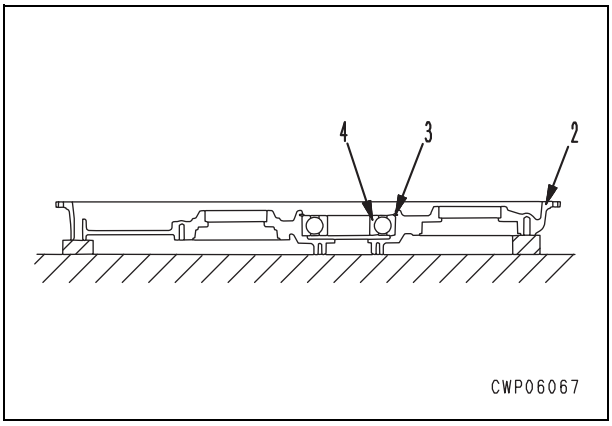
1) Install nipples (8).
2) Press fit 2 gears (6) to rear cover (5).
3) Press fit gear (7) to rear cover.
   ★ Before press-fitting, coat the rolling surface of the bearing with grease.
   Bearing: **Lubrication oil (G2-LI)**

   ★ Put wooden sheet [6] in contact with the gear, and tap lightly with a hammer to press fit.



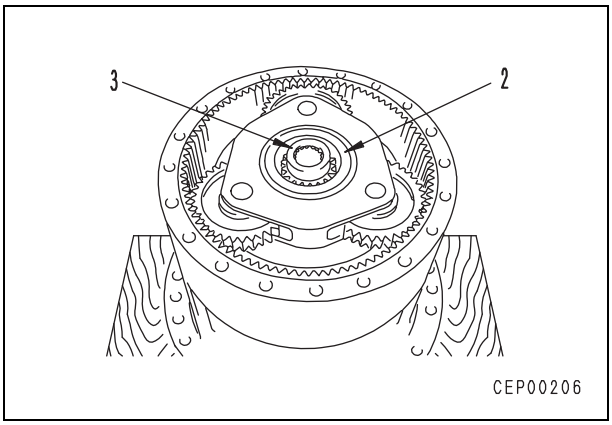
4. Front cover

1) After coating front cover (2) and bearing (4) with grease, press fit, then install snap ring (3).
   Bearing: **Lubrication oil (G2-LI)**



10. No. 1 sun gear

1) Assemble No.1 sun gear (3) to carrier assembly.
2) Install thrust washer (2).

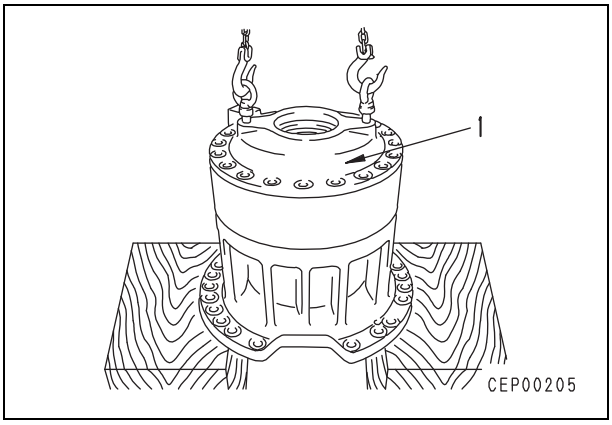


11. Cover

Install cover (1).

Cover mounting surface:
Gasket sealant (LG-6)

Mounting bolt:
1st time: **98 Nm {10 kgm}**
2nd time: **120 ± 5°**



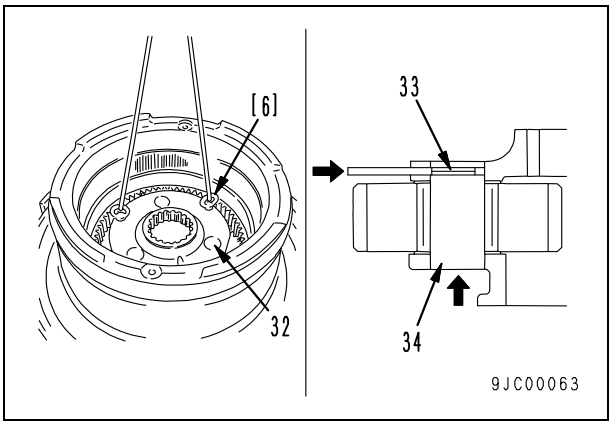
12. Refilling with oil

Tighten drain plug and add oil through oil filler.

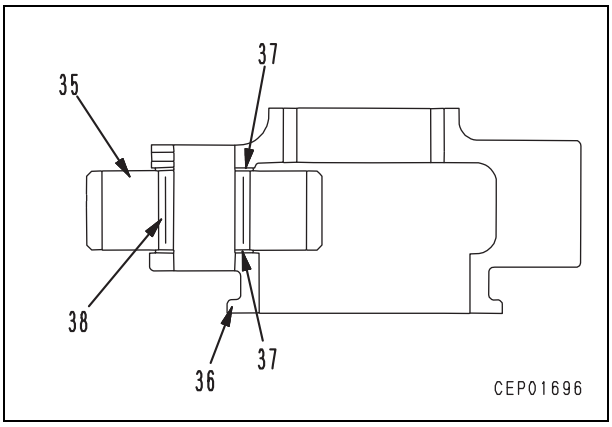
Swing machinery case: **Approx. 21.5 ℓ**

13. No. 1 carrier assembly

1) Using eyebolts [6], remove No. 1 carrier assembly (32).
2) Disassemble No. 1 carrier assembly as follows.
   i) Knock pin (33) into shaft (34).
   ii) Knock out shaft (34) towards pin end.
   ★ Remove the pin from the shaft.



3) Pull out gear (35) from carrier (36), then remove thrust washer (37) and bearing (38).



14. No. 1 ring gear

Remove No.1 ring gear (39).

15. No. 1 sun gear

Remove No.1 sun gear (40).

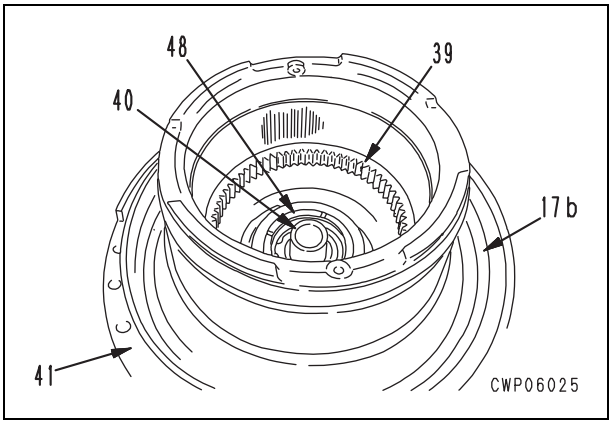
16. Thrust washer

Remove thrust washer (48) from travel motor.

17. Floating seal

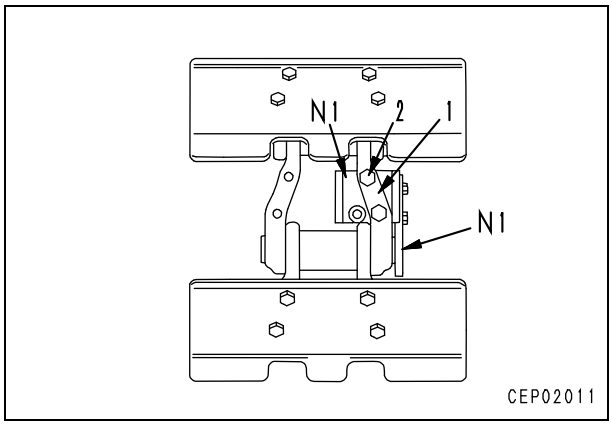
Remove floating seal (17b) from shaft (41).

★ If the seal is to be used again, be careful not to damage the contact surface, and keep in a safe place.

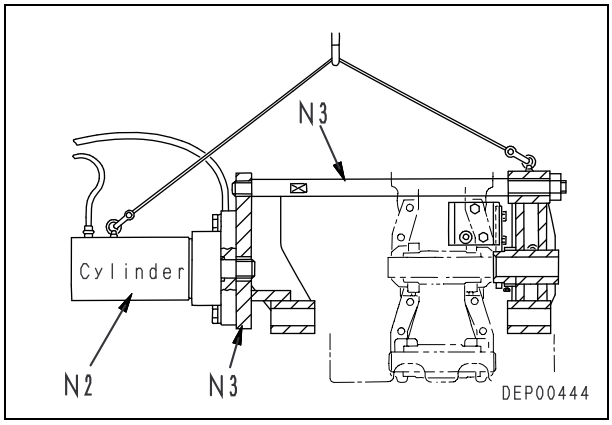


Disassembly

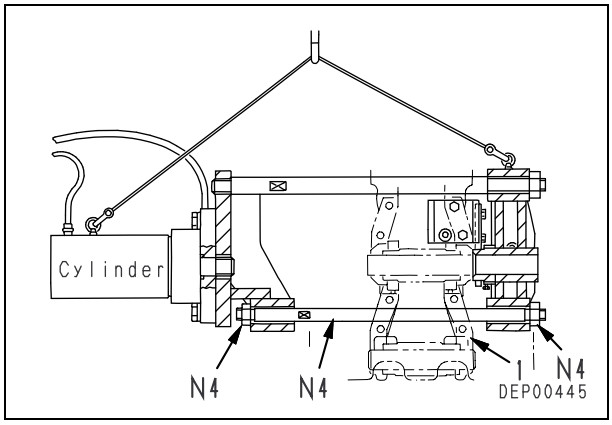
1. Using two bolts (2), install tool **N1** (adapter, guide, bolt) to link (1).
   ★ It is also possible to use 2 track bolts for bolt (2).



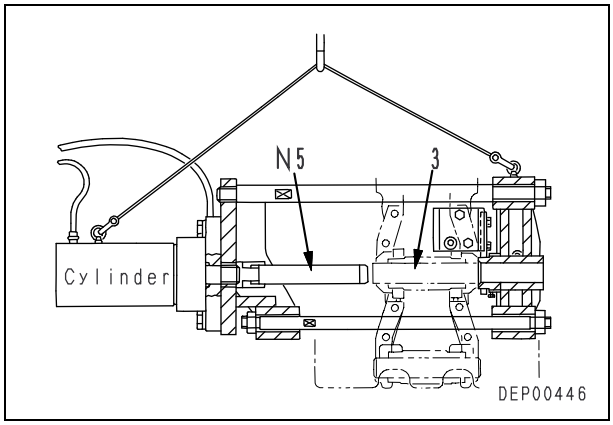
2. Assemble tool **N2** (pump, cylinder 1471 kN {150 t}) and tool **N3** (frame, rod, adapter, bolt x 1, eyebolt), then raise chassis and set on track.



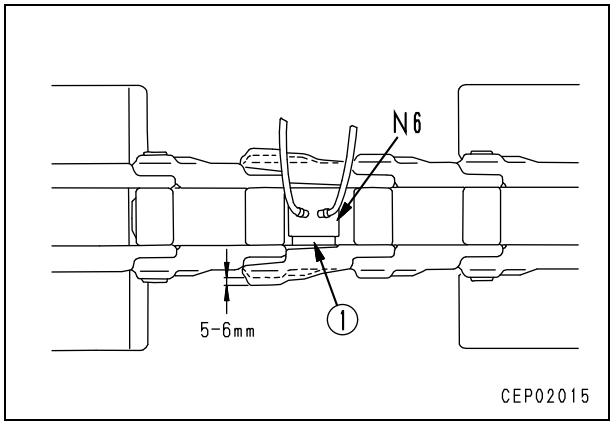
3. Insert rod of tool **N4** from cylinder end, and install with 2 nuts.
   ★ Pass the rod through the hole in link (1) to install.



4. Set tool **N5** (adapter, guide, pusher) in position, then apply hydraulic pressure and remove pin (3).
   When the cylinder reaches the end of its stroke, insert extension **N5** between the adapter and guide, and repeat the operation.



5. Set tool **N6** (294 kN {30 ton} puller) and spacer [1] to center of roller tread of link to be disassembled, then apply hydraulic pressure to puller and open link 5 – 6 mm.



Disassembly and assembly of track roller assembly

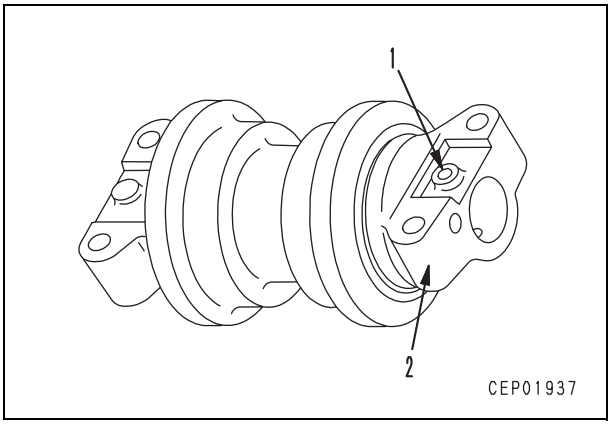
Special tools

Symbol		Part number	Part name	Necessity	Q'ty
L	6	790-434-1620	Installer	■	1
	10	791-601-1000	Oil pump	■	1
		791-646-8002	Oil lubricator	■	1
		790-701-3000	Seal checker	■	1

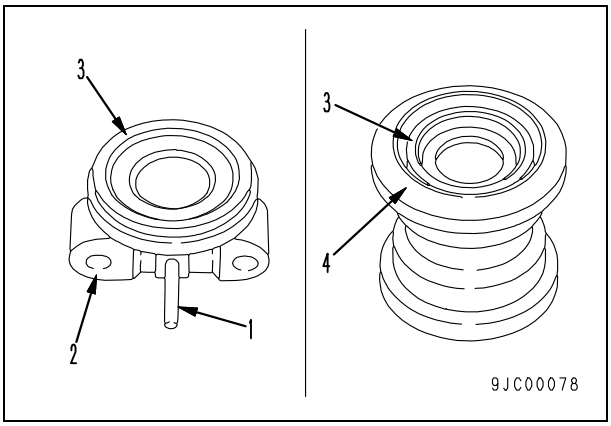
Disassembly

1. Remove plug and drain oil.
   ★ Rotate the shaft while draining the oil.
   Track roller: **Approx. 800 – 850 cc**

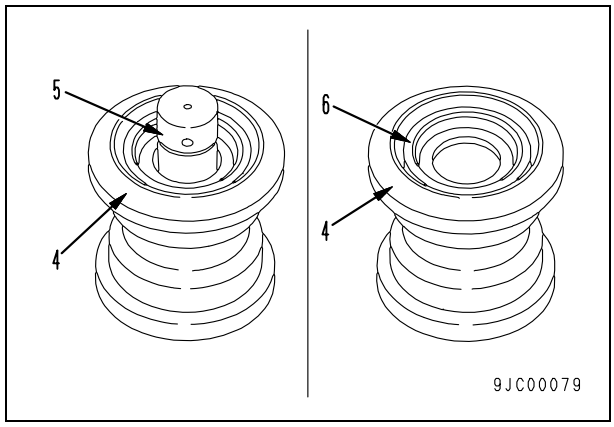
2. Remove pin (1), then remove collar (2).



3. Remove floating seal (3) from collar (2) and roller (4).



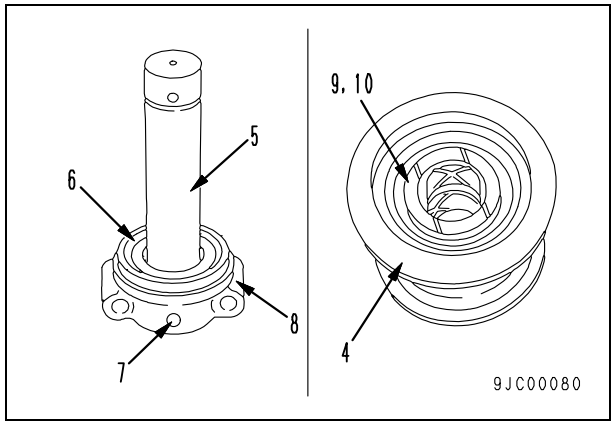
4. Pull out roller (4) from shaft (5).
   ★ It is filled with 800 – 850 cc. of oil, so drain the oil at this point or lay a cloth to prevent the area from becoming dirty.

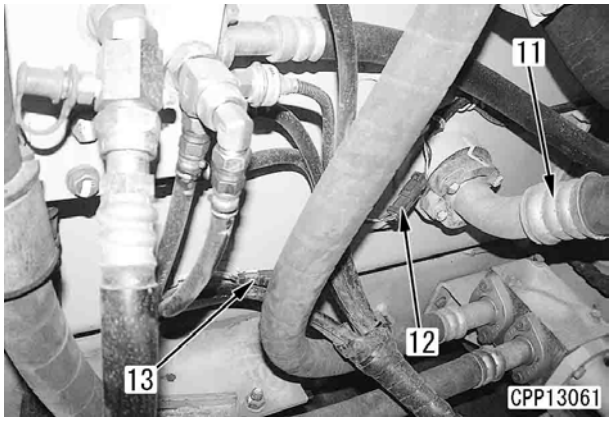


5. Remove floating seal (6) on opposite side from roller (4) and collar (8).

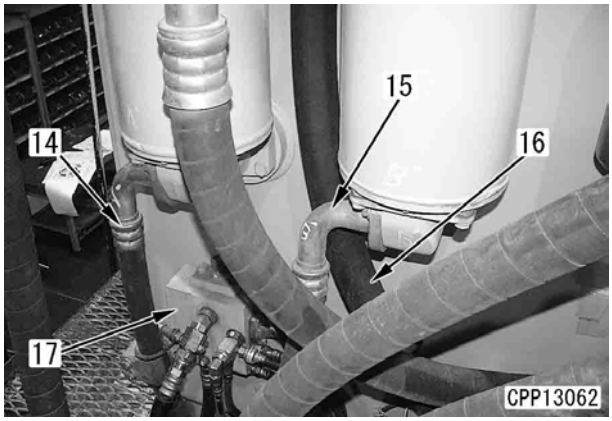
6. Remove pin (7), then remove collar (8) from shaft (5).

7. Remove bushings (9) and (10) from roller (4).



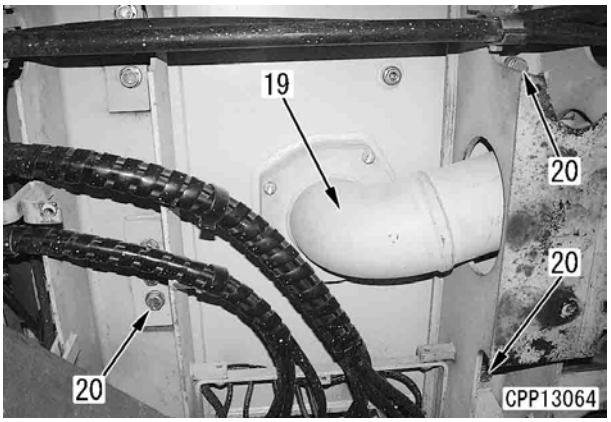


14. Disconnect hoses (14) and (15).
15. Remove the clamps, disconnect hose (16).
16. Remove valve assembly (17).

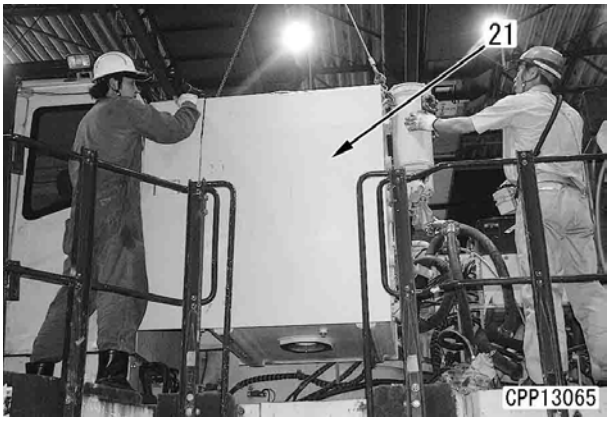


17. Disconnect washer tanks (18).

18. Disconnect tube (19).
19. Remove 12 mounting bolts (20). [*1]



20. Lift and remove hydraulic tank (21).
    Hydraulic tank assembly: **780 kg**



Installation

- Carry out installation in reverse order of removal.

[*1]
Mounting bolt: **Adhesive (LT-2)**
Hydraulic tank mounting bolt:
Width across flats 30 mm
Hydraulic tank mounting bolt:
549 ± 59 Nm {56 ± 6 kgm}

- **Refilling with oil (Hydraulic tank)**
  Add oil through oil filler to the specified level. Run the engine to circulate the oil through the system. Then check the oil level again.
  Hydraulic tank (Hydraulic tank refill oil capacity):
  Approx. 670 ℓ

- **Bleeding air**
  Bleed air from the parts, refer to “Bleeding air from various system” in Testing and adjusting.

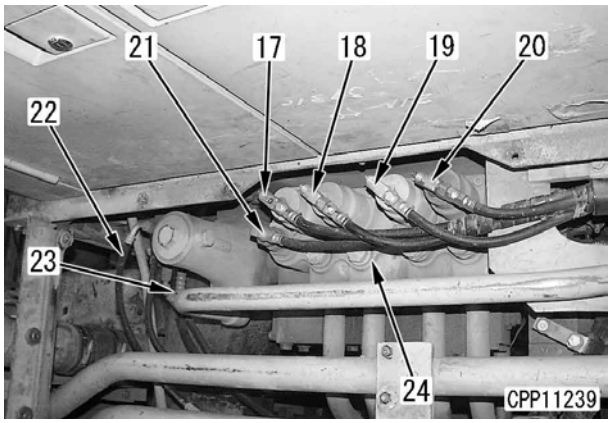
13. Remove pilot hoses (17), (18), (19), and (20), and then disconnect main relief valve (21).

14. Disconnect pilot valve hose (22).

15. Disconnect PPC hose (23).

16. Remove 4-spool control valve assembly (No. 3) (24).

    4-spool control valve assembly: **240 kg**



Installation

- Carry out installation in the reverse order to removal.

- **Refilling with oil (hydraulic tank)**
  Add oil through the oil filler to the specified level. Run the engine to circulate the oil through the system. Then check the oil level again.

- **Bleeding air**
  Bleed the air from the circuit between the valve and hydraulic pressure cylinder.
  For details, see Testing and adjusting, “Bleeding air”.

Installation

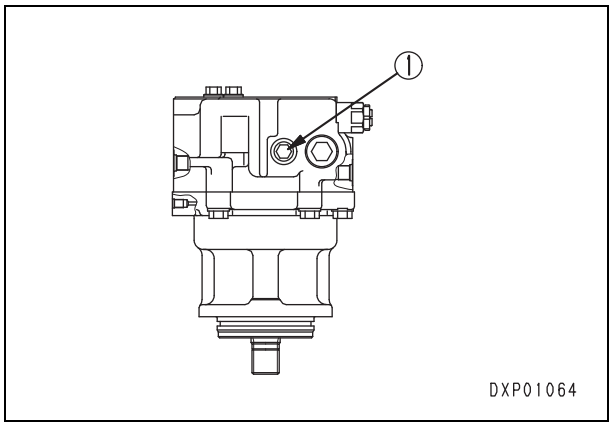
- Carry out installation in the reverse order to removal.

★ If the mounting bolt holes of the motor installed later are not aligned, remove plug [1] for releasing the brake and apply oil pressure.

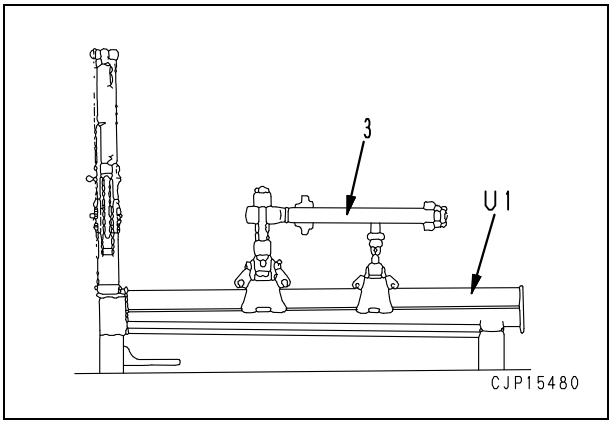
- **Refilling with oil**

★ Add oil through the oil filler to the specified level. Run the engine to circulate the oil through the system. Then, check the oil level again.

★ Add new oil by the quantity of the oil that leaked when the motor assembly was removed.

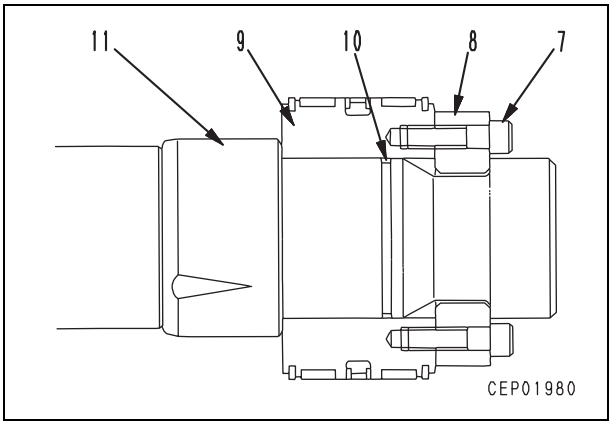


3) Fix the head side of piston rod assembly (3) with tool **U1** or a press.

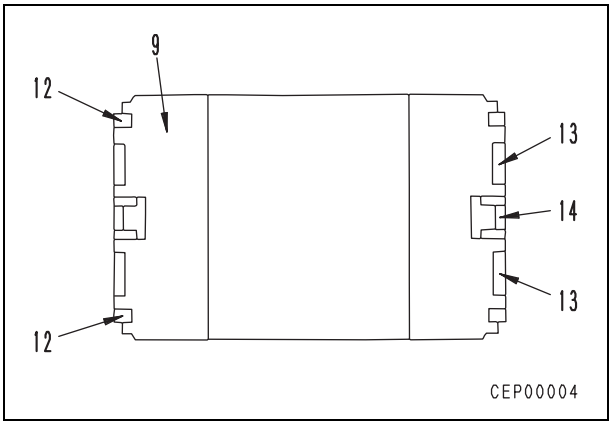


2. Piston assembly

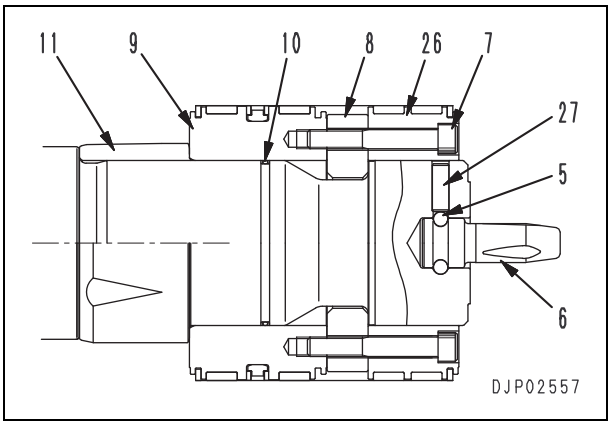
- Boom cylinder and bucket cylinder (Loading shovel specification)
  1) Remove bolts (7), piston assembly (9), and spacer (8).
  2) Remove the O-ring and backup ring (10).
  3) Remove plunger (11).



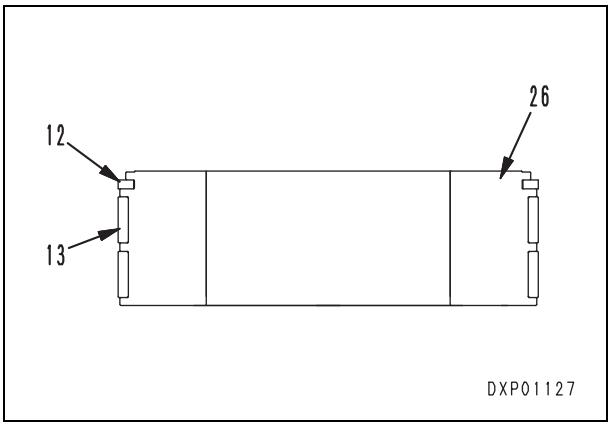
4) Disassembly of piston assembly.
   i) Remove rings (12).
   ii) Remove wear rings (13).
   iii) Remove piston ring (14).



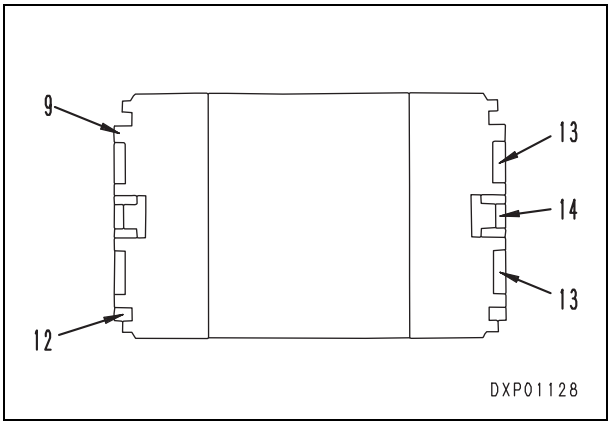
- Arm cylinder
  1) Remove bolts (7), piston assembly (26), and spacer (8).
  2) Remove pin (27), 10 balls (5), and plunger (6).
  3) Remove piston assembly (9), O-ring, and backup ring (10).
  4) Remove plunger (11).



5) Disassembly of piston assembly (26).
   i) Remove ring (12).
   ii) Remove wear ring (13).



6) Disassembly of piston assembly (9).
   i) Remove ring (12).
   ii) Remove wearing rings (13).
   iii) Remove piston ring (14).



Installation

- Carry out installation in the reverse order to removal.

[*1] [*2]

Inside surface of bushing when assembling pin: **Anti-friction compound (LM-P)**

Grease after assembling pin: **Grease (LM-G)**

When aligning the position of the pin hole, never insert your fingers in the hole.

- **Bleeding air**
  - ★ For details, see Testing and adjusting, “Bleeding air from each part”.

- **Refilling with oil (hydraulic tank)**
  - ★ Add oil through oil filler to the specified level. Run the engine to circulate the oil through the system. Then check the oil level again.

Removal and installation of bucket assembly

Loading shovel

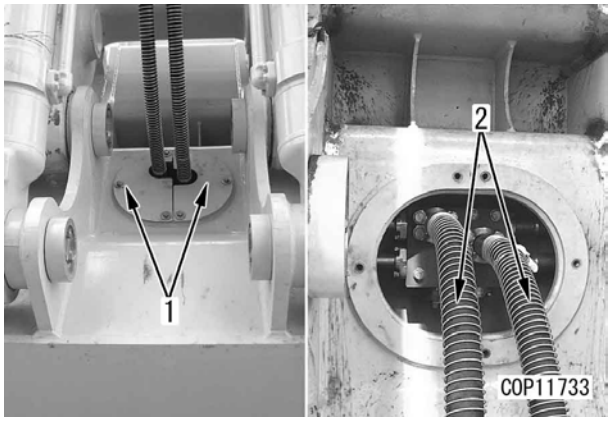
Removal

⚠ **Set the bottom of the bucket horizontal, lower the work equipment completely to the ground and stop the engine. Operate the control levers several times to release the remaining pressure in the hydraulic piping.**

⚠ **Loosen the oil filler cap slowly to release the pressure inside the hydraulic tank.**

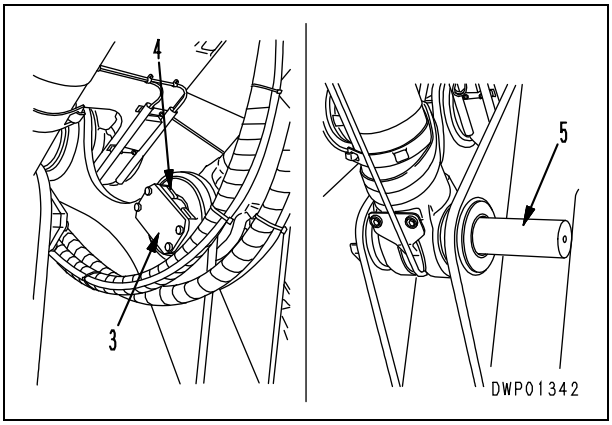
1. Disconnect covers (1).

2. Disconnect bottom dump cylinder hoses (2).
   - ★ If there is remaining pressure in the hydraulic circuit, the oil may spurt out, so check while disconnecting.
   - ★ Plug the hose to stop oil flow-out.



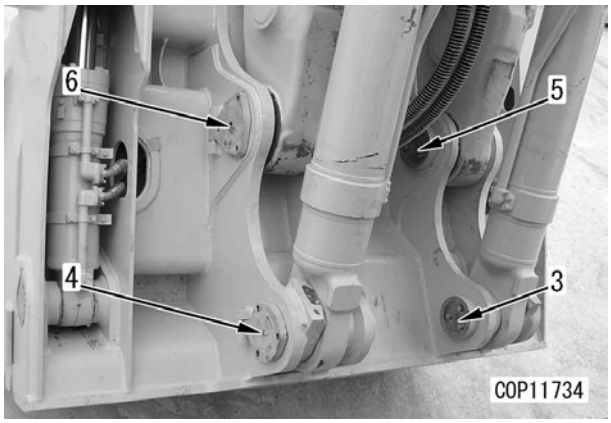
3. Sling bucket cylinder assembly, and remove plate (3), then pull out bottom pin (4).
   - ★ Remove the pin on the other side in the same way. [*1]

   Pin: **50 kg**



4. Sling bucket assembly, and remove plate (5), then pull out arm-bucket connecting pin (6). [*2]
   - ★ Remove the pin on the other side in the same way.

   Pin: **67.9 kg**



5. Lift off bucket assembly (7).

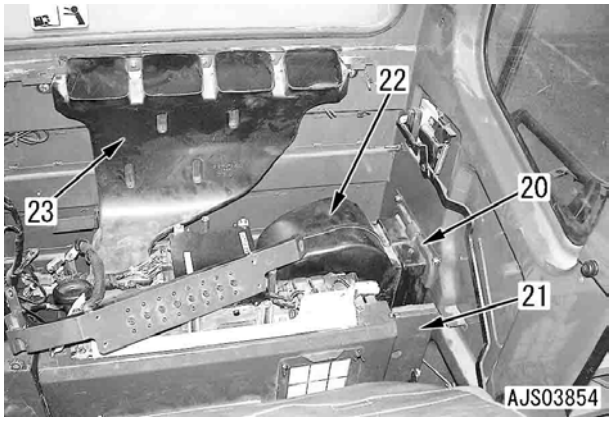
   Bucket assembly: **10,340 kg**

14. Pull outside air filter cover open-close lever (18).

15. Remove outside air filter (19).

16. Remove left plates (20) and (21).

17. Remove ducts (22) and (23).

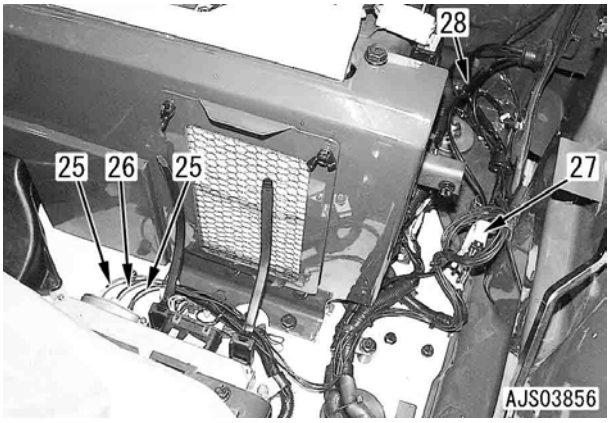


18. Remove cover (24).

19. Disconnect 2 antenna wires (25) and connector (26).

20. Disconnect 2 cab wiring intermediate connectors (27).
    - **H09**: Top side
    - **H08**: Bottom side

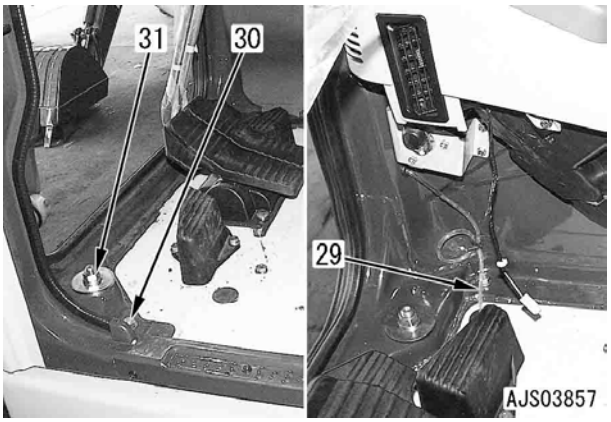
21. Disconnect radio antenna (28).

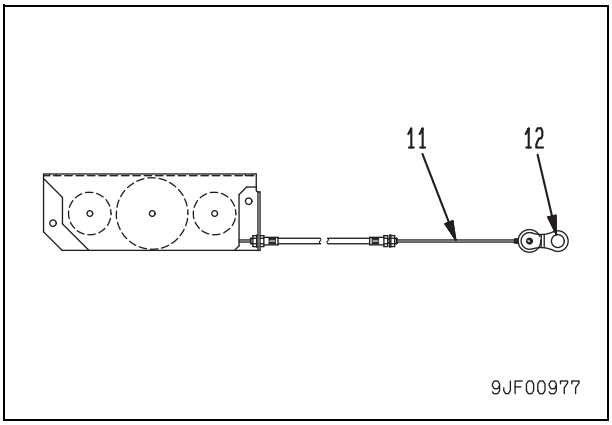


22. Disconnect window washer hose (29).

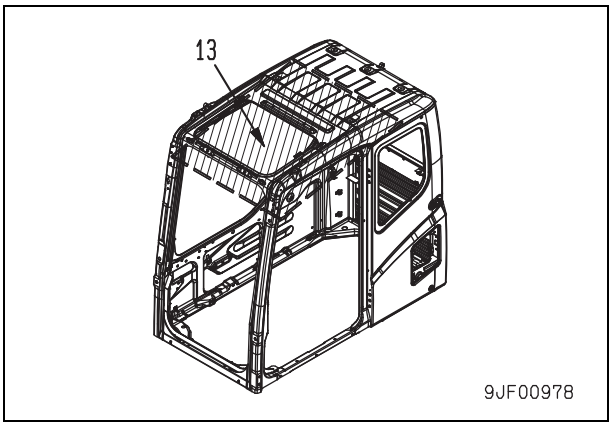
23. Remove 5 mounting bolts (30).
    ★ Confirm the bolt length.

24. Remove 5 mounting nuts (31).
    ★ A nut is provided under the seat, too.

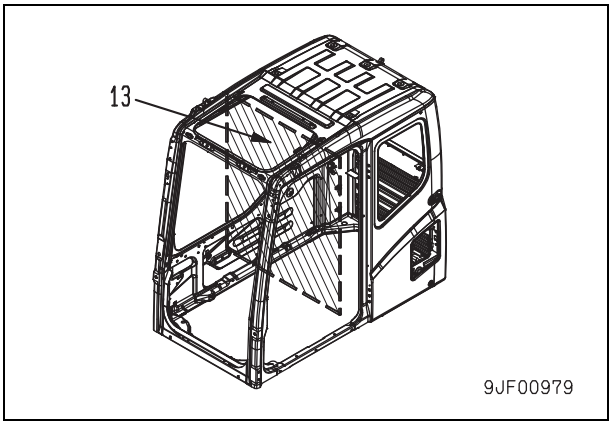




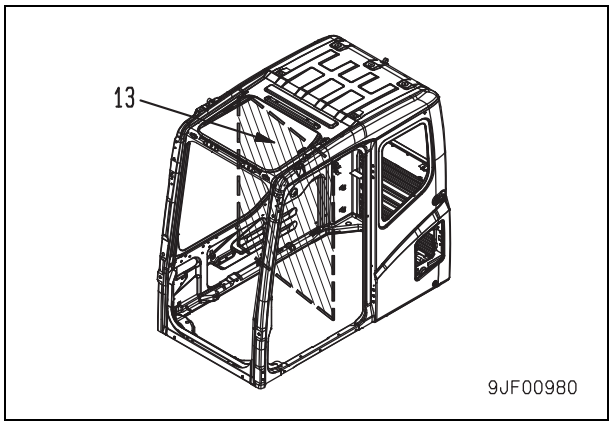
9. Put out the bottom of front window assembly (13) through the rail opening portion and lower it gradually.

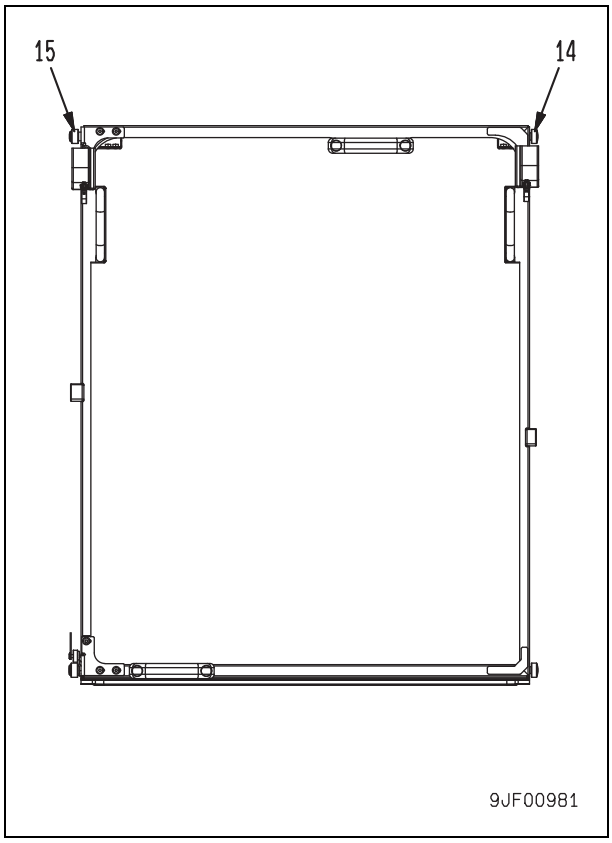


10. Lower front window assembly (13) completely.
    ★ Do not let the front window assembly touch the monitor.



11. Twist front window assembly (13) to the right and left to remove both upper rollers (14) and (15) from the rails, and then remove front window assembly (13).





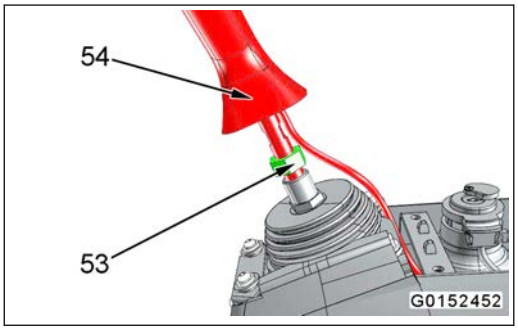
- Threaded type

1) Install the work equipment control lever assembly (54) with the nut (53).

REMARK

- Screw in the lever to the bottom of the valve.
- After you tighten it, turn it back by 3 and a half turns. Adjust the lever height and direction, and tighten and fix it.

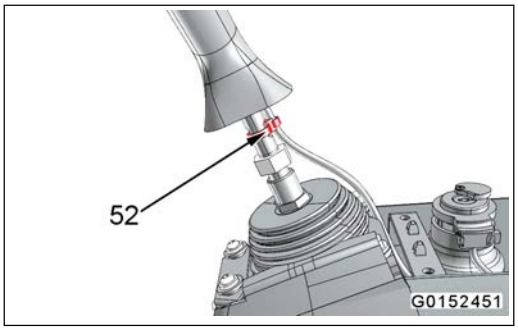
Nut (53): 34.3 to 58.8Nm{3.5 to 6.0kgfm}

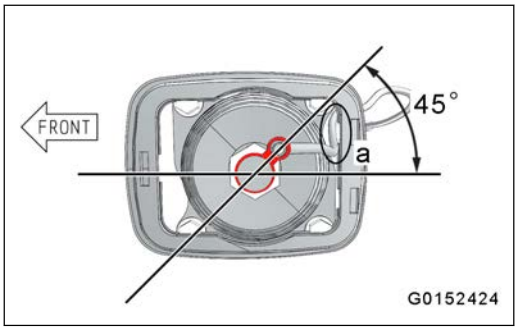


2) Fix it with the band (52).

REMARK

- Use a new band.
- If you fix it tightly, the disconnection can occur.
- Put the wirings through the cut-out part of the bracket.
- After you fix it, operate the lever and make sure that the wirings move freely.
- Band mounting angle: 45°

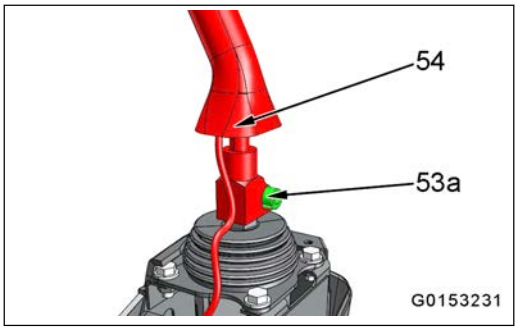




- Split boss type

1) Install the work equipment control lever assembly (54) with the bolt (53a).

Bolt (53a): 59 to 74Nm{6 to 7.5kgfm}



PC1250-8R, PC1250SP-8R Hydraulic excavator
Form No. SEN02793-022