

Shop Manual

**HYDRAULIC
EXCAVATOR**

PC490 -11E0

PC490LC -11E0

PC490HRD-11E0

SERIAL NUMBERS K75001 and up

KOMATSU

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below





- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

SAFETY NOTICE FOR OPERATION


(ALL-A-1120-012-00-B)

- Appropriate servicing and repair are extremely important to ensure safe operation of the machine. The shop manuals describe the effective and safe servicing and repair methods recommended by Komatsu. Some of the servicing and repair methods require the use of special tools designed by Komatsu for special purposes.
- The symbol mark  is indicated for such matters that require special precautions. The work indicated with this warning mark  should be performed according to the instructions with special attention. Should a hazardous situation occurs or be anticipated during such work, be sure to keep safe first and take every necessary measures.

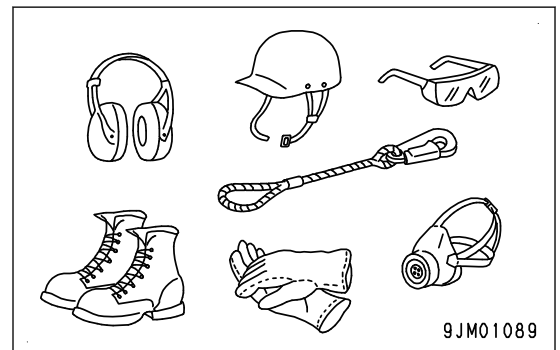
Safety matters

- Well organized work place
- Correct work clothes
- Observance of work standard
- Enforcement of hand signals
- Prohibition against unlicensed persons operating and handling the machine
- Safety check before starting work
- Wear of dust glasses (for cleaning or grinding work)
- Wear of welding goggles and protectors (for welding work)
- Being in good physical condition, and good preparation
- Always be alert and careful.

General precautions

 **If the machine is handled incorrectly, it is dangerous. Read and understand what is described in the operation and maintenance manual before operation. Read and understand what is described in this manual before operation.**

- Read and understand the meaning of all the safety labels stuck to the machine before performing any greasing or repairs. For the locations of the safety labels and detailed explanation of precautions, see Operation and Maintenance Manual.
- Tools and removed parts in the workshop should be well organized. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dust, dirt, oil, or water on the floor. Smoke only in the designated areas. Never smoke while working.
- Keep all tools in good condition, learn the correct way to use them, and use the proper ones. Check the tools, machine, forklift truck, service car, etc. thoroughly before starting the work.
- Always wear safety shoes and helmet when performing any operation. Do not wear loose clothes, or clothes with buttons missing.



DISCONNECT AND CONNECT PUSH-PULL TYPE COUPLER

(ALL-P-C930-927-00-B)

REMARK

- Loosen the oil filler cap of the hydraulic tank slowly to release the remaining pressure in the hydraulic tank.
- Provide an oil container to receive oil since some hydraulic oil flows out when the hose is disconnected even after the remaining pressure is released from the hydraulic tank.

METHOD FOR DISCONNECTING AND CONNECTING TYPE 1 PUSH-PULL TYPE COUPLER

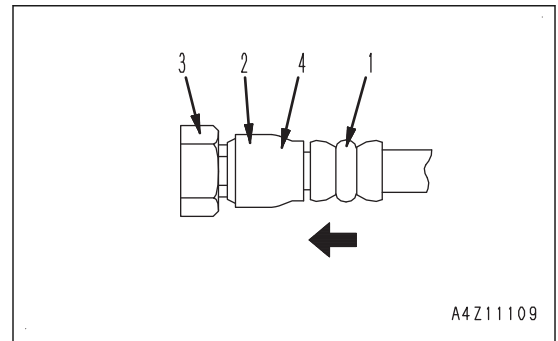
(ALL-P-C930-925-00-B)

Disconnection

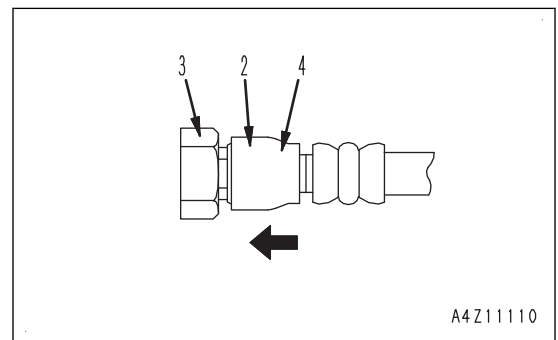
1. Hold adapter (1), and push hose joint (2) into mating adapter (3).

REMARK

- Push it in approximately 3.5 mm.
- Do not hold rubber cap portion (4).



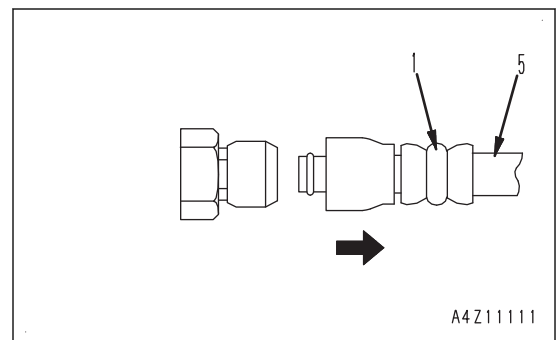
2. While having adapter (3) inserted into hose side joint (2), insert rubber cap (4) to adapter (3) side until it clicks.



3. Hold hose adapter (1) or hose (5), and pull it out.

REMARK

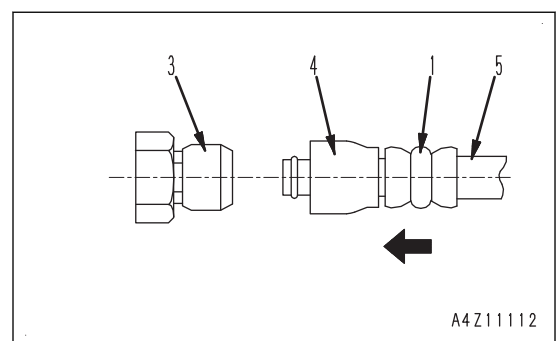
Provide an oil container to receive a quantity of hydraulic oil which may flow out.

**Connection**

1. Hold hose adapter (1) or hose (5), and insert it in mating adapter (3), aligning the axis.

REMARK

Do not hold rubber cap portion (4).



1 mm = 0.03937 in

	0	1	2	3	4	5	6	7	8	9
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	2.847	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

kg to lb

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

ℓ to U.S.Gal

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

ℓ to U.K.Gal

1 ℓ = 0.21997 U.K.Gal

	0	1	2	3	4	5	6	7	8	9
0	0	0.220	0.440	0.660	0.880	1.100	1.320	1.540	1.760	1.980
10	2.200	2.420	2.640	2.860	3.080	3.300	3.520	3.740	3.950	4.179
20	4.399	4.619	4.839	5.059	5.279	5.499	5.719	5.939	6.159	6.379

10 STRUCTURE AND FUNCTION

AdBlue/DEF TANK SENSOR

(PC400_11-K-AFG1-001-00-B)

STRUCTURE OF AdBlue/DEF TANK SENSOR

(PC400_11-K-AFG1-041-00-B)

REMARK

The shape is subject to machine models.



1: Connector

3: Temperature sensing part

2: Concentration Sensing part

4: Level sensing part

FUNCTION OF AdBlue/DEF TANK SENSOR

(PC400_11-K-AFG1-042-00-B)

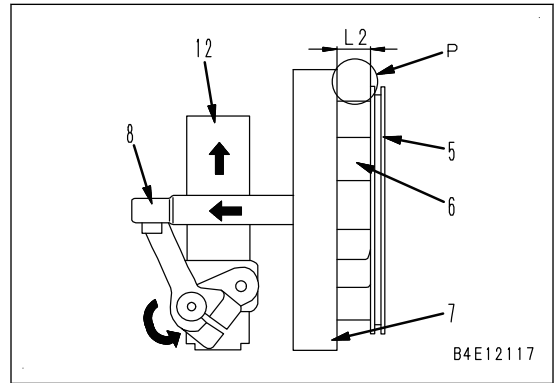
- This sensor is installed to AdBlue/DEF tank and outputs AdBlue/DEF level, AdBlue/DEF concentration, and AdBlue/DEF temperature through CAN communication.
- AdBlue/DEF level and AdBlue/DEF concentration are measured by using ultrasonic wave.
- When the tank is frozen or empty, AdBlue/DEF level and AdBlue/DEF concentration are not measured.

When nozzle ring is “open”

1. During high speed operation (rotation), exhaust gas inlet passage (P) is wide (L2).
2. As the engine speed increases and the turbine inlet pressure (exhaust gas pressure) increases exhaust gas inlet passage (P) is widened (L2) so that the exhaust gas acts on turbine impeller (11) efficiently.

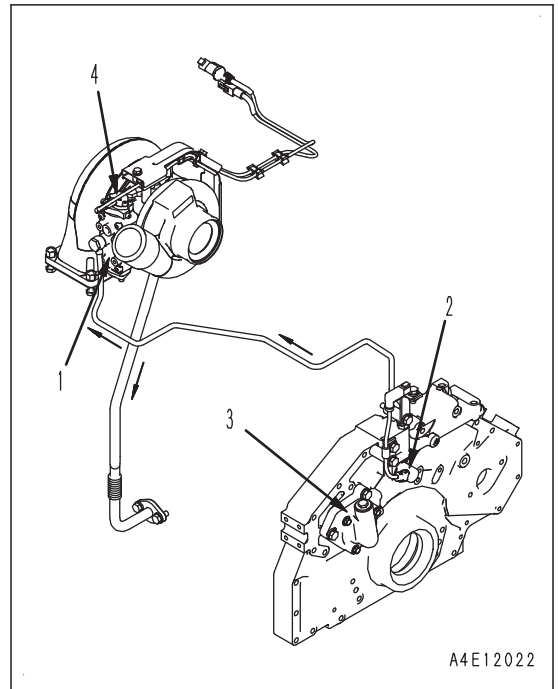
REMARK

- Nozzle ring (7), vanes (6), and push rod (8) are all-in-one unit, and it slides only and does not rotate.
- Hydraulic actuator (3) is equipped with VGT position sensor. VGT position sensor is calibrated together with the variable mechanism of VGT and the result is written in the memory in VGT position sensor. Accordingly, if any of hydraulic actuator (3), VGT position sensor, and VGT unit fails, whole VGT must be replaced.



Operation of hydraulic actuator

1. Hydraulic actuator (1) is controlled by EPC valve (2) installed to the front cover and driven hydraulically.
2. The hydraulic pressure supplied by engine boost oil pump (3) is used for this purpose.
3. The position of hydraulic actuator (1) is fed back to engine controller by the signals from VGT position sensor (4).



(ENG125_6-K-A9J0-001-00-B)

EGR SYSTEM

EGR

Abbreviation for Exhaust Gas Recirculation

LAYOUT DRAWING OF EGR SYSTEM

(ENG125_6-K-A9J0-04D-00-B)

REMARK

The shape is subject to machine models.

6. The pressure in the servo piston chamber decreases, and rocker cam (9) returns in the direction of the maximum swash plate angle.
7. These processes are repeated, and the swash plate is fixed to a position where EPC output pressure is balanced with the force of spring (8).
8. When EPC output pressure increases, the swash plate angle decreases. When EPC output pressure decreases, the swash plate angle increases.

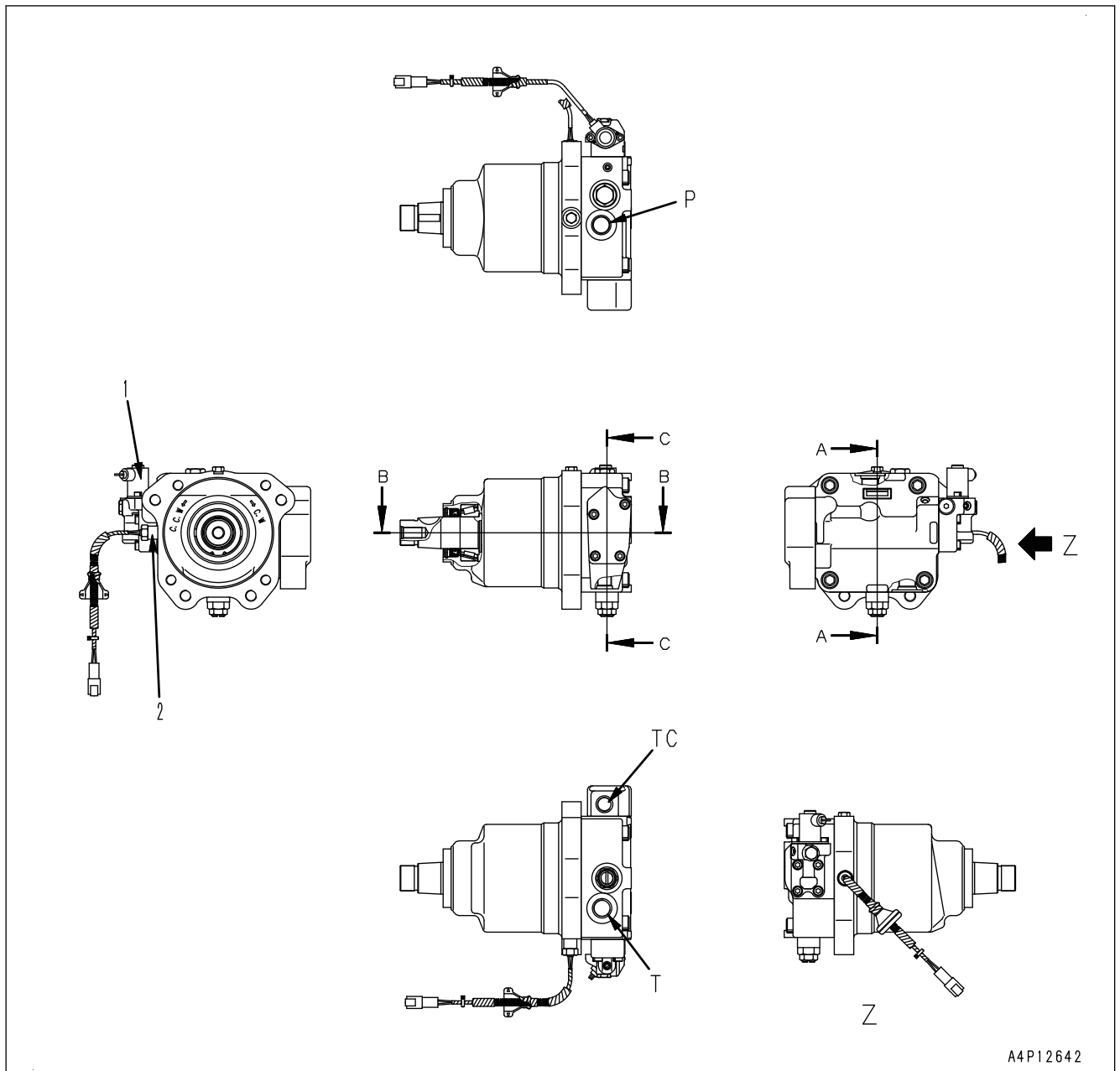
COOLING FAN MOTOR

(PC400_10-K-ACK0-001-00-B)

STRUCTURE OF COOLING FAN MOTOR

(PC400_10-K-ACK0-041-00-B)

General view



P: From fan pump

TC: To hydraulic tank

T: To oil cooler

1: Cooling fan reverse solenoid valve

2: Cooling fan speed sensor

should be shut down. Greasing is stopped, until the cause of the malfunction is repaired and the control unit is reset with the test push-button.

Normally the pump is shut off by the control unit when in 10 successive greasing cycles the required grease pressure has not been reached during the pumping phase. Meaning: the control unit shuts off the pump when the grease pressure has not been reached 10 successive times while greasing alternately through lines A and B, thus 5 times A and 5 times B but the control unit also shuts off the pump when the grease pressure is not reached 10 times successively when greasing through line B, however through line A the pressure is still reached and also the other way around.

With parameter 'noa' (number of attempts), a different value for the maximum number of attempts can be adjusted. The adjustment depends on the malfunction sensitivity of the connected greasing points. The adjustment range is 1 to 25 greasing cycles.

Display

A display is also deliverable instead of the operating mode push-button with integrated signal lamp.

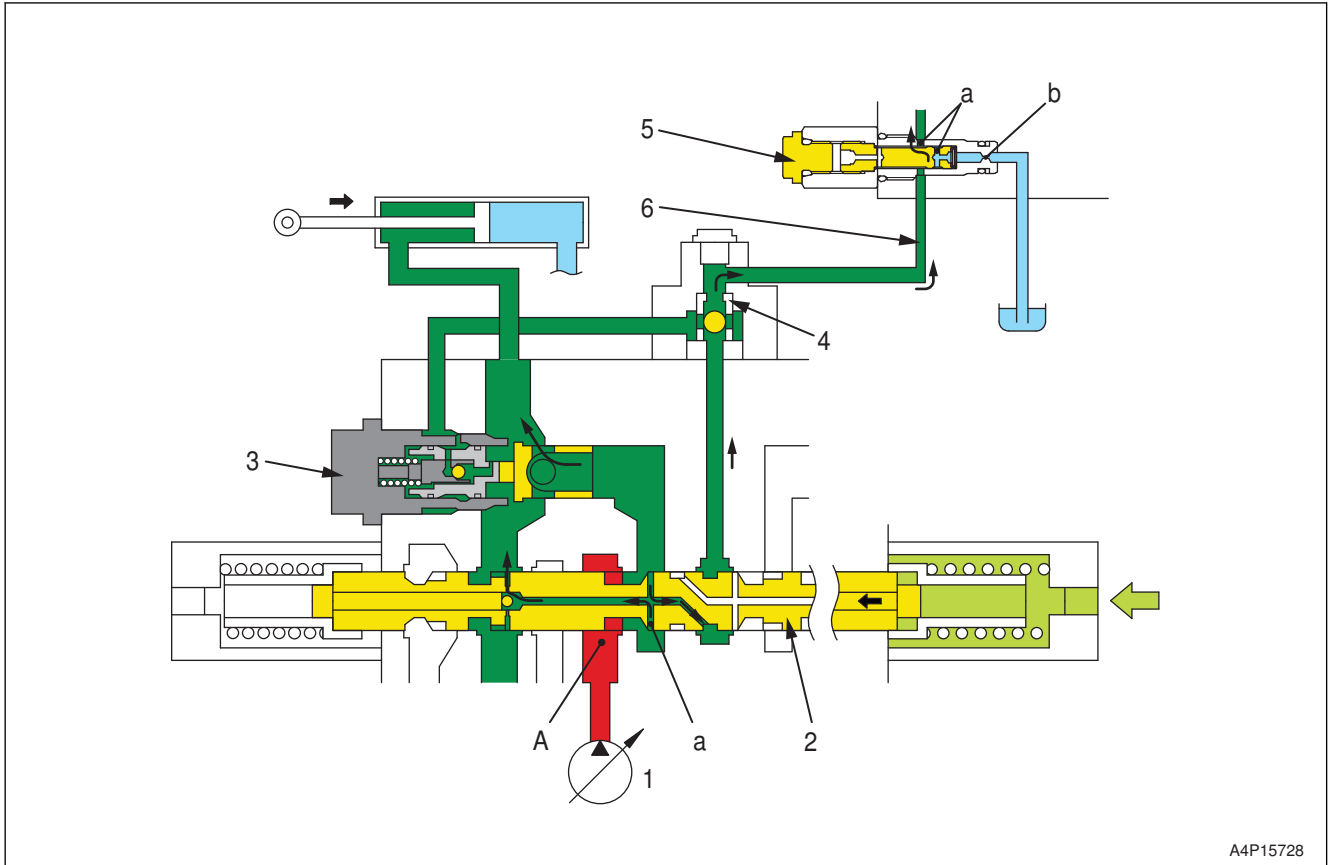
On this display green lamps continuously indicate the adjusted operating mode. In addition, this display is equipped with a yellow warning lamp (minimum grease level reached), a red lamp (system malfunction) and a push-button to adjust the desired operating mode.

Pin No.	Signal name	Input/Output
48	PCV2 (-)	Ground/Shield/ Return
49	Injector #4 (+)	Output
50	Injector #5 (+)	Output
51	Injector #6 (+)	Output
52	(*1)	-
53	(*1)	-
54	GND	Ground/Shield/ Return
55	GND	Ground/Shield/ Return
56	GND	Ground/Shield/ Return
57	GND	Ground/Shield/ Return
58	GND	Ground/Shield/ Return
59	(*1)	-
60	(*1)	-
61	Intake air temperature sensor	Input
62	Charge temperature sensor	Input
63	Crankcase pressure sensor	Input
64	(*1)	-
65	(*1)	-
66	(*1)	-
67	VGT position sensor	Input
68	(*1)	-
69	(*1)	-
70	Datalink3 (+) (KOMNET/r)	Communication
71	(*1)	-
72	(*1)	-
73	Injector #4 (-)	Ground/Shield/ Return
74	Injector #5 (-)	Ground/Shield/ Return
75	Injector #6 (-)	Ground/Shield/ Return
76	EGR valve solenoid (-)	Ground/Shield/ Return
77	(*1)	-
78	Sensor 5 V power supply	Power supply
79	Sensor 5 V power supply	Power supply

FUNCTION OF LS BYPASS PLUG

(PC400_11-K-PNSH-042-00-B)

- LS bypass plug releases the remaining pressure in LS pressure circuit (6) through orifices (a) and (b).
- It reduces the LS pressure rising speed and prevents sudden change of the hydraulic pressure.
- When oil bypasses through LS bypass plug (5), pressure loss occurs due to the resistance in the circuit from orifice (c) of main spool (2) to LS shuttle valve (4).
- The effective LS differential pressure decreases, and the dynamic stability of the actuator is improved.



A4P15728

LS SELECT VALVE

(PC400_11-K-J6PA-001-00-B)

LS

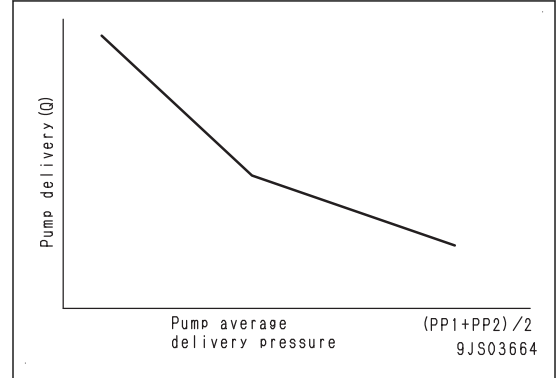
Abbreviation for Load Sensing

FUNCTION OF LS SELECT VALVE

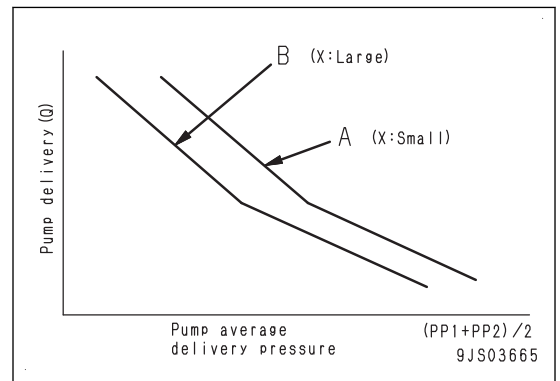
(PC400_11-K-J6PA-042-00-B)

The illustration shows the state of simultaneous operation of swing and travel RIGHT. (It shows the state when pilot pressure (BP) is supplied)

6. When pump pressure (PP2) increases further and spool (3) moves to the right further, pump pressure (PP1) flows to port (C) to minimize the discharged volume.
7. When servo piston (9) moves to the right, springs (4) and (6) are compressed and push back spool (3).
8. The positional relation between average of pump pressures $(PP1 + PP2)/2$ and servo piston (9) is angled since springs (4) and (6) are 2-stage springs.
9. The relation between average of pump pressures $(PP1 + PP2)/2$ and average of pump discharged volume (Q) is shown in the figure below.
10. When command current (X) sent to PC-EPC valve solenoid (1) increases, the relationship between average of pump pressures $(PP1 + PP2)/2$ and pump discharged volume (Q) is translated in proportion to the thrust of PC-EPC valve solenoid.



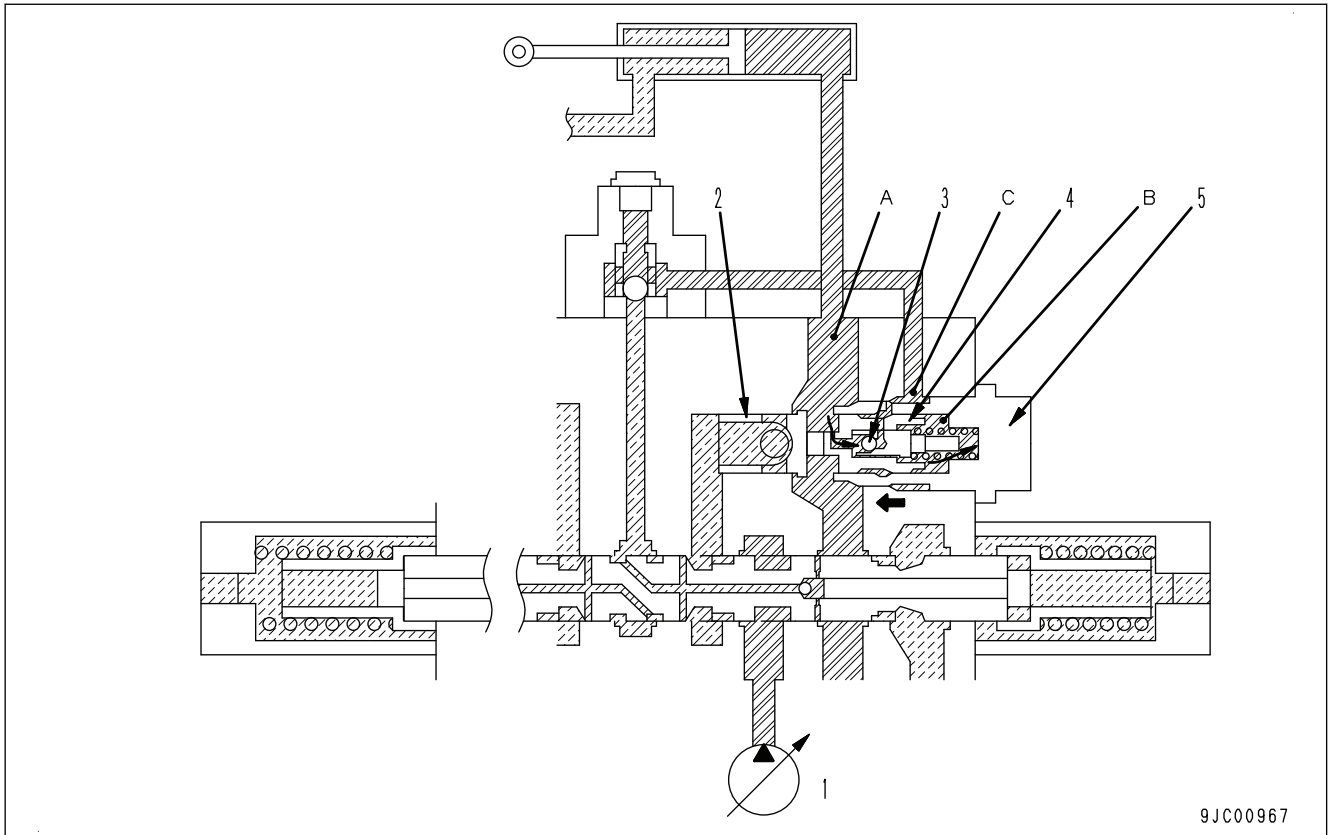
11. Since the thrust of PC-EPC valve solenoid (1) is added to the rightward thrust caused by the pump pressure applied to spool (3), the relationship between average of pump pressures $(PP1 + PP2)/2$ and pump discharged volume (Q) is translated from (A) to (B) as command current (X) increases.



OPERATION OF SHUTTLE VALVE IN PRESSURE COMPENSATION VALVE OF CONTROL VALVE

(PC400_10-K-L6D0-044-10-B)

When holding pressure in port (A) exceeds LS pressure in spring chamber (B)



1: Main pump

4: Piston

2: Valve

5: Pressure compensation valve

3: Shuttle valve

1. Shuttle valve (3) is pressed to the right by port (A) pressure and disconnects ports (A) and (C).
2. The holding pressure in port (A) is supplied to spring chamber (B) and presses piston (4) to the left so that piston (4) and valve (2) do not separate from each other.

INTRODUCTION OF LS PRESSURE IN CONTROL VALVE

(PC400_10-K-C2A4-001-00-B)

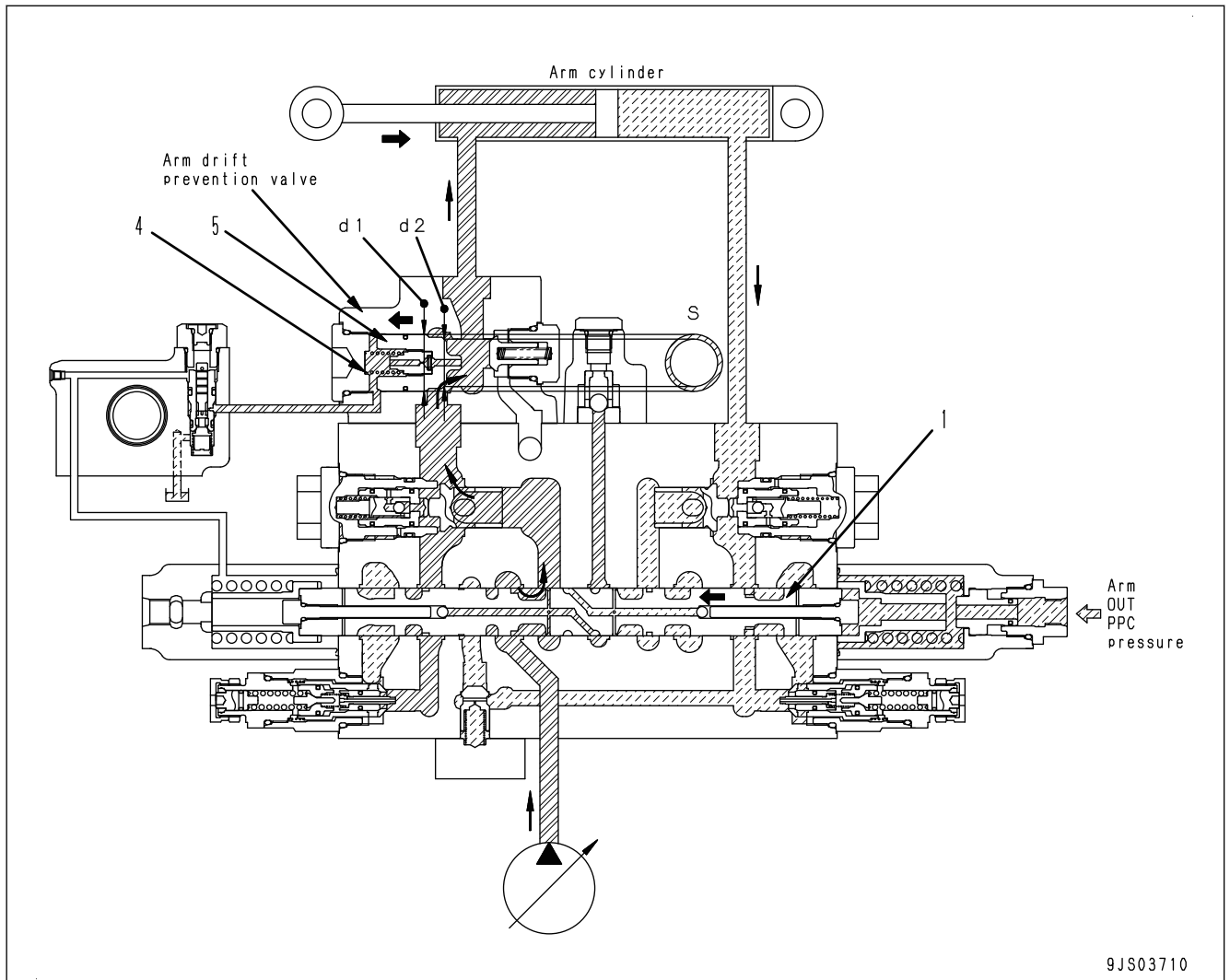
LS

Abbreviation for Load Sensing

OPERATION OF ARM HYDRAULIC DRIFT PREVENTION VALVE OF CONTROL VALVE

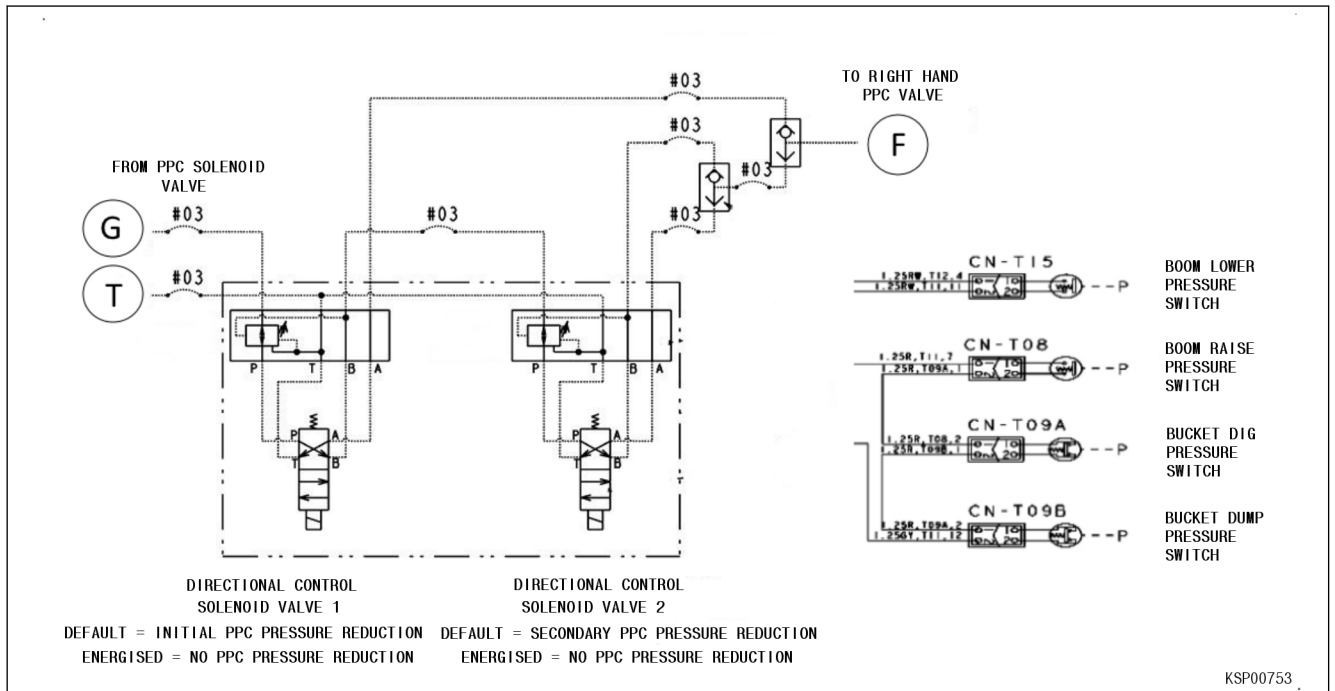
(PC400_10-K-L9K0-044-00-B)

When arm is moved "OUT"



1. When arm "OUT" operation is performed, the pressurized oil from the control valve acts leftward on the right side of area (S) of the ring of poppet (5) having outside diameter (d1) and inside diameter (d2).
2. The force acting leftward on area (S) compresses spring (4) and moves poppet (5) to the left.
3. The pressurized oil from the control valve flows through the opening of poppet (5) to the arm cylinder head.

Extended High Reach, High Reach Demolition or Medium Reach Demolition work equipment is fitted



G: From PPC solenoid valve (PPC supply)

T: To tank (drain)

F: To RH PPC valve

NEUTRAL

When the RH lever is in the neutral position

- Directional control solenoid valve (1) is in the default position, directing oil through port B of the initial pressure reducing valve (3), PPC pressure is reduced.
- Directional control solenoid valve (2) is energised, directing oil through port A of the secondary pressure reducing valve (4), No further PPC pressure reduction.
- The setting of initial pressure reducing valve (3) will determine the maximum pressure at port F.

BUCKET DIG OR BUCKET DUMP

When the RH lever is moved to activate bucket dig or when the RH lever is moved to activate bucket dump

- Directional control solenoid valve (1) is in the default position, directing oil through port B of the initial pressure reducing valve (3), PPC pressure is reduced.
- Directional control solenoid valve (2) is energised, directing oil through port A of the secondary pressure reducing valve (4), no further PPC pressure reduction.
- The setting of initial pressure reducing valve (3) will determine the maximum pressure at port (F).

BOOM RAISE

When the RH lever is moved backwards to activate boom raise

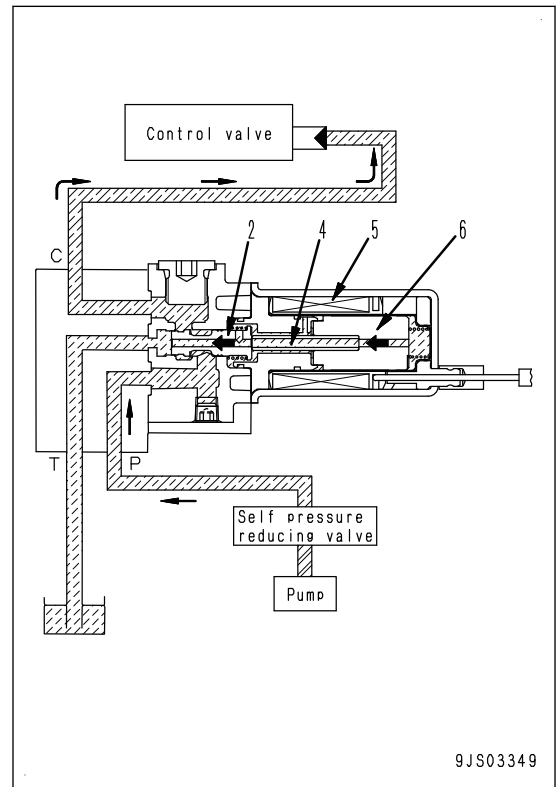
- Boom raise pressure switch (normally open) activates.
- Directional control solenoid valve (1) is energised directing oil through port A, no reduction of PPC pressure occurs.
- Directional control solenoid valve (2) is bypassed.
- Pressure at port (F) is not reduced.

NOTICE

Boom raise speed is reduced by other means, (see Section Boom Hi Lock Valve).

When signal current is maximum (coil is energized)

1. When the signal current flows to coil (5), coil (5) is energized.
Since the signal current is maximum at this time, the thrust of plunger (6) is also maximum.
2. Spool (2) is pressed to the left by push pin (4).
3. The pressurized oil flows from port (P) to port (C) at the maximum rate, and the circuit pressure between EPC valve and control valve becomes maximum.
4. Port (T) closes and no pressurized oil flows to the hydraulic tank.



- When pressure (P) is constant, energy loss can be suppressed by reducing flow (Q), or relief rate (drain rate), according to the formula of "Energy loss = Pressure (P) x Flow (Q)". Fuel efficiency can be improved by suppressing the energy loss.

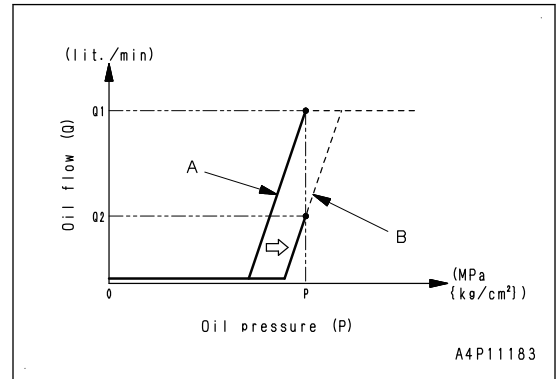
A: When pilot pressure is stopped (low-pressure set)

B: When pilot pressure is applied (high-pressure set)

P: 27.9 MPa {286 kg/cm²}

Q1:260 l/min

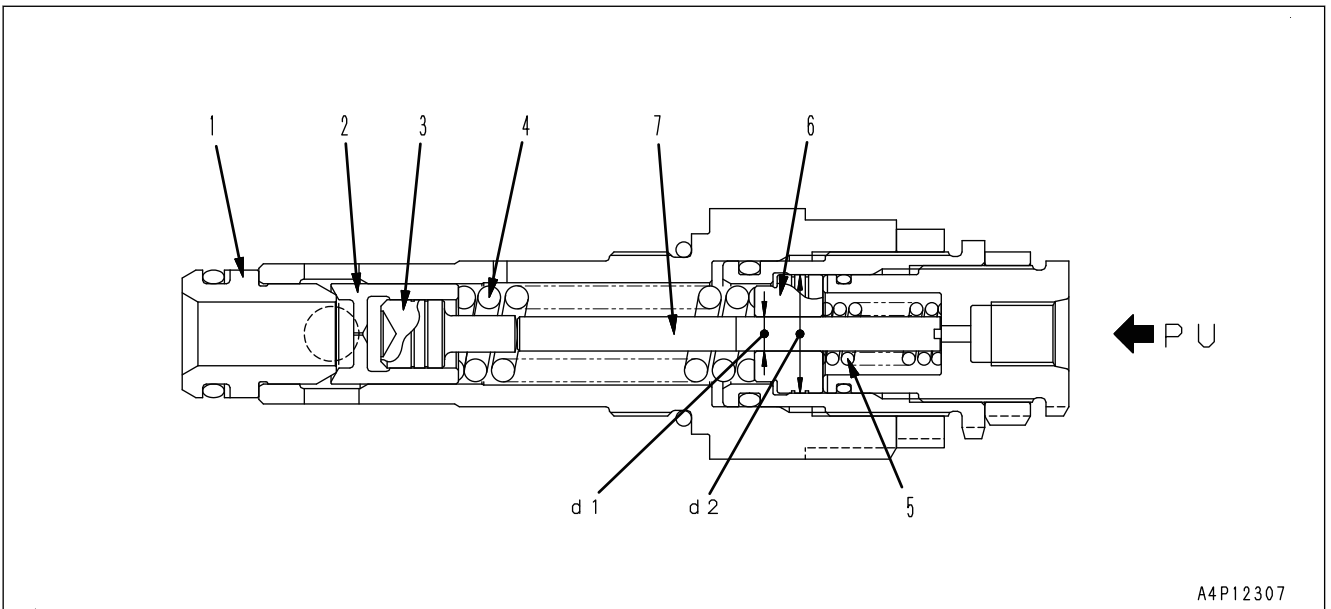
Q2:100 l/min



OPERATION OF 2-STAGE SWING RELIEF VALVE OF SWING MOTOR

(PC400_10-K-J6B1-044-10-B)

When pilot pressure (PU) is cut off (low pressure setting)



The set pressure depends on the installed load of spring (4).

- | | |
|--|---|
| 1: Level plug | 8: Cover |
| 2: Drain plug | 9: Ring gear (number of teeth: 98) |
| 3: No.1 planetary gear (number of teeth: 43) | 10: Sprocket |
| 4: No. 1 sun gear (number of teeth: 10) | 11: Floating seal |
| 5: No. 2 sun gear (number of teeth: 18) | 12: Travel motor |
| 6: No. 1 planetary carrier | 13: No.2 planetary gear (number of teeth: 39) |
| 7: No. 2 planetary carrier | |

SPECIFICATIONS OF FINAL DRIVE

(PC400_10-K-DF10-030-00-B)

Reduction ratio: $-\frac{(10 + 98)}{10} \times \frac{(18 + 98)}{18} + 1 = -68.600$

Quantity of damper oil (for each set): 11 ℓ

FUNCTION OF FINAL DRIVE

(PC400_10-K-DF10-042-00-B)

The travel motor is high in speed but low in torque. Accordingly, the final drive reduces the speed, increases the driving force, and transmits it to the sprocket.

TRAVEL PPC VALVE

(PC400_10-K-C6V0-001-00-B)

PPC

Abbreviation for Proportional Pressure Control

Machine model			PC490-11E0, PC490LC-11E0		
Engine			SAA6D125E-7		
Item	Measurement condition		Unit	Standard value for new machine	Repair limit
AdBlue/DEF line heater relay 1 test	AdBlue/DEF line heater relay 1 test within approximately 900 seconds after starting the test		V	24.5±1.5	24.5±1.5
AdBlue/DEF line heater relay 2 test	AdBlue/DEF line heater relay 2 test within approximately 900 seconds after starting the test		V	24.5±1.5	24.5±1.5
AdBlue/DEF pump heater relay	AdBlue/DEF line heater relay test within approximately 900 seconds after starting the test		V	24.5±1.5	24.5±1.5
AdBlue/DEF tank heater valve test	AdBlue/DEF line heater valve test within approximately 900 seconds after starting the test		V	24.5±1.5	24.5±1.5
SCR removal efficiency Test	SCR removal effectiveness monitor display after the test	AdBlue/DEF Injection Test Result	-	1 (Normality)	1 (Normality)
		SCR Efficiency Test Result		1 (Normality)	1 (Normality)

Control valve spool stroke

Machine model			PC490-11E0, PC490LC-11E0						
Engine			SAA6D125E-7						
Item	Measurement condition		Unit	Standard value for new machine			Repair limit		
Boom control valve	<ul style="list-style-type: none"> Engine: Stopped Measurement position: See "Control valve" in "Machine posture and procedure for measuring performance". 		mm	ℓ	a	b	ℓ	a	b
Arm control valve				-	9.5±0.5	9.5±0.5	-	9.5±0.5	9.5±0.5
Bucket control valve									
Swing control valve									
Travel control valve									

STANDARD VALUE TABLE FOR ELECTRICAL

(PC400_11-P-E000-001-00-B)

STANDARD VALUE TABLE FOR ELECTRICAL

(PC400_11-P-E000-033-00-B)

Controller

Equipment name		Procedure, measuring location, criteria, and remarks		
Engine controller	Continuous power supply voltage	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Turn the battery disconnect switch to OFF position. 3. Insert T-adapter into connector J2. 4. Turn the battery disconnect switch ON. 5. Measure voltage with starting switch at OFF position and when starting engine. 		
		Voltage	Between J2 (1) and (49)	20 to 30 V
			Between J2 (25) and (50)	20 to 30 V
			Between J2 (26) and (51)	20 to 30 V
			Between J2 (27) and (52)	20 to 30 V
			Between J2 (28) and (50)	20 to 30 V
Pump controller	Continuous power supply voltage	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Turn the battery disconnect switch to OFF position. 3. Disconnect connector CP01 and connect T-adapter to female side. 4. Turn the battery disconnect switch ON. 5. Turn starting switch to ON position. 		
		Voltage	Between CP01 (female) (1) and (2)	20 to 30 V
			Between CP01 (female) (4) and (5)	20 to 30 V
	Solenoid power supply voltage	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Turn the battery disconnect switch to OFF position. 3. Disconnect connector CP02 and connect T-adapter to female side. 4. Turn the battery disconnect switch ON. 5. Turn starting switch to ON position. 		
		Voltage	Between CP02 (female) (116) and ground	20 to 30 V
			Between CP02 (female) (118) and ground	20 to 30 V
Between CP02 (female) (121) and ground	20 to 30 V			
Machine monitor	Continuous power supply voltage	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Turn the battery disconnect switch to OFF position. 3. Insert T-adapter into connector CM01. 4. Turn the battery disconnect switch ON. 5. Turn starting switch to ON position. 		
		Voltage	Between CM01 (1) and (3)	20 to 30 V
			Between CM01 (2) and (4)	20 to 30 V

ENGINE AND COOLING SYSTEM

(ALL-K-A000-001-30-B)

TEST ENGINE SPEED

(PC400_10-K-A000-304-00-B)

▲ Place the machine on a level ground, and then lower the work equipment completely to the ground in a stable posture. Set the lock lever to LOCK position, and then stop the engine.

Check this item with Pre-defined Monitoring or Monitoring function of the machine monitor.

Check this item under the following conditions.

- Engine coolant Temperature: 60 to 100 °C
- Hydraulic oil temperature: 45 to 55 °C

For testing the engine speed to perform troubleshooting, refer to this section.

METHOD FOR TESTING ENGINE SPEED

(PC400_10-K-A000-388-01-B)

Testing the engine speed at high idle

1. Select "Pre-defined Monitoring" (01/25) or the following monitoring items, and display it by referring to "SET AND OPERATE MACHINE MONITOR".

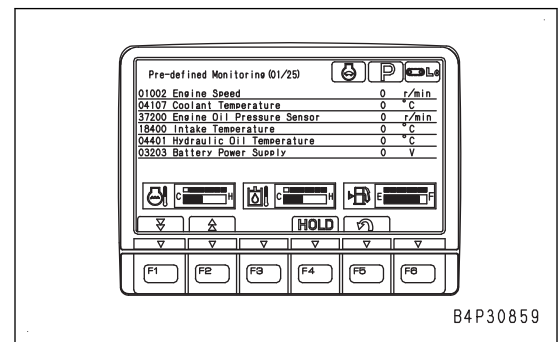
Monitoring code: 01002 "Engine Speed"

Monitoring code: 04107 "Coolant Temperature"

Monitoring code: 04401 "Hydraulic Oil Temperature"

2. Start the engine.
3. Keep the engine coolant temperature and the hydraulic oil temperature in the testing condition range.
4. Turn the fuel control dial to MAX (High idle) position, set the working mode to P ("Power Mode"), and turn off the auto-deceleration.
5. Turn on the swing lock switch.
6. Check the engine speed when all control levers and control pedals are in NEUTRAL position.

For standard values, see STANDARD VALUE TABLE, "STANDARD VALUE TABLE FOR ENGINE".



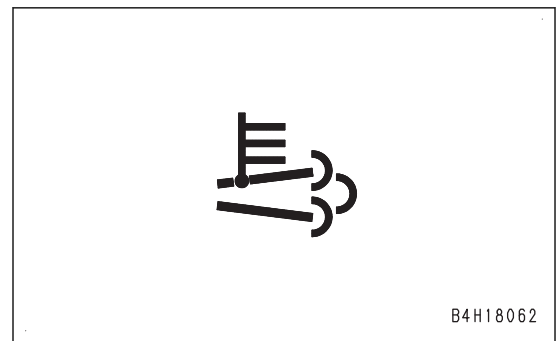
B4P30859

Testing the engine speed at low idle

The engine speed at low idle becomes higher during the aftertreatment devices regeneration, and the engine speed cannot be tested correctly. If the aftertreatment devices regeneration pilot lamp is still lit, perform the test after the aftertreatment devices regeneration is done.

REMARK

When the aftertreatment devices regeneration is finished, the aftertreatment devices regeneration pilot lamp goes out.



B4H18062

1. Select "Pre-defined Monitoring" (01/25) or the following monitoring items, and display it by referring to "SET AND OPERATE MACHINE MONITOR".
 - Monitoring code: 01002 "Engine Speed"
 - Monitoring code: 04107 "Coolant Temperature"
 - Monitoring code: 04401 "Hydraulic Oil Temperature"
2. Start the engine.
3. Keep the engine coolant temperature and the hydraulic oil temperature in the testing condition range.

HANDLE NO-INJECTION CRANKING OPERATION*(PC400_10-K-A000-25L-00-B)*

No-injection cranking operation means to crank the engine by using the starting motor while disabling injection in all cylinders electrically. The purpose and effect of this operation are as follows.

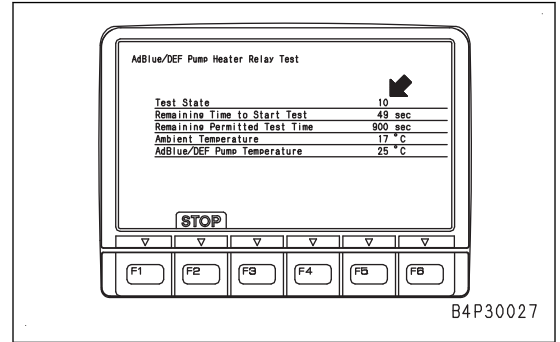
No-injection cranking is performed to lubricate the engine parts and to protect them from seizure. It is performed before the engine is started after the machine or engine has been stored for a long period.

For standard values, see "Standard value table", "STANDARD VALUE TABLE FOR MACHINE".

- When the voltage of 24.5 ± 1.5 V is measured, press F2.

REMARK

AdBlue/DEF purge action starts automatically, and the display of "Test State" changes to the flashing of "20".



After finishing the test, remove the testing tools, and restore the machine.

REMARK

When disconnecting connector, always turn the battery disconnect switch to OFF position.

TEST AdBlue/DEF TANK HEATER VALVE

(PC400_11-K-AFK2-304-00-B)

Tools for testing AdBlue/DEF tank heater valve

Symbol	Part No.	Part name	Q'ty	Remarks
A	799-601-9020	T-adapter	1	
B	799-601-2600	T-box	1	
C	Commercially available	Multimeter	1	

⚠ Place the machine on a level ground, lower the work equipment with a stable posture to the ground, set the lock lever in LOCK position, and stop the engine.

NOTICE

If KOMNET communication error remains less than 1 second, engine controller is unable to detect it, and the test may be continued while the machine monitor does not continue the test (standard screen). In that case, once the starting switch is turned to OFF position, system operating lamp goes out, and the engine controller shuts down to reset the test.

"AdBlue/DEF Tank Heater Valve Test" is a function to actuate AdBlue/DEF tank heater valve at any timing, and to check electrical action.

For testing of AdBlue/DEF tank heater valve to perform troubleshooting or others, refer to this section.

METHOD FOR TESTING AdBlue/DEF TANK HEATER VALVE

(PC400_11_E-K-AFK2-362-01-B)

- After checking that the system operating lamp is off, turn the battery disconnect switch to OFF position, and remove the key.
- Remove cover (1).




2. While fixing holder (12), loosen lock nut (13).
3. Turn holder (12) to adjust the pressure.

REMARK

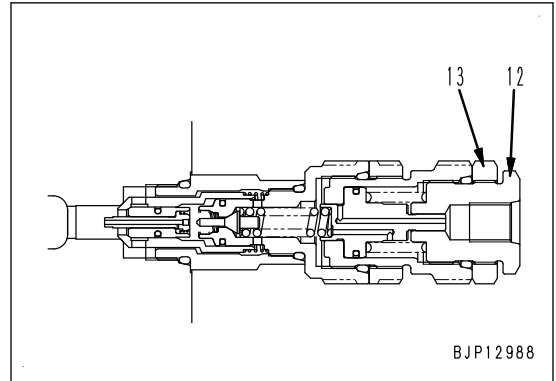
- If holder (10) is turned clockwise, the pressure is increased. If it is turned counterclockwise, the pressure is decreased.
- Quantity of pressure adjustment per turn of holder: Approximately 25.3 MPa {258 kg/cm²}

4. While fixing holder (12), tighten lock nut (13).

 Lock nut (13) :
78 to 93 Nm {8.0 to 9.5 kgm}

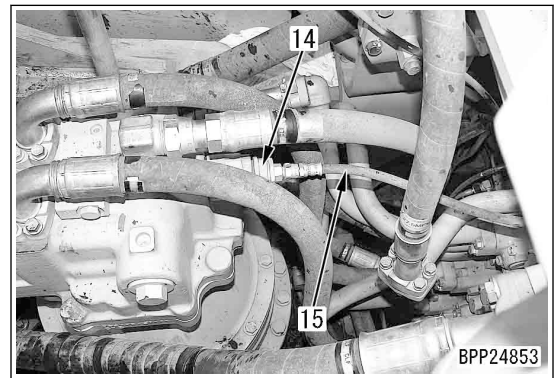
5. Connect pilot hose (9).

After the adjustment, recheck the oil pressure according to the testing procedure described above.

**METHOD FOR ADJUSTING SWING RELIEF PRESSURE**

(PC400_10-K-J000-270-10-B)

If the swing relief pressure is not normal, adjust swing 2-stage relief valve (14) according to the following procedure.




1. Disconnect the pilot hose (15).
2. While fixing holder (16), loosen lock nut (17).
3. Turn holder (16) to adjust the pressure.

REMARK

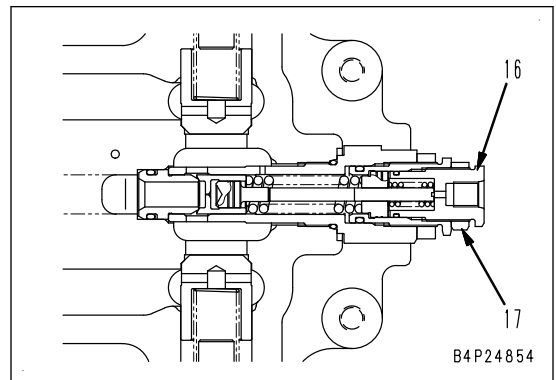
- If the holder is turned clockwise, the pressure is increased. If the holder is turned counterclockwise, the pressure is decreased.
- Quantity of pressure adjustment per turn of holder 4.7 MPa {47.9 kg/cm²}

4. While fixing holder (16), tighten lock nut (17).

 Lock nut :
93.1 to 122.5 Nm {9.5 to 12.5 kgm}

5. Connect pilot hose (15).

After the adjustment, recheck the oil pressure according to the testing procedure described above.



3. Disconnect hose (2) on the cylinder head side, and block the hose side by using a flange B.

⚠ Be careful not to disconnect the hose on the cylinder bottom side.

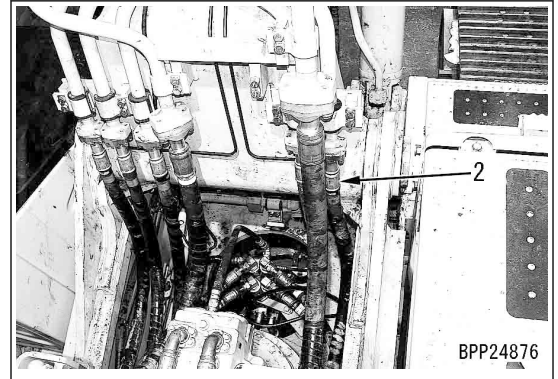
4. Start the engine, and perform arm IN relief with the fuel control dial at MAX (High idle).

⚠ Be careful not to operate the lever to "Arm OUT" side.

5. 30 seconds after starting relief, measure the amount of oil leakage for 1 minute.

For standard values, see "Standard value table", "STANDARD VALUE TABLE FOR MACHINE".

After finishing the test, restore the machine.



TEST OIL LEAKAGE OF BUCKET CYLINDER

(PC400_10-K-LCD0-364-00-B)

1. Set the bucket cylinder at the CURL stroke end, and stop the engine.
2. Release the remaining pressure from the piping on the bucket cylinder head side. For details, see "RELEASE REMAINING PRESSURE FROM HYDRAULIC SYSTEM".

REMARK

Operate the lever in the bucket CURL direction only to release the remaining pressure.

3. Disconnect hose (3) on the cylinder head side, and block the hose side by using a flange B.

⚠ Be careful not to disconnect the hose on the cylinder bottom side.

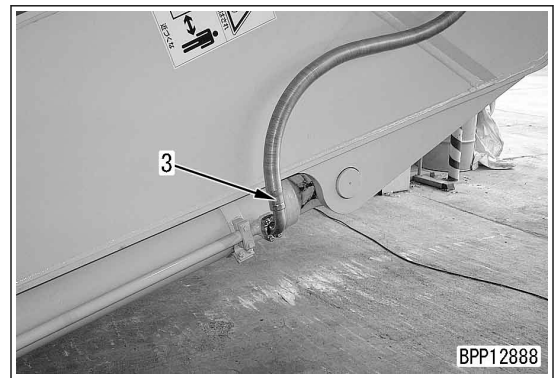
4. Start the engine, and perform bucket CURL relief with the fuel control dial at MAX (High idle).

⚠ Be careful not to operate the lever to "Bucket DUMP" side.

5. Measure the amount of oil leakage for 1 minute in the elapsed time of 30 seconds after starting relief.

For standard values, see "Standard value table", "STANDARD VALUE TABLE FOR MACHINE".

After finishing the test, restore the machine.



METHOD FOR TESTING OIL LEAKAGE OF SWING MOTOR

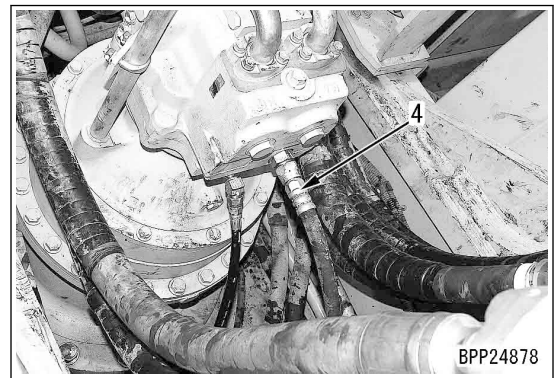
(PC400_10-K-J610-364-00-B)

1. Disconnect drain hose (4), and block the hose end with plug C.
2. Set the swing lock switch to ON position.
3. Start the engine, and perform swing relief with the fuel control dial at High idle (MAX) position.
4. 30 seconds after starting relief, measure the amount of oil leakage for 1 minute.

For standard values, see "Standard value table", "STANDARD VALUE TABLE FOR MACHINE".

5. After measuring once, swing the upper structure 180 ° and measure it again.

After finishing the test, restore the machine.



METHOD FOR TESTING OIL LEAKAGE OF TRAVEL MOTOR

(PC400_10-K-C400-364-00-B)

1. Remove the travel motor cover.

No.	Monitoring code	Self-define Monitoring items (screen display)	Unit			Applicable component
			SI	Metric	Imperial	
3	18100	EGR Valve Position	mm	mm	in	ENG
4	48600	EGR Solenoid Current	mA	mA	mA	ENG
5	48700	KVGT Position	mm	mm	in	ENG
6	48800	KVGT Solenoid Current	mA	mA	mA	ENG

Pre-defined Monitoring (04/25) Engine temperature system

No.	Monitoring code	Self-define Monitoring items (screen display)	Unit			Applicable component
			SI	Metric	Imperial	
1	01002	Engine Speed	r/min	rpm	rpm	ENG
2	48100	Turbocharger Speed	r/min	rpm	rpm	ENG
3	04107	Coolant Temperature	°C	°C	°F	ENG
4	18400	Intake Temperature	°C	°C	°F	ENG
5	18500	Charge Temperature	°C	°C	°F	ENG

Pre-defined Monitoring (05/25) Intake and exhaust pressure system

No.	Monitoring code	Self-define Monitoring items (screen display)	Unit			Applicable component
			SI	Metric	Imperial	
1	01002	Engine Speed	r/min	rpm	rpm	ENG
2	37400	Ambient Pressure	kPa	kg/cm ²	psi	ENG
3	36500	Charge Pressure	kPa	kg/cm ²	psi	ENG
4	48100	Turbocharger Speed	r/min	rpm	rpm	ENG
5	48200	MAF	kg/sec	kg/min	lb/min	ENG

Pre-defined Monitoring (06/25) Post-treatment system

No.	Monitoring code	Self-define Monitoring items (screen display)	Unit			Applicable component
			SI	Metric	Imperial	
1	47000	KDPF Outlet Pressure	kPa	kg/cm ²	psi	KDPF
2	47100	KDPF Differential Pressure	kPa	kg/cm ²	psi	KDPF
3	47200	KDPF 1 Outlet Temperature	°C	°C	°F	KDPF
4	47300	KDOC 1 Inlet Temperature	°C	°C	°F	KDPF
5	47400	KDOC 1 Outlet Temperature	°C	°C	°F	KDPF
6	47600	Dosing Fuel Pressure	kPa	kg/cm ²	psi	KDPF

Pre-defined Monitoring (07/25) Engine

No.	Monitoring code	Self-define Monitoring items (screen display)	Unit			Applicable component
			SI	Metric	Imperial	
1	01002	Engine Speed	r/min	rpm	rpm	ENG
2	37200	Engine Oil Pressure	kPa	kg/cm ²	psi	ENG
3	48400	Crankcase Pressure	kPa	mmAq	psi	ENG

- On “With/Without Attachment” screen, select a setting with the function switch.

Without attachment: When attachment is not installed

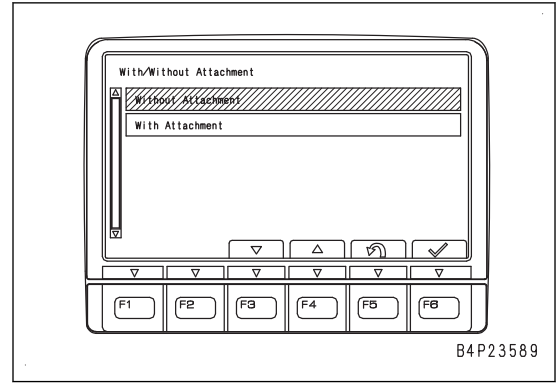
With attachment: When attachment is installed

F3: Moves the selection downward

F4: Moves the selection upward

F5: Cancels the selection. Screen returns to “Default” screen

F6: Enters the selection, and the screen returns to “Default” screen



NOTICE

Select “With attachment” on this screen when attachment is installed. The attachment will not be available in “Working Mode” in operator mode if it is not set on this screen. It results in that the attachment does not function well or a failure may occur in the hydraulic components.

METHOD FOR SETTING DEFAULT (CAMERA)

(PC400_10_E-K-Q162-110-00-B)

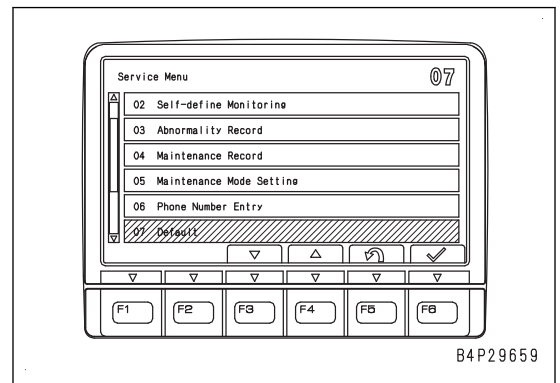
Default setting menu is used to check or change default values of the machine monitor and the machine.

“Camera” function is for setting of camera when the camera is installed or removed.

- Select “Default” on “Service Menu” screen.

REMARK

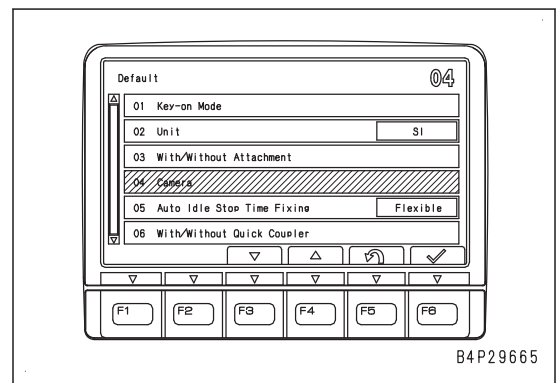
For selecting method, see “METHOD FOR OPERATING SERVICE MODE” in “SERVICE MODE”.



- Select “Camera” with the function switches or numeral input switches on “Default” screen.

REMARK

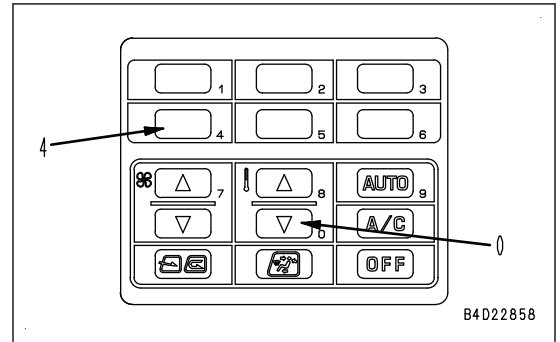
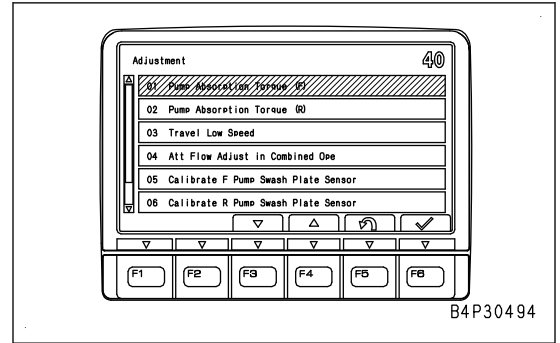
For selecting method, see “METHOD FOR OPERATING SERVICE MODE” in “SERVICE MODE”.



- Enter "40" with numeral input switches after the "Adjustment" screen is displayed, and press F6.

REMARK

Since this function is required only when the pump is replaced, the PC valve is adjusted or disassembled, or the pump controller is replaced, it is not displayed in the menu list.



- On the "Pump Calibration" screen, select "Matching Speed Check" with function switches or numeral input switches.

REMARK

Select this when it is required to check abnormality or current condition of the machine. Selecting method is the same as on "Service Menu" screen.

The alphabet letter at the right top of the screen indicates the following condition.

D: Default

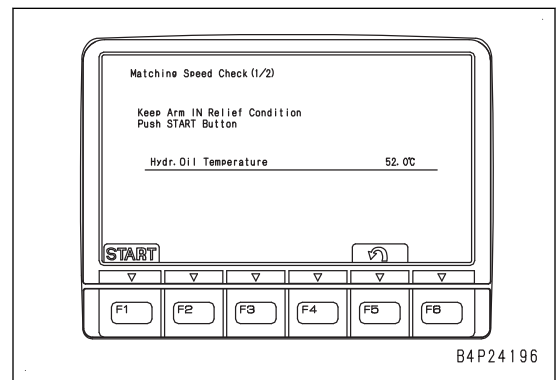
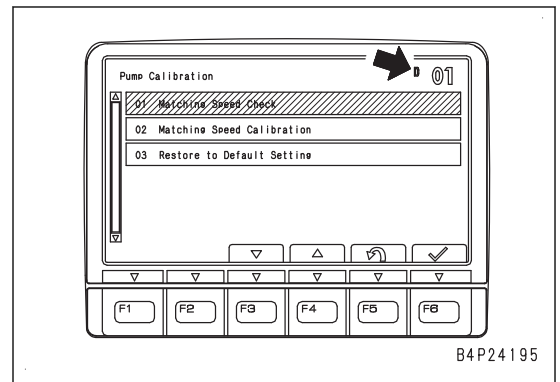
F: Adjustment value at shipment from factory (Factory shipment state (Normal))

U: User calibration value

- On the "Matching Speed Check" screen, check the matching speed by relieving the arm circuit in digging operation and by using the function switches

F1: Starts the matching speed check

F5: Returns to the "Pump Calibration" screen

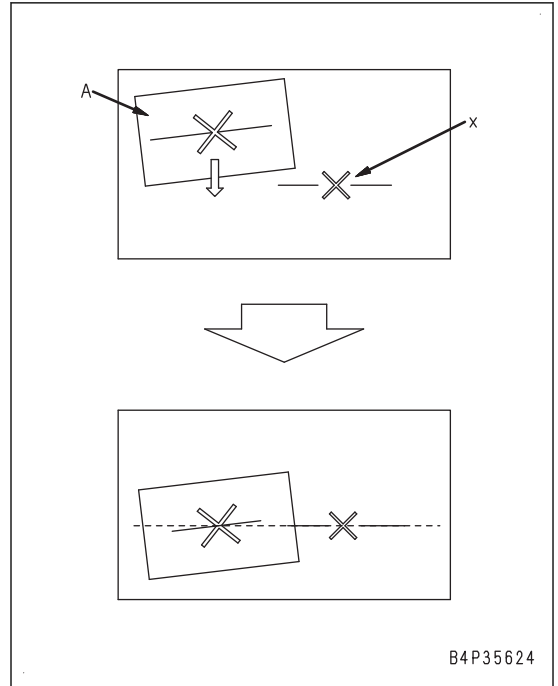


11. Match the center of the angle setting calibration marker A and the vertical direction position of the camera marker with the function switches.

A: Angle setting calibration marker A

x: Camera marker

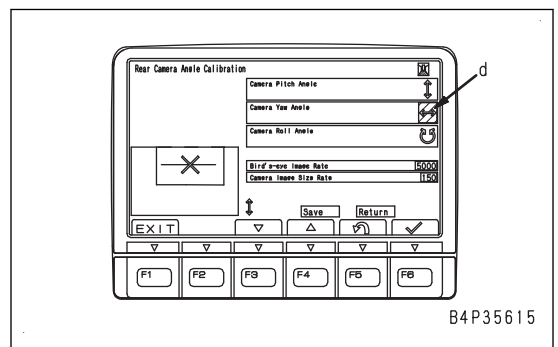
- F1: The screen returns to "Service Menu" screen.
- F3: Moves the camera image downward
- F4: Moves the camera image upward
- F5: Cancels the calibration item / Cancels the change. The screen returns to "KomVision Adjustment Menu" screen.
- F6: Enters the calibration item/Enters the change



12. Select and enter "Camera Yaw Angle" with the function switches.

- F1: The screen returns to "Service Menu" screen.
- F3: Moves the selection downward.
- F4: Moves the selection upward.
- F5: Selection is canceled. The screen returns to "CAMERA CALIBRATION" screen.
- F6: Enters the selected item.

The back ground color of icon (d) turns yellow when the selected item is entered.

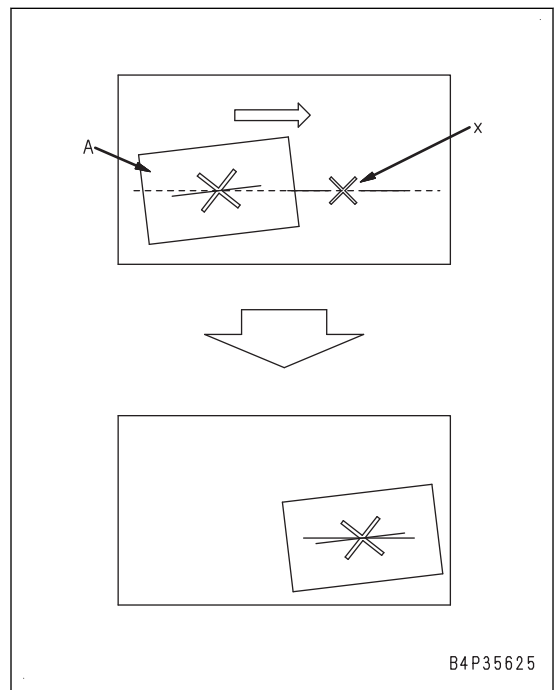


13. Match the center of the angle setting calibration marker A and the lateral position of the camera marker with the function switches.

A: Angle setting calibration marker A

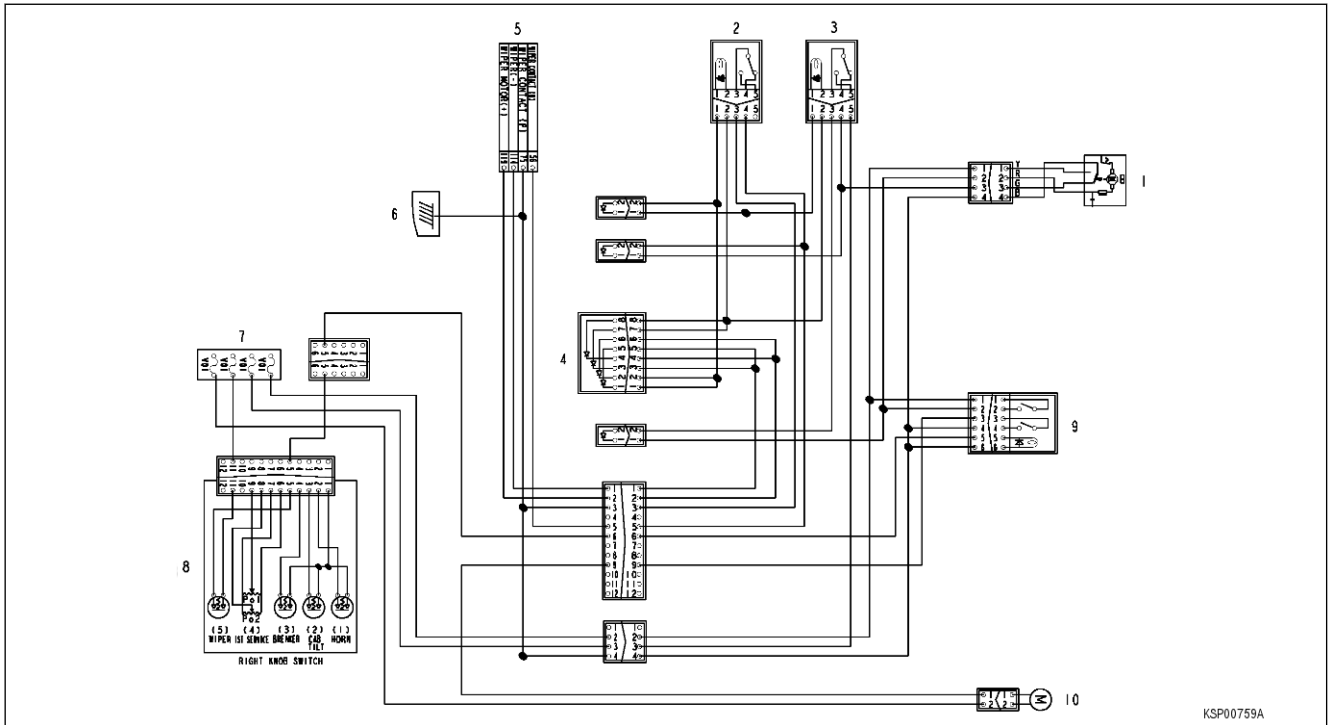
x: Camera marker

- F1: The screen returns to "Service Menu" screen.
- F3: Moves the camera image to the left
- F4: Moves the camera image to the right
- F5: Cancels the calibration item / Cancels the change. The screen returns to "KomVision Adjustment Menu" screen.
- F6: Enters the calibration item/Enters the change



PARALLEL LINK FRONT SCREEN WIPER

(PC490_11-P-E000-051-20-B)



1. Parallel link wiper motor
2. Parallel link wiper relay A
3. Parallel link wiper relay B
4. Parallel link wiper rectifier
5. Pump controller
6. Ground
7. Fuse box
8. RH lever
9. One touch wiper relay
10. Washer motor

Operation

The machine controller generates an alternating current, this is more commonly used to drive a reversing motor type wiper system. The parallel link front wiper system uses a constant rotation type motor and linkage. The alternating current is changed to a direct current signal by rectifier (4).

The parallel wiper motor contains a cam switch. To auto-park the wiper, this switch in conjunction with relays (2) and (3) are used to bring the wiper to its initial position once the power is switched off.

NOTICE

The system can only program one "Neutral" sensor at a time, therefore, it is important that only 1 un-programmed (Neutral) sensor is connected to the system at any time. If more than one "Neutral" sensor is installed during programming the sensor will be damaged and will not be able to be used in the installation and must be replaced.

Read and understand ALL of the removal and installation instructions before commencing.

⚠ Place the machine on a level ground, lower the work equipment to the ground so that it is stable, and set the lock lever to LOCK position, and then stop the engine.

⚠ Stop the engine, turn the battery disconnect switch to OFF position, and remove the key. For details, see "TESTING AND ADJUSTING", "HANDLE BATTERY DISCONNECT SWITCH".

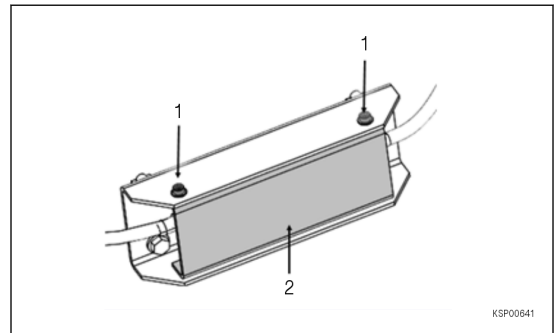
Write down the connector numbers and installation positions before disconnecting wiring harnesses.

METHOD FOR REMOVING 1-AXIS (WORK EQUIPMENT) SENSOR (PC390_11-K-Q200-924-50-B)

NOTICE

Only remove 1 sensor from the machine at any time. If more than 1 sensor is to be replaced complete the removal and installation, including programming, of each sensor fully before beginning removal and installation of the next sensor.

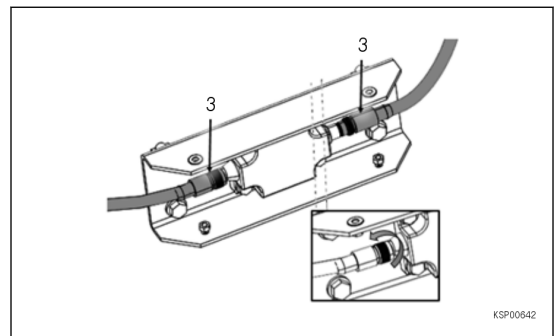
1. Remove hexagonal socket head bolts x 4 (1).
2. Remove sensor cover (2).



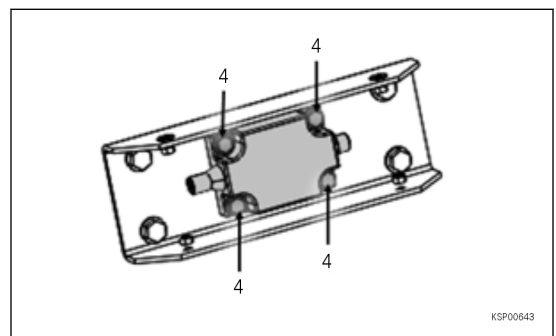
3. Disconnect electrical connectors x 2 (3) by turning the knurled portion of the connector counter-clockwise.

NOTICE

Do not use excessive force while disconnecting the harness connectors.



4. Remove M6 x 4 sensor bolts (4).



METHOD FOR INSTALLING 1-AXIS (WORK EQUIPMENT) SENSOR(PC390_11-K-Q200-924-60-B)

Complete removal procedure steps 1~4 in reverse order.

NOTICE

While completing step 3 follow below instruction.



KSP00716

LC Undercarriage

Measurement	Display (m)	Actual (m)	Tolerance
Horizontal distance (m)	X1	X2 + 0.16	±0.1
Vertical distance (m)	Y1	2162 - Y2	±0.1

Hydraulic Wide Gauge Undercarriage

Measurement	Display (m)	Actual (m)	Tolerance
Horizontal distance (m)	X1	X2 + 0.16	±0.1
Vertical distance (m)	Y1	2062 - Y2	±0.1

40. Reach is confirmed by calculation:

$$X1 - (X2 + 0.16) = < 0.1$$

41. Height is confirmed by calculation:

For LC undercarriage:

$$Y1 - (2162 - Y2) = < 0.1$$

For Hydraulic Wide Gauge undercarriage:

$$Y1 - (2062 - Y2) = < 0.1$$

42. Set the work equipment posture:

- Boom cylinder = Max. length
- Mid-link cylinder = Max. length
- Arm cylinder = Max. length

- For the failure code relating to the “Inducement strategy” of the Urea SCR system, which cannot be cleared by “Engine Controller Active Fault Clear”, these can now be cleared from the machine monitor by using a one-time password issued by Komatsu. Also, INSITE can be used for clearing.

In case failure codes cannot be cleared

- The relevant failure code may not be able to clear due to derated engine power caused by “Inducement strategy”, environmental conditions or other functional restrictions. Details and the measures to be taken are as shown below.

Case 1 : Derated engine power caused by “Inducement strategy”

- The failure code may not be able to be cleared because it is a failure code caused by an “Inducement strategy”, which derates the engine power. (Detail of “Inducement strategy”, see Structure and function chapter “UREA SCR SYSTEM”.)
- Failure codes, which are caused by “Inducement strategy”, and be cleared by turning the starting switch to ON position or operating the engine at low idle, are cleared in the same manner as before.
- However, some failure codes caused by “Inducement strategy” and require “Loaded Diagnostics Operation To Clear Failure Code” may not let the machine move to activate troubleshooting. (The “Inducement status” advances to derate engine power.) For the applicable codes, see separate sheet. Applicable codes are also identified at their descriptions of “Troubleshooting by failure code”.
- Measures to be taken:
When the repair is completed, perform “Engine Con Inducement Fault Clear” and then “Loaded Diagnostics Operation To Confirm Failure Correction” or “Loaded Diagnostics Operation To Clear Failure Code” to confirm that the failure code is cleared.


Case 2 : Environmental conditions

- Depending on environmental conditions (altitude, ambient temperature and etc.) when performing “Loaded Diagnostics Operation To Confirm Failure Correction” or “Loaded Diagnostics Operation To Clear Failure Code”, or when AdBlue/DEF freeze prevention mode is activated, the failure code may not be able to be cleared.
(Applicable codes are identified by including the conditions that prevent clearing in “Related information” of each “Troubleshooting by failure code”.)
- Measures to be taken:
 1. When the repair is completed, perform “Loaded Diagnostics Operation To Confirm Failure Correction” or “Loaded Diagnostics Operation To Clear Failure Code” under appropriate environmental conditions.
(See the description of each “Troubleshooting by failure code”.)
 2. If the measure mentioned above is difficult to take after the repair is completed, perform “Engine Controller Active Fault Clear”, or “Engine Con Inducement Fault Clear” and then confirm that the failure code is cleared.
- Examples:
 - Some failure codes cannot be cleared under certain environmental conditions (altitude, ambient temperature, etc.)
 1. Some failure codes cannot be cleared at high altitudes (ambient pressure 80 kPa or less).
 2. Some failure codes cannot be cleared at low temperatures (ambient temperature -7 °C or below).
 3. Some failure codes indicate failures only when AdBlue/DEF freeze prevention mode is activated.
 4. Some failure codes do not indicate a failure when AdBlue/DEF freeze prevention mode is activated.
 - Code cannot be cleared because AdBlue/DEF pump stops or AdBlue/DEF injection stops
 - Condition that stops the AdBlue/DEF pump or AdBlue/DEF injection is shown below.
 1. Ambient temperature: -24 °C or below
 2. Thaw mode activated

1. Set the TOP mark at the top, and the line running on TOP mark and plug (P) perpendicular to the ground.
2. Place the oil container to receive oil under plug (P).
3. Remove plugs (P) and (F) by using the hex wrench, and drain oil.

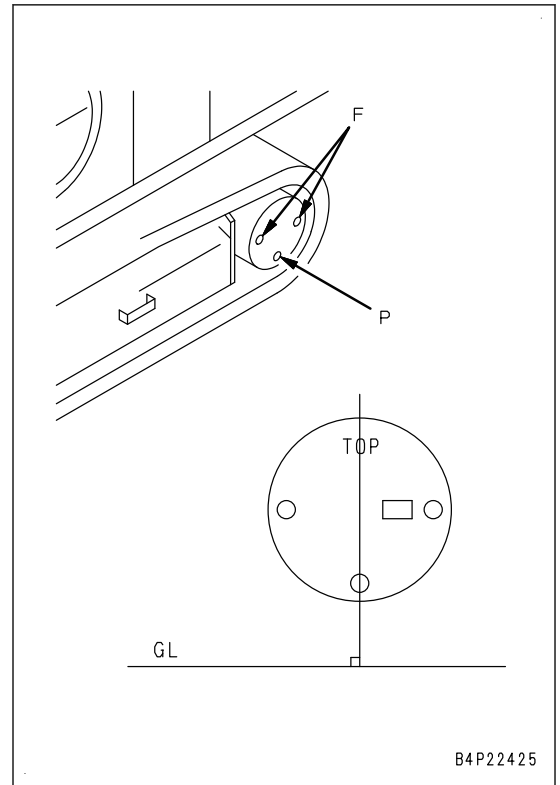
Check for damages on O-ring attached to the plugs. Replace it if necessary.

4. Tighten plug (P).
5. Refill oil through plug (F) hole.
6. If oil flows out of the plug (F) hole, install the plug (F).

 Tightening torque of plugs (P) and (F): :
 $68.6 \pm 9.8 \text{ Nm}$ $7 \pm 1 \text{ kgm}$

NOTICE

There are 2 plugs (F). For refilling, use the one which is easier for refilling and inner gear is not seen through.



BLEED AIR FROM FUEL SYSTEM

(PC400_11-K-AD00-289-02-B)

For the bleeding air from the fuel system, see "TESTING AND ADJUSTING", "BLEED AIR FROM FUEL SYSTEM".

BLEED AIR FROM HYDRAULIC SYSTEM

(PC400_11-K-C000-289-00-B)

For bleeding air from the hydraulic system, see "TESTING AND ADJUSTING", "BLEED AIR FROM HYDRAULIC CIRCUIT".

ELECTRICAL EQUIPMENT - CHECK METHOD

(PC400_11-P-E000-289-00-B)

Check of battery terminal for looseness and corrosion

1. Check the battery cable terminals for looseness and corrosion.
2. Check for any accumulated dirt and combustibles (dead leaves, twigs, etc.) around the batteries. If any, remove them.

Check of alternator terminal for looseness and corrosion

3. Remove the engine undercover.
4. Check alternator terminal B, terminal R, and terminal E for open circuit, looseness and corrosion.

Check of starting motor terminal for looseness and corrosion

5. Check starting motor terminal B, terminal C, and terminal R for open circuit, looseness and corrosion.

Check of battery voltage (with engine stopped)

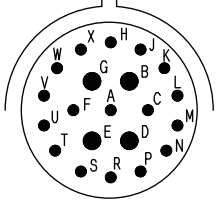
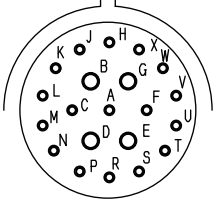
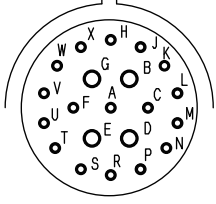
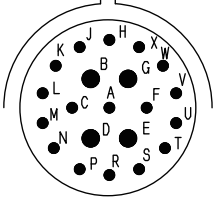
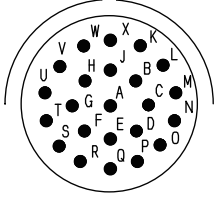
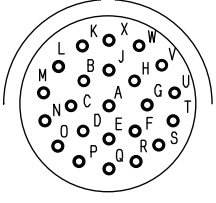
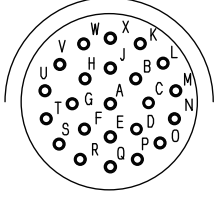
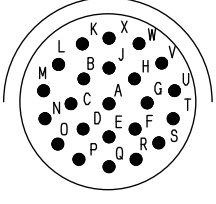
6. Check the battery voltage by using the battery tester while the engine is stopped.

Check of battery electrolyte level

7. Check before operating the machine.

Connector No.	Connector type	Number of pins	Location	Address
F02	—	—	Fuse box	V-9
F04	L	2	Fusible link	C-9
F05	L	2	Fusible link	C-9
F11	Terminal	1	Slow blow fuse	B-9
F12	Terminal	1	Slow blow fuse	A-9
G	SUMITOMO	3	G sensor	AE-4
G_RES	DT	2	Resistor	AG-9
H08	M	4	Intermediate connector	X-4,AD-4
H09	M	8	Intermediate connector	X-5,AD-4
H14	090	22	Intermediate connector	T-9
H15	090	22	Intermediate connector	S-9
H16	090	22	Intermediate connector	X-4
INJ	DT	12	Injector	AJ-7
INJ#1	DT	2	Injector #1	AJ-5
INJ#2	DT	2	Injector #2	AJ-6
INJ#3	DT	2	Injector #3	AE-2
INJ#4	DT	2	Injector #4	AE-3
INJ#5	DT	2	Injector #5	AG-9
INJ#6	DT	2	Injector #6	AF-8
J01	—	20	Junction connector (black)	W-2
J02	—	20	Junction connector (pink)	V-2
J03	—	20	Junction connector (orange)	V-1
J04	—	20	Junction connector (pink)	X-2
J05	—	20	Junction connector (pink)	X-3
J06	—	20	Junction connector (orange)	X-6
J1	DELPHI	96	Engine controller	AF-2
J1939	DT	3	CAN_C	AJ-8
J2	DELPHI	96	Engine controller	AG-1
JC01	Terminal	8	Junction connector	AH-1
JC02	Terminal	12	Junction connector	AH-1
JM03	Terminal	3	Junction connector	—
JM05	Terminal	3	Junction connector	—
JM06	Terminal	3	Junction connector	—
JM07	Terminal	3	Junction connector	—
JM08	Terminal	4	Junction connector	—
JM09	Terminal	4	Junction connector	—
JM10	Terminal	3	Junction connector	—
JM11	Terminal	3	Junction connector	—

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

Type (shell size code)	HD30 Series connector		Testing connection use special tool Part No.
	Body (plug)	Body (receptacle)	
24-21 (7)	Pin (male terminal)	Socket (female terminal)	799-601-9270 (T-adapter)
			
	BWP05025	BWP05026	
	Part No. : 08191-71201, 08191-71202, 08191-71205, 08191-71206	Part No. : 08191-74101, 08191-74102, 08191-74105, 08191-74106	
24-23 (8)	Socket (female terminal)	Pin (male terminal)	799-601-9280 (T-adapter)
			
	BWP05027	BWP05028	
	Part No. : 08191-72201, 08191-72202, 08191-72205, 08191-72206	Part No. : 08191-73101, 08191-73102, 08191-73105, 08191-73106	
24-23 (8)	Pin (male terminal)	Socket (female terminal)	799-601-9280 (T-adapter)
			
	BWP05029	BWP05030	
	Part No. : 08191-81201, 08191-81202, 08191-81203, 08191-81204, 08191-81205, 08191-80206	Part No. : 08191-84101, 08191-84102, 08191-84103, 08191-84104, 08191-84105, 08191-84106	
24-23 (8)	Socket (female terminal)	Pin (male terminal)	799-601-9280 (T-adapter)
			
	BWP05031	BWP05032	
	Part No. : 08191-82201, 08191-82202, 08191-82203, 08191-82204, 08191-82205, 08191-82206	Part No. : 08191-83101, 08191-83102, 08191-83103, 08191-83104, 08191-83105, 08191-83106	

B4D18408

PRECAUTIONS FOR CLEANING AND REPLACING KDPF (KCSF and KDOC)

(PC400_11-K-A9H0-2A4-00-B)

⚠ Since KDPF and KDOC are heated to 500 °C or above, take care not to get burn injury.

Related information

Soot accumulation amount of KCSF in KDPF is classified in 8 levels. From “Service menu” of machine monitor, display “Diagnostic Tests” screen, and current level of accumulated soot can be checked on “Active Regeneration for Service” screen.

Following failure codes are displayed corresponding to the soot accumulation level.

- If the soot accumulation level is 4 or 5, the failure code [CA2639] is displayed.
- If the soot accumulation level is 6 or 7, the failure code [CA1921] is displayed.
- If the soot accumulation level is 8, the failure code [CA1922] is displayed.
 - If the soot accumulation level is 8, you need to check, clean or replace because KDPF is completely clogged with soot.
 - Manual stationary regeneration can be performed up to soot accumulation level 7, and soot in KCSF can be burnt and removed.
- If the soot accumulation level is 4 to 7, perform the manual stationary regeneration. Manual stationary regeneration can be performed from Active Regeneration for Service (see below) or from operator mode.

Method of manual stationary regeneration from “Active Regeneration for Service”.

- When the soot accumulation level is 3 or below, manual stationary regeneration can be performed only from “Active Regeneration for Service” according to the following procedure.
 1. Start the engine.
 2. Secure the safety of the machine.
 3. From “Service menu” of machine monitor, display “Diagnostic Tests” screen, open “Active Regeneration for Service”, and then perform “Manual Stationary Regeneration”.
- Time required for manual stationary regeneration varies depending on soot accumulation amount in KCSF. Rough guide is described below.

Soot accumulation level 4: Approximately 40 minutes to 1 hour

Soot accumulation level 5: Approximately 1 hour to 2 hours

- How to reset KDPF (KCSF) cleaning. From “Service menu” of machine monitor, display “Diagnostic Tests” screen, open “KDPF Memory Reset”, and perform “KDPF Cleaning” (Reset KDPF cleaning).
- How to reset KDPF (KCSF) replacing. From “Service menu” of machine monitor, display “Diagnostic Tests” screen, open “KDPF Memory Reset”, and perform “KDPF Change” (Reset KDPF change).
- If KCSF in KDPF is replaced, perform reset of “KDPF Cleaning” and reset of “KDPF Change”, and perform Manual Stationary Regeneration from always “Active Regeneration for Service” to remove moisture from KCSF.
 - How to reset after KDOC change From “Service menu” of the machine monitor, display “Diagnostic Tests” screen, open “KDPF Memory Reset”, and perform “KDOC Change” (Reset after KDOC change).
- If KDOC in KDPF is replaced, perform reset of “KDOC Change” but it is not necessary to perform manual stationary regeneration.

In case of KCSF cleaning or change

- At 4500 h period periodical cleaning
 1. Check the soot accumulation level, if it is displayed, perform “Active Regeneration for Service” until it becomes zero.

FAILURE CODE [879CKA]

(ALL-K-K560-410-00-B)

Action level	Failure code	Failure	Ventilating sensor Open Circuit (Machine monitor system)
-	879CKA		
Details of failure	Air conditioner controller detects open circuit in evaporator temperature (frost) sensor.		
Action of controller	<ul style="list-style-type: none"> Air conditioner controller transmits open circuit information of evaporator temperature (frost) sensor to machine monitor by CAN communication. Stops air conditioner. 		
Phenomenon on machine	Air conditioner does not operate because of open circuit in evaporator temperature (frost) sensor.		
Related information	<ul style="list-style-type: none"> After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position. Check if this failure code is displayed on electrical system failure record screen in SERVICE MODE of machine monitor. Since connector of air conditioner evaporator temperature (frost) sensor cannot be checked when it is mounted on machine, troubleshooting cannot be performed. 		
No.	Cause	Procedure, measuring location, criteria and remarks	
1	Defective air conditioner controller	Air conditioner controller may be defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)	
2	Defective air conditioner unit	Air conditioner unit may be defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)	

FAILURE CODE [AS00R5]

(ALL-K-AF00-410-60-B)

Action level	Failure code	Failure	Inducement 3 (SCR Device Abnormality) (Engine controller system)
L04	AS00R5		
Detail of failure	Engine power deration.		
Action of controller	<ul style="list-style-type: none"> The information related to this failure code is displayed on the monitor screen. Engine power is restricted to low idle. Neither Manual Stationary Regeneration nor Active Regeneration for Service can be performed. 		
Phenomenon on machine	<ul style="list-style-type: none"> Engine speed is fixed at low idle speed. 		
Related information	<ul style="list-style-type: none"> This failure code is detected during engine operation. If this failure code displays after SCR system abnormality is repaired and the engine controller is shut down, run the engine for 1 minute to clear the failure code. After this failure code is cleared, engine power deration continues until the starting switch is turned to OFF position. 		
No.	Cause	Procedure, measuring location, criteria and remarks	
1	SCR system abnormality	Failure codes of SCR system abnormality are displayed. Perform troubleshooting for them.	
2	Engine system abnormality	If any other failure codes than SCR system abnormality are displayed, perform troubleshooting for them.	

FAILURE CODE [CA145]

(ALL-K-ACA0-410-10-B)

Action level	Failure code	Failure	Coolant Temperature Sensor Low Error (Engine controller system)
L01	CA145		
Details of failure	Low voltage occurs in signal circuit of engine coolant temperature sensor.		
Action of controller	Sets coolant temperature to fixed value for operation.		
Phenomenon on machine	<ul style="list-style-type: none"> Engine startability becomes poor in low temperature. Overheat prevention function does not operate. 		
Related information	<ul style="list-style-type: none"> Signal voltage from engine coolant temperature sensor can be checked by monitoring function. (Code: 04105 (V)) Temperature in engine oil coolant sensor can be checked by monitoring function. (Code: 04107 (°C)) After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position. When temperature sensor connector is removed, failure code for High Error [CA144] is displayed instead of this failure code. <p>⚠ Do not work at high coolant temperature, when testing and replacing coolant temperature sensor.</p>		

No.	Cause	Procedure, measuring location, criteria and remarks																
1	Defective wiring harness connector	<ol style="list-style-type: none"> See descriptions of wiring harness and connectors in “c: Electrical equipment” in “CHECKS BEFORE TROUBLESHOOTING” of “RELATED INFORMATION ON TROUBLESHOOTING”, and check it. Turn starting switch to ON position. <p>If this failure code is cleared, wiring harness connector is defective.</p>																
2	Defective coolant temperature sensor	<ol style="list-style-type: none"> Turn starting switch to OFF position. Disconnect connector TWTR and connect socket to male side. <p>REMARK Regard coolant temperature sensor as normal if its resistance is 700 Ω to 37 kΩ when coolant temperature is min. 0 °C.</p> <table border="1"> <tr> <td rowspan="5">Resistance between TWTR (male) (A) and (B)</td> <td>0 °C</td> <td>30 to 37 kΩ</td> </tr> <tr> <td>25 °C</td> <td>9.3 to 10.7 kΩ</td> </tr> <tr> <td>50 °C</td> <td>3.2 to 3.8 kΩ</td> </tr> <tr> <td>80 °C</td> <td>1.0 to 1.3 kΩ</td> </tr> <tr> <td>95 °C</td> <td>700 to 800 Ω</td> </tr> <tr> <td>Between TWTR (male) (B) and ground</td> <td>All coolant temperature range</td> <td>Min. 1 MΩ</td> </tr> </table>			Resistance between TWTR (male) (A) and (B)	0 °C	30 to 37 kΩ	25 °C	9.3 to 10.7 kΩ	50 °C	3.2 to 3.8 kΩ	80 °C	1.0 to 1.3 kΩ	95 °C	700 to 800 Ω	Between TWTR (male) (B) and ground	All coolant temperature range	Min. 1 MΩ
Resistance between TWTR (male) (A) and (B)	0 °C	30 to 37 kΩ																
	25 °C	9.3 to 10.7 kΩ																
	50 °C	3.2 to 3.8 kΩ																
	80 °C	1.0 to 1.3 kΩ																
	95 °C	700 to 800 Ω																
Between TWTR (male) (B) and ground	All coolant temperature range	Min. 1 MΩ																
3	Ground fault in wiring harness (contact with ground circuit)	<ol style="list-style-type: none"> Turn starting switch to OFF position. Disconnect connectors J1 and TWTR, and connect T-adaptor to female side of J1. <table border="1"> <tr> <td>Resistance</td> <td>Between J1 (female) (83) and ground</td> <td>Min. 1 MΩ</td> </tr> </table>			Resistance	Between J1 (female) (83) and ground	Min. 1 MΩ											
Resistance	Between J1 (female) (83) and ground	Min. 1 MΩ																

FAILURE CODE [CA322]

(ALL-K-AE81-410-00-B)

Action level	Failure code	Failure	Injector #1 (L#1) Open Circuit Error or Short Circuit Error (Engine controller system)
L03	CA322		
Details of failure	Open or short circuit is detected in #1 injector circuit.		
Action of controller	None in particular		
Phenomenon on machine	<ul style="list-style-type: none"> Engine power deration Engine does not run stably. 		
Related information	<ul style="list-style-type: none"> After repairing, check if the failure code is cleared by the following procedure. Procedure: Start engine. While engine is running normally, approximately 65 V of pulse voltage is supplied to injector (+) side. Because it is pulse voltage, it cannot be measured by using multimeter. If ground fault or hot short circuit is detected, failure codes [CA322], [CA331] and [CA324] appear simultaneously. 		

No.	Cause	Procedure, measuring location, criteria and remarks		
1	Defective wiring harness connector	<ol style="list-style-type: none"> See "RELATED INFORMATION ON TROUBLESHOOTING", "CHECKS BEFORE TROUBLESHOOTING", "Electrical equipment", and check them according to the descriptions of wiring harness and connectors. Start the engine. 		
		If this failure code is not displayed, the wiring harness connector is defective.		
2	Defective injector #1	<ol style="list-style-type: none"> Turn starting switch to OFF position. Disconnect connector CN1, and connect T-adapter to male side. 		
		Resistance	Between CN1 (male) (1) and (2)	0.4 to 1.1 Ω
			Between CN1 (male) (1) and ground	Min. 1 MΩ
3	Open circuit or ground fault in wiring harness	<ol style="list-style-type: none"> Turn the starting switch to OFF position. Disconnect the connector J1, and connect the T-adapter to female side. 		
		Resistance	Between J1 (female) (25) and (1)	0.4 to 1.1 Ω
			Between J1 (female) (25) and ground	Min. 1 MΩ
4	Open circuit in wiring harness (wire breakage or defective contact of connector)	<p>If no failure is found by check on cause 3, this check is not required.</p> <ol style="list-style-type: none"> Turn the starting switch to OFF position. Disconnect connectors J1 and CN1, and connect T-adapter to each female side. 		
		Resistance	Between J1 (female) (25) and CN1 (female) (1)	Max. 1 Ω
			Between J1 (female) (1) and CN1 (female) (2)	Max. 1 Ω
5	Ground fault in wiring harness (contact with ground circuit)	<p>If no failure is found by check on cause 3, this check is not required.</p> <ol style="list-style-type: none"> Turn the starting switch to OFF position. Disconnect connectors J1 and CN1, and connect T-adapter to each female side. 		
		Resistance	Between ground and J1 (female) (25) or CN1 (female) (1)	Min. 1 MΩ
			Between ground and J1 (female) (1) or CN1 (female) (2)	Min. 1 MΩ

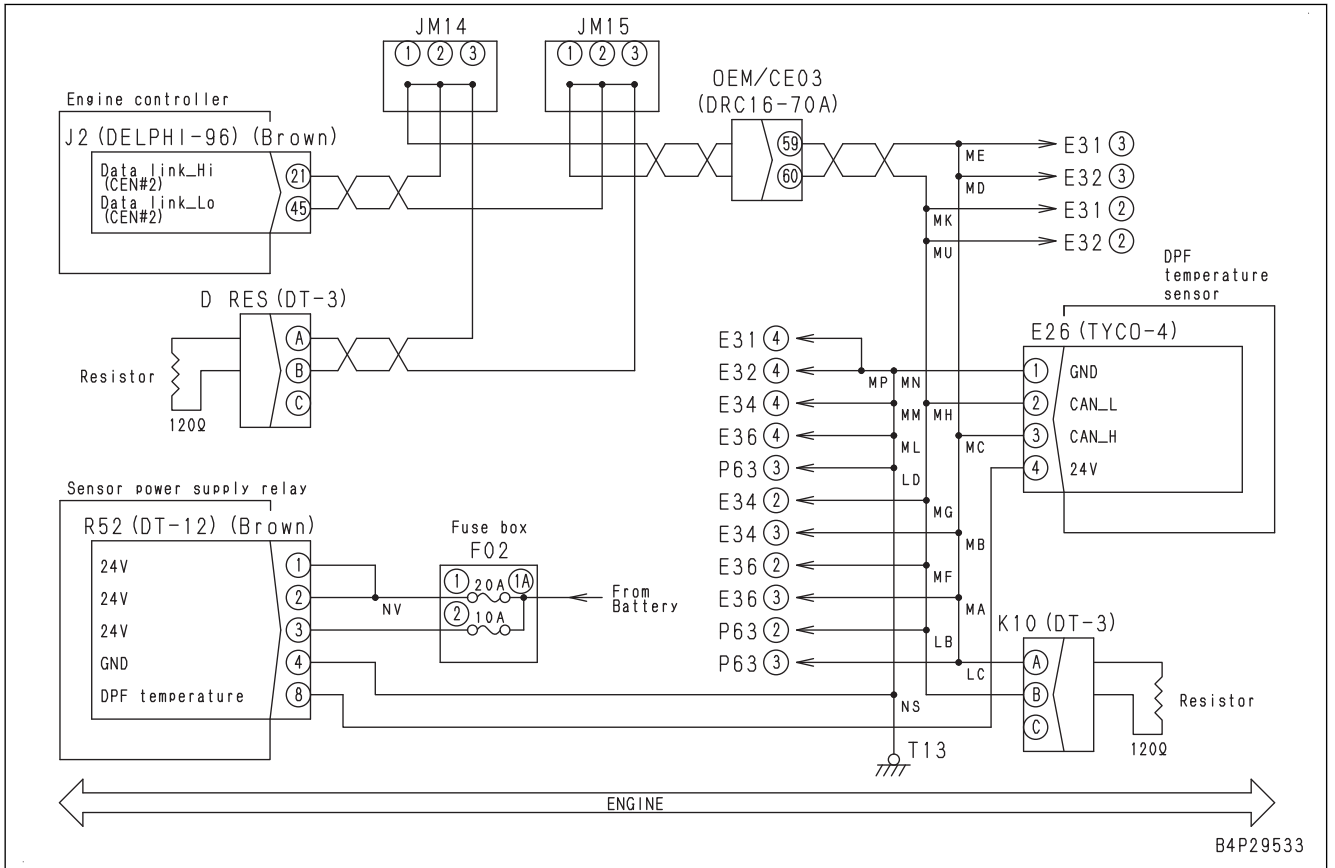
FAILURE CODE [CA515]

(ALL-K-AE25-410-00-B)

Action level	Failure code	Failure	Common Rail Pressure Sensor Supply Voltage High Error (Engine controller system)
L03	CA515		
Details of failure	High voltage occurs in power supply (5 V) of common rail pressure sensor.		
Action of controller	<ul style="list-style-type: none"> • Engine power deration • Restricts common rail pressure. 		
Phenomenon on machine	Engine power deration		
Related information	After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position.		

No.	Cause	Procedure, measuring location, criteria and remarks	
1	Defective wiring harness connector	1. See descriptions of wiring harness and connectors in “Electrical equipment” in “CHECKS BEFORE TROUBLESHOOTING” of “RELATED INFORMATION ON TROUBLESHOOTING”, and check it. 2. Turn starting switch to ON position.	
		If this failure code is cleared, harness connector is defective.	
2	Defective common rail pressure sensor (internal defect)	1. Turn starting switch to OFF position. 2. Disconnect connector PFUEL. 3. Turn starting switch to ON position.	
		If this failure code is cleared any more, sensor is defective. REMARK Other failure codes are displayed at the same time. This happens because the connector is disconnected. So ignore other codes besides this failure code.	
3	Defective wiring harness	1. Turn starting switch to OFF position. 2. Disconnect connectors J1. 3. Turn starting switch to ON position.	
		If this failure code does not appear, wiring harness may be defective. Perform following troubleshooting. REMARK Other failure codes (many codes) are also displayed. They are generated because of disconnection of connector. Ignore failure codes other than this code.	
4	Hot short circuit in wiring harness	If failure code is still displayed after above checks on cause 3, this check is not required. 1. Turn starting switch to OFF position. 2. Disconnect connector PFUEL, and connect T-adapter to female side of connector. 3. Turn starting switch to ON position.	
		Voltage	Between PFUEL(female)(1) and (3)

Circuit diagram related to KDOC temperature sensor



FAILURE CODE [CA1777]

(ALL-K-AFA3-410-01-B)

Action level	Failure code	Failure	Sensor Supply Relay Voltage Low Error (Engine controller system)
L01	CA1777		
Detail of failure	Low voltage error occurs in sensor power supply relay circuit.		
Action of controller	None in particular		
Phenomenon on machine	<ul style="list-style-type: none"> Inoperative KDPF temperature sensor, turbocharger outlet NOx sensor, SCR outlet NOx sensor, ammonia sensor, SCR temperature sensor and AdBlue/DEF tank sensor. NOx emission increases because AdBlue/DEF injection is disabled. 		
Related information	<ul style="list-style-type: none"> Be careful that voltage is applied to the connector of the sensor power supply relay even if the starting switch is OFF. Troubleshooting of this failure code covers circuits from engine controller through sensor power supply relay to ground. After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position. 		

No.	Cause	Procedure, measuring location, criteria and remarks
1	Defective wiring harness connector	<ol style="list-style-type: none"> See descriptions of wiring harness and connectors in “c: Electrical equipment” in “Checks before troubleshooting” of “Related information on troubleshooting”, and check it. Turn starting switch to ON position. <p>If this failure code is cleared, wiring harness connector is defective.</p>
2	Defective fuses No. 1 and 2 in fuse box F02	<p>Check if fuses No. 1 and 2 in fuse box F02 are blown.</p> <p>REMARK If blown, perform troubleshooting for ground fault in wiring harness.</p>
3	Defective sensor power supply relay	<ol style="list-style-type: none"> Turn starting switch to OFF position. Check that system operating lamp does not light up, and then turn the battery disconnect switch OFF. Disconnect connector R52, and replace sensor power supply relay. Turn the battery disconnect switch ON. Turn starting switch to ON position. <p>If this failure code is cleared, the original sensor power supply relay is defective.</p>

FAILURE CODE [CA1924]

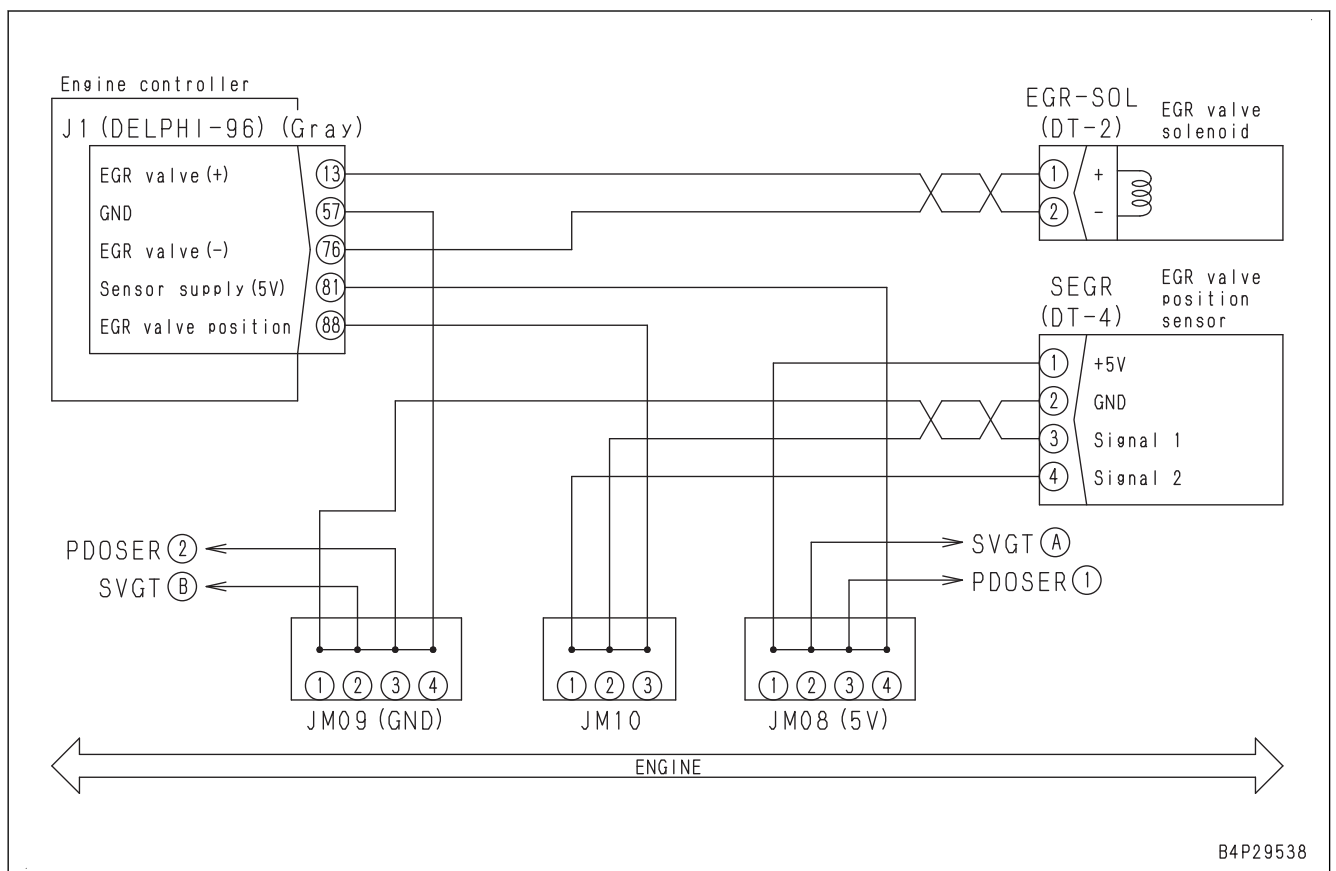
(ALL-K-A9JK-410-10-B)

Action level	Failure code	Failure	Fuel Doser Solenoid 1 Low Error (Engine controller system)
L03	CA1924		
Details of failure	Abnormal low voltage occurs in fuel doser solenoid valve 1(shut off valve).		
Action of controller	Regeneration control stops.		
Phenomenon on machine	<ul style="list-style-type: none"> Automatic regeneration is not performed. Manual stationary regeneration cannot be performed. 		
Related information	<p>⚠ Exhaust connector and KDPF become hot (Min. 500 °C). Be careful not to get burn injury.</p> <ul style="list-style-type: none"> If connector DSOV1 is disconnected, failure code [CA1923] is displayed. See failure code [CA1925]. This failure code is cleared after implementing fuel doser solenoid valve 1drive again turning the starting switch from OFF to ON after abnormality repair. After repairing, check if the failure code is cleared by the following procedure. Procedure: Start engine. 		

No.	Cause	Procedure, measuring location, criteria and remarks	
1	Defective wiring harness connector	<ol style="list-style-type: none"> See descriptions of wiring harness and connectors in “c: Electrical equipment” in “Checks before troubleshooting” of “Related information on troubleshooting”, and check it. Start engine. 	
		If this failure code is cleared, wiring harness connector is defective.	
2	Defective dosing fuel solenoid valve 1 (shut-off valve)	<ol style="list-style-type: none"> Turn starting switch to OFF position. Disconnect connector DSOV1, and connect T-adapter to male side. 	
		Resistance	Between DSOV1 (male) (2) and (1) 4 to 6 Ω
			Between DSOV1 (male) (1) and ground (DSOV body) Min. 1 MΩ
3	Open or short circuit in wiring harness	<ol style="list-style-type: none"> Turn starting switch to OFF position. Disconnect connector J1, and connect T-adapter to female side. 	
		Resistance	Between J1 (female) (8) and (30) 4 to 6 Ω
4	Ground fault in wiring harness (contact with ground circuit)	<ol style="list-style-type: none"> Turn starting switch to OFF position. Disconnect connectors J1 and DSOV1, and connect T-adapter to either female side. 	
		Resistance	Between ground (frame) and J1 (female) (9) or DSOV1 (female) (1) Min. 1 MΩ
5	Short circuit in wiring harness	<ol style="list-style-type: none"> Turn starting switch to OFF position. Disconnect connectors J1 and DSOV1, and connect T-adapter to female side of J1. 	
		Continuity	Between J1 (female) (8) and each pin other than pin (8) No continuity (no sound is heard)
6	Defective dosing fuel solenoid valve 1 (shut-off valve)	Replace dosing fuel solenoid valve 1 (shut-off valve).	

No.	Cause	Procedure, measuring location, criteria and remarks		
4	Ground fault in wiring harness (contact with ground circuit)	1. Turn starting switch to OFF position. 2. Disconnect connectors J1 and SEGR, and connect T-adapter to either female side.		
		Resistance	Between ground and J1 (female) (88) or SEGR (female) (3)	Min. 1 MΩ
5	Short circuit in wiring harness	1. Turn starting switch to OFF position. 2. Disconnect connectors J1 and SEGR, and connect T-adapter to either female side.		
		Resistance	Between J1 (female) (88) and (57), or between SEGR (female) (2) and (3)	Min. 1 MΩ
6	Defective EGR valve lift sensor	If no failure is found in causes 1 through 5 but found in cause 6, the sensor is defective. 1. Turn starting switch to OFF position. 2. Insert T-adapter into connector J1 or SEGR. 3. Turn starting switch to ON position.		
		Voltage	Between J1 (88) and (57), or between SEGR (3) and (2)	1.0 to 4.0 V
7	Defective engine controller	If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)		

CIRCUIT DIAGRAM (EGR VALVE LIFT SENSOR)



B4P29538

FAILURE CODE [CA2765]

(ALL-K-AP70-410-40-B)

Action level	Failure code	Failure	Injector Trim Data Mismatch (Engine controller system)
L01	CA2765		
Detail of failure	<ul style="list-style-type: none"> The data of the injector trim entered into the engine controller is not correct. The same injector trim data was input in multiple injectors. 		
Action of controller	Injector compensation is not implemented.		
Phenomenon on machine	Engine output becomes excessive or lowers.		
Related information	After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position.		

No.	Cause	Procedure, measuring location, criteria and remarks
1	Incorrect input of injector trim data	Since input value of injector trim data may be incorrect, check the input value. When replacing injector, perform injector trim. For details, see "TESTING AND ADJUSTING", "WRITE INJECTOR COMPENSATION VALUE TO ENGINE CONTROLLER".
2	Input of the same injector trim data	<ol style="list-style-type: none"> When multiple injectors that have the same injector trim data are installed, replace only applicable injector. (When 2 injectors have overlapped data, replace one of them.) After replacing, check that there is no overlapped data among the trim data of all injectors, and input injector trim data again. See "WRITE INJECTOR COMPENSATION VALUE TO ENGINE CONTROLLER".

FAILURE CODE [CA3147]

(ALL-K-AF90-410-20-B)

Action level	Failure code	Failure	SCR Outlet Temperature Sensor Low Error (Engine controller system)
L01	CA3147		
Detail of failure	Ground fault or sensor circuit error in SCR outlet temperature sensor measuring section or probe (+)		
Action of controller	<ul style="list-style-type: none"> As the SCR outlet temperature cannot be detected, substitute the SCR temperature for the SCR outlet temperature and run the engine (if the SCR temperature sensor also has an error, use the latest normal value). Advances to Inducement strategy. AdBlue/DEF injection stops. 		
Phenomenon on machine	<ul style="list-style-type: none"> NOx emission increases because AdBlue/DEF injection is disabled. Engine power deration according to inducement strategy. 		
Related information	<p>⚠ The SCR assembly, sensor fitting piping, and sensor probe become hot (Min. 400 °C). be careful not to get burned.</p> <ul style="list-style-type: none"> The SCR temperature sensor and SCR outlet temperature sensor are integrated into one sensor controller which provides CAN communication with the engine controller. Ground fault or sensor circuit error in SCR outlet temperature sensor measuring section or probe (+) is sent to the engine controller via CAN communication, and this failure code is displayed. For the replacement procedure of the SCR outlet temperature sensor, see “Disassembly and assembly”, “Remove and install SCR temperature sensor”. After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position. 		

No.	Cause	Procedure, measuring location, criteria and remarks
1	Defective SCR outlet temperature sensor	<ol style="list-style-type: none"> Turn starting switch to OFF position. Replace SCR temperature sensor. Turn starting switch to ON position. <p>If this failure code is cleared, the original sensor is defective. (Troubleshooting of sensor is impossible.)</p>
2	Defective engine controller	If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)

FAILURE CODE [CA3242]

(ALL-K-AFK0-410-10-B)

Action level	Failure code	Failure	AdBlue/DEF Tank Heating Error (Engine controller system)
L01	CA3242		
Detail of failure	AdBlue/DEF tank heating valve or engine coolant circuit, or both are clogging. (The temperature of the AdBlue/DEF tank does not rise though the engine controller turns ON ("1") 19102 "AdBlue/DEF Tank HtrValve Command" and opens the AdBlue/DEF tank heating valve.)		
Action of controller	None in particular		
Phenomenon on machine	<ul style="list-style-type: none"> • AdBlue/DEF line stops thawing. • NOx emission increases because AdBlue/DEF injection is disabled at low temperature. 		
Related information	<ul style="list-style-type: none"> • The engine controller judges whether this failure code is displayed only during thawing control of the AdBlue/DEF tank (The value of 19305 AdBlue/DEF Tank Heating State is "1"). • 19305 AdBlue/DEF Tank Heating State, 1: Thawing, 2: Warming, or 0: OFF. • The "Pre-defined Monitoring" screen uses the AdBlue/DEF tank thawing control diagnosis. (The following numbers are the monitoring codes) • AdBlue/DEF tank thawing control diagnosis 19305 AdBlue/DEF Tank Heating State 19102 AdBlue/DEF Tank HtrValve Command 19115 AdBlue/DEF Temperature in Tank 4107 Coolant Temperature 19400 Ambient Temperature 19133 Engine Room Temperature <p>NOTICE After investigating the cause of the problem and completing the repair, perform "Loaded Diagnostics Operation To Confirm Failure Correction" to make sure this failure code is not re-displayed. (Turning the starting switch to ON position does not confirm the completion of repair.)</p>		

No.	Cause	Procedure, measuring location, criteria and remarks
1	Defective AdBlue/DEF tank heating valve system	If failure code [CA1683] or [CA1684] is displayed on the abnormality record screen, perform troubleshooting these first.
2	Defective AdBlue/DEF tank temperature sensor system	If failure code [CA1677] or [CA1678] is displayed on the abnormality record screen, perform troubleshooting these first.

No.	Cause	Procedure, measuring location, criteria and remarks
3	Defective intake air system	Check intake air system hoses, clamps, and tubes for damage and loosening. Repair as necessary.
4	Defective injector	Perform cylinder cutout mode operation to identify disabled cylinder (see "TESTING AND ADJUSTING", "HANDLING CYLINDER CUTOUT MODE OPERATION").
5	Oil leakage to turbocharger exhaust connector	<ol style="list-style-type: none"> 1. Remove turbocharger exhaust connector. 2. Check inside of turbocharger exhaust connector for adhesion of oil and fuel. <p>NOTICE</p> <ul style="list-style-type: none"> • If oil or fuel is found, visually check for oil leaks from EGR valve and turbocharger. Repair abnormality, if any. • Wipe off oil or fuel sticking to piping.
6	Oil leakage into exhaust connector or duct to KDPF	<p>Check the exhaust system between the turbocharger and KDPF to check for oil or fuel flow into KDPF.</p> <ul style="list-style-type: none"> • Wipe stained oil or fuel off clean, if any. • If there is a trace of oil or fuel flowing into KDPF, check for KDPF and clean or replace it as necessary.
7	KDOC outlet temperature sensor installation error	<p>For details, see "Chapter 50 DISASSEMBLY AND ASSEMBLY", "REMOVE AND INSTALL KDPF ASSEMBLY" and "DISASSEMBLE AND ASSEMBLE OF KDPF ASSEMBLY". Repair as necessary.</p> <p>For details, see "REMOVE AND INSTALL KDPF ASSEMBLY", and "DISASSEMBLE AND ASSEMBLE OF KDPF ASSEMBLY" in Chapter 50 DISASSEMBLY AND ASSEMBLY. Repair as necessary.</p>
8	Defective KDPF temperature sensor	<ol style="list-style-type: none"> 1. Perform "Loaded Diagnostics Operation To Confirm Failure Correction". 2. If the failure code displays after performing the preceding troubleshooting, replace the KDPF temperature sensor. 3. Perform "Loaded Diagnostics Operation To Confirm Failure Correction".
9	Defective engine controller	If this failure code is kept displayed, or is displayed again after above checks are performed, engine controller is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)

Loaded Diagnostics Operation To Confirm Failure Correction

Check if the repair has been completed with the following procedure:

(Make sure this failure code is not displayed after this procedure.)

1. Clear this failure code by "Engine Controller Active Fault Clear" from the "service mode" of the machine monitor.
2. Turn starting switch to ON position, and start the engine.
3. Start the engine and run the engine at low idle speed for approximately 1 minute.
4. After warm-up operation, set the swing lock to ON, the working mode to P, and the fuel control dial to MAX position.
5. Operate for 40 seconds in succession with Arm IN relief.

NOTICE

- Be careful of overheating of the work equipment oil temperature.

6. Operate 5. for 30 minutes
7. If the failure code is not displayed, repair work is completed.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

No.	Cause	Procedure, measuring location, criteria and remarks		
5	Ground fault in wiring harness (contact with ground circuit)	<ol style="list-style-type: none"> 1. Turn the starting switch to OFF position. 2. Turn the battery disconnect switch to OFF position. 3. Disconnect the connectors J2 and R53A, and connect the T-adapter to either female side. 		
		Resistance	Between ground and J2 (female) (3) or R53A (female) (10)	Min. 1 MΩ
6	Short circuit in wiring harness	<ol style="list-style-type: none"> 1. Turn the starting switch to OFF position. 2. Turn the battery disconnect switch to OFF position. 3. Disconnect connectors J2 and R53A, and connect T-adapter to female side of J2. 		
		Continuity	Between J2 (female) (3) and each pin other than pin (3)	No continuity
7	Defective AdBlue/DEF heater relay	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Check that system operating lamp does not light up, and then turn the battery disconnect switch OFF. 3. Disconnect connector R53A and R53B, and replace AdBlue/DEF heater relay. 4. Turn the battery disconnect switch ON. 5. Turn starting switch to ON position. 		
		If this failure code is cleared, the original AdBlue/DEF heater relay is defective.		
8	Defective engine controller	If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)		

No.	Cause	Procedure, measuring location, criteria and remarks
5	Defective engine controller	If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)

Loaded Diagnostics Operation to Clear Failure Code

Check if the repair has been completed with the following procedure:

(Make sure this failure code is cleared after this procedure.)

1. Turn the starting switch to ON position, and start the engine.
2. Run the engine at low idle speed.
3. Check if monitoring code 19108 "AdBlue/DEF Pump Pressure" is 900 ± 100 kPa within 5 minutes after starting the engine.

REMARK

- If this failure code is cleared, repair is completed.
- In case it is not cleared, return to troubleshooting.

No.	Cause	Procedure, measuring location, criteria and remarks
2	Low AdBlue/DEF concentration (entrained water, etc.)	<ol style="list-style-type: none"> 1. Check that the “AdBlue/DEF concentration” displayed on the Pre-defined Monitoring screen is in the normal range (29 to 36 %). 2. If the “AdBlue/DEF concentration” is normal, perform “Loaded Diagnostics Operation To Clear Failure Code”. 3. If the “AdBlue/DEF concentration” falls outside of this range, use a portable concentration meter to recheck the concentration. If the concentration still falls outside of the range of 31.5 to 33.5 %, drain all of the AdBlue/DEF from the tank and refill with fresh AdBlue/DEF. 4. If the “AdBlue/DEF concentration” is in 29 to 36 % after the work finished, perform “Loaded Diagnostics Operation To Clear Failure Code”. 5. If the portable concentration meter reading is in the range of 31.5 to 33.5 %, proceed to the next troubleshooting.
3	Contaminated AdBlue/DEF	<ol style="list-style-type: none"> 1. Drain more than 1 ℓ of AdBlue/DEF to check that it is not contaminated with foreign material, etc. 2. If the drained AdBlue/DEF is contaminated, drain all of the AdBlue/DEF and refill with fresh AdBlue/DEF. 3. If it is heavily contaminated with sand, dirt, etc., clean the AdBlue/DEF tank. 4. If the “AdBlue/DEF concentration” is in 29 to 36 % after the work finished, perform “Loaded Diagnostics Operation To Clear Failure Code”. 5. If the “AdBlue/DEF concentration” is out of the normal range, proceed to the next troubleshooting.
4	Foreign matter adhered to the sensing part of the AdBlue/DEF tank sensor	<ol style="list-style-type: none"> 1. Remove the AdBlue/DEF level sensor so that you can reach the AdBlue/DEF concentration detection part (end of sensor). 2. Clean up the AdBlue/DEF concentration detection part with dry and clean cloth, and install the AdBlue/DEF level sensor. 3. If AdBlue/DEF concentration is within the range from 29 to 36 % on "Pre-defined Monitoring" screen, perform “Loaded Diagnostics Operation to Clear Failure Code” to complete the repair work. 4. If AdBlue/DEF concentration is out of the normal range, proceed to the next troubleshooting. <p>REMARK</p> <ul style="list-style-type: none"> • If the new AdBlue/DEF has not been added as described in Cause “Contaminated AdBlue/DEF”, and if it takes time to remove the sensor, drain the total amount of AdBlue/DEF, refill with new AdBlue/DEF again, and check the sensor output. • For details of removing AdBlue/DEF tank sensor, see DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL AdBlue/DEF TANK SENSOR FLANGE ASSEMBLY”.
5	Defective AdBlue/DEF tank sensor (internal defect)	<ol style="list-style-type: none"> 1. Replace the AdBlue/DEF tank sensor. 2. If the “AdBlue/DEF concentration” displayed on the Pre-defined Monitoring screen falls in the range of 29 to 36%, perform “Loaded Diagnostics Operation To Clear Failure Code” topics to complete the repair. 3. If the “AdBlue/DEF concentration” falls outside of this range, proceed to the next troubleshooting.

No.	Cause	Procedure, measuring location, criteria and remarks	
5	Ground fault in wiring harness (contact with ground circuit)	If failure code (no open circuit) is still displayed after above checks in cause 2, measure resistance at any one place in Hi line and Lo line. 1. Turn starting switch to OFF position. 2. Check that system operating lamp does not light up, and then turn battery disconnect switch to OFF position. 3. Disconnect all related connectors, and connect T-adapter to the female side of the connector to be measured.	
		Resistance	Between one of J2 (female) (21), K10 (female) (A), D_RES (female) (A), E31 (female) (3), E32 (female) (2), E26 (female) (3), E34 (female) (3), E36 (female) (3), or P63 (female) (2) and ground Min. 1 MΩ
			Between one of J2 (female) (45), K10 (female) (B), D_RES (female) (B), E31 (female) (2), E32 (female) (3), E26 (female) (2), E34 (female) (2), E36 (female) (2), or P63 (female) (3) and ground Min. 1 MΩ
6	Hot short circuit in wiring harness	If failure code (no open circuit) is still displayed after above checks in cause 2, measure resistance at any one place in Hi line and Lo line. 1. Turn starting switch to OFF position. 2. Check that system operating lamp does not light up, and then turn battery disconnect switch to OFF position. 3. Insert T-adapter into one of the related connectors. 4. Set battery disconnect switch to ON position. 5. Turn starting switch to ON position.	
		Voltage	Between one of J2(21), K10(A), D_RES (A), E31(3), E32(2), E26(3), E34(3), E36(3), or P63(2) and ground 1 to 4 V
			Between one of J2(45), K10(B), D_RES (B), E31(2), E32(3), E26(2), E34(2), E36(2), or P63(3) and ground 1 to 4 V
7	Defective KDPF temperature sensor	1. Turn starting switch to OFF position. 2. Replace KDPF temperature sensor. 3. Turn starting switch to ON position. If this failure code is cleared, the original sensor is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)	
8	Defective engine controller	If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)	

Loaded Diagnostics Operation to Confirm Failure Correction

Check if the repair has been completed with the following procedure:

(Make sure this failure code is not displayed after this procedure.)

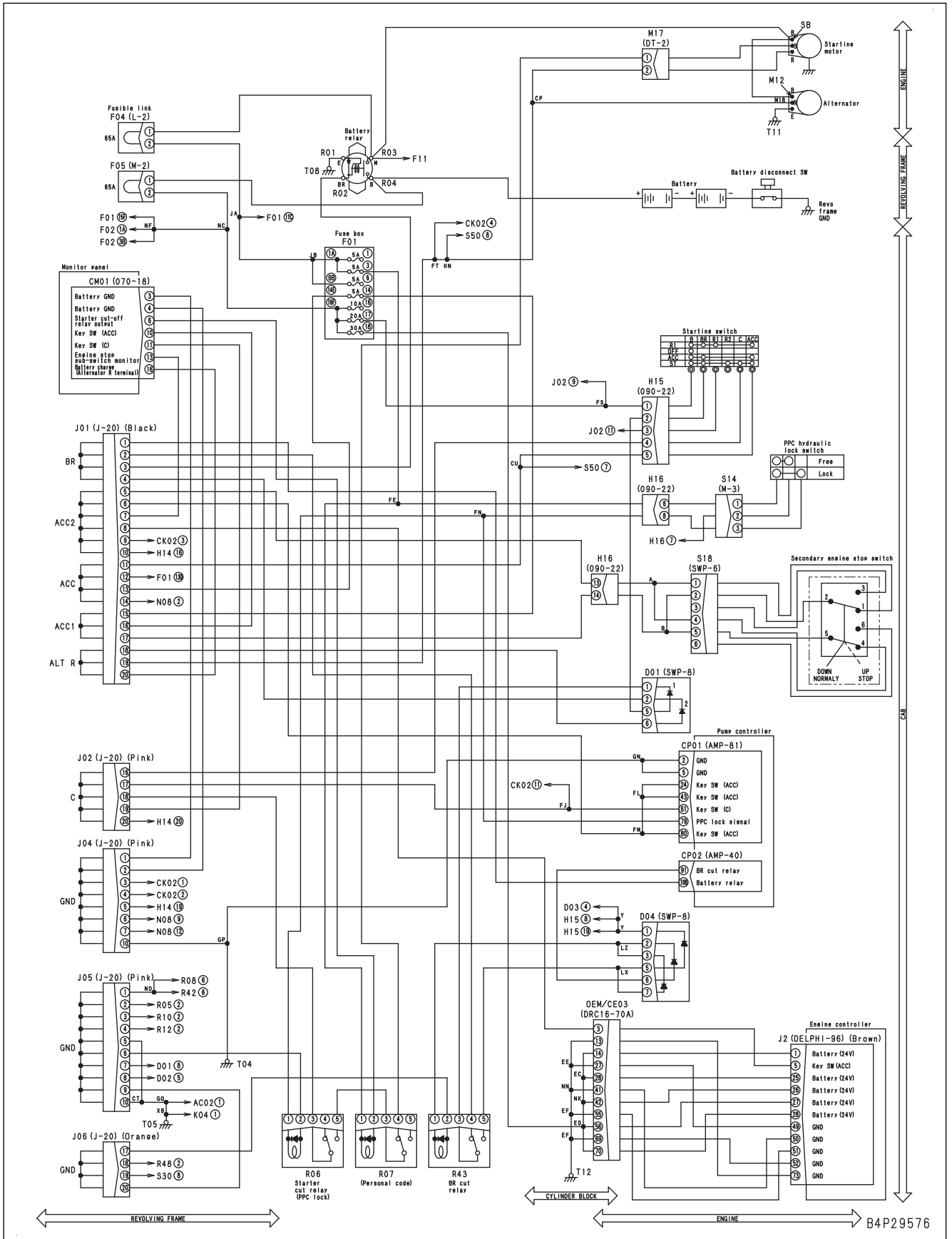
1. Turn the starting switch to ON position (Do not start the engine).
2. Check if monitoring code 19136 "AdBlue/DEF Pump Temperature" is 42 °C or less and 19107 "AdBlue/DEF Pump Heater 1 Command" is "0" on the "Pre-defined Monitoring" screen.
3. Wait for 10 minutes.
4. If the AdBlue/DEF Pump Temperature rises 12 °C or less after the starting switch is turned to ON, repair will be completed.
5. After the repair is completed, see "PROCEDURE FOR TESTING AND TROUBLESHOOTING" to clear the failure code and make sure that the failure code has been cleared from the Abnormality Record screen.

REMARK

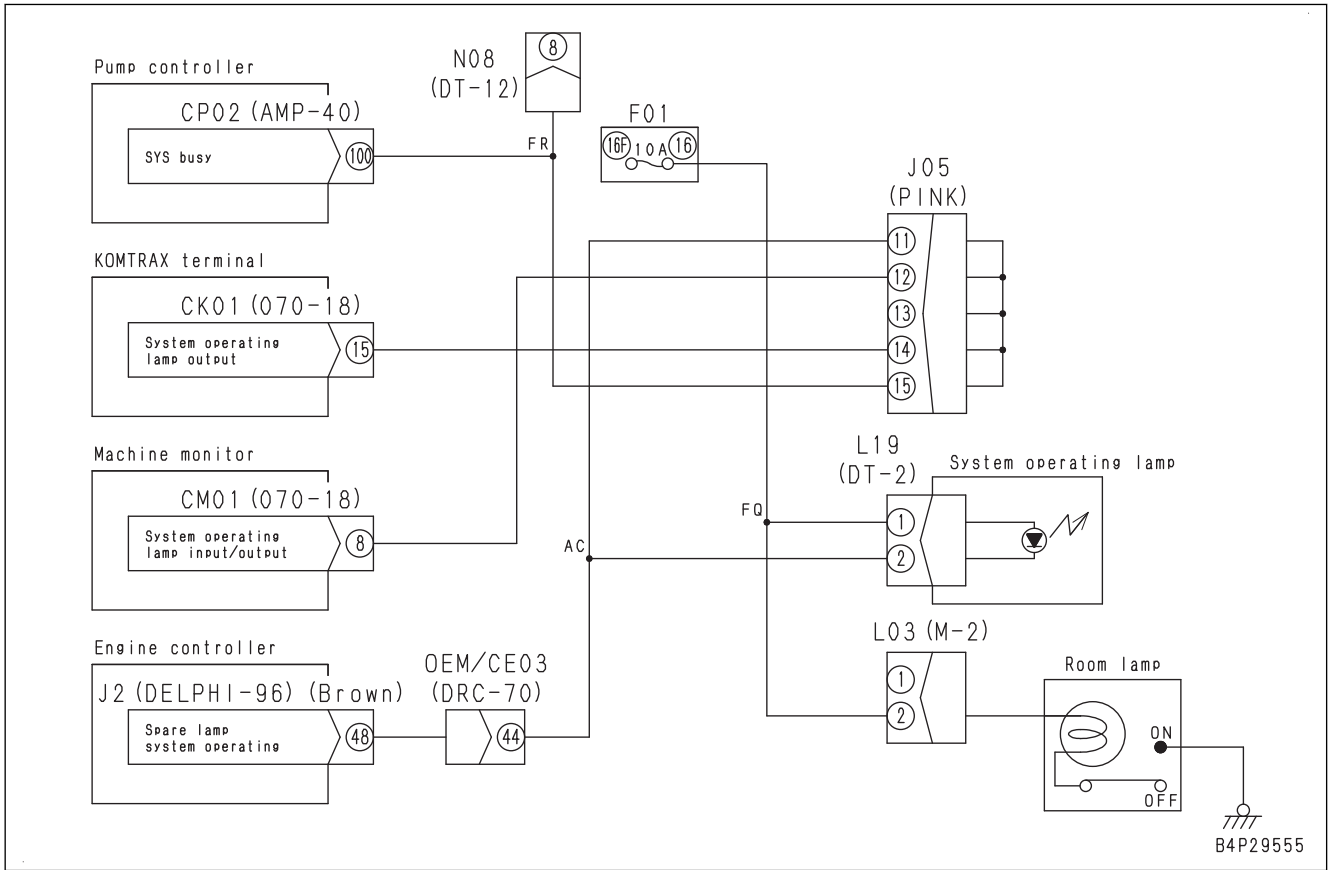
If the increase of "AdBlue/DEF Pump Temperature" is 12 °C or more after the starting switch is turned to ON, return to troubleshooting.

<p style="text-align: center;">Related information</p>	<p>⚠ The AdBlue/DEF injector becomes hot (Min. 400 °C). Be careful not to get burned.</p> <ul style="list-style-type: none"> • This failure code is displayed together with failure codes whose possible cause is clogging of AdBlue/DEF hose. These are the failure codes to identify the position where failure is occurring, and they need not to be treated individually. • This failure code is displayed for the purpose of monitoring for cause identification of the failure codes [CA3151] and [CA3543]. It is not necessary to troubleshoot and replace parts when this failure code is displayed alone. • Even if cause of failure is eliminated, it takes time to detect that the cause has been eliminated, so the failure code may be displayed continuously, but no action is required. • The engine controller does not display this failure code during thawing control of the AdBlue/DEF supply system (because the AdBlue/DEF injection is disabled, which disables judgment). • Make sure that the value of the following four states are other than 1 (Thawing) 3 minutes after the engine is started. (It is not possible to troubleshoot this failure until thawing control is completed) • The state of each heater is 1: Thawing, 2: Warming, or 0: OFF. Enter the following numbers directly and confirm the values on the monitoring code screen. 19305 AdBlue/DEF Tank Heating State 19306 AdBlue/DEF suction and purge line heater state 19307 AdBlue/DEF pressure line heater state 19308 AdBlue/DEF pump heater state • The “Pre-defined Monitoring” screen uses the AdBlue/DEF injector diagnosis and AdBlue/DEF pump diagnosis. (The following numbers are the monitoring codes) • AdBlue/DEF injector diagnosis 19304 AdBlue/DEF Pump State 19120 AdBlue/DEF Injection Quantity 19205 AFT NH3 Sensor Corrected 19202 Turbo Outlet NOx Corrected 47200 KDPF Outlet Temperature • AdBlue/DEF pump diagnosis 19304 AdBlue/DEF Pump State 19108 AdBlue/DEF Pump Pressure 19136 AdBlue/DEF Pump Temperature 19109 AdBlue/DEF Pump PressSensor Volt 19120 AdBlue/DEF Injection Quantity <p>NOTICE</p> <p>This failure code requires “Loaded Diagnostics Operation To Clear Failure Code”. After investigating the cause of the problem and completing the repair, perform “Loaded Diagnostics Operation To Clear Failure Code” to make sure the failure code is cleared. (This failure code is not cleared by only turning starting switch to ON position.)</p>
--	---

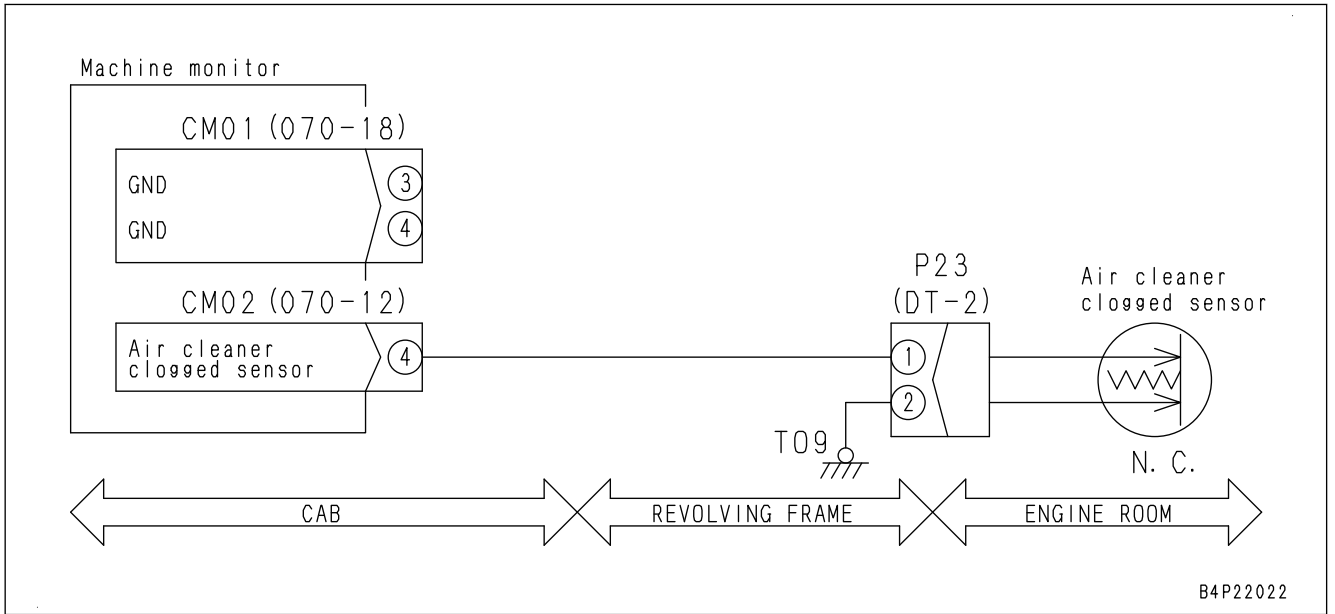
Circuit diagram related to personal code relay



Circuit diagram related to system operating lamp



CIRCUIT DIAGRAM (AIR CLEANER CLOGGING SENSOR)



No.	Cause	Procedure, measuring location, criteria and remarks		
2	Defective arm OUT PPC pressure sensor (internal defect)	1. Turn starting switch to OFF position. 2. Insert T-adaptor into connector P08. 3. Turn starting switch to ON position.		
		Voltage	Between P08 (2) and (1)	0.5 to 4.5 V
		REMARK If power supply voltage is normal and sensor output voltage is not normal, it is difficult to judge whether cause of failure is ground fault or hot short circuit in wiring harness. Check as below. 1. Turn starting switch to OFF position. 2. Interchange connector P08 with connector of another PPC pressure sensor. 3. Turn starting switch to ON position and display "Electrical Sys Abnormality Record" screen on machine monitor. 4. If E mark is not displayed again for this failure code, arm OUT PPC pressure sensor is defective. REMARK After the troubleshooting, return the connector.		
3	Open circuit in wiring harness (Wire breakage or defective contact of connector)	1. Turn starting switch to OFF position. 2. Disconnect connectors CP01 and P08, and connect T-adaptors to each female side.		
		Resistance	If power supply voltage in check on cause 1 is normal, this check is not required. Between CP01 (female) (18) and P08 (female) (1)	Max. 1 Ω
			Between CP01 (female) (51) and P08 (female) (2)	Max. 1 Ω
			If power supply voltage in check on cause 1 is normal, this check is not required. Between CP01 (female) (6) and P08 (female) (3)	Max. 1 Ω
4	Ground fault in wiring harness (Contact with ground circuit)	1. Turn starting switch to OFF position. 2. Disconnect connectors CP01 and P08, and connect T-adaptor to either female side.		
		Resistance	Between ground and CP01 (female) (51) or P08 (female) (2)	Min. 1 MΩ
5	Hot short circuit in wiring harness (Contact with 5 V circuit and 24 V circuit)	1. Turn starting switch to OFF position. 2. Disconnect connector P08. 3. Connect T-adaptor to female side of connector P08. 4. Turn starting switch to ON position.		
		Voltage	Between P08 (female) (2) and ground	Max. 1 V
6	Defective pump controller	If no failure is found by preceding checks, pump controller is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly).		

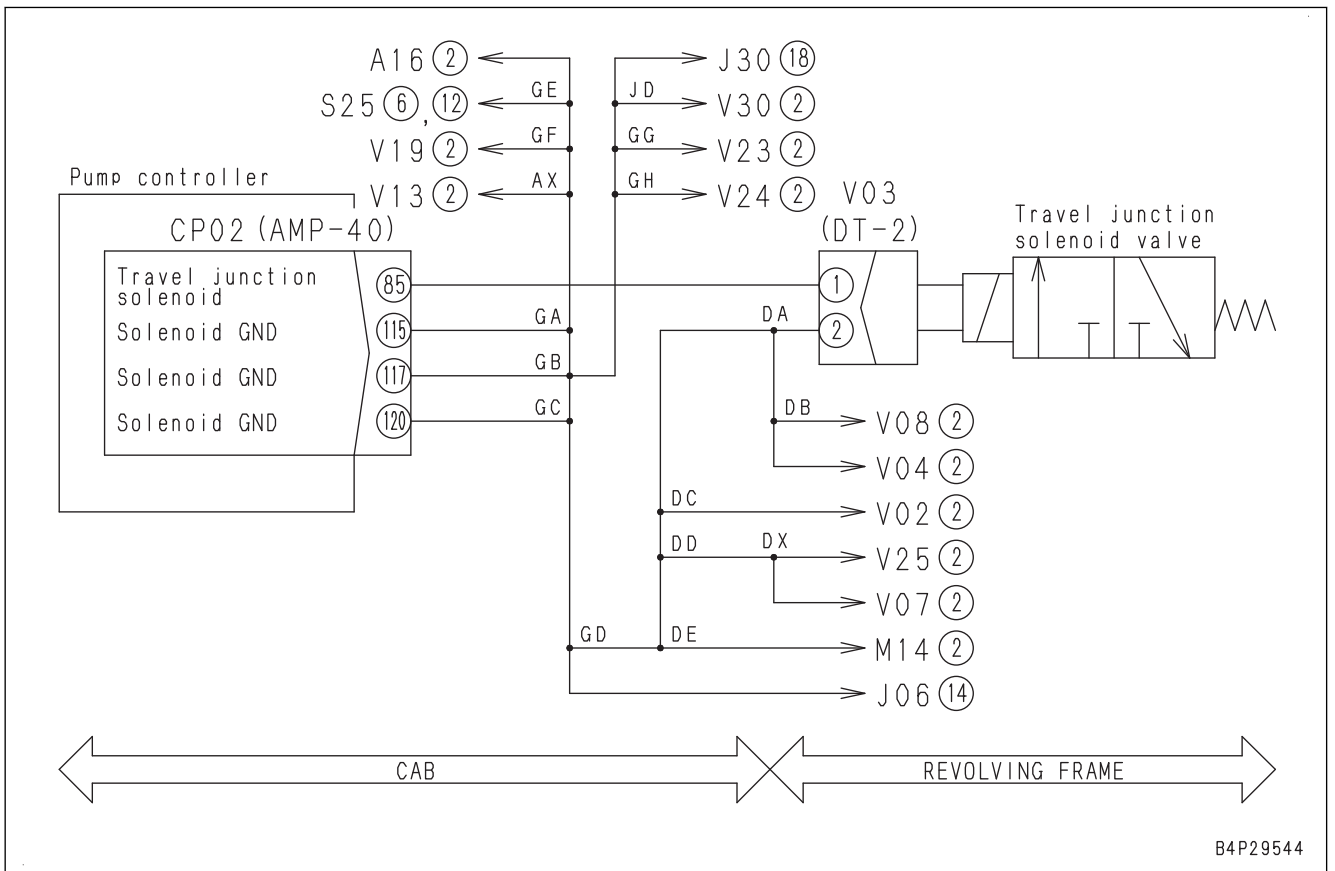
FAILURE CODE [DLM3KB]

(ALL-K-ACN0-410-10-B)

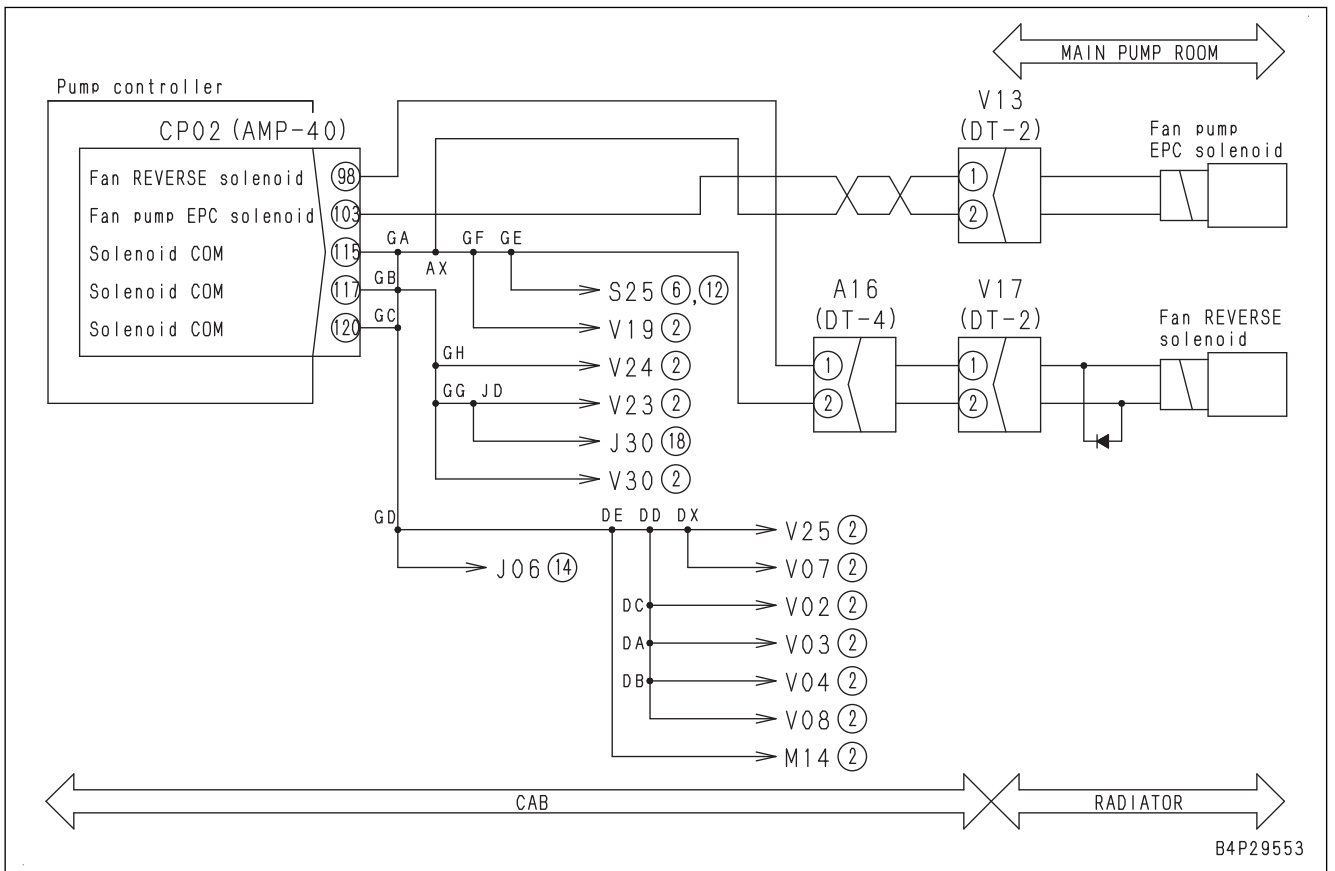
Action level	Failure code	Failure	Fan Speed Sensor Short Circuit (Pump controller system)
L01	DLM3KB		
Detail of failure	Pulse voltage is not input from the fan speed sensor due to the fan speed sensor system ground fault. This failure code is displayed when the following conditions are met: <ol style="list-style-type: none"> 1. Failure code [DLM3KA] is not detected. 2. Engine speed of Min. 800 rpm 3. Fan reverse not under control 		
Action of controller	None in particular		
Phenomenon on machine	Fan rotation is not accurate.		
Related information	<ul style="list-style-type: none"> • Rotation speed detected by the fan speed sensor can be checked by monitoring function. (Code: 10007 Fan speed) 		

No.	Cause	Procedure, measuring location, criteria and remarks	
1	Defective fan speed sensor (internal open or short circuit)	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Disconnect connector P50, and connect T-adapter to male side. 	
		Resistance	Between P50 (male) (1) and (2) 2 to 3 kΩ Between P50 (male) (1) and ground Min. 1 MΩ
2	Open or short circuit in wiring harness	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Disconnect connector CP01 and connect T-adapter to female side. <p>REMARK If resistance value is Min. 1 MΩ, wire breakage occurs. If resistance value is Max. 1 Ω, short circuit occurs.</p>	
		Resistance	Between CP01 (female) (25) and (44) 2 to 3 kΩ
3	Ground fault in wiring harness (Contact with ground circuit)	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Disconnect connectors CP01 and P50, and connect T-adapter to either female side. 	
		Resistance	Between ground and CP01 (female) (25) or P50 (female) (1) Min. 1 MΩ
4	Hot short circuit in wiring harness (Contact with 24 V circuit)	<ol style="list-style-type: none"> 1. Turn starting switch to OFF position. 2. Disconnect connector P50, and connect T-adapter to female side. 3. Turn starting switch to ON position. 	
		Voltage	Between P50 (female) (1) and (2) 3 to 4 V
5	Defective pump controller	If no failure is found by preceding checks, pump controller is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly).	

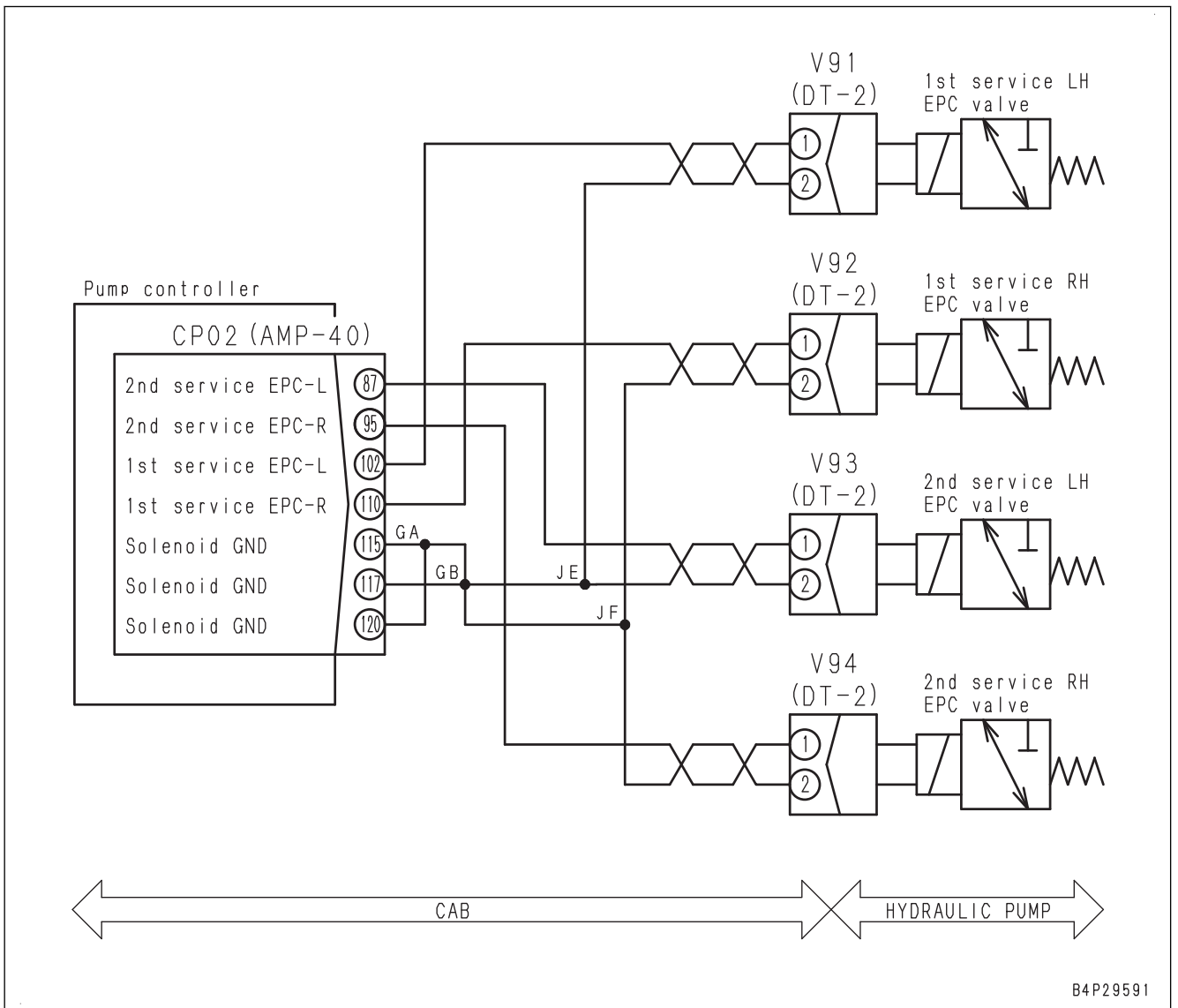
Circuit diagram related to travel junction valve solenoid



Circuit diagram related to hydraulic drive fan EPC



Circuit diagram related to ATT flow rate adjustment EPC



FAILURE CODE [DY2DKB]

(ALL-K-K730-410-30-B)

Action level	Failure code	Failure	Wiper Motor (Normal Rotation) Short Circuit (Pump controller system)
—	DY2DKB		
Detail of failure	When power to normal rotation side of wiper motor drive is supplied, short circuit was detected because of abnormal current flow to the circuit.		
Action of controller	Stops output to wiper motor drive normal rotation side. Even if cause of failure disappears, machine does not become normal until starting switch is turned to OFF position.		
Phenomenon on machine	Windshield wiper does not work.		
Related information	<ul style="list-style-type: none"> As T-adapter for pump controller connector is "socket-type box", operating voltage cannot be measured at pump controller connector. After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position and turn wiper switch to INT or ON position. 		

No.	Cause	Procedure, measuring location, criteria and remarks		
1	Defective wiper motor (Internal short circuit or ground fault)	1. Turn starting switch to OFF position. 2. Disconnect connector M05, and connect T-adapter to female side.		
		Resistance	Between M05 (female) (3) and (1) Between M05 (female) (3) and ground	Max. 20 Ω Min. 1 MΩ
2	Short circuit in wiring harness	1. Turn starting switch to OFF position. 2. Disconnect connectors CP02 and M05, and connect T-adapter to either harness side.		
		Resistance	Between CP02 (female) (119) and (114), or between M05 (male) (1) and (3)	Min. 1 MΩ
3	Ground fault in wiring harness (Contact with ground circuit)	1. Turn starting switch to OFF position. 2. Disconnect connectors CP02 and M05, and connect T-adapter to either harness side.		
		Resistance	Between ground and CP02 (female) (119) or M05 (male) (3)	Min. 1 MΩ
4	Defective pump controller	If no failure is found by preceding checks, pump controller is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly).		
		<ul style="list-style-type: none"> Reference 1. Turn starting switch to OFF position. 2. Insert T-adapter to connector M05. 3. Turn starting switch to ON position. 4. Turn wiper switch to ON and OFF positions, and perform troubleshooting.		
		Voltage	Between M05 (3) and (5)	Wiper switch: OFF Wiper switch: ON

E-16 FUEL GAUGE DISPLAY DOES NOT MOVE FROM MINIMUM OR MAXIMUM

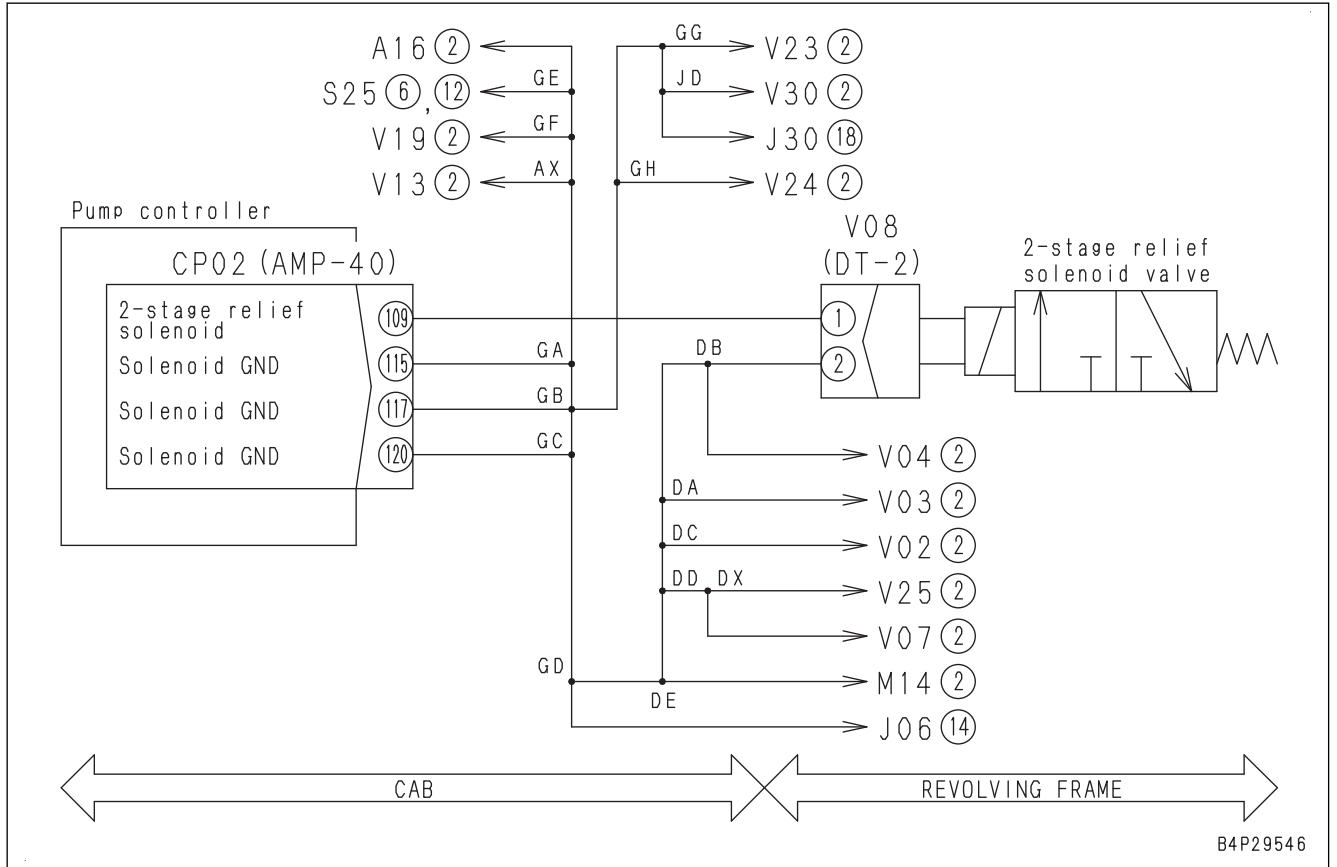
(ALL-K-AD40-410-20-B)

Failure	Fuel gauge display does not move from minimum or maximum.
Related information	<ul style="list-style-type: none"> Signal voltage of fuel sensor can be checked with monitoring function. (Code: 04200)

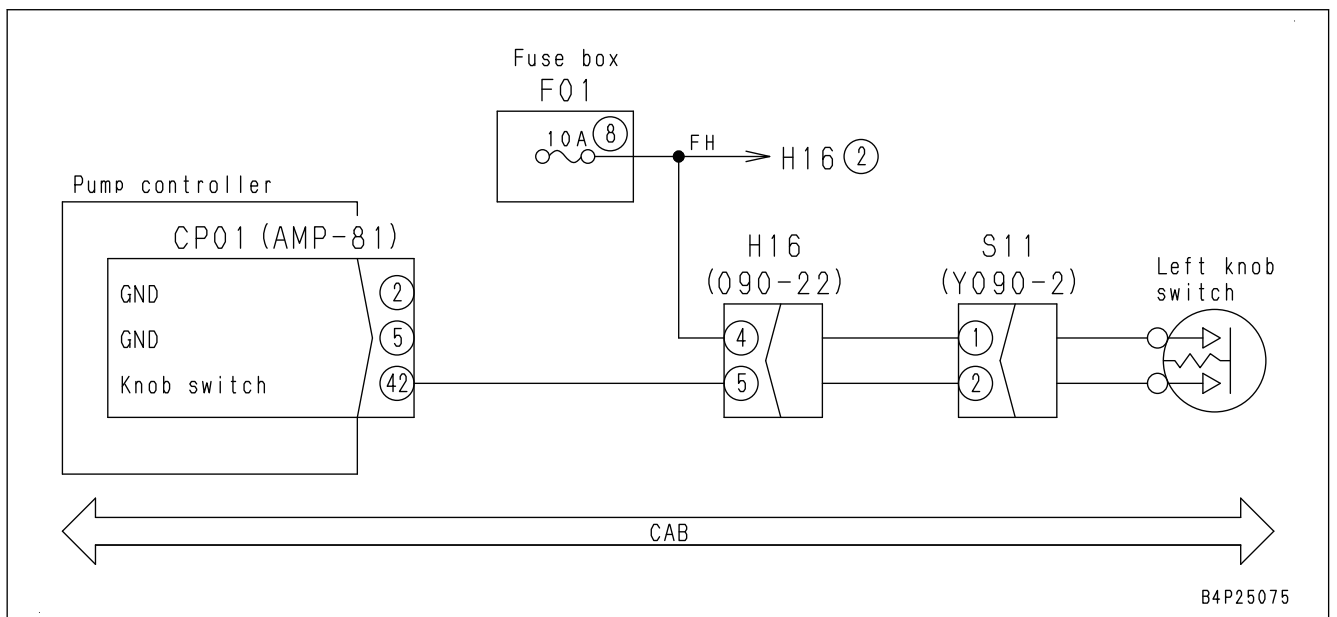
No.	Cause	Procedure, measuring location, criteria and remarks			
1	Defective fuel level sensor (Internal open or short circuit)	1. Turn starting switch to OFF position. 2. Disconnect connector P21, and connect T-adapter to male side.			
		Resistance	Between P21 (male) (1) and ground	Fuel level FULL	Approx. 12 Ω
				Fuel level EMPTY	85 to 110 Ω
2	Open or short circuit in wiring harness	1. Turn starting switch to OFF position. 2. Disconnect connector CM01 and connect T-adapter to female side.			
		Resistance	Between CM01 (female) (15) and ground	Fuel level FULL	Approx. 12 Ω
				Fuel level EMPTY	85 to 110 Ω
3	Open circuit in wiring harness (Wire breakage or defective contact of connector)	REMARK If check on cause 2 is normal, this check is not required.			
		1. Turn starting switch to OFF position. 2. Disconnect connectors CM01 and P21 and connect T-adapters to each female side.			
		Resistance	Between CM01 (female) (15) and P21 (female) (1)	Max. 1 Ω	
4	Ground fault in wiring harness (Contact with ground circuit)	1. Turn starting switch to OFF position. 2. Disconnect connectors CM01 and P21, and connect T-adapter to either female side.			
		Resistance	Between ground and CM01 (female) (15) or P21 (female) (1)	Min. 1 MΩ	
5	Hot short circuit in wiring harness (Contact with 24 V circuit)	1. Turn starting switch to OFF position. 2. Disconnect connector P21. 3. Insert T-adapter into connector CM01, or connect T-adapter to female side of P21. 4. Turn starting switch to ON position.			
		Voltage	Between ground and CM01 (15) or P21 (female) (1)	Approx. 3.3 V	
6	Defective machine monitor	If no failure is found by above checks, machine monitor is defective. (Since this is an internal defect, troubleshooting cannot be performed.)			

No.	Cause	Procedure, measuring location, criteria and remarks
8	Defective pump controller	If no failure is found by preceding checks, pump controller is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly).

Circuit diagram related to 2-stage relief solenoid system



Circuit diagram related to one-touch power maximizing system



TROUBLESHOOTING FOR HYDRAULIC AND MECHANICAL SYSTEMS (H MODE)

(ALL-K-150H-001-00-B)

INFORMATION MENTIONED IN TROUBLESHOOTING TABLE (H MODE)

(ALL-A-5170-010-00-B)

The following information is summarized in the troubleshooting table. Before performing troubleshooting, understand that information fully.

Failure	Failure symptom that appears on machine
Related information	Information on occurred failure or troubleshooting

No.	Cause	Procedure, measuring location, criteria, and remarks
1	Probable cause of failure (Each number is serial number, not priority sequence.)	<Contents of description> <ul style="list-style-type: none"> • Criteria to determine probable causes • Remarks for determination of probable cause
2		
3		
4		
5		

No.	Cause	Procedure, measuring location, criteria and remarks			
4	Malfunction of bucket control valve (pressure compensation valve) (bucket CURL, bucket DUMP side)	Be ready with engine stopped, then perform troubleshooting with engine at high idle.			
		Bucket relief pressure	Hydraulic oil temperature: 45 to 55 °C	<ul style="list-style-type: none"> • Bucket CURL relief • Bucket DUMP relief 	33.1 to 36.8 MPa {338 to 375 kg/cm ² }
		Check hydraulic drift of bucket cylinder with engine stopped. <ul style="list-style-type: none"> • Hydraulic oil temperature: 45 to 55 °C • Bucket with rated load, arm cylinder fully retracted, bucket cylinder fully extended, boom top face horizontal, and bucket unloaded, arm cylinder fully extended, bucket cylinder fully extended, boom top face horizontal 			
		If visible hydraulic drift is observed, it is abnormal.			
		Check whether bucket cylinder moves slowly when performing hydraulic relief of other work equipment. (If boom cylinder moves, it is abnormal.)			
		If any failure is found in either of above check items, interchange pressure compensation valves on bucket CURL and DUMP sides, and check whether failure symptom changes. (Each area ratio is different, so be sure to restore it after checking the symptom.)			
5	Malfunction of bucket control valve (suction safety valve) (bucket CURL side)	Be ready with engine stopped, then perform troubleshooting with engine at high idle.			
		Bucket relief pressure	Hydraulic oil temperature: 45 to 55 °C	<ul style="list-style-type: none"> • Bucket CURL relief • Bucket DUMP relief 	33.1 to 36.8 MPa {338 to 375 kg/cm ² }
		<ul style="list-style-type: none"> • If only bucket CURL relief pressure in the above relief pressures is low, suction safety valve may be defective. Check the safety valve. • Check for damaged sealing material, etc. by appearance (Be careful to prevent foreign materials from entering during repair). • When disassembling, replace the suction safety valve assembly with a new one since its relief pressure cannot be adjusted on the machine. 			
6	Malfunction of bucket control valve (LS shuttle valve)	Be ready with engine stopped, then perform troubleshooting with engine at high idle.			
		LS differential pressure	Hydraulic oil temperature: 45 to 55 °C	All control levers in NEUTRAL	4.2±1.0 MPa {42±10 kg/cm ² }
			Hydraulic oil temperature: 45 to 55 °C	Bucket CURL DUMP fine control	2.65±0.1 MPa {27±1 kg/cm ² }
		Among the above measuring points, if LS differential pressure becomes higher than the standard value, LS shuttle valve may be defective. Check for defect of the check valve (ball).			

H-31 UPPER STRUCTURE OVERRUNS EXCESSIVELY WHEN IT STOPS SWINGING (BOTH RIGHT AND LEFT)

(ALL-K-J000-410-04-B)

Failure	Upper structure overruns excessively when it stops swinging (both right and left).
Related information	<ul style="list-style-type: none"> Perform all troubleshooting with working mode set in power mode (P). F pump pressure can be checked with monitoring function. (Code: 01100) R pump pressure can be checked with monitoring function. (Code: 01101) If failure code [DWK0KA] or [DWK0KB] is also displayed, perform troubleshooting for it first.

No.	Cause	Procedure, measuring location, criteria and remarks			
1	Defective swing motor (safety valve)	Be ready with engine stopped, then perform troubleshooting with engine at high idle.			
		Swing relief pressure	Swing lock switch: ON	Swing control lever: L.H. swing relief and R.H. swing relief	27.8 to 32.9 MPa {283 to 335 kg/cm ² }
		<ul style="list-style-type: none"> If both right and left swings are lower than the standard value at the same pressure, sealing of safety valve may be defective. The safety valve is featured with a 2-stage relief function, however, its Hi and Lo pressure settings are the same (the relief flow differs). 			
2	Defective swing motor	Be ready with engine stopped, then perform troubleshooting with engine at high idle.			
		Swing motor leakage amount	Swing lock switch: ON	Swing control lever: L.H. swing relief and R.H. swing relief	11 ℓ/min

S-10 ENGINE OIL CONSUMPTION IS EXCESSIVE

(ALL-K-AB00-410-40-B)

Failure	Engine oil consumption is excessive		
Related information	If any failure code is displayed, perform troubleshooting for that code first.		
No.	Cause	Point to check, remarks	Remedy
1	Dust intake from air intake system	If air intake piping between air cleaner and engine is removed, dust enters in piping.	Air intake piping cleaning or replacement
2	Breakage or wear of piston ring	<ul style="list-style-type: none"> Measured blowby pressure is above standard value. After KCCV filter element is replaced, blowby pressure is still high. Measure compression pressure (See standard value table). (Reference: See "TESTING AND ADJUSTING", "Testing compression pressure".) 	Piston ring replacement or repair
3	Oil leakage from KCCV oil return piping.	Check for oil leakage from KCCV oil return piping.	Oil piping repair or replacement
4	Oil leakage out of engine	Check for oil leakage.	Oil leakage part repair
5	Oil leakage from oil filter	Check for oil leakage from oil filter.	Oil filter re installation or replacement
6	Oil leakage from oil piping	Check for oil leakage from oil piping	Oil piping repair or replacement
7	Oil leakage from oil drain plug	Check oil leakage from oil drain plug.	Retighten oil drain plug
8	Oil leakage from oil pan	Check for oil leakage from oil pan.	Oil pan repair or replacement
9	Oil leakage from cylinder head	Check for oil leakage from cylinder head.	Cylinder head repair or replacement
10	Wear or damage of rear oil seal	Oil in clutch chamber or damper chamber on mounted machine side is increased.	Rear oil seal repair or replacement
11	Oil leakage from VGT	<ul style="list-style-type: none"> Inlet/outlet of blower and outlet of turbine in VGT have oil stains. Check if VGT shaft can rotate (by manually moving the VGT's blade axially and vertically). 	VGT replacement
12	Oil leakage from oil cooler	<ul style="list-style-type: none"> Oil is mixed in coolant. Remove oil cooler, and visually check for oil leakage from the oil cooler surface. Check oil cooler for leakage by air pressure test. 	Oil cooler replacement
13	Oil leakage from EGR valve system	Outlet port is stained with oil after the EGR valve is disconnected.	EGR valve replacement
14	Wear or damage of valve guide or stem seal	<ul style="list-style-type: none"> Check valve guide and stem seal. Remove cylinder head and check guide internal surface and stem seal for damage (Reference: See Maintenance standard). 	Valve guide and stem seal replacement

106 ANGLE SENSOR A4/A6 TIMEOUT

(PC390_11-K-Q200-410-80-B)

Failure	1-axis angle sensor (high reach demolition arm or demolition digging arm) is not communicating with working range indicator console.	
Related information	If any failure code is displayed, perform troubleshooting for that code first.	
No.	Cause	Procedure, measuring location, criteria and remarks
1	Electrical connections not made	<ul style="list-style-type: none"> • Check all electrical connections including interchangeable work equipment electrical connector and termination resistor • Tighten/make good any loose connections • Check operation of system
2	Damaged wiring	<ul style="list-style-type: none"> • Check LED on 1-axis angle sensor (high reach demolition arm or demolition digging arm) is illuminated when machine ignition is on. • Check continuity of wiring • Replace damaged parts
3	Termination resistor not installed correctly in working range indicator CAN Bus circuit	<ul style="list-style-type: none"> • Confirm resistance between CAN High and CAN Low of working range indicator Can Bus is $60 \Omega \pm 10\%$ • Remove 120Ω termination resistor at high reach demolition or demolition digging boom arm angle sensor and check resistance. Replace if damaged. • 2-axis (pitch and roll) angle sensor has an internal 120Ω resistor to check this resistor is functioning correctly; - Ensure termination resistor is removed from high reach demolition or demolition digging boom arm angle sensor - Confirm resistance between CAN High and CAN Low of working range indicator Can Bus is : $120 \Omega \pm 10\%$. - If resistance is incorrect replace 2-axis (pitch and roll) angle sensor and return damaged part.
4	Damaged 1-axis angle sensor (high reach demolition arm or demolition digging arm)	If angle sensor is damaged (see "WORKING RANGE INDICATOR SYSTEM ANGLE SENSOR REPLACEMENT") for replacement procedure.

Symbol	Part No.	Part name	Necessity	Q'ty	New/Redesign	Sketch	Remarks
B	791-601-1000	Oil pump assembly	■	1			

Disassembly and assembly of idler cushion assembly tools

Symbol	Part No.	Part name	Necessity	Q'ty	New/Redesign	Sketch	Remarks
A	791-685-8006	compressor	■	1			
	791-635-3160	Extension	■	1			
	790-101-1600	Cylinder686 kN {70 t}	■	1			
	790-101-1102	Pump	■	1			
B	790-201-1500	Push tool kit	■	1			
	790-201-1660	• Plate		1			
	790-101-5021	• Grip		1			
	01010-50816	• Bolt		1			

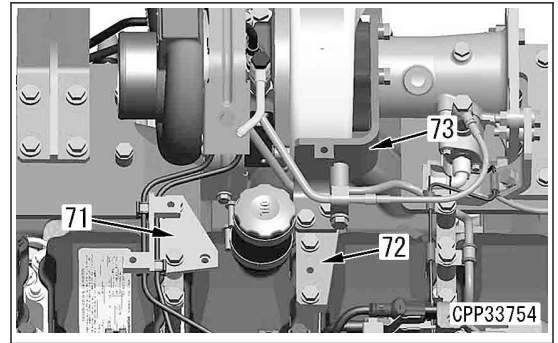
Disassembly and assembly of track roller assembly tools

Symbol	Part No.	Part name	Necessity	Q'ty	New/Redesign	Sketch	Remarks
A	796T-630-1210	Installer	■	1	N	○	Installation of floating seal
B	791-601-1000	Oil pump assembly	■	1			Check for air leakage of seal
C	790-201-2750	Spacer	●	1			Press fit of bushing

Disassembly and assembly of carrier roller assembly tools

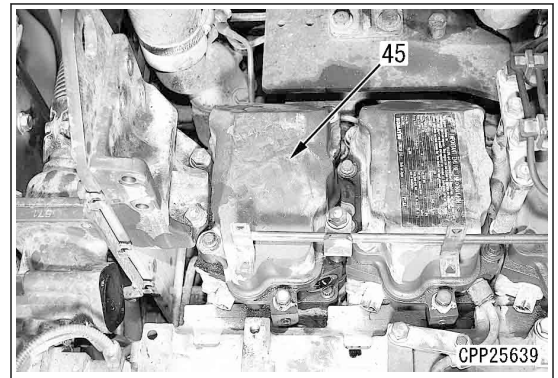
Symbol	Part No.	Part name	Necessity	Q'ty	New/Redesign	Sketch	Remarks
A	791-430-3230	Installer	■	1			Installation of floating seal
B	791-601-1000	Oil pump assembly	■	1			Check for air leakage of seal
C	790-201-2830	Spacer	■	1			Removal of bushing
D	790-201-2730	Spacer	■	1			Press fit of bushing
E	793T-613-1370	Spacer	■	1	N	○	Press fit of ring

30. Remove harness brackets (71) and (72) of VGT-REV and SVGT.
31. Remove VGT anti-runout bracket (73).



Cylinder head cover

32. Remove cylinder head cover (45).



Rocker arm and shaft assembly

33. Loosen nuts (46) (2 pieces) completely.

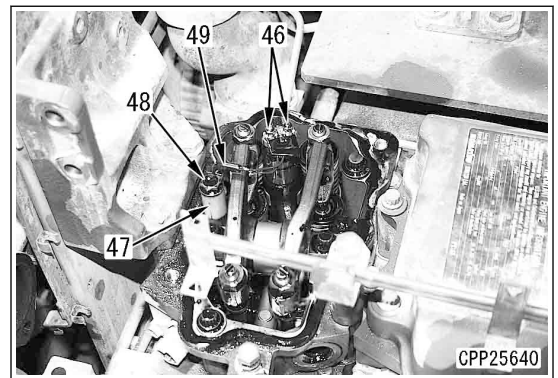
NOTICE

Loosen nuts (46) alternately.

34. Remove mounting bolt (48) of holder (47).

REMARK

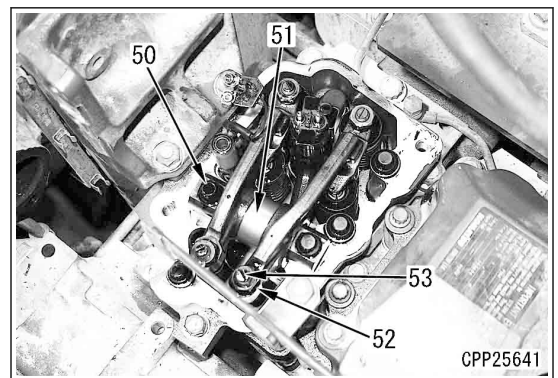
Move injector wiring harness (49) aside so that it does not hinder the work.



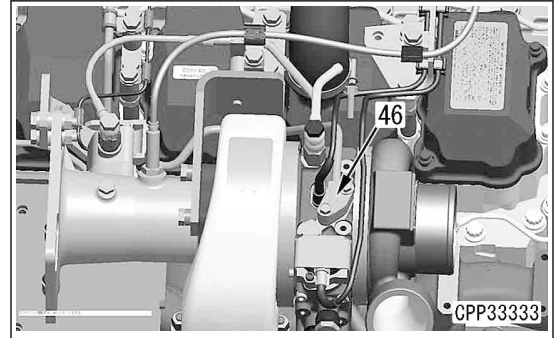
35. Remove rocker shaft mounting bolt (50), and remove rocker arm and shaft assembly (51).

NOTICE

Loosen lock nut (52), and then loosen adjustment screw (53) enough so that excessive force is not applied to the push rods when the rocker arms are installed.

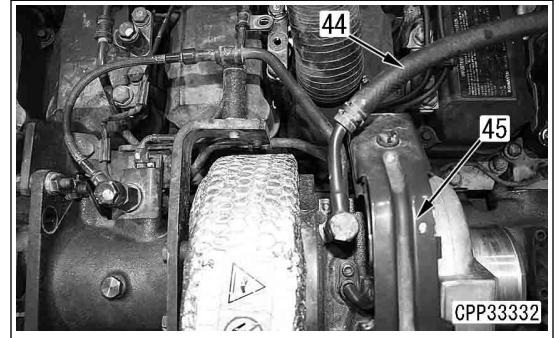


30. Install tube (46).




31. Install cover (45).


32. Install hose (44).

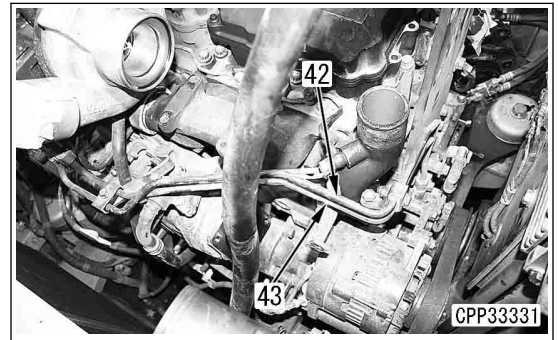


Tube

33. Install tubes (42) and (43).

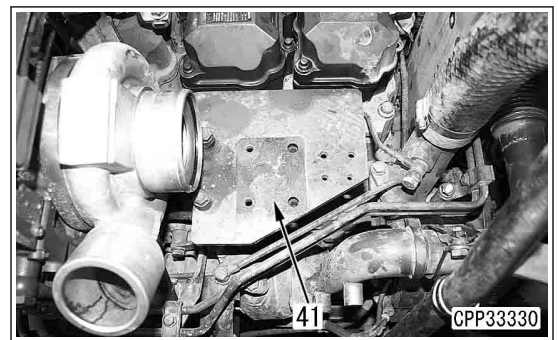
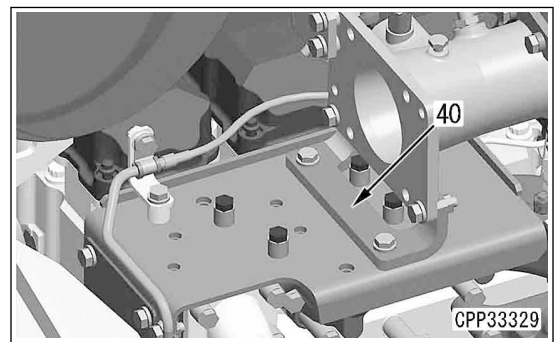
 Sleeve nut on front cover side :
24 to 27 Nm {2.4 to 2.7 kgm}

 Joint bolt on KVG T side:
24.5 to 34.3 Nm {2.5 to 3.5 kgm}

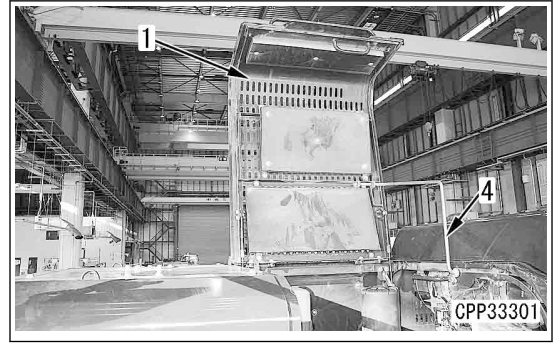


Bracket

34. Install brackets (40) and (41).



23. Close engine hood (1).

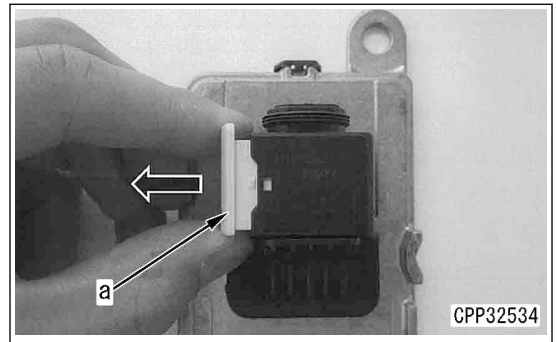
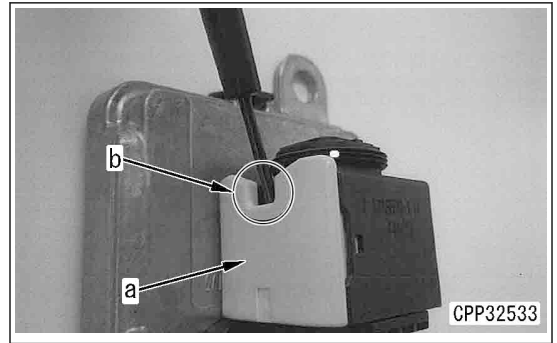


- 1) Insert a flat-head screwdriver, etc. into the claw part (b) of connector lever (yellow) (a), and unlock it.
- 2) Pinch lever (yellow) (a) with your fingers and slide it.

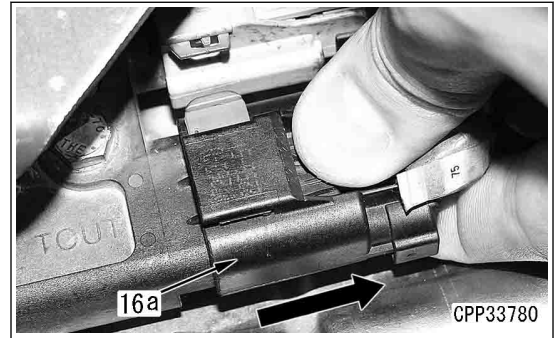
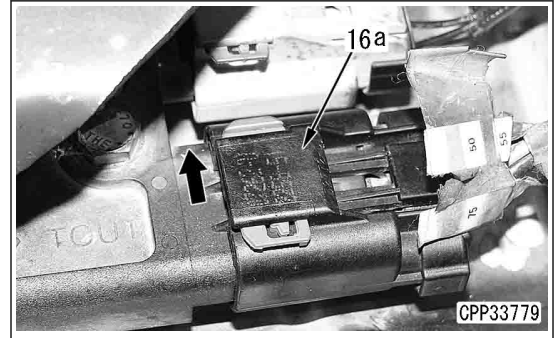
REMARK

Do not remove lever (yellow) (a).

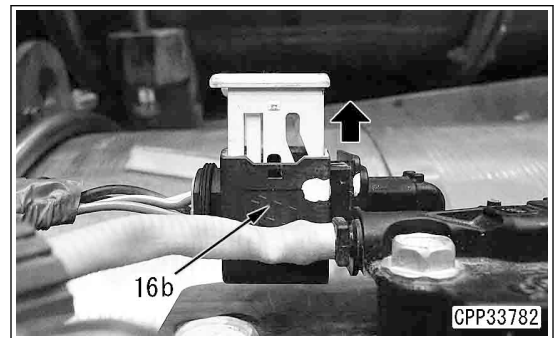
- 3) Pull connectors E32 (16c), E34 (16d), and E36 (16e) to the opposite direction to the sensor side, and disconnect them.
14. Disconnect clips (14c) (5 pieces).



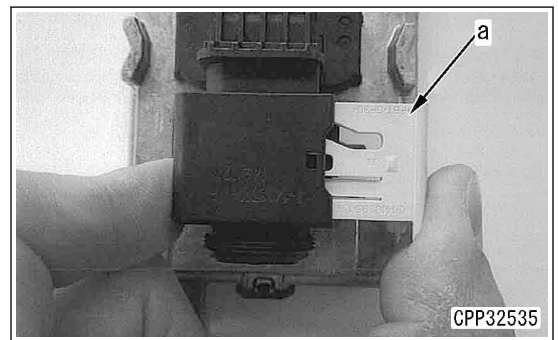
- 1) Slide the lever (red) in the direction of the arrow, insert connector E25 (16a) with the lock released, and slide it in the opposite direction of the arrow to lock it.



- 2) Slide the lever (yellow) in the direction of the arrow, insert connector E26 (16b) with the lock released, and slide it in the opposite direction of the arrow to install it.

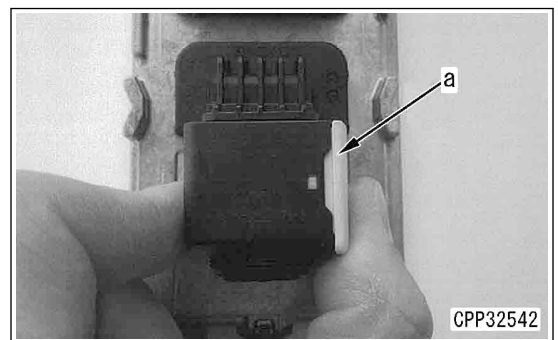


- 3) While keeping lever (yellow) (a) pulled up, insert connector E26 (16b) into sensor.



- 4) Push lever (yellow) (a) with your finger until the click sound is heard, connector becomes locked.

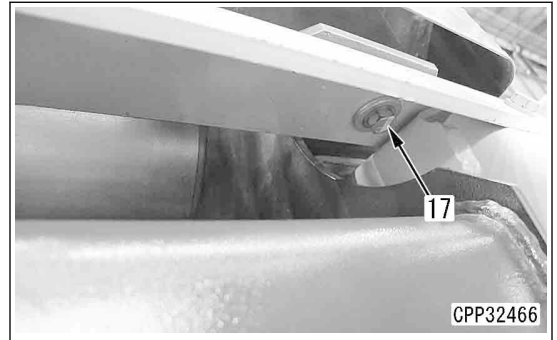
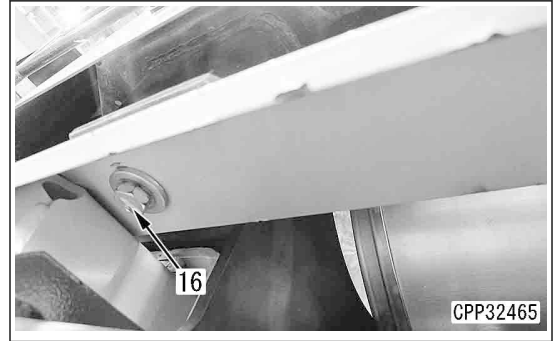
87. Install clips (14a) (3 places).



- Lightly tighten front mounting bolts (16) and rear mounting bolts (17) of left engine hood assembly.

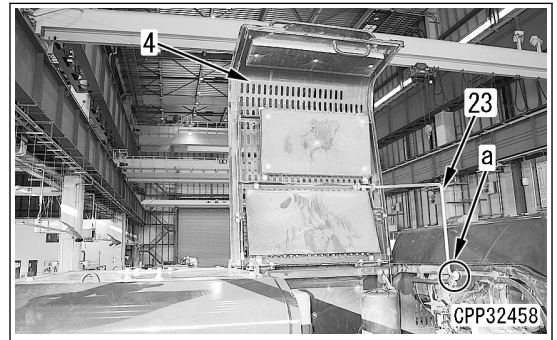
REMARK

Perform positioning of the engine hood assembly.

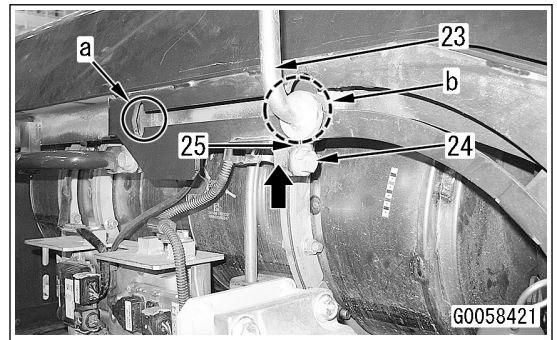


Mounting bolt of center engine hood

- Tilt engine hood assembly (4) forward, and move lock bar (fixing rod) (23) from position (a) to (b).



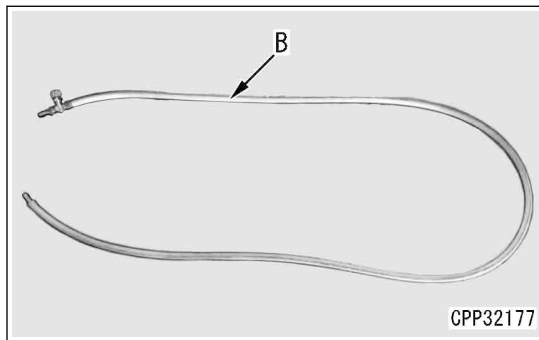
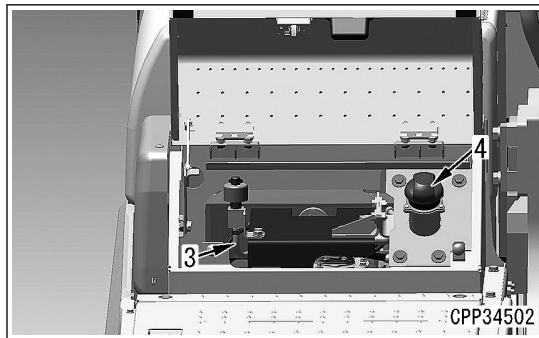
- Push up stopper (25) in the direction of the arrow, and tighten it with bolt (24).



7. Disconnect breather hose (3), and connect tool B.

NOTICE

Securely tighten cap (4) to prevent air from entering the AdBlue/DEF tank.



8. Loosen drain plug (5), and drain AdBlue/DEF.



AdBlue/DEF tank:

73 ℓ

NOTICE

When handling AdBlue/DEF, be sure to use vinyl gloves (21a).

9. Prepare container (5a) under AdBlue/DEF tank.
 10. Adjust the flow of AdBlue/DEF by using the valve of tool C, and drain it carefully so that it does not splash.

REMARK

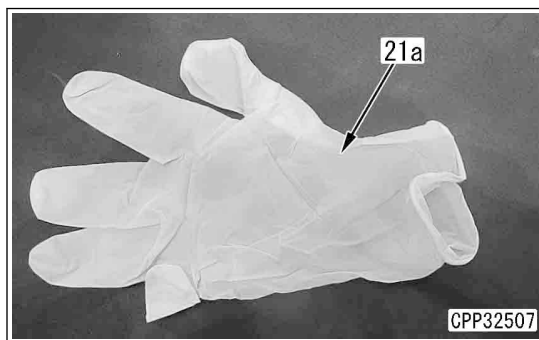
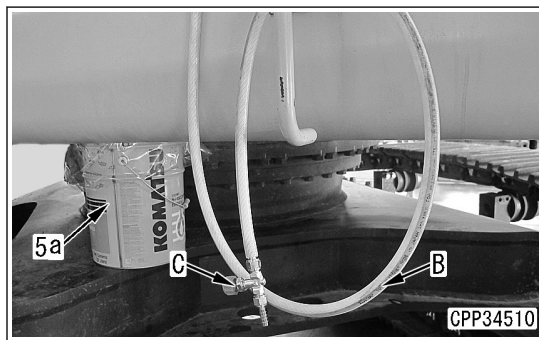
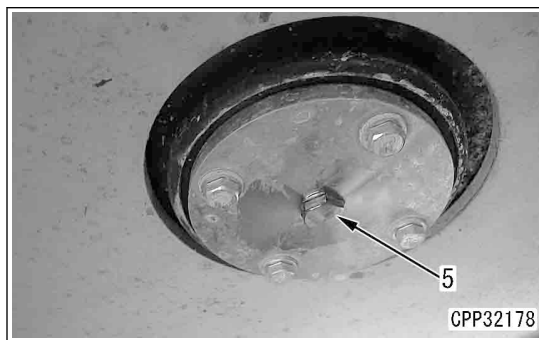
- Keep it closed at the beginning of draining, and open it gradually.
- After a while when tool C is closed, the flow gradually decreases, then replace the container with an empty one by 20 ℓ.

11. Disconnect tool B which is installed at draining of AdBlue/DEF, and connect breather hose (3) to the breather joint.
 12. After draining is completed, close drain plug (5).



Drain plug (5):

9.8 to 12.7 Nm {1.0 to 1.3 kgm}



METHOD FOR ASSEMBLING KDPF ASSEMBLY

(PC400_10-K-A9H0-710-00-B)

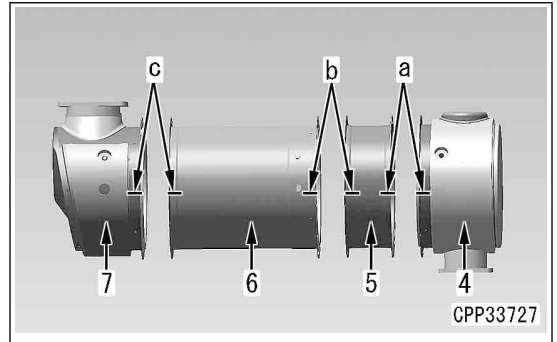
KDPF assembly

1. Securely fix tool A which are used for disassembling the bottom of each body.
2. Set inlet (4), KDOC (5), KCSF (6), and outlet (7).
3. Securely align the match marked positions (a), (b), and (c) with connection of each body during disassembly.


NOTICE

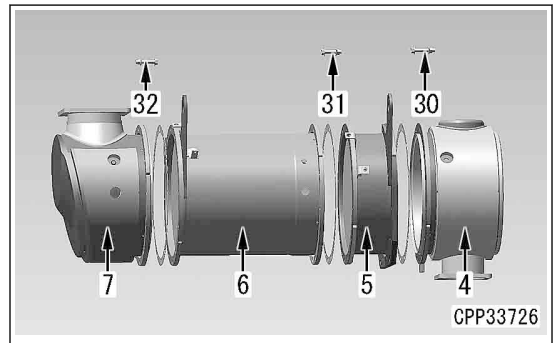
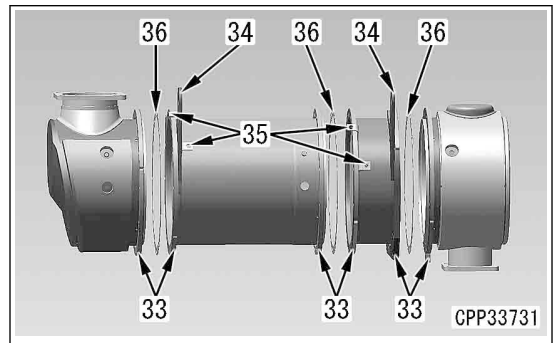
If they are assembled with match marks displaced, the flanges of KDPF inlet and outlet are installed at wrong angle causing defective installation of exhaust pipe at its inlet and outlet.

4. Install brand new gasket (36) to the area between the bodies.
5. Install backup plate (33), hanger (34) and bracket (35).




6. Finger-tighten mounting bolts (30) (12 pieces) of inlet (4) and KDOC (5), mounting bolts (31) (13 pieces) of KDOC (5) and KCSF (6), and mounting bolts (32) (12 pieces) of KCSF (6) and outlet (7).

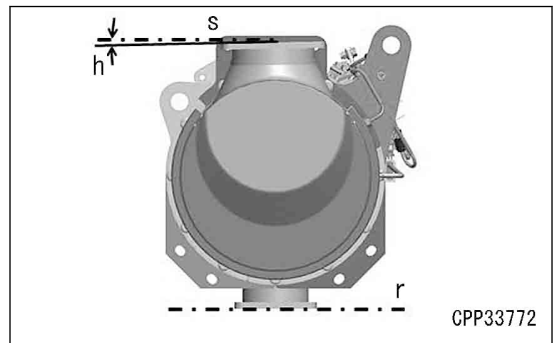
 Mounting bolt:
Seizure prevention compound (LC-G)



7. Adjust the angle at inlet (4), KDOC (5), KCSF (5), and outlet (7) so that it becomes the same as angle (h) at KDPF inlet flange (4) and KDPF outlet flange, then tighten the mounting bolts to the specified torque.

angle (h): $1 \pm 0.5^\circ$

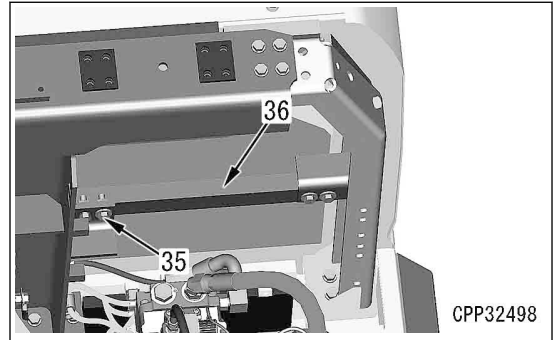
 Mounting bolt :
59 to 74 Nm {6.0 to 7.6 kgm}



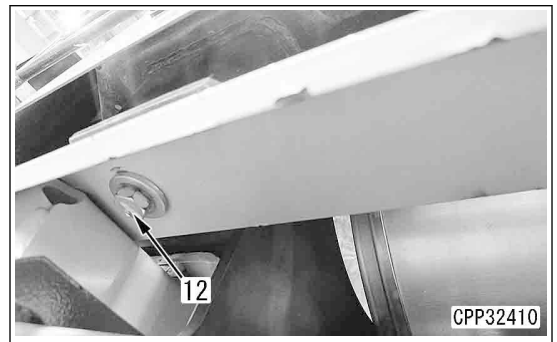
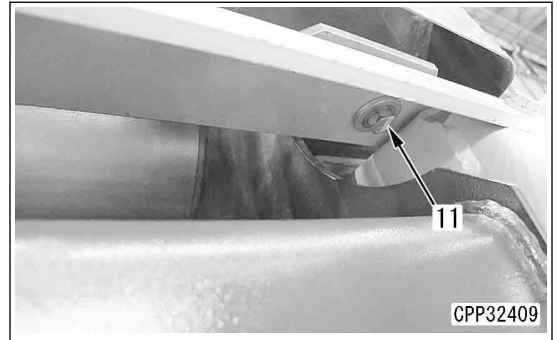
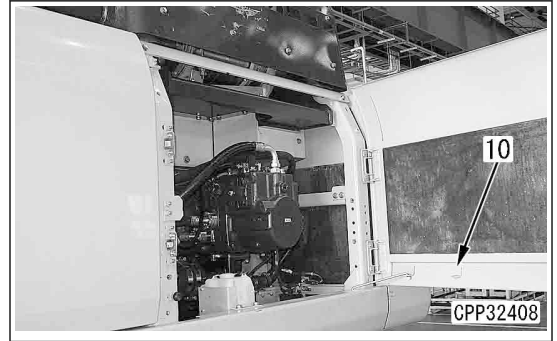
9. Temporarily assemble plate (23) with mounting bolts (22) (8 pieces).



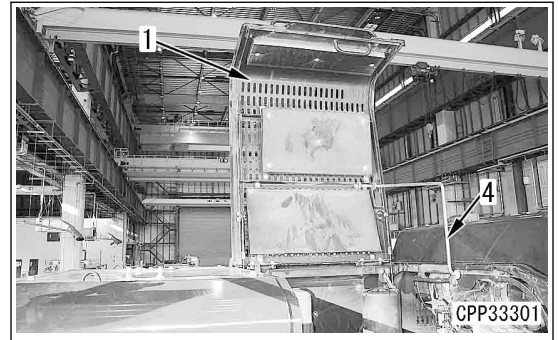
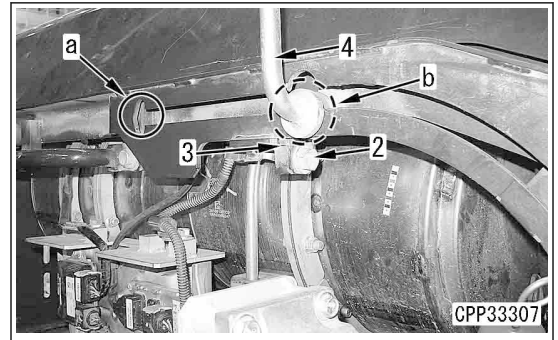
10. Temporarily assemble plate (36) with mounting bolts (35) (4 pieces).



7. Open machine body left cover (10) and install front mounting bolt (12) and rear mounting bolt (11).



18. Open engine hood (1) to the last part, return lock bar (fixing rod) (4) to the middle position (B), and lock it with bolt (2).
19. Push up stopper (3) in the direction of the arrow, and tighten bolt (2).
20. Close engine hood (1).



REMOVE AND INSTALL SWING CIRCLE ASSEMBLY

(PC400_10-K-J110-924-00-B)

- ⚠ Place the machine on a level ground, lower the work equipment to the ground so that it is stable, and set the lock lever to LOCK position, and then stop the engine.
- ⚠ Stop the engine, turn the battery disconnect switch to OFF position, and remove the key. (For details, see Testing and adjusting, "Handling of battery disconnect switch".)

METHOD FOR REMOVING SWING CIRCLE ASSEMBLY

(PC400_10-K-J110-520-00-B)

Releasing remaining pressure

1. Release the remaining pressure in the hydraulic circuit referring to Testing and adjusting, "Releasing remaining pressure from hydraulic system".

Revolving frame assembly

2. Remove the revolving frame assembly. For details, see "Removal and installation of revolving frame assembly".

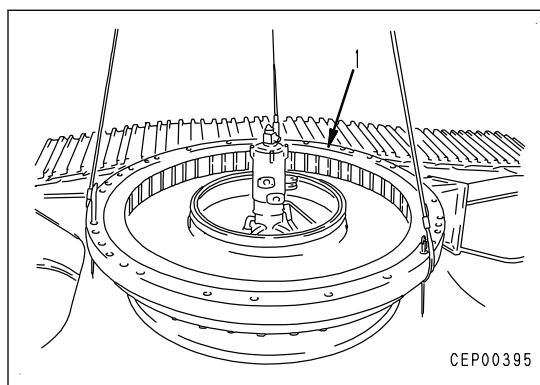
Swing circle assembly

3. Perform 3-point sling of swing circle assembly (1), and hold it.
4. Remove the mounting bolts (40 pieces), sling swing circle assembly (1), and remove it.



Swing circle assembly (1) :

600 kg

**METHOD FOR INSTALLING SWING CIRCLE ASSEMBLY**

(PC400_10-K-J110-720-00-B)

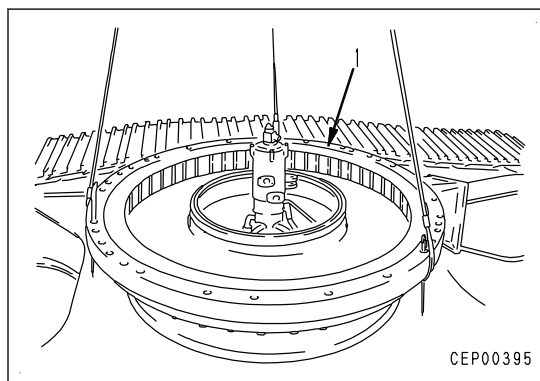
Swing circle assembly

1. Sling swing circle assembly (1), and install it with the mounting bolts (40 pieces).



Swing circle assembly (1):

600 kg

Mating faces of the swing circles:
Liquid gasket (LG-6)Threaded portion of swing circle mounting bolt:
Adhesive (LT-2)Swing circle inner bolt (first time):
1180 to 1470 Nm {120 to 150 kgm}**REMARK**

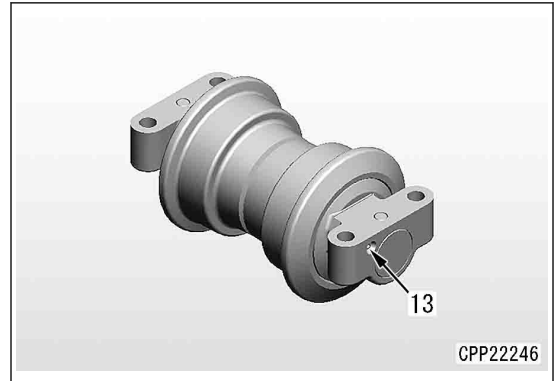
Target value: 1325 Nm

Swing circle inner bolt (second time):
1325±145 Nm {135±15 kgm}**REMARK**

Since this is an important bolt, tighten it to the center value of the torque range.

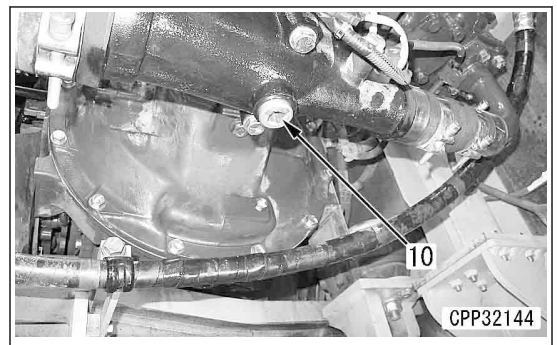
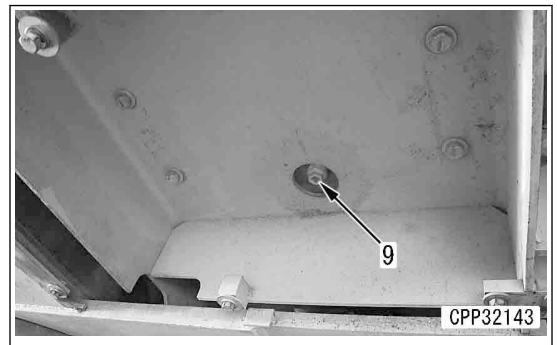
REMARK

When installing to the machine body, make sure plug (13) faces the out side of the machine body.



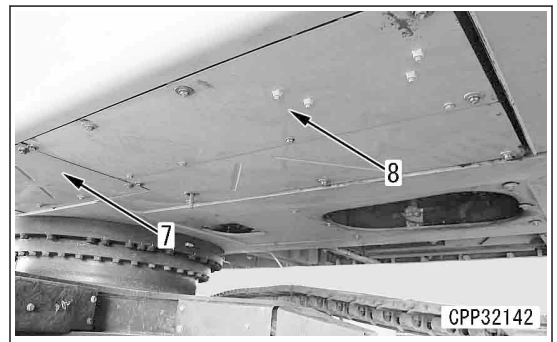
Drain plug

15. Tighten drain plug (9) at the bottom of the hydraulic tank and drain plug (10) at the bottom of the suction tube.



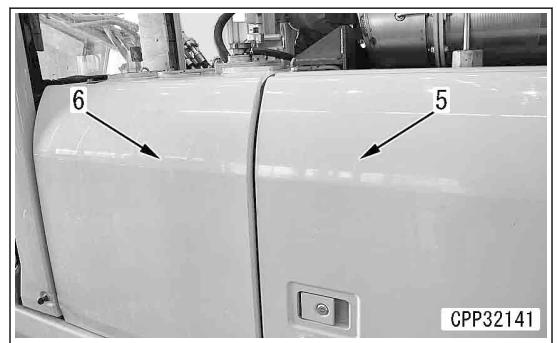
Undercover

16. Install cover (7) to the bottom of the hydraulic tank and cover (8) to the bottom of the main pump.



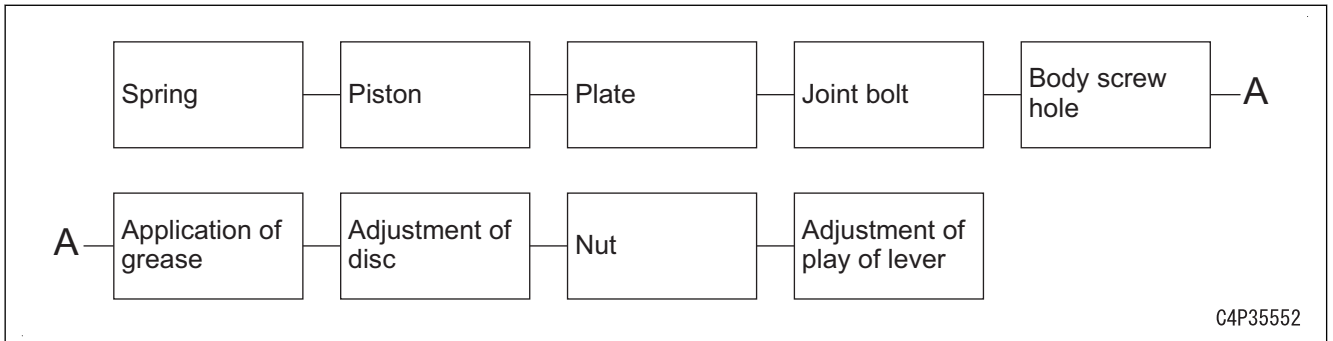
Hydraulic tank cover

17. Install hydraulic tank cover (6).
18. Close left side cover (5).



DISASSEMBLE AND ASSEMBLE WORK EQUIPMENT PPC VALVE ASSEMBLY

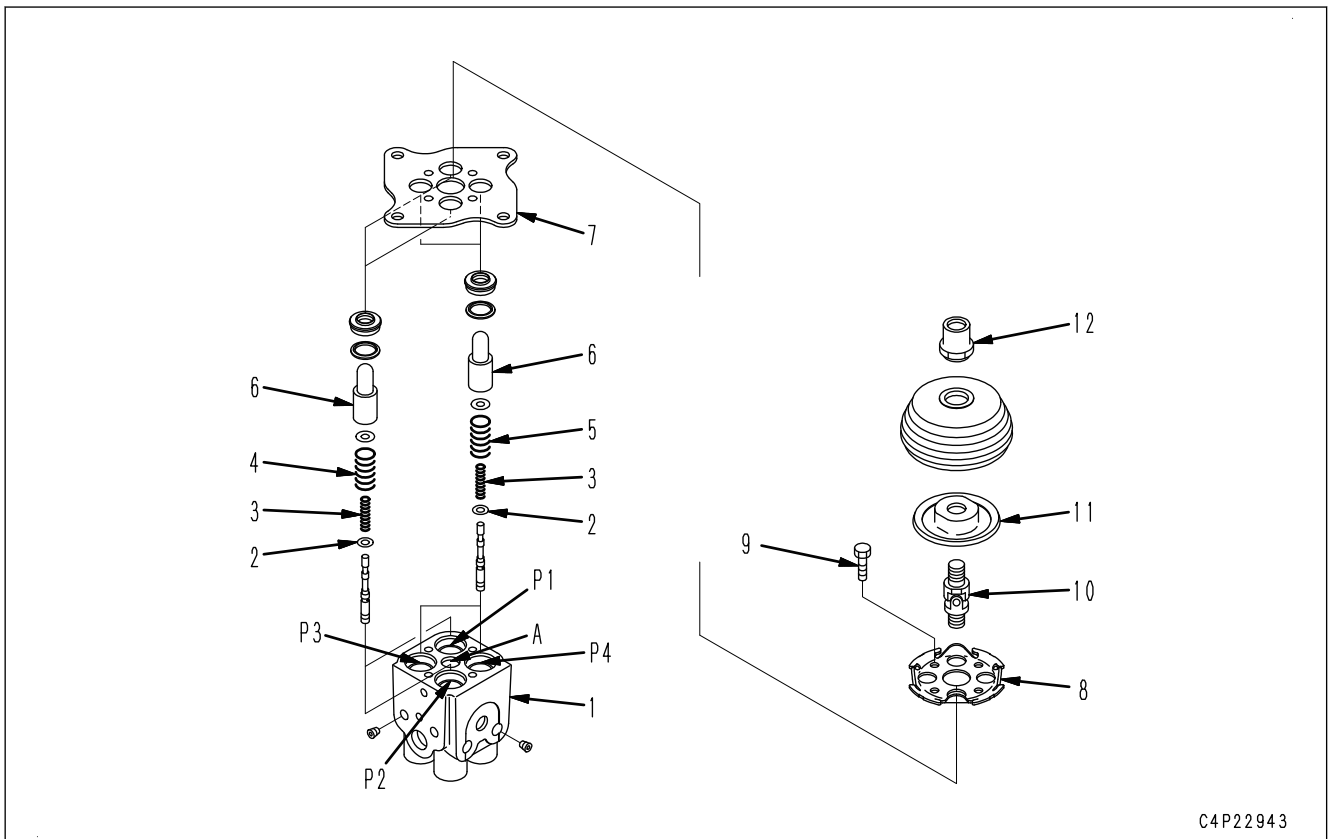
(PC400_10-K-PL28-926-00-B)



METHOD FOR DISASSEMBLING WORK EQUIPMENT PPC VALVE ASSEMBLY

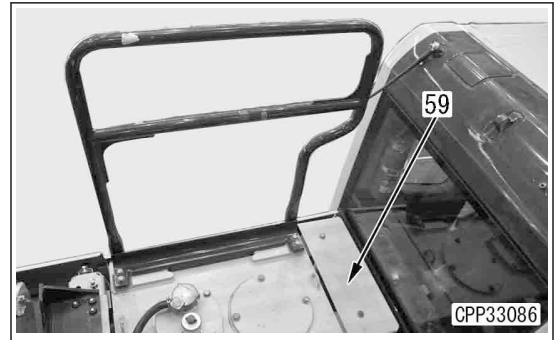
(PC400_10-K-PL28-530-00-B)

In this section, only precautions for disassembling the work equipment PPC valve assembly are explained.

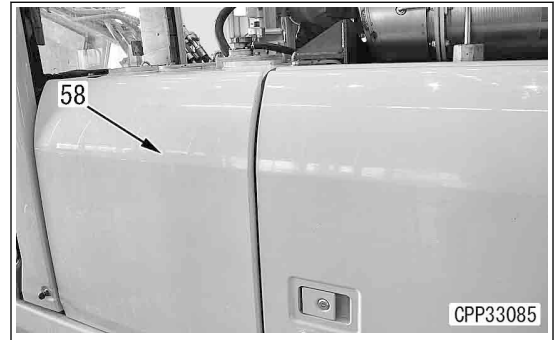


⚠ 2 each of 2 different types of springs with different mounting load are installed to springs (4) and (5). Check and write down the mounting position (hydraulic port) to prevent any wrong installation.

5. Install cover (59) at the rear of the operator's cab.



6. Install cover (58) on the side of the hydraulic tank.



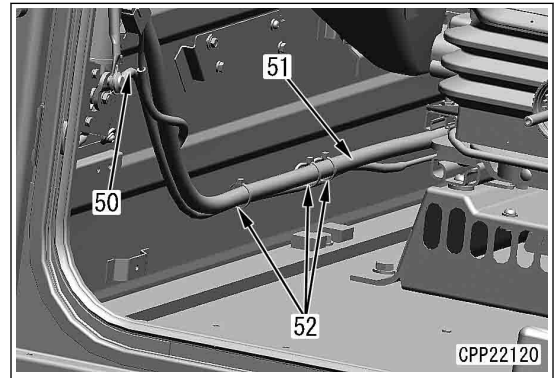
Window washer hose

7. Install window washer hose (50) and wiring harness (51), and bind them with cable tie (52).

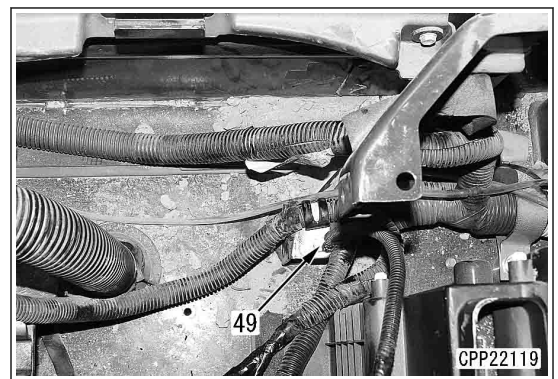
REMARK

Use a brand new cable tie (52).

8. Connect window washer hose (50).

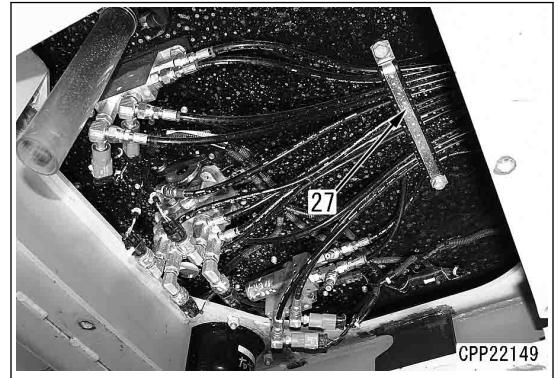


9. Install clamp (49).



Clamp

14. Disconnect clamp (27) (2 bolts).



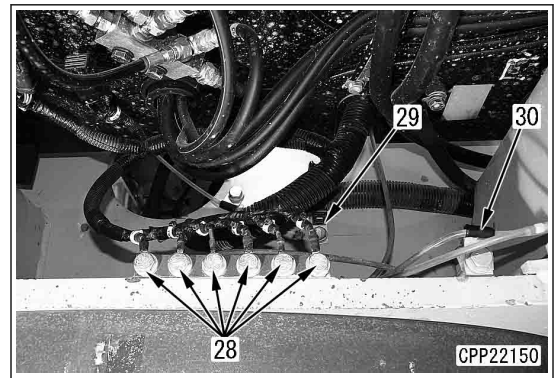
Ground cable

15. Disconnect ground cable (28).

REMARK

The ground cables are named as (T04), (T05), (T06), (T07), (T09), and (T10) from the left.

16. Disconnect clamps (29) and (30).



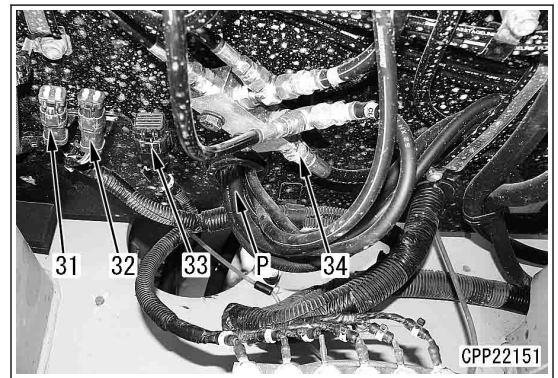
Connector

17. Pull out connectors (31) to (33) from the clips.

(31): Intermediate connector (A41) (Machine equipped with camera 2)

(32): Intermediate connector (A42) (Machine equipped with camera 3)

(33): Intermediate connector (A08) (Machines equipped with attachment)



Hose, tube

18. Disconnect hose (34).

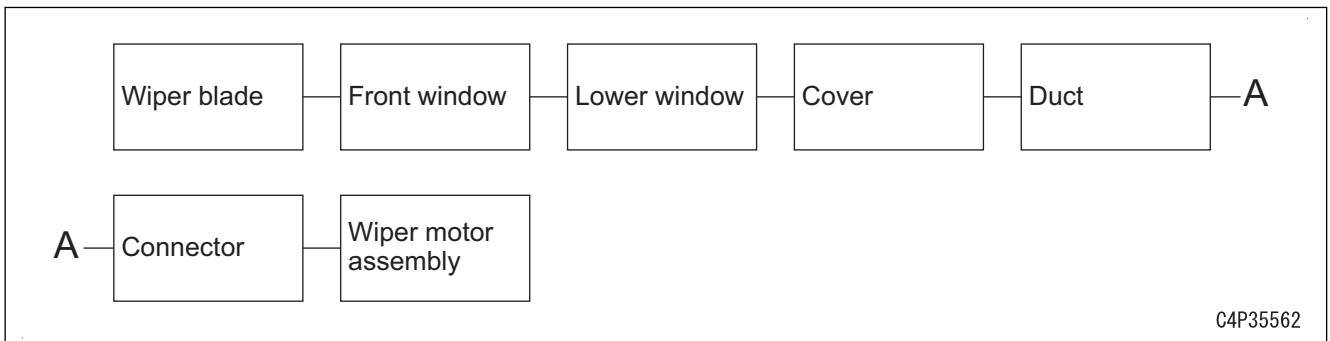
(34): Port (P) (Circuit from PPC oil pressure lock solenoid valve)

REMARK

Disconnect hoses (P) of the work equipment PPC valve on the junction block side.

REMOVE AND INSTALL FRONT WIPER ASSEMBLY

(PC400_10-K-K710-924-00-B)



⚠ Place the machine on a level ground, lower the work equipment to the ground so that it is stable, and set the lock lever to LOCK position, and then stop the engine.

⚠ Place the work equipment lock lever in LOCK position.

⚠ Stop the engine, turn the battery disconnect switch to OFF position, and remove the key. (For details, see Testing and adjusting, “HANDLING BATTERY DISCONNECT SWITCH”).

NOTICE

Write down the connector numbers and installed positions before disconnecting electric wiring and hoses.

METHOD FOR REMOVING FRONT WIPER ASSEMBLY

(PC400_10-K-K710-520-00-B)

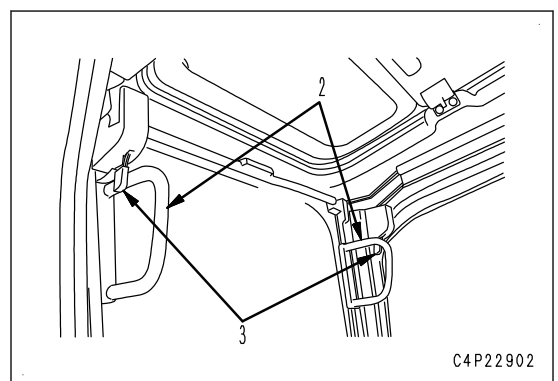
wiper arm

1. Check that wiper arm (1) is stowed in the right stay.



Front window

2. While holding grips (2) on the right and left of the front window, pull lever (3) forward to release the lock.



- Disconnect connector (15) first, and disconnect connectors (13), (14), and (16).

REMARK

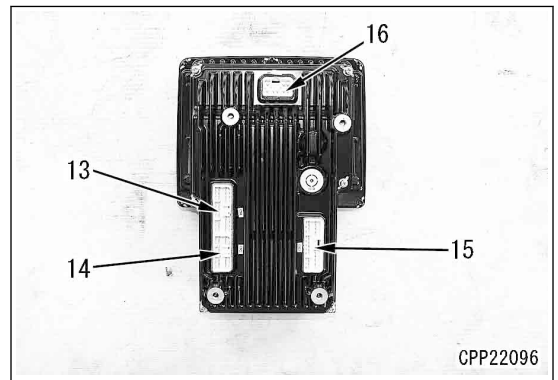
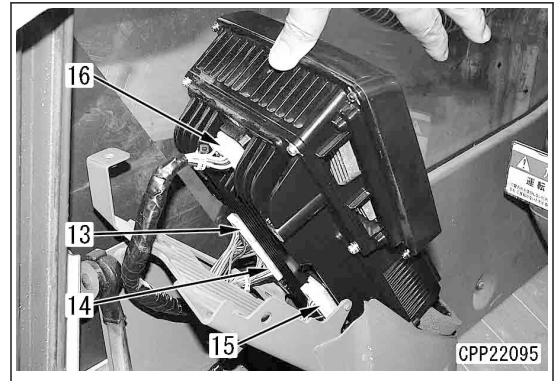
By disconnecting connector (15) first, other connectors can be disconnected easily.

(13): Machine monitor (CM01)

(14): Machine monitor (CM02)

(15): Machine monitor (unused) (CM03)

(16): Machine monitor (for camera connection) (CM04)



METHOD FOR INSTALLING MACHINE MONITOR ASSEMBLY

(PC400_10-K-Q180-720-00-B)

Connector

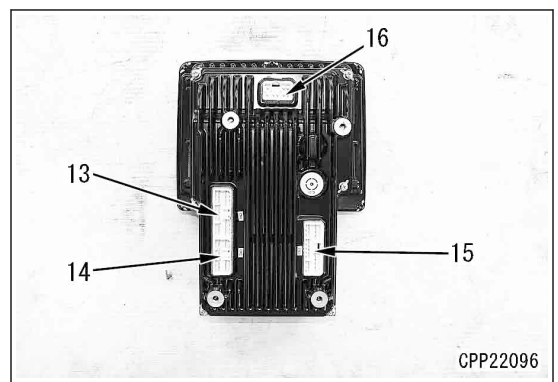
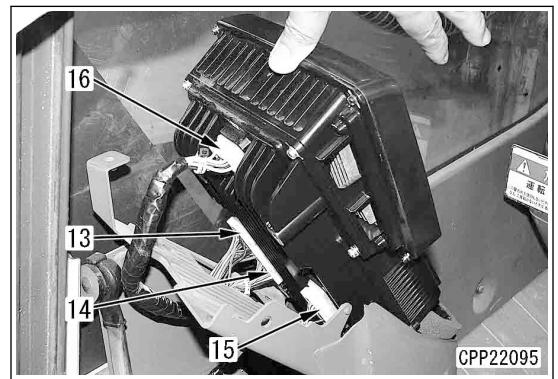
- Install connectors (13), (14), and (16) first, and then connector (15).

(13): Machine monitor (CM01)

(14): Machine monitor (CM02)

(15): Machine monitor (unused) (CM03)

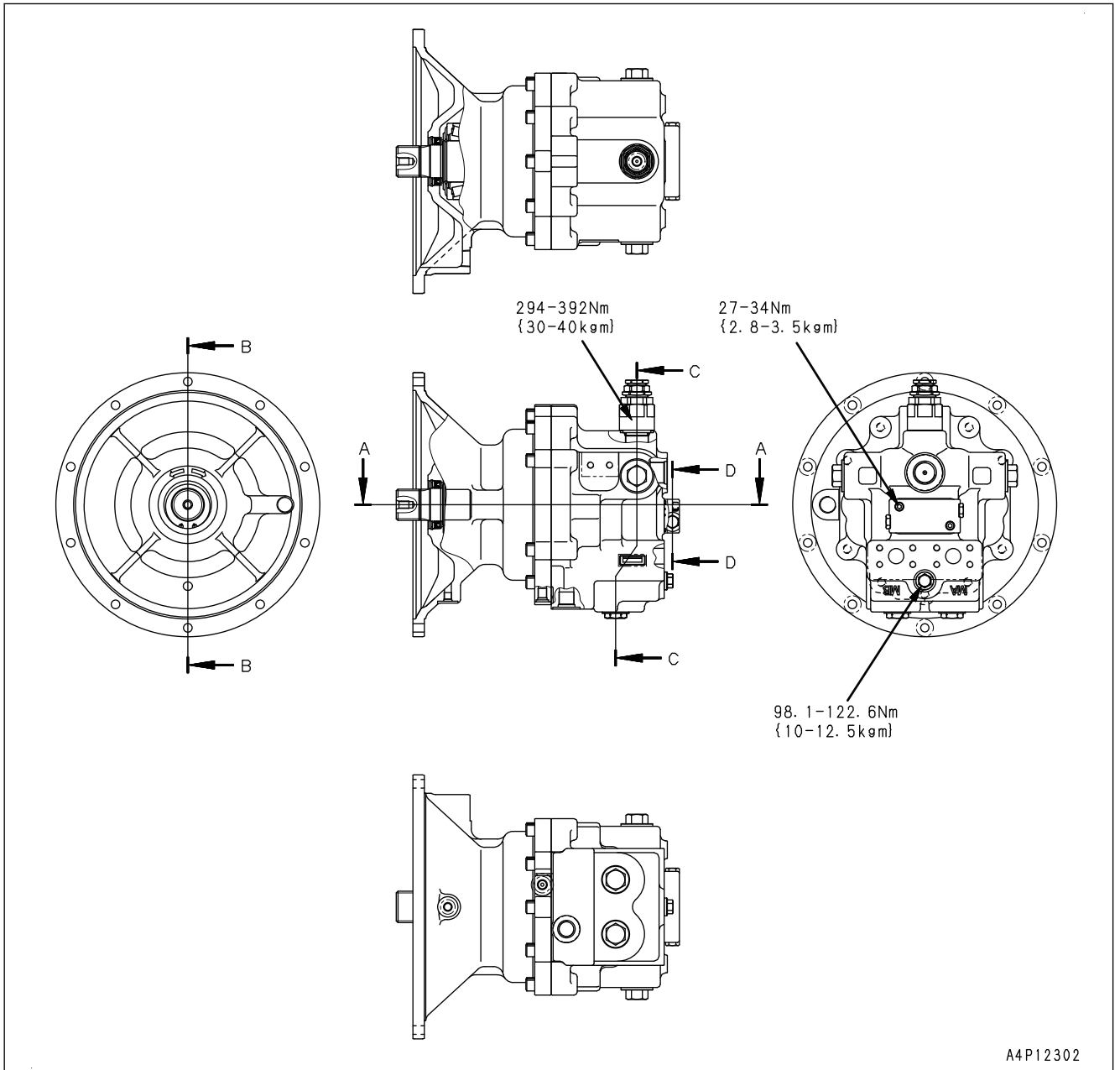
(16): Machine monitor (for camera connection) (CM04)



Abbreviation	Actual word spelled out	Purpose of use (major applicable machine (*1), or component/system)	Explanation
ICT	Information and Communication Technology	Communication and electronic control	A general term for the engineering and its socially applied technology of information processing and communication.
IMA	Inlet Metering Actuator	Engine	This is a valve that adjusts the fuel intake amount at the pump inlet in order to control the supply pump fuel discharged volume. (Same as IMV)
IMU	Inertial Measurement Unit	Engine	This is a device to detect the angle (or angular velocity) and acceleration of the 3 axes that control motions.
IMV	Inlet Metering Valve	Engine	This is a valve that adjusts the fuel intake amount at the pump inlet in order to control the supply pump combustion discharged volume. (Same as IMA)
KCCV	Komatsu Closed Crankcase Ventilation	Engine	This is a mechanism that burns the blowby gas again by separating oil from blowby gas and returning it to the intake side. It primarily consists of filters.
KCSF	Komatsu Catalyzed Soot Filter	Engine	This is a filter that captures soot in exhaust gas. It is built in to KDPF.
KDOC	Komatsu Diesel Oxidation Catalyst	Engine	This is a catalyst that is used for purifying exhaust gas. It is built in to KDPF or assembled with the muffler.
KDPF	Komatsu Diesel Particulate Filter	Engine	This is a component that is used to purify the exhaust gas. KDOC (catalyst) and KCSF (filter to capture soot) are built-in it. It is installed instead of the conventional muffler.
KTCS	Komatsu Traction Control System	Travel and brake (HM)	This is a function that performs braking with the optimum force and recovers the driving force of the wheels by actuating the inter-axle differential lock when the wheels runs idle while the machine travels on the soft ground.
LCD	Liquid Crystal Display	Machine monitor	This is an image display equipment such as a monitor in which the liquid crystal elements are assembled.
LED	Light Emitting Diode	Electronic parts	This is a semiconductor element that emits light when the voltage is applied in forward direction.
LIN	Local Interconnect Network	Communication and electronic control	This is one of communication standards that are used in the network on the machine.
LS	Load Sensing	Hydraulic system	This is a function that detects differential pressure of pump, and controls discharged volume corresponding to load.
LVDS	Low Voltage Differential Signaling	Communication and electronic control	This is one of communication standards that are used in the network on the machine.
MAF	Mass Air Flow	Engine	This indicates engine intake air flow. This is not used independently but is used as combined with sensor. Mass air flow sensor can be called as MAF sensor.

MAINTENANCE STANDARD OF SWING MOTOR

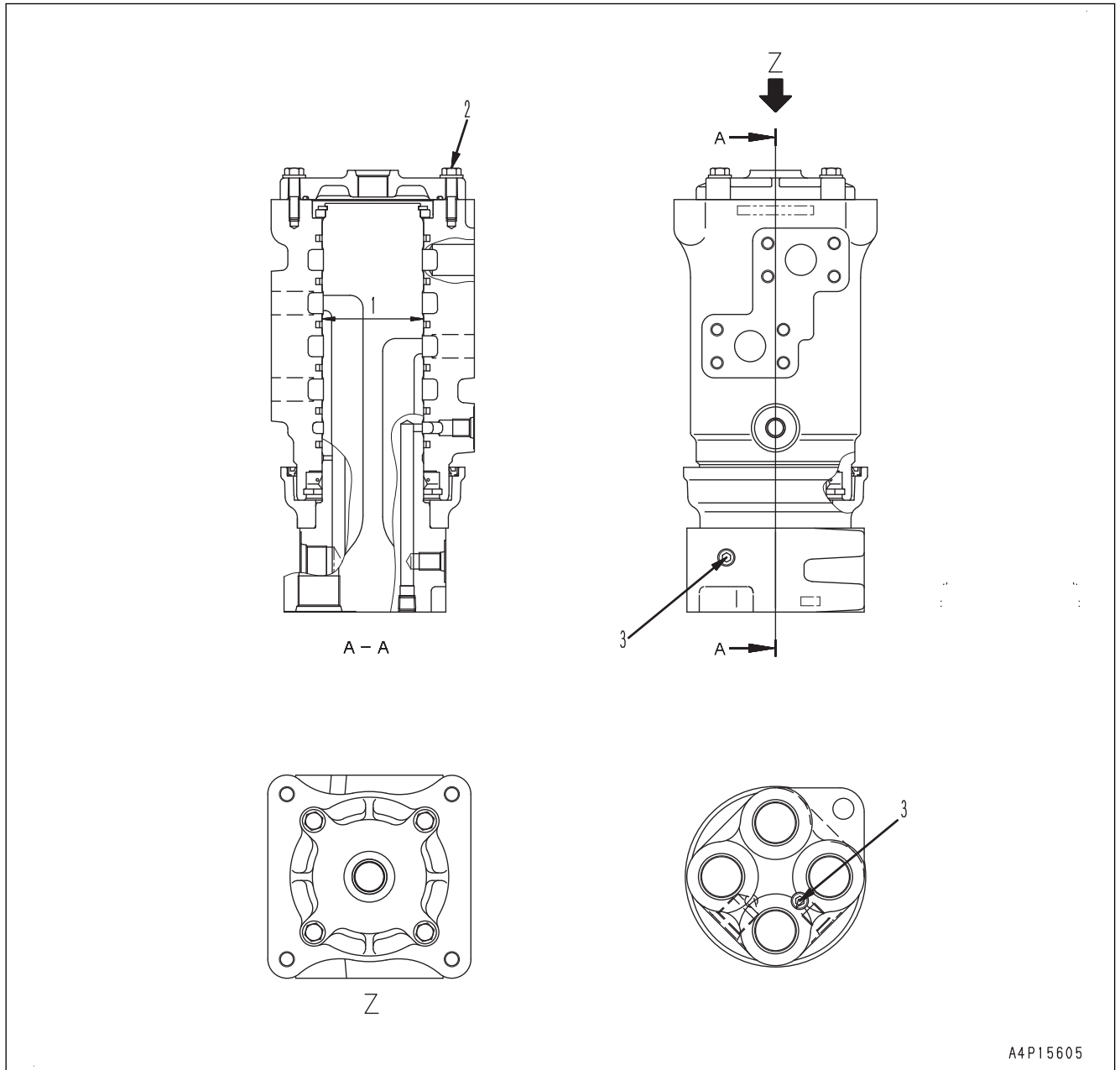
(PC400_10-K-J610-034-00-B)



A4PI2302

MAINTENANCE STANDARD OF CENTER SWIVEL JOINT

(PC400_10-K-J8E0-034-00-B)

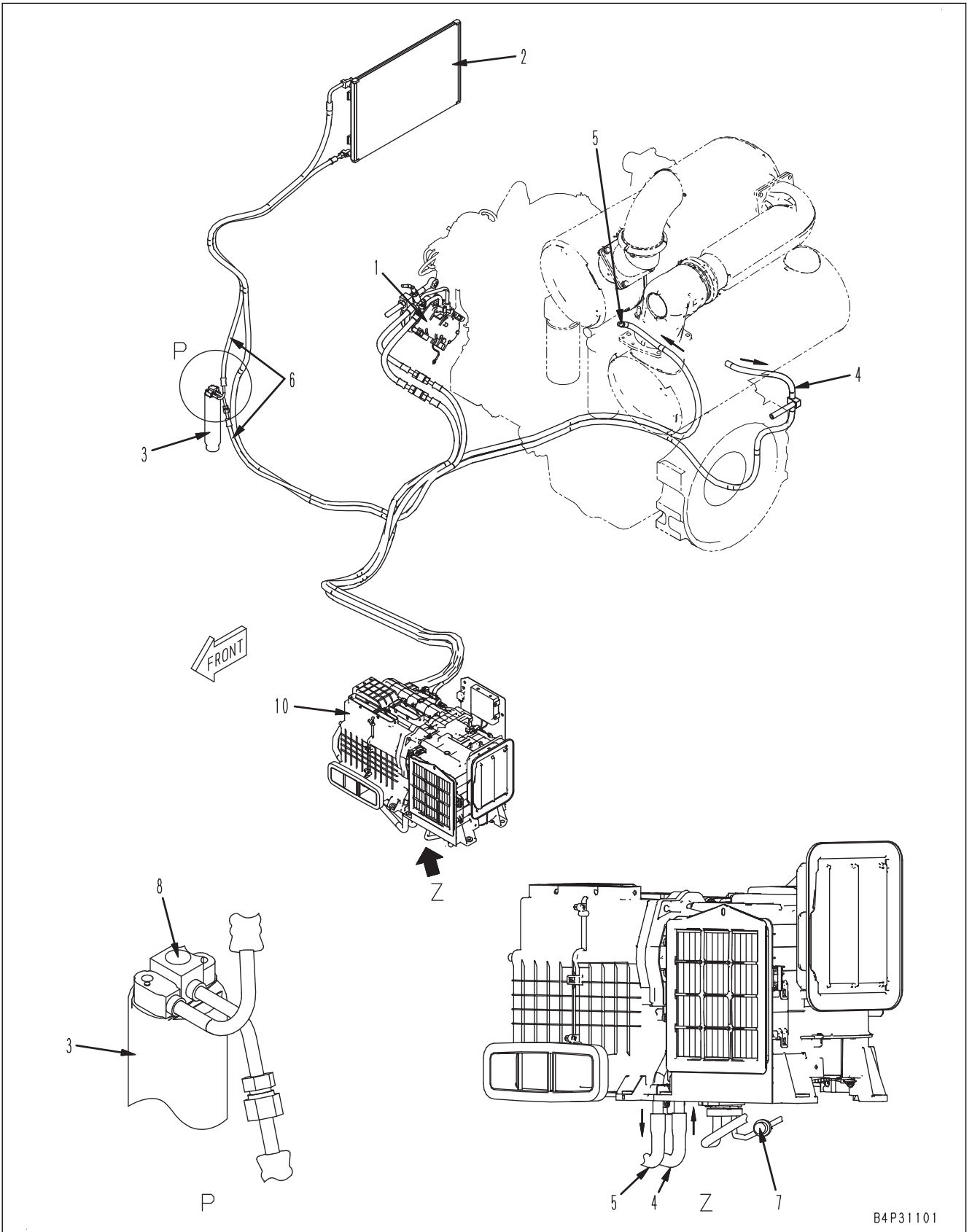


Unit: mm

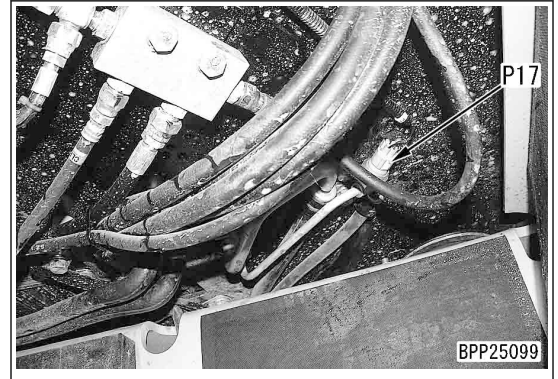
No.	Item	Criteria			Remedy
		Standard dimension	Standard clearance	Allowable clearance	
1	Clearance between rotor and shaft	80	0.056 to 0.105	0.111	Replace
2	Tightening torque of bolt	31.4±2.9 Nm {3.2±0.3 kgm}			Retighten
3	Tightening torque of plug	33.3±3.9 Nm {3.4±0.4 kgm}			Retighten

AIR CONDITIONER COMPONENT

(PC400_10-K-K500-04D-00-B)



P17: Dual pressure switch connectors

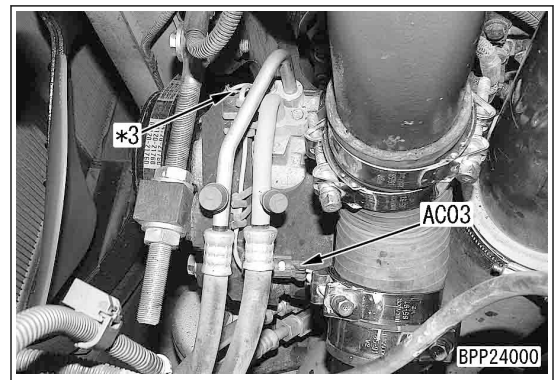


Air conditioner compressor connectors layout

Open the engine hood.

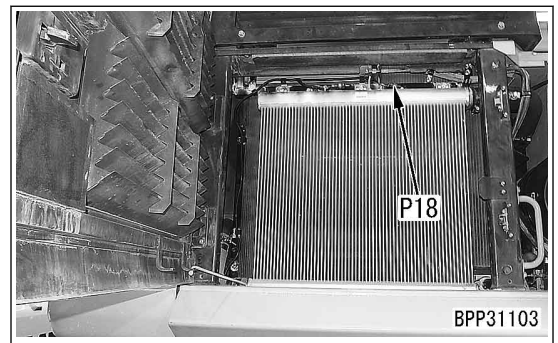
AC03: Air conditioner compressor connector

*3: Air conditioner compressor ground



Outside air temperature sensor connectors layout

P18: Outside air temperature sensor connector



FAILURE CODE [879FMC]

(ALL-K-K56C-410-00-B)

Action level	Failure code	Failure	Air Mix Damper Malfunction (Machine monitor system)
L01	879FMC		
Details of failure	Air conditioner controller detects no rotation of air mix (temperature regulator) damper servomotor, judging from potentiometer voltage of servomotor.		
Action of controller	Air conditioner controller transmits abnormality of air mix damper to machine monitor by CAN communication.		
Phenomenon on machine	Air conditioner does not operate since temperature cannot be regulated.		
Related information	<ul style="list-style-type: none"> After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position. Check if this failure code is displayed on electrical system failure record screen in service mode of machine monitor. Since connector of air mix damper servomotor cannot be checked when it is mounted on machine, troubleshooting cannot be performed. 		

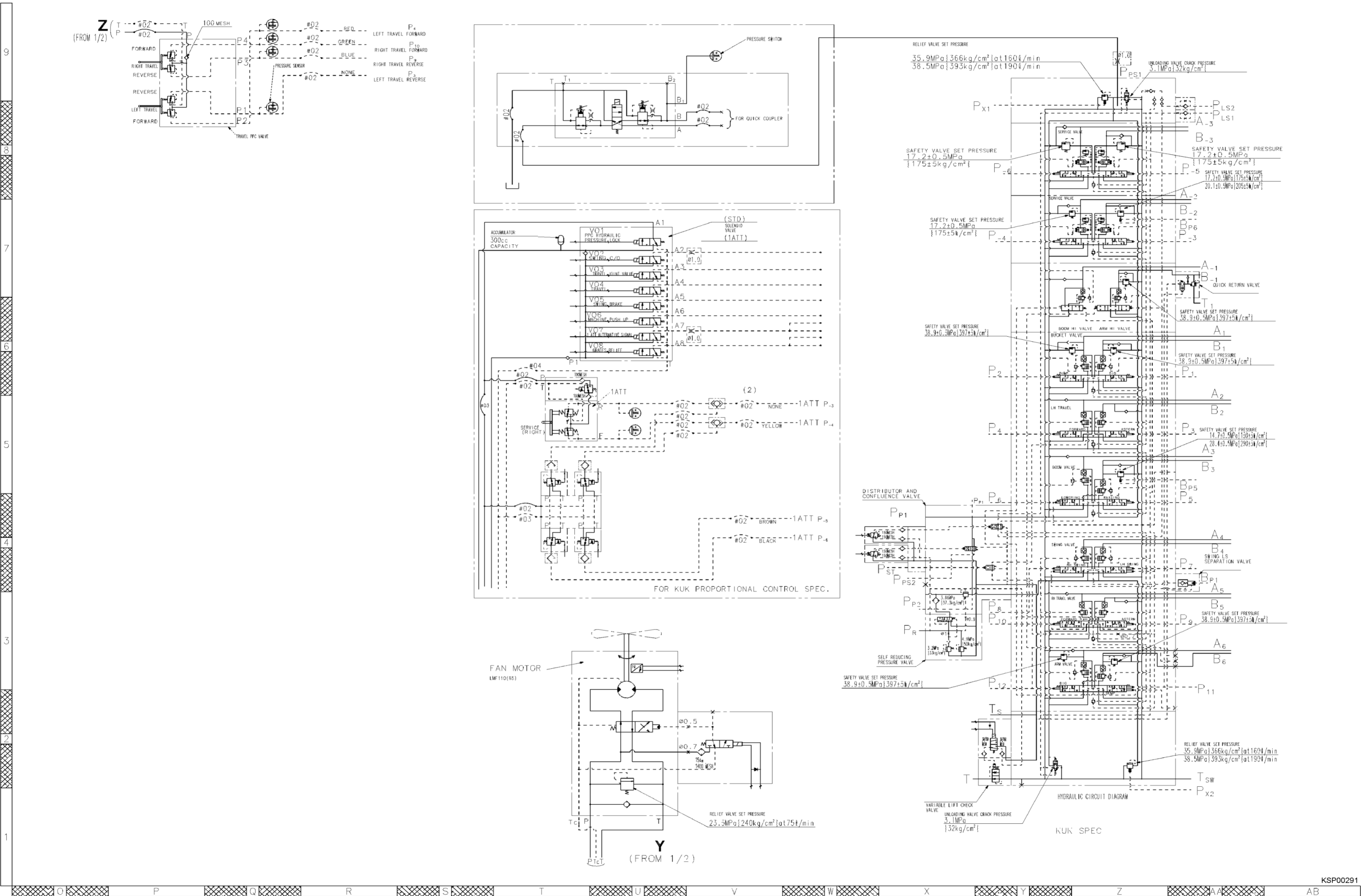
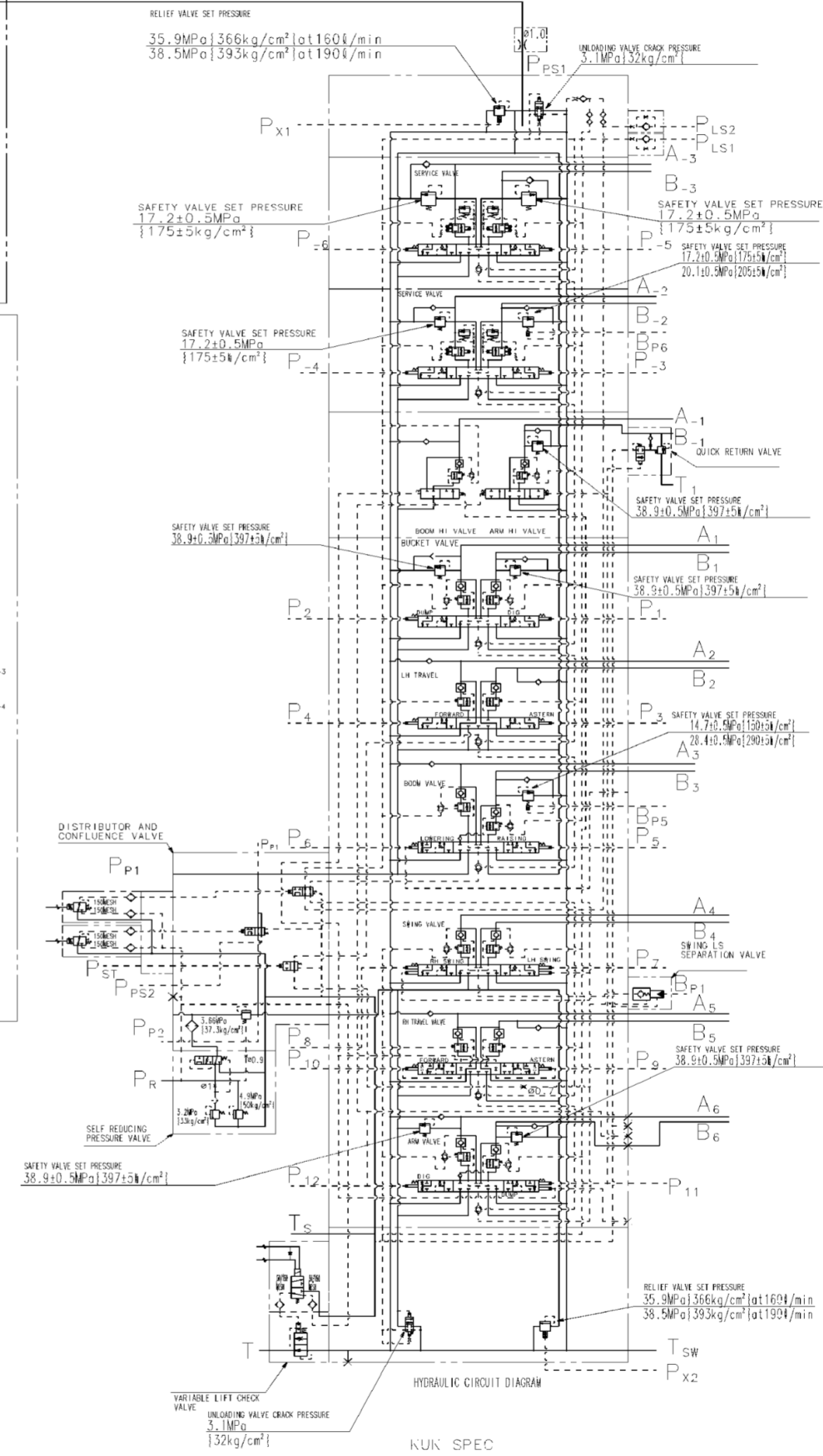
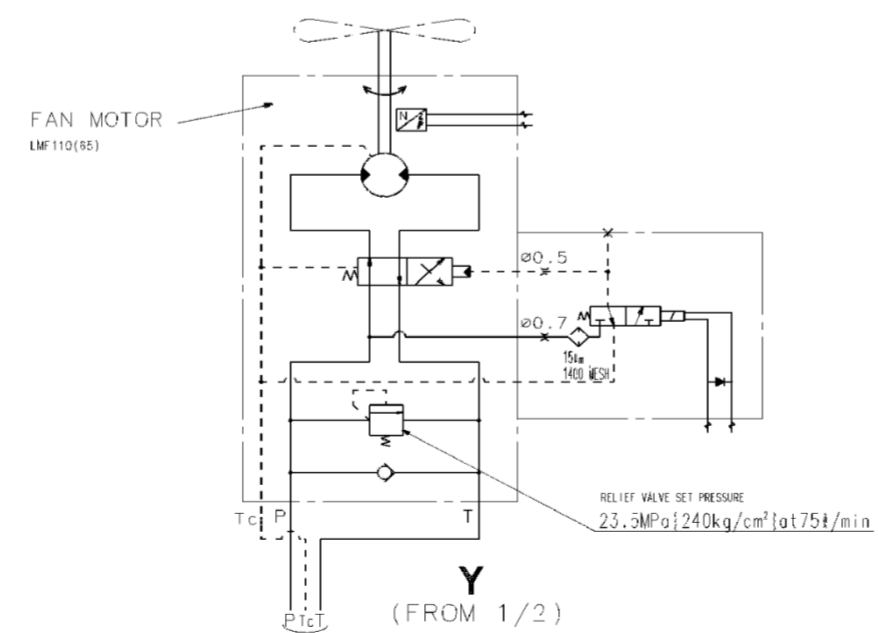
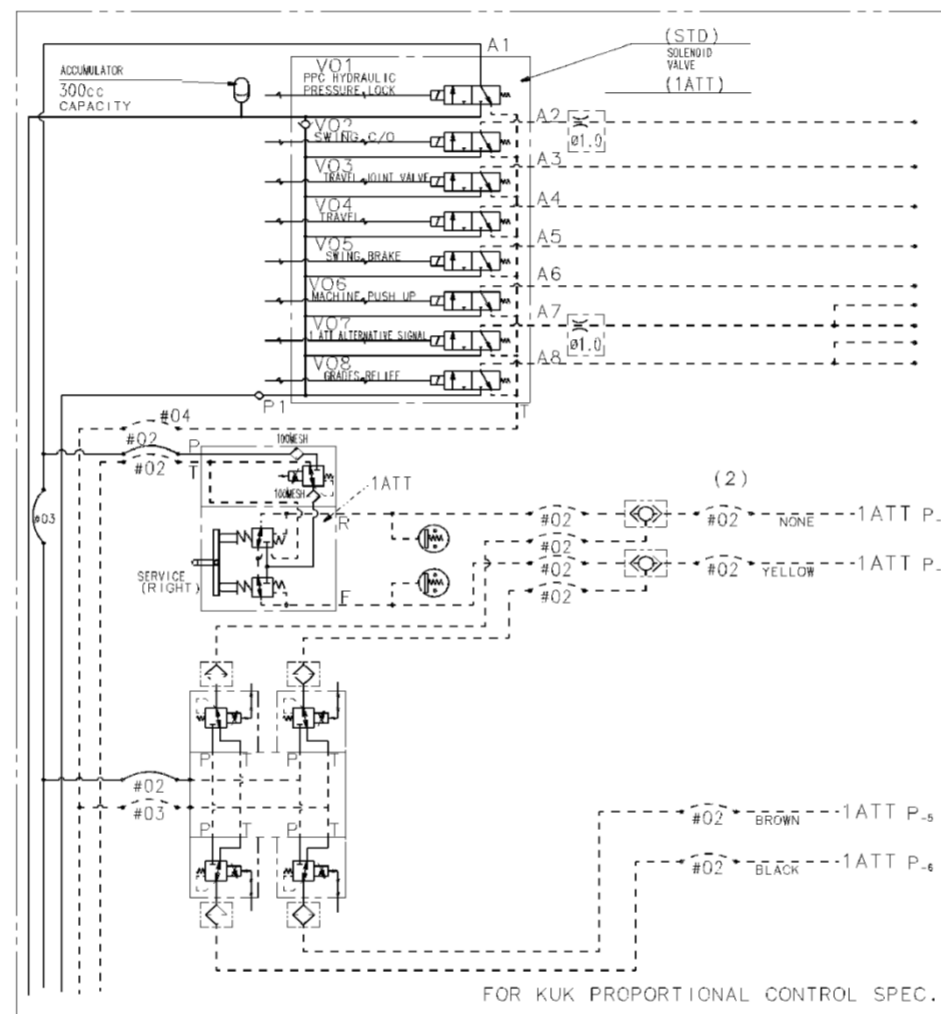
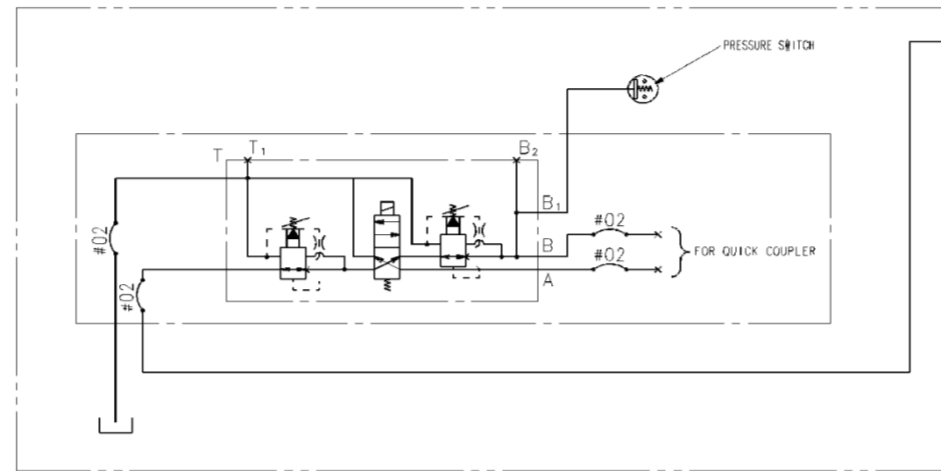
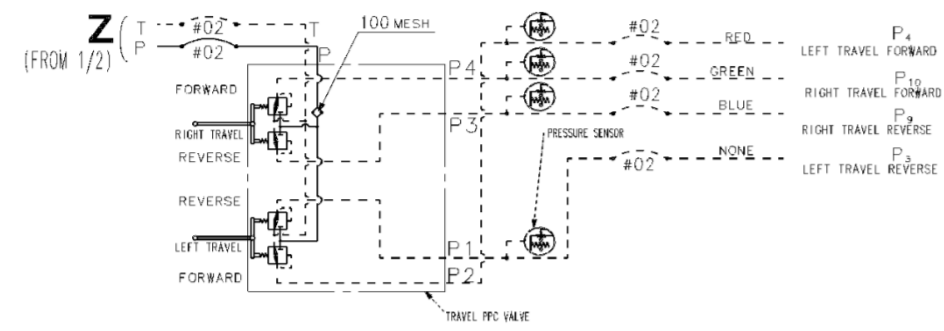
No.	Cause	Procedure, measuring location, criteria and remarks
1	Defective air conditioner controller	Air conditioner controller may be defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)
2	Defective air conditioner unit	Air conditioner unit may be defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)

HYDRAULIC CIRCUIT DIAGRAM (2/2)

PC490-11E0, PC490LC-11E0

REMARK

This figure may include equipment and devices that are unavailable as optional items in some areas.



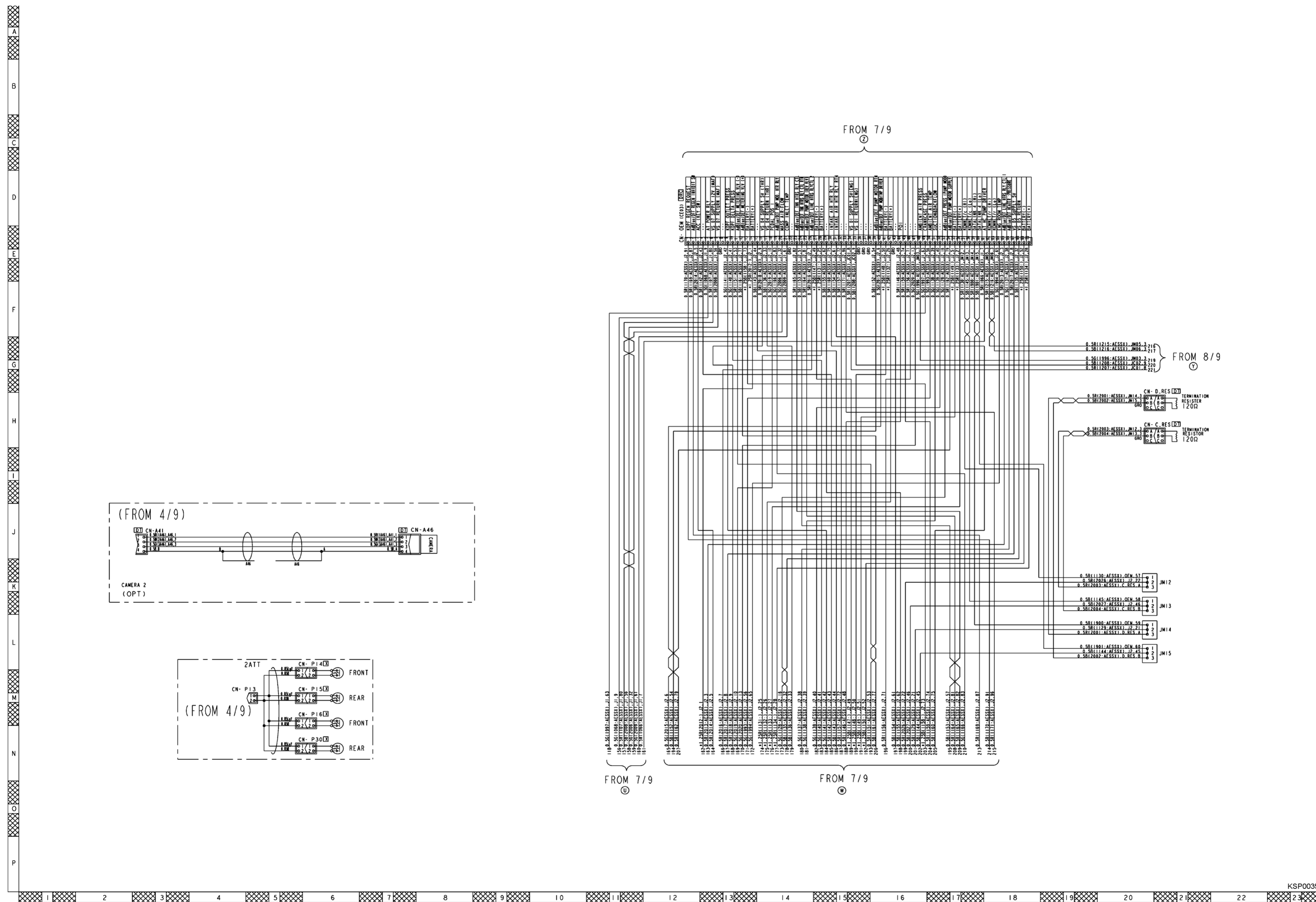
KSP00291

ELECTRICAL CIRCUIT DIAGRAM (9/9)

PC490-11E0, PC490LC-11E0

REMARK

This figure may include equipment and devices that are unavailable as optional items in some areas.



CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL