SEN06740-04

Shop Manual

WHEEL LOADER **WA900-8**

SERIAL NUMBERS 90001 and up

KOMATSU

- Check that there is no dust, dirt, oil, or water stuck to the connector pins (joint portion).
- Check that there is no deformation, defective contact, corrosion, or damage on the connector pins.
- Check that there is no damage or crack on the external surfaces of the connectors.

NOTICE

- **If there is any dust, dirt, oil, or water stuck to the connector, wipe it off with a dry cloth. If there is any water intrusion into the connector, warm the inside of the connector and harness with a dryer. Do not overheat the connector, otherwise short circuit may occur.**
- **If there is any damage or breakage, replace the connector.**

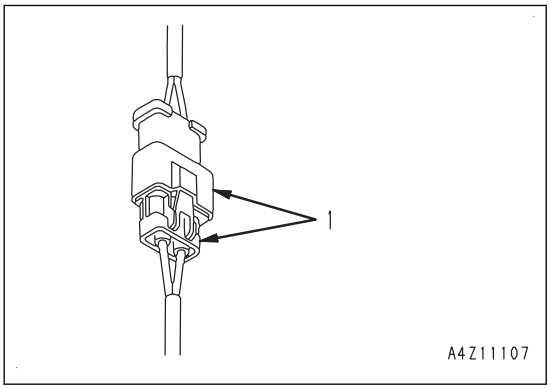
2. Connecting the connector securely

   Position connector (1) correctly, and fit it in securely.

   REMARK

   If the connector is lock stopper type, insert it until it clicks.

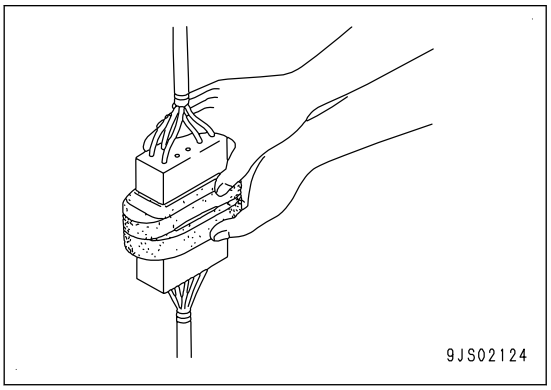
3. Correct the protrusion of the boot and misalignment of the wiring harness.



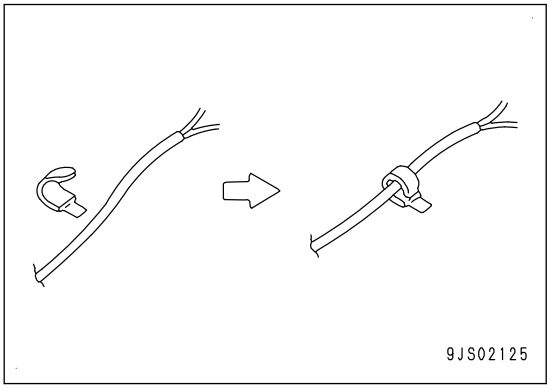
- If the connector is with the boot, correct any extrusion of the boot. In addition, if the wiring harness is misaligned or the clamp is out of position, adjust it to its correct position.

  REMARK

  If the protrusion of the boot and misalignment of the wiring harness cannot be fixed, remove the clamp to adjust them.



- If the connector clamp is removed, be sure to return it to its original position. Check that there is no looseness.



Drying wiring harness

REMARK

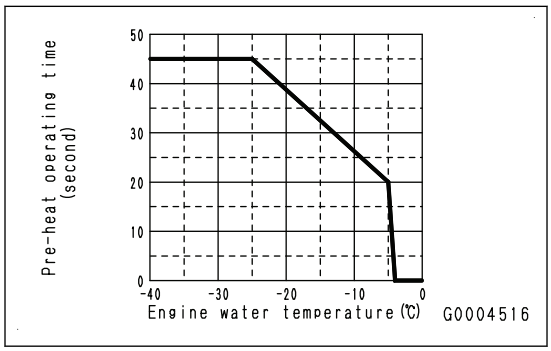
If the wiring harness is dirty with oil and dust, wipe it off with a dry cloth. Avoid water washing or steam washing. If water washing is unavoidable, do not use high-pressure water or steam directly on the wiring harness. If water gets directly on the connector, do as follows.

Preheating function

For machines with pre-lubrication system, the transmission controller controls the preheating function as the alternative of the engine controller.

By this control, the timing of the start of the preheating operations changes to the time when the pre-lube complete conditions are established from the time when the starting switch is turned to the ON position.

Automatic preheating of the machine with the pre-lubrication system is operated as one of the pre-lube function. Manual preheating is not operated because the circuit is disconnected at the pre-lube selector connector.



Preheating operation time changes in response to the engine coolant temperature. Operation time is as follows.

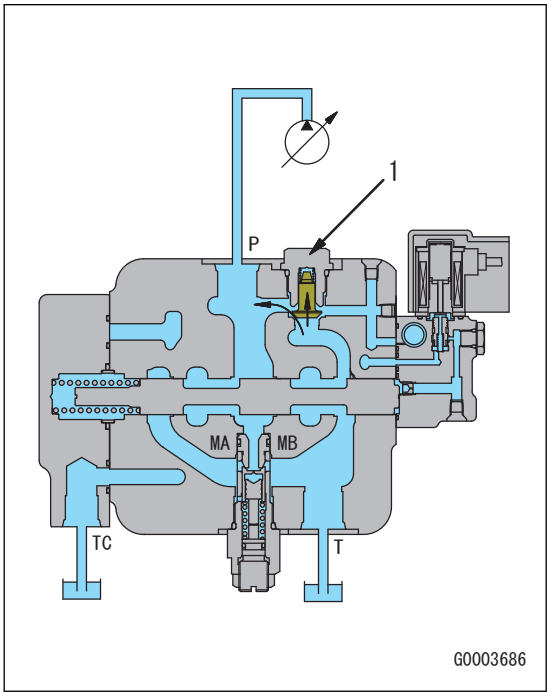
REMARK

If preheating is done manually, an error is sensed and a failure code is shown.

SUCTION VALVE OF COOLING FAN MOTOR

OPERATION OF COOLING FAN MOTOR SUCTION VALVE

When the engine stops, the motor is rotated by the inertial force of the fan. The motor acts as a pump, and tries to discharge hydraulic oil to the oil chamber (MB) and to suck hydraulic oil from the oil chamber (MA). The suction valve (1) is pushed up by hydraulic pressure at the outlet side (MB). By supply of hydraulic oil at the outlet side (MB) to the inlet side (MA), cavitation by negative pressure is prevented.



REVERSE ROTATION VALVE OF COOLING FAN MOTOR

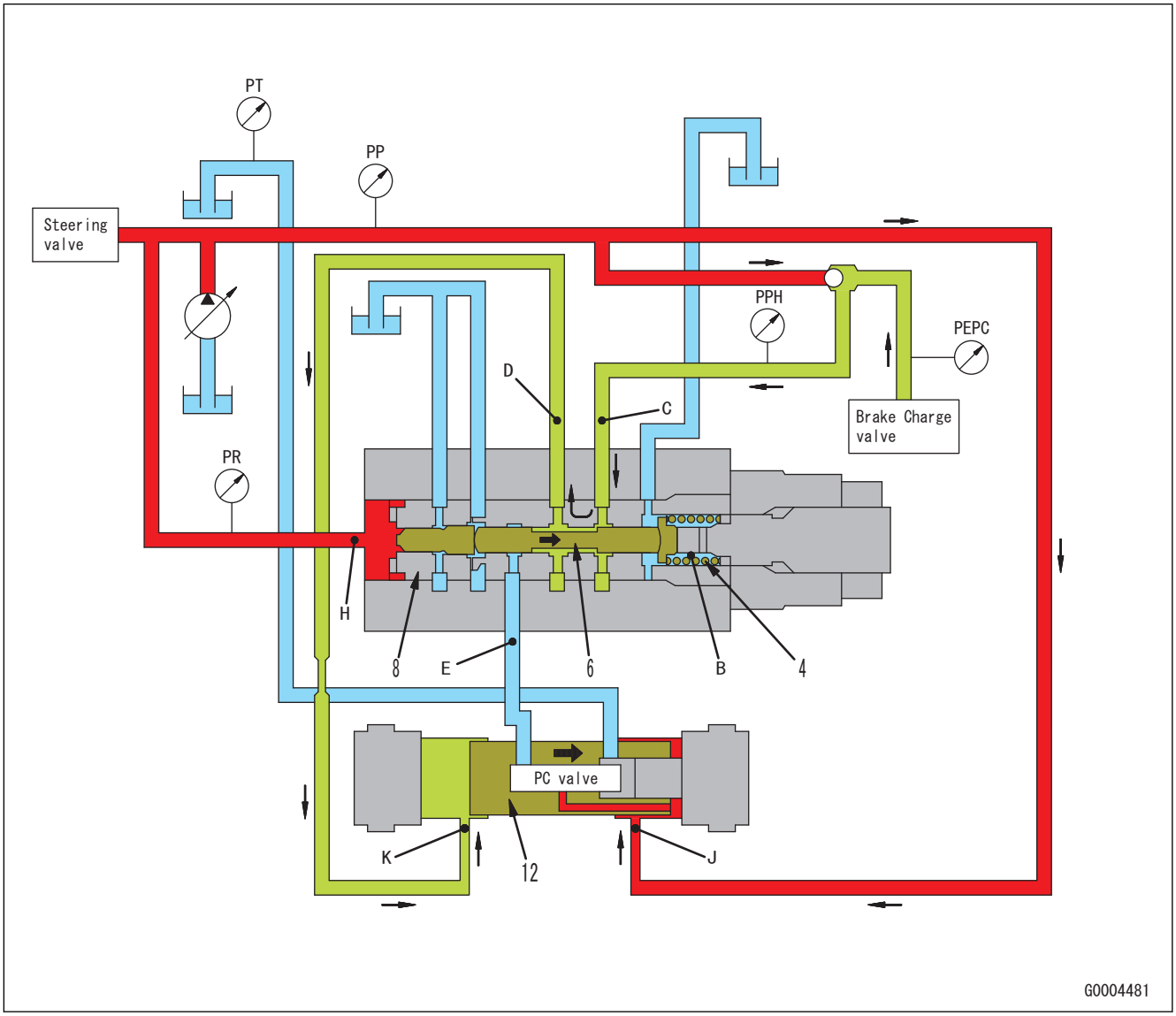
FUNCTION OF REVERSE ROTATION VALVE OF COOLING FAN MOTOR

- The rotation direction of the fan motor is changed by use of the current value that controls the pilot valve.
- The solenoid valve controls the position of the spool in response to the command current output proportionally from the controller. When the command current passes the neutral range, the fan becomes neutral. It decreases the fan speed. After the fan speed is decreased, the rotation direction changes to the reverse. Thus, the rotation direction changes smoothly.
  The reverse rotation changes to the normal rotation in the same manner.

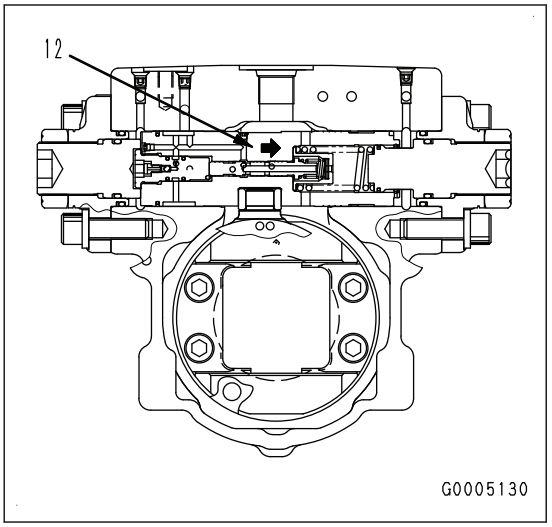
Pin No.	Signal name	Input and output signals
12	Preheating	Input
13	GND (digital)	-
14	Headlamp	Input
15	Left turn signal	Input
16	Right turn signal	Input
17	GND (digital)	-
18	Relay (drive of motor for auto-greasing)	Output
19	Relay (personal lock)	Output
20	Alarm buzzer	Output
21	(*1)	-
22	(*1)	-
23	(*1)	-
24	Starting switch ACC signal	Input
25	Pressure sensor (auto-greasing)	Input
26	(*1)	-
27	Temperature sensor (oil temperature of front brake)	Input
28	GND (analog)	-
29	Seat belt switch	Input
30	Unit switch connector	Input
31	Engine shutdown secondary switch	Input
32	(*1)	-
33	Daytime light ON	Input
34	Small lamp	Input
35	Auto-greasing low grease level switch	Input
36	(*1)	-
37	(*1)	-
38	(*1)	-
39	(*1)	-
40	(*1)	-
41	(*1)	-
42	(*1)	-
43	Starting switch ACC signal	Input
44	Hydraulic oil filter clogging sensor 1	Input
45	(*1)	-
46	Battery electrolyte level sensor	Input
47	GND (analog)	-
48	Coolant level sensor	Input
49	(*1)	-

OPERATION OF STEERING PUMP LS VALVE

When control valve is in neutral position



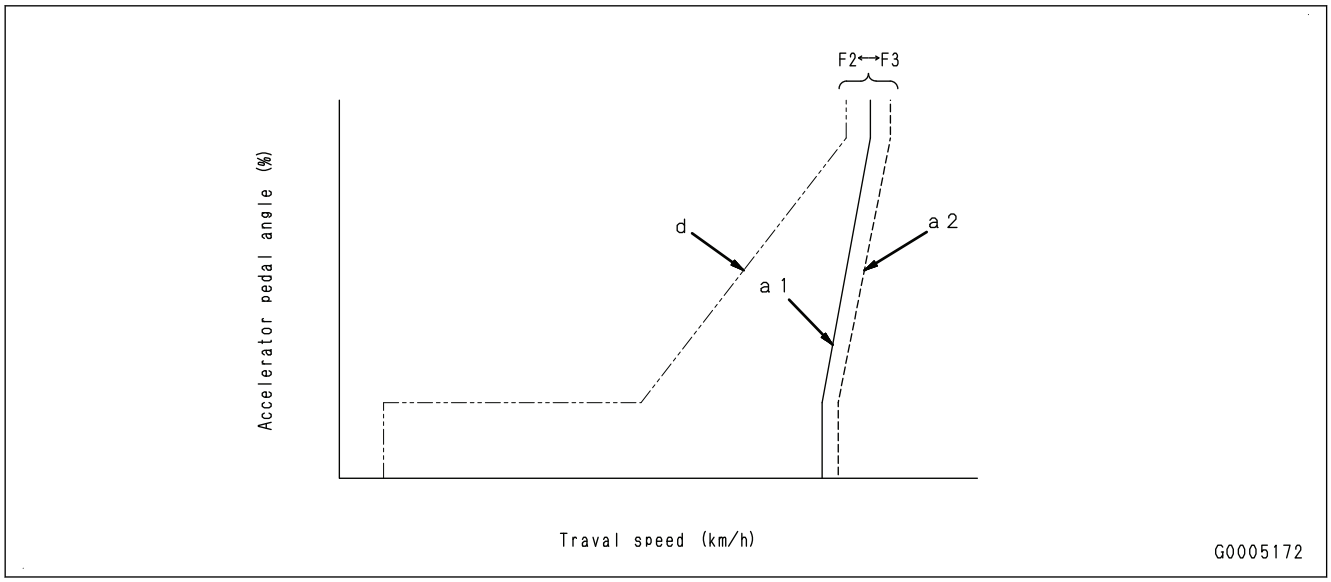
1. LS valve is a 3-way selector valve, and signal pressure (PR) from the steering valve is sent to the port (H) of the sleeve (8).
2. The position of the spool (6) is set by the force of the spring (4) and signal pressure (PR) from the steering valve.
3. Before the engine is started, the servo piston (12) is pushed to the left.
4. At the start of the engine, the steering valve signal pressure (PR) is 1.7 MPa {1.7 kg/cm^2} when the control lever is in NEUTRAL position.
5. The spool (6) stops at a position where the opening of the spool (6) from the port (D) to the port (C) and that from the port (D) to the port (E) are approximately equal.
6. The shuttle valve output pressure (PPH) enters the large diameter side of the piston from the port (K).



7. The pump pressure (PP) is in the port (J) on the small diameter side of the piston.

Power mode selector switch	Automatic gear shift selector switch	
	Automatic shift	Manual gear shift
P mode	Automatic shift P mode	Manual gear shift P mode
E mode	Automatic shift E mode	Manual gear shift E mode

- In the automatic shift mode, upshift/downshift operations are controlled by the directional selector switch, gear speed switch, travel speed, throttle position, and engine speed.



a1: Upshift (other than hunting prevention) d: Downshift

a2: Upshift (hunting prevention)

- When gear speed switch is in 1st to 3rd
  The maximum gear speed (gear shifting range) used in the automatic gear shifting operation is restricted.
  In the automatic shift mode, the machine starts in the 2nd gear normally. Accordingly, the gear speed switch is set to 3rd, the gear is upshifted or downshifted in the range between 2nd and 3rd speed.
  When the kickdown function is used, the gear can be downshifted to the 1st speed in the specified condition.
- When directional selector switch is in N (Neutral)
  When the directional selector switch is in the N (Neutral) position, the actual transmission gear speed is fixed to the gear speed selected before the N (Neutral) position.
  Even if the gear speed switch is operated while the directional selector switch is in the N (Neutral) position, the gear speed before the operation is held.
  The gear speed changes when the directional selector switch is operated to the F (Forward) or the R (Reverse) position.

SHIFT HOLD FUNCTION

- The shift hold function holds the current gear speed which was selected when the hold switch was pushed during the automatic shift mode, and it does not upshift the gear even when the travel speed increases. It does not downshift the gear even when the travel speed decreases.
- The shift hold pilot lamp on the machine monitor is lit while the shift hold function is in operation. The shift hold function is canceled when the hold switch is pushed again, and the pilot lamp goes off.
- The shift hold function is canceled automatically when the directional selector switch, gear speed switch, or kickdown switch is operated.

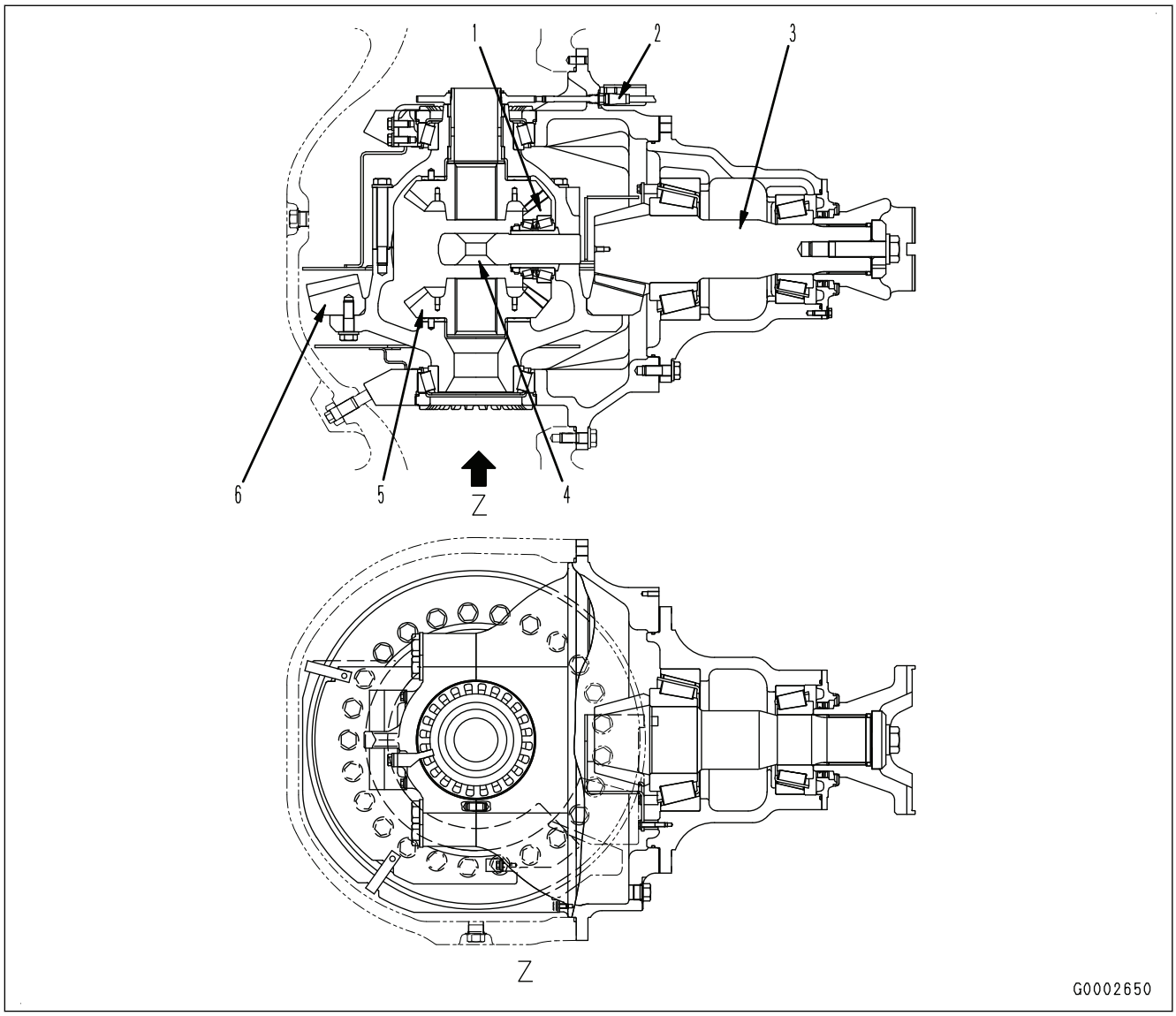
KICKDOWN FUNCTION

- In manual shift mode
  The kickdown function shifts the gear speed to the 1st when the kickdown switch is pushed while the directional selector switch is not in the N (Neutral) position and the gear speed switch is in 2nd.

DIFFERENTIAL

STRUCTURE OF FRONT DIFFERENTIAL

General view and sectional view

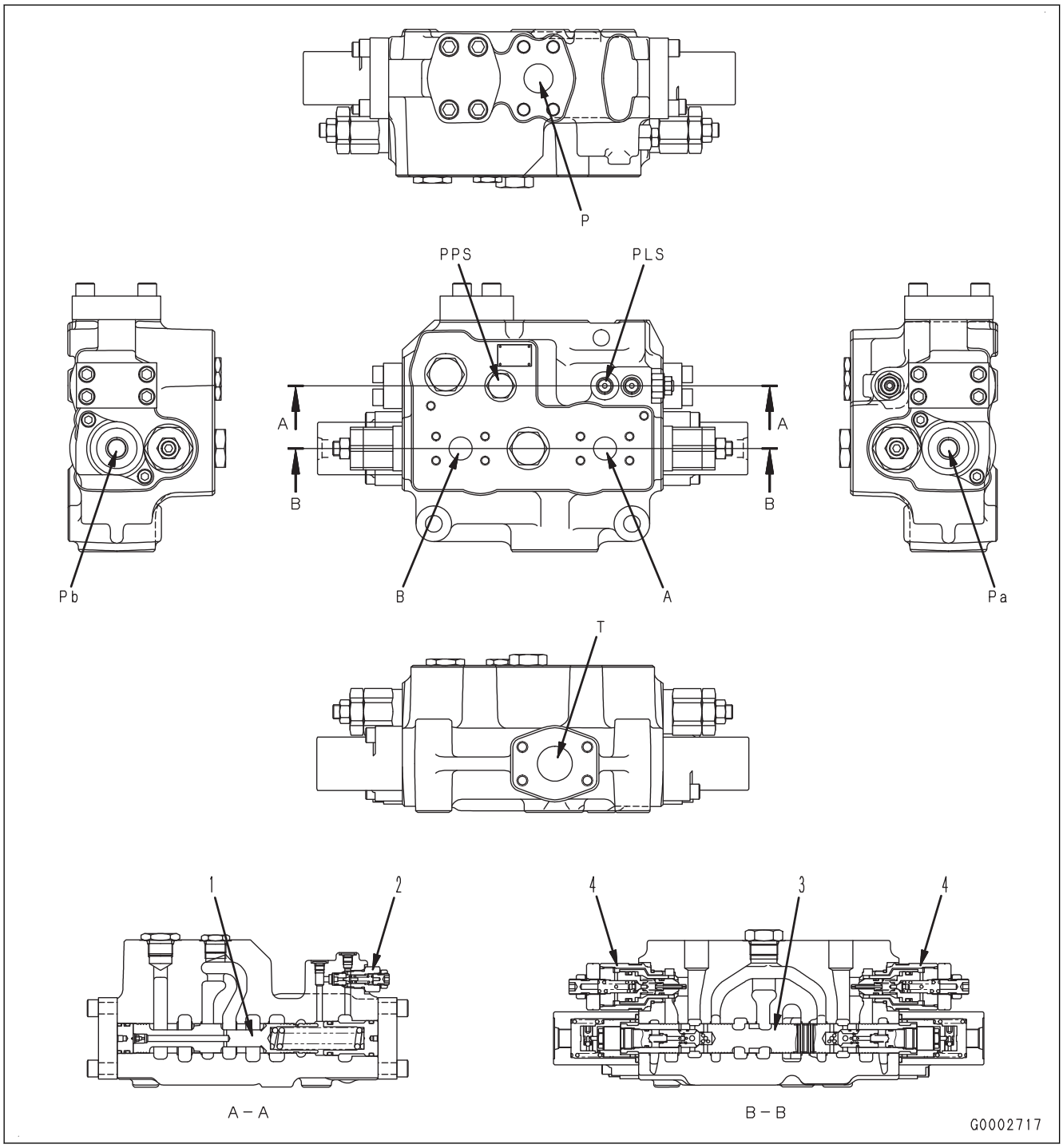


1: Pinion (number of teeth: 22)
2: Speed sensor
3: Bevel pinion (number of teeth: 12)
4: Shaft
5: Side gear (number of teeth: 28)
6: Bevel gear (number of teeth: 53)

STEERING VALVE

STRUCTURE OF STEERING VALVE

General view and sectional view



A: To steering cylinder
B: To steering cylinder
P: From steering pump
Pa: From rotary valve
1: Unload spool
2: Main relief valve
Pb: From rotary valve
PPS: To steering pump port PB
T: To hydraulic tank
PLS: To steering pump port PLS
3: Main spool
4: Overload relief valve

5: Power ladder RAISE switch
6: Power ladder LOWER switch
7: Relay (power ladder shock reduction solenoid)
8: Power ladder operation alarm
9: Relay (power ladder pump drive motor)
10: Circuit breaker (for power ladder)
11: Power ladder pump drive motor
12: Power ladder pump
13: Solenoid valve (power ladder shock reduction)
14: Solenoid valve (power ladder raise and lower switch)
15: Relief valve (RAISE side)
16: Relief valve (LOWER side)
17: Power ladder speed adjustment valve (LOWER)
18: Power ladder speed adjustment valve (RAISE)
19: Manual LOWER valve
20: Power ladder cylinder
21: LOWER reduction proximity sensor
22: RAISE reduction proximity sensor
23: Stored position proximity sensor
24: Parking brake release connector (secondary)
25: Transmission controller
26: Relay (power ladder power source)
27: From parking brake circuit

FUNCTION OF POWER LADDER SYSTEM

- Power ladder control system
  - When the parking brake is applied, this function allows to raise or lower the ladder with the ladder control switch by use of the oil pressure.
  - To prevent the raise/lower ladder operation while a person is on it, the ladder does not rise when a load of 294 N {30 kg} or more is applied to the bottom step of the ladder.
- Activate/disable power ladder functions
  Power ladder functions can be activated or disabled by the option select function in the machine monitor.
  - When ADD is selected, the power ladder functions are activated.
  - When NO ADD is selected, the power ladder pilot lamp and parking brake interlock function are disabled, but they can be controlled with the manual control switch.
- Power ladder stroke end shock reduction function
  The solenoid valve (power ladder shock reduction) operates just before the ladder reaches the stroke end, and the function controls the operation speed of the ladder to reduce the shock that occurs when the ladder stops.
- Parking brake interlock function
  To prevent the machine travel while the ladder is at lowered position, the parking brake cannot be released when the ladder is not in the stored position.
- Alarm buzzer function
  The alarm buzzer operates while the ladder is operated, to give warning to people in the area around the machine.
- Power ladder drop prevention function
  If the power ladder drops down because of the hydraulic drift while the machine travels, the ladder is automatically raised and returned to the stored position.
- Power ladder position confirmation pilot lamp function
  The status of the power ladder pilot lamp shows the ladder position.
  The power ladder pilot lamp goes off when the power ladder is in the stored position, and it lights up when the power ladder is not in the stored position.

OPERATION OF POWER LADDER SYSTEM

Power ladder raise operation

1. When the power ladder RAISE switch (2) and (5) is operated, the relay (power ladder pump drive motor) (9) is energized by the current. The current flows through the relay from a fuse and activates the power ladder pump drive motor (11).
   At the same time, the solenoid valve (power ladder raise and lower switch) (14) is energized.

ENGINE AND COOLING SYSTEM

TEST ENGINE SPEED

Obey the procedure that follows to check the engine speed.

⚠ **Stop the machine on a level ground, lower the work equipment to the ground, set the parking brake switch to the ON position, lock the work equipment lock switch, and stop the engine.**

⚠ **Chock the tires to prevent machine movement.**

For standard values, see STANDARD VALUE TABLE, “STANDARD VALUE TABLE FOR ENGINE” and “STANDARD VALUE TABLE FOR MACHINE”.

TEST ENGINE SPEED

TEST ENGINE HIGH IDLE SPEED

Setting of test condition

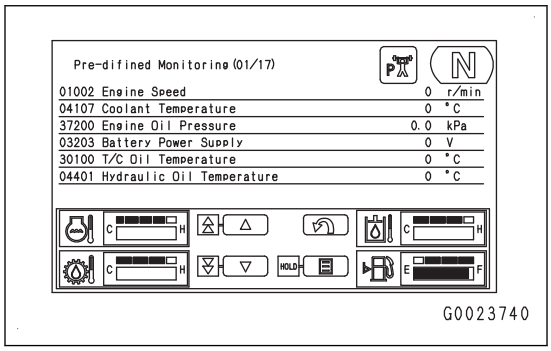
1. Start the engine.
2. Set the power mode setting to Power mode. For details, see “DEFAULT SETTING MENU” in “SETTING AND OPERATION OF MACHINE MONITOR”.
3. Select and show “Pre-defined Monitoring” (01/17) or the monitoring items that follow. For details, see “SETTING AND OPERATION OF MACHINE MONITOR”.

   Monitoring code: 01002“Engine Speed”

   Monitoring code: 04107“Coolant Temperature”

   Monitoring code: 04401“Hydraulic Oil Temperature”

   Monitoring code: 30100“T/C Oil Temperature”



4. Make sure that the engine coolant temperature and each oil temperature are in the specified range.
   - Engine coolant temperature: 60 to 100 °C
   - Hydraulic oil temperature: 45 to 55 °C
   - Torque converter oil temperature: 60 to 80 °C
5. Turn off the air conditioner.
6. Set the each control lever to the NEUTRAL position.

Check procedure

7. Measure the engine speed when the accelerator pedal is pushed to the stroke end (high idle).

TEST ENGINE LOW IDLE SPEED

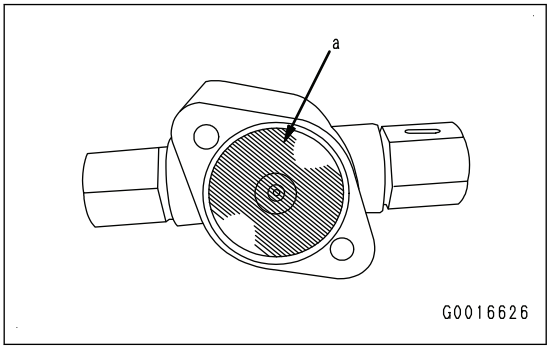
Setting of test condition

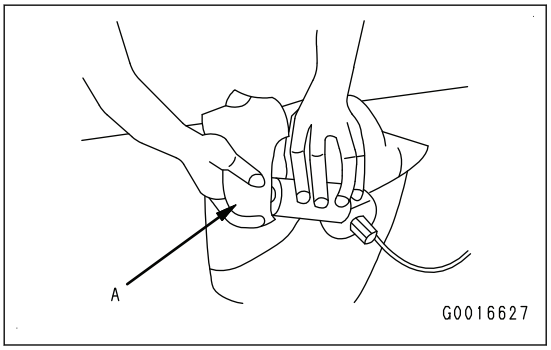
1. Start the engine.
2. Make sure that the RPM set pilot lamp is not lit.

   REMARK
   - The engine speed at low idle becomes higher than the standard value while the RPM set pilot lamp is lit (active). Make sure that the RPM set pilot lamp goes off (disabled) before you measure the engine speed at low idle.
   - When the RPM set pilot lamp is lit, cancel the set engine speed.
3. Set the power mode setting to Power mode. For details, see “DEFAULT SETTING MENU” in “SETTING AND OPERATION OF MACHINE MONITOR”.

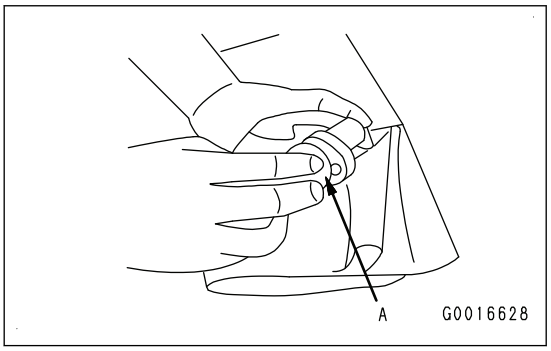
Clean fuel doser

3. Put the cloth A in the sufficient quantity of diesel fuel B. Push it against the accumulated soot (a) at the fuel doser injection port end to soak it with diesel fuel.





4. Soak the accumulated soot (a) with diesel fuel B, and wipe off the soot with the cloth A.

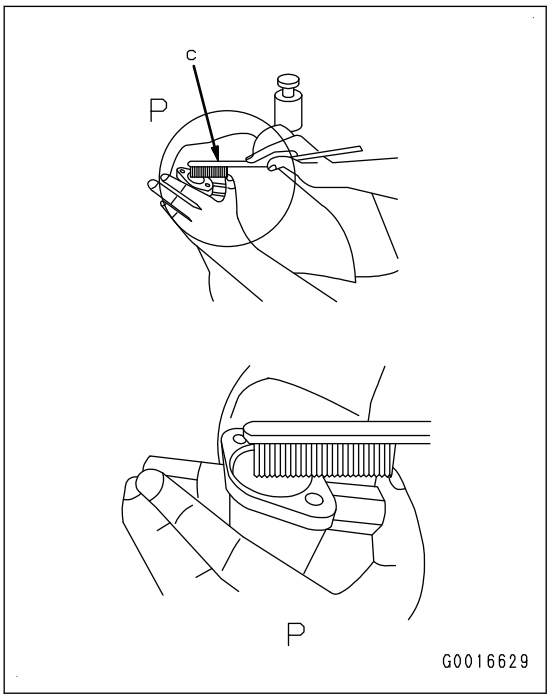


5. Brush the injection port end to remove the soot in the injection port with nylon brush C.

   Remove soot fully from the injection port with the nylon brush C and cloth A.

   NOTICE

   - **Use a nylon brush for cleaning. Do not use a wire brush as it can cause the damage on the injection port.**
   - **Use diesel fuel to clean. Do not use other solvents.**



Ambient temperature	Gas pressure		Remarks
°C	MPa	kg/cm^2	
46	3.39	34.6	
47	3.40	34.7	
48	3.41	34.8	
49	3.42	34.9	
50	3.43	35.0	Standard gas pressure, standard temperature

REMARK

- Compare the gas pressure shown on the gauge and the “Specified nitrogen gas pressure table”, and when the gas pressure is higher than that, go to the step 9., and adjust the gas pressure.
- Compare the gas pressure shown on the gauge and the “Specified nitrogen gas pressure table”, and when the gas pressure is not sufficient, go to the step 10., see “CHARGE ACCUMULATOR NITROGEN GAS PRESSURE FOR BRAKE” and adjust it.
- If the accumulator gas pressure is the specified nitrogen gas pressure, go to the step 11.

9. If you reduce the accumulator nitrogen gas pressure after you test the accumulator nitrogen gas pressure, do it by the steps that follow.

REMARK

Turn the handle (a) clockwise (valve is open).

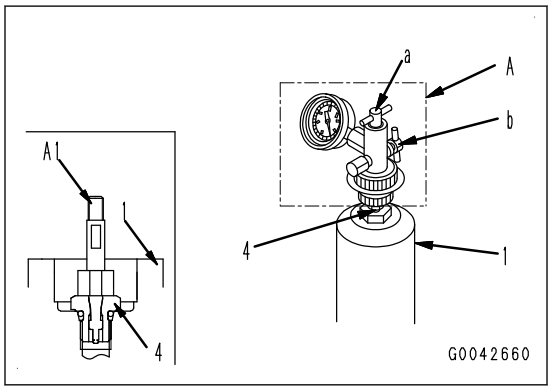
1) Turn the handle (b) slowly counerclockwise, release the nitrogen gas from the thread part of the handle (b) slowly. See the “Specified nitrogen gas pressure table”, and when the gas pressure becomes the specified gas pressure, turn the handle (b) clockwise to close the valve to adjust the nitrogen gas pressure of the accumulator (1).
2) Do the step 11. and after.

10. If you need to charge the nitrogen gas pressure of the accumulator after the test of accumulator nitrogen gas pressure, do the procedure as follows.

1) Turn the handle (a) counterclckwise until it stops, and close the valve.
2) Turn the handle (b) slowly counterclockwise, and release the nitrogen gas remained in the gas charging tool A from the thread part of the handle (b) to release. (Between the handle (b) part and the ambient air: Open, to bleed the air from the hose)
3) See the step 7. of the “CHARGE ACCUMULATOR NITROGEN GAS PRESSURE FOR BRAKE” to adjust it.

Restoration

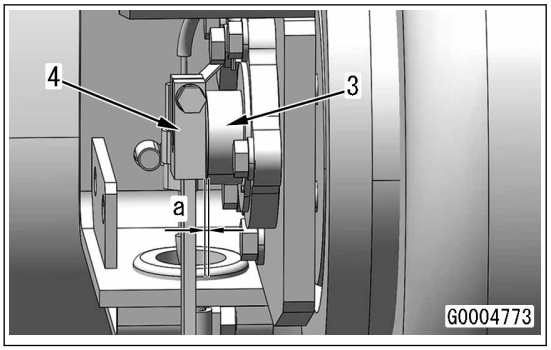
11. Turn the handle (a) counterclckwise, and close the gas valve (4) of the accumulator (1).
12. Turn the handle (b) counerclockwise, and release the nitrogen gas remained in the gas charging tool A.
13. Remove the gas charging tool A.
14. Remove the extension A1.



2. Adjust the position of the bucket potentiometer lever (4) and tighten the bolt (5) for the clearance (a) between the bucket potentiometer (3) and bucket potentiometer lever (4) to be within the standard range.

   For the standard values, see STANDARD VALUE TABLE, “STANDARD VALUE TABLE FOR MACHINE”.

   Bolt (5): 27 to 34 Nm {2.8 to 3.5 kgm}



2. Select “ON” or “OFF” on the “Maintenance Mode On or Off” screen.

   “ON”: All the maintenance items are activated

   “OFF”: All the maintenance items are disabled

   UP switch (10): Moves the selection up by one item.

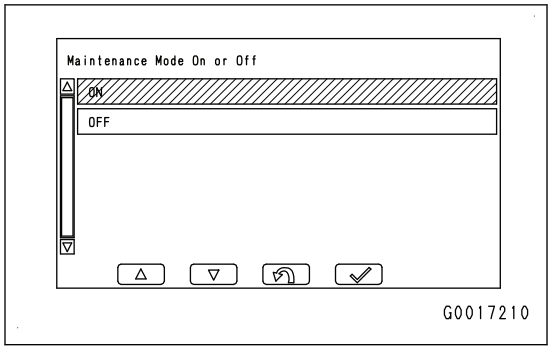
   DOWN switch (11): Moves the selection down by one item.

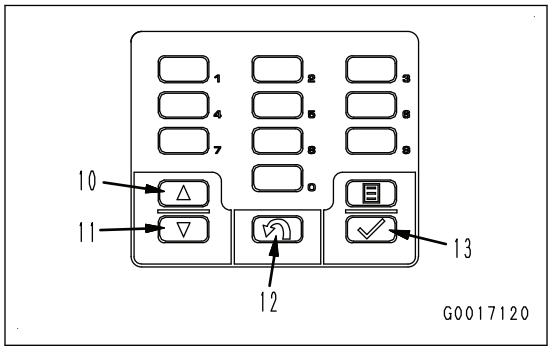
   RETURN switch (12): Cancels the selection and returns to the “Maintenance Mode Change” screen

   ENTER switch (13): Validates the selection and returns to the “Maintenance Mode Change” screen

   REMARK

   - Even when ON/OFF for each item is set, this setting has priority. Set the each item again.
   - When the setting is “ON”, the maintenance due time for that item is reset.





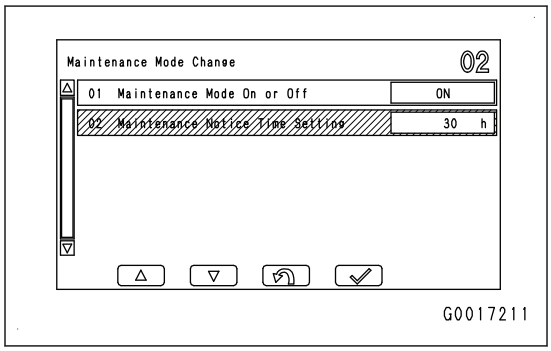
3. Select “Maintenance Notice Time Setting” on the “Maintenance Mode Change” screen.

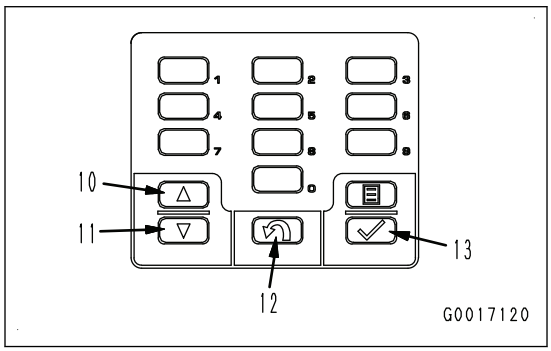
   UP switch (10): Moves the selection up by one item.

   DOWN switch (11): Moves the selection down by one item.

   RETURN switch (12): Cancels the selection and returns to the “Maintenance Mode Setting” screen

   ENTER switch (13): Validates the selection

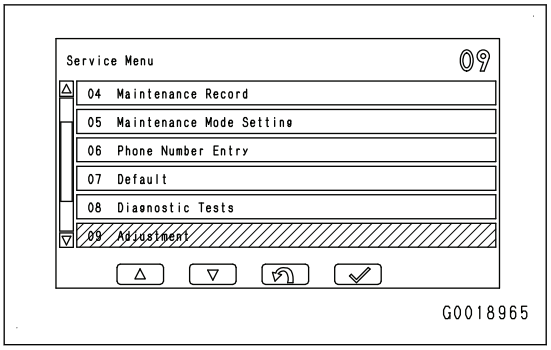




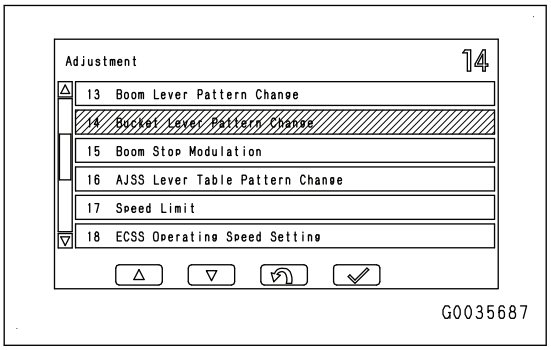
1. Select “Adjustment” on the “Service Menu” screen.

   REMARK

   For details about how to select, see “SERVICE MODE” in “SERVICE MODE”.



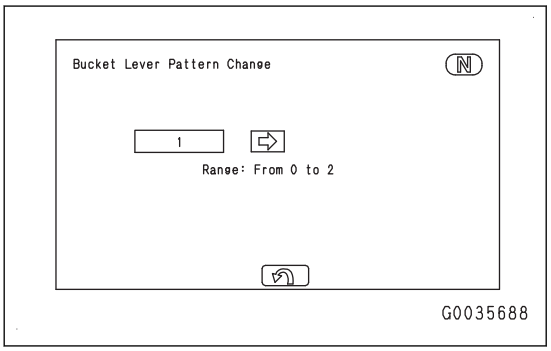
2. When the “Adjustment” screen is shown, use the switch on the switch panel to select “Bucket Lever Pattern Change”.

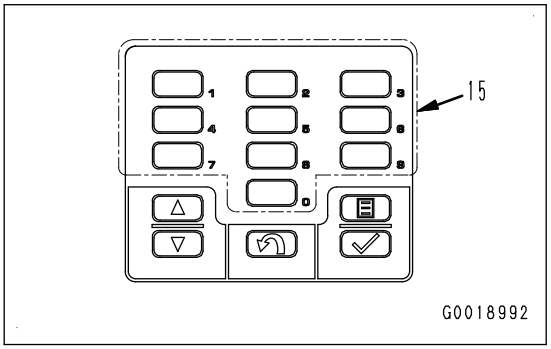


3. When the “Bucket Lever Pattern Change” screen is shown, push the numeral input switch (15) on the switch panel to show the “Numeric Input of New Value” screen.

   REMARK

   “Numeric Input of New Value” is shown when one of 0 to 9 numeral input switch is pushed.





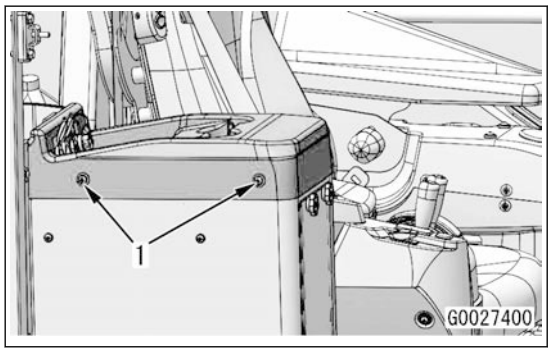
Applicable machine model			WA900-8				
Engine			SAA12V140E-7				
Item	Test conditions	Unit	Standard value for new machine	Failure criterion	Measured value	Good	No good
Bucket tilted back (Full stroke)	• Hydraulic oil temperature: 45 to 55 ˚C • Power mode: Power mode • Accelerator pedal: Push the pedal fully to the stroke end (high idle) • Bucket: No load • Bucket DUMP stroke end - Bucket TILT BACK stroke end • Tilt Shock Reduction Level setting: OFF • For the measuring posture, see STANDARD VALUE TABLE, fig. 10 of “MACHINE POSTURE AND PROCEDURES TO MEASURE PERFORMANCE”.	second	3.2 to 3.8	Max. 4.5			
Bucket tilted back (horizontal)	• Hydraulic oil temperature: 45 to 55 ˚C • Power mode: Power mode • Accelerator pedal: Push the pedal fully to the stroke end (high idle) • Bucket: No load • Bucket horizontal - Bucket TILT BACK stroke end • Tilt Shock Reduction Level setting: OFF • For the measuring posture, see STANDARD VALUE TABLE, fig. 11 of “MACHINE POSTURE AND PROCEDURES TO MEASURE PERFORMANCE”.		1.7 to 2.3	Max. 2.9			

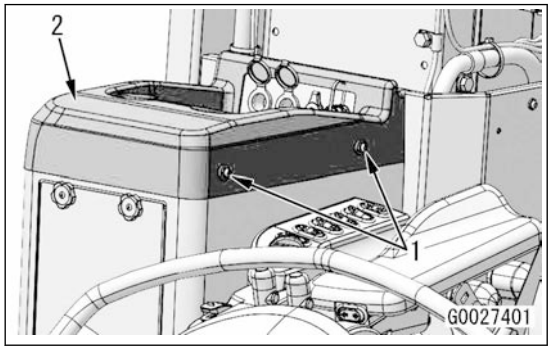
PREPARATION TO TROUBLESHOOT ELECTRICAL SYSTEM

- When you do the troubleshooting of the electrical circuit for the work equipment controller, engine controller, transmission controller, monitor controller, KOMTRAX controller, KOTRAX Plus controller, and KomVision controller, expose the applicable connector part as follows.
- For the connectors that use the locks with the special mechanism, disconnect and connect as follows.

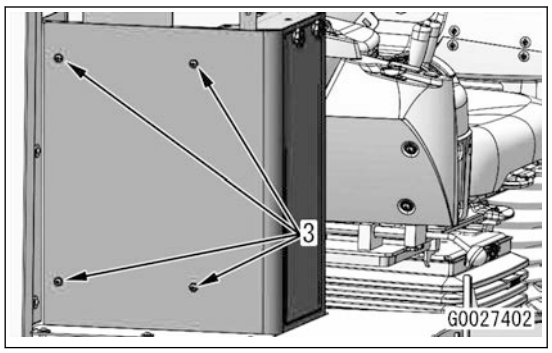
CONNECT ADAPTER TO TROUBLESHOOT WORK EQUIPMENT CONTROLLER

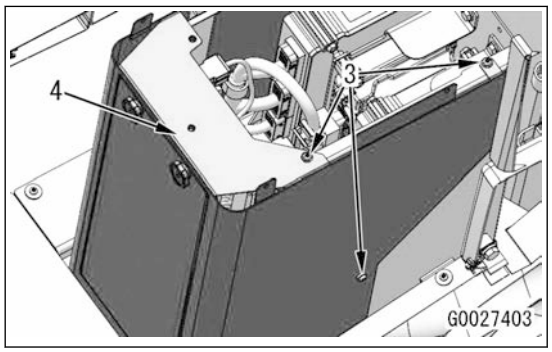
1. Remove the screws (1) (4 pieces), and remove the cover (2).





2. Remove the screws (3) (7 pieces), and remove the cover (4).





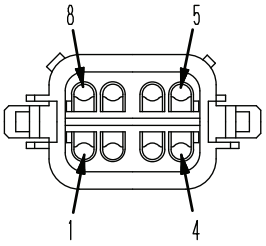
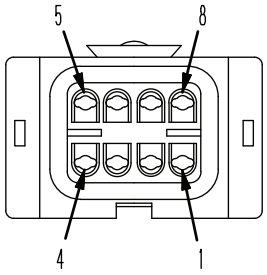
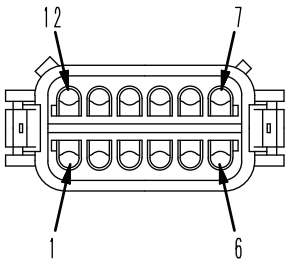
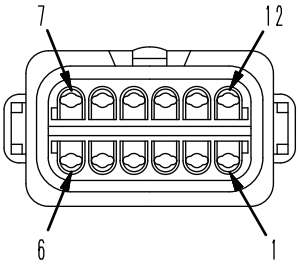
Connector from							Connector to		
Connector (terminal) No.	Address		Equipment name	Type	Number of pins	Pin No.	Connector (terminal) No.	Pin No.	Diameter and color of wire
	Connector layout	Connector and wiring harness chart							
C56	A94	K1230	KomVision controller (option)	-	10	A	L90A	4	0.5W
						B	L90A	5	0.5R
						C	L90A	9	0.5G
						D	L90A	10	0.5Gr
						E	L90A	8	0.5Y
						F	L90A	3	0.5O
						G	L90A	6	0.5Br
						H	L90A	7	0.5Sb
						J	L90A	11	0.5L
						K	D4	-	0.5fB
CA1	-	L364	Joint	-	-	-	J15	6	0.5fL
							L14	1	0.5fL
							L14	4	0.5fL
CAN1	I26	M370	CAN terminating resistor (MMS service connector)	DT	3	A	J01	11	0.5fW
						B	J01	18	0.5fL
CE1	-	K364	Joint	-	-	-	L14	2	0.5fYB
							L14	5	0.5fYB
							RL3 (male)	33	0.5fYB
CEN1_RES_L	H76	J484	CAN termination resistor (engine)	DT	3	A	JC06_L	1	0.5R
						B	JC06_L	4	0.5B
CEN1_RES_R	E72	L581	CAN termination resistor (engine)	DT	3	A	JC06_R	1	0.5R
						B	JC06_R	4	0.5B
CEN2_RES_L	I78	J488	CAN termination resistor (engine)	DT	3	A	JC08_L	4	0.5R
						B	JC08_L	5	0.5B
CEN2_RES_R	F72	L580	CAN termination resistor (engine)	DT	3	A	JC05_R	1	0.5R
						B	JC05_R	4	0.5B

Connector from							Connector to		
Connector (terminal) No.	Address		Equipment name	Type	Number of pins	Pin No.	Connector (terminal) No.	Pin No.	Diameter and color of wire
	Connector layout	Connector and wiring harness chart							
J08	B37	O426	Junction connector	SMD	20	1	L36	1	0.5fRW
						2	L21	8	0.5fRW
						3	CL3 (female)	18	0.5fRW
						4	MMS	7	0.5fRW
						5	RL4 (male)	33	0.5fRW
						6	XL3 (male)	1	0.5fRW
						7	FUSE3	20	0.5fR
						8	L126	5	0.5fR
						9	L125	5	0.5fR
						10	RL3 (male)	12	0.5fR
						11	TMC2	5	0.5fRW
						13	ML1 (male)	18	0.5fYB
						14	L124	1	0.5fYB
						15	L124	3	0.5fYB
						17	L20	1	0.5fY
						18	L125	3	0.5fY
						19	RL4 (male)	15	1.25fY
						20	MCM1	12	0.5Y

Connector from							Connector to		
Connector (terminal) No.	Address		Equipment name	Type	Number of pins	Pin No.	Connector (terminal) No.	Pin No.	Diameter and color of wire
	Connector layout	Connector and wiring harness chart							
L133	D35	K334	Condenser relay	Relay	5	1	J10	12	0.5fY
						2	J06	12	0.5fLR
						3	J06	20	0.5fGr
						5	FUSE3	28	1.25fR
L134	I30	D308	Heated wire mirror relay (option)	Relay	4	1	F1	-	0.5fYR
						2	F2	-	0.5fB
						3	J26	15	1.25fYB
						4	FUSE3	24	1.25fR
L135	A25	K464	Hazard lamp relay	Relay	5	1	J03	2	0.5fR
						2	J03	4	0.5fGY
						3	J03	7	0.5fGR
						5	J03	3	0.5fR
						6	FUSE2	12	0.5fGW
L136	A25	I464	Right turn signal lamp relay	Relay	5	1	J03	9	0.5fGR
						2	J03	16	0.5fG
						3	J16	1	0.5fGW
						5	J03	12	0.5fGY
L137	A25	G464	Left turn signal lamp relay	Relay	5	1	J03	10	0.5fGR
						2	J03	19	0.5fGR
						3	J16	11	0.5fGR
						5	J03	13	0.5fGY
L138	A27	E464	Stop lamp relay	Relay	6	1	RL3 (male)	3	0.5fLY
						2	J09	17	0.5fLR
						3	J04	4	0.5fB
						4	CL3 (female)	26	0.5fGR
						5	L10	2	0.5fLW
						6	J04	3	0.5fB

Connector from							Connector to		
Connector (terminal) No.	Address		Equipment name	Type	Number of pins	Pin No.	Connector (terminal) No.	Pin No.	Diameter and color of wire
	Connector layout	Connector and wiring harness chart							
SIG_L (female)	E78	L535	Intermediate connector (engine controller)	HD30	31	1	ECM_L_J2	13	0.5G
						2	ECM_L_J2	8	0.5R
						3	ECM_L_J2	32	0.5B
						4	ECM_L_J1	56	0.5B
						5	ECM_L_J1	80	0.5R
						6	ECM_L_J1	32	0.5G
						7	ECM_L_J1	61	0.5G
						8	ECM_L_J1	7	0.5R
						9	JC07_L	8	0.5R/B
						10	JC07_L	6	0.5B
						11	JC05_L	8	0.5R/B
						12	JC05_L	6	0.5B
						13	JC08_L	8	0.5R
						14	JC08_L	6	0.5B
						15	ECM_L_J2	5	0.5R
						16	ECM_L_J2	43	0.5R
						17	ECM_L_J2	44	0.5B
						18	ECM_L_J2	9	0.5R
						19	ECM_L_J2	33	0.5B
						20	ECM_L_J2	10	0.5G
						21	JC05_L	2	0.5B
						22	ECM_L_J2	75	0.5R
						23	ECM_L_J2	61	0.5B
						24	ECM_L_J2	42	0.5G
						25	ECM_L_J2	41	0.5G
						26	JC05_L	11	0.5R
						27	ECM_L_J2	71	0.5R
						28	ECM_L_J2	72	0.5R
						29	ECM_L_J2	96	0.5R

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

No. of pins	DT Series connector		
	Body (plug)	Body (receptacle)	Testing connection use special tool Part No.
8	 BWP05045	 BWP05046	8GR:799-601-9060 (T-adapter) 8B: 799-601-9070 (T-adapter) 8G: 799-601-9080 (T-adapter) 8BR:799-601-9090 (T-adapter)
	Part No. :08192-1820□ (normal type) 08192-2820□ (fine wire type)	Part No. :08192-1810□ (normal type) 08192-2810□ (fine wire type)	
12	 BWP05047	 BWP05048	12GR:799-601-9110 (T-adapter) 12B: 799-601-9120 (T-adapter) 12G: 799-601-9130 (T-adapter) 12BR:799-601-9140 (T-adapter)
	Part No. :08192-1920□ (normal type) 08192-2920□ (fine wire type)	Part No. :08192-1910□ (normal type) 08192-2910□ (fine wire type)	

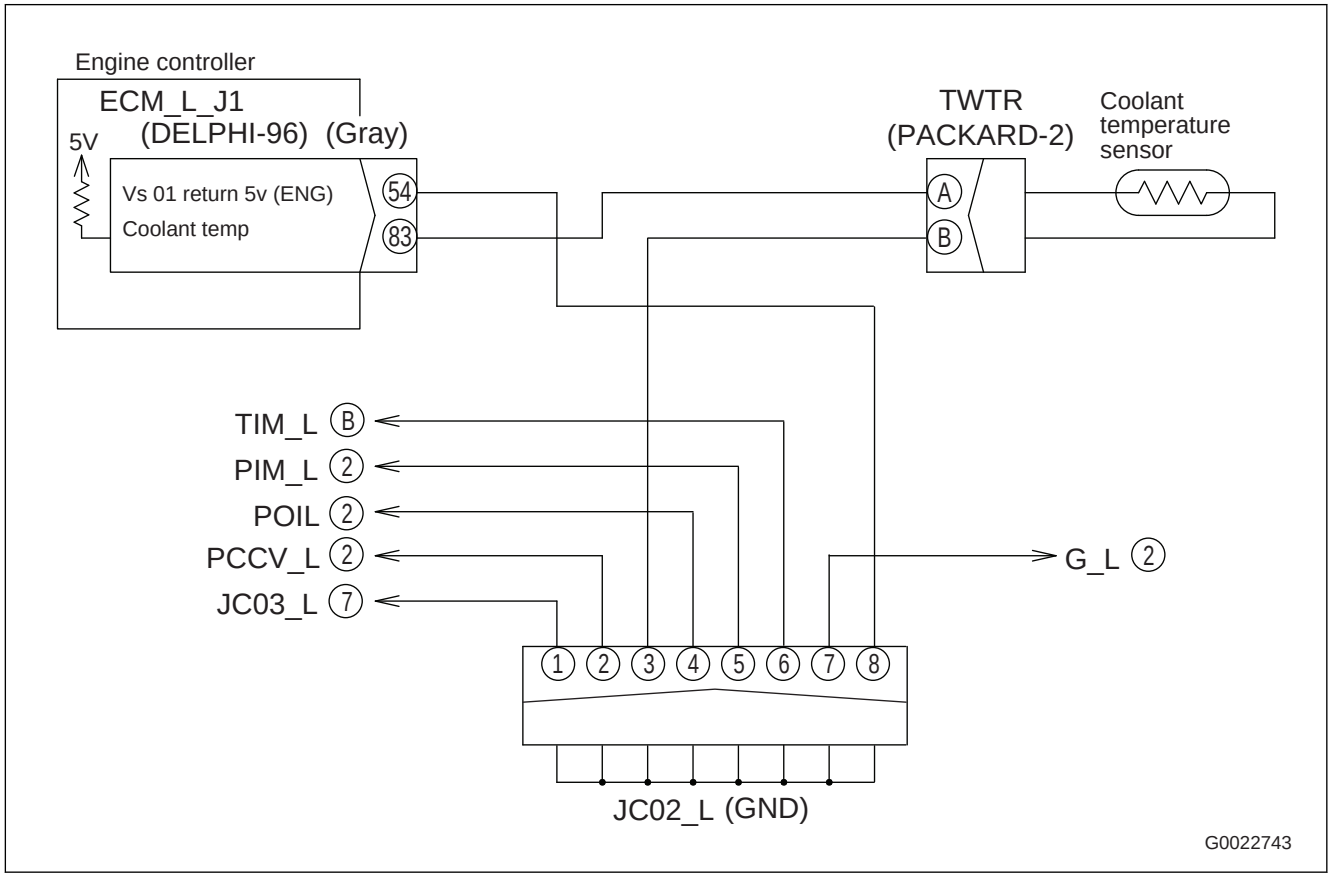
G0026152

Failure code	Failure (Shown on screen)	Applicable component for failure (Shown on screen)	Action level	History category	Remarks
DAQLKB	System Operating Lamp Short Circuit (T/M Controller)	TM	-	Electrical system	
DAQQKR	CAN2 Defective Communication (T/M Controller)	MON	L03	Electrical system	
DAQRKR	CAN1 Defective Communication (T/M Controller)	MON	L03	Electrical system	
DAQRMA	Option Selection Mismatch (T/M Controller)	TM	L03	Electrical system	
DAZ9KQ	Model Selection Signal Mismatch (A/C)	MON	-	Electrical system	
DAZQKR	CAN 2 Defective Communication (A/C ECU)	MON	L01	Electrical system	
DB2QKR	CAN 2 Defective Communication (Engine Controller)	MON	L03	Electrical system	
DB2RKR	CAN 1 Defective Communication (Engine Controller)	MON	L03	Electrical system	
DB90KK	Main Power Voltage Low Error (W/E Controller)	WRK	L03	Electrical system	
DB90KT	Read Only Memory Abnormality (W/E Controller)	WRK	L01	Electrical system	
DB90MC	W/E Controller Malfunction	WRK	-	Electrical system	
DB91KA	Key SW ACC Signal Open Circuit (W/E Controller)	WRK	L03	Electrical system	
DB92KK	Solenoid Power Voltage Low Error (W/E Controller)	WRK	L03	Electrical system	
DB95KX	Failure of 5V Power Source 1	WRK	L03	Electrical system	
DB96KX	5V Sensor Power Supply 2 Voltage out of Range (W/E Controller)	WRK	L03	Electrical system	
DB97KX	24V Power Supply System Abnormality (BBC)	WRK	L03	Electrical system	
DB99KQ	Model Selection Signal Mismatch (W/E Controller)	WRK	L03	Electrical system	
DB9LKA	System Operating Lamp Open Circuit (W/E Controller)	WRK	-	Electrical system	
DB9LKB	System Operating Lamp Short Circuit (W/E Controller)	WRK	-	Electrical system	
DB9QKR	CAN 2 Defective Communication (W/E Controller)	MON	L03	Electrical system	
DB9RKR	CAN 1 Defective Communication (W/E Controller)	MON	L03	Electrical system	
DB9RMA	Option Selection Mismatch (W/E Controller)	WRK	L03	Electrical system	

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Ground fault in wiring harness
(Parking brake oil pressure switch circuit)</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors MCM1 and X18, and connect the T-adapter to the female side of one of them to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td>Resistance</td><td>Between ground and MCM1 (female) (71) or X18 (female) (1)</td><td>Min. 1 MΩ</td></tr></table></td><td>YES</td><td>• Ground fault in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Ground fault in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Short circuit in wiring harness
(Parking brake oil pressure switch circuit)</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors MCM1 and X18, and connect the T-adapter to the female side of MCM1 to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td>Resistance</td><td>Between MCM1 (female) (71) and each pin other than pin (71)</td><td>Min. 1 MΩ</td></tr></table></td><td>YES</td><td>• Short circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Short circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Monitor controller</td><td rowspan="2">1. Start the engine.
2. Check the ON/OFF state of “Parking Brake Press SW” of Monitor Input 4 with the monitoring function.
3. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td rowspan="2">ON/OFF state</td><td>Parking brake switch: OFF position</td><td>ON</td></tr><tr><td>Parking brake switch: ON position</td><td>OFF</td></tr></table></td><td>YES</td><td>• The monitor controller is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The monitor controller is defective.
• Replace the monitor controller.
• Go to “Confirmation of repair”.</td></tr>
</table>

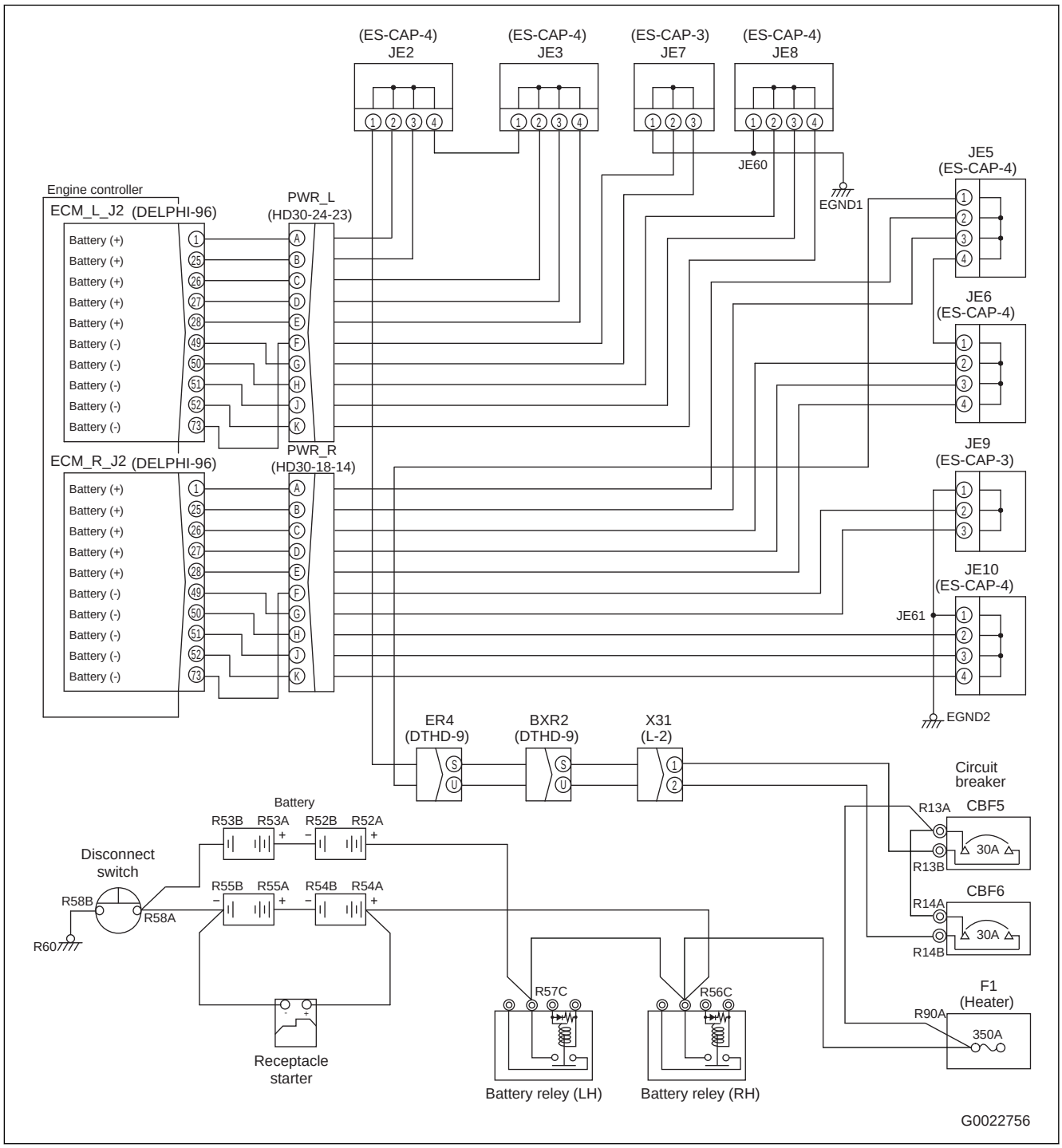
No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
5	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Start the engine. 4. Check the abnormality record. 5. Is “E” shown in the abnormality record of this failure code?	YES	Go to the first check item.
			NO	The repair is completed.

Circuit diagram of engine coolant temperature sensor



<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Sensor</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect all the connectors that follow.
3. Install one of the disconnected connector.
4. Turn the starting switch to the ON position, then do the troubleshooting.
5. Check if this failure code is shown.
6. Do the procedure from steps 1 to 5 until all the connectors are connected.
7. Is the installed connector normal?
REMARK
As the connector is disconnected, the failure code of the disconnected device is shown.<table><tr><th>Sensor</th><th>Connector</th><th>Shown failure code</th></tr><tr><td>Dosing fuel pressure sensor</td><td>PDOSER_L</td><td>CA1928</td></tr><tr><td>EGR valve lift sensor</td><td>SEGR_L</td><td>CA2272</td></tr><tr><td>VGT position sensor</td><td>SVGT_L</td><td>CA2382</td></tr></table></td><td>YES</td><td>• The device connected to each connector is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The device that is connected to the connector shown in this failure code is defective.
• Replace the device that is connected to the connector shown in this failure code.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Confirmation of check results</td><td rowspan="2">1. Do the troubleshooting above again.
2. Can you identify the cause by the check?</td><td>YES</td><td>The repair is completed.</td></tr>
<tr><td>NO</td><td>• The engine controller can be defective.
• Replace the engine controller.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Confirmation of repair</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Connect all the component parts.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>Go to the first check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

Circuit diagram of engine controller power supply



No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
5	Common rail pressure limiter	1. Check the mechanical problem on the common rail pressure limiter. 2. Is the common rail pressure limiter normal? **REMARK** If there is mechanical problem on the common rail pressure limiter, it is a failure.	YES	• The common rail pressure limiter is normal. • Go to the next check item.
			NO	• The common rail pressure limiter is defective. • Replace the common rail. **REMARK** Replace the common rail to replace the common rail pressure limiter. (For details, see the DISASSEMBLY AND ASSEMBLY in the shop manual Engine 12V140E-7 series.) • Go to “Confirmation of repair”.
6	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check?	YES	The repair is completed.
			NO	• The engine controller can be defective. • Replace the engine controller. • Go to “Confirmation of repair”.
7	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Start the engine. 4. Check the abnormality record. 5. Is “E” shown in the abnormality record of this failure code?	YES	Go to the first check item.
			NO	The repair is completed.

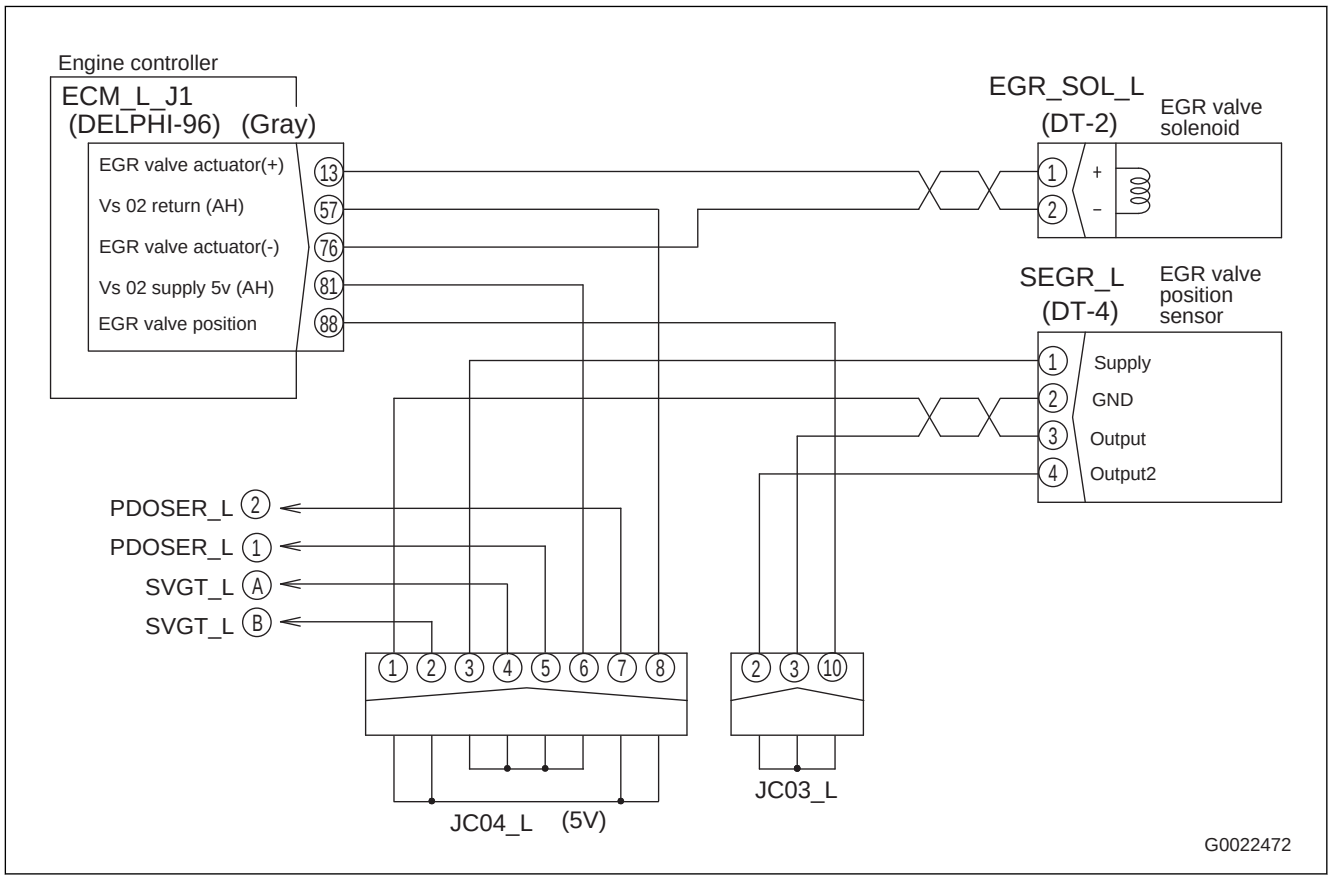
<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Open circuit in wiring harness (CAN communication circuit)</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors ECM_L_J1, ECM_R_J1, CEN1_RES_L and CEN1_RES_R, and connect the T-adapter to the female side of ECM_L_J1, ECM_R_J1 and the male side of CEN1_RES_L, CEN1_RES_R to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td rowspan="12">Resistance</td><td>Between ECM_L_J1 (female) (69) and ECM_R_J1 (female) (69)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_L_J1 (female) (93) and ECM_R_J1 (female) (93)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_L_J1 (female) (69) and CEN1_RES_L (male) (A)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_L_J1 (female) (69) and CEN1_RES_R (male) (A)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_L_J1 (female) (93) and CEN1_RES_L (male) (B)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_L_J1 (female) (93) and CEN1_RES_R (male) (B)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_R_J1 (female) (69) and CEN1_RES_L (male) (A)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_R_J1 (female) (69) and CEN1_RES_R (male) (A)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_R_J1 (female) (93) and CEN1_RES_L (male) (B)</td><td>Max. 1 Ω</td></tr><tr><td>Between ECM_R_J1 (female) (93) and CEN1_RES_R (male) (B)</td><td>Max. 1 Ω</td></tr></table></td><td>YES</td><td>• Open circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Open circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
</table>

FAILURE CODE [CA1924]

Details of failure	Low voltage error occurs in the fuel doser solenoid valve 1 (shut-off valve at left bank side) circuit.
Action level	L03
Action of controller	Stops the regeneration control.
Phenomenon on machine	• The automatic regeneration cannot be done. • The manual stationary regeneration cannot be done.
Related information	⚠ **The exhaust connector and KDPF are heated to a temperature of 500 °C or more. Be careful not to get a burn injury.** **Reference information** This failure code is cleared when the starting switch is turned from the OFF position to ON position after the repair is completed, then the fuel doser solenoid valve 1 (shut-off valve at left bank side) is activated.

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness and connector</td><td rowspan="2">1. See the section about wiring harness and connector in the “ELECTRIC EQUIPMENT” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”.
2. Are the wiring harness and connector normal?</td><td>YES</td><td>• The wiring harness and connector are normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The wiring harness and connector are defective.
• Repair or replace the defective wiring harness and connector.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Dosing fuel solenoid valve 1</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector DSOV1_L, and connect the T-adapter to the male side to troubleshoot.
3. Does the troubleshooting result agree with the standard value?
<table>
<tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr>
<tr><td rowspan="2">Resistance</td><td>Between DSOV1_L (male) (1) and (2)</td><td>4 to 6 Ω</td></tr>
<tr><td>Between DSOV1_L (male) (1) and ground</td><td>Min. 1 MΩ</td></tr>
</table></td><td>YES</td><td>• The fuel doser solenoid valve 1 is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The fuel doser solenoid valve 1 is defective.
• Replace the fuel doser solenoid valve 1.
• Go to “Confirmation of repair”.</td></tr>
</table>

Circuit diagram of EGR valve lift sensor



FAILURE CODE [CA2765]

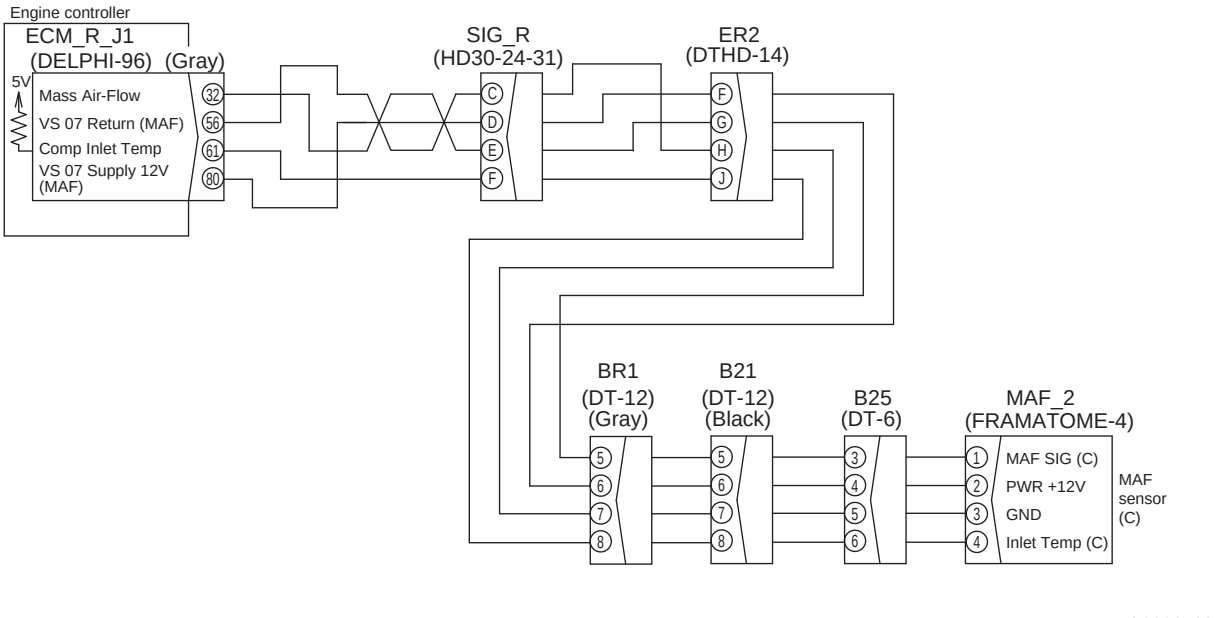
Details of failure	• The injector trim data inputted in the engine controller is not correct. • The same injector trim data is inputted on the two or more injectors.
Action level	L01
Action of controller	Does not do the injector compensation.
Phenomenon on machine	The engine output becomes excessive or lowers.
Related information	-

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Wiring harness and connector	1. See the section about wiring harness and connector in the “ELECTRIC EQUIPMENT” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”. 2. Are the wiring harness and connector normal?	YES	• The wiring harness and connector are normal. • Go to the next check item.
			NO	• The wiring harness and connector are defective. • Repair or replace the defective wiring harness and connector. • Go to “Confirmation of repair”.
2	Input value of injector rim data	1. Check the input value of the injector trim data. 2. Is the injector trim data inputted correctly?	YES	• The input value of the injector rim data is normal. • Go to the next check item.
			NO	• The injector trim data is not inputted correctly. • Input the injector trim data. For details, see TESTING AND ADJUSTING, “WRITE INJECTOR COMPENSATION VALUE TO ENGINE CONTROLLER”. • Go to “Confirmation of repair”.

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
6	KDOC outlet temperature sensor installed state	1. Check the installed state of the KDOC outlet temperature sensor, and check for damage and looseness. 2. Is the KDOC outlet temperature sensor installed correctly? **REMARK** • If there is damage or looseness on the KDOC outlet temperature sensor, it is a failure. • To access the KDOC outlet temperature sensor, see DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL KDPF ASSEMBLY” and “DISASSEMBLE AND ASSEMBLE KDPF ASSEMBLY”.	YES	• The KDOC outlet temperature sensor is installed correctly. • Go to the next check item.
			NO	• The KDOC outlet temperature sensor is not installed correctly. • Install the KDOC outlet temperature sensor again. For details, see DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL KDPF ASSEMBLY” and “DISASSEMBLE AND ASSEMBLE KDPF ASSEMBLY”. • If a damage is found, replace the KDPF temperature sensor. • Go to “Confirmation of repair”.
7	KDPF temperature sensor	1. Turn the starting switch to the OFF position. 2. Disconnect the connector TDPF, and replace with the same type sensor. 3. See “Confirmation of repair” to do Loaded Diagnostics Operation To Confirm Failure Correction. 4. Check the abnormality record. 5. Is “E” shown in the abnormality record of this failure code? **REMARK** Replace the KDPF temperature sensor. For details, see DISASSEMBLY AND ASSEMBLY, “DISASSEMBLE AND ASSEMBLE KDPF ASSEMBLY”.	YES	• The removed KDPF temperature sensor is normal. • Return the removed KDPF temperature sensor to its initial position. • Go to the next check item.
			NO	• The removed KDPF temperature sensor is defective. • The repair is completed.
8	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check?	YES	The repair is completed.
			NO	• The engine controller can be defective. • Replace the engine controller. • Go to “Confirmation of repair”.

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Charge pressure sensor</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Insert the T-adapter into the connector PIM_R.
3. Turn the starting switch to the ON position, then do the troubleshooting.
4. Does the test result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td>Voltage</td><td>Between PIM_R (3) and (2)</td><td>0.3 to 4.7 V</td></tr></table></td><td>YES</td><td>• The charge pressure sensor is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The charge pressure sensor is defective.
• Replace the charge pressure sensor.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Confirmation of check results</td><td rowspan="2">1. Do the troubleshooting above again.
2. Can you identify the cause by the check?</td><td>YES</td><td>The repair is completed.</td></tr>
<tr><td>NO</td><td>• The engine controller can be defective.
• Replace the engine controller.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Confirmation of repair</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Connect all the component parts.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>Go to the first check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

Circuit diagram of mass air flow and temperature sensor



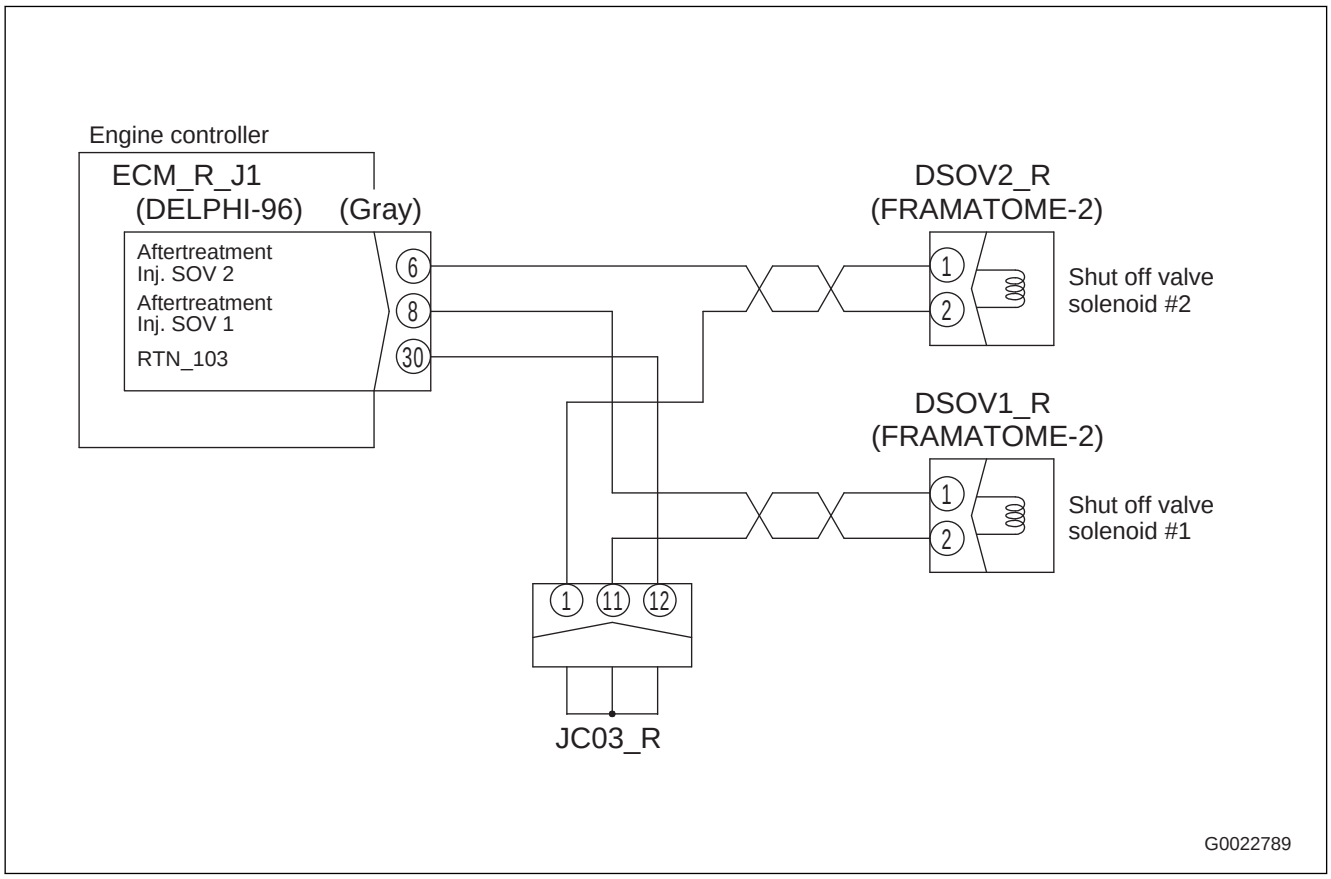
FAILURE CODE [CB697]

Details of failure	High voltage error occurs in the signal circuit of the engine controller internal temperature sensor.
Action level	L01
Action of controller	None in particular.
Phenomenon on machine	None
Related information	**Monitoring code** “Engine Con Internal Temp_2” can be checked with the monitoring function. (Code: 18901)

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Wiring harness and connector	1. See the section about wiring harness and connector in the “ELECTRIC EQUIPMENT” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”. 2. Are the wiring harness and connector normal?	YES	• The wiring harness and connector are normal. • Go to the next check item.
			NO	• The wiring harness and connector are defective. • Repair or replace the defective wiring harness and connector. • Go to “Confirmation of repair”.
2	Controller operating condition	1. Check if the engine controller is operated in high temperature. 2. Is the temperature around the engine controller normal?	YES	• The controller operating condition is normal. • Go to the next check item.
			NO	• The controller operating condition is not normal. • Cool down the engine controller body and the area around it. • Go to “Confirmation of repair”.
3	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check?	YES	The repair is completed.
			NO	• The engine controller can be defective. • Replace the engine controller. • Go to “Confirmation of repair”.

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Hot short circuit in wiring harness</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector PCCV_R, and connect the T-adapter to the female side.
3. Turn the starting switch to the ON position, then do the troubleshooting.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td>Voltage</td><td>Between PCCV_R (female) (3) and (2)</td><td>Max. 1 V</td></tr></table></td><td>YES</td><td>• Hot short circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Hot short circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Crankcase pressure sensor</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Insert the T-adapter into the connector PCCV_R.
3. Turn the starting switch to the ON position, then do the troubleshooting.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td>Voltage</td><td>Between PCCV_R (3) and (2)</td><td>0.3 to 4.7 V</td></tr></table></td><td>YES</td><td>• The crankcase pressure sensor is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The crankcase pressure sensor is defective.
• Replace the crankcase pressure sensor.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Confirmation of check results</td><td rowspan="2">1. Do the troubleshooting above again.
2. Can you identify the cause by the check?</td><td>YES</td><td>The repair is completed.</td></tr>
<tr><td>NO</td><td>• The engine controller can be defective.
• Replace the engine controller.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Confirmation of repair</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Connect all the component parts.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>Go to the first check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

Circuit diagram of fuel doser solenoid valve



Related information	**⚠ The turbocharger exhaust connector and KDOC, and KDPF are heated to a temperature of 500 °C or more. Be careful not to get a burn injury.** **NOTICE** Clear failure code Start the engine, do the warm-up operation, and then do the normal operation for approximately 3 hours. (The time required to clear the code is reduced by high exhaust temperature conditions.) Operate the machine approximately 3 hours and make sure that this failure code is cleared. **Monitoring code** • “KDOC 1 Inlet Temperature_2” can be checked with the monitoring function. (Code: 47302) • “KDOC 1 Outlet Temperature_2” can be checked with the monitoring function. (Code: 47402) • “KDPF 1 Outlet Temperature_2” can be checked with the monitoring function. (Code: 47202) **Prior troubleshooting** If the failure code [CB227*], [CB23**], or [CB238*] is shown at the same time, do the troubleshooting for it first. **Reference information** • The KDOC inlet temperature, KDOC outlet temperature, and KDPF outlet temperature at idle (regeneration is not done) are 100 to 250 °C and the difference between temperature is approximately 10 °C. (KDOC inlet temperature > KDOC outlet temperature > KDPF outlet temperature) • During manual stationary regeneration, the KDOC inlet temperature, KDOC outlet temperature, and KDPF outlet temperature are 250 to 400 °C when the dosing fuel is not injected (KDOC is dry). • When the KDPF is replaced, do the reset procedure for KDOC and KDPF to complete the repair procedure. For details, see TESTING AND ADJUSTING, “SETTING AND OPERATION OF MACHINE MONITOR”, “TESTING MENU”, “TESTING MENU (KDPF MEMORY RESET)”. • When the soot accumulation level is 3 or below, the ”Manual Stationary Regeneration" only can be done by the "Active Regeneration for Service". • If the KDOC efficiency lowers for a long period, the failure code [CB2637] is shown continuously, then the failure code [AQ10N3] can be shown. After that, if the KDOC efficiency is still low, the failure code for defective regeneration [CB1691] can be shown. • Check the exhaust gas color. For details, see TESTING AND ADJUSTING, “TEST EXHAUST GAS COLOR”.

DSOV1_L: Dosing fuel solenoid valve 1 (shut off valve connector of left bank side)

DSOV2_L: Dosing fuel solenoid valve 2 (drain valve connector of left bank side)

DSOV1_R: Dosing fuel solenoid valve 1 (shut off valve connector of right bank side)

DSOV2_R: Dosing fuel solenoid valve 2 (drain valve connector of right bank side)

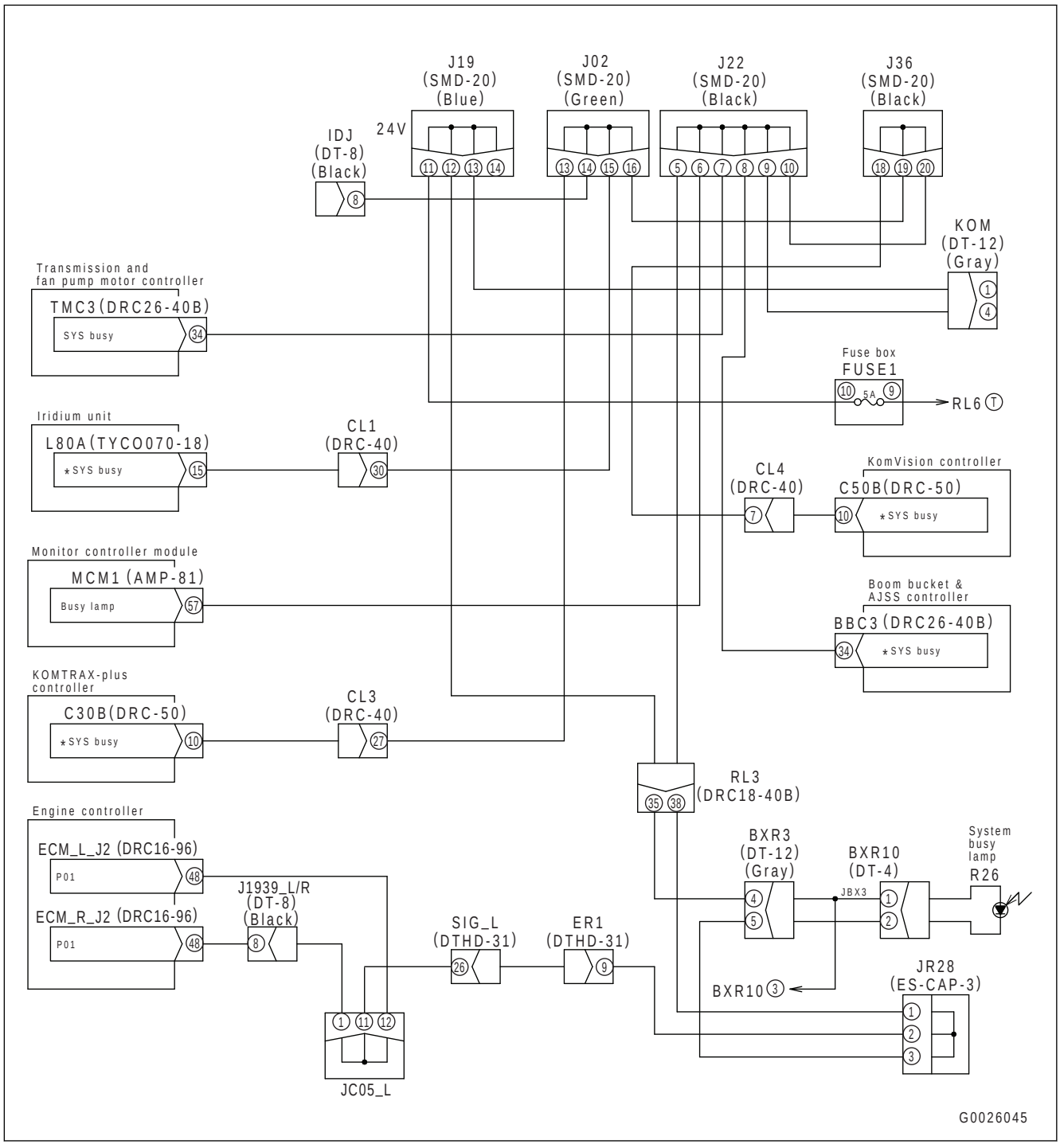
<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Power supply circuit of KDPF temperature sensor</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector TDPF_2, and connect the T-adapter to the female side.
3. Turn the starting switch to the ON position, then do the troubleshooting.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td>Voltage</td><td>Between TDPF_2 (female) (4) and (1)</td><td>22 to 30 V</td></tr></table></td><td>YES</td><td>• The power supply circuit of KDPF temperature sensor is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The battery voltage is not normal.
• See “ELECTRIC EQUIPMENT” to solve the problem.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">KDPF temperature sensor</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector TDPF_2, and replace with the same type sensor.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?
REMARK
Replace the KDPF temperature sensor. For details, see DISASSEMBLY AND ASSEMBLY, “DISASSEMBLE AND ASSEMBLE KDPF ASSEMBLY”.</td><td>YES</td><td>• The removed KDPF temperature sensor is normal.
• Return the removed KDPF temperature sensor to its initial position.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The removed KDPF temperature sensor is defective.
• The repair is completed.</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Engine controller</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Replace the engine controller.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>• The removed engine controller is normal.
• Return the removed engine controller to its initial position.
• Go to “Confirmation of repair”.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Confirmation of repair</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Connect all the component parts.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>Go to the first check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

FAILURE CODE [D1E6KB]

Details of failure	When the controller drives primary circuit (coil) of the parking brake relay, abnormal voltage is generated.
Action level	L03
Action of controller	• Does not drive the parking brake relay. • Lights up the centralized warning lamp and operates the alarm buzzer. • Even after the cause of failure is corrected, the machine will not return to normal until the starting switch is turned to the OFF position.
Phenomenon on machine	When the automatic idle stop function is activated, the parking brake cannot be applied automatically.
Related information	**Monitoring code** ON/OFF state of the “Parking Brake Relay” can be checked with the monitoring function. (Code: 03706) **Reference information** This failure code senses the failure at the primary side (coil side) of the parking brake relay. The failure at the secondary side (contact side) cannot be sensed.

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness and connector</td><td rowspan="2">1. For details, see the section of wiring harness and connector of “Electrical component” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”.
2. Are the wiring harness and connector normal?</td><td>YES</td><td>• The wiring harness and connector are normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The wiring harness and connector are defective.
• Repair or replace the defective wiring harness and connector.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Parking brake relay</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector L159, and connect the T-adapter to the male side to troubleshoot.
3. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td>Resistance</td><td>Between L159 (male) (1) and (2)</td><td>200 to 400 Ω</td></tr></table></td><td>YES</td><td>• The parking brake relay is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The parking brake relay is defective.
• Replace the parking brake relay.
• Go to “Confirmation of repair”.</td></tr>
</table>

Circuit diagram of system operating lamp



<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">13</td><td rowspan="2">Open circuit in wiring harness (CAN1 communication circuit)</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors TMC2 and MCM2, and connect the T-adapter to the each female side to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td rowspan="3">Resistance</td><td>Between TMC2 (female) (33) and MCM2 (female) (113)</td><td>Max. 1 Ω</td></tr><tr><td>Between TMC2 (female) (33) and MCM2 (female) (112)</td><td>Max. 1 Ω</td></tr><tr><td>Between TMC2 (female) (23) and MCM2 (female) (105)</td><td>Max. 1 Ω</td></tr></table></td><td>YES</td><td>• Open circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Open circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">14</td><td rowspan="2">Ground fault in wiring harness (CAN1 communication circuit)</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors TMC2, BBC2, ECM_L_J1, C50B, C30B, MCM2 and KOM/r_RES, and connect the T-adapter to the female side of one of them to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
REMARK
The connectors C50B (female) (32) and (31) are not provided for machines without KomVision. Use the connectors CL4 (female) (12) and (11) toward you to troubleshoot.
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td rowspan="2">Resistance</td><td>Between ground and TMC2 (female) (33), BBC2 (female) (33), ECM_L_J1 (female) (70), C50B (female) (32), C30B (female) (32), MCM2 (female) (113), (112), or KOM/r_RES (female) (A)</td><td>Min. 1 MΩ</td></tr><tr><td>Between ground and TMC2 (female) (23), BBC2 (female) (23), ECM_L_J1 (female) (94), C50B (female) (31), C30B (female) (31), MCM2 (female) (105), or KOM/r_RES (female) (B)</td><td>Min. 1 MΩ</td></tr></table></td><td>YES</td><td>• Ground fault in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Ground fault in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
</table>

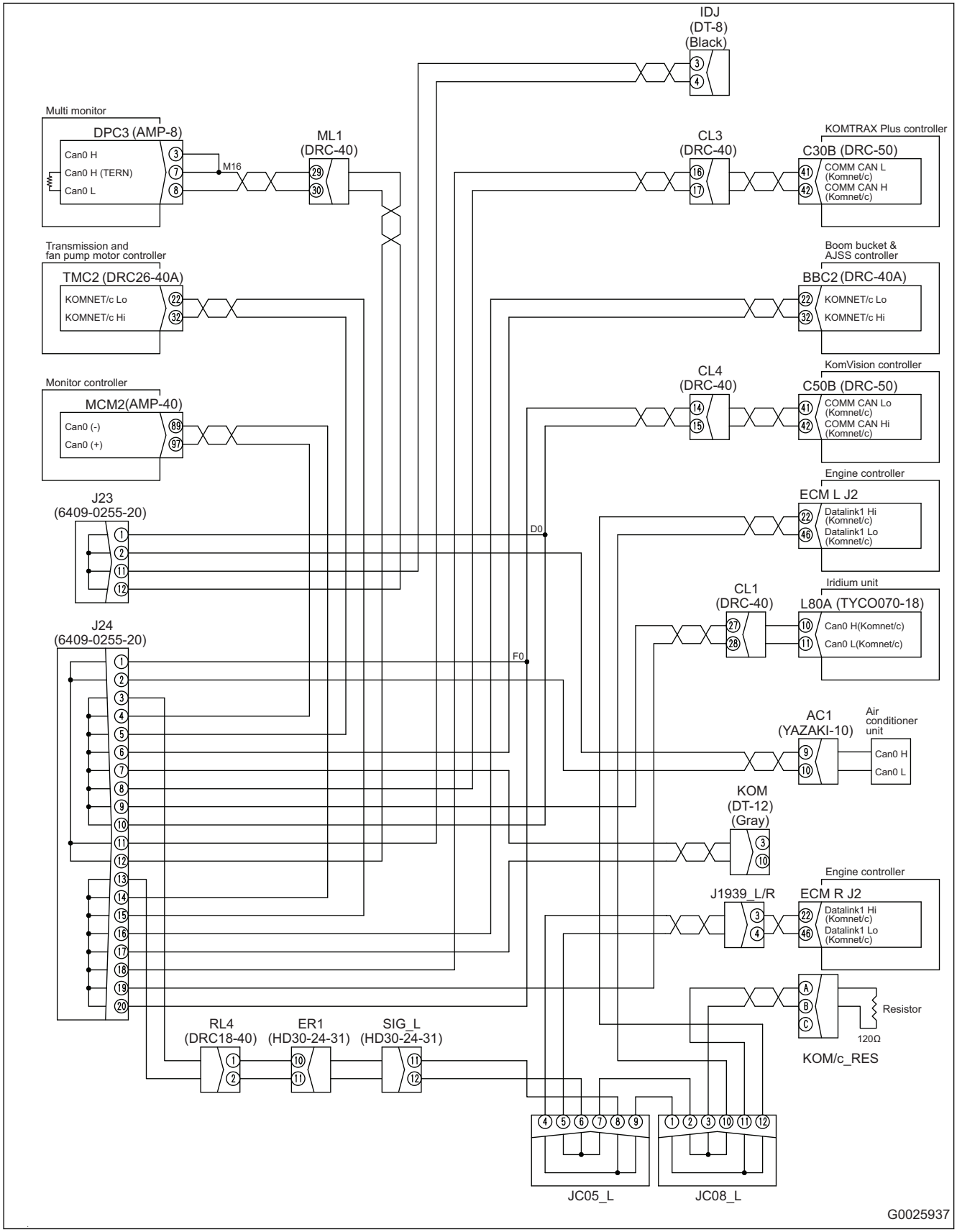
<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Open circuit in wiring harness</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Remove the fuse No.7 in the fuse box FUSE1.
4. Disconnect the connector BBC3, and connect the T-adapter to the female side to troubleshoot.
5. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td rowspan="6">Resistance</td><td>Between FUSE1-14 and BBC3 (female) (1)</td><td>Max. 1 Ω</td></tr><tr><td>Between FUSE1-14 and BBC3 (female) (11)</td><td>Max. 1 Ω</td></tr><tr><td>Between BBC3 (female) (21) and ground</td><td>Max. 1 Ω</td></tr><tr><td>Between BBC3 (female) (31) and ground</td><td>Max. 1 Ω</td></tr><tr><td>Between BBC3 (female) (32) and ground</td><td>Max. 1 Ω</td></tr><tr><td>Between BBC3 (female) (33) and ground</td><td>Max. 1 Ω</td></tr></table></td><td>YES</td><td>• Open circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Open circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Ground fault in wiring harness</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Remove the fuse No.7 in the fuse box FUSE1.
4. Disconnect the connector BBC3, and connect the T-adapter to the female side to troubleshoot.
5. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td>Resistance</td><td>Between ground and FUSE1-14, BBC3 (female) (1), or (11)</td><td>Min. 1 MΩ</td></tr></table></td><td>YES</td><td>• Ground fault in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Ground fault in wiring harness occurs.
• Repair or replace the wiring harness.
• Replace the fuse if it is blown out.
• Go to “Confirmation of repair”.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">17</td><td rowspan="2">Defective controller</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect one of the connectors; transmission controller (connector TMC2), work equipment controller (connector BBC2), engine controller (connector ECM_L_J1), KomVision controller (connector C50B), and KOMTRAX Plus controller (connector C30B).
4. Set the battery disconnect switch to the ON position.
5. Turn the starting switch to the ON position, then do the troubleshooting.
6. Does the number of shown failure codes decrease from 5?
REMARK
• If all of five failure codes that the monitor controller senses ([DAQRKR], [DB2RKR], [DB9RKR], [DBPRKR], and [DBVRKR]) are shown, do the procedure of steps 1 through 6 to disconnect the controller one by one and do troubleshooting to find the defective controller.
• If a disconnected controller is not defective, install the controller back to its initial position, then do the troubleshooting for the next controller.
• Do not disconnect the monitor controller (connector MCM2). As it is connected to the terminating resistor, CAN1 communication error occurs when it is disconnected.
• The KomVision controller (connector C50B) is provided only for machines with KomVision.
• The failure CODE [DBPRKR] is shown only for machines with KomVision.</td><td>YES</td><td>• The removed controller is defective.
• Replace the defective controller.
• Go to “Confirmation of repair”.</td></tr>
<tr><td>NO</td><td>• The removed controller is normal.
• Return the removed controller to its initial position.
• Go to the next check item.</td></tr>
<tr><td rowspan="2">18</td><td rowspan="2">Machine monitor</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Replace the machine monitor.
4. Turn the starting switch to the ON position.
5. Check the abnormality record.
6. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>• The removed machine monitor is normal.
• Return the machine monitor to its initial position.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

FAILURE CODE [DBPRMA]

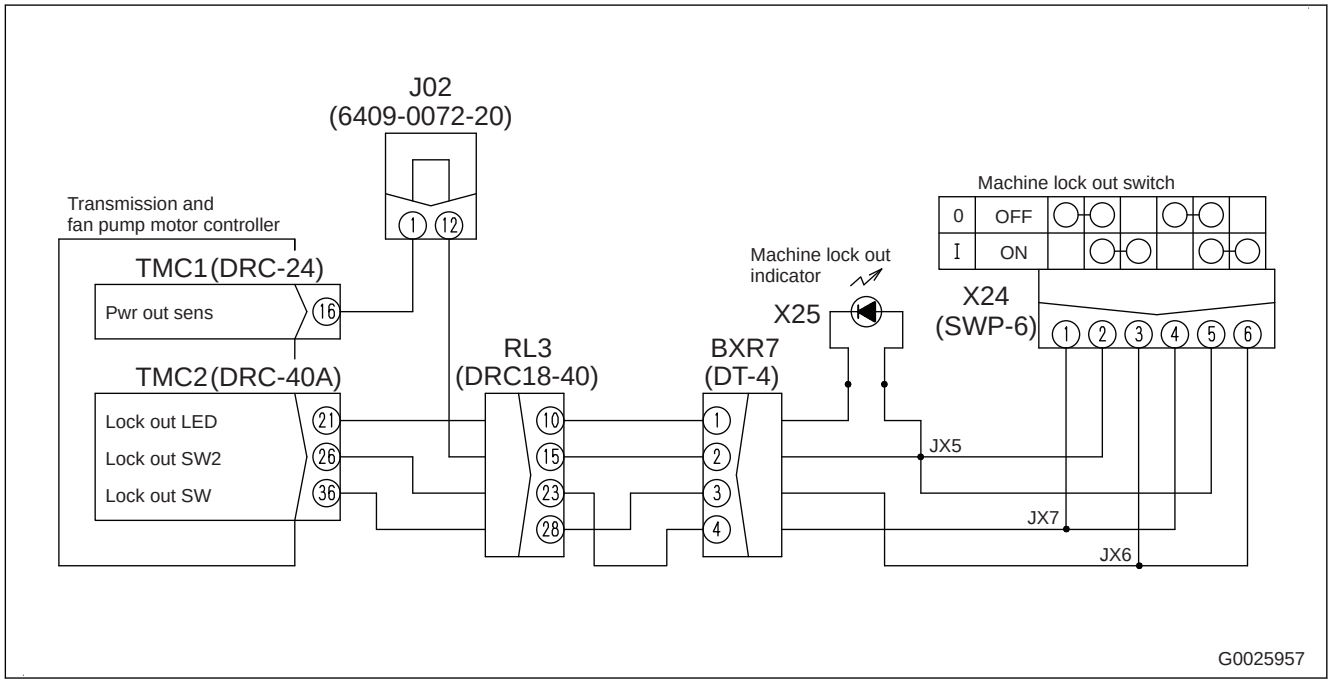
Details of failure	-
Action level	L01
Action of controller	-
Phenomenon on machine	-
Related information	No check is required even if this failure code is shown.

Circuit diagram of CAN2 communication



No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
3	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check?	YES	The repair is completed.
			NO	• The transmission controller can be defective. • Replace the transmission controller. • Go to “Confirmation of repair”.
4	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Turn the starting switch to the ON position. 4. Check the abnormality record. 5. Is “E” shown in the abnormality record of this failure code?	YES	Go to the first check item.
			NO	The repair is completed.

Circuit diagram of machine lockout operating lamp



FAILURE CODE [DDW9LD]

Details of failure	Because of ground fault in kickdown switch system, the kickdown cannot be done.
Action level	L01
Action of controller	• Operates the kickdown one time when ground fault occurs, and then does not control the kickdown thereafter. • After the cause of failure is corrected, the machine will return to normal.
Phenomenon on machine	• If ground fault occurs, the kiickdown can be operated one time. • The kickdown operation cannot be done thereafter. • The machine can start semi auto digging.
Related information	**Monitoring code** ON/OFF state of the “Kickdown SW” can be checked with the monitoring function. (Code: 02212)

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness and connector</td><td rowspan="2">1. For details, see the section of wiring harness and connector of “Electrical component” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”.
2. Are the wiring harness and connector normal?</td><td>YES</td><td>• The wiring harness and connector are normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The wiring harness and connector are defective.
• Repair or replace the defective wiring harness and connector.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Kickdown switch</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector S05, and connect the T-adapter to the male side to troubleshoot.
3. Does the troubleshooting result agree with the standard value?
<table>
<tr><th>Item</th><th colspan="2">Measurement position/condition</th><th>Standard value</th></tr>
<tr><td rowspan="3">Resistance</td><td rowspan="2">Between S05 (male) (1) and (2)</td><td>Kickdown switch: Push</td><td>Max. 1 Ω</td></tr>
<tr><td>Kickdown switch: Do not operate</td><td>Min. 1 MΩ</td></tr>
<tr><td>Between S05 (male) (1) and ground</td><td>Continuous</td><td>Min. 1 MΩ</td></tr>
</table></td><td>YES</td><td>• The kickdown switch is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The kickdown switch is defective.
• Replace the kickdown switch.
• Go to “Confirmation of repair”.</td></tr>
</table>

FAILURE CODE [DGT6KY]

Details of failure	The KOMTRAX Plus controller senses hot short circuit in the exhaust temperature sensor (R).
Action level	-
Action of controller	• Failure detection only • If the cause of failure is eliminated, the machine returns to normal.
Phenomenon on machine	Failure detection only
Related information	**Monitoring code** • “Exhaust Temp (R) Sensor Voltage” can be checked with the monitoring function. (Code: 42652) • “Exhaust Temperature (R)” can be checked with the monitoring function. (Code: 42651)

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness and connector</td><td rowspan="2">1. For details, see the section of wiring harness and connector of “Electrical component” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”.
2. Are the wiring harness and connector normal?</td><td>YES</td><td>• The wiring harness and connector are normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The wiring harness and connector are defective.
• Repair or replace the defective wiring harness and connector.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Hot short circuit in wiring harness</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector X20, and connect the T-adapter to the female side.
3. Turn the starting switch to the ON position, then do the troubleshooting.
4. Does the troubleshooting result agree with the standard value?
<table>
<tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr>
<tr><td>Voltage</td><td>Between X20 (female) (B) and (C)</td><td>Max. 1 V</td></tr>
</table></td><td>YES</td><td>• Hot short circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Hot short circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Hot short circuit in wiring harness</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector T TCIN.P, and connect the T-adapter to the female side.
3. Turn the starting switch to the ON position, then do the troubleshooting.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td>Voltage</td><td>Between T TCIN.P (female) (2) and (1)</td><td>Max. 1 V</td></tr></table></td><td>YES</td><td>• Hot short circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Hot short circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Torque converter input oil pressure sensor</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Insert the T-adapter into the connector T TCIN.P.
3. Turn the starting switch to the ON position, then do the troubleshooting.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td>Voltage</td><td>Between T TCIN.P (2) and (1)</td><td>0.5 to 4.5 V</td></tr></table></td><td>YES</td><td>• The torque converter input oil pressure sensor is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The torque converter input oil pressure sensor is defective.
• Replace the torque converter input oil pressure sensor.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Confirmation of check results</td><td rowspan="2">1. Do the troubleshooting above again.
2. Can you identify the cause by the check?</td><td>YES</td><td>The repair is completed.</td></tr>
<tr><td>NO</td><td>• The transmission controller can be defective.
• Replace the transmission controller.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">8</td><td rowspan="2">Confirmation of repair</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Connect all the component parts.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>Go to the first check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

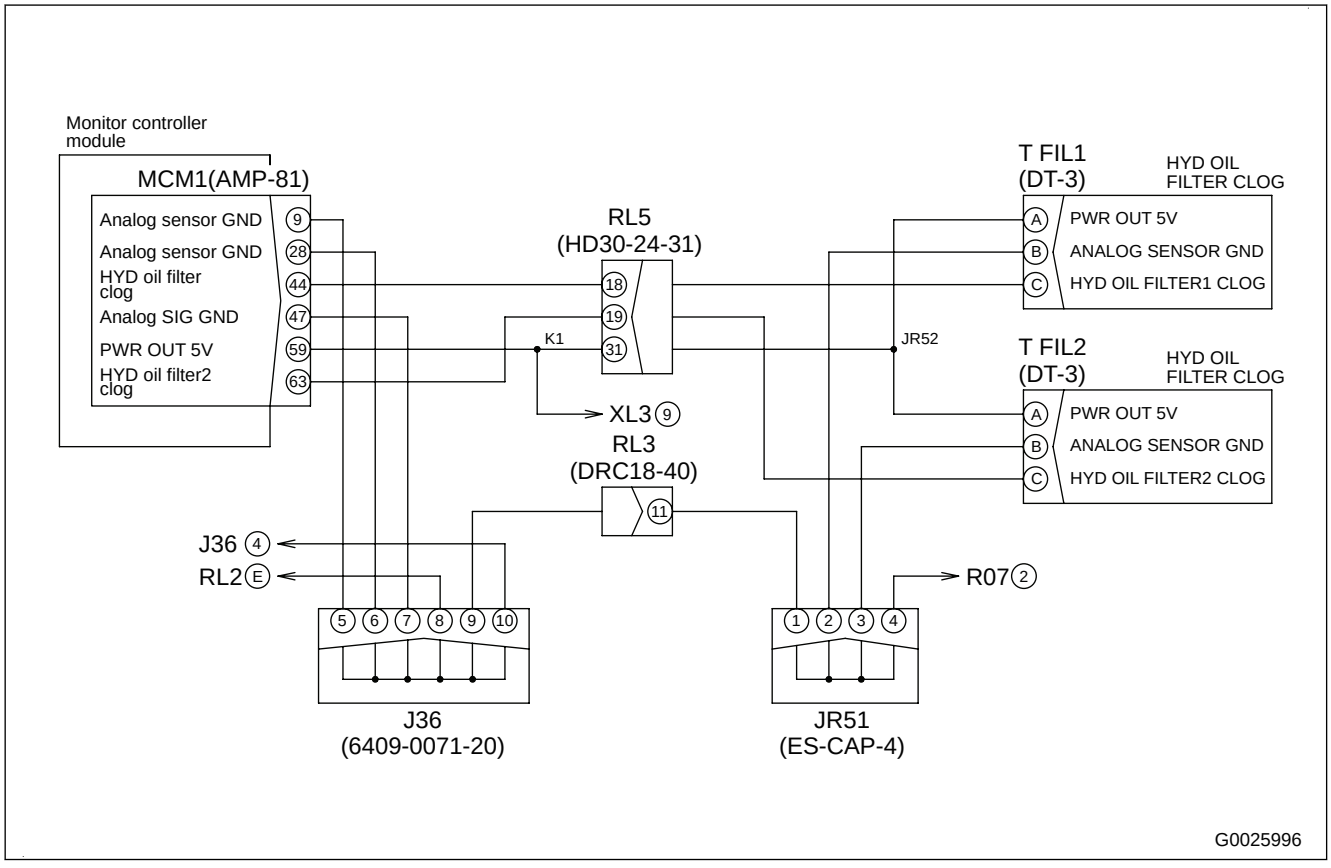
FAILURE CODE [DK5AKA]

Details of failure	Because of open circuit or ground fault in the boom potentiometer lever (sub: B line) signal, the signal voltage of the boom potentiometer lever (sub: B line) is 0.3V or below.
Action level	L03
Action of controller	• Controls the boom by the boom potentiometer lever (main: A line) if the boom potentiometer lever (main: A line) is normal. But in this case, the controller does not activate the boom detent control and decreases the speed of the work equipment to 30% of normal speed. • Recognizes that the lever stroke signal of the boom potentiometer lever (sub) is 0%. • Lights up the centralized warning lamp and operates the alarm buzzer. • After the cause of failure is corrected, the machine will return to normal.
Phenomenon on machine	The boom detent control does not operate. The work equipment speed decreases to 30 % of normal speed.
Related information	**Prior troubleshooting** If the failure code [DB95KX] is shown at the same time, do the troubleshooting for it first. **Monitoring code** • “Boom Lever Voltage (Main)” can be checked with the monitoring function. (Code: 42000) • “Boom Lever Voltage (Sub)” can be checked with the monitoring function. (Code: 42001)

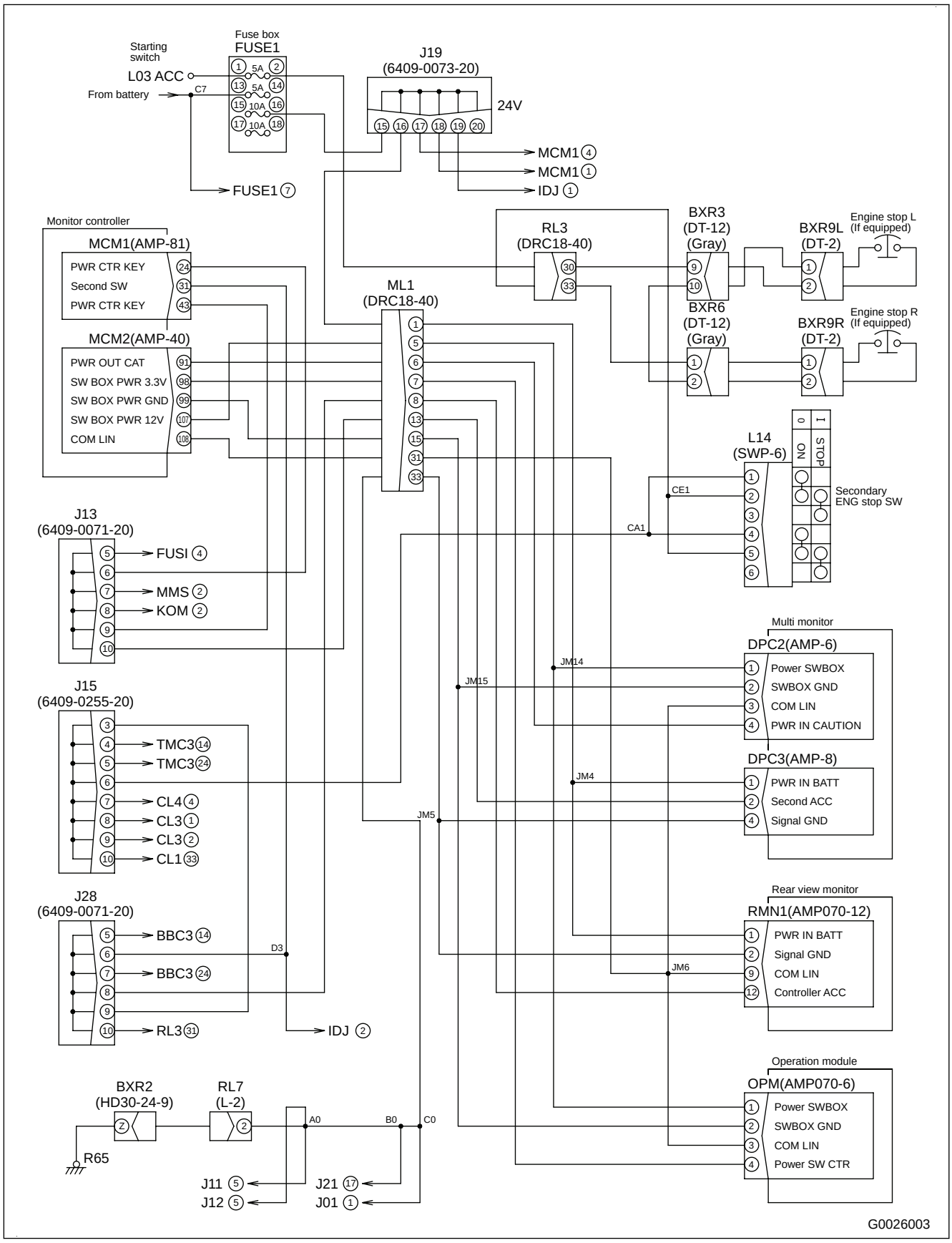
No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Wiring harness and connector	1. For details, see the section of wiring harness and connector of “Electrical component” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”. 2. Are the wiring harness and connector normal?	YES	• The wiring harness and connector are normal. • Go to the next check item.
			NO	• The wiring harness and connector are defective. • Repair or replace the defective wiring harness and connector. • Go to “Confirmation of repair”.

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
7	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check?	YES	The repair is completed.
			NO	• The machine monitor can be defective. • Replace the machine monitor. • Go to “Confirmation of repair”.
8	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Turn the starting switch to the ON position. 4. Check the abnormality record. 5. Is “E” shown in the abnormality record of this failure code?	YES	Go to the first check item.
			NO	The repair is completed.

Circuit diagram of hydraulic oil filter clogging sensor

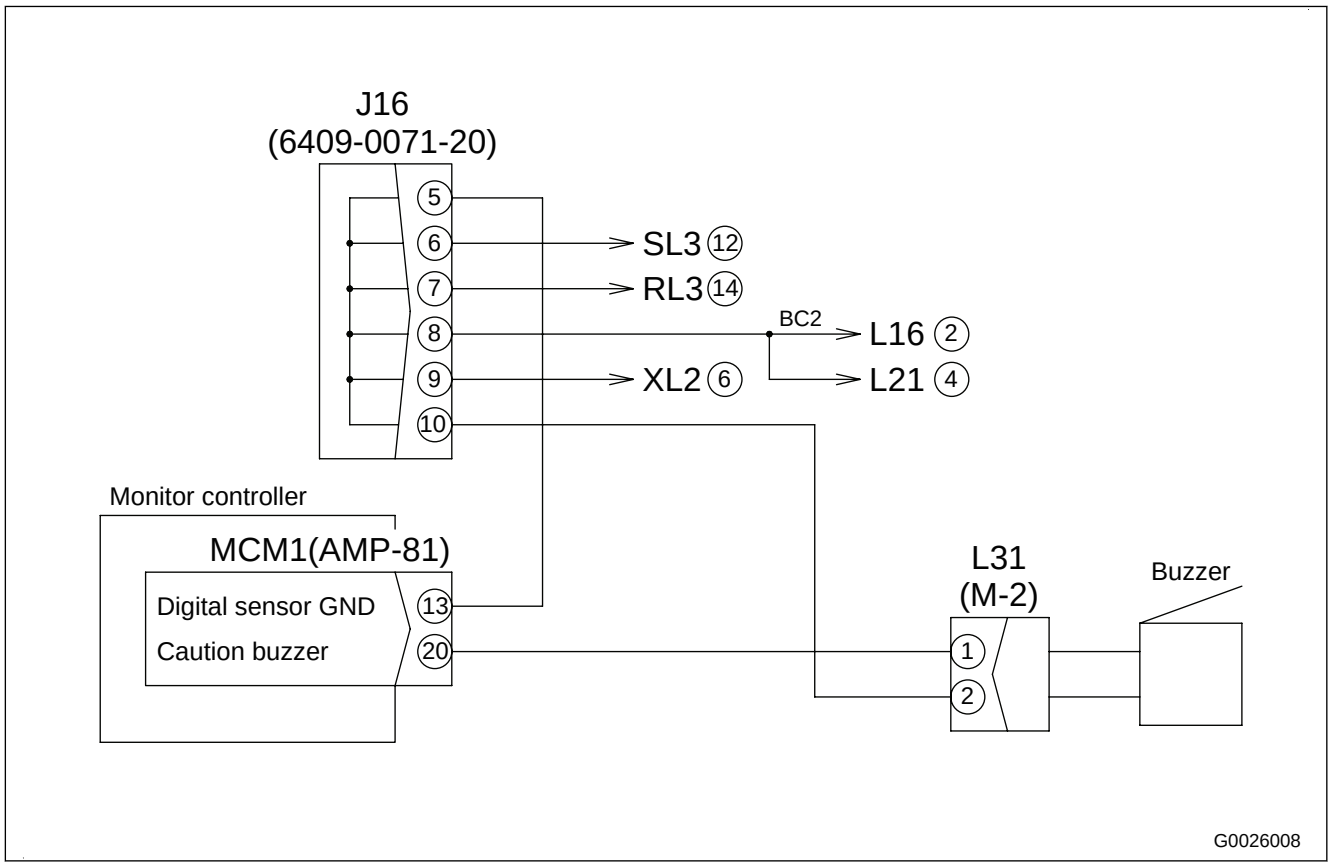


Circuit diagram of LIN communication (LED unit)



No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
7	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Turn the starting switch to the ON position. 4. Check the abnormality record. 5. Is “E” shown in the abnormality record of this failure code? **REMARK** As it takes time to activate the controller, wait for approximately 1 minute and check the abnormality record.	YES	Go to the first check item.
			NO	The repair is completed.

Circuit diagram of alarm buzzer



<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Open circuit in wiring harness</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors BBC3 and N16, and connect the T-adapter to the each female side to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td rowspan="2">Resistance</td><td>Between BBC3 (female) (18) and N16 (female) (1)</td><td>Max. 1 Ω</td></tr><tr><td>Between BBC3 (female) (13) and N16 (female) (2)</td><td>Max. 1 Ω</td></tr></table></td><td>YES</td><td>• Open circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Open circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Confirmation of check results</td><td rowspan="2">1. Do the troubleshooting above again.
2. Can you identify the cause by the check?</td><td>YES</td><td>The repair is completed.</td></tr>
<tr><td>NO</td><td>• The work equipment controller can be defective.
• Replace the work equipment controller.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Confirmation of repair</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Connect all the component parts.
3. Start the engine.
4. Set the bucket control lever to “TILT” position.
5. Check the abnormality record.
6. Is “E” shown in the abnormality record of this failure code?</td><td>YES</td><td>Go to the first check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

FAILURE CODE [DWNVKA]

Details of failure	The transmission controller senses open circuit in the power ladder RAISE solenoid.
Action level	L03
Action of controller	• Does not drive the power ladder raise solenoid. (Only for machines with power ladder option) • Lights up the centralized warning lamp and operates the alarm buzzer. • Even after the cause of failure is corrected, the machine will not return to normal until the starting switch is turned to the OFF position.
Phenomenon on machine	The power ladder can be lowered during the travel. (Only for machines with power ladder option)
Related information	**Monitoring code** ON/OFF state of the “Ladder Raise Solenoid” can be checked with the monitoring function. (Code: 03706) (It is shown only for machines with power ladder.)

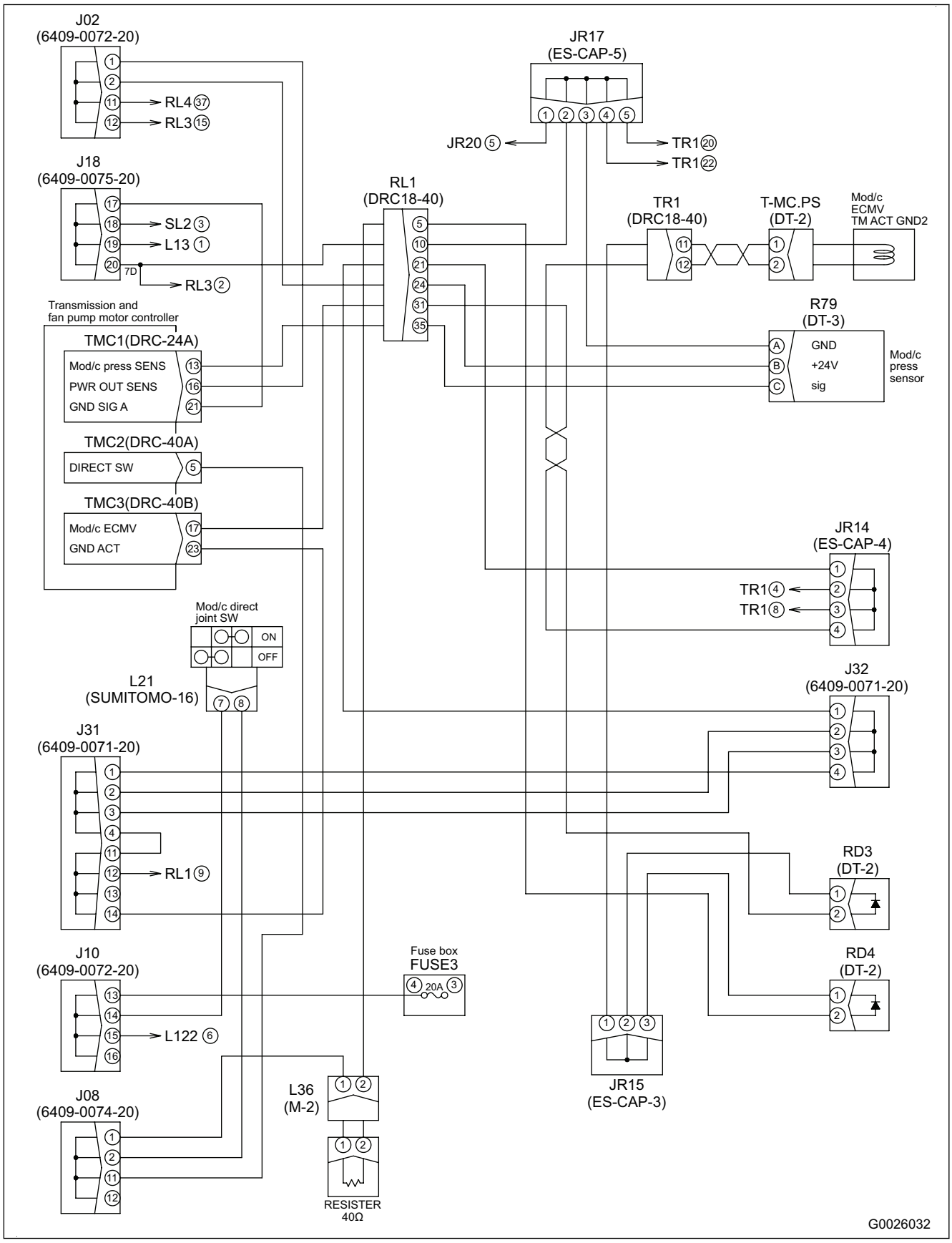
<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness and connector</td><td rowspan="2">1. For details, see the section of wiring harness and connector of “Electrical component” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”.
2. Are the wiring harness and connector normal?</td><td>YES</td><td>• The wiring harness and connector are normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The wiring harness and connector are defective.
• Repair or replace the defective wiring harness and connector.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Power ladder raise solenoid</td><td>1. Turn the starting switch to the OFF position.
2. Disconnect the connector PL7, and connect the T-adapter to the male side to troubleshoot.
3. Does the troubleshooting result agree with the standard value?
<table>
<tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr>
<tr><td>Resistance</td><td>Between PL7 (male) (1) and (2)</td><td>10 to 30 Ω</td></tr>
</table>
</td><td>YES</td><td>• The power ladder RAISE solenoid is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The power ladder RAISE solenoid is defective.
• Replace the power ladder RAISE solenoid.
• Go to “Confirmation of repair”.</td></tr>
</table>

FAILURE CODE [DXF6KB]

Details of failure	Because of ground fault in the steering lock solenoid 2 output signal system, abnormal voltage is generated when the controller drives the steering lock solenoid 2.
Action level	L03
Action of controller	• Does not drive the steering lock solenoid 2. • Lights up the centralized warning lamp and operates the alarm buzzer. • Even after the cause of failure is corrected, the machine will not return to normal until the starting switch is turned to the OFF position.
Phenomenon on machine	The machine lock-out option function does not operate.
Related information	**NOTICE** This is shown only for machines with machine lock-out system. **Monitoring code** ON/OFF state of the “Steering Lock Sol 2” can be checked with the monitoring function. (Code: 03708)

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness and connector</td><td rowspan="2">1. For details, see the section of wiring harness and connector of “Electrical component” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”.
2. Are the wiring harness and connector normal?</td><td>YES</td><td>• The wiring harness and connector are normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The wiring harness and connector are defective.
• Repair or replace the defective wiring harness and connector.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Steering lock solenoid 2</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector X27, and connect the T-adapter to the male side to troubleshoot.
3. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/ condition</th><th>Standard value</th></tr><tr><td rowspan="2">Resistance</td><td>Between X27 (male) (1) and (2)</td><td>35 to 45 Ω</td></tr><tr><td>Between X27 (male) (1) and ground</td><td>Min. 1 MΩ</td></tr></table></td><td>YES</td><td>• The steering lock solenoid 2 is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The steering lock solenoid 2 is defective.
• Replace the steering lock solenoid 2.
• Go to “Confirmation of repair”.</td></tr>
</table>

Circuit diagram of modulation clutch



No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
3	Wiring harness between machine monitor liquid crystal unit and monitor controller	1. Turn the starting switch to the OFF position. 2. Replace the wiring harness between the machine monitor liquid crystal unit and the monitor controller with the new wiring harness. 3. Turn the starting switch to the ON position. 4. Is “LCD UNIT ON MACHINE MONITOR IS ABNORMAL” resolved?	YES	The repair is completed.
			NO	• The wiring harness between machine monitor liquid crystal unit and the monitor controller is normal. • Go to the next check item.
4	Machine monitor liquid crystal unit	1. Turn the starting switch to the ON position. 2. Make sure that the LED unit and meter unit operate correctly. 3. Do the LED unit and meter unit operate correctly?	YES	• The machine monitor liquid crystal unit is normal. • Go to the next check item.
			NO	• The machine monitor liquid crystal unit is defective. • Replace the machine monitor. • Go to “Confirmation of repair”.
5	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check?	YES	The repair is completed.
			NO	• The monitor controller can be defective. • Replace the monitor controller. • Go to “Confirmation of repair”.
6	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Turn the starting switch to the ON position. 4. Is this problem resolved?	YES	The repair is completed.
			NO	Go to the first check item.

E-23 PARKING BRAKE INDICATOR LAMP DOES NOT LIGHT UP WHEN PARKING BRAKE IS ON (PARKING) POSITION

Details of failure	The monitor controller cannot recognize parking brake press switch operation.
Related information	⚠ **When you do the troubleshooting while the parking brake is released, be sure to chock the tires and let other person to push the brake pedal. (work with 2 persons)** **Prior troubleshooting** If the failure code [D1E6KA], [D1E6KB], or [D1E6KY] is shown, do the troubleshooting for it first. **Monitoring code** • The ON/OFF state of the “Parking Brake Press SW” can be checked with the monitoring function. (Code: 04510) • The ON/OFF state of the “Parking Brake SW” can be checked with the monitoring function. (Code: 02215) **Reference information** • When the parking brake switch is set to the ON (PARK) position, the monitoring display of the parking brake switch and parking brake oil pressure switch change to OFF as no oil pressure is applied in normal condition. • When the voltage of 24 V is applied to the parking brake solenoid, the parking brake is released. • The T-adapter of the monitor controller connector is “socket type box” adapter. The operating voltage cannot be measured with the monitor controller connector. • For details about the parking brake relay (L124), see failure code [2F00MA].

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Wiring harness and connector	1. Check the wiring harness and connector. For details, see “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”, “ELECTRIC EQUIPMENT”. 2. Are the wiring harness and connector normal?	YES	• The wiring harness and connector are normal. • Go to the next check item.
			NO	• The wiring harness and connector are defective. • Repair or replace the defective wiring harness and connector. • Go to “Confirmation of repair”.

E-39 NONE OF HEADLAMP, CLEARANCE LAMP, OR TAIL LAMP LIGHTS UP

Details of failure	The lighting up circuit is abnormal.
Related information	**Monitoring code** • ON/OFF state of the “Night Lighting SW” can be checked with the monitoring function. (Code: 04507) • ON/OFF state of the “Head Light SW” can be checked with the monitoring function. (Code: 04507) **Reference information** • Headlamp switch “SMALL” position: The clearance lamp, tail lamp, and machine monitor night lighting light up. • Headlamp switch “HEAD” position: The headlamp, clearance lamp, tail lamp, and machine monitor night lighting light up.

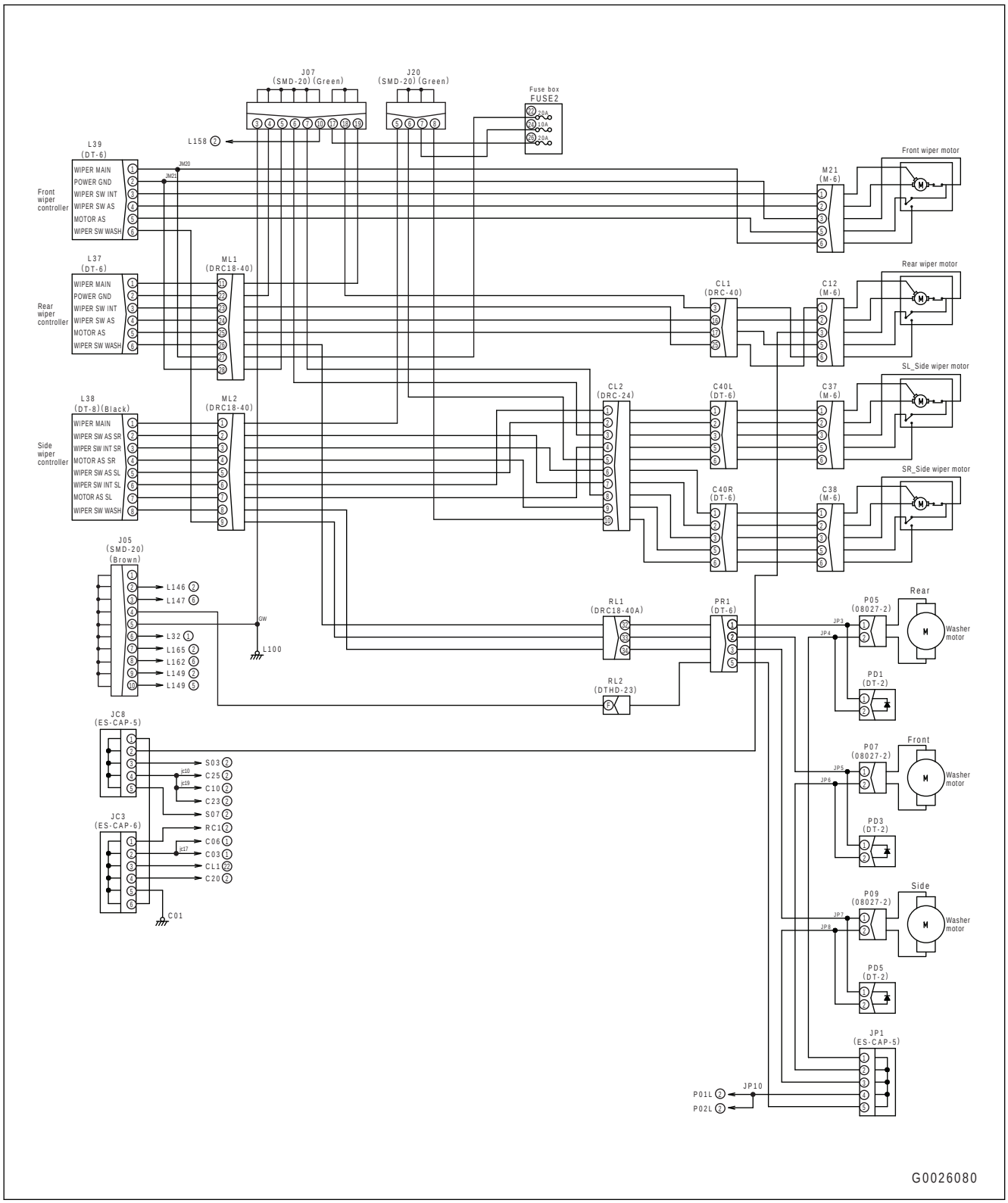
No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Wiring harness and connector	1. Check the wiring harness and connector. For details, see “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”, “ELECTRIC EQUIPMENT”. 2. Are the wiring harness and connector normal?	YES	• The wiring harness and connector are normal. • Go to the next check item.
			NO	• The wiring harness and connector are defective. • Repair or replace the defective wiring harness and connector. • Go to “Confirmation of repair”.
2	Fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position. 3. Remove the fuse No.5 in the fuse box FUSE2, and visually check it for blown out, then do the continuity test. 4. Is the fuse normal?	YES	• The fuse is normal. • Go to the next check item.
			NO	• The fuse is defective. • If the fuse is blown out, go to “Ground fault in wiring harness”. • If the fuse is not blown out but has no continuity, replace it. • Go to “Confirmation of repair”.

E-49 BACKUP LAMP DOES NOT LIGHT UP OR STAYS LIT

Details of failure	The lighting up circuit is abnormal.
Related information	-

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Wiring harness and connector	1. Check the wiring harness and connector. For details, see “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”, “ELECTRIC EQUIPMENT”. 2. Are the wiring harness and connector normal?	YES	• The wiring harness and connector are normal. • Go to the next check item.
			NO	• The wiring harness and connector are defective. • Repair or replace the defective wiring harness and connector. • Go to “Confirmation of repair”.
2	Fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position. 3. Remove the fuse No.7 in the fuse box FUSE2, and visually check it for blown out, then do the continuity test. 4. Is the fuse normal?	YES	• The fuse is normal. • Go to the next check item.
			NO	• The fuse is defective. • If the fuse is blown out, go to “Ground fault in wiring harness”. • If the fuse is not blown out but has no continuity, replace it. • Go to “Confirmation of repair”.

Circuit diagram of window washer



E-74 KomVision MONITOR DOES NOT DISPLAY CAMERA IMAGE PARTIALLY

Details of failure	The KomVision camera or control system is abnormal.
Related information	**Prior troubleshooting** If the KomVision related failure code is shown, do the troubleshooting for it first.

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Block of camera	1. Check for the obstacle that blocks the camera. 2. Is there an obstacle?	YES	• Remove the obstacle to block the camera. • Go to “Confirmation of repair”.
			NO	• There is no obstacle to block the camera. • Go to the next check item.
2	KomVision monitor	1. Turn the starting switch to the ON position. 2. Change to other camera image to troubleshoot. 3. Is there an area that is not shown on the KomVision monitor all the time?	YES	• The KomVision monitor is defective. • Replace the KomVision monitor. • Go to “Confirmation of repair”.
			NO	• The KomVision monitor is normal. • Go to the next check item.
3	KomVision camera	1. Turn the starting switch to the OFF position. 2. Replace the defective camera with another KomVision camera installed in the machine. 3. Turn the starting switch to the ON position. 4. Is the camera image shown correctly? **REMARK** When you replace the defective camera, do the calibration of the replaced camera. For details, see OTHERS, “TEST AND ADJUST KomVision SYSTEM”, “CAMERA CALIBRATION”.	YES	• The KomVision camera is defective. • Replace the KomVision camera. • Go to “Confirmation of repair”.
			NO	• The KomVision camera is normal. • Go to the next check item.

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
14	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Start the engine. 4. Operate the AJSS lever to troubleshoot. 5. Is this problem resolved?	YES	The repair is completed.
			NO	Go to the first check item.

H-21 BUCKET SLOWS DOWN DURING TILT BACK OPERATION

Details of failure	The bucket cylinder is abnormal.
Related information	**NOTICE** Work equipment system hydraulic circuit has two systems. **Monitoring code** “Bucket Flow Command” can be checked with the monitoring function. (Code: 55901) **Reference information** • Make sure that the bucket and bucket cylinder are not deformed. • Make sure that the bucket flow command does not change.

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Bucket cylinder	1. The bucket cylinder tube can be expanded or there can be a internal damage. 2. Check the bucket cylinder. 3. Is the bucket cylinder normal? **REMARK** • Hold the boom at detent while the boom RAISE remote positioner is in operation, then the boom is operated above the target stop angle, the boom RAISE operation speed decreases and increases. • For other failure of the boom RAISE, see H MODE “BUCKET MOVES SLOW OR LACKS TILT BACK FORCE”.	YES	• The bucket cylinder is normal. • Go to the next check item.
			NO	• The bucket cylinder is defective. • Disassemble the bucket cylinder to check further, and repair or replace it. • Go to “Confirmation of repair”.
2	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Start the engine. 4. Operate the bucket control lever to troubleshoot. 5. Is this problem resolved?	YES	The repair is completed.
			NO	Go to the first check item.

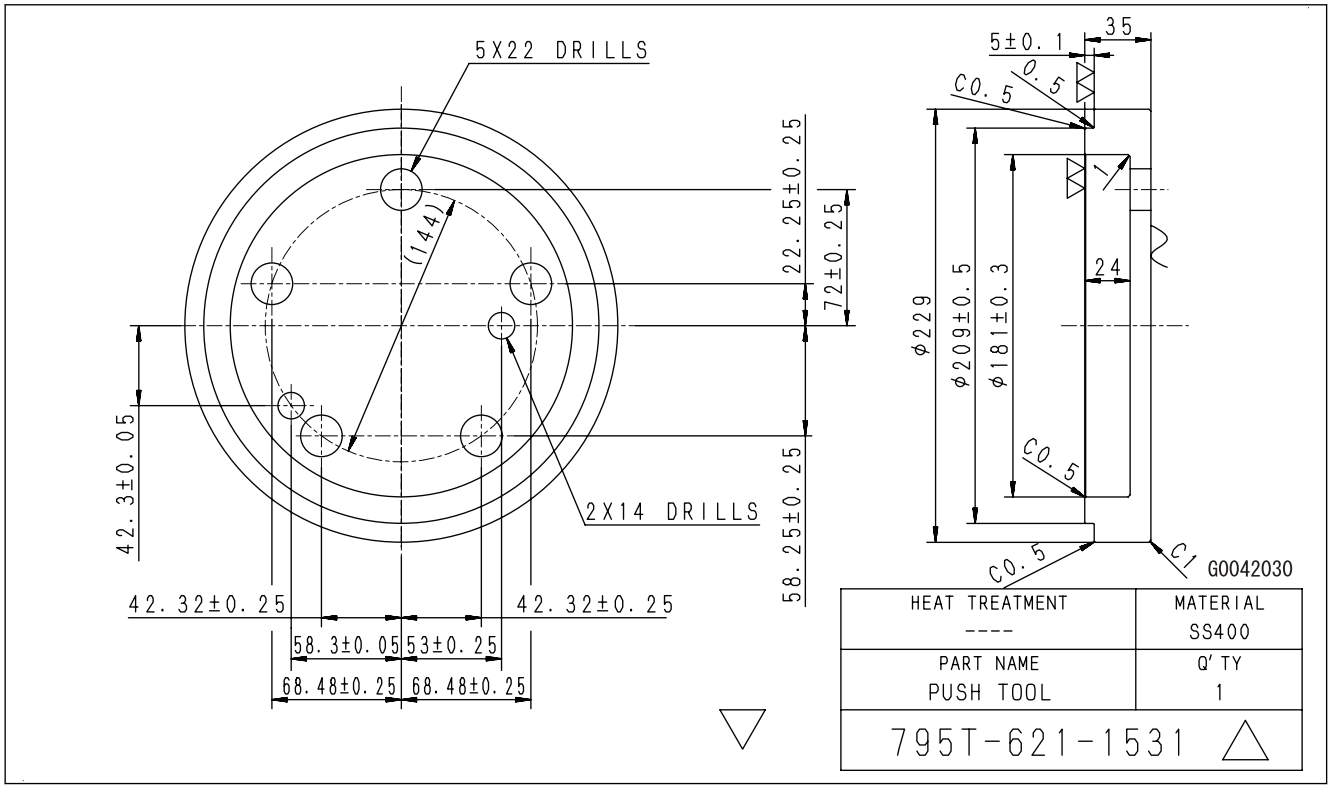
No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
21	Compression pressure	1. Test the compression pressure. For details, see TESTING AND ADJUSTING, “TEST COMPRESSION PRESSURE”, “TEST COMPRESSION PRESSURE”. 2. Is the compression pressure normal?	YES	• The compression pressure is normal. • Go to “Confirmation of repair”.
			NO	• The compression pressure is defective. • Go to the next check item.
22	Engine controller	1. The engine controller can have a internal error. 2. Replace the engine controller. 3. Turn the starting switch to the start position. 4. Is this trouble removed?	YES	• The removed engine controller is defective. • The repair is completed.
			NO	• The removed engine controller is normal. • Return the removed engine controller to its initial position. • Go to the next check item.
23	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check? **REMARK** • If you cannot identify the cause by the check, failure can be occurred in the items that follow. • Engine combustion chamber components	YES	The repair is completed.
			NO	• Remove the engine assembly. For details, see DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL ENGINE ASSEMBLY” in shop manual, and see Engine 12V140E-7 series. Then do a disassembly investigation of the engine and repair or replace the part causing this trouble phenomenon. • Go to “Confirmation of repair”. **REMARK** This troubleshooting cannot be done on some working jobsites.
24	Confirmation of repair	1. Connect all the component parts. 2. Turn the starting switch to the START position to troubleshoot. 3. Is this trouble removed?	YES	The repair is completed.
			NO	Go to the first check item.

S-19 VIBRATION IS EXCESSIVE

Failure	Vibration is excessive.
Related information	**Prior troubleshooting** • If unusual noise is heard and vibration is excessive, do the troubleshooting of “UNUSUAL NOISE IS HEARD” also. • If the failure code is shown, do the troubleshooting for it first.

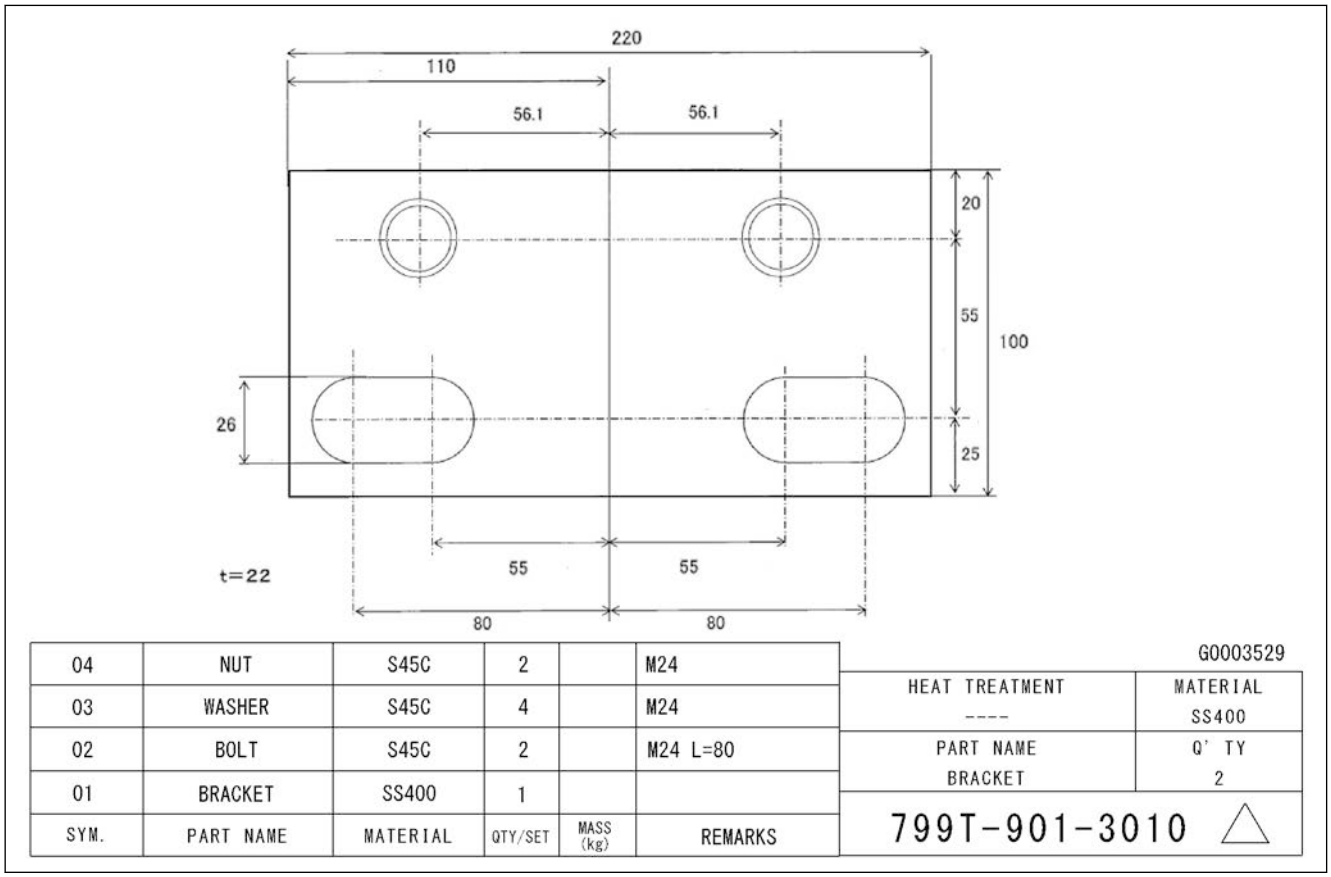
No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Engine mount bolt and cushion	1. Check the engine mount bolt for looseness and the cushion for crack or hardening. For details, see MAINTENANCE STANDARD, “ENGINE AND COOLING SYSTEM”, “MAINTENANCE STANDARD OF ENGINE MOUNT”. 2. Are the engine mount bolt and cushion normal? **REMARK** • If the engine mount bolt is loose, it is a failure. • If there is a crack or hardened part on the cushion, it is a failure. • To access the engine mount bolt and cushion, see DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL ENGINE ASSEMBLY”.	YES	• The engine mount bolt and cushion are normal. • Go to the next check item.
			NO	• The engine mount bolt and cushion are defective. • Retighten the bolt or replace the cushion. • Go to “Confirmation of repair”.
2	Vibration damper	1. Remove the vibration damper. For details, see DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL ENGINE FRONT OIL SEAL”. 2. Check the vibration damper. For details, see MAINTENANCE STANDARD in the shop manual Engine 12V140E-7 series. 3. Is the vibration damper normal?	YES	• The vibration damper is normal. • Go to the next check item.
			NO	• The vibration damper is defective. • Replace the vibration damper. • Go to “Confirmation of repair”.
3	Damper assembly	1. Remove the damper assembly. For details, see DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL DAMPER ASSEMBLY”. 2. Check the damper assembly. For details, see MAINTENANCE STANDARD, “ENGINE AND COOLING SYSTEM”, “MAINTENANCE STANDARD OF DAMPER”. 3. Is the damper assembly normal?	YES	• The damper assembly is normal. • Go to the next check item.
			NO	• The damper assembly is defective. • Repair or replace the part that does not agree with the standard value as in MAINTENANCE STANDARD. • Go to “Confirmation of repair”.

795T-621-1531: Push tool



HEAT TREATMENT	MATERIAL
----	SS400
PART NAME	Q'TY
PUSH TOOL	1
795T-621-1531 △	

799T-901-3010: Bracket



SYM.	PART NAME	MATERIAL	QTY/SET	MASS (kg)	REMARKS
04	NUT	S45C	2		M24
03	WASHER	S45C	4		M24
02	BOLT	S45C	2		M24 L=80
01	BRACKET	SS400	1		

HEAT TREATMENT	MATERIAL
----	SS400
PART NAME	Q'TY
BRACKET	2
799T-901-3010 △	

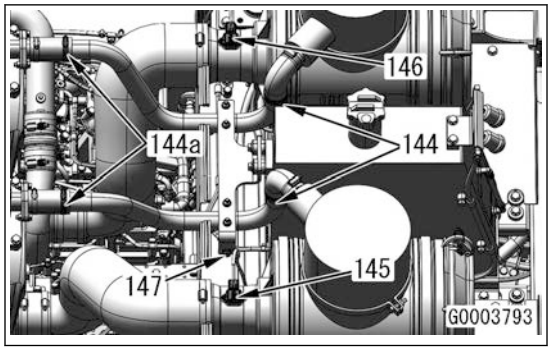
REMOVE AND INSTALL COOLING FAN AND FAN MOTOR ASSEMBLY

Standard tools to be used when you remove and install the cooling fan and fan motor assembly

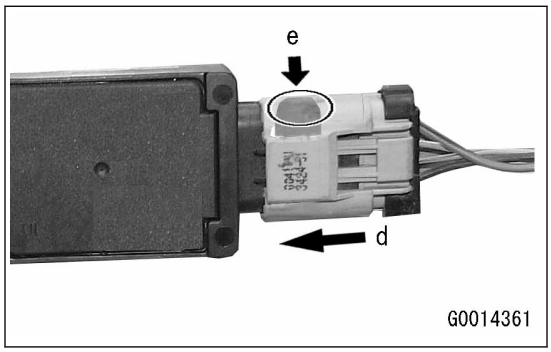
The listed parts are for reference only. You can use the part that is not listed if it is applicable.

No.	Part name	Part No.	Specifications	Q'ty	Remarks
1	Socket wrench	Commercially available	17 mm	1	
2	Socket wrench	Commercially available	19 mm	1	
3	Socket wrench	Commercially available	24 mm	1	
3	Socket wrench	Commercially available	30 mm	1	
4	Socket wrench	Commercially available	55 mm	1	
5	Open-end wrench	Commercially available	27 mm	1	
6	Open-end wrench	Commercially available	32 mm	1	
7	Open-end wrench	Commercially available	41 mm	1	
8	Torque wrench (socket)	Commercially available	24.5 to 34.3 Nm 59 to 74 Nm 98 to 123 Nm 235 to 285 Nm 441 to 539 Nm 455 to 565 Nm	As required	
9	Torque wrench (open-end)	Commercially available	44.1 to 53.9 Nm 49.0 to 78.5 Nm 128 to 186 Nm 177 to 245 Nm	As required	
10	Puller	Commercially available		1	
11	Oil container	Commercially available		As required	
12	Webbing sling	Commercially available	25 mm (800 kg)	As required	(35 kg), (75 kg)
13	Hose	Commercially available		2	

63. Install the bolt (147).
    Tool: Torque wrench (socket)
    Bolt (147): Width across flats 17 mm, M10
    Bolt (147): 59 to 74 Nm {6.0 to 7.5 kgm}

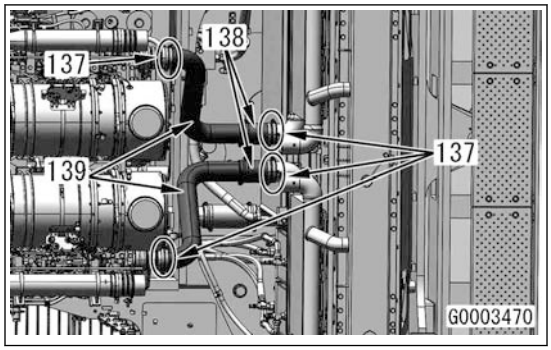


64. Connect the connector MAF (145) and MAF_2 (146) as follows.
    1) Connect the connector in the direction (d).
    2) Slide the lock in the direction (e), and lock it.
65. Install the hose clamps (144) (2 pieces) and (144a) (2 pieces).
    Tool: Torque wrench (socket)
    Hose clamp (144): Width across flats 8 mm
    Hose clamp (144): 8.8±0.5 Nm {0.90±0.05 kgm}
    Hose clamp (144a): Width across flats 7 mm
    Hose clamp (144a): 5.9±0.49 Nm {0.60±0.05 kgm}

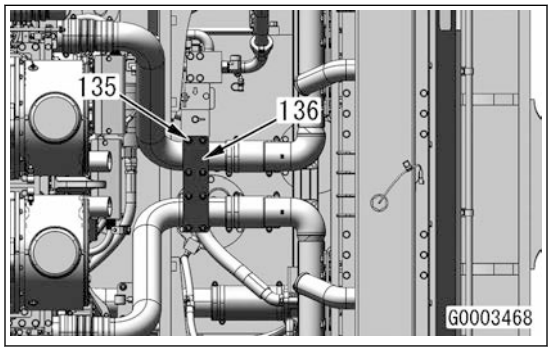


Hose, tube

66. Install the hoses (138) (2 pieces) and tubes (139) (2 pieces) as a unit with the hose clamps (137) (8 pieces).
    Tool: Torque wrench (socket)
    Hose clamp (137): Width across flats 9.5 mm (3/8 inch)
    Hose clamp (137): 10.58±0.5 Nm {1.07±0.05 kgm}



67. Install the bracket (136) with the U-bolts (135) (4 pieces).
    REMARK
    Use the new U-bolts (135).
    Tool: Torque wrench (socket)
    U-bolt (135): Width across flats 19 mm
    U-bolt (135): 14.7 to 44.1 Nm {1.5 to 4.5 kgm}



Bolt for clamp (26), (26a): Width across flats 14 mm, M10

Bolt for clamp (26), (26a): 10.8 to 26.0 Nm {1.1 to 2.7 kgm}

Bolt for clamp (27): Width across flats 10 mm, M6

Bolt for clamp (27): 11.8 to 14.7 Nm {1.2 to 1.5 kgm}

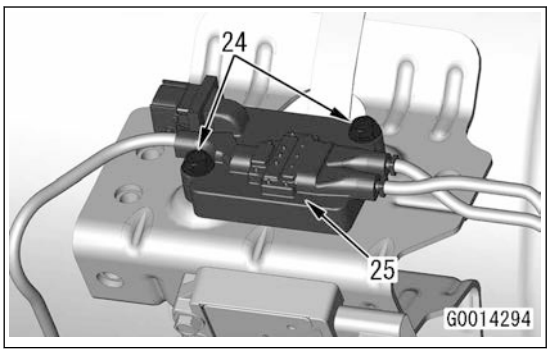
Temperature sensor

17. Install the temperature sensor (25) with the bolts (24) (2 pieces).

    Tool: Torque wrench (socket)

    Bolt (24): Width across flats 10 mm, M6

    Bolt (24): 11.8 to 14.7 Nm {1.2 to 1.5 kgm}

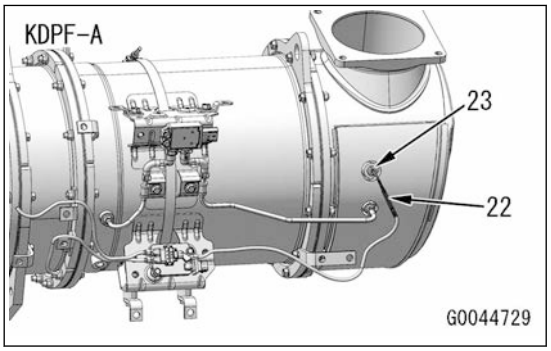


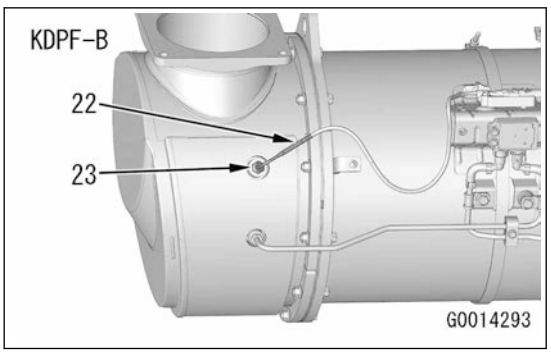
18. Tighten the KDPF outlet temperature sensor (22) with the nut (23).

    Tool: Torque wrench (open-end)

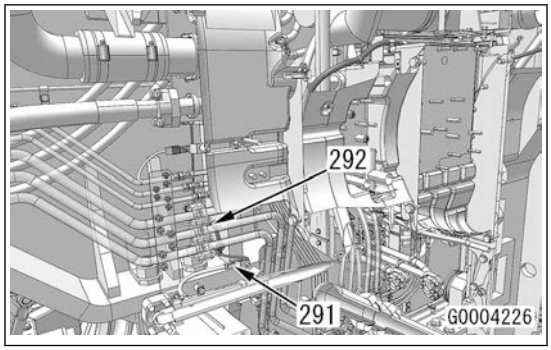
    Nut (23): Width across flats 17 mm

    Nut (23): 22 to 28 Nm {2.2 to 2.8 kgm}



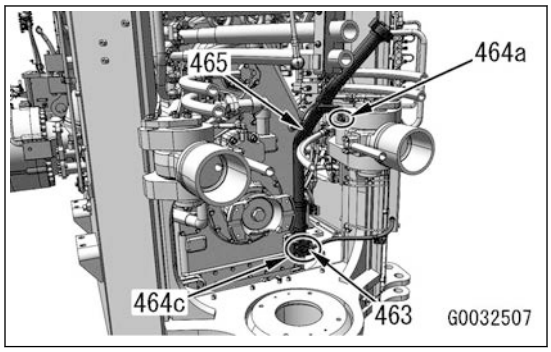


95. Disconnect the connector R72 (291).
96. Remove the bolt (292).
    Tool: Socket wrench
    Bolt (292): Width across flats 17 mm, M10



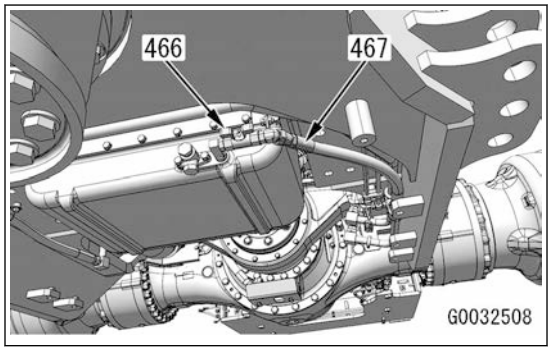
Filler tube assembly

97. Disconnect the hose (463).
    Tool: Open-end wrench, special tool A
    Hose (463): Width across flats 22 mm, #03 size
98. Remove the bolts (464a) (2 pieces) and (464c) (4 pieces), and remove the filler tube assembly (465).
    Tool: Socket wrench, special tool J, oil container
    Bolt (464a): Width across flats 17 mm, M10
    Bolt (464c): Width across flats 19 mm, M12



Service center (for machines with service center)

99. Make sure that the valve (466) is closed, and disconnect the hose (467).
    Tool: Open-end wrench, special tool D
    Hose (467): Width across flats 36 mm, #06 size



Diverter valve assembly

100. Remove the diverter valve assembly. For details, see “REMOVE AND INSTALL DIVERTER VALVE ASSEMBLY”.

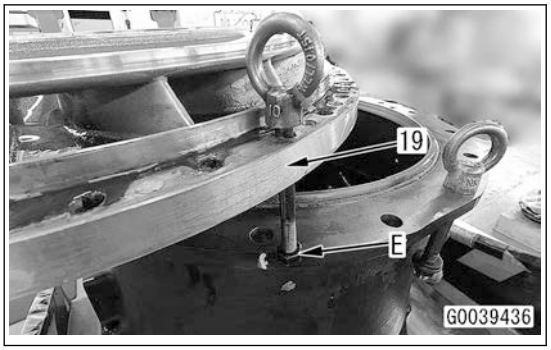
15. Lift the pump assembly (19), and remove it.

    REMARK

    Be careful that the bearing inner race is not damaged.

    Tool: Eyebolt (M10, stem), 2-point wire, nut (E)

    Pump assembly (19): 40 kg

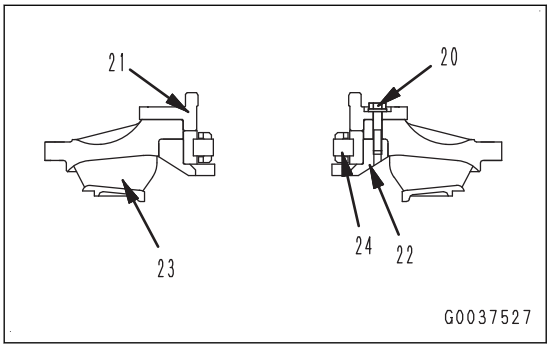


16. Turn over the pump assembly (19), remove the bolts (20) (16 pieces), and remove the retainer (21) and guide (22) from the pump (23).

    Tool: Socket wrench

    Bolt (20): Width across flats 17 mm, M10

17. Remove the outer race of the bearing (24) from the guide (22).



18. Remove the inner race of the bearing (24) and spacer (25) from the stator shaft (26).

    Tool: Puller (A), spacer (B), push tool (F)

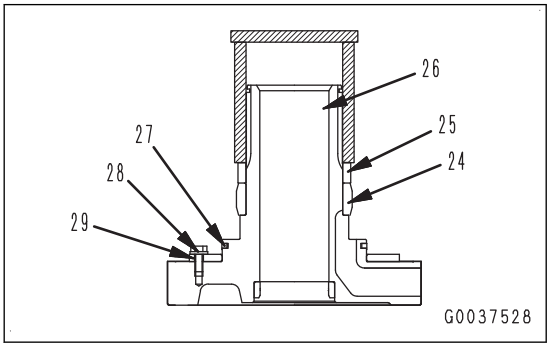
19. Remove the seal ring (27) from the stator shaft (26).

20. Remove the bolts (28) (4 pieces), and remove the plate (29).

    Tool: Socket wrench

    Bolt (28): Width across flats 17 mm, M10

    Stator shaft (26): 30 kg



ASSEMBLE TORQUE CONVERTER ASSEMBLY

Preparation

1. Wash the each parts and repair the sharp edges in advance.

   NOTICE

   When you install the bearing by expansion fit, drop 6 cc or more of power train oil (TO10 or TO30) or rust preventive oil (KP-9) over it, and rotate it approximately 10 turns.

Pump and stator assembly

2. Install the plate (29) to the stator shaft (26) with the bolts (28) (4 pieces).

   Tool: Torque wrench (socket)

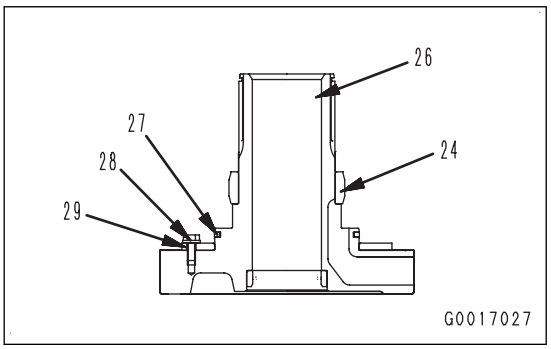
   Bolt (28): Width across flats 17 mm, M10

   Bolt (28): 59 to 74 Nm {6 to 7.5 kgm}

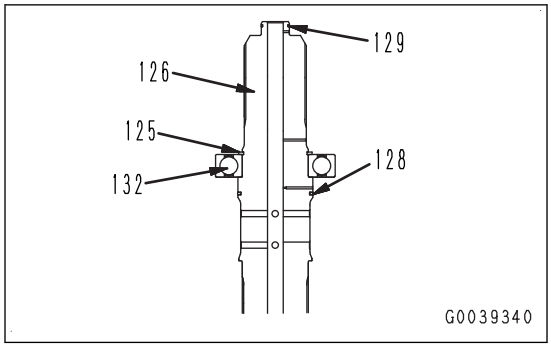
3. Install the seal ring (27) to the stator shaft (26).

   Outside periphery of seal ring (27): Grease (G0-LI or G2-LI)

4. Install the inner race of the bearing (24) to the stator shaft (26).



7. Install the bearing (132) to the output shaft (126), and install the snap ring (125).



NOTICE

Press-fit the bearing inner race until its end surface touches the stepped part of the output shaft (126).

Tool: Push tool (H), (J), snap ring pliers (For shaft)

Output shaft (126): 45 kg

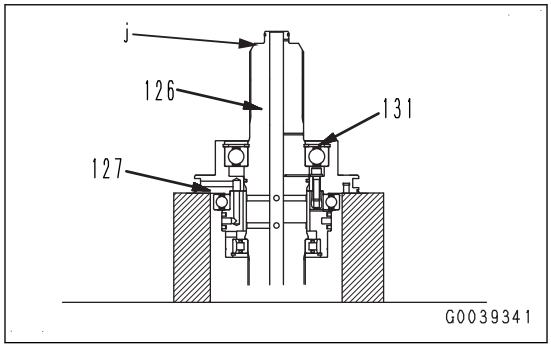
8. Install the seal rings (128) and (129) to the output shaft (126).

Outside periphery of seal ring (128): Grease (G0-LI or G2-LI)

Outside periphery of seal ring (129): Grease (G0-LI or G2-LI)

9. Set the cage assembly (127) with the block.

Tool: Block



Cage assembly (127): 40 kg

10. Lift the output shaft (126) with the points (h), and set it to the installation position.

Tool: Eyebolt (M8, stem) (2 pieces), 2-point wire

Output shaft (126): 50 kg

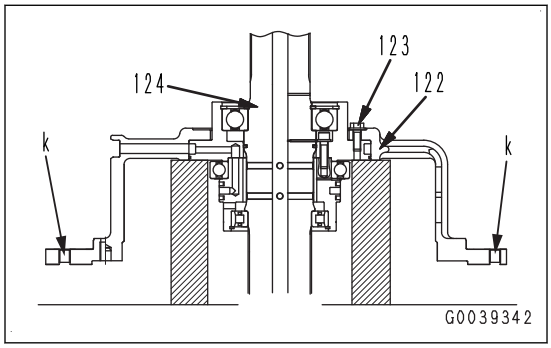
11. Install the output shaft (126) to the cage assembly (127), and install the snap ring (131).

NOTICE

Press-fit the bearing outer race until its end surface touches the stepped part of the cage.

Tool: Push tool (K), (L), snap ring pliers (for hole)

12. Install the eyebolt to the point (g), lift the rear housing (122) and set to the output shaft assembly (124).



Tool: Eyebolt (M16) (2 pieces), 2-point wire

Rear housing (122): 110 kg

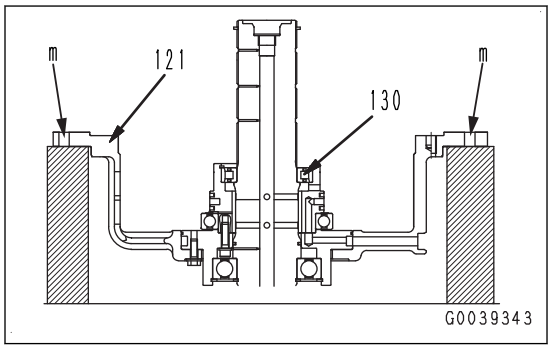
13. Install the rear housing (122) with the bolts (123) (9 pieces).

Tool: Torque wrench (socket)

Bolt (123): Width across flats 19 mm, M12

Bolt (123): 98 to 123 Nm {10 to 12.5 kgm}

14. Install the eyebolt to the points (m), turn over the rear housing assembly (121), and set it on the block.



Tool: Eyebolt (M16) (2 pieces), 2-point wire, block

Rear housing assembly (121): 190 kg

15. Install the inner race of the bearing (130) to the rear housing assembly (121).

NOTICE

Press-fit the bearing inner race until its end surface touches the stepped part of the shaft.

Tool: Push tool (J), (M)

8. Lift the front fender assembly (10) with the points (a), and hold it.

   Tool: 2-point chain, lever block

   Front fender assembly (10): 230 kg

9. Remove the bolts (11a) (4 pieces), bolts (11b) (4 pieces), and bolt (11c) (1 piece), lift the front fender assembly (10), and remove it.

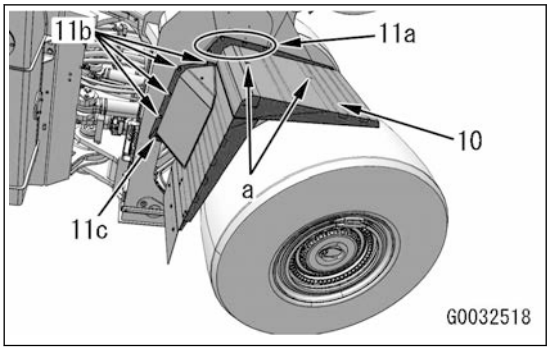
   REMARK

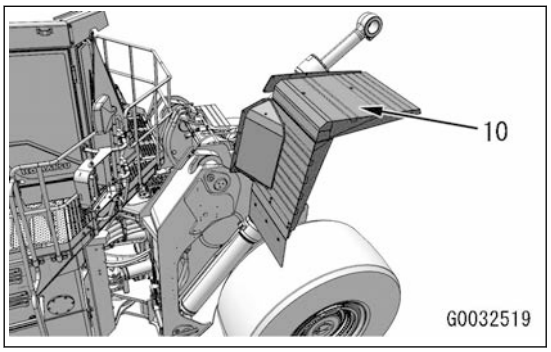
   The length of the bolt (11b) is 30 mm and that of the bolt (11c) is 35 mm.

   Tool: Socket wrench

   Bolt (11a): Width across flats 24 mm, M16

   Bolt (11b), (11c): Width across flats 19 mm, M12

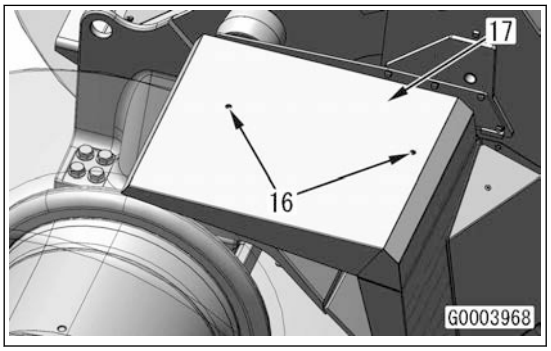




Front fender assembly (machine left side)

10. Remove the caps (16) (2 pieces), and install the eyebolt.

    Tool: Eyebolt



11. Lift the front fender assembly (17) with the points (a), and hold it.

    Tool: 2-point chain, lever block

    Front fender assembly (17): 230 kg

12. Remove the bolts (18a) (4 pieces), bolts (18b) (4 pieces), and bolt (18c) (1 piece), lift the front fender assembly (17), and remove it.

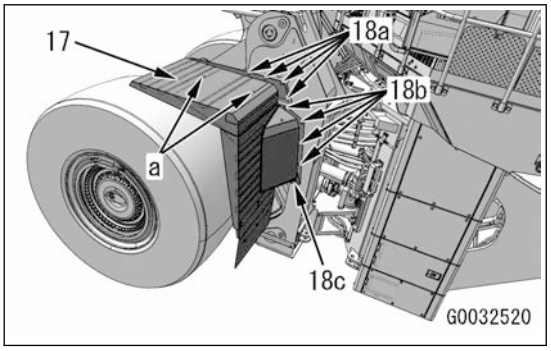
    REMARK

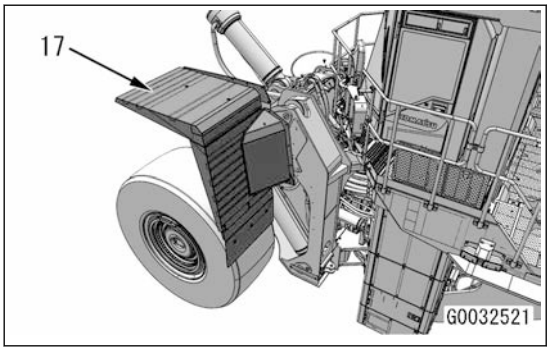
    The length of the bolt (11b) is 30 mm and that of the bolt (11c) is 35 mm.

    Tool: Socket wrench

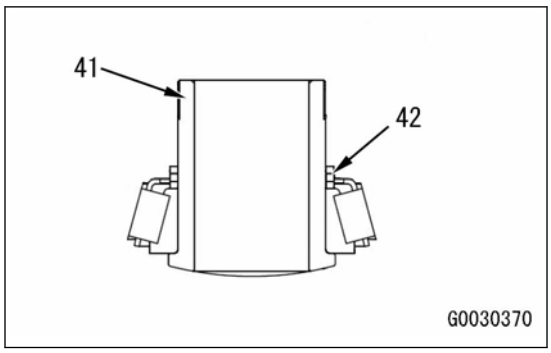
    Bolt (18a): Width across flats 24 mm, M16

    Bolt (18b), (18c): Width across flats 19 mm, M12

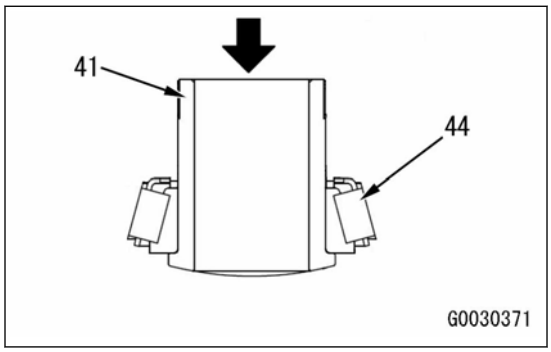




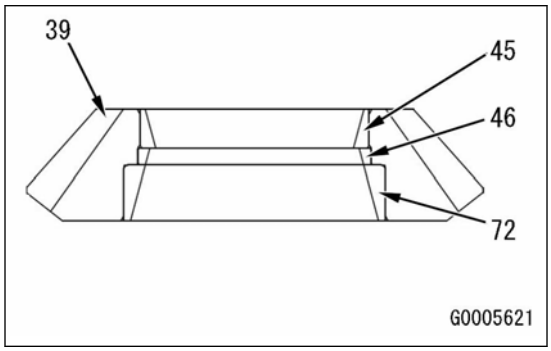
3) Remove the spacer (42) from the sleeve (41).



4) Remove the bearing (44) from the sleeve (41) with the press.
   Tool: Press

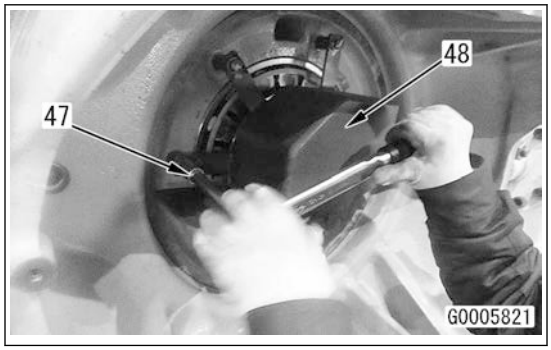


5) Remove the outer race (45) from the pinion gear (39) with the press.
   Tool: Press
6) Remove the spacer (46) and outer race (72) from the pinion gear (39) with the press.
   Tool: Press



Cage assembly
The figure shows the front side as a example. Do the same procedure for the rear side.

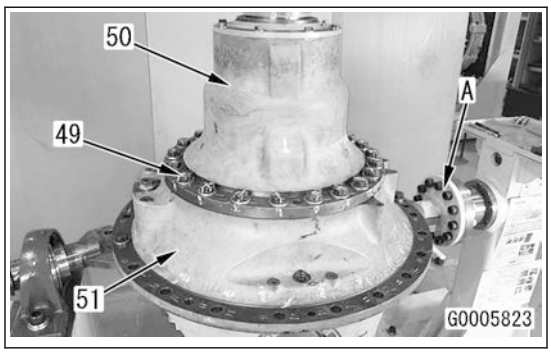
33. Remove the bolts (47) (3 pieces), and remove the pinion gear cover (48).
    Tool: Socket wrench
    Bolt (47): Width across flats 17 mm, M10



34. Turn the unit repair stand (A) by 90 °, and move the cage assembly (50) upward.
35. Remove the bolts (49) (22 pieces), lift the cage assembly (50), and remove it.

    REMARK

    - Put the matchmarks on the carrier case (51) and cage assembly (50).
    - After removal, set the cage assembly (50) on the block to prevent its bottom from touching the floor.



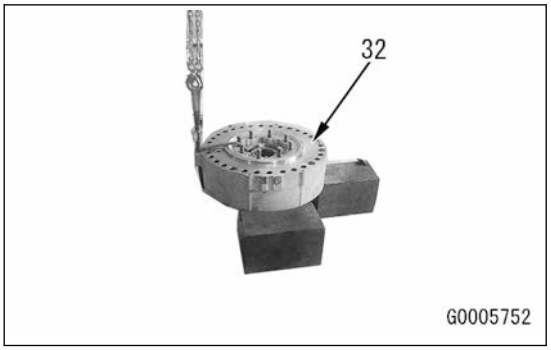
14. Turn over the brake housing (32), and set it on the block.

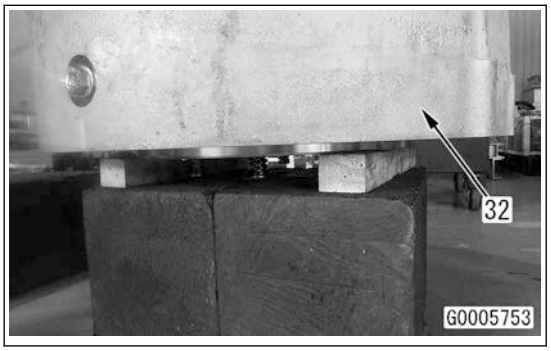
REMARK

Do not block the guide and stud bolt installation position when it is set.

Tool: Webbing sling, 2-point chain, block

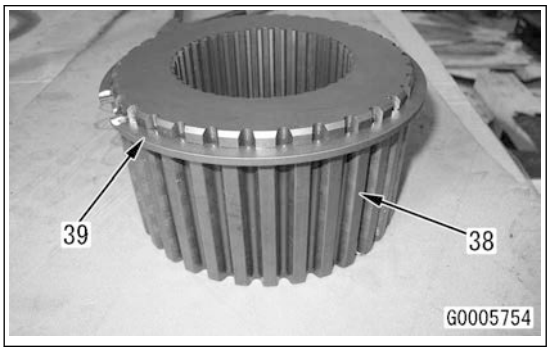
Brake housing (32): 310 kg





15. Install the snap ring (39) to the inner gear (38).

Tool: Snap ring pliers (For shaft)

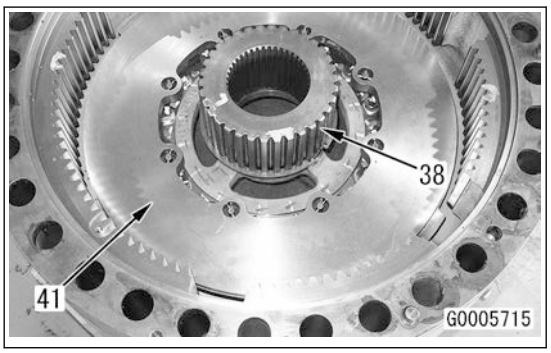


16. Install the inner gear (38).

REMARK

- Install the inner gear (38) with its snap ring installed side down.
- Apply axle oil to the piston (41).

Piston (41): Axle oil (AXO80)



12. Install the covers (10), (11), and (12) with the bolts (7) (6 pieces), (8) (6 pieces), and (9) (6 pieces).

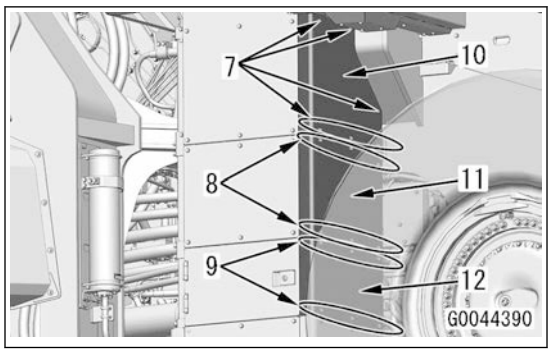
    Tool: Torque wrench (socket)

    Bolt (7), (8), (9): Width across flats 19 mm, M12

    Cover (10): 11 kg

    Cover (11): 11 kg

    Bolt (7), (8), (9): 98 to 123 Nm {10 to 12.5 kgm}



13. Install the covers (4), (5), and (6) with the bolts (1) (6 pieces), (2) (6 pieces), and (3) (6 pieces).

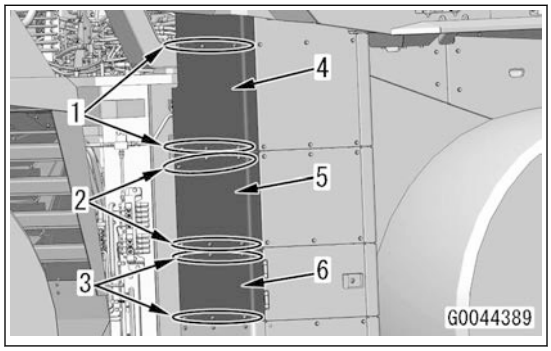
    Tool: Torque wrench (socket)

    Bolt (1), (2), (3): Width across flats 19 mm, M12

    Cover (4): 15 kg

    Cover (5): 11 kg

    Bolt (1), (2), (3): 98 to 123 Nm {10 to 12.5 kgm}



Add hydraulic oil

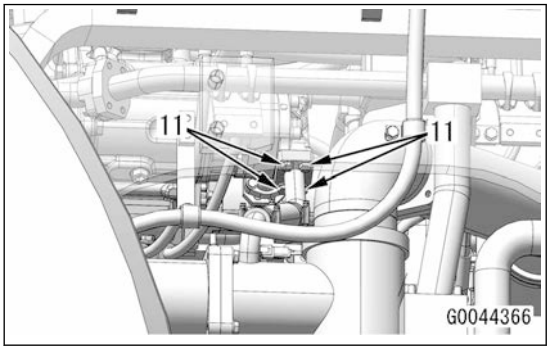
14. Add hydraulic oil. For details, see “DRAIN AND ADD HYDRAULIC OIL”.

Bleed air from brake circuit

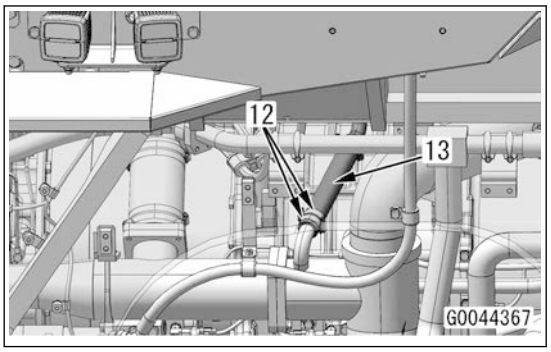
15. Bleed air from the brake circuit. (For details, see TESTING AND ADJUSTING, “BLEED AIR FROM BRAKE CIRCUIT”.)

Suction hose

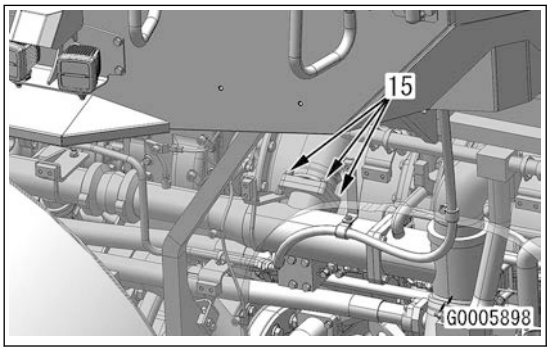
3. Remove the bolts (11) (4 pieces).
   Tool: Socket wrench
   Bolt (11): Width across flats 17 mm, M10



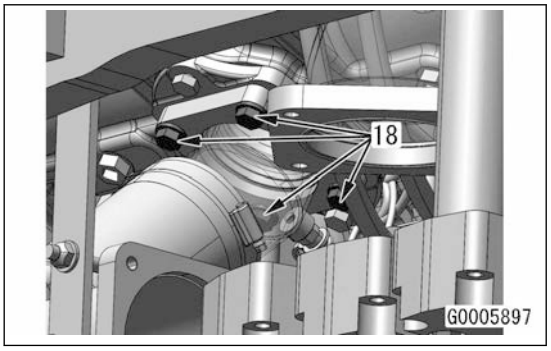
4. Remove the hose clamps (12) (2 pieces), and disconnect the hose (13).
   Tool: Socket wrench
   Hose clamp (12): Width across flats 8 mm



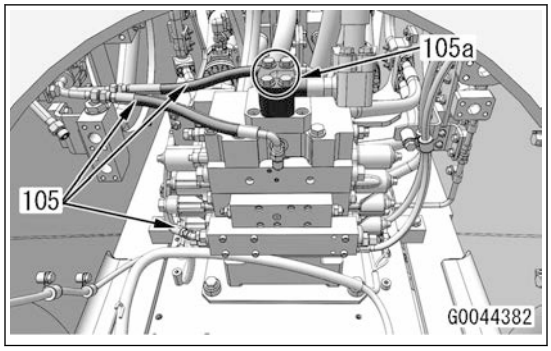
5. Remove the bolts (15) (4 pieces).
   Tool: Socket wrench
   Bolt (15): Width across flats 19 mm, M12



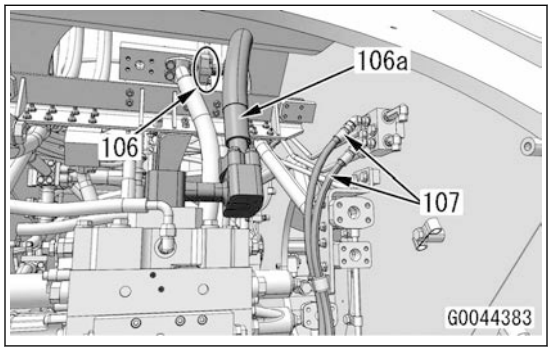
6. Remove the bolts (18) (4 pieces).
   Tool: Socket wrench
   Bolt (18): Width across flats 19 mm, M12



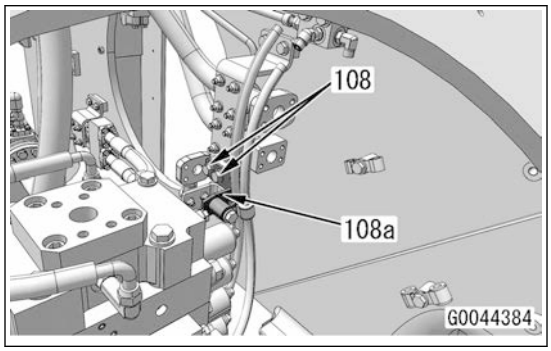
55. Disconnect the hoses (105) (3 pieces).
    Tool: Open-end wrench, special tool B
    Hose (105): Width across flats 22 mm, #03 size
56. Remove the bolts (105a) (4 pieces).
    Tool: Socket wrench
    Bolt (105a): Width across flats 19 mm, M12



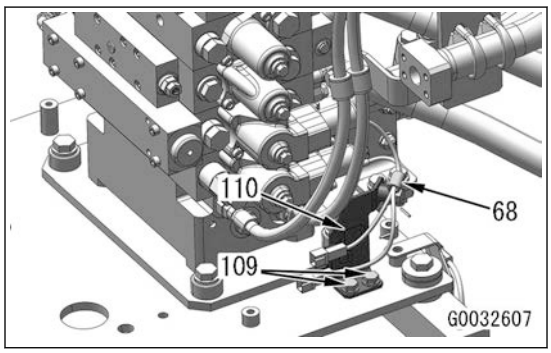
57. Remove the bolts (106) (4 pieces), and remove the tube assembly (106a).
    Tool: Socket wrench
    Bolt (106): Width across flats 19 mm, M12
58. Disconnect the hoses (107) (2 pieces).
    Tool: Open-end wrench, special tool B
    Hose (107): Width across flats 22 mm, #03 size



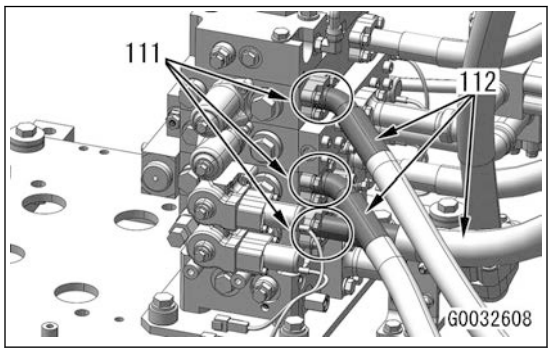
59. Remove the bolts (108) (2 pieces), and remove the bracket (108a).
    Tool: Socket wrench
    Bolt (134): Width across flats 19 mm, M12



60. Remove the clamp (68).
    Tool: Socket wrench
    Bolt for clamp (68): Width across flats 17 mm, M10
61. Remove the bolts (109) (2 pieces), and remove the bracket (110).
    Tool: Socket wrench
    Bolt (109): Width across flats 17 mm, M10

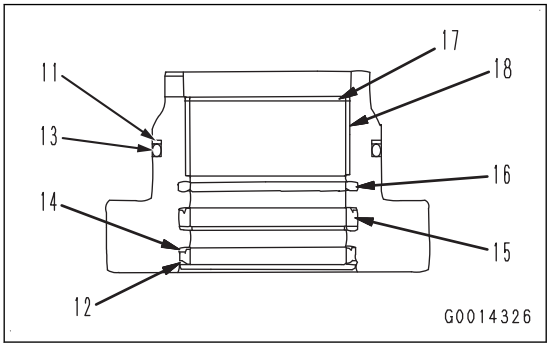


62. Remove the bolts (111) (12 pieces), and disconnect the hoses (112) (3 pieces).
    Tool: Socket wrench, special tool C
    Bolt (111): Width across flats 14 mm, M10



Disassembly of cylinder head assembly

9. Remove the O-ring (13) and backup ring (11).
   Tool: Snap ring pliers
10. Remove the snap ring (12), and remove the dust seal (14).
11. Remove the rod packing (15).
12. Remove the buffer ring (16).
13. Remove the snap ring (17), and remove the bushing (18).
    Tool: Snap ring pliers



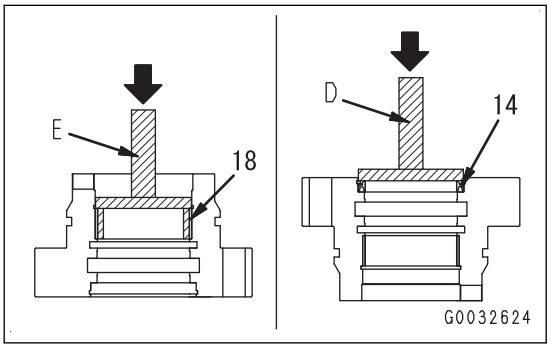
ASSEMBLE LIFT CYLINDER ASSEMBLY

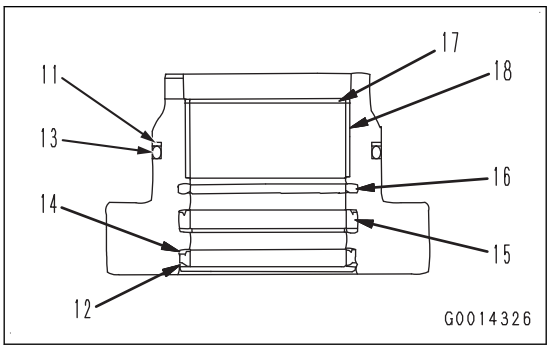
⚠ **Be sure not to damage the packing, dust seal, and O-ring.**

⚠ **Do not insert the backup ring with force. Warm it in water at 50 to 60 °C before you insert it.**

Assembly of cylinder head assembly

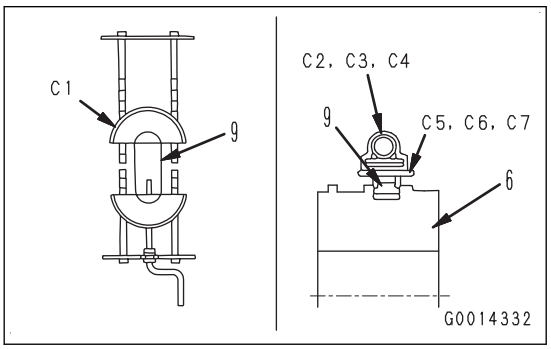
1. Press-fit the bushing (18) with the push tool (E), and install the snap ring (17).
   Tool: Push tool (E), snap ring pliers
2. Install the buffer ring (16).
3. Install the rod packing (15).
4. Install the dust seal (14) with the plate (D), and fix it with the snap ring (12).
   Tool: Plate (D), snap ring pliers
5. Install the backup ring (11) and O-ring (13).



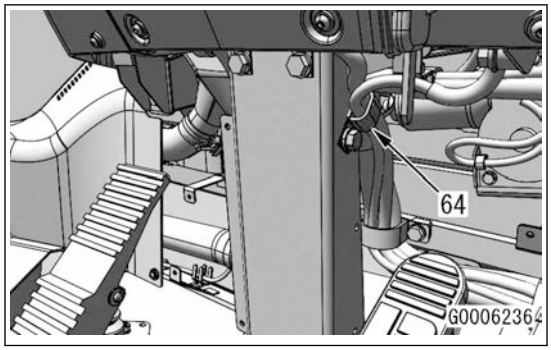


Assembly of piston assembly

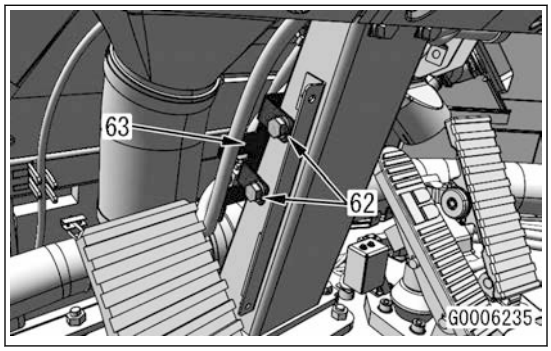
6. Expand the piston ring (9) with the expander (C1).
   REMARK
   Rotate the handle of the expander (C1) 8 to 10 turns to expand the piston ring (9).
   Tool: Expander (C1)
7. Remove the piston ring (9) from the expander (C1), and install it to the piston (6).
   Tool: Expander (C1)
8. Compress the piston ring (9) with the expander (C1).
   Tool: Expander (C1)
9. Install the wear ring (8).



23. Install the clamp (64).
    Tool: Torque wrench (socket)
    Bolt for clamp (64): Width across flats 17 mm, M10
    Bolt for clamp (64): 59 to 74 Nm {6 to 7.5 kgm}

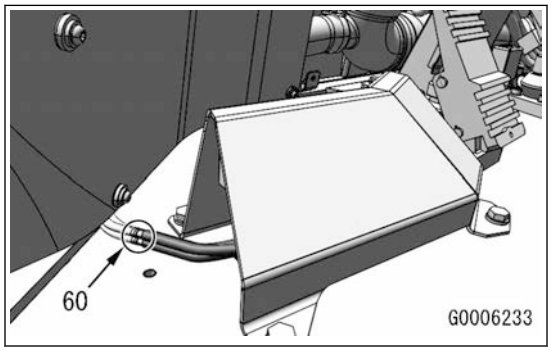


24. Install the bracket (63) with the bolts (62) (2 pieces).
    REMARK
    The wiring harness is attached to the bracket (62) at this time.
    Tool: Torque wrench (socket)
    Bolt (62): Width across flats 17 mm, M10
    Bolt (62): 59 to 74 Nm {6 to 7.5 kgm}

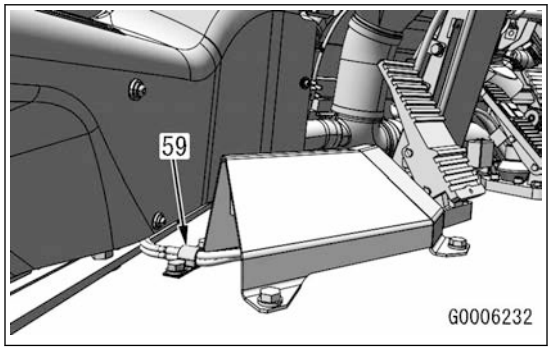


Hose

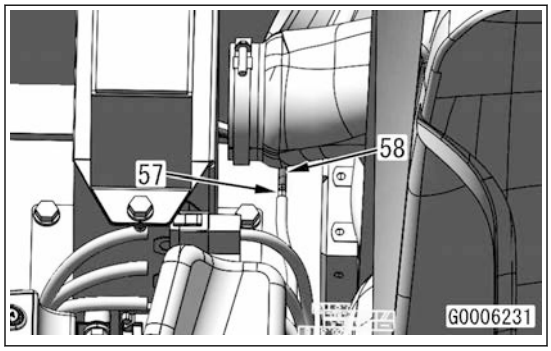
25. Connect the connectors (60) (3 pieces).



26. Install the clamp (59).
    Tool: Torque wrench (socket)
    Bolt for clamp (59): Width across flats 17 mm, M10
    Bolt for clamp (59): 59 to 74 Nm {6 to 7.5 kgm}



27. Disconnect the connector (57), and connect the hose (58).

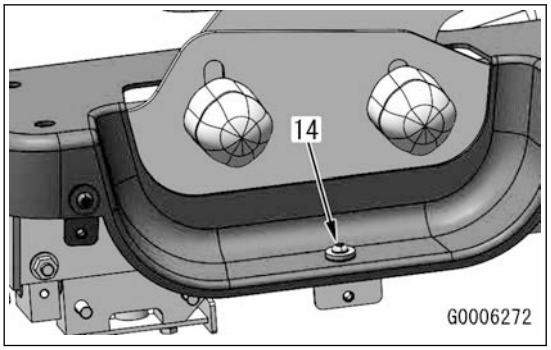


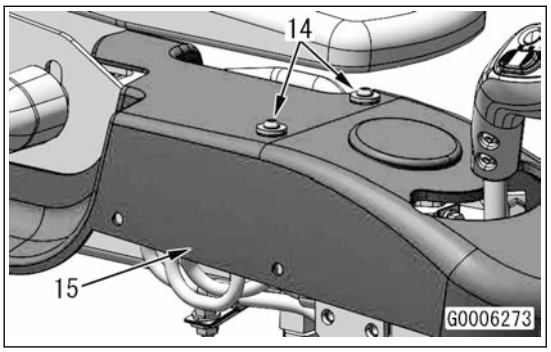
7. Install the cover (15) with the hexagonal socket head screws (14) (3 pieces).

   Tool: Torque wrench (hexagonal)

   Hexagonal socket head screw (14): Width across flats 4 mm, M6

   Hexagonal socket head screw (14): 9.8 Nm {1.05 kgm} (target value)





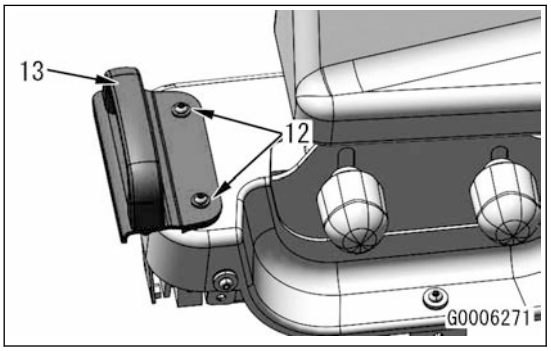
Bracket

8. Install the bracket (13) with the hexagonal socket head screws (12) (2 pieces).

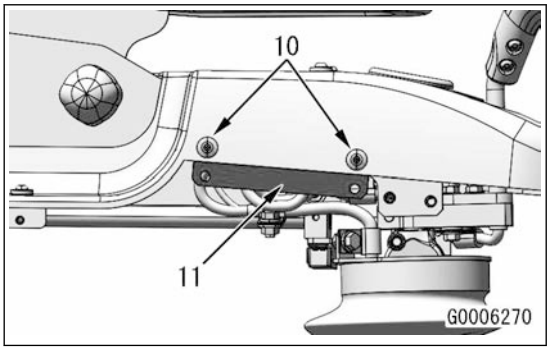
   Tool: Torque wrench (hexagonal)

   Hexagonal socket head screw (12): Width across flats 4 mm, M6

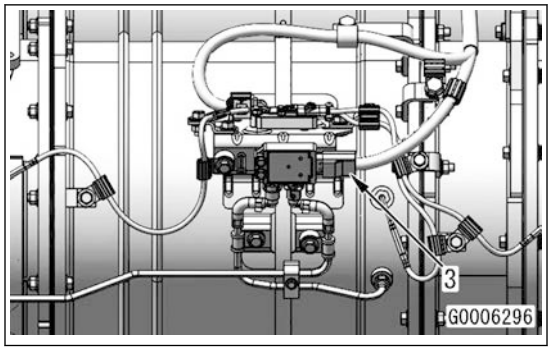
   Hexagonal socket head screw (12): 9.8 Nm {1.05 kgm} (target value)



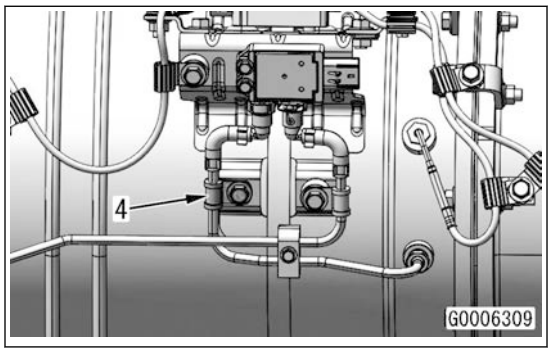
9. Install the stay (11) with the clips (10) (2 pieces).



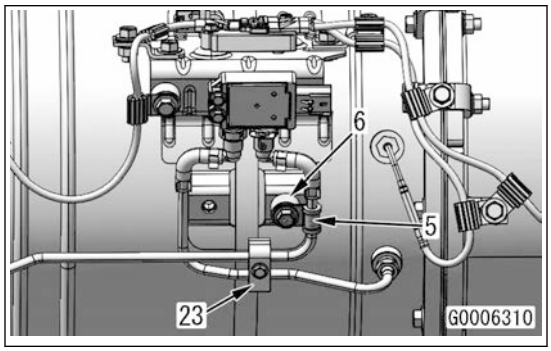
2. Disconnect the connector DPFP2 (3).



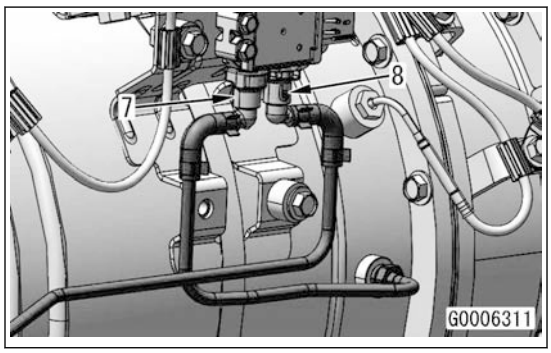
3. Remove the clamp (4).
   Tool: Socket wrench
   Bolt for clamp (4): Width across flats 14 mm, M10

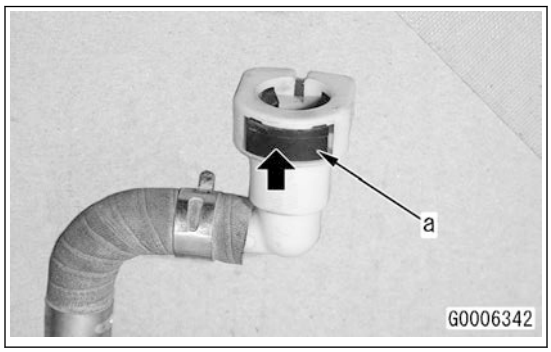


4. Remove the clamp (5).
   REMARK
   Restore the spacer (6) with the removed bolt.
   Tool: Socket wrench
   Bolt for clamp (5): Width across flats 14 mm, M10
5. Remove the clamp (23).
   Tool: Socket wrench
   Bolt for clamp (23): Width across flats 10 mm, M6



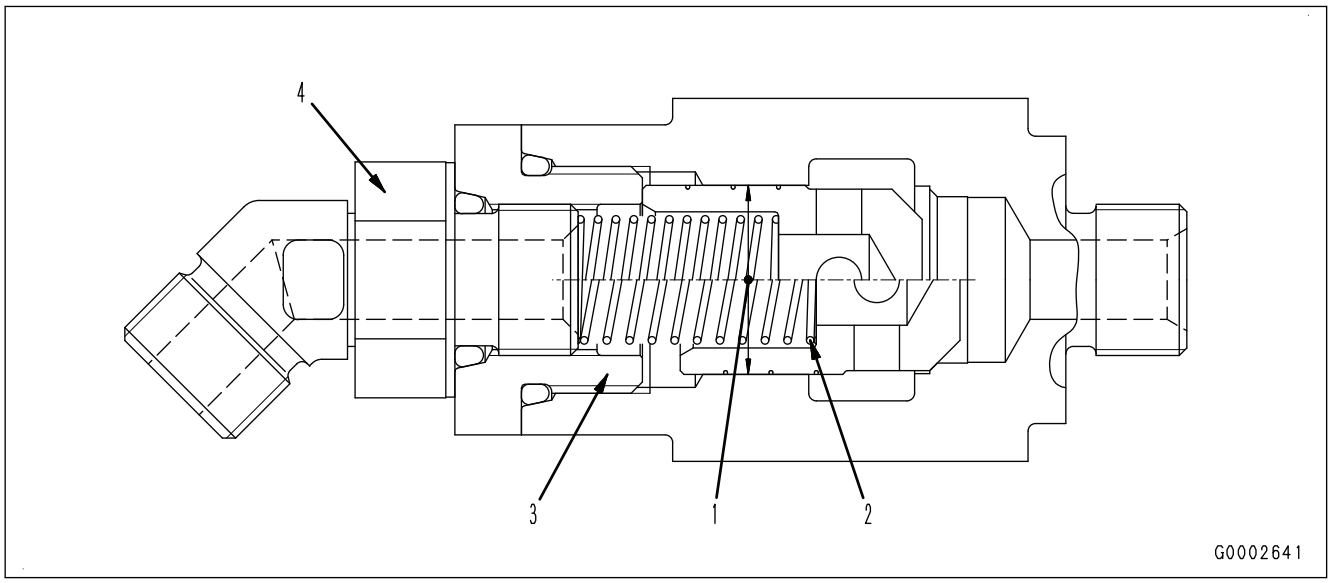
6. Disconnect the piping connectors (7) and (8).
   REMARK
   Pull it out while you push the (a) part.





No.	Item	Judgment criteria	Remedy
1	Tightening torque of bolt	11.8 to 14.7 Nm {1.2 to 1.5 kgm}	Retighten
2	Tightening torque of plug	24.5 to 34.3 Nm {2.5 to 3.5 kgm}	
3	Tightening torque of bolt	27 to 34 Nm {2.8 to 3.5 kgm}	
4	Tightening torque of plug	34.3 to 44.1 Nm {3.5 to 4.5 kgm}	
5	Tightening torque of bolt	157 to 196 Nm {16 to 20 kgm}	
6	Tightening torque of plug	9.8 to 12.74 Nm {1.0 to 1.3 kgm}	
7	Tightening torque of bolt	27 to 34 Nm {2.8 to 3.5 kgm}	
8	Tightening torque of speed sensor	20 to 25 Nm {2.0 to 2.5 kgm}	

MAINTENANCE STANDARD OF PARKING BRAKE CIRCUIT CHECK VALVE



Unit: mm

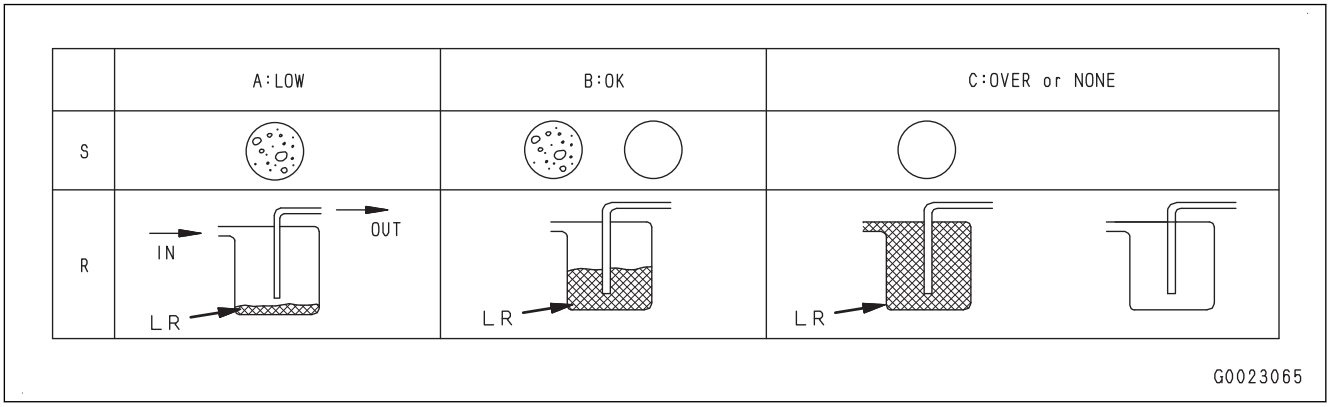
No.	Item	Standard dimensions	Tolerance		Standard clearance	Allowable clearance	Remedy
			Shaft	Hole			
1	Clearance between check valve and valve body	25	-0.020 -0.041	+0.052 0	0.020 to 0.093	0.113	Replace
2	Check valve spring	Standard dimensions			Repair limit		Replace
		Free length	Installed height	Load at installed height	Free length	Load at installed height	
		45	31.5	3.58 N {0.37 kg}	43.7	3.40 N {0.35 kg}	
3	Tightening torque of adapter	93.1 to 122.5 Nm {9.5 to 12.5 kgm}					Retighten
4	Tightening torque of elbow	83.3 to 132.3 Nm {8.5 to 13.5 kgm}					

In that case, tighten it again. For the tightening torque, see the table of tightening torque in “PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF AIR CONDITIONER PIPINGS”.

*4: Start the engine, turn the air conditioner switch to the ON position to check.

CHECK REFRIGERANT LEVEL FROM SIGHT GLASS

Start the engine and turn the air conditioner switch to the ON position. Check it after 5 minutes.



S: Condition viewed through the sight glass LR: Liquid refrigerant

R: Quantity of refrigerant

A: When bubbles are continuously seen, the quantity of refrigerant is low

B: When bubbles are intermittently seen, the quantity of refrigerant is correct

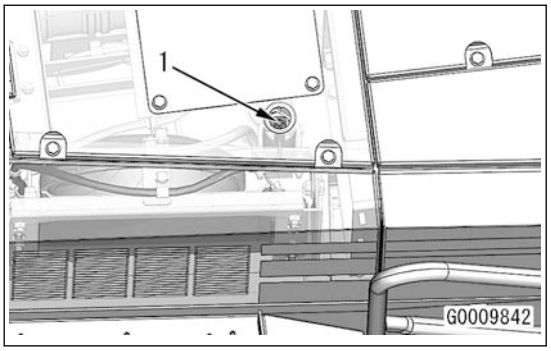
D: When bubbles are not seen (it is transparent), refrigerant is overfilled or no refrigerant

The above is a generally known method. But, use it for reference only.

Judge by the gauge pressure. For details, see “TROUBLESHOOTING BY GAUGE PRESSURE”.

Layout of sight glass

1: Sight glass

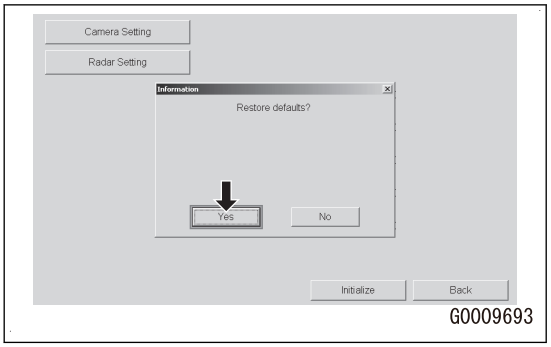


A-3 TROUBLESHOOTING FOR COMPRESSOR AND REFRIGERANT SYSTEM (AIR IS NOT COOLED)

Details of failure	Air is not cooled because of the compressor or refrigerant system failure.
Phenomenon on machine	• When engine is started and air conditioner switch is pushed on the air conditioner screen on the machine monitor, air is not cooled as shown on the screen. • The air conditioner compressor does not operate.
Related information	**Prior troubleshooting** If the failure code [879GKX] is shown, do the troubleshooting for it first. **Reference information** • Show the Electrical Sys Abnormality Record screen on the machine monitor, and check if refrigerant is abnormal by the failure code [879GKX]. For details, see Test with self-diagnosis function. • If refrigerant is abnormal, compressor is not turned on, thus air is not cooled. • Abnormal refrigerant pressure shows that the signal ((21) of connector ACECU) from the triple pressure switch is not grounded. • The air conditioner cannot turn the ON position if the evaporator temperature is 3 °C or below. (normal) • When air does not come out, see “TROUBLESHOOTING FOR BLOWER MOTOR SYSTEM (NO AIR COMES OUT OR AIR FLOW IS ABNORMAL)”. • For the connectors, see “LOCATIONS OF AIR CONDITIONER PARTS AND ARRANGEMENT OF CONNECTORS”. • The T-adapter is not provided on the connector ACECU of the air conditioner controller and its pin is small. So do the troubleshooting on the intermediate connector. (The T-adapter is not provided on the intermediate connector, but the pin is large.) • When the connector ACECU of the air conditioner controller and air conditioner harness between the intermediate connectors are defective, replace the air conditioner unit.

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
1	Wiring harness, connector	1. For details, see the section of wiring harness and connector of “Electrical component” in “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”. 2. Are the wiring harness and connector normal?	YES	• The wiring harness and connector are normal. • Go to the next check item.
			NO	• The wiring harness and connector are not normal. • Repair or replace the defective wiring harness and connector. • Go to “Confirmation of repair”.

4. On the confirmation screen, select the “Yes” button, and push the obstacle warning cancel switch (3).



5. When all the settings in the KomVision controller are Initialized, “Success.” is shown. Push the obstacle warning cancel switch (3).

   The screen moves back to the maintenance mode screen.

TROUBLESHOOTING BY FAILURE CODE (DISPLAY OF CODE)

FAILURE CODE [D1J0KB]

Details of failure	The KomVision controller senses ground fault in the radar power supply relay.
Action level	L01
Action of controller	-
Phenomenon on machine	The radar does not operate and a obstacle cannot be sensed.
Related information	-

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness and connector</td><td rowspan="2">1. Check the wiring harness and connector. For details, see “RELATED INFORMATION TO TROUBLESHOOT”, “CHECKS BEFORE TROUBLESHOOTING”, “ELECTRIC EQUIPMENT”.
2. Are the wiring harness and connector normal?</td><td>YES</td><td>• The wiring harness and connector are normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The wiring harness and connector are defective.
• Repair or replace the defective wiring harness and connector.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Radar power supply relay</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Disconnect the connector L163, and connect the T-adapter to the male side to troubleshoot.
3. Does the troubleshooting result agree with the standard value?
<table>
<tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr>
<tr><td>Resistance</td><td>Between L163 (male) (2) and (1)</td><td>290±30 Ω</td></tr>
</table></td><td>YES</td><td>• The radar power supply relay is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The radar power supply relay is defective.
• Replace the radar power supply relay.
• Go to “Confirmation of repair”.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">9</td><td rowspan="2">Open circuit in wiring harness (Power supply circuit of radar)</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors C50B, L33, L163 and N51, and connect the T-adapter to the each female side to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td rowspan="4">Resistance</td><td>Between C50B (female) (39) and L163 (female) (1)</td><td>Max. 1 Ω</td></tr><tr><td>Between L163 (female) (2) and ground C07</td><td>Max. 1 Ω</td></tr><tr><td>Between L33 (4) and L163 (female) (5)</td><td>Max. 1 Ω</td></tr><tr><td>Between N51 (female) (4) and L163 (female) (3)</td><td>Max. 1 Ω</td></tr></table></td><td>YES</td><td>• Open circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Open circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Ground fault in wiring harness (Power supply circuit of radar)</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit, the set the battery disconnect switch to the OFF position.
3. Disconnect the connectors C50B, L33, L34, L35, L163 and N51, and connect the T-adapter to the female side of one of them to troubleshoot.
4. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Standard value</th></tr><tr><td rowspan="3">Resistance</td><td>Between ground and C50B (female) (39) or L163 (female) (1)</td><td>Min. 1 MΩ</td></tr><tr><td>Between ground and L33 (female) (4), L163 (female) (5), L34 (female) (1), or L35 (female) (1)</td><td>Min. 1 MΩ</td></tr><tr><td>Between ground and N51 (female) (4) or L163 (female) (3)</td><td>Min. 1 MΩ</td></tr></table></td><td>YES</td><td>• Ground fault in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Ground fault in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
</table>

No.	Cause	Procedures, Measurement, Values, Note	Diagnosis and treatment	
3	Confirmation of check results	1. Do the troubleshooting above again. 2. Can you identify the cause by the check?	YES	The repair is completed.
			NO	• The KomVision controller can be defective. • Replace the KomVision controller. • Go to “Confirmation of repair”.
4	Confirmation of repair	1. Turn the starting switch to the OFF position. 2. Connect all the component parts. 3. Turn the starting switch to the ON position. 4. Check the abnormality record. 5. Is “E” shown in the abnormality record of this failure code? **REMARK** As it takes time to activate the controller, wait for approximately 1 minute and check the abnormality record.	YES	Go to the first check item.
			NO	The repair is completed.

<table>
<tr><th>No.</th><th>Cause</th><th>Procedures, Measurement, Values, Note</th><th colspan="2">Diagnosis and treatment</th></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Short circuit in wiring harness</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is not lit. Set the battery disconnect switch to the OFF position.
3. Disconnect the obstacle alarm buzzer terminal C19+.
4. Disconnect connector C50B. Connect the T-adapter to the female side to troubleshoot.
5. Does the troubleshooting result agree with the standard value?
<table><tr><th>Item</th><th>Measurement position/condition</th><th>Judgment criteria</th></tr><tr><td>Resistance</td><td>Between C50B (female) (47) and each pin other than pin (47)</td><td>Min. 1 MΩ</td></tr></table></td><td>YES</td><td>• Short circuit in wiring harness does not occur.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• Short circuit in wiring harness occurs.
• Repair or replace the wiring harness.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Obstacle alarm buzzer</td><td rowspan="2">1. Turn the starting switch to the ON position.
2. Does the obstacle alarm buzzer operate?</td><td>YES</td><td>• The obstacle alarm buzzer is normal.
• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• The removed obstacle alarm buzzer is defective.
• Replace the obstacle alarm buzzer.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Reconfirmation of check results</td><td rowspan="2">1. Do the troubleshooting above again.
2. Can you identify the cause by the check?</td><td>YES</td><td>The repair is completed.</td></tr>
<tr><td>NO</td><td>• The KomVision controller can be defective.
• Replace the KomVision controller.
• Go to “Confirmation of repair”.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Confirmation of repair</td><td rowspan="2">1. Turn the starting switch to the OFF position.
2. Connect all the component parts.
3. Turn the starting switch to the ON position.
4. Check the abnormality record.
5. Is “E” shown in the abnormality record of this failure code?
REMARK
As it takes time to activate the controller, wait for approximately 1 minute and check the abnormality record.</td><td>YES</td><td>Go to the first check item.</td></tr>
<tr><td>NO</td><td>The repair is completed.</td></tr>
</table>

ELECTRICAL CIRCUIT DIAGRAM OF MACHINE (2/8)

WA900-8

REMARK

This figure includes the equipment and device that are not available as optional items in some areas.