SEN06957-03

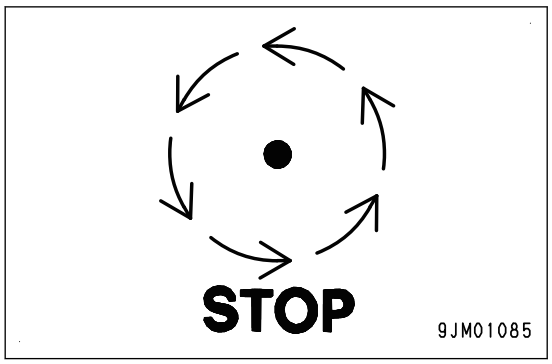
# Shop Manual

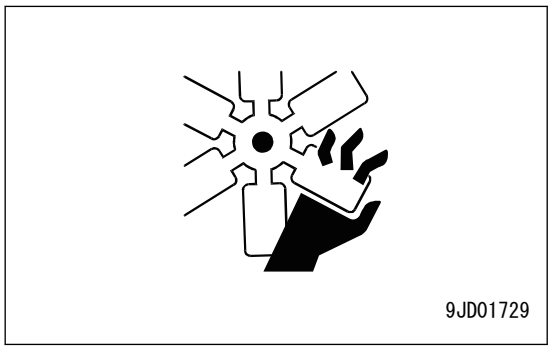
HYDRAULIC
EXCAVATOR

## PC700LC-11
## PC700LC-11E0

SERIAL NUMBERS 80001 and up

KOMATSU

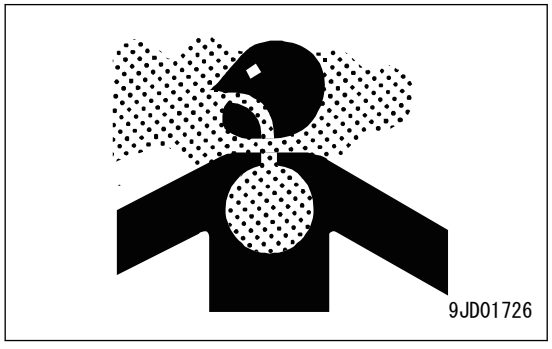



- Before starting work, shut down the engine. When working on or around a rotating part, in particular, shut down the engine. When checking the machine without shutting down the engine (measuring oil pressure, revolving speed, temperature, etc.), take extreme care not to get caught in rotating parts or moving parts.
- When raising a heavy component (heavier than 20kg), use a hoist or crane. Before starting work, check that the slings (wire ropes, webbing slings, chains, and hooks) are free from damage. Always use slings which have ample capacity and install them to proper places. Operate the hoist or crane slowly to prevent the component from hitting any other part. Do not work with any part still raised by the hoist or crane.
- When removing a part which is under internal pressure or under reaction force of a spring, always leave 2 bolts in diagonal positions. Loosen those 2 bolts gradually and alternately to release the pressure, and then remove the part.
- When removing components, do not break or damage the electrical wiring. Damaged wiring may cause a fire.
- When removing piping, do not spill the fuel or oil. If any fuel or oil drips onto the floor, wipe it off immediately. Fuel or oil on the floor can cause you to slip and can even cause fires.
- Do not use gasoline to wash parts as a general rule. Do not use gasoline to clean electrical parts, in particular.
- Install the disassembled parts again to the original position. Replace the damaged parts or the parts that cannot be used again with new ones. Before you connect the hoses or wiring harnesses, make sure that they do not touch and give damage to other parts when you operate the machine.

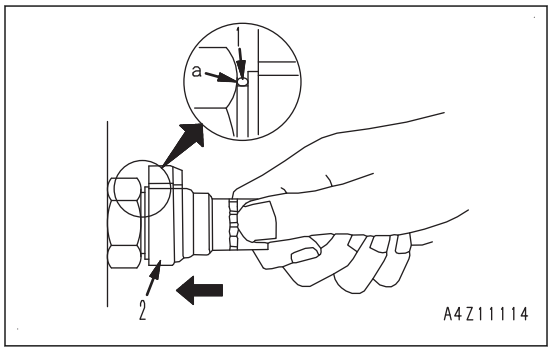
  **REMARK**

  When you replace the removed or disassembled parts with new ones, refer the parts book to find out the part number.
- When installing high pressure hoses and tubes, make sure that they are not twisted. Damaged hoses and tubes are dangerous, so be extremely careful when installing hoses and tubes for high pressure circuits. In addition, check that high pressure hoses and tubes are correctly installed.
- When assembling or installing parts, always tighten them to the specified torques. When installing protective parts such as guards, or parts which vibrate violently or rotate at high speed, check again that they are installed correctly.
- Never insert your fingers or hand when aligning 2 holes. Be careful not to get your fingers caught in a hole.
- Check that the measuring tools are correctly installed when measuring hydraulic pressure.
- Take care when removing or installing the tracks of track-type machines. Since the track shoe may separate suddenly when you remove it, never let anyone stand at either end of the track shoe.
- If the engine is operated for a long time in a closed place with poor ventilation, it may cause gas poisoning. Open the windows and doors to ventilate the place well.



## Connection

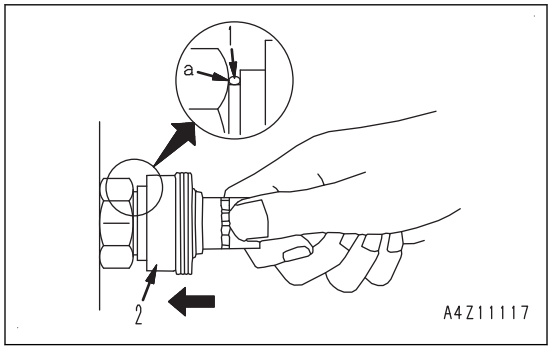
Hold the tightening adapter part, and push body (2) straight until sliding prevention ring (1) contacts contact surface (a) of the hexagonal part at the male end.



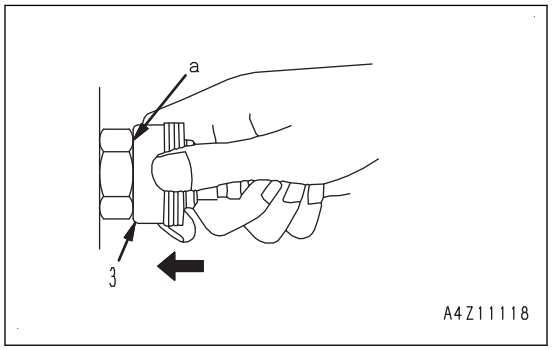

## How to Disconnect and Connect Type 3 Push-Pull Type Coupler

## Disconnection

1. Hold the tightening adapter part and push body (2) straight until sliding prevention ring (1) contacts contact surface (a) of the hexagonal part at the male end.



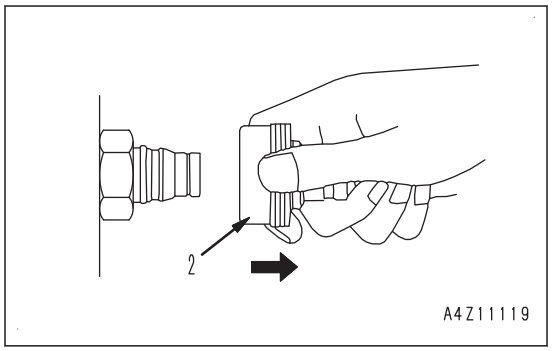

2. While keeping the condition of step 1, push cover (3) straight until it contacts contact surface (a) of the hexagonal portion on the male side.




3. While keeping the conditions of steps 1 and 2, pull out whole body (2) to disconnect it.

   **REMARK**

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



1 ℓ = 0.21997 U.K.Gal

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 6.599 | 6.819 | 7.039 | 7.259 | 7.479 | 7.699 | 7.919 | 8.139 | 8.359 | 8.579 |
| 40 | 8.799 | 9.019 | 9.239 | 9.459 | 9.679 | 9.899 | 10.119 | 10.339 | 10.559 | 10.778 |
| 50 | 10.998 | 11.281 | 11.438 | 11.658 | 11.878 | 12.098 | 12.318 | 12.528 | 12.758 | 12.978 |
| 60 | 13.198 | 13.418 | 13.638 | 13.858 | 14.078 | 14.298 | 14.518 | 14.738 | 14.958 | 15.178 |
| 70 | 15.398 | 15.618 | 15.838 | 16.058 | 16.278 | 16.498 | 16.718 | 16.938 | 17.158 | 17.378 |
| 80 | 17.598 | 17.818 | 18.037 | 18.257 | 18.477 | 18.697 | 18.917 | 19.137 | 19.357 | 19.577 |
| 90 | 19.797 | 20.017 | 20.237 | 20.457 | 20.677 | 20.897 | 21.117 | 21.337 | 21.557 | 21.777 |

## kgfm to lbft

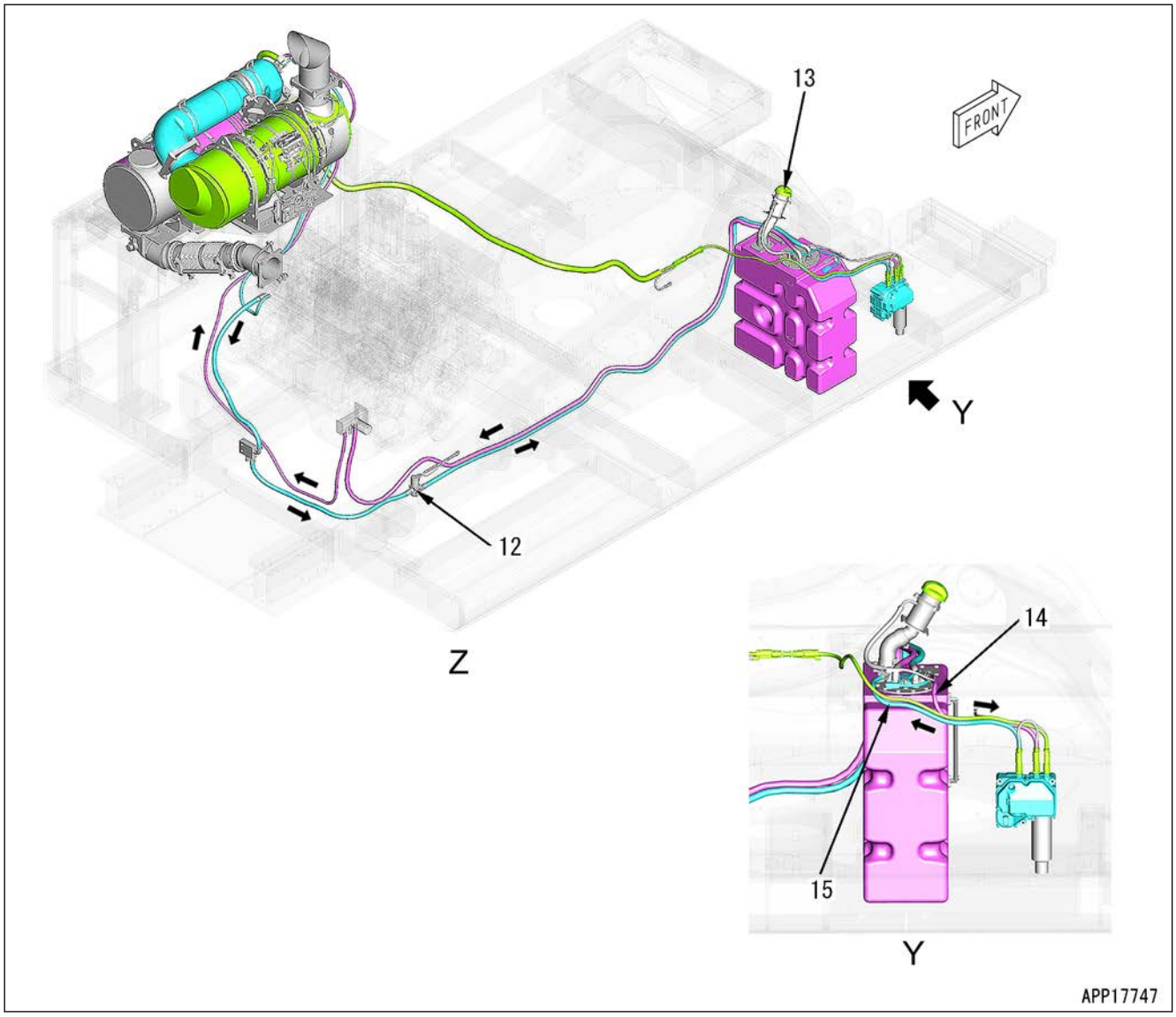
1 kgfm = 7.233 lbft

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 7.2 | 14.5 | 21.7 | 28.9 | 36.2 | 43.4 | 50.6 | 57.9 | 65.1 |
| 10 | 72.3 | 79.6 | 86.8 | 94.0 | 101.3 | 108.5 | 115.7 | 123.0 | 130.2 | 137.4 |
| 20 | 144.7 | 151.9 | 159.1 | 166.4 | 173.6 | 180.8 | 188.1 | 195.3 | 202.5 | 209.8 |
| 30 | 217.0 | 224.2 | 231.5 | 238.7 | 245.9 | 253.2 | 260.4 | 267.6 | 274.9 | 282.1 |
| 40 | 289.3 | 296.6 | 303.8 | 311.0 | 318.3 | 325.5 | 332.7 | 340.0 | 347.2 | 354.4 |
| 50 | 361.7 | 368.9 | 376.1 | 383.4 | 390.6 | 397.8 | 405.1 | 412.3 | 419.5 | 426.8 |
| 60 | 434.0 | 441.2 | 448.5 | 455.7 | 462.9 | 470.2 | 477.4 | 484.6 | 491.8 | 499.1 |
| 70 | 506.3 | 513.5 | 520.8 | 528.0 | 535.2 | 542.5 | 549.7 | 556.9 | 564.2 | 571.4 |
| 80 | 578.6 | 585.9 | 593.1 | 600.3 | 607.6 | 614.8 | 622.0 | 629.3 | 636.5 | 643.7 |
| 90 | 651.0 | 658.2 | 665.4 | 672.7 | 679.9 | 687.1 | 694.4 | 701.6 | 708.8 | 716.1 |
| 100 | 723.3 | 730.5 | 737.8 | 745.0 | 752.2 | 759.5 | 766.7 | 773.9 | 781.2 | 788.4 |
| 110 | 795.6 | 802.9 | 810.1 | 817.3 | 824.6 | 831.8 | 839.0 | 846.3 | 853.5 | 860.7 |
| 120 | 868.0 | 875.2 | 882.4 | 889.7 | 896.9 | 904.1 | 911.4 | 918.6 | 925.8 | 933.1 |
| 130 | 940.3 | 947.5 | 954.8 | 962.0 | 969.2 | 976.5 | 983.7 | 990.9 | 998.2 | 1005.4 |
| 140 | 1012.6 | 1019.9 | 1027.1 | 1034.3 | 1041.5 | 1048.8 | 1056.0 | 1063.2 | 1070.5 | 1077.7 |
| 150 | 1084.9 | 1092.2 | 1099.4 | 1106.6 | 1113.9 | 1121.1 | 1128.3 | 1135.6 | 1142.8 | 1150.0 |
| 160 | 1157.3 | 1164.5 | 1171.7 | 1179.0 | 1186.2 | 1193.4 | 1200.7 | 1207.9 | 1215.1 | 1222.4 |
| 170 | 1129.6 | 1236.8 | 1244.1 | 1251.3 | 1258.5 | 1265.8 | 1273.0 | 1280.1 | 1287.5 | 1294.7 |
| 180 | 1301.9 | 1309.2 | 1316.4 | 1323.6 | 1330.9 | 1338.1 | 1345.3 | 1352.6 | 1359.8 | 1367.0 |
| 190 | 1374.3 | 1381.5 | 1388.7 | 1396.0 | 1403.2 | 1410.4 | 1417.7 | 1424.9 | 1432.1 | 1439.4 |

## kgf/cm$^2$ to lb/in$^2$

1 kgf/cm$^2$ = 14.2233 lb/in$^2$

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 14.2 | 28.4 | 42.7 | 56.9 | 71.1 | 85.3 | 99.6 | 113.8 | 128.0 |
| 10 | 142.2 | 156.5 | 170.7 | 184.9 | 199.1 | 213.4 | 227.6 | 241.8 | 256.0 | 270.2 |
| 20 | 284.5 | 298.7 | 312.9 | 327.1 | 341.4 | 355.6 | 369.8 | 384.0 | 398.3 | 412.5 |



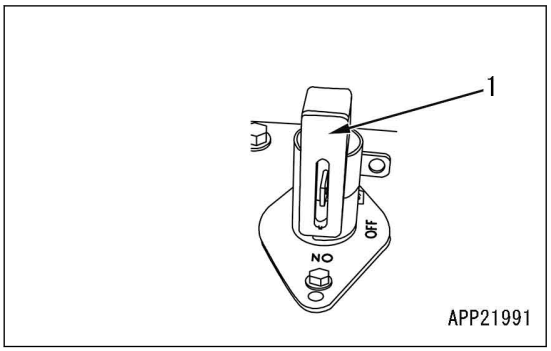

12: DEF tank heating valve
13: DEF filler port
14: DEF suction hose
15: DEF return hose

# Battery Isolator

## Function of Battery Isolator

(O): OFF position

(I): ON position




- Usually, battery isolator switch (1) is used instead of disconnecting the cable from the negative terminal of the battery in the following cases.
  - When storing the machine for a long period (1 month or longer)
  - When servicing or repairing the electrical system
  - When performing electric welding
  - When handling the battery
  - When replacing the fuse, etc.
- When battery isolator switch (1) is turned to OFF position (the contact is opened), all the continuous power supplies for the components, including the starting switch B terminal and controllers, are all cut out, and the condition is the same as the condition when the battery is not connected. Accordingly, all of the electrical system of the machine does not operate.

**NOTICE**

- **Do not turn battery isolator switch (1) to OFF position while the system operating lamp is lit.**
  **If battery isolator switch (1) is turned to OFF position while the system operating lamp is lit, the data in the controller may be lost and the controller may be damaged seriously.**
- **Do not turn battery isolator switch (1) to OFF position while the engine is running or immediately after the engine is stopped.**
  **If battery isolator switch (1) is turned to OFF position while the alternator is generating power, the generated current has nowhere to go, leading to overvoltage in the electrical system of the machine, which may cause serious damage to the electrical system, including the electric devices and controllers.**

**REMARK**

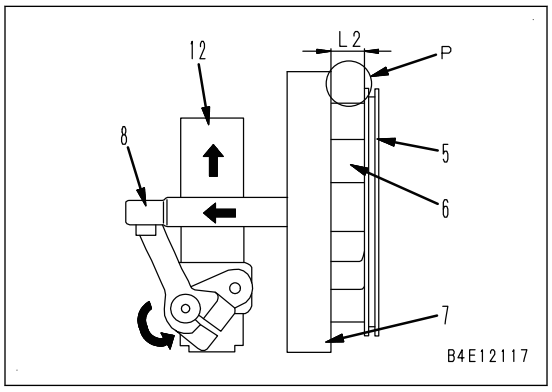
- The system operating lamp lights up while the controller is in operation or DEF pump is in operation. It lights up when KOMTRAX is performing communication, even if the starting switch is set to OFF position.
- If battery isolator switch (1) has been at OFF position for a long period, the machine monitor and the clock of the radio may be initialized. In this case, re-setting is required.

## Nozzle Ring (Open) State

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

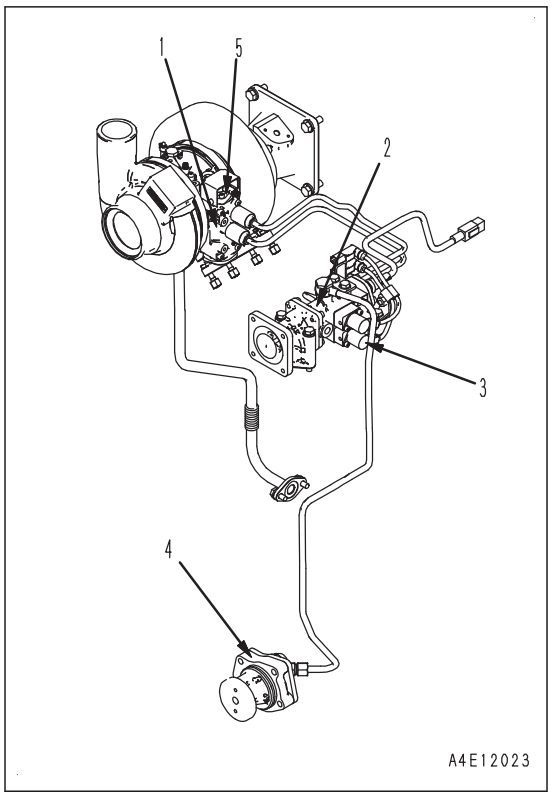
**REMARK**

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




## Operation of Hydraulic Actuator

1. Hydraulic actuator (1) is operated by the oil pressure controlled by EPC valve (3) installed to EGR valve (2).
2. The hydraulic pressure supplied by engine boost oil pump (4) is used for this purpose.
3. The position of hydraulic actuator (1) is fed back to engine controller by the signals from VGT position sensor (5).




## EGR System

**EGR**

Abbreviation for Exhaust Gas Recirculation

## Layout Drawing of EGR System

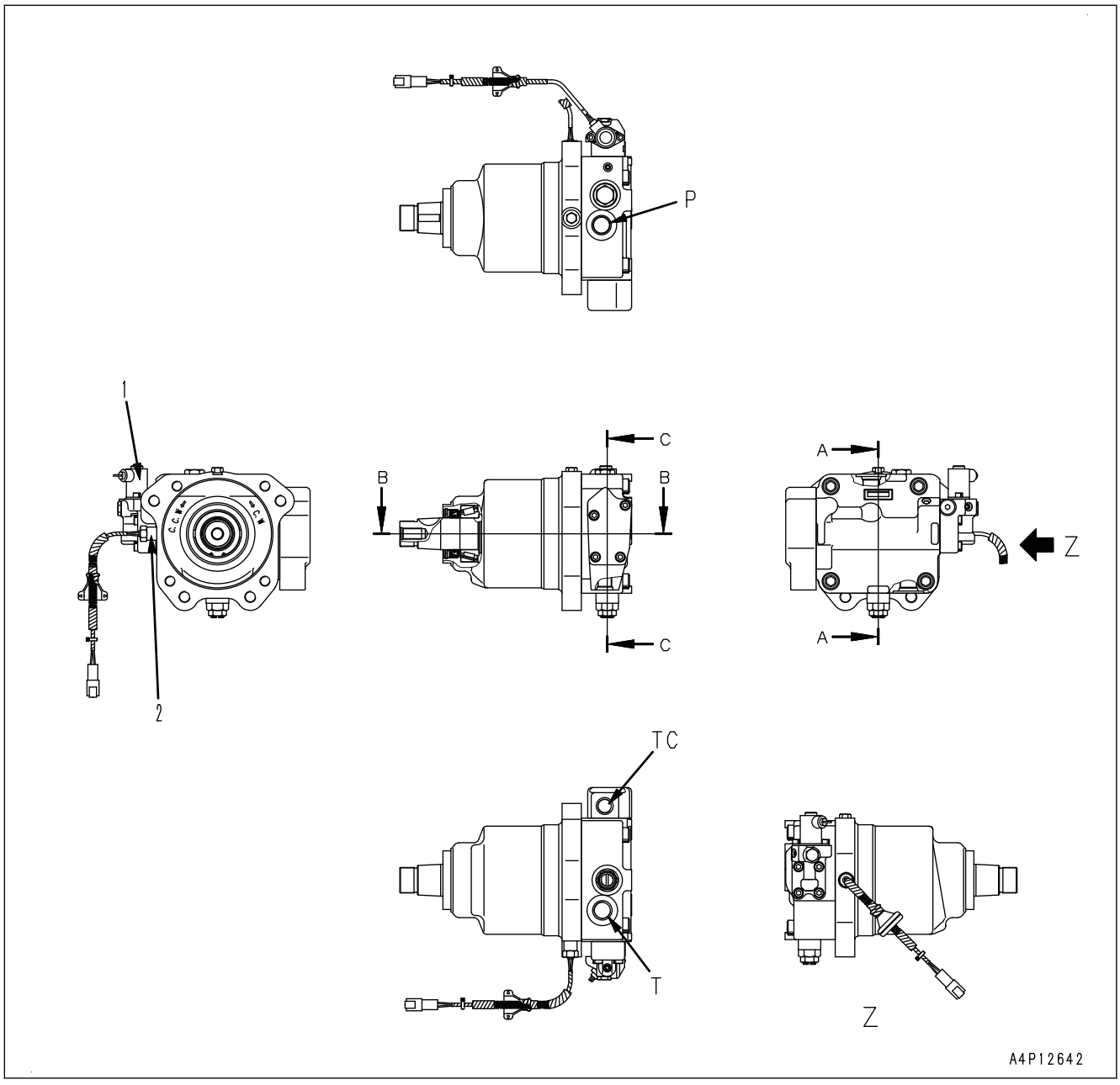
**REMARK**

The shape is subject to machine models.

## Cooling Fan Motor

### Structure of Cooling Fan Motor

### General View

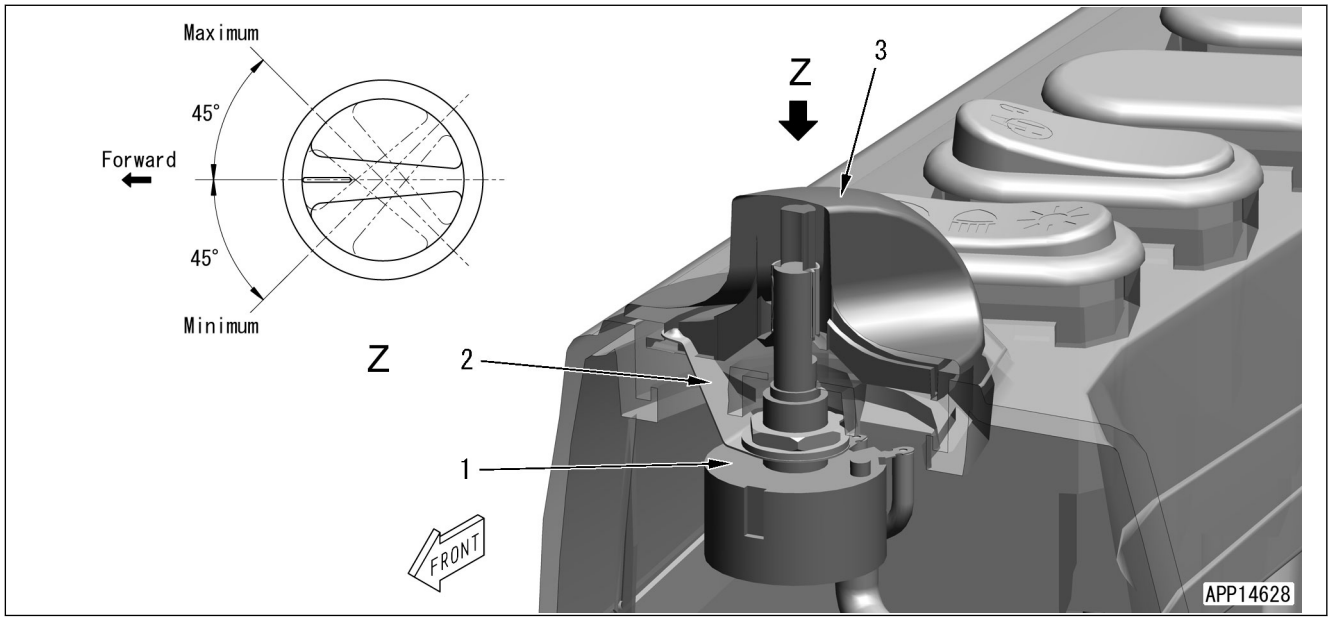



P: From fan pump
TC: To hydraulic tank
T: To oil cooler
1: Cooling fan reverse solenoid valve
2: Cooling fan speed sensor

<table>
<tr><th>Symbol</th><th>Item to be displayed</th><th colspan="3">Range and method for display</th><th>Remarks</th></tr>
<tr><td rowspan="3">  <br>9JC01178</td><td rowspan="3">One-touch power maximizing</td><td>One-touch power maximizing switch</td><td colspan="2">Monitor display</td><td rowspan="3">Display of the state of one-touch power maximizing function</td></tr>
<tr><td>ON</td><td colspan="2">Lit<br>(Goes out approximately 8.5 seconds after, if held down)</td></tr>
<tr><td>OFF</td><td colspan="2">Not lit</td></tr>
<tr><td rowspan="5">  <br>9JC01179</td><td rowspan="5">Swing lock</td><td>Swing lock switch</td><td>Swing parking brake cancel switch</td><td>Monitor display</td><td rowspan="5">Displays the operation state of swing lock.</td></tr>
<tr><td>OFF</td><td>OFF</td><td>Not lit</td></tr>
<tr><td>ON</td><td>OFF</td><td>Lit</td></tr>
<tr><td>OFF</td><td>ON</td><td>Flashing</td></tr>
<tr><td>ON</td><td>ON</td><td>Flashing</td></tr>
<tr><td>  <br>9JC01180</td><td>Wiper</td><td colspan="3">INT: Intermittent operation<br>ON: Continuous operation<br>Goes out: Stopped</td><td>Displays the operation state of front window wiper.</td></tr>
<tr><td>  <br>9JC01175</td><td>Air conditioner</td><td colspan="3">Lit: ON<br>Not lit: OFF</td><td>Indicates the operation state of air conditioner and blower.</td></tr>
<tr><td>  <br>9JC01181</td><td>Seat belt is not fastened.</td><td colspan="3">Lit: Not fastened<br>Not lit: Fastened</td><td>Displays whether seat belt is fastened.</td></tr>
<tr><td>  <br>9JC01182</td><td>Engine stop</td><td colspan="3">Lit: When engine is stopped<br>Not lit: When engine is running</td><td>Displays the operation state of engine.</td></tr>
<tr><td>  <br>9JC01183</td><td>Aftertreatment devices regeneration</td><td colspan="3">Lit: When the aftertreatment devices regeneration is in progress<br>Not lit: Aftertreatment devices regeneration has been completed.</td><td>Indicates the regeneration state of aftertreatment devices.</td></tr>
<tr><td>  <br>9JC01184</td><td>Aftertreatment devices regeneration disable</td><td colspan="3">Lit: When the aftertreatment devices regeneration is disabled<br>Not lit: Aftertreatment devices regeneration disable is canceled</td><td>• Indicates the regeneration state of aftertreatment devices.<br>• The KDPF soot accumulation caution lamp lights up when the manual stationary regeneration is necessary.</td></tr>
<tr><td>  <br>9JC01185</td><td>Message<br>(Unread)</td><td colspan="3">Lit: There is an unread message<br>Not lit: No message</td><td>Indicates the state of messages.</td></tr>
</table>

3: Knob

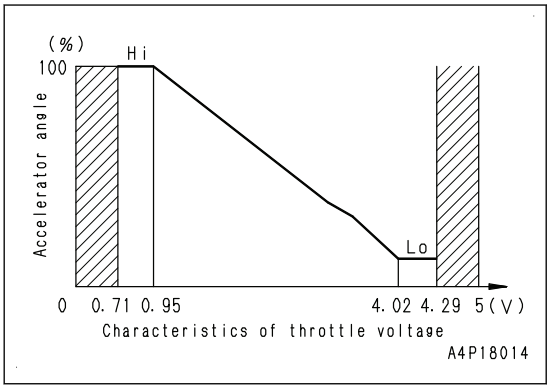
## Function of Fuel Control Dial




When knob (3) is turned, the shaft of potentiometer (1) rotates. The resistance of variable resistor in the potentiometer (1) varies according to this rotation, and throttle signals are sent to the controller.

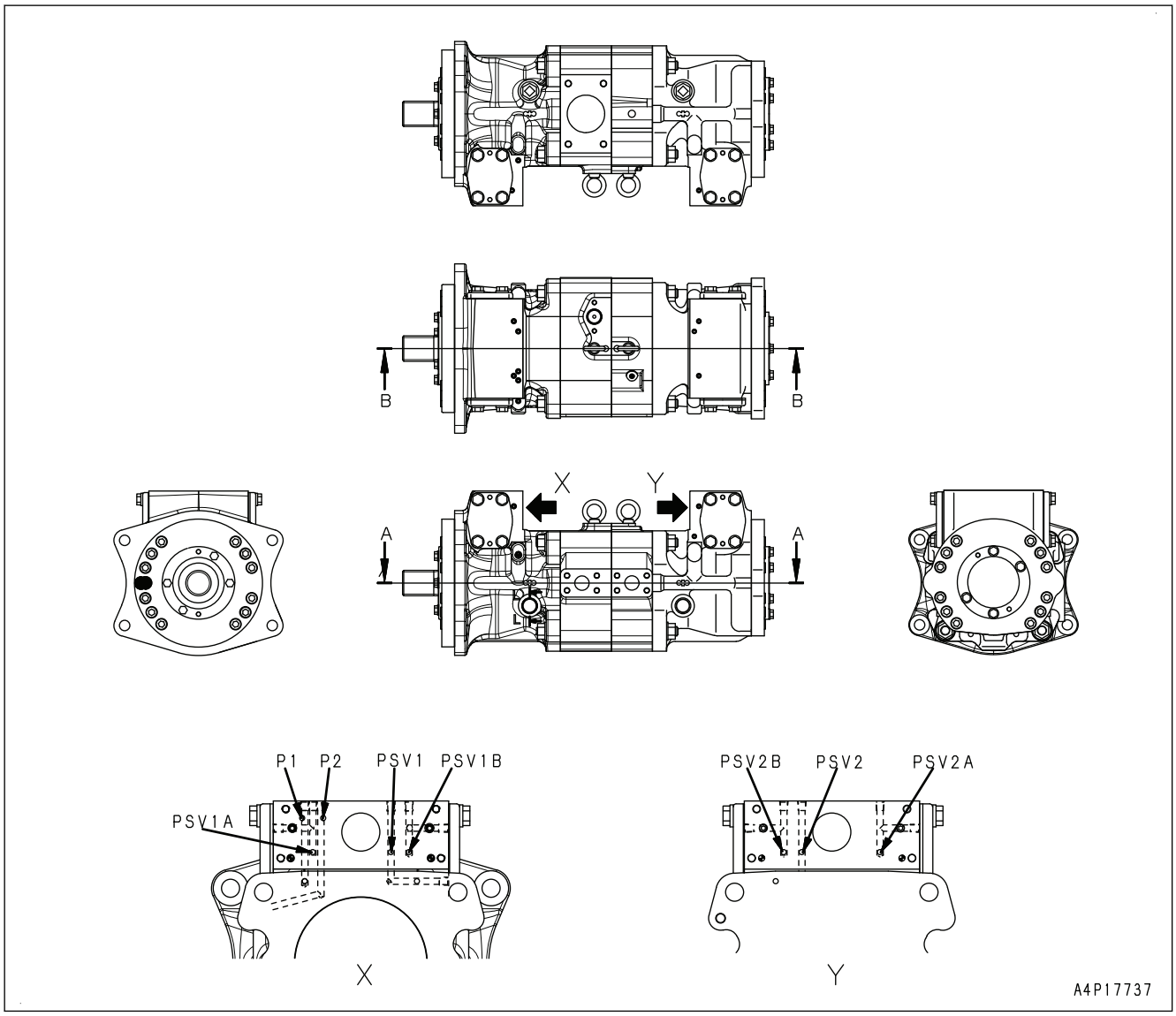
**REMARK**

The hatched area in the following graph is the abnormality detection area. The engine speed is set to low idle when the throttle voltage is in this area.



## General View

No. 2 main pump




P1: Front pump pressure port

P2: Rearpump pressure port

PSV1: Servo valve source pressure port

PSV1A: Servo piston output port

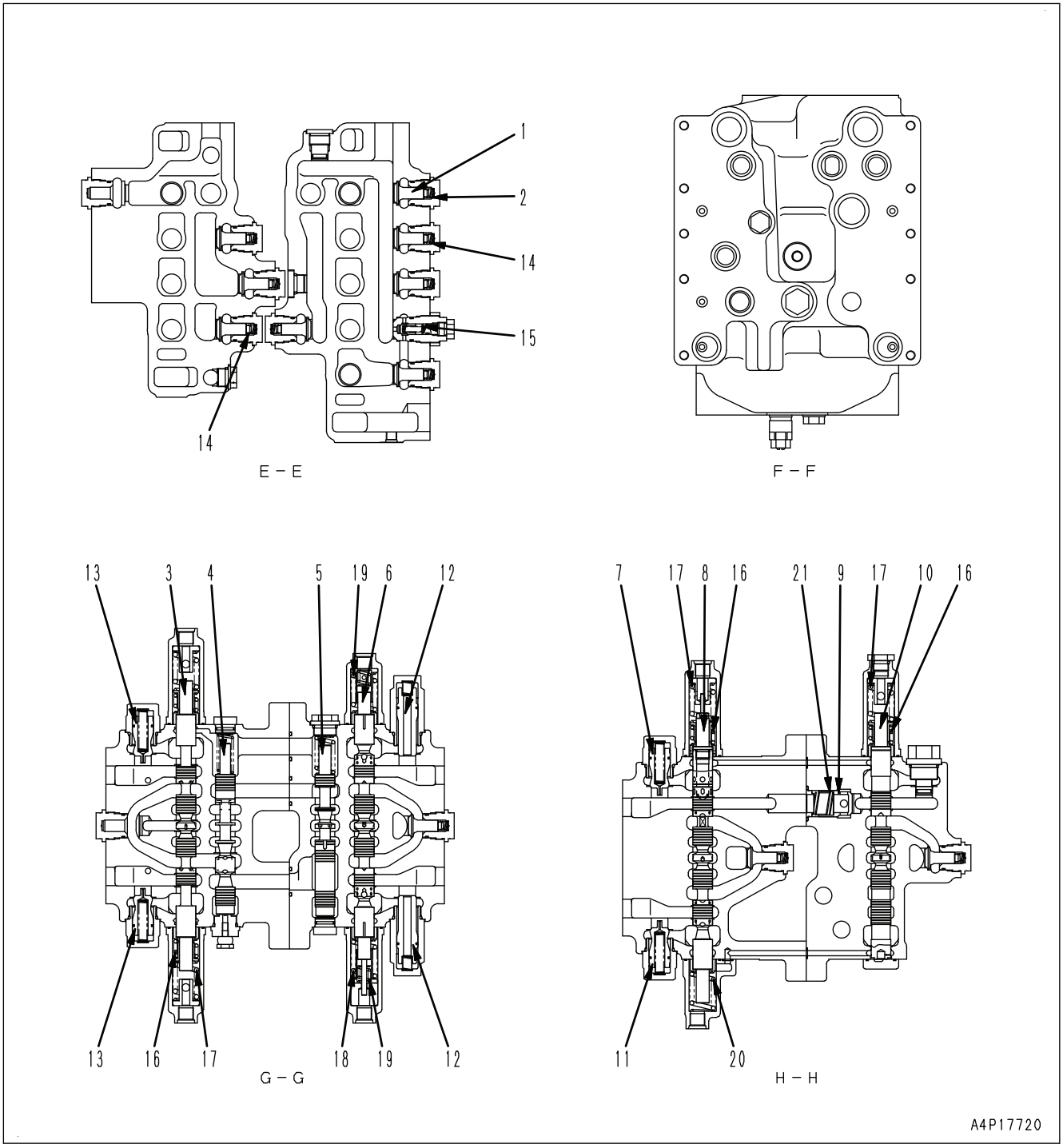
PSV1B: Servo valve output port

PSV2: Servo valve source pressure port

PSV2A: Servo piston output port

PSV2B: Servo valve output port

## Sectional Views (E-E, F-F, G-G, H-H)




1: Check valve
2: Check valve spring
3: Spool (left TRAVEL)
4: Spool (straight-travel)
5: Spool (swing priority)
6: Spool (swing)
7: Suction valve
8: Spool (boom Lo)
9: Check valve
10: Spool (boom Hi)
11: Suction valve
12: Suction valve
13: Suction valve
14: Check valve spring
15: Check valve spring
16: Return spring
17: Return spring
18: Return spring

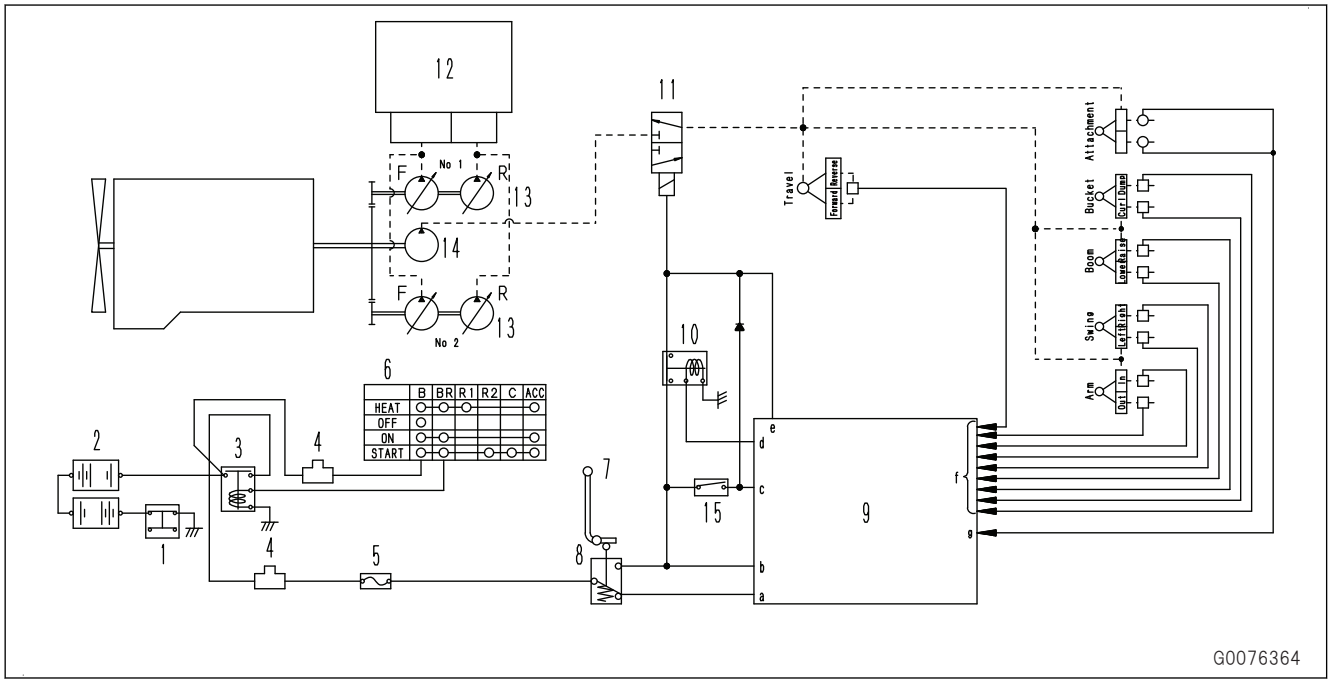
# PPC Lock System

**PPC**

Abbreviation for Proportional Pressure Control

## System Diagram of PPC Lock

PPC: Abbreviation for Proportional Pressure Control




Input and output signals

a: PPC lock signal

b: PPC lock signal

c: Lock lever automatic lock cancel switch signal

d: Lock lever automatic lock relay drive signal

e: PPC lock solenoid valve drive signal

f: Oil pressure sensor signal

g: Oil pressure switch signal

1: Battery isolator switch

2: Battery

3: Battery relay

4: Circuit breaker

5: Fuse box

6: Starting switch

7: Lock lever

8: PPC lock switch

9: Pump controller

10: Work equipment automatic lock relay

11: PPC lock solenoid valve

12: Control valve

13: Main pump

14: Control pump

15: Lock lever automatic lock cancel switch

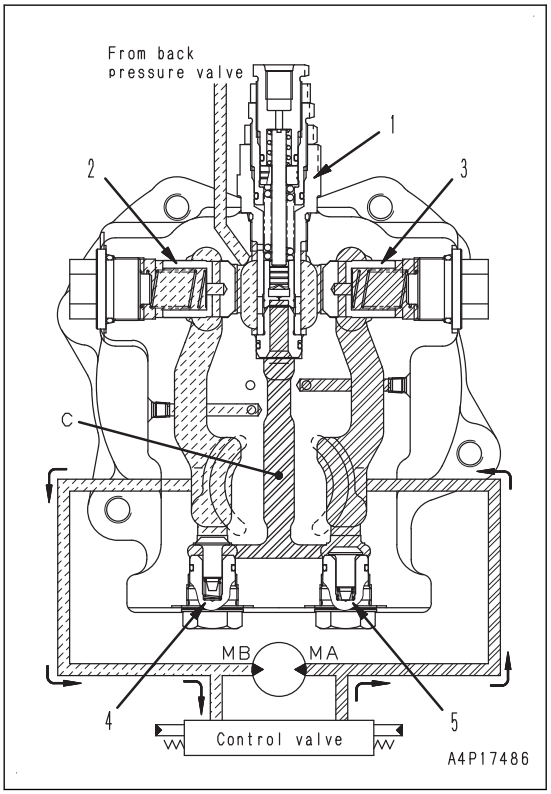
## Function of PPC Lock System

- PPC lock switch is interlocked with the lock lever. When the lock lever is set to LOCK position, PPC lock switch is turned “OFF”.
- When PPC lock switch is turned OFF, the current flowing into PPC lock solenoid valve is cut out, and the work equipment and machine body do not move even if any control lever or pedal is operated.

# Operation of Check Valve, Shuttle Valve, and 2-Stage Swing Relief Valve of Swing Motor

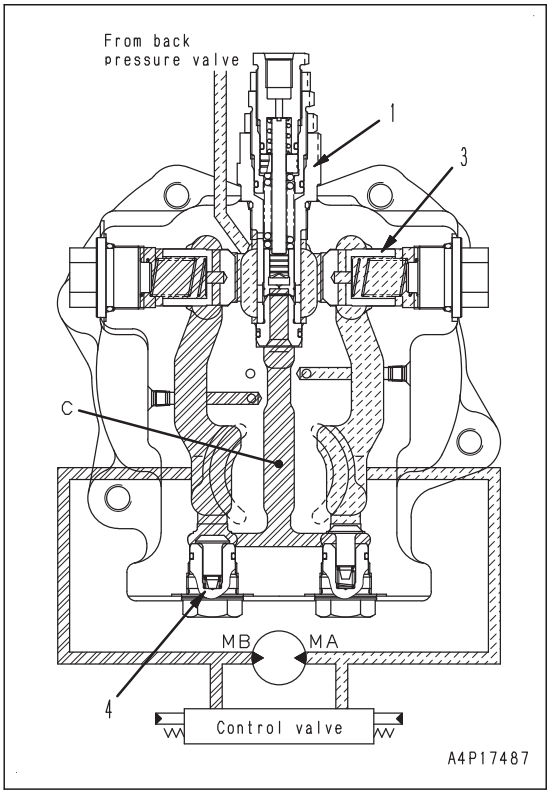
## When Swing System Starts

1. When swing RIGHT operation is performed, the pressurized oil from the pump flows through control valve into port (MA).
2. The pressure in port (MA) increases, starting torque is generated, and the motor starts rotating.
3. The oil from the motor outlet returns to the tank through port (MB) and control valve.

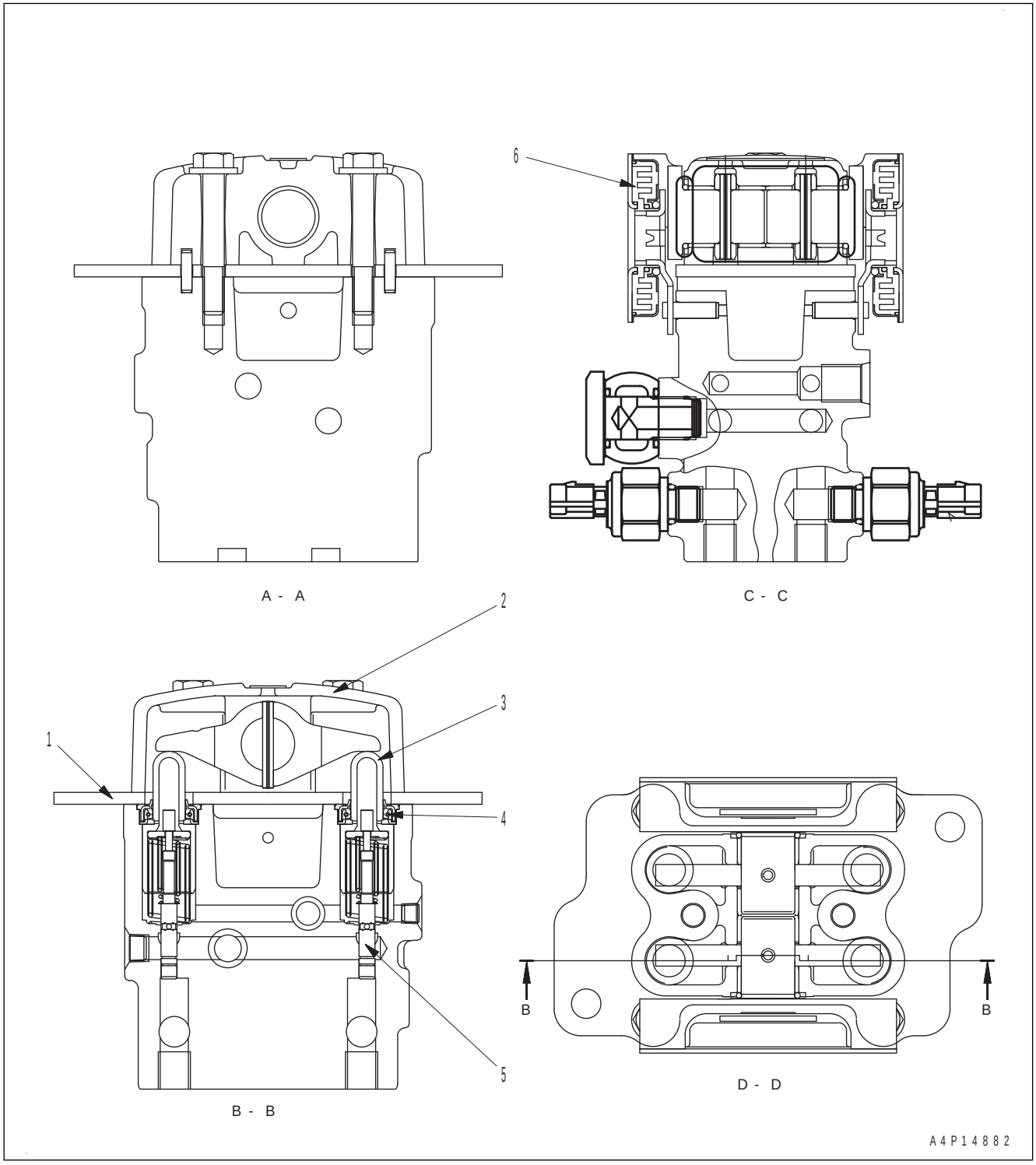



## When Swing Operation Stops

1. When the swing control lever is returned to NEUTRAL position, the supply of the pressurized oil from the pump to port (MA) stops.
2. The return circuit of the oil from the motor output to the tank is closed by control valve. The pressure in port (MB) increases.
3. Rotational resistance occurs in the motor, and the brake starts working.
4. The pressure in port (MA) exceeding that in port (MA) pushes (4) of the shuttle valve (A).
5. The pressure in chamber (C) becomes the same with port (MB) and increases to the set pressure of relief valve (1).
6. High braking torque acts on the motor, and the motor stops.
7. The relieved oil and the oil from back pressure valve are supplied to port (MA) through check valve (3) while relief valve (1) is in operation.
8. Cavitation in port (MA) is prevented.



## Sectional View




1: Plate
2: Case
3: Piston
4: Seal
5: Spool
6: Damper

**Operating Force of Control Lever and Pedal**

| Machine model | | | PC700LC-11 | |
|---|---|---|---|---|
| Engine | | | SAA6D140E-7 | |
| Item | Measurement condition | Unit | Standard value for new machine | Repair limit |
| Boom control lever | • Hydraulic oil temperature45 to 55 °C<br>• Fuel control dial: MAX (High idle) position<br>• Control lever: At center of grip<br>• Pedal: At tip of pedal<br>• Read the maximum value when the lever is operated to the stroke end | N {kg} | 15.7 to 3.9 {1.6 to 0.4 } | 24.5 or less {2.5 or less} |
| Arm control lever | | | 15.7 to 3.9 {1.6 to 0.4 } | 24.5 or less {2.5 or less} |
| Bucket control lever | | | 12.7 to 2.9 {1.3 to 0.3 } | 21.6 or less {2.2 or less} |
| Swing control lever | | | 12.7 to 2.9 {1.3 to 0.3 } | 21.6 or less {2.2 or less} |
| Travel control lever | | | 24.5 to 5.9 {2.5 to 0.6 } | 39.2 or less {4.0 or less} |
| Travel control pedal | | | 74.5 to 18.6 {7.6 to 1.9 } | 107.6 or less {11 or less} |

**Oil leakage**

| Machine model | | | PC700LC-11E0 | |
|---|---|---|---|---|
| Engine | | | SAA6D140E-7 | |
| Item | Measurement condition | Unit | Standard value for new machine | Repair limit |
| Oil leakage from cylinder | • Hydraulic oil temperature45 to 55 °C<br>• Fuel control dial: MAX (High idle) position<br>• Measure the leakage for 1 minute while relieving the travel motor or cylinder to be measured | mℓ/min | 5 or less | 20 or less |
| Center swivel joint | | | 10 or less | 100 or less |

**Cooling Fan**

| Machine model | | | PC700LC-11E0 | |
|---|---|---|---|---|
| Engine | | | SAA6D140E-7 | |
| Item | Measurement condition | Unit | Standard value for new machine | Repair limit |
| Cooling fan speed | • Hydraulic oil temperature45 to 55 °C<br>• Fuel control dial: MAX (High idle) position<br>• Fixed the fan speed to the maximum. (See “SET AND OPERATE MACHINE MONITOR”) | rpm | 1430 to 50 | 1430 to 50 |

**Pump Performance**

| Machine model | | | PC700LC-11E0 | |
|---|---|---|---|---|
| Engine | | | SAA6D140E-7 | |
| Item | Measurement condition | Unit | Standard value for new machine | Repair limit |
| Main pump performance | • Pump speed (rpm)2000 rpm<br>• TVC current 400 mA<br>• Test pump discharge pressure (MPa {kg/cm$^2$}): P1<br>• Other pump discharged pressure (MPa {kg/cm$^2$}): P2<br>• Average discharge pressure (MPa {kg/cm$^2$}):<br>P = (P1 + P2) / 2 | ℓ/min | Q<br>(See graph) | Q<br>(See graph) |

# Examine Exhaust Gas Color

**Tools to Examine Exhaust Gas Color**

| Symbol | | Part No. | Part name | Q'ty | Remarks |
|---|---|---|---|---|---|
| A | | 799-201-9002 | Handy smoke checker | 1 | |
| B | - | Commercially available | Smoke meter | 1 | |
| | 1 | Commercially available | Probe | 1 | |

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

⚠ **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury. Wait for the temperature to go down, and then start the work.**

Check this item under the following conditions.

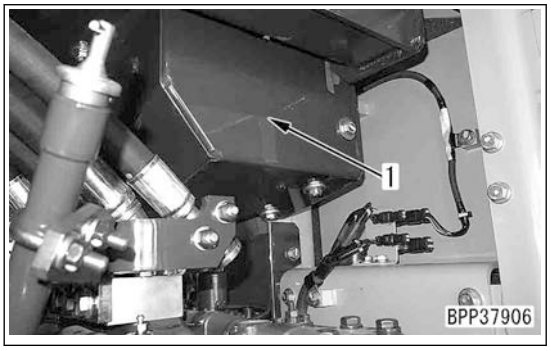
Engine coolant temperature: 60 to 100 °C

If an air source and an electric power source are not available in the field, use the handy smoke checker A. Use the smoke meter B when recording the official data, etc.

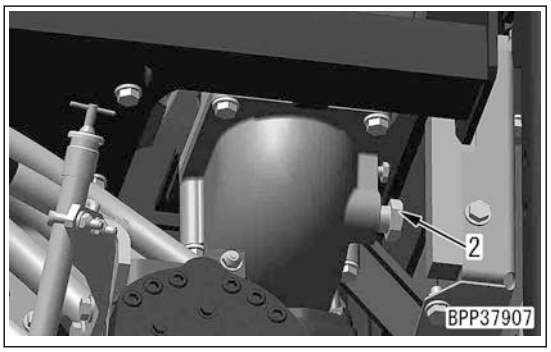
For testing of exhaust gas color to perform troubleshooting, refer to this section.

## How to Examine Exhaust Gas Color with the Handy Smoke Checker

1. Open the cover on the left side of the machine.
2. Remove the cover (1).




3. Remove the plug (2).



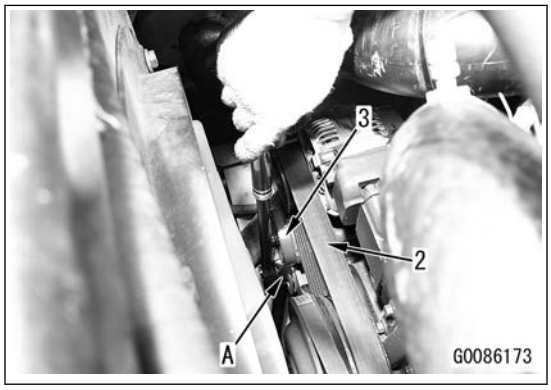
## How to Replace Fan Belt

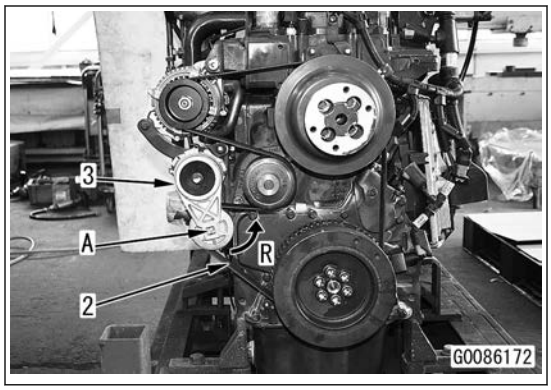
The auto-tensioner is provided for the fan belt. Therefore, testing and adjusting is usually unnecessary.

Disconnect the air conditioner compressor belt before replacing the fan belt.

Place the machine on a level ground and lower the work equipment to the ground.

1. Set the wrench to portion “A” (width across the flats: 12.7 mm) of the tensioner assembly (3), and turn the wrench in the direction opposite to the winding-up direction to decrease the fan belt (2) tension.
2. Firmly set the wrench on tensioner assembly (3) at portion “A” before applying turning force to the wrench. (If you try to rotate the wrench before it is fully inserted due to strong spring force of tensioner assembly (3), it can disengage and cause serious physical injuries.)
3. After removing fan belt (2), slowly and carefully restore tensioner assembly (3).
4. Be careful not to catch your fingers between the pulley and fan belt (2) during work.
5. Replace fan belt (2).
6. Check each pulley for breakage and crack.



## Examine DEF Tank Heater Valve

**Tools to Examine DEF Tank Heater Valve**

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

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

**NOTICE**

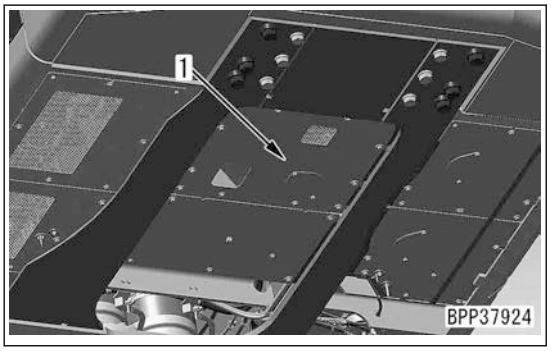
**If KOMNET communication error remains less than 1 second, engine controller is unable to detect it, and the test may be continued while the machine monitor does not continue the test (standard screen). In that case, once the starting switch is turned to OFF position, system operating lamp goes out,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

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

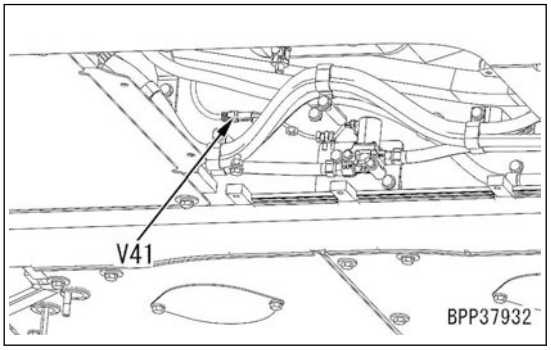
For testing of DEF tank heater valve to perform troubleshooting or others, refer to this section.

## How to Examine DEF Tank Heater Valve

1. Check that the system operating lamp is not lit. Turn the battery isolator switch to OFF position.
2. Remove the undercover (1).




3. Disconnect the connector (V41) to be tested.



## How to Release Remained Pressure from Swing Motor Circuit

Release the remaining pressure from the circuit according to the following procedure before disconnecting piping between the swing motor and control valve.

Perform steps 1. to 5. by referring to the “Releasing the remaining pressure from the hydraulic cylinder circuit when disconnecting the bucket and arm cylinder hydraulic circuits”.

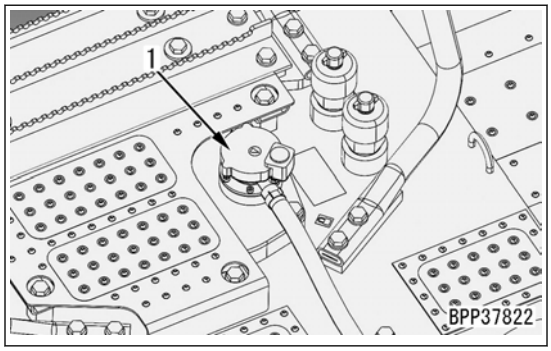
**REMARK**

Perform the lever operation only with swing operation.

## How to Release Remained Pressure from Travel Motor Circuit

- Release the remaining pressure from the piping according to the following procedure before disconnecting piping between the travel motor and control valve.
- The control valve spool of the travel circuit is an open type circuit, so the remaining pressure can be released by performing the same operation as that described in “METHOD FOR RELEASING REMAINING PRESSURE FROM HYDRAULIC TANK”.

1. Lower the work equipment to the ground in a stable posture, and stop the engine.
2. Loosen the oil filler cap (1) of the hydraulic tank gradually to release the air in the tank.



**(2) CO Cancel Operation Table**

| Operating condition of solenoid valve | | Operating state of solenoid valve |
|---|---|---|
| Working mode | P1-mode, E-mode | OFF (De-energized) |
| | P0-mode,L mode | ON (Energized) |
| One-touch power maximizing switch | ON | |
| Swing lock switch | ON | |
| Travel lever | When operated | |

**(3) 2-Stage Relief Solenoid Valve Operation Table**

| Operating condition of solenoid valve | | Operating state of solenoid valve |
|---|---|---|
| Working mode | L mode | ON (Energized) |

**(4) Operation Table of Machine Push-up Solenoid Valve**

| Operating condition of solenoid valve | | Operating state of solenoid valve |
|---|---|---|
| Machine push-up and power maximizing switch | ON | OFF (De-energized) |
| | OFF | ON (Energized) |

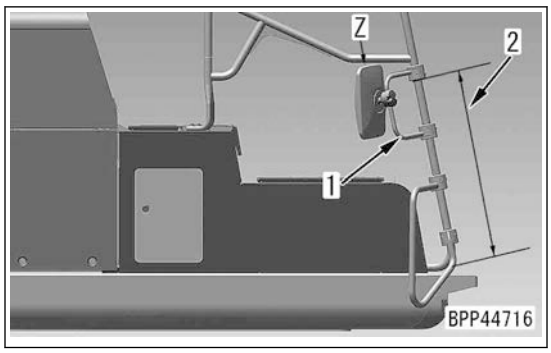
**(5) Operation Table of Travel Speed Selector Solenoid Valve**

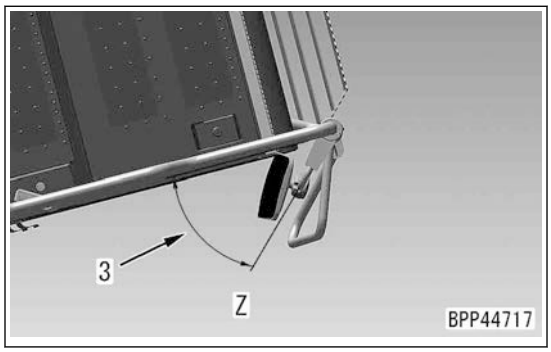
| Operating condition of solenoid valve | | Operating state of solenoid valve |
|---|---|---|
| Travel speed switch | Lo | OFF (De-energized) |
| | Hi | ON (Energized) |

**(6) Swing Parking Brake Solenoid Valve Operation Table**

| Operating condition of solenoid valve | | | Operating state of solenoid valve |
|---|---|---|---|
| Swing lock switch | ON | Approx. 10 seconds passes after the work equipment and swing control levers are set to NEUTRAL position | OFF (De-energized) |
| | OFF | When operating the work equipment control lever and swing control lever | ON (Energized) |

1. Adjust the stay (1).
   Installing position (2): 776 mm
   Installing position (3): 47 °




2. Adjust the mirror (4).

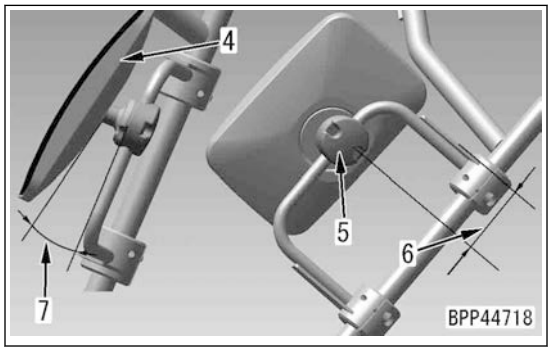
**REMARK**

Install the mirror (4) so that “Komatsu” logo comes to the right side of the machine.

Tightening torque of the mounting bolt (5): 6.0 to 7.0 Nm {0.61 to 0.71 kgfm}

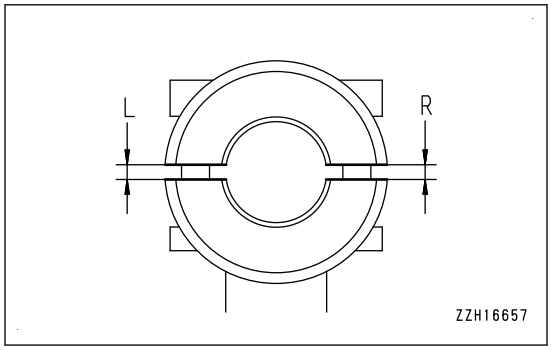
Installing position (6): 102 mm

Installing position (7): 10 °



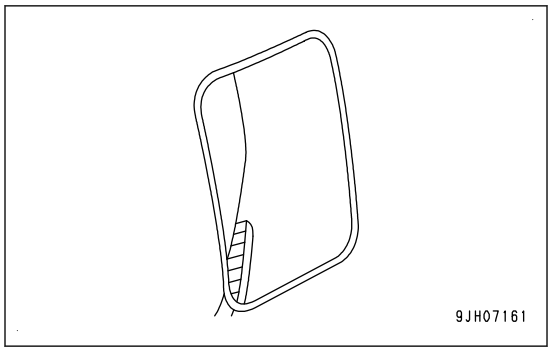

**NOTICE**

- **Tighten the bolts on the right and left sides of the brackets alternately so that the clearance on the left (L) and the clearance on the right (R) are equal.**
- **If tightening the mounting bolts of mirror and stay, the bracket may be broken. Tighten them with the specified torque.**




Set the mirror so that the machine side is reflected in the mirror as shown in the figure.

Adjustment is completed when you can recognize a person at the rear right end of the machine body.



**REMARK**

- If no abnormality is recorded, “No Abnormality Record” is displayed.
- In the mechanical systems abnormality record screen, up to 50 cases currently stored are displayed.
- If the number of occurrence is 1 (first occurrence), the service meter reading at the first occurrence and that at the last occurrence are the same. When the latest service meter reading is recovered, the value at the recovery time is displayed, thus the above readings may not be the same.
- If “E” is displayed on the left of a failure code, the abnormality is still occurring or correction of it is not confirmed.
- For all of the failure codes that the machine monitor can record, see “40 Troubleshooting”, “Failure Code Table”.
- If the characters in the failure are many, the character strings display is scrolled.
- The contents of an abnormality record of the mechanical system cannot be deleted.

## How to See Abnormality Record (Electrical Systems)

The machine monitor logs the failures that occurred in the past and is occurring currently and classifies them into the mechanical system abnormality and electrical system abnormality.

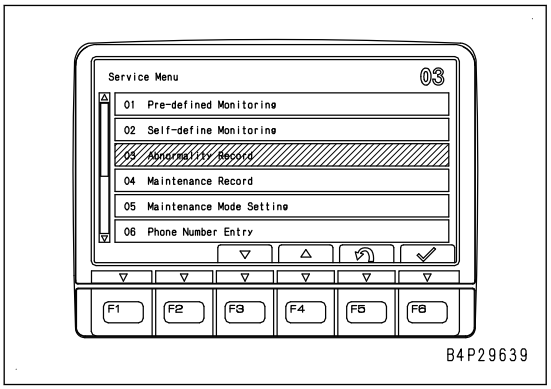
To check “Electrical Sys Abnormality Record”, perform the following procedures.

For all of the failure codes that the machine monitor can record, see TROUBLESHOOTING, “Failure code list”.

1. Select “Abnormality Record” on “Service Menu” screen.

   **REMARK**

   For selecting method, see “How to Operate Service Mode” in “Service Mode”.




2. On “Abnormality Record” screen, select “Electrical Sys Abnormality Record” with the function switches or numeral input switches.

   F3: Moves the selection downward.

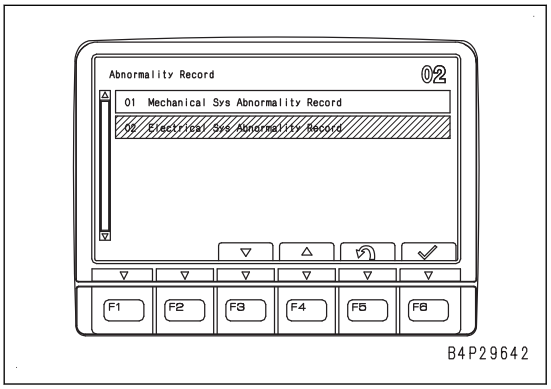
   F4: Moves the selection upward.

   F5: Returns the screen to “Service Menu” screen.

   F6: Enters the selection.

   **REMARK**

   Input a code (2-digit) by using the numeral input switches to directly select the item, and then press F6 to enter the selection.




3. On “Electrical Sys Abnormality Record” screen, the following information is displayed.

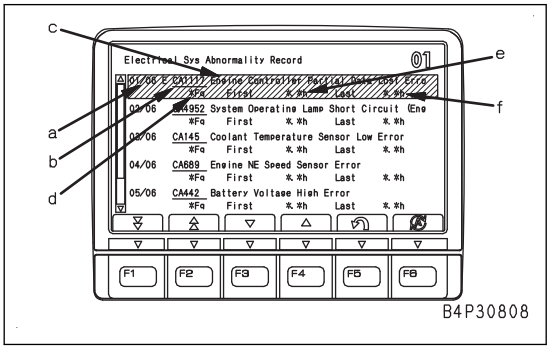
   a: Occurrence order of abnormalities from latest one/ Total number of records

   b: Failure code

   c: Detail of failure

   d: Number of occurrences (displayable range: 0 to 65535 times)

   e: Service meter reading at the first occurrence



Adjust each device by referring to “ADJUST KomVision RELATED DEVICES”.

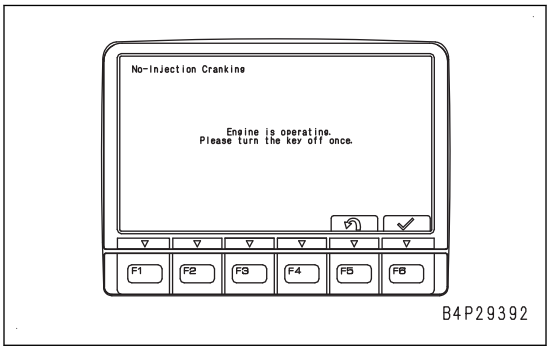
## No-Injection Cranking Operation

If the engine is operated after long storage of the machine, it may be worn or damaged because of insufficient lubrication with oil. To prevent this, the machine has a function to crank the engine without injecting fuel to lubricate the engine before starting it.

Setting of No-Injection cranking to be performed while the engine is stopped.

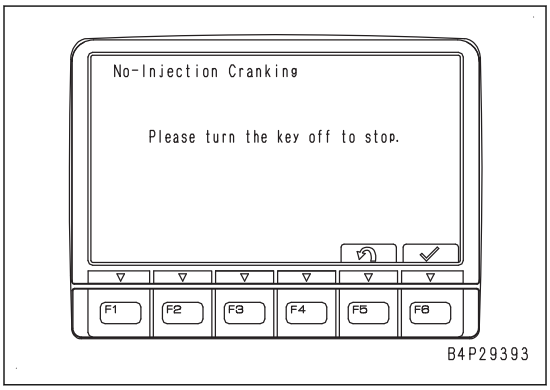
No-Injection cranking does not function while the engine is running.

This function can be selected even when the engine is running. However, if you execute No-Injection cranking, “Engine is running. Please turn the key off once.” is displayed on the screen.




Even if the confirmation screen is displayed and No-Injection cranking is operated, the function does not become effective in the following cases. Turn the starting switch OFF once to operate.

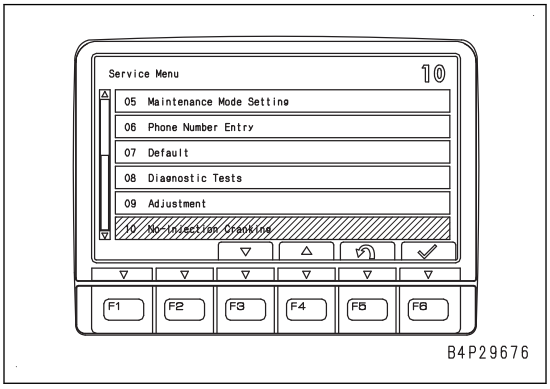
- The communication between the machine monitor and engine controller is not normal.
- An engine start operation has been performed before the message “No-injection cranking is possible” is displayed.




1. Select “No-Injection Cranking” on “Service Menu” screen.

   **REMARK**

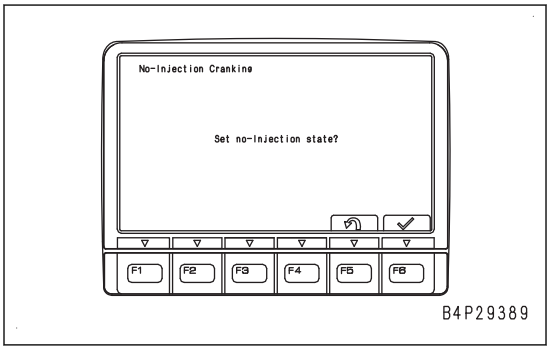
   For selecting method, see “How to Operate Service Mode” in “SERVICE MODE”.




2. When “No-Injection Cranking” screen is displayed, confirmation for the execution of No-Injection cranking is displayed. Select the action with the function switch.

   F5: Does not implement (returns the screen to “Service Menu”).

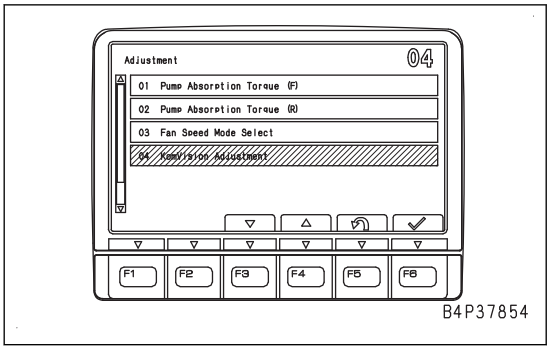
   F6: Executes.



5. Select “KomVision Adjustment” with the function switches or numeral input switches on “Adjustment” screen.

   **REMARK**

   See “How to Operate Service Mode” in “SERVICE MODE” for selecting method.




6. Select “Camera Calibration” with the function switches on “KomVision Adjustment Menu” screen.

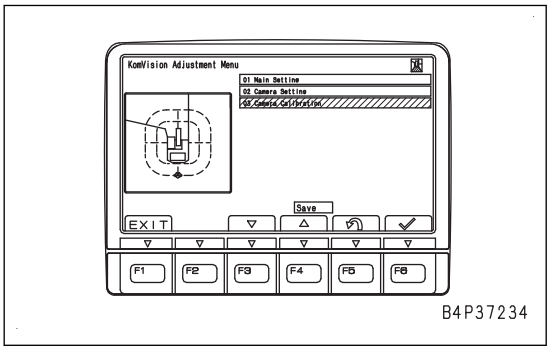
   F1: The screen returns to “Service Menu” screen.

   F3: Moves the selection downward.

   F4: Moves the selection upward.

   F5: Selection is canceled. The screen returns to “Adjustment” screen.

   F6: Enters the selected item.




7. Select “ 01 Angle Calibration” with the function switches on “CAMERA CALIBRATION” screen.

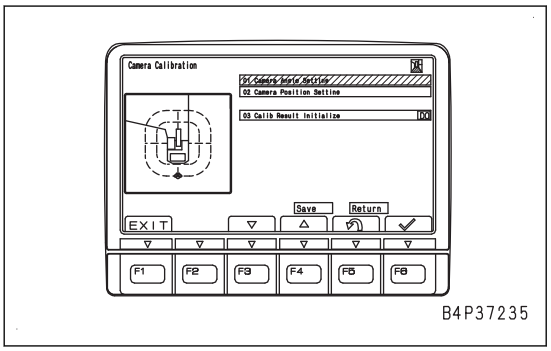
   F1: The screen returns to “Service Menu” screen.

   F3: Moves the selection downward.

   F4: Moves the selection upward.

   F5: Selection is canceled. The screen returns to “KomVision Adjustment Menu” screen.

   F6: Enters the selected item.




8. Select the camera to be adjusted with the function switches on “Camera Selection(Angle Calibration)” screen.

   F1: The screen returns to “Service Menu” screen.

   F3: Moves the selection downward.

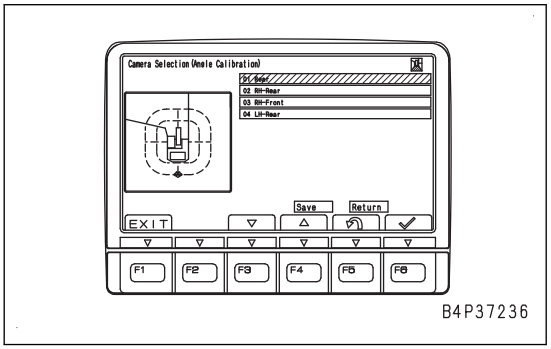
   F4: Moves the selection upward.

   F5: Selection is canceled. The screen returns to “CAMERA CALIBRATION” screen.

   F6: Enters the selected item.

   **REMARK**

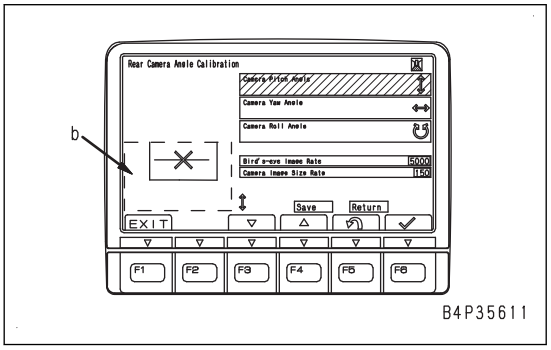
   “Bird's-eye Image Rate” and “Camera Image Size Rate” can be adjusted with the function switches.




9. Check that the angle setting calibration marker A installed in Step 1 is displayed in the box (b) when the angle calibration screen for the selected camera is displayed.

   **REMARK**

   Adjust the position of the angle setting calibration marker A or the angle of the camera if the angle setting calibration marker A is not displayed.



| Machine model | | | | PC700LC-11 | | | Good | No good |
|---|---|---|---|---|---|---|---|---|
| Engine | | | | SAA6D140E-7 | | | | |
| Item | Testing conditions | | Unit | Standard value for new machine | Repair limit | Measured value | | |
| F pump TVC valve outlet pressure | • Hydraulic oil temperature45 to 55 °C<br>• Working mode: P (Power Mode)<br>• Fuel control dial: MAX (High idle) position | All control levers and control pedals: When levers are returned from fine control to NEUTRAL | MPa {kgf/cm$^2$} | 2.05 to 2.45 {21 to 25 } | 1.76 or more {18 or more} | | | |
| | | Work equipment operation: Boom RAISE relief | | 0.57 to 1.30 {5.8 to 13.2 } | 0.52 to 1.25 {5.3 to 12.7 } | | | |
| | | Operation of work equipment: Boom RAISE relief + One-touch power maximizing function is actuated | | 0.90 to 1.40 {9.1 to 14.3 } | 0.85 to 1.35 {8.6 to 13.8 } | | | |
| R pump TVC valve outlet pressure | • Hydraulic oil temperature45 to 55 °C<br>• Working mode: P (Power Mode)<br>• Fuel control dial: MAX (High idle) position | All control levers and control pedals: When levers are returned from fine control to NEUTRAL | MPa {kgf/cm$^2$} | 2.05 to 2.45 {21 to 25 } | 1.76 or more {18 or more} | | | |
| | | Work equipment operation: Boom RAISE relief | | 0.57 to 1.30 {5.8 to 13.2 } | 0.52 to 1.25 {5.3 to 12.7 } | | | |
| | | Operation of work equipment: Boom RAISE relief + One-touch power maximizing function is actuated | | 0.90 to 1.40 {9.1 to 14.3 } | 0.85 to 1.35 {8.6 to 13.8 } | | | |

# Test in Accordance with Testing Procedure

## Examine Fuel Level and Type

⚠ **Fuel is highly flammable and dangerous. Keep fire away.**

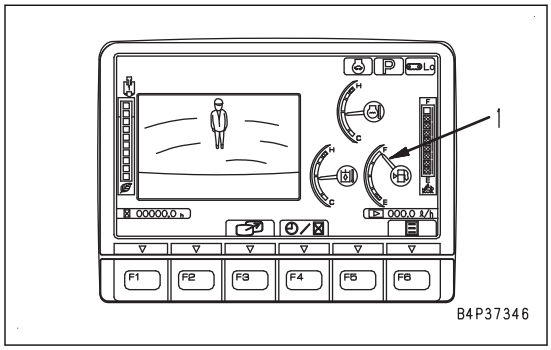
⚠ **When adding fuel, be careful not to overflow it.**

⚠ **Wipe off any spilled fuel. If fuel spills over soil or sand, remove all the fuel and soil or sand together.**

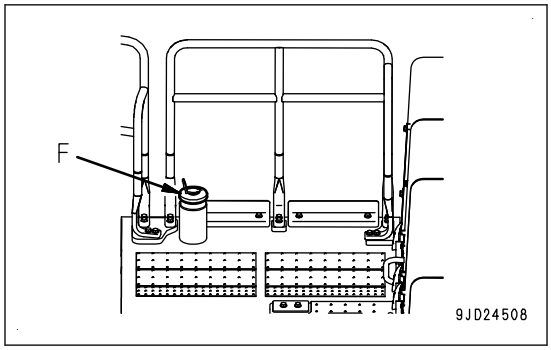
1. Turn the engine starting switch to ON position and check the fuel level with the fuel gauge (1) on the monitor panel.

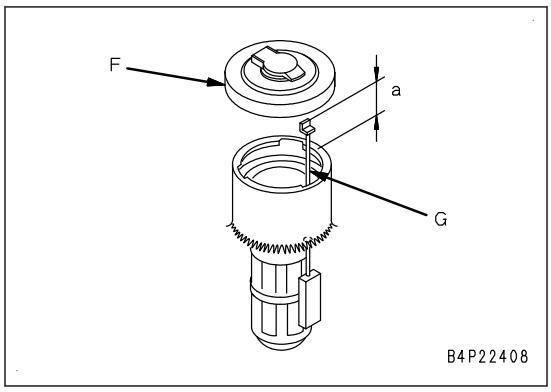
   After checking, turn the switch back to OFF position.

2. If the fuel level is low, open fuel filler cap (F) of the fuel tank and add fuel through the fuel filler port to the necessary level, referring to the position of float gauge (G).



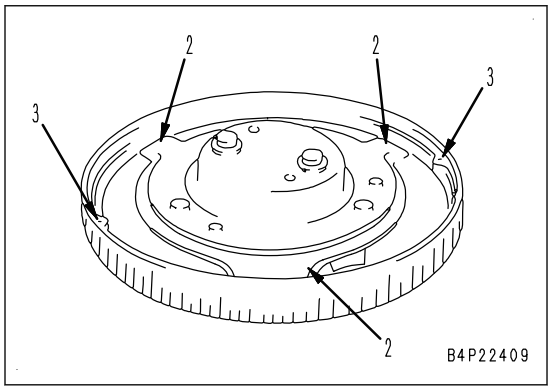

3. After adding fuel, push float gauge (G) straight down with fuel filler cap (F), and tighten fuel filler cap (F) securely while taking care the float gauge (G) is not caught in tab (2) of fuel filler cap (F).



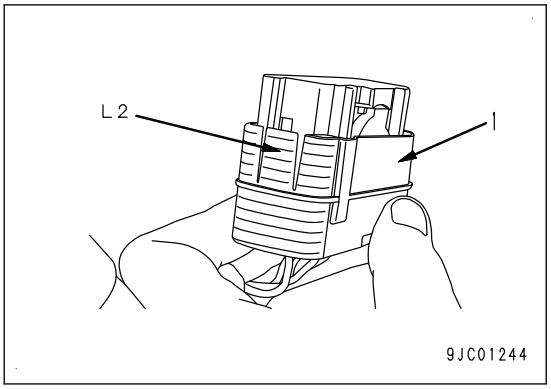

**REMARK**

If breather hole (3) in the oil filler cap is clogged, the pressure in the tank decreases and fuel may not be supplied. To prevent this, clean the breather hole.



3. Hold the connector body (black portions on the male and female sides) and disconnect the connector.

- How to connect connector
  Insert the connector straight until it clicks.

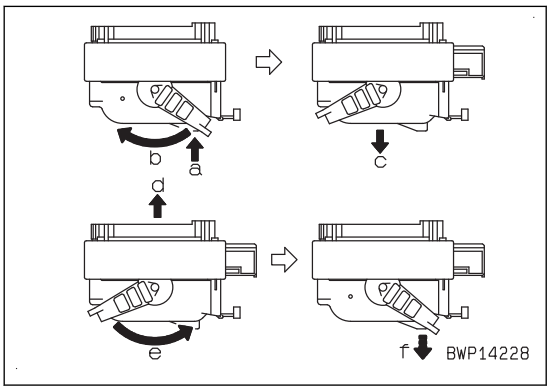


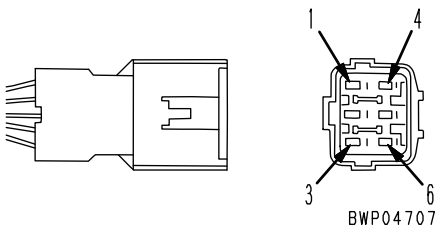
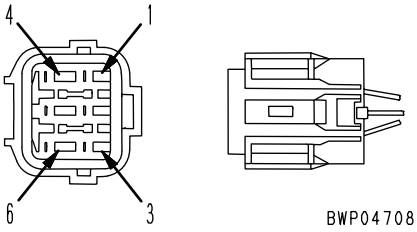
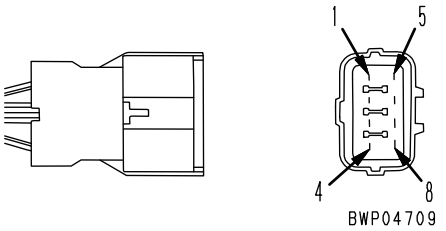
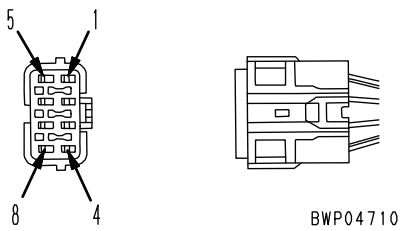
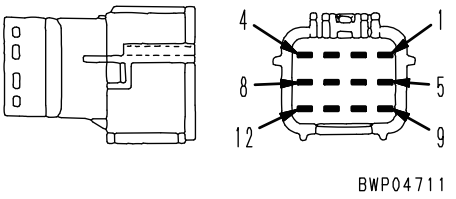
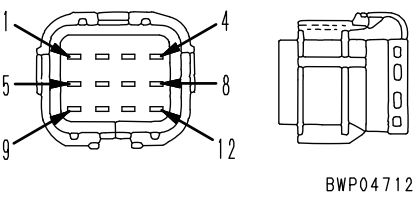
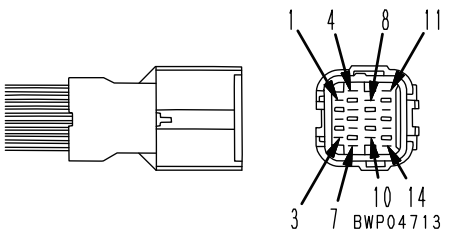
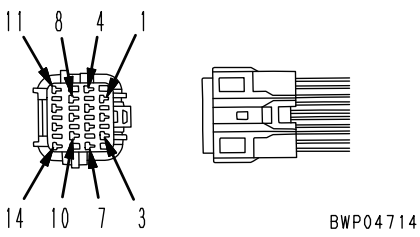

**AMP-81 and DELPHE-96 connectors**

- Disconnection and connection of connector
  Disconnect the connector by moving in the order of (a) to (c), and connect in the order of (d) to (f) as shown in the figure.

  Disconnection: (a) Unlock (b) Slide the lever (c) Disconnect the connector

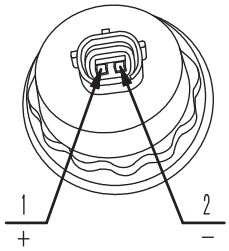
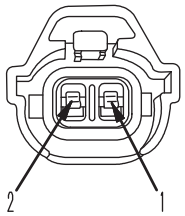
  Connection: (d) Position the connector (e) Slide the lever (f) Engage the lock

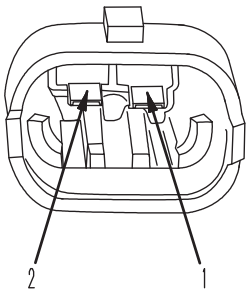
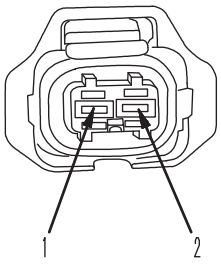


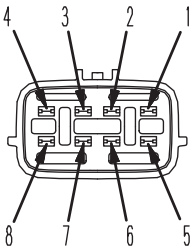
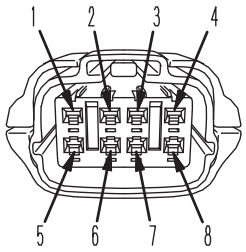
| No. of pins | SWP type connector | | |
|---|---|---|---|
| | Male (female housing) | Female (male housing) | Testing connection use special tool Part No. |
| 6 |  |  | 799-601-7050 (T-adapter) |
| | Part No. : 08055-10681 | Part No. : 08055-10691 | |
| 8 |  |  | 799-601-7060 (T-adapter) |
| | Part No. : 08055-10881 | Part No. : 08055-10891 | |
| 12 |  |  | 799-601-7310 (T-adapter) |
| | Part No. : 08055-11281 | Part No. : 08055-11291 | |
| 14 |  |  | 799-601-7070 (T-adapter) |
| | Part No. : 08055-11481 | Part No. : 08055-11491 | |

B4D18191

SUMITOMO connector for engine

| No. of pins | PCV (125, 140 engine) | | |
|---|---|---|---|
| | Valve side (plug) | Harness side (receptacle) | Testing connection use special tool Part No. |
| 2 |  |  | 799-601-9430 (Socket) (Kit : 799-601-4101) (Kit : 799-601-4201) |
| | — | — | |

| No. of pins | Fuel supply pump (95 engine) | | |
|---|---|---|---|
| | Valve side (plug) | Harness side (receptacle) | |
| 2 |  |  | — |
| | — | — | |

| No. of pins | Variable flow turbocharger, EGR valve (95 engine) | | |
|---|---|---|---|
| | Sensor (motor) side (plug) | Harness side (receptacle) | |
| 8 |  |  | — |
| | — | — | |

B4W21624

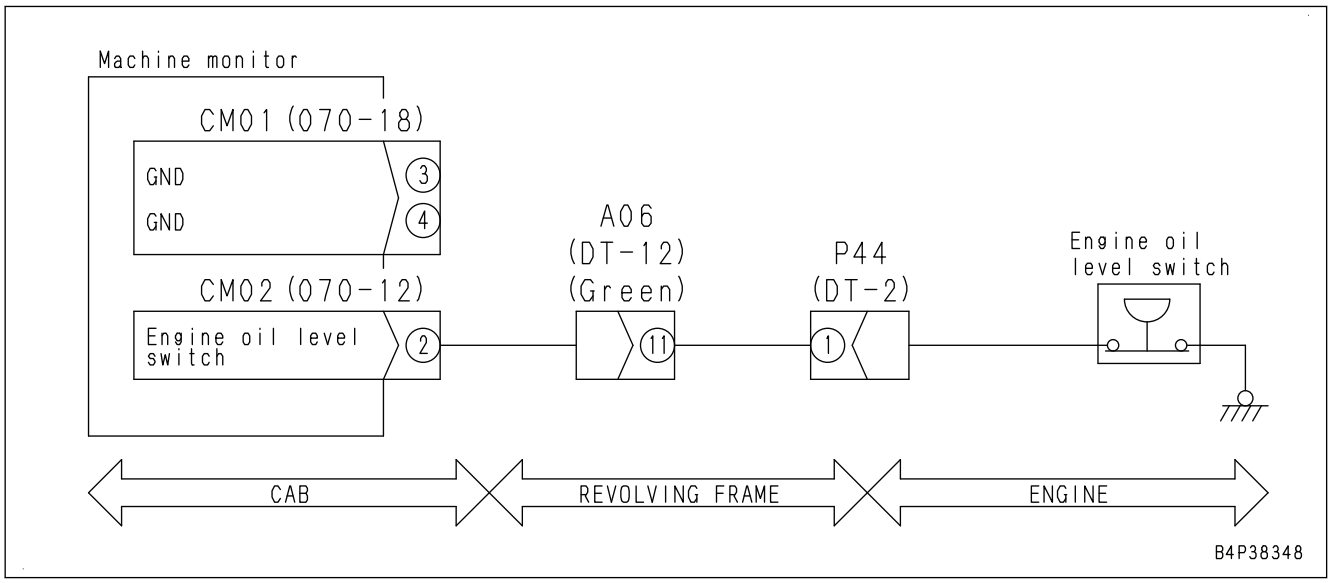
| Failure code | Failure (Shown on screen) | Applicable equipment | Action level | History category | Remarks |
|---|---|---|---|---|---|
| CA731 | Engine Backup Speed Sensor Phase Error | ENG | L01 | Electrical system | |
| CA778 | Engine Backup Speed Sensor Error | ENG | L01 | Electrical system | |
| CA1117 | Engine Controller Partial Data Lost Error | ENG | L04 | Electrical system | |
| CA1664 | KDOC Abnormality | ENG | L03 | Electrical system | |
| CA1669 | DEF Level Sensor Voltage High Error | ENG | L01 | Electrical system | |
| CA1673 | DEF Level Low Error 3 | ENG | L03 | Electrical system | |
| CA1677 | DEF Temperature Sensor Low Error | ENG | L01 | Electrical system | |
| CA1678 | DEF Temperature Sensor High Error | ENG | L01 | Electrical system | |
| CA1682 | DEF Pump Priming Error | ENG | L01 | Electrical system | |
| CA1683 | DEF Tank Heating Valve Voltage High Error | ENG | L01 | Electrical system | |
| CA1684 | DEF Tank Heating Valve Voltage Low Error | ENG | L01 | Electrical system | |
| CA1686 | DEF Quality Sensor Voltage High Error | ENG | L01 | Electrical system | |
| CA1691 | Defective Regeneration | ENG | L03 | Electrical system | |
| CA1694 | SCR Outlet NOx Sensor In Range Error | ENG | L01 | Electrical system | |
| CA1695 | Sensor 5 Supply Voltage High Error | ENG | L03 | Electrical system | |
| CA1696 | Sensor 5 Supply Voltage Low Error | ENG | L03 | Electrical system | |
| CA1712 | DEF Tank Thawing Error | ENG | L01 | Electrical system | |
| CA1713 | DEF Tank Heater Valve Open Stuck Error | ENG | L01 | Electrical system | |
| CA1714 | DEF Quality Sensor Out of Calibration Error | ENG | L01 | Electrical system | |
| CA1715 | DEF Quality Sensor Internal Circuit Error | ENG | L01 | Electrical system | |
| CA1776 | Sensor Supply Relay Voltage High Error | ENG | L01 | Electrical system | |
| CA1777 | Sensor Supply Relay Voltage Low Error | ENG | L01 | Electrical system | |
| CA1843 | Crankcase Pressure Sensor High Error | ENG | L01 | Electrical system | |

# Failure Code [989L00]

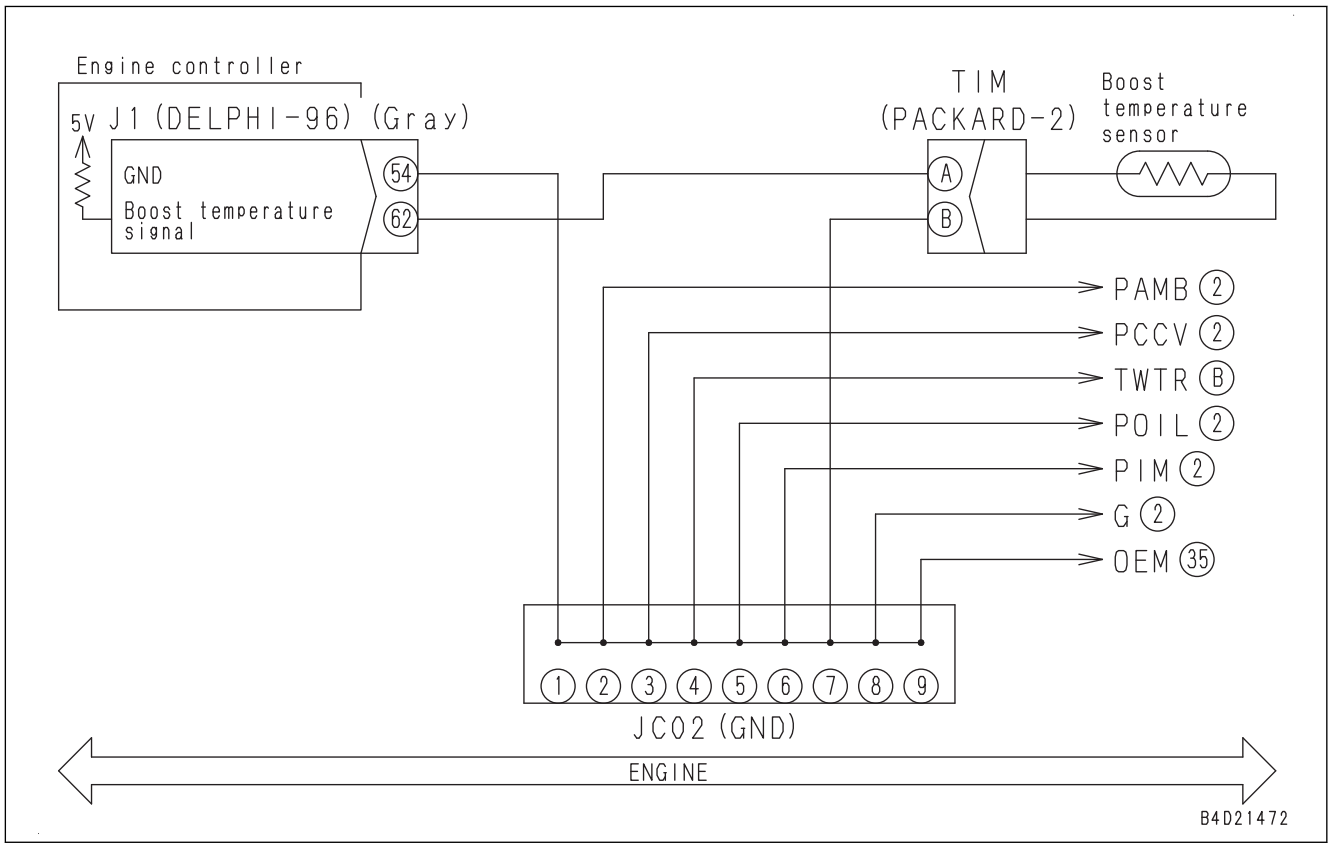
| Action level | Failure code | Failure | Engine Controller Lock Caution 1 (Machine monitor system) |
|---|---|---|---|
| - | 989L00 | | |
| Detail of failure | Engine controller lock error is detected (factor 1). | | |
| Action of controller | • None in particular<br>• If cause of failure disappears, machine becomes normal by itself. | | |
| Phenomenon on machine | Engine does not start. | | |
| Related information | • When this failure code is displayed after replacement of monitor controller, user password must be replaced with one before replacement of controller<br>• After completion of repair, check if the failure code is cleared by the following procedure. Procedure: Turn the starting switch to ON position. | | |

| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 1 | Machine monitor replaced | This failure may occur due to machine monitor replacement. |

## Circuit Diagram of Engine Oil Level



## Circuit Diagram of Charge Air Temperature Sensor



# Failure Code [CA325]

| Action level | Failure code | Failure | Injector #6 (L#6) Open Circuit Error or Short Circuit Error (Engine controller system) |
|---|---|---|---|
| L03 | CA325 | | |
| Details of failure | Open or short circuit is detected in #6 injector circuit. | | |
| Action of controller | None in particular | | |
| Phenomenon on machine | • Engine power deration<br>• Engine does not run stably. | | |
| Related information | • After repairing, check if the failure code is cleared by the following procedure. Procedure: Start engine.<br>• If ground fault or hot short circuit is detected, failure codes [CA323], [CA325] and [CA332] appear simultaneously.<br>• While engine is running normally, approximately 65 V of pulse voltage is supplied to injector (+) side. Because it is pulse voltage, it cannot be measured by using multimeter. | | |

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 1 | Defective wiring harness connector | 1. See descriptions of wiring harness and connectors in “Electrical equipment” in “CHECKS BEFORE TROUBLESHOOTING” of “RELATED INFORMATION ON TROUBLESHOOTING”, and check it.<br>2. Start the engine. | | |
| | | If this failure code is cleared, wiring harness connector is defective. | | |
| 2 | Defective injector #6 | 1. Turn starting switch to OFF position.<br>2. Disconnect connector CN6, and connect T-adapter to male side. | | |
| | | Resistance | Between CN6 (male) (1) and (2) | 0.4 to 1.1 Ω |
| | | | Between CN6 (male) (1) and ground | Min. 1 MΩ |
| 3 | Open circuit or ground fault in wiring harness | 1. Turn starting switch to OFF position.<br>2. Disconnect connector J1, and connect T-adapter to female side. | | |
| | | Resistance | Between J1 (female) (51) and (75) | 0.4 to 1.1 Ω |
| | | | Between J1 (female) (51) and ground | Min. 1 MΩ |
| 4 | Open circuit in wiring harness (wire breakage or defective contact of connector) | If failure code is still displayed after above checks on cause 3, this check is not required.<br>1. Turn starting switch to OFF position.<br>2. Disconnect connectors J1 and CN6, and connect T-adapter to each female side. | | |
| | | Resistance | Between J1 (female) (51) and CN6 (female) (1) | Max. 1 Ω |
| | | | Between J1 (female) (75) and CN6 (female) (2) | Max. 1 Ω |

# Failure Code [CA555]

| Action level | Failure code | Failure | Crankcase Pressure High Error 2 (Engine controller system) |
|---|---|---|---|
| L01 | CA555 | | |
| Details of failure | High pressure error (level 1) in crankcase pressure is detected. | | |
| Action of controller | None in particular | | |
| Phenomenon on machine | None in particular | | |
| Related information | • Signal voltage from crankcase pressure sensor can be checked by monitoring function. (Code: 48401 (V))<br>• Pressure in crankcase pressure sensor can be checked by monitoring function. (Code: 48400 (kPa))<br>• This failure code is cleared when failure code [CA1942] is displayed.<br>• After repairing, check if the failure code is cleared by the following procedure. Procedure: Start engine. | | |

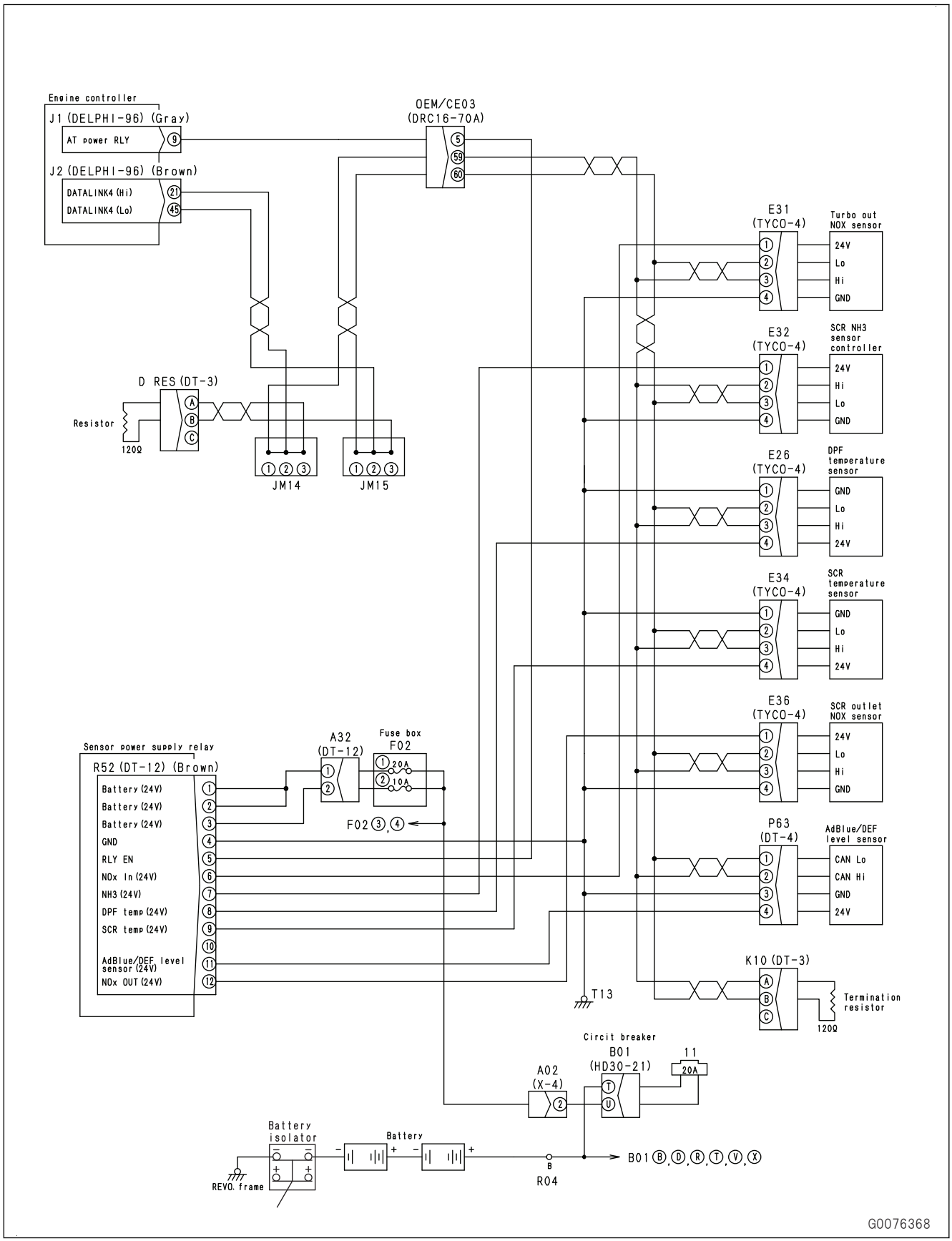
| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 1 | Clogged KCCV filter | Replace the KCCV filter. |
| 2 | Blocked KCCV gas piping | If an error persists after replacement of the KCCV filter and emulsions are detected inside KCCV, blocked emulsions may be suspected in KCCV blow by gas piping. Check that there is no coolant leakage. |
| 3 | Defective crankcase pressure sensor | Crankcase pressure sensor system may be defective. Perform troubleshooting for failure codes [CA1843] and [CA1844]. |
| 4 | Increase of blowby gas | The error does not disappear after replacing KCCV filter, and “Crankcase Pressure High Error 1” or “Crankcase Pressure High Error 2” is also displayed, piston ring may be worn or broken, or oil from VGT may be leaked, valve guide and stem seal may be worn or damaged. Perform troubleshooting “TROUBLESHOOTING OF ENGINE (S MODE)”, “Engine oil consumption is excessive”. |

# Failure Code [CA1677]

| Action level | Failure code | Failure | DEF Temperature Sensor Low Error (Engine controller system) |
|---|---|---|---|
| L01 | CA1677 | | |
| Detail of failure | Failure of DEF temperature sensor (Short circuit of thermistor for temperature measurement) | | |
| Action of controller | Advances to Inducement strategy. (EU Specification) | | |
| Phenomenon on machine | • Failure to measure DEF level.<br>• Engine power deration according to inducement strategy. (EU Specification) | | |
| Related information | • The DEF temperature sensor is one of the DEF tank sensors integrated with the DEF level sensor and DEF quality sensor performs CAN communication with the engine controller.<br>• If the thermistor for temperature measurement shorts, this failure code is sent to the engine controller via CAN communication and displayed.<br>• After repairing, check if the failure code is cleared by the following procedure.<br>Procedure: Turn starting switch to ON position. | | |

| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 1 | Defective wiring harness connector | 1. See descriptions of wiring harness and connectors in “Electrical equipment” in “CHECKS BEFORE TROUBLESHOOTING” of “RELATED INFORMATION ON TROUBLESHOOTING”, and check it.<br>2. Turn starting switch to ON position. |
| | | If this failure code is cleared, wiring harness connector is defective. |
| 2 | Defective DEF tank sensor | 1. Check the sensor connector for contamination and damage.<br>2. Turn starting switch to OFF position.<br>3. Replace the DEF tank sensor.<br>4. Turn starting switch to ON position. |
| | | If this failure code is cleared, any internal parts in the original DEF tank sensor is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.) |
| 3 | Defective engine controller | If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.) |

## Circuit Diagram of Sensor Power Supply Relay



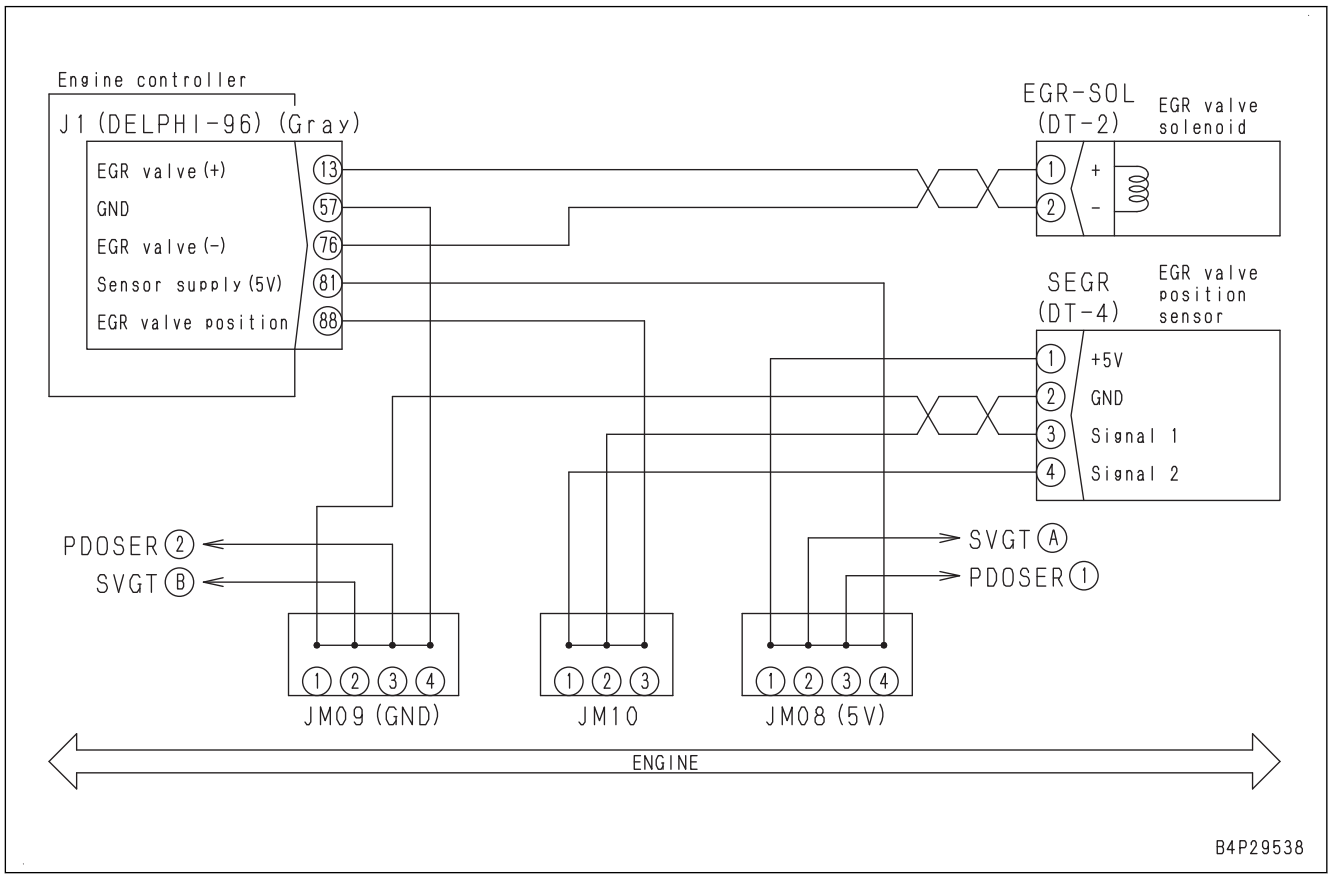
# Failure Code [CA1924]

| Action level | Failure code | Failure | Fuel Doser Solenoid 1 Low Error (Engine controller system) |
|---|---|---|---|
| L03 | CA1924 | | |
| Details of failure | Abnormal low voltage occurs in fuel doser solenoid valve 1(shut off valve). | | |
| Action of controller | Regeneration control stops. | | |
| Phenomenon on machine | • Automatic regeneration is not performed.<br>• Manual stationary regeneration cannot be performed. | | |
| Related information | ⚠ **Exhaust connector and KDPF become hot (Min. 500 °C). Be careful not to get burn injury.**<br>• If connector DSOV1 is disconnected, failure code [CA1923] is displayed.<br>• See failure code [CA1925].<br>• This failure code is cleared after implementing fuel doser solenoid valve 1drive again turning the starting switch from OFF to ON after abnormality repair.<br>• After repairing, check if the failure code is cleared by the following procedure.<br>Procedure: Start engine. | | |

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 1 | Defective wiring harness connector | 1. See descriptions of wiring harness and connectors in “c: Electrical equipment” in “Checks before troubleshooting” of “Related information on troubleshooting”, and check it.<br>2. Start engine. | | |
| | | If this failure code is cleared, wiring harness connector is defective. | | |
| 2 | Defective dosing fuel solenoid valve 1 (shut-off valve) | 1. Turn starting switch to OFF position.<br>2. Disconnect connector DSOV1, and connect T-adapter to male side. | | |
| | | Resistance | Between DSOV1 (male) (2) and (1) | 4 to 6 Ω |
| | | | Between DSOV1 (male) (1) and ground (DSOV body) | Min. 1 MΩ |
| 3 | Open or short circuit in wiring harness | 1. Turn starting switch to OFF position.<br>2. Disconnect connector J1, and connect T-adapter to female side. | | |
| | | Resistance | Between J1 (female) (8) and (30) | 4 to 6 Ω |
| 4 | Ground fault in wiring harness (contact with ground circuit) | 1. Turn starting switch to OFF position.<br>2. Disconnect connectors J1 and DSOV1, and connect T-adapter to either female side. | | |
| | | Resistance | Between ground (frame) and J1 (female) (9) or DSOV1 (female) (1) | Min. 1 MΩ |
| 5 | Short circuit in wiring harness | 1. Turn starting switch to OFF position.<br>2. Disconnect connectors J1 and DSOV1, and connect T-adapter to female side of J1. | | |
| | | Continuity | Between J1 (female) (8) and each pin other than pin (8) | No continuity (no sound is heard) |
| 6 | Defective dosing fuel solenoid valve 1 (shut-off valve) | Replace dosing fuel solenoid valve 1 (shut-off valve). | | |

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 6 | Hot short circuit in wiring harness | 1. Turn starting switch to OFF position.<br>2. Disconnect connector SEGR and connect T-adapter to female side.<br>3. Turn starting switch ON (with connector SEGR disconnected). | | |
| | | Voltage | Between SEGR (female) (3) or (4) and (2) | Max. 1 V |
| 7 | Defective engine controller | If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.) | | |
| | | Reference<br>1. Turn starting switch to OFF position.<br>2. Insert T-adapter into connector J1.<br>3. Turn starting switch to ON position. | | |
| | | Voltage | Between J1 (88) and (57) | 1.0 to 4.0 V |

## Circuit Diagram of EGR Valve Lift Sensor

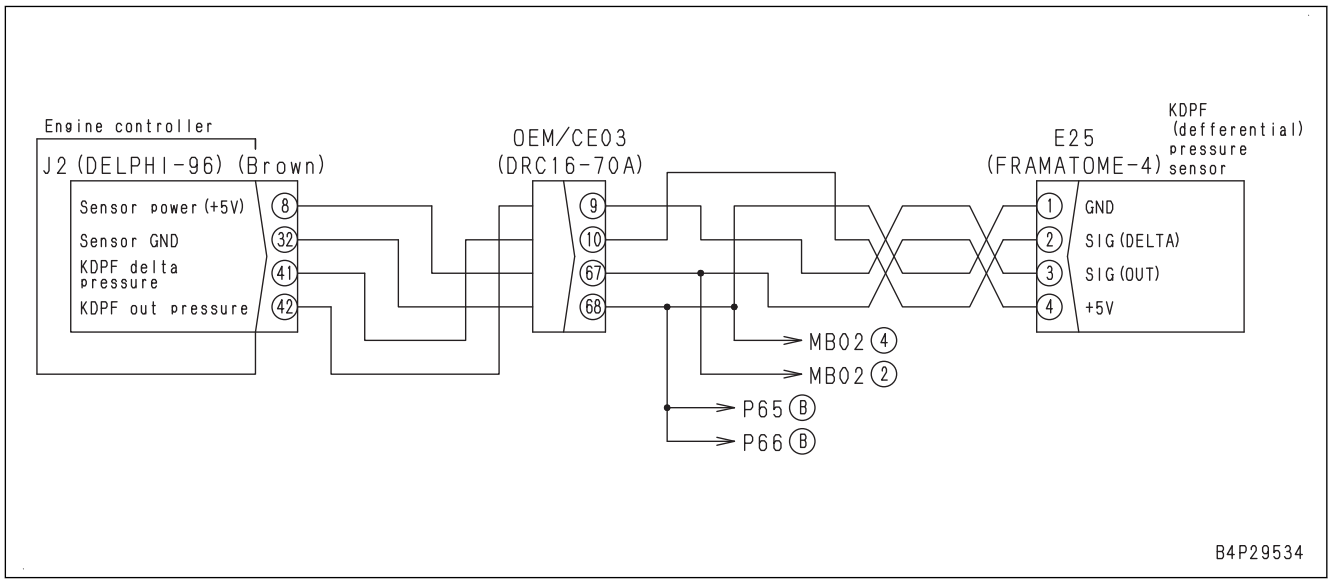


# Failure Code [CA2732]

| Action level | Failure code | Failure | Fuel Doser Solenoid 2 High Error (Engine controller system) |
|---|---|---|---|
| L03 | CA2732 | | |
| Detail of failure | Abnormal high voltage occurs in fuel doser solenoid valve 2 (drain valve). | | |
| Action of controller | Regeneration control stops. | | |
| Phenomenon on machine | • Automatic regeneration is disabled.<br>• Manual stationary regeneration is disabled. | | |
| Related information | ⚠ **Since exhaust connector and KDPF are heated to 500°C or above, be careful not to get burn injury.**<br>• If failure code [CA1923] is also displayed, the ground line may have open circuit.<br>• If connector DSOV2 is disconnected, this failure code is displayed.<br>• See failure code [CA1963].<br>• After repairing, check if the failure code is cleared by the following procedure. Procedure: Turn starting switch to ON position. | | |

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 1 | Defective wiring harness connector | 1. See descriptions of wiring harness and connectors in “c: Electrical equipment” in “CHECKS BEFORE TROUBLESHOOTING” of “RELATED INFORMATION ON TROUBLESHOOTING”, and check it.<br>2. Turn starting switch to ON position. | | |
| | | If this failure code is cleared, wiring harness connector is defective. | | |
| 2 | Defective dosing fuel solenoid valve 2 (drain valve) | 1. Turn starting switch to OFF position.<br>2. Disconnect connector DSOV2, and connect T-adapter to male side. | | |
| | | Resistance | Between DSOV2 (male) (2) and (1) | 4 to 6 Ω |
| 3 | Open or short circuit in wiring harness | 1. Turn starting switch to OFF position.<br>2. Disconnect connector J1, and connect T-adapter to female side. | | |
| | | Resistance | Between J1 (female) (6) and (30)<br>Resistance is the same as resistance of dosing fuel solenoid valve 2. | 4 to 6 Ω |
| 4 | Open circuit in wiring harness (wire breakage of ground line or defective contact of connector) | If failure code is still displayed after above checks on cause 3, this check is not required.<br>1. Turn starting switch to OFF position.<br>2. Disconnect connectors J1 and DSOV2 and connect T-adapters to each female side. | | |
| | | Resistance | Between J1 (female) (6) and DSOV2 (female) (1) | Max. 1 Ω |
| | | | Between J1 (female) (30) and DSOV2 (female) (2) | Max. 1 Ω |
| 5 | Hot short circuit in wiring harness | 1. Turn starting switch to OFF position.<br>2. Disconnect connector DSOV2, and connect T-adapter to female side.<br>3. Turn starting switch to ON position. | | |
| | | Voltage | Between DSOV2 (female) (1) and (2) | Max. 4.7 V |

## Circuit Diagram Related to KDPF Outlet Pressure Sensor



| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 6 | Defective KDPF temperature sensor | If all of 6 failure codes of [CA2771], [CA3232], [CA3868], [CA3911], [CA4151], and [CA4152] are displayed.<br>1. Turn starting switch to OFF position.<br>2. Disconnect KDPF temperature sensor (E26).<br>3. Turn starting switch to ON position. | | |
| | | If any of these 6 codes disappeared, the sensor which has been disconnected is defective. | | |
| 7 | Defective DEF tank sensor | If all 6 failure codes of [CA2771], [CA3232], [CA3868], [CA3911], [CA4151], and [CA4152] are displayed<br>1. Turn starting switch to OFF position.<br>2. Disconnect DEF tank sensor (P63).<br>3. Turn starting switch to ON position. | | |
| | | Displaying less than 6 failure codes indicates the disconnected sensor is defective. | | |
| 8 | Open circuit in wiring harness (power supply circuit) | 1. Turn the starting switch to OFF position.<br>2. Check that system operating lamp is turned off, and then turn the battery isolator switch to OFF position.<br>3. Disconnect connectors R52 and E31 and connect T-adapter to each female side. | | |
| | | Resistance | Between R52 (female) (6) and E31 (female) (1) | Max. 1 Ω |
| | | | Between E31 (female) (4) and ground | Max. 1 Ω |
| 9 | Defective CAN terminating resistor | 1. Turn starting switch to OFF position.<br>2. Disconnect connector K10 and D_RES and connect T-adapter to male side. | | |
| | | Resistance | Between K10 (male) (A) and (B) | Approxi. 120 Ω |
| | | | Between D_RES (male) (A) and (B) | Approxi. 120 Ω |
| 10 | Open circuit in wiring harness (CAN communication line) | 1. Turn the starting switch to OFF position.<br>2. Check that system operating lamp is turned off, and then turn the battery isolator switch to OFF position.<br>3. Disconnect connectors J2, E36, K10, and D_RES, and connect T-adapter to each female side. | | |
| | | Resistance | Between J2 (female) (21) and E31 (female) (3) | Max. 1 Ω |
| | | | Between J2 (female) (45) and E31 (female) (2) | Max. 1 Ω |
| | | | Between K10 (female) (A) and E31 (female) (3) | Max. 1 Ω |
| | | | Between K10 (female) (B) and E31 (female) (2) | Max. 1 Ω |
| | | | Between D_RES (female) (A) and E31 (female) (3) | Max. 1 Ω |
| | | | Between D_RES (female) (B) and E31 (female) (2) | Max. 1 Ω |

| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 3 | Oil leakage into turbocharger exhaust connector | 1. Remove the turbocharger exhaust connector.<br>2. Check if oil or fuel is not attached to inside of the turbocharger exhaust connector.<br>**NOTICE**<br>• **If it is attached, visually check the EGR valve and turbocharger for oil leakage. Repair them if an abnormality is found.**<br>• **Remove oil or fuel from the piping thoroughly.** |
| 4 | Oil leakage into exhaust connector or duct to KDPF | Check the exhaust system between the turbocharger and KDPF for entry of oil or fuel.<br>• If oil or fuel is attached, remove it thoroughly.<br>• If a mark of oil or fuel flowing into KDPF is found, check KDPF, and then clean or replace it if required. |
| 5 | Defective installation of KDOC outlet temperature sensor | For details, see Disassembly and Assembly, “Remove and Install KDPF Assembly” and “DISASSEMBLE AND ASSEMBLE OF KDPF ASSEMBLY”. Repair as necessary. |
| 6 | Defective KDPF temperature sensor | If the failure code is not cleared after performing above-mentioned troubleshooting, replace KDPF temperature sensor. |
| 7 | Defective engine controller | If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.) |

## Loaded Diagnostics Operation to Clear Failure Code

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

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

1. Turn the starting switch from OFF to ON and leave it there for 1 minute.
2. Start the engine and run it at low idle speed for 15 minutes.

   **NOTICE**

   **If the failure code is cleared, repair work is complete. Otherwise, perform the following:**

   **REMARK**

   If failure code is not cleared after preceding steps 1 and 2 are performed, following temperature conditions are requirements for clearing the failure code. Steps 4 and 6 are required to satisfy temperature requirements.

   - KDOC outlet temperature 200 °C or above
   - KDPF outlet temperature 200 °C or above
3. Display KDOC outlet temperature and KDPF outlet temperature with monitoring function.
4. Raise one side by work equipment.
5. Set the swing lock to ON and the working mode to P.
6. Set the fuel control dial to MAX position and travel to Hi and drive for 15 minutes with one side idle running.

   **NOTICE**

   **When the KDOC outlet temperature or KDPF outlet temperature does not exceed 200 °C, perform “Loaded Diagnostics Operation To Clear failure Code” [CA1883].**
7. If the the failure code is cleared, repair work is complete.

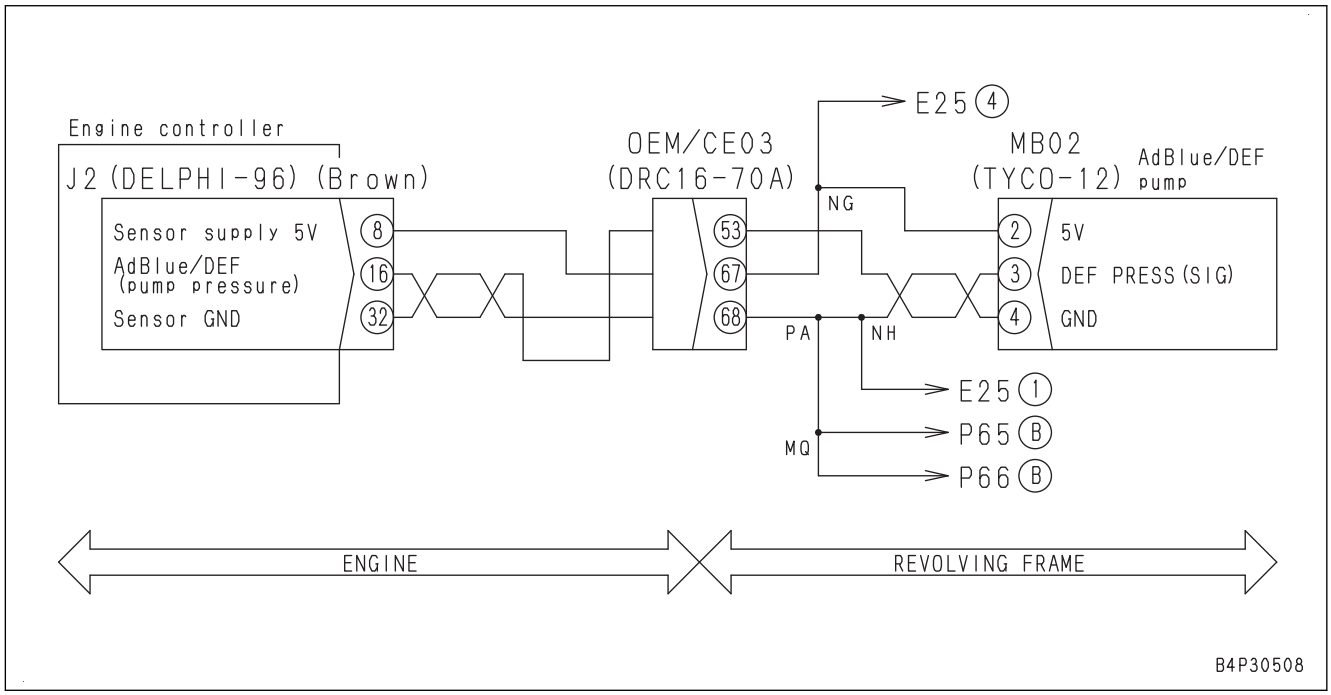
# Failure Code [CA3497]

| Action level | Failure code | Failure | DEF Level Low Error 1 (Engine controller system) |
|---|---|---|---|
| - | CA3497 | | |
| Detail of failure | The DEF tank level lowered. (The tank capacity becomes 10 % or less) | | |
| Action of controller | Advances to Inducement strategy. | | |
| Phenomenon on machine | None in particular | | |
| Related information | • The failure codes of DEF level low are as follows:<br>When DEF level is 10 % or less [CA3497]<br>When DEF level is 5 % or less [CA3498]<br>When DEF level is 2.5 % or less [CA1673]<br>When DEF level is 0.0 % or less [CA3547]<br>• CA3498 is displayed if usage is continued without refilling DEF and the DEF level becomes 5 % or less.<br>• After repairing, check if the failure code is cleared by the following procedure.<br>Procedure: Turn starting switch to ON position. | | |

| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 1 | Low DEF level | 1. Turn starting switch to OFF position.<br>2. Check the sight gauge to confirm that there is sufficient amount of DEF in the DEF tank.<br>3. Refill DEF if the level is low.<br>4. Turn starting switch to ON position. |
| | | If this failure code is cleared, DEF has been insufficient. |
| 2 | Defective DEF tank sensor | 1. Check the sensor connector for contamination and damage.<br>2. Turn starting switch to OFF position.<br>3. Replace the DEF tank sensor.<br>4. Turn starting switch to ON position. |
| | | If this failure code is cleared, any internal parts in the original DEF tank sensor is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.) |
| 3 | Defective engine controller | If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.) |

| No. | Cause | Procedure, measuring location, criteria and remarks | | | |
|---|---|---|---|---|---|
| 5 | Ground fault in wiring harness (contact with ground circuit) | 1. Turn starting switch to OFF position.<br>2. Disconnect MB02, and connect T-adapter to female side or insert T-adapter to connector J2. | | | |
| | | Resistance | Between MB02 (female) (3) or J2 (16) and ground | | Min. 1 MΩ |
| 6 | Defective DEF pressure sensor | 1. Turn starting switch to OFF position.<br>2. Insert T-adapter into connector J2 or MB02.<br>3. Turn starting switch to ON position. | | | |
| | | Voltage | Between J2 (female) (16) and (32), or between MB02 (female) (3) and (4) | Sensor output | 0.25 to 4.75 V |
| 7 | Defective engine controller | If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.) | | | |

## Circuit Diagram of DEF Pump Pressure Sensor

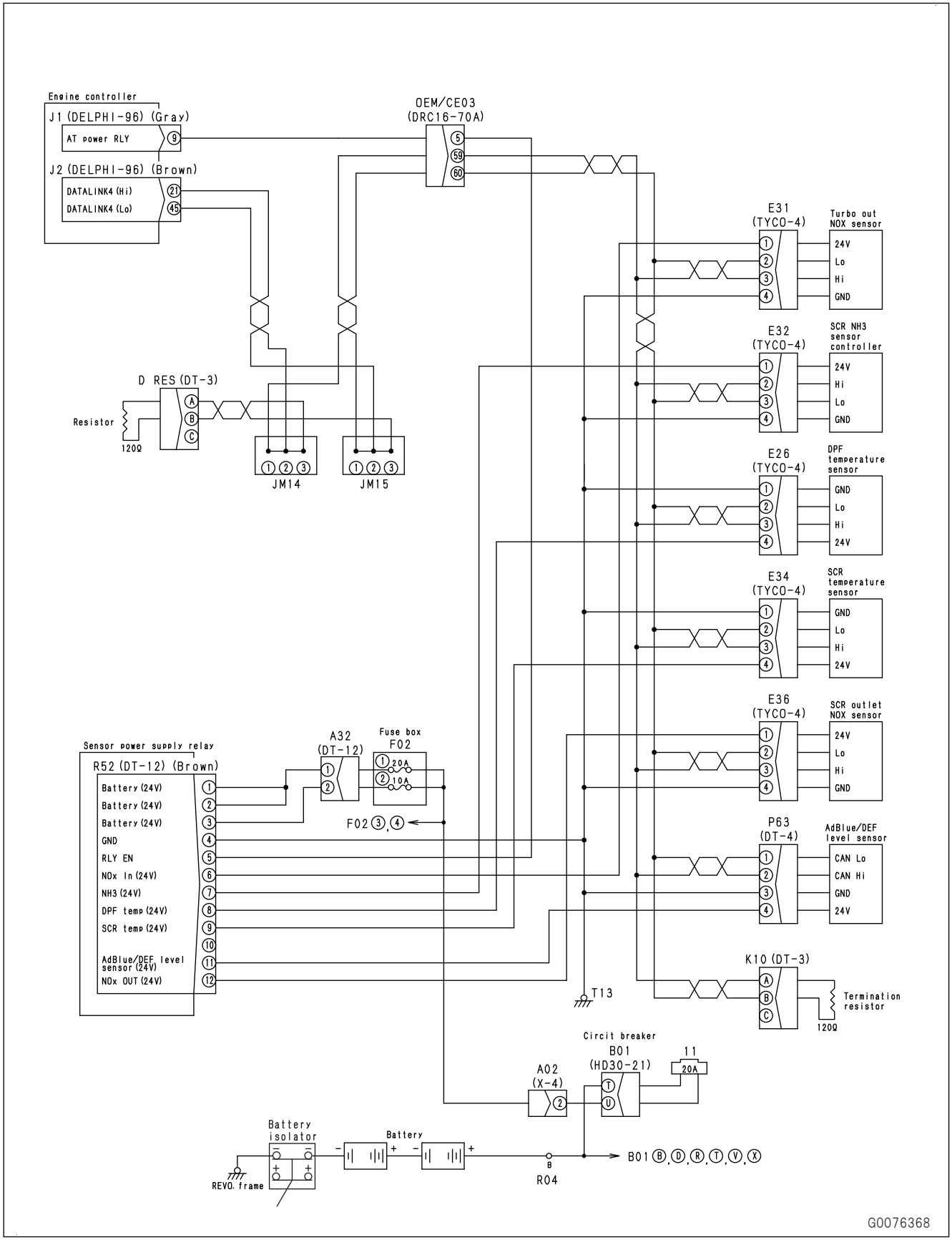


# Failure Code [CA3682]

| Action level | Failure code | Failure | Turbo Outlet NOx Sensor Power Voltage Error (Engine controller system) |
|---|---|---|---|
| L01 | CA3682 | | |
| Detail of failure | Turbo outlet NOx sensor does not display the value due to defective power supply of turbo outlet NOx sensor. | | |
| Action of controller | • Operates the engine by referring to the model NOx value.<br>• Activates Inducement strategy (EU specification). | | |
| Phenomenon on machine | • DEF injection becomes inappropriate and the NOx emission may increase, or ammonia may be discharged.<br>• Engine output is reduced based on Inducement strategy (EU specification). | | |

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measuring location, criteria and remarks</th></tr>
<tr><td rowspan="4">6</td><td rowspan="4">Hot short circuit in wiring harness</td><td colspan="3">If failure code (no open circuit) is still displayed after above checks in cause 2, measure resistance at any one place in Hi line and Lo line.<br>1. Turn starting switch to OFF position.<br>2. Check that system operating lamp does not light up, and then turn battery isolator switch to OFF position.<br>3. Insert T-adapter into one of the related connectors.<br>4. Set battery isolator switch to ON position.<br>5. Turn starting switch to ON position.</td></tr>
<tr><td rowspan="2">Voltage</td><td>Between one of J2(21), K10(A), D_RES (A), E31(3), E32(2), E26(3), E34(3), E36(3), or P63(2) and ground</td><td>1 to 4 V</td></tr>
<tr><td>Between one of J2(45), K10(B), D_RES (B), E31(2), E32(3), E26(2), E34(2), E36(2), or P63(3) and ground</td><td>1 to 4 V</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Defective DEF tank sensor</td><td colspan="3">1. Turn starting switch to OFF position.<br>2. Replace DEF tank sensor (P63).<br>3. Turn starting switch to ON position.</td></tr>
<tr><td colspan="3">If this failure code is cleared, the original sensor is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)</td></tr>
<tr><td>8</td><td>Defective engine controller</td><td colspan="3">If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)</td></tr>
</table>

## Circuit Diagram of SCR System CAN Communication



| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 9 | Hot short circuit in wiring harness (DEF pump heater circuit) | 1. Turn the starting switch to OFF position.<br>2. Disconnect connector MB02 and connect T-adapter to female side.<br>3. Turn the starting switch to ON position.<br>**REMARK**<br>Check for ambient temperature of 10 °C or above (condition under which DEF pump heater is not working). | | |
| | | Voltage | Between MB02 (female) (5) and (6) | Max. 1 V |
| 10 | Defective DEF pump | If no failure is found by above checks, DEF pump is defective. (Since this is an internal defect, troubleshooting cannot be performed.) | | |
| 11 | Defective DEF pump temperature sensor | If no failure is found by above checks, DEF pump temperature sensor is defective. (Since this is an internal defect, troubleshooting cannot be performed.) | | |
| 12 | Defective engine controller | If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.) | | |

## Loaded Diagnostics Operation to Confirm Failure Correction

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

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

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

**REMARK**

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

| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 2 | Contaminated DEF | 1. Drain more than 1 ℓ of DEF to check that it is not contaminated with foreign material, etc.<br>2. If the drained DEF is contaminated, drain all of the DEF and refill with fresh DEF.<br>3. If it is heavily contaminated with sand, dirt, etc., clean the DEF tank.<br>4. If the “DEF concentration” is in 29 to 36 % after the work finished, perform “Loaded Diagnostics Operation To Clear Failure Code”.<br>5. If the “DEF concentration” is out of the normal range, proceed to the next troubleshooting. |
| 3 | Foreign matter adhered to the sensing part of the DEF tank sensor | 1. Remove the DEF level sensor so that you can reach the DEF concentration detection part (end of sensor).<br>2. Clean up the DEF concentration detection part with dry and clean cloth, and install the DEF level sensor.<br>3. If DEF concentration is within the range from 29 to 36 % on “Pre-defined Monitoring” screen, perform “Loaded Diagnostics Operation to Clear Failure Code” to complete the repair work.<br>4. If DEF concentration is out of the normal range, proceed to the next troubleshooting.<br>**REMARK**<br>• If the new DEF has not been added as described in Cause “Contaminated DEF”, and if it takes time to remove the sensor, drain the total amount of DEF, refill with new DEF again, and check the sensor output.<br>• For details of removing DEF tank sensor, see Disassemble and Assembly, “Remove and Install DEF Tank Sensor Flange Assembly”. |
| 4 | Defective DEF tank sensor (internal defect) | 1. Replace the DEF tank sensor.<br>2. If the “DEF concentration” displayed on the Pre-defined Monitoring screen falls in the range of 29 to 36%, perform “Loaded Diagnostics Operation To Clear Failure Code” topics to complete the repair.<br>3. If the “DEF concentration” falls outside of this range, proceed to the next troubleshooting. |
| 5 | Defective engine controller | 1. Replace the engine controller.<br>2. Perform “Loaded Diagnostics Operation To Clear Failure Code”.<br>3. If this failure code is displayed, perform troubleshooting again. |

## Loaded Diagnostics Operation to Clear Failure Code

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

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

1. Turn the starting switch to OFF position, and shut down the engine controller.
2. Turn the starting switch to ON position.
3. Wait for 60 minutes. (It is not necessary to start the engine.)
4. If this failure code is cleared, repair is completed.

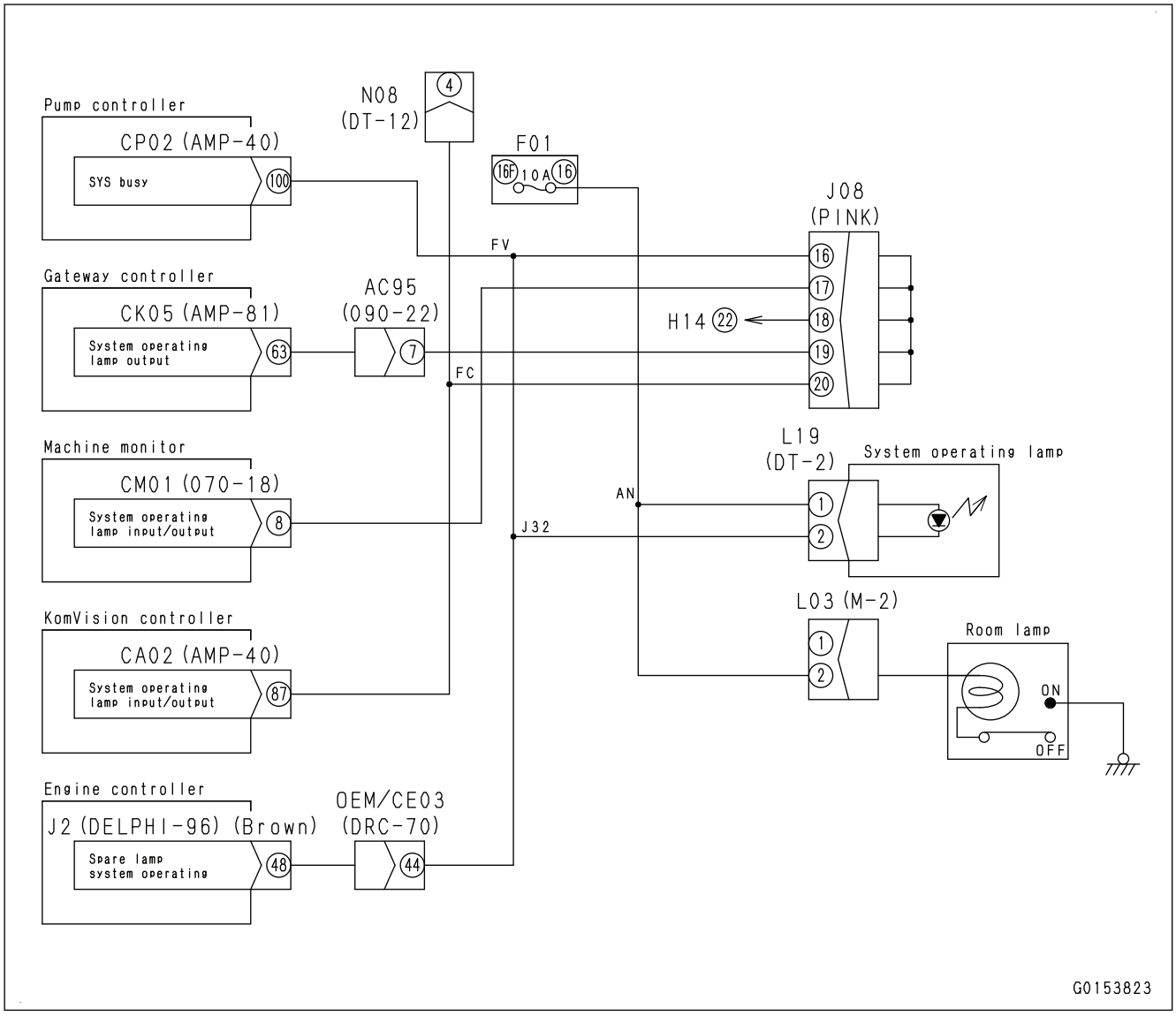
# Failure Code [CA5179]

| Action level | Failure code | Failure | Engine Room Temperature Sensor High Error (Engine controller system) |
|---|---|---|---|
| L01 | CA5179 | | |
| Detail of failure | A high voltage error occurs in signal circuit of engine room temperature sensor. | | |
| Action of controller | Run the engine by using the default value of the engine room temperature (25 °C). | | |
| Phenomenon on machine | • DEF line stops thawing.<br>• NOx emission may increase because DEF line stops thawing. | | |
| Related information | • This failure code is displayed when the engine room temperature sensor connector is removed.<br>• After repairing, check if the failure code is cleared by the following procedure.<br>Procedure: Turn starting switch to ON position. | | |

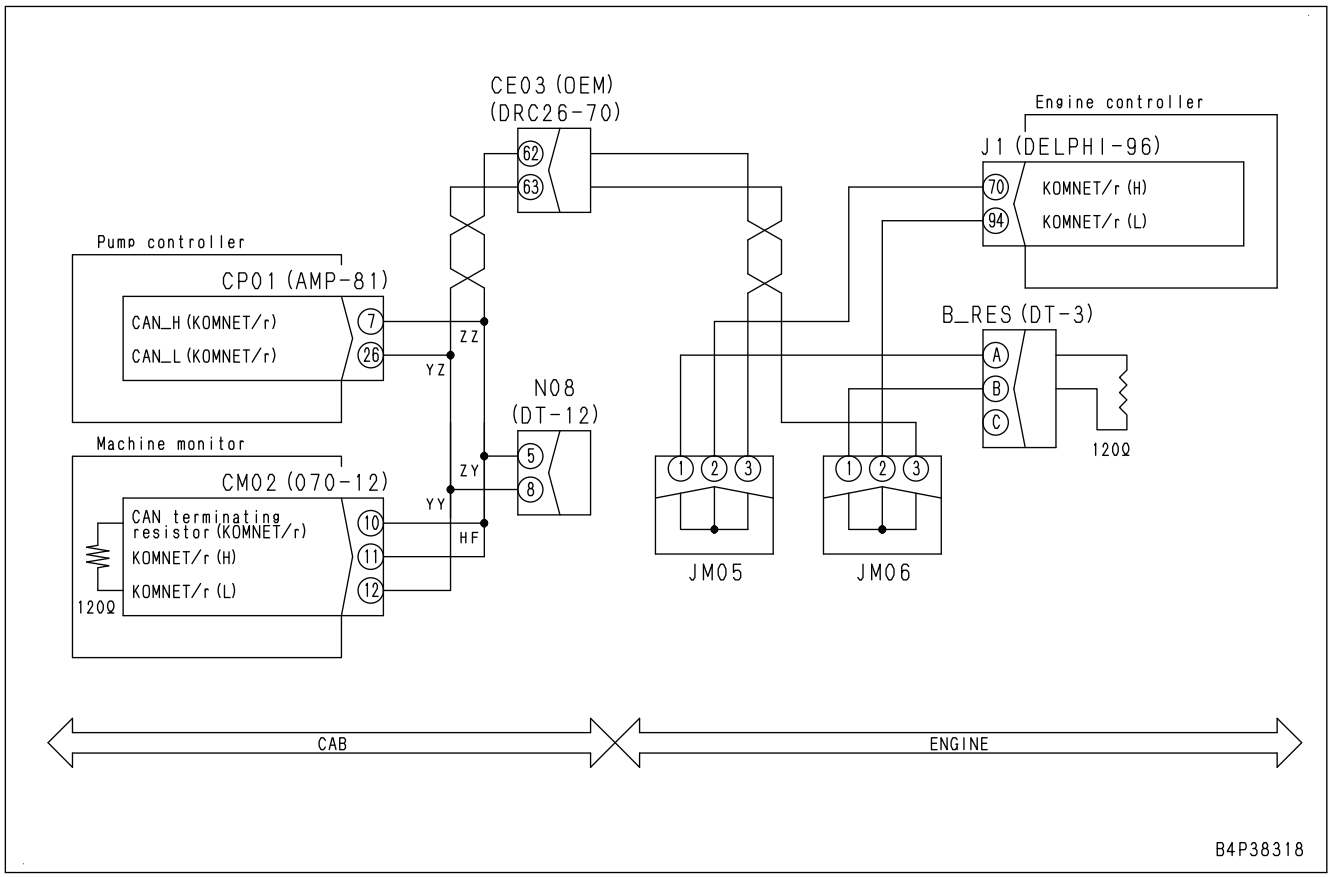
| No. | Cause | Procedure, measuring location, criteria and remarks | | | |
|---|---|---|---|---|---|
| 1 | Defective wiring harness connector | 1. See descriptions of wiring harness and connectors in “Electrical equipment” in “CHECKS BEFORE TROUBLESHOOTING” of “RELATED INFORMATION ON TROUBLESHOOTING”, and check it.<br>2. Turn starting switch to ON position. | | | |
| | | If this failure code is cleared, the wiring harness connector is defective. | | | |
| 2 | Defective engine room temperature sensor | 1. Turn starting switch to OFF position.<br>2. Disconnect connector P66 and connect socket to male side.<br>**REMARK**<br>If a resistance value of the engine room temperature sensor ranges from 280 Ω to 382 kΩ, the engine room temperature sensor is considered to be normal. | | | |
| | | Resistance | Between `P66 (male) (A) and (B) | -40 °C | 291 to 382 kΩ |
| | | | | -20 °C | 85 to 109 kΩ |
| | | | | 0 °C | 29 to 36 kΩ |
| | | | | 30 °C | 7.3 to 8.8 kΩ |
| | | | | 60 °C | 2.3 to 2.7 kΩ |
| | | | | 90 °C | 860 to 970 Ω |
| | | | | 130 °C | 280 to 320 Ω |
| 3 | Open or short circuit in wiring harness | 1. Turn starting switch to OFF position.<br>2. Disconnect connector J2, and connect T-adapter to female side.<br>**REMARK**<br>Use an engine room temperature sensor resistance characteristics table for check on cause 2 as a resistance value. | | | |
| | | Resistance | Between J2 (female) (65) and (32) | | 280 Ω to 382 kΩ |

| No. | Check item | Procedure of troubleshooting | Judgment and remedy | |
|---|---|---|---|---|
| 3 | Confirmation of check results | 1. Do the troubleshooting above again.<br>2. Can you find the cause by the check? | YES | The repair is done. |
| | | | NO | • The gateway controller can be defective.<br>• Replace the gateway controller.<br>• Go to "Confirmation of repair". |
| 4 | Confirmation of repair | 1. Turn the starting switch to the OFF position.<br>2. Connect all the component parts.<br>3. Turn the starting switch to the ON position. And then, do the troubleshooting.<br>4. Is this failure code shown? | YES | Go back to the first check item. |
| | | | NO | The repair is done. |

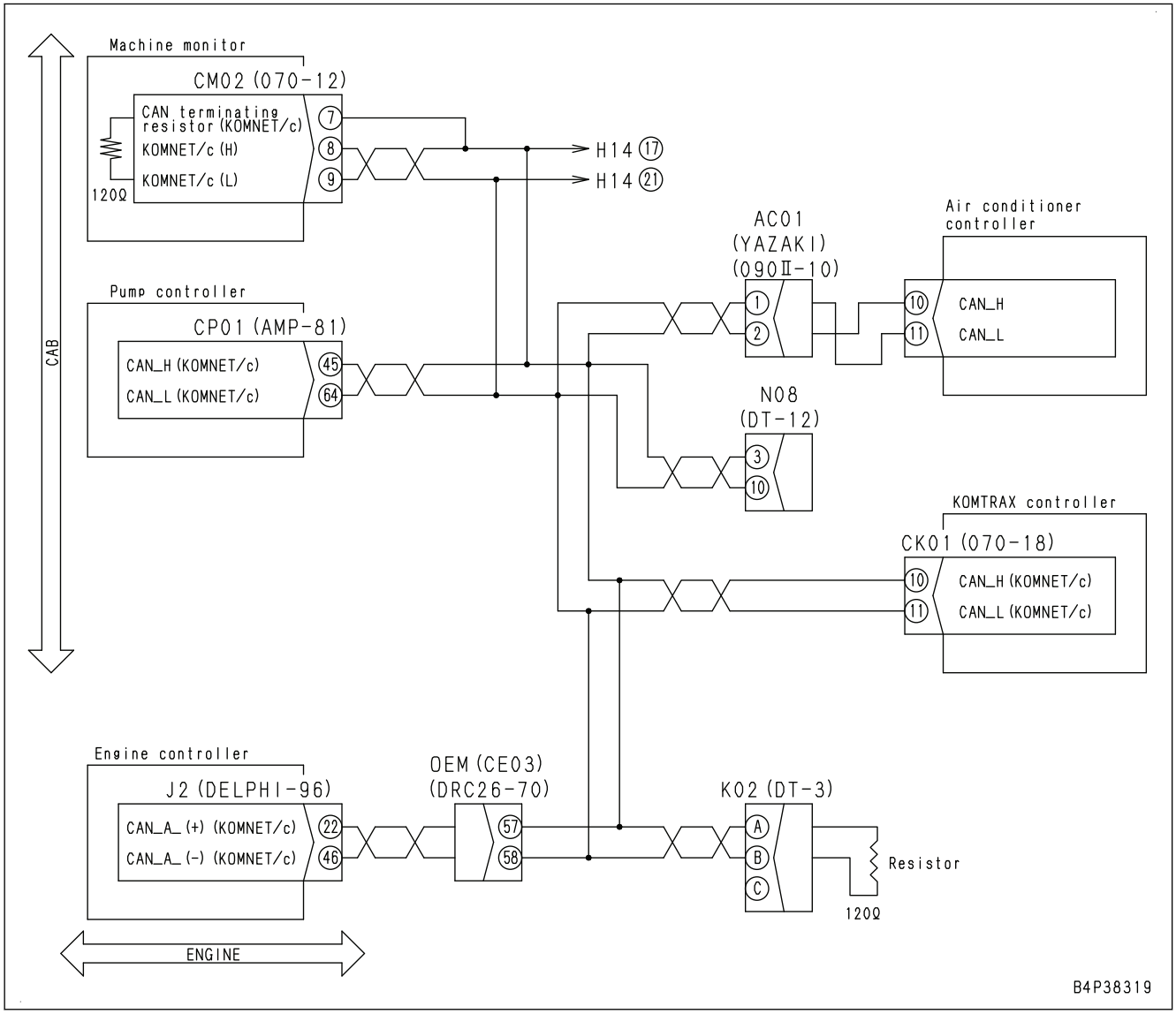
## Circuit Diagram of System Operating Lamp



## Circuit Diagram of CAN Communication 1



## Circuit Diagram of CAN2 Communication

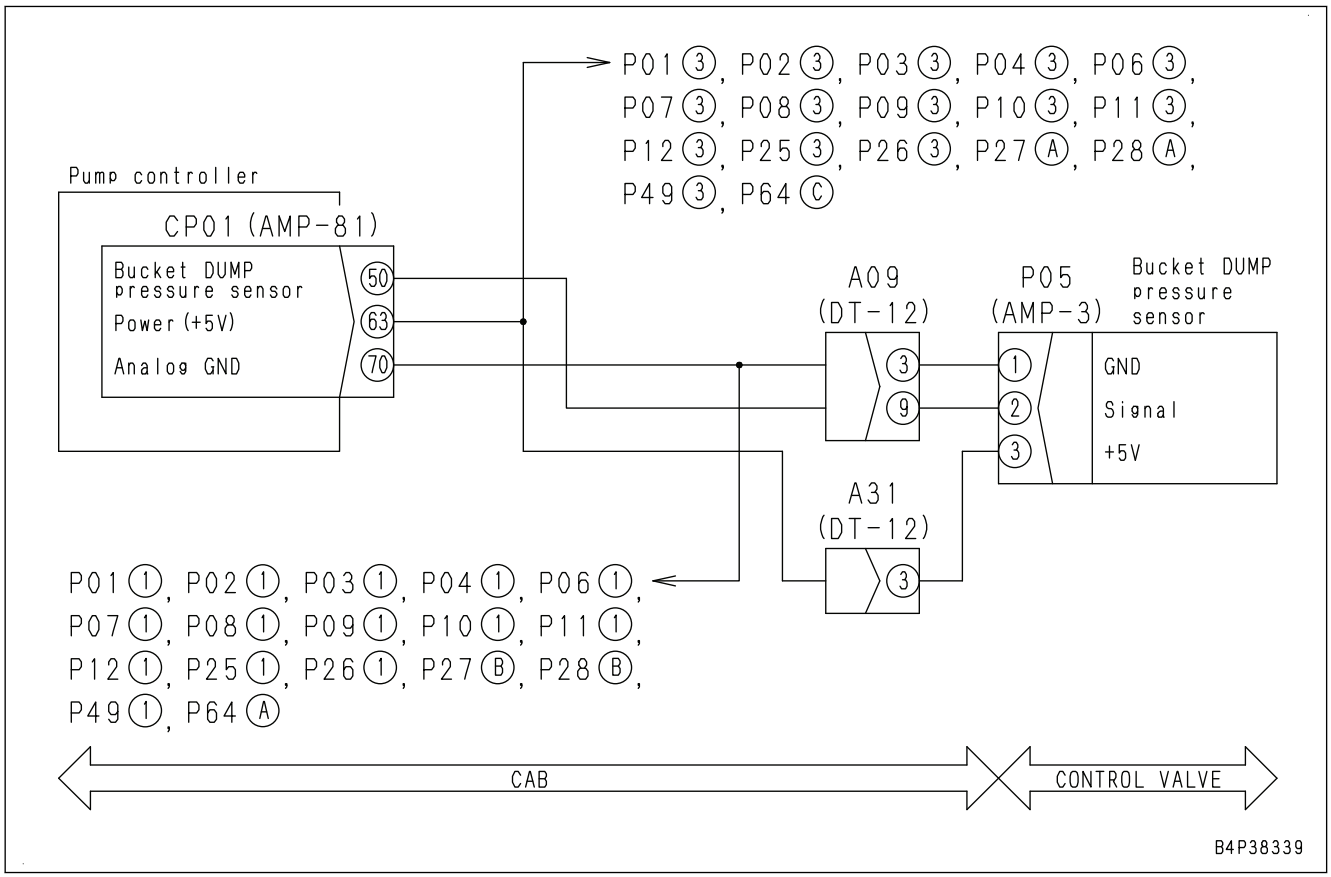


# Failure Code [DHACMA]

| Action level | Failure code | Failure | KDPF Outlet Pressure Sensor Frozen (Engine controller system) |
|---|---|---|---|
| - | DHACMA | | |
| Detail of failure | Signal voltage from KDPF differential pressure sensor does not show a correct value when ambient temperature is low because of frozen KDPF differential pressure sensor. (Signal voltage is within “normal” or “operating” range.) | | |
| Action of controller | Normal operation | | |
| Phenomenon on machine | No | | |
| Related information | ⚠ **Since KDOC and KDPF are heated to Min. 500 °C or above, be careful not to get burn injury.**<br>• The cause of this failure code is solved after freeze is solved. Troubleshooting is not necessary.<br>• If the ambient temperature is not freezing point when this failure code is displayed on abnormality record, identify the cause according to the following procedures.<br>• KDPF differential pressure sensor and KDPF outlet pressure sensor are provided as a unit.<br>• Signal voltage from KDPF outlet pressure sensor can be checked with monitoring function. (Code: 47001 (V))<br>• Pressure detected by KDPF outlet pressure sensor can be checked with monitoring function. (Code: 47000 (kPa))<br>• Temperature in KDOC inlet temperature sensor can be checked by monitoring function. (Code: 47300 (°C))<br>• Temperature in KDOC outlet temperature sensor can be checked by monitoring function. (Code: 47400 (°C))<br>• Temperature in KDPF outlet temperature sensor can be checked by monitoring function. (Code: 47200 (°C))<br>• For details of access to KDPF differential pressure sensor, wiring harness and tube, see "Chapter 50 DISASSEMBLY AND ASSEMBLY, “REMOVE AND INSTALL KDPF ASSEMBLY” and “DISASSEMBLE AND ASSEMBLE OF KDPF ASSEMBLY”.<br>• The KDOC inlet temperature sensor, KDOC outlet temperature sensor, and KDPF outlet temperature sensor are integrated into one sensor controller which provides CAN communication with the engine controller.<br>• After turning starting switch to OFF position, engine controller performs DEF purge (for Max. 6 minutes) and then stops. To restart engine, wait until system operating lamp goes off after turning starting switch to OFF position, and then turn starting switch to ON position.<br>• Mass air flow sensor and intake air temperature sensor are provided as a unit. | | |

| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 1 | Defective KDPF differential pressure sensor tube | If failure code [CA3135] is displayed on the abnormality record screen, perform troubleshooting for failure code [CA3135] first. |
| 2 | Ambient temperature sensor installation error | Check the installation of the ambient temperature sensor. If there is a defective installation, install it again correctly. |
| 3 | Defective intake air temperature sensor | Check the installation of the intake air temperature sensor, if there is a defective installation, install it again correctly. |

## Circuit Diagram of Bucket DUMP PPC Pressure Sensor

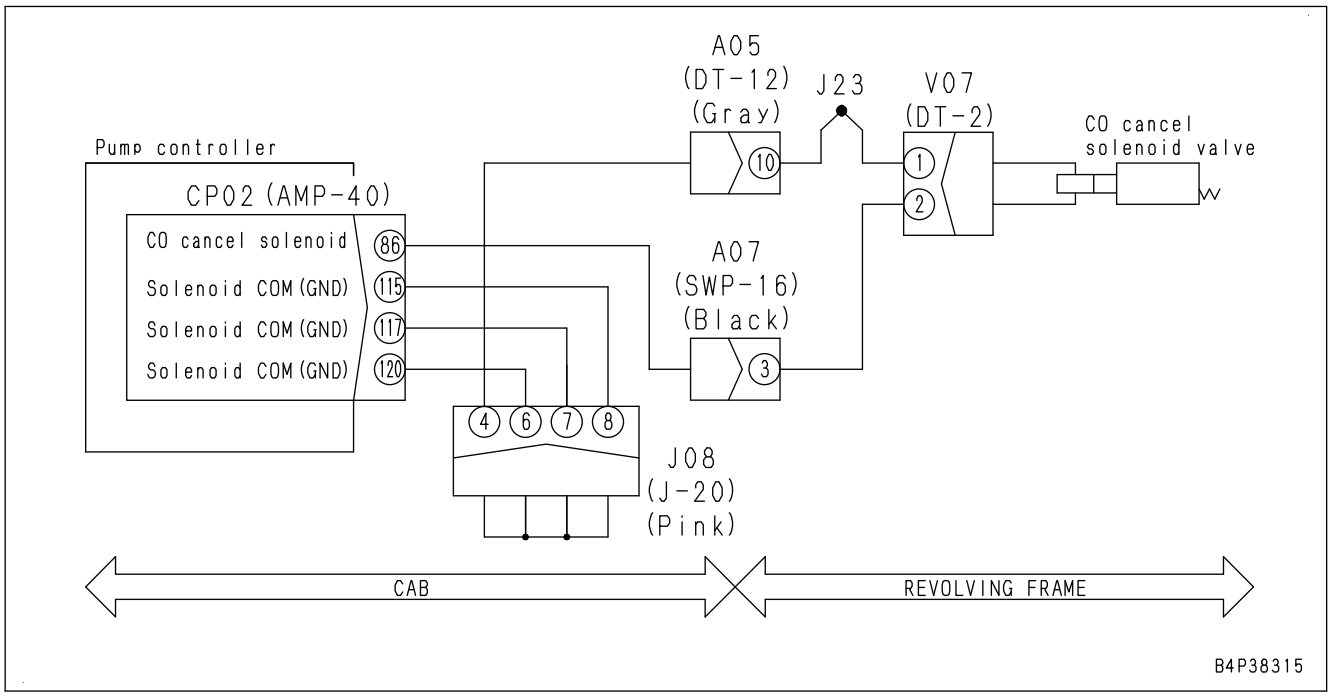


# Failure Code [DR20KA]

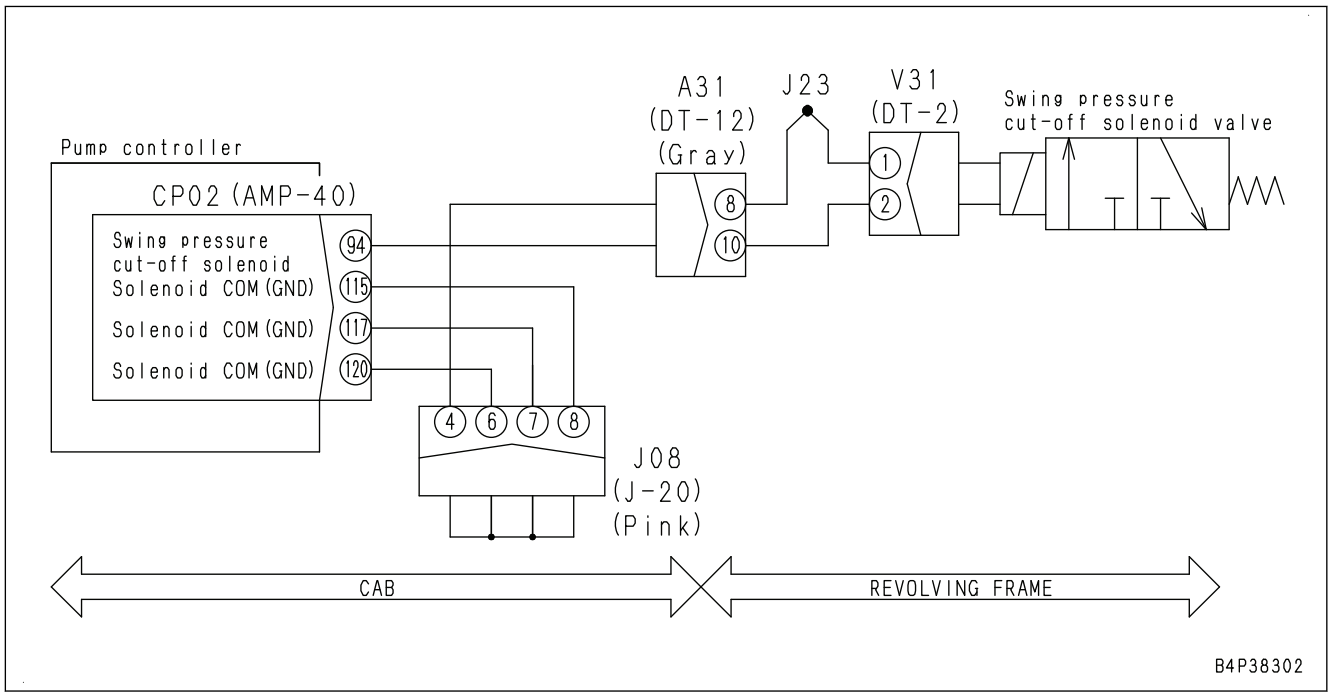
| Action level | Failure code | Failure | Disconnection of Camera 2 NTSC Input (KomVision controller system) |
|---|---|---|---|
| L01 | DR20KA | | |
| Detail of failure | Image signal of the camera 2 cannot be detected. | | |
| Action of controller | None in particular | | |
| Phenomenon on machine | Display area of the R.H. camera and the single camera images are displayed in black. | | |
| Related information | After completion of repair, check that the failure code is cleared by the following operation.<br>Procedure: Turn the starting switch to ON position and display a Bird's Eye View | | |

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 1 | Open circuit in wiring harness | 1. Turn the starting switch to OFF position.<br>2. Disconnect the connectors CA01 and A77, and connect the T-adapter to each female side. | | |
| | | Resistance | Between CA01 (female) (25) and A77 (female) (1) | Max. 1 Ω |
| | | | Between CA01 (female) (23) and A77 (female) (2) | Max. 1 Ω |
| | | | Between CA01 (female) (42) and A77 (female) (4) | Max. 1 Ω |
| 2 | Ground fault in wiring harness | 1. Turn the starting switch to OFF position.<br>2. Disconnect the connectors CA01 and A77, and connect the T-adapter to either female side. | | |
| | | Resistance | Between ground and either CA01 (female) (23) or A77 (female) (2) | Min. 1 MΩ |
| 3 | Hot short circuit in wiring harness | 1. Turn the starting switch to OFF position.<br>2. Disconnect the connector A77, and connect the T-adapter to female side.<br>3. Turn the starting switch to ON position. | | |
| | | Voltage | Between A77 (female) (2) and (4) | Max. 9 V |
| | | | Between A77 (female) (4) and ground | Max. 9 V |
| 4 | Defective camera | 1. Turn the starting switch to OFF position.<br>2. Replace the R.H. camera.<br>3. Turn the starting switch to ON position. | | |
| | | If failure code is not displayed, camera has internal defect. | | |
| 5 | Defective KomVision controller | If no failure is found by above checks, KomVision controller is defective. (Since this is an internal defect, troubleshooting cannot be performed). | | |

## Circuit Diagram Related to CO Cancel Solenoid



## Circuit Diagram of Swing C/O Solenoid System



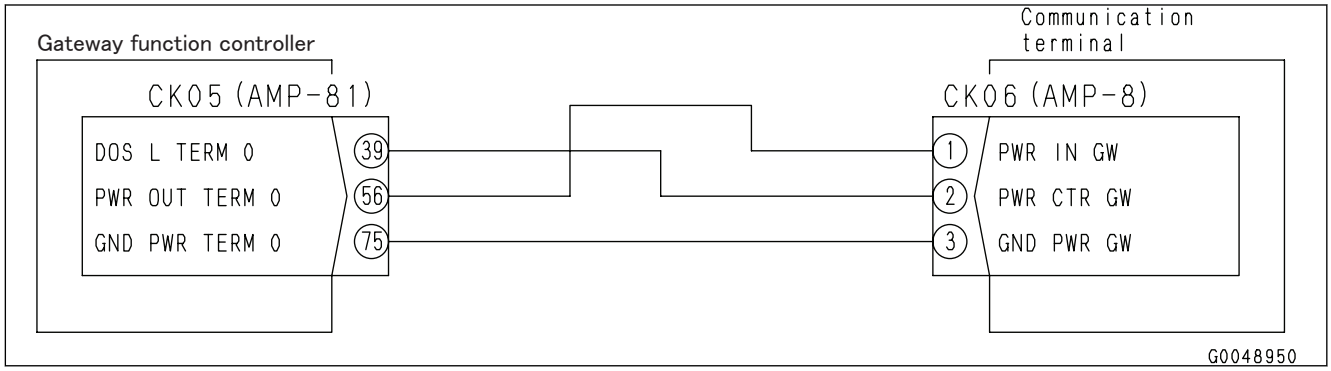
# Failure Code [F311KA]

| | |
|---|---|
| Detail of failure | The voltage of Centralized Warning Lamp Signal 1 Open Circuit signal output line from the gateway function controller is 3.83V or more and less than 5.67V while the command is OFF. So, an open circuit is found. |
| Action level | - |
| Action of controller | • Does not turn ON the Centralized Warning Lamp Signal 1 Open Circuit signal.<br>• Even if the cause of the failure is removed, the machine does not go back to the correct state until the start switch is turned to the OFF position one time. |
| Phenomenon on machine | KOMTRAX system does not operate correctly. |
| Related information | |

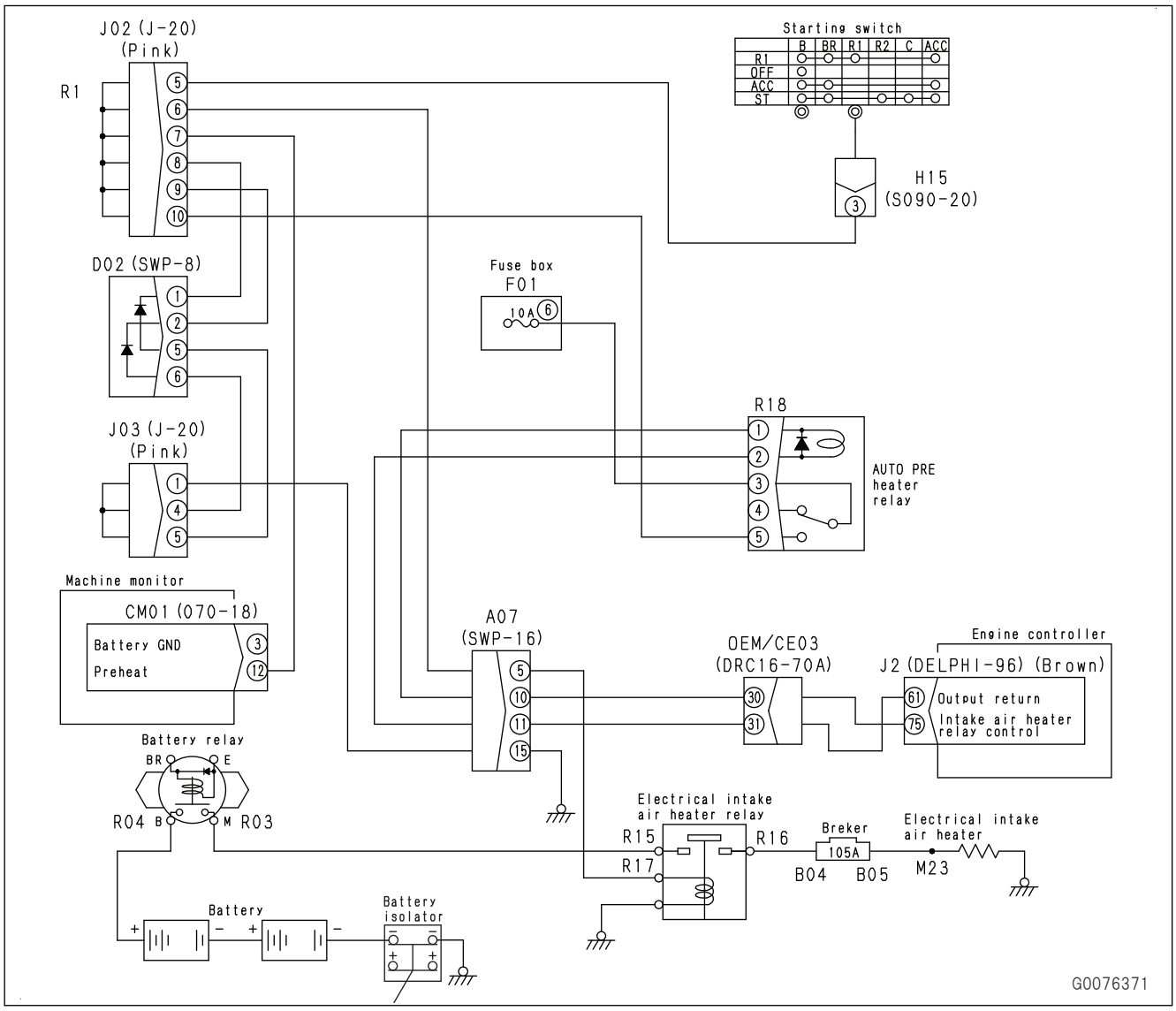
<table>
<tr><th>No.</th><th>Check item</th><th colspan="3">Procedure of troubleshooting</th><th colspan="2">Judgment and remedy</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Wiring harness, connector</td><td colspan="3" rowspan="2">1. Examine the wiring harnesses and connectors. For details, see "RELATED INFORMATION FOR TROUBLESHOOTING", "CHECKS BEFORE TROUBLESHOOTING", "Electrical Equipment".<br>2. Are the wiring harness and connectors in the correct state?</td><td>YES</td><td>• The wiring harnesses and connectors are correct.<br>• Go to the next check item.</td></tr>
<tr><td>NO</td><td>• A wiring harness or a connector is defective.<br>• Repair or replace the defective wiring harness or connector.<br>• Go to "Confirmation of repair".</td></tr>
<tr><td rowspan="4">2</td><td rowspan="4">Open circuit in wiring harness</td><td colspan="3">1. Turn the start switch to the OFF position.<br>2. Disconnect the connectors CK05 and N08. Connect a T-adapter to the female side of CK05 or the male side of N08.<br>3. Measure the resistance.<br>4. Does the troubleshooting result agree with the standard value?</td><td>YES</td><td>• Open circuit in wiring harness does not occur.<br>• Go to the next check item.</td></tr>
<tr><td>Item</td><td>Measurement position, condition</td><td>Standard value</td><td rowspan="2">NO</td><td rowspan="2">• The wiring harness has an open circuit.<br>• Repair or replace the defective wiring harness.<br>• Go to "Confirmation of repair".</td></tr>
<tr><td>Resistance</td><td>Between CK05 (female) (66) and N08 (male) (5)</td><td>Max. 1Ω</td></tr>
</table>

| No. | Check item | Procedure of troubleshooting | Judgment and remedy | |
|---|---|---|---|---|
| 4 | Confirmation of repair | 1. Turn the starting switch to the OFF position.<br>2. Connect all the component parts.<br>3. Turn the starting switch to the ON position to troubleshoot.<br>4. Is this failure code shown? | YES | Go back to the first check item. |
| | | | NO | The repair is completed. |

Circuit Diagram of Gateway Function Controller



## Circuit Diagram of Engine Preheating

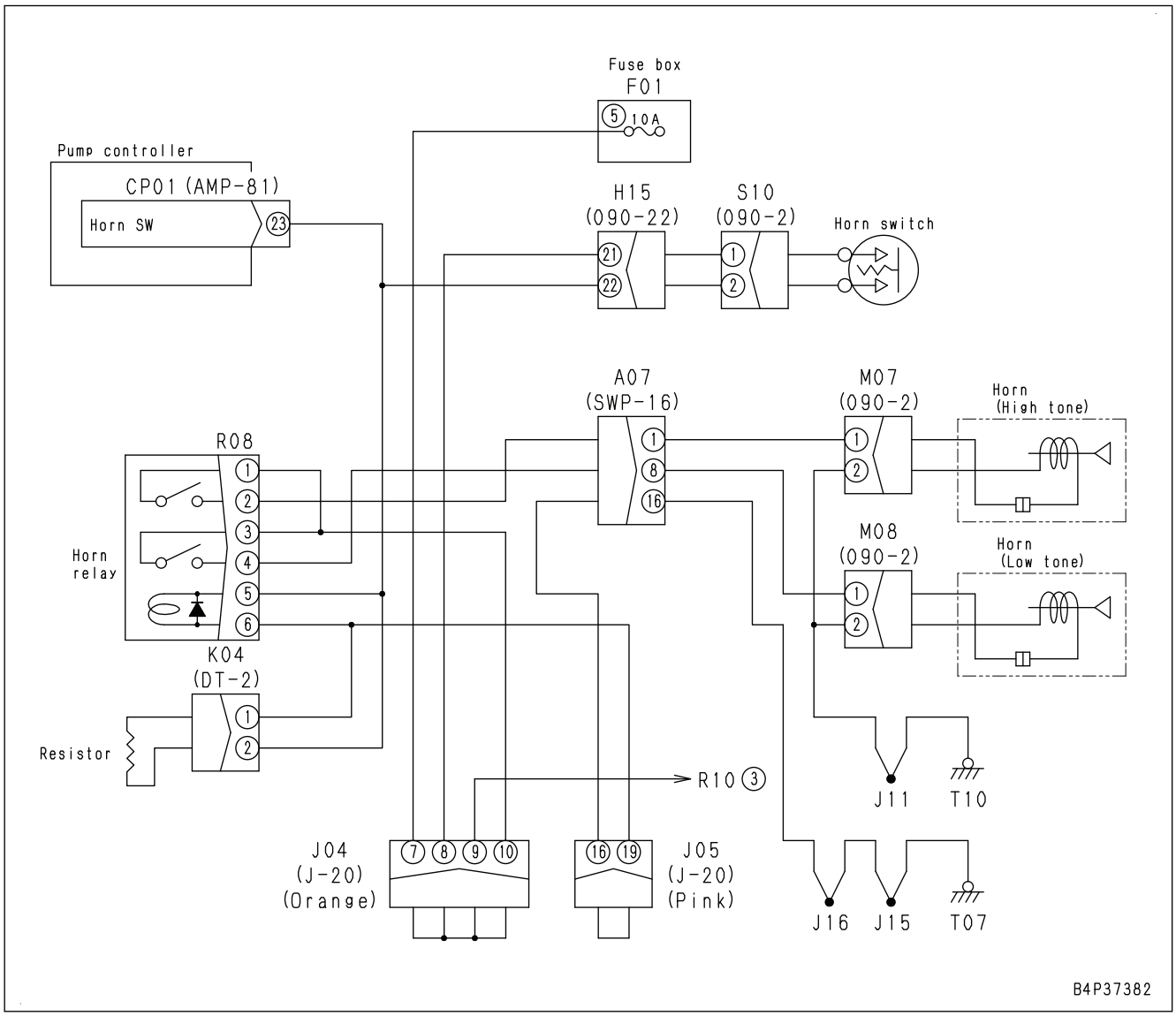


# E-25 When Auto-Decelerator Switch is Operated, Auto-Decelerator Monitor Does Not Come On or Does Not Go Out

| | |
|---|---|
| Failure | When auto-deceleration switch is operated, auto-deceleration monitor does not light up or does not go off. |
| Related information | • State of auto-deceleration switch signal can be checked with monitoring function. (Code: 04504) |

| No. | Cause | Procedure, measuring location, criteria and remarks |
|---|---|---|
| 1 | Defective machine monitor | Machine monitor may be defective. (Because this is an internal defect, trouble-shooting cannot be performed.) |

## Circuit Diagram of Horn



# Troubleshooting for Hydraulic and Mechanical Systems (H Mode)

## H-1 All Work Equipment, Swing and Travel Do Not Work

| | |
|---|---|
| Failure | All of work equipment, travel, and turn do not work. |
| Related information | Perform all troubleshooting with working mode set in power mode (P). |

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 1 | Internal defect of PTO (main pump drive system) | Be ready with engine stopped, then perform the troubleshooting in that condition. | | |
| | | Disconnect the coupler for measuring the oil pressure of main pump, and turn the crankshaft. When the oil flows out the coupler hole, it is normal. | | |
| 2 | Internal defect of PTO (control pump drive system) | Be ready with engine stopped, then perform the troubleshooting in that condition. | | |
| | | Disconnect the outlet hose of control pump, and turn the crankshaft. When the oil flows out the pump outlet, it is normal. | | |
| 3 | Internal defect of control pump | Internal defect of control pump is suspected. Check if there is metallic powder, etc. in the pilot filter. | | |
| 4 | Improper adjustment or malfunction of control relief valve | Be ready with engine stopped, then perform the troubleshooting with engine at high idle. | | |
| | | Control relief pressure | Control lever: All levers in NEUTRAL | 3.14(+0.39/0) MPa {32(+4/0) kgf/cm$^2$} |
| | | If the oil pressure is not normal after adjustment, perform the test on cause 5.<br>If the test result is normal in check on cause 5, malfunction of control relief valve is suspected. Check it directly. | | |
| 5 | Internal oil leakage of control system component | Be ready with engine stopped, then perform the troubleshooting with engine at high idle. | | |
| | | Control relief pressure | Control lever: All levers in NEUTRAL | 3.14(+0.39/0) MPa {32(+4/0) kgf/cm$^2$} |
| 6 | Malfunction of PPC lock solenoid valve | Be ready with engine stopped, then perform the troubleshooting with engine at high idle. | | |
| | | Solenoid valve outlet pressure | When the work equipment lock lever is in FREE position | Min. 2.74 MPa {Min. 28 kgf/cm$^2$} |
| | | | When the work equipment lock lever is in LOCK position | 0 MPa {0 kgf/cm$^2$} |

# H-26 Upper Structure Swings Only to Right or Left

| | |
|---|---|
| Failure | Upper structure swing only to the right or left. |
| Related information | • Perform all troubleshooting with working mode set in power mode (P).<br>• Left swing PPC pressure can be checked with monitoring function. (Code: 09001)<br>• Right swing PPC pressure can be checked with monitoring function. (Code: 09002) |

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 1 | Malfunction of swing PPC valve | Be ready with engine stopped, then perform the troubleshooting with engine at high idle. | | |
| | | PPC valve output pressure | When the L.H. work equipment control lever is moved in full stroke to swing LEFT and swing RIGHT | Min. 2.74 MPa {Min. 28 kgf/cm$^2$} |
| 2 | Malfunction of control valve (spool) | If failure code still displays after above checks and upper structure does not swing when swing control lever is operated with pump pressure at approximately 4 MPa, spool may be stuck near NEUTRAL position. | | |
| 3 | Defective seat of swing motor (suction valve) | Switch the suction valve of the right and left swing motors between each other and make judgment based on the changes in phenomena. Then, remove them and check stick, defect, etc. of the valves. | | |
| 4 | Defective sealing of swing motor (check valve) | Switch the check valve of the right and left swing motors between each other and make judgment based on the changes in phenomena. Then, remove them and check stick, defect, etc. of the valves. | | |

# S-13 Oil is in Coolant (or Coolant Spurts Back or Coolant

| | |
|---|---|
| Failure | Oil is in coolant (or coolant spurts back or coolant level goes down) |
| Related information | If any failure code is displayed, perform troubleshooting for that code first. |

| No. | Cause | Point to check, remarks | Remedy |
|---|---|---|---|
| 1 | Engine oil is milky. | Engine oil is increasing and milky. | Perform troubleshooting of “WATER MIXES INTO ENGINE OIL (MILKY)” in S mode, and take corrective action. |
| 2 | Breakage of oil cooler element | Check oil cooler element. | Oil cooler element replacement |
| 3 | Breakage of cylinder head | • There are many bubbles in radiator and coolant blows back.<br>• Disassemble engine and check cylinder head for abnormality by pressure test. | Cylinder head replacement |
| 4 | Breakage of head gasket | • Many bubbles and blow-back are found in radiator.<br>• Disassemble and inspect engine. Check cylinder head gasket for failure. | Cylinder head gasket replacement |
| 5 | Cracking or hole caused by pitting in cylinder block | • Engine oil is increasing and milky.<br>• Disassemble engine and check inside of cylinder block for cracking or hole caused by pitting. | Cylinder block replacement |

**Molybdenum Disulfide Lubricant**

| Komatsu code | Part No. | Volume | Container | Main features and applications |
|---|---|---|---|---|
| LM-P | - | 200 g | Tube | • Use to prevent galling and seizure of press-fitting portions, shrink-fitted portions, and threaded portion.<br>• Use to lubricate linkages, bearings, etc. |
| LM-S | - | 190 g | Container | • Spray type<br>• Thin molybdenum disulfide films are made on metal surfaces to prevent the metals from galling.<br>• Use for drive shaft splines, needle bearings, various link pins, bolts, etc. |

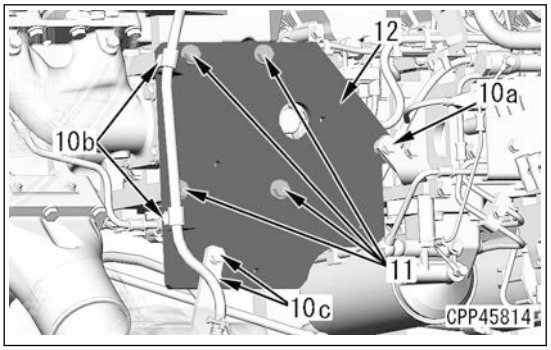
**Seizure Prevention Compound**

| Komatsu code | Part No. | Volume | Container | Main features and applications |
|---|---|---|---|---|
| LC-G<br>NEVER-SEEZ | - | - | Container | • Feature: Seizure and galling prevention compound with metallic super-fine-grain, etc.<br>• Use for the mounting bolt in the high temperature area of the exhaust manifold and the turbocharger, etc. |

**Grease**

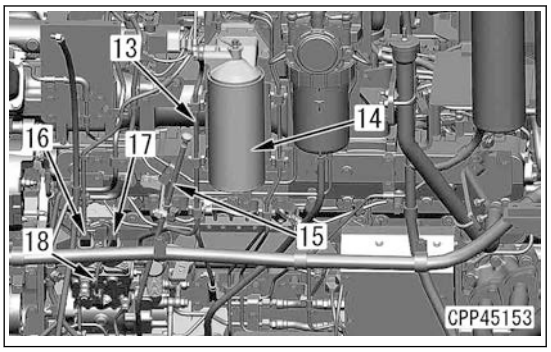
| Komatsu code | Part No. | Volume | Container | Main features and applications |
|---|---|---|---|---|
| G2-LI<br>G0-LI (*)<br>*: For cold regions | SYG2-400LI<br>SYG2-350LI<br>SYG2-400LI-A<br>SYG2-160LI<br>SYGA-160CNLI<br>SYG0-400LI-A (*)<br>SYG0-16CNLI (*) | Various | Various | • Lithium grease with extreme pressure lubrication performance, general purpose type. |
| Grease that includes molybdenum disulfide<br>LM-G (G2-M) | SYG2-400M<br>SYG2-400M-A<br>SYGA-16CNM | 400 g×10<br>400 g×20<br>16 kg | Bellows-type container<br>Container | • Use for parts under heavy load.<br>• Caution: DO NOT use this grease for roller bearings, such as swing circle bearings, etc. or splines.<br>• Caution: Use this grease for work equipment pins only when installing them, but do not use it afterwards. |
| Hyper white grease<br>G2-T<br>G0-T (*)<br>*: For cold regions | SYG2-400T-A<br>SYG2-16CNT<br>SYG0-400T-A (*)<br>SYG0-16CNT (*) | 400 g<br>16 kg | Bellows-type container<br>Container | • Higher seizure resistance, heat resistance, and waterproof than molybdenum disulfide grease<br>• Not conspicuous on machine since color is white. |

11. Remove the bolts (10a), (10b), and (10c).
12. Remove the bolts (11) (4 pieces), and remove the bracket (12).




**Tube, EGR oil tube**

13. Disconnect the fuel tube (13).
14. Remove the bolts (4 pieces), and remove the fuel filter assembly (14).
15. Remove the dipstick pipe (15).
16. Disconnect the connectors PCV1 (16), PCV2 (17), and G (18).

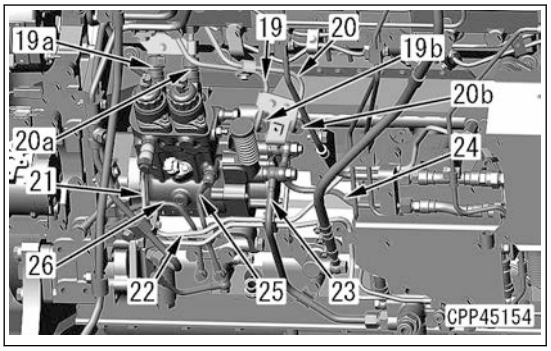



**Fuel high-pressure pipe**

17. Remove the fuel spray prevention caps (19a), (19b), (20a), and (20b) of the fuel high-pressure pipes (19) and (20), loosen the sleeve nut, and disconnect the fuel high-pressure pipes (19) and (20).

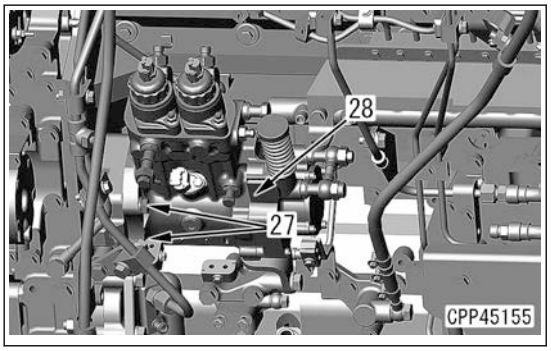
    **REMARK**

    Loosen the sleeve nut on the common rail side, as well.
18. Disconnect the fuel tubes (21), (22), (23), and (24).
19. Disconnect the oil tubes (25) and (26).



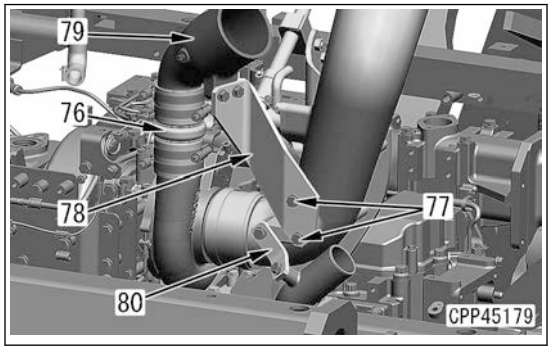

**Supply pump assembly**

20. Remove the bolts (27) (4 pieces), and remove the supply pump assembly (28).

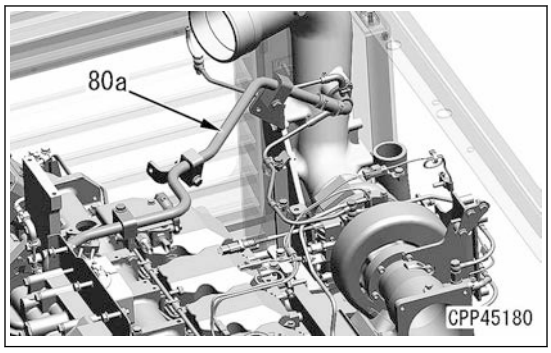


**Hose, bracket**

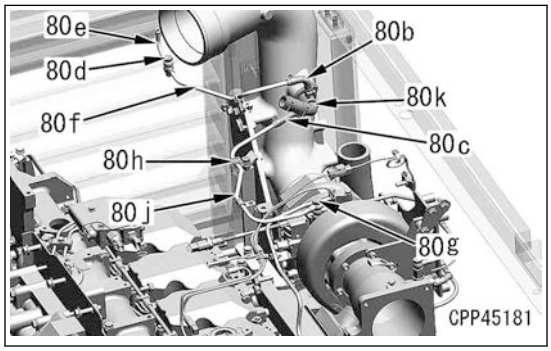
58. Loosen the clamp of the hose (76).
59. Remove the bolts (77) (2 pieces), and remove the bracket (78) together with the boost connector (79) as a unit.
60. Remove the coolant outlet connector bracket (80).



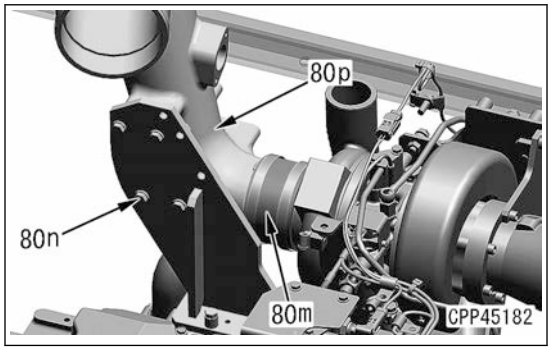

61. Remove KCCV outlet piping (80a).




62. Loosen the clamps of the hoses (80b) and (80c).
63. Remove the joint (80d), and remove the tubes (80e) and (80f).
64. Remove the joint (80g) and clamp (80h), and remove the tube (80j).
65. Remove the bolt, and remove the connector (80k).

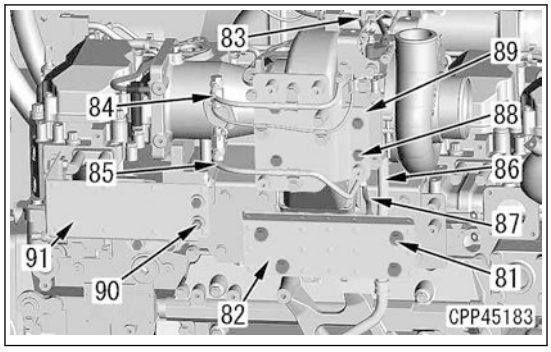



66. Loosen the clamp of the hose (80m), remove the bolts (80n) (4 pieces), and then remove the connector (80p).




**Exhaust elbow**

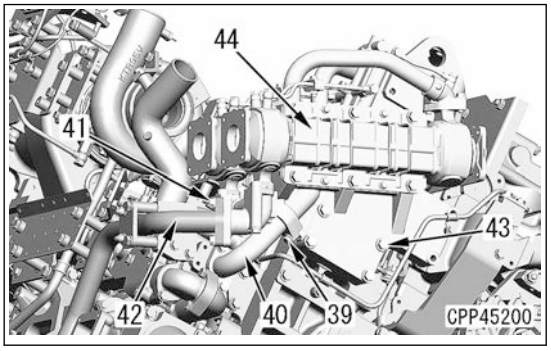
67. Remove the bolts (81) (4 pieces), and remove the cover (82).
68. Remove the clip (1 place each), and remove the coolant tubes (83), (84), (85), and (86).
69. Remove the clip (1 place), and remove VGT lubrication oil tube (87).
70. Remove the bolts (88) (4 pieces), and remove the cover (89).
71. Remove the bolts (90) (6 pieces), and remove the heat insulation cover (91).



**EGR cooler assembly**

23. Remove the bolts (39) (2 pieces), and remove the coolant return tube (40).
24. Remove the bolts (41) (2 pieces), and remove the coolant supply tube (42).
25. Remove the bolts (43) (4 pieces), sling EGR cooler assembly (44), and remove it.

    EGR cooler assembly (44):
    80 kg




## How to Install EGR Cooler Assembly

**EGR cooler assembly**

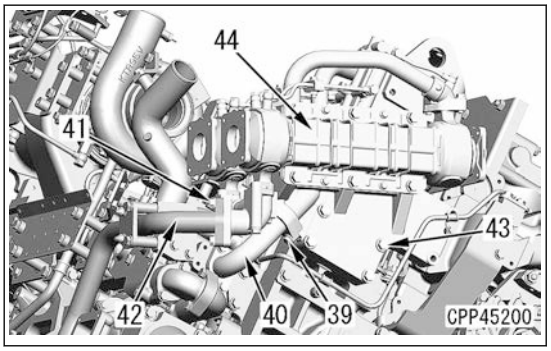
1. Sling the EGR cooler assembly (44), hold it, and tighten the bolts (43) (4 pieces).

    EGR cooler assembly (44):
    80 kg

2. Install the coolant supply tube (42) with the bolts (41) (2 pieces).

    **REMARK**

    Replace the gasket to be installed to the coolant tube flange surface with a new one.




3. Install the coolant return tube (40) with the bolts (39) (2 pieces).

    **REMARK**

    Replace the gasket to be installed to the coolant tube flange surface with a new one.

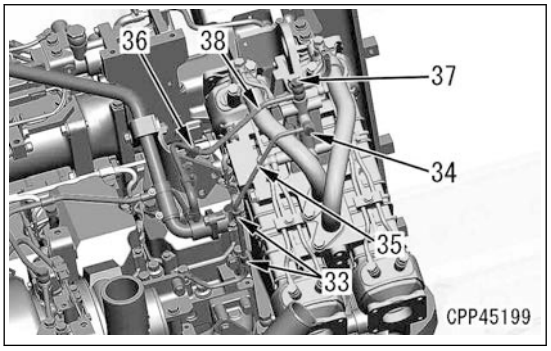
**Tube**

4. Connect the coolant tube (38), and install the clamp (36) and joint bolt (37).

    Joint bolt (37):
    24.5 to 34.3 Nm {2.5 to 3.5 kgfm}

5. Connect the coolant tube (35), and install the clamps (33) (2 places) and joint bolt (34).

    Joint bolt (34):
    19.6 to 29.6 Nm {2 to 3 kgfm}




**Bracket**

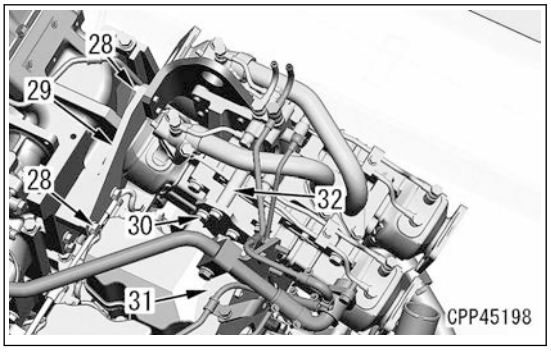
6. Install the bracket (31) with the bolts (30) (3 pieces).

    **REMARK**

    1 place of bolt (30) of bracket (31) is tightened together with spacer (32).

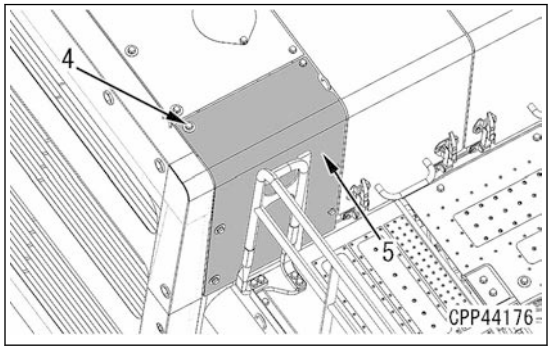
    Bolt (30) of bracket (31) (exhaust elbow mount bracket side):
    Seizure prevention compound

7. Install the bracket (29) with the bolts (28) (4 pieces).

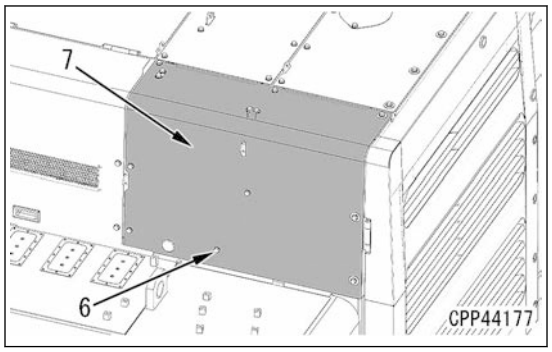


**R.H. engine hood**

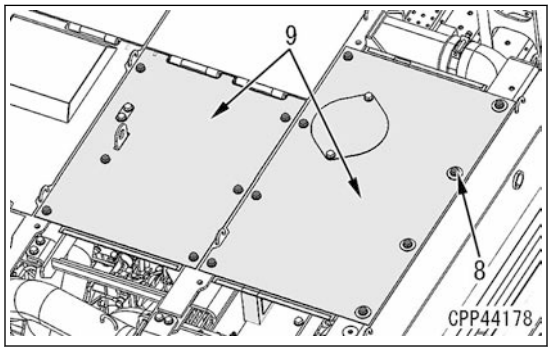
3. Remove the bolts (4) (6 pieces), and remove the cover (5).



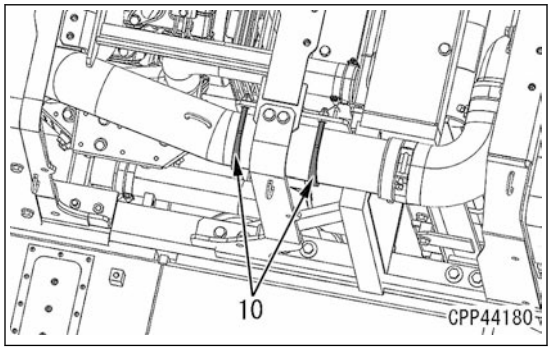

4. Remove the bolts (6) (9 pieces), and remove the cover (7).



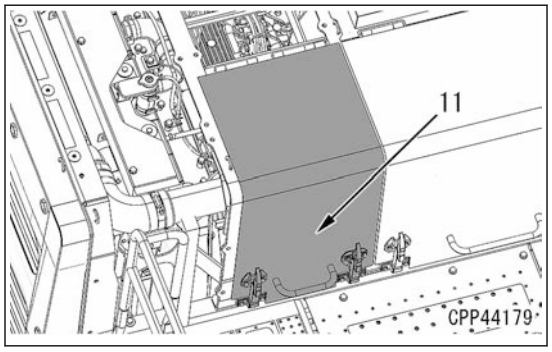

5. Remove the bolts (8) (14 pieces), and remove the covers (9) (2 places).



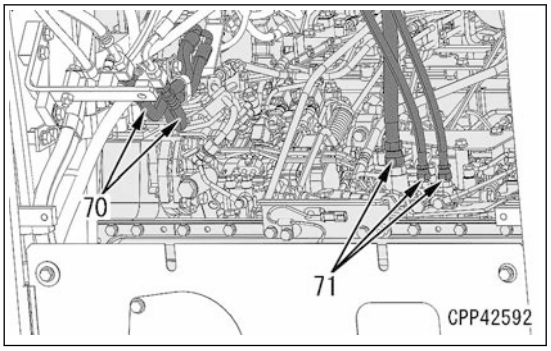

6. Remove U-bolts (10) (2 places).



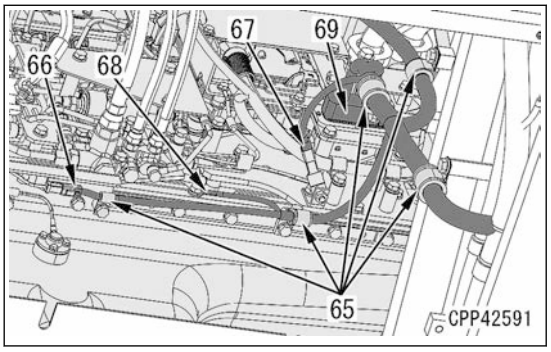

7. Open the cover (11).



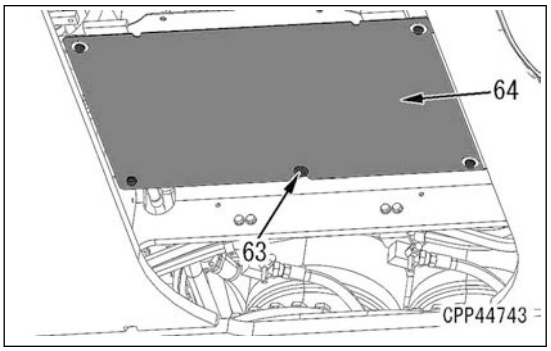
4. Connect the hoses (71) (3 pieces).
5. Connect the air conditioner hoses (70) (2 pieces).



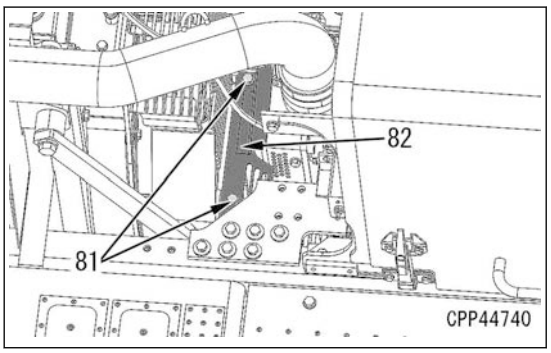

6. Connect the connectors P44 (66), M37 (67), CE03 (69), and ground cable T12 (68).
7. Install the clamps (65) (5 places).



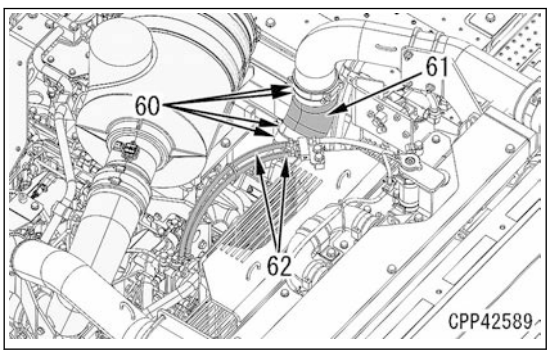

8. Install the undercover (64) with the bolts (63) (5 pieces).



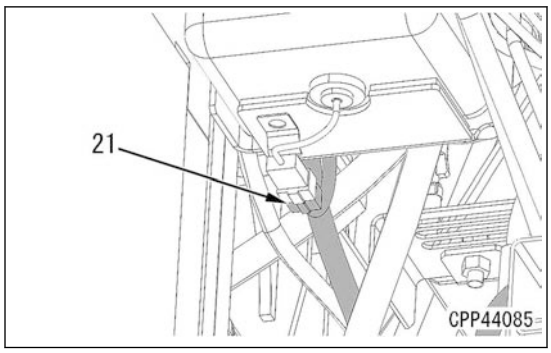

9. Remove the fan guard (82) with the bolts (81) (2 pieces).



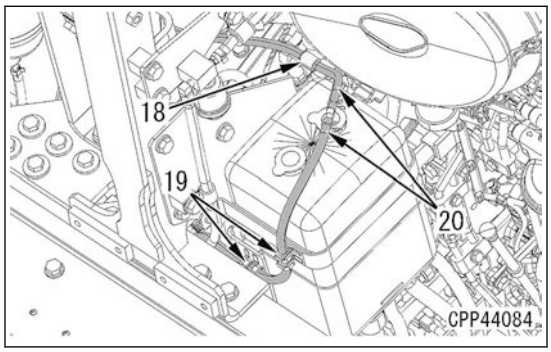

10. Connect the hoses (62) (2 pieces).
11. Install the hose (61) and MIKALOR clamps (60) (4 places) according to the following procedure.



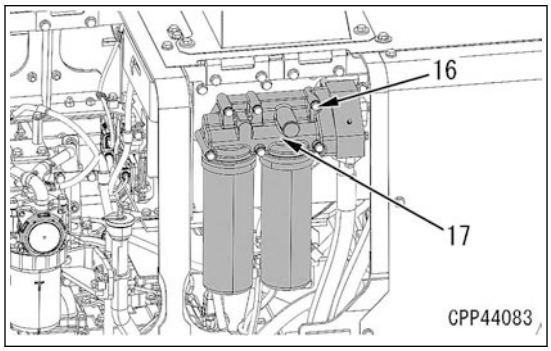
15. Connect the connector P24 (21) on the under surface of the reservoir tank.



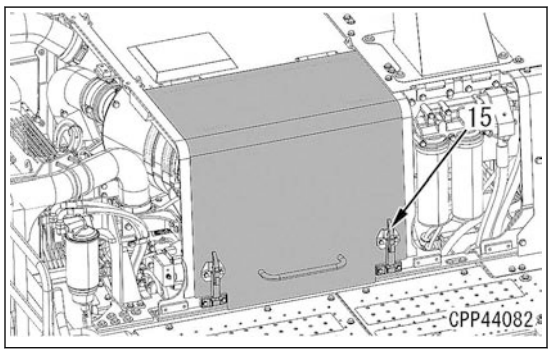

16. Install the clamp (18) and clips (19) (2 places), and connect the hoses (20) (2 pieces).



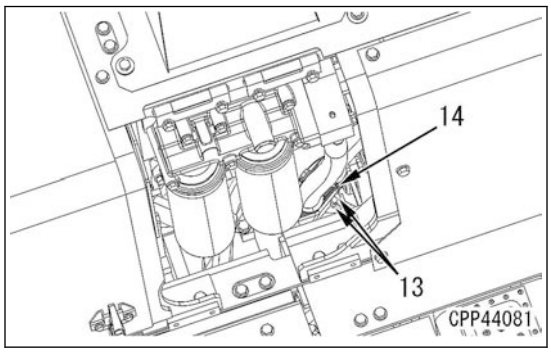

17. Install the engine oil filter (17) with the bolts (16) (6 pieces).



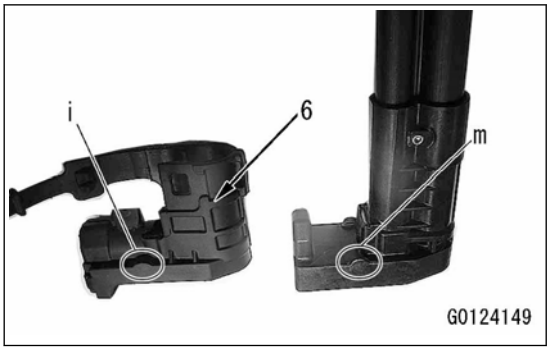

18. Close the cover (15).

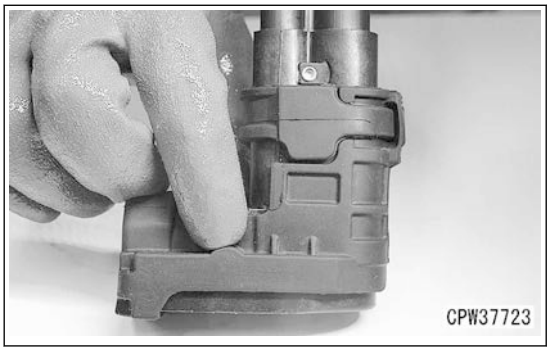



19. Install the clamp (14) with the bolts (13) (2 pieces).

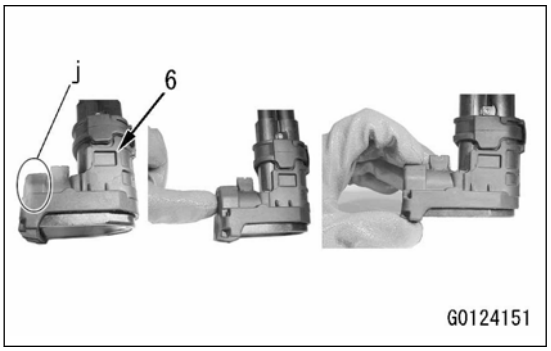


7) Check that the convex part (i) of the boot (6) is securely set in the convex part (m) of the sensor body.

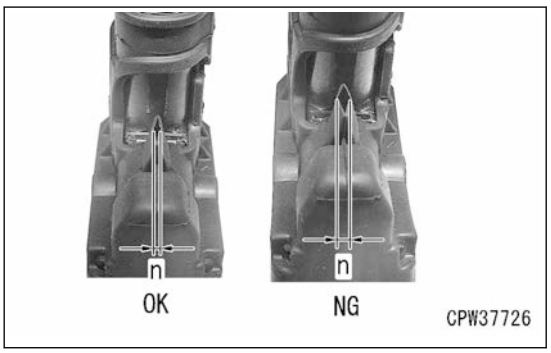



8) Check that the sensor is set in the tip part (j) by moving the tip part (j) of the boot (4) by hand.




9) Check that the opening (n) of the boot top is 2.5 mmor below .



9. Temporarily assemble the differential pressure sensor Lo piping (26), differential pressure sensor Hi piping (27), and clamps (18), (19), and (20) (3 places).
10. Install the piping connectors (22) and (23) to the differential pressure sensor (21).

**REMARK**

Check that “locking” sound is heard when the piping connectors (22) and (23) are inserted.

11. Position the differential pressure sensor Lo piping (26) and differential pressure sensor High piping (27), and check that they are not unnecessarily stressed.
12. Tighten the band (29) to the specified torque.

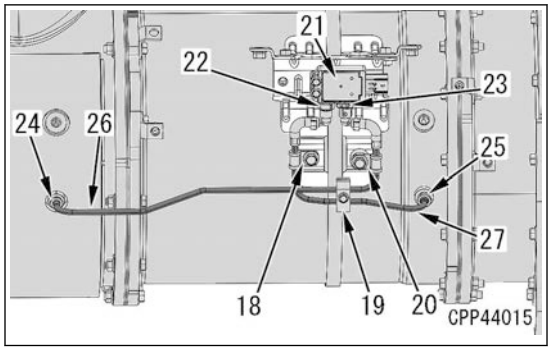
Band (29) mounting bolt:
6.3 to 8.3 Nm {0.64 to 0.85 kgfm}

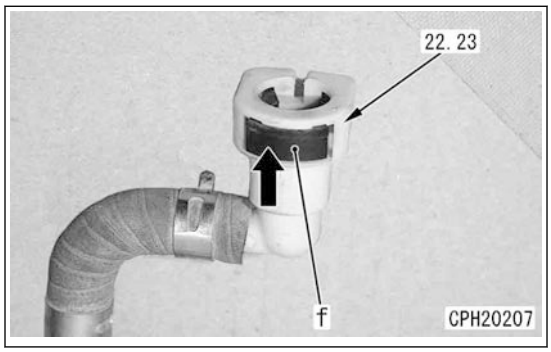
**NOTICE**

**The band (29) is made of stainless steel, accordingly never use an impact wrench.**

**REMARK**

Mounting nut (width across flats) of band (29): 11.1 mm {7/16 in}




13. Tighten the nut (24) of the differential pressure sensor Lo piping to the specified torque.

Nut (24):
13.6 to 19.0 Nm {1.39 to 1.94 kgfm}

**REMARK**

Nut (24) (width across flats): 15.88 mm {5/8 in}

14. Tighten the nut (25) of the differential pressure sensor Hi piping to the specified torque.

Nut (25):
24.5 to 36.5 Nm {2.5 to 3.7 kgfm}

**REMARK**

Nut (25) (width across flats): 17.46 mm {11/16 in}

15. Tighten the clamps (18), (19), (20) to the specified torque.

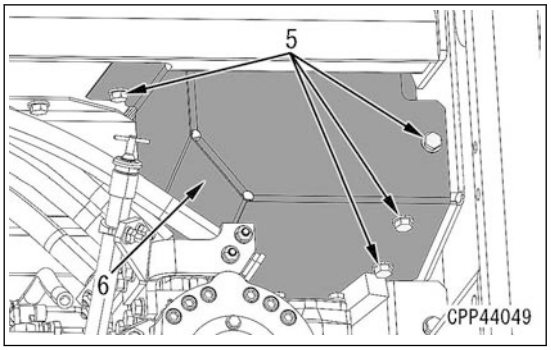
Mounting bolts of clamps (18) and (20):
10.8 to 26.0 Nm {1.1 to 2.7 kgfm}

Clamp (19) mounting bolt:
11.8 to 14.7 Nm {1.2 to 1.5 kgfm}

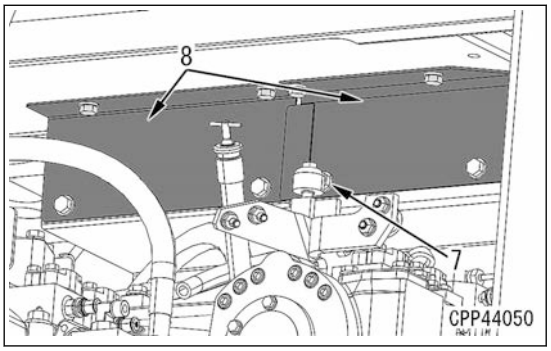
**REMARK**

- Mounting bolts (width across flats) of clamps (18) and (20)14 mm
- Mounting bolt (width across flats) of clamp (19)10 mm

3. Remove the bolts (5) (5 pieces), and remove the partition plate (6).




4. Remove the bolts (7) (8 pieces), and remove the partition plates (8) (2 places).

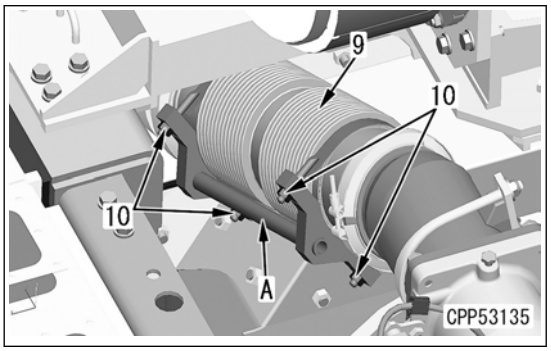



5. Install the restraint jig (A) to the bellows pipe (9) with the nuts (10) (4 pieces).

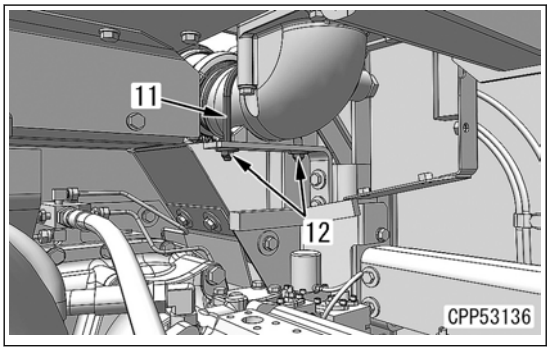
   Nut (10):
   14.8 Nm {1.5 kgfm}

   **NOTICE**

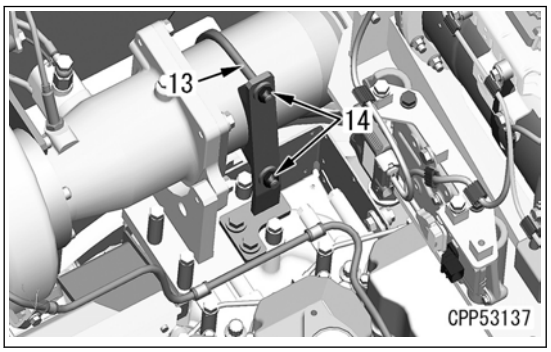
   **Installation of the restraint jig (A) is not required when exchanging the bellows pipe (9) with a new one.**



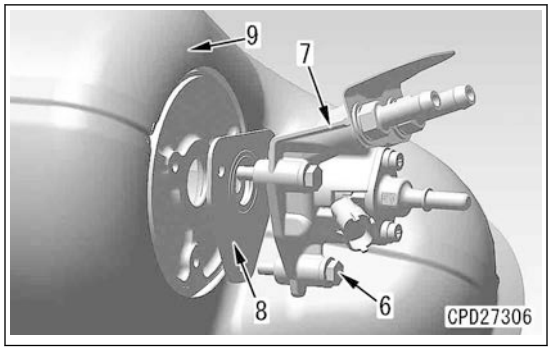

6. Remove the nuts (12) (2 pieces), and remove U-bolt (11).




7. Remove the nuts (14) (2 pieces), and remove U-bolt (13).



2. Install DEF injector (7) according to the following procedure.




1) Apply seizure prevention compound to the bolt (6).

Threaded portion of bolt (6):
Seizure prevention compound (LC-G)

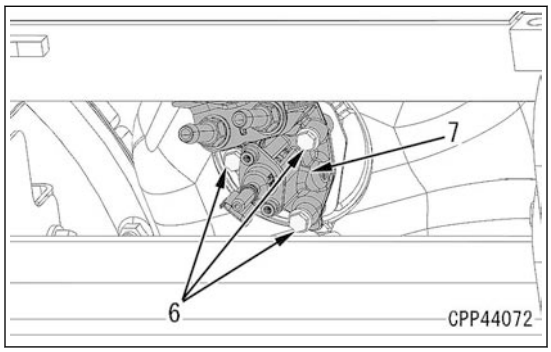
2) Temporarily assemble the gasket (8) and bolts (6) (3 pieces) to DEF injector (7), and install them to DEF mixing tube (9).

**NOTICE**

**Use a new gasket.**

**REMARK**

Before tightening the bolts (6), install them so that no clearance is created between the gasket (8) and DEF mixing tube (9) and between the gasket (8) and DEF injector (7).

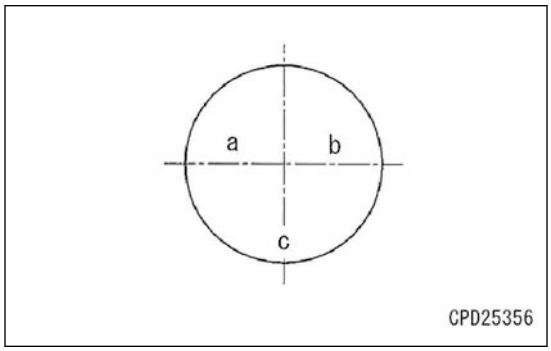



3) Tighten the bolt (6) in the order of a, b, and c.

Bolt (6):
7±1 Nm {0.7±0.1 kgfm}

4) Tighten the bolt (6) again in the order of a, b, and c.

Bolt (6):
7±1 Nm {0.7±0.1 kgfm}

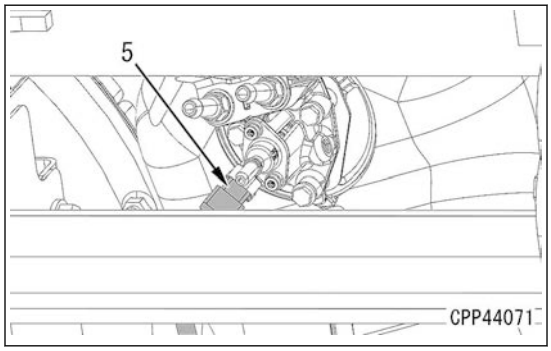



**NOTICE**

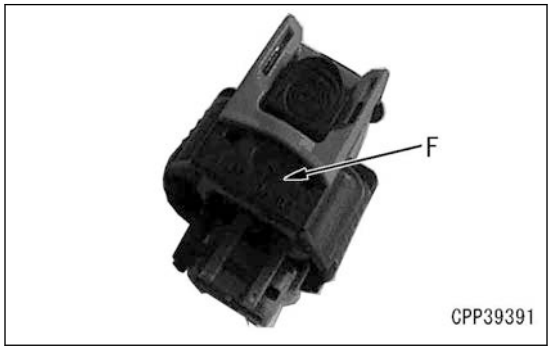
- **After tightening the bolts (6) to the specified torque, tighten all the bolts to the specified torque again.**
- **Be careful not to damage DEF inlet and the coolant inlet/outlet connector parts by hitting them to the parts around them, etc.**

**Hose, connector**

3. Connect the connector MB03 (5) according to the following procedure.




1) Remove the connector cover (F).



# Remove and Install Air Conditioner Condenser Assembly

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

⚠ **Stop the engine, and turn the battery isolator switch to OFF position. (For details, see Testing and Adjusting, "Handle Battery Isolator Switch".)**

⚠ **If refrigerant gas (air conditioner gas: R134a) gets in your eyes, you may lose your sight. And if it touches your skin, you may suffer from frostbite. Put on protective eyeglasses, gloves, and working clothes with long sleeves while collecting the refrigerant or filling the air conditioner circuit with the refrigerant.**

**NOTICE**

- **Never release the refrigerant (air conditioner gas: R134a) to the atmosphere.**
- **Ask a qualified person for collecting, adding and filling operations of the refrigerant. (Only qualified persons can work.)**

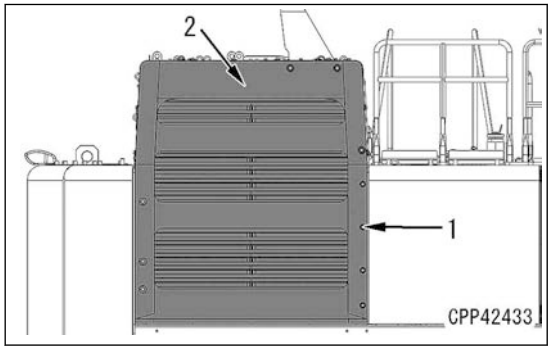
## How to Remove Air Conditioner Condenser Assembly

**Collecting the refrigerant**

1. Collect the refrigerant (air conditioner gas: R134a) from the air conditioner circuit.
   Quantity of refrigerant to be collected: 1150±50 g

**Cover**

2. Remove the bolts (1) (7 pieces), and open the cover (2).

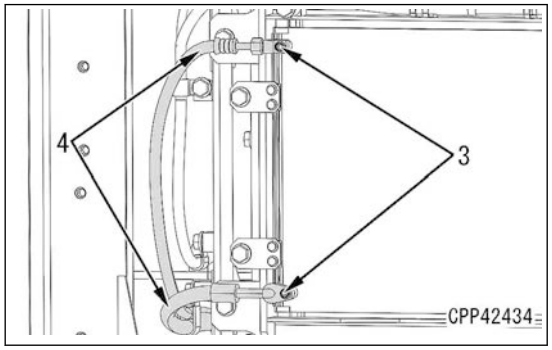



**Air conditioner condenser assembly**

3. Remove the bolts (3) (2 pieces), and disconnect the air conditioner hoses (4) (2 pieces).

   **NOTICE**

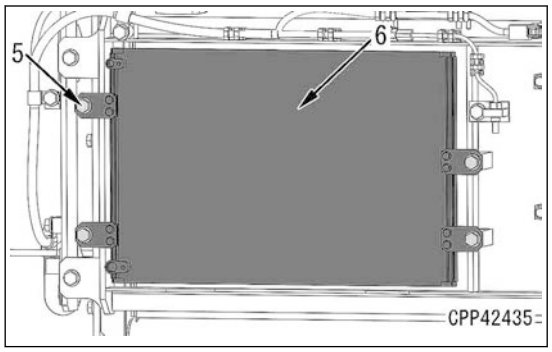
   - **Plug the hose to prevent dust and water from entering.**
   - **Be careful not to damage or lose O-ring.**




4. Remove the bolts (5) (4 pieces), and remove the air conditioner condenser assembly (6).

   **NOTICE**

   **When removing, take care not to damage the core part.**



**Refilling with hydraulic oil**

12. Refill the hydraulic tank with Komatsu genuine oil to the specified level through the oil filler port. Start the engine to circulate the oil through the piping, and check the oil level again. (For details, see Structure and Function, “Table of Fuel, Coolant, and Lubricants”.)

**Bleeding air from hydraulic circuit**

13. Bleed air from the hydraulic pump circuit. (For details, see Testing and Adjusting, “Bleed Air from Hydraulic System”.)

## How to Install Idler and Idler Cushion Assembly

### Idler and idler cushion assembly

1. Install the idler cushion assembly (4) to the idler assembly (3).

   Idler assembly (3):

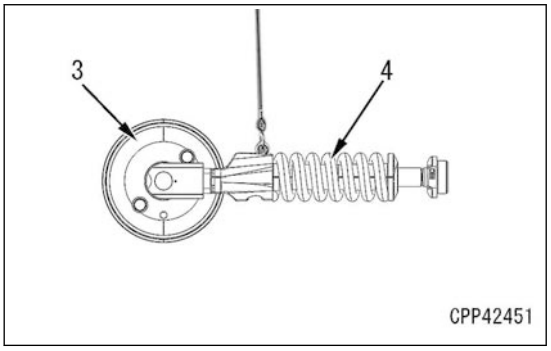
   350 kg

   Idler cushion assembly (4):

   460 kg

   Mounting bolt:

   824 to 1030 Nm {84 to 105 kgfm}



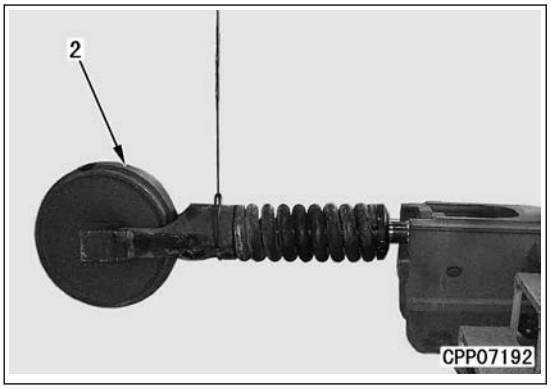

2. While slinging the idler and idler cushion assembly (2), install it to the track frame.

   **NOTICE**

   **Be careful when slinging the idler and idler cushion assembly (4). It slants when it is slung at the slinging position, since the center of gravity of the idler cushion assembly (4) is at the rear.**

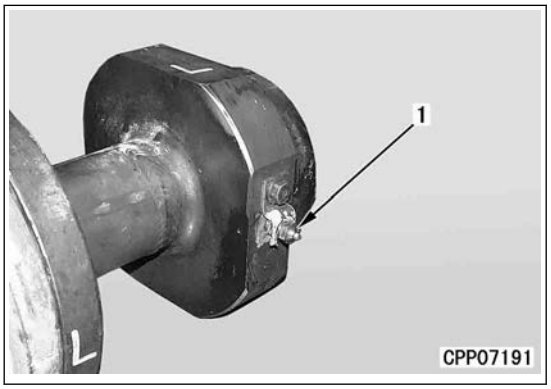
   Idler and idler cushion assembly (2):

   800 kg




### Track shoe assembly

3. Install the lubricator (1).
4. Install the track shoe assembly. See “Separate and Connect Track Assembly”.



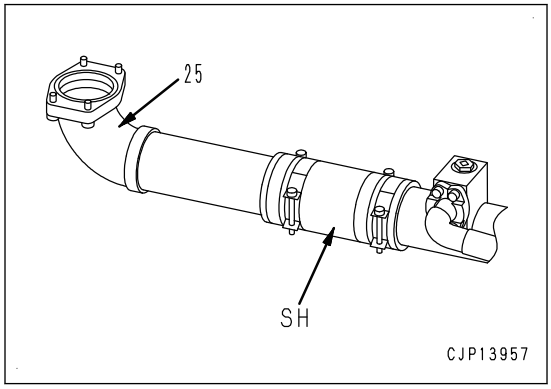
**Suction tube, connector**

3. Connect the suction tube (25).

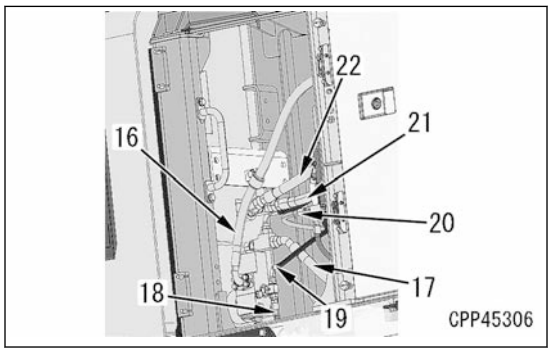
   **REMARK**

   Do not remove MIKALOR clamp of the suction hose (SH).

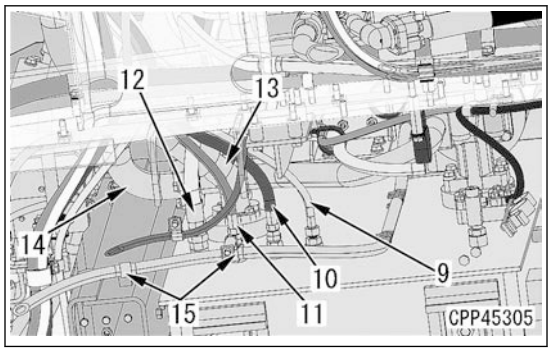
   - If the hose is disconnected, see “Remove and Install Hydraulic Pump Assembly”, INSTALL SUCTION HOSE (SH).



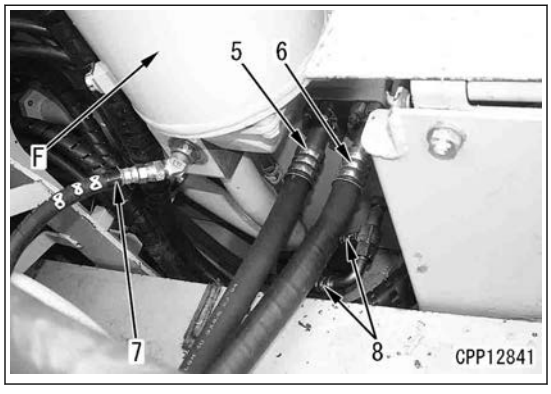

4. Connect the hoses (16), (17), (18), (19), (20), (21), and (22) from the rear of the hydraulic tank (27).




5. Install the overflow hose clamp (15).
6. Connect the hoses (9), (10), (11), (12), (13), and (14) from the rear inside of the hydraulic tank (27).
7. Install the undercover.




8. Install the hoses (5), (6), (7), and (8) from under the hydraulic oil filter (F).



# Remove and Install Arm Cylinder Assembly

**Tools for Removal and Installation of the Arm Cylinder Assembly**

| Symbol | Part No. | Part name | Necessity | Q'ty | New/Redesign | Sketch | Remarks |
|---|---|---|---|---|---|---|---|
| A | Commercially available | Puller | ■ | 1 | | | Removal and installation of arm cylinder assembly |
| B | Commercially available | Block | ● | 1 | | | |

⚠ **Extend the arm cylinder piston rod to approximately 200 mm before the arm IN stroke end, lower the work equipment to the ground in a stable posture, and set the lock lever to LOCK position, and then stop the engine.**

⚠ **Stop the engine, turn the battery isolator switch to OFF position. (For details, see Testing and Adjusting, "Handle Battery Isolator Switch".)**

⚠ **Release the remaining pressure in the hydraulic circuit. See Testing and Adjusting, "Release Remained Pressure in Hydraulic Circuit".**

⚠ **Never insert your fingers into the pin holes when aligning their positions.**

**NOTICE**

**Install a plug or flange in the place where a hydraulic hose is disconnected to prevent oil from flowing out.**

## How to Remove Arm Cylinder Assembly

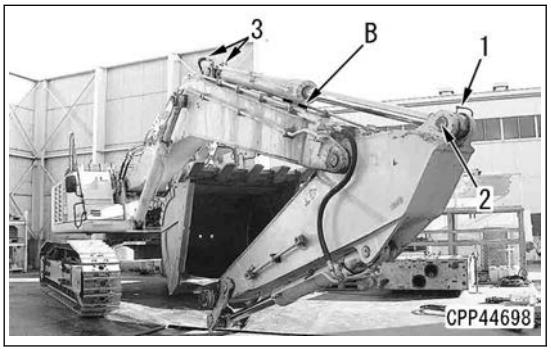
**Pin on the head side**

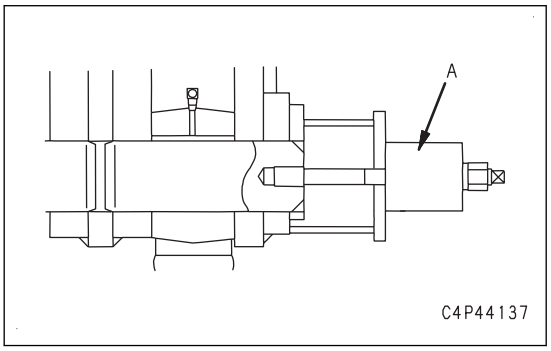
1. Set the block (B) between the arm cylinder and boom.
2. Disconnect the lubrication hose (1).
3. Pull out the pin (2) on the head side.

   **REMARK**

   If the pin on the head side cannot be pulled out, use the puller (A) to pull out the pin.

   Pin (2):
   35 kg

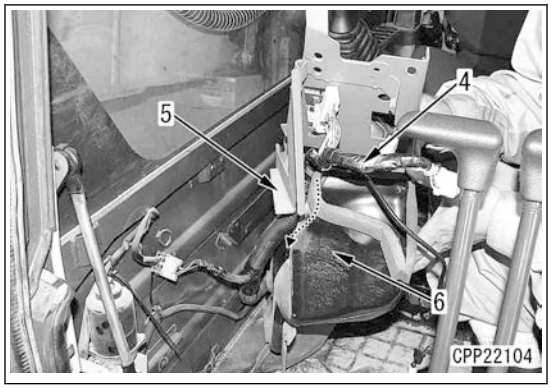



**Arm cylinder assembly**

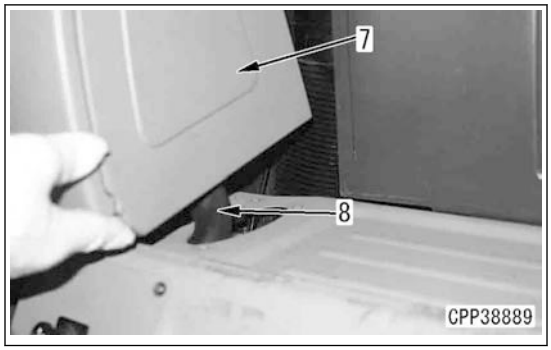
4. Start the engine, retract the piston rod, and tie the piston rod by using a wire, etc. so that it is not pulled out.
5. Disconnect the hose (3).

5. Remove the wiring harness (4) through the space between the cover (5) and duct (6).

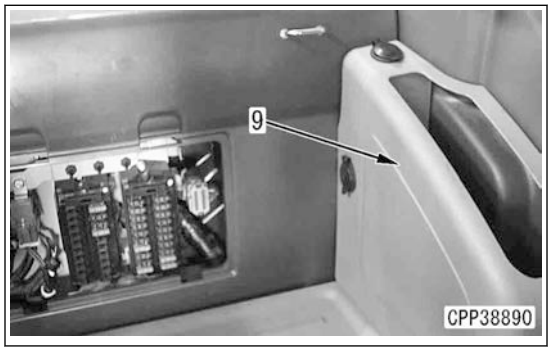



6. Remove the bolts (5 pieces), and lift the box (7).

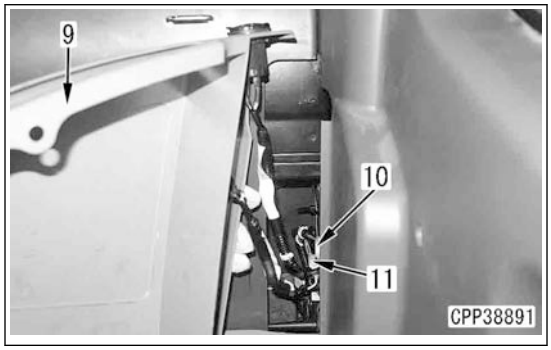

7. Disconnect the hose (8), and remove the box (7).



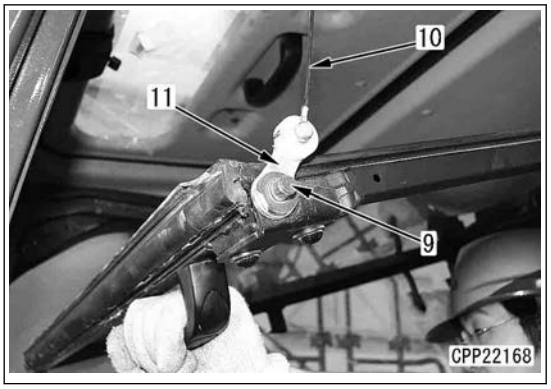

8. Remove the bolts (3 pieces), and lift the box (9).




9. Disconnect the connectors M13A (10) and M13B (11), and remove the box (9).

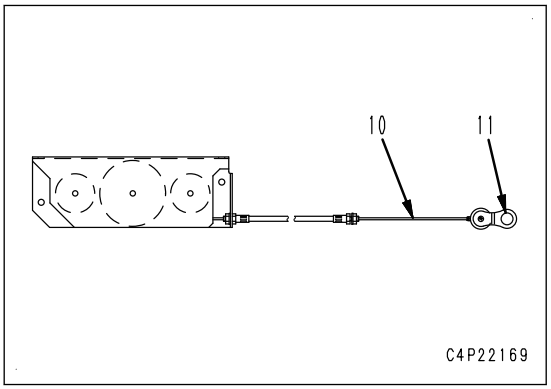


6. A return load of 58.8 N {6 kg} is applied to the pull-up assist cable (10) in the direction of the rear side of the operator's cab. When disconnecting the cable, remove the pin (9) with extreme care.



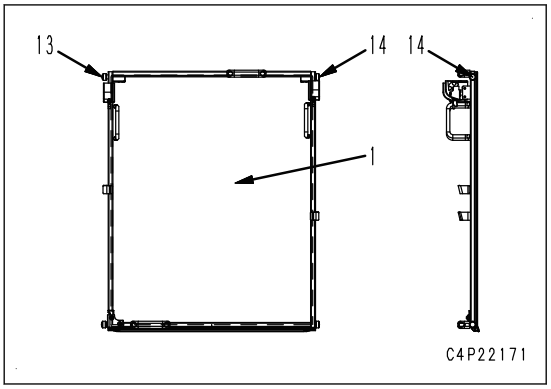

**REMARK**

- When the pin (9) is removed, the plate (11) at the tip of the pull-up assist cable (10) is removed.
- Place the plate (11) on the mounting screw (5) (also using washer (6)) of the L.H. corner bracket (3), and fix it.




7. Lower the front window assembly (1) completely with extreme care to prevent the front window assembly (1) from contacting with the machine monitor (12).


8. Carefully slide the front window assembly (1), bring out the upper part of the front window assembly (1) downward from the bracket removal areas (rail opening areas) at the R.H. and L.H. corners where the brackets were removed in step 2.



## How to Install Operator Seat

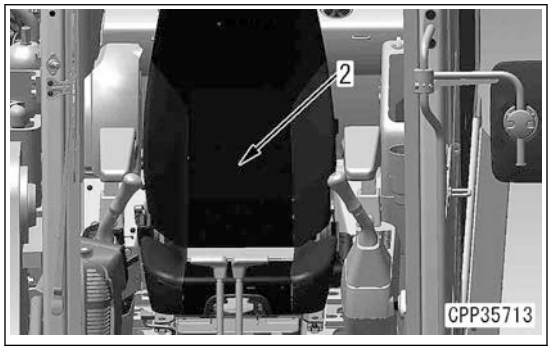
### Operator's seat

1. Install the operator's seat (2).

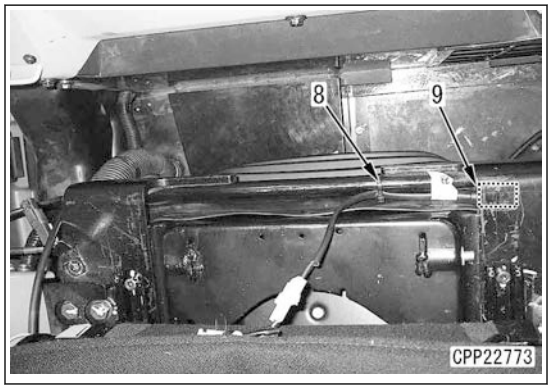
   Operator's seat (2):
   25 kg

   **REMARK**

   Since the crane cannot be used, install the operator's seat (2) by 2 persons.

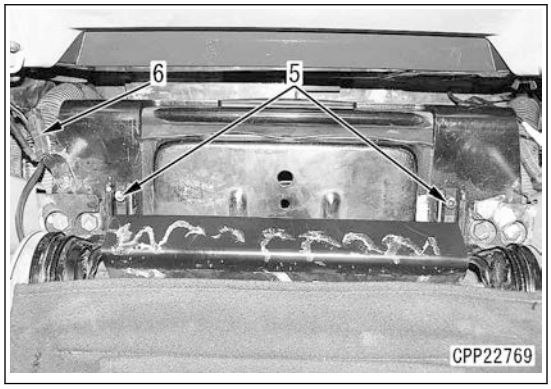


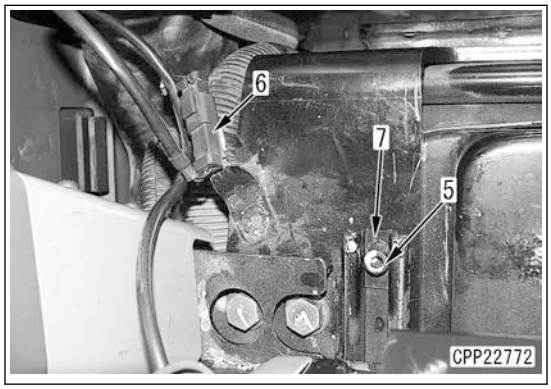

2. Connect the connector M35 (9), and bind the cable tie (8).




3. Connect the connector S19 (6).
4. Install the bolts (5) (2 pieces) and reinforcing plates (7) (2 pieces).

   Bolt (5):
   25.5 Nm {2.6 kgfm}



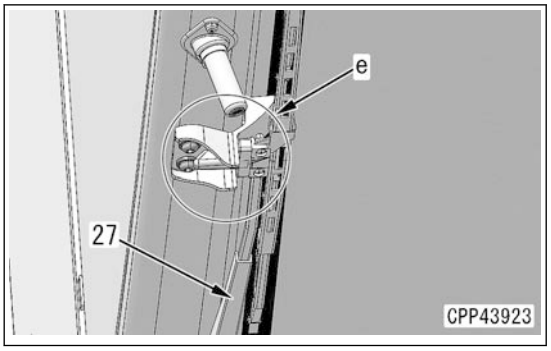
1) Press wiper switch (37) 3 times continuously, and check that wiper arm (27) swings one round-trip, and then is stored in the part (e) of the R.H. stay.
2) Perform the step 1) again.

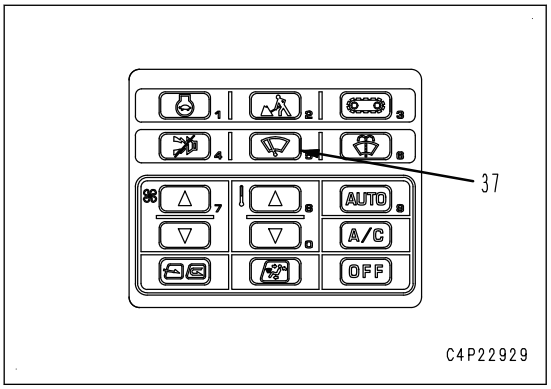
**NOTICE**

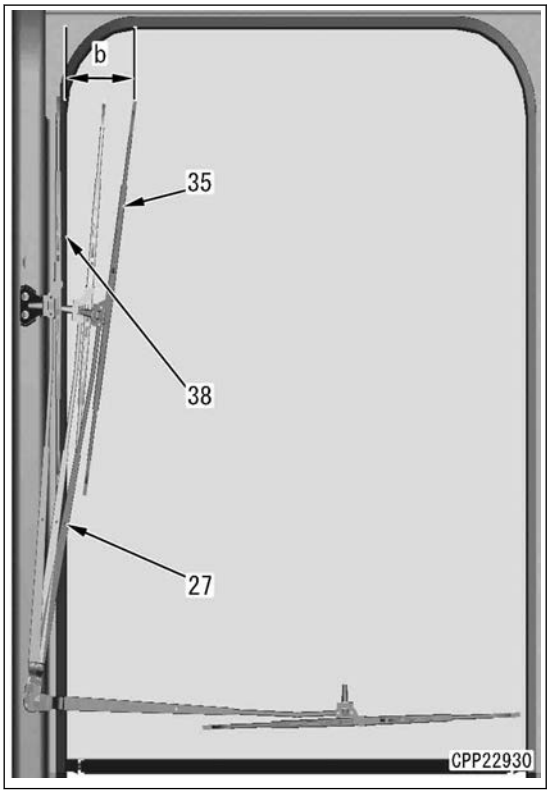
**Between the steps 1) and 2), the rotation direction of the motor crank is different. Therefore, check the operation 2 times.**

3) When the tip of the wiper blade (35) is at the highest position by pressing the wiper switch (37), check that the clearance (b) between the trim seal (38) and wiper is the following dimension.

Dimension (b): 130 mm or less



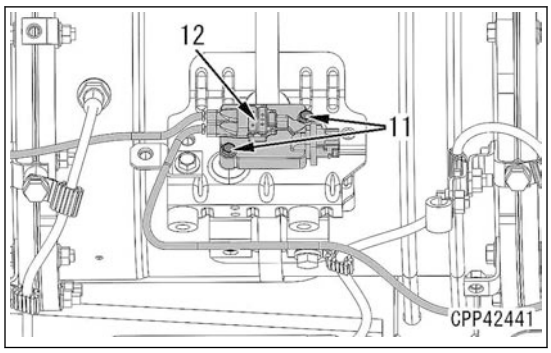



6. Remove the bolts (11) (2 pieces), and remove SCR temperature sensor (12).

**REMARK**

Bolt (11) (width across flats): 10 mm




## How to Install SCR Temperature Sensor

**SCR temperature sensor**

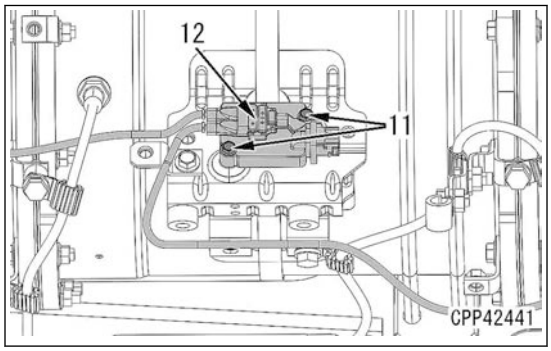
1. Install SCR temperature sensor (12) with the bolts (11) (2 pieces).

Bolt (11):
11.8 to 14.7 Nm {1.2 to 1.5 kgfm}

Threaded portion of bolt (11):
Seizure prevention compound (LC-G)

**REMARK**

Bolt (11) (width across flats): 10 mm



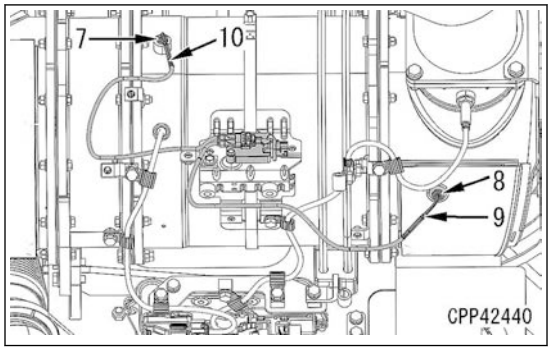

2. Insert the metal portions (a) of SCR outlet temperature sensor (9) and SCR inlet temperature sensor (10) straight in the direction of the arrow, and tighten the nuts (7) and (8).

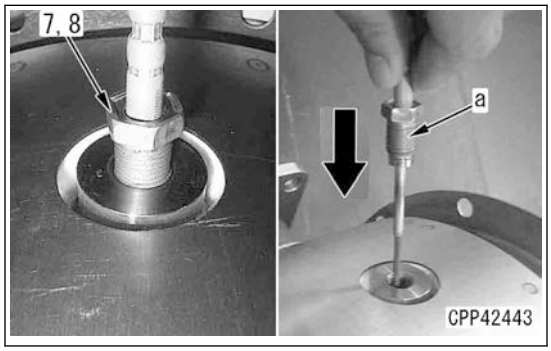
Nut (7):
35 to 41 Nm {3.6 to 4.2 kgfm}

Nut (8):
22 to 28 Nm {2.2 to 2.8 kgfm}

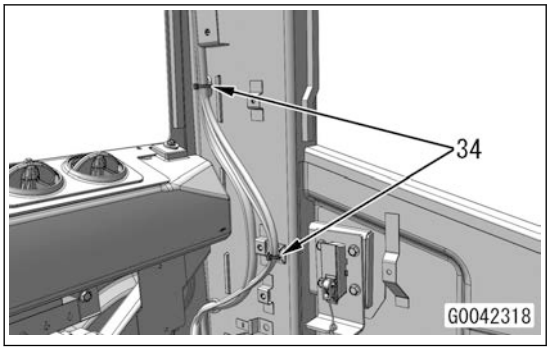
**REMARK**

- SCR outlet temperature sensor (9) mounting nut (width across flats)17 mm
- SCR inlet temperature sensor (10) mounting nut (width across flats)17 mm

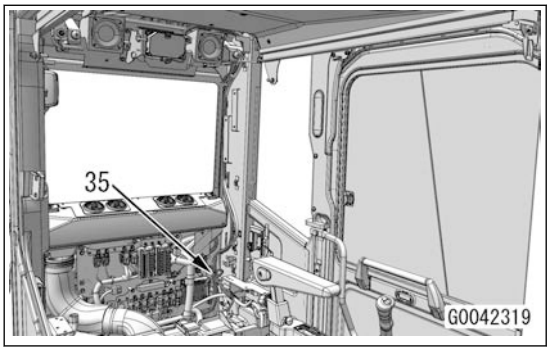


29. Cut the bands (34) (2 pieces).
    Tool: Nippers

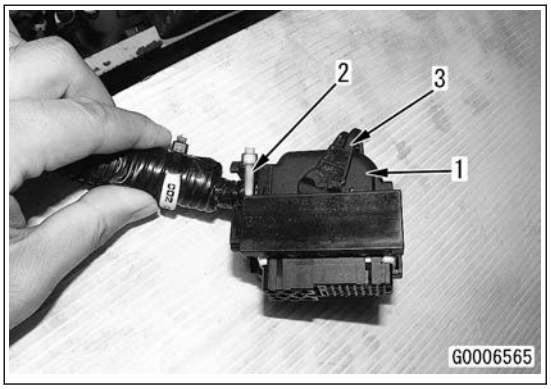



30. Remove the gateway controller wiring harness (35).

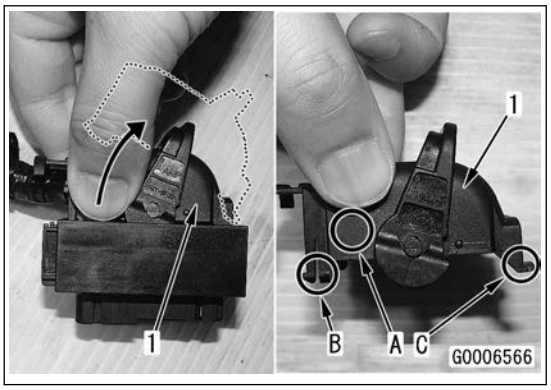



## Reference: How to Remove Connector Cover (1)

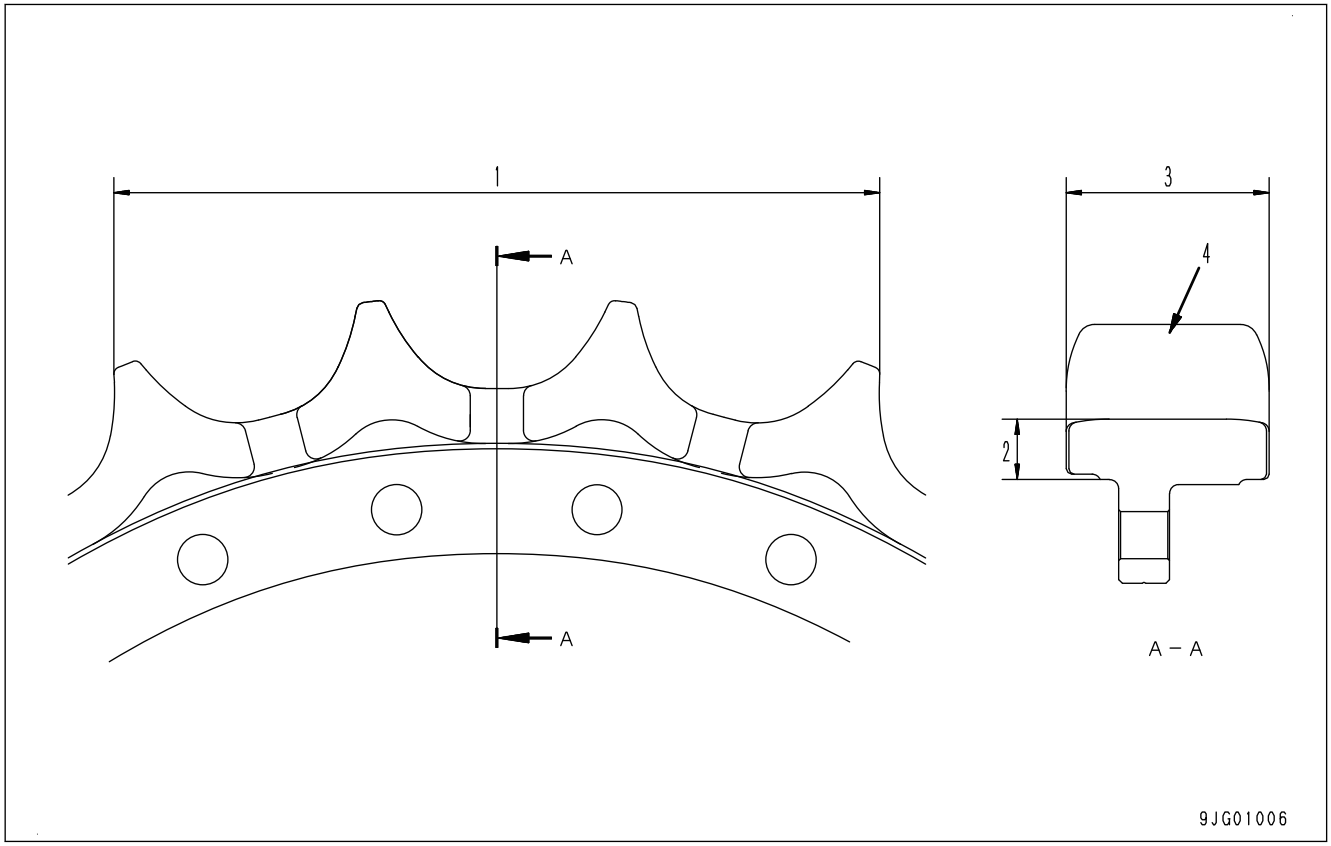
1. Cut the band (2).
2. Move the lever (3) upward.




3. Lightly press the part (A) on both sides of the connector cover (1) to release the claw (B).
4. Remove the connector cover (1) around the claw (C) along the arc line.



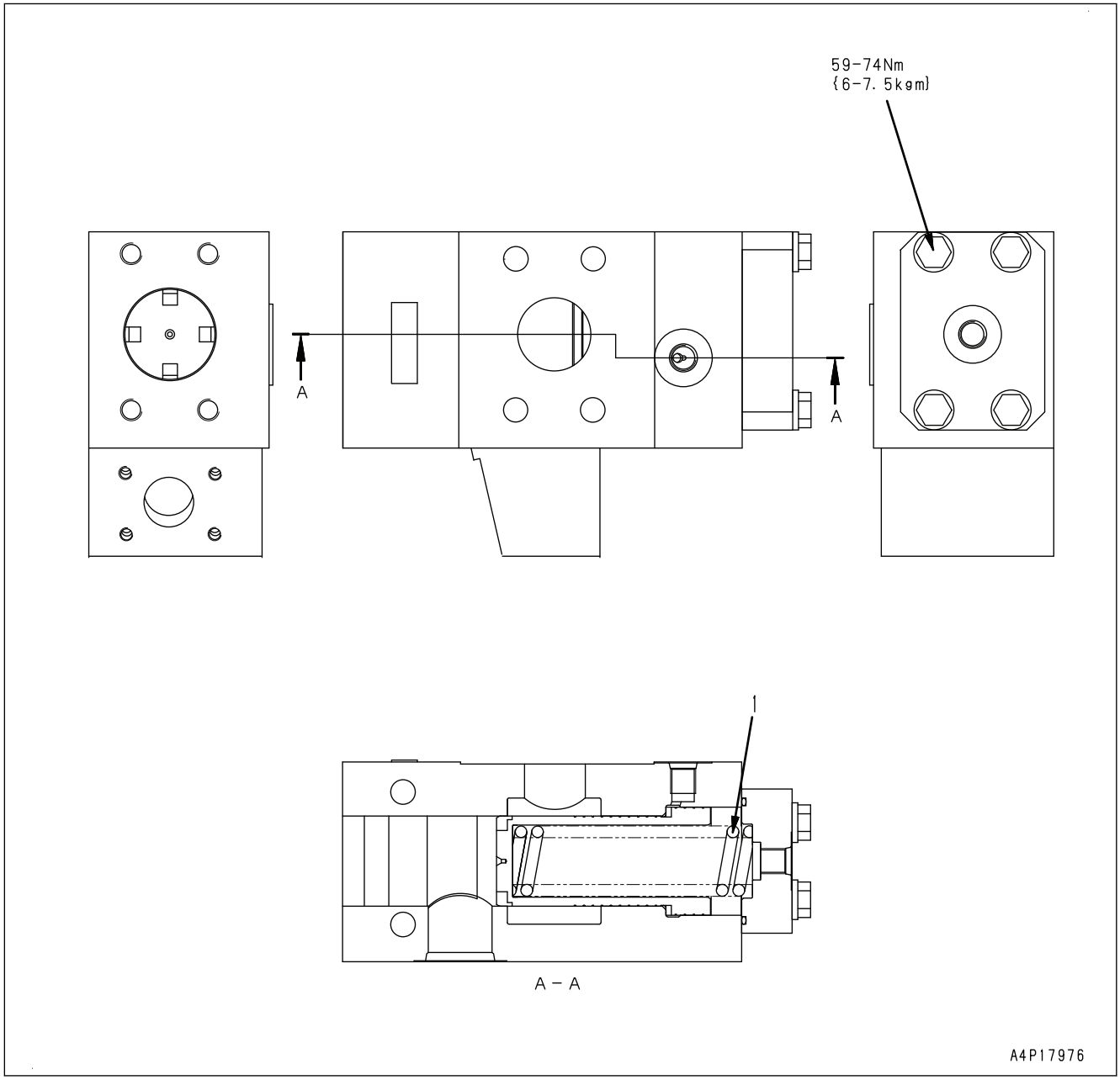
# Maintenance Standard for Sprocket




Unit: mm

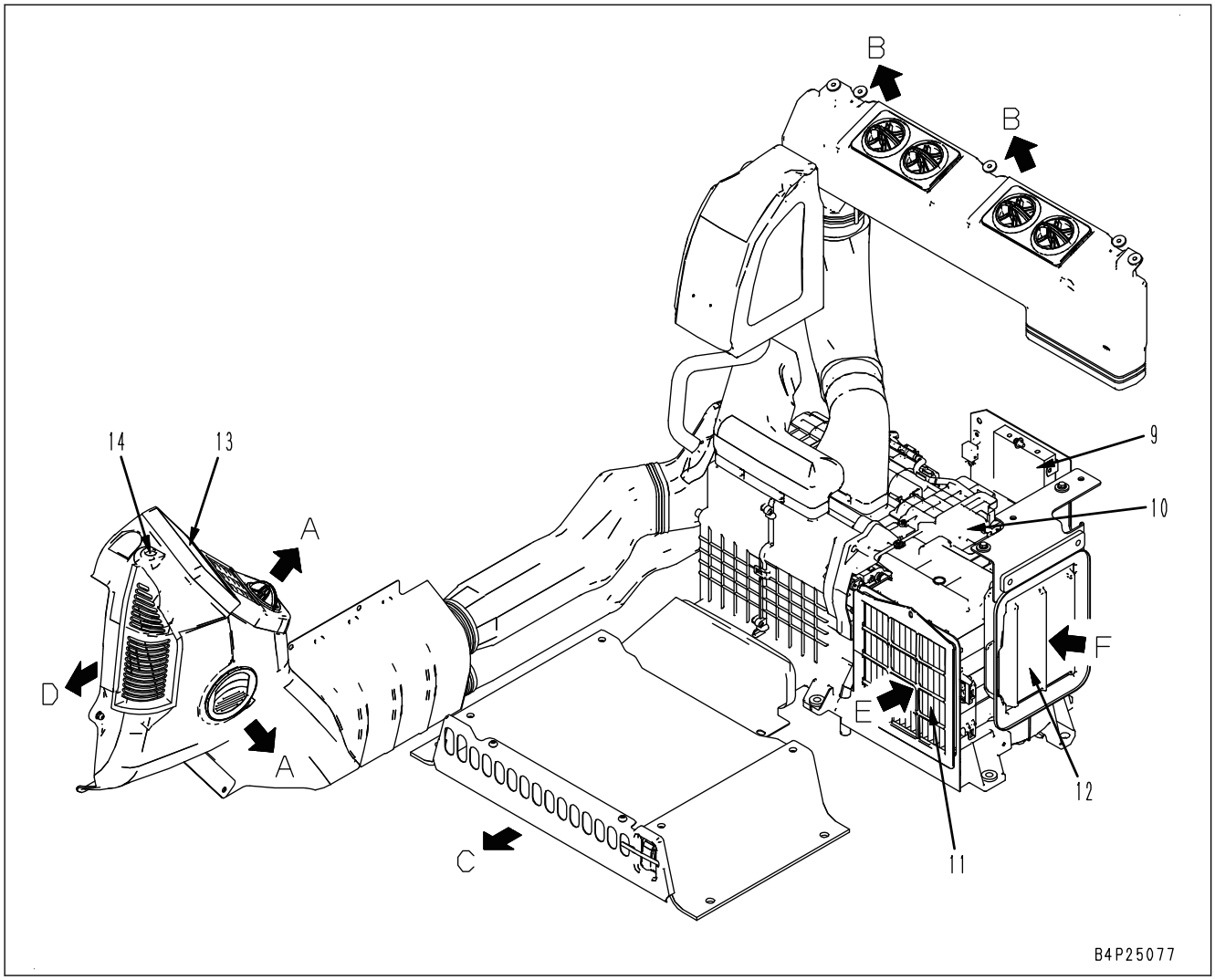
| No. | Item | Judgment criteria | | Remedy |
|---|---|---|---|---|
| 1 | Wear of tooth tip | Standard dimensions | Repair limit | Repair by build-up welding or replace |
| | | 350.1 | 338.1 | |
| 2 | Thickness of tooth bottom | 24.4 | 18.4 | |
| 3 | Width of tooth | 104 | 101.5 | |
| 4 | Wear of tooth profile | Repair limit: 6 (Use “Full-scale drawing of sprocket profile” for judgment) | | |

# Maintenance Standard for Variable Back Pressure Valve




Unit: mm

| No. | Item | Judgment criteria | | | | | Remedy |
|---|---|---|---|---|---|---|---|
| 1 | Valve return spring | Free height | Installed height | Load at installed height | Free height | Load at installed height | Replace the spring if damaged or deformed |
| | | 165.8 x 38.5 | 133 | 785 kN {80 kg} | - | 628 kN {64 kg} | |

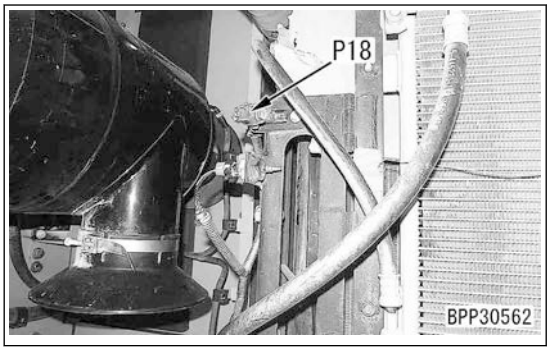



A: Front vents
B: Rear vents
C: Foot vents
1: Compressor
2: Condenser
3: Receiver drier
4: Hot water piping
5: Hot water return piping
6: Refrigerant piping
7: Dual pressure switch
D: Defroster vents
E: Recirculation air inlet
F: Fresh air inlet
8: Sight glass
9: Air conditioner controller
10: Air conditioner unit
11: Recirculation air filter
12: Fresh air filter
13: Machine monitor
14: Sunlight sensor

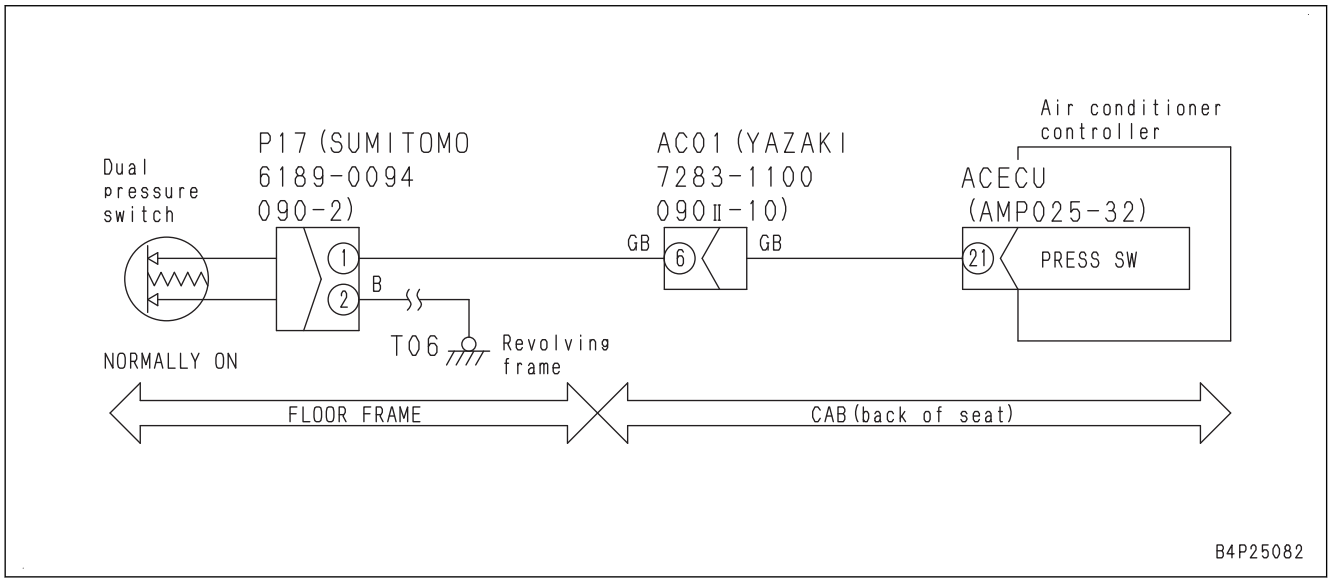
AC03: Air conditioner compressor connector


## Connector Layout of Outside Temperature Sensor

P18: Outside air temperature sensor connector



## Circuit Diagram Related to Refrigerant (Dual) Pressure Switch



# Electrical Circuit Diagram (11/12) (Machine with KOMTRAX Terminal) (Oceania Spec)

PC700LC-11

**REMARK**

This figure covers the equipment and devices that are unavailable as optional items in some areas.