SEN00986-11

Shop Manual

BULLDOZER

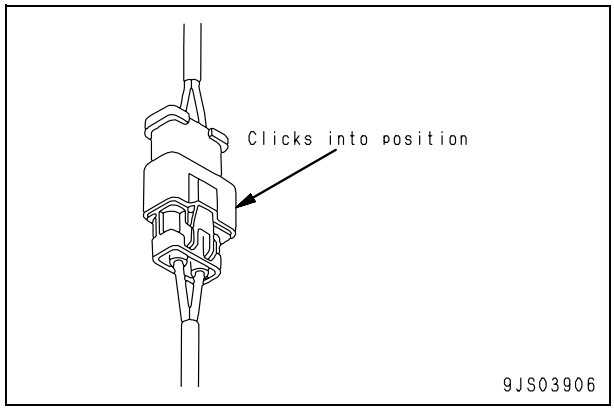
D375A-5E0

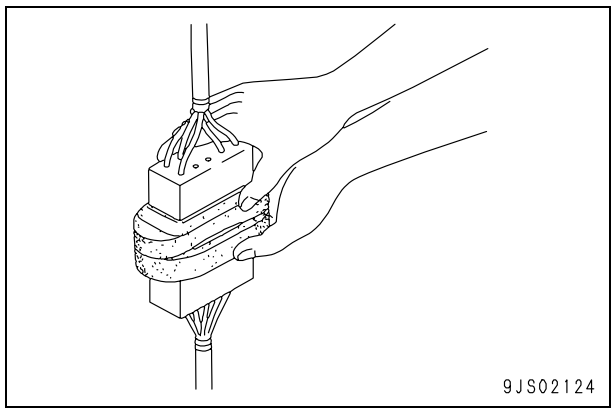
SERIAL NUMBERS 50001 and up

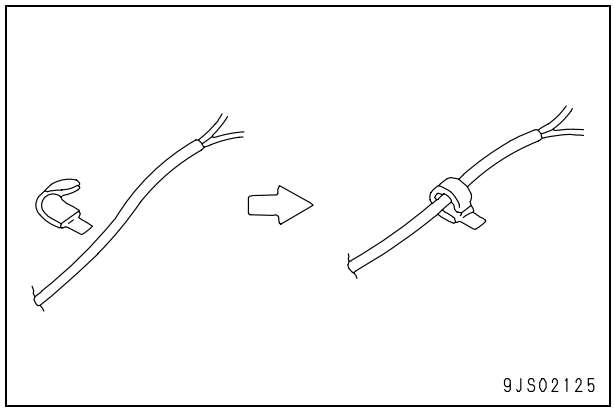
ecot3

KOMATSU

2) Connecting connectors
   1] Check the connector visually.
   Check that there is no oil, dirt, or water stuck to the connector pins (mating portion).
   Check that there is no deformation, defective contact, corrosion, or damage to the connector pins.
   Check that there is no damage or breakage to the outside of the connector.
   ★ If there is any oil, water, or dirt stuck to the connector, wipe it off with a dry cloth. If any water has got inside the connector, warm the inside of the wiring with a dryer, but be careful not to make it too hot as this will cause short circuits.
   ★ If there is any damage or breakage, replace the connector.
   2] Fix the connector securely.
   Align the position of the connector correctly, and then insert it securely. For connectors with the lock stopper, push in the connector until the stopper clicks into position.
   3] Correct any protrusion of the boot and any misalignment of the wiring harness.
   For connectors fitted with boots, correct any protrusion of the boot. In addition, if the wiring harness is misaligned, or the clamp is out of position, adjust it to its correct position.
   ★ If the connector cannot be corrected easily, remove the clamp and adjust the position.
   ● If the connector clamp has been removed, be sure to return it to its original position. Check also that there are no loose clamps.



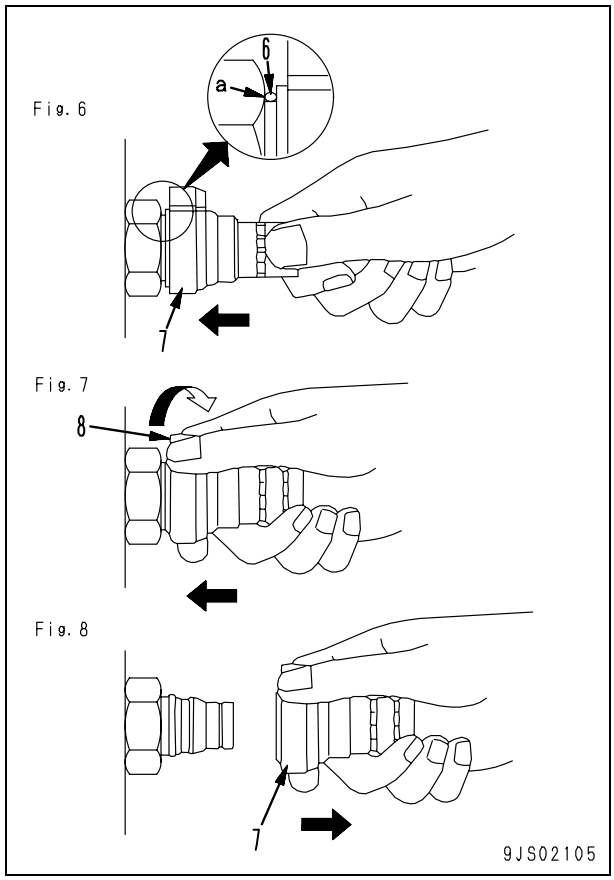




Type 2

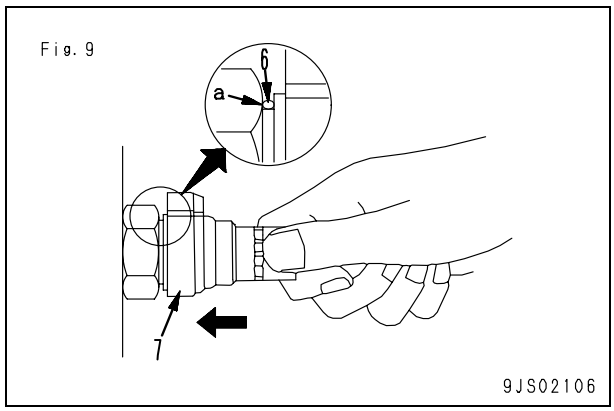
1. Disconnection

1) Hold the tightening portion and push body (7) straight until sliding prevention ring (6) contacts contact surface (a) of the hexagonal portion at the male end. (Fig. 6)
2) While holding the condition of Step 1), turn lever (8) to the right (clockwise). (Fig. 7)
3) While holding the condition of Steps 1) and 2), pull out whole body (7) to disconnect it. (Fig. 8)



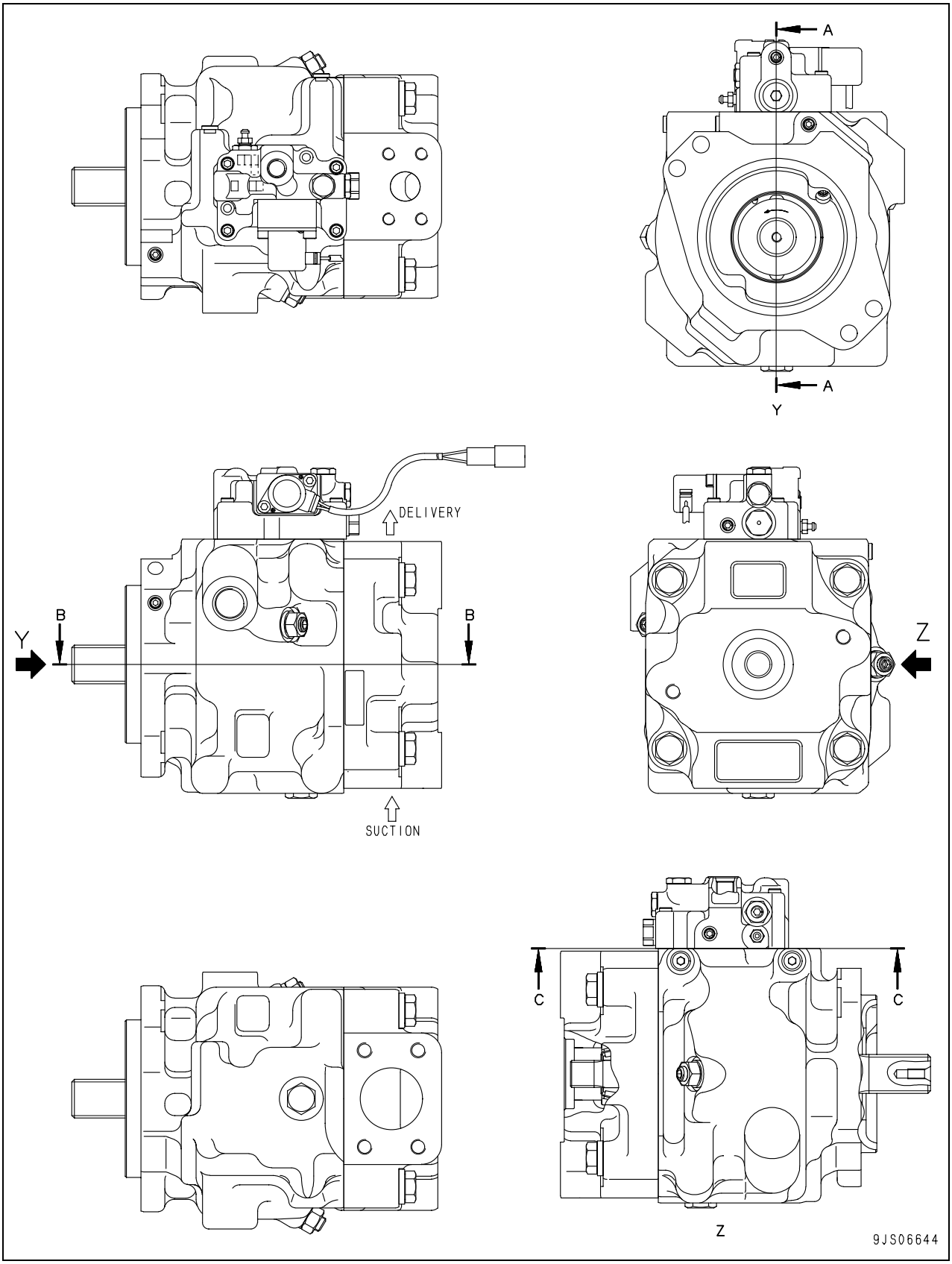
2. Connection

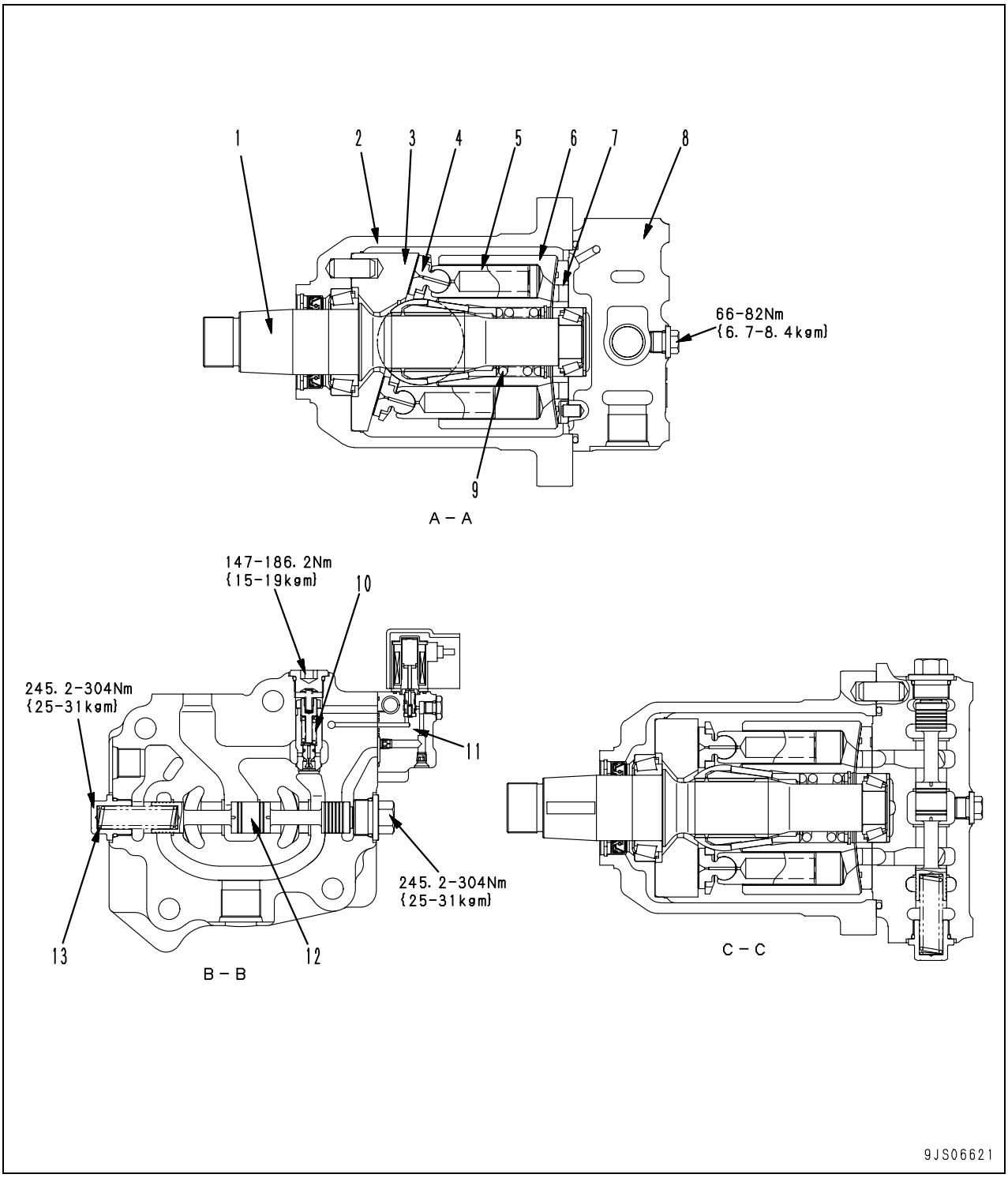
- Hold the tightening portion and push body (7) straight until sliding prevention ring (6) contacts contact surface (a) of the hexagonal portion at the male end. (Fig. 9)



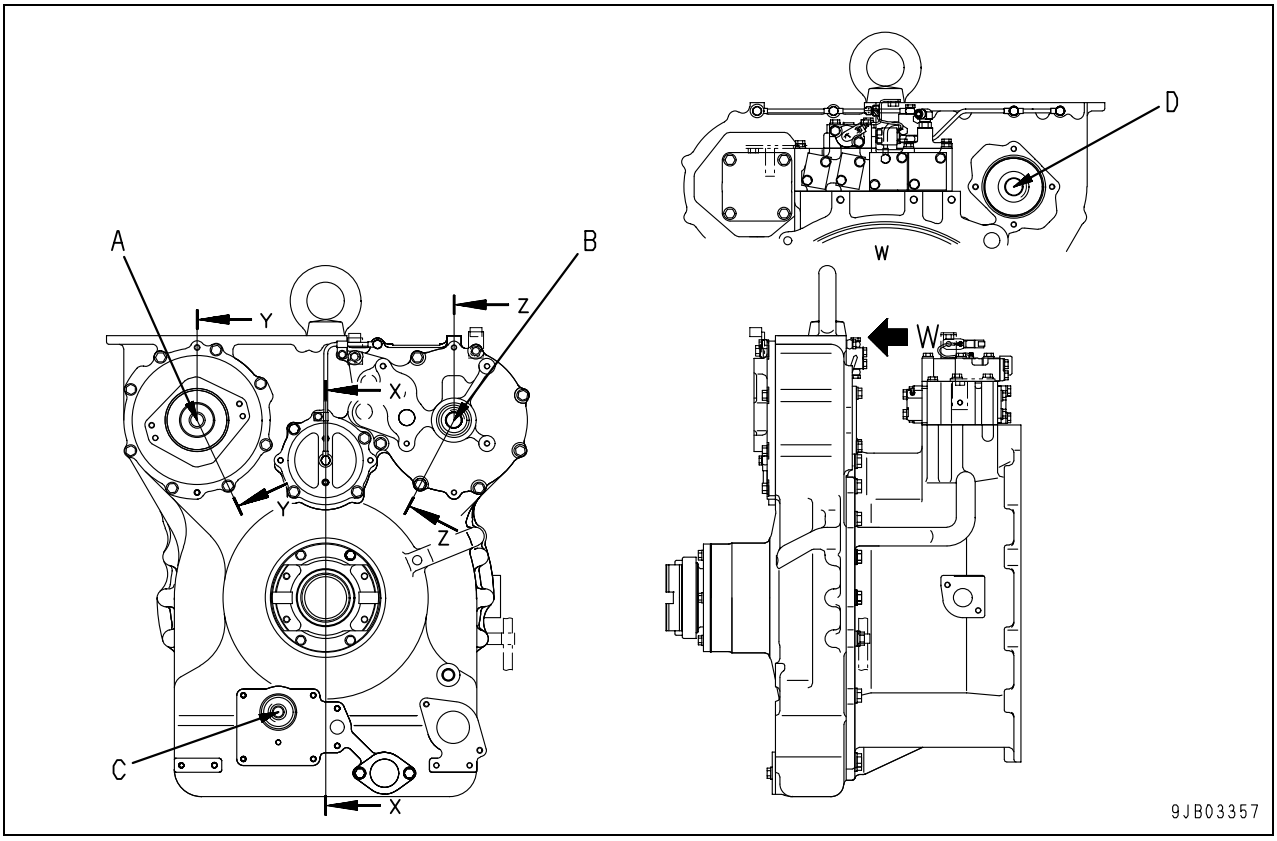
Machine model				D375A-5E0
Serial number				50001 and up
Engine	Name			SAA6D170E-5
	Type of engine			4-cycle, water-cooled, in-line vertical type, direct injection type with turbocharger and aftercooler
	Number of cylinders – Bore x Stroke		mm	6 – 170 x 170
	Piston displacement		ℓ {cc}	23.15 {23,150}
	Performance	Flywheel horsepower	kw {HP}/rpm	391 {525}/1,800
		Max. torque	Nm {kgm}/rpm	2,730 {278}/1,300
		Max. speed at no load	rpm	1,900
		Min. speed at no load	rpm	750
		Min. fuel consumption ratio	g/kw·h {g/HP·h}	208 {153}
	Starting motor Alternator Battery			24 V, 7.5 kW x 2 24 V, 60 A 12 V, 170 Ah x 2
	Radiator core type			Rectangle wave fin
Power train	Torque converter			3-element, 1-stage, 1-phase (with lockup clutch)
	Transmission			Planetary gear type, multiple disc clutch type, hydraulic actuation type, lubricating oil pump force-feeding type, forward 3-speed, reverse 3-speed
	Bevel gear shaft			Spiral bevel gear type, lubricating oil splashing type
	Steering clutch			Wet type, multiple disc clutch type, spring-boosted type, hydraulic actuation type (manual type), brake linkage type
	Steering brake			Wet type, multiple disc clutch type, spring-boosted type, hydraulic actuation type (foot operation, manual type), clutch linkage type
	Final drive			Spur gear 1-stage, planetary gear 1-stage deceleration type, lubricating oil splashing type
Undercarriage	Suspension Carrier roller Track roller			Rigid, balancing beam type 2 each side 8 each side
	Track shoe			Assembly type, single grouser, 41 each side, pitch: 280.0 mm, width: 610 mm
Power train + lubricating oil pump (tandem)				Gear type (BAL 180 + 112)
Scavenging pump (tandem)				Gear type (BAR 63 + 277)
Cooling fan pump			MPa {kg/cm²} ℓ/mm/rpm	Variable swash plate type: (LPV90+30) Max. diacharge pressure: 18.1 {184} Logical discharge pressure: 231/1,926
Cooling fan motor			MPa {kg/cm²}	Fixed swash plate type (LMF150) Max. allowable working pressure: 18.1 {184}

1. LPV90 Cooling fan pump




1
2
3
4
5
6
7
8
66-82Nm
{6.7-8.4kgm}
9
A – A
147-186.2Nm
{15-19kgm}
10
245.2-304Nm
{25-31kgm}
11
245.2-304Nm
{25-31kgm}
13
12
B – B
C – C
9JS06621

Torque converter, PTO



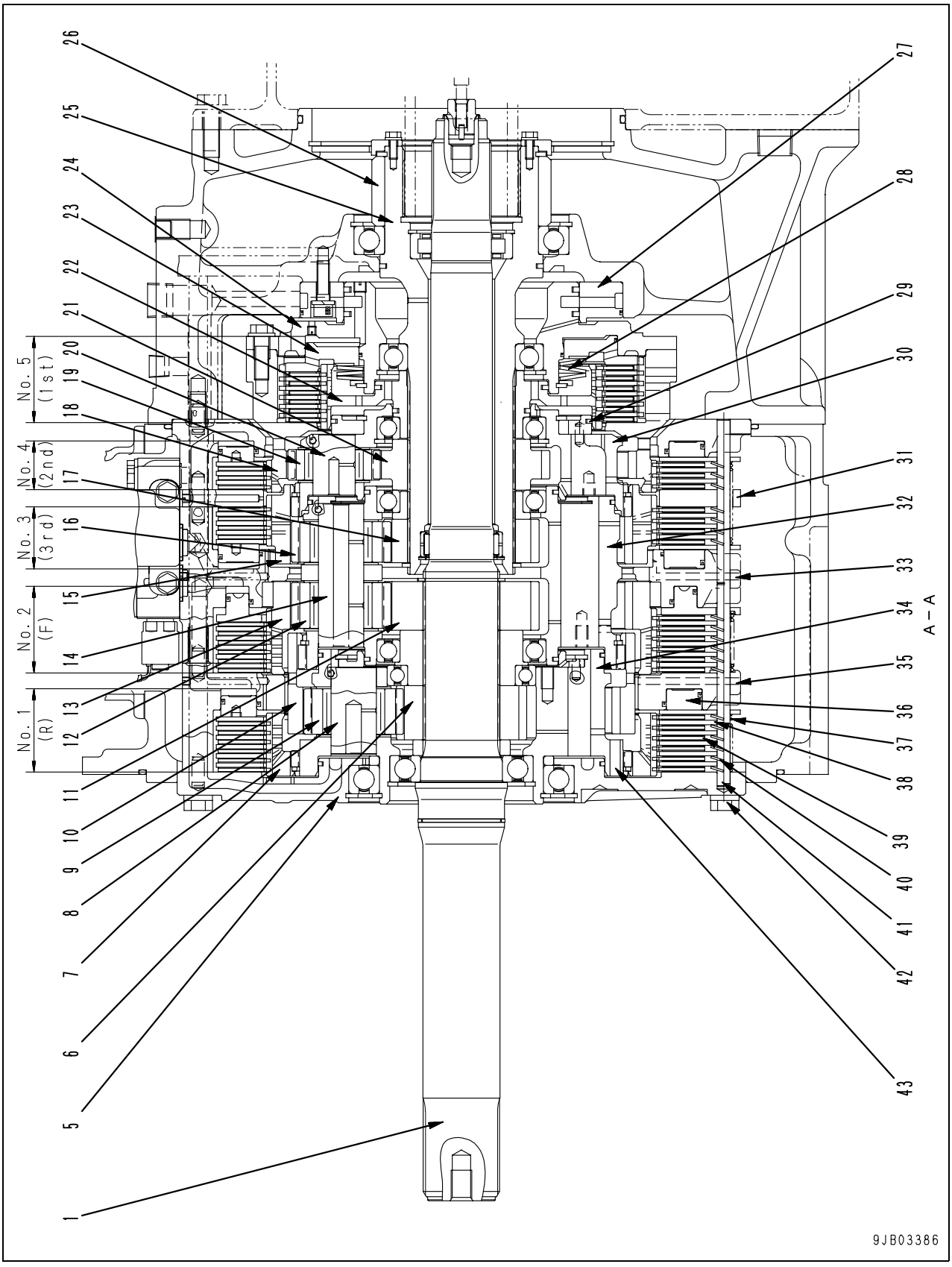
1. Coupling
2. Seal cage
3. Input shaft [PTO drive gear (61 teeth)]
4. Front housing
5. Idler gear (77 teeth)
6. Idler gear shaft
7. Clutch housing
8. Drive case
9. Turbine
10. Rear housing
11. Stator
12. Pump
13. Stator shaft
14. Bearing cage
15. Retainer
16. Shaft
17. Transmission input shaft
18. Stator clutch boss
19. Stator clutch housing
20. Return spring
21. Stator clutch plate
22. Stator clutch disc
23. Stator clutch piston
24. Turbine boss
25. Lock-up clutch disc
26. Lock-up clutch plate
27. Lock-up clutch piston
28. Scavenging pump gear (63 teeth)
29. Seal seat
30. Spacer
31. Cover
32. Cooling fan pump and hydraulic pump gear (57 teeth)
33. Power train pump gear (57 teeth)
34. Cover
35. Cover

A: Cooling fan pump mount
B: Power train pump mount
C: Scavenging pump mount
D: Hydraulic pump mount

- The lock-up "ON/OFF" operation is carried out when the sensor signal conforms to the conditions below. (It is not turned ON during gear shifting.)
  1. Conditions for "ON" (AND circuit)
     1) Not during gear shifting (The status that the clutch is completely engaged):
        The transmission controller recognizes the status.
     2) When the right-sided conditions for the ON rpm are conformed to:
        When the both above conditions 1) and 2) are conformed to.
  2. Conditions for "OFF" (OR circuit)
     1) During gear shifting (The status that the clutch is not completely engaged.)
     2) When the right-sided conditions for the OFF rpm are conformed to.

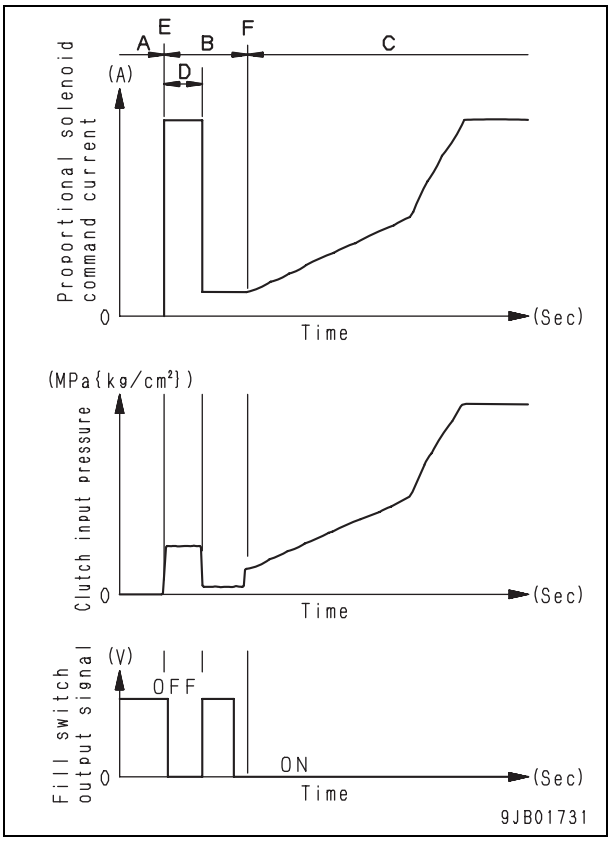
The status quo is maintained when the conditions of either 1 or 2 are not conformed to.

Gear speed / rpm			F1	F2, F3, R1, R2, R3
Rpm of torque convertor output shaft	Low speed side	ON	1,230 rpm or more	1,260 rpm or more
		OFF	1,200 rpm or less	1,230 rpm or less
	High speed side	ON	—	2,140 rpm or less
		OFF	—	2,200 rpm or more


No. 5 (1st)
No. 4 (2nd)
No. 3 (3rd)
No. 2 (F)
No. 1 (R)
A – A
9JB03386

Operation of ECMV

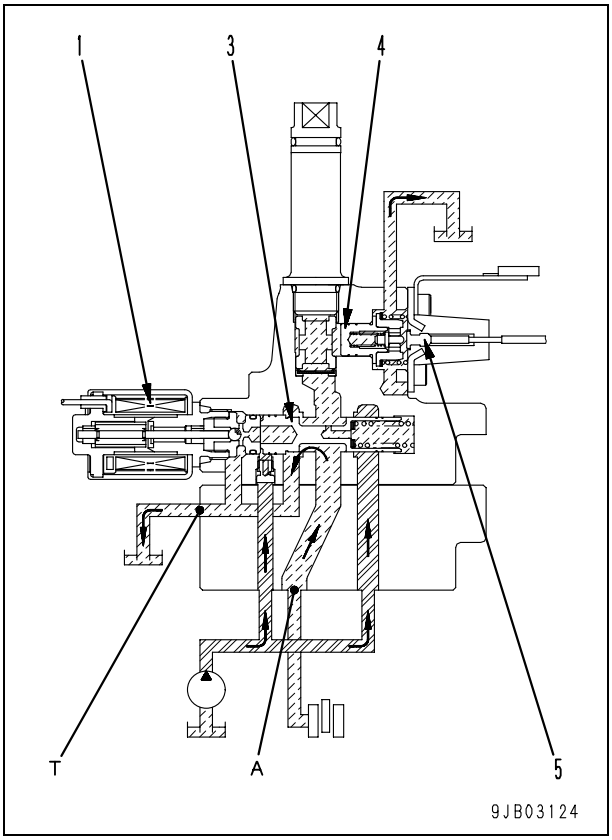
- ECMV is controlled with the command current sent from the controller to the proportional solenoid and the fill switch output signal.
  The relationship between the proportional solenoid command current of ECMV, clutch input pressure, and fill switch output signal is shown below.



Range A: Before shifting gear (When draining)
Range B: During filling
Range C: Pressure regulation
Range D: During filling (During triggering)
Range E: Start of filling
Range F: Finish of filling

★ The logic is so made that the controller will not recognize completion of filling even if the fill switch is turned "ON" during triggering (Range D).

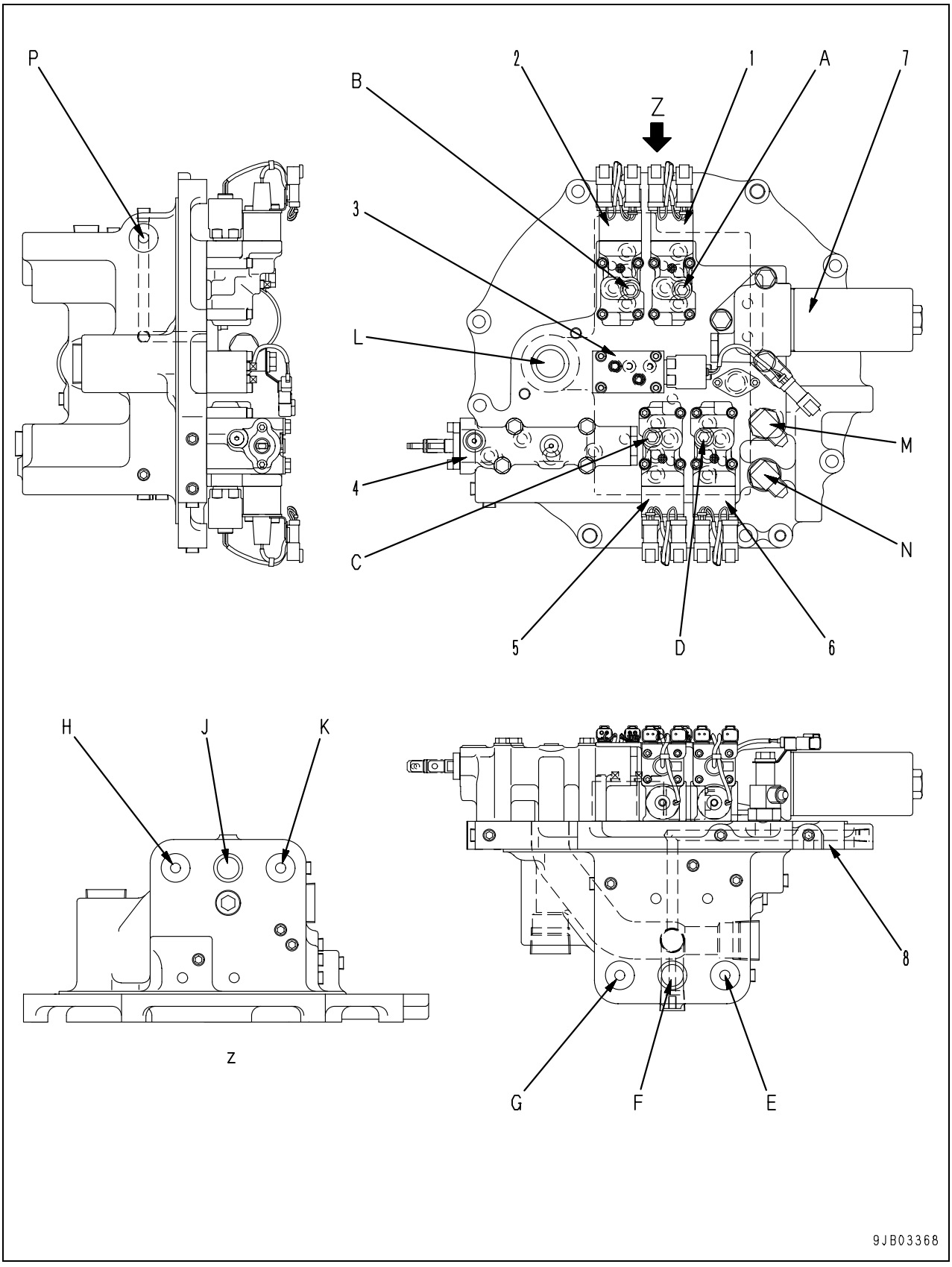
Before shifting gear (when draining) (Range A in chart)



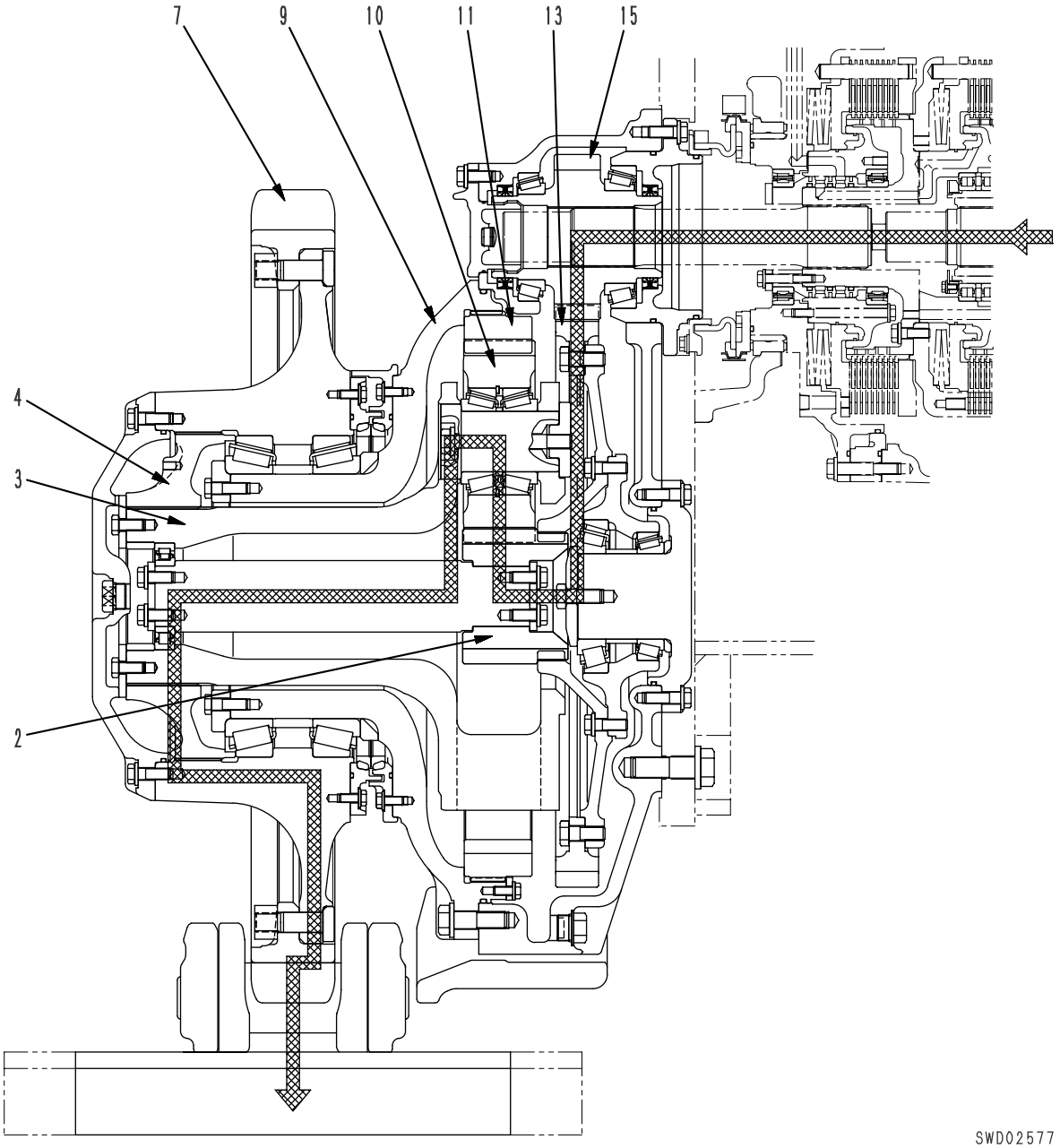
- Under the condition where any current is not sent to proportional solenoid (1), pressure control valve (3) drains the oil from clutch port (A) through drain port (T).
  Also at this time, fill switch (5) is turned "OFF" because oil pressure is not applied to pressure detection valve (4).

Steering ECMV

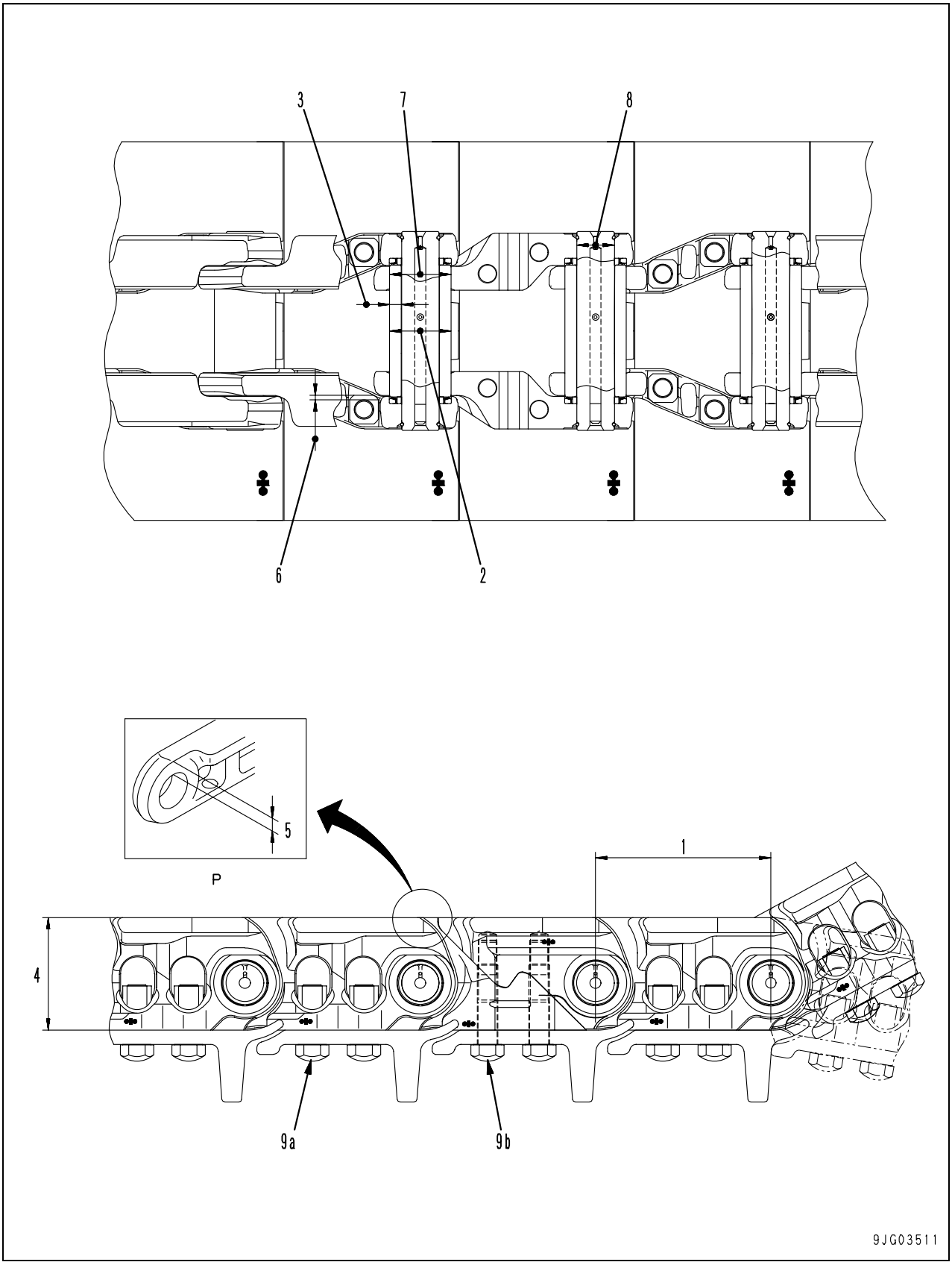
(Electronic Control Modulation Valve)



Path of power transmission



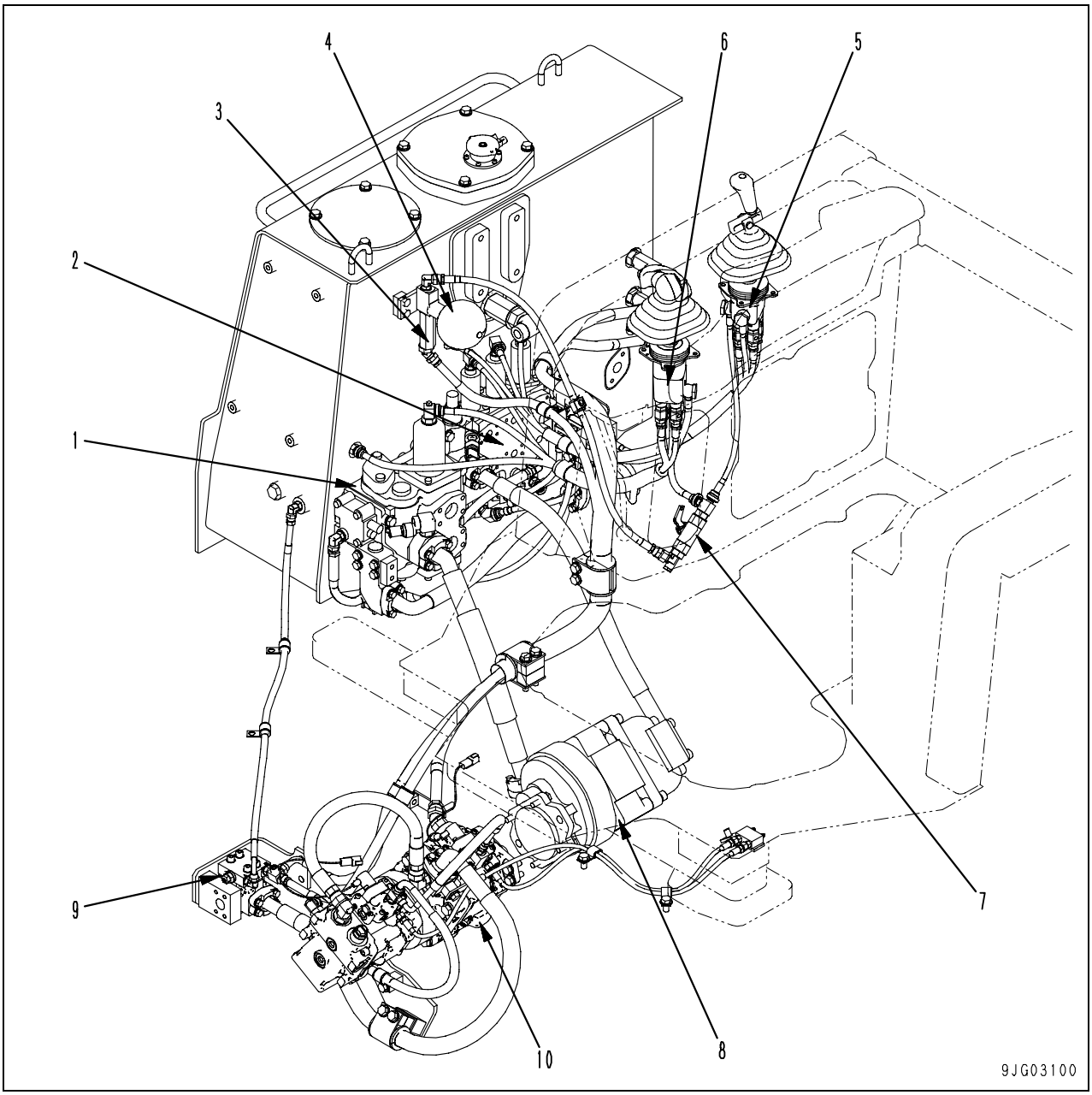
Track shoe



★ Portion P shows the link on the side where the bushing is pressed fitted.

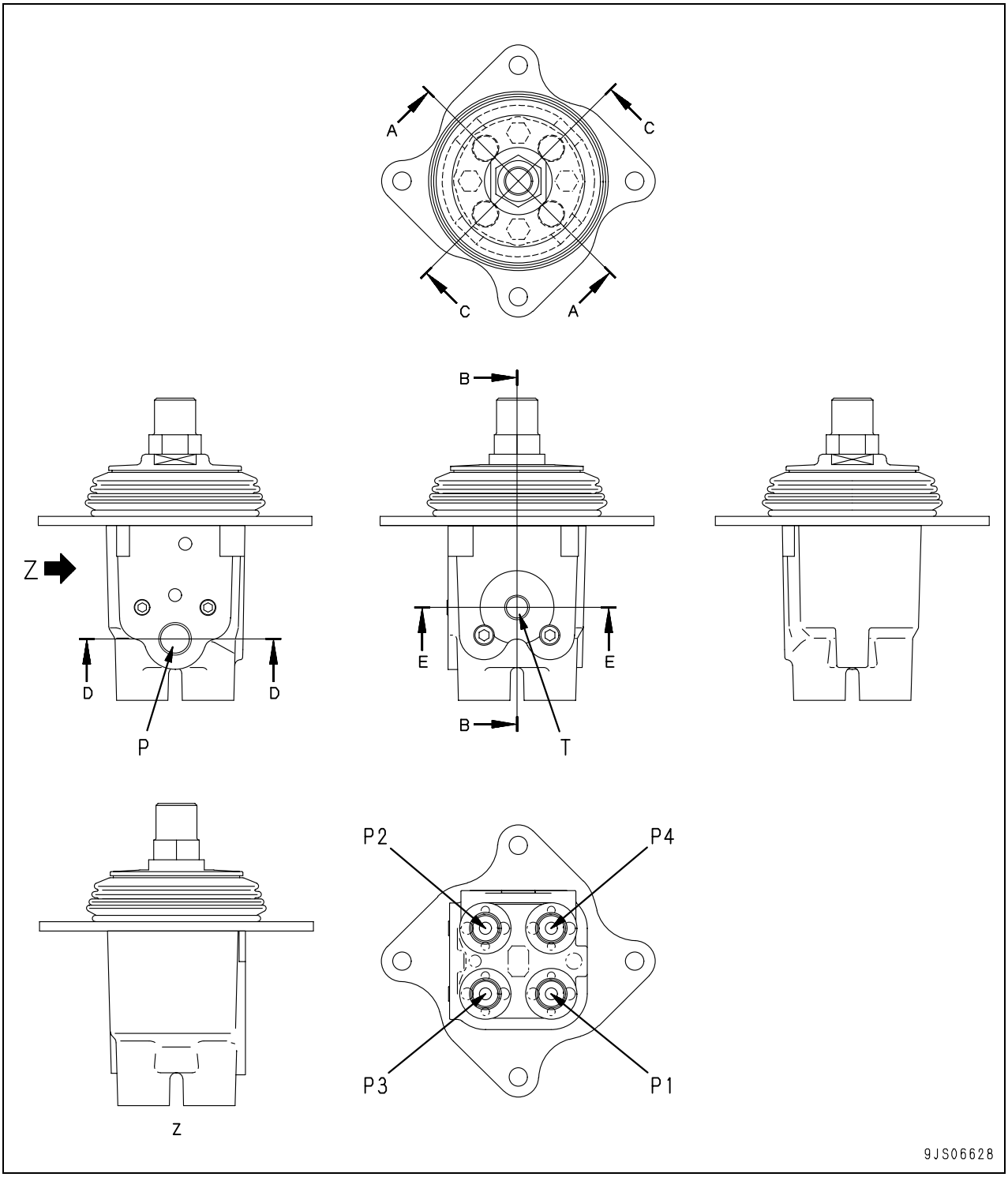
PPC control piping diagram

Blade, ripper control



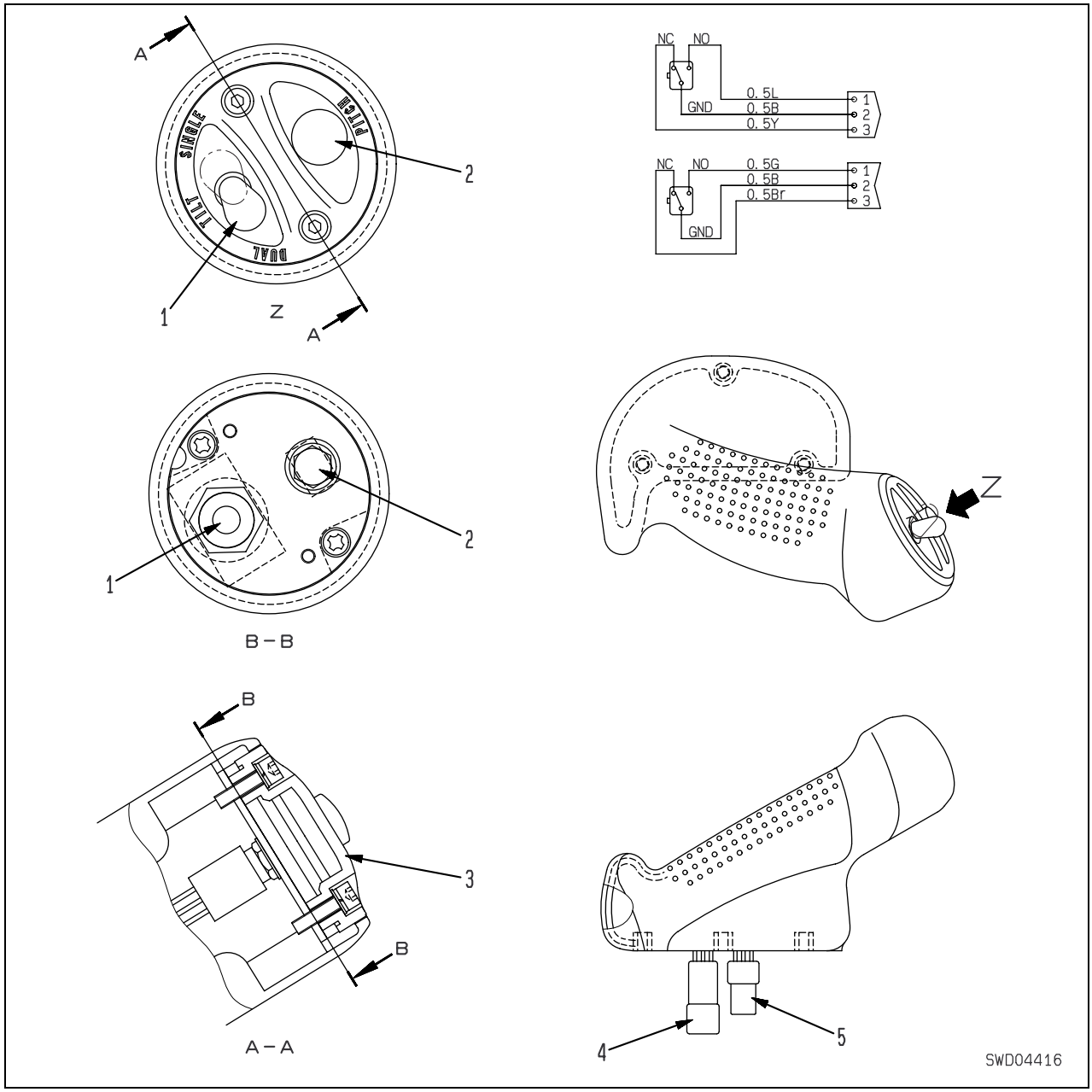
1. Blade lift valve
2. Blade tilt, ripper Lo valve
3. Check valve
4. Accumulator
5. Ripper control PPC valve
6. Blade control PPC valve
7. PPC lock valve
8. Hydraulic pump (SAR(4)140 + (3)071)
9. Self pressure reducing valve
10. Cooling fan pump (LPV90 + 30)

2. Ripper PPC valve



P : From self pressure reducing valve
P1 : To ripper tilt valve PPC port
P2 : To ripper tilt valve PPC port
P3 : To ripper lift valve PPC port
P4 : To ripper lift valve PPC port
T : To tank

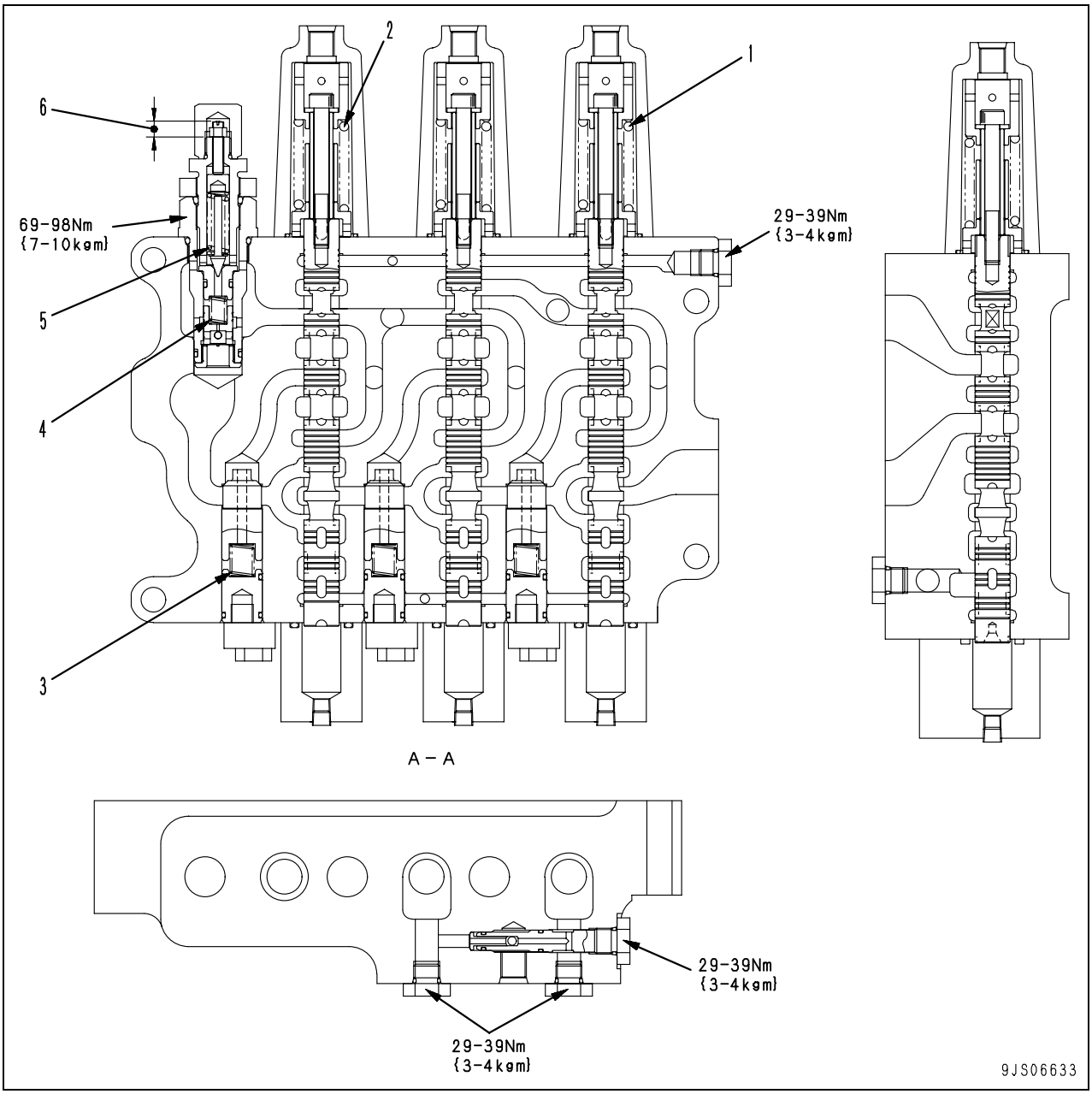
Blade control knob (Only the machine with dual tilt)



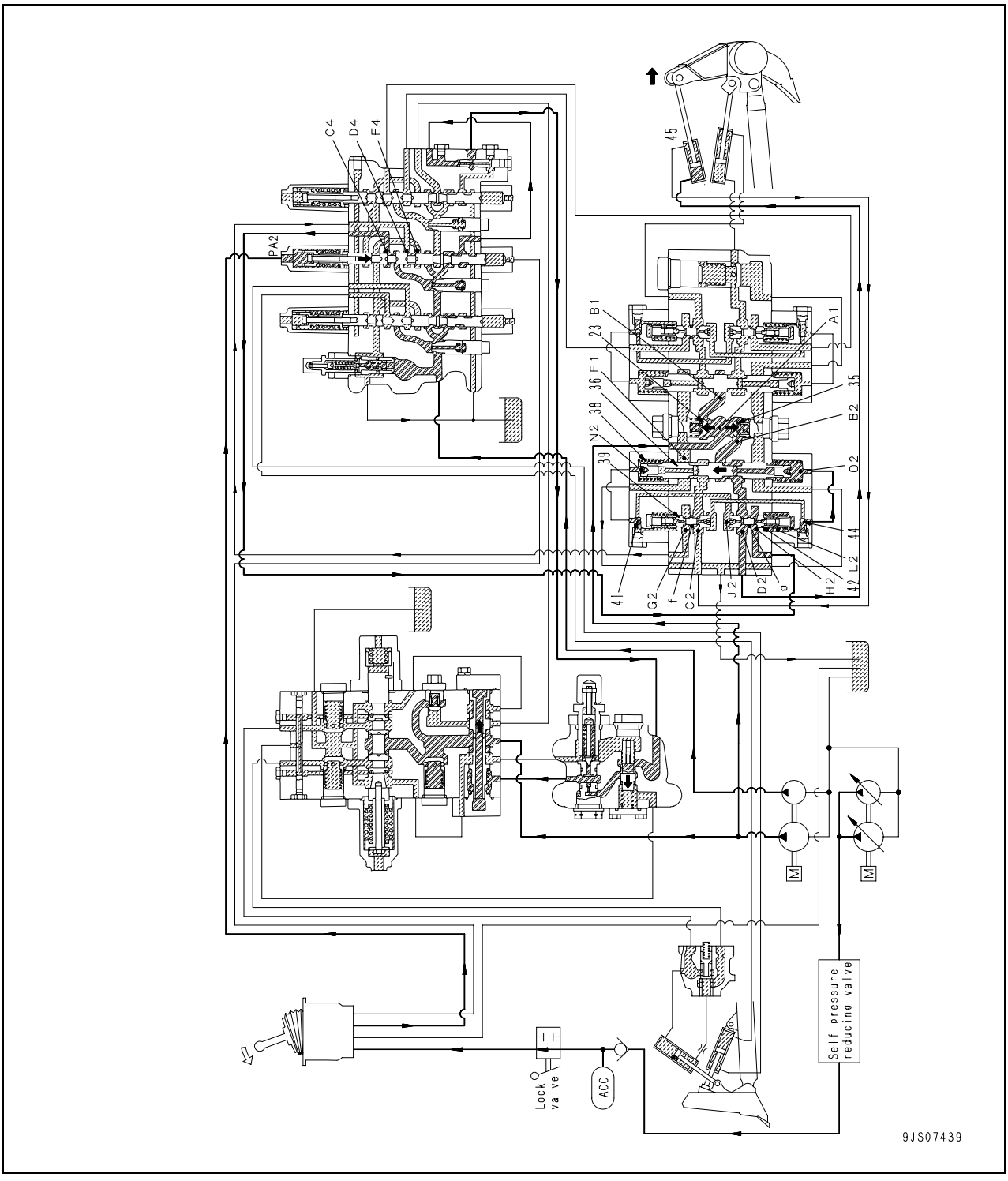
1. Switch (Dual, single tilt switching)
2. Switch (Pitch)
3. Cover
4. Connector (Male)
5. Connector (Female)

Outline

- By setting the blade control knob to the front and the rear or the left and the tight, the blade is raised or lowered and tilted left or right. Further, by setting the switch (1) to the "DUAL" side and setting the lever to the left and right, the dual tilt actuation is performed. Also by setting the lever to the left and right pressing (2), the pitch actuation is performed.
- When the switch (2) is pressed and the lever is actuated, the blade is pitched. When the lever is set to the left, the blade is pitched back. When the lever is set to the right, the blade is pitch-damped.
- When the switch (1) is set to the "DUAL" side and the lever is actuated, the blade is dually tilted. When the lever is set to the left, the blade is dually tilted left. When the lever is set to the right, the blade is dually tilted right.
- Even if the switch (1) is switched to either "DUAL" or "SINGLE", the blade is pitched when the lever is set left and right pressing the switch (2).

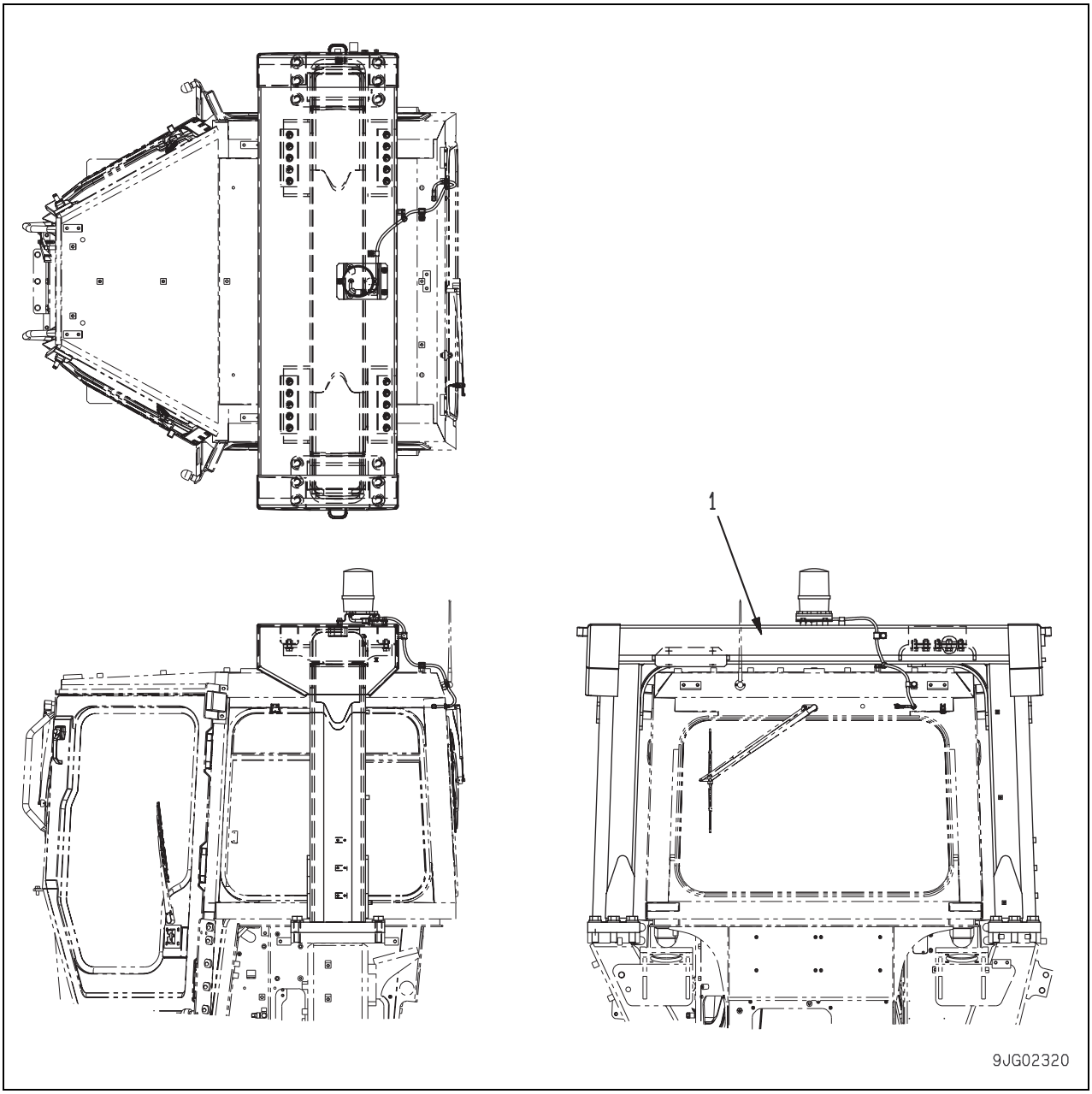

2
1
6
69-98Nm
{7-10kgm}
29-39Nm
{3-4kgm}
5
4
3
A – A
29-39Nm
{3-4kgm}
29-39Nm
{3-4kgm}
9JS06633

6. Ripper lever at TILT IN (ripper Hi valve actuated)



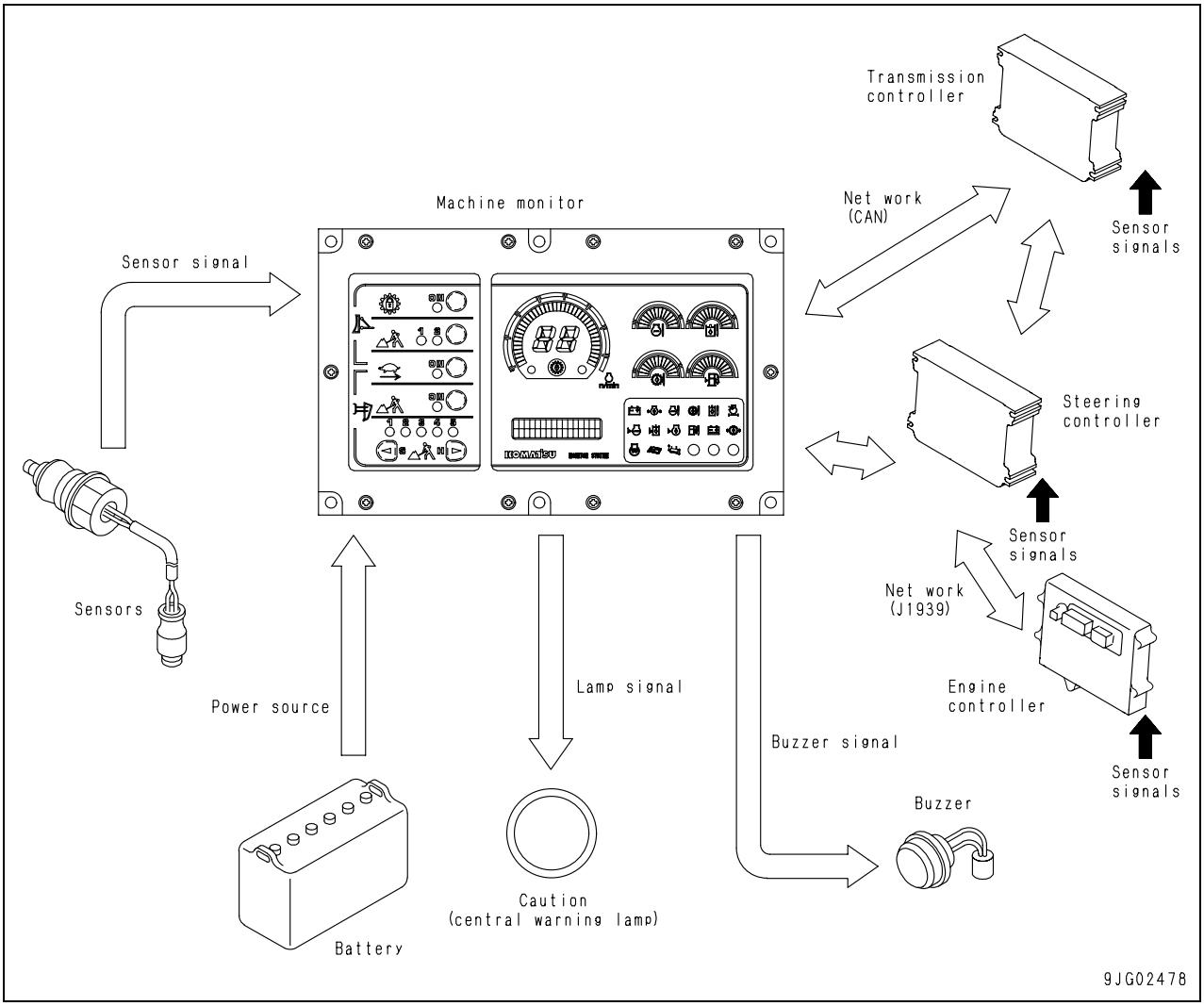
D375A-5E0 Bulldozer
Form No. SEN00998-01

ROPS guard



1. ROPS guard

Monitor system



Note

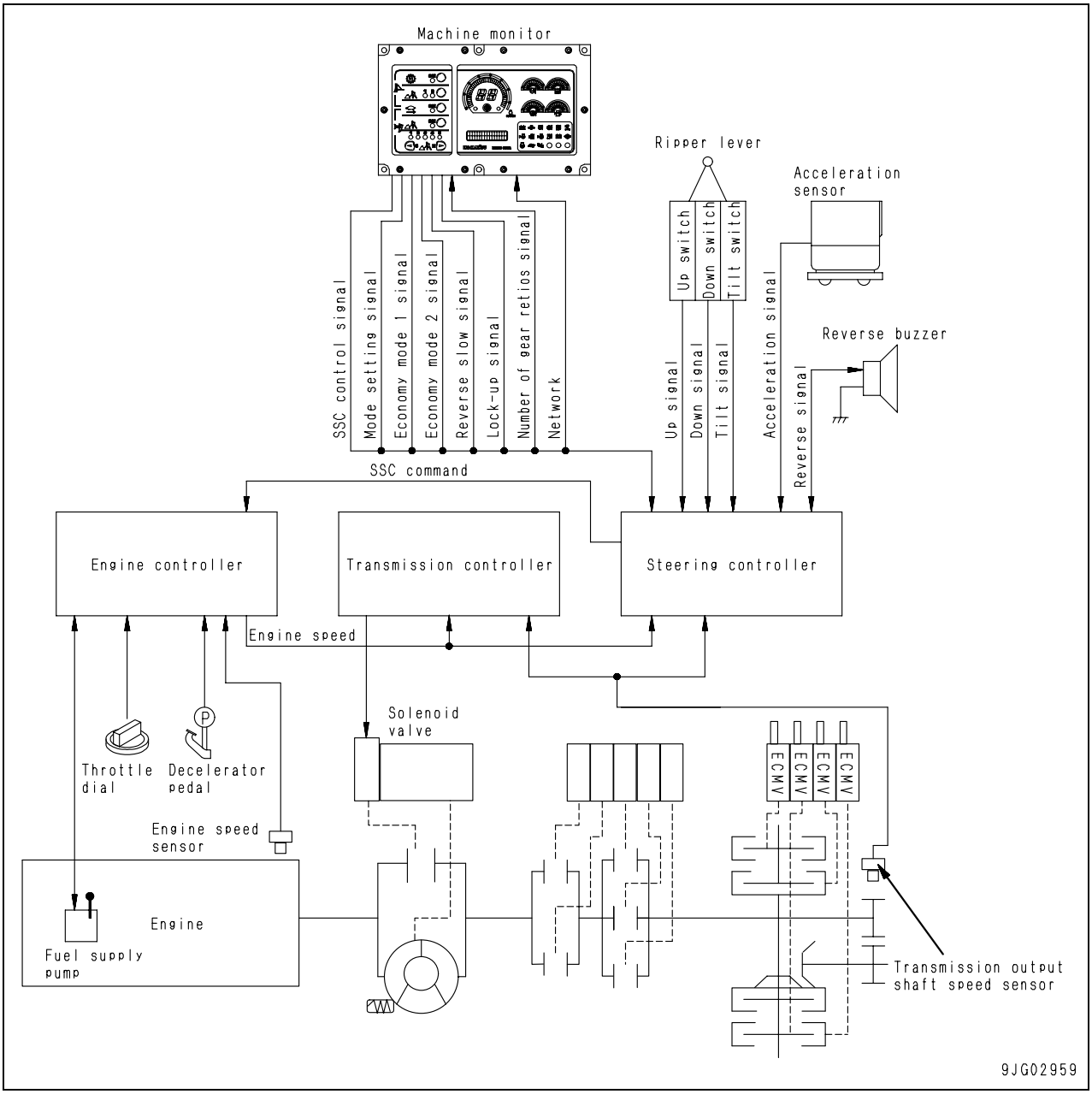
The machine monitor has the different thing of the design by a machine.
The details watch a clause of **Machine monitor**.

Outline

- The monitor system monitors the machine condition with the sensors installed to various parts of the machine and processes and displays the obtained information on the machine monitor quickly to notify the operator of the machine condition.
  The main display sections and functions of the machine monitor are as follows.
  1) Monitor unit which turns on the alarm when the machine has a trouble.
  2) Gauge unit which constantly displays the machine condition (coolant temperature, torque converter oil temperature, fuel level, etc.)
  3) Function of displaying error codes.
  4) Function of monitoring the current and voltage of the sensors and solenoids.
- In the machine monitor, there are various mode selector switches of the SSC (Shoe Slip Control), which are used to operate the machine control system.
- The machine monitor has functions of displaying data and selecting the SSC mode.
  The CPU (Central Processing Unit) in it processes, displays, and outputs the information. The display unit is LCD (Liquid Crystal Display) and the switches are seat switches.

Mode selection system

System diagram



Note

The machine monitor has the different thing of the design by a machine.
The details watch a clause of **Machine monitor**.

Outline

- The mode selection system automatically carries out engine control to match the operating mode selected by the operator, and acts to reduce fuel consumption, extend the life of the track shoes, and reduce the frequency of operation of the deceleration.
- The following engine control modes are available; Economy mode control used for dozing, SSC used for ripping, reverse slow mode control for both dozing and ripping, and lockup control to select the direct drive or torque converter drive.

Atmospheric temperature sensor

Specifications

Power consumption: Max. 0.5 mW

Pressure resistance: 0.98 MPa {10 kg/cm^2}

Sensed temperature range (ambient): –30 to +120°C

Storage temperature range: –50 to +140°C

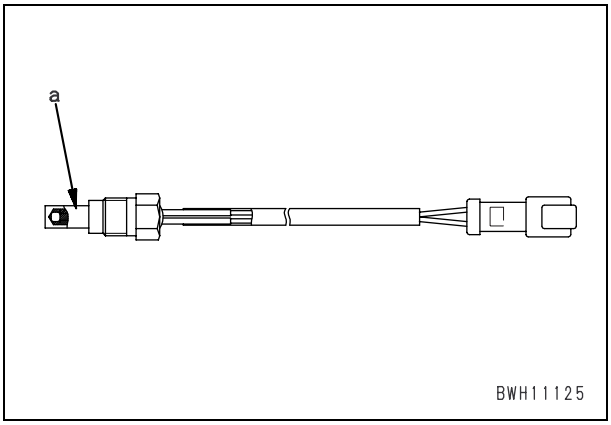
Performance table

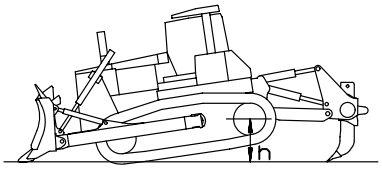
Sensed temperature (°C)	–20	–10	0	10	20	50
Resistance (kΩ)	30.32	18.58	11.74	7.623	5.077	1.712

a. Heat sensing part of sensor – Outside diameter of mounting part: 16 x 1.5

Function

The atmospheric temperature sensor inputs the change of the atmospheric temperature as the change of the thermistor resistance to the VHMS controller.



Machine model					D375A-5E0	
Category	Item		Measurement conditions	Unit	Standard value for new machine	Service limit value
Work equipment	Hydraulic drift	Hydraulic drift of chassis (Ripper lift)	 BWD10509 • Hydraulic oil temperature: 45 – 55°C • Engine stopped • Hydraulic drift for 5 minutes at center of sprocket (Change in height h)	mm	Max. 30/5 min	60/5 min
	Leakage in cylinder internal oil	Blade tilt cylinder	• Engine at high idle • Hydraulic oil temperature: 45 – 55°C • Measure oil leakage during 1 minute at cylinder relief	cc/min	Max. 3.0	12
		Ripper lift cylinder			Max. 3.6	12
		Ripper tilt cylinder			Max. 3.2	12

6) Start the engine.
7) Accelerate the engine suddenly or run at high idle, and depress the accelerator switch of smoke meter **C2** at the same time to collect the exhaust gas color on the filter.
8) Place the filter paper used to catch the exhaust gas color on top of at least 10 sheets of unused filter paper inside the filter paper holder, and read the value shown.
9) After completing the test, remove the testing equipment and set to the original condition.

Bleeding air from fuel circuit

★ Bleed air according to this procedure in the following cases.
- When the fuel filter was replaced
- When fuel ran out
- When starting the engine for the first time after replacing the fuel piping or supply pump

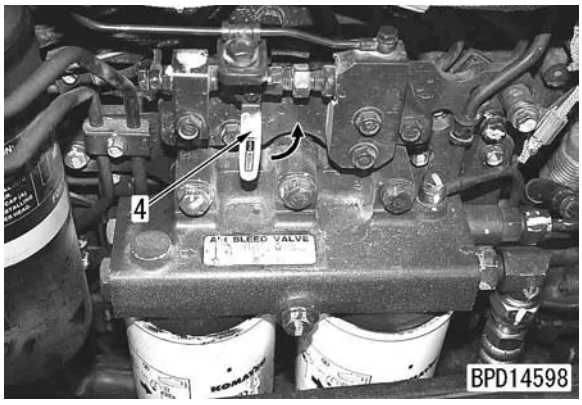
★ When the fuel filter is replaced, don't feed fuel to the filters, including both the main and prefilter.

⚠ **Pressure is constantly applied to the fuel circuit as long as operation of the electric priming pump is continued. Loosening the air bleeding plug from this state might allow fuel to burst out. Thus, don't try to loosen the plug while the pump is in operation.**

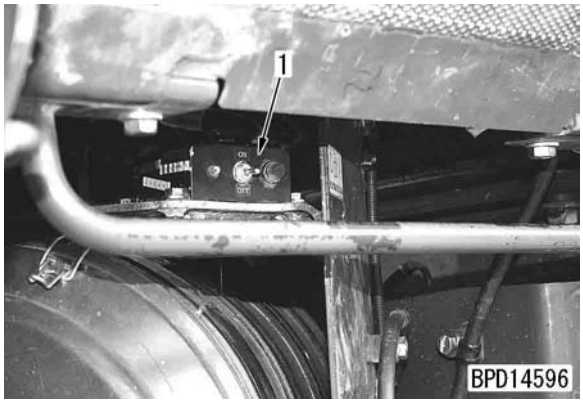
1. Set the starting switch to OFF position.

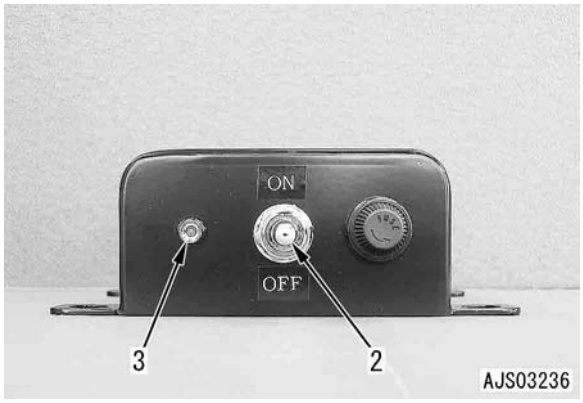
2. Open the engine left side cover.

3. Open air bleeder valve (4) on the prefilter head.
   ★ Turn the valve lever to the horizontal position.

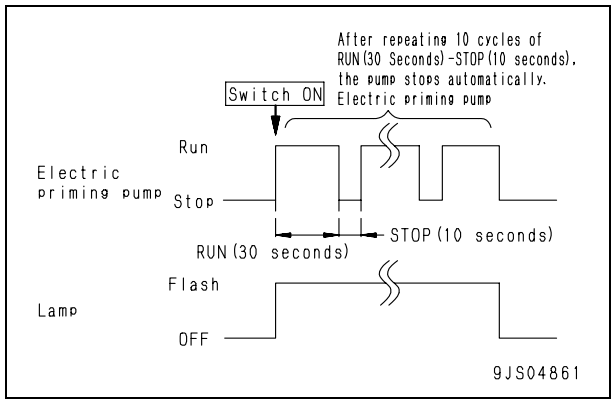


4. Set switch (2) of electric priming pump switch (1) installed in the engine compartment to the "ON" position.
   ★ Lamp (3) will start flashing and operation of the electric priming pump will be started.
   - Release switch (2), and it automatically returns to its original position.



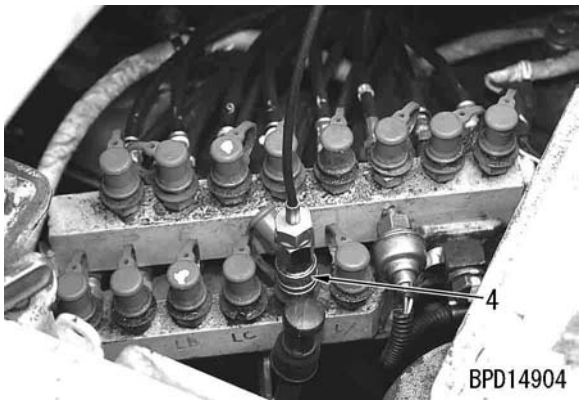


   ★ The built-in timer of this switch automatically starts or stops operation of the electric priming pump. (See the figure below)
   ★ Operation of the electric priming pump is stopped as long as flashing of the lamp is continued. It is not an error.
   ★ Shifting the switch to “OFF” while the lamp is flashing turns off the lamp and stops the electric priming pump, too.

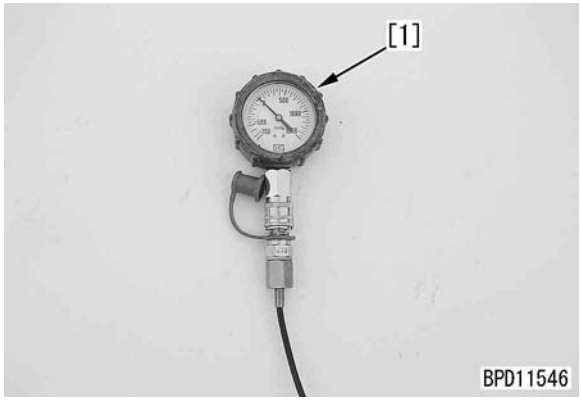


4. Testing torque converter stator clutch pressure (SC)

1) Connect oil pressure gauge [1] of hydraulic tester **K1** to oil pressure test nipple (4).
   ★ Use a 6 MPa {60 kg/cm^2} oil pressure gauge.



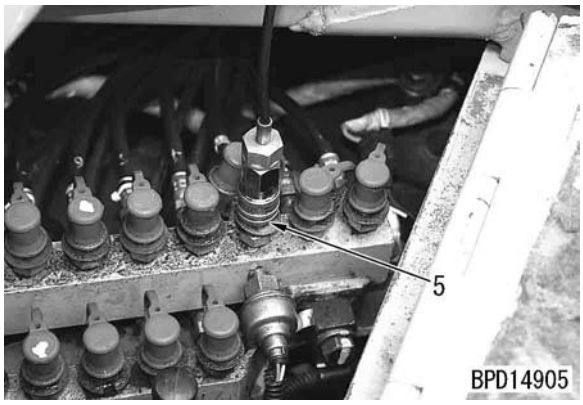
2) Start the engine and set all the functions of the PCCS lever to neutral.
3) Test the oil pressure with the engine at low idle and high idle.



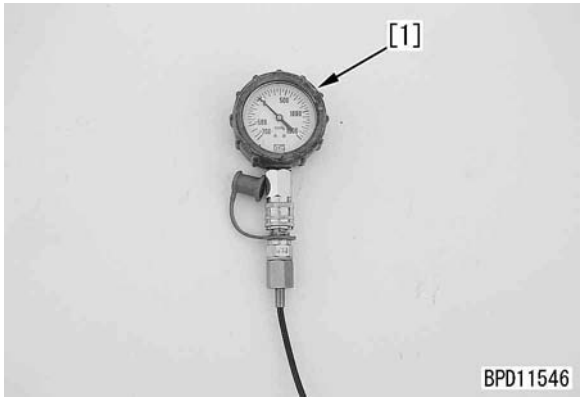
4) After completing the test, remove the testing equipment and set to the original condition.

5. Testing transmission main relief pressure (TM)

1) Connect oil pressure gauge [1] of hydraulic tester **K1** to oil pressure test nipple (5).
   ★ Use a 6 MPa {60 kg/cm^2} oil pressure gauge.



2) Start the engine and set all the functions of the PCCS lever to neutral.
3) Test the oil pressure with the engine at low idle and high idle.



4) After completing the test, remove the testing equipment and set to the original condition.

★ The transmission main relief pressure of the VHMS specification machine can be checked with "Monitoring mode: 43000" of the monitor panel.

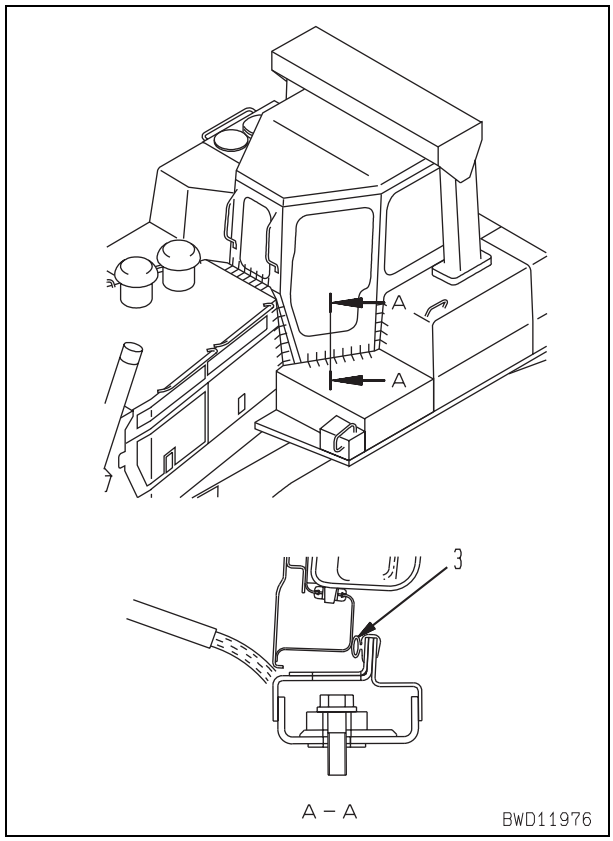
7) Tow the machine to a safe place.
   ★ The brake releasing oil pressure lowers gradually because of internal leakage and the brake is applied again about 1 minutes after. Accordingly, work quickly.
   ★ If the brake releasing pressure lowers to about 1.57 MPa {16 kg/cm^2}, the brake is applied. In this case, operate the volume pump again to raise the brake releasing pressure to the initial pressure.

Inspecting wear of sprocket

★ Use the "Full-scale dimensions drawing of sprocket profile" in "Sprocket" in "Structure, function, and maintenance standard" as a gauge for testing wear of the sprocket.
★ Make a copy of the "Full-scale dimensions drawing of sprocket profile" on a transparent paper or sheet and apply it directly to the sprocket to see if the sprocket can be used.

2. Check of sealing performance

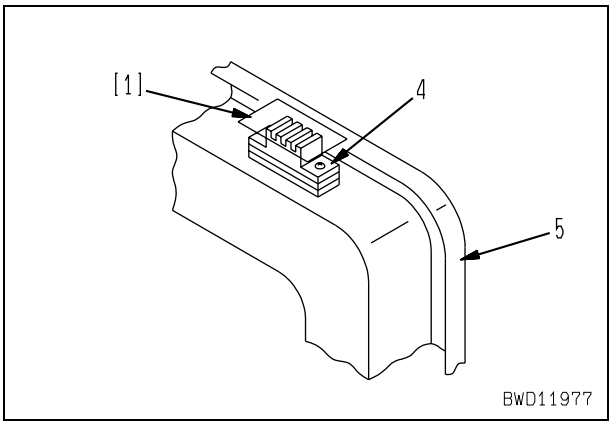
1) Close the all openings of the cab.
2) Splash coolant around the hatched part of the cab at the rate of about 19 ℓ/min for 10 minutes.
   - At this time, it is not necessary to splash pressurized coolant.
3) Splash coolant horizontally from a hose over sealing surface (3).
4) Check around the dashboard carefully.
   ★ If coolant leaks, caulk the leaking part and check again.



3. Testing door lock

Close the door and check the relationship between the operator's cab and door. If there is any fault, repair it.

1) Check of condition
   1] Check the installed height of damper rubbers (4). (Check 4 pieces on each side.)
      - Stick adhesive tape [1] to the contact face of damper rubber (4), open and close the door 2 – 3 times. Then, check the contact face of adhesive tape [1] against the operator's cab.
        Normal:
        When the door is closed, the damper rubbers come in contact lightly.
        Abnormal:
        When the door is closed, the damper rubbers do not come in contact or come in contact so strongly that the adhesive tapes are removed.

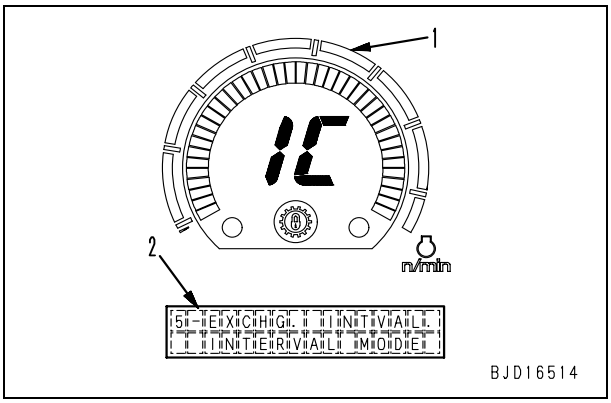


5. Maintenance interval change mode (5-EXCHG. INTVAL. INTERVAL MODE)

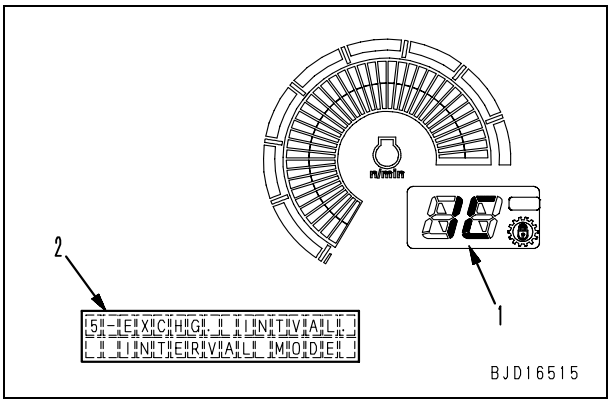
In this mode, you can check and set the maintenance interval times of various filters and oils which are the bases of the maintenance display function in the operator mode.

1) Selecting and executing mode
   1] Select "Maintenance interval change mode" on the mode selection screen.
      ★ If the mode is selected, code (1C) is displayed on gear speed display section (1) and the title is displayed on multi-information section (2).
   2] Display the maintenance item selection screen by operating buzzer cancel switch (4).
      ● [◇]: Execute mode.

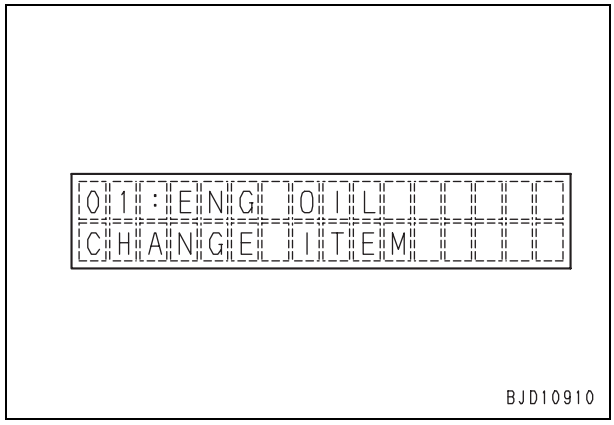
Serial No.: 50001 – 50090



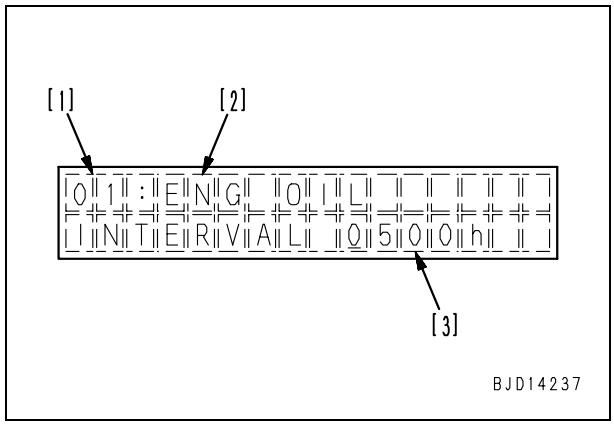
Serial No.: 50091 and up



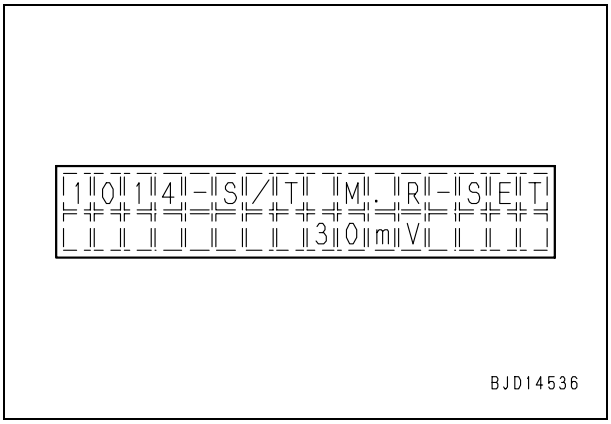
2) Selecting and displaying maintenance item
   1] Operate information switch (5) on the maintenance item selection screen to select a maintenance item.
      ● [>]: Next code
      ● [<]: Previous code
   2] Display the maintenance item selection screen by operating buzzer cancel switch (4).
      ● [◇]: Execute item.



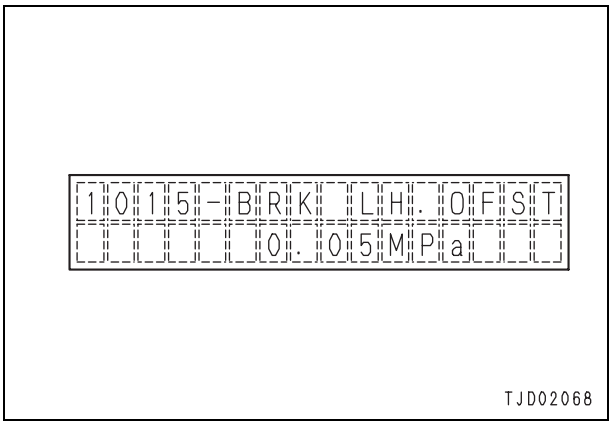
3) Contents of information section
   The following items are displayed on the information section.
   (1) Code
   (2) Maintenance item
   (3) Replacement interval time (Set time)
   ★ The items shown below are examples.
   ★ If the replacement interval does not need to be changed, finish the operation on this screen.
   ★ If the replacement interval needs to be changed, go to step 4).

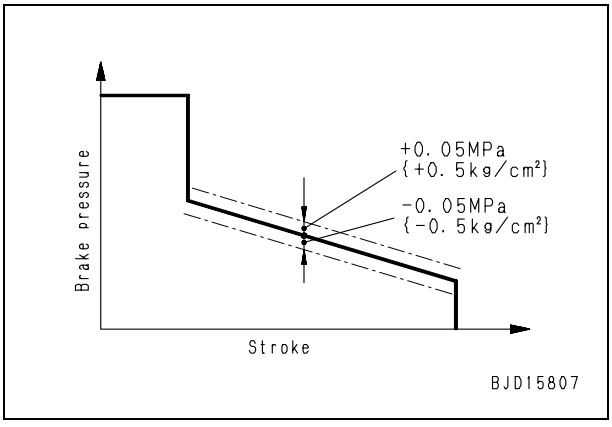


[15] **1014**: Steering lever right set
- This code is used to adjust the maximum right steering position of the PCCS lever.
- The deviation of the steering potentiometer from the standard maximum right position is displayed by voltage on the lower line (Display range: -2500 – 2500 mV).
- Adjustment method:
  1) Set the PCCS lever to the right steering stroke end.
  2) Set buzzer cancel switch (4) in the [◇] position and check that the caution buzzer sounds.
  ★ Even if adjustment is carried out, the display on the lower line does not change.
  ★ Even if this code is turned off, the setting is effective.
  ★ This code is not for adjusting the steering performance.



[16] **1015**: Left brake oil pressure offset
- This code is used to adjust the left brake oil pressure manually.
- The offset oil pressure (Unit: MPa) is displayed on the lower line (If it has been adjusted, its value is displayed. It can be adjusted further within the allowable range).
- Adjustment method:
  ★ The allowable adjustment range is ± 0.3 MPa {3 kg/cm²} (Displayed value: 0.3)
  1) Operate the shift switch to set the offset oil pressure.
     - Shiftup switch (6): Increase oil pressure
     - Shiftdown switch (7): Decrease oil pressure
     ★ The offset pressure is increased or decreased by 0.05 MPa {0.5 kg/cm²} (Displayed value: 0.05).
  2) Set buzzer cancel switch (4) in the [◇] position and check that the caution buzzer sounds.
  ★ Even if this code is turned off, the setting is effective.

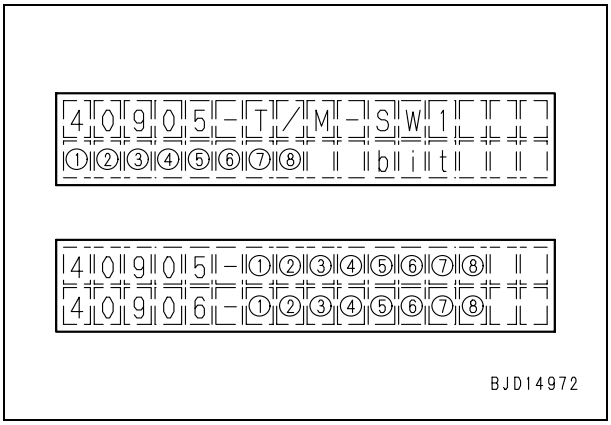




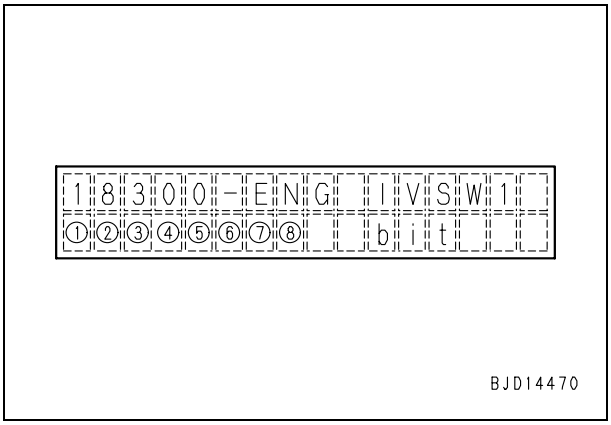
Detailed information on bit display codes

Examples of display of bit information

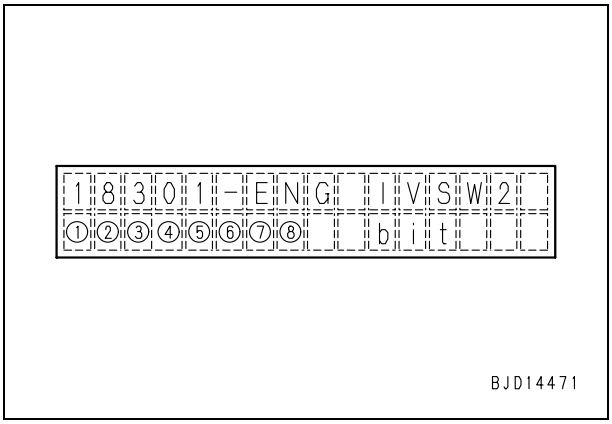
★ The display position of the bit information in the "Real-time monitoring mode (Display of only 1 item)" is different from that in the "Dual display monitoring mode (Simultaneous display of 2 items)".
★ The bit information is displayed by [_] for OFF and [o] for ON in the places 1 – 8.
★ The state of each item shown below is the condition for turning on the bit.



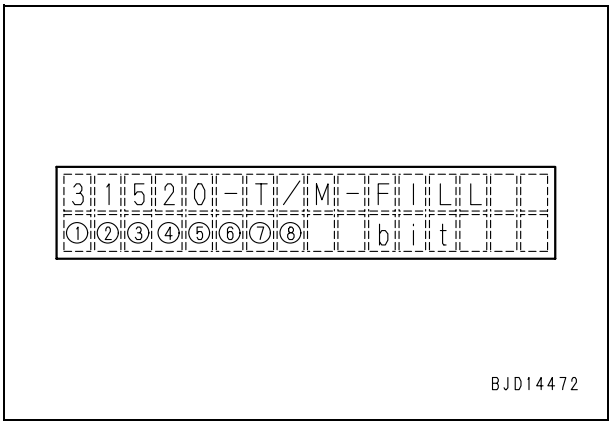
18300: Engine controller idle validation switch 1
1: Idle validation switch 1: ON
2: (Unused)
3: (Unused)
4: (Unused)
5: (Unused)
6: (Unused)
7: (Unused)
8: (Unused)



18301: Engine controller idle validation switch 2
1: Idle validation switch 2: ON
2: (Unused)
3: (Unused)
4: (Unused)
5: (Unused)
6: (Unused)
7: (Unused)
8: (Unused)

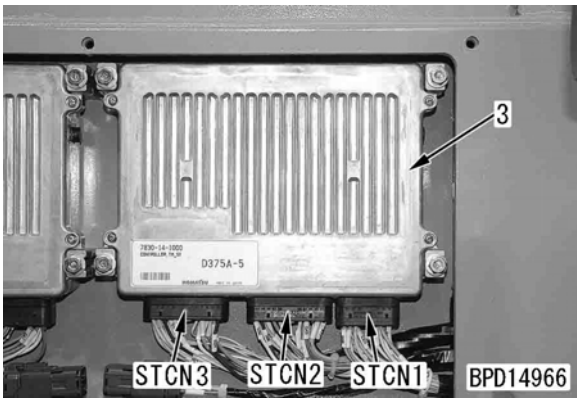


31520: Input state of transmission controller fill switch
1: Forward clutch fill switch: ON
2: Reverse clutch fill switch: ON
3: 1st clutch fill switch: ON
4: 2nd clutch fill switch: ON
5: 3rd clutch fill switch: ON
6: (Unused)
7: (Unused)
8: (Unused)

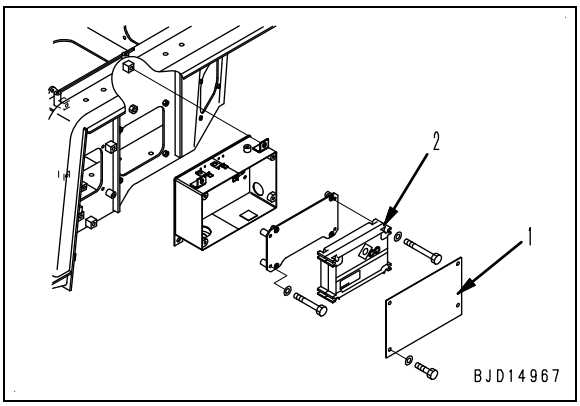


4. **Steering controller**
   1) Slide the operator's seat to the front end and fold the seat back forward.
   2) Remove cover (1).

   3) Insert or connect T-adapters in or to connectors **STCN1**, **STCN2**, and **STCN3** of steering controller (3).
      ★ If the connectors cannot be disconnected and connected easily, remove the controller from the floor flame.
      ★ Since the connectors are secured with screws, loosen those screws before disconnecting.
      ★ When connecting the connectors again, tighten their screws to the specified torque.
      Screw: **3 ± 1 Nm {0.3 ± 0.1 kgm}**



5. **VHMS controller**
   1) Open the floor left side cover and remove cover (1).
   2) Insert or connect T-adapters in or to connectors **V1**, **V2A**, **V2B**, **V3A**, **V3B**, **V4A**, and **V4B** of VHMS controller (2).
      ★ If it is difficult to remove and install the connectors, remove the controller for the ease of work.



6. **ORBCOMM terminal**
   1) Remove cover (1) on the right side of the floor.
   2) Insert or connect T-adapters in or to connector **KOM1** of ORBCOMM terminal (2).
      ★ If it is difficult to remove and install the connectors, remove the terminal for the ease of work.

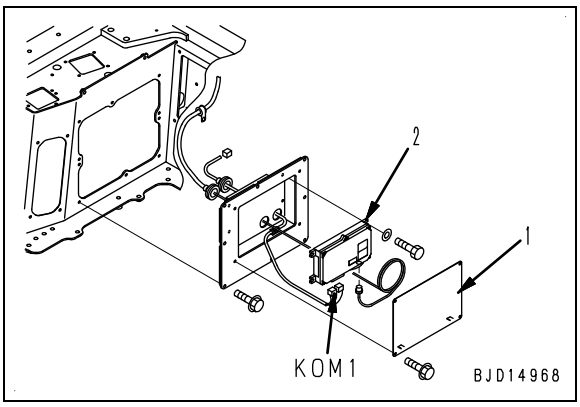


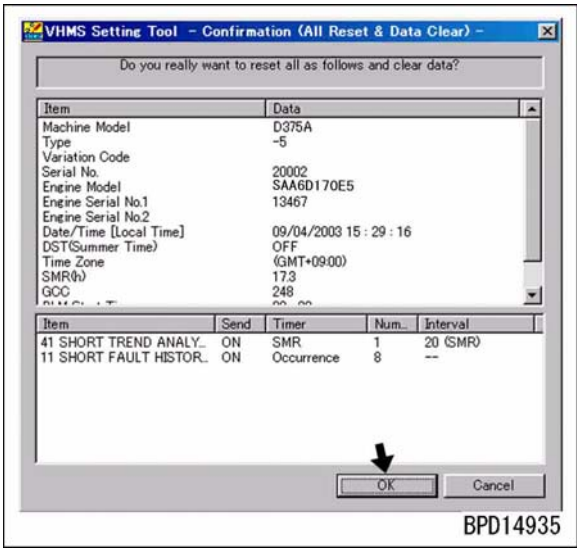
Table 1 Operations of machine to be executed while snap shot is operated

NO	Start	Finish	Time (sec)	Operation of machine							
				State of machine	Transmission	Steering	Work equipment	Fuel control dial	Decelerator pedal	Brake pedal	Parking brake
1	0:00	1:00	30	Low idle	N	LH	N	LOW	Released	Released	Released
2	1:00	2:00	30		N	RH	N	LOW	Released	Released	Released
3	2:00	3:00	30	High idle	N	N	N	HI	Released	Released	Released
4	3:00	4:00	30	Deceleration slow	N	N	N	HI	Pressed	Released	Released
5	4:00	4:30	29	Work equipment relief & high idle	N	N	Ripper lift	HI	Released	Released	Released
6	4:30	5:00	29	Work equipment relief & low idle	N	N		LOW	Released	Released	Released
7	5:00	5:30	29	Torque converter stall & low idle	N→F1→F2→F3→N→R1→R2→R3→N	N	N	LOW	Released	Pressed	Released
8	5:30	6:00	29	Torque converter stall (F3) & high idle (Note 1)	N→F3 (Shift to F3, then run engine at high idle)	N	N	HI	Pressed→Shift F3, then Released	Pressed	Released
9	6:00	6:30	29	High idle	N	N	N	HI	Released	Released	Released
10	6:30	7:00	29	Torque converter stall + Relief	N→F3 (Shift to F3, then run engine at high idle)	N	Ripper lift	HI	Pressed→Shift F3, then Released	Pressed	Released
11	7:00	7:30	29	High idle→ low idle (Note 2)	N	N	N	HI →LOW	Released	Released	ON

(Note 1): Press the brake pedal fully and shift the gear to F3, then run the engine at full throttle.
(Note 2): Keep running the engine at low idle until the oil temperature is lowered to the normal level.

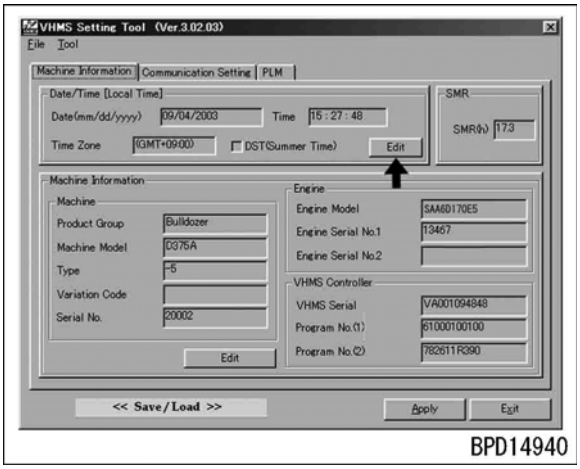
* While the torque converter is stalled and the 1st gear speed is selected, do not heighten the engine speed to high idle.
* After stalling the torque converter, watch the power train oil temperature gauge and take care not to overheat the power train oil.
(The torque converter stall time of 30 seconds is a reference time. When the power train oil temperature gauge reaches the top of the green range, return the transmission to the N (Neutral) position and run the engine at high idle to lower the oil temperature.)

4) The saved information is displayed. Press the "OK" button.

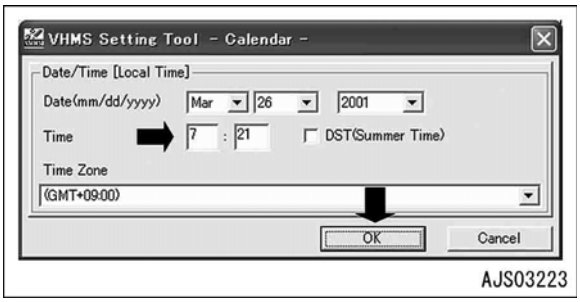


5) The saved information is displayed on another screen.

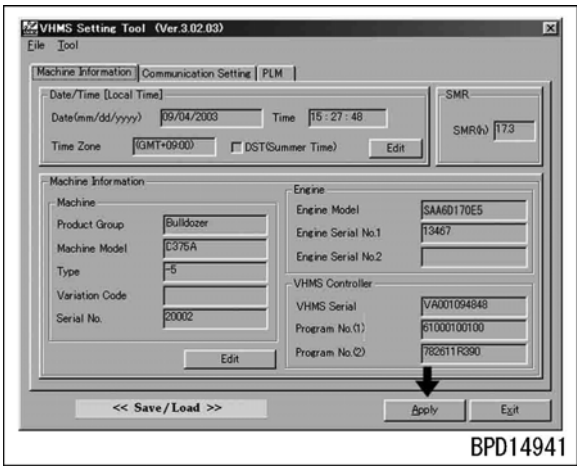
6) Press the [Edit] button to set the time.

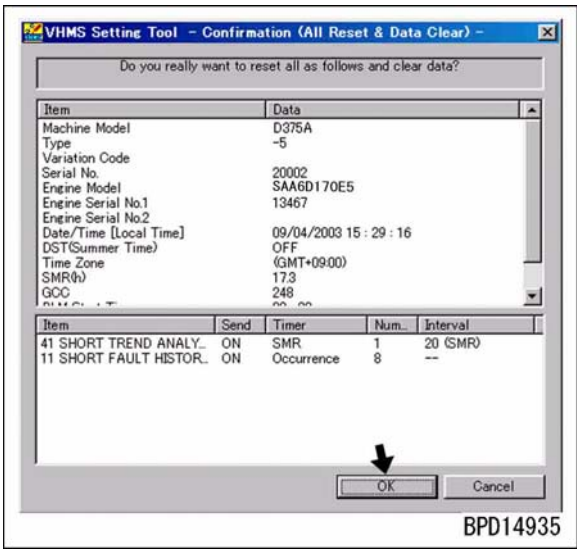


7) After setting the time, press the "OK" button.



8) Press the [Apply] button, and the contents of the setting are displayed. Check the contents again and press the [OK] button if there is not a problem.



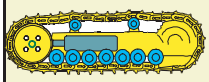


UNDERCARRIAGE TROUBLESHOOTING REPORT (IMPACT)
(8-roller specification machin)

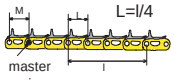
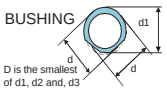
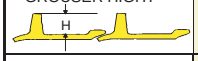
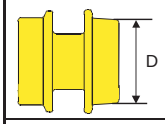
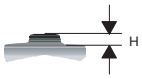
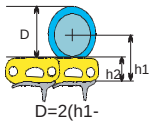
(Program form No.: SELA195001)

KUC

Komatsu
Undercarriage Inspection



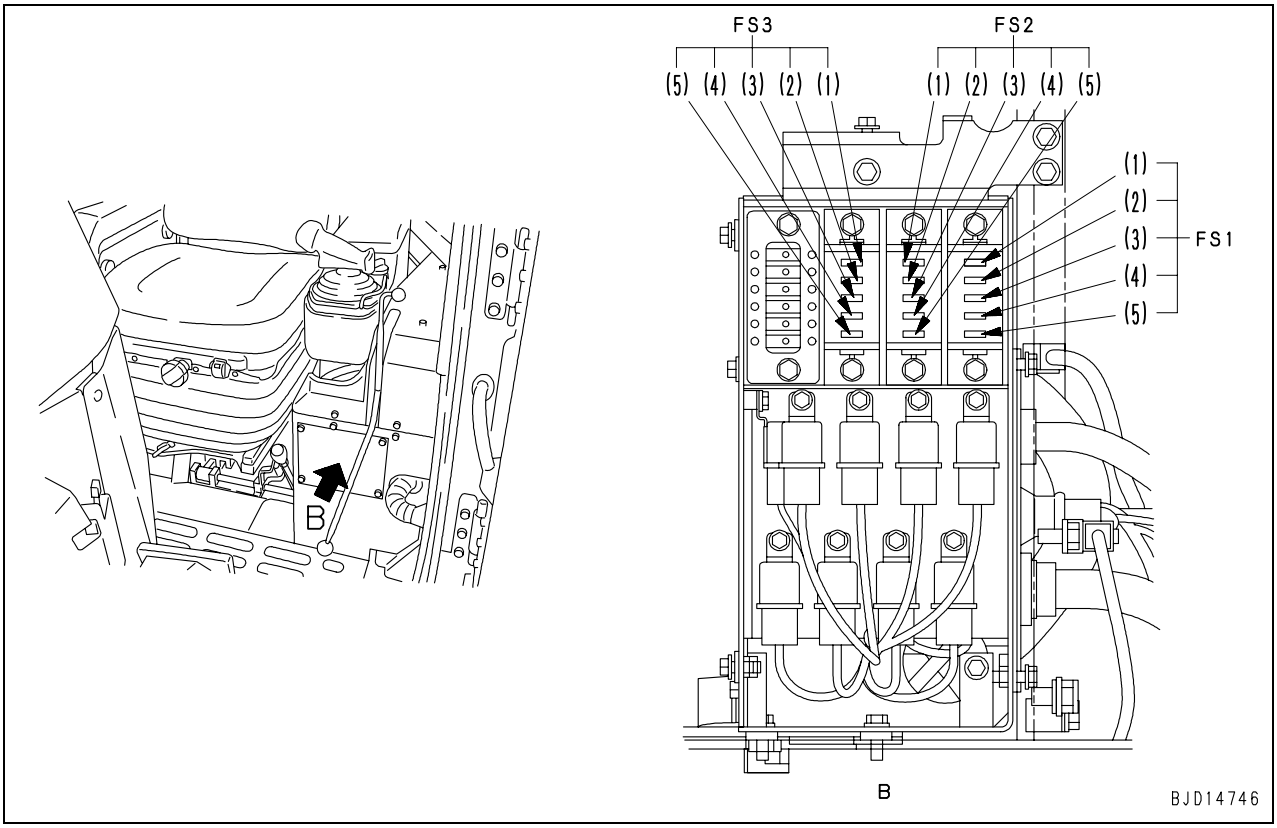
Customer name:			
Address:			
Model	D375A-5E0	Serial#	Equip#
Location		SMR	
Soil condition		Dealer	
Working condition		Inspector	
Insp.Date(yy/mm/dd)			(yyyy/m/d)
Work Order No			
Wet,AR,HD or Dry	Wet		
Shoe width (mm)			
Shoe type	SINGLE		
Wear type	IMPACT		

			New	100% Wear	Measured mm	Wear %	SMR New	SMR Rebuilt	Hours on Parts:	Comments/Observation
LINK PITCH 	R	LH	1121.2	1133.2						
		RH	1121.2	1133.2						
	M	LH	280.30	283.30						
		RH	280.30	283.30						
		LH	181.0	163.0						
		RH	181.0	163.0						
BUSHING 		LH	98.5	92.5			New	Turned		
		RH	98.5	92.5			New	Turned		
GROUSER HIGHT 		LH	93.0	30.0						
		RH	93.0	30.0						
CARRIER 	Front	LH	210.0	185.0						
		RH	210.0	185.0						
	Rear	LH	210.0	185.0						
		RH	210.0	185.0						
IDLER 	Front	LH	23.5	36.0						
		RH	23.5	36.0						
	Rear	LH	23.5	36.0						
		RH	23.5	36.0						
TRACK ROLLER  D=2(h1-	1	LH	280.0	205.0						
	2	LH	270.0	200.0						
	3	LH	270.0	200.0						
	4	LH	270.0	200.0						
	5	LH	270.0	200.0						
	6	LH	270.0	200.0						
	7	LH	270.0	200.0						
	8	LH	280.0	205.0						
	9	LH								
	10	LH								
	1	RH	280.0	205.0						
	2	RH	270.0	200.0						
	3	RH	270.0	200.0						
	4	RH	270.0	200.0						
	5	RH	270.0	200.0						
	6	RH	270.0	200.0						
	7	RH	270.0	200.0						
	8	RH	280.0	205.0						
	9	RH								
	10	RH								
SPROCKET 		LH	0.0	8.0						
		RH	0.0	8.0						

Remarks:

Fuse boxes

Location of fuse box Ⅰ



Fuse box Ⅰ FS1

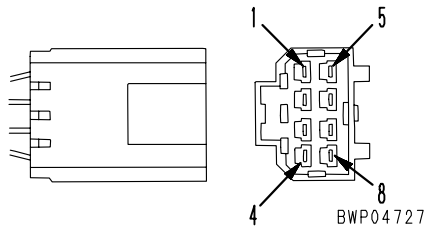
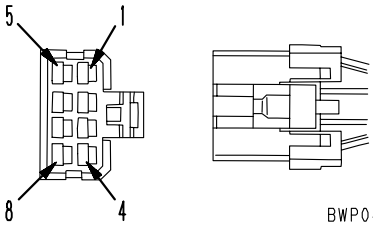
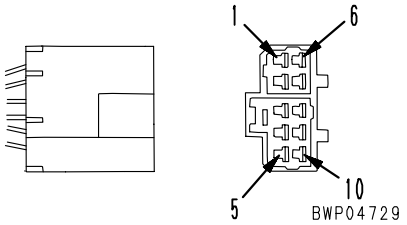
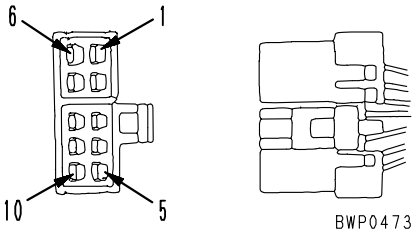
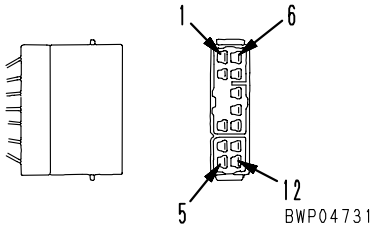
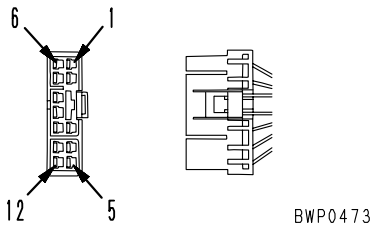
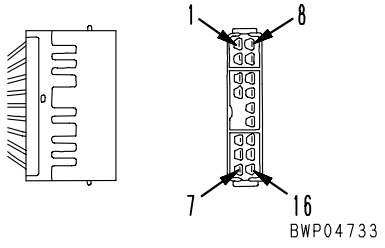
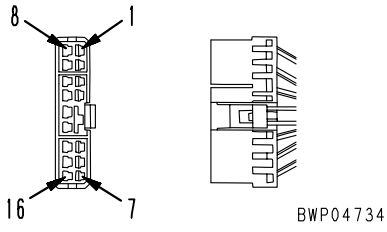
Fuse No.	Power suplly breaker (Type of power supply)	Fuse capacity (A)	Destination of power
1	CB105 (Switched power supply)	20	Power supply for VHMS controller
2	CB30 (Unswitched power supply)	20	Unswitched power supply for VHMS, T/M, S/T controller
3		20	Unswitched power supply for Operator's cab
4		10	Unswitched power supply for 12V converter
5	CB105 (Switched power supply)	20	Power supply for 12V converter

Fuse box Ⅰ FS2

Fuse No.	Power suplly breaker (Type of power supply)	Fuse capacity (A)	Destination of power
1	CB105 (Switched power supply)	5	Back alarm
2		20	Preheater, pin puller, air suspension seat
3		20	Additional heater
4		20	Working lamp
5		20	Rear lamp

Fuse box Ⅰ FS3

Fuse No.	Power suplly breaker (Type of power supply)	Fuse capacity (A)	Destination of power
1	Starting switch (Accessory power supply)	5	Accessory power supply for engine controller
2	CB105 (Switched power supply)	5	Horn
3		20	Spare 1
4		20	Spare 2
5	Starting switch (Accessory power supply)	20	Spare ACC signal

No. of pins	S type connector		
	Male (female housing)	Female (male housing)	T-adapter Part No.
8	 BWP04727	 BWP04728	799-601-7140
	Part No. : 08056-10871	Part No. : 08056-10881	
10 (White)	 BWP04729	 BWP04730	799-601-7150
	Part No. : 08056-11071	Part No. : 08056-11081	
12 (White)	 BWP04731	 BWP04732	799-601-7350
	Part No. : 08056-11271	Part No. : 08056-11281	
16 (White)	 BWP04733	 BWP04734	799-601-7330
	Part No. : 08056-11671	Part No. : 08056-11681	

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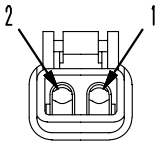
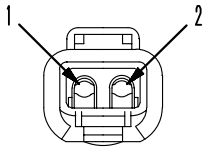
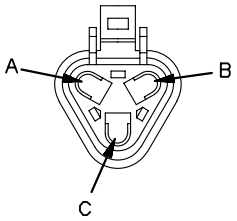
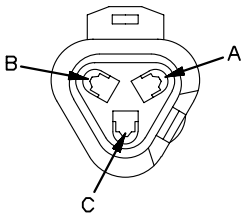
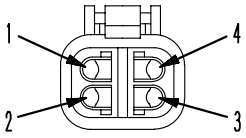
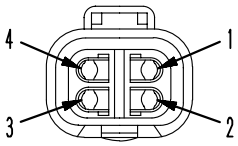
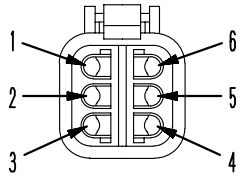
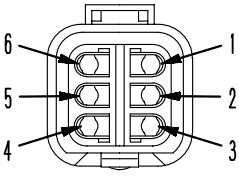
[The pin No. is also marked on the connector (electric wire insertion end)]

No. of pins	DT Series connector		
	Body (plug)	Body (receptacle)	T-adapter Part No.
2	 BWP05037	 BWP05038	799-601-9020 799-601-9890
	Part No. :08192-12200 (normal type) 08192-22200 (fine wire type)	Part No. :08192-12100 (normal type) 08192-22100 (fine wire type)	
3	 BWP05039	 BWP05040	799-601-9030 799-601-9890
	Part No. :08192-1A200 (normal type) 08192-2A200 (fine wire type)	Part No. :08192-13100 (normal type) 08192-23100 (fine wire type)	
4	 BWP05041	 BWP05042	799-601-9040 799-601-9890
	Part No. :08192-14200 (normal type) 08192-24200 (fine wire type)	Part No. :08192-14100 (normal type) 08192-24100 (fine wire type)	
6	 BWP05043	 BWP05044	799-601-9050
	Part No. :08192-16200 (normal type) 08192-26200 (fine wire type)	Part No. :08192-16100 (normal type) 08192-26100 (fine wire type)	

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T- branch box and T- branch adapter table (Rev. 2008.02)

★ The vertical column indicates a part number of T-branch box or T-branch adapter while the horizontal column indicates a part number of harness checker assembly.

Part No.	Part name	Number of pins	Identification symbol	T-adapter kit													Out of kit
				799-601-2500	799-601-2700	799-601-2800	799-601-7000	799-601-7100	799-601-7400	799-601-7500	799-601-8000	799-601-9000	799-601-9100	799-601-9200	799-601-9300	799-601-4101	799-601-4201	
799-601-2600	T-box (for ECONO)	21		●		●		●	●		●							
799-601-3100	T-box (for MS)	37																●
799-601-3200	T-box (for MS)	37																●
799-601-3380	Plate for MS (14-pin)																	●
799-601-3410	Adapter for BENDIX (MS)	24	MS-24P															●
799-601-3420	Adapter for BENDIX (MS)	24	MS-24P															●
799-601-3430	Adapter for BENDIX (MS)	17	MS-17P															●
799-601-3440	Adapter for BENDIX (MS)	17	MS-17P															●
799-601-3450	Adapter for BENDIX (MS)	5	MS-5P															●
799-601-3460	Adapter for BENDIX (MS)	10	MS-10P															●
799-601-3510	Adapter for BENDIX (MS)	5	MS-5P															●
799-601-3520	Adapter for BENDIX (MS)	17	MS-17P															●
799-601-3530	Adapter for BENDIX (MS)	19	MS-19P															●
799-601-2910	Adapter for BENDIX (MS)	14	MS-14P															●
799-601-3470	Case																	●
799-601-2710	Adapter for MIC	5	MIC-5P	●	●				●									
799-601-2720	Adapter for MIC	13	MIC-13P	●	●				●									
799-601-2730	Adapter for MIC	17	MIC-17P	●	●	●		●	●		●							
799-601-2740	Adapter for MIC	21	MIC-21P	●	●	●		●	●		●							
799-601-2950	Adapter for MIC	9	MIC-9P				●	●	●		●							
799-601-2750	Adapter for ECONO	2	ECONO2P	●	●													
799-601-2760	Adapter for ECONO	3	ECONO3P	●	●													
799-601-2770	Adapter for ECONO	4	ECONO4P	●	●													
799-601-2780	Adapter for ECONO	8	ECONO8P	●	●													
799-601-2790	Adapter for ECONO	12	ECONO12P	●	●													
799-601-2810	Adapter for DLI	8	DLI-8P	●	●													
799-601-2820	Adapter for DLI	12	DLI-12P	●	●													
799-601-2830	Adapter for DLI	16	DLI-16P	●	●													
799-601-2840	Extension cable (ECONO type)	12	ECONO12P	●	●				●									
799-601-2850	Case			●														
799-601-4350	T-box (for DRC 60, ECONO)	60														●		
799-601-4360	Case															●		
799-601-7010	Adapter for X (T-adapter)	1							●		●							
799-601-7020	Adapter for X	2	X2P				●	●	●		●							
799-601-7030	Adapter for X	3	X3P				●	●	●		●							
799-601-7040	Adapter for X	4	X4P				●	●	●		●							
799-601-7050	Adapter for SWP	6	SW6P				●	●	●									
799-601-7060	Adapter for SWP	8	SW8P				●	●	●									
799-601-7310	Adapter for SWP	12	SW12P															●
799-601-7070	Adapter for SWP	14	SW14P						●		●							
799-601-7320	Adapter for SWP	16	SW16P															●
799-601-7080	Adapter for M (T-adapter)	1							●		●							
799-601-7090	Adapter for M	2	M2P				●	●	●		●							
799-601-7110	Adapter for M	3	M3P				●	●	●		●							

Failure code [15SBLH] When reverse clutch oil pressure command current is ON, fill signal is OFF

Action code	Failure code	Trouble	When reverse clutch oil pressure command current is ON, fill signal is OFF (Transmission controller system)
CALL E03	**15SBLH**		
Contents of trouble	• The fill switch signal is not set on at output to the transmission reverse clutch solenoid circuit.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Decides that engine speed is neutral (N) at reverse operation. • Limits operation of engine and transmission.		
Problem that appears on machine	• Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, running is limited to F1. • Auto-shift down function does not work.		
Related information	• The input state (ON/OFF) from the reverse clutch fill switch can be checked in real-time monitoring mode. (Code **31520**: Transmission fill switch input state) • Method of reproducing failure code: Engine start + Reverse running		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective reverse clutch fill switch (Internal short)	★ Prepare with starting switch OFF, then start the engine for troubleshooting.			
			FRT (male)	PCCS lever	Resistance	
			Between (1) – chassis ground	N	Min. 1 MΩ	
				R (Reverse)	Max. 1 Ω	
	2	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between TMCN1 (female) (24) – FRT (female) (1)		Resistance	Max. 1 Ω
	3	Defective transmission controller	★ Prepare with starting switch OFF, then start the engine for troubleshooting.			
			TMCN1	PCCS lever	Voltage	
			Between (24) – chassis ground	N	5 – 11 V	
				R (Reverse)	Max. 1 V	
	4	Defective hydraulic pressure system	When no fault is detected in the electric system, the hydraulic pressure system is assumed to be abnormal. Carry out the related troubleshooting (H mode).			

Failure code [2201L1] When right steering clutch oil pressure command current is OFF, fill signal is ON

Action code	Failure code	Trouble	When right steering clutch oil pressure command current is OFF, fill signal is ON (Steering controller system)
CALL E04	**2201L1**		
Contents of trouble	• The fill switch signal is not set off at output stop of the right steering clutch solenoid circuit.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Limits operation of engine, transmission, and brake.		
Problem that appears on machine	• Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, it never runs. • Auto-shift down function does not work.		
Related information	• The input state (ON/OFF) from the right steering clutch fill switch can be checked in real-time monitoring mode. (Code **31521**: Steering fill switch input state) • Method of reproducing failure code: Engine start		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective right steering clutch fill switch (Internal short)	★ Prepare with starting switch OFF. Engine start for troubleshooting.			
			FRC (male)	PCCS lever	Resistance	
			Between (1) – chassis ground	N (Neutral)	Min. 1 MΩ	
				Right max. steering	Max. 1 Ω	
	2	Defective harness grounding (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between STCN3 (female) (39) – FRC (female) (1) with chassis ground		Resistance	Min. 1 MΩ
	3	Defective steering controller	★ Prepare with starting switch OFF. Engine start for troubleshooting.			
			STCN3	PCCS lever	Voltage	
			Between (39) – chassis ground	N (Neutral)	5 – 11 V	
				Right max. steering	Max. 1 V	
	4	Defective hydraulic pressure system	When no fault is detected in the electric system, the hydraulic pressure system is assumed to be abnormal. Carry out the related troubleshooting (H mode).			

Failure code [2302L1] When left steering brake oil pressure command current is OFF, fill signal is ON

Action code	Failure code	Trouble	When left steering brake oil pressure command current is OFF, fill signal is ON (Steering controller system)
CALL E04	**2302L1**		
Contents of trouble	• The fill switch signal is not set off at output stop of the left steering brake solenoid circuit.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Limits operation of engine, transmission, and brake.		
Problem that appears on machine	• Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, it never runs. • Auto-shift down function does not work.		
Related information	• The input state (ON/OFF) from the left steering brake fill switch can be checked in real-time monitoring mode. (Code **31521**: Steering fill switch input state) • Method of reproducing failure code: Engine start		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective left steering brake fill switch (Internal short)	★ Prepare with starting switch OFF, then start engine, release parking brake lever and carry out troubleshooting.			
			FLB (male)	PCCS lever	Resistance	
			Between (1) – chassis ground	N (Neutral)	Max. 1 Ω	
				Left max. steering	Min. 1 MΩ	
	2	Defective harness grounding (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between STCN2 (female) (35) – FLB (female) (1) with chassis ground		Resistance	Min. 1 MΩ
	3	Defective steering controller	★ Prepare with starting switch OFF, then start engine, release parking brake lever and carry out troubleshooting.			
			STCN2	PCCS lever	Voltage	
			Between (35) – chassis ground	N (Neutral)	Max. 1 V	
				Left max. steering	5 – 11 V	
	4	Defective hydraulic pressure system	When no fault is detected in the electric system, the hydraulic pressure system is assumed to be abnormal. Carry out the related troubleshooting (H mode).			

Failure code [B@GAZK] Battery electrolyte level reduction

Action code	Failure code	Trouble	Battery electrolyte level reduction
—	**B@CHZK**		
Contents of trouble	• Battery electrolyte level reduced and battery electrolyte level reduction lamp lighted.		
Action of controller	• None in particular.		
Problem that appears on machine	• None in particular.		
Related information	• Since above caution lamp is not set on this machine, above failure code does not occur. Above failure code is listed up in mechanical system failure code table, however.		

Failure code [B@HANS] Hydraulic oil overheat

Action code	Failure code	Trouble	Hydraulic oil overheat (Mechanical system)
—	**B@HANS**		
Hydraulic oil overheat trouble	• During rotation of engine, hydraulic oil caution lamp flashes.		
Action of controller	• Blinks warning lamp and sounds alarm buzzer.		
Problem that appears on machine	• If machine is operated as it is, work equipment circuit units may be damaged.		
Related information	• Method of reproducing failure code: Engine start. • Hydraulic oil temperature caution symbol on machine monitor blinks and this failure code is recorded.		

	Cause		Standard value in normal state/Remarks on troubleshooting
Possible causes and standard value in normal state	1	Hydraulic oil temperature overheat (When system is in normal state)	It is suspected that problem causing hydraulic oil temperature overheat is occurring at present or occurred in past. Investigate cause and damage condition, and correct it.
	2	Defective hydraulic oil temperature caution lamp system	Carry out troubleshooting of hydraulic oil temperature caution lamp system in accordance with “E-8 During running of engine, emergency caution item flashes” in E mode.

Failure code [CA132] Throttle sensor abnormally low level

Action code	Failure code	Trouble	Throttle sensor abnormally low level (Engine controller system)
CALL E03	**CA132**		
Contents of trouble	• Decelerator potentiometer circuit of throttle sensor detected abnormally low level.		
Action of controller	• Keeps engine speed constant. • Turns the centralized warning lamp and alarm buzzer ON.		
Problem that appears on machine	• Engine does not reach full throttle.		
Related information	• Signal state of decelerator potentiometer (Decelerator position) can be checked with real-time moniitoring mode (Code: **31707**). • Signal state of decelerator potentiometer (Voltage) can be checked with real-time moniitoring mode (Code: **31703**). • Method of reproducing failure code: Turn the starting switch ON.		

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting
	Carry out troubleshooting for failure code [**CA131**].	

Failure code [CA213] Engine oil temperature sensor abnormally low level

Action code	Failure code	Trouble	Engine oil temperature sensor abnormally low level (Engine controller system)
E01	**CA213**		
Contents of trouble	• Engine oil temperature sensor circuit is abnormally low.		
Action of controller	• Sets engine oil temperature to fixed value (100°C), and continues operation.		
Problem that appears on machine	—		
Related information	• The input state (oil temperature) from the engine oil temperature sensor can be checked with the real-time moniitoring mode (Code: **42700**). • The input state (voltage) from the engine oil temperature sensor can be checked with the real-time moniitoring mode (Code: **42701**). • Method of reproducing failure code: Turn the starting switch ON.		

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting
	Carry out troubleshooting for failure code [**CA212**].	

Failure code [CA271] PCV1 short circuit

Action code	Failure code	Trouble	PCV1 short circuit (Engine controller system)
CALL E03	**CA271**		
Contents of trouble	• Short circuit was detected in supply pump PCV1 circuit.		
Action of controller	• Alarm buzzer ON.		
Problem that appears on machine	—		
Related information	• Method of reproducing failure code: Turn the starting switch ON. • While engine is running normally, pulse voltage of about 24 V is applied to PCV1 (1). This pulse voltage cannot be measured with circuit tester.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective supply pump PCV1 (Internal short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			PCV1 (male)	Resistance		
			Between (1) and (2)	2.3 – 5.3 Ω		
			Between (1), (2) and chassis ground	Min. 1 MΩ		
	2	Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between EGC1 (female) (4) – PCV1 (female) (1) and chassis ground	Resis-tance	Min. 1 MΩ	
			Wiring harness between EGC1 (female) (5) – PCV1 (female) (2) and chassis ground	Resis-tance	Min. 1 MΩ	
	3	Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting			
			Wiring harness between EGC1 (female) (4) – PCV1 (female) (1) and chassis ground	Voltage	Max. 1 V	
			Wiring harness between EGC1 (female) (5) – PCV1 (female) (2) and chassis ground	Voltage	Max. 1 V	
	4	Defective engine controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			EGC1 (female)	Resistance		
			Between (4) and (5)	2.3 – 5.3 Ω		
			Between (4), (5) and chassis ground	Min. 1 MΩ		

Failure code [CA331] Injector #2 system disconnection or short circuit

Action code	Failure code	Trouble	Injector #2 system disconnection or short circuit (Engine controller system)
CALL E03	**CA331**		
Contents of trouble	• Disconnection or short circuit was detected in injector #2 circuit.		
Action of controller	• Alarm buzzer ON.		
Problem that appears on machine	• Engine output drops. • Speed does not become stable.		
Related information	• Method of reproducing failure code: Start engine. • While engine is running normally, pulse voltage of about 65 V is applied to positive (+) side of injector. This pulse voltage cannot be measured with circuit tester.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective injector #2 (Internal defect)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			CN2 (male)	Resistance		
			Between (1) and (2)	0.4 – 1.1 Ω		
			Between (1), (2) and chassis ground	Min. 1 MΩ		
	2	Disconnection in wiring harness (Disconnection or defective contact of connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between EGC1 (female) (54) – CN2 (female) (1)	Resistance	Max. 1 Ω	
			Wiring harness between EGC1 (female) (51) – CN2 (female) (2)	Resistance	Max. 1 Ω	
	3	Grounding fault in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between EGC1 (female) (54) – CN2 (female) (1) and chassis ground	Resistance	Min. 1 MΩ	
			Wiring harness between EGC1 (female) (51) – CN2 (female) (2) and chassis ground	Resistance	Min. 1 MΩ	
	4	Defective engine controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			EGC1 (female)	Resistance		
			Between (54) and (51)	0.4 – 1.1 Ω		
			Between (54), (51) and chassis ground	Min. 1 MΩ		
	5	Defective injector or wiring harness of another cylinder	If another failure code for injector abnormality is displayed, carry out troubleshooting for it, too.			

Failure code [CA452] Common rail pressure sensor abnormally low level

Action code	Failure code	Trouble	Common rail pressure sensor abnormally low level (Engine controller system)
CALL E03	**CA452**		
Contents of trouble	• Common rail pressure sensor circuit is abnormally low.		
Action of controller	• Limits output and continues operation (limits common rail pressure). • Turns the centralized warning lamp and alarm buzzer ON.		
Problem that appears on machine	• Engine output lowers.		
Related information	• The input state (common rail pressure) from the common rail pressure sensor can be checked with the real-time moniitoring mode (Code: **36400**). • The input state (voltage) from the common rail pressure sensor can be checked with the real-time moniitoring mode (Code: **36401**). • Method of reproducing failure code: Turn the starting switch ON.		

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting
	Carry out troubleshooting for failure code [**CA451**].	

Failure code [CA2352] EGR valve solenoid drive disconnection

Action code	Failure code	Trouble	EGR valve solenoid drive disconnection (Engine controller system)
E03	**CA2352**		
Contents of trouble	• Disconnection error was detected in drive circuit of EGR valve solenoid.		
Action of controller	• Limits output and continues operation. • Closes EGR valve. • Turns the centralized warning lamp and alarm buzzer ON.		
Problem that appears on machine	• Engine output drops.		
Related information	• Method of reproducing failure code: Turn the starting switch ON.		

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting
	Carry out trouble shooting for failure code [**CA2351**].	

Failure code [D190KA] Engine controller ACC signal cut relay disconnection

Action code	Failure code	Trouble	Engine controller ACC signal cut relay disconnection (Steering controller system)
—	**D190KA**		
Contents of trouble	• Voltage of engine controller ACC cut relay circuit does not match controller output.		
Action of controller	• Stops outputting signal to engine controller ACC cut relay.		
Problem that appears on machine	• Engine stop function of steering controller does not work.		
Related information	• Output state (Voltage) to engine controller ACC cut relay can be checked in real-time moniitoring mode (Code **60500**: Engine controller ACC cut relay voltage). • Method of reproducing failure code: Turn starting switch ON. ★ This failure code detects abnormality on primary side (coil side) of engine controller ACC cut relay but does not detect abnormality on secondary side (contact side).		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective fuse FS32 (1)	If fuse is broken, circuit probably has ground fault etc.			
	2	Defective engine controller ACC cut relay (Internal disconnection)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			ACT (male)		Resistance	
			Between (1) and (2)		200 – 400 Ω	
	3	Disconnection in wiring harness (Disconnection in wiring harness or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between STCN2 (female) (8) – ACT (female) (2)		Resistance	Max. 1 Ω
			Wiring harness between ACT (female) (1) – FSB (female) (3), FSB (3) (male) – DS3 (1) (female), DS3 (1) (male) – KEY (female) (1), KEY (male) (1) – 270		Resistance	Max. 1 Ω
	4	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between STCN2 (female) (8) – ACT (female) (2) and chassis ground		Resistance	Min. 1 MΩ
			Wiring harness between ACT (female) (1) – FSB (female) (3), FSB (3) (male) – DS3 (1) (female), DS3 (1) (male) – KEY (female) (1), KEY (male) (1) – 270 and chassis ground		Resistance	Min. 1 MΩ
	5	Defective steering controller	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			STCN2	Starting switch	Voltage	
			Between (8) – chassis ground	ON	Max. 1 V	

Failure code [DAQ2KK] Transmission controller load power supply voltage reduction

Action code	Failure code	Trouble	Transmission controller load power supply voltage reduction (Transmission controller system)
CALL E04	**DAQ2KK**		
Contents of trouble	• Power source voltage of load (relay, solenoid, etc.) on transmission controller is below 17V.		
Action of controller	• Flashes warning lamp and turns on alarm buzzer. • Limits operation of engine and transmission.		
Problem that appears on machine	• Relay and solenoid may not be driven and therefore system may not operate properly. • Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, it can not travel any more. • Display of machine monitor may be abnormal.		
Related information	• Battery charge state (voltage) can be checked in real-time moniitoring mode. (Code **03200**: Battery voltage) • Method of reproducing failure code: Turn the starting switch ON.		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective circuit breaker CB3 (20 A)	If circuit breaker CB3 is turned OFF, circuit probably has ground fault etc.		
	2	Defective circuit breaker CB105 (105A)	When the circuit breaker CB105 is cut off, it is highly possible that a defective harness grounding has occurred in the circuit.		
	3	Disconnection in wiring harness (Disconnection or defective contact of connectors)	★ Prepare with starting switch OFF and diagnose with starting switch still OFF.		
			Wiring harness between TMCN3 (female) (2), (12), (22) – CB3 (2) – between CB3 (2) – B105 (L)	Resistance	Max. 1 Ω
			Wiring harness between B105 (S) – terminal block (TR1L) or between terminal block (TR1S) – battery relay BRC terminal	Resistance	Max. 1 Ω
			Wiring harness between TMCN3 (female) (21), (31), (32), (33) – ground	Resistance	Max. 1 Ω
	4	Defective harness grounding (Contact with ground circuit)	★ Prepare with starting switch OFF and diagnose with starting switch still OFF.		
			Wiring harness between TMCN2 (female) (2), (12), (22) – CB3 (2), CB3 (1) – B105 (L) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between CB105 (S) – terminal block (TR1L) or between terminal block (TR1S) – battery relay BRC terminal and chassis ground	Resistance	Min. 1 MΩ
	5	Defective steering and transmission controller	★ Prepare with starting switch OFF and diagnose with starting switch ON.		
			TMCN3	Voltage	
			Between (2), (12), (22) – (21), (31), (32), (33)	20 – 30 V	

Failure code [DB37KK] Steering controller sensor 5V power supply (2) voltage reduction

Action code	Failure code	Trouble	Steering controller sensor 5V power supply (2) voltage reduction (Steering controller system)
CALL E03	**DB37KK**		
Contents of trouble	• Voltage of 5 V power source (2) circuit of steering controller sensor is less than 4.5 V or more than 5.5 V. • Abnormal current flowed in 5 V power source (2) circuit of steering controller sensor.		
Action of controller	• Stops output of 5 V power source (2) circuit if abnormal voltage has flowed. • Flashes caution lamp and turns on caution buzzer.		
Problem that appears on machine	• System may not operate normally. • Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, gear speed is limited to F1 and R1.		
Related information	• Method of reproducing failure code: Turn starting switch ON.		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective acceleration sensor (if equipped) (internal short circuit)	If service code lights up steadily (reset display) when right connector is disconnected, the defect is internal. ★ Disconnect connector with starting switch OFF and turn the switch ON to diagnose.		SSA connector
	2	Defective harness grounding (Contact with ground circuit)	★ Prepare with starting switch OFF and diagnose with starting switch still OFF.		
			Between ground and wiring harness between STCN3 (female) (34) – SSA (female) (1) and chassis ground	Resis-tance	Min. 1 MΩ
	3	Hot short of wiring harness (Contact with 24 V circuit)	★ Prepare with starting switch OFF and diagnose with starting switch ON.		
			Between ground and wiring harness between STCN3 (female) (34) – SSA (female) (1) and chassis ground	Voltage	Max. 1V
	4	Defective steering and transmission controller	★ Prepare with starting switch OFF and diagnose with starting switch ON.		
			STCN3, STCN1	Voltage	
			Between STCN3 (34) – STCN1(21)	4.5 – 5.5 V	

Failure code [DBB6KP] (or VHMS LED display "n902") Sensor power supply (24V) system disconnection or short circuit

Action code	Failure code	Trouble	Sensor power supply (24V) system disconnection or short circuit (VHMS controller system)
—	**DBB6KP**		
Contents of trouble	• Sensor power supply voltage (24 V) is out of normal range (20 – 30 V)		
Action of controller	• None in particular.		
Problem that appears on machine	• System may not operate normally.		
Related information	• LED displays "n902".		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Disconnection in wiring harness	1) Turn starting switch OFF. 2) Connect T-adapter.		
			Wiring harness between V1 (female) (2) – EXHF (female) (1), between V1 (female) (2) – EXHR (female) (1) or between V1 (female) (2) - VF2 (female) (10) – PL2 (female) (21) – TMMD (female) (B)	Resis-tance	Max. 1 Ω
	2	Ground fault in wiring harness	1) Disconnect connectors V1, V2A, EXHF, EXHR, VF2, PL2 and TMMD.		
			Wiring harness between V1 (female) (2) – EXHF (female) (1), between V1 (female) (2) – EXHR (female) (1) or between V1 (female) (2) – VF2 (female) (10) – PL2 (female) (21) – TMMD (female) (B) – chassis ground	Resis-tance	Min. 1 MΩ
	3	Defective VHMS controller	1) Turn starting switch OFF. 2) Disconnect connectors V1 and V2A. 3) Connect T-adapter. 4) Turn starting switch ON.		
			Between V1 (female) (2) – V2A (female) (12), (13)	Voltage	20 – 30 V

Failure code [DD13KB] Shift-down switch short circuit

Action code	Failure code	Trouble	Shift-down switch short circuit (Transmission controller system)
E02	**DD13KB**		
Contents of trouble	• Signals of two systems of shift down switch circuit were turned ON (CLOSE).		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Recognizes that switch is not pressed.		
Problem that appears on machine	• Shift down is not possible. • Auto shift down does not function.		
Related information	• Of signals of two systems of switch, NO is for operation detection and NC is for error detection. • Input state (ON/OFF) from shift down switch can be checked in real-time moniitoring mode. (Code **40905**: Transmission controller input signal 1) • Method of reproducing failure code: Turn starting switch ON (and operate shift up switch).		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective shift down switch (Internal disconnection)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			SFTD (female)	Shift down switch		
				OFF (Release)	ON (Press)	
			Resistance between (2) – (3)	Max. 1 Ω	Min. 1 MΩ	
			Resistance between (2) – (1)	Min. 1 MΩ	Max. 1 Ω	
	2	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Short circuit of wiring harness between TMCN3 (female) (19) – SFTD (male) (3) and chassis ground		Resis-tance	Min. 1 MΩ
			Short circuit of wiring harness between TMCN3 (female) (29) – SFTD (male) (1) and chassis ground		Resis-tance	Min. 1 MΩ
	3	Defective transmission controller	★ Prepare with starting switch OFF, turn starting switch ON and carry out troubleshooting.			
			TMCN1, TMCN3	Shift down switch		
				OFF (Release)	ON (Press)	
			Voltage between TMCN3 (19) – TMCN1 (10)	Max. 1 V	5 – 11 V	
			Voltage between TMCN3 (29) – TMCN1 (10)	5 – 11 V	Max. 1 V	

Failure code [DDK5KB] Shift switch short circuit

Action code	Failure code	Trouble	Shift switch short circuit (Transmission controller system)
E02	**DDK5KB**		
Contents of trouble	• Signals of two systems of shift up switch circuit were turned ON (CLOSE) at the same time.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Recognizes that switch is not pressed.		
Problem that appears on machine	• Gear cannot be shifted up and down (1st ⇔ 2nd).		
Related information	• Input state (ON/OFF) from shift switch can be checked in real-time moniitoring mode. (Code **40906**: Transmission controller input signal 2) • Method of reproducing failure code: Turn starting switch ON (and operate shift up switch).		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Wrong selection of travel lever type	If failure code [**DDT5KQ**] is displayed, carry out troubleshooting for it.			
	2	Defective shift up switch (Internal disconnection)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			SNC (male)	Shift switch		
				OFF (Release)	ON (Press)	
			Resistance between (1) – (3)	Max. 1 Ω	Min. 1 MΩ	
			Resistance between (2) – (1)	Min. 1 MΩ	Max. 1 Ω	
	3	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between TMCN2 (female) (10) – SNC (male) (3) and chassis ground	Resis-tance	Min. 1 MΩ	
			Wiring harness between TMCN2 (female) (7) – SNC (male) (2) and chassis ground	Resis-tance	Min. 1 MΩ	
	4	Defective transmission controller	★ Prepare with starting switch OFF, turn starting switch ON and carry out troubleshooting.			
			TMCN1,TMCN2	Shift switch		
				OFF (Release)	ON (Press)	
			Voltage between TMCN2 (10) – TMCN1 (10)	Max. 1 V	5 – 11 V	
			Voltage between TMCN2 (7) – TMCN1 (10)	5 – 11 V	Max. 1 V	

Failure code [DDNBLD] Ripper lift raise oil pressure switch is held down for long time

Action code	Failure code	Trouble	Ripper lift raise oil pressure switch is held down for long time (Transmission controller system)
—	**DDNBLD**		
Contents of trouble	• The signal of the ripper lift raise oil pressure switch circuit is kept turned ON for 60 seconds.		
Action of controller	• Recognizes that the oil pressure switch is turned OFF.		
Problem that appears on machine	• The shoe slip control (SSC) function does not operate normally. • Ripper raise operation speed decreases. • VHMS data may become abnormal.		
Related information	• The input state (ON/OFF) from the ripper lift raise oil pressure switch can be checked in the real-time moniitoring mode. (Code **70305**: Ripper lever oil pressure switch input signal) • Method of reproducing failure code: Turn the starting switch ON (Error is reproduced after 60 seconds).		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Wrong operation of lever (When electrical system is normal)	If the error code lamp still lights up (resetting is still urged) after the resetting operation is performed, it is suspected that the lever was operated to cause an error.			
	2	Defective ripper lift raise oil pressure switch (Internal short circuit)	★ Prepare with starting switch OFF, then start engine and carry out troubleshooting.			
			RPU (male)	Ripper lever	Resistance	
			Between (1) and (2)	Neutral	Min. 1 MΩ	
				Raise	Max. 1 Ω	
	3	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Between wiring harness between TMCN2 (female) (3) and RPU (female) (1) and chassis ground		Resistance	Min. 1 MΩ
	4	Defective transmission controller	★ Prepare with starting switch OFF, then start engine and carry out troubleshooting.			
			TMCN2, TMCN1	Ripper lever	Voltage	
			Between TMCN2 (13) and TMCN1 (10)	Neutral	5 – 11 V	
				Raise	Max. 1 V	

Failure code [DDT5KA] Neutral switch disconnection

Action code	Failure code	Trouble	Neutral switch disconnection (Transmission controller system)
E02	**DDT5KA**		
Contents of trouble	• Signals of two systems of neutral switch circuit were turned OFF (OPEN) at the same time.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Recognizes that switch is not pressed.		
Problem that appears on machine	• Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, it cannot travel at all.		
Related information	• Of signals of two systems of switch, NO is for operation detection and NC is for error detection. • Input state (ON/OFF) from shift up switch can be checked in real-time moniitoring mode. (Code **40906**: Transmission controller input signal 2) • Method of reproducing failure code: Turn starting switch ON (+ Operate neutral switch).		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Wrong selection of travel lever type	If failure code [**DDT5KQ**] is displayed, carry out troubleshooting for it.			
	2	Defective shift up switch (Internal disconnection)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			SNC (female)	Shift up switch		
				OFF (Release)	ON (Press)	
			Resistance between (4) – (6)	Max. 1 Ω	Min. 1 MΩ	
			Resistance between (4) – (5)	Min. 1 MΩ	Max. 1 Ω	
	3	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between TMCN2 (female) (27) – SNC (male) (6)	Resis-tance	Max. 1 Ω	
			Wiring harness between TMCN2 (female) (17) – SNC (male) (5)	Resis-tance	Max. 1 Ω	
			Wiring harness between TMCN1 (female) (10) – SNC (male) (4)	Resis-tance	Max. 1 Ω	
	4	Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with starting switch OFF, turn starting switch ON and carry out troubleshooting.			
			Wiring harness between TMCN2 (female) (27) – SNC (male) (6) and chassis ground	Voltage	Max. 1 V	
			Wiring harness between TMCN2 (female) (17) – SNC (male) (5) and chassis ground	Voltage	Max. 1 V	
	5	Defective transmission controller	★ Prepare with starting switch OFF, turn starting switch ON and carry out troubleshooting.			
			TMCN1,TMCN2	Shift up switch		
				OFF (Release)	ON (Press)	
			Voltage between TMCN1 (27) – TMCN1 (10)	Max. 1 V	5 – 11 V	
			Voltage between TMCN2 (17) – TMCN1 (10)	5 – 11 V	Max. 1 V	

Failure code [DGT5KB] (or VHMS LED display "n321") Front exhaust temperature sensor system disconnection

Action code	Failure code	Trouble	Front exhaust temperature sensor system disconnection
—	**DGT5KB**		
Contents of trouble	• Signal voltage of No. 1, 2 and 3 cylinder (front side) exhaust temperature sensor is below 0.5 V.		
Action of controller	• None in particular.		
Problem that appears on machine	• No. 1, 2 and 3 cylinder (front side) exhaust temperature cannot be monitored with monitoring function.		
Related information	• LED displays "n321".		

	Cause		Standard value in normal state/Remarks on troubleshooting				
Possible causes and standard value in normal state	1	Abnormal increase of No. 1, 2 and 3 cylinder (front side) exhaust temperature (When system is normal)	Check engine and then repair if necessary.				
	2	Defective No. 1, 2 and 3 cylinder (front side) exhaust temperature sensor	1) Turn starting switch OFF. 2) Replace No. 1, 2 and 3 cylinder (front side) exhaust temperature sensor.				
			Signal does not become normal after replacement.			Exhaust temperature sensor is normal.	
			Signal becomes normal after replacement.			Exhaust temperature sensor is defective.	
	3	Defective No. 1, 2 and 3 cylinder (front side) exhaust temperature sensor amplifier	1) Turn starting switch OFF. 2) Disconnect connector EXAF. 3) Insert T-adapter. 4) Connect connector. 5) Start engine.				
			EXAF – V1, V2A line	Between (A) – (C)		Voltage	20 – 30 V
				Between (B) – (C)	20 °C	Voltage	Approx. 0.9 – 1.2 V
					500 °C	Voltage	Approx. 2.6 – 3.5 V
	4	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	1) Turn starting switch OFF. 2) Disconnect connectors EXHF, EXTF, EXAF, V1 and V2A in order. 3) Connect T-adapter.				
			Wiring harness between EXHF (female) (1) – EXTF (male) (1)			Resistance	Max. 1 Ω
			Wiring harness between EXHF (female) (2) – EXTF (male) (2)			Resistance	Max. 1 Ω
			Wiring harness between EXAF (female) (A) – V1 (female) (2)			Resistance	Max. 1 Ω
			Wiring harness between EXAF (female) (B) – V2A (female) (7)			Resistance	Max. 1 Ω

Failure code [DHE5KY] (or VHMS LED display "n331") Engine blow-by pressure sensor system short circuit

Action code	Failure code	Trouble	Engine blow-by pressure sensor system short circuit
—	**DHE5KY**		
Contents of trouble	• Signal voltage of engine blow-by pressure sensor is above 4.7 V.		
Action of controller	• None in particular.		
Problem that appears on machine	• Engine blow-by pressure cannot be monitored with real-time moniitoring mode.		
Related information	• LED displays "n331".		

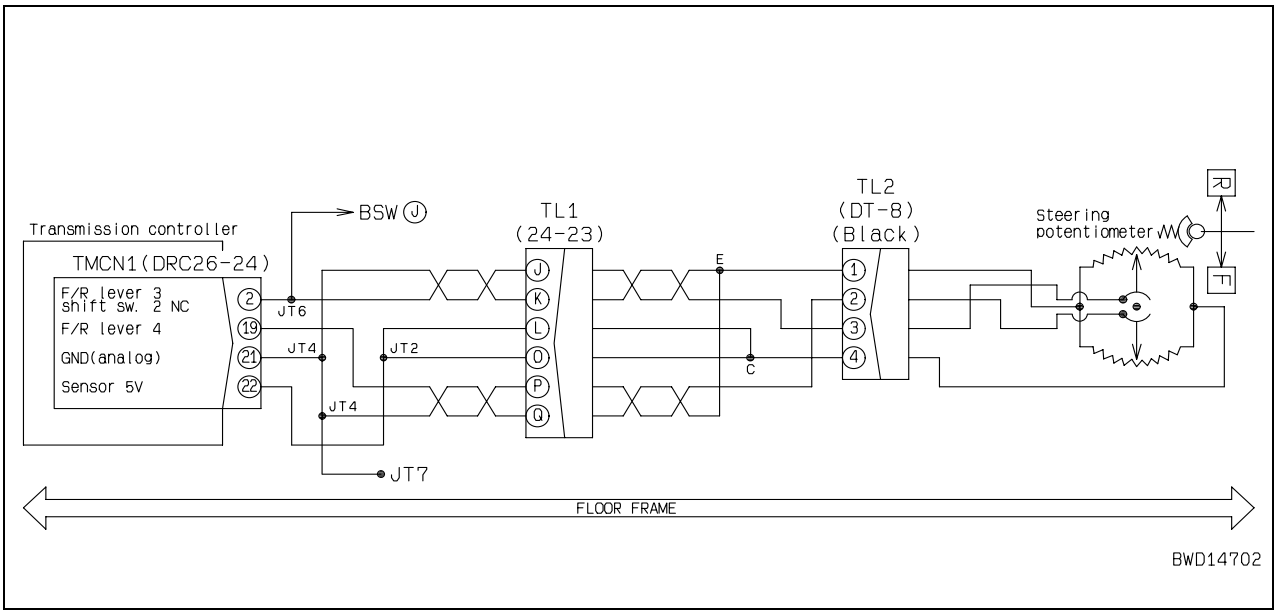
	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective engine blow-by pressure sensor	1) Turn starting switch OFF. 2) Disconnect connector ENBP. 3) Connect T-adapter. 4) Connect connector. 5) Turn starting switch ON.		
			Between ENBP (female) (B) – (female) (A)	Voltage	4.5 – 5.5 V
			Between ENBP (female) (C) – (female) (A)	Voltage	0.3 – 0.7 V
	2	Short circuit in wiring harness	1) Turn starting switch OFF. 2) Disconnect connectors V2A and ENBP. 3) Connect T-adapter.		
			Wiring harness between V2A (female) (18) – ENBP (female) (C) and chassis ground	Resis-tance	Min. 1 MΩ
	3	Defective VHMS controller	1) Turn starting switch OFF. 2) Disconnect connectors V1 and V2A. 3) Connect T-adapter. 4) Turn starting switch ON.		
			Between V1 (female) (4) – V2A (female) (12)	Resis-tance	4.5 – 5.5 V
			Between V2A (female) (18) – V2A (female) (12)	Resis-tance	0.3 – 0.7 V

Failure code [DK30KZ] Steering potentiometer 1 disconnection or short circuit

Action code	Failure code	Trouble	Steering potentiometer 1 disconnection or short circuit (Steering controller system)
CALL E04	**DK30KZ**		
Contents of trouble	• When starting switch is turned ON, either of steering potentiometers 1 (ST1) and 2 (ST2) is abnormal, then either of failure codes [**DK30KA**] and [**DK30KB**] and failure codes [**DK31KA**] and [**DK31KB**] are displayed simultaneously.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Limits operation of engine, transmission, and brake.		
Problem that appears on machine	• Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, it cannot travel any more.		
Related information	• Input (Voltage) from steering potentiometers can be checked in real-time moniitoring mode. (Code **50300**: Voltage of steering potentiometer 1) (Code **50301**: Voltage of steering potentiometer 2) • Method of reproducing failure code: Turn starting switch ON and operate PCCS lever (for steering).		

Possible causes and standard value in normal state	Cause	Standard value in normal state/Remarks on troubleshooting
	Carry out troubleshooting for failure codes [**DK30KA**], [**DK30KB**], [**DK31KA**], and [**DK31KB**].	

Circuit diagram related

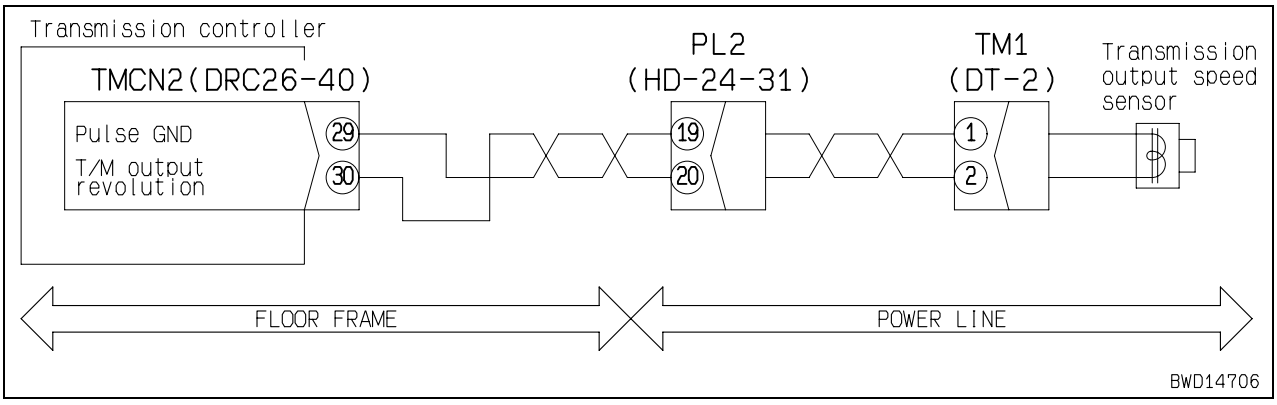


Failure code [DLT3KB] Transmission output speed sensor short circuit

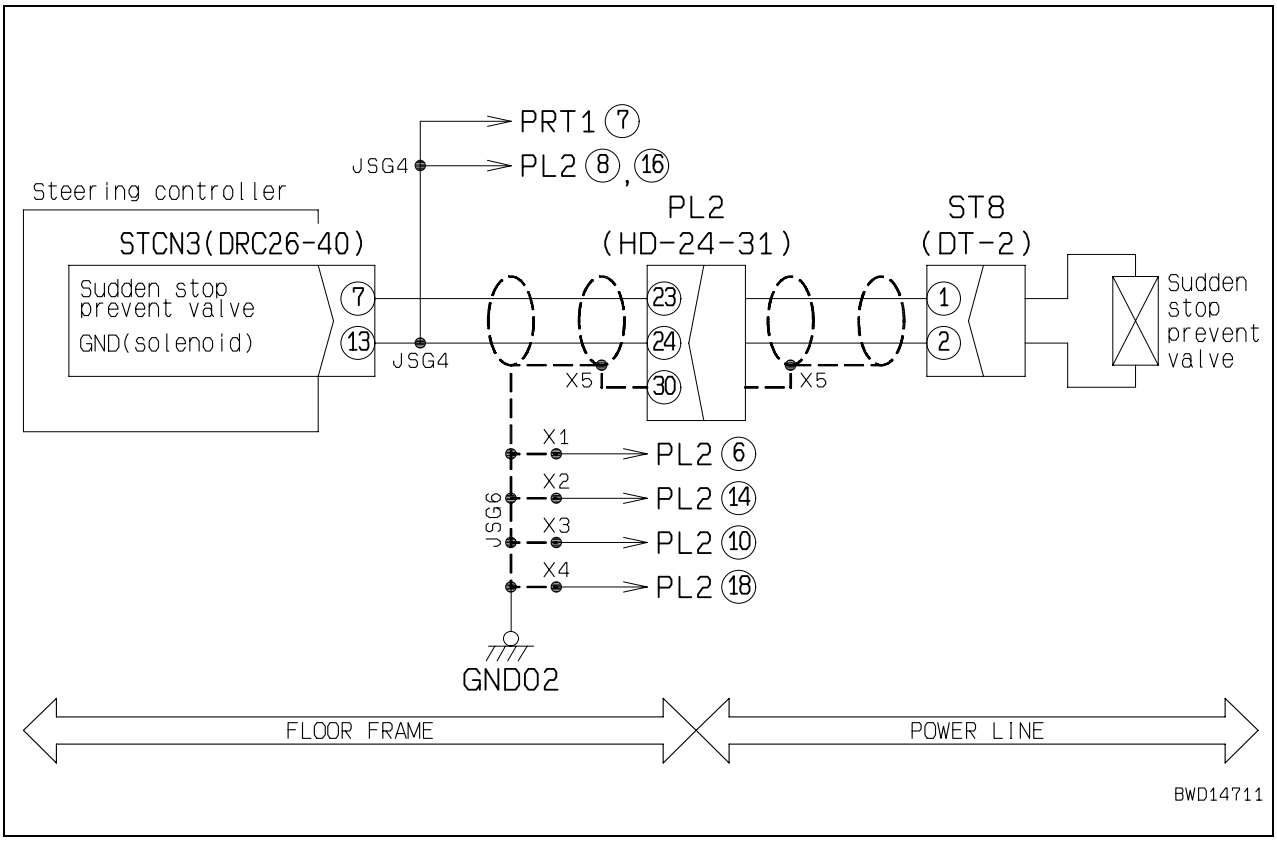
Action code	Failure code	Trouble	Transmission output speed sensor short circuit (Transmission controller system)
E01	**DLT3KB**		
Contents of trouble	• Signal is not input normally from transmission output speed sensor.		
Action of controller	—		
Problem that appears on machine	• Transmission speed cannot be monitored. • Traction force cannot be calculated.		
Related information	• Input (rpm) from transmission output speed sensor can be checked in real-time moniitoring mode. (Code **31400**: Transmission speed) • Method of reproducing failure code: Engine start + Drive machine.		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective transmission output speed sensor (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			TM1 (male)	Resistance	
			Between (1) – (2)	500 – 1,000 Ω	
			Between (1) – chassis ground	Min. 1 MΩ	
	2	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between TMCN2 (female) (30) – TM1 (female) (1)	Resis-tance	Max. 1 Ω
			Wiring harness between TMCN2 (female) (29) – TM1 (female) (2)	Resis-tance	Max. 1 Ω
	3	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Short circuit of wiring harness between TMCN2 (female) (30) – TM1 (female) (1) with chassis ground	Resis-tance	Min. 1 MΩ
	4	Defective transmission controller	If causes 1 – 3 are not detected, transmission controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Circuit diagram related



Circuit diagram related



Failure code [DXH1KA] Lockup solenoid disconnection

Action code	Failure code	Trouble	Lockup solenoid disconnection (Transmission controller system)
E01	**DXH1KA**		
Contents of trouble	• When signal is output to torque converter lock-up solenoid circuit, any current does not flow.		
Action of controller	• Stops outputting to torque converter lock-up solenoid circuit.		
Problem that appears on machine	• Torque converter is not locked-up.		
Related information	• Output (Current) to torque converter lock-up solenoid can be checked in real-time moniitoring mode. (Code **31627**: Torque converter lock-up solenoid drive current) • Method of reproducing failure code: Engine start + Turn lock-up switch ON + Drive machine.		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective torque converter lock-up solenoid (Internal short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			653 (male)	Resistance	
			Between (1) – (2)	30 – 80 Ω	
	2	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between TMCN3 (female) (38) – 653 (female) (1)	Resis-tance	Max. 1 Ω
			Wiring harness between TMCN3 (female) (23) – 653 (female) (2)	Resis-tance	Max. 1 Ω
	3	Defective transmission controller	If causes 1 and 2 are not detected, transmission controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)		

Failure code [DXH5KY] 2nd clutch ECMV hot short

Action code	Failure code	Trouble	2nd clutch ECMV hot short (Transmission controller system)
CALL E03	**DXH5KY**		
Contents of trouble	• Some current always flows into 2nd clutch solenoid circuit.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Stops outputting to transmission 2nd clutch solenoid circuit. • Limits operation of engine and transmission.		
Problem that appears on machine	• Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, travel is limited to F2 and R2.		
Related information	• Output (Current) to 2nd clutch solenoid can be checked in real-time moniitoring mode. (Code **31603**, **31613**: command current, output current of 2nd clutch ECMV) • Method of reproducing failure code: Engine start + Drive machine in F2 or R2.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective 2nd clutch solenoid (Internal short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			S2T (male)	Resistance		
			Between (1) – (2)	5 – 15 Ω		
			Between (1) – chassis ground	Min. 1 MΩ		
	2	Hot short in wiring harness (Contact with 24 V circuit)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			Short circuit of wiring harness between TMCN3 (female) (36) – S2T (female) (1) with chassis ground	Voltage	Max. 1 V	
			Short circuit of wiring harness between TMCN3 (female) (13) – S2T (female) (2) with chassis ground	Voltage	Max. 1 V	
	3	Defective transmission controller	If causes 1 and 2 are not detected, transmission controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Failure code [DXH8KB] Forward clutch ECMV short circuit

Action code	Failure code	Trouble	Forward clutch ECMV short circuit (Transmission controller system)
CALL E03	**DXH8KB**		
Contents of trouble	• When signal was output to transmission forward clutch solenoid circuit, abnormal current flowed.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Stops outputting to transmission forward clutch solenoid circuit. • Limits operation of engine and transmission.		
Problem that appears on machine	• Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, travel is limited to R1.		
Related information	• Output (Current) to forward clutch solenoid can be checked in real-time moniitoring mode. (Code **31608**, **31622**: command current, output current of forward clutch ECMV) • Method of reproducing failure code: Engine start + Drive machine forward.		

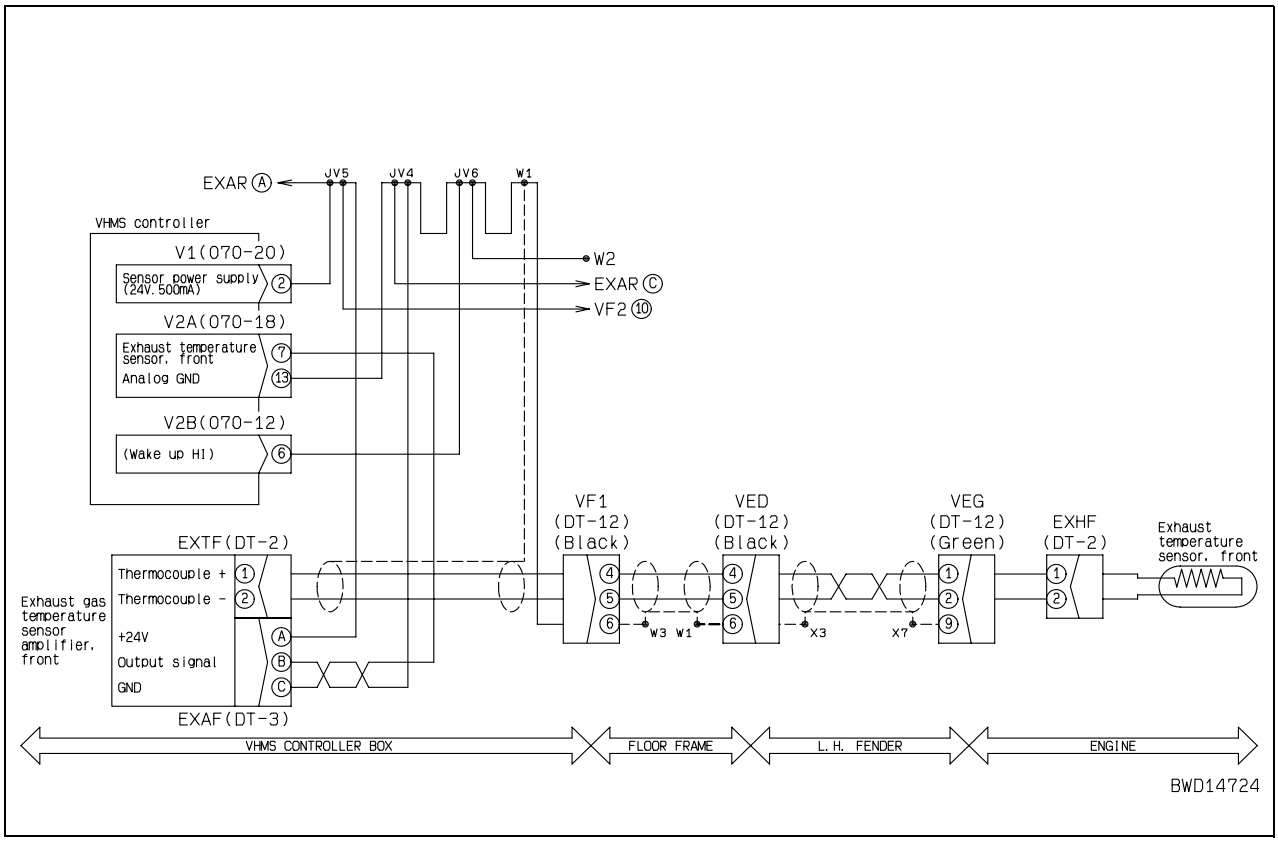
	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective forward clutch solenoid (Internal short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			SFT (male)	Resistance		
			Between (1) – (2)	5 – 15 Ω		
			Between (1) – chassis ground	Min. 1 MΩ		
	2	Short circuit with chassis ground in wiring harness (Contact with ground circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Short circuit of wiring harness between TMCN3 (female) (35) – SFT (female) (1) with chassis ground	Resis-tance	Min. 1 MΩ	
	3	Short circuit in wiring harness (with another wiring harness)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Short circuit in wiring harness between TMCN3 (female) (35) – SFT (female) (1) with wiring harness between TMCN3 (female) (13) – SFT (female) (2)	Resis-tance	Min. 1 MΩ	
	4	Defective transmission controller	If causes 1 – 3 are not detected, transmission controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

Failure code [DXHBKA] Right brake ECMV disconnection

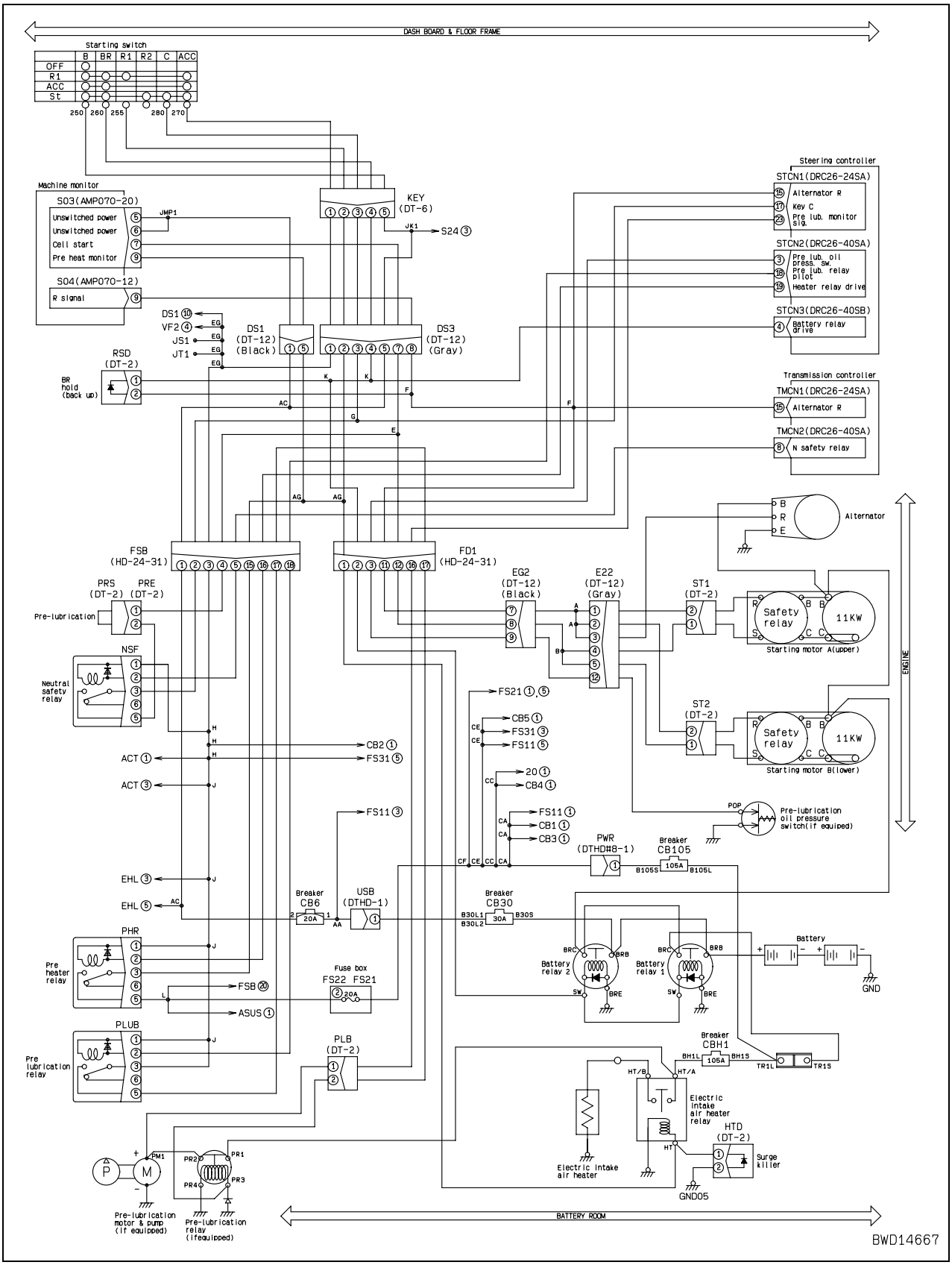
Action code	Failure code	Trouble	Right brake ECMV disconnection (Steering controller system)
CALL E04	**DXHBKA**		
Contents of trouble	• When signal is output to right steering brake solenoid circuit, any current does not flow.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Stops outputting to right steering brake solenoid circuit. • Limits operation of engine, transmission and brake. • Operates sudden stop prevention valve.		
Problem that appears on machine	• Right brake keeps operating. • Once machine is stopped, engine speed is limited to medium (half). • Once machine is stopped, it cannot travel any more.		
Related information	• Output (Current) to right steering brake solenoid can be checked in real-time moniitoring mode. (Code **31620**, **31618**: command current, output current of right steering brake ECMV) • Method of reproducing failure code: Turn starting switch ON + Rrelease parking brake lever.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective right steering brake solenoid (Internal short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			SRB (male)	Resistance		
			Between (1) – (2)	5 – 15 Ω		
	2	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			Wiring harness between STCN3 (female) (15) – SRB (female) (1)	Resis-tance	Max. 1 Ω	
			Wiring harness between STCN3 (female) (13) – SRB (female) (2)	Resis-tance	Max. 1 Ω	
	3	Defective steering controller	If causes 1 and 2 are not detected, steering controller may be defective. (Since trouble is in system, troubleshooting cannot be carried out.)			

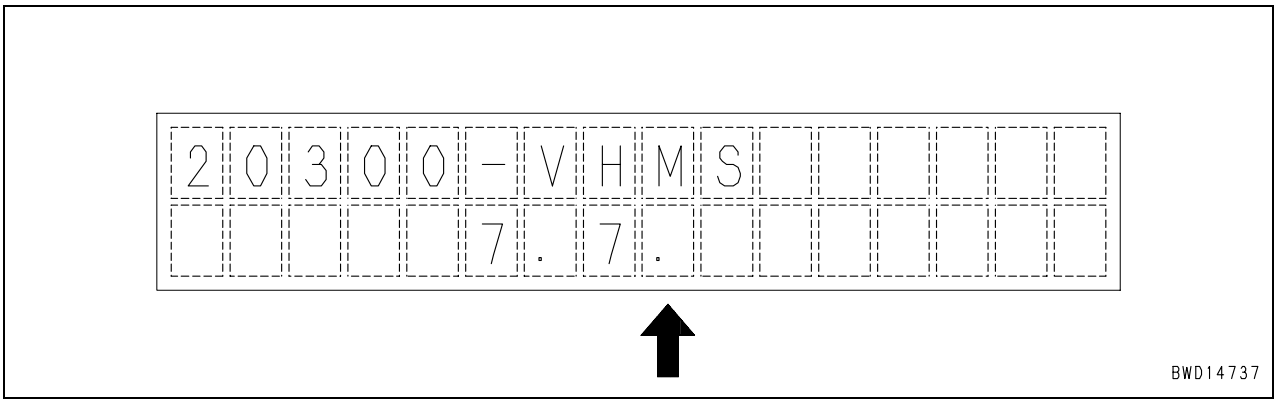
Circuit diagram related



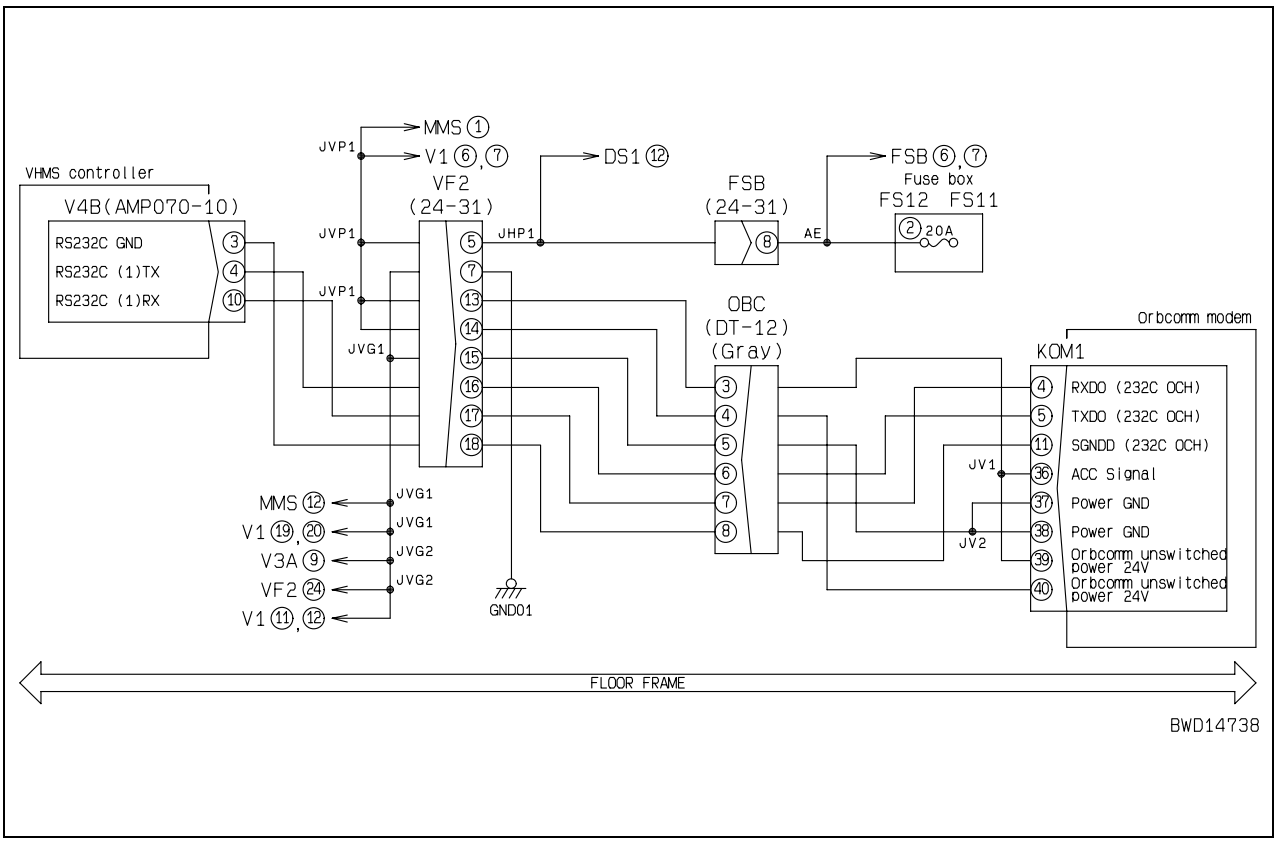
Circuit diagram related



Decimal point position of multi-function monitor



Circuit diagram related



	Cause		Standard value in normal state/Remarks on troubleshooting
Possible causes and standard value in normal state	8	Internal defect of steering clutch, brake	The inside of the steering clutch is supposed to be defective, check it directly.
	9	Malfunction of parking brake lever switch	Carry out troubleshooting for failure codes [**DDQ2KA**], [**DDQ2KB**], [**DDQ214**] and [**dDQ214**]. Even if failure code is not displayed, check that switch operates normally.

H-21 Ripper pin puller cylinder does not work (giant ripper attachment machine)

Trouble	• The ripper pin puller cylinder does not work.
Related information	• Confirm that the main relief pressure for transmission is normal before troubleshooting.

<table>
<tr><td rowspan="6">Possible causes and standard value in normal state</td><td colspan="2">Cause</td><td colspan="3">Standard value in normal state/Remarks on troubleshooting</td></tr>
<tr><td rowspan="3">1</td><td rowspan="3">Defective function of pin puller solenoid</td><td colspan="3">★ Prepare with starting switch OFF, then drive the engine in high idle mode for troubleshooting.</td></tr>
<tr><td>Pin puller switch</td><td>Measurement position</td><td>Pin puller working pressure</td></tr>
<tr><td>Push-in</td><td>Cylinder bottom side</td><td rowspan="2">Min. 2.2 MPa {Min. 22 kg/cm^2}</td></tr>
<tr><td>Pull-in</td><td>Cylinder head side</td></tr>
<tr><td>2</td><td>Internally defective pin puller cylinder</td><td colspan="3">The pin puller cylinder is assumed to be defective internally; directly check it.</td></tr>
<tr><td>3</td><td>Defective pin puller fuse FS2-2 (20 A)</td><td colspan="3">Check fuse for breakage. If it is broken, short circuit has probably occurred.
Check wiring harness of related circuit.</td></tr>
</table>

c) Exhaust smoke comes out but engine does not start (Fuel is being injected)

General causes why exhaust smoke comes out but engine does not start

- Rotating force in short due to defective electrical system
- Supply of fuel small
- Small air intake
- Improper selection of fuel

			Cause													
			Clogged air cleaner element	Wear of valve system (valve, rocker lever, etc.)	Worn piston ring, cylinder liner	Improper fuel used	Clogged air breather hole in fuel tank cap	Leakage, clogging, air in fuel piping	Clogged fuel filter, strainer	Clogged feed pump gauze filter	Stuck or seized supply pump plunger	Clogged injection nozzle, defective spray	Defective or deteriorated battery	Defective coolant temperature sensor or defective wiring harness	Defective intake air heater system
Questions / Check items	Check recent repair history														
	Degree of machine operation	Machine operated for long period			△				△	△		△			
	Suddenly failed to start			◎							◎			○	
	Non-specified fuel is being used										○	○			
	Replacement of filters not carried out according to Operation & Maintenance Manual		◎						◎	◎					
	Engine oil replenishment increasing				◎										
	Preheat monitor not indicating normal operation during preheating or at low temperature (when monitor installed)														◎
	Dust indicator turned red (with indicator installed)		◎												
	Clogged air breather hole in fuel tank cap						◎								
	Rust and water are detected when fuel tank is drained								◎	◎					
	When removed, no fuel is inside the fuel filter					◎									
	Leakage from fuel piping							◎							
	Starting motor cranks engine slowly												◎		
	When engine is cranked, abnormal noise is heard from around cylinder head			◎											
	When engine is cranked with starting motor,	Fuel fails to discharge, when bleeding air plug of the fuel filter is removed				○			◎	◎					
		Spill flow drops, when spill hose is separated from injector									◎				
	When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low											◎			
Troubleshooting	Inspect air cleaner directly		●												
	Inspect valve system directly			●											
	When compression pressure is measured, the oil pressure is low.				●										
	Air is discharged when the air is bled from the fuel system							●							
	Inspect the fuel filter, strainer directly								●						
	Inspect the fuel feed pump gauze filter directly									●					
	Carry out troubleshoot by "Rail Press Very Low Error (*1)"										●				
	Testing a single unit injector indicates defective spraying											●			
	Specific gravity of electrolyte and voltage of battery are low												●		
	Coolant temperature gauge indication is not normal (when the gauge is installed)													●	
	Intake air heater mount does not warm up during preheating operation														●
		Remedy	Clean	Replace	Replace	Replace	Clean	Correct	Clean	Clean	Replace	Replace	Replace	Replace	Replace

*1: Troubleshooting by failure code (Display of code), Code [**CA559**], and Code [**CA2249**]

S-15 Abnormal noise is made

General causes why abnormal noise is made
- Abnormality due to defective parts
- Abnormal combustion
- Air sucked in from intake system

★ Judge if noise is from inside or outside before proceeding with troubleshooting

★ When engine is not fully warmed up, engine noise rises slightly because of operation in the low temperature mode. This is not abnormal, however.

★ When engine is accelerated, it enters acceleration mode, where engine noise remains slightly higher for about 5 seconds maximum. This is not abnormal, however.

			Cause													
			Air leakage between turbocharger and cylinder head	Seizure or interference of turbocharger	Cracks or gas leakage from EGR gas piping	Breakage of valve system (valve, rocker lever, etc.)	Defect inside muffler (dividing board out of position)	Improper valve clearance	Excessive wear of piston ring, cylinder liner	Improper gear train backlash	Missing, seized gear train bushing	Deformed fan	Clogged, seized injector	Dirt caught in the injector	Defective fuel injection timing (abnormal low coolant temperature sensor)
Questions	Confirm recent repair history															
	Degree of use of machine	Operated for long period							△							
	Condition of abnormal noise	Gradually increased						○	○			○				
		Suddenly increased		○	○	○					○					
	Non-specified fuel is being used												○			
	Engine oil must be added more frequently								◎							
Check items	Metal particles are found when oil is drained in oil filter					○			◎		◎					
	Leakage of air between turbocharger and cylinder head		◎													
	When engine is cranked, abnormal noise is heard from around turbocharger			◎												
	When engine is cranked, abnormal noise is heard from around EGR gas piping				◎											
	When engine is cranked, abnormal noise is heard from around cylinder head					◎		◎								
	When engine is cranked, abnormal noise is heard from around muffler						◎									
	When exhaust manifold is touched immediately after starting engine, temperature of some cylinders is low												◎	○		
	Color of exhaust gas	Blue under light load							◎							
		Black	○	◎				○								
	Engine pickup is poor and combustion is abnormal												◎			
	Abnormal noise is loud when accelerating engine							○		○		○	○			
	Blow-by gas is excessive								◎							
Troubleshooting	When turbocharger is rotated by hand, it is found to be heavy			●												
	Inspect EGR gas piping directly				●											
	Inspect valve system directly					●										
	When muffler is removed, abnormal noise disappears						●									
	Inspect valve clearance directly							●								
	When compression pressure is measured, the oil pressure is low.								●							
	Inspect gear train directly									●	●					
	Inspect fan directly											●				
	Speed of some cylinders does not change when operated in reduced cylinder mode												●	●		
	Abnormal noise is emitted only when starting engine													●		
	Check by the real-time monitoring mode															●
		Remedy	Replace	Replace	Replace	Correct	Replace	Adjust	Replace	Replace	Replace	Correct	Replace	Replace	Correct	

Component	Symbol		Part No.	Part name	Necessity	Qty	New/remodel	Sketch	Nature work remarks
No. 1 bogie assembly	L	15 1	791-630-2280	Adapter	■	1			Removal of shaft, ring
		2	790-201-2770	Spacer	■	1			
		3	791-630-2250	Plate	■	1			
		4	790-434-1070	Screw	■	1			
		5	01580-13629	Nut	■	2			
		6	01643-33690	Washer	■	2			
		7	790-101-4000	Puller (490 kN {50 ton})	■	1			
		8	790-101-1102	Pump	■	1			
No. 1 bogie assembly		16 1	791-630-2260	Plate	■	1			Press fitting of pin assembly
		2	791-630-2270	Screw	■	3			
		3	01580-12419	Nut	■	3			
		4	01643-32460	Washer	■	3			
		5	790-101-4000	Puller (490 kN {50 ton})	■	1			
		6	790-101-1102	Pump	■	1			
		17	791T-630-2290	Guide	■	2	N	○	Align the pin hole of the track frame and bogie
		18	790-434-1350	Installer	■	1			Installation of floating seal
		19	791-601-1000	Oil pump	■	1			Filling of oil
		20 1	791-630-1860	Bracket (L.H)	■	1	N		Setting of installation position
		2	791-630-1870	Bracket (R.H)	■	1	N		
		3	01010-62760	Bolt	■	2			
		4	01643-32780	Washer	■	2			
		21	791T-630-1900	Sling tool	●	1		○	Installation of track roller assembly
			791T-630-1910	• Tube		1		○	
			791T-630-1920	• Plate		1		○	
			07283-38973	• Clip		1			
			04530-11628	• Eye bolt		1			
			01643-31645	• Washer		1			
			01643-31232	• Washer		2			
			01582-01210	• Nut		2			
Track shoe	R	1	791-646-7351	Push tool	■	1			Removal of small plug
		2	791-660-7460	Pin brush	■	1			Cleaning of pin hole
		3	791-646-7900	Push tool (for large plug)	■	1			Press fitting of large plug
		4	791-701-3000 or 791-601-1000	Seal checker Oil pump	■	2			Supply oil
		5	791-932-1110	Push tool (for small plug)	■	1			Press fitting of small plug
		6	791-632-1021	Installer	■	1			Installation of seal assembly
		7 1	791-632-1100	Remover & installer assembly	■	1			Disassembly, assembly of track shoe
		2	791-632-1130	• Adapter		1			
		3	790-434-1610	• Guide		1			
		4	01010-51440	• Bolt		2			
		5	791-685-9510	• Frame		1			
		6	791-685-9530	• Rod		1			

BULLDOZER

D375A-5E0

Machine model	Serial number
D375A-5E0	50001 and up

50 Disassembly and assembly

Engine and cooling system

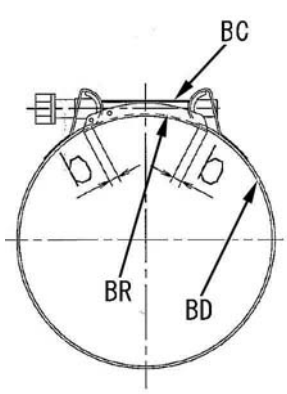
[*3]
MIKALOR clamp (MC10), (MC20) and (MC23)

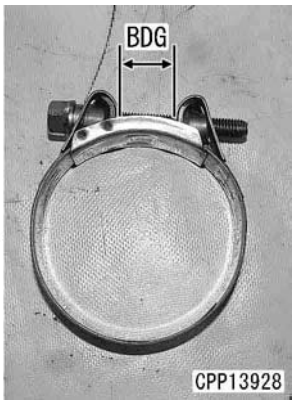
★ Use a new MIKALOR clamp.

1) Set hose to the original position. (Insertion depth of air hose: **80 mm**)
2) Set bridge (BR) under the clamp bolt and lap it over band (BD) at least (b) reaches 5 mm.
3) Tightening of the clamp.
   ★ Do not use an impact wrench.
   Clamp bolt (BC):
   Lubricating oil (THREEBOND PANDO 18B)

   - **When reusing the hose**
     Install clamp to the clamp mark made on the hose
     Clamp bolt (BC):
     Min. 6 Nm {0.6 kgm}

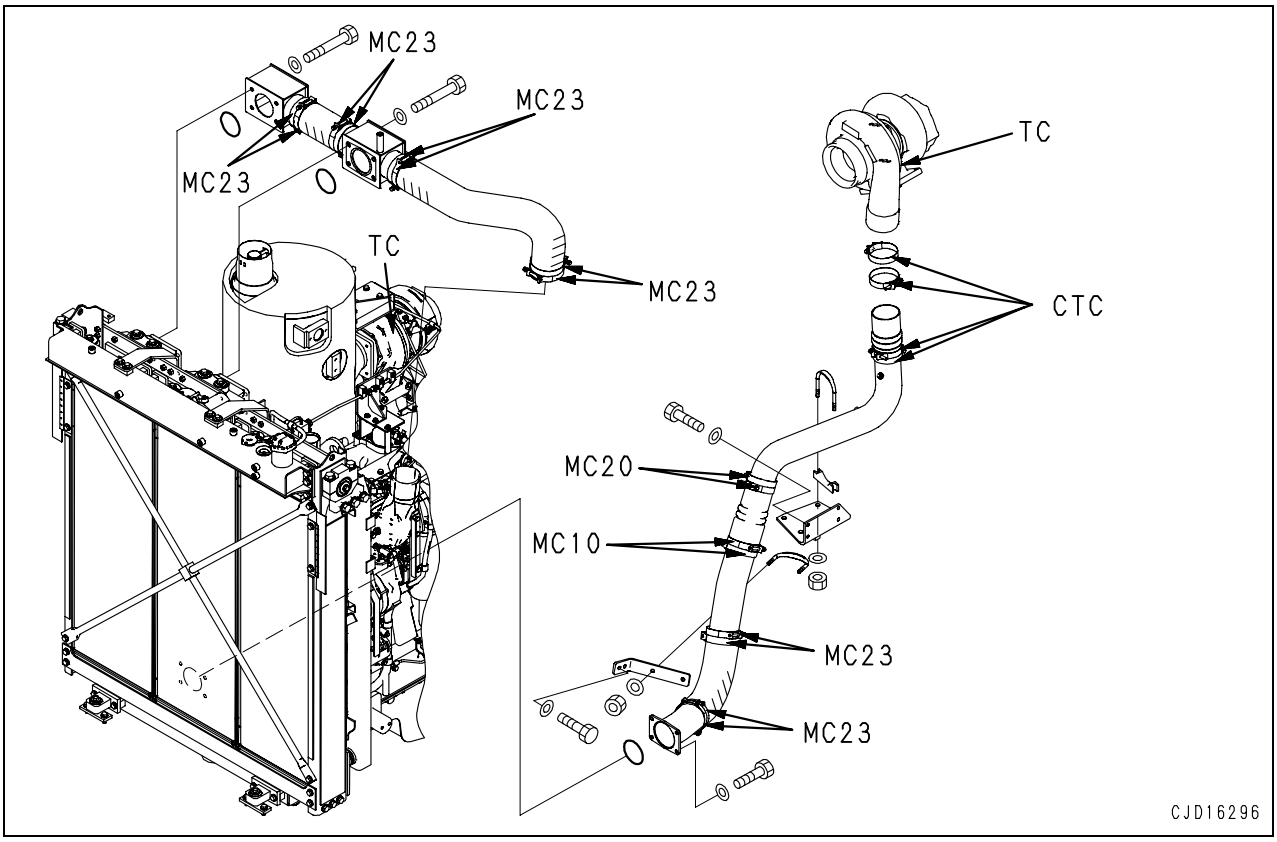
   - **When using a new hose**
     Tighten until dimension (BDG) is the following.
     MC10: 7 – 10 mm
     MC20: 17 – 20 mm
     MC23: 20 – 23 mm





Constant torque clamp (CTC)
10.5 ± 0.5 Nm {1.07 ± 0.05 kgm}

(TC): Turbo charger



- **Refilling with water**
  Add water through water filler to the specified level. Run the engine to circulate the water through the system. Then check the water level again.
  Cooling water: **120 ℓ**

- **Refilling with oil (Hydraulic tank)**
  Add oil through the oil filler to the specified level. Run the engine to circulate the oil through the system. Then, check the oil level again.
  Hydraulic tank: **130 ℓ**

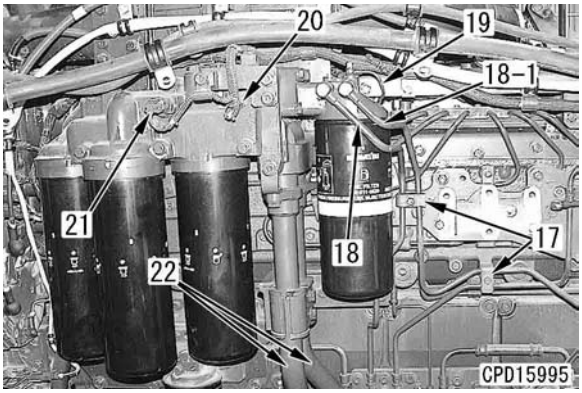
13. Remove fuel tube clamp (17).

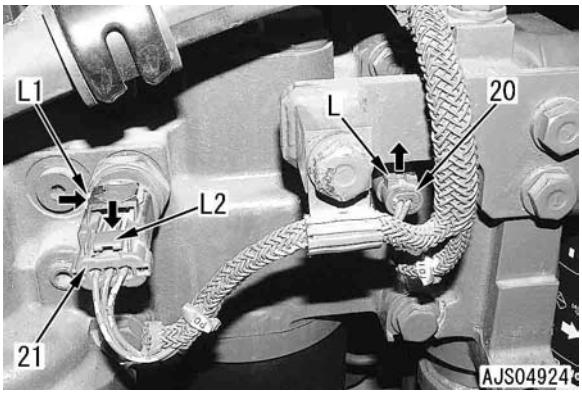
14. Remove fuel tubes (18-1), (18-2) and (19). [*3]

15. Disconnect connectors TOIL (20).
    ★ Pull out connector by driving lock (L) upward.

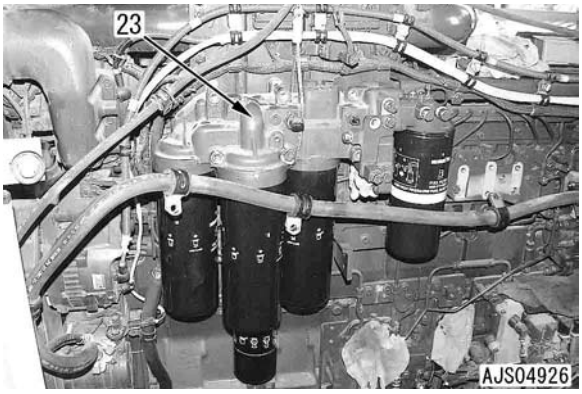
16. Disconnect connectors POIL (21) in the following manner.
    1) When disconnecting connector, slide lock (L1) rightward.
    2) Pull out connector while pushing lock (L2).

17. Remove tube assembly (22).

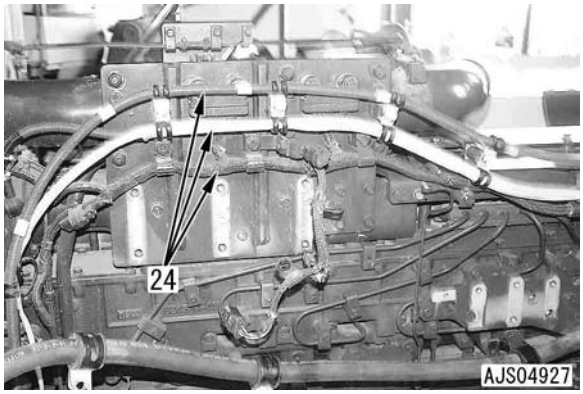




18. Lift off engine oil filter assembly (23).

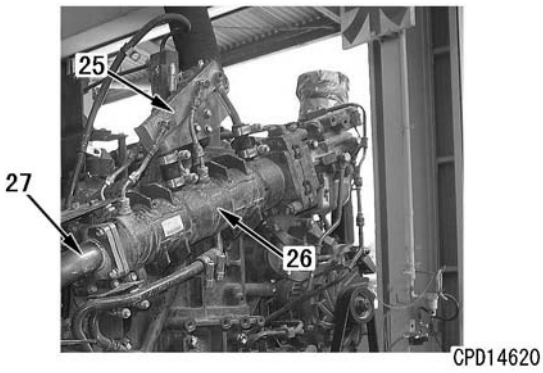


19. Disconnect wiring harness (24).



20. Disconnect water tube (25).

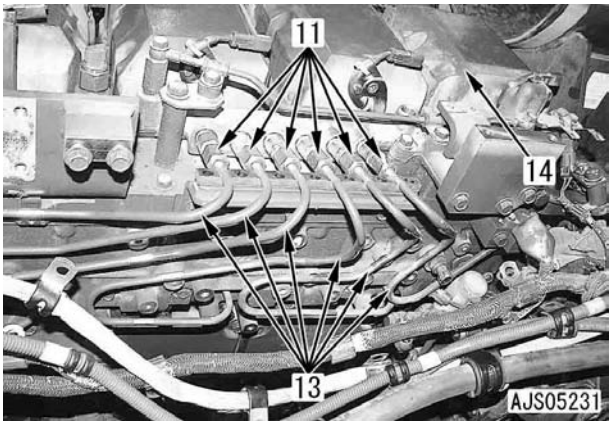
21. Remove EGR valve and cooler assembly (26) and exhaust tube (27).

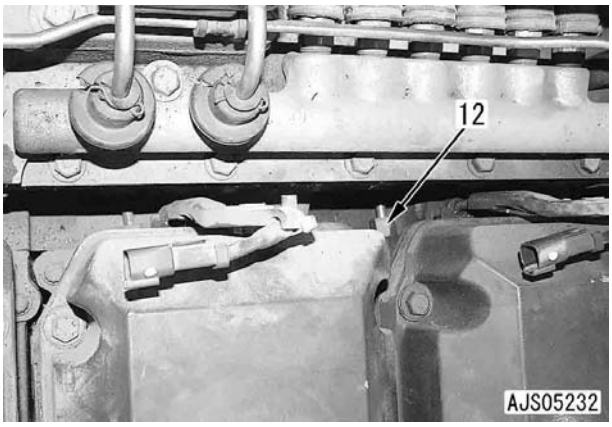


38. Disconnect 6 sleeves (11) and (12).

39. Remove high-pressure piping (13).

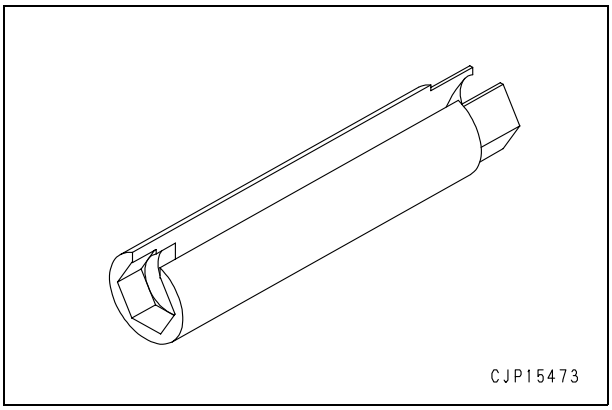
40. Remove cylinder head cover (14).





★ When tool **A2** is not available, disconnect sleeve (12) through the top.

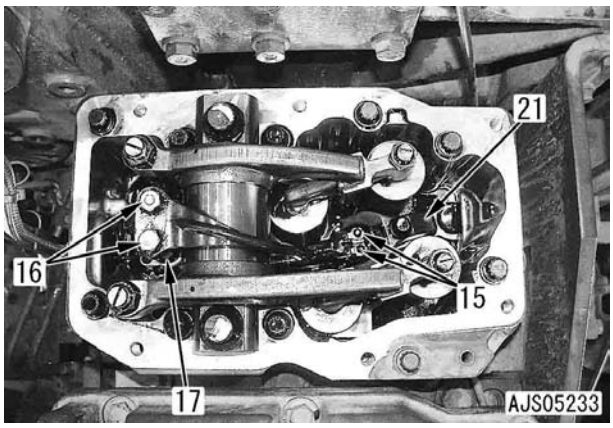
- Tool **A2**



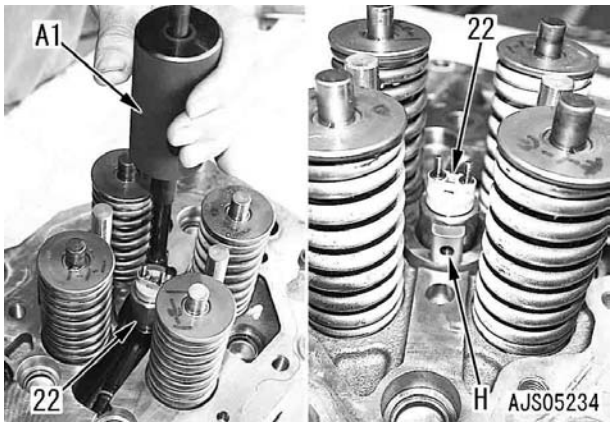
41. Remove terminal mounting nuts (15).
    ★ Loosen the nuts alternately.

42. Remove wiring harness assembly mounting bolts (16) and spacer (17).

43. Remove fuel injector holder (21).



44. Using tool **A1**, remove fuel injector assembly (22).
    ★ Remove the assembly by hitching tip of tool **A1** on hole (H) of the fuel injector.
    ★ Do not grip the solenoid valve at the top of the injector to pull off the injector.
    ★ The figure shows the removed rocker arm and shaft assembly.



12. Using eyebolt [1], sling damper cover (26). Using a forcing screw, remove the damper cover. [*3]

⚠ Set guide bolt [2] (ℓ = 200 mm) so that the damper cover will not come off suddenly.

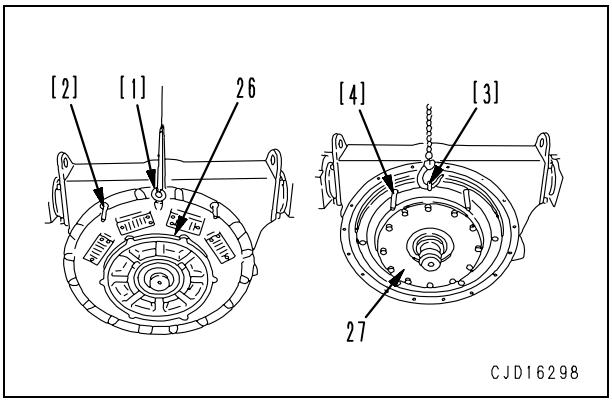
Damper cover: **75 kg**

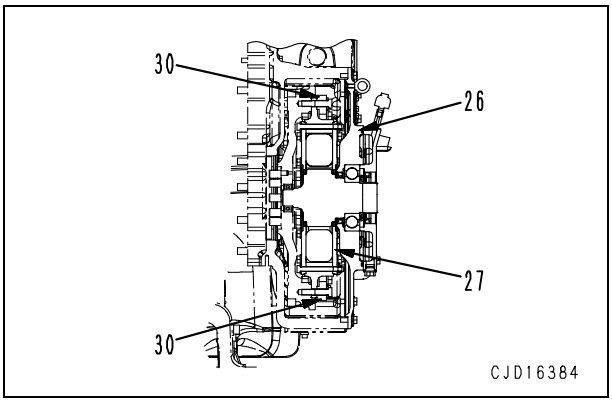
13. Using eyebolt [3], remove damper assembly (27). [*4]

⚠ Set guide bolt [4] (L = 200 mm) so that the damper assembly will not come off suddenly.

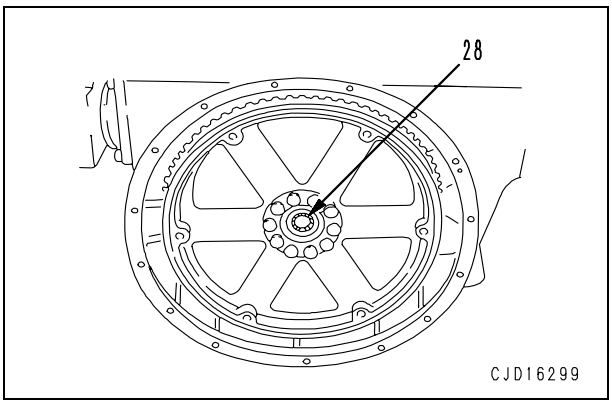
Damper assembly: **70 kg**

★ Remove inertial ring (30).





14. Remove bearing (28) from the flywheel. [*5]



Installation

- Carry out installation in the reverse order to removal.

[*1]

Universal joint mounting bolt:
176.4 ± 19.6 Nm {18 ± 2 kgm}

[*2]

Holder mounting bolt thread portion:
Adhesive (LT-2)

Holder mounting bolt:
276.85 ± 31.85 Nm {28.25 ± 3.25 kgm}

[*3]

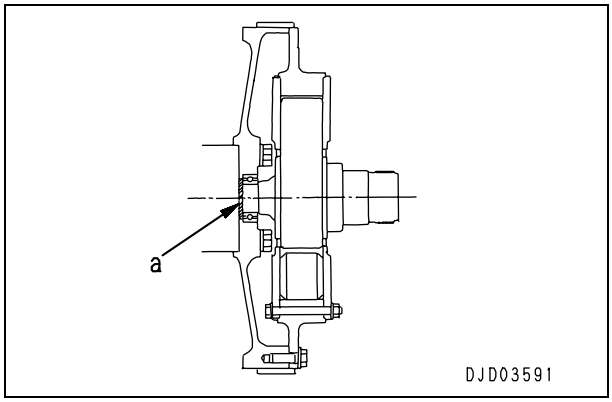
★ Using guide bolt [2] (ℓ = 200 mm), dtermine the position of the damper cover.

[*4]

★ Using guide bolt [4] (ℓ = 200 mm), dtermine the position of the damper assembly.

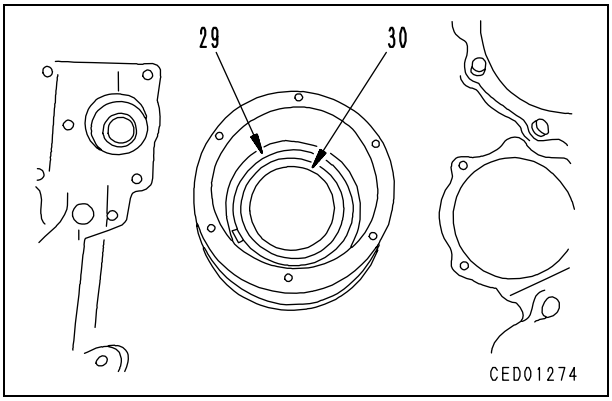
[*5]

The hatched portion (a) in the diagram:
Grease (G2-LI) approx. 50% full (approx. 11 g)

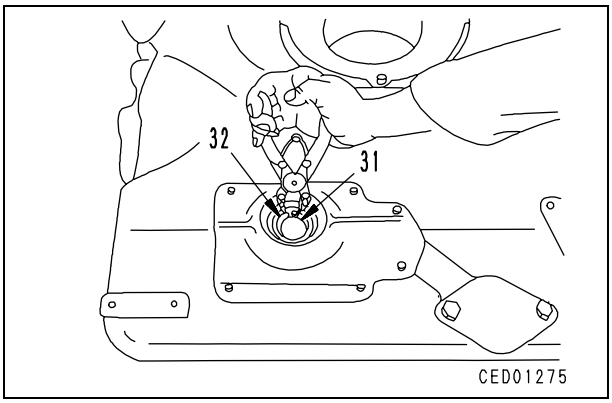


- **Refilling with oil (Damper case: EO30-DH)**
  ★ Fill with oil to the specified level.

3) Remove bearing outer race (29).
4) Remove sleeve (30).



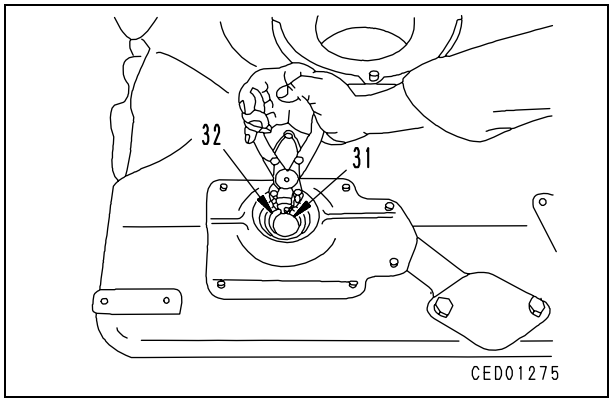
7. Bearing
Remove snap ring (31), then remove bearing (32).



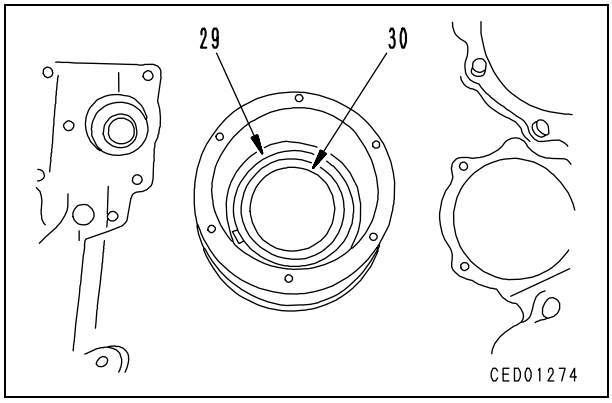
Assembly

★ Wash all parts clean and check that there are no scratches or dirt before assembling.
★ Check that the snap ring is fitted securely in the groove.

1. Bearing
1) Using push tool, press fit bearing (32) to case.
   ★ Drop **approx. 6 cc of power train oil (TO10 or TO30)** on the bearing, and rotate it 10 times.
2) Install snap ring (31).



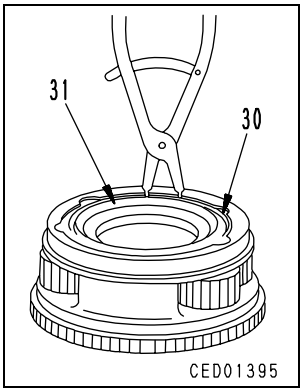
2. PTO case
1) Install sleeve (30) to case.
   ★ Install the sleeve with the chamfered portion on the inside circumference facing down.
   ★ Expand fit the sleeve.
2) Using push tool, press fit bearing outer race (29).

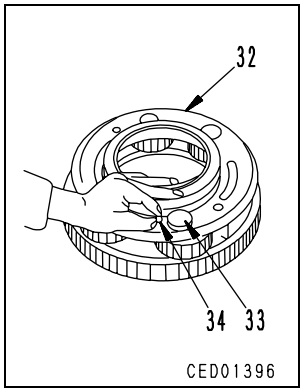


16] Turn over No. 1 carrier assembly, remove snap ring (30), then remove collar (31).

17] Turn over No. 1 carrier assembly, pull out shaft (33) partially from carrier (32), remove ball (34), then remove shaft (33).

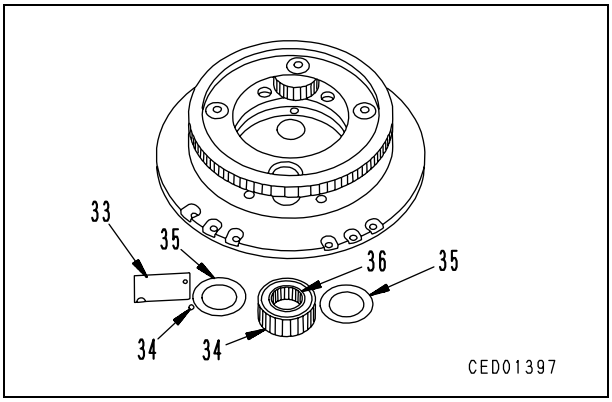
★ Keep the ball in a safe place and be careful not to lose it.





18] Remove gear (34) and thrust washer (35) from carrier.

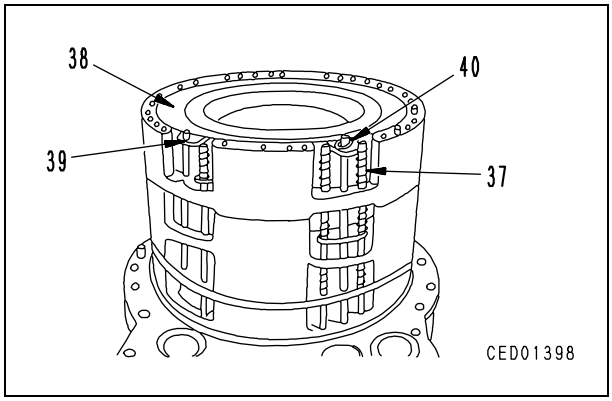
19] Remove needle bearing (36) from gear (34).



6. No. 1 discs, plates, springs

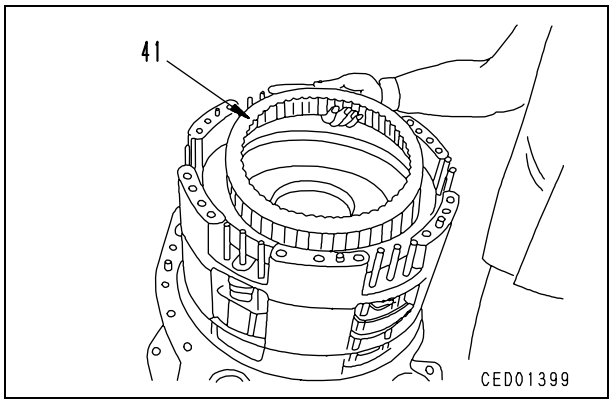
1) Remove 12 springs (37).
2) Remove 6 discs (38), 6 springs (40), and 5 plates (39) in turn, then remove guide plate.

★ Store the discs and plates in a flat place to prevent them from becoming deformed.



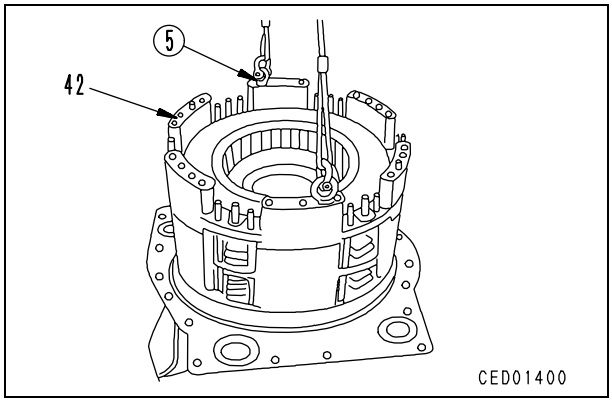
7. No. 1 clutch ring gear

Remove No. 1 clutch ring gear (41).

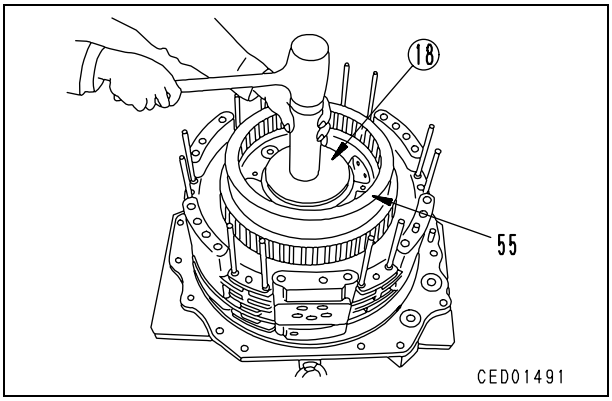


8. No. 1 housing

1) Using eyebolts [5], remove No. 1 housing assembly (42).

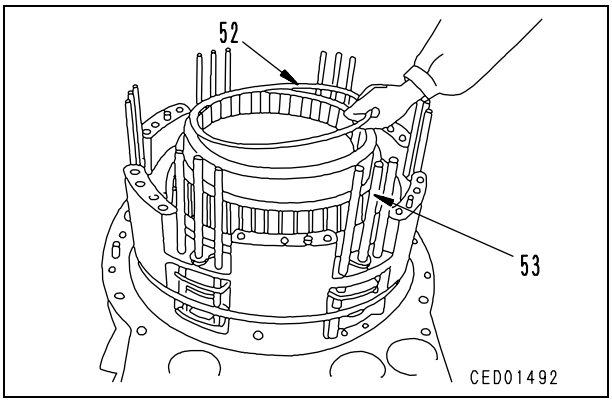


3) Using push tool [18], press fit bearing portion of No. 1 ring gear and No. 2, No. 3 carrier assembly (55).

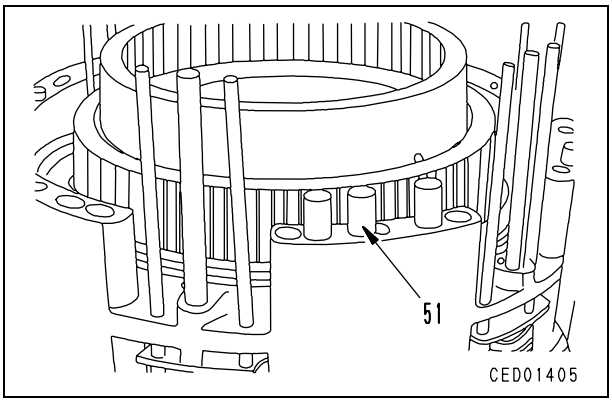


14. No. 2 discs, plates, springs

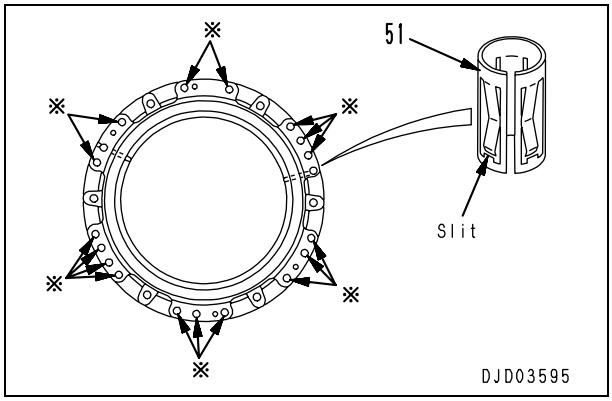
1) Install 6 torque pins (53).
   ★ Length of torque pin: **199 mm**
2) Install seal ring (52) to No. 2, No. 3 carrier.
   Seal ring: **Grease (G2-LI)**



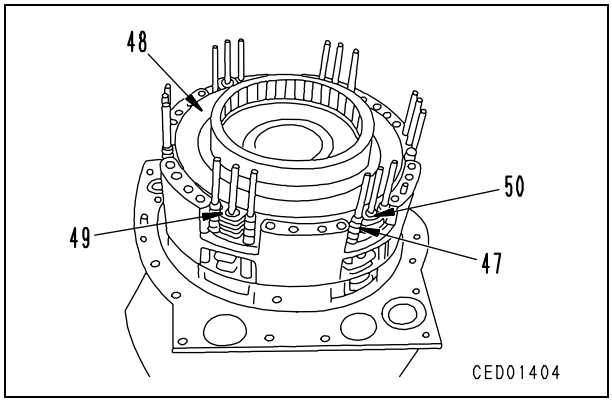
3) Install 17 sleeves (51).



★ Set the sleeve with the slit at the bottom and install it in the bolt hole marked *.

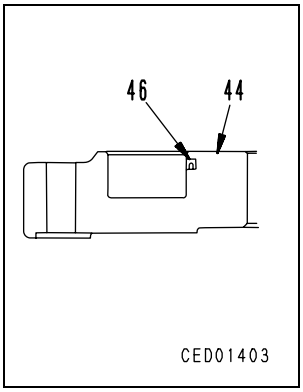


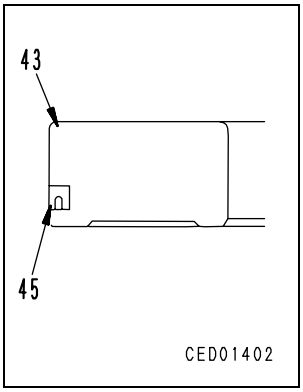
4) Install 12 springs (47).
   ★ Free length of spring: **70 mm**
5) Install 6 discs (48), 6 springs (50), and 5 plates (49) in turn.
   ★ Align the notches in the oil groover on the outside circumference of the discs.



15. No. 1 housing assembly

1) Install seal ring (46) to housing (44).
   ★ Install the seal ring in the direction shown in the diagram below.
   Seal ring: **Grease (G2-LI)**
2) Install seal ring (45) to piston (43).
   ★ Install the seal ring in the direction shown in the diagram below.
   Seal ring: **Grease (G2-LI)**

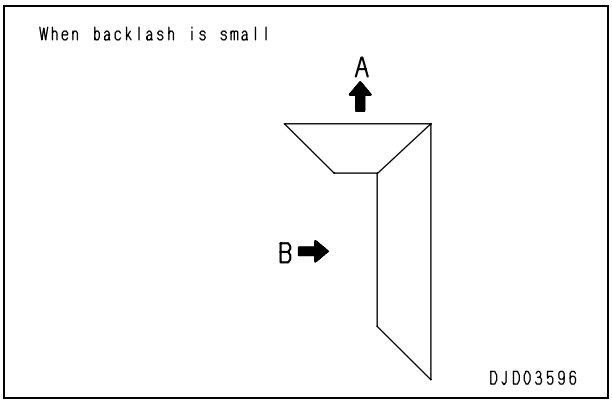




Adjusting

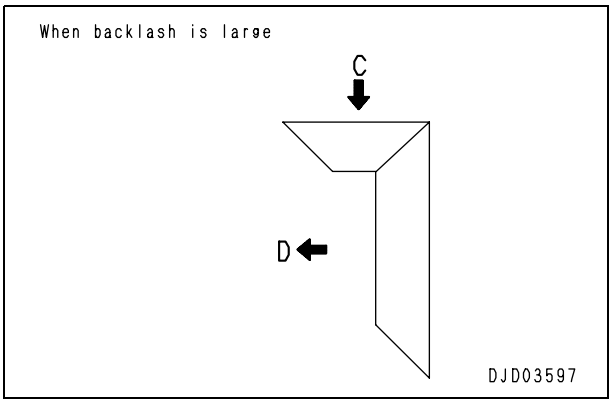
If the result of the measurement shows that the backlash is not correct, adjust as follows.

1] When backlash is too small:
Adjust the shim thickness at the bevel pinion end and move the bevel pinion in direction (A).
Or, adjust the shim thickness at the bearing cage of the bevel gear shaft and move the bevel gear in direction (B).



2] When backlash is too large:
Adjust the shim thickness at the bevel pinion end and move the bevel pinion in direction (C).
Or, adjust the shim thickness at the bearing cage of the bevel gear shaft and move the bevel gear in direction (D).

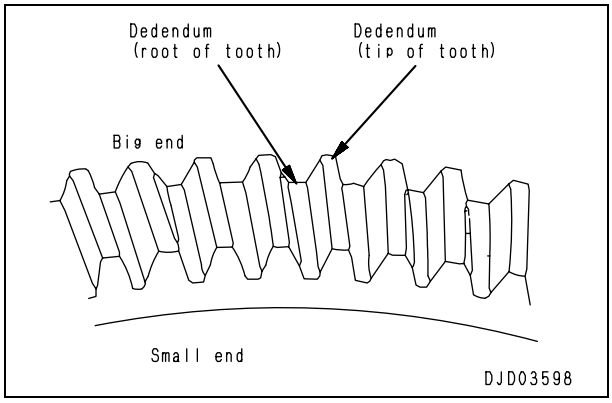
★ When adjusting the shim thickness at the bearing cage of the bevel gear shaft, do not change the preload of the bearing. Adjust by moving shims from one side to the opposite side. Always keep the same total thickness of shims.



2) Adjusting tooth contact

Testing

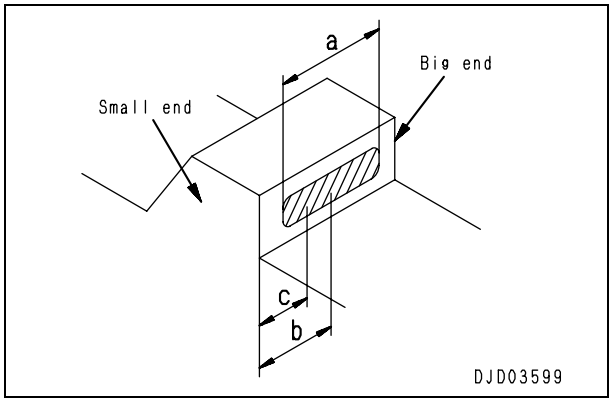
1] Coat the tooth face of the bevel pinion lightly with red lead (minium), then rotate the bevel gear forward and backward and inspect the pattern left on the teeth.



2] The standard value for the tooth contact is as follows
(from small end of pinion)
a) Width of tooth contact: **30 – 75 %**
b) Center of tooth contact: **25 – 50 %**
c) Position of tooth contact: **25 – 50 %**

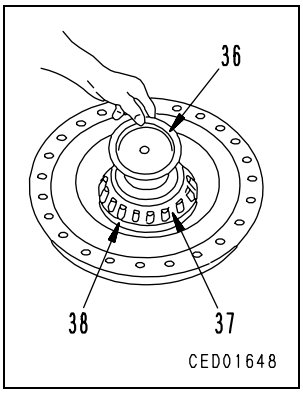
★ When preload is applied to the taper roller bearing supporting the bevel gear, it should be within the standard value with only the bevel pinion meshed and under no load.

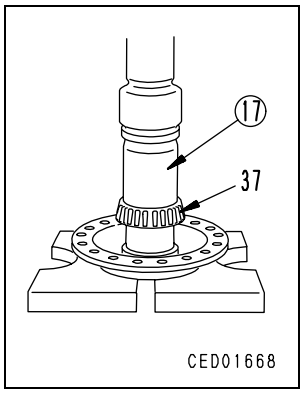
★ The tooth contact should be at the center of the tooth height and there should be no strong contact at the root of the gear tooth.
In addition, the contact should be more or less the same for forward and reverse.



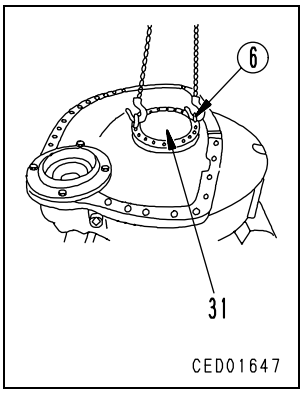
4. Hub, shaft assembly

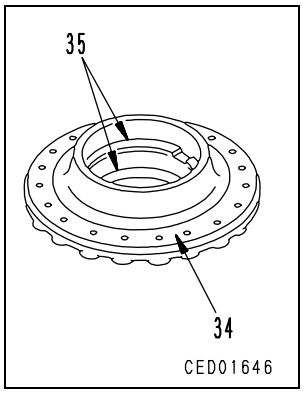
1) Assemble shaft assembly as follows.
   1] Install collar (38).
   2] Using push tool [17], press fit bearing inner race (37).
   3] Install collar (38).



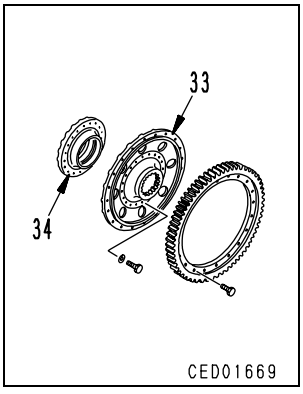


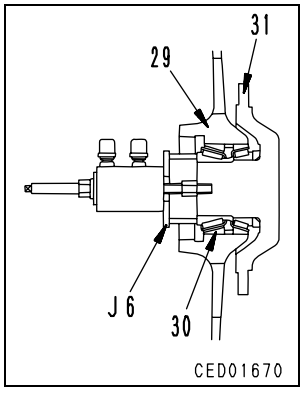
2) Using eyebolts [6], install shaft assembly (31) to case.
3) Assemble hub assembly as follows.
   1] Using push tool, press fit bearing outer race (35) to boss (34).



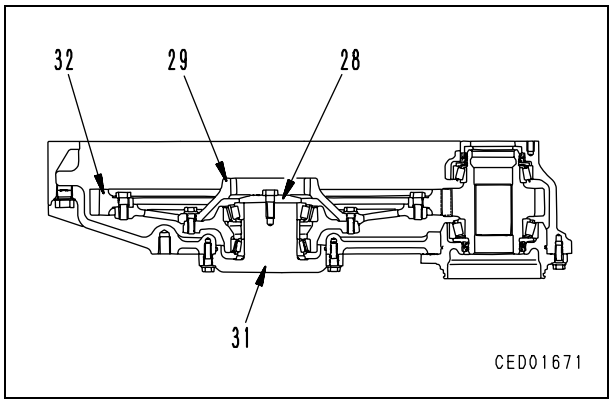


   2] Set boss (34) to hub (33).
4) Set shaft assembly (31) and hub assembly (29) in position, then using tool **J6**, press fit bearing portion (30).



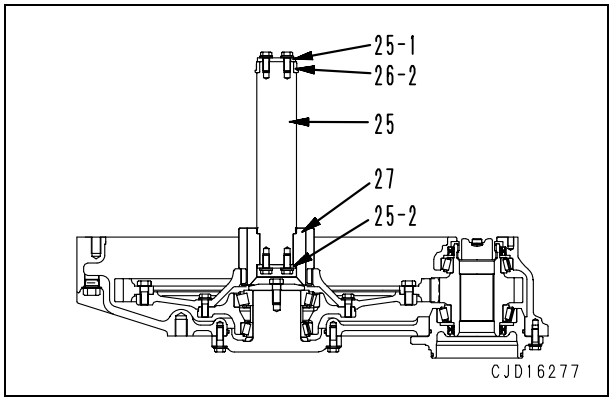


5) Tighten mounting bolts of hub assembly (29).
   Mounting bolt:
   276.85 ± 31.85 Nm {28.25 ± 3.25 kgm}
6) Install plate (28).
   Mounting bolt: **Adhesive (LT-2)**
   Mounting bolt:
   548.8 ± 58.8 Nm {56 ± 6 kgm}
7) Install gear (32).
   Mounting bolt:
   539 ± 49 Nm {55 ± 5 kgm}



5. Sun gear, shaft assembly

1) Install bearing inner race (26-2) to the shaft with plate (25-1).
2) Install sun gear (27) to the shaft with plate (25-2).
3) Install shaft assembly (25).



Removal and installation of recoil spring assembly

Special tools

Sym-bol		Part No.	Part name	Necessity	Q'ty	New/remodel	Sketch
M	1	791-730-1110	Bolt	■	6		
		01580-12722	Nut	■	6		
		01643-32780	Washer	■	1		
		790-101-2102	Puller (294kN {30ton})	■	1		
		790-101-1102	Pump	■	1		

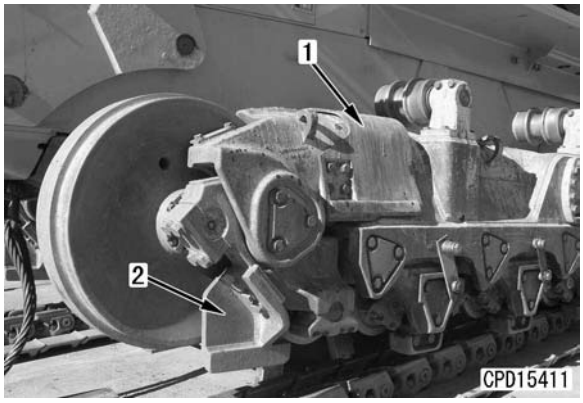
Removal

1. Expand the track shoe assembly. For details, see "Expansion and installation of track shoe assembly".

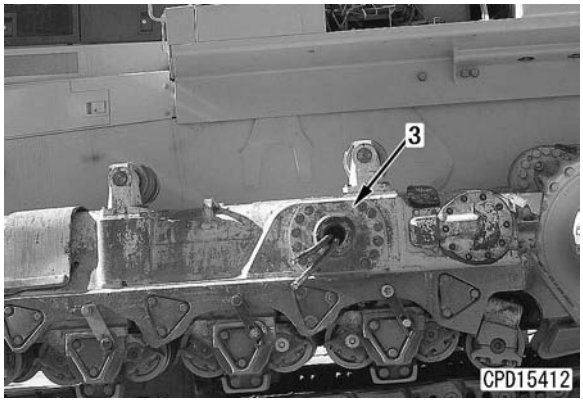
2. Drain oil from recoil cylinder chamber using oil pump.
   Recoil cylinder chamber: **Approx. 50 ℓ**

3. Using eyebolt [1], remove cover (1).
   Cover: **40 kg**

4. Remove cover (2).

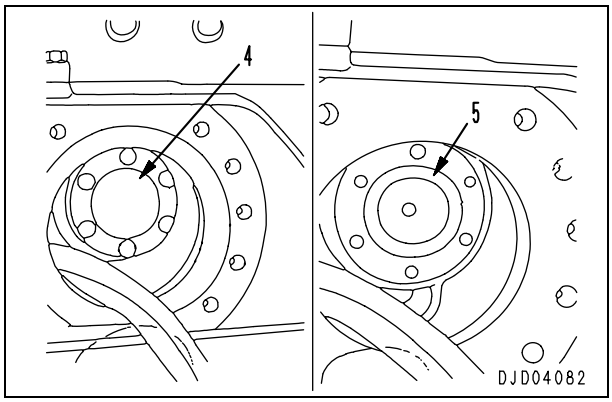


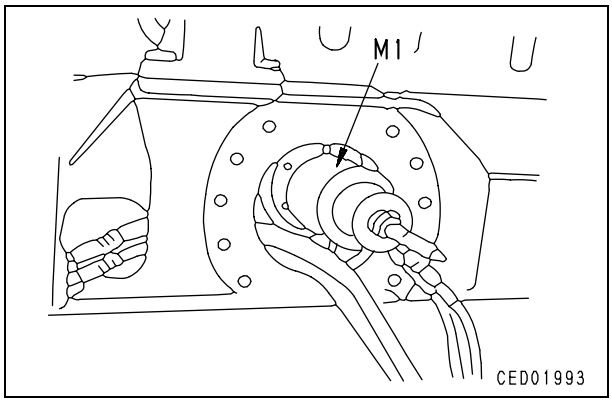
5. Lift off trunnion (3).
   Trunnion: **75 kg**



6. Remove covers (4).
   ★ Remove both the inside and outside covers.

7. Using tool **M1**, remove pins (5). [*1]
   ★ Remove both the inside and outside pins.





Removal and installation of bogie assembly

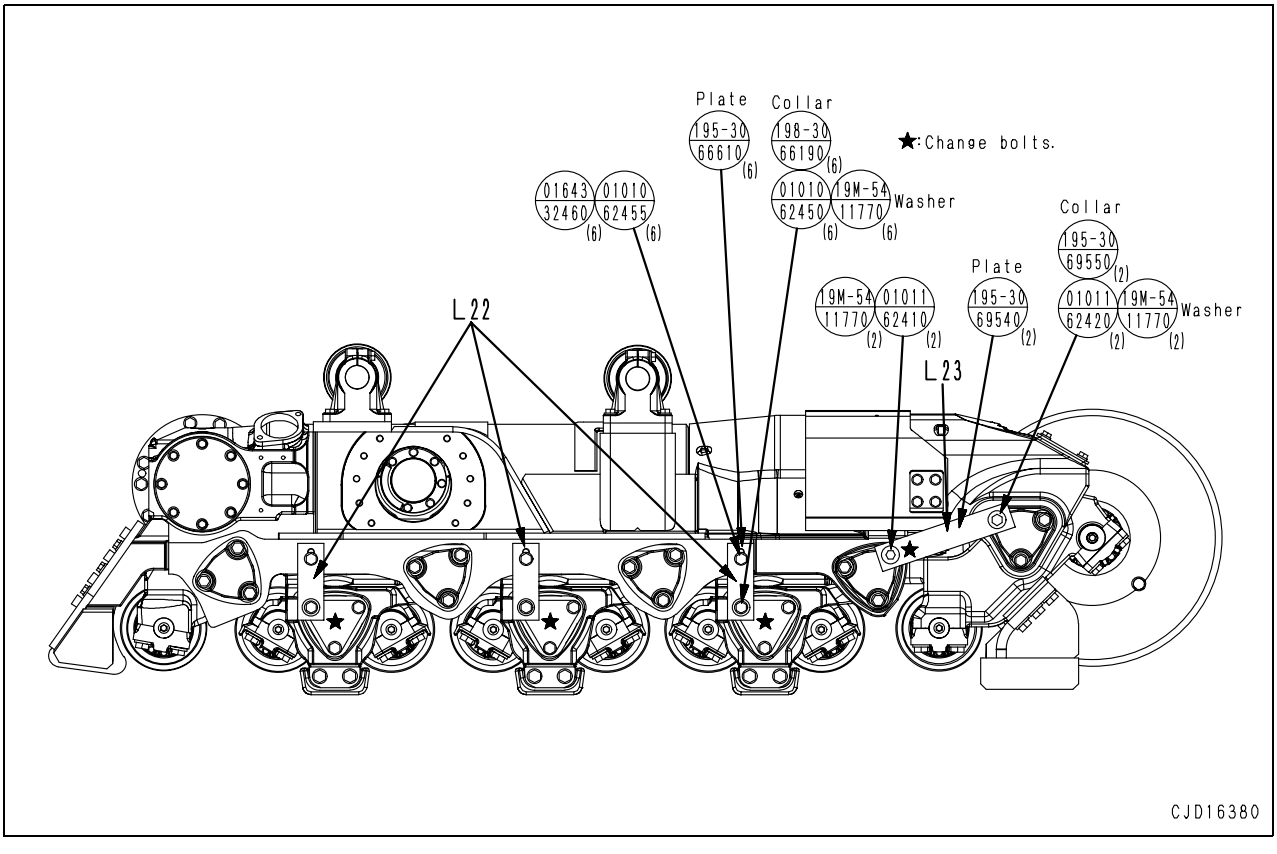
Special tools

Sym-bol		Part No.	Part name	Necessity	Q'ty	New/remodel	Sketch
L	14	1	791-630-2260	Plate	■	1		
		2	790-201-2730	Spacer	■	1		
		3	791-630-2270	Screw	■	3		
		4	01580-12419	Nut	■	3		
		5	01643-32460	Washer	■	3		
		6	790-101-4000	Puller (490kN {50ton})	■	1		
		7	790-101-1102	Pump	■	1		
	15	1	791-630-2280	Adapter	■	1		
		2	790-201-2770	Spacer	■	1		
		3	791-630-2250	Plate	■	1		
		4	790-434-1070	Screw	■	1		
		5	01580-13629	Nut	■	2		
		6	01643-33690	Washer	■	2		
		7	790-101-4000	Puller (490kN {50ton})	■	1		
		8	790-101-1102	Pump	■	1		
L	16	1	791-630-2260	Plate	■	1		
		2	791-630-2270	Screw	■	3		
		3	01580-12419	Nut	■	3		
		4	01643-32460	Washer	■	3		
		5	790-101-4000	Puller (490kN {50ton})	■	1		
		6	790-101-1102	Pump	■	1		
	17		791T-630-2290	Guide	■	2		○
	18		791-530-1510	Installer	■	1		
	19		791-601-1000	Oil pump	■	1		
	22		195-30-68610	Plate	■	6	N	
			01010-62450	Bolt	■	6		
			01010-62455	Bolt	■	6		
			19M-54-11770	Washer	■	6	N	
			01643-32460	Washer	■	6		
			198-30-66190	Collar	■	6	N	
	23		195-30-69540	Plate	■	2	N	
			01011-82410	Bolt	■	2		
			01011-82420	Bolt	■	2		
			19M-54-11770	Washer	■	4	N	
			195-30-69550	Collar	■	2	N	

Removal

1. Expand the track shoe assembly. For details, see "Expansion and installation of track shoe assembly".

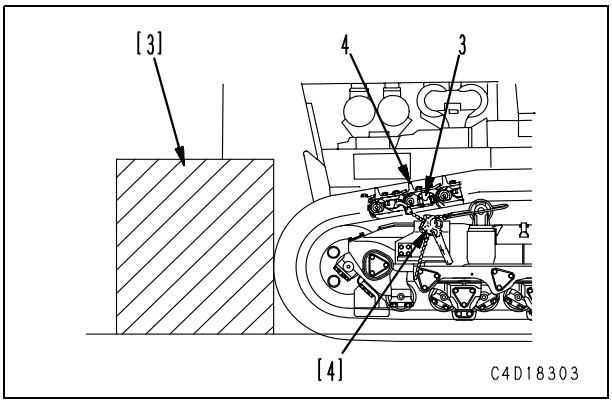
2. Install tool **L22**, **L23** and secure the bogie assembly.

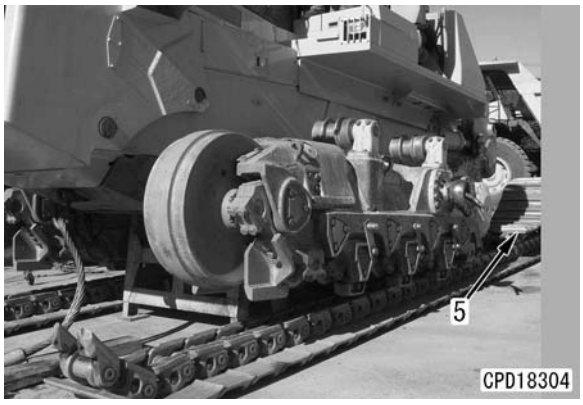


2. Move the machine slowly forward against large block [3] or a wall (or the blade of another machine of the similar size of the machine to be repaired, if available) to press the track shoe on the idler side. When the recoil spring is distorted, stop and apply the brake.
   At this time, set the master link (3) between the idler and front carrier roller.
   ★ For safe work, apply a lever block [4] between the carrier roller support and link.

3. Remove track shoe (4) and disconnect master link (3). [*2]

4. Raise tip of master link, move machine towards rear slowly, and lay out track shoe assembly (5).
   ★ Length of track: **Approx. 12.5 m**
   ⚠ **To prevent danger, never stand in front of the idler yoke assembly.**

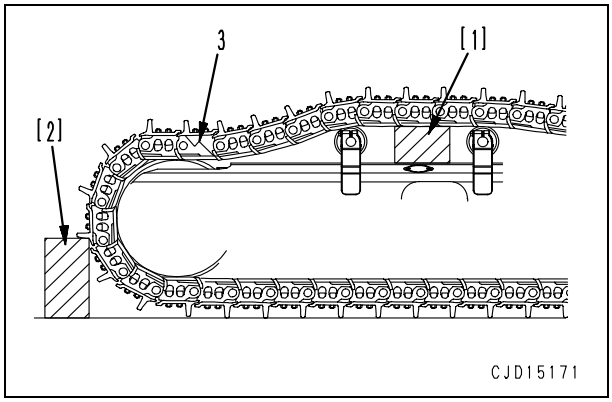




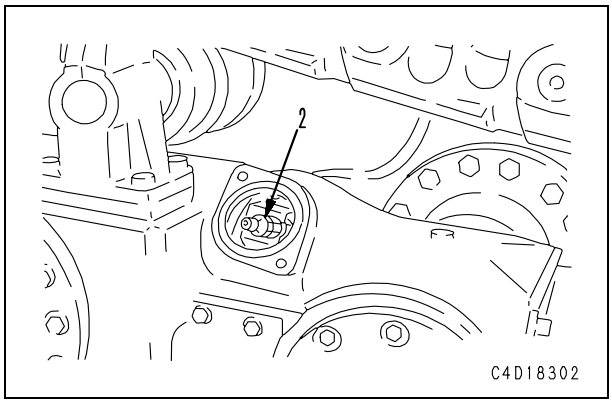
Expanding track shoe assembly (Normal)

★ If any abnormality is not detected by Check before expanding track shoe assembly, perform the following procedure.

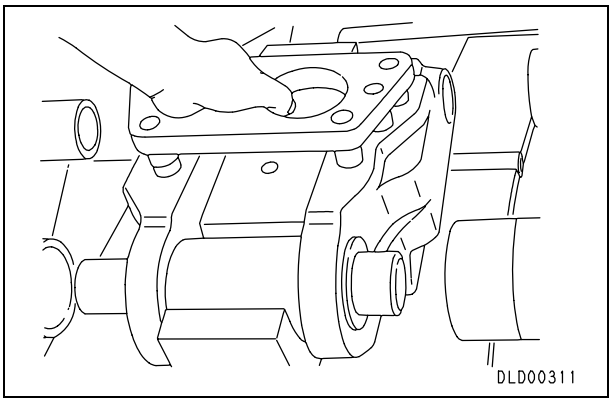
1. Set the master link in position.
   ★ Set the master link (3) above the idler (a little after the idler center).
   ★ Set a block [1] and [2] between the front side of the idler and carrier roller so that the mating part of the master link will not open until the master bolt is pulled out.



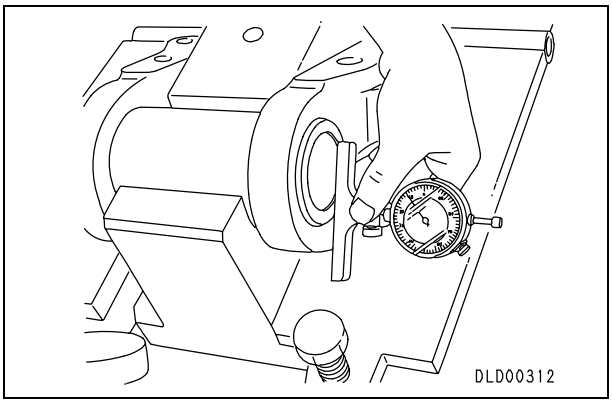
2. Loosen lubricator (2). [*1]
   ⚠ **Do not loosen lubricator (2) more than 1 turn.**



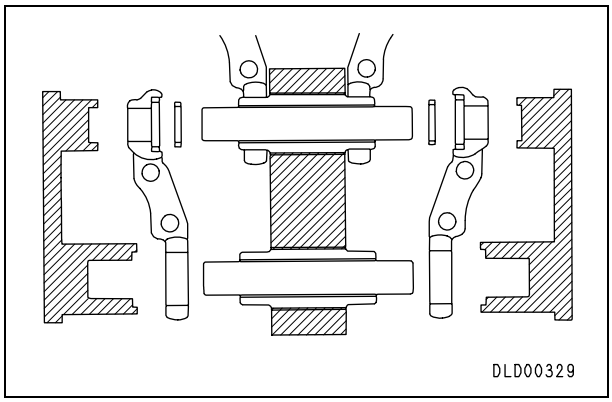
3) Using the shoe bolt hole pitch gauge, press fit the master links until the distance between the shoe bolt holes of both links is the standard value.
   ★ Remove the all steel chips caused by press fitting of the bushing with compressed air.
4) Turn over the master links and check that they are press fitted in parallel.



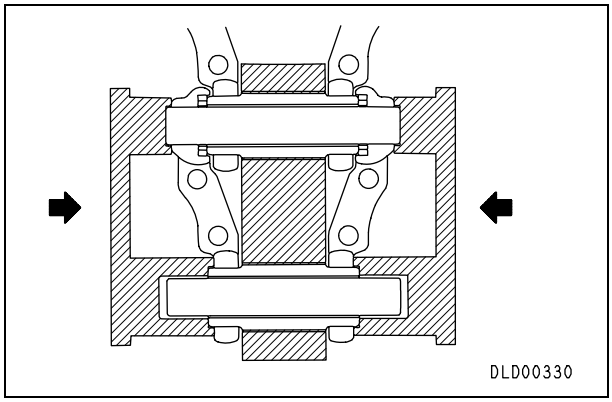
5) Measure the amount of protrusion of the left and right bushing with a depth gauge.
   ★ Adjust the press fitting jig of the link press so that the projections on both sides will be even.



6) Send the master links and set the next pin and bushing.
   ★ When reusing a pin, install it so that its side hole will be the link tread side similarly to a new one. If it is not installed so, its strength may be lowered. Accordingly, indicate the direction of the side hole on the end face to prevent a mistake.
   ★ If the outside of the pin is worn, install it so that the un-worn surface will be on the traction side. In this case, install the pin so that its side hole will be the link tread side, too.



7) Set both links and operate both pushing jigs to press fit the pin and bushing simultaneously.
   ★ If the pin and bushing have play when they are press fitted, the seal may come off the link. To prevent this, press fit smoothly. If the seal comes off the link, stop press fitting and set the seal to the link correctly, then start press fitting again.
   ★ Pushing force of pin and bushing: 980 kN {100 tons}
   Pushing force ≈ 1.8 x Average pressure
   ★ (Adjust the relief pressure of the link press to set the pushing force.)



Installation

- Carry out installation in the reverse order to removal.

[*1]

★ Remove the grease from the pressfitting surface of the seal.

The pressfitting surface of the seal:
Gasket sealant (LG-6)

★ Be careful not to install with the seal displaced in the direction of twisting.

[*2]

★ Install cover (6) and (7) tighten bolt (9-1).

Cover (6) and (7):
245 – 309 Nm {25 – 31.5 kgm}

[*3]

Bolt (9), (9-1):
1,960 – 2,450 Nm {200 – 250 kgm}

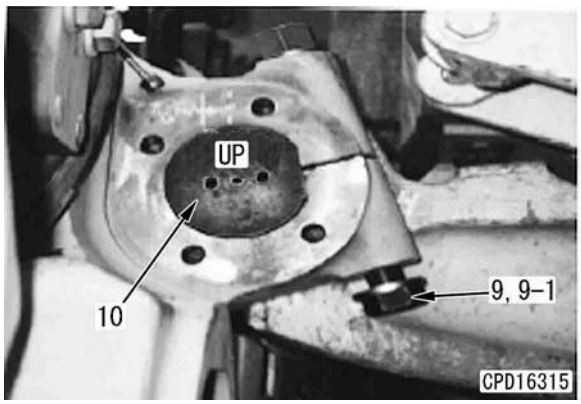
[*4]

Inside surface of bushing: **Grease (G2-LI)**

★ Before installing the pin, operate hydraulic jack [1] to adjust the height of the main frame and align the center of the equalizer bar hole and track frame hole.

★ Set "UP" mark on the pin (10) up and install pin (10).

★ Direct position of notch on the pin (10) to machine inside at right side and machine outside at left side.



[*5]

Lock plate mounting bolt:
549 ± 59 Nm {56 ± 6 kgm}

[*6]

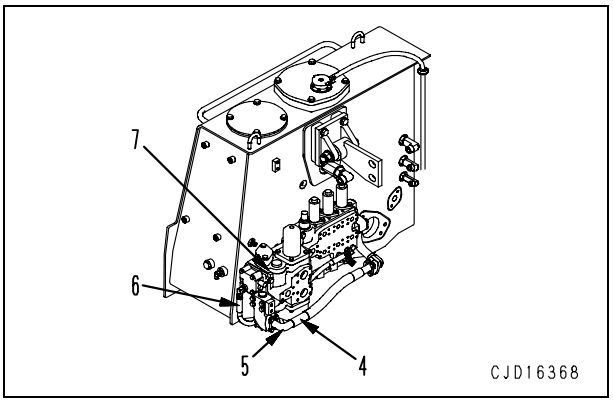
Equalizer bar bushing and main frame bushing:
Grease (G2-LI)

★ Before installing the pin, operate the crane to align the center of the main frame hole and the equalizer bar hole.

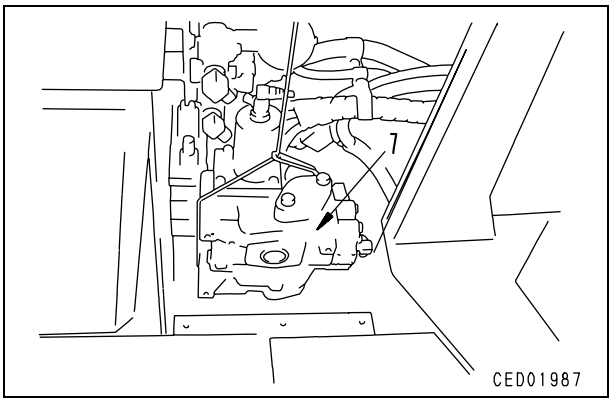
- **Refilling with oil (pivot case)**
  Add oil through oil filler to the specified level.
  Pivot case: **18 ℓ (EO30)**

5. Disconnect clamp (4).

6. Disconnect hoses (5) and (6) from work blade lift valve (7).



7. Sling work blade lift valve (7) temporarily and remove the mounting bolts. Then, remove the blade lift valve assembly.
   Blade lift valve assembly: **60 kg**

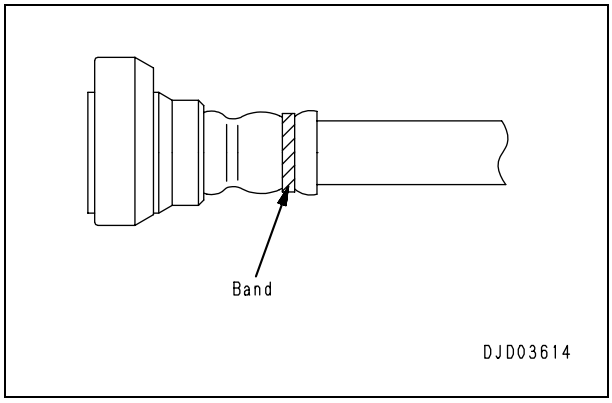


Installation of blade lift valve assembly

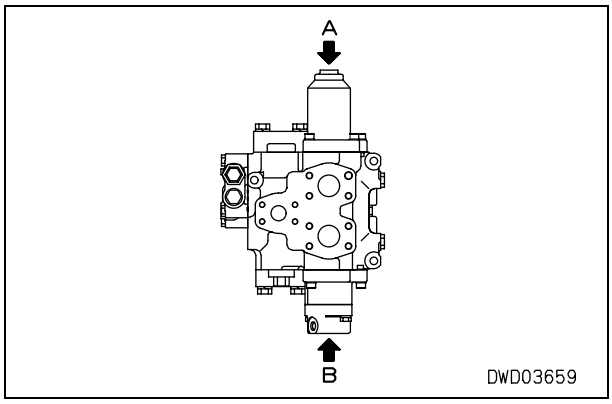
- Carry out installation in the reverse order to removal.

[*1]

★ The connecting positions of the PPC hoses are indicated by the band colors on their quick couplers. When connecting them, confirm them by the band colors.



Distinguishing color bands
(View from operator's cad)
A. Transparent
B. Red/White



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

- **Bleeding air**
  Bleed air from the piping. For details, see Testing and adjusting, "Bleeding air from work equipment cylinders".

Disassembly and assembly of ripper pin puller cylinder assembly

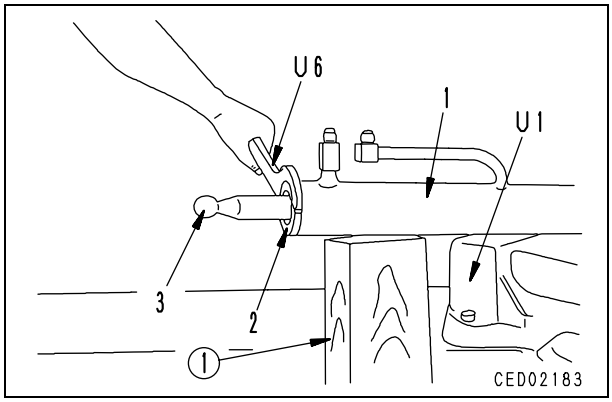
Special tools

Symbol		Part No.	Part name	Necessity	Q'ty	New/remodel	Sketch
U	1	790-502-1003	Cylinder repair stand	●	1		
	2	790-201-1702	Push tool kit	■	1		
		790-201-1721	• Push tool		1		
		790-101-5021	• Clip		1		
		01010-50816	• Bolt		1		
	3	790-201-1500	Push tool kit	■	1		
		790-201-1530	• Plate		1		
		790-101-5021	• Grip		1		
		01010-50816	• Bolt		1		
	4	790-720-1000	Expander	■	1		
	5	796-720-1630	Ring	■	1		
		07281-00709	Clamp	■	1		
	6	790-102-2304	Wrench	■	1		

Disassembly

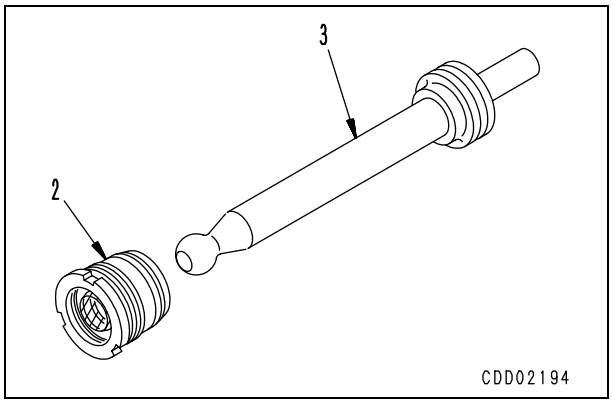
1. Cylinder assembly

1) Set pin puller cylinder assembly (1) to tool **U1**.
2) Using tool **U6**, remove cylinder head assembly (2).
3) Remove piston rod (3) and cylinder head assembly (2) together.
   ★ Put an oil pan under the cylinder to receive the oil.

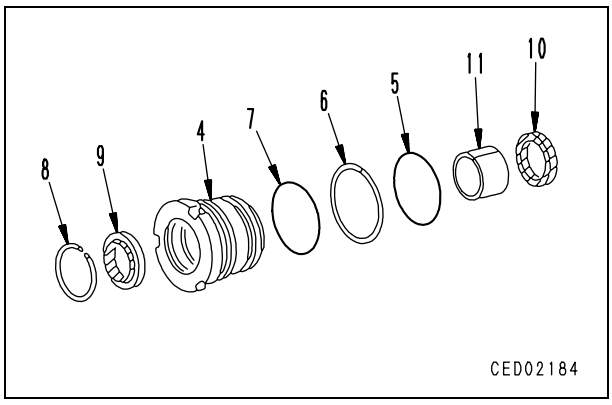


2. Cylinder head assembly

1) Remove cylinder head assembly (2) from piston rod (3).



2) Remove O-ring (5) and backup ring (6).
3) Remove O-ring (7).
4) Remove snap ring (8) and dust seal (9).
5) Remove rod packing (10) and bushing (11).



BULLDOZER

D375A-5E0

Machine model	Serial number
D375A-5E0	50001 and up

50 Disassembly and assembly

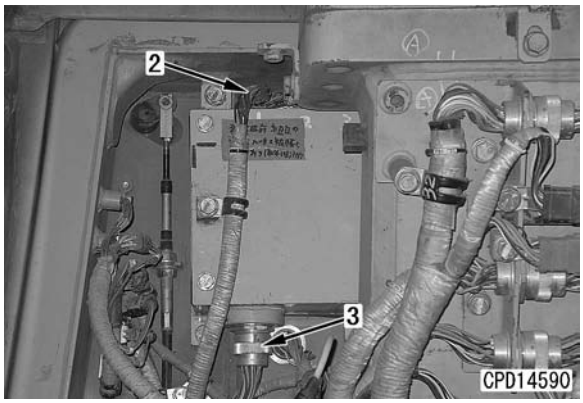
Cab and its attachments

Removal and installation of VHMS controller assembly

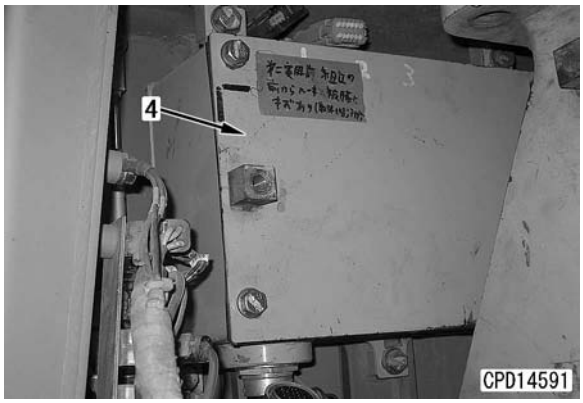
Removal

1. Lift off operator's cab left cover (1).

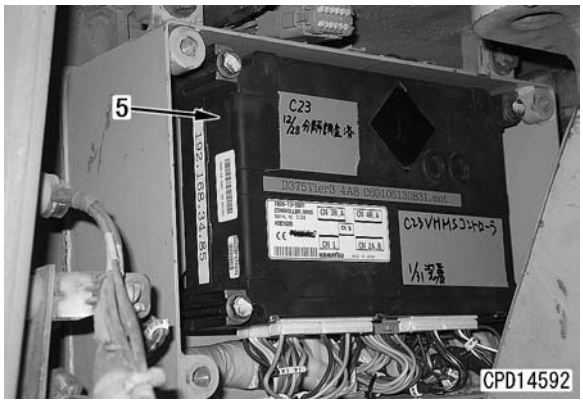
2. Disconnect wiring connector (2) and main wiring harness cap (3).



3. Remove the mounting bolts and controller case cover (4).



4. Remove the mounting bolts and VHMS controller assembly (5).



Installation

- Carry out installation in the reverse order to removal.