Mark	Pages	Revision number
	10-194	
	10-195	
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	10-197	
	10-198	
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	20-481	(1)
	20-482	(1)

HOW TO READ THE SHOP MANUAL

VOLUMES

Shop manuals are issued as a guide to carrying out repairs. They are divided as follows:

Chassis volume: Issued for every machine model
Engine volume: Issued for each engine series
Electrical volume:
Attachments volume:
} Each issued as one volume to cover all models

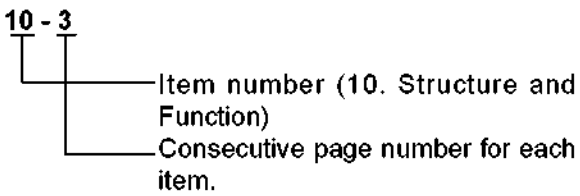
These various volumes are designed to avoid duplicating the same information. Therefore, to deal with all repairs for any model , it is necessary that chassis, engine, electrical and attachment volumes be available.

DISTRIBUTION AND UPDATING

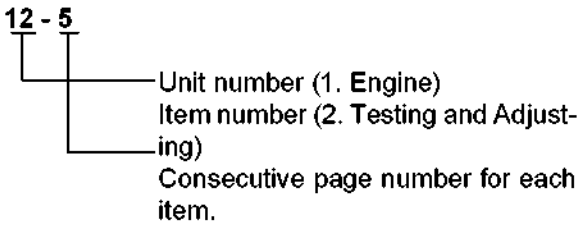
Any additions, amendments or other changes will be sent to KOMATSU distributors. Get the most up-to-date information before you start any work.

FILING METHOD

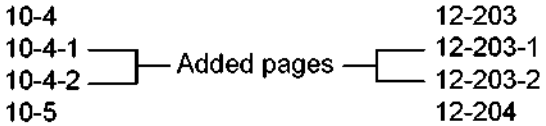
1. See the page number on the bottom of the page. File the pages in correct order.
2. Following examples show how to read the page number.
   Example 1 (Chassis volume):



   Example 2 (Engine volume):



3. Additional pages: Additional pages are indicated by a hyphen (-) and number after the page number. File as in the example.
   Example:



REVISED EDITION MARK

When a manual is revised, an edition mark ((1)(2)(3)....) is recorded on the bottom of the pages.

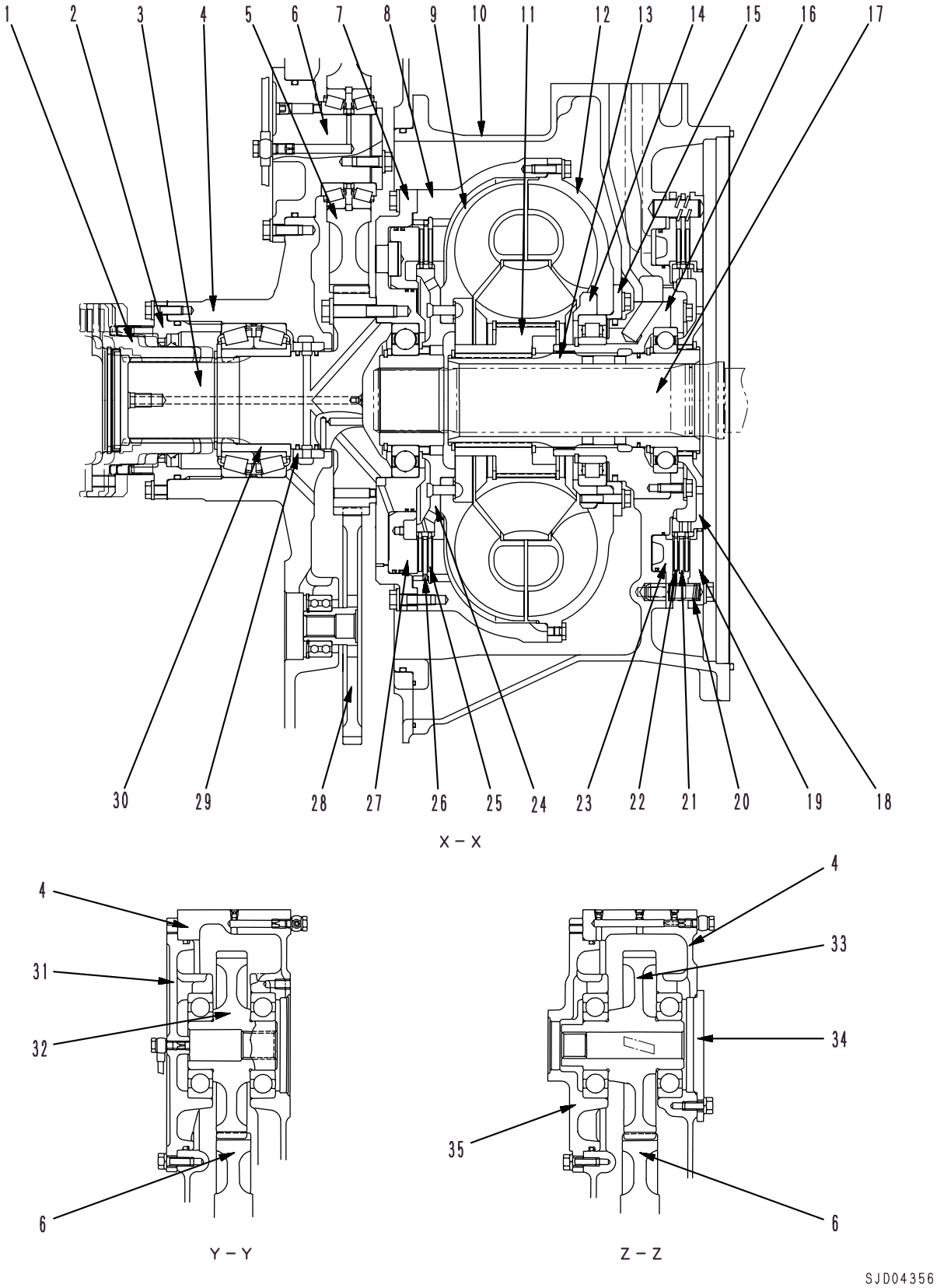
REVISIONS

Revised pages are shown in the LIST OF REVISED PAGES next to the CONTENTS page.

SYMBOLS

So that the shop manual can be of ample practical use, important safety and quality portions are marked with the following symbols.

Symbol	Item	Remarks
	Safety	Special safety precautions are necessary when performing the work.
★	Caution	Special technical precautions or other precautions for preserving standards are necessary when performing the work.
	Weight	Weight of parts of systems. Caution necessary when selecting hoisting wire, or when working posture is important, etc.
	Tightening torque	Places that require special attention for the tightening torque during assembly.
	Coat	Places to be coated with adhesives and lubricants, etc.
	Oil, water	Places where oil, water or fuel must be added, and the capacity.
	Drain	Places where oil or water must be drained, and quantity to be drained.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X – X
4
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6
Y – Y
4
33
34
35
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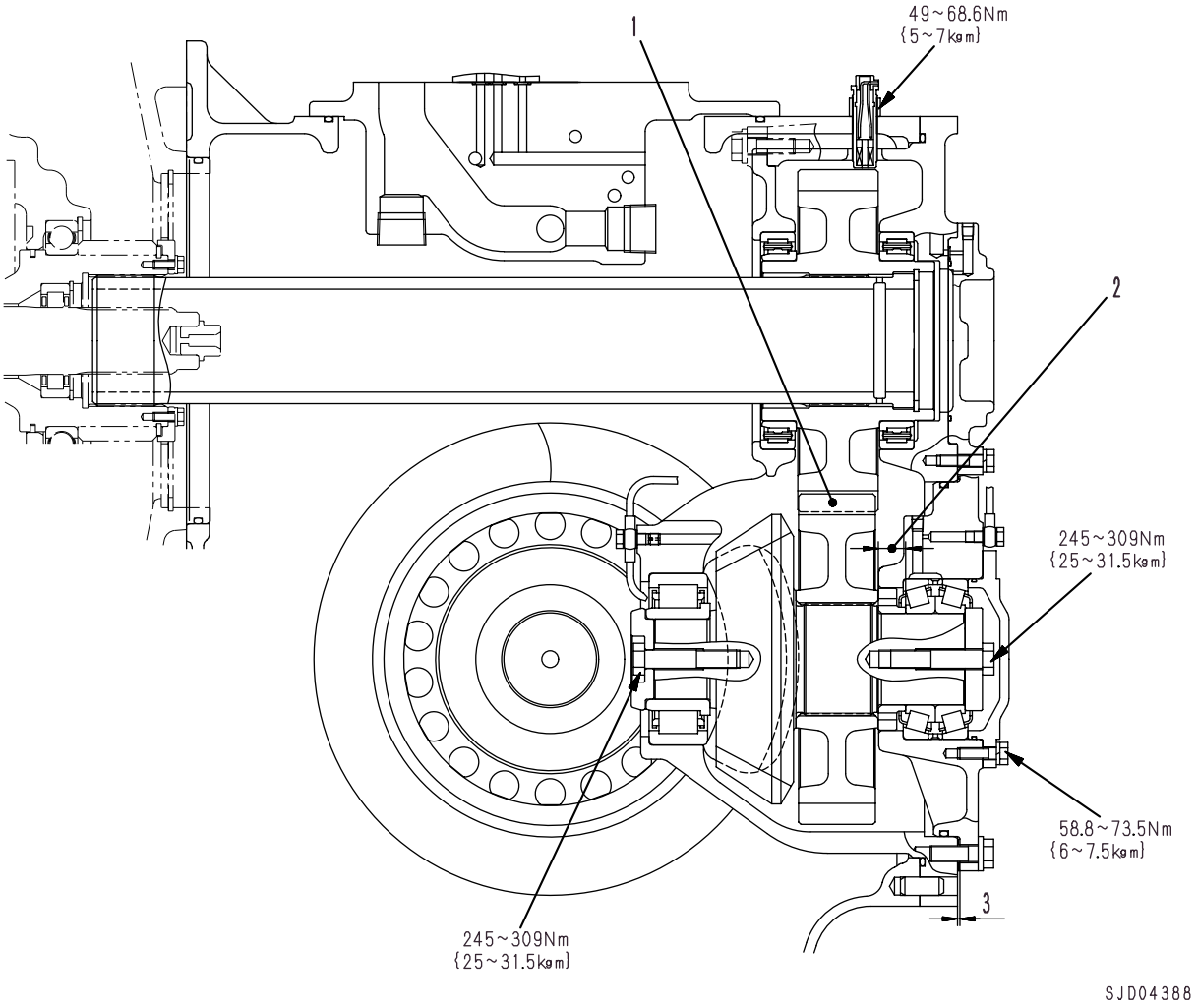
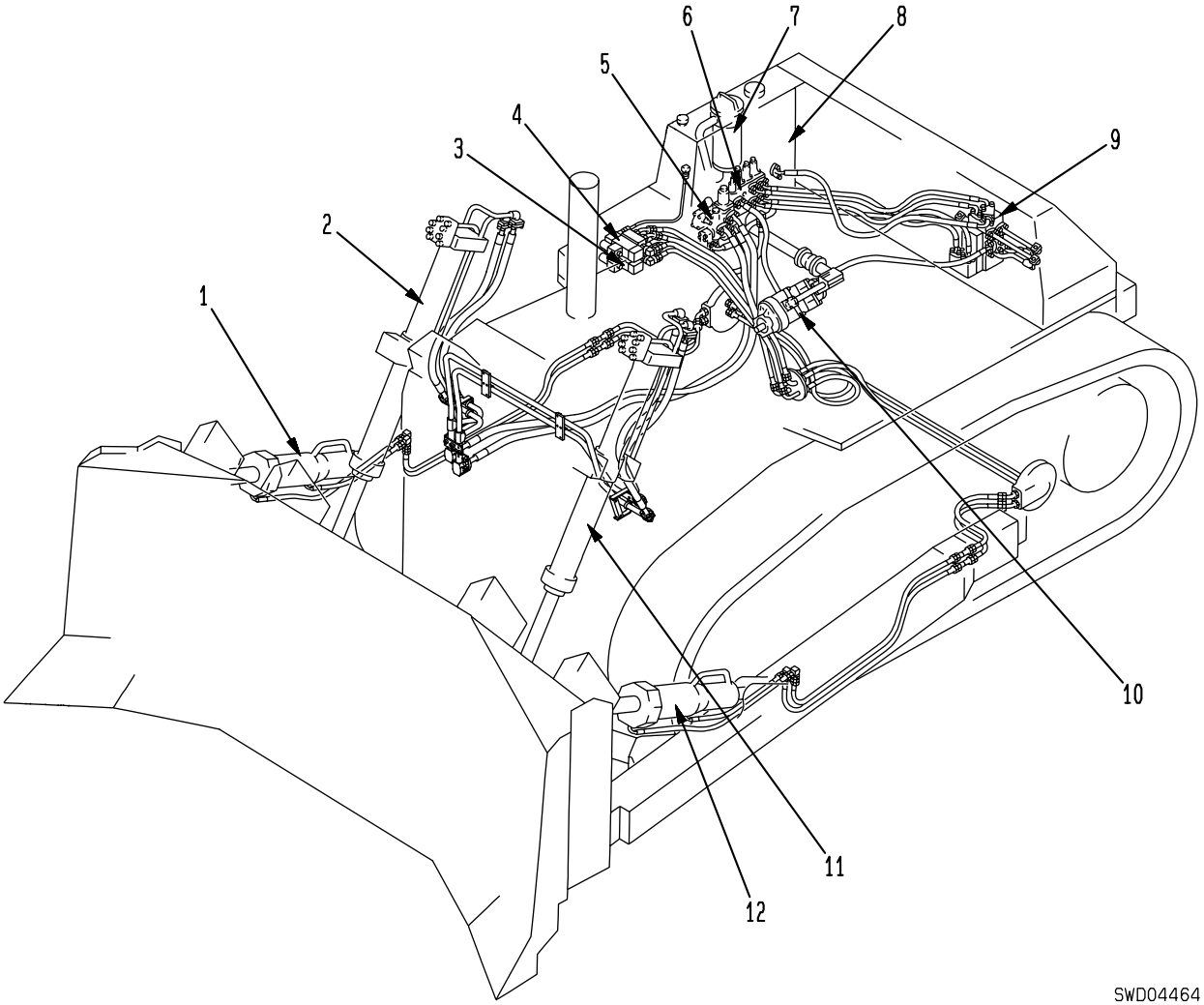
Z – Z
SJD04356



Unit: mm

No.	Check item	Criteria		Remedy
1	Backlash of transfer gear	Standard clearance	Clearance limit	Adjust or replace
		0.24 – 0.63	0.75	
2	Thickness of collar between transfer gear and bearing	Standard size	Repair limit	Replace
		24	23.6	
3	Standard shim thickness for bearing cage mount	2.0		Adjust

- **U-DOZER + DUAL TILT**

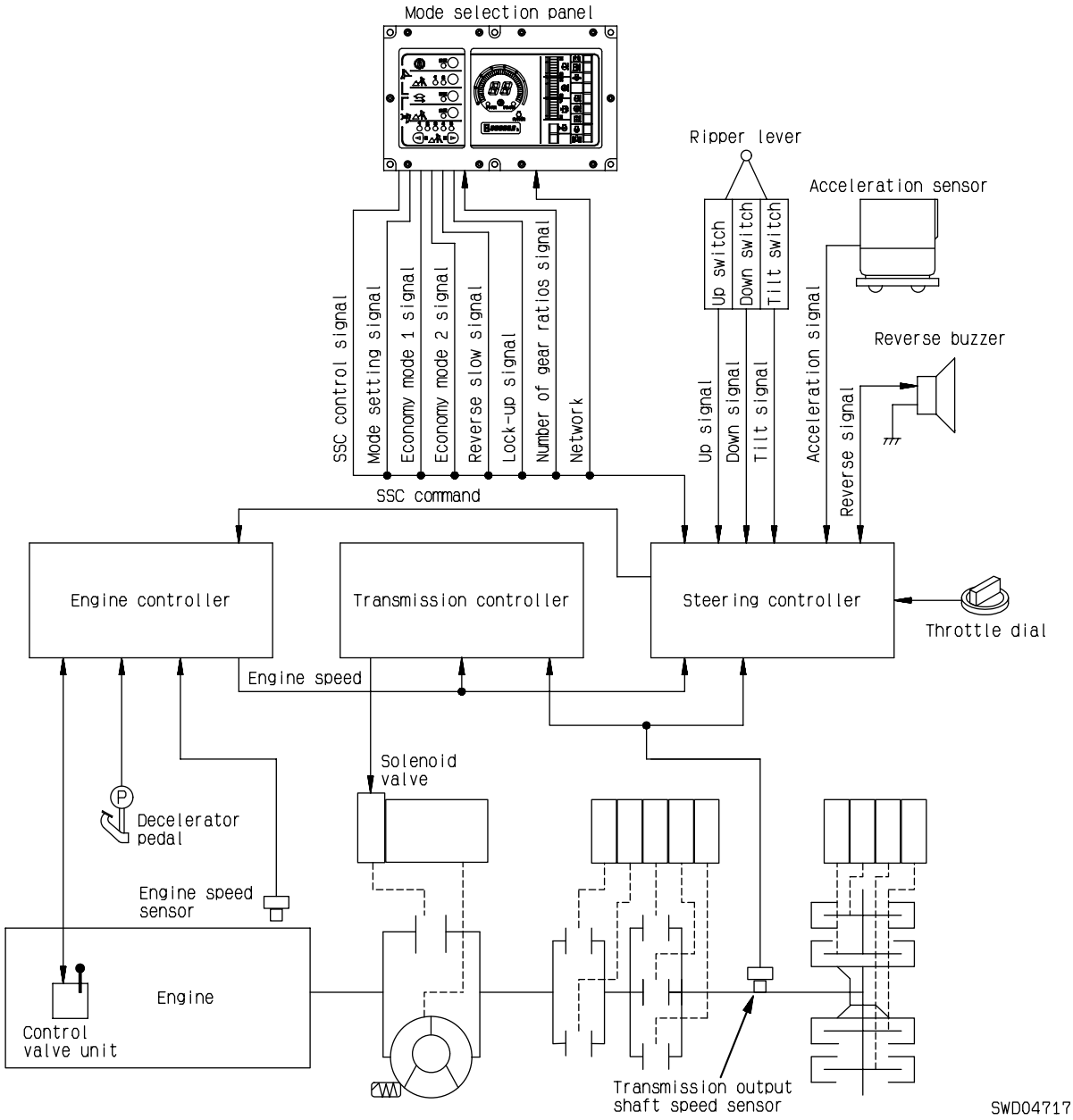


1. Blade tilt cylinder
2. R.H blade lift cylinder
3. Pitch solenoid valve
4. Dual tilt solenoid valve
5. Blade lift valve
6. Blade tilt, ripper Lo valve
7. Hydraulic filter
8. Hydraulic tank
9. Ripper Hi valve
10. Work equipment + PPC charge pump (SAR(4)140 + (3)071 + (1)022)
11. L.H. blade lift cylinder
12. Blade pitch cylinder

MODE SELECTION SYSTEM

(SSC (Shoe slip control) system)

System drawing



Outline

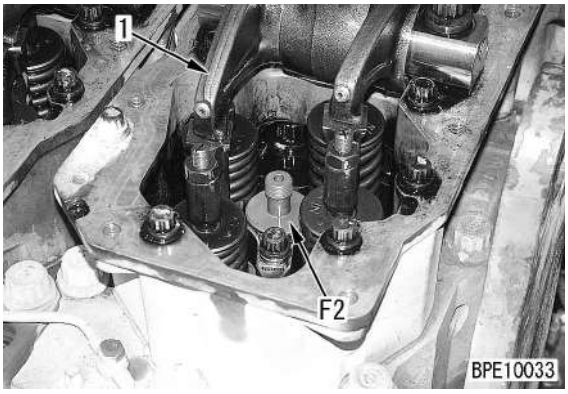
- The mode selection system automatically performs the engine control that matches the work condition selected by the operator. It reduces a fuel cost, makes the life of the track longer, and reduces the frequency of decelerator operation.
- The engine control mode includes the economy mode control used at dozing time, the SSC used at ripping time, and the reverse slow mode control that can be used in both.
- The lock-up control mode is the same mode as the conventional lock-up function and cannot perform simultaneous selection with the above mode.

6. Install rocker arm assemblies (1) and adjust the valve clearance.

Threads and seat of mounting bolt:
Engine oil (EO30CD)

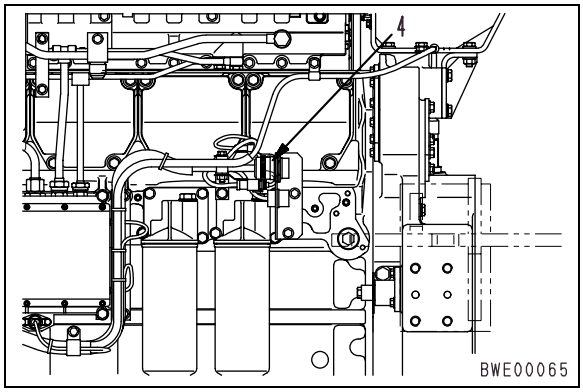
Mounting bolt:
235.2 – 254.8 Nm {24 – 26 kgm}

★ See ADJUSTING VALVE CLEARANCE.

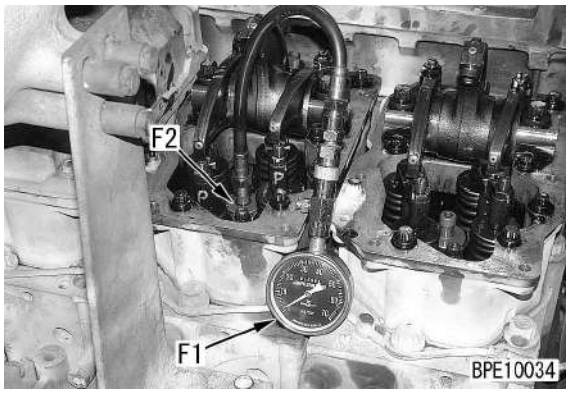


7. Disconnect the **EG1 (POW)** connector and **EG2 (SIG)** connector (4) of the engine.

★ After this step, the fuel pump does not supply fuel to the injectors.



8. Connect compression gauge **F1** to adapter assembly **F2** of the cylinder to be measured.



9. Crank the engine with the starting motor and measure the compression pressure.

★ Read the gauge when its pointer is stabilized.

10. After finishing measurement, remove the measuring instruments and return the removed parts.

★ Measure the stem length of the injector holder mounting bolt. If it is longer than 80 mm, replace the bolt.

Threads and seat of holder mounting bolt:
Engine oil (EO30CD)

Holder mounting bolt:
1st time:
24.5 – 34.3 Nm {2.5 – 3.5 kgm}
2nd time:
Tighten by 90 – 120º

Threads and seat of rocker arm assembly mounting bolt:
Engine oil (EO30CD)

Rocker arm assembly mounting bolt:
235.2 – 254.8 Nm {24 – 26 kgm}

★ Adjust the valve clearance. For details, see ADJUSTING VALVE CLEARANCE.

★ Adjust the set load of the injector. For details, see ADJUSTING SET LOAD OF INJECTOR.

Cylinder head cover mounting bolt:
9.8 ± 1.0 Nm {1 ± 0.1 kgm}

OPERATION AND DISPLAY OF SERVICE MODE

Method of switching to service mode

★ When using the service mode, carry out the following special operation to switch the screen display.

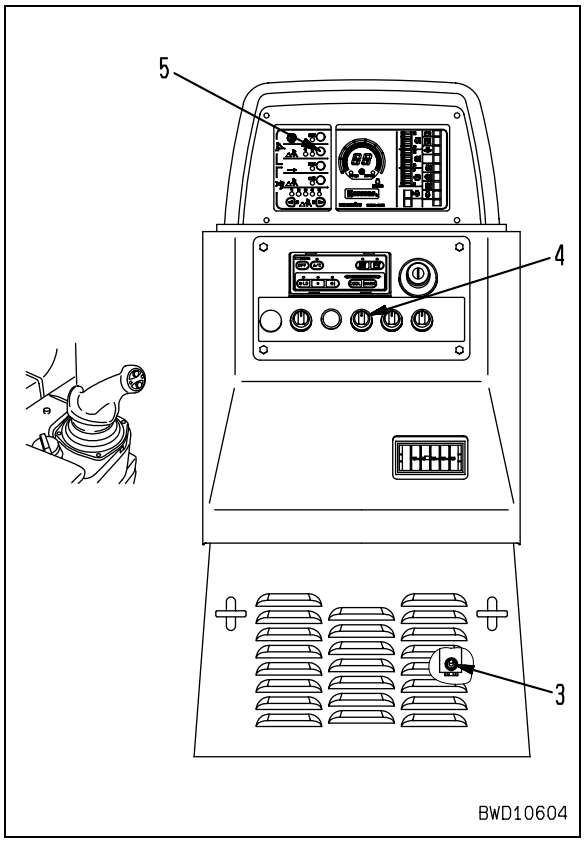
1) Special operation of switches
Set service switch (3) to the ON position, then hold buzzer cancel switch (4) at the ON position for at least 7 seconds.
★ The mode displayed on the panel differs according to the selection position of the economy mode switch (see next section).

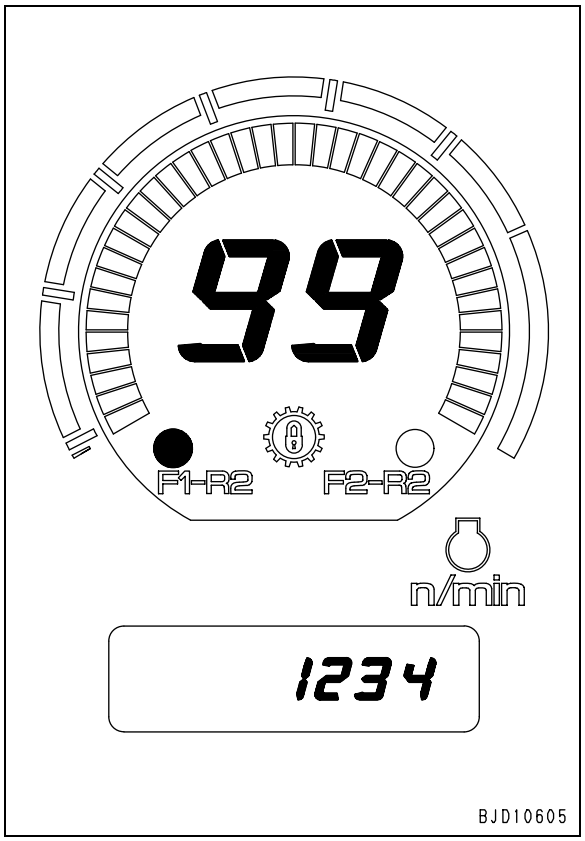
2) Selecting mode to use
After switching to the service mode, operate the following switches to switch to the mode to be used.
• Economy mode switch (5)

Economy mode	Mode	F1-R2 lamp	F2-R2 lamp
OFF	Monitoring mode	●	
1	Adjustment mode	●	●
2	Service code display mode		

★ When switching to each mode, the shift mode display lamp lights up or goes out to indicate which mode is now being used.
★ The economy mode switch can be set to the position to be used before switching to the service mode.
★ The diagram on the right shows the initial screen when the economy mode switch is OFF and the monitoring mode has been selected.

3) Finishing mode, function
When the service switch is turned OFF, the mode or function can be finished regardless of the mode or level being operated.





Pm CLINIC CHECK SHEET

D375A-5	Serial No

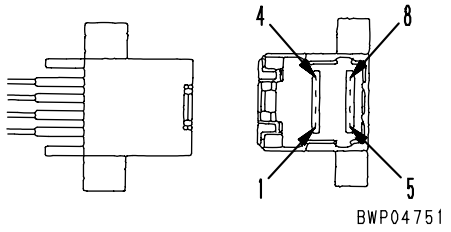
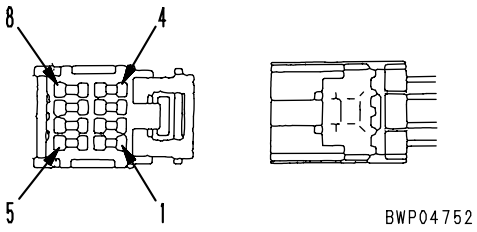
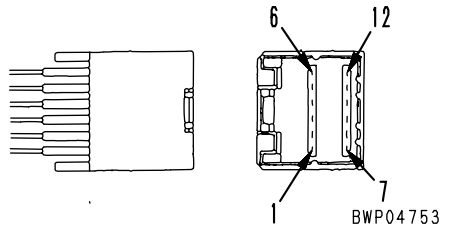
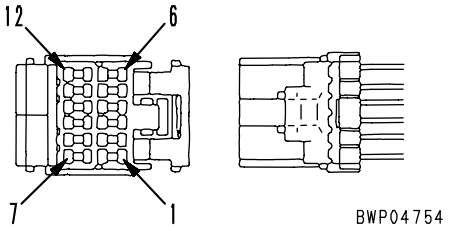
Work order No.	Date	Service meter	Serviceman
	/ /	h	

	Item	Measurement conditions		Unit	Standard value for new machine	Service limit value	Measurement results	Pass	Fail
Engine	Engine speed	Low idling		rpm	690 - 750	690 - 750			
		Decel	Deceleration pedal depressed		850 - 950	850 - 950			
		High idling			1870 - 1930	1870 - 1930			
		Torque converter stall			1470 - 1570	Min. 1430			
		Torque converter stall + work equipment relief			1240 - 1360	Min. 1160			
	Blow-by pressure	Torque converter stall		kPa <mmAq>	Max. 4.9 <Max. 500>	Max. 7.9 <Max. 800>			
	Engine oil pressure	Engine at low idling	SAE10W	kPa <kg/cm²>	Min. 100 <Min. 1.0>	50 <0.5>			
		Engine at high idling	SAE10W		340 - 540 <3.5 - 5.5>	180 <1.8>			
		Engine at low idling	SAE15W-40 SAE30		Min. 120 <Min. 1.2>	70 <0.7>			
		Engine at high idling	SAE15W-40 SAE30		380 - 590 <4.0 - 6.0>	210 <2.1>			
	Boost pressure	Torque converter stall		kPa <mmHg>	Min. 107 <Min. 800>	Min. 93 <Min. 700>			
	Exhaust temperature	Torque converter stall	No. 1, 2 & 3	℃	Max. 680	700			
			No. 4, 5 & 6						

※ When measuring the oil pressure of the torque converter and transmission, use the adjustment mode of the monitor and set to "Both steering clutches release mode (Co mode)". (Check that the left and right steering clutches are released.) When measuring the pressure of each transmission clutch, check only with the engine at low idling to ensure safety.

	Item	Measurement conditions		Unit	Standard value for new machine	Service limit value	Measurement results	Pass	Fail
Torque converter	Inlet oil pressure	Transmission: Neutral Oil temperature: 70-90 ℃	Engine at low idling	MPa <kg/cm²>	0.03 - 0.15 <0.3 - 1.5>	0.03 - 0.15 <0.3 - 1.5>			
	Outlet oil pressure				0.01 - 0.15 <0.1 - 1.5>	0.01 - 0.15 <0.1 - 1.5>			
	Lock-up clutch pressure				0 - 0 <0 - 0>	0 - 0 <0 - 0>			
	Stator clutch pressure				2.25 - 2.65 <23.0 - 27.0>	2.25 - 2.65 <23.0 - 27.0>			
	Inlet oil pressure		Engine at high idling		0.8 - 1.0 <8.0 - 10.0>	0.8 - 1.0 <8.0 - 10.0>			
	Outlet oil pressure				0.39 - 0.64 <4.0 - 6.5>	0.39 - 0.64 <4.0 - 6.5>			
	Lock-up clutch pressure				0 - 0 <0 - 0>	0 - 0 <0 - 0>			
	Stator clutch pressure				2.45 - 2.85 <25.0 - 29.0>	2.45 - 2.85 <25.0 - 29.0>			
	Lock-up clutch pressure	Transmission: F1 (Co mode)	Raise engine speed, when lock-up lamp lights up		1.27 - 1.47 <13.0 - 15.0>	1.27 - 1.47 <13.0 - 15.0>			
	Stator clutch pressure				0 - 0 <0 - 0>	0 - 0 <0 - 0>			

	Item	Measurement conditions		Unit	Standard value for new machine	Service limit value	Measurement results	Pass	Fail
Transmission	Main relief pressure	Transmission: Neutral	Engine at low idling	MPa <kg/cm²>	2.40 - 2.70 <24.5 - 27.5>	2.35 - 2.94 <24.0 - 30.0>			
			Engine at high idling		2.55 - 2.85 <26.0 - 29.0>	2.45 - 2.94 <25.0 - 30.0>			
	Lubricating oil pressure		Engine at low idling		— —	— —			
			Engine at high idling		0.15 - 0.25 <1.5 - 2.5>	0.15 - 0.25 <1.5 - 2.5>			
	F clutch pressure	T/M: F3 (Co mode)	Engine at low idling		2.40 - 2.70 <24.5 - 27.5>	2.35 - 2.94 <24.0 - 30.0>			
	R clutch pressure	T/M: R3 (Co mode)	Engine at low idling		2.40 - 2.70 <24.5 - 27.5>	2.35 - 2.94 <24.0 - 30.0>			
	1st clutch pressure	T/M: F1 (Co mode)	Engine at low idling		2.05 - 2.45 <21.0 - 25.0>	1.96 - 2.55 <20.0 - 26.0>			
	2nd clutch pressure	T/M: F2 (Co mode)	Engine at low idling		2.40 - 2.70 <24.5 - 27.5>	2.35 - 2.94 <24.0 - 30.0>			
	3rd clutch pressure	T/M: F3 (Co mode)	Engine at low idling		2.40 - 2.70 <24.5 - 27.5>	2.35 - 2.94 <24.0 - 30.0>			

Number of Pins	AMP040 Type Connector		
	Male (Female housing)	Female (Male housing)	T-adapter Part Number
8			799-601-7180
	—	Housing part number: 79A-222-3430 (Quantity: 5 pieces)	
12			799-601-7190
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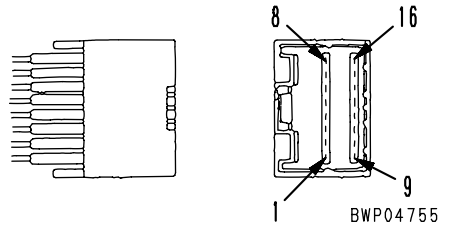
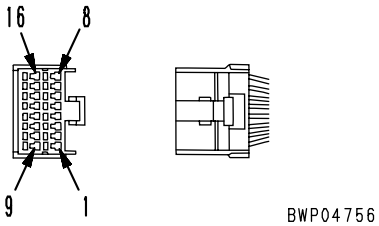
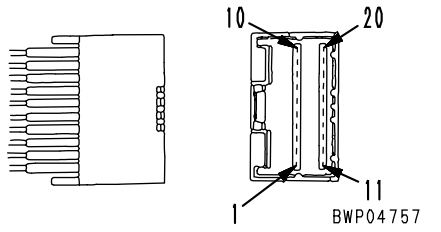
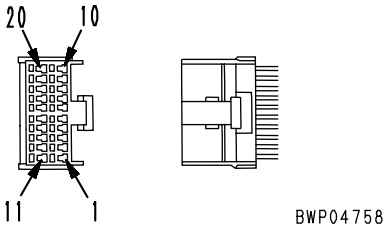
16			799-601-7210
	—	Housing part number: 79A-222-3450 (Quantity: 5 pieces)	
20			799-601-7220
	—	Housing part number: 79A-222-3460 (Quantity: 5 pieces)	

★ Terminal part number: 79A-222-3470 (for all numbers of pins).

SERVICE CODE E0179 (SHORT CIRCUIT IN NEUTRAL SAFETY RELAY SYSTEM)

User code	Service code	Trouble	Short circuit in neutral safety relay system (Transmission controller system)
E02	E0179		
Contents of trouble	• When GND signal for neutral safety relay circuit is turned off, abnormal current flowed.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Stops outputting GND signal for neutral safety relay circuit.		
Problem that appears on machine	• Engine cannot be started.		
Related information	• Outputting to neutral safety relay (Voltage) can be checked in monitoring mode. (Code dN: Neutral safety relay drive voltage) • Method of reproducing service code: Turn starting switch ON and operate parking brake lever (LOCK position). ★ This service code detects abnormality on primary side (coil side) of neutral safety relay and cannot 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 neutral safety relay (Internal short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			NSF (male)	Resistance	
			Between ① – ②	200 – 400 Ω	
	2	Short circuit with power source 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 TMCN2 (female) ⑧ – NSF (female) ② with chassis ground	Voltage	Max. 1 V
	3	Defective transmission controller	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			TMCN2	Parking brake lever	Voltage
			Between ⑧ – chassis ground	When locked	Max. 1 V
				When free	20 – 30 V

SERVICE CODE E0311 (DISCONNECTION OR SHORT CIRCUIT IN BLADE PITCH SWITCH SYSTEMS)

User code	Service code	Trouble	Disconnection or short circuit in blade pitch switch systems (Transmission controller system)
E02	E0311		
Contents of trouble	• Signals of both blade pitch switch circuit systems are turned ON or OFF simultaneously.		
Action of controller	• Flashes caution lamp and turns on caution buzzer. • Assumes that switch is not pressed.		
Problem that appears on machine	• Blade does not pitch (When pitching operation is performed, blade tilts).		
Related information	• NO and NC signals of both switch systems are for detecting operation and error respectively. • Inputting from blade pitch switch (ON･OFF) can be checked in monitoring mode. (Code bD: Blade lever knob switch input) • Method of reproducing service code: Turn starting switch ON and operate blade pitch switch.		

	Cause		Standard value in normal state/Remarks on troubleshooting			
Possible causes and standard value in normal state	1	Defective blade pitch switch (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.			
			P03 (male)	Blade pitch switch		
				OFF (Released)	ON (Pressed)	
			Resistance between ① – ⑤	Max. 1 Ω	Min. 1 MΩ	
			Resistance between ① – ②	Min. 1 MΩ	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 TMCN2 (female) ⑮ – P03 (female) ⑤	Resistance	Max. 1 Ω	
			Wiring harness between TMCN2 (female) ⑤ – P03 (female) ②	Resistance	Max. 1 Ω	
			Wiring harness between TMCN1 (female) ④, ⑩ – P03 (female) ①	Resistance	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) ⑮ – P03 (female) ⑤ with chassis ground	Resistance	Min. 1 MΩ	
			Short circuit of wiring harness between TMCN2 (female) ⑤ – P03 (female) ② with chassis ground	Resistance	Min. 1 MΩ	
	4	Short circuit with power source 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 TMCN2 (female) ⑮ – P03 (female) ⑤ with chassis ground	Voltage	Max. 1 V	
			Short circuit of wiring harness between TMCN2 (female) ⑤ – P03 (female) ② with chassis ground	Voltage	Max. 1 V	
	5	Defective transmission controller	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.			
			TMCN1, TMCN2	Blade pitch switch		
				OFF (Released)	ON (Pressed)	
			Voltage between TMCN2 ⑮ – TMCN1 ④, ⑩	Max. 1 V	5 – 11 V	
			Voltage between TMCN2 ⑤ – TMCN1 ④, ⑩	5 – 11 V	Max. 1 V	

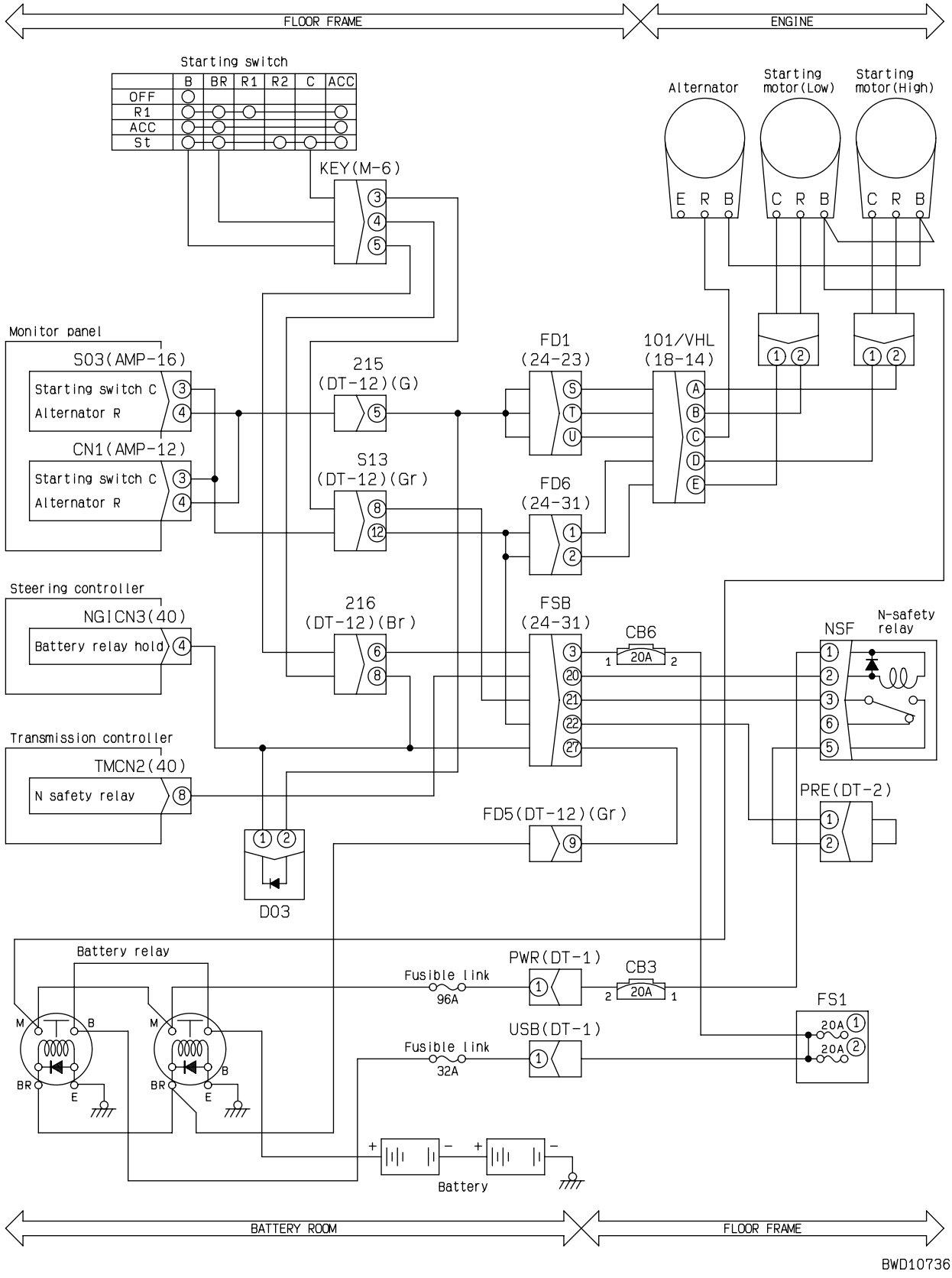
SERVICE CODE E0932 (DISCONNECTION IN TRANSMISSION SPEED SENSOR SYSTEM)

User code	Service code	Trouble	Disconnection in transmission speed sensor system (Transmission controller system)
E01	E0932		
Contents of trouble	• Signal is not input from transmission speed sensor		
Action of controller	• Cannot recognize transmission output speed.		
Problem that appears on machine	• Gear shifting feeling of transmission may become bad. • Auto shift-down function does not work.		
Related information	★ Since transmission speed signal is input to both steering controller and transmission controller, related codes may be displayed simultaneously, depending on troubled part. (Related code: E0933) • Inputting from transmission speed sensor (Voltage) can be checked in monitoring mode. (Code 94: Transmission speed sensor input signal) • Method of reproducing service code: Start engine and drive machine. ⚠ When troubleshooting by operating transmission, set system in adjustment mode (Code: Co) so that machine will not start.		

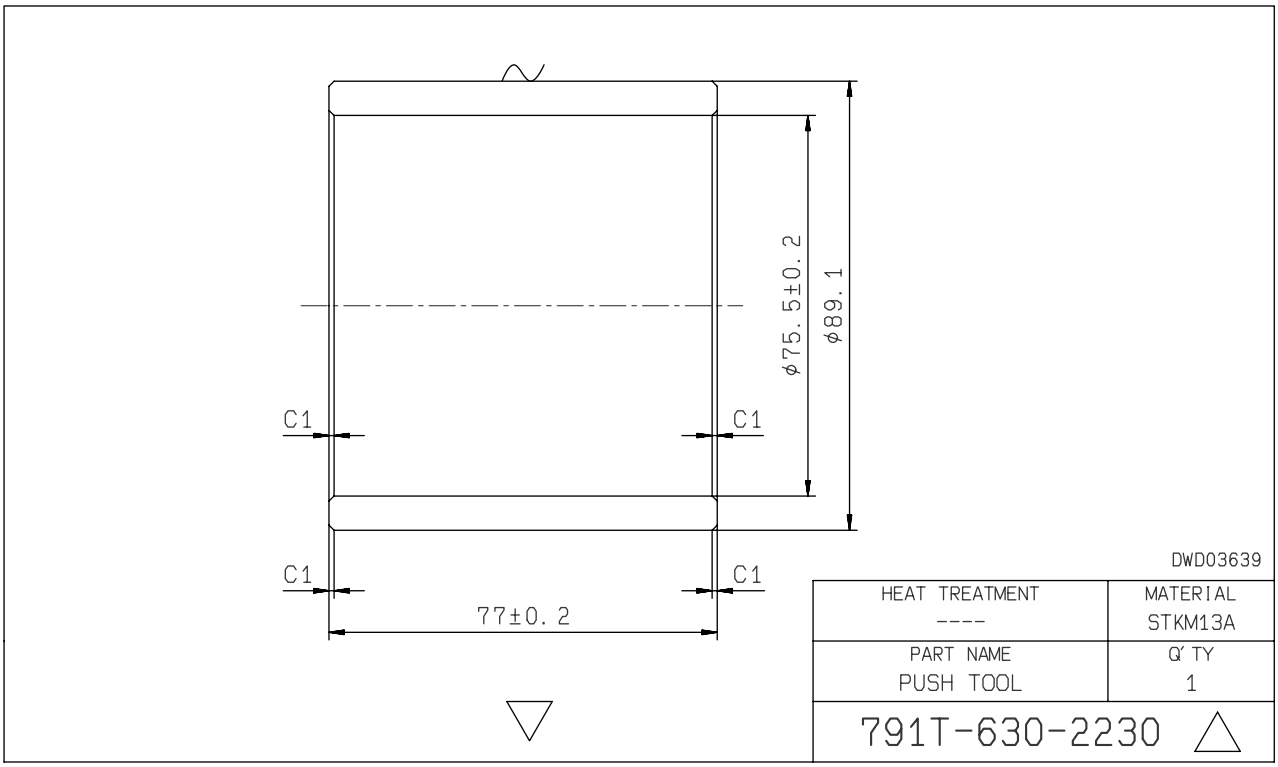
When only service code [E0932] is displayed					
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between TMCN2 (female) ㉚ – circuit branching point	Resistance	Max. 1 Ω
			Wiring harness between TMCN2 (female) ㉙ – circuit branching point	Resistance	Max. 1 Ω
	2	Defective transmission controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			TMCN2 (female)	Resistance	
			Between ㉚ – ㉙	500 – 1,000 Ω	
			Between ㉚ – chassis ground	Min. 1 MΩ	

When service codes [E0933] and [E0932] are displayed simultaneously					
Possible causes and standard value in normal state	Cause		Standard value in normal state/Remarks on troubleshooting		
	1	Defective transmission speed sensor (Internal disconnection or short circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			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 TM1 (female) ① – circuit branching point	Resistance	Max. 1 Ω
			Wiring harness between TM1 (male) ② – circuit branching point	Resistance	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 TM1 (female) ① – TMCN2 (female) ㉚ – NGICN2 (female) ㉚ with chassis ground	Resistance	Min. 1 MΩ

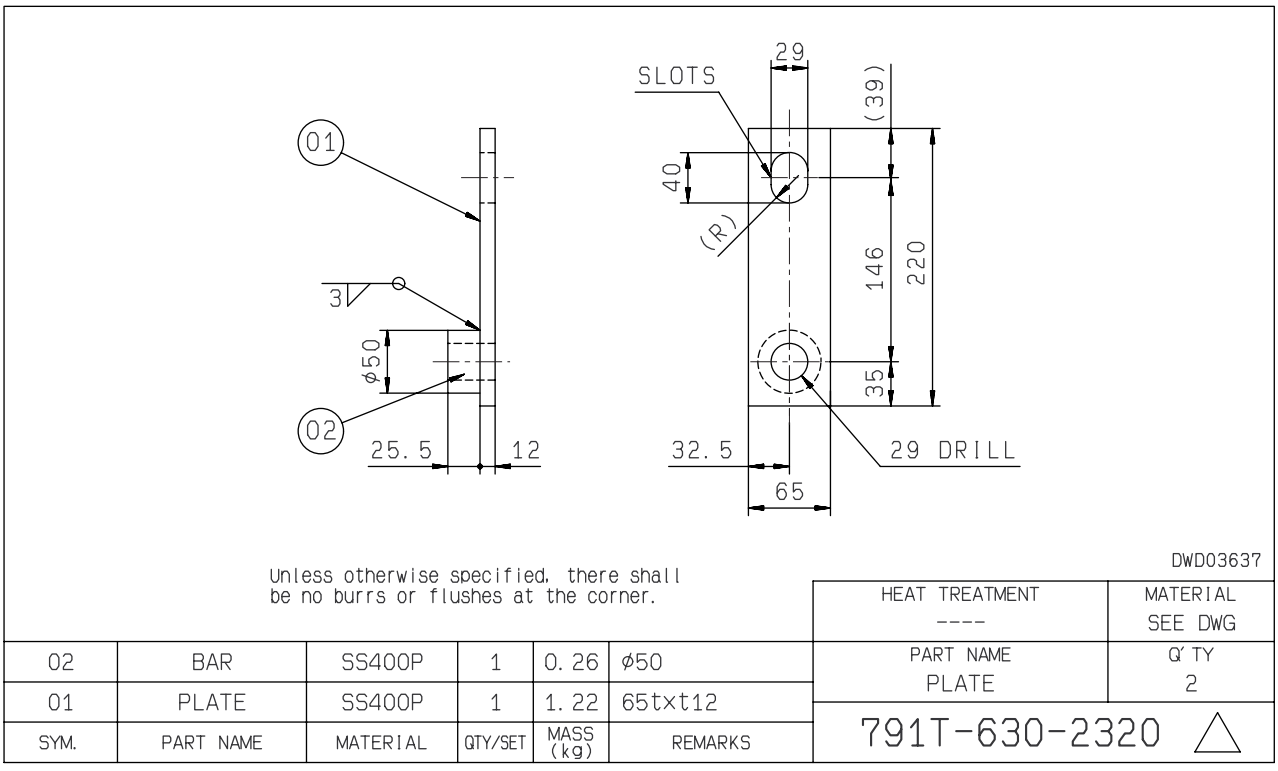
Engine start/charge-related circuit diagram



L10 Push tool



L13 Plate



SYM.	PART NAME	MATERIAL	QTY/SET	MASS (kg)	REMARKS
02	BAR	SS400P	1	0.26	φ50
01	PLATE	SS400P	1	1.22	65txt12