



70ZV-2

SHOP MANUAL

General Information
Function & Structure

93208-00502



93208-00502
December 2014

SHOP MANUAL

WHEEL LOADER

70ZV-2

***General Information
Standard Measurement Values for
Performance Check
Function & Structure
Check & Adjustment***

Powered by CUMMINS QSB6.7 Engine

Serial No. 70C5-9001 and up

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70ZV-2 EU 00-6
00 General Information
Outline

△ : First time replacement or cleaning only

Section	Item for check	Operating hours						When Required
		10	50	250	500	1000	2000	
Axle system	Check Tire for Damage, Air and Tread Depth	○						
	Greasing (Axle support)		○					
	Check Tire Air Pressure		○					
	Check Differential Gear Oil			○				
	Check Planetary Gear Oil			○				
	Greasing (Pillow block bearing unit)			○				
	Check Tightness of Wheel Bolts			○				
	Check Tightness of Axle Mount Bolts			△			○	
	Greasing (2nd Propeller Shaft Spline)						○	
	Replace Differential Gear Oil						○	
	Replace Planetary Gear Oil						○	
	Greasing (2nd Propeller Shaft)							Every 12000 hours ○
	Greasing (3rd Propeller Shaft)							Every 12000 hours ○
Steering system	Check Steering Wheel Operation	○						
	Greasing (Steering Cylinder)		○					
Brake system	Check Service Brake Operation	○						
	Check Parking Brake Operation	○						
	Adjust Parking Brake Lining					○		
	Check Service Brake Disk Wear						○	
	Check Brake Accumulator						○	
	Clean Filter for Brake Line			△			○	
Loading system	Check Hydraulic Oil Level	○						
	Greasing		○					
	Replace Hydraulic Oil Return Filter			△		○		
	Replace Hydraulic Oil, Clean Filter						○	
	Replace Filter in the Hydraulic Tank Cap (S/N ~9250)						○	
	Replace Filter in the Hydraulic Tank Breather Valve (S/N 9251~)						○	
	Replace Bucket Teeth (option)							○
	Replace Cutting Edge							○
Chassis	Adjust and Check Rear View Mirrors	○						
	ROPS (Roll Over Protective Structure) Cab	○						
	Greasing (Center Pin)		○					
	Check Ride Control Accumulator (option)						○	
	Check and/or Replace Seat Belt							○
	Check Windshield Washer Fluid							○

Flanged hexagon bolt

1. Bolt type: Metric thread
2. Bolt strength: 8.8 (8T)
3. Thread pitch: Coarse pitch thread (C)

(N-m)

Type	Bolt size		Bolt strength
	Nominal dimension	Pitch	8.8 (8T)
Metric thread	M5	0.8	7
	M6	1	12
	M8	1.25	28
	M10	1.5	53
	M12	1.75	94
	M16	2	231
	M20	2.5	441
M24	3	765	

(kgf-m)

Type	Bolt size		Bolt strength
	Nominal dimension	Pitch	8.8 (8T)
Metric thread	M5	0.8	0.7
	M6	1	1.2
	M8	1.25	2.9
	M10	1.5	5.4
	M12	1.75	9.6
	M16	2	23.5
	M20	2.5	45.0
M24	3	78.0	

(lb-ft)

Type	Bolt size		Bolt strength
	Nominal dimension	Pitch	8.8 (8T)
Metric thread	M5	0.8	5.0
	M6	1	8.6
	M8	1.25	20.9
	M10	1.5	38.9
	M12	1.75	69.1
	M16	2	169.2
	M20	2.5	324.0
M24	3	561.6	

70ZV-2 EU 03-4

03 Measurement for Performance Check

Standard Measurement Values for Performance Check

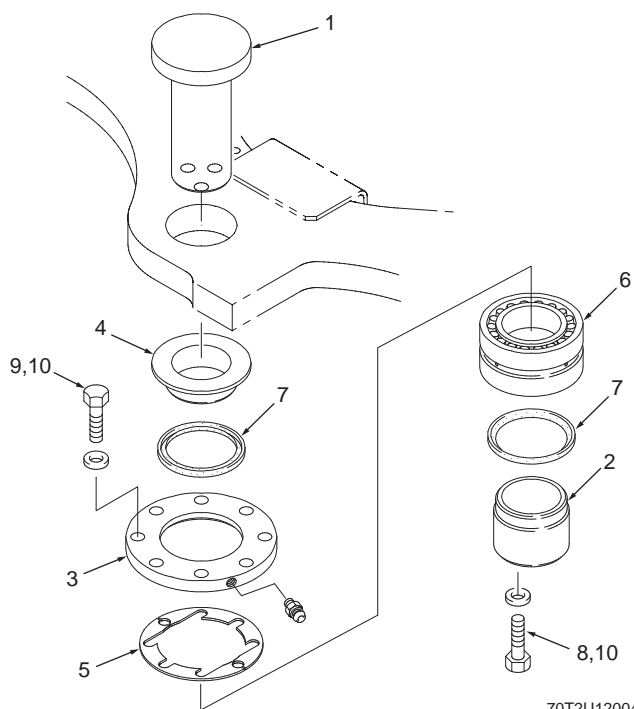
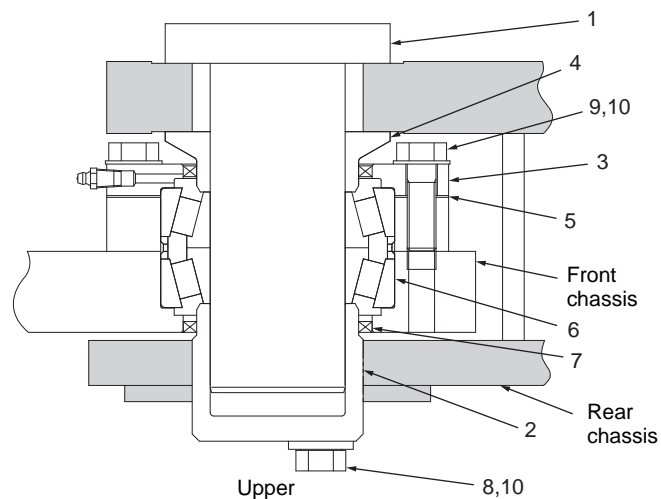
Item			Standard measurement values for performance check		Remarks	
System	Measurement item		Normal	Fuel efficient mode		
Hydraulic pressure	Cylinder drift (when boom and bucket are horizontal and with no load) (mm/min) (in/min)	Boom cylinder	3 (1/8) or less			
		Bucket cylinder	4 (5/32) or less			
	Boom rising time (no load) (sec)	Engine speed	Idling (LI)	21±3.0		
			1,500 min ⁻¹ (rpm)	10±1.0		
			Maximum (HI)	5.6±0.5		
	Full steering time (sec)	Engine speed	Idling (LI)	5.0±0.5		
			1,500 min ⁻¹ (rpm)	2.1±0.3		
			Maximum (HI)	2.0±0.3		
	Relief valve setting pressure MPa (kgf/cm ²) (psi)	Loading line main relief pressure (HI)		20.6±0.5 (210±5) (2,986±71)		
		Loading line overload relief pressure (LI)		23.5±0.5 (240±5) (3,413±71)		Run engine at lowest possible speed while setting
		Steering line main relief pressure (HI)		20.6±0.5 (210±5) (2,986±71)		
		Steering line overload relief pressure (LI)		23.5±0.5 (240±5) (3,413±71)		Run engine at lowest possible speed while setting
		Pilot line reducing pressure (LI)		3.5 (36) (512)		Run engine at lowest possible speed while setting
	Fan maximum revolution (HI) min ⁻¹ (rpm)	Engine water temperature <80°C (180°F) T/C oil temperature <110°C (230°F) Hydraulic oil temperature <90°C (195°F)		1,190 ⁺⁷⁵ ₋₂₀₀		
Engine water temperature >95°C (205°F) T/C oil temperature >115°C (240°F) Hydraulic oil temperature >95°C (205°F)		1,700 ⁺¹⁰⁰ ₋₅₀				
Fan minimum revolution (LI) min ⁻¹ (rpm)	Engine water temperature <60°C (140°F) Engine idle revolution		850 ⁺⁵⁰ ₋₂₀₀			

Center Pin

Upper center pin

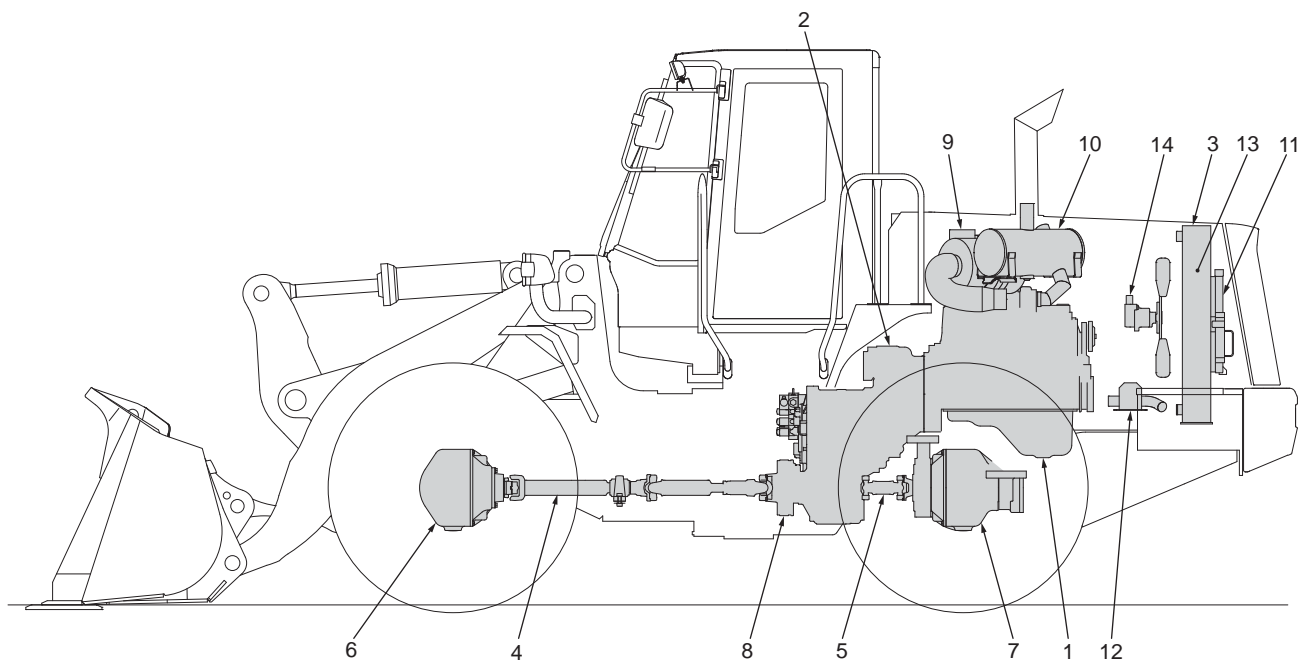
Upper

1. Center pin
2. Cover
3. Bearing cover
4. Sleeve
5. Shim
6. Bearing assembly
7. Dust seal
8. Bolt
9. Bolt
10. Washer



70T2U12004

Power Line



70V2E22001

1. Engine
2. Torque converter and transmission
3. Radiator
4. 2nd propeller shaft
5. 3rd propeller shaft
6. Front axle differential gear
7. Rear axle differential gear
8. Parking brake
9. Air cleaner
10. Muffler
11. Hydraulic oil cooler
12. Torque converter oil cooler
13. Air charge cooler
14. Fan motor

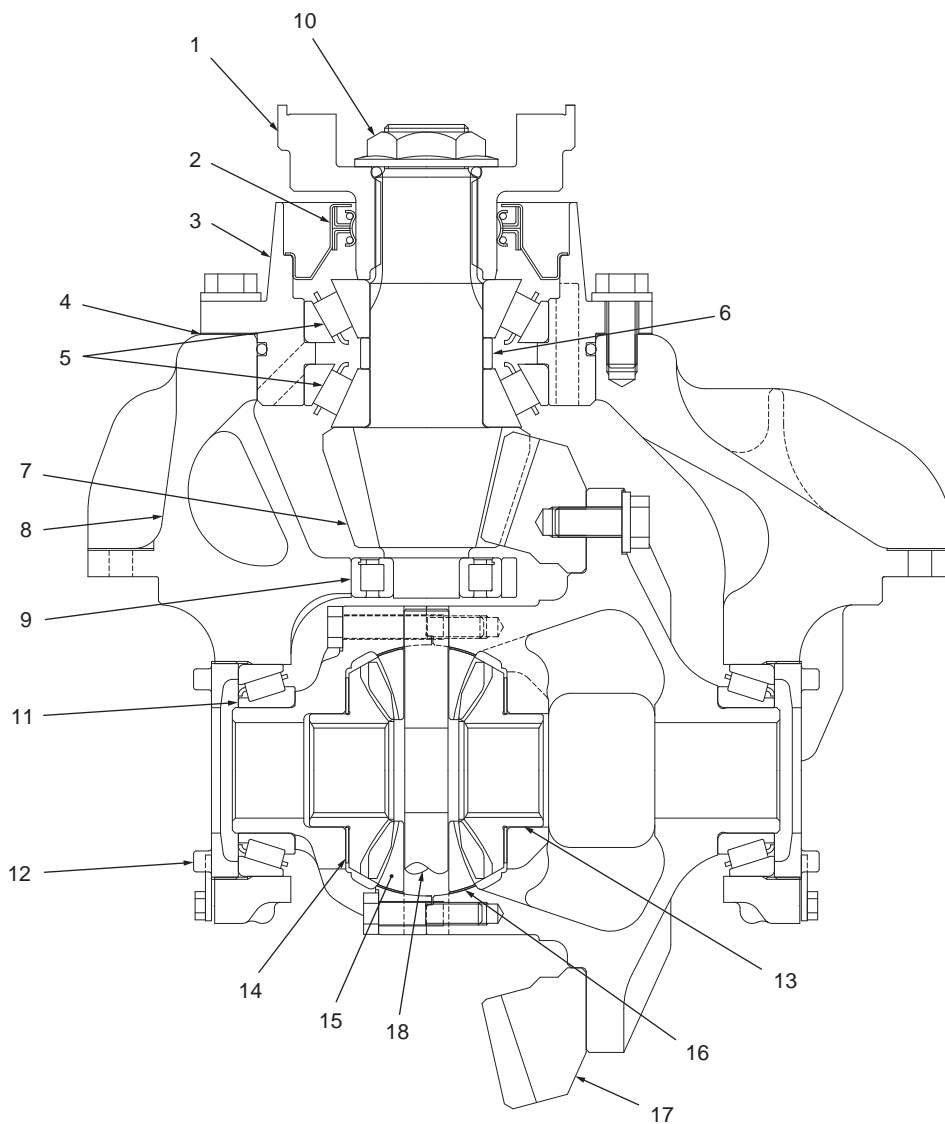
The power output from the engine is transmitted to the transmission through the torque converter (combined with the transmission). The speed and direction are changed according to the engagement of the transmission clutches. The power is then transmitted through the second and third propeller shafts to the differential gears of front and rear axles.

Finally the power is transmitted through the axles to the planetary gears, and tires to move the machine.

On the back side of the engine, there are a radiator and a torque converter oil cooler. The radiator incorporates engine coolant, air charge cooler and an external air type hydraulic oil cooler. The torque converter oil cooler is separately installed behind the engine. On the second propeller shaft side of the transmission, a parking brake is installed.

Differential Gear

Front differential gear



- 1. Flange
- 2. Oil seal (double lip)
- 3. Cage
- 4. Shim
- 5. Taper roller bearing
- 6. Collar
- 7. Drive pinion
- 8. Carrier
- 9. Pilot bearing

- 10. Nut
- 11. Taper roller bearing
- 12. Adjusting nut
- 13. Side gear
- 14. Thrust washer (side gear)
- 15. Differential pinion
- 16. Thrust washer (pinion gear)
- 17. Ring gear
- 18. Spider (cross shaft)

Engine

WARNING

Unexpected movement of the machine may cause an accident resulting in injury or death.

Therefore, to provide repair service with the engine running, be sure to observe the following items:

- Park the machine on level ground.
- Apply the parking brake.
- Block the tires with chocks to prevent the tires from moving.
- Determine the signals between the service men.
- Prohibit any person from walking into dangerous areas.
 - Near articulation area of the machine
 - Under the machine
 - Around the engine
 - In front of or behind the machine

CAUTION

Do not touch the fan or V-belt of the engine or high-temperature section if the engine is running.

An accident resulting in injury may occur.

Be sure to stop the engine before you open the access panel of the engine room.

Keep all guards in place.

Avoid high temperature components even when the engine is stopped.

Use a photo tachometer when checking engine revolution.

Measuring engine speed

Measurement instrument

- Tachometer

Standard measurement value

Low idle (min^{-1}): 800 ± 50

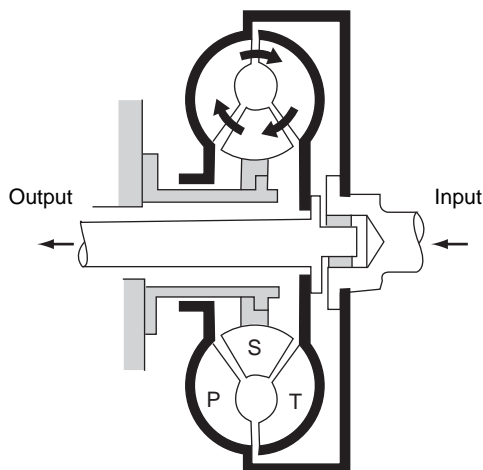
High idle (min^{-1}): $2,240 \pm 50$

(S/N 9037~)

Measure the engine speed with the following condition.

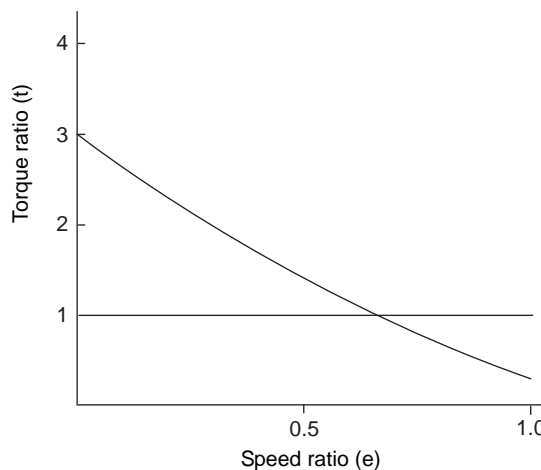
1. Parking switch ON
2. Shift lever in F position

Torque Converter



95ZV32002

Torque multiplication



95ZV32003

Torque converter structure

The torque converter is between the engine and transmission, and consists of three impellers as shown in the figure. The three impellers are pump (P), turbine (T), and stator (S) impellers.

If the engine speed/pump impeller speed stays the same but the turbine impeller speed is reduced due to the transmission load-output torque is increased. This is "torque multiplication". Heat is also generated.

$$\text{Speed ratio}(e) = \frac{\text{Turbine impeller speed (min}^{-1}\text{) (rpm)}}{\text{Pump impeller speed (min}^{-1}\text{) (rpm)}}$$

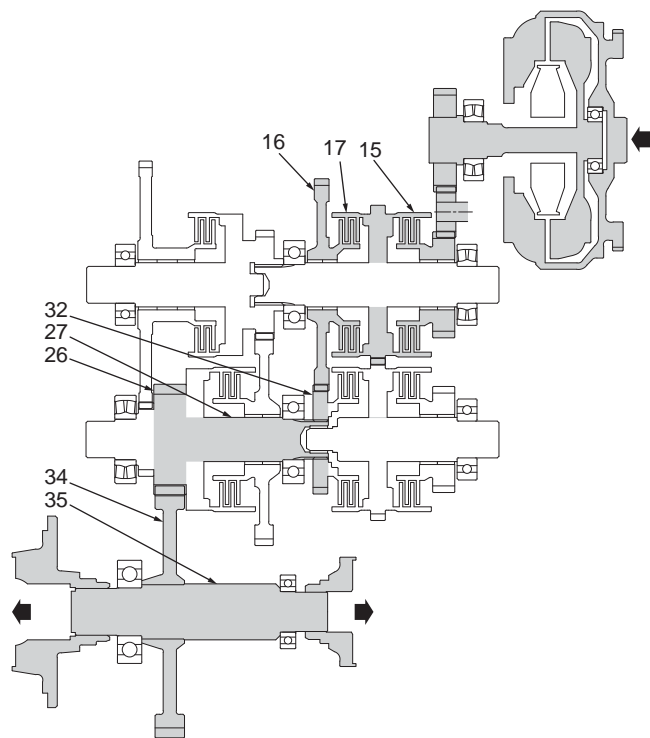
Power flow path

The pump is connected to the engine flywheel, and rotates together with the engine.

The turbine is connected to the torque converter output shaft to transmit the power to the transmission.

The stator is fixed to the torque converter case. The area of the impellers is filled with oil. When the engine is started, the pump impeller rotates, therefore the oil will circulate to rotate the turbine impeller (circulation order: pump→turbine→stator→pump). Oil is redirected by the fixed stator impeller back to the pump impeller. When the turbine impeller rotates, the power will be transmitted to the output shaft.

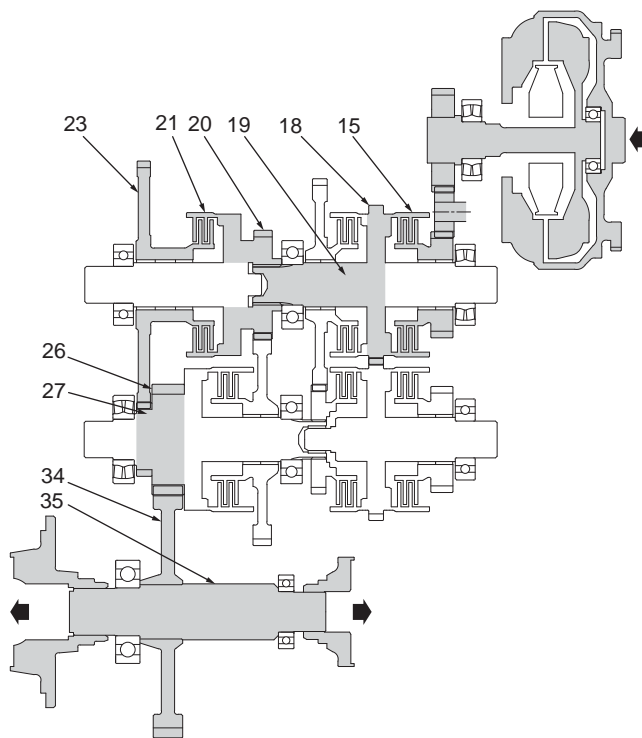
Forward 3rd speed power flow path



80ZV32004

1. The power from the torque converter is transmitted to forward clutch (15), and then, to 3rd speed clutch (17) that is connected to 3rd speed clutch gear (16). The power is then transmitted to 2nd speed clutch gear (32).
2. Since 2nd speed clutch gear (32) is spline-connected to counter shaft C (27), the power is transmitted to counter gear C (26).
3. Counter gear C (26) transmits the power to output shaft gear (34), and then, to output shaft (35).

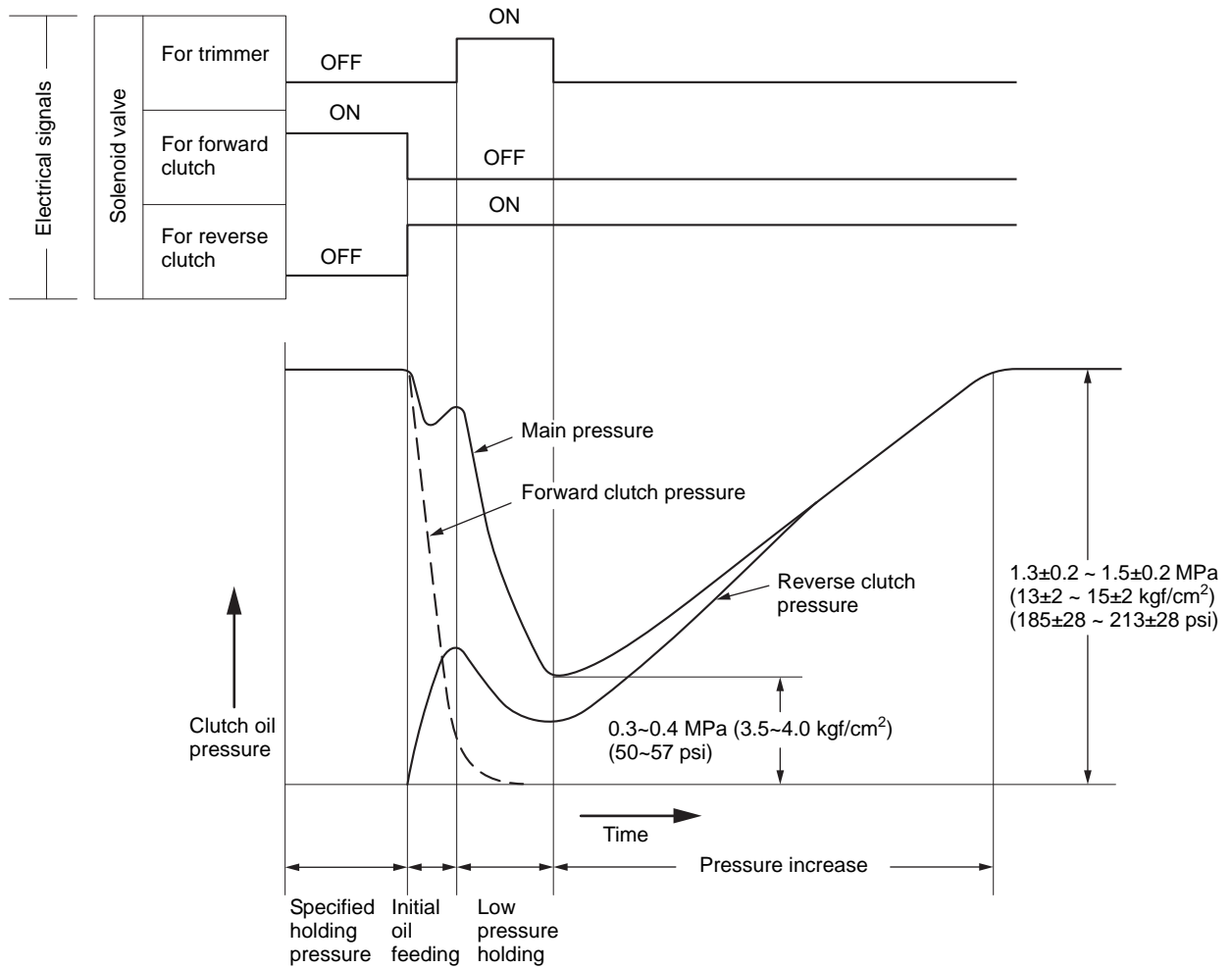
Forward 4th speed power flow path



80ZV32005

1. The power from the torque converter is transmitted to forward clutch (15). Forward clutch (15) transmits the power to counter gear A (18), and then, to counter shaft A (19).
2. Counter shaft A (19) is spline-connected to counter gear B (20).
3. When 4th speed clutch (21) is engaged, the power will be transmitted to 4th speed clutch gear (23).
4. 4th speed clutch gear (23) transmits the power to counter shaft gear (27), counter gear C (26), and then, to output shaft gear (34). After that, the power is finally transmitted to output shaft (35).

Clutch control oil pressure curve



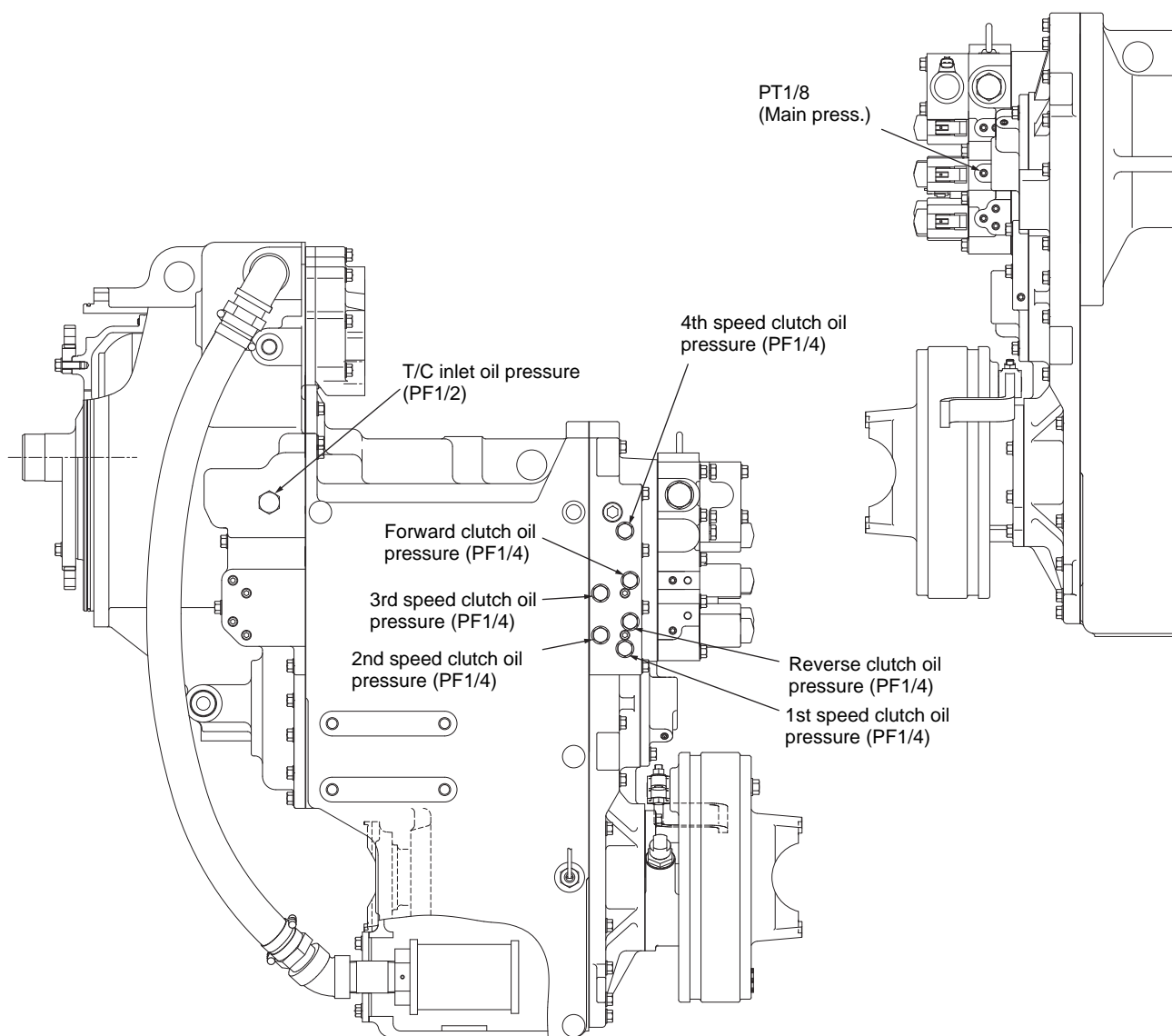
80ZVE32018

Initial oil feeding*	Low-pressure holding	Pressure increase
0~0.05 sec.	0.2 sec.	Approx. 1 sec.

*Note: The initial oil feeding time depends on the capacity of the clutch piston chamber.

Clutch Oil Pressure

Measuring clutch oil pressure



70V2E33001

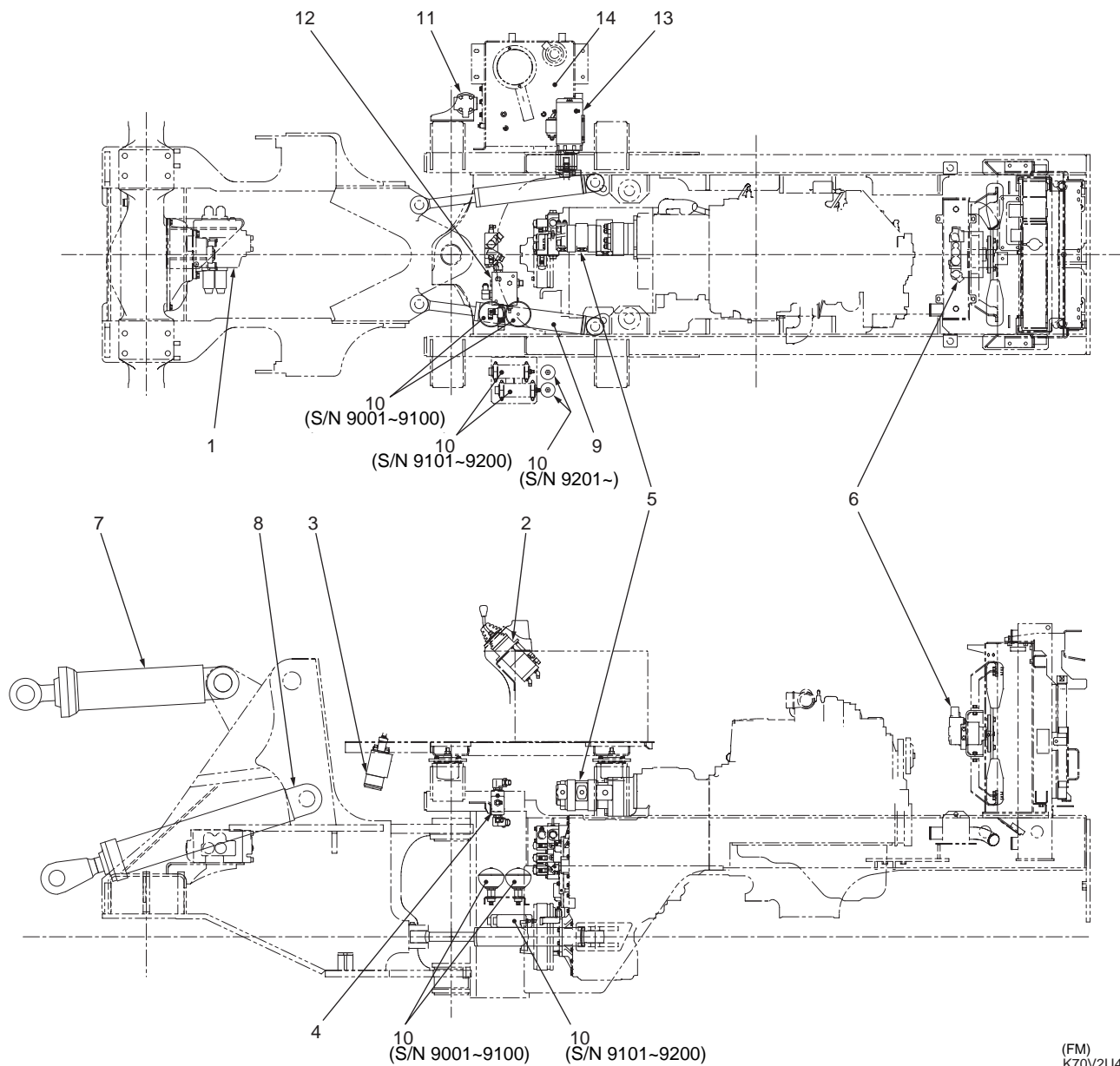
WARNING

Unexpected movement of the machine may cause an accident resulting in injury or death.

To prevent such an accident during clutch oil pressure measurement, be sure to closely communicate with the person in the cab by giving signals to each other. Also use a gauge with a hose long enough to reach outside from the articulation area.

- Pressure gauge 2 MPa (20 kgf/cm²) (284 psi) with 2~3 m hose
- Clutch oil pressure measurement value:
1.3±0.2 MPa (13±2 kgf/cm²) (185±28 psi) at engine idling speed (LI)
1.5±0.2 MPa (15±2 kgf/cm²) (213±28 psi) at engine maximum speed (HI)
- Torque converter oil temperature:
50~80°C (120~180°F)

Layout of Hydraulic Units

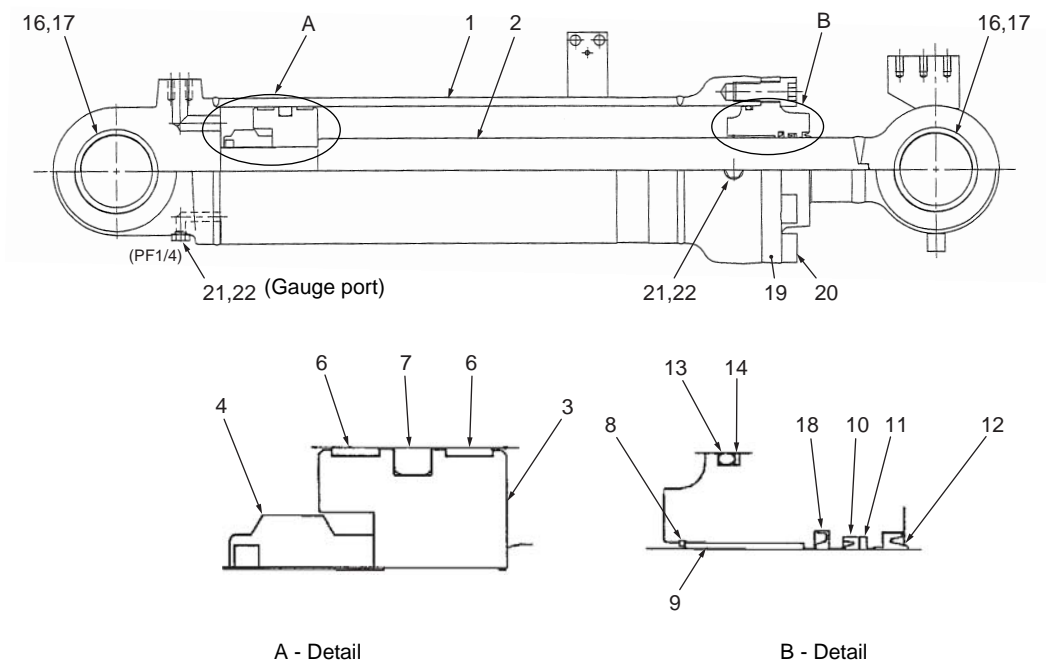


(FM)
 K70V2U42005

- | | |
|-------------------------------|--------------------------------|
| 1. Multiple control valve | 8. Boom cylinder |
| 2. Pilot valve | 9. Steering cylinder |
| 3. Orbitrol® | 10. Accumulator (for steering) |
| 4. Priority valve | 11. T/C line filter |
| 5. Hydraulic pump (3 section) | 12. ELS valve (OPT) |
| 6. Fan motor | 13. Secondary steering pump |
| 7. Bucket cylinder | 14. Hydraulic tank |

Bucket cylinder

(S/N 9001~9133)



K70V2U42007

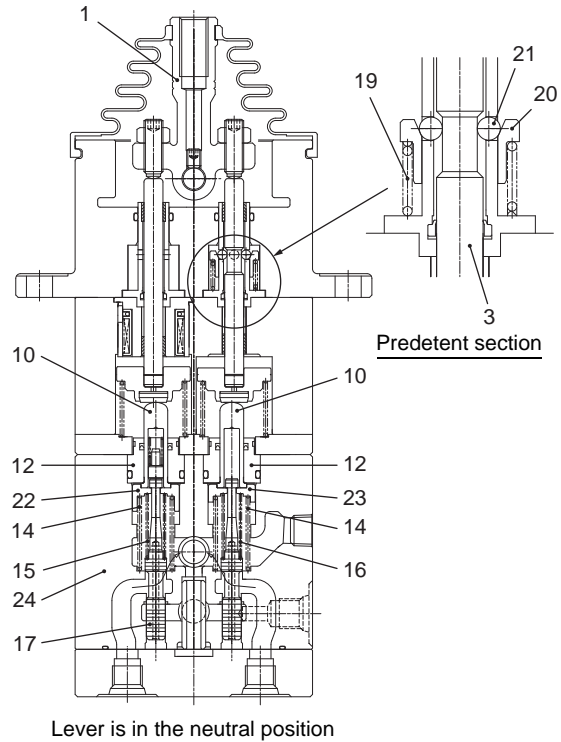
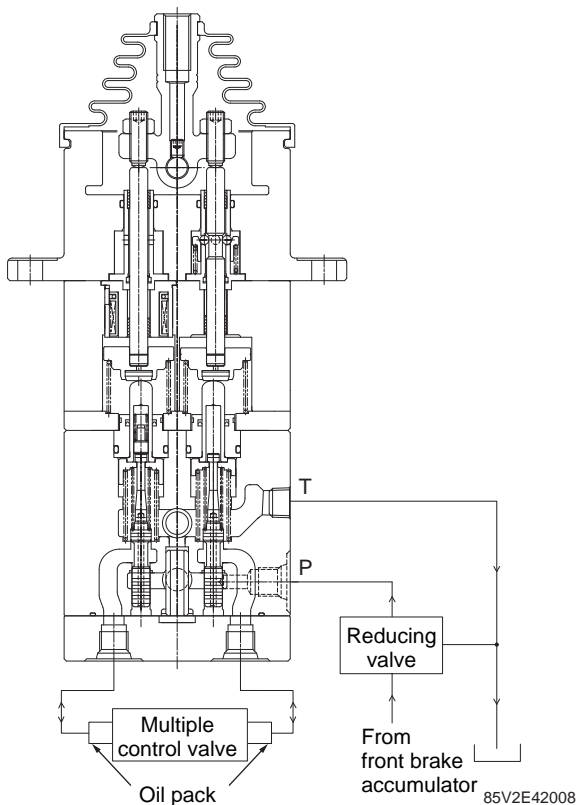
☞: Nut (4): 5,900±300 N-m (602±31 kgf-m) (4,350±220 lb-ft)
 : Bolt (20): 880±90 N-m (90±9 kgf-m) (649±66 lb-ft)

- | | |
|-------------------|-----------------|
| 1. Cylinder tube | 11. Backup ring |
| 2. Piston rod | 12. Dust seal |
| 3. Piston | 13. O-ring |
| 4. Nut | 14. Backup ring |
| 5. — | 15. — |
| 6. Wear ring | 16. Bushing |
| 7. Piston packing | 17. Dust seal |
| 8. Clip | 18. Buffer seal |
| 9. Bushing | 19. Rod cover |
| 10. Rod packing | 20. Bolt |
| | 21. Plug |
| | 22. O-ring |

Pilot valve function

The pilot valve applies oil pressure in proportion to the operating angle of the lever, there-by carrying out remote control of the spool in the multiple control valve.

Pilot valve operation (modulated position)



85V2E42009

The pilot valve has holes of lengthwise direction in which the reducing valve is built. The reducing valve section consists of spool (17), spring for secondary pressure (15)(16), return spring (14) and spring seat (22)(23). Being inserted in plug (12), push rod (10) can be moved smoothly to change the bending quantity of secondary pressure spring (15)(16).

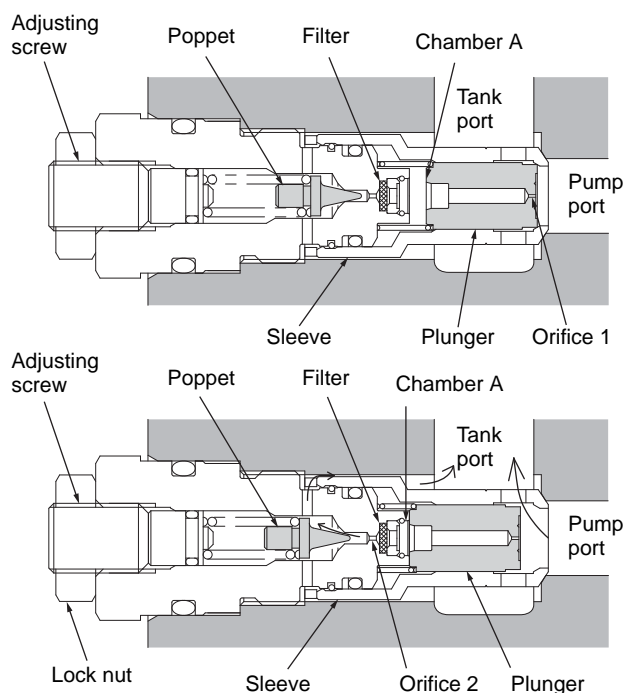
Return spring (14) contacts casing (24) and spring seat (22)(23). This spring works on returning push rod (10) to its original position without relation to secondary pressure, therefore it ensures returning the spool to neutral. Also it has the effect as reactive force spring to give the modulation feeling to operator.

When lever (1) is in the neutral position, the force of secondary pressure spring (15)(16) is not worked on spool (17) and spool is pushed up to push rod (10) by return spring (14). As spool (17) closes the pump port and the tank port is opened, the oil pressure is not applied to the multiple control valve oil pack. The spool of multiple control valve is held in neutral by its centering springs. There is no oil flow to the cylinder.

Multiple control valve main relief valve

The main relief valve is installed between the pump and the control spool. When the cylinder comes to the stroke end, or if the pressure is above the set pressure, the oil fed from the pump will be discharged into the tank through this valve (main relief valve) to prevent pump and pipe damage.

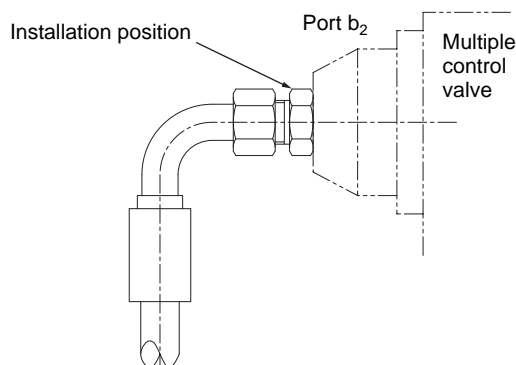
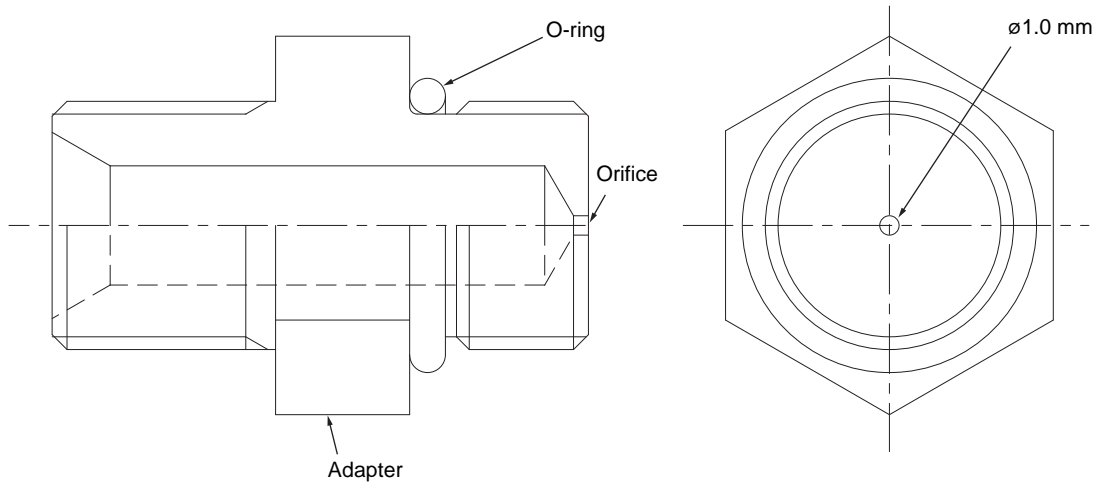
Main relief valve operation



70ZV42013

1. When the oil pressure is at the set point or below
 - The pressurized oil from the pump flows in to the chamber A through the orifice 1, and the plunger is pressed against the sleeve by the pressure area difference of the plunger and the spring force. Also the sleeve completely closes the pump port by the pressure area difference of the sleeve between the pump port side and chamber A side.
2. When the oil pressure exceeds the set point
 - When the oil pressure in the cylinder line rises above the pressure set by the spring, the poppet is moved to the left and opens the port. Then the oil in the chamber A flows to the tank through clearance between the body and sleeve. As a result, the pressure in the chamber A rapidly lowers and the plunger is moved to the left. Then the plunger opens the port to the tank port and the pressurized oil in the pump port escapes to the tank port.

Adapter (Orifice)



80ZV42018

The adapter is installed in the boom lowering line between the pilot valve and the multiple control valve.

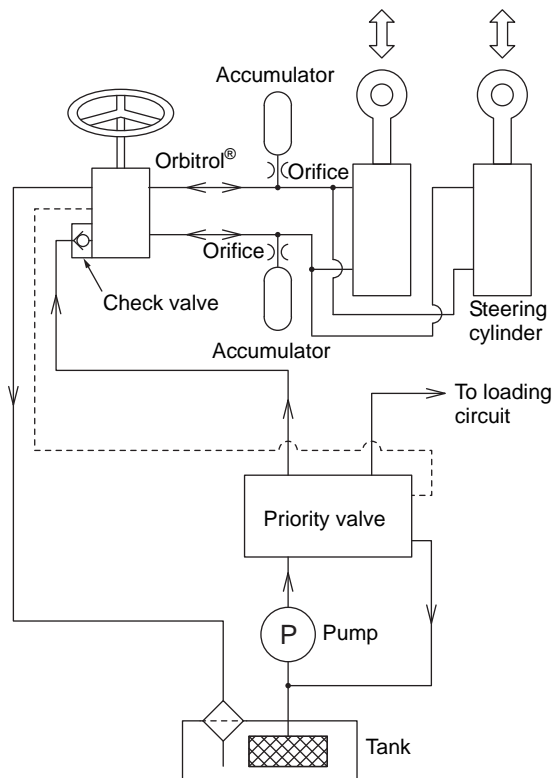
When the lever is shifted back to the holding position just after lowering the boom, the boom spool of the multiple control valve is quickly returned to the holding position by the return spring. At this time, the boom lowering inertia causes a shock to the machine body.

To lessen this shock to the machine body, the adapter (orifice) controls the spool return speed by slowly returning the pilot oil which was pushing the spool.

Note

When the oil is very cold it will pass very slowly through the orifice. As a result it will take longer than normal for the spool to shift to neutral or holding position. Always warm up the oil before beginning normal operation.

Steering System



K65V2E42004

A load sensing type steering system is employed, designed to save energy consumed in the hydraulic system (to raise the operational efficiency).

When the steering wheel is turned, an amount of oil proportional to the turning speed is sent from the pump to the steering cylinder through the priority valve and the Orbitrol®.

When the steering wheel is not operated, almost all of the hydraulic oil discharged from the pump is supplied to the loading circuit.

The priority valve detects the resistance of the hydraulic oil passing through the Orbitrol®, namely the speed of the steering wheel's rotation and the amount of oil, and then distributes oil to the loading and steering circuits.

The accumulator is provided to prevent shock at the time of starting and stopping the steering wheel.

Orbitrol®

A sensing-type Orbitrol® is used in this model in combination with the priority valve, which regulated the oil flow from the pump in proportion to the rotating speed of the steering wheel.

Valve System

As for the valve system of the Orbitrol®, load-sensing, non-load reaction, dynamic signal and Q/Amp. is adopted.

1. Load-sensing system

Regardless of the load change, this system make it possible to steer with the compensated pressure and all amount of pump flow except the necessity for steering can be utilized for other actuators.

2. Non-load reaction system

The L&R ports are blocked when the steering wheel is in neutral. This system is superior because reactive force of road surface does not transmit to the steering wheel. It's effective for the operators to lighten the fatigue.

3. Dynamic signal

The signal of spool control of the priority valve is not only from Orbitrol® but also from priority valve directly, so the response of the steering is superior.

4. Q/Amp.

Q: flow quantity
Amp: amplification

The Orbitrol® have the function to amplify the flow quantity. Flow quantity is changed depending on the rotation amount of the steering wheel. If the rotating speed is faster, discharge flow quantity is amplified.
(Amplification ratio.....2.0:1.0)

Overload relief valve and make-up valve

When the steering wheel is not being turned, the oil between the Orbitrol® and the cylinder is sealed in.

If the external force is applied to the steering cylinder under this condition, the high pressure would be created in the circuit, and the pressurized oil might cause a ruptured pipe or cylinder, a bent piston rod, or some other problem, unless the oil is allowed to escape.

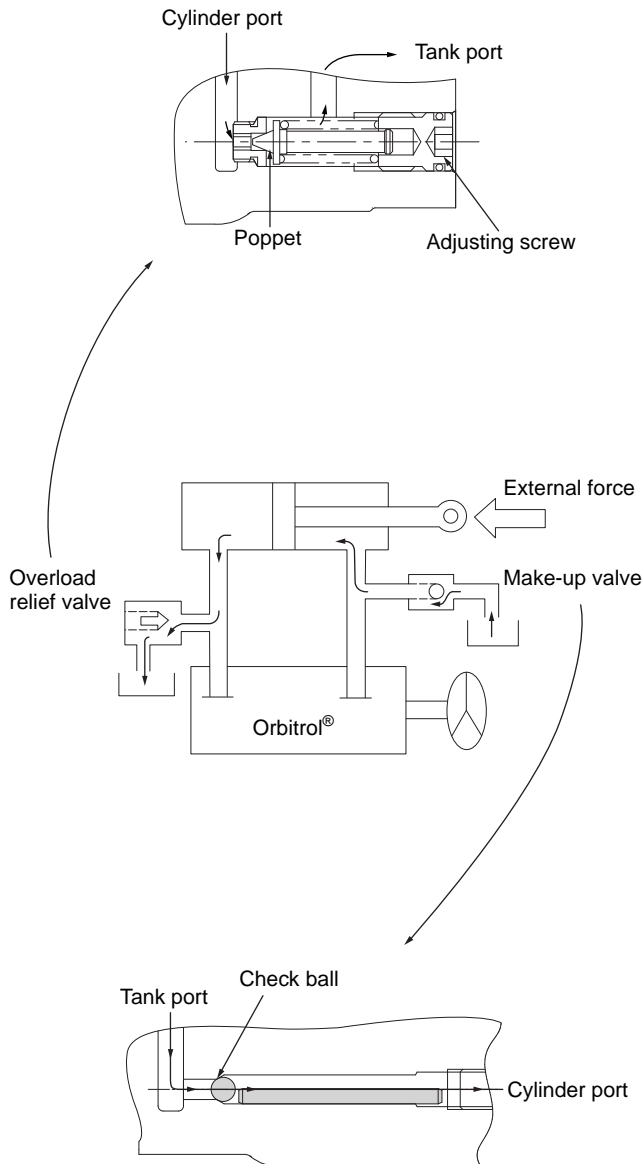
The overload relief valve directs this pressurized oil to the tank. (Relief pressure setting = 23.5 MPa (240 kgf/cm²) (3,406 psi))

The set pressure of the overload relief valve can be adjusted by turning the adjusting screw.

When the overload relief valve opens and causes the oil in the cylinder to escape to the tank, the pressure in the opposite section of the cylinder (the rod end of the cylinder in the figure) becomes negative. When that happens, the make-up valve opens and directs the oil from the tank into the cylinder, cancelling the suction pressure in the cylinder.

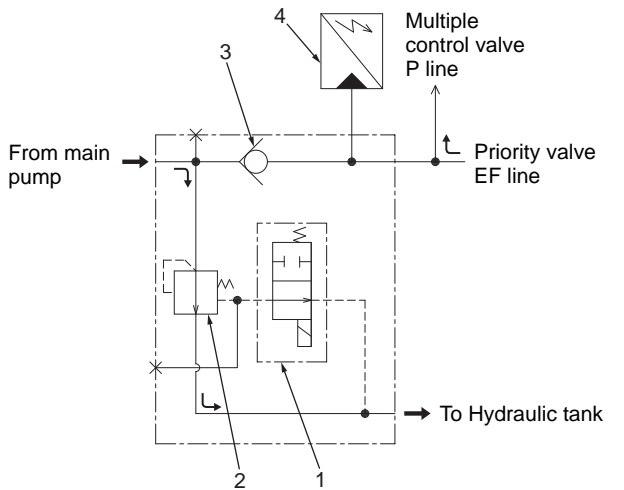
Note

Unless the Orbitrol® is removed, it is impossible to adjust the overload relief valve.



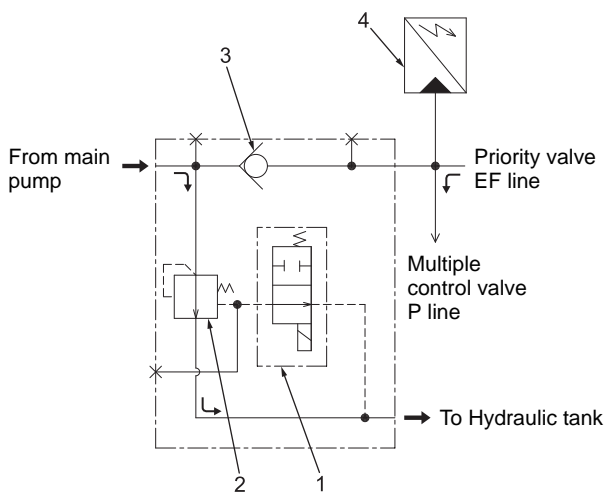
While the ELS is operating

(S/N 9001~9200)



80V2E42008

(S/N 9201~)



K70V2U42004

When the ELS switch is turned on and the ELS operation condition set by the MCU is satisfied, the solenoid valve in the ELS valve is energized and the spool is moved.

After that, the setting pressure of relief valve drops to the hydraulic tank pressure level.

Therefore, the oil discharged from the main pump opens relief valve (2) that setting value dropped and all the hydraulic oil from the main pump goes to the hydraulic tank.

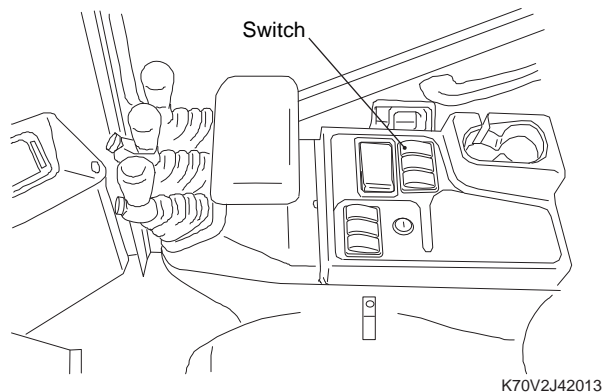
But the oil from the priority valve EF port cannot flow into relief valve (2) because of check valve (3), and flow into the multiple control valve P port.

Therefore when the ELS is operated, most of the engine power is applied to the wheels to exert maximum driving force by turning off the main pump and reducing the pump driving load on engine.

In addition, it becomes easy to operate slightly by reducing the quantity of total oil to the loading circuit, and is improved the performance of operating when excavating and scooping.

Reversing Fan Motor Line (OPT)

Reversing fan motor function



Engaging this switch reverses the rotation of the cooling fan for cleaning the radiator fins.

When pushing this switch for more than 2 seconds with the engine running, the switch turns "ON", the pilot lamp on the switch lights up and the cooling fan turns in reverse rotation for 1 minute, after which it returns to its normal rotation.

The fan turns continuously in reverse direction for 1 minute at 30 minute intervals.

When the switch is pushed again for more than 2 seconds, the cooling fan reversal switch turns "OFF" and the pilot lamp on the switch turns "OFF". Then the cooling fan turns in the normal direction.

The cooling fan reversal switch can be operated any time the engine is running. It is not necessary to stop the machine to push the reversal cooling fan switch.

If the fan turns in reverse direction under the following conditions, reverse control of fan is canceled. The reversal fan indicator lamp flashes at 0.5 sec cycle (ON: 0.25 sec, OFF: 0.25 sec) for 3 seconds, and then the lamp turns off and the fan turns in normal rotation.

Functional limitation conditions:

When either one of the following temperature exceeds the preset upper limit(s), the cooling fan reverse rotation function does not work.

1. Signal of engine water temperature > 94°C (201.2°F)
2. Signal of torque converter oil temperature > 115°C (239°F)
3. Signal of the hydraulic oil temperature > 95°C (203°F)

Loading/Steering Circuit Relief Valve/Ride Control Circuit Reducing Valve (OPT)

Loading circuit relief valve setting pressures

WARNING

Unexpected movement of the machine may cause an accident resulting in injury or death.

Therefore, to provide repair service with the engine running, be sure to observe the following items:

- Park the machine on level ground.
- Apply the parking brake.
- Block the tires with chocks to prevent the tires from moving.
- Determine the signals between the service man.
- Prohibit any person from walking into dangerous areas.
 - Near articulation areas of the machine
 - Under the machine
 - Around the engine
 - In front of or behind the machine

CAUTION

Do not touch the fan or V-belt of the engine or a high-temperature section if the engine is running. An accident resulting in injury may occur.

Be sure to stop the engine before you open the access panel of the engine room. Keep all guards in place.

Avoid high temperature components even when the engine is stopped.

CAUTION

Be careful, you may get burned if the high pressure oil spouts out. To prevent such an accident, be sure to release the residual pressure from the pipe, and open the cap of the hydraulic tank before removing the plug from the pressure measurement port.

Releasing residual pressure from tank and pipes

Keep the bottom surface of the bucket horizontal, and stop the engine when the bucket is approximately 30 cm (1 ft.) above the ground.

Tilt down the bucket until it comes in contact with the ground. Place the bucket control lever in the roll back position, and then lower the boom.

Push down on, then open the cap of the hydraulic tank to release the residual pressure.

Measurement instruments

Pressure gauge

30 MPa (300 kgf/cm²) (5,000 psi)
(for loading line with 3 m (10 ft.) hose)

5 MPa (50 kgf/cm²) (1,000 psi)
(for pilot line) with 2~3 m (6~10 ft.) hose

Note

For safety purpose, route the gauge to an area where it may be safely read by the person doing the test.

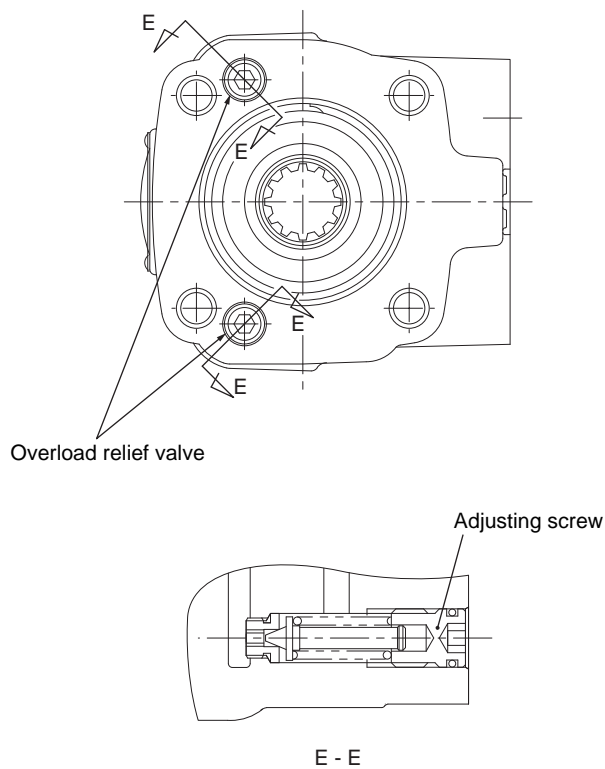
Standard measurement value

Loading line main relief pressure (at maximum speed) MPa (kgf/cm ²) (psi)	20.6±0.5 (210±5) (2,986±71)
Loading line overload relief pressure (at idling speed) MPa (kgf/cm ²) (psi)	23.5±0.5 (240±5) (3,413±71)
Pilot line MPa (kgf/cm ²) (psi)	3.5 (36) (512)

Hydraulic oil temperature: 50±5°C (120±9°F)

Measuring steering circuit overload relief pressure

Orbitrol®



70V2E43002

1. Attach the pressure gauge to the port ((1) for the left turn, (2) for the right turn).
2. Adjust the main relief valve pressure to 25.5 MPa (260 kgf/cm²) (3,697 psi) + 1/4 additional turn, so the pressure is above the overload relief pressure.
3. Steer the machine until the front and rear chassis contact each other. Continue to hold the steering wheel fully turned.
4. Keep the engine speed at low idle, and measure and record the pressure.
Raise the engine speed to 1,000 min⁻¹ if fail to do.

Adjusting overload relief pressure

The pressure is adjusted by the overload relief valve on the orbitrol®.

Turn clockwise the adjusting screw to raise the steering line overload relief pressure.

Note

It is not possible to adjust the overload relief pressure if the orbitrol® is removed.

⚠ WARNING

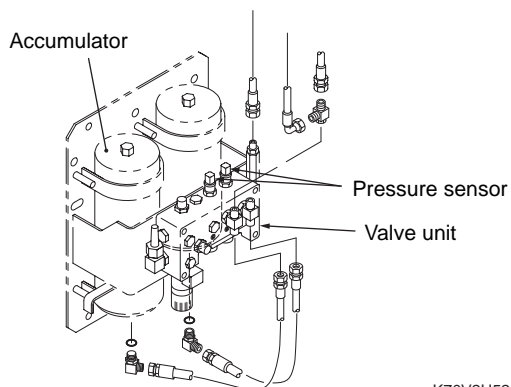
If the machine begins to move with the articulation stopper applied, it may cause an accident resulting in injury or death.

After the measurement, be sure to disconnect and store the articulation stopper.

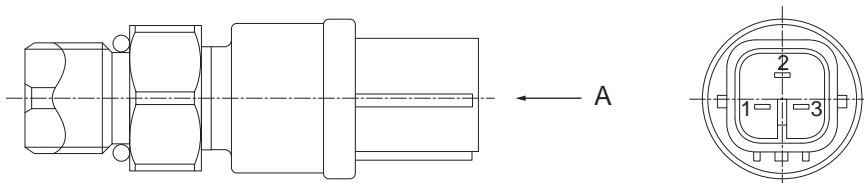
IMPORTANT

At the completion of check and adjustment of overload relief valve pressure, be sure to reset the main relief valve to the original condition.

Accumulator low pressure sensor

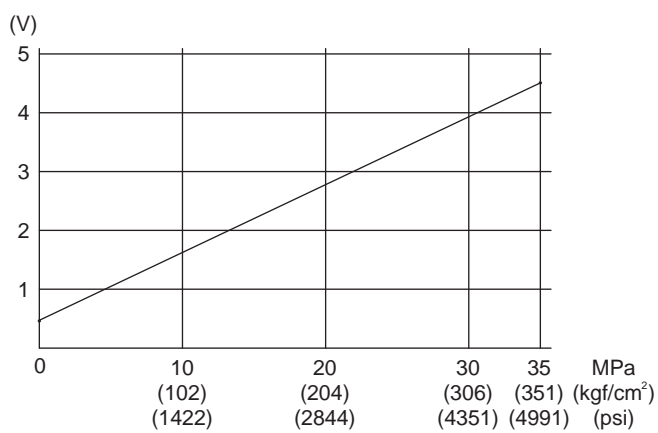


K70V2U52001



View A

- 1: Power (+)
- 2: Output (+)
- 3: Common



Brake circuit air bleeding procedure

WARNING

Unexpected movement of the machine may cause a severe accident. To prevent such an accident, take the following safety measures when performing air bleeding with the engine running.

- Park the machine on level ground.
- Apply the parking brake.
- Block the tires with chocks to prevent the wheel from moving.
- Determine the signals between the persons related to this work for engine starting to prevent an accident.
- When moving up the boom, install a safety column under the boom.
- Apply the articulate stopper.

IMPORTANT

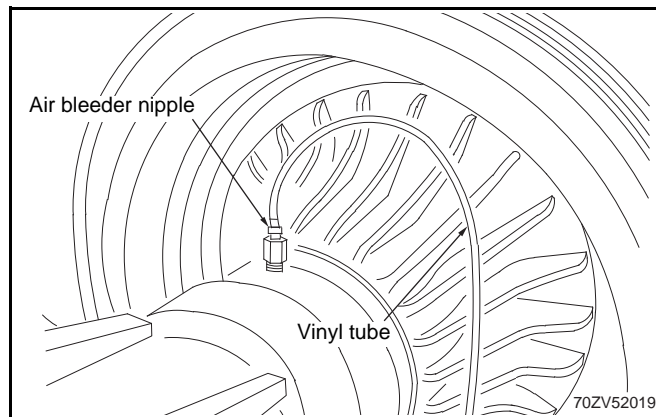
Before bleeding the service brakes, it is important to remove all air from the brake valve manifold block, and all related valves.

These include the reducing valve and park brake valve. Failure to do this correctly will result in unsatisfactory brake modulation.


Perform the following to do this:

1. Verify that the wheels are securely blocked, and the articulation lock is in the "locked" position.
2. Charge accumulator to full pressure, then shut off engine, and complete procedure.
3. Turn the park brake solenoid valve release knob counterclockwise then back to neutral five times with a five second wait period between each turn. Position this back to the normal position when finished.

Bleeding air from brake pipes and axle housing hubs



1. Connect a vinyl tube to the air bleeder nipple provided in the axle housing, and place an oil can for hydraulic oil recovery.
2. Loosen the air bleeder nipple a little. Press and hold the left brake pedal until oil containing no air comes from the air bleeder nipple. After that, tighten the air bleeder nipple. Perform this operation for each of the four wheels.

 : Air bleeder nipple
9 N-m (0.9 kgf-m) (6.5 lb-ft)

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

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

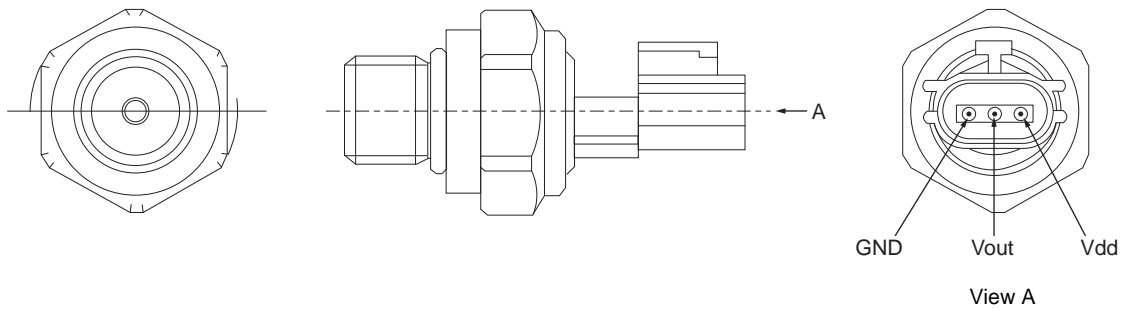


- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

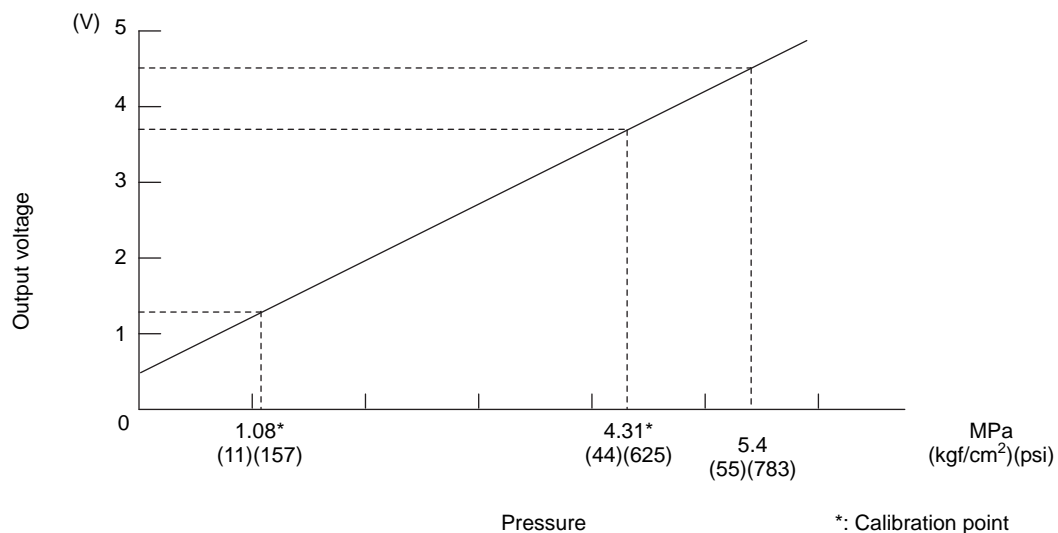
CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

70ZV-2 EU 52-28
 52 Function & Structure Brake Group
 Pressure Sensor (for stop lamp and declutch)

Pressure sensor (stop lamp) (S/N 9251~)



K80V2U52003

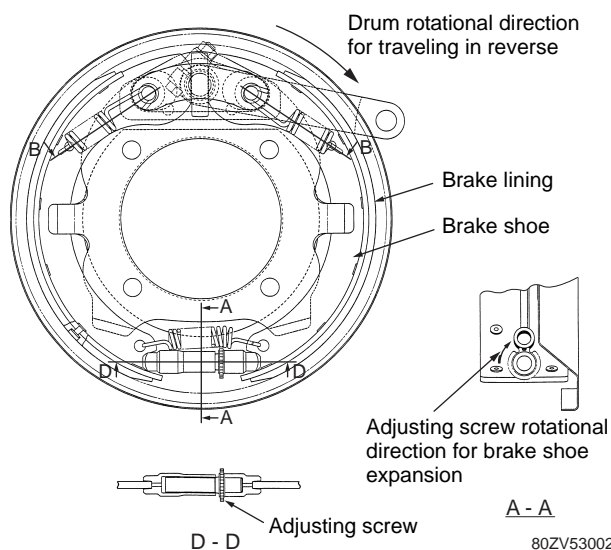


K80V2U52004

70ZV-2 EU 53-10
 53 Check & Adjustment Brake Group
 Parking Brake

Possible cause	Solution
Clearance between brake drum and shoe too large	Clearance adjustment
Improperly adjusted spring chamber link	Check and adjustment
Broken spring chamber spring	Check and repair
Parking brake solenoid valve malfunction	Check and repair

Parking brake clearance adjustment procedure



⚠ WARNING

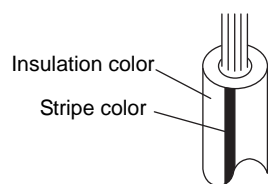
Unexpected movement of the machine may cause serious injury or death. Adjusting parking brake clearance requires the parking brake to be released. So, to prevent accidental movement, observe the following items:

- Park the machine on level ground.
- Block the tires with chocks to prevent the wheels from moving.
- Place the bucket to the ground.
- Stop the engine, and then remove the starter key. Place "DO NOT OPERATE!" tag on the steering wheel.
- Prohibit any person from walking into the dangerous area.

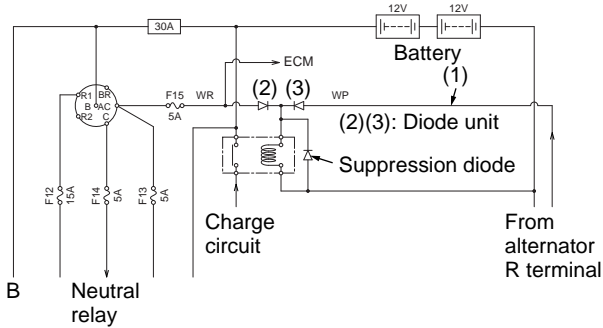
If the machine moved during parking brake performance check, the clearance between the brake drum and the lining is too large.

Electrical Cable Color Codes

Color of insulation	Y (yellow)	G (green)	Sb (sky blue)	Br (brown)	L (blue)	W (white)	R (red)	B (black)	O (orange)	Lg (light green)	P (pink)	Gy (grey)	V (violet)
Y (yellow)	Y	YG	YSb	YBr	YL	YW	YR	YB	YO			YGy	YV
G (green)	GY	G			GL	GW	GR	GB	GO				
Sb (sky blue)	SbY	SbG	Sb			SbW	SbR		SbO	SbLg	SbP		
Br (brown)	BrY	BrG		Br	BrL	BrW	BrR	BrB					
L (blue)	LY	LG		LBr	L	LW	LR	LB	LO	LLg	LP		
W (white)	WY	WG		WBr	WL	W	WR	WB	WO		WP		WV
R (red)	RY	RG		RBr	RL	RW	R	RB	RO	RLg		RGy	
B (black)	BY	BG			BL	BW	BR	B	BO	BLg	BP		BV
O (orange)	OY	OG	OSb		OL	OW	OR	OB	O				
Lg (light green)	LgY	LgG	LgSb	LgBr	LgL	LgW	LgR	LgB		Lg			
P (pink)		PG			PL	PW		PB			P		
Gy (grey)	GyY	GyG			GyL	GyW	GyR	GyB	GyO			Gy	
V (violet)						VW	VR						V



Alternator R terminal wire



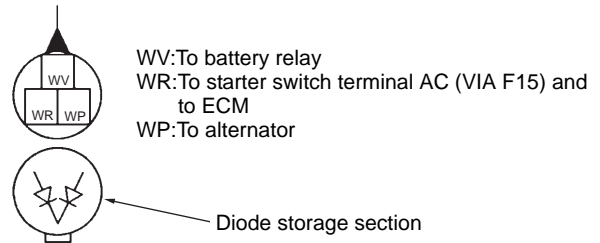
70V2U62005

Engine motion-active circuit:

When the starter switch is turned OFF, the battery relay is automatically turned OFF since the command current from the starter switch terminal AC stops flowing and the coil is demagnetized. Then the charging circuit from the alternator is shut down.

However the alternator is still generating power and the load dump surge may be generated. This may damage the related circuits and equipment. In order to prevent this trouble, this circuit (1) is provided to hold the battery relay in the "ON" position.

Diode unit



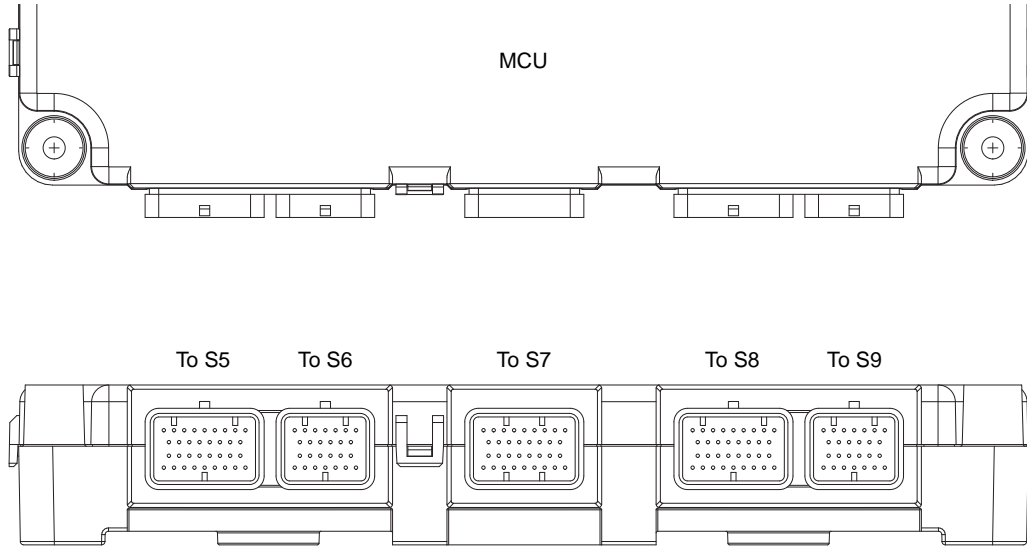
70ZV62017

The diode unit is incorporated in the milky white connector near the battery relay. It is provided for the following purpose.

1. Diode (2)
 This diode is provided to prevent the roundabout current from the alternator to the ECM. If this diode is not provided (or is defective), the ECM does not turn OFF and the engine cannot be stopped.
2. Diode (3)
 This diode is provided to prevent the roundabout current from the starter switch AC to the alternator R terminal.

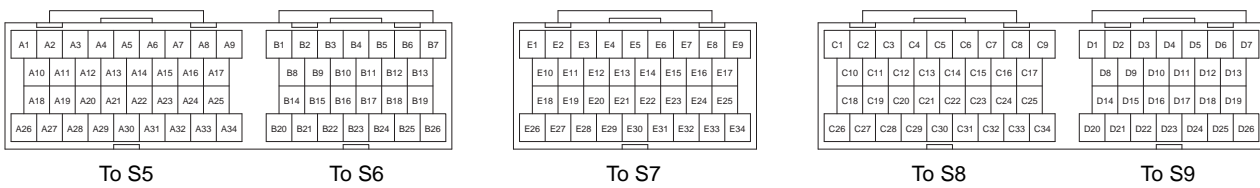
70ZV-2 EU 62-38
 62 Function & Structure Electrical Group
 Transmission Control Circuit and Monitor Circuit

Connector



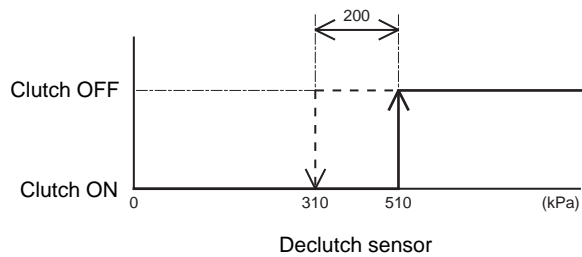
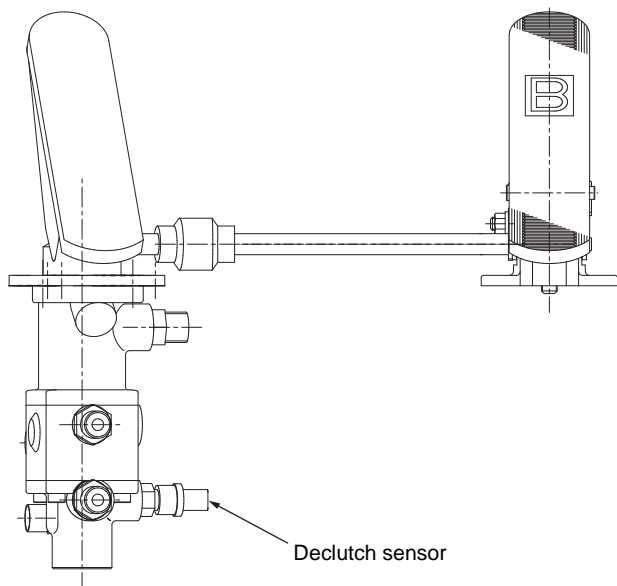
MCU

A 1.2S_SO	A16.TT_L	A31.1/4_L	B12.X_R	E 1.SSR_SO	E16.SPD	E31.TT_SE	C 1.2S_SE	C16.EP	C31.BSL	D12.SL_A
A 2.2_SO	A17.D_SO	A32.SS_L	B13.F_SO	E 2.FC_SO	E17.BATT	E32.OT_SE	C 2.DSUB2	C17.F	C32.EG_M	D13.SS_N
A 3.ES_R	A18.1_SO	A33.3/4_L	B14.B_SO	E 3.KEY	E18.CANL1	E33.OUT_RSE	C 3.DSUB4	C18.ASUB1	C33.DD_S	D14.KD
A 4.DD_SO	A19.EP_L	A34.EG_SW1	B15.EG_SW2	E 4.KEY	E19.SS_P	E34.ET_M	C 4.BSL-	C19.ASUB2	C34.AFR	D15.INCH_S
A 5.3_SO	A20.AB_L	B 1.H_SO	B16.RIN1	E 5.GND	E20.CANL0		C 5.TT	C20.1/2	D 1.PRK	D16.OD_SW
A 6.HM	A21.A_L	B 2.PWM_SO	B17.OUT_MD2	E 6.GND	E21.TM_M		C 6.AC	C21.1/8	D 2.AM_SW	D17.SH
A 7.LL_SO	A22.1/2_L	B 3.IP_SO	B18.N_R	E 7.GND	E22.B_SE2		C 7.ET	C22.2S	D 3.SL_2	D18.SS_SW
A 8.4_SO	A23.E_L	B 4.R_SO	B19.BR_L	E 8.GND	E23.WT_SE		C 8.BL	C23.EG_H	D 4.SL_R	D19.SS_F
A 9.OTH_OUT	A24.FR_L	B 5.MO_SO	B20.CAN_R1	E 9.+5V	E24.AL		C 9.BD	C24.IP_SW	D 5.SL_3	D20.TMP
A10.R_L	A25.SC_SW	B 6.FR_SO	B21.CAN_R2	E10.TGEG	E25.RXD1		C10.DSUB1	C25.FR	D 6.S_UP	D21.INCH
A11.F_L	A26.TF_L	B 7.SSL_SO	B22.DOUT1	E11.KEY	E26.TGSP		C11.DSUB3	C26.KO_P	D 7.S_DOWN	D22.KO_S
A12.ST_L	A27.AC_L	B 8.BSL_SO	B23.OUT_FEV	E12.KEY	E27.INCH_SE		C12.DR	C27.ES_SE	D 8.EG_SW	D23.SC
A13.WL_L	A28.BP_L	B 9.BZ	B24.MT	E13.CANH1	E28.SC_P		C13.BSL+	C28.3/4	D 9.M_SW	D24.AR
A14.CW_L	A29.W_L	B10.BSL_R	B25.ET_SE	E14.EGR2	E29.CANH0		C14.TF	C29.1/4	D10.SL_1	D25.SM_SW
A15.ET_L	A30.SC_L	B11.KO_R	B26.TXD1	E15.EGR1	E30.B_SE1		C15.WL	C30.DC	D11.SL_F	D26.SS_R



Connector details

Adjustable declutch preset switch



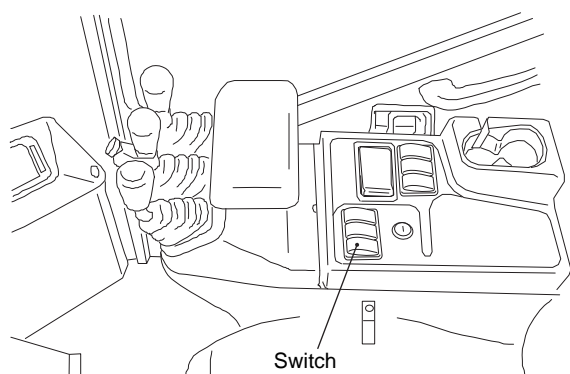
85V2E62028

Declutch preset switch	Declutch sensor	Transmission clutch
ON	More than 510 (kPa)	Disengage
	Less than 310 (kPa)	Engage

Adjustable declutch preset switch is used to change the angle of the left brake pedal (Declutch pedal) to disengage the transmission clutch.

With the engine running, step on the left brake pedal (Declutch pedal) up to the desired angle and press the switch to set the brake pedal (Declutch pedal) angle.

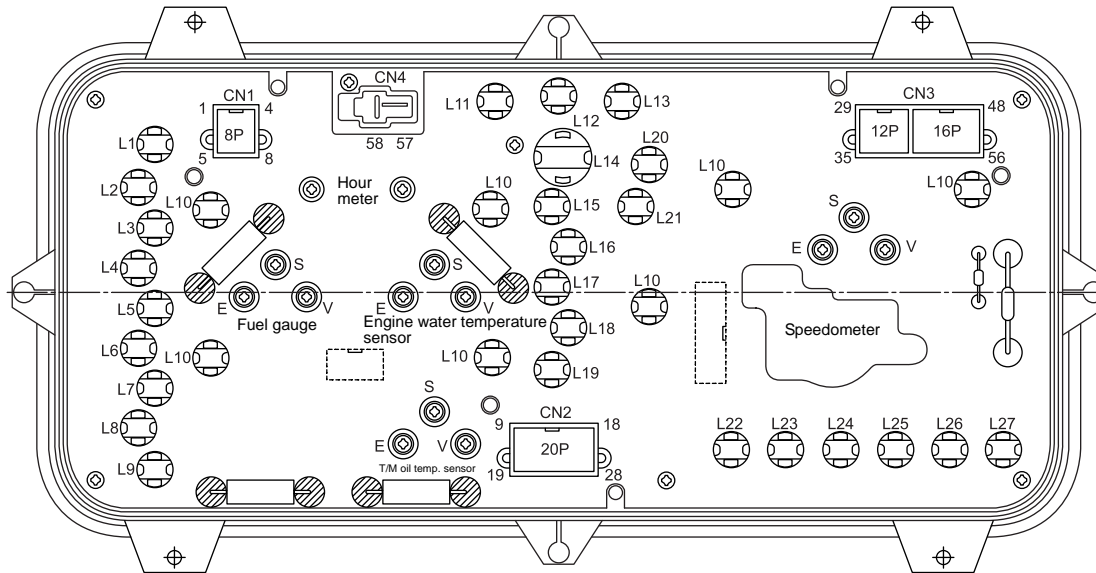
85V2E62006



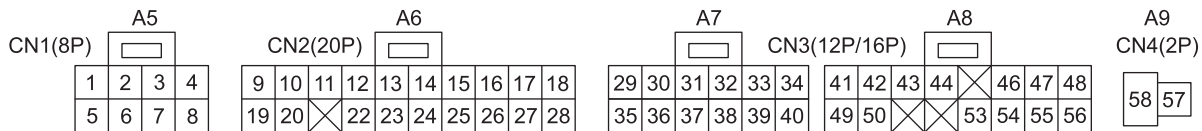
70V2U62015

Instrument panel rear surface

(S/N 9001~9300)



Layout of connector pins (Instrument panel side)



85V2E62052

Pin No.	Signal	Lamp No.
1	—	L9
2	Charge lamp	L7
3	Air cleaner clogging alarm	L6
4	T/M oil temperature alarm	L5
5	Engine water temperature alarm	L4
6	Engine oil pressure alarm	L3
7	Brake alarm	L2
8	MCU failure alarm	L1
9	+24 V power supply	—
10	Secondary steering	L22
11	Reversal fan (optional)	L23
12	Engine warning lamp	L25
13	—	L24
14	Engine stop lamp	L26
15	—	L27
16	E/G water temperature (sensor)	—
17	T/M oil temperature (sensor)	—
18	—	—
19	Instrument panel illumination	L10
20	—	L8

Pin No.	Signal	Lamp No.
21	—	—
22	Fuel gauge (sensor)	—
23	—	—
24	—	—
25	—	—
26	—	—
27	—	—
28	GND (—)	—
29	+24 V power supply	—
30	—	—
31	—	—
32	—	—
33	—	—
34	Neutral	L21
35	GND (—)	—
36	1st speed indication	—
37	2nd speed indication	—
38	3rd speed indication	—
39	4th speed indication	—
40	Parking brake lamp	L15

Pin No.	Signal	Lamp No.
41	AUTO lamp	L20
42	—	L16
43	Converter (+)	—
44	Converter (—)	—
45	—	—
46	Declutch lamp	L17
47	Preheating lamp	L19
48	Work lamp	L18
49	Central alarm lamp	L14
50	GND (—)	—
51	—	—
52	—	—
53	High-beam lamp	L12
54	Turn signal (left) lamp	L13
55	Turn signal (right) lamp	L11
56	—	—
57	Hour meter (—)	—
58	Hour meter (+)	—

3. Current engine coolant temperature and maximum engine coolant temperature recorded (which can be reset)

Press the [] (step forward)] button and release.

E	G	C	O	O	L	A	N	T		8	3	°	C
						M	A	X		9	1	°	C

90ZV-262026


You will now be at the screen shown above.



The monitor displays the current engine coolant temperature in the "EG COOLANT" line and maximum engine coolant temperature for the day in the "MAX" line. This self resets daily at 24:00 (12:00 Midnight).

Even if the engine is stopped once and then started again, if the time is before 24:00, the monitor displays the maximum engine coolant temperature recorded on the day.

The maximum engine coolant temperature is automatically reset everyday at 24:00, whether the engine starter switch is turned on or off.

Immediately after reset, the engine coolant temperature at the time of reset is displayed as the maximum engine coolant temperature. In other words, the current engine coolant temperature is equivalent to the maximum engine coolant temperature.

To manually reset, press the [] button to reset the maximum engine coolant temperature. Immediately after reset, the engine coolant temperature at the time of reset is displayed as the maximum engine coolant temperature.

Press the [] button to change over the display unit from "°C" to "°F". Press the [] button again to return the display unit from "°F" to "°C".

4. Current transmission oil temperature and maximum transmission oil temperature recorded (which can be reset)

Press the [] (step forward)] button and release.

T	C	O	I	L						9	5	°	C	
						M	A	X		1	0	4	°	C

90ZV-262027


You will now be at the screen shown above.



The monitor displays the current transmission oil temperature in the "TC OIL" line and maximum transmission oil temperature for the day in the "MAX" line. This self resets daily at 24:00 (12:00 Midnight).

Even if the engine is stopped once and then started again, if the time is before 24:00, the monitor displays the maximum transmission oil temperature recorded on the day.

The maximum transmission oil temperature is automatically reset everyday at 24:00, whether the engine starter switch is turned on or off.

Immediately after reset, the transmission oil temperature at the time of reset is displayed as the maximum transmission oil temperature. In other words, the current transmission oil temperature is equivalent to the maximum transmission oil temperature.

To manually reset, press the [] button to reset the maximum transmission oil temperature. Immediately after reset, the transmission oil temperature at the time of reset is displayed as the maximum transmission oil temperature.

Press the [] button to change over the display unit from "°C" to "°F". Press the [] button again to return the display unit from "°F" to "°C".

2. Inactive faults (Checking history *)

Again, up to 100 machine faults and 100 engine faults can be recorded in the fault log (200 faults total).

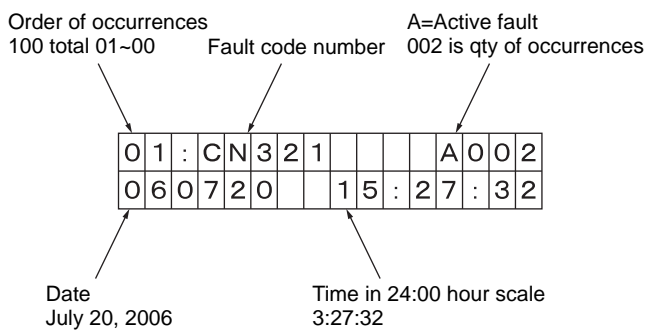
Failure codes that begin with CN are machine faults.

Failure codes that begin with EN are engine faults.

What is shown

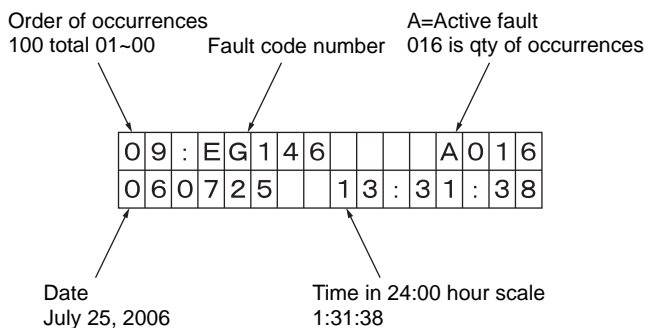
The following list of items are shown. Order of occurrences, fault code number, date, hour-minute-second, and quantity of occurrence. Examples shown below.

This shows fault CN321. This is caused by an engine coolant temperature fault (open circuit). Note descriptions.



80V2U62020

This shows fault EG146. This is caused by an engine coolant temperature fault (overheat condition). Note descriptions.



80V2U62021

*..... If still active, shows "A" before fault number.

Selection of machine fault log and engine fault log

You can toggle between viewing the engine faults or machine faults.

Machine fault

When the machine fault log screen is displayed, press and hold the [▶] (step forward) button for 2 seconds or more to display the engine fault log screen which shows the latest engine fault code.

0	1	:	C	N	3	2	1					A	0	0	2
0	6	0	7	2	0			1	5	:	2	7	:	3	2

80V2U62022

Engine fault

When the engine fault log screen is displayed, press and hold the [◀] (step back) button for 2 seconds or more to display the machine fault log screen which shows the latest machine fault code.

0	9	:	E	G	1	4	6					A	0	1	6
0	6	0	7	2	5			1	3	:	3	1	:	3	8

80V2U62023

The machine fault log screen and engine fault log screen can be distinguished as follows:

Displayed fault code:

CN*** Machine fault log screen

EG*** Engine fault log screen

Parameter Setting Monitor

(Refer to page 92-56)

Parameter setting monitor display

This monitor allows check of parameters that are currently set.

Value levels to set parameter for items like ride control, tire ratios, date/time clock (used to log faults), declutch pressures, secondary steering, detent values sensor, etc.

Note

If the feature is set to "Invalid" in specification setting view, the following items will be skipped in the parameter setting monitor view.

- RIDE CONTROL - SP5 (Ride control)
- SECONDARY STEERING - SP7 (Secondary steering)
- K-LEVER - SP8 (K-Lever)
- TRACTION CONTROL - SP11 (Traction control)
- 2 STAGE - SP13 (Efficient loading system)
- BOOM SOFT LAND - SP14 (Lower kickout)
- KICK OUT - SP15 (Lift kickout)

1. Shift inhibitor

From turning on key switch which would default to screen shown below.

O	U	T	S	I	D	E	T	E	M	P			
											9	8	° F

80V2U62002

Pressing both the [▶] (step forward) and [◀] (step back) buttons simultaneously, 4 times once after another, arrive at the screen shown below.

D	E	C	E	L	E	R	A	T	I	O	N			
S	P	E	E	D					1	5	k	m	/	h

80V2U62005

The transmission changes the speed range automatically according to the machine speed. If the machine speed sensor is disconnected when the machine is running high, the machine speed is suddenly reduced because of that the transmission is automatically shifted to the low range. As a result, the operator becomes very unstable condition by rapid deceleration. This device prevents the above.

By pressing the [▶] (step forward) button, you will arrive at a window as shown below.

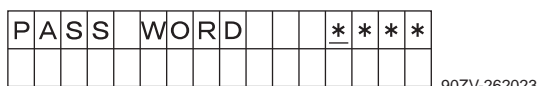
D	E	C	E	L	E	R	A	T	I	O	N			
R	A	T	I	O	1	5	k	m	/	h	/	0.	1	S

80V2U62043

2. Password entry and changing settings

Note

To make changes to entry settings, engine must be "OFF", and key switch in "ON" position with parking brake applied. Otherwise changes will not happen.



The password is a numerical password.

Press the [➤] (step forward)] button to add "1" to a numerical value.

The numerical value will increase as you press the [➤] (step forward)] button as follows;

0 → 1 → 2 → 3 → 4 → 5 → 9 → 0 → 1 → 2 → 3 → 4 → 5 → etc.

Press the [⊙] button to change the cursor position to continue password entry. When finished, press the [⊙] button for longer than 2 seconds to get to the following screen.



Every time the [➤] (step forward)] button is pressed and held for 2 seconds, the displayed contents are changed over "All setting reset → Specification group 1 → Specification group 2 → All setting reset" in sequence.

Every time the [⏪] (step back)] button is pressed and held for 2 seconds, the displayed contents are changed over "All setting reset → Specification group 2 → Specification group 1 → All setting reset" in sequence.

For the display sequence, refer to "Outline of MODM (Machine Operation Diagnostic Module) Operation" page 92-50.

Specification group 1

Every time the [➤] (step forward)] button is pressed, the displayed content is changed "FR switch → Shift hold → Ride control → ..." in sequence.

Every time the [⏪] (step back)] button is pressed, the displayed content is changed "FR switch → Wheel type → Kickout → ..." in sequence.

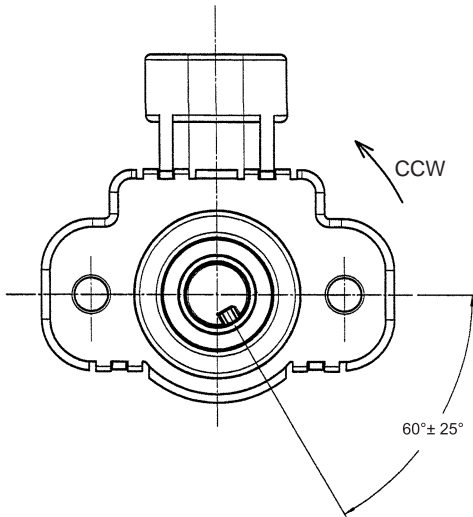
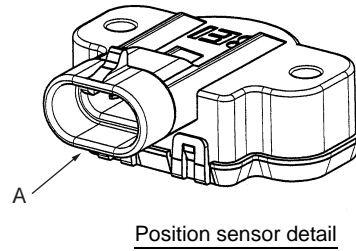
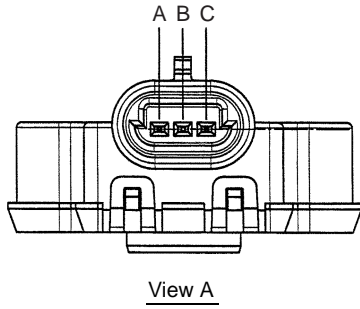
The following items can now be selected as "VALID" or "INVALID" by pressing and holding the [⊙] button for 2 seconds or longer, and then selecting the [➤] (step forward)] or the [⏪] (step back)] button to choose "VALID" or "INVALID" as required.

When finished, press and hold the [⊙] button for 2 seconds or longer to accept the change.

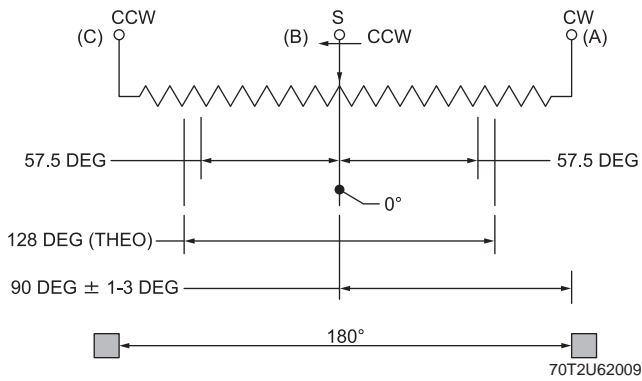
If you need to return without making a selection, press the [⊗] button, and you will return to the previous screen without making a change of selection.

- Selection switch shift (shift lever or F/R switch)
Valid/Invalid
- Shift hold
Valid/Invalid
- Ride control
Valid/Invalid
- Secondary steering
Valid/Invalid
- K-Lever (Stick steering)
A Type/B Type/Invalid
- Hydraulic pressure increase
Valid/Invalid
- Traction control
Valid/Invalid
- Tachograph
Valid/Invalid
- Efficient loading system (ELS)
Valid/Invalid
- Lower kickout
Valid/Invalid
- Lift kickout (variable)
Valid/Invalid
- Wheel type
A type (Big wheel)/B type (Small wheel)

70ZV-2 EU 62-108
 62 Function & Structure Electrical Group
 Electrical Detent Circuit

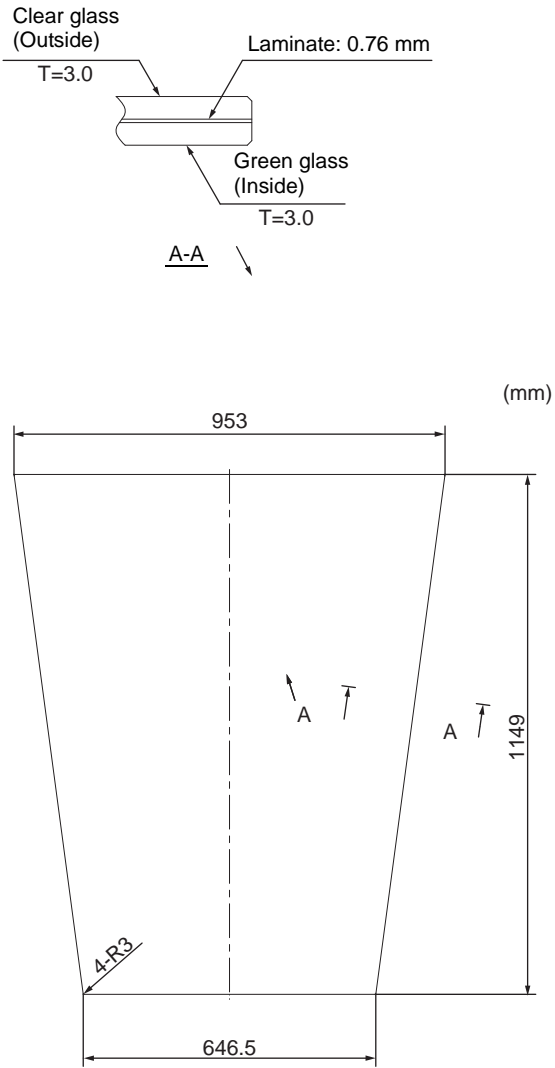


70T2U62008



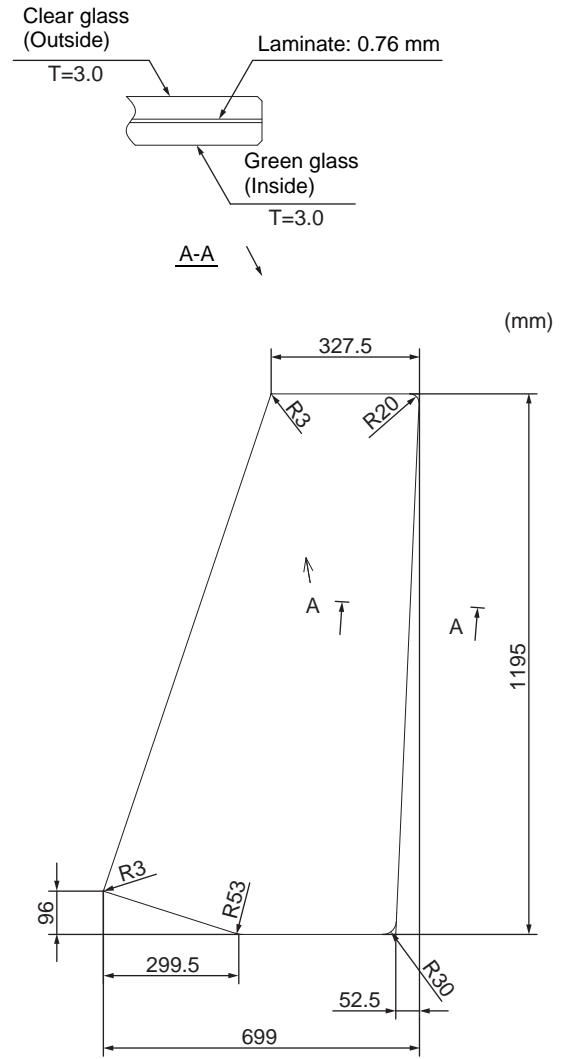
Resistance	5 kΩ ± 1 kΩ
Electrical rotation	128° (Theoretical)
Mechanical rotation	180°
Clockwise stop	90° from elect. center
Spring return	To clockwise end of rotation

1. Part number 32011-21690



70V2E72002

2. Part number 32011-21700



70V2E72003

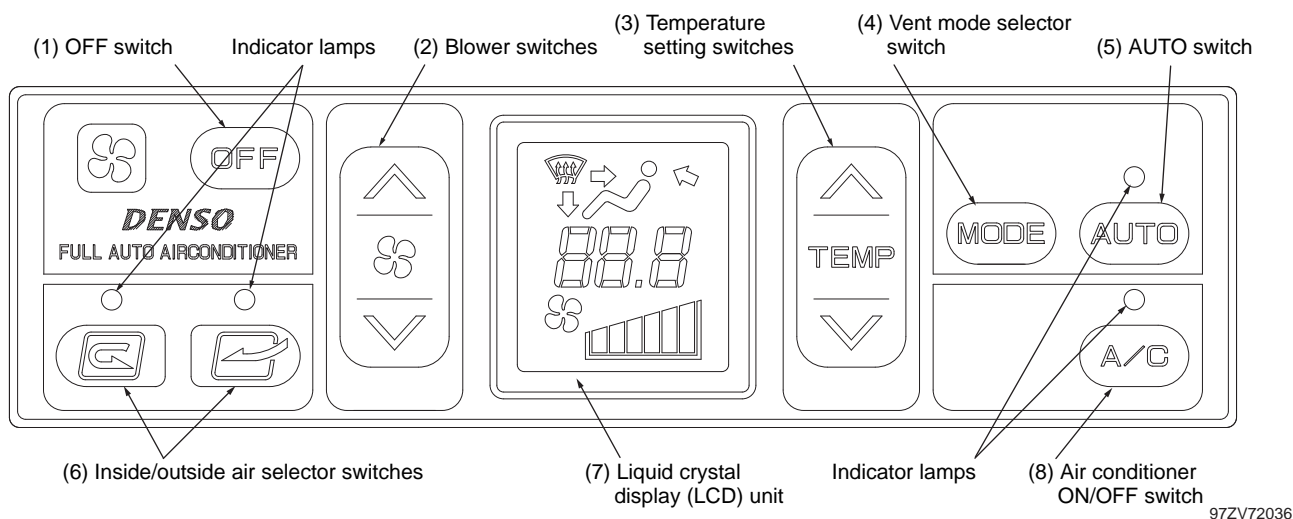
Note
 This glass must comply with ECE REG43.

Note
 This glass must comply with ECE REG43.

Air conditioner functions of components

Control panel

Name and function of each part on control panel



97ZV72036

- (1) OFF switch

This switch stops the operation of the blower and the air conditioner.

When OFF switch (1) is pressed, the set temperature and the air blow quantity displayed on LCD unit (7) as well as the indicator lamps above AUTO switch (5) and air conditioner ON/OFF switch (8) turned "off", and operation is stopped.

- (2) Blower switches

These switches change over the air flow quantity in six steps.

The air flow quantity is displayed on the LCD unit. When the \wedge switch is pressed, the air flow quantity increases.

When the \vee switch is pressed, the air flow quantity decreases.

In the automatic mode, the air flow quantity is automatically changed over.

Display on the LCD unit and the air blow quantity

Display on LCD unit	Air blow quantity
	Air quantity "low"
	Air quantity "medium 1"
	Air quantity "medium 2"
	Air quantity "medium 3"
	Air quantity "medium 4"
	Air quantity "high"

70ZV-2 EU 72-34

72 Function & Structure Operator Station Group

Air Conditioner

Troubleshooting the expansion valve

Item	Symptom	Cause	Action
Blocked expansion valve or defective adjustment (too closed)	Both high pressure and low pressure are low, and air bubbles cannot be seen through sight glass.	- Expansion valve	- Cleaning/adjustment or replacement
Defective adjustment (too open)	Low pressure is too high, and compressor head is cold.	- Expansion valve	- Adjustment or replacement
Freezing caused by moisture	Cooling is disabled during operation. Frosting is not detected in evaporator. Both high pressure and low pressure are low, and air bubbles cannot be seen through sight glass.	- Expansion valve	- Replace receiver tank, evacuate air, then charge gas again.

Resistor

The resistor controls rotation of the condenser fan motor in two steps in accordance with a command given by the fan control pressure switch (medium pressure switch).

Resistor specifications

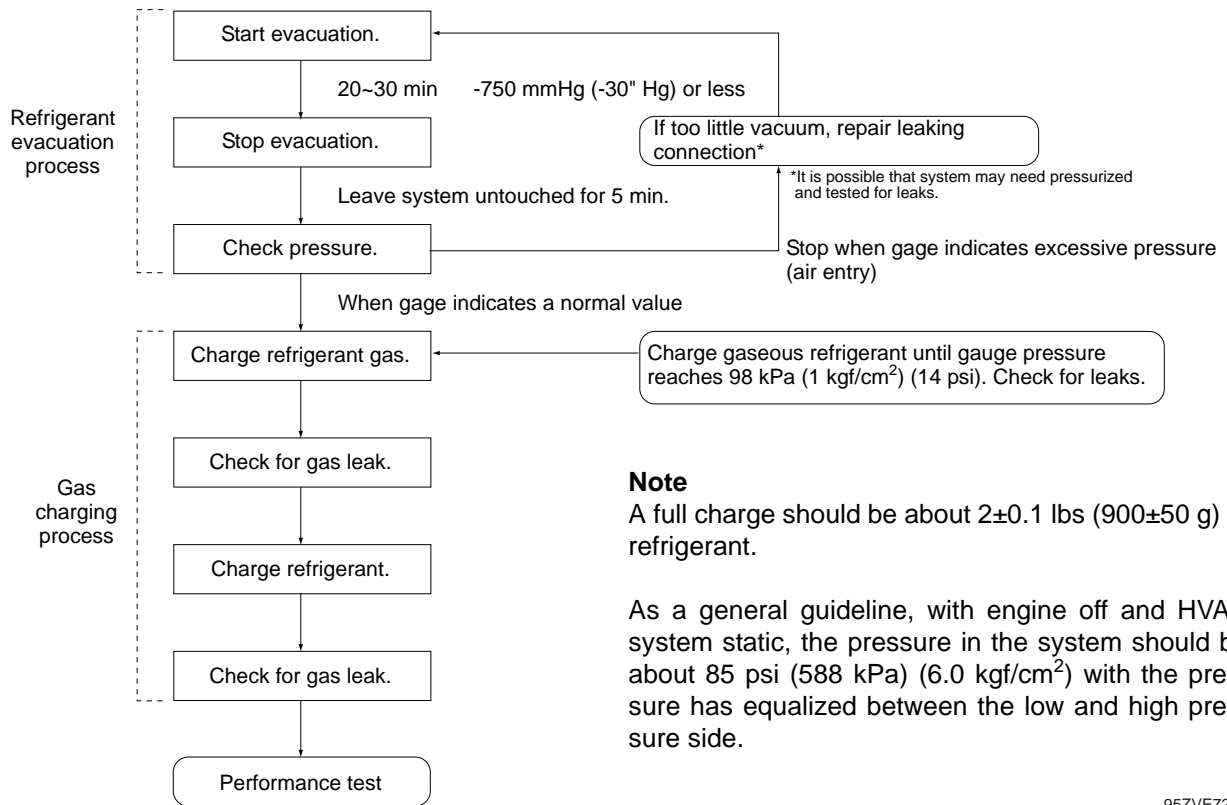
Resistance	4.0 Ω
------------	--------------

Troubleshooting the condenser unit

Item	Symptom	Cause	Action
Heat radiation quantity is insufficient due to blockage*.	Both high pressure and low pressure are abnormally high, and air does not become cool enough.	- Blockage or crushed fins	- Clean or replace condenser
Rotation of condenser fan motor is defective.		- Fan motor	- Repair or replace motor
Blockage / condenser airflow	High pressure is abnormally high, low pressure is abnormally low, and air does not become cool enough. Air bubbles can be seen through sight glass.	- Internal to condenser fins	- Clean or replace condenser
Gas leak	Both high pressure and low pressure are abnormally low, and air bubbles can be seen through sight glass.	- Leaks at joints - Cracks in main body	- Tightening - Repair or replacement

* It is important to check the fan blades also as these can become bent or packed with dirt, making them ineffective.

Charging procedure chart



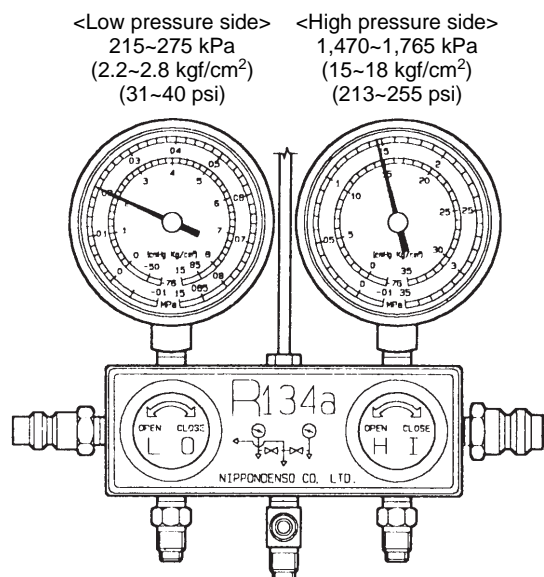
Note

A full charge should be about 2±0.1 lbs (900±50 g) of refrigerant.

As a general guideline, with engine off and HVAC system static, the pressure in the system should be about 85 psi (588 kPa) (6.0 kgf/cm²) with the pressure has equalized between the low and high pressure side.

Troubleshooting using the gauge manifold

Normal status



Condition

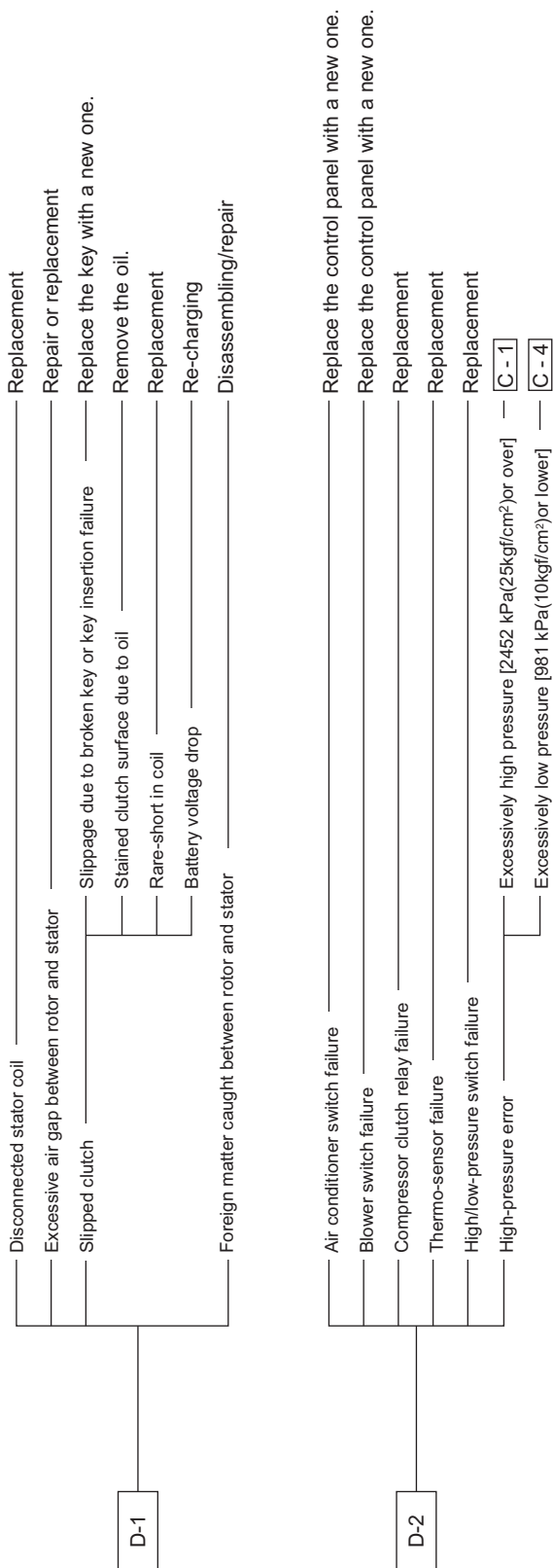
After warming up the engine, check the pressure under the following condition.

- Doors
Completely open
- Inside/outside air selection
Inside air
- Number of rotations of engine
1,500 min⁻¹
- Temperature at suction port of air conditioner
30~35°C (86~95°F)
- Blower speed
High
- Temperature control switches
Maximum cooling

97ZV72091

Pressure values indicated by gauges in the normal status

A/C suction port temperature	Pressure	Pressure value by gauge
20~25°C (68~77°F)	High pressure side	1,000~1,215 kPa (10.2~12.4 kgf/cm ²) (145~176 psi)
	Low pressure side	127~167 kPa (1.3~1.7 kgf/cm ²) (18~24 psi)
25~30°C (77~86°F)	High pressure side	1,215~1,470 kPa (12.4~15.0 kgf/cm ²) (176~213 psi)
	Low pressure side	167~215 kPa (1.7~2.2 kgf/cm ²) (24~31 psi)
30~35°C (86~95°F)	High pressure side	1,470~1,784 kPa (15.0~18.2 kgf/cm ²) (213~258 psi)
	Low pressure side	215~275 kPa (2.2~2.8 kgf/cm ²) (31~40 psi)
35~40°C (95~104°F)	High pressure side	1,784~2,146 kPa (18.2~21.9 kgf/cm ²) (258~310 psi)
	Low pressure side	275~353 kPa (2.8~3.6 kgf/cm ²) (40~51 psi)



Parts to be replaced periodically

Air filters

Air filter for outside air

Cleaning

Once every 2 weeks or when required.

However, if the operating environment is severe (with much sand, dust, etc.) and the air filter is easily clogged, clean it more frequently.

To clean, blow filter with compressed air of 196~294 kPa (2~3 kgf/cm²) (28~43 psi) mainly from inside of filter.

Replacement

Once each year or when required.

When air flow volume is so small as to affect air movement even after the filter has been cleaned, or when the air filter has been cleaned 20 times, replace it.

Air filters for inside air

Cleaning

Once each month

However, if the air filters are easily clogged, clean them more frequently.

To clean, blow filter with compressed air of 196~294 kPa (2~3 kgf/cm²) (28~43 psi) mainly from inside of the filter.

Replacement

Once every 3 years

When air flow volume is so small as to affect air movement even after the filter has been cleaned, or when the air filter has been cleaned 6 times, replace it.

Receiver dryer

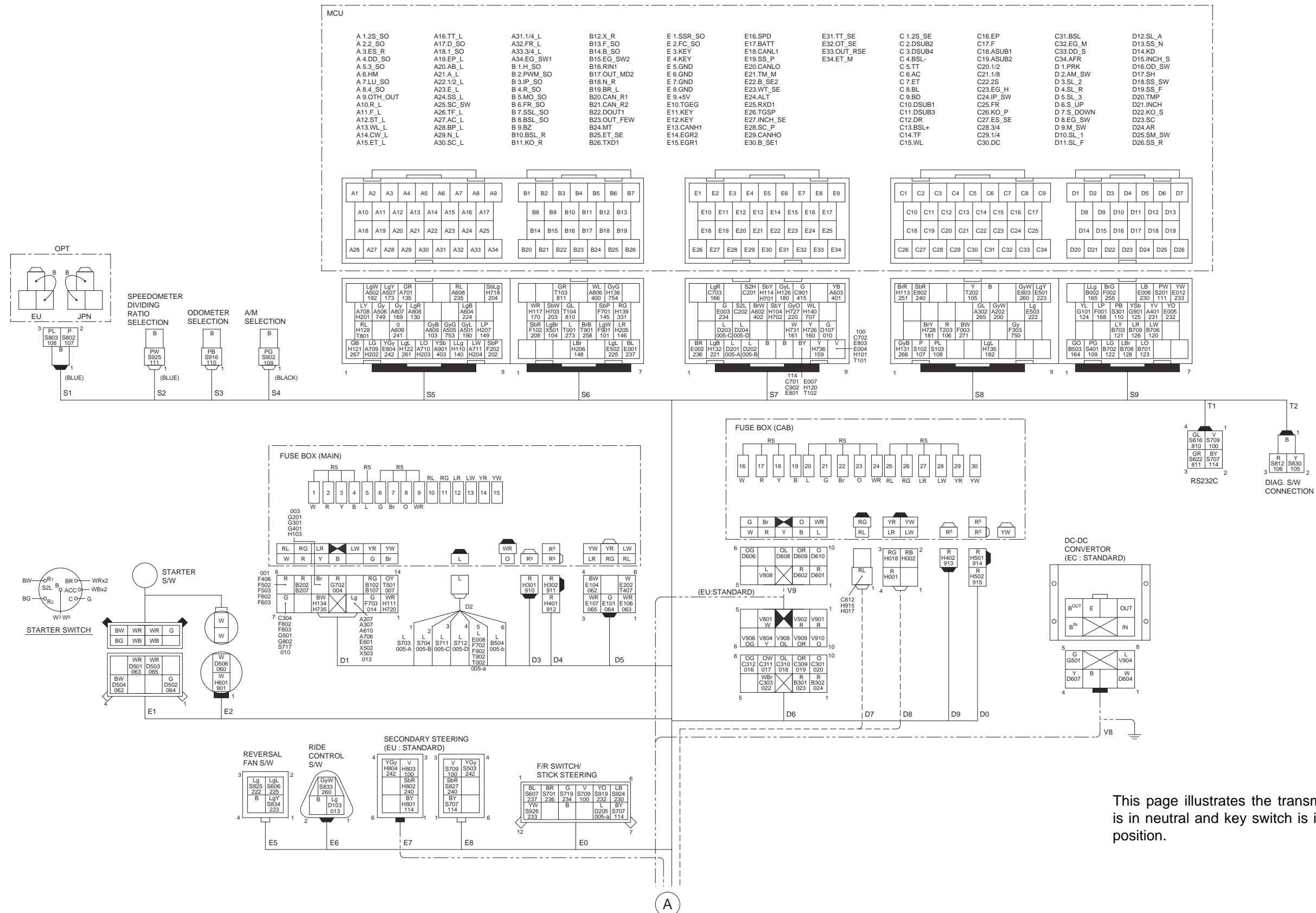
Replacement

Once every 3 years or 6,000 hours

Note

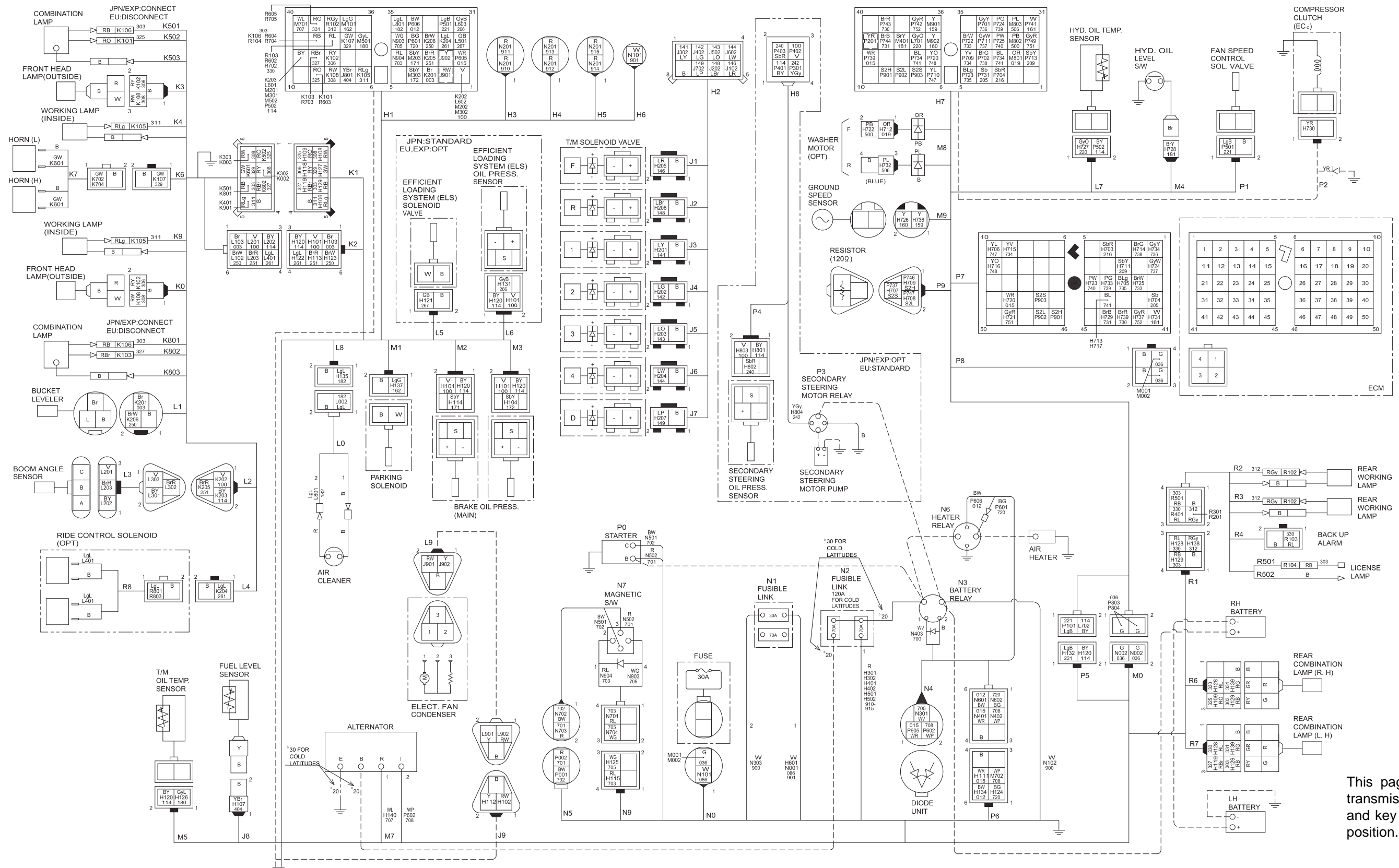
When replacing the receiver dryer, do not release the refrigerant into the atmosphere.

Electrical Wiring Diagram (2/3) (S/N 9001~9033)



This page illustrates the transmission is in neutral and key switch is in OFF position.

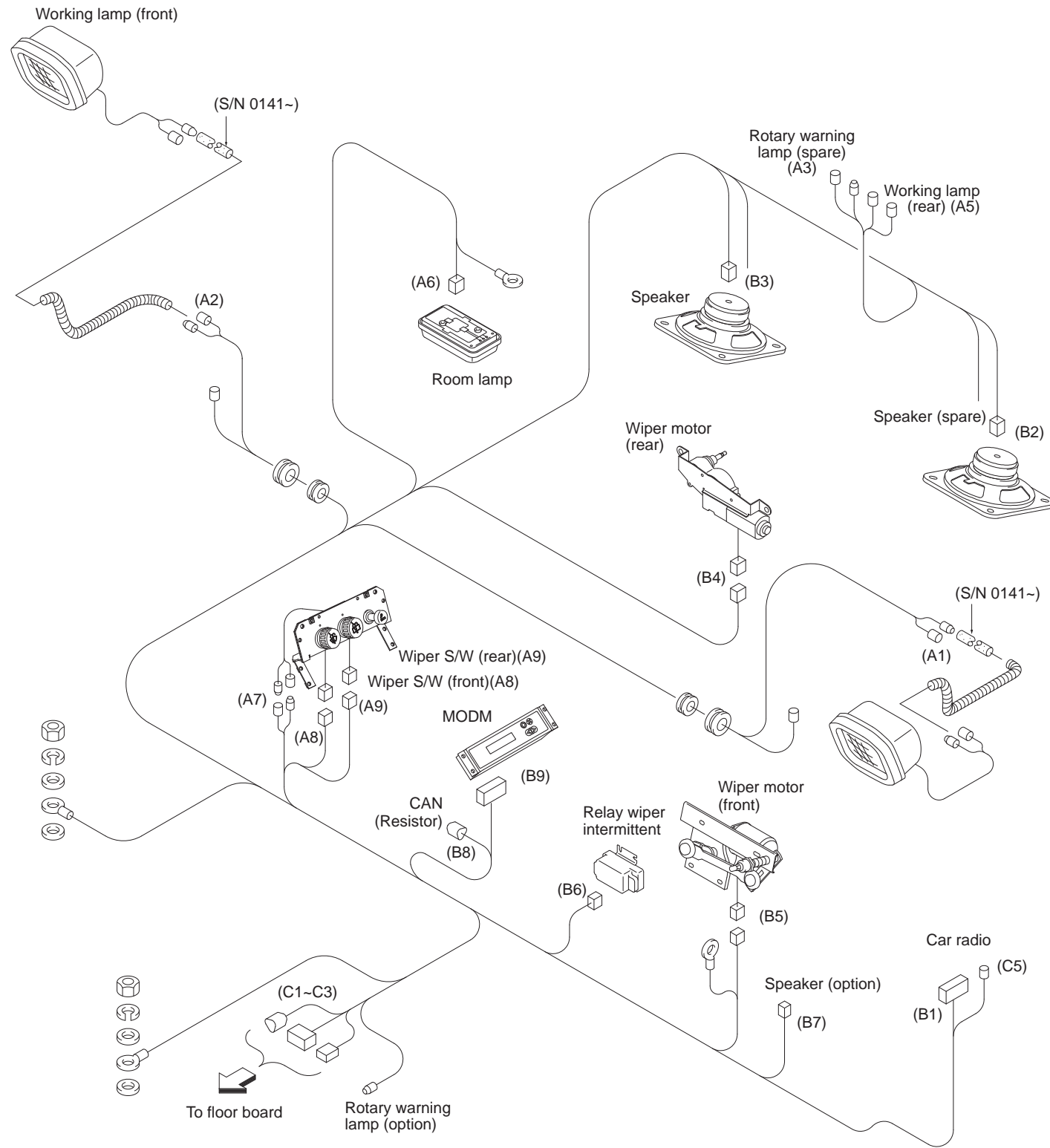
Electrical Wiring Diagram (3/3) (S/N 9201~9300)



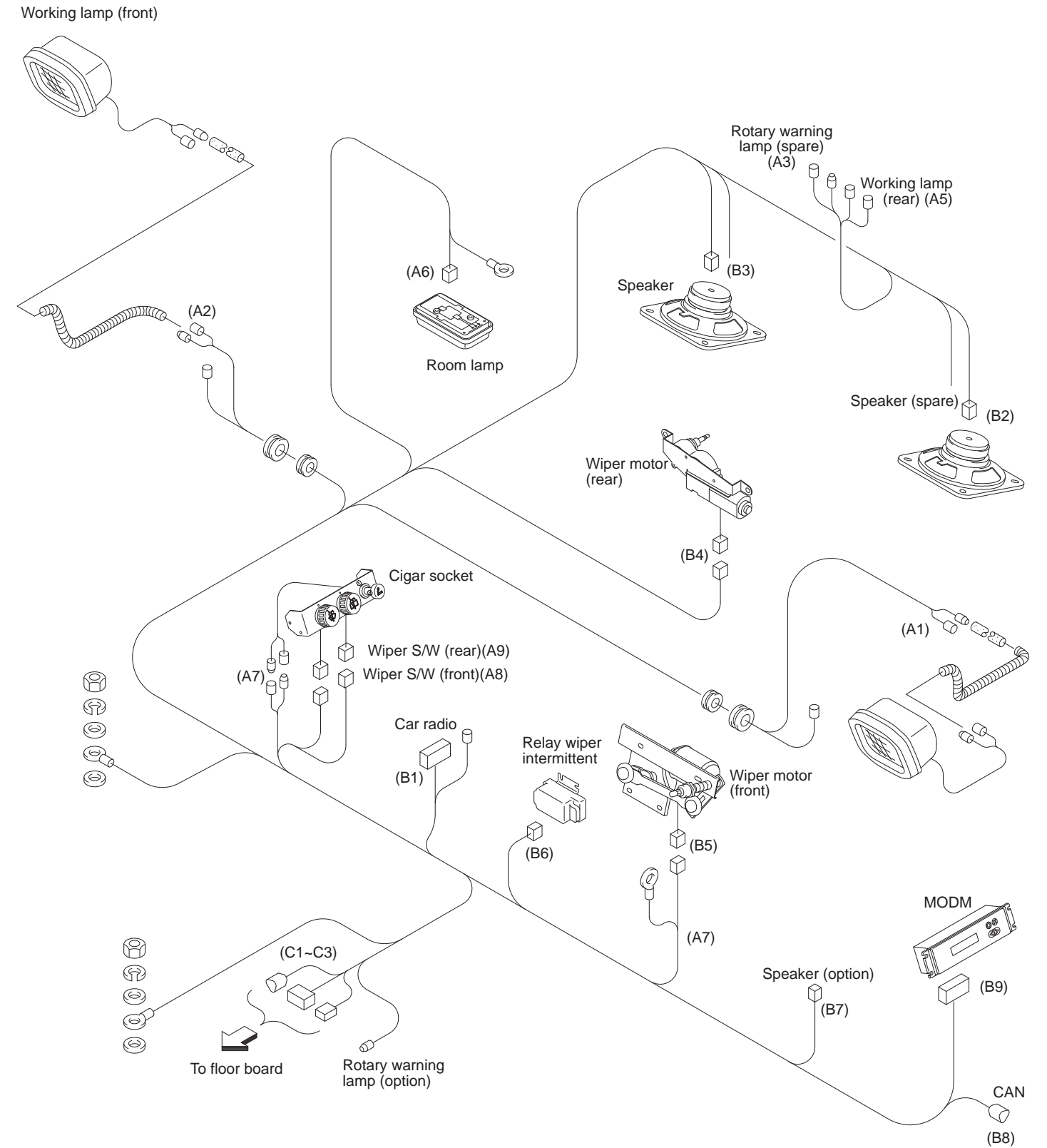
This page illustrates the transmission is in neutral and key switch is in OFF position.

Cab

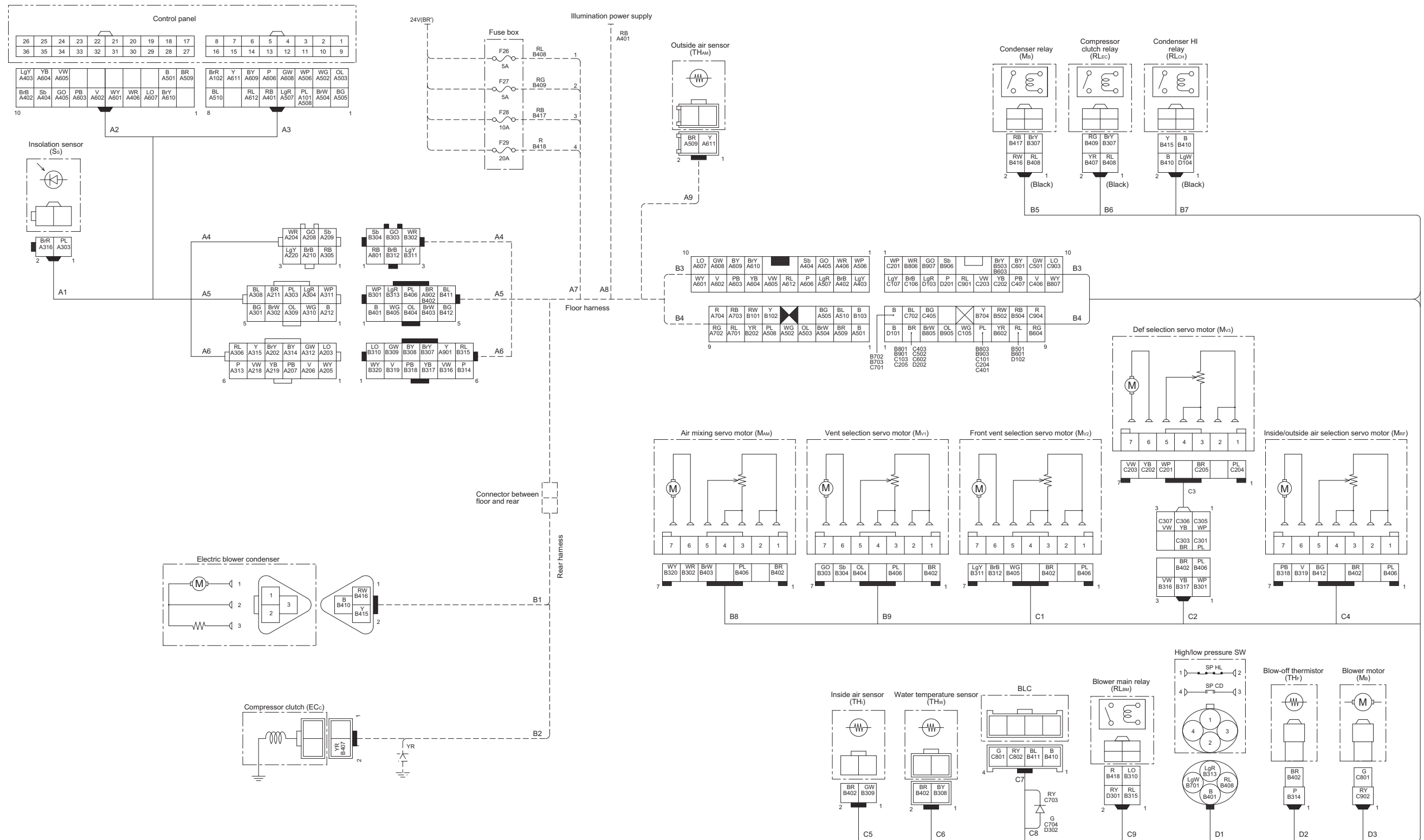
ROPS CAB S/N 0139~0152



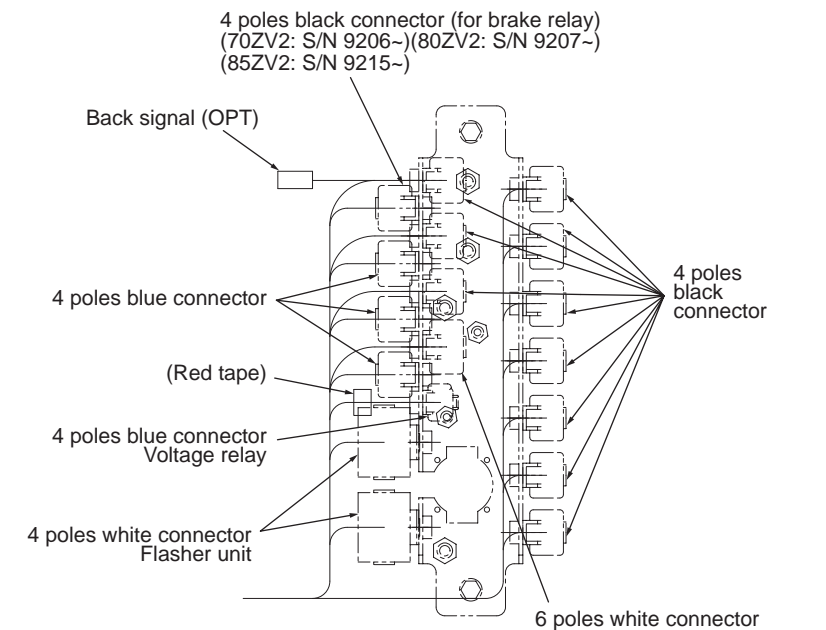
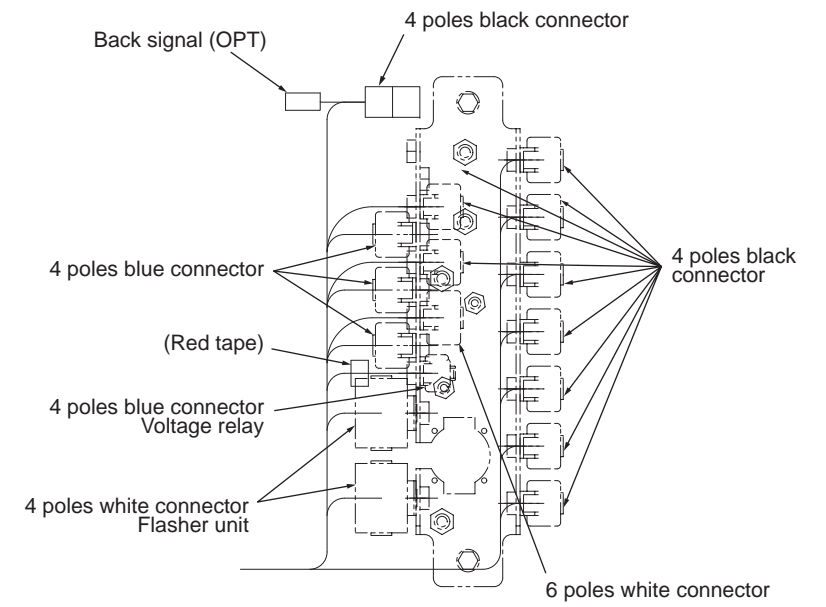
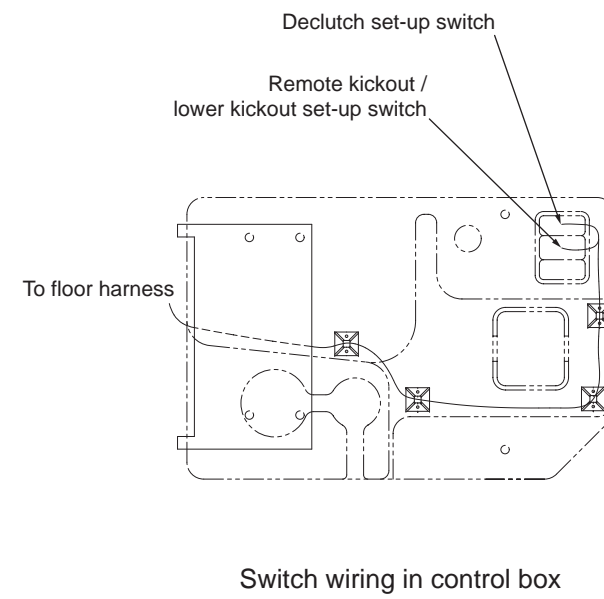
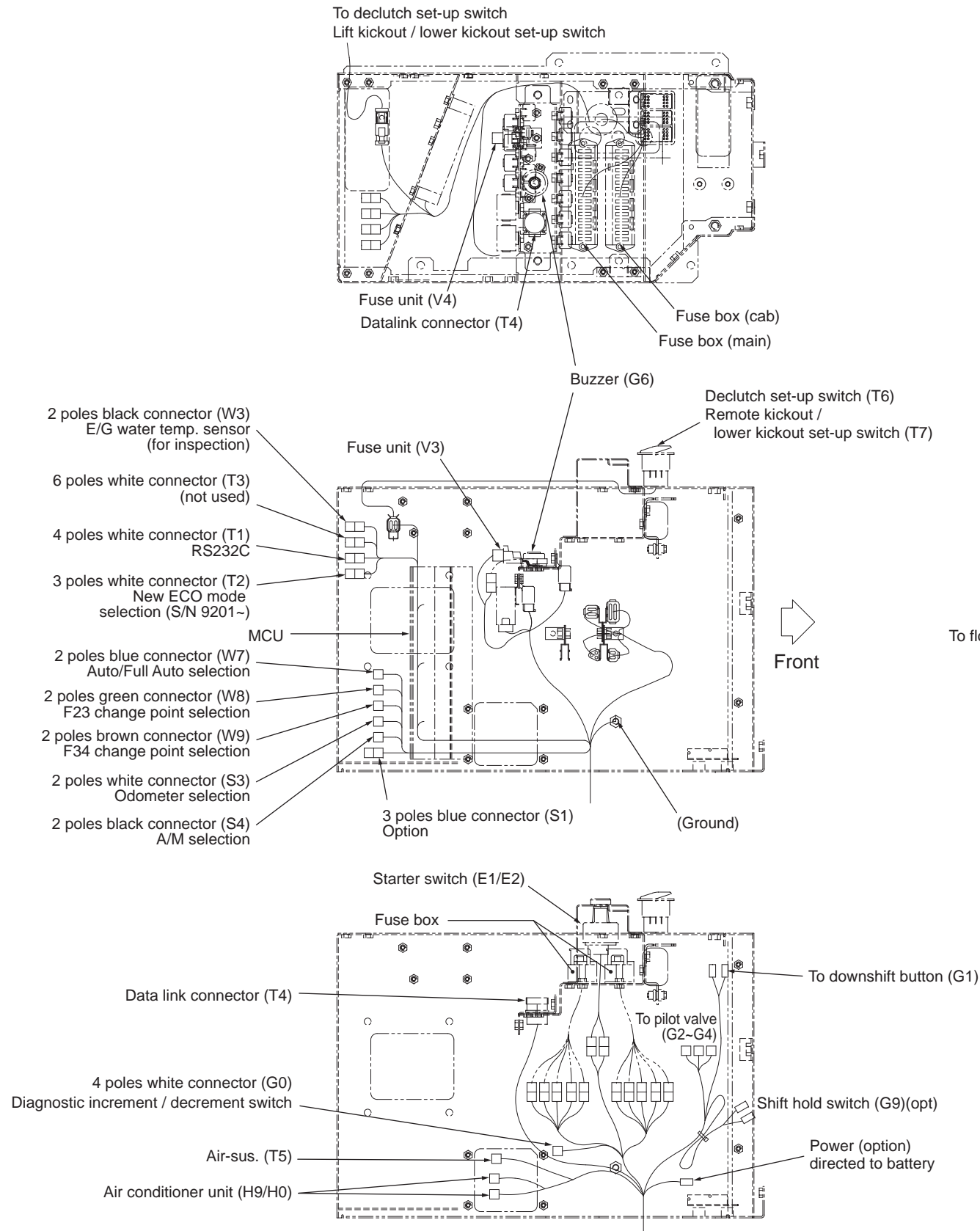
ROPS CAB S/N 0153~



Electrical Wiring Diagram (Cabin Air Conditioner)



Control box (S/N 9101~)



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