Printed in Japan (K)
(ヨーロッパ・輸出一般用)

95ZV

SHOP MANUAL

General Information
Function & Structure

93215-00226

93215-00226
September 2014

SHOP MANUAL

WHEEL LOADER

95ZV

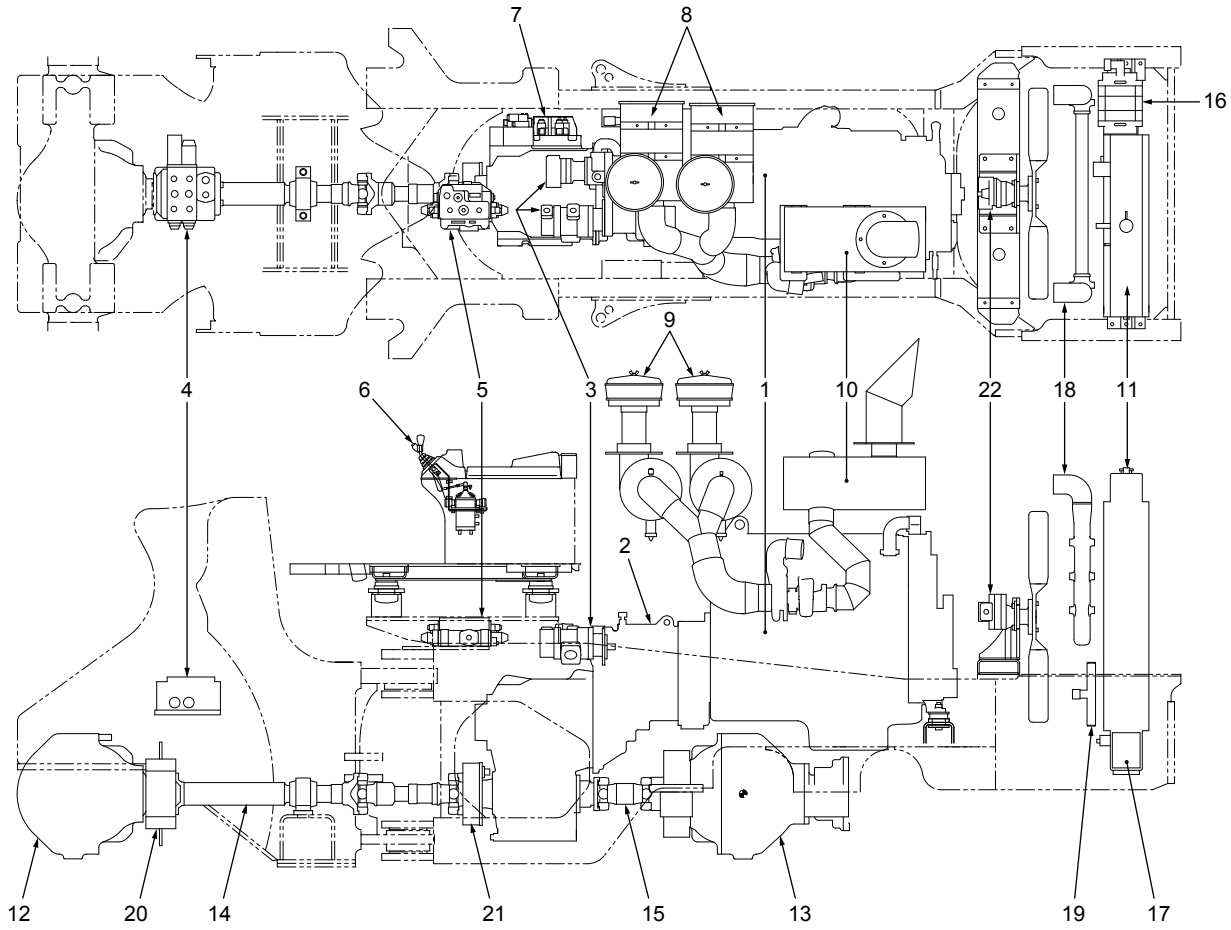
General Information
Standard Measurement Values for Performance Check
Function & Structure
Check & Adjustment

Powered by CUMMINS QSX15 ENGINE

Serial No. 97C4-0101 and up
97C4-9001 and up

Outline

Layout of main components



95ZV00001

1. Engine assembly (Cummins QSX-15)
2. Transmission/Torque converter assy
3. Hydraulic pump
4. Multiple (loader) control valve
5. Steering valve
6. Pilot valve (for loading)
7. Transmission control valve
8. Air cleaner
9. Precleaner
10. Muffler
11. Radiator
12. Front axle assembly
13. Rear axle assembly
14. 2nd propeller shaft
15. 3rd propeller shaft
16. Hydraulic oil cooler (air-to-oil type)
17. T/C oil cooler (lower tank of radiator)
18. Air charge cooler
19. Fuel cooler
20. Front parking brake
21. Parking brake
22. Fan motor

(kgf-m)

Type	Bolt size			Bolt strength	
	Nominal dimension	Nominal dia.	Pitch	8.8 (8T)	10.9 (11T)
Metric thread	M8	8	(C) 1.25	2.7	3.9
	M10	10	(C) 1.5	5.4	7.8
			(F) 1.25	5.6	8.2
	M12	12	(C) 1.75	9.2	13.5
			(F) 1.25	9.8	14.5
	M14	14	(C) 2.0	14.5	21.0
			(F) 1.5	15.5	22.5
	M16	16	(C) 2.0	22.0	32.0
			(F) 1.5	23.0	33.7
	M18	18	(C) 2.5	30.5	44.5
			(F) 1.5	33.0	48.5
	M20	20	(C) 2.5	42.5	62.0
			(F) 1.5	46.0	67.5
	M22	22	(C) 2.5	57.0	83.0
			(F) 1.5	61.0	89.5
	M24	24	(C) 3.0	73.5	105.0
			(F) 2.0	78.5	115.0
	M27	27	(C) 3.0	105.0	155.0
			(F) 2.0	115.0	165.0
	M30	30	(C) 3.5	145.0	215.0
			(F) 2.0	160.0	230.0
	M33	33	(C) 3.5	195.0	290.0
			(F) 2.0	210.0	310.0
Unified thread	5/16	05	18 UNC	2.5	3.6
	3/8	06	16 UNC	4.5	6.6
	7/16	07	14 UNC	7.2	10.5
	1/2	08	13 UNC	10.5	15.0
	9/16	09	12 UNC	15.0	22.0
	5/8	10	11 UNC	20.5	30.0
	3/4	12	10 UNC	36.5	53.5
	7/8	14	9 UNC	56.5	82.5
	1	16	8 UNC	88.5	130.0

Note: Tighten the bolts according to the above list, unless otherwise specified.

Cautions on Safety

⚠ 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

⚠ WARNING

Operation under the boom or the bucket may lead to severe accidents.
Make sure to apply the safety lock of the boom and the bucket control lever provided in the cab, remove the starter key, and attach a "DO NOT OPERATE!" tag to the cab.

⚠ CAUTION

Be careful not to be burnt by bursting high pressure oil.
Release the pressure remaining inside the circuit and open the cap of the hydraulic oil tank before removing the plug from the pressure measurement port so that the internal pressure of the hydraulic oil tank is released and burst of the high pressure oil can be prevented.

⚠ WARNING

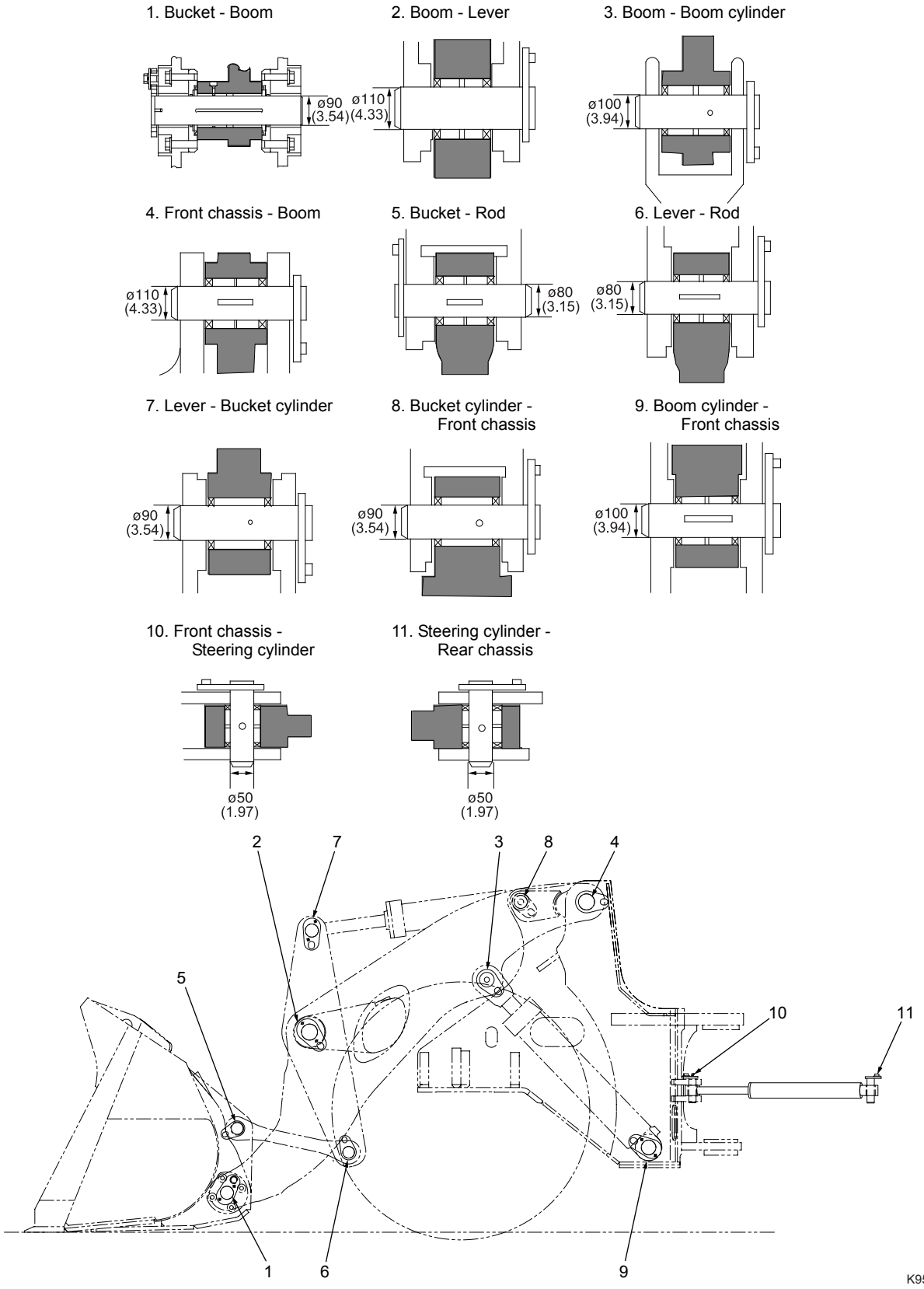
Entering the articulation area of the machine body while the engine is running may cause severe accidents.
Make sure to stop the engine, pull out the starter key, and attach a "DO NOT OPERATE!" tag to the cab before entering the articulation area.

⚠ CAUTION

Touching the fan or the V belt of the engine or the hot area while the engine is running may cause severe accidents.
Make sure to stop the engine before opening the engine room side cover.

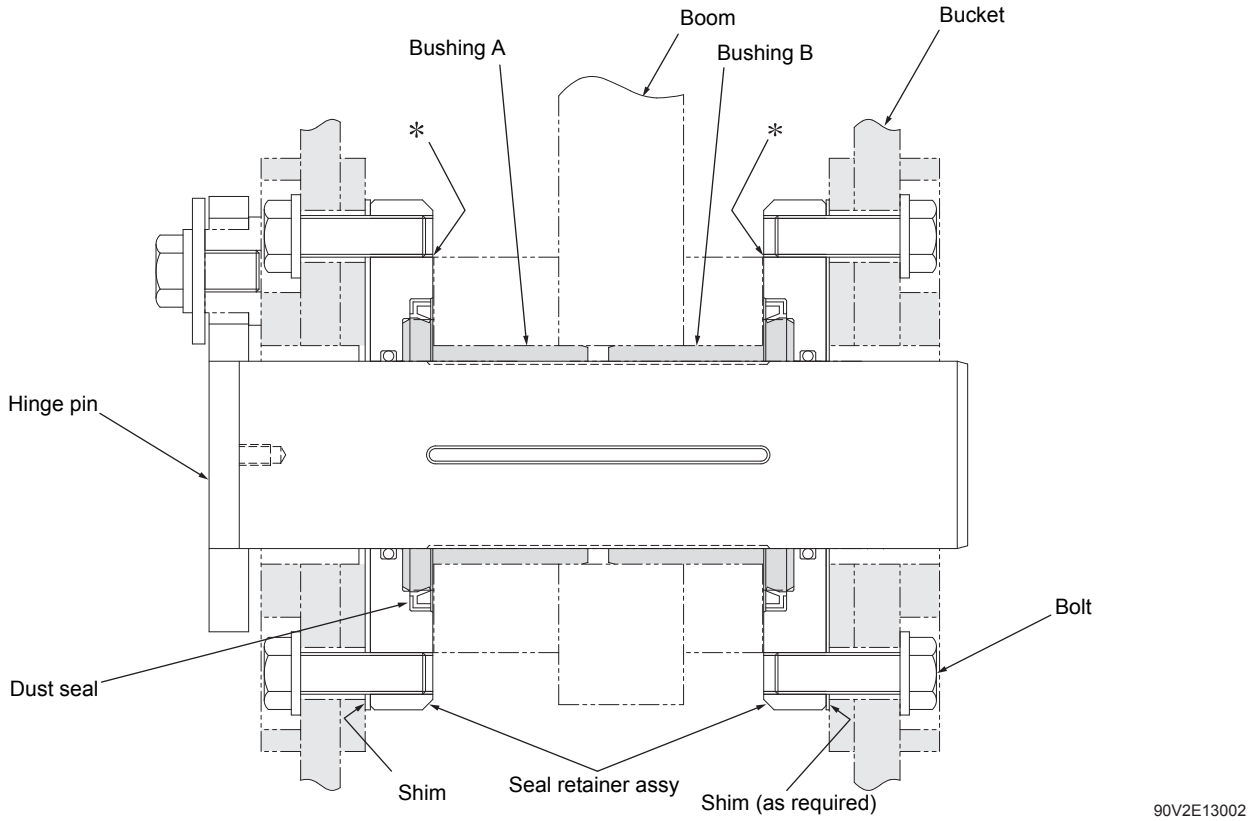
Loading linkage pin

mm (in)



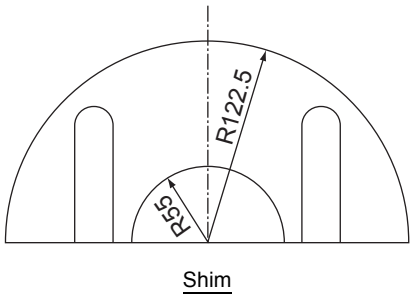
K95ZV12003

Bucket hinge pin section



Adjust the clearance (*) to 1.0 mm or less for the hinge pin (#1).

How to assemble



1. Attach the seal retainer assy to the bushings.

   (When installing the dust seal to the seal retainer assy, be sure to check the direction of the dust seal.)

2. Align the pin holes in the bucket and the boom then insert the pin.

3. Place the shim between the bucket boss and the seal ring assy so that the clearance between the boom boss and the seal ring (* marked) is less than 1 mm.

   Tighten the bolt for the seal retainer assy.

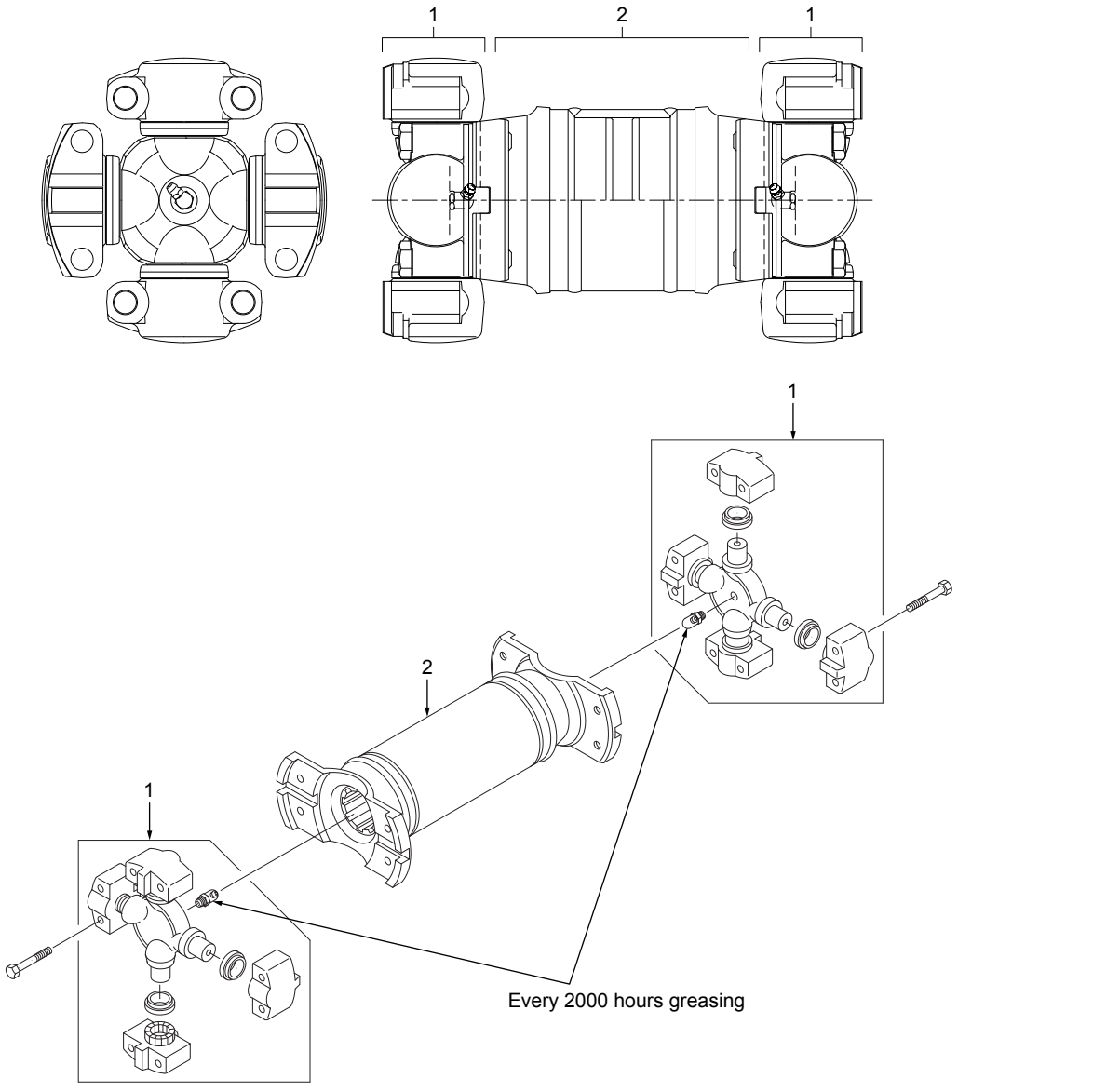
   : 441 N-m (45 kgf-m) (326 lb-ft)

Shim thickness

1.0, 0.5 mm (0.039, 0.020 in)
(2 kinds of shim thickness)

Third propeller shaft assembly

Transmission – Rear differential

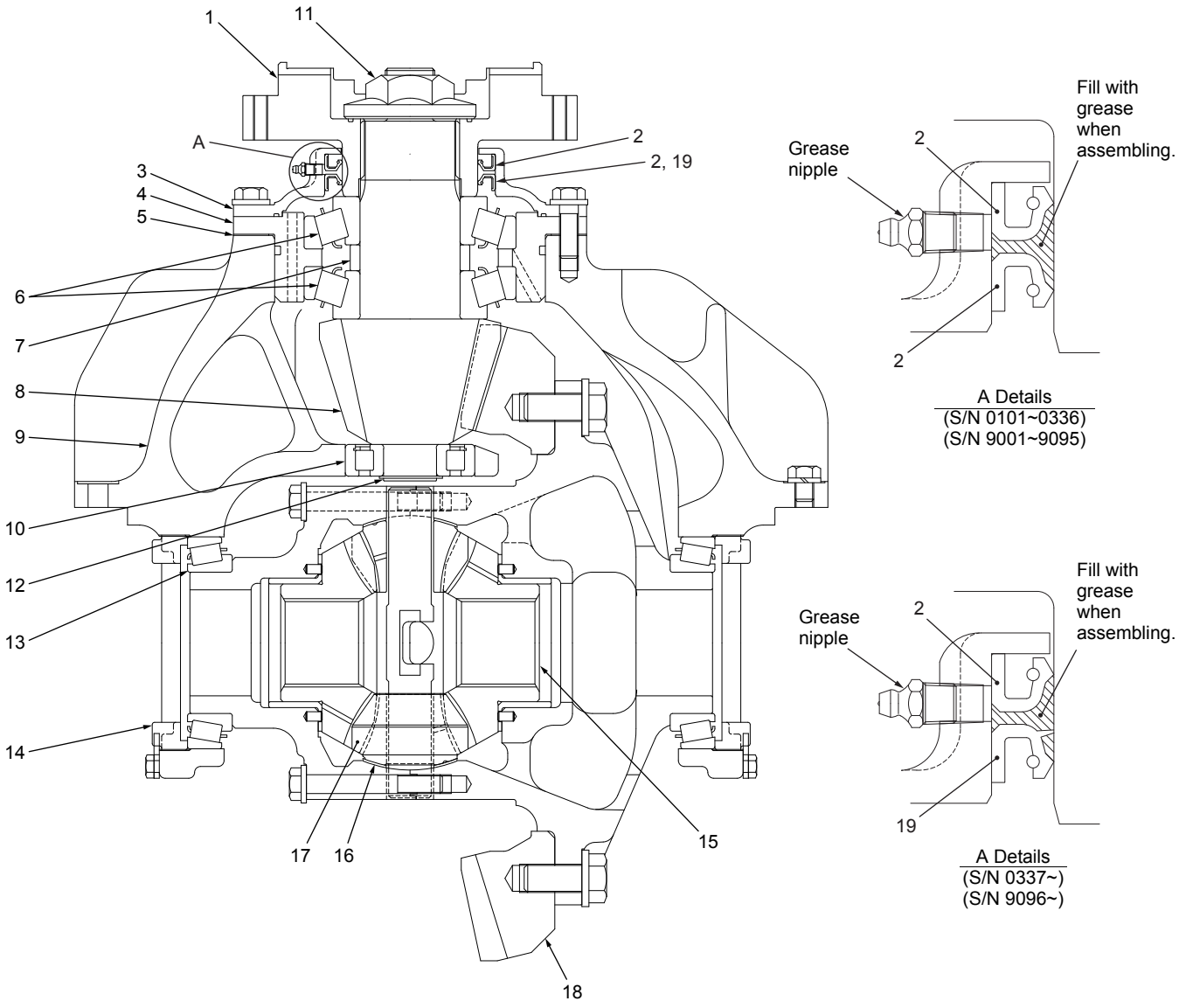


K95ZVE22002

1. Journal spider assembly
2. Propeller shaft

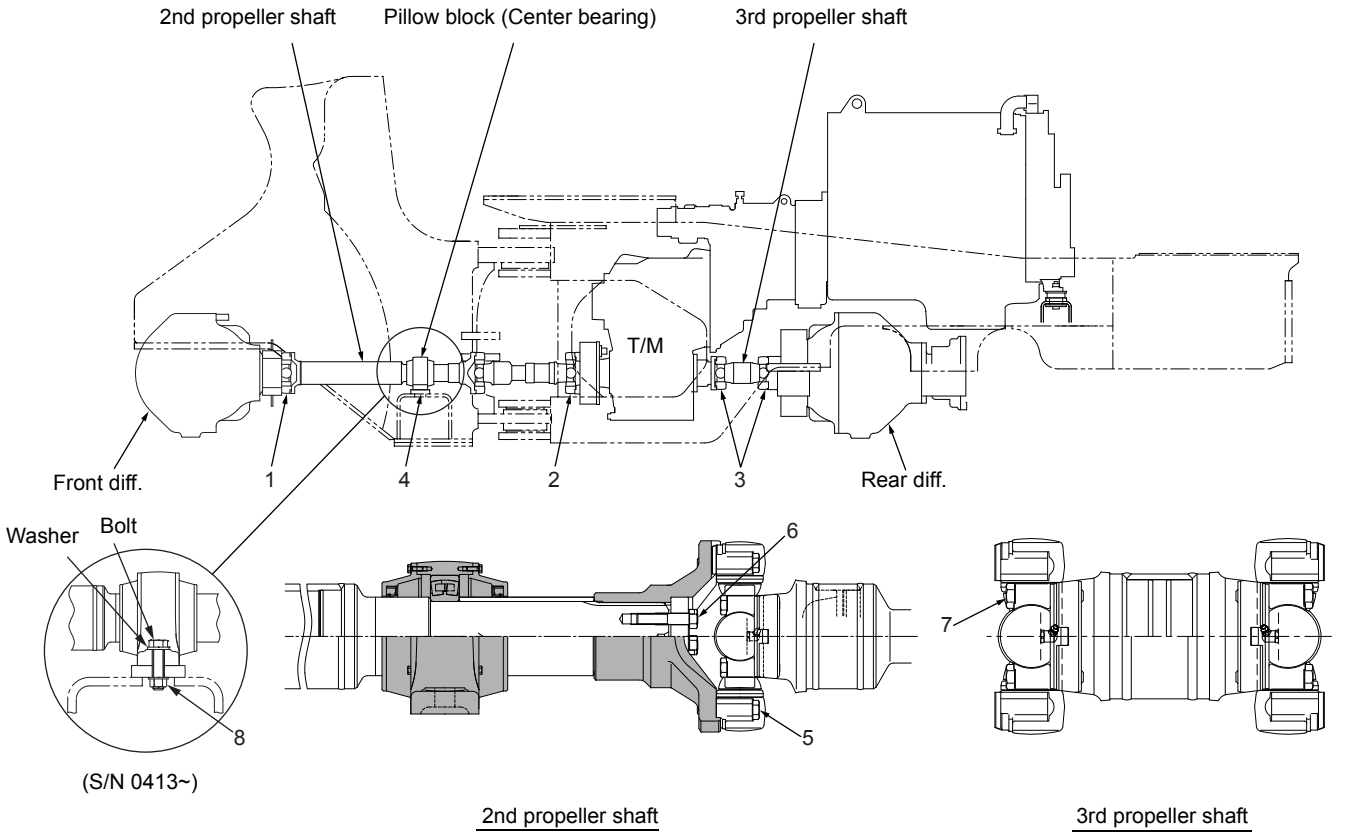
Differential Gear

Front differential gear



1. Flange
2. Oil seal (single lip)
3. Seal retainer
4. Bearing retainer
5. Shim
6. Taper roller bearing
7. Collar
8. Drive pinion
9. Carrier
10. Pilot bearing
11. Nut
12. Snap ring
13. Taper roller bearing
14. Adjusting nut
15. Side gear
16. Thrust washer (pinion gear)
17. Differential pinion
18. Ring gear
19. Oil seal (Double lips)

Propeller shaft tightening torque



K95V23001

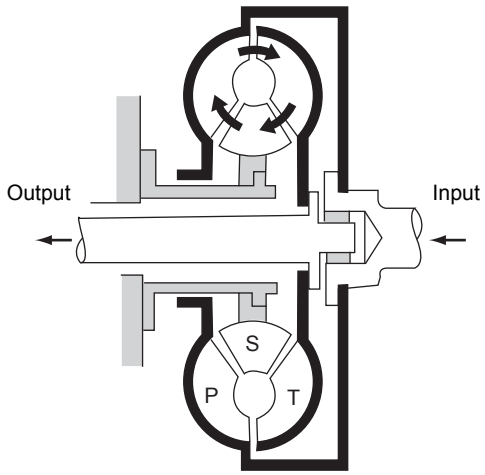
IMPORTANT

Never reuse universal joint or driveline bolts or locks. Always use new bolts and secure with loctite® 262 and primer.

:
1. 142 N-m (14.5 kgf-m) (105 lb-ft)
2. 142 N-m (14.5 kgf-m) (105 lb-ft)
3. 142 N-m (14.5 kgf-m) (105 lb-ft)
4. 441 N-m (45.0 kgf-m) (326 lb-ft)
5. 162 N-m (16.5 kgf-m) (119 lb-ft)
6. 162 N-m (16.5 kgf-m) (119 lb-ft)
7. 162 N-m (16.5 kgf-m) (119 lb-ft)
8. 417 N-m (42.5 kgf-m) (308 lb-ft)

#1, 2, 3: Screw lock agent (Three Bond 1327)
#4, 8: Screw lock agent (Loctite® 262)

Torque Converter



95ZV32002

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.

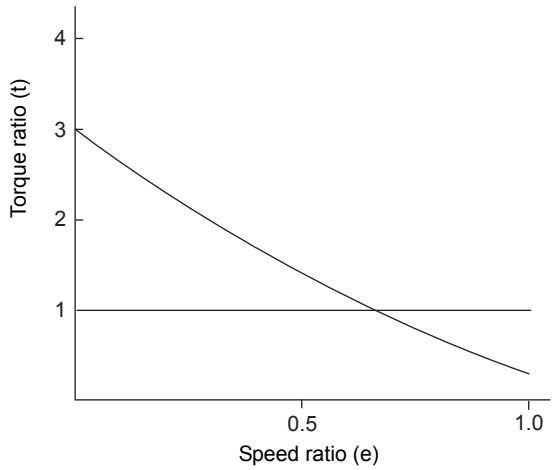
Power flow path

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.

Torque multiplication

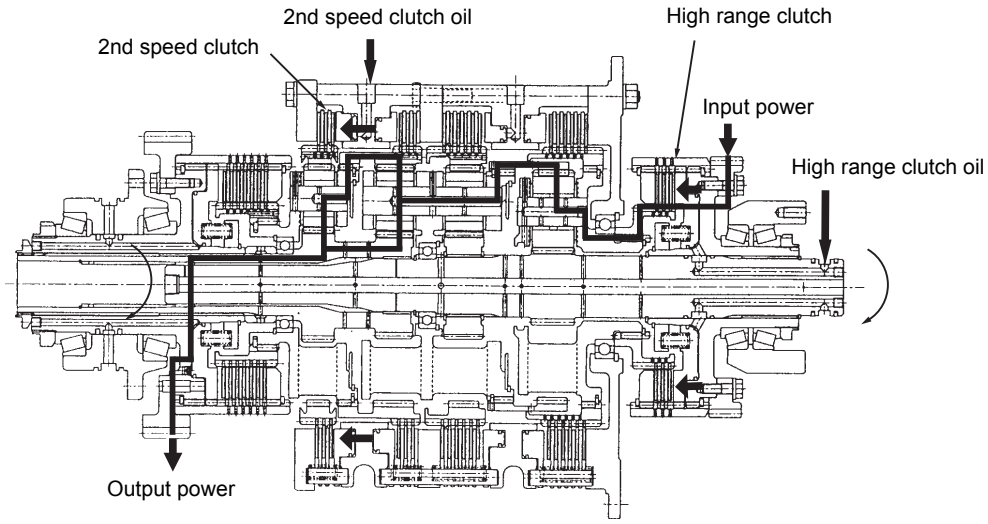


95ZV32003

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.

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

Forward 4th speed flow path



Modulation Mechanism

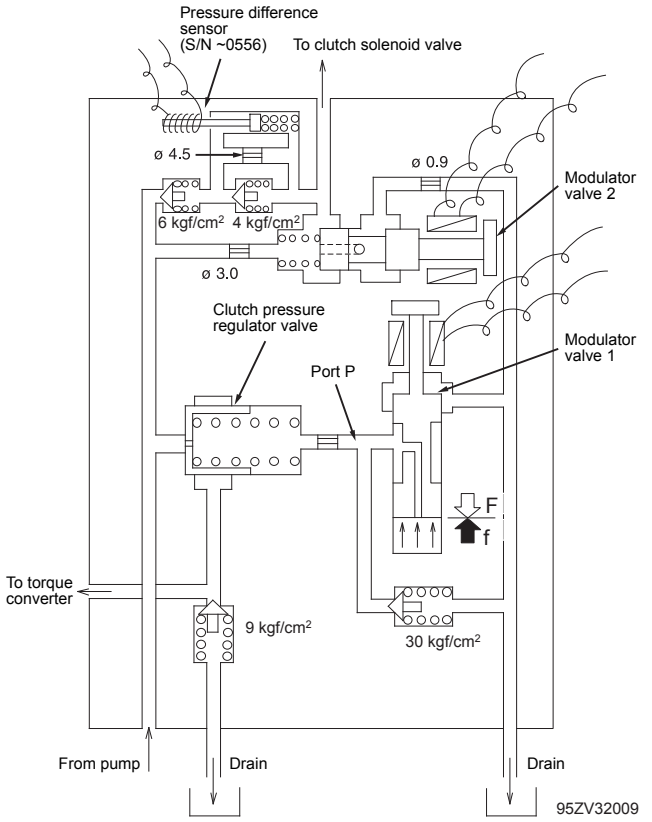
Modulator valve function

When changing forward/reverse or speed, the modulation mechanism works to reduce the time required for clutch engagement (time lag), to prevent the shock at clutch engagement, to improve the work efficiency and durability of the power system, and to ensure operator's comfort.

For such effects, the modulation mechanism controls the clutch oil pressure rising time as follows:

An electrical signal from the shift control unit (SCU) controls the trimmer operation. For information on the SCU refer to "Electrical Group" section.

Modulator valve 1



The modulator valve 1 is a solenoid-operated proportional pressure reducing valve. Downward magnetic force (F) acts on the top of the spool in proportion to the amount of current applied to the coil.

The bottom of the spool is acted upon by the upward hydraulic force (f). When this upward force (f) and magnetic force (F) are in balance, the spool is stationary, which generates the specified pressure at port P.

The hydraulic force adjusted by modulator valve 1 acts on the left end of the clutch pressure regulator valve, and so the hydraulic force from the pump to the clutch is also controlled by modulator valve 1.

In other words, when the control pressure from the modulator valve 1 is low, oil from the pump easily moves the clutch pressure regulator valve to the right end and relieves the oil to the torque converter or, above 0.9 MPa (9 kgf/cm^2) (128 psi) to the drain port, reducing clutch oil pressure.

Measuring clutch time lag

⚠ WARNING

Unexpected movement of the machine may cause an accident resulting in injury or death.
To crawl under the machine, be sure to stop the engine, and block the tires with chocks to prevent them from moving. Give signals to the person in the cab during the work.

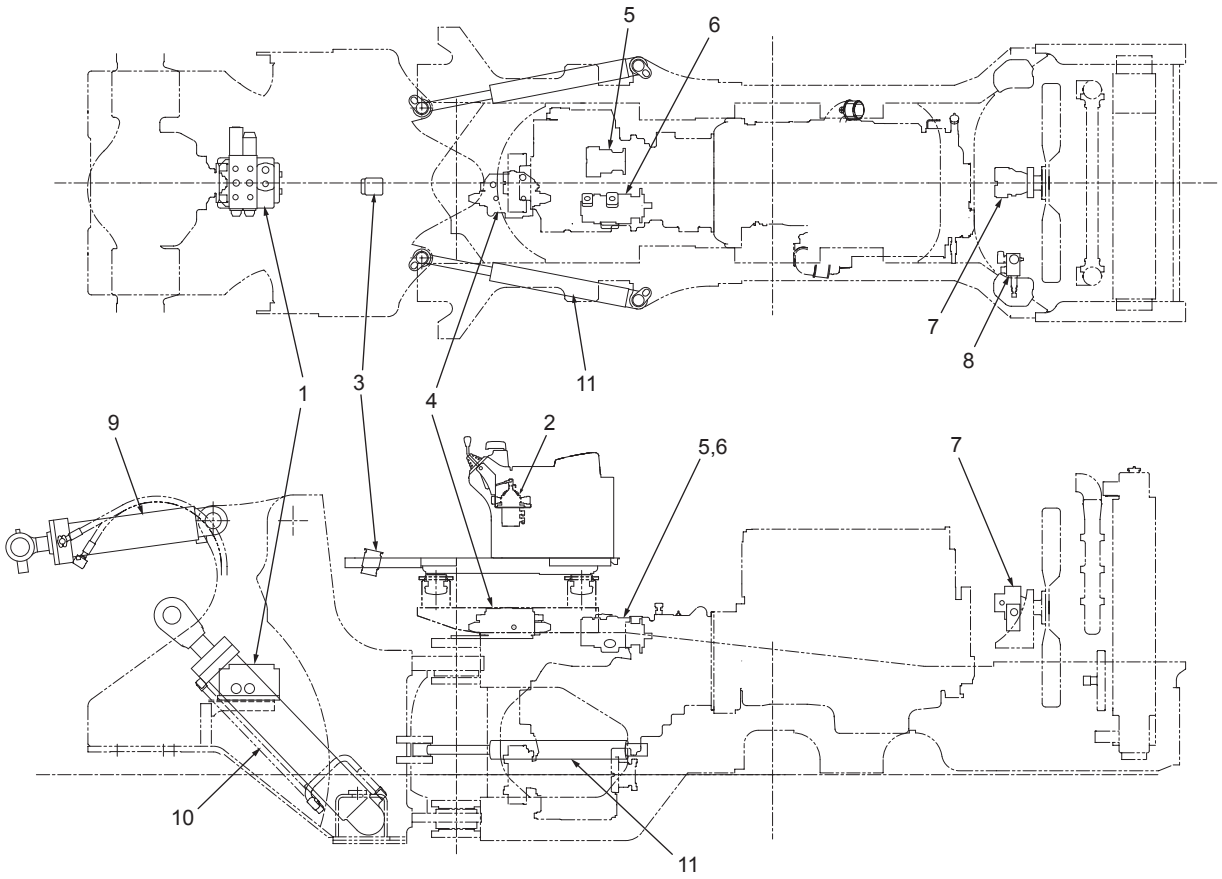
Time lag measurement procedure

- Lower the boom to the lowest limit, and fully roll back the bucket until the bucket contacts to the stopper.
- Set the parking brake switch to the "OFF" position. Do not apply the service brakes.
- Set the transmission shift lever to the neutral 1st speed.
- Keep the engine speed at 1,500 min^{-1} (rpm).
- Move the shift lever to the forward position. At the same time, start the stop watch to measure the time required before the machine moves.

Possible causes for clutch time lag

Possible cause	Solution
Defective pressure difference sensor (S/N ~0556)	Replacement
Malfunctioning modulator valve (1) operation	Inspection & repair
Malfunctioning modulator valve (2) operation	Inspection & repair
Defective controller	Replacement
Defective clutch	Disassembly & repair

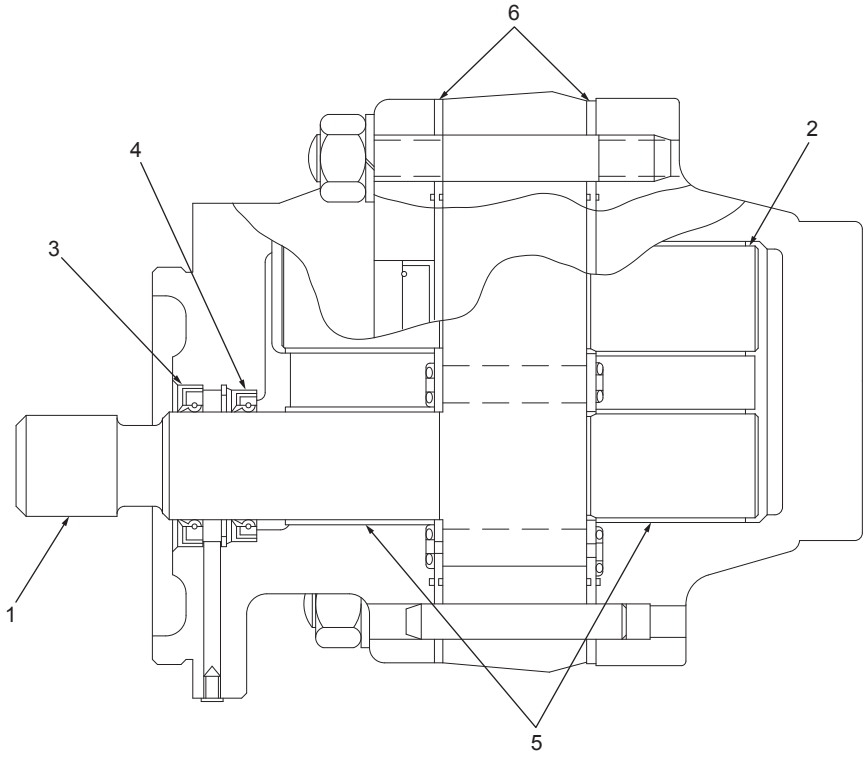
Layout of Hydraulic Units



95ZV42039

1. Multiple control valve
2. Pilot valve (for loading)
3. Orbitrol®
4. Steering valve
5. Hydraulic pump (for steering)
6. Hydraulic pump (for loading, for pilot & brake)
7. Fan motor
8. Relief valve (for fan)
9. Bucket cylinder
10. Boom cylinder
11. Steering cylinder

Steering pump (S/N 0101~0258, 9001~9065)



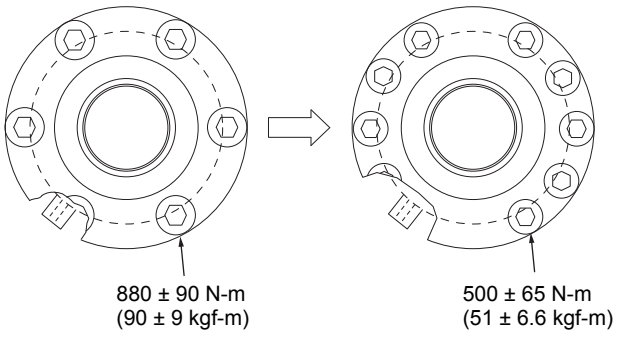
97ZV42012

1. Drive gear
2. Driven gear
3. Oil seal
4. Oil seal
5. Bushing
6. Wear plate (fixed type)

Pump specifications

Applicable circuit		Steering circuit
Theoretical discharge	cm^3/rev	113
Maximum operation pressure	MPa (kgf/cm^2) (psi)	24.5±0.5 (250±5) (3553±73)
Maximum speed	min^{-1}	2,500

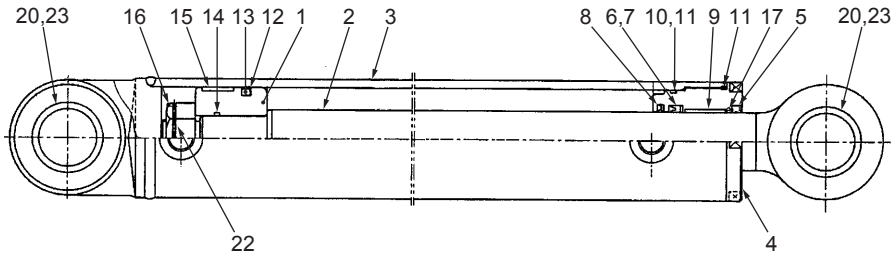
Measurement conditions:
Oil temperature 50~80ºC (120~180ºF)
Hydraulic oil ISO VG46



K70V2J42023

Note
The number of mounting bolt (25) has been increased on S/N 0451 and thereafter.
Be advised the tightening torque has been also changed.

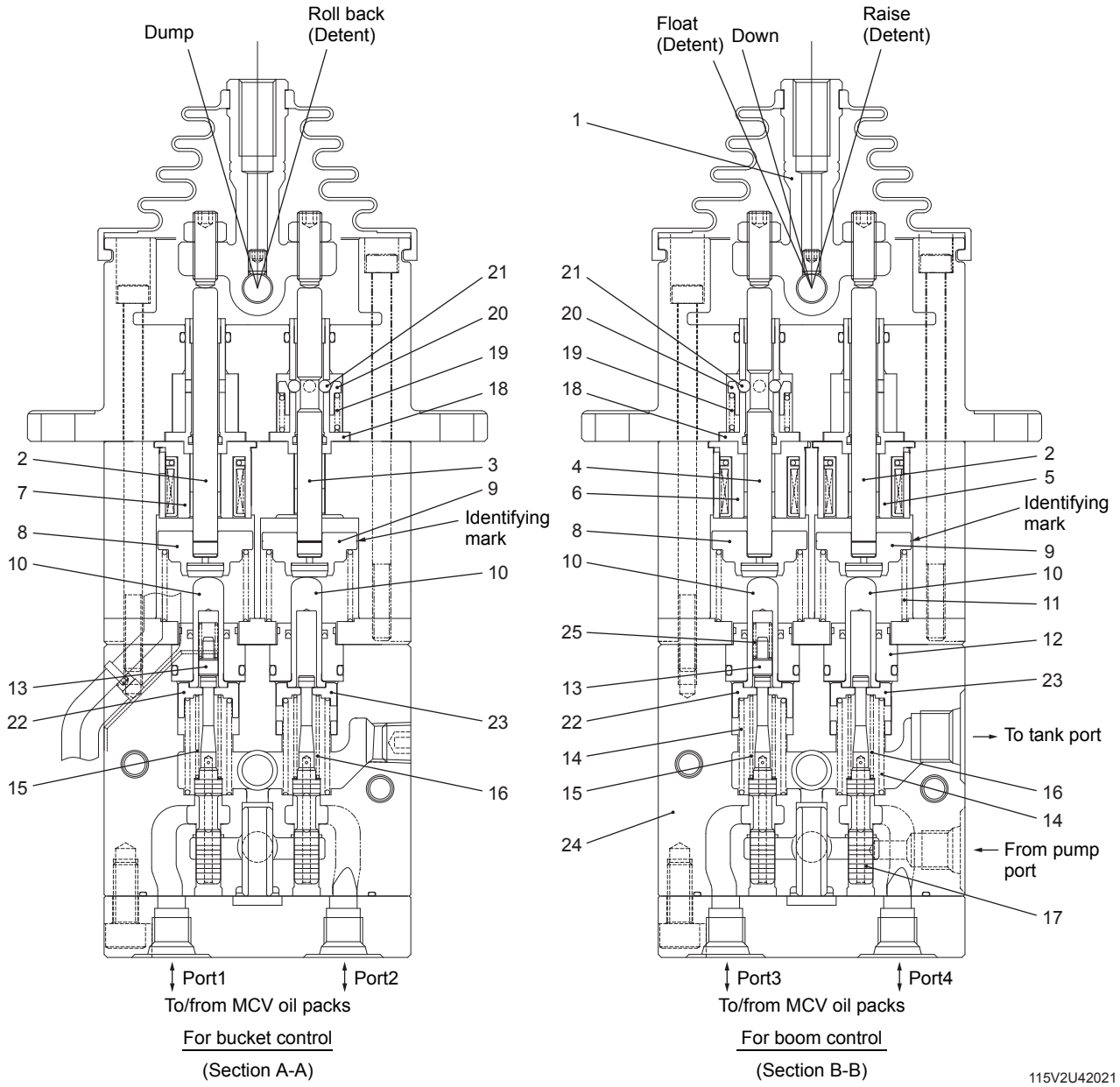
Steering cylinder



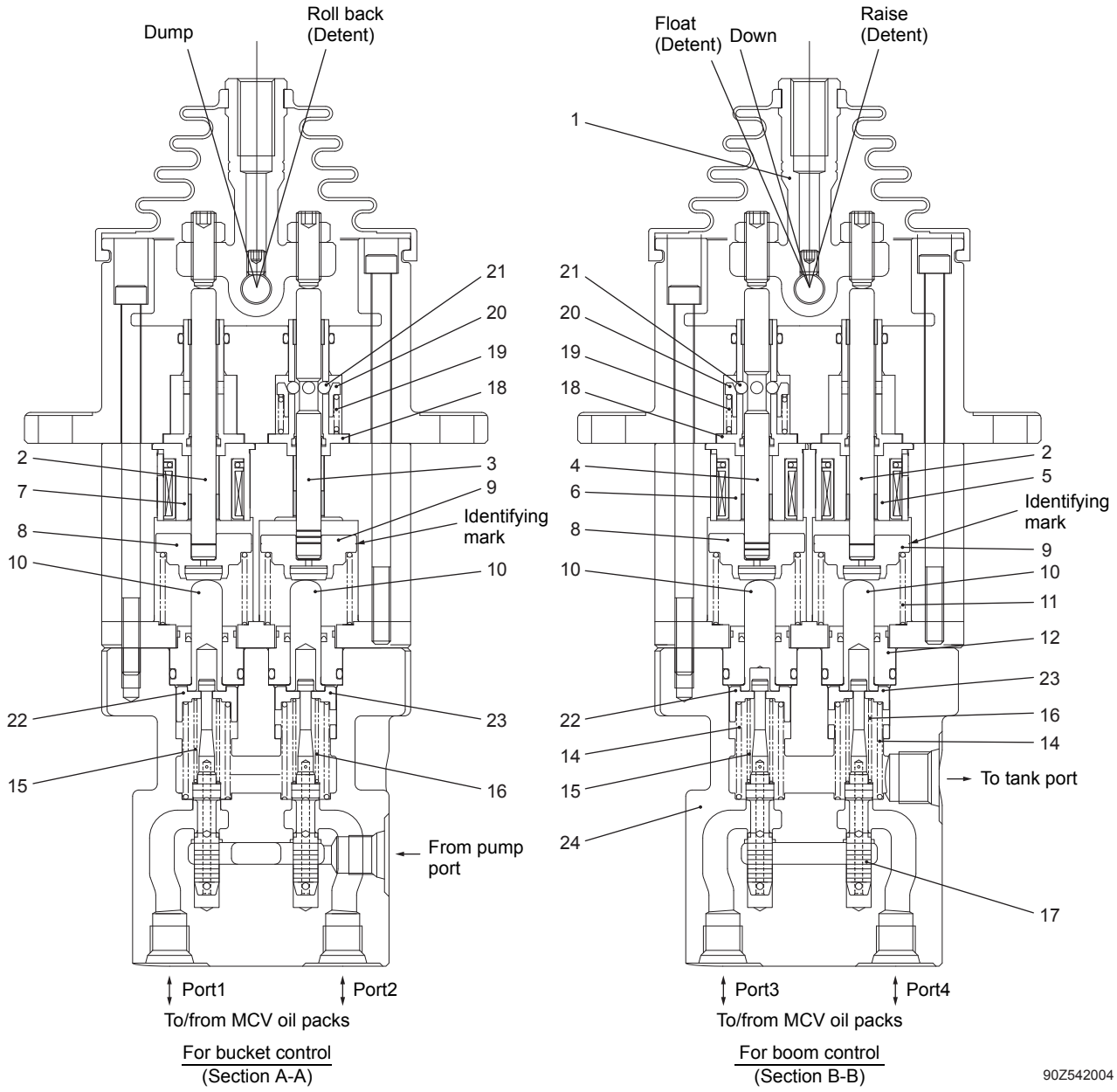
97ZV42027

: Rod cover (4): 1,765 N-m (180 kgf-m) (1,302 lb-ft)
: Piston nut (16): 1,275 N-m (130 kgf-m) (941 lb-ft)

1. Piston
2. Piston rod
3. Cylinder tube
4. Rod cover
5. Dust seal
6. Backup ring
7. U-packing
8. Buffer ring
9. Bushing
10. Backup ring
11. O-ring
12. Slipper ring
13. Back ring
14. O-ring
15. Wear ring
16. Piston nut
17. Stop ring
18. —
19. —
20. Dust seal
21. —
22. Stop ring
23. Bushing



1. Lever
2. Push rod
3. Push rod
4. Push rod
5. Detent solenoid coil (boom down / float)
6. Detent solenoid coil (boom raise)
7. Detent solenoid coil (bucket level)
8. Fixing disc
9. Fixing disc (Identifying mark)
10. Push rod
11. Spring
12. Plug
13. Spring seat
14. Spring
15. Spring
16. Spring
17. Spool
18. Detent bushing
19. Spring
20. Detent ring
21. Steel ball (4 pieces per spool)
22. Spring seat
23. Spring seat
24. Casing
25. Spring



1. Lever
2. Push rod
3. Push rod
4. Push rod
5. Detent solenoid coil (boom down / float)
6. Detent solenoid coil (boom raise)
7. Detent solenoid coil (bucket level)
8. Fixing disc
9. Fixing disc (Identifying mark)
10. Push rod
11. Spring
12. Plug
13. —
14. Spring
15. Spring
16. Spring
17. Spool
18. Detent bushing
19. Spring
20. Detent ring
21. Steel ball (4 pieces per spool)
22. Spring seat
23. Spring seat
24. Casing

Multiple control valve make-up valve

(Installed on the rod side of the boom circuit)

The make-up valve is installed in the circuit between the control spool and boom cylinder.

Extremely quick boom lowering may generate low pressure due to low oil supply speed compared with boom lowering speed. The low pressure could form a vacuum that may cause cavitation.

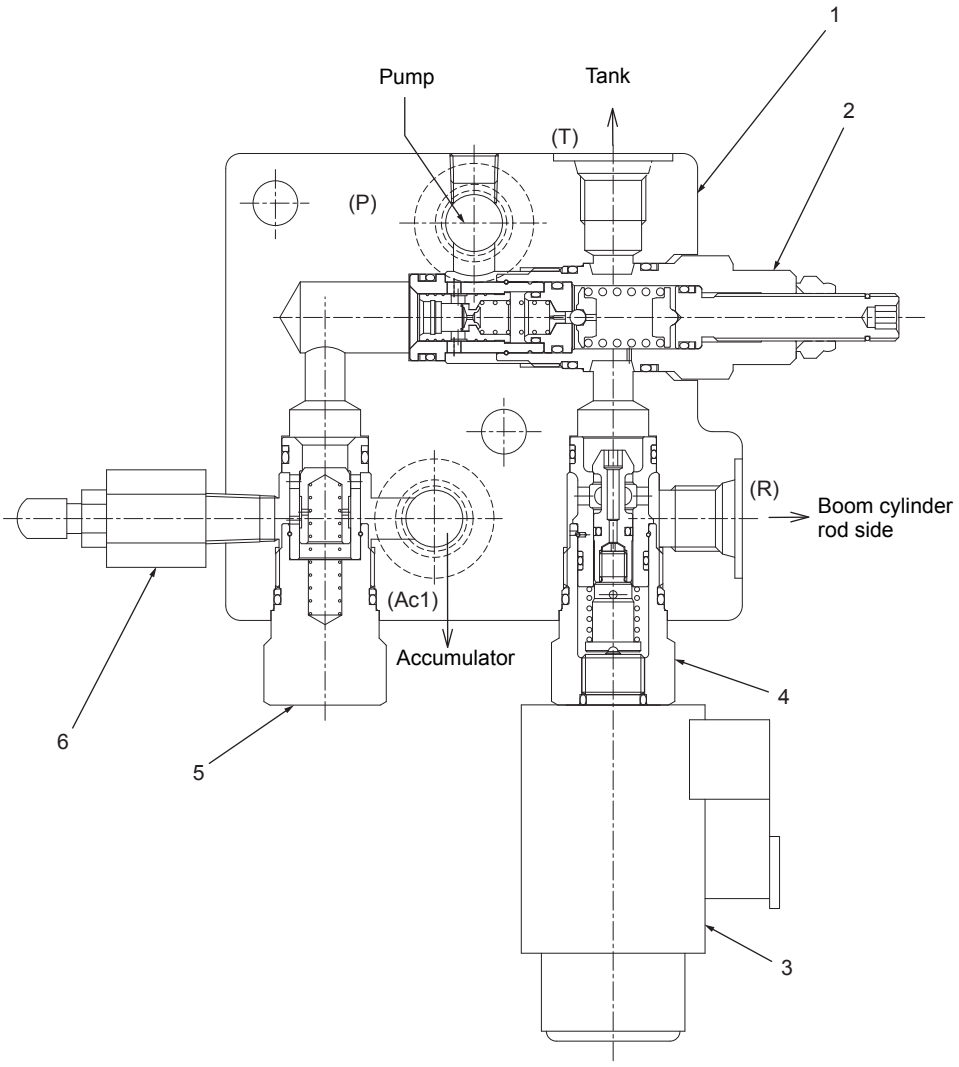
The purpose of the make-up valve is to prevent generation of such a vacuum. When the pressure in the rod side is lower than tank pressure, the make-up valve is opened to feed oil from the tank to the cylinder.

Make-up valve operation

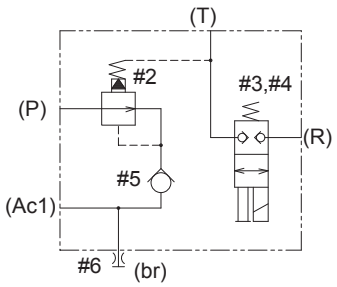
The make-up valve has the same structure as the overload relief valve with make-up valve does. Refer to the description on "Overload relief valve operation" for the makeup valve operation.

Vibration damper valve assembly (Reducing valve circuit)

Outline drawing



1. Block
2. Reducing valve
3. Solenoid
4. Valve
5. Check valve
6. Bleeder valve

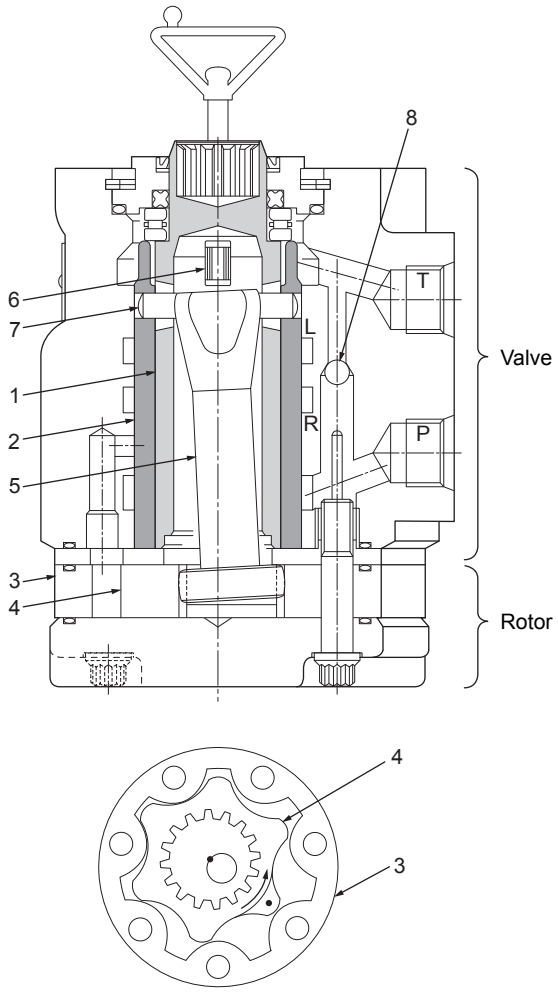


Hydraulic circuit

95V2E42012

Orbitrol® structure

Valve part



70ZV42022

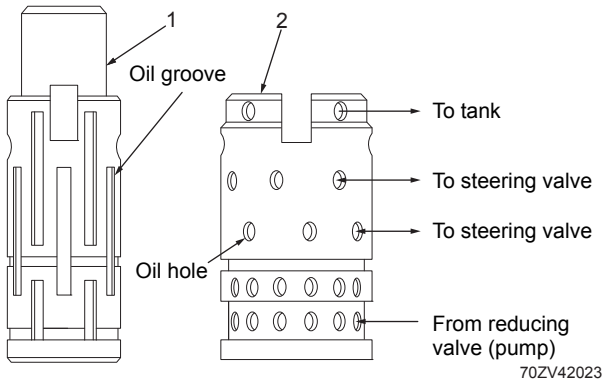
1. Spool
2. Sleeve
3. Stator
4. Rotor
5. Drive shaft
6. Centering spring
7. Cross pin
8. Check valve

- Spool (1) and sleeve (2) as a set form a rotary-type directional change-over valve. The spool (1) in this valve is linked to the steering wheel by means of a spline.

- When the steering wheel is not being turned, the spool (1) and the sleeve (2) are held in the neutral position by the centering spring (6); the oil groove of the spool does not match the oil hole of the sleeve, so the flow route of oil is totally closed.

- When the steering wheel is turned, the oil groove of the spool matches the oil hole of the sleeve, opening the oil passage, permitting oil to flow.

Rotor part

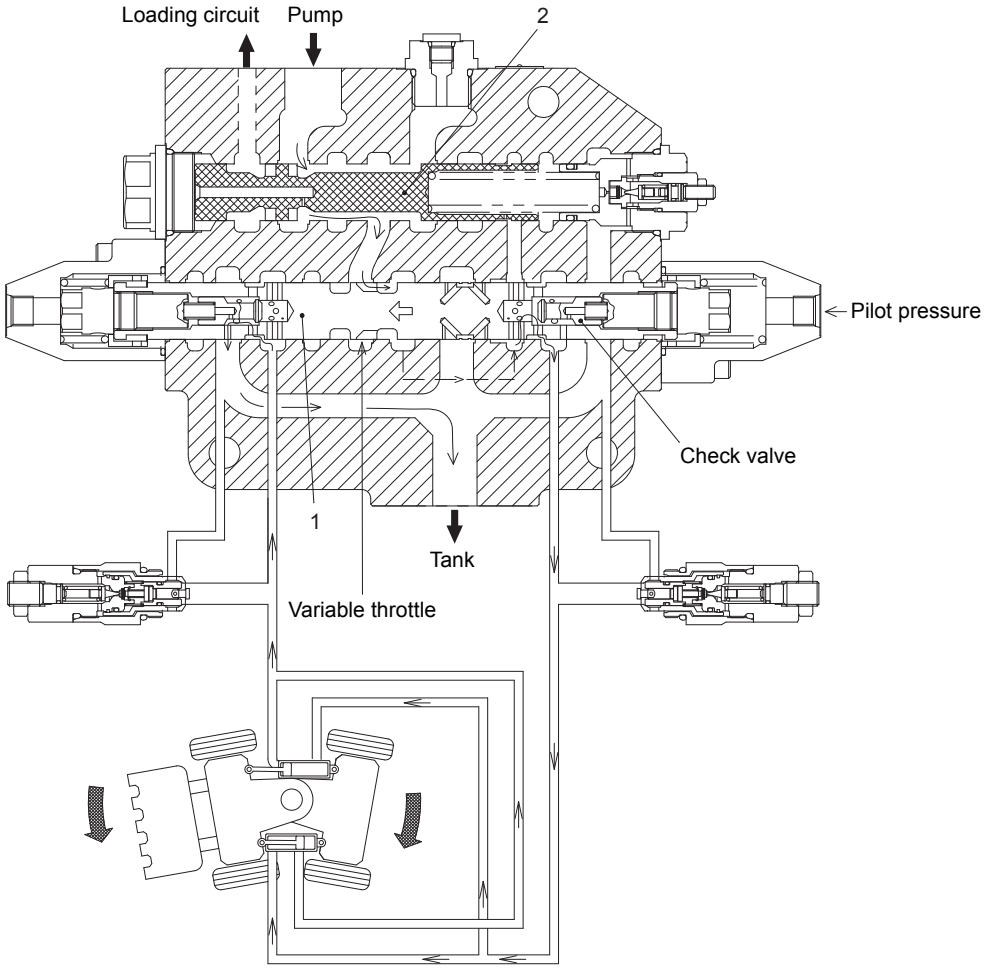


70ZV42023

- A kind of internal gear, when the valve opens, it functions as a hydraulic motor.

- The rotor (4) rotation is transmitted to the valve part by means of the connected drive shaft (5), and the degree of valve opening is regulated depending on how fast the steering wheel is being turned.

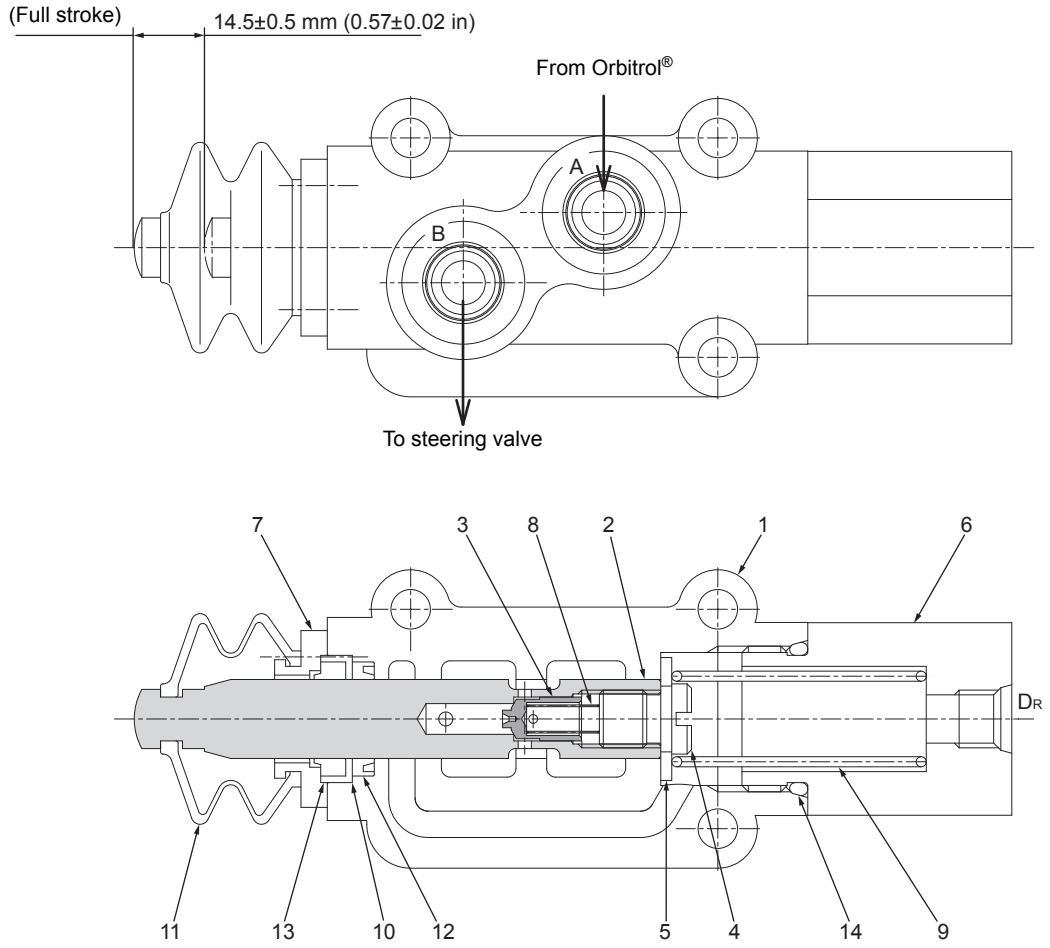
Left turn position



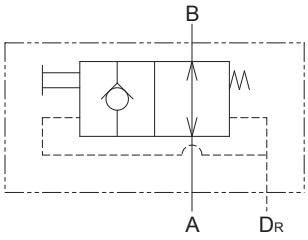
95ZV42043

- When steering spool (1) is pushed in to the left, the pressurized oil from the pump is sent to steering cylinders through the variable throttle section and the check valve. The pressurized oil moves the cylinder rods and the machine turns to the left.
- During low-speed turning, displacement of steering spool (1) is small. However, since the oil flow rate to the steering cylinder is reduced at the variable throttle section at the spool center, the pressure difference between the front and rear of the throttle section is increased. When the pressure difference is increased to 0.63 MPa (6.4 kgf/cm^2) (91.4 psi), flow control spool (2) is opened to discharge excess oil to the loading line. In this way, the flow control spool prevents extreme increase in the amount of the oil from the steering pump, and adjusts the oil flow rate to the cylinder.

(S/N 0411~)



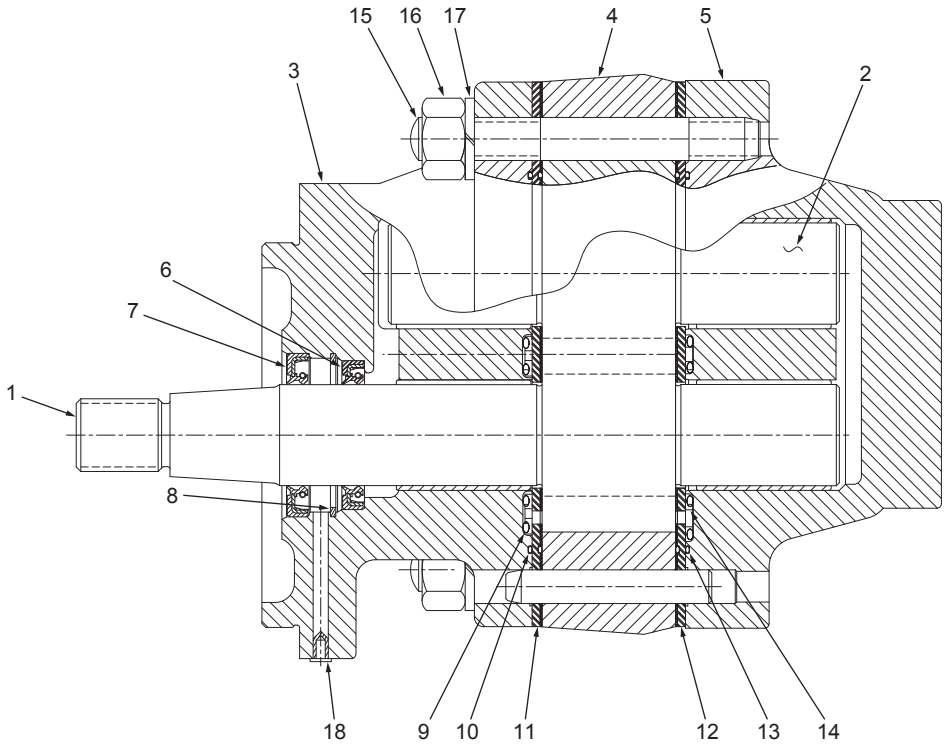
K80Z542005



1. Housing
2. Spool
3. Check valve
4. Plug
5. Washer
6. Plug
7. Flange
8. Spring
9. Spring
10. Spacer
11. Boot
12. U-packing
13. Dust seal
14. O-ring

97ZV42042

Fan motor (GM30C) (S/N 0101~0230)



97ZV42049

1. Drive gear
2. Driven gear
3. Front cover
4. Center section
5. Rear cover
6. Oil seal (inner)
7. Oil seal (outer)
8. Retaining ring
9. Gland seal
10. O-ring
11. Wear plate (front)
12. Wear plate (rear)
13. O-ring
14. Seal retainer
15. Bolt
16. Nut
17. Washer
18. Plug (drain)

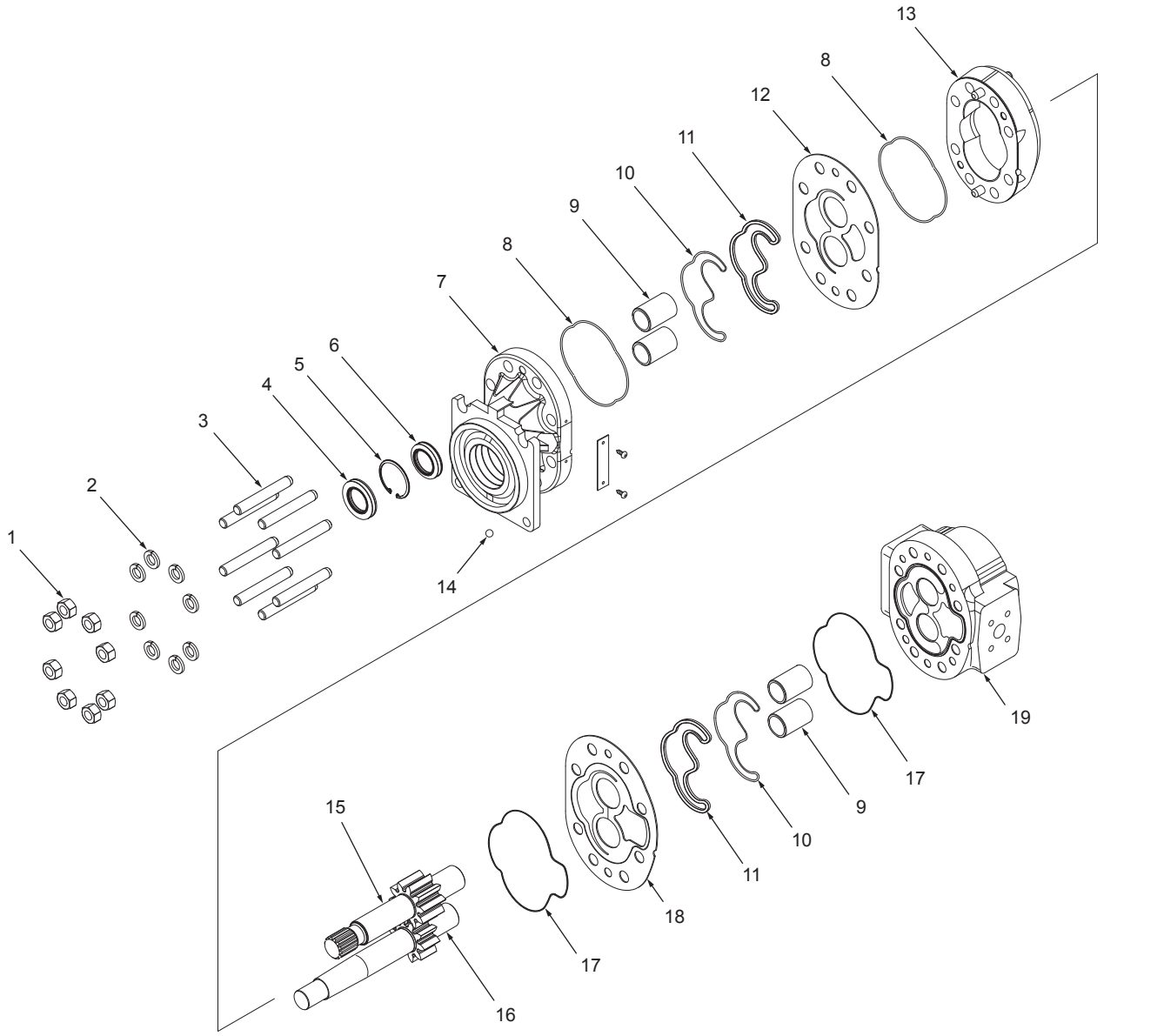
Fan motor specifications

Displacement capacity	80.0 cm^3/rev
Operating number of revolutions	1,500 min^{-1} (rpm)
Motor efficiency	95%

IMPORTANT

This motor is designed to rotate only in one direction. Hoses must be connected correctly or damage to motor will result from reverse rotation.

Fan motor (GM30W) (S/N 0314~0398)

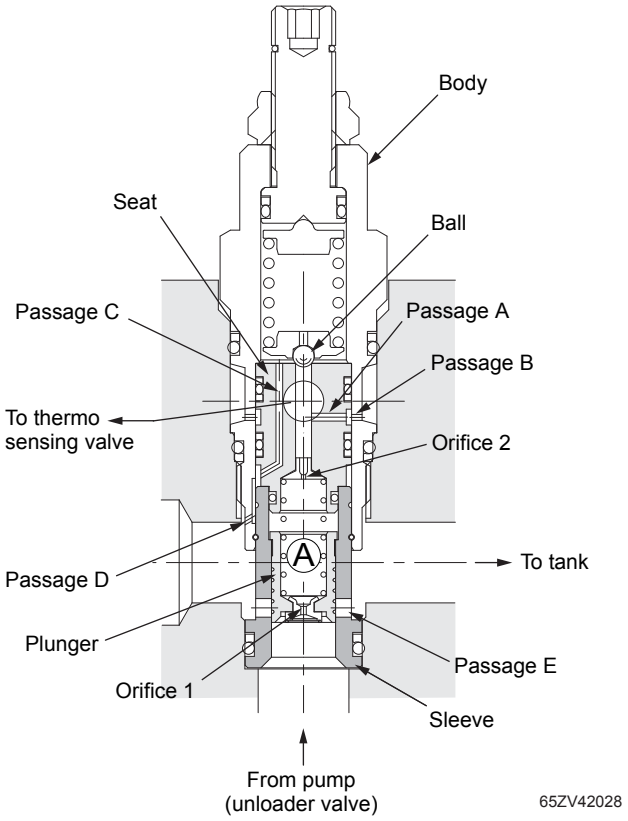


K115ZV42022

1. Nut
2. Washer
3. Stud bolt
4. Oil seal (outer)
5. Retaining ring
6. Oil seal (inner)
7. Front cover
8. O-ring
9. Bushing
10. Oil seal (E-ring)
11. Seal retainer
12. Wear plate
13. Center section
14. Steel ball
15. Driven gear
16. Drive gear
17. O-ring
18. Wear plate
19. Rear cover

Note
The same fan motor model “GM30C” is used on the machines S/N 0231~0313. Refer to "Fan motor (GM30C) (S/N 0101~0230)" page 42-110 for details.

Fan motor relief valve



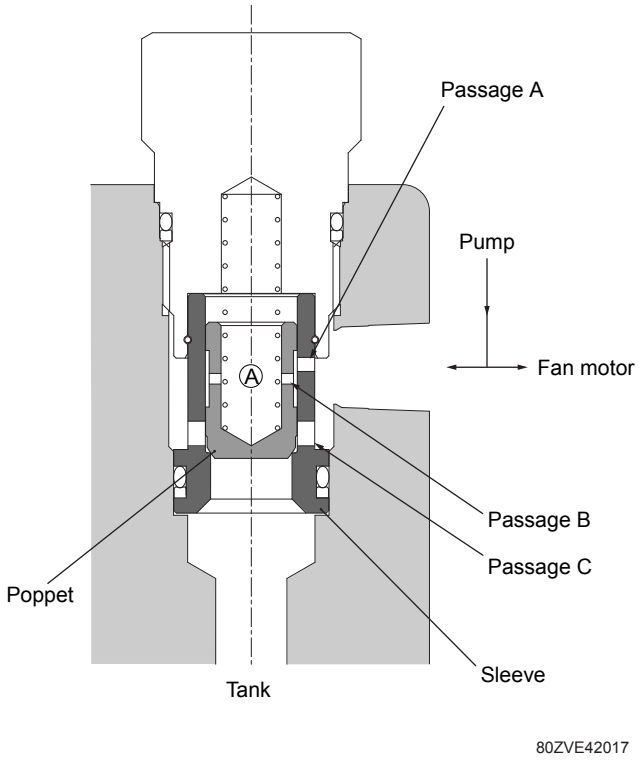
The oil from the pump goes through orifices 1 and 2 and passages A and B, then flows from the body perimeter to the thermo-sensing valve.

When the engine cooling water temperature increases and reaches 93 ± 2ºC (200 ± 3.6ºF), the spring load of the thermo-sensing valve becomes maximum, and the pressure in the fan motor line increases. When this pressure reaches 15.1 MPa (154 kgf/cm^2) (2,190 psi), the pressure oil from the orifice 2 pushes up the ball and releases into the tank by way of passages C and D. As a result, the oil pressure in chamber A decreases, the pressure oil from the pump pushes up the plunger and flows into the tank port by way of passage E.

Accordingly, the maximum number of revolutions (1,500 min^{-1}) of the fan motor is determined by this relief pressure.

Set pressure (guideline)
16.1 MPa (164 kgf/cm^2) (2,335 psi)

Fan motor check valve (make-up valve)



While the engine is running, the oil from the pump enters the chamber A by way of passages A and B, and presses both the spring and the poppet against the sleeve. As a result, the oil does not flow into the tank port.

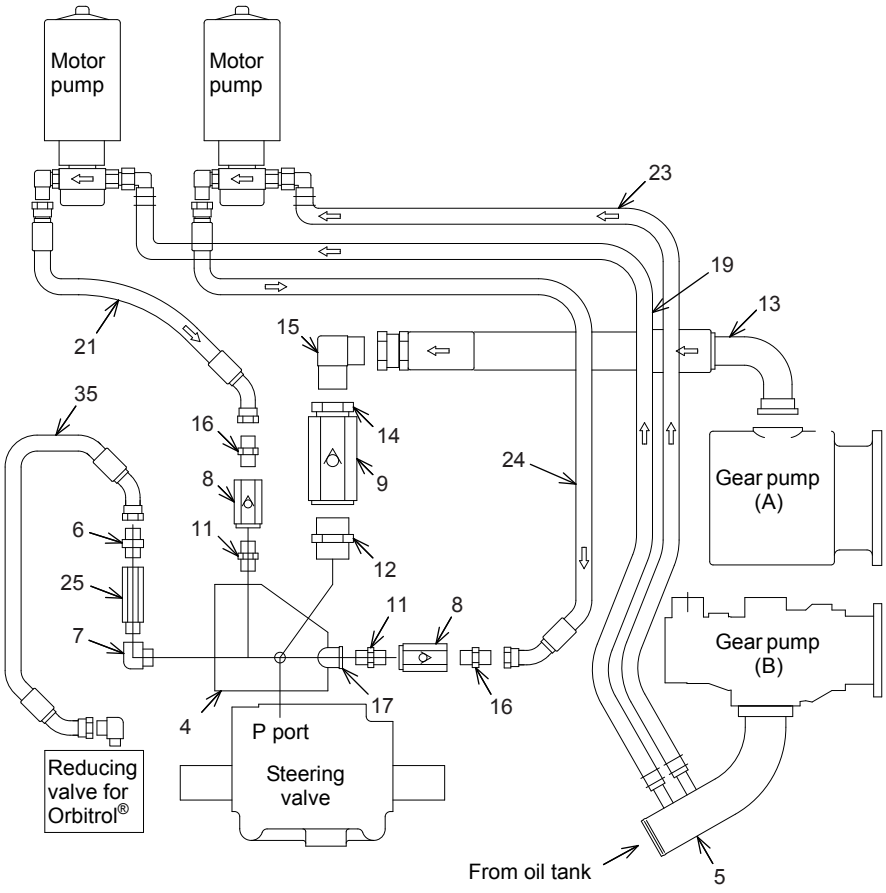
When the engine is stopped, the pressure in the pump port (chamber A) becomes negative pressure (or a void) because the oil is not fed to the fan motor though the fan continues to turn by the inertia. In order to prevent generation of negative pressure, the poppet is pushed up from the tank port side, and the oil at the tank port flows into the fan motor line by way of passage C.

This status continues until revolution of the fan caused by the inertia is attenuated and stopped.

When the oil pressure reaches the set pressure [15.1 MPa (154 kgf/cm^2) (2,190 psi)] or more, the relief valve (72) releases the pressure oil to the tank, as a result, the maximum fan revolution is regulated.

On the other hand, the relief valve (72) and the thermo-sensing valve (74) are connected each other by way of the port Pp. Because the set pressure of the thermo-sensing valve (74) changes in accordance with the engine cooling water temperature, the regulated maximum number of revolutions varies depending on the cooling water temperature.

Emergency steering hydraulic diagram



95ZVE42007

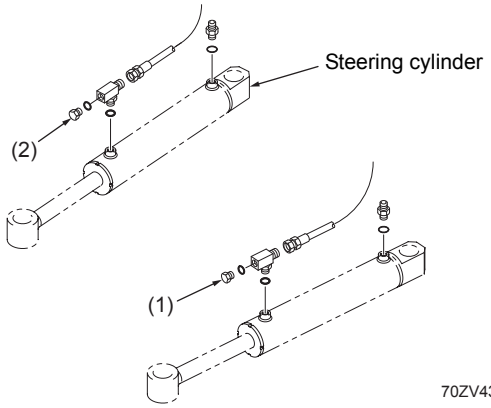
1. —
2. —
3. —
4. Block
5. Oil pipe
6. Adapter
7. Elbow adapter
8. Check valve
9. Check valve
10. —
11. Adapter
12. Adapter
13. High pressure hose
14. Adapter
15. Elbow fitting
16. Adapter
17. Connector
18. —
19. Heat resisting hose
20. —
21. High pressure hose
22. —
23. Heat resisting hose
24. High pressure hose
25. Line filter
26. —
27. —
28. —
29. —
30. —
31. —
32. —
33. —
34. —
35. High pressure hose

For the electrical wiring diagram/ connection diagram, refer to “Electrical Group”.

Gauge port

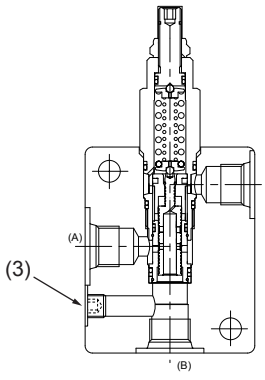
	Gauge port location	Port size
Main relief pressure	(1), (2)	G (PF) 1/4 with O-ring
Overload relief pressure		
Reducing pressure	(3)	Rc (PT 1/8)

Steering cylinder

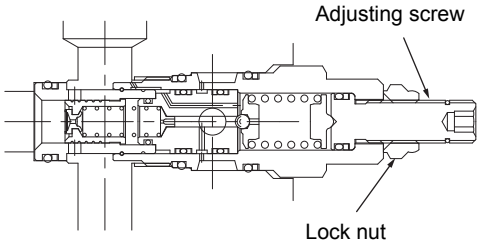


70ZV43007

Reducing valve



115ZV43006



Relief valve

65ZV43007

4. If the maximum number of revolutions is not correct, adjust it using the adjusting screw in the relief valve.
   Turn the adjusting screw clockwise to increase both the pressure and the number of fan revolution.

Note
The relief valve on the low pressure side cannot be adjusted because it accommodates a thermo-sensing valve. It can be only confirmed.

After placing hose and adapter in the Port P_P to normal, measure the pressure while the fan is moving at low speed. At this time, the engine cooling water temperature should be 80 ºC (176 ºF) or less (Engine at HI).

The unloader valve controls the flow rate and the pressure of the hydraulic oil sent from the pump to the accumulator. The body (1) is equipped with ports (pump, fan motor, accumulator, pilot and tank).

The spool (3) which opens and closes the pump port to the fan motor port, the orifice (6) which regulates the flow rate to the accumulator port with high priority, and the pressure governor mechanism which controls the pressure on the accumulator port side are built in the unloader valve.

Unloader valve operation

While the unloader valve is not operating, the spool (3) is pushed back by the spring (2) and the pump port to the fan motor port is closed. Oil flowing from the pump port is sent to the accumulator port through the orifice (6), and the pressure at the accumulator port increases accordingly.

When an excess flow rate is generated, the spool (3) moves to the fan motor port side and the excess flow rate flows out to the port to the fan motor.

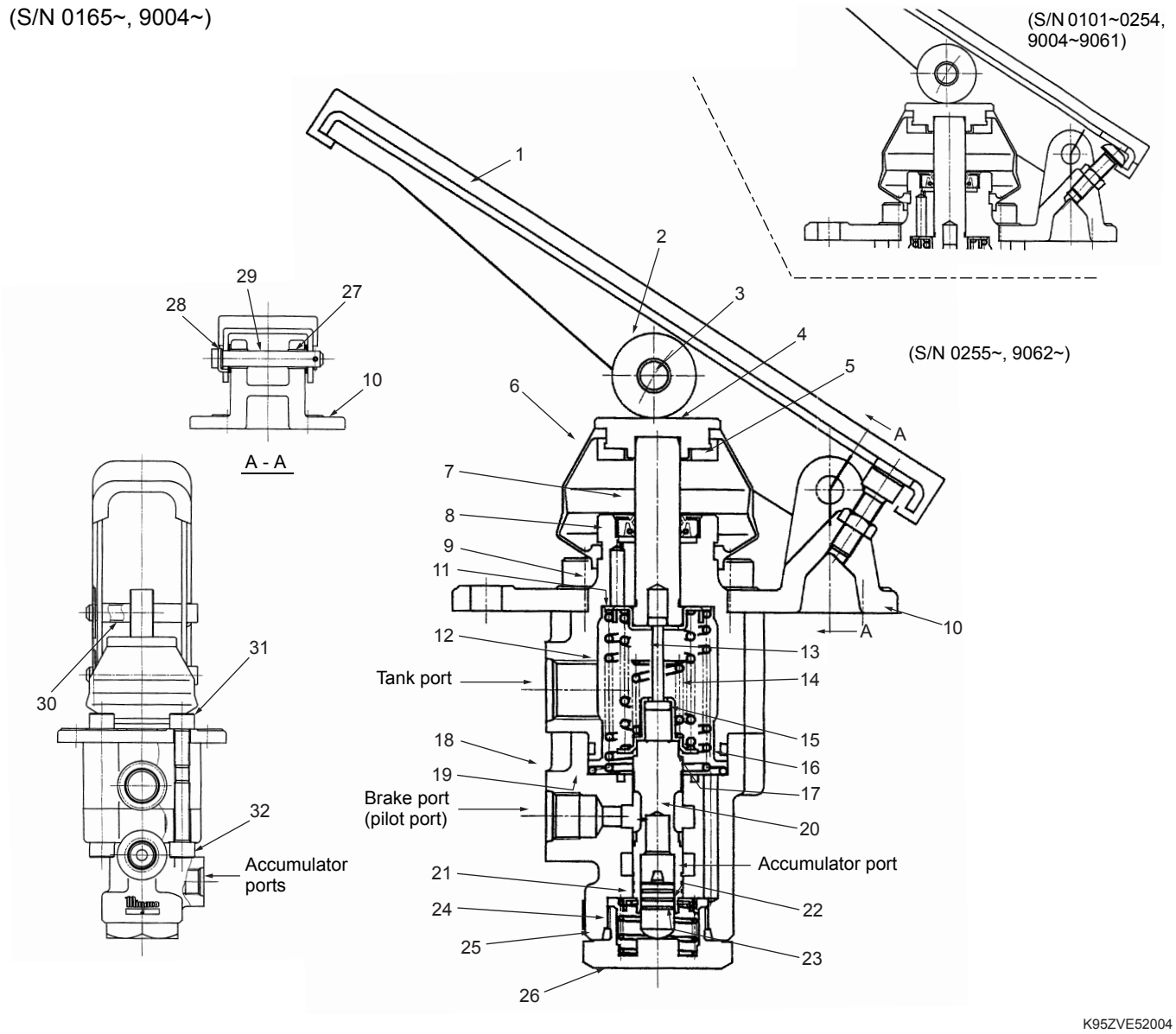
The pressure at the accumulator port is transferred to the inside of the pressure governor through the orifice (7).

When the pressure at the accumulator port increases and exceeds the load of the springs (17) (18) applied on the pilot valve (15), the pilot valve opens and increase of the pressure at the accumulator port stops (cut-out pressure). At this time, the pressure in the accumulator connected to the pilot port pushes the governor plunger (11), and continuously releases the pilot valve.

When the pressure in the accumulator decreases and the spring attached to the pilot valve pushes back the governor plunger, the pilot valve is closed and the pressure at the accumulator port starts to increase again (cut-in pressure).

Setting pressure	OFF	11.8 ± 0.5 MPa (120 ± 5 kgf/cm^2) (1,706 ± 71 psi)
	ON	6.9 ± 1.0 MPa (70 ± 10 kgf/cm^2) (995 ± 142 psi)

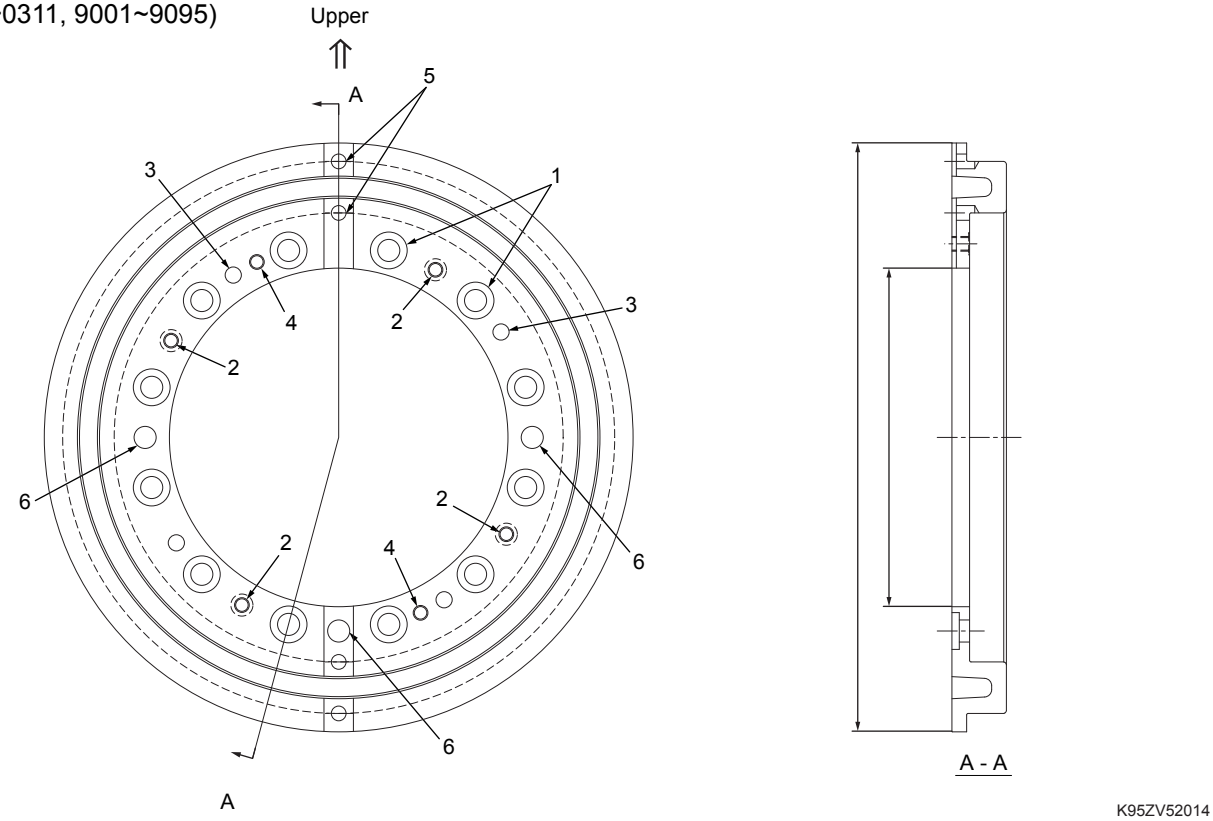
(S/N 0165~, 9004~)



1. Brake pedal
2. Roller
3. Bushing
4. Seat
5. Pedal stopper
6. Boot
7. Push rod
8. Oil seal
9. Flange
10. Bracket
11. Retainer
12. Spring
13. Rod
14. Spring
15. Spring
16. O-ring
17. Retainer
18. Cylinder
19. Spring
20. Spool
21. Plunger
22. Retainer
23. Snap ring
24. Spring
25. O-ring
26. End cap
27. Bushing
28. Pin
29. Pin
30. Collar
31. Bolt
32. Bolt

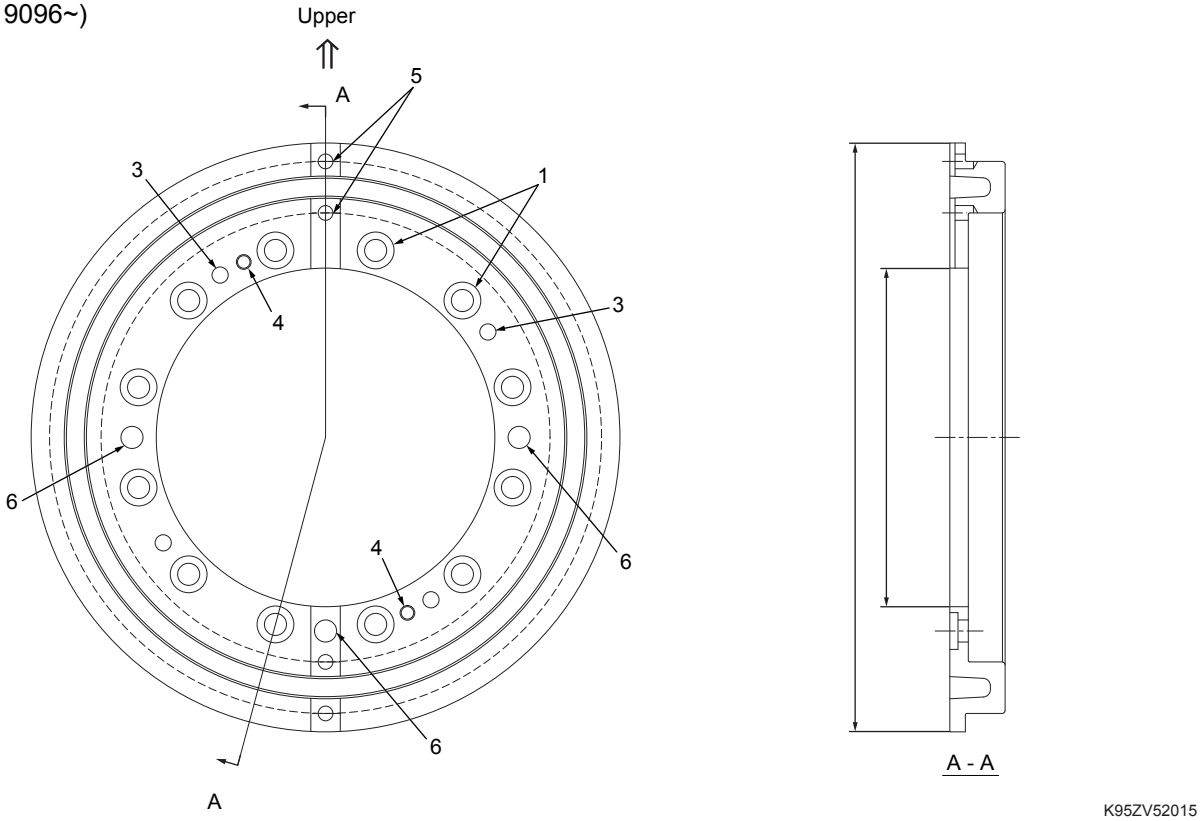
Service brake piston

(S/N 0101~0311, 9001~9095)



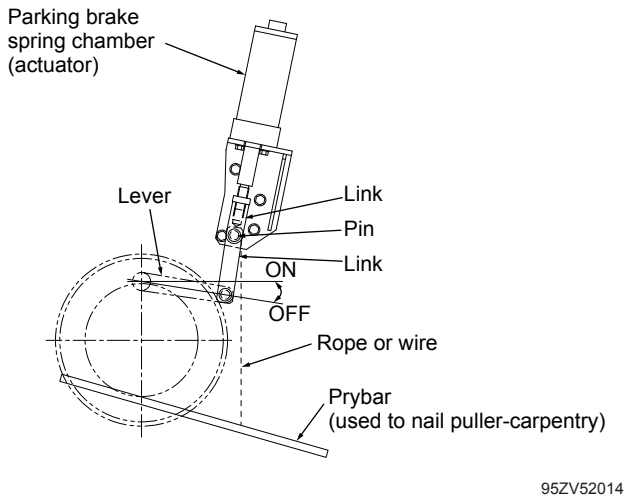
K95ZV52014

(S/N 0312~, 9096~)



K95ZV52015

Method 2



To release the parking brake while the regular oil pressure source may not function due to an engine related trouble, etc., perform the following operation.

- When there is another oil pressure source
  Supply oil pressure to the oil inlet of park brake spring chamber from another oil pressure source, then remove the pin when it releases.

- When there is no other oil pressure source
  Secure a rope or wire to the link, pull downward on the rope or wire with a pry bar to control the spring force of the spring chamber, then remove the pin when it releases.

MEMO

Measurement procedure

Turn the planetary gear so that the oil supply plug is positioned at the place about ±5º from the top. Check that the teeth of steel plate are as shown in the figure in the previous page (only one section of the plate circumference is as shown in the figure).

Insert calipers to the inner steel plate to measure the dimension A.

Note
During measurement, be sure the service brake is applied.

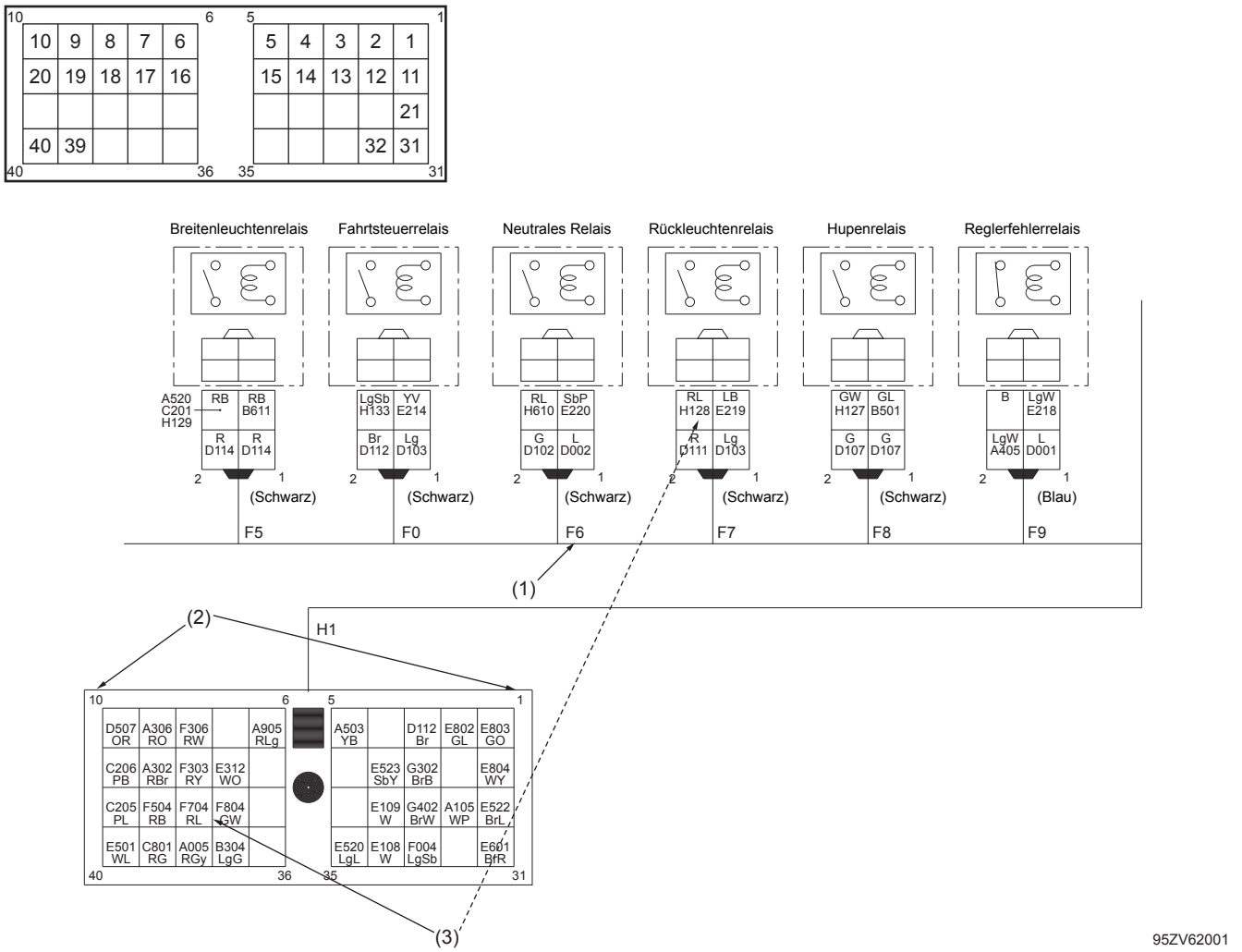
Wear limit for dimension A:
- 25.1 mm (0.988 in) (S/N 0101~0254, 9001~9060)
- 24.7 mm (0.972 in) (S/N 0255~, 9061~)

Dimension A when the plate is new:
- 29.0 mm (1.142 in) (S/N 0101~0254, 9001~9060)
- 28.6 mm (1.126 in) (S/N 0255~, 9061~)

Note
To aid quick measurement on the front axle-raise the front of the machine so the front tires clear the ground by about 25 mm (1 in). This allows easy rotation of the wheel to align the gear teeth.

Verwendung des elektrischen Schaltplans (DEUTSCH)

Beispiel



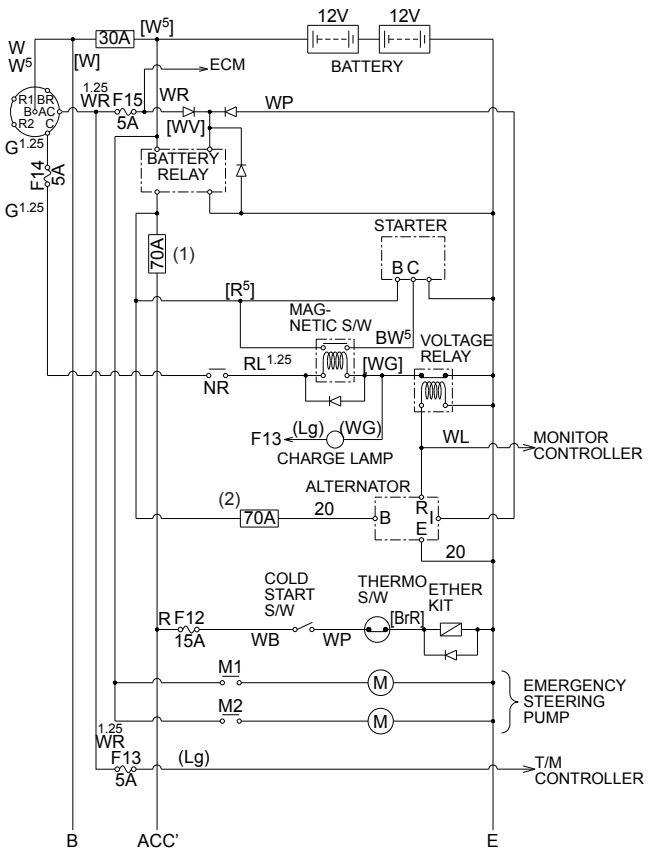
Für den elektrischen Schaltplan wird die Adressenmethode verwendet. Damit wird jeder Steckvorrichtung und jeder Anschlußklemme ein Symbol zugeordnet, damit die Klemme, an die das andere Ende des Kabels angeschlossen werden muß, leicht gefunden werden kann.

Beispiel 1
Symbol unterhalb (oder oberhalb) der Steckvorrichtung, wie z. B. F6:
Zeigt die Adresse der Steckvorrichtung an.

Beispiel 2
Symbol an der Mehrklemmen- Anschlußstelle, wie z. B. 1 und 10:
Zeigt die Klemmennummer und die Zählrichtung an.

Beispiel 3
Überprüfung der anderen Steckvorrichtungsklemme, wo F704 RL (Artikel (3)) angeschlossen ist:

1. F704
   Zeigt, daß die Klemme an die vierte Klemme der F7-Steckvorrichtung angeschlossen ist.
   Überprüfen Sie die Beschreibung in der vierten Klemme des F7-Steckvorrichtung (F704). Zie gibt an, daß die Steckvorrichtung F704 an H128 angeschlossen ist. Dies bedeutet, daß die vierte Klemme der F7-Steckvorrichtung an die 28. Klemme der H1-Steckvorrichtung angeschlossen ist.
2. RL
   Zeigt die Farbe des Kabels an. „ RL ” bedeutet, daß der Isolierdraht rot ist, und „ L ” bedeutet, daß sich auf dem roten Isoliermaterial ein blauer Streifen befindet.



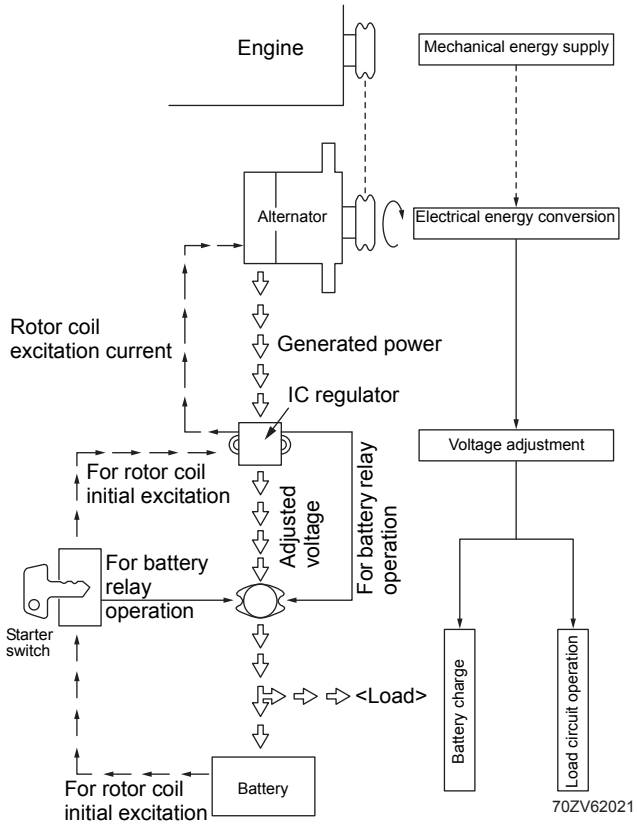
Fusible link location (S/N 9001~)

K95ZVE62001

Problems caused by blown fusible link

Fuse damaged	Problem (symptom)	
	During engine operation	During engine stop
30A	- Engine will stop automatically. - All the power for all electrical circuit will be OFF.	- All the electrical circuit will not function. - Engine can not be started
70A (1)	- Horn [and optional flasher] will operate. - All the others will not operate and the machine can not be operated. - Engine will not stop automatically but can be stopped by turning the starter switch to “OFF”.	- The same conditions as “During engine operation” but engine can be started.
70A (2)	- The machine can be operated but the batteries can not be charged and the batteries will be discharged soon.	- The same conditions as “During engine operation”.

Power Generating/Charging Circuit



The power generating/charging device and the charging circuit consisting of an alternator, regulator, battery, etc. generate and supply the power required to all electrical units of the machine.

Alternator

The alternator driven by the engine rectifies, with 6 diodes, full waves in three phases of the AC output generated in the stator coil by the three-phase start connection (Y connection) into DC output, then supplies it as the electric power to the battery and the machine load.

In the electricity generated in the alternator, the voltage fluctuates depending on the number of revolutions of the engine and the load size if no measures are taken.

To prevent fluctuation, a regulator is integrated so that the voltage supplied to the battery and the load circuit is always constant.

FAULT CODE/ LAMP	DESCRIPTION	QSB5.9 (70ZV)	QSL9 (85ZV)	QSM11 (90ZV)	QSX15 (95ZV)	QSK19 (115ZV)	QST30 (135ZV)
EG284 Yellow	Engine Speed / Position Sensor #1 (Crankshaft) Supply Voltage Circuit - shorted low.	○	○		○		
EG285 Yellow	SAE J1939 Data Link Multiplexing PGN Timeout Error.	○	○	○	○	○	
EG286 Yellow	SAE J1939 Data Link Multiplexing Configuration Error.	○	○	○	○	○	
EG287 Red	SAE J1939 Multiplexing Accelerator Pedal Sensor System Error.	○	○			○	
EG288 Red	SAE J1939 Multiplexing Remote Accelerator Pedal Sensor System Error.	○	○			○	
EG293 Yellow	Auxiliary Temperature Sensor Input #1 Circuit - shorted high.		○	○	○		
EG294 Yellow	Auxiliary Temperature Sensor Input #1 Circuit - shorted low.		○	○	○		
EG295 Yellow	Ambient Air Pressure Sensor Circuit - data incorrect.	○	○	○	○		
EG296 Red	Auxiliary Pressure Sensor Input #2 Engine Protection - critical.		○			○	
EG297 Yellow	Auxiliary Pressure Sensor Input #2 Circuit - shorted high.		○	○	○		
EG298 Yellow	Auxiliary Pressure Sensor Input #2 Circuit - shorted low.		○	○	○		
EG311 Yellow	Injector Solenoid Valve Cylinder #1 Circuit - grounded circuit.			○			
EG312 Yellow	Injector Solenoid Valve Cylinder #5 Circuit - grounded circuit.			○			
EG313 Yellow	Injector Solenoid Valve Cylinder #3 Circuit - grounded circuit.			○			
EG314 Yellow	Injector Solenoid Valve Cylinder #6 Circuit - grounded circuit.			○			
EG315 Yellow	Injector Solenoid Valve Cylinder #2 Circuit - grounded circuit.			○			
EG319 Yellow	Real Time Clock - power Interrupt.	○	○	○	○	○	
EG321 Yellow	Injector Solenoid Valve Cylinder #4 Circuit - grounded circuit.			○			
EG322 Yellow	Injector Solenoid Valve Cylinder #1 Circuit - open circuit.	○	○	○		○	
EG323 Yellow	Injector Solenoid Valve Cylinder #5 Circuit - open circuit.	○	○	○		○	
EG324 Yellow	Injector Solenoid Valve Cylinder #3 Circuit - open circuit.	○	○	○		○	
EG325 Yellow	Injector Solenoid Valve Cylinder #6 Circuit - open circuit.	○	○	○		○	
EG331 Yellow	Injector Solenoid Valve Cylinder #2 Circuit - open circuit.	○	○	○		○	
EG332 Yellow	Injector Solenoid Valve Cylinder #4 Circuit - open circuit.	○	○	○		○	
EG334 Yellow	Coolant Temperature Sensor Circuit - data erratic, intermittent, or incorrect.		○				
EG341 Yellow	Engine Control Module - data lost.	○	○	○	○		
EG343 Yellow	Engine Control Module - warning internal hardware failure.	○	○	○	○	○	○

LED inspection windows

IN (Input signal)	
Sym-bol	Signal
F	Shift lever position F
R	Shift lever position R
1	Shift lever position 1
2	Shift lever position 2
3	Shift lever position 3
A	Shift lever position A
M	Auto shift cancellation
S	Shift switch ON
P	Parking switch OFF (Running position)
I	Inching switch ON
ES	Emergency steering
SI1	Spare

OUT (Output signal)	
Sym-bol	Signal
X	Controller failure
RR	Back relay ON
DC	Modulator valve 2 ON
L	Low clutch solenoid valve ON
H	High clutch solenoid valve ON
R	Reverse clutch sol. valve ON
BZ	Buzzer
N	Neutral relay ON
BRK	Auto brake sol. valve ON
1	1st clutch sol. valve ON
2	2nd clutch sol. valve ON
3	3rd clutch sol. valve ON

Connector E1 (Input)					
No.	Sym-bol	Signal	No.	Sym-bol	Signal
1	I	Inching switch (+)	11	3	Shift lever 3 (+)
2	MC	Failure history reset	12	2	Shift lever 2 (+)
3	DD	Vibration damper (OPT)	13	P	Parking switch (+)
4	1	Shift lever 1 (+)	14	S	Shift switch (+)
5	R	Shift lever R (+)	15	F	Shift lever F (+)
6	EG	Engine speed sensor (+)	16	MR	Failure history call
7	COM	Engine speed machine speed (-)	17	G1	For switch input (-)
8	SP	Machine speed sensor (+)	18	SSG	Press diff. sensor signal
9	GND	GND	19	SV	Power for press. diff. sensor
10	A	Shift lever A (+)	20	+24V	+24V

Connector E2 (Output)		
No.	Sym-bol	Signal
1	4R	4 (right) lamp
2	3R	3 (right) lamp
3	2R	2 (right) lamp
4	1R	1 (right) lamp
5	4L	4 (left) lamp
6	3L	3 (left) lamp
7	2L	2 (left) lamp (-)
8	ESO	Emergency steering (output)
9	ESI	Emergency steering (input)
10	SI1	Spare
11		
12	SO1	Vibration damper relay (OPT)
13	A	Auto lamp
14	AB	Auto brake lamp
15	N	Neutral lamp
16	X	Controller failure relay
17	RR	Back-up relay
18	NR	Neutral relay

Connector E3 (Output)		
No.	Sym-bol	Signal
1	3	3rd clutch sol. valve
2	2	2nd clutch sol. valve
3	1	1st clutch sol. valve
4	PC+	Modulator valve 1 (+)
5	BZ	Buzzer
6	R	Reverse clutch sol. valve
7	H	High clutch sol. valve
8	L	Low clutch sol. valve
9	DC	Modulator valve 2
10	BRK	Auto brake solenoid valve
11	PC-	Modulator valve 1 (-)
12	G2	Solenoid valve (-)

Modulator valve (2) [MV_2]

This valve assists MV_1 in controlling (lowering) the clutch oil pressure.

Unlike MV_1, it performs an ON and OFF operation.

Controlling the clutch oil pressure

Modulator valve (2) is energized simultaneously when the current in MV_1 changes from high to low current flow. It is de-energized some time after the current in MV_1 returns to a higher level and the clutch oil pressure reaches the specified value.

Note
Modulator valve (2)
If MV_2 is damaged or disconnected, the machine will have severe shift shock during clutch engagement. In this case, the lowest clutch pressure will be only about 0.7 to 1.0 MPa (100 to 142 psi) during charging. The highest clutch oil pressure reaches the specified value.

Transmission controller failure warning

Should the transmission controller stop working due to any of the following causes, a dash mounted monitor lamp lights up to give warning.

T/M controller failure monitor lamp 

If a warning is given as a result of self-diagnosis of the transmission controller

The transmission controller has a self-diagnosis function incorporated in it, and if the computer program becomes abnormal due to abuse or defect, a dangerous condition may occur, the monitor lamp lights up and all the outputs from the controller are turned OFF. In this case, the LED on the output circuit side of the controller will not be lit. Some input LED may still be operating (ON).

If the circuit protector (CP) is turned OFF

If the circuit protector is automatically turned OFF due to a short circuit, etc., in the output circuit, the monitor lamp lights up and all the outputs from the controller are turned OFF. In this case, the none of the LEDs on the controller will be lit.

Replacement of the transmission controller

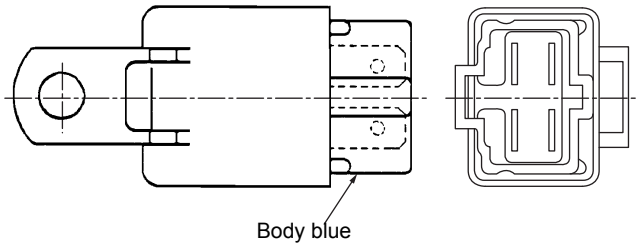
If the monitor lamp lights up under the cause 1 above, it is an indication that the transmission controller's program has malfunctioned and the transmission controller assembly must be replaced.

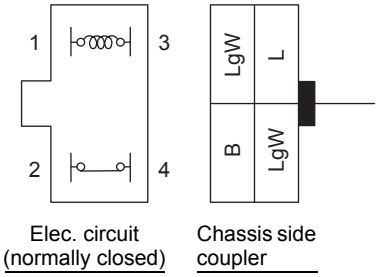
If the monitor lamp lights up under the cause 2 above, the cause is NOT the transmission controller.

Once the cause is removed, the controller may be reset and continue to be used.

To reset simply turn the circuit protector switch to "ON".

Controller fault relay





K95ZV62016

Rating	DC 24 V
Operation voltage	16 V or less
Reset voltage	2.4 V or more
Coil resistance	320 Ω

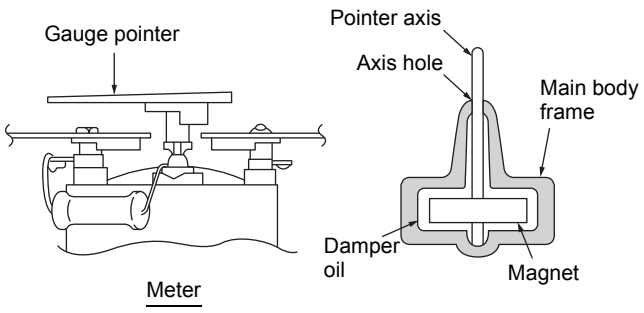
Operation monitor lamps

No.	Monitor item	Monitor lamp		Lighting condition	Remarks
		Lighting color	Symbol		
1	Parking	Red	(P)	When parking brake switch is set to ON	
2	Transmission cut off	Green		When transmission cut off switch is set to ON	For declutch
3	Working light	Green		When working light (rear) switch is set to ON	
4	Turn signal indicator (left)	Green		When turn signal lever (left) is actuated	
5	Turn signal indicator (right)	Green		When turn signal lever (right) is actuated	
6	High beam	Blue		When head lamp is set to high beam	
7	Auto shift	Green	AUTO	When transmission shift lever is set to automatic position	
8	Neutral	Green	N	When transmission shift lever is set to neutral position	
9	Transmission status	Yellow	YELLOW LED	When transmission shift lever is set to corresponding gear (1~4)	
10	Vibration damper	Green		When vibration damper switch is set to ON	(OPT)

Caution on storage of individual instrument panel

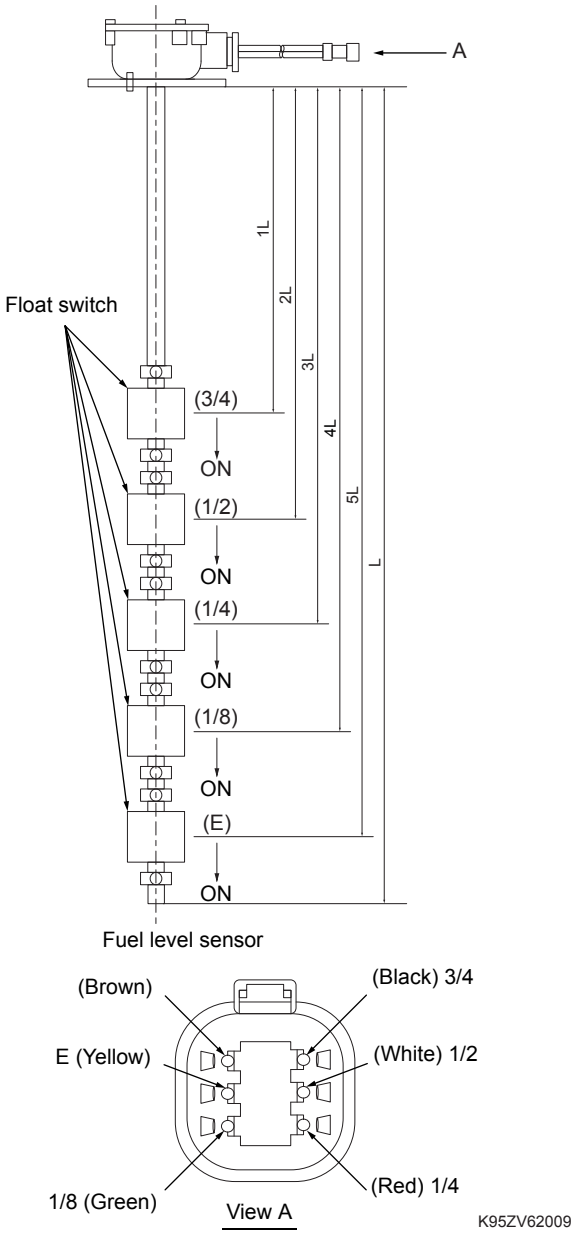
IMPORTANT

When storing the instrument panel individually, make sure that the panel face (transparent face) faces upward.
If the panel face faces below the vertical direction, the damper oil may leak from meter pointer axis holes.



70ZV62039

(S/N 0263~, 9065~)


A
1L
2L
3L
4L
5L
L
Float switch
(3/4)
ON
(1/2)
ON
(1/4)
ON
(1/8)
ON
(E)
ON
Fuel level sensor
(Brown)
(Black) 3/4
E (Yellow)
(White) 1/2
1/8 (Green)
(Red) 1/4
View A
K95ZV62009

Diagnostic (T/M controller) failure code detection condition

1. Failure code indication for current failure:

   If more than one failure code is stored in memory the newest one is displayed first. To review older failure codes switch ON the diagnostic switch.

2. Shift lever failure detection codes (codes 11~23):

   Codes 11~22 indicate a short circuit in either the shift lever or the wiring. Code 23 indicates an open circuit in the shift lever or a broken wire. The machine may operate normally in all but one speed.

3. QUAD switch malfunction code (code 25):

   Normally the switch is not pushed for more than 10 seconds. If the switch stays ON (contacts closed) for more than 10 seconds the controller considers it to be a short circuit in the switch or its wiring.

4. Inching (declutch) switch malfunction code (code 26):

   When using the inching (also called declutch or clutch-cutout) switch it is normal for it to be ON (contacts closed) while the brake pedal is depressed. However, if the switch remains ON for more than 3 minutes the controller considers that there is a short in the switch or its wiring. Should the operator keep the pedal depressed more than 3 minutes the malfunction code will be stored in the controller but the machine will continue to operate normally.

5. Solenoid open circuit codes (codes 51~58):

   If the transmission solenoid coil is internally open, has high resistance (more than 35 Ω), or a broken wire between the controller and the solenoid coil. The machine will not move in the gear that has the open circuit (malfunction codes 51~56). The symptom may be the same as 2 above. Read the malfunction code to determine which malfunction has actually occurred.
   If the modulator valve 2 (MV2) is disconnected (malfunction code 57) harsh shifting will occur.
   If the auto-brake solenoid coil is defective or disconnected the auto-brake feature will not work.

6. Modulator Valve (MV1) open circuit codes (code 59):

   The normal current value is about 450 milliamperes (mA) through MV1 coil. When the current value through the MV1 coil is less than 5 mA for more than 10 seconds the controller senses an open circuit in the coil or its wiring. In this case the transmission pressure will be very low and may not move.

7. Pressure differential sensor malfunction #1 (code 60):

   When this code is indicated the sensor itself is defective. However, the internal spool may be stuck rather than an electrical defect.

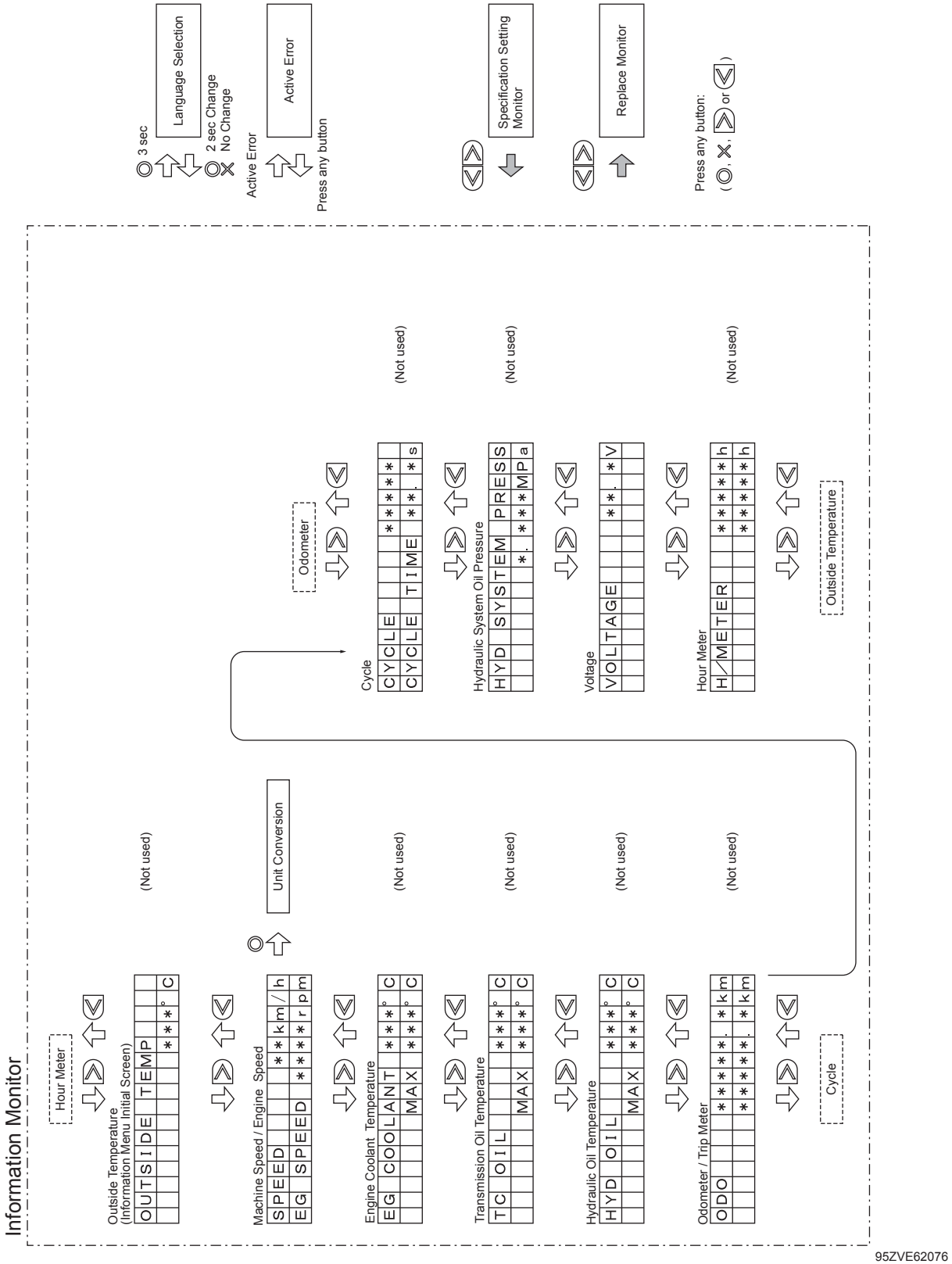
8. Pressure differential sensor malfunction #2 (code 61):

   This code indicates the signal from the sensor is not correct. While the sensor may be electrically or mechanically (stuck spool) defective there is the possibility that internal leakage in the clutch pack seal (s). Replacement to the sensor will not correct the problem if the seal is defective.

9. Engine speed sensor malfunction (code 71):

   This code occurs when the signal from the engine speed sensor is extremely high (over 3,000 min^{-1} (rpm)).
   While this could occur from an engine over speed situation it can also occur from electronic "noise" from other sources. Be sure the wiring from the sensor to the controller is twisted through the harness. Twisting the wire prevents it from acting like an antenna and picking up the electronic noise generated from other sources.

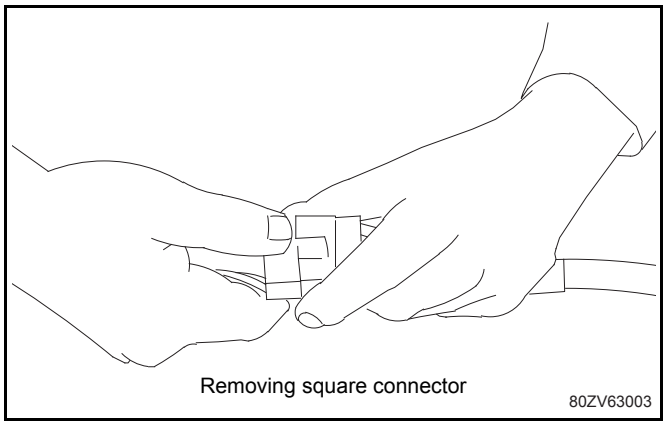
   Note
   If the speed sensor is defective or disconnected no LED characters will be displayed when the engine is running (refer to the controller display).


Information Monitor
Hour Meter
Outside Temperature
(Information Menu Initial Screen)
OUTSIDE TEMP
**.*°C
(Not used)
Machine Speed / Engine Speed
SPEED
***km/h
EG SPEED
****rpm
Unit Conversion
Engine Coolant Temperature
EG COOLANT
***.*°C
MAX
***.*°C
(Not used)
Transmission Oil Temperature
TC OIL
***.*°C
MAX
***.*°C
(Not used)
Hydraulic Oil Temperature
HYD OIL
***.*°C
MAX
***.*°C
(Not used)
Odometer / Trip Meter
ODO
*****.*km
*****.*km
(Not used)
Cycle
Odometer
Cycle
CYCLE
*****
CYCLE TIME
****.*s
(Not used)
Hydraulic System Oil Pressure
HYD SYSTEM PRESS
***.*MPa
(Not used)
Voltage
VOLTAGE
**.*V
Hour Meter
H/METER
*****h
*****h
Outside Temperature
3 sec
Language Selection
2 sec Change
No Change
Active Error
Active Error
Press any button
Specification Setting
Monitor
Replace Monitor
Press any button:
(, or)

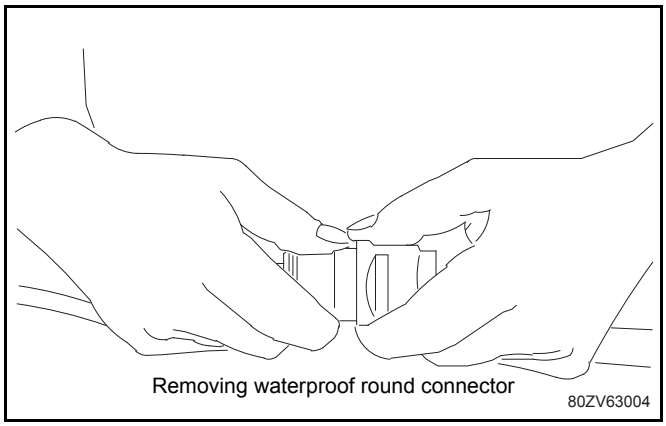
95ZVE62076

Cautions Regarding Electric Circuit Check

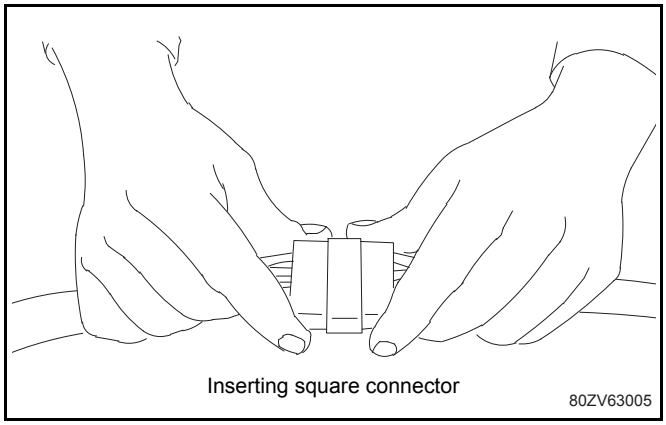
Disconnecting or reinstalling connector



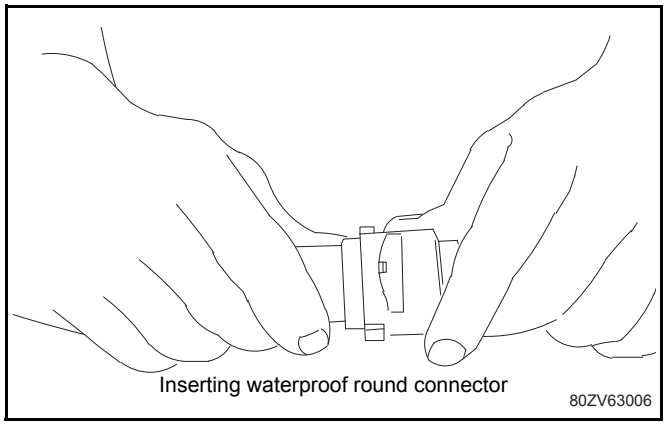
Removing square connector 80ZV63003



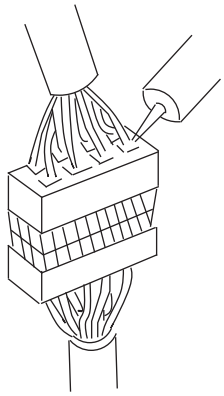
Removing waterproof round connector 80ZV63004



Inserting square connector 80ZV63005



Inserting waterproof round connector 80ZV63006



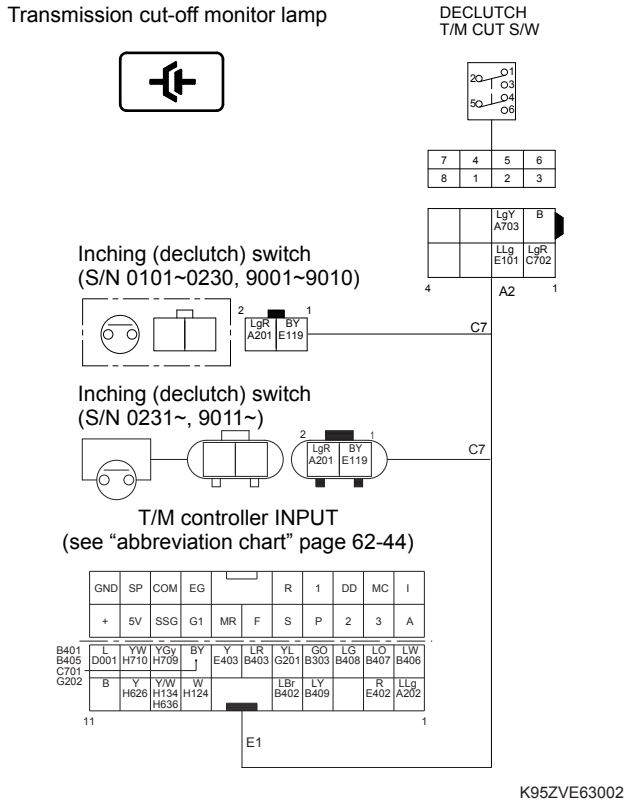
80ZV63007

1. Before disconnecting or reinstalling the connector, be sure to turn the power off (turn the starter switch to OFF).

2. To disconnect a connector, firmly grab the connector, and press and hold the stopper claw. While holding down the claw, pull out the connector in the straight direction. Do not pull the electric cable or wires. They may be damaged. Do not twist the connector or the female terminal cover may be damaged to cause poor contact.

3. When reconnecting, insert it until the stopper claw clicks.
   If the connector is not completely connected, it may cause poor contact.

Inching (declutch) input electrical circuit check



Turn the transmission cut-off (Declutch) switch on the instrument panel "ON". Note that the transmission cut-off monitor lamp will light if the lamp circuit is not defective. Press down the left brake pedal, and check the on/off status of the transmission controller "I" LED indicator.

⚠ WARNING

Unexpected movement of the machine may cause an accident resulting in injury or death.
Be sure to observe the following items before starting work.
- Position the machine on level ground, and lower the bucket onto the ground.
- Block the tires with chocks to prevent them from moving

Transmission cut-off switch	Input LED "I"		Judgment		Remarks
	Brake pedal				
	Pressed down	Released			
ON	◎	—	Normal		
	—	—	Abnormal	Disconnect	Inching impossible
	◎	◎	Abnormal	Defective SW or short-circuit	Machine stays in the inching (declutch) mode
OFF	—	—	Normal		Inching function cancel
	◎	◎	Abnormal		Defective wiring

◎ On
— Off

<Step 1> Checking inching switch

Check the conductivity between the cable terminals of each switches and the controller.

<Solution>

Repair or replace the defective cable.

Inching switch specification

(S/N 0101~0230, 9001~9010)

Operating pressure MPa (kgf/cm^2) (psi)	1.1 ± 0.15 (11.2 ± 1.5) (159 ± 21)
Return pressure MPa (kgf/cm^2) (psi)	0.9 ± 0.1 (9.2 ± 1.0) (131 ± 14)
Resistance (Ω)	10.4

(S/N 0231~, 9011~)

Operating pressure MPa (kgf/cm^2) (psi)	0.5 ± 0.1 (5.0 ± 1.0) (71.1 ± 14.2)
Return pressure MPa (kgf/cm^2) (psi)	0.3 ± 0.05 (3.0 ± 0.5) (42.7 ± 7.1)
Resistance (Ω)	6.9

<Step 1> Checking cable of output circuit

Disconnect the connector from the solenoid valve, and then measure the voltage of the connector terminal on the cable side using a tester. Note that the starter switch should be "ON", engine "OFF" and parking switch should be at the OFF position.

Checking positive cable

Terminals to be checked	Voltage	Judgment
Between terminals LgG and body grounding	Approx. 24 V	Normal
	Approx. 0 V	Abnormal

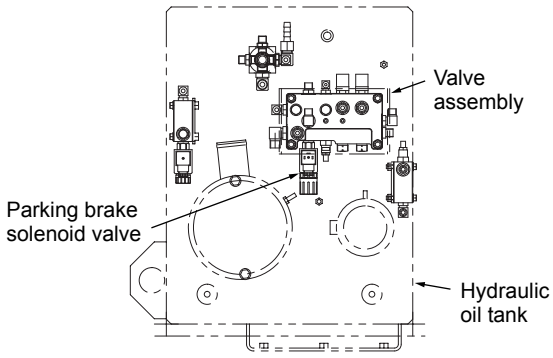
Checking negative cable

Terminals to be checked	Voltage	Judgment
Between terminals L and body grounding	Approx. 0 V	Normal
	Other than 0 V	Abnormal

<Solution>

If a cable is disconnected or a wire broken, measure the voltage of the next connector in the same way. Find the defective cable, and then repair or replace the cable.

<Step 2> Checking solenoid valve



Valve location

95ZV52041

- Measuring coil resistance

  Disconnect the connector from the solenoid valves, and then measure the resistance of the coil using an analog meter.

Coil resistance	Judgment
Approx. 35 Ω	Normal
Disconnect ∞ Ω or short-circuited 0 Ω	Abnormal

Note
The diode is incorporated in the coil.

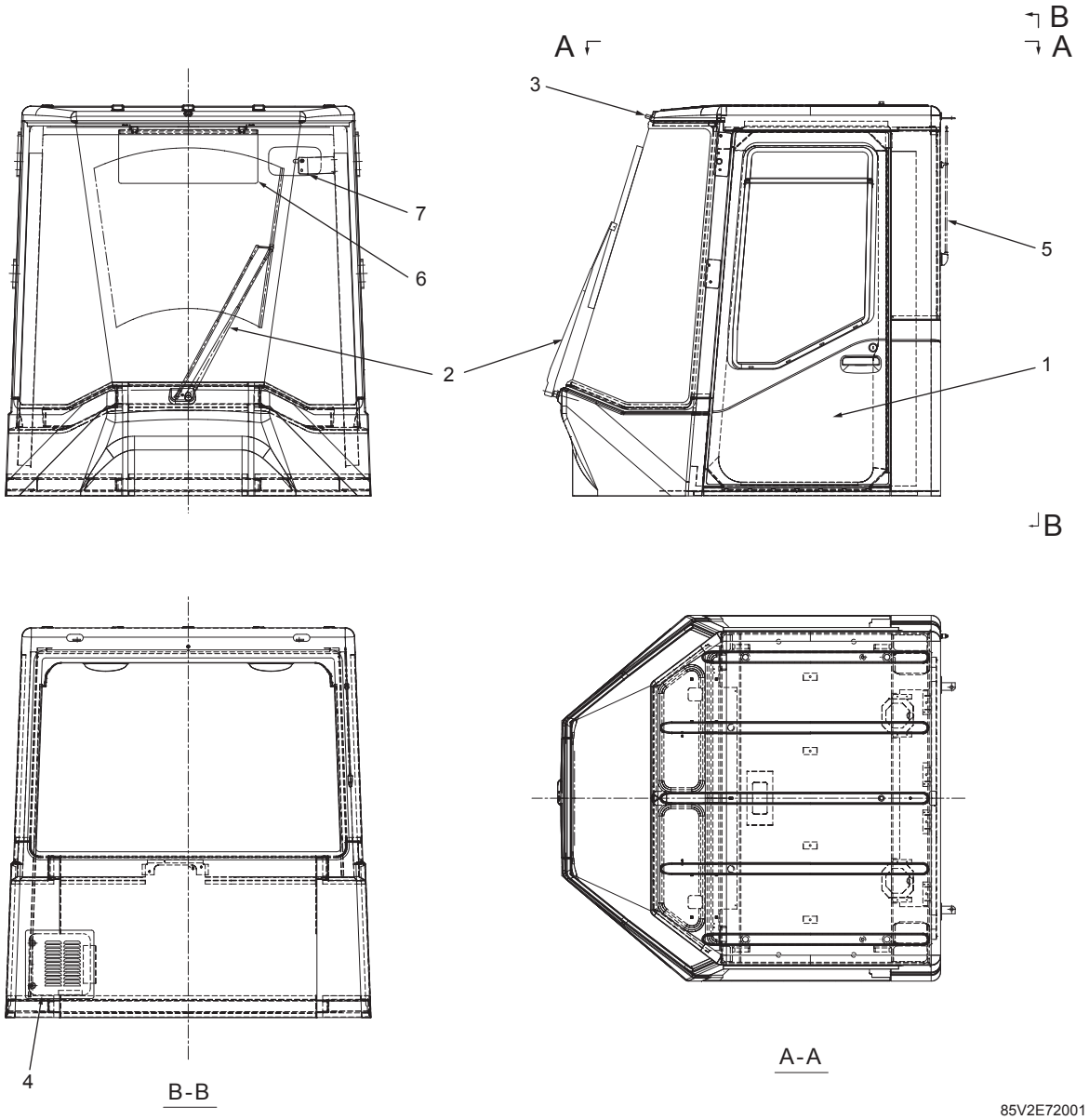
- Checking sticking of solenoid valve

  Run engine and charge the brake accumulator, move the manual operation knob on the solenoid valve, then check whether the parking brake can be turned on and off. If the parking brake cannot be turned on and off, the solenoid valve is stuck.

<Solution>

If wire breakage or a sticking valve is detected in the coil, replace the valve assembly.

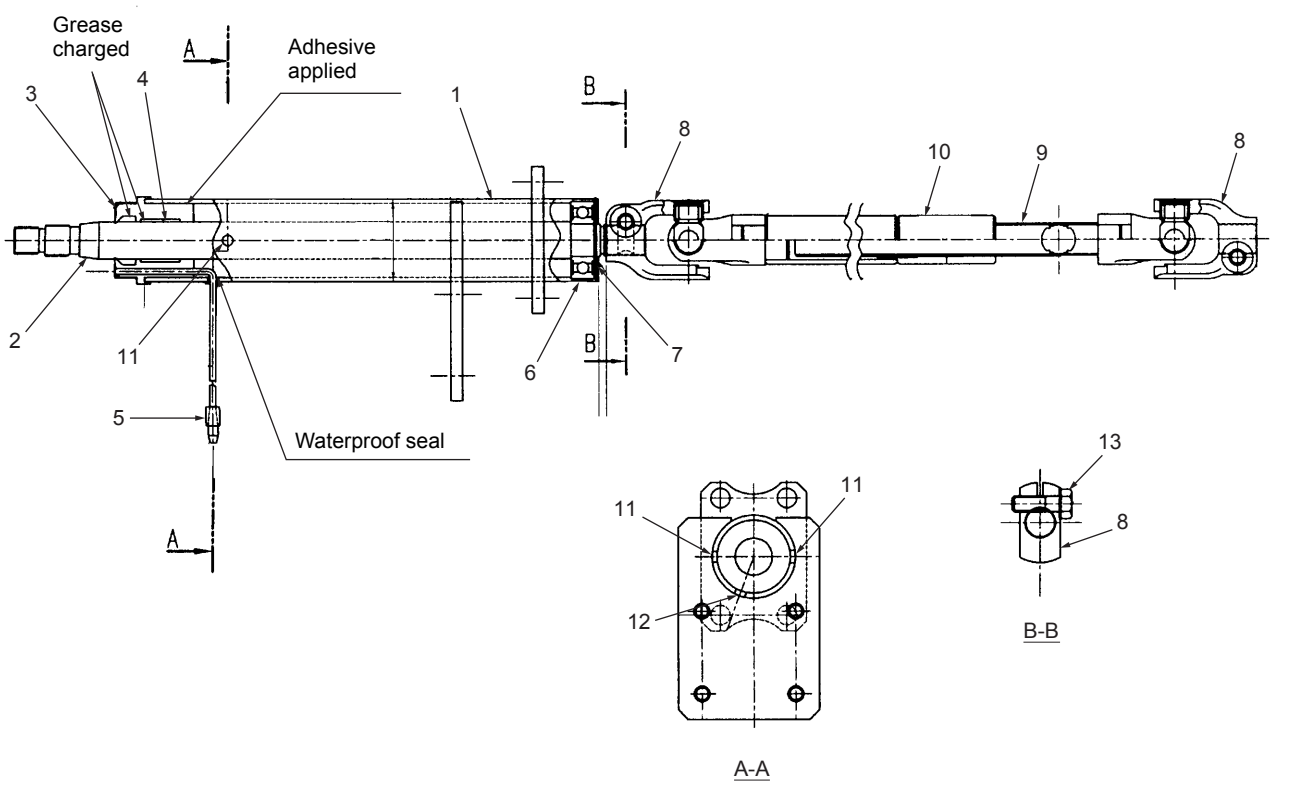
Cabin



The cabin equipped with the ROPS (Roll Over Protective Structure) is provided as standard.

1. Door (left side)
2. Front wiper
3. Window washer jet nozzle
4. Outside air suction port (air conditioner)
5. Antenna
6. Sun visor
7. Rear view mirror

Column shaft



1. Column tube
2. Column shaft
3. Column bushing
4. Bushing
5. Terminal (male)
6. Ball bearing
7. C-shaped snap ring
8. U-shaped joint
9. Serrated shaft
10. Tube
11. Transmission shift lever installation positioning hole
12. Wiring output port
13. Bolt

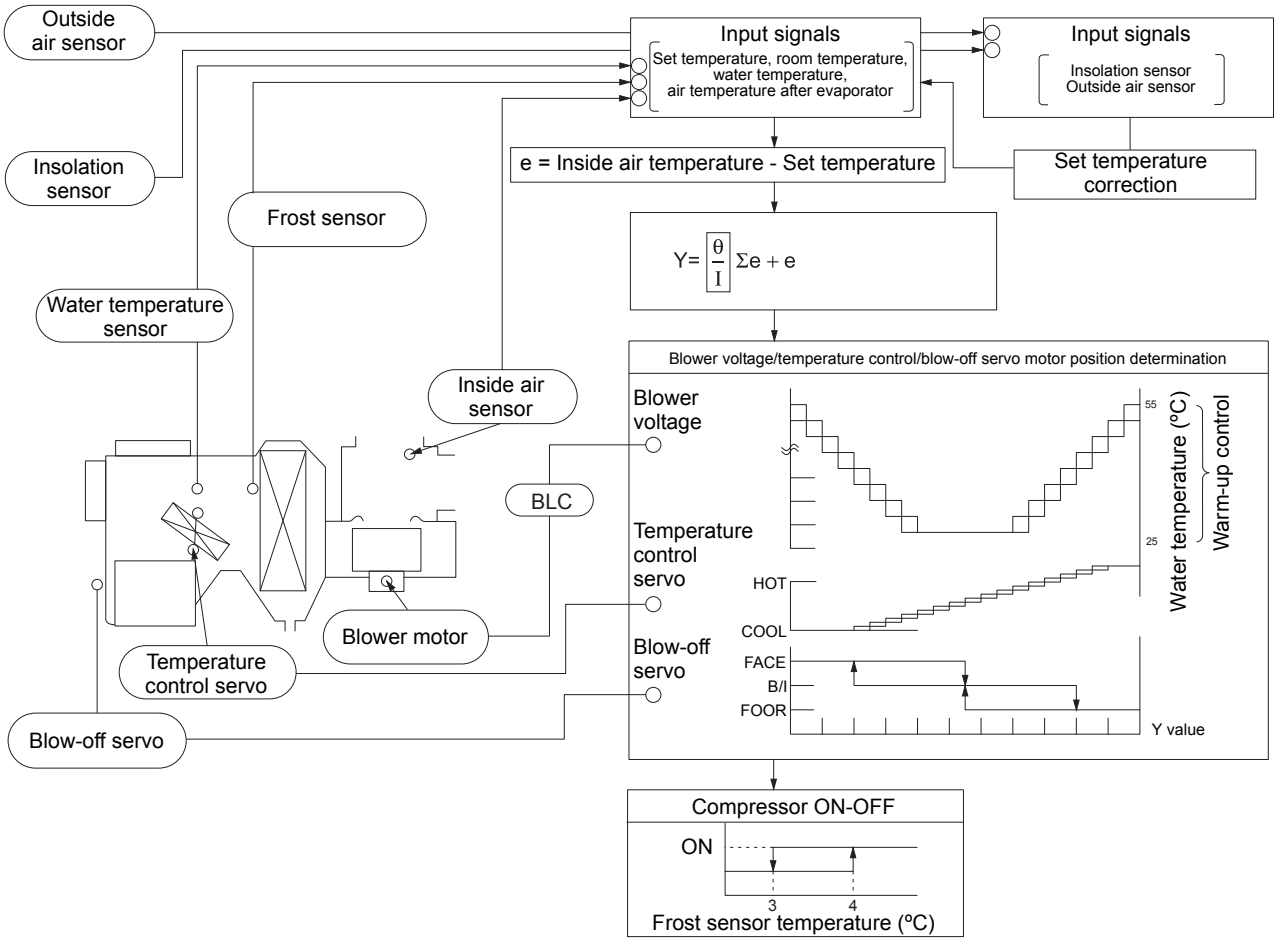
: (13): 25 N-m (2.5 kgf-m)

Shift lever

Refer to "Electrical Group 62".

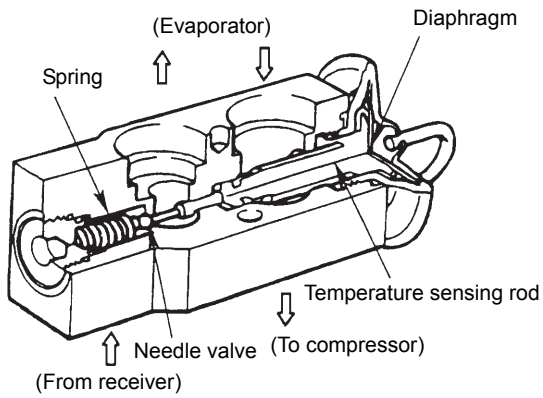
Electrical circuit

Control schematic drawing



95ZVE72018

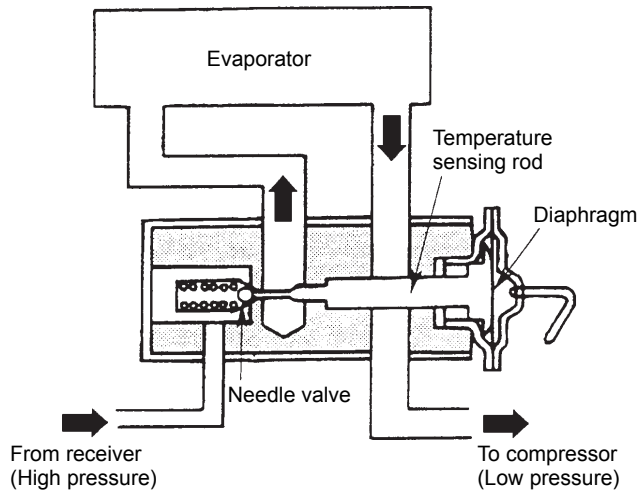
Expansion valve (box type)



Structural drawing of box type expansion valve

97ZV72049

Expansion valve operation



97ZV72050

The expansion valve offers the following two functions.

1. By injecting the liquid refrigerant at high temperature and high pressure which has gone through the receiver from a small hole, the expansion valve expands dramatically the liquid refrigerant into mist refrigerant at low temperature and low pressure.

2. Promptly in accordance with the vaporized status of the refrigerant inside the evaporator, the expansion valve adjusts the refrigerant quantity.
   In order to ensure that the evaporator offers its full performance, the liquid refrigerant should be kept in a state in which it deprives heat of the adjacent area and its evaporation is always completed at the exit of the evaporator.
   To realize this, the expansion valve automatically adjusts the refrigerant quantity in accordance with fluctuation of the temperature inside the cabin (cooling load) and fluctuation of the rotation speed of the compressor.
   The expansion valve consists of a needle valve, a diaphragm and a temperature sensing rod.
   The temperature sensing rod detects the temperature of the refrigerant which has gone through the evaporator, and transfers the detected temperature to the refrigerant gas chamber located in the upper portion of the diaphragm chamber.

The temperature sensing rod detects the temperature of the refrigerant which has gone through the evaporator, and transfers the detected temperature to the refrigerant gas chamber located in the upper portion of the diaphragm chamber.

The gas pressure changes in accordance with the detected temperature, the temperature sensing rod directly connected to the diaphragm is moved, then the needle valve opening is adjusted.

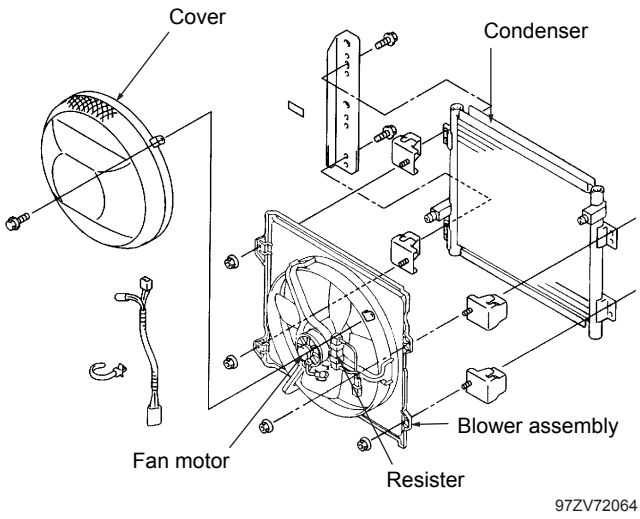
- When the temperature at the exit of the evaporator is low (that is, when the cooling load is small)

The gas pressure inside the diaphragm chamber becomes low, the volume decreases, the temperature sensing rod moves to the right, and the needle valve is closed.

- When the temperature at the exit of the evaporator is high (that is, when the cooling load is large)

The gas pressure inside the diaphragm chamber becomes high, the volume increases, the temperature sensing rod moves to the left, the needle valve is opened, and more quantity of refrigerant is supplied to the evaporator.

Condenser unit



Each condenser unit consists of a condenser, a condenser fan motor and a resistor. Two condenser units are arranged in series with the piping.

The condenser units cool down the gaseous refrigerant at high temperature and high pressure sent from the compressor, and change it into liquid refrigerant.

Condenser

The condenser consisting of tubes and fins cools down the gaseous refrigerant at high temperature and high pressure (70ºC, 1,618 kPa (16.5 kgf/cm^2)) sent from the compressor, and change it into liquid refrigerant during passing tubes.

Condenser fan motor

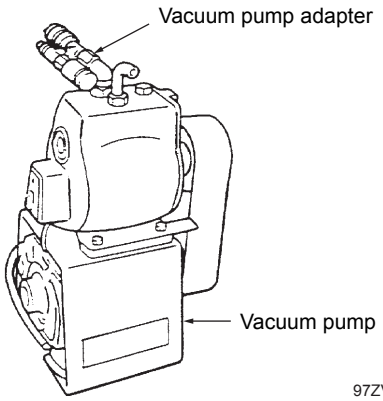
The condenser fan motor used to cool down the condenser is mounted on the condenser together with a fan shroud.

Condenser specifications

Voltage	DC 24 V
Power consumption	80 W x 10%
Air quantity	1,750±10 m^3/Hr
Number of rotations of motor	2,200 min^{-1}

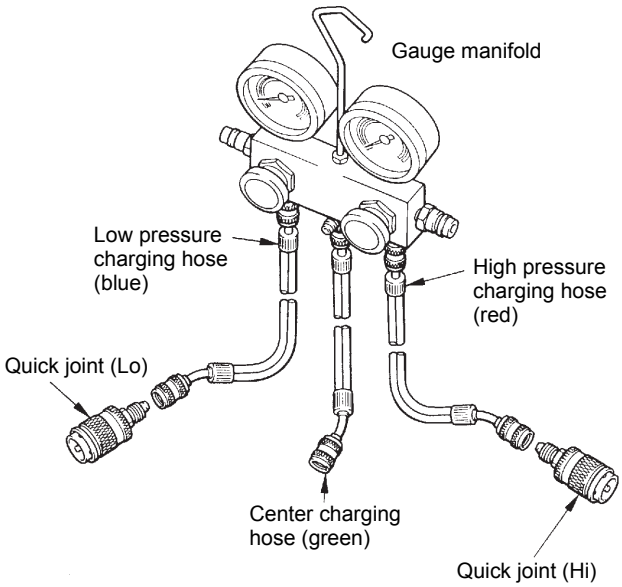
Refrigerant charging tools

Vacuum pump



A vacuum pump should be used to eliminate the moisture inside the circuit.

Charging hose and quick joints



These three hose of three colors are used to evacuate the air and charge the gas. (The colors may be different depending on the manufacturer.)

Red hose
Connects the high pressure valve of the gauge manifold and the high pressure charging valve (with "H" mark on its cap) of compressor outlet hose.

Blue hose
Connects the low pressure valve of the gauge manifold and the low pressure charging valve (with "L" mark on its cap) of the compressor inlet hose.

Green hose
Connects the center valve of the gauge manifold and the vacuum pump (or the service can valve).

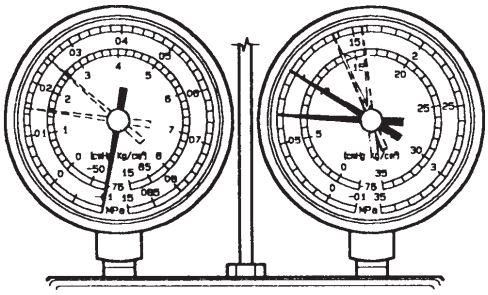
When the moisture has entered into the cooling circuit.

<Low pressure side>
Abnormal status
Vacuum

Normal status
215~275 kPa
(2.2~2.8 kgf/cm^2)

<High pressure side>
686~981 kPa
(7~10 kgf/cm^2)

1,470~1,765 kPa
(15~18 kgf/cm^2)



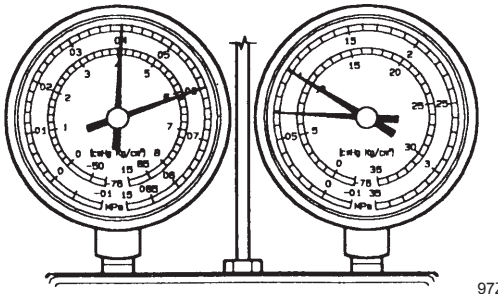
97ZV72094

Symptom	Cause	Inspection/action point
- Air conditioner operates normally for a while after startup, but pressure on low pressure side indicates a vacuum value later.	Expansion valve is frozen due to entry of moisture.	- Inspect expansion valve, replace if needed. - Replace receiver dryer. - After finishing work, evacuate system completely and recharge.

When the compression in compressor is defective.

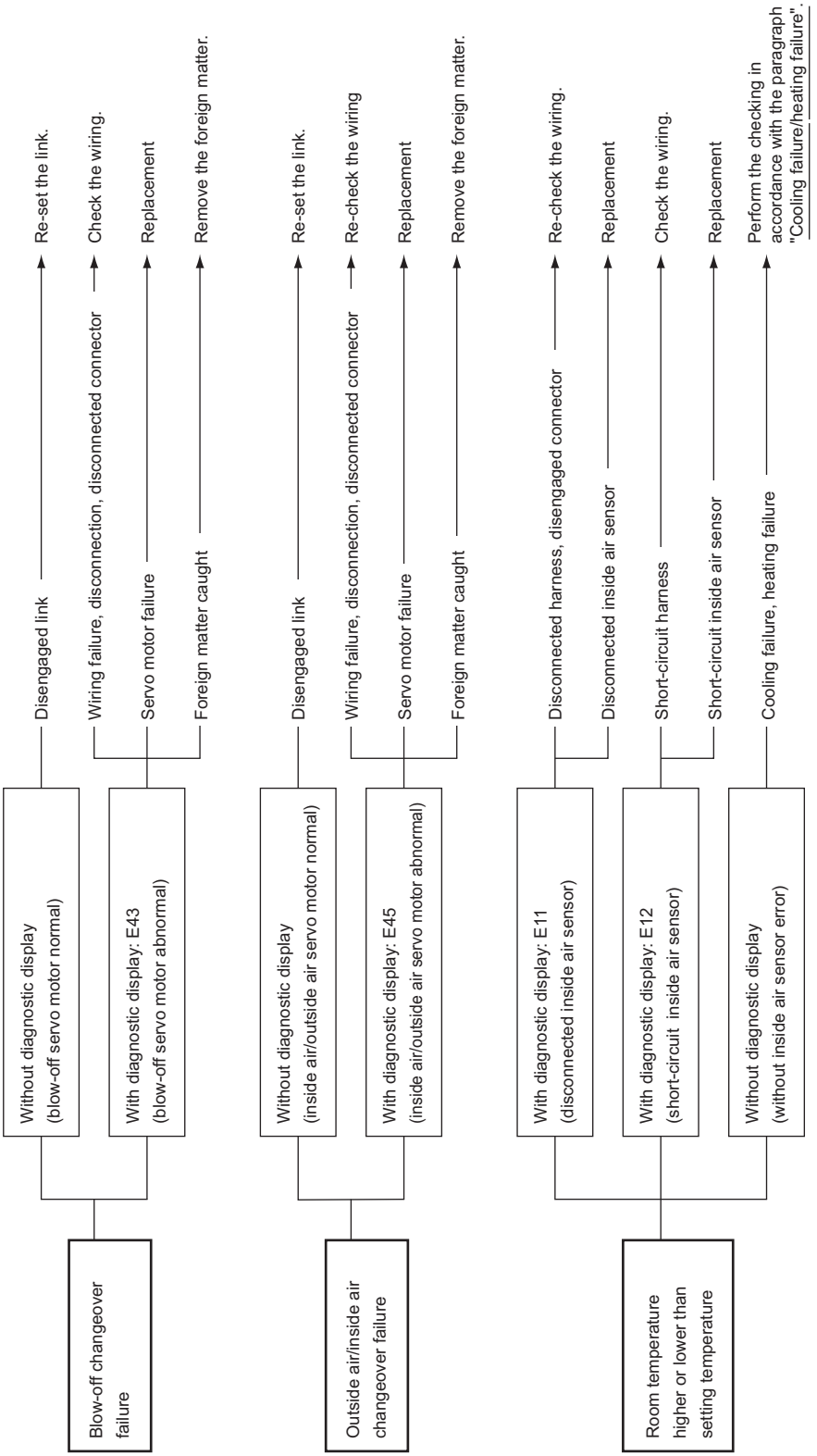
<Low pressure side>
392~588 kPa
(4~6 kgf/cm^2)

<High pressure side>
686~981 kPa
(7~10 kgf/cm^2)



97ZV72095

Symptom	Cause	Inspection/action point
- Pressure on low pressure side is unusually high, and pressure on high pressure side is unusually low. - Shortly after air conditioner turns off, pressure becomes equal between high pressure side and low pressure side.	Compressor is defective.	- Review 2nd symptom. - If pressure in compressor is low, compressor will not build much heat due to lack of pressure. - Replace compressor. - After finishing work, evacuate system and recharge.


Blow-off changeover failure
Without diagnostic display (blow-off servo motor normal)
Disengaged link
Re-set the link.
With diagnostic display: E43 (blow-off servo motor abnormal)
Wiring failure, disconnection, disconnected connector
Check the wiring.
Servo motor failure
Replacement
Foreign matter caught
Remove the foreign matter.
Outside air/inside air changeover failure
Without diagnostic display (inside air/outside air servo motor normal)
Disengaged link
Re-set the link.
With diagnostic display: E45 (inside air/outside air servo motor abnormal)
Wiring failure, disconnection, disconnected connector
Re-check the wiring
Servo motor failure
Replacement
Foreign matter caught
Remove the foreign matter.
Room temperature higher or lower than setting temperature
With diagnostic display: E11 (disconnected inside air sensor)
Disconnected harness, disengaged connector
Re-check the wiring.
Disconnected inside air sensor
Replacement
With diagnostic display: E12 (short-circuit inside air sensor)
Short-circuit harness
Check the wiring.
Short-circuit inside air sensor
Replacement
Without diagnostic display (without inside air sensor error)
Cooling failure, heating failure
Perform the checking in accordance with the paragraph "Cooling failure/heating failure".

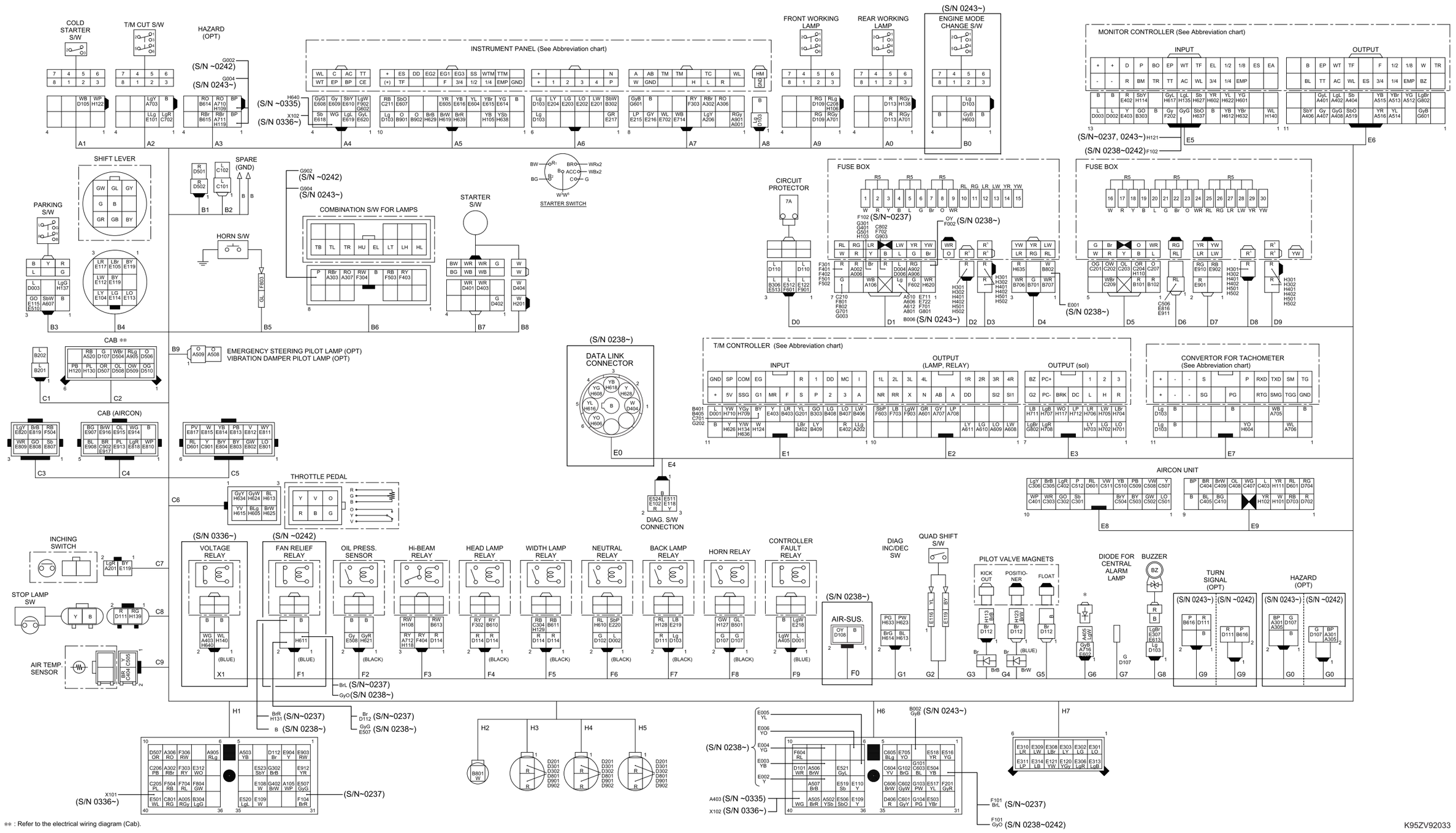
80V2E01018

N

O

P

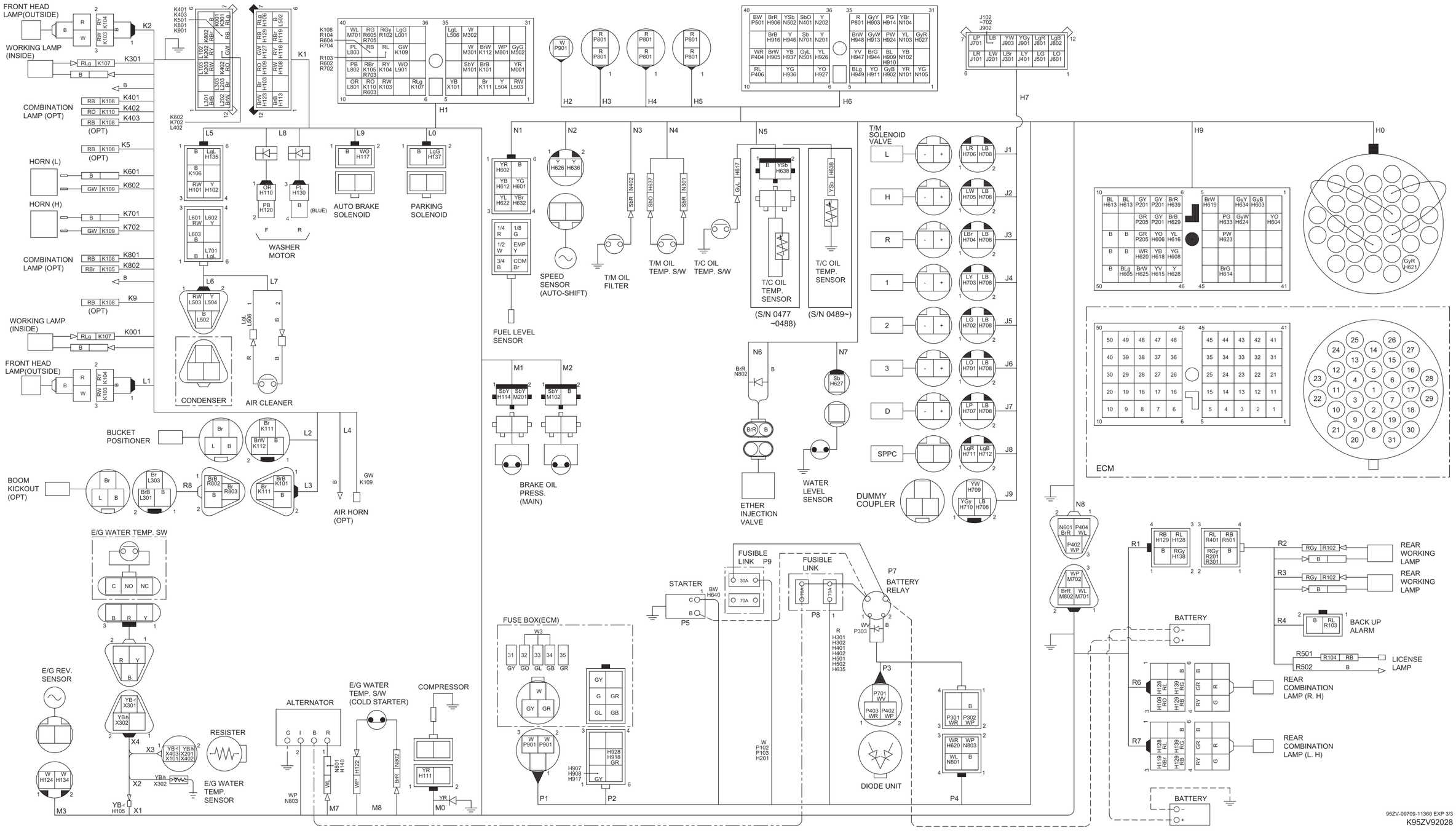
Electrical Wiring Diagram (1/2) (S/N 0101~0358)



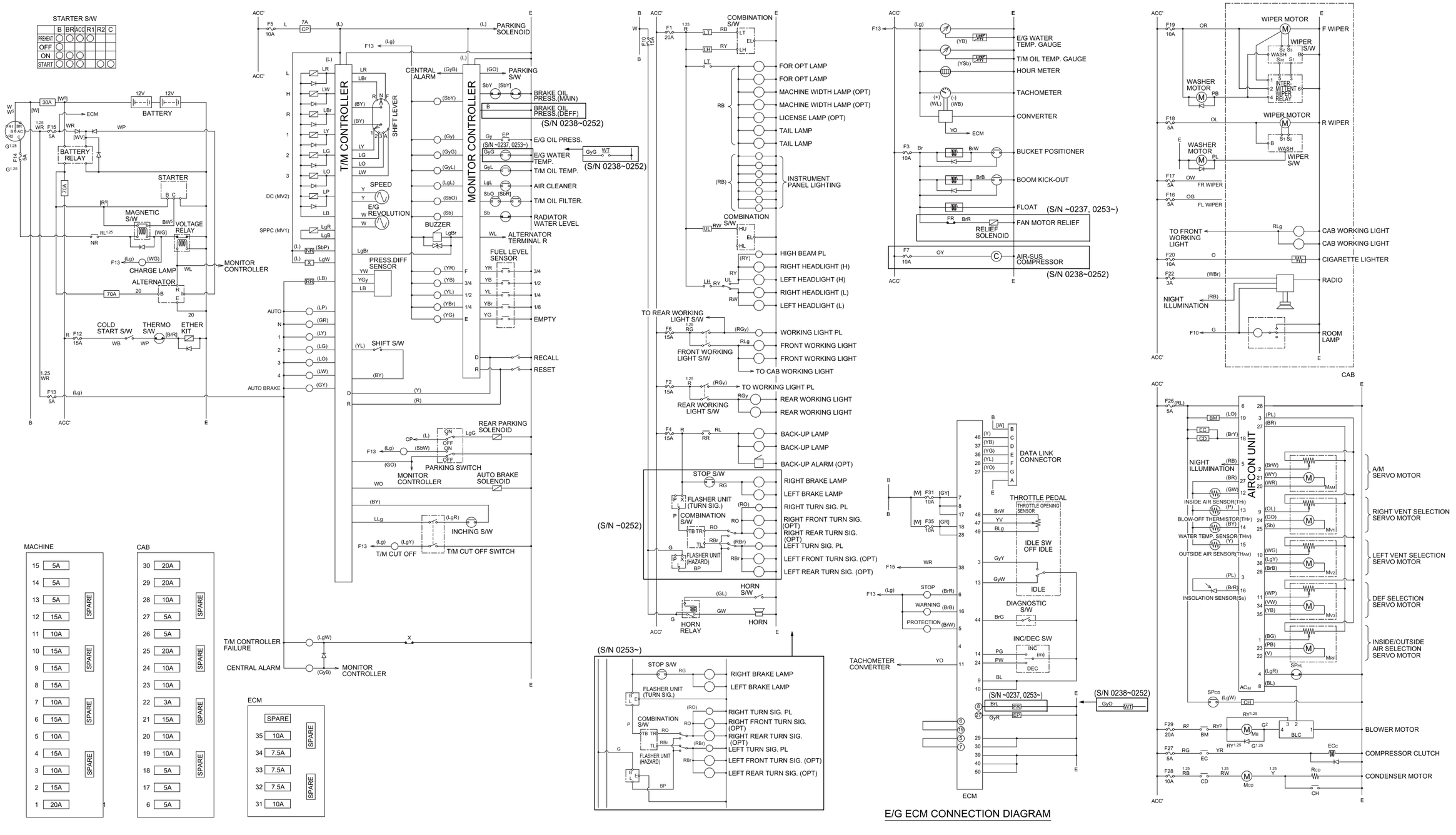
** : Refer to the electrical wiring diagram (Cab).

K95ZV92033

Electrical Wiring Diagram (3/3) (S/N 0561~)

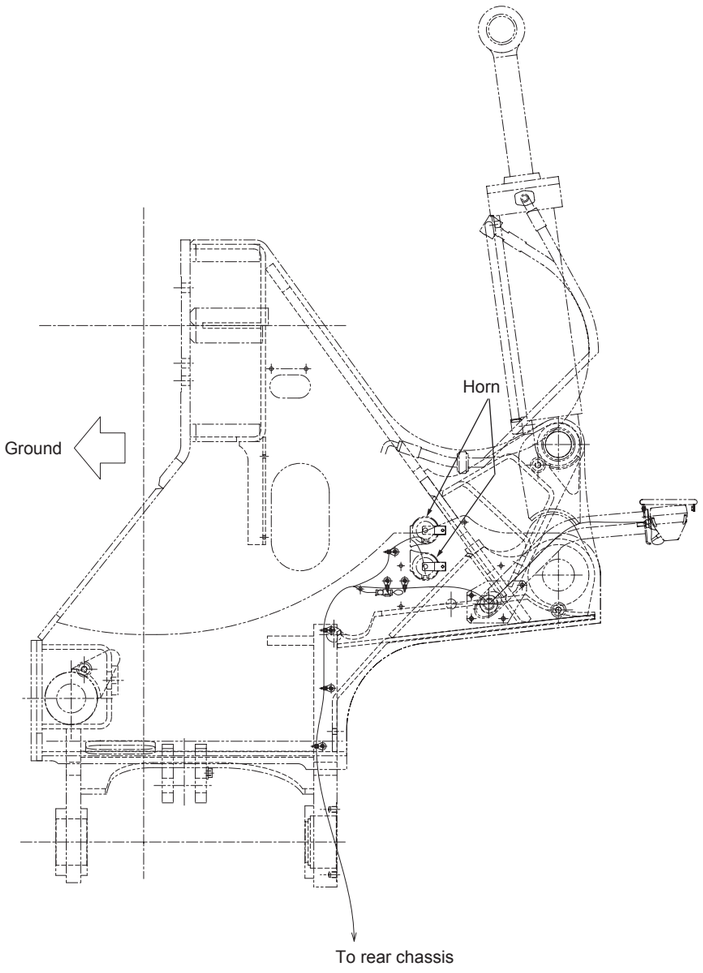


Electrical Connection Diagram (S/N 0101~0358)

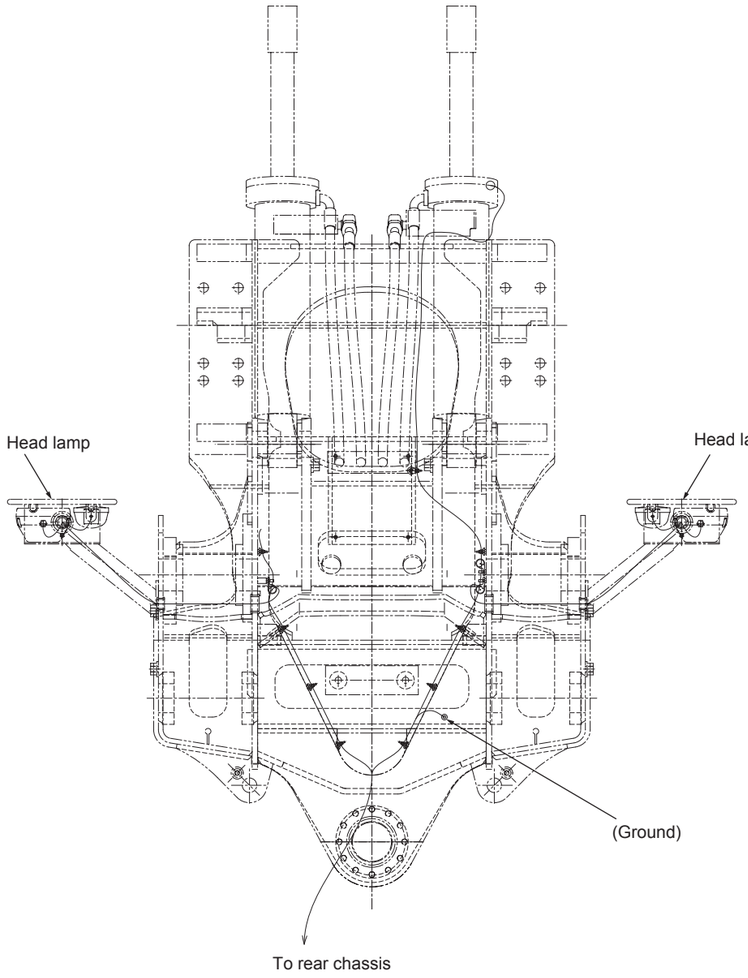


Electrical Equipment Layout

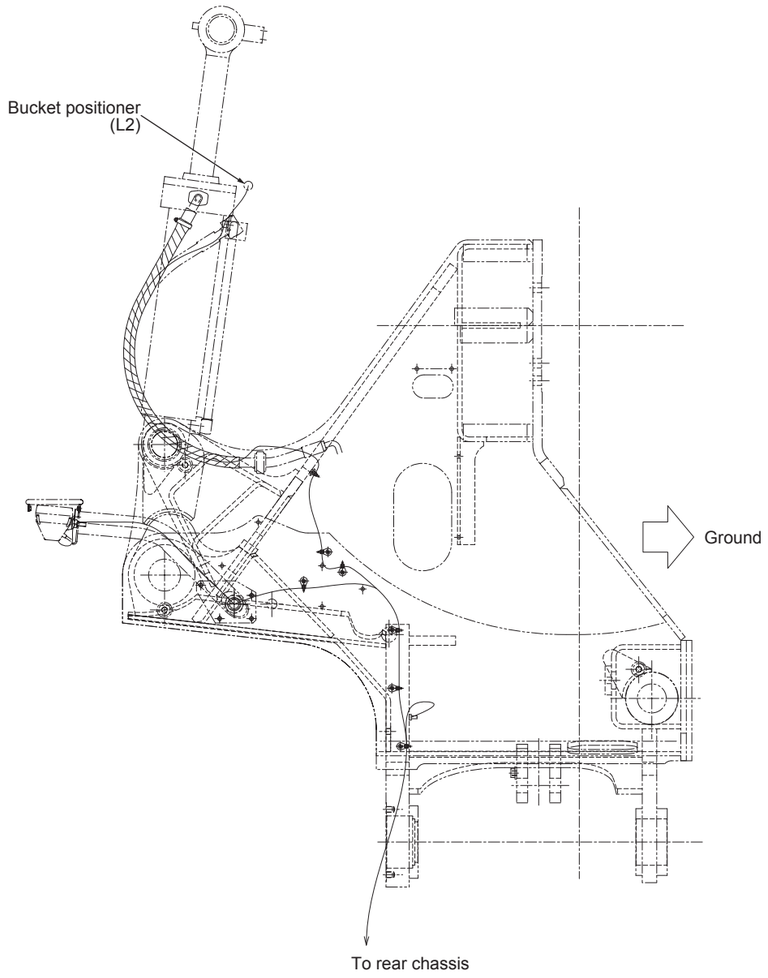
Front chassis (S/N 0101~)



LH Side



Top View



RH Side