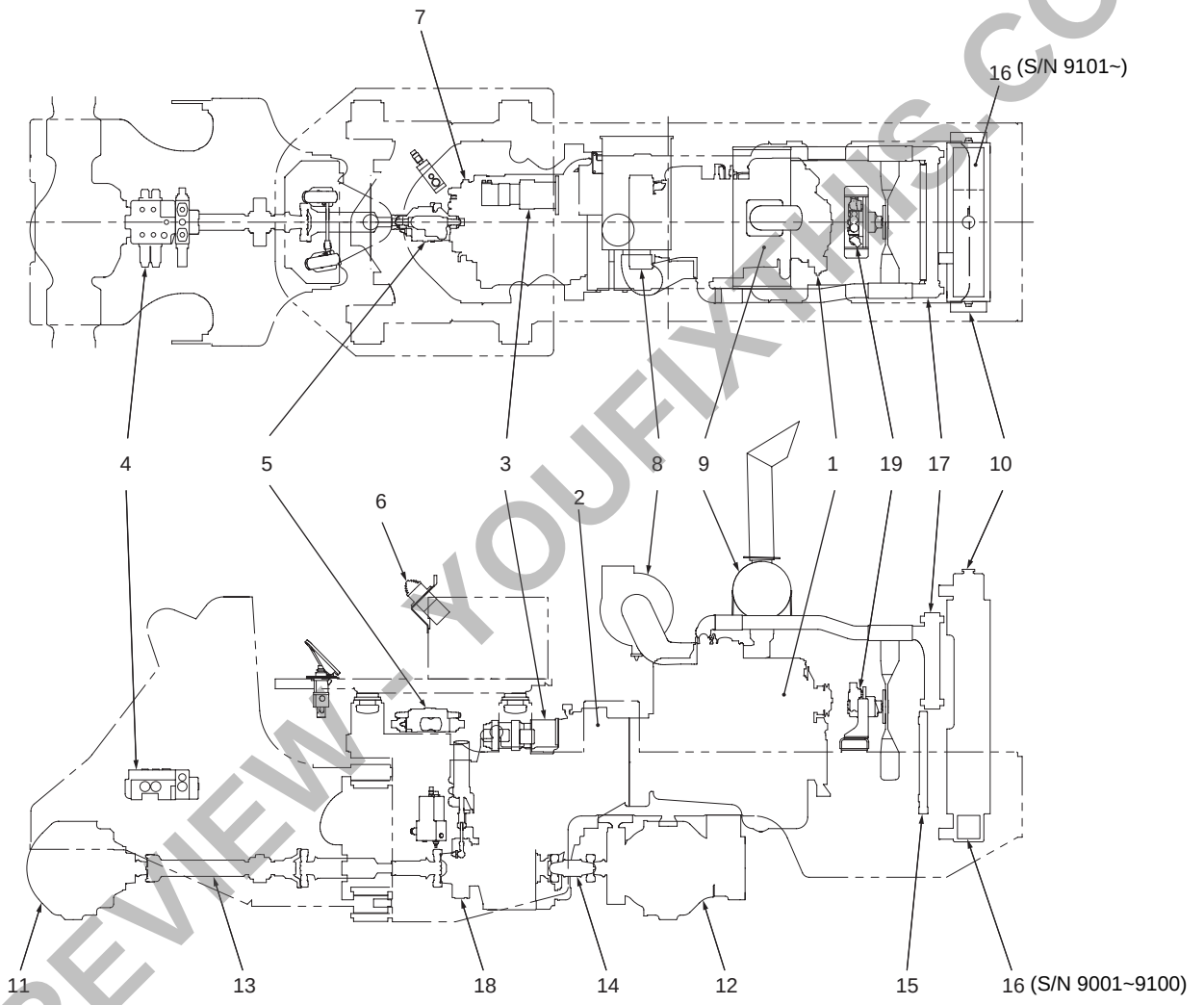
Outline

Layout of main components



85V2E00001

1. Engine assembly (Cummins QSC8.3)
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. Muffler
10. Radiator
11. Front axle assembly
12. Rear axle assembly
13. 2nd propeller shaft
14. 3rd propeller shaft
15. Hydraulic oil cooler (air-to-oil type)
16. T/C oil cooler
17. Air charge cooler
18. Parking brake
19. Fan motor

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Standard Measurement Values for Performance Check

Measurement conditions
Temperature of torque converter oil: 50~80°C (120~180°F)
Temperature of hydraulic oil: 50~80°C (120~180°F)
Temperature of engine coolant: 50~80°C (120~180°F)

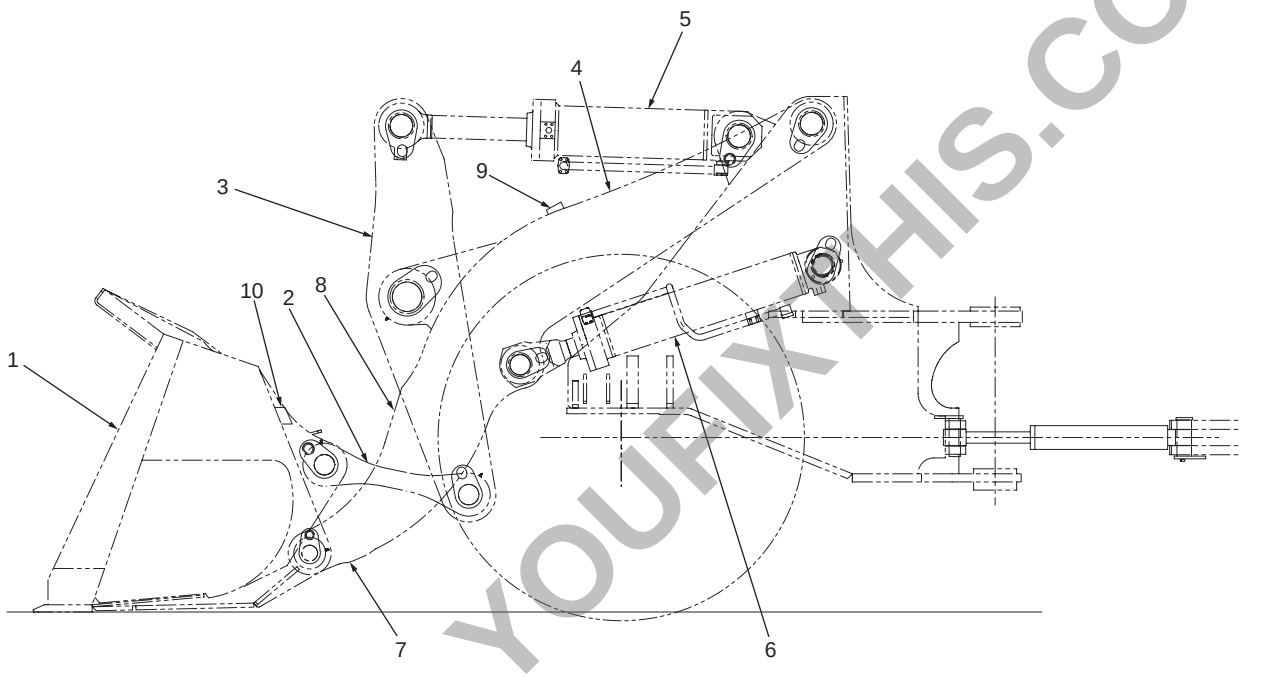
Item				Standard measurement values for performance check		Remarks
System	Measurement item			Normal	Fuel efficient mode	
Engine	Engine speed (min^{-1}) (rpm) (S/N 9001~9200)	Minimum no-load speed, Low Idle (LI)		800±50		725 in hibernate mode
		Maximum no-load speed, High Idle (HI)		2,250±50		
		Maximum speed in torque converter stall mode		2,250±100	2,050±100	
		Maximum speed in multiple control valve relief mode		2,250±100	1,955±100	
		Maximum speed in torque converter stall plus multiple control valve relief mode		1,795 $^{+150}_{-100}$	1,655 $^{+150}_{-100}$	
	Engine speed (min^{-1}) (rpm) (S/N 9201~)	Minimum no-load speed, Low Idle (LI)		800±50		725 in hibernate mode
		Maximum no-load speed, High Idle (HI)		2,250±50	2,050±50	
		Maximum speed in torque converter stall mode		2,250±100	2,050±100	
		Maximum speed in multiple control valve relief mode		2,250±100	2,250±100	
		Maximum speed in torque converter stall plus multiple control valve relief mode		1,795 $^{+150}_{-100}$	1,655 $^{+150}_{-100}$	
Transmission	Clutch pressure MPa (kgf/cm^2) (psi)	Engine speed	Idling (LI)	1.3±0.2 (13±2) (185±28)		
			Maximum (HI)	1.5±0.2 (15±2) (213±28)		
	Clutch time lag (sec)	Neutral→Forward 1st speed (engine speed: 1,500 min^{-1} (rpm))		0.3±0.1		Before wheels move

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Front Chassis

Loading linkage



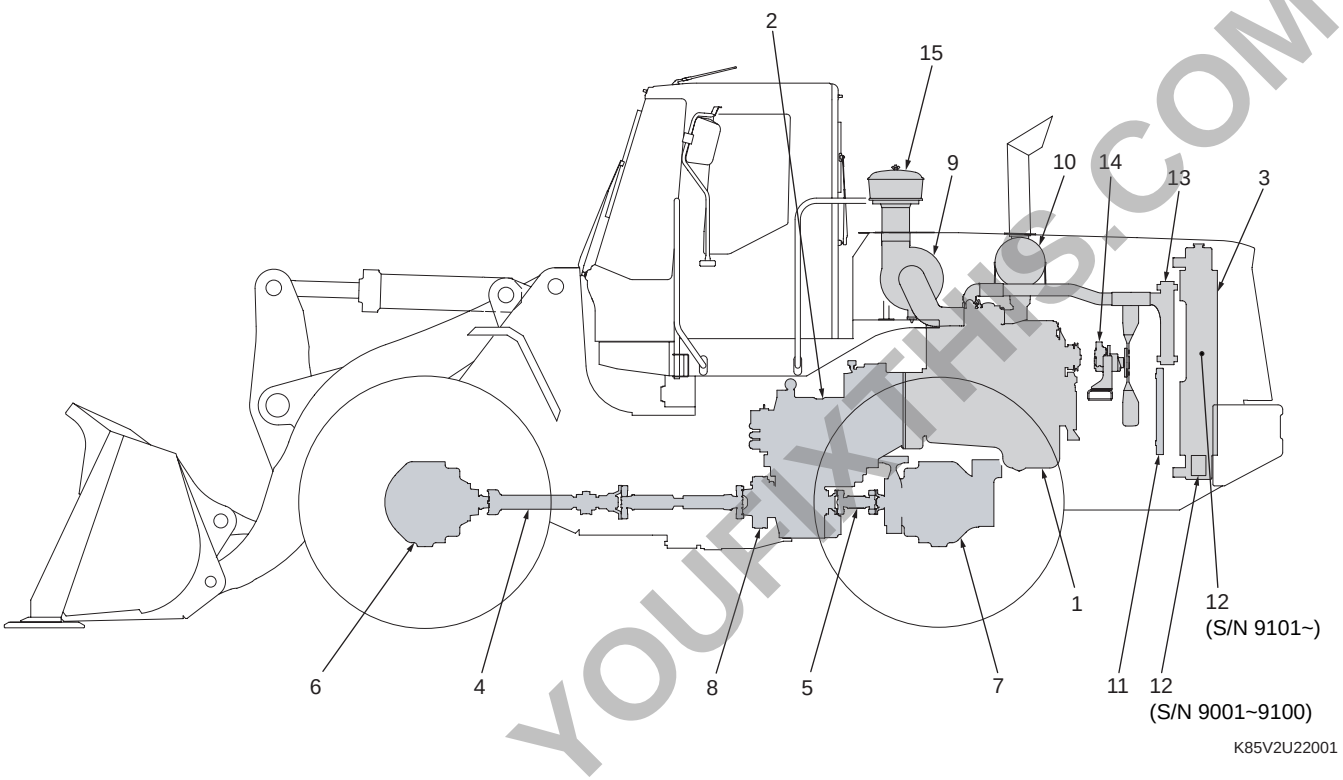
85ZVE12001

1. Bucket
2. Link
3. Lever
4. Boom
5. Bucket cylinder
6. Boom cylinder
7. Dump stopper surface
8. Roll-back stopper surface
9. Lever stopper surface
10. Bucket stop plate
    (Design differs by manufacturer of the attachment)

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Power Line



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
15. Pre cleaner

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.

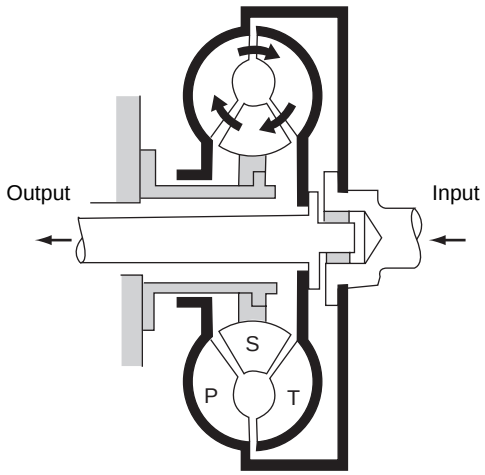
Finally the power is transmitted through the axles to the planetary gears, and tires to move the machine.

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

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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.

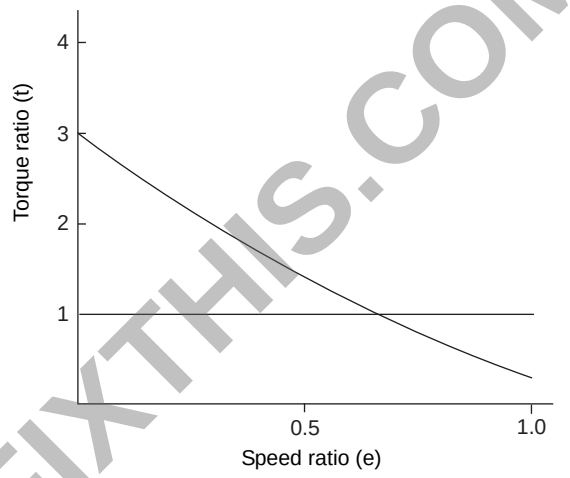
Power flow path

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.

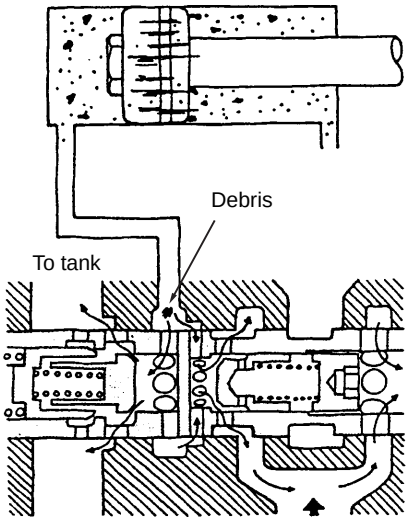
$$\text{Speed ratio(e)} = \frac{\text{Turbine impeller speed } (\text{min}^{-1}) \text{ (rpm)}}{\text{Pump impeller speed } (\text{min}^{-1}) \text{ (rpm)}}$$

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Flushing Hydraulic Circuit

Purpose of flushing



95ZV42001

If the inside of a cylinder, pump, or a valve of the hydraulic system is broken, the debris will be sent into the hydraulic line together with the oil. Most of the debris will flow into the return filter or hydraulic tank.

However, there are some debris that will remain in the valves, cylinders, or pipes. Therefore, even if the damaged cylinder or valve is replaced, the debris sticking in other valves, cylinders, or pipes will break loose and then is fed into the cylinders, where the debris may damage the inside of the cylinders, or stick into the valve spools or relief valves, and cause another malfunction. To prevent such problems, be sure to remove all the debris from the system.

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Brake System Outline

The brake system is the all-hydraulic type, and has two independent systems consisting of the front system and the rear system for enhancing safety. The service brake is the wet disc type. The parking brake is the internal expansion drum type.

Service brake

Oil from the pump is regulated in a range from 6.9~11.8 MPa (70~120 kgf/cm^2) (995~1,706 psi) by unloader valve (22), and accumulated in accumulator (33) provided for the front and rear wheels.

When brake valve (23) is depressed, the pressure oil in the accumulator enters the disc brake piston chamber for the front and rear wheels, pushes the piston, and generates braking power.

Parking brake

The internal expansion type drum brake for parking is applied by spring chamber (55).
Spring chamber (55) operates when the pressure oil inside the spring chamber returns to the tank while the power is not supplied to solenoid valve (35) (that is, while the parking switch is ON).

Adjustment of axle internal pressure

While the brake pedal is not pressed, the internal pressure of the hydraulic tank is always applied on the brake piston chamber, and there is a possibility that the brake may drag.

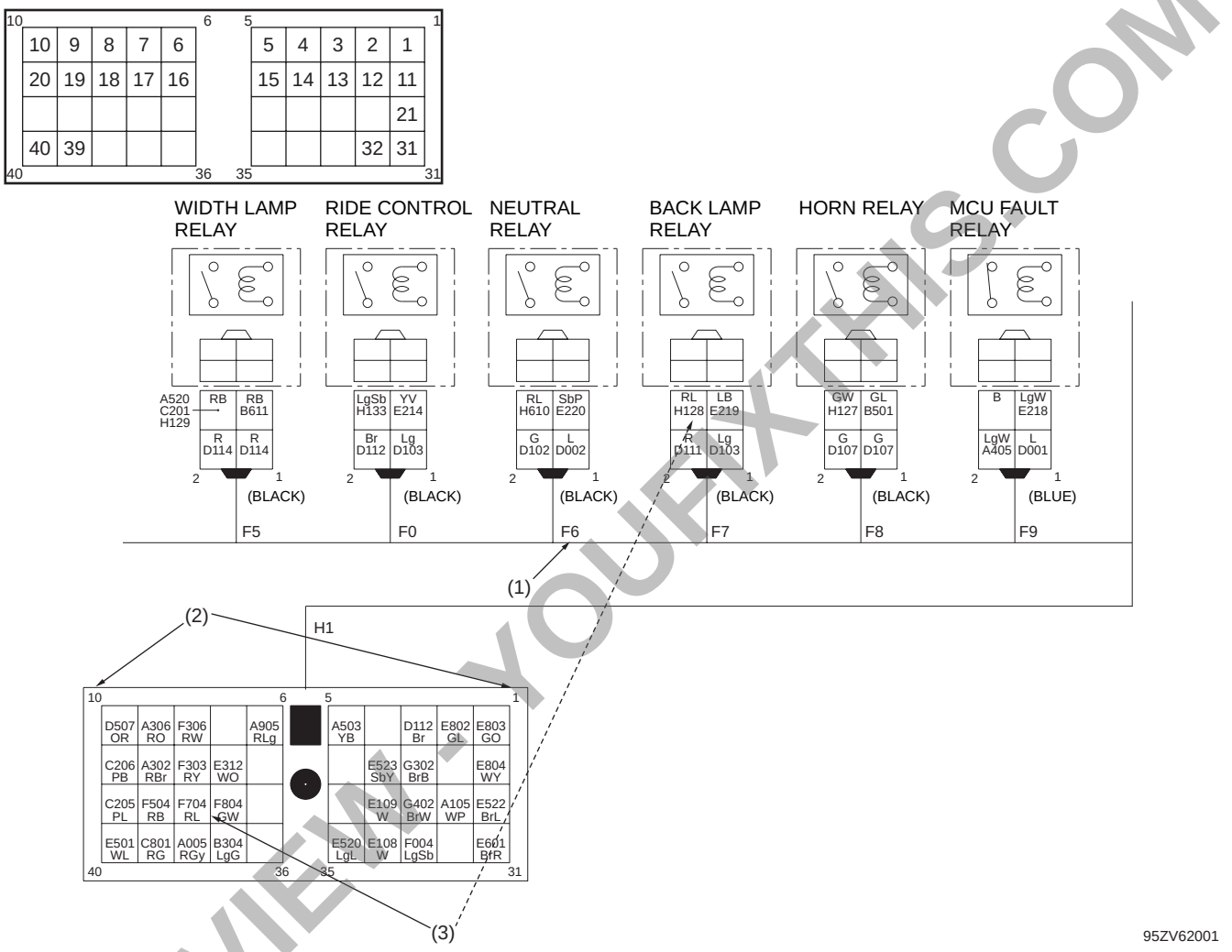
To prevent the brake from dragging, the axle housing air chamber is connected to the hydraulic tank air chamber so that the pressure inside the axle housing becomes equivalent to the pressure inside the hydraulic tank.

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How to Use Electrical Wiring Diagram

Example



The address method is used for electrical wiring diagrams. For this method, a symbol is attached to each connector and connector terminal in order to easily locate the other terminal where the other end of the cable is connected.

Example 1
Symbol under (or above) connector, such as F6:
Shows the address of the connector.

Example 2
Symbol at the multi-terminal connector, such as 1 and 10:
Shows the terminal number and the numbering direction.

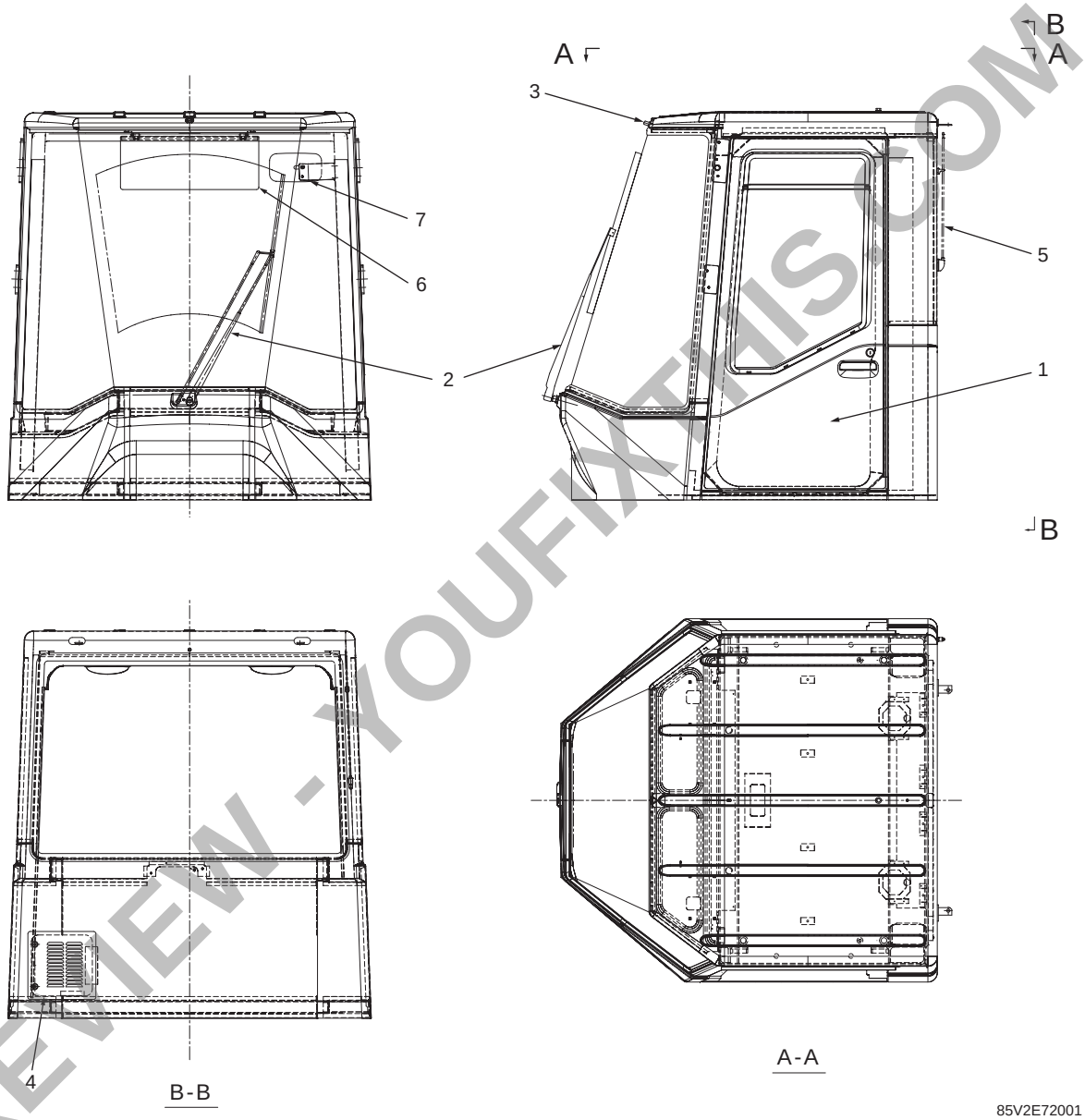
Example 3
Checking the other connector terminal where F704 RL (item (3)) is connected:

1. F704
   Shows that the terminal is connected to the 4th terminal of the F7 connector.
   Check the description in the 4th terminal of the F7 connector (F704), it shows that the F704 terminal is connected to H128. This means that the 4th terminal of the F7 connector is connected to the 28th terminal of the H1 connector.
2. RL
   Shows the color of the wire "RL" represents that the insulation color is red, and "L" represents a blue stripe is on the red insulation.

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Cabin



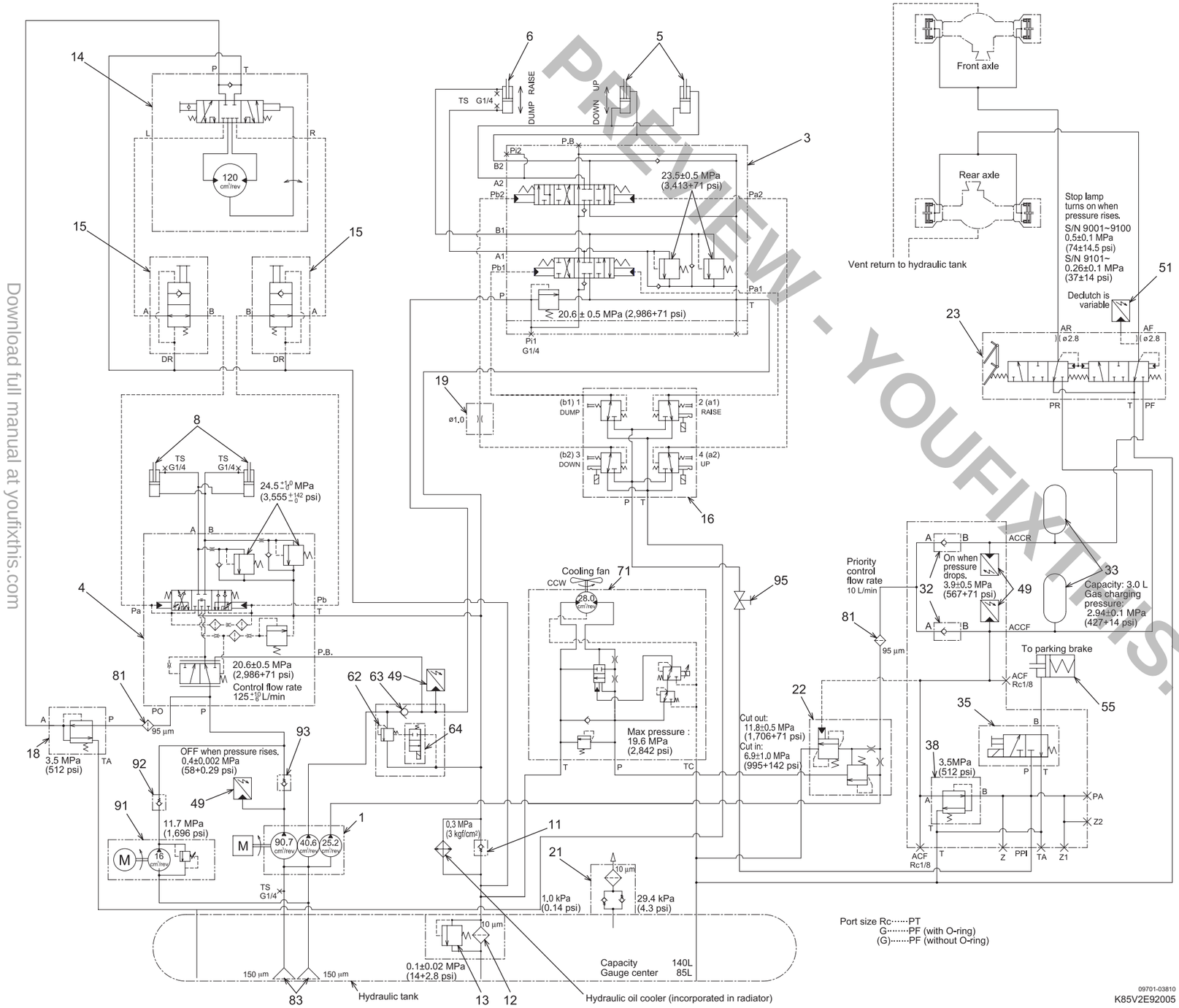
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The cabin equipped with the ROPS (Roll Over Protective Structure) is provided as standard.

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

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Hydraulic & Brake Circuit



1. Hydraulic pump
   Front.....Steering
   Center.....Loading
   Rear.....Brake and Pilot
2. —
3. Multiple control valve (loading circuit)
4. Steering valve
5. Boom cylinders
6. Bucket cylinder
7. —
8. Steering cylinders
9. —
10. —
11. Check valve (oil cooler bypass)
12. Return filter
13. Relief valve (return filter bypass)
14. Orbitrol®
15. Stop valve
16. Pilot valve (for loading)
17. —
18. Reducing valve (Orbitrol® circuit)
19. Adapter (orifice, slow spool return)
20. —
21. Breather valve (oil filling port)
22. Unloader valve
23. Brake valve
24. —
25. —
26. —
27. —
28. —
29. —
30. —
31. —
32. Check valve
33. Accumulator
34. —
35. Solenoid valve (for parking brake)
36. —
37. —
38. Reducing valve (pilot, parking brake)
39. —
40. —
41. —
42. —
43. —
44. —
45. —
46. —
47. —
48. —
49. Pressure sensor (for brake oil pressure) (for secondary steering) (OPT) (for efficient loading system)
50. —
51. Pressure sensor (for declutch & stop lamp)
52. —
53. —
54. —
55. Oil cylinder (for parking)
56. —
57. —
58. —
59. —
60. —
61. —
62. Relief valve
63. Check valve
64. Solenoid valve (for efficient loading system)
65. —
66. —
67. —
68. —
69. —
70. —
71. Fan motor
72. —
73. —
74. —
75. —
76. —
77. —
78. —
79. —
80. —
81. Line filter
82. —
83. Suction strainer
84. —
85. —
86. —
87. —
88. —
89. —
90. —
91. Motor and pump (OPT) (for secondary steering)
92. Check valve (OPT)
93. Check valve (OPT)
94. —
95. Valve (for safety lock)

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Weight of Main Components

Item			Approx. weight (kg)	Approx. weight (lb)	Remarks
Unit name	Part name				
Chassis	Bucket		1,775	3,915	GSC bucket
	Boom		1,330	2,935	Standard
	"Z" -Lever		395	870	
	Link (Bucket to Lever)		80	180	
	Engine room assembly		280	620	Including the radiator guard
	Hydraulic tank		150	330	Excluding oil
	Fuel tank		150	330	Excluding fuel
	Floor board		230	510	
	Cab (ROPS)		500	1,100	
	Deck	Left side	65	145	With handrail
		Right side	70	155	With handrail
	Front chassis		1,700	3,740	
	Rear chassis		1,475	3,250	
	Counter weight		1,270	2,800	
Power line	Engine		700	1,540	Excluding oil
	Radiator assembly		380	840	Excluding water and oil
	Transmission		900	1,980	Excluding oil
	Second propeller shaft		70	155	
	Third propeller shaft		15	35	
	Front axle assembly		1,170	2,600	Excluding tires and oil
	Rear axle assembly		1,380	3,045	Excluding tires and oil (Including axle support)
	Differential		175	385	
Hydraulic system	Multiple control valve		55	125	
	Pilot valve		10	22	
	Steering valve		25	55	
	Orbitrol®		6	15	
	Hydraulic pump		35	80	Triple pump
	Fan motor		15	35	
	Boom cylinder		190/pc	420/pc	Excluding oil
	Bucket cylinder		220	485	Excluding oil
	Steering cylinder		40/pc	90/pc	Excluding oil
Other	Tire		520/pc	1,150/pc	With rim (23.5R25☆)
	Battery		35/pc	80/pc	

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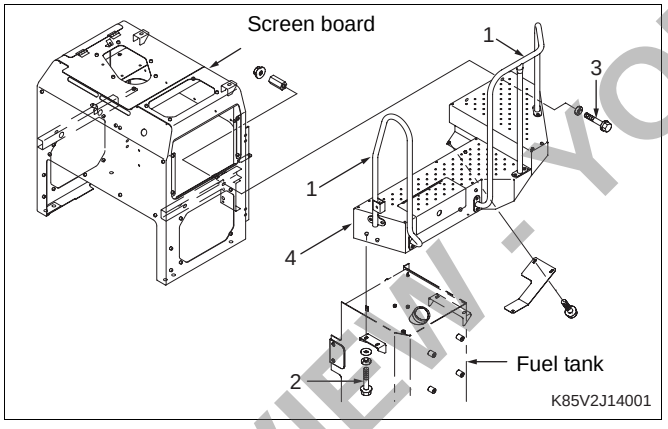
Deck

Deck removing and installing

Deck removing

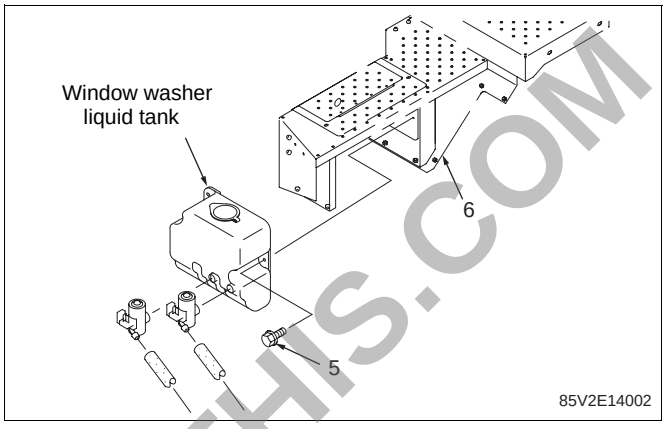
⚠ WARNING

Unexpected movement of the machine could cause an accident resulting in injury or death. Be sure to observe the following items before starting deck removal:
- Position the machine on level ground, and apply the parking brake.
- Lower the attachment onto the ground, and block the tires with chocks, etc. to prevent them from moving.
- Remove the engine key, and hang a "DO NOT START ENGINE!" tag on the steering wheel.

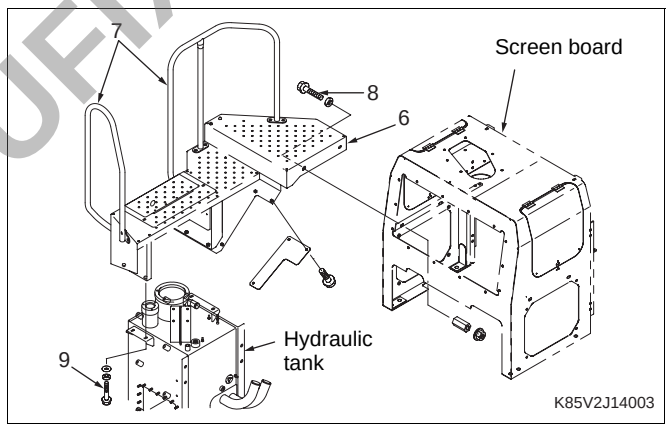


1. Apply a sling to handrail (1) and deck (4), then remove bolts (2)(3).

   : Deck (4) (with handrails): 80 kg (175 lbs)



2. Remove bolt (5) to remove the window washer liquid tank from deck (6).



3. Apply a sling to handrail (7) and deck (6), then remove bolts (8)(9).

   : Deck (6) (with handrails): 70 kg (155 lbs)

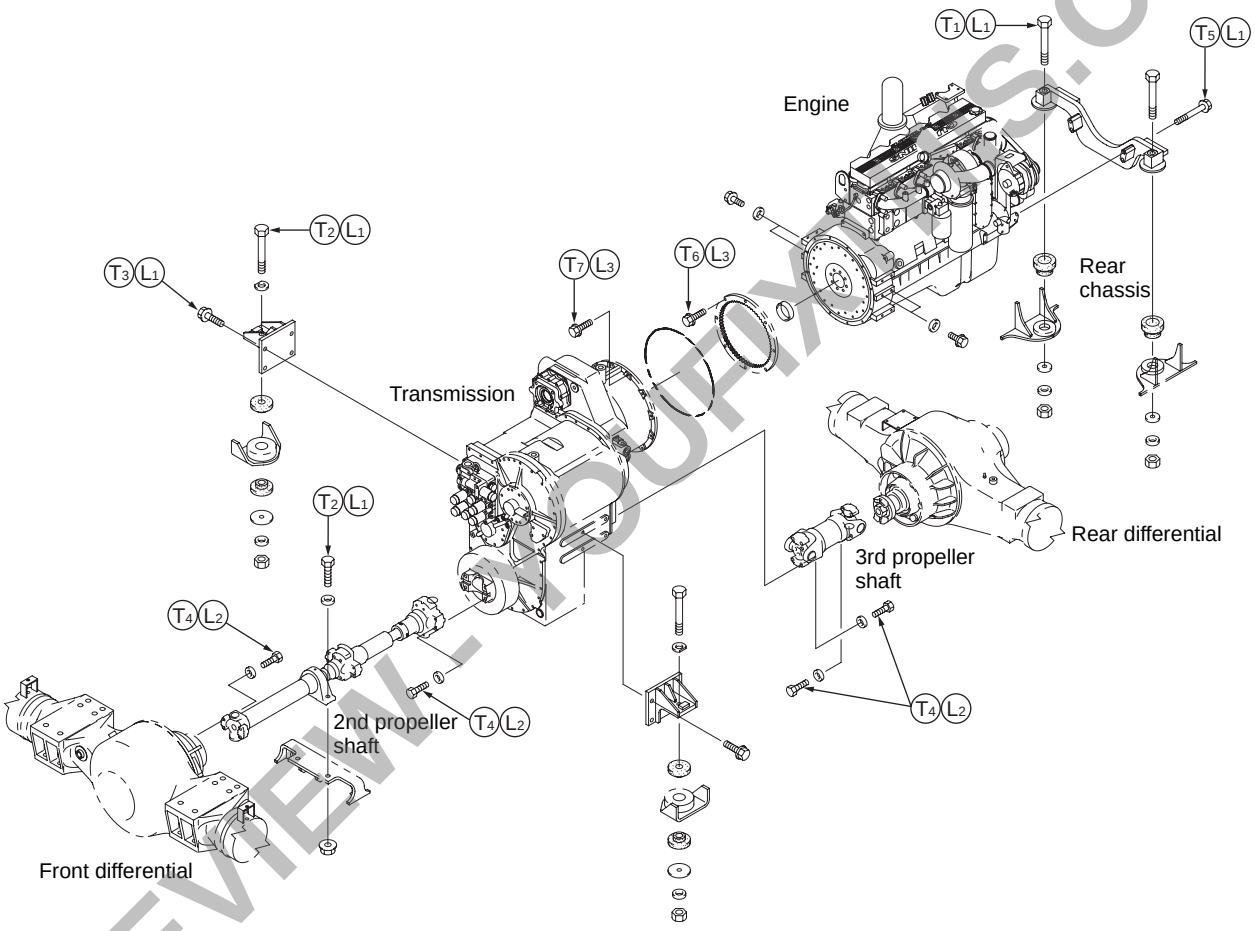
4. While considering the balance, remove decks (4)(6) together with the handrails.

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Power Line

Power line tightening torque



85V2E24028

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:
T_1: 441 N-m (45 kgf-m) (325 lb-ft)
T_2: 417 N-m (42.5 kgf-m) (307 lb-ft)
T_3: 230 N-m (23.5 kgf-m) (170 lb-ft)
T_4: 142 N-m (14.5 kgf-m) (105 lb-ft)
T_5: 94 N-m (9.6 kgf-m) (69 lb-ft)
T_6: 67 N-m (6.8 kgf-m) (49 lb-ft)
T_7: 53 N-m (5.4 kgf-m) (39 lb-ft)

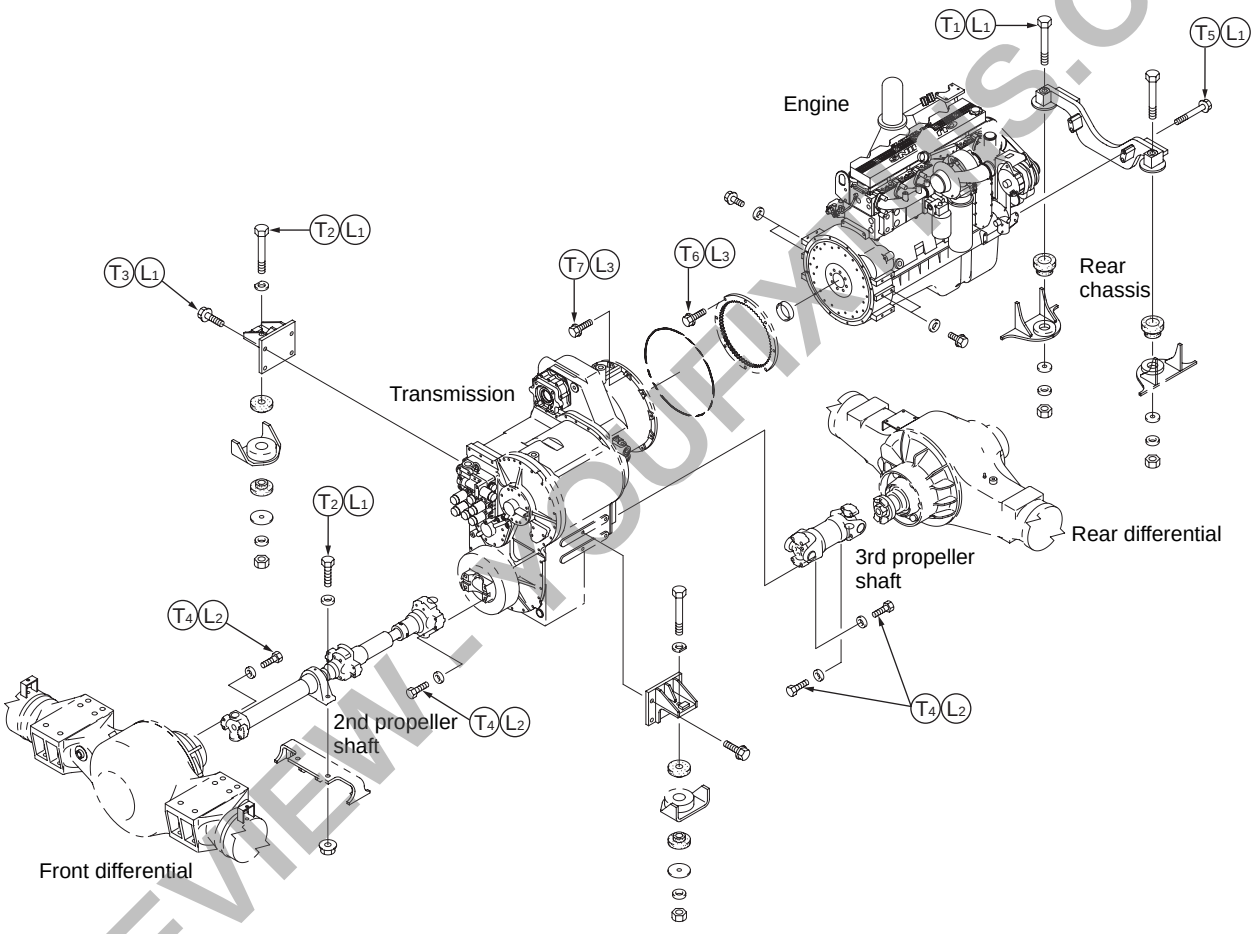
L_1: Screw lock agent (Loctite® 262)
L_2: Screw lock agent (Three Bond 1327)
L_3: With lubrication oil (Engine oil or gear oil)

Always replace drive shaft bolts with new ones - never reuse them.

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Torque Converter and Transmission Assembly

Torque converter and transmission assembly tightening torque



85V2E24028

:
T_1: 441 N-m (45 kgf-m) (325 lb-ft)
T_2: 417 N-m (42.5 kgf-m) (307 lb-ft)
T_3: 230 N-m (23.5 kgf-m) (170 lb-ft)
T_4: 142 N-m (14.5 kgf-m) (105 lb-ft)
T_5: 94 N-m (9.6 kgf-m) (69 lb-ft)
T_6: 67 N-m (6.8 kgf-m) (49 lb-ft)
T_7: 53 N-m (5.4 kgf-m) (39 lb-ft)

L_1: Screw lock agent (Loctite® 262)
L_2: Screw lock agent (Three Bond 1327)
L_3: With lubrication oil (Engine oil or gear oil)

Always replace drive shaft bolts with new ones - never reuse them.

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Hydraulic Parts Removal and Installation Warning

Disassembly and reassembly work of hydraulic parts greatly depends on the working area and working condition (soon after operation or not).
Understand the following items well and work safely.

⚠ WARNING

Unexpected movement of machine could cause serious injury or death. To prevent such an accident, observe the following items:

- Park the machine on level and solid ground.
- Apply the parking brake and block tires with chocks to prevent wheels from moving.
- Be sure to remove the engine key, and hang a "DO NOT START!" tag on the steering wheel or the operator's seat.
- Relieve the internal pressure from the hydraulic line and hydraulic tank.
- Use signals as agreed upon before starting work.
- Do not enter the hazardous area.
- When removing a heavy load over 20 kg (44 lbs), use a crane or a lift device.
- Stay out of the working area while using a crane.
- While working with the boom raised, put safety blocks or supports to prevent it from dropping suddenly.
- The temperature at each part may be high soon after the engine is stopped. Be careful not to get burned.
- When removing pipes, place a container to catch the drained oil.

IMPORTANT

- Cover the disconnected hoses and pipes with plastic caps or plugs to protect them from dust, water and dirt.
- Apply the specified torque to tighten each part.

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Unloader Valve

Unloader valve removing and installing

Unloader valve removing

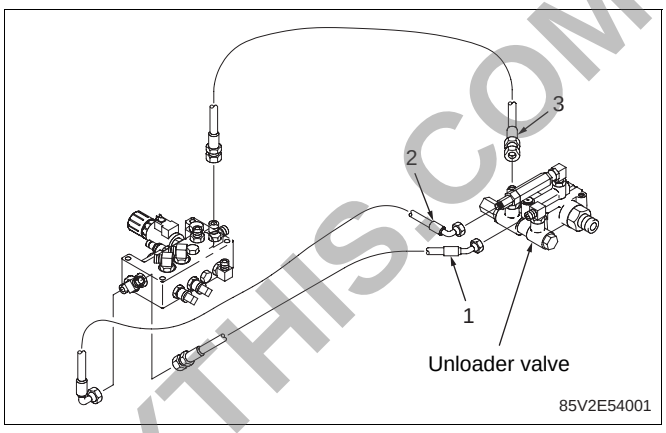
⚠ WARNING

Unexpected movement of the machine could cause an accident resulting in injury or death. To prevent such an accident, observe the following items:
- Park the machine on level ground.
- Block the front wheels with chocks to prevent the wheels from moving.
- Before starting work, be sure to remove the engine key, and hang a "DO NOT START!" tag on the steering wheel or the operator's seat, or disconnect the negative side of the battery.

IMPORTANT

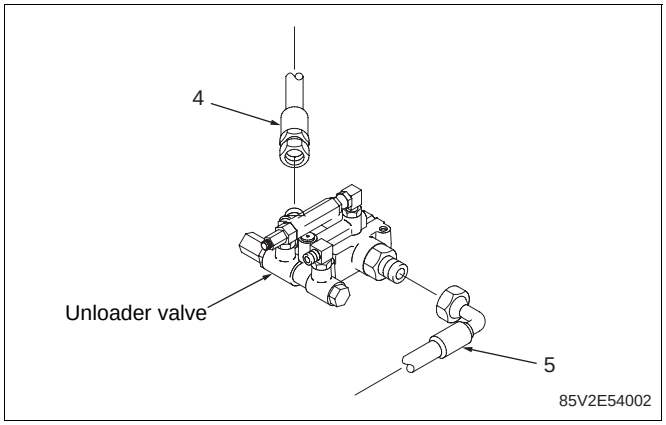
If a battery terminal is removed from a machine in less than 30 seconds after the key is put into the “OFF” position, it can corrupt the ECM program, which can disable the engine. Always wait 1 full minute to be sure to be past this “write to memory function” prior to removing battery terminals.

Before starting work:
- Stop the engine. Depress the brake pedal many times until there is no brake pressure.
- Press the hydraulic tank cap, and relieve the internal pressure from the hydraulic tank.
- Prepare a container to catch drained oil.



1. Remove hoses (1)(2)(3) from the unloader valve.

Note
Cover the disconnected hoses with plastic, plugs or caps to protect them from dust and dirt.



2. Remove hoses (4)(5) from the unloader valve.

Note
Cover the disconnected hoses with plastic, plugs or caps to protect them from dust and dirt.

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Air Conditioner

Air conditioner removing and installing

Air conditioner removing

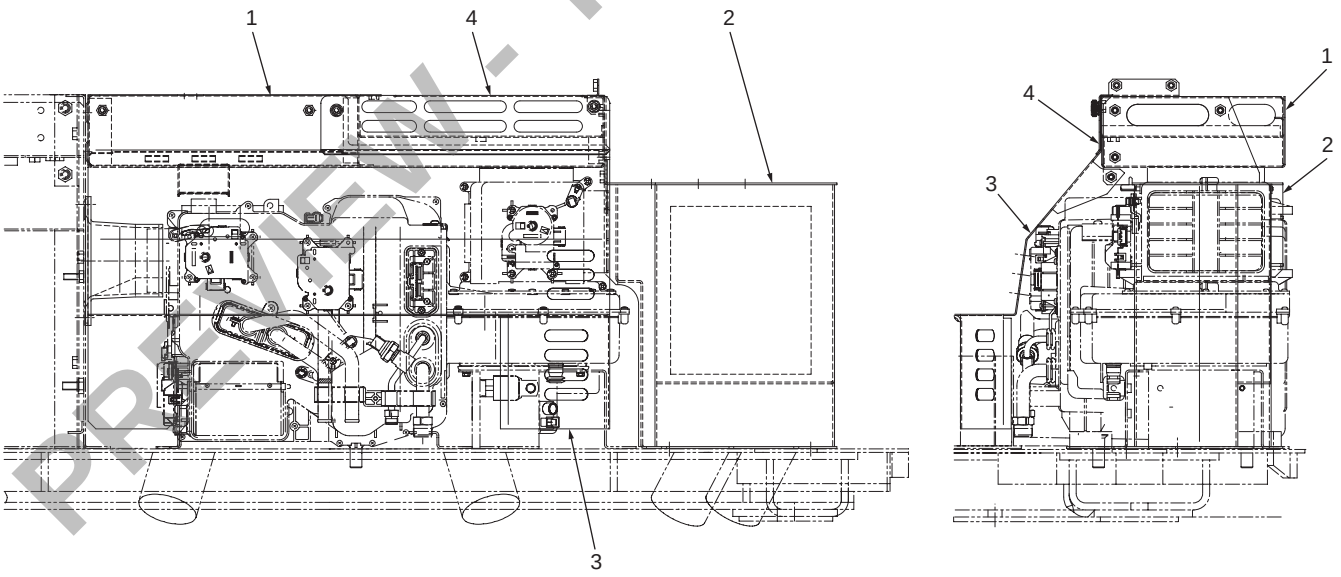
IMPORTANT

In case that it is necessary to replace the air conditioner parts, be sure to set the air conditioner mode as below before removing the air conditioner unit from the machine.

Temperature control: Max cool
Ventilation mode: Foot
Air intake control: Inside air circulation

Before starting work:

- Remover the seat in the cab.
- Collect the air conditioner refrigerant using the proper recovery method.
- Remove the floor mat in the cab.



View from operator's seat

95ZVE74001

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Torque Converter and Transmission Group

1. Machine dose not move in any shift lever position.

Check before starting work.

1. Check that the parking brake is released.
2. Check the error code No. shown on the MODM.
3. Check the transmission oil level.
4. Check the fuses of the MCU system.
5. Check the 70 A fusible link.
   (If the 70 A fusible link is off, no electrical circuits will operate except horn circuit and hazard flasher [opt.].)

Possible cause \ Symptoms / check point	Low clutch oil pressure at all the shift lever positions.	Torque converter oil becomes milky and cloudy in color.	Temperature of the torque converter oil is too high.	Filter of the torque converter is clogged.	Setting the declutch ON/OFF switch to OFF allows normal operation.	F5 fuse blows.	Pump is extremely heated.	Pump produces an abnormal (shrieking) noise.					Solution
Air drawn into suction line of the torque converter pump	○	○	○				○	○					Tightening hose band
Defective torque converter pump	○		○				○						Pump replacement
Damaged torque converter			○	○									Disassembly & repair
Sticking clutch pressure regulator valve	○												Disassembly & repair
Malfunctioning inching pressure switch					○								Switch replacement
Defective controller	○												Controller replacement
Neutral relay, controller fault relay, lift kickout and lower kickout relay, parking switch wirings short circuited						○							Repairing wiring
Restricted suction line - pinched, plugged, or internally defective.							○	○					Replace hose

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Item				Standard measurement values for performance check	Remarks
System	Measurement item				
Hydraulic line	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±2.0	
			1,500 min^{-1} (rpm)	10.0±1.0	
			Maximum (HI)	6.3±0.5	
	Full steering time (sec)	Engine speed	Idling (LI)	4.0±0.5	
			1,500 min^{-1} (rpm)	2.8±0.3	
			Maximum (HI)	2.8±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)		$24.5\ ^{+1.0}_{0}$ ($250\ ^{+10}_{0}$) ($3{,}555\ ^{+142}_{0}$)	Run engine at lowest possible speed while setting
		Pilot line reducing pressure (LI)		3.5 (36) (512)	
	Fan maximum revolution (HI) min^{-1} (rpm)	Engine water temp. <80ºC T/C oil temp. <110ºC Hydraulic oil temp. <90ºC		$1{,}155\ ^{+75}_{-200}$	
		Engine water temp. >95ºC T/C oil temp. >115ºC Hydraulic oil temp. >95ºC		$1{,}650\ ^{+75}_{-200}$	
	Fan minimum revolution (LI) min^{-1} (rpm)	Engine water temp. >60ºC		$544\ ^{+75}_{-200}$	

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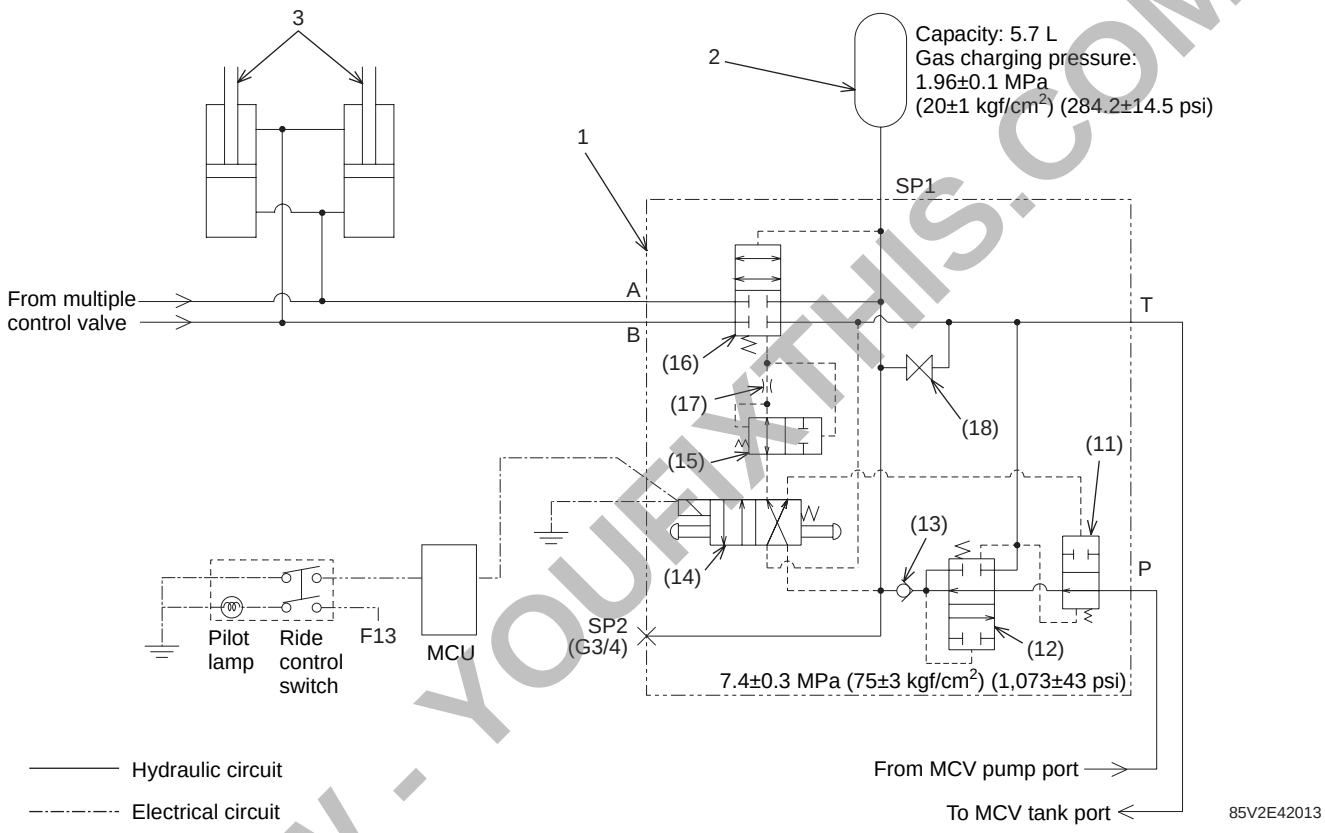
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Ride Control (OPT)

Ride control hydraulic circuit



1. Valve assembly
   (11) Charge switching spool
   (12) Reducing valve
   (13) Check valve
   (14) Solenoid valve
   (15) Flow control spool
   (16) Main spool
   (17) Orifice
   (18) Depressure valve (for accumulator circuit)
2. Accumulator
3. Boom cylinder

Ride control function

Ride control reduces fore and aft pitching motion to the machine in roading by using the boom cylinder and hydraulic circuit with the accumulator. Ride control can be operated or released by turning the ride control switch ON/OFF.

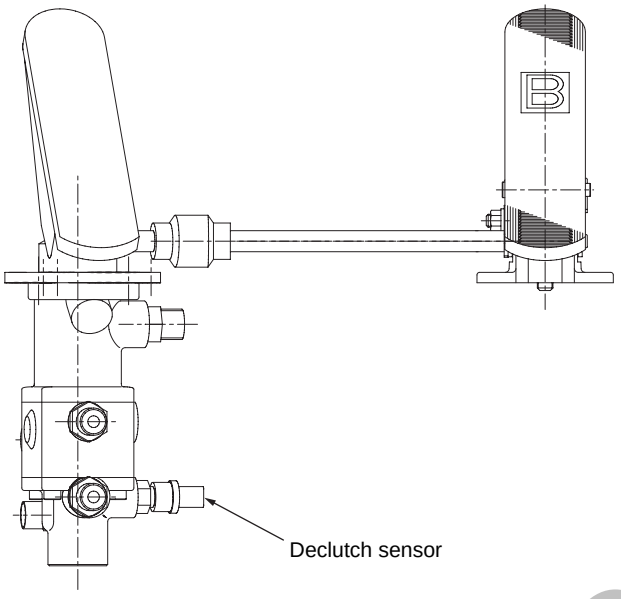
Turn the ride control switch ON, and when the machine travelling speed reaches more than 7 km/h (4.3 mph), solenoid valve (14) comes to ON by a signal from the MCU, then the ride control works.

When the machine travelling speed goes down to 5 km/h (3.1 mph) or slower, no signal transferred from the MCU, as a result, the ride control does not work.

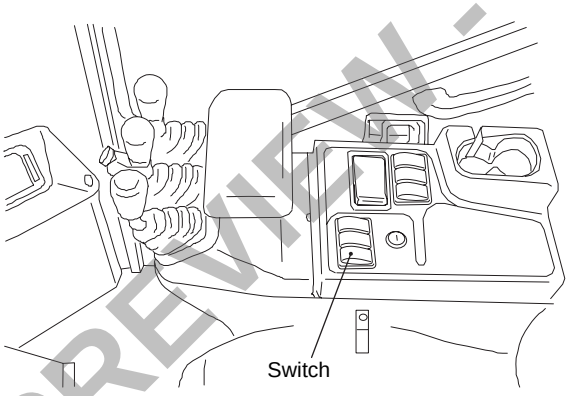
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Adjustable declutch preset switch

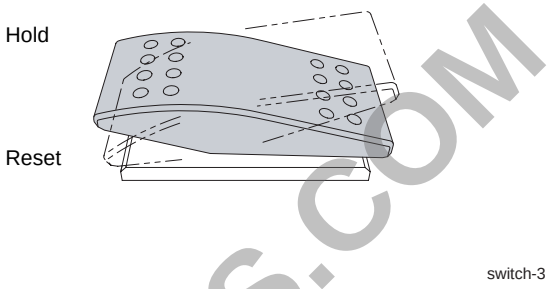


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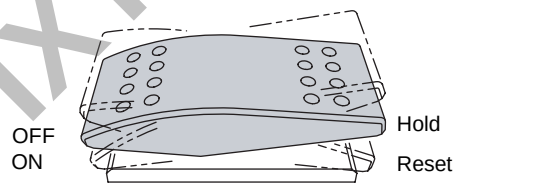
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(S/N 9001~9100)

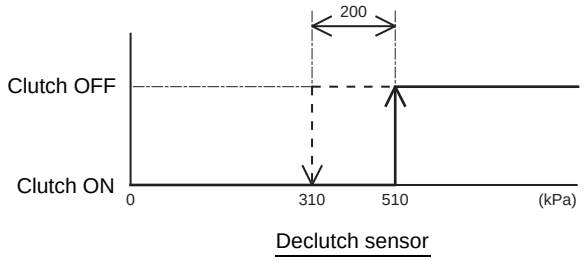


switch-3

(S/N 9101~)



65V2E62018



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.

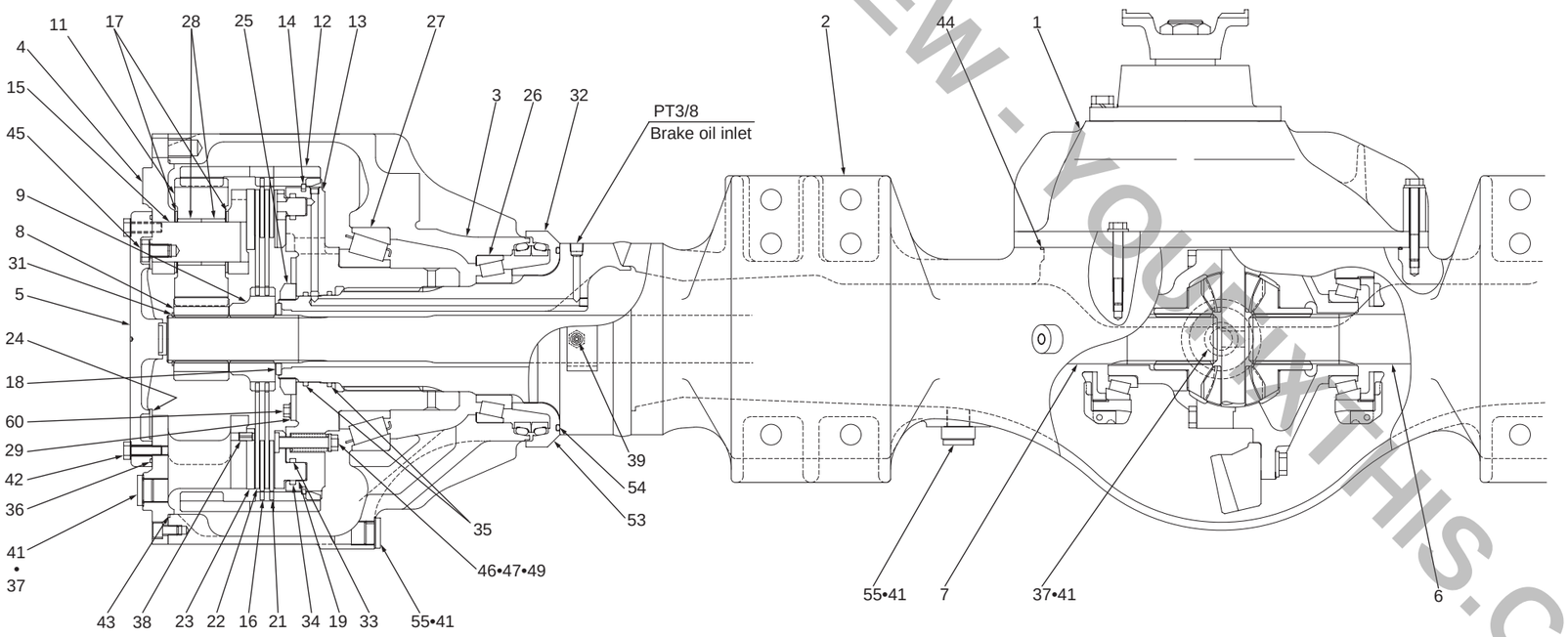
With the engine running, step on the left brake pedal (Declutch pedal) up to the desired angle and press the switch to set the brake pedal (Declutch pedal) angle.

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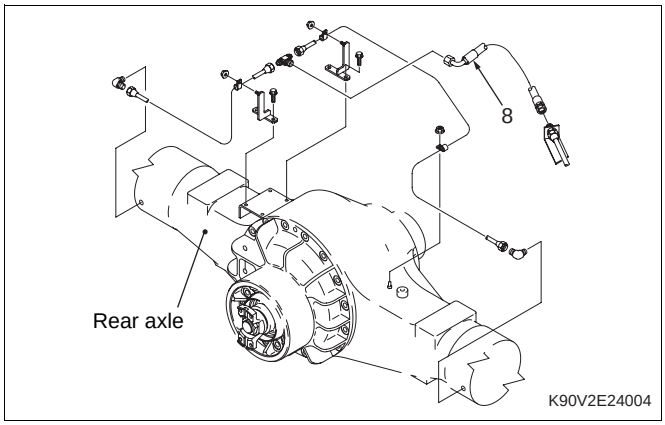
Axle Assembly

The only difference between the front and rear axle is the differential housing (1) and axle housing (2).
Other parts are the same as the rear axle assembly.



1. Differential assembly
2. Axle housing assembly
3. Wheel hub
4. Spider (planetary carrier)
5. Cover
6. Axle shaft
7. Axle shaft
8. Sun gear
9. Disc gear
10. —
11. Planetary gear
12. Internal gear
13. Internal gear hub
14. Snap ring
15. Planetary pin
16. Steel plate
17. Wear ring
18. Wear ring
19. Piston
20. —
21. Steel plate
22. Friction disc
23. Brake backing plate
24. Plate
25. Axle nut
26. Taper roller bearing (inner)
27. Taper roller bearing (outer)
28. Needle cage
29. Axle lock plate
30. —
31. Snap ring
32. Floating seal
33. D-ring
34. D-ring
35. O-ring
36. O-ring
37. Magnet plug
38. Spring pin
39. Bleed screw
40. —
41. Seal washer
42. Bolt
43. O-ring
44. O-ring
45. Bolt
46. Socket bolt
47. Spring
48. —
49. U-nut
50. —
51. —
52. —
53. Ring
54. O-ring
55. Plug
56. —
57. —
58. —
59. —
60. Bolt

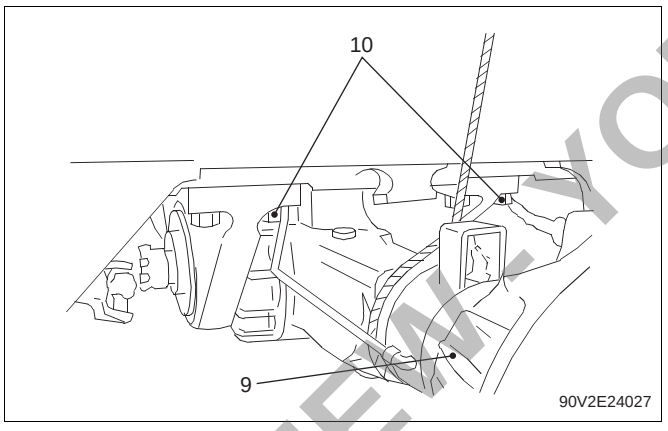
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9. Disconnect the front and rear grease pipes.

10. Disconnect hose (8) from the brake oil inlet side.

Note
Cover and plug the disconnected pipes, hoses and fittings to protect them from dust and dirt.



11. Temporarily sling rear axle assembly (9), and remove right and left retainer bolts (10) from the rear axle support.

: Bolt (10): 721 N-m (73.5 kgf-m) (532 lb-ft)
: Rear axle assembly (including axle supports): 1,380 kg (3,045 lbs)

Note
The rear support is locked by not only the bolts but also dowel pins. Carefully remove or reinstall the support while checking the dowel pins.
Be careful not to bend or damage the oil pipes.
Do not reuse the retainer bolts. Replace them with new ones.

12. Lower rear axle assembly (9) evenly on the carrier, and then pull out the rear axle.

⚠ CAUTION

The axle assembly could fall off the carrier causing injury. Before pulling out the rear axle, carefully position the axle onto the carrier using a strap so that the axle will not fall from the carrier.

Rear axle assembly installing

For reinstallation, follow the above procedures in reverse order.
Refer to "Air bleeding procedure" page 24-22 for air bleeding in the service brake.

Rear axle disassembling and assembling

For disassembling and reassembling the rear axle assembly, refer to "Front axle disassembling and assembling" page 24-23.

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Accumulator disassembling and assembling

IMPORTANT

Before disassembly or reassembly, read and understand the aforementioned "Hydraulic Parts Disassembly and Assembly Cautions" page 44-3.

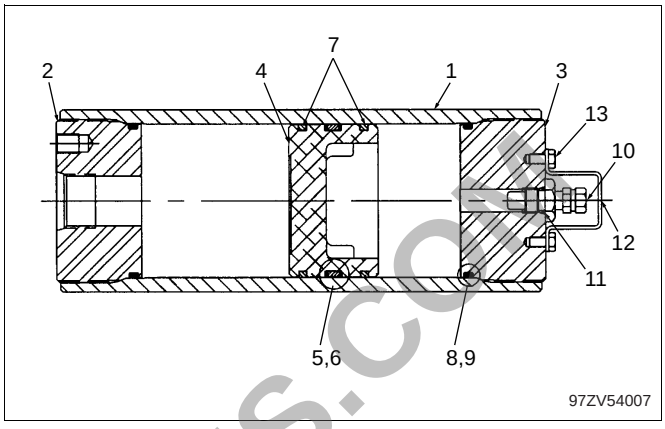
Accumulator disassembling

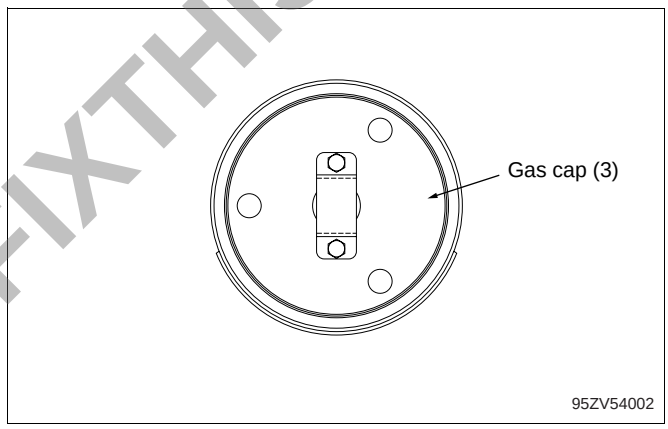
⚠ WARNING

Disassembly without breathing the inner gas could cause serious injury or death by explosion. To prevent such an accident, observe the following item:
- Carefully handle the accumulator that has the high pressure.
- Before disassembly, completely reduce the gas pressure lower to the atmospheric pressure.
- Do not drill and weld the body.
- Do not use over the specified pressure.
- Use Nitrogen gas for charge.

IMPORTANT

- Take care not to scratch the cylinder to prevent gas leak.
- Carefully remove each part so that it is not scratched or dented.





1. Loosen bolt (13) to remove gas valve guard (12).
2. Remove the cap of gas valve (10) and install the charging valve to gas valve (10), then bleed the gas completely from the accumulator.
3. Insert three pins into gas cap (3). Remove the gas cap by using a long bar.

   Pin hole: ø11.4 (0.4 in)

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