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GROUP 1 STRUCTURE AND FUNCTIONS

1. INTRODUCTION

There are two types of brake systems: Service brake and parking brake.

Pressing the service brake pedal generates hydraulic pressure in the master cylinder. This pressure lets the brake lever press the pressure pin to apply braking pressure on the disk carrier.

The parking brake lever operates with cable to make the pressure pin apply braking pressure on the disk carrier.

2. SPECIFICATIONS

1) SERVICE BRAKE

Item	Unit	Specifications
Туре	-	Wet disk brake
Brake fluid	-	Hydraulic oil ISO VG32 (AZOLLA ZS32)
Max. torque	N·m (at 50 bar)	3600

2) PARKING BRAKE

Item	Dimensions
Туре	Latched, inner-expanding mechanical type
Parking lever stroke	29 deg.
Parking cable stroke	90 mm

3. BRAKE PEDAL AND PIPING



4 Brake valve assy

4. BRAKE CONNECTION

It is recommended to use lever 2 output cylinder on the service brake. In such a case, it is possible to reduce pedal stroke to the minimal value comparing with the lever 1 cylinder.

Three M10×1 connections are provided for connecting the hydraulic pressure brake to the brake cable.

1) Connecting hydraulic brake

Connect air breather and brake hose (hydraulic line) to the connection points.

 \cdot Fastening torque : 1.4 - 1.8 kgf \cdot m

Keep curvature radius maximum when installing hydraulic line to reduce resistance against restoration force of brake lifting to the largest extent.

2) Connecting parking brake cable

Fasten parking brake cable to lever with screws.

Once installation is complete, check installation footprint, and keep it intact.

Keep curvature radius maximum when installing brake line to reduce resistance against restoration force of brake lifting to the largest extent.

A Once brake fluid is filled, bleed the brake (see page 4-6).

5. BRAKE VALVE

1) STRUCTURE



- 1 Rod assembly
- 2 Boot

3

- Snap ring
- 4 Body
- 5 Piston

- 6 Union
- 7 Elbow
- 8 O-ring
- Second cup
 First cup
- 13 Spring
- 14 Spring sheet
- 15 Spring sheet

2) DISASSEMBLING

- (1) Remove boot (2) and rod assembly (1).
- (2) Remove snap ring (3), and then disassemble piston (5), second cup (11), first cup (12), spring (13), and spring sheets (14, 15).
- (3) Specifications of brake valve
 - · Cylinder bore diameter : 19.05 mm
 - · Piston stroke : 23.0 mm

3) INSPECTION

- (1) Clean components, and check them for conditions.
- * Use isopropyl alcohol or brake fluid only. Never use gasoline, kerosene, or other mineral oil. Do not keep rubber component in alcohol in alcohol for 30 seconds or longer.
- (2) If defect is found on the inner wall of the body, replace the brake valve assembly.
- (3) If deformation or other defect is found, replace boot (2), second cup (11), first cup (12) and piston (5).

4) ASSEMBLING

- Make sure again the parts are not contaminated before assembling. Apply thin film of brake oil on parts.
 - \cdot Assembling is done in reverser order of disassembling.

GROUP 2 OPERATIONAL CHECKS AND TROUBLESHOOTING

1. OPERATIONAL CHECK

1) BRAKE PIPING

- (1) Check pipe, hose and joint for damage, oil leak or interference.
- (2) Press brake pedal to check force required for pressing.

Check for any variation of operating force and pedal position with the pedal kept pressed.

2) BRAKING FORCE

(1) Drive the truck at max. speed on hard, flat and paved surface. If any signal is alarmed, immediately stop the truck, and measure the distance from signal alarming pint to stopped point (under no load).

· Stopping distance: 5 m or less

(2) Make sure that there is no inclination of steering wheel or bake, or no noise during sudden braking.

3) PARKING BRAKE

- (1) Operating force of parking lever is 20-30 kgf \cdot m.
- (2) Make sure that the loaded truck is kept standstill on slope of 15% gradient when applying the parking brake.

If there is no slope, drive the truck at low speed and check operation of the parking brake.

2. OPERATION INSPECTION, AND FAILURE DIAGNOSIS AND TROUBLESHOOTING

Trouble	Cause	Troubleshooting
Defective brake operation	 Oil leak inside system, or low level of brake oil in tank 	 Repairing oil leak. Discharge remained oil, and fill the oil tank of the brake valve with brake oil to the specified level.
	 Air in the system. Abraded and degraded piston cup of the body to cause oil leak. 	 Fully bleed air from the brake lever. Check the body and piston for abrasion. If no defect is detected, replace the cup.
Excessive brake pedal operating distance	• Air in the system.	 Fully bleed the system. Check the oil tube joint and connections for oil leak, and replace parts, if required.
Large wheel weight	 Return port of brake valve clogged by piston cup. Return spring 	 Checking brake valve Repair or replacement of pedal return spring.

GROUP 3 TESTING AND ADJUSTMENT

1. BRAKE BLEEDING

Bleeding should be performed on brake system after filling brake fluid.

- Remove the cap from bleeding valve, and connect hose to the valve to put discharging fluid into a container.
- 2) Press brake pedal to apply pressure.
- Rotate bleeding valve by a half turn with spanner while pressing brake pedal to bleed the brake.



- ※ Put discharged brake fluid into a container. Do not spill brake fluid on the floor, or discharge it into drain.
- A Close bleeding valve before releasing brake pedal.
- Repeat this process until brake fluid shows no bubble.
 Check the level of brake fluid in a container, and make up the fluid, if required.
- 4) Once brake fluid is discharged without indication of bubble, fasten the bleeding valve, remove hose, and install dust prevention cap on bleeding valve.
 - \cdot Fastening torque : 1.5 \pm 0.2 kgf \cdot m

2. ADJUSTMENT OF PEDAL

1) BRAKE PEDAL

- (1) Adjust the height of pedal from the floor plate with a stopper bolt.
 - · Pedal height : 122 mm (4.8 in)
- (2) Play

Adjust play with rod of master cylinder. · Idle stroke : 0.5~1.5 mm (0.02~0.06 in)

