CONTENTS

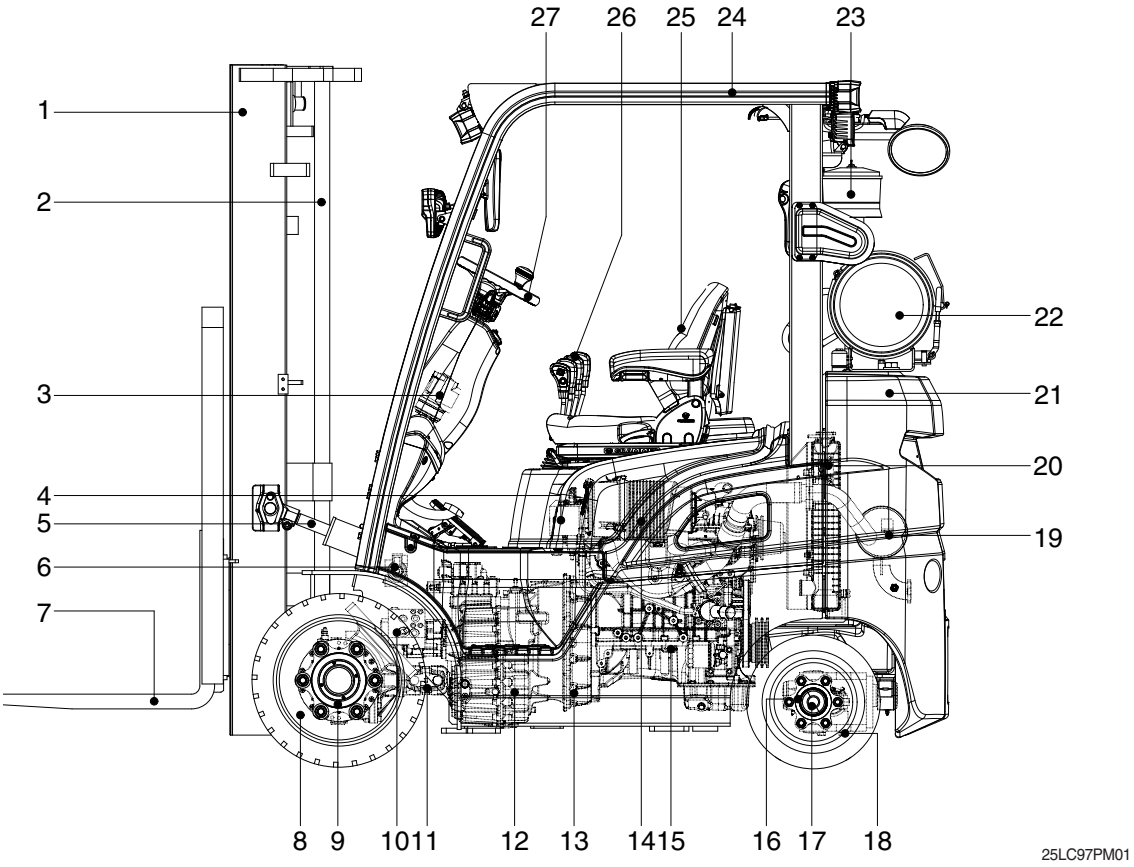
SECTION 1 GENERAL

4. TIGHTENING TORQUE FOR MAJOR COMPONENTS

NO	Item		Size	kgf · m	lbf · ft
1	Engine	Engine mounting bolt	M10×1.5	6.9±1.4	49.9±10.1
2		Engine bracket mounting nut	M12×1.25	12.5±2.5	90±18
3		Radiator mounting bolt, nut	M8×1.25	2.5±0.5	18.1±3.6
4		Torque converter mounting bolt	M10×1.25	7.4±1.5	53.5±10.8
5	Hydraulic system	Main pump mounting bolt	M10×1.5	5.3±0.5	38.3±3.6
6		MCV mounting bolt	M8×1.25	2.5±0.5	18.1±3.6
7		Steering unit mounting bolt	M10×1.5	4.0±0.5	28.9±3.6
8		Tilt cylinder; rod-end bolt, nut	M12×1.75	9.5±0.5	68±13.7
9		Tilt cylinder pin; mounting bolt	M10×1.5	4.0±1.5	28.9±3.6
10	Power train system	Transmission mounting bolt, nut	M16×2.0	7.5	54
11		Drive axle mounting bolt, nut	M20×1.5	65±3	470±21.6
12		Steering axle mounting bolt, nut	M20×2.5	58±8.5	420±61
13		Front wheel mounting nut	M20×1.5	47±5	340±36
14		Rear wheel mounting nut	M16×1.5	25±2	181±14
15	Others	Counterweight mounting bolt	M30×3.5	100±15	723±108
16		Operator's seat mounting nut	M8×1.25	2.5±0.5	18.1±3.6
17		Head guard mounting bolt	M12×1.75	12.8±3.0	92.6±21.7

SECTION 2 REMOVAL & INSTALLATION OF UNIT

GROUP 1 MAJOR COMPONENTS

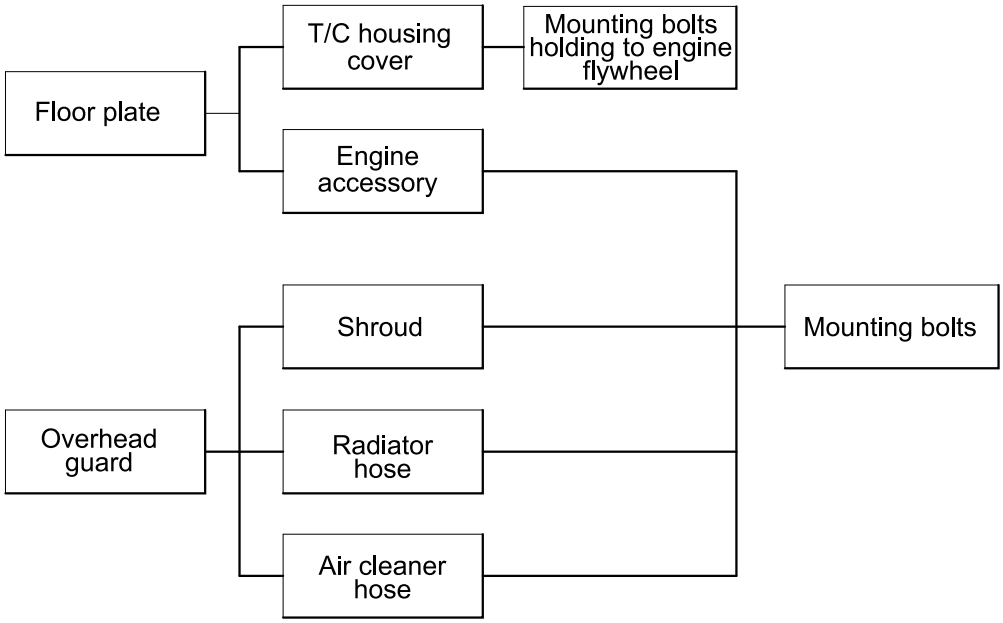


1	Mast	10	Hydraulic pump	19	Exhaust system
2	Lift cylinder	11	Drive shaft	20	Radiator
3	Steering unit	12	Transmission	21	Counterweight
4	Main control valve	13	Torque converter	22	LPG tank
5	Tilt cylinder	14	Air cleaner	23	Precleaner
6	Dual flow divider	15	Engine	24	Overhead guard
7	Fork	16	Steering axle	25	Seat
8	Front wheel	17	Steering cylinder	26	Remote control lever
9	Drive axle	18	Rear wheel	27	Steering handle

3. ENGINE

Remove the torque converter, transmission and front axle inside the frame, then remove the engine assembly.

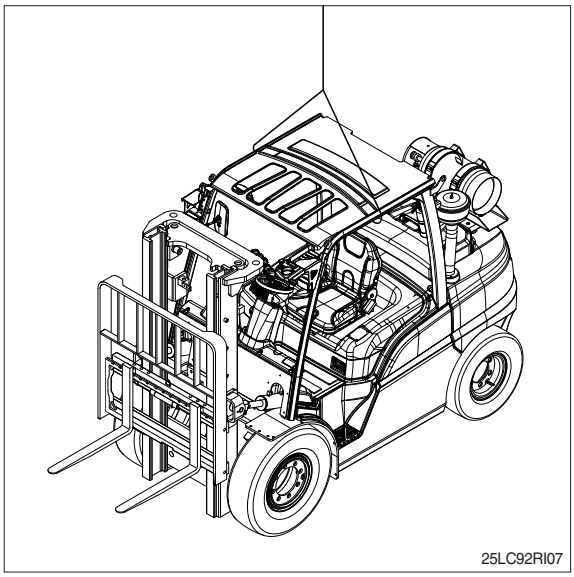
1) REMOVAL



D503RE25

(1) Overhead guard

Remove the wiring for rear combination lamp, working lamp, head lamp and flasher lamp on the stay of the overhead guard and then raise it. Then remove the bonnet with seat.



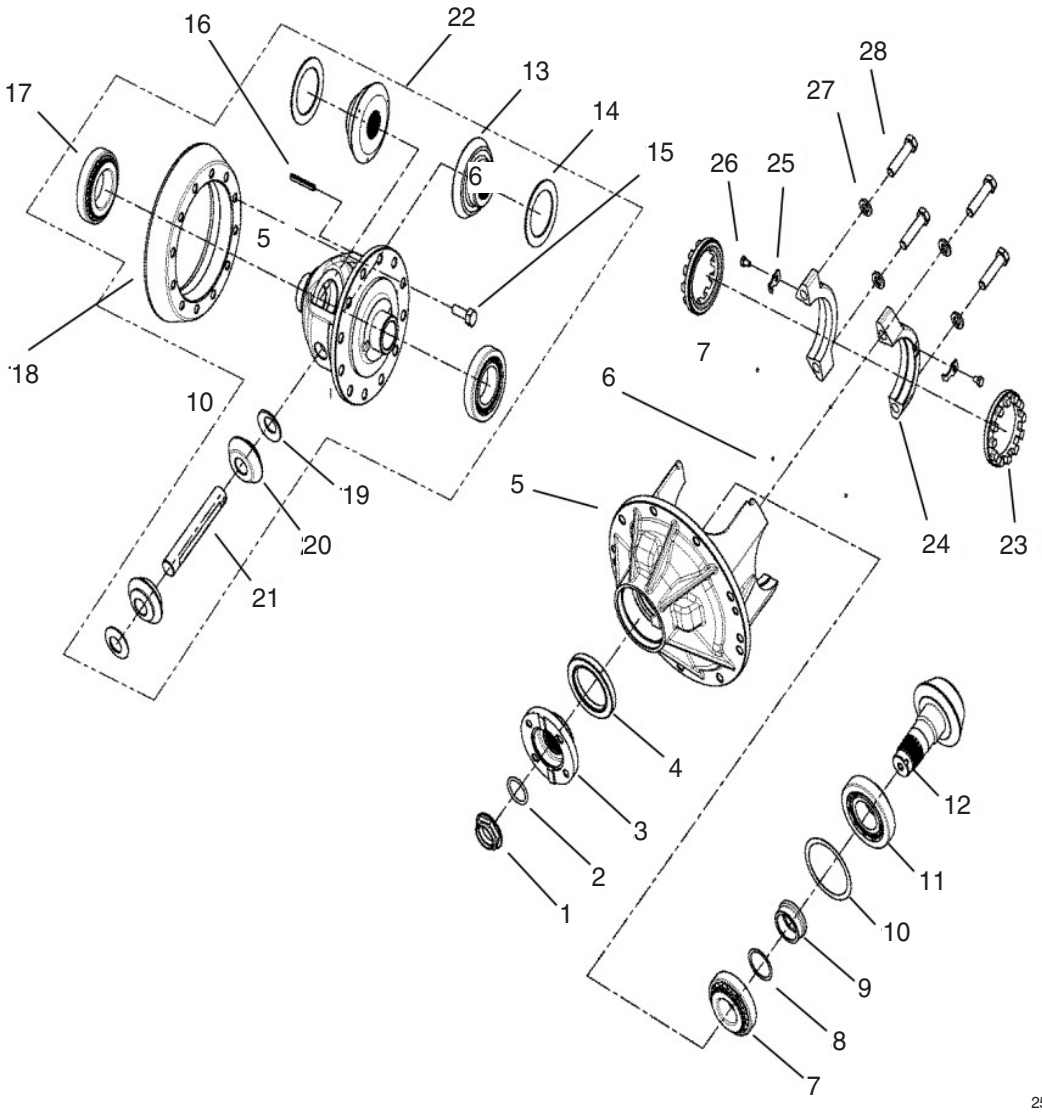
25LC92RI07

3) SPECIFICATION

Item			Specification
Torque converter	Type		3 Element, 1 stage, 2 phase
	Stall ratio		3.0 : 1
Transmission	Type		Power shift
	Gear shift (FWD/REV)		1/1
	Overhaul ratio	FWD	1.437 : 1
		REV	1.437 : 1
Axle	Type		Front-wheel drive type
	Gear ratio		11.568
	Gear		Ring and pinion gear type
Wheels	Q'ty (FR/RR)		Single : 2/2
	Front (drive)	25LC-9	21×7×15
		30/33LC-9	21×8×15
	Rear (steer)		16×6×10 1/2
Brakes	Service		Front wheel, wet disk brake
	Parking		Electric switch, wet disk brake
Steering	Type		Full hydraulic, power steering
	Steering angle		80.79˚ to both right and left angle, respectively

3) Carrier sub assy

(1) Structure

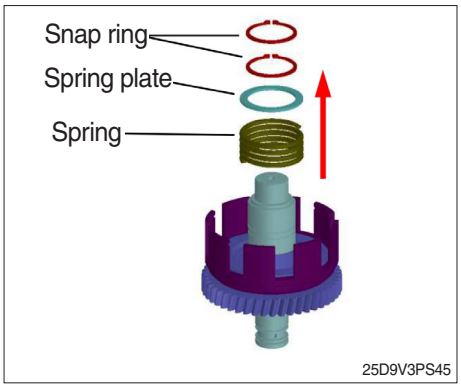


25D9V3PS104

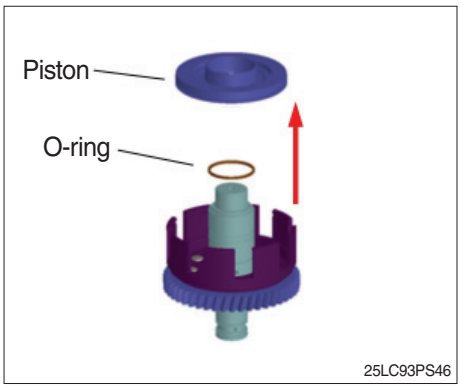
1	Lock nut	11	T/R bearing	21	Spider
2	O-ring	12	Pinion shaft	22	Diffsub assy
3	Flange yoke	13	Diff side gear	23	Adjust screw
4	Oil seal	14	Thrust washer	24	Carrier cap
5	Carrier case	15	Hex bolt	25	Lock plate
6	Steel ball	16	Spring pin	26	Hex bolt
7	T/R bearing	17	T/R bearing	27	Plain wahser
8	Shim	18	Ring gear	28	Hex bolt
9	Spacer	19	Thrust washer		
10	T/R bearing	20	Diff pinion gear		

(14) Remove the snap rings, spring plate and spring.

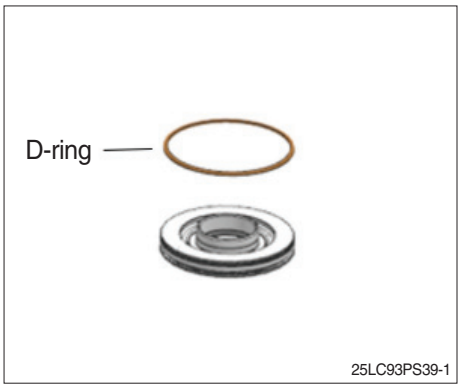
⚠ **When removing the snap ring, it may bounce off by spring force, so fix the spring firmly before removing it. Pay attention to safety when removing snap ring.**



(15) By means of compresed air, press the piston off and remove it. Then remove the o-ring.

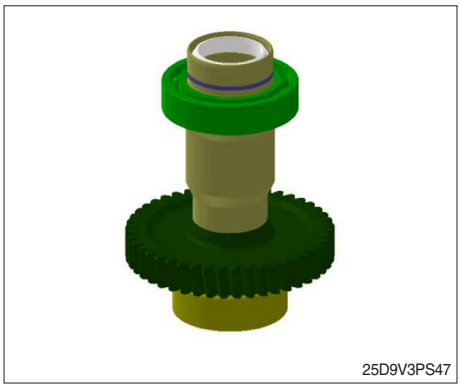


(16) Remve the D-ring.



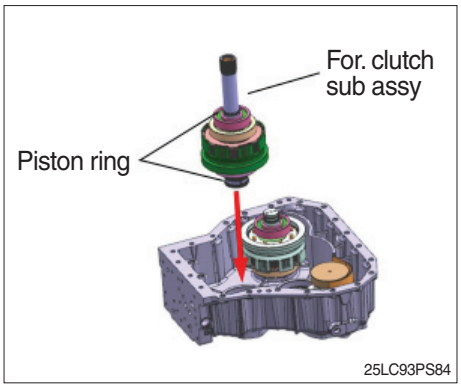
3) DISASSEMBLY OF OUTPUT SHAFT SUB ASSY

(1) Disassemble output shaft sub assembly.



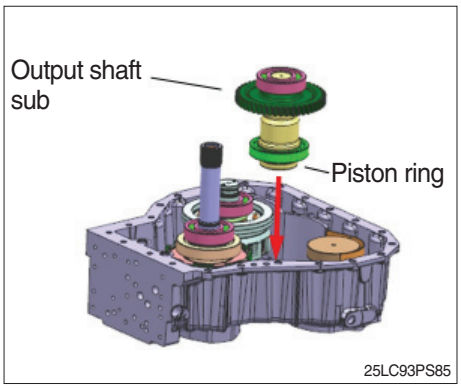
(6) Installl the for. clutch sub assy.

※ **Align and grease piston rings.**

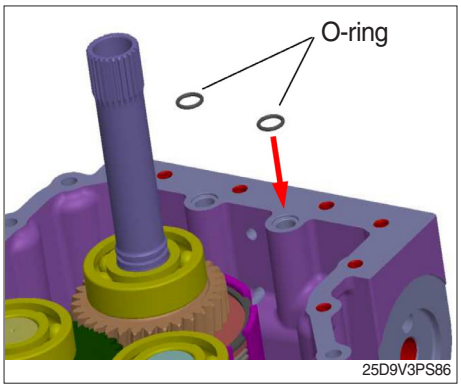


(7) Installe the output shaft sub assy.

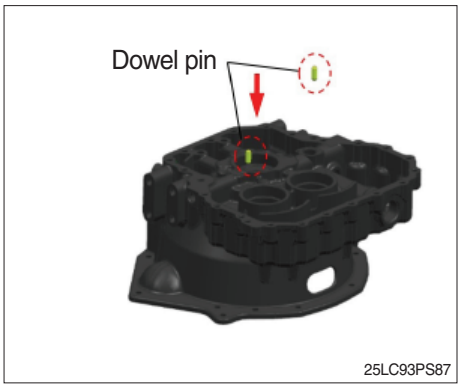
※ **Align and grease piston rings.**



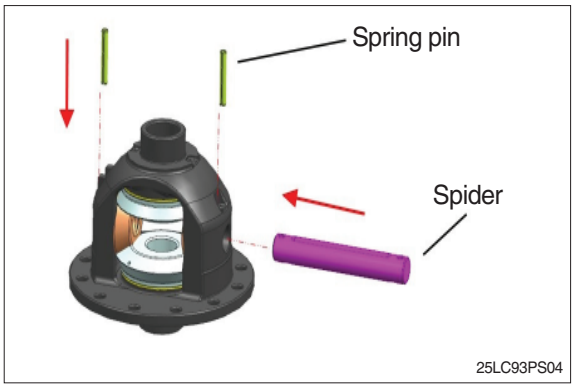
(8) Insert the o-rings and oil them.

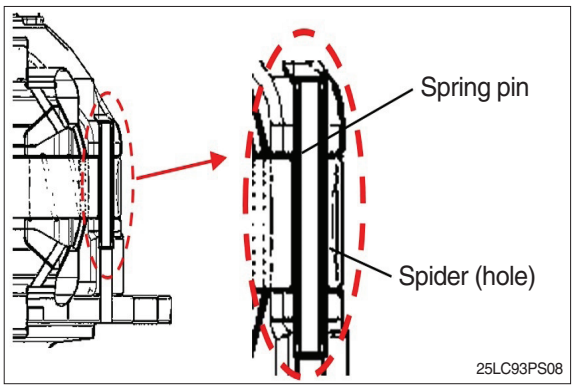


(9) Press in dowel pin. (2 EA)

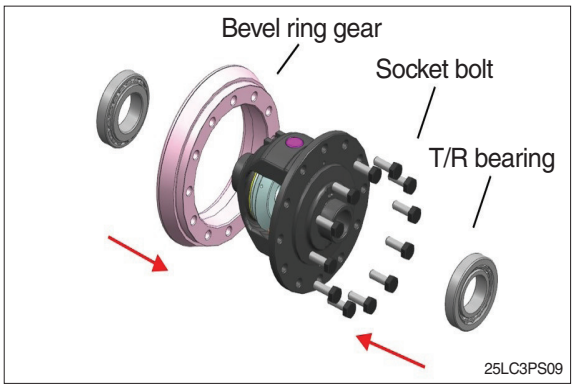


(4) Assemble the spider and press the spring pins.

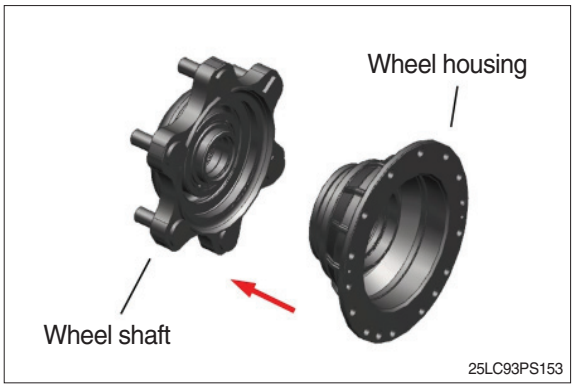




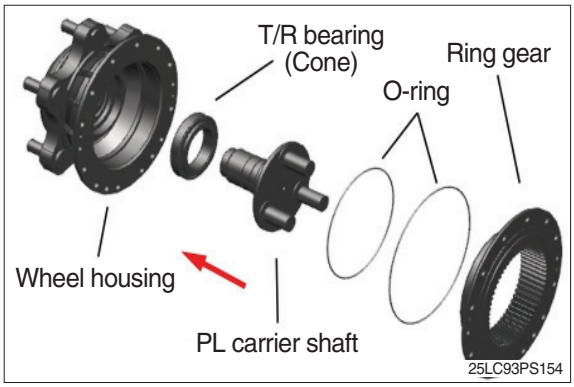
(5) Assemble the bevel ring gear and press the T/R bearing onto the diff case.



(3) Assemble the wheel housing and the wheel shaft.



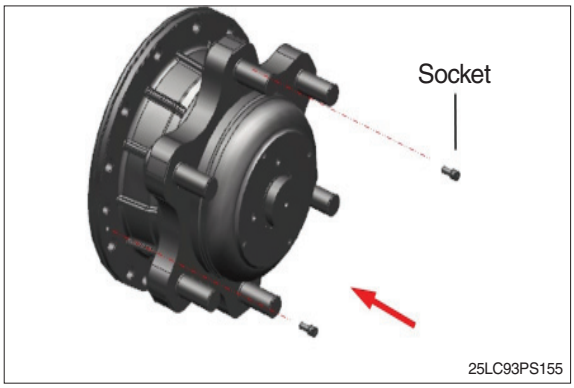
(4) Assemble the T/R bearing(cone), o-rings, pl carrier shaft, ring gear and grease o-rings.



(5) Assemble the socket bolts

※ **Fix the wheel housing and rign gear.**

· Tightening toruqe : 1.2 ~ 1.4 kgf·m
(8.7 ~ 10.1 lbf·ft)



(6) Assemble the hub lock nut to confirm the bearing rolling torque. Loosen and tighten repeatedly 2 ~ 3 times wih 25.5 ~ 29.5 kgf·m (184 ~ 213 lbf·ft). Adjust the hub lock nut so that the rolling torque of wheel housing is 0.56 ~ 0.61 kgf·m (4.05 ~ 4.41 lbf·ft) and fasten set screw.

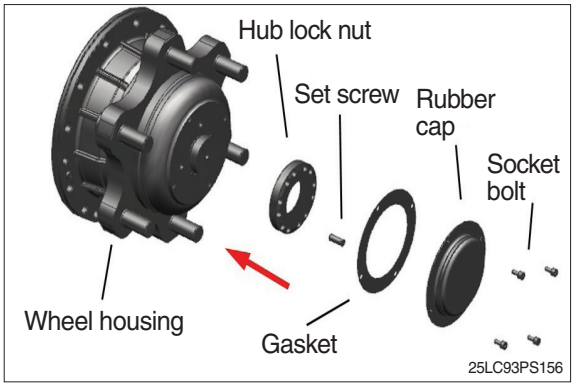
· Screw tighten toruqe : 1.2 ~ 1.4 kgf·m
(8.7 ~ 10.1 lbf·ft)

※ **Spread loctite #277.**

(7) Assemble gasekt, rubber cap and fasten socket bolt.

· Socket tighten toruqe : 0.8 ~ 1 kgf·m
(5.8 ~ 7.2 lbf·ft)

※ **Spread loctite #277.**



2) DRIVE AXLE

(1) General information

Drive axles generate small metal wear particles during operating, especially hard particles are allowed to circulate in the lubricant, along with external moisture. In these case the internal components can be more faster damaged and the brake can be made a noise.

(2) Magnets and magnetic drain plugs

The axle has magnetic drain plugs which has minimum 0.5 kg of capacity for picking-up low carbon steel. This drain plug must be checked if there are metal particles at every oil change interval.

(3) Breather

Breathers release the air pressure inside and help to minimize the condensation of oil.

※ Please clean the plug if it has particles on the surface. Cover the breather when steam cleaning the housing. If the breather is not covered, water can enter the housing and contaminate the oil.

(4) Oil level

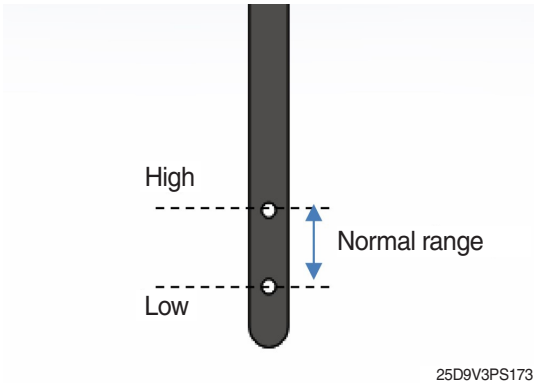
① Check and adjust oil

⚠ To prevent serious eye injury, please always wear the glass for safe when you perform the truck maintenance or service.

The part for oil filling and drain plugs are located in the axle housing.

a. Park the truck on flat ground.

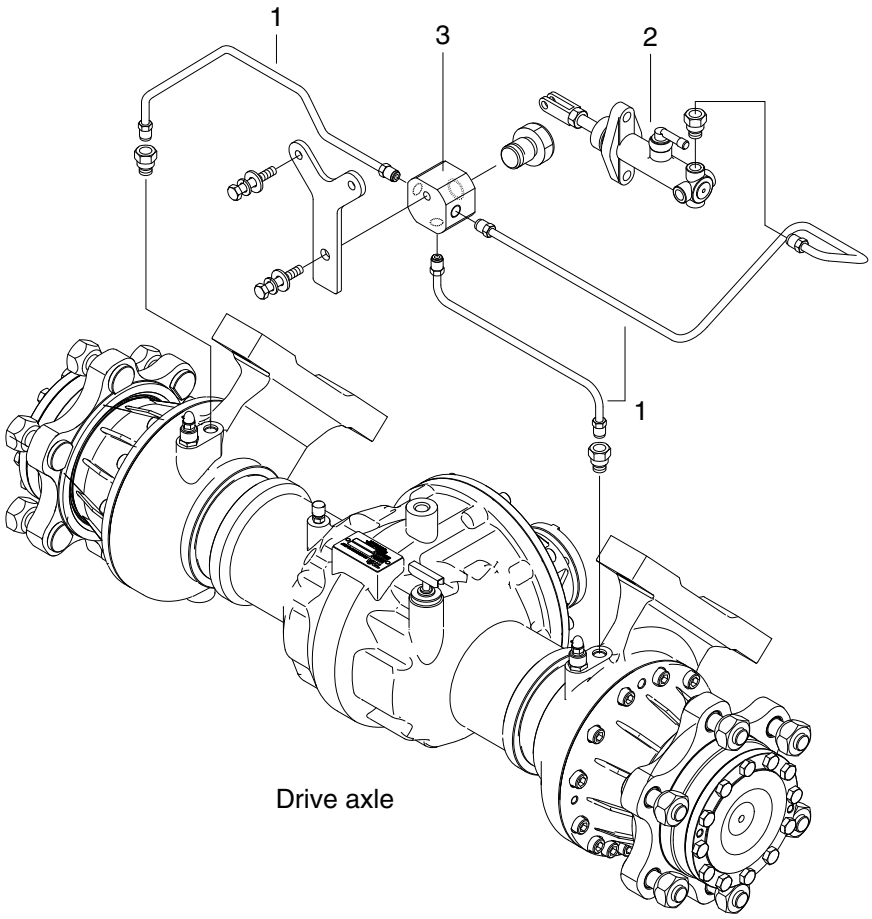
b. Pull out oil level gauge from axle, then check the height of oil.



c. If the height of oil of level gauge is higher than the upper limit, drain the oil outby after loosening main drain plug , if the height of oil is lower than the lowest limit, replenish oil.

3. BRAKE PIPING

1) STRUCTURE

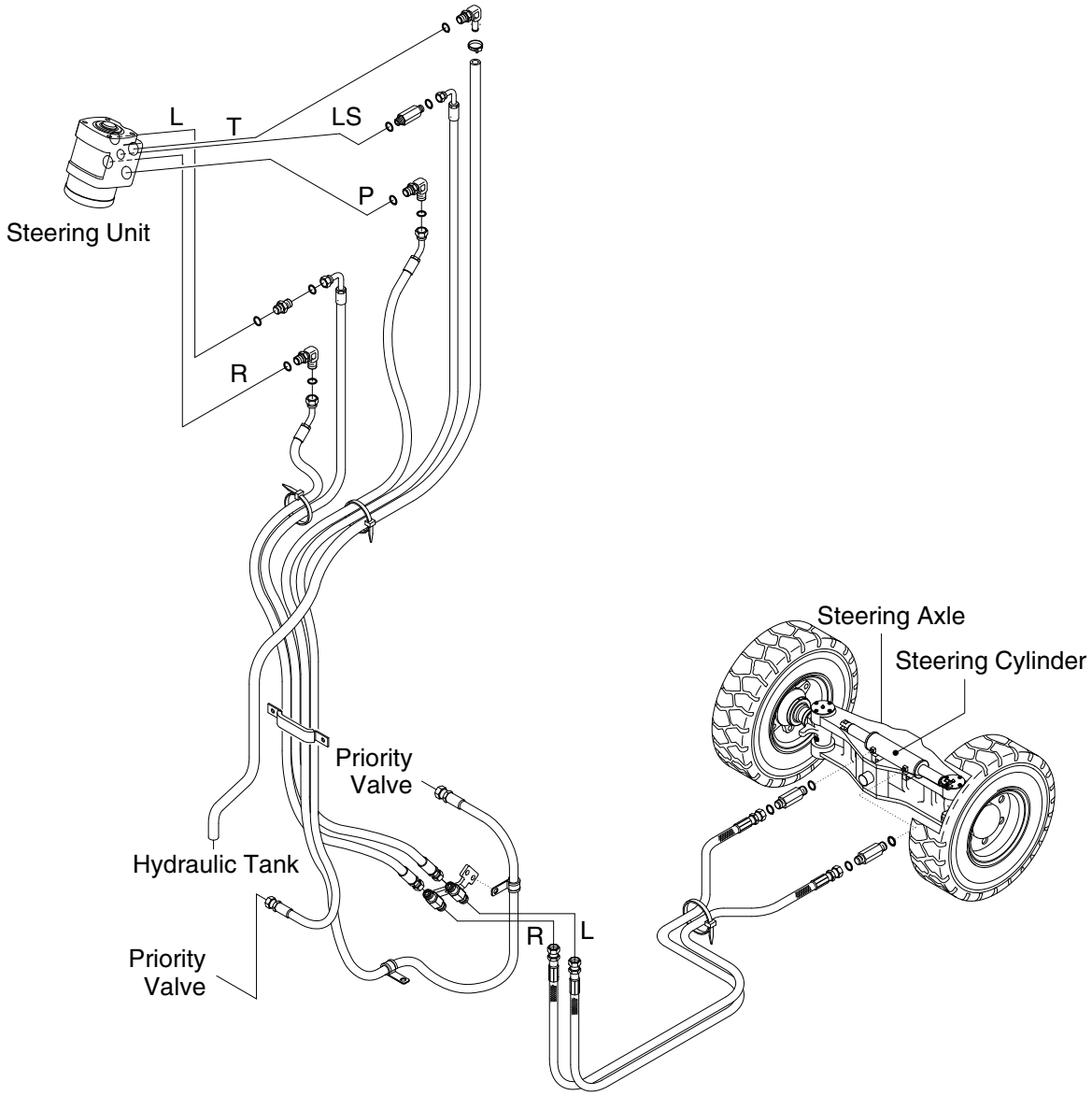


25LC94BS01A

1 Brake pipe 2 Brake valve 3 3 way block

GROUP 1 STRUCTURE AND FUNCTION

1. OUTLINE

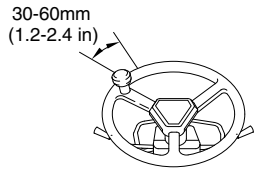


25LC95SS72A

The steering system for this truck is composed of main pump, steering wheel assembly, steering unit, priority valve, steering cylinders, steering axle and piping. The steering axle supports the forklift weight with the rear axle, contains a cylinder and controls the position of the rear tires. The steering axle body is unit structure having steering knuckles installed to its both ends by means of king pins. Hub and wheel are mounted through bearing to spindle of knuckle. When the steering wheel is turned, the rotation torque is transmitted to the steering unit, and the hydraulic oil in the steering unit is transmitted to the steering axle hydraulic cylinder through the hose, so that the forklift moves left and right. The force produced by the steering cylinders moves the knuckle of rear tires through the intermediate link. Refer to the illustration for the location of the steering system components.

GROUP 2 OPERATIONAL CHECKS AND TROUBLESHOOTING

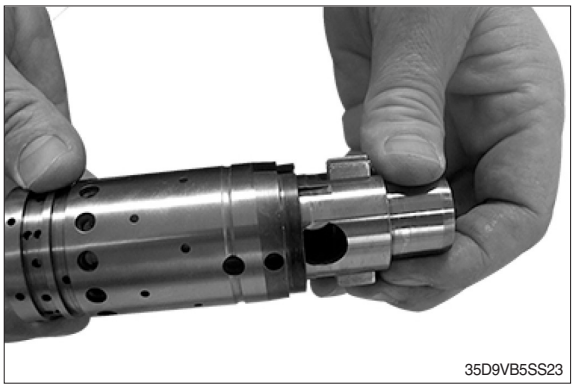
1. OPERATIONAL CHECKS

<table>
<tr><th>Check item</th><th>Checking procedure</th></tr>
<tr><td>Steering wheel
 
</td><td>· Set rear wheels facing straight forward, then turn steering wheel to left and right. Measure range of steering wheel movement before rear wheel starts to move. Range should be 30~60 mm at rin of steering wheel. If play is too large, adjust at gear box.
Test steering wheel play with engine at idling.</td></tr>
<tr><td>Knuckle</td><td>· Check knuckle visually or use crack detection method. If the knuckle is bent, the tire wear is uneven, so check tire wear.</td></tr>
<tr><td>Steering axle</td><td>· Put camber gauge in contact with hub and measure camber.
If camber is not within 0±0.5° ; rear axle is bent.
· Ask assistant to drive truck at minimum turning radius.
· Fit bar and a piece of chalk at outside edge of counterweight to mark line of turning radius.
· If minimum turning radius is not within±100 mm (±4 in)of specified value, adjust turning angle stopper bolt.
Min turning radius (Outside)
<table>
<tr><td>25LC-9</td><td>2035 mm (80 in)</td></tr>
<tr><td>30LC-9</td><td>2085 mm (82 in)</td></tr>
<tr><td>33LC-9</td><td>2113 mm (83 in)</td></tr>
</table></td></tr>
<tr><td>Hydraulic pressure of power steering</td><td>Connect a pressure gauge to the LS pressure check port on the priority valve. Turn steering wheel fully and check oil pressure.
※ Oil pressure : 110 ~ 115 bar (1595 ~ 1670 psi)</td></tr>
</table>

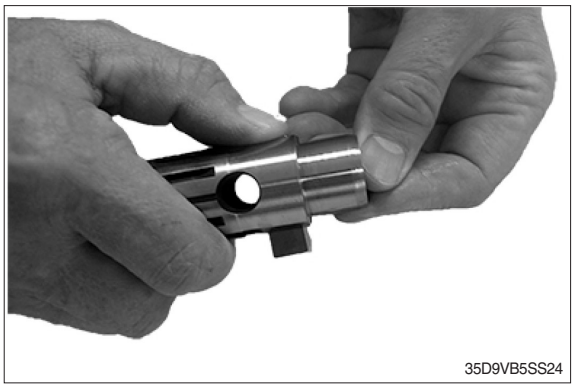
(16) Press out the cross pin (11).

(17) Remove the ring (10).

(18) Carefully press the spool out of the sleeve.

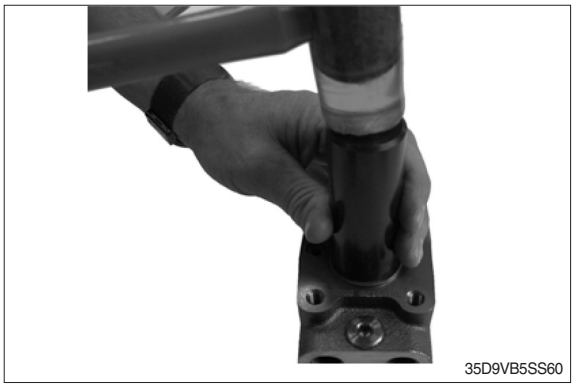


(19) Press the neutral position springs (12) out of the slot of the spool.



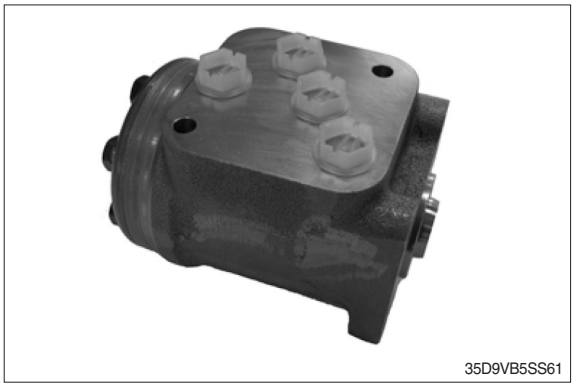
(34) Place the dust seal ring (1) in the housing.

(35) Fit the dust seal ring in the housing using special tool for dust seal assembly and a plastic hammer.



(36) After finalizing the entire assembly, screw in the plastic plugs into the connection ports to keep the ports clean during storage and transportation.

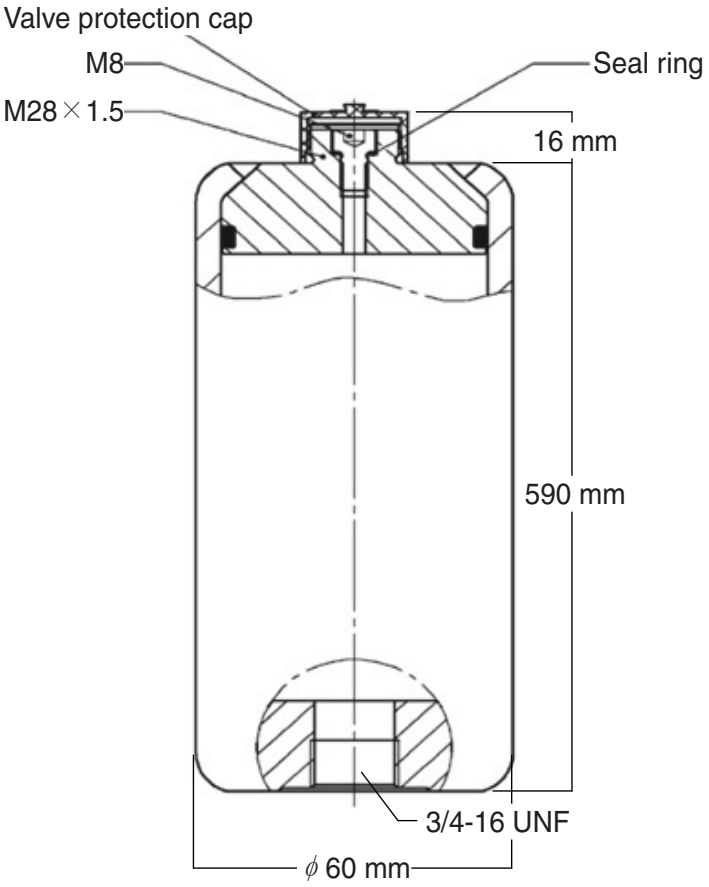
※ **Refer to the relief valve and LS port pressure test and adjustment.**



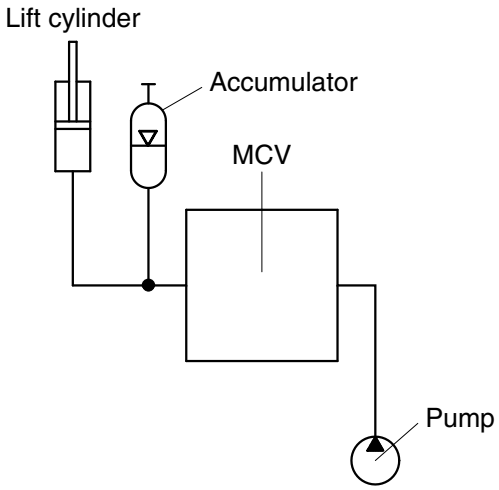
SECTION 6 HYDRAULIC SYSTEM

6. MAST ACCUMULATOR

1) STRUCTURE



35D9VB6HS52



35D9VB6HS59

Mast type	Parts No.	Normal volume	Pre-charging pressure at 20 ℃ (68 ℉)	Gas	Weight
V	31HK-70060	1 ℓ (0.26 U.S. gal)	10 bar (145 psi)	Nitrogen gas N_2	4.8 kg (10.6 lb)
TF, QF	31HK-70050		6 bar (87 psi)		

※ Max. working pressure : 280 bar (4000 psi), shell, rod material : carbon steel

※ Permitted operating temperature : -20 ~ +80 ℃ (-4 ~ +176 ℉), seal material : NBR/PUR

The mast accumulator is installed in the hydraulic line of the lift cylinder to absorb fork vibration and reduce hydraulic pulsation, which acts as a shock absorber to reduce vibration that may occur when climbing slopes or driving on rough road surfaces. This helps to prevent damage to fragile items such as glass or ceramics (porcelain) by ensuring the stability of the truck. In addition, when applied to hydraulic attachments (e.g. paper roll clamps, carton clamps, etc.), it can be configured and utilized to help reduce damage to the load through "prevent slipping of loads".

※ The accumulator works effectively under light and heavy loads. The higher the load, the smaller the absorption effect.

※ Compared with the case without the accumulator, this device can repeat overrun and underrun for a certain period of time when the fork stops. The phenomenon is slightly different depending on the load conditions, so please understand its characteristics before operation.

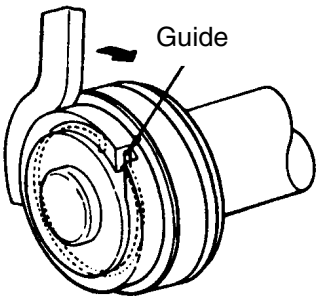
2. TROUBLESHOOTING

1) SYSTEM

Problem	Cause	Remedy
Large fork lowering speed.	· Seal inside control valve defective. · Oil leaks from joint or hose. · Seal inside cylinder defective.	· Replace spool or valve body. · Replace. · Replace packing.
Large spontaneous tilt of mast.	· Tilting backward : Load check valve defective. · Tilting forward : tilt lock valve defective. · Oil leaks from joint or hose. · Seal inside cylinder defective.	· Clean or replace. · Clean or replace. · Replace. · Replace seal.
Slow fork lifting or slow mast tilting.	· Lack of hydraulic oil. · Hydraulic oil mixed with air. · Oil leaks from joint or hose. · Excessive restriction of oil flow on pump suction side. · Relief valve fails to keep specified pressure. · Poor sealing inside cylinder. · Pump detctive. · Mast fails to move smoothly. · Oil leaks from lift control valve spool. · Oil leaks from tilt control valve spool.	· Add oil. · Bleed air. · Replace. · Clean filter. · Adjust relief valve. · Replace packing. · Replace pump. · Adjust roll to rail clearance. · Replace spool or valve body. · Replace spool or valve body.
Hydraulic system makes abnormal sounds.	· Excessive restriction of oil flow pump suction side. · Gear or bearing in hydraulic pump defective.	· Clean filter. · Replace pump.
Control valve lever is locked	· Foreign matter jammed between spool and valve body. · Valve body defective.	· Clean. · Tighten body mounting bolts uniformly.
High oil temperature.	· Lack of hydraulic oil. · Priority valve spool flow path is blocked. · Oil filter clogged.	· Add oil. · Replace priority valve. · Clean filter.

2) DISASSEMBLY

(1) Hold the cylinder tube in a vice, loosen the cylinder head and remove it.
Remove the spacer from the cylinder tube and knock out the bushing. Hook a wrench in the hole in the retainer at the piston end and turn. Lever up the edge of the guide, then turn the guide in again and the guide can be removed.



L15C3HS25

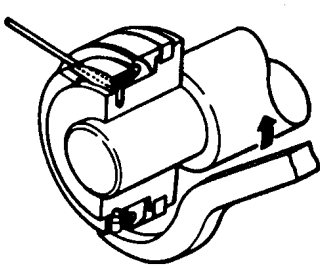
3) CHECK AND INSPECTION

mm (in)

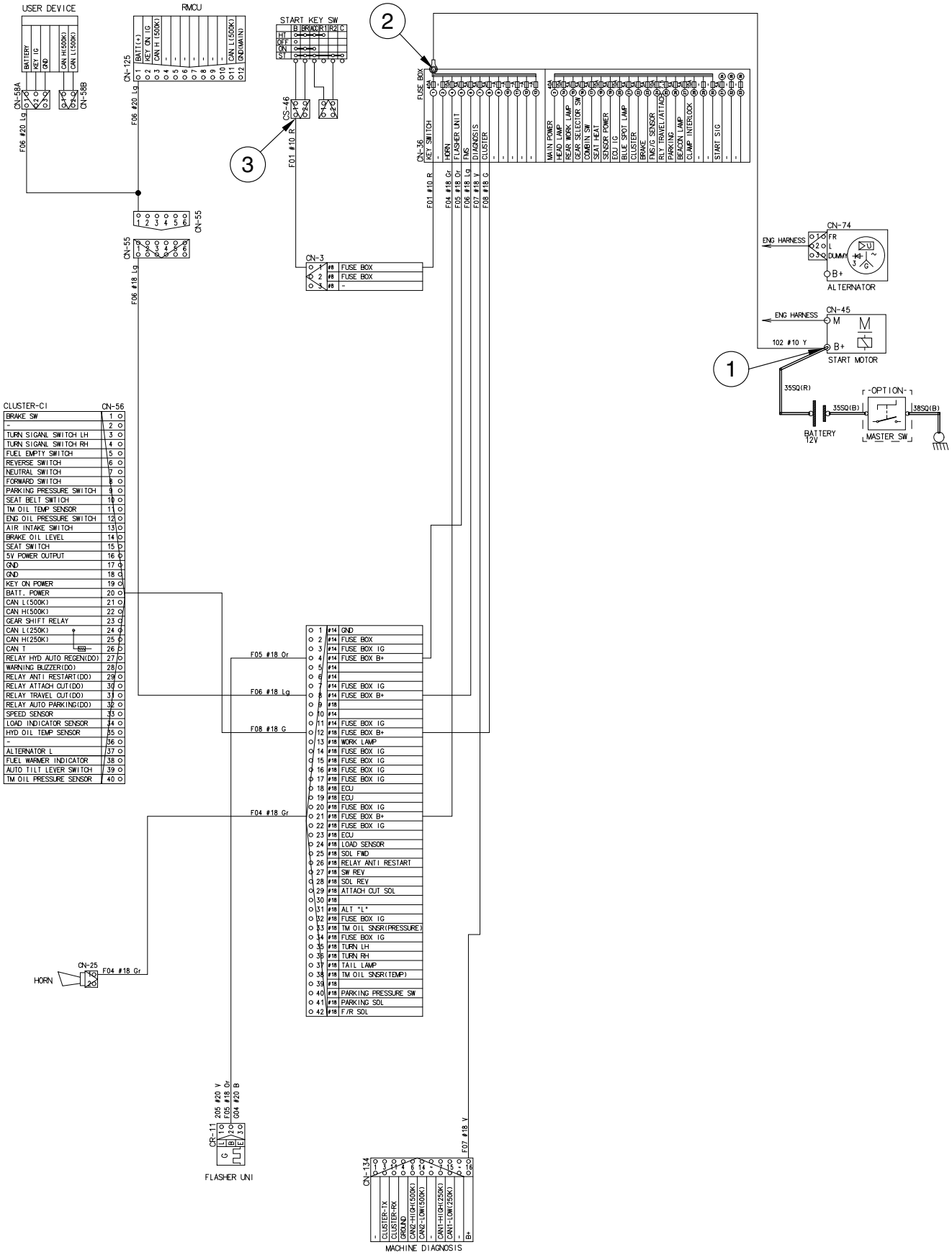
Check item	Standard size	Repair limit	Remedy
Clearance between cylinder rod & bushing	0.072~0.288 (0.003~0.011)	0.5 (0.020)	Replace bushing
Clearance between piston ring & tube	0.05~0.030 (0.002~0.012)	0.5 (0.020)	Replace piston ring

4) ASSEMBLY

(1) Soak the piston ring in hydraulic oil at a temperature of 40 to 50°C, expand the inside diameter and assemble on the piston. Install a piston seal.
Bend the edge of the guide and rotate it to install the guide completely.

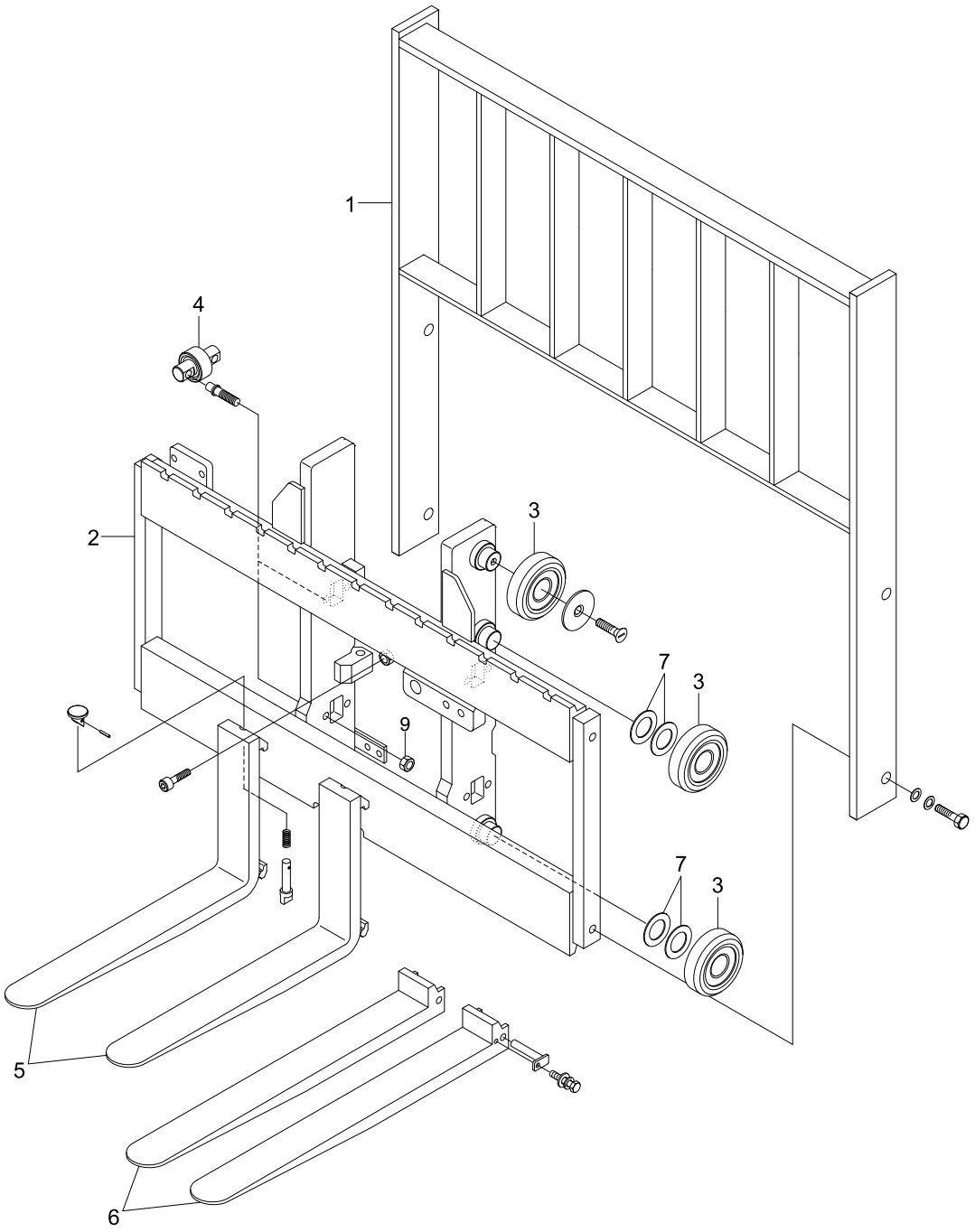

L15C3HS26

POWER CIRCUIT



25LC97ES03

3. CARRIAGE, BACKREST AND FORK



35D9MS04

1	Backrest	5	Fork
2	Carriage	6	Extension fork
3	Roller	7	Shim (0.5, 1.0t)
4	Side roller		