SECTION 3 POWER TRAIN SYSTEM

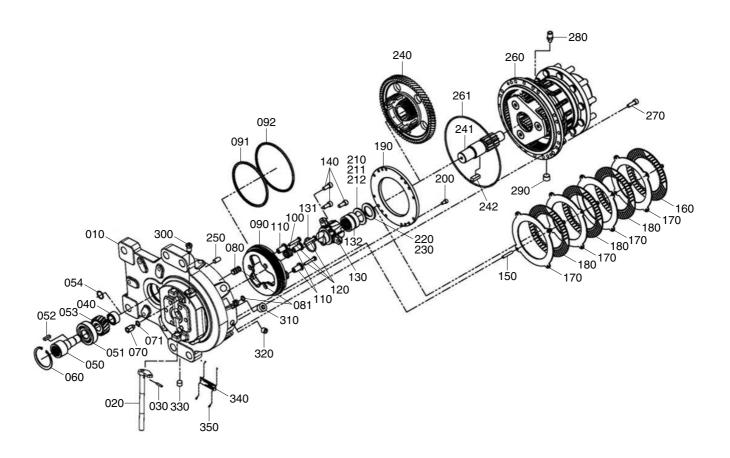
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SECTION 3 POWER TRAIN SYSTEM

GROUP 1 STRUCTURE AND OPERATION

1. DRIVE UNIT

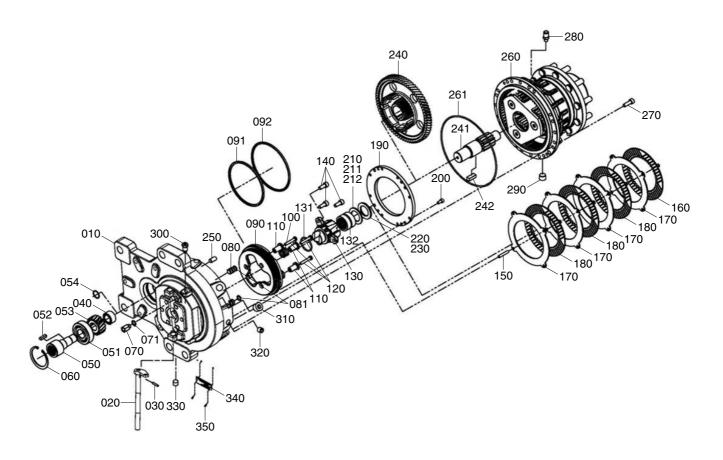
1) STRUCTURE (1/2)



22B9PT01

010	Housing (LH, RH)	070	Fitting (brake)	120	Bolt (piston brake)
020	Parking lever (LH, RH)	071	O-ring (fit-brake)	130	Bearing boss (drive)
030	Spring pin	080	Parking pin	131	O-ring (bearing boss)
040	Needle roller bearing (drive)	081	O-ring (parking pin)	132	Needle bearing roller (drive)
050	Drive gear shaft	090	Brake piston	140	Hex socket bolt (bearing boss)
051	Ball bearing (drive)	091	D-ring (small)	150	Guide pin
052	Key (drive)	092	D-ring (large)	160	Spring brake disc
053	Drive gear 18T	100	Return spring	170	Reaction plate
054	Snap ring (drive)	110	Spacer	180	Friction plate
060	Snap ring (drive)				

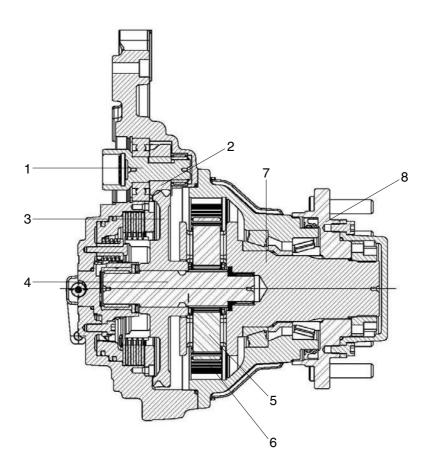
STRUCTURE (2/2)



22B9PT01

190	Stopper disc plate	260	Wheel assy
200	Hex socket bolt (brake cover)	261	O-ring (final housing)
210	Spacer (bearing boss, 3.0 t)	270	Hex socket bolt (housing)
211	Spacer (bearing boss, 3.1 t)	280	Air breather
212	Spacer (bearing boss, 3.2 t)	290	Magnetic plug (drain)
220	Thrust needle bearing (bearing boss)	300	Air breather (brake)
230	Thrust needle washer (bearing boss)	310	Socket plug (fill oil)
240	Driven gear (71T)	320	Socket plug (level)
241	Sun gear shaft (13T)	330	Socket plug (drain)
242	Key (driven)	340	Name plate (LH, RH)
250	Dowel pin (plate housing)	350	Rivet

2) OPERATION



DU003B

- 1 Drive shaft
- 2 Drive gear
- 3 Gear
- 4 Sun gear shaft

- 5 Planetary gear
- 6 Ring gear
- 7 Carrier shaft
- 8 Wheel adapter

DRIVE AXLE

The drive axle include service brake and parking brake as a power transfer components which are assembled to drive wheels of the battery fork lift.

The rotation power from the drive motor transmits to the drive shaft (1).

The gear (3) engages with the drive gear (2) which is fixed by key to the shaft.

The gear (3) is fixed by key to the sun gear shaft (4).

The planetary gears (5) engage with the ring gear (6) which is fixed by key to the sun gear shaft (4).

Finally reduced rotation power is transmitted to the wheel adapter (8) which is fixed with the carrier shaft (7).

3) SPECIFICATION

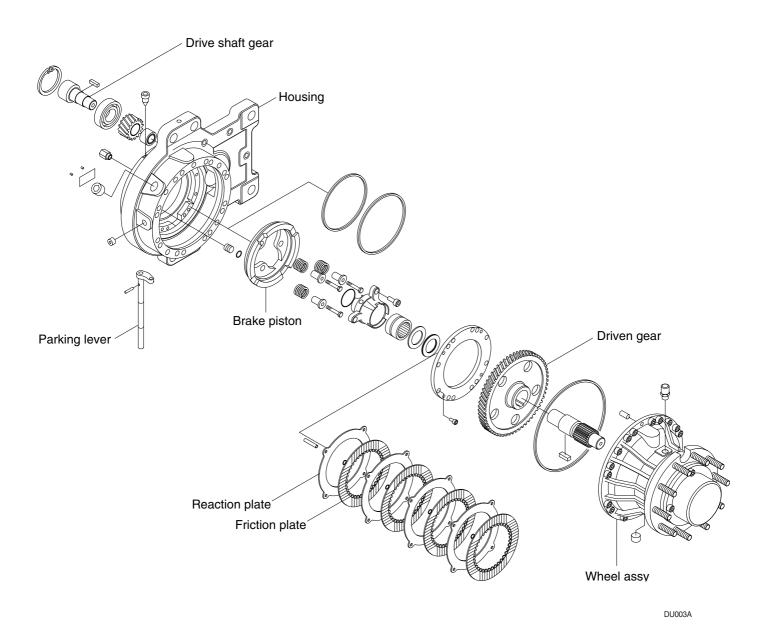
Item	Unit	Specification
Max wheel load	kg/lb	4500/9921
Gear ratio	-	24.58
Weight without fluid	kg/lb (EA)	62/137
Oil quantity (Mobilfluid 424)	≀ /U.S.gal	1.0/0.26

GROUP 2 TROUBLESHOOTING

Problem	Cause	Remedy	
1. Noise			
Knocking conditional on speed	Gearing of helical gear steep has been damaged when mounting motor.	Dismount electric motor. Check drive pinion and helical gear for damage.	
2) Singing noise	· Motor connection is not correct.	- Check motor connection.	
	· Motor bearing is faulty.	- Check motor bearing.	
3) Muffled grinding noise	· Wheel bearings faulty.	- Have bearings checked in a workshop.	
	- Due to insufficient fluid level.		
	 Inadmissibly high prestress of bearings. 		
	· Gearing of planetary step is damaged	- Have gear set of planetary step and wheel bearings checked in a workshop.	
	- Due to insufficient fluid level.		
	- Due to excessive bearing clearance		
	of wheel.		
2. Leakage			
1) Breather valve	· Excessive fluid level.	- Check fluid level.	
2) Motor	· O-ring seal faulty.	- Dismount electric motor, check O-ring and sealing surfaces for damages.	
3) Wheel shaft	· Sealing ring of wheel shaft faulty.	- Check sealing ring and wheel shaft for damages in the sealing area.	
4) Brake lever	Sealing ring of brake lever faulty.	 Check sealing ring and straight pin for damages in the sealing area. Consult workshop. 	
5) Transmission warms up	· Fluid level is either too high or too low.	- Check fluid level.	
	 Wheel bearings with an excessive pretension. 	- Check clearance of wheel shaft.	

GROUP 3 DISASSEMBLY AND ASSEMBLY

1. DISASSEMBLY OF THE DRIVE AXLE ASSY

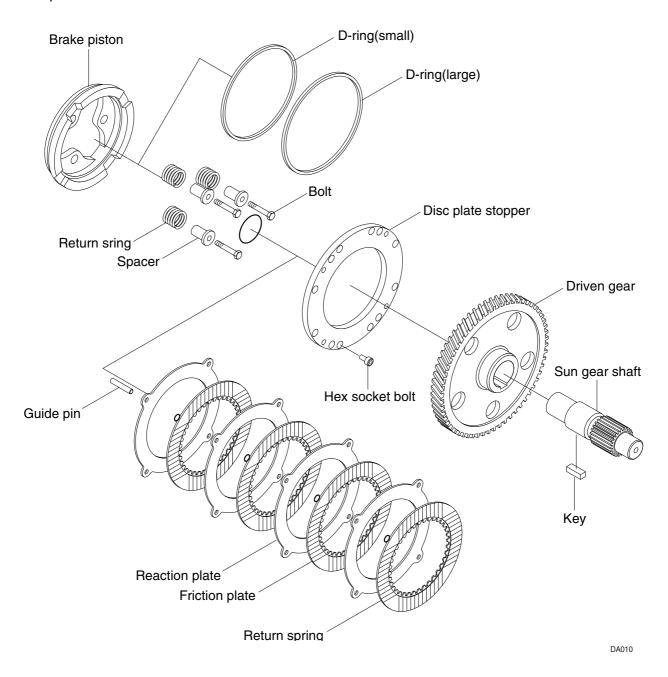


▲ Arrange all the components according to disassembled sequence when disassembling the drive axle assy.

Record using the felt-tip open if necessary and provide the components to discriminate easily.

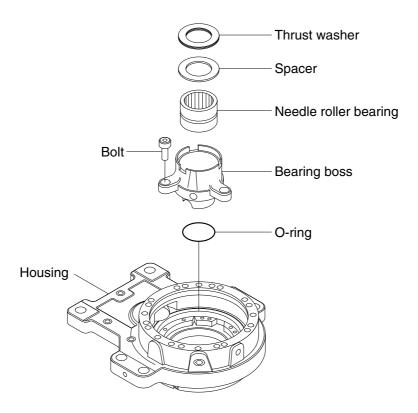
Store the disassembled components to clean place for cleaness of it.

1) DISASSEMBLY OF SERVICE BRAKE



- (1) Disassemble the sun gear shaft and the driven gear from the bearing boss.
- (2) Loosen and remove the socket bolts (12EA) to fix the stopper using the special tool.
- (3) Disassemble the reaction plates (4 pcs) and the brake discs (4 pcs) from the housing.
 - * When disassembling the reaction plates and the friction plate, take care to damage or loss of the springs (16EA).
- (4) Remove the bolts to fix the piston from the housing using the spaner or wrench.
 - * When disassembling the piston, let air pressure into the brake port.

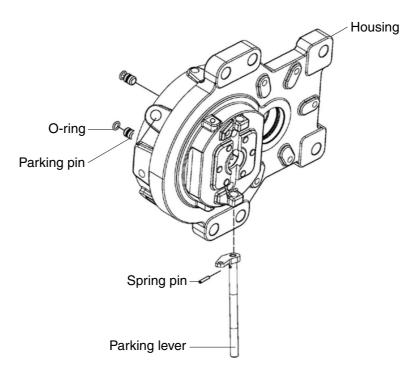
2) DISASSEMBLY OF BEARING BOSS



DA011

- (1) Remove the thrust washer and spacer from the bearing boss.
- (2) Disassemble the bolts (3EA) to fix the bearing boss from the housing using the special tool.
- (3) Take care to the damage and the break away of the O-ring for the bearing boss.
 - * When disassembling the bearing boss, always renew the O-ring.

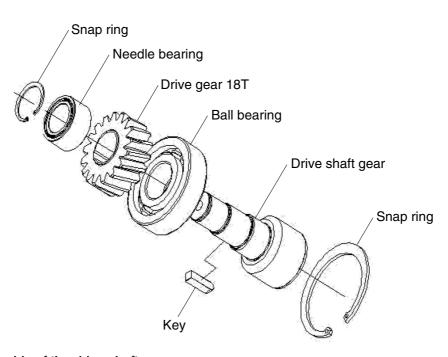
3) DISASSEMBLY OF PARKING LEVER AND DRIVE SHAFT ASSY



DA012A

(1) Disassembly of the parking lever and pin

- ① Remove the spring pin using the pryer.
- ② Remove the parking pin and the O-ring from the housing using the rubber mallet and driver.
- * Take tare to do not damage for the O-ring of the parking pin.

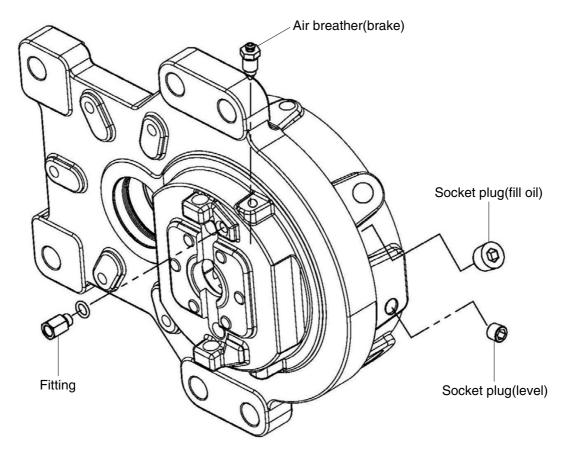


DA012B

(2) Disassembly of the drive shaft assy

- ① Remove snap ring (retaining ring) from the gear drive shaft.
- ② Disassemble the gear and the key from the gear drive shaft.
- ③ Disassemble the ball bearing from the gear drive shaft using the gear puller.
- * When disassembling the ball bearing, fix the gear to the bearing inner race of the ball bearing.

4) DISASSEMBLY OF THE BRAKE FITTING AND PLUG

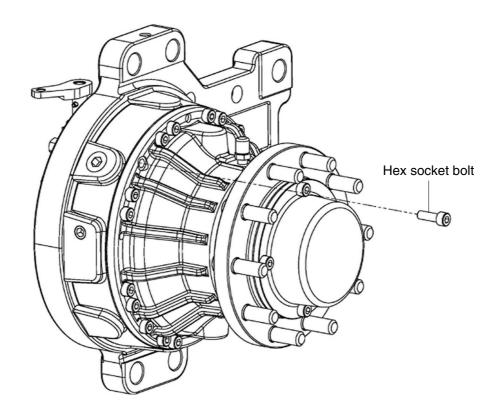


DA013

- (1) Remove the fitting of the brake port and the air breather.
- (2) Remove the level plug and oil filling plug.

5) DISASSEMBLY OF THE WHEEL ASSY

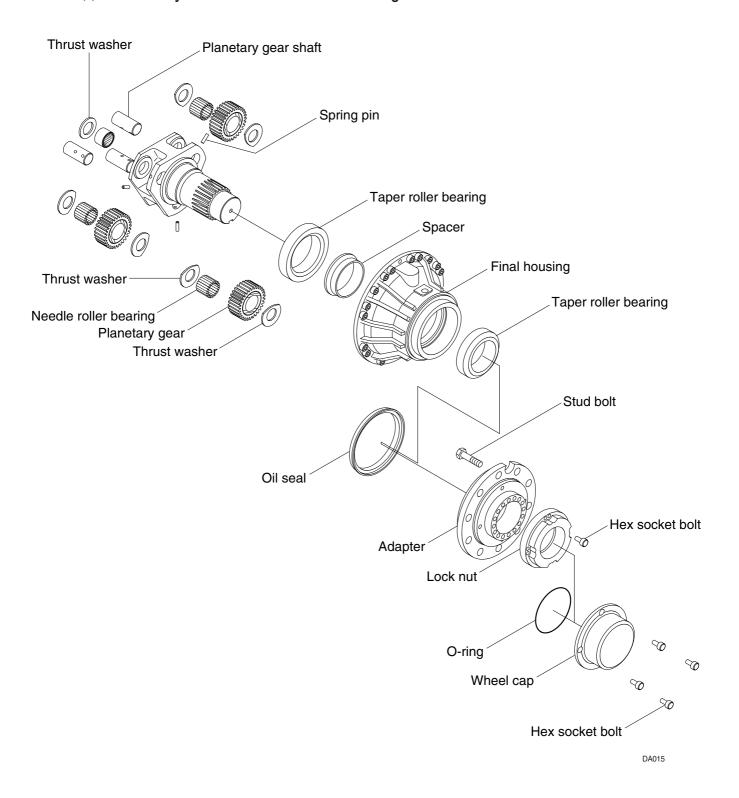
Remove the hex socket bolts from the housing to disassemble the wheel assy and the drive axle assy using the special tool.



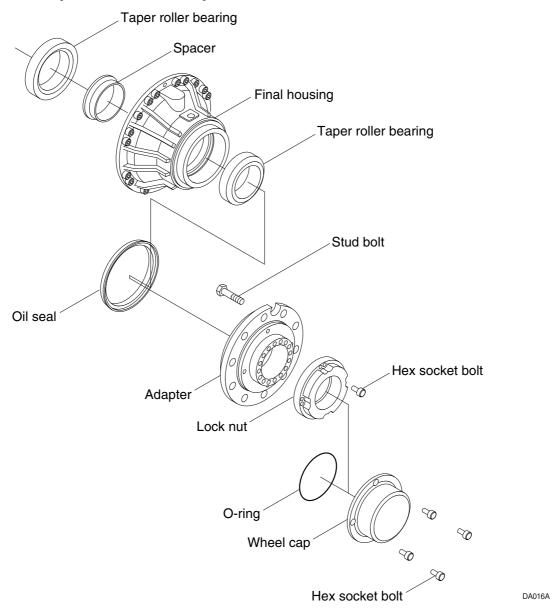
DA014

- ⚠ When disassembling the wheel assy, arrange the all components in regular sequence for dissassembling.
- * Disassemble according to regular sequence for all components.
- * Record using the felt-tip pen if necessary and provide the components to discriminate easily.

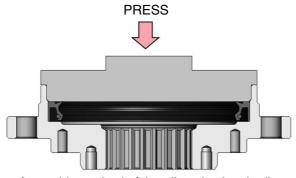
(1) Disassembly of the carrier and the hub bearing



(2) Disassembly of the wheel sub assy



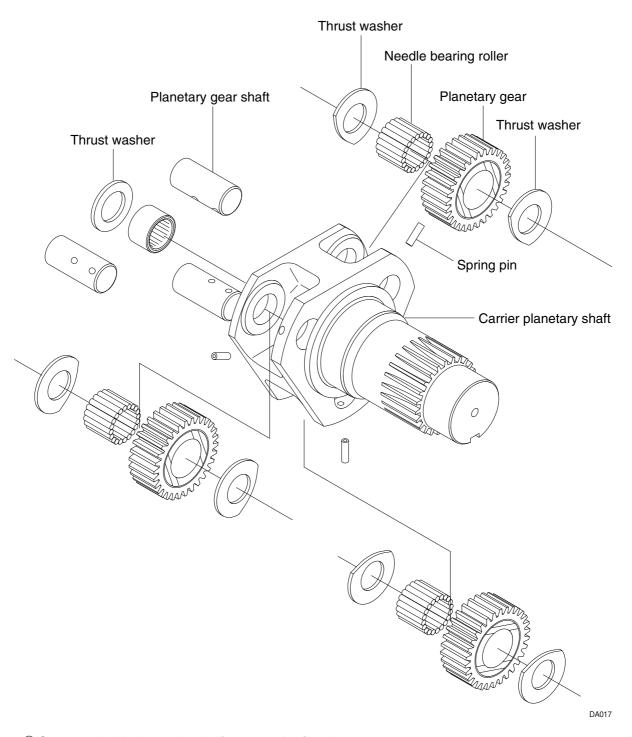
- ① Disassemble the socket bolts (4EA) to fix the wheel cap from the wheel adapter using the special toool.
- ② Remove the bolts to fix the lock nut.
- ③ Disassemble the lock nut to fix the adapter from the carrier shaft.
- ④ Disassemble the wheel adapter from the carrier shaft.
 - * Take care not to damage the oil seal which is inserted in the wheel adapter.
- ⑤ Disassemble the taper roller bearing after putting on the wheel assy to the press.



Assembly method of the oil seal using the jig

DA016B

(3) Disassembly of the carrier shaft assy



- ① Set up straightly the carrier shaft assy on the flat place.
- ② Remove the spring pin to fix the planetary gear shaft using pench or tool.
- ③ Disassemble the planetary gear shaft tapping smoothly using the mallet or tool in two or three times.
 - Repeat the disassembly for the planetary carrier assys (3EA).
- ▲ When reassembling the planetary carrier, take care not to lose the pin springs.
 Always make sure that the pin springs are assembled to the planetary carrier after assembling.