



5T-7T Internal Combustion Counterbalanced Forklift Truck

Service Manual

Ⓐ UT50/60/70P (DSL)

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P/N 76500014

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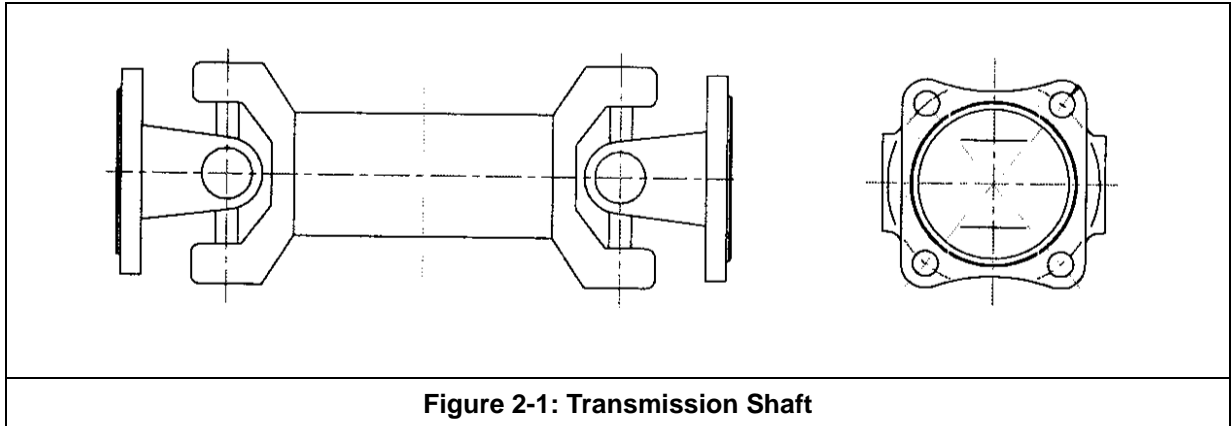
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2.5 Drive Shaft

The drive shaft consists of flange yoke, cross shaft, bearing, centering yoke and other components. The cross shaft is mounted in the centering yoke ears, needle bearing sleeves are incorporated into the four bearing blocks, and the cross shaft is provided with a grease fitting that can be used to inject grease through to the bearings.

When excessive clearance is generated between cross shaft and needle bearings, disconnect flange yoke and replace bearings or cross shaft as required. Bearings must be replaced as a set. The two cross shaft grease fittings should be located on the same side to aid servicing.

Use MoS₂ lubricant on needle bearings. Never use thick oil such as butter for lubrication, because this will prevent the needle rollers on the cross shaft from rolling on the journal, thereby accelerating wear. Add lubricant frequently when working in dusty environments.



3.7.3 Removal and Assembly of Main Reduction Unit

Remove drive axle and main reduction unit from vehicle.

- (1) Chock rear wheels with wooden blocks.
- (2) Raise front end of forklift truck and place wooden blocks under support sleeve on each side.



WARNING:

The counterweight is heavy. Carefully place a wooden block under the counterweight.

- (3) Ensure that support sleeve is properly supported on the wooden blocks.
- (4) Remove mast and related parts.
- (5) Drain oil from drive axle housing.
- (6) Remove half-axes (together with drive axle).
- (7) Support drive axle using a jack.
- (8) Remove transmission shaft from main reduction unit.
- (9) Remove brake line.
- (10) Remove support sleeve coupling bolts.
- (11) Carefully remove drive axle together with main reduction unit.

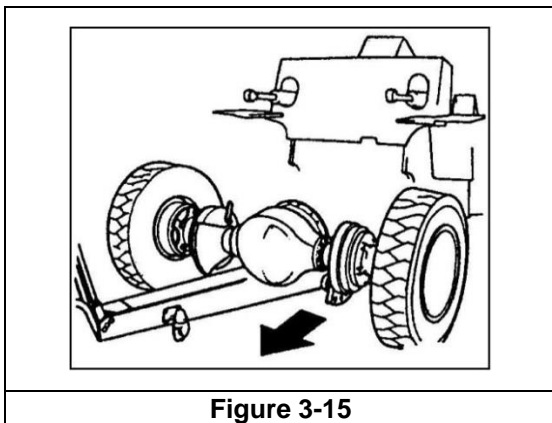


Figure 3-15

- (12) Carefully remove main reduction unit mounting bolts, then separate main reduction unit.

Install in reverse order of removal.

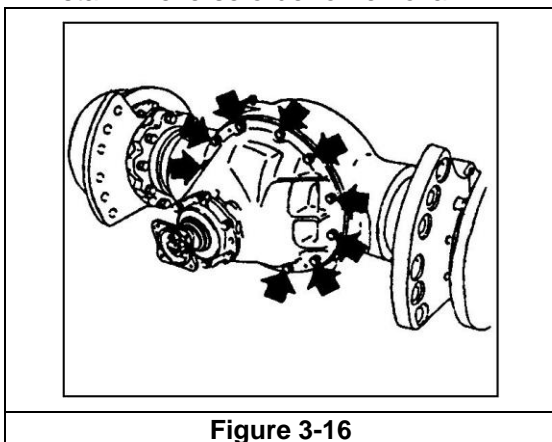


Figure 3-16

Removal

Before removal, comprehensively check the backlash between the driving and driven spiral bevel gears, check the meshing area of the driving gears, driven gears and half-axle gears, and correctly diagnose the cause of any faults.

Remove differential casing

- (1) Mark the left and right differential casings and bearing blocks to their respective sides.
- (2) Remove lock plate from bearing adjuster nut on left and right-side bearing blocks.

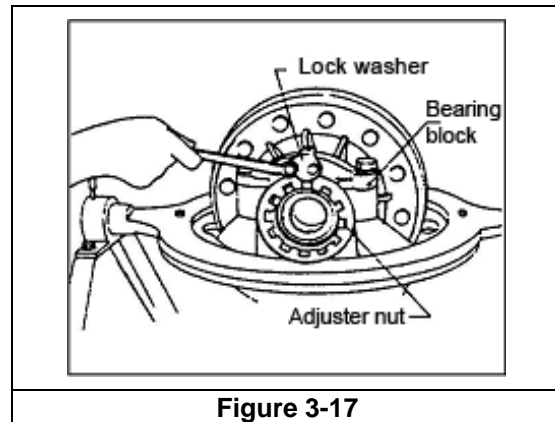


Figure 3-17

- (3) Gently loosen bearing block mounting bolts and remove adjuster nuts.

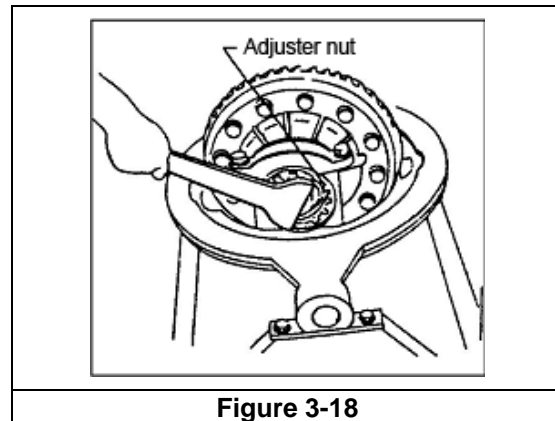


Figure 3-18

- (4) Remove bearing block mounting bolts and left and right bearing blocks.
- (5) Lift differential assembly with a hoist or other means, being careful not to knock the outer bearing surface.

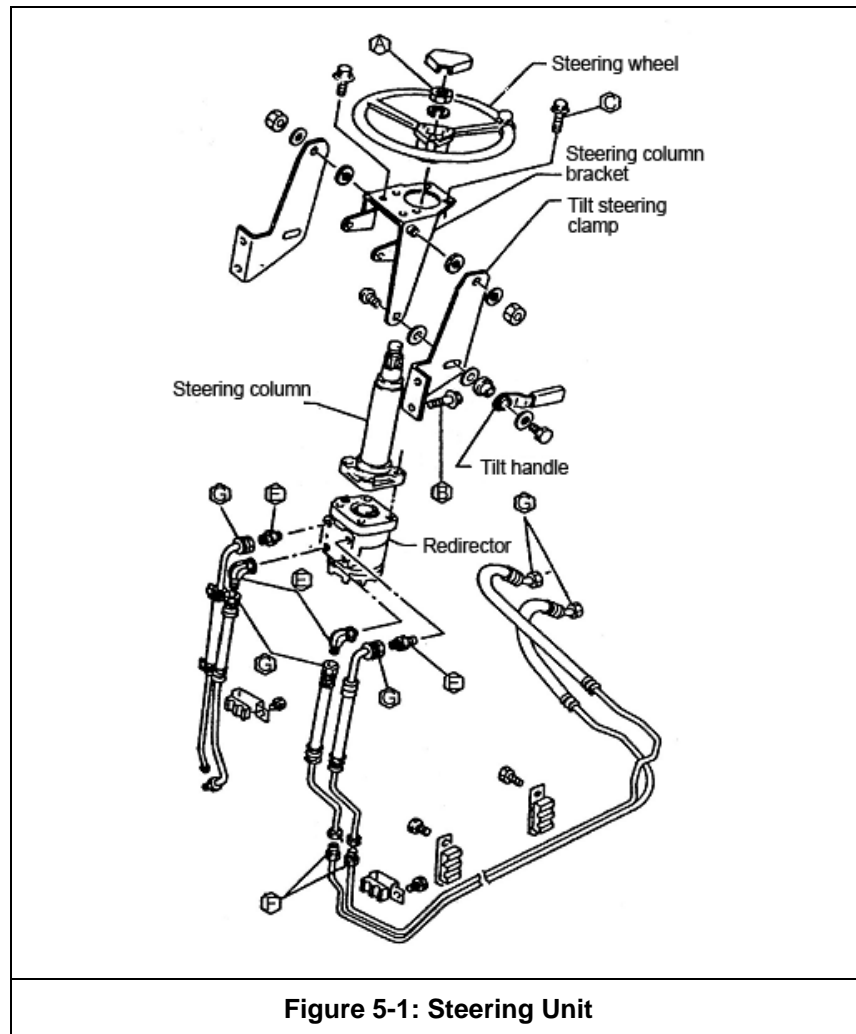


Figure 5-1: Steering Unit

5.2.2 Hydraulic Steering Gear (see Figure 5-2)

The hydraulic Cycloidal steering gear is a power-assisted fully hydraulic steering system. As shown in the figure, the rotor (9) and stator (10) are a pair of Cycloidal inner meshing gears. During normal operation (power steering), they act as a metering servo valve that is connected in series between the diverter valve and steering cylinder. Oil flowing in and out of the steering cylinder must pass through the metering servo valve, which meters the oil flow to the steering cylinder in proportion to the angular rotation of the steering wheel so as to actuate steering. The pair of rotary valves (valve spool 4, valve sleeve 11) connected to the coupling block (8) are used to distribute oil, by varying the oil flow in synchronization with the rotor.

When the steering wheel is not rotating, the spring (5) brings and holds the spool (4) and sleeve (11) in a neutral position to each other, cutting off the hydraulic oil flow to the steering cylinder. At this point the oil is directed back to the reservoir.

When the engine stops running, the pump does not supply oil and the steering action will be realized manually by turning the steering wheel to move valve spool (4), valve sleeve (11) and coupling block (2) which actuate the rotor (9) to feed oil into steering cylinder. In this case, the rotor (9) and stator (10) act as a hand pump, making manual steering possible.

6.6.2 Brake Wheel Cylinder

The brake wheel cylinder has two pistons and is bolted to the brake disc. In the cylinder there are two piston cups held against the pistons by a spring that separates the two pistons. The seal of the cylinder piston cups affects braking performance. If you discover traces of brake fluid in brake drum, check piston cups and cylinder and repair or replace if damaged. When bleeding air, do not allow fluid to leak into brake drum. Use brake fluid when installing piston cups. Do not use mineral oil.

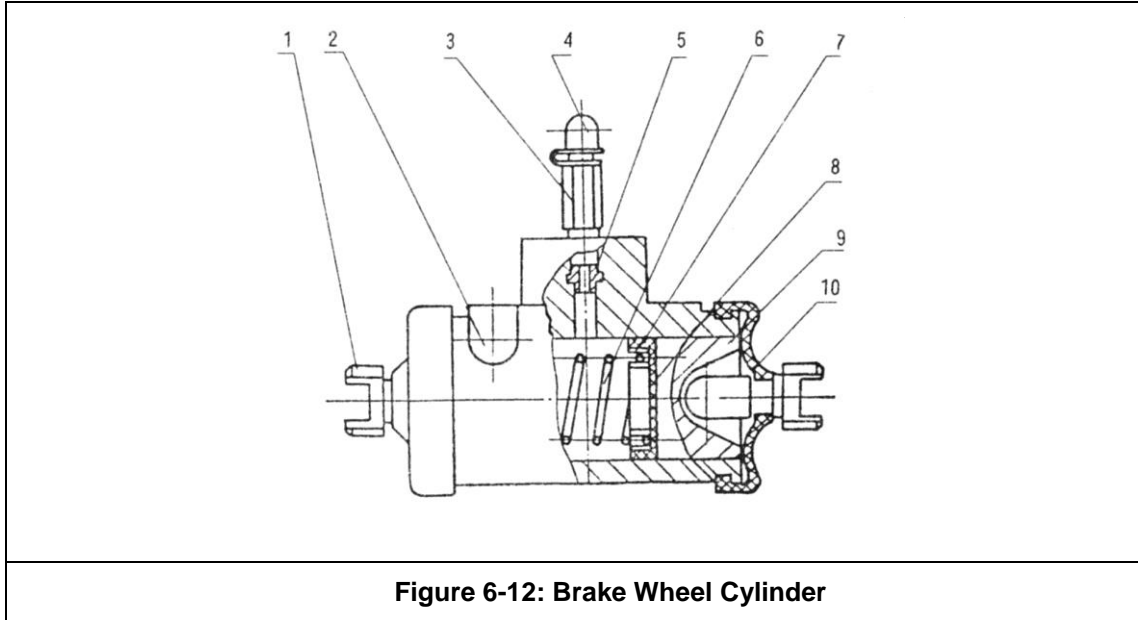


Figure 6-12: Brake Wheel Cylinder

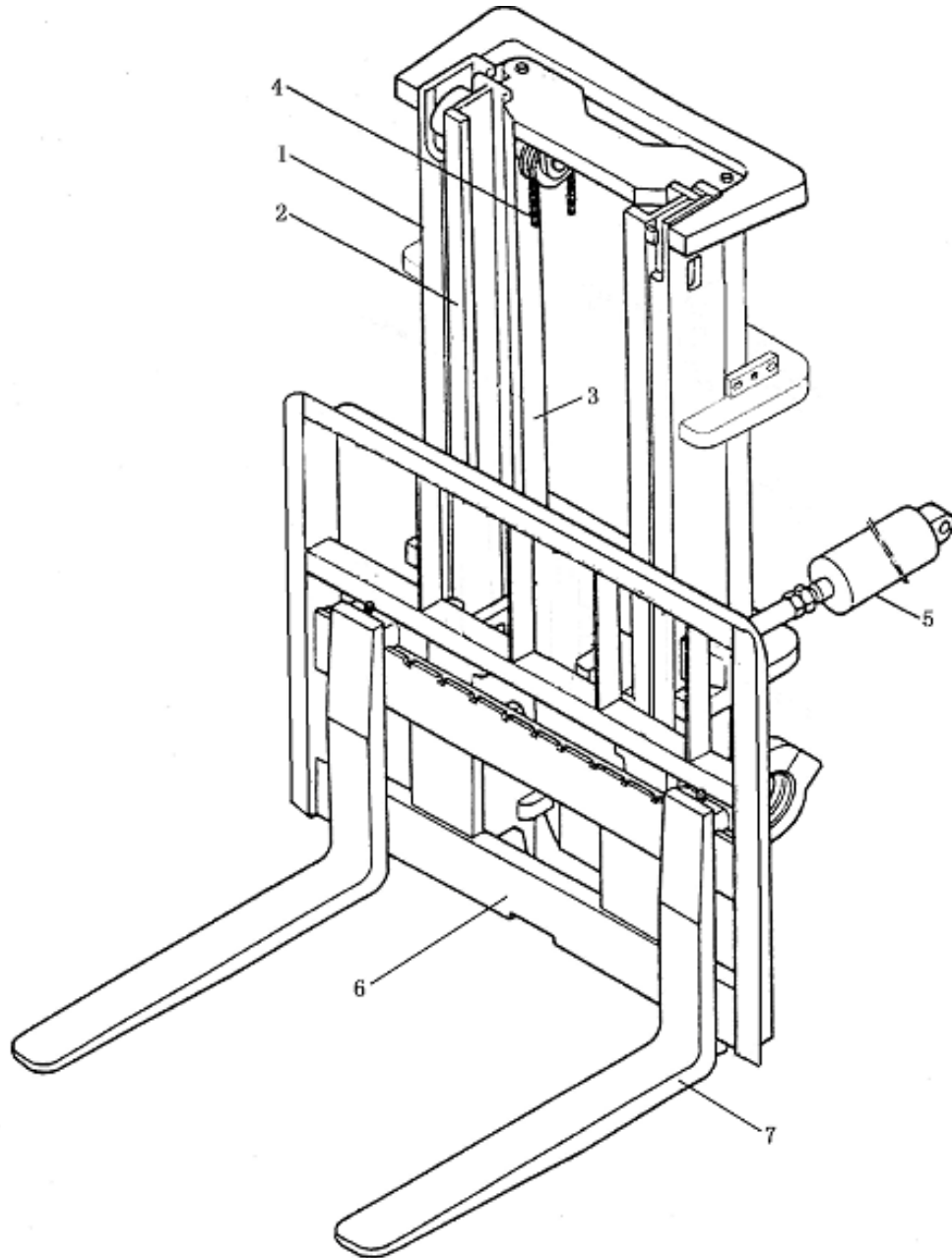
1. Rod	2. Brake Cyl. Block	3. Bleeder Screw	4. Bleeder Cap	5. Connector Block
6. Spring	7. Spring Retainer	8. Wheel Cylinder Cup	9. Piston	10. Dust Cover

6.7. Parking Brake

The forklift truck's park brake is an internal expanding mechanical hand brake having a brake base mounted on the frame housing. The brake backing plate is fixed onto a supporting flange. The gear on the parking brake shaft is in constant mesh with the gear on the dual variable output shaft. When the forklift truck is running, the parking brake gear drives the brake drum. When the hand brake lever is pulled, the brake cable causes the brake shoe to expand and hold the brake drum, which stops the parking brake gear and therefore brakes the gear on the output shaft gear, thereby holding the truck in a stationary position.

If the parking brake lever is found to be faulty during use and maintenance, check and adjust it immediately. When the hand brake free travel increases and cannot achieve the specified incline parking requirements, adjust it immediately.

Figure 8-1: Simplex (2 Stg LFL) Mast Components



1.Outer Mast

2.Inner Mast

3.Main Lift
Cylinder

4. Chain

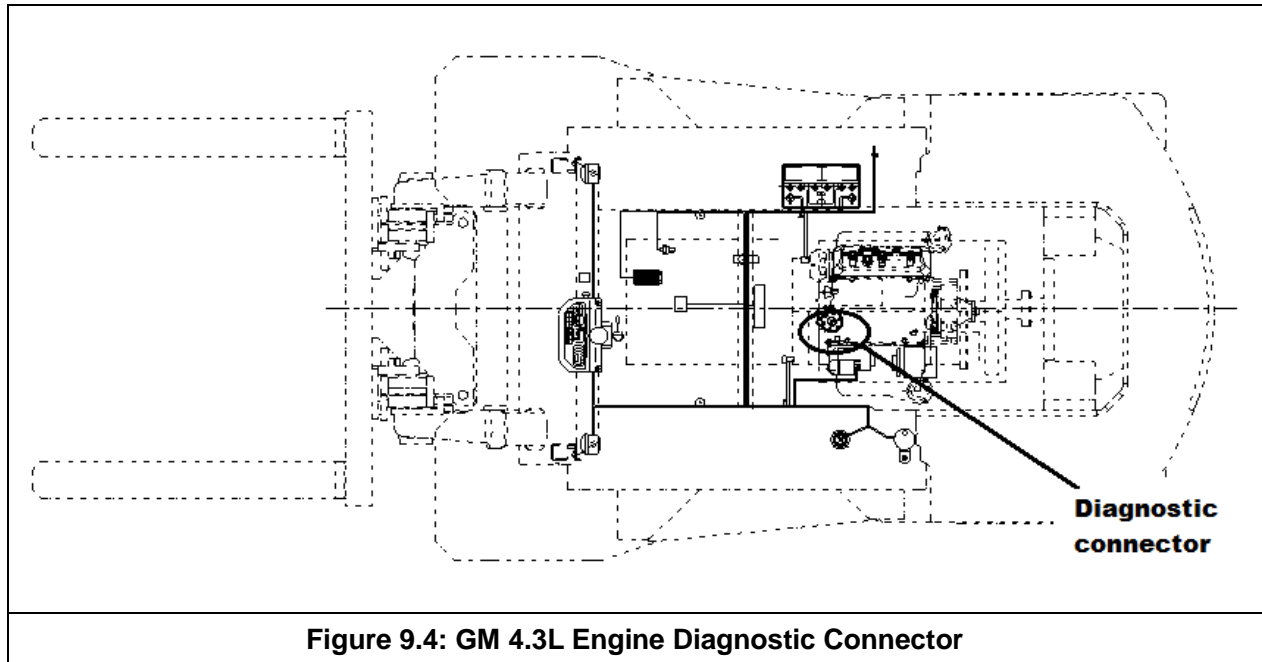
5.Tilt Cylinder

6. Carriage

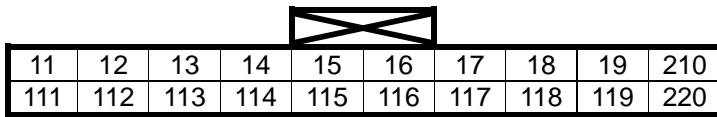
7. Fork

9.2 GM 4.3I Engine Diagnostics

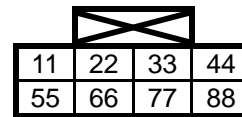
Connect the data cable connection point on the GM 4.3I engine in the following figure (positioned near the bottom left hand side of the bracket above the starter).



A- 20 pin plug



B 8 pin plug



Pin	Function Definition
A1	Controller Power + (+12 V)
A2	Power Ground
A3	Power Ground
A4	Battery +
A5	Parking brake light outlet (high efficiency)
A6	Mast lifting and lowering output (high efficiency)
A7	High- and low-speed solenoid valve (high efficiency)
A8	Reverse solenoid valve (high efficiency)
A9	Forward solenoid valve (high efficiency)
A10	Output on (high efficiency)
A11	+12V reserved, for external connection to power supply of indicator light, not for connection to large current loading. (cancelled)
A12	Power Ground
A13	BATT+ reserved, for external connection to power supply of indicator light, not for connection to large current loading. (cancelled)
A14	Seat switch (high efficiency)
A15	Parking brake switch (high efficiency)
A16	High and low speed changeover switch Closing corresponds to high speed
A17	Reverse gear (high efficiency)
A18	Forward gear (high efficiency)
A19	Manual/automatic changeover switch Closing corresponds to high speed
A20	Forklift speed sensor
B1	R2 indicator (low efficiency)
B2	R1 indicator (low efficiency)
B3	Alarm (high efficiency)
B4	Alarm indication (high efficiency)
B5	Auto indication (low efficiency)
B6	F2 indicator (low efficiency)
B7	F1 indicator (low efficiency)
B8	N indicator (high efficiency)

Note: High efficiency means it is available provided there is voltage, and the low efficiency means it is available only when grounded (no-voltage).

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