



Service Manual

Chassis & Mast

MC/FC

GP40N1	AT40-02011-up
GP45N1	AT29D-52011-up
GP50CN1	AT29D-82011-up
GP50N1	AT33C-52011-up
GP55N1	AT33C-82011-up

DP40NM1	AT12B-02011-up
DP45NM1	AT19D-52011-up
DP50CNM1	AT19D-82011-up
DP50NM1	AT28C-52011-up
DP55NM1	AT28C-82011-up

(5) Friction plates and mating plates

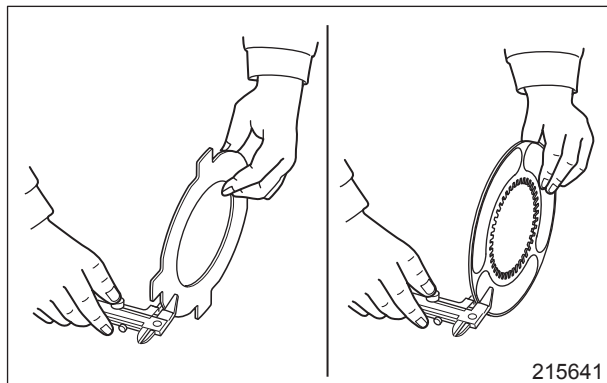
- (a) Check both plates for seizure, uneven contact, distortion, or damage.
- (b) Check mating plates for hot spots (scattered black carbon deposits).
- (c) Check both the inner and outer teeth of each plate for wear or damage.
- (d) Measure thickness of each plate.

Note: If any of the above defects is found, replace the entire plates with new ones.

Unit: mm (in.)

Friction plate	A	2.6 ± 0.1 (0.102 $\pm$ 0.004)
	B	2.2 (0.087)
Mating plate	A	2.3 ± 0.07 (0.091 $\pm$ 0.0028)
	B	2.1 (0.083)

A : Standard value B: Service limit



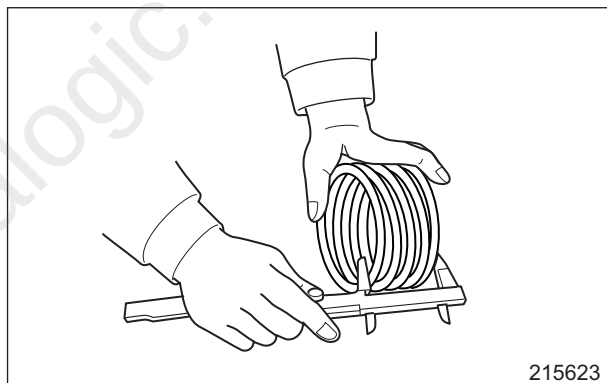
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(6) Measure the free length and the height under load of the clutch return spring.

Unit: mm (in.)

Clutch return spring	Free length	A	68 ± 2 (2.68 $\pm$ 0.08)
		B	64.5 (2.539)
	Height / under load	A	33.5 (1.32) / 349 $\pm$ 135 N (35.6 $\pm$ 13.8 kgf) [78.5 $\pm$ 30.3 lbf]
		B	33.5 (1.319) / 1147 N 117.0 kgf 257.9 lbf

A : Standard value B: Service limit



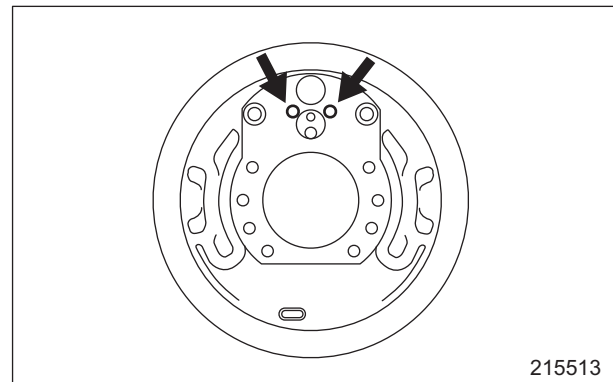
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Suggestions for Reassembly**(1) Installing wheel cylinder**

Tighten the wheel cylinder to the backing plate with bolts. Torque to specifications.

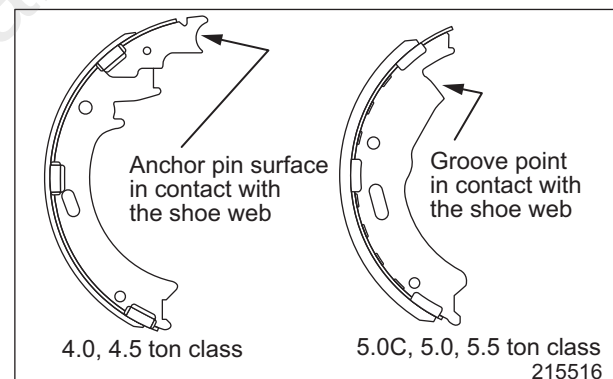
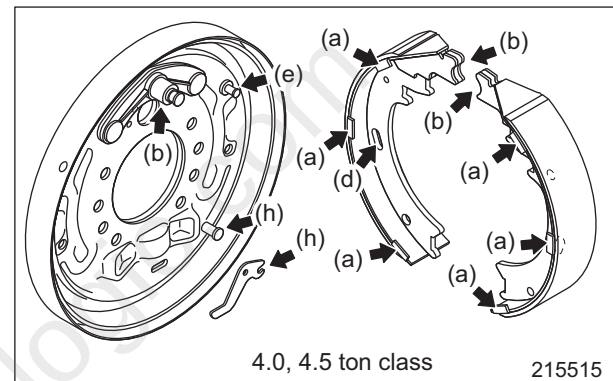
Unit: N·m (kgf·m) [lbf·ft]

Item	Weight class	
	4.0, 4.5 ton class	5.0C, 5.0, 5.5 ton class
Tightening torque	17.65 to 26.48 (1.8 to 2.7) [13.03 to 19.54]	17.65 to 26.48 (1.8 to 2.7) [13.03 to 19.54]

**(2) Greasing**

Apply a thin coat of the brake grease (AKB100) to the following areas.

- (a) Shoe ledge (6 locations)
(Contact surface between the backing plate and the shoe)
- (b) Contact surface of the shoe web and the anchor pin of the backing plate. (4.0, 4.5 ton class)
- (c) Contact surface of the shoe web and the groove of the backing plate. (5.0C, 5.0, 5.5 ton class)
- (d) Contact surface of the cup of the hold-down spring and the shoe.
- (e) Contact part of the fitting cable and the sheave, and the pin. (4.0, 4.5 ton class)
- (f) Contact part of the fitting link and the toggle lever, and the pin. (5.0C, 5.0, 5.5 ton class)
- (g) Contact part of the adjusting lever and the pin.

**(3) Installing shoe and lining assembly**

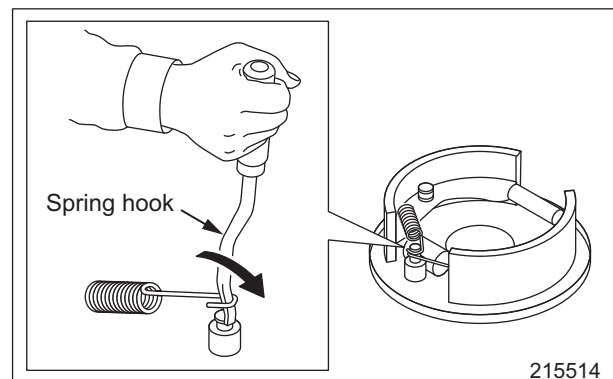
Ensure that each connector link of the wheel cylinder has been correctly inserted into the shoe web.

(4) Installing return spring

Use a special tool to install the return springs to the backing plate pins.

Special tool

Spring installer	65309-15413
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4.3 Adjustment Value and Oil Quantities

Note: The values in the table below are for the standard model.

Unit:mm (in.)

Item				Truck model				
				GP40N1	GP45N1	GP50CN1	GP50N1	GP55N1
Alternator drive belt deflection-when pushed inward with 98 N (10 kgf) [22 lbf] pressure				11 to 13 (0.43 to 0.51)				
Spark plug type				BPR4E				
Spark plug gap				0.8 to 0.9 (0.0315 to 0.0354)				
Engine idling speed (min ⁻¹)				650 to 700				
Steering wheel free play-when measured at rim with engine idling				15 to 30 (0.59 to 1.18)				
Inching pedal free play				3 to 6 (0.12 to 0.24)				
Brake pedal free play				5 (0.20)				
Tire size	Front tire	Single	8.25-15-14PR (1)	300-15-18PR (1)				
		Double	7.50-16-12PR (1)					
	Rear tire		7.00-12-12PR (1)				7.00-12-14PR (1)	
Tire pressure	Front tire	Single	kPa(kgf/cm ²)[psi]	800(8.2)[116.0]				
		Double	kPa(kgf/cm ²)[psi]	700(7.1)[101.5]				
	Rear tire		kPa(kgf/cm ²)[psi]	700 (7.1) [101.5]		850 (8.7) [123.3]		1000 (10.2) [145.1]
Wheel nuts tightening torque	Front tire	N·m(kgf·m)[lbf·ft]		600±60 (61.18±6.12) [442.54±44.25]				
	Rear tire	N·m(kgf·m)[lbf·ft]		377.3 (38.47) [278.45]				
Lift chain elongation limit			mm/20 links	518 (20.39)	648 (25.51)			
Fuel tank capacity			liter (cu.in.)	87 (5309)	105 (6407)			
Engine cooling system -0.65 liter (0.17 cu.in.) reservoir tank included			liter (cu.in.)	16 (976.4)				
Engine oil	Engine	liter (cu.in.)		8.3 (506.5)				
	Oil filter	liter (cu.in.)		0.3 (18.3)				
	Total	liter (cu.in.)		8.6 (524.8)				
Transmission oil			liter (cu.in.)	17 (1037.4)				
Transfer and differential gear oil level			liter (cu.in.)	7.9 (482.1)				
Hydraulic oil			liter (cu.in.)	72 (4394)		81 (4943)		
Battery electrolyte specific gravity, corrected to 20°C (68°F)				1.26 to 1.28				

2. Lift Truck Models Covered

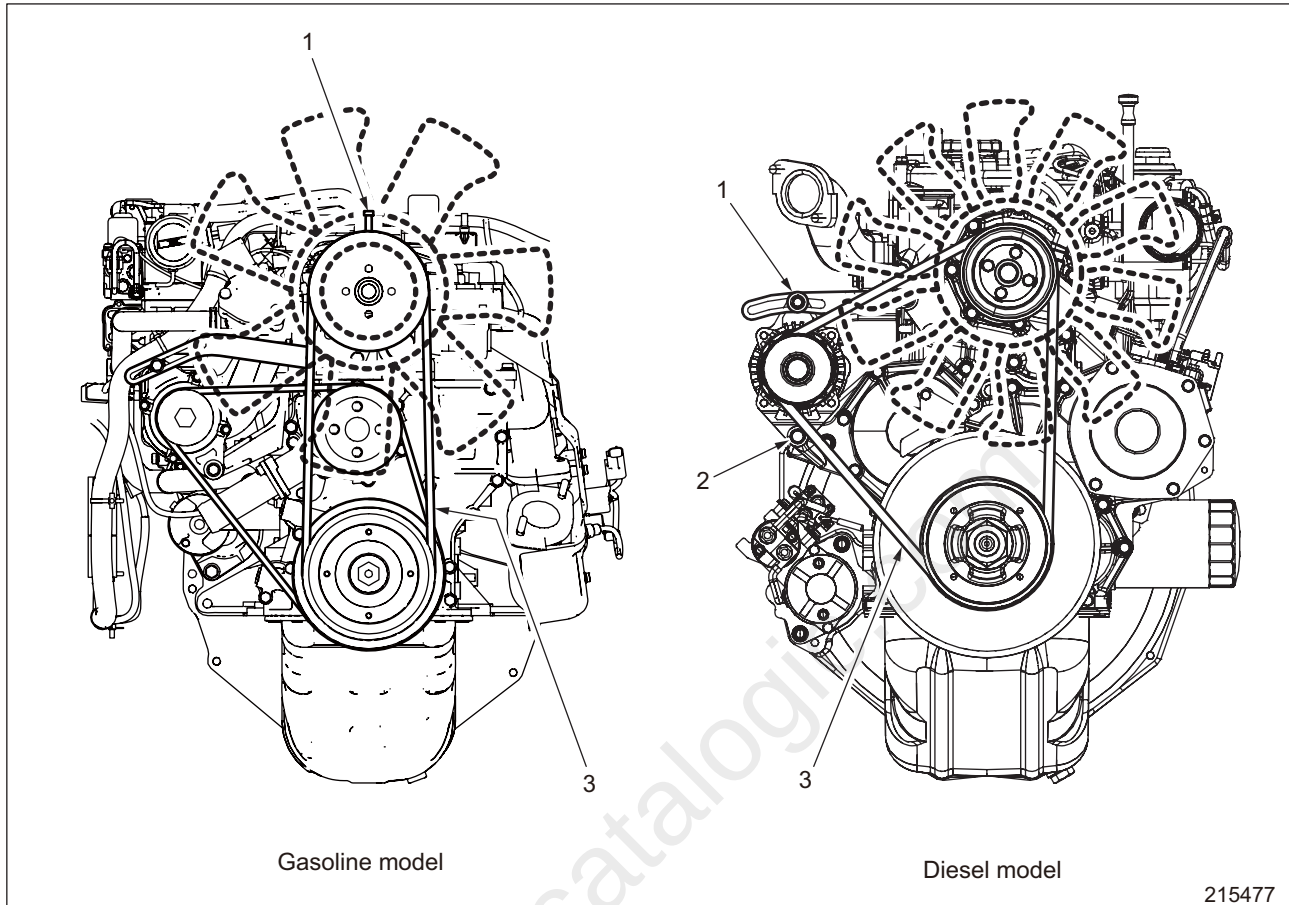
This Service Manual provides service and maintenance information for the following lift trucks:

Mounted engine	Gasoline model	Diesel model
Non-electronic control	-	MC / FC
Electronic control	MC / FC	-

Electronic Gasoline engine models			Non-electronic diesel engine models		
Truck model	Serial number	Mounted engine	Truck model	Serial number	Mounted engine
GP40N1	AT40-00011-up	TB45	DP40NM1	AT12B-00011-up	S6S
GP45N1	AT29D-50001-up	TB45	DP45NM1	AT19D-50001-up	S6S
GP50CN1	AT29D-80001-up	TB45	DP50CNM1	AT19D-80001-up	S6S
GP50N1	AT33C-50001-up	TB45	DP50NM1	AT28C-50001-up	S6S
GP55N1	AT33C-80001-up	TB45	DP55NM1	AT28C-80001-up	S6S

3. Removal and Installation

3.1 Fan Belt Removal



- 1 Tension assembly (pulley lock bolt)
- 2 Alternator lock bolt

- 3 Fan belt

3.1.1 Start by

Remove the radiator cover.

7. Parking Brake Warning Buzzer and Lamp

7.1 Function

Parking Brake Warning Buzzer and Lamp

Whether the engine is being stopped or running, leaving the operator seat with the parking brake released activates the operator presence switch to causes the warning buzzer to sound and the warning lamp to blink.



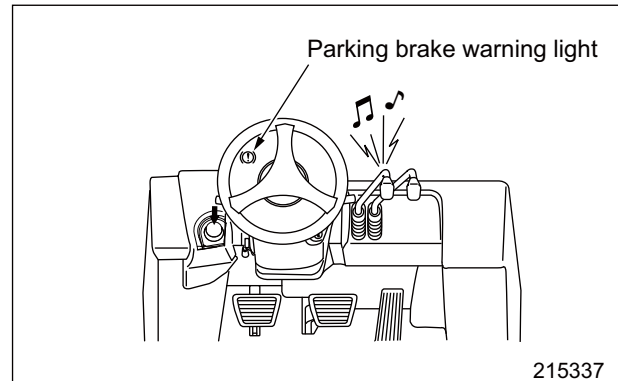
CAUTION

- (1) Before operating the lift truck, be sure to check the parking brake warning buzzer and the warning lamp are functioning properly.
- (2) The warning buzzer and the warning lamp remind an operator of locking the parking brake switch before leaving the lift truck. Be sure to maintain the warning buzzer and the warning lamp so that they function properly.
- (3) How to park the lift truck:
 - ♦Park the lift truck on level and hard ground.
 - ♦Place the direction lever to the neutral position.
 - ♦Lower the forks until the fork tips touch the floor.
 - ♦Apply the parking brake.
 - ♦Stop the engine and remove the key.
- (4) When replacing the operator seat with a new one, be sure to use the Cat genuine seat with an operator presence switch.

♦Controller Function

The controller turns the warning buzzer output ON when the operator is not seated and leaves the parking brake switch released while the key switch is in the ON position. (The warning buzzer activates.)

While the key switch is in the OFF position, the controller does not activate since the power to the controller turns OFF. In this case, the relay circuit causes the warning buzzer to activate.



- (10) Refill engine oil, coolant, and transmission oil, and check for oil/coolant leakage. Unless otherwise specified, use soft water (tap water) mixed with antifreeze in the concentration of 30%. When overhauling an engine, change the coolant in the reserve tank. (For antifreeze concentration in cold climates, refer to the "Chapter 13 SERVICE DATA.")
- (11) Adjust the inching pedal and the brake pedal. (Refer to the "Chapter 6 POWERSHIFT TRANSMISSION and Chapter 9 BRAKE SYSTEM.")
- (12) Bleed air out of the brake oil circuit after connecting the brake pipe. (Refer to the "Chapter 9 BRAKE SYSTEM.")
- (13) After all the parts are correctly installed, start the engine and check hydraulic oil level by operating the mast and the steering. Also check the level of the engine oil, the coolant and the transmission oil in a similar manner.
- (14) Visually check that there is no spillage of oil and coolant under the lift truck.

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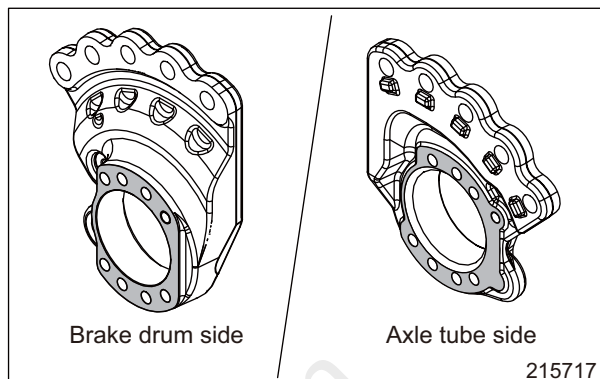
4.1.3 Reassembly

To reassemble, follow the disassembly sequence in reverse.

(1) Axle support

- (a) Apply liquid gasket to the mating surfaces between the axle tube and the brake drum.

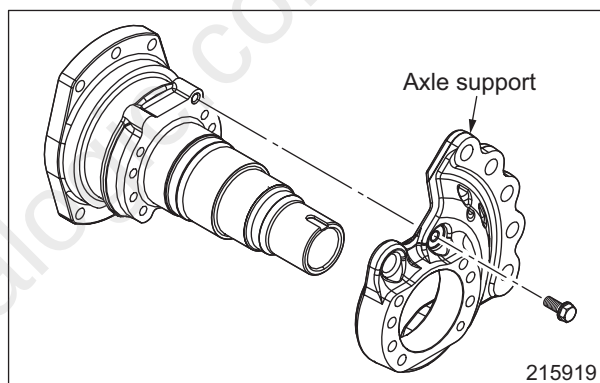
Liquid gasket	ThreeBond #1194 or equivalent
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- (b) Tighten the mounting bolts to the specified torque.

Unit: N·m (kgf·m) [lbf·ft]

Tightening torque	214 (21.8) [157.9]
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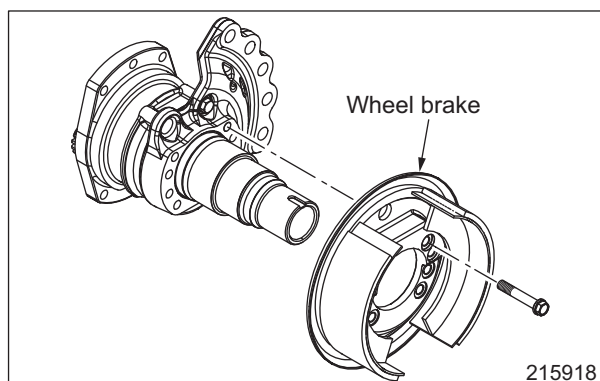
(2) Wheel Brake assembly

Thoroughly wash the mounting bolt threads, and apply sealing compound to the threads before tightening the bolts to the specified torque.

Sealing compound	LOCTITE #271 or equivalent
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Unit: N·m (kgf·m) [lbf·ft]

Item	Truck model	
	4.0, 4.5 ton class	5.0C, 5.0, 5.5 ton class
Tightening torque	214(21.8)[157.9]	295(30.1)[217.7]



Full Version Available

Caterpillar DP50NM1 Forklift Service and Schematic Manual (99739-8B120)

Caterpillar DP50NM1 forklift service manual, covers hydraulics, drive unit, wiring, engine, and schematics in PDF. Instant PDF download.

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