



Service Manual

Chassis & Mast

MC/FC

GP15N	AT34A-00012-49999	GP18NM	AT34B-00012-49999
GP18N	AT34A-00012-49999	GP20CNM	AT34B-50012-99999
GP20CN	AT34A-50012-99999	GP20NM	AT17F-00012-49999
GP20N	AT35A-00012-49999	GP25NM	AT17F-00012-49999
GP25N	AT35A-00012-49999	GP25NMA	AT17F-00012-49999
GP28N	AT36A-00012-49999	GP28NM	AT36B-00012-49999
GP30N	AT13G-00012-49999	GP30NM	AT13H-00012-49999
GP33N	AT13G-50012-99999	GP33NM	AT13H-50012-99999
GP35N	AT13G-50012-99999	GP35NM	AT13H-50012-99999
DP20N	AT18E-00012-49999	DP20NM	AT18D-00012-49999
DP25N	AT18E-00012-49999	DP25NM	AT18D-00012-49999
DP28N	AT37B-00012-49999	DP25NMA	AT18D-00012-49999
DP30N	AT14G-00012-49999	DP28NM	AT37A-00012-49999
DP33N	AT14G-50012-99999	DP30NM	AT14F-00012-49999
DP35N	AT14G-50012-99999	DP33NM	AT14F-50012-99999
GP15NM	AT34B-00012-49999	DP35NM	AT14F-50012-99999



- (3) Measure the clearance between torque converter housing (pump body) and drive gear using a feeler gauge.

Internal gear and Drive gear	A	0.040 to 0.083 (0.002 to 0.003)
	B	0.15 (0.006)

A: Standard value B: Repair or service limit
Unit: mm (in.)

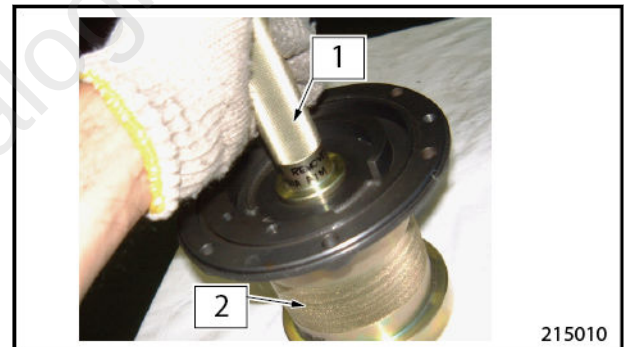


6.5.8.2 BUSHING, INSTALLATION

NOTE: If bushing is badly damaged or worn, replace oil pump assembly. If bushing is replaced, an inner bore surface finishing process is required for bushing after the installation. For the finishing process, see the figure on the next page. Failure to conduct the inner bore surface finishing results in serious damage to oil pump assembly and transmission.

- (1) Remove internal gear and drive gear from pump body, and set the pump body on the stand.
- (2) Using the installer, install bushing.

Part name	Part number
Stand	91A68-01700
Installer	91A68-01600



1. SPECIAL TOOL (INSTALLER, 91A68-01600)
 2. SPECIAL TOOL (STAND, 91A68-01700)
- (3) Conduct the inner bore surface finishing of bushing.

- | | |
|------------------------|-------------|
| 1. TILT LOCK LEVER | 4. BOLT (A) |
| 2. LEVER MOUNTING BOLT | 5. NUT (B) |
| 3. TILT LOCK LEVER | |
| 1) TOP FACE OF LEVER | |

10.2.5.2 ASSEMBLY

If the alignment marks have disappeared, or the lever is being replaced with a new lever, install the lever by seeing the following steps. : (The above illustration shows the relation of the parts when the tilt position is in the NEUTRAL and the column lock lever is locked.)

1. Tighten the nut B to the tightening torque of 11 to 15 N·m (1.1 to 1.5 kgf·m) [8.1 to 11.1 lbf·ft].
(This represents a lever-locked condition.)
2. Select the optimal position for the tilt lock lever in a locked condition, and fit the tilt lock lever into the serrated section of nut B. The optimal position is where the star-marked notch section of the bracket intersects with the top face of the lever.
3. Tighten the bolt A.
4. Loosen the tilt lock lever and check that the bracket slides in the entire tilting area without interfering with other parts.

OFF	GPS OFF
Slow BLINK	GPS ON
Fast BLINK	GPS time synchronization
Solid ON	GPS fix from satellites

Table 14-2.

GPS (Yellow LED)

Item	Sympton	Probable Cause	Check Item
1	TCU LED are not lighting up when the key switch is turned ON	TCU 34-pin harness 2 Amp inline Fuse (P3) may be blown or not seated properly	- Check seating of the inline 2 Amp P4 fuse located on the harness close to the TCU. You can trace the Red wire on Pin 1 of the TCU-34 pin harness back to the fuse to locate the fuse - Confirm that the 2 Amp P3 fuse is not blown
		TCU 34-pin harness connection not seated properly at the TCU	Check seating of the 34-pin connector on the TCU An audible CLICK can be heard when the connector is locked in and seated properly
		4-pin P7 connector not seated properly	Check seating of P7 connector
		Not getting external power from the batteries	Check DC voltage supply between pin 1 and 2 of the 34-pin connector on the TCU harness for voltage equal to the battery supply of the truck
		Continuity of the postive battery supply between TCU 34-pin harness connector and 4-pin P7 connector is broken	Measute for continuity between pin 1 of the 34-pin TCU harness connector and pin 1 on P7.
		Continuity of the ground between TCU 34-pin connector and ground connection is broken	Measute for continuity between pin 2of the 34-pin TCU harness connector and chassis ground.

Table 14-3.

8.3 DISASSEMBLY AND ASSEMBLY

8.3.1 WHEEL HUB, DISASSEMBLY, AND ASSEMBLY

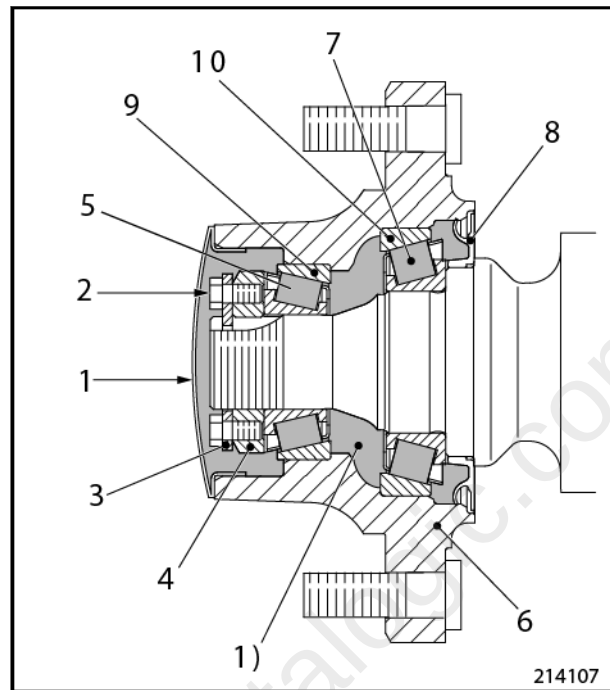


Figure 8-8.

SEQUENCE

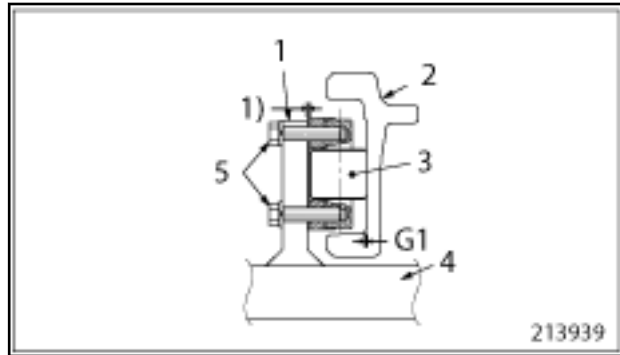
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|----------------------------|---------------------------|
| 1. HUB CAP | 6. HUB (WITH BEARING CUP) |
| 2. BOLT | 7. BEARING CONE |
| 3. LOCK PLATE | 8. OIL SEAL |
| 4. LOCKNUT (HEXAGON NUT) | 9. BEARING CUP |
| 5. BEARING CONE | 10. BEARING CUP |
| 1) AUTOLEX A OR EQUIVALENT | |

Suggestions for Disassembly

1. Remove rear wheels as preparatory work.
2. Check the hub for looseness. If there is looseness, the bearing may be worn.
3. If the bearing is not damaged, it is unnecessary to remove it.
4. The cup and the cone of the bearing make a pair. When replacing, replace them as a set.
5. When removing the oil seal 8, replace it with a new one. Do not reuse it.
6. Use a special service tool to remove the bearing.

Inspections after Disassembly

1. Bearing
Replace the bearing if damage, seizure, peel, rotation failure, or unusual noise is found.



- | | |
|-----------------|--------------------------|
| 1. LIFT BRACKET | 4. LIFT BRACKET |
| 2. INNER MAST | 5. ROLLER MOUNTING BOLTS |
| 3. SIDE ROLLER | |
| 1) SHIM (D) | |

12.12.2.2 INSTALLING MAST ROLLERS

Mast rollers are identical in shape and size with lift bracket lower rollers.

Unit: mm (in.)	
Clearance F	1 (0.04) maximum
Clearance G	0.1 to 0.5 (0.004 to 0.020)

Table 12-36.

- Measure clearance F between the rollers' rolling contact surfaces and masts
If the measured clearances do not conform to the standard values, replace with rollers of correct diameters listed in the table below.

NOTE: For measuring procedures, see "12.14.5 ADJUSTING CLEARANCE BETWEEN LIFT BRACKET ROLLER AND MAST."

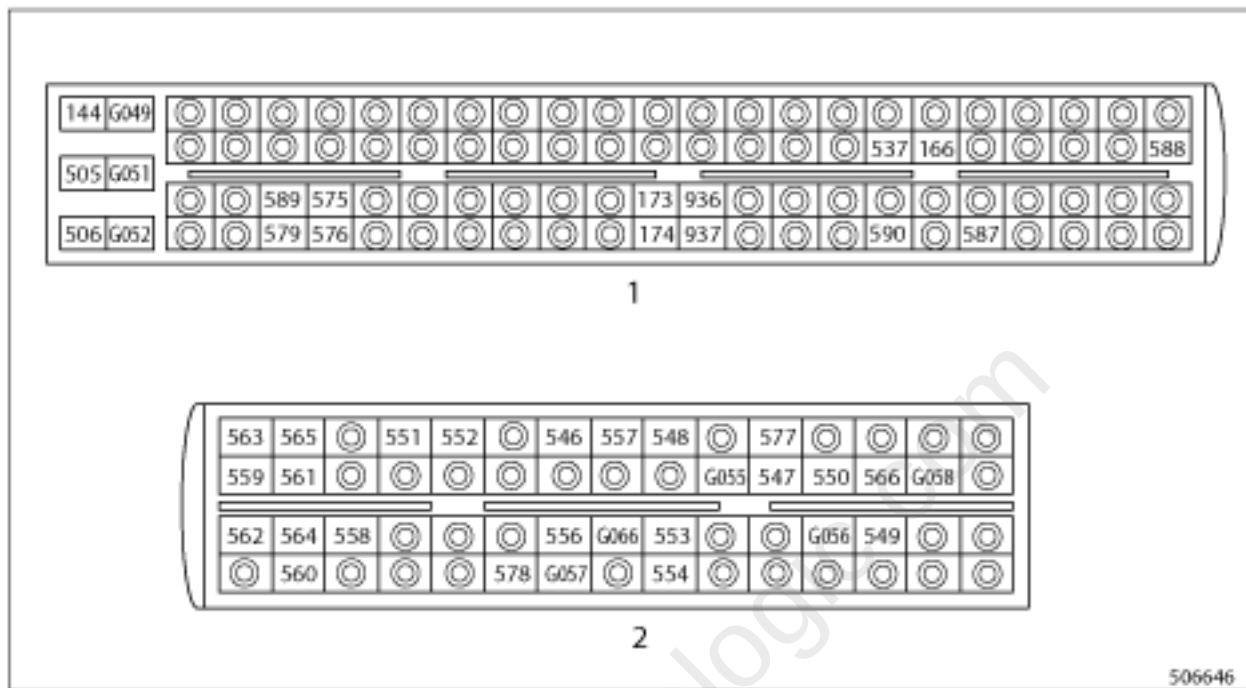
Unit: mm (in.)		
Size (diameter)	Truck type	
	1 ton class	2 ton class 3 ton class
S	99 (3.90)	113.8 (4.48)
M	100 (3.94)	115 (4.53)
L	101 (3.98)	116 (4.57)
LL	102 (4.02)	117 (4.61)

Table 12-37.

- To install the of mast rollers, follow the procedures for the lift-bracket rollers.

4.8.4 ECU (D04EG ENGINE MODEL)

ECU pin locations

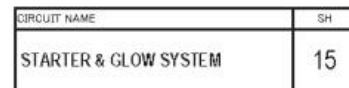


1. ECU (H-01)

2. ECU (H-02)

VCM signal allocation (E-01)

Pin No.	Circuit No.	Signal name
1	144 (3R)	Battery + (1)
2	G09 (5B)	Battery - (1)
3	505 (2R)	Battery + (2)
4	G051 (2B)	Battery - (2)
5	506 (2R)	Battery + (3)
6	G052 (2B)	Battery - (3)
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	Blank	Diagnostic Mode Switch 2



Full Version Available

Caterpillar DP20NM Forklift Service Manual (99729-80100)

Caterpillar DP20NM Forklift service manual, covers hydraulics, mast, drive unit, wiring, and service data in PDF. Instant PDF download.

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