



# Service Manual

## Chassis & Mast

**MC**

|               |                |                |                |               |                |
|---------------|----------------|----------------|----------------|---------------|----------------|
| <b>GP15N</b>  | CT25C-55001-up | <b>GPE15N</b>  | CT34-00001-up  | <b>DP15N</b>  | CT16D-54001-up |
| <b>GP15ZN</b> | CT34-52001-up  | <b>GPE18N</b>  | CT34-40001-up  | <b>DP18N</b>  | CT16D-74001-up |
| <b>GP18N</b>  | CT25C-75001-up | <b>GPE20CN</b> | CT34-30001-up  | <b>DP20CN</b> | CT16D-24001-up |
| <b>GP18ZN</b> | CT34-72001-up  | <b>GPE20N</b>  | CT17D-20001-up | <b>DP20N</b>  | CT18C-20001-up |
| <b>GP20CN</b> | CT34-22001-up  | <b>GPE20ZN</b> | CT35-20001-up  | <b>DP25N</b>  | CT18C-70001-up |
| <b>GP20N</b>  | CT17D-10001-up | <b>GPE25N</b>  | CT17D-70001-up | <b>DP30N</b>  | CT14E-10001-up |
| <b>GP20ZN</b> | CT35-10001-up  | <b>GPE25ZN</b> | CT35-70001-up  | <b>DP35N</b>  | CT14E-80001-up |
| <b>GP25N</b>  | CT17D-60001-up | <b>GPE30N</b>  | CT13F-10001-up |               |                |
| <b>GP25ZN</b> | CT35-60001-up  | <b>GPE35N</b>  | CT13F-80001-up |               |                |
| <b>GP30N</b>  | CT13F-40001-up |                |                |               |                |
| <b>GP35N</b>  | CT13F-60001-up |                |                |               |                |

## 6.2 Seat Belt Warning Light, Checking the Operation

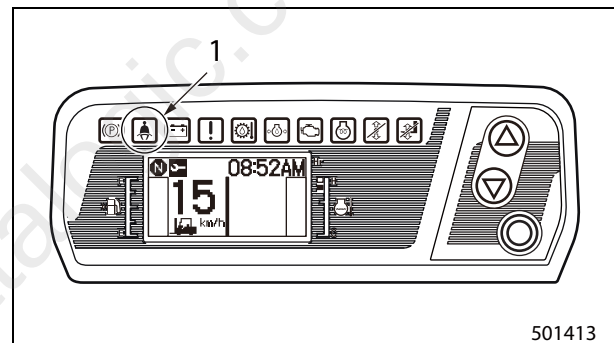
- (1) Connect the service tool to the VCM-1M controller.
- (2) Turn the key switch to the ON position and start the engine.
- (3) Display the input monitor screen of the service tool.
- (4) Make sure that the seat switch status is turned OFF when the seat belt is not fastened or not buckled properly. Also check that the seat belt warning light in the meter panel glows.

| Input Monitor                      |              |         |
|------------------------------------|--------------|---------|
| Item                               | Normal Range | Value   |
| Seat Switch                        | * - *        | ON      |
| Seat Switch timer                  | * - *        | ON      |
| Seatbelt Switch                    | * - *        | OFF     |
| Accel Switch                       | * - *        | ON      |
| Park brake Switch                  | * - *        | ON      |
| Direction lever F                  | * - *        | OFF     |
| Direction lever N                  | * - *        | ON      |
| Direction lever R                  | * - *        | OFF     |
| FNR lever                          | * - *        | Neutral |
| Joystick (Lift lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (Lift lever 1) status     | * - *        | Normal  |
| Joystick (Lift lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (Lift lever 2) status     | * - *        | Normal  |
| Joystick (Tilt lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (Tilt lever 1) status     | * - *        | Normal  |
| Joystick (Tilt lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (Tilt lever 2) status     | * - *        | Normal  |
| Joystick (ATT1 lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (ATT1 lever 1) status     | * - *        | Normal  |
| Joystick (ATT1 lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (ATT1 lever 2) status     | * - *        | Normal  |
| Joystick (ATT2 lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (ATT2 lever 1) status     | * - *        | Normal  |
| Joystick (ATT2 lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (ATT2 lever 2) status     | * - *        | Normal  |

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### If Seat belt switch does not indicate ON

Check the seat belt switch operation and wiring connections by referring to 4-38 "Harness Codes", 4-40 "VCM-1M Controller", and 4-44 "Seat Switch".



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1. Lighting

- (5) Make sure that the seat belt switch turns ON and the seat belt warning light in the meter panel goes out when the seat belt is properly fastened.

| Input Monitor                      |              |         |
|------------------------------------|--------------|---------|
| Item                               | Normal Range | Value   |
| Seat Switch                        | * - *        | ON      |
| Seat Switch timer                  | * - *        | ON      |
| Seatbelt Switch                    | * - *        | ON      |
| Accel Switch                       | * - *        | ON      |
| Park brake Switch                  | * - *        | ON      |
| Direction lever F                  | * - *        | OFF     |
| Direction lever N                  | * - *        | ON      |
| Direction lever R                  | * - *        | OFF     |
| FNR lever                          | * - *        | Neutral |
| Joystick (Lift lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (Lift lever 1) status     | * - *        | Normal  |
| Joystick (Lift lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (Lift lever 2) status     | * - *        | Normal  |
| Joystick (Tilt lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (Tilt lever 1) status     | * - *        | Normal  |
| Joystick (Tilt lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (Tilt lever 2) status     | * - *        | Normal  |
| Joystick (ATT1 lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (ATT1 lever 1) status     | * - *        | Normal  |
| Joystick (ATT1 lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (ATT1 lever 2) status     | * - *        | Normal  |
| Joystick (ATT2 lever 1) signal [%] | -100 - 100   | 0       |
| Joystick (ATT2 lever 1) status     | * - *        | Normal  |
| Joystick (ATT2 lever 2) signal [%] | -100 - 100   | 0       |
| Joystick (ATT2 lever 2) status     | * - *        | Normal  |

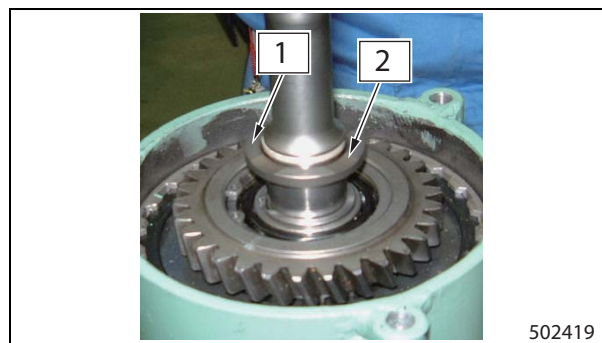
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### Forward side input spacer and bearing, Installing

(1) Install input spacer using installer (special tool).

Note:

- Install input spacer with its oil groove side facing ball bearing side.
- When input spacer has been installed, snapping is hidden behind input spacer.

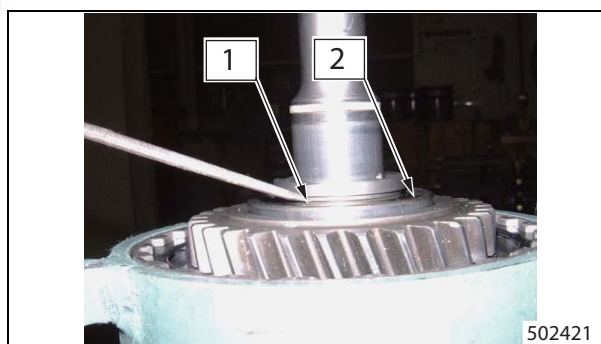


1. Input spacer

2. Oil groove



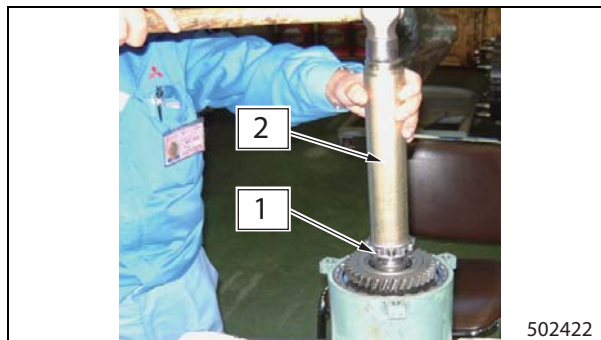
1. Special tool (Installer)



1. Input spacer

2. Angular bearing

(2) Install bearing using installer (special tool).



1. Bearing

2. Special tool (Installer)

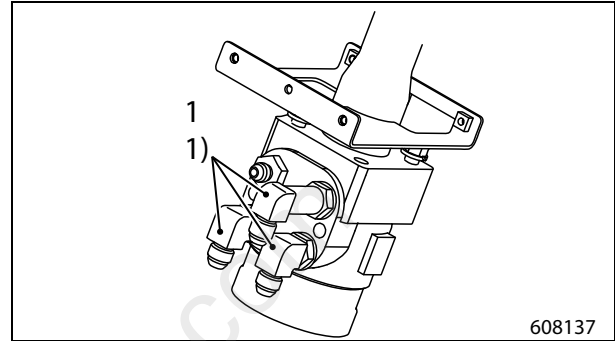
## 6. Steering Valve, Removing

- (1) Remove the cover from the steering column.
- (2) Disconnect four hoses from the steering valve.
- (3) Remove bolts and remove the steering valve.

## 7. Steering Valve, Installing

For installation, follow the removal sequence in reverse and observe the instructions below:

- (1) Apply grease to serrated portion at the lower part of the steering shaft.
- (2) Tighten mounting bolts to the specified torque.
- (3) Pay attention to the orientation when installing the elbow on the steering valve. Also be sure to tighten to the specified torque.



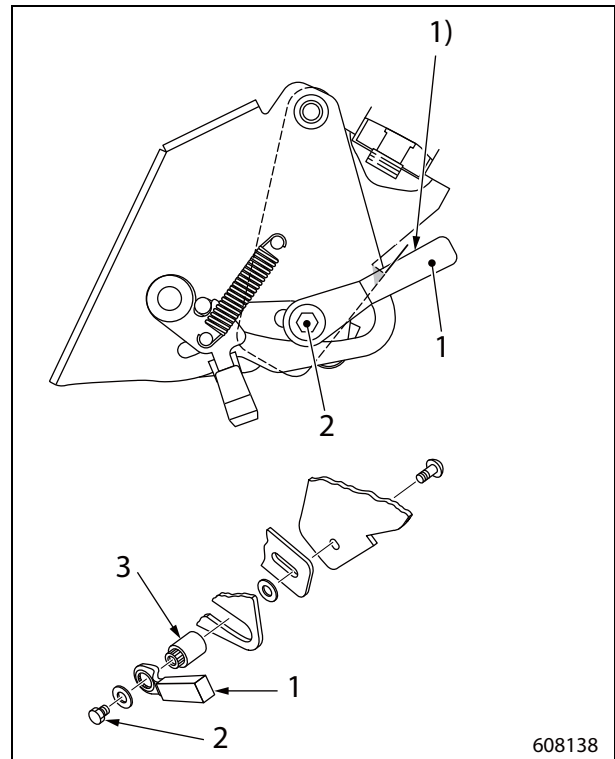
1. Elbow

1) Install the elbow facing downward

| Ref. | Item  | Tightening torque                                       |
|------|-------|---------------------------------------------------------|
| 1    | Elbow | 34 to 39 N·m (3.5 to 4.0 kgf·m) [25.08 to 28.76 lbf·ft] |

## 8. Tilt Lock Lever, Disassembling

- (1) Make a matchmark across tilt lock lever and nut 3 for proper installation at assembly.
- (2) Remove lever mounting bolt 2 and remove tilt lock lever.



1. Tilt lock lever

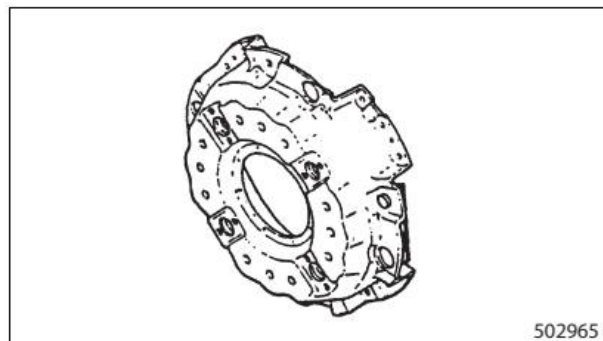
2. Lever mounting bolt

3. Nut

1) Lever face

**Clutch cover**

Check the clutch cover for distortion, cracks, deformation and wear.

**Release levers**

Check each release lever for wear or damage on the contact and sliding surfaces.

## 7. Pressure Assembly, Assembling

For assembly, follow the disassembly sequence in reverse.

### 7.1 Suggestions for Assembly

**Bolt tightening torque**

- Tighten the bolts with strap fixing washers 3 to the torque specified below.

| Item                              | Tightening torque                                      |
|-----------------------------------|--------------------------------------------------------|
| Strap fixing washer mounting bolt | 39 to 59N·m (4.0 to 6.0 kgf·m) [28.76 to 43.52 lbf·ft] |

- Tighten the bolts that hold locking plates 1 to the torque specified below.

| Item                     | Tightening torque                                           |
|--------------------------|-------------------------------------------------------------|
| Lockplate mounting bolts | 5.8 to 7.8 N·m (0.59 to 0.80 kgf·m) [4.278 to 5.753 lbf·ft] |

**Applying grease**

Apply molybdenum disulfide grease (Never Seez or equivalent) to the pressure plate of the dry type clutch at the following places.

- Contact surfaces of release lever and pressure plate.
- Contact surfaces of release lever and lever support.

Also apply anti-seize and lubricating compound (Never Seez grease) to the following parts.

- Support nut threaded portion
- Support nut spherical portion

6. Axle Assembly, Installing

For installation, follow the removal sequence in reverse and observe the instructions below:

- (1) Using shims, adjust the total front and back clearance to be 0.8 mm (0.032 in.) or less.

**CAUTION**

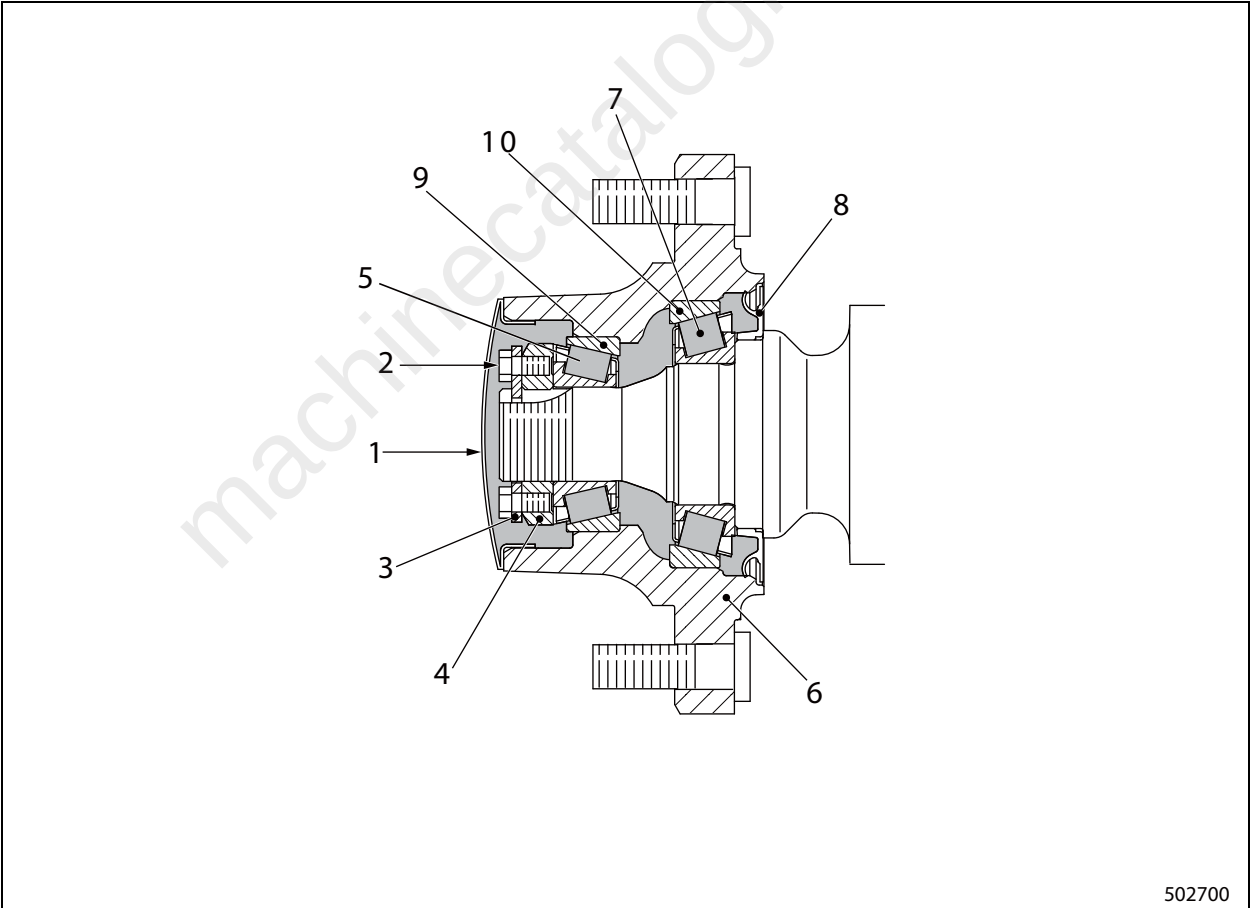
Place shims equally at the front and back.

- (2) Apply "AUTOLEX A" grease or equivalent through grease nipple.
- (3) Tighten the bolts to the specified torque.

| Item              | Specified value                                                             |
|-------------------|-----------------------------------------------------------------------------|
| Tightening torque | 247.4 to 334.8 N·m<br>(25.23 to 34.14 kgf·m)<br>[182.473 to 246.936 lbf·ft] |

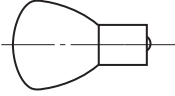
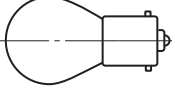
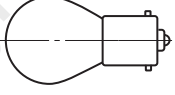
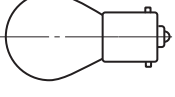
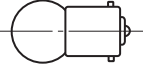
7. Wheel Hub, Disassembling

7.1 Disassembly Sequence



- 1. Hub cap
- 2. Bolt
- 3. Lockplate
- 4. Locknut (hexagon nut)
- 5. Tapered roller bearing (inner race)
- 6. Hub (with tapered roller bearing outer race)
- 7. Tapered roller bearing (inner race)
- 8. Oil seal
- 9. Tapered roller bearing (outer race)
- 10. Tapered roller bearing (outer race)

## 3.24 List of Lights

| Item           |                           |                           | Qty | Lens color | Bulb                                                                                 | Remark                               |
|----------------|---------------------------|---------------------------|-----|------------|--------------------------------------------------------------------------------------|--------------------------------------|
|                |                           |                           |     |            | Figure                                                                               |                                      |
| Type of lights | Head light                |                           | 2   | Colorless  |    | STD                                  |
|                | Combination light (front) | Turn signal light         | 2   | Orange     |    | STD<br>Mounted on the overhead guard |
|                |                           | Clearance light           | 2   | Colorless  |    |                                      |
|                | Combination light (rear)  | Turn signal light         | 2   | Orange     |    | STD                                  |
|                |                           | Tail light and stop light | 2   | Red        |  | STD                                  |
|                |                           | Backup light              | 2   | Colorless  |  | STD                                  |
|                |                           |                           |     |            |                                                                                      |                                      |

## Full Version Available

### Caterpillar GP18N Forklift Service and Operator Manual (99719-3F110)

Caterpillar GP18N forklift service manual, covers mast, hydraulics, drive unit, wiring, and engine service. Searchable PDF download.

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