



Service Manual

Chassis & Mast

MC

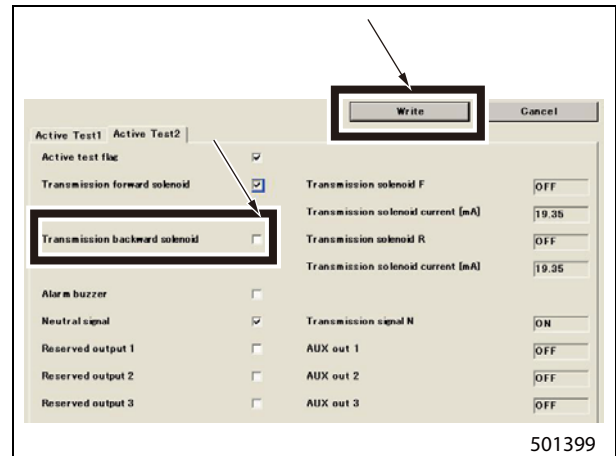
GP15N	CT25C-55001-up	GPE15N	CT34-00001-up	DP15N	CT16D-54001-up
GP15ZN	CT34-52001-up	GPE18N	CT34-40001-up	DP18N	CT16D-74001-up
GP18N	CT25C-75001-up	GPE20CN	CT34-30001-up	DP20CN	CT16D-24001-up
GP18ZN	CT34-72001-up	GPE20N	CT17D-20001-up	DP20N	CT18C-20001-up
GP20CN	CT34-22001-up	GPE20ZN	CT35-20001-up	DP25N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

For use with K15, K21, K25, S4Q2 and S4S
Engine Service Manuals.

99719-38210

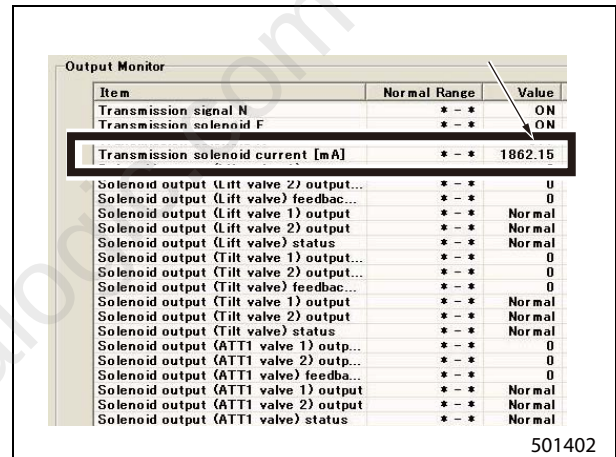
- (5) Insert a check mark in the box of either T/M solenoid F or T/M solenoid R, and press the write button.
- (6) When the write confirmation dialogue box is displayed, press the YES button the same as (4) above, and when the write completed dialogue box is displayed, press the OK button to complete the set-up.

Note: Do not check both boxes of T/M solenoid F or T/M solenoid R to avoid the controller damage.



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- (7) Press the output monitor button in the service tool screen to display the output monitor screen. Make sure that the T/M control valve current is 2000 mA or around.



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- (8) After confirmation, turn the key switch to the OFF position to terminate the active test. (Be sure to turn off the key switch before proceeding to the next step.)

Note: If a defect is found, refer to 4-51 "Truck Status Display and Troubleshooting" and check for the possible causes of the diagnostic code F-85, F-87, and F-89.

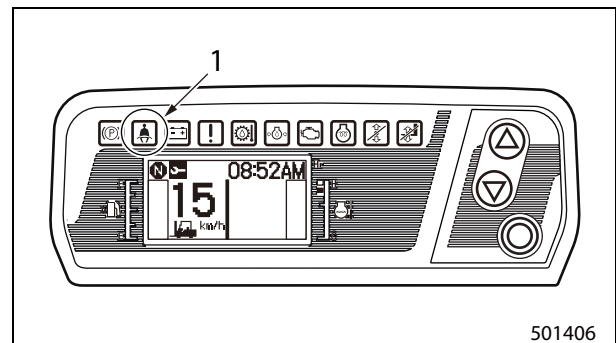
6. Seat Belt Warning Light

6.1 Seat Belt Warning Light, Checking the Operation

This light flashes when the seat belt is not worn or not buckled properly.

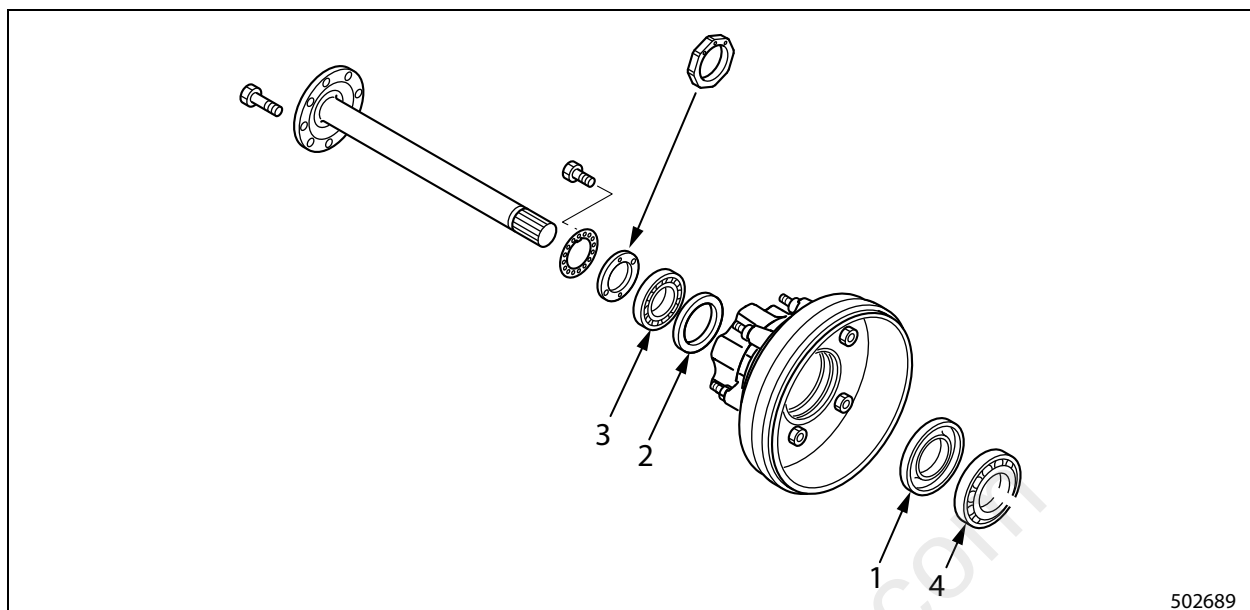
Controller function

The controller sends a warning signal to the meter panel if the seat belt is not fastened.



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1. Seat belt warning light



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- | | |
|----------------------------|--|
| 1. Oil seal
2. Oil seal | 3. Tapered roller bearing
4. Tapered roller bearing |
|----------------------------|--|

Special tool (Installer)		Truck classifications	
		1 ton class	2, 3 ton classes
1	Oil seal	91A68-00500	
2	Oil seal	91B68-00900	91E68-00700
3	Tapered roller bearing		91E68-00900
4	Tapered roller bearing		91E68-00800

- Apply sealant (ThreeBond 1184) to the flange surfaces of the axle shaft.

Note: DO NOT apply grease or oil to outer peripheral portion of oil seal when installing.

17. Lift cylinders, Removing (Second Cylinder for Duplex Mast)

17.1 Disassembly Sequence



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- | | |
|------------------------------|-------------------|
| 1. Holder subassembly | 12. Rod |
| 2. Head subassembly | 13. Piston |
| 3. Piston rod subassembly | 14. Slide ring |
| 4. Cylinder tube subassembly | 15. Set screw |
| 5. Holder | 16. Check valve |
| 6. Wiper ring | 17. Cushion spool |
| 7. Back-up ring | 18. Spring |
| 8. U-ring | 19. Snapring |
| 9. O-ring | 20. Tube assembly |
| 10. Head | 21. Plug |
| 11. Bushing | |

17.2 Suggestions for Disassembly

Removing piston

Be careful not to damage the piston seals and cylinder bore surface when pulling out the piston from the cylinder.

18. Lift Cylinder (Second for Duplex Mast), Inspecting

Cylinder tube

- Check the bore surface for excessive wear, scratches and rust.
- Check welds for cracks or dents.

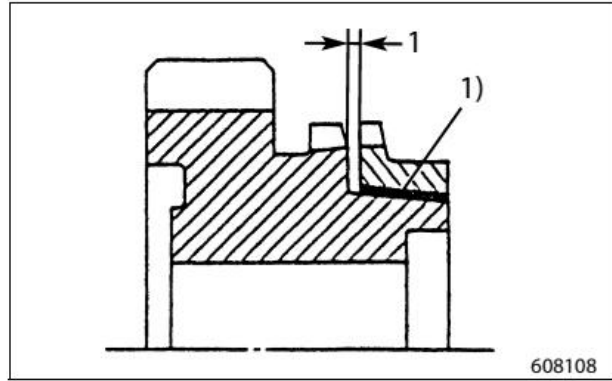
Piston rod

- Check rod deflection.
- Check the rod surface for scratches, rust or wear.

Rings, packings and threaded portions

- Check seal lips for damage, wear, or deterioration.
- Check threaded portions for damage.

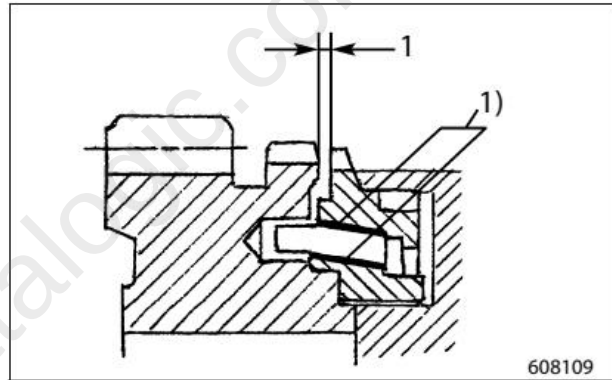
- (2) Check cones for wear or damage.
- (3) Measure the axial clearance between the gear and synchronizer ring.



H-L

1. Clearance (H-L)

1) Cone



F-R

1. Clearance (F-R)

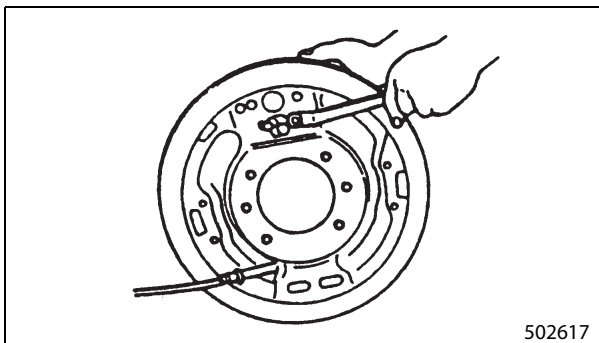
1) Cone

Item		Ref.	Standard	Limit
Axial clearance between gear and ring	H-L	1	1.75 mm (0.0689 in.)	0 mm (0.00 in.)
	F-R	2	1.85 mm (0.0728 in.)	0.25 mm (0.0098 in.)

8.3 Suggestions for Assembly

Wheel cylinder, Installing

Apply liquid gasket to the mounting face of the wheel cylinder before installing and tighten wheel cylinder to specified torque.



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Item	Specified value	
	1 ton class	2, 3 ton classes
Tightening torque	7.8 to 11.8 N·m (0.80 to 1.20 kgf·m) [5.753 to 8.703 lbf·ft]	17.7 to 26.5 N·m (1.80 to 2.70 kgf·m) [13.055 to 19.545 lbf·ft]

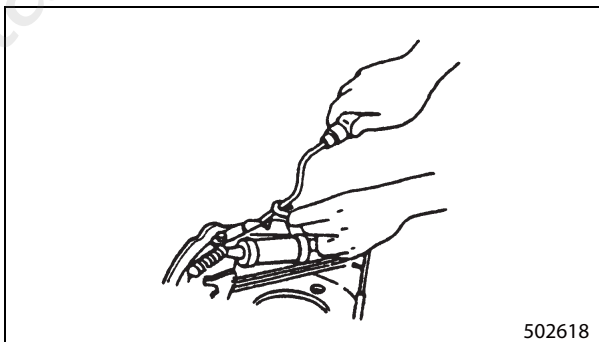
Applying grease

Apply a thin coat of specified brake grease to the following parts:

- Shoe ledge (6 places) (Contact area between backing plate and shoe)
- Anchor pin surface in contact with shoe ends

Shoe and lining, Installing

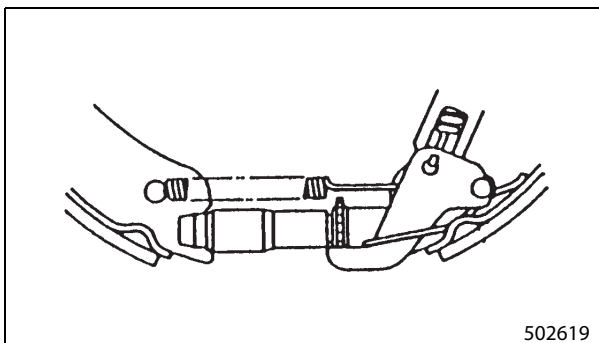
Ensure that each connector link of the wheel cylinder has been correctly inserted into shoe web.



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Return spring, Installing

Using special tool, install return springs to backing plate pins.

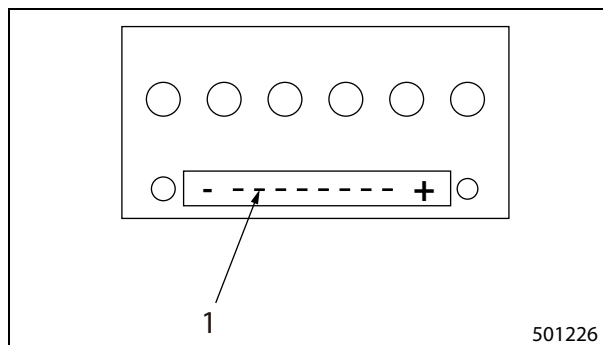


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Special tool	Part number
Spring installer	64309-15413

4.3 Precautions for Battery Charging

- (1) In a slow charging, the charging current should be about 1/10 of the capacity of battery.
- (2) In quick charging, the battery capacity in ampere (A) should not be exceeded.
- (3) During charging, adjust the charging current so that the electrolyte temperature does not exceed 45 °C (113 °F).
- (4) When connecting cables to battery terminals, always connect the positive (+) terminal first, and when disconnecting, remove the negative (-) terminal first.
- (5) Be sure to provide proper ventilation as hydrogen gas is generated during charging.



1. Identification

Identification	
34B19L	(Gasoline model)
55D23L	
75D26L	(Diesel model)
95D31L	
105D31L	

⚠ CAUTION

Be sure to turn off the key switch and light switch before disconnecting or connecting the battery cables.
(This prevents damage to the IC regulator.)

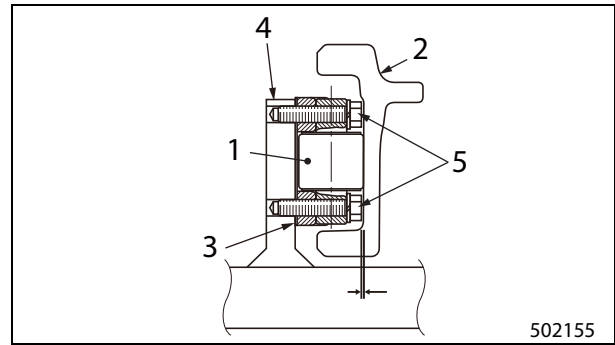
Adjusting clearance between side roller rolling face and inner mast

Measure the clearance between side roller rolling face and inner mast. If the measured clearance does not meet the standard value, adjust the clearance as follows:

Note: For measurement, refer to 14-51 "Inspection and Adjustment".

If the clearance is too large, increase shims thickness (d) as required.

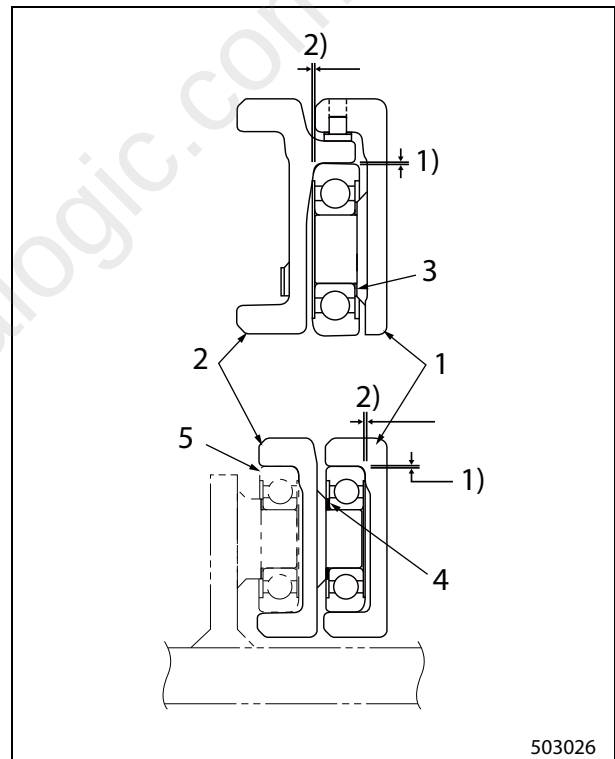
Note: At the factory, shim thickness (d) is usually adjusted to 1 mm (0.04 in.) for shipping.



- 1. Side roller
- 2. Inner mast
- 3. Shim (d)
- 4. Lift bracket
- 5. Roller mounting bolt

2.12 Installing Mast Rollers (All Mast Models)

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



- 1. Outer mast
- 2. Inner mast
- 3. Shim (e)
- 4. Shim (f)
- 5. Lift bracket lower roller
- 1) Clearance between main roller rolling face and mast
- 2) Clearance between main roller side face and mast

Ref.	Item	Standard
1)	Clearance between main roller rolling face and mast	1 mm (0.04 in.) or less
2)	Clearance between main roller side face and mast	0.1 to 0.5 mm (0.004 to 0.020 in.)

► Truck Models Covered in This Manual

Truck Model	Serial Number	Engine
GP15N	T25C-55001-up	K15
GP15ZN	T34-52001-up	K21
GPE15N (MC)	T34-00001-up	K21E
GPE15N (FC)	T34-19001-up	K21E
GP18N	T25C-75001-up	K15
GP18ZN	T34-72001-up	K21
GPE18N (MC)	T34-40001-up	K21E
GPE18N (FC)	T34-49001-up	K21E
GP20CN	T34-22001-up	K21
GPE20CN (MC)	T34-30001-up	K21E
GPE20CN (FC)	T34-39001-up	K21E
GP20N	T17D-10001-up	K21
GP20ZN	T35-10001-up	K25
GPE20N (MC)	T17D-20001-up	K21E
GPE20N (FC)	T17D-38001-up	K21E

Truck Model	Serial Number	Engine
DP15ND (MC)	T16D-54001-up	S4Q2
DP15NT (MC)	T16D-54001-up	S4Q2
DP15NDS (MC)	T16D-54001-up	S4Q2
DP15NTS (MC)	T16D-54001-up	S4Q2
DP15N (FC)	T16D-64001-up	S4Q2
DP18ND (MC)	T16D-74001-up	S4Q2
DP18NT (MC)	T16D-74001-up	S4Q2
DP18NDS (MC)	T16D-74001-up	S4Q2
DP18NTS (MC)	T16D-74001-up	S4Q2
DP18N (FC)	T16D-84001-up	S4Q2
DP20CND (MC)	T16D-24001-up	S4Q2
DP20CNT (MC)	T16D-24001-up	S4Q2
DP20CND (MC)	T16D-24001-up	S4Q2
DP20CNTS (MC)	T16D-24001-up	S4Q2
DP20CN (FC)	T16D-28001-up	S4Q2
DP20ND (MC)	T18C-20001-up	S4S
DP20NT (MC)	T18C-20001-up	S4S
DP20NDS (MC)	T18C-20001-up	S4S

Truck Model	Serial Number	Engine
GPE20ZN (MC)	T35-20001-up	K25E
GPE20ZN (FC)	T35-38001-up	K25E
GP25N	T17D-60001-up	K21
GP25ZN	T35-60001-up	K25
GPE25N (MC)	T17D-70001-up	K21E
GPE25N (FC)	T17D-88001-up	K21E
GPE25ZN (MC)	T35-70001-up	K25E
GPE25ZN (FC)	T35-88001-up	K25E
GP30N	T13F-40001-up	K25
GPE30N (MC)	T13F-10001-up	K25E
GPE30N (FC)	T13F-20001-up	K25E
GP35N	T13F-60001-up	K25
GPE35N (MC)	T13F-80001-up	K25E
GPE35N (FC)	T13F-90001-up	K25E

Truck Model	Serial Number	Engine
DP20NTS (MC)	T18C-20001-up	S4S
DP20N (FC)	T18C-40001-up	S4S
DP25ND (MC)	T18C-70001-up	S4S
DP25NT (MC)	T18C-70001-up	S4S
DP25NDS (MC)	T18C-70001-up	S4S
DP25NTS (MC)	T18C-70001-up	S4S
DP25N (FC)	T18C-90001-up	S4S
DP30ND (MC)	T14E-10001-up	S4S
DP30NT (MC)	T14E-10001-up	S4S
DP30NDS (MC)	T14E-10001-up	S4S
DP30NTS (MC)	T14E-10001-up	S4S
DP30N (FC)	T14E-20001-up	S4S
DP35ND (MC)	T14E-80001-up	S4S
DP35NT (MC)	T14E-80001-up	S4S
DP35NDS (MC)	T14E-80001-up	S4S
DP35NTS (MC)	T14E-80001-up	S4S
DP35N (FC)	T14E-90001-up	S4S

Abbreviation

- MC is short for mechanical control levers.
- FC is short for fingertip control levers.
- D stands for manual transmission.
- T stands for powershift transmission.

Full Version Available

Caterpillar DP18NDs Forklift Service and Operator Manual (99719-38210)

Caterpillar DP18NDs

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