



Service Manual

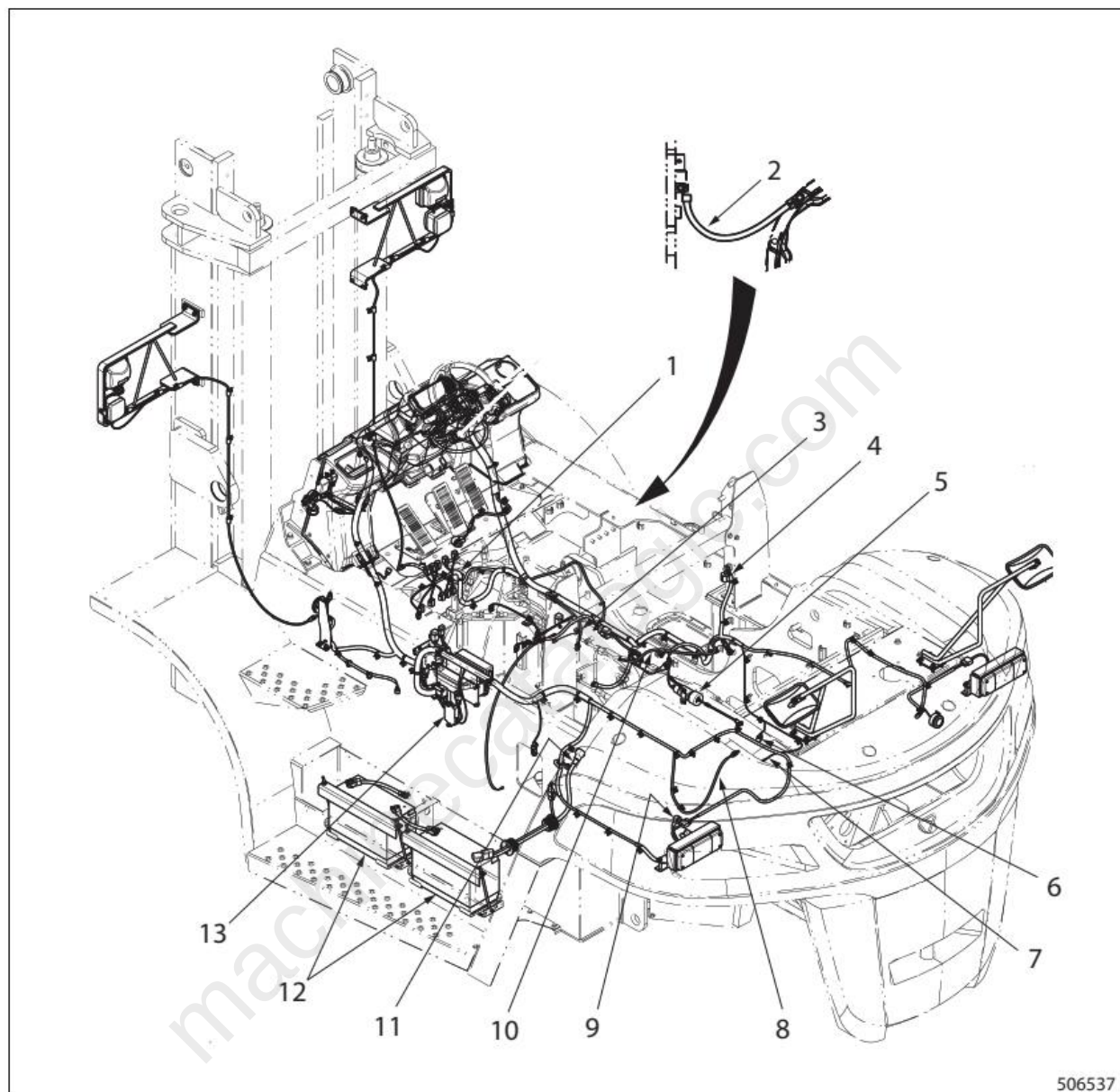
Chassis & Mast

FC/LC

DP100NM1	T15E-20011-39999
DP100NM1S	T15E-20011-39999
DP120NM1	T15E-20011-39999
DP120NM1S	T15E-20011-39999
DP135NM1	T15E-20011-39999
DP135NM1S	T15E-20011-39999
DP150NM1	T24C-20011-39999
DP150NM1S	T24C-20011-39999

4.3 Removing Harnesses

Remove connectors and terminals.



506537

- | | |
|----------------------------|-----------------------|
| 1. Control valve (FC) | 8. Engine thermo unit |
| 2. Battery cable | 9. Alternator |
| 3. Power train | 10. Glow plug |
| 4. Rear tower (RH) | 11. Starter |
| 5. Engine stop solenoid | 12. Battery |
| 6. Oil bypass alarm switch | 13. Engine stop timer |
| 7. Oil pressure switch | |

Suggestions for removal

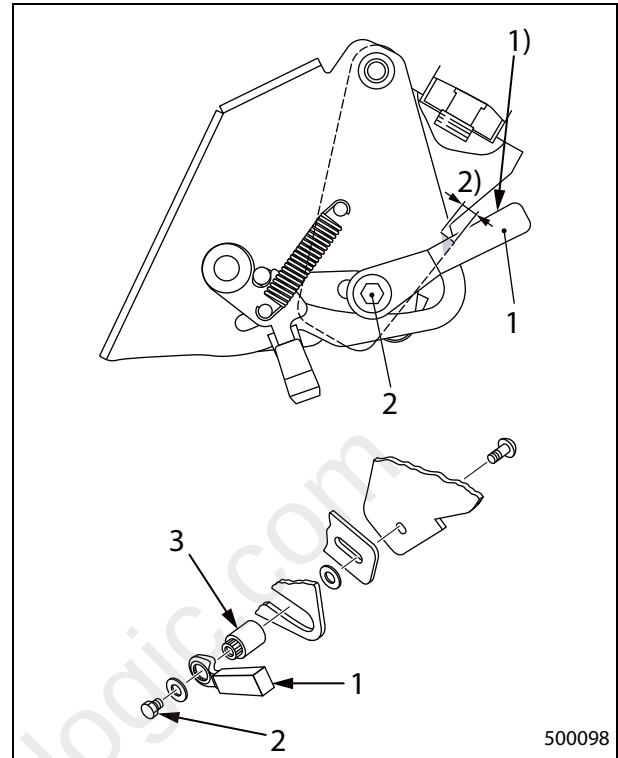
- (1) Tack the disconnected harnesses to the main harness or the frame to prevent damage to them.
- (2) If other wires are stressed when removing the engine and transmission as one unit, see "3. ELECTRICAL SYSTEM" to disconnect the related wiring.

4.7 Assembling Tilt Lock Lever

If the matchmarks which were made earlier, have disappeared, or when the lever is replaced with a new one, install the lever as instructed below.

(The illustration on the right shows the relation of the parts when the tilt position is in NEUTRAL and the column lock lever is locked.)

- (1) Tighten nut **3** to the tightening torque of 11 to 15 N·m (1.1 to 1.5 kgf·m) [8.11 to 11.06 lbf·ft]. (This is a lever locked state).
- (2) Select the optimal locked position for the tilt lock lever **1** and fit the tilt lock lever **1** into the serration of nut **3**. The optimal position is within the range which formed by the intersection of the notched section **2** of the bracket and the upper aspect of the lever.
- (3) Tighten bolt **2**.
- (4) Loosen the tilt lock lever **1**, and make sure that the bracket slides in the entire tilting range without interfering with other parts.



500098

1. Tilt lock lever
 2. Lever mounting bolt
 3. Nut
- 1) Lever aspect

Installing lift chains

Lift chains can be installed without change unless the positions of the upper locknuts have been changed. Tighten the locknuts and anchor nuts to the specified torque after the adjustment.

Model	Nut tightening torque
FP120AM FPS120AM 4FP135AM 4FPS135AM	393 N·m (40.1 kgf·m) [289.86 lbf·ft]
FP160AM	441 N·m (45 kgf·m) [325.26 lbf·ft]

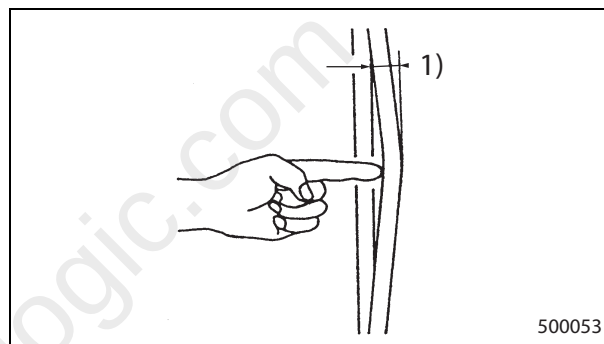
Adjusting hose tension

The hose tension is 196 N (20.0kgf) [44.06 lbf].

When the midpoint of 1 m (1.1 yd) hose is pushed with a force of 9.8 N (1.00 kgf) [2.203 lbf], the hose tension should allow approx. 12.5 mm (0.492 in.) of deflection.

Adjust the tension according to the length of the hose which differs with the raised height of the mast.

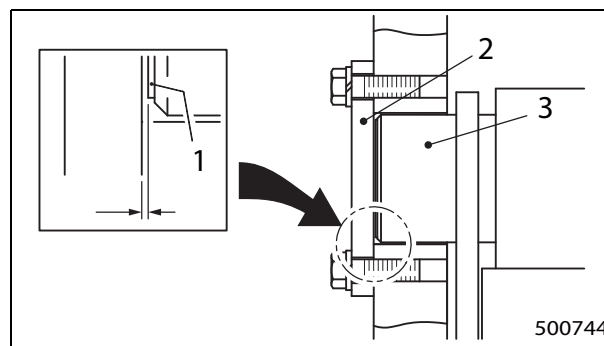
For example, if the hose length is 2 m (2.2 yd) from the pulley to the bottom joint when the mast is raised to the highest position, the tension of the hose is acceptable if it allows approx. 25 mm (0.98 in.) of deflection when the hose is pushed with a force of 9.8 N (1.00 kgf) [2.203 lbf].



1) Amount of deflection

Guide bar

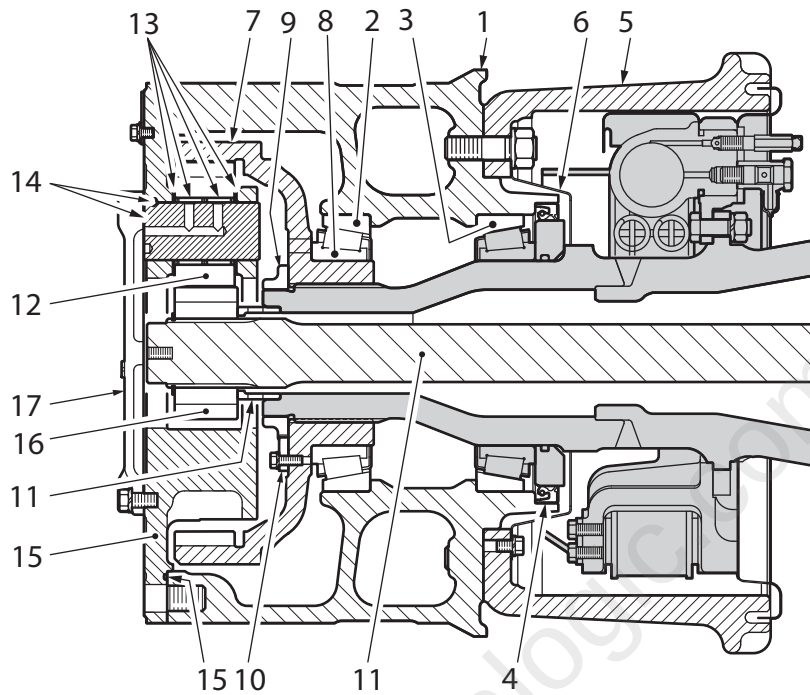
If there is a clearance between guide bar and stopper plate, push the guide bar against the stopper plate on one side to eliminate the clearance (0 mm [0 in.]) and adjust the clearance between guide bar and stopper plate on the other side to 1 mm or less using shims.



- 1. Shim
- 2. Stopper plate
- 3. Guide bar

Part number	Shim thickness
94632-01800	3.2 mm (0.126 in.)
94632-01700	2.3 mm (0.091 in.)
94632-01600	1.0 mm (0.039 in.)

10.3 Assembly Sequence of Hub Reduction



500329

- | | |
|--|-----------------------------------|
| 1. Front wheel hub | 10. Lockplate |
| 2. Tapered roller bearing (Outer race) | 11. Axle shaft, Sleeve |
| 3. Tapered roller bearing (Outer race) | 12. Planetary gear |
| 4. Oil seal | 13. Roller bearing, Thrust washer |
| 5. Brake hub | 14. Planetary pin, Steel ball |
| 6. Oil deflector | 15. Planetary carrier, O-ring |
| 7. Ring gear | 16. Sun gear |
| 8. Tapered roller bearing (Inner race) | 17. Planetary gear cover, Gasket |
| 9. Nut | |

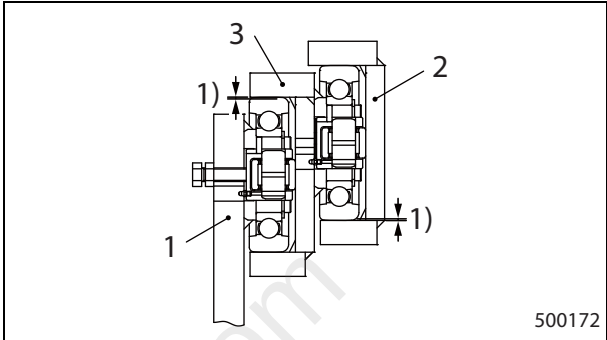
6. Assembling Mast Assembly

Follow the disassembly sequence in reverse to assemble and observe the instructions below:

6.1 Suggestions for Assembly

Back and front clearances between mast and lift bracket

- (1) Select the main rollers to provide the standard clearance between the main roller and the rolling surface through the whole lifting stroke.



1. Inner mast
2. Lift bracket
3. Outer mast
1) Clearance

Ref.	Item	Standard
1)	Back and front clearance between mast and lift bracket	0.5 to 2.8 mm (0.020 to 0.110 in.)

- (2) If the value exceeds the standard, replace the main roller with a new ones.

Item		Standard
Main roller size	S	203 mm (7.99 in.)
	M	205 mm (8.07 in.)
	L	207 mm (8.15 in.)

3.14 Glow Relay

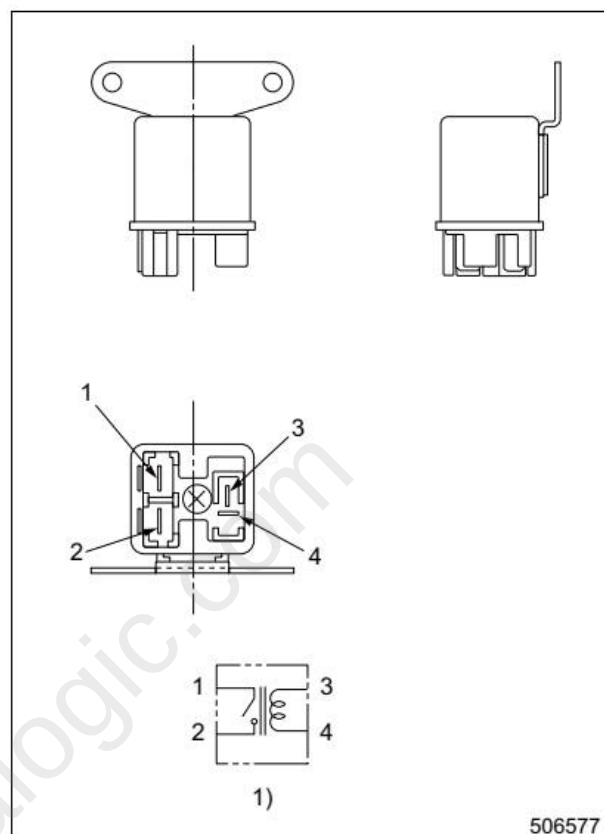
Rated voltage: DC 24V

Continuous rated time : Max 1 min

Coil resistance: 52 ohm

Inductance: 94mH at 1khz

Operating temperature: -40° C (-40° F) to 100° C (212° F)



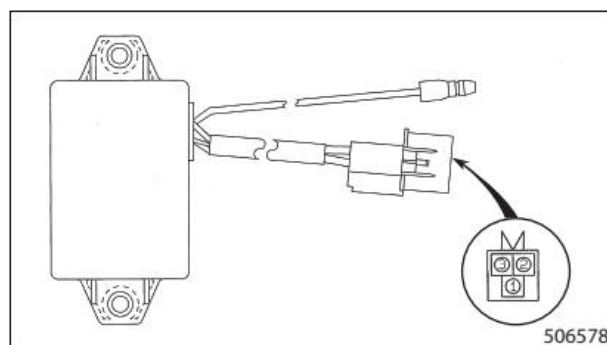
1) Connecting diagram

3.15 Engine Stop Timer

Rated voltage: 24V

Operating temperature: -30° C (-22° F) to 80° C (176° F)

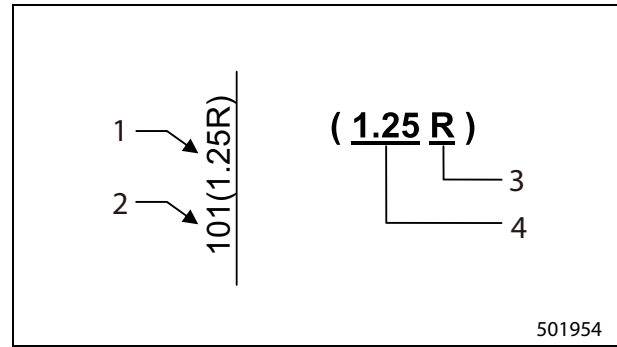
Solenoid output time: 6 ± 1 sec.



Circuit No.	Wire color	Wire diameter	Destination
1	R	0.5	Key switch (ON)
2	RW	2	Battery (positive)
3	G	2	Solenoid
4	B	0.5	GND

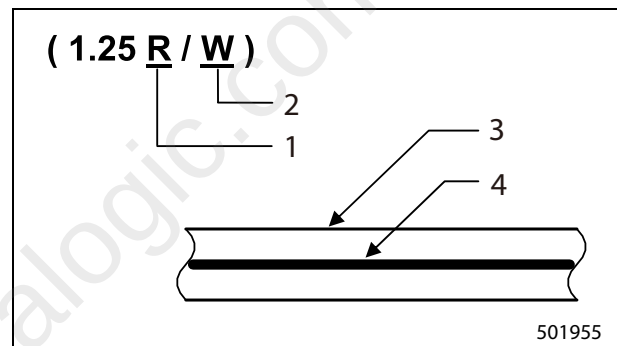
2.3 Connecting Lines

- (1) There are two thicknesses of the line which connect between elements in the circuit diagram. Each line is used as follows:
 - Thick line: Connecting lines for the electric wires size of 20 mm^2 (0.78 in^2) or above.
 - Thin line: All other connecting lines except the above.
- (2) Connecting lines are represented by the circuit number, wire diameter and wire color. For the connecting lines of 0.5 mm^2 (0.02 in^2) wire size, the wire diameter is omitted.



1. Wire diameter, wire color
2. Circuit number
3. Wire color
4. Wire diameter

- (3) Here are two types of wires: the one having only one color and the one having a colored stripe (combination of two colors).



1. Base color
2. Stripe color
3. Base color
4. Stripe color

Color codes

Symbol	Color	Symbol	Color	Symbol	Color
B	Black	Br	Brown	P	Pink
W	White	L	Blue	Sb	Sky blue
R	Red	Lg	Light green	V	Purple
G	Green	O	Orange		
Y	Yellow	Gr	Gray		

Full Version Available

Caterpillar DP135NM1S Forklift Service and Operator Manual (99799-41110)

Caterpillar DP135NM1S forklift service manual, covers hydraulics, mast, drive unit, wiring, and engine work. Searchable PDF download.

[VIEW THE FULL MANUAL](#)