

Service Manual

GP15, GP18, GP20, GP25, GP30, GP35, DP20, DP25, DP30, DP35 Mast Supplement

GP15 3AM00001-up

GP18 3AM00001-up

GP20 5AM00001-up

5AM90001-up

GP25 5AM00001-up

5AM90001-up

GP30 7AM00001-up

GP35 8AM00001-up

DP20 5BM00001-up

DP25 5BM00001-up

DP30 7BM00001-up

DP35 8BM00001-up

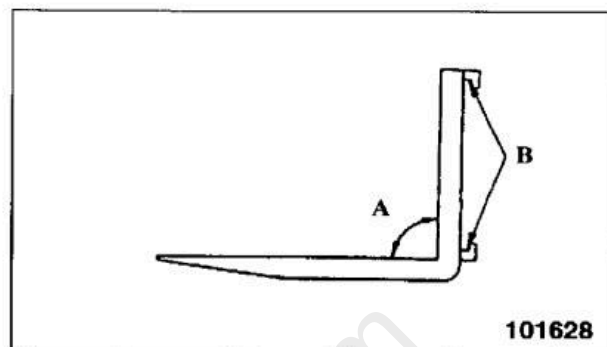
INSPECTION AND ADJUSTMENT

Forks

1. Carefully inspect the forks for cracks. Special attention should be given to the heel section A, all weld areas and B mounting brackets.

Forks with cracks should be removed from service.

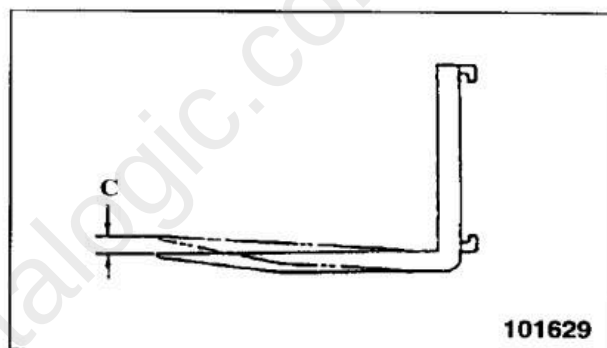
"Wet Test" magnetic particle inspection is generally preferred due to its sensitivity and the ease of interpreting the results.



2. Check the difference in height of one fork tip to the other when mounted on the fork carrier. A difference in fork tip height can result in uneven support of the load and cause problems when entering loads.

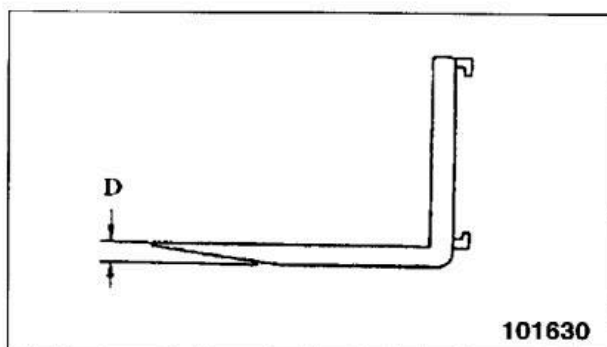
The maximum allowable difference in fork tip elevation C is 5 mm (0.20 in.) for pallet forks.

Replace one or both forks when the difference in fork tip height exceeds the maximum allowable difference.



3. Check the fork blade D. The fork should be withdrawn from service if the thickness is reduced to less than the tolerant thickness.

Fork blade length may also be reduced by wear, especially on tapered forks and platens. Remove the forks from service when the blade length is no longer adequate for the intended loads.



Unit: mm (in.)

Tolerant thickness	Standard	Limit
GP15	40 (1.6)	31 (1.2)
GP18	40 (1.6)	33 (1.3)
GP20, DP20	45 (1.8)	36 (1.4)
GP25, DP25	45 (1.8)	39 (1.5)
GP30, DP30	45 (1.8)	40 (1.57)
GP35, DP35	50 (2.0)	45 (1.8)

A = Assembly standard B = Repair or service limit

Unit: mm (in.)

Item	Truck model	GP15, GP18	GP20, GP25 DP20, DP25	GP30, GP35 DP30, DP35
207106				
Tightening torque N·m(kgf·m)[lbf·ft]	Mast support bolts	A	74 (7.5) [54]	178 (18.2) [132]
	Upper nut ②	A	57 (5.8) [42.0]	84 (8.6) [62.2]
	Double nut (lower) ①	A	98 (10) [72.3]	147 (15.0) [108.5]
Distortion of finger bar		A	5 (0.2)	
102709				

MAST AND FORK

3. Lift chains, chain wheels and chain wheel supports

- (1) Measure the length of each chain to be sure that two chains are equal in length. Also check the chains for wear, evidence of breakage, link binding and twist.
- (2) Check each chain anchor bolt for cracks or damaged thread.
- (3) Check each chain wheel support and chain wheel for crack or wear. Check to be sure that the wheels are capable of smooth rotation.

Length of Lift Chain (per 20 links)

A = Assembly standard

B = Repair or service limit

Unit: mm (in.)

	GP15, GP18	GP20, GP25 DP20, DP25	GP30, GP35 DP30, DP35
A	318 (12.52)	381 (15.00)	508 (20.00)
B	327 (12.87)	392 (15.43)	523 (20.59)

4. Mast strips

Check the mast strips for damage, wear or distortion.

Reassembly

To reassemble, follow the reverse of disassembly sequence and do the following steps:

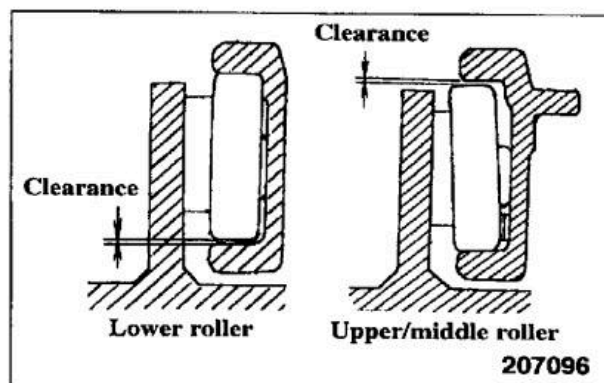
1. Adjusting mast and lift bracket clearance

Rollers for mast and lift bracket are available in three sizes (diameters) for selective use. Select the size that will provide a longitudinal clearances of 1 mm (0.04 in.) and less.

Roller Sizes

Unit: mm (in.)

Diam of main roller	GP15, GP18	GP20 thru GP35 DP20 thru DP35
S	99 (3.90)	113.8 (4.48)
M	100 (3.94)	115 (4.53)
L	101 (3.98)	116 (4.57)

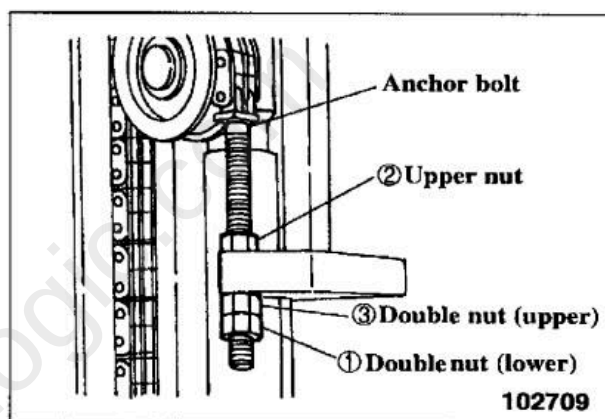


Chain Tension Adjustment

⚠ WARNING

Personal injury can be caused by sudden movement of the mast and lift bracket. Blocks must be used to prevent the mast and lift bracket from any movement while the adjustments are made. Keep hands and feet clear of any parts that can move.

1. Have the truck standing on a level floor, with the mast vertical and the forks lowered to the floor. Check to be sure that the lift cylinders are fully retracted.
2. Set the anchor bolts with double nut (upper) ③.
3. Raise the forks slightly and push the chains inward midway between the chain wheel and anchor alternately to check the tension. When adjusting the chains by means of the double nut (upper) ③, tilt the mast forward to slacken the chains to facilitate adjustment.
4. Turn double nut (upper) ③ to adjust the chain tension. Then, hold the anchor bolt in place with a wrench and tighten upper nut ② to the specified torque.
5. Hold double nut (upper) ③ in place with a wrench, and tighten double nut (lower) ① to the specified torque.

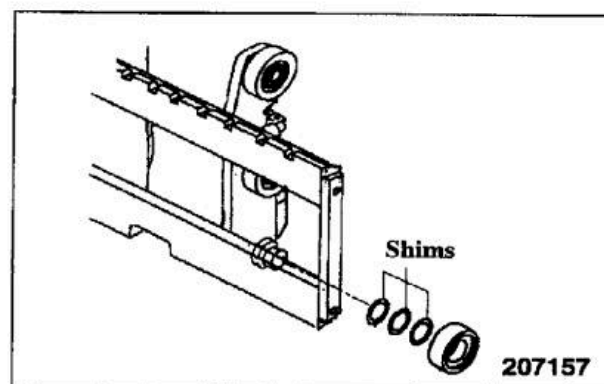


Tightening torque

Unit: N·m (kgf·m) [lbf·ft]

Model Item	GP15 thru GP25 DP20, DP25	GP30, GP35 DP30, DP35
Upper nut ②	57 (5.8) [42.0]	84 (8.6) [62.2]
Double nut (lower) ①	98 (10) [72.3]	147 (15.0) [108.5]

6. Make sure that the chain tension is correct with the mast in vertical (0°) position.



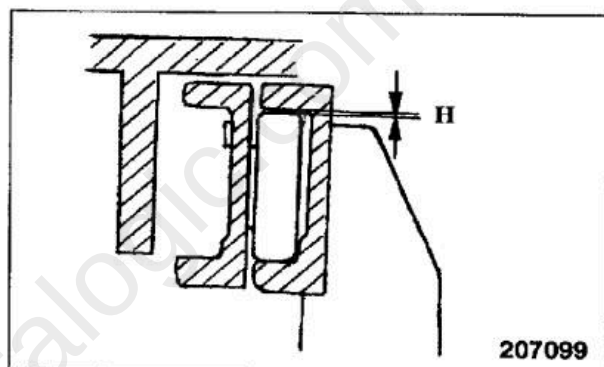
Mast Clearance Adjustment

1. Longitudinal clearance adjustment on mast main rollers

- (1) Tilt the mast all the way backward.
- (2) Using a feeler gauge, measure the clearance H between the inner mast lower roller and outer mast.

Clearance H	0.1 to 1.0 mm (0.004 to 0.039 in.)
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- (3) If the clearance H is out of specification, use oversize rollers.



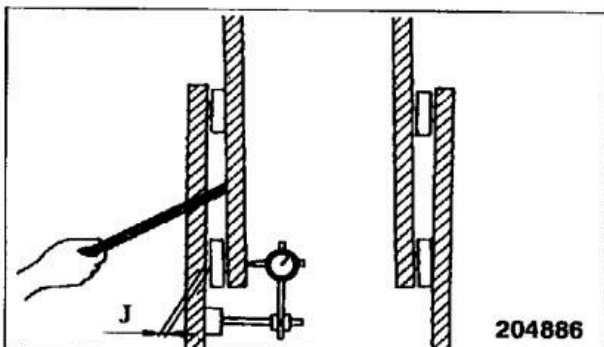
Roller Sizes

Unit: mm (in.)

Diam. of main roller	GP15, GP18	GP20 thru GP35 DP20 thru DP35
S	99 (3.90)	113.8 (4.48)
M	100 (3.94)	115 (4.53)
L	101 (3.98)	116 (4.57)

2. Lateral clearance adjustment on inner mast main rollers

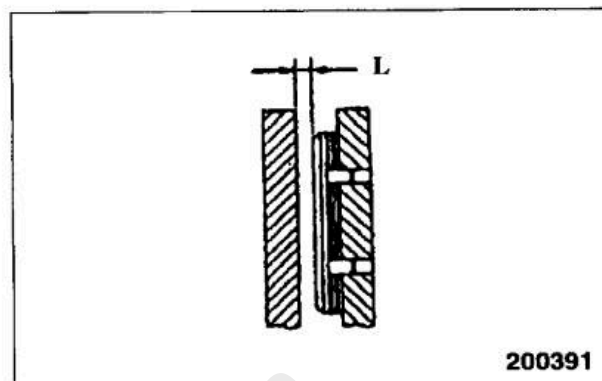
- (1) Raise the mast all the way.
- (2) Set a dial indicator on the inside of the outer mast with its contact point rested on the inner mast.
- (3) Go over to the opposite of the mast, and push the inner mast against the outer mast. Set the indicator to zero.



Mast Strip Adjustment

1. Check the clearance L with the clearance between the outer mast rollers and inner mast set to zero (0) in maximum lift position.

Clearance L	0.1 to 0.5 mm (0.004 to 0.020 in.)
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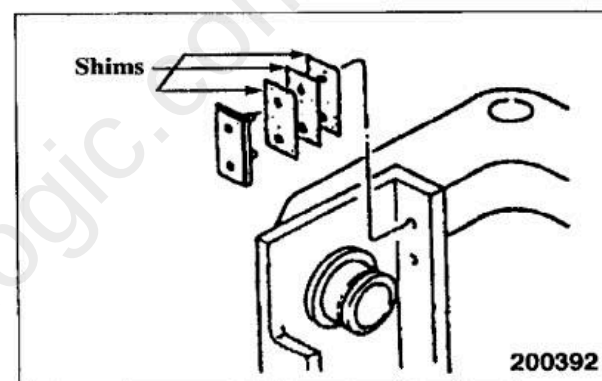


2. If the clearance L is out of specification, adjust it by means of shims.

NOTE

Refer to Main Roller Shim Replacement.

3. After adjusting the all clearance, move the mast and lift bracket slowly to make sure that they move smoothly through their full stroke.

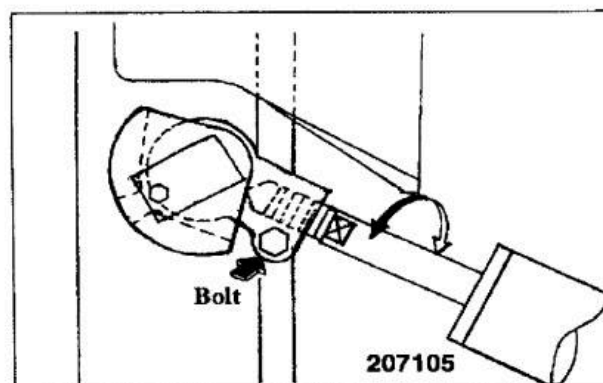


Tilt Angle Adjustment

1. Adjust the tire pressure correctly and keep the truck level.
2. Tilt the mast all the way backward and stop the engine.
3. Measure the backward tilt angle of the mast at both sides.
4. To adjust the tilt angle, loosen the bolt of tilt cylinder socket, and adjust the cylinder stroke by turning the rod on either cylinder so that there is no difference in stroke between the cylinders, left and right.

NOTE

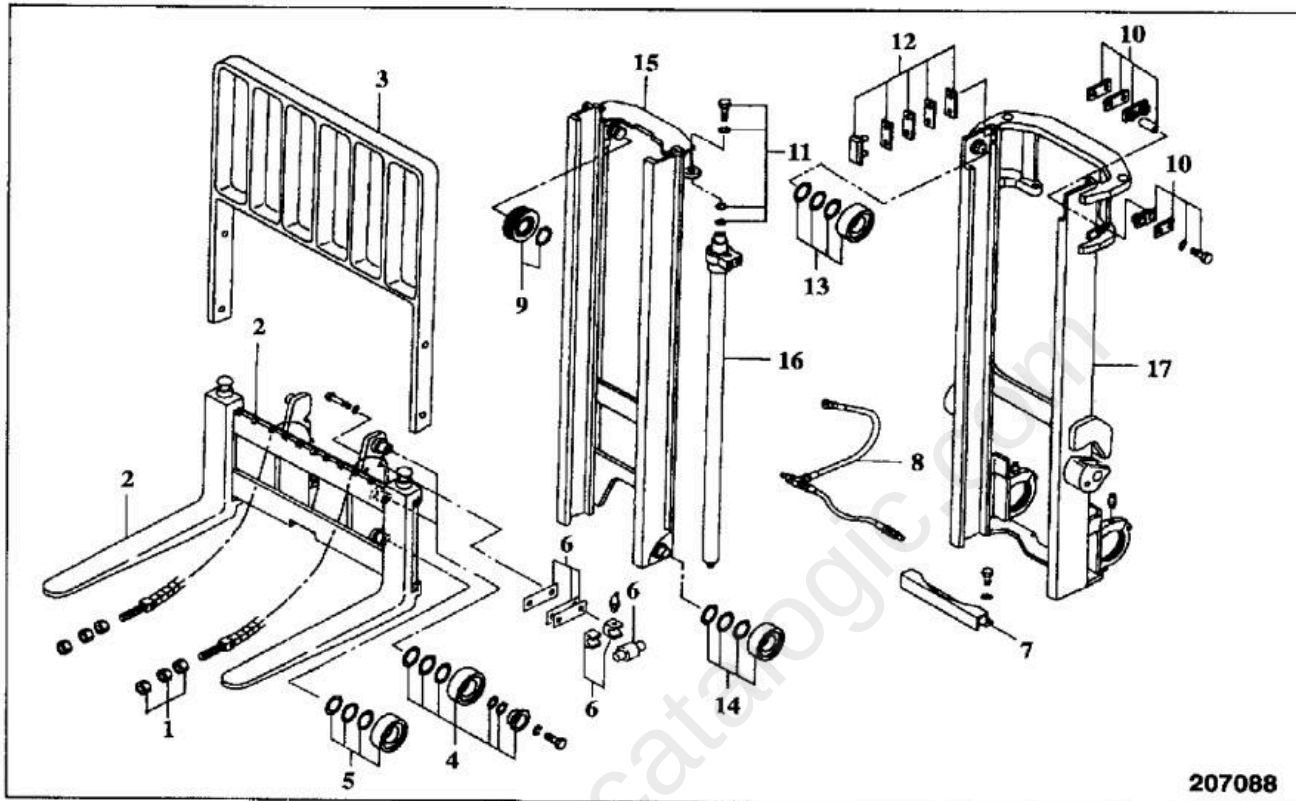
It is not necessary to adjust the forward tilt angle if the backward tilt angle is properly adjusted.



Forward - backward tilt angle	6° -10° (standard)
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DISASSEMBLY AND REASSEMBLY

Disassembly



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Sequence

- | | |
|---|---|
| 1 Nut | 10 Cylinder clamp, Seat, Shims, Cushion, Collar and Bolts |
| 2 Forks and Lift bracket | 11 Bolt and Shims |
| 3 Backrest | 12 Mast strip and Shims |
| 4 Main roller and Shims | 13 Main roller and Shims |
| 5 Main roller and Shims | 14 Main roller and Shims |
| 6 Side roller, Bracket and Shims | 15 Inner mast |
| 7 Hose guard | 16 Lift cylinders |
| 8 Lift hose (high pressure)
[Rubber hose, T-joint and Down safety valve] | 17 Outer mast |
| 9 Snap ring and Chain wheel | |

Suggestions

1. Removing mast strips and main rollers

Remove bolts 10,11 to free lift cylinder 16. Cross the tops of the two lift cylinders. Slide inner mast 15 toward the bottom of outer mast 17, and remove main rollers 13,14 and mast strips 12.

Full Version Available

Caterpillar DP20 Forklift Mast Supplement Service Manual (99719-72102)

Caterpillar DP20 forklift mast service manual, covers lift hydraulics, chains, rollers, and adjustments. Downloadable PDF format.

[VIEW THE FULL MANUAL](#)