

Service Manual

**GP40, GPL40;
DP40, DPL40, DP45, DP50
Chassis & Mast**

For use with: 6G72 Gasoline, S6S Diesel
Engine Service Manual

(a) Automatic 2-speed transmission

Before installing the bearing, determine the thickness of shims to be put by referring "a" (punched on differential carrier) and "b" to this formula:

$$\text{Thickness of shims } C = 1.7 + \frac{a}{100} - b$$

where a = machining error of differential carrier indicated in a unit of 1/100 mm [0.0004 in.]

b = machining error of bevel pinion

(b) Powershift 1-speed transmission and manual transmission

- i Determine the standard thickness of shims "S1" by referring the error "b" of dimension "B" to this formula:

$$\text{Standard thickness of shims } S1 = 0.7 - b$$

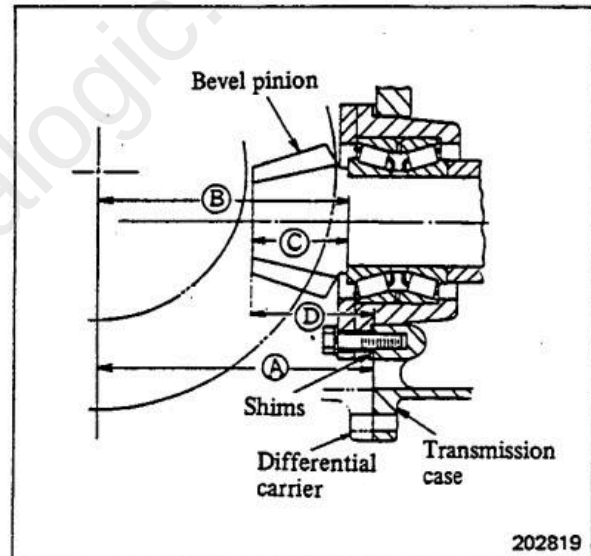
- ii After assembling the parts temporarily, measure dimension "D" and calculate the thickness of shims "S2" to be put by using the following formula:

$$\text{Thickness of shims to be adjusted } S2 = (87.3 + S1 + a + c) - D$$

- iii The thickness of shims to be inserted "S" is "S1" + "S2."

where a = machining error of dimension A indicated in a unit of 1/100 mm [0.0004 in.] on differential carrier by punching
[Example: +10]

b = machining error of dimension B indicated in a true unit on bevel pinion by punching
[Example: -0.2]



FRONT AXLE AND REDUCTION DIFFERENTIAL

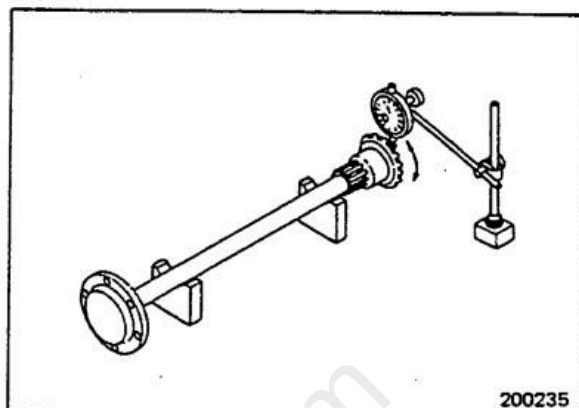
Inspection and Repair

(1) Axle shafts

- (a) Check the splines for wear. Install the differential bevel gear to the splined end of axle shaft, and turn the gear back and forth. Measure the free movement of the gear (looseness between mating splines) with a dial gauge as shown.

Unit: mm [in.]

Free movement of gear (looseness between mating splines)	A	0.07 to 0.17 [0.002 8 to 0.006 7]
	B	0.5 [0.020]



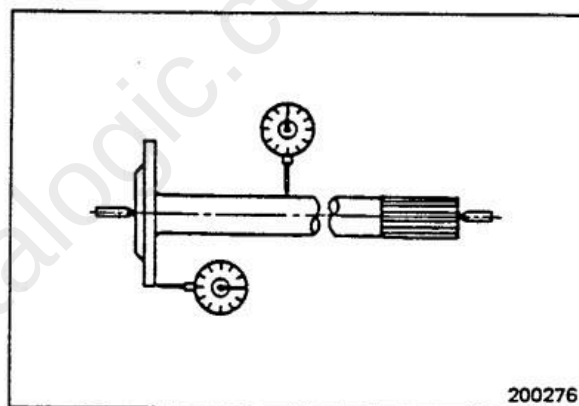
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- (b) Check the axle shaft for runout.

- (i) Put the dial gauge spindle to the middle part of the shaft, and rotate the shaft to measure the runout.

Unit: mm [in.]

Axle shaft runout (1/2 of gear reading)	A	1.0 [0.039], maximum
	B	2.0 [0.079]



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- (ii) Put the dial gauge spindle to the flange, and rotate the shaft to measure the face runout of the flange.

Unit: mm [in.]

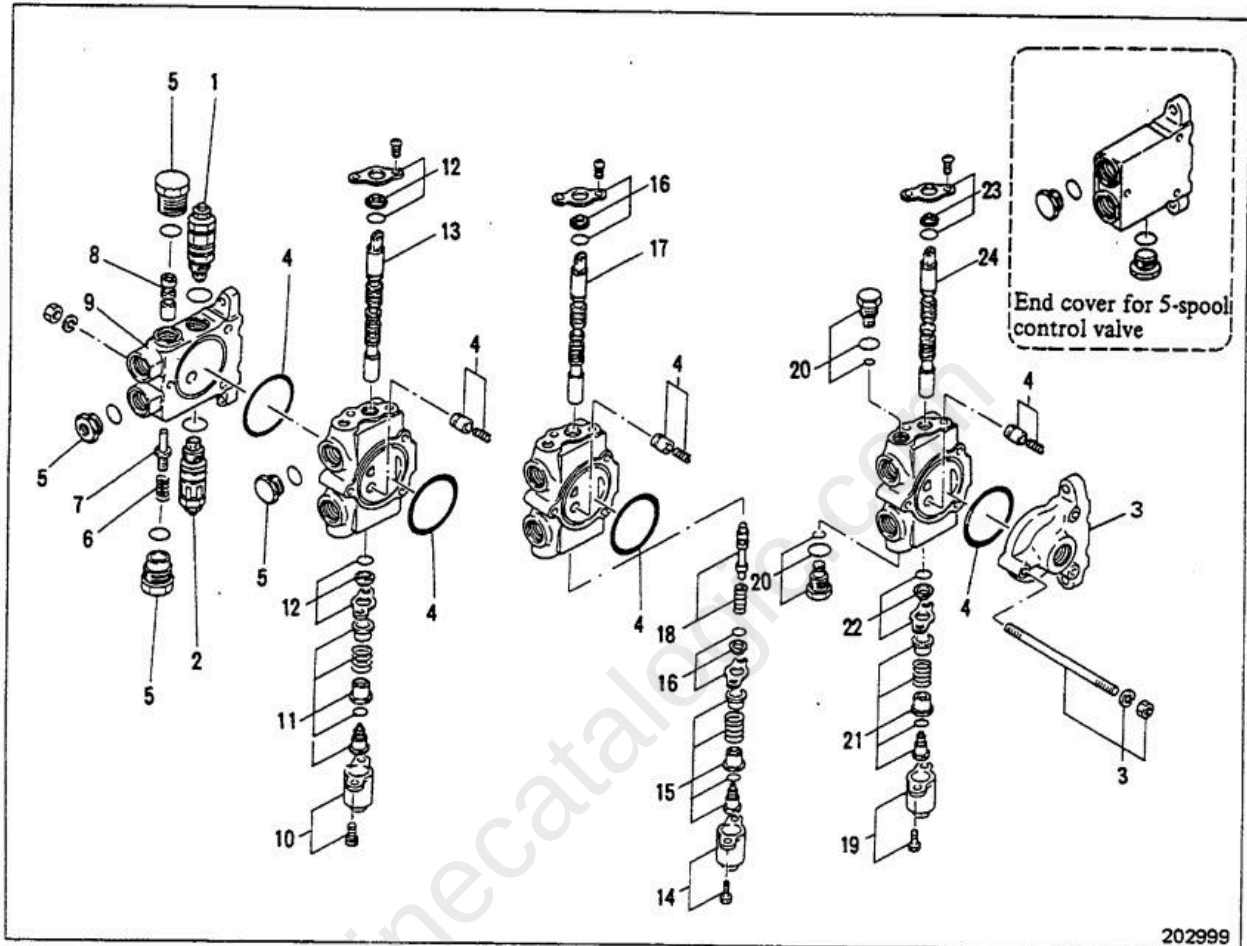
Face runout of flange	A	0.04 [0.001 6]
	B	0.5 [0.020]

(2) Axle housing

- (a) Check the outer surface of oil seal retainer for wear or damage.
- (b) Check the outer and inner oil seals for wear or damage.

CONTROL VALVE

Disassembly

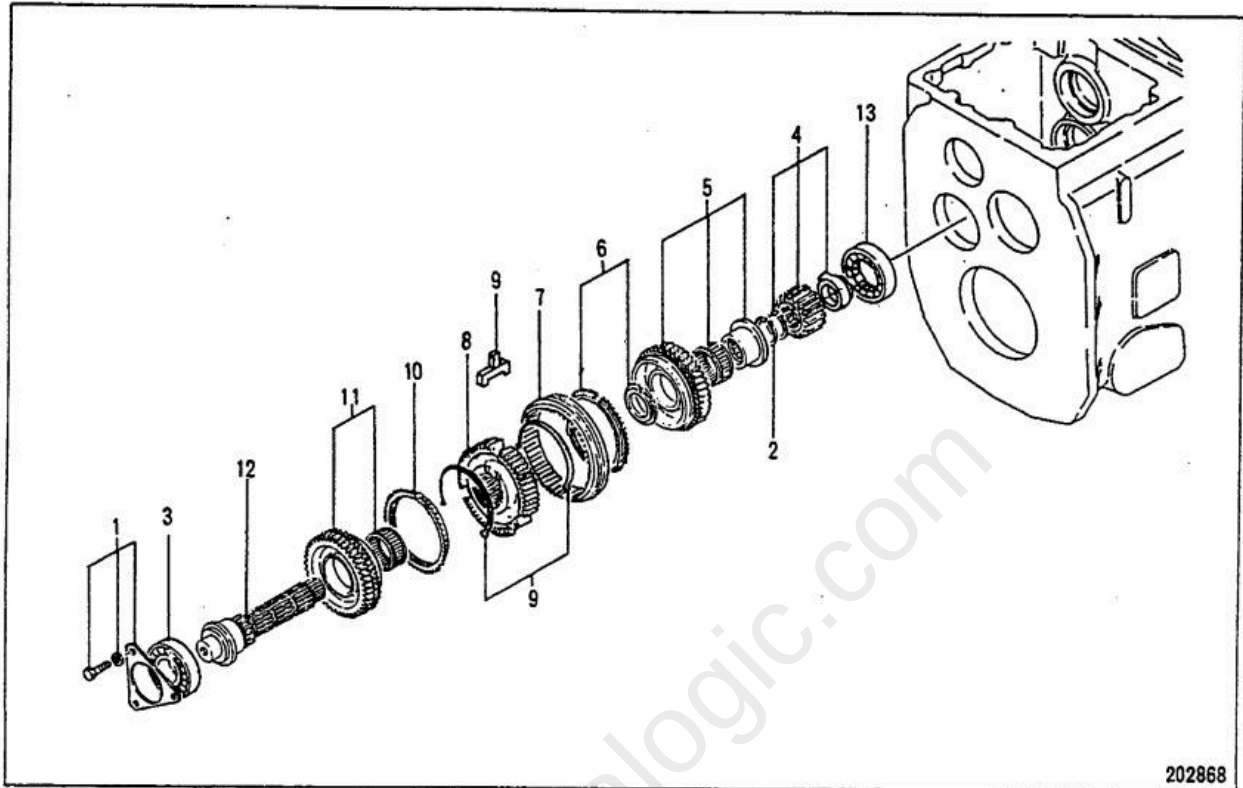


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Disassembly sequence

- | | |
|------------------------------------|-------------------------------------|
| 1 Main relief valve | 13 Lift valve spool |
| 2 Flow divider relief valve | 14 Bolt, cap |
| 3 Bolt, nut, end cover | 15 Cap screw, spring seat, spring |
| 4 Load check valve, spring, O-ring | 16 Plate, wiper, O-ring |
| 5 Plug | 17 Tilt valve spool |
| 6 Spring | 18 Poppet (tilt lock valve), spring |
| 7 Orifice plug | 19 Bolt, cap |
| 8 Spool | 20 Plug, O-ring |
| 9 Housing (inlet) | 21 Cap screw, spring seat, spring |
| 10 Bolt, cap | 22 Plate, wiper, O-ring |
| 11 Cap screw, spring seat, spring | 23 Plate, wiper, O-ring |
| 12 Plate, wiper, O-ring | 24 Attachment valve spool |

Countershaft (3rd Shaft)



Disassembly sequence

- | | |
|--|--|
| 1 Cover [bolts, washers] | 7 Sleeve |
| 2 Snap ring | 8 Hub |
| 3 Ball bearing | 9 Spring, key |
| 4 Countergear, roller bearing (inner), snap ring | 10 Ring |
| 5 Sleeve, needle roller bearing, forward gear | 11 Reverse gear, needle roller bearing |
| 6 Spacer, ring | 12 Shaft |
| | 13 Roller bearing (outer) |

NOTE

The outer race of roller bearing 13 will be left in the transmission case.

BRAKE SYSTEM

Inspection and Repair

(1) Cylinder body

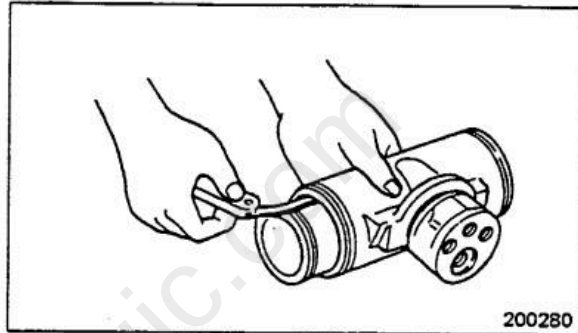
- (a) Check the bore of the body for rusting, erosion or scoring.
- (b) Check the threads of bleeder screw and oil pipe screw connections for damage.

(2) Piston

- (a) Check the sliding surfaces for rusting or scoring.
- (b) Insert the piston into the cylinder body, and measure the clearance between the two. Replace the piston and body if the clearance exceeds the service limit.

Unit: mm [in.]

Clearance between piston and cylinder body	A	0.020 to 0.105 [0.000 79 to 0.004 13]
	B	0.15 [0.005 9]



(3) Piston cups

Check each cup for swelling or other defects, and replace it even if its defect is minor.

Unit: mm [in.]

Fit of piston cups in cylinder body	A	1.85 [0.072 8]
	B	0.65 [0.025 6]

(4) Boot

Replace the boot if it is hardened, damaged or otherwise deteriorated. Replace it every 1 year.

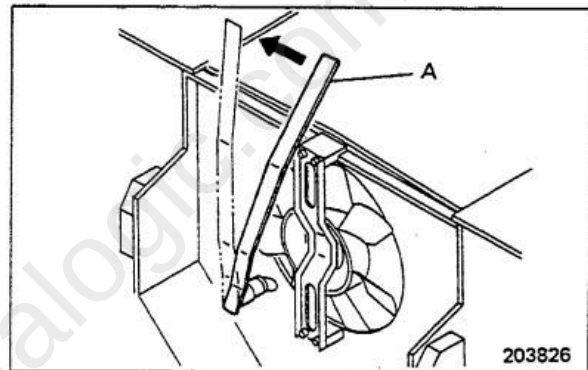
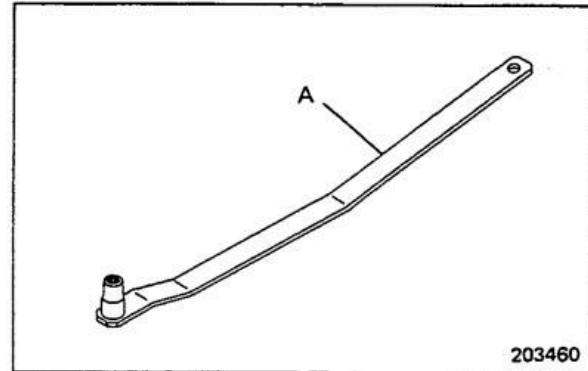
Reassembly

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

- (1) Put a uniform coat of brake fluid on the cylinder bore and piston cups.
- (2) Be careful not to damage the lip of piston cup.
- (3) Position the cups correctly in the cylinder body.

Suggestions for removal and installation

- (1) Make sure coolant temperature is low before opening the drain cock.
- (2) Using tensioner wrench A (91268-04500) through the space between the counterweight and frame (home base plate), loosen the tension pulley bolt.
To loosen this bolt, move tensioner wrench A in the direction of arrow 15 to 20 times. The pulley will not move unless its bolt is not loosened enough. Over-loosening of the bolt, however, would cause the pulley to come off. If the pulley comes off, the counterweight has to be removed for installation of the pulley.
- (3) Force the pulley all the way toward the fan and remove fan belt.



Installation

To install, follow the reverse of removal procedure and do the following steps:

- (1) Turn the fan by hand to make sure it rotates smoothly. If its bearing is noisy, replace it.
- (2) After putting the belt on the drive and driven pulleys, push it midway between the pulleys to make sure the tension pulley moves freely. Then, tighten the pulley bolt.
- (3) When installing the hoses to the radiator, push each hose over the flared portion of the hose connector of radiator and clamp it there securely.
- (4) Pour antifreeze coolant into the radiator and start the engine. Run the engine and check for any abnormal noise. Check the coolant level in the reserve tank.

Full Version Available

Caterpillar GP40 Forklift Service Manual (99739-84100)

Caterpillar GP40 forklift service manual, covers hydraulics, mast, drive unit, wiring, and engine service. Searchable PDF download.

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