



SERVICE MANUAL

FG35

FD35

FG40

FD40

FD45

FD50

FD50C

NOTE

For use with the 6G72
Gasoline Engine Service Manual.

For use with the S6S
Diesel Engine Service Manual.

**CHASSIS
MAST**

(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:

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:

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

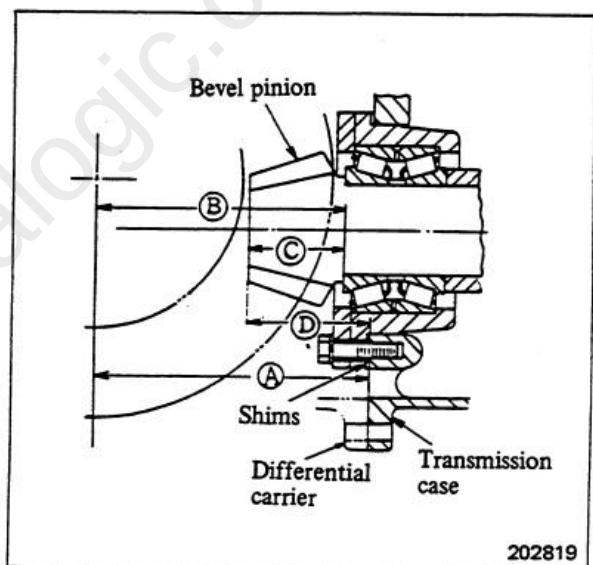
- ii After assembling the parts temporarily, measure dimension "D" and calculate the thickness of shims "S2" to be put by using the following formula:

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

- 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]



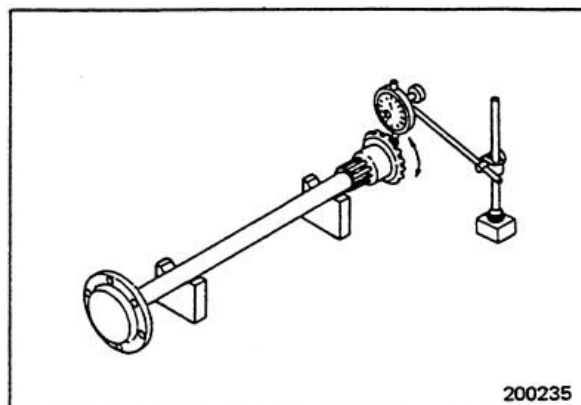
Inspection and Repair

(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]



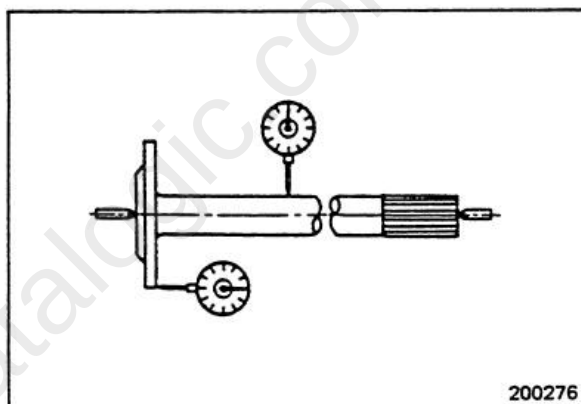
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- (b) Check the axle shaft for runout.

- (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.]

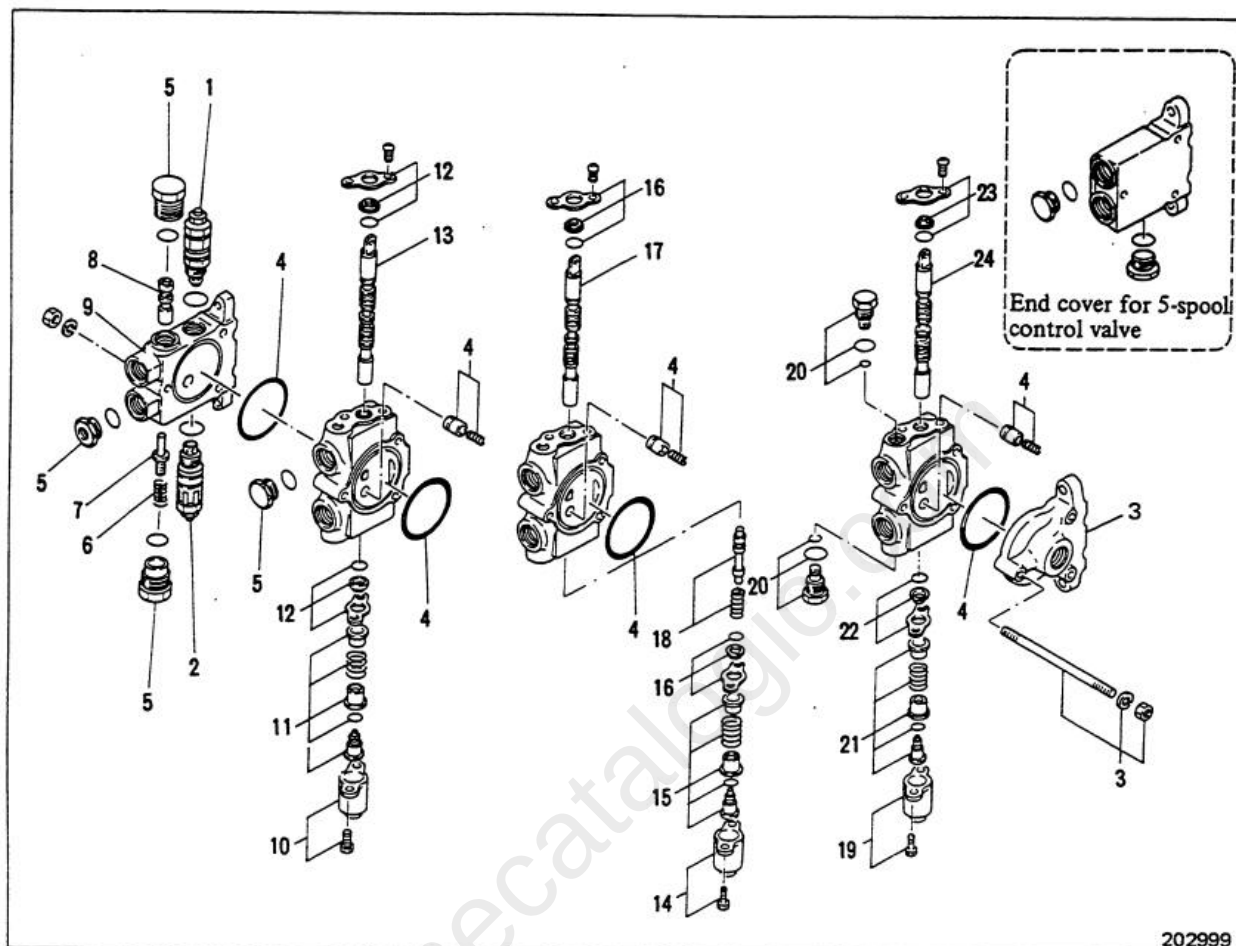
Face runout of flange	A	0.04 [0.001 6]
	B	0.5 [0.020]

(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

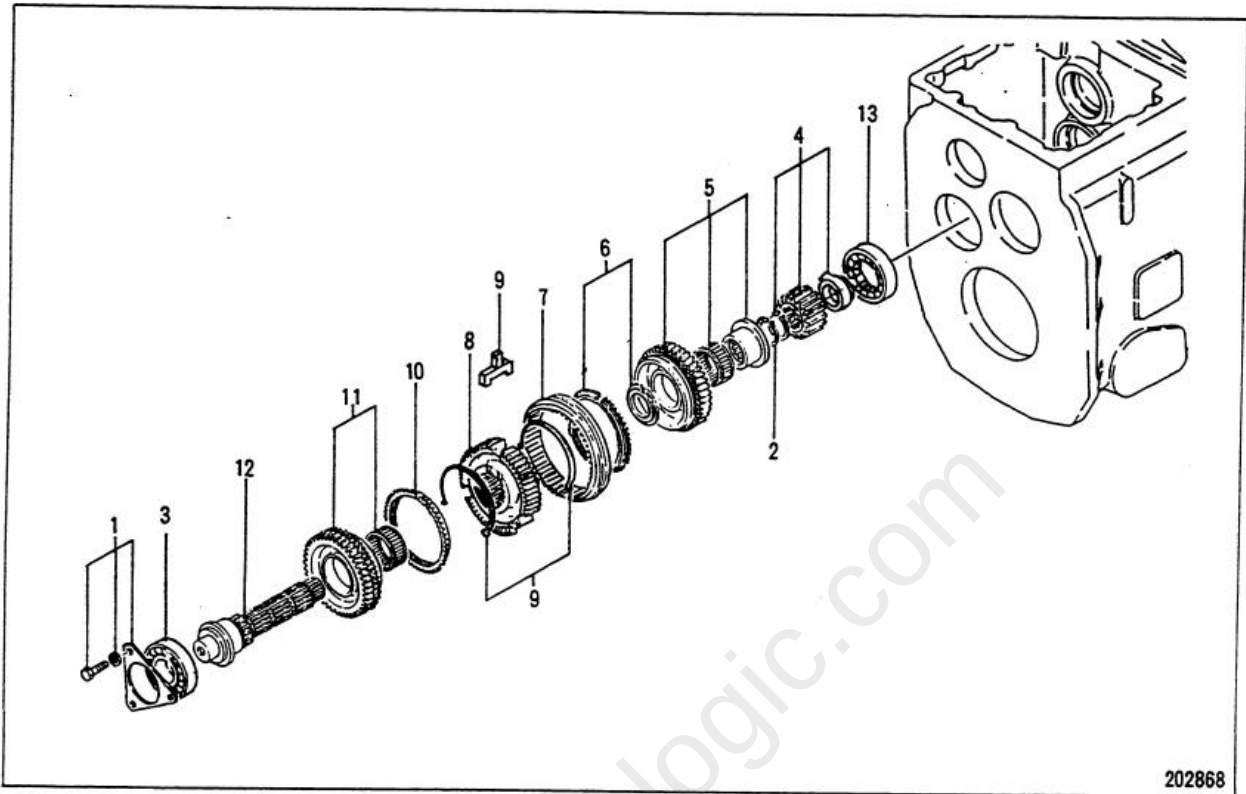
Disassembly



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.

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