

Forward and Reversing Vibrating Plate LG 140/160/200/250/300/450/500/550/700

Work Shop Manual WLGALLEN1, August 1998

These instructions apply from:

LG 140	PIN (S/N)	*31400001*
LG 160	PIN (S/N)	*31600001*
LG 200	PIN (S/N)	*32000001*
LG 250	PIN (S/N)	*32500001*
LG 300	PIN (S/N)	*33000001*
LG 450	PIN (S/N)	*34500001*
LG 500	PIN (S/N)	*35000050*
LG 550	PIN (S/N)	*35500049*
LG 700	PIN (S/N)	*37000001*



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WARNING SYMBOLS

WARNING



Safety instructions – Personal safety



Special caution – Machine or component damage

TECHNICAL DATA

Model	Engine	Engine RPM	VPM	Fuel tank capacity lit. (qts)	Engine oil capacity lit. (qts)	Hydraulic tank capacity lit. (qts)	Eccentric shaft lubrication lit. (qts)
LG 140	Farymann 15D	2850	3900	4,0 (4.2)	1,0 (1.06)	1,5 (1.6)	0,4 (0.42)
	Honda GX160	3600	3900	3,6 (3.8)	0,6 (0.65)	1,5 (1.6)	0,4 (0.42)
LG 160	Farymann 15D	3600	4920	4,0 (4.2)	1,0 (1.06)	1,5 (1.6)	0,4 (0.42)
	Honda GX160	3600	4920	3,6 (3.8)	0,6 (0.65)	1,5 (1.6)	0,4 (0.42)
LG 200	Hatz 1B20	3000	3900	x,x (y.y)	1,0 (1.06)	1,5 (1.6)	0,5 (0.53)
	Honda GX160	3600	3900	3,6 (3.8)	0,6 (0.65)	1,5 (1.6)	0,4 (0.42)
LG 250	Yanmar L60AE	2850	3900	3,5 (3.7)	1,1 (1.15)	1,6 (1.7)	0,5 (0.53)
LG 300	Hatz 1D31S	2850	3900	5,0 (5.3)	1,2 (1.25)	1,6 (1.7)	0,5 (0.53)
LG 450	Yanmar L100AE	3000	3300	5,5 (5.8)	1,65 (1.75)	3,5 (3.7)	0,8 (0.85)
LG 500	Hatz 1D60Z	3000	3600	7,0 (7.4)	2,0 (2.1)	3,5 (3.7)	0,8 (0.85)
LG 550	Hatz 1D60S	3000	3300	7,0 (7.4)	1,7 (1.8)	3,5 (3.7)	0,8 (0.85)
LG 700	Hatz 1D81S	3000	3300	7,0 (7.4)	2,0 (2.1)	3,5 (3.7)	1,5 (1.6)

OTHER SERVICE INFORMATION

	LG 140/160/200/250/300/450/700	LG 500/550
Engine oil	SAE 10W-30	SAE 10W-40
Hydraulic oil	Shell Morlina 10	Shell Tellus TX32
Eccentric housing	SAE 10W-30	SAE 10W-40

	LG 140/160/200/250/300/550	LG 450/500/700
Max force angle	30°	30°
Hyd. pressure	35 bar (500 psi)	50 bar (725 psi)
Response time	1 sec	1 sec

Tightening Torque

- Housing	140 Nm (103 lb.ft)	140 Nm (103 lb.ft)
- Ecc. weight	85 Nm (63 lb.ft)	85 Nm (63 lb.ft)
- Belt tension	3 mm/25 N (1/8"/6 lbs)	3 mm/25 N (1/8"/6 lbs)

Loctite

Bolts locked with	Loctite 242
Sealing surfaces	Loctite 510
Hyd. pump spline	Loctite 648
Eccentric weight	Loctite 271

PRINCIPLES OF OPERATION

The vibrations of a reversible plate compactor are generated by 2 counter-rotating eccentric weights located in a housing and bolted directly to the bottom plate. The housing is centrally mounted to the bottom plate and the eccentric weights can be aligned to change the "direction of vibration", this allows forward motion, stand still and reverse motion. Changing the direction of travel is done hydraulically with a single lever at the operator handle.

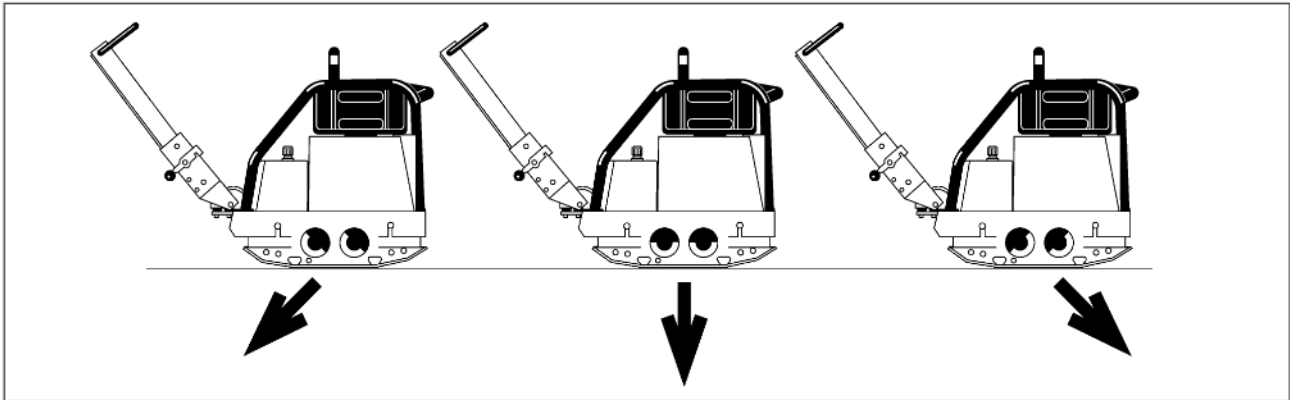


Fig 1. Direction of vibration

A centrifugal clutch mounted on the engine transmits driving torque to the eccentric shafts through a V-belt at high engine speed and disengages at low engine speed to permit idling.

The driven shaft (1) also turns a hydraulic pump (2) providing flow to stroke a piston (3) in the control shaft (4). When the piston is fully stroked, the weights align such that the machine travels Forward. To reverse direction, pump flow is directed to tank and a return spring (5) in the control shaft aligns the weights so that machine travels in reverse. When the hydraulic system is not working, the machine will travel only in reverse. The same principal is valid for LG 550 but there is two pistons controlled shafts to enable the plate to return.

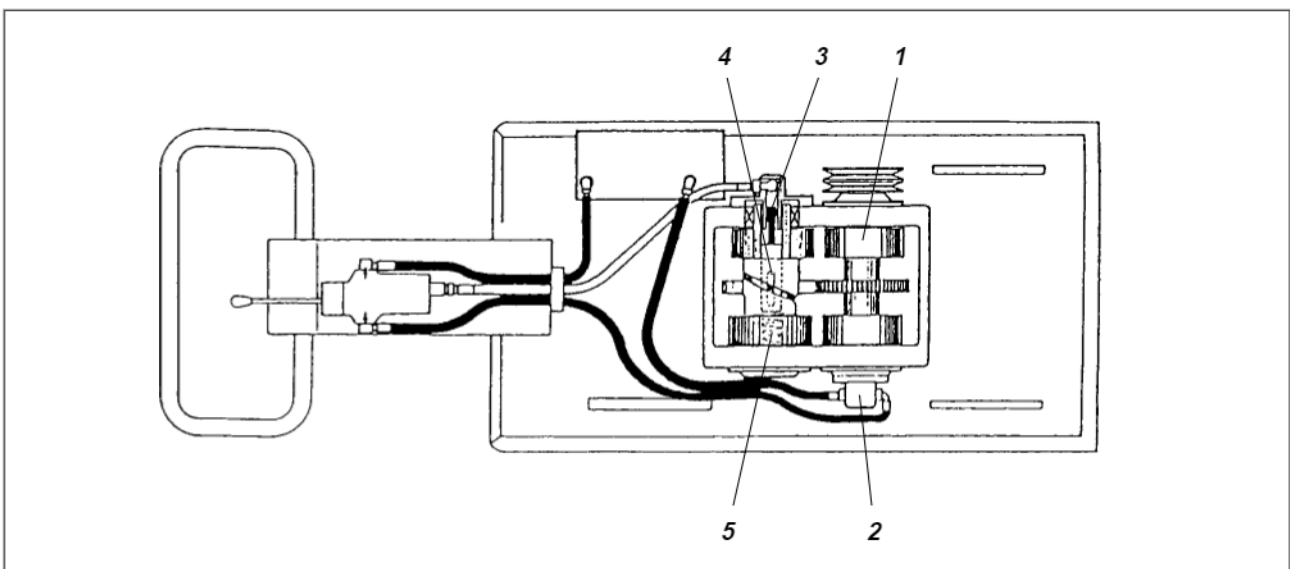


Fig2. Eccentric weights

1. Driven shaft
2. Hydraulic pump
3. Piston
4. Control shaft
5. Return spring

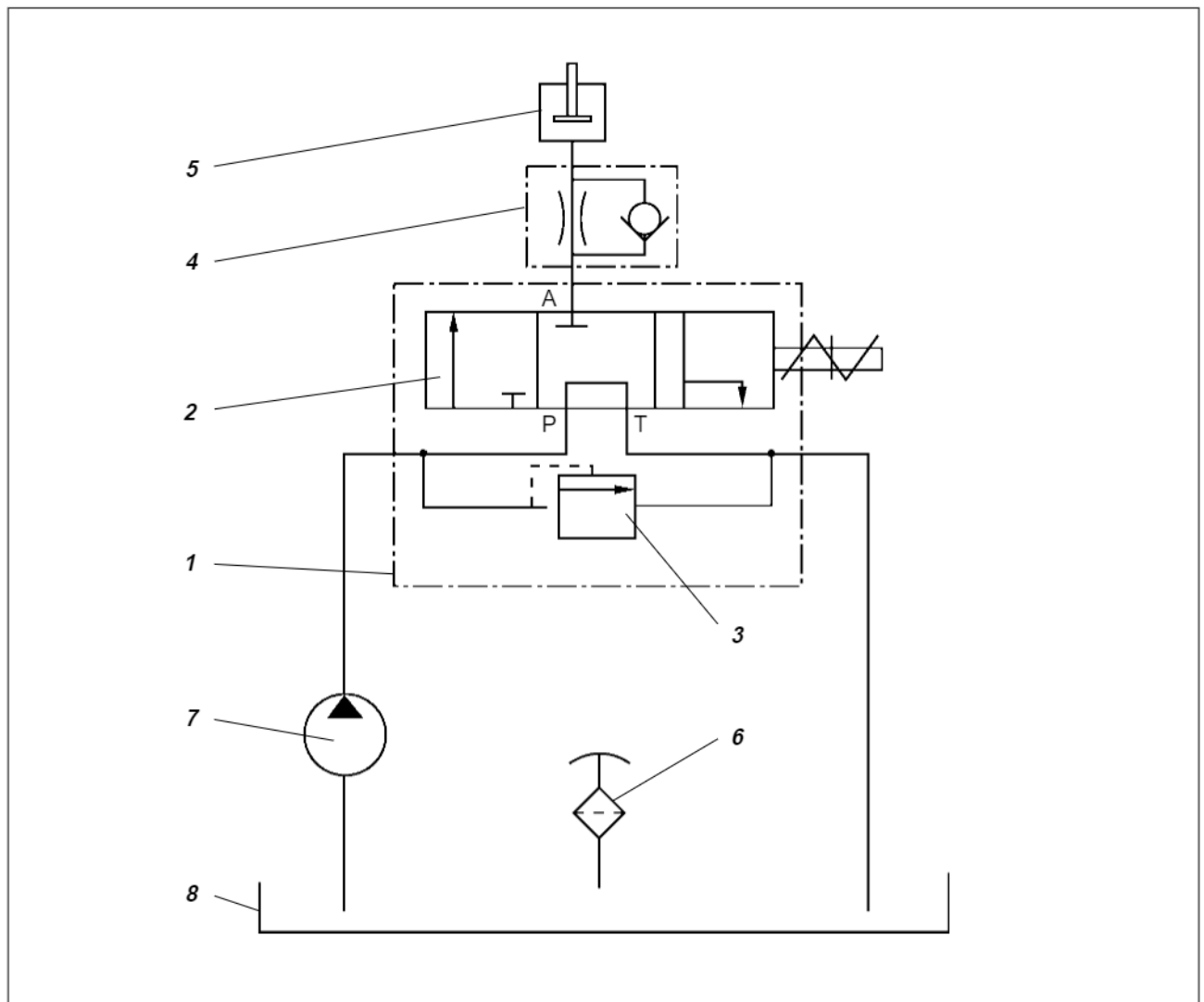


Fig 3. Hydraulic diagram

1. Control valve
2. Way valve
3. Relief valve
4. Check valve
5. Cylinder
6. Airfilter
7. Hydraulic pump
8. Hydraulic tank

HYDRAULIC DIAGRAM (LG 550)

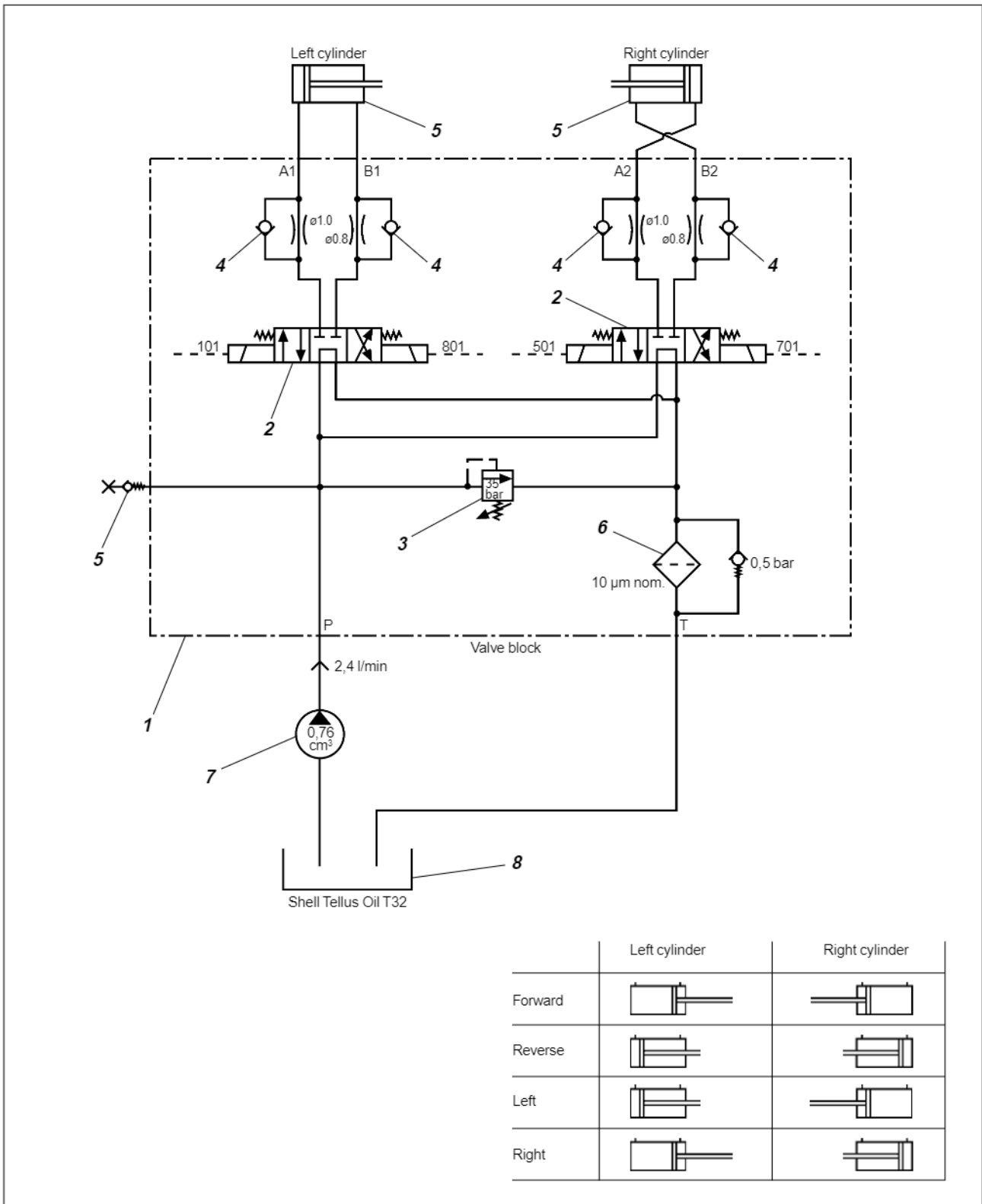


Fig 4. Hydraulic diagram

- 1. Control valve
- 2. Three way valve
- 3. Relief valve
- 4. Check valve
- 5. Cylinder
- 6. Hydraulic filter
- 7. Hydraulic pump
- 8. Hydraulic tank
- 9. Test port

Checking hydraulic tank oil level.

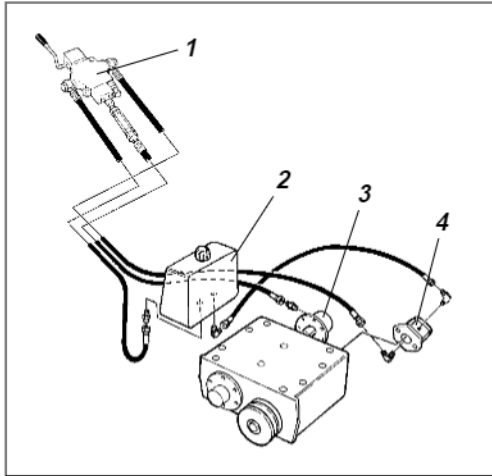


Fig 5. Hydraulic system

1. Four way valve
2. Hydraulic tank
3. Cylinder
4. Hydraulic pump

1. Correct hydraulic tank oil level is 7 cm (2 3/4 in.) below edge of filler hole, use specified oil only.
2. If oil level is low, check connections and hoses.
3. If there is no visible leakage, check if oil is leaking into eccentric housing. Forward motion of the machine would also be effected.
4. Check piston seal if hydraulic oil is found in housing.

Control valve operation - Adjusting hydraulic pressure

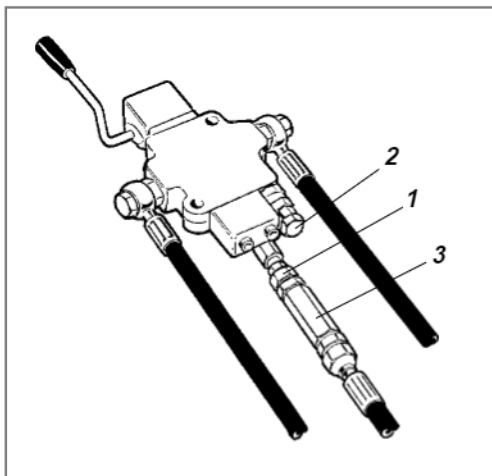


Fig 6. Valve operation

1. Connect a pressure gauge in-line at hose, position (1) or in-line at pump outlet fitting. When control valve lever is moved forward, gauge should show pressure. There is pressure in only in forward. When lever is set to reverse, pump flow is ported back to tank and the spring returns the piston.
2. If adjustment is necessary, adjust at position (2) to 500 psi for LG 140, 160, 200, 250, 300 and 550. Adjust to 750 psi for LG 450, 500 and 700.
3. If pressure can't be adjusted, check the hydraulic pump.



When machine operates in reverse only, this indicates that the hydraulic system is not working or piston seal at cylinder is damaged or pin control shaft may be broken.

ECCENTRIC HOUSING IDENTIFICATION

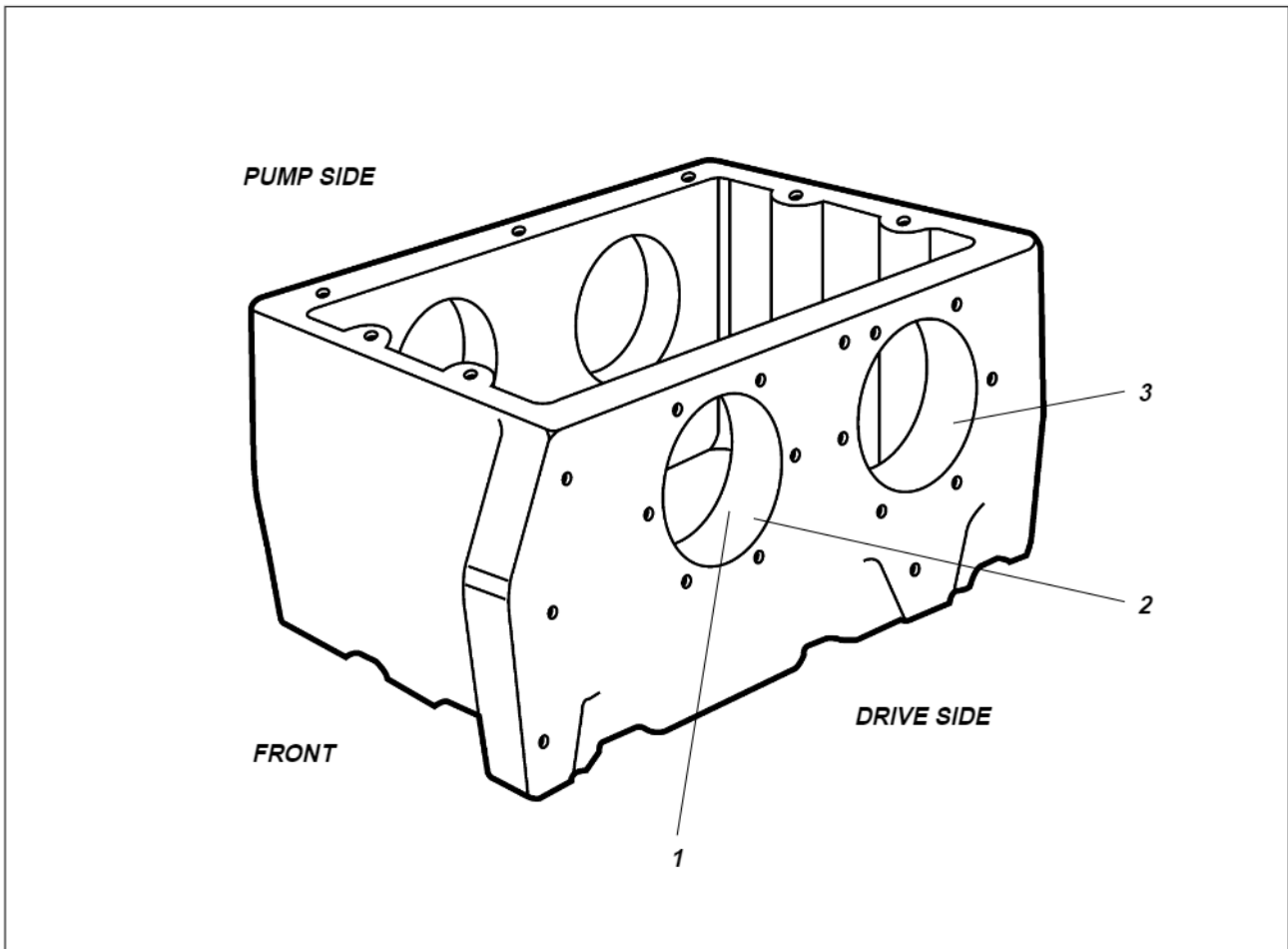


Fig 7. Eccentric housing
1. Drive shaft location
2. Pulley
3. Control shaft location

ASSEMBLY OF ECCENTRIC ELEMENT

Control shaft

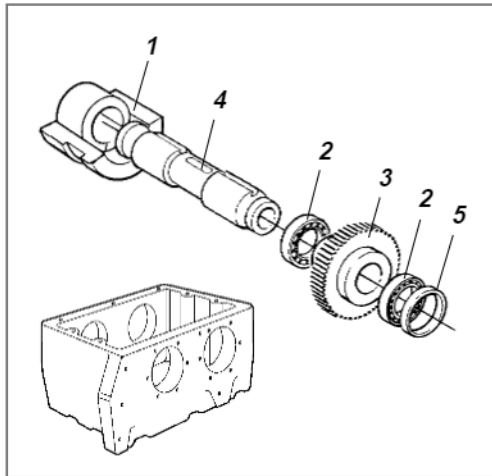


Fig 8. Control shaft

1. Eccentric weight
2. Bearing
3. Sleeve
4. Control shaft
5. Spacer

1. Fit bearings on control shaft's pump side and driven shaft's drive side.
2. Place control shaft's eccentric weight (1) in housing.
3. Fit 2 bearings (2) in sleeve (3) and place in housing with gear next to housing drive side.
4. Fit inner bearing race and snap ring on control shaft (4) pump side. Place shaft in housing.
5. Fit spacer (5) on shaft.
6. Fit bearing, inner race and snap ring, check shaft end play.

Control shaft

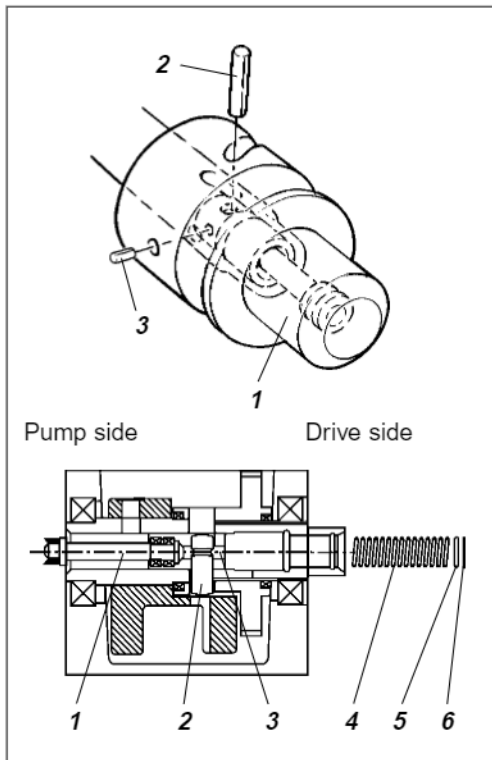


Fig 9. Control shaft

1. Piston
2. Pin
3. Screw
4. Spring
5. Stop
6. Snap ring

7. Clean inside of control shaft.
8. Fit piston (1) in shaft.
9. Fit pin (2) through the groove in the sleeve, the groove in the shaft and piston. Make sure the groove in the pin is center of shaft.
10. Fit set screw (3) to lock pin (2) in position. Use Loctite 242.
11. Fit spring (4), stop (5) and snap ring (6) in the shaft.
12. Check operation of spring and sleeve by pushing in on position.

ASSEMBLY OF ECCENTRIC ELEMENT

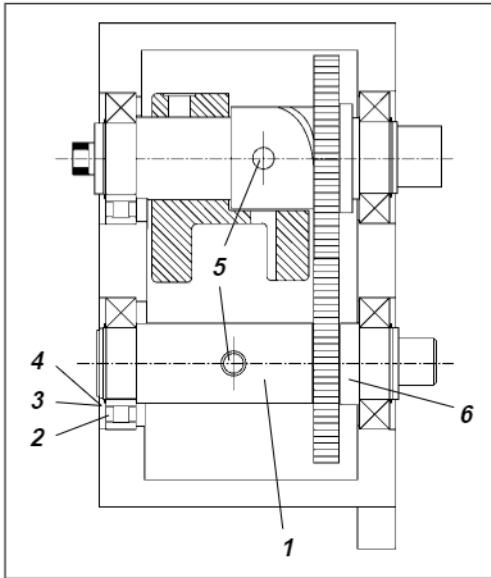


Fig 10. Drive shaft

1. Drive shaft
2. Bearing
3. Inner race
4. Snap ring
5. Hole in drive shaft/control shaft
6. Spacer

LG 140, LG 160, LG 200, LG 250, LG 300

1. Place driven shaft (1) with gear next to housing drive side.
2. Fit bearing (2), inner race (3) and snap ring (4) on driven shaft pump side.
3. Interlock the gears when holes (5) on control shaft and drive shaft face straight up. Drive shaft threaded hole faces up.
4. Fit spacer (6), inner race and snap ring on driven shaft drive side.
5. Check driven shaft end play, this can be done by carefully hitting the shaft with a mallet.

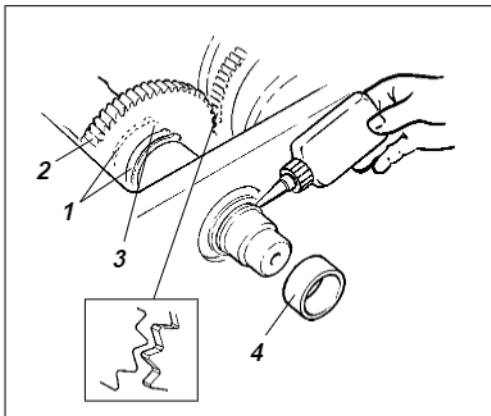


Fig 11. Control shaft

1. Snap rings
2. Gear wheel
3. Key
4. Ring

LG 450, LG 500, LG 550*, LG 700

- Place snap ring (1) and gear wheel (2) on shaft with the punch marks toward the drive side of the housing, mount key (3) and the snap rings.
- Interlock the gears as shown and install ring (4) with Loctite 648.

* The LG 550 is slightly different to the pictures but is mainly the same

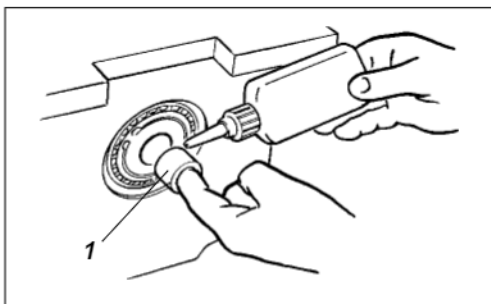


Fig 12. Eccentric housing - drive side

1. Sleeve

6. Fit sleeve (1) on driven shaft pump side, use Loctite 648.

TIMING OF THE ECCENTRIC ELEMENT

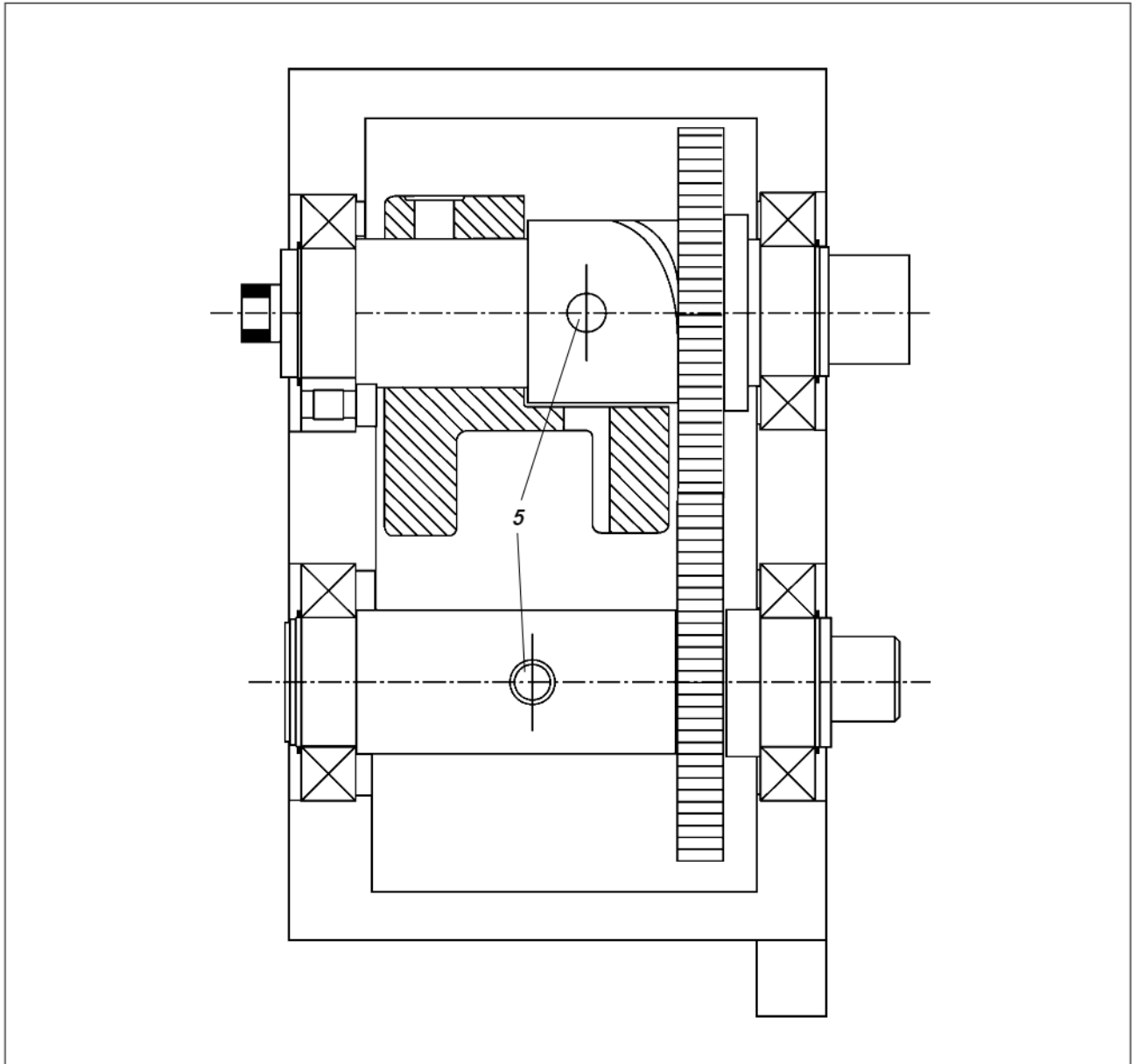


Fig 13. Eccentric Element
5. Hole in drive shaft/control shaft

LG 140, LG 160, LG 200, LG 250, LG 300

Interlock the gears when holes (5) on control shaft and drive shaft face straight up. Drive shaft threaded hole faces up.

LG 450, LG 500, LG 550, LG 700

Interlock the gears when the timing marks are correct.

ASSEMBLY OF ECCENTRIC ELEMENT

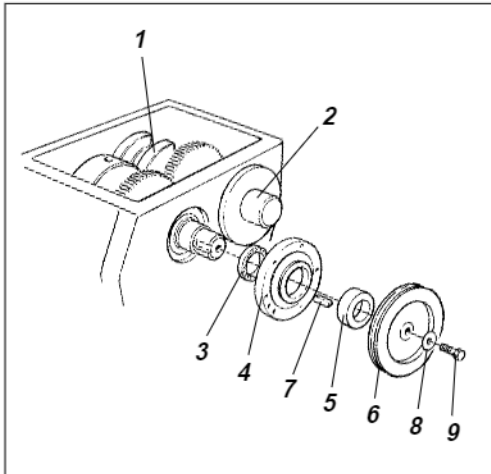


Fig 14. Eccentric element

1. Eccentric weight
2. Cover
3. Sealing
4. Cover
5. Sleeve
6. Pulley
7. Key
8. Washer
9. Screw

1. Fasten the eccentric weight (1) to the control shaft using the screw and washer. Use Loctite 271, torque 85,4 Nm (63 lb.ft).
2. Repeat procedure for the driven shaft.
3. Install the cover (2) on drive side control shaft using Nordlock lock washers. Puller hole in vertical position. Use Loctite liquid gasket.
4. Install sealing (3) in cover (4).
5. Repeat step nr. 3.
6. Install sleeve (5) on pulley (6).
7. Install pulley (6), key (7), washer (8) and screw (9). Use Loctite 242.

ASSEMBLY OF ECCENTRIC ELEMENT

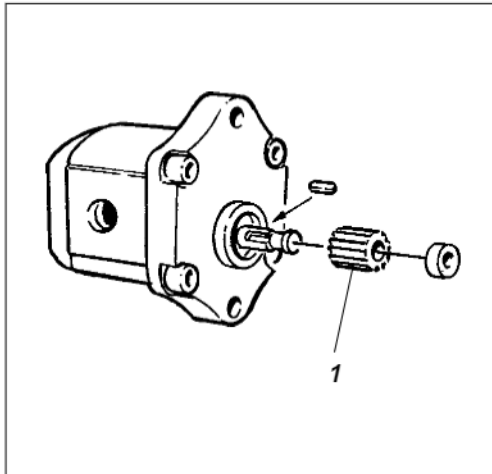


Fig 15. Hydraulic pump
1. Splined sleeve

1. Install the splined sleeve on the pump using Loctite 242.

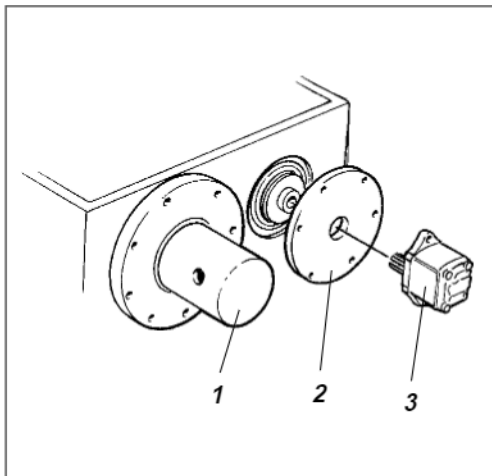


Fig 16. Hydraulic pump
1. Cylinder
2. Cover
3. Hydraulic pump

2. Install the cylinder (1) at the control shaft pump side, hole facing back. Use Loctite liquid gasket and Nordlock washers.
3. Install hydraulic pump on cover (2). Use Loctite liquid gasket and Nordlock washers.
4. Install the cover. Inner threaded hole for hydraulic pump facing the cylinder, puller hole should be vertical.

ASSEMBLY OF ECCENTRIC ELEMENT

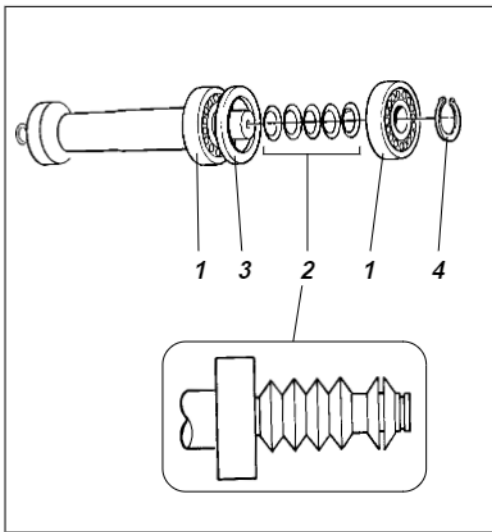


Fig 17. Piston assembly

1. Bearing
2. Disc spring washer
3. Spacer
4. Snap ring

Bearing assembly LG 140/160/200/250/300

1. Install bearing (1) on the shaft.
2. Install 5 pairs of opposite facing disc spring washers (2) see diagram. Fit spacer (3) over the washers.
3. Install the second bearing (1) on the shaft.
4. Install the snap ring (4).

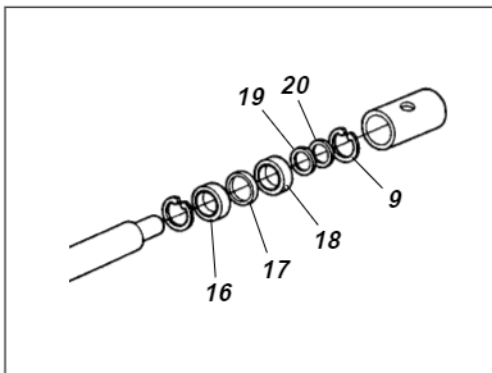


Fig 18. Piston assembly

9. Snap ring
16. Axial bearing
17. Spacer
18. Radial bearing
19. Disc spring washer
20. Washer

Bearing assembly LG 450/500/700

1. Assemble axial bearing (16) on shaft, (outerring small and wide side).



Small side on bearing towards the sealing.

2. Install spacer (17).
3. Install second radial bearing (18) on the shaft.
4. Install washer (19), washer (20) and lock with retaining ring (9).

ASSEMBLY OF ECCENTRIC ELEMENT

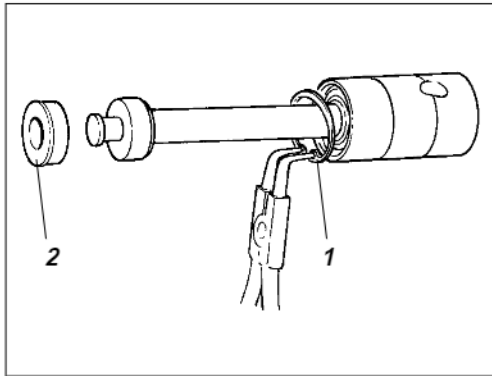


Fig 19. Piston assembly

1. Snap ring
2. Seal

Sealing assembly LG 140/160/200/250/300/450/700

1. Install shaft in the piston with snap ring (1).
2. Install the seal (2) on the shaft.

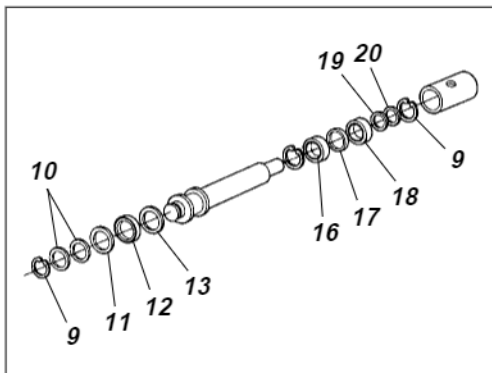


Fig 20. Piston assembly

9. Snap ring
- 10,19. Disc spring washer
- 11,20. Washer
12. Shaft seal
13. Guide
16. Axial bearing
17. Spacer
18. Radial bearing

Sealing assembly LG 500

1. Assemble guide (13).
2. Install shaft seal (12), washer (11), 1 pair of opposite facing washers (10) and lock with snap ring (9).

Low VPM or machine does not vibrate

- Check belt tension
- Check centrifugal clutch and drive pulley
- Check eccentric element

Machine travels in reverse only

- Check oil level in the hydraulic tank. If low and there are no external leaks, check oil level in the eccentric housing. If hydraulic oil has entered the housing, the seal on the piston is damaged and must be replaced.
- Loosen hydraulic nose near cylinder or below check valve, and check that you have pressure when control valve lever is moved forward. There is pressure only when is stroked forward.
- If no pressure check the pump.
- Inspect the check valve, that it is installed the right way, the side with the ball should be towards the control valve.
- Pin in control shaft may be broken, eccentric element must be disassembled to replace the pin.

During assembly it is most important that the two shafts are in the right position relative to each other. On the smaller plates, LG 140, LG 160, LG 200, LG 250 and LG 300 the round hole in the sleeve on the control shaft should point up (12 o'clock) and in the driven shaft the threaded hole should also point straight up (12 o'clock). This is the position of the shafts when the two gears are intermeshed and the last bearing is pressed in the housing.

On the larger plates, LG 450, LG 500, LG 550 and LG 700 the gears have timing marks. Punch mark on single gear tooth is intermeshed with the two punched teeth on the other gear.

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