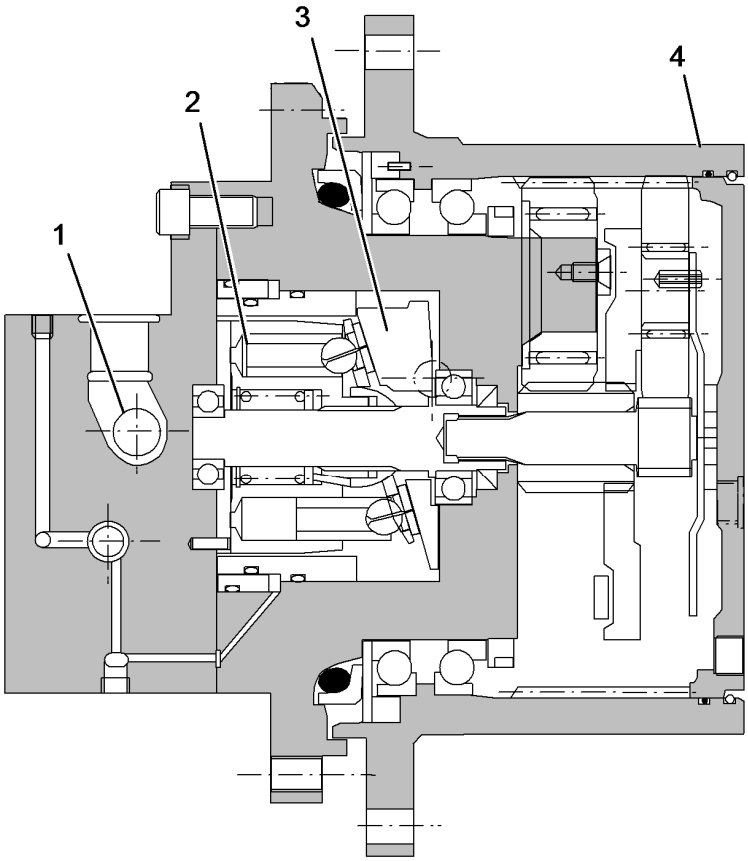
Document Title: **Design of travel motor**	Function Group:	Information Type: **Service Information**	Date: **2014/4/16**
Profile: **CEX, EC45 [GB]**			

Design of travel motor

The hydraulic motor in this machine is an axial piston motor.

The shock valves protect both motor and circuit against pressure peaks by maintaining the start-up pressure/relief pressure of the hydraulic motor at a constant level.

The swash plate can be adjusted to two fixed positions: high rotary speed/low torque (high travel speed) or low rotary speed/high torque (low travel speed), in compliance with the travel speed switch and the way valve.



E250295A

Figure 1

1. Counter balance valve
2. Cylinder block (axial pistons)
3. Axial piston motor with swash plate
4. Reduction gear

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Service Information

Document Title: **Design of axial piston motor**	Function Group:	Information Type: **Service Information**	Date: **2014/4/16**
Profile: **CEX, EC45 [GB]**			

Design of axial piston motor

Cylinder (5) contains an assembly group with nine pistons (4). The cylinder (5) abuts against valve plte (6) which is designed with two half-moon shaped slots A and B (high and low pressure ports).

The hydraulic oil passing through the hydraulic valve is directed to valve plate (6). When the oil arrives slot A it enters into the bore in cylinder (5) which corresponds with slot A. This applies pressure to piston (4). Swash plate (3) converts this pressure into a rotary force and transfers it to shaft (2), which is tightly connected with cylinder (5) by splines. The oil forced out of the cylinder bore passes through slot B in the valve plate (6).

When rotating in reverse direction the flow of hydraulic oil starts at slot B and the flow of return oil at slot A.

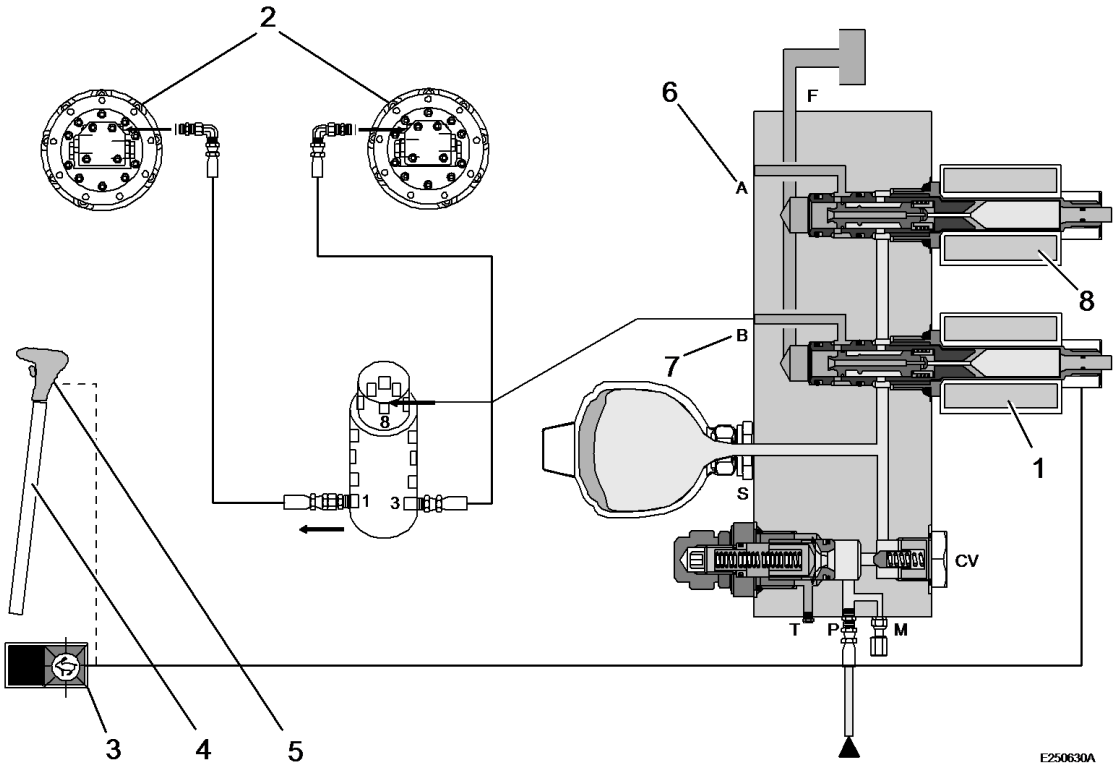

Figure 1

1 Drive shaft
2 Shaft
3 Swash plate
4 Piston
5 Cylinder
6 Valve plate

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Document Title: **Brake valve (counter balance valve)**	Function Group:	Information Type: **Service Information**	Date: **2014/4/16**
Profile: **CEX, EC45 [GB]**			

Brake valve (counter balance valve)

Brake valve, neutral position

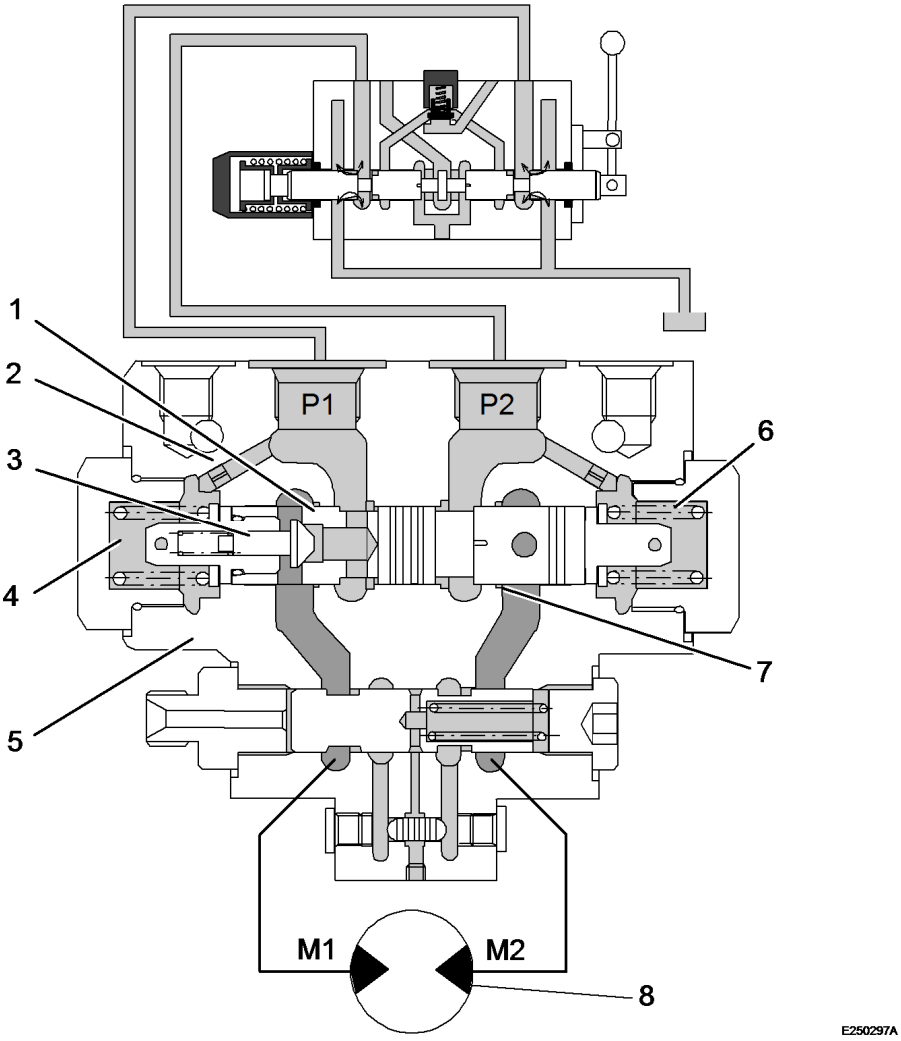

Figure 1

1 Valve spool
2 Bore
3 Check valve
4 Chamber
5 Housing
6 Spring
7 Bore
8 Axial piston motor

The balancing valve stops the axial piston motor (8). When valve spool (1) is in neutral position no pressure is applied to ports P1 and P2 and ports M1 and M2 are closed by valve spool (1) and check valve (3), so that the motor cannot rotate.

The machine is braked.

Brake valve, actuated

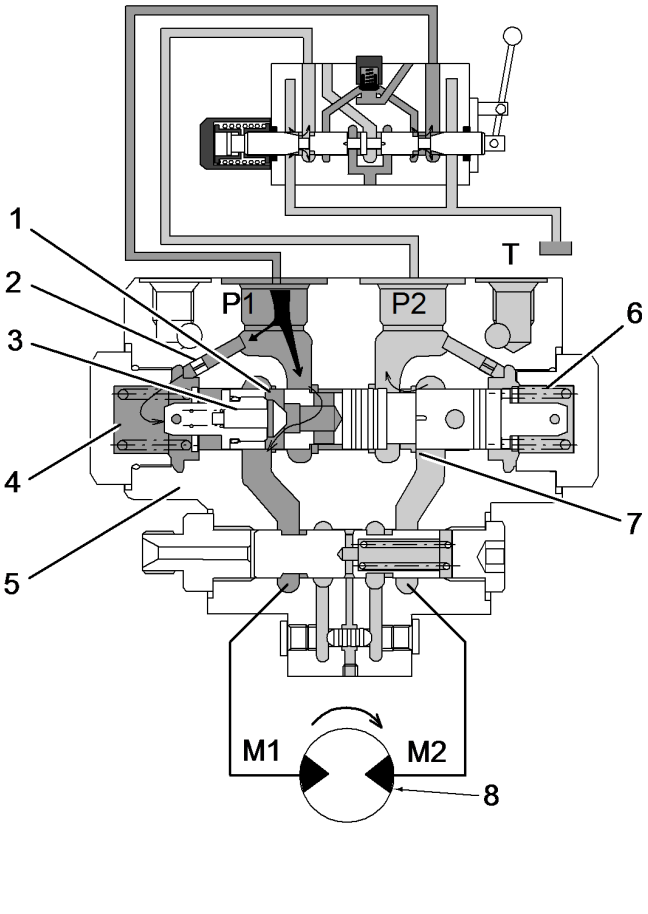

Figure 2

1 Valve spool
2 Bore
3 Check valve
4 Chamber
5 Housing
6 Spring
7 Bore
8 Axial piston motor

If hydraulic oil flows out of port P1, part of this oil will open the check valve (3) and flow to port M1 at the inlet of the hydraulic motor.

All other hydraulic oil flows through the restrictor bore (2) into chamber (4) and overcomes the force of spring (6), so that the valve spool (1) slides to the right.

The hydraulic oil flowing back to the hydraulic motor can thereby enter through port M1 and flow back through the motor housing (8) and the passage (7) of the valve spool (1) to port M2 to drive the hydraulic motor.

If the hydraulic oil comes from port M1 the action of each of the components mentioned above and therefore the sense of rotation of the hydraulic motor is reversed in relation to the condition described above.

If the hydraulic oil flow through port M1 is subsequently interrupted, the valve spool (1), that has been moved to the right, will try to return to the left with the assistance of spring (6).

Just before the oil in chamber (4) flows out of port P1 through the restrictor (2) the speed of the valve spool (1) returning to the left side is controlled by the restrictor (2).

The hydraulic motor tries to continue its rotation, even after the hydraulic oil flow in the area of port P1 has been interrupted.

Spool (1) limits the return flow in order to stop rotation of the motor.

This brakes the hydraulic motor hydraulically.

The machine is steered by sensitive actuation of the travel motors.

Document Title: **Removing the travel motor**	Function Group:	Information Type: **Service Information**	Date: **2014/4/16**
Profile: **CEX, EC45 [GB]**			

Removing the travel motor

Op nbr

1. Unscrew screws (2) from cover (1) of the travel motor and take the cover off.

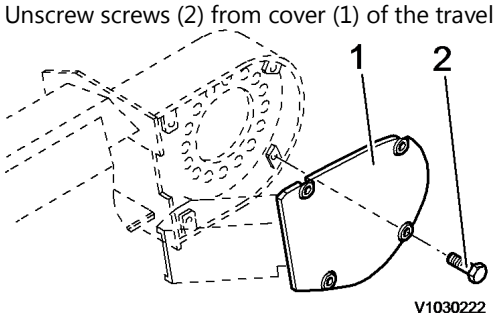

Figure 1
Cover, removing

1. Cover
2. Screw

WARNING

Recoil spring cylinder is filled with pressurized grease. When adjusting the track tension or loosening the track, pay special attention. Keep face, hands and body away from the nipple and valve.

WARNING

High pressure grease in track adjuster cylinder. Do not remove grease fitting or nut and valve assembly to release grease.

WARNING

Do not get near the idler as the track assembly may fall on your feet.

2. Lift up the track, unscrew valve (1) (max. two turns) and let all grease run out, until the track is completely relieved.

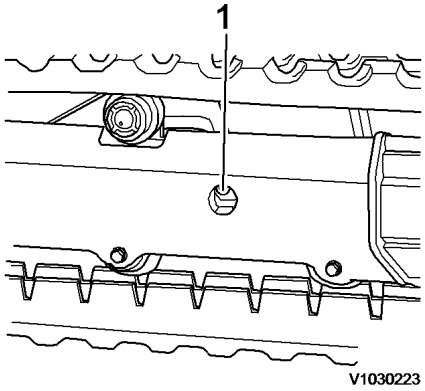

Figure 2
Crawler track tensioning valve

1. Valve

3. Removal of rubber or steel track, see chapter 7.

4. Mark and disconnect hydraulic hoses (1) from the travel motor. Close hose ends and ports to prevent oil from seeping out and dirt from entering.

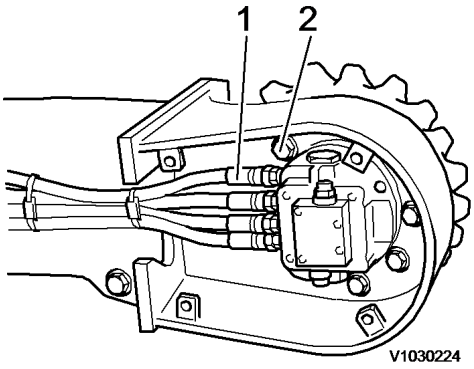

Figure 3
Hydraulic hoses and screws, removing

1. Hydraulic hose
2. Screw

5. Unscrew the travel motor fastening screws (2) from the lower frame.

6. Place a lifting sling at both sides of the sprocket around the travel motor and tension it. Remove the travel motor as a complete unit.

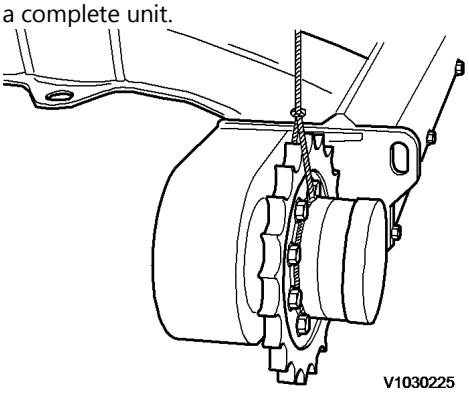

Figure 4
Travel motor, removal
NOTE!
Lift the travel motor as close to the track drive as possible to keep the balance.

NOTE!
Position marks on lower frame and travel gear will be of help during later assembly.

Document Title: **Assembling the travel motor**	Function Group:	Information Type: **Service Information**	Date: **2014/4/16**
Profile: **CEX, EC45 [GB]**			

Assembling the travel motor

NOTE!
Thoroughly examine the contact faces on lower frame and gear for burrs, dirt and rust flakes.

Op nbr

1. Place a lifting sling at both sides of the sprocket around the travel motor.
   Lift the motor up and mount it to the lower frame.

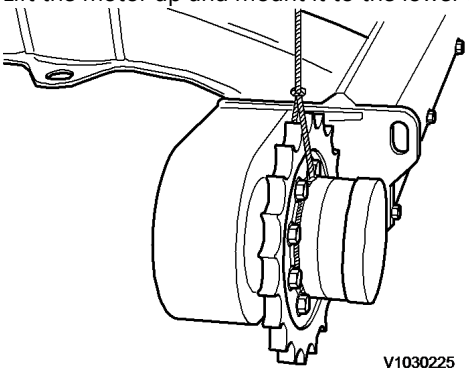

Figure 1
Travel motor, assembling

2. Slightly cover fastening screws (2) with screw retention agent, screw in and tighten with 250...300 Nm.

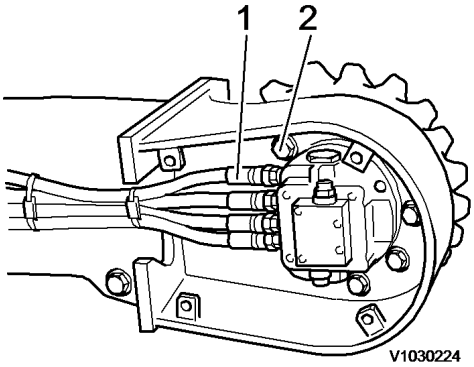

Figure 2
Hydraulic hoses and screws, installing

1. Hydraulic hose
2. Screw

3. Connect the marked hydraulic hoses to the travel motor.

4. Fasten cover (2) with screws (2) for the travel motor.

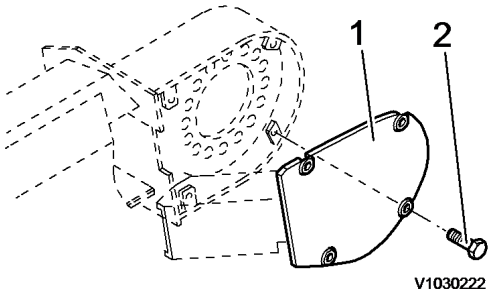

Figure 3
Fasten cover

1. Cover
2. Screw

5. Check the oil level in the travel motor. If necessary change or replenish the oil.

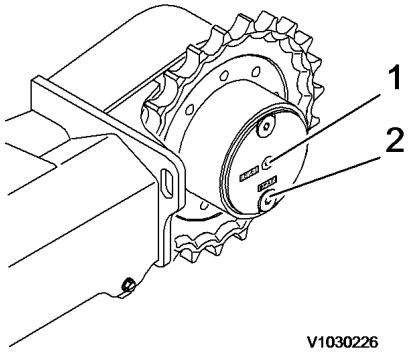

Figure 4
Checking the oil level

1. Filler opening
2. Oil drain plug

6. Install the rubber track and close the valve unit (1). Assembly of rubber or steel track, see chapter 7.

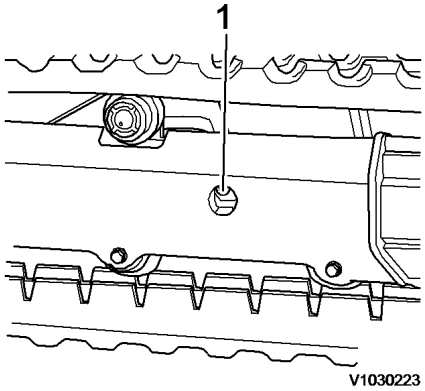

Figure 5
Crawler track tensioning valve

1. Valve

7. Connect the grease gun and operate, until the specified track tension is reached.

8. The track is correctly tensioned when a sagging (A) of 140 to 150 mm (steel tracks) or 100 to 110 mm (rubber tracks) is reached, see chapter 7.

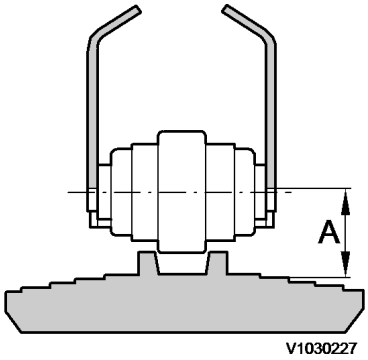

Figure 6
Track sagging

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Service Information

Document Title: **Travel motor, exploded view**	Function Group:	Information Type: **Service Information**	Date: **2014/4/16**
Profile: **CEX, EC45 [GB]**			

Travel motor, exploded view

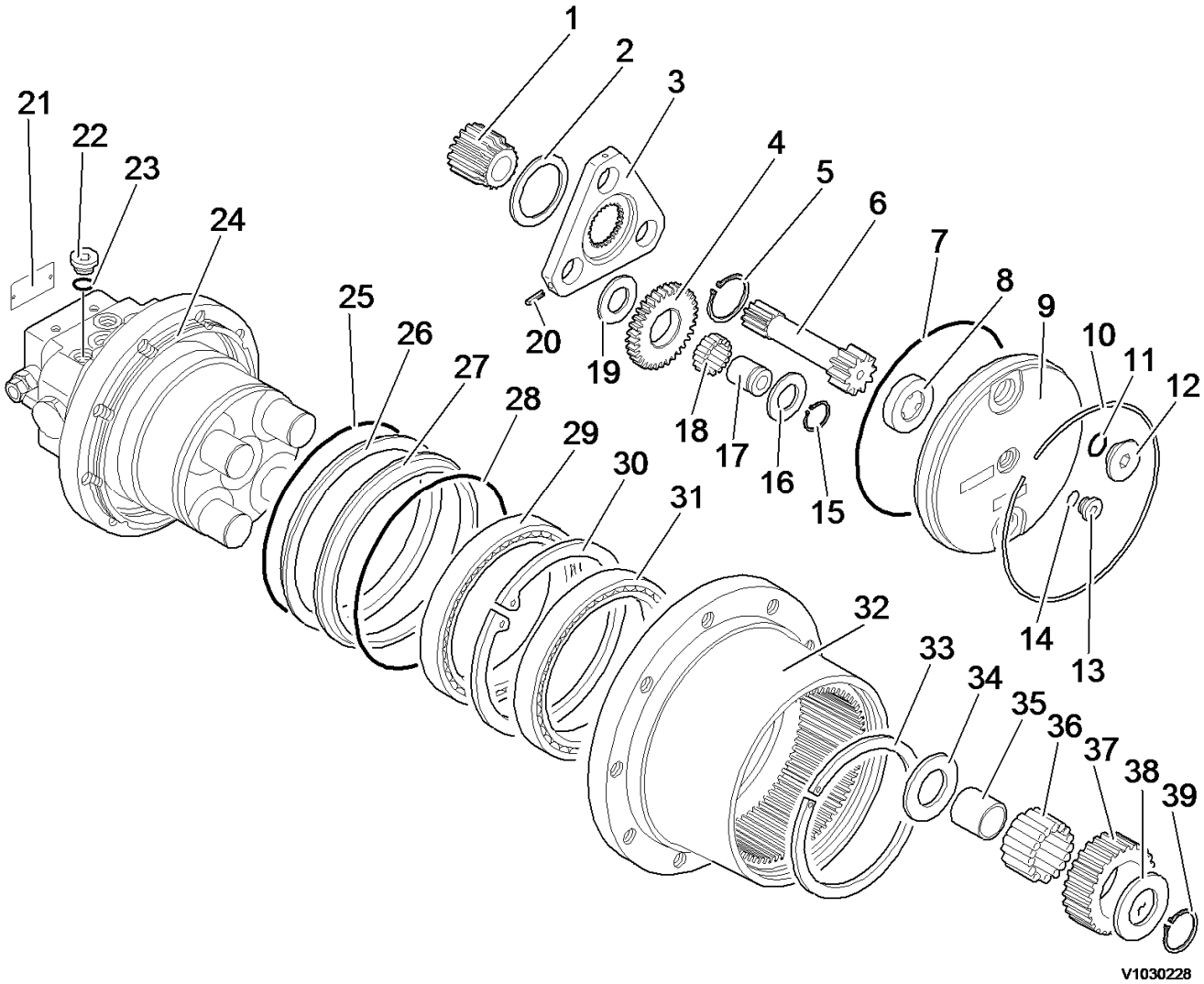

Figure 1
Travel motor, exploded view

1. Pinion
2. Stop ring
3. Planet carrier
4. Washer
5. Snap ring
6. Pinion
7. O-ring
8. Sliding ring
9. Cover
10. Snap ring

11. O-ring
12. Plug
13. Plug
14. O-ring
15. Snap ring
16. Pressure disc
17. Roll pin
18. Needle
19. Pinion
20. Pin
21. Plate
22. Plug
23. O-ring
24. Hydraulic motor
25. O-ring
26. Loose seal
27. Loose seal
28. O-ring
29. Roller bearing
30. Snap ring
31. Roller bearing
32. Housing
33. Snap ring
34. Pressure disc
35. Ring
36. Needle
37. Pinion
38. Pressure disc
39. Snap ring

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