PRODUCT DESCRIPTION
Quiet and Robust

Design

The RKP pumps benefit from low noise levels Sizes 32 to 250 are fitted with a sliding stroke ring. The big suction port supports the use of wide suction lines. The control port of the compensators is build in G 1/4".

RKP stands for reliability, low noise, and durability and this is underlined by its extended warranty. Under the conditions described on page 5, warranty for mineral oil is covered for 10,000 operating hours or 24 months.

Further Advantages of the Moog Radial Piston Pump RKP are:

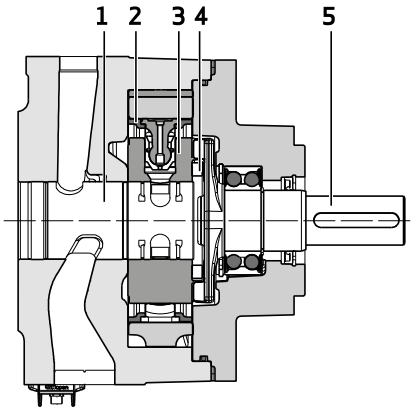
- Fast response
- Compact modular design enabling the pump selection to match the application
- Good suction characteristics
- Low pressure ripple

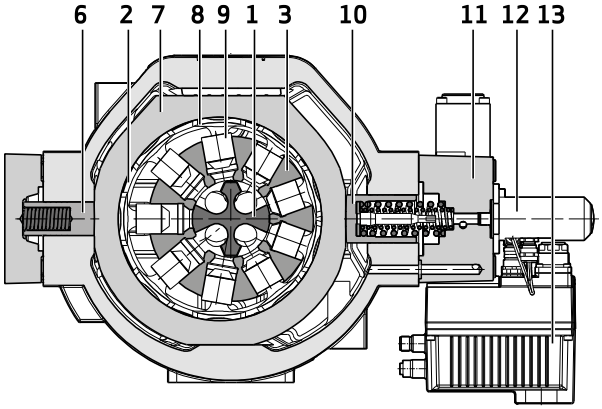
The following RKP features are available:

- Medium pressure series (280 bar (4,000 psi)) and high pressure series (350 bar (5,000 psi)) for mineral oil
- Large selection of compensators including mechanical, hydraulic and electro-hydraulic (analog or digital with CANopen or EtherCAT)
- Mechanical flow limitation
- Multiple pumps by tandem mounting
- Various drive flanges
- Suitable for most hydraulic oils such as mineral oil,transmission oil, biodegradable oil and synthetic esters (HFD)
- Suitable pump versions are also available for special fluids such as oil in water emulsions, (HFA and HFB), water-glycol (HFC), lubricating oils and cutting emulsions. See the catalog Radial Piston Pump RKP for Low-Flammability Fluids for details of these pumps.

Mode of Operation

The shaft (5) transfers the drive torque to the star-shaped cylinder block (3), free of any transverse forces via a crossdisc coupling (4). The cylinder block is supported on the control journal (1). The radial pistons (9) in the cylinder block run against the stroke ring (7) through hydrostatically balanced slipper pads (8). Piston and slipper pads are joined by ball and socket joints which is locked by a ring. The slipper pads are guided in the stroke ring by two retaining rings (2) and, when running, are held against the stroke ring by centrifugal force and oil pressure. As the cylinder block rotates, the pistons perform a reciprocating motion due to the eccentric positioning of the stroke ring, the piston stroke being twice the eccentricity. The eccentric position of the stroke ring is controlled by two diametrically opposed control pistons (6, 10) and the compensator (11). The oil flow to and from the pump passes through the pump ports and into and out of the pistons through the porting in the control journal. The rolling bearing, supporting the drive shaft, is only subjected to external forces. The compensator setting limits the system pressure and adjusts the pump flow between zero and full flow to maintain the set pressure. At the RKP-D the position of the stroke ring is detected by an LVDT (12) and high dynamically controlled by a servo pilot valve (13).





PRODUCT OVERVIEW

									Units
Displacement	**19**	**32**	**45**	**63**	**80**	**100**	**140**	**250**	cm^3/rev
Pressures									
Medium pressure series									
Maximum operating pressure[2)]	280 (4,000)	280 (4,000)	280 (4,000)	280 (4,000)	280 (4,000)	280 (4,000)	280 (4,000)		bar (psi)
Pressure peak[2)]	350 (5,000)	350 (5,000)	350 (5,000)	350 (5,000)	350 (5,000)	350 (5,000)	350 (5,000)		bar (psi)
High pressure series									
Maximum operating pressure[2)]	350 (5,000)	350 (5,000)		350 (5,000)	350 (5,000)		350 (5,000)	350 (5,000)	bar (psi)
Pressure peak[2)]	420 (6,000)	420 (6,000)		420 (6,000)	420 (6,000)		420 (6,000)	420 (6,000)	bar (psi)
Hydraulic fluid	Mineral oil according to DIN 51524								
Hydraulic fluid temperature range	-15 to +80 (+5 to +176)								°C (°F)
Viscosity	Allowable viscosity operational range 12 to 100 Recommended viscosity 16 to 46; hydraulic fluid viscosity class VG 46 or VG 32 according to ISO 3448 Maximum viscosity 500 during start-up with electric motor at 1,800 min^{-1}								mm^2/s (cSt)
Filtering	NAS 1638, class 9; ISO 4406, class 20/18/15; obtained with filter fineness of β 20 = 75 [3)] NAS 1638, class 7; ISO 4406, class 18/16/13; with electro-hydraulic control (RKP-D)								

For special fluids, e.g. HFA, HFC and emulsions, the above pressure, viscosity and filtration parameters may be changed. See the relevant special fluids catalog for details.

[2)] Maximum operating pressure and pressure peak according to ISO 5598
[3)] Dirt particles retention rate > 20 µm is 1: 75, i.e. 98.67 %

TECHNICAL INFORMATION

⚠ Important

The pump must be put into service by a trained hydraulic systems engineer.

Installation

The radial piston pump can be mounted in any position. The drive shaft must not be subject to radial or axial loads and should therefore to be driven through a flexible coupling. The pump must be driven in the correct direction of rotation. All plugs on the pump should only be removed immediately before the pipes are connected and the standard hydraulic cleanliness procedures have been done.
The use of cold drawn seamless steel pipes in accordance with DIN 2391 is recommended.

Suction Line (A)

It is recommended that final piping connections to the pump are flexible hoses. The shortest possible suction line should be used with a diameter large enough to give a fluid velocity below 1.5 m/s (0.06 in/s). Sharp angles and screwed pipe joints should be avoided due to the danger of air ingress and excessive pressure drop therefore, pipe bends and/or hoses should be used. The minimum permissible inlet pressure must be maintained. If a suction filter (minimum 0.15 mm (0.01 in) mesh aperture) or an isolating valve is used, it must be installed below the fluid level.

Pressure Line (B)

Ensure the pressure pipework is securely clamped and the screws are correctly torque tightened.

Drain Line (L)

The upper drain port must be used for the drain line and the pipework is to be routed to ensure the housing is always full of fluid. The pipe should lead directly to the tank, separate from other return lines. For RKP250 port L1 must be used for drain line connection. The bearing cover of the pump must be assembled with port L1 in upper position. For descriction of port L2 see further information in chapter “Flushing the housing”. It must terminate below the lowest fluid level and should be as far away from the suction take off as possible. Do not fit a filter, cooler or non-return valve in the drain line. The maximum recommended length for the drain line is 3 m (10 ft). The pressure at drain port is not to exceed 1 bar gauge (14.5 psi) (2 bars absolute (29 psi)).
The recommended outside pipe diameters for drain lines (lightweight version) are:

RKP 19: 15 mm (5/8")
RKP 32 and 45: 18 mm (3/4")
RKP 63, 80, 100 and 140: 22 mm (7/8")
RKP 250: 35 mm (1 1/4")

Flushing the Housing

For heat dissipation it is necessary to flush the pump under the following conditions:

- Pump sizes 63 to 100 cm^3/rev
  If the pump is operated at low pressure without flow for long periods (t > 15 min, p < 30 bar (435 psi), Q = 0 l/min (0 gpm))
- Pump sizes 140 and 250 cm^3/rev
  Flushing of the housing is necessary in general at any time

The flushing line to the pump must be connected to the lower drain port. For RKP 250 the flushing line to the pump must be connected to port L2.

Flush volume

Displacement V [cm^3/rev]	**63, 80, 100**	**140**	**250**
Flush volume [l/min (gpm)]	4 to 6 (1 to 1.5)	6 to 8 (1.5 to 2)	10 to 12 (2.5 to 3)

Noise Development

Radial piston pumps have a low primary noise level. However, the overall noise level hydraulic of the unit depends on the pump mounting and piping layout and the transmitted noise can be prevented by:

- Connecting the pump to the bellhousing using an anti-vibration flange.
- Use flexible hoses instead of solid pipes.
- Clamp the pipework with elastic insert clamps.

Connections

Suction line to port A and pressure line from port B. Except for RKP 19 counterclockwise: Suction port B, pressure port A.

Putting into Service

Do not start up the pump without hydraulic fluid. Before switching on, the pump housing must be filled with hydraulic fluid using the higher drain port.

Jog start the electric motor to check the correct direction of rotation. Run the pump at low pressure until the hydraulic system has been fully de-aerated. When putting pumps for HF fluids into operation, the system must be run at low pressure of between 30 to 50 bar (435 to 725 psi) for approximately 1 hour.

Important

The fluid temperature in the tank must not exceed the temperature of the pump by more than +25 °C (+77 °F).

If this should occur, the pump must be jog started for intervals of approximately 1 to 2 seconds until pump casing has heated up. When changing a pump, clean the suction pipe, drain line and tank. Refill the tank with filtered fluid.