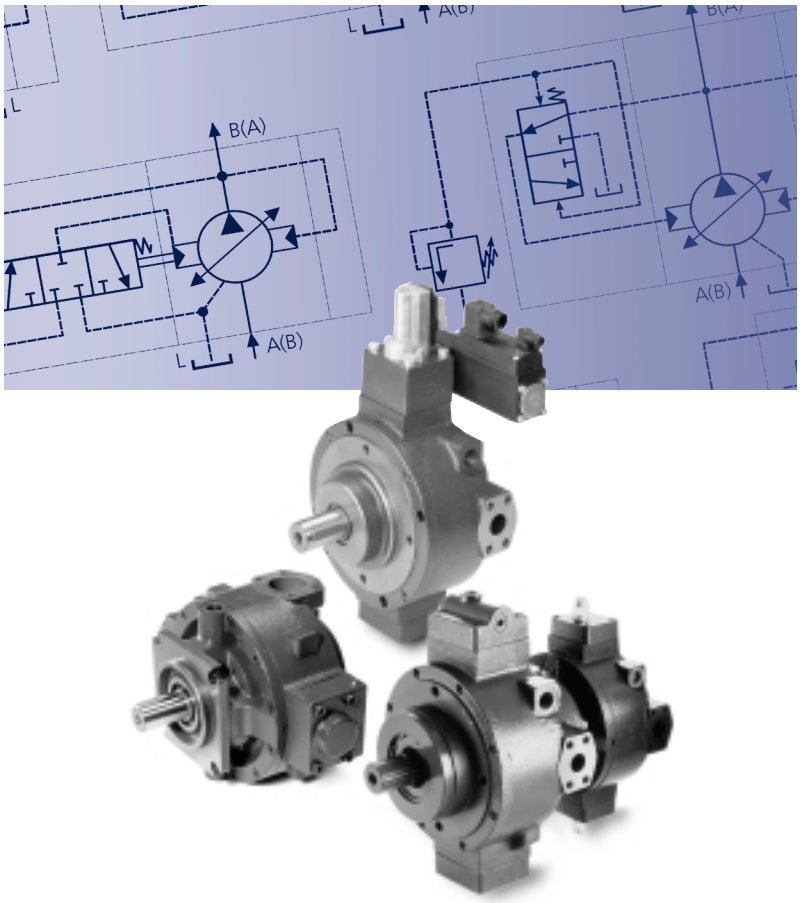
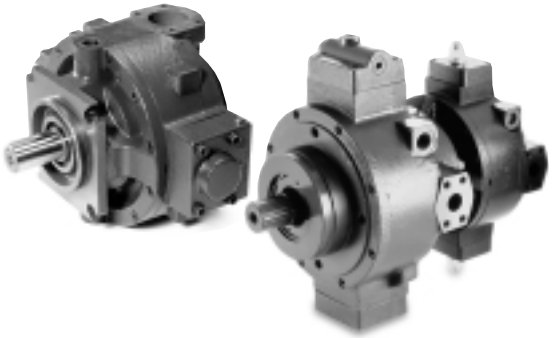
MOOG

RKP Pumps
Product Line Overview



Moog Technology

The Moog RKP pump operates on a radial piston pump principle that has served the industrial market for over three decades. As the new owner of this product line, Moog demonstrates its commitment to offering a range of products and system solutions to meet the high performance needs of our customer base. Markets and applications for this product include plastics, metal forming, machine tool, mining, and testing machinery to name a few.

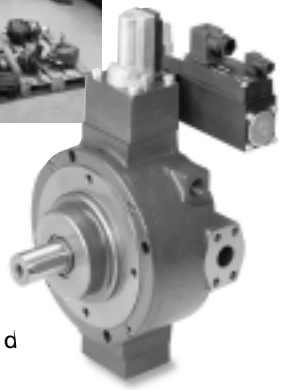


Moog produces a wide range of RKP Pumps in different sizes, single and multiple configurations, and with multiple control options and mounting flange selections available. RKP pumps are also suitable for pumping special fluids such as HFA, HFB, HFC, HFD and cutting emulsions.

Moog Support

RKP Pumps are manufactured with precision parts using tight machining tolerances, state-of-the-art production processes, and thorough product testing to guarantee a long service life. We back the quality of our new and repaired products with a 24-month extended warranty.* Moog's technical staff is available around the world to help you keep your products and systems running in peak operating conditions. From integrating within current machinery to building new electric and hydraulic systems, our engineers and technicians are committed to delivering performance and cost advantages to our customers.

***Exceptions apply for special fluids and applications.**

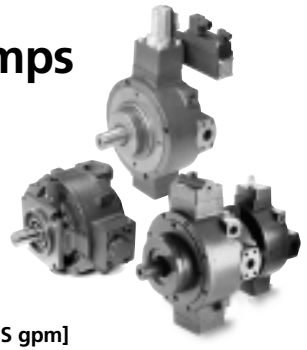


Start-up Checklist:

- Pre-fill the pump with hydraulic fluid using the upper d connection
- Switch the pump "on" and "off" for short intervals until the pump and hydraulic fluid have stabilized in temperature
- Confirm direction of shaft rotation
- Run at low pressures until the hydraulic system has been deaerated

For repair or technical support, visit www.moog.com for your nearest location.

Moog RKP Pumps



Size and Displacement (cm^3/rev)	19	32	45	63	80	100	140
Weight - kg [lbs]	**22.0 [48.5]**	**33.0 [73.0]**	**33.0 [73.0]**	**65.0 [143]**	**65.0 [143]**	**71.0 [157]**	**105 [231]**
Rated Flow @ 1200 rpm - lpm [US gpm]	22.8 [6.0]	38.4 [10.1]	54.0 [14.3]	75.6 [20.0]	96.0 [25.4]	120 [31.7]	168 [44.4]
Rated Flow @ 1800 rpm - lpm [US gpm]	34.2 [9.0]	57.6 [15.2]	81.0 [21.4]	113 [30.0]	144 [38.0]	180 [47.6]	252 [66.6]
Continuous Pressure for Standard Version High Pressure Version - bar [psi]	280 [4,000] 350 [5,000]	280 [4,000] 350 [5,000]	280 [4,000]	280 [4,000] 350 [5,000]	280 [4,000] 350 [5,000]	280 [4,000]	280 [4,000]
Max. Pressure for Standard Version ⚠1 High Pressure Version* - bar [psi]	315 [4,500] 385 [5,600]	315 [4,500] 385 [5,600]	315 [4,500]	315 [4,500] 385 [5,600]	315 [4,500] 385 [5,600]	300 [4,350]	315 [4,500]
Pressure Peak for Standard Version High Pressure Version - bar [psi]**	350 [5,000] 420 [6,100]	350 [5,000] 420 [6,100]	350 [5,000]	350 [5,000] 420 [6,100]	350 [5,000] 420 [6,100]	330 [4,750]	350 [5,000]
Recommended Pipe Outer Diameter for Drain Line (light weight version) nominal - mm [in]	15 [5/8]	18 [3/4]	18 [3/4]	22 [7/8]	22 [7/8]	22 [7/8]	22 [7/8]
Mass Moment of Inertia kg cm^2 [lb$f$ in sec^2]	17.7 [0.016]	61.0 [0.054]	61.0 [0.054]	186 [0.165]	186 [0.165]	186 [0.165]	380 [0.336]
Ambient Temperature Ratings	-15 to +60°C [5 to 140°F]						
Hydraulic Fluid Temperature Ratings	-15 to +80°C [5 to 158°F]						
Maximum Rated Speeds (rpm) at Inlet Pressure 0.8 bar [12 psi] abs.	2,700	2,500	1,800	2,100	1,500	1,500	1,500
Maximum Rated Speeds (rpm) at Inlet Pressure 1 bar [15 psi] abs.	2,900	2,900	2,100	2,300	1,800	1,800	1,800
Minimum Inlet Pressure Suction Connection (abs.)	0.8 bar [12 psia]						
Maximum Housing Pressure (abs.)	2.0 bar [30 psia]						
Viscosity **Allowable Operating Ratings**	12 - 100 mm^2/s [cSt]						
Viscosity **Recommended Ratings**	16 - 46 mm^2/s [cSt] at +40°C [104°F] (ISO-VG 32 or 46)						
Cleanliness Level	NAS 1638, level 9 ISO/DIN 4406, level 18/15 Obtained with filter fineness $\beta_{20} = 75$ ⚠2						

*** For RKP EHV: max. pressure 300 bar [4,350 psi]** **** For RKP EHV: pressure peak 330 bar [4,750 psi]**

⚠1 Maximum pressure to DIN 24 312 **⚠2 Dirt particles retention rate > 20 µm is 1: 75, i.e. 98.67%**

RKP Type Code System

Example Pump Model Number	**0514 700 325**
Corresponding Pump Type Code Designation	**0514R18C3RPV63SM28HZ-**

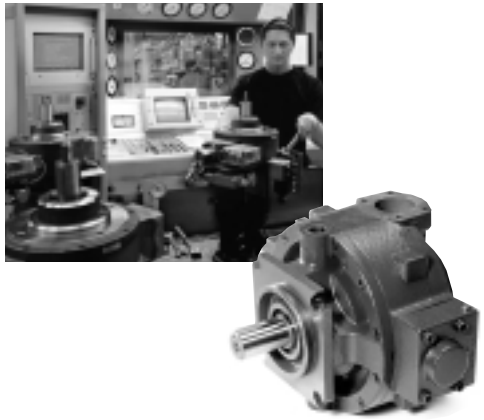
(continued)

Guideline to Understanding 15-digit Type Code	**0514**	**R**	**18**	**C**	**3**	**RPV**
	Radial Piston Pump	Shaft Rotation (e.g., R = clockwise)	Rotational Speed in hundred rpm (e.g., 18 = 1800 rpm)	Drive Shaft (e.g., C = key to SAE Standard)	Mounting Flange Type (e.g., 3 = DIN ISO 3119/1 Imperial Dimensions)	Variable Displacement Principle

Conversions

Table for Metric Conversions

To Convert	Into	Multiply By
bar	psi	14.504
kg	lbs	2.205
Nm	lb in	8.844
cm	in	0.3937
cu cm	cu in	0.06102
mm^2/s	cSt	1.0
cu cm	cu ft	3.53×10^{-5}
cu cm	US gal	2.642×10^{-4}
KW	HP	1.341
Liters	US gal	0.2642
Liters	cu in	61.020



Basic Pump Formulas:

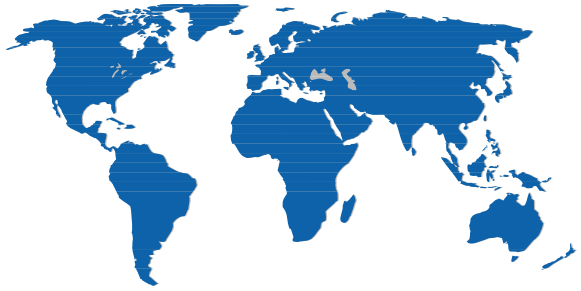
Pump Delivery (cu in/min)	Pump Delivery = Cylinder Area (sq in) x Piston Velocity (in/min)	$Q = A \times v$
Force (lbs)	Force = Cylinder Area (sq in) x Line Pressure (lbs/sq in)	$F = A \times p$
Pump Outlet Flow (US gpm)	$\text{Flow} = \frac{\text{Rotational Speed (rpm)} \times \text{Pump Displacement (cu in/rev)}}{231}$	$Q = \frac{n \times V}{231}$
Pump Input Power (HP)	$\text{Input} = \frac{\text{Flow Rate Output (US gpm)} \times \text{Pressure (psig)}}{1714 \times \text{Overall Efficiency (\%)}}$	$HP_{in} = \frac{Q \times p}{1714 \times \eta_t}$
Overall Efficiency (%)	$\text{Overall Efficiency} = \frac{\text{Output (HP)}}{\text{Input (HP)}} \times 100$	$\eta_t = \frac{\text{Output}}{\text{Input}} \times 100$
	Overall Efficiency = Volumetric Eff. (%) x Hydromechanical Eff. (%)	$\eta_t = \eta_v \times \eta_{hm}$
Volumetric Efficiency (%)	$\text{Volumetric Efficiency} = \frac{\text{Actual Flow Rate Output (US gpm)}}{\text{Theoretical Flow Rate Output (US gpm)}} \times 100$	$\eta_V = \frac{Q_{act}}{Q_{theo}} \times 100$
Hydromechanical Efficiency (%)	$\text{Hydromechanical Efficiency} = \frac{\text{Theoretical Torque to Drive (Nm)}}{\text{Actual Torque to Drive (Nm)}} \times 100$	$\eta_{hm} = \frac{T_{theo}}{T_{act}} \times 100$
Temperature (°F)	Temperature = 1.8 x Temperature (°C) +32	T (°F) = 1.8 x T (°C) +32
Through Drive Torque (Nm)	$\text{Through Drive Torque} = 1.59 \sum_{i=2}^{n} \frac{\text{Displacement (cu cm/rev)} \times \text{Pressure (bar)}}{\text{Hydromechanical Efficiency (\%)}}$	$T = 1.59 \sum_{i=2}^{n} \frac{V_i \times p_i}{\eta_{hmi}}$

RKP Type Code System *(continued)*

	63	S	M	28	H	Z
	Displacement (e.g., 63 = 63 cu cm per rev)	Housing Version (e.g., S = Suction and Pressure Connection Port with flange SAE Code 61)	Operating Hydraulic Fluid (e.g., M = Mineral oil)	Max. Operating Pressure in 10 bar (e.g., 28 = 280 bar)	Control Option (e.g., H = Remote Pressure Compensator)	No Special Feature Suffix

Why RKP Pumps?

- Proven product with high reliability
- Robust and contamination-resistant design allows for long life
- Higher pressure ranges and suitability for pumping special fluids
- Low noise levels and compact design
- Rapid response time and high volumetric efficiencies
- Large selection of control options
- Thru drive capability



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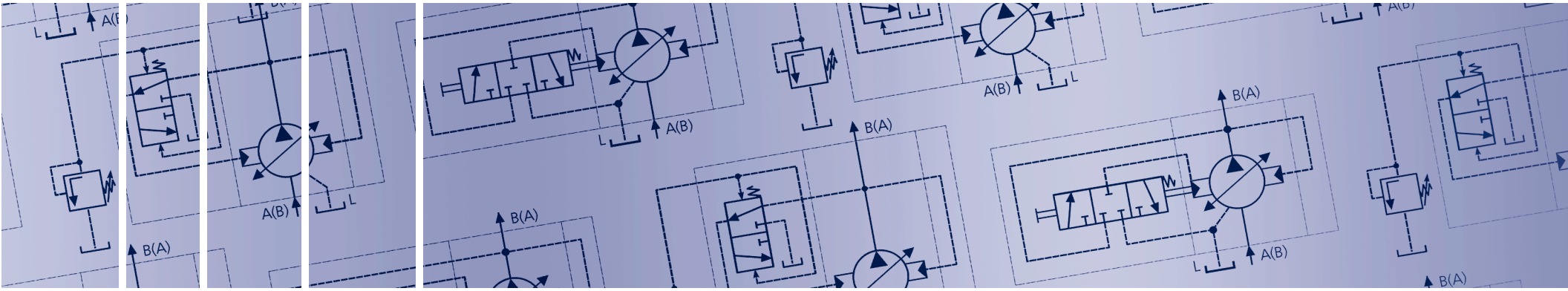

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