



## Piston Pumps

## Technical Data

Size	23	32	45	63	80	107
Displacement (cm <sup>3</sup> )	22.9	32	45.6	63	80.4	106.7
Max Speed (rpm)	2920	2900	2560	2300	2130	1860
Max Flow (/min)	65	90	113	141	166	193
Max Drive Power *(kW)	32.5	45	56.5	70.5	83	96.5
Torque at 300 bar (Nm)	109	153	218	301	384	509
Torque at 350 bar (Nm)	128	178	254	351	448	594
Rotary Stiffness (Nm/rad)	304	304	435	520	771	806
Moment of Inertia (Kgm <sup>2</sup> )	0.0012	0.0012	0.003	0.0042	0.0072	0.0116
Weight (kg)	5.8	5.8	8	9	11.6	14.5

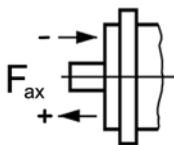
1) These values apply at absolute pressures at suction opening »S« and operating on mineral oil (at 0.8 bar at suction port S reduced technical data)

2) 3% flow loss included

### Pump Drive

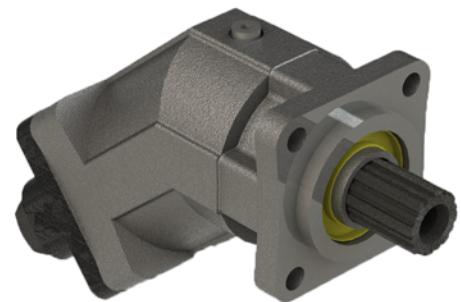
Permissible axial load of the drive shaft

Size		23	32	45	63	80	107
Permissible axial load/ bar operating pressure	+F (N/bar)	+5.2	+5.2	+7.0	+8.7	+10.6	+12.9
	-F (N/bar)	-24	-33	-43	-53	-60	-71



-F<sub>ax</sub> = increases bearing life

+F<sub>ax</sub> = reduces bearing life



### Calculation of size

Flow	$q_v = \frac{V_g \cdot n \cdot \eta_v}{1000}$	in L/min	V <sub>g</sub> = geom. displacement per revolution in cm <sup>3</sup>
Torque	$T = \frac{V_g \cdot \Delta p}{20 \cdot \pi \cdot \eta_{mh}}$	in Nm	Δp = differential pressure in bar
Power	$P = \frac{2\pi \cdot T \cdot n}{60000} = \frac{q_v \cdot \Delta p}{600 \cdot \eta_t}$	in kW	n = speed in rpm
			η <sub>v</sub> = volumetric efficiency
			η <sub>mh</sub> = mech-hydraulic efficiency
			η <sub>t</sub> = overall efficiency (η <sub>t</sub> = η <sub>v</sub> + η <sub>mh</sub> )