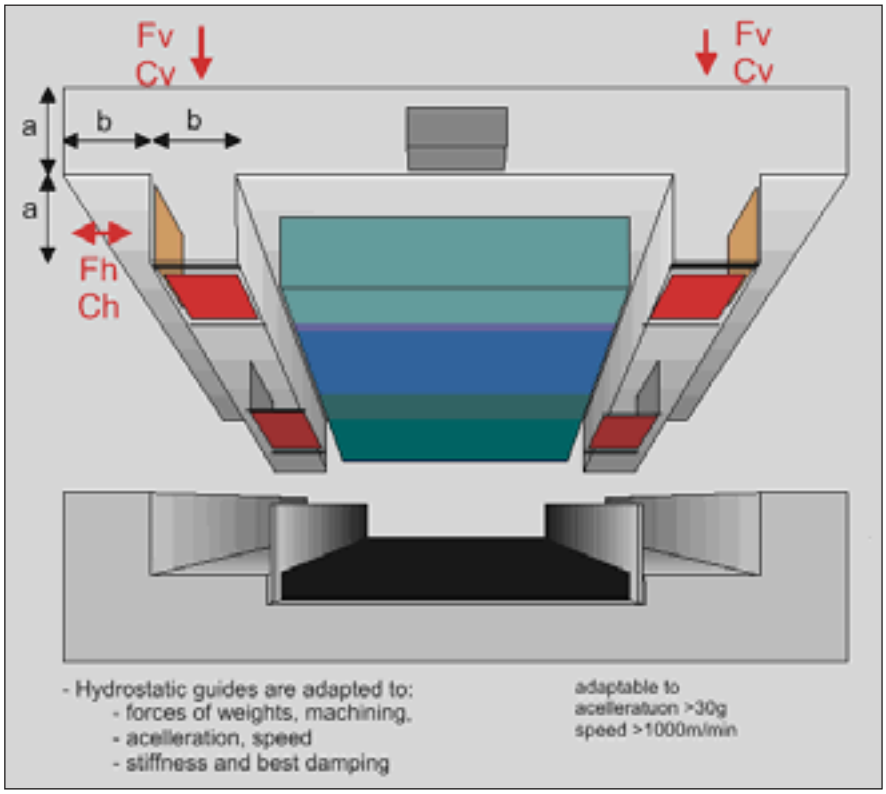
HYPROSTATIK
Schonfeld GmbH



Sizes of Hydrostatic Linear Motor Guides†

Permanent attraction force Fa		2.6-3.9 kN	5-7.7 kN	10-15 kN	20-27 kN	40-47 kN
Dimension a		40 mm	45 mm	50 mm	55 mm	65 mm
Dimension b		45 mm	50 mm	55 mm	60 mm	70 mm
Max. displacement		3-7 µm	3-5 µm	3-5 µm	3-5 µm	2-4 µm
Pressure 50 bar	F max. Cv	6500 N 200-2300 N/µm	11500 N 400-5000 N/µm	15500 N 900-7000 N/µm	20000 N 1.8-8.8k N/µm	28000 N 2.5-12 kN/µm
	Fh max. Ch	±6500N 800-2500 N/µm	±11500 N 900-2500 N/µm	±15500 N 1.2-3.2 kN/µm	±20000 N 1.6-4 kN/µm	±28000 N 2.1-5 kN/µm
Pressure 100 bar	Fv max. Cv	16000 N 250-600 N/µm	23000 N 400-900 N/µm	30000 N 550-1200 N/µm	40000 N 650-1600 N/µm	50000 N 1.2-4.2 kN/µm
	Fh max.	±16000 N 1.2-3.0 kN/µm	±23000 N 1.4-3.1 kN/µm	±30000 N	±40000 N	±50000 N 2.4-5.2 kN/µm

Oil Requirement at Max. 40° C / 105°C, Friction at 10m/min‡

Permanent attraction force Fa		2.6-3.9 kN	5-7.7 kN	10-15 kN	20-27 kN	40-47 kN
Oil VG 32 to 100 m/min	Friction 10 m/min	9 N	10 N	14 N	18 N	24 N
	Oil req. at 50 bar	0.45 l/min	0.59 l/min	0.61 l/min	0.69 l/min	0.71 l/min
	Oil req. at 100 bar	0.86 l/min	1.02 l/min	1.04 l/min	1.08 l/min	1.06 l/min
Oil VG 15 to 200 m/min	Friction 10 m/min	4 N	4.2 N	5.7 N	7.3 N	9.5 N
	Oil req. at 50 bar	1.1 l/min	1.32 l/min	1.35 l/min	1.46 l/min	1.60 l/min

An alternative to traditional mechanical components is a hydrostatic system in which the slides, bearings, and other points of contact are separated by a thin layer of oil under pressure. This system, the patented PM Flow Controller, eliminates all metal-to-metal contact and virtually eliminates wear because components are “floating” on a very thin film of oil.

The PM Flow Controller is a self-contained mechanical device and thus does not require an electronic controller or an external pressure feedback device for operation. The PM Flow Controller maintains an almost steady-state of the hydrostatic gap in the hydrostatic pathways necessary to support a load regardless of grinding or cutting stress, the weight of a workpiece, or its location, by varying the pressure and flow of oil to the pocket.

The PM Flow Controller makes it possible for machine builders to easily integrate custom hydrostatic systems into both new and existing machines.

Features of Hydrostatic Linear Motor Guides

- Friction-free at low speed, very low friction at higher speed
- Moves smaller than 0.1µm possible
- No friction change when reversing direction, allowing for precise positioning
- No slip-stick effect at slow speed
- Floats on oil pockets independent of speed and load without any contact, so wear is not possible
- No precision loss, even under 24 hour operation at full load and maximum speed
- No variation of friction as with balls
- A hydrostatic system operates like a damper; excellent damping results in better workpiece surface and tool life
- Less sensitive to chips and other debris

Technical Features

- The magnetic force of the motor is countered close to the motor fixture by wear free hydrostatic pockets, resulting in reduced bending stress and bending deformation in the slide and guideway
- Low production cost because no surfaces need to be ground to close tolerances
- Ideal for horizontal and vertical slides with large acceleration and speed

†All dimensions shown in mm.
All features can be changed, and can be adapted to a specific application.

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The friction is almost proportional to the speed, the oil demand is the maximum at maximum temperature.

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