

PNEUMOSTATIC LINEAR MOTION SYSTEM **LMP** series DATA SHEET

The pneumostatic linear motion system of LMP series sums up several characteristics as dynamic capabilities, precision, reliability and versatility. The pneumostatic technology, joined to direct linear drives, allows fast and very precise positioning, and indefinitely constant performances.

The systems are supplied with high efficiency ironcore linear motors and high accuracy linear optical encoders.

The sliders are available in 3 different sizes, and they can each adopt till 3 linear motors sizes.

The available nominal strokes are from 156mm up to 968mm (depending on size). Longer strokes by special request.

The LMP guides can be used as stand alone linear systems, or in different combinations/architecture X/Y or X/Y/Z.

As additional optional, MAGER can provide the LMP series with pneumostatic rotary motion systems, as the TGH series.



General Specifications

	size / model MU	S10		S20		S30	
		S10-05-030	S20-05-030	S20-10-030	S30-05-030	S30-10-030	S30-10-050
linear motor's peak force (*)	N	240	240	480	240	480	800
linear motor's continuous force (*)	N	53	53	103	53	103	166
encoder (**)	---	linear optical		period: up to 20µm	accuracy: up to ±5µm		
nominal air supply pressure	bar	5	5		5		
air consumption (@ n.a.s.p.)	Nl/min	51	47		64		
air condition	---	Requested filtering power against particles: 1µm NOT lubricated air (no oil), dry air Dew point at the operative pressure: 3°C					
accessories	---	cable chains, dust protection, air filtering and pressure regulation unit					
optionals	---	tooling plate with custom fixing holes for tool, air pressure switch, drives & power supply, rotary system					

Dynamic Performances

verification formula for load bearings

$$F_{z,lim} \geq \frac{F_z}{4} + \frac{M_{yz}}{k_x} + \frac{M_{xz}}{k_y}$$

verification formula for side bearings

$$F_{y,lim} \geq \frac{F_y}{2} + \frac{M_{xy}}{k_z}$$

	size model	S10		S20		S30	
		S10-05-030	S20-05-030	S20-10-030	S30-05-030	S30-10-030	S30-10-050

LOAD BEARINGS		MU	pneumostatic				
bearings technology	---	---	attraction force of ironcore linear motor				
bearings preload	---	---					
LOAD LIMIT parameter $F_{z,lim}$	N	360	954			1460	
k_x	m	0.177	0.251			0.323	
k_y	m	0.157	0.240			0.266	
stiffness PITCH	Nm/arcsec	0.46	3.11			5.94	
stiffness ROLL	Nm/arcsec	0.60	3.41			8.79	

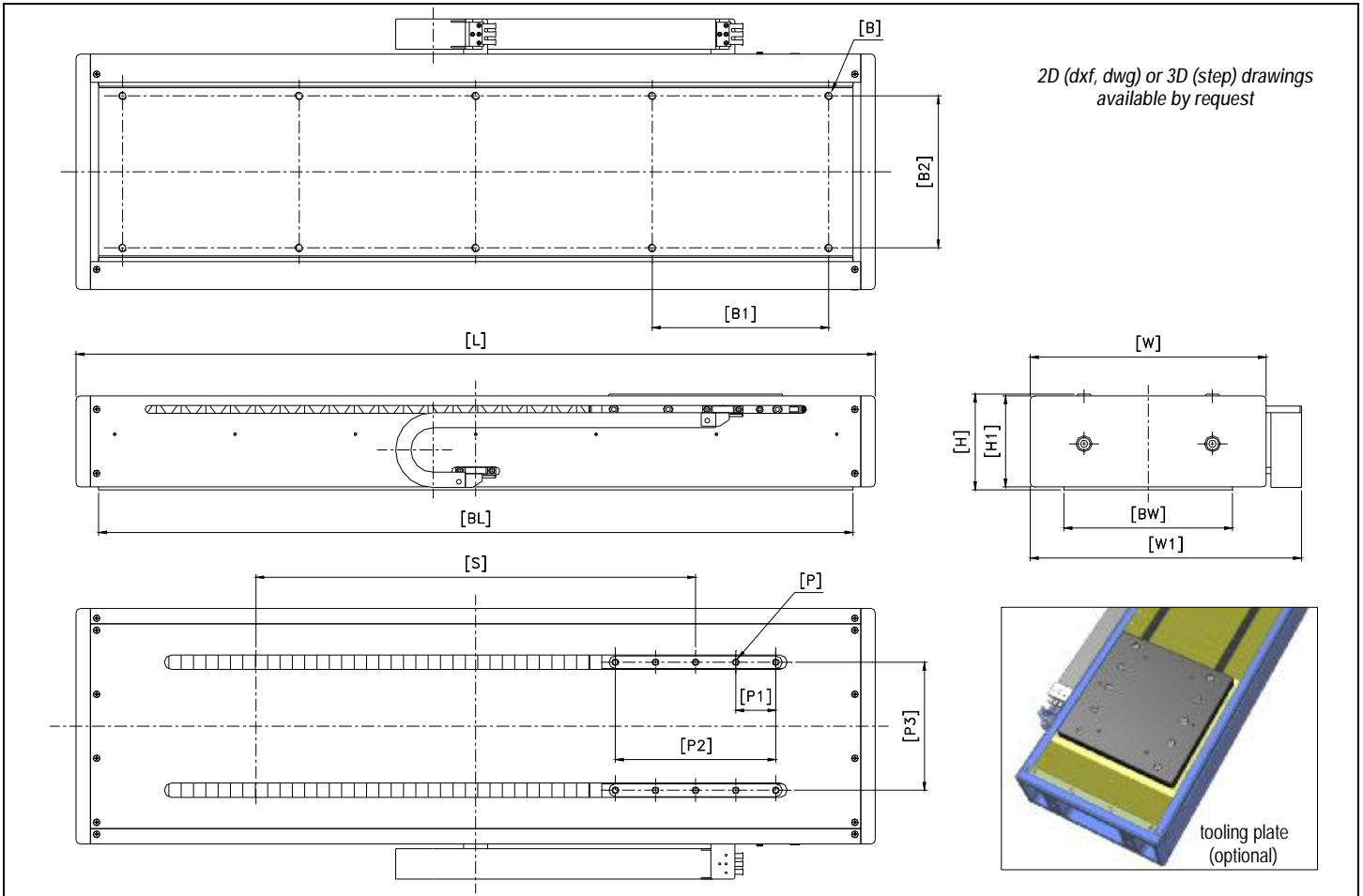
SIDE BEARINGS		MU	pneumostatic				
bearing technology	---	---	contrast air bearings				
bearing preload	---	---					
LOAD LIMIT parameter $F_{y,lim}$	N	196	521			800	
k_z	m	0.079	0.120			0.133	
stiffness YAW	Nm/arcsec	0.40	2.20			5.30	

maximum speed	m/s	<i>DEPENDENT ON FINAL APPLICATION</i> --- ENCODER, DRIVE, CONTROLLER, PAYLOAD --- best performances with ETEL drives and controllers (error mapping available) for further details please contact MAGER technical service					
maximum acceleration	m/s ²						
speed stability	%						
position stability / accuracy	µm						
repeatability (uni- & bi-directional)	µm						

(*) for linear motor's full specifications, or for the use of different linear motors please contact MAGER technical service.

(**) for linear encoder's full specifications, or for the use of different linear encoders, please contact MAGER technical service.

Overall Dimensions, Masses



			size / model		S10	S20	S20	S30	S30	S30
			dwg ref.	MU	S10-05-030	S20-05-030	S20-10-030	S30-05-030	S30-10-030	S30-10-050
stage width / toale width ⁽¹⁾	[W] / [W1]	mm			182 / 226	240 / 283.5		294 / 338		
	[H]	mm			92.5 / 87	106.5 / 101		119.5 / 114		
base width	[BW]	mm			96	158		210		
base holes	[B]	mm			[BN]x2x M8x14	[BN]x2x M8x14		[BN]x2x M10x16		
base holes - X step	[B1]	mm			100	100		100		
base holes - Y step	[B2]	mm			80	140		190		
interface holes	[P]	mm			4x2x M4x8	5x2x M5x10		5x2x M8x14		
interface holes - X step	[P1]	mm			36	40		50		
interface holes - X length	[P2]	mm			108	160		200		
interface holes - Y step	[P3]	mm			100	120		160		
tooling plate dimensions ⁽²⁾		mm			L144xW144xH14	L210xW210xH13		L240xW240xH18		
moving mass w/o (w) tooling plate		kg			2.0 (2.7)	4.2 (5.8)	4.7 (6.2)	6.2 (8.9)	6.6 (9.4)	7.2 (9.9)

horizontal & vertical straightness		µm	stroke (and final application) dependent:			
			2 µm / 25 mm	5 µm / 250 mm	10 µm / 500 mm	15 µm / 1000 mm

⁽¹⁾ depending on the choice of the cable chain

⁽²⁾ layout and size of the fixing holes for customer's tool by custom request

S10		size		S10-05-030-02	S10-05-030-03	S10-05-030-04	S10-05-030-05	S10-05-030-06	S10-05-030-07	S10-05-030-08
stroke ⁽³⁾	[S]	mm		156	284	412	540	668	796	924
stage length	[L]	mm		450	610	770	920	1070	1230	1390
base length	[BL]	mm		394	554	714	864	1014	1174	1334
number of base holes	[BN]	nr		3	5	7	7	9	11	13
stage mass S10-05-030 ⁽⁴⁾		kg		11.2	14.2	18.3	21.2	24.1	27.2	30.3

S20		size		S20-xx-030-03	S20-xx-030-04	S20-xx-030-05	S20-xx-030-06	S20-xx-030-07	S20-xx-030-08	S20-xx-030-09
stroke ⁽³⁾	[S]	mm		200	328	456	584	712	840	968
stage length	[L]	mm		560	710	860	1000	1150	1300	1450
base length	[BL]	mm		504	654	804	944	1094	1244	1394
number of base holes	[BN]	nr		5	5	7	9	9	11	13
stage mass S20-05-030 ⁽⁴⁾		kg		21.3	27.3	31.6	35.7	40.0	44.4	48.7
stage mass S20-10-030 ⁽⁴⁾		kg		21.7	27.8	32.1	36.2	40.5	44.8	49.2

S30		size		S30-xx-xxx-03	S30-xx-xxx-04	S30-xx-xxx-05	S30-xx-xxx-06	S30-xx-xxx-07	S30-xx-xxx-08	S30-xx-xxx-09
stroke ⁽³⁾	[S]	mm		200	328	456	584	712	840	968
stage length	[L]	mm		600	750	900	1050	1200	1350	1500
base length	[BL]	mm		544	694	844	994	1144	1294	1444
number of base holes	[BN]	nr		5	5	7	9	11	11	13
stage mass S30-05-030 ⁽⁴⁾		kg		33.8	43.2	49.8	56.4	63.0	69.7	76.3
stage mass S30-10-030 ⁽⁴⁾		kg		34.3	43.6	50.3	56.9	63.5	70.1	76.8
stage mass S30-10-050 ⁽⁴⁾		kg		35.9	45.6	52.5	59.5	66.5	73.4	80.4

⁽³⁾ longer strokes by special request

⁽⁴⁾ without tooling plate - lighter versions available soon