Series 1605

The purpose of producing a rodless cylinder is to provide a space saving option over conventional cylinders. On a traditional rod type cylinder, the total space occupied with rod out is more than double the length of the cylinder, while with rodless cylinder it is little more than its stroke. Profiled tube allows mounting of sensors 1500._, RS._, HS._ and 1580._, MRS._, MHS._ on the two sides of carriage, by means of suitable brackets. Standard accessories include foot mounting brackets for installation on cylinder and caps, intermediate mounting brackets to give support to long stroke cylinders under load (over one metre), an oscillating coupling device for installation between the mounting plate and the load and on request, a very precise external movement device.

Construction characteristics

Other seals	oil resistant NBR rubber
Bands	tempered stainless steel
Cushion bushings	aluminium
Barrel	anodized aluminium
Mounting place	anodized aluminium
Piston seals	special 80 shore nitril mixture, wear resistant
Plain bearing guide	acetal resin
Piston	acetal resin
End caps	anodized aluminium

Operational characteristics

Fluid	filtered and lubricated air
Pressure	0.5 ... 8 bar
Working temperature	-5 °C ... +70 °C
Max. speed	1.5 m/s (normal working conditions)
Bores	Ø25 - Ø32 - Ø40 - Ø50 - Ø63
Max. strokes	6 meters

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- Please adequately evaluate the load involved and its direction, especially in respect to the moving carriage (also see tables for loads and admitted moments).
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.
For applications where a low smooth uniform operations speed is required, you must specify this on your purchase order so that we can use the proper special grease.

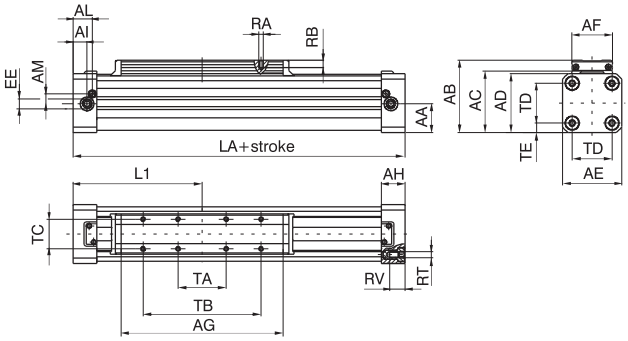
Use and maintenance

This type of cylinder, due to its characteristics, has to be used within certain criteria. Correct use will give long and troublefree operation. Filtered and lubricated compressed air reduce seal wear. Verify that the load will not produce unforeseen stresses. Never combine high speed with heavy load. Always support the long stroke cylinder with intermediate brackets and never exceed the specified working conditions. If maintenance is required, follow the instructions supplied with the repair kit.

Basic version

Coding: 1605.Ø.stroke.01.M

(Max. stroke 6 m)

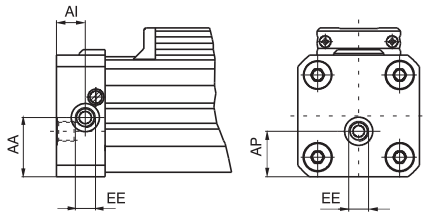


Left head

Coding: 1605.Ø.stroke.02.M

(Max. stroke 6 m)

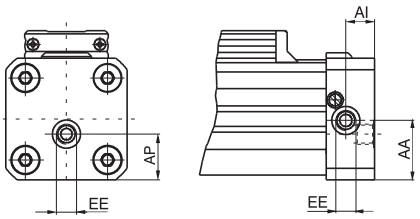
Possibility of a single feed cylinder head



Right head

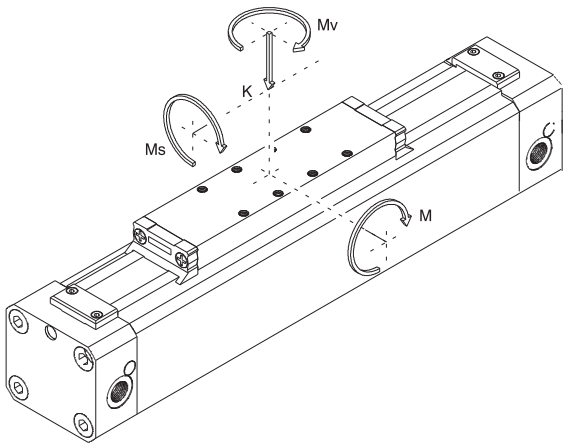
Coding: 1605.Ø.stroke.03.M

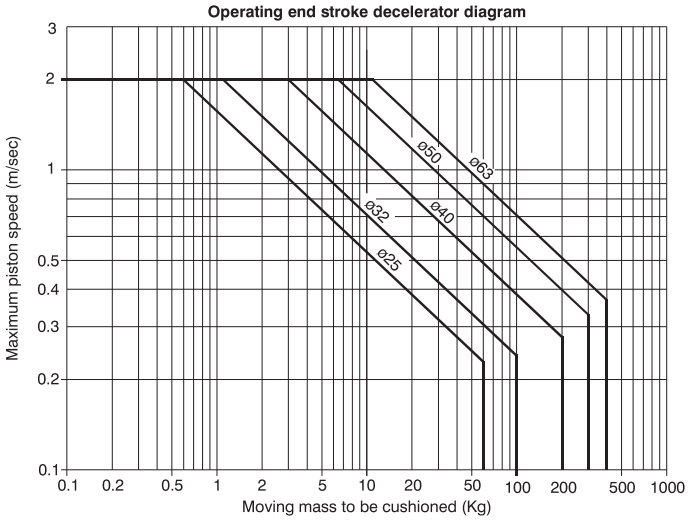
(Max. stroke 6 m)



Bore		25	32	40	50	63
AA		19,5	25,5	31	39	46,5
AB		56	70	80	98	113,5
AC		48,5	60	70	85	100
AD		44	55	65	80	95
AE		40	55	65	80	95
AF		30	40	40	55	55
AG		117	146	186	220	255
AH		23	27	30	32	36
AI		12,5	14,5	17,5	19	23
AL		19	22,5	24,5	26	30
AM		7,5	10,5	11,5	13,5	16
AP		13	15,2	23	30	35,5
EE		G1/8"	G1/4"	G1/4"	G1/4"	G3/8"
L1		100	125	150	175	215
LA		200	250	300	350	430
RA		M4	M5	M5	M6	M6
RB		7,5	9,5	9,5	11,5	11,5
RT		M5	M6	M6	M8	M8
RV		13,5	16,5	16,5	20,5	20,5
TA		30	40	40	65	65
TB		80	110	110	160	160
TC		23	30	30	40	40
TD		27	36	47	54	68
TE		6,5	9,5	9	13	13,5
Weight (g)	Stroke 0	900	1650	2650	4330	8010
	every 100 mm	225	340	490	725	1070
Stroke tolerance: + 2 mm.						

Basic version cylinder

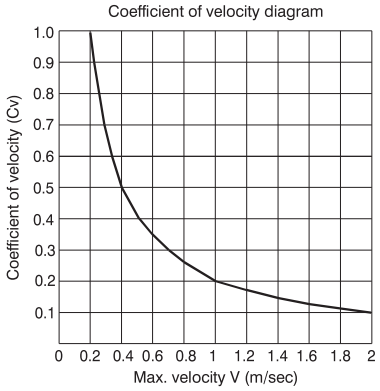




Recommended loads and moments in static conditions

Cylinder bore	Decelerating stroke (mm)	Max. recommended load K (N)	Max. recommended bending moment M (Nm)	Max. recommended cross moment Ms (Nm)	Max. recommended twisting moment Mv (Nm)
25	20	300	15	0,8	3
32	25	450	30	2,5	5
40	31	750	60	4,5	8
50	38	1200	115	7,5	15
63	49	1600	150	8,5	24

Attention: use guided carriage for heavier loads or precise linear movements (MG or MH versions).
All reported data are referred to carriage plane and indicates MAX - values in statical conditions. These values should not be exceeded either in dynamic conditions (best speed <1m/sec).
Should the cylinder be utilised at its maximum performances, ensure the proper additional absorbers are used.



Calculation of permissible load (Kd) in dynamic conditions
Kd = K • Cv

Loads under combined stressing conditions

It is important to take into consideration the following formula when there are a combination of forces with torque:

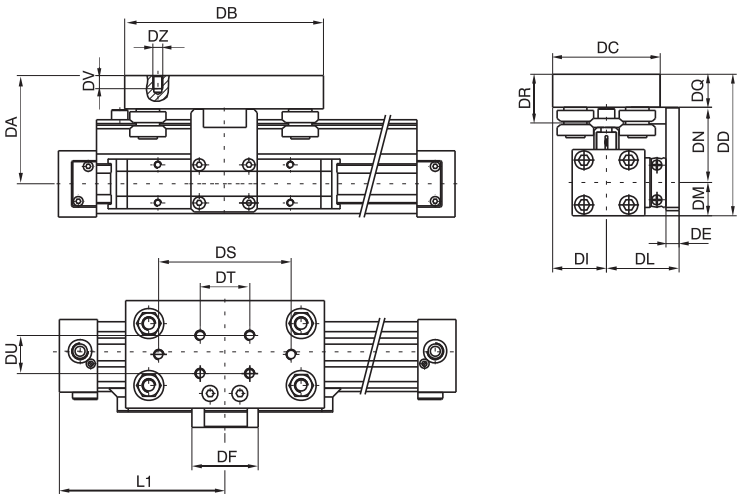
$$\left[\left(2 \times \frac{Ms}{Ms\ max}\right)+\left(1.5 \times \frac{Mv}{Mv\ max}\right)+\frac{M}{M\ max}+\frac{K}{K\ max}\right] \times \frac{100}{Cv} \leq 100$$

Cylinder with linear control unit

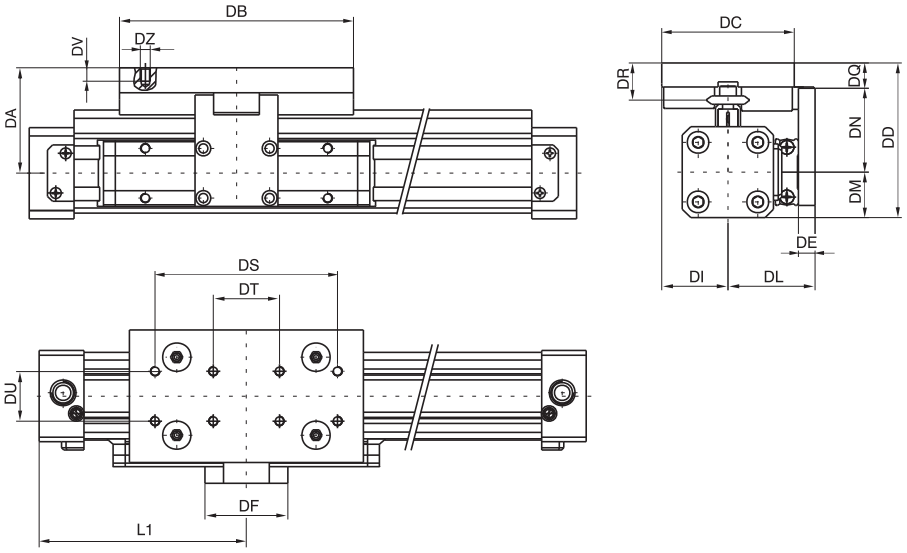
Coding: 1605.Ø.stroke.01.MG

(Max. stroke 3 m)

Cylinders Ø25



Cylinders Ø32, Ø40, Ø50



Bore	DA	DB	DC	DD	DE	DF	DI	DL	DM	DN	DQ	DR	DS	DT	DU	DV	DZ	L1	Weight (g)	every 100 mm
25	65	120	65	85	8	40	32,5	44	20	45,5	19,5	29	80	30	23	8	M6	100	850	90 g
32	63	141	80	90,5	10	50	40	52,5	27,5	48,5	14,5	21,5	110	40	30	8	M5	125	950	
40	68,5	141	80	101	10	50	40	57,5	32,5	54	14,5	21,5	110	40	30	8	M5	150		
50	76	141	80	116	12	80	40	70	40	61,5	14,5	21,5	110	40	30	8	M5	175		

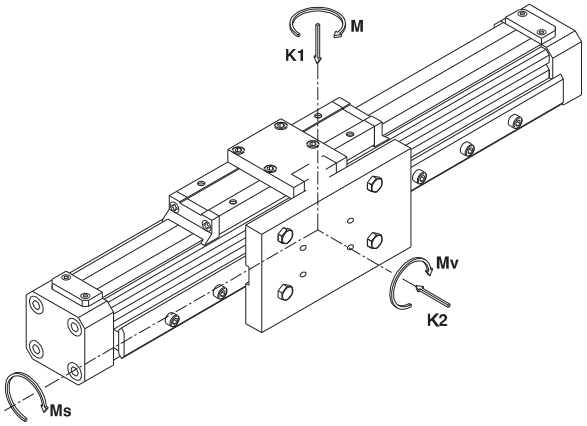
For cylinders weight refer to base version

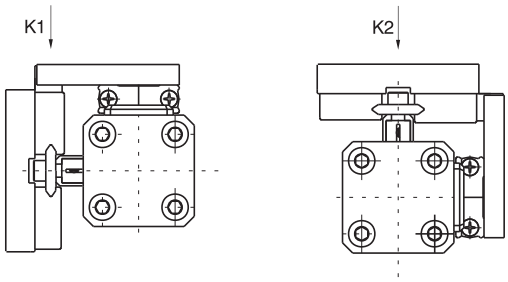
Construction and working characteristics

Rod	carbon steel with hardness higher than 55-60 HRC
Bearing with shaft	shielded bearing with shaped ring
Carriage plate	anodised aluminium
End cap	acetal resin

Cylinder with linear control unit Ø25, Ø32, Ø40 and Ø50 mm

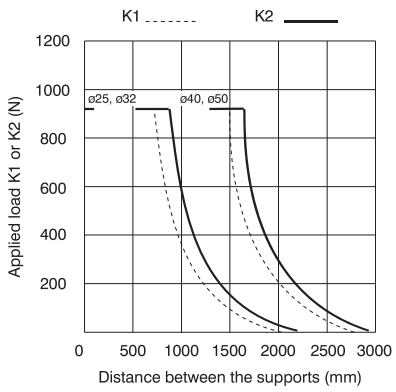
Max. suggested loads and moments

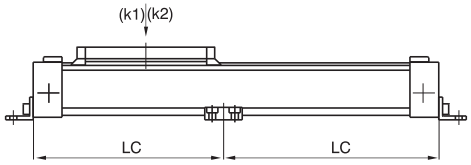




K1 (N)	K2 (N)	M (Nm)	Ms (Nm)	Mv (Nm)
960	960	40	12	40

Max. load (K1 o K2) depending on the distance LC between the supports

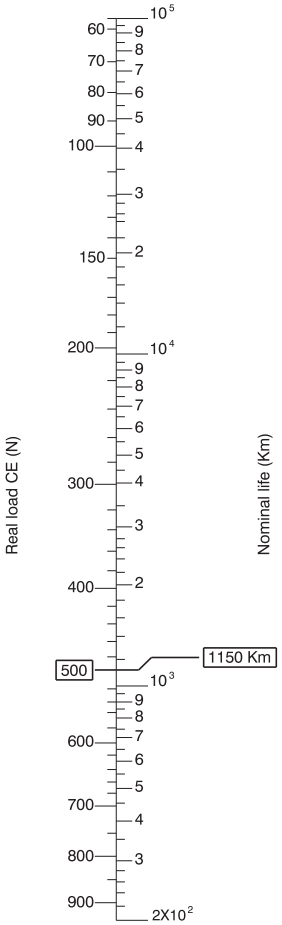




Real load (CE) under combined stressing conditions

It is important to take into consideration the following formula when there are a combination of forces with torque:
CE = [K1 + K2 + (24 x M) + (80 x Ms) + (24 x Mv)] ≤ 960

Nomograph load / life



All data refers to a linear control unit properly lubricated with linear speed < of 1.5 m/s

Example to compute the life

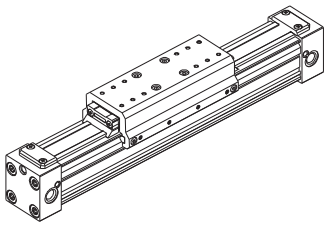
Compute the linear control unit life with a load of 100 N applied 50 mm off its axle.

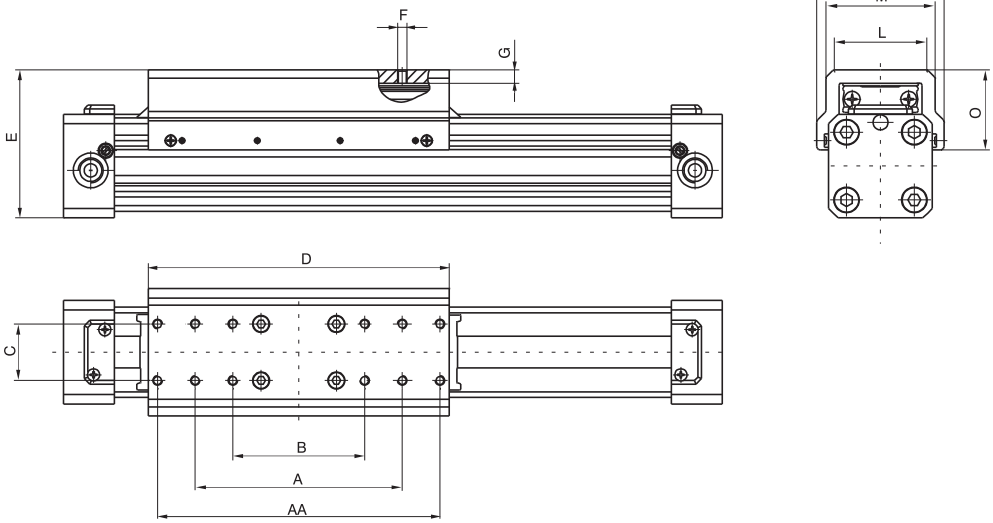
Ms = 0,05 x 100 = 5 Nm K1 = 100 N
How to compute the real load using the formula:
CE = [K1 + K2 + (24 x M) + (80 x Ms) + (24 x Mv)]
CE = [(100 + 0) + (24 x 0) + (80 x 5) + (24 x 0)] = 500N
After having verified that the CE is lower than 960 N we realise that the life is 1150 Km from the nomograph.

Cylinder with plain bearing guide

Coding: 1605.Ø.stroke.01.MH

(Max. stroke 6 m)





Bore	AA	A	B	C	D	E	F	G	H	L	M	O	Weight (g)
Ø25	/	80	55	23	130	64 ±1	M4	6,5	57	36	42	32	235
Ø32	/	110	70	30	160	78,5 ±1	M5	7	68	50	58	42,5	445
Ø40	/	110	70	30	202	88,5 ±1	M5	7	77	52	60	45,5	595
Ø50	210	160	110	40	235	114,5 ±1	M6	14	100	71	83	61,5	1453
Ø63	210	160	110	40	270	130 ±1	M6	14	116	76	90	65,5	1810

Complete plain bearing guide

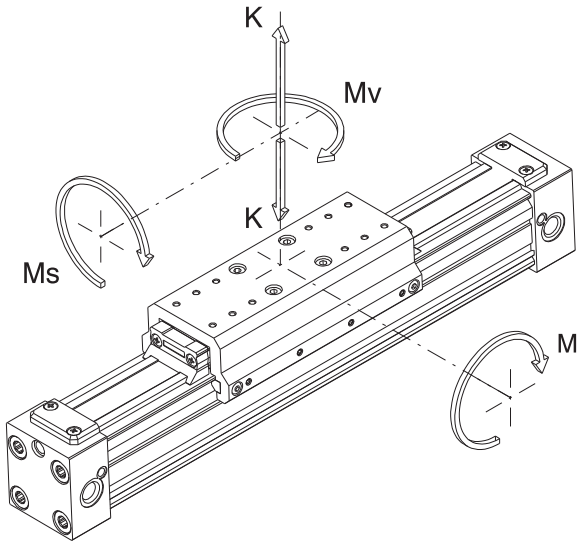
Coding: 1600.Ø.05F

Construction and working characteristics

Plain bearing	reinforced carbon fibre nylon
Carriage plate	anodised aluminium

Cylinder with plain bearing guide ø25, ø32, ø40, ø50 and ø63 mm

Max. suggested loads and moments



Recommended loads and moments in static conditions

Cylinder bore	Max. recommended load K (N)	Max. recommended bending moment M (Nm)	Max. recommended cross moment Ms (Nm)	Max. recommended twisting moment Mv (Nm)
Ø25	300	20	1	4
Ø32	450	35	3	6
Ø40	750	70	5	9
Ø50	1200	120	8	16
Ø63	1600	155	9	25