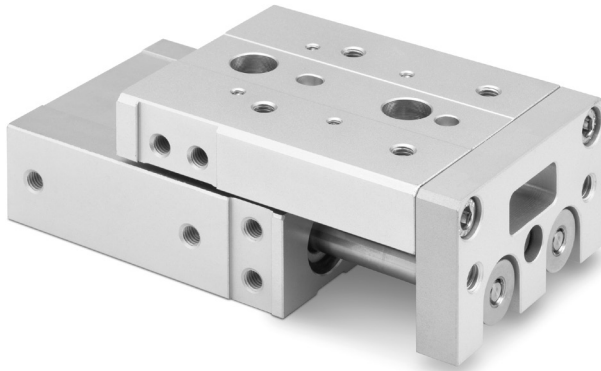


Pneumatic mini slides Series MST



Size: 6, 8, 12, 15, 20, 25



- » High stiffness and precision
- » Compact and light design
- » Adjustable stroke length
- » Hydraulic end stroke cushioning

The pneumatic slides Series MST are the ideal solution for applications that require high strength and accurate positioning. The combination of a pneumatic cylinder with double piston and a precision roller guide enables a highly accurate positioning, reducing positioning errors to a minimum while enhancing the overall efficiency of the system.

Series MST is available in different sizes and strokes and is adjustable using special accessories that increase the adaptability and versatility of the product. Equipped with an internal magnet, proximity switches can be integrated for position monitoring.

GENERAL DATA

Operation	double-acting
Strokes min. max	see table
Operating temperature	5°C ÷ 60°C (with dry air - 20°C)
Speed	50 ÷ 500 mm/s
Operating pressure	1.5 ÷ 7 bar
Fluid	filtered air in class 7.8.4 according to ISO 8573-1 standard. If lubricated air is used, it is recommended to use oil ISOVG32. Once applied the lubrication should never be interrupted.
Sensors	CSD

STANDARD STROKES

■ = Double-acting

STANDARD STROKES										
Mod.	Ø	10	20	30	40	50	75	100	125	150
MST6	6	■	■	■	■	■				
MST8	8	■	■	■	■	■	■			
MST12	12	■	■	■	■	■	■	■		
MST16	16	■	■	■	■	■	■	■	■	
MST20	20	■	■	■	■	■	■	■	■	■
MST25	25	■	■	■	■	■	■	■	■	■

CODING EXAMPLE

MST	12	-	40
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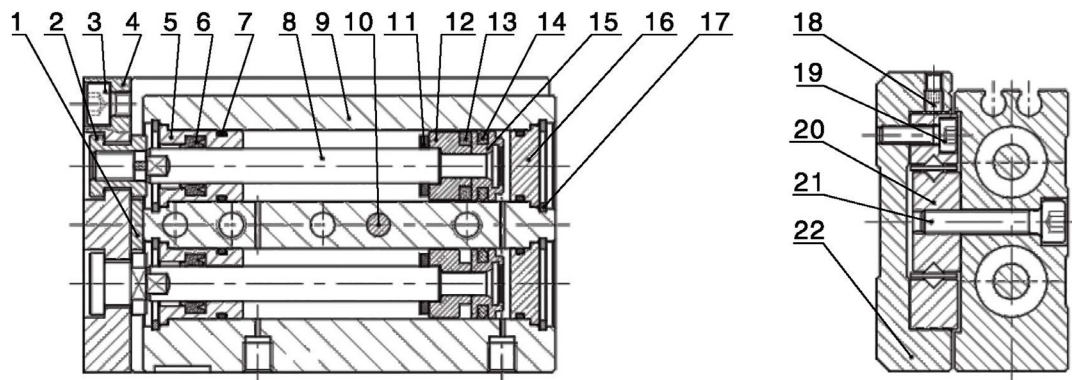
MST	SERIES
12	SIZE: 6 8 12 16 20 25
40	STROKE: (See the standard strokes table)

PNEUMATIC SYMBOLS

The pneumatic symbols which have been indicated in the CODING EXAMPLE are shown below.



Pneumatic mini slides Series MST - construction



LIST OF COMPONENTS			
PARTS	MATERIALS	PARTS	MATERIALS
1 - Cushion Pad	TPU	12 - Magnet Seat	Aluminum Alloy
2 - Fixing Screw	Stainless steel	13 - Integrated Magnet	RbFeB
3 - Hexagon Socket Cap Head Screw	Carbon steel	14 - Piston Seal	NBR
4 - Fixin Plate	Aluminum Alloy	15 - Piston	Aluminum Alloy
5 - Front Cover	Aluminum Alloy	16 - Rear Cover	Aluminum Alloy
6 - Front Scrapper Seal	NBR	17 - C-Type Retainer Ring	Spring Steel
7 - O-ring	NBR	18 - Hexagon Socket Set Screw	Carbon Steel
8 - Piston Rod	Stainless steel	19 - Hexagon Socket Cap Head Screw	Carbon Steel
9 - Barrel	Aluminum Alloy	20 - Linear Roller Sliding Guide Rail	Assembly
10 - Positioning pin	Stainless steel	21 - Hexagon Socket Cap Head Screw	Carbon Steel
11 - Anti-Crash Gasket	TPU	22 - Slide Table	Aluminium Alloy

Weights

Unit of measurement: g

The weight in the table below is the standard product weight without adjuster.

Stroke (mm)	10	20	30	40	50	75	100	125
Mod.								
MST6	73	90	103	146	163	-	-	-
MST8	143	156	178	225	269	-	-	-
MST12	345	350	355	403	470	651	-	-
MST16	542	551	560	623	708	973	1245	1523
MST20	988	995	1002	1111	1226	1617	2081	2482
MST25	1462	1480	1498	1638	1785	2314	2845	3437

Theoretical power

Unit of measurement: N

Mod.	Bore size (mm)	Rod size (mm)	Acting type	Pressure area (mm ²)	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar
MST6	6	3	OUT	57	11	17	23	29	34	40
			IN	42	8	13	17	21	25	29
MST8	8	4	OUT	101	20	30	40	51	61	71
			IN	75	15	23	30	38	45	53
MST12	12	6	OUT	226	45	68	90	113	136	158
			IN	170	34	51	68	85	102	119
MST16	16	8	OUT	402	80	121	161	201	241	281
			IN	302	60	91	121	151	181	211
MST20	20	10	OUT	628	126	188	251	314	377	440
			IN	471	94	141	188	236	283	330
MST25	25	12	OUT	982	194	295	393	491	589	687
			IN	756	151	227	302	378	454	529

Symbol and Unit

Symbol	Description	Unit
A,B,C	Correction value for center position distance of movement	mm
a	Acceleration of inertia	m/s ²
E	Kinect energy	J
Ea	Allowable kinect energy	J
E_{max}	Maximum allowable kinect energy	J
g	Acceleration of gravity g=9.81	m/s ²
K	Mounting work coefficient	-
L1,L2,L3	Overhang	mm
M_p,M_y,M_r	Dynamic moment (Pitch Yaw Roll)	Nm
M_{pmax},M_{y_{max}},M_{r_{max}}	Maximum allowable dynamic moment (Pitch Yaw Roll)	Nm
M_{po},M_{yo},M_{ro}	Static moment (Pitch Yaw Roll)	Nm
M_{pomax},M_{yomax},M_{romax}	Maximum allowable static moment (Pitch Yaw Roll)	Nm
V_a	Average speed	mm/s
W	Applied load	N
W_{max}	Maximum allowable applied load	N
B	Applied load coefficient	-

1. Kinetic energy check

- 1.1 Calculate kinetic energy of load E (J)
- 1.2 Calculate allowable kinetic energy E_a (J)
- 1.3 Check that kinetic energy of load doesn't exceed allowable kinetic energy

$$E = \frac{1}{2} \cdot \frac{W}{g} \cdot \left(\frac{1.4 \cdot V_a}{1000} \right)^2$$

$$E_a = K \cdot E_{max}$$

$$E \leq E_a$$

Maximum allowable kinetic energy E_{max} , Maximum allowable applied load (W_{max})

Mod.	Kinetic energy (J)	
	Standard	Shock absorber
MST6	0.01	-
MST8	0.024	0.048
MST12	0.05	0.1
MST16	0.1	0.2
MST20	0.13	0.26
MST25	0.22	0.44

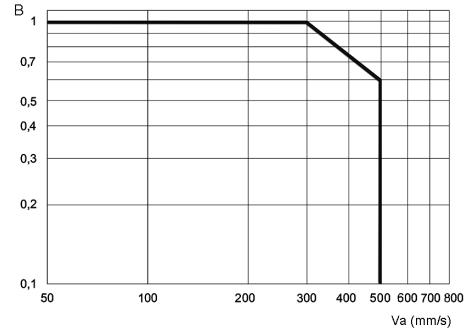
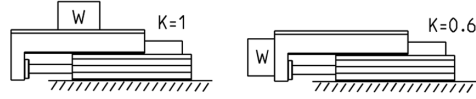
2. Load Check

- 2.1 Calculate allowable applied load W_a (N)
- 2.2 Check that load (W) doesn't exceed allowable applied load (W_a)

K = Mounting work coefficient
 B = Applied load coefficient
 V_a = average speed [mm]

$$W_a = K \cdot B \cdot W_{max}$$

$$W \leq W_a$$



Mod.	Maximum allowable applied load W_{max} (kg)
MST6	4
MST8	8
MST12	15
MST16	30
MST20	40
MST25	70

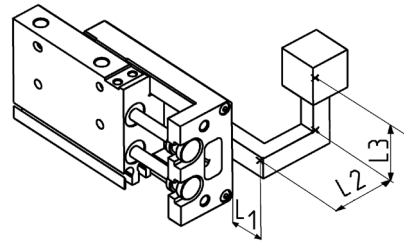
3. Moment Check

$L1, L2, L3$: the distance of load center to mount plane
 A, B, C : correction value for center position distance of moment

M_p, M_y, M_r : dynamic moment, during the movement of the slide

M_{p0}, M_{y0}, M_{r0} : static moment, during the impact with the end-stroke

w : load weight [kg]
 g : acceleration of gravity [mm/s²]
 a : acceleration of inertia [mm/s²]



Standard:

$$a = 1600 \cdot \left(\frac{V_a}{1000}\right)^2$$

Shock absorber:

$$a = 400 \cdot \left(\frac{V_a}{1000}\right)^2$$

3.1 Maximum allowable moment

Static moment: Mpomax, Myomax, Mromax

Dynamic moment: Mpmx, Mymax, Mrmax

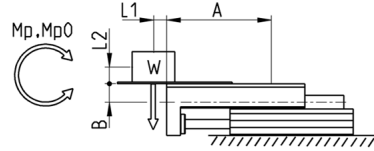
Correction value: A, B, C

Mod.	Stroke (mm)	Mpomax (Nm)	Myomax (Nm)	Mromax (Nm)	Mpmx (Nm)	Mymax (Nm)	Mrmax (Nm)	A (mm)	B (mm)	C (mm)
MST6	10	3.3	3.8	2.6	0.7	0.7	0.6	27	7.3	15
MST6	20	3.3	3.8	2.6	0.7	0.7	0.6	42	7.3	15
MST6	30	3.3	3.8	2.6	0.7	0.7	0.6	52	7.3	15
MST6	40	7.2	7.9	3.6	1.3	1.3	0.6	72	7.3	15
MST6	50	12.4	12.7	4.7	1.8	1.8	0.6	87	8.5	20
MST8	10	10.1	9.1	8.8	2.5	2.5	2.0	32	8.5	20
MST8	20	10.1	9.1	8.8	2.6	2.6	2.0	42	8.5	20
MST8	30	10.1	9.1	8.8	2.8	2.8	2.0	57	8.5	20
MST8	40	12.4	10.8	10.1	3.4	3.4	2.3	72	8.5	20
MST8	50	23.6	24.8	13.9	4.4	4.4	2.1	92	8.5	20
MST8	75	32.8	35.3	16.4	4.6	4.6	1.8	132	8.5	20
MST12	10	33	34.3	30.9	7.3	7.3	5.8	48	10	25
MST12	20	33	34.3	30.9	7.6	7.6	5.8	58	10	25
MST12	30	33	34.3	30.9	7.8	7.8	5.8	68	10	25
MST12	40	33	34.3	30.9	8.0	8.0	5.8	78	10	25
MST12	50	53.4	49.6	39.7	9.8	9.8	5.8	88	10	25
MST12	75	78.8	71.9	48.6	14.2	14.2	6.8	125	10	25
MST12	100	78.8	71.9	48.6	14.7	14.7	6.8	160	10	25
MST16	10	33	34.3	30.9	8.8	8.8	7.6	43	11	31
MST16	20	33	34.3	30.9	9.2	9.2	7.6	53	11	31
MST16	30	33	34.3	30.9	9.5	9.5	7.6	63	11	31
MST16	40	33	34.3	30.9	10.0	10.0	7.6	78	11	31
MST16	50	53.4	49.6	39.7	12.2	12.2	7.6	93	11	31
MST16	75	78.8	71.9	48.6	17.6	17.6	8.9	130	11	31
MST16	100	78.8	71.9	48.6	18.2	18.2	8.9	165	11	31
MST16	125	143.7	144.5	53.3	24.8	24.8	7.8	204	11	31
MST20	10	60.1	50.5	72.8	14.5	14.5	15.2	47	16,5	38
MST20	20	60.1	50.5	72.8	15.2	15.2	15.2	57	16,5	38
MST20	30	60.1	50.5	72.8	15.7	15.7	15.2	67	16,5	38
MST20	40	60.1	50.5	72.8	16.3	16.3	15.2	82	16,5	38
MST20	50	60.1	50.5	72.8	16.6	16.6	15.2	92	16,5	38
MST20	75	169.3	154.3	114.4	41.2	41.2	22.0	136	16,5	38
MST20	100	169.3	154.3	114.4	42.8	42.8	22.0	176	16,5	38
MST20	125	169.3	154.3	114.4	43.6	43.6	22.0	205	16,5	38
MST20	150	267.5	286.6	145.6	49.0	49.0	20.5	249	16,5	38
MST25	10	60.1	50.5	72.8	16.3	16.3	17.6	52	20,3	43
MST25	20	60.1	50.5	72.8	17.0	17.0	17.6	62	20,3	43
MST25	30	60.1	50.5	72.8	17.4	17.4	17.6	72	20,3	43
MST25	40	60.1	50.5	72.8	17.8	17.8	17.6	82	20,3	43
MST25	50	60.1	50.5	72.8	18.2	18.2	17.6	96	20,3	43
MST25	75	169.3	154.3	114.4	45.2	45.2	25.3	141	20,3	43
MST25	100	169.3	154.3	114.4	46.2	46.2	25.3	165	20,3	43
MST25	125	169.3	154.3	114.4	48.0	48.0	25.3	210	20,3	43
MST25	150	267.5	286.6	145.6	65.0	65.0	28.3	254	20,3	43

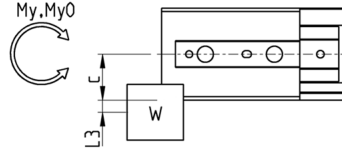
3.2 Moment Check (Horizontal)

Calculate actual moment: $M_p, M_{p0}, M_y, M_{y0}, M_r, M_{r0}$ (Nm)

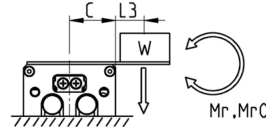
*Check



$$M_p = W \cdot \frac{(L1 + A)}{1000} \quad M_{p0} = W \cdot \frac{(L1 + A)}{1000} + W \cdot \frac{a}{g} \cdot \frac{(L2 + B)}{1000}$$



$$M_{y0} = W \cdot \frac{a}{g} \cdot \frac{(L3 + C)}{1000} \quad M_y = 0$$



$$M_r = W \cdot \frac{(L3 + C)}{1000} \quad M_{r0} = W \cdot \frac{a}{g} \cdot \frac{(L3 + C)}{1000}$$

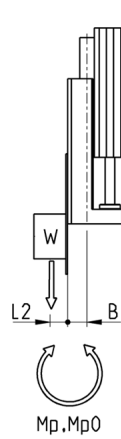
$$\frac{M_p}{M_{p,max}} + \frac{M_y}{M_{y,max}} + \frac{M_r}{M_{r,max}} \leq 1^*$$

$$\frac{M_{p0}}{M_{p0,max}} + \frac{M_{y0}}{M_{y0,max}} + \frac{M_{r0}}{M_{r0,max}} \leq 1^*$$

3.3 Moment Check (Vertical)

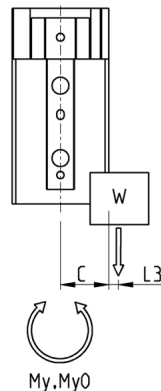
Calculate actual moment: $M_p, M_{p0}, M_y, M_{y0}, M_r, M_{r0}$ (Nm)

*Check



$$M_p = W \cdot \frac{(L2 + B)}{1000}$$

$$M_{p0} = W \cdot \frac{(L2 + B)}{1000} + W \cdot \frac{a}{g} \cdot \frac{(L2 + B)}{1000}$$



$$M_y = W \cdot \frac{(L3 + C)}{1000}$$

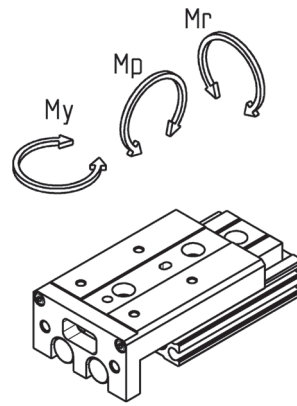
$$M_{y0} = W \cdot \frac{(L3 + C)}{1000} + W \cdot \frac{a}{g} \cdot \frac{(L3 + C)}{1000}$$

$$\frac{M_p}{M_{p,max}} + \frac{M_y}{M_{y,max}} \leq 1^*$$

$$\frac{M_{p0}}{M_{p0,max}} + \frac{M_{y0}}{M_{y0,max}} \leq 1^*$$

4. Graphs deflection

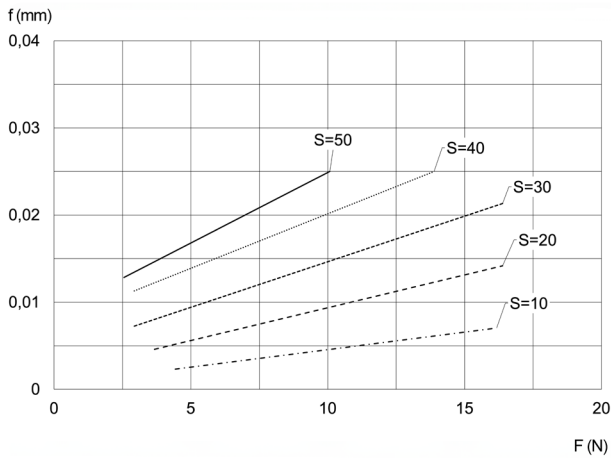
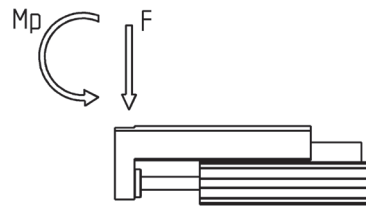
Below are the graphs of table deflection, divided according to the type of moment generated by the load. By knowing the value of the load and the slide model, check that the table deflection is appropriate for the required application.



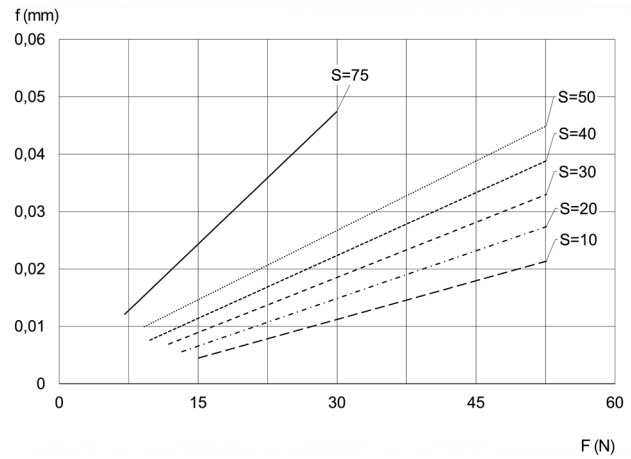
4.1 Graphs deflection due to Mp Moment

Graph deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the mini slide. In this situation the load generates a moment M_p .

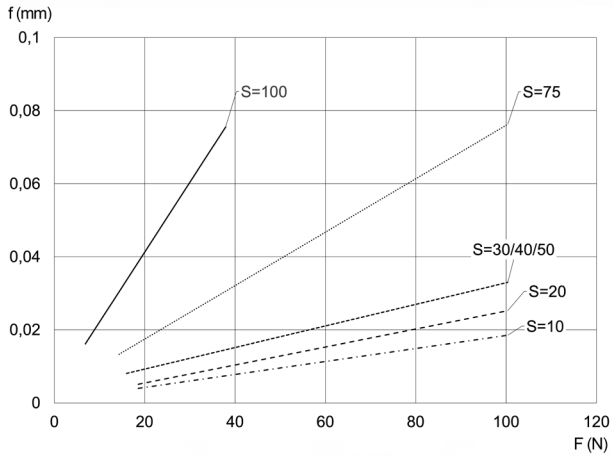
f = deflection of the table [mm]
 s = stroke [mm]



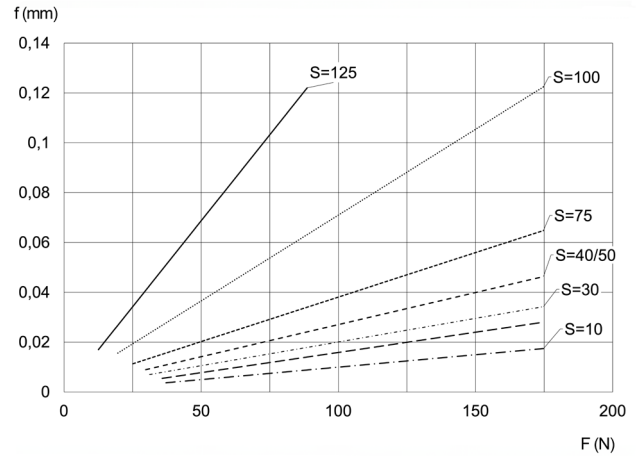
MST6



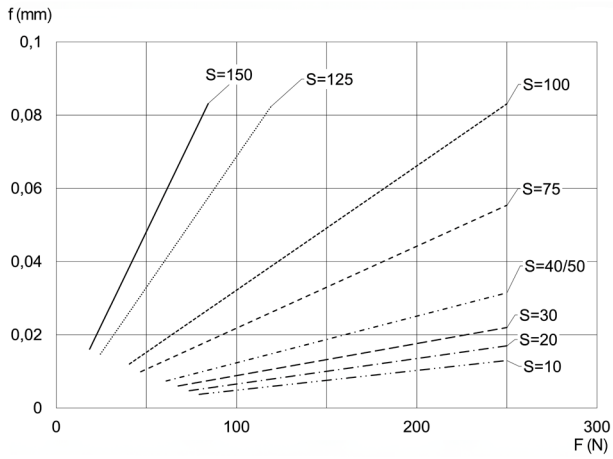
MST8



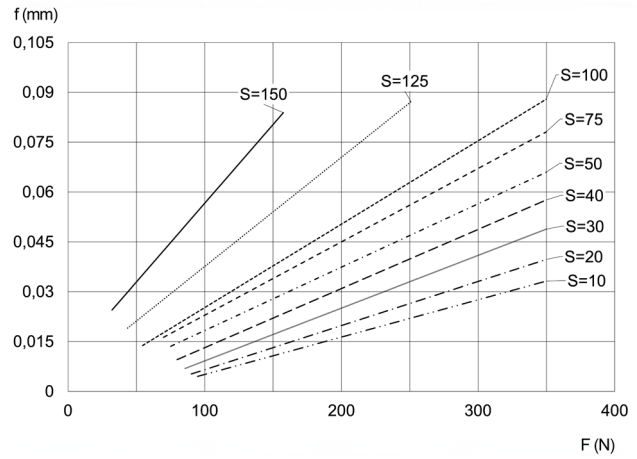
MST12



MST16



MST20

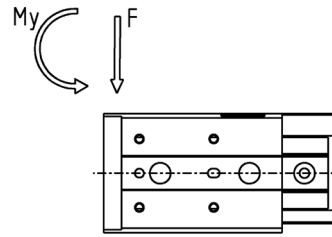


MST25

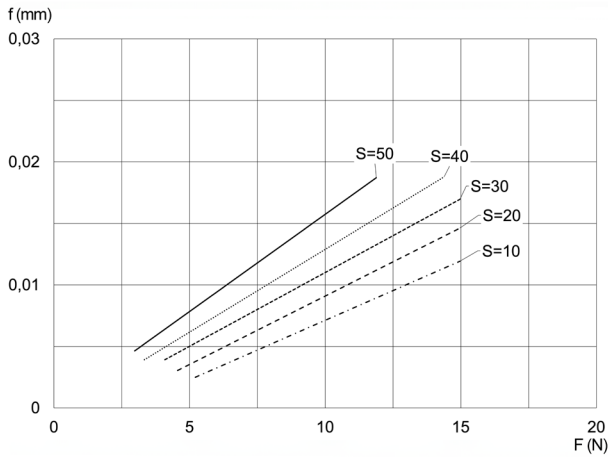
4.2 Graphs deflection due to My Moment

Graph deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the mini slide. In this situation the load generates a moment M_y .

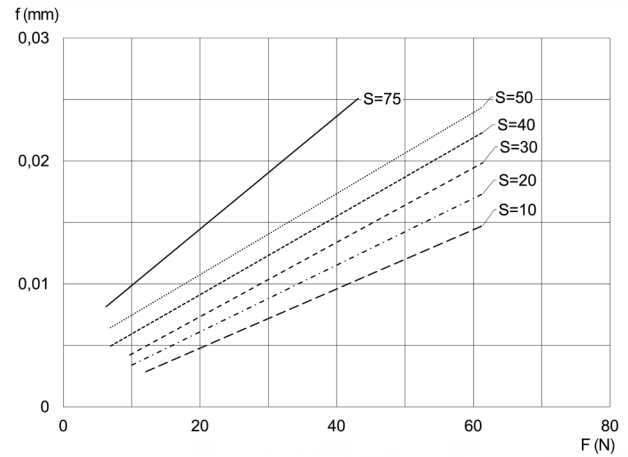
f = deflection of the table [mm]
 s = stroke [mm]



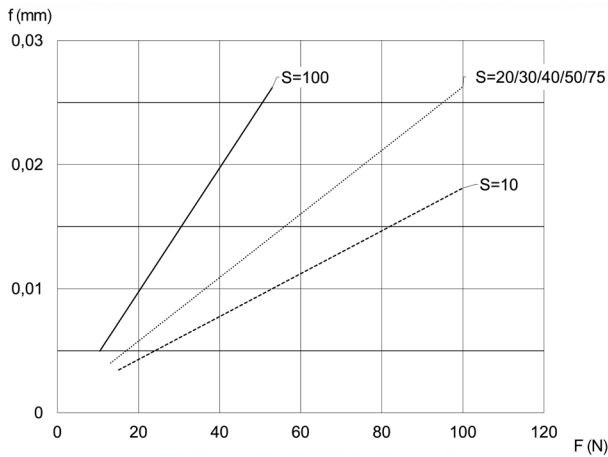
PNEUMATIC MINI SLIDES SERIES MST



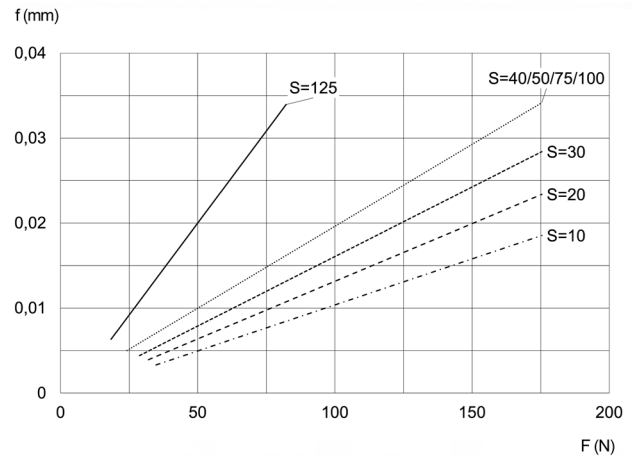
MST6



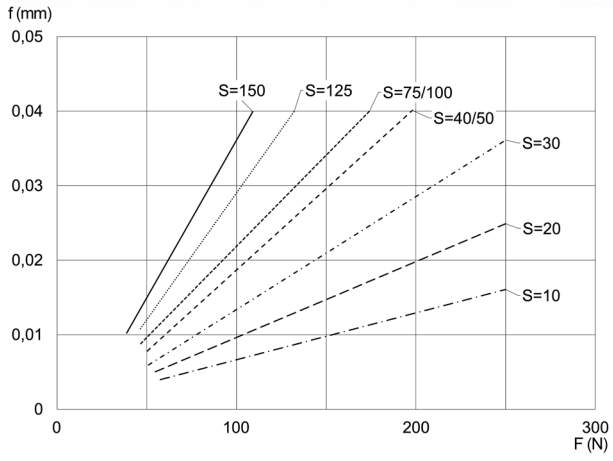
MST8



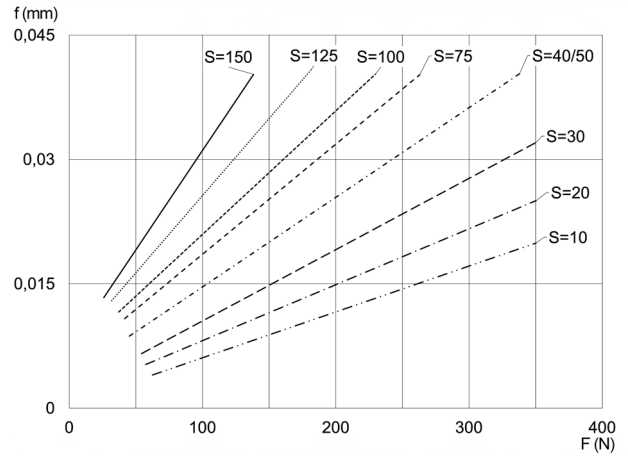
MST12



MST16



MST20

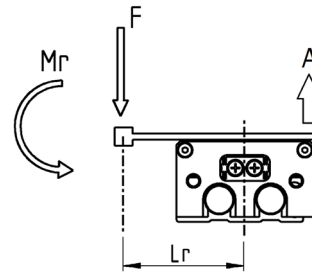


MST25

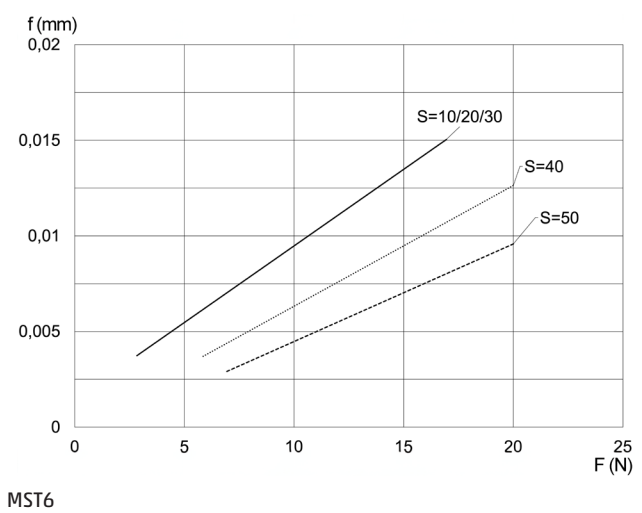
4.3 Graphs deflection due to Mr Moment

Graph deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the mini slide. In this situation the load generates a moment M_r .

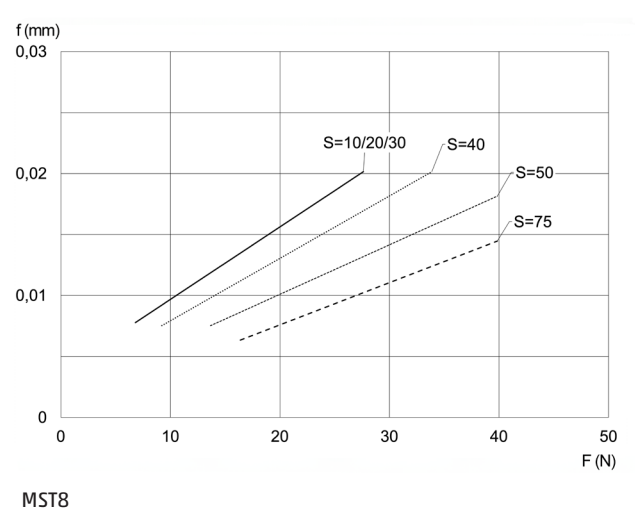
f = deflection of the table [mm]
 s = stroke [mm]



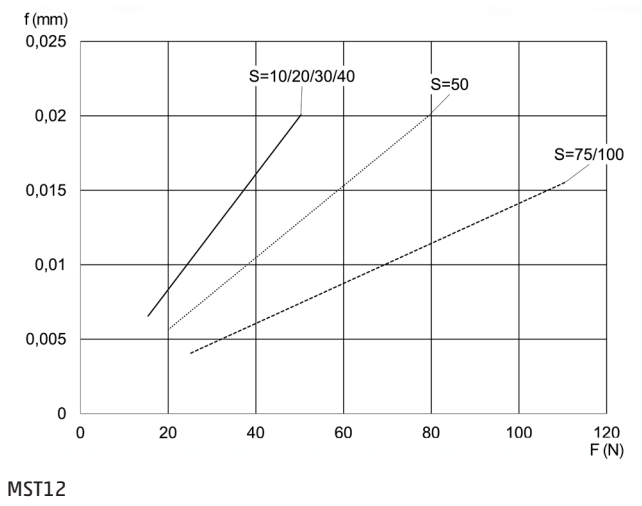
PNEUMATIC MINI SLIDES SERIES MST



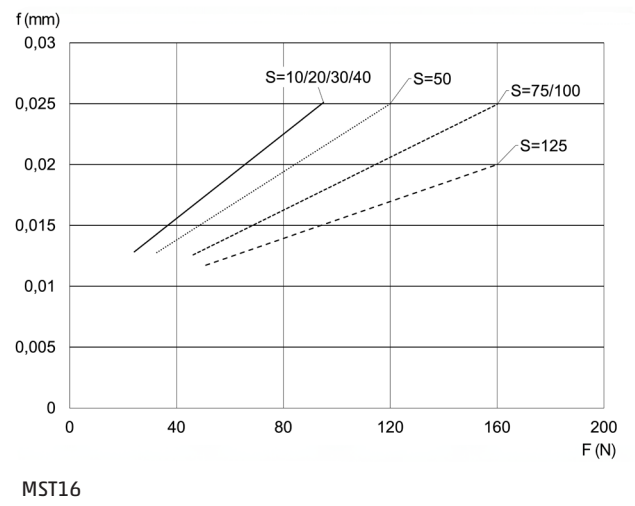
MST6



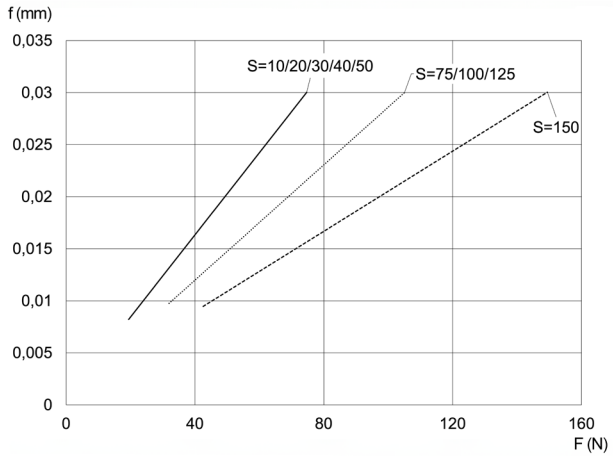
MST8



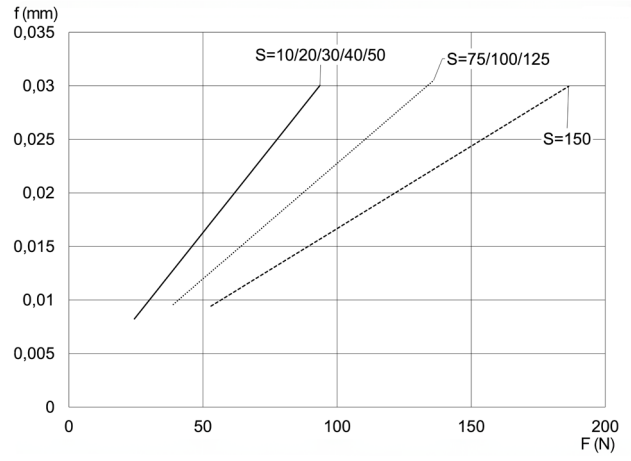
MST12



MST16

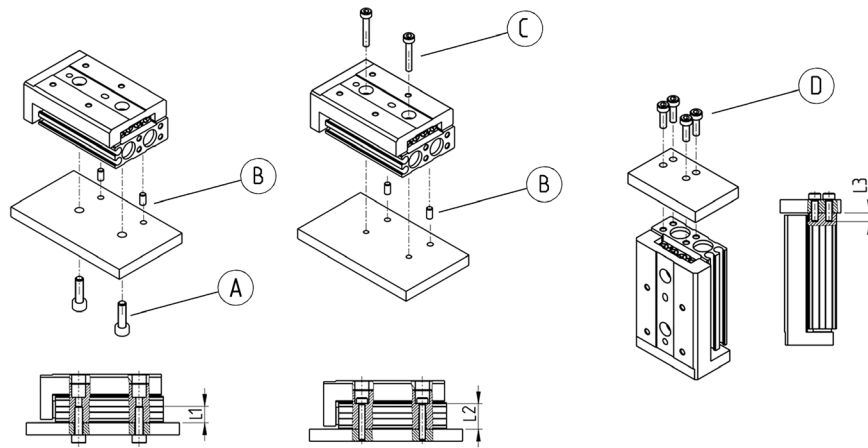


MST20



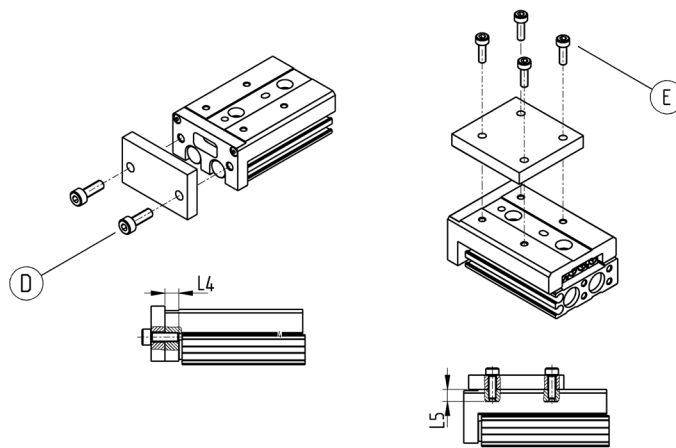
MST25

Slide assembly examples



Mod.	A	B	C	D	L1 (mm)	L2 (mm)	L3 (mm)
MST6	M4	Ø3	M3	M2,5	8	10,8	3,5
MST8	M4	Ø3	M3	M3	8	12,5	4
MST12	M5	Ø4	M4	M4	10	18	6
MST16	M6	Ø5	M5	M5	12	23,5	7
MST20	M6	Ø5	M5	M5	12	28,5	8
MST25	M8	Ø6	M6	M6	16	34,5	10

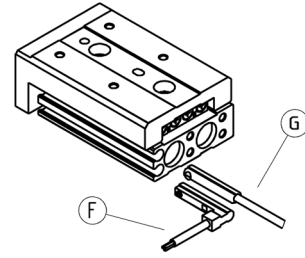
Load application examples



Mod.	D	E	L4 (mm)	L5 (mm)
MST6	M3	M3	5	4
MST8	M4	M3	6	4,5
MST12	M5	M4	8	5,5
MST16	M6	M5	10	7,5
MST20	M6	M5	13	9,5
MST25	M8	M6	15	13

Example of mounting: sensors

Series CSD

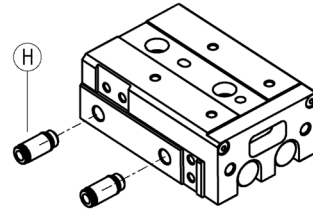


Mod.

F = CSD-H-334
CSD-H-364

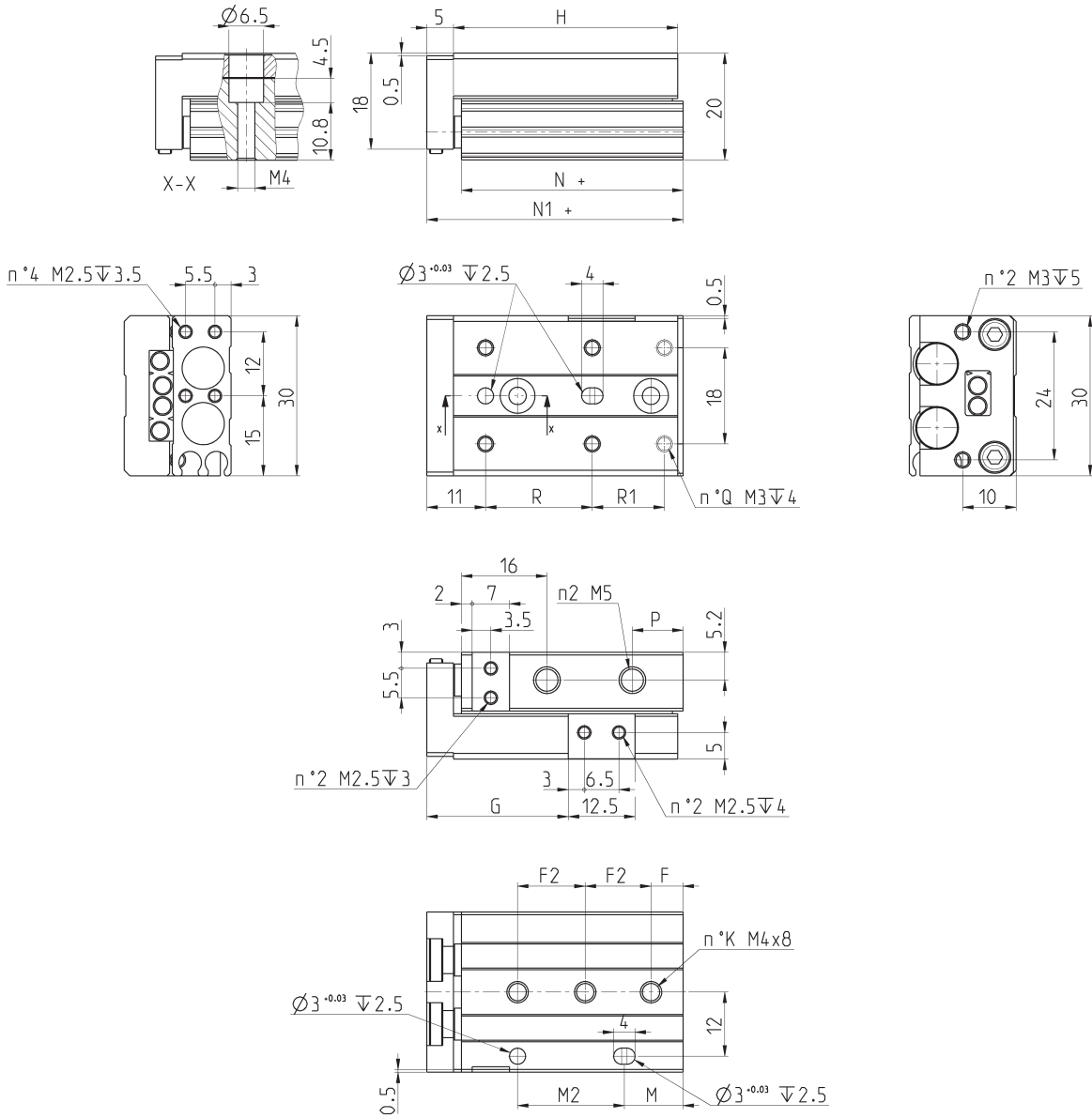
G = CSD-D-334
CSD-D-364

Air supply ports



Mod.	H
MST6	M5
MST8	M5
MST12	M5
MST16	M5
MST20	G1/8
MST25	G1/8

Pneumatic mini slides Series MST

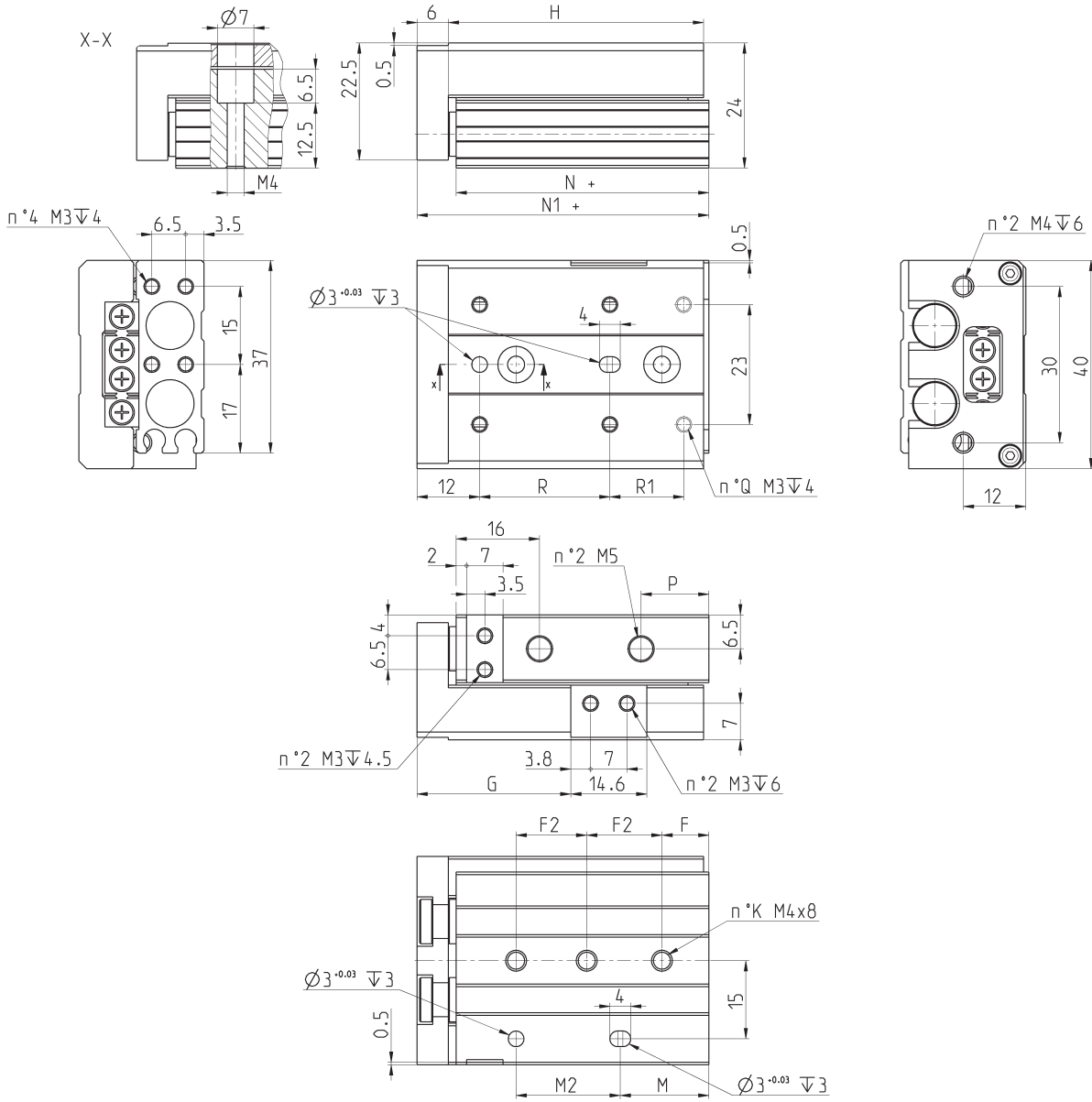


Mod.	M2	M	F	F2	R	G	H	P	N1+	N+	Q	K
MST6-10	20	11	6	25	20	26.5	42	9.5	48	41.5	4	2
MST6-20	20	21	6	35	30	36.5	52	9.5	58	51.5	4	2
MST6-30	20	31	11	20	20	46.5	62	8	68	61.5	6	3
MST6-40	30	43	13	30	28	56.5	84	18	90	83.5	6	3
MST6-50	48	41	17	24	38	66.5	100	24	106	99.5	6	4

Pneumatic mini slides Series MST

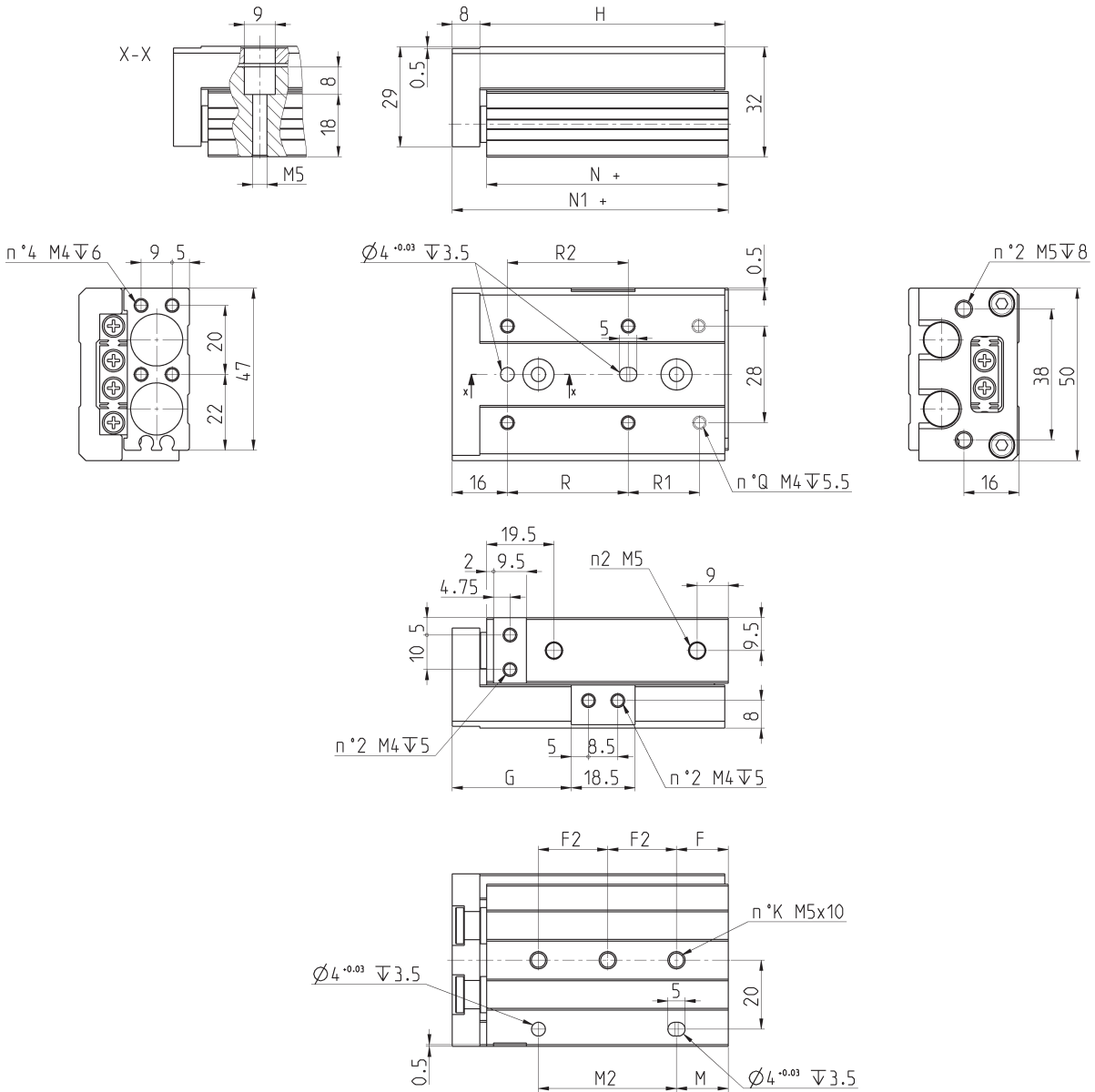


PNEUMATIC MINI SLIDES SERIES MST



Mod.	M2	M	F	F2	R	G	H	P	N1+	N+	Q	K
MST8-10	20	17	9	28	25	29.5	49	13	56	48.5	4	2
MST8-20	30	12	12	30	25	39.5	54	8	61	53.5	4	2
MST8-30	20	33	13	20	40	49.5	65	8	72	64.5	4	3
MST8-40	28	43	15	28	50	59.5	83	8	90	82.5	4	3
MST8-50	46	43	20	23	38	69.5	101	8	108	100.5	6	4
MST8-75	56	83	27	28	50	94.5	151	8	158	150.5	6	5

Pneumatic mini slides Series MST

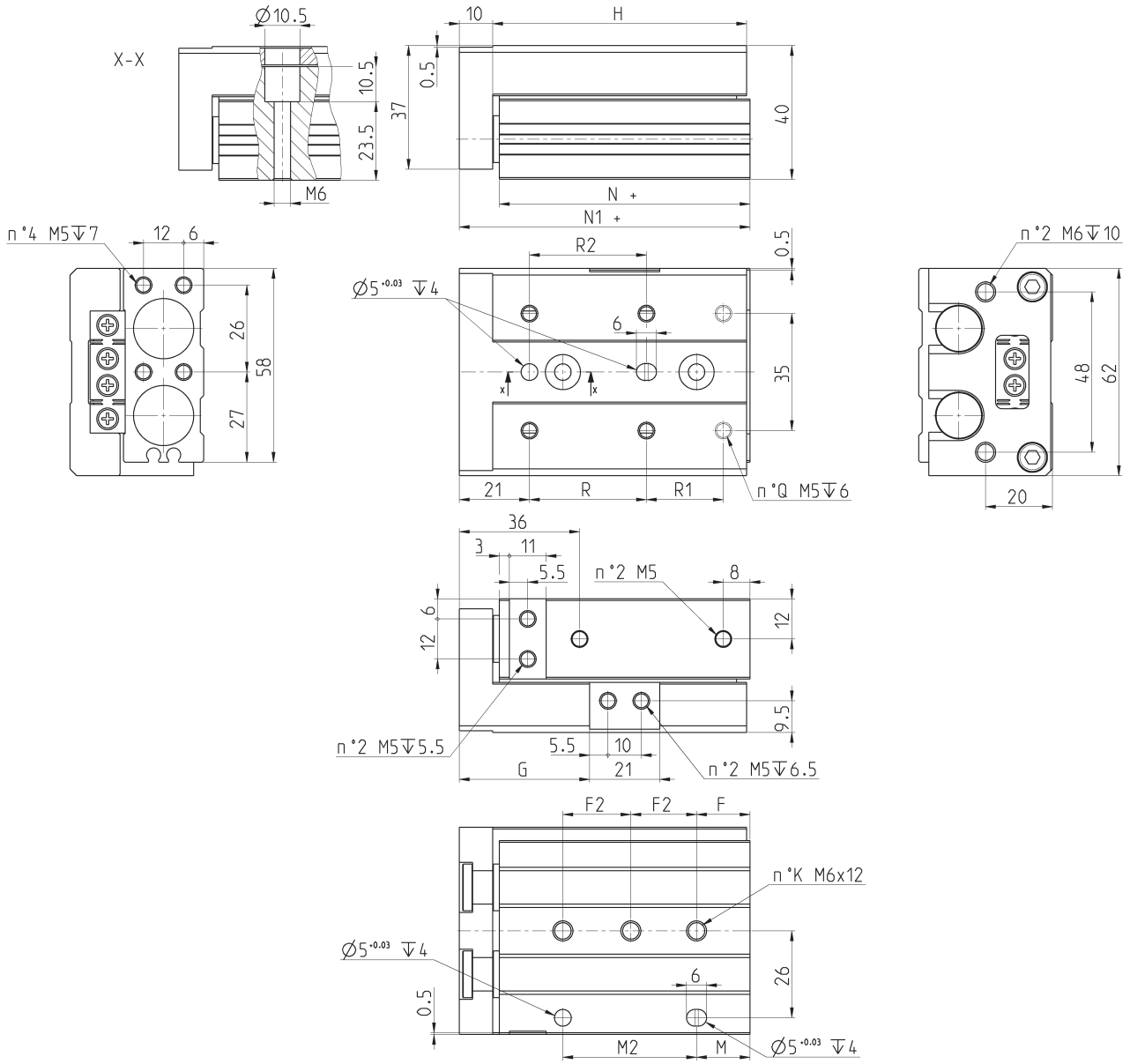


Mod.	M2	M	F	F2	R	G	H	N1+	N+	Q	K
MST12-10	40	15	15	40	35	34.5	71	80	70	4	2
MST12-20	40	15	15	40	35	44.5	71	80	70	4	2
MST12-30	40	15	15	40	35	54.5	71	80	70	4	2
MST12-40	25	42	17	25	50	64.5	83	92	82	4	3
MST12-50	36	51	15	36	35	74.5	105	112	102	6	3
MST12-75	72	61	25	36	55	99.5	149	158	148	6	4
MST12-100	76	111	35	38	65	124.5	203	212	202	6	5

Pneumatic mini slides Series MST

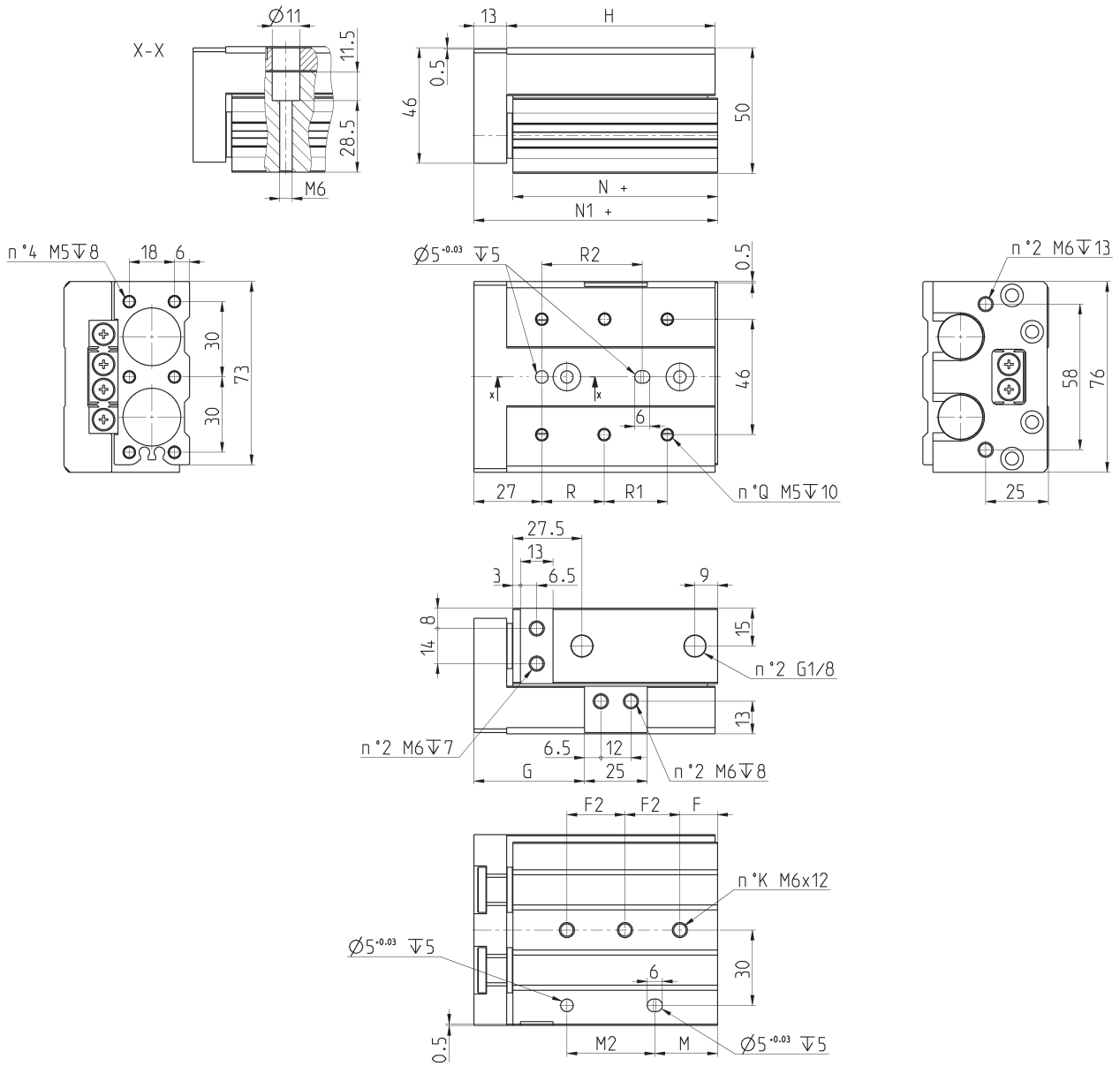


PNEUMATIC MINI SLIDES SERIES MST



Mod.	M2	M	F	F2	R	G	H	N1+	N+	Q	K
MST16-10	40	16	16	40	35	39	76	87	75	4	2
MST16-20	40	16	16	40	35	49	76	87	75	4	2
MST16-30	40	16	16	40	35	59	76	87	75	4	2
MST16-40	50	16	16	50	40	69	86	97	85	4	3
MST16-50	50	21	21	30	30	79	101	112	100	6	3
MST16-75	70	26	26	35	55	104	151	162	150	6	4
MST16-100	70	109	39	35	65	129	199	210	198	6	5
MST16-125	70	159	19	35	70	154	249	260	248	6	7

Pneumatic mini slides Series MST

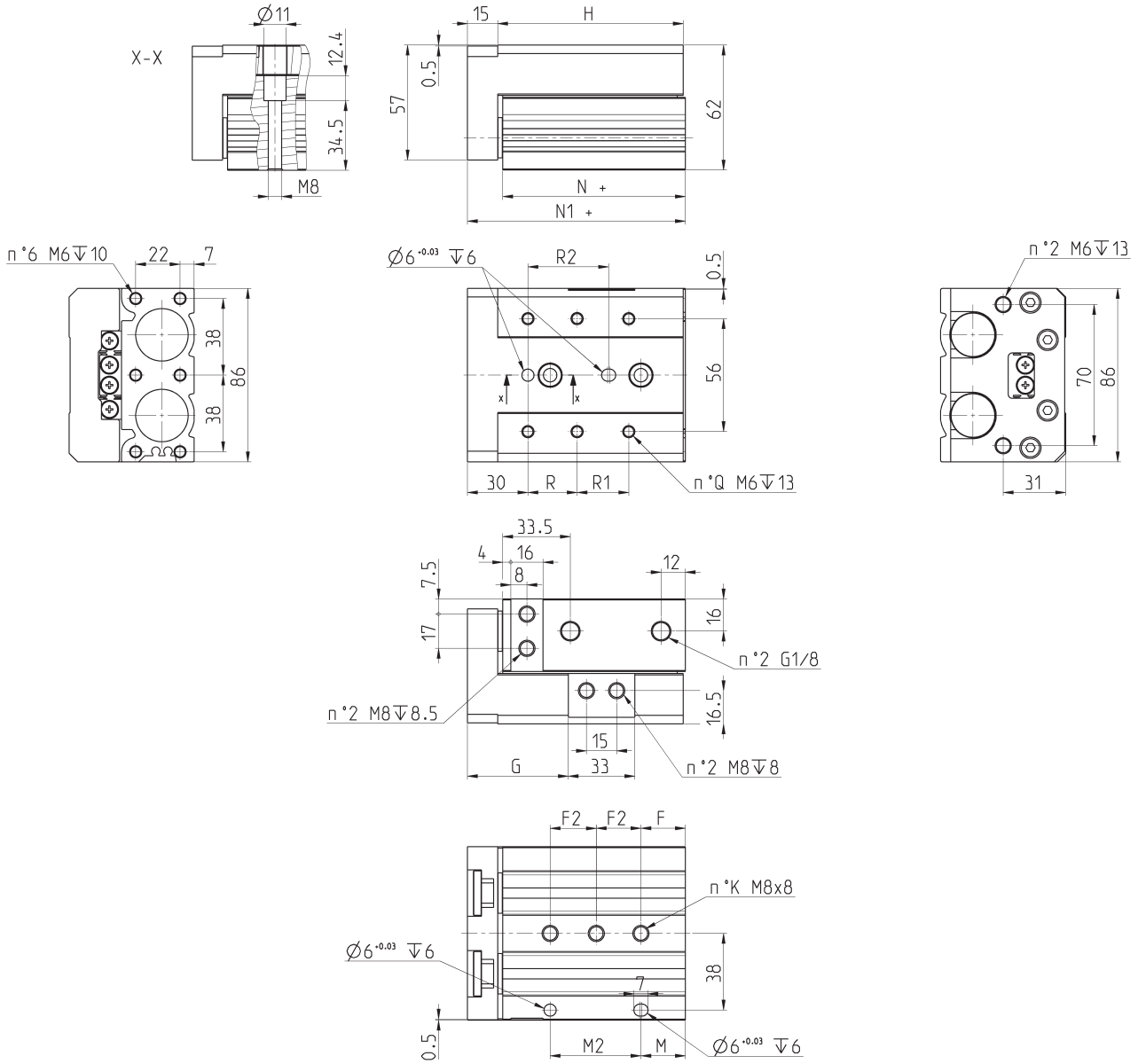


Mod.	M2	M	F	F2	R	R2	G	H	N1+	N+	Q	K
MST20-10	35	25	15	45	50	40	44	83	97	81.5	4	1
MST20-20	35	25	15	45	50	40	54	83	97	81.5	4	1
MST20-30	35	25	15	45	50	40	64	83	97	81.5	4	1
MST20-40	35	35	15	55	60	50	74	93	107	91.5	4	1
MST20-50	35	50	15	35	35	35	84	108	122	106.5	6	2
MST20-75	70	54	19	35	60	60	109	147	161	145.5	6	3
MST20-100	70	107	37	35	70	70	134	200	214	198.5	6	4
MST20-125	76	155	41	38	70	70	159	254	268	252.5	8	5
MST20-150	88	195	19	44	80	80	184	306	320	304.5	8	6

Pneumatic mini slides Series MST

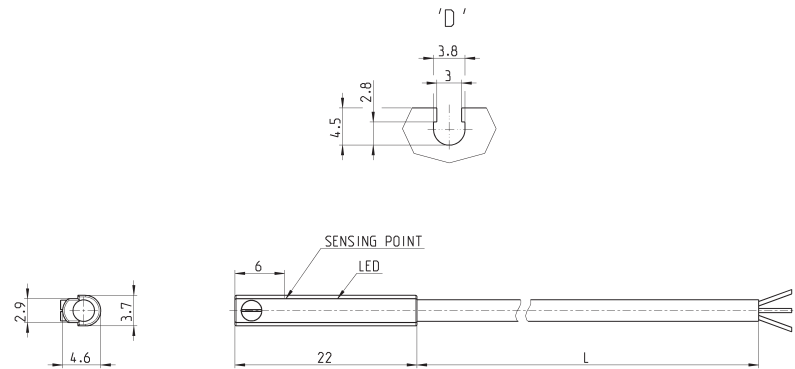


PNEUMATIC MINI SLIDES SERIES MST



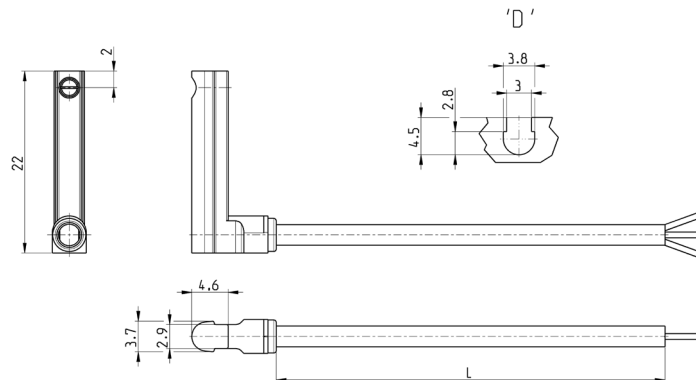
Mod.	M2	M	F	F2	R	R2	G	H	N1+	N+	Q	K
MST25-10	45	22	22	45	50	40	50	92	108	90.5	4	2
MST25-20	45	22	22	45	50	40	60	92	108	90.5	4	2
MST25-30	45	22	22	45	50	40	70	92	108	90.5	4	2
MST25-40	55	22	22	55	60	50	80	102	118	100.5	4	2
MST25-50	35	55	20	35	35	35	90	115	131	113.5	6	3
MST25-75	70	61	26	35	60	60	115	156	172	154.5	6	4
MST25-100	70	102	32	35	70	70	140	197	213	195.5	6	5
MST25-125	76	154	40	38	75	75	165	255	271	253.5	8	6
MST25-150	80	190	30	40	80	80	190	295	311	293.5	8	7

Magnetic proximity switches, 3-wire cable, D-slot



Mod.	Operation	Connections	Voltage	Output	Max. current	Max Load	Protection	L = length cable
CSD-D-334	Magneto-resistive	3 wires	10 ÷ 27 V DC	PNP	200 mA	6W	Against polarity reversing and overvoltage	2 m
CSD-D-334-5	Magneto-resistive	3 wires	10 ÷ 27 V DC	PNP	200 mA	6W	Against polarity reversing and overvoltage	5 m
CSD-D-374	Magneto-resistive	3 wires	10 ÷ 27 V DC	NPN	200 mA	6W	Against polarity reversing and overvoltage	2 m
CSD-D-374-5	Magneto-resistive	3 wires	10 ÷ 27 V DC	NPN	200 mA	6W	Against polarity reversing and overvoltage	5 m

Magnetic proximity switches, 3-wire cable, D-slot with 90° cable

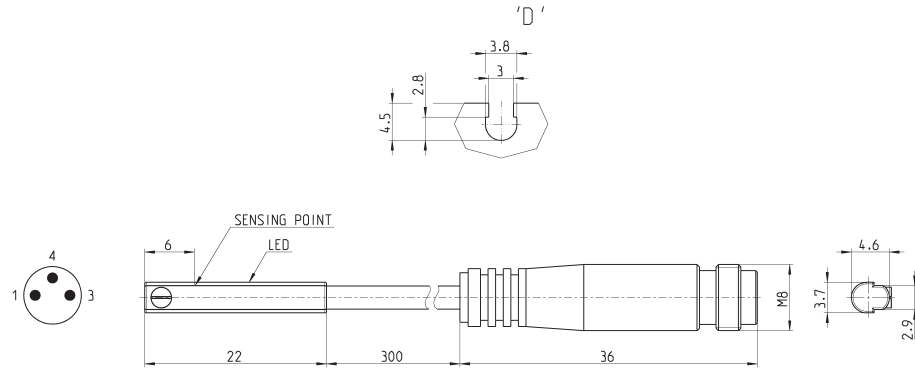


Mod.	Operation	Connections	Voltage	Output	Max. current	Max Load	Protection	L = length cable
CSD-H-334	Magneto-resistive	3 wires	10 ÷ 27 V DC	PNP	200 mA	6 W	Against polarity reversing and overvoltage	2 m
CSD-H-334-5	Magneto-resistive	3 wires	10 ÷ 27 V DC	PNP	200 mA	6 W	Against polarity reversing and overvoltage	5 m
CSD-H-374	Magneto-resistive	3 wires	10 ÷ 27 V DC	NPN	200 mA	6 W	Against polarity reversing and overvoltage	2 m
CSD-H-374-5	Magneto-resistive	3 wires	10 ÷ 27 V DC	NPN	200 mA	6 W	Against polarity reversing and overvoltage	5 m

Magnetic proximity switches, male M8 3-pin conn., D-slot, straight



Cable length: 0.3 m

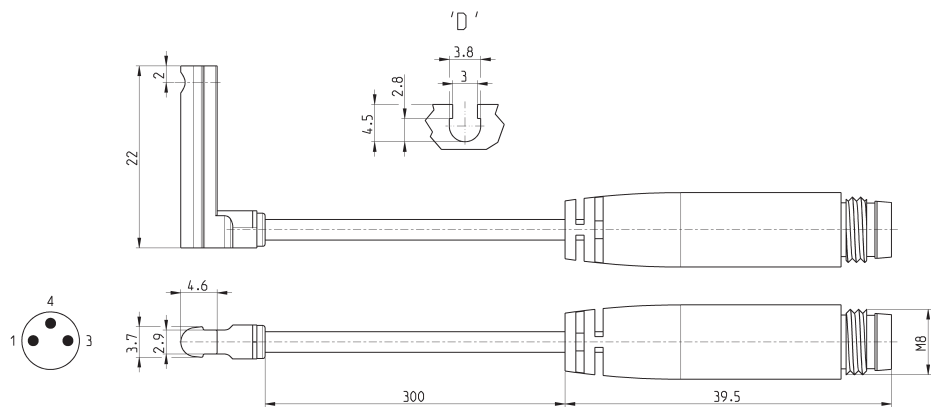


Mod.	Operation	Connection	Voltage	Output	Max current	Max load	Protection
CSD-D-364	Magneto-resistive	3 wires with M8 connector	10 ÷ 27 V DC	PNP	200 mA	6 W	Against polarity reversing and overvoltage
CSD-D-384	Magneto-resistive	3 wires with M8 connector	10 ÷ 27 V DC	NPN	200 mA	6 W	Against polarity reversing and overvoltage

Magnetic proximity switches, male M8 3-pin conn., D-slot, 90°

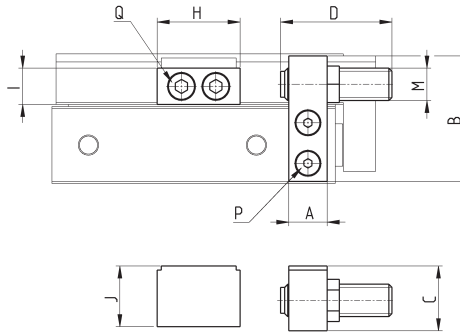


Cable length: 0.3 m



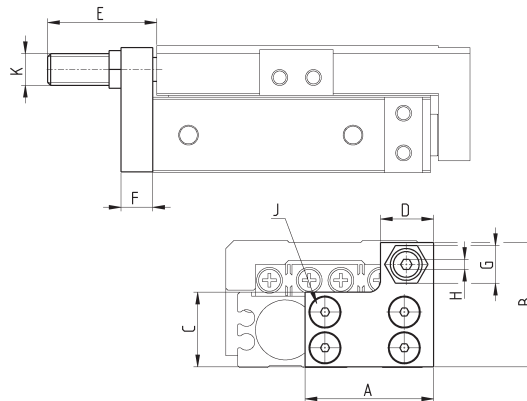
Mod.	Operation	Connection	Voltage	Output	Max current	Max load	Protection
CSD-H-364	Magneto-resistive	3 wires with M8 connector	10 ÷ 27 V DC	PNP	200 mA	6 W	Against polarity reversing and overvoltage
CSD-H-384	Magneto-resistive	3 wires with M8 connector	10 ÷ 27 V DC	NPN	200 mA	6 W	Against polarity reversing and overvoltage

Stroke adjusting screw at extension end



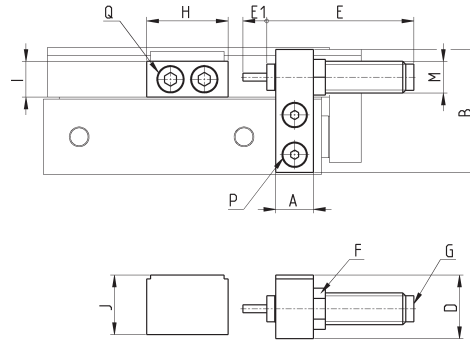
Mod.	Adjustable stroke range (mm)	A	B	C	D	E	F	M	P	H	I	J	Q
SR-6F	10	7	19	10.5	22.5	8	3	M6x1.0	M2.5 Length 10	12.5	6.5	10.5	M2.5 Length 10
SR-8F	10	7	23	15.5	27.5	11	4	M8x1.0	M2.5 Length 16	16.6	7	15.5	M2.5 Length 16
SR-12F	10	9.5	31	16	27.5	11	4	M8x1.0	M2.5 Length 14	20.5	9	15	M2.5 Length 14
SR-16F	10	11	37	19	30.5	12.7	5	M10x1.0	M2.5 Length 18	23	11	18.5	M2.5 Length 18
SR-20F	10	13	47	26	34	19	6	M14x1.5	M2.5 Length 25	27	12	25.5	M2.5 Length 25
SR-25F	10	16	54	24	34	19	6	M14x1.5	M2.5 Length 20	23	17	23	M2.5 Length 20

Stroke adjusting screw at retraction end



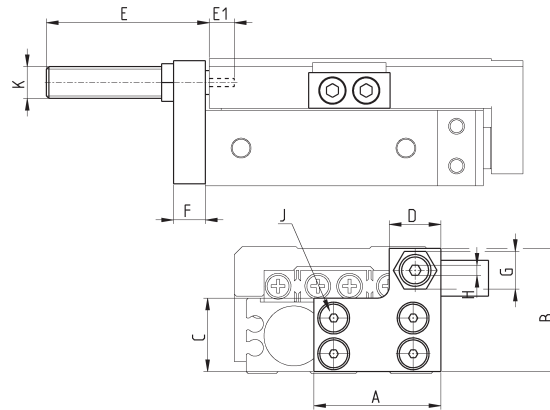
Mod.	Adjustable stroke range (mm)	A	B	C	D	E	F	G	H	J	K
SR-6R	10	18	19	11.2	8	22.5	6	8	3	M2.5 Length 6	M6x1.0
SR-8R	10	25	23.2	13.2	15	27.5	8	11	4	M3 Length 8	M8x1.0
SR-12R	10	32	31	18.5	13	27.5	8	11	4	M4 Length 8	M8x1.0
SR-16R	10	39	38	23	17	30.5	10	12.7	5	M5 Length 10	M10x1.0
SR-20R	10	48	48	29	20.5	34	12	19	6	M5 Length 12	M14x1.5
SR-25R	10	51	53.3	34	25	34	15	19	6	M6 Length 16	M14x1.5

Shock absorber screw at extension end



Mod.	A	B	C	D	E	E1	F	M	P	H	I	J	Q
EA-8F	7	23	14	15.5	38	6	11	M8x1.0	M3 Länge 16	16.6	7	15.5	M3 Länge 16
EA-12F	9.5	31	14.5	16	38	6	11	M8x1.0	M4 Länge 14	20.5	9	15	M4 Länge 14
EA-16F	11	37	17.5	19	43	7	12.7	M10x1.0	M5 Länge 18	23	11	18.5	M5 Länge 18
EA-20F	13	47	23.5	26	76	12	19	M14x1.5	M6 Länge 25	27	12	25.5	M6 Länge 25
EA-25F	16	54	22	84	76	12	19	M14x1.5	M6 Länge 20	33	17	23	M6 Länge 20

Shock absorber screw at retraction end



Mod.	A	B	C	D	E	F	G	H	J	K
EA-8R	25	23.2	13.2	15	38	6	8	11	M3 Length 8	M8x1.0
EA-12R	32	31	18.5	13	38	6	8	11	M4 Length 8	M8x1.0
EA-16R	39	38	23	17	43	8	10	12.7	M5 Length 10	M10x1.0
EA-20R	48	48	29	20.5	76	12	12	19	M5 Length 12	M14x1.5
EA-25R	51	53.3	34	25	76	12	15	19	M6 Length 16	M14x1.5