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Mini slide, Series MSC-MG-EM

- Ø 8 mm
- double-acting
- with magnetic piston
- Cushioning Elastic with metal end stop
- Easy2Combine capable
- with double piston
- With integrated “Medium Performance” ball rail system
- Scope of delivery: incl. centering rings

Working pressure min./max.	3 ... 10 bar
Ambient temperature min./max.	0 ... 60 °C
Medium	Compressed air
Max. particle size	5 µm
Oil content of compressed air	0 ... 1 mg/m³
Pressure for determining piston forces	6.3 bar
Repetitive precision	0,02 mm
Weight	See table

Technical data

Piston Ø	8 mm	12 mm	16 mm	20 mm	25 mm
Stroke 10	R480643754	R480643760	R480643767	R480643774	R480643781
20	R480643755	R480643761	R480643768	R480643775	R480643782
30	R480643756	R480643762	R480643769	R480643776	R480643783
40	R480643757	R480643763	R480643770	R480643777	R480643784
50	R480643758	R480643764	R480643771	R480643778	R480643785
80	R480643759	R480643765	R480643772	R480643779	R480643786
100	-	R480643766	R480643773	R480643780	R480643787

Technical information

The pressure dew point must be at least 15 °C under ambient and medium temperature and may not exceed 3 °C .
The oil content of compressed air must remain constant during the life cycle.
Use only the approved oils from AVENTICS. Further information can be found in the “Technical information” document (available in the MediaCentre).

Repetitive precision after 100 consecutive strokes: 0,02 mm

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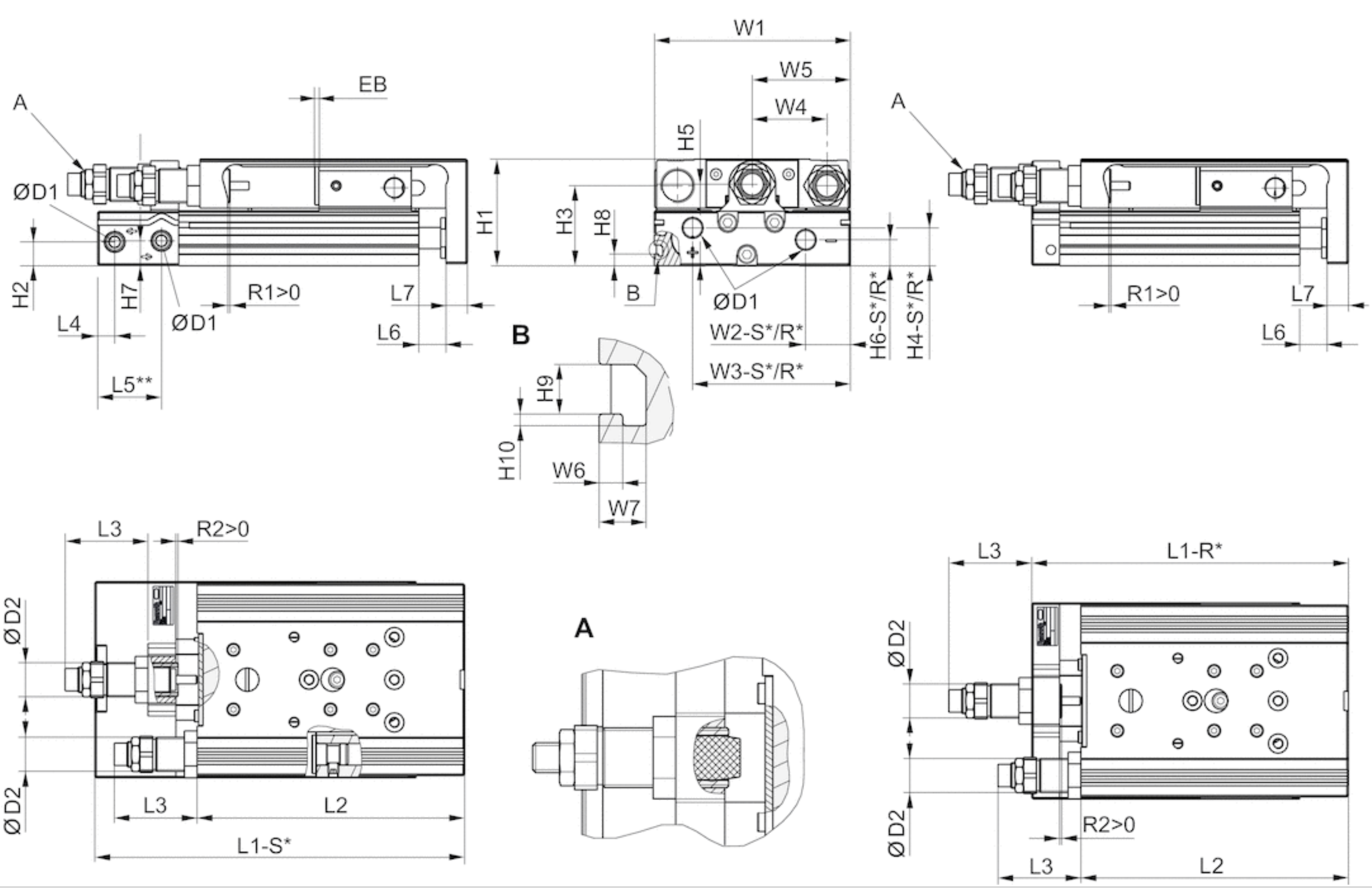
Technical information

Extracting piston force, theoretical	63 N	143 N	253 N	396 N	619 N
Cushioning energy	0,03 J	0,06 J	0,12 J	0,3 J	0,4 J

Material	
Housing	Aluminum, anodized
Piston rod	Stainless steel
Front plate	Aluminum, anodized
Seal	Polyurethane
Ball rail table	Aluminum, anodized
Guide rail	Steel, hardened
Centering rings	Stainless steel

Dimensions

Dimensions



R*: base with air connections only at the back
S*: base with air connections at the back and sides
** Ø 8 has a different reference plane.

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Dimensions

Piston Ø	Ø D1	Ø D2	H1	H2	H3	H4-R	H4-S	H5	H6-R	H6-S	H7	H8	H9	H10	L3 1)	L4	L5 2)
8 mm	M5	M10x1	28	9.6	20.5	-	7.5	19.5	-	5.5	18	-	-	-	27.8	9.8	–
8 mm	M5	M10x1	28	9.6	20.5	-	7.5	19.5	-	5.5	18	-	-	-	27.8	9.8	–
12 mm	M5	M12x1	34	5.7	25	11.2	11.2	24.5	5.7	5.7	8.3	-	-	-	31.8	7.2	22.5
16 mm	M5	M12x1	40	7.2	29	12.2	12.2	31	7.7	7.7	11.2	-	-	-	30	6.5	17.7
20 mm	G 1/8	M16x1,5	50	11.2	37.5	17.3	17.3	38.2	11.7	12.2	11.7	5.5	4.2	1	43.7	8	30
25 mm	G 1/8	M18x1,5	60	14.2	44	15.5	22.9	46.5	13.2	21.7	16.2	6.9	5.2	1.5	41.9	9	31

Piston Ø	L6	L7	W1	W2-R	W2-S	W3-R	W3-S	W4	W5	W6	W7
8 mm	1.9	6	50.2	–	19.3	–	30.5	18	W1/2	–	–
8 mm	1.9	6	50.2	–	19.3	–	30.5	18	W1/2	–	–
12 mm	2	8	66	28.8	28.8	53	53	24.5	W1/2	–	–
16 mm	2	10	76	31	31	60.5	60.5	30	W1/2	–	–
20 mm	2.1	10	92	10	21	74	74	35	W1/2	2	4
25 mm	2.1	12	112	11	14	92	92	44	W1/2	2.5	4.8

S = stroke

1) max.

2) Ø 8 has a different reference plane.

Stroke-dependent dimensions

Piston Ø	S=10 EB	S=20 EB	S=30 EB	S=40 EB	S=50 EB	S=80 EB	S=100 EB	S=10 L1-R
8 mm	32	22	12	2	2	2	–	–
8 mm	32	22	12	2	2	2	–	–
12 mm	32	22	12	2	2	2	2	111
16 mm	22	12	2	2	2	2	2	103.5
20 mm	22	12	2	2	2	2	2	115
25 mm	32	22	12	2	2	2	2	138.5

S=20 L1-R	S=30 L1-R	S=40 L1-R	S=50 L1-R	S=80 L1-R	S=100 L1-R	S=10 L1-S	S=20 L1-S
–	–	–	–	–	–	101.7	101.7
–	–	–	–	–	–	101.7	101.7
111	111	111	126	172	192	127.9	127.9
103.5	103.5	113.5	128.5	174.5	194.5	114.4	114.4
115	115	125	140	185	205	139.9	139.9
138.5	138.5	138.5	151.5	197.5	217.5	162.2	162.2

S=30 L1-S	S=40 L1-S	S=50 L1-S	S=80 L1-S	S=100 L1-S	S=10 L2	S=20 L2	S=30 L2	S=40 L2
101.7	101.7	121.7	171.7	–	93.5	93.5	93.5	93.5
101.7	101.7	121.7	171.7	–	93.5	93.5	93.5	93.5
127.9	127.9	142.9	188.9	208.9	98.8	98.8	98.8	98.8
114.4	124.4	139.4	185.4	205.4	90.4	90.4	90.4	100.4
139.9	149.9	164.9	209.9	229.9	100.5	100.5	100.5	110.5
162.2	162.2	175.2	221.2	241.2	121.5	121.5	121.5	121.5

S=50 L2	S=80 L2	S=100 L2	S=10 R1 1)	S=20 R1 1)	S=30 R1 1)	S=40 R1 1)	S=50 R1 1)
113.5	163.5	–	4.2	4.2	4.2	4.2	4.2

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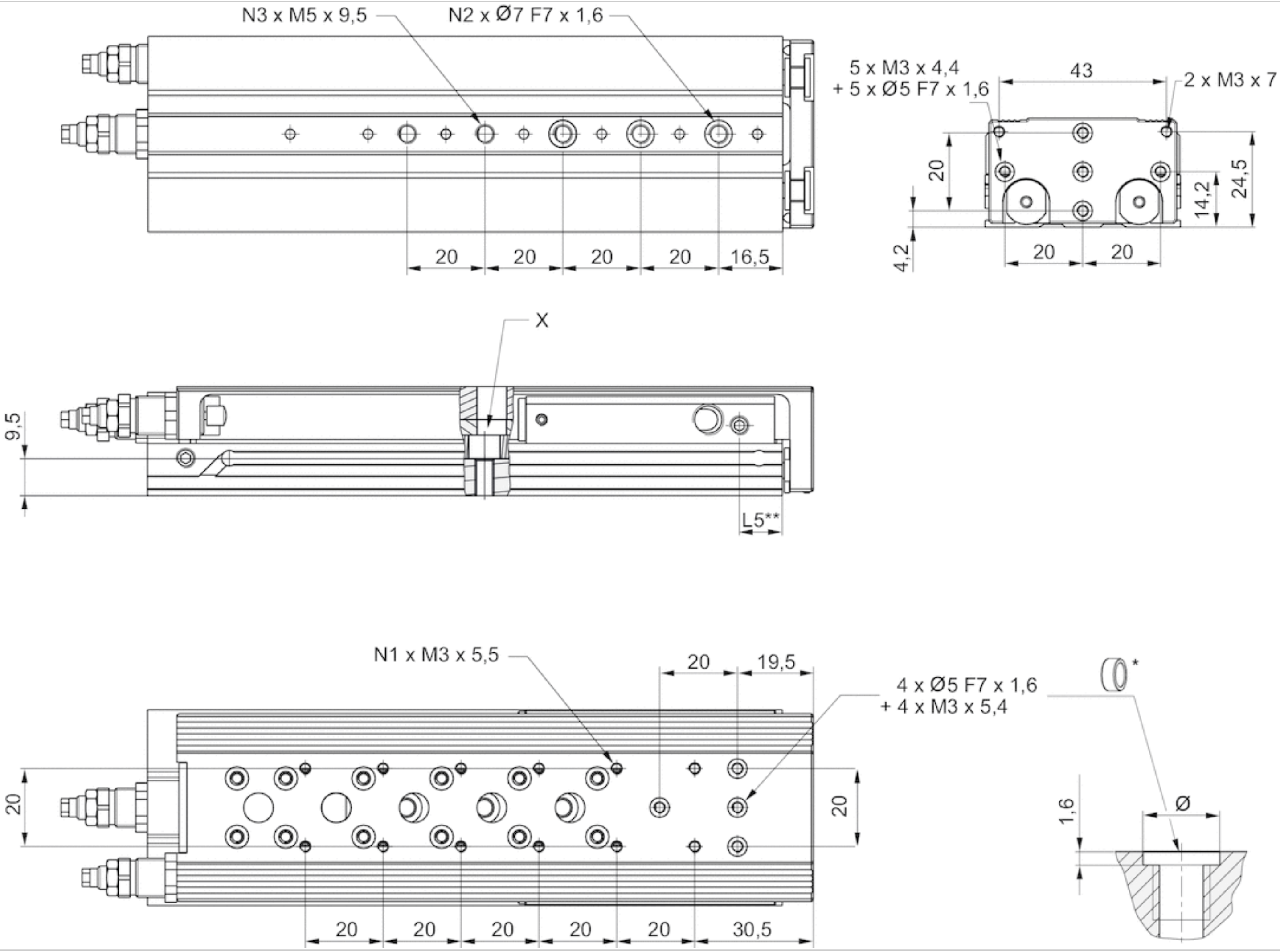
S=50 L2	S=80 L2	S=100 L2	S=10 R1 1)	S=20 R1 1)	S=30 R1 1)	S=40 R1 1)	S=50 R1 1)
113.5	163.5	–	4.2	4.2	4.2	4.2	4.2
113.8	159.8	179.8	5.7	5.7	5.7	5.7	5.7
115.4	161.4	181.4	8.7	8.7	8.7	8.7	8.7
125.5	170.5	190.5	12.4	12.4	12.4	12.4	12.4
134.5	180.5	200.5	11.5	11.5	11.5	11.5	10.5

S = stroke
R1 = stroke setting range for forward stroke
R2 = stroke setting range for return stroke
1) max.

Dimensions

MSC-08



* = centering rings
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Dimensions

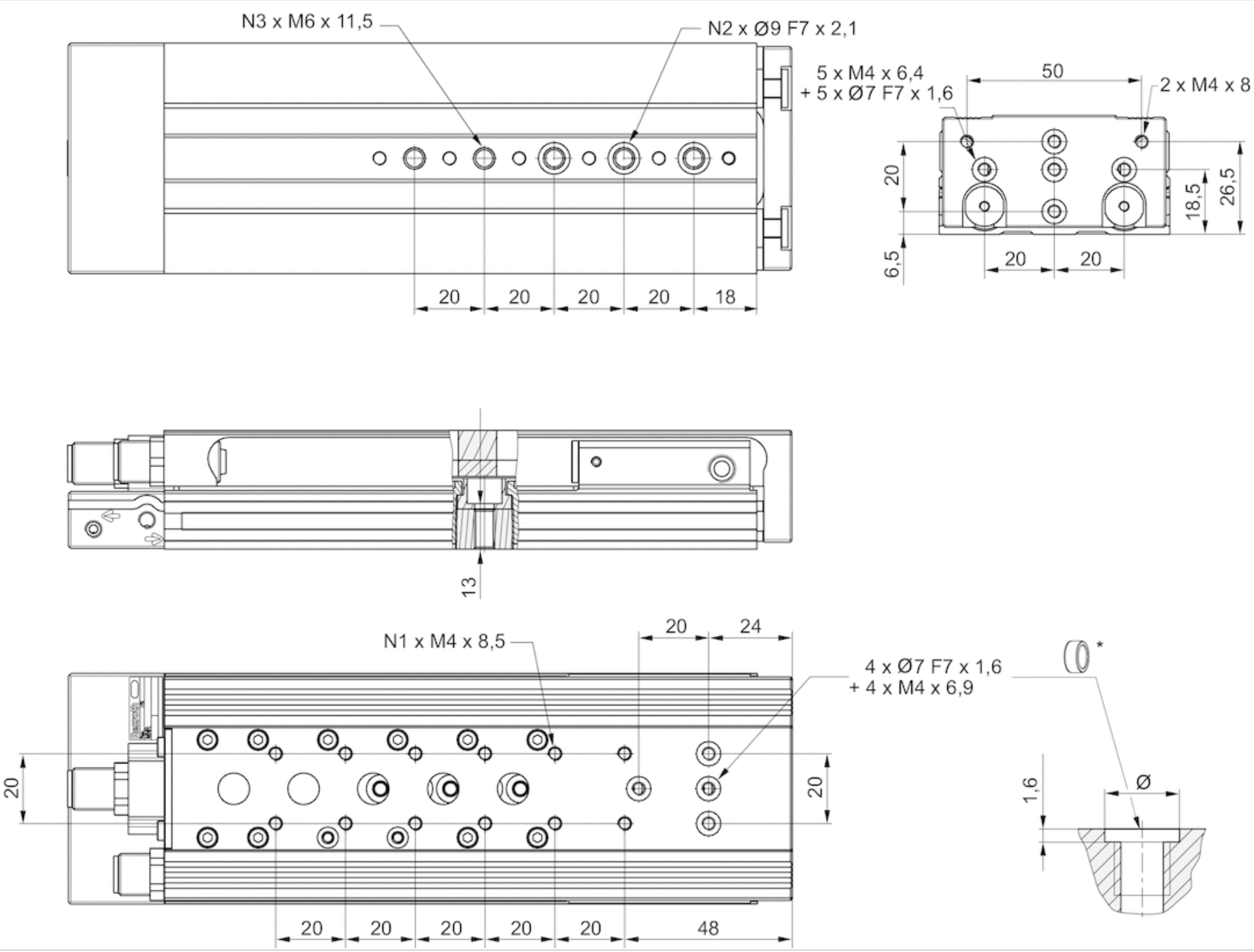
Piston Ø	S	N1	N2	N3	L5	X
8 mm	10	4	2	2	11	-
8 mm	20	4	2	2	11	-
8 mm	30	4	2	2	11	-
8 mm	40	4	2	2	11	-
8 mm	50	4	3	3	11	1)
8 mm	80	8	3	5	11	-

S = stroke

1) Access to the through hole only after removal of the stroke limitation bolts

Dimensions

MSC-12



* = centering rings

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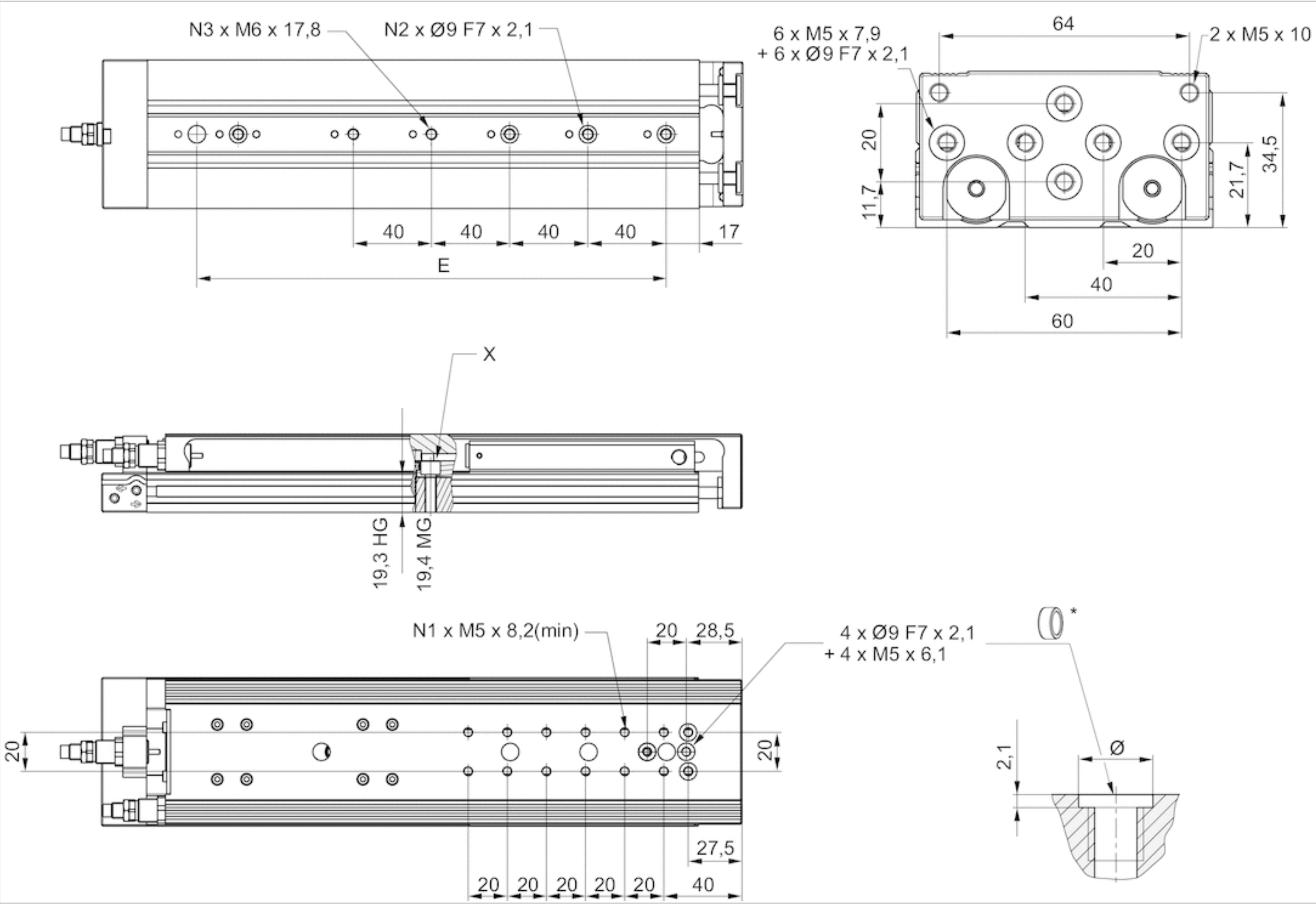
Dimensions

Piston Ø	S	N1	N2	N3
12 mm	10	2	2	2
12 mm	20	2	2	2
12 mm	30	2	2	2
12 mm	40	2	2	2
12 mm	50	4	3	3
12 mm	80	6	3	5
12 mm	100	8	3	5

S = stroke

Dimensions

MSC-16



* = centering rings

Dimensions

Piston Ø	S	N1	N2	N3	X
16 mm	10	2	2	2	1)

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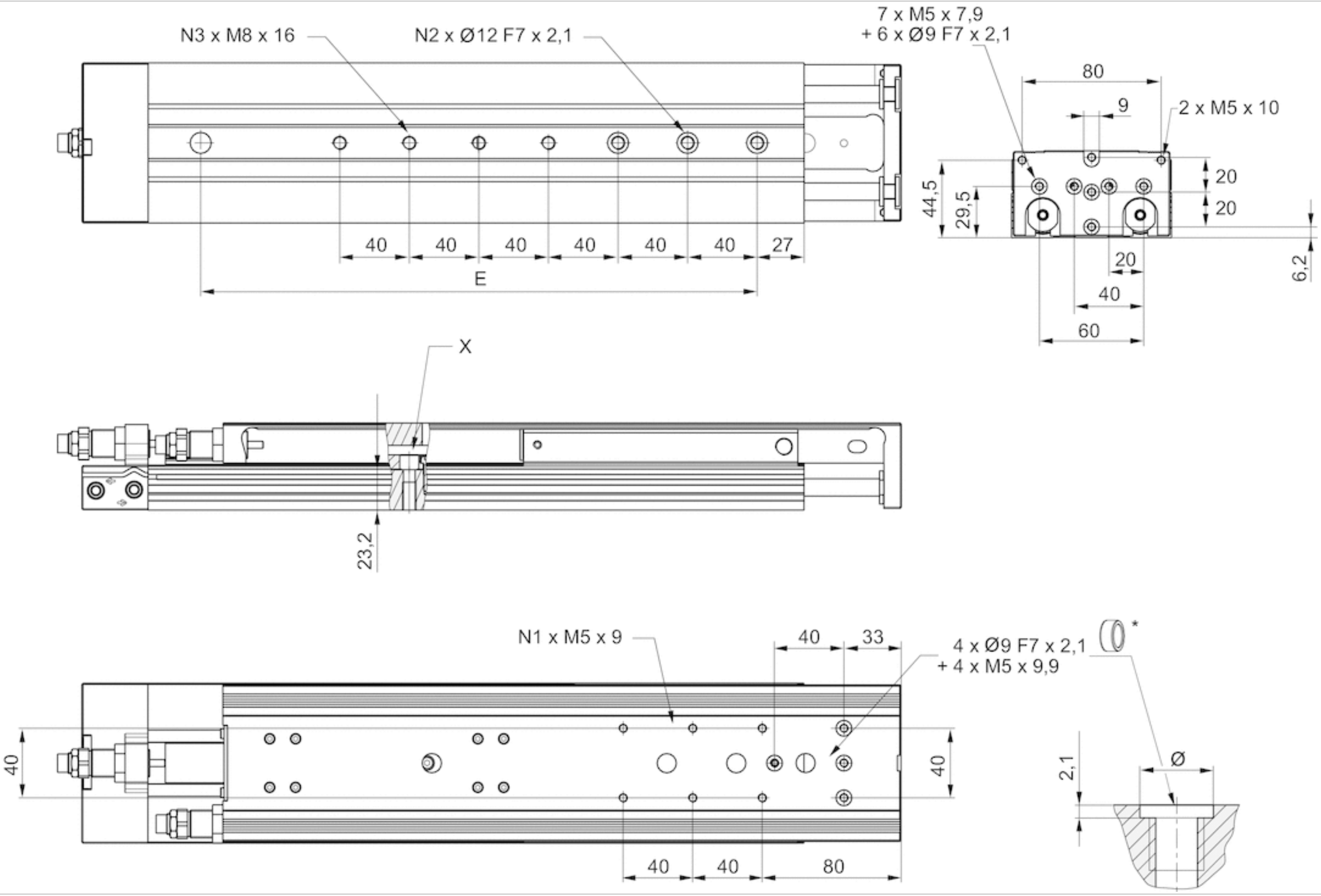
Piston Ø	S	N1	N2	N3	X
16 mm	20	2	2	2	1)
16 mm	30	2	2	2	-
16 mm	40	4	2	2	-
16 mm	50	4	2	2	-
16 mm	80	6	3	3	-
16 mm	100	8	3	3	-

S = stroke

1) Access to the through hole only after removal of the stroke limitation bolts

Dimensions

MSC-20



* = centering rings

Dimensions

Piston Ø	S	N1	N2	N3	X
20 mm	10	2	2	2	1)
20 mm	20	2	2	2	1)
20 mm	30	2	2	2	-
20 mm	40	2	2	2	-

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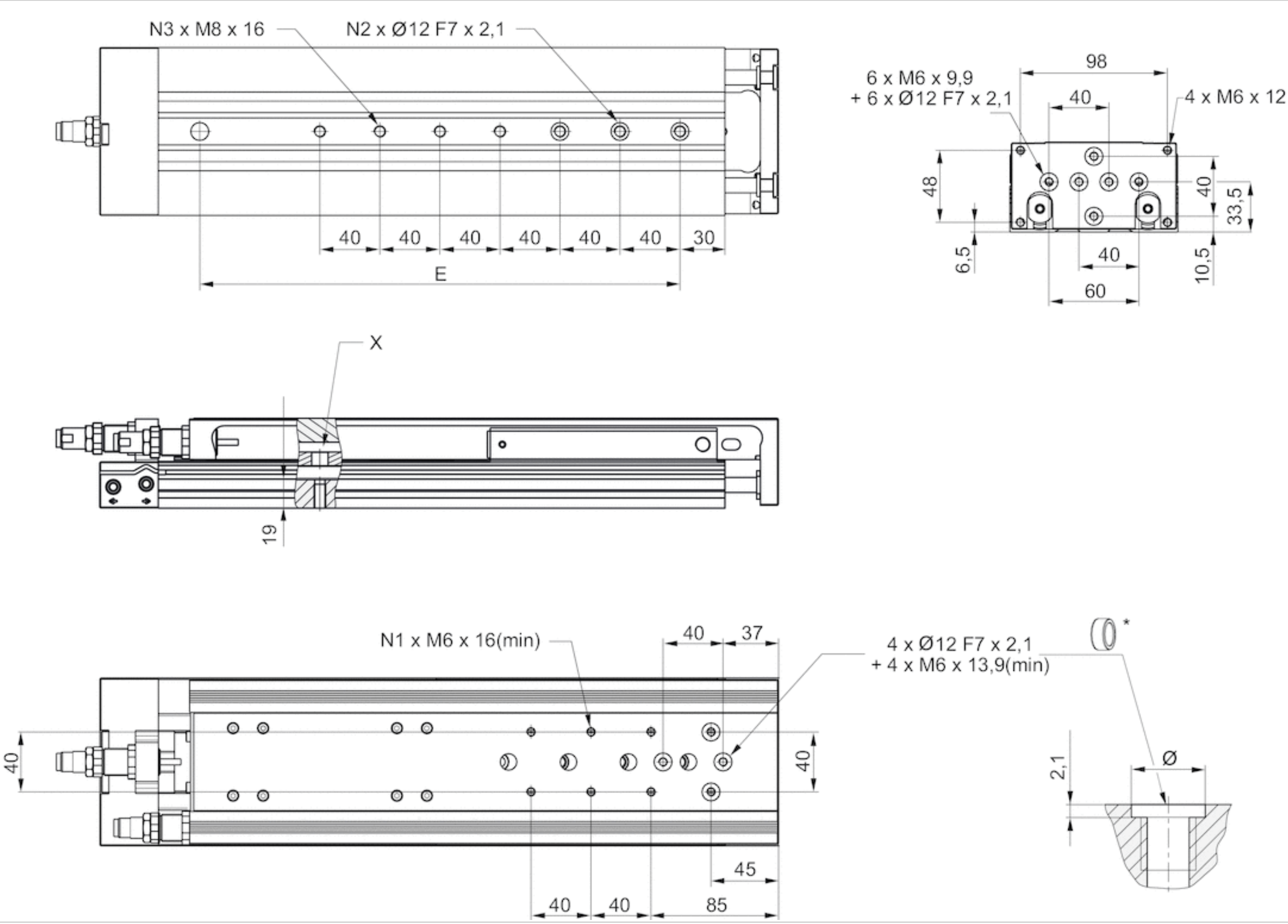
Piston Ø	S	N1	N2	N3	X
20 mm	50	2	2	2	-
20 mm	80	4	3	3	-
20 mm	100	4	3	3	-

S = stroke

1) Access to the through hole only after removal of the stroke limitation bolts

Dimensions

MSC-25



* = centering rings

Dimensions

Piston Ø	S	N1	N2	N3	X
25 mm	10	2	2	2	1)
25 mm	20	2	2	2	1)
25 mm	30	2	2	2	1)
25 mm	40	2	2	2	-
25 mm	50	4	2	2	-
25 mm	80	4	3	3	-

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Piston Ø	S	N1	N2	N3	X
25 mm	100	4	3	3	-

S = stroke

1) Access to the through hole only after removal of the stroke limitation bolts

Weight of moving parts [kg]

Piston Ø	S=10	S=20	S=30	S=40	S=50	S=80	S=100	S=125	S=150	S=200
8 mm	0.165	0.165	0.165	0.165	0.195	0.265	–	–	–	–
8 mm	0.165	0.165	0.165	0.165	0.195	0.265	–	–	–	–
12 mm	0.28	0.28	0.28	0.28	0.315	0.403	0.46	–	–	–
16 mm	0.375	0.375	0.375	0.4	0.45	0.615	0.65	0.725	0.765	–
20 mm	0.655	0.655	0.655	0.69	0.765	0.985	1.035	1.2	1.29	1.54
25 mm	1.1	1.1	1.1	1.1	1.225	1.45	1.625	1.885	2.085	2.445

S = stroke

Weight [kg]

Piston Ø	S	Weight kg
8 mm	10	0,37 kg
8 mm	20	0,36 kg
8 mm	30	0,35 kg
8 mm	40	0,34 kg
8 mm	50	0,41 kg
8 mm	80	0,56 kg
12 mm	10	0,62 kg
12 mm	20	0,61 kg
12 mm	30	0,56 kg
12 mm	40	0,59 kg
12 mm	50	0,67 kg
12 mm	80	0,92 kg
12 mm	100	0,99 kg
16 mm	10	0,81 kg
16 mm	20	0,79 kg
16 mm	30	0,76 kg
16 mm	-	0,82 kg
16 mm	50	1,29 kg
16 mm	80	1,37 kg
16 mm	100	1,94 kg
20 mm	10	1,36 kg
20 mm	20	1,42 kg
20 mm	30	1,38 kg
20 mm	40	1,45 kg
20 mm	50	1,61 kg
20 mm	80	2,1 kg
20 mm	100	2,23 kg
25 mm	10	2,32 kg

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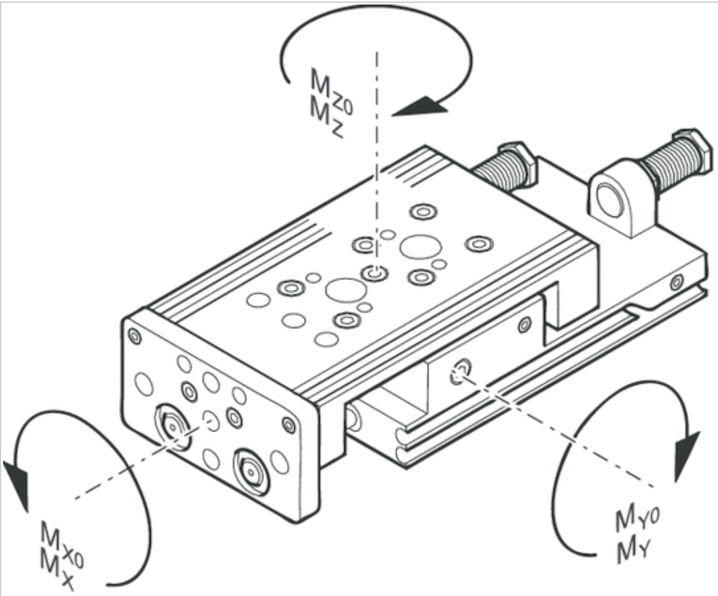
Piston Ø	S	Weight kg
25 mm	20	2,46 kg
25 mm	30	2,22 kg
25 mm	40	2,38 kg
25 mm	50	2,64 kg
25 mm	80	3,29 kg
25 mm	-	3,56 kg

S = stroke

3)

Dimensions

Load capacity



M = max. permissible torque

Dimensions

Piston Ø	S	a [mm] 1)	d [mm] 2)	Mx0 3)	My0 3)	Mz0 3)	Mx 4)	My 4)	Mz 4)
8 mm	10	69.5	12	5.8	5.9	5.9	1.1	1.7	1.7
8 mm	20	69.5	12	5.8	5.9	5.9	1.1	1.7	1.7
8 mm	30	69.5	12	5.8	5.9	5.9	1.1	1.7	1.7
8 mm	40	69.5	12	5.8	5.9	5.9	1.1	1.7	1.7
8 mm	50	83	12	5.8	5.9	5.9	1.3	1.7	1.7
8 mm	80	121	12	8	14.6	14.6	1.3	3.7	3.7
12 mm	10	77	15	13.8	6.45	6.45	3.5	1.6	1.6
12 mm	20	77	15	13.8	6.45	6.45	3.5	1.6	1.6
12 mm	30	77	15	13.8	6.45	6.45	3.5	1.6	1.6
12 mm	40	77	15	13.8	6.45	6.45	3.5	1.6	1.6
12 mm	50	81	15	13.8	6.45	6.45	3.5	1.6	1.6
12 mm	80	117	15	17.3	15.6	15.6	5.2	3.5	3.5
12 mm	100	137	15	17.3	15.6	15.6	5.2	3.5	3.5
16 mm	10	65	15	31.6	11.95	11.95	6.5	3.2	3.2

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Piston Ø	S	a [mm] 1)	d [mm] 2)	Mx0 3)	My0 3)	Mz0 3)	Mx 4)	My 4)	Mz 4)
16 mm	20	65	15	31.6	11.95	11.95	6.5	3.2	3.2
16 mm	30	65	15	31.6	11.95	11.95	6.5	3.2	3.2
16 mm	-	40	75	15	31.6	11.95	11.95	6.5	3.2
16 mm	50	86	15	31.6	11.95	11.95	7	3.2	3.2
16 mm	80	123	15	45	27.3	27.3	8.7	6.3	6.3
16 mm	100	144	15	45	27.3	27.3	8.7	6.3	6.3
20 mm	10	75	20	31.6	11.95	11.95	9.6	4	4
20 mm	20	75	20	31.6	11.95	11.95	9.6	4	4
20 mm	30	75	20	31.6	11.95	11.95	9.6	4	4
20 mm	40	75	20	31.6	11.95	11.95	9.6	4	4
20 mm	50	92	20	31.6	11.95	11.95	10	4	4
20 mm	80	125	20	45	27.3	27.3	11.7	8	8
20 mm	100	143	20	45	27.3	27.3	11.7	8	8
25 mm	10	85	24	87	24.5	24.5	22.9	6.6	6.6
25 mm	20	85	24	87	24.5	24.5	22.9	6.6	6.6
25 mm	30	85	24	87	24.5	24.5	22.9	6.6	6.6
25 mm	40	85	24	87	24.5	24.5	22.9	6.6	6.6
25 mm	50	102	24	87	24.5	24.5	15.3	6.6	6.6
25 mm	80	134	24	110	62.5	62.5	18.8	14.5	14.6
25 mm	100	152	24	110	62.5	62.5	18.8	14.5	14.6

S = stroke

1) correction factor (a)

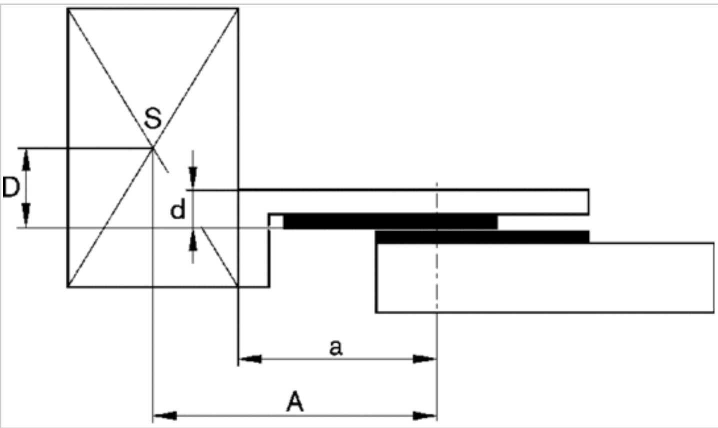
2) Correction factor (b)

3) Static moment M [Nm]

4) Dynamic moment M [Nm]

Dimensions

correction factor (a d)



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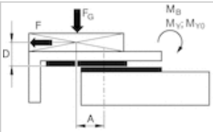
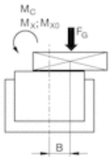
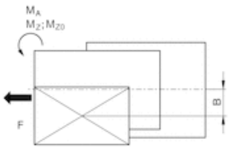
horizontal



stat.	$M_{B0} = F_G \cdot A + F \cdot D$
dyn.	$M_B = F_G \cdot A$



stat.	$M_{C0} = F_G \cdot B$
dyn.	$M_C = F_G \cdot B$

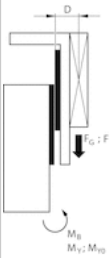


stat.	$M_{A0} = F \cdot B$
dyn.	$M_A = 0$

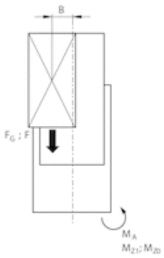
dyn.	$\frac{M_A}{M_1} + \frac{M_B}{M_2} + \frac{M_C}{M_3} \leq 1$
stat.	$\frac{M_{A0}}{M_{Z0}} + \frac{M_{B0}}{M_{Y0}} + \frac{M_{C0}}{M_{X0}} \leq 1$

F = m • aFG = m • ga = 1250•V²/H
F = deceleration force [N]F= force due to weight [N]m = load mass [kg]a = deceleration [m/s²]g = gravitational acceleration 9,81 [m/s²]V = velocity [m/s]H = stroke length of shock absorber [mm]

vertical



stat.	$M_{B0} = (F_G + F) \cdot D$
dyn.	$M_B = F_G \cdot D$



stat.	$M_{A0} = (F_G + F) \cdot B$
dyn.	$M_A = F_G \cdot B$

dyn.	$\frac{M_A}{M_1} + \frac{M_B}{M_2} \leq 1$
stat.	$\frac{M_{A0}}{M_{Z0}} + \frac{M_{B0}}{M_{Y0}} \leq 1$

F = m • aFG = m • ga = 1250•V²/H
F = deceleration force [N]F= force due to weight [N]m = load mass [kg]a = deceleration [m/s²]g = gravitational acceleration 9,81 [m/s²]V = velocity [m/s]H = stroke length of shock absorber [mm]

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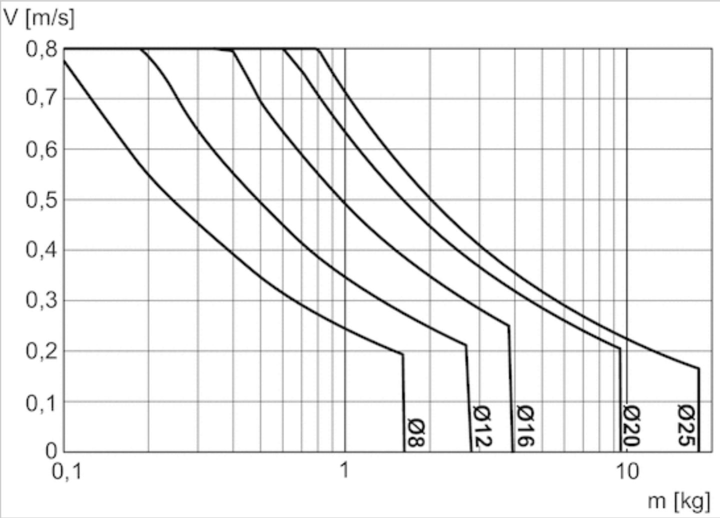
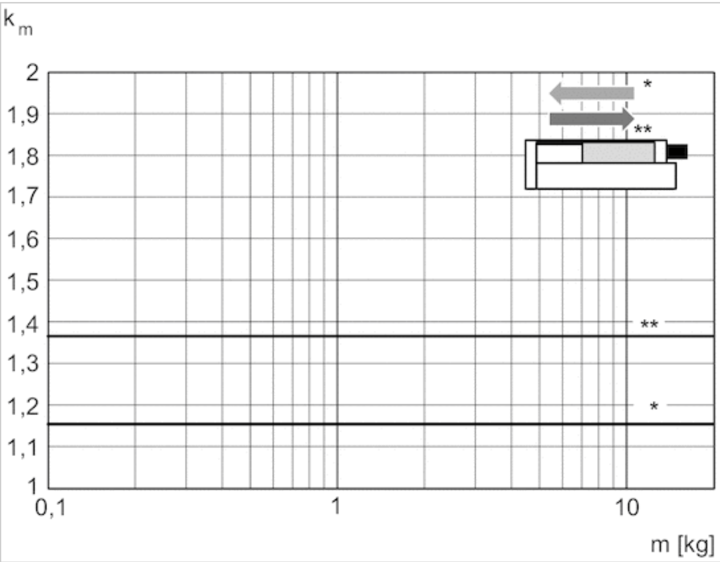
Diagrams

Maximum moving mass



V = velocity [m/s]
m = mass

Correction factor for required speed: retracting and extending horizontal



* retracting
** extracting
V = s/1000 • t • km
V = velocity [m/s]
S = stroke

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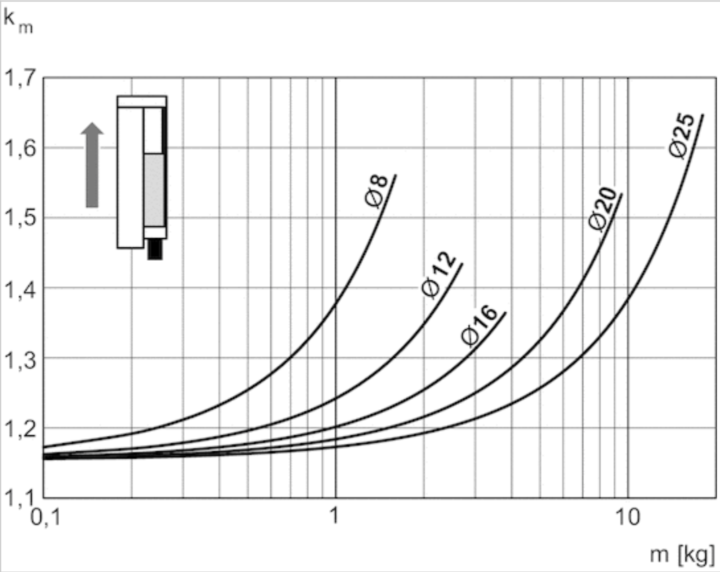
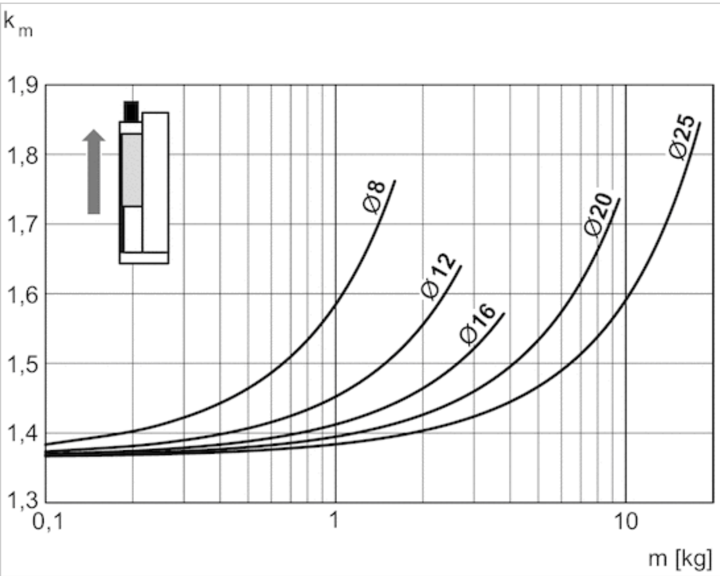
Correction factor for required speed: extending vertical upwards



V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

Correction factor for required speed: retracting vertical upwards



V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

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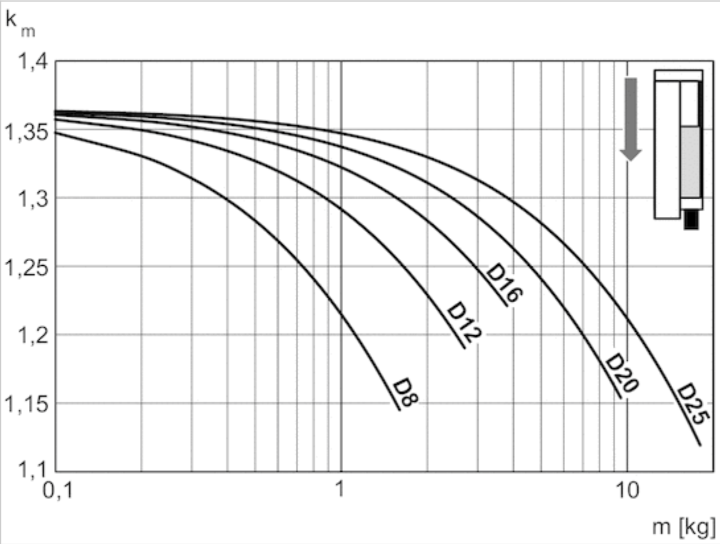
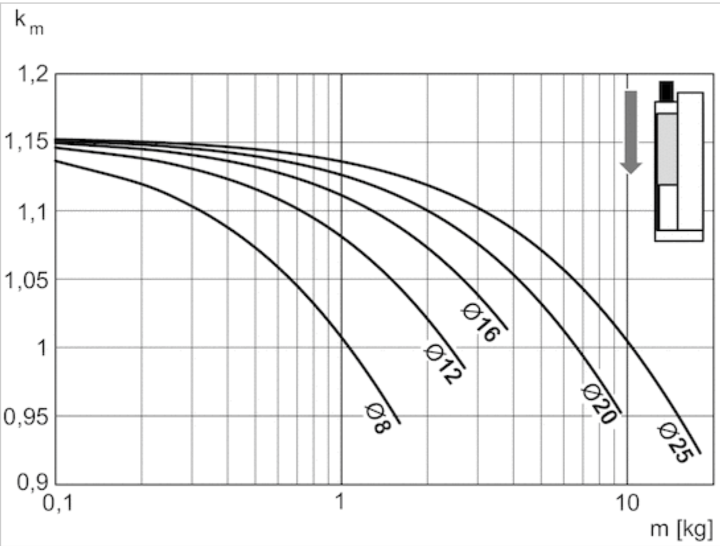
Correction factor for required speed: retracting vertical downwards



V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

Correction factor for required speed: extending vertical downwards



V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

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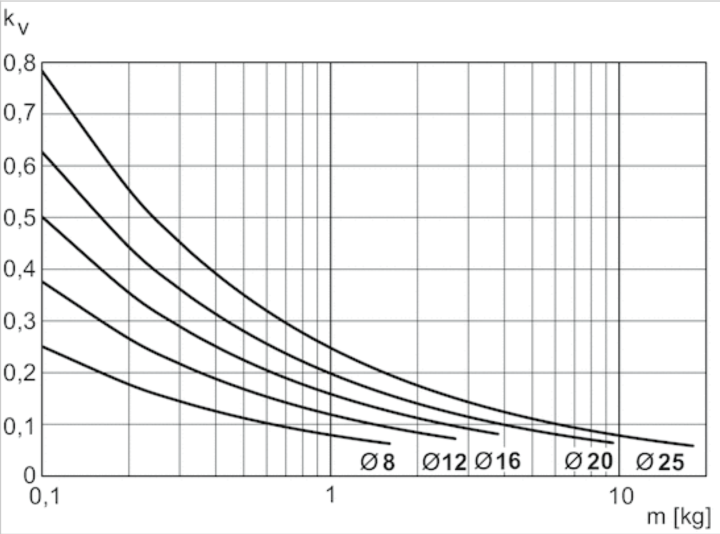
Extracting speed max.



V = √s • kv
V = velocity [m/s]
S = stroke [mm]
m = mass