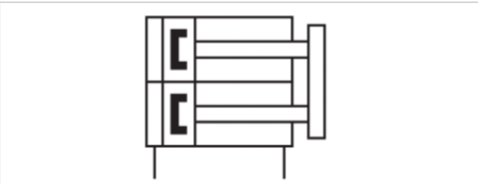
Mini slide, Series MSC-HG-EE

- Scope of delivery: incl. centering rings
- Ø 8-25 mm
- double-acting
- with magnetic piston
- Cushioning elastic
- Easy2Combine capable
- with double piston
- With integrated “High Performance” ball rail system

Working pressure min./max.	See table below
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
Weight	See table below



Technical data

Piston Ø	8 mm	12 mm	16 mm	20 mm	25 mm
Stroke 10	R412019204	R412019190	R412019168	R412018910	R412019023
20	R412019205	R412019191	R412019169	R412018911	R412019024
30	R412019206	R412019192	R412019170	R412018912	R412019025
40	R412019207	R412019193	R412019171	R412018913	R412019026
50	R412019208	R412019194	R412019172	R412018914	R412019027
80	R412019209	R412019195	R412019173	R412018915	R412019028
100	-	R412019196	R412019174	R412018916	R412019029
125	-	-	R412019175	R412018917	R412019030
150	-	-	R412019176	R412018918	R412019031
200	-	-	-	R412018919	R412019032

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Technical data

Piston Ø 2x	8 mm	12 mm	16 mm	20 mm
Working pressure min./max.	1,5 ... 10 bar	1 ... 10 bar	1 ... 10 bar	1 ... 10 bar
Retracting piston force, theoretical	48 N	107 N	218 N	297 N
Extracting piston force, theoretical	63 N	143 N	253 N	396 N
Speed max.	0,8 m/s	0,8 m/s	0,8 m/s	0,8 m/s
Cushioning length	0,3 mm	0,75 mm	1 mm	1,2 mm
Cushioning energy	0,06 J	0,3 J	0,3 J	0,4 J

Piston Ø 2x	25 mm
Working pressure min./max.	1 ... 10 bar
Retracting piston force, theoretical	520 N
Extracting piston force, theoretical	619 N
Speed max.	0,8 m/s
Cushioning length	1,6 mm
Cushioning energy	0,5 J

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).

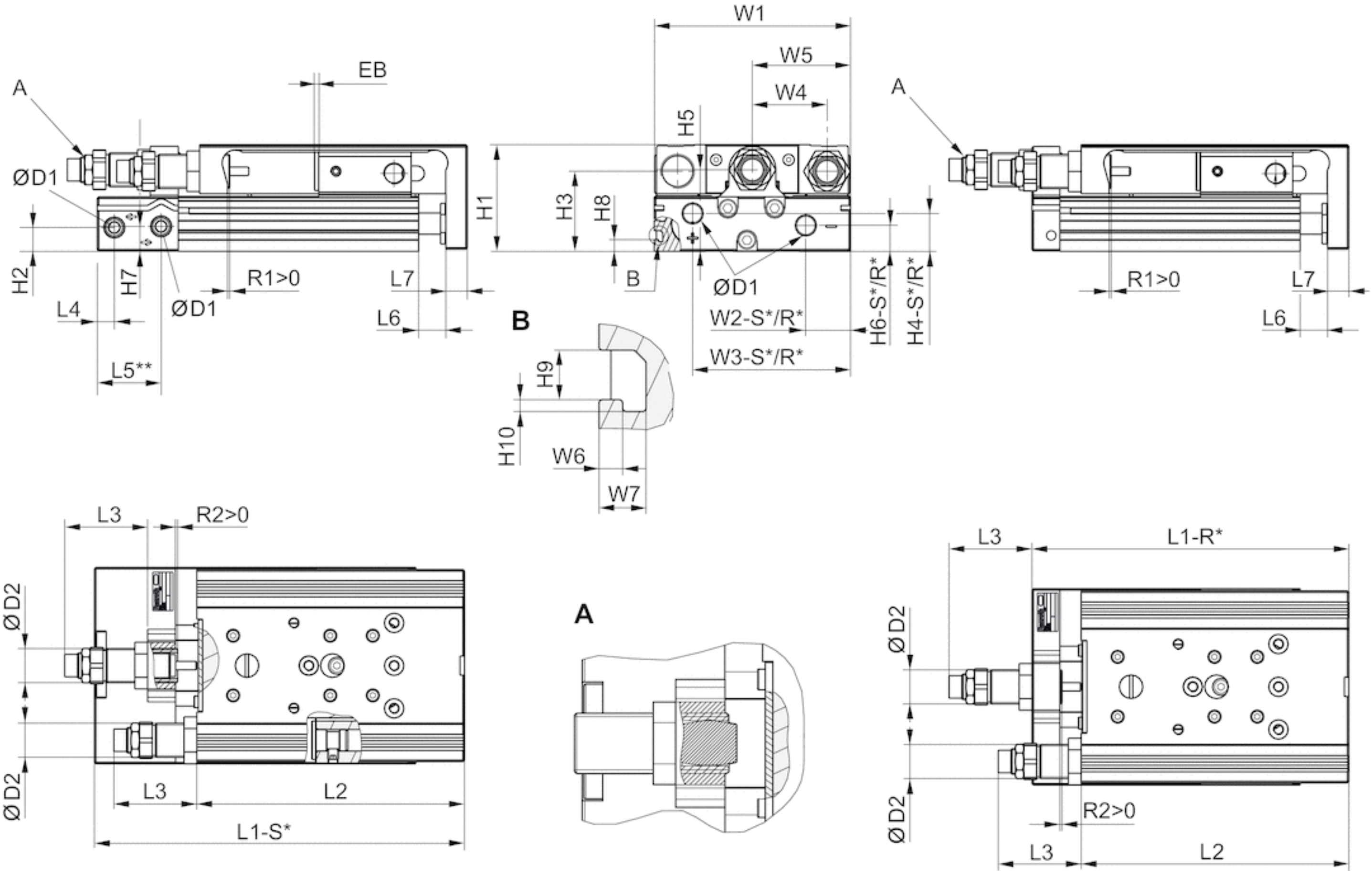
Repetitive precision after 100 consecutive strokes: 0,3 mm
Base with air connections at the back and sides
Intermediate strokes can be configured.
Scope of delivery: incl. centering rings
R1 = stroke setting range for forward stroke
R2 = stroke setting range for return stroke
Ø 8 has a different reference plane.

Technical information

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.

Stroke-dependent dimensions

Piston Ø	S=10 EB	S=20 EB	S=30 EB	S=40 EB	S=50 EB	S=80 EB
8 mm	12	2	2	2	2	2
12 mm	22	12	2	2	2	2
16 mm	22	12	2	2	2	2
20 mm	22	12	2	2	2	2
25 mm	22	12	2	2	2	2

Piston Ø	S=100 EB	S=125 EB	S=150 EB	S=200 EB	S=10 L1-R	S=20 L1-R
8 mm	–	–	–	–	–	–
12 mm	2	–	–	–	101	101
16 mm	2	2	2	–	103.5	103.5
20 mm	2	2	2	2	115	115
25 mm	2	2	2	2	128.5	128.5

Piston Ø	S=30 L1-R	S=40 L1-R	S=50 L1-R	S=80 L1-R	S=100 L1-R
8 mm	–	–	–	–	–
12 mm	101	111	126	172	192
16 mm	103.5	113.5	128.5	174.5	194.5
20 mm	115	125	140	185	205
25 mm	128.5	138.5	151.5	197.5	217.5

Piston Ø	S=125 L1-R	S=150 L1-R	S=200 L1-R	S=10 L1-S	S=20 L1-S
8 mm	–	–	–	81.7	81.7
12 mm	–	–	–	117.9	117.9
16 mm	283	308	–	114.4	114.4
20 mm	289.5	329.5	404.5	139.9	139.9
25 mm	294.5	334.5	409.5	152.2	152.2

Piston Ø	S=30 L1-S	S=40 L1-S	S=50 L1-S	S=80 L1-S	S=100 L1-S
8 mm	91.7	101.7	121.7	171.7	–
12 mm	117.9	127.9	142.9	188.9	208.9
16 mm	114.4	124.4	139.4	185.4	205.4
20 mm	139.9	149.9	164.9	209.9	229.9
25 mm	152.2	162.2	175.2	221.2	241.2

Piston Ø	S=125 L1-S	S=150 L1-S	S=200 L1-S	S=10 L2	S=20 L2	S=30 L2
8 mm	–	–	–	73.5	73.5	83.5
12 mm	-	-	–	88.8	88.8	88.8
16 mm	293.9	318.9	–	90.4	90.4	90.4
20 mm	314.4	354.4	429.4	100.5	100.5	100.5
25 mm	318.2	358.2	433.2	111.5	111.5	111.5

Piston Ø	S=40 L2	S=50 L2	S=80 L2	S=100 L2	S=125 L2	S=150 L2
8 mm	93.5	113.5	163.5	–	–	–
12 mm	98.8	113.8	159.8	179.8	-	-

Piston Ø	S=40 L2	S=50 L2	S=80 L2	S=100 L2	S=125 L2	S=150 L2
16 mm	100.4	115.4	161.4	181.4	269.9	294.9
20 mm	110.5	125.5	170.5	190.5	275	315
25 mm	121.5	134.5	180.5	200.5	277.5	317.5

Piston Ø	S=200 L2	S=10 R1 max.	S=20 R1 max.	S=30 R1 max.
8 mm	–	9.2	9.2	9.2
12 mm	–	7.7	7.7	7.7
16 mm	–	10.7	10.7	10.7
20 mm	390	18.4	18.4	18.4
25 mm	392.5	17.5	17.5	17.5

Piston Ø	S=40 R1 max.	S=50 R1 max.	S=80 R1 max.	S=100 R1 max.
8 mm	9.2	9.2	9.2	–
12 mm	7.7	7.7	7.7	7.7
16 mm	10.7	10.7	10.7	10.7
20 mm	18.4	18.4	18.4	18.4
25 mm	17.5	16.5	17.5	17.5

Dimensions

Piston Ø	Ø D1	Ø D2	H1	H2	H3	H4-R	H4-S	H5	H6-R	H6-S	H7	H8	H9	H10	L3 max.	L4
8 mm	M5	M10x1	28	9.6	20.5	-	7.5	19.5	-	5.5	18	-	-	-	16	9.8
12 mm	M5	M12x1	34	5.7	25	11.2	11.2	24.5	5.7	5.7	8.3	-	-	-	20.2	7.2
16 mm	M5	M12x1	40	7.2	29	12.2	12.2	31	7.7	7.7	11.2	-	-	-	18.4	6.5
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	27.9	8
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	29.2	9

Piston Ø	L5 2)	L6	L7	R2 max.	W1	W2-R	W2-S	W3-R	W3-S	W4	W5	W6	W7
8 mm	–	1.9	6	9.1	50.2	–	19.3	–	30.5	18	W1/2	–	–
12 mm	22.5	2	8	14	66	28.8	28.8	53	53	24.5	W1/2	–	–
16 mm	17.7	2	10	12.4	76	31	31	60.5	60.5	30	W1/2	–	–
20 mm	30	2.1	10	19.9	92	10	21	74	74	35	W1/2	2	4
25 mm	31	2.1	12	22.2	112	11	14	92	92	44	W1/2	2.5	4.8

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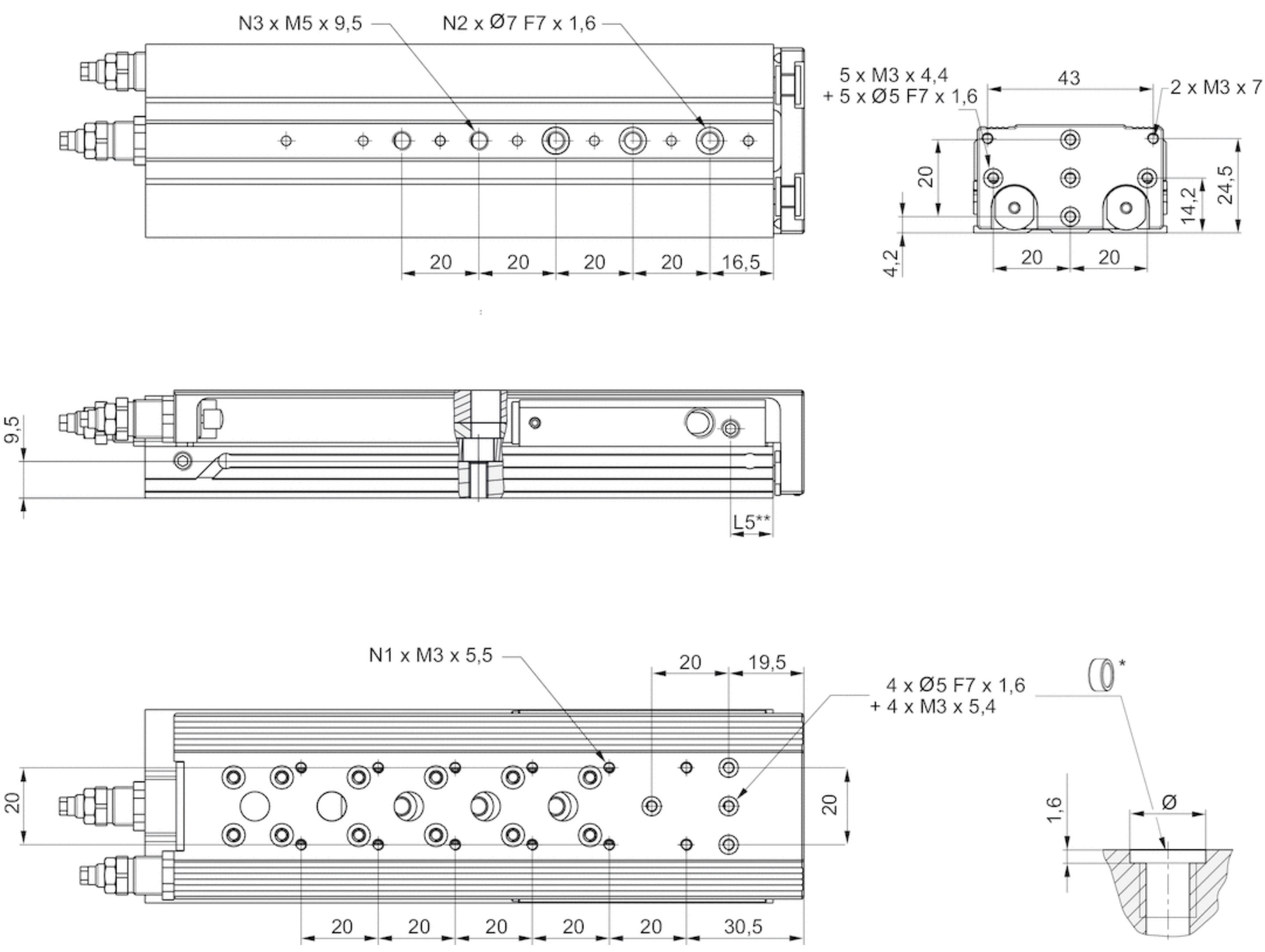
Dimensions

MSC-08



* = centering rings
** Ø 8 has a different reference plane.

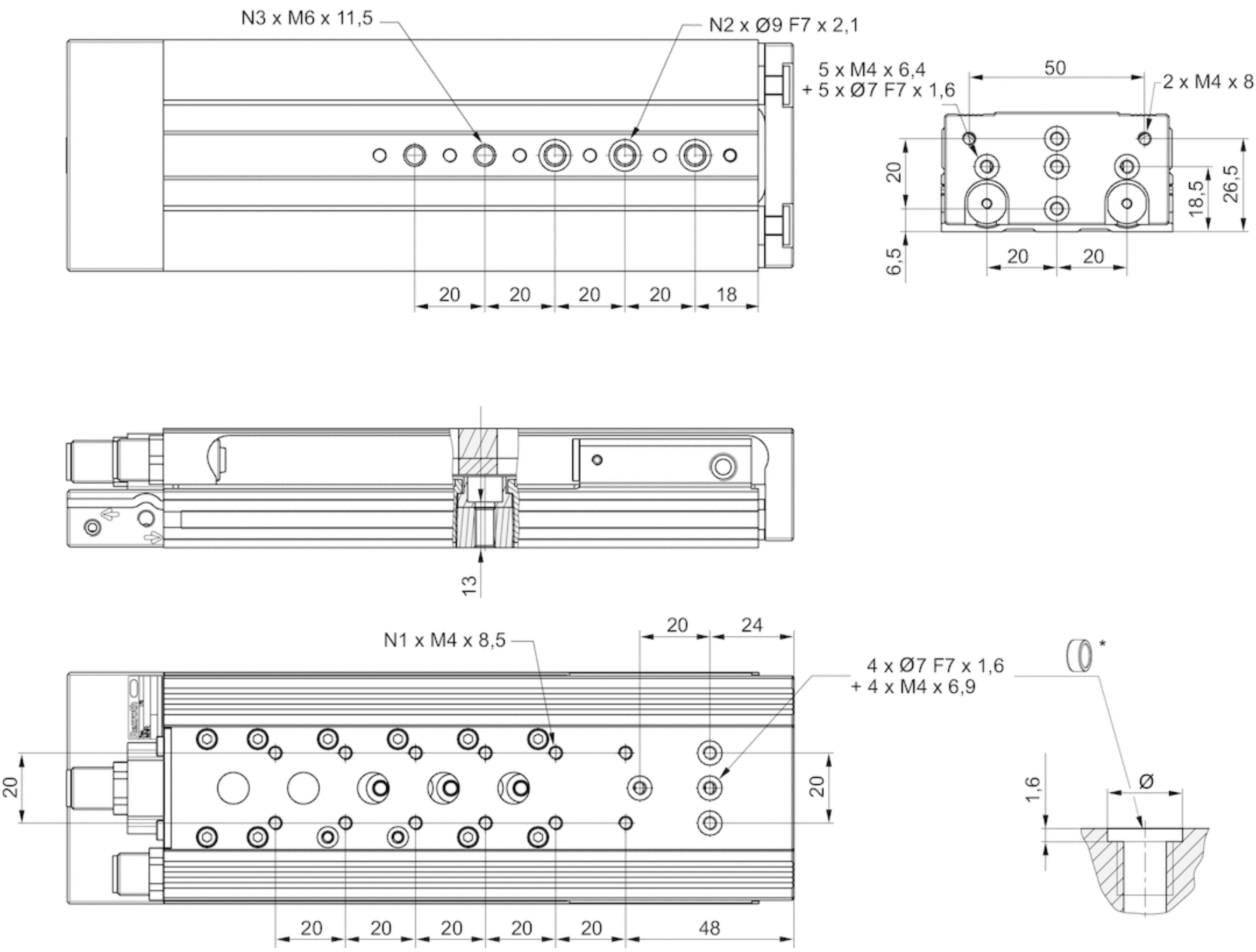
Dimensions

Piston Ø	Stroke	N1	N2	N3	L5
8 mm	10	4	2	2	11
8 mm	20	4	2	2	11
8 mm	30	4	2	2	11
8 mm	40	6	2	2	11
8 mm	50	8	3	3	11

Piston Ø	Stroke	N1	N2	N3	L5
8 mm	80	12	3	5	11

Dimensions

MSC-12



* = centering rings

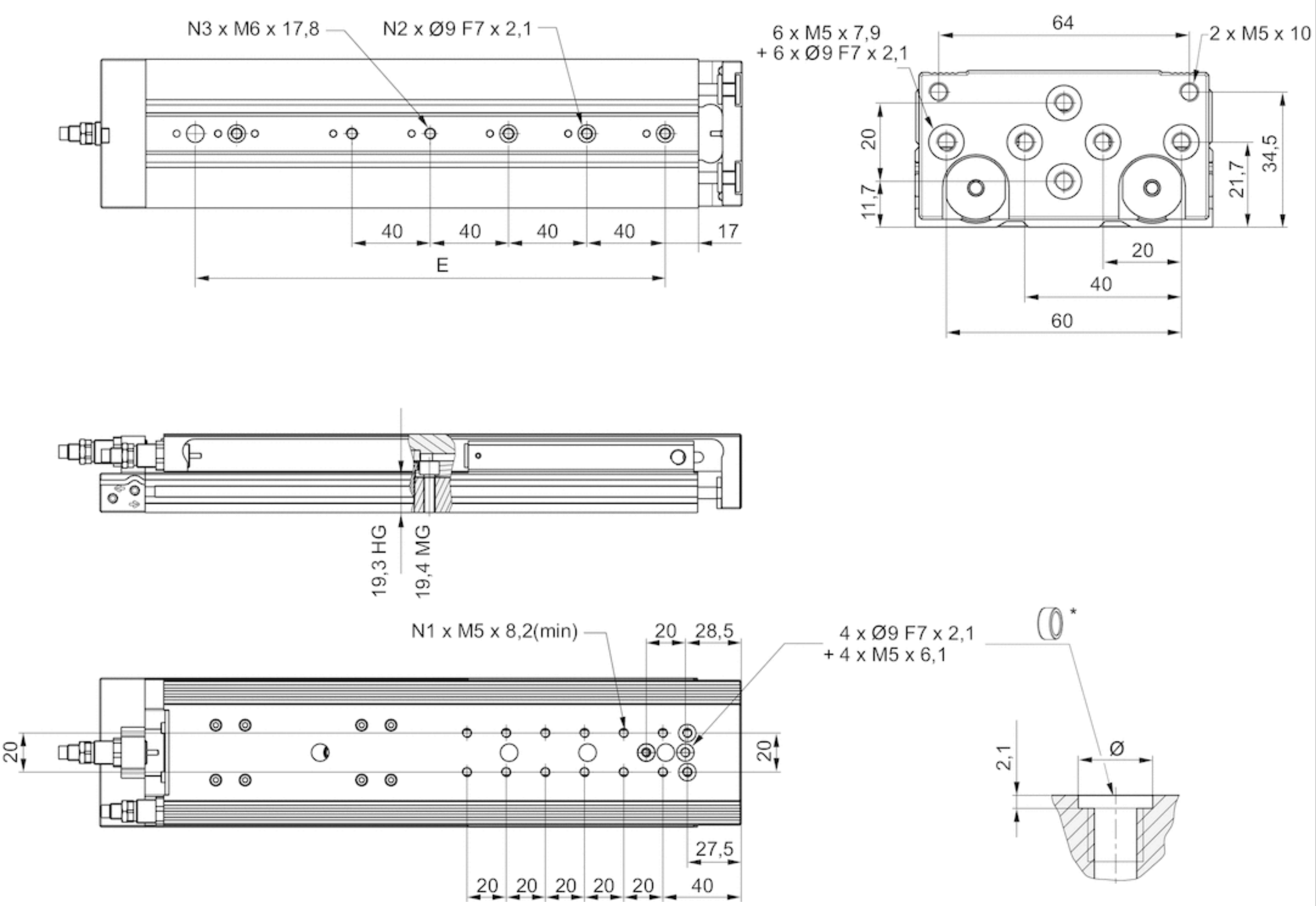
Dimensions

Piston Ø	Stroke	N1	N2	N3
12 mm	10	4	2	2
12 mm	20	4	2	2
12 mm	30	4	2	2

Piston Ø	Stroke	N1	N2	N3
12 mm	40	4	2	2
12 mm	50	6	3	3
12 mm	80	10	3	5
12 mm	100	12	3	5

Dimensions

MSC-16



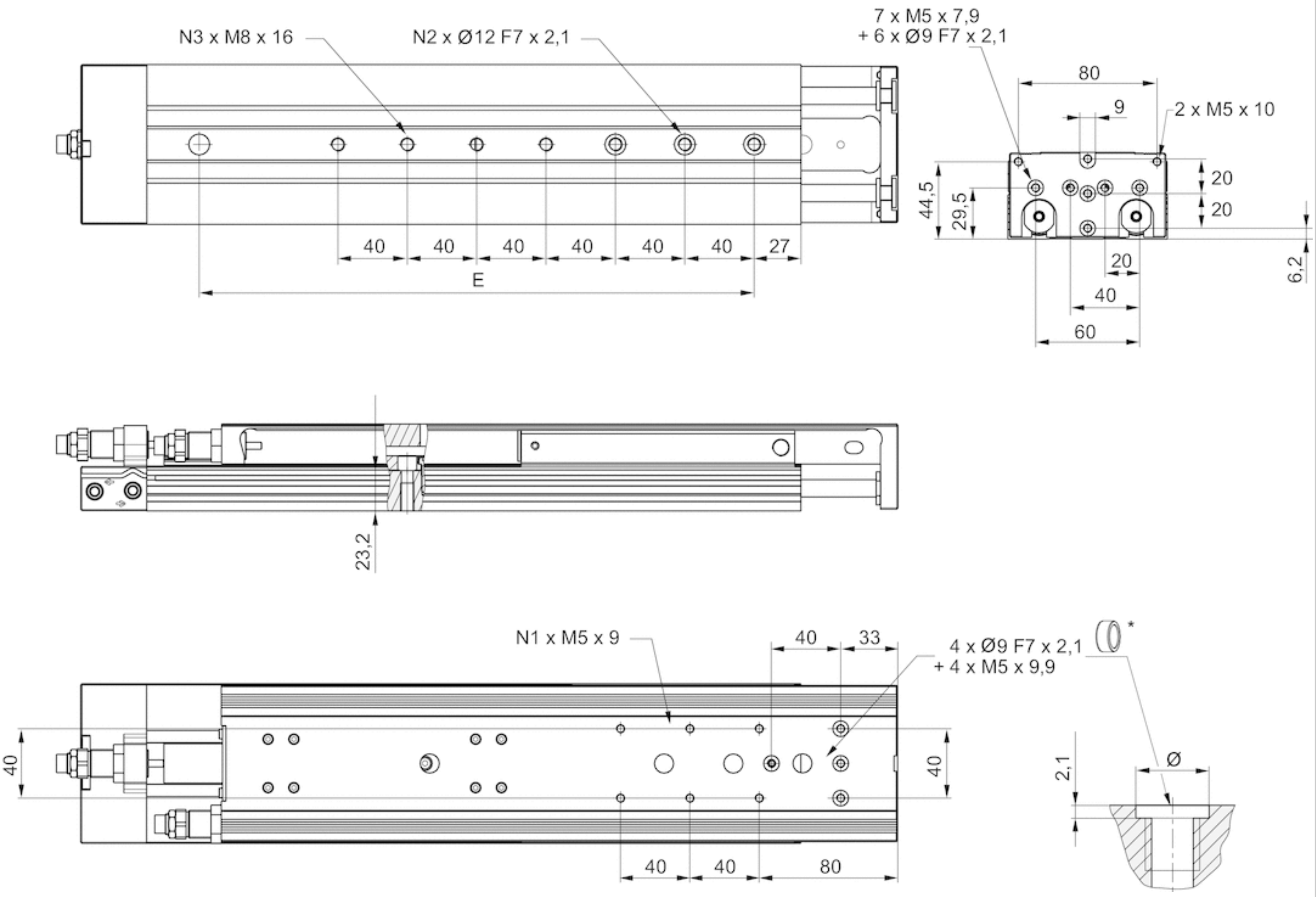
* = centering rings

Dimensions

Piston Ø	Stroke	E	N1	N2	N3
16 mm	10	–	4	2	2
16 mm	20	–	4	2	2
16 mm	30	–	4	2	2
16 mm	40	–	4	2	2
16 mm	50	–	6	2	2
16 mm	80	–	6	3	3
16 mm	100	–	8	3	3
16 mm	125	200	12	4	5
16 mm	150	240	12	4	5

Dimensions

MSC-20



* = centering rings

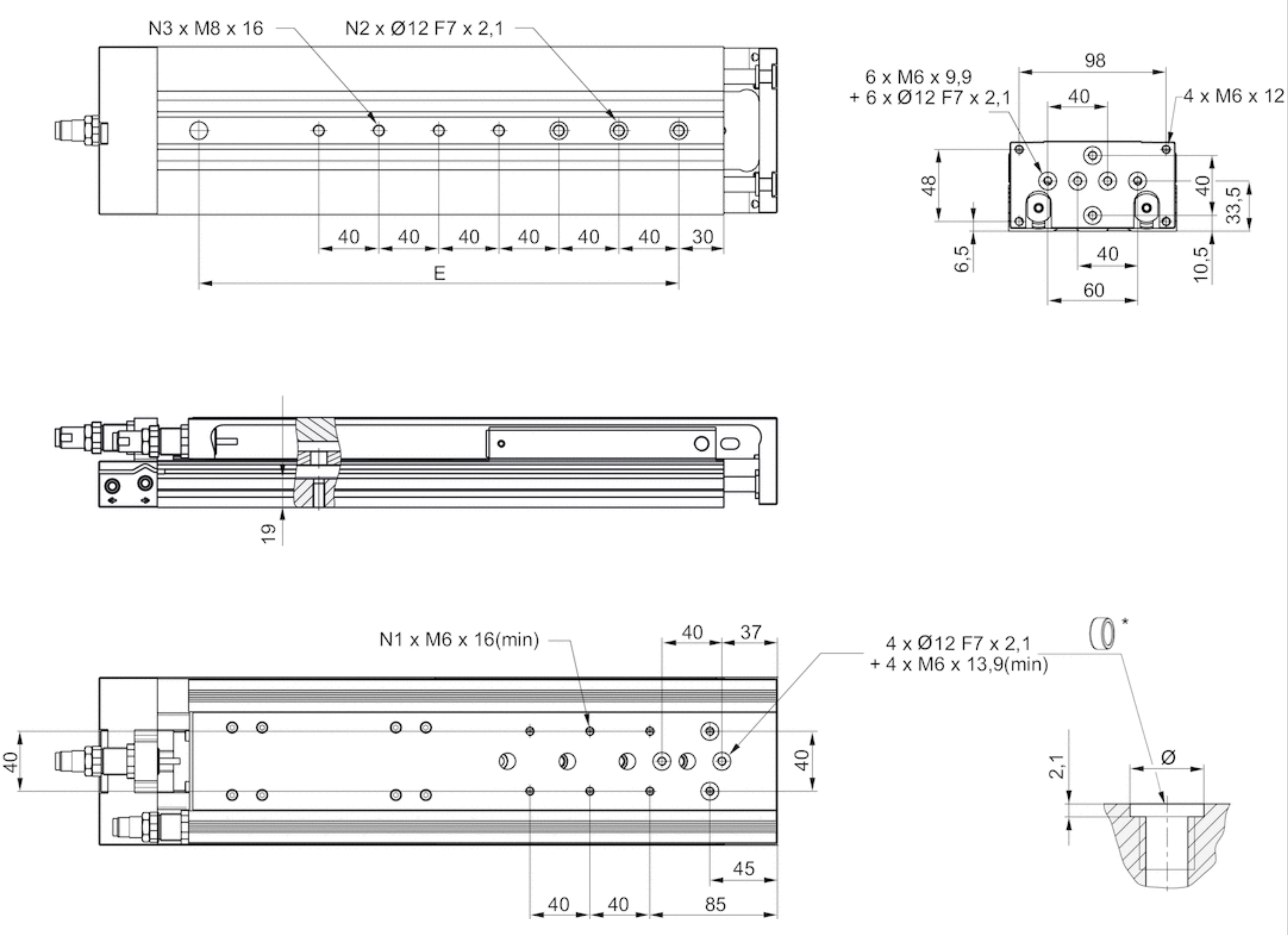
Dimensions

Piston Ø	Stroke	E	N1	N2	N3
20 mm	10	–	2	2	2
20 mm	20	–	2	2	2
20 mm	30	–	2	2	2
20 mm	40	–	2	2	2
20 mm	50	–	2	2	2
20 mm	80	–	4	3	3

Piston Ø	Stroke	E	N1	N2	N3
20 mm	100	–	4	3	3
20 mm	125	200	6	4	5
20 mm	150	240	6	4	5
20 mm	200	320	6	4	7

Dimensions

MSC-25



* = centering rings

Dimensions

Piston Ø	Stroke	E	N1	N2	N3
25 mm	10	–	2	2	2
25 mm	20	–	2	2	2
25 mm	30	–	2	2	2
25 mm	40	–	2	2	2
25 mm	50	–	4	2	2
25 mm	80	–	4	3	3
25 mm	100	–	4	3	3
25 mm	125	200	4	4	5
25 mm	150	240	6	4	5
25 mm	200	320	6	4	7

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	0.14	0.14	0.155	0.165	0.195	0.265	–	–	–	–
12 mm	0.255	0.255	0.26	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	1.225	1.45	1.625	1.885	2.085	2.445

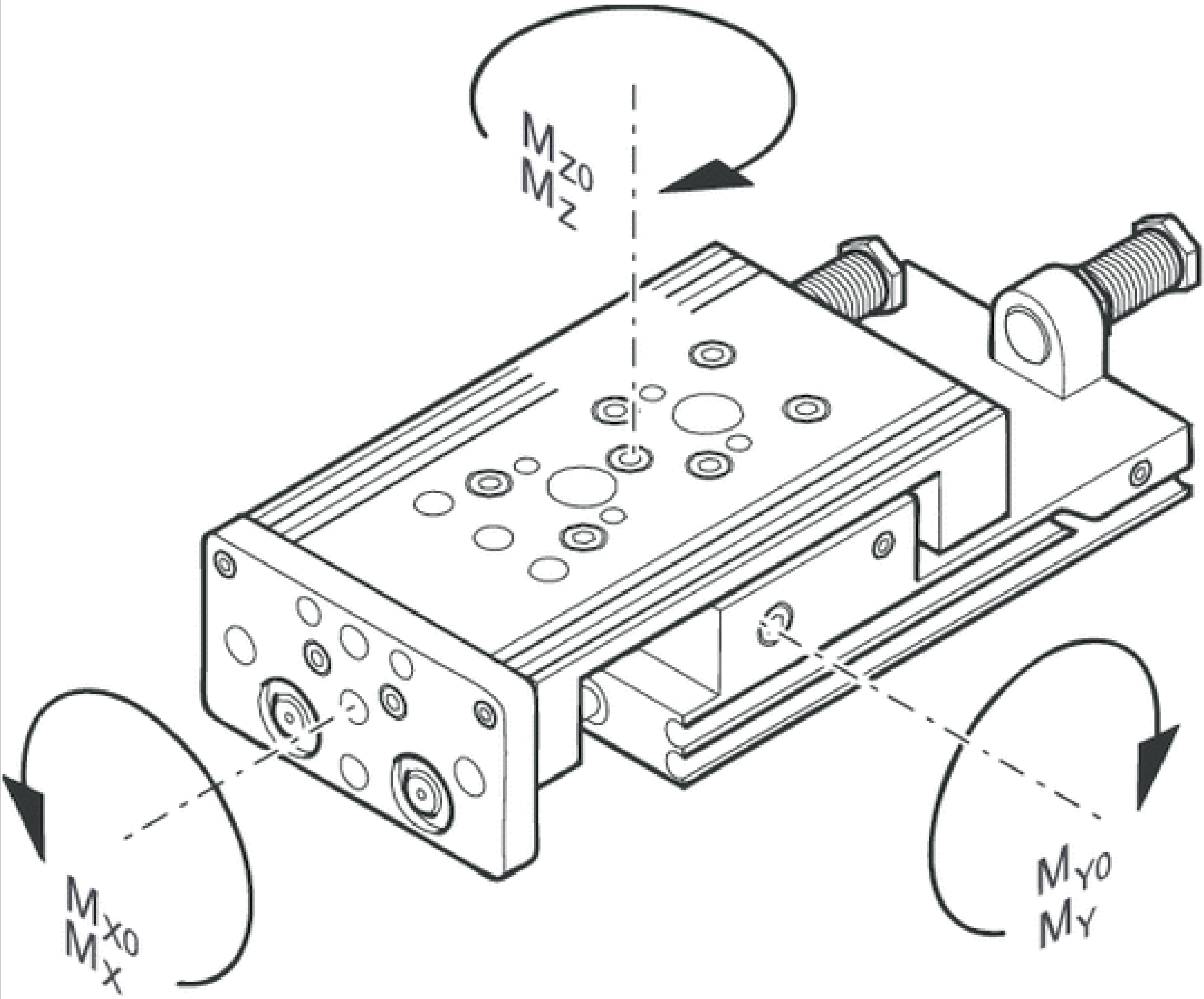
Weight [kg]

Piston Ø	Stroke	Weight kg
8 mm	10	0,3 kg
8 mm	20	0,29 kg
8 mm	30	0,32 kg
8 mm	40	0,34 kg
8 mm	50	0,41 kg
8 mm	80	0,56 kg
12 mm	10	0,59 kg
12 mm	20	0,57 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	40	0,82 kg
16 mm	50	1,29 kg
16 mm	80	1,37 kg
16 mm	100	1,94 kg
16 mm	125	1,94 kg
16 mm	150	2,08 kg

Piston Ø	Stroke	Weight 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
20 mm	125	3,02 kg
20 mm	150	3,36 kg
20 mm	200	4,12 kg
25 mm	10	2,32 kg
25 mm	20	2,26 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	100	3,56 kg
25 mm	125	4,75 kg
25 mm	150	5,37 kg
25 mm	200	6,46 kg

Dimensions

Load capacity



M = max. permissible torque

correction factor (a)

Piston Ø	Stroke	a [mm]	d [mm]	Mx0 Static moment M [Nm]
8 mm	10	45	14	7
8 mm	20	50	14	7
8 mm	30	60	14	7
8 mm	40	70	14	7
8 mm	50	80	14	9
8 mm	80	125	14	13
12 mm	10	54.5	16	20
12 mm	20	59.5	16	20
12 mm	30	64.5	16	20
12 mm	40	74.5	16	20
12 mm	50	84.5	16	23
12 mm	80	125	16	33
12 mm	100	145	16	33
16 mm	10	55.5	15	35
16 mm	20	60.5	15	35
16 mm	30	65.5	15	35
16 mm	40	75.5	15	35
16 mm	50	85.5	15	38
16 mm	80	126	15	74
16 mm	100	146	15	74
16 mm	125	198.5	15	88
16 mm	150	223.5	15	88
20 mm	10	60.5	20	87
20 mm	20	65.5	20	87
20 mm	30	70.5	20	87
20 mm	40	80.5	20	87
20 mm	50	90.5	20	93
20 mm	80	130.5	20	116
20 mm	100	150.5	20	116
20 mm	125	201	20	126
20 mm	150	233.5	20	126
20 mm	200	296	20	126
25 mm	10	67.5	24	100
25 mm	20	72.5	24	100
25 mm	30	77.5	24	100
25 mm	40	87.5	24	100
25 mm	50	96.5	24	100
25 mm	80	137	24	110
25 mm	100	157	24	110
25 mm	125	201	24	145
25 mm	150	236.5	24	145
25 mm	200	299	24	145

My0 Static moment M [Nm]	Mz0 Static moment M [Nm]	Mx Dynamic moment M [Nm]
7	7	1.1
7	7	1.1

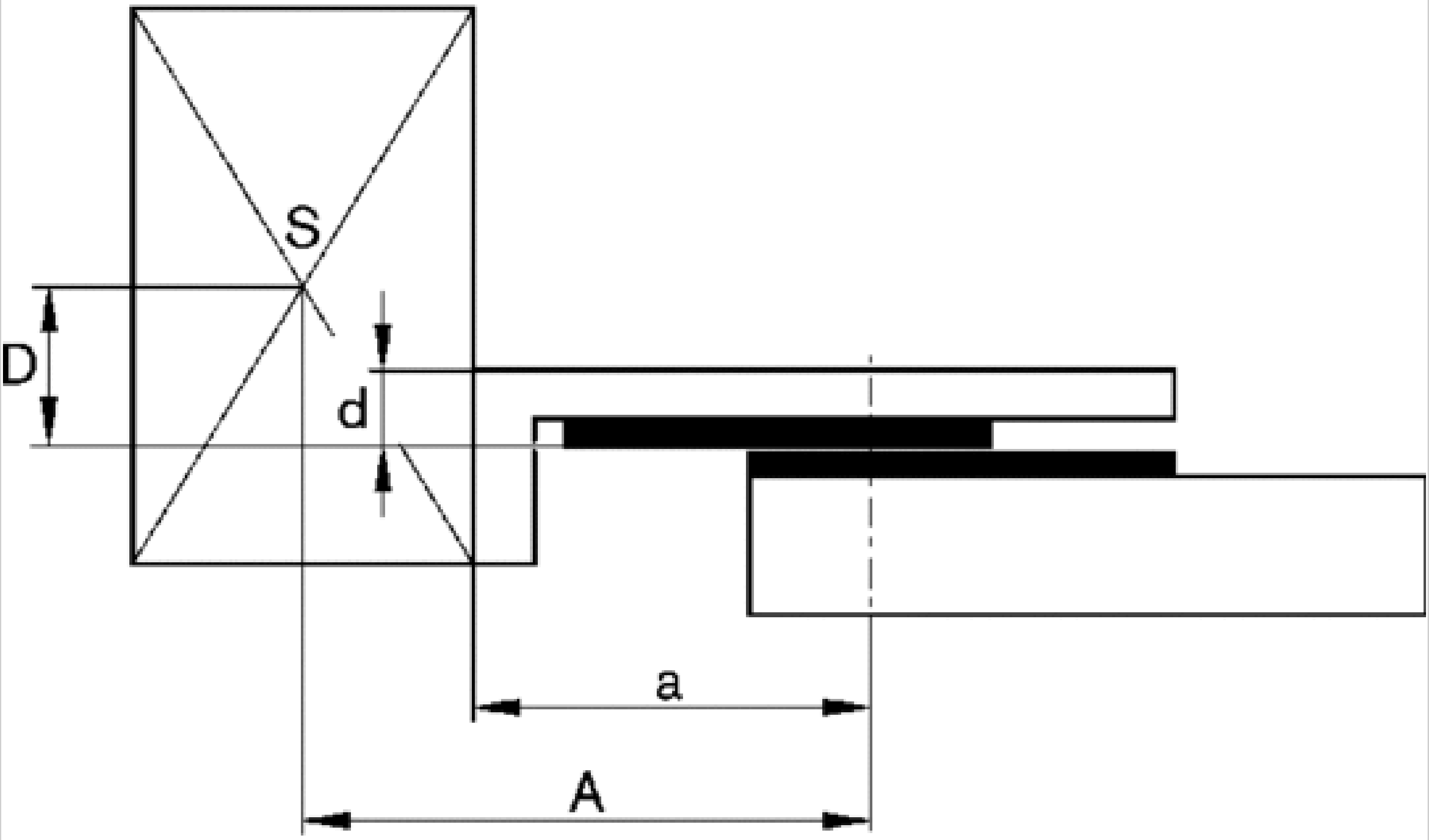
My0 Static moment M [Nm]	Mz0 Static moment M [Nm]	Mx Dynamic moment M [Nm]
7	7	1.1
7	7	1.1
13	13	1.3
25	25	1.3
14	14	4.2
14	14	4.2
14	14	4.2
14	14	4.2
19	19	4.6
32	32	5.2
32	32	5.2
25	25	6.5
25	25	6.5
25	25	6.5
25	25	6.5
29	29	7
58	58	8.7
58	58	8.7
118	118	15.2
119	119	15.2
57	57	9.6
57	57	9.6
57	57	9.6
57	57	9.6
65	65	10
99	99	11.7
99	99	11.7
136	136	19
152	152	19
179	179	19
90	90	22.9
90	90	22.9
90	90	22.9
90	90	22.9
90	90	15.3
129	129	18.8
129	129	18.8
180	180	20.4
201	201	20.4
236	236	20.4

My Dynamic moment M [Nm]	Mz Dynamic moment M [Nm]
1.9	1.9
1.9	1.9
1.9	1.9
1.9	1.9
2.9	2.9
3.8	3.8
4.4	4.4

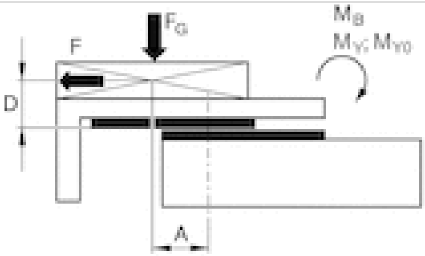
My Dynamic moment M [Nm]	Mz Dynamic moment M [Nm]
4.4	4.4
4.4	4.4
4.4	4.4
5.6	5.6
8.2	8.2
8.2	8.2
6.6	6.6
6.6	6.6
6.6	6.6
6.6	6.6
7.6	7.6
12.8	12.8
12.8	12.8
31.2	31.2
31.2	31.2
12	12
12	12
12	12
12	12
13.3	13.3
19	19
19	19
40.6	40.6
45.4	45.4
53.4	53.4
19.5	19.5
19.5	19.5
19.5	19.5
19.5	19.5
13	13
20.8	20.8
20.8	20.8
44.1	44.1
49.2	49.2
57.8	57.8

Dimensions

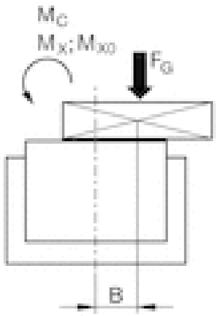
correction factor (a, d)



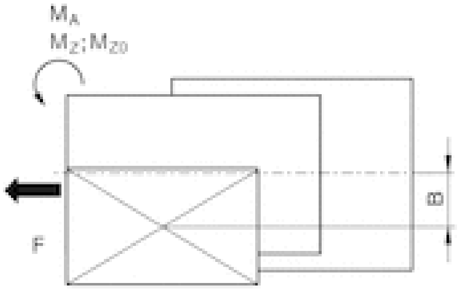
horizontal



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.	$M_C = F_G \cdot B$



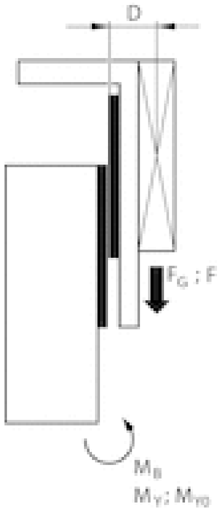
stat.	$M_{A0} = F \cdot B$
dyn.	$M_A = 0$

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

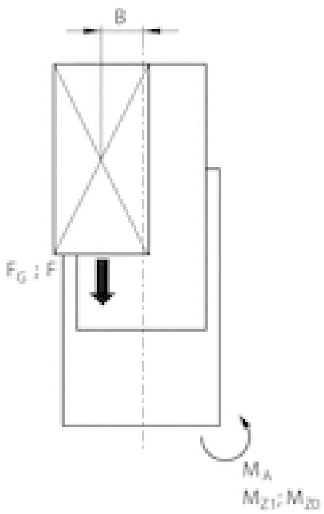
F = m • a
FG = m • g
a = 1250•V²/H

F = deceleration force [N]
FG= 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.	$M_A = F_G \cdot B$

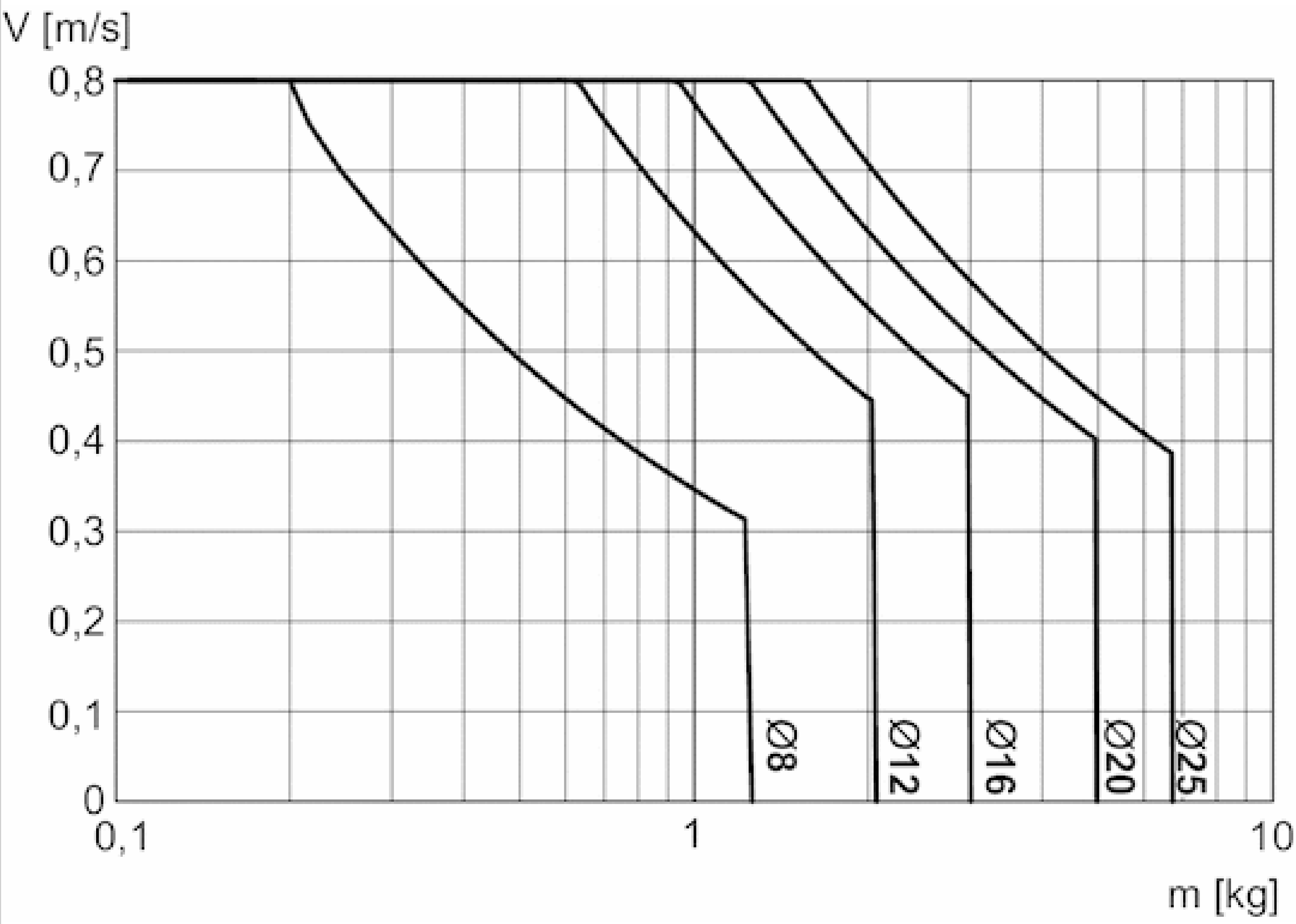
dyn.	$\frac{M_A}{M_1} + \frac{M_B}{M_2} \leq 1$
stat.	$\frac{M_{A0}}{M_{Z0}} + \frac{M_{B0}}{M_{Y0}} \leq 1$

F = m • a
FG = m • g
a = 1250•V²/H

F = deceleration force [N]
FG= 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]

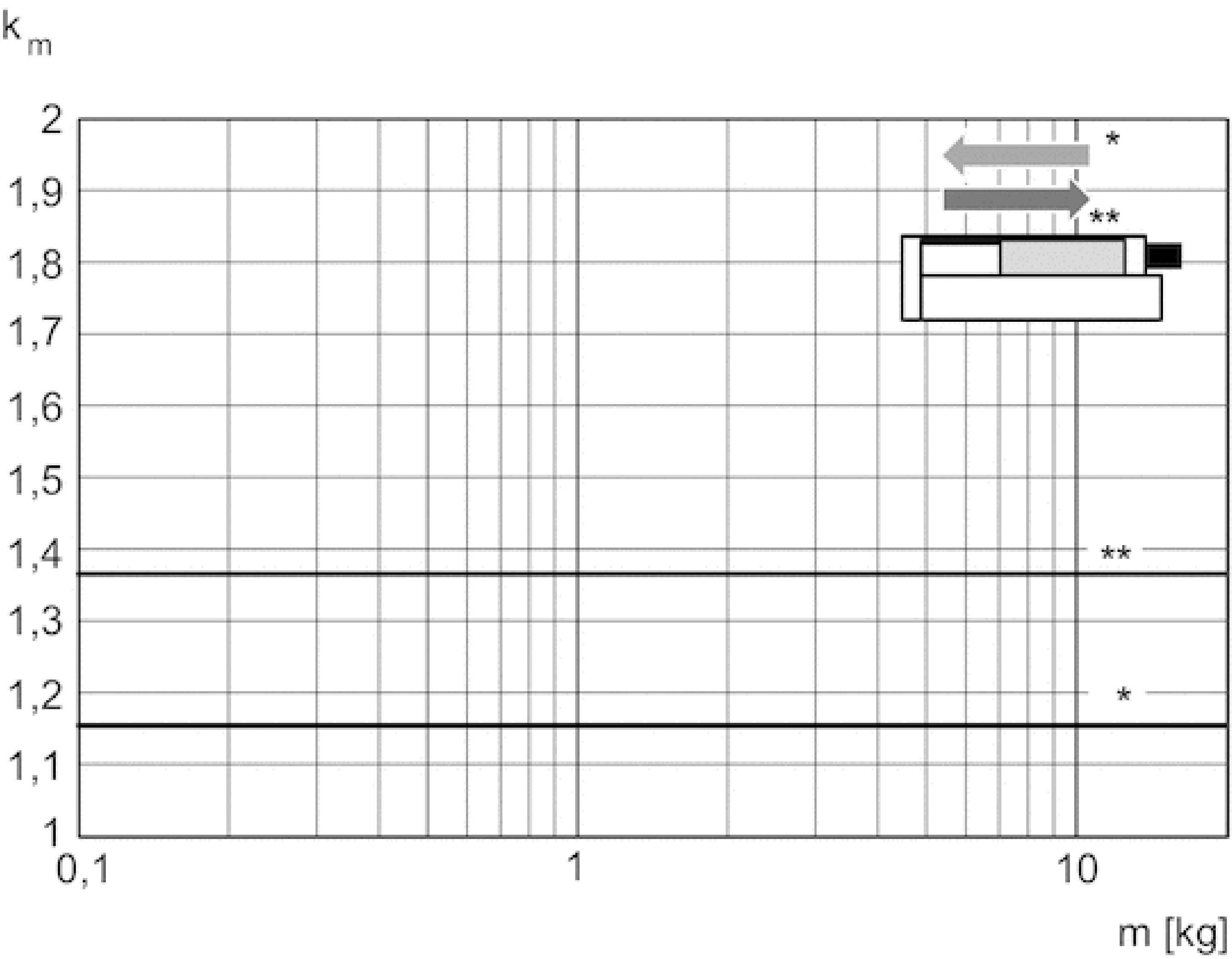
Diagrams

Maximum moving mass



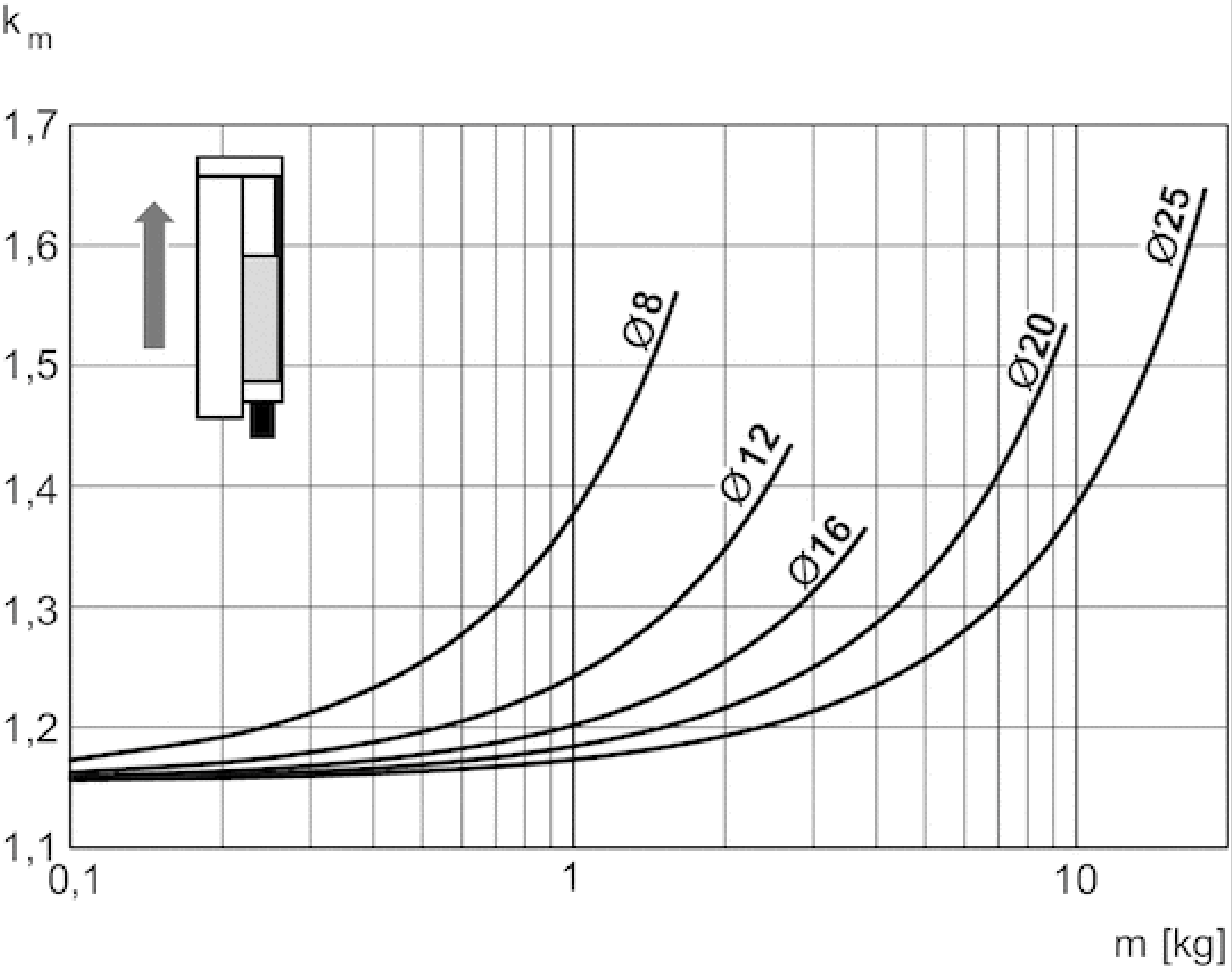
V = velocity [m/s]
m = mass

Correction factor for required speed: retracting and extending, horizontal



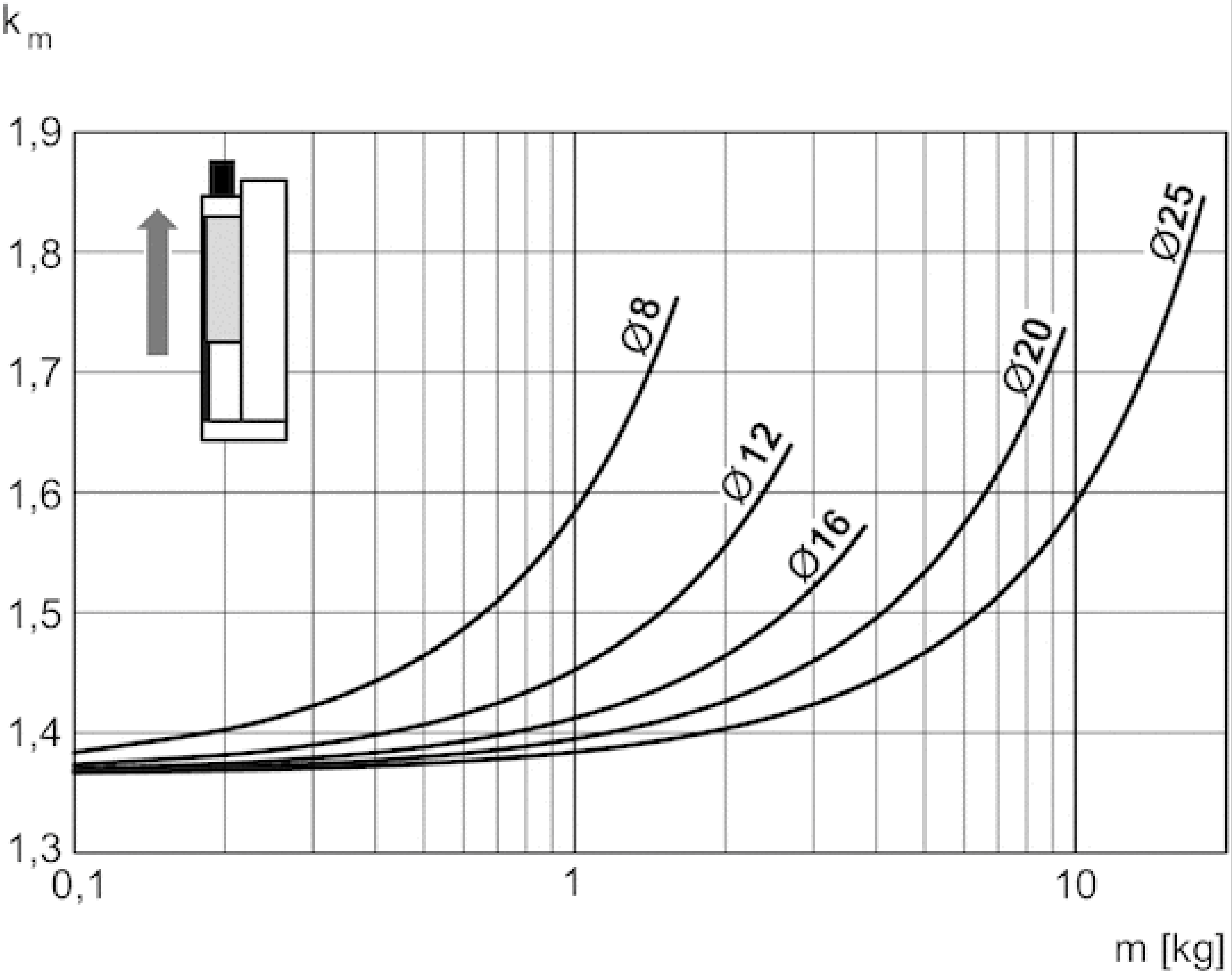
* retracting
** extracting
V = s/1000 • t • km
V = velocity [m/s]
S = stroke

Correction factor for required speed: extending, vertical, upwards



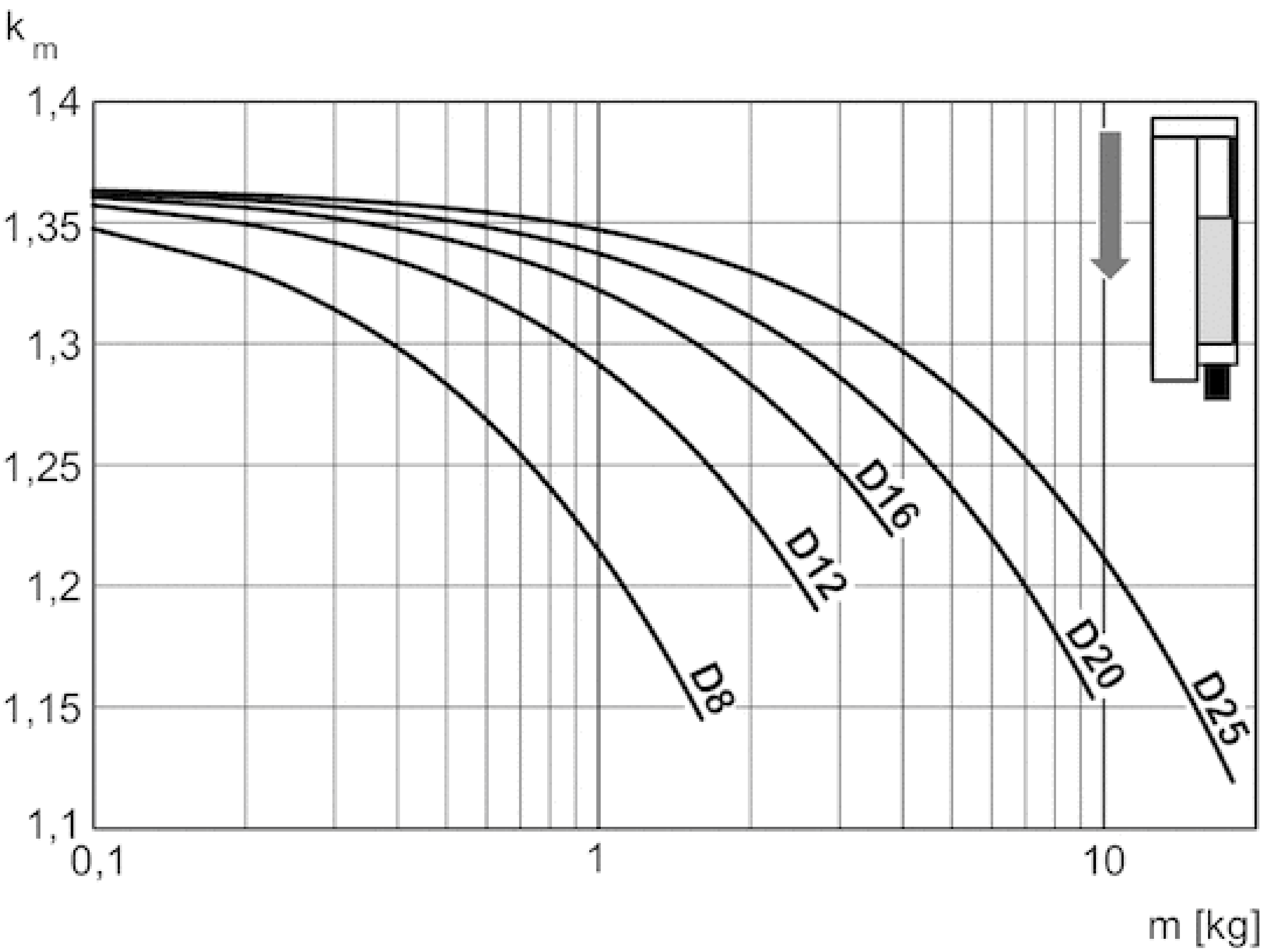
V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

Correction factor for required speed: retracting, vertical, upwards



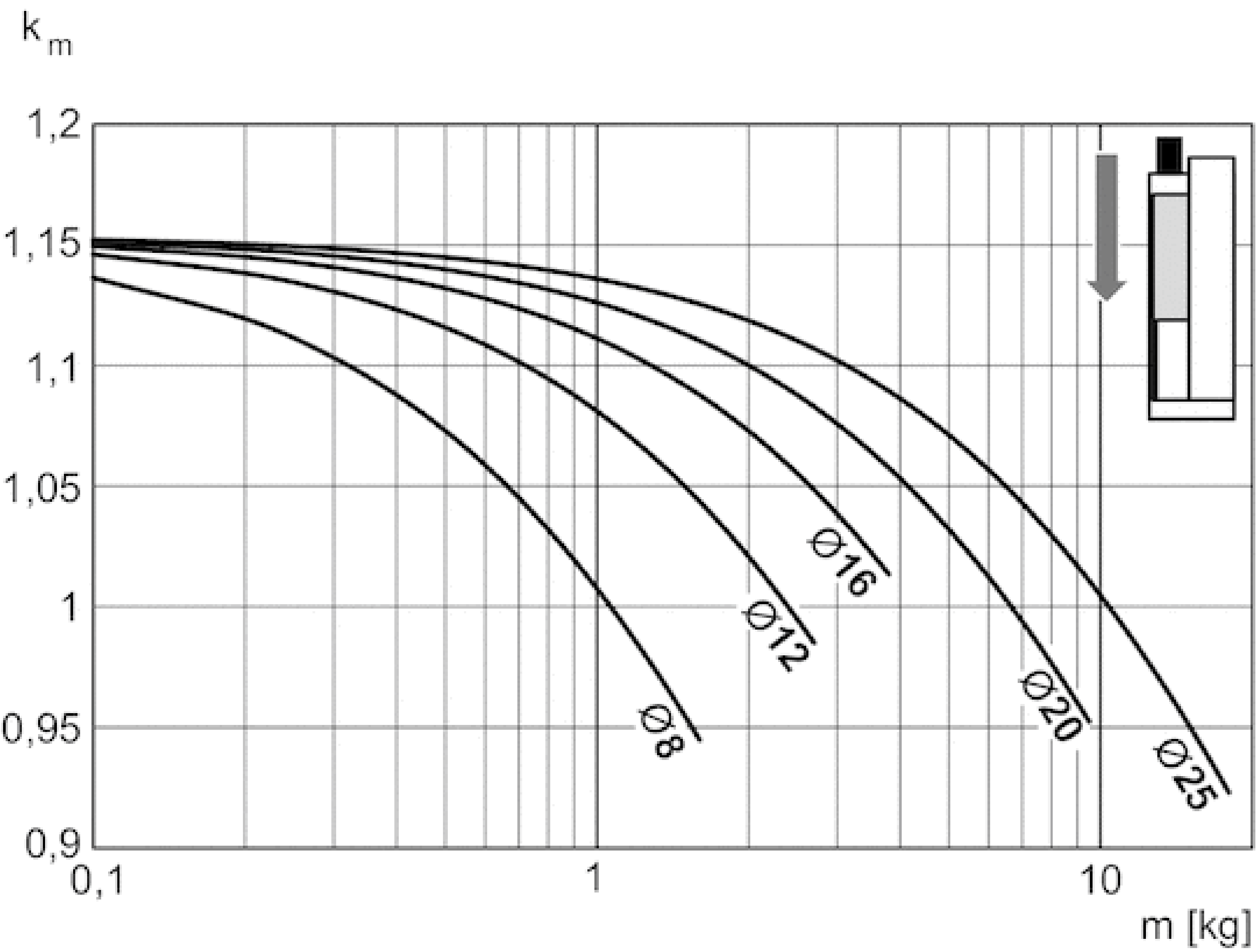
V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

Correction factor for required speed: retracting, vertical, downwards



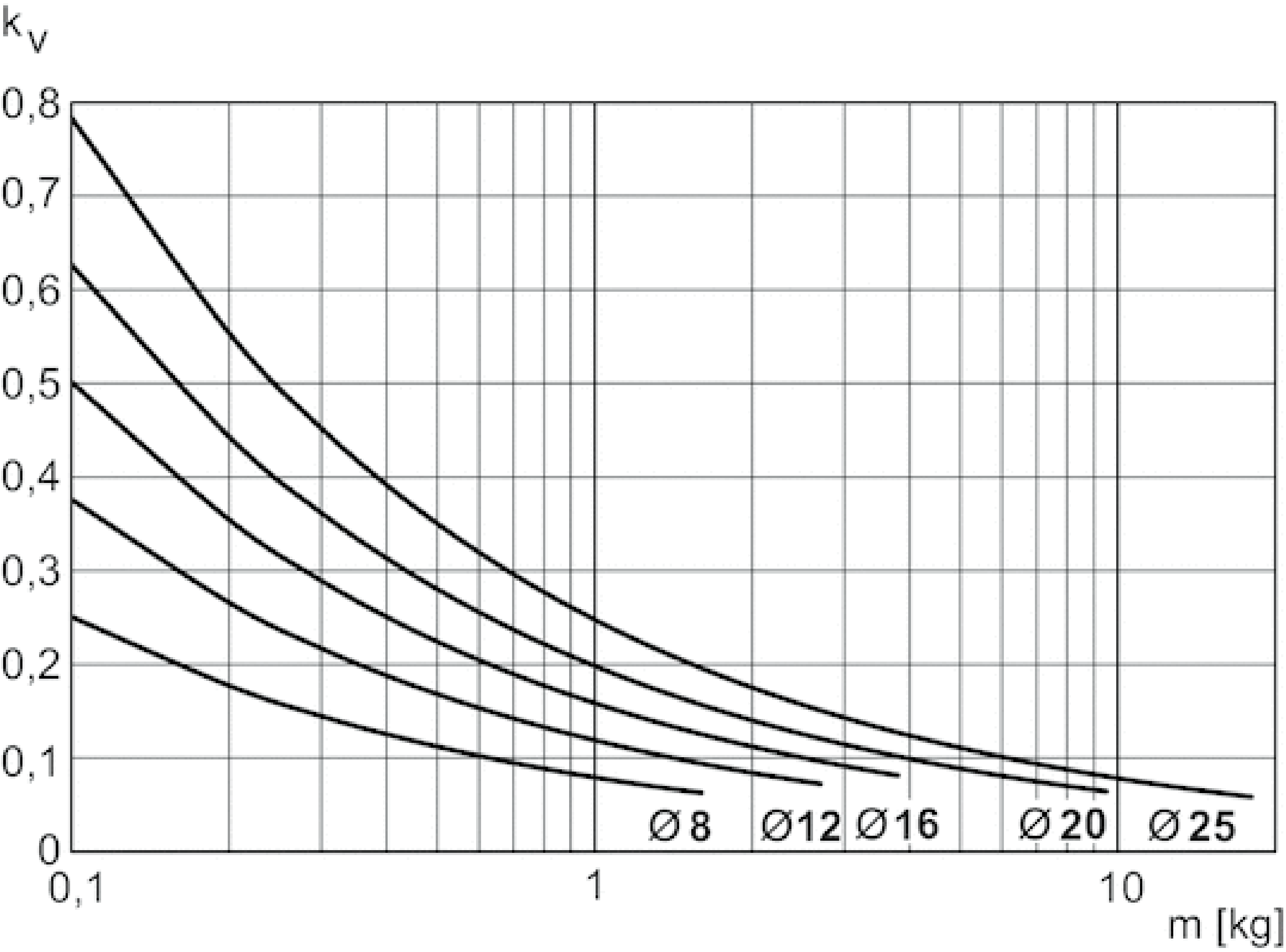
V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

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

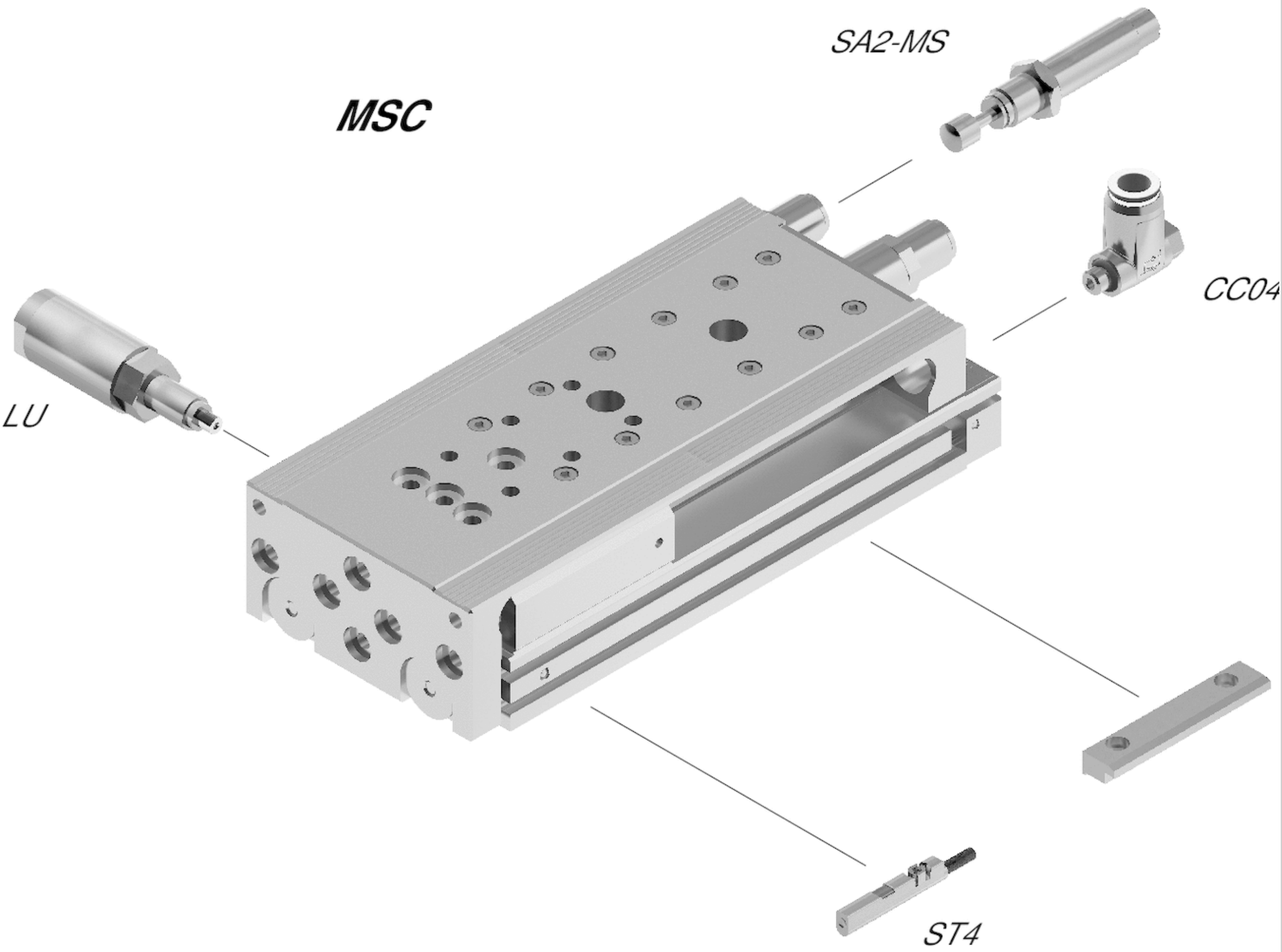
Extracting speed max.



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

Accessories overview

Overview drawing



NOTE:
This overview drawing is only for orientation to indicate where the various accessory parts can be fastened to the cylinder. The illustration has been simplified for this purpose. It is thus not possible to derive the dimensions from this overview.

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