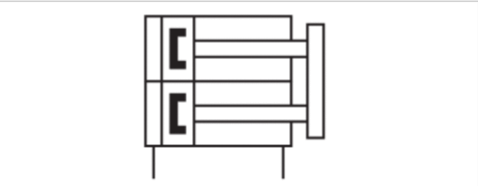
Mini slide, Series MSC-HG-HM

- Scope of delivery: incl. centering rings
- Ø 8-25 mm
- double-acting
- with magnetic piston
- Cushioning hydraulic
- 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
Repetitive precision	0,02 mm
Weight	See table below



Technical data

Piston Ø	8 mm	12 mm	16 mm	20 mm	25 mm
Stroke 20	R412019211	-	-	-	-
30	R412019212	R412019199	R412019183	R412019000	R412019036
40	R412019213	R412019200	R412019184	R412019001	R412019037
50	R412019214	R412019201	R412019185	R412019002	R412019038
80	R412019215	R412019202	R412019186	R412019003	R412019039
100	-	R412019203	R412019187	R412019004	R412019040
125	-	-	R412019188	R412019005	R412019041
150	-	-	R412019189	R412019006	R412019042
200	-	-	-	R412019007	R412019043

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	5 mm	7 mm	7 mm	10 mm
Cushioning energy	0,6 J	1 J	1,2 J	3,1 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	14 mm
Cushioning energy	5,8 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).

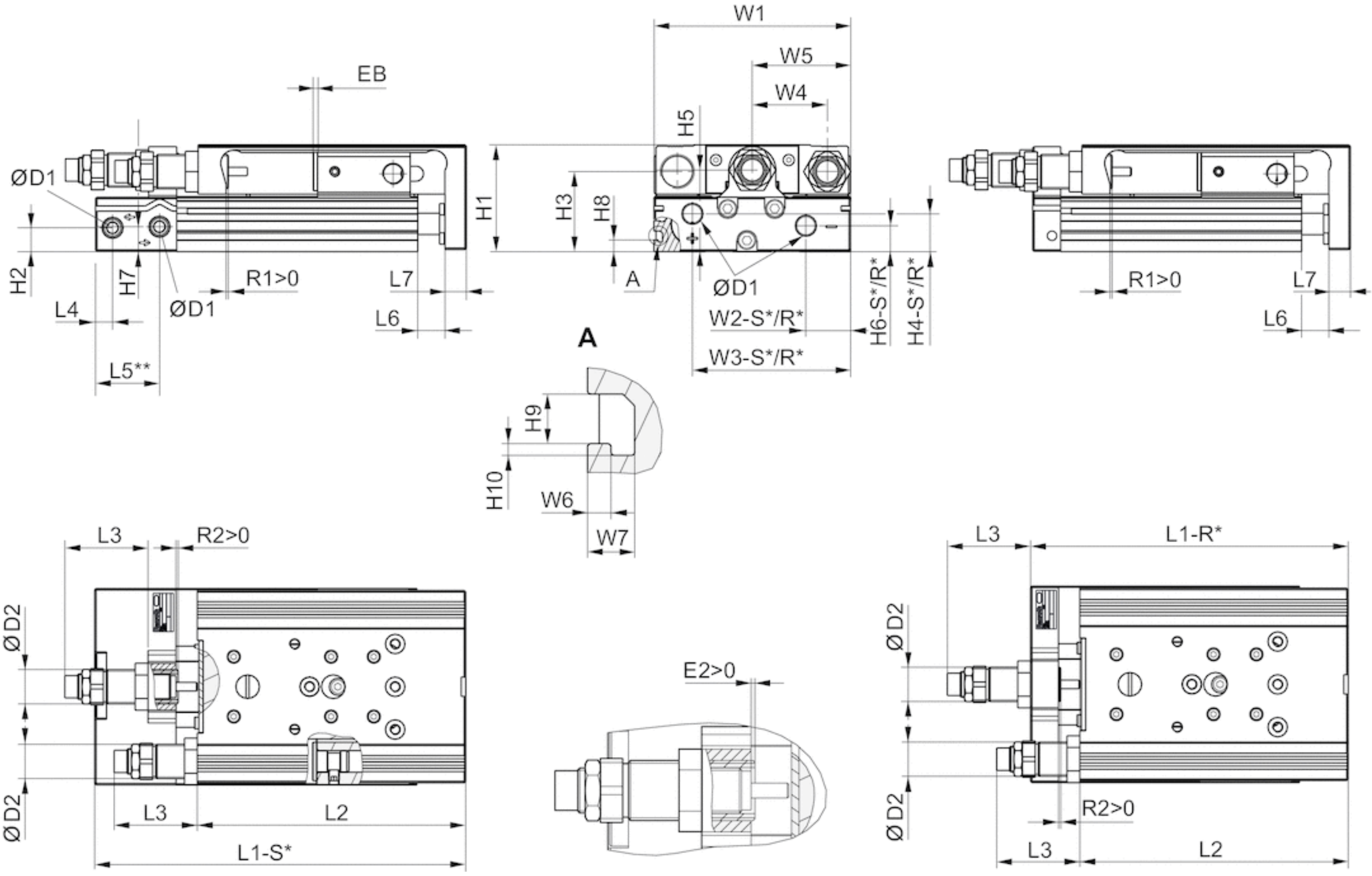
Repetitive precision after 100 consecutive strokes: 0,02 mm
Base with air connections at the back and sides
Intermediate strokes can be configured.
Scope of delivery: incl. centering rings
R1 = stroke setting range for forward stroke
R2 = stroke setting range for return stroke

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	–	–	–	99.3	99.3
16 mm	2	2	2	–	101.8	101.8
20 mm	2	2	2	2	112.9	112.9
25 mm	2	2	2	2	126.1	126.1

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	99.3	109.3	124.3	170.3	190.3
16 mm	101.8	111.8	126.8	172.8	192.8
20 mm	112.9	122.9	137.9	182.9	202.9
25 mm	126.1	136.1	149.1	195.1	215.1

Piston Ø	S=125 L1-R	S=150 L1-R	S=200 L1-R	S=10 L1-S	S=20 L1-S
8 mm	–	–	–	80.7	80.7
12 mm	–	–	–	116.2	116.2
16 mm	281.3	306.3	–	112.7	112.7
20 mm	287.4	327.4	402.4	137.8	137.8
25 mm	292.1	332.1	407.1	149.8	149.8

Piston Ø	S=30 L1-S	S=40 L1-S	S=50 L1-S	S=80 L1-S	S=100 L1-S
8 mm	90.7	100.7	120.7	170.7	–
12 mm	116.2	126.2	141.2	187.2	207.2
16 mm	112.7	122.7	137.7	183.7	203.7
20 mm	137.8	147.8	162.8	207.8	227.8
25 mm	149.8	159.8	172.8	218.8	238.8

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	292.2	317.2	–	90.4	90.4	90.4
20 mm	312.3	352.3	427.3	100.5	100.5	100.5
25 mm	315.8	355.8	430.8	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	–	4.2	4.2	4.2
12 mm	–	5.7	5.7	5.7
16 mm	–	8.7	8.7	8.7
20 mm	390	12.4	12.4	12.4
25 mm	392.5	11.5	11.5	11.5

Piston Ø	S=40 R1 max.	S=50 R1 max.	S=80 R1 max.	S=100 R1 max.
8 mm	4.2	4.2	4.2	–
12 mm	5.7	5.7	5.7	5.7
16 mm	8.7	8.7	8.7	8.7
20 mm	12.4	12.4	12.4	12.4
25 mm	11.5	10.5	11.5	11.5

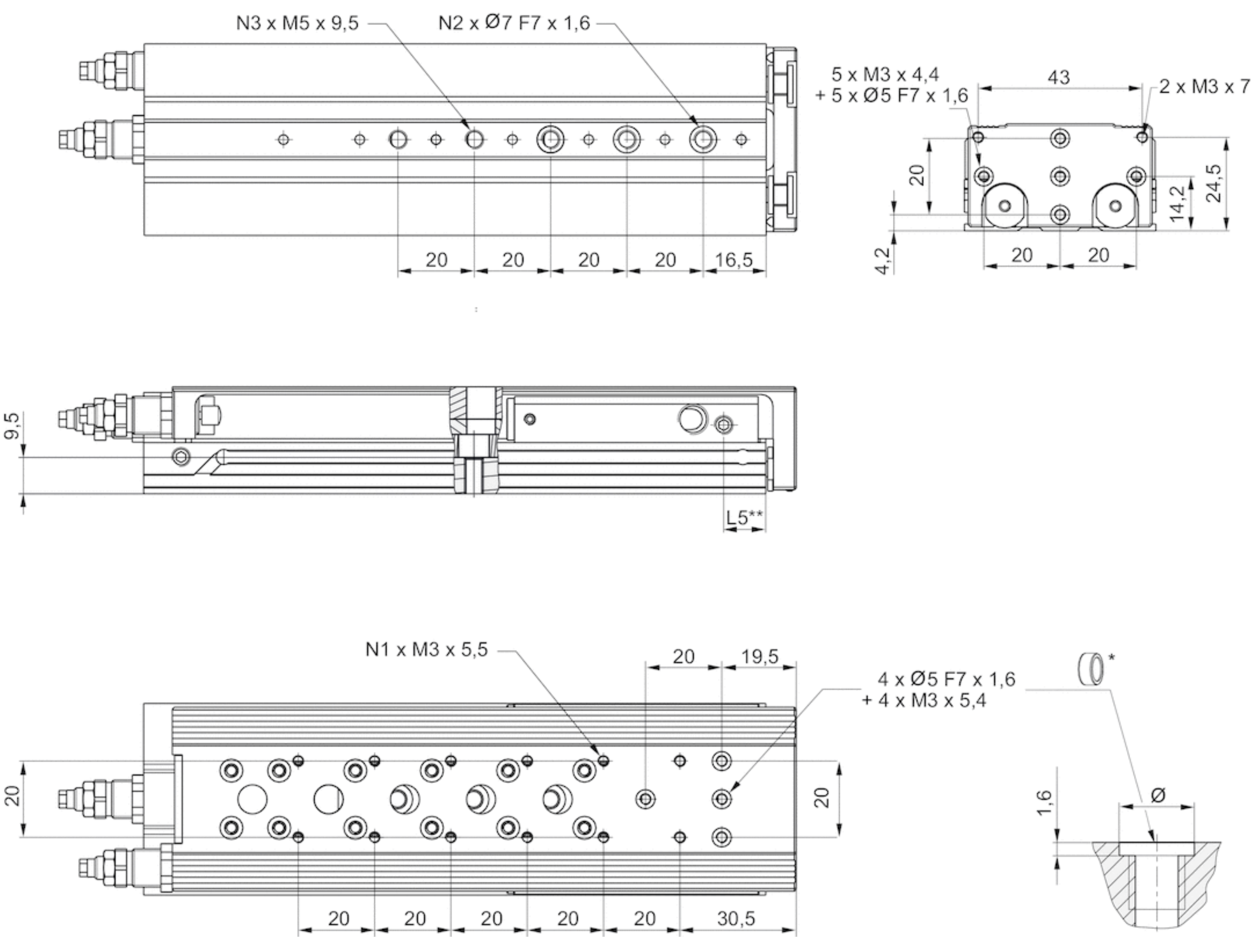
Dimensions

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	-	-	-	31	9.8
12 mm	M5	M12x1	34	5.7	25	11.2	11.2	24.5	5.7	5.7	8.3	-	-	-	46.7	7.2
16 mm	M5	M12x1	40	7.2	29	12.2	12.2	31	7.7	7.7	11.2	-	-	-	44.9	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	48.9	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	67.7	9

Piston Ø	L5 2)	L6	L7	R2	W1	W2-R	W2-S	W3-R	W3-S	W4	W5	W6	W7
8 mm	–	1.9	6	4.1	50.2	–	19.3	–	30.5	18	W1/2	–	–
12 mm	22.5	2	8	12	66	28.8	28.8	53	53	24.5	W1/2	–	–
16 mm	17.7	2	10	10.4	76	31	31	60.5	60.5	30	W1/2	–	–
20 mm	30	2.1	10	14	92	10	21	74	74	35	W1/2	2	4
25 mm	31	2.1	12	16.2	112	11	14	92	92	44	W1/2	2.5	4.8

Dimensions

MSC-08



* = centering rings

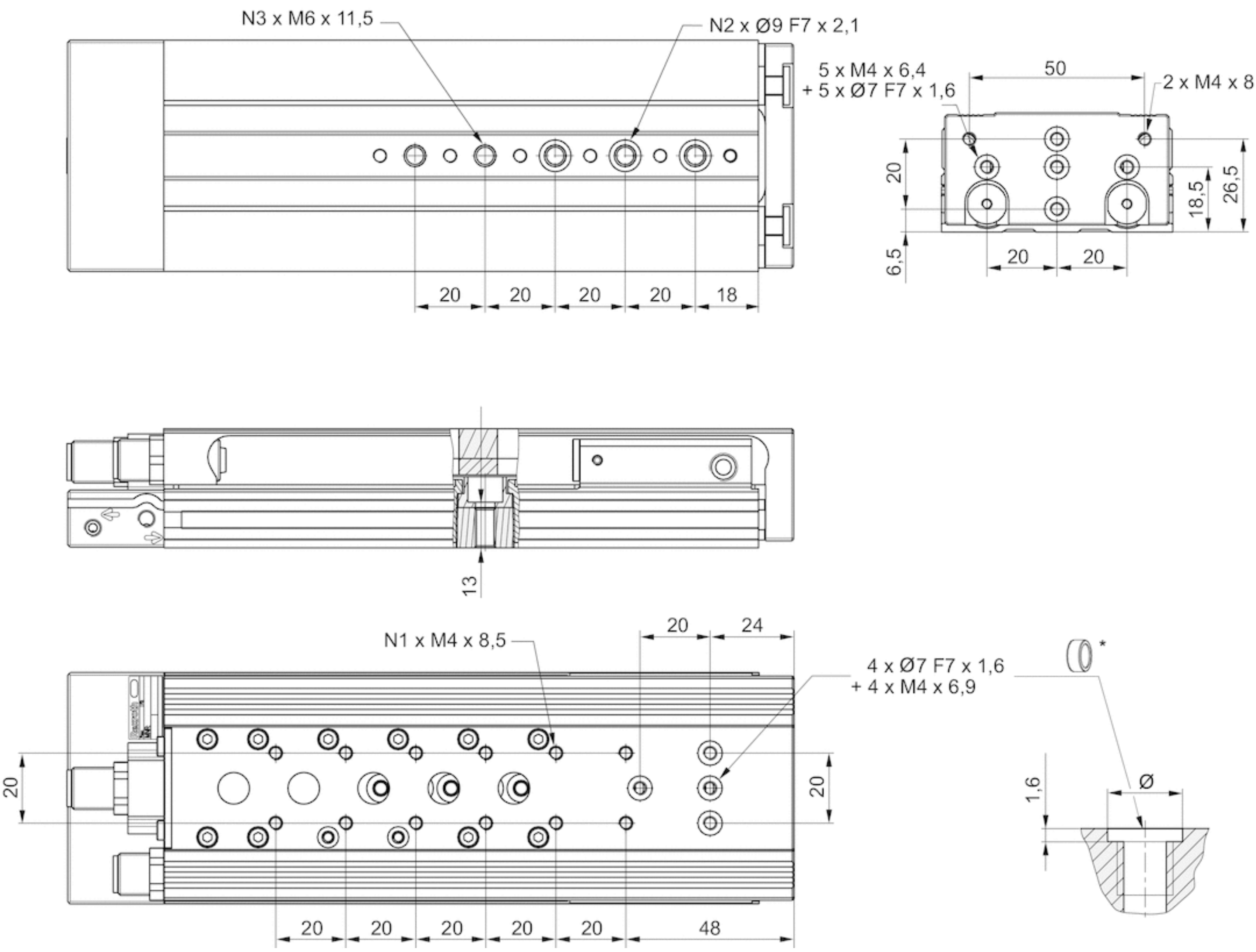
** Ø 8 has a different reference plane.

Dimensions

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

Dimensions

MSC-12



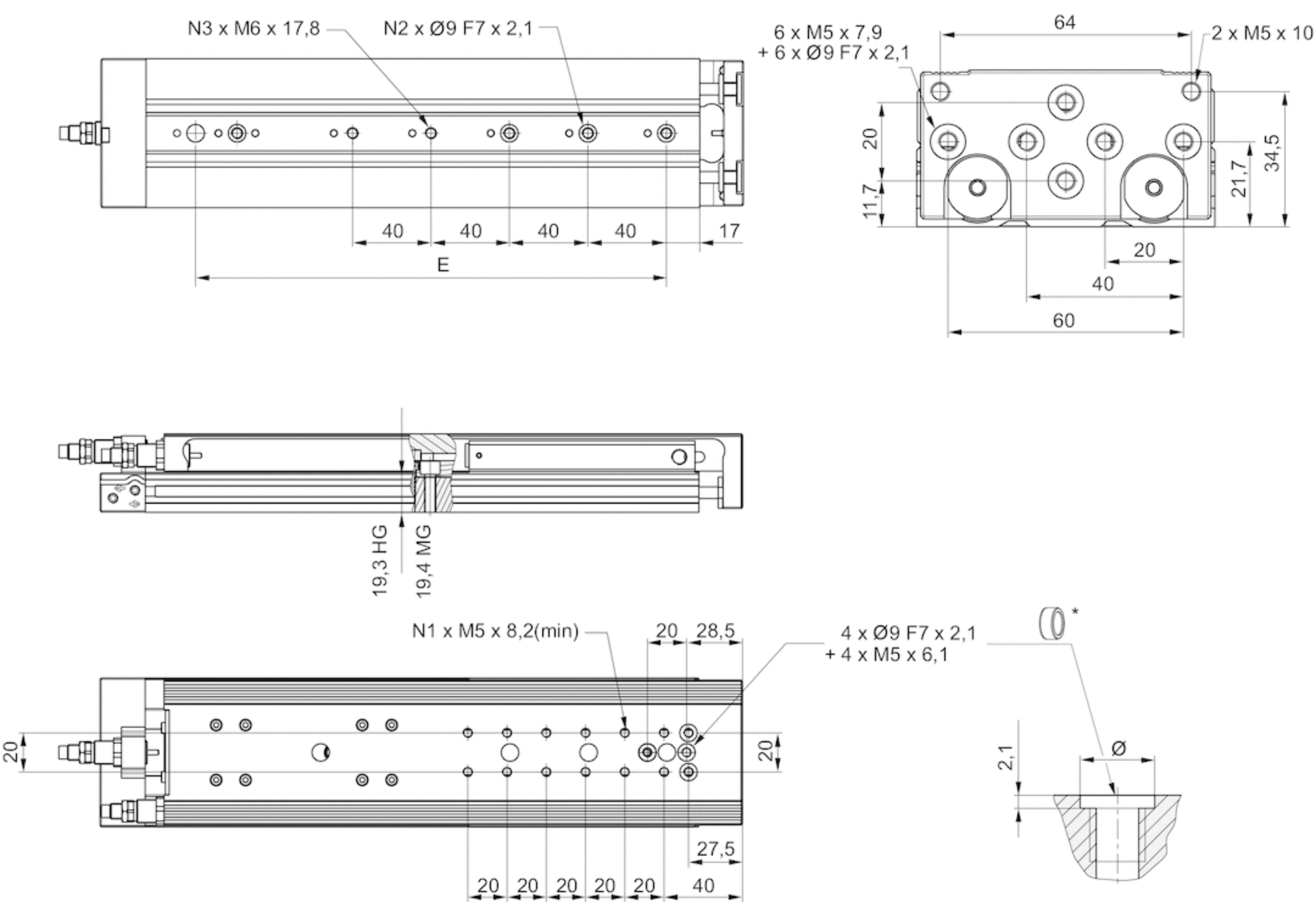
* = centering rings

Dimensions

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

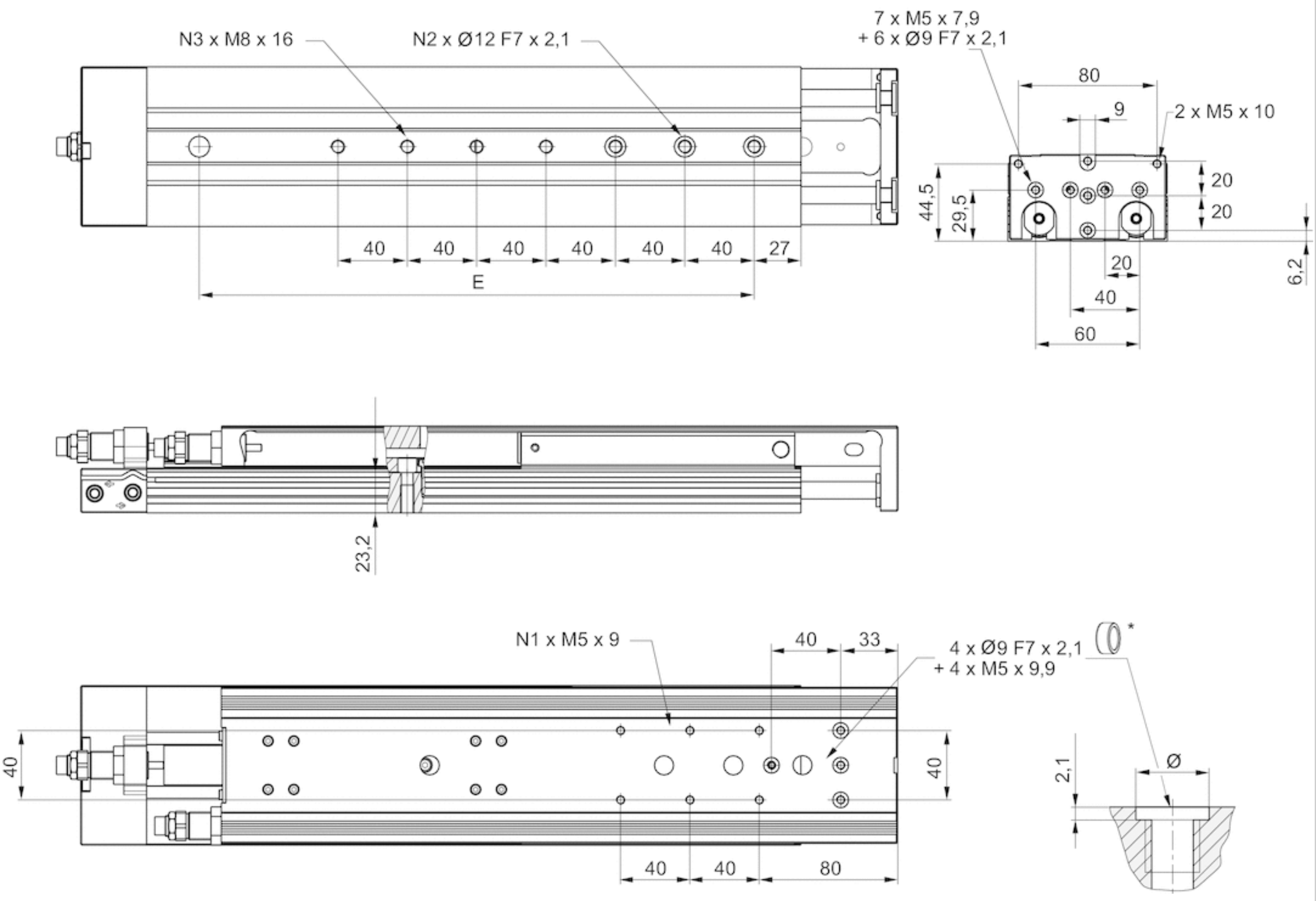
Dimensions

Piston Ø	Stroke	E	N1	N2	N3
16 mm	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

Piston Ø	Stroke	E	N1	N2	N3
16 mm	150	240	12	4	5

Dimensions

MSC-20



* = centering rings

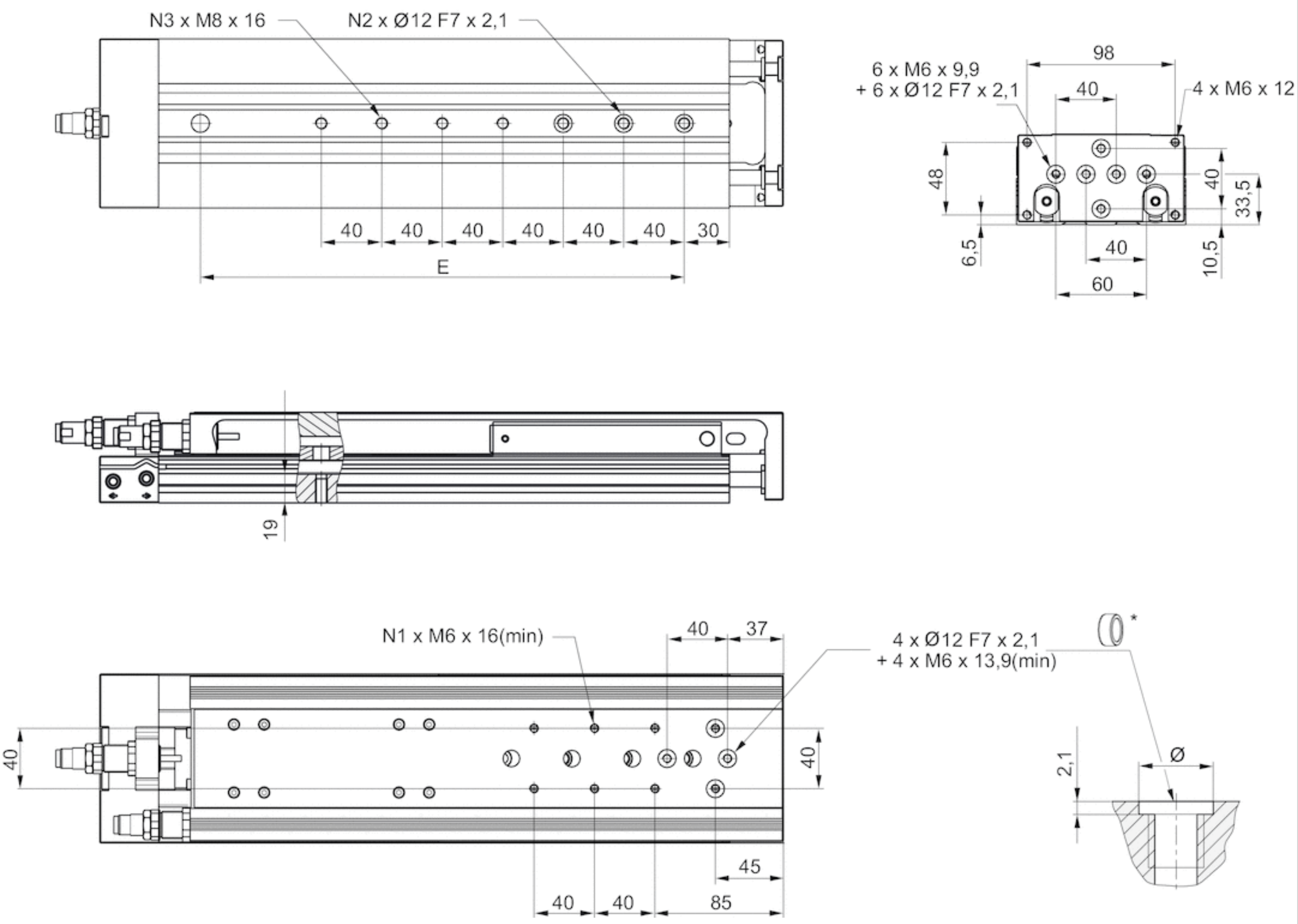
Dimensions

Piston Ø	Stroke	E	N1	N2	N3
20 mm	30	–	2	2	2
20 mm	40	–	2	2	2
20 mm	50	–	2	2	2

Piston Ø	Stroke	E	N1	N2	N3
20 mm	80	–	4	3	3
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	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

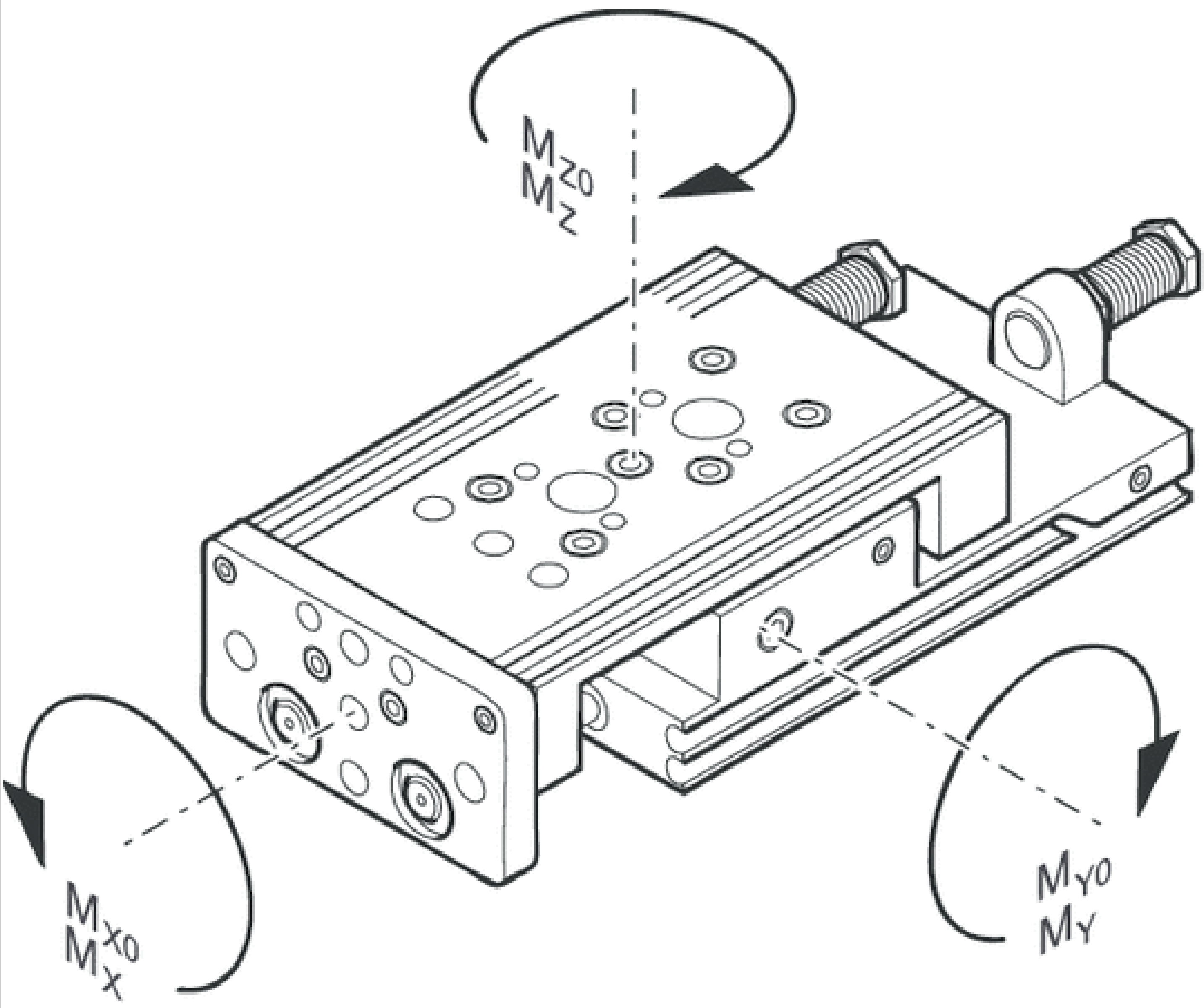
Weight [kg]

Piston Ø	Stroke	Weight kg
8 mm	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	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	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
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

Piston Ø	Stroke	Weight kg
20 mm	200	4,12 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

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correction factor (a)

Piston Ø	S	a [mm]	d [mm]	Mx0 Static moment M [Nm]	My0 Static moment M [Nm]
8 mm	20	50	14	7	7
8 mm	30	60	14	7	7
8 mm	40	70	14	7	7
8 mm	50	80	14	9	13
8 mm	80	125	14	13	25
12 mm	30	64.5	16	20	14
12 mm	40	74.5	16	20	14
12 mm	50	84.5	16	23	19
12 mm	80	125	16	33	32
12 mm	100	145	16	33	32
16 mm	30	65.5	15	35	25
16 mm	40	75.5	15	35	25
16 mm	50	85.5	15	38	29
16 mm	80	126	15	74	58
16 mm	100	146	15	74	58
16 mm	125	198.5	15	88	118
16 mm	150	223.5	15	88	119
20 mm	30	70.5	20	87	57
20 mm	40	80.5	20	87	57
20 mm	50	90.5	20	93	65
20 mm	80	130.5	20	116	99
20 mm	100	150.5	20	116	99
20 mm	125	201	20	126	136
20 mm	150	233.5	20	126	152
20 mm	200	296	20	126	179
25 mm	30	77.5	24	100	90
25 mm	40	87.5	24	100	90
25 mm	50	96.5	24	100	90
25 mm	80	137	24	110	129
25 mm	100	157	24	110	129
25 mm	125	201	24	145	180
25 mm	150	236.5	24	145	201
25 mm	200	299	24	145	236

Mz0 Static moment M [Nm]	Mx Dynamic moment M [Nm]	My Dynamic moment M [Nm]
7	1.1	1.9
7	1.1	1.9
7	1.1	1.9
13	1.3	2.9
25	1.3	3.8
14	4.2	4.4
14	4.2	4.4
19	4.6	5.6
32	5.2	8.2

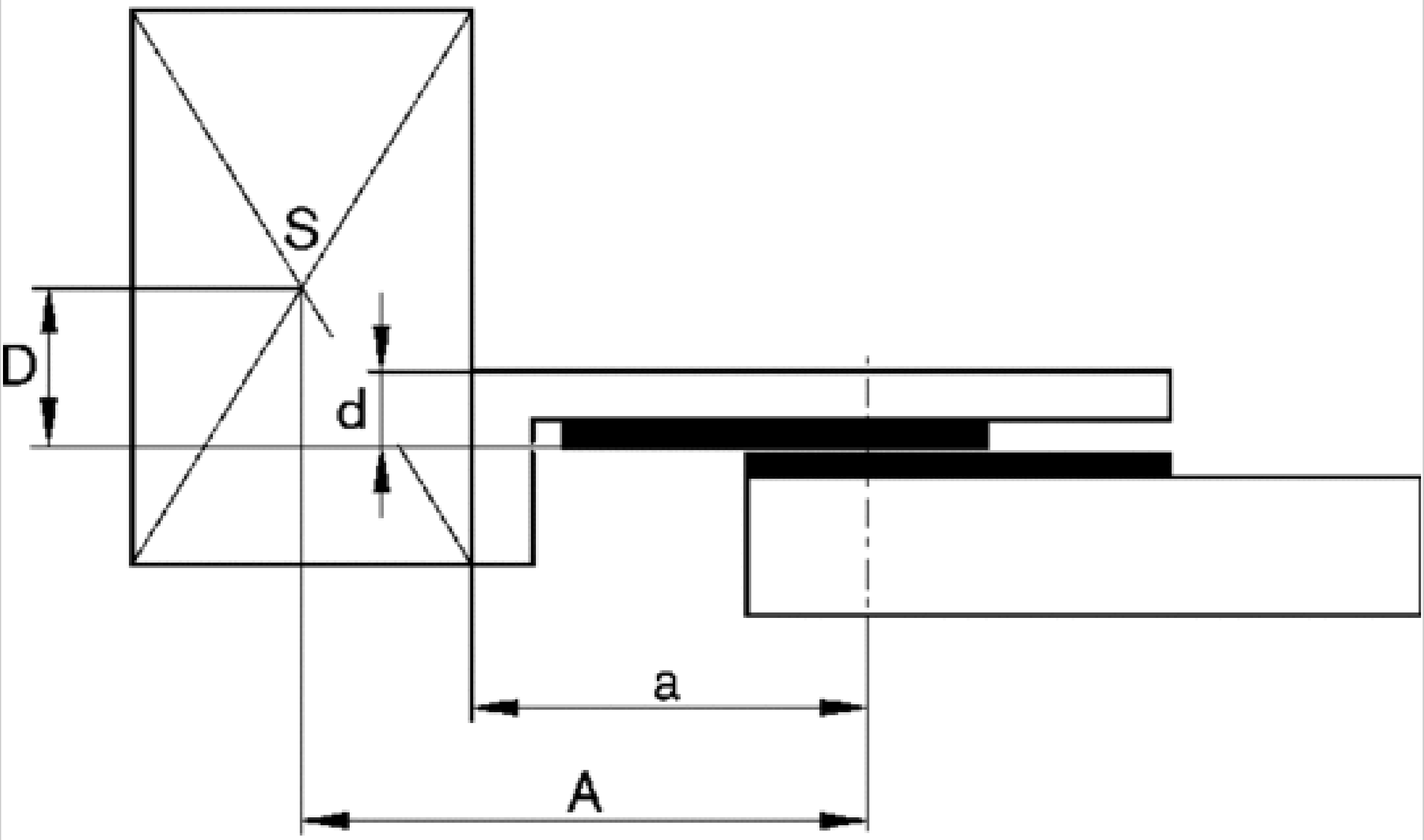
Mz0 Static moment M [Nm]	Mx Dynamic moment M [Nm]	My Dynamic moment M [Nm]
32	5.2	8.2
25	6.5	6.6
25	6.5	6.6
29	7	7.6
58	8.7	12.8
58	8.7	12.8
118	15.2	31.2
119	15.2	31.2
57	9.6	12
57	9.6	12
65	10	13.3
99	11.7	19
99	11.7	19
136	19	40.6
152	19	45.4
179	19	53.4
90	22.9	19.5
90	22.9	19.5
90	15.3	13
129	18.8	20.8
129	18.8	20.8
180	20.4	44.1
201	20.4	49.2
236	20.4	57.8

Mz Dynamic moment M [Nm]
1.9
1.9
1.9
2.9
3.8
4.4
4.4
5.6
8.2
8.2
6.6
6.6
7.6
12.8
12.8
31.2
31.2
12
12
13.3
19
19
40.6

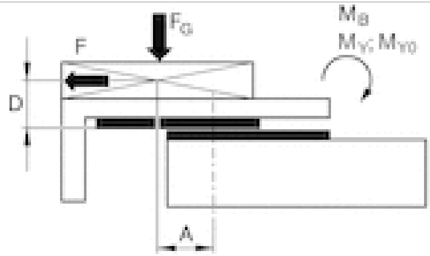
Mz Dynamic moment M [Nm]
45.4
53.4
19.5
19.5
13
20.8
20.8
44.1
49.2
57.8

Dimensions

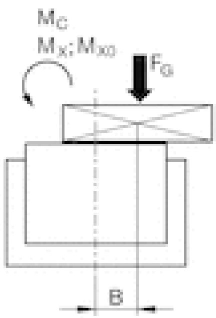
correction factor (a, d)



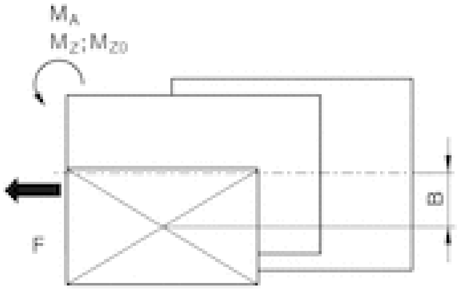
horizontal



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.	$M_C = F_G \cdot B$



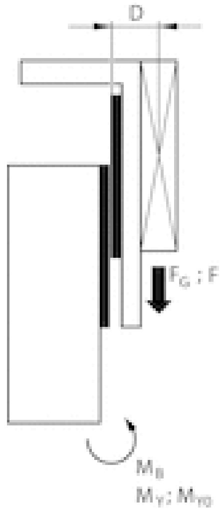
stat.	$M_{A0} = F \cdot B$
dyn.	$M_A = 0$

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

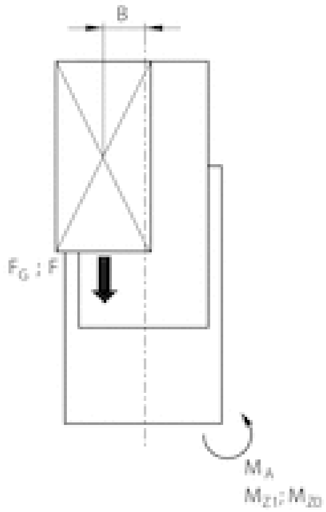
F = m • a
FG = m • g
a = 1250•V²/H

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.	$M_A = F_G \cdot B$

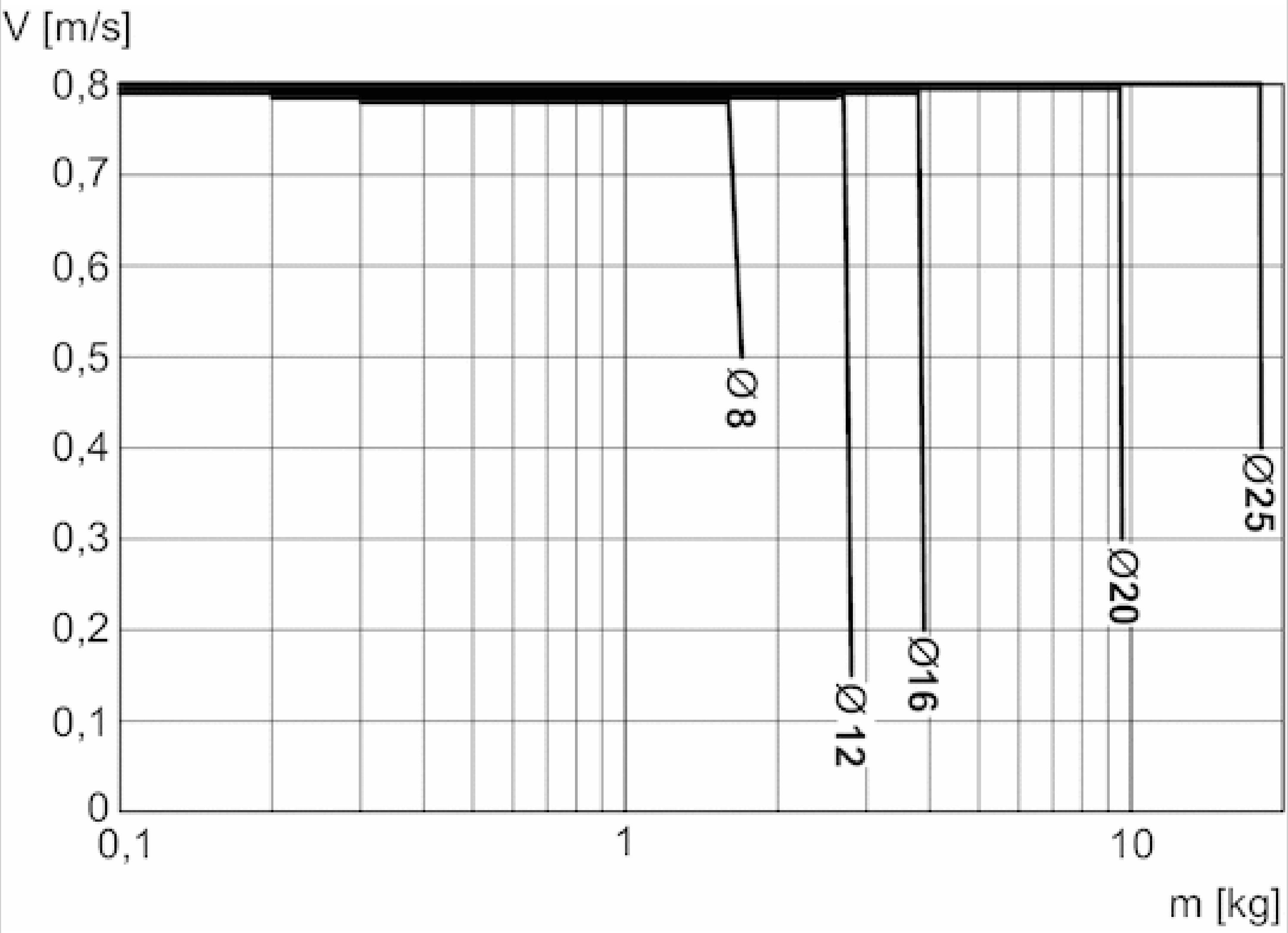
dyn.	$\frac{M_A}{M_1} + \frac{M_B}{M_2} \leq 1$
stat.	$\frac{M_{A0}}{M_{Z0}} + \frac{M_{B0}}{M_{Y0}} \leq 1$

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]

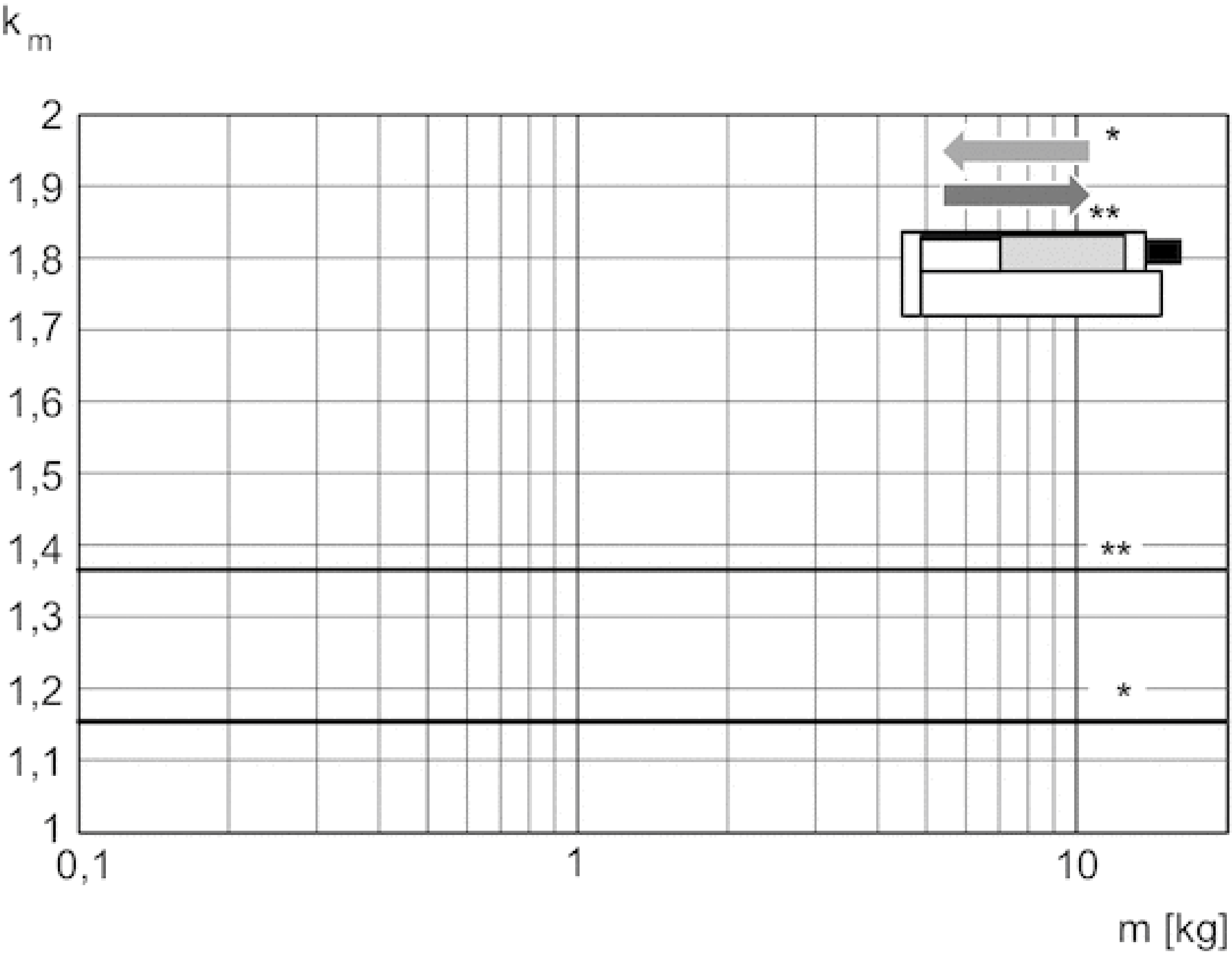
Diagrams

Minimum and maximum moving mass



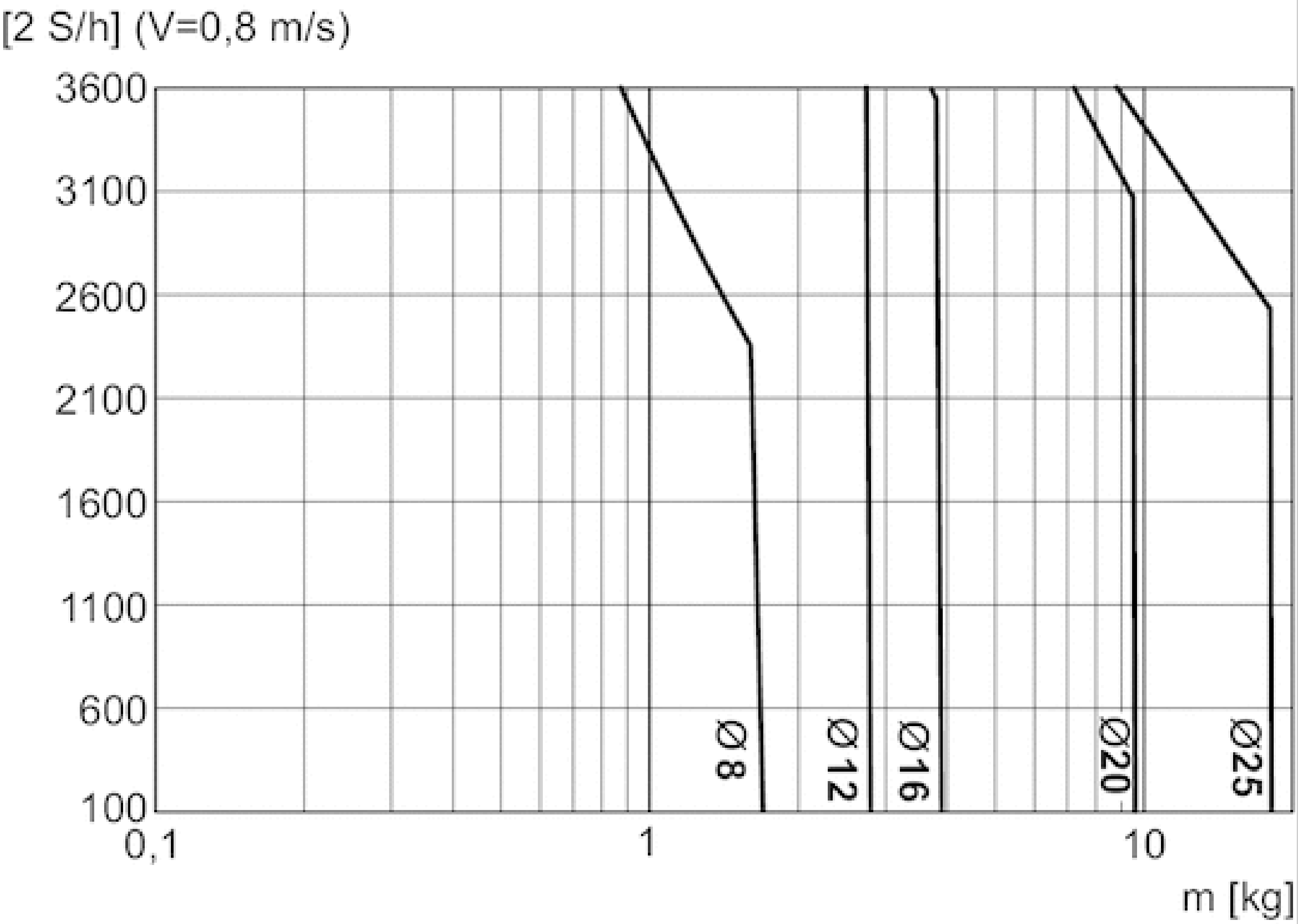
V = velocity [m/s]
m = mass

Correction factor for required speed: retracting and extending, horizontal



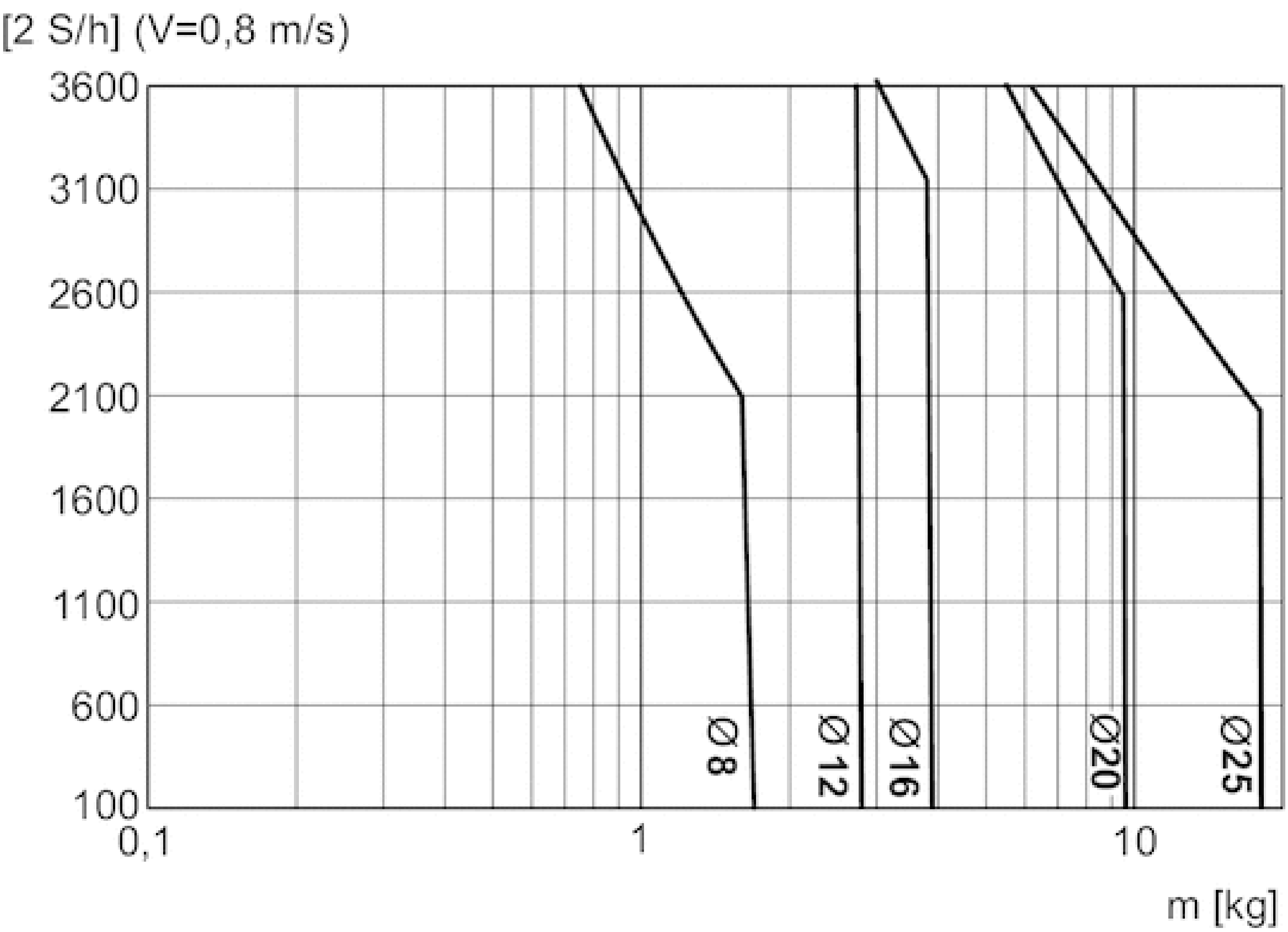
* retracting
** extracting
V = s/1000 • t • km
V = velocity [m/s]
S = stroke

Max. additional moving mass, horizontal



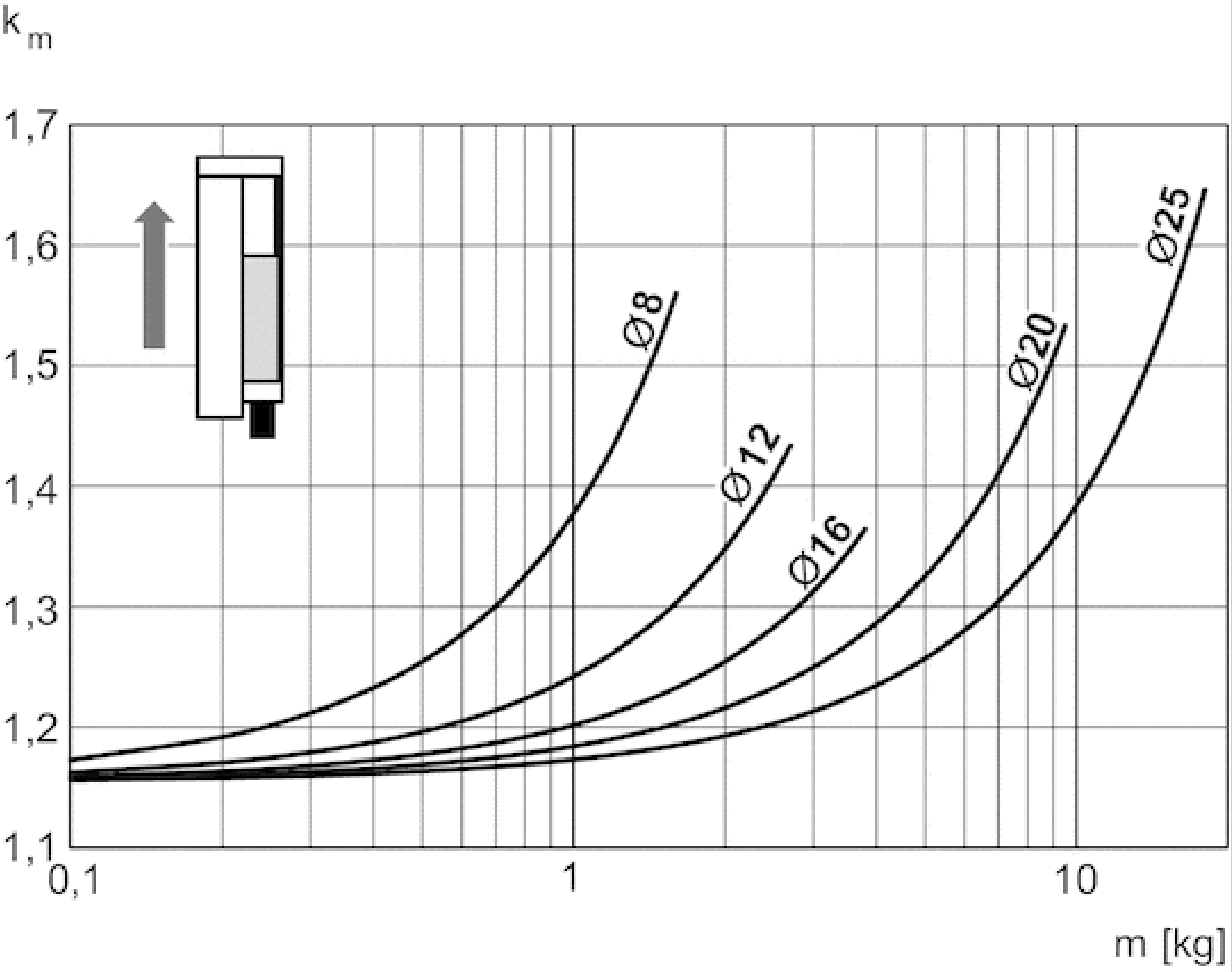
S = stroke [mm]
2 x S = 1 cycle
V = velocity [m/s]
m = mass

Max. additional moving mass, vertical



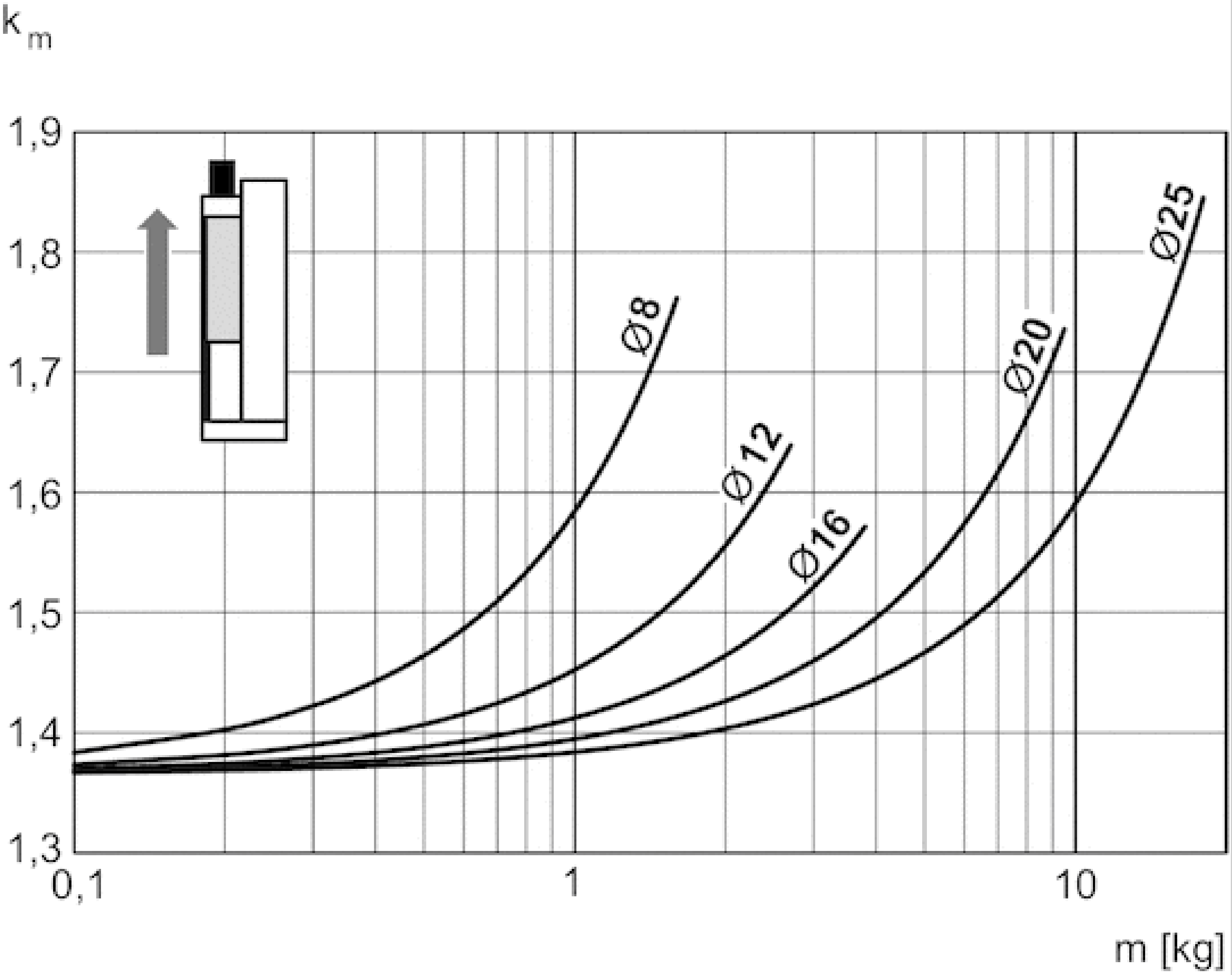
S = stroke [mm]
2 x S = 1 cycle
V = velocity [m/s]
m = mass

Correction factor for required speed: extending, vertical, upwards



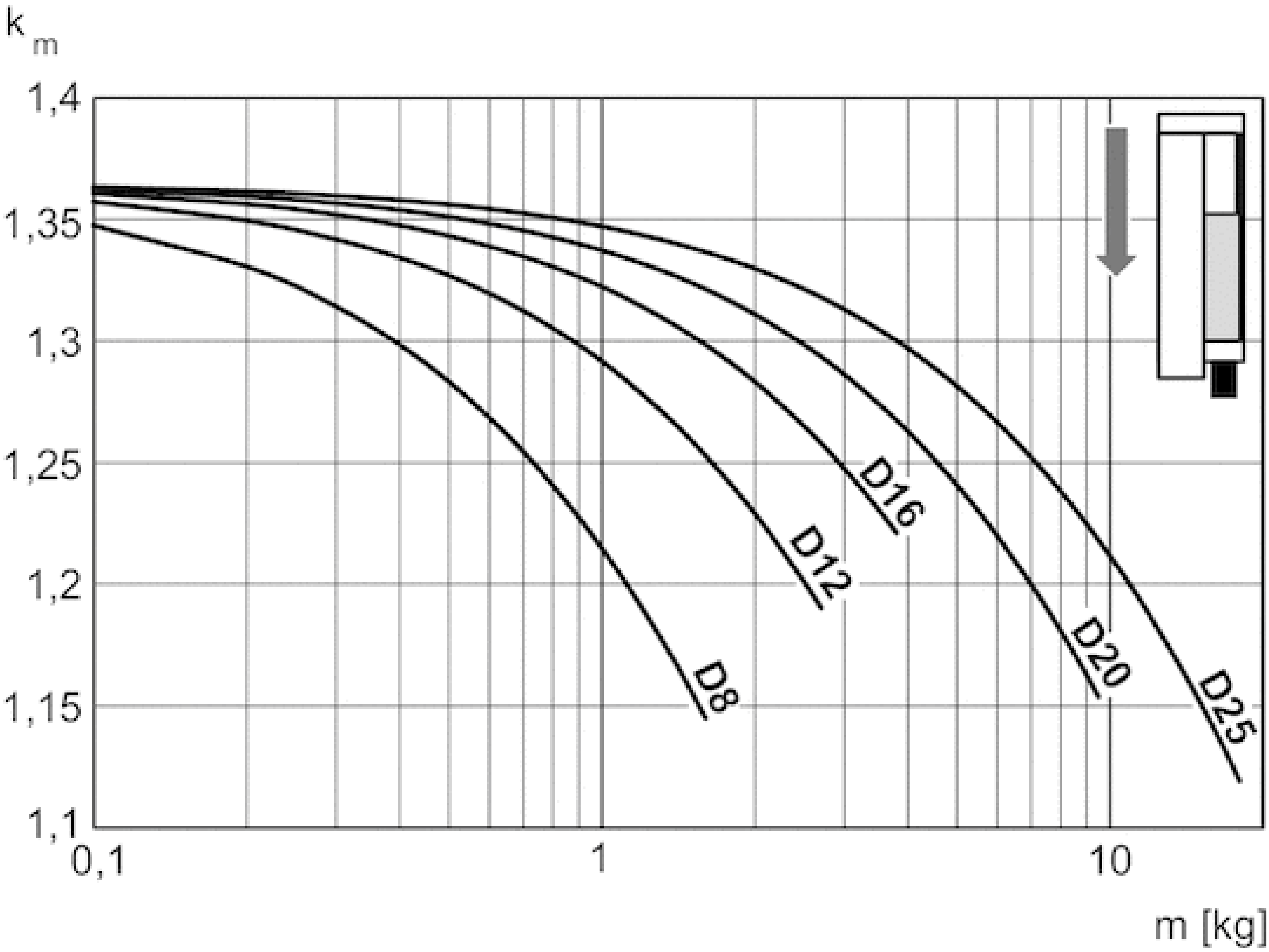
V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

Correction factor for required speed: retracting, vertical, upwards



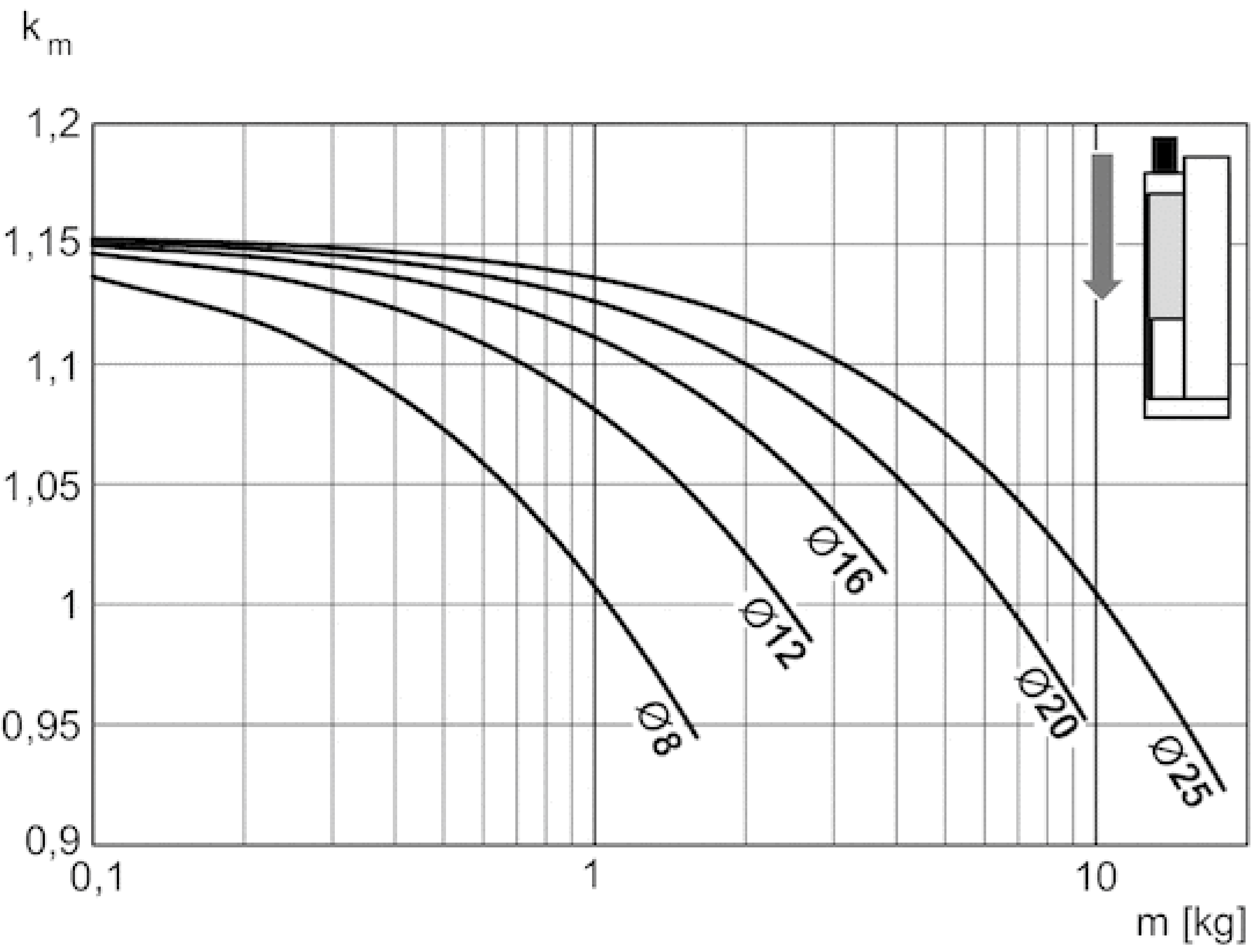
V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

Correction factor for required speed: retracting, vertical, downwards



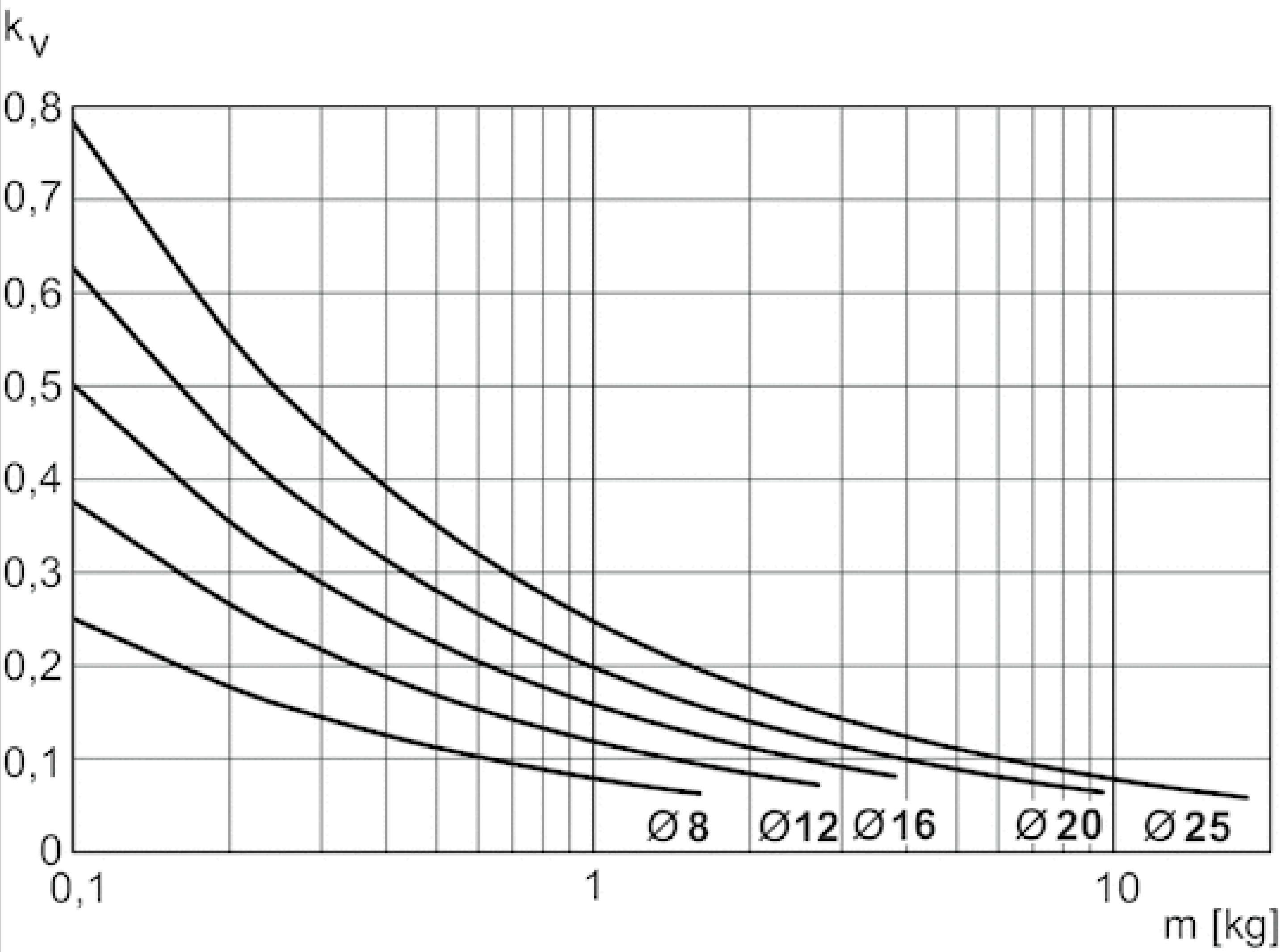
V = s/1000 • t • km
V = velocity [m/s]
S = stroke [mm]
t = time [s] for one stroke
m = mass

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

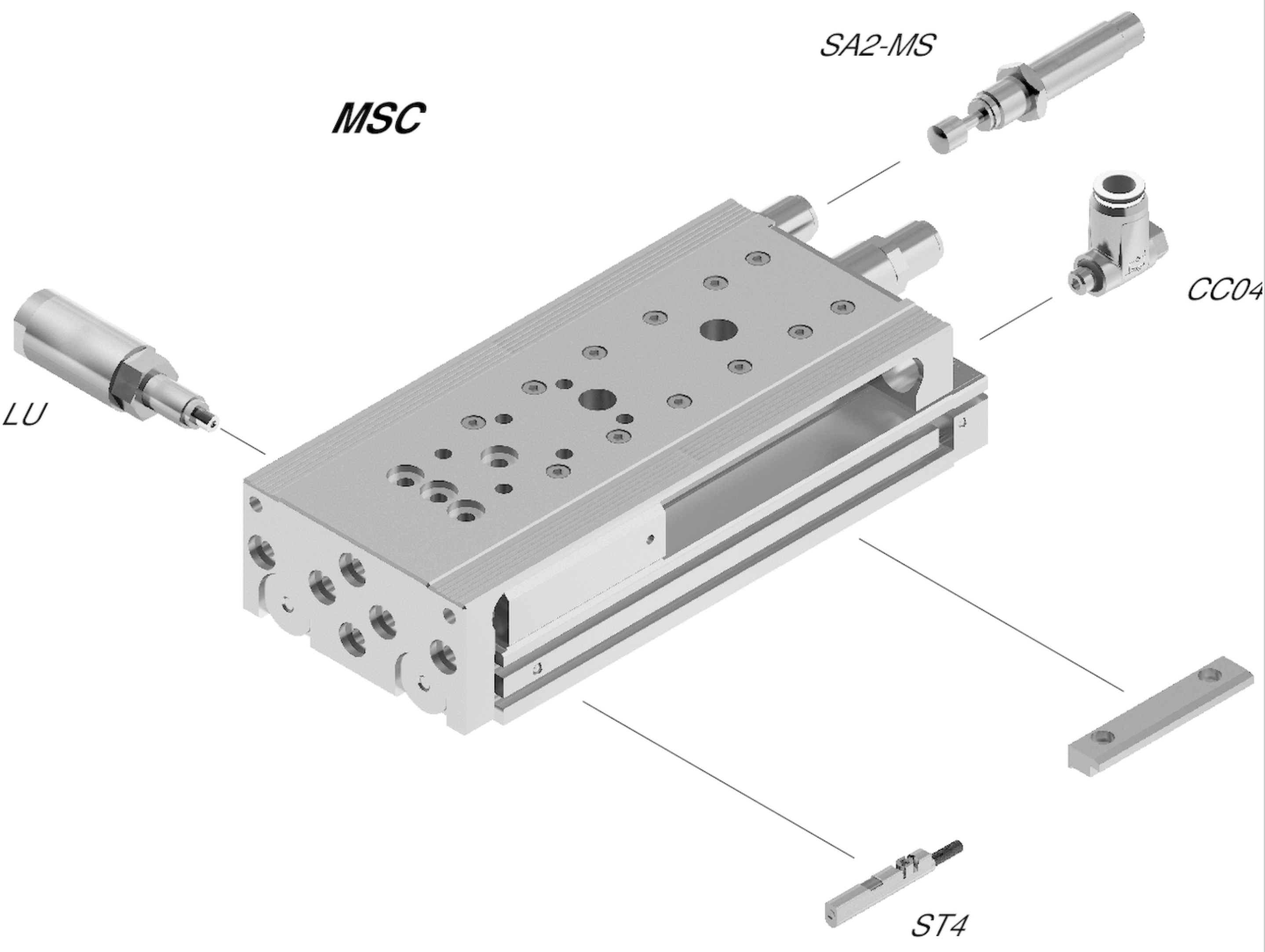
Extracting speed max.



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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