

AVENTICS Series MSC Guide cylinders

The AVENTICS Series MSC mini slides have a compact design, require minimal installation space and can be optimally configured for virtually any automated handling task. A wide range of configuration options make the mini slide a truly universal handling component. Precise and reliable operation, coupled with a custom configuration and tailored to the specific application – these attributes allow the mini slides to assume the actuator role in efficient handling. The Series MSC offers high torque absorption and maximum stability. In addition, it provides technical features that guarantee optimally adjusted functions and maintenance-friendly processes. Fast, secure and efficiently connected with the special Easy-2-Combine Interface, the mini slides can be combined with the other components of a handling system without additional mounting plates.

- High torque and load absorption with maximum stability
- Compact design
- Easy-2-Combine Interface



Technical data

Industry	Industrial
Piston Ø	12 mm
Stroke	50 mm
Functional principle	Double-acting
Easy2Combine	capable
double piston	with double piston
Port	M5
Cushioning	hydraulic
Repetitive precision	0,02 mm
Min. working pressure	1 bar
Max. working pressure	10 bar
Min. ambient temperature	0 °C
Max. ambient temperature	60 °C
Medium	Compressed air
Retracting piston force, theoretical	107 N
Extracting piston force, theoretical	143 N
Max. speed	0.8 m/s
Cushioning length	7 mm
Cushioning energy	1 J

Min. oil content of compressed air	0 mg/m ³
Max. oil content of compressed air	1 mg/m ³
Max. particle size	5 µm
Pressure for determining piston forces with integrated ball rail guide	6,3 bar
	With integrated "High Performance" ball rail system
Weight	0.67 kg

Material

Housing material	Aluminum
Surface housing	anodized
Material piston rod	Stainless Steel
Material front plate	Aluminum
Surface front plate	anodized
Seal material	Polyurethane
Material ball rail table	Aluminum
Surface ball rail table	anodized
Material guide rail	Steel, chrome-plated
Surface guide rail	hardened
Material centering rings	Stainless Steel
Part No.	R412019201

Technical information

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

The pressure dew point must be at least 15 °C less than ambient and medium temperature and may not exceed 3 °C.

The oil content of compressed air must remain constant during the life cycle.

Dimensions



R*: base with air connections only at the back

S*: base with air connections at the back and sides

** $\varnothing 8$ has a different reference plane.

Mini slide, Series MSC-HG-HM

R412019201

Series MSC

2026-03-26

Piston Ø	Ø D1	Ø D2	H1	H2	H3	H4-R	H4-S	H5	H6-R	H6-S
8	M5	M10x1	28	9.6	20.5	-	7.5	19.5	-	5.5
12	M5	M12x1	34	5.7	25	11.2	11.2	24.5	5.7	5.7
16	M5	M12x1	40	7.2	29	12.2	12.2	31	7.7	7.7
20	G 1/8	M16x1,5	50	11.2	37.5	17.3	17.3	38.2	11.7	12.2
25	G 1/8	M18x1,5	60	14.2	44	15.5	22.9	46.5	13.2	21.7

Piston Ø	H7	H8	H9	H10	L3 max.	L4	L5 2)	L6	L7	R2
8	18	-	-	-	31	9.8	-	1.9	6	4.1
12	8.3	-	-	-	46.7	7.2	22.5	2	8	12
16	11.2	-	-	-	44.9	6.5	17.7	2	10	10.4
20	11.7	5.5	4.2	1	48.9	8	30	2.1	10	14
25	16.2	6.9	5.2	1.5	67.7	9	31	2.1	12	16.2

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

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=125 EB	S=150 EB	S=200 EB
8	12	2	2	2	2	2	–	–	–	–
12	22	12	2	2	2	2	2	–	–	–
6	22	12	2	2	2	2	2	2	2	–
20	22	12	2	2	2	2	2	2	2	2
25	22	12	2	2	2	2	2	2	2	2

Piston Ø	S=10 L1-R	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=125 L1-R	S=150 L1-R	S=200 L1-R
8	–	–	–	–	–	–	–	–	–	–
12	99.3	99.3	99.3	109.3	124.3	170.3	190.3	–	–	–
6	101.8	101.8	101.8	111.8	126.8	172.8	192.8	281.3	306.3	–
20	112.9	112.9	112.9	122.9	137.9	182.9	202.9	287.4	327.4	402.4
25	126.1	126.1	126.1	136.1	149.1	195.1	215.1	292.1	332.1	407.1

Piston Ø	S=10 L1-S	S=20 L1-S	S=30 L1-S	S=40 L1-S	S=50 L1-S	S=80 L1-S	S=100 L1-S	S=125 L1-S	S=150 L1-S	S=200 L1-S
8	80.7	80.7	90.7	100.7	120.7	170.7	–	–	–	–
12	116.2	116.2	116.2	126.2	141.2	187.2	207.2	–	–	–
6	112.7	112.7	112.7	122.7	137.7	183.7	203.7	292.2	317.2	–
20	137.8	137.8	137.8	147.8	162.8	207.8	227.8	312.3	352.3	427.3
25	149.8	149.8	149.8	159.8	172.8	218.8	238.8	315.8	355.8	430.8

Piston Ø	S=10 L2	S=20 L2	S=30 L2	S=40 L2	S=50 L2	S=80 L2	S=100 L2	S=125 L2	S=150 L2	S=200 L2
8	73.5	73.5	83.5	93.5	113.5	163.5	–	–	–	–
12	88.8	88.8	88.8	98.8	113.8	159.8	179.8	–	–	–
6	90.4	90.4	90.4	100.4	115.4	161.4	181.4	269.9	294.9	–
20	100.5	100.5	100.5	110.5	125.5	170.5	190.5	275	315	390
25	111.5	111.5	111.5	121.5	134.5	180.5	200.5	277.5	317.5	392.5

Piston Ø	S=10 R1 max.	S=20 R1 max.	S=30 R1 max.	S=40 R1 max.	S=50 R1 max.	S=80 R1 max.	S=100 R1 max.	S=125 R1 max.	S=150 R1 max.	S=200 R1 max.
8	4.2	4.2	4.2	4.2	4.2	4.2	–	–	–	–
12	5.7	5.7	5.7	5.7	5.7	5.7	5.7	–	–	–
6	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	–
20	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
25	11.5	11.5	11.5	11.5	10.5	11.5	11.5	11.5	11.5	11.5

Correction factor (a, d)



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.	$\frac{M_{A0}}{M_{Z0}} + \frac{M_{B0}}{M_{Y0}} + \frac{M_{C0}}{M_{X0}} \leq 1$

$F = m \cdot a$ $FG = m \cdot g$ $a = 1250 \cdot V^2 / H$
 F = deceleration force [N] F_G = force due to weight [N] m = load mass [kg] a
= deceleration [m/s^2] g = gravitational acceleration 9,81 [m/s^2] V = velocity
[m/s] H = stroke length of shock absorber [mm]

Correction factor (a, d)
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.	$\frac{M_{A0}}{M_{Z0}} + \frac{M_{B0}}{M_{Y0}} \leq 1$

$F = m \cdot a$ $F_G = m \cdot g$ $a = 1250 \cdot V^2 / H$
 F = deceleration force [N] F_G = 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]

Mini slide, Series MSC-HG-HM

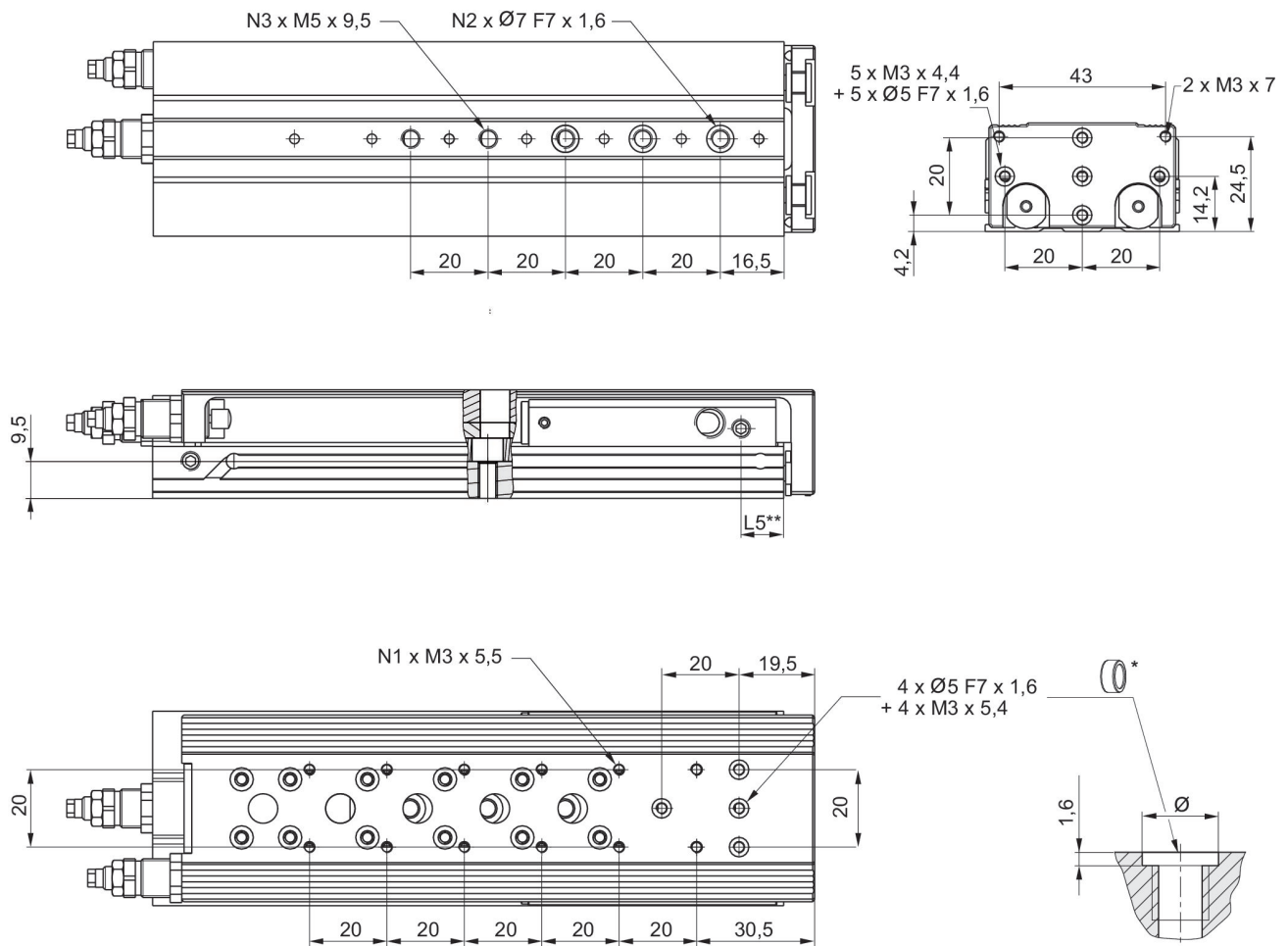
R412019201

Series MSC

2026-03-26

Dimensions

MSC-08



* = centering rings

** Ø 8 has a different reference plane.

Part No.	Piston Ø	Stroke	N1	N2	N3	L5
R412019204	8	10	4	2	2	11
R412019205	8	20	4	2	2	11
R412019206	8	30	4	2	2	11
R412019207	8	40	6	2	2	11
R412019208	8	50	8	3	3	11
R412019209	8	80	12	3	5	11

Mini slide, Series MSC-HG-HM

R412019201

Series MSC

2026-03-26

Dimensions

MSC-12



* = centering rings

Part No.	Piston Ø	Stroke	N1	N2	N3
R412019190	12	10	4	2	2
R412019191	12	20	4	2	2
R412019192	12	30	4	2	2
R412019193	12	40	4	2	2
R412019194	12	50	6	3	3
R412019195	12	80	10	3	5
R412019196	12	100	12	3	5

Mini slide, Series MSC-HG-HM

R412019201

Series MSC

2026-03-26

Part No.	Piston Ø	Stroke	N1	N2	N3
R480643794	12	10	4	2	2
R480643795	12	20	4	2	2
R480643796	12	30	4	2	2
R480643797	12	40	4	2	2
R480643798	12	50	6	3	3
R480643799	12	80	10	3	5
R480643800	12	100	12	3	5

Part No.	Piston Ø	Stroke	N1	N2	N3
R412019190	12	10	4	2	2
R412019191	12	20	4	2	2
R412019192	12	30	4	2	2
R412019193	12	40	4	2	2
R412019194	12	50	6	3	3
R412019195	12	80	10	3	5
R412019196	12	100	12	3	5

Minimum and maximum moving mass



V = velocity [m/s]
m = mass

Mini slide, Series MSC-HG-HM

R412019201

Series MSC

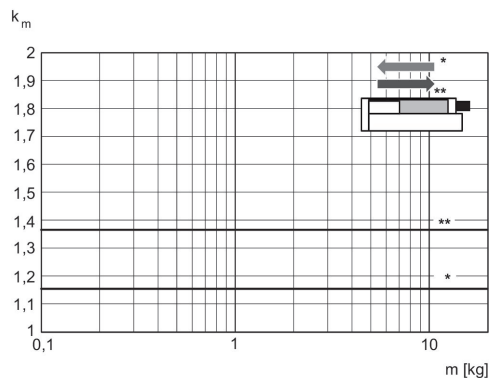
2026-03-26

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.

Correction factor for required speed:
retracting and extending, horizontal



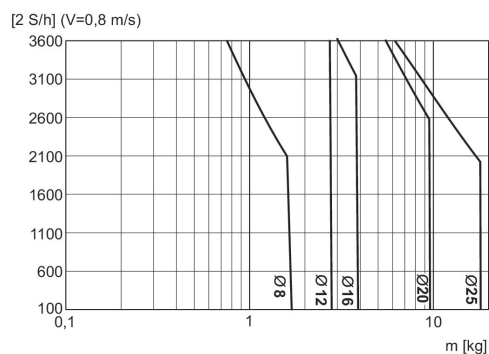
* retracting
** extending
 $V = s/1000 \cdot t \cdot km$
 V = velocity [m/s]
 S = stroke

Max. additional moving mass,
horizontal



S = stroke [mm]
 $2 \times S = 1$ cycle
 V = velocity [m/s]
 m = mass

Max. additional moving mass, vertical



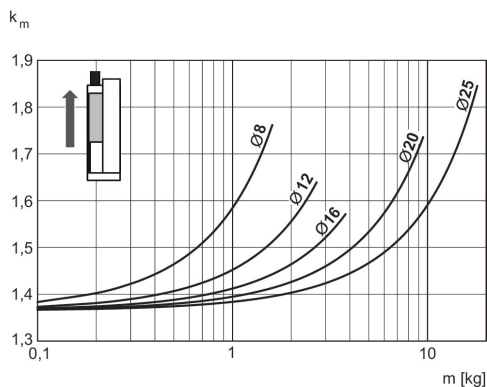
S = stroke [mm]
 $2 \times S = 1$ cycle
 V = velocity [m/s]
 m = mass

Correction factor for required speed:
extending, vertical, upwards



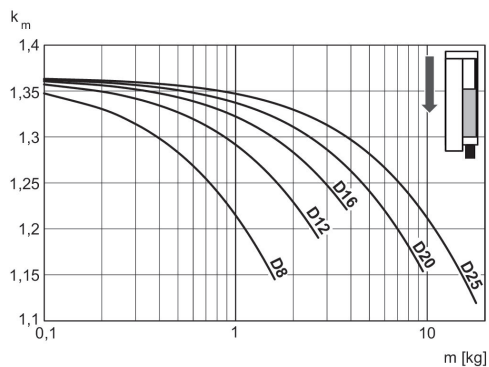
$V = s/1000 \cdot t \cdot km$
 V = velocity [m/s]
 S = stroke [mm]
 t = time [s] for one stroke
 m = mass

Correction factor for required speed:
retracting, vertical, upwards



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

Correction factor for required speed:
retracting, vertical, downwards



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

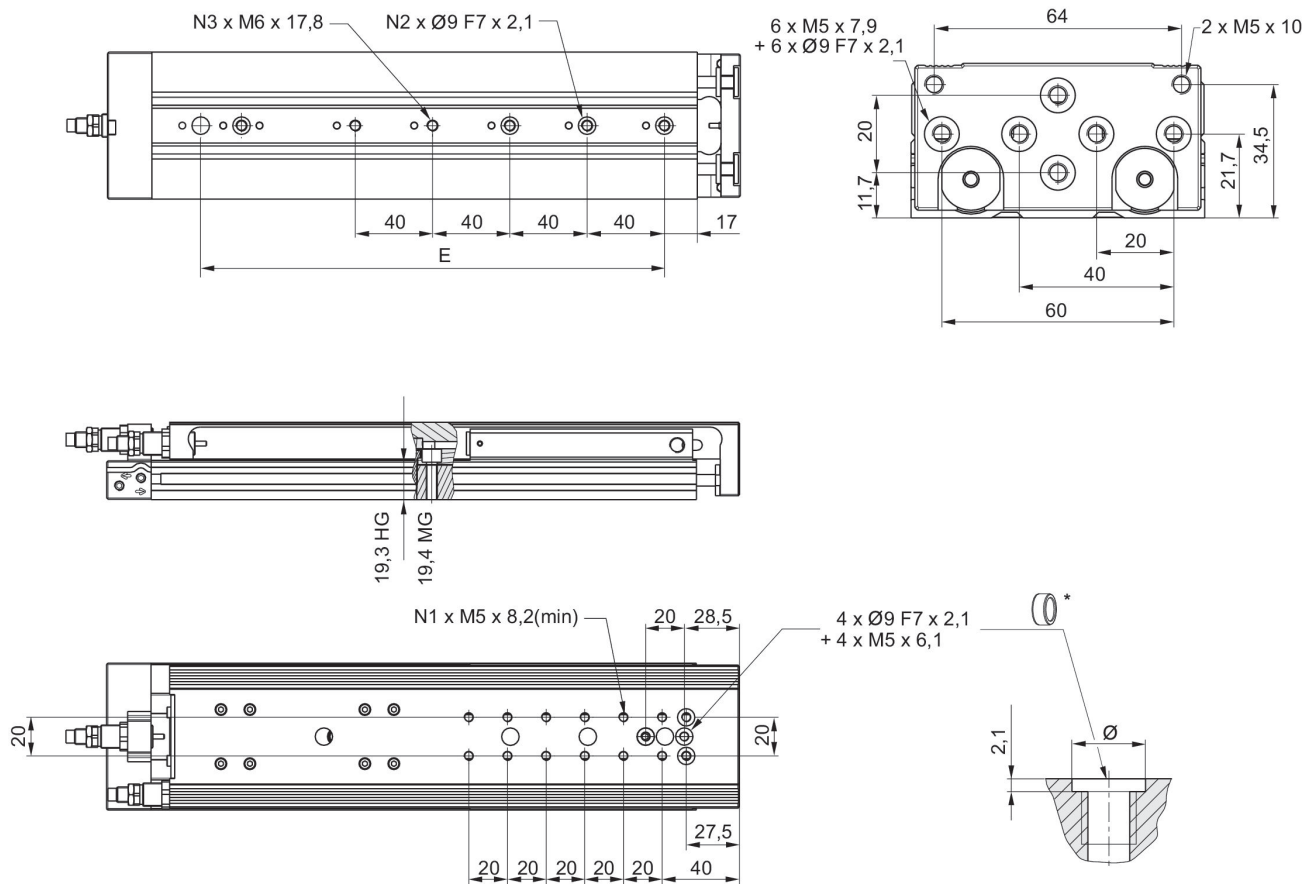
R412019201

Series MSC

2026-03-26

Dimensions

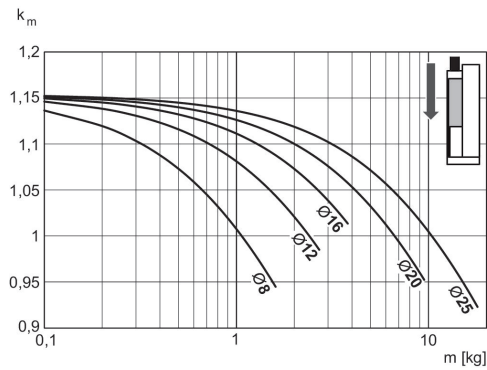
MSC-16



* = centering rings

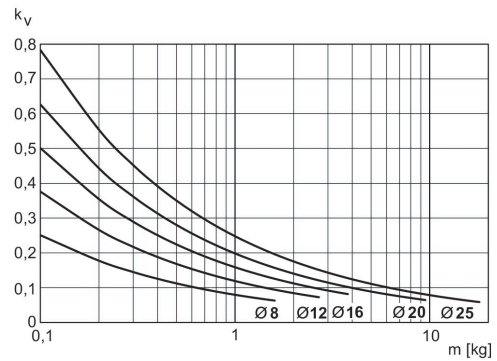
Part No.	Piston Ø	Stroke	E	N1	N2	N3
R412019175	16	125	200	12	4	5
R480643808	16	125	200	12	4	5
R412019188	16	125	200	12	4	5
R480640200	16	125	200	12	4	5
R412019176	16	150	240	12	4	5
R480643809	16	150	240	12	4	5
R412019189	16	150	240	12	4	5
R480640201	16	150	240	12	4	5

Correction factor for required speed:
extending, vertical, downwards



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

Max. extracting speed



$V = \sqrt{s} \cdot kv$
 V = velocity [m/s]
 S = stroke [mm]
 m = mass

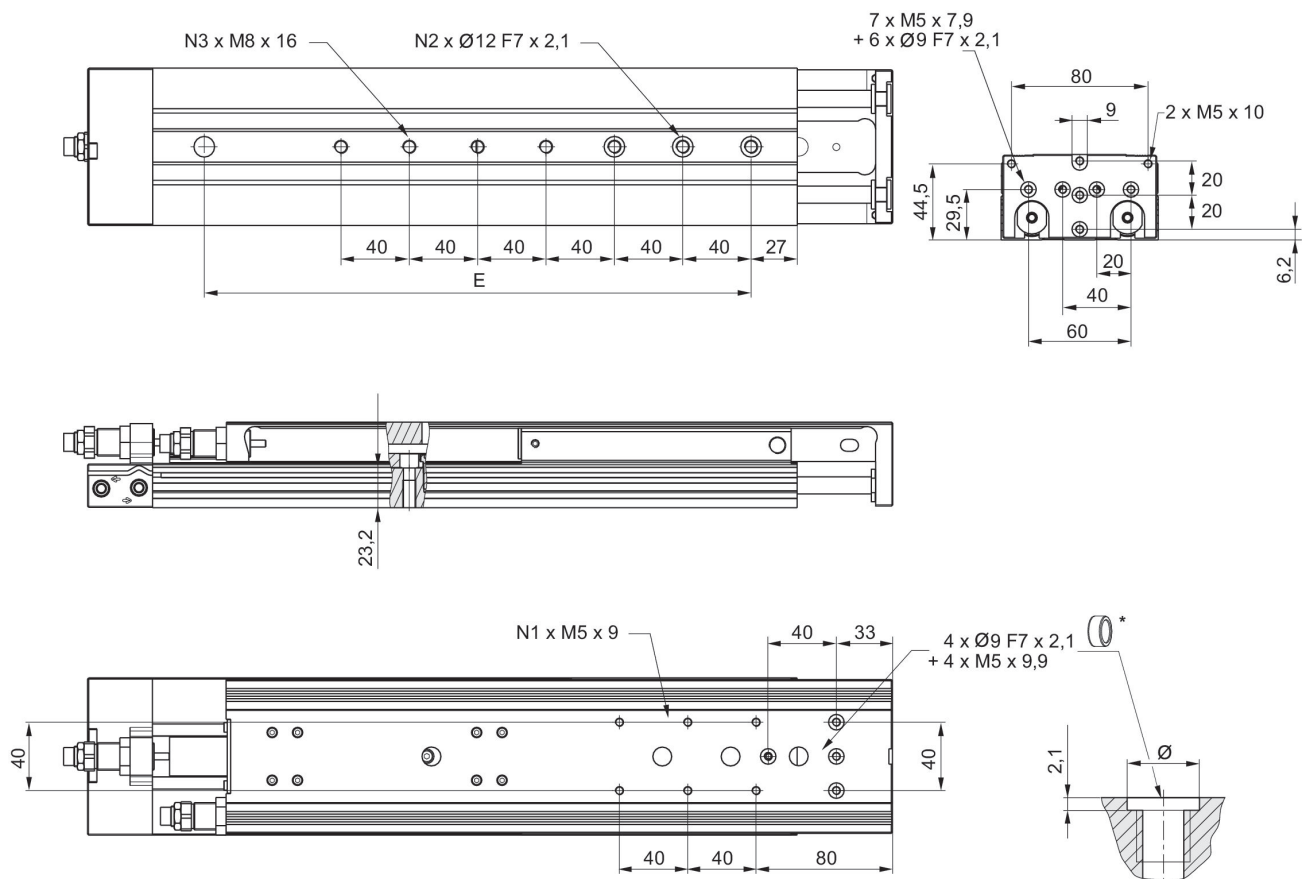
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Series MSC

2026-03-26

Dimensions

MSC-20



* = centering rings

Part No.	Piston Ø	Stroke	E	N1	N2	N3
R412018917	20	125	200	6	4	5
R480643817	20	125	200	6	4	5
R412019005	20	125	200	6	4	5
R480640205	20	125	200	6	4	5
R412018918	20	150	240	6	4	5
R480643818	20	150	240	6	4	5
R412019006	20	150	240	6	4	5
R480640206	20	150	240	6	4	5
R412018919	20	200	320	6	4	7
R480643819	20	200	320	6	4	7
R412019007	20	200	320	6	4	7
R480640207	20	200	320	6	4	7

Mini slide, Series MSC-HG-HM

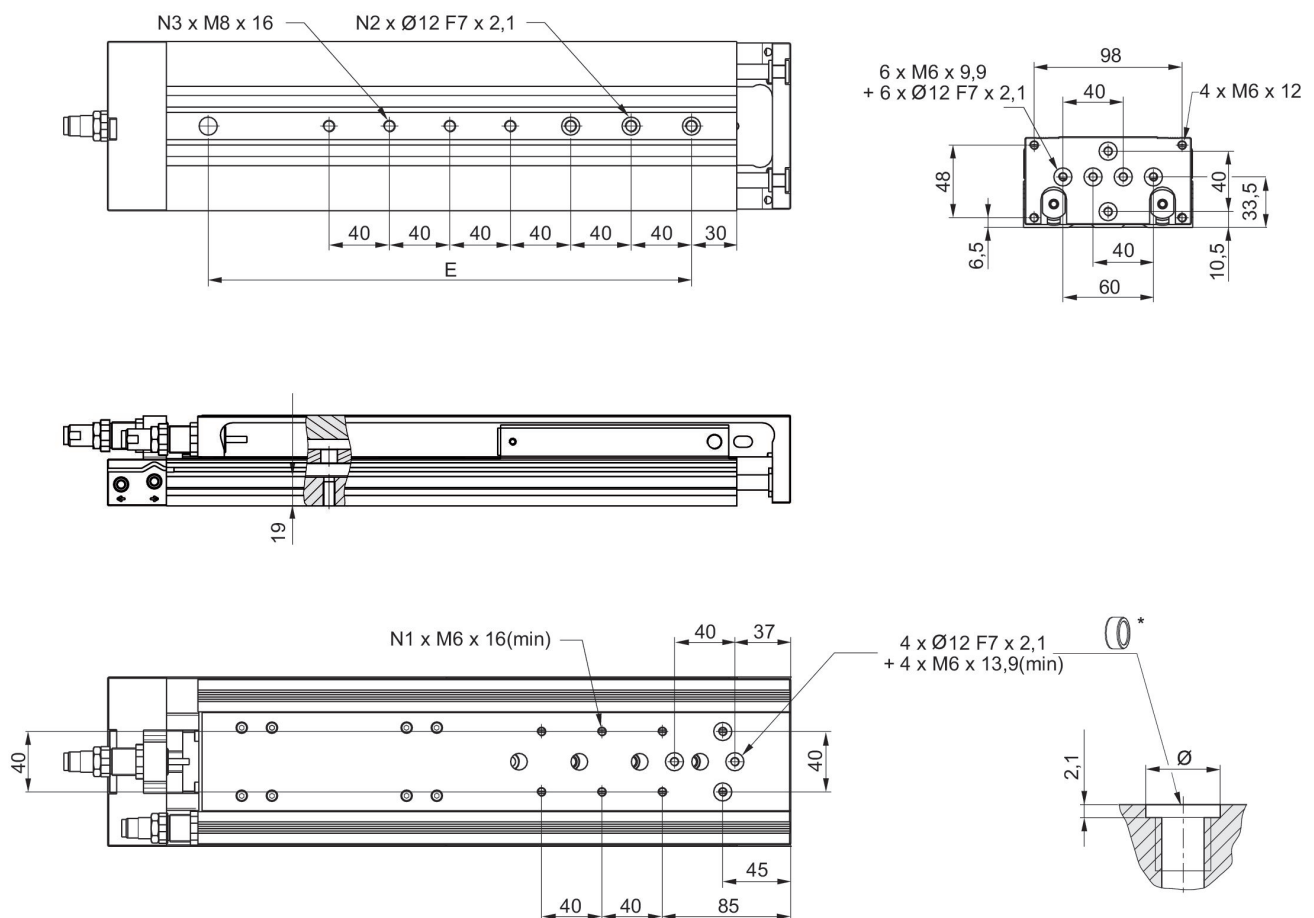
R412019201

Series MSC

2026-03-26

Dimensions

MSC-25



* = centering rings

Part No.	Piston $\varnothing$	Stroke	E	N1	N2	N3
R412019030	25	125	200	4	4	5
R480643827	25	125	200	4	4	5
R412019041	25	125	200	4	4	5
R480640211	25	125	200	4	4	5
R412019031	25	150	240	6	4	5
R480643828	25	150	240	6	4	5
R412019042	25	150	240	6	4	5
R480640212	25	150	240	6	4	5
R412019032	25	200	320	6	4	7
R480643829	25	200	320	6	4	7
R412019043	25	200	320	6	4	7
R480640213	25	200	320	6	4	7

Load capacity



M = max. permissible torque

Correction factor (a)

Part No.	Piston Ø	S	a [mm]	d [mm]	Mx _{max} [Nm]	My _{max} [Nm]	Mz _{max} [Nm]
R412019211	8	20	50	14	7	7	7
R412019212	8	30	60	14	7	7	7
R412019213	8	40	70	14	7	7	7
R412019214	8	50	80	14	9	13	13
R412019215	8	80	125	14	13	25	25
R412019199	12	30	64.5	16	20	14	14
R412019200	12	40	74.5	16	20	14	14
R412019201	12	50	84.5	16	23	19	19
R412019202	12	80	125	16	33	32	32
R412019203	12	100	145	16	33	32	32
R412019183	16	30	65.5	15	35	25	25
R412019184	16	40	75.5	15	35	25	25
R412019185	16	50	85.5	15	38	29	29
R412019186	16	80	126	15	74	58	58
R412019187	16	100	146	15	74	58	58
R412019188	16	125	198.5	15	88	118	118
R412019189	16	150	223.5	15	88	119	119
R412019000	20	30	70.5	20	87	57	57
R412019001	20	40	80.5	20	87	57	57
R412019002	20	50	90.5	20	93	65	65
R412019003	20	80	130.5	20	116	99	99
R412019004	20	100	150.5	20	116	99	99
R412019006	20	150	233.5	20	126	152	152
R412019007	20	200	296	20	126	179	179
R412019036	25	30	77.5	24	100	90	90
R412019037	25	40	87.5	24	100	90	90
R412019038	25	50	96.5	24	100	90	90
R412019039	25	80	137	24	110	129	129
R412019040	25	100	157	24	110	129	129
R412019041	25	125	201	24	145	180	180
R412019042	25	150	236.5	24	145	201	201
R412019043	25	200	299	24	145	236	236

S = stroke

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	0.14	0.14	0.155	0.165	0.195	0.265	–	–	–	–
12	0.255	0.255	0.26	0.28	0.315	0.403	0.46	–	–	–
16	0.375	0.375	0.375	0.4	0.45	0.615	0.65	0.725	0.765	–
20	0.655	0.655	0.655	0.69	0.765	0.985	1.035	1.2	1.29	1.54
25	1	1	1	1.1	1.225	1.45	1.625	1.885	2.085	2.445