Стандартная пневматическая каретка

ECDX2

∅10, 15, 25

Технические характеристики

Номинальный размер		10	15	25
Рабочее давление (МПа)		0.15 ~ 1.0		0.1 - 1.0
Макс. нагрузка (Н)		10	30	60
Жесткость на скручивание* (°C)		± 0.1	± 0.04	± 0.02
Среда		Очищенный сжатый воздух, с содержанием или без содержания масла		
Испытательное давление (МПа)		1.5		
Рабочая температура (°C)		5 ~ 60		
Демпфирование		Амортизатор (по запросу)		
Регулирова длины хода		±2		
Скорость хода поршня (мм/с)	с упорным пальцем	30 ~ 200		
	с амортизатором	30 ~ 500		

* Жесткость на скручивание указана для нулевого хода

Вес (кг)

Номинальный размер	Длина хода (мм)					
	25	50	75	100	150	200
10	0.17	0.22	0.27	0.32	–	–
15	0.23	0.34	0.45	0.56	0.78	1.00
25	–	1.15	1.36	1.58	2.01	2.45

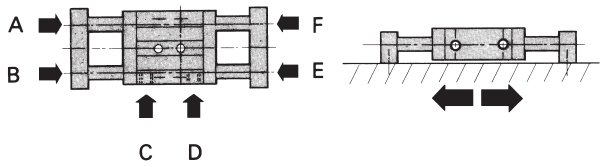
Теоретическое усилие (Н)

Номинальный размер	Диаметр поршневого штока (мм)	Площадь поршня ($см^2$)	Рабочее давление (МПа)							
			0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
10	6	1.01	20	30	40	50	60	70	80	90
15	8	2.07	41	62	83	104	124	145	166	186
25	14	5.97	119	179	239	299	358	418	478	537

Направление движения каретки

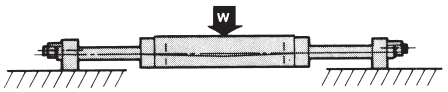
Вводы A-F обуславливают следующие движения каретки при закрепленных концевых фланцах:

Направление движения	Вправо	Влево
Ввод	A	B
	D	C
	F	E



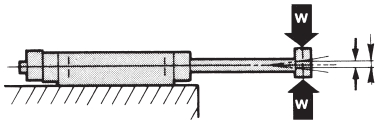
Прогиб поршневого штока при нагрузке по центру каретки

Тип	Нагрузка (Н)	Длина хода (мм)	
		100	200
ECDPX2N10	10	0.07	–
ECDPX2N15	30	0.08	0.28
ECDPX2N25	60	0.02	0.08



Прогиб поршневого штока при нагрузке по центру концевого фланца

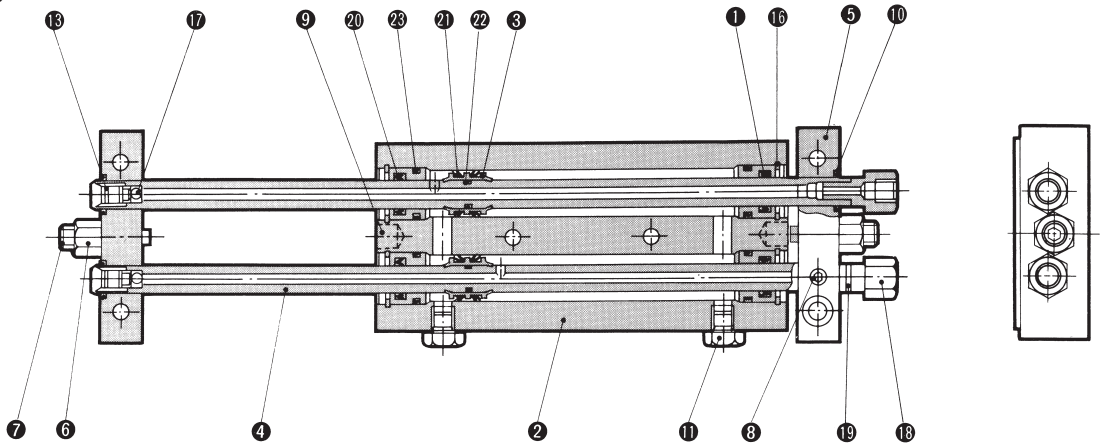
Тип	Нагрузка (Н)	Длина хода (мм)			
		50	100	150	200
ECDBX2N10	3	0.06	0.30	–	–
ECDBX2N15	5	0.09	0.22	0.50	1.0
ECDBX2N25	10	0.03	0.09	0.16	0.25



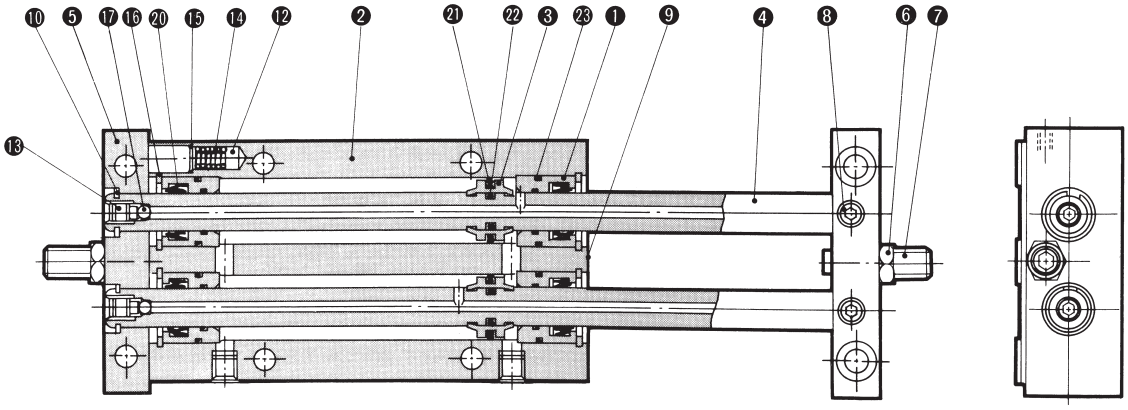
Стандартная пневматическая каретка
ECDX2

Конструкция

∅10



∅15, ∅25



Спецификация

Поз.	Обозначение	Материал
1	Корпус	Алюминиевый сплав
2	Каретка	Алюминиевый сплав
3	Поршень	Алюминиевый сплав
4	Поршневой шток	Углеродистая сталь
5	Концевой фланец	Алюминиевый сплав
6	Гайка	Сталь
7	Регулировочный болт	Хромистая сталь
8	Винт-фиксатор	Хромистая сталь
9	Штифт	Сталь
10	Стопорное кольцо	Пружинная сталь
11	Заглушка	Хромистая сталь
12	Магнит	
13	Заглушка	Хромистая сталь
14	Пружина	Пружинная сталь
15/16	Стопорное кольцо	Пружинная сталь
17	Шарик	Подшипниковая сталь
18	Муфта	Сталь
19	Уплотнение	NBR (нитрильный каучук)
20	Уплотнение поршневого штока	NBR
21	Поршневое уплотнение	NBR
22	Поршневое уплотнение	NBR
23	Уплотнение гильзы цилиндра	NBR

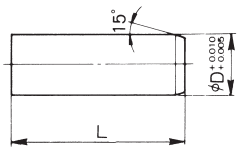
Ремкомплект

Комплект уплотнений, включающий поз. 20-23

Номин. размер	**Номер для заказа**
10	**CX2N10-PS**
15	**CX2N15-PS**
25	**CX2N25-PS**

Принадлежности: центрирующий палец

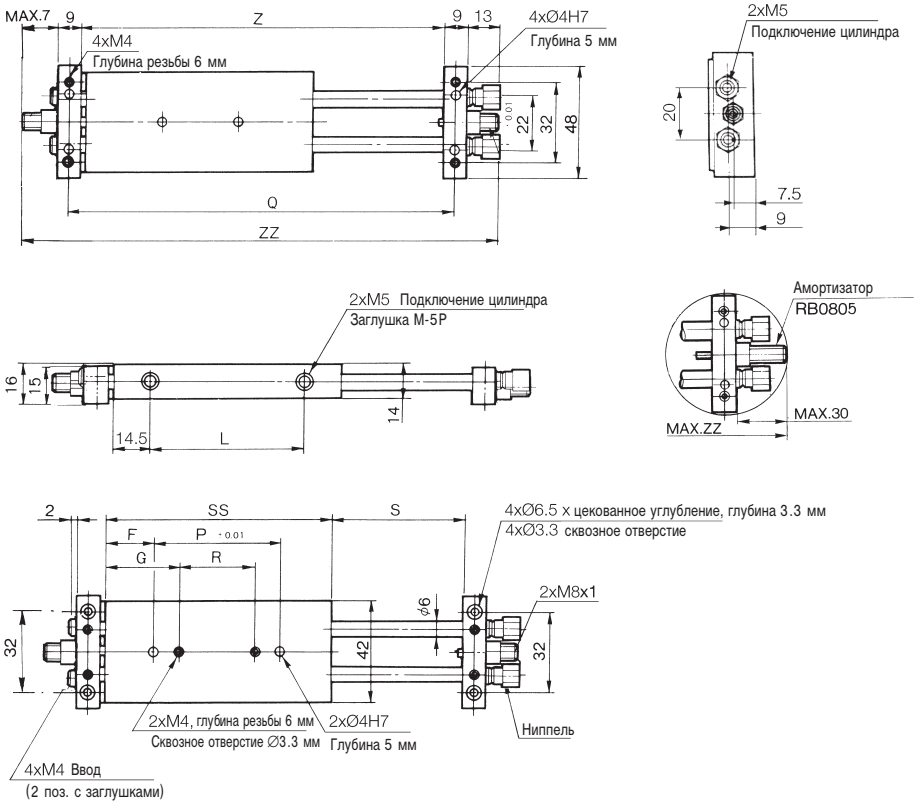
Номин. размер	L	D	**Номер для заказа**
10	10	4	**MS4-10**
15	10	5	**MS5-10**
25	15	6	**MS6-15**



Размеры

Базовое исполнение

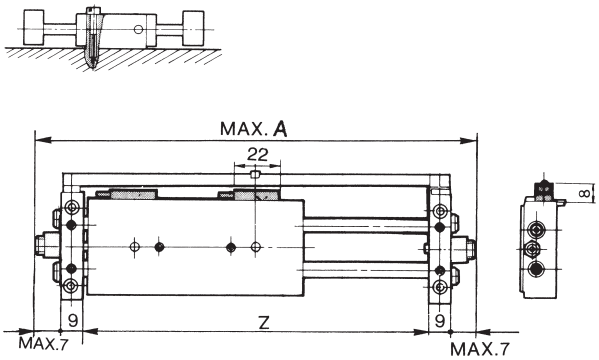
ECDX2N10



Ход	F	G	L	P	Q	R	S	SS	Z	С регулировочным болтом		С амортизатором	
										ZZ	A	ZZ	A
25	9.5	19.5	38	48	103	28	27	67	94	132	126	172	172
50	20	30	63	52	153	32	52	92	144	182	176	222	222
75	25	35	88	67	203	47	77	117	194	232	226	272	272
100	25	35	113	92	253	72	102	142	244	282	276	322	322

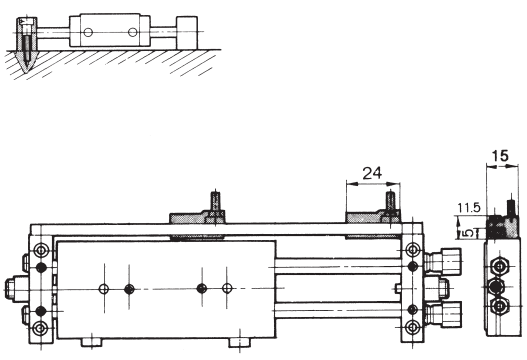
Каретка жестко закреплена

ECDBX2N10



Концевые фланцы жестко закреплены

ECDPX2N10

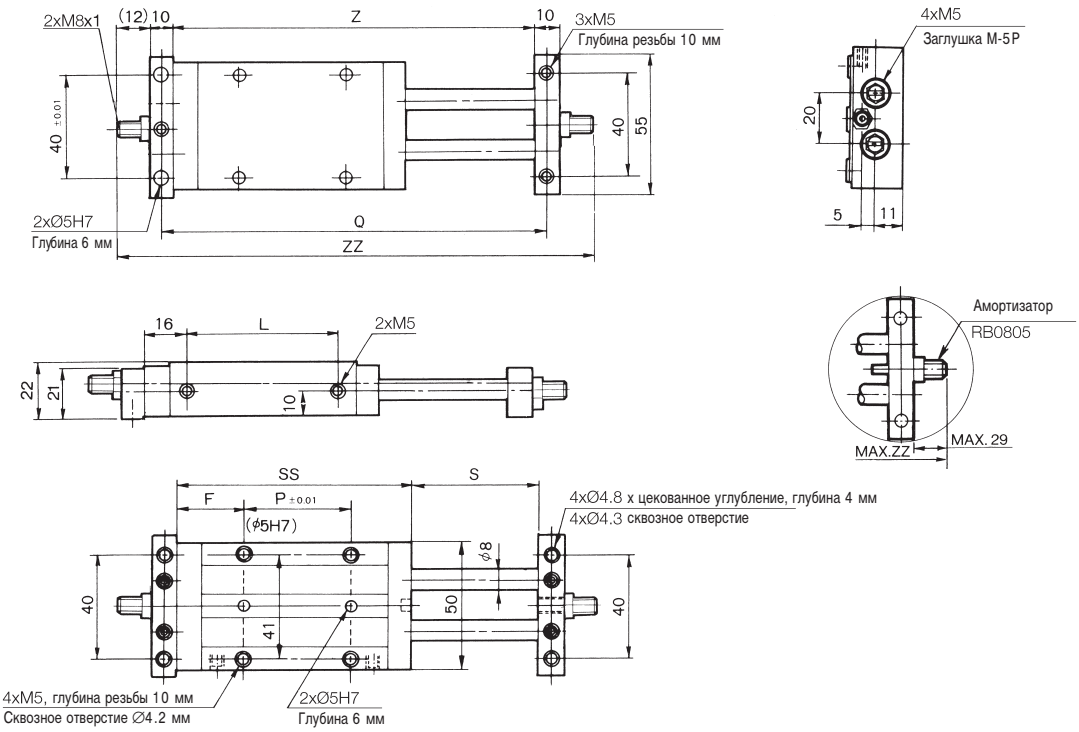


Стандартная пневматическая каретка
ECDX2

Размеры

Базовое исполнение

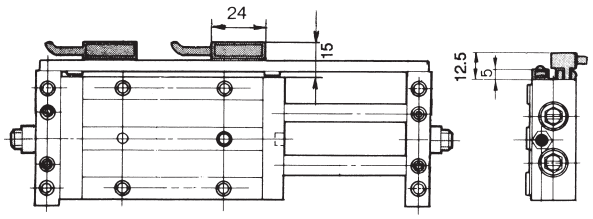
ECDX2N15



Ход	F	L	P	Q	S	SS	Z	С регулировочным болтом	С амортизатором
								ZZ	ZZ
25	24.5	37	20	106	27	69	96	128	174
50	24.5	62	45	156	52	94	146	178	224
75	27	87	65	206	77	119	196	228	274
100	27	112	90	256	102	144	246	278	324
150	52	162	90	356	152	194	346	378	424
200	77	212	90	456	202	244	446	478	524

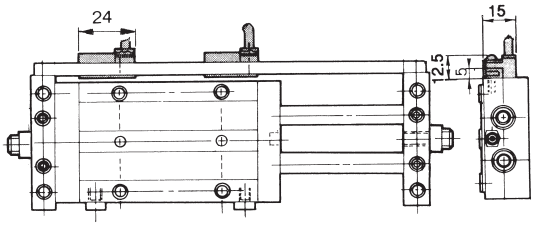
Каретка жестко закреплена

ECDBX2N15



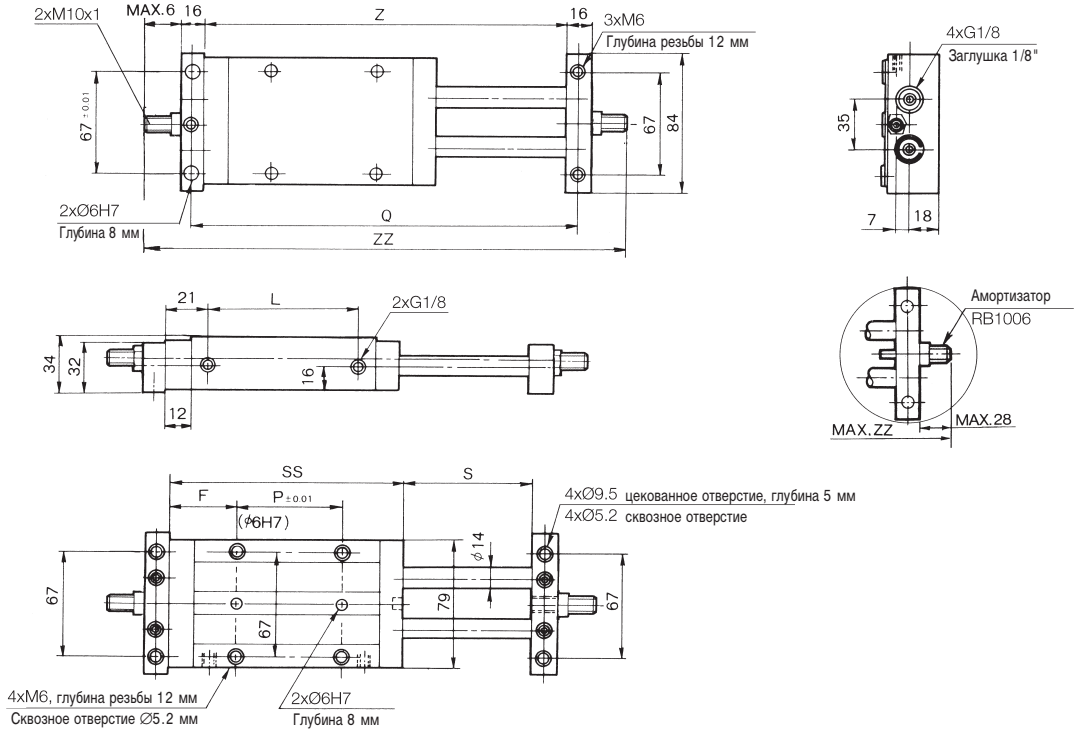
Концевые фланцы жестко закреплены

ECDPX2N15



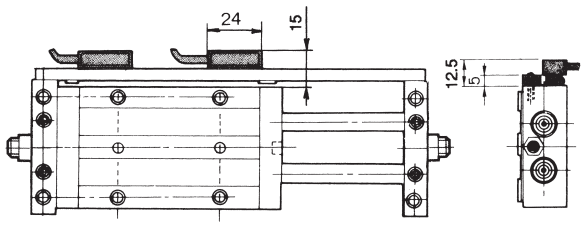
Размеры

Базовое исполнение
ECDX2N25

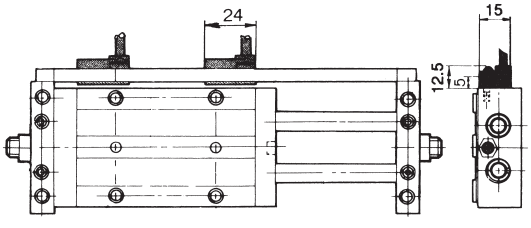


Ход	F	L	P	Q	S	SS	Z	С регулировочным болтом	С амортизатором
								ZZ	ZZ
50	31	65	45	175	52	107	159	203	247
75	33.5	90	65	225	77	132	209	253	297
100	33.5	115	90	275	102	157	259	303	347
150	58.5	165	90	375	152	207	359	403	447
200	83.5	215	90	475	202	257	459	503	547

Каретка жестко закреплена
ECDBX2N25



Концевые фланцы жестко закреплены
ECDPX2N25



Данные по заказу

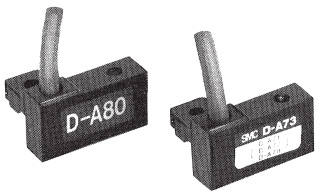
Номинальный размер	Длина хода (мм)	Номер для заказа	
		Каретка жестко закреплена	Концевые фланцы жестко закреплены
10	25, 50, 75, 100	**ECDBX2N10-□**	**ECDPX2N10-□**
15	25, 50, 75, 100, 150, 200	**ECDBX2N15-□**	**ECDPX2N15-□**
25	25, 50, 75, 100, 150, 200	**ECDBX2N25-□**	**ECDPX2N25-□**

□ Длина хода в мм

Стандартная пневматическая каретка ECDX2
Датчики положения

Выбор датчиков положения

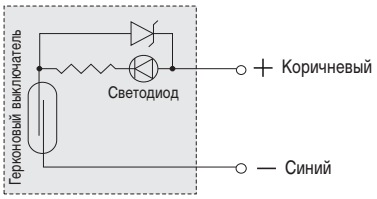
Способ монтажа	Стандартная пневматическая каретка	Датчик положения	Светодиод
Каретка жестко закреплена	Номинальный размер 10, ECDBX2N	D-E73AL	●
		D-E80AL	–
	Номинальный размер 15/25, ECDBX2N	D-A73L	●
		D-F7PL	●
		D-A80L	–
Концевые фланцы жестко закреплены	Номинальный размер 10/15/25, ECDPX2N	D-A73L	●
		D-F7PL	●
		D-A80L	–



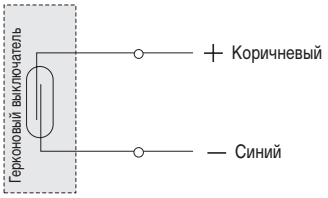
Технические характеристики

Номер для заказа	**D-A73L** / **D-E73AL**		**D-A80L** / **D-E80AL**			**D-F7PL** (PNP)
Рабочее напряжение	24 VDC	110 VAC.	до 24 AC/DC	48 AC/DC	110 AC/DC	4.5 – 28 VDC
Макс. ток (мА)	40	18	50	40	18	80
Время срабатывания (мс)	1.2					< 1
Макс. ударная нагрузка (G)	30					100
Диапазон температур (°C)	от +5 до +60					от -10 до + 60
Длина кабеля (м)	3					

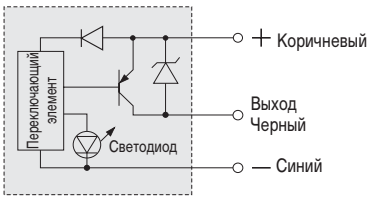
D-E73AL, D-A73L



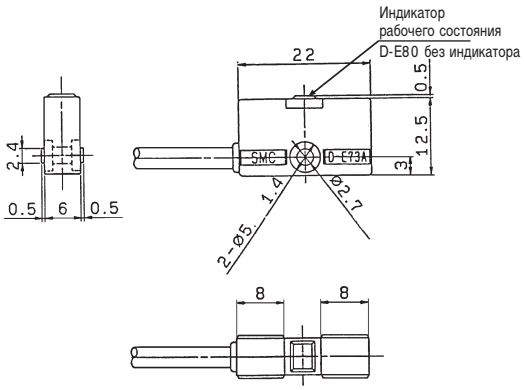
D-A80L, D-E80AL



D-F7PL

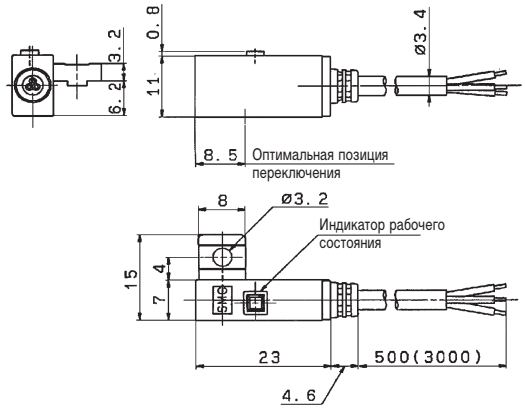


Размеры D-E73AL/D-E80AL



Размеры D-A73L/D-A80L

Размеры D-F7PL



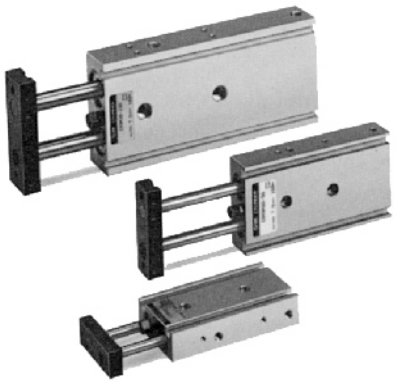
Двухштоковый сдвоенный цилиндр

CXSM

□6~32

Технические характеристики

Диаметр поршня (мм)	6	10	15	20	25	32
Среда	Очищенный сжатый воздух, с содержанием или без содержания масла					
Диапазон рабочих давлений (МПа)	0.15~0.7	0.1~0.7		0.05~0.7		
Диапазон температур (°C)	5~60					
Скорость хода поршня (мм/с)	30~300					
Присоединительная резьба	M5				G1/8	
Диапазон регулировки хода	Стандартный ход может быть уменьшен макс. на 5 мм					
Опора	Втулка скольжения					
Демпфирование	Упругий концевой демпфер (с обеих сторон)					



Теоретические усилия на штоке (Н)

Тип	□ штока (мм)	Направление движения	Эффект. площадь (см²)	Рабочее давление (МПа) 0.1	0.2	0.3	0.4	0.5	0.6	0.7
CXSM6	4	Выдвижение	0.56	8.4*	11.2	16.8	22.4	28.0	33.6	39.2
		Втягивание	0.31	4.6*	6.2	9.3	12.4	15.5	18.6	21.7
CXSM10	6	Выдвижение	1.57	15	31	47	62	78	94	109
		Втягивание	1.00	10	20	30	40	50	60	70
CXSM15	8	Выдвижение	3.53	35	70	105	141	176	211	247
		Втягивание	2.52	25	50	75	100	126	151	176
CXSM20	10	Выдвижение	6.28	62	125	188	251	314	376	439
		Втягивание	4.71	47	94	141	188	235	282	329
ECXSM25	12	Выдвижение	9.82	98	196	294	392	491	589	687
		Втягивание	7.56	75	151	226	302	378	453	529
ECXSM32	16	Выдвижение	16.08	160	321	482	643	804	964	1125
		Втягивание	12.06	120	241	361	482	603	723	844

* Значения действительны для Р мин.=0.15 МПа

Вес (кг)

Тип	Длина хода (мм) 10	20	30	40	50	75	100
CXSM6	0.081	0.095	0.108	0.122	0.135	–	–
CSXM10	0.15	0.17	0.19	0.21	0.23	–	–
CXSM15	0.25	0.28	0.30	0.33	0.36	–	–
CXSM20	0.40	0.44	0.48	0.51	0.55	0.64	0.73
ECXSM25	0.61	0.66	0.72	0.77	0.83	0.97	1.10
ECXSM32	1.15	1.23	1.32	1.40	1.49	1.71	1.93

Номер для заказа

E CXS **M** **20** — **100**

E — Только для □25 и □32

M — Направляющая втулка скольжения

20 — □, мм

6
10
15
20
25
32

100 — Стандартный ход

10, 20, 30, 40, 50	Цилиндры □6, □10, □15
10, 20, 30, 40, 50, 75, 100	Цилиндры □20, □25, □32

Датчик положения

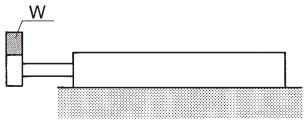
Модификации датчиков положения (заказываются отдельно)

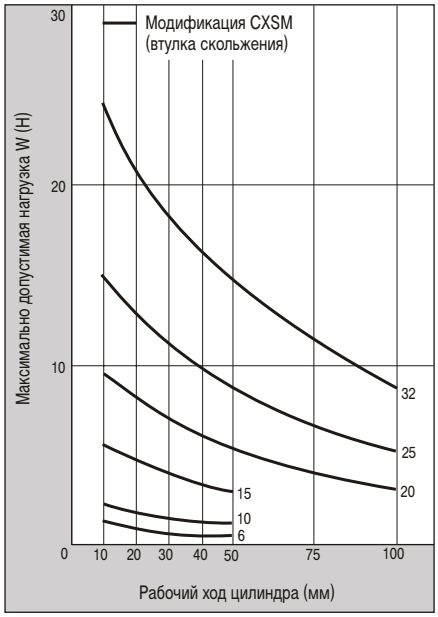
Герконовый выключатель	Электронный выключатель
D-Z73L	D-Y7PL
D-Z80L	D-Y59BL

Подробнее о технических характеристиках датчиков положения см. на стр. 417, 420

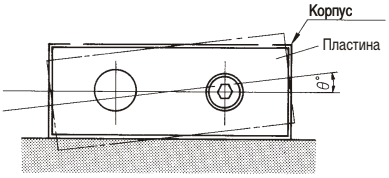
Условия эксплуатации

Максимально допустимая нагрузка





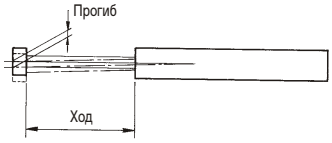
Допуск по углу скручивания

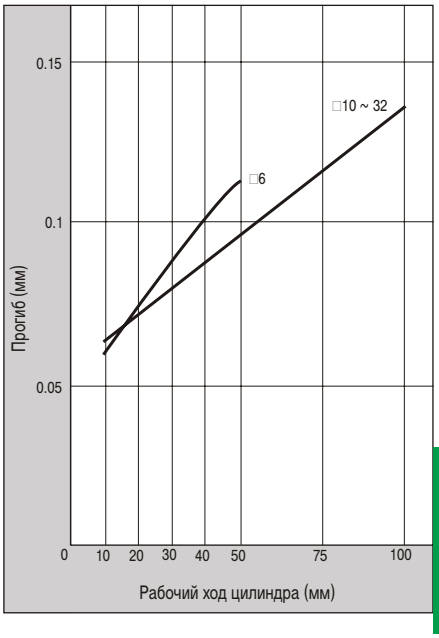


Диаметр поршня (мм)	CXSM (подшипниковая втулка)
6	± 0.10
10	± 0.10
15	± 0.07
20	± 0.06
25	± 0.05
32	± 0.04

Данные приводятся для положения с втянутым поршнем в ненагруженном состоянии.

Прогиб поршневого штока (без нагрузки)





Компактная пневмокаретка с направляющей качения

MXH

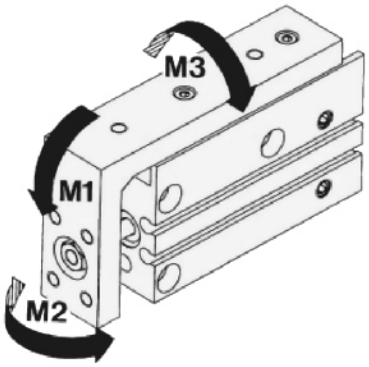
Миниатюрная линейная направляющая

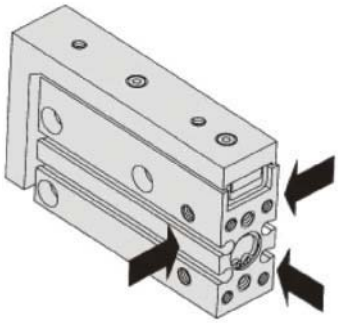
Миниатюрная линейная направляющая обеспечивает линейность движения и защиту от проворота

Возможен монтаж датчиков конечного положения

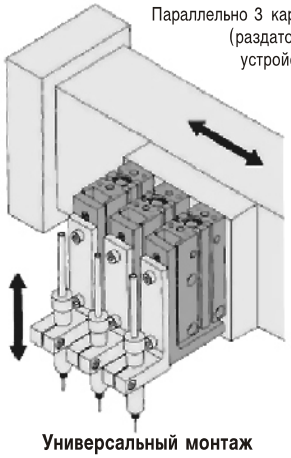
Параллельность хода
(без нагрузки) **≤ 0.05 мм**

Макс. прогиб края каретки:
M1: ≤ 0.02 мм
M2: ≤ 0.01 мм
Макс. угол проворота:
M3: ≤ 0.25°



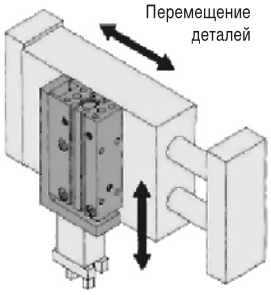


Подвод сжатого воздуха возможен с трех сторон



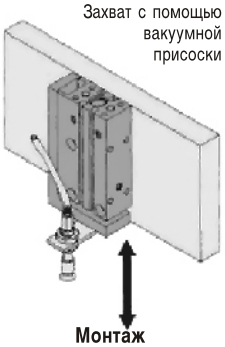
Параллельно 3 каретки (раздаточное устройство)

Универсальный монтаж
Вертикальный
(через корпус)



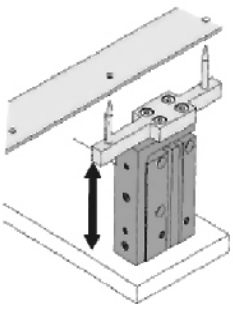
Перемещение деталей

Монтаж на боковой стенке
(через сквозные отверстия)



Захват с помощью вакуумной присоски

Монтаж на боковой стенке
(через корпус)



Позиционирование отверстий

Монтаж на направляющей

Технические характеристики

Диаметр поршня (мм)	6	10	16	20
Присоединительная резьба	M5			
Среда	Сжатый воздух, с содержанием масла* или без него			
Принцип действия	Двустороннего действия			
Испытательное давление (МПа)	1.05			
Макс. рабочее давление (МПа)	0.7			
Мин. рабочее давление (МПа)	0.12	0.06		0.05
Температура рабочей и окружающей среды (°C)	- 10 ~ +60			
Скорость поршня, (мм/сек)	50 ~ 500			
Демпфирование	Демпфирующее уплотнение с обеих сторон			
Допуски на точность хода	+1,0 / 0			

* ISO VG32 Класс 1

Вес (г)

Типоразмер	Стандартный ход, мм								
	5	10	15	20	25	30	40	50	60
MXH6	62	67	76	81	91	96	111	125	140
MXH10	117	125	140	148	162	170	192	215	238
MXH16	216	27	247	258	279	290	323	353	386
MXH20	437	455	486	505	542	560	597	656	700

Теоретическое усилие (Н)

ø поршня (мм)	ø штока (мм)	Направление движения	Площадь поршня (мм²)	Рабочее давление (МПа)		
				0.3	0.5	0.7
6	3	OUT	28.3	8.49	14.2	19.8
		IN	21.2	6.36	10.6	14.8
10	4	OUT	78.5	23.6	39.3	55.0
		IN	66.0	19.8	33.0	46.2
16	6	OUT	201	60.3	101	141
		IN	172	51.6	86.0	121
20	8	OUT	314	94.2	157	220
		IN	264	79.2	132	185

Номер для заказа

Датчики положения (заказываются отдельно)

Номер для заказа	Индикация	Напряжение	Ток (мА)
Герконовые датчики			
D-A90L	-	24,48/110 V AC/DC	50/40/18
D-A93L	•	24 VDC 110 VAC	5-40 5-18
Электронные датчики			
D-F9VBL **D-F9BL**	•	24 VDC	<40
D-F9PVL **D-F9PL**			<80

Подробную информацию см. на стр. 487, 488.

Номер для заказа

MXH □ – □

ø поршня (мм)	Длина хода (мм)
6	5
10	10
16	15
20	20
	25
	30
	40
	50
	60

Low Profile Slide Table

Series MXF

How to Order

Low Profile Slide Table **MXF** **12** — **50** — **F9N** **S**

Bore-Stroke (mm)

ø8	10, 20, 30
ø12	20, 30, 50
ø16	30, 50, 75
ø20	30, 50, 75, 100

Auto switch

—	Without auto switch

Select the auto switch from the list below.

Number of auto switches

—	2 pcs.
S	1 pc.
n	n pcs.

How to Order Stroke Adjuster (Accessory)

MXF — A 16 27 — X11

Applicable cylinder bore size

8	ø8
12	ø12
16	ø16
20	ø20

Adjustable range

—	5mm	Standard
X11	15mm	Option
X12	25mm	

∗ -X12 (Adjustable range 25mm) is not available for series MXF8/MXF12.
∗ -X11 and -X12 are not available as built-in product.

Applicable Auto Switches/ Refer to p.5.3-2 for the detailed specifications on auto switches.

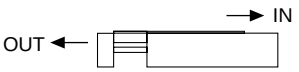
Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage			Auto switch model		Lead wire length		Applicable load	
					DC		AC	Electrical entry direction		0.5 (—)	3 (L)		
								Perpendicular	In-line				
Reed switch	—	Grommet	No	2 wire	24V	5V 12V	100V or less	**A90V**	**A90**	●	●	IC	Relay PLC
			Yes			12V	100V	**A93V**	**A93**	●	●	—	
				3 wire (equivalent to NPN)	—	5V	—	**A96V**	**A96**	●	●	IC	—
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	**F9NV**	**F9N**	●	●	—	Relay PLC
				3 wire (PNP)				**F9PV**	**F9P**	●	●		
				2 wire				**F9BV**	**F9B**	●	●		
	Diagnostic indication (2 colour)			3 wire (NPN)				**F9NWV**	**F9NW**	●	●		
				3 wire (PNP)				**F9PWV**	**F9PW**	●	●		
				2 wire				**F9BWV**	**F9BW**	●	●		

∗ Lead wire length 0.5m·····— (Example)A93
3m·····L (Example)A93L

Specifications

Bore size (mm)	ø8	ø12	ø16	ø20
Port size	M3 X 0.5	M5 X 0.8		
Fluid	Air			
Action	Double acting			
Operating pressure	0.15 to 0.7MPa			
Proof pressure	1.05MPa			
Ambient and fluid temperature	–10 to 60˚C			
Operating speed range	50 to 500mm/s			
Cushion	Both ends rubber bumper			
Lubrication	Non-lube			
Auto switch (option)	Reed switch Solid state switch (2 wire, 3 wire) 2 color indication solid state switch (2 wire, 3 wire)			
Stroke tolerance	$^{+1}_{0}$ mm			
Stroke adjustment range	Extend 5mm/Retract 5mm			

Theoretical Force



(Unit: N)

Bore size (mm)	Rod diameter (mm)	Operating direction	Piston area (mm^2)	Operating pressure (MPa)					
				0.2	0.3	0.4	0.5	0.6	0.7
8	4	OUT	50	10	15	20	25	30	35
		IN	38	8	11	15	19	23	27
12	6	OUT	113	23	34	45	57	68	79
		IN	85	17	26	34	43	51	60
16	8	OUT	201	40	60	80	101	121	141
		IN	151	30	45	60	76	91	106
20	10	OUT	314	63	94	126	157	188	220
		IN	236	47	71	94	118	142	165

Note) Theoretical force (N)=Pressure (MPa) X Piston area(mm^2)

Standard Stroke

Model	Standard stroke (mm)
MXF8	10, 20, 30
MXF12	20, 30, 50
MXF16	30, 50, 75
MXF20	30, 50, 75, 100

Weight

(g)

Model	Standard stroke (mm)					
	10	20	30	50	75	100
MXF8	120	130	170	—	—	—
MXF12	—	210	250	360	—	—
MXF16	—	—	360	500	690	—
MXF20	—	—	600	750	1060	1370

Table Deflection

Table deflection by pitch moment

Table pitch deflection due to static pitch moment applied at arrow for all strokes of slide table.

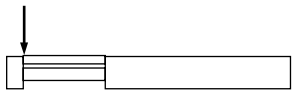


Table deflection by yaw moment

Table yaw deflection due to static yaw moment applied at arrow for all strokes of slide table.

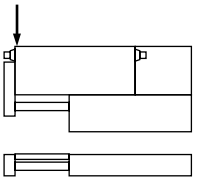
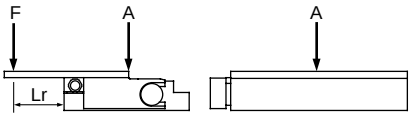
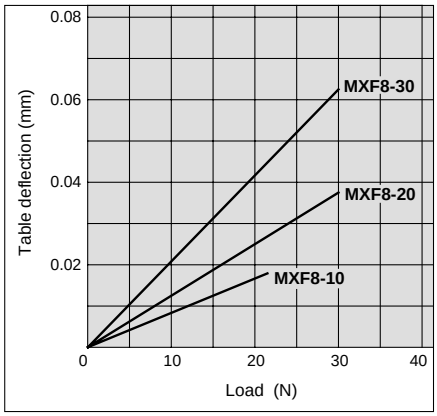


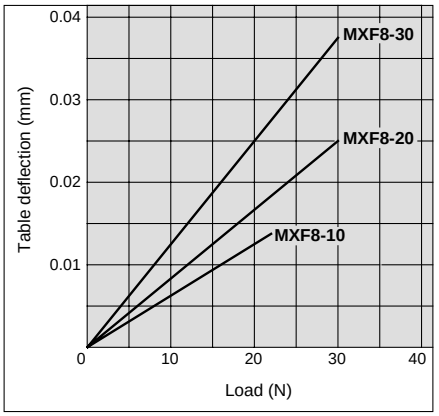
Table deflection by roll moment

Table roll deflection arrow A due to static roll moment applied at arrow F when Lr=20mm and table is retracted.

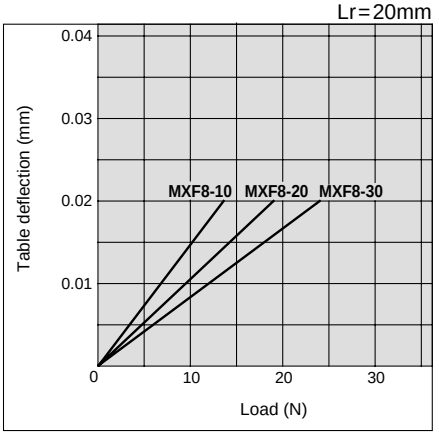


MXF8

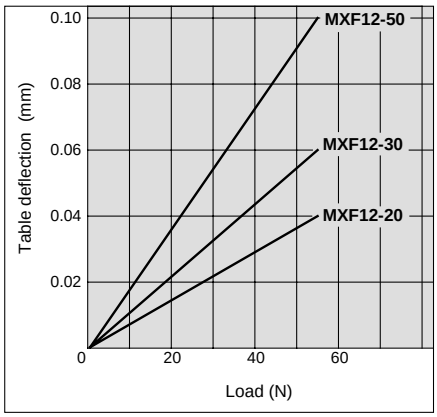


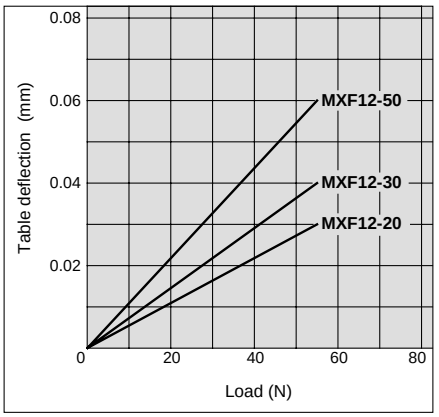


Lr=20mm

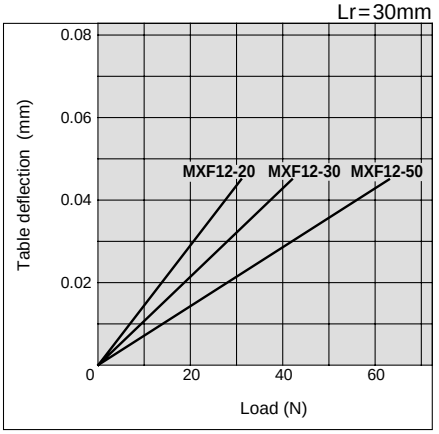


MXF12





Lr=30mm



Allowable static moment

Model \ Stroke (mm)	Allowable static moment: Mp, My, Mr (Nm)						Correction value for moment centre distance (mm)					
	10	20	30	50	75	100	C_{p1}	C_{p2}	C_{y1}	C_{y2}	C_{r1}	C_{r2}
MXF8	0.56	0.78	0.98	—	—	—	6 (1)	10	6 (1)	21	21	10
MXF12	—	1.65	2.22	3.34	—	—	10	11	10	23	23	11
MXF16	—	—	3.41	5.69	7.96	—	10	12	10	28	28	12
MXF20	—	—	6.66	9.14	13.70	18.27	11	17	11	34	34	17

Note 1) 16mm only for MXF8-10.

Table deflection by pitch moment

Table pitch deflection due to static pitch moment applied at arrow for all strokes of slide table.

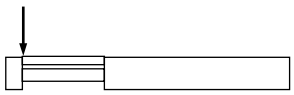


Table deflection by yaw moment

Table yaw deflection due to static yaw moment applied at arrow for all strokes of slide table.

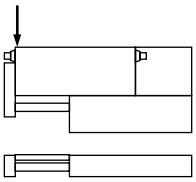
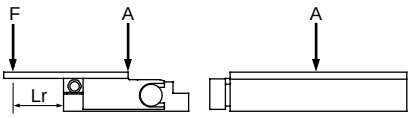
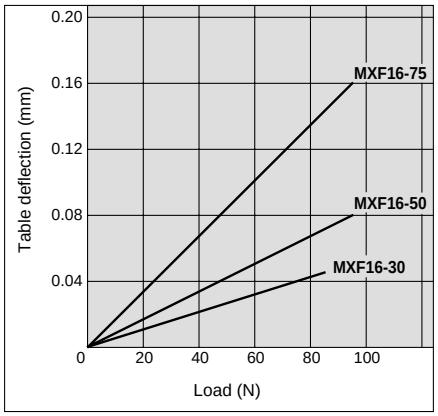


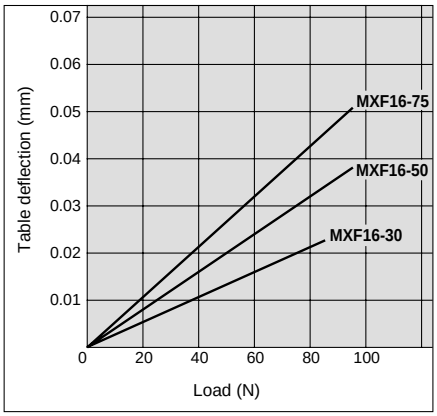
Table deflection by roll moment

Table roll deflection arrow A due to static roll moment applied at arrow F when Lr=20mm and table is retracted.

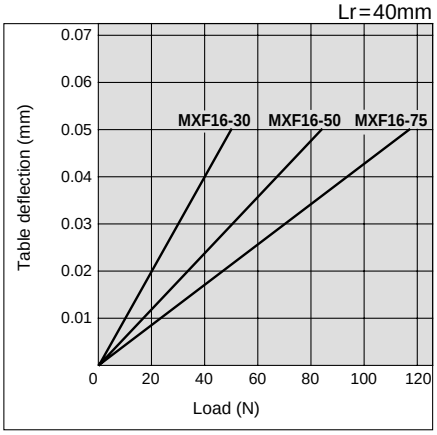


MXF 16

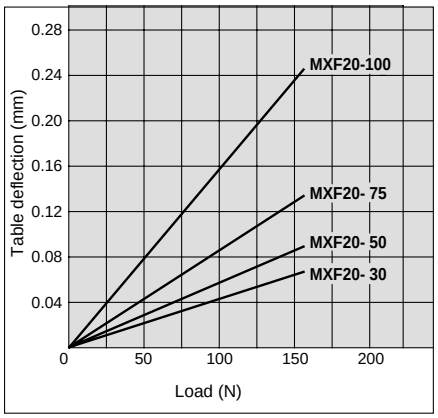


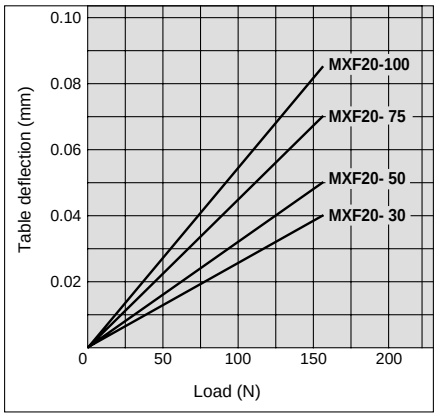


Lr=40mm

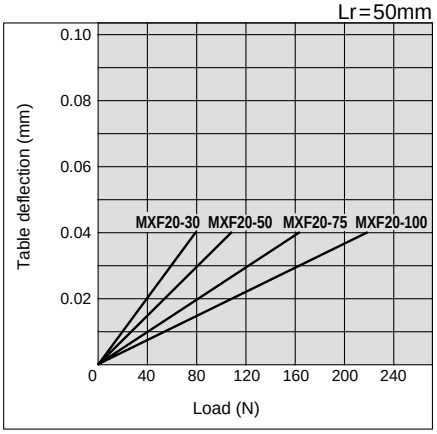


MXF 20

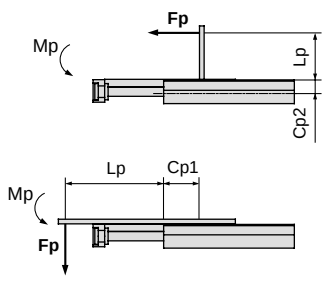
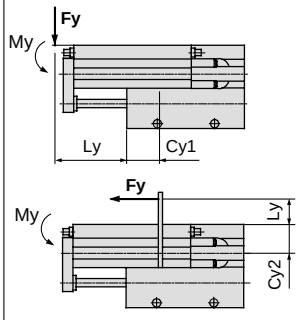
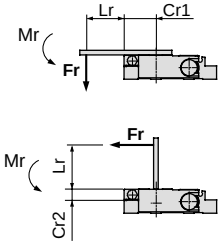




Lr=50mm



■Formula for calculation of allowable static load, Fp, Fy and Fr

When pitch moment is applied	When yaw moment is applied	When roll moment is applied
		
$Fp=\frac{Mp \times 1000}{(Lp+Cp)}$ (N)	$Fy=\frac{My \times 1000}{(Ly+Cy)}$ (N)	$Fr=\frac{Mr \times 1000}{(Lr+Cr)}$ (N)
Lp: Distance between body and load point(mm) Cp: Correction value for moment center distance(mm)	Ly: Distance between body and load point(mm) Cy: Correction value for moment center distance(mm)	Lr: Distance between body and load point(mm) Cr: Correction value for moment center distance(mm)

⚠Precaution

Selection

⚠Caution

①If a table is stopped at an intermediate position by an external stopper, avoid ejection. If ejection occurs, it causes damage. If a slide table is stopped at an intermediate position by an external stopper and then forwarded to the front, draw back the intermediate stopper after supplying pressure to allow the slide table to return to the back for an instant, then supply pressure to the opposite port to operate the slide table.

②Do not use in circumstances that excessive, external forces or impacts would be applied. These conditions could lead to malfunctions.

③Portable weight should be 1/10 or less of the allowable static load in consideration of the overhang or inertia.

Guide for Operation of Slide Table MXF

⚠Precaution

Be sure to read before handling.
Refer to p.0-39 to 0-43 for Safety Instructions and common precautions.

Mounting

⚠Caution

①Do not scratch or dent the mounting side of the body, table or end plate. It causes play in the guide section and increases sliding resistance.
②Do not apply scratch or dent the forward side of the rail or guide. It can cause play of the guide section and increases sliding resistance.
③Do not bring into close contact with objects which would be influenced by a magnetic field. As an air slide table has magnets built-in, do not allow close contact with magnetic disks, magnetic cards or magnetic tapes. Data may be erased.
④When mounting an air slide table, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding from its position.
⑤Be careful when adjusting stroke not to allow cylinder end plate to bottom out against cylinder body.

Positioning

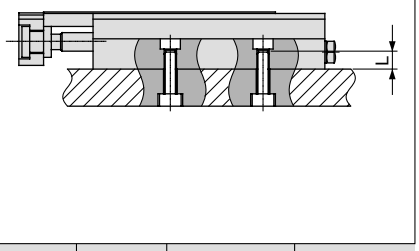
⚠Caution

①Pin holes are desigied to allow accurate and repeated mounting.
∗ Location of pin holes on top and bottom are not identical.

Slide Table Mounting

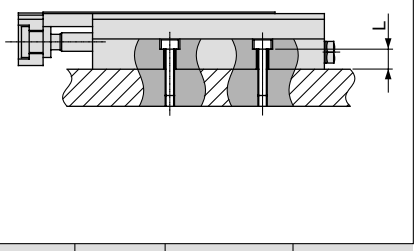
The slide table can be mounted from 2 directions. Select the best direction according to your appliciation.

①Body tapped mounting



Model	Bolt used	Max. torque (Nm)	Max. screw-in depth L(mm)
MXF8	M4 X 0.7	2.1	4.7
MXF12	M4 X 0.7	2.1	6.5
MXF16	M5 X 0.8	4.4	6.7
MXF20	M5 X 0.8	4.4	8.5

②Through hole mounting



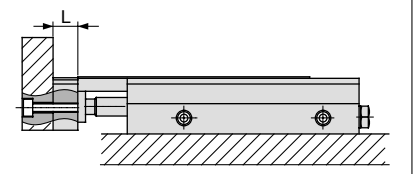
Model	Bolt used	Max. torque (Nm)	Max. screw-in depth L(mm)
MXF8	M3 X 0.5	1.2	4.7
MXF12	M3 X 0.5	1.2	6.5
MXF16	M4 X 0.7	2.8	6.7
MXF20	M4 X 0.7	2.8	8.5

⚠Caution 0.02mm or less of flatness is recommended. An uneven mounting surface may cause play and increase sliding resistance.

Mounting of Work Piece

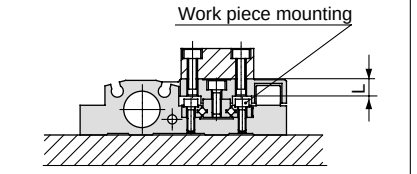
Work can be mounted on two sides of the air slide table.

①Front face mounting



Model	Bolt used	Max. torque (Nm)	Max. screw-in depth L(mm)
MXF8	M3 X 0.5	0.9	6
MXF12	M3 X 0.5	0.9	6
MXF16	M4 X 0.7	2.1	10
MXF20	M5 X 0.8	4.4	12

②Top face mounting

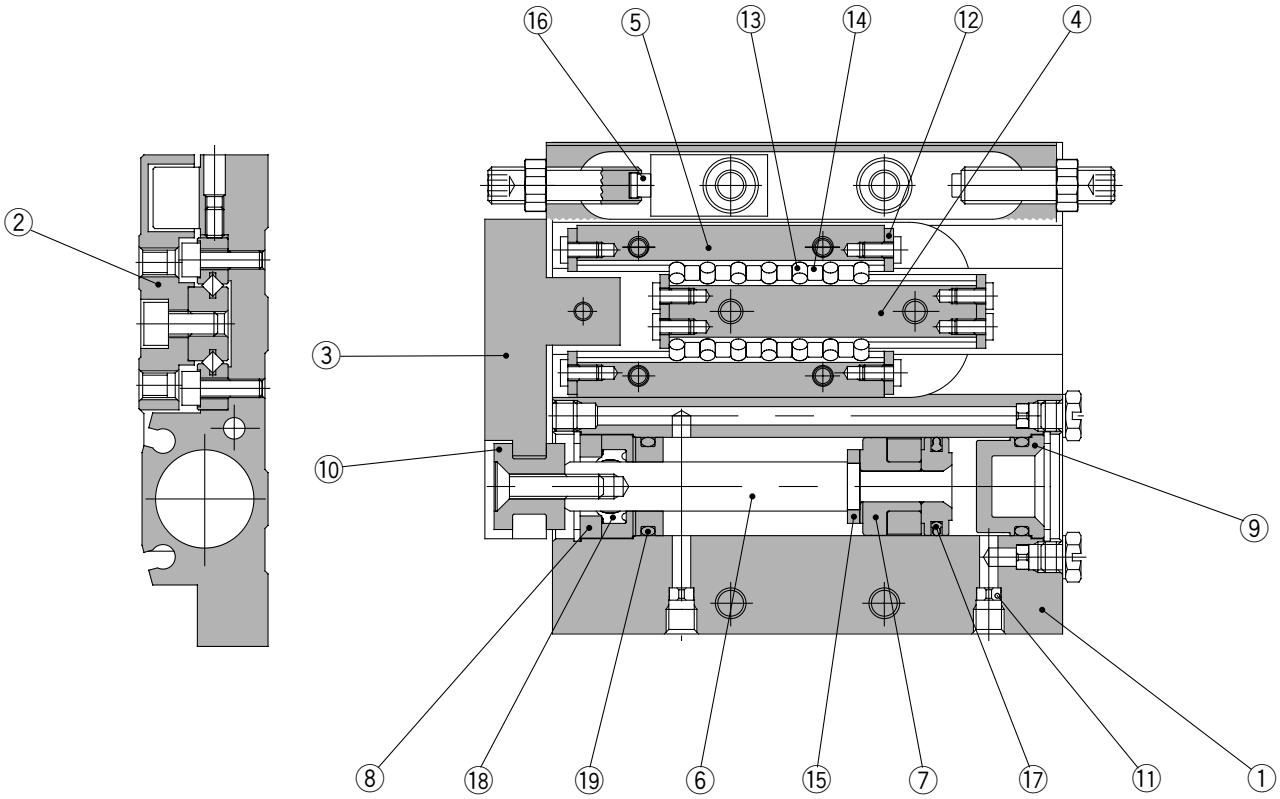


Model	Bolt used	Max. torque (Nm)	Max. screw-in depth L(mm)
MXF8	M3 X 0.5	0.9	6.5
MXF12	M3 X 0.5	0.9	5.5
MXF16	M4 X 0.7	2.1	6.5
MXF20	M5 X 0.8	4.4	9.5

⚠Caution

Use bolts at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the end plate. If the bolts are too long, they hit the end plate and may cause malfunctions.

Construction



Component Parts

No.	Description	Material	Note
①	Body	Aluminum alloy	Hard anodized
②	Table	Aluminum alloy	Hard anodized
③	End plate	Aluminum alloy	Hard anodized
④	Rail	Carbon tool steel	Heat treatment
⑤	Guide	Carbon tool steel	Heat treatment
⑥	Rod	Stainless steel	
⑦	Piston assembly	—	With magnet
⑧	Seal retainer	Brass	Electroless nickel plated
⑨	Head cap	Resin	
⑩	Floating bushing	Stainless steel	
⑪	Orifice	Brass	Electroless nickel plated
⑫	Roller stopper	Stainless steel	
⑬	Cylindrical roller	High carbon chromium bearing	
⑭	Roller spacer	Resin	
⑮	Rod bumper	Polyurethane	

Component Parts

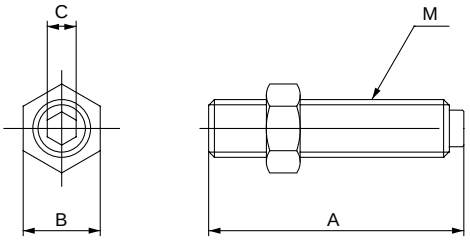
No.	Description	Material	Note
⑯	Adjustment bumper	Polyurethane	
⑰	Piston seal	NBR	
⑱	Rod seal	NBR	
⑲	O ring	NBR	

Replacement Parts: Seal Kits

Bore size (mm)	Kit No.	Note
8	MXF8-PS	1 set including ⑰ to ⑲
12	MXF12-PS	
16	MXF16-PS	
20	MXF20-PS	

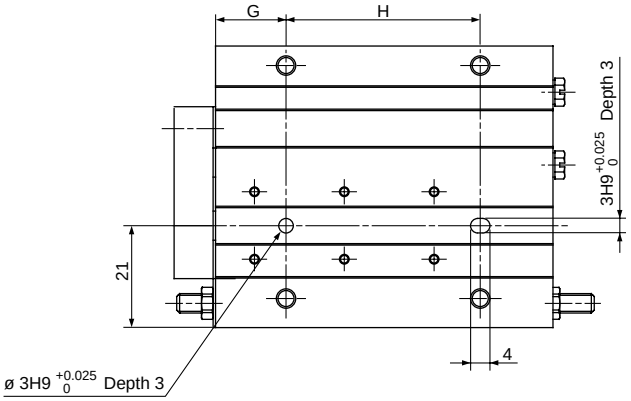
∗ The parts indicated with the numbers ⑰, ⑱ and ⑲ are included in a seal kit. Specify the order numbers in compliance with respective cylinder bore size.

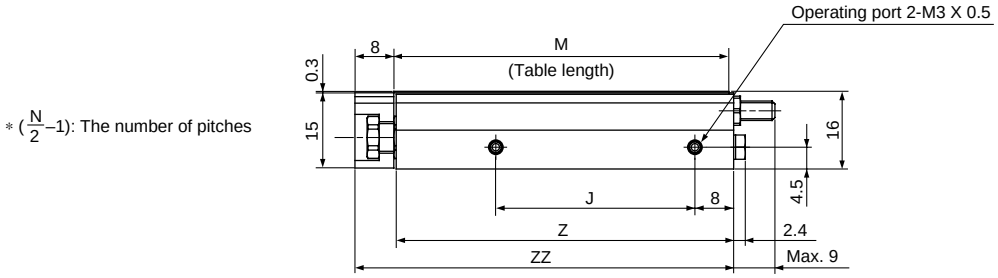
Stroke Adjuster Bolt/Dimensions

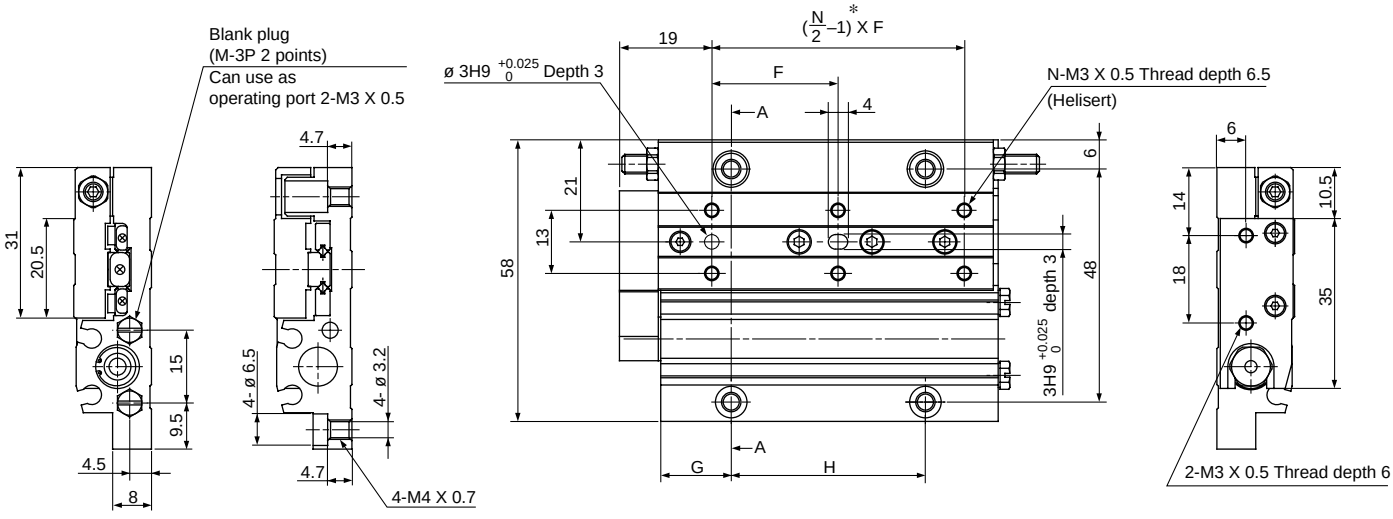


Model	Part No.	Stroke adj. range (mm)	A	B	C	M
MXF8	MXF-A827	5	17	6	2	M4 X 0.7
	MXF-A827-X11	15	27			
MXF12	MXF-A1227	5	23.5	7	2.5	M5 X 0.8
	MXF-A1227-X11	15	33.5			
MXF16	MXF-A1627	5	26.5	8	3	M6 X 1
	MXF-A1627-X11	15	36.5			
	MXF-A1627-X112	25	46.5			
MXF20	MXF-A2027	5	30	12	4	M8 X 1
	MXF-A2027-X11	15	40			
	MXF-A2027-X12	25	50			

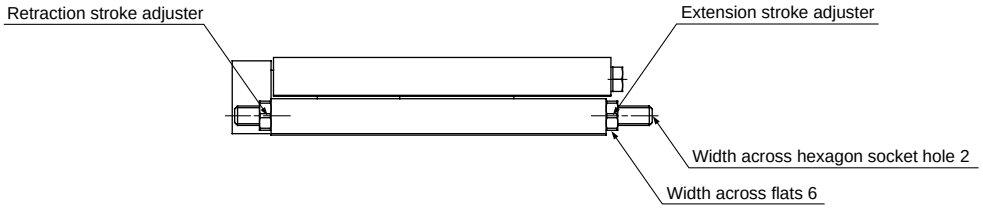
Dimensions MXF8





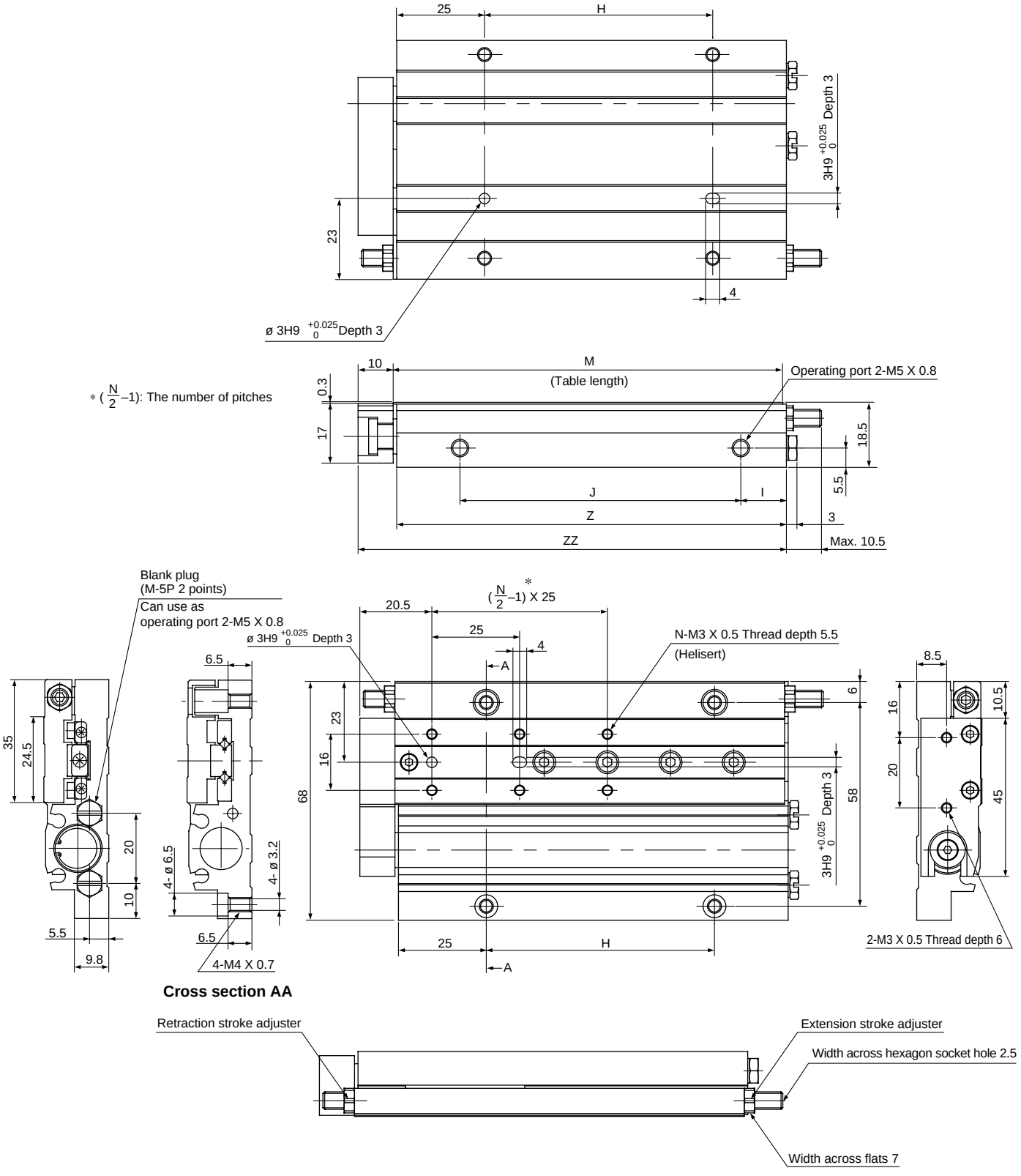


Cross section AA



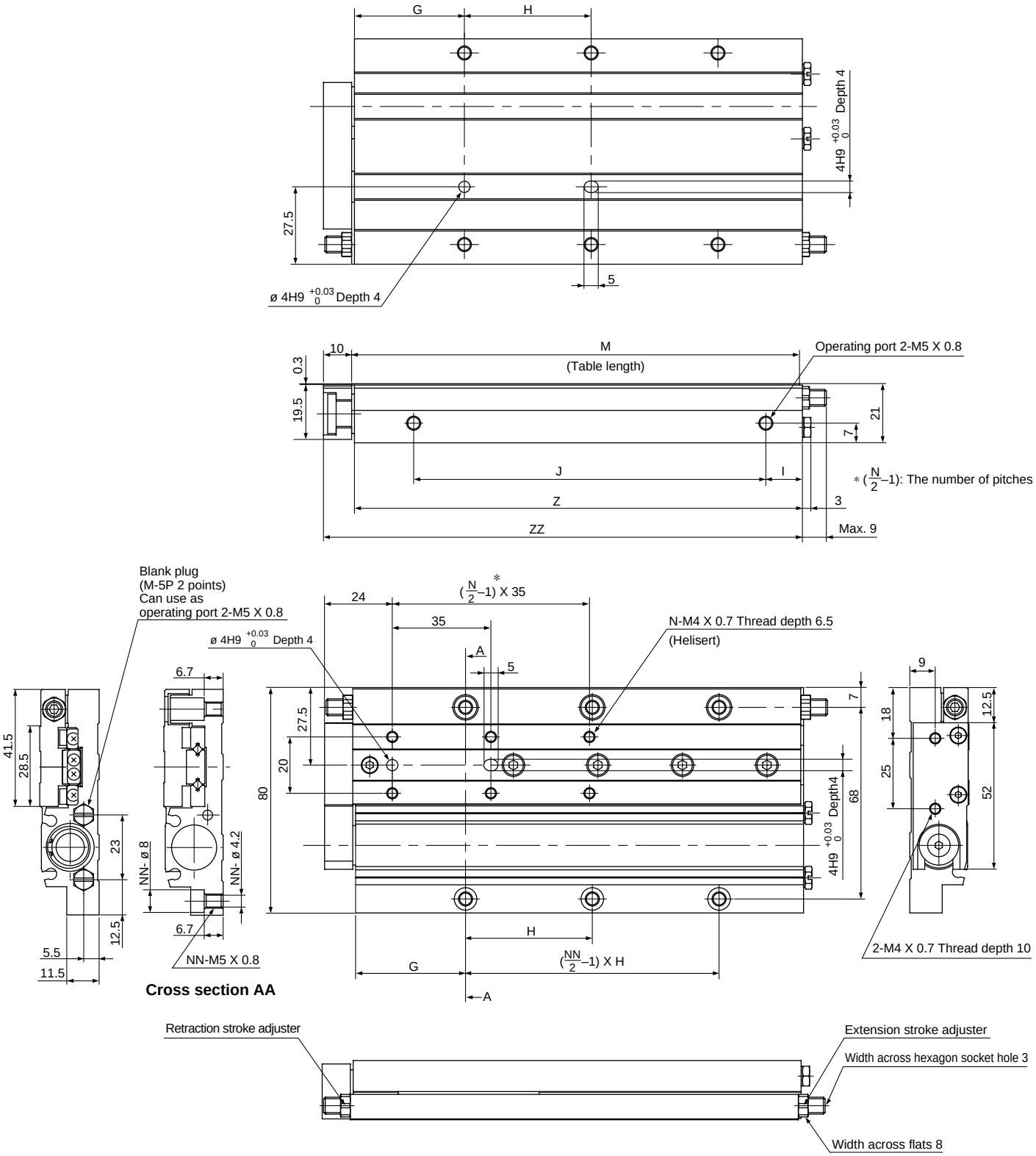
Model	F	N	G	H	J	M	Z	ZZ
MXF8-10	20	4	13.5	22	21	49	49.5	58
MXF8-20	26	4	14.5	26	26	54	54.5	63
MXF8-30	26	6	14.5	40	41	69	69.5	78

Dimensions MXF12



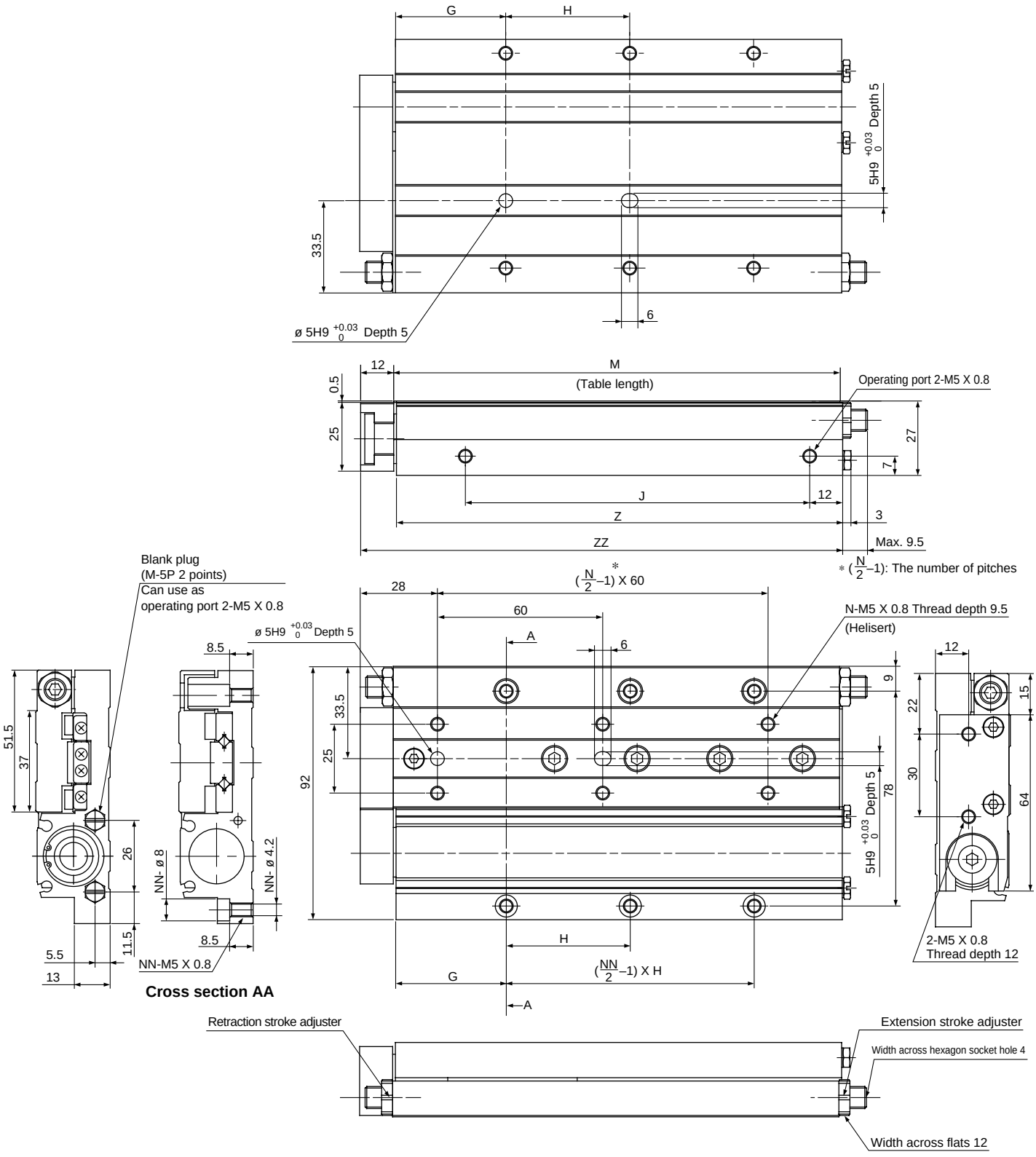
Model	N	H	I	J	M	Z	ZZ
MXF12-20	4	22	11	36	65	65	76
MXF12-30	4	30	12	45	75	75	86
MXF12-50	6	65	13	80	111	111	122

Dimensions MXF16



Model	N	G	H	NN	I	J	M	Z	ZZ
MXF16-30	4	29	25	4	12	50	83	83	94
MXF16-50	6	29	55	4	12	80	113	113	124
MXF16-75	6	39	45	6	13	125	159	159	170

Dimensions MXF20



Model	N	G	H	NN	J	M	Z	ZZ
MXF20-30	4	29	30	4	57	91	91	104
MXF20-50	4	36	45	4	77	113	113	126
MXF20-75	6	40	45	6	125	162	162	175
MXF20-100	6	59	60	6	175	211	211	224

Series MXF
Auto Switch Specifications

∗ Refer to p.5.3-2 for the detailed specifications on auto switches

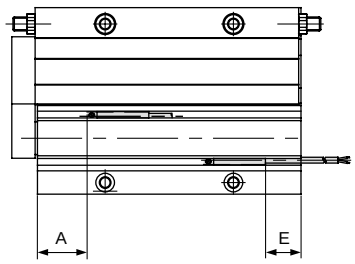
⚠ Precautions

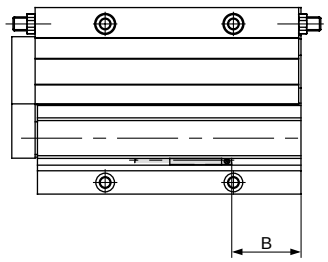
Be sure to read before handling. Refer to p.0-44 to 0-46 for common precautions.

Applicable Auto Switch Model

Bore size	Auto switch model		Electrical entry/Function		Page
ø 8, ø 12 ø16, ø 20	Reed switch	**D-A90**	Grommet	2 wire, In-line	5.3-19
		D-A93			
		D-A96		3 wire, In-line	5.3-19
		D-A90V		2 wire, Perpendicular	5.3-20
		D-A93V			
		D-A96V		3 wire, Perpendicular	5.3-20
	Solid state switch	**D-F9N**		3 wire(NPN), In-line	5.3-39
		D-F9P		3 wire(PNP), In-line	5.3-39
		D-F9B		2 wire, In-line	5.3-39
		D-F9NW		3 wire(NPN), 2 colour, In-line	5.3-66
		D-F9PW		3 wire(PNP), 2 colour, In-line	5.3-66
		D-F9BW		2 wire, 2 colour, In-line	5.3-66
		D-F9NV		3 wire(NPN), Perpendicular	5.3-39
		D-F9PV		3 wire(PNP), Perpendicular	5.3-39
		D-F9BV		2 wire, Perpendicular	5.3-39
		D-F9NWV		3 wire(NPN), 2 colour, Perpendicular	5.3-66
		D-F9PWV		3 wire(PNP), 2 colour, Perpendicular	5.3-66
		D-F9BWV		2 wire, 2 colour, Perpendicular	5.3-66

Auto Switch/Suitable Mounting Position for End of Stroke Detection





Reed switch: D-A90, D-A93, D-A96, D-A90V, D-A93V, D-A96V (mm)

Model	A	B Stroke						E Stroke						Switch operation range
		10	20	30	50	75	100	10	20	30	50	75	100	
MXF8	9.5	10	5	10	—	—	—	8 (5.5)	3 (0.5)	8 (5.5)	—	—	—	4.5
MXF12	12	—	13.1	13.1	29.1	—	—	—	11.1 (8.6)	11.1 (8.6)	27.1 (24.6)	—	—	5
MXF16	17.2	—	—	15.8	25.8	46.8	—	—	—	13.8 (11.3)	23.8 (21.3)	44.8 (42.3)	—	6
MXF20	19.4	—	—	20.7	22.7	46.2	70.7	—	—	18.7 (16.2)	20.7 (18.2)	44.2 (41.7)	68.7 (66.2)	7

Solid state switch: D-F9B, D-F9P, D-F9N, D-F9□W (mm)

Model	A	B Stroke						E Stroke						Switch operation range
		10	20	30	50	75	100	10	20	30	50	75	100	
MXF8	13.5	14	9	14	—	—	—	4	–1	4	—	—	—	2
MXF12	16	—	17.1	17.1	33.1	—	—	—	7.1	7.1	23.1	—	—	2.5
MXF16	21.2	—	—	19.8	29.8	50.8	—	—	—	9.8	19.8	40.8	—	3
MXF20	23.4	—	—	24.7	26.7	50.2	74.7	—	—	14.7	16.7	40.2	64.7	4

Solid state switch: D-F9BV, D-F9NV, D-F9PV, D-F9□WV (mm)

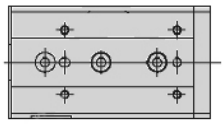
Model	A	B Stroke						E Stroke						Switch operation range
		10	20	30	50	75	100	10	20	30	50	75	100	
MXF8	13.5	14	9	14	—	—	—	6	1	6	—	—	—	2
MXF12	16	—	17.1	17.1	33.1	—	—	—	9.1	9.1	25.1	—	—	2.5
MXF16	21.2	—	—	19.8	29.8	50.8	—	—	—	11.8	21.8	42.3	—	3
MXF20	23.4	—	—	24.7	26.7	50.2	74.7	—	—	16.7	18.7	42.2	66.7	4

( ): D-A93

Высокая жесткость, высокая точность

Плавные движения благодаря роликовым направляющим

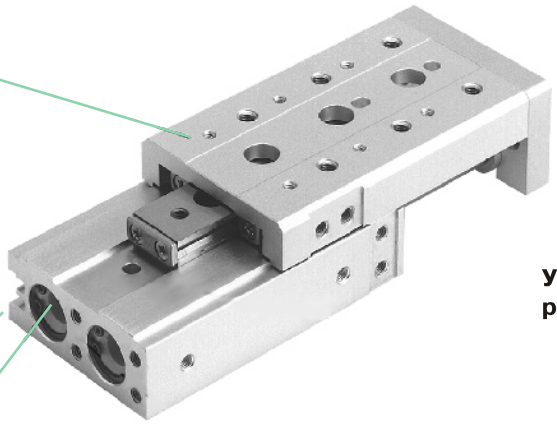
Средства, облегчающие монтаж



Отверстия для позиционирования облегчают повторный монтаж

Возможна установка датчиков положения

Датчики положения полностью утапливаются в корпусе каретки

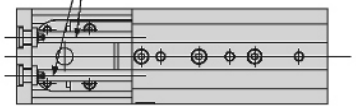


Узел регулировки хода

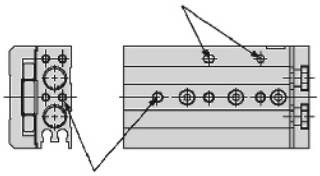
Может быть оснащена унифицированным узлом ограничения хода 0-5 мм

Компактная и легкая

Благодаря двухпоршневому приводу усилие в два раза больше, чем усилие на стандартном цилиндре

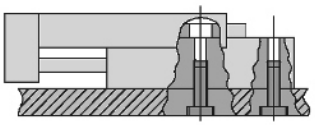
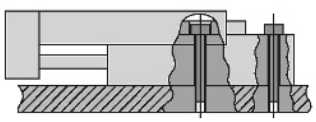
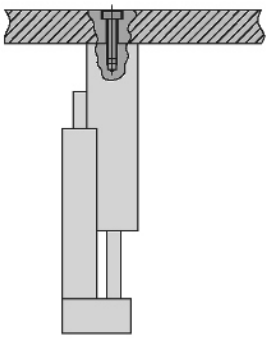


Отверстия для позиционирования



Крепежные отверстия (резьба)

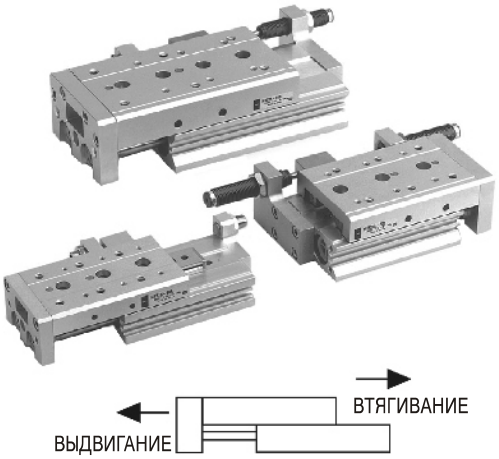
Варианты монтажа пневмокаретки

1) крепление снизу	2) крепление сверху	3) осевое крепление
		

Технические характеристики

Диаметр поршня (мм)	6	8	12	16	20	25
Присоединительная резьба	M3	M5			G1/8	
Среда	Очищенный сжат. воздух с содержанием* или без содерж. масла					
Принцип действия	Двустороннего действия					
Диапазон рабочих давлений (МПа)	0.15 ~ 0.7					
Испытательное давление (МПа)	1.05					
Температура окружающей и рабочей среды (°C)	-10 ~ +60					
Скорость поршня (мм/с)	50 ~ 500					

* Рекомендуемый тип масла: ISO VG32 класс 1



Теоретическое усилие на каретке (в Н)

ø поршня (мм)	ø поршневого штока (мм)	Направление движения	Эффектив. площадь поршня (мм²)	Рабочее давление (МПа)					
				0.2	0.3	0.4	0.5	0.6	0.7
6	3	Выдвигание	57	11	17	23	29	34	40
		Втягивание	42	8	13	17	21	25	29
8	4	Выдвигание	101	20	30	40	51	61	71
		Втягивание	75	15	23	30	38	45	53
12	6	Выдвигание	226	45	68	90	113	136	158
		Втягивание	170	34	51	68	85	102	119
16	8	Выдвигание	402	80	121	161	201	241	281
		Втягивание	302	60	91	121	151	181	211
20	10	Выдвигание	628	125	188	251	314	377	440
		Втягивание	471	94	141	188	236	283	330
25	12	Выдвигание	982	196	295	393	491	590	687
		Втягивание	756	151	227	302	378	454	529

Вес (г)

Тип	Стандартная длина хода (мм)							
	10	20	30	50	75	100	125	150
MXS6	95	110	130	230	–	–	–	–
MXS8	–	175	215	295	465	–	–	–
MXS12	–	–	380	530	730	980	–	–
MXS16	–	–	700	850	1200	1450	1800	–
EMXS20	–	–	1100	1400	1800	2300	2900	3400
EMXS25	–	–	1950	2350	2950	3550	4450	5150

Датчики положения

Подробную информацию см. на стр. 487.

Герконовый датчик

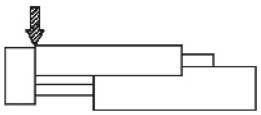
	светодиод	Напряжение	Ток
D-A90L		24/48/110VAC	50/40/20 мА
D-A93L	●	24VDC/110VAC	5~40 мА

Электронный датчик

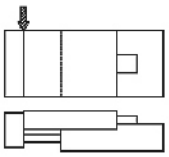
	светодиод	Напряжение	Ток
D-F9BL (2 провода)	●	24 VDC	< 30 мА
D-F9PL (PNP-структ.)	●	24 VDC	< 50 мА

Критерии выбора / допустимые боковая нагрузка и прогиб

Продольная нагрузка

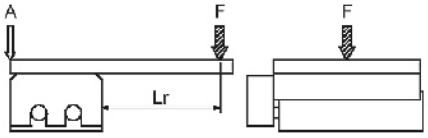


Поперечная нагрузка

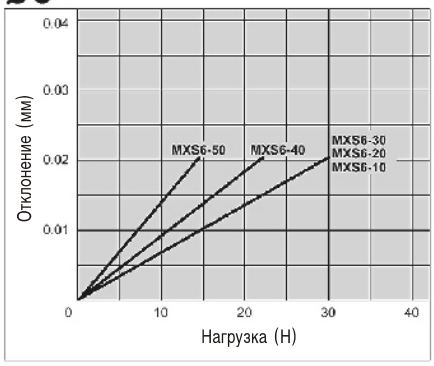


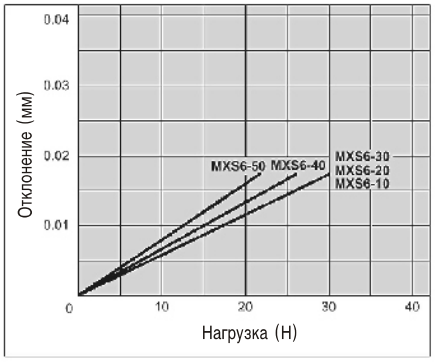
Смещенная нагрузка

Отклонение от точки A,
если нагрузка направлена по F

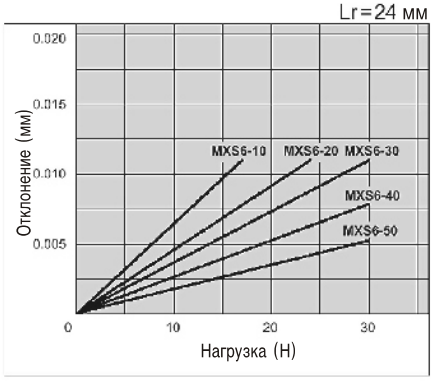


ø6

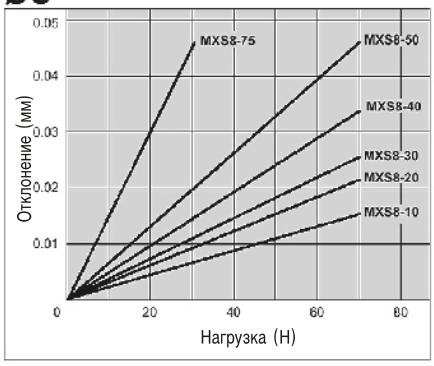


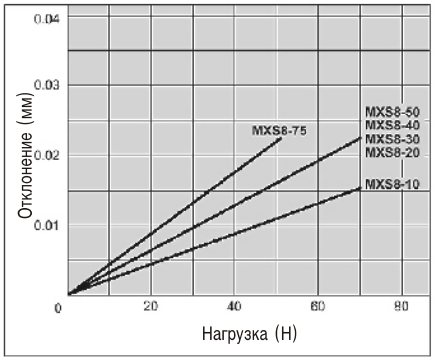


Lr=24 мм

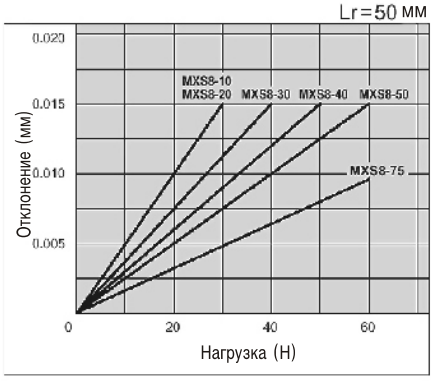


ø8

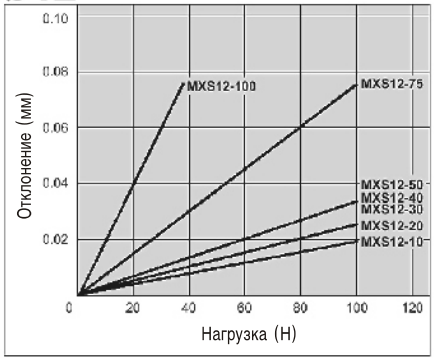


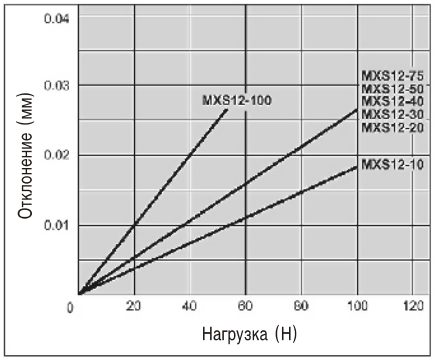


Lr=50 мм

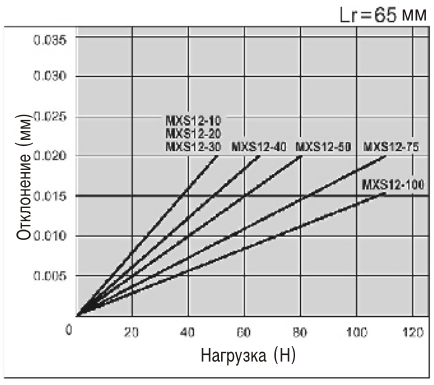


ø12



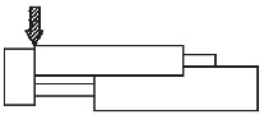


Lr=65 мм

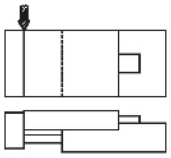


Критерии выбора / допустимые боковая нагрузка и прогиб

Продольная нагрузка

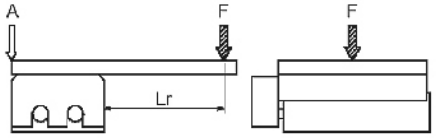


Поперечная нагрузка

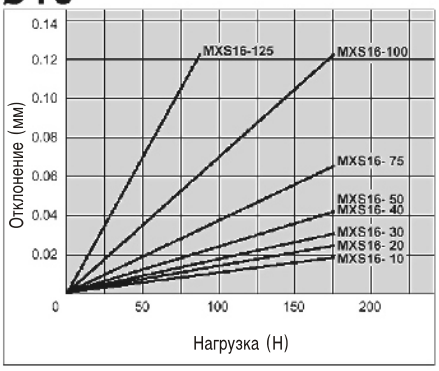


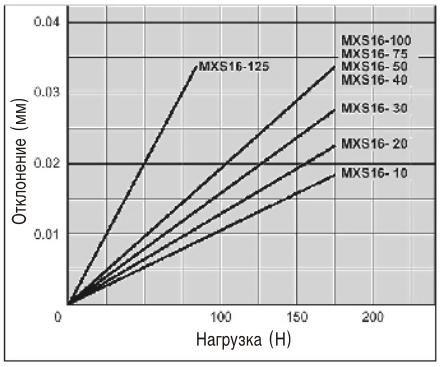
Смещенная нагрузка

Отклонение от точки A,
если нагрузка направлена по F

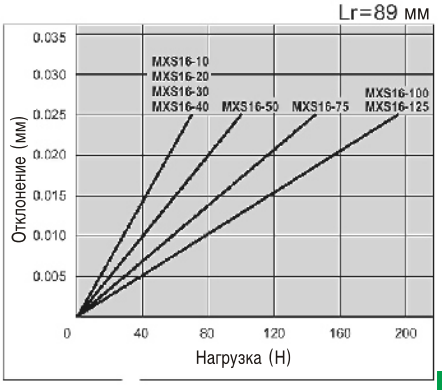


ø16

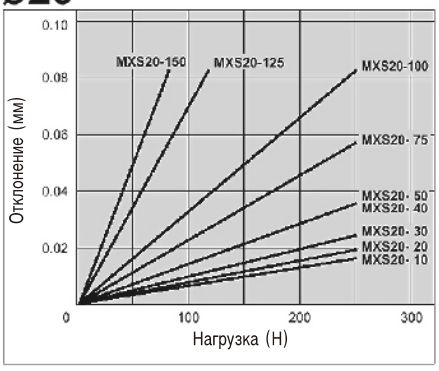


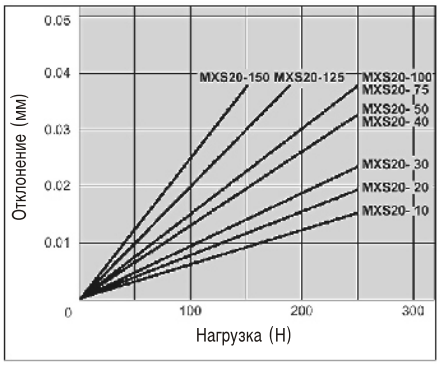


Lr=89 мм

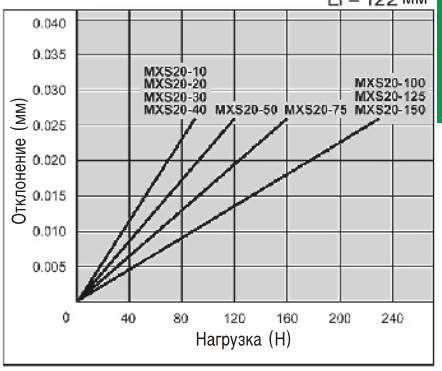


ø20

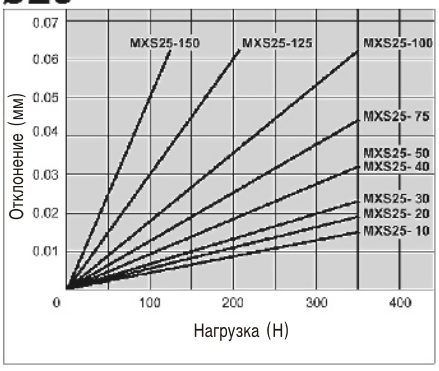


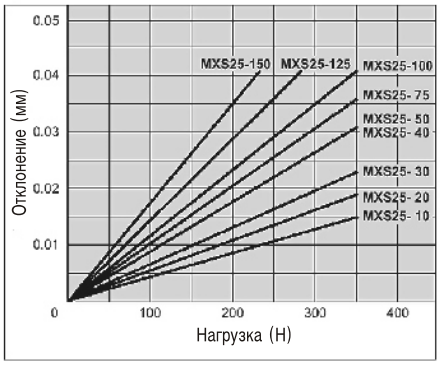


Lr=122 мм

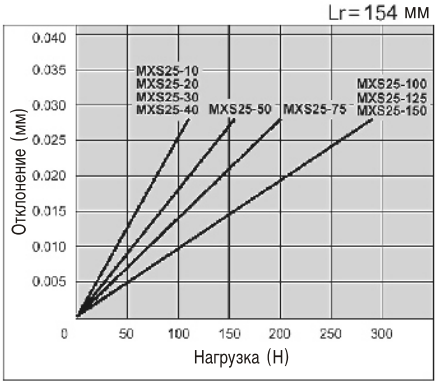


ø25





Lr=154 мм



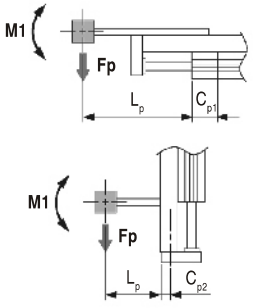
Динамическая нагрузка не должна превышать 1/10 допустимой статической нагрузки (сила инерции масс, скорость).

Компактная пневмокаретка короткого хода
MXS

Критерии выбора

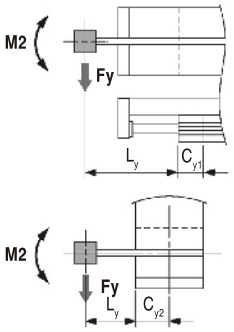
Расчет допустимой статической нагрузки Fp, Fy и Fr

Продольная нагрузка



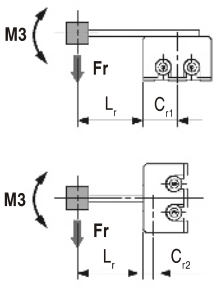
$$F_p = \frac{M1 \times 100}{L_p + C_p} (H)$$

Поперечная нагрузка



$$F_y = \frac{M2 \times 100}{L_y + C_y} (H)$$

Смещеная нагрузка



$$F_r = \frac{M3 \times 100}{L_r + C_r} (H)$$

L_p, L_y, L_r - расстояние между монтажной плоскостью и центром тяжести нагрузки (мм)

C_p, C_y, C_r - поправочный коэффициент на расстояние от центра тяжести нагрузки (мм)

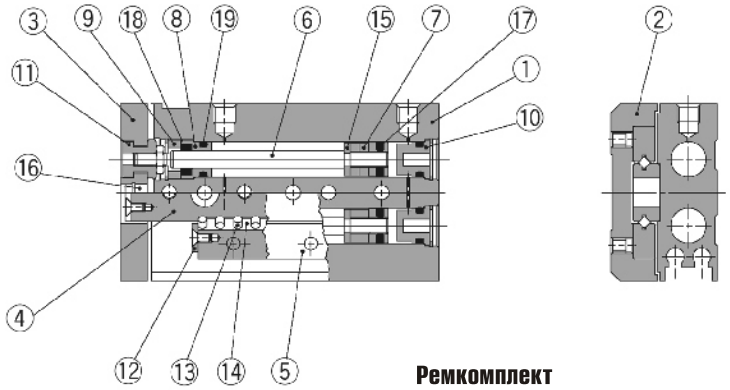
Меры предосторожности

1. Если цилиндр работает с недопустимо высокими моментами, вследствии несбалансированной нагрузки на направляющую происходит увеличение зазора. Вместе с этим сокращается срок службы каретки.
2. Слишком высокая скорость поршня приводит к ударам, воздействующим на направляющую,что также сокращает срок службы.

Максимально допустимый момент

Ход (мм) / ø поршня (мм)	Допустимый момент для: M1, M2, M3 (Нм)								Расстояние от центра тяжести нагрузки (мм)					
	10	20	30	50	75	100	125	150	Cp1	Cp2	Cy1	Cy2	Cr1	Cr2
6	0.70	0.98	1.22	1.22	–	–	–	–	11	6	13	16	16	6
8	–	2.06	2.78	4.17	4.17	–	–	–	11	7.5	13	20	20	7.5
12	–	–	4.26	7.11	9.95	9.95	–	–	24	8.5	26	25	25	8.5
16	–	–	8.33	11.42	17.13	22.84	22.84	–	27	10	30	31	31	10
20	–	–	13.79	19.31	24.83	35.87	35.87	35.87	34	14.5	36	38	38	14.5
25	–	–	21.73	30.42	39.11	47.80	47.80	47.80	42	19	44	46	46	19

Конструкция



Ремкомплект

Комплекты уплотнений, состоящие из поз. 17, 18,19

Тип	Номер для заказа
MXS6	**MXS6-PS**
MXS8	**MXS8-PS**
MXS12	**MXS12-PS**
MXS16	**MXS16-PS**
EMXS20	**MXS20-PS**
EMXS25	**MXS25-PS**

Спецификация

Поз.	Обозначение	Материал
1	Корпус	Алюм. сплав (тверд. алитирование)
2	Стол	
3	Концевой фланец	
4	Шина	Сталь
5	Направляющая	
6	Поршневой шток	Нерж. сталь
7	Поршень	
8	Зажим уплотнения	Латунь
9	Крышка	Пластмасса
10	Компенсаторная гайка	Нерж. сталь
11	Соединительный канал	Латунь (никелиров.)
12	Роликовый стопор	Нерж. сталь
13	Ролики	Подшип. сталь
14	Сепаратор	Пластмасса
15	Демпферная шайба	Полиуретан
16	Концевой демпфер	Полиуретан
17	Уплотнение поршня	NBR
18	Уплотнен. поршн. штока	
19	Кольцевая прокладка круглого профиля	

Номер для заказа

Пневмокаретка

EMXS [12] - [50]

для ø20 и ø25

длина хода (мм)

10	20	30	50	75	100	125	150

ø поршня (мм)/(стандартный ход)

6	10, 20, 30, 50
8	20, 30, 50, 75
12	30, 50, 75, 100
16	30, 50, 75, 100, 125
20	30, 50, 75, 100, 125, 150
25	30, 50, 75, 100, 125, 150

Принадлежности (заказываются отдельно)

Узел ограничения хода

MXS - A [S] [12] - [X11]

Выдвижение	S
Втягивание	T

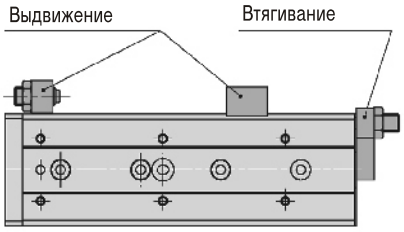
ø поршня (мм)

6
8
12
16
20
25

диапазон регулировки (мм)

–	0~5
X11	0~15
X12*	0~25

* не для MXS6

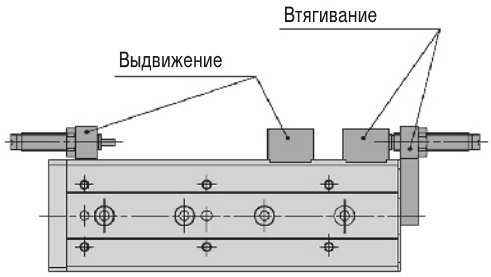


Узел ограничения хода с амортизатором

MXS - B [S] [12]

Выдвижение	S
Втягивание	T

ø поршня (мм)
6
8
12
16
20
25



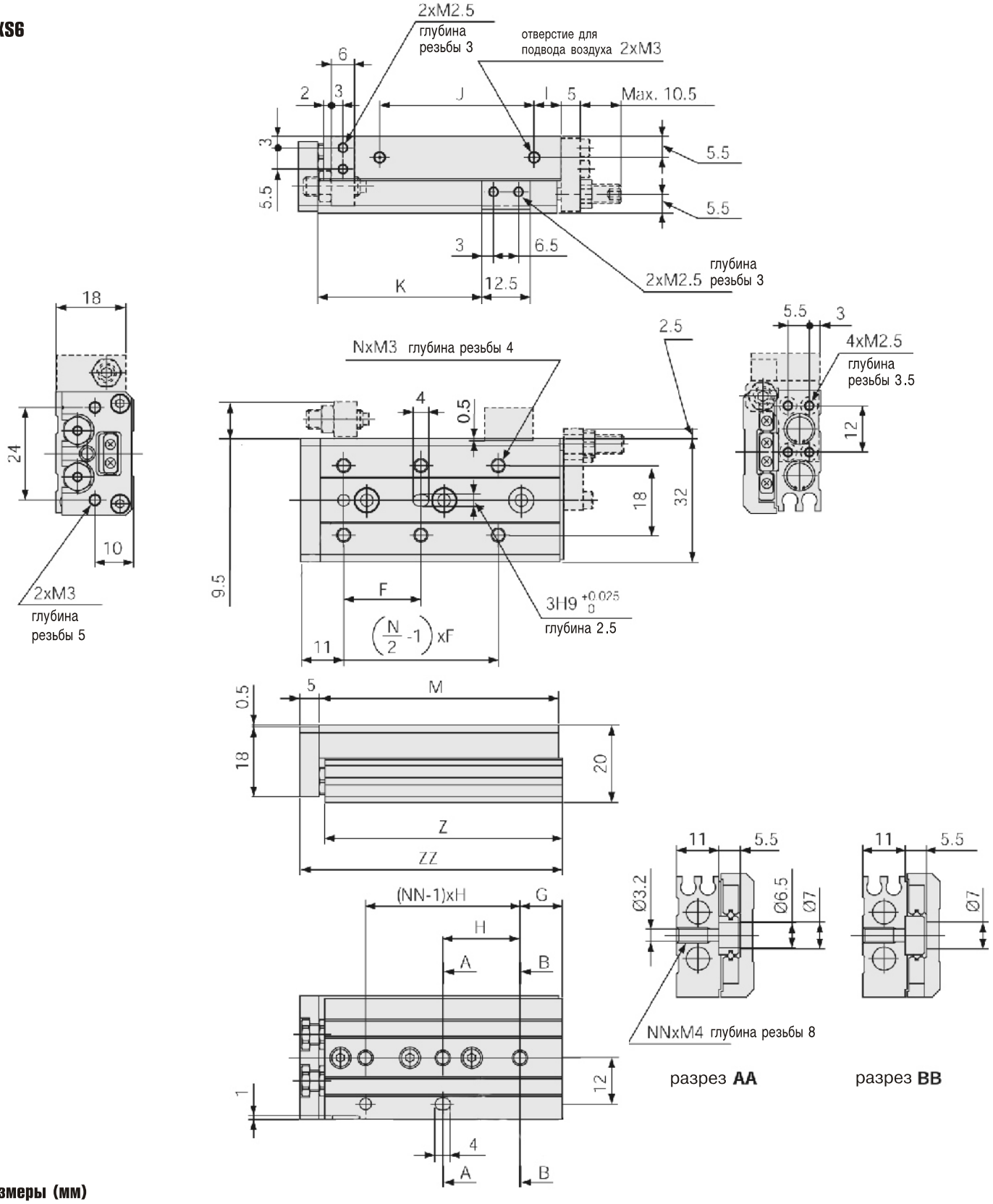
Амортизатор

Номер для заказа	RB0805	RB0806	RB1007	RB1411	RB1412
Тип каретки	MXS8	MXS12	MXS16	EMXS20	EMXS25
Макс. поглощение энергии на ход (Нм=Дж)	0.98	2.94	5.88	14.7	19.6
Ход (мм)	5	6	7	11	12
Макс. скорость столкновения (мм/сек)	50 ~ 500				
Число допустимых двойных ходов в мин. (n)	80	80	70	45	45
Макс. допустимая нагрузка (Н)	245	245	422	814	814
Диапазон рабочих температур (°С)	-10 ~ +60				
Усилие на сжатой пружине (Н)	1.96	1.96	4.22	6.86	6.86
Усилие на растянутой пружине (Н)	3.83	4.22	6.86	15.80	15.98
Вес (г)	15	15	25	65	65

Компактная пневмокаретка короткого хода
MXS

Размеры

MXS6

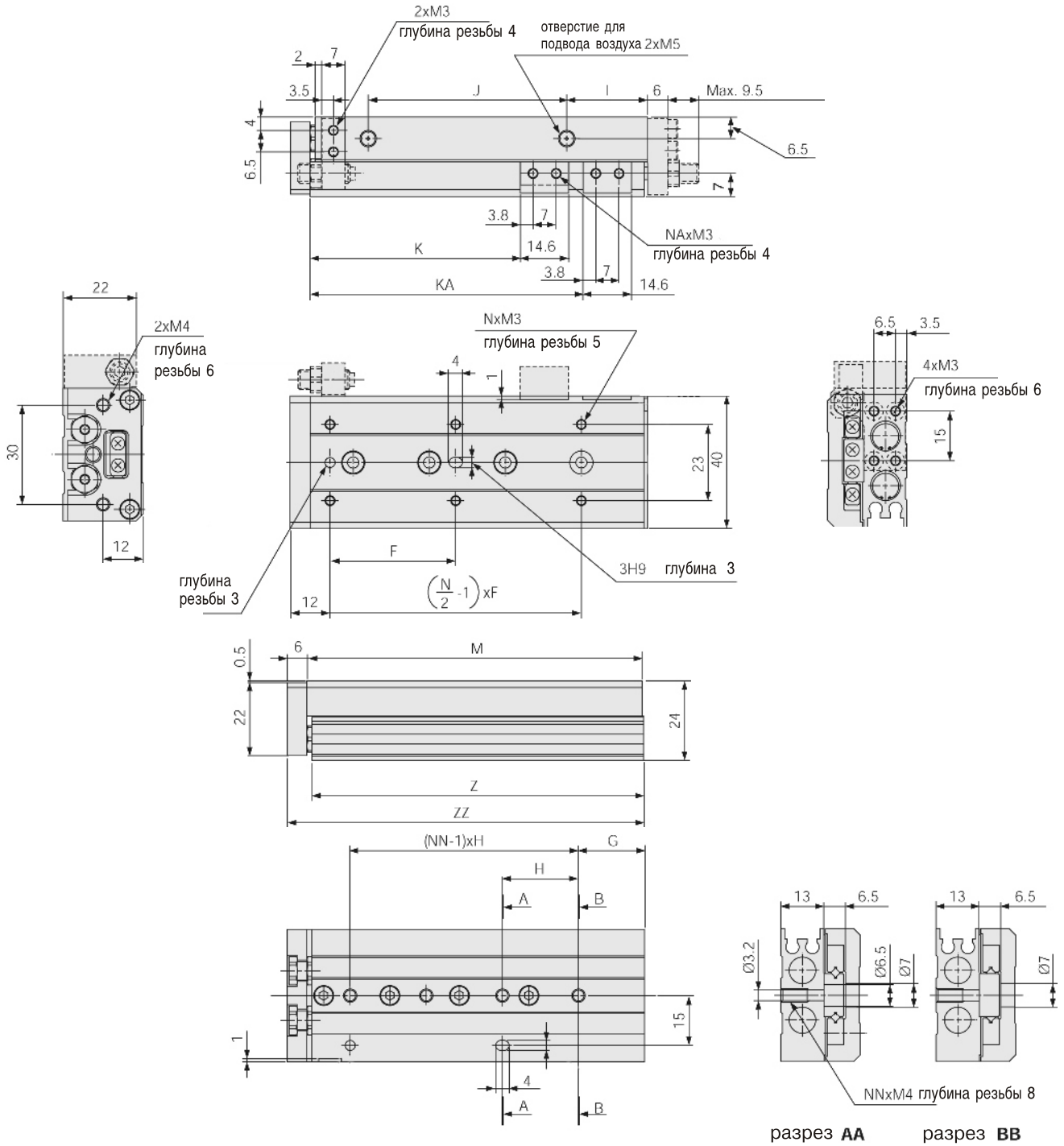


Размеры (мм)

	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
MXS6-10	20	4	6	25	2	11	20	10	17	22.5	42	41.5	48
MXS6-20	30	4	6	35	2	21	20	10	27	32.5	52	51.5	58
MXS6-30	20	6	11	20	3	31	20	7	40	42.5	62	61.5	68
MXS6-40	28	6	13	30	3	43	30	19	50	52.5	84	83.5	90
MXS6-50	38	6	17	24	4	41	48	25	60	62.5	100	99.5	106

Размеры

MXS8



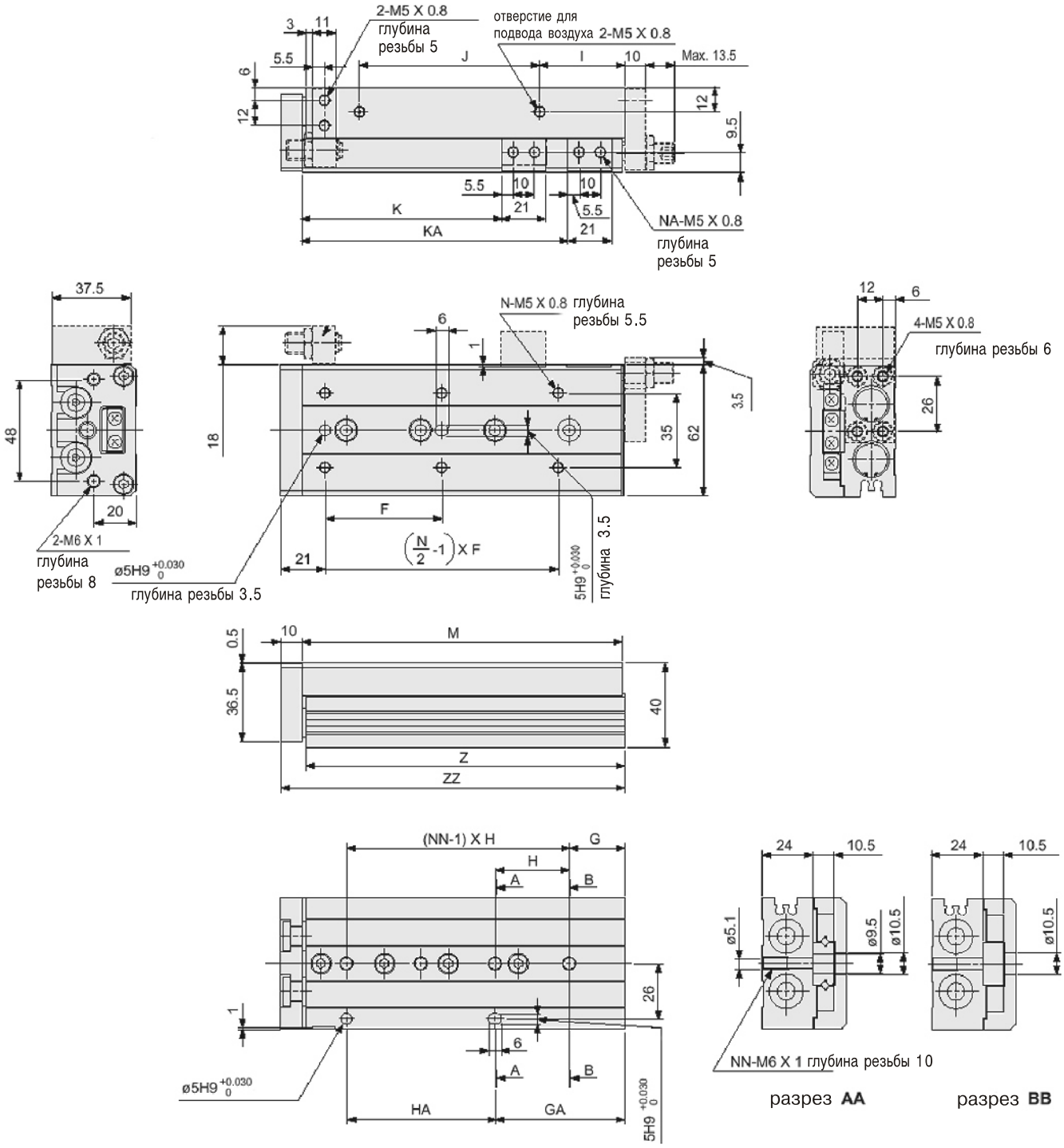
Размеры (мм)

	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXS8-10	25	4	9	28	2	17	20	13	19.5	23.5	—	2	49	48.5	56
MXS8-20	25	4	12	30	2	12	30	8.5	29	33.5	—	2	54	53.5	61
MXS8-30	40	4	13	20	3	33	20	9.5	39	43.5	—	2	65	64.5	72
MXS8-40	50	4	15	28	3	43	28	10.5	56	53.5	—	2	83	82.5	90
MXS8-50	38	6	20	23	4	43	46	24.5	60	63.5	82.5	4	101	100.5	108
MXS8-75	50	6	27	28	5	83	56	38.5	96	88.5	132.5	4	151	150.5	158

Компактная пневмокаретка короткого хода
MXS

Размеры

MXS12

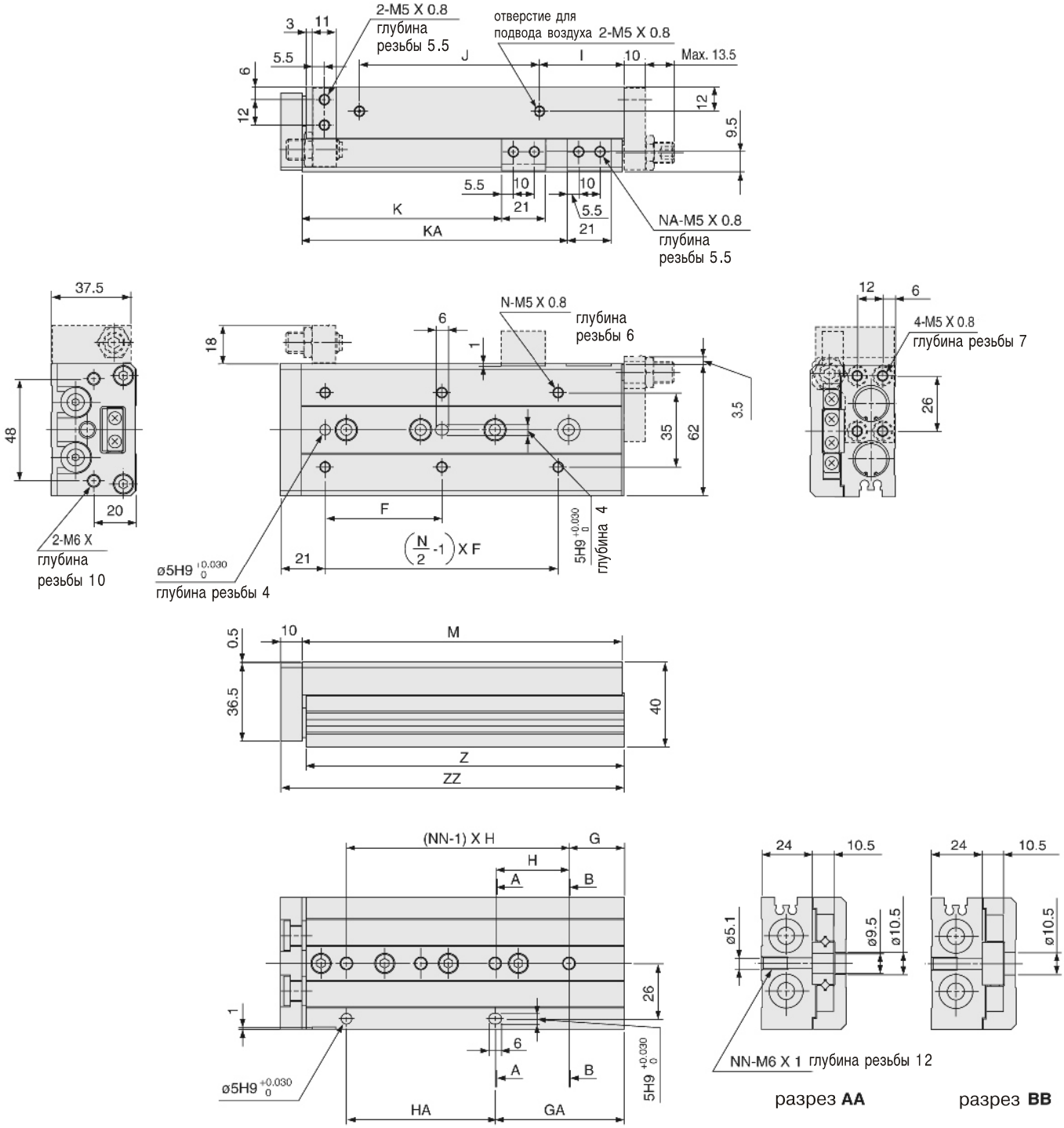


Размеры (мм)

	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXS12-10	35	4	15	40	2	15	40	10	40	26.5	—	2	71	70	80
MXS12-20	35	4	15	40	2	15	40	10	40	36.5	—	2	71	70	80
MXS12-30	35	4	15	40	2	15	40	10	40	46.5	—	2	71	70	80
MXS12-40	50	4	17	25	3	42	25	10	52	56.5	—	2	83	82	92
MXS12-50	35	6	15	36	3	51	36	22	60	66.5	—	2	103	102	112
MXS12-75	55	6	25	36	4	61	72	43	85	91.5	125.5	4	149	148	158
MXS12-100	65	6	35	38	5	111	76	52	130	116.5	179.5	4	203	202	212

Размеры

MXS16

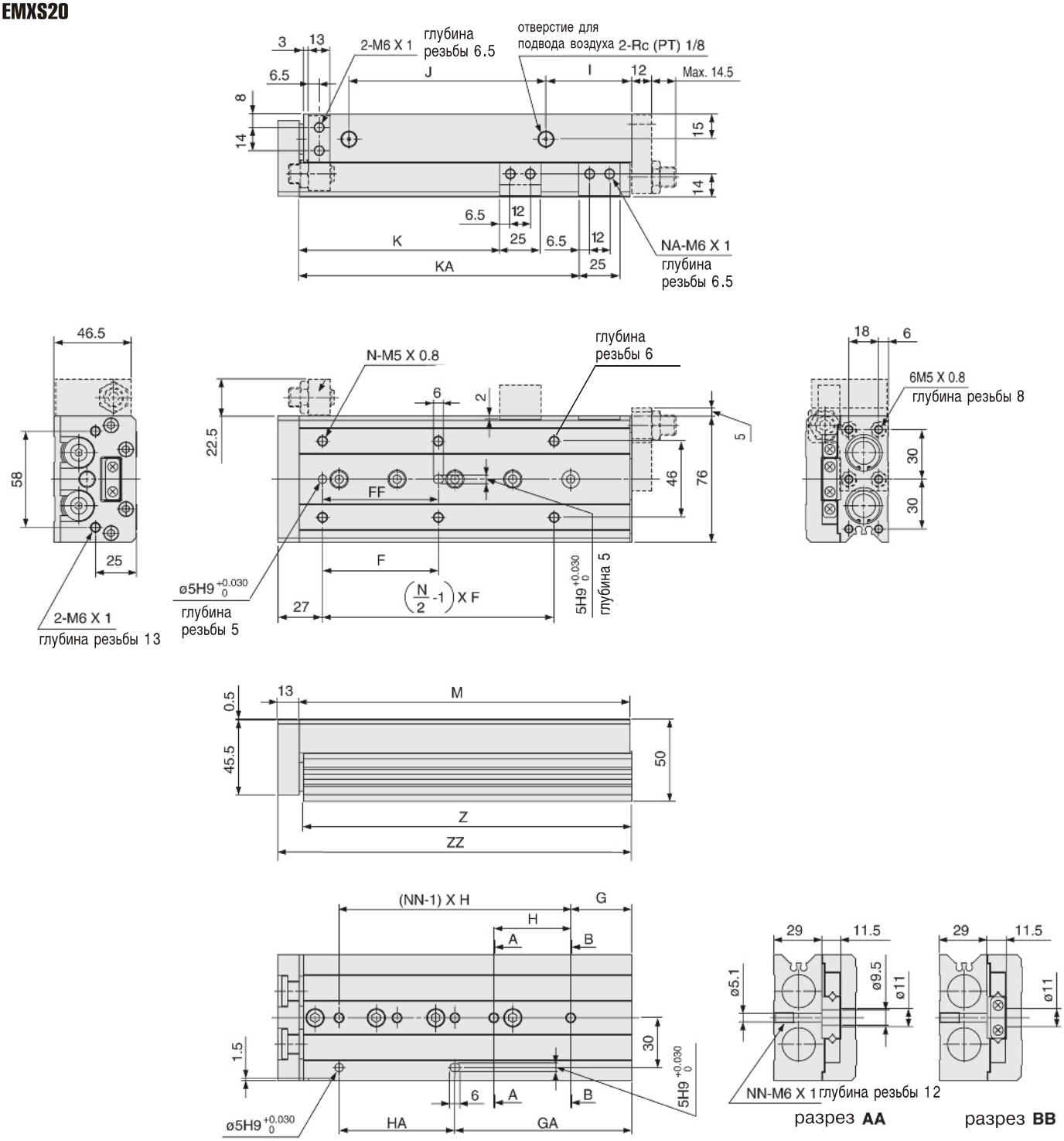


Размеры (мм)

	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
MXS16-10	35	4	16	40	2	16	40	10	40	29	—	2	76	75	87
MXS16-20	35	4	16	40	2	16	40	10	40	39	—	2	76	75	87
MXS16-30	35	4	16	40	2	16	40	10	40	49	—	2	76	75	87
MXS16-40	40	4	16	50	2	16	50	10	50	59	—	2	86	85	97
MXS16-50	30	6	21	30	3	51	30	15	60	69	—	2	101	100	112
MXS16-75	55	6	26	35	4	61	70	40	85	94	125	4	151	150	162
MXS16-100	65	6	39	35	5	109	70	55	118	119	173	4	199	198	210
MXS16-125	70	8	19	35	7	159	70	68	155	144	223	4	249	248	260

Размеры

EMXS20

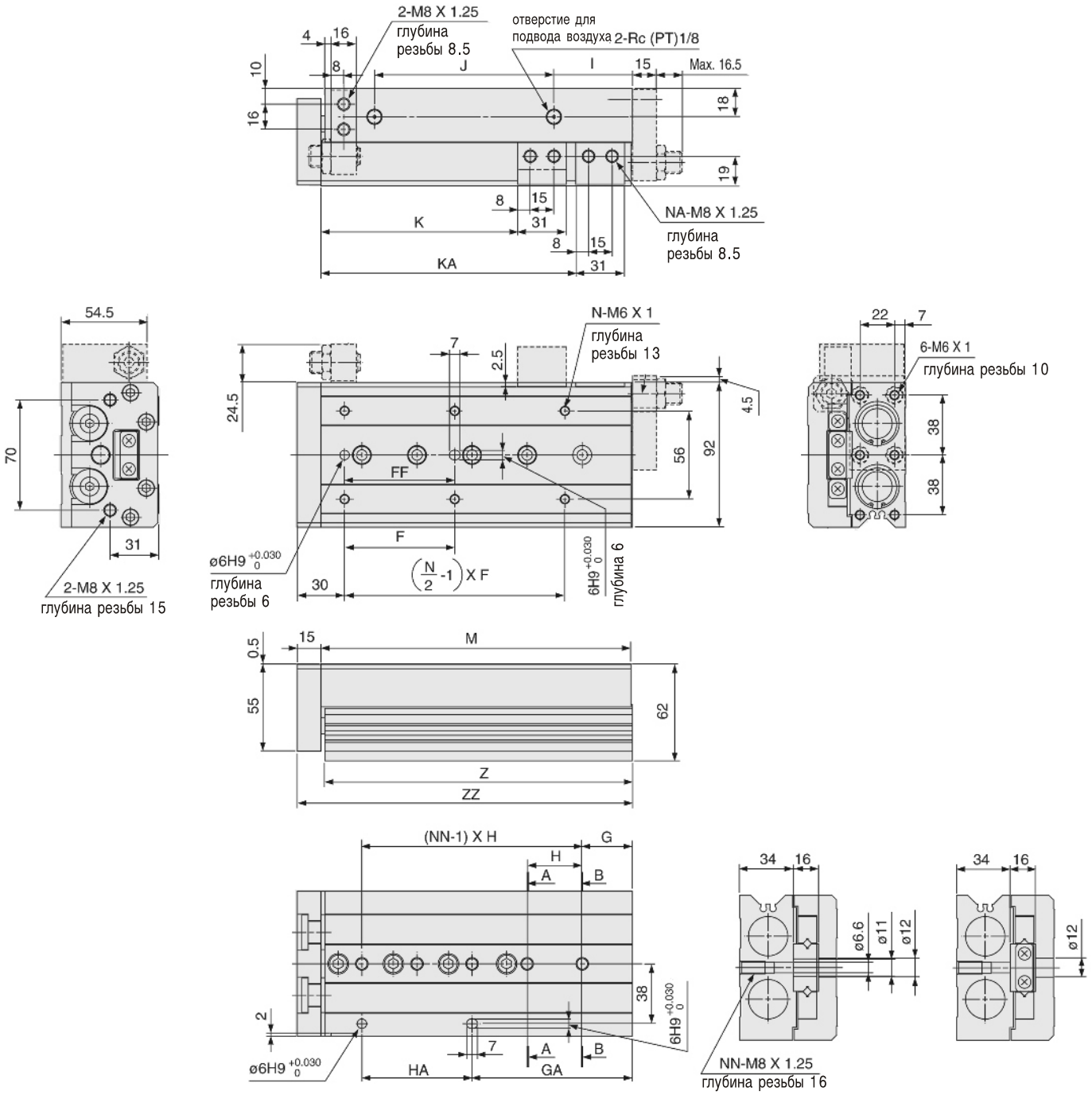


Размеры (мм)

	F	FF	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
EMXS20-10	50	40	4	15	45	2	25	35	10	44	31	—	2	83	81.5	97
EMXS20-20	50	40	4	15	45	2	25	35	10	44	41	—	2	83	81.5	97
EMXS20-30	50	40	4	15	45	2	25	35	10	44	51	—	2	83	81.5	97
EMXS20-40	60	50	4	15	55	2	35	35	10	54	61	—	2	93	91.5	107
EMXS20-50	35	35	6	15	35	3	50	35	10	69	71	—	2	108	106.5	122
EMXS20-75	60	60	6	19	35	4	54	70	10	108	96	—	2	147	145.5	161
EMXS20-100	70	70	6	37	35	5	107	70	58	113	121	169	4	200	198.5	214
EMXS20-125	70	70	8	41	38	6	155	76	70	155	146	223	4	254	252.5	268
EMXS20-150	80	80	8	19	44	7	195	88	87	190	171	275	4	306	304.5	320

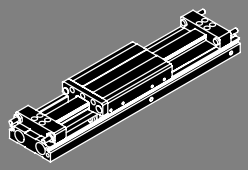
Размеры

EMXS25



Размеры (мм)

	F	FF	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
EMXS25-10	50	40	4	22	45	2	22	45	12	47	35	—	2	92	90.5	108
EMXS25-20	50	40	4	22	45	2	22	45	12	47	45	—	2	92	90.5	108
EMXS25-30	50	40	4	22	45	2	22	45	12	47	55	—	2	92	90.5	108
EMXS25-40	60	50	4	22	55	2	22	55	12	57	65	—	2	102	100.5	118
EMXS25-50	35	35	6	20	35	3	55	35	12	70	75	—	2	115	113.5	131
EMXS25-75	60	60	6	26	35	4	61	70	33	90	100	—	2	156	154.5	172
EMXS25-100	70	70	6	32	35	5	102	70	50	114	125	162	4	197	195.5	213
EMXS25-125	75	75	8	40	38	6	154	76	67	155	150	218	4	255	253.5	271
EMXS25-150	80	80	8	30	40	7	190	80	82	180	175	258	4	295	293.5	311

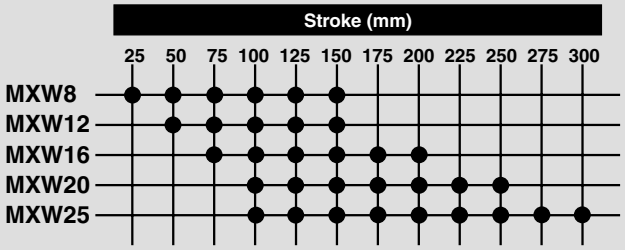


Long Stroke Slide Table
Series MXW
ø8, ø12, ø16, ø20, ø25

Linear guide table provides long stroke. Table rigidity is constant throughout entire stroke.

Long stroke (Max. 300 mm)

Linear guide provides long stroke,
and it obtains smooth operation without vibration.



Dual piston rod

• Slim design provides 2 times the force of standard cylinder.

MXW8: ø8 x 2 **MXW20: ø20 x 2**
MXW12: ø12 x 2 **MXW25: ø25 x 2**
MXW16: ø16 x 2

Shock absorber

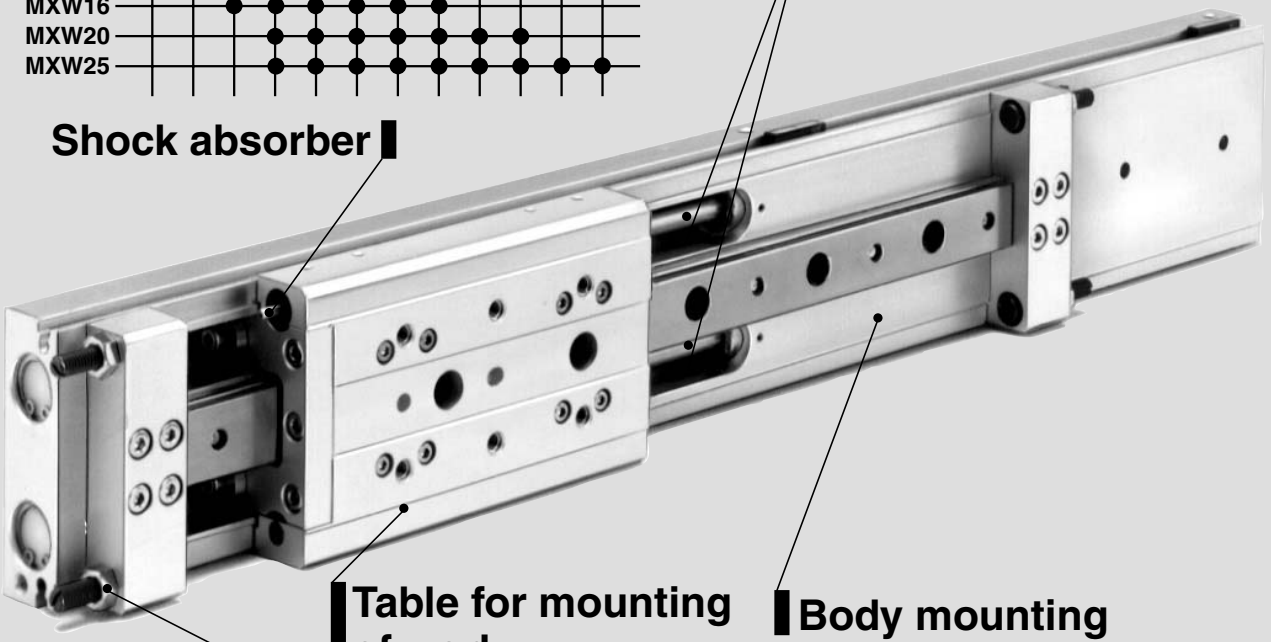
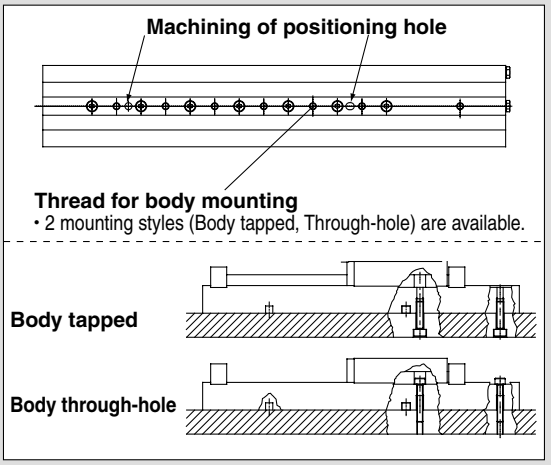


Table for mounting of work

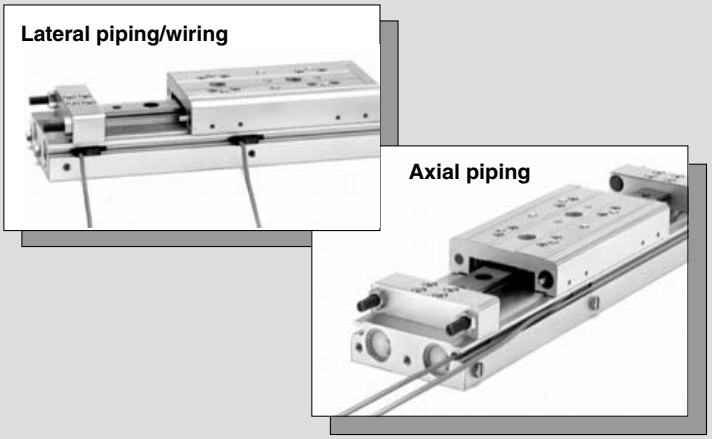
Stroke adjuster

Body mounting



Piping, Wiring

- Piping is possible from 2 directions.
- Can pipe and wire switches from the same surface.
- Auto switch can be attached to either side of body.



Series MXW Long Stroke Slide Table
Operation Guide

⚠ Precautions

Be sure to read before handling. Refer to pages 8-34-3 to 8-34-6 for Safety Instructions and Actuator Precautions.

Selection

⚠ Caution

1. Operate loads within the range of the operating limits.
Select the model from Maximum allowable load and allowable moment. For details, refer to the following selection procedures. When actuator is used outside of operating limit, eccentric loads on the guide in excess, will cause vibration on guide, inaccuracy and shorten its life.

2. If intermediate stops by external stopper are done, avoid ejection.
If ejection occurs, it may cause damage.
In the case slide table is stopped at intermediate positions by the external stopper then forwarded to the front, after slide table is returned to the back for just a moment to retract the stopper, supply pressure to the opposite port to operate slide table.

3. Do not use it in such a way that excessive external force or impact force could work on it.
This could result in damage.

Maximum allowable load and allowable moment will vary depending on workpiece mounting methods, mounting orientation and piston speed. A determination of usability is performed based on the operating limit values in the graphs with respect to operating conditions, but the total ($\sum\alpha$n) of the load factors (αn) for each weight and moment should not exceed 1.

$$\sum\alpha n = \frac{\text{Load (W)}}{\text{Maximum load weight (Wmax)}} + \frac{\text{Static moment (M)}}{\text{Allowable static moment (Mmax)}} + \frac{\text{Dynamic moment (Me)}}{\text{Allowable dynamic moment (Memax)}} < 1$$

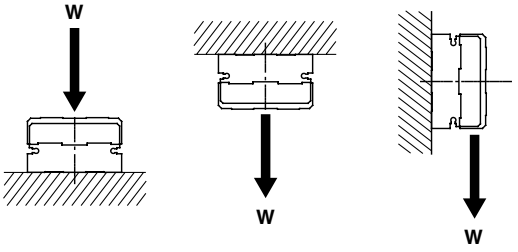
Wmax, Mmax and Memax values are according to **graph (1), (2) and (3)** below.

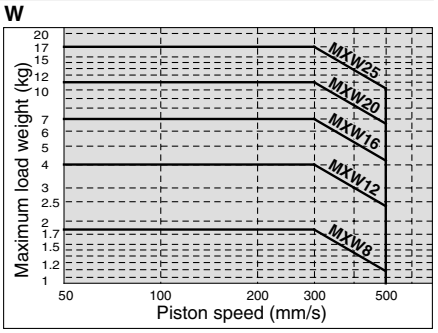
Load Weight

Maximum Load Weight (kg)

Model	W
MXW8	1.8
MXW12	4
MXW16	7
MXW20	11
MXW25	17

Note) No need to consider this load factor in the case of using perpendicularly in a vertical position.





Graph (1)

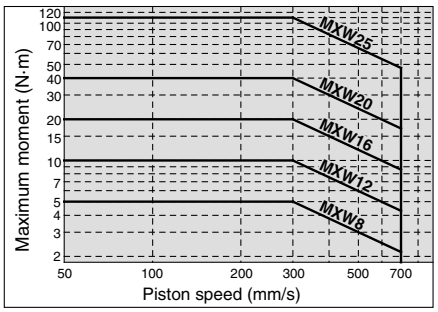
Moment

Allowable Moment

(Static moment/Dynamic moment) (N·m)

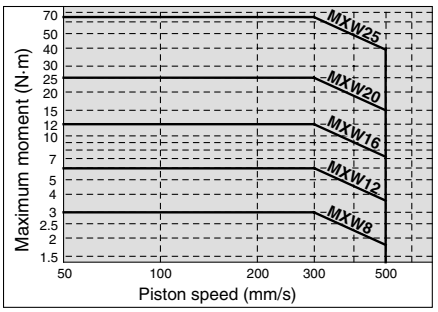
Model	Pitch moment	Yaw moment	Roll moment
	Mp/Mep	**My/Mey**	**Mr**
MXW8	5	5	3
MXW12	10	10	2
MXW16	20	20	12
MXW20	40	40	25
MXW25	110	110	65

Mp/Mep (Pitch moment)
My/Mey (Yaw moment)



Graph (2)

Mr (Roll moment)



Graph (3)

Static Moment

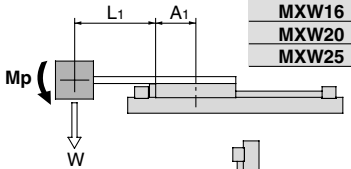
Moment generated by the workpiece weight even when the cylinder is stopped

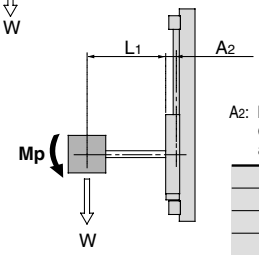
■ Pitch moment

Mp = W x 9.8 (L_1 + A_1)

A_1: Moment center position distance compensation amount (mm)

MXW8	39
MXW12	48
MXW16	58
MXW20	75
MXW25	97





A_2: Moment center position distance compensation amount (mm)

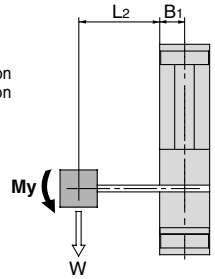
MXW8	10
MXW12	10
MXW16	14
MXW20	20
MXW25	28

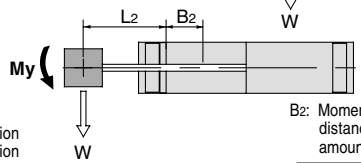
■ Yaw moment

My = W x 9.8 (L_2 + B)

B_1: Moment center position distance compensation amount (mm)

MXW8	23
MXW12	29
MXW16	37
MXW20	49
MXW25	63





B_2: Moment center position distance compensation amount (mm)

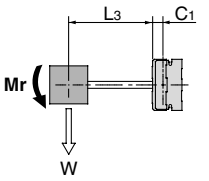
MXW8	39
MXW12	48
MXW16	58
MXW20	75
MXW25	97

■ Roll moment

Mr = W x 9.8 (L_3 + C)

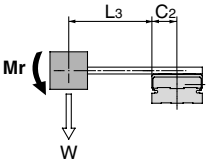
C_1: Moment center position distance compensation amount (mm)

MXW8	10
MXW12	10
MXW16	14
MXW20	20
MXW25	28



C_2: Moment center position distance compensation amount (mm)

MXW8	23
MXW12	29
MXW16	37
MXW20	49
MXW25	63



Dynamic Moment

Moment due to impact of load at end of stroke.

We = δ·W·V
V = 1.4*Va
*) **Correction factor (Reference value)**

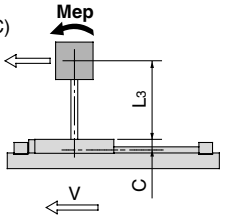
We: Equivalent weight for impact (kg)
δ: Bumper coefficient
With urethane bumper (standard) = 4/100
With shock absorber = 1/100
W: Load (kg)
V: Collision speed (mm/s)
Va: Average speed (mm / s)

■ **Pitch moment**
Mep = 1/3*·We x 9.8 (L3 + C)

* **Average load coefficient**

C: Moment center position distance compensation amount (mm)

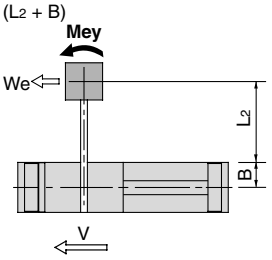
MXW8	10
MXW12	10
MXW16	14
MXW20	20
MXW25	28



■ **Yaw moment**
Mey = 1/3* We x 9.8 (L2 + B)

B: Moment center position distance compensation amount (mm)

MXW8	23
MXW12	29
MXW16	37
MXW20	49
MXW25	63



Selection Calculation

For selection of a proper model, find load factors (αn) and make sure that their sum total (Σαn) does not exceed 1.

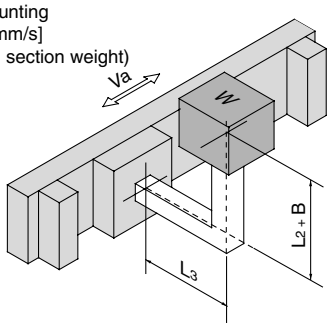
$$\Sigma\alpha n = \alpha_1 + \alpha_2 + \alpha_3 < 1$$

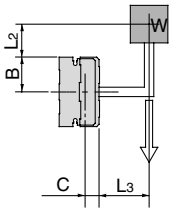
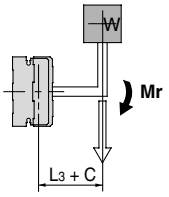
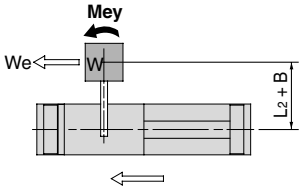
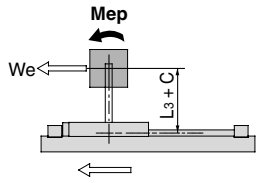
Item	Load factor αn	Note
1. Max. load	α1 = W/Wmax	Examine W. Wmax is maximum dynamic moment at Va.
2. Static moment	α2 = M/Mmax	Examine Mp, My, and Mr. Mmax is the allowable moment for Va.
3. Dynamic moment	α3 = Me/Memax	Examine Mep and Mey Memax is the allowable moment for V.

V: Collision speed, Va: Average speed

<Operating conditions>

Cylinder: MXW16
Cushion: Standard (Urethane bumper)
Mounting: Horizontal wall mounting
Speed (Average): Va = 300 [mm/s]
Load: W = 1 [kg] (Except arm section weight)
L3 = 50 [mm]
L2 = 50 [mm]



Item	Load factor αn	Note
1. Maximum load weight 	α1 = W/Wmax = 1/7 **= 0.14**	Examine W. Find the value of Wmax when Va = 300 mm/s from Graph (1). Note) No need to consider this load factor in the case of using perpendicularly in a vertical position. (Define α1 = 0.)
2. Static moment 	Mr = W x 9.8 (L3 + C) = 1 x 9.8 (0.05 + 0.014) = 0.63 [N·m] α2 = Mr/Mrmax = 0.63/12 **= 0.053**	Examine Mr. (Mp, My values do not apply to this example.) Mrmax value is from Graph (3) at Va = 300 mm/s.
3. Dynamic moment 	Mey = 1/3·We x 9.8 (L2 + B) V = 1.4Va We = δ·W·V = 4/100·1·1.4·300 = 168 [kg] ∴Mey = 1/3 x 16.8 x 9.8 (0.05 + 0.037) = 4.8 [N·m] α3 = Mey/Meymax = 4.8/14.3 **= 0.34**	Examine Mey. Mey: Find the equivalent weight for impact, We Bumper coefficient δ = 4/100 (With urethane bumper) Meymax value is from Graph (2) at V = 1.4 Va = 420 mm/s.
	Mep = 1/3 We x 9.8 (L3 + C) = 1/3 16.8 x 9.8 (0.05 + 0.014) = 3.5 [N·m] α3' = Mep/Mepmax = 3.5/14.3 **= 0.24**	Examine Mep. From above formula We = 16.8 Mepmax value is from Graph (2) at V = 1.4 Va = 420 mm/s.

Σαn = α1 + α2 + α<3 + α3'
= 0.14 + 0.053 + 0.34 + 0.24
= 0.773 **Σαn = 0.773 < 1, Application is approved.**

Series MXW Long Stroke Slide Table
Operation Guide

⚠ Precautions

Be sure to read before handling. Refer to pages 8-34-3 to 8-34-6 for Safety Instructions and Actuator Precautions.

Mounting

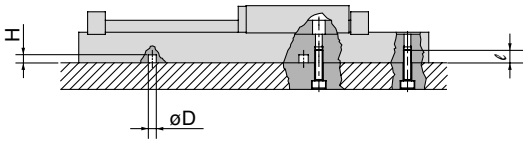
⚠ Caution

1. **Do not apply scratches and dents on mounting side of body and table (guide table).**
   The damage will decrease parallelism, increase vibration of guide and increase moving part resistance.
2. **Do not scratch or dent on the forward side of the rail.**
   This could result in looseness and increased operating resistance, etc.
3. **Keep away from objects which are influenced by magnets.**
   A magnet is built inside of guide block for use near a with the auto switch, so do not use near a magnetic disk, magnetic card, or magnetic tape. Data might be erased.
4. **When mounting an air slide table, use screws with appropriate length and do not exceed the maximum tightening torque.**
   Tightening with a torque above the limit could malfunction. Whereas tightening insufficiently could result in misalignment or come to a drop.

Mounting of Long Stroke Slide Table

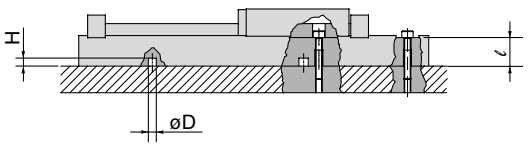
The air slide table can be mounted from 2 directions.
Select the best direction according to application requirement.

1. Body tapped



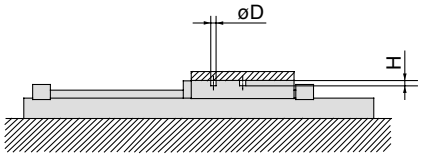
Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth ℓ (mm)	Positioning hole øD x H (mm)
MXW8	M4 x 0.7	2.1	8	ø5H9 $^{+0.030}_{0}$ depth 4.5
MXW12	M5 x 0.8	4.4	10	ø5H9 $^{+0.030}_{0}$ depth 4.5
MXW16	M6 x 1	7.4	12	ø6H9 $^{+0.030}_{0}$ depth 5.5
MXW20	M6 x 1	7.4	12	ø6H9 $^{+0.030}_{0}$ depth 5.5
MXW25	M8 x 1.25	18	16	ø8H9 $^{+0.036}_{0}$ depth 9

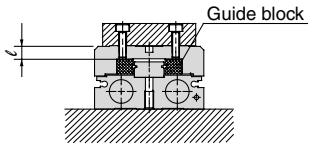
2. Through-hole



Model	Bolt	Max. tightening torque (N·m)	Depth ℓ (mm)	Positioning hole øD x H (mm)
MXW8	M3 x 0.5	1.2	14.8	ø5H9 $^{+0.030}_{0}$ depth 4.5
MXW12	M4 x 0.7	2.1	19.2	ø5H9 $^{+0.030}_{0}$ depth 4.5
MXW16	M5 x 0.8	4.4	21.5	ø6H9 $^{+0.030}_{0}$ depth 5.5
MXW20	M5 x 0.8	4.4	30.5	ø6H9 $^{+0.030}_{0}$ depth 5.5
MXW25	M6 x 1	7.4	36	ø8H9 $^{+0.036}_{0}$ depth 9

Mounting of Workpiece





⚠ Caution

5. **To prevent the workpiece holding bolts from touching the guide block, use bolts that are 0.5 mm or more shorter than the maximum screw-in depth.**
   If the bolts are too long, they come in contact with the guide block, which could lead to a malfunction.

Model	Bolt	Max. tightening torque (N·m)	Max. screw-in depth ℓ (mm)	Positioning hole øD x H (mm)
MXW8	M4 x 0.7	2.1	6	ø5H9 $^{+0.030}_{0}$ depth 4.5
MXW12	M4 x 0.7	2.1	6	ø5H9 $^{+0.030}_{0}$ depth 4.5
MXW16	M5 x 0.8	4.4	9	ø6H9 $^{+0.030}_{0}$ depth 5.5
MXW20	M5 x 0.8	4.4	13	ø6H9 $^{+0.030}_{0}$ depth 5.5
MXW25	M6 x 1	7.4	18.5	ø8H9 $^{+0.036}_{0}$ depth 9

6. **Flatness of mounting surface should be less than 0.02 mm.**
   Insufficient flatness of workpiece or base to which Air Slide Table is mounted can generate play in guide section or increase of sliding resistance.

⚠ Caution

1. **The positioning hole on the table and on the bottom of the body does not have the same center.**
   Use these holes during reinstallation after the table has been removed for the maintenance of an identical product.

Table Deflection (Reference values)

Table displacement due to pitch moment load

Amount of displacement on A when the load is applied at F.

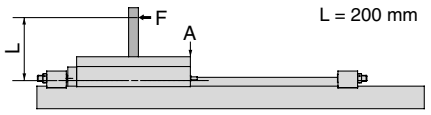


Table displacement due to yaw moment load

Amount of displacement on A when the load is applied at F.

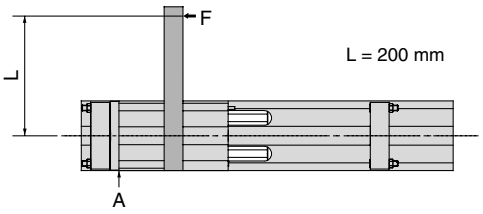
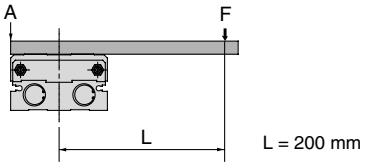
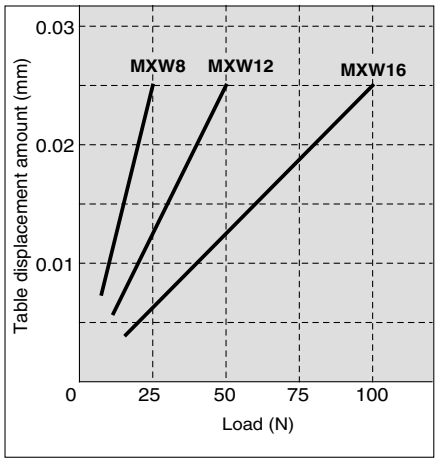


Table displacement due to roll moment load

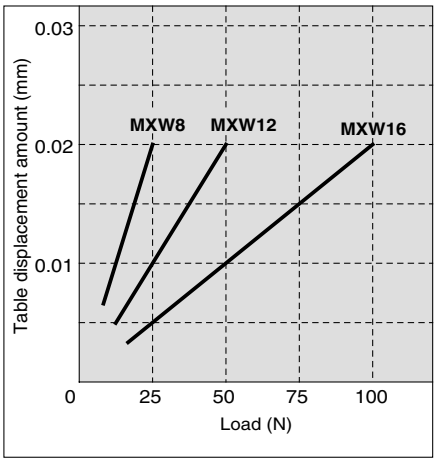
Amount of displacement on A when the load is applied at F.



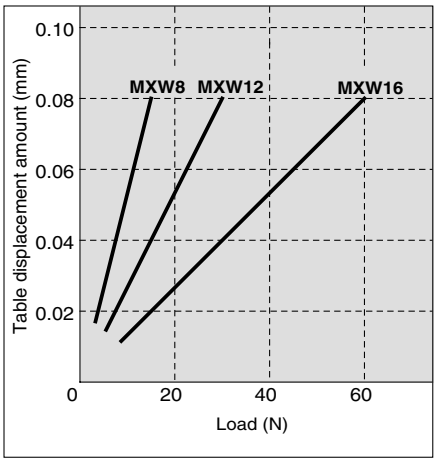
MXW8/12/16



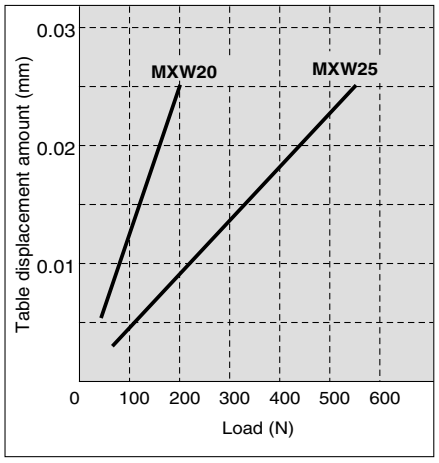
MXW8/12/16



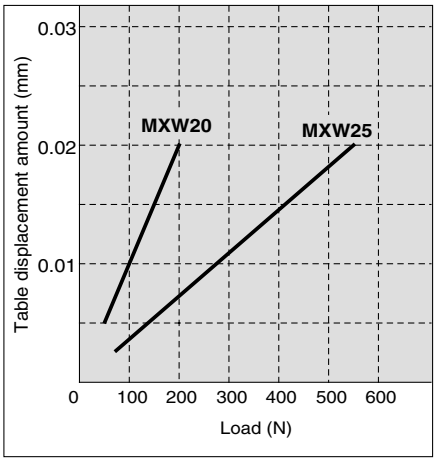
MXW8/12/16



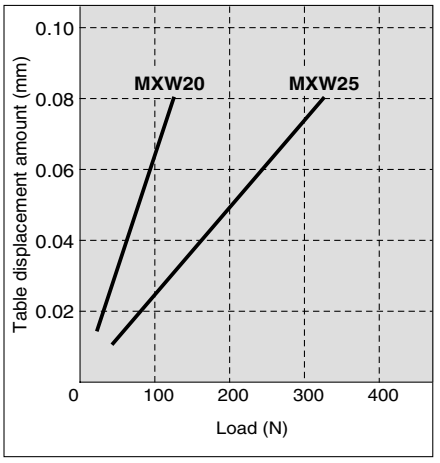
MXW20/25



MXW20/25



MXW20/25



Long Stroke Slide Table

Series MXW

ø8, ø12, ø16, ø20, ø25

How to Order

MXW | **16** | – | **100** | **B** | – | **M9N** | **S**

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Bore size (Stroke (mm))

ø8	25, 50, 75, 100, 125, 150
ø12	50, 75, 100, 125, 150
ø16	75, 100, 125, 150, 175, 200
ø20	100, 125, 150, 175, 200, 225, 250
ø25	100, 125, 150, 175, 200, 225, 250, 275, 300

Auto switch

Nil	Without auto switch

∗ For the applicable auto switch model, refer to the table below.

Option

Nil	Standard (with urethane bumper)
B	With shock absorbers 2 pcs.

Applicable Auto Switch/Refer to page 8-30-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length ∗ (m)			Pre-wire connector	Applicable load	
					DC		AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)			
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96V**	**A96**	●	●	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V	**A93V**	**A93**	●	●	—	—	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**F9NV**	**F9N**	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				**F9PV**	**F9P**	●	●	○	○		
				2-wire		12 V		**F9BV**	**F9B**	●	●	○	○	—	
	Diagnostic indication (2-color indication)			3-wire (NPN)		5 V, 12 V		**F9NWV**	**F9NW**	●	●	○	○	IC circuit	
				3-wire (PNP)				**F9PWV**	**F9PW**	●	●	○	○		
				2-wire		12 V		**F9BWV**	**F9BW**	●	●	○	○	—	

∗ Lead wire length symbols: 0.5 m·····Nil (Example) M9N
3 m·····L (Example) M9NL
5 m·····Z (Example) M9NZ

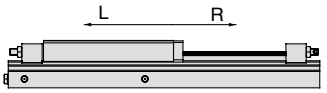
∗ Solid state switches marked with "○" are produced upon receipt of order.

• Since there are other applicable auto switches than listed, refer to page 8-7-22 for details.
• For details about auto switches with pre-wire connector, refer to page 8-30-52.

Specifications

Model	MXW8	MXW12	MXW16	MXW20	MXW25
Bore size (mm)	ø8 x 2 (ø11 or its equivalent)	ø12 x 2 (ø17 or its equivalent)	ø16 x 2 (ø23 or its equivalent)	ø20 x 2 (ø28 or its equivalent)	ø25 x 2 (ø35 or its equivalent)
Piping port size	M5 x 0.8			Rc 1/8	
Fluid	Air				
Action	Double acting				
Operating pressure	0.15 to 0.7 MPa				
Proof pressure	1.05 MPa				
Ambient and fluid temperature	–10 to +60°C				
Piston speed	50 to 500 mm/s				
Cushion	Both ends urethane bumper (Standard) Shock absorber at both ends (Option)				
Lubrication	Non-lube				
Auto switch (Option)	Reed switch Solid state switch (2-wire, 3-wire) 2-color indication solid state switch (2-wire, 3-wire)				
Stroke length tolerance	$^{+1}_{0}$ mm				
Stroke adjustment range	One side: 5 mm (Both sides: 10 mm)				

<Operating direction>
When viewed from size with lateral ports.
R: Right (OUT side)
L: Left (IN side)



Made to Order Specifications (For details, refer to page 8-31-1.)

Symbol	Specifications
-X42	Anti-corrosive specifications for guide unit

Theoretical Output

Dual rod cylinder produces double the thrust of standard cylinder. (N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm^2)	Operating pressure (MPa)					
				0.2	0.3	0.4	0.5	0.6	0.7
8	4	R	101	20	30	40	51	61	71
		L	75	15	23	30	38	45	53
12	6	R	226	45	68	90	113	136	158
		L	170	34	51	68	85	102	119
16	8	R	402	80	121	161	201	241	281
		L	302	60	91	121	151	181	211
20	10	R	628	126	188	251	314	377	440
		L	471	94	141	188	236	283	330
25	12	R	982	196	295	393	491	589	687
		L	756	151	227	302	378	454	529

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm^2)

Standard Stroke (mm)/Weight (g)

(g)

Model	Standard stroke (mm)											
	25	50	75	100	125	150	175	200	225	250	275	300
MXW8	550	610	700	790	880	980	—	—	—	—	—	—
MXW12	—	930	1010	1140	1270	1400	—	—	—	—	—	—
MXW16	—	—	1850	1970	2150	2350	2540	2740	—	—	—	—
MXW20	—	—	—	4440	4640	5000	5360	5710	6070	6430	—	—
MXW25	—	—	—	9300	9620	9970	10500	11100	11700	12200	12800	13400

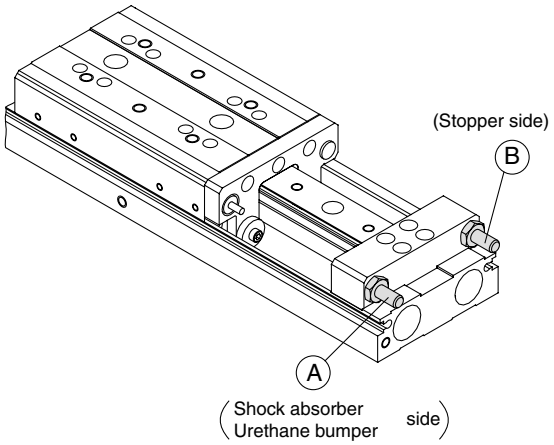
Option Specifications

Stopper Bolt Assembly

Stopper bolt assembly can be ready for the following manner.

Change of adjuster assembly		Qty. needed for stopper bolt assembly		Parts to be Changed (Refer to the figure below.)
		Standard	Option (-X11)	
Changing the stroke adjustment range from 5 mm to 15 mm for one side	W/o shock absorber	—	2	Replace Ⓐ
	With shock absorber	—	4	Replace ⒶⒷ
Changing to the one with shock absorber		2	—	Add Ⓑ
Changing to the one with shock absorber and stroke adjustment range of 15 mm		—	4	Replace Ⓐ Add Ⓑ

Note 1) When only one side of stroke is changed, the quantity needed is the half of the above.
Note 2) Shock absorber must be ordered separately.
For the shock absorber model numbers, refer to page 8-7-9.



How to Order Stopper Bolt Assembly

MXW −A 16 12− X11

Applicable bore size (mm)

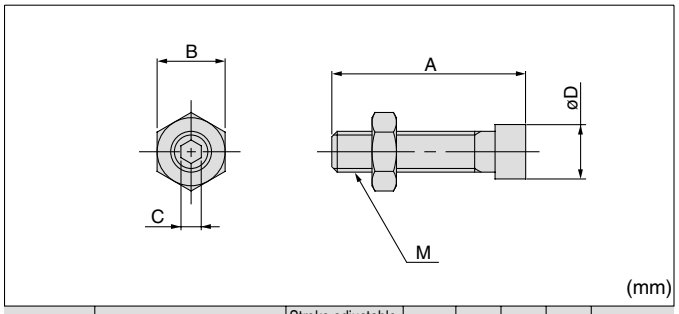
MXW8	ø8
MXW12	ø12
MXW16	ø16
MXW20	ø20
MXW25	ø25

Adjustment range

Nil	5 mm	Standard
X11	15 mm	Option

Note) The above model number is one adjuster bolt assembly only.

Dimensions



(mm)

Applicable size	Model	Stroke adjustable range (mm)	A	B	C	D	M
MXW8	MXW-A812	5	21	8	2.5	6	M5 x 0.5
	MXW-A812-X11	15	31				
MXW12	MXW-A1212	5	23.5	8	2.5	6	M5 x 0.8
	MXW-A1212-X11	15	33.5				
MXW16	MXW-A1612	5	28.5	10	3	8	M6 x 1
	MXW-A1612-X11	15	38.5				
MXW20	MXW-A2012	5	34.5	13	4	10	M8 x 1.25
	MXW-A2012-X11	15	44.5				
MXW25	MXW-A2512	5	40	17	5	14	M10 x 1.5
	MXW-A2512-X11	15	50				

⚠Precautions

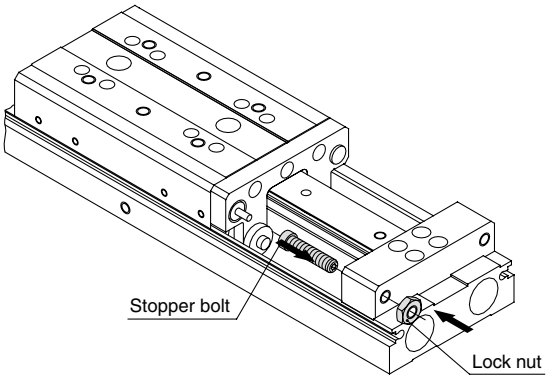
Adjustment

⚠ Caution

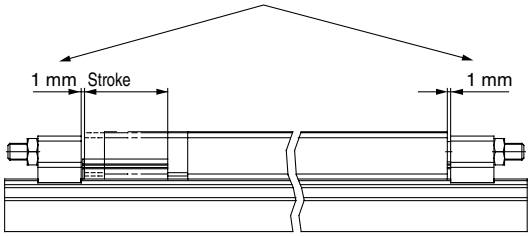
1. Do not operate within 1 mm.
The effectiveness of the shock absorber and urethane bumper will not be brought into full play, and could be adversely affected.

How to moumt

1. Thread in the adjuster bolt from the direction of the arrow.
2. Fasten the lock nut from the direction of the arrow.



Avoid operating within 1 mm.
The effectiveness of the shock absorber and urethane damper will not be brought into full play, and could be adversely affected.



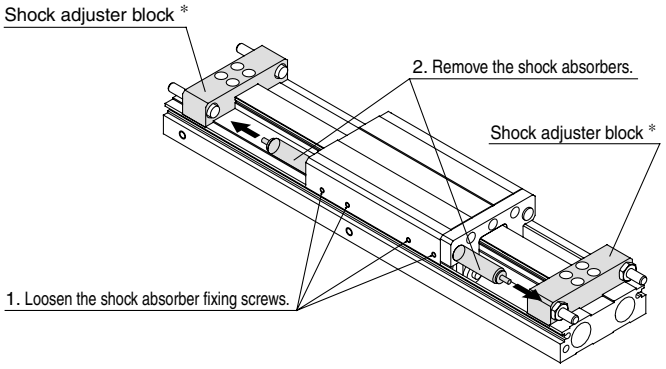
Shock Absorber

Specifications

Shock absorber model		RB0805 -X552	RB0806 -X552	RB1007 -X552	RB1412 -X552	RB2015 -X552
Applicable slide table		MXW8	MXW12	MXW16	MXW20	MXW25
Max. absorbing energy (J)		0.98	2.94	5.88	19.6	58.8
Stroke absorption (mm)		5	6	7	12	15
Max. collision speed (m/sec)		0.05 to 5				
Max. operating frequency (cycle/min)		80	80	70	45	25
Max. allowable thrust (N)		245	245	422	814	1961
Ambient temperature range (°C)		–10 to 80				
Spring force (N)	Extended	1.96	1.96	4.22	6.86	8.34
	Retracted	3.83	4.22	6.86	15.98	20.50
Weight (g)		15	15	25	65	150

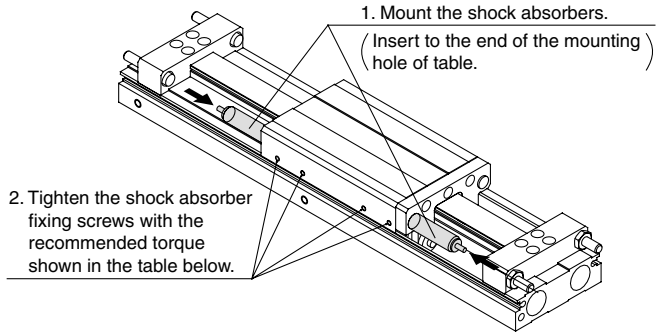
How to Replace

1. How to Remove



* In the case of MXW8-25, first take out the adjuster block, and then the shock absorber.
Tighten the mounting bolt with the torque 0.3 N·m when assembling the adjuster block.

2. How to Mount



Recommended Tightening Torque

Model	Shock absorber fixing thread size	Recommended tightening torque (N·m)	Hexagon wrench width across flats (mm)
MXW8	M3 x 4	0.6	1.5
MXW12	M3 x 4	0.6	1.5
MXW16	M3 x 4	0.6	1.5
MXW20	M4 x 5	0.8	2
MXW25	M5 x 6	1	2.5

⚠Precautions

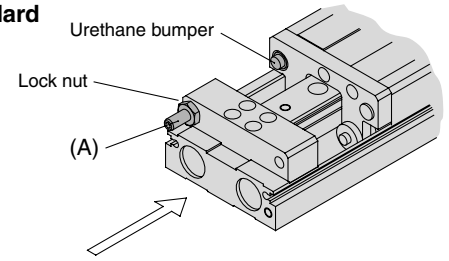
Adjustment

⚠Caution

1. Do not operate in such a state that the stopper blocks and stopper bolts on both sides are removed.
Doing so could create shocks, which could loosen and cause damage.

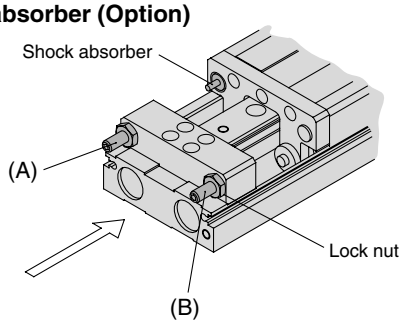
Stroke adjustment

1. Standard



Loosen the adjuster bolt lock nut on side (A), insert a wrench in the direction of the arrow to adjust the stroke, and then tighten the lock nut.

2. With shock absorber (Option)



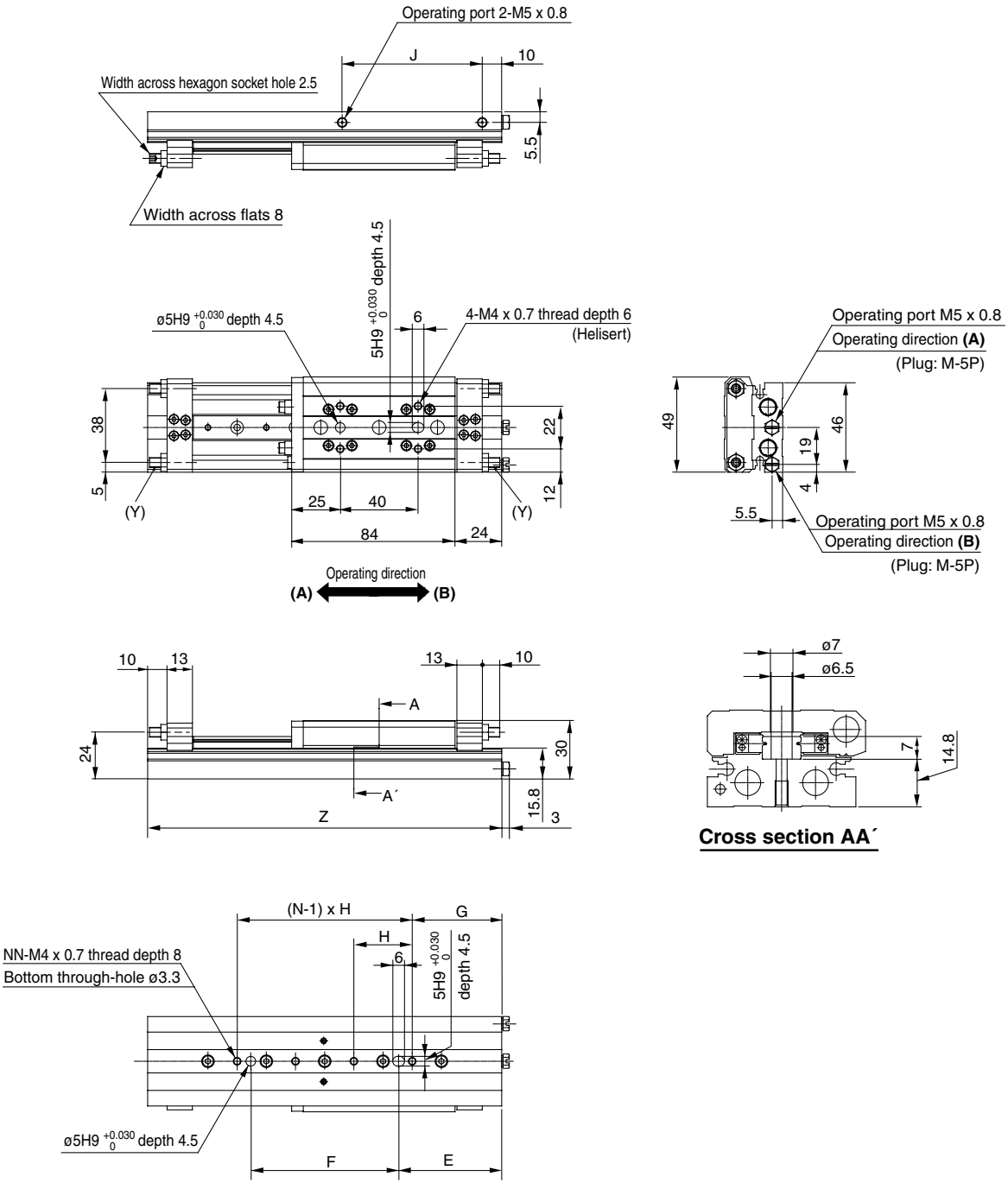
Stroke adjustment

- Loosen the adjuster bolt lock nut on side (B), insert a wrench in the direction of the arrow to adjust the stroke, and then tighten the lock nut.

Stroke absorption adjustment for shock absorber

- Loosen the adjuster bolt lock nut on side (A), insert a wrench in the direction of the arrow to adjust the stroke, and then tighten the lock nut.

Dimensions: MXW8 Stroke: 25, 50 mm

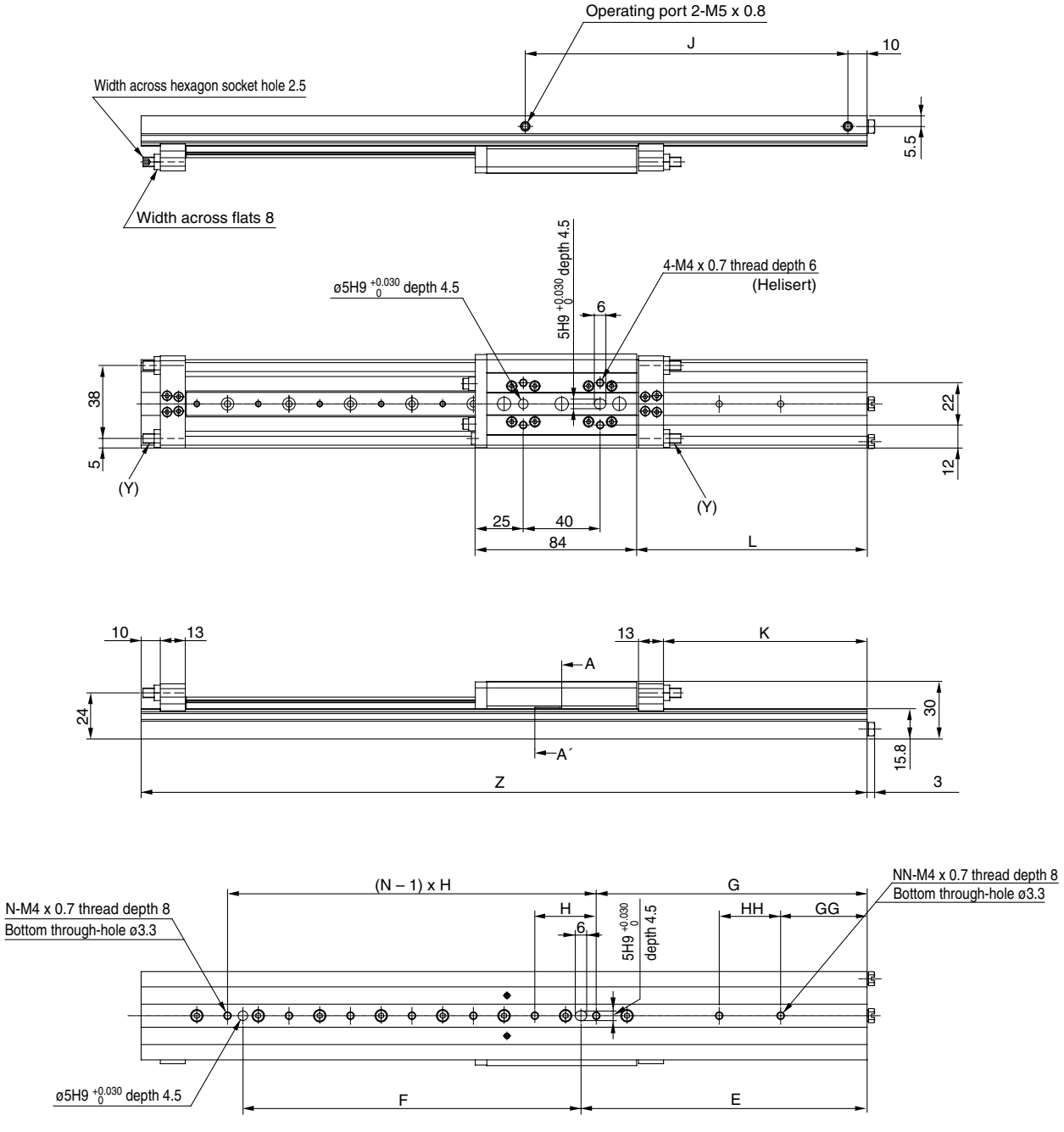


(mm)

Model	E	F	G	H	J	N	Z
MXW8-25	55	48	47	32	64	3	157
MXW8-50	53	76	46	30	71	4	182

Note) Adjuster bolt (Y) shown in the section above is attached only on B type (with shock absorber).

Dimensions: MXW8 Stroke 75, 100, 125, 150 mm

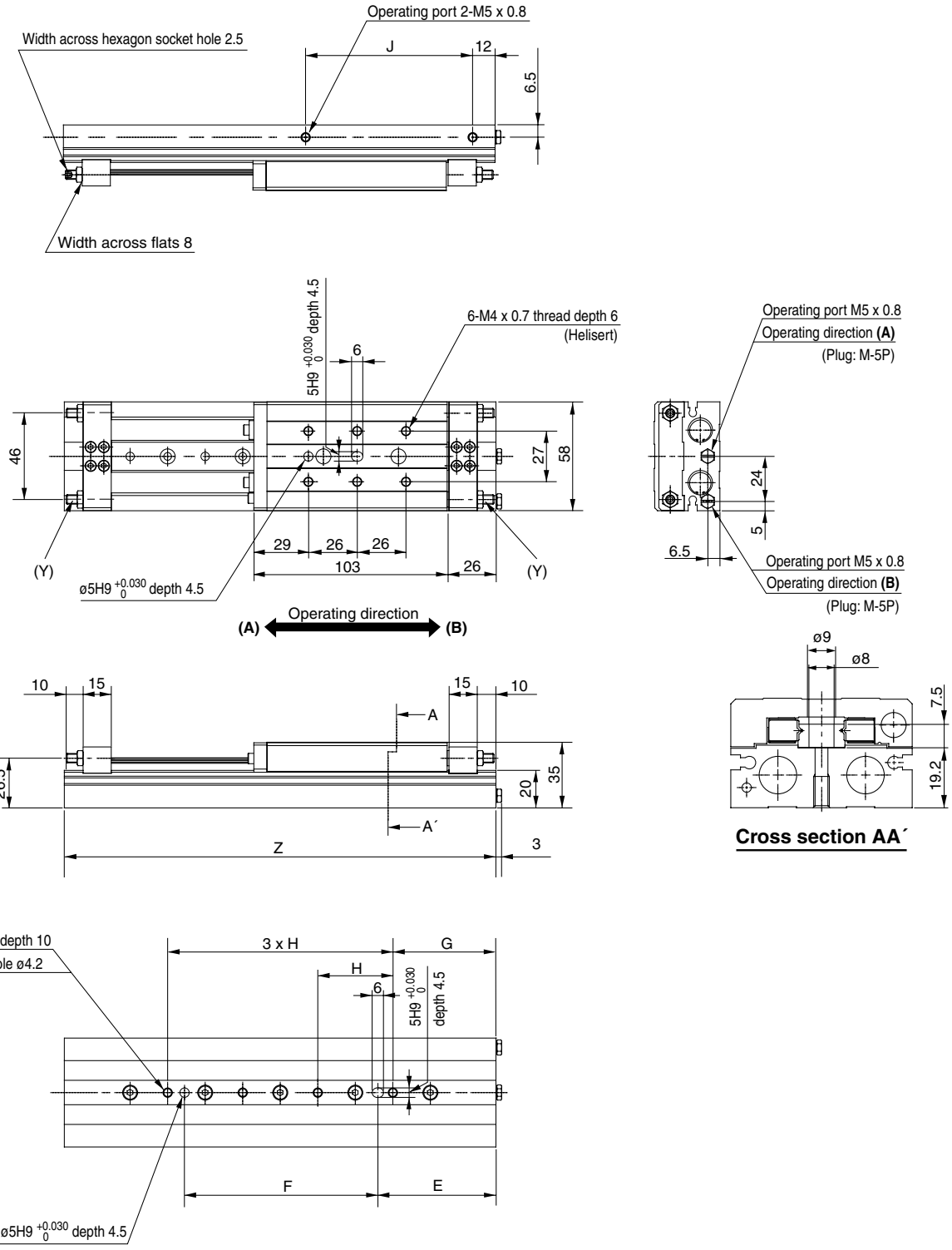


(mm)

Model	E	F	G	GG	H	HH	J	K	L	N	NN	Z
MXW8-75	71	106	64	19	30	—	92	31	45	5	1	228
MXW8-100	106	112	98	34	32	—	115	56	70	5	1	278
MXW8-125	129	144	121	25	32	32	138	81	95	6	2	328
MXW8-150	149	176	141	45	32	32	168	106	120	7	2	378

Series MXW

Dimensions: MXW12 Stroke 50, 75 mm

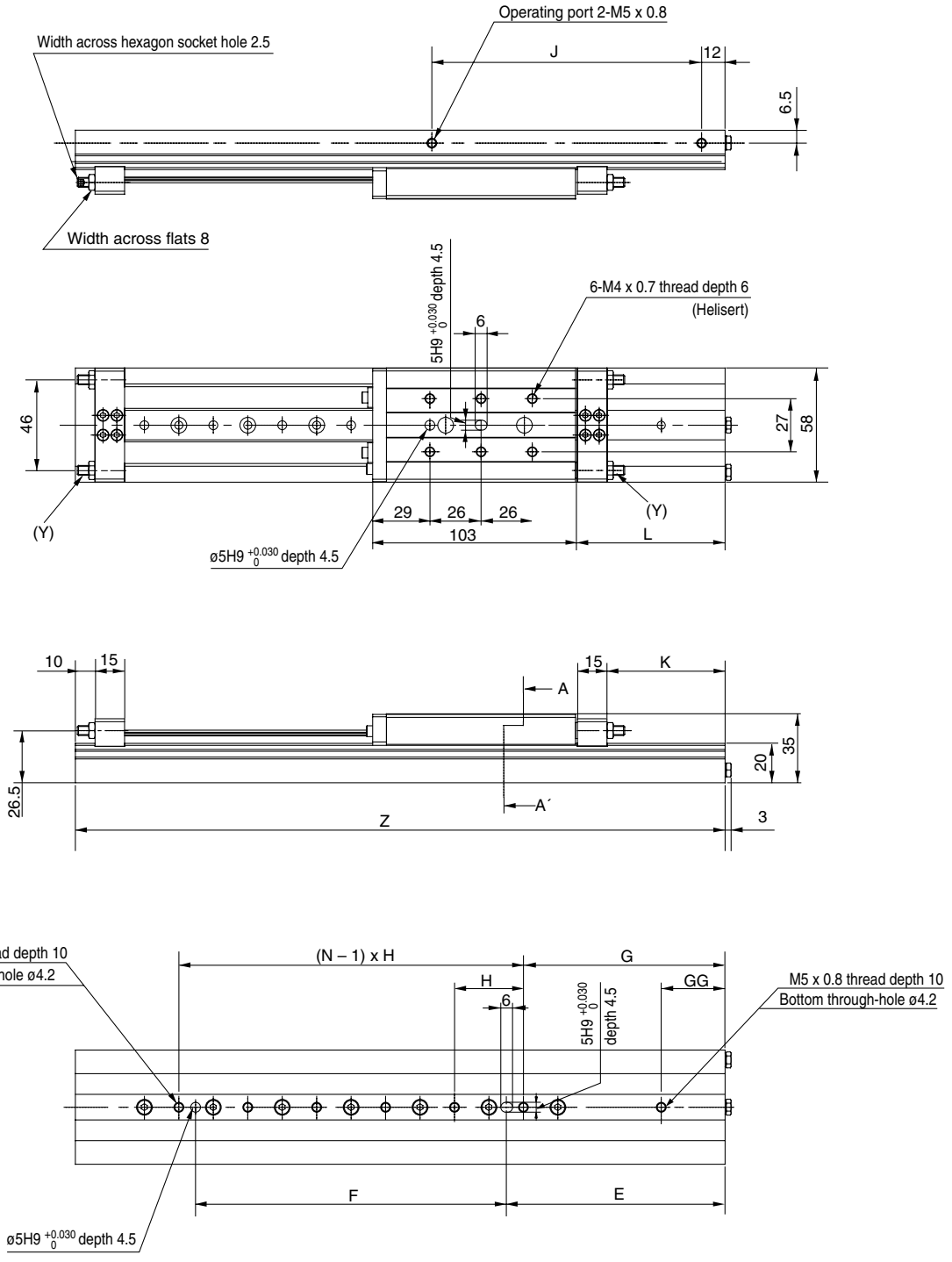


(mm)

Model	E	F	G	H	J	Z
MXW12-50	58	88	50	35	84	205
MXW12-75	63	103	55	40	89	230

Note) Adjuster bolt (Y) shown in the section above is attached only on type B (with shock absorber).

Dimensions: MXW12 Stroke 100, 125, 150 mm

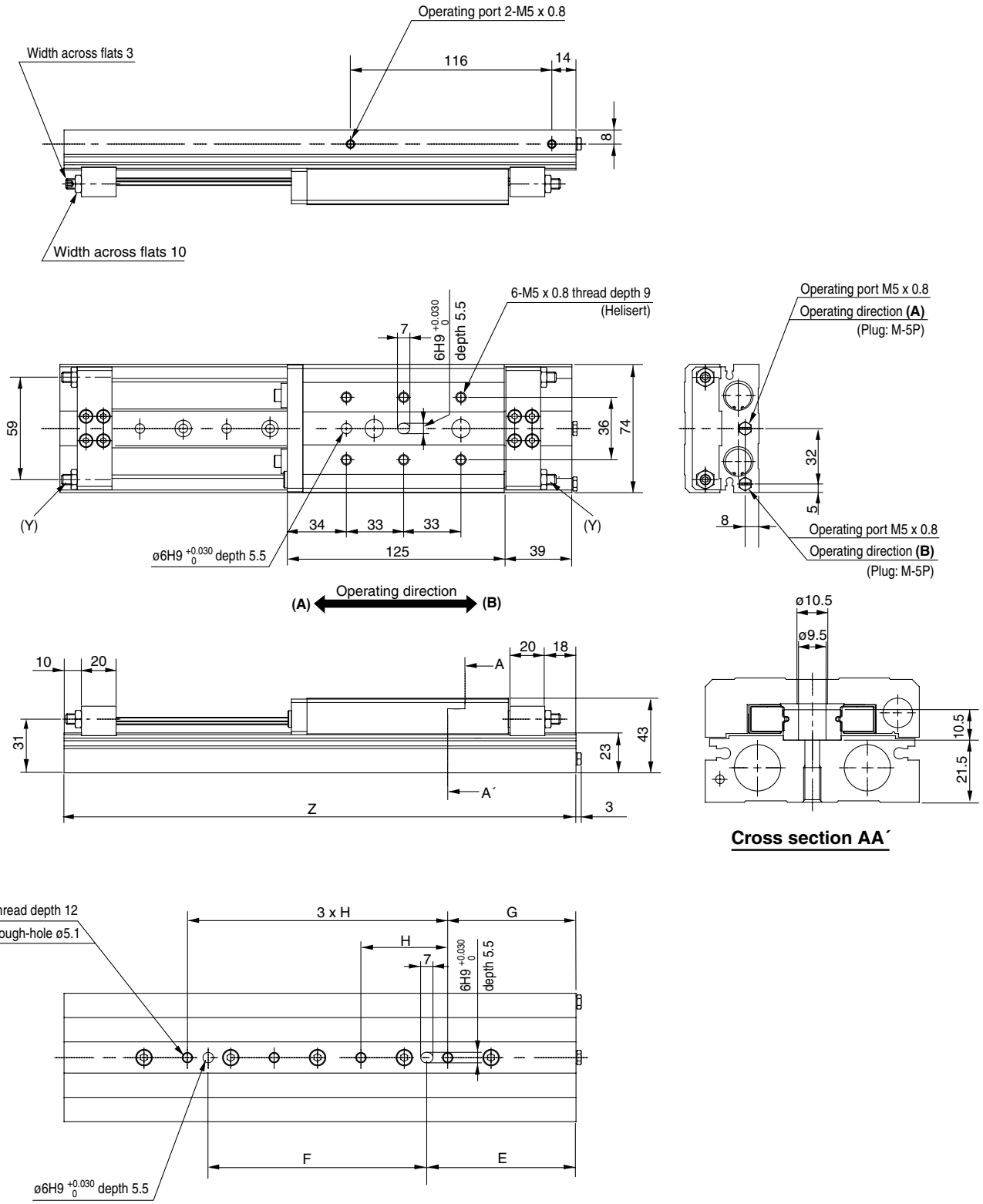


(mm)

Model	E	F	G	GG	H	J	K	L	N	Z
MXW12-100	91	123	82.5	30	35	114	35	51	5	280
MXW12-125	111	158	102.5	32.5	35	137	60	76	6	330
MXW12-150	136	182	127.5	47.5	40	164	85	101	6	380

Series MXW

Dimensions: MXW16 Stroke 75, 100 mm

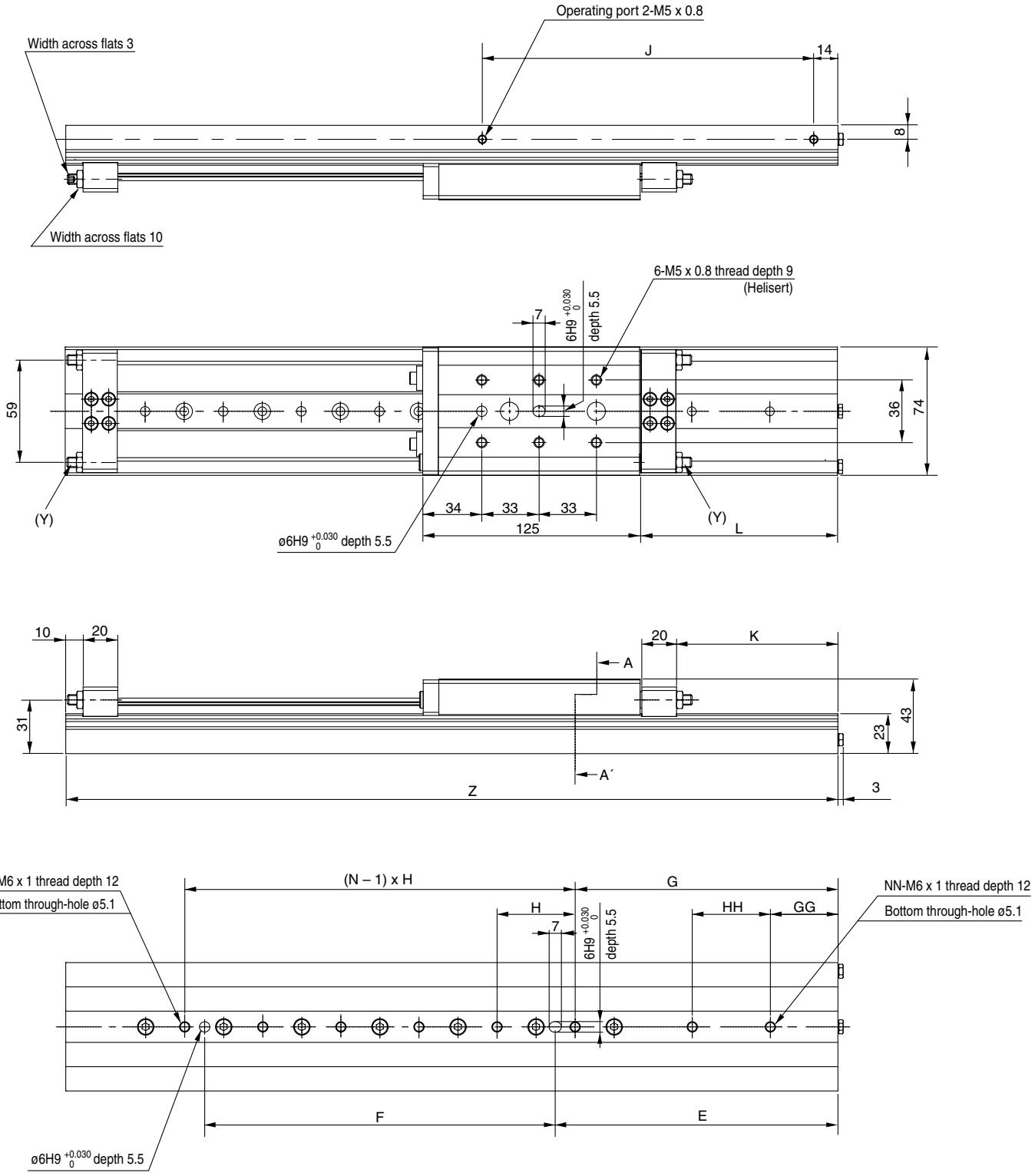


(mm)

Model	E	F	G	H	Z
MXW16-75	83	112	71.5	45	270
MXW16-100	86	126	74	50	295

Note) Adjuster bolt (Y) shown in the section above is attached only on type B (with shock absorber).

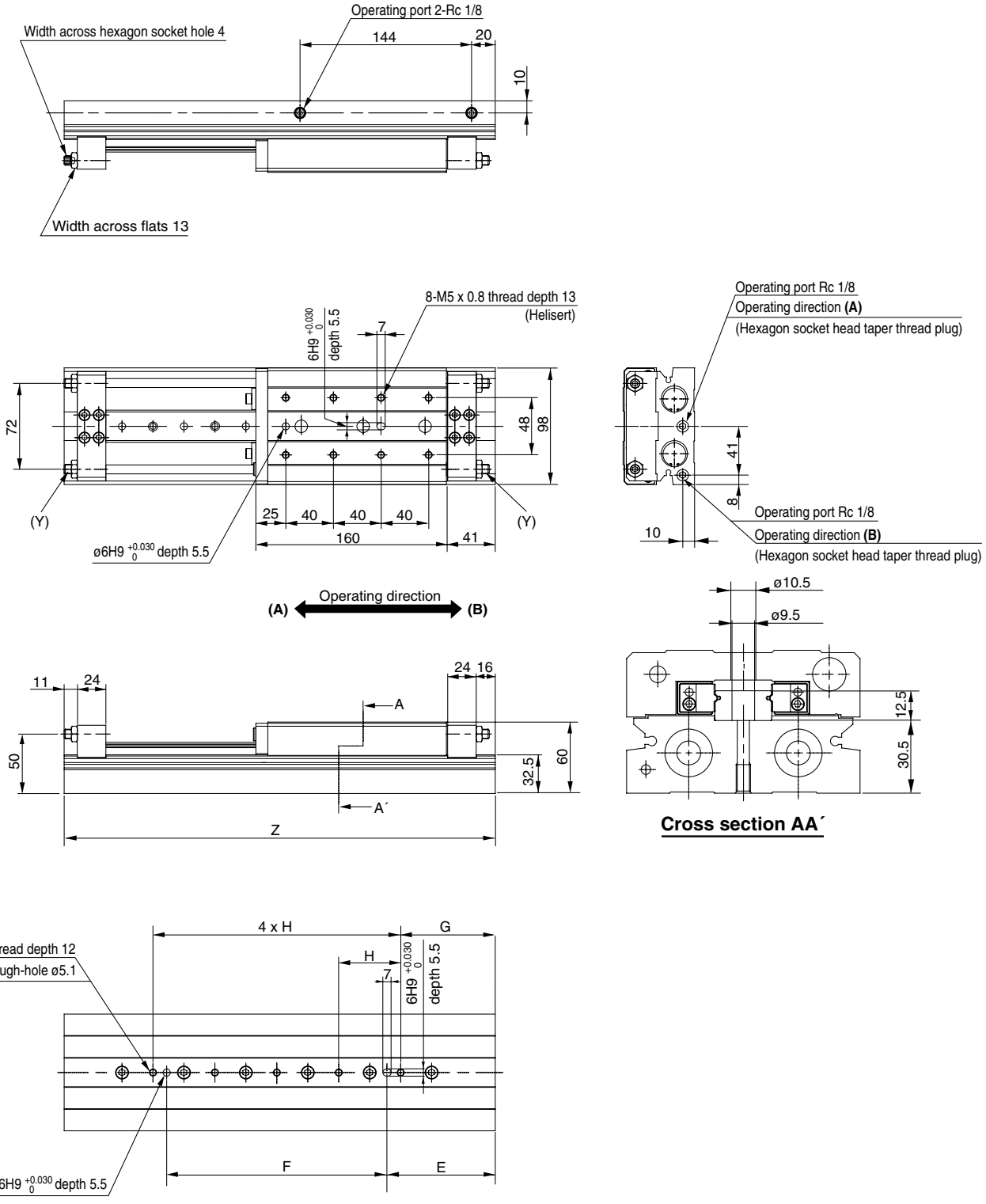
Dimensions: MXW16 Stroke 125, 150, 175, 200 mm



(mm)

Model	E	F	G	GG	H	HH	J	K	L	N	NN	Z
MXW16-125	110	157	99	31.5	45	—	141	43	64	5	1	345
MXW16-150	136	176	124	24	50	—	166	68	89	5	1	395
MXW16-175	163	202	151.5	39	45	45	191	93	114	6	2	445
MXW16-200	186	226	174	24	50	50	216	118	139	6	2	495

Dimensions: MXW20 Stroke 100, 125 mm

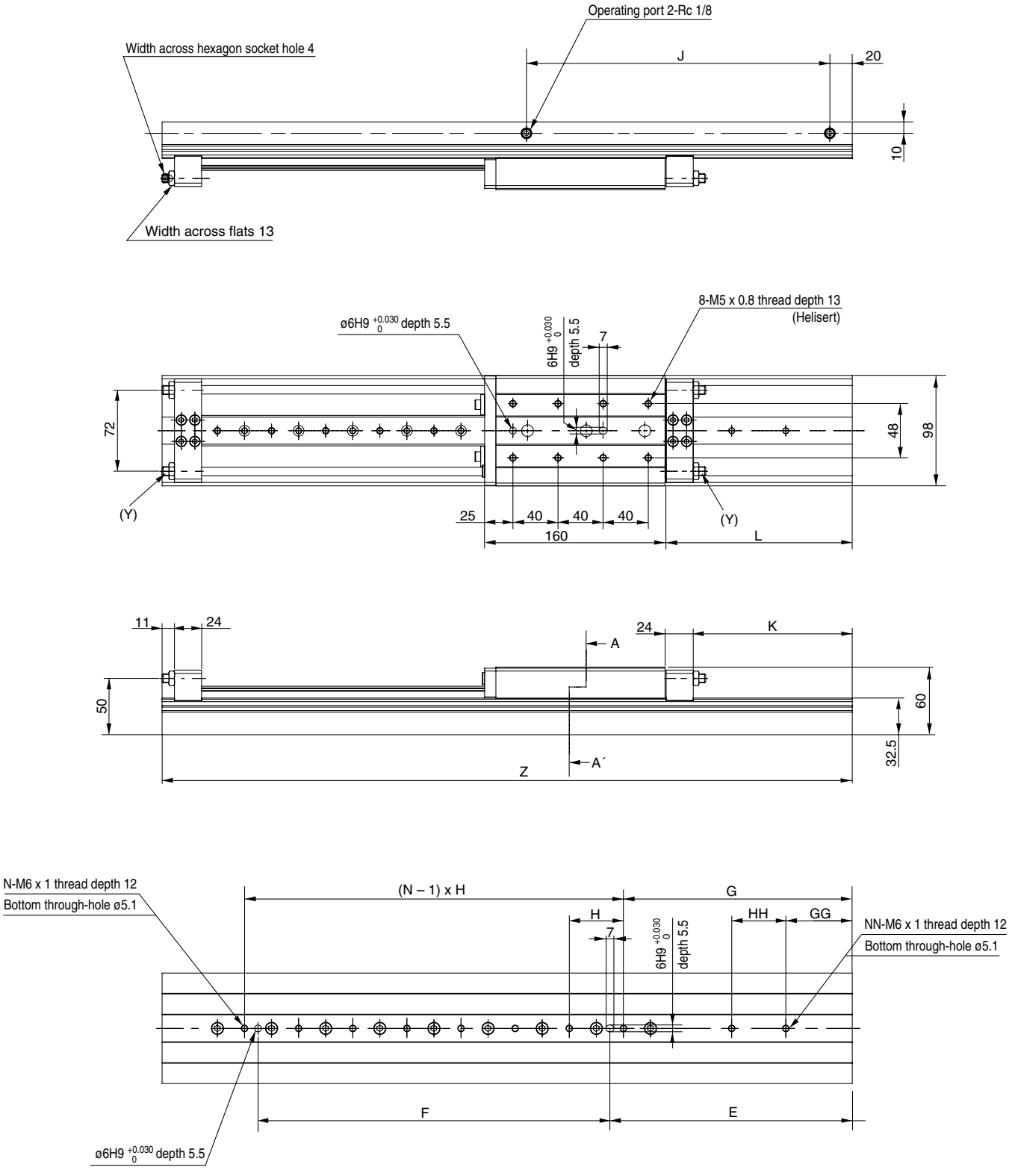


(mm)

Model	E	F	G	H	Z
MXW20-100	87	168	75	48	337
MXW20-125	91	185	79.5	52	362

Note) Adjuster bolt (Y) shown in the section above is attached only on type B (with shock absorber).

Dimensions: MXW20 Stroke 150, 175, 200, 225, 250 mm

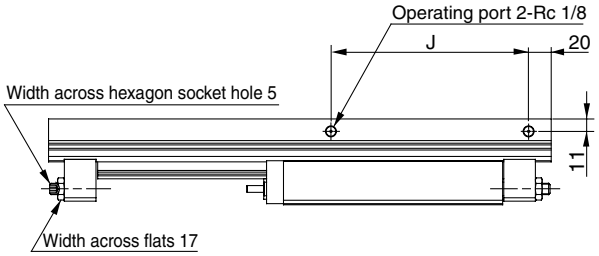


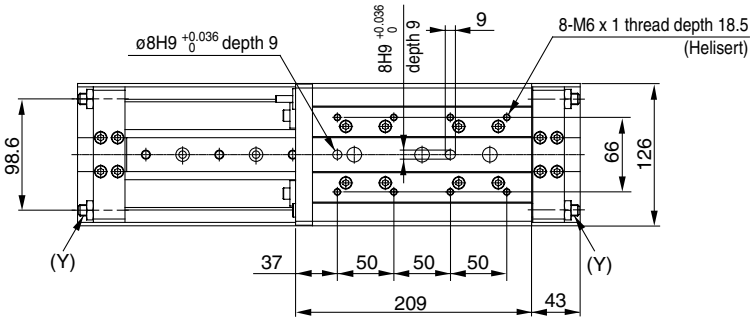
(mm)

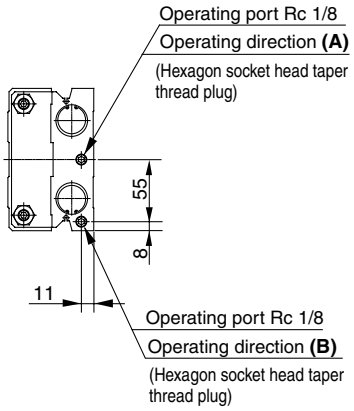
Model	E	F	G	GG	H	HH	J	K	L	N	NN	Z
MXW20-150	113	216	101	29	48	—	169	41	66	6	1	412
MXW20-175	140	237	128.5	50.5	52	—	194	66	91	6	1	462
MXW20-200	164	264	152	56	48	—	219	91	116	7	1	512
MXW20-225	189	288	177.5	73.5	52	—	244	116	141	7	1	562
MXW20-250	215	312	203	59	48	48	269	141	166	8	2	612

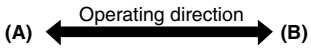
Series MXW

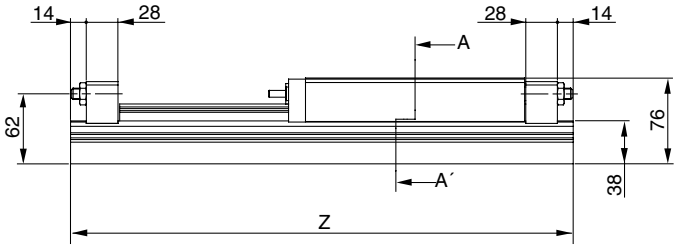
Dimensions: MXW25 Stroke 100, 125, 150 mm

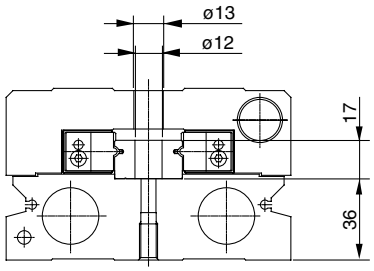




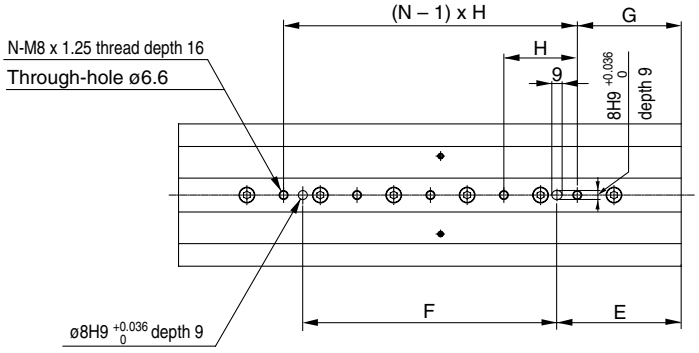








Cross section AA´

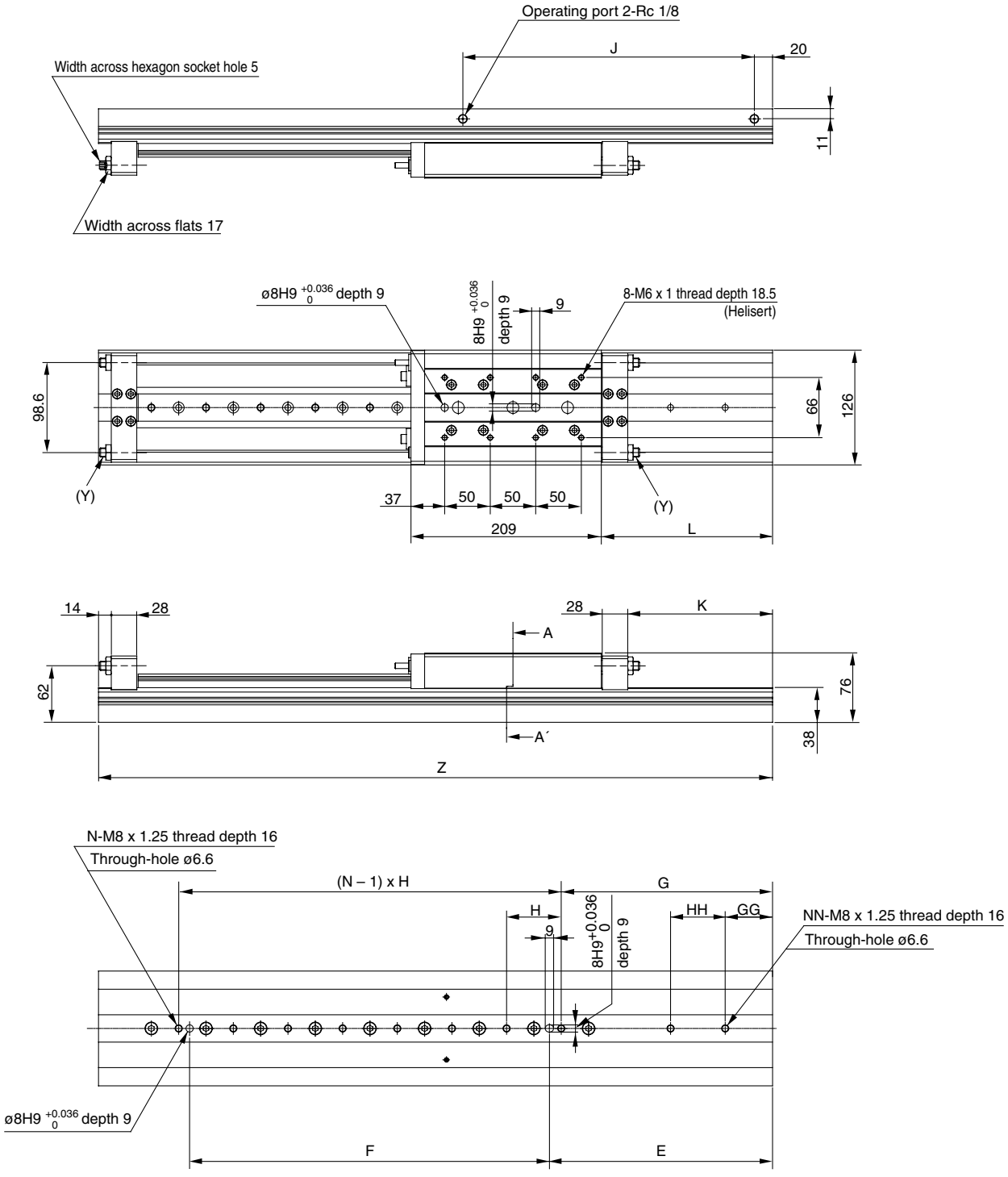


(mm)

Model	E	F	G	H	J	N	Z
MXW25-100	115	165	100	65	165	4	395
MXW25-125	105	210	90	60	180	5	420
MXW25-150	110	225	92	65	180	5	445

Note) Adjuster bolt (Y) shown in the section above is attached only on type B (with shock absorber).

Dimensions: MXW25 Stroke 175, 200, 225, 250, 275, 300 mm

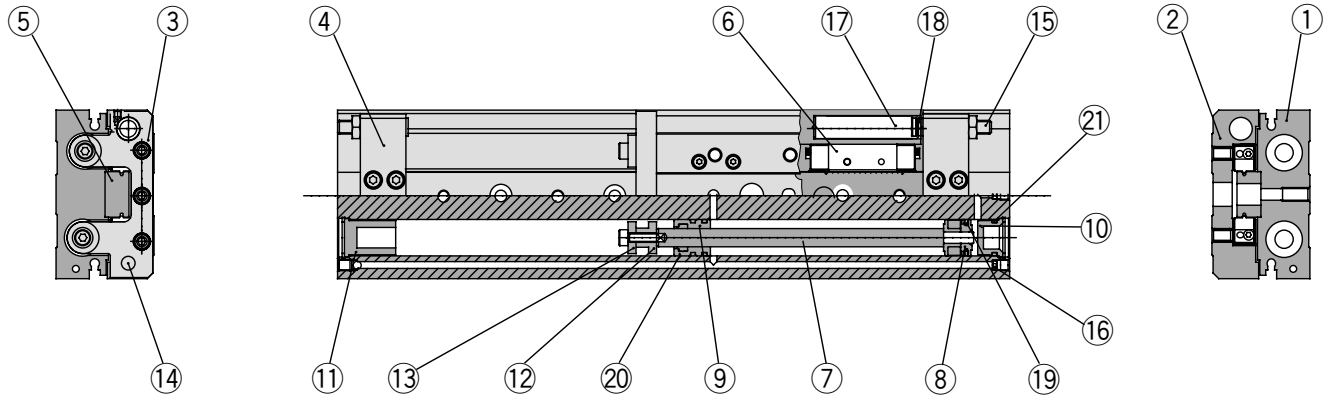


(mm)

Model	E	F	G	GG	H	HH	J	K	L	N	NN	Z
MXW25-175	120	270	105	—	60	—	195	34	63	6	—	490
MXW25-200	155	275	142	—	60	—	225	59	88	6	—	540
MXW25-225	175	305	165	55	55	—	245	84	113	7	1	590
MXW25-250	200	335	187	67	60	—	275	109	138	7	1	640
MXW25-275	225	360	210	80	65	—	300	134	163	7	1	690
MXW25-300	245	395	232	52	60	60	320	159	188	8	2	740

Series MXW

Construction



Component Parts

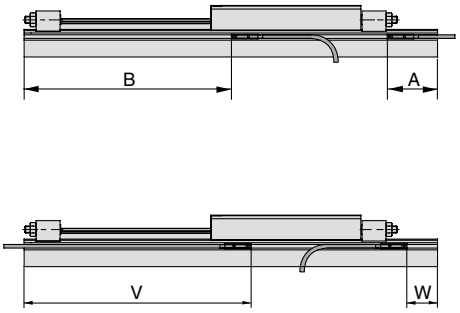
No.	Description	Material	Note
①	Body	Aluminum alloy	Hard anodized
②	Table	Aluminum alloy	Hard anodized
③	End plate	Aluminum alloy	Hard anodized
④	Stroke adjuster block	Aluminum alloy	Hard anodized
⑤	Rail	High carbon chrome bearing steel	Heat treated
⑥	Guide block	High carbon chrome bearing steel	Heat treated
⑦	Rod	Stainless steel	
⑧	Piston assembly	—	With magnet
⑨	Rod cover	Aluminum alloy	
⑩	Head cap	Resin	
⑪	End cap	Resin	
⑫	Floating bushing A	Stainless steel	
⑬	Floating bushing B	Stainless steel	
⑭	Stopper	Stainless steel	Heat treated
⑮	Stroke adjusting bolt	Carbon steel	Heat treated, Electroless nickel plated
⑯	Orifice	Brass	Electroless nickel plated
⑰	Absorber shaft	Aluminum alloy	Chromate treated
⑱	Adjusting bumper	Polyurethane	
⑲	Piston seal	NBR	
⑳	Rod seal	NBR	
㉑	O-ring	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
8	MXW8-PS	Set of nos. above ⑲, ⑳, ㉑
12	MXW12-PS	
16	MXW16-PS	
20	MXW20-PS	
25	MXW25-PS	

∗ Seal kit includes ⑲, ⑳, ㉑. Order the seal kit, based on each bore size.

Proper Auto Switch Mounting Position (Detection at stroke end)



Reed Switch: D-A90(V), D-A93(V), D-A96(V)

Model		Stroke (mm)											
		25	50	75	100	125	150	175	200	225	250	275	300
MXW8	A	52.5	31.5	27.5	27.5	27.5	27.5	—	—	—	—	—	—
	B	79.5	100.5	125.5	150.5	175.5	200.5	—	—	—	—	—	—
	W	32.5	11.5	7.5	7.5	7.5	7.5	—	—	—	—	—	—
	V	99.5	120.5	145.5	170.5	195.5	220.5	—	—	—	—	—	—
MXW12	A	—	51	31	31	31	31	—	—	—	—	—	—
	B	—	104	124	149	174	199	—	—	—	—	—	—
	W	—	31	11	11	11	11	—	—	—	—	—	—
	V	—	124	144	169	194	219	—	—	—	—	—	—
MXW16	A	—	—	59.5	34.5	34.5	34.5	34.5	34.5	—	—	—	—
	B	—	—	135.5	160.5	185.5	210.5	235.5	260.5	—	—	—	—
	W	—	—	39.5	14.5	14.5	14.5	14.5	14.5	—	—	—	—
	V	—	—	155.5	180.5	205.5	230.5	225.5	280.5	—	—	—	—
MXW20	A	—	—	—	68.5	43.5	43.5	43.5	43.5	43.5	43.5	—	—
	B	—	—	—	168.5	193.5	218.5	243.5	268.5	293.5	318.5	—	—
	W	—	—	—	48.5	23.5	23.5	23.5	23.5	23.5	23.5	—	—
	V	—	—	—	188.5	213.5	238.5	263.5	288.5	313.5	338.5	—	—
MXW25	A	—	—	—	86.5	74.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5
	B	—	—	—	208.5	220.5	250.5	270.5	295.5	320.5	345.5	370.5	395.5
	W	—	—	—	66.5	54.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
	V	—	—	—	228.5	240.5	270.5	290.5	315.5	340.5	365.5	390.5	415.5

Solid State Switch: D-M9B(V), D-M9N(V), D-M9P(V)
2-color Indication Solid State Switch: D-F9BW(V), D-F9NW(V), D-F9PW(V)

Model		Stroke (mm)											
		25	50	75	100	125	150	175	200	225	250	275	300
MXW8	A	48.5	27.5	23.5	23.5	23.5	23.5	—	—	—	—	—	—
	B	83.5	104.5	129.5	154.5	179.5	204.5	—	—	—	—	—	—
	W	36.5	15.5	11.5	11.5	11.5	11.5	—	—	—	—	—	—
	V	95.5	116.5	141.5	166.5	191.5	216.5	—	—	—	—	—	—
MXW12	A	—	47	27	27	27	27	—	—	—	—	—	—
	B	—	108	128	153	178	203	—	—	—	—	—	—
	W	—	35	15	15	15	15	—	—	—	—	—	—
	V	—	120	140	165	190	215	—	—	—	—	—	—
MXW16	A	—	—	55.5	30.5	30.5	30.5	30.5	30.5	—	—	—	—
	B	—	—	140	165	190	215	240	265	—	—	—	—
	W	—	—	43.5	18.5	18.5	18.5	18.5	18.5	—	—	—	—
	V	—	—	152	177	202	227	252	277	—	—	—	—
MXW20	A	—	—	—	64.5	39.5	39.5	39.5	39.5	39.5	39.5	—	—
	B	—	—	—	172.5	197.5	222.5	247.5	272.5	297.5	322.5	—	—
	W	—	—	—	52.5	27.5	27.5	27.5	27.5	27.5	27.5	—	—
	V	—	—	—	184.5	209.5	234.5	259.5	284.5	309.5	334.5	—	—
MXW25	A	—	—	—	82.5	70.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5
	B	—	—	—	212.5	224.5	254.5	274.5	299.5	324.5	349.5	374.5	399.5
	W	—	—	—	70.5	58.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5
	V	—	—	—	224.5	236.5	266.5	286.5	311.5	336.5	361.5	386.5	411.5

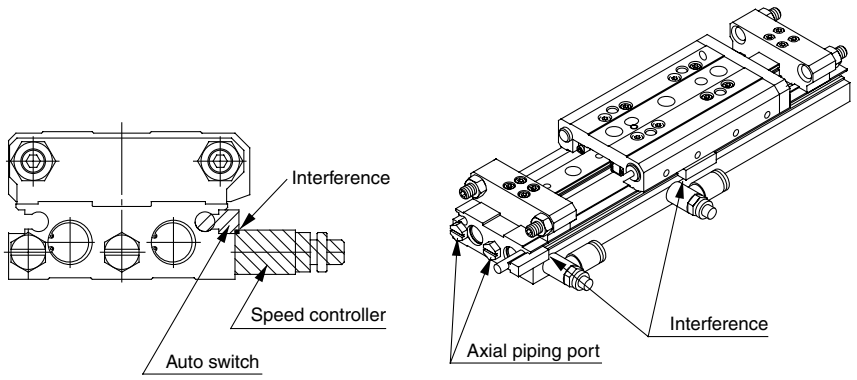
Operating Range

Auto switch model	Applicable bore size (mm)				
	8	12	16	20	25
D-A9□ **D-A9□V**	6	6	8.5	10	10
D-M9□ **D-F9□W** **D-M9□V** **D-F9□WV**	3 (2)	3 (3)	4 (3)	6 (4)	5.5 (4)

Note) Figures in parentheses are the case for D-M9□, D-M9□V switch types.

⚠Caution

Caution on Handling Auto Switches/For MXW8 only



When an auto switch is installed on the port side of MXW8, some switches could interfere with the speed controller or a fitting.Therefore, use one of the methods described below for installing the auto switch.

1. Use the port for piping in the axial direction.
2. Install an auto switch on the opposite side of the port.
3. Use a pipe fitting with 7 mm width across flats or ø8 external diameter or less.

● **M-5J** (Extension fittings) + **AS1201F-M5-04** (Speed controller with One-touch fittings, Elbow style)
● **KJL04-M5** (One-touch fitting) + **AS1001F-04** (Speed controller with One-touch fittings, In-line style)

Table for Auto Switch Interference with Speed Controller and Fittings

Auto switch model	Electrical entry direction	Wiring type	Auto switch model
Solid state switch **D-M9□, D-M9□V**	Perpendicular	3-wire	**D-M9NV, D-M9PV**
		2-wire	**D-M9BV**
2-color indication solid state switch **D-F9□W, D-F9□WV**	Perpendicular	3-wire	**D-F9NWV, D-F9PWV**
		2-wire	**D-F9BWV**

Other than the models listed in “How to Order”, the following auto switches are applicable. For detailed specifications, refer to page 8-30-1.

Type	Model	Electrical entry (Fetching direction)	Features
Reed switch	D-A90	Grommet (In-line)	Without indicator light
	D-A90V	Grommet (Perpendicular)	

∗ Normally closed (NC = b contact), solid state switch (D-F9G/F9H type) are also available. For details, refer to page 8-30-31.