MCSS series

SLIDE CYLINDER

Mindman

Table for standard stroke:

Tube I.D.	Stroke (mm)
ϕ6	10, 20, 30, 40, 50
ϕ8	10, 20, 30, 40, 50, 75
ϕ12	10, 20, 30, 40, 50, 75, 100
ϕ16	10, 20, 30, 40, 50, 75, 100, 125
ϕ 20, 25	10, 20, 30, 40, 50, 75, 100, 125, 150

※Produce after received your orders.

Order example:

MCSS－20－50－AS－BSP

MODEL

STROKE

TUBE I.D.

STROKE ADJUSTER
Blank: Without adjuster
AS: Adjuster at extension end
AT: Adjuster at retraction end
A: Adjuster at both ends
BS: Absorber at extension end
BT: Absorber at retraction end
B: Absorber at both ends

PORT THREAD
Blank: PT thread
BSP: BSP thread
NPT: NPT thread

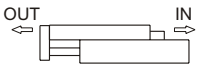
Features:

- Work table and air cylinder are integrated compactly. Air slide table is ideal for precise assembly.
- Grooves on the body for sensor switch to be inserted into.

Specification:

Model	MCSS		
Acting type	Double acting		
Tube I.D. (mm)	6	8, 12, 16	20, 25
Port size	M3×0.5	M5×0.8	PT 1/8
Medium	Air		
Operating pressure range	1.5~7 kgf/cm^2		
Proof pressure	10 kgf/cm^2		
Ambient temperature	－5~＋60℃ (No freezing)		
Lubricator	Not required		
Cushion	Rubber bumpper (Standard) Shock absorber (Option)		
Sensor switch	RCE, RCE1		

Theoretical force:



(Unit: N)

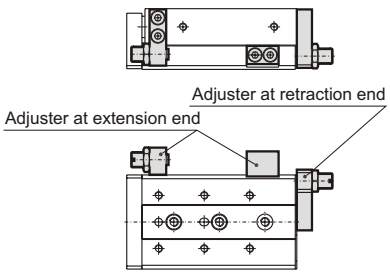
Tube I.D. (mm)	Piston rod (mm)	Operating direction	Piston area (mm^2)	Operating pressure (MPa)					
				0.2	0.3	0.4	0.5	0.6	0.7
6	3	OUT	57	11	17	23	29	34	40
		IN	42	8	13	17	21	25	29
8	4	OUT	101	20	30	40	51	61	71
		IN	75	15	23	30	38	45	53
12	6	OUT	226	45	68	90	113	136	158
		IN	170	34	51	68	85	102	119
16	8	OUT	402	80	121	161	201	241	281
		IN	302	60	91	121	151	181	211
20	10	OUT	628	126	188	251	314	377	400
		IN	471	94	141	188	236	283	330
25	12	OUT	982	196	295	393	491	589	687
		IN	756	151	227	302	378	454	529

Stroke adjuster option:

Stroke adjuster

- Adjustable stroke range: 0~5mm

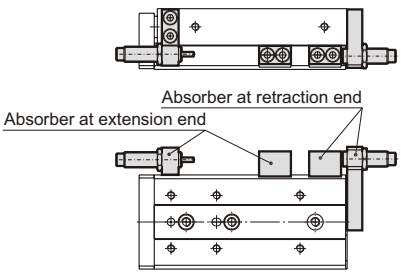
AS: Adjuster at extension end
AT: Adjuster at retraction end
A: Adjuster at both ends



With shock absorber

- Enables adjustment of stroke.
- Absorbs the collision at stroke end and stops smoothly.

BS: Absorber at extension end
BT: Absorber at retraction end
B: Absorber at both ends



MCSS Precautions Be sure to read before handling.

SLIDE CYLINDER

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Selection

❶ Do not apply a load over the operating limit range.

Select the model considering max. allowable load and allowable moment. When actuator is used outside of operating limits, eccentric loads on guide will be in excess this causing vibration on guide and inaccuracy, and shortens life.

❷ If intermediate stops by external stopper is done, avoid ejection.

If ejection occurs, it may cause damage. In case the slid table is stopped at intermediate positions by an external stopper then forwarded to the front, return the slide table to the back for just a moment to retract the stopper, then supply pressure to the opposite port to operate slide table.

❸ Do not apply excessive forces and impacts.

This will cause problems and possible failure.

Mounting

❶ Do not scratch and dent mounting side of body, table and end plate.

The damage will result in a decrease in parallelism, vibration of guide and an increase in moving part resistance.

❷ Do not scratch and dent forward side of rail and guide.

This causes vibration and increases moving part resistance.

Mounting

❸ Do not apply excessive power and load when work is mounted.

Vibrations on guide and moving part resistance will result when power over the allowable moment is applied.

❹ Flatness of mounting surface should be less than 0.02mm.

Insufficient flatness of workpiece or base to which Air Slide Table is mounted can cause generation of play at guide section or increase sliding resistance.

❺ Select the proper connection with the load which has external support and/or guide mechanism on the outside, and align it properly.

❻ Avoid contact with the air slide table during operation.

Adjuster option creates additional pinch points which can cause injury to operator when table is moving. Preventative measures, e.g. installation of a cover, should be taken to avoid such accidents.

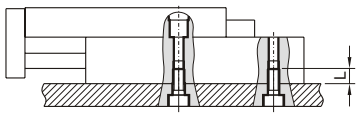
❼ Keep away from objects which is influenced by magnets.

A magnet is built in the guide block for use with an auto switch, there for do not use magnetic disk, magnetic card, or magnetic tape, else data will be eliminated.

❽ When mounting an air slide table, use appropriate length of screws and do not exceed the maximum tightening torque.

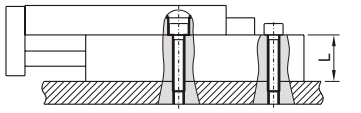
If tightening the screw beyond the designated value, it may malfunction. If tightening it insufficiently, it may result in position sliding or falling off of air slide table.

1. Lateral mounting (Body tapped)



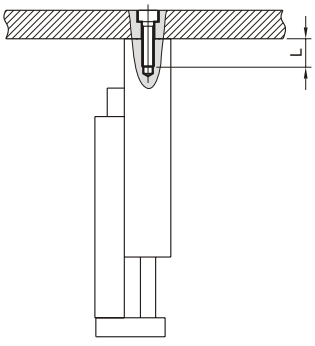
Model	Bolt	Max. torque (Nm)	Max. screw-in depth (L mm)
MCSS-6	M4×0.7	2.1	8
MCSS-8	M4×0.7	2.1	8
MCSS-12	M5×0.8	4.4	10
MCSS-16	M6×1	7.4	12
MCSS-20	M6×1	7.4	12
MCSS-25	M8×1.25	18	16

2. Lateral mounting (Through hole)



Model	Bolt	Max. torque (Nm)	Max. screw-in depth (L mm)
MCSS-6	M3×0.5	1.2	11
MCSS-8	M3×0.5	1.2	13
MCSS-12	M4×0.7	2.8	17
MCSS-16	M5×0.8	5.7	24
MCSS-20	M5×0.8	5.7	27
MCSS-25	M6×1	10	34

3. Axial mounting (Body tapped)



Model	Bolt	Max. torque (Nm)	Max. screw-in depth (L mm)
MCSS-6	M2.5×0.45	0.5	3.5
MCSS-8	M3×0.5	0.9	4
MCSS-12	M4×0.7	2.1	6
MCSS-16	M5×0.8	4.4	7
MCSS-20	M5×0.8	4.4	8
MCSS-25	M6×1	7.4	10

MCSS Precautions Be sure to read before handling.

SLIDE CYLINDER

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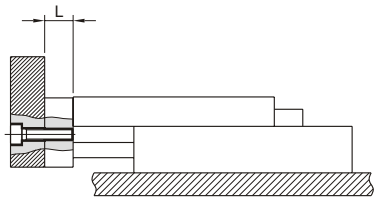
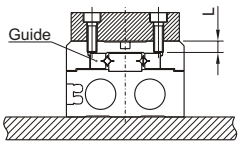
Mounting

1.Front face mounting



Model	Bolt	Max. torque (Nm)	Max. screw-in depth (L mm)
MCSS-6	M3×0.5	0.9	5
MCSS-8	M4×0.7	2.1	6
MCSS-12	M5×0.8	4.4	8
MCSS-16	M6×1	7.4	10
MCSS-20	M6×1	7.4	13
MCSS-25	M8×1.25	18	15

2.Top face mounting



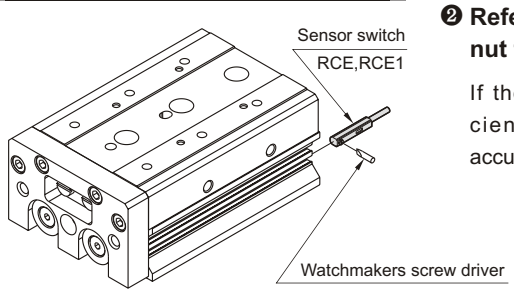
When attaching work to guide, use a bolt which is at least 0.5mm shorter than the maximum thread depth. Longer bolts can cause malfunction due to contact with guide bearings.

Model	Bolt	Max. torque (Nm)	Max. screw-in depth (L mm)
MCSS-6	M3×0.5	0.9	4
MCSS-8	M3×0.5	0.9	5
MCSS-12	M4×0.7	2.1	5.5
MCSS-16	M5×0.8	4.4	6
MCSS-20	M5×0.8	4.4	10
MCSS-25	M6×1	7.4	13

❶ The positioning hole on the table and the positioning hole at the bottom of the body do not have the same center.

Use these holes during reinstallation after the table has been removed for the maintenance of an identical product.

Installation of sensor switch



Environment

❶ Do not use in atmosphere where the actuator contacts directly the liquid such as cutting oil.

Conditions where the cylinder piston rod and guide shafts are exposed directly to cutting oil, coolant and oil mist lead to vibration, increase of moving part resistance, air leakage, etc.

❷ Do not use in atmosphere where the actuator contacts directly the material such as powder dust, dust, spatter etc.

This causes vibration, increase of moving part and air leakage. Consult Mindman when the use in such environment is required.

❸ Do not use in direct sun light.

❹ Do not use in environment where there is heat source.

Use a cover when there is a heat source around the actuator, or if temperature of product increases and exceeds operating temperature range by emissive heat.

❺ Do not subject it to excessive vibration and/or impact.

This results in damage and/or malfunction.

Contact Mindman if the actuator is used in the above conditions.

Precautions for adjuster option

Stroke adjuster

❶ Never replace the original adjuster bolts.

Impact energy causes play, damage, etc.

❷ Refer to the below table for lock nut tightening torque.

If the lock nut is not tightened sufficiently, it leads to low positioning accuracy.

Precautions for adjuster option

Stroke adjuster

Model	Tightening torque (Nm)
MCSS-6	3.0
MCSS-8	5.0
MCSS-12	12.5
MCSS-16	25.0
MCSS-20	43.0
MCSS-25	69.0

❸ When stroke adjuster is adjusted, do not hit the table with the wrench.

This can cause excessive play.

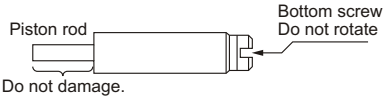
With shock absorber

❶ Do not rotate the screw set on bottom of shock absorber.

This is not the screw for adjusting. If this screw is rotated, it may cause oil leakage.

❷ Do not scratch the exposed portion of the piston rod.

Decrease in life or malfunction may result.



❸ Shock absorber is considered a consumable component. When energy absorption is decreased, replace it.

Model	Part No. of shock absorber
MCSS-8	MAC0806-SN
MCSS-12	MAC0806-SN
MCSS-16	MAC1007-SN
MCSS-20	MAC1412-SN
MCSS-25	MAC1412-SN

❹ Refer to the below table for tightening torque for lock nut of shock absorber.

Model	Tightening torque (Nm)
MCSS-8	1.67
MCSS-12	1.67
MCSS-16	3.14
MCSS-20	10.8
MCSS-25	10.8

Table deflection

Table deflection by pitch moment

Table pitch deflection due to static pitch moment applied at arrow for fully extended stroke of slide table

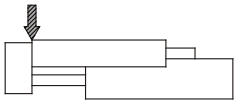


Table deflection by yaw moment

Table yaw deflection due to static yaw moment applied at arrow for fully extended stroke of slide table.

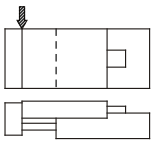
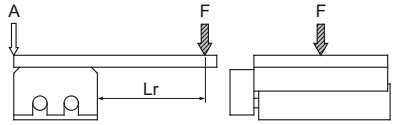
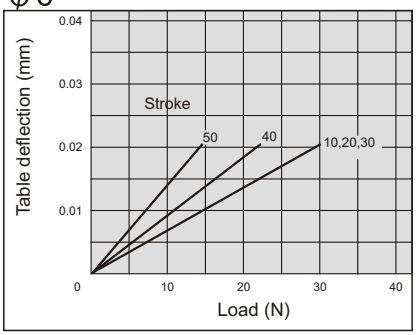


Table deflection by roll moment

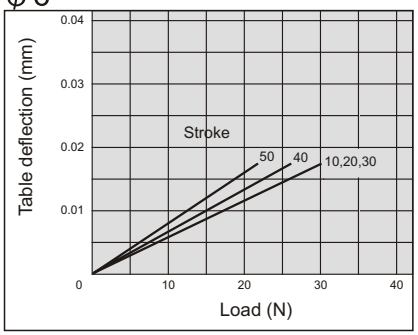
Table roll deflection arrow A due to static roll moment applied at arrow F when Lr= (see table) and table is retracted.



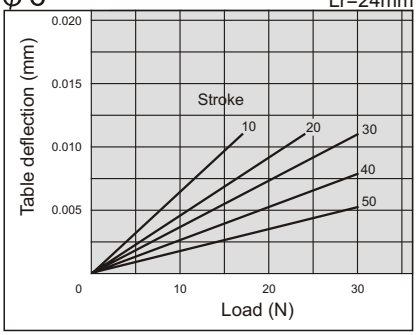
ϕ6



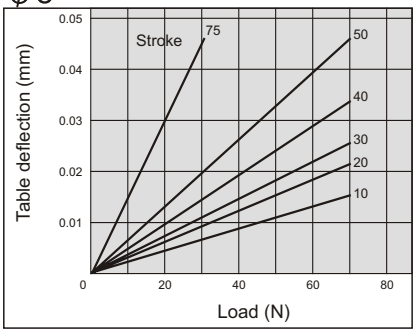
ϕ6



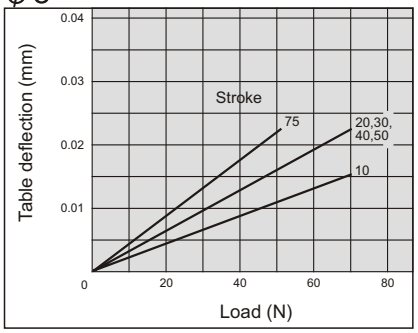
ϕ6 Lr=24mm



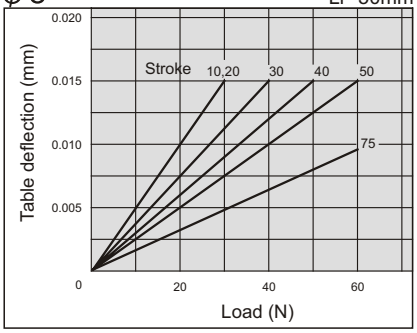
ϕ8



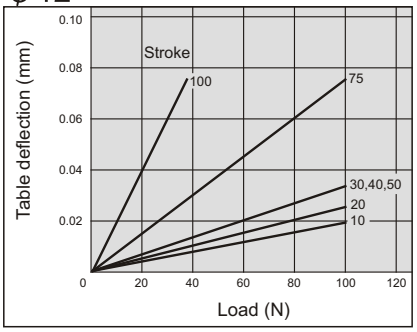
ϕ8



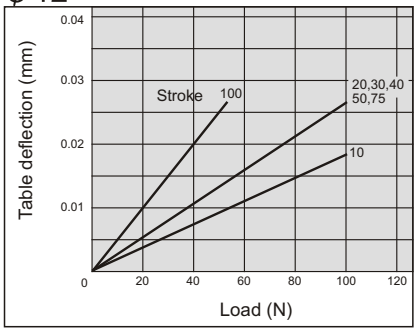
ϕ8 Lr=50mm



ϕ12



ϕ12



ϕ12 Lr=65mm

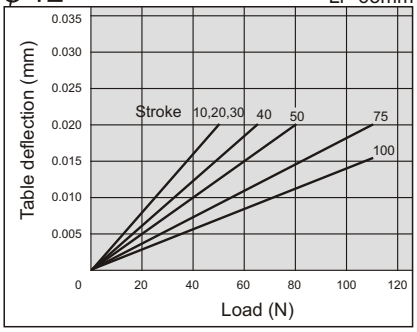


Table deflection

Table deflection by pitch moment

Table pitch deflection due to static pitch moment applied at arrow for fully extended stroke of slide table

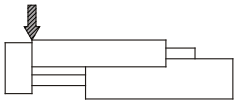


Table deflection by yaw moment

Table yaw deflection due to static yaw moment applied at arrow for fully extended stroke of slide table.

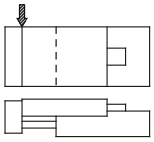
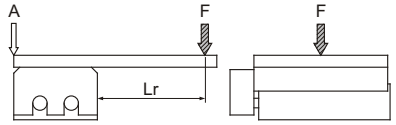
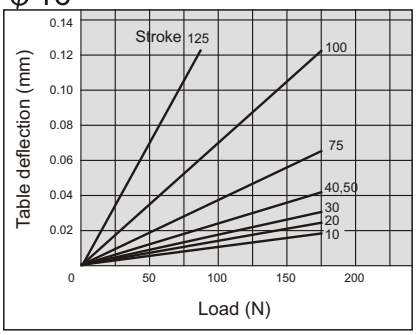


Table deflection by roll moment

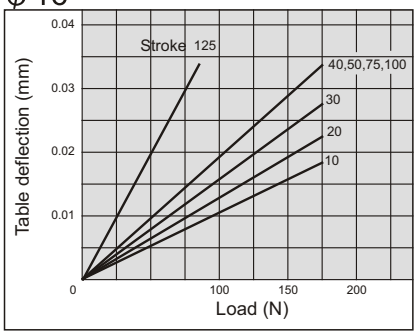
Table roll deflection arrow A due to static roll moment applied at arrow F when Lr= (see table) and table is retracted.



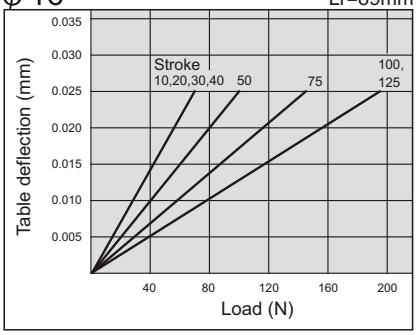
ϕ16



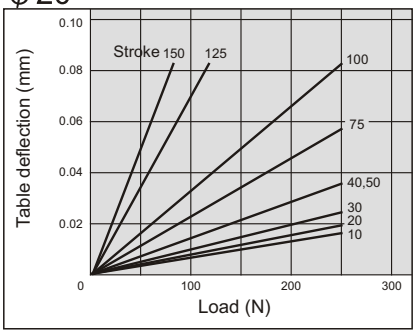
ϕ16



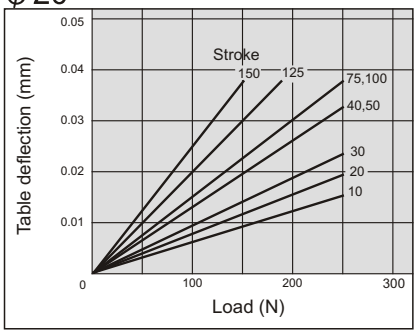
ϕ16 Lr=89mm



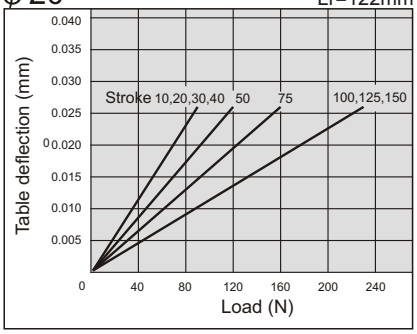
ϕ20



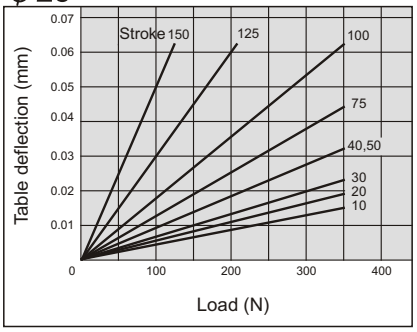
ϕ20



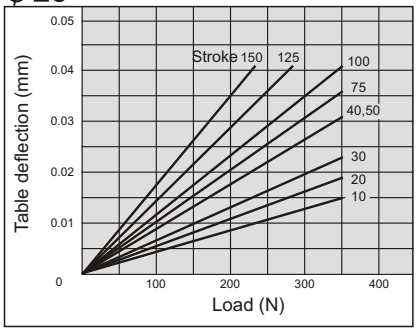
ϕ20 Lr=122mm



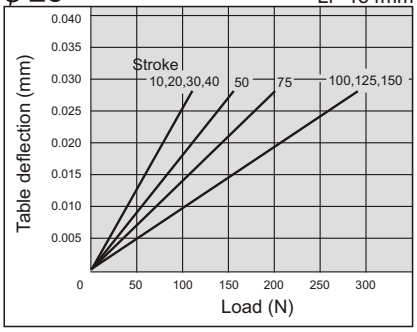
ϕ25

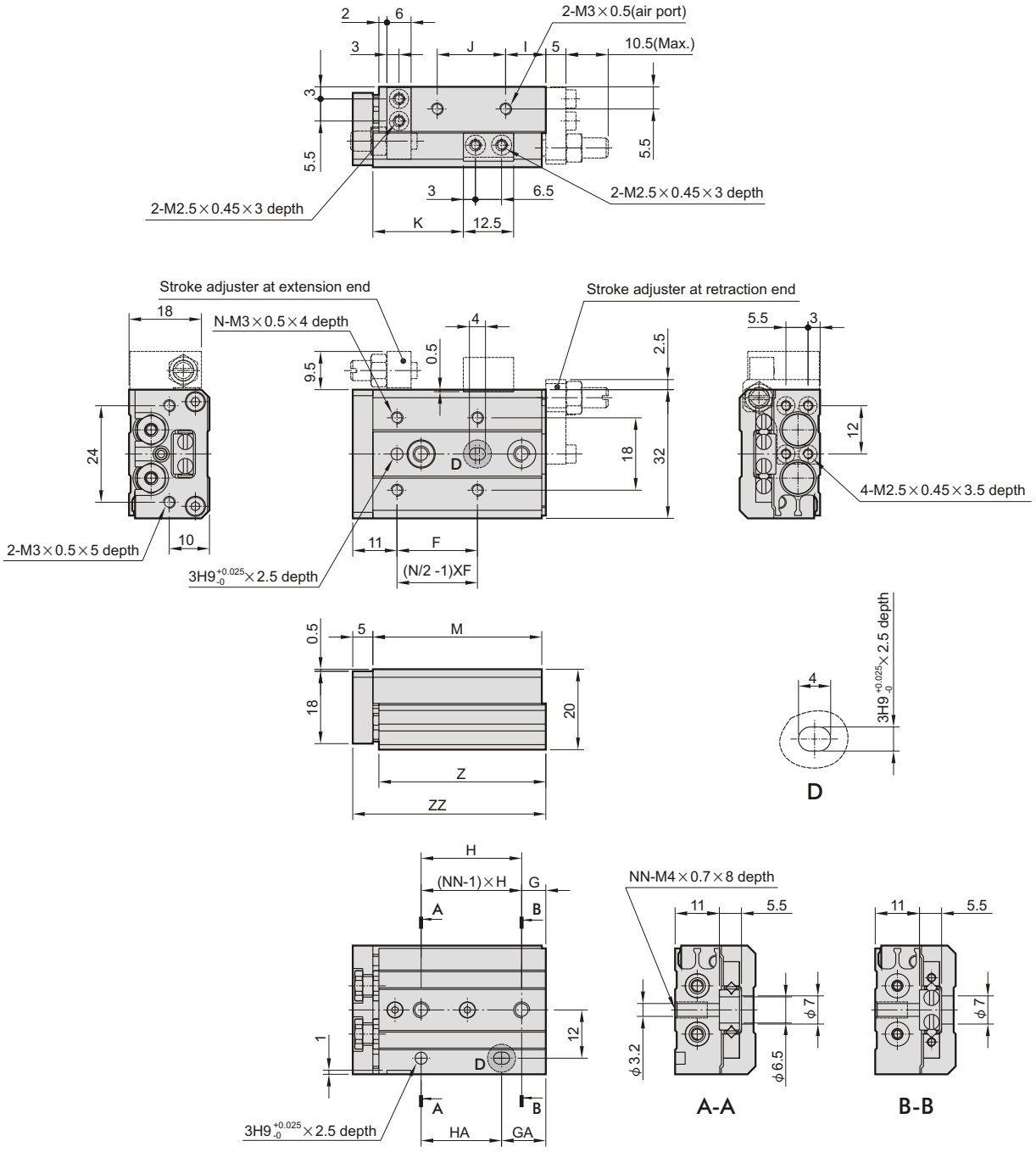


ϕ25

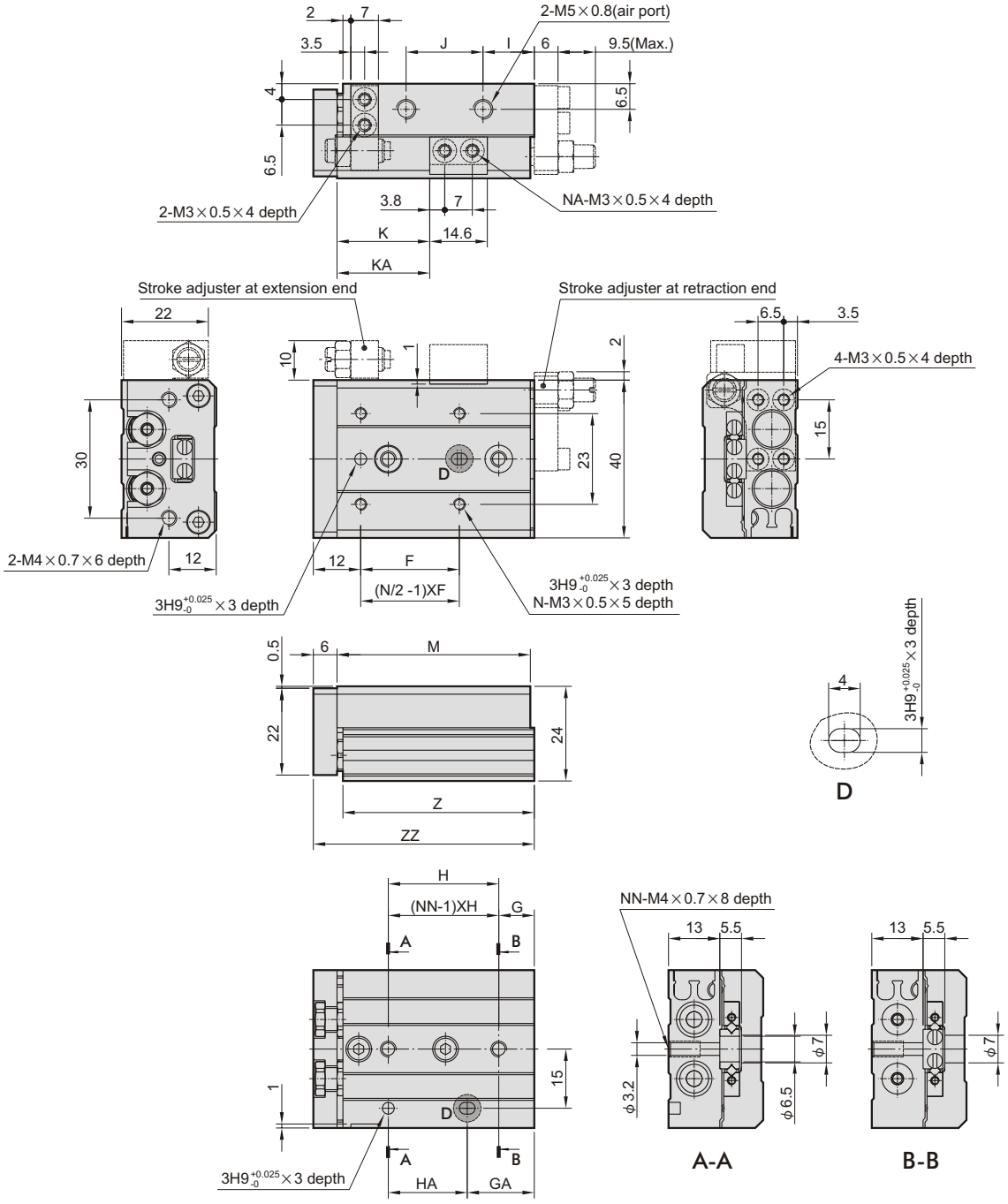


ϕ25 Lr=154mm



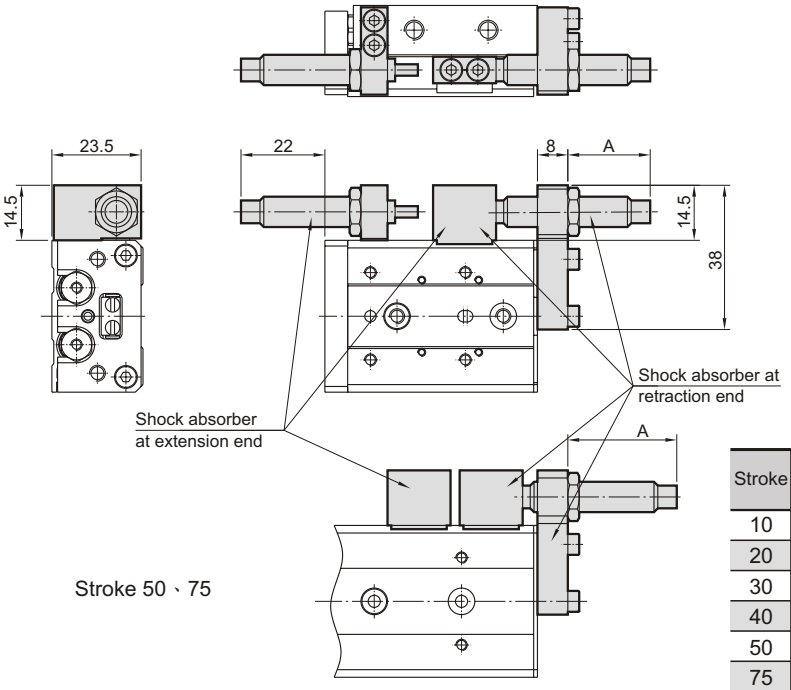


Code / Stroke	F	G	GA	H	HA	I	J	K	M	N	NN	Z	ZZ
10	20	6	11	25	20	10	17	22.5	42	4	2	41.5	48
20	30	6	21	35	20	10	27	32.5	52	4	2	51.5	58
30	20	11	31	20	20	7	40	42.5	62	6	3	61.5	68
40	28	13	43	30	30	19	50	52.5	84	6	3	83.5	90
50	38	17	41	24	48	25	60	62.5	100	6	4	99.5	106



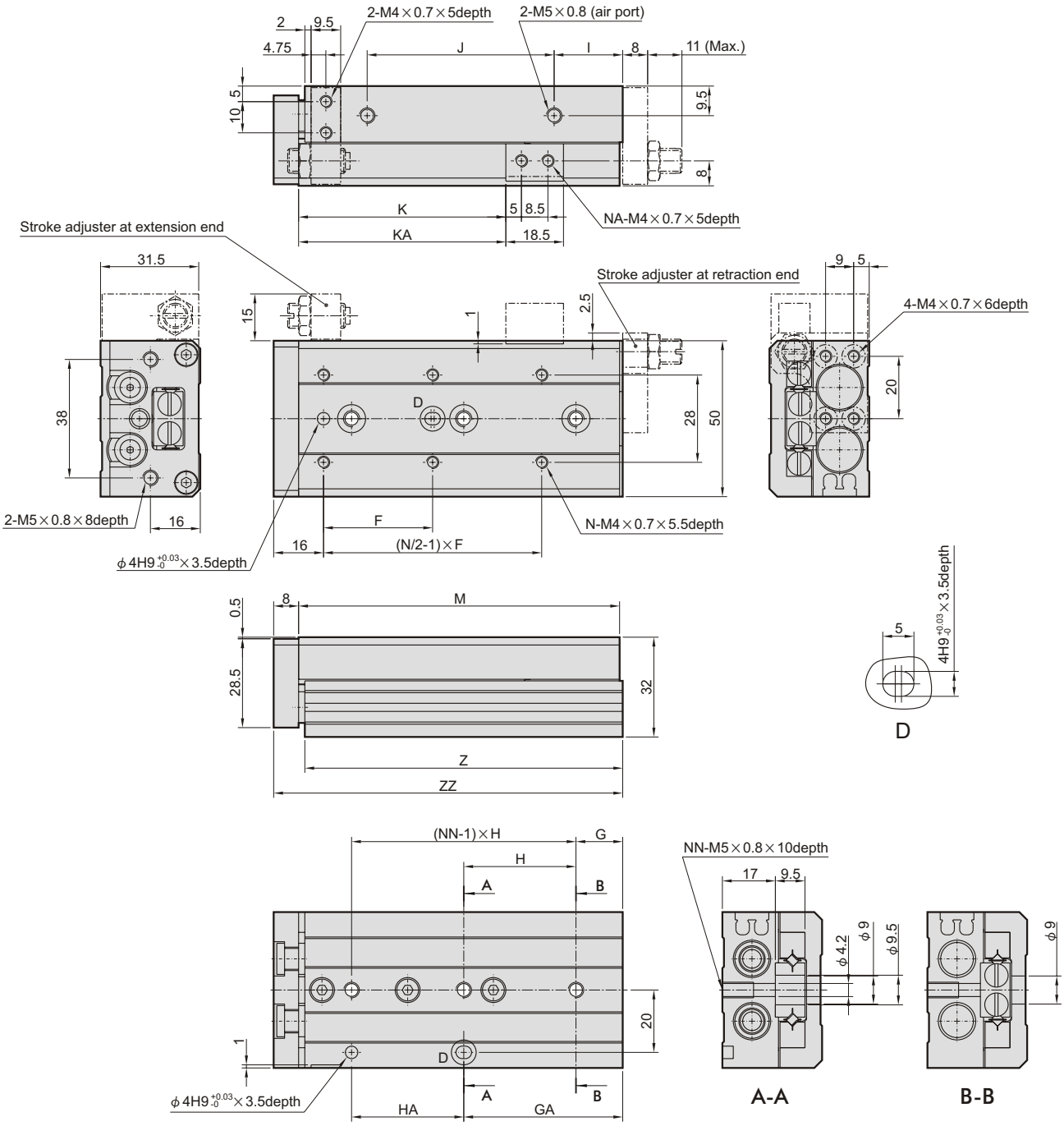
Code / Stroke	F	G	GA	H	HA	I	J	K	KA	M	N	NA	NN	Z	ZZ
10	25	9	17	28	20	13	19.5	23.5	-	49	4	2	2	48.5	56
20	25	12	12	30	30	8.5	29	33.5	-	54	4	2	2	53.5	61
30	40	13	33	20	20	9.5	39	43.5	-	65	4	2	3	64.5	72
40	50	15	43	28	28	10.5	56	53.5	-	83	4	2	3	82.5	90
50	38	20	43	23	46	24.5	60	63.5	82.5	101	6	4	4	100.5	108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

ϕ8



Stroke	Stroke adjustment range		A dimension (Retracted side mounting)
	Extending	Retracting	
10	Max. 22	5	22
20		15	27
30		15	26
40		5	18
50		20	29
75		20	29

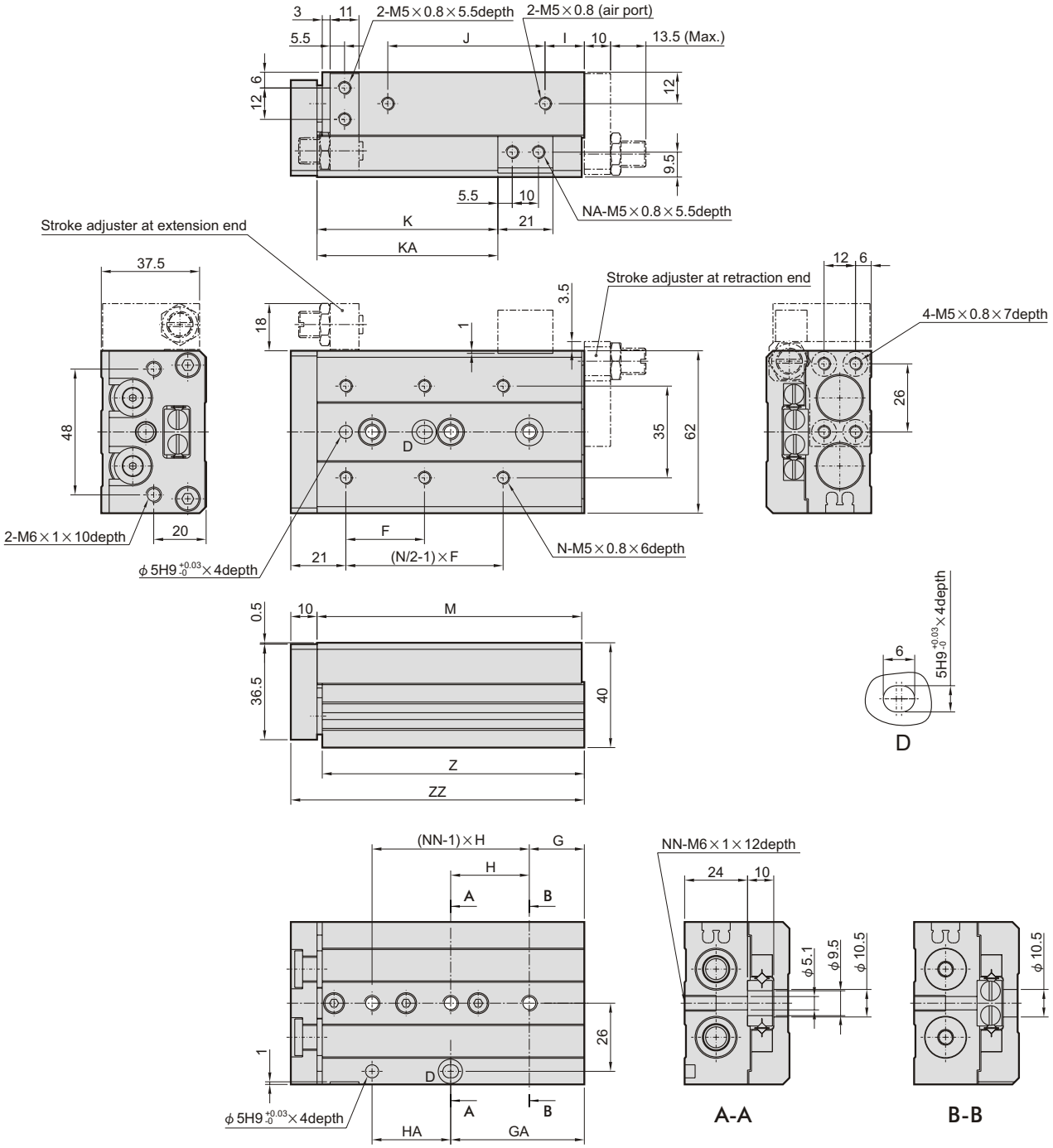
※Other dimensions not indicated are the same as the basic style.



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

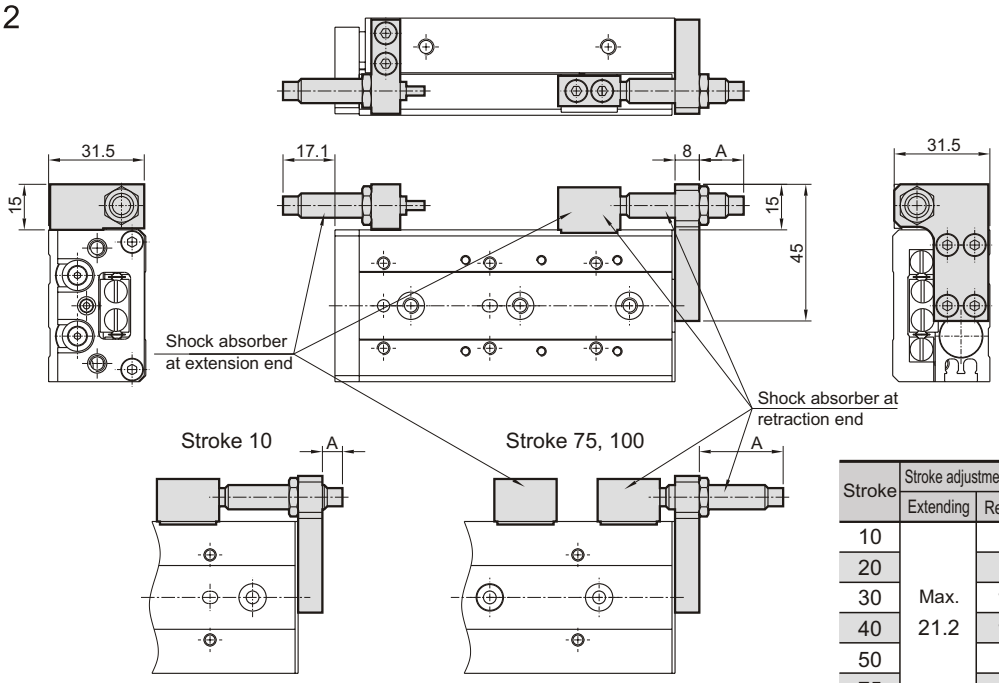
MCSS Dimensions ϕ16

SLIDE CYLINDER



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

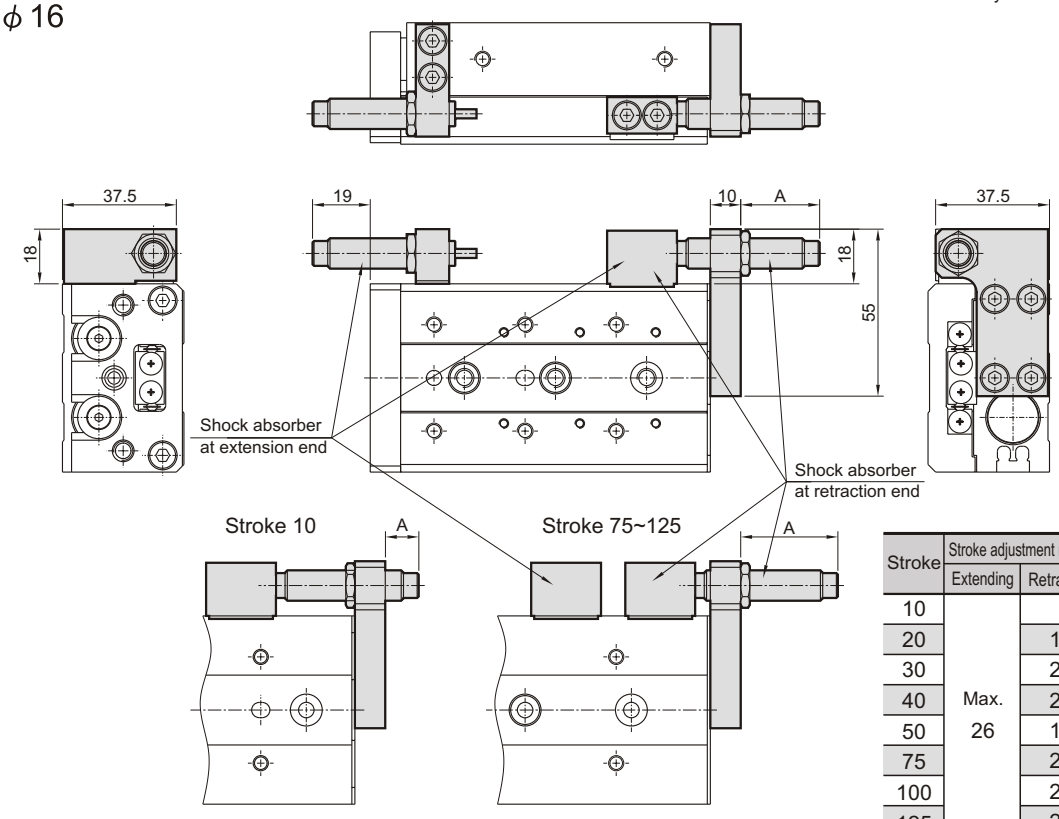
ϕ12



Stroke	Stroke adjustment range		A dimension (Retracted side mounting)
	Extending	Retracting	
10	Max. 21.2	1.6	6.6
20		8.6	16.6
30		18.6	26.6
40		16.6	24.6
50		6.6	14.6
75		19.6	27.6
100		19.6	27.6

※Other dimensions not indicated are the same as the basic style.

ϕ16

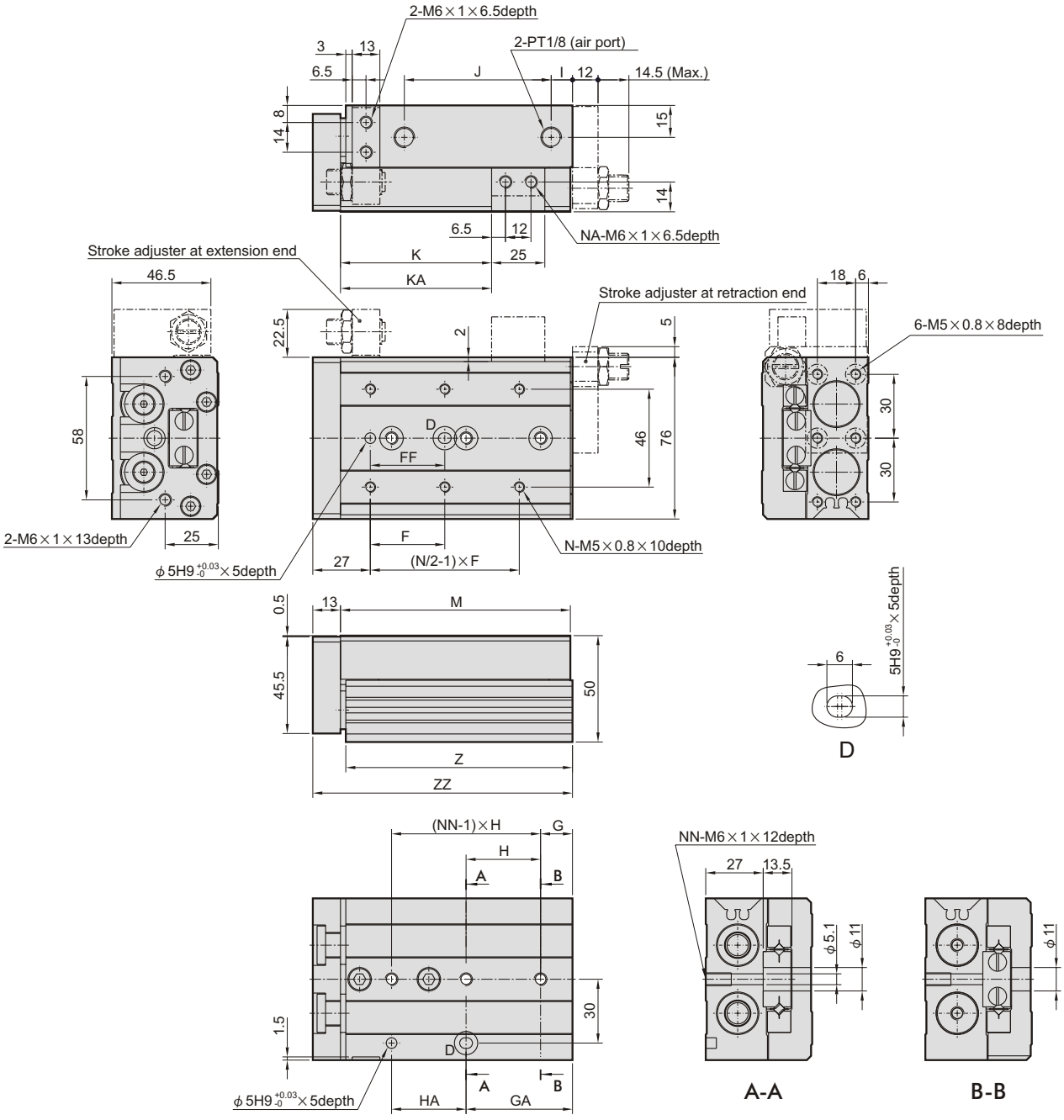


Stroke	Stroke adjustment range		A dimension (Retracted side mounting)
	Extending	Retracting	
10	Max. 26	6	11
20		13	21
30		23	31
40		23	31
50		18	26
75		24	32
100		24	32
125		24	32

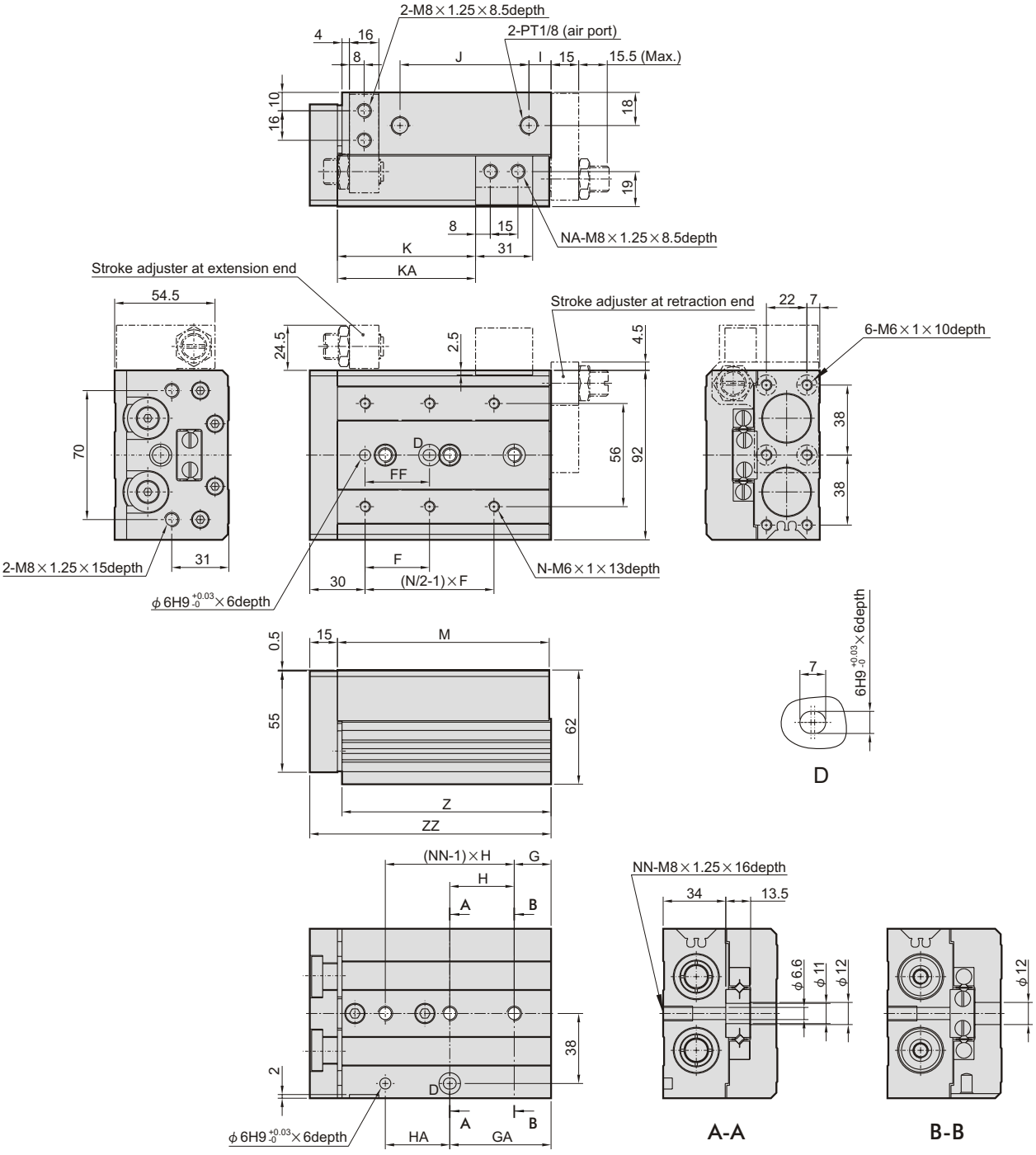
※Other dimensions not indicated are the same as the basic style.

MCSS Dimensions ϕ20

SLIDE CYLINDER

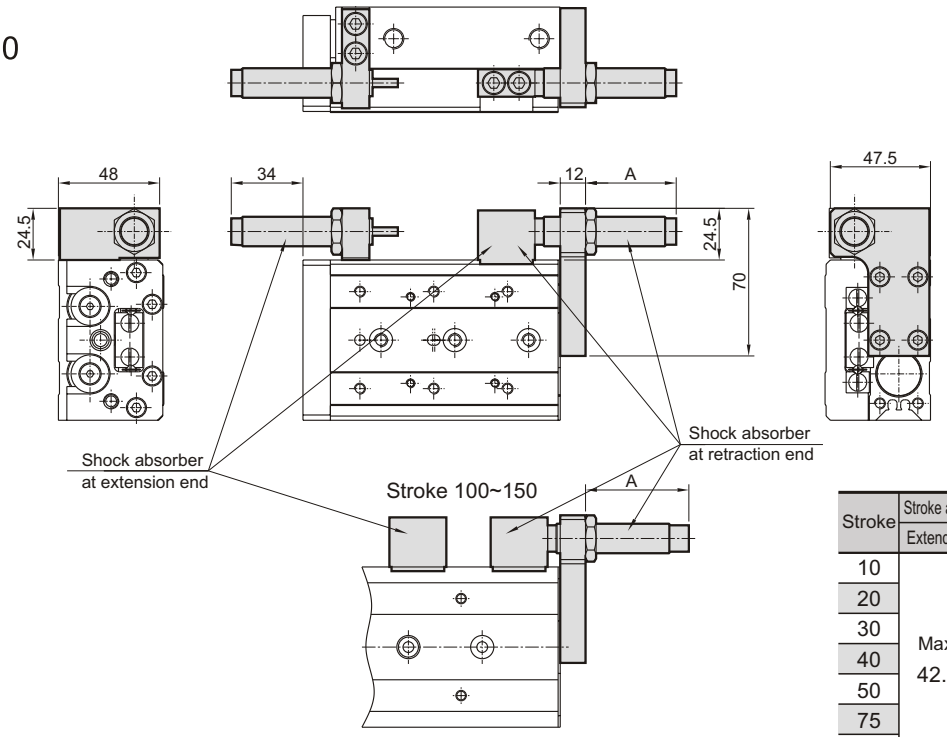


Code / Stroke	F	FF	G	GA	H	HA	I	J	K	KA	M	N	NA	NN	Z	ZZ
10	50	40	15	25	45	35	10	44	31	-	83	4	2	2	81.5	97
20	50	40	15	25	45	35	10	44	41	-	83	4	2	2	81.5	97
30	50	40	15	25	45	35	10	44	51	-	83	4	2	2	81.5	97
40	60	50	15	35	55	35	10	54	61	-	93	4	2	2	91.5	107
50	35	35	15	50	35	35	10	69	71	-	108	6	2	3	106.5	122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



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

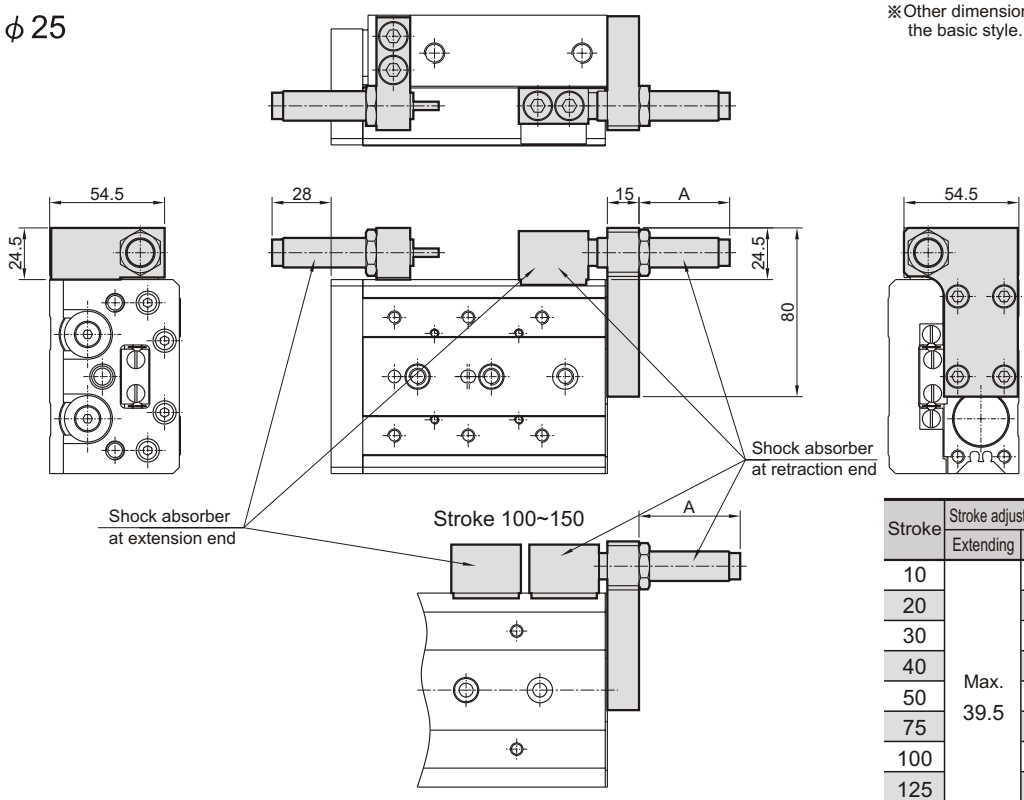
ϕ20



Stroke	Stroke adjustment range		A dimension (Retracted side mounting)
	Extending	Retracting	
10	Max. 42.5	10	27
20		20	37
30		30	47
40		37	47
50		33	43
75		15	29
100		35	49
125		35	49
150		35	49

※Other dimensions not indicated are the same as the basic style.

ϕ25



Stroke	Stroke adjustment range		A dimension (Retracted side mounting)
	Extending	Retracting	
10	Max. 39.5	10	25
20		20	35
30		30	45
40		35	45
50		33	43
75		17	27
100		38	48
125		36	46
150		36	46

※Other dimensions not indicated are the same as the basic style.

Order example of stroke adjuster:

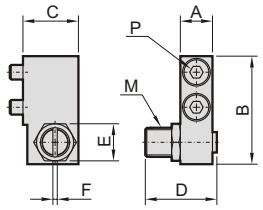
MCSS – 20 – AS – X12

- MCSS — MODEL
- 20 — TUBE I.D.
- AS — STROKE ADJUSTER
  - **AS**: Stroke adjuster at extension end
  - **AT**: Stroke adjuster at retraction end
  - **BS**: Shock absorber at extension end
  - **BT**: Shock absorber at retraction end
- X12 — ADJUSTABLE RANGE (only for stroke adjuster)
  - Blank: 5mm
  - **X11**: 15mm
  - **X12**: 25mm

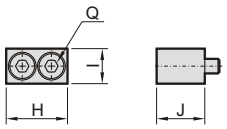
*__X12__ (adjustable range: 25mm) is not available for MCSS-6.
*__X11__ and __X12__ are not available for shock absorber type.
*Shock absorber is not available on series MCSS-6.
*__X11__ and __X12__ adjusters cannot be ordered assembled with MCSS.
*Refer to the above figures for the dimensions.

Stroke adjuster at extension end:

Mounted to body



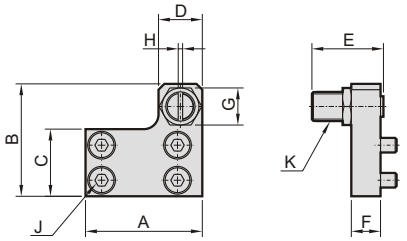
Mounted to table



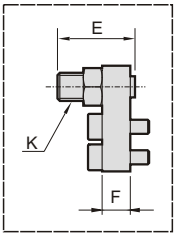
Tube I.D.	Order code	Adjustable stroke range (mm)	Mounted to body								Mounted to table			
			A	B	C	D	E	F	M	P*	H	I	J	Q*
6	MCSS-6-AS	5	6	17.8	10.5	16.5	7	2.5	M5×0.8	M2.5×10	12.5	6	8.5	M2.5×8
	MCSS-6-AS-X11	15				26.5								
8	MCSS-8-AS	5	7	21.5	11	16.5	8	3	M6×1	M3×10	14.6	7	10	M3×10
	MCSS-8-AS-X11	15				26.5								
	MCSS-8-AS-X12	25				36.5								
12	MCSS-12-AS	5	9.5	31	16	20	11	1.5	M8×1	M4×16	18.5	10	13	M4×12
	MCSS-12-AS-X11	15				30								
	MCSS-12-AS-X12	25				40								
16	MCSS-16-AS	5	11	37	19	24.5	14	1.5	M10×1	M5×16	21	12	16.5	M5×16
	MCSS-16-AS-X11	15				34.5								
	MCSS-16-AS-X12	25				44.5								
20	MCSS-20-AS	5	13	45.5	24	27.5	17	1.5	M12×1.25	M6×20	25	13	21	M6×20
	MCSS-20-AS-X11	15				37.5								
	MCSS-20-AS-X12	25				47.5								
25	MCSS-25-AS	5	16	53.5	26.5	32.5	19	1.5	M14×1.5	M8×25	31	17	25.5	M8×25
	MCSS-25-AS-X11	15				42.5								
	MCSS-25-AS-X12	25				52.5								

* Size of hexagon socket head cap screws

Stroke adjuster at retraction end:



※MCSS-6, 8

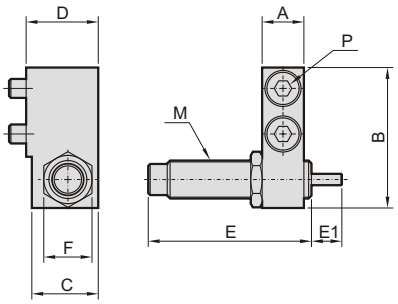


Tube I.D.	Order code	Adjustable stroke range (mm)	A	B	C	D	E	F	G	H	J*	K
6	MCSS-6-AT	5	21	19	10.5	8	16.5	5	7	2.5	M2.5×8	M5×0.8
	MCSS-6-AT-X11	15					26.5					
8	MCSS-8-AT	5	25	22.5	12.5	9	16.5	6	8	3	M3×10	M6×1
	MCSS-8-AT-X11	15					26.5					
	MCSS-8-AT-X12	25					36.5					
12	MCSS-12-AT	5	32	31	18.5	13	20	8	12	1.5	M4×8	M8×1
	MCSS-12-AT-X11	15					30					
	MCSS-12-AT-X12	25					40					
16	MCSS-16-AT	5	40	38.5	23	15	24.5	10	14	1.5	M5×10	M10×1
	MCSS-16-AT-X11	15					34.5					
	MCSS-16-AT-X12	25					44.5					
20	MCSS-20-AT	5	50	48	29	21	27.5	12	17	1.5	M5×12	M12×1.25
	MCSS-20-AT-X11	15					37.5					
	MCSS-20-AT-X12	25					47.5					
25	MCSS-25-AT	5	60	58	35	23	32.5	15	19	1.5	M6×16	M14×1.5
	MCSS-25-AT-X11	15					42.5					
	MCSS-25-AT-X12	25					52.5					

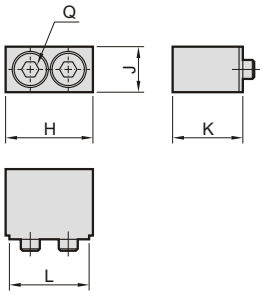
* Size of hexagon socket head cap screws

Stroke adjuster at extension end:

Mounted to body



Mounted to table

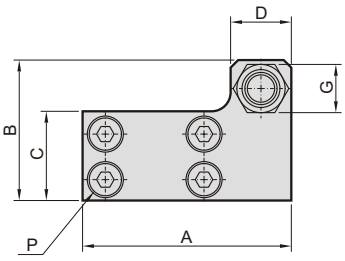


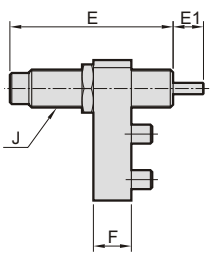
Tube I.D.	Order code	Mounted to body									Mounted to table				
		A	B	C	D	E	E1	F	M	P*	H	J	K	L	Q*
8	MCSS-8-BS	7	23	14	15.5	40.6	6	11	M8×1	M3×16	16.6	7	15.5	14.6	M3×16
12	MCSS-12-BS	9.5	31	14.5	16	40.6	6	11	M8×1	M4×16	20.5	10	15	18.5	M4×12
16	MCSS-16-BS	11	37	17.5	19	47	7	12.7	M10×1	M5×16	23	12	18.5	21	M5×16
20	MCSS-20-BS	13	45.5	23.5	26	67	12	19	M14×1.5	M6×25	27	13	25.5	25	M6×25
25	MCSS-25-BS	16	53.5	23.5	26.5	67	12	19	M14×1.5	M8×25	33	17	25.5	31	M8×25

* Size of hexagon socket head cap screws

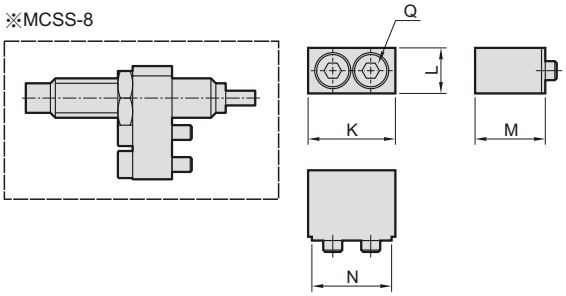
Stroke adjuster at retraction end:

Mounted to body





Mounted to table



Tube I.D.	Order code	Mounted to body										Mounted to table				
		A	B	C	D	E	E1	F	G	J	P*	K	L	M	N	Q*
8	MCSS-8-BT	38	23	12.5	14	40.6	6	8	12	M8×1	M3×12	16.6	7	15.5	14.6	M3×16
12	MCSS-12-BT	45	31	18	14	40.6	6	8	11	M8×1	M4×8	20.5	10	15	18.5	M4×12
16	MCSS-16-BT	55	37	23.5	16	47	7	10	12.7	M10×1	M5×10	23	12	18.5	21	M5×16
20	MCSS-20-BT	70	47	29	23	67	12	12	19	M14×1.5	M5×12	27	13	25.5	25	M6×25
25	MCSS-25-BT	80	54	35	23	67	12	15	19	M14×1.5	M6×16	33	17	25.5	31	M8×25

* Size of hexagon socket head cap screws