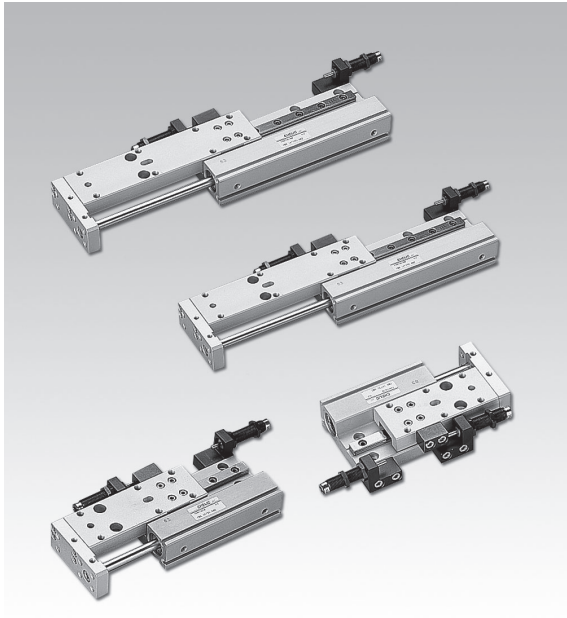


Actuator unit - FMR(L) Series

Slide table cylinder

CHELIC

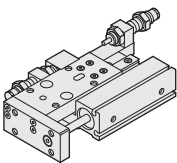


FMR(L) series

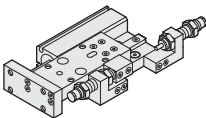
Provide CAD external dimension.

Future :

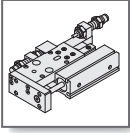
1. It adopts a precise slide rail guide, low abrasion, fast and accurate driving.
2. It is available for right and left sliding types and adjustable screws device.
3. With cushion device.



FMR series ---- Slide table cylinder--- Ø10 ~ Ø32 ----- P.6-7.12



FML series ---- Slide table cylinder--- Ø10 ~ Ø32 ----- P.6-7.12

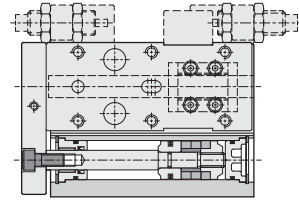


FMR(L) series - Slide table cylinder

Operating specification • Ordering expression

CHELIC

Internal structure



Theoretical force

Unit : kgf

Bore size mm	Piston rod dia mm	Piston action	Piston area cm ²	Air pressure (kgf/cm ²)						
				1	2	3	4	5	6	7
10	6	Push	0.79	—	1.6	2.4	3.2	4.0	4.7	5.5
		Pull	0.32	—	0.6	1	1.3	1.6	1.9	2.2
16	8	Push	2.01	—	4	6	8	10.1	12.1	14.1
		Pull	1.51	—	3	4.5	6	7.6	9.1	10.6
20	10	Push	3.14	—	6	9	12	15	18	21
		Pull	2.35	—	4.7	7.1	9.4	11.8	14.1	16.5
25	12	Push	4.90	—	9	14	19	24	29	34
		Pull	3.77	—	7.5	11.3	15.1	18.9	22.6	26.3
32	16	Push	8.04	—	16	24	32	40	48	55
		Pull	6.03	—	12.1	18.1	24.2	30.2	36.2	42.2

Note : Above are theoretical data - please take into consideration the frictional resistance and the mechanical of valve that should be added calculation before using. (About 70%~80%)

Specification

Unit : mm

Item	Bore size	10	16	20	25	32
Operation		Double acting				
Fluid		Air				
Pressure range	kgf / cm ² (kpa)	1.5 ~ 9 (150 ~ 900)		1 ~ 9 (100 ~ 900)		
Max. operating pressure	kgf / cm ² (kpa)	9.5 (950)				
Ambient and fluid temperature	°C	0 ~ 60				
Piston speed	mm/sec	50 ~ 200				
Lubrication		Free				
Port size		M5×0.8			Rc 1/8	
Sensing device		With magnet				

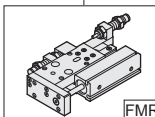
Bore size and Stroke

Bore size (mm)	Stroke
Ø10	30, 50
Ø16	30, 50, 75, 100
Ø20	30, 50, 75, 100
Ø25	30, 50, 75, 100
Ø32	30, 50, 75, 100

How to order

FMR **16** × **50** — **SD** **2** — **B.M** **2**

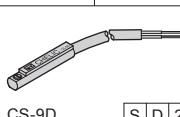
Model Bore size Stroke Sensor switch Shock absorber



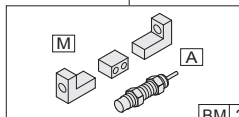
FMR :
Slide table cylinder

Ø10 - Ø10 mm
Ø16 - Ø16 mm
Ø20 - Ø20 mm
Ø25 - Ø25 mm
Ø32 - Ø32 mm

Ø10 - 30 ~ 50 mm
Ø16 - 30 ~ 100 mm
Ø20 - 30 ~ 100 mm
Ø25 - 30 ~ 100 mm
Ø32 - 30 ~ 100 mm



CS-9D S D 2



M A B BM 2

Shock absorber list (Option)

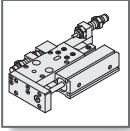
Bore size	Model	Max. absorber
10	SAC - 0806	0.2 kgf•m
16	SAC - 1008	0.4 kgf•m
20	SAC - 1008	0.4 kgf•m
25	SAC - 1210	0.5 kgf•m
32	SAC - 1210	0.5 kgf•m

Legend:
 [SD] : Sensor switch code (CS-9D)
 [SB] : Sensor switch code (CS-9B)
 [2] : Number of sensor switch
 1 = 1 PCS
 2 = 2 PCS
 (option)
 [A] : Shock absorber
 [B] : Adjustable tacking bolt
 [M] : Shock absorber mounting sets
 1 = 1 PCS
 2 = 2 PCS
 (option)

FML :
Slide table cylinder

Expression : Shock absorber is mounted on the side of body so as to absorb the impact force. (Please indicate AM code number, cushion set M1,M2 is 2pcs for 1 set, impact block M2 is 1 pc).

[M] The shock absorbers are fixed assembly which includes middle impact block and adjusting screw fixed seat on each right and left side.
(When you purchase, the fix seat assembly is whole set.)

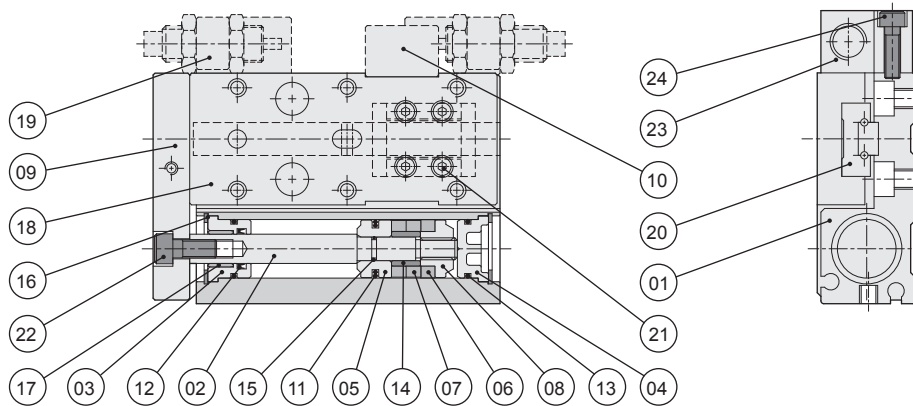


FMR(L) series - Slide table cylinder

Components • Material list

CHELIC

Internal structure

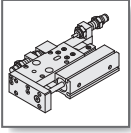


Components and Material list

No.	Item	Material	No.	Item	Material
01	Body	Aluminum alloy	13	Front/Rear cover O-Ring	NBR
02	Shaft	Medium carbon steel	14	Rod cover O-Ring	Copper
03	Front cover	Aluminum alloy	15	Piston O-Ring	NBR
04	Rear cover	Aluminum alloy	16	Clip	Spring steel
05	Piston	Copper	17	Bearing	Teflon
06	Wear ring	Teflon	18	Front plate	Aluminum alloy
07	Magnet	Rubber	19	Shock absorber base	Aluminum alloy
08	Wear ring base	Copper	20	Precision slider	Bearing steel
09	Slider	Aluminum alloy	21	Slider screw	Alloy steel
10	Stopper	Iron	22	Fixed screw	Alloy steel
11	Piston packing	NBR	23	Shock absorber screw	Alloy steel
12	Shaft packing	NBR	24	Base screw	Alloy steel

Packing and O-ring part list

Item	Piston Packing	Piston O-Ring	Shaft packing	Shaft O-ring
Bore size	No.	1	1	4
Ø10	DYP-10	Ø4 × Ø1.0	DYR-6	Ø8 × Ø1.0
Ø16	COP-16	Ø6.3 × Ø0.8	DYR-8K	Ø13.2 × Ø1.5
Ø20	COP-20	Ø8 × Ø1.0	DYR-10SK	Ø17.5 × Ø1.5
Ø25	COP-25	Ø10 × Ø1.0	DYR-12	Ø20.8 × Ø2.0
Ø32	COP-32	Ø13.5 × Ø1.5	DYR-16	Ø28.5 × Ø2.0



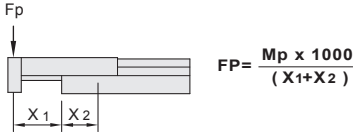
FMR(L) series - Slide table cylinder

Design • Installation reference

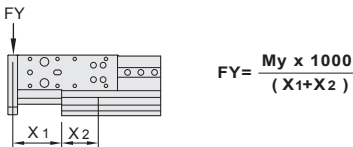
CHELIC

○ The calculation method and Allowed load

- Vertical moment of force



- Leaning sway moment of force



- Roll moment force



○ Motionless allowable torque

N • m (kgf • m)

Model	Item	Ø10	Ø16	Ø20	Ø25	Ø32
Mp	(Vertical direction)	9.40 [0.96]	9.40 [0.96]	9.40 [0.96]	13.7 [1.40]	29.7 [3.03]
My	(Leaning sway direction)	7.90 [0.81]	7.90 [0.81]	7.90 [0.81]	15.8 [1.61]	29.7 [3.03]
Mr	(Roll direction)	13.7 [1.40]	13.7 [1.40]	13.7 [1.40]	27.4 [2.80]	51.9 [5.30]

Note :

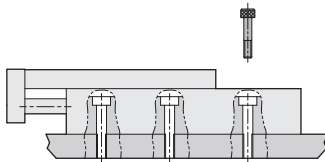
- Please do not exceed load limit. It will affect the precision of precise the slide rail, if it exceeds the limit.
- Avoid hitting with great force.
- Inertial load must be with in 1/10 of the allowable motionless load.

Expression :

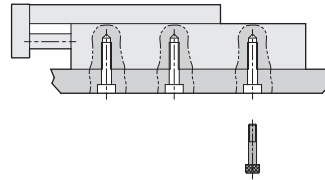
- X1 is the distance from body to point of load.
- X2 is the center distance from body to slide.
- X3 is the center distance from (Fr) point of load to slide rail base.

○ Mounting type

- Top mounting type



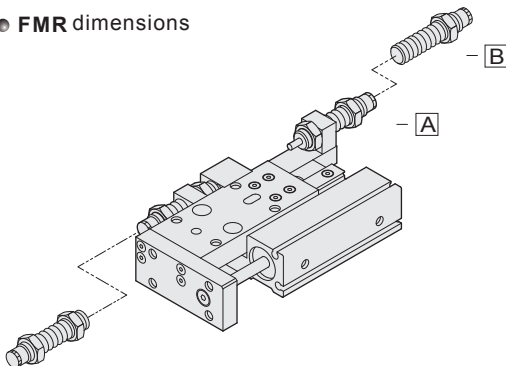
- Base mounting



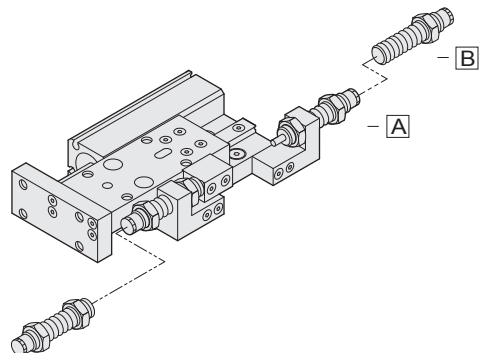
○ Adjustable stroke and with shock absorber

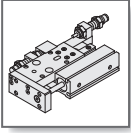
- A with shock absorber
- B with adjustable bolt

- FMR dimensions



- FML dimensions





FMR(L) series - Slide table cylinder

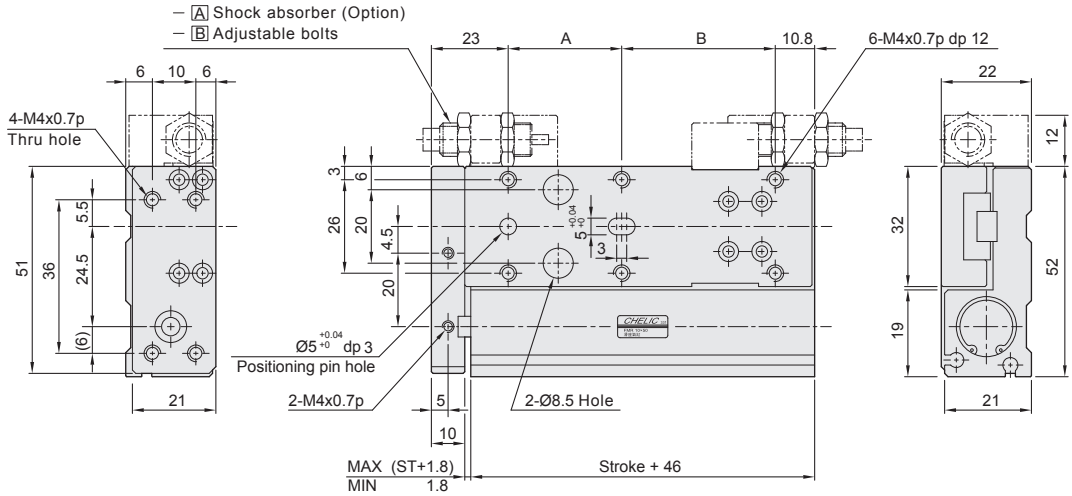
External dimension - Ø10

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☉ FMR(L) 10 ×



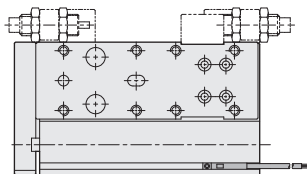
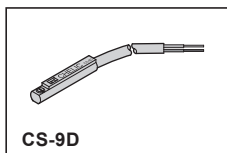
FMR(L) 10 × ST

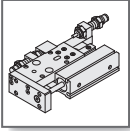


☉ Dimension

Code Stroke	A	B	C	G
30	22	32	48	38
50	32	42	68	48

☉ Sensor switch





FMR(L) series - Slide table cylinder

External dimension - Ø16

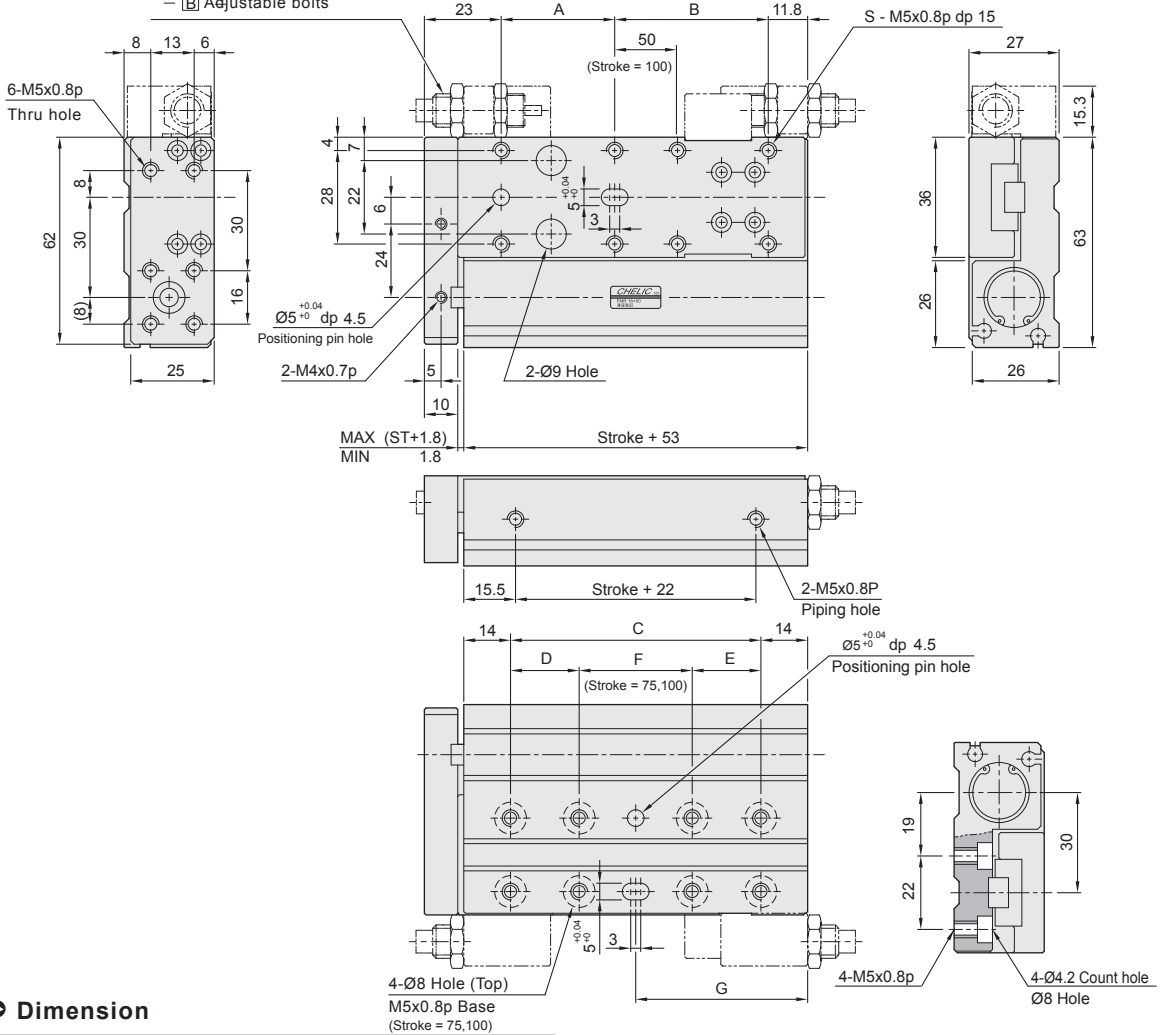
CHELIC

◉ FMR(L) 16 ×

- A Shock absorber (Option)
- B Adjustable bolts



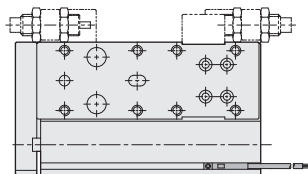
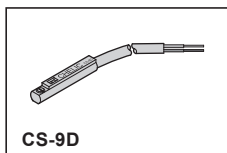
FMR(L) 16 × ST

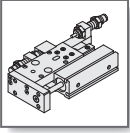


◉ Dimension

Code Stroke	A	B	C	D	E	F	G	S
30	30	30	55	-	-	-	41.5	6
50	50	30	75	-	-	-	51.5	6
75	50	55	100	32	32	36	64	6
100	50	80	125	40	40	45	76.5	8

◉ Sensor switch





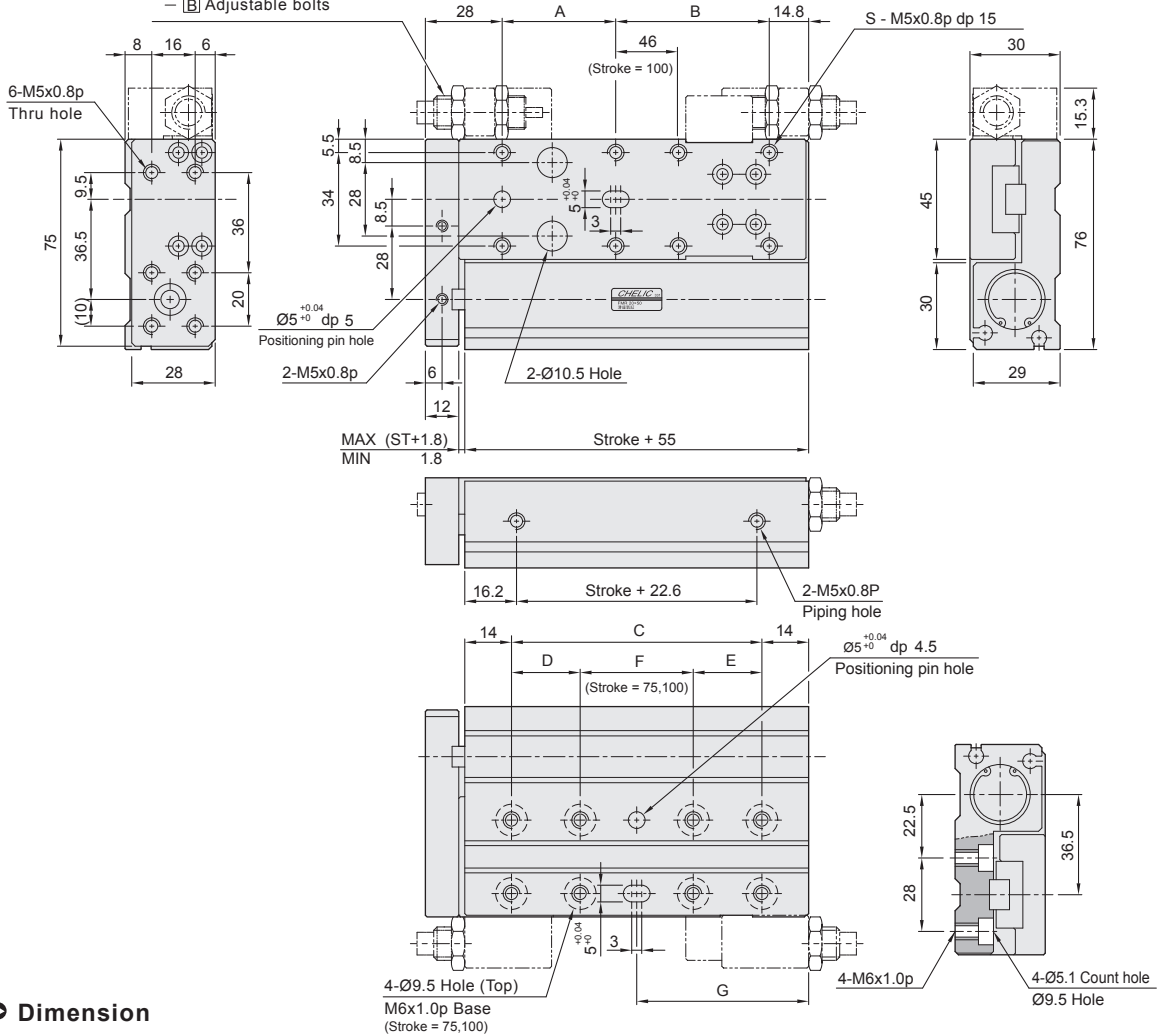
FMR(L) series - Slide table cylinder

External dimension - Ø20

CHELIC

◉ FMR(L) 20 ×

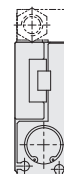
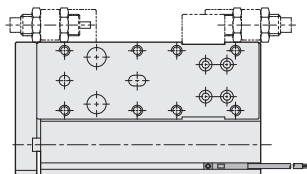
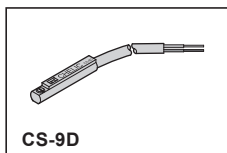
- A Shock absorber (Option)
- B Adjustable bolts

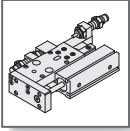


◉ Dimension

Code Stroke	A	B	C	D	E	F	G	S
30	26	30	57	-	-	-	42.5	6
50	50	26	77	-	-	-	52.5	6
75	50	51	102	32	32	38	65	6
100	50	76	127	36	36	55	77.5	8

◉ Sensor switch





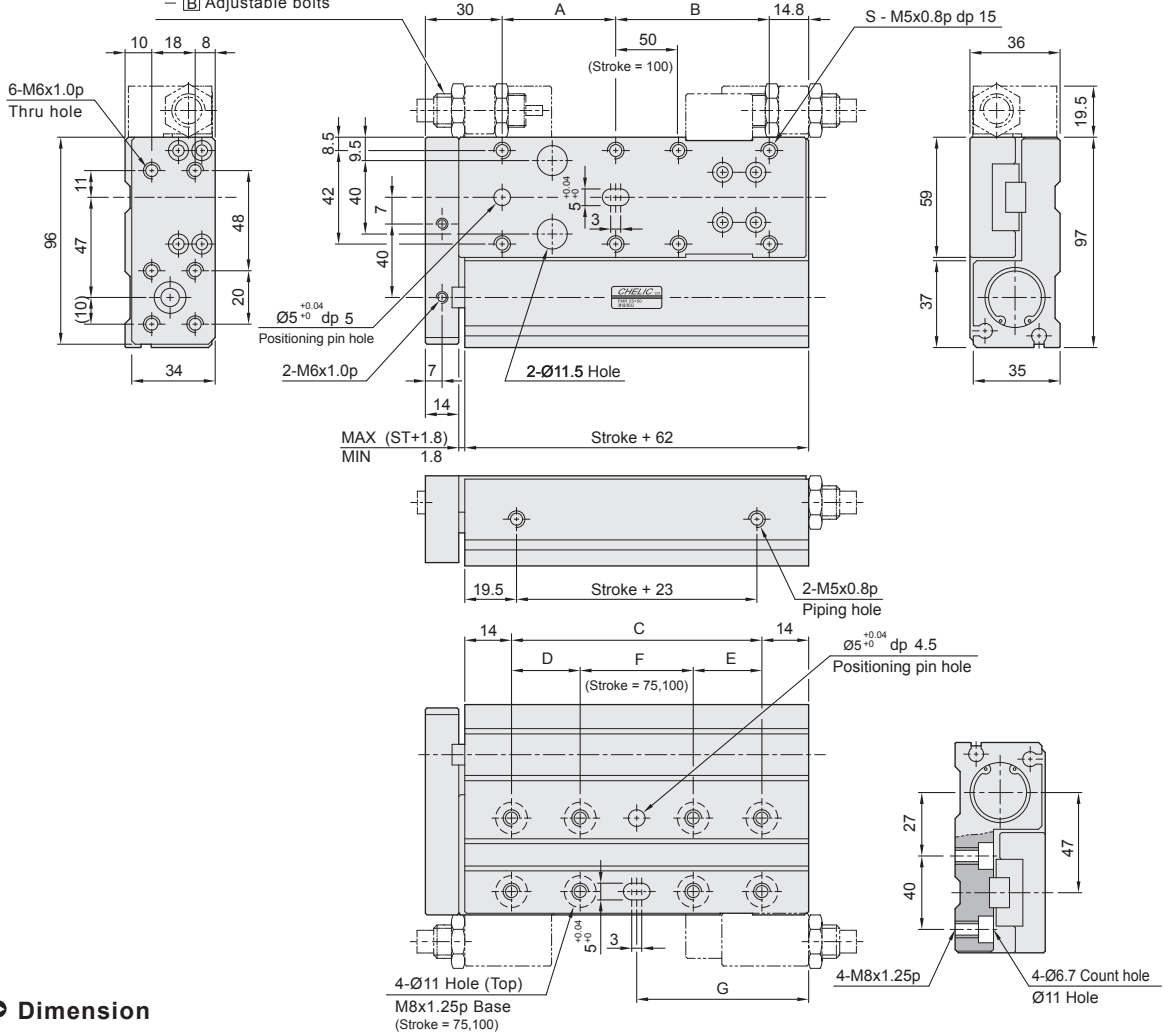
FMR(L) series - Slide table cylinder

External dimension - Ø25

CHELIC

◉ FMR(L) 25 ×

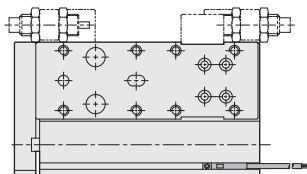
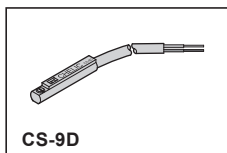
- A Shock absorber (Option)
- B Adjustable bolts

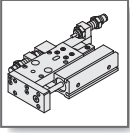


◉ Dimension

Code Stroke	A	B	C	D	E	F	G	S
30	32	31	64	-	-	-	46	6
50	50	33	84	-	-	-	56	6
75	50	58	109	32	32	45	68.5	6
100	50	83	134	32	32	70	81	8

◉ Sensor switch





FMR(L) series - Slide table cylinder

External dimension - Ø32

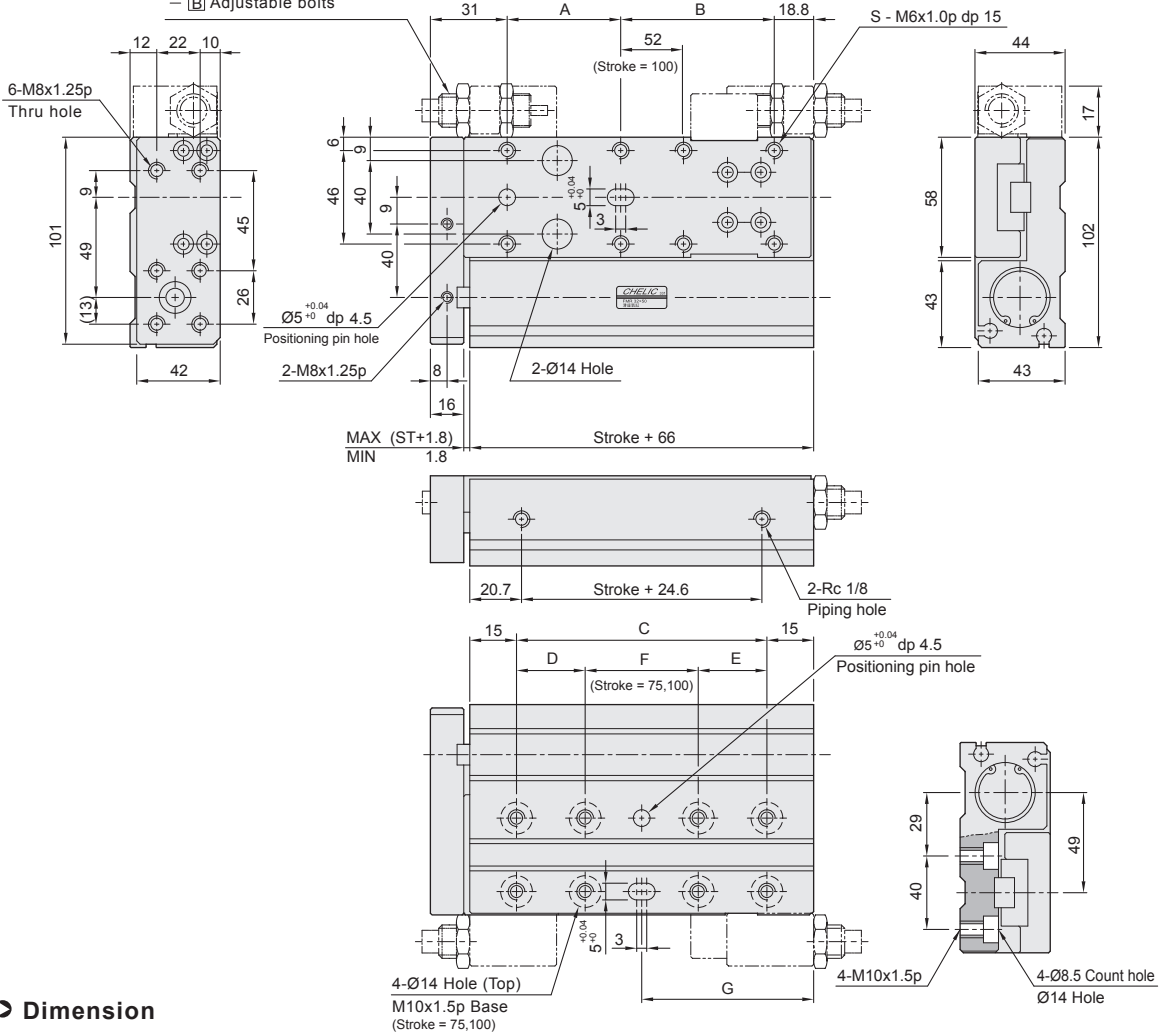
CHELIC

◉ FMR(L) 32 ×

- A Shock absorber (Option)
- B Adjustable bolts



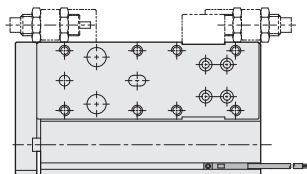
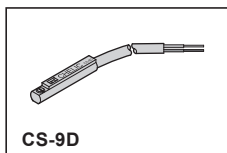
FMR(L) 32 × ST

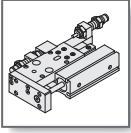


◉ Dimension

Code Stroke	A	B	C	D	E	F	G	S
30	32	32	66	-	-	-	48	6
50	52	32	86	-	-	-	58	6
75	52	57	111	26	26	59	70.5	6
100	52	82	136	36	36	64	83	8

◉ Sensor switch



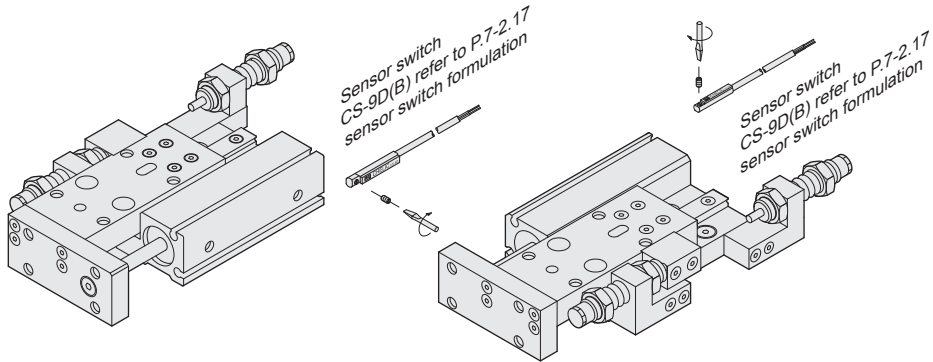


FMR(L) series - Slide table cylinder

Sensor switch installation • Setting

CHELIC

◉ Sensor switch mounting type



◉ Operating range

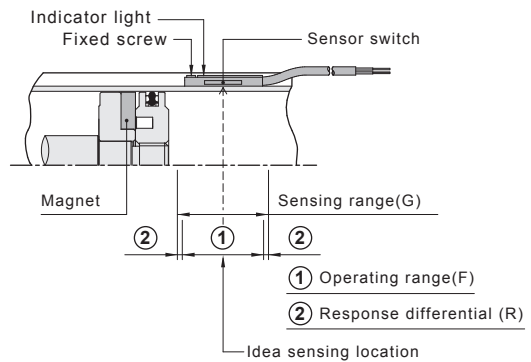
Sensor switch is fixed on the cylinder body. The magnetic piston head will activate the Sensor switch when it enters the operating range. It has 0.5mm differential.

◉ Setting range

When piston head moves the switch setting and adjustment will be based on the responding range generated by the magnetic field and the switch. (Please refer to the below table)

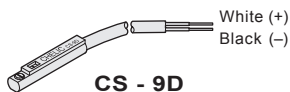
◉ Sensor setting and Operating range

● CS - 9D (B)



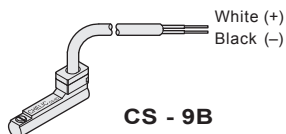
Model	CS-9D(B)	
Bore size	Operating range (F)	Response differential(R)
10	7 (3)	1
16	10 (7)	1
20	12 (9)	1
25	14 (12)	1
32	17 (14)	1.2

◉ Sensor switch introduction



CS - 9D

Voltage : DC 5 ~ 120 V
AC 5 ~ 120 V



CS - 9B

Voltage : DC 5 ~ 120 V
AC 5 ~ 120 V