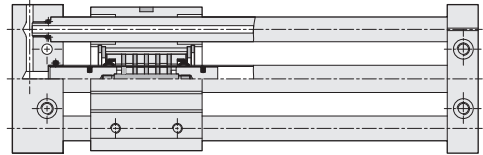


# MRU series ( Bushing type ) Magnetic rodless cylinder

Operating specification and Ordering expression **CHELIC PNEUMATIC**



## Internal structure



## Theoretical force

Unit : kgf

Bore size mm	Guide size mm	Action	Piston area cm <sup>2</sup>	Air pressure ( kgf / cm <sup>2</sup> )						
				1	2	3	4	5	6	7
Ø10	Ø10	Push	0.78	-	1.5	2.3	3.1	3.9	-	-
Ø15	Ø12	Push	1.76	-	3	5	7	8	10	-
Ø20	Ø16	Push	3.14	-	6	9	12	15	18	-
Ø25	Ø16	Push	4.90	-	9	14	19	24	29	-
Ø32	Ø20	Push	8.04	-	16	24	32	40	48	-
Ø40	Ø25	Push	12.5	-	25	38	50	63	75	-

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

## Specification

Item	Bore size (mm)	Ø10	Ø15	Ø20	Ø25	Ø32	Ø40
Operation		Double acting					
Fluid		Air					
Pressure range	kgf/cm <sup>2</sup> (kpa)	1.5 ~ 4.5 (150~450)		1.5 ~ 6.0 ( 150 ~ 600 )			
Max. service pressure	kgf/cm <sup>2</sup> (kpa)	5 (500)		6.5 ( 650 )			
Operating ambient temperature range	°C	0 ~ 60					
Range of service speed	mm / sec	50 ~ 500					
Lubrication		Free					
Stroke adjusting range		-10 ~ 0					
Port size		M5		PT 1/8"		PT1/4"	
Sensor device		With magnet					

## Standard stroke ( MRU series )

Unit : mm

Bore size	Stroke	Max. stroke
Ø10	100 · 200 · 250 · 300	500
Ø15	100 · 200 · 250 · 300 · 350 · 400 · 450 · 500	700
Ø20	200 · 250 · 300 · 350 · 400 · 450 · 500 · 600 · 700 · 800	1000
Ø25	200 · 250 · 300 · 350 · 400 · 450 · 500 · 600 · 700 · 800	1200
Ø32	200 · 250 · 300 · 350 · 400 · 450 · 500 · 600 · 700 · 800	1200
Ø40	200 · 250 · 300 · 350 · 400 · 450 · 500 · 600 · 700 · 800	1200

## Magnetic force ( N )

Bore size (mm)	Ø10	Ø15	Ø20	Ø25	Ø32	Ø40
Hold force	40	137	220	340	560	922
	-	81.4	154	221	358	569

## How to order

**MRU** × **15** × **100** - **H** - **SD 2** - **A 2**  
 Model      Bore size      Stroke      Magnetic force - Enhancer      Sensor switch      Shock absorber

Bush guide type MRU

Bore size: 10 - Ø10, 15 - Ø15, 20 - Ø20, 25 - Ø25, 32 - Ø32, 40 - Ø40  
 Stroke: Ø10 - 100 ~ 300, Ø15 - 100 ~ 500, Ø20 - 200 ~ 800, Ø25 - 200 ~ 800, Ø32 - 200 ~ 800, Ø40 - 200 ~ 800

Magnetic force - Enhancer: None : Standard  
 Sensor switch: CS-30F SF 2 (None: Without sensor switch, SF: Sensor switch code (CS-30F), 2: Number of sensor switch)  
 Shock absorber: CS-9D SD 2 (None: Without shock absorber, A: Shock absorber, 1 = 1 PCS, 2 = 2 PCS (Option))

## Shock absorber list (Option)

Bore size	Model	Max. absorber
Ø10	SAT-0806N	3 N·m
Ø15	SAT-0806N	3 N·m
Ø20	SAT-1007N	6 N·m
Ø25	SAT-1412N	20 N·m
Ø32	SAT-2015N	59 N·m
Ø40	SAT-2015N	59 N·m

MRU :  
Magnetic rodless  
cylinder

PRU  
Rodless  
Cylinder

PRF  
Rodless  
Cylinder

PRUT  
Rodless  
Cylinder

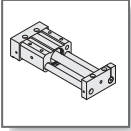
MRD  
Magnetic  
Rodless  
Cylinder

MRB  
Magnetic  
Rodless  
Cylinder

MRX  
Magnetic  
Rodless  
Cylinder

MRU  
Magnetic  
Rodless  
Cylinder

MRH  
Magnetic  
Rodless  
Cylinder

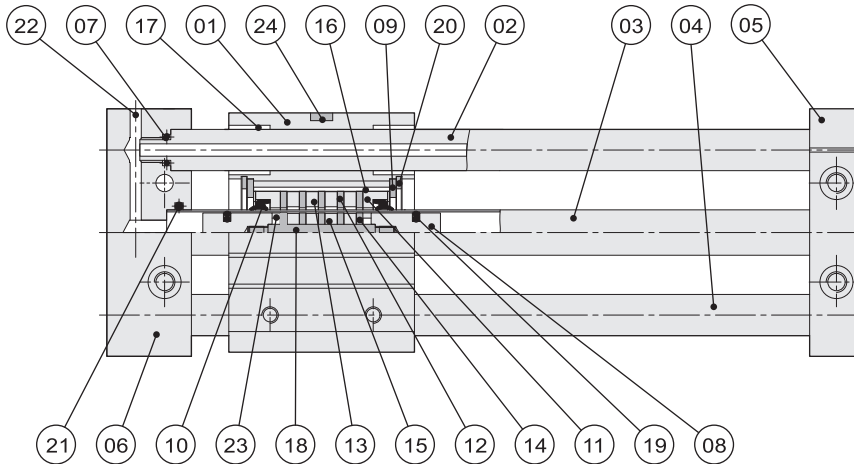


# MRU series ( Bushing type ) Magnetic rodless cylinder

## Components and Material list

CHELIC PNEUMATIC

### Internal structure



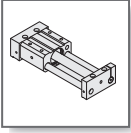
### Components and Material list

No.	Item	Material	No.	Item	Material
01	Body	Aluminum alloy	13	Magnet	Rare earth metals
02	Rod	Medium carbon steel	14	Inner yoke	Iron
03	Rod	Stainless steel	15	Piston magnetic	Rare earth metals
04	Rod	Medium carbon steel	16	Magnetic bush	Aluminum alloy
05	Front sliding block	Aluminum alloy	17	Bearing	Phosphor bronze
06	End sliding block	Aluminum alloy	18	Piston joiner	Stainless steel
07	O-Ring	NBR	19	Piston packing	NBR
08	Piston	Stainless steel	20	Snap	Alloy steel
09	Fix tab	Iron	21	O-Ring	NBR
10	Rod packing	NBR	22	Steel ball	Stainless steel
11	Rod packing base	POM	23	Wear ring	Teflon
12	Outer yoke	Iron	24	Magnet	Rare earth metals

### Packing and O-Ring list

Item Bore size <small>mm</small>	No.	Piston packing	Ventilate rod O-Ring	Rod packing	Rod O-Ring
		2	1	2	2
Ø 10		PPY – 10	Ø6.5 × Ø1.5	PDU – 11.5 x 16	Ø10.8 x Ø2
Ø 15		DYP – 15	Ø6.5 × Ø1.5	PDU – 17 x 22.4	Ø16 x Ø2
Ø 20		DYP – 20	Ø8 × Ø1.5	PDU – 21 x 28.3	Ø20.8 x Ø2
Ø 25		PPY – 25	Ø10 × Ø1.5	PDU – 26 x 34.4	Ø26 x Ø2
Ø 32		PPY – 32	Ø12 × Ø1.5	PDU – 33.2 x 45.4	Ø33 x Ø2
Ø 40		PPY – 40	Ø13.8 × Ø2	PDU – 48 x 51	Ø41 x Ø1.78

Note : Piston packing and rod packing all adopt imports. ( Mitsubishi, Sakagami and same grade )



# MRU series (Bushing type)

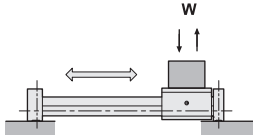
## Magnetic rodless cylinder

Design and Installation reference

CHELIC PNEUMATIC

### Load and Moment allowable

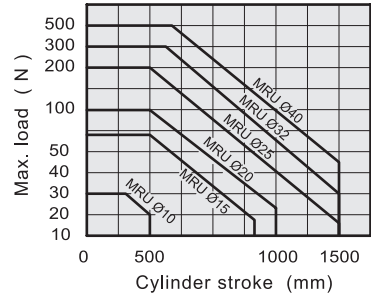
#### Horizontal load



Unit : N. [ kgf ]

Bore size (mm)	Horizontal load W
Ø10	27 [ 2.7 ]
Ø15	65 [ 6.5 ]
Ø20	112 [ 11.2 ]
Ø25	182 [ 18.2 ]
Ø32	290 [ 29.0 ]
Ø40	480 [ 48.0 ]

### Load and Stroke characteristic



**PRU**  
Rodless  
Cylinder

**PRF**  
Rodless  
Cylinder

**PRUT**  
Rodless  
Cylinder

### Load coefficient ( E ) : E < 1

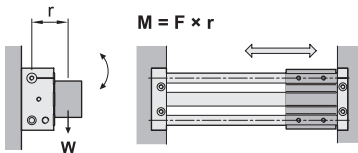
Bore size (mm)	Ø10	Ø15	Ø20	Ø25	Ø32	Ø40
Load coefficient (E) E < 1	$\frac{10^{(0.86-1.4 \times 10^{-3} \times ST)}}{3}$	$\frac{10^{(1.5-1.4 \times 10^{-3} \times ST)}}{7}$	$\frac{10^{(1.71-1.4 \times 10^{-3} \times ST)}}{12}$	$\frac{10^{(1.98-1.4 \times 10^{-3} \times ST)}}{20}$	$\frac{10^{(2.26-1.4 \times 10^{-3} \times ST)}}{30}$	$\frac{10^{(2.48-1.4 \times 10^{-3} \times ST)}}{50}$

**MRD**  
Magnetic  
Rodless  
Cylinder

**MRB**  
Magnetic  
Rodless  
Cylinder

**MRX**  
Magnetic  
Rodless  
Cylinder

#### Horizontal slide load

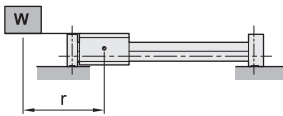


Bore size (mm)	Ø10	Ø15	Ø20	Ø25	Ø32	Ø40
Load allowable (W) kgf	$\frac{E \cdot 15}{12.9 + 2r}$	$\frac{E \cdot 40}{12.5 + 2r}$	$\frac{E \cdot 80}{13.5 + 2r}$	$\frac{E \cdot 150}{15.3 + 2r}$	$\frac{E \cdot 270}{18.2 + 2r}$	$\frac{E \cdot 535}{21.3 + 2r}$

**MRU**  
Magnetic  
Rodless  
Cylinder

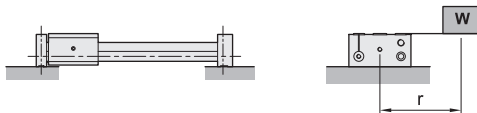
**MRH**  
Magnetic  
Rodless  
Cylinder

#### Load center offset in operating direction



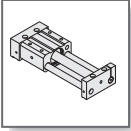
Bore size (mm)	Ø10	Ø15	Ø20	Ø25	Ø32	Ø40
Load allowable (W) kgf	$\frac{E \cdot 6}{4.65 + r}$	$\frac{E \cdot 19}{5.8 + r}$	$\frac{E \cdot 38}{6.5 + r}$	$\frac{E \cdot 65}{6.8 + r}$	$\frac{E \cdot 108}{7.3 + r}$	$\frac{E \cdot 206}{8.3 + r}$

#### Load center offset in operating direction



Bore size (mm)	Ø10	Ø15	Ø20
Load allowable (W) kgf	$\frac{E \cdot 9}{4.6 + r}$	$\frac{E \cdot 27}{5.7 + r}$	$\frac{E \cdot 55}{6.8 + r}$

Bore size (mm)	Ø25	Ø32	Ø40
Load allowable (W) kgf	$\frac{E \cdot 100}{7.2 + r}$	$\frac{E \cdot 185}{8.9 + r}$	$\frac{E \cdot 370}{10.5 + r}$

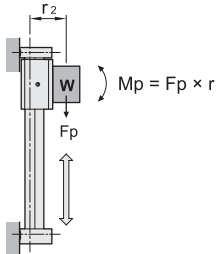


# MRU series ( Bushing type ) Magnetic rodless cylinder

Design and Installation reference

CHELIC PNEUMATIC

## Vertical load



Bore size (mm)	Ø10	Ø15	Ø20	Ø25	Ø32	Ø40
Load allowable (W) kgf	$\frac{E \cdot 5}{3.6 + r}$	$\frac{E \cdot 15}{3.65 + r}$	$\frac{E \cdot 29}{3.5 + r}$	$\frac{E \cdot 53}{5 + r}$	$\frac{E \cdot 97}{5 + r}$	$\frac{E \cdot 184}{6 + r}$

## Mounting type

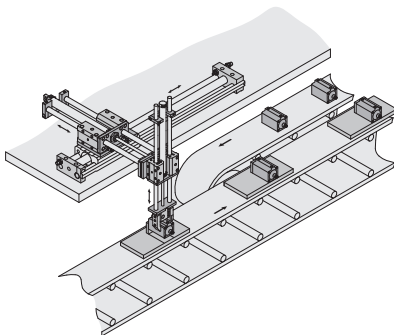
● Top mounting type



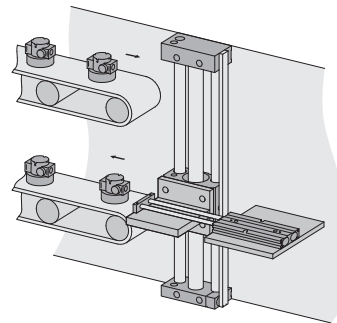
● Base mounting type



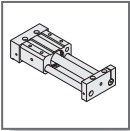
## Multi - purpose



● Transport operation



● Moving operation



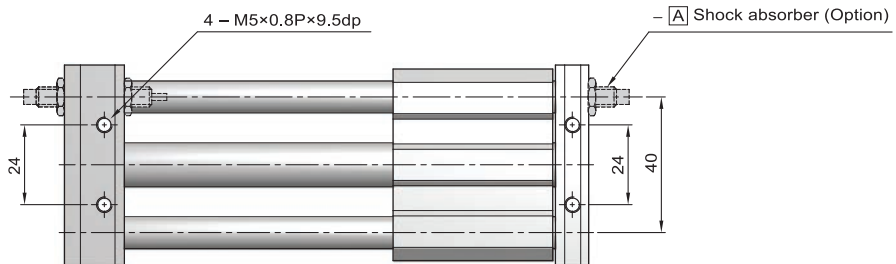
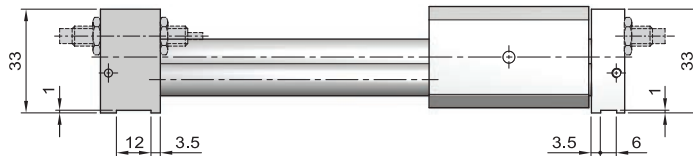
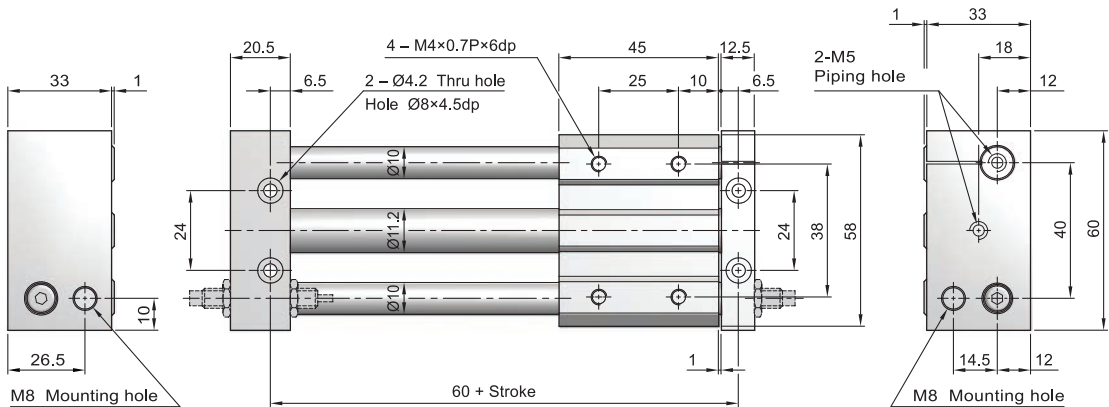
# MRU series ( Bushing type ) Magnetic rodless cylinder

External dimension -  $\varnothing 10$

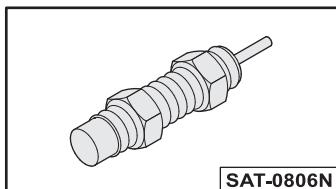
CHELIC PNEUMATIC

MRU  $\varnothing 10$  x

MRU  x  ST



Shock absorber (Option)



**PRU**  
Rodless  
Cylinder

**PRF**  
Rodless  
Cylinder

**PRUT**  
Rodless  
Cylinder

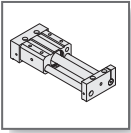
**MRD**  
Magnetic  
Rodless  
Cylinder

**MRB**  
Magnetic  
Rodless  
Cylinder

**MRX**  
Magnetic  
Rodless  
Cylinder

**MRU**  
Magnetic  
Rodless  
Cylinder

**MRH**  
Magnetic  
Rodless  
Cylinder

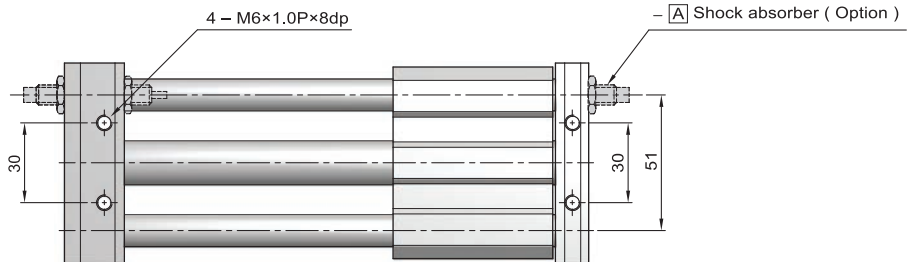
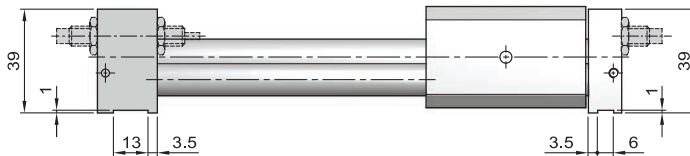
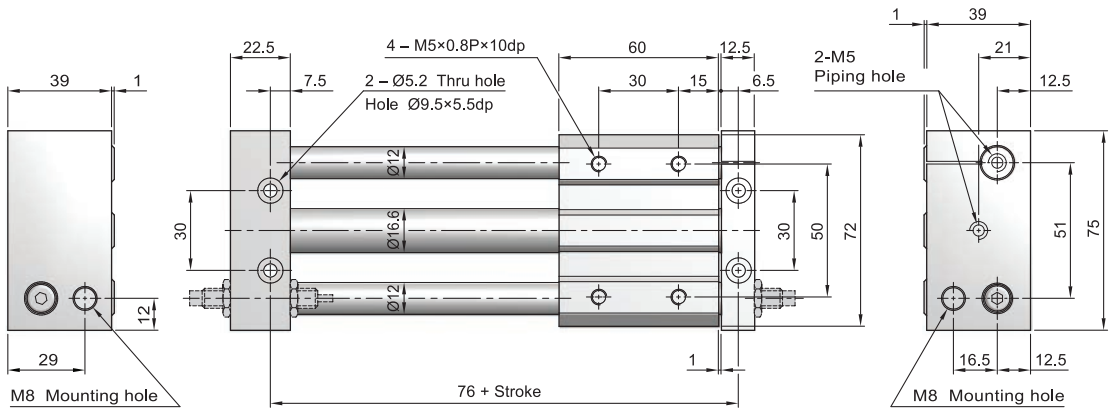


# MRU series ( Bushing type ) Magnetic rodless cylinder

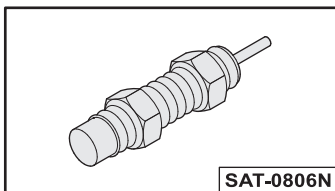
External dimension - Ø15

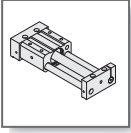
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MRU Ø15 x



Shock absorber ( Option )





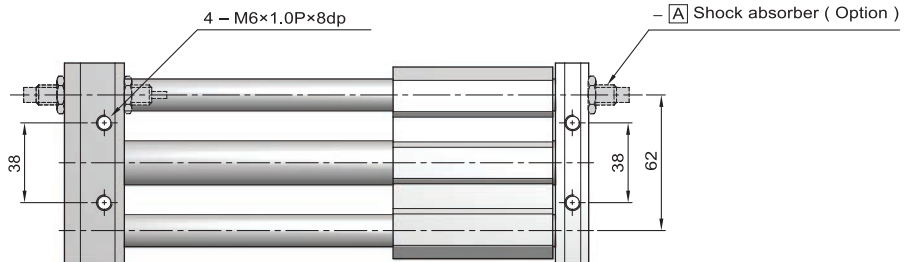
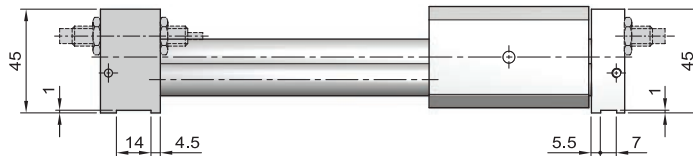
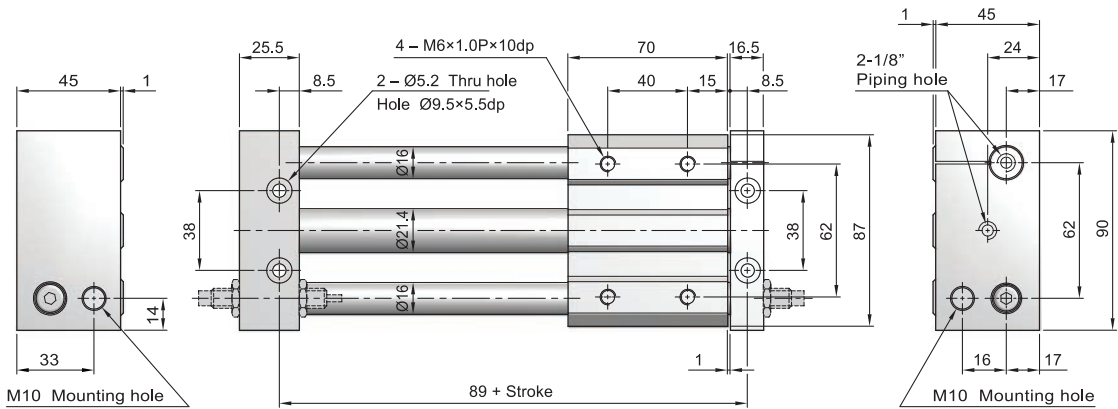
# MRU series ( Bushing type ) Magnetic rodless cylinder

External dimension - Ø20

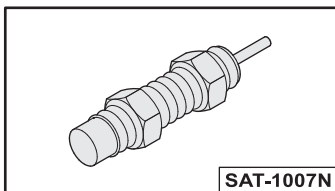
CHELIC PNEUMATIC

MRU Ø20 x

MRU  x  ST



Shock absorber ( Option )



**PRU**  
Rodless  
Cylinder

**PRF**  
Rodless  
Cylinder

**PRUT**  
Rodless  
Cylinder

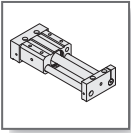
**MRD**  
Magnetic  
Rodless  
Cylinder

**MRB**  
Magnetic  
Rodless  
Cylinder

**MRX**  
Magnetic  
Rodless  
Cylinder

**MRU**  
Magnetic  
Rodless  
Cylinder

**MRH**  
Magnetic  
Rodless  
Cylinder

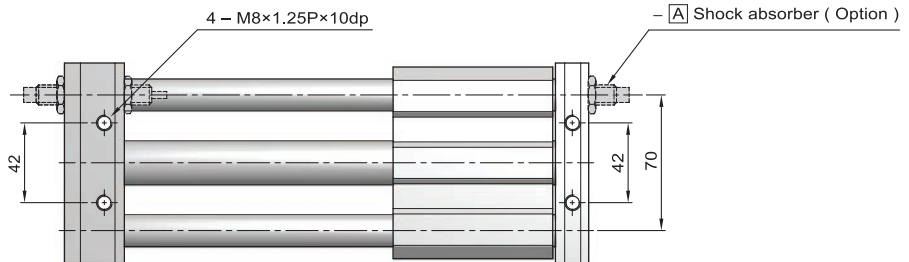
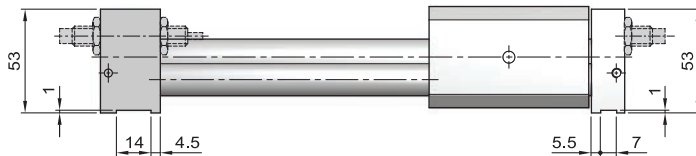
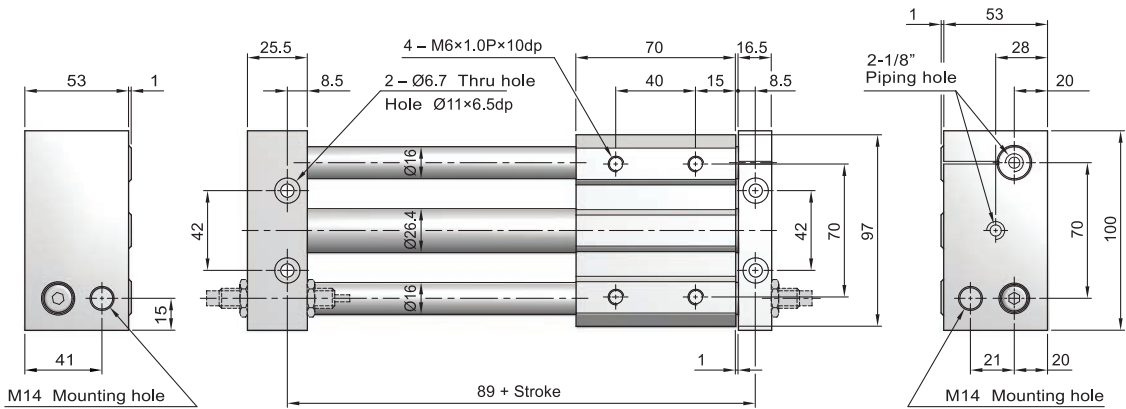


# MRU series ( Bushing type ) Magnetic rodless cylinder

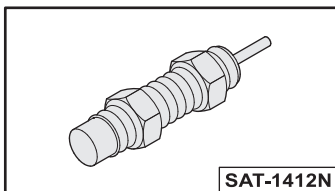
External dimension - Ø25

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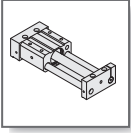
MRU Ø25 x



Shock absorber ( Option )





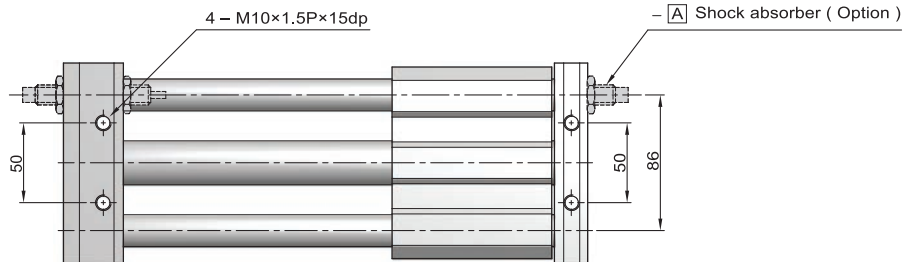
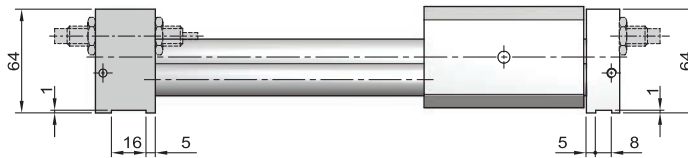
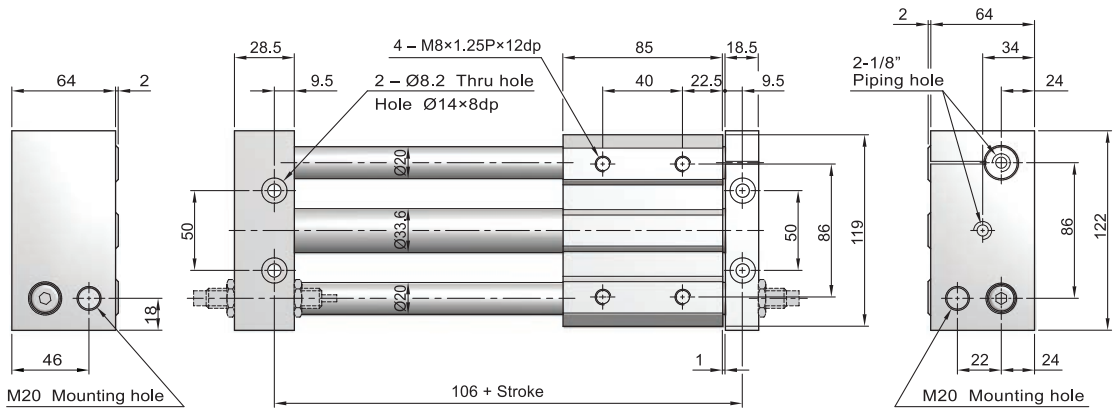


# MRU series ( Bushing type ) Magnetic rodless cylinder

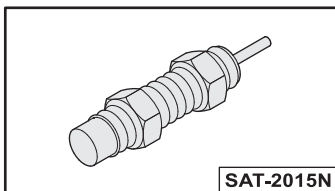
External dimension - Ø32

CHELIC PNEUMATIC

MRU Ø32 x



Shock absorber ( Option )



**PRU**  
Rodless  
Cylinder

**PRF**  
Rodless  
Cylinder

**PRUT**  
Rodless  
Cylinder

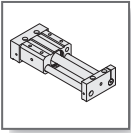
**MRD**  
Magnetic  
Rodless  
Cylinder

**MRB**  
Magnetic  
Rodless  
Cylinder

**MRX**  
Magnetic  
Rodless  
Cylinder

**MRU**  
Magnetic  
Rodless  
Cylinder

**MRH**  
Magnetic  
Rodless  
Cylinder

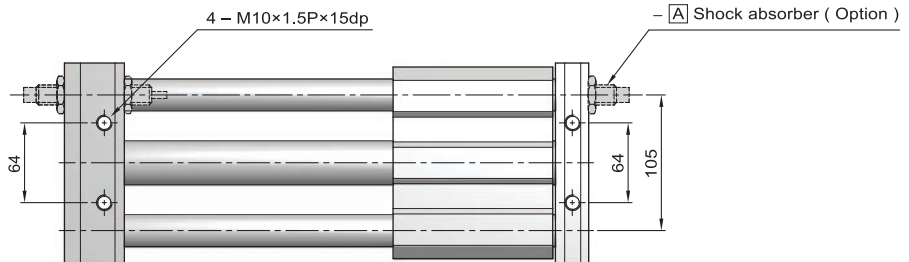
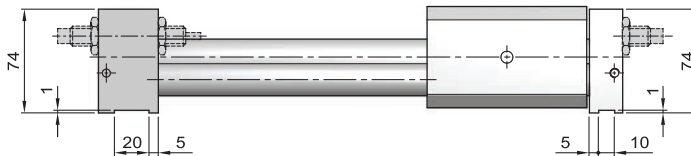
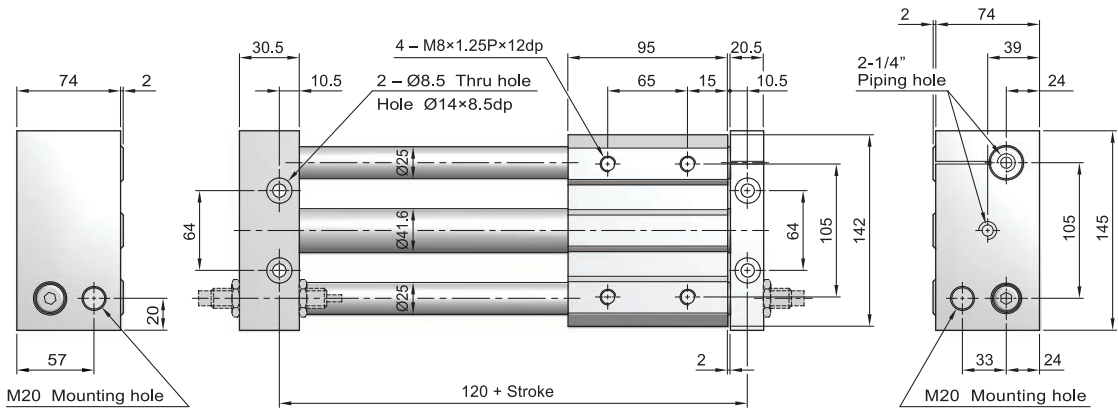


# MRU series ( Bushing type ) Magnetic rodless cylinder

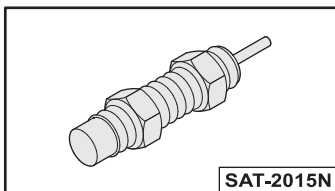
External dimension - Ø40

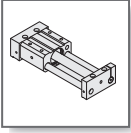
CHELIC PNEUMATIC

MRU Ø40 x



Shock absorber ( Option )





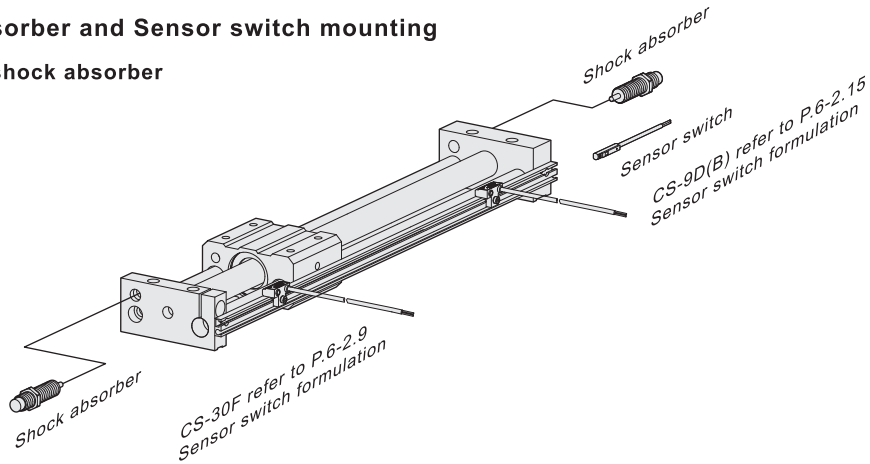
# MRU series ( Bushing type ) Magnetic rodless cylinder

Sensor switch installation and Sensing setting

CHELIC PNEUMATIC

## Shock absorber and Sensor switch mounting

– **A** With shock absorber



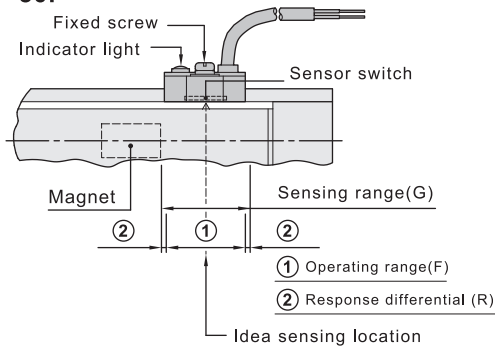
**PRU**  
Rodless  
Cylinder

**PRF**  
Rodless  
Cylinder

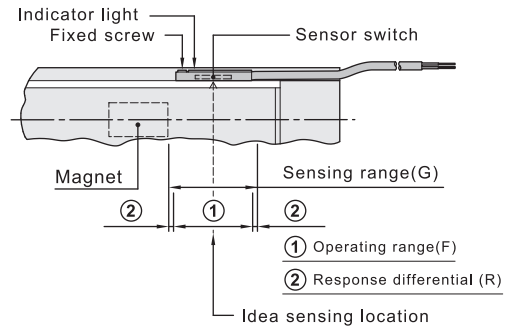
**PRUT**  
Rodless  
Cylinder

## Sensor switch setting and Operating range

### CS-30F



### CS-9D(B)



**MRD**  
Magnetic  
Rodless  
Cylinder

**MRB**  
Magnetic  
Rodless  
Cylinder

**MRX**  
Magnetic  
Rodless  
Cylinder

**MRU**  
Magnetic  
Rodless  
Cylinder

**MRH**  
Magnetic  
Rodless  
Cylinder

## Sensing 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.

## Operating 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)

Model	CS-30F		CS-9D(B)	
	Operating range (F)	Response differential(R)	Operating range (F)	Response differential(R)
Ø10	10	1	8	1
Ø15	10	1	8	1
Ø20	9	1.2	8	1.2
Ø25	13	1.2	11	1.2
Ø32	10.5	1.5	9	1.5
Ø40	10.5	1.5	9	1.5

## Connector type

