Clamp Cylinders

Overview

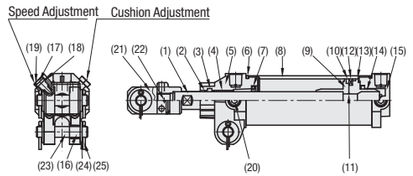
MISUMI's clamp cylinders are equipped with crevices having concaved knuckles. They are specialized clamping cylinders.

Quick Delivery: Quick delivery is available for the three off-the-shelf strokes.

Light Weight: The optimized shape of the cover has trimmed and streamlined the products.

Safety: The compact cylinders each houses a speed controller, a cushion and a needle. This obtains both easy adjustments and increased safety thanks to the needle projecting in the shortest possible length.

Basic Structure of Clamp Cylinder



Number	Name	Material	Surface Treatment	Number	Name	Material	Surface Treatment
1	Piston Rod	Steel	Chrome Plating	14	Piston*	Aluminum Alloy Die Casting	
2	Metal Scraper	Copper Alloy		15	Head Cover	Aluminum Alloy Die Casting	Chromate
3	Rod Gasket	Nitrile Rubber		16	Bushing for Crevice	Steel, Copper	
4	Bushing	Copper Alloy		17	Needle	Copper Alloy	
5	Rod Cover	Aluminum Alloy Die Casting	Chromate	18	Body Gasket	Nitrile Rubber	
6	Cylinder Gasket	Nitrile Rubber		19	Hexagon Nut	Steel	Chromate
7	Cushion Gasket	Urethane Rubber, Copper	Chromate	20	Hexagon Socket Plug	Steel	Black Oxide
8	Cylinder Tube	Aluminum Alloy	Hard Anodize Treatment	21	Concaved Knuckle	Cast Iron	Manganese Phosphate Coating
9	Piston*	Aluminum Alloy Die Casting		22	Spring Pin	Steel	Black Oxide
10	Piston Gasket	Nitrile Rubber		23	Pivot Pin	Steel	Black Oxide
11	Piston Gasket	Nitrile Rubber		24	Flat Washer	Steel	Chromate
12	Magnet	Plastic		25	Split Pin	Steel	Chromate
13	Wear ring	Polyacetal					

*Material: Aluminum Alloy for Ø40 only.

Basic Specifications of Clamp Cylinders

Tube Inner Diameter (mm)	40	50	63
Operating Type	Double Acting		
Permissible Fluid	Compressed Air		
Max. Operating Pressure (MPa)	1.0		
Min. Operating Pressure (MPa)	0.1		
Guaranteed Withstand Pressure	1.6		
Operating Temp. Range (°C)	5–60		
Connection Diameter	Rc1/4		
Standard Stroke	75 / 100 / 125		
Piston Speed (mm/s)	50–500	50–400	50–300
Cushion Mechanism	Air Cushion on Head Side		
Effective Cushion Length(mm)	13.5		
Lubrication	N/A		
Support Type	Concaved Crevices		

*Use the clamp cylinders within absorbed energy (Refer to the Cushion Characteristic Chart below).

Stroke

Tube Inner Dia. (mm)	St Stroke			Max. Stroke (mm)	Min. Stroke (mm)	Min. Stroke with Sensor (mm)
Ø40	75	100	125	125	75	75
Ø50						
Ø63						

Cushion Characteristic Chart

Tube Inner Dia. (mm)	Effective Cushion Length(mm)	Allowable Energy (J)	
		w/ Cushion	w/o Cushion
Ø40	13.5	5.14	0.137
Ø50		6.41	0.137
Ø63		11.37	0.205

Cushion

The cushion mechanism is provided in order to prevent the piston from hitting the cover at the stroke end, by absorbing kinetic energy owned by the piston through air compressibility. Thus the cushion does not actuate the piston at low velocity near the stroke end. The above chart refers to kinetic energy that can be absorbed by the cushion. Consider using separate buffer equipment if the kinetic energy exceeds these values, or if bounces from air compressibility should be avoided.

Kinetic Energy (J) = 1/2 x Mass (kg) x = {Velocity (m/s)}^{2}

Cylinder Mass (Unit: kg)

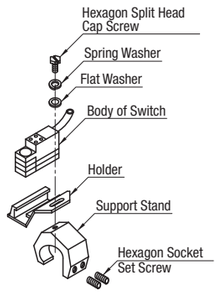
Tube Inner Dia. (mm)	Stroke=0mm Product Mass	Stroke=100mm Added Mass	Concaved Knuckle Joints
Ø40	0.75	0.34	0.37
Ø50	0.82	0.36	
Ø63	1.03	0.39	

(Ex.)
MCCLA40-75 Product Mass
– Stroke = Product Mass at 0 mm/h ····· 0.75 kg
– Stroke = Added Mass at 75 mm/h ····· 0.34 x 75 / 100 = 0.255 kg
– Included Accessories' Mass (Concaved Knuckle Joints) 0.37 kg
– Product Mass ····· 0.75 + 0.255 + 0.37 = 1.375 kg

Specifications

Item	Contact Point 2 Wire Type MT10 MTV10		No Contact 2 Wire Type MT12 MTV12	Contact 3 Wire Type MT13
Purpose	For PLC and Relays		For PLC (dedicated)	For PLC and Relays
Output Method	—			NPN Output
Power supply voltage				DC10–28V
Load Voltage	DC12/24V	AC110V	DC10–30V	DC30V or less
Load Current	5–50 mA	7–20 mA	*5–20 mA	100 mA or less
Current consumption	—		—	DC24V 10 mA or less
Internal Voltage Drop	3V or less		4V or less	0.5 V or less
Lamp	LED (Lights when ON)			
Leakage Current	0mA		1 mA or less	10 μA or less
	1m (Oil Resistant Vynil Cab Tyer Cord 2 Conductors 0.2 mm^2)			
Maximum Impact	294 m/s^2		980 m/s^2	
Insulation Resistance	20MΩ or more at 500V, with a High Resistance Value Meter			
Dielectric Strength Voltage	No anomaly to be recognized after AC1000V applied for 1 minute			
Ambient Temperature	-10–+60°C			
Protective Structure	IEC Standards IP67 / JIS C0920 (Water-Resistant) / Oil-Proof			
Mass	1 m: 20 g 3 m: 50 g			
Circuit	Brown line [+] Blue line [-]		Brown line [+] Blue line [-]	Brown Wire [Power Supply+] Black line [Output] Blue line [Power Supply -]

*The values of the maximum load current 20 mA is for 25°C 20 mA less when used in ambient temp. 25°C or higher. (5–10 mA when 60°C)



How to Mount

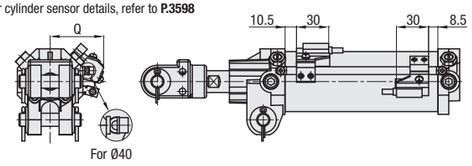
(1) Pass a hexagon split head cap screw through a spring washer and a flat washer before setting up a holder.
(2) Fit a mounting bracket in the tie rod of a cylinder, and then tightenthe hexagon split head cap screw with a tightening torque of 0.5–0.7 N · m.
(3) Finally, tighten the hexagon socket head cap screws with a tightening torque of 1.7–2.0 N · m.

Tuning

(1) Fine-Tuning
Loosen the hexagon split head cap screw and move only the sensor body before tightening at torque of 0.5–0.7 N · m.
(2) Coarse-Tuning
Loosen the hexagon split head cap screw and the set screws, and move the cylinder to a predetermined position before tightening at torque of 0.5–0.7 N · m. Finally, tighten the set screws at torque of 1.7–2.0 N · m.

Dimensions for Cylinder Sensor Mounting

For cylinder sensor details, refer to **P.3598**



Tube Inner Dia.	Q
Ø40	46
Ø50	50
Ø63	56

Note the rotating direction in mounting a tie rod.

Precautions

*Be sure to read the precautions in "Compact Air Cylinders – Overview" on **P.3585**

DANGER: A clearly dangerous state. Unless avoided, death or serious injuries might be caused.

CAUTION: A potentially dangerous state depending on usage. Unless avoided, death or injuries might be caused.

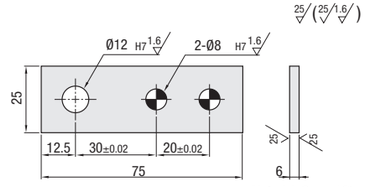
NOTE: A potentially dangerous state depending on usage. Unless avoided, low-grade to moderate injuries might be caused, or property might be damaged.

Hinge Plates / Economy Type

Hinge Plates

RoHS10

HPAN



Material: General Structural Steel

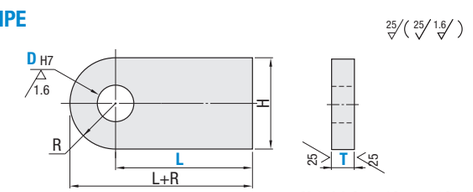
Part Number Example

Part Number
HPAN

Economy Type

RoHS10

HPE



Material: General Structural Steel

Part Number Type	D	L 10 mm Increment	T Selection	R	H
HPE	8	40–100	9 12 15 16	11	22
	10			12.5	25
	12			16	32
	16			19	38
	20			25	50

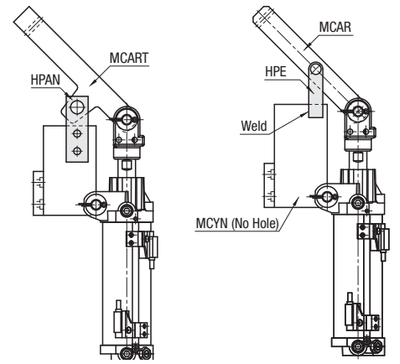
Part Number Example

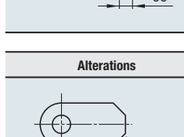
Part Number	-	L	-	T
HPE12	-	100	-	16

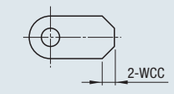
Part Number Alterations

Part Number	-	L	-	T	-	(CC / WCC)
HPE12	-	100	-	16	-	WCC10

Application Example



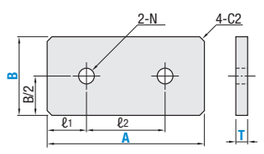
Alterations	Code	Spec.
	CC	The corner on one side can be cut in any given length. CC = 1 mm Increment 1≤CC<H/2 Available for HPE type only.

Alterations	Code	Spec.
	WCC	The corners on both sides can be cut in any given length. WCC = 1 mm Increment 1≤WCC<H/2 Available for HPE type only

Economy Type

RoHS10

Type	Material	Surface Treatment
JNPB	Low Carbon Steel	Trivalent Bright Chromate
JNPS	304 Stainless Steel	—



Part Number Type	A	B					T JNPB	T JNPS	ℓ1	ℓ2	N
JNPB JNPS	30	10	20				2.0 4.5	2.0 4.0	5	20	4.5
	40	10	20	30						30	
	50	10	20	30	40				10	30	
	60	10	20	30	40	50				40	
	70	10	20	30	40	50				50	5.5
	80	10	20	30	40	50				60	
	90	10	20	30	40	50			15	60	
	100	10	20	30	40	50				70	

Part Number Example

Part Number	-	B	-	T
JNPB50	-	30	-	2.0