CKD

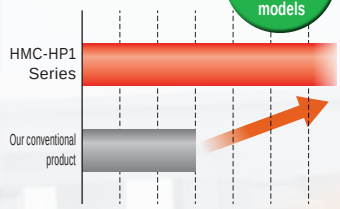
New Products

Wide Parallel Hand
HMC-HP1 Series

Changing "grippers" changes manufacturing

Long service life

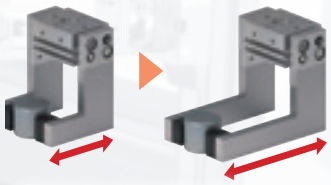
2x or more conventional models



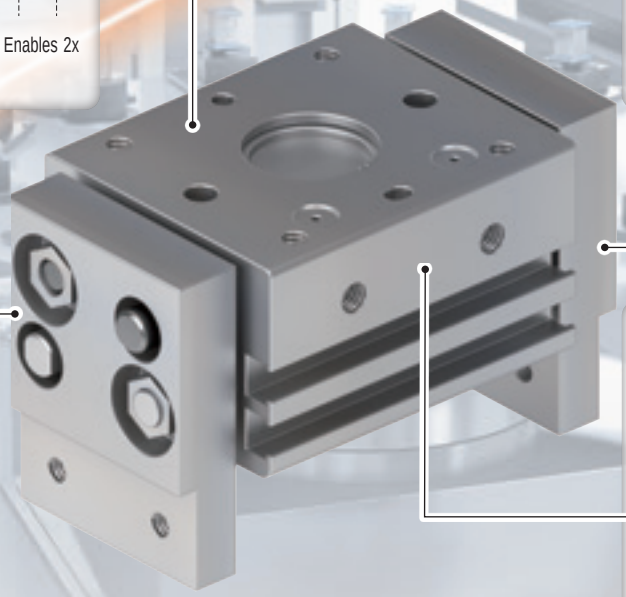
Highly advanced sliding technology. Enables 2x the durability of conventional models.

High rigidity

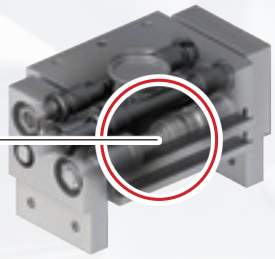
1.3x or more conventional models



Redesigned guide with improved rigidity.



High gripping force



Double piston structure adopted. Compact and realizes high gripping force.

Abundant stroke

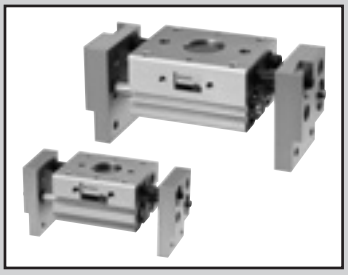
Stroke type	Stroke (mm)					
	ø10	ø16	ø20	ø25	ø32	ø40
Short	20	30	40	50	70	100
Middle	40	60	80	100	120	160
Long	60	80	100	120	160	200

HP
HIGH PRODUCTIVITY

Green Power

CKD Corporation

CC-1580A



Wide parallel hand (standard/long stroke)

HMC-HP1 Series

● Operating stroke: Short stroke: 20, 30, 40, 50, 70, 100mm
Middle stroke: 40, 60, 80, 100, 120, 160mm
Long stroke: 60, 80, 100, 120, 160, 200mm

Double acting

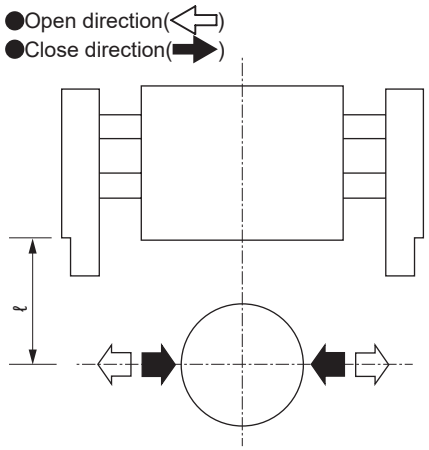
RoHS CAD

Specifications

Item	HMC-10			HMC-16			HMC-20			HMC-25			HMC-32			HMC-40		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Bore size mm	ø10×2			ø16 x 2			ø20 x 2			ø25 x 2			ø32 x 2			ø40x2		
Actuation	Double acting																	
Working fluid	Compressed air																	
Max. working pressure MPa	0.6																	
Min. working pressure MPa	0.15			0.1														
Ambient temperature °C	-10 to 60 (no freezing)																	
Port size	M5												Rc1/8					
Operating stroke mm	20	40	60	30	60	80	40	80	100	50	100	120	70	120	160	100	160	200
Rod diameter mm	ø6			ø8			ø10			ø12			ø16			ø20		
Volumetric capacity (reciprocating) cm^3	2.0	4.0	6.0	9.0	18.1	24.1	18.8	37.7	47.1	37.8	75.6	90.7	84.4	145	193	188	302	377
Repeatability mm	±0.1																	
Weight kg	0.28	0.39	0.45	0.53	0.74	0.85	0.98	1.3	1.5	1.6	2.2	3.5	2.9	3.8	4.5	5.3	6.9	8.2
Lubrication	Not required																	

Gripping force

• Gripping force is the thrust (one finger) in the direction of the arrow shown in the figure.



Unit: N

Bore size (mm)	Double acting
ø10	14
ø16	45
ø20	74
ø25	131
ø32	228
ø40	396

*Supply pressure 0.5MPa,ℓ = 40mm (ø10, 16, 20, 25), 80 mm (ø32, 40), value in stroke center

Switch specifications

Item	Proximity 2-wire	Proximity 3-wire
	T2H/V	T3H/V
Applications	Dedicated for programmable controller	For programmable controller, relay
Output method	—	NPN output
Power supply voltage	—	10 to 28 VDC
Load voltage/current	10 to 30 VDC, 5 to 20mA (*1)	30 VDC or less, 100 mA or less
Display lamp	Red LED (Lit when ON)	
Leakage current	1 mA or less	10 μA or less
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g	

*1: The above max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

How to order

Without switch (built-in magnet for switch)

HMC - 32 A ——— HP1

With switch (built-in magnet for switch)

HMC - 32 A - T2H - R - HP1

Ⓐ Bore size (mm)

Ⓑ Stroke

Ⓒ Switch model No.

Ⓓ Switch quantity

Code	Description
Ⓐ Bore size (mm)	
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40

Ⓑ Stroke length	
A	Short stroke
B	Middle stroke
C	Long stroke

Ⓒ Switch model No.

Lead wire Straight type	Lead wire L-shaped type	Contact	Voltage AC	Voltage DC	Display	Lead wire
T2H*	**T2V***	Proximity		●	1-color display	2-wire
T3H*	**T3V***			●		3-wire

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓓ Switch quantity	
R	1 on open side
H	1 on closed side
D	2

[Example of model No.]

HMC-32A-T2H-R-HP1

Ⓐ Bore size (mm) : ø32
Ⓑ Strokes : short
Ⓒ Switch model No. : Proximity T2H switch, lead wire 1 m
Ⓓ Switch quantity : 1 on open side

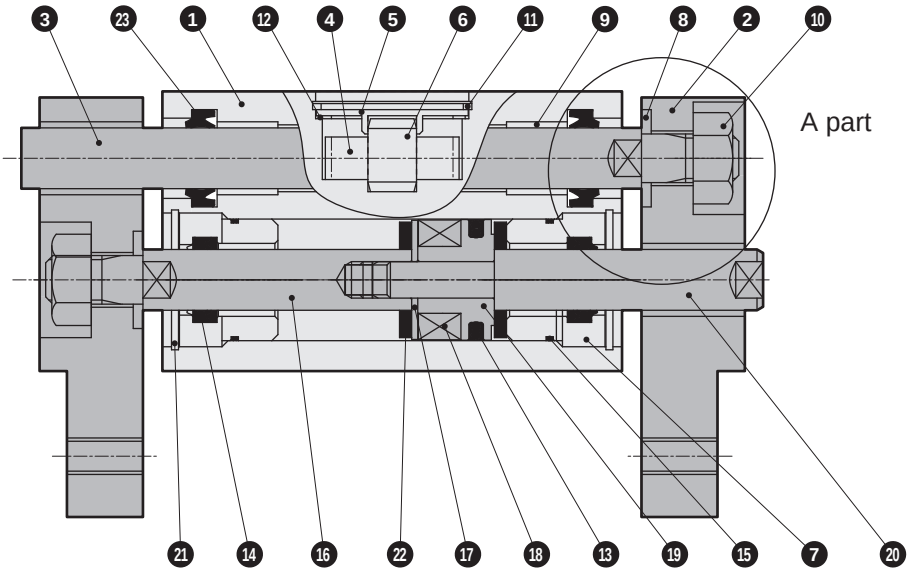
How to order switch

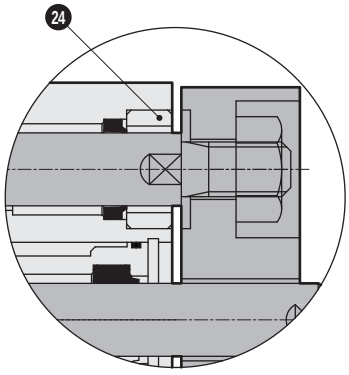
SW - T2H

Switch model No.
(Item Ⓒ above)

Internal structure and parts list

● HMC-10 to 40-HP1





ø10, 16 A part details

Parts list

Part No.	Part name	Material	Remarks	Part No.	Part name	Material	Remarks
1	Body	Aluminum alloy	Hard alumite	13	Piston packing	Nitrile rubber	
2	Finger	Aluminum alloy	Hard alumite	14	Rod packing	Nitrile rubber	
3	Rack	Steel alloy		15	Gasket	Nitrile rubber	
4	Pinion	Steel alloy		16	Piston rod A	Stainless steel	
5	Pinion cover	Stainless steel		17	Spacer	Aluminum alloy	Chromate
6	Pinion shaft	Stainless steel		18	Magnet	-	
7	Rod metal A	Aluminum alloy	Chromate	19	Piston	Aluminum alloy	Chromate
8	Washer	Steel	ø10 to 25 only	20	Piston rod B	Stainless steel	
9	Bearing	Oiles drymet		21	Round R type snap ring	Steel	
10	Hexagon nut	Steel		22	Cushion rubber	Urethane rubber	
11	C-snap ring	Stainless steel (*1)		23	Scraper	Nitrile rubber	
12	Wave washer	Steel for spring	Phosphate coating	24	Rod metal B	Stainless steel	ø10, ø16 only

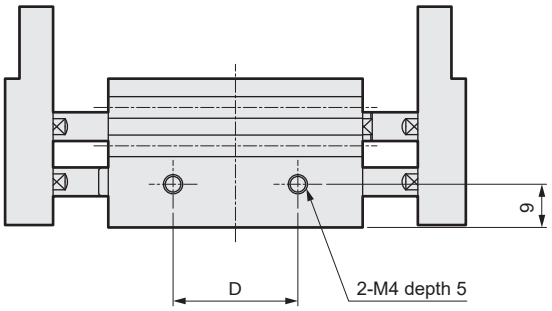
*1: Only ø20 is steel.

Consumable parts list

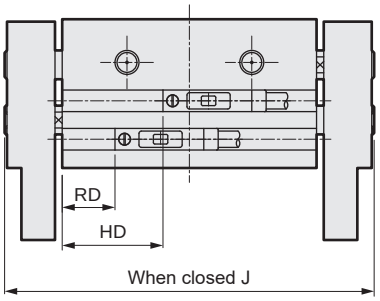
Bore size (mm)	Kit No.	Consumable parts No.
ø10	HMC-10K-HP1	13 14 15 22 23
ø16	HMC-16K-HP1	
ø20	HMC-20K-HP1	
ø25	HMC-25K-HP1	
ø32	HMC-32K-HP1	
ø40	HMC-40K-HP1	

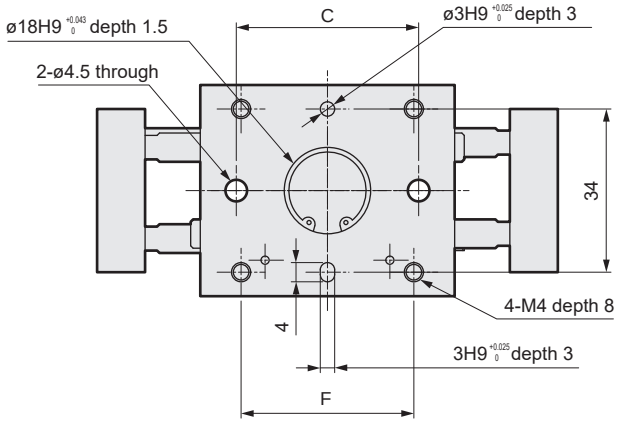
Dimensions (bore size: ø10)

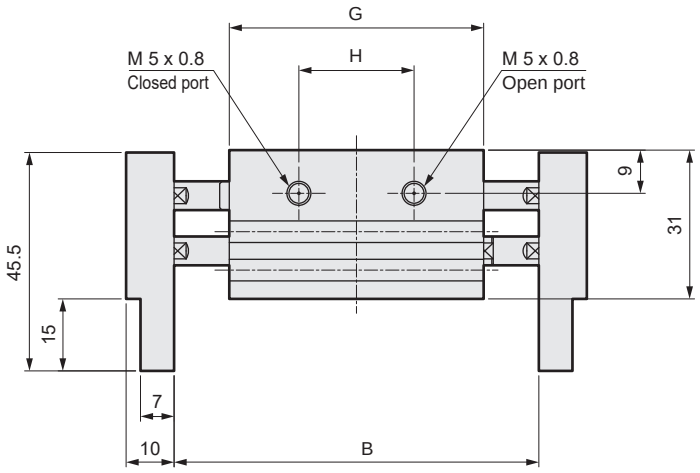
● HMC-10*-HP1

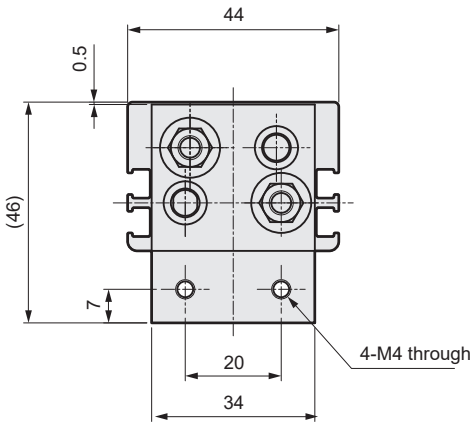


● With switch





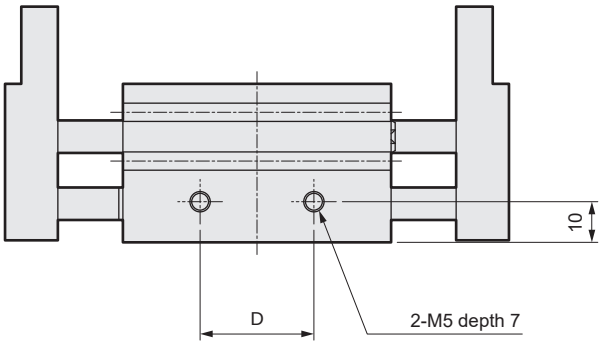




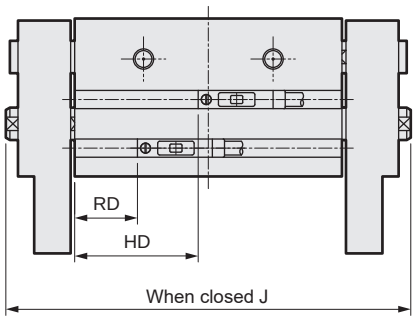
Model No.	B		C	D	F	G	H	J	RD	HD
	MAX	MIN								
HMC-10A	76	56	38	26	36	53	26	79	11	21
HMC-10B	118	78	54	42	52	71	40	115	15	35
HMC-10C	156	96	72	60	70	81	50	145	15	45

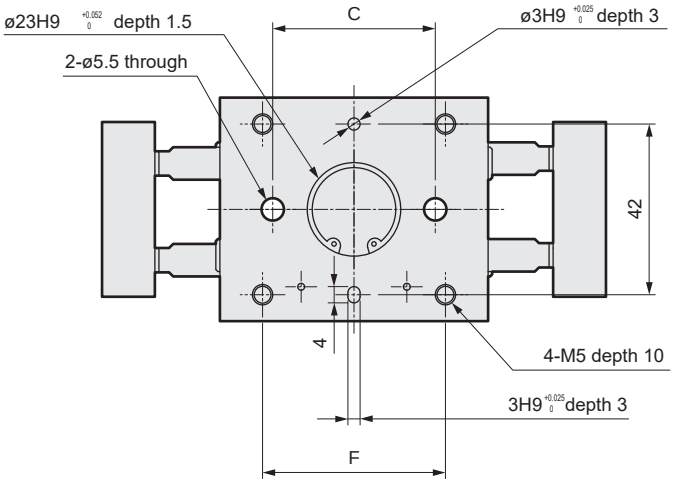
Dimensions (bore size: ø16)

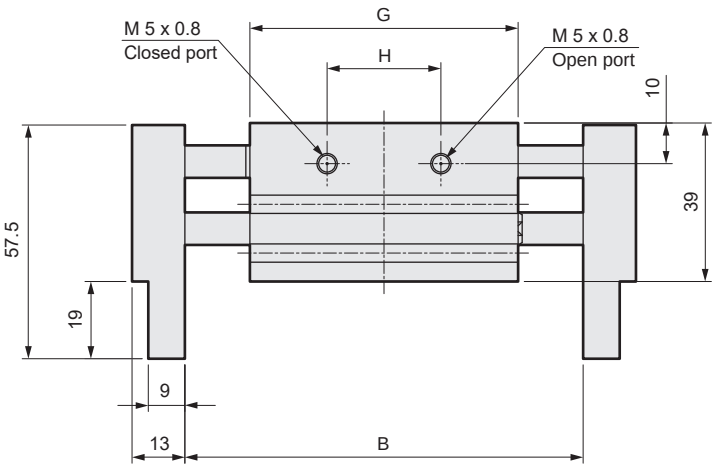
● HMC-16*-HP1

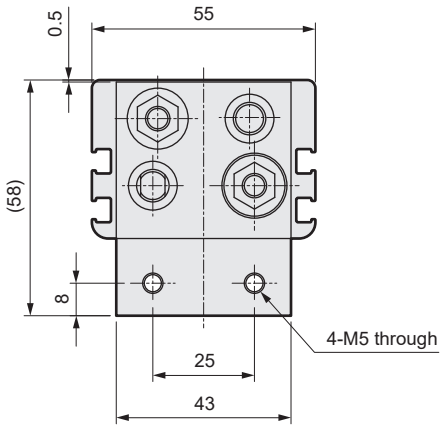


● With switch





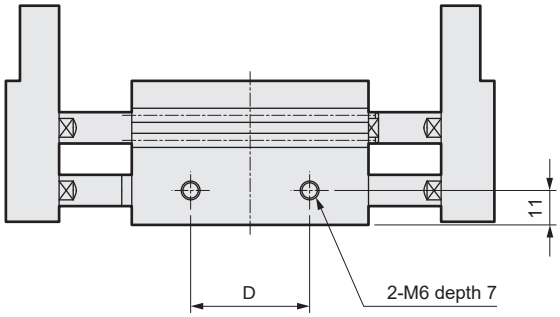




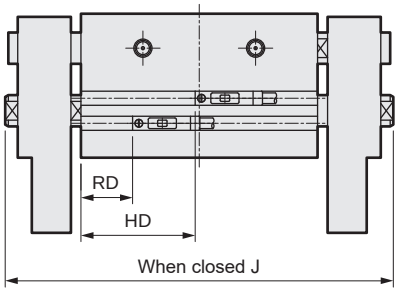
Model No.	B		C	D	F	G	H	J	RD	HD
	MAX	MIN								
HMC-16A	98	68	40	28	45	66	32	100	15.5	30.5
HMC-16B	170	110	70	58	75	95	60	159	22.5	52.5
HMC-16C	210	130	90	78	95	105	70	189	22.5	62.5

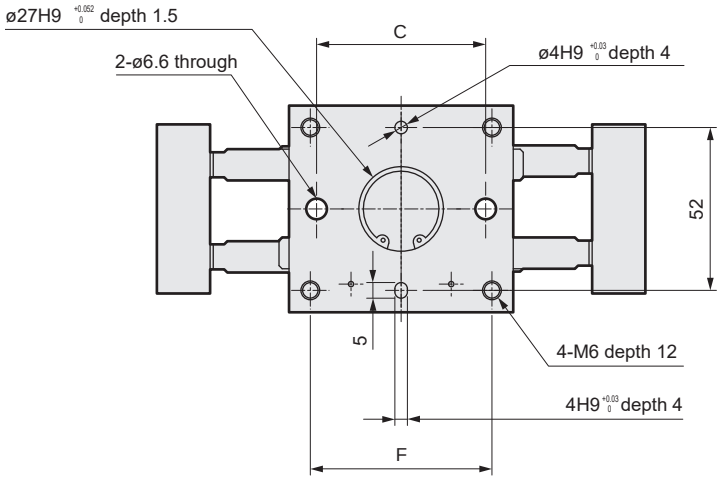
Dimensions (bore size: ø20)

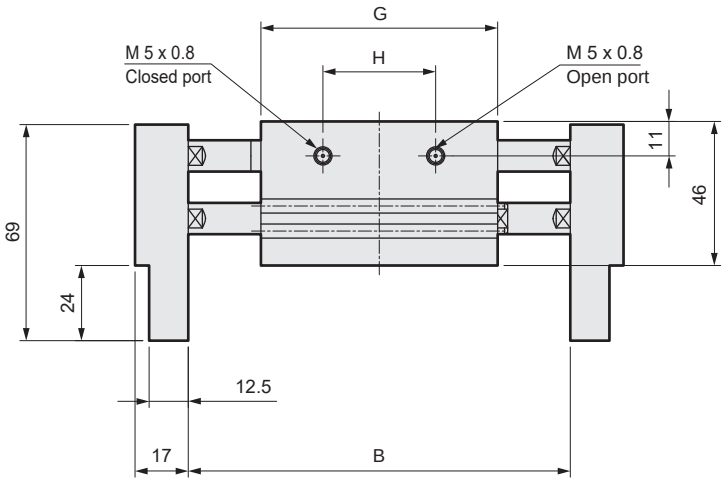
● HMC-20*-HP1

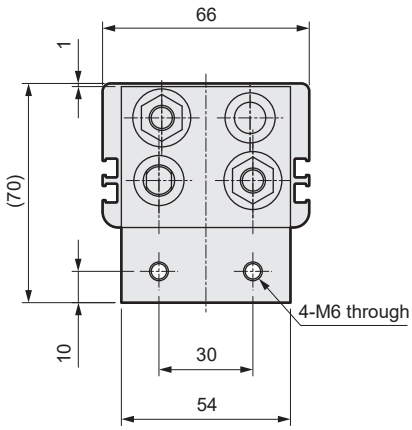


● With switch





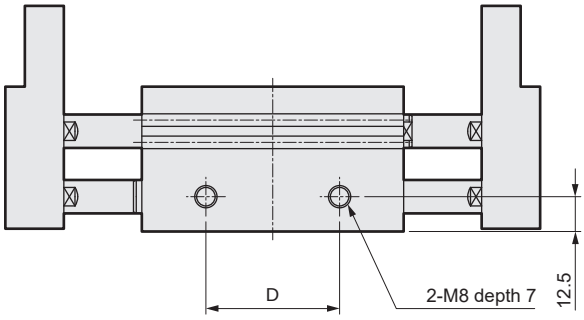




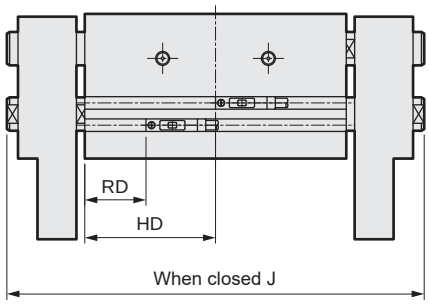
Model No.	B		C	D	F	G	H	J	RD	HD
	MAX	MIN								
HMC-20A	122	82	54	38	58	75.6	36	124	16.5	36.5
HMC-20B	222	142	96	80	100	113.6	68	195	25.5	65.5
HMC-20C	262	162	116	100	120	133.6	78	235	30.5	80.5

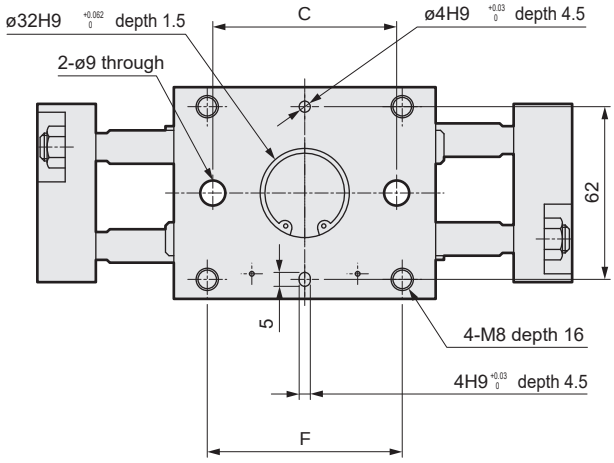
Dimensions (bore size: ø25)

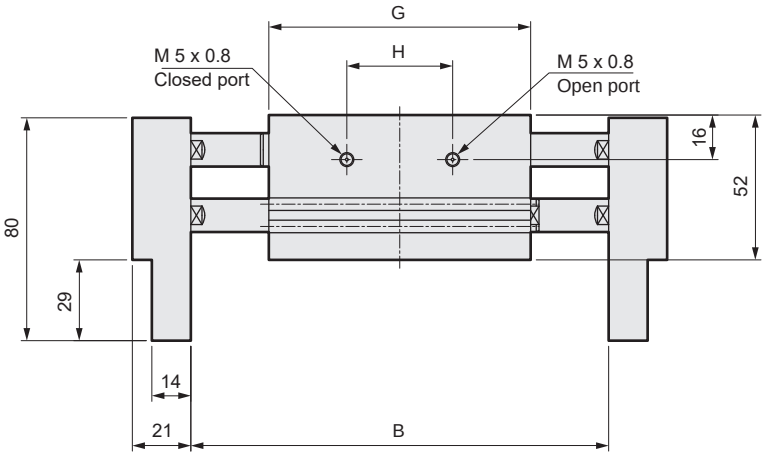
● HMC-25*-HP1

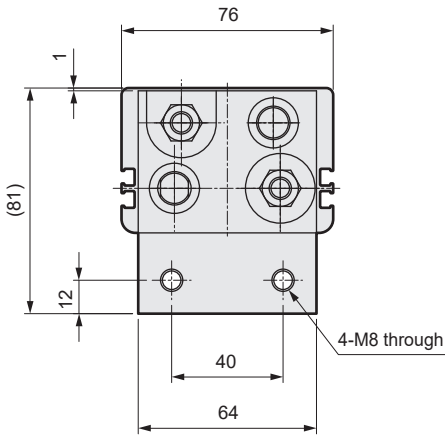


● With switch





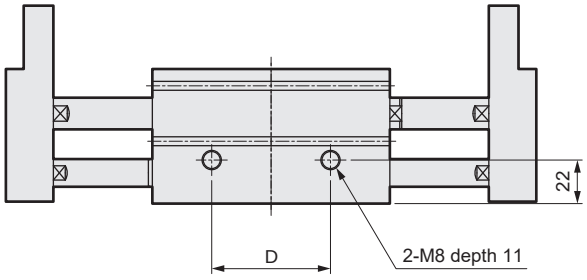




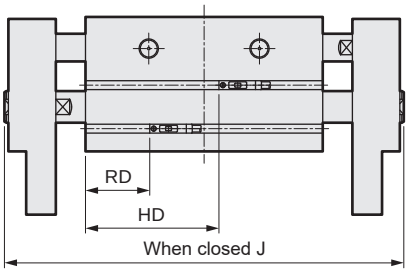
Model No.	B		C	D	F	G	H	J	RD	HD
	MAX	MIN								
HMC-25A	150	100	66	48	70	94	38	152	22	47
HMC-25B	282	182	120	102	124	146	94	254	38	88
HMC-25C	320	200	138	120	142	156	104	284	38	98

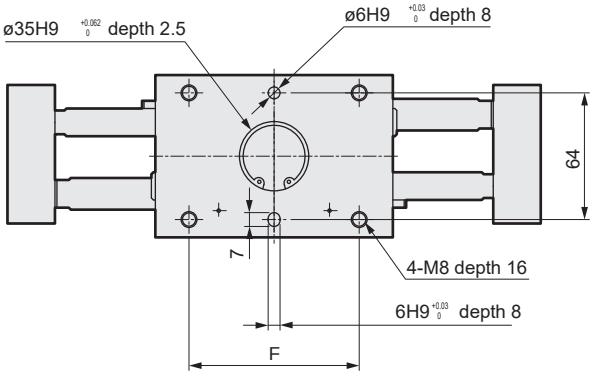
Dimensions (bore size: ø32)

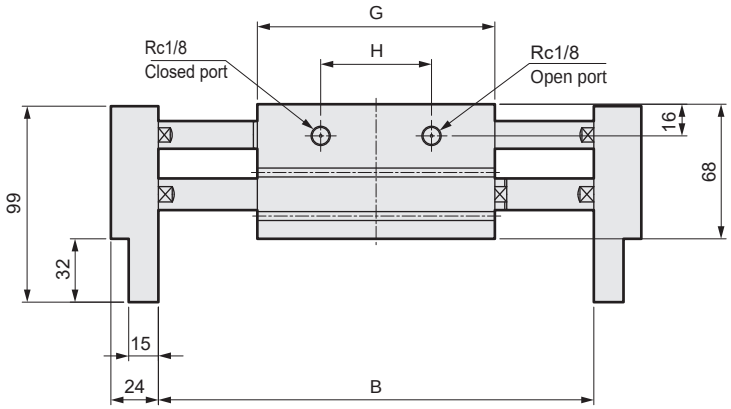
● HMC-32*-HP1

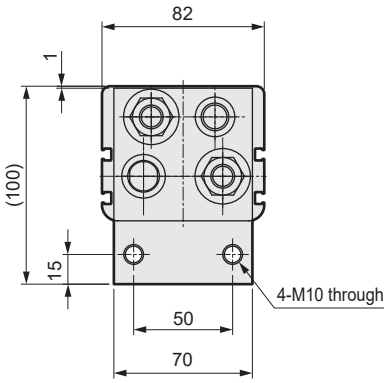


● With switch





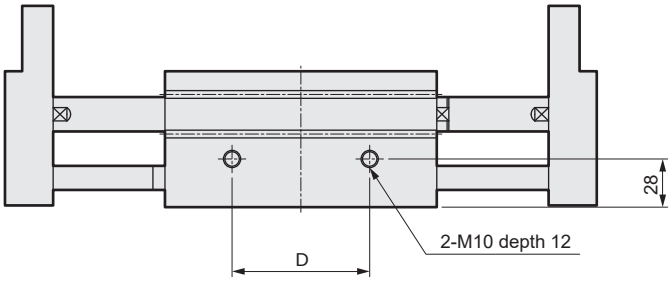




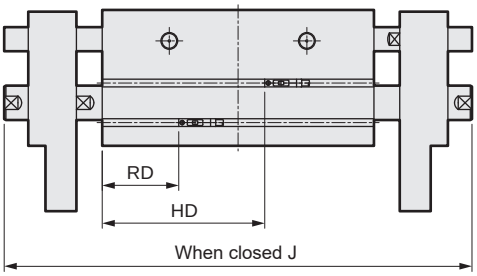
Model No.	B		D	F	G	H	J	RD	HD
	MAX	MIN							
HMC-32A	220	150	60	86	120	56	202	32.5	67.5
HMC-32B	318	198	108	134	170	104	310	45	105
HMC-32C	402	242	152	178	198	124	362	45	125

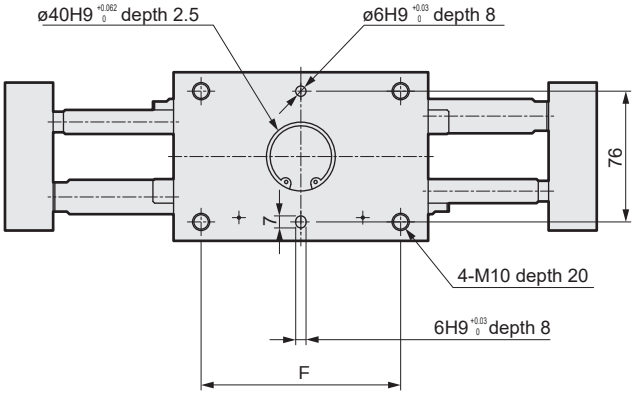
Dimensions (bore size: ø40)

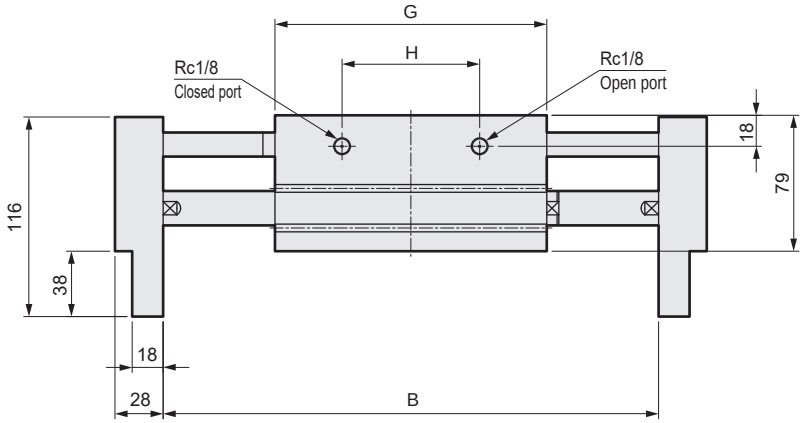
● HMC-40*-HP1

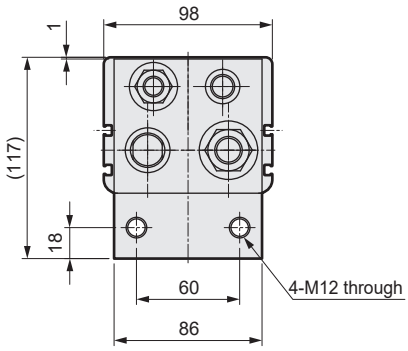


● With switch









Model No.	B		D	F	G	H	J	RD	HD
	MAX	MIN							
HMC-40A	288	188	80	116	158	80	272	44.5	94.5
HMC-40B	406	246	138	174	216	150	390	58.5	138.5
HMC-40C	486	286	178	214	236	170	450	58.5	158.5

HMC-HP1 selection guide

STEP-1 Select a suitable model by required gripping force

①Calculation of required gripping force

Gripping force FW satisfying the following equation is required to transport the workpiece (weight WL).

$$F_W] \quad \frac{W_L \times g \times K}{n}$$

F_W: Required gripping force [N]
n: Number of attachments = 2
W_L: Weight of workpiece [kg]
g: Gravitational acceleration = 9.8[m/s^2]
K: Transport coefficient
5 [holding only]
10 [normal transport]
20 [suddenly accelerated transport]

Transport coefficient K

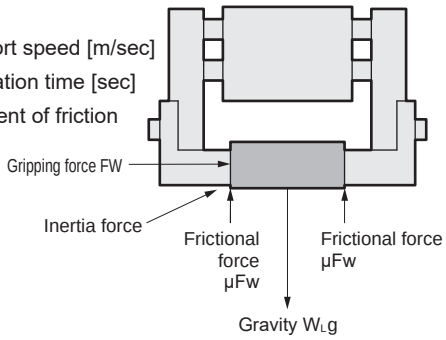
Calculation example: When decelerating and stopping in 0.1 second from transport speed of V = 0.75 m/s with friction coefficient μ of workpiece and jaw as 0.1, see below.

Obtain the transport coefficient K from the force applied to the workpiece

- Inertial force = $W_L(V/t)$
- Gravity = $W_L g$
- Required gripping force F_W> $\frac{W_L(V/t)+W_L g}{n\mu} = \frac{W_L(V/t+g)}{n\mu} = \frac{17.3\,W_L}{2 \times 0.1} = 86.5W_L$

∴Here, the transport coefficient K is calculated from the above equation: $\frac{V/t+g}{\mu g} = \frac{0.75/0.1+9.8}{0.1 \times 9.8} \approx 20$

V: Transport speed [m/sec]
t: Deceleration time [sec]
μ: Coefficient of friction

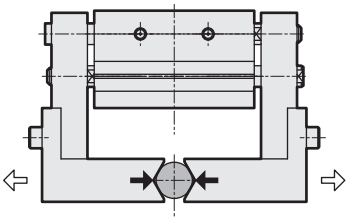


Note)Allowance is required for transport coefficient K due to impacts during transportation, etc. Even when the coefficient of friction μ is higher than μ = 0.1, set transport coefficient K from 10 to 20 or more for safety.

②Model selection based on required gripping force

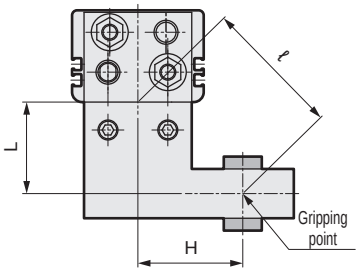
The gripping force changes depending on the "gripping direction", "attachment length", and "supply pressure". Confirm on the gripping force graph that sufficient force can be obtained under the usage conditions. Refer to page 13 for the gripping force graph.

Grip direction

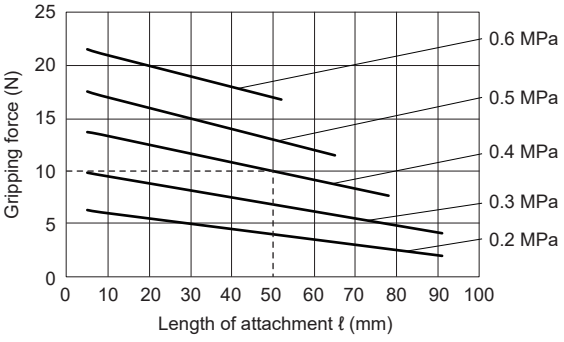


● Open direction (⇦)
● Close direction (➡)

Attachment length ℓ



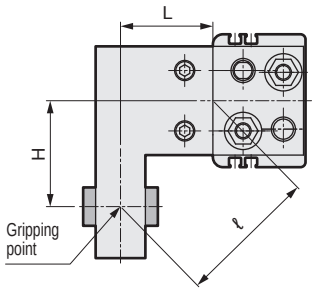
Understanding the gripping force graph
(For HMC-10)



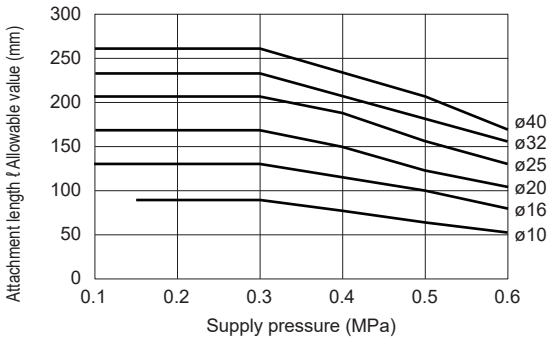
For example, when supply pressure is 0.4 MPa and attachment length is 50 mm, the gripping force is 10 N.

STEP-2 Confirmation of attachment shape

Example) ℓ: 50mm



When HMC-10 is selected, the attachment length ℓ: 50mm is smaller than the value at the supply pressure 0.5MPa of the ø10 line, so it can be used.



●Use attachments that are as short and lightweight as possible.

If the attachment is long and heavy, inertia increases when opening and closing. This may cause play in the finger, and adversely affect durability.

●Even if the attachment shape is within the performance data, by making it as small as possible enables the product to have a longer service life. Also, if ℓ is long, unexpected vibration, etc., could cause erroneous gripping and falling during transport. With "Cylinder diameter ×1.3/working pressure" as a guide, if ℓ is longer than that, set the transport coefficient of STEP-1 to a high value (Guideline: Transport coefficient 20 or more)

●The weight of the attachment affects the service life, so check that the weight is less than the following value.

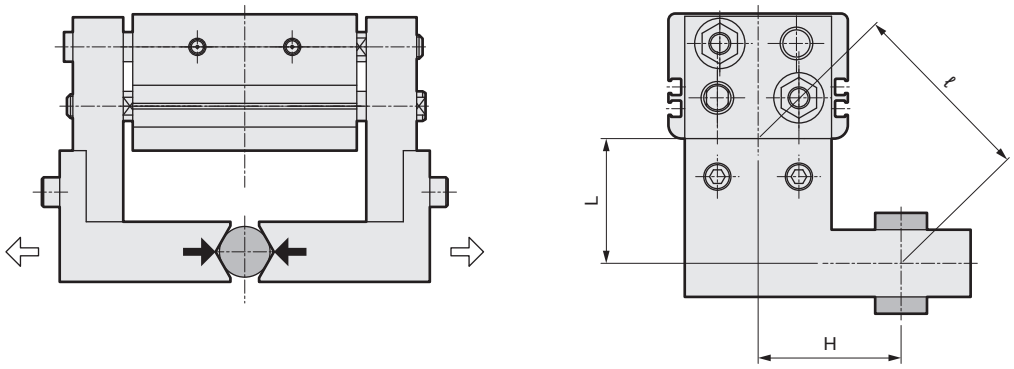
W<1/4H (1 pc.) W: Weight of attachment

H: Product weight of Hand

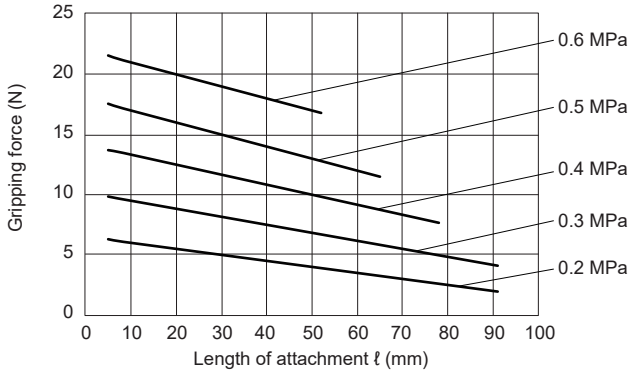
Gripping force performance data

- Gripping force indicates the thrust (one finger) in the direction of the arrow shown in the figure.
- The gripping force at hand attachment length ℓ with a supply pressure up to 0.6MPa is shown.

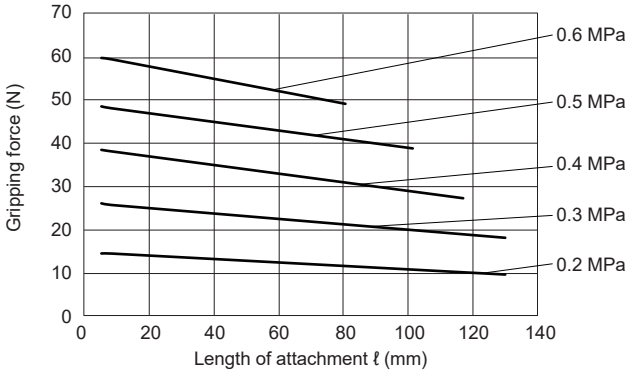
● Open direction (⇦)
● Close direction (➡)



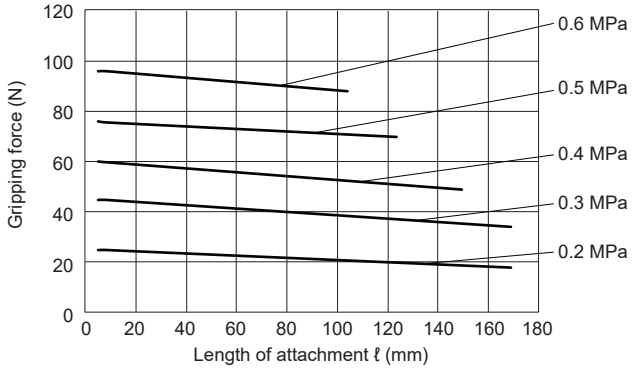
HMC-10



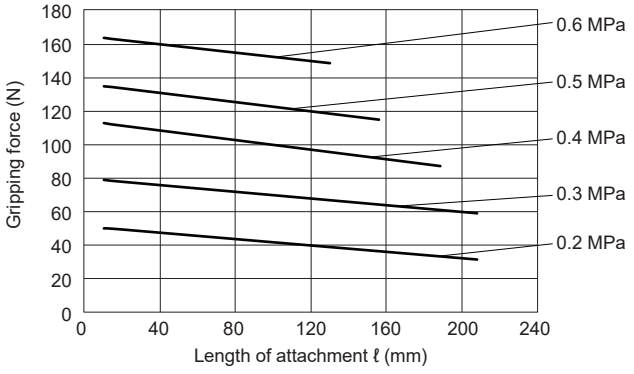
HMC-16



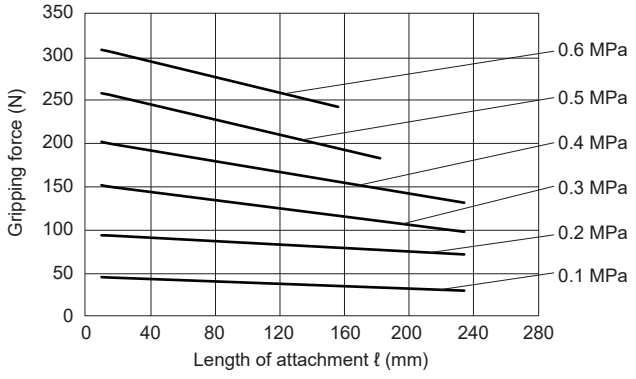
HMC-20



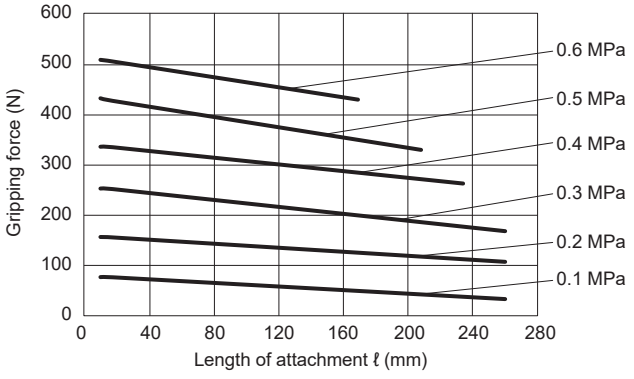
HMC-25



HMC-32



HMC-40



Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

⚠ WARNING

1 This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc., related to the safety of device design and control, etc.

ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility.Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions in the following pages to prevent accidents.

■ The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

⚠ DANGER: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

⚠ WARNING: If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

⚠ CAUTION: When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation.
Every item provides important information and must be observed.

Warranty

1 Warranty period

The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.

2 Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.
However, following failures are excluded from this warranty:

1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
3) Failure not caused by the product.
4) Failure caused by use not intended for the product.
5) Failure caused by modifications/alterations or repairs not carried out by CKD.
6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
7) Failure caused by acts of nature and disasters beyond control of CKD.

The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

Pneumatic components

Safety Precautions

Be sure to read this section before use. Refer to Pneumatic Cylinders II (CB-030SA) for general information of the cylinder and cylinder switches.

Product-specific cautions: Wide parallel hand HMC-HP1 Series

Design/selection

⚠WARNING

■ If a moving workpiece poses a danger to the human body, or if there is a possibility of human fingers being pinched by the fingers or the attachments, take safety precautions such as by installing a protective cover.

■ If the circuit pressure drops due to power failure or air source trouble, the gripping force may decrease and the workpiece may fall. Provide position locking measures, etc., so that personnel are not injured or machines damaged.

⚠CAUTION

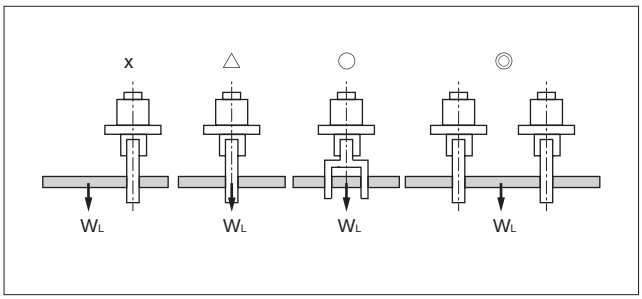
■ Working environment

At cutting, casting, or welding plants, there is a risk of foreign matter, such as cutting fluid, chips, powder and dust, entering the equipment. Use covers and such to prevent this as much as possible.

Do not use the equipment under the following environments.

- Exposed to cutting oil (because the sliding section is abraded by abrasive or polishing debris in the liquid)
- When the atmosphere contains organic solvents, chemicals, acids, alkalis, kerosene, etc.
- Exposed to water

■ When gripping long or large workpieces, stable gripping requires a grip on the center of gravity. Stability is a must when using larger or multiple workpieces as well.



■ Select a model that has sufficient force to grip the workpiece weight.

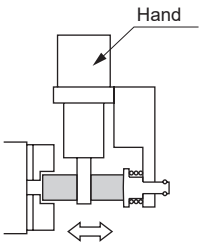
■ Select a model that has sufficient opening/closing width for the workpiece size.

■ If the attachment is not rigid enough, the resulting sag could cause the finger to twist or adversely affect operation.

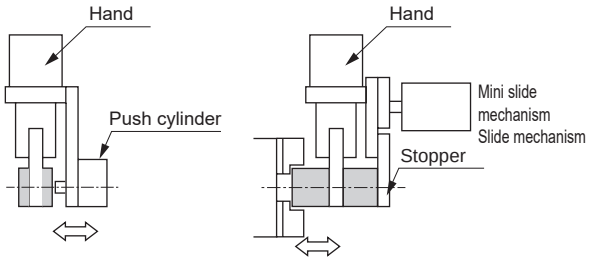
■ If directly inserting the workpiece into the jig with the hand, consider clearance during design. The hand could be damaged.

Hand

● Push-in jig with ejector



● When using a push cylinder



Note)Since the workpiece slides over the top of the attachment, it may significantly shorten the service life of the chuck. The shape of the attachment should be sufficiently considered.

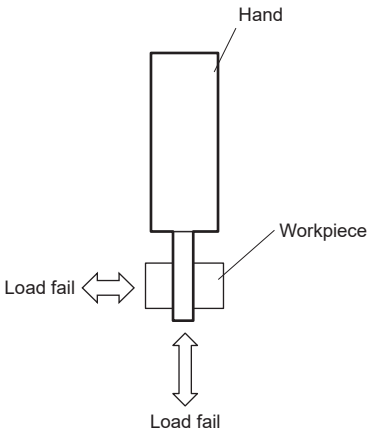
■ Adjust the gripper opening/closing speed using the speed controller (sold separately). When used at high speed, backlash may occur sooner. In addition, the workpiece may vibrate due to shocks in opening/closing, which may lead to erroneous chucking, erroneous insertion of workpieces and poor repeatability.

■ Condensation (water drops) may occur in the piping in certain conditions if an actuator with small bore size/short stroke is operated at high frequency. Take measures against condensation with a quick exhaust valve, etc.

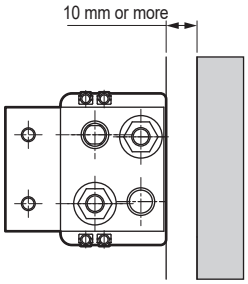
Mounting, installation and adjustment

⚠ CAUTION

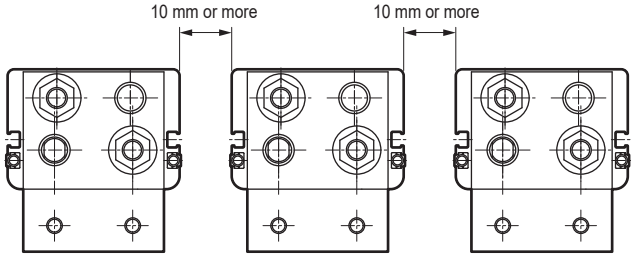
■ Be sure not to apply an excessive load to the fingers and attachment when attaching and detaching or conveying workpieces. Scratches and dents may occur in the finger, possibly causing malfunction.



■ The cylinder switch may malfunction if there is a magnetic substance such as a steel plate installed adjacently. Check that a distance of 10 mm is provided from the surface of the cylinders.



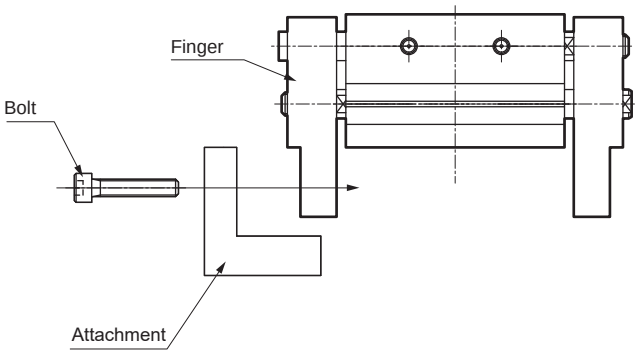
■ The cylinder switch may malfunction if cylinders are installed adjacently. Check that the following distances are provided between cylinders.



■ Clamping operation is accurate when performed as softly as possible at a low speed. Repeatability is also stable.

■ Attachment mounting method

When mounting the attachment to the finger, to prevent any effect on the hand, pull in the piston rod when tightening so that the finger is not twisted.

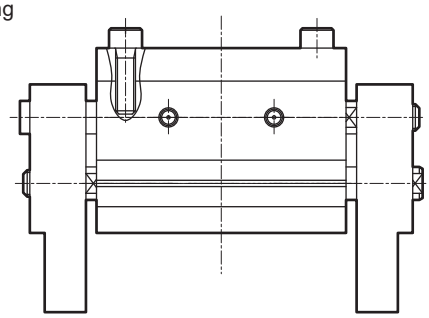


Item	Bolt used	Tightening torque (N·m)
HMC-10	M 4 x 0.7	1.4
HMC-16	M 5 x 0.8	2.8
HMC-20	M 6 x 1	4.9
HMC-25	M 8 x 1.25	11.6
HMC-32	M 10 x 1.5	22.8
HMC-40	M 12 x 1.75	39.1

■ Do not cause dents or scratches that may damage flatness or perpendicularity on the body mounting surface or finger.

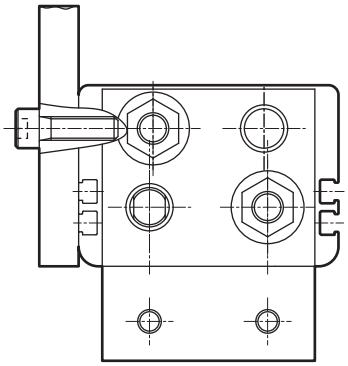
■ Refer to the following section for body mounting.

●Top mounting



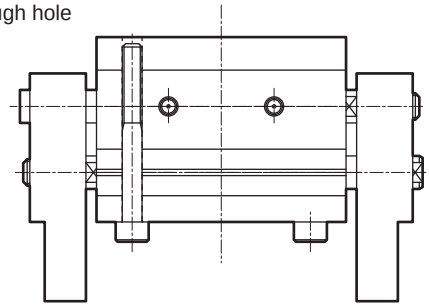
Item	Bolt used	Tightening torque (N·m)	Max. screw insertion depth L (mm)
HMC-10	M 4 x 0.7	2.1	8
HMC-16	M 5 x 0.8	4.3	10
HMC-20	M 6 x 1	7.3	12
HMC-25	M 8 x 1.25	17.5	16
HMC-32	M 8 x 1.25	17.5	16
HMC-40	M 10 x 1.5	36	20

●Front mounting



Item	Bolt used	Tightening torque (N·m)	Max. screw insertion depth L (mm)
HMC-10	M 4 x 0.7	1.6	5
HMC-16	M 5 x 0.8	3	7
HMC-20	M 6 x 1	4.3	7
HMC-25	M 8 x 1.25	10	7
HMC-32	M 8 x 1.25	12	11
HMC-40	M 10 x 1.5	22	12

●Use of through hole



Item	Bolt used	Tightening torque (N·m)
HMC-10	M 4 x 0.7	2.1
HMC-16	M 5 x 0.8	4.3
HMC-20	M 6 x 1	7.3
HMC-25	M 8 x 1.25	17.5

■ Do not retighten or disassemble, other than the screws used for fixing the body and attachment. This could lead to malfunction.

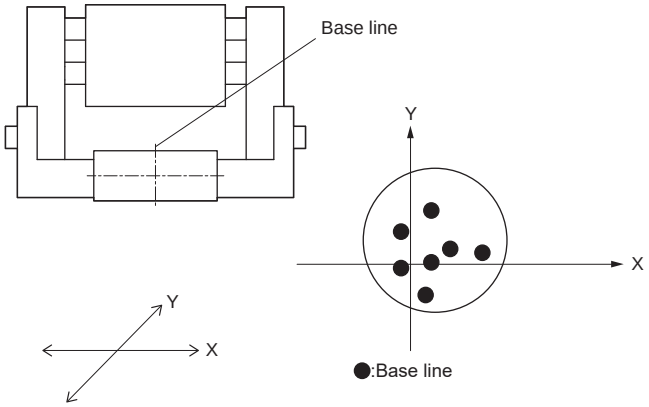
Use/maintenance

⚠ CAUTION

■ Repeatability

The repeatability here indicates the displacement of the finger in the case of repeated clamping and unclamping in the same conditions (hand fixed, same attachment used: see below). Shock during opening and closing may lead to position misalignment of the workpiece and deterioration of repeatability. Note as well that attachment wear or insufficient rigidity may lead to deterioration of accuracy.

Conditions
- Attachment dimensions, shape, weight
- Attachment workpiece gripping position
- Clamp method, length
- Attachment and workpiece contact area resistance
- Shock-free opening and closing with speed controller
- Fluctuation of gripping force (air pressure), etc.

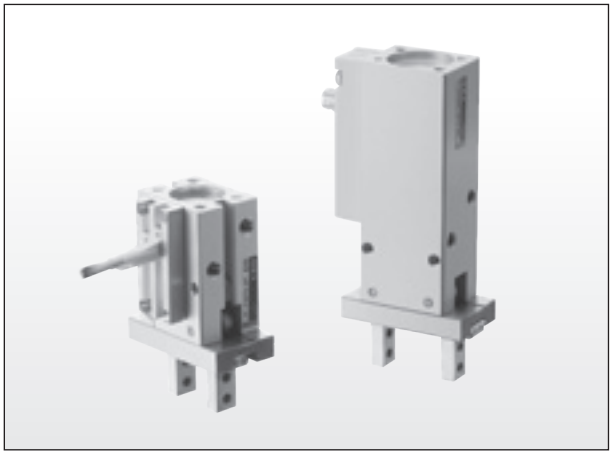


MEMO

Related products

Linear Slide Hand LSH-HP Series

Catalog No. CC-1419A



LSH-HP1 Series

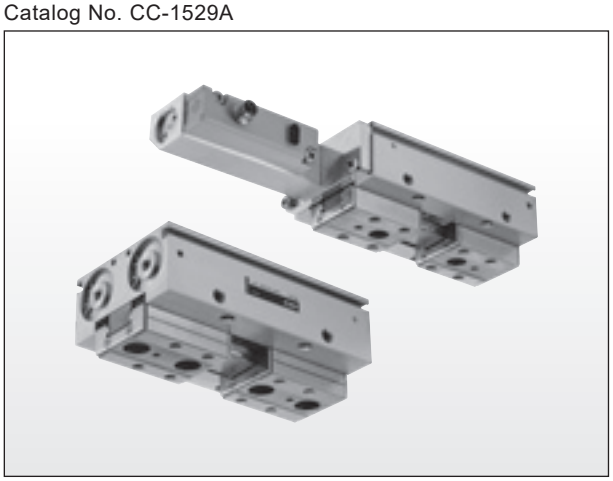
- Increased linear guide performance
- Increased flexibility in design
- Long service life
- Reduced processes on site

LSH-HP2 Series

- High repeatability ±0.02mm, linearity FS±0.5%
- A high structure is realized by an integrated structure with a displacement sensor built into the body
- Environment-resistant IP65 equivalent amplifier and rubber cover

Low-profile long stroke hand LST-HP Series

Catalog No. CC-1529A



LST-HP1 Series

- Thin design from double piston system
- Increased linear guide performance
- Long service life
- Reduced processes on site
- Switch with bending resistant lead wire can be selected

LSTM-HP2 Series

- High repeatability ±0.04mm, linearity F.S.±0.5%
- A displacement sensor is built into the body, achieving a high-precision integrated structure

3-way jaw chuck CKW-HP1 Series

Catalog No. CC-1581A

- Long service life Long service life cylinder sliding technology employed (more than 2-fold compared to conventional models)
- Design revision of high rigidity guide part (1.3x or more compared with conventional models)
- Replacement time reduced significantly
  High precision positioning hole (±0.025 mm)
  Slide plate cylinder switch replacement

Related products

HP Series General Catalog

Catalog No.CC-1421A

- Actuator for high frequency use (HP1) Optimized sliding technology for longer service life with the same dimensions as conventional products (4 or more times higher than conventional products)
- Downward actuator for dust environment (G-HP1) Equipped with rubber scraper and lube keeping structure to improve durability in dust environment (4 or more times that of conventional models)
- Actuator with length measuring function (HP2) Integrates high precision position detection sensor for predictive maintenance
- Long-life cylinder rechargeable battery compatible (P4-HP1) Extend service life of P4 Series with track records in rechargeable battery manufacturing processes (durability count of 10 million cycles or more)
- Environment-resistant cylinder For food manufacturing processes (FP1-G-HP1) Extended service life in dusty environments in food manufacturing processes (durability count of 5 million cycles or more)

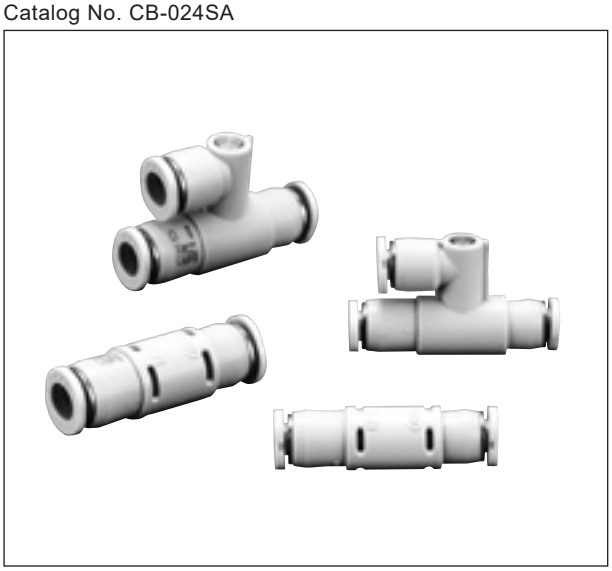
Auto hand changer CHC Series

Catalog No. CB-030SA

- High connection strength between body and adapter, ensuring high rigidity
- Position locking mechanism is equipped to prevent falling tools even when the drive source is shut off.
- DA wide range of options including sub-connector are available

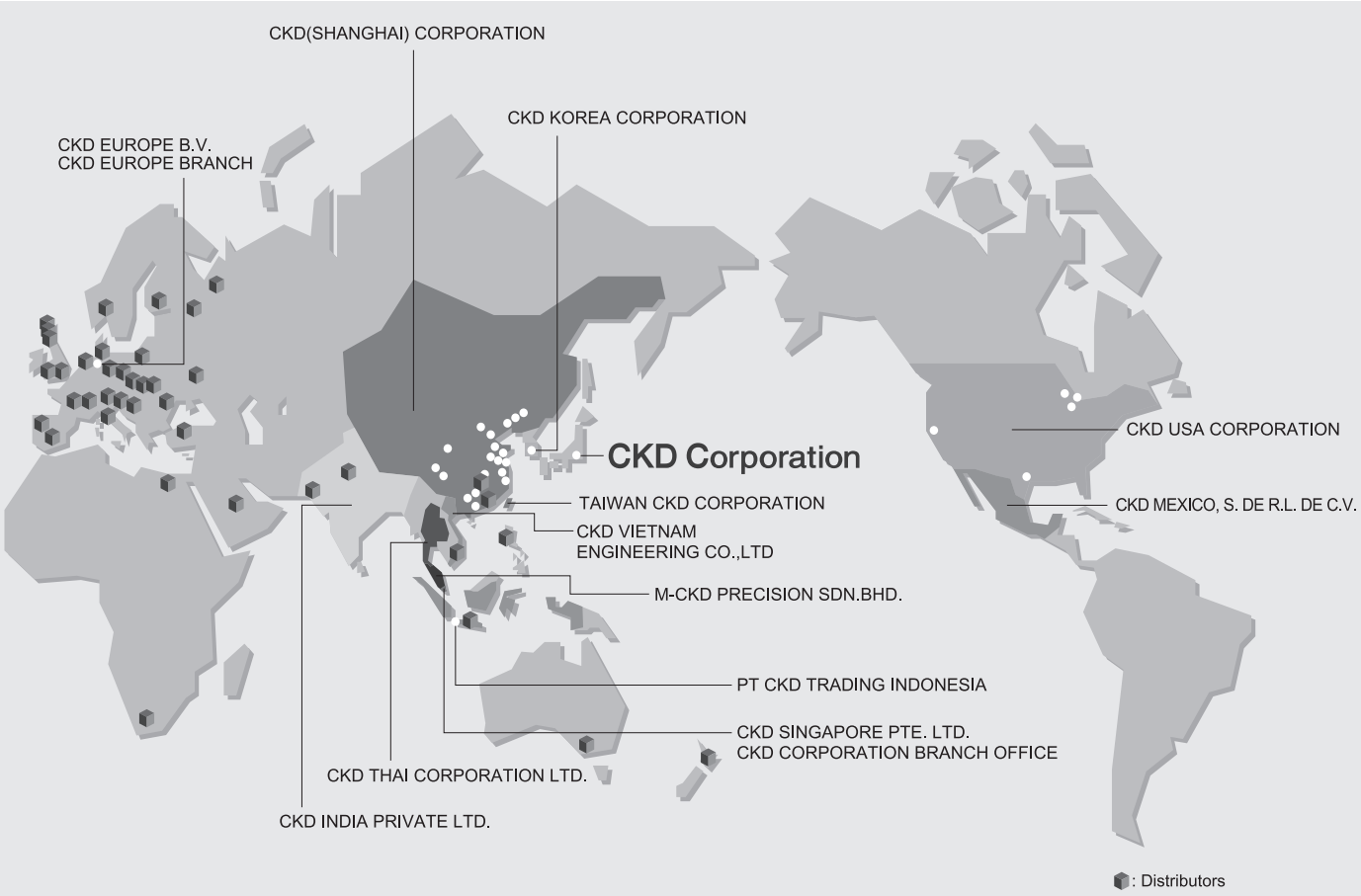
Quick exhaust valve QEL Series

Catalog No. CB-024SA



- Compact/space saving inline
  Ozone-resistant materials are used as standard for to prevent degradation of the valving element
- Reducer that can be connected to piping (made-to-order product)
  Quick exhaust can be performed near the actuator
  Helps reduce adiabatic expansion

WORLD-NETWORK



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ASIA

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- 杭州事務所(HANGZHOU OFFICE)
- 無錫事務所(WUXI OFFICE)
- 昆山事務所(KUNSHAN OFFICE)
- 蘇州事務所(SUZHOU OFFICE)
- 南京事務所(NANJING OFFICE)
- 合肥事務所(HEFEI OFFICE)
- 成都事務所(CHENGDU OFFICE)
- 武漢事務所(WUHAN OFFICE)
- 鄭州事務所(ZHENGZHOU OFFICE)
- 長沙事務所(CHANGSHA OFFICE)
- 重慶事務所(CHONGQING OFFICE)
- 西安事務所(XIAN OFFICE)
- 広州事務所(GUANGZHOU OFFICE)
- 中山事務所(ZHONGSHAN OFFICE)
- 深圳西事務所(WEST SHENZHEN OFFICE)
- 深圳東事務所(EAST SHENZHEN OFFICE)
- 東莞事務所(DONGGUAN OFFICE)
- 厦門事務所(XIAMEN OFFICE)
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