

Changing "gripping" changes manufacturing

Increased guide rigidity even for wide types

Achieves high rigidity, high precision, and high durability



- Significant reduction in minor stoppages
- Significant reduction in replacement frequency
- Significant reduction in replacement time
- Durability of 10 million cycles or more

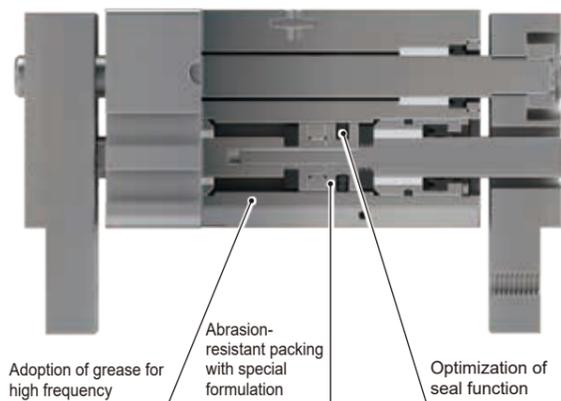
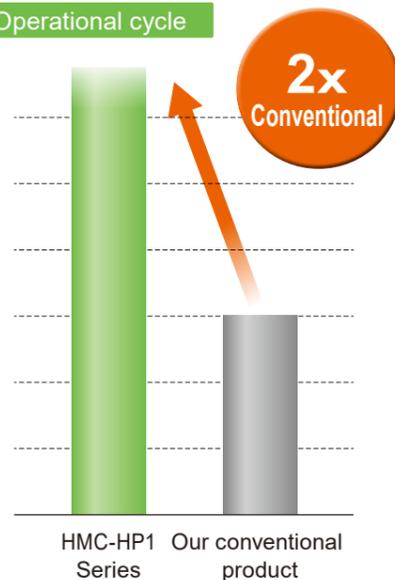
*According to our specified conditions



Long service life

Mastering sliding technology, achieving durability more than twice that of conventional products.

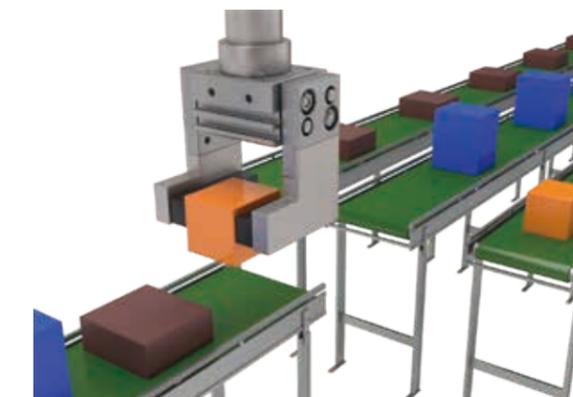
Operational cycle



Abundant strokes

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

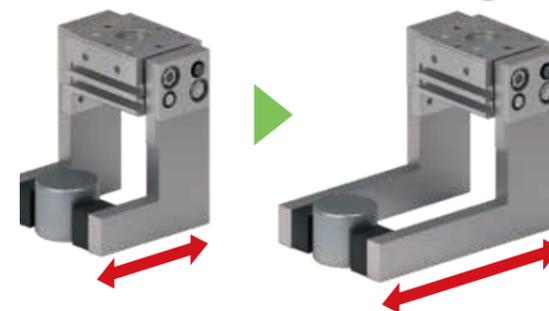
Powerfully grips large and small workpieces with a long stroke.



High rigidity

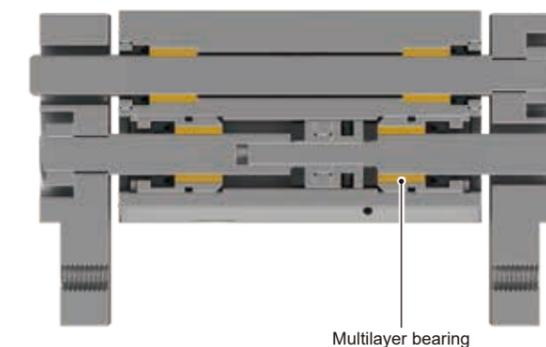
Increased guide rigidity by redesigning the guide section.

1.3x
Conventional



Double bearing structure

Reinforced multilayer bearings that exhibit excellent friction characteristics under high load conditions



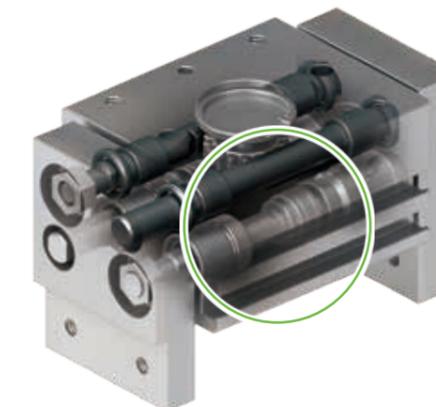
Compatible with gripping large workpieces

Wide opening ideal for large workpieces.



High gripping force

Adopts a double piston structure. Achieves compact size and high gripping force by directly transmitting cylinder thrust to the fingers.



Hand (Gripper)
LSH-HP
LSH
FH100
BSA2
BHA
BHG
BHE
LHA
LHAG
HAP-1C
HAP-2 to 4CS
HKP
HCP
HGP
LST-HP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMC-HP
HMF
HMF-G
HMF-B
HFP
FH500
HBL
HJL
HMD
HDL
HJD
Cylinder Switch
Ending

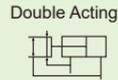
Hand (Gripper)
LSH-HP
LSH
FH100
BSA2
BHA
BHG
BHE
LHA
LHAG
HAP-1C
HAP-2 to 4CS
HKP
HCP
HGP
LST-HP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMC-HP
HMF
HMF-G
HMF-B
HFP
FH500
HBL
HJL
HMD
HDL
HJD
Cylinder Switch
Ending



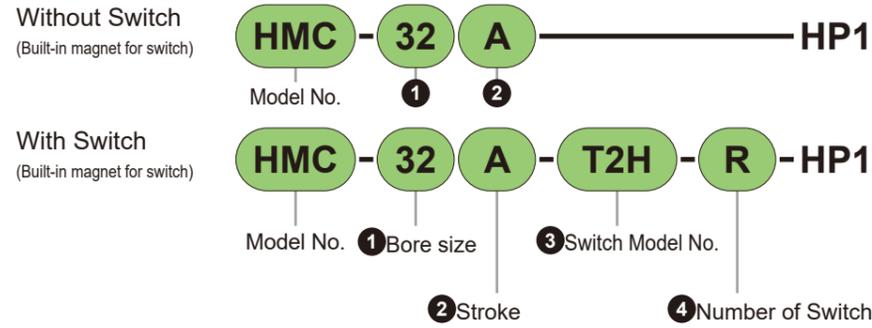
Wide Parallel Gripper (Standard/Long Stroke)

HMC-HP1 Series

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



Model No. Notation Method



① Bore Size (mm)

Code	Content
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40

② Stroke

Code	Content	Stroke (mm)					
		ø10	ø16	ø20	ø25	ø32	ø40
A	Short stroke	20	30	40	50	70	100
B	Middle stroke	40	60	80	100	120	160
C	Long stroke	60	80	100	120	160	200

③ Switch Model No.

For switch details, please refer to P. 573. Switches are included with the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1	
			AC	DC	AC	DC	Straight	L-shape
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□
	1-Color Flex-Resistant Lead Wire	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3
	1-Color	3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□
		3-wire (PNP)	-				T3PH□	T3PV□

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length" table.

*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

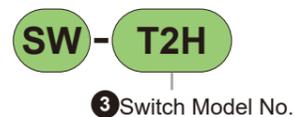
*3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 573.

*4: When installing a 2-color indicator switch, please consult our sales office.

④ Number of Switches

Code	Content
R	With 1 pc. on Open Side
H	With 1 pc. on Close Side
D	With 2 pcs

Switch Single Unit Model No. Notation Method



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 x 2			ø16 x 2			ø20 x 2			ø25 x 2			ø32 x 2			ø40 x 2		
Actuation method	Double Acting Type																	
Operating Fluid	Compressed Air																	
Max. Working Pressure MPa	0.6																	
Min. Operating 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		
Internal volume (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																	

Note) For gripping force, refer to P. 256.

*Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

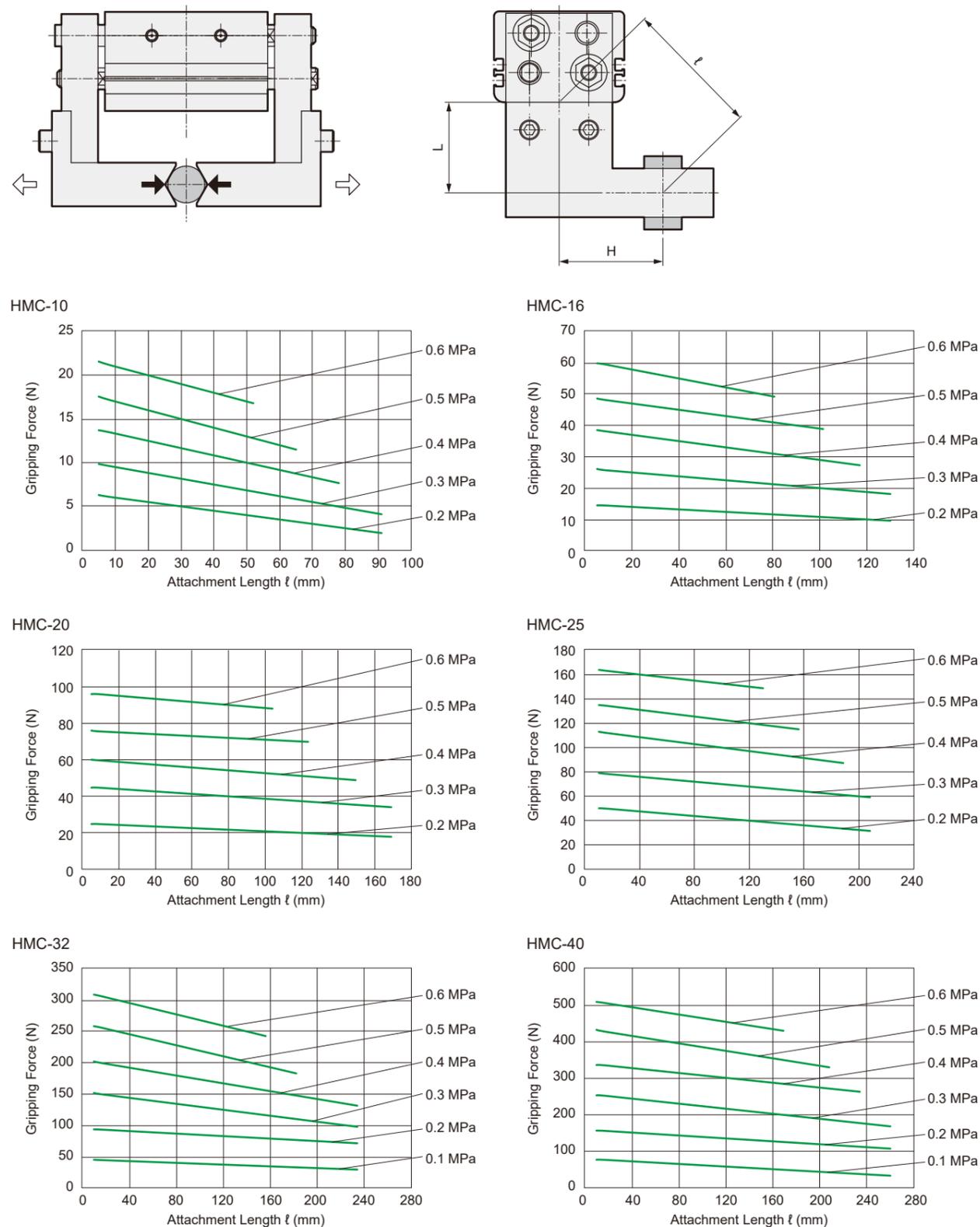
Example) Lead wire length
 1 m T2H
 3 m T2H③
 5 m T2H⑤

Gripping Force Performance Data

- Gripping force represents the thrust (for one finger) in the direction of the arrow shown in the figure.
- Indicates the gripping force at attachment length ℓ of the gripper when the supply pressure is up to 0.6 MPa.

Note) When selecting, check the design and selection precautions on P. 336.

- Opening direction (←)
- Closing direction (→)

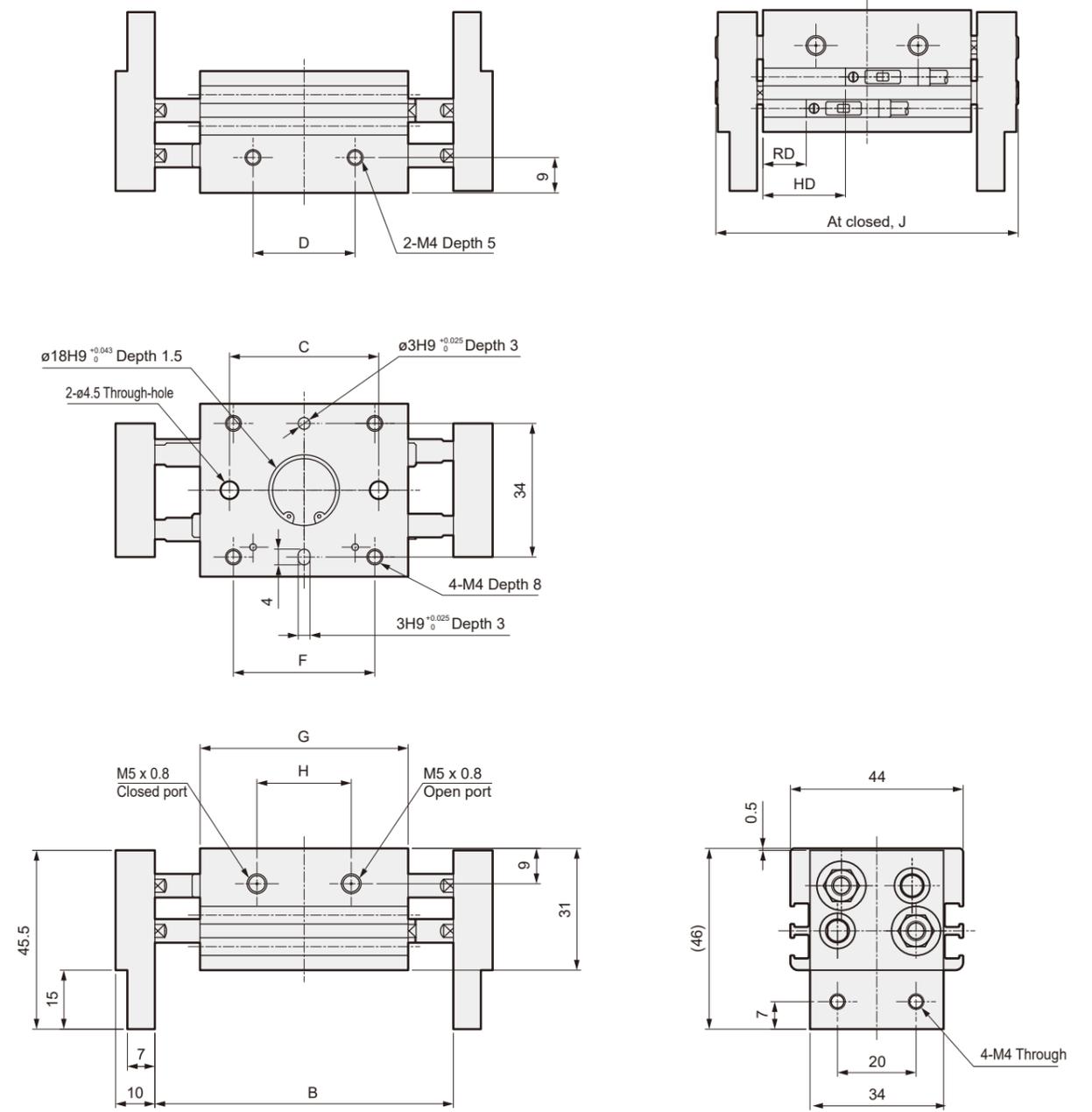


Outline Dimension Drawing

External dimensions diagram (Bore size: $\phi 10$)

● HMC-10□-HP1

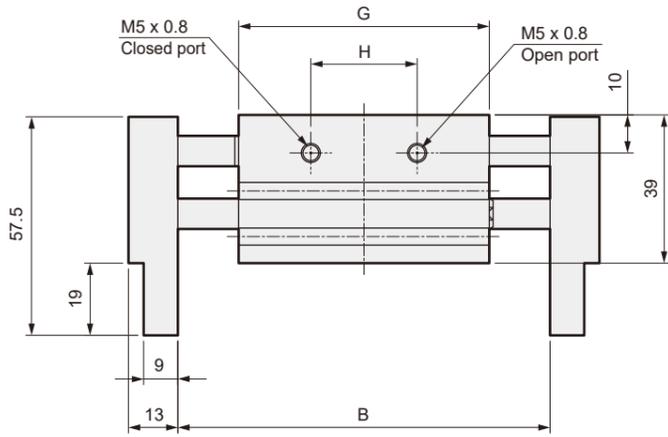
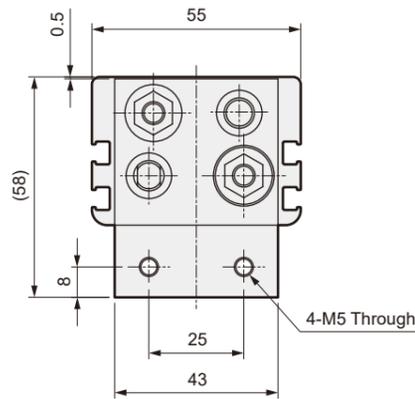
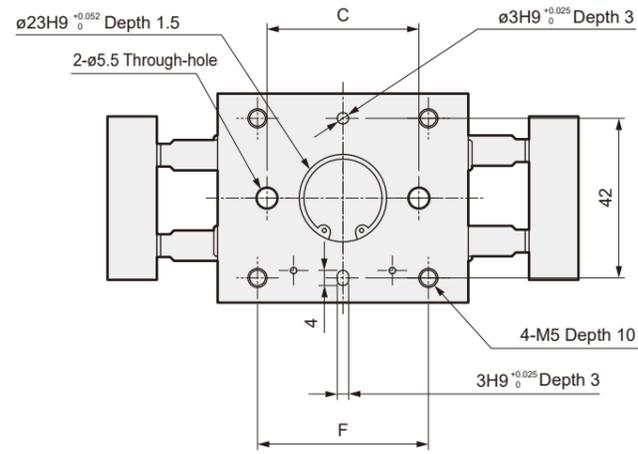
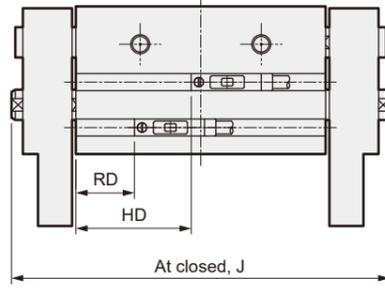
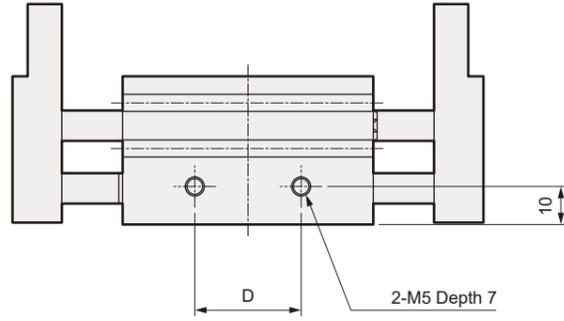
● With Switch



Model No.	B		C	D	F	G	H	J
	When Open	When Closed						
HMC-10A	76	56	38	26	36	53	26	79
HMC-10B	118	78	54	42	52	71	40	115
HMC-10C	156	96	72	60	70	81	50	145

●HMC-16□-HP1

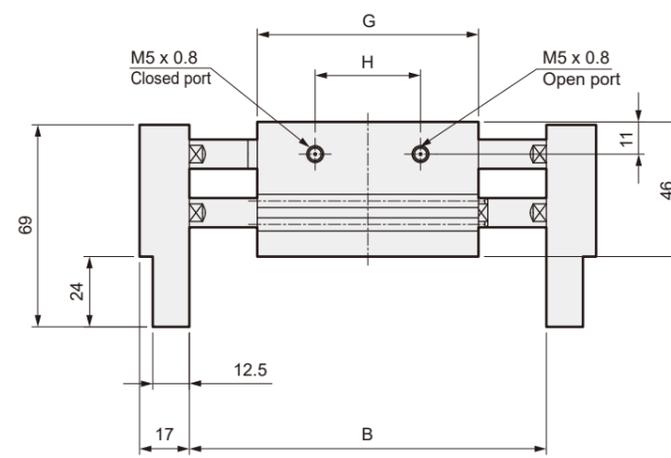
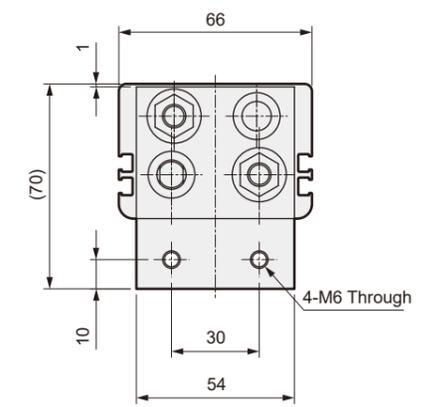
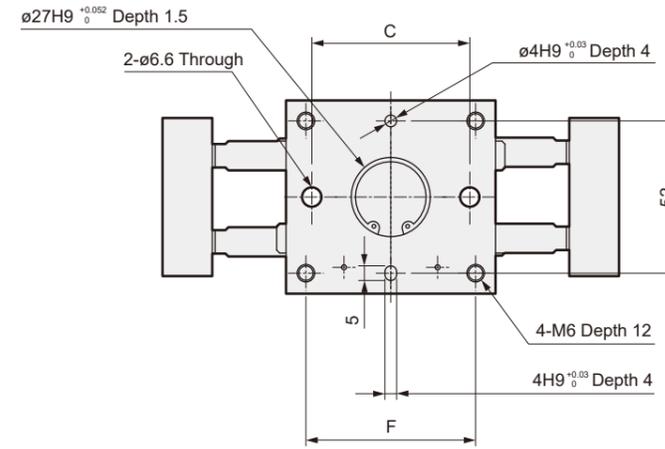
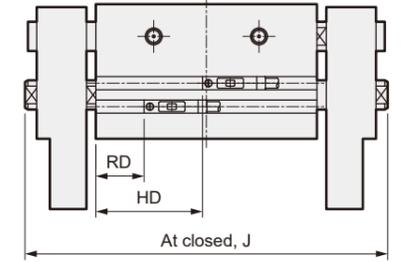
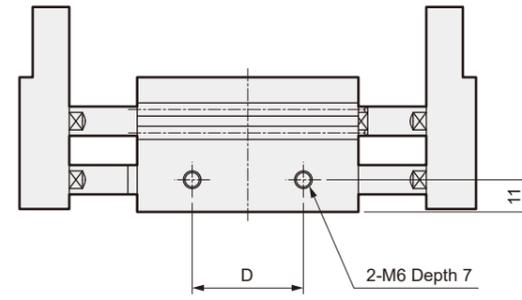
●With Switch



Model No.	B		C	D	F	G	H	J
	When Open	When Closed						
HMC-16A	98	68	40	28	45	66	32	100
HMC-16B	170	110	70	58	75	95	60	159
HMC-16C	210	130	90	78	95	105	70	189

●HMC-20□-HP1

●With Switch



Model No.	B		C	D	F	G	H	J
	When Open	When Closed						
HMC-20A	122	82	54	38	58	75.6	36	124
HMC-20B	222	142	96	80	100	113.6	68	195
HMC-20C	262	162	116	100	120	133.6	78	235

Hand (Gripper)

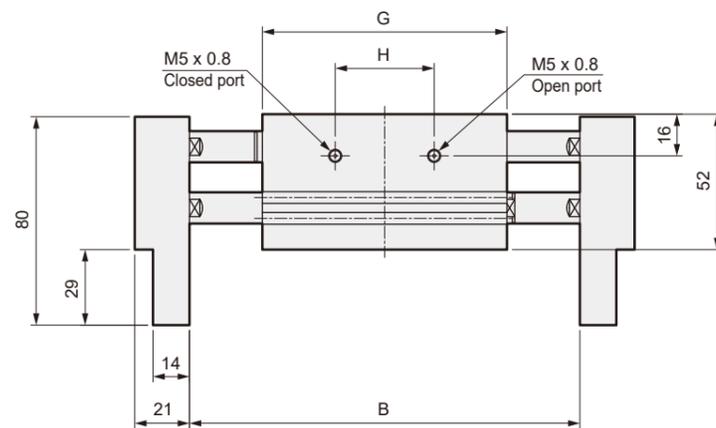
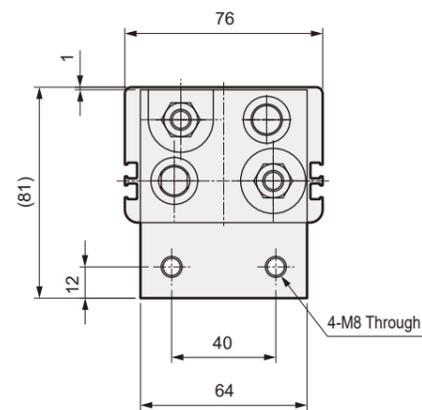
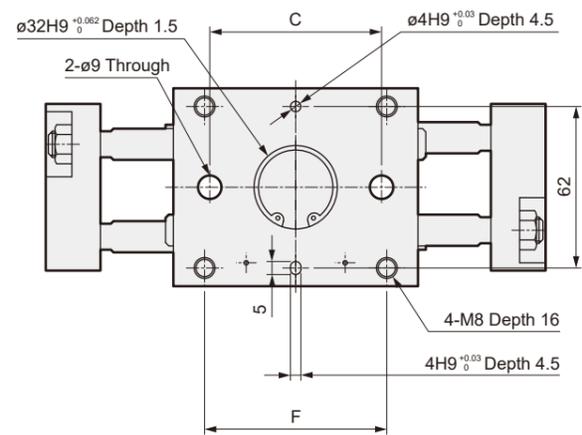
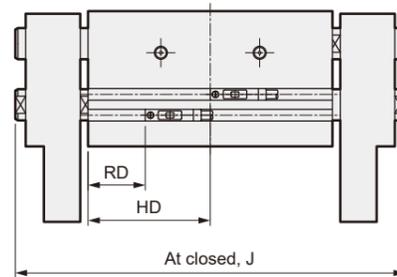
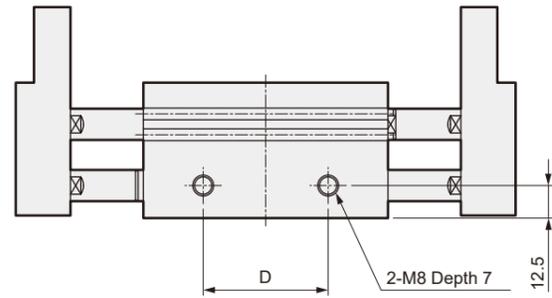
LSH-HP
LSH
FH100
BSA2
BHA
BHG
BHE
LHA
LHAG
HAP-1C
HAP-2 to 4CS
HKP
HCP
HGP
LST-HP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMC-HP
HMF
HMF-G
HMF-B
HFP
FH500
HBL
HJL
HMD
HDL
HJD
Cylinder Switch
Ending

Hand (Gripper)

LSH-HP
LSH
FH100
BSA2
BHA
BHG
BHE
LHA
LHAG
HAP-1C
HAP-2 to 4CS
HKP
HCP
HGP
LST-HP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMC-HP
HMF
HMF-G
HMF-B
HFP
FH500
HBL
HJL
HMD
HDL
HJD
Cylinder Switch
Ending

●HMC-25□-HP1

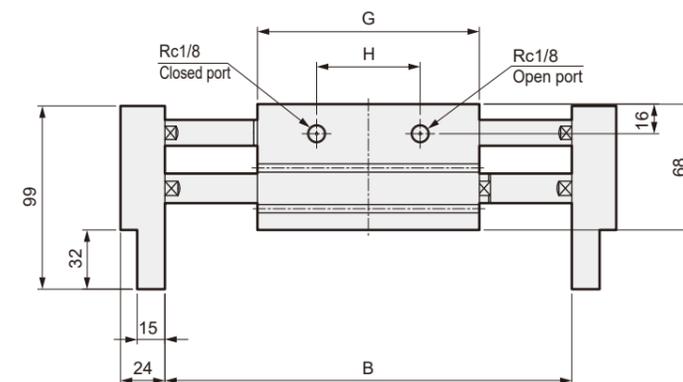
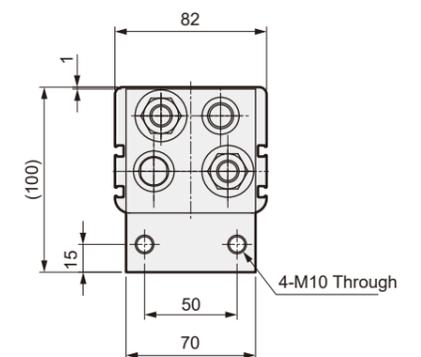
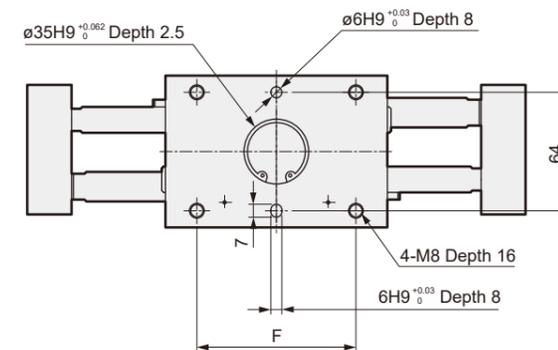
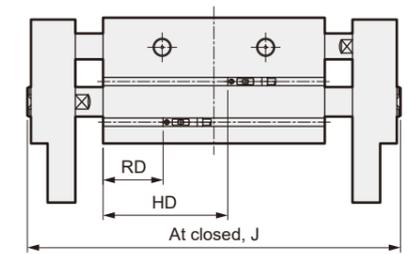
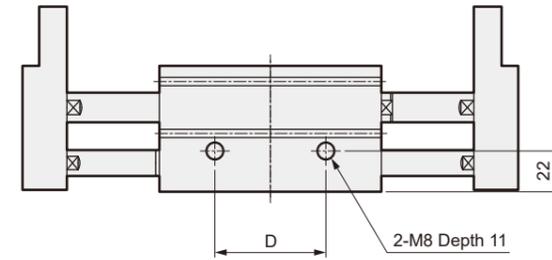
●With Switch



Model No.	B		C	D	F	G	H	J
	When Open	When Closed						
HMC-25A	150	100	66	48	70	94	38	152
HMC-25B	282	182	120	102	124	146	94	254
HMC-25C	320	200	138	120	142	156	104	284

●HMC-32□-HP1

●With Switch

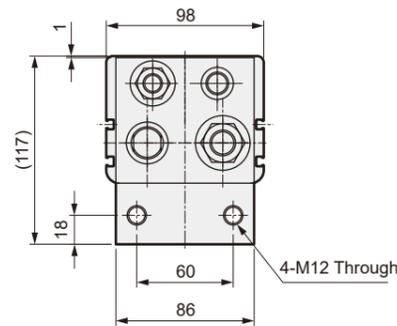
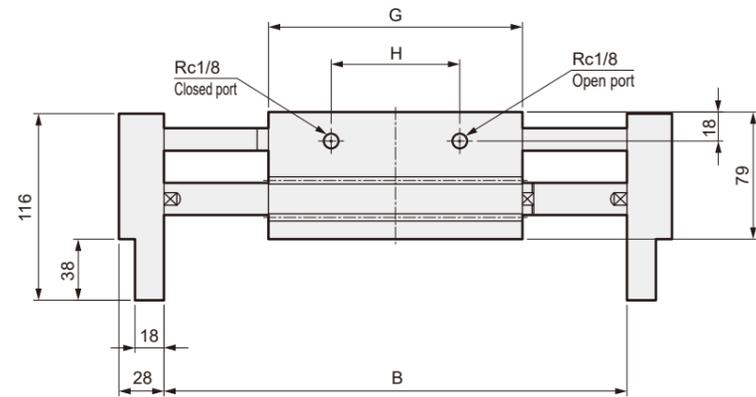
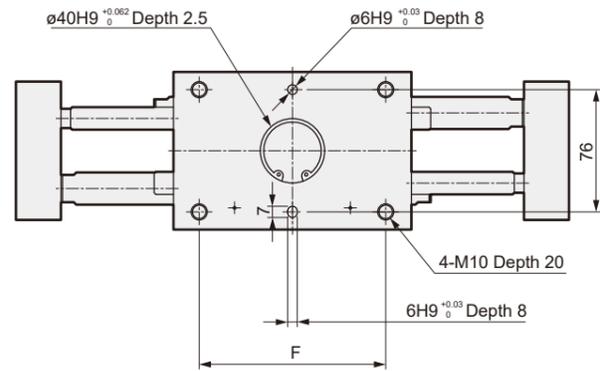
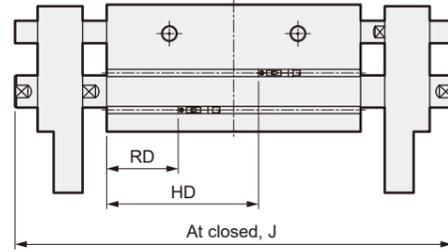
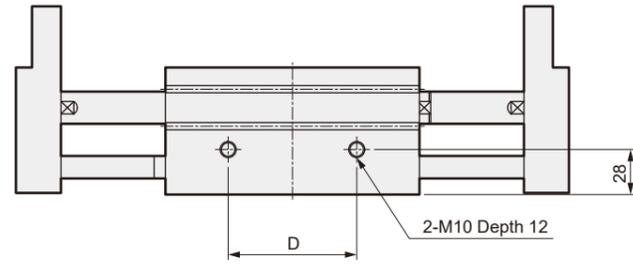


Model No.	B		D	F	G	H	J
	When Open	When Closed					
HMC-32A	220	150	60	86	120	56	202
HMC-32B	318	198	108	134	170	104	310
HMC-32C	402	242	152	178	198	124	362

Outline Dimensional Drawing (Bore size: $\phi 40$)

●HMC-40□-HP1

●With Switch

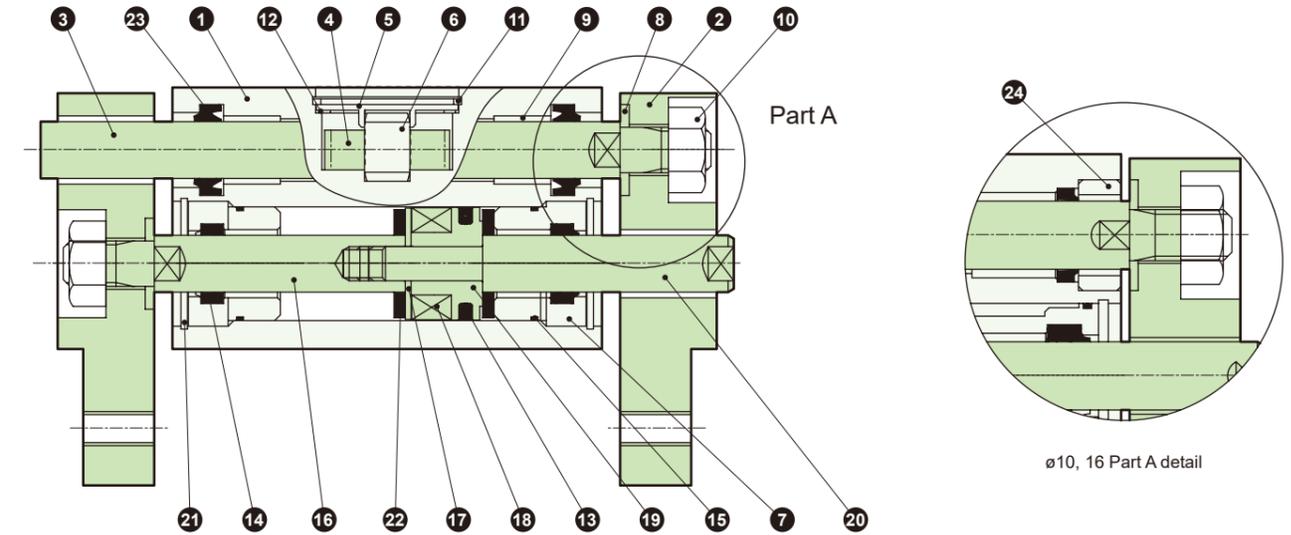


Model No.	B		D	F	G	H	J
	When Open	When Closed					
HMC-40A	288	188	80	116	158	80	272
HMC-40B	406	246	138	174	216	150	390
HMC-40C	486	286	178	214	236	170	450

Internal Structure Diagram/Material

Internal Structure Diagram/Material

●HMC-10 to 40-HP1



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Body	Aluminum Alloy	Hard Anodized	13	Piston Packing	Nitrile Rubber	
2	Finger	Aluminum Alloy	Hard Anodized	14	Rod Packing	Nitrile Rubber	
3	Rack	Alloy Steel		15	Gasket	Nitrile rubber	
4	Pinion	Alloy Steel		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	$\phi 10$ to 25 only	20	Piston Rod B	Stainless Steel	
9	Bearing	Oiles Drymet		21	Round R Type Retaining Ring	Steel	
10	Hexagon Nut	Steel		22	Cushion Rubber	Urethane Rubber	
11	C-type retaining ring	$\phi 10, 16, 25$ to 40: Stainless steel $\phi 20$: Steel		23	Scraper	Nitrile Rubber	
12	Wave Washer	Spring steel	Phosphate Coating	24	Rod metal B	Stainless Steel	$\phi 10, \phi 16$ only

For maintenance parts, please visit the CKD Equipment Product Site
[\(https://www.ckd.co.jp/kiki/en/\)](https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts.

STEP-1 Select appropriate model from required gripping force

① Calculation of Required Gripping Force

To transport a workpiece (weight W_L), a gripping force F_W that satisfies the following formula is required.

$$F_W > \frac{W_L \times g \times K}{n}$$

- F_W : Required Gripping Force [N]
- n : Number of Fingers = 2
- W_L : Workpiece Weight [kg]
- g : Gravitational acceleration = 9.8 [m/s²]
- K : Conveyance Factor
- 5 [Holding only]
- 10 [Normal transport]
- 20 [Rapid acceleration transport]

About Conveyance Factor K

Calculation Example) When decelerating from a conveyance speed $V = 0.75$ m/s to stop in 0.1 seconds, with a friction coefficient μ of 0.1 between the workpiece and finger, it is as follows.

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

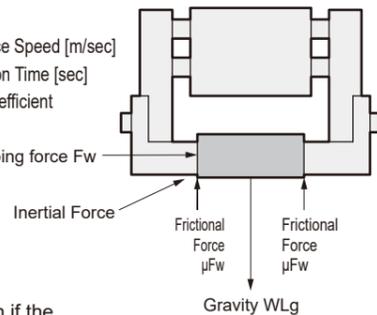
- Inertial force = $W_L (V/t)$
- Gravity = $W_L g$

- V : Conveyance Speed [m/sec]
- t : Deceleration Time [sec]
- μ : Friction Coefficient

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

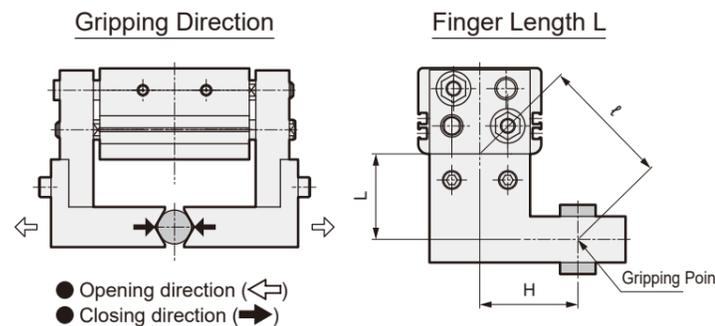
$$\therefore \text{The transport coefficient K at this time is, from the above formula } \frac{V/t + g}{\mu g} = \frac{0.75/0.1 + 9.8}{0.1 \times 9.8} \approx 20$$

Note) The transport coefficient K needs to allow a margin for impacts during transport, etc. Even if the friction coefficient μ is higher than $\mu=0.1$, set the conveyance factor K to 10 to 20 or more for safety.

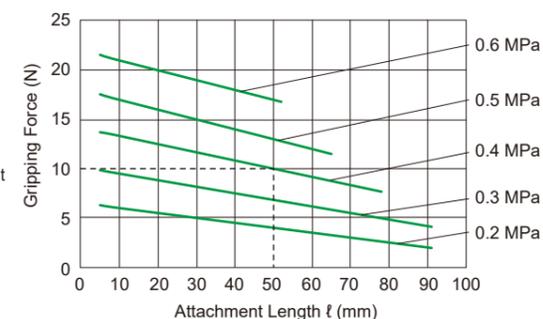


② Model selection from required gripping force

Gripping force changes depending on "gripping direction," "attachment length," and "supply pressure." Confirm from the gripping force graph that sufficient gripping force can be obtained under your operating conditions. For the gripping force graph, refer to P. 256.



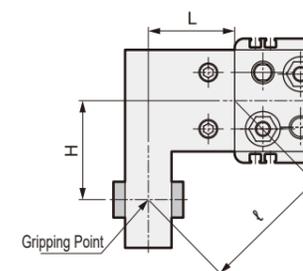
How to Read Gripping Force Graph (For HMC-10)



For example, if the supply pressure is 0.4 MPa and the attachment length is 50 mm, the resulting gripping force will be 10 N.

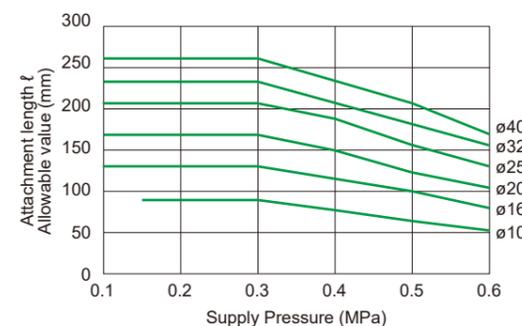
STEP-2 Confirmation of Attachment Shape

Ex) l : 50 mm



Note) When selecting, check the design and selection precautions on P. 336.

If HMC-10 is selected, the attachment length l : 50 mm is smaller than the value on the $\phi 10$ line at a supply pressure of 0.5 MPa, so it can be used.



- Use attachments that are as lightweight and short as possible. If they are long and heavy, the inertial force during opening and closing becomes large, which may cause backlash in the fingers or accelerate wear of the finger's sliding parts, adversely affecting the service life.
- Even if the attachment shape is within the performance data, making it as small as possible will allow the product to be used for a long time. Also, if l is long, there is a risk of gripping errors, dropping during transport, etc., due to unexpected vibrations. As a guideline, use "Cylinder bore $\times 1.3$ / Operating pressure". If l is longer than that, set a higher transport coefficient in STEP-1 (Guideline: Transport coefficient of 20 or more).
- The weight of the attachment affects the service life, so please keep it below the following.
 $W < 1/4H$ (1 piece) W : Weight of attachment
 H : Gripper Product Weight

Hand (Gripper)

LSH-HP
LSH
FH100
BSA2
BHA
BHG
BHE
LHA
LHAG
HAP-1C
HAP-2 to 4CS
HKP
HCP
HGP
LST-HP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD

HMC-HP
HMF
HMF-G
HMF-B
HFP
FH500
HBL
HJL
HMD
HDL
HJD
Cylinder Switch
Ending

Hand (Gripper)

LSH-HP
LSH
FH100
BSA2
BHA
BHG
BHE
LHA
LHAG
HAP-1C
HAP-2 to 4CS
HKP
HCP
HGP
LST-HP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD

HMC-HP
HMF
HMF-G
HMF-B
HFP
FH500
HBL
HJL
HMD
HDL
HJD
Cylinder Switch
Ending