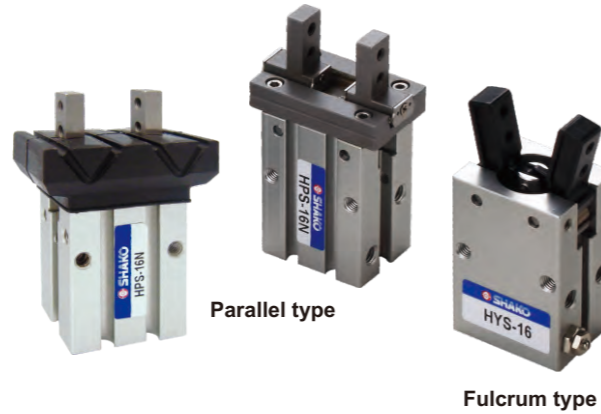


Features

1. Identical to SMC mounting hole
2. Precision and no vibration.
3. Endurable and strong mechanism.
4. SUS440C gripper provides a long life of product.
5. Aluminum alloy body with hard anodizing for wear and corrosion resistance.



How to order

HPS	16	N	SR	1
Mini gripper	Bore size	Type of gripper	Sensor type	Number of sensor
HPS : Parallel type (Linear mechanism)	10 : ϕ 10 16 : ϕ 16 20 : ϕ 20 25 : ϕ 25	W : Wide N : Narrow (For HPS only)	Blank : W/O sensor SQ : Square type (For HPS only) AL-30R/N/P SR : Round type AL-07R/N/P	1 pc 2 pcs

*Please refer to P3-181, P3-184

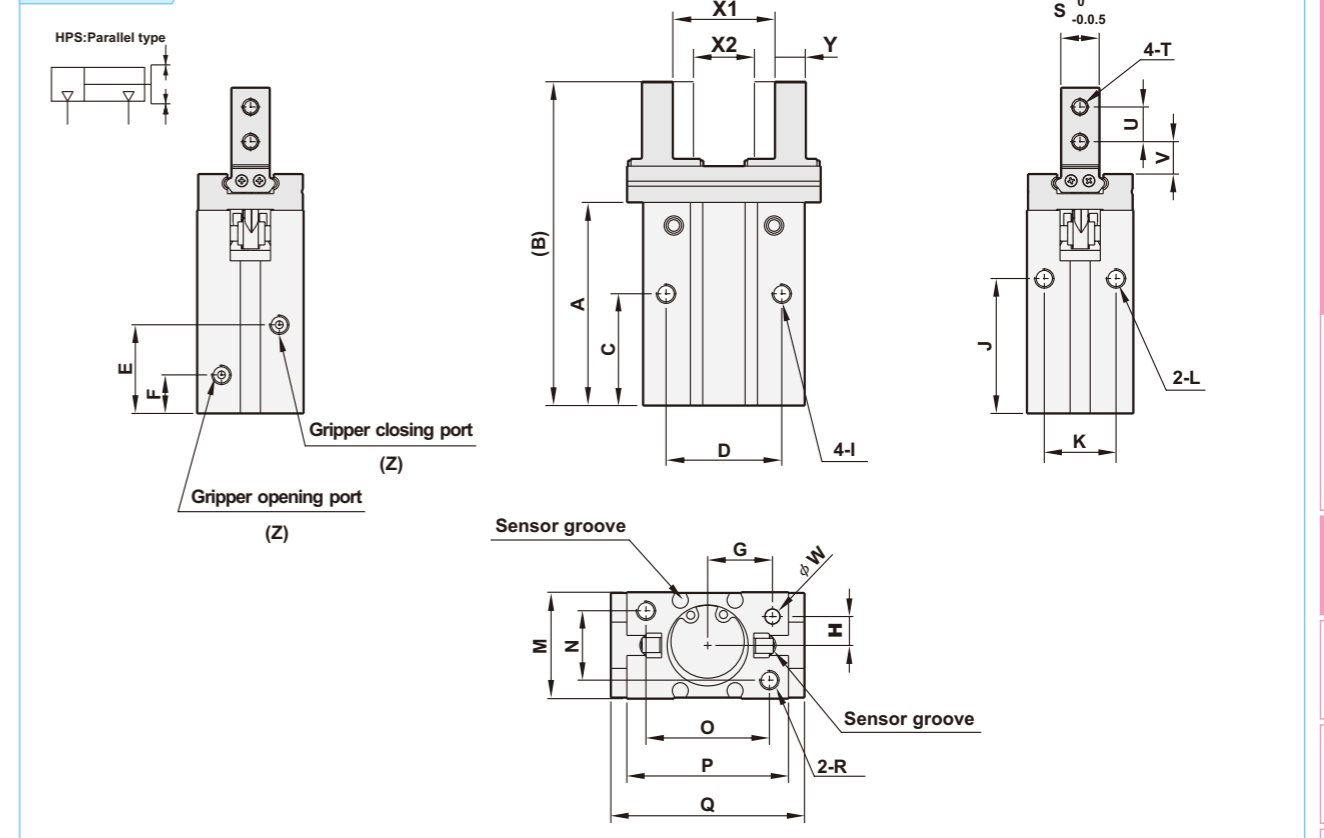
Specifications

Bore size	ϕ 10	ϕ 16	ϕ 20	ϕ 25
Port size	M3		M5	
Gripping gap distance (Wide type)	Full open : 15.2mm, Full closed : 11.2mm		Full open : 22mm, Full closed : 14mm	Full open : 26mm, Full closed : 16mm
Gripping gap distance (Narrow type)	Full open : 9.7mm, Full closed : 5.7mm		Full open : 15.2mm, Full closed : 7mm	Full open : 17.2mm, Full closed : 7.7mm
Internal gripping force(For HPS)	16.5N	44N	65.5N	102N
External gripping force(For HPS)	10.5N	33N	42N	63.5N
Fluid	Compressed air			
Acting	Double acting			
Operating pressure range	Fulcrum type : 1.0~6.1 kgf/cm ² , Parallel type : 1.0~7 kgf/cm ²			
Max. operating pressure	7 kgf/cm ²			
Lubrication	Not required or few			
Body material	Aluminum alloy (6061T6)			
Gripper material	SUS(Parallel type) , S45C(Fulcrum type)			
Magnet	Built-in			
Ambient temperature	0°C ~ 60°C			
Operating frequency	HPS: 160 c.p.m.		HYS:180 c.p.m	
Operating angle (For HYS)	-10° ~ 30°			

P3-111

Dimensions

HPS-10~25



(Unit: mm)

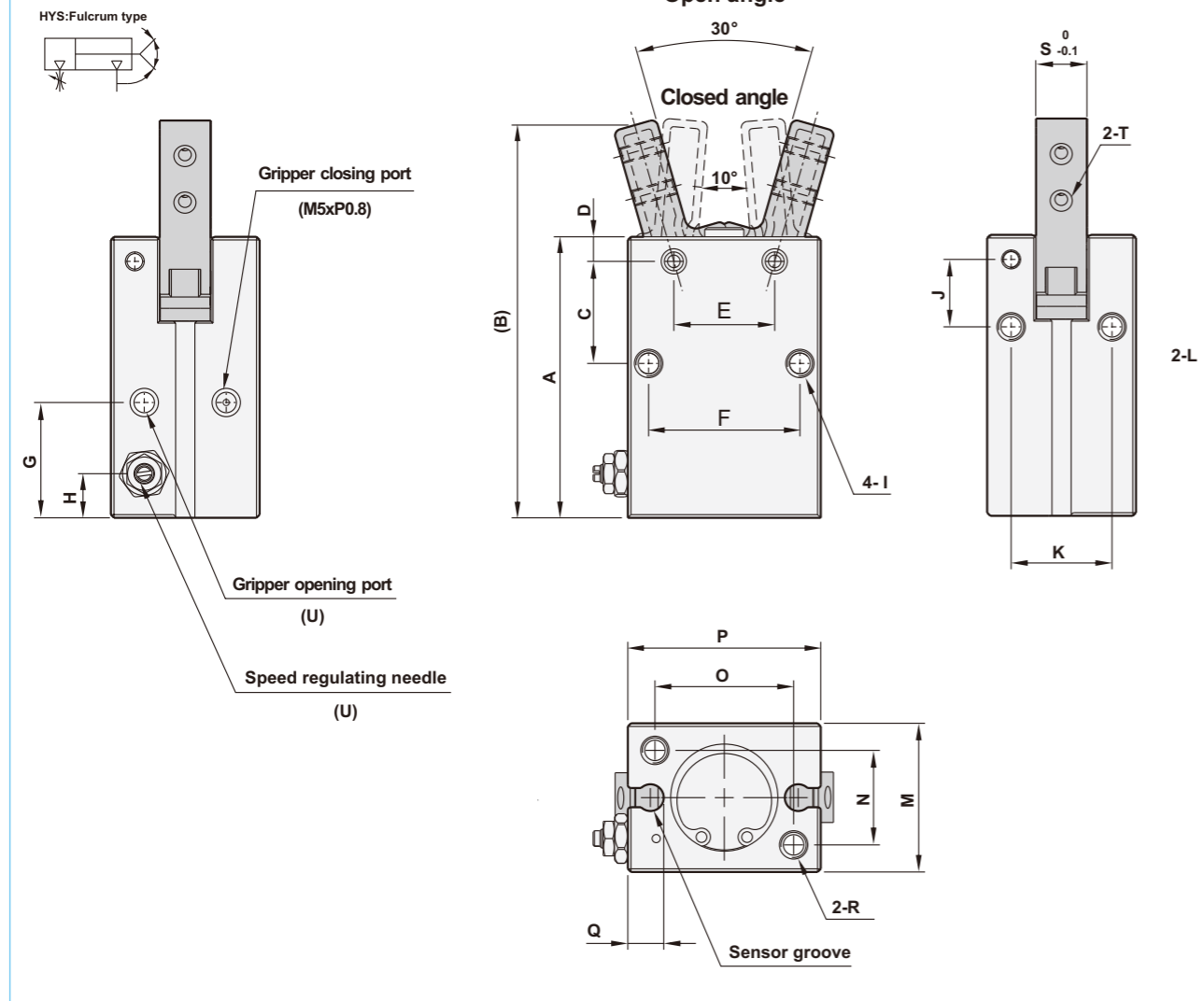
Model	A	B	C	D	E	F	G	H	I	J	K	L	M
HPS-10W	37.8	57	23	16	19	9	7.6	5.2	M3xP0.5xL6.0	27	11.4	M3xP0.5xL6.0	16.4
HPS-10N	37.8	57	23	16	19	9	7.6	5.2	M3xP0.5xL6.0	27	11.4	M3xP0.5xL6.0	16.4
HPS-16W	42.4	67	24.5	24	19	7.5	11	6.5	M4xP0.7xL8.0	30	16	M4xP0.7xL4.5	23.6
HPS-16N	42.4	67	24.5	24	19	7.5	11	6.5	M4xP0.7xL8.0	30	16	M4xP0.7xL4.5	23.6
HPS-20W	52.7	84	29	30	23	10	16.8	7.5	M5xP0.8xL10.0	35	18.6	M5xP0.8xL8.0	27.6
HPS-20N	52.7	84	29	30	23	10	16.8	7.5	M5xP0.8xL10.0	35	18.6	M5xP0.8xL8.0	27.6
HPS-25W	63.6	102.7	30	36	23.5	10.7	21.8	10	M6xP1.0xL12.0	36.5	22	M6xP1.0xL10.0	33.6
HPS-25N	63.6	102.7	30	36	23.5	10.7	21.8	10	M6xP1.0xL12.0	36.5	22	M6xP1.0xL10.0	33.6

Model	N	O	P	Q	R	S	T	U	V	W	X1	X2	Y	Z
HPS-10W	12	19	23	29	M3xP0.5xL6.0	5	M2.5xP0.45	5.7	4.8	2	15.2 ^{+2.2} ₀	11.2 ⁰ _{-0.7}	4 ⁰ _{-0.1}	M3xP0.5
HPS-10N	12	19	23	29	M3xP0.5xL6.0	5	M2.5xP0.45	5.7	4.8	2	9.7 ^{+2.2} ₀	5.7 ⁰ _{-0.4}	4 ⁰ _{-0.1}	M3xP0.5
HPS-16W	15	22	30.6	38.1	M4xP0.7xL8.0	8	M3xP0.5	7	6.3	3	22 ^{+2.2} _{-0.2}	14 ⁰ _{-0.7}	5 ⁰ _{-0.1}	M5xP0.8
HPS-16N	15	22	30.6	38.1	M4xP0.7xL8.0	8	M3xP0.5	7	6.3	3	15.2 ^{+2.2} ₀	7 ⁰ _{-0.4}	5 ⁰ _{-0.1}	M5xP0.8
HPS-20W	18	32	42	50.2	M5xP0.8xL10.0	10	M4xP0.7	9	7.9	4	26 ^{+2.2} _{-0.2}	16 ⁰ _{-0.7}	8 ⁰ _{-0.1}	M5xP0.8
HPS-20N	18	32	42	50.2	M5xP0.8xL10.0	10	M4xP0.7	9	7.9	4	17.2 ^{+2.2} ₀	7.7 ⁰ _{-0.4}	8 ⁰ _{-0.1}	M5xP0.8
HPS-25W	22	40	52	63	M6xP1.0xL12.0	12	M5xP0.8	12	10.4	4	33.3 ^{+2.5} _{-0.2}	19.3 ⁰ _{-0.8}	10 ⁰ _{-0.1}	M5xP0.8
HPS-25N	22	40	52	63	M6xP1.0xL12.0	12	M5xP0.8	12	10.4	4	22.8 ^{+2.5} ₀	8.8 ⁰ _{-0.4}	10 ⁰ _{-0.1}	M5xP0.8

P3-112

Dimensions

HYS-10~25



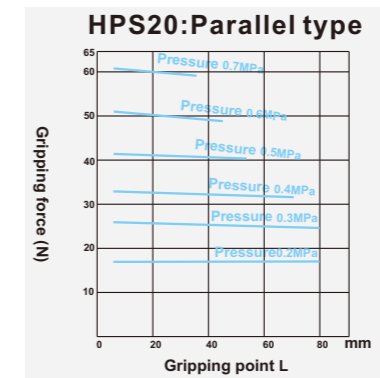
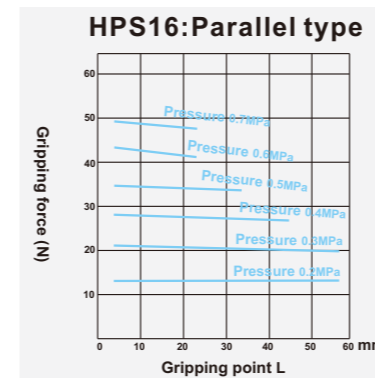
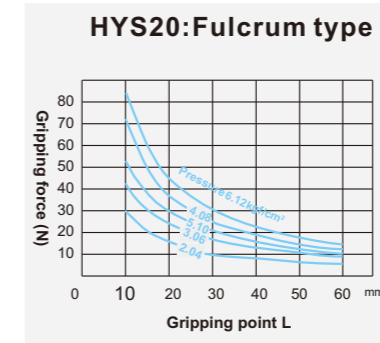
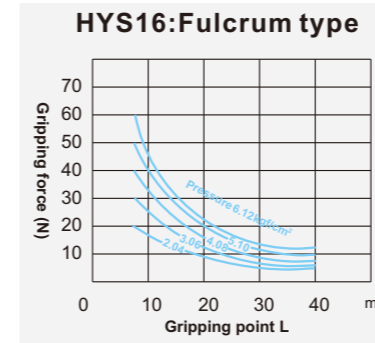
(Unit: mm)

Model	A	B	C	D	E	F	G	H	I	J	K
HYS-10	38.6	52.4	12.8	2.8	10	16	18.8	7.2	M3xP0.5xL6	8.8	11.4
HYS-16	44.6	62.5	16.2	3.9	16	24	18.3	7	M4xP0.7xL8	10.7	16
HYS-20	55.2	77.7	21.7	4.5	20	30	22.2	7.5	M5xP0.8xL10	15.7	18.6
HYS-25	60.4	92	25.8	4.6	25	36	23.5	8.5	M6xP1.0xL10	19.3	22

Model	L	M	N	O	P	Q	R	S	T	U
HYS-10	M3xP0.5xL6	16.4	12	18	23	4.6	M3xP0.5xL6	6.4	M2.5xP0.45through	M3xP0.5
HYS-16	M4xP0.7xL6.5	23.6	15	22	30.6	5.7	M4xP0.7xL8	8	M3xP0.5through	M5xP0.8
HYS-20	M5xP0.8xL8	27.6	18	32	42	8.8	M5xP0.8xL10	10	M4xP0.7through	M5xP0.8
HYS-25	M6xP1.0xL10	33.6	22	40	52	11.5	M6xP1.0xL12	12	M5xP0.8through	M5xP0.8

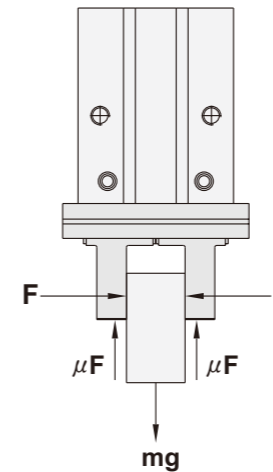
P3-113

Gripping force graph



Pressure/Gripping point/Gripping force graph
*Please note that gripping force need 10~20 times greater than the work piece weight.

Effective gripping force calculation



When gripping a work piece as in the left figure , the following definitions are applied:

- F:** Gripping force (N)
- μ:** Coefficient of friction between the attachments and the work piece
- m:** Work piece mass (kg)
- g:** Gravitational acceleration (=9.8m/s²)
- mg:** Work piece weight (N)

the conditions under which the work piece will not drop are:

$$2 \times \mu F > mg$$

Number of fingers

and therefore

$$F > \frac{mg}{2 \times \mu}$$

With "a" representing the extra margin, F is determined by the following formula:

$$F > \frac{mg}{2 \times \mu} \times a$$

*Even in cases where the coefficient of friction is greater than $\mu = 0.2$, for reasons of safety, a gripping force should be selected at least 10 to 20 times greater than the work piece weight.

*It is necessary to allow a greater margin for high accelerations and strong impacts.

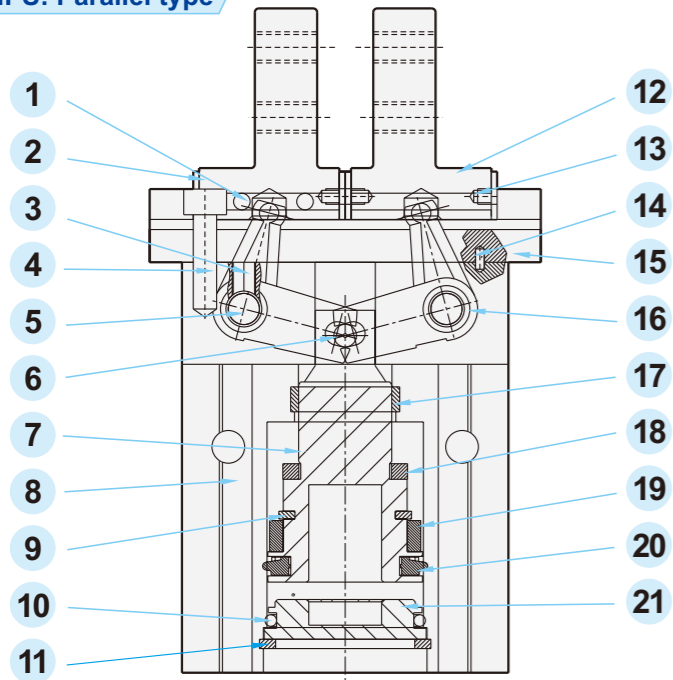
Example:
<The "10 to 20 times or more of the work piece weight">

When $\mu = 0.2$	When $\mu = 0.1$
$F = \frac{mg}{2 \times 0.2} \times 4$	$F = \frac{mg}{2 \times 0.1} \times 4$
$= 10 \times mg$	$= 20 \times mg$
10 x work piece weight	20 x work piece weight

P3-114

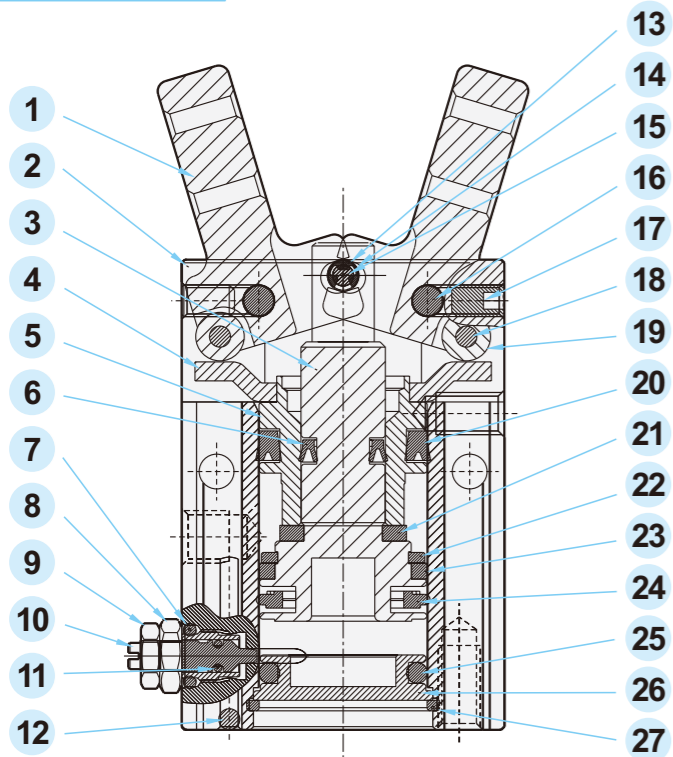
Material of parts

HPS: Parallel type



No.	Description	Material	Qty
1	Steel ball	Carbon steel	24
2	Roller stopper	Stainless steel	4
3	Plug	Fe+Ni	2
4	Hex socket head cap screw	Stainless steel	4
5	Lever shaft	Stainless steel	2
6	Center pin	Stainless steel	1
7	Piston	Aluminum alloy	1
8	Body	Aluminum alloy	1
9	Snap ring	Fe+Ni	1
10	O-ring	NBR	1
11	C type snap ring	Stainless steel	1
12	Gripper	Stainless steel	2
13	Screw	Fe+Ni	8
14	Parallel pin	Stainless steel	2
15	Guide	Stainless steel	1
16	Lever	Stainless steel	2
17	U-ring	NBR	1
18	Bumper	PU	1
19	Magnet	Rare earth magnet	1
20	U-piston seal	NBR	1
21	End cover	Aluminum alloy	1

HYS: Fulcrum type



No.	Description	Material	Qty
1	Gripper	Carbon steel	2
2	Body	Aluminum alloy	1
3	Piston	Aluminum alloy	1
4	Plate	Carbon steel	1
5	Sleeve	Aluminum alloy	1
6	U-ring	NBR	1
7	O-ring	NBR	1
8	Bolt	Cu	1
9	Nut	Fe+Ni	1
10	Speed regulating needle	Cu	1
11	O-ring	NBR	1
12	Steel ball	Carbon steel	1
13	Snap ring	Stainless steel	1
14	Center roller	Stainless steel	2
15	Center pin	Stainless steel	1
16	Lever shaft	Stainless steel	2
17	Plug	Fe+Ni	2
18	Roller pin	Stainless steel	2
19	Roller	Stainless steel	2
20	U-ring	NBR	1
21	Bumper	PU	1
22	Snap ring	Fe+Ni	1
23	Magnet	Rare earth magnet	1
24	U-piston ring	NBR	1
25	O-ring	NBR	1
26	End cover	Aluminum alloy	1
27	C type snap ring	Stainless steel	1

P3-115

Memo...



P3-116