MCHJ series

PARALLEL GRIPPER (3-Finger)

mindman

Model selection

Technical data

Caution for safety
(Read before installing)



Features

- Compact design to ensure minimum interference while operating; robust T rail design, ensure accurate gripping.
- Can reach maximum torque suitable for long jaws design.
- Circular piston-driven design ensure maximum clamping force.
- Hose-free direct connection: Air supply channel can connect directly without piping or through thread to assure the flexibility of supplying compressed air on any kind of automation system.
- Assembling with a dust-proof module can prevent foreign matters (>0.5mm) entering the gripper.
- Magnetic as standard.

Dust-proof module

- For dusty environment usage.
- When installing soft-jaws, the length of jaws are measured from the the body surface.
- Heat resistance type of modules are also available. Please contact our sales department.

Pressure piece

- A special design for the gripper to eject the workpiece after gripper opens.

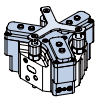
Order example

MCHJ — 50 — SD

MODEL

SIZE
50, 66, 80, 100, 125, 160

ACCESSORIES (Options)

P (*1)	**SD** (*2)	**PSD** (*1)
Pressure piece	Dust-proof Module	**P+SD**
		

*1. Only for size 50~100.
*2. When the size 50 is assembled with the dust-proof module, the proximity sensor cannot be used.

Accessories

SD — MCHJ — 50

SD: Dust-proof module
P : Pressuer piece

SIZE
50 ~ 160*

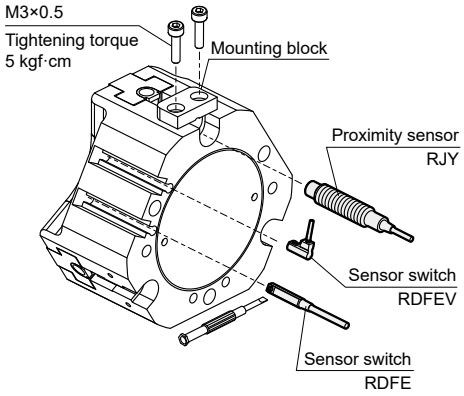
* Pressure piece (P) only for size 50~100.

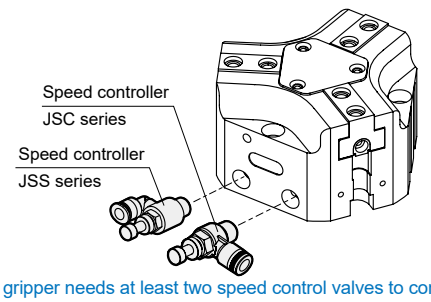
Specification

Model	MCHJ					
Acting type	Double acting					
Size	50	66	80	100	125	160
Stroke per-jaw (mm)	4	6	8	10	12	16
Effective external gripping force (N) (*)	95	177	297	527	917	1756
Close/Open time (1/s)	0.025	0.03	0.05	0.1	0.2	0.25
Medium	Air					
Operating pressure range	0.2~0.8 MPa					
Compressed air consumption (cm^3)	9.2	21.5	47	100	195	485
Ambient temperature	+5°C~ +80°C					
Lubrication	Not required					
Sensor switch	RDGV	RDFE(V)				
Proximity sensor	–	RJY				
Accessories	Mounting block, Accessory kits					
Weight (kg)	0.22	0.5	0.85	1.6	2.8	5.2

* Under the condition of clamping length 40mm and operation pressure 0.6 MPa.

Installation of sensor switch & speed controller

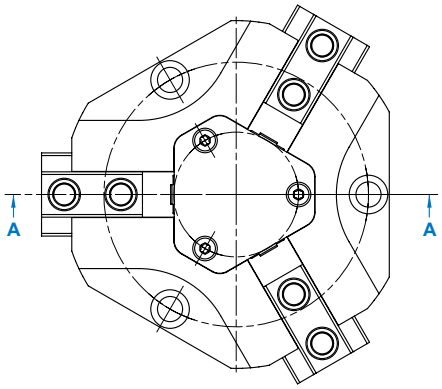




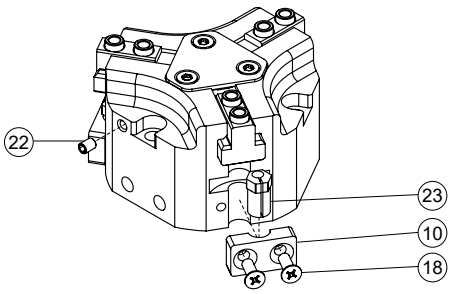
* Each gripper needs at least two speed control valves to control speed.
* Speed controller specification .

MCHJ Inside structure & Parts list

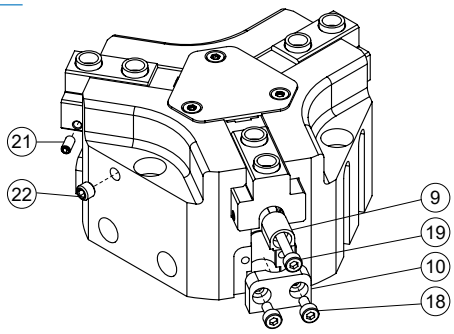
PARALLEL GRIPPER (3-Finger)

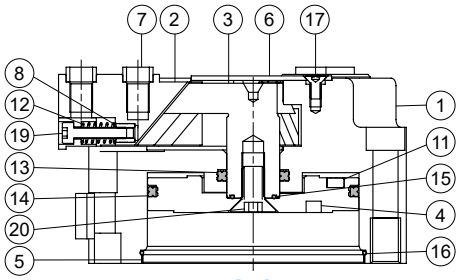


50



66~160





A-A

Material

No.	Size / Part name	50	66	80	100	125	160	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy						1	
2	Finger	Carbon steel						3	
3	Rod	Carbon steel						1	
4	Piston	Aluminum alloy						1	
5	End cover	Stainless steel						1	
6	Plate cover	Stainless steel						1	
7	Centering sleeve	Stainless steel						*4	
8	Thread insert	–		Brass				3	
9	Sensor adj block	–	Aluminum alloy					2	
10	Magnet holder	*1	Resina					2	
11	Magnet	Magnet material						1*2	
12	Spring	–	SWP					2	
13	Rod packing	NBR						1	●
14	Piston packing	NBR						1	●
15	O-ring	NBR						1	●
16	O-ring	NBR						1	●
17	Screw	Alloy steel						3	
18	Bolt	*3	Stainless steel					4	
19	Hex bolt	–	Stainless steel					2	
20	Bolt	Alloy steel						1	
21	Hex screw	–	Stainless steel					4	
22	Hex screw	*3	Stainless steel					3	
23	Adjust socket	SUS	–					2	

*1. Aluminum alloy *2. Size 125 Q'y: 2 pcs *3. Alloy steel *4. Included in accessory kits

Order example of repair & accessory kits

Size	Repair kits	Accessory kits
50	**PS-MCHJ-50**	**AK-MCHJ-50**
66	**PS-MCHJ-66**	**AK-MCHJ-66**
80	**PS-MCHJ-80**	**AK-MCHJ-80**
100	**PS-MCHJ-100**	**AK-MCHJ-100**
125	**PS-MCHJ-125**	**AK-MCHJ-125**
160	**PS-MCHJ-160**	**AK-MCHJ-160**

Accessory kits

	
O-ring (×2) Material: NBR	Iron plug (×2) Stainless steel + NBR
	
PIN (×2)* Bearing steel	Centering sleeve (×6) Stainless steel

* Refer to the table below.

Pin size

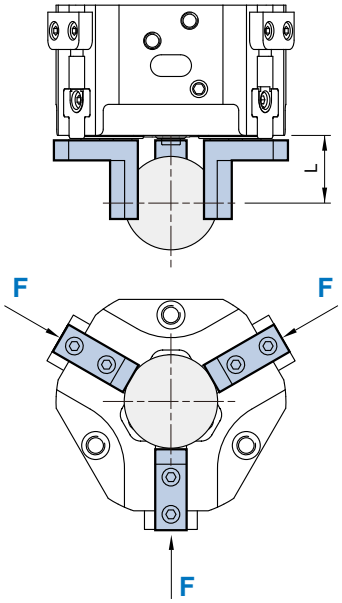
Size	Pin
50	ø4×8.8L
66	ø4×14.8L
80	ø5×14.8L
100	ø5×14.8L
125	ø6×17.8L
160	ø6×17.8L

Effective gripping force

* Model selection .

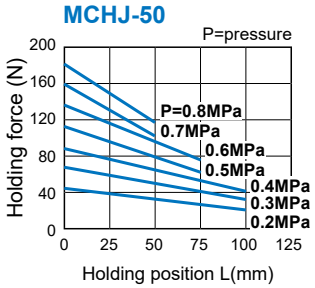
Indication of effective gripping force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when three fingers and attachments are in full contact with the workpiece as shown in the figure below.

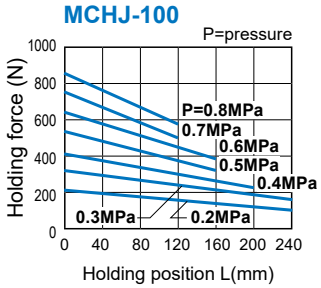
1N=0.102 kgf
1MPa=10.2 kgf/cm^2

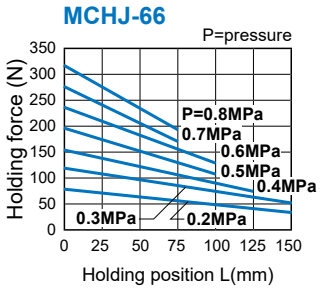


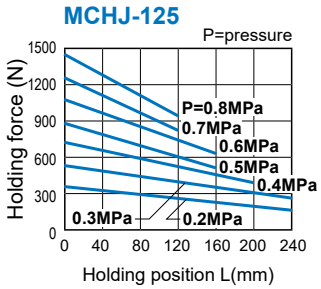
External grip

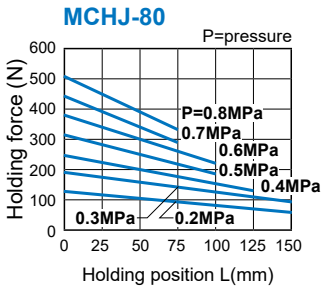
External gripping force

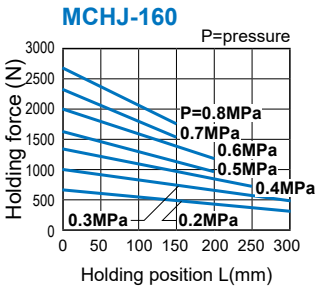


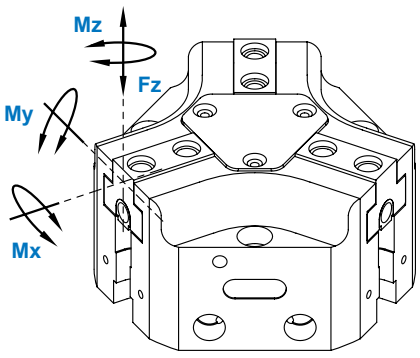












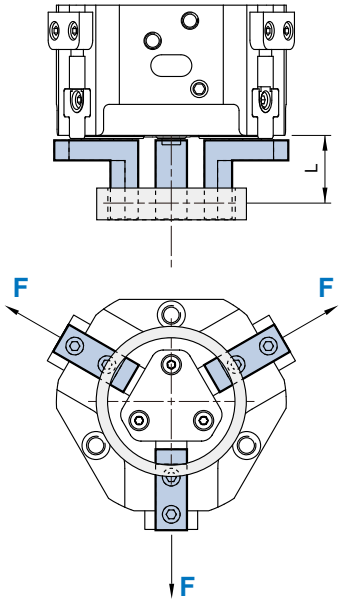
Code / Model	Mx max. (Nm)	My max. (Nm)	Mz max. (Nm)	Fz max. (N)
MCHJ-50	15	15	8	700
MCHJ-66	50	45	35	1200
MCHJ-80	80	60	50	1800
MCHJ-100	100	90	75	2500
MCHJ-125	120	120	100	3200
MCHJ-160	160	180	140	5000

Effective gripping force

* Model selection .

Indication of effective gripping force.
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when three fingers and attachments are in full contact with the workpiece as shown in the figure below.

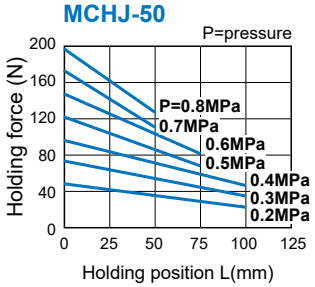
1N=0.102 kgf
1MPa=10.2 kgf/cm^2



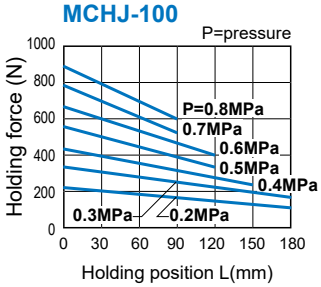
Internal grip

Internal gripping force

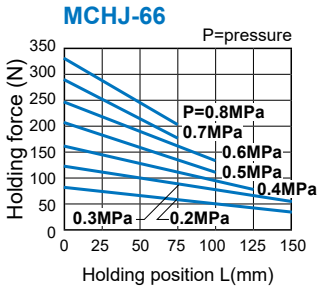
MCHJ-50



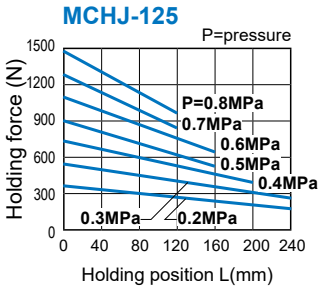
MCHJ-100



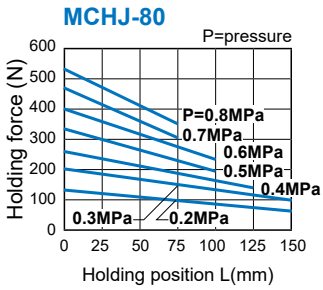
MCHJ-66



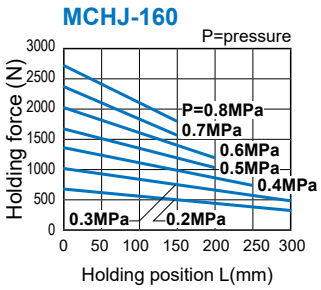
MCHJ-125



MCHJ-80



MCHJ-160

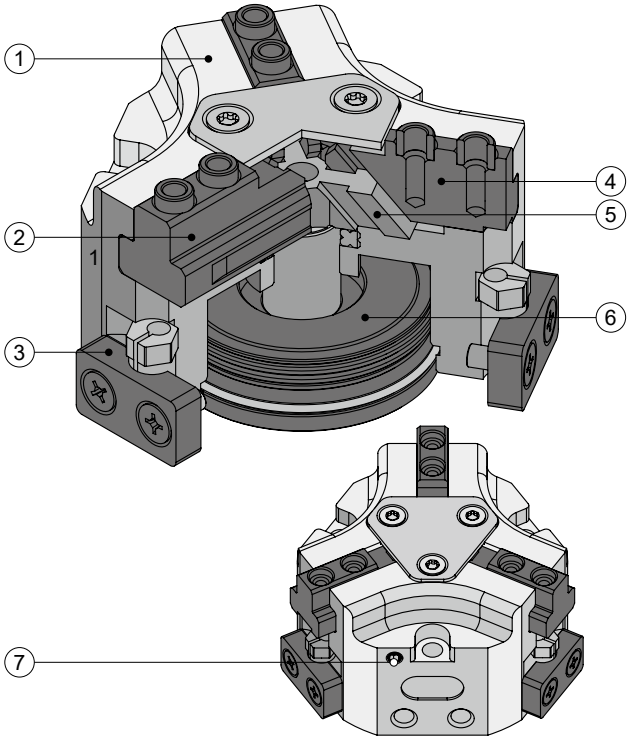


MCHJ Internal structure & Application examples

PARALLEL GRIPPER (3-Finger)

Internal structure & Movement description

Compressed air will push or press the circular piston.
By tilting the working surface, the wedge hook will transfer the movement to side movement, and initiate the action of the three base jaws simultaneously.



① **Material**
Anodized high rigid aluminum alloy to reduce weight.

② **Rail**
Bearing rails load the base jaw,which ensure the minimal vibration of long jaw.

③ **Sensor system**
Sensor switch or proximity sensor are available.

④ **Base jaw**
Jaws connected to work piece.

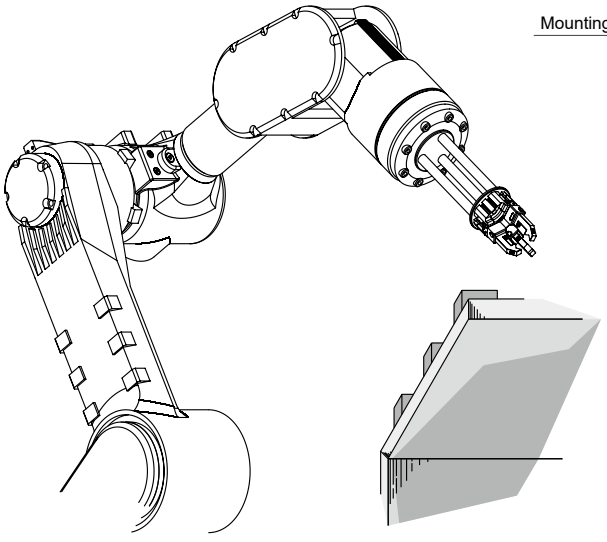
⑤ **Wedge hook**
High power transmission center jaws.

⑥ **Large circular piston**
Generate larger structural strength.

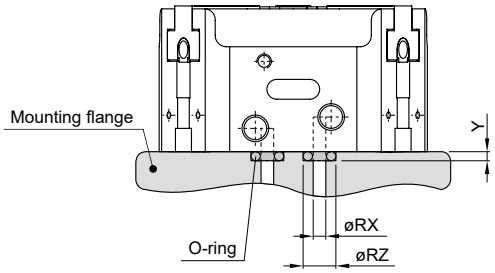
⑦ **Air purge connection** (External vents)
The air purge is used in order to make it more difficult for dirt and dust to penetrate into the product and the guiding areas.
* The air purge is effective only when the gripper is opened.
* Install a valve to control the air purge.

Application examples

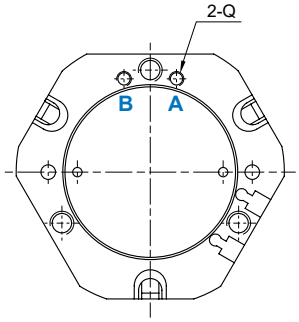
The wedge hook can pass through the inclined working surface, change the action to sideways and simultaneously actuate the three-jaw clamping movement.
It can be used in the robot arm system environment when matched with various accessory.



Hose-free direct connection



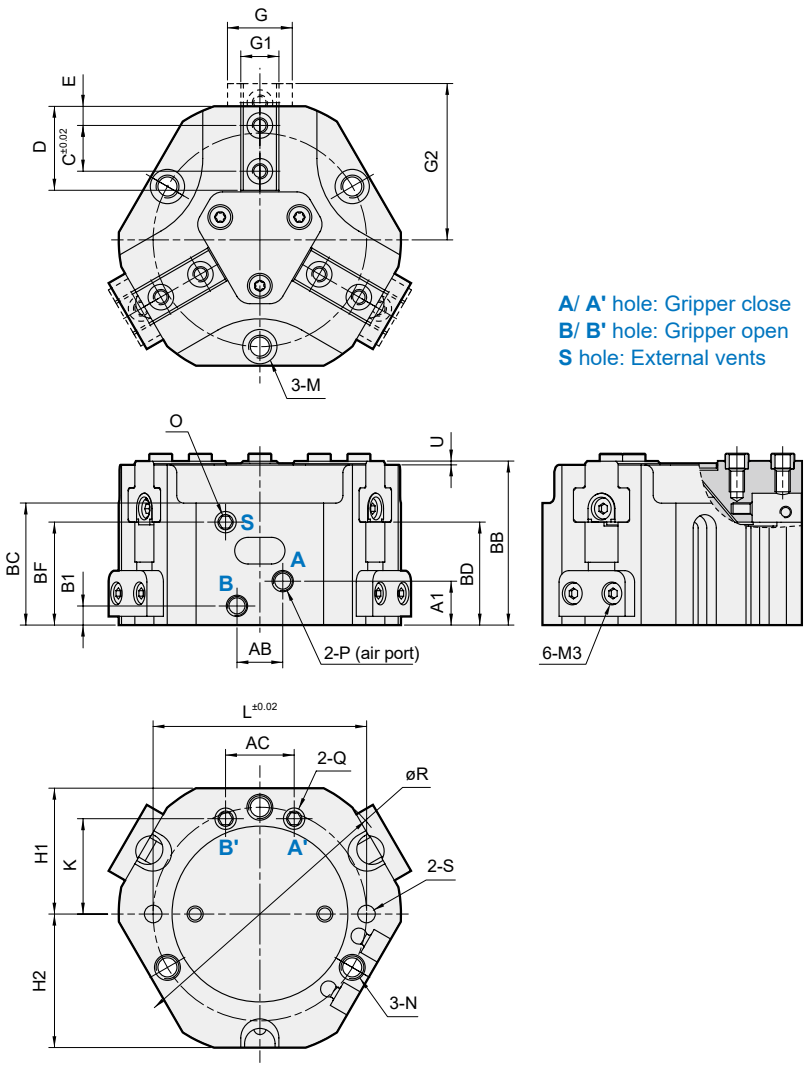
Code / Size	Q	RX	RZ	Y
50	M3	3	5	0.7
66	M5	5	8	1.2
80	M5	5	8	1.2
100	M5	5	8	1.2
125	M5	5	8	1.2
160	M5	5	8	1.2



A hole: Gripper close
B hole: Gripper open

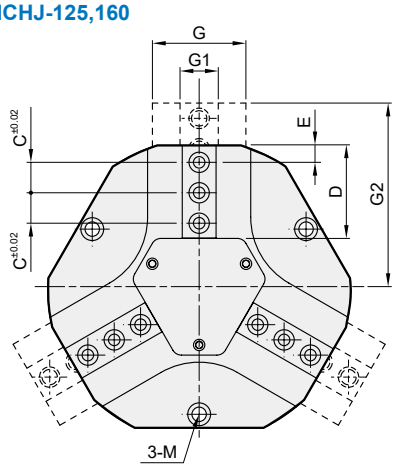
MCHJ Dimensions 50~160

PARALLEL GRIPPER (3-Finger)



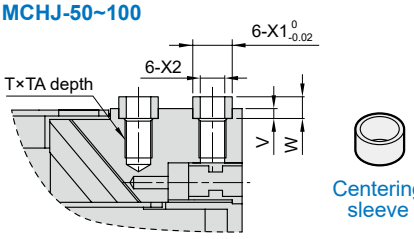
A/ A' hole: Gripper close
B/ B' hole: Gripper open
S hole: External vents

MCHJ-125,160

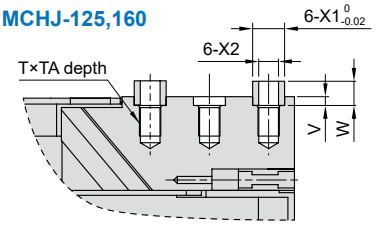


Centering sleeve

MCHJ-50~100



MCHJ-125,160

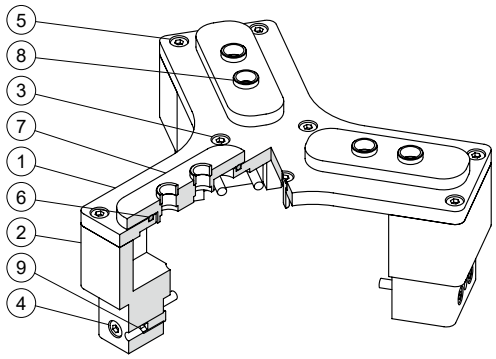


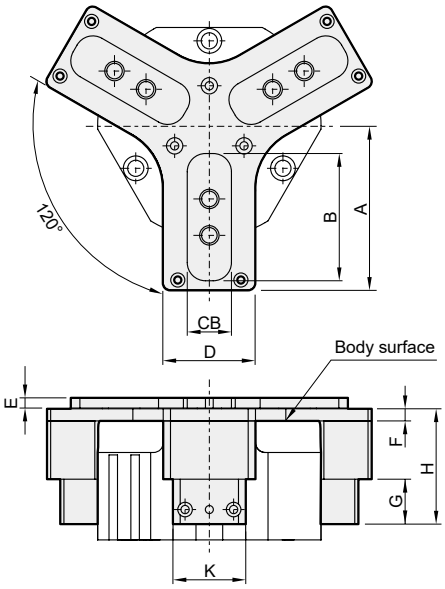
Code / Size	A1	AB	AC	B1	BB	BC	BD	BF	C	D	E	G	G1	G2	H1	H2	K	L
50	5	12	12	5	35	26	23	23	8	16	4	12	6.5	31	26	27	19	45
66	11.5	12	18	5	43	32	27	27	12	22	5	17	10	41	33	35	25	56
80	8	26	18	8	50	36	31	31	15	26.7	6	22	12	51.5	40.5	43.5	32	70
100	13.5	24	24	10	60	41	38	34	18	34.2	10	26	14	64	51	54	42	90
125	17	30	30	10	68	49	42.5	37	12.5	42.3	10	31	15.5	79	64	67	53	112
160	20	44	38	10.5	80	55	48	45	18	54.8	10	39	20	102	81	86	67.5	146

Code / Size	M	N	O	P	Q	R	S	T	TA	U	V	W	X1	X2
50	ø7.3×4.1dp, ø4.3 thru, P.C.D.ø45	M5×0.8×8dp	M3	M5×0.8	M3	57	ø4H7×5	6-M3×0.5	7	1	2	3.9	ø5	ø3
66	ø9×5.1dp, ø5.1 thru, P.C.D.ø56	M6×1.0×10dp	M5	M5×0.8	M5	74	ø4H7×8	6-M4×0.7	8	1	2	3.9	ø6	ø4
80	ø10.2×6.1dp, ø6.8 thru, P.C.D.ø70	M8×1.25×12dp	M5	G1/8	M5	92	ø5H7×8	6-M6×1.0	10	1	2	3.9	ø8	ø6
100	ø10.5×6.5dp, ø6.8 thru, P.C.D.ø90	M8×1.25×12dp	M5	G1/8	M5	114	ø5H7×8	6-M6×1.0	12	1	2	3.9	ø10	ø6
125	ø13.5×8.1dp, ø8.6 thru, P.C.D.ø112	M10×1.5×15dp	M5	G1/8	M5	139	ø6H7×10	9-M6×1.0	14	1	2	3.9	ø10	ø6
160	ø13.5×8.1dp, ø8.6 thru, P.C.D.ø146	M10×1.5×24dp	M5	G1/8	M5	179	ø6H7×10	9-M8×1.25	14	1	2	3.9	ø12	ø8

Inside structure & Parts list / Dimensions

Dust cover 50~160



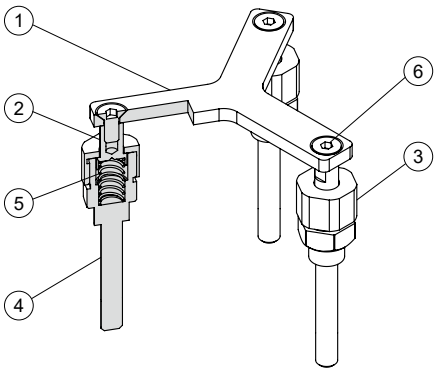


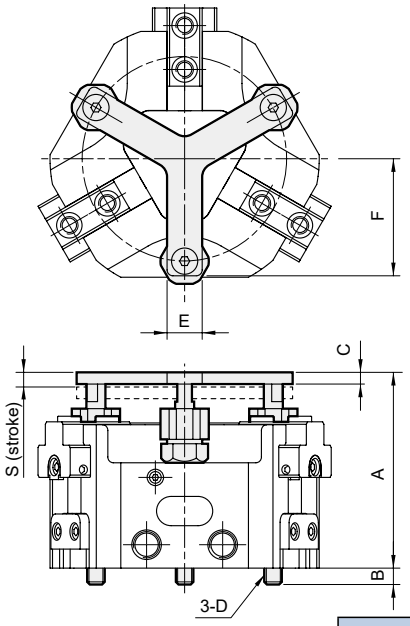
Material

No.	Part name	Material	Q'y	
			50	66~160
1	Dust cover	Aluminum alloy	1	1
2	Mounting block	Aluminum alloy	3	3
3	Bolt	Alloy steel	3	3
4	Bolt	Alloy steel	5	6
5	Bolt	Alloy steel	6	6
6	O-ring	NBR	3	3
7	Slider	Carbon steel	3	3
8	Centering sleeve	Stainless steel	6	6
9	Hexagon screw	Alloy steel	0	2

Code / Size	A	B	CB	D	E	F	G	H	K	Weight (g)
50	43	30	13	17	4.5	5	16	35.5	17	105
66	51	41	16.2	24	4.5	5	19.5	45.5	24	179
80	67.5	52.4	18.1	38	4.5	5	19	48	30	381
100	80	61	22	37	4.5	5	11.5	41	37	417
125	95	72	22	50	4.5	5	14.5	47.5	37	603
160	121	93	25	60	4.5	6	13	55	50	1019

Pressure piece 50~100





Material

No.	Part name	Material	Q'y
1	Top plate	Carbon steel	1
2	Spring pressure column	Carbon steel	3
3	Nut	Carbon steel	3
4	Fixed column	Carbon steel	3
5	Spring	Stainless steel	3
6	Bolt	Alloy steel	3

Code / Spec.	A	B	C	D	E	F	S	Weight (g)	Ejection force (kgf)	
									Retracted Min.	Extended Max.
50	55.5	5	2	M4×0.7	8	30	6	63	1	3.9
66	60.9	5.6	2	M5×0.8	10	35	5	93	2	3.8
80	66.9	5.6	4	M6×1.0	12	40	5	149	1.5	2.4
100	71.6	7.9	4	M6×1.0	14	50	5	180	4.1	6.3