SHZ
Air Gripper

SHZ: Standard double acting,magnet built-in

SHZ: Single acting(N.O.), magnet built-in

SHZSB:Single acting(N.C.), magnet built-in

Specifications

Bore size(mm)			10	16	20	25	32	40
Acting type			Double Acting/Single Acting					
Working medium			Clean Air(40 μ m filteration)					
Applicable pressure range	Double acting	Φ10	0.15~0.7MPa(22~100psi)(1.5~7.0bar)					
		Φ16~Φ40	0.1~0.7MPa(15~100psi)(1.0~7.0bar)					
	Single acting	Φ10	0.3~0.7MPa(45~100psi)(3.0~7.0bar)					
		Φ16~Φ25	0.25~0.7MPa(36~100psi)(2.5~7.0bar)					
Working temperature			-20~70℃(No freezing)					
Oil			Not required					
Maximum frequency			180(C.P.M)					
Port size			M3X0.5	M5X0.8				
Weight(g)			52	120	236	430	765	1364

How to Order?

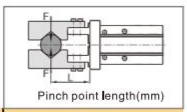
Series	–	Type No.	–	Bore	–	Magnet No.
SHZ: Parrallel air gripper		Blank: Basic type SA: Single acting (N.O.) SB: Single acting (N.C.)		10 25 16 32 20 40		S: With magnet (Magnet is standard)

Order Example: Parrallel air gripper,Bore 20,with magnet,ERP code is:SHZ20–S

Product Features

1. Integrated design of linear guide rail,high rigidity,high precision;
2. Positioning pin at the bottom of the linear guide rail, effeciently preventing deviation of guide rail from the body;
3. Deeper attached fixing benchmark centering hole, improving fixing accuracy, and improving consistency after repeated dismounting and fixing
4. According to the actual requirements of the customer , the initial position of the claw can be customized to meet the different needs under different working conditions。

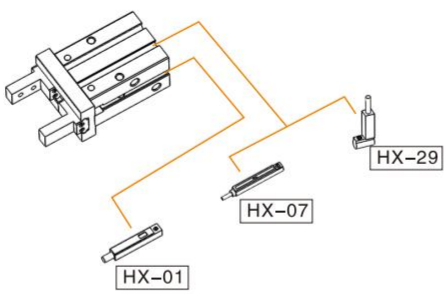
Clamping Force and Stroke



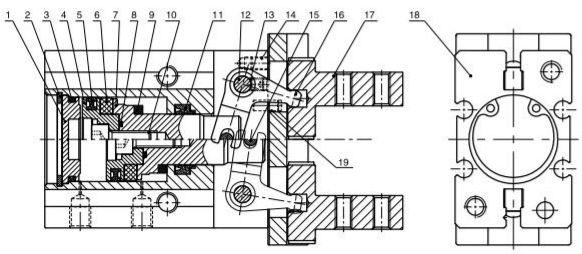
Acting Type		Type	Clamping force effective value of single air finger(N)		Stroke(two sides) (L) (mm)
			Closure clamping torgue	Open clamping torgue	
Double acting		SHZ10	11	17	4
		SHZ16	34	45	6
		SHZ20	45	68	10
		SHZ25	69	102	14
		SHZ32	160	195	22
		SHZ40	255	320	30
Single acting (N.O.)	(N.O.)	SHZSA10	7	–	4
		SHZSA16	27	–	6
		SHZSA20	35	–	10
		SHZSA25	55	–	14
		SHZSA32	133	–	22
		SHZSA40	220	–	30
	(N.C.)	SHZSB10	–	13	4
		SHZSB16	–	38	6
		SHZSB20	–	59	10
		SHZSB25	–	87	14
		SHZSB32	–	163	22
		SHZSB40	–	270	30

Note: The value of the clamping force in above table is when the working pressure is 0.5Mpa and the L value of the clamping point is 20mm.

Optional Accessories

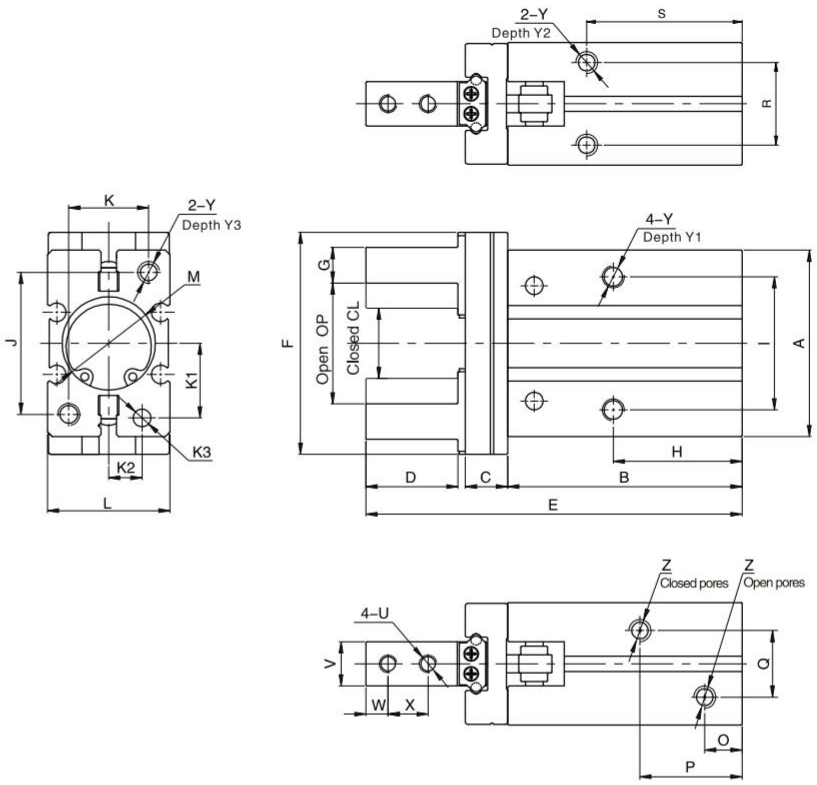


Internal Composition



No.	Part Name	Material	No.	Part Name	Material
1	Rear cover	Aluminum alloy	10	Hexagon socket cheese head screws	Carbon Steell
2	C type retainer ring	Spring steel	11	Front cover dust ring	TPU/ NBR(Φ25,Φ32)
3	O-ring	NBR			
4	Piston	Aluminum alloy/ Stainless steels(Φ10)	12	Pins	Stainless Steel
			13	Hexagon socket set screws	Carbon Steel
5	Piston Seal	NBR	14	Hexagon socket cheese head screws	Carbon Steel
6	Magnet	Synthetic resin	15	Pins	Stainless Steel
7	Piston rod	Aluminum alloy/ Stainless steels(Φ10)	16	Crank rods	Alloy Steel
			17	Claw assembly	Components
8	O-Ring	NBR	18	Cylinder	Aluminum
9	Bumper	PTEE	19	Pins	Stainless steel

Main Dimension



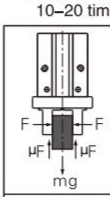
Bore/Sign	A	B	C	D	E	F	G	H	I	J	K	L	M	O	P	Q
SHZ10	23	37.6	6	12.3	57	29	$4^{0}_{-0.05}$	23	16	18	12	16.4	$11^{+0.05}_{0}$ Depth2	7	18.8	10
SHZ16	30.6	42.5	7.5	15.5	67.3	38	$5^{0}_{-0.05}$	24.5	24	22	15	23.6	$17^{+0.05}_{0}$ Depth2	7.1	18.5	13
SHZ20	42	52.8	9.5	20.7	84.7	50	$8^{0}_{-0.05}$	29	30	32	18	27.6	$21^{+0.05}_{0}$ Depth3	8.4	23	15
SHZ25	52	63.6	11	25.5	102.7	63	$10^{0}_{-0.05}$	30	36	40	22	33.6	$26^{+0.05}_{0}$Depth3.5	9.5	23.5	19.5
SHZ32	60	67	12	29.7	113	106	$12^{0}_{-0.05}$	40	46	46	26	40	$34^{+0.05}_{0}$Depth2.5	9.5	31	24
SHZ40	72	83	15	36	139	132	$14^{0}_{-0.05}$	49	56	56	32	48	$42^{+0.05}_{0}$Depth2.5	10.5	38	28
Bore/Sign	K1	K2	K3	R	S	U	W	V	X	Y	Y1	Y2	Y3	Z	OP	CL
SHZ10	7.6	5.2	$2^{+0.05}_{0}$Depth3	11.4	27	M2.5X0.45	3	$5^{0}_{-0.05}$	5.7	M3X0.5	6	6	6	M3X0.5	14.8^{+2}_{0}	$11.4^{0}_{-0.7}$
SHZ16	11	6.5	$3^{+0.05}_{0}$Depth3	16	30	M3X0.5	4	$8^{0}_{-0.05}$	7	M4X0.7	9.5	5.5	8	M5X0.8	20.8^{+2}_{0}	$14.8^{0}_{-0.7}$
SHZ20	16.8	7.5	$4^{+0.05}_{0}$Depth4	18.6	35	M4X0.7	5	$10^{0}_{-0.05}$	9	M5X0.8	11.5	8	10	M5X0.8	26^{+2}_{0}	$16.2^{0}_{-0.7}$
SHZ25	21.8	10	$4^{+0.05}_{0}$Depth4	22	36.5	M5X0.8	6	$12^{0}_{-0.05}$	12	M6X1.0	14.5	10	12	M5X0.8	33.5^{+2}_{0}	$19.2^{0}_{-0.7}$
SHZ32	23	12	$5^{+0.05}_{0}$Depth5	26	48	M6X1.0	7	$15^{0}_{-0.05}$	14	M6X1.0	10	10	12	M5X0.8	$48^{+2.5}_{0}$	26^{0}_{-1}
SHZ40	29	14	$5^{+0.05}_{0}$Depth5	32	58	M8X1.25	9	$18^{0}_{-0.05}$	17	M8X1.25	12	12	16	M5X0.8	$60^{+2.5}_{0}$	30^{0}_{-1}

Product Selection

Please select the Air Gripper as below steps

①Confirm effective gripping force ›› ②Confirm gripping point ›› ③Confirm the external force applied to the fingers

1. Selection of gripping force: When clamping the workpiece as below photo and the impact is generated in the normal handling condition, the clamping force is 10–20 times more than the mass of the clamped object when the safety factor a = 4.

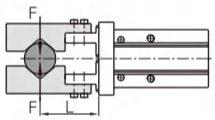
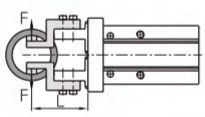
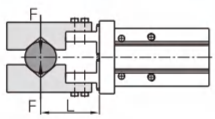
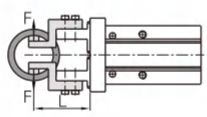
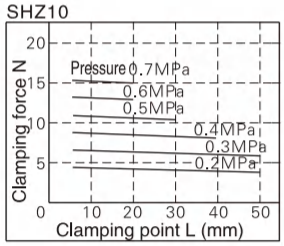
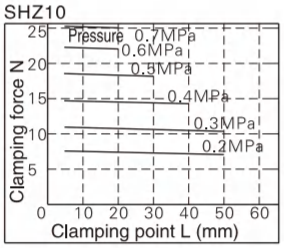
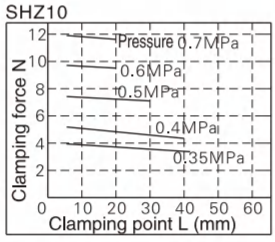
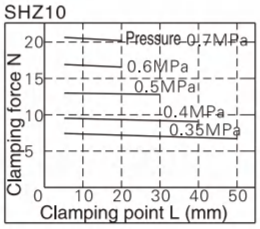
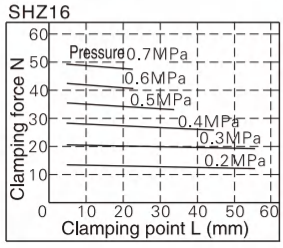
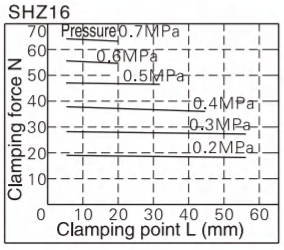
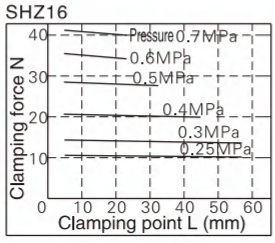
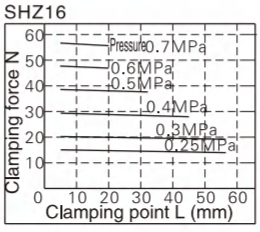
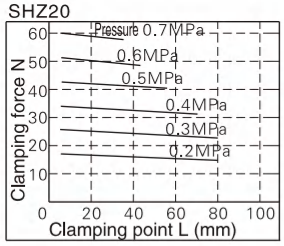
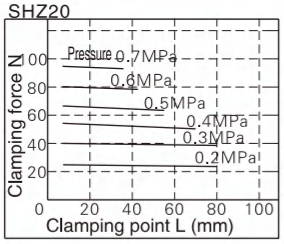
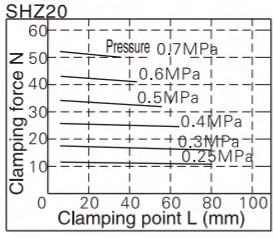
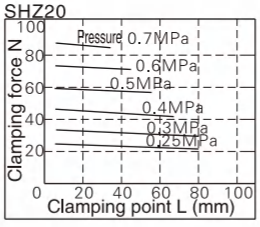
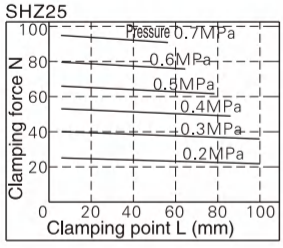
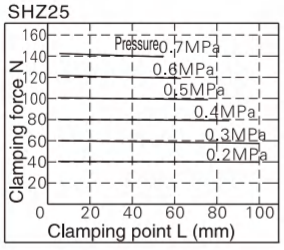
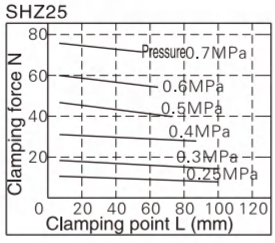
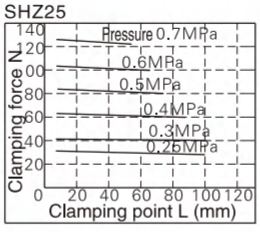
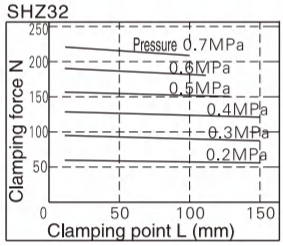
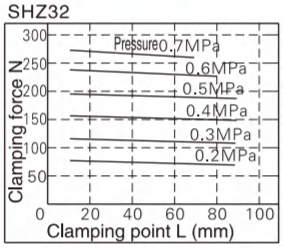
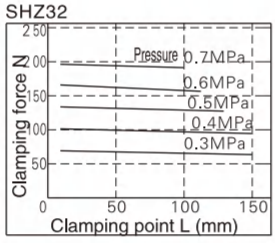
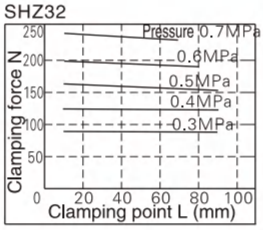
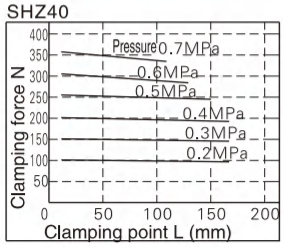
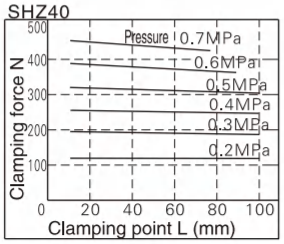
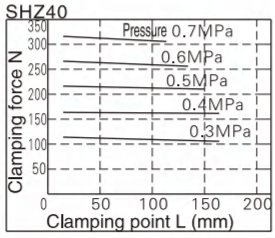
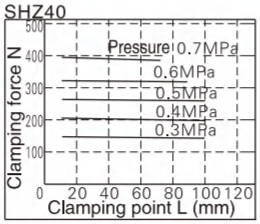


When gripping the workpiece as shown on the left		μ =0.2	μ =0.1
F: Clamping force (N) μ : Friction coefficient between fittings and workpiece m: Mass of workpiece g: Gravitational acceleration (=9.8m/s)	The condition that the workpiece does not fall is: $2X\mu F>mg$, $F>\frac{mg}{2X\mu}$ Safety factor of a, F: $F=\frac{mg}{2X\mu}Xa$	$F=\frac{mg}{2X0.2}X4=10Xmg$	$F=\frac{mg}{2X0.1}X4=20Xmg$
		10 times the mass of the clamped object	20 times the mass of the clamped object

Note: When the coefficient of friction > 0.2, please select the clamping force 10–20 times of the mass of the object for the sake of safety; for huge acceleration and impact, it is necessary to select a bigger safety factor.

Product Selection

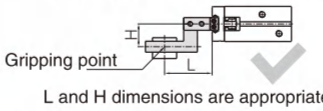
1.1 The actual gripping force must falls within the range of the effective gripping force of the Air Gripper as in the table below.

Double acting Closed Gripping Force	Double Acting Opened Gripping Force	Single acting N.O. gripping force	Single acting N.C.gripping force
			
SHZ10	SHZ10	SHZ10	SHZ10
			
SHZ16	SHZ16	SHZ16	SHZ16
			
SHZ20	SHZ20	SHZ20	SHZ20
			
SHZ25	SHZ25	SHZ25	SHZ25
			
SHZ32	SHZ32	SHZ32	SHZ32
			
SHZ40	SHZ40	SHZ40	SHZ40
			

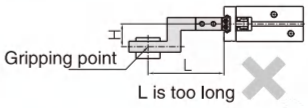
◎ Product Selection

2. Selection of gripping point

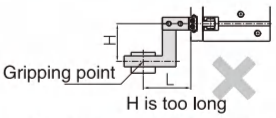
2.1. Select a gripping point within the range as the table below. If exceeding the limit, the fingers will be subjected to excessive torque loads, which will shorten the life of the air gripper.



L and H dimensions are appropriate



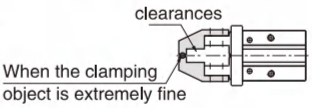
L is too long



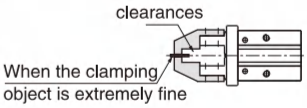
H is too long

2.2 Within the range allowed of the gripping point, try to design the accessories to be as short and light as possible. When the accessories are long and heavy, the inertia force when the fingers are switched on and off becomes larger, which reduces the effectiveness of the gripper and affects its service life.

2.3. When the clamping object is extremely fine and thin, a gap should be set on the accessory. If there is no gap, the clamping will be unstable, resulting in position offset and poor clamping.

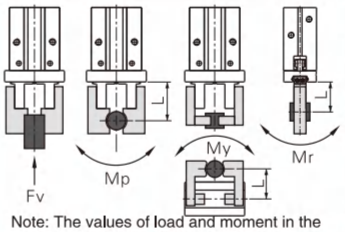


When the clamping object is extremely fine



When the clamping object is extremely fine

3. Confirmation of the external force applied to the fingers



Note: The values of load and moment in the table indicate static values.

Bore	Vertical load Fv (N)	Maximum torque (Nm)		
	SHZ	Mp	My	Mr
10	58	0.26	0.26	0.53
16	98	0.68	0.68	1.36
20	147	1.32	1.32	2.65
25	255	1.94	1.94	3.88
32	343	3	3	6
40	490	4.5	4.5	9

Calculation of permissible external forces when moment loads are applied

Permissible load (N) $= \frac{M(\text{Maximum permissible torque})(N.M)}{L \times 10^{-3}}$

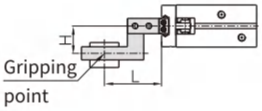
unit conversion constant

The size of the external force acting on the static load that gives the pitching moment at the point L=30mm on the guiderail of SHZ16 is: f=10N.

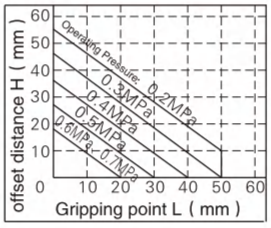
Permissible load (N) $= \frac{0.68}{30 \times 10^{-3}} = 22.7(N)$

The actual load f=10 (N)<22.7 (N) meets the usage requirements.

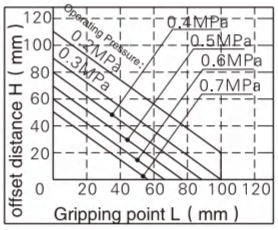
Range of closed gripping points



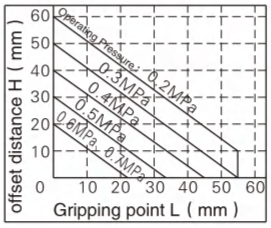
SHZ10



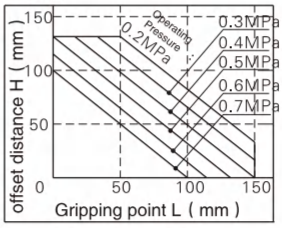
SHZ25



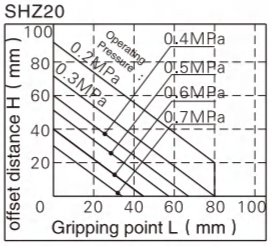
SHZ16



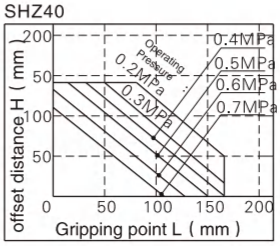
SHZ32



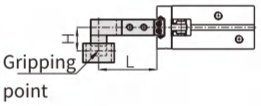
SHZ20



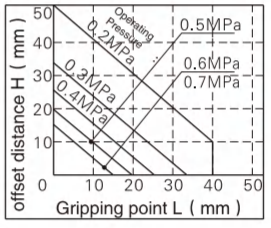
SHZ40



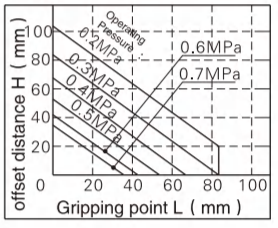
Range of opened gripping points



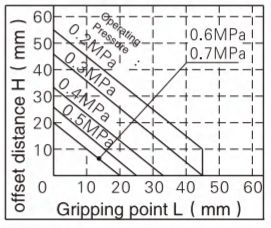
SHZ10



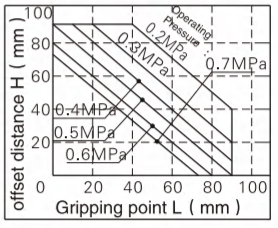
SHZ25



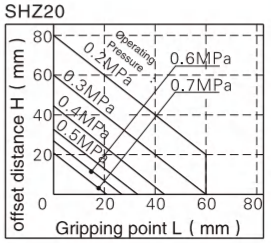
SHZ16



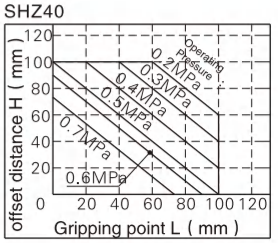
SHZ32



SHZ20



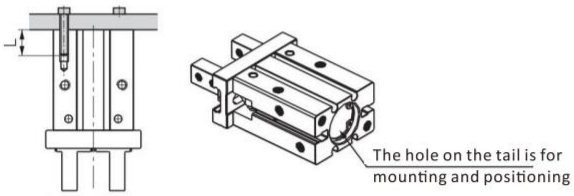
SHZ40



Installation and Use

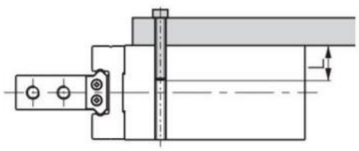
1. Installing a fall prevention device is recommended when applying a lowering clamping force. In the case of a sudden pressure decrease due to emergency stop, these prevention devices can help to avoid personal or equipment injuries.
2. Don't use air gripper upon strong external force and impact force. Air grippers are not intended for use under external or impact forces.
3. When installing or repairing your air gripper take precautions to safely use your component.
4. Please contact with us when using the single acting type gripper for specific spring action force information.
5. Don't reverse the clamping gripper when installing clamping parts.
6. The locking torque of the fastening screw must be within the prescribed torque range shown in the chart below. If the locking torque is not set properly the unit will not perform correctly.

Tail Mounting Type



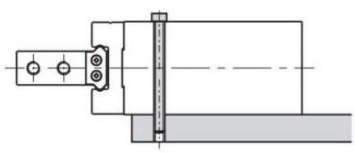
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)	Tail Positioning Bore Dia(mm)	Tail positioning Depth(mm)
10	M3X0.5	0.88	6	$\phi 11^{+0.05}_{0}$	2
16	M4X0.7	2.1	8	$\phi 17^{+0.05}_{0}$	2
20	M5X0.8	4.3	10	$\phi 21^{+0.05}_{0}$	3
25	M6X1.0	7.3	12	$\phi 26^{+0.05}_{0}$	3.5
32	M6X1.0	7.9	12	$\phi 34^{+0.05}_{0}$	2.5
40	M8X1.25	17.7	16	$\phi 42^{+0.05}_{0}$	2.5

Front Tapped Hole Mounting



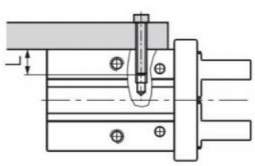
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M3X0.5	0.69	5
16	M4X0.7	2.1	8
20	M5X0.8	4.3	10
25	M6X1.0	7.3	12
32	M6X1.0	7.9	10
40	M8X1.25	17.7	12

Through Hole Mounting



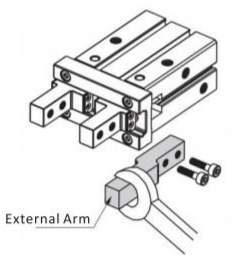
Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M2.5X0.45	0.49	5
16	M3X0.5	0.88	8
20	M4X0.7	2.1	10
25	M5X0.8	4.3	12
32	M5X0.8	4.3	13
40	M6X1.0	7.3	16

Side Tapped Hole Mounting



Bore	Bolt Size	Max.Locking Torque (Nm)	Max.Screwed Depth (mm)
10	M3X0.5	0.9	6
16	M4X0.7	1.6	4.5
20	M5X0.8	3.3	8
25	M6X1.0	5.9	10
32	M6X1.0	5.9	10
40	M8X1.25	13.7	12

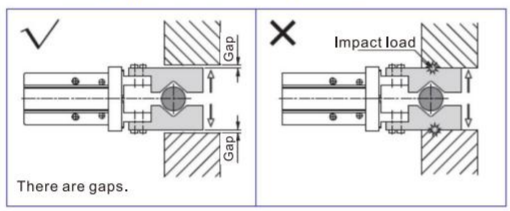
7. Clamping Jaw Installation:
Never clamp the body directly and then lock the screws. The gripping jaw should be held by the spanner and the screw should be locked using a hex wrench.



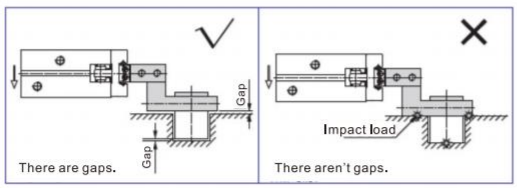
Bore	Bolt Size	Max.Locking Torque (Nm)
10	M2.5X0.45	0.31
16	M3X0.5	0.59
20	M4X0.7	1.4
25	M5X0.8	2.8
32	M6X1.0	4.9
40	M8X1.25	11.8

8. Avoid applying external forces to the gripping jaw.

8.1 The air gripper end of stroke in open status.

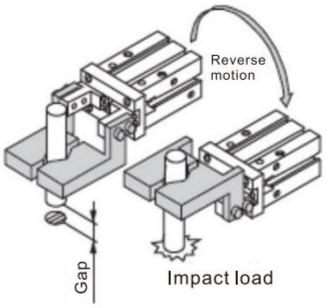


8.2 The air gripper end of stroke in moving status.

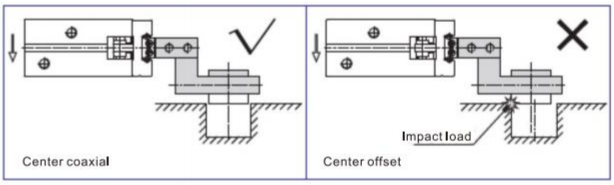


◎ Installation and Use

8.3 When reversing your loaded air gripper make sure the object being gripped is centred.



9. When ripping an object the item should always be centred. When testing, you must reduce the pressure for low speed running, to guarantee the safety and no impact.



10. Please us the flow control valve to adjust the opening and closing speed of your gripper.
11. Always ensure the gripper path is clear of obstruction.
12. Before removing your air gripper, please make sure all power is disconnected and you've discharged residual compressed air.