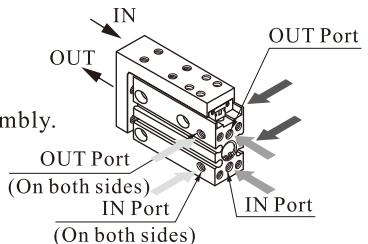


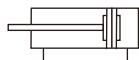
# Slide table cylinder——HLH Series



## Product feature

1. Miniature linear roller ball bearing integrated wise cylinder.
2. With the excellent straightness and non-rotation precision, it is more suitable for precision assembly.
3. Mounting is possible from 4 directions.
4. Piping is possible from 3 directions.

## Symbol



## Specification

Bore size(mm)	6	10	16	20
Acting type			Double acting	
Fluid		Air(to be filtered by 40μm filter element)		
Operating pressure		0.15~0.7MPa(22~100psi)(1.5~7.0bar)		
Proof pressure		1.2MPa(175psi)(12.0bar)		
Temperature °C		-20~70		
Speed range mm/s		50~500		
Allowable kinetic energy J	0.008	0.025	0.05	0.1
Stroke tolerance		+1.0 0		
Cushion type		Bumper		
Sensor switches [Note1]		CMSH, DMSH(S)		
Port size		M5×0.8		

## Stroke

Bore size (mm)	Standard stroke (mm)							Max.std stroke
	5	10	15	20	25	30	40	
6	5	10	15	20	25	30		30
10	5	10	15	20	25	30	40	50
16	5	10	15	20	25	30	40	60
20	5	10	15	20	25	30	40	60

[Note] Consult us for non-standard stroke.

## Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type	Pressure area( $\text{mm}^2$ )	Operating pressure(MPa)							
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	
6	3	Double acting	Push-side	28.3	-	5.7	8.5	11.3	14.2	17.0	19.8
			Pull-side	21.2	-	4.2	6.4	8.5	10.6	12.7	14.8
10	4	Double acting	Push-side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull-side	66.0	6.6	13.2	19.8	26.4	33.0	39.6	46.2
16	6	Double acting	Push-side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull-side	172.7	17.3	34.5	51.8	69.1	86.4	103.6	120.9
20	8	Double acting	Push-side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull-side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7

# Slide table cylinder——HLH Series

## ■ Ordering code

**HLH 20 × 30 S**

(1) (2) (3) (4)

**③Stroke**

Refer to stroke table for details

**①Model**

HLH: Slide table cylinder(Double acting type)

**②Bore size**

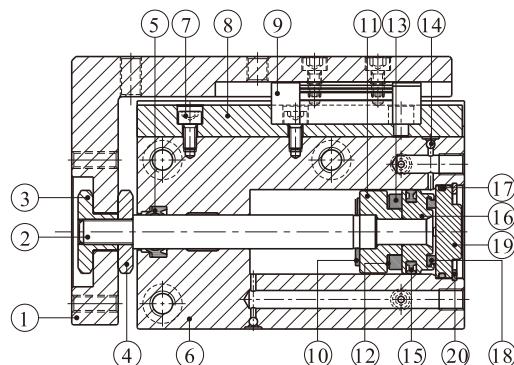
6 10 16 20

**④Magnet**

S: With magnet

## ■ Inner structure and material of major parts

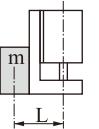
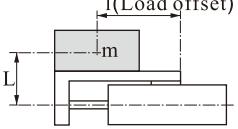
HLH



NO.	Item	Material	NO.	Item	Material
1	Slide table	Aluminum alloy	11	Magnet holder	Aluminum alloy
2	Piston rod	Stainless steel	12	Magnet washer	NBR
3	Hexagon nut	Carbon steel	13	Magnet	Sintered metal(Neodymium-iron-boron)
4	Hexagon nut	Carbon steel	14	Steel ball	SUS304
5	Rod seal	NBR	15	Piston seal	NBR
6	Body	Aluminum alloy	16	Piston	Aluminum alloy
7	Screw	Carbon steel	17	O-ring	NBR
8	Linear guide	Stainless steel	18	Bumper	TPU
9	Slide block		19	Back cover	Aluminum alloy
10	Bumper	TPU	20	C clip	Spring steel

## ■ Model Selection Method

1. Select the bore size according to the thrust and practicality. Refer to the table on page 195.
2. Determine the selection conditions in order, starting from the upper row in the table below, and choose one of the selection graphs to be used.

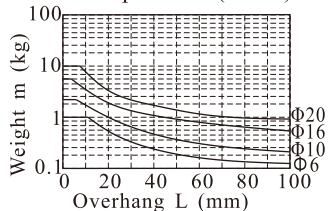
Mounting position	Vertical			Horizontal					
	$\leq 100$	$\leq 300$	$\leq 500$	$\leq 100$		$\leq 300$		$\leq 500$	
Maximum speed(mm/s)	$\leq 100$	$\leq 300$	$\leq 500$	50	100	200	50	100	200
Load offset l(mm)	-	-	-	(1)	(2)	(3)	(4)	(5)	(6)
Selection graph	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
L: Overhang (the distance from the cylinder shaft centre to the load centre of gravity)	  								

2.1) The relation between loading and overhang(Selection graphs)

# Slide table cylinder——HLH Series

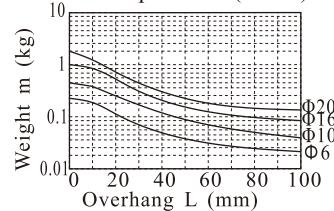
## Selection Graphs(1)

Maximum speed 100(mm/s) or less



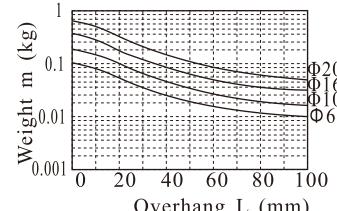
## Selection Graphs(2)

Maximum speed 300(mm/s) or less



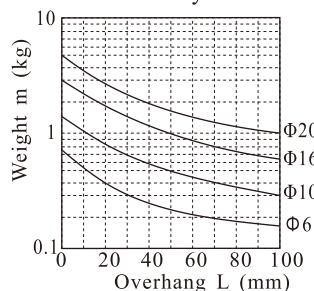
## Selection Graphs(3)

Maximum speed 500(mm/s) or less



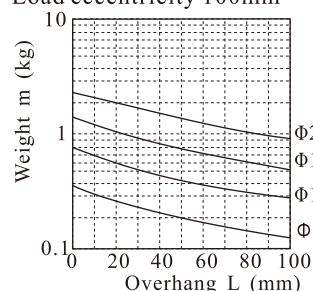
## Selection Graphs(4)

Maximum speed 100(mm/s) or less  
Load eccentricity 50mm



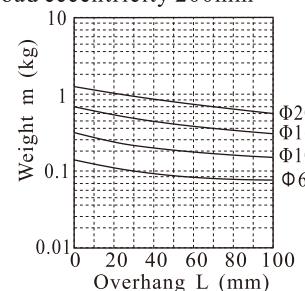
## Selection Graphs(5)

Maximum speed 100(mm/s) or less  
Load eccentricity 100mm



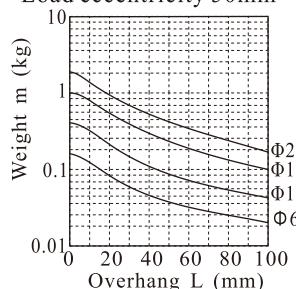
## Selection Graphs(6)

Maximum speed 100(mm/s) or less  
Load eccentricity 200mm



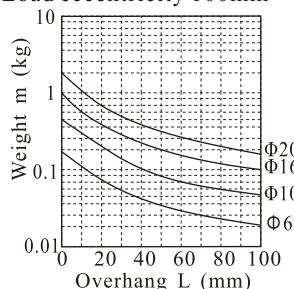
## Selection Graphs(7)

Maximum speed 300(mm/s) or less  
Load eccentricity 50mm



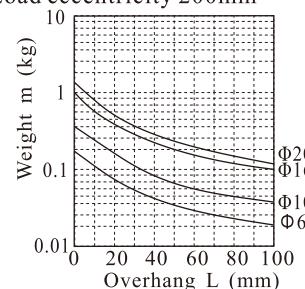
## Selection Graphs(8)

Maximum speed 300(mm/s) or less  
Load eccentricity 100mm



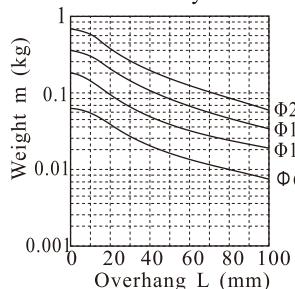
## Selection Graphs(9)

Maximum speed 300(mm/s) or less  
Load eccentricity 200mm



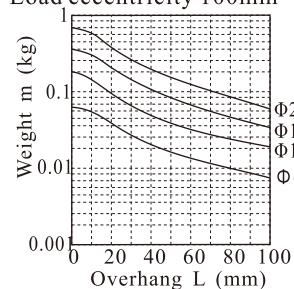
## Selection Graphs(10)

Maximum speed 500(mm/s) or less  
Load eccentricity 50mm



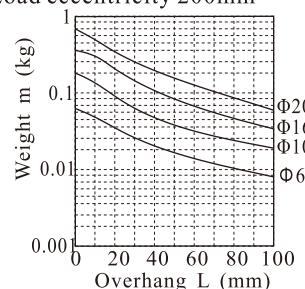
## Selection Graphs(11)

Maximum speed 500(mm/s) or less  
Load eccentricity 100mm



## Selection Graphs(12)

Maximum speed 500(mm/s) or less  
Load eccentricity 200mm



## 2.2) Selection Examples

Example ①: Mounting: Vertical Maximum speed: 500mm/s Overhang: 40mm Load weight: 0.1Kg

Refer to Graph based on vertical mounting and a speed of 500mm/s. In Graph , find the intersection of a 40mm overhang and load weight of 0.1Kg, which results in a selection of ø20.

Example ②: Mounting: Horizontal Maximum speed: 500mm/s Load eccentricity: 50mm Overhang: 30mm  
Load weight: 0.1Kg

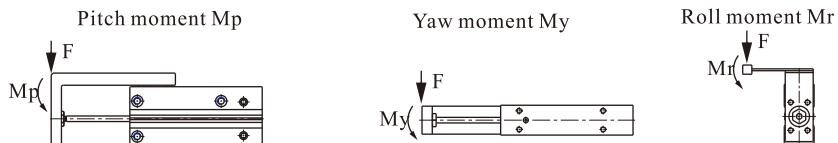
Refer to Graph based on horizontal mounting, a speed of 500mm/s and load eccentricity of 50mm.In Graph , find the intersection of a 30mm overhang and load weight of 0.1Kg, which results in a selection of ø16.

# Slide table cylinder——HLH Series

## ■ Installation and application

1. The actual loading and moment of cylinder must be less than it's allowable loading and moment:

1.1) The allowable moment of cylinder

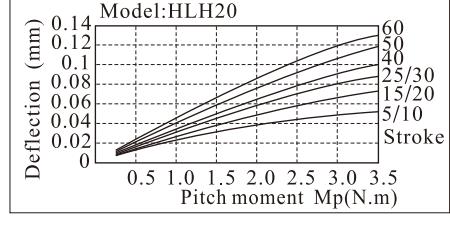
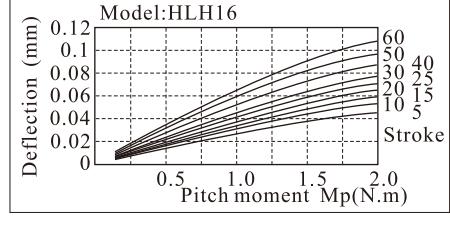
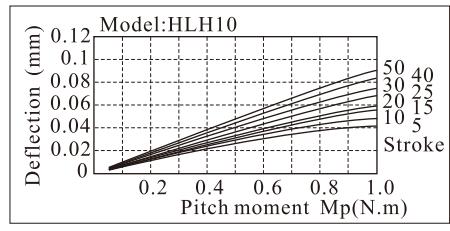
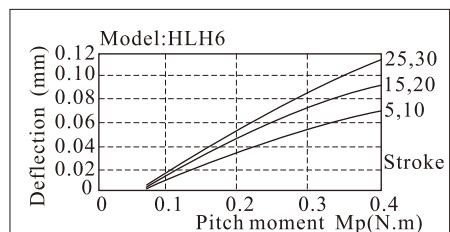
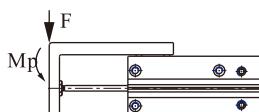


Model/Allowable torque (Nm)	Pitch moment $M_p$	Yaw moment $M_y$	Roll moment $M_r$
HLH6	0.25	0.25	0.41
HLH10	0.95	0.95	1.49
HLH16	3.28	3.28	3.45
HLH20	6.29	6.29	6.61

1.2) When the cylinder is subjected to different type of moment, there will be different degree of shift in performance, please refer to the following table for details.

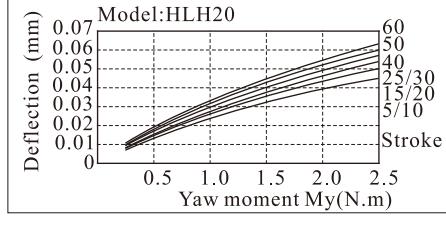
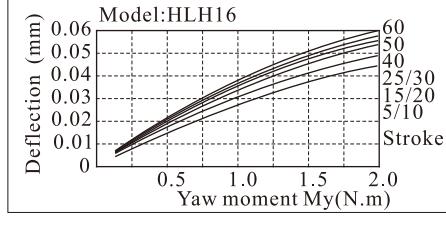
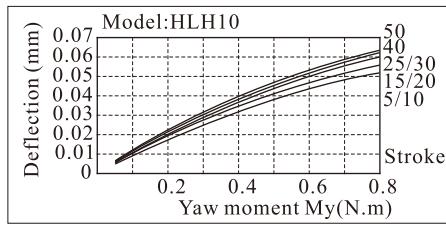
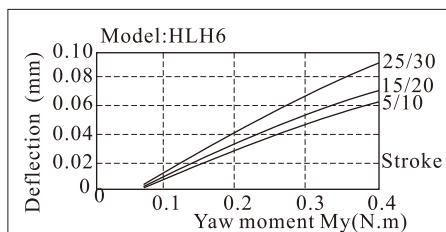
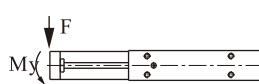
### Table deflection due to pitch moment

Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.



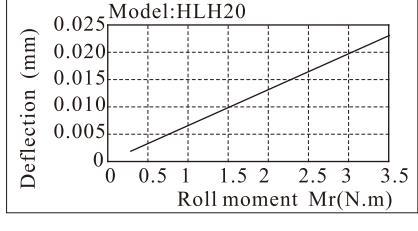
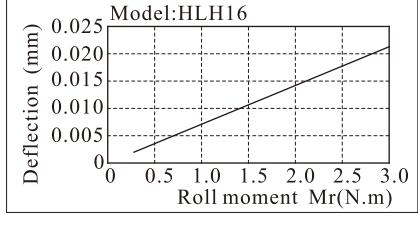
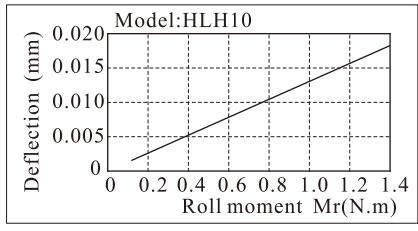
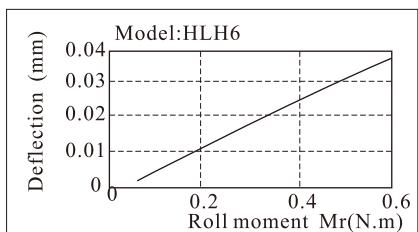
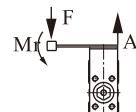
### Table deflection due to yaw moment

Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.



### Table deflection due to roll moment

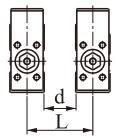
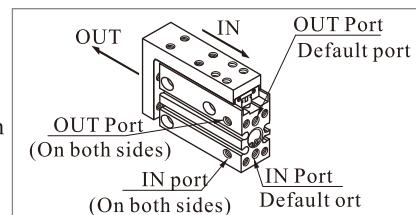
Table deflection(at A) when a load acts upon section F at the full stroke of the compact slide.



# Slide table cylinder——HLH Series

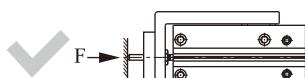
2. The compact slide can be piped from 3 directions. Confirm the pressure ports and operating direction. (See drawing right)

3. In compact slides with sensor switch, there is a danger of sensor switch malfunction if the mounting pitch is less than the dimensions shown in Table right.  
Be sure to allow at least the indicated interval.

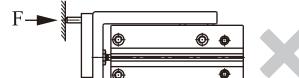


At least indicated interval (mm)/Model	HLH6	HLH10	HLH16	HLH20
d	5	5	10	15
L	21	25	35	47

4. When the output of the compact slide will be directly applied to the table, it should be applied along the rod axis.



The loading and piston rod are coaxial

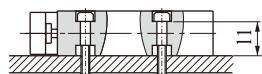


The loading and piston rod are offset

5. Be sure to use a flow control valve, and adjust the speed to 500mm/s or less.

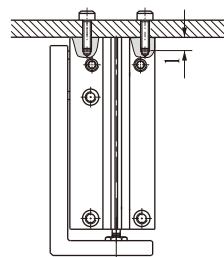
6. A compact slide can be mounted from 4 directions. Don't exceed the max. fastening torque then tightening the mounting bolts.

## Lateral Mounting(Through Holes)

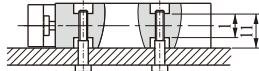


Model	Bolts	Max.fastening torque	L1
HLH6	M3×0.5	1.1(Nm)	12.7
HLH10	M4×0.7	2.5(Nm)	15.6
HLH16	M4×0.7	2.5(Nm)	20.6
HLH20	M5×0.8	5.1(Nm)	24.0

## Axial Mounting(Tapped Holes)

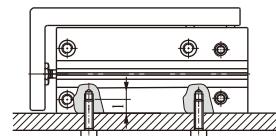


## Lateral Mounting(Tapped Holes)



Model	Bolts	Max.fastening torque	L1	L
HLH6	M4×0.7	2.5(Nm)	12.7	9.4
HLH10	M5×0.8	5.1(Nm)	15.6	11.2
HLH16	M5×0.8	5.1(Nm)	20.6	16.2
HLH20	M6×1.0	8.1(Nm)	24.0	16.0

## Vertical Mounting (Tapped Holes)

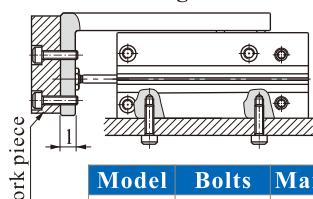


Model	Bolts	Max.fastening torque	L
HLH6	M3×0.5	1.1(Nm)	5
HLH10	M4×0.7	2.5(Nm)	6
HLH16	M4×0.7	2.5(Nm)	6
HLH20	M5×0.8	5.1(Nm)	8

## 7. Work Piece Mounting

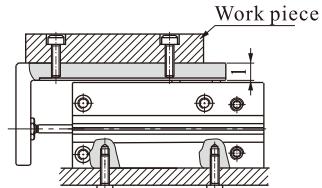
7.1) Work pieces can be mounted on 2 surfaces of the compact slide. When mounting a work piece, tighten the bolts properly at a torque value within the limiting range.

### Front Mounting



Model	Bolts	Max.fastening torque	L
HLH6	M3×0.5	1.1(Nm)	5.5
HLH10	M4×0.7	2.5(Nm)	7.5
HLH16	M4×0.7	2.5(Nm)	10
HLH20	M5×0.8	5.1(Nm)	11

### Top Mounting



Model	Bolts	Max.fastening torque	L
HLH6	M3×0.5	1.1(Nm)	6.5
HLH10	M4×0.7	2.5(Nm)	8
HLH16	M4×0.7	2.5(Nm)	9
HLH20	M5×0.8	5.1(Nm)	9.5

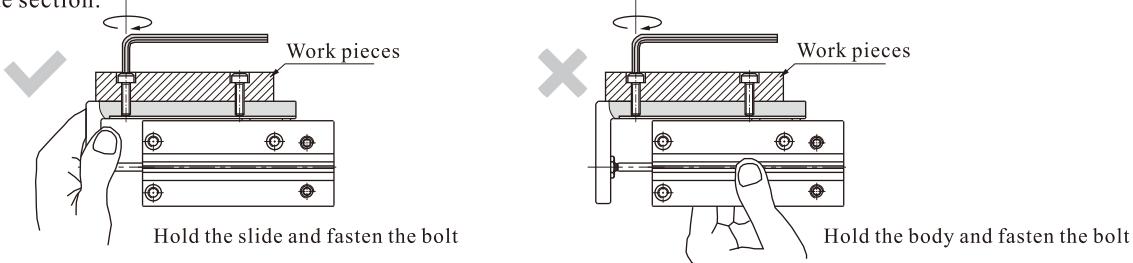
7.2) Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.

7.3) Hold the slide when fastening work pieces with bolts, If the body is held while tightening bolts, excessive moment may damage guide section.

# **Slide table cylinder——HLH Series**

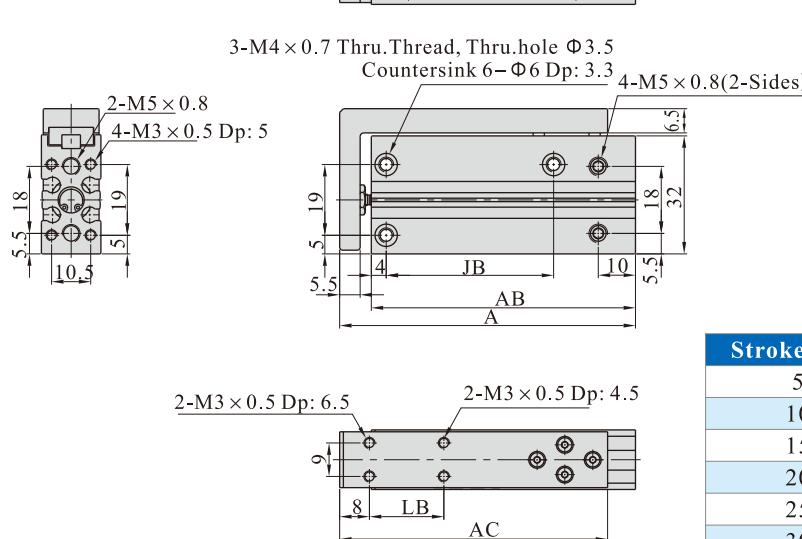
7.2) Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.

7.3) Hold the slide when fastening work pieces with bolts, If the body is held while tightening bolts, excessive moment may damage guide section.



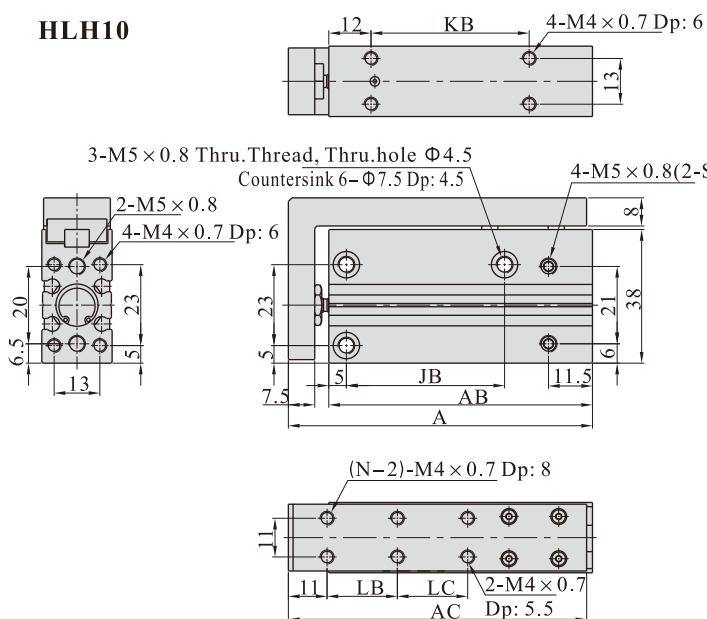
## Dimensions

HLH6



Stroke\Item	A	AB	AC	JB	KB	LB
5	44.5	36	42	14	10	10
10	49.5	41	42	14	15	10
15	54.5	46	52	24	20	20
20	59.5	51	52	24	25	20
25	64.5	56	62	30	30	30
30	69.5	61	62	30	35	30

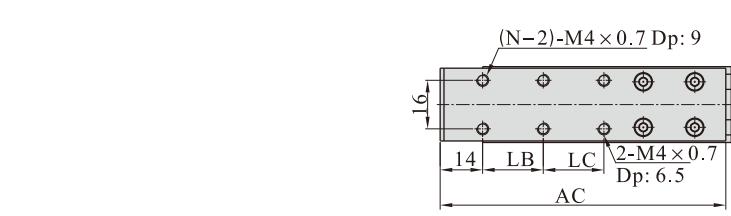
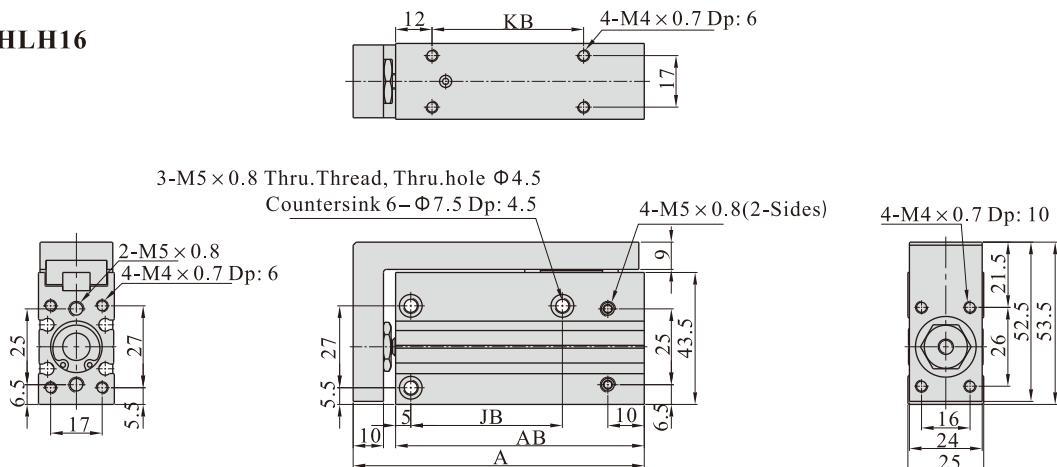
HLH10



<b>Stroke\Item</b>	<b>A</b>	<b>AB</b>	<b>AC</b>	<b>JB</b>	<b>KB</b>	<b>LB</b>	<b>LC</b>	<b>N</b>
5	51.5	40	50	14	10	10	-	4
10	56.5	45	55	14	15	10	-	4
15	61.5	50	60.5	24	20	20	-	4
20	66.5	55	63	24	25	20	-	4
25	71.5	60	70.5	30	30	30	-	4
30	76.5	65	75.5	30	35	30	-	4
40	86.5	75	85.5	45	45	20	20	6
50	96.5	85	93	55	55	25	25	6

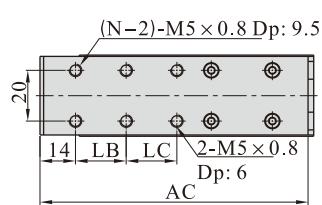
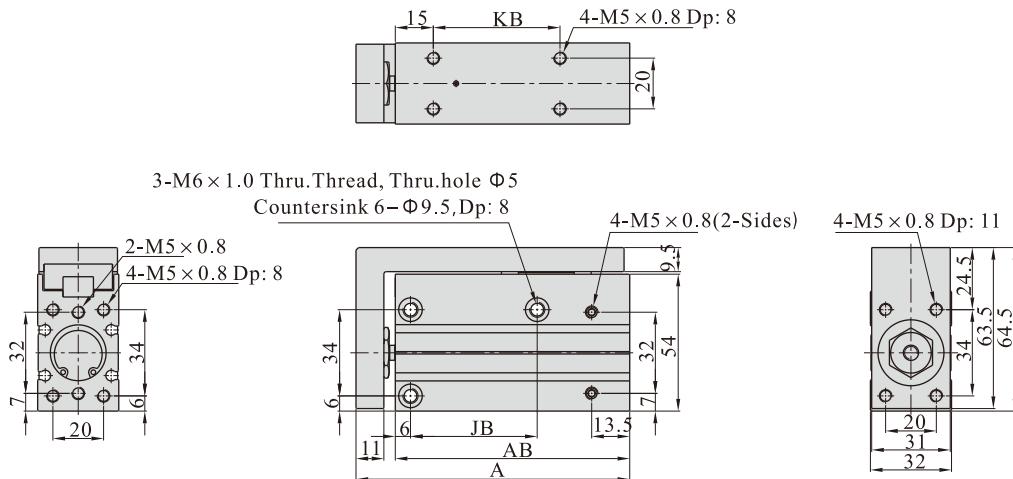
# Slide table cylinder——HLH Series

**HLH16**



Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	61	47	60	20	15	10	-	4
10	66	52	64.5	20	20	10	-	4
15	71	57	69.5	30	25	20	-	4
20	76	62	75	30	30	20	-	4
25	81	67	80	40	35	30	-	4
30	86	72	84.5	40	40	30	-	4
40	96	82	95	50	50	20	20	6
50	106	92	104.5	60	60	25	25	6
60	116	102	114.5	60	70	30	30	6

**HLH20**



Stroke\Item	A	AB	AC	JB	KB	LB	LC	N
5	73	57.5	72	20	15	10	-	4
10	78	62.5	72	20	20	10	-	4
15	83	67.5	82	25	25	20	-	4
20	88	72.5	82	25	30	20	-	4
25	93	77.5	92	40	35	30	-	4
30	98	82.5	92	40	40	30	-	4
40	108	92.5	101.5	50	50	20	20	6
50	118	102.5	113.5	70	60	25	25	6
60	128	112.5	122.5	70	70	30	30	6

# Air gripper——HFK Series

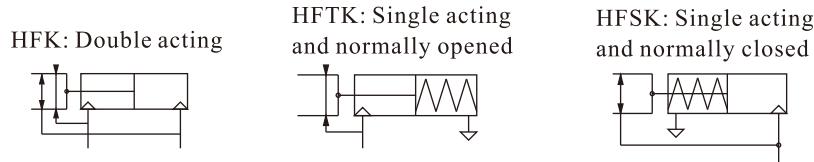
## Parallel style with guide track——roller bearing



### Product feature

1. Integrated design of linear guide roller, high rigidity and high precision.
2. A positioning pin is attached to the bottom of the linear guide rail, which can prevent the deviation of the positioning rail and body.
3. With squareness magnetic switch slots and roundness magnetic switch slots.
4. The positioning hole can improve the precision and the consistency of repeated dismounting and positioning.
5. According to the actual using requirements of customers, the initial position of clamping jaw can be customized to meet the different needs under different working conditions.
6. Can be mounted from three directions.

### Symbol



### Specification

Bore size (mm)			10	16	20	25	32	40	
Acting type			Double acting		Single acting				
Fluid			Air(to be filtered by 40μm filter element)						
Operating pressure	Double acting	Φ10	0.2~0.7MPa(28~100psi)(2.0~7.0bar)						
		Others	0.15~0.7MPa(22~100psi)(1.5~7.0bar)						
	Single acting	Φ10	0.35~0.7MPa(50~100psi)(3.5~7.0bar)						
		Others	0.25~0.7MPa(36~100psi)(2.5~7.0bar)						
Temperature °C			-20~70						
Lubrication			Not required						
Repeatability mm			±0.01				±0.02		
Max. frequency			180(c.p.m)				60(c.p.m)		
Port size			M3×0.5				M5×0.8		

### Gripping force and stroke

Acting type		Double acting(HFK)						Single acting_NO (HFTK)						Single acting_NC (HFSK)					
Bore size		10	16	20	25	32	40	10	16	20	25	32	40	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	11	34	45	69	160	255	7	27	35	55	133	220	-	-	-	-	-	-
	Internal	17	45	68	102	195	320	-	-	-	-	-	-	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		4	6	10	14	22	30	4	6	10	14	22	30	4	6	10	14	22	30
Weight(g)	F Type	56	124	236	418	750	1340	57	125	238	420	799	1437	57	125	238	420	799	1437
	Others	56	124	236	428	729	1268	57	125	238	430	778	1365	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.

# Air gripper——HFK Series

## Parallel style with guide track——roller bearing

### ■ Ordering code

HFK - 20 □

① ② ③

#### ① Model

HFK: Air finger(Double acting)

HFSK: Air finger(Single acting and normally closed)

HFTK: Air finger(Single acting and normally opened)

#### ③ Finger Style

Blank: Standard

B: Side mounting type

R: Narrow type

F: Bottom mounting type

N: Thru.hole mounting type

W: Side mounting and narrow type

M: Thru.hole mounting and narrow type

#### ② Bore size

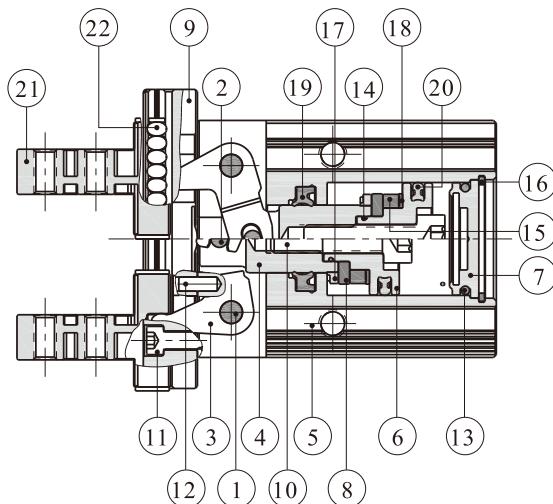
Bore size	Series
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10 16 20 25 32 40	HFK
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10 16 20 25	HFSK HFTK
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Note) HFK series are all attached with magnet.

### ■ Inner structure and material of major parts



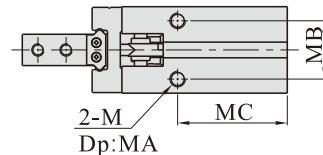
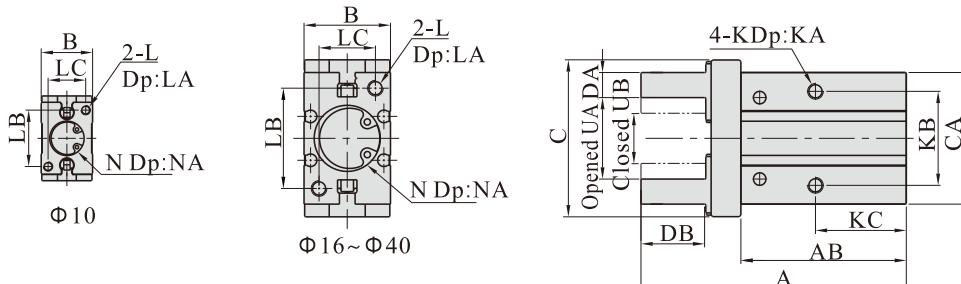
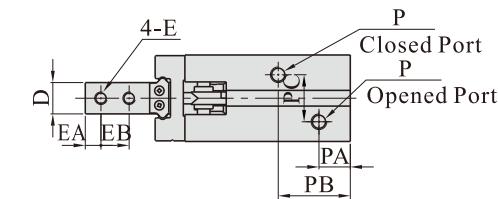
NO.	Item	Material	NO.	Item	Material
1	Pin	Stainless steel	12	Pin	Bearing steel
2	Pin	Stainless steel	13	O-ring	NBR
3	Curved bar	Stainless steel	14	O-ring	NBR
4	Piston rod	Aluminum alloy/Stainless steel	15	Magnet	Sintered metal(Neodymium-iron-boron)
5	Body	Aluminum alloy	16	C clip	Spring steel
6	Piston	Aluminum alloy/Stainless steel	17	Bumper	TPU
7	Back cover	Brass/Aluminum alloy	18	Magnet washer	NBR
8	Magnet fixed flake	Aluminum alloy/Stainless steel	19	Rod packing	NBR
9	Bearing steel	Stainless steel	20	Piston seal	NBR
10	Countersink screw	Carbon steel	21	Clamping jaw	Bearing steel
11	Countersink screw	Carbon steel	22	Guide roller	Bearing steel

# Air gripper——HFK Series

## Parallel style with guide track——roller bearing

### Dimensions

Standard type



Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA
HFK10	57	37.5	16.5	30	23	5 <sup>0</sup> <sub>-0.05</sub>	4 <sup>0</sup> <sub>-0.05</sub>	12	M2.5×0.45	3
HFK16	67.5	42.5	23.5	39	30.5	8	5	15	M3×0.5	4
HFK20	85	53	27.5	53	42	10 <sup>0</sup> <sub>-0.05</sub>	8 <sup>0</sup> <sub>-0.05</sub>	20	M4×0.7	5
HFK25	103	64	33.5	71	52	12	10	25	M5×0.8	6
HFK32	113(122)	67(76)	40	106	60	15 <sup>0</sup> <sub>-0.05</sub>	12 <sup>0</sup> <sub>-0.05</sub>	29	M6×1.0	7
HFK40	139(152)	83(96)	48	132	72	18	14	36	M8×1.25	9

Model\Item	EB	K	KA	KB	KC	L	LA	LB	LC	M	MA	MB
HFK10	5.7	M3×0.5	5	16	23	M3×0.5	6	18	12	M3×0.5	6	11.5
HFK16	7	M4×0.7	7	24	24.5	M4×0.7	8	22	15	M4×0.7	4.5	16
HFK20	9	M5×0.8	8	30	29	M5×0.8	10	32	18	M5×0.8	8	18.5
HFK25	12	M6×1.0	10	36	30	M6×1.0	12	40	22	M6×1.0	10	22
HFK32	14	M6×1.0	10	46	40(49)	M6×1.0	12	46	26	M6×1.0	10	26
HFK40	17	M8×1.25	12	56	49(62)	M8×1.25	16	56	32	M8×1.25	12	32

Model\Item	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFK10	27	$\Phi 11^{+0.05}_0$	1.5	M3×0.5	7	19	10	15.5 <sup>+2</sup> <sub>0</sub>	11.5 <sup>0</sup> <sub>-1</sub>
HFK16	30	$\Phi 17^{+0.05}_0$	1.5	M5×0.8	7.5	19	13	21	15
HFK20	35	$\Phi 21^{+0.05}_0$	2	M5×0.8	9.5	23	15	26.5 <sup>+2</sup> <sub>0</sub>	16.5 <sup>0</sup> <sub>-1</sub>
HFK25	36.5	$\Phi 26^{+0.05}_0$	2	M5×0.8	9	24	20	33.5	19.5
HFK32	48(57)	$\Phi 34^{+0.05}_0$	2.5	M5×0.8	9.5	31(40)	24	48 <sup>+2.5</sup> <sub>0</sub>	26 <sup>0</sup> <sub>-1</sub>
HFK40	58(71)	$\Phi 42^{+0.05}_0$	2.5	M5×0.8	10.5	38(50)	28	60	30

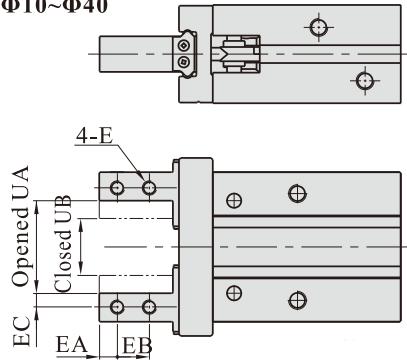
[Note]The values in “()” in the above table are single acting type sizes.

# Air gripper——HFK Series

## Parallel style with guide track——roller bearing

### Side mounting type(B type)

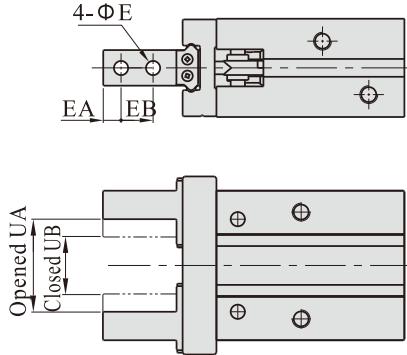
$\Phi 10 \sim \Phi 40$



Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-B	M2.5×0.45	3	5.7	2	15.5 <sup>+2</sup> <sub>0</sub>	11.5 <sub>-1</sub> <sup>0</sup>
HFK16-B	M3×0.5	4	7	2.5	21 <sup>+2</sup> <sub>0</sub>	15 <sub>-1</sub> <sup>0</sup>
HFK20-B	M4×0.7	5	9	4	26.5 <sup>+2</sup> <sub>0</sub>	16.5 <sub>-1</sub> <sup>0</sup>
HFK25-B	M5×0.8	6	12	5	33.5 <sup>+2</sup> <sub>0</sub>	19.5 <sub>-1</sub> <sup>0</sup>
HFK32-B	M6×1.0	7	14	6	48 <sup>+2.5</sup> <sub>0</sub>	26 <sub>-1</sub> <sup>0</sup>
HFK40-B	M8×1.25	9	17	7	60 <sup>+2.5</sup> <sub>0</sub>	30 <sub>-1</sub> <sup>0</sup>

### Thru-hole mounting type(N type)

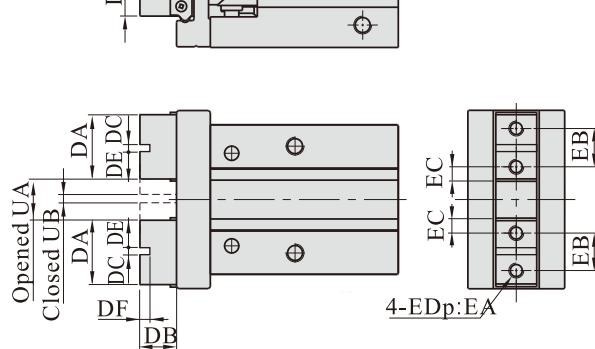
$\Phi 10 \sim \Phi 40$



Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10-N	2.8	3	5.7	15.5 <sup>+2</sup> <sub>0</sub>	11.5 <sub>-1</sub> <sup>0</sup>
HFK16-N	3.3	4	7	21 <sup>+2</sup> <sub>0</sub>	15 <sub>-1</sub> <sup>0</sup>
HFK20-N	4.5	5	9	26.5 <sup>+2</sup> <sub>0</sub>	16.5 <sub>-1</sub> <sup>0</sup>
HFK25-N	5.5	6	12	33.5 <sup>+2</sup> <sub>0</sub>	19.5 <sub>-1</sub> <sup>0</sup>
HFK32-N	6.5	7	14	48 <sup>+2.5</sup> <sub>0</sub>	26 <sub>-1</sub> <sup>0</sup>
HFK40-N	9	9	17	60 <sup>+2.5</sup> <sub>0</sub>	30 <sub>-1</sub> <sup>0</sup>

### Bottom mounting type(F type)

$\Phi 10 \sim \Phi 40$



Model\Item	D	DA	DB	DC	DE	E
HFK10-F	5 <sup>0</sup> <sub>-0.05</sub>	11	5	2 <sup>+0.04</sup> <sub>0.01</sub>	4.5	M2.5×0.45
HFK16-F	8 <sup>0</sup> <sub>-0.05</sub>	14	8	2.5 <sup>+0.04</sup> <sub>0.01</sub>	5.8	M3×0.5
HFK20-F	10 <sup>0</sup> <sub>-0.05</sub>	18	10.5	3 <sup>+0.04</sup> <sub>0.01</sub>	7.5	M4×0.7
HFK25-F	12 <sup>0</sup> <sub>-0.05</sub>	22	13	4 <sup>+0.04</sup> <sub>0.01</sub>	9	M5×0.8
HFK32-F	15 <sup>0</sup> <sub>-0.05</sub>	34.5	18	5 <sup>+0.04</sup> <sub>0.01</sub>	14.8	M6×1.0
HFK40-F	18 <sup>0</sup> <sub>-0.05</sub>	41.5	22	6 <sup>+0.04</sup> <sub>0.01</sub>	17.7	M8×1.25

Model\Item	DF	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-F	2	4	6	2.45	5.5 <sup>+2</sup> <sub>0</sub>	1.8 <sub>-0.5</sub> <sup>0</sup>
HFK16-F	2.5	6	8	3.05	7.5 <sup>+2</sup> <sub>0</sub>	1.8 <sub>-0.5</sub> <sup>0</sup>
HFK20-F	3	8	10	3.95	11.5 <sup>+2</sup> <sub>0</sub>	1.8 <sub>-0.5</sub> <sup>0</sup>
HFK25-F	4	10	12	4.9	16 <sup>+2.5</sup> <sub>0</sub>	2.4 <sub>-0.5</sub> <sup>0</sup>
HFK32-F	5	12	20	7.3	25 <sup>+2.5</sup> <sub>0</sub>	3.4 <sub>-0.5</sub> <sup>0</sup>
HFK40-F	6	16	24	8.7	33 <sup>+3</sup> <sub>0</sub>	3.4 <sub>-0.5</sub> <sup>0</sup>

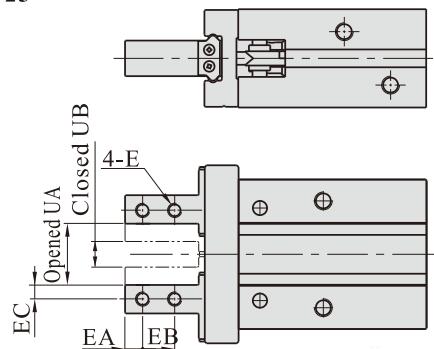
[Note] The other dimensions are the same as standard type.

# Air gripper——HFK Series

## Parallel style with guide track——roller bearing

Side mounting and narrow type(W type)

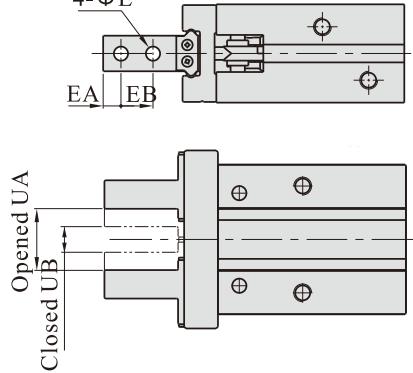
$\Phi 10 \sim \Phi 25$



Model\Item	E	EA	EB	EC	UA(Opened)	UB(Closed)
HFK10-W	M2.5×0.45	3	5.7	2	10 <sup>+2</sup> / <sub>0</sub>	6 <sup>0</sup> / <sub>-1</sub>
HFK16-W	M3×0.5	4	7	2.5	12.5 <sup>+2</sup> / <sub>0</sub>	6.5 <sup>0</sup> / <sub>-1</sub>
HFK20-W	M4×0.7	5	9	4	17 <sup>+2</sup> / <sub>0</sub>	7 <sup>0</sup> / <sub>-1</sub>
HFK25-W	M5×0.8	6	12	5	23 <sup>+2.5</sup> / <sub>0</sub>	9 <sup>0</sup> / <sub>-1</sub>

Thru-hole mounting and narrow type(M type)

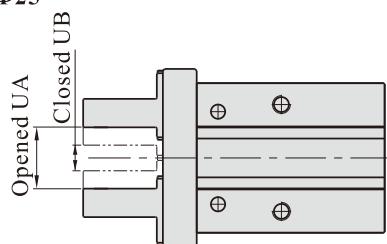
$\Phi 10 \sim \Phi 25$



Model\Item	E	EA	EB	UA(Opened)	UB(Closed)
HFK10-M	2.8	3	5.7	10 <sup>+2</sup> / <sub>0</sub>	6 <sup>0</sup> / <sub>-1</sub>
HFK16-M	3.3	4	7	12.5 <sup>+2</sup> / <sub>0</sub>	6.5 <sup>0</sup> / <sub>-1</sub>
HFK20-M	4.5	5	9	17 <sup>+2</sup> / <sub>0</sub>	7 <sup>0</sup> / <sub>-1</sub>
HFK25-M	5.5	6	12	23 <sup>+2.5</sup> / <sub>0</sub>	9 <sup>0</sup> / <sub>-1</sub>

Narrow type(R type)

$\Phi 10 \sim \Phi 25$



Model\Item	UA(Opened)	UB(Closed)
HFK10-R	10 <sup>+2</sup> / <sub>0</sub>	6 <sup>0</sup> / <sub>-1</sub>
HFK16-R	12.5 <sup>+2</sup> / <sub>0</sub>	6.5 <sup>0</sup> / <sub>-1</sub>
HFK20-R	17 <sup>+2</sup> / <sub>0</sub>	7 <sup>0</sup> / <sub>-1</sub>
HFK25-R	23 <sup>+2.5</sup> / <sub>0</sub>	9 <sup>0</sup> / <sub>-1</sub>

[Note] The other dimensions are the same as standard type.

# Air gripper——HFZ Series

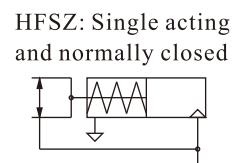
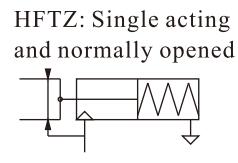
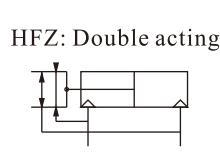
## Parallel style with guide track——ball bearing



### Product feature

1. Integrated design of linear guide roller, high rigidity and high precision.
2. A positioning pin is attached to the bottom of the linear guide rail, which can prevent the deviation of the positioning rail and body.
3. With squareness magnetic switch slots and roundness magnetic switch slots.
4. The positioning hole can improve the precision and the consistency of repeated dismounting and positioning.
5. According to the actual using requirements of customers, the initial position of clamping jaw can be customized to meet the different needs under different working conditions.
6. Can be mounted from three directions.

### Symbol



### Specification

Bore size (mm)			6	10	16	20	25	32	40		
Acting type			Double acting			Single acting					
Fluid			Air(to be filtered by 40μm filter element)								
Operating pressure	Double acting		Φ6, Φ10		0.2~0.7MPa(28~100psi)(2.0~7.0bar)						
	Others				0.15~0.7MPa(22~100psi)(1.5~7.0bar)						
	Single acting		Φ6, Φ10		0.35~0.7MPa(50~100psi)(3.5~7.0bar)						
	Others				0.25~0.7MPa(36~100psi)(2.5~7.0bar)						
Temperature □			-20~70								
Lubrication			Not required								
Repeatability mm			±0.01						±0.02		
Max. frequency			180(c.p.m)						60(c.p.m)		
Port size			M3×0.5			M5×0.8					

### Gripping force and stroke

Acting type		Double acting(HFZ)							Single acting_NO (HFTZ)							Single acting_NC (HFSZ)						
Bore size		6	10	16	20	25	32	40	6	10	16	20	25	32	40	6	10	16	20	25	32	40
Gripping force per finger Effective value(N)	External	3.3	11	34	45	69	160	255	1.9	7	27	35	55	133	220	-	-	-	-	-	-	-
	Internal	6.1	17	45	68	102	195	320	-	-	-	-	-	-	-	3.7	13	38	59	87	163	270
Opening/Closing stroke(Both sides)(mm)		3	4	6	10	14	22	30	3	4	6	10	14	22	30	3	4	6	10	14	22	30
Weight (g)	F Type	24	-	-	-	-	-	25	-	-	-	-	-	-	25	-	-	-	-	-	-	-
	Others	25	56	124	236	428	729	1268	26	57	125	238	430	778	136	26	57	125	238	430	778	1365

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.

# Air gripper——HFZ Series

Parallel style with guide track——ball bearing

## ■ Ordering code

HFZ - 20 □

① ② ③

### ① Model

HFZ: Air finger(Double acting)

HFSZ: Air finger(Single acting and normally closed)

HFTZ: Air finger(Single acting and normally opened)

### ③ Finger Style

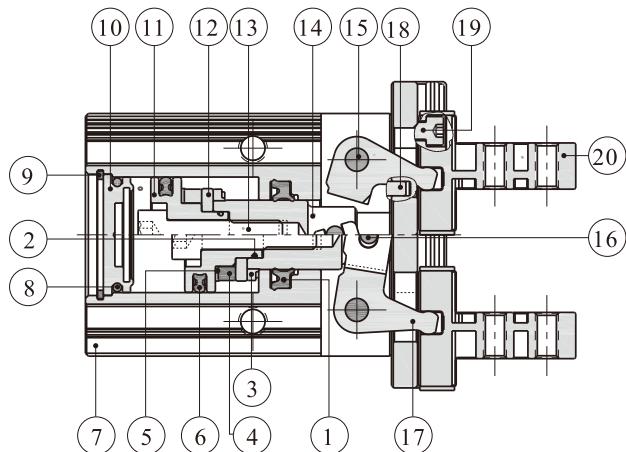
Finger style	Bore size
Blank: Standard	6 10 16 20 25 32 40
B: Side mounting type	
N: Thru.hole mounting type	6
F: Bottom mounting type	

### ② Bore size

6 10 16 20 25 32 40

Note) HFZ series are all attached with magnet.

## ■ Inner structure and material of major parts

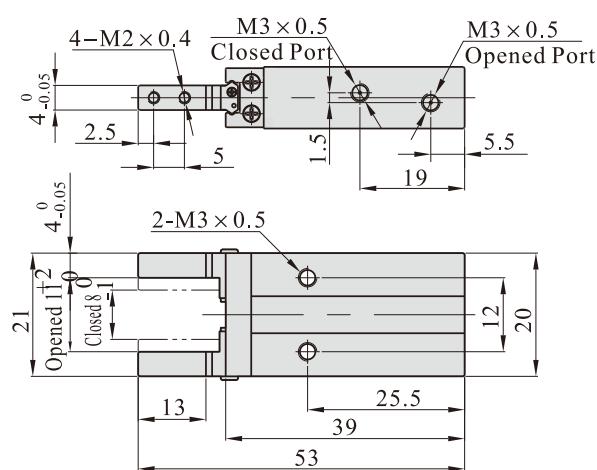
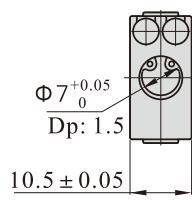


NO.	Item	Material
1	Rod packing	NBR
2	O-ring	NBR
3	Bumper	TPU
4	Magnet	Sintered metal (Neodymium-iron-boron)
5	Magnet washer	NBR
6	Piston seal	NBR
7	Body	Aluminum alloy
8	O-ring	NBR
9	C clip	Spring steel
10	Back cover	Aluminum alloy
11	Piston	Aluminum alloy/Stainless steel
12	Magnet fixed flake	Stainless steel
13	Screw	Carbon steel
14	Piston rod	Aluminum alloy/Stainless steel
15	Pin	Stainless steel
16	Pin	Stainless steel
17	Curved bar	Stainless steel
18	Pin	Stainless steel
19	Countersink screw	Carbon steel
20	Assembly of clamping jaw and guide rail	Stainless steel

## ■ Dimensions

Standard type

Φ6



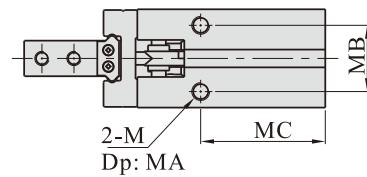
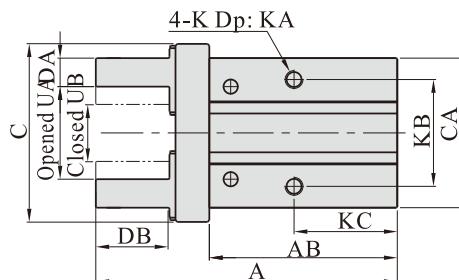
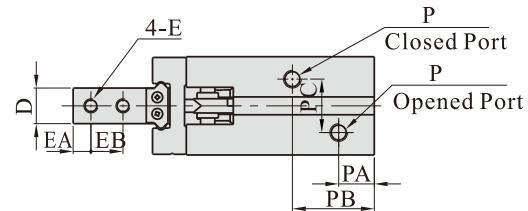
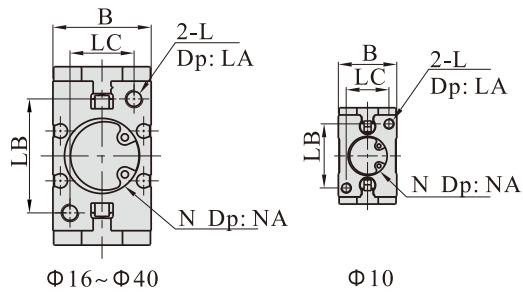
# Air gripper——HFZ Series

Parallel style with guide track——ball bearing

## Dimensions

Standard type

$\Phi 10 \sim \Phi 40$



Model\Item	A	AB	B	C	CA	D	DA	DB	E	EA
HFZ10	57	37.5	16.5	30	23	5 <sup>0</sup> <sub>-0.05</sub>	4 <sup>0</sup> <sub>-0.05</sub>	12	M2.5×0.45	3
HFZ16	67.5	42.5	23.5	39	30.5	8	5	15	M3×0.5	4
HFZ20	85	53	27.5	53	42	10 <sup>0</sup> <sub>-0.05</sub>	8 <sup>0</sup> <sub>-0.05</sub>	20	M4×0.7	5
HFZ25	103	64	33.5	71	52	12	10	25	M5×0.8	6
HFZ32	113(122)	67(76)	40	106	60	15 <sup>0</sup> <sub>-0.05</sub>	12 <sup>0</sup> <sub>-0.05</sub>	29	M6×1.0	7
HFZ40	139(152)	83(96)	48	132	72	18	14	36	M8×1.25	9

Model\Item	EB	K	KA	KB	KC	L	LA	LB	LC	M	MA	MB
HFZ10	5.7	M3×0.5	5	16	23	M3×0.5	6	18	12	M3×0.5	6	11.5
HFZ16	7	M4×0.7	7	24	24.5	M4×0.7	8	22	15	M4×0.7	4.5	16
HFZ20	9	M5×0.8	8	30	29	M5×0.8	10	32	18	M5×0.8	8	18.5
HFZ25	12	M6×1.0	10	36	30	M6×1.0	12	40	22	M6×1.0	10	22
HFZ32	14	M6×1.0	10	46	40(49)	M6×1.0	12	46	26	M6×1.0	10	26
HFZ40	17	M8×1.25	12	56	49(62)	M8×1.25	16	56	32	M8×1.25	12	32

Model\Item	MC	N	NA	P	PA	PB	PC	UA(Opened)	UB(Closed)
HFZ10	27	$\Phi 11^{+0.05}_0$	1.5	M3×0.5	7	19	10	15.5 <sup>+2</sup> <sub>0</sub>	11.5 <sup>0</sup> <sub>-1</sub>
HFZ16	30	$\Phi 17^{+0.05}_0$	1.5	M5×0.8	7.5	19	13	21	15
HFZ20	35	$\Phi 21^{+0.05}_0$	2	M5×0.8	9.5	23	15	26.5 <sup>+2</sup> <sub>0</sub>	16.5 <sup>0</sup> <sub>-1</sub>
HFZ25	36.5	$\Phi 26^{+0.05}_0$	2	M5×0.8	9	24	20	33.5	19.5
HFZ32	48(57)	$\Phi 34^{+0.05}_0$	2.5	M5×0.8	9.5	31(40)	24	48 <sup>+2.5</sup> <sub>0</sub>	26 <sup>0</sup> <sub>-1</sub>
HFZ40	58(71)	$\Phi 42^{+0.05}_0$	2.5	M5×0.8	10.5	38(50)	28	60	30

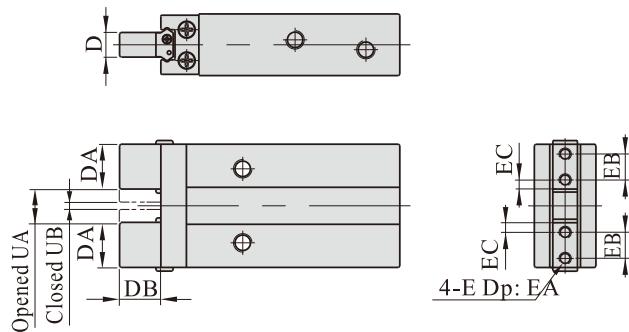
[Note]The values in “()” in the above table are single acting type sizes.

# Air gripper——HFZ Series

## Parallel style with guide track——ball bearing

### Bottom mounting type(F type)

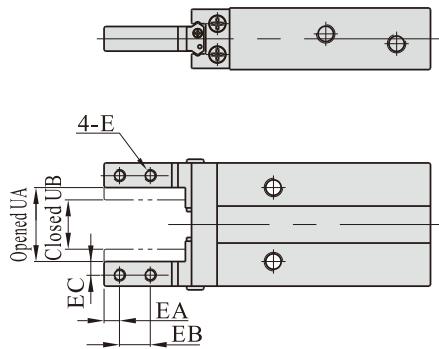
$\Phi 6$



Model\Item	D	DA	DB	EA	EB	E
HFZ6-F	4 <sup>0</sup> <sub>-0.05</sub>	7.5	7	3	3.5	M2×0.4
Model\Item	UA(Opened)					UB(Closed)
HFZ6-F	$5^{+1.5}_0$					1.8 <sup>0</sup> <sub>-0.5</sub>

### Side mounting type(B type)

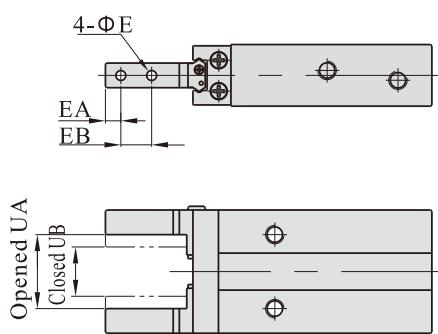
$\Phi 6$



Model\Item	E	EA	EB	EC
HFZ6-B	M2×0.4	2.5	5	2
Model\Item	UA(Opened)			UB(Closed)
HFZ6-B	$11^{+2}_0$			8 <sup>0</sup> <sub>-1</sub>

### Thru-hole mounting type(N type)

$\Phi 6$



Model\Item	E	EA	EB
HFZ6-N	2.3	2.5	5
Model\Item	UA(Opened)		UB(Closed)
HFZ6-N	$11^{+2}_0$		8 <sup>0</sup> <sub>-1</sub>

[Note] The other dimensions are the same as standard type.

# Clamping Cartridges

## Selection aid

### 1) Clamping cartridge KP

- For in-house assembly of clamping units
- Not certified for use in safety-related control systems



### 2) Clamping unit KPE

- Ready-to-install combination of clamping cartridge KP and housing
- Wide range of mounting options → 9
- Not certified for use in safety-related control systems



## Characteristics: At a glance

- The clamping cartridges/units use spring force to hold round material in any required position.
- They can stop and hold material for long periods, even in applications with varying loads, fluctuating operating pressure and system leaks.
- The clamping force is released by pressurising the clamping cartridge.
- The clamping cartridges/units can be mounted in any position.
- Clamping cartridges/units are not suitable for positioning.
- The clamping cartridge KP and the clamping units KPE, KEC, KEC-S are standalone components.
- Cylinders with integrated clamping unit
  - ADNKP
  - DSNU-...-KP
  - DSBC-...-C
  - DNCKE/DNCKE-S
- Zero backlash in clamped condition with varying loads on the piston rod:
  - Clamping cartridge/unit
  - KP/KPE: no
  - Clamping unit
  - KEC/KECS: yes

## Requirements for the round material to be clamped

In combination with clamping cartridge KP or clamping unit KPE

- Material:
  - Hard-chrome-plated steel
  - Hardened steel
  - Rolled steel: Tensile strength > 650 N/mm<sup>2</sup>, hardness (HB30) > 175
- Diameter tolerance: h8
- Surface roughness: Rmax. = 4 µm
- The specified holding forces refer to a static load. If these values are exceeded, slippage may occur.
- Clamping cartridge KP and clamping unit KPE are not suitable for dynamic operation.

## Ordering Code

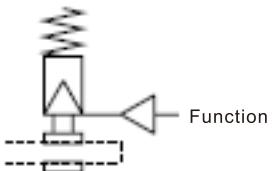
KP	10	180
Series	Static holding force	
	80: 80N	
	180: 180N	
(Bore size)	350: 350N	
4: 4mm	600: 600N	
6: 6mm	1000: 1000N	
8: 8mm	1400: 1400N	
10: 10mm	2000: 2000N	
12: 12mm	5000: 5000N	
16: 16mm	7500: 7500N	
20: 20mm		
25: 25mm		
32: 32mm		

KPE	10	S
Series	Certification	
	Blank: No	S: Safety device to
(Bore size)		Machinery Directive 2006/42/EC
4: 4mm		
6: 6mm		
8: 8mm		
10: 10mm		
12: 12mm		
16: 16mm		
20: 20mm		
25: 25mm		
32: 32mm		

# Clamping Cartridges — KP Series



## Symbol



Diameter of round material to be clamped:  
4 ... 32 mm



Force: 80 ... 7500 N

## Note

Additional measures are required for use in safety-related applications; in Europe, for example, the standards listed under the EC Machinery Directive must be observed. Without additional measures in accordance with statutory minimum requirements, the product is not suitable as a safety-related part of control systems.

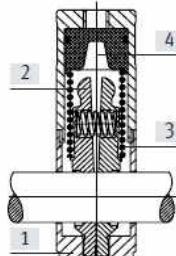
## General technical data

For round material diameter	4	6	8	10	12	16	20	25	32
Pneumatic connection			M5 x 0.8				G1/8		
Design				Tilting plates					
Type of mounting				Via self-configured housing					
Type of clamping with active direction				At both ends, Clamping via spring force, compressed air to release					
Static holding force [N]	80	180	350	350	600	1000	1400/2000	5000	7500
Axial play under load [mm]	0.2		0.3		0.5		0.8		1.8
Min. release pressure [bar]					3				
Mounting position					Any				
Product weight [g]	10	15	50	50	50	90	170	700	1600
Operating medium				Compressed air to ISO 8573-1:2010 [7:4:4]					
Note on operating/pilot medium				Lubricated operation possible (in which case lubricated operation will always be required)					
Operating pressure [bar]					≤10				
Ambient temperature1) [°C]					-10 ~ +80				
Corrosion resistance class CRC*					2				

\* Corrosion resistance class CRC 2 to Festo standard FN 940070 Moderate corrosion stress.

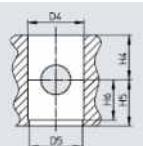
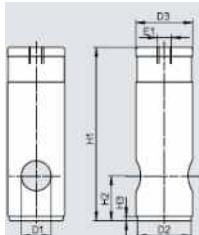
Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

## Materials



No.	Name	Material
1	Housing	Anodised aluminium
2	Clamping jaws	Brass
3	Spring	Spring steel
4	Piston	POM
-	Seals	NBR, TPE-U(PU)

## Dimensions and ordering data



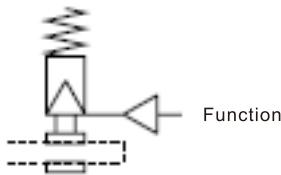
Note  
When installing the clamping cartridge in a housing, plain bearings must be installed on both sides of this housing.

Bore size mm	D1	D2 h12	D3 f9	D4 D9	D5	E1	H1	H2	H3	H4 min.	H5 min.	H6	Weight (g)	Type
4	4	10	12	12	11	M5	28	7	2	9	7.5	6	10	KP-4-80
6	6	14	16	16	15	M5	35	10	3	10	11	8	15	KP-6-180
8	8	18	20	20	19	M5	62	17.5	3	18	18.5	15.5	50	KP-8-350
10	10	18	20	20	19	M5	62	17.5	3	18	18.5	15.5	50	KP-10-350
12	12	18	20	20	19	G1/8	62	17.5	3	18	18.5	15.5	50	KP-12-600
16	16	22	24	24	23	G1/8	83	22	3	22	23	20	90	KP-16-1000
20	20	28	30	30	29	G1/8	100	25	3	25	26	23	170	KP-20-1400
	20	36	38	38	37	G1/8	115.5	30	3	30	31	28	170	KP-20-2000
25	25	46	48	48	47	G1/8	155	36	3	36	37	34	700	KP-25-5000
32	32	63	65	65	64	G1/8	195	55	3	55	56	53	1600	KP-32-7500

# Clamping Units —— KPE Series



## Symbol



Function



Diameter of round material to be clamped:  
4 ... 32 mm



Force: 80 ... 7500 N

## Note

Additional measures are required for use in safety-related applications; in Europe, for example, the standards listed under the EC Machinery Directive must be observed. Without additional measures in accordance with statutory minimum requirements, the product is not suitable as a safety-related part of control systems.

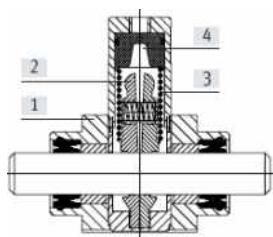
## General technical data

For round material diameter	4	6	8	10	12	16	20	25	32		
Pneumatic connection	M5 x 0.8							G1/8			
Design	Tilting plates										
Type of mounting	With mounting thread, With through-hole										
Type of clamping with active direction	At both ends, Clamping via spring force, compressed air to release										
Static holding force [N]	80	180	350	350	600	1000	2000	5000	7500		
Axial play under load [mm]	0.2	0.3			0.5		0.8		1.8		
Min. release pressure [bar]	3										
Mounting position	Any										
Product weight [g]	100	150	240	260	270	410	930	2000	4600		
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]										
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)										
Operating pressure [bar]					≤10						
Ambient temperature1) [°C]	-10 ~ +80										
Corrosion resistance class CRC*	2										

\* Corrosion resistance class CRC 2 to Festo standard FN 940070 Moderate corrosion stress.

Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

## Materials

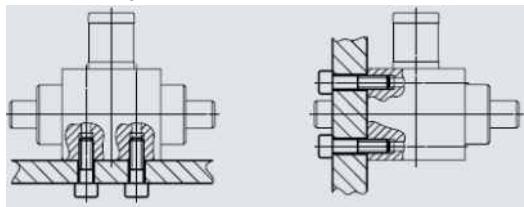


No.	Name	Material
1	Retaining bracket	Anodised aluminium
2	Clamping jaws	Brass
3	Spring	Spring steel
4	Piston	POM
-	Seals	NBR, TPE-U(PU)

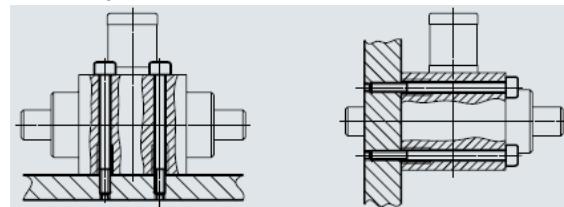
# Clamping Units —— KPE Series

## Mounting options

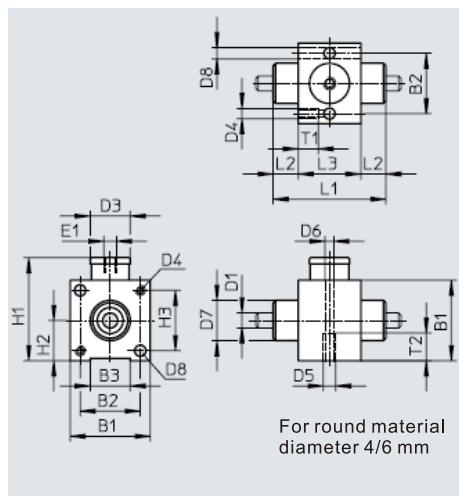
With mounting thread



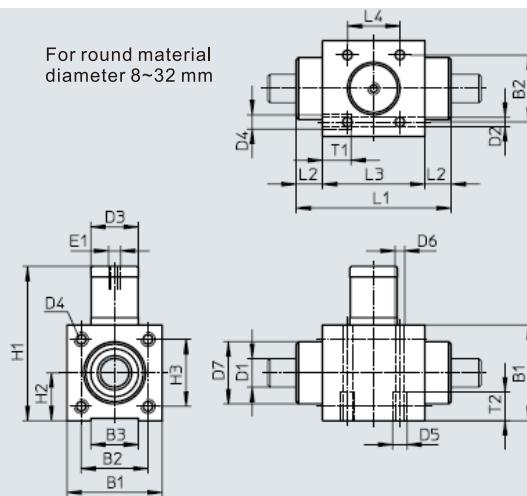
With through-hole



## Dimensions and ordering data



For round material diameter 8~32 mm



Bore size mm	B1	B2	B3	D1	D2	D3	D4	D5	D6	D7 d11	D8	E1	H1	H2	H3	L1	L2	L3	L4	T1	T2	Weight (g)	Type
4	27	19.5	12	4	-	12	-	M5	4.2	12	4.5	M5	34.5	13.5	19.5	33	7.5	18	-	9	11	100	KPE-4
6	32	24	16	6	-	16	-	M5	4.2	16	4.5	M5	41	16	24	45	10	25	-	9	11	150	KPE-6
8	36	27	20	8	4.2	20	M5	M5	4.2	22	-	M5	62.5	18	27	58	10	38	20	10	11	240	KPE-8
10	36	27	20	10	4.2	20	M5	M5	4.2	22	-	M5	62.5	18	27	62	12	38	20	10	11	260	KPE-10
12	40	28	20	12	5.2	20	M6	M6	5.2	28	-	G1/8	64.5	20	28	65	11	43	22	12	12	270	KPE-12
16	45	32.5	25	16	5.2	24	M6	M6	5.2	32	-	G1/8	83.5	22.5	32.5	69	12.5	44	22	12	12	410	KPE-16
20	65	50	38	20	6.5	38	M8	M8	6.5	45	-	G1/8	118	32.5	50	83	12.5	58	30	16	16	930	KPE-2
25	88	65	50	25	8.5	48	M10	M10	8.5	55	-	G1/8	163	44	65	100	15	70	34	20	20	2000	KPE-25
32	118	90	70	32	10.3	65	M12	M12	10.3	60	-	G1/8	199	59	90	154	25	104	60	24	24	4600	KPE-32

# Cylinder accessories

## —I Knuckle and Y Knuckle



### ■ Ordering code

F - M16 × 150 I			
①	②	③	④
① Accessories			□ Screw thread
F: cylinder accessories			M3: M3
			050: 0.5mm
			M4: M4
			070: 0.7mm
			M5: M5
			080: 0.8mm
			M6: M6
			100: 1.0mm
			M8: M8
			M10: M10
			125: 1.25mm
			M12: M12
			M14: M14
			M16: M16
			M18: M18
			M20: M20
			150: 1.5mm
			M22: M22
			M26: M26
			M27: M27
			M36: M36
			200: 2.0mm
			M42: M42

### ■ Table for I knuckle and cylinder

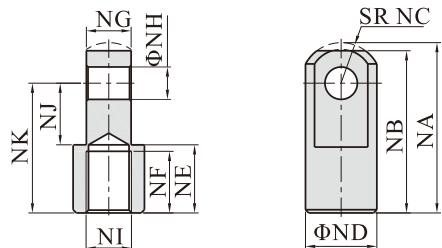
Cylinder Accessory	CP96/C96/DNC/DNG/SC							DNG/SC	DNG				SI								
	32	40	50	63	80	100	125		160	200	250	320	32	40	50	63	80	100	125	160	200
F-M10X125I(Y)	●												●								
F-M12X125I(Y)		●												●							
F-M16X150I(Y)			●	●											●	●					
F-M20X150I(Y)					●	●											●	●			
F-M27X200I(Y)							●											●		●	
F-M36X200I(Y)								●	●									●		●	
F-M42X200I(Y)										●											
F-M48X200I(Y)											●										
Cylinder Accessory	JSI/MB							SCE				MI									
	32	40	50	63	80	100	125	32	40	50	63	80	100	8	10	12	16	20	25	32	40
F-M4X070I(Y)														●	●						
F-M6X100I(Y)															●	●					
F-M8X125I(Y)																	●				
F-M10X125I(Y)	●								●										●	●	
F-M12X125I(Y)										●											●
F-M14X150I(Y)		●																			
F-M16X150I(Y)			●								●										
F-M18X150I(Y)				●	●																
F-M20X150I(Y)						●								●	●						
F-M22X150I(Y)							●														
F-M26X150I(Y)								●													
F-M27X200I(Y)									●												

# Cylinder accessories

## —I Knuckle and Y Knuckle

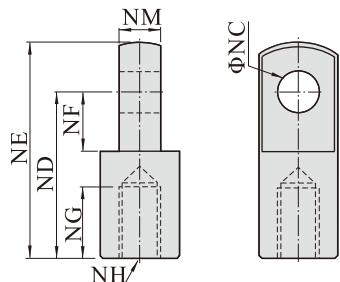
### Dimensions

I Knuckle(M14\ M18\ M22\ M26)



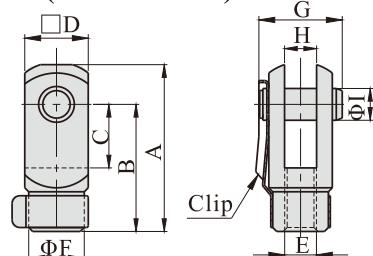
Type\Item	NA	NB	NC	ND	NE	NF	NG	NH	NJ	NK	NI
F-M14X150I	52.5	50	12.5	22	21	19	13.8	10	19	40	M14×1.5
F-M18X150I	66.5	64	16.5	28	27	24	19.8	14	24	50	M18×1.5
F-M22X150I	83.5	80	23.5	40	29	26	29.8	22	34	60	M22×1.5
F-M26X150I	83.5	80	23.5	40	29	26	29.8	22	34	60	M26×1.5

I Knuckle(Others)



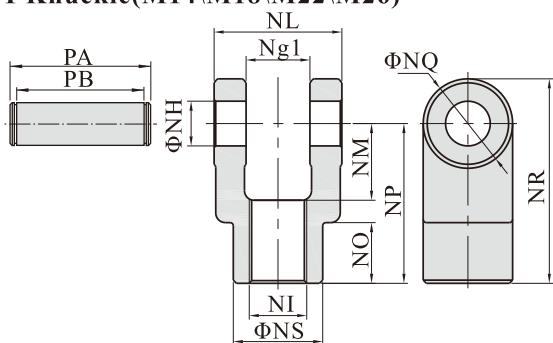
Type\Item	NC	ND	NE	NF	NG	NH	NM
F-M3x050I	3	12	15.5	5	5	M3×0.5	3
F-M4x070I	4	16	21	6.8	8	M4×0.7	4
F-M5x080I	5	25	32	14.1	7.5	M5×0.8	6.3
F-M6x100I	6	21	28	8.5	8	M6×1.0	6
F-M8x125I	8	30	40	11	15	M8×1.25	8
F-M10x125I	10	40	50	15	20	M10×1.25	10
F-M12x125I	12	48	62	24	20	M12×1.25	12
F-M16x150I	16	64	82	32	23	M16×1.5	16
F-M20x150I	20	80	102	40	30	M20×1.5	20
F-M27x200I	30	110	139	51	45	M27×2.0	30
F-M36x200I	35	144	181	65	55	M36×2.0	35
F-M42x200I	40	168	211	85	62	M42×2.0	40

Y Knuckle(M10 and below)



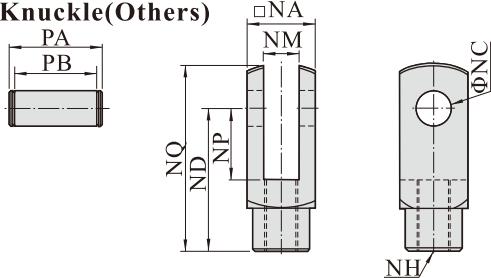
Type\Item	A	B	C	D	F	E	G	H	I
F-M3X050Y	15.5	12	5	6	6	M3×0.5	9	3	3
F-M4X070Y	22	16	8	8	7	M4×0.7	11.5	4	4
F-M5X080Y	28	21	10.2	12	10	M5×0.8	15.5	6.5	5
F-M6X100Y	32	24	12	12	10	M6×1.0	16	6	6
F-M8X125Y	42	32	16	16	14	M8×1.25	21	8	8
F-M10X125Y	52	40	20	19	18	M10×1.25	25	10	10

Y Knuckle(M14\ M18\ M22\ M26)



Type\Item	NG1	NH	NI	NL	NM	NO	NP	NQ	NR	NS	PA	PB
F-M14X150Y	14.2	10	M14×1.5	27.8	19	17	40	22	51	22	34.6	28.8
F-M18X150Y	20.2	14	M18×1.5	39.8	24	19	50	28	64	28	47	40.8
F-M22X150Y	30.2	22	M22×1.5	59.8	34	20	65	40	85	40	69.2	60.8
F-M26X150Y	30.2	22	M26×1.5	59.8	34	20	65	40	85	40	69.2	60.8

Y Knuckle(Others)



Type\Item	NA	NC	ND	NP	NQ	NM	NH	PA	PB
F-M12X125Y	25.4	12	48	24	62	12	M12×1.25	32.4	26.2
F-M16X150Y	32	16	64	32	80	16	M16×1.5	39	32.8
F-M20X150Y	44.4	20	80	40	101	20	M20×1.5	53.4	45.2
F-M27X200Y	54	30	110	55	139	30	M27×2.0	64.2	54.8
F-M36X200Y	70	35	144	73	179	35	M36×2.0	80.2	70.8
F-M42X200Y	85	40	168	86	211	40.3	M42×2.0	115	93

# Cylinder accessories

## —Floating joint and Universal joint



### ■ Ordering code

F - M22 × 150 F				
①	②	③	④	
<b>① Accessories</b>			<b>□ Screw thread</b>	
F: cylinder accessories			M3: M3	
			M4: M4	
			M5: M5	
			M6: M6	
			M8: M8	
			M10: M10	
			M12: M12	
			M14: M14	
			M16: M16	
			M18: M18	
			M20: M20	
			M22: M22	
			M26: M26	
			M27: M27	
			M36: M36	
			M42: M42	
			150: 1.5mm	
			200: 2.0mm	

<b>① Accessories</b>
F: cylinder accessories
<b>④ Code</b>
F: Floating joint
U: Universal joint

### ■ Table for I knuckle and cylinder

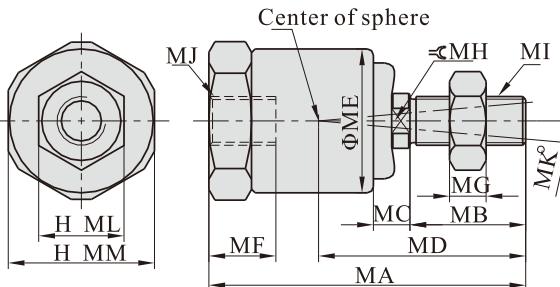
Cylinder Accessory	CP96/C96/DNC/DNG/SC							DNG/SC			DNG				SI																		
	32	40	50	63	80	100	125	160	200	250	320	32	40	50	63	80	100	125	160	200													
F-M10X125F(U)	●											●																					
F-M12X125F(U)		●											●																				
F-M16X150F(U)			●	●										●	●																		
F-M20X150F(U)					●	●										●	●																
F-M27X200F(U)						●												●															
F-M36X200F(U)							●		●									●															
F-M42X200F(U)									●										●		●												
F-M48X200F(U)										●																							
Cylinder Accessory	JSI/MB							SCE				MI				JSI/MB																	
	32	40	50	63	80	100	125	32	40	50	63	80	100	8	10	12	16	20	25	32	40	12	16	20	25	32	40	50	63	80	100		
F-M4X070F(U)									●	●																							
F-M6X100F(U)														●	●																		
F-M8X125F(U)																●																	
F-M10X125F(U)	●								●									●	●														
F-M12X125F(U)									●									●															
F-M14X150F(U)		●																															
F-M16X150F(U)			●							●																							
F-M18X150F(U)			●	●																													
F-M20X150F(U)										●	●																						
F-M22X150F(U)					●																												
F-M26X150F(U)						●																											
F-M27X200F(U)							●																										

# Cylinder accessories

## — Floating joint and Universal joint

### Dimensions

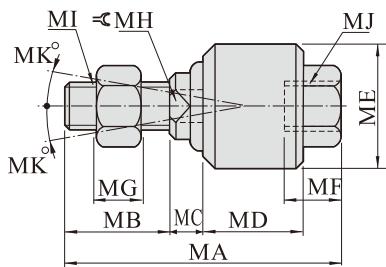
#### Floating joint(M6 and below)



Type\Item	MA	MB	MC	MD	ME	MF	MG	MH	MI\mj	ML	MM
F-M3X050F	23.5	7.5	3	15	12.8	5.5	2.4	4	M3×0.5	5.5	13
F-M4X070F	26	9.5	3	17	12.8	6	3	4	M4×0.7	7	13
F-M5X080F	34.5	13.5	3.5	22.8	13.8	8	4	6	M5×0.8	8	14
F-M6X100F	34.5	13.5	3.5	22.8	13.8	8	4	6	M6×1.0	10	14

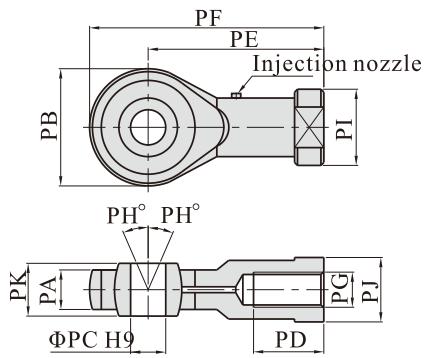
Note: Angle compensation:  $\pm 5^\circ$ . Radial direction compensation: 0.5

#### Floating joint(M8 and above)

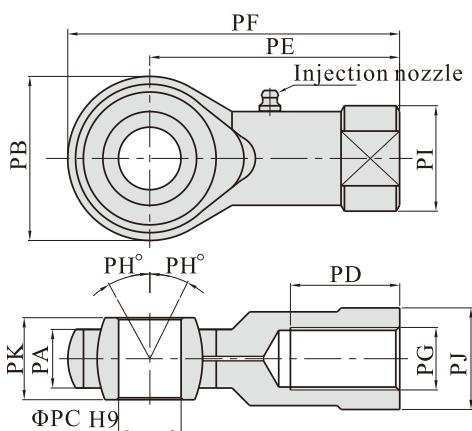


Type\Item	MA	MB	MC	MD	ME	MF	MG	MH	MI/MJ	MK
F-M8X125F	51	20	6	17	24	10.5	6	8	M8×1.25	13
F-M10X125F	58	22	7	21	26	11	6	10	M10×1.25	12
F-M12X125F	58	22	8	21	28	11.5	7	12	M12×1.25	12
F-M14X150F	70	22.5	8.5	28	34.5	16	8	15	M14×1.5	12
F-M16X150F	90	27	10	41	44.5	19	8	17	M16×1.5	7
F-M18X150F	92	27	10	41	44.5	21	11	18	M18×1.5	7
F-M20X150F	102	29	13	46	53	22	10	22	M20×1.5	10
F-M22X150F	108	32	13	46	53	25	13	22	M22×1.5	5
F-M26X150F	120	32	14.5	52.5	59.5	25	13	27	M26×1.5	5
F-M27X200F	136.5	40	14.5	52.5	59.5	40	13.5	27	M27×2.0	5
F-M36X200F	194.5	60	20.5	77.5	84	54	18	36	M36×2.0	5

#### Universal joint(M8 and below)



#### Universal joint(M10 and above)



Type\Item	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK
F-M4X070U	6	18	5	10	27	36	M4×0.7	13	12.5	10	8
F-M5X080U	6	18	5	10	27	36	M5×0.8	13	12.5	10	8
F-M6X100U	6.8	20	6	12	30	40	M6×1.0	13	13	11	9
F-M8X125U	9	24	8	16	36	48	M8×1.25	13	16	14	12
F-M10X125U	11	26	10	20	43	56	M10×1.25	13	19	17	14
F-M12X125U	12	32	12	22	50	66	M12×1.25	13	22	19	16
F-M14X150U	14	36	14	28	57	75	M14×1.5	13	25	22	19
F-M16X150U	15	40	16	28	64	84	M16×1.5	15	27	22	21
F-M18X150U	16.5	46	18	30	71	94	M18×1.5	15	31	27	23
F-M20X150U	18	46	20	33	77	100	M20×1.5	15	34	30	25
F-M26X150U	22	60	25	48	94	124	M26×1.5	15	42	36	31
F-M27X200U	25	70	30	51	110	145	M27×2.0	15	50	41	37
F-M36X200U	27.5	80	35	56	125	165	M36×2.0	15	57.5	50	43