

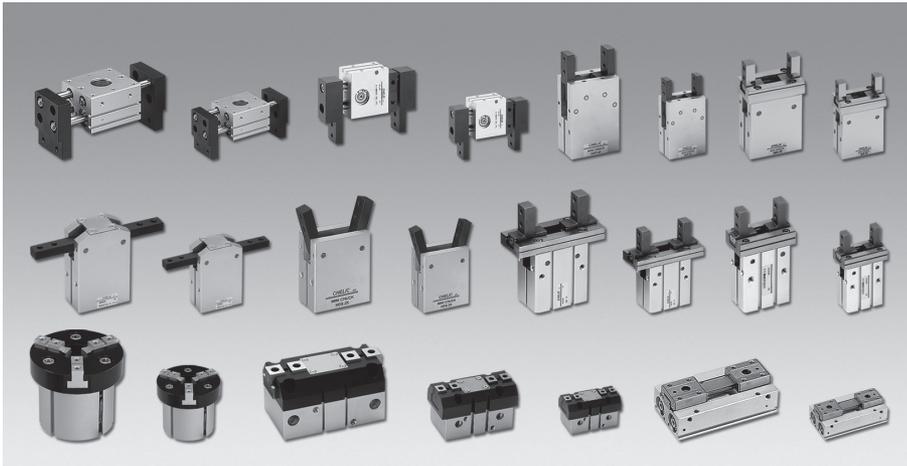
# GRIPPER Series

HDS \ HDM \ HDP \ HDK \ HDF \ HDZ \  
HDZL \ HDW \ HDL \ HDT \ HDR Series

CHELIC PNEUMATIC



HDS \ HDM \ HDP  
HDK \ HDF \ HDZ  
JDZL \ HDW \ HDL  
HDT \ HDR Series  
are with a **CD-ROM**  
containing computer  
auxiliary design drawings.



**HDS**  
Angular  
Gripper

**HDM**  
180° Angular  
Gripper

**HDP**  
Parallel  
Gripper

**HDK**  
Parallel  
Gripper

**HDF**  
Parallel  
Gripper

**HDZ**  
Parallel  
Gripper

**HDZL**  
Parallel  
Gripper

**HDW**  
Parallel  
Gripper

**HDL**  
Gripper

**HDT**  
Gripper

**HDR**  
Three  
Finger  
Gripper



**HDS** series ----- Angular Gripper ----- Ø10 ~ Ø32 ----- P.21-1.1



**HDM** series ----- 180° Angular Gripper ----- Ø12 ~ Ø32 ----- P.21-2.1



**HDP** series ----- Parallel Gripper ----- Ø10 ~ Ø32 ----- P.21-3.1



**HDK** series ----- Parallel Gripper ----- Ø16 ~ Ø32 ----- P.21-4.1



**HDF** series ----- Parallel Gripper ----- Ø8 ~ Ø32 ----- P.21-5.1



**HDZ** series ----- Parallel Gripper ----- Ø10 ~ Ø40 ----- P.21-6.1



**HDZL** series ----- Parallel Gripper ----- Ø10 ~ Ø25 ----- P.21-7.1



**HDW** series ----- Parallel Gripper ----- Ø20 ~ Ø100 ----- P.21-8.1



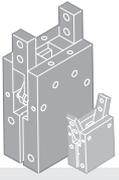
**HDL** series ----- Gripper ----- Ø20 \ Ø32 ----- P.21-9.1



**HDT** series ----- Gripper ----- Ø10 ~ Ø40 ----- P.21-10.1



**HDR** series ----- Three Finger Gripper ----- Ø25 ~ Ø63 ----- P.21-11.1



## **Safety notice / common caution** ①

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Please read this safety notice carefully, pay attention to safety item while using this product, in order to prevent injury to human body and damage of property; thus, there are divided into three classes of " **Danger** " , " **Warning** " , and " **Caution** " according to the extend of prevention.

### **Danger**

Obvious situated at " **Danger** " state, may cause casualty if not avoided; take special safety protection and management to prevent the occurrence of " **Danger** "

### **Warning**

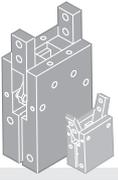
Condition of operation is situated at " **Warning** " state, may cause casualty if not avoided ; take special safety protection and manager to prevent the occurrence of " **Warning** "

### **Caution**

Condition of operation is situated at " **Caution** " state, may cause minor or moderate injury and damage of property if not avoided; take special safety protection and management.

- For safety protection and prevention of accident, please understand the condition of application and know the design, installation, procedure of usage and essential safety condition before using this product.
- Please use within the specification and requirement of this product; application beyond the specification may cause hazard. In case of special condition of application, take the confirmation of safety into account and then use it; in case of doubt in reading this information and related data, contact us before using.
- It is hazardous in error assemble and operation of compressed air and its accessories; so, while selecting the product, the related personnel of design, assemble, operating and service should possess sufficient knowledge and experience, and follow normal operating procedure, in order to maintain safe operation and good effect.
- The safety notice is made according to **ISO 4414** ; pneumatic fluid power and **JSI B 8370** general requirement of air system.

※ **The safety notice, we do not notify if change anything.**



## **Safety notice / common caution ②**

CHELIC PNEUMATIC



This product suitable for application in general industrial equipment; adhere to the following caution while designing, assembling, using and maintenance.

Safety notice

### **Danger**

#### **1. Please never use in the following application**

- Use in operation, delivering and management of the appliance for the purpose of human life and body.
- Use in operation which rise obvious “danger” and safety concern to human life and body.
- Special for safety purpose, situation with impact of safety to human life and body

#### **2. Confirmation of safety shall avoid the following conditions which cause safety impact to human and damage of equipment.**

- Operation of machine, device should note to the drop of driven object or race at the rotation radius and operation range cause injury of human and damage of equipment.
- Operation of machine, device should note the air supply source and poor power supply and interruption and cause injury of human and damage of equipment.
- When restarting the machine, device, may cause object flying out and cause injury of human and damage of equipment.

### **Warning**

#### **1. Please never use in following situation**

- In outdoor dusty condition.
- To avoid chemical , corrosive and inflammable gas ; to avoid sea water , high temperature place in surrounding.
- Exceed the condition in the specification of the product.
- In the place tend to receive rigorous shock impact, which affect the quality and stability of the product.

#### **2. Please don't make any modification or disassemble to the structure, function of the product.**

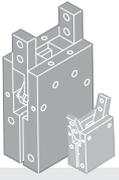
#### **3. Shut off the power switch and air source properly before service and maintenance, to avoid consequent hazard and damage of product.**

#### **4. To avoid consequent hazard and damage of product while assembling and operation.**

### **Caution**

#### **1. Pay attention to the cleanliness of the pipeline while piping, to avoid dust, dirt and leak proof tape been sucked into the pipe line and affect the operation performance of the product.**

#### **2. There are itemized cautions for various products, please contact our sales representative if you have any question.**



# Safety notice / Gripper Caution for application

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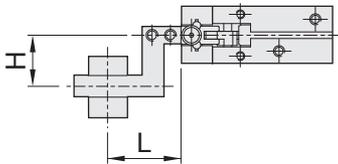


Please read this safety notice carefully, pay attention to safety item while using this product, in order to prevent injury to human body and damage of property.

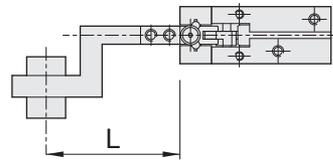
## Caution for service and Selection

### Warning

- Make thorough understanding to the characteristic of the compressed air and the application of this product while designing circuit.
- Please use only the fluid stated on the catalog, don't use the fluid other than limited, in order to prevent damage of product and affect the operation safety.
- Take safety precaution to reserve space in clamped object and placement when moving the working piece and moving route to avoid collision, prevent safety impact to human body and equipment
- Take the emergency or transient cut off power source, or power failure, air source circuit pressure drop causing holding force drop, vertical movement slip and resulting in damage of mechanical device, and human safety into account upon designing, so, safety countermeasure should be take in design.
- The design of holding point should limit to safety range, too long a holding point will cause excessive load to the claw and cause damage of the claw and affect the life of the product.

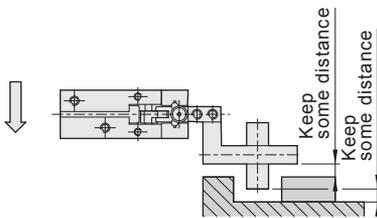


○ Correct

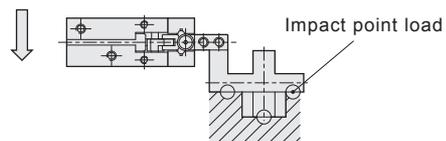


✗ Incorrect  
(too long holding point)

- The holding fixture design attach to the claw piece should be based on the principle of short, small and compact, avoid lengthy and too heavy attached fixture; excessive momentum while flapping will cause overload. Cause damage of mechanical clamp if resulting in loosen matching recession of the claw piece.
- If use in holding of long object and large work piece, please use larger holding force mechanical clamp or multiple mechanical clamp, the selection of mechanical clamp should note the calculation of holding force, load ability and make allowance.
- Avoid the occasion with impart force, direct impact load to catch claw or holding object will lead to impact load receive by the structure of the catch claw and cause damage and impair the safety of the equipment.

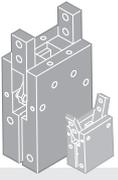


○ Correct



✗ Incorrect claw piece  
(attached fixture) impact

- Avoid impact during placement, do not skewed the work piece, the mechanical clamp and the fixture shall not be collided.



## Safety notice / Gripper Caution for application

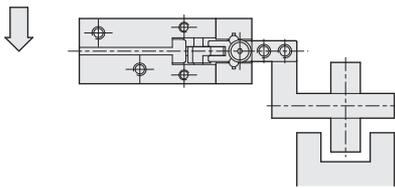
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Safety notice

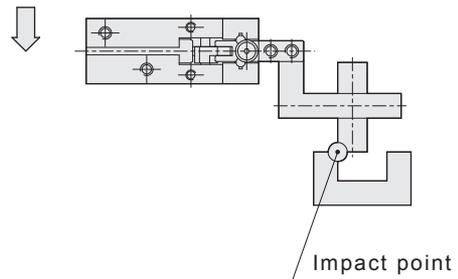
- In situation with rigorous vibration causing unstable holding of clamped object and danger of dropping mechanical part, prevent the damage resulting from vibration and with proper countermeasure.
- For design of holding force and point, take the gravity center and stability of the work piece into account; prevent improper holding force or unstable holding point cause dropping of work piece.
- Design of the holding force of mechanical clamp should take the held object into account, because fast moving impact load and impact load resulting from revolving work may cause drop and damage of part and reduction of accuracy.

### Caution

- While installing and using, note the enter position of the holding object, avoid shift position placement cause skew and make uneven force receiving of mechanical clamp and compulsory pressure cause damage of mechanical clamp.



○ Correct



✗ Incorrect  
(skew impact)

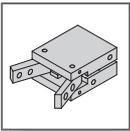
- **Placement point of work piece should be accurate without skew angle impact, including uneven force receiving.**
- Test run after installation or repairing, supply air from little to large, first perform empty holding, and press down load movement after every step is steady to prevent error action caused by bad blank.
- The selection and installation of sensor should follow the requirement of specification in the catalog.

### Caution for service and maintenance

#### Warning

- Shut off the power switch and air source properly before service and maintenance, confirm that there is no residue pressure in the pipeline and start work after confirming the status is safe.
- Please don't disassemble the mechanical clamp in discretion, disassemble the revolving cylinder in discretion will lead to displacement of the original calibration accuracy; error disassembling will lead to hazard and cause problem on operation of the product.
- Service and maintenance should be performed regularly as schedule, check for normal function of mechanical clamp? Is there any loosen? Is there any malfunction in allocation with other component?



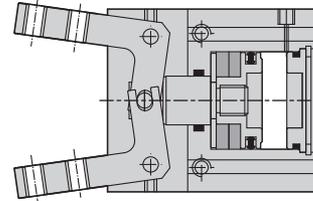


# HDS / HRS series - ANGULAR GRIPPER

Operation specification and Ordering expression

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## Internal structure

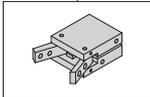
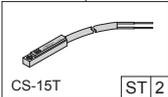
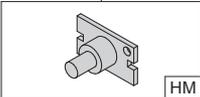
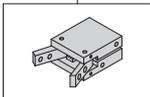


## Specification

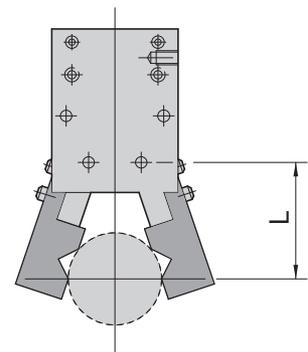
Item	Model	HDS-10	HDS-16	HDS-20	HDS-25	HDS-32
Bore size		10	16	20	25	32
Type of operation		HDS : Double acting ; HRS : Single acting normally open				
Fluid		Air				
Pressure range	kgf/cm <sup>2</sup>	1.5 ~ 7 ( 150 ~ 700 )				
Range of service temperature	°C	0 ~ 60				
Max. operation frequency	min	180				
Lubrication	Cylinder	Lubrication free				
	Lever section	Required ( Apply Lubricating oil )				
Theoretical holding force Kgf-cm	Closed side	0.16XP	0.8XP	1.7XP	3.4XP	6.1XP
	Opened side	0.26XP	1.1XP	2.3XP	4.3XP	8.1XP
Length of maximum gripping point (L)	mm	30	40	60	70	85
Effective gripping force (F) (Note 1)	Kgf	F = M / L X 0.85				
Lever open/ close angles	°C	-10° ~ +30°				
Port size		M3 x 0.5P		M5 x 0.8		
Magnet device		With magnet				

🔍 Note 1 F : Effective gripping force , L : Gripping point length , M : Theoretical holding force , P : Pressure Kgf/cm<sup>2</sup>

## How to order

<b>HDS</b>	<b>20</b>	<b>ST 2</b>	<b>HM</b>
Model	Bore size	Sensor switch	Mounting bracket
	10 - 10 mm 16 - 16 mm 20 - 20 mm 25 - 25 mm 32 - 32 mm	 CS-15T [ST] 2	 HM
<b>HDS :</b> Angular Gripper (Double acting)		None : without sensor [ST] : Sensor code (CS-15T) [SB] : Sensor code (CS-15B) [SG] : Sensor code (CS-5G) [SGN] : Sensor code (CS-5GN) [SGP] : Sensor code (CS-5GP)	None : Without Mounting bracket [HM] : HM type Mounting bracket ( please refer to P.21-1.7 )
		[2] : Number of sensor 1 = 1 PCS 2 = 2 PCS	 HB
<b>HRS :</b> Angular Gripper (Single acting normally open)			None : Without Mounting bracket [HB] : HB type Mounting bracket ( please refer to P.21-1.7 ) ※ Note : Ø10 ~ Ø32 use

## Length of gripping point



**HDS**  
Angular  
Gripper

**HDM**  
180°Angular  
Gripper

**HDP**  
Parallel  
Gripper

**HDK**  
Parallel  
Gripper

**PDF**  
Parallel  
Gripper

**HDZ**  
Parallel  
Gripper

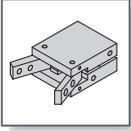
**HDZL**  
Parallel  
Gripper

**HDW**  
Parallel  
Gripper

**HDL**  
Gripper

**HDT**  
Gripper

**HDR**  
Three  
Finger  
Gripper

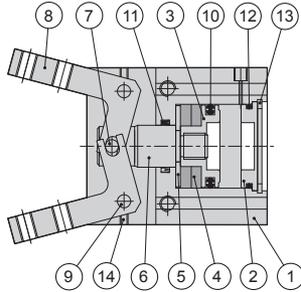


# HDS / HRS series - ANGULAR GRIPPER

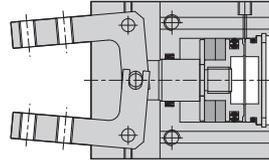
## Components and Material list

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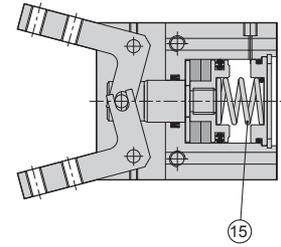
### Double acting type (fingers open)



### Double acting type (fingers close)



### Single acting



### Components and Material list

No.	Item	Material	No.	Item	Material
01	Body	Aluminum alloy	09	Slide pin	Bearing steel
02	End cover	Copper	10	Piston packing	NBR
03	Piston	Copper	11	Rod packing	NBR
04	Magnet	Rubber	12	End cover o-ring	NBR
05	Magnet holder	Copper	13	Snap ring	Spring steel
06	Piston rod	Stainless steel	14	Hexagon screw	Alloy steel
07	Rod pin	Bearing steel	15	Spring	Stainless steel
08	Y type claw	Alloy steel			

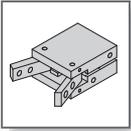
### Packing and O-Ring

Item	Piston packing	Rod packing	End cover o-ring
Number	1	1	1
Bore size			
Ø10	COP-10	DYR-6	Ø8 X Ø1.5
Ø16	COP-16	DYR-8K	Ø13.2 X Ø1.5
Ø20	COP-20	DYR-10SK	Ø17.5 X Ø1.5
Ø25	COP-25	DYR-12	Ø22 X Ø1.5
Ø32	COP-32	DYR-16	Ø28.5 X Ø2.0

### Weight

Model	Weight
HDS - 10S	0.10 kg
HDS - 16S	0.12
HDS - 20S	0.20
HDS - 25S	0.33
HDS - 32S	0.56

Note : Piston and rod packing adapt in Osaka and Mitsubishi imports.



# HDS / HRS series - ANGULAR GRIPPER

Gripping force characteristic

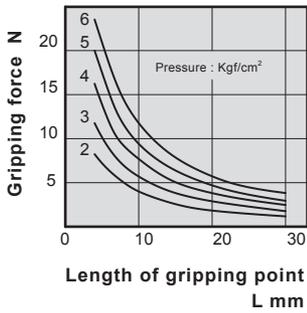
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► Gripping force characteristic

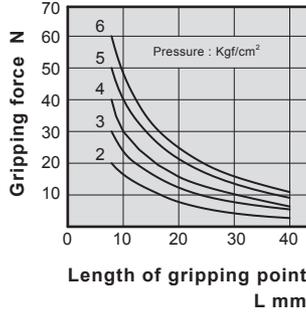


● HDS / HRS External gripping force

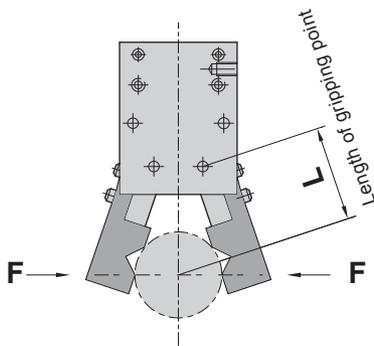
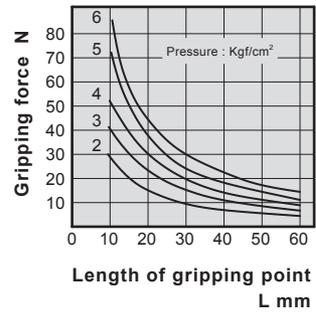
HDS-10



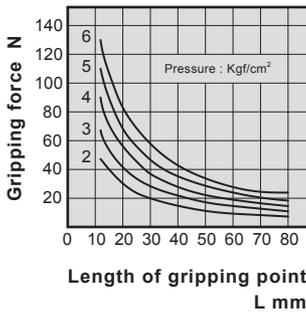
HDS-16



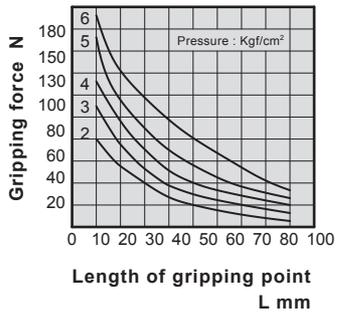
HDS-20



HDS-25



HDS-32



**HDS**  
Angular  
Gripper

**HDM**  
180° Angular  
Gripper

**HDP**  
Parallel  
Gripper

**HDK**  
Parallel  
Gripper

**HDF**  
Parallel  
Gripper

**HDZ**  
Parallel  
Gripper

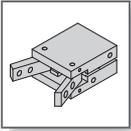
**HDZL**  
Parallel  
Gripper

**HDW**  
Parallel  
Gripper

**HDL**  
Gripper

**HDT**  
Gripper

**HDR**  
Three  
Finger  
Gripper



# HDS / HRS series - ANGULAR GRIPPER

Operating type , Data , and Mounting type

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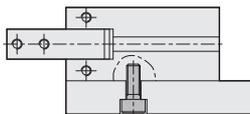
## Operating type and Data

Operating type	Model	Bore size (mm)	The smallest operating pressure (Mpa)	Thread port (mm)	Effective gripping force	
						Kgf(N)
Double acting	HDS - 10	10	0.22	4 - M3x0.5P	Open	0.3 (3.6)
					Close	0.2 (2.2)
	HDS - 16	16	0.1	4 - M3x0.5P	Open	1.5 (15.2)
					Close	1.1 (11.1)
	HDS - 20	20	0.1	4 - M4x0.7P	Open	3.2 (31.9)
					Close	2.4 (23.6)
	HDS - 25	25	0.1	4 - M5x0.8P	Open	6.0 (59.6)
					Close	4.8 (47.2)
	HDS - 32	32	0.1	4 - M6x1.0P	Open	11.4 (112.4)
					Close	8.6 (84.6)
Single acting	HRS - 10	10	0.36	4 - M3x0.5P	Close	0.2 (2.2)
	HRS - 16	16	0.3	4 - M3x0.5P	Close	1.1 (11.1)
	HRS - 20	20	0.2	4 - M4x0.7P	Close	2.4 (23.6)
	HRS - 25	25	0.2	4 - M5x0.8P	Close	4.8 (47.2)
	HRS - 32	32	0.2	4 - M6x1.0P	Close	8.6 (84.6)

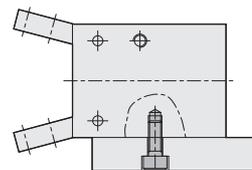
 Note : The gripping force is the force of open and close gripper which is in the length of gripping point is 30mm and acting pressure is 0.5Mpa.

## Mounting type

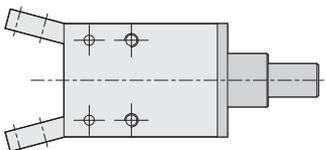
1. Use the thread in the bottom



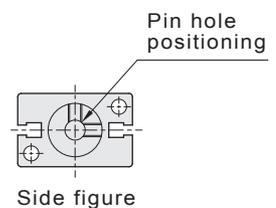
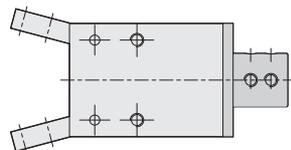
2. Use the thread in the side of body

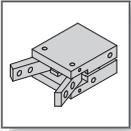


3. Use HM type Mounting bracket in the bottom



4. Use HB type Mounting bracket in the bottom



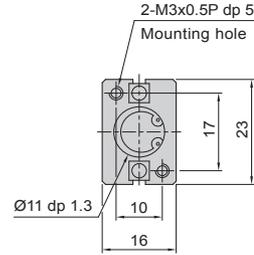
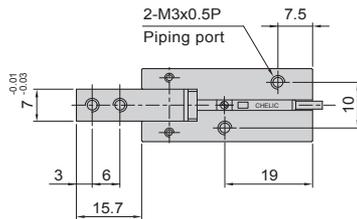
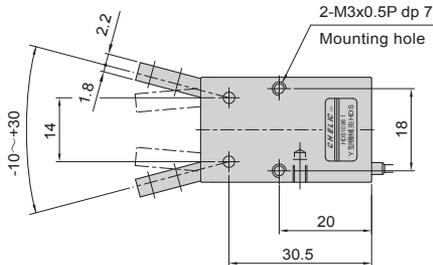
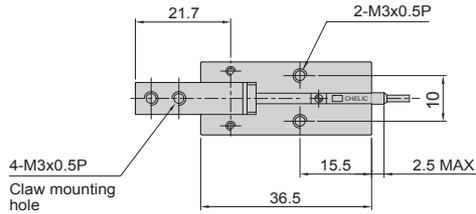


# HDS / HRS series - ANGULAR GRIPPER

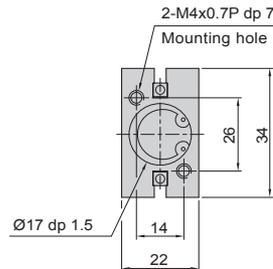
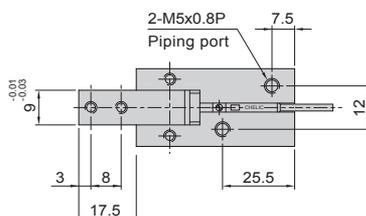
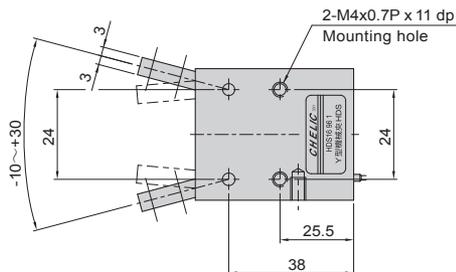
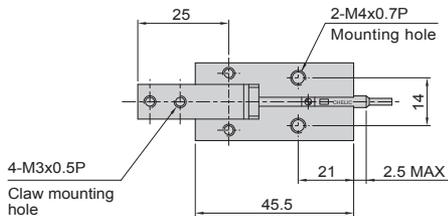
External dimension -  $\varnothing 10$  ·  $\varnothing 16$

CHELIC PNEUMATIC

► HDS - 10  
HRS - 10



► HDS - 16  
HRS - 16



**HDS**  
Angular  
Gripper

**HDM**  
180° Angular  
Gripper

**HDP**  
Parallel  
Gripper

**HDK**  
Parallel  
Gripper

**PDF**  
Parallel  
Gripper

**HDZ**  
Parallel  
Gripper

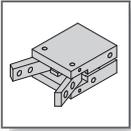
**HDZL**  
Parallel  
Gripper

**HDW**  
Parallel  
Gripper

**HDL**  
Gripper

**HDT**  
Gripper

**HDR**  
Three  
Finger  
Gripper

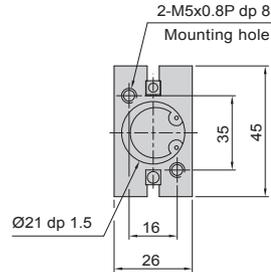
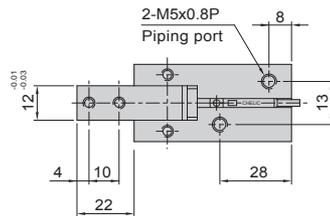
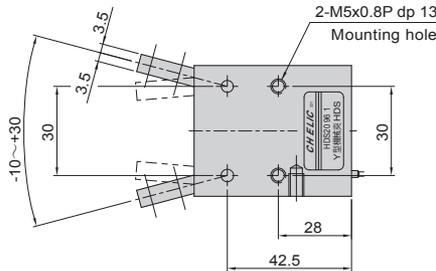
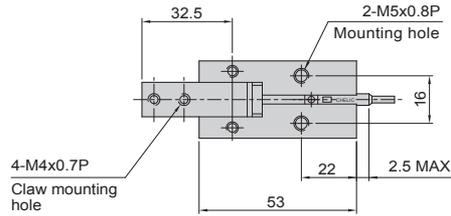


# HDS / HRS series - ANGULAR GRIPPER

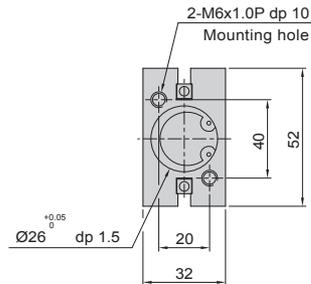
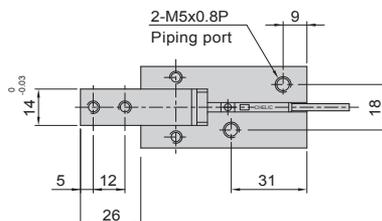
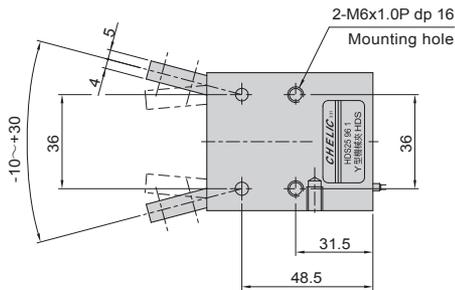
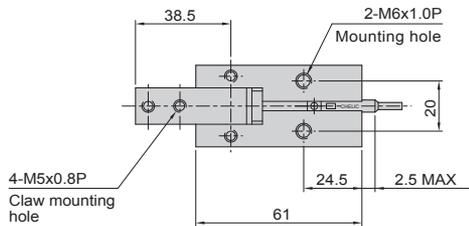
External dimension - Ø20、Ø25

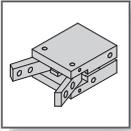
CHELIC PNEUMATIC

● HDS - 20  
HRS - 20



● HDS - 25  
HRS - 25



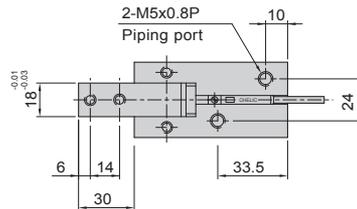
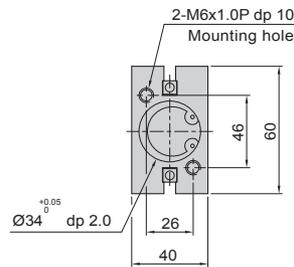
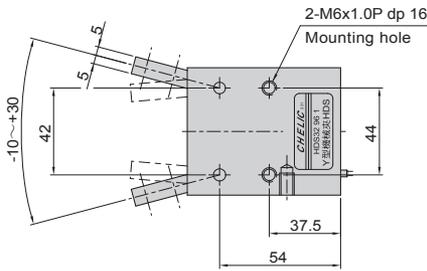
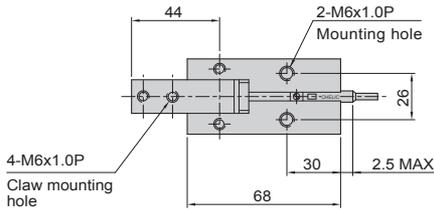


# HDS / HRS series - ANGULAR GRIPPER

External dimension - Ø32, Mounting bracket

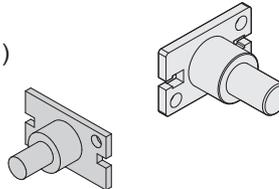
CHELIC PNEUMATIC

● **HDS - 32**  
**HRS - 32**



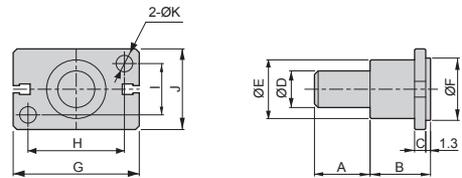
- HDS**  
Angular Gripper
- HDM**  
180° Angular Gripper
- HDP**  
Parallel Gripper
- HDK**  
Parallel Gripper
- HDF**  
Parallel Gripper
- HDZ**  
Parallel Gripper
- HDZL**  
Parallel Gripper

● **Mounting bracket**  
( Suitable for HDS、HRS、HDP、HDK series )



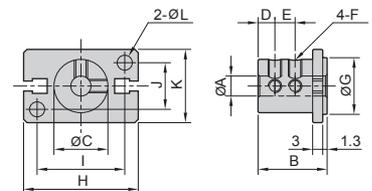
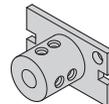
● **HM type Mounting bracket**  
( Using in internal mounting )

Symbol Model	A	B	C	D	E	F	G	H	I	J	K
HM10	10	10	2	8	12	11	23	17	10	16	3.5
HM16	15	15	3	10	16	17	34	26	14	22	4.5
HM20	15	15	3	10	18	21	45	35	16	26	5.5
HM25	25	17	5	14	26	26	52	40	20	32	6.5
HM32	25	20	6	16	30	34	60	46	26	40	6.6

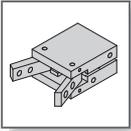


● **HB type Mounting bracket**  
( Using in external mounting )

Symbol Model	A	B	C	D	E	F	G	H	I	J	K	L
HB10	4	20.5	10	5	-	M3 x 0.5p	11	23	17	10	16	3.5
HB16	6	20.5	16	5	6	M4 x 0.7p	17	34	26	14	22	4.5
HB20	8	20.5	20	7	7	M4 x 0.7p	21	45	35	16	26	5.5
HB25	10	30.5	25	8	10	M4 x 0.7p	26	52	40	20	32	6.5
HB32	12	40.5	32	10	15	M4 x 0.7p	34	60	46	26	40	6.5



- HDW**  
Parallel Gripper
- HDL**  
Gripper
- HDT**  
Gripper
- HDR**  
Three Finger Gripper



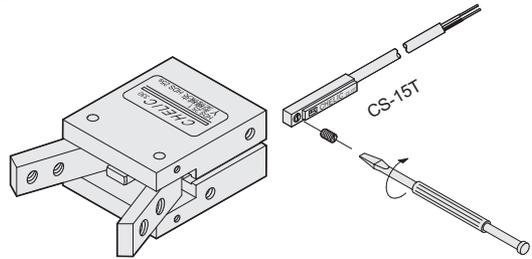
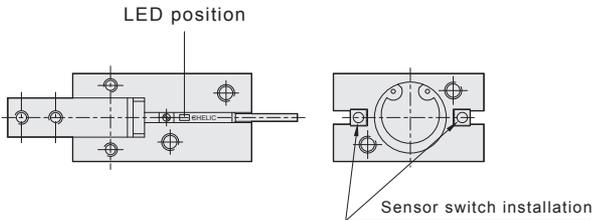
# HDS / HRS series - ANGULAR GRIPPER

How to use and Mount sensor switch

CHELIC PNEUMATIC

## ▶ HDS / HRS Sensor switch installation example

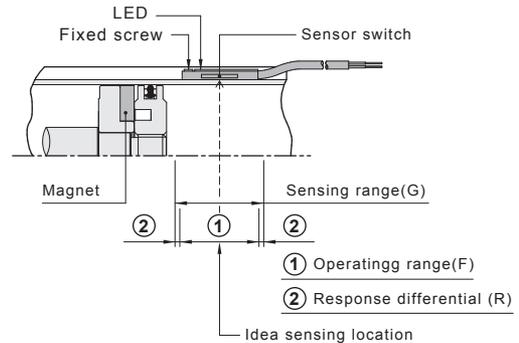
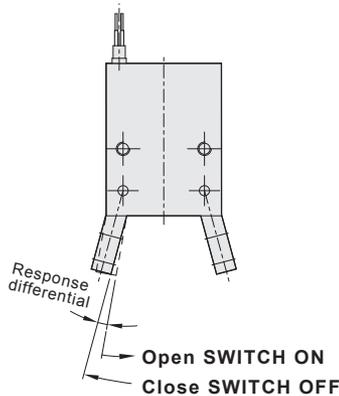
- Sensor switch installing and Position



CS-15T  
( Please refer to P.22-1.18 Sensor switch standard )

- Response differential and Position adjustable

- Response differential and Position adjustable



## ▶ Sensing range

Sensor switch is fixed on the cylinder body.  
The magnetic piston head will activate the sensor switch when it enters the operating range. It has 0.5mm differential.

## ▶ Operating range

When piston head moves the switch setting and adjustment will be based on the responding range generated by the magnetic field and the switch.  
(Please refer to the below table)

Unit : mm

Model	CS-15T(B)	
Bore size	Operating range (F)	Response differential(R)
10	3	1
16	5	1
20	8.5	1
25	10	1.8
32	10	2

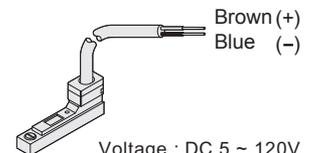
## ▶ Connection type

### CS-15T



Voltage : DC 5 ~ 120V  
AC 5 ~ 120V

### CS-15B



Voltage : DC 5 ~ 120V  
AC 5 ~ 120V

### CS-5G



Voltage : DC 10 ~ 28V