

# NFHC2 Series

Paralled Opening Type Air Chuck / Compact Type

Bore size : Ø8, Ø12, Ø16, Ø20



- Options for secondary battery industries available
- Various mounting options
- High rigidity and high precision
- Various finger options
- Single acting type available
- Excellent durability by applying low dew point grease
- HNBR rod packing

## How to order



### 1 2B Series

Blank	Standard type
2B	Secondary Battery type

### 2 Compact AIR CHUCK Series

New  
Finger  
Horizontal  
Compact  
2 : Number of fingers

### 3 Bore Size

8	8mm
12	12mm
16	16mm
20	20mm

### 4 Action

D	Double acting type
S	Single acting type (Normally opened)
T	Single acting type (Normally closed)

### 5 Attaching Type

Blank	Basic type
1	Side tap type
2	Through hole type

### 6 Cover Plate

Blank	Standard
N	With cover plate

### 7 Auto Switch

Blank	Without auto switch
W9H	Mini solid state (Horizontal)
W9V	Mini solid state (Vertical)
W10V	Mini solid state (Vertical)
W20H	Mini solid state (Vertical, 2 colors)

※ In case of 3m lead wire, L should be added at the end of item number. (ex : W9HL)

### 8 Number of switches

Blank	2 pcs
S	1 pcs
N	N pcs

△ Even in the 2B series, the aluminum alloy material may contain a small amount of copper(Cu) or zinc(Zn), so please contact us for details.

※ 2B series specifications and external dimensions are the same as standard products.

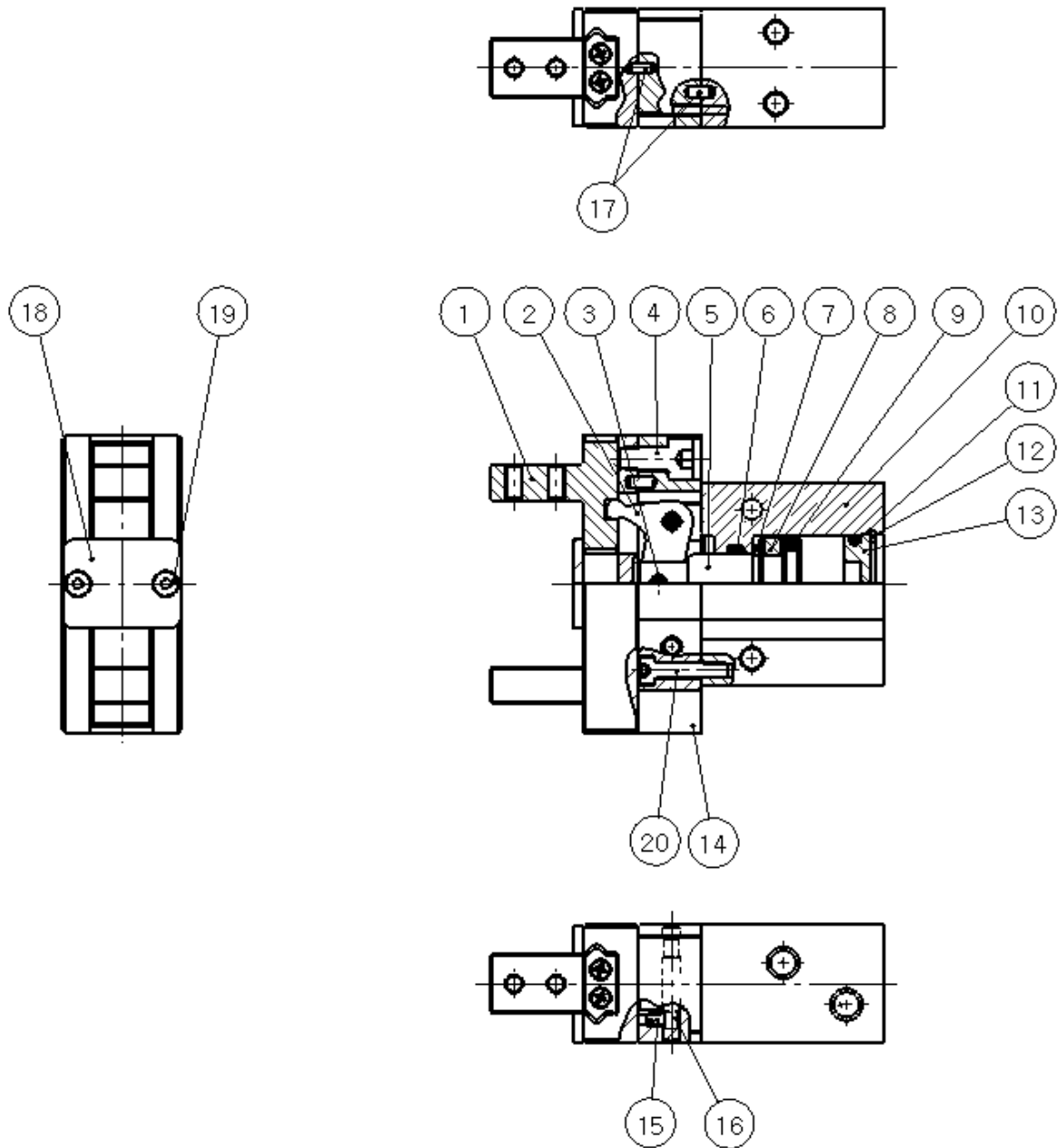
## Specifications

Model		NFHC2-8			NFHC2-12			NFHC2-16			NFHC2-20		
Action		D	S	T	D	S	T	D	S	T	D	S	T
Bore Size(mm)		8			12			16			20		
Opening/Closing STROKE (mm)	Closing Width	8			14			18			20		
	Opening Width	12			20			28			34		
	STROKE	4			6			10			14		
Theoretical Gripping (1) Force (N)	Closed	9	5.7	-	19.3	14.2	-	26.3	20.9	-	61.9	46	-
	Opened	12	-	9.2	25.8	-	20.5	43.2	-	34.3	82.6	-	70.6
Port Size		M3			M5			M5			M5		
Weight(gf)		38	40		72	78		144	160		266	292	
Max. Gripping Length(mm)		50			60			70			100		
Fluid		Air											
Operating Pressure (MPa)	Double Acting	Ø8 : 0.15 ~ 0.7MPa											
		Ø12~Ø20 : 0.15 ~ 0.7MPa											
	Single	Nor. OP	Ø8 : 0.35 ~ 0.7MPa										
		Nor. CL	Ø12 : 0.3 ~ 0.7MPa Ø16~Ø20 : 0.25 ~ 0.7MPa										
Lubricant		Unnecessary											
Using Temperature(°C)		5 ~ 60											
(2) Repeated opening/closing	Initial Value	±0.01			±0.01			±0.01			±0.01		
	After 1M Times	±0.1			±0.05			±0.05			±0.05		
Critical Performance Times (C.P.M)		120											
Auto Switch for Checking		Mini Solid State Auto Switch(W9H, W9V, W10V, W20H)											

(1) Theoretical gripping force is the value at the center of stroke. (Based on 5 Mpa)

(2) Accuracy (mm)

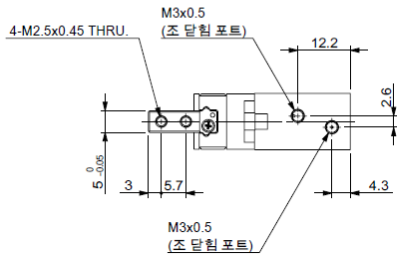
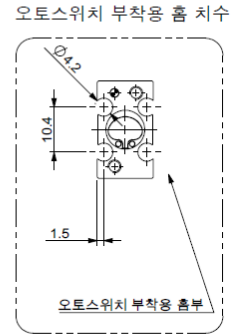
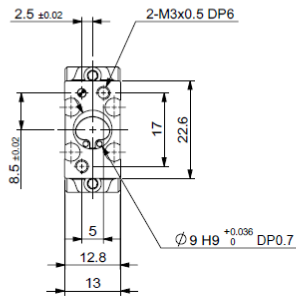
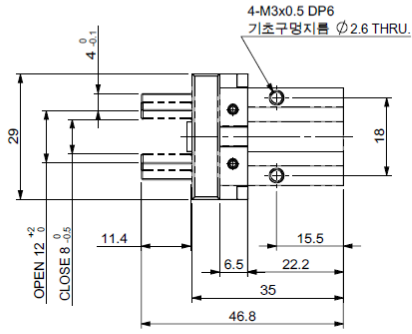
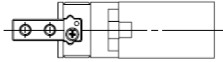
## Structure



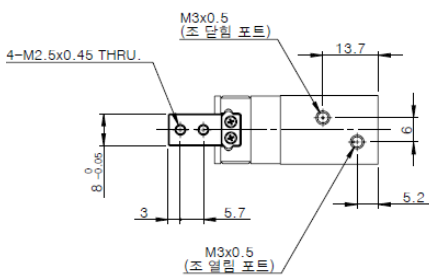
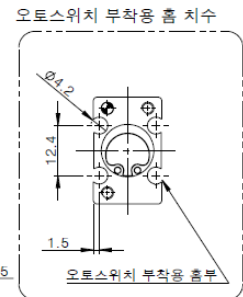
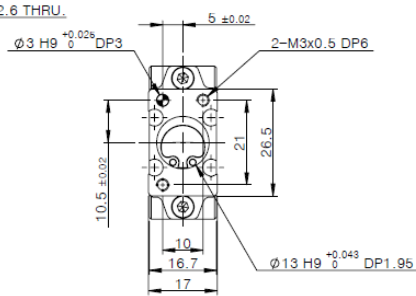
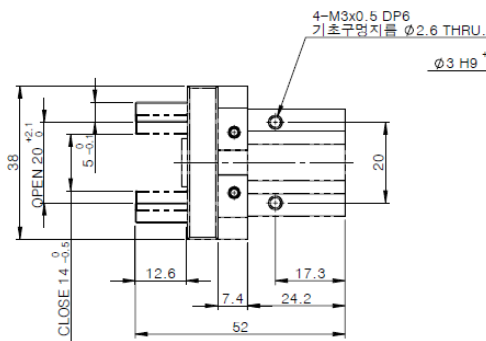
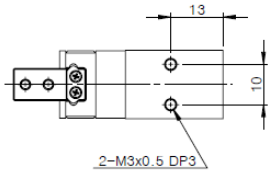
NO	Description	Material	Note	NO	Description	Material	Note
1	FINGER ASS'Y	Carbon tool steel	Normal	11	GASKET	NBR	
2	LINK	Die steel		12	SNAP RING	Spring steel	
3	HINGE PIN	Bearing steel		13	HEAD COVER	Aluminum alloy	
4	HEX. SOCKET BOLT	Carbon steel		14	MIDDLE BODY	Aluminum alloy	
5	PISTON ROD	Ø8~16 : Stainless steel		15	SET SCREW	Stainless steel	
		Ø20 : Aluminum alloy		16	LINK PIN	Bearing steel	
6	ROD PACKING	NBR		17	DOWEL PIN	Bearing steel	
7	BUMPER	URETHANE		18	COVER PLATE	Aluminum alloy	Option
8	MAGNET	Magnetic		19	FLAT HEAD BOLT	Stainless steel	Option
9	PISTON PACKING	NBR		20	HEX. SOCKET BOLT	Carbon steel	
10	LINK	Die steel					

## Dimensions

### Double Acting / NFHC2-8D



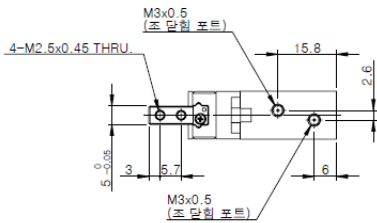
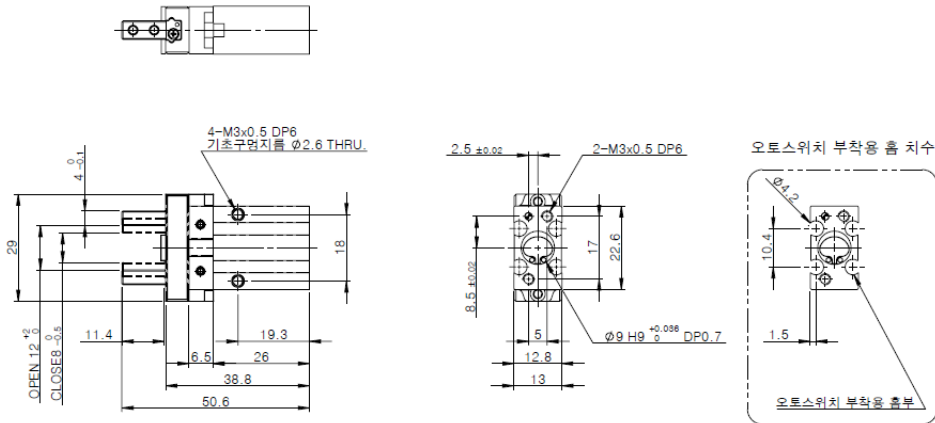
### Double Acting / NFHC2-12D



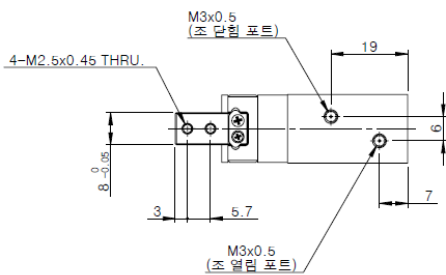
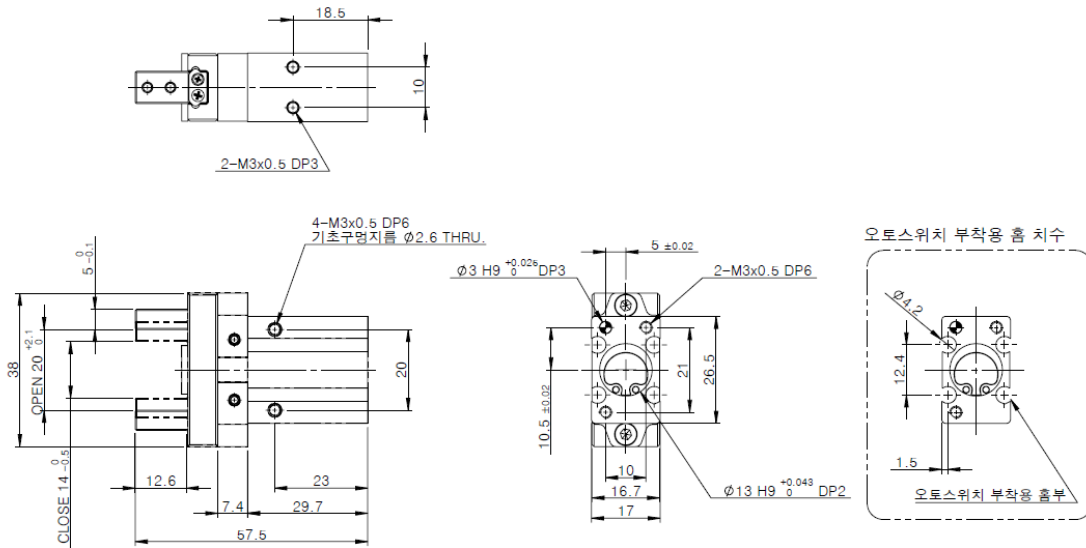


Dimensions

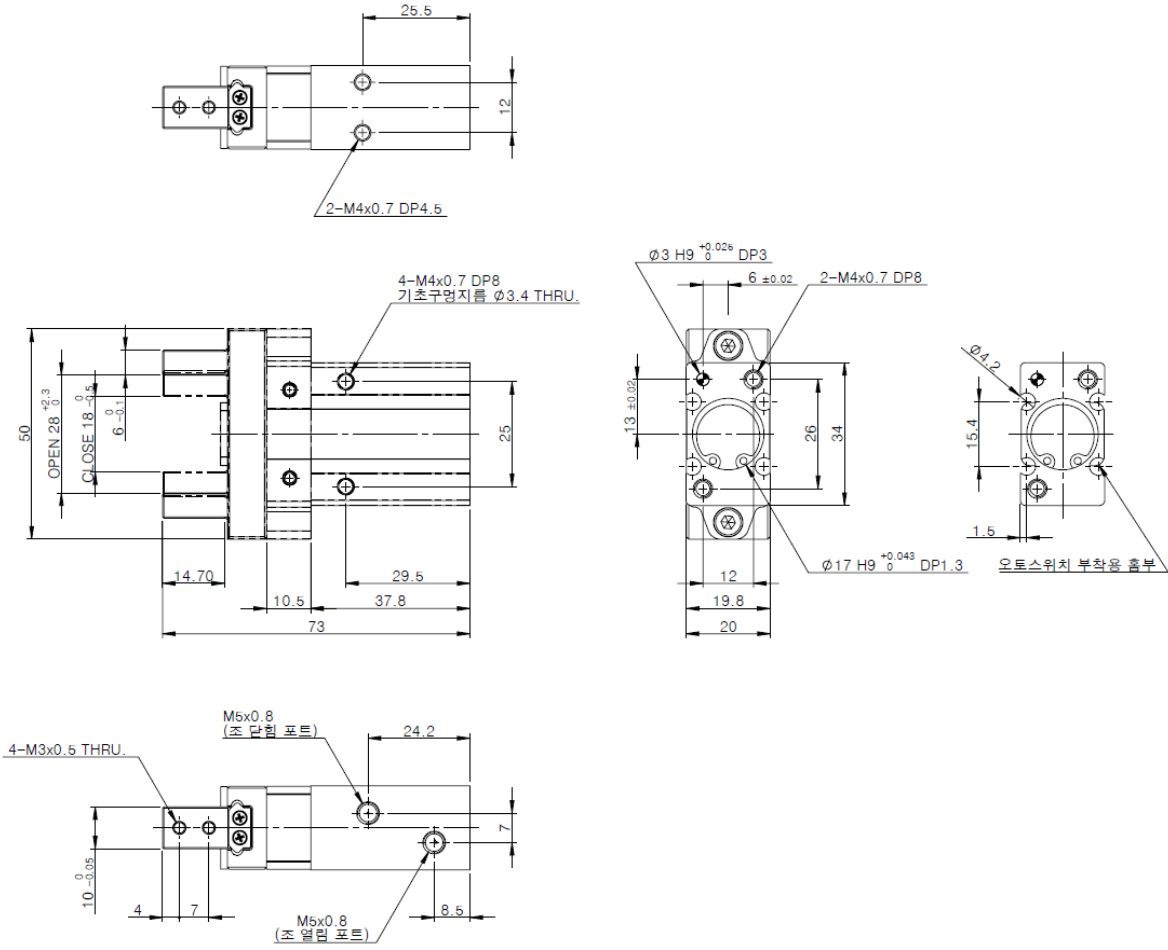
Single Acting / NFHC2-8T(S)



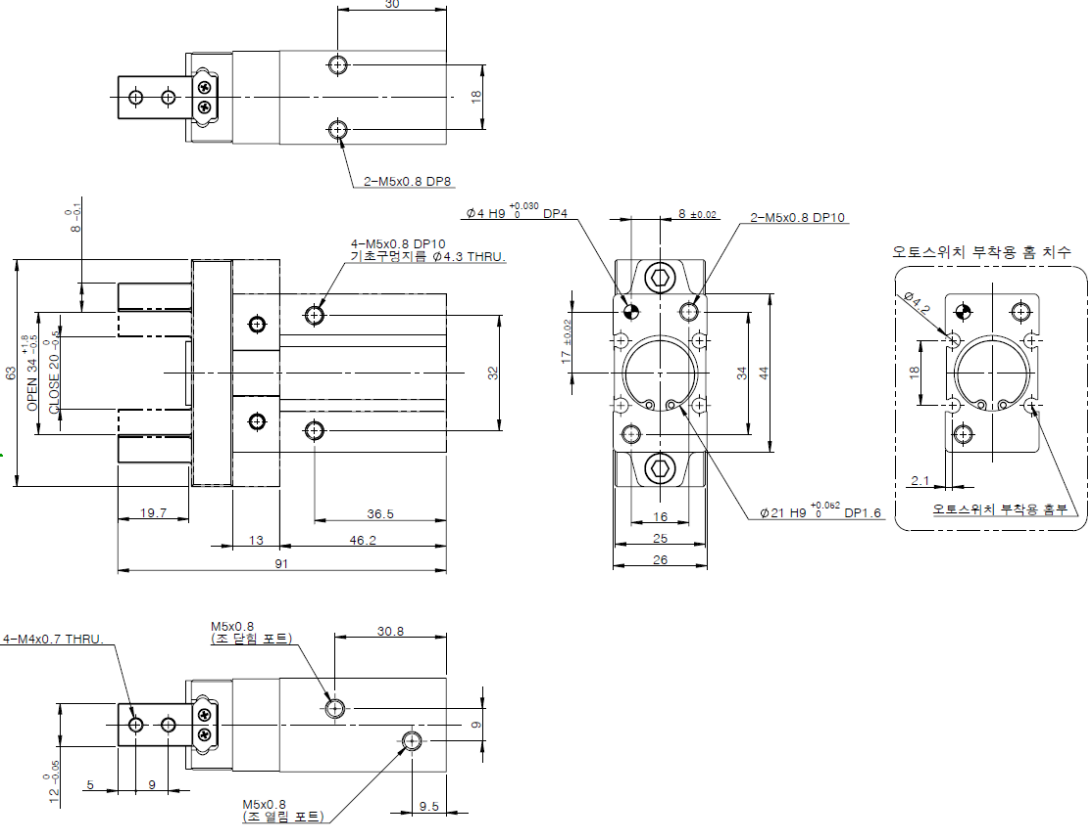
Single Acting / NFHC2-12T(S)



Single Acting / NFHC2-16T(S)

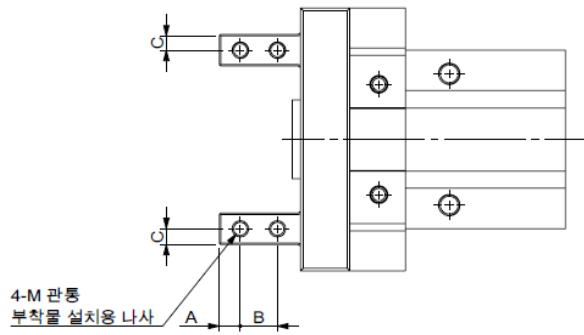


Single Acting / NFHC2-20T(S)

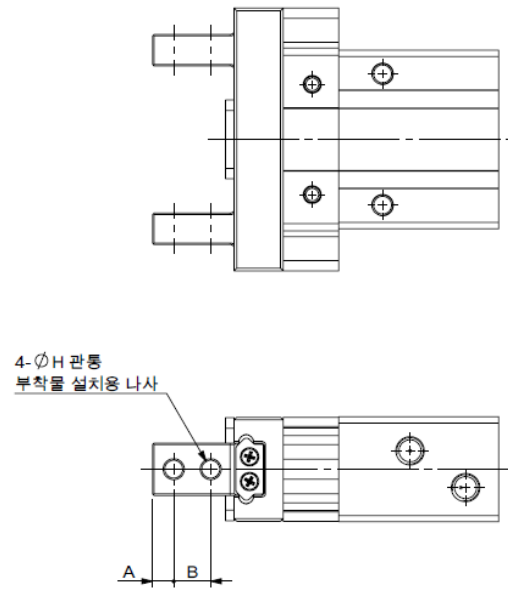


## Attaching Option of finger

### Side Tap Type



### Through Hole Type



Unit : mm

Model	A	B	C	M
NFHC2-8□1	3	5.7	2	M2.5x0.45
NFHC2-12□1	3	5.7	2.5	M2.5x0.45
NFHC2-16□1	4	7	3	M3x0.5
NFHC2-20□1	5	9	4	M4x0.7

※ Dimensions other than the table are the same as the basic type.

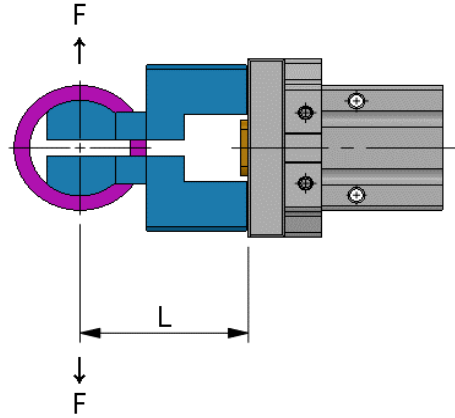
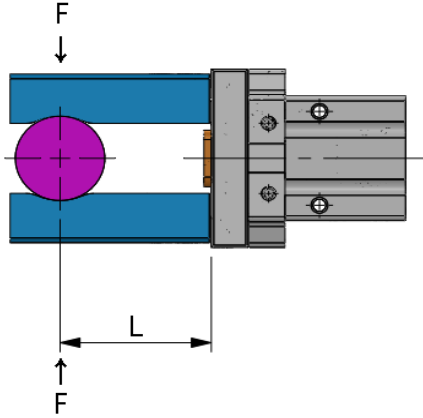
Unit : mm

Model	A	B	H
NFHC2-8□1	3	5.7	2.9
NFHC2-12□1	3	5.7	2.9
NFHC2-16□1	4	7	3.4
NFHC2-20□1	5	9	4.5

※ Dimensions other than the table are the same as the basic type.

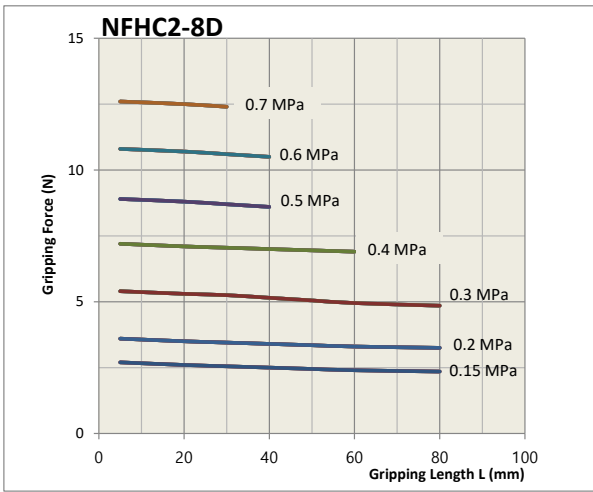


Effective gripping force (N) according to gripping length "L"

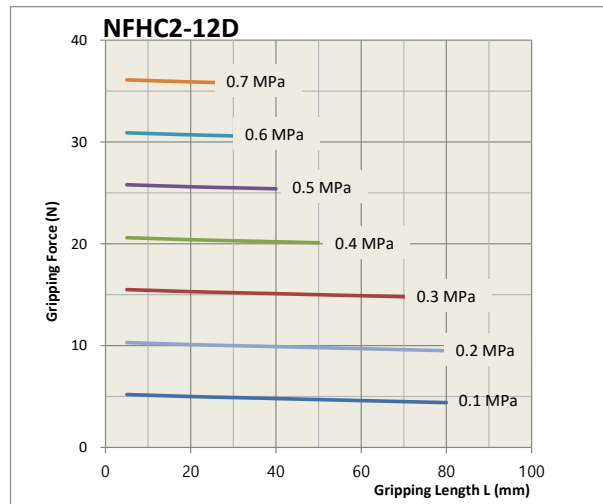
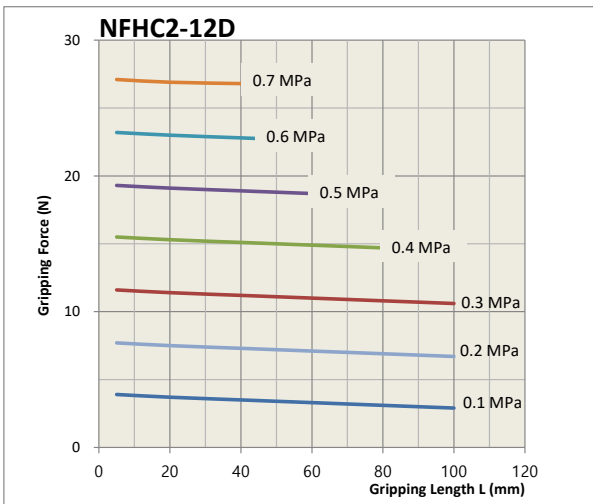
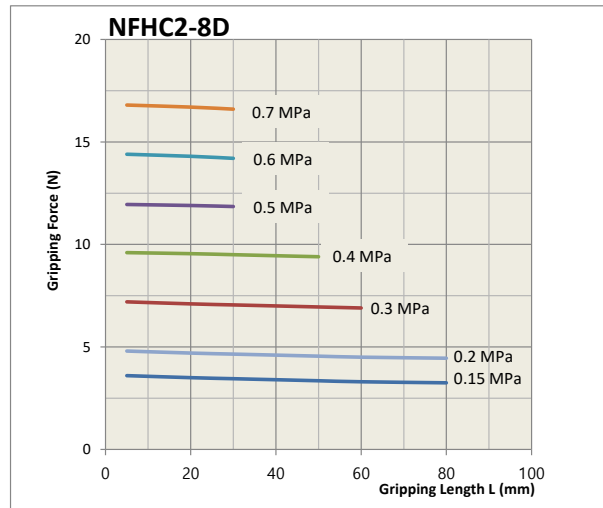


- ▶ The graph shows the effective gripping force (N) of one pair.
- ▶ Please observe the maximum gripping length for each inner diameter and pressure for use.

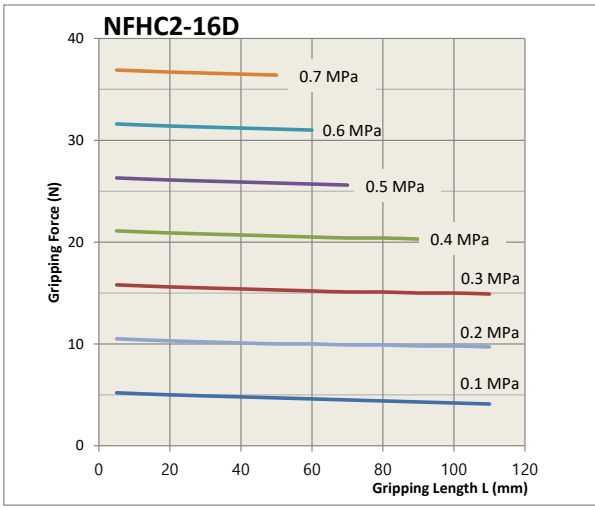
Gripping force of double-acting outer diameter



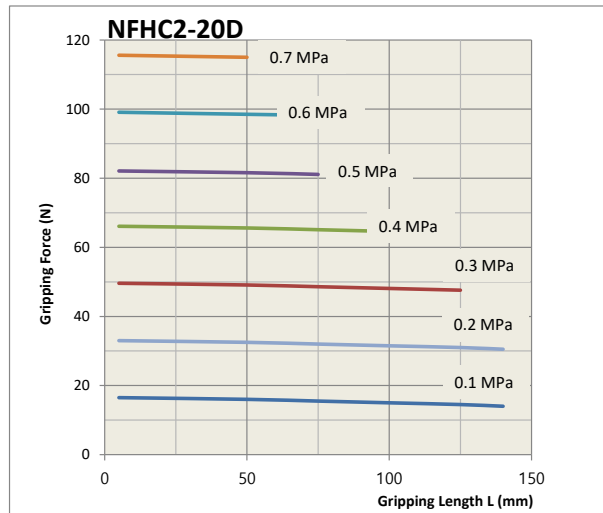
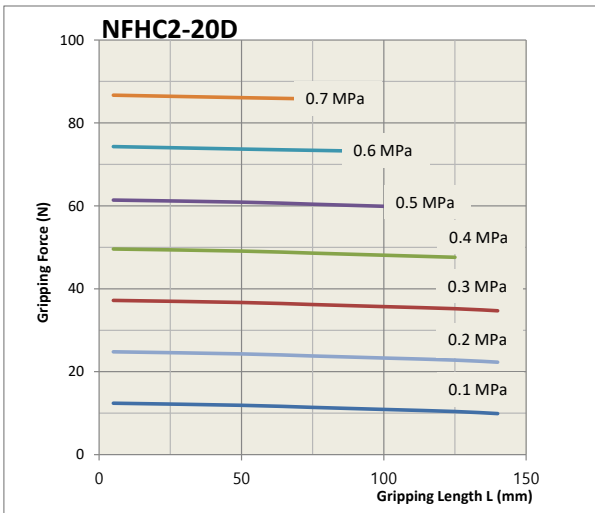
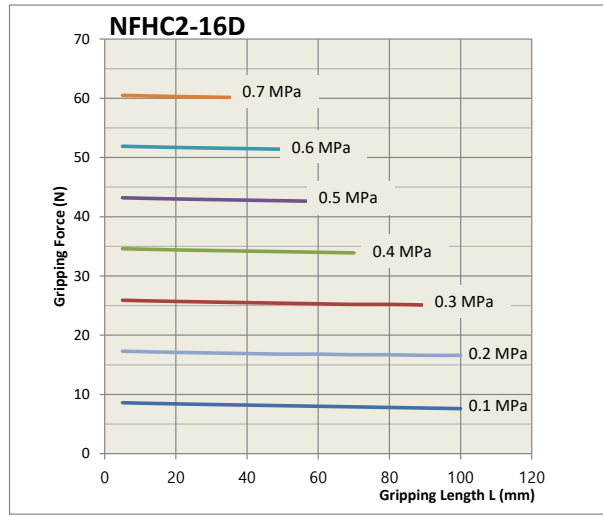
Gripping force of double-acting inner diameter



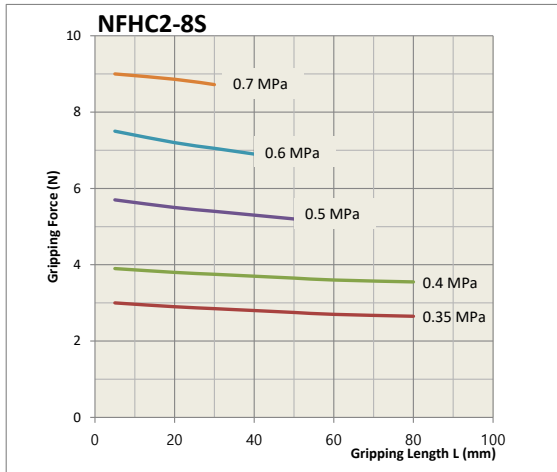
Gripping force of double-acting outer diameter



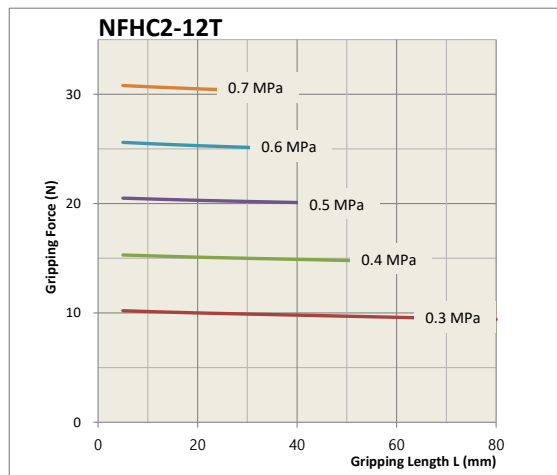
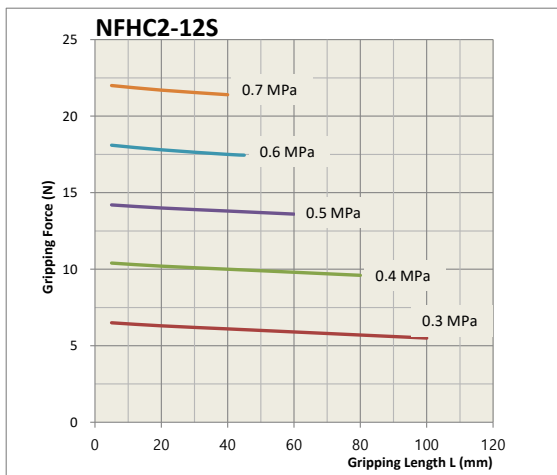
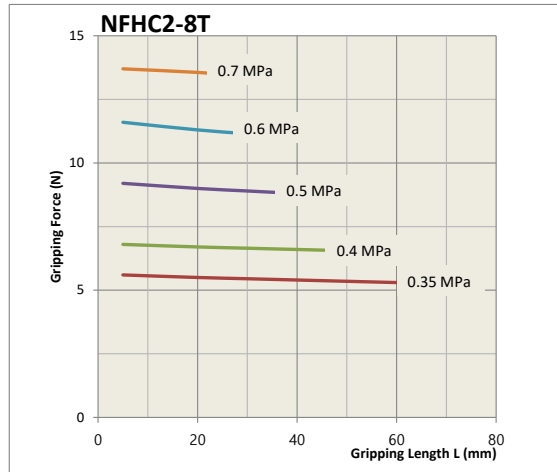
Gripping force of double-acting inner diameter



Gripping force of single-acting outer diameter

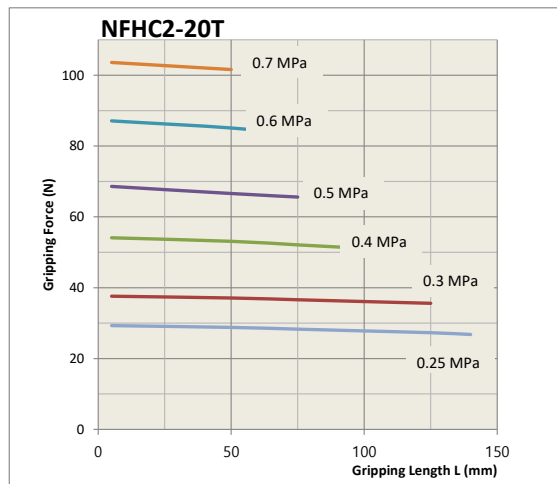
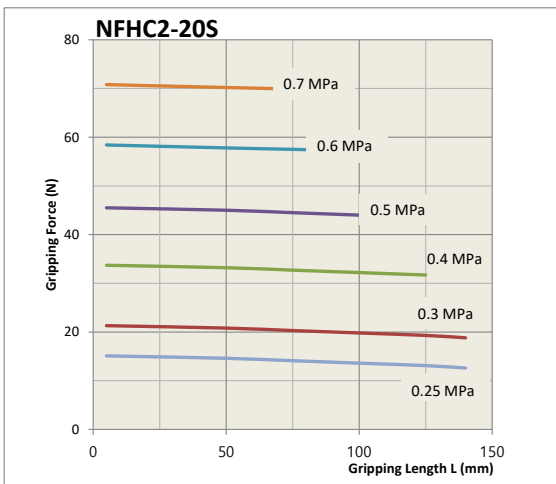
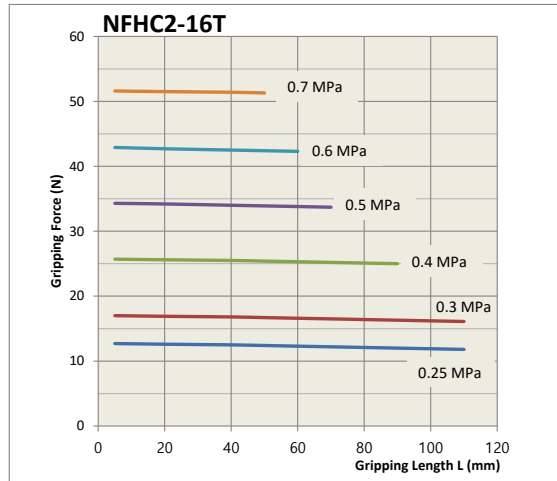
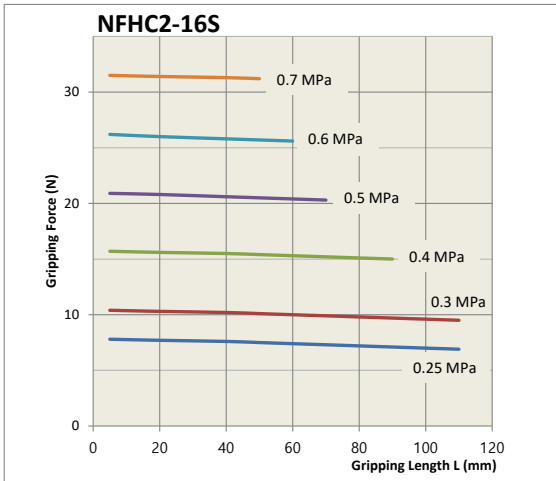


Gripping force of single-acting inner diameter

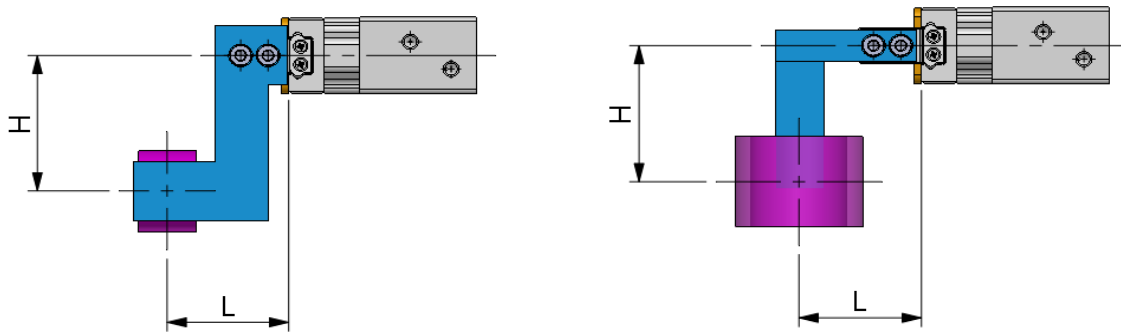


Gripping force of single-acting outer diameter

Gripping force of single-acting inner diameter

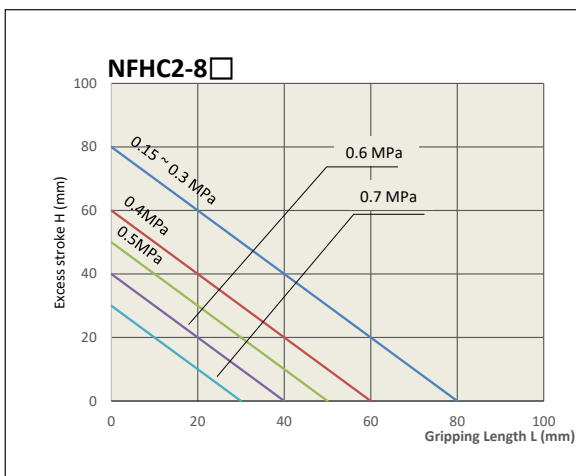


## Limiting range of gripping length

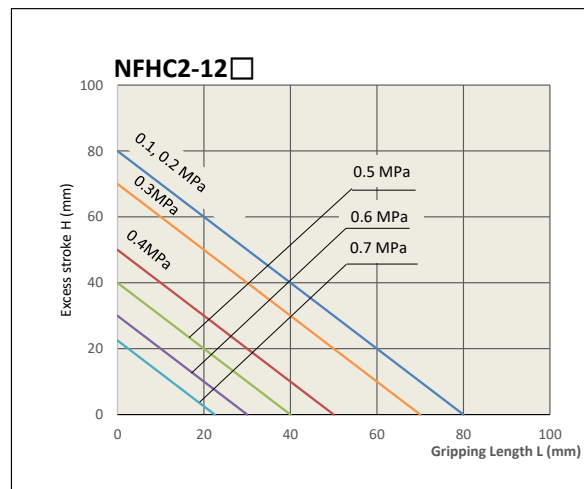
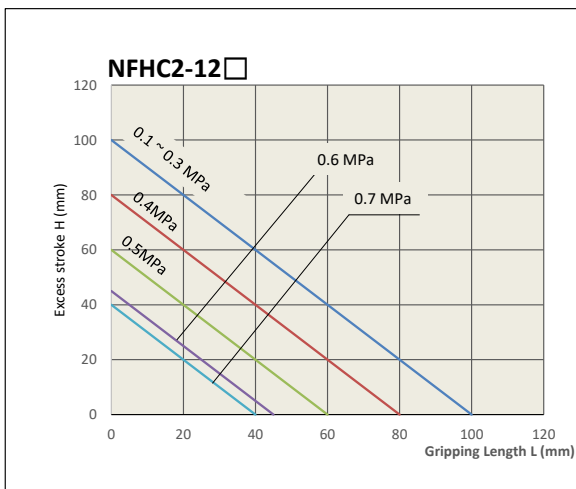
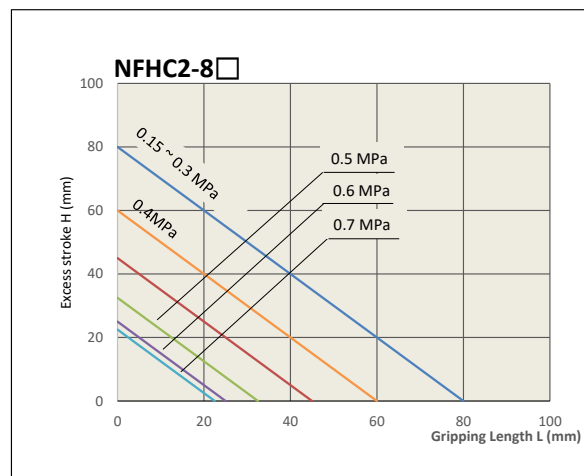


- ▶ The sum of the length of the gripping point and the amount of overhang should be used within the limit as shown in the graph.
- ▶ If used beyond the limited range, it may adversely affect the service life time.

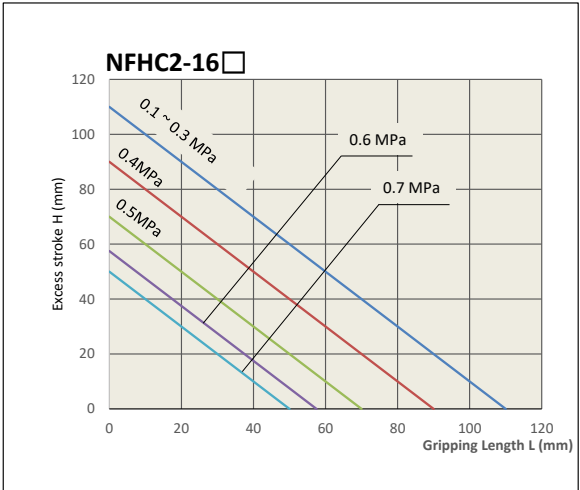
## Gripping of outer diameter



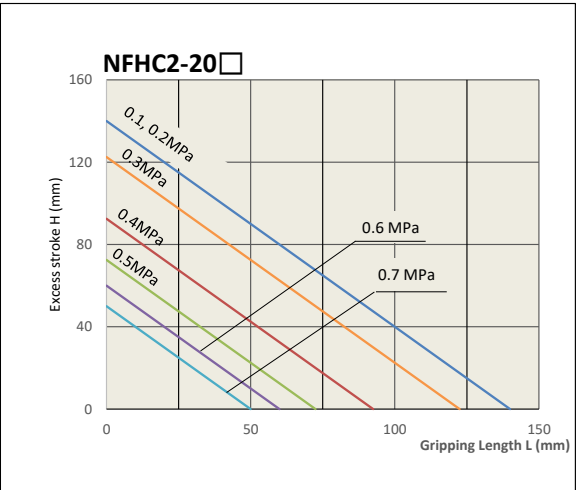
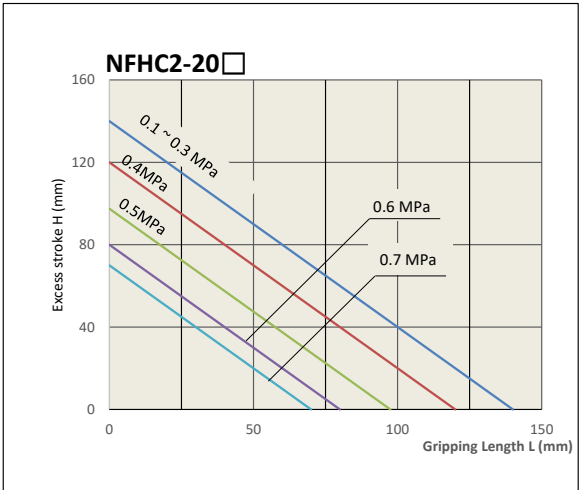
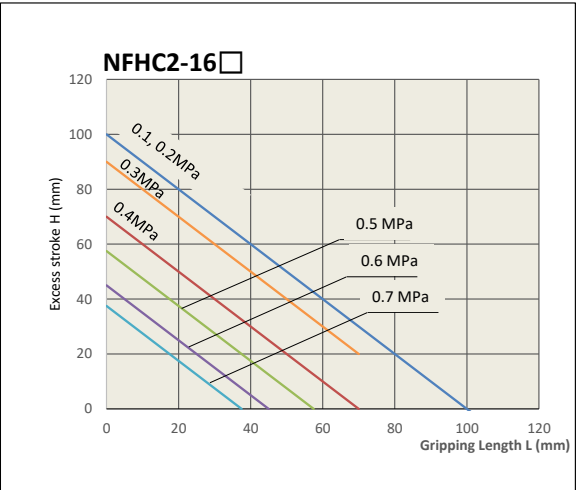
## Gripping of inner diameter



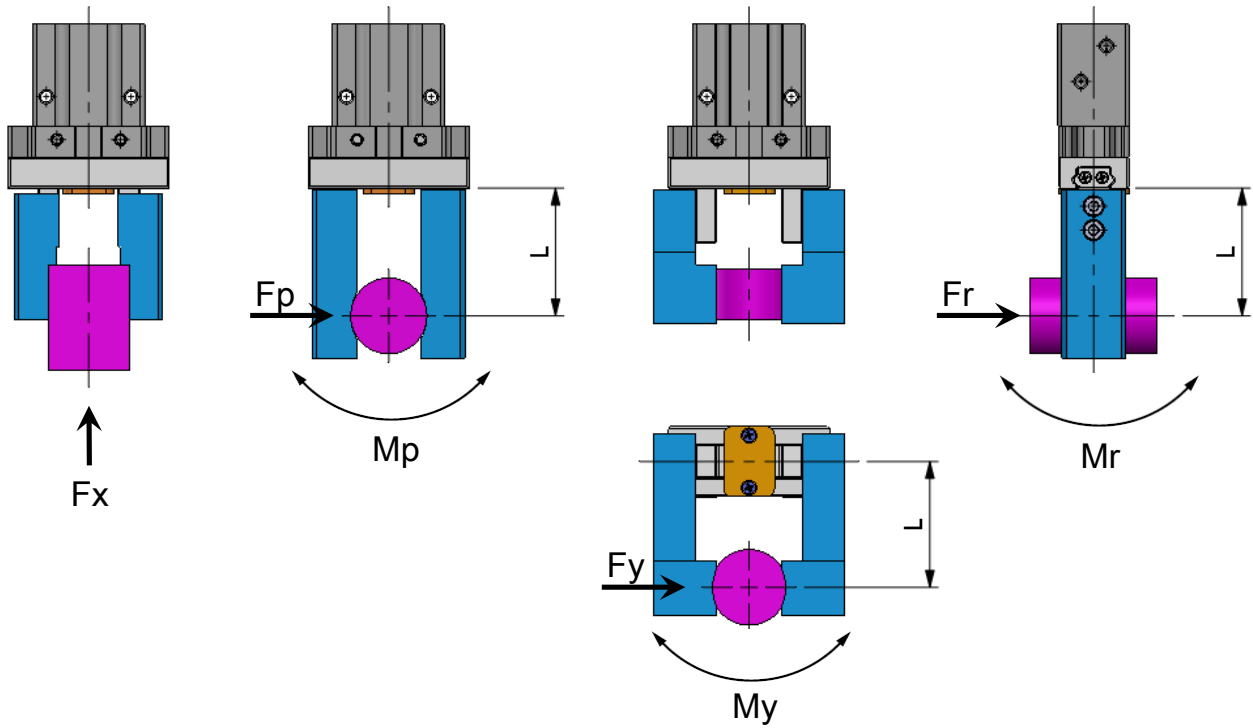
Gripping of outer diameter



Gripping of inner diameter



Permissible load and permissible moment



L\* = Center point distance at which load is applied

Model	Permissible load in vertical direction Fx(N)	Maximum permissible moment (N·m)			Maximum lateral load F(N)
		Pitch moment Mp	Yawing moment My	Rolling moment Mr	
NFHC2-8D□	62	0.28	0.28	0.56	15
NFHC2-12D□	98	0.68	0.68	1.36	33
NFHC2-16D□	151	1.35	1.35	2.71	64
NFHC2-20D□	299	2.37	2.37	4.75	113

Permissible load calculation (when moment load is applied)

EX)

NFHC2-16D Spec. At the point of length L = 60mm

A load that applies a yawing moment When a static load of 20N is applied

$$\text{Permissible load } F(N) = \frac{My (N \cdot m)}{L \times 10^{-3}}$$

$$\text{Permissible load } F(N) = \frac{1.35}{60 \times 10^{-3}}$$

$$= 22.5N / \text{Available.}$$

## Caution

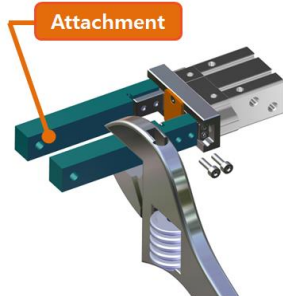
Be sure to read before use.

### Precautions when selecting

**⚠ Caution**

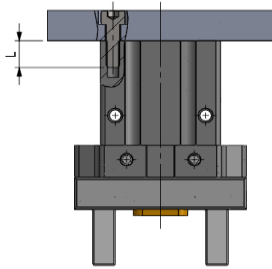
- Use the load within the range of 1/10 to 1/20 of the effective gripping force.

#### 1. How to attach to Finger



Model	Bolts to use	Max. tightening Torque N.m
NFHC2-8D□	M2.5x0.45	0.31
NFHC2-12D□	M2.5x0.45	0.31
NFHC2-16D□	M3x0.5	0.59
NFHC2-20D□	M4x0.7	1.4

#### 2. Vertical installation method



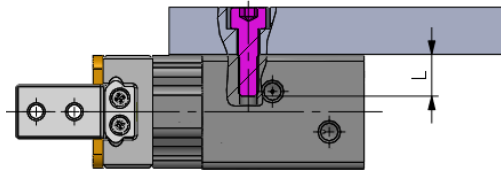
Model	Bolts to use	Max. tightening Torque N.m	Max. screwing depth (L mm)
NFHC2-8D□	M3x0.5	0.88	6
NFHC2-12D□	M3x0.5	0.88	6
NFHC2-16D□	M4x0.7	2.1	8
NFHC2-20D□	M5x0.8	4.3	10

### Precautions when attaching

**⚠ Caution**

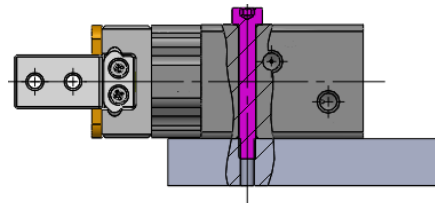
- Do not apply shock to the finger and body attachment surfaces. It can cause finger shaking and malfunction.
- Be careful not to touch your body during operation.
- When attaching the attachment to the finger, support it with a spanner and install it.
- When attaching the product, use appropriate screws to fix it. Tightening with a value exceeding the limit can cause malfunction, and insufficient tightening can cause misalignment or fall.

#### 3. Horizontal installation method (using BODY tap)



Model	Bolts to use	Max. tightening Torque N.m	Max. screwing depth (L mm)
NFHC2-8D□	M3x0.5	0.88	6
NFHC2-12D□	M3x0.5	0.88	6
NFHC2-16D□	M4x0.7	2.1	8
NFHC2-20D□	M5x0.8	4.3	10

#### 4. Horizontal installation method (using BODY through-holes)



Model	Bolts to use	Max. tightening Torque N.m
NFHC2-8D□	M2.5x0.45	0.31
NFHC2-12D□	M2.5x0.45	0.31
NFHC2-16D□	M3x0.5	0.59
NFHC2-20D□	M4x0.7	1.4