

NEOA Series

Model Code No.

● Air Type

NEOA - 6 C

Series Name

Bore Size

6 : 6mm

Action Type

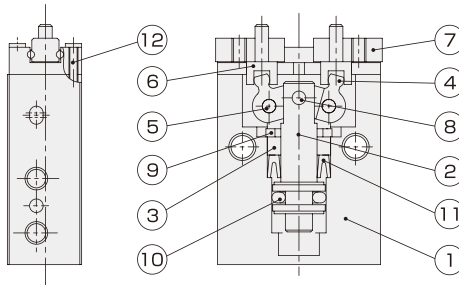
- A: Single Acting Normally Open
- B: Single Acting Normally Close
- C: Double Acting

(Actual Size)

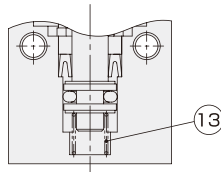


Internal Structure Drawing

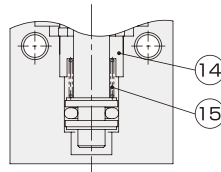
NEOA-6C



NEOA-6A



NEOA-6B



Parts List

No.	Name	Material	No.	Name	Material
1	Body	Aluminum Alloy	10	Piston Packing	NBR
2	Piston Rod	Stainless Steel	11	Rod Packing	NBR
3	Pressure Cover A	Resin	12	Cross-recessed Head Screw	Stainless Steel
4	Action Lever	Carbon Steel	13	Spring A	Piano Wire
5	Fulcrum Pin	Carbon Tool Steel	14	Pressure Cover B	Resin
6	Knuckle	Stainless Steel	15	Spring B	Piano Wire
7	Bearing	Bearing Steel	16	Exhaust Plug *1	Brass (Cd restricted material)
8	Roller	Hard Steel	17	Hexagon Socket Head Bolt *2	Stainless Steel
9	Hole Locating Snap Ring	Carbon Steel			

*1) Exhaust plug for single acting. (Not indicated in the drawing)

*2) Attached mounting bolt. (Not indicated in the drawing)

Specifications

Item	Model	NEOA-6C	NEOA-6A	NEOA-6B
Action Type		Double Acting	Single Acting Normally Open	Single Acting Normally Close
Bore Size [mm]		φ6		
Rod Diameter [mm]		φ4		
Opening/Closing Stroke [mm]		3 (0~+0.7)		
Fluid		Air		
Close Gripping Force ^{Note 1)} [N]		3.3	1.5 ^{Note 3)}	1.3 ^{Note 4)}
Open Gripping Force ^{Note 2)} [N]		6.3	1.1 ^{Note 5)}	4.4 ^{Note 6)}
Operating Pressure Range [MPa]		0.25~0.7	0.4~0.7	0.3~0.7
Proof Pressure [MPa]		1.05		
Maximum Operating Cycle [Cycle/min]		180		
Operating Temperature [°C]		0~60 (No Freezing)		
Lubrication		Not Required (Required for sliding parts of the machine)		
Pipe Bore		M3×0.5		
Applicable Switch		None		
Product Mass [g]		10.9	11.1	11.0
Repeat Gripping Accuracy [mm]		±0.01		

Note 1) It is an effective value when the gripping point L is 15mm and the pressure is 0.5 MPa.

Note 2) It is an effective value when the gripping point L is 10mm and the pressure is 0.5 MPa.

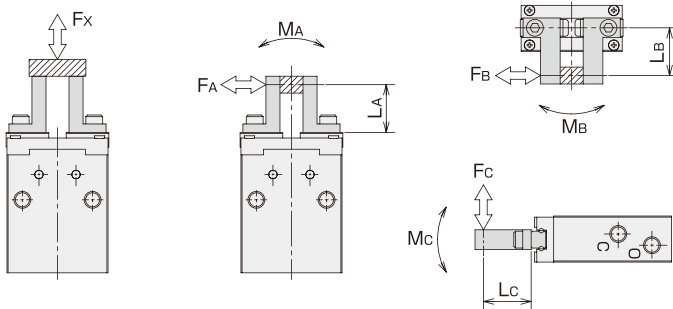
Note 3) It is a gripping force when the product is nearly fully closed.

Note 4) It is a spring-generated gripping force when the product is nearly fully closed.

Note 5) It is a spring-generated gripping force when the product is nearly fully opened.

Note 6) It is a gripping force when the product is nearly fully opened.

Allowable Load and Allowable Moment



$$MA = FA \times LA$$

$$MB = FB \times LB$$

$$Mc = Fc \times Lc$$

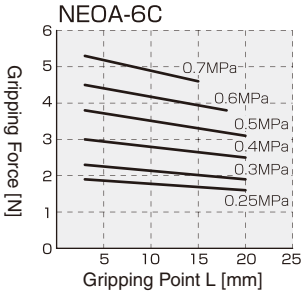
Model	Load and Moment	FX [N]	MA [N·m]	MB [N·m]	Mc [N·m]
NEOA-6		9	0.03	0.03	0.06

NEOA Series

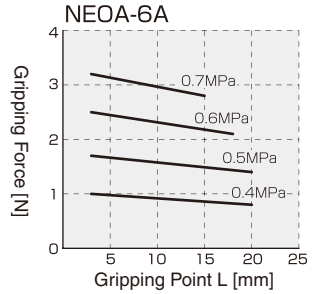
Effective Gripping Force

Closing Force

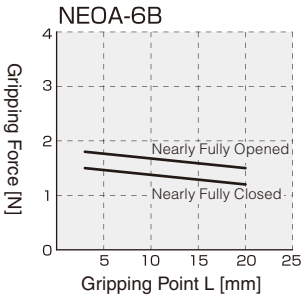
Double Acting



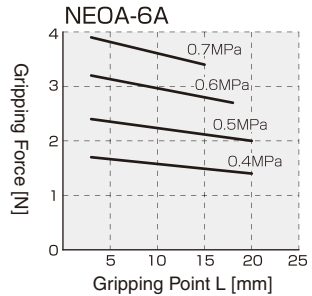
Single Acting Normally Open (Nearly Fully Closed)



Single Acting Normally Close

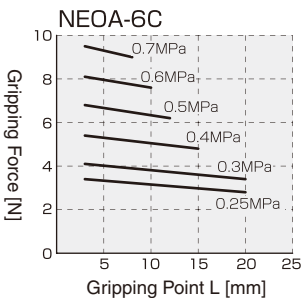


Single Acting Normally Open (Nearly Fully Opened)

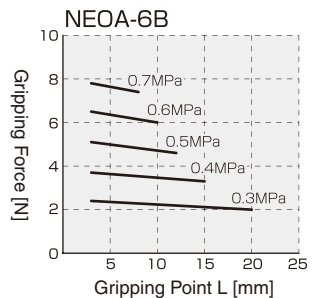


Opening Force

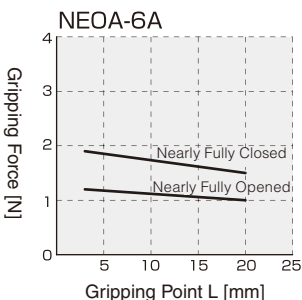
Double Acting



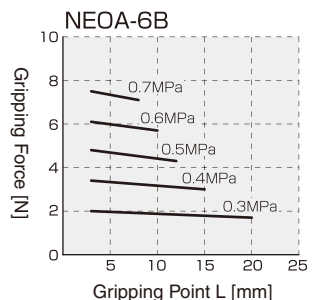
Single Acting Normally Close (Nearly Fully Closed)



Single Acting Normally Open

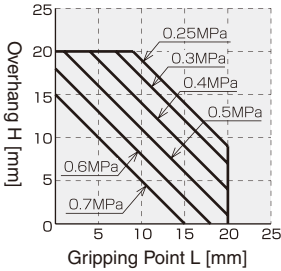
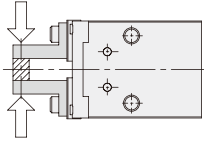


Single Acting Normally Close (Nearly Fully Opened)

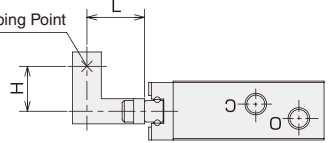
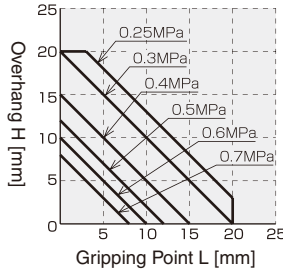
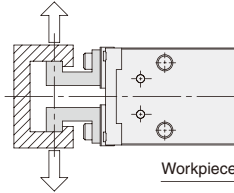


■ Gripping Point Limit Range

■ External Gripping



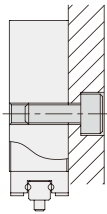
■ Internal Gripping



■ Main Body Mounting Method

Mounting Method 1

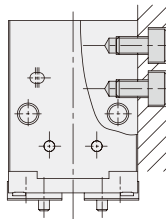
When the mounting screw on the front of the main body is used



Bolt to be Used	Maximum Tightening Torque [N·m]
M3×0.5	0.59

Mounting Method 2

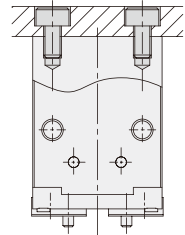
When the screw on the side of the main body is used



Bolt to be Used	Maximum Tightening Torque [N·m]
M2.5×0.45	0.34

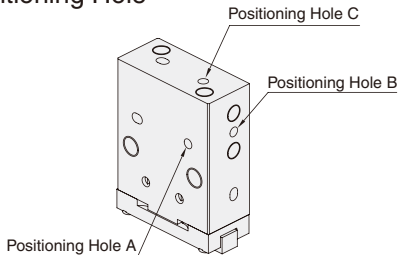
Mounting Method 3

When the screw on the bottom face of the main body is used



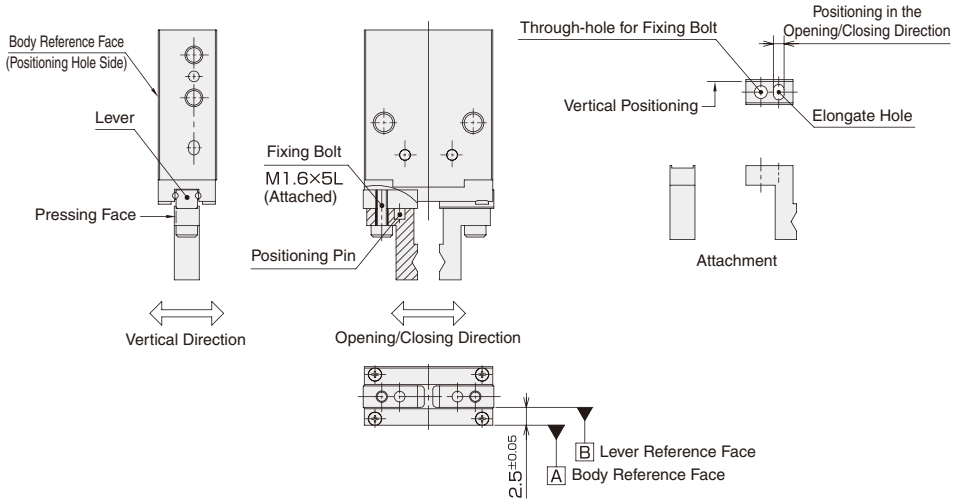
Bolt to be Used	Maximum Tightening Torque [N·m]
M2.5×0.45	0.34

■ Positioning Hole

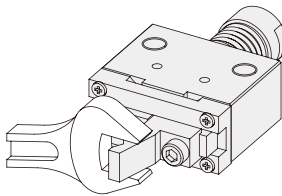
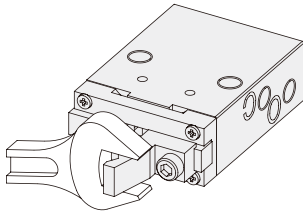


Positioning Hole A	φ 1.5 ^{+0.03} Depth 1.5	For Mounting Method 1
Positioning Hole B		For Mounting Method 2
Positioning Hole C		For Mounting Method 3

Example of Attachment Design



Attachment Mounting Method

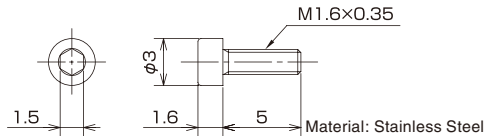


When you mount the attachment, hold the attachment with a spanner or the like to remove load to the lever. Please check the tightening torque of mounting bolt in the table below.

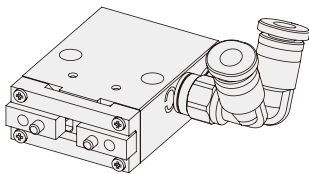
Model	Bolt Size	Maximum Tightening Torque [N·m]
NEOA-6	M1.6×0.35	0.156
NEOM-6		

Two attachment mounting bolts (M1.6×5 L) are attached to the product.

Mounting Screw Size (JIS B 1176)



Joint Mounting



In the case of double acting type, select joints with outer diameter $\phi 6$ or less.

If the outer diameter exceeds $\phi 6$, the joints will interfere with each other and can not be mounted.

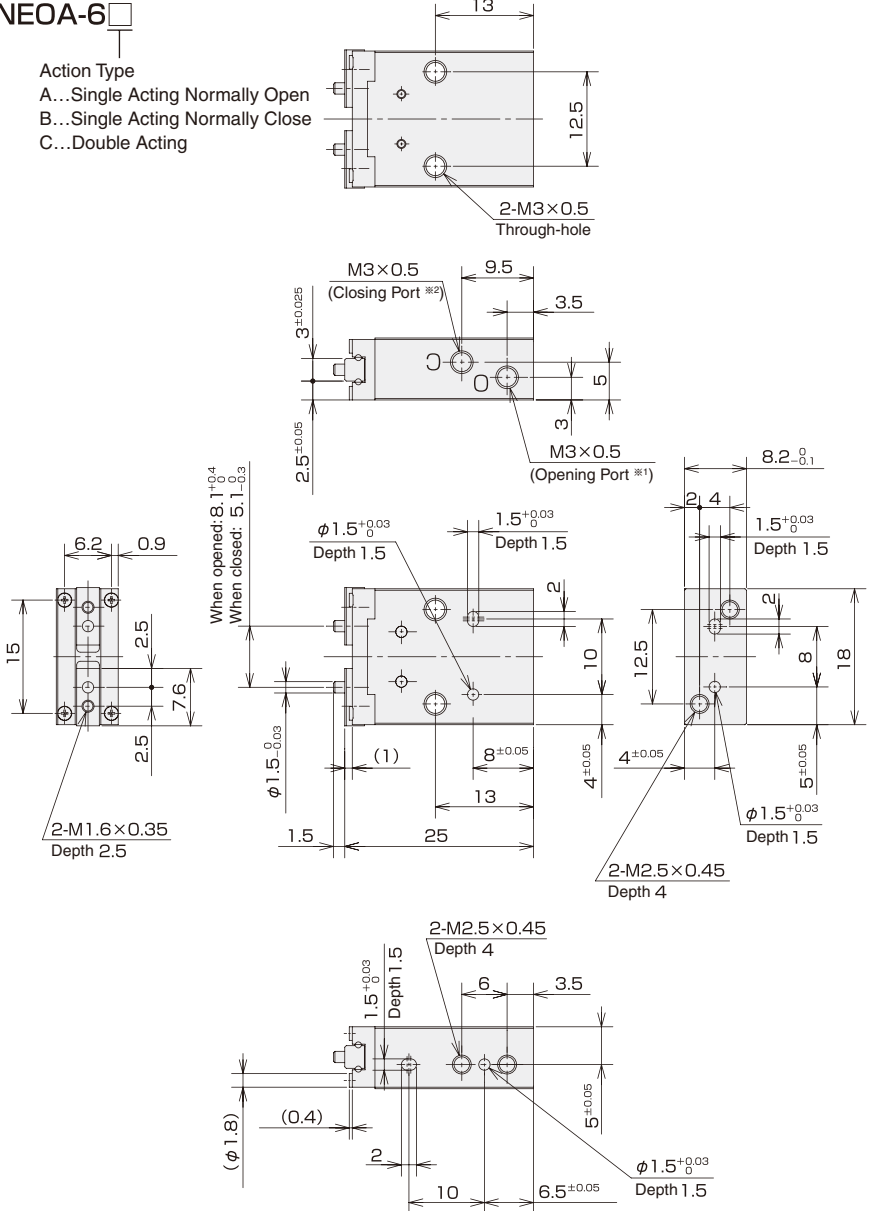
Even in the case of single acting type, the same joint should be used to prevent the joint from protruding the mounting surface.

Dimensions

NEOA-6□

Action Type

- A...Single Acting Normally Open
- B...Single Acting Normally Close
- C...Double Acting



※1) In the case of single acting normally open (NEOA-6A), the opening port becomes an exhaust port and can not be used.

※2) In the case of single acting normally close (NEOA-6B), the closing port becomes an exhaust port and can not be used.

NEOM Series

Model Code No.

● Mechanical Type

(Actual Size)

NEOM - 6 - L

Series Name

Nominal Diameter

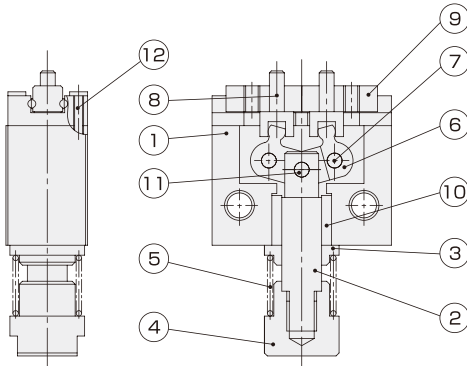
6

Gripping Force

L: Low
H: High



Internal Structure Drawing



Parts List

No.	Name	Material
1	Main Body	Aluminum Alloy
2	Piston Rod	Stainless Steel
3	Pressure Cover A	Aluminum Alloy
4	Pressure Cover B	Carbon Steel
5	Spring	Piano Wire
6	Action Lever	Carbon Steel
7	Fulcrum Pin	Carbon Tool Steel
8	Knuckle	Stainless Steel
9	Bearing	Bearing Steel
10	Metal	Oil-impregnated Sintered Bearing (Copper-based)
11	Roller	Hard Steel
12	Cross-recessed Head Screw	Stainless Steel
13	Hexagon Socket Head Bolt *1	Stainless Steel

※1) Attached mounting bolt. (Not indicated in the drawing)

Specifications

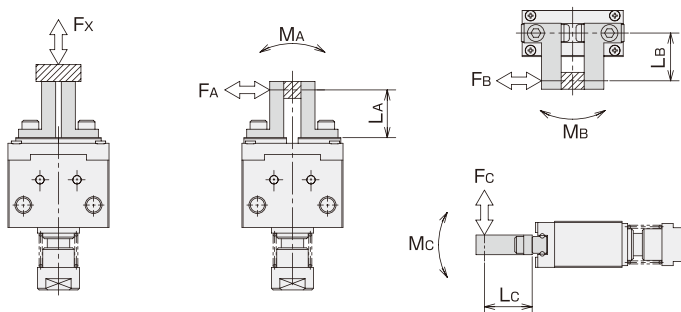
Item \ Model	NEOM-6-L	NEOM-6-H
Action Type	Single Acting Normally Close (External force drive at opening)	
Nominal Diameter	6	
Opening/Closing Stroke [mm]	2.4 (0~+1.3)	
Lever Ratio ^{Note 1)}	1 : 1.8	
Gripping Force (At Closing) ^{Note 2)} [N]	1.7	3.5
Extrusion Force ^{Note 3)} [N]	8	15
Allowable Extrusion Force [N]	20	
Maximum Operating Cycle [Cycle/min]	180	
Operating Temperature [°C]	0~120 (No Freezing)	
Lubrication	Required (Sliding parts of the machine)	
Applicable Switch	None	
Product Mass [g]	11	
Repeat Gripping Accuracy [mm]	±0.01	

Note 1) The lever ratio is the "Extruded Distance (how much the rear rod is extruded) and the "Lever Opening Distance (Lever Opening Distance at that time) (both sides) expressed in "Extruded Distance: Lever Opening Distance".

Note 2) Indicates the case of L=15 when fully closed.

Note 3) Extrusion force is an external force required to open the levers completely by overwhelming the spring force in the closing direction.

Allowable Load and Allowable Moment



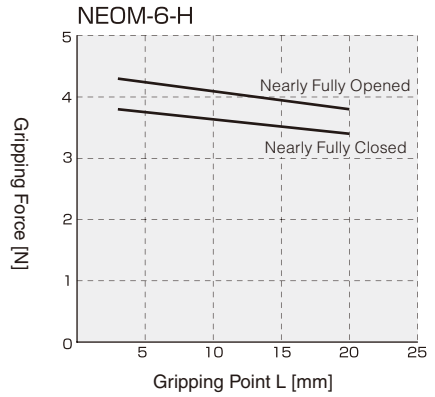
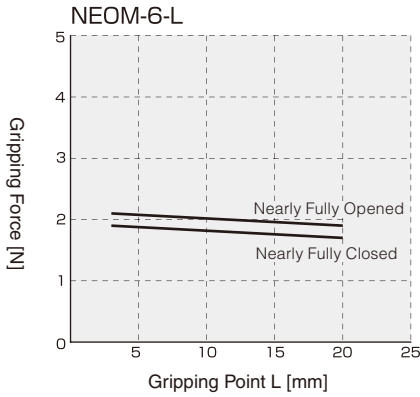
$$MA = FA \times LA$$

$$MB = FB \times LB$$

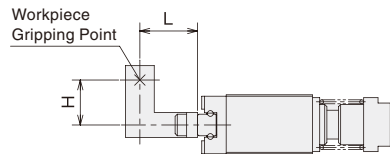
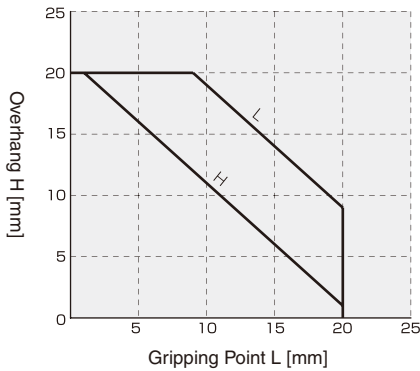
$$Mc = Fc \times Lc$$

Load and Moment \ Model	FX [N]	MA [N·m]	MB [N·m]	Mc [N·m]
NEOM-6	9	0.03	0.03	0.06

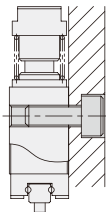
Gripping Force (Closing Force)



Gripping Point Limit Range

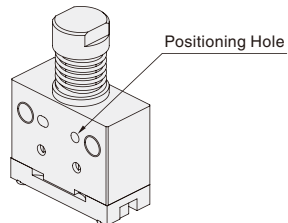


Main Body Mounting Method



Bolt to be Used	Maximum Tightening Torque [N·m]
M3×0.5	0.59

Positioning Hole



Positioning Hole	$\phi 1.5^{+0.03}_0$ Depth 1.5
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Gripper Selection Guide

Precautions for Selection

(1) Safety Measures

If the movable parts of the workpiece and gripper may cause damage to the human body or mechanical equipment during operation, take safety measures such as installing a protective cover.

In addition, if using a pneumatic gripper, see also the common precautions of pneumatic equipment.

(2) Gripping Force and Workpiece Mass

The gripping force varies depending on action type (single acting type or double acting type) and working pressure. It also relates to the material, shape, surface roughness and movement speed, etc. of the workpiece to be gripped. As a general guide, select a gripper that has a gripping force of 10 to 20 times or more the workpiece weight.

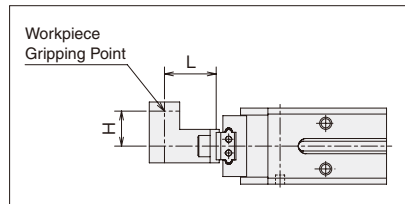
In addition, it shall be greater than that when great acceleration or impact is applied during workpiece conveyance.

Selection of an unsuitable model may cause workpiece falling, etc.

(3) Gripping Point Limit Range

When gripping a workpiece, mount the attachment to the finger part according to the workpiece while keeping the distances from the gripper body (gripping point L and overhang H) within the limit range.

If they exceed the limit range, the bending moment applied to the finger part will become large, causing backlash and a bad influence on the life and accuracy.



(4) Attachment Design

The attachment shall be designed to be as light and short as possible. If the attachment is long and heavy, the bending moment applied to the finger part and the inertial force at the time of gripping will become too large, causing increased backlash or damage.

(5) Opening/Closing Stroke

Select a model that has a margin in gripper opening/closing and stroke relative to workpiece. If there is no margin, gripping may become unstable due to the variation of gripper opening/closing width and workpiece diameter.

When a detection switch is used, it may cause detection failures.

(6) Mounting

When mounting the attachment to the finger part, do not twist the finger part. Twisting may cause backlash or reduced accuracy.

Also, adjust and check so that no external force is applied when opening/closing the finger part. When moving the gripper or opening/closing the finger part, collision of the workpiece or attachment with other objects may cause backlash or damage.

When mounting the gripper body, prevent scratches or dents due to the gripper falling or collision.

(7) Opening/Closing Speed

If the opening/closing speed of the finger part is too high, the inertia of the finger part and attachment may cause backlash or damage.

Install a speed control valve to prevent impact.



Safety Precautions

The purpose of precautions in this document is to instruct you to use this product safely and prevent risk and damage to you and other people. These precautions are categorized into the following three risk/ damage levels: CAUTION, WARNING and DANGER in order to indicate the seriousness of a risk/damage and the level of emergency. Be sure to follow them in addition to ISO4414 ^{*1)}, JIS B 8370 ^{*2)} and other safety regulations since all of them are about safety.



CAUTION

Indicates a hazardous situation which could result in minor or moderate injury or property damage if the product is used improperly.



WARNING

Indicates a potentially hazardous situation which will result in death or serious injury if the product is used improperly.



DANGER

Indicates an imminently hazardous situation which will result in death or serious injury if the product is used improperly.

※1) ISO 4414 : Pneumatic fluid power-Recommendations for the application of equipment to transmission and control systems.

※2) JIS B 8370 : General Rule for Pneumatic Systems



WARNING

① The compatibility of a pneumatic pressure system shall be judged by the pneumatic pressure system designer or any person who determines its specifications.

Products described in this document have various use conditions. Therefore, the compatibility of each product to the system shall be determined by the pneumatic pressure system designer or any person who determines its specifications after conducting analysis and/or tests as needed. The person who determined the compatibility of the system is responsible for the initial performance of the system and assurance of safety. From now on also, you are requested to construct a system after examining all contents of the specifications and considering the possibility of equipment failures based on the latest product catalogues and materials.

② Only personnel with sufficient knowledge and experience are allowed to handle this product.

Compressed air is dangerous if it is handled wrongly. Only personnel with sufficient knowledge and experience are allowed to assemble, operate or maintain machines and systems that use an air compressor.

③ Do not handle machines and systems or remove equipment until safety is confirmed.

1. Before checking or maintaining machines or systems, make sure that driven object fall prevention measures and runaway prevention measures have been taken.
2. Before removing equipment, make sure that the safety measures described above have been taken, shut off the supply air (energy source), turn off the power of the corresponding equipment and exhaust compressed air from the system.
3. Before re-starting machines and systems, make sure that jumping prevention measures have been taken and do it carefully.

④ If the product is used under the following conditions and environment, pay attention to safety measures and consult us.

1. Use in the conditions and environment not specified in this document or outdoor.
2. Use for nuclear, railroad, aircraft, vehicle, medical equipment, equipment in contact with drink and food, entertainment equipment, emergency shutoff circuits, clutch brake circuits for press, safety equipment, etc.
3. Use for the applications that are expected to have a large influence on people and properties and especially requiring safety.



Actuator Precaution ①

Please read the following instructions before use.

Design



WARNING

◆ Abnormal action

Actuators may cause a kind of impact when force change occurs due to rattle in the sliding part of a machine. In this case, actuators may result in bodily damage (e.g. hands or legs being caught) or machine damage. Therefore, adjust actuators for smooth mechanical movement and design them to prevent bodily damage.

◆ Protective cover

When there is a risk that a system or a product is harmful to human body during operation, install a protective cover.

◆ Impact relaxation

When the driven object moves at a high speed or its mass is large, it is difficult to absorb impact using the cushion of the cylinder only. Therefore, install a circuit to reduce the speed before going to the cushion to release impact. In this case, consider the rigidity of the mechanical system fully.

◆ Power source failures and supply pressure drop

If the power source (e.g. electric, pneumatic pressure, hydraulic source) has a failure or the air pressure drops due to troubles, cylinder power will drop, thus leading to load decrease. Take measures to prevent damage to human bodies and equipment.

◆ Jumping prevention circuit

When the cylinder is driven by the exhaust center type directional control valve or one side of the piston is pressed under the condition that air has been exhausted from the cylinder (such as when starting after the residual pressure has been exhausted from the circuit), driven objects will jump out at a high speed. Such situation may be harmful to the human body (e.g. hands or legs getting caught) or machine damage. Therefore, select equipment and design circuits to prevent driven objects from jumping.

◆ Emergency stop, abnormal stop

Design actuators so that their motions do not damage human bodies or equipment even in case of emergency/abnormal stop of the system or when the system is re-started after stop.

Selection



WARNING

◆ Working pressure range

If the system is used with the maximum working pressure or above, each part will be worn or damaged, thus resulting in breakage or operation failures. If the system is used with the minimum working pressure or less, the specified thrust force cannot be generated, thus causing malfunctions such as failure to move smoothly. Therefore, use products within the specified working pressure range. (See the specifications.)

◆ Intermediate stop

When the 3-position closed center type directional control valve is used to stop the cylinder piston in the intermediate position, it cannot stop it correctly and accurately because it uses not hydraulic pressure but compressed air. Also, it is not assured that valves and cylinders leak no air. Therefore, pistons may not be able to stop for a long time. Consult us if you need to realize long time stop position retention.

Mounting



WARNING

◆ Locking in mounting

Product fixing bolts and attachment/jig mounting bolts must have a locking. Mount bases must have a structure to prevent deformation and breakage due to thrust force or inertia force at stopping.



Actuator Precaution ②

Please read the following instructions before use.

Mounting



CAUTION

◆ Precautions in operating

Do not use the product until it is confirmed that equipment operate properly.

After mounting, repair or modification, connect compressed air and power and conduct appropriate functional tests and leak inspection to check if the mounting is appropriate.

◆ Equipment operation check

After mounting the product to the system, do not start the system immediately but check if the product has been properly mounted for safety.

◆ Product handling

Dropping or hitting the product or pinching the product with a tool will result in product deformation, thus causing accuracy deterioration and operational failure.

◆ Speed adjustment

Adjust the cylinder drive speed gradually to the specified speed with a speed controller from the low speed side.

◆ Precautions in magnetic products

Bringing magnetic products such as a magnetic disk, a magnetic guard and a magnetic tape close to the built-in switch sensing magnet type may result in data erase. Also, do not bring them close to any equipment that may cause malfunction due to magnetism.

Piping



CAUTION

◆ Treatment before piping

Before piping, blow air (flush) or clean pipes sufficiently to remove chips, cutting oil and dust from the pipes.

◆ Seal tape winding

When you screw in pipes and joints, be careful not to make piping screw chips and sealing materials enter into the inside of the pipes. When you use a seal tape, wind a screw with the tape so that 1.5 to 2 turns of the screw head is not winded.

Fueling



CAUTION

◆ Fueling to compressed air

Do not fuel the product since it is initially lubricated.

◆ Use in the lubrication circuit

If the system needs lubricating, use additive-free turbine oil class 1 ISO VG32 or ISO VG46. Do not use machine oil and spindle oil because they will damage packings, thus causing operation failures. Do not stop lubricating in the middle of lubricating because doing so will cause flowout of lubrication grease, thus accelerating damage of packings and other parts, resulting in operation failures.

Air source



WARNING

◆ Quality of compressed air

Compressed air containing drain (e.g. dust, water, salt, degraded compressor oil, oil carbon particles) and corrosive gas will damage packings and other parts, thus causing operation failures and damages. Therefore, use clean compressed air.



Actuator Precaution ③

Please read the following instructions before use.

Air source



CAUTION

◆ Drain removal measure

Compressed air containing a large amount of drain not only causes operation failures of the air compressor but also causes environmental contamination. Install equipment such as an after-cooler, an air dryer and an air filter (nominal filtration rating: 50 μm or less). The air cleaning system to drive actuators is recommended in JPAS005 "Guidelines for Use and Selection of Pneumatic Cylinders".

◆ Temperature of compressed air

Hot compressed air will accelerate damage of packings and other parts. Even when the environmental temperature is within the specified range, heat may transmit through jigs connected to the actuator and driven objects. When the environmental temperature is low, drain and moisture will become solidified or frozen, thus resulting in damaged packings and parts and operation failures. Therefore, measures to prevent freezing must be taken. Otherwise data may be erased. Also, do not bring them close to any equipment that may cause malfunction due to magnetism.

Usage environment



WARNING

◆ Outdoor use

Do not use the product in places where the product is directly or indirectly exposed to wind and rain, is exposed to direct sunlight, or any outdoor place where the product is influenced by temperature or any other factors because this product is not resistant to weather.

◆ Use in the corrosive environment

Do not use the product in water or places where the product is exposed to salt water, acid, alkaline fluid splash, iron powder or in their gases or moisture vapors.

◆ Cover installation

Attachment of dust, water, oil, chips, iron powder, or spatter to the rod and the sliding parts will result in damaged shafts and packings, thus causing air leak and operation failures. Set covers on the linear guides to prevent such deposition.

◆ Operating temperature range

Use with a temperature exceeding the maximum operating temperature will result in deterioration acceleration such as hardening of packings, thus causing operation failures. Even when the environmental temperature is within the specified range, heat may transmit through jigs and driven objects. When the product is working at a high speed, its sliding surfaces will locally overheat, thus causing similar problems, freezing due to adiabatic expansion or surface dew condensation.

When the temperature is lower than the minimum operating temperature, drain and moisture will become solidified or frozen, thus resulting in damaged packings and operation failures. Therefore, measures to prevent freezing must be taken.

Maintenance and check



WARNING

◆ Removing equipment, and supplying and exhausting compressed air

Before removing equipment, make sure that driven object fall prevention measures and runaway prevention measures have been taken, cut off supply air, turn off the power of the equipment and exhaust compressed air from the system. Before re-starting the equipment, make sure that the jumping prevention measures have been taken and do it carefully.



CAUTION

◆ Draining air filter

Operating the equipment without maintaining or draining the air dryer and the air filter will result in life shortening or equipment failures. Drain tends to increase in summer in particular, so drain them frequently in summer. Use of a type with an auto drain function is recommended.

Guide to Our Website

<http://www.newera.co.jp/en/pneumatic/index.html>

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