

INSTRUCTION MANUAL

MODEL NTS3

Collaborative Robot Mounting Unit 3-jaw Parallel Gripper

DANGER

- This Instruction Manual has been prepared for intended use for production engineers and maintenance persons who operate this product. When the beginners use this product, be sure to receive the guidance from skilled persons, sales agents, or us in advance.
- Before installing, using, or maintaining this product, read carefully the safety precautions given in this manual so as to understand them completely. If you do not heed given instructions or safety precautions, serious human accidents, death, or physical damage may occur.
- Store this manual with care in the specified place at hand, and reread it as necessary for correct use of the product.
- Please contact the sales agent if you have any uncertainty or doubt about this manual.

Preface

This manual provides detailed information on the 3-jaw parallel gripper (model NTS3) so that you can understand its performance and functions and use it safely and correctly.

Before using this gripper, read this manual carefully to understand how to use the gripper correctly. Always follow the instructions and warnings given in **“Important Safety Precautions”** and **“Precautions for Use”**. Failure to follow these precautions could result in serious human accidents.

Terms and Symbols Used for Safety Messages

In this manual, handling precautions that are considered especially important are classified and displayed as shown below according to the degree of risk (seriousness of harm) that could result. Please completely understand the meaning of these terms and follow the instructions for safe operation.

Safety Alert Symbol

This triangle is a safety alert symbol used to alert you to potential safety hazards. To avoid death or injuries that could occur, follow the safety messages given with this safety alert symbol.



Failure to follow the safety precautions below will result in death or serious injuries.



Failure to follow the safety precautions below will result in death or serious injuries.



Failure to follow the safety precautions below may result in minor or moderate injuries.



Indicates instructions which, if you do not heed given instructions, could result in damage to the product or shortened service life, or damage to peripheral equipment.

Disclaimer and How to Use Instruction Manual

This product is suitable for gripping a conveyed workpiece by being installed on the robot or loader. The product is equipped with the jaws to grip the conveyed workpiece and they are operated by air pressure. For any other applications, please contact us.

Kitagawa Iron Works Co., Ltd. shall not be held liable for human accidents, death, damage, or loss that occurred due to a failure to follow the safety precautions given in this manual.

This manual does not predict all potential hazards in operation, inspection, and maintenance under all environmental conditions. There will be an infinite number of matters that cannot or must not be done, and it is impossible for the manual to cover all of them.

Therefore, the matters, unless otherwise mentioned clearly as “can be done” or “may be done” in this manual, should be considered as “cannot be done” or “must not be done”. Please contact us or our agents if you have an uncertainty about safety when you try to perform operation, inspection, or maintenance not mentioned in this manual.

Warranty and Disclaimer

The product is warranted for one year after the date of delivery.

All parts used shall be those delivered by Kitagawa Corporation. Kitagawa Corporation shall not be held liable for human accidents, death, damage, or loss that occurred due to the use of parts which are not genuine parts manufactured by Kitagawa. Also, the use of parts other than Kitagawa’s genuine parts will void the warranty.

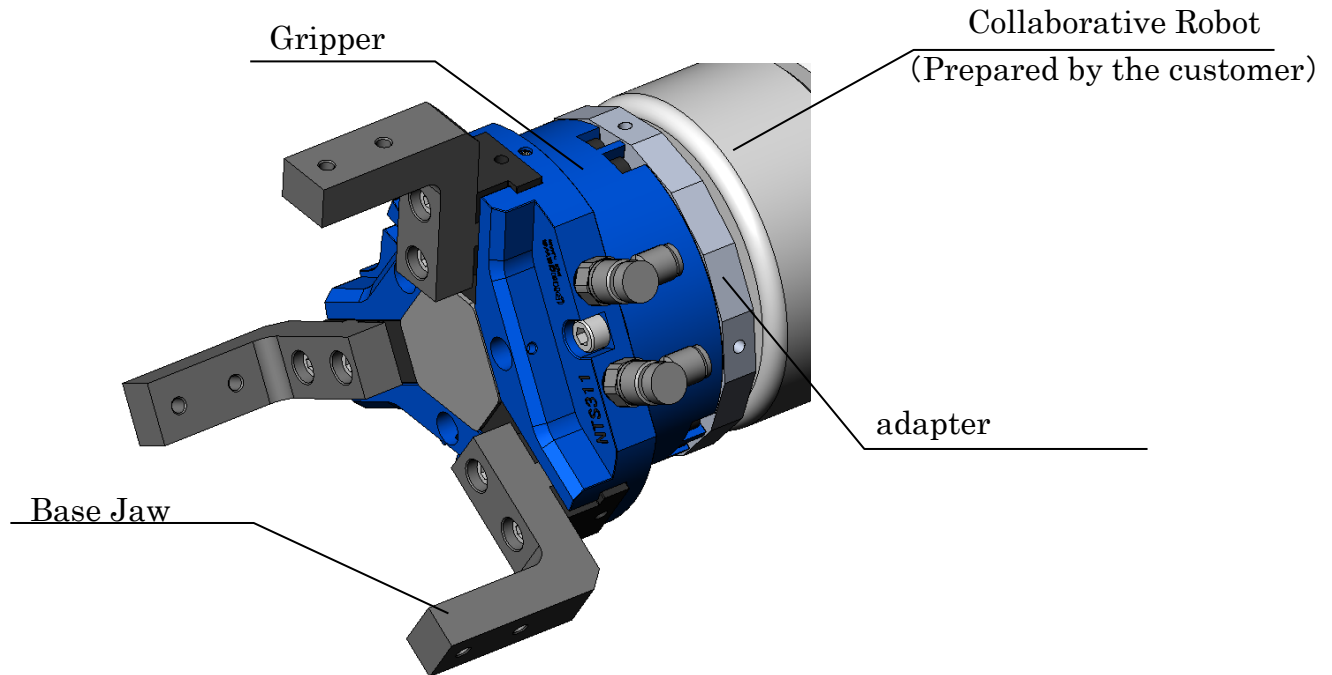
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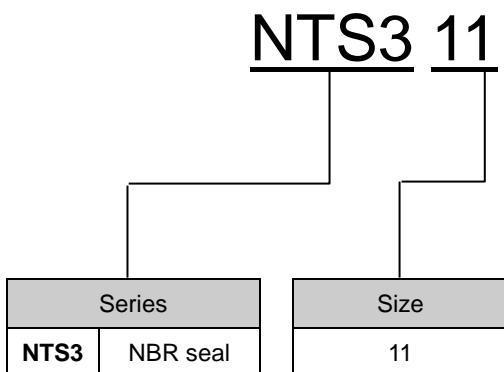
1. Structural Drawing and Parts List

1-1. Mounting parts configuration

The collaborative robots on which this product can be installed are limited to those with end-effector mounting standards conforming to ISO9409-1-50-4-M6. It cannot be installed on collaborative robots with other mounting standards.

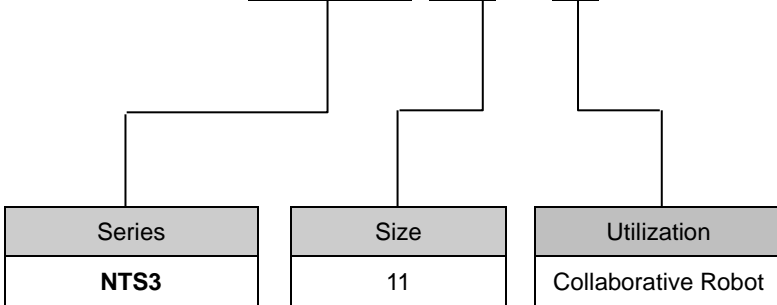


- The model indication is as follows:



- The models of the Gripper Mounting Kit are as follows
Mounting Standard: Conforms to ISO9409-1-50-4-M6

NTS3 11 - C



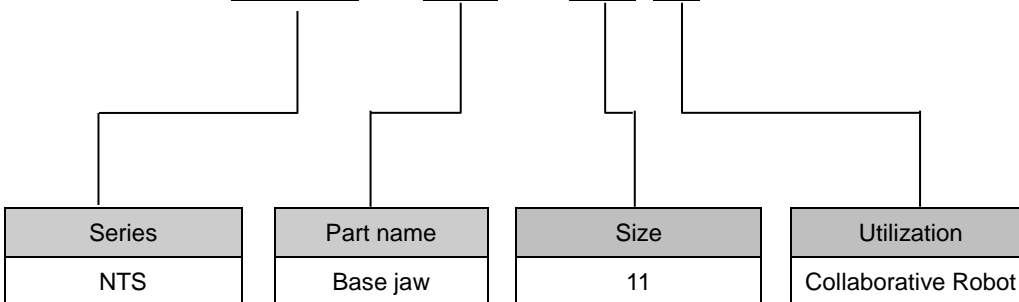
- Air equipment set

HP – A188

This equipment set includes solenoid valves, one-touch joints, and other air equipment to operate the grippers. Other equipment not included in the air equipment set must be provided by the customer.

- Base jaw

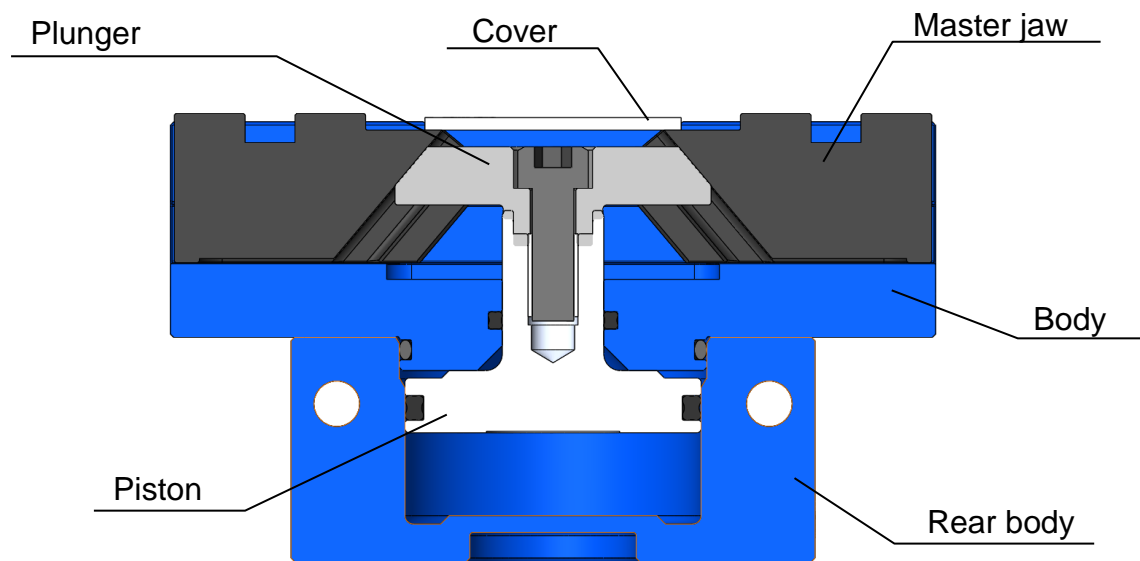
NTS – BJ 3 11 C



Concerning the base jaw.

If you are not selecting a jaw to attach to the base jaw or a base jaw, please refer to Section 5 "Jaw Design" to design and prepare the base jaw yourself.

1-2. Structural drawing

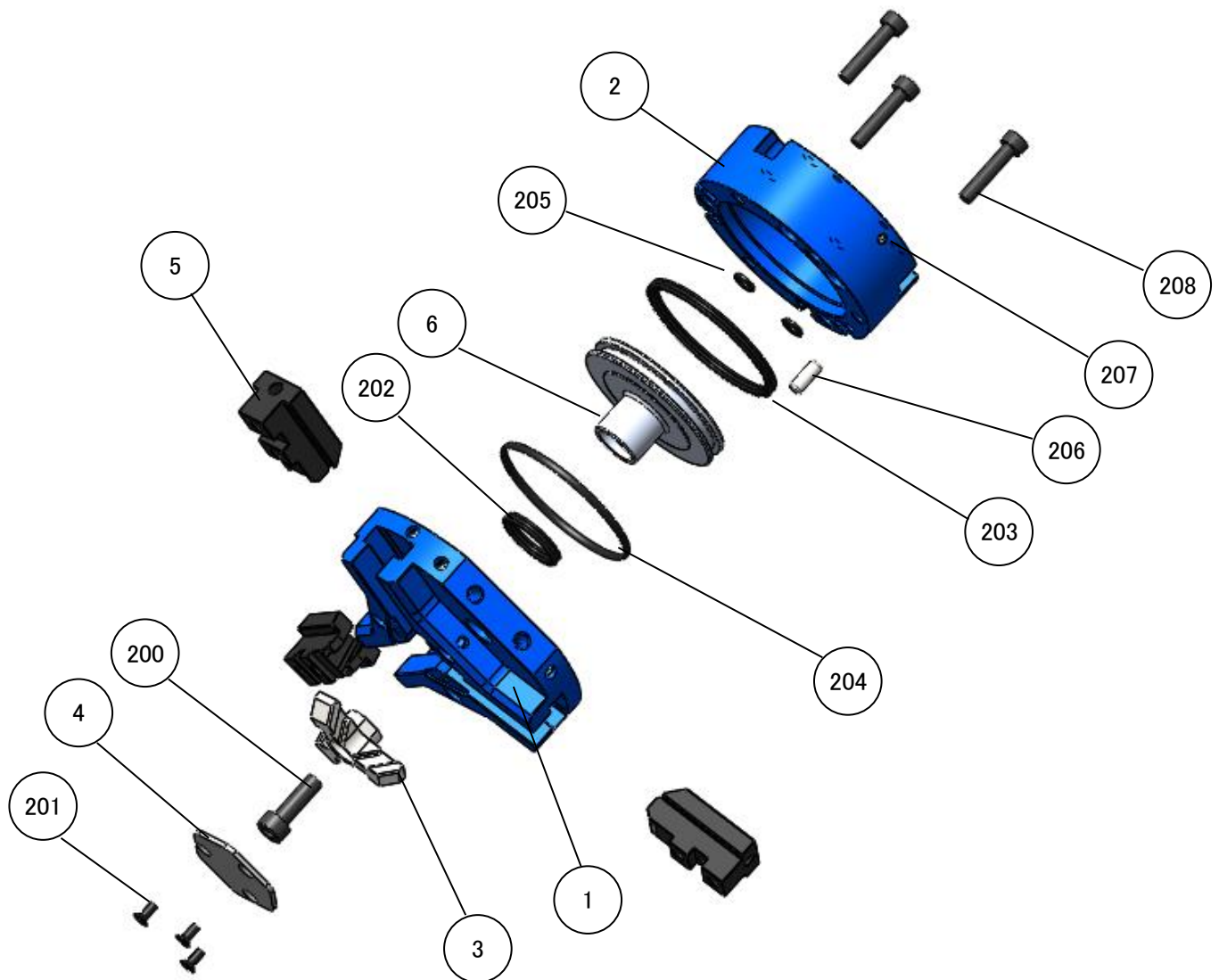


1-3. Seal list

Model	No.			
	202	203	204	205
NTS311	X-ring X118	X-ring X232	O-ring S71	O-ring P4

1-4. Parts list

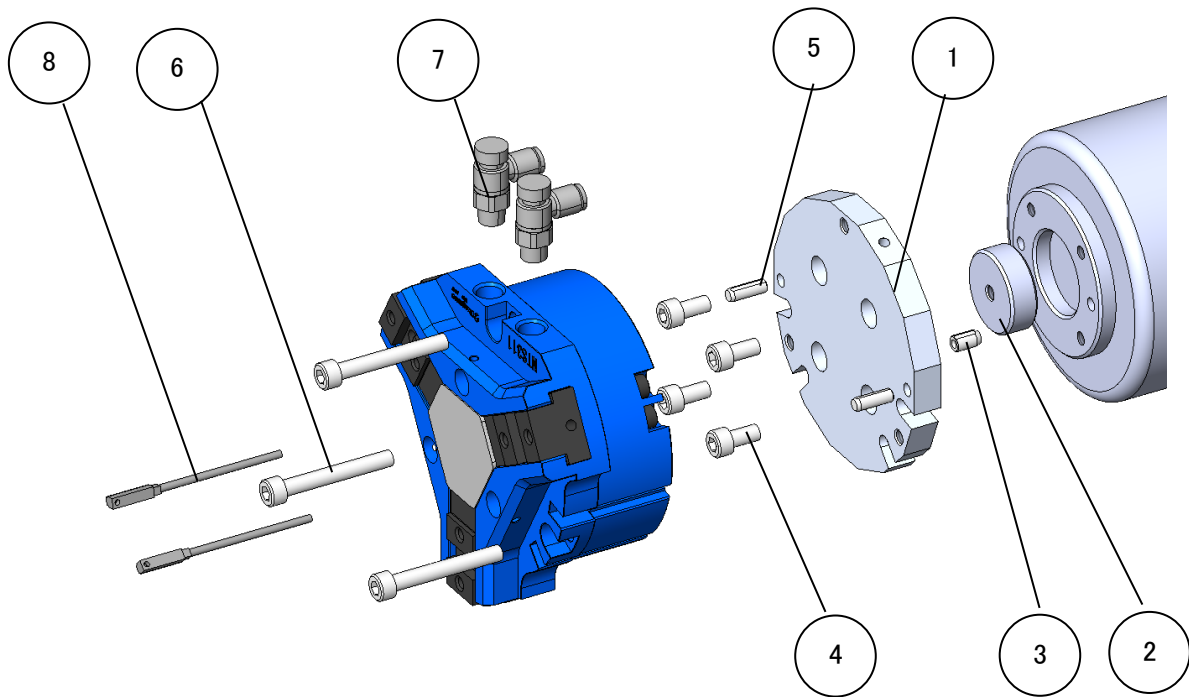
① Without safety mechanism



No.	Parts name	Quantity	No.	Parts name	Quantity
1	Body	1	202	Shaft packing	1
2	Rear body	1	203	Piston packing	1
3	Plunger	1	204	O-ring A	1
4	Cover	1	205	O-ring B	2
5	Master jaw	3	206	Parallel pin	1
6	Piston	1	207	Setscrew	4
200	Piston fixing bolt	1	208	Rear body fixing bolt	3
201	Cover fixing bolt	3			

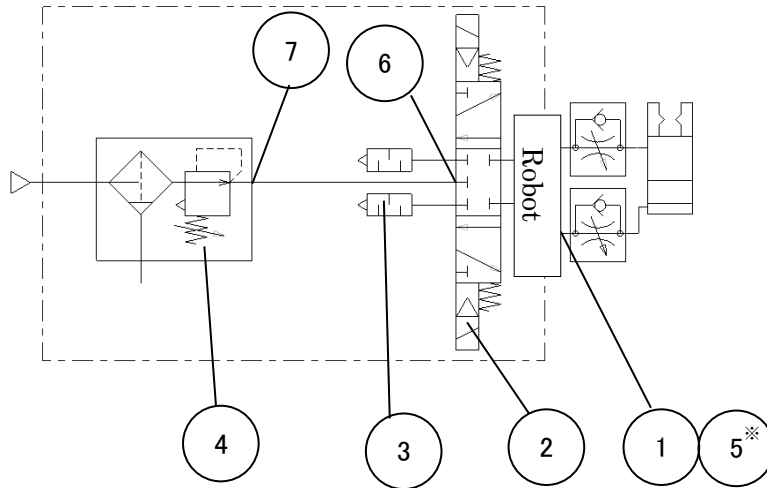
1 – 5. Mounting parts list

1-5-1. Hand mounting set



No.	Parts name	Quantity	No.	Parts name	Quantity
1	Adapter (Conforms to ISO9409-1-50-4-M6 mounting standard)	1	5	Positioning pin	2
2	Bushing	1	6	Gripper mounting bolt	3
3	Positioning pin	1	7	Speed Controller SC3W-6-6 manufactured by CKD	2
4	Adapter mounting bolt	4	8	Reed Switch SW-F2H3 manufactured by CKD (Lead wire length 3m)	2

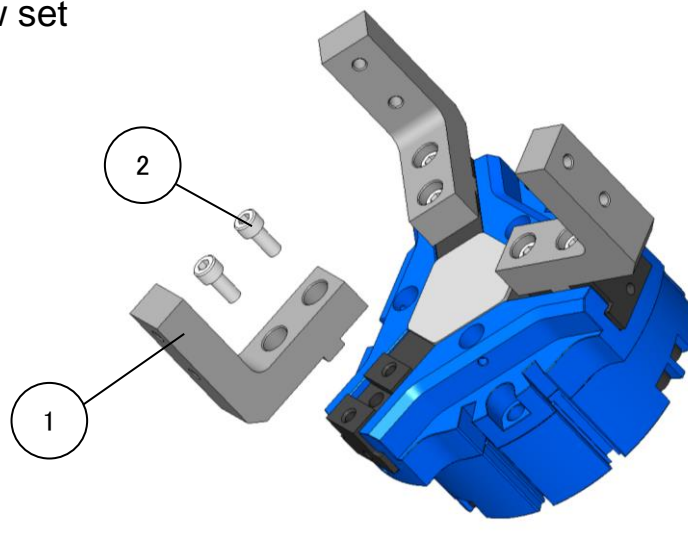
1-5-2. Air equipment set



No.	Parts name	Quantity	No.	Parts name	Quantity
1	Air hose	1	5	Single elbow GWL6-M5 manufactured by CKD	4
2	Solenoid valve 4GA230R-C6-E03-3 manufactured by CKD	1	6	Single elbow GWL6-6 manufactured by CKD	1
3	Silencer SLW-6A manufactured by CKD	2	7	Single straight GWS6-6 manufactured by CKD	2
4	Filter regulator W1000-6-W-B3W manufactured by CKD	1			

※No.5 single elbow may not be used depending on the robot model to be installed.

1-5-3. Base jaw set



No.	Parts name	Quantity	No.	Parts name	Quantity
1	Base jaw	3	2	Fixing bolt	6

2. Important Safety Precautions

Important safety precautions that particularly you should know or follow are summarized below. Please read them before starting to use the product.



DANGER

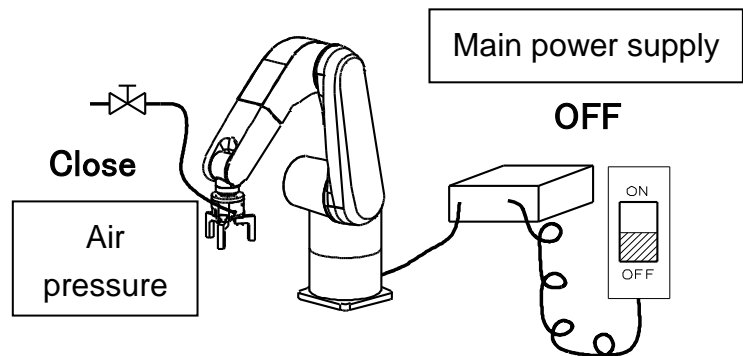
Failure to follow the safety precautions below will result in death or serious injuries.



Be sure to turn off the main power supply when installing, checking, oiling, or replacing the gripper.

Also, shut down the air pressure in the work area.

- During work, the robot or gripper could move abruptly and collide with your body.
- After shutting down the air pressure, release the air pressure remaining inside the gripper.



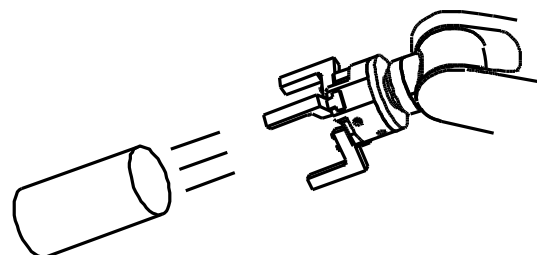
When installing, checking, oiling, or replacing the gripper, post a sign or notice, or provide a fence, and so on to notify people around the machine that work is in progress.

- Notify people around the machine that work is in progress and take measures to keep people other than the operator out of the work area.
Machine motion not predicted by a third party could cause serious danger.



Take safety measures so that the operator is not injured even if the conveyed workpiece flies out due to the reduced air pressure.

- Observe the legal safety standards defined by each country, such as installation of safeguards or fall prevention covers.





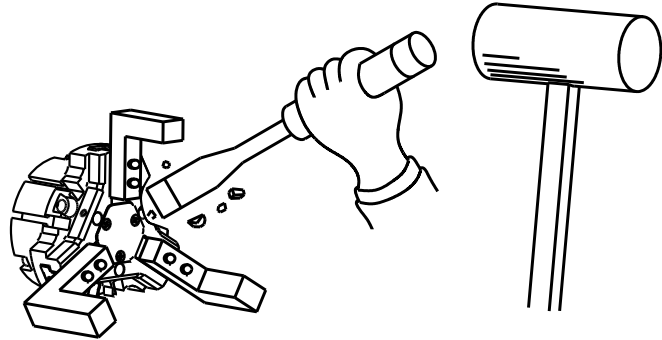
DANGER

Failure to follow the safety precautions below will result in death or serious injuries.



Do not modify the gripper.

- Not only the gripper is damaged but also the gripper and fixed workpiece may fly out.



If using the gripper as a workpiece fixture when the workpiece is drilled, deburred, welded, or modified additionally, confirm the specifications.

- If the gripper is used out of the specifications, not only the gripper is damaged but also the fixed workpiece may fly out.



Be sure to tighten the bolts with the specified torque.

- Lack of bolt quantity or tightening torque, or excessive torque could damage the bolt, causing the gripper or conveyed workpiece to fly out.
- When tightening the bolts, fix the gripper so that it will not rotate. Failure to do so may result in injury by slipping your hands when tightening the bolts.

Other than piston fixing bolt			Piston fixing bolt		
Bolt Size	Tightening torque		Bolt Size	Tightening torque	
M3	1.0	N·m	M5	6.8	N·m
M4	2.0	N·m	M6	12.7	N·m
M5	4.5	N·m	M8	33.3	N·m
M6	7.65	N·m	M10	72.6	N·m
M8	18.0	N·m			



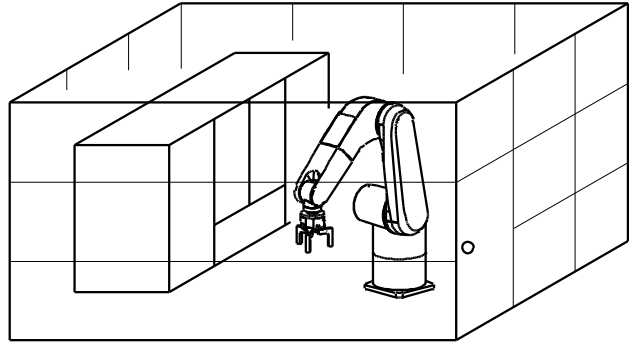
DANGER

Failure to follow the safety precautions below will result in death or serious injuries.



Use the gripper in accordance with the legal safety standards.

- Use the gripper in accordance with the legal safety standards defined by each country, such as installation of safeguards or safety covers.





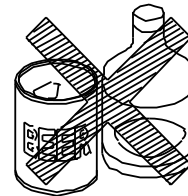
WARNING

Failure to follow the safety precautions below will result in death or serious injuries.



Do not operate the machine after drinking alcohol or taking medicine.

- Impaired judgment or operation mistake may cause serious hazards.



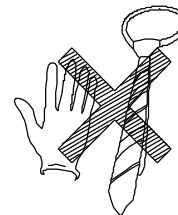
Alcohol

Medicine



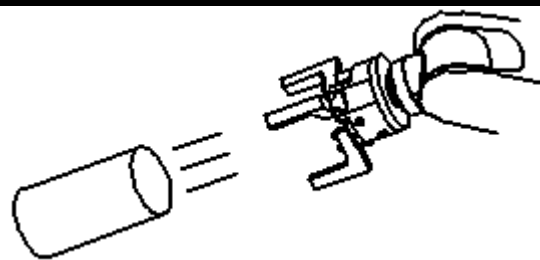
Do not wear clothing or accessories such as a necktie, necklace, etc. which are easy to be caught in.

- You may be caught in the gripper.



Use the gripper within the range of specification values.

- When selecting a gripper, select the model by referring to "Model selection" in page 11.
- Have the gripper grip the conveyed workpiece at the position of its center of gravity.
- If not, not only the gripper is damaged but also the conveyed workpiece may fly out.



3. Specifications

3-1. Specification table

(Standard gripping force)

Model	NTS	
	311	
Fluid used	Air pressure	
Operating air pressure (MPa)	0.2 – 0.8	
Ambient temperature range (°C)	5 – 60	
Jaw stroke in diameter (mm)	20	
Cylinder internal volume (reciprocation) (cm ³)	112	
Repeatability (mm)	±0.01	
Body mass (kg)	1.21	
Ambient humidity range (%)	30 – 95	
Storage temperature range (°C)	-10 – 60	
Noise level (dB)	79	

*Noise is measured at 4 locations 1m from the gripper, front, back, left, and right.

3-2. Gripping force

① Model selection

Perform the following calculation and select the model that provides a gripping force exceeding the calculation result, though a gripping force varies depending on the shapes of jaws created by the customer and conveyed workpiece or the friction coefficient.

$$F = m(g+a)/\mu$$

(Example)

When mass of conveyed workpiece = 8 kg, friction coefficient = 0.1, and robot acceleration = 10m/s²:
 $F = 8(9.8+10)/0.1 = 1584$ (N)

F = Gripping force (N)

m = Mass of conveyed workpiece (kg)

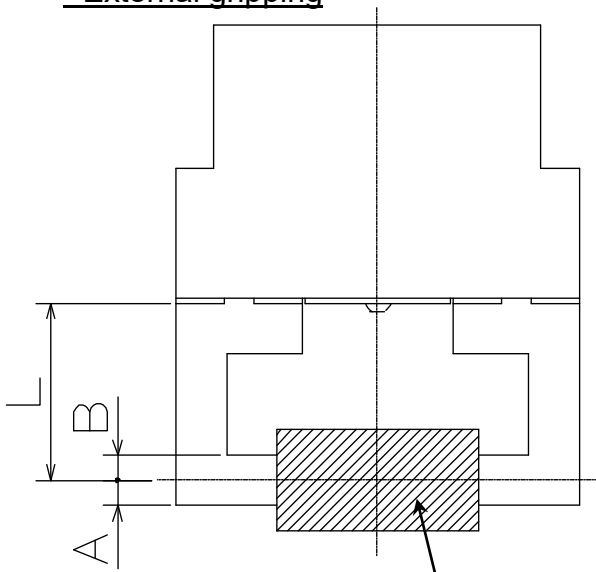
g = Gravitational acceleration (m/s²)

a = Acceleration of robot/loader (m/s²)

μ = Friction coefficient of gripping part

② Gripping force

● External gripping

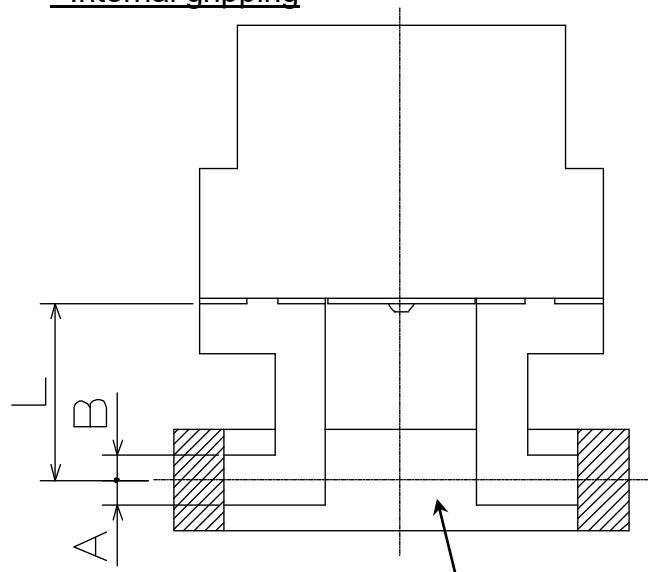


$$A = B$$

Conveyed workpiece

L: Distance up to a grip point (mm)

● Internal gripping



$$A = B$$

Conveyed workpiece

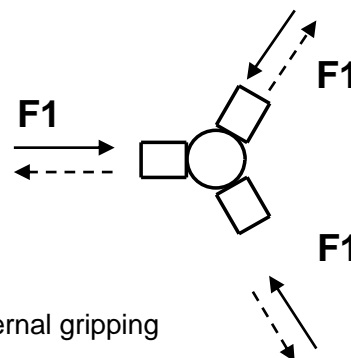
● Expression of gripping force

A gripping force F shown in graph is actually measured gripping force per jaw F1 x the number of jaws.

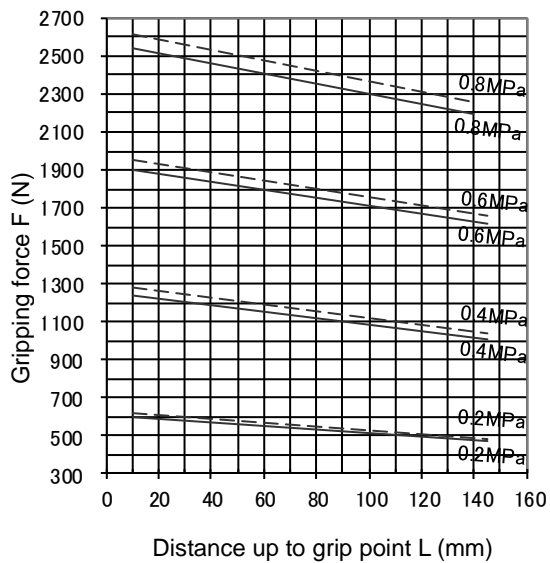
$$(F = F1 \times 3)$$

—— External gripping

----- Internal gripping



■ NTS311



NOTICE

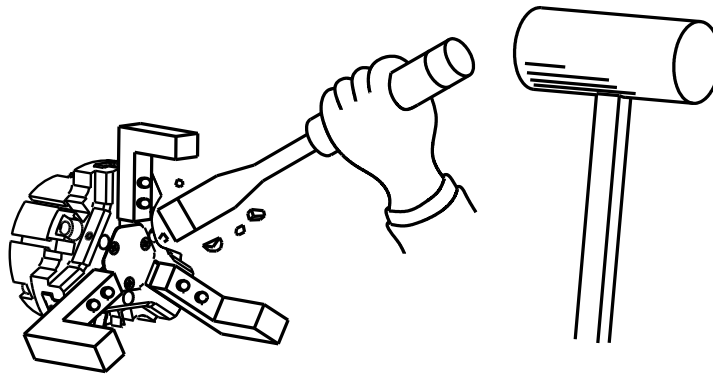
- Determine the distance up to a grip point L as short as possible when designing the jaws. Also, the distance up to a grip point L should be used within a range shown in graph. If it is used out of the range, not only the specified gripping force may not be obtained but also the wear of sliding parts may be increased.

4. Use

The product provides pneumatic pressure to the machine, moves the jaws in the open or close direction, grips the material to be transported, and transports it to the desired location. After transport, the jaws are moved in the open or closed direction to remove the material.

DANGER

- Do not modify the gripper. Using the modified product could cause unexpected accidents. Kitagawa shall not be held liable for human accidents, death, damage, or loss that occurred due to the modification.



- If using the gripper as a workpiece fixture when the workpiece is drilled, deburred, welded, or modified additionally, confirm the specifications. If the gripper is used out of the specifications, not only the gripper is damaged but also the conveyed workpiece may fly out.

WARNING

- Wear appropriate clothing suitable for the work and wear gloves, safety glasses, safety shoes, and helmet.
 - Wearing inappropriate clothing causes the clothing to be stuck, resulting in danger.
 - Appropriate clothing will be preventive measures to prevent hazards due to the carelessness or unexpected accidents during work.

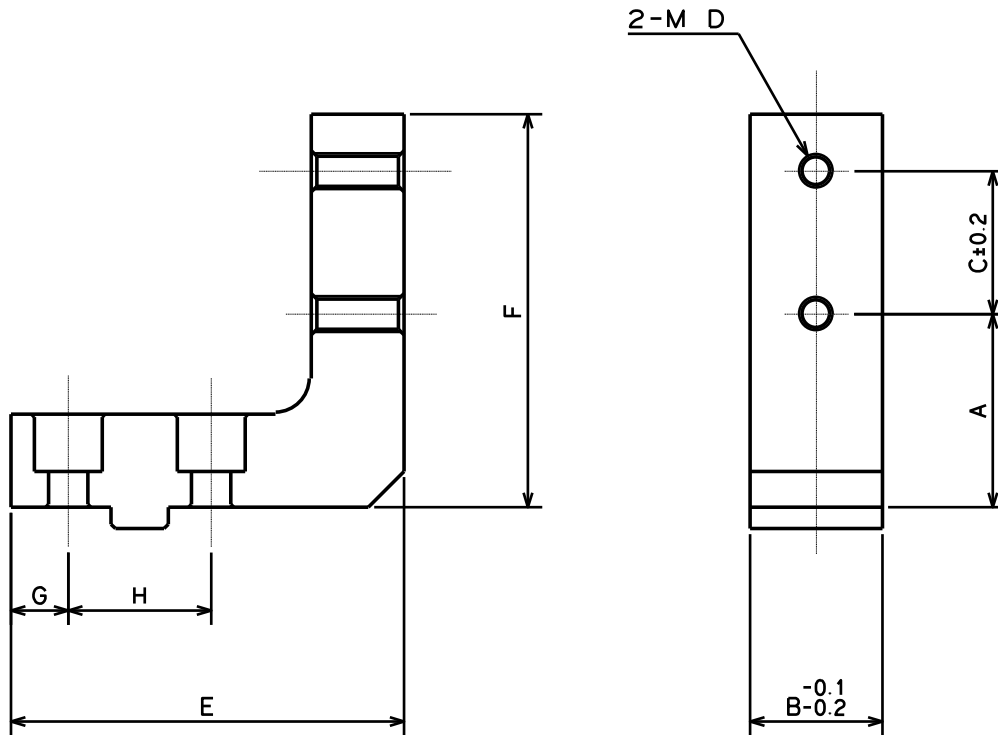
NOTICE

- Do not use the product in the environment of corrosive chemicals, corrosive gas, dust, and vibration, avoiding high temperature or direct sunlight.
- When storing the product, apply antirust treatment and then store it in a place free from water leakage, dew condensation, or freeze.

5. Design of Jaws

5-1. Designing jaws to be installed on the gripper

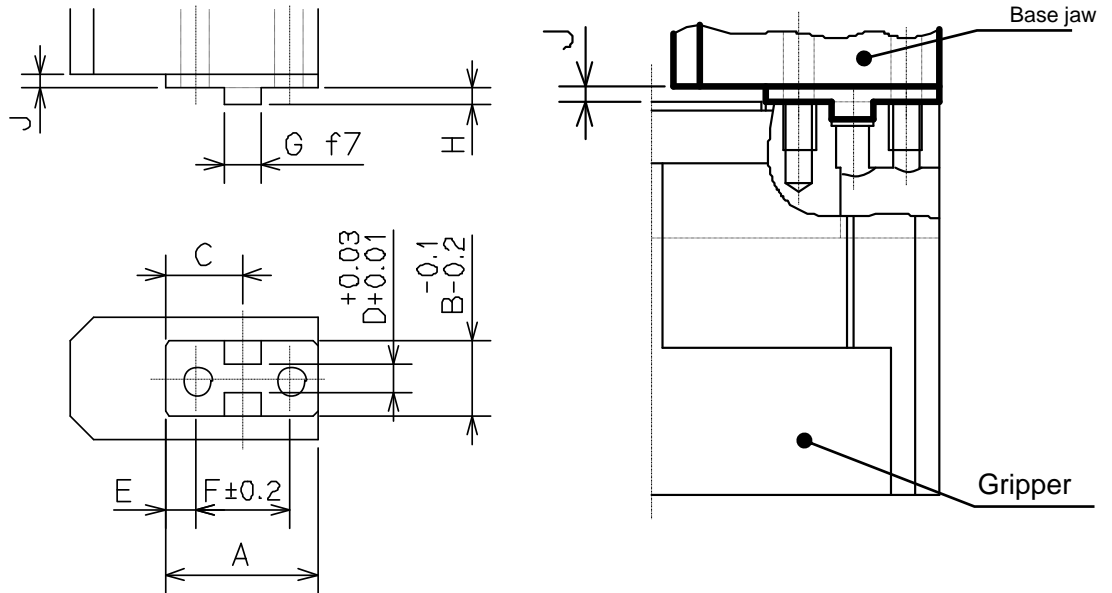
When designing the jaws to be mounted on the base jaws, refer to the base jaw dimensions below. The base jaws do not have grooves for left and right positioning.



Model	A	B	C	D	E	F	G	H
NTS-BJ311C	18.5	27	20	5	55	55	8	20

5-2. Designing base jaws to be installed on the gripper

When designing base jaws to be installed on the gripper, form the installation face to the master jaw as shown below.



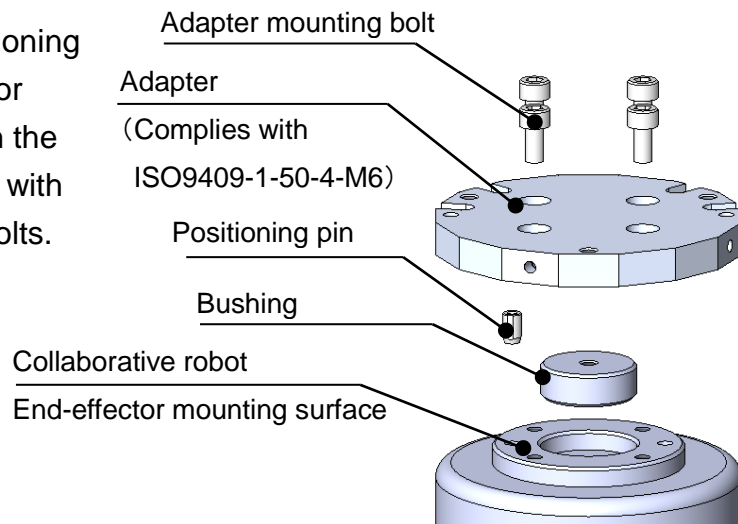
Model	A	B	C	D(*)	E	F	G(*)	H(*)	J
NTS 311	28.5	18.5	14	6	4	20	8	3.5	0.5

* Dimensions D, G, and H in the table are used for positioning the jaws. Dimension D is used for positioning in the lateral direction, and dimensions G and H are used for positioning in the longitudinal direction.

6. Installation

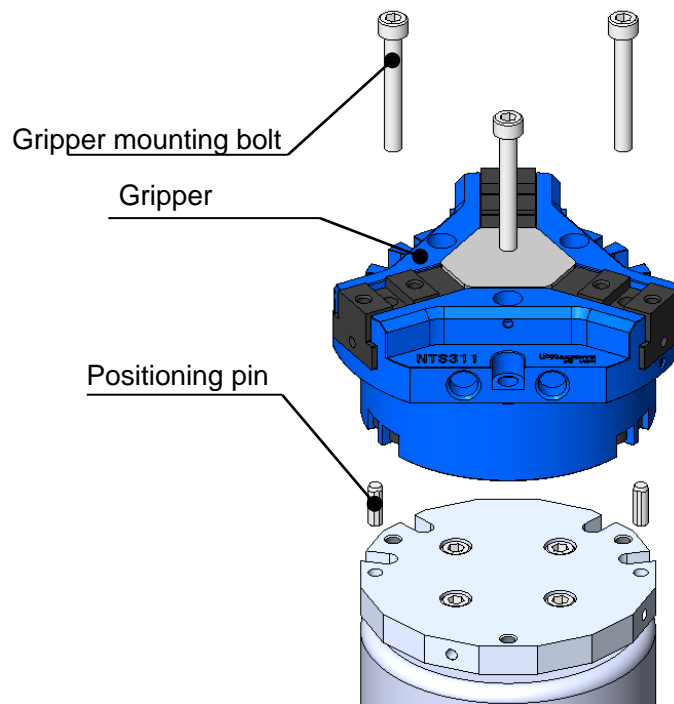
6-1. Adapter Installation

Install the bushing and positioning pin on the robot's end effector mounting surface and attach the adapter. Secure the adapter with the four adapter mounting bolts.



6-2. Gripper Installation

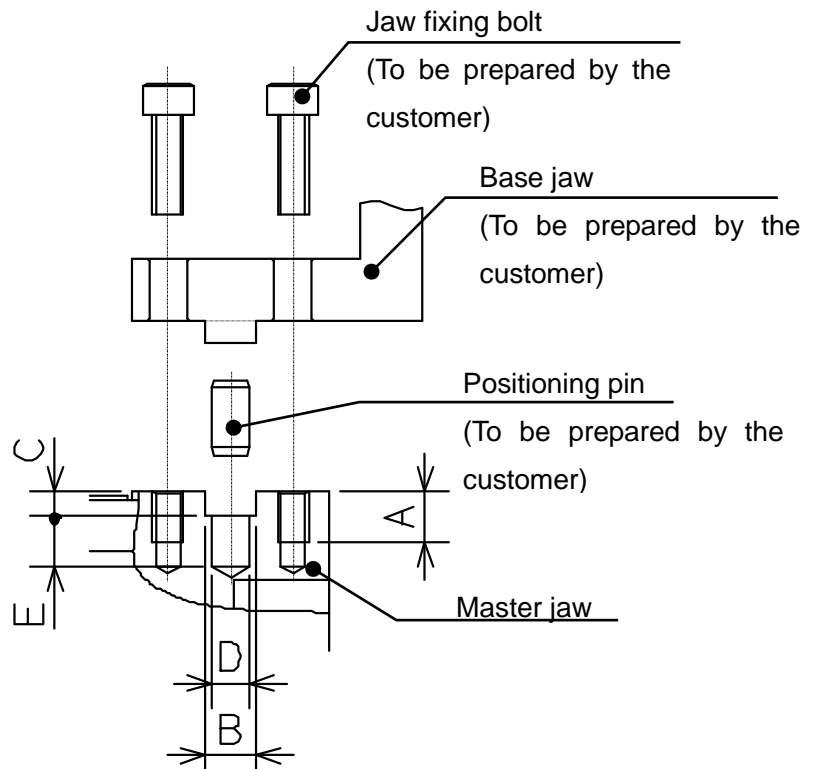
Mount the gripper body using the 3 mounting bolt holes and 2 positioning pin holes.



- Be sure to tighten the bolts with the specified torque. Lack of tightening torque or excessive torque could break the bolt, causing the gripper or conveyed workpiece to fly out.

6-2. Base Jaw Installation

When you select our base jaws, install them using the two mounting bolt holes and positioning pins. The figures in this section are shown with the base jaws to be prepared by the customer, so please prepare the fixing bolts and positioning pins for the base jaws before installation.



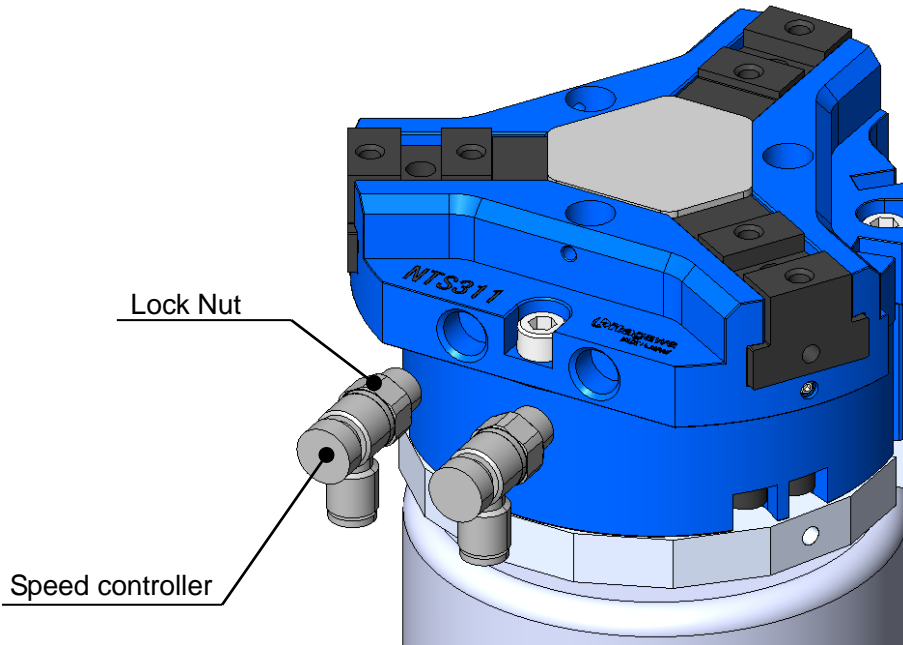
Model		NTS	311
Mounting Bolt	Size		M5
	Thread depth	A(mm)	8
Fitting portion	Width (H8)	B(mm)	8
	Depth	C (mm)	4
Positioning pin hole	Diameter (H8)	D (mm)	Φ6
	Depth	E (mm)	8

DANGER

- Be sure to tighten the bolts with the specified torque. Lack of tightening torque or excessive torque could break the bolt, causing the jaws or conveyed workpiece to fly out.
- Before installing the base jaws, disconnect the air piping.

6-3. Connecting the air piping

Attach a speed controller to the air supply port to open and close the jaws. Refer to the manufacturer's instructions for how to handle the speed controller. After connecting the piping, verify that there are no air leaks and that the gripper operates normally.



Recommended tightening torque for lock nut

Bolt size	Tightening torque(N·m)
M5	0.3
1/8	0.8

WARNING

- Be sure to shut off the air pressure before connecting the air piping.
- Use compressed air as the fluid.
- Do not use compressed air that contains chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, as it may cause damage or malfunction.

⚠ CAUTION

- Use clean air that has passed through an air filter (filtration of 5 μm or less).
- Keep the fluid temperature and ambient temperature within the range of 5 to 60°C.
- Can be used without lubrication, but if lubricated, please use Class 1 turbine oil (no additives) ISO VG32.
- Adjust with a speed controller, etc. so that the opening/closing speed does not become faster than necessary.

6-4. Installing the switches

Use reed switches of the following models.

	CKD			SMC	
	Noncontact	2-wire system		Noncontact	2-wire system
Model	F2H	F2V	F2S	D-M9B	D-M9BV
Lead wire pull-out shape	Straight	L-shaped	L-shaped short	Straight	L-shaped

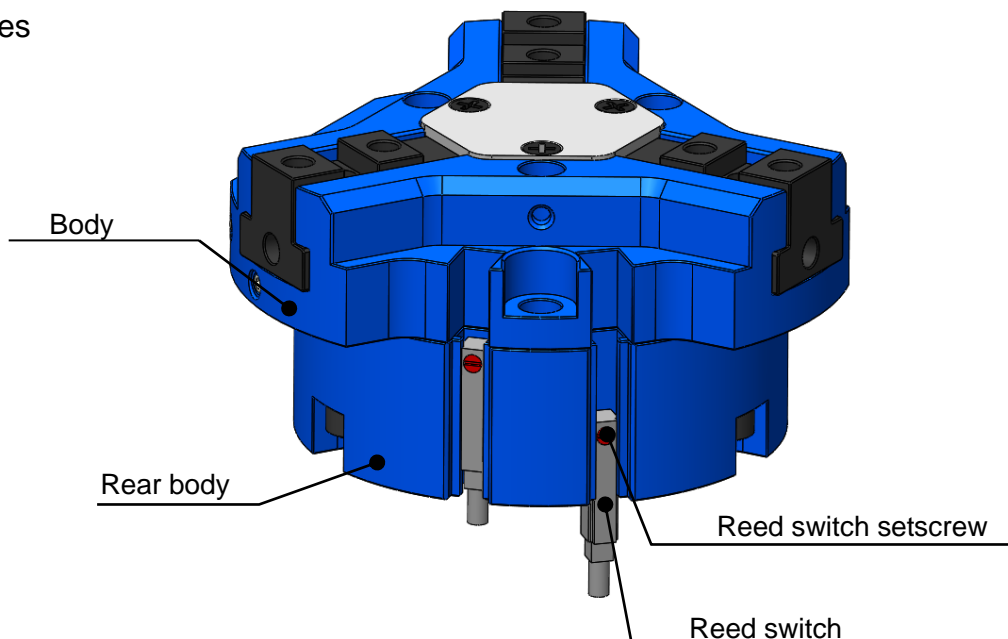
* Using reed switches not shown below may lead to unstable response.

① Installing the reed switch

Install the reed switch in the reed switch installation groove on the side face of the rear body.

There are four reed switch installation grooves, and up to four reed switches can be installed.

When using reed switches, please design a adaptor without interference with the reed switches



- Installation procedure for the close end side

- ① Move the master jaws to the close end positions, respectively.
- ② Install the reed switch using the reed switch bracket.
- ③ Move up and down the reed switch slowly.
- ④ Tighten and fix the setscrew provided on the reed switch at the position where the reed switch detected.
- ⑤ Repeat the opening/closing operation of the master jaws to confirm that the reed switch can detect.

*In the case of workpiece external gripping, make the above-mentioned adjustment with the workpiece gripped.

- Installation procedure for the open end side

- ① Move the master jaws to the open end positions, respectively.
- ② Install the reed switch using the reed switch bracket.
- ③ Move up and down the reed switch slowly.
- ④ Tighten and fix the setscrew provided on the reed switch at the position where the reed switch detected.
- ⑤ Repeat the opening/closing operation of the master jaws to confirm that the reed switch can detect.

7. Maintenance and Inspection

7-1. Periodic inspection

- Before work or at the grease supply, move the jaws over full stroke to check that the stroke mentioned in the specification table is obtained.
- At the end of work, be sure to clean the gripper main body using an air gun.
- At least every three months, check that respective bolts have been tightened.

7-2. Maintenance interval

- The maintenance interval is at every 1 million cycles, disassemble the gripper, clean the parts, replace the seals, apply grease, and then reassemble the gripper.

7-3. Grease supply

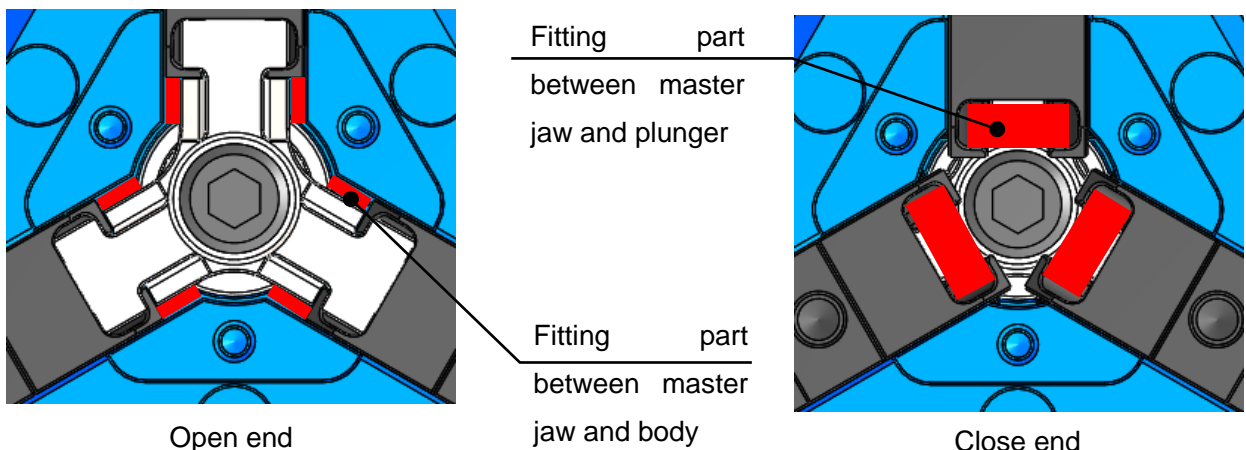
① Grease used

- Be sure to use the specified grease listed below. If unspecified grease is used, adequate effect may not be obtained.

Brand	Manufacturer
Klüberpaste 46 MR 401	Clueber Lubrication: Whole world
CHUCK GREASE PRO	Kitagawa genuine grease (Kitagawa sales agents in each country)

② Supplying method

- ① Remove the face plate from the base.
- ② Remove the cover (No.4).
- ③ Apply grease to the fitting parts between the body (No.1), master jaw (No.5), and plunger (No.3).
- ④ Move the master jaws several strokes without gripping anything to spread the grease.



② Safety information on grease and antitrust oil

Applicable range

- Specified grease
- Antitrust agent applied to the product at the delivery

First-aid treatment

- **Aspiration:** In case of much aspiration, go to a place where there is fresh air, and cover your body with a blanket to keep your body warm. Consult a doctor if necessary.
- **Sticking to your skin:** Wipe off the oil, and wash your skin with water and soap. If you feel itchy or you get inflamed, consult a doctor immediately.
- **Entering your eye:** Wash your eye with fresh water for at least 15 minutes, and then consult a doctor.
- **Accidental drinking:** Consult a doctor immediately without vomiting forcibly.
- For the grease other than the specified one and antitrust oil prepared by the customer, refer to the safety information prepared for respective oils.

7—4. Air circuit maintenance

- Periodically drain the air filter, etc.
- If foreign matter such as carbonized compressor oil enters the circuit, the solenoid valve and robot hand will malfunction, so be careful when performing maintenance and inspection of the compressor.

7-5. Disassembly and assembly procedure

Disassembly procedure

By referring to the parts list on page 5, disassemble the product through the procedure below:

- ① Stop the air pressure supplied to the gripper and disconnect the air piping.
- ② Remove the gripper from the robot or the loader.
- ③ Remove the cover fixing bolts (No.201) and the cover (No.4).
- ④ Loosen the piston fixing bolt (No.200) and remove the plunger (No.3) and the master jaws (No.5).
- ⑤ Loosen the rear body fixing bolts (No.208) and remove the rear body (No.2).
- ⑥ Remove the piston (No.6) from the rear body (No.2).

Assembly procedure

By referring to the parts list on page 5, assemble the product through the procedure below:

- ① Insert the piston (No.6) in the rear body (No.2). (Align the magnet position to the sensor groove.)
- ② Attach the parallel pin (No.206) and O-ring B (No.205) to the rear body (No.2).
- ③ Assemble the body (No.1) and rear body (No.2) using the rear body fixing bolts (No.208).
- ④ Insert the master jaws (No.5) in the body (No.1).
- ⑤ Assemble the master jaws (No.5) and plunger (No.3), and fix the plunger (No.3) and the piston (No.6) with the piston fixing bolt (No.200).
Note 1: For the piston fixing bolt (No.200) tightening torque, refer to page 7.
Note 2: The plunger (No.3) and the piston (No.6) have phases, respectively.
- ⑥ Fix the cover (No.4) using the cover fixing bolts (No.201).
- ⑦ Install the gripper to the robot or the loader.
- ⑧ Connect the air pressure piping.

To reassemble the gripper, apply the specified grease to the sliding parts and the oil treatment to the seal sliding parts, and perform the reverse procedure of disassembly while checking that the seals do not protrude or fall.

Oil treatment used

Be sure to use the specified oil treatment shown below.

Brand	Manufacturer
S-10 Oil treatment	Napolex: Japan



- Be sure to tighten the bolts with the specified torque. Lack or tightening torque or excessive torque could break the bolt, causing the conveyed workpiece to fly out.

8. Troubleshooting

8-1. In the case of gripper malfunction

Check the following, and take corrective actions.

Symptom	Cause	Corrective actions
Gripper does not operate	Gripper internal part is broken	Replace the gripper with a new one.
	Slideways get seized	Disassemble, and correct the seized part with an oilstone, or replace the gripper with a new one.
	The piston does not operate	Check that the air pressure is within the operating pressure range
		Check for air leakage
		Check the piping and solenoid valve, and if normal, disassemble and clean the cylinder
The switch is faulty or installed incorrectly	Check that the switch can detect normally.	
Lack of master jaw stroke	Much dust exists in master jaws	Disassemble the gripper, clean it, replace the seals, and apply grease
Low gripping force	Low air pressure	Check that the air pressure is within the operating pressure range
	Air leaks from the seal	Disassemble the gripper, clean it, replace the seals, and apply grease
	Master jaw movements are not smooth	Remove the cover and supply grease, and open and close the master jaws several times without gripping any conveyed workpiece
		Disassemble the gripper, clean it, and apply grease

 **WARNING**

- If the gripper failed due to a seizure or damage, disassemble the gripper following the disassembly procedure. If the gripper is in the state that you cannot disassemble, do not disassemble it forcibly but please contact us or our agents.
- Stop using the gripper immediately if the situations are not improved though corrective actions given in above table were taken. Continuous use of faulty product or part could cause serious human accidents due to flying gripper or conveyed workpiece.
- The gripper must be repaired only by skilled persons who have received the training course. Repair by unskilled persons or persons other than us or our agents could cause serious human accidents.

8-2. Contact address in case of trouble

Please get in touch with our sales agent from which you purchased the gripper or our office of the address given on the back cover when the gripper troubled.

9. Others

9-1. Standards and directives to which the gripper conforms

This product conforms to the following standards and directives:

- Machinery directive:2006/42/EC Annex I
- EN ISO 12100:2010

9-2. Disposal of gripper

Dispose of this unit in accordance with the laws and regulations of your country.

DECLARATION OF INCORPORATION

of partly completed machinery

Copy of original

We hereby declare that the following our product conform with the essential health and safety requirements of the EC Machinery Directive so that the product is to be incorporated into end-machinery. The product must not be put into service until end-machinery has been declared in conformity with the provisions of the EC Machinery Directive 2006/42/EC Annex II part 1.A.

We also declare that the specific technical documentation for this partly completed machinery was drawn up according to the EC Machinery Directive 2006/42/EC Annex VII part B.

Product : Gripper

Model : NTS2 Series, NTS3 Series, NTB Series,
NPGT Series, QG (L) Series, NPG Series

Serial number : See original declaration

Manufacturer : Kitagawa Corporation
77-1, Motomachi, Fuchu-shi,
Hiroshima 726-8610, Japan

Authorized compiler : Peter Soetebier / Prokurist
in the community Kitagawa Europe GmbH
Borsigstr.3 D-40880 Ratingen, GERMANY

The essential health and safety requirements in accordance with the EC Machinery Directive 2006/42/EC Annex I were applied and fulfilled:

1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.3.1, 1.3.2, 1.3.4, 1.5.3, 1.5.4, 1.5.8, 1.5.9, 1.6.1, 1.7.1, 1.7.2, 1.7.3, 1.7.4, 1.7.4.1, 1.7.4.2, 1.7.4.3

The following harmonized standards were applied:

EN ISO 12100:2010

Signature : See original declaration

Place / Date : See original declaration

Name / Title : Tomonari Hiromoto / Manager, Technical section 1
Technical department
Kitagawa Global hand Company

Being the responsible person appointed and employed the manufacturer.

UK DECLARATION OF INCORPORATION
of partly completed machinery
Copy of original

We hereby declare that the following our product conform with the essential health and safety requirements of the Supply of Machinery (Safety) Regulations 2008 so that the product is to be incorporated into end-machinery. The product must not be put into service until end-machinery has been declared in conformity with the provisions of the Supply of Machinery (Safety) Regulations 2008 Annex II part 1.A.

We also declare that the specific technical documentation for this partly completed machinery was drawn up according to the Supply of Machinery (Safety) Regulations 2008 Annex VII part B.

Product : Gripper

Model : NTS2 Series, NTS3 Series, NTB Series,
NPGT Series, QG (L) Series, NPG Series

Serial number : See original declaration

Manufacturer : Kitagawa Corporation
77-1, Motomachi, Fuchu-shi,
Hiroshima 726-8610, Japan

Authorized complier : Mark Jones / Financial Director
in the community : UNIT 1 THE HEADLANS, DOWNTON,
SALISBURY, WILTSHIRE, SP5 3JJ, UNITED
KINGDOM

The essential health and safety requirements in accordance with the Supply of Machinery (Safety) Regulations 2008 Annex I were applied and fulfilled:
1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.3.1, 1.3.2, 1.3.4, 1.5.3, 1.5.4, 1.5.8, 1.5.9, 1.6.1, 1.7.1,
1.7.2, 1.7.3, 1.7.4, 1.7.4.1, 1.7.4.2, 1.7.4.3

The following harmonized standards were applied:
EN ISO 12100:2010, EN 1550:1997+A1: 2008

Signature : See original declaration

Place / Date : See original declaration

Name / Title : Tomonari Hiromoto / Manager, Technical section 1
Technical department
Kitagawa Global hand Company

Being the responsible person appointed and employed the manufacturer.

Kitagawa Corporation Kitagawa Global hand Company
 77-1, Motomachi, Fuchu-shi, Hiroshima, 726-8610, Japan

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Fax. +81-847-45-8911

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