Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications.The customer should provide safety measures to avoid danger in the event of problems.)

❶Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc. related to the safety of device design and control, etc.

ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷Note that there may be hot or charged sections even after operation is stopped.
❸When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility.Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
❹When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions in the following pages to prevent accidents.

■The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

Danger: (DANGER) When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

Warning: (WARNING) If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

Caution: (CAUTION) When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation.
Every item provides important information and must be observed.

Please read below notes before ordering.

1 Warranty period

This warranty shall be valid for one year after delivery to the customer's designated site.

2 Scope of warranty

If any faults, found to be the responsibility of CKD, occur during the above warranty term, the product shall be replaced, the required replacement parts provided free of charge, or shall be repaired at the CKD factory free of charge.
This Limited Warranty will not apply to:
(1) Failures due to use outside the conditions and environments set forth in the catalog or these specifications.
(2) Failures resulting from factors other than this product.
(3) Failures caused by improper use of the product.
(4) Failures resulting from modifications or repairs made without CKD consent.
(5) Failures caused by matters that could not be predicted with the technologies in practice when the product was delivered.
(6) Failures resulting from natural disasters or accidents for which CKD is not liable.
The warranty covers the actually delivered product, and does not cover any damage resulting from losses induced by faults in the delivered product.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

Pneumatic components

Safety Precautions

Be sure to read this section before use.
For details on general cylinders and cylinder switches, refer to Pneumatic Cylinders (CB-030S).

Laws and regulations on robot safety

Please read the following standards carefully before use.

ISO10218 and JIS B 8433 (Robots and robotic devices)
ISO/TS 15066 (Robots and robotic devices)

Product-specific cautions: Grippers for collaborative robots

Design/selection

⚠WARNING

■ If a moving workpiece poses a danger to the human body, or if there is a possibility of human fingers being pinched by the fingers of the gripper or attachment, take safety precautions such as by installing a protective cover.

■ If the circuit pressure drops due to a power outage or there is a problem with the air source, gripping force may decrease causing the workpiece to fall. Provide position locking measures, etc., so that personnel are not injured or machines damaged.

⚠CAUTION

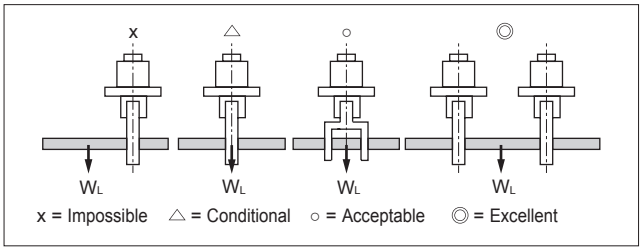
■ Usage environment

At cutting, casting, or welding plants, there is a risk of foreign matter, such as cutting fluid, chips, powder and dust, entering the equipment. Use covers and such to prevent this as much as possible.

Do not use the equipment under the following environments.

- Cutting fluid is applied (because the sliding portion will be scraped by the abrasive or abrasive powder in the fluid)
- When the atmosphere contains organic solvents, chemicals, acids, alkalis, kerosene, etc.
- Water is applied

■ When grasping long or large workpieces, it is a necessary to grasp the center of gravity to ensure a stable grip, but it is also necessary to stabilize it by increasing the size and using multiple pieces.

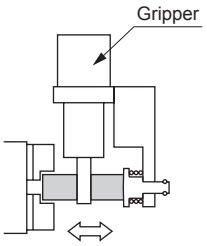


■ Select a model with a sufficient gripping force according to the mass of the workpiece.

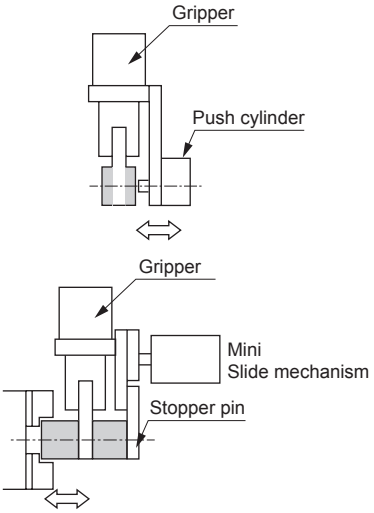
■ Select a model with a sufficient opening and closing width according to the size of the workpiece.

■ When inserting the workpiece directly to the jig using a gripper, take the clearance into consideration during design. The gripper may be damaged.

● Press the jig by ejecting



● When using a push cylinder



Note) Since the workpiece slides on the attachment, the lifespan of the gripper may be greatly reduced. The shape of the attachment should be sufficiently considered.

■ If the attachment is not rigid enough, the fingers may twist due to deflection, which may have a negative impact on operation.

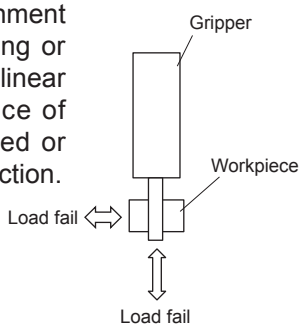
■ Adjust the gripper opening/closing speed using the speed controller.
When used at high speed, backlash may occur sooner. Also, the workpiece may vibrate due to the impact of opening and closing, which may result in gripper errors, workpiece insertion failures, or poor repeatability.

■ If a small-diameter or short-stroke actuator operates at a high frequency, condensation (water droplets) may form inside the piping in certain conditions. Take steps to prevent condensation such as by using a quick exhaust valve.

Mounting, installation and adjustment

⚠CAUTION

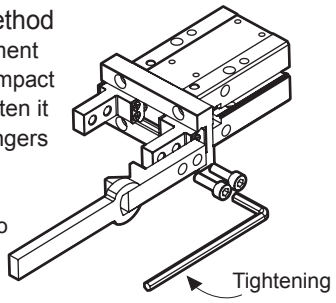
■ Be sure not to apply an excessive load to the fingers and attachment when attaching and detaching or conveying workpieces. The linear guide rolling contact surface of the fingers may be scratched or dented, resulting in a malfunction.



■ Attachment mounting method

When mounting the attachment to the fingers, consider the impact to the gripper body and tighten it with a wrench so that the fingers are not twisted.

Do not apply load to the body.

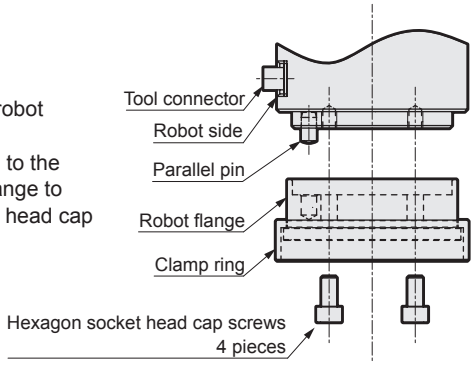


Descriptions	Bolt used	Tightening torque (N·m)
RLSH-A20D1N	M4×0.7	1.4
RHLF-16CS	M4×0.7	1.4
RCKL-40CS	M5×0.8	2.8

[Mounting method]

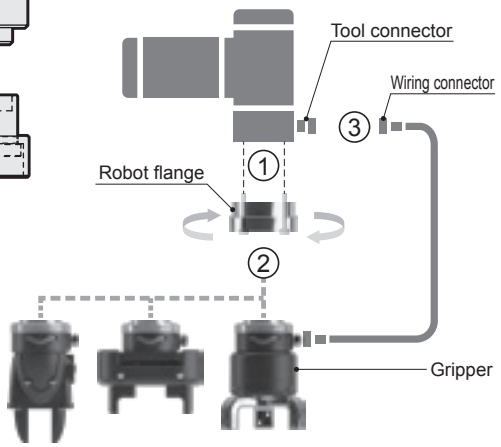
① Mounting the robot flange

Loosen the clamp ring and remove the robot flange from the gripper.
After inserting the parallel pin (included) to the robot flange surface, mount the robot flange to the robot using the four hexagon socket head cap screws (included).
Note: Tightening torque = 7 Nm



② Mounting the gripper

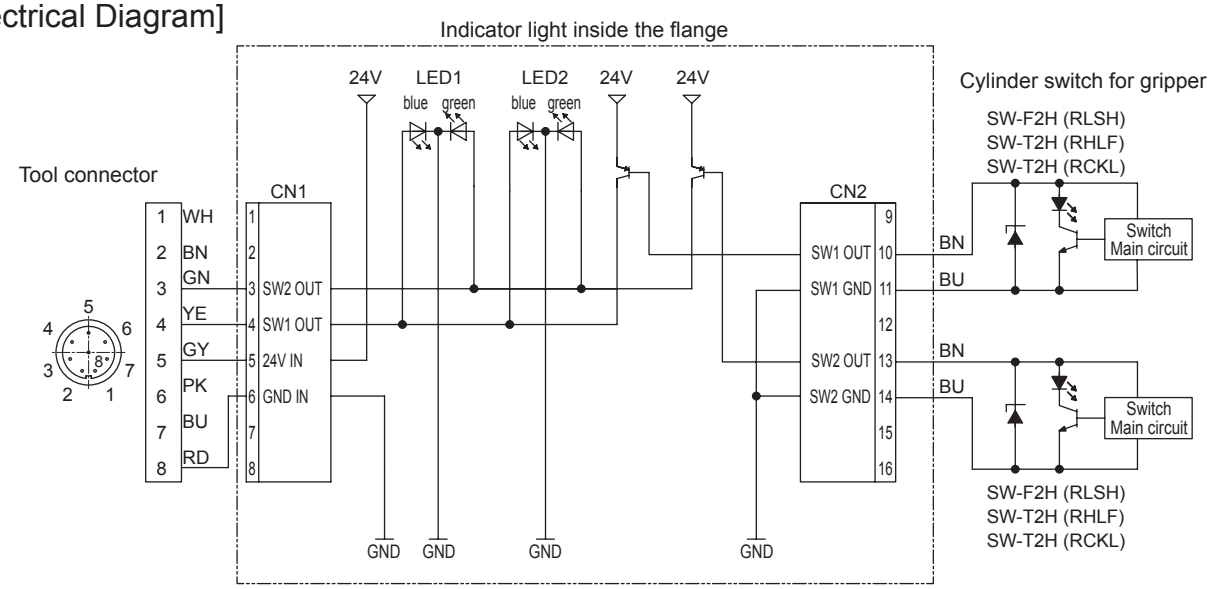
Mount the gripper to the robot flange and tighten the clamp ring.
Note: Tighten the clamp ring by hand to make sure it is not loose.



③ Connector connection

Connect the gripper connector to the tool connector of the robot.

[Electrical Diagram]



[Switch specifications]

Descriptions	Proximity 2-wire	
	F2H	T2H
Applications	Dedicated for programmable controller	
Load voltage/current	DC10 to 30V 5 to 20mA	
Leakage current	1mA or less	
Shock resistance	980m/s^2	
Weight g	10	18

Grippers for collaborative robots

Directional control valve (Option)

Symbol Ⓑ when attachment V (directional control valve / tube) is selected

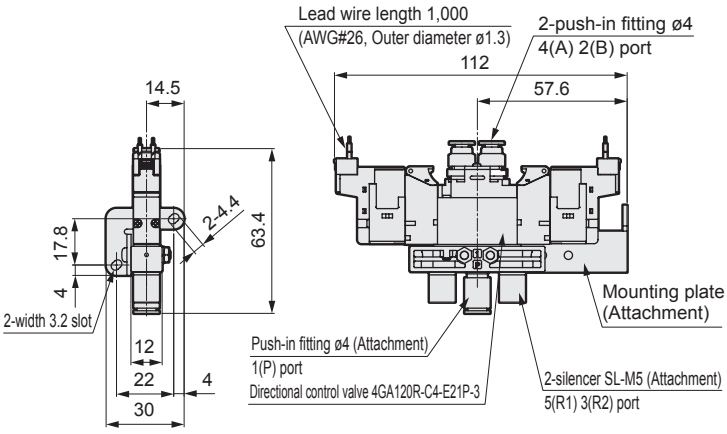
Directional control valve model No.
4GA120R-C4-E21P-FLA28482-3

Refer to “Pneumatic Valves (No.CB-023S)” for other specification products.

Specifications

Item	Description
Valve type and operation method	Pilot operated soft spool valve
Solenoid position	2-position double solenoid
Max. working pressure MPa	0.7
Min. working pressure MPa	0.2
Ambient temperature °C	-5 to 55 (no freezing)
Fluid temperature °C	5 - 55
Manual override	Non-locking/locking common
Response time ms	9
Flow characteristics C [dm^3/(s·bar)], b	P → A/B: C = 1.2, b = 0.47 A/B → R1/R2: C = 0.72, b = 0.37
Rated voltage V	24V DC
Voltage fluctuation range	±10%
Holding current A	0.017
Power consumption W	0.40
Surge suppressor	Built-in
Indicator	Built-in lamp

Dimensions

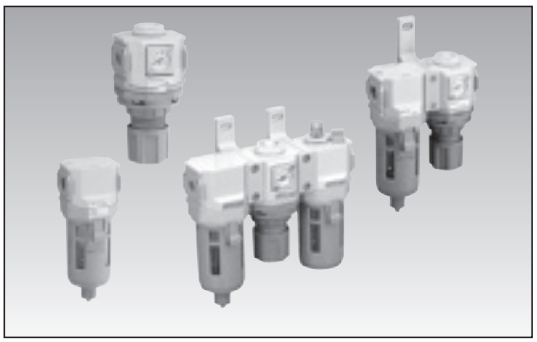


Related products

Modular type selex FRL

Catalog No. CB-024SA

- Compact/modular type with unified principal dimensions for filters, regulators, and lubricators
- Wide variety of combinations are possible according to the application
- Long-life element is used
- Simple design with no wasted space on the front



Portable air supply unit ASU-S

Catalog No. CC-1363A

- Portable compact compressor
- Supplies clean air with built-in filter
- Continuous operation possible

If the goods and/or their replicas, the technology and/or software found in this catalog are to be exported from Japan, Japanese laws require that the exporter makes sure that they will never be used for the development or manufacture of weapons for mass destruction.

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