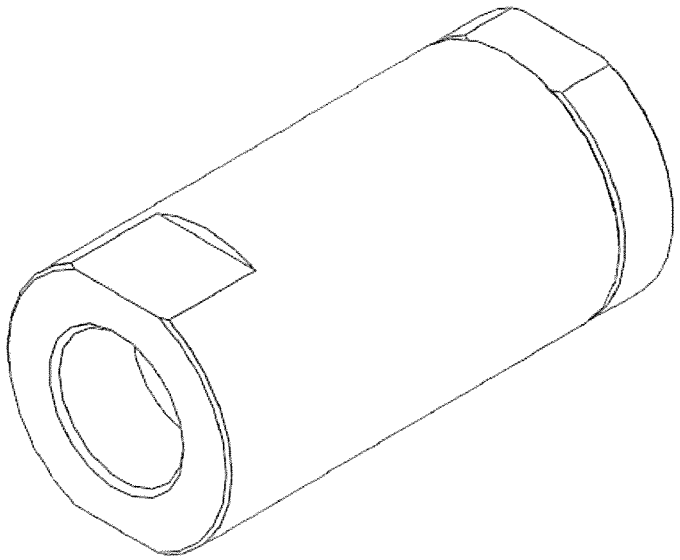
SM－50703－A

CKD

INSTRUCTION MANUAL
CHECK VALVE FOR LIQUIDS
CCH SERIES



- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

Ver.2

CKD Corporation

Safety precautions

When designing and manufacturing a device using CKD products, the manufacturer is obligated to manufacture a safe product by confirming safety of the system comprising the following items:

- Device mechanism
- Pneumatic or water control circuit
- Electric control that controls the above

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 someone having sufficient knowledge and experience.**

2. **Use this product within its specifications.**
   Consult with CKD for details when using the product beyond the unique specification range, outdoors, or in the following conditions or environment: Additionally, the product must not be modified or machined.
   ① Use for special applications requiring safety including nuclear energy, railroad, aviation, ship, vehicle, medical equipment, equipment or applications coming into contact with beverage or food, amusement equipment, emergency shutoff circuits, press machine, brake circuits, or for safeguard.
   ② Use for applications where life or assets could be adversely affected, and special safety measures are required.

3. **Observe corporate standards and regulations, etc., related to the safety of device design and control, etc.**
   ISO4414, JIS B 8370 (pneumatic system rules)
   JFPS2008(principles for pneumatic cylinder selection and use)
   Including High Pressure Gas Maintenance Law, Occupational Safety and Sanitation Laws, other safety rules, body standards and regulations, etc.

4. **Do not handle, pipe, or remove devices before confirming safety.**
   ① Inspect and service the machine and devices after confirming safety of the entire system related to this product.
   ② Note that there may be hot or charged sections even after operation is stopped.
   ③ When 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 enough attention to possible water leakage and leakage of electricity.
   ④ When 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 on the pages below to prevent accidents.**

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

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

⚠ WARNING : When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

⚠ 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. In any case, important information that must be observed is explained.

Precautions with regard to guarantee

● Guarantee period

The guarantee period of our product shall be one (1) year after it is delivered to the place specified by the customer.

● Guarantee coverage

If any failure for which CKD CORPORATION is recognized to be responsible occurs within the above warranty period, a substitute or necessary replacement parts shall be provided free of charge, or the product shall be repaired free of charge at the plant of CKD CORPORATION.

However, the guarantee excludes following cases:

① Defects resulting from operation under conditions beyond those stated in the catalogue or specifications.
② Failure resulting from malfunction of the equipment and/or machine manufactured by other companies.
③ Failure resulting from wrong use of the product.
④ Failure resulting from modification or repairing that CKD CORPORATION is not involved in.
⑤ Failure resulting from causes that could not be foreseen by the technology available at the time of delivery.
⑥ Failure resulting from disaster that CKD is not responsible of.

Guarantee stated here covers only the delivered products. Any other damage resulting from failure of the delivered products is not covered by this guarantee.

● Confirmation of product compatibility

Our customer shall be responsible of confirming compatibility of our product used in our customer's system, machinery or device.

〔 Contents 〕

1. Unpacking

⚠ CAUTION	Do not remove the packing bag until just before piping work. Otherwise, foreign matter enters from the port and cause malfunction or bad operation.

(1) Check that the model No. shown on the face plate of the product agrees with that you ordered.
(2) Check that the product has no external damages.
(3) When storing the product, keep the product inside the packing box to prevent the intrusion of foreign matter to the valve. Take out the valve when piping.

2. Installation

⚠ WARNING	Contact CKD if the product is to be used beyond specifications, or in special applications.

2.1 Conditions for installation

⚠ WARNING	a) Do not use this product in an environment in which corrosive gases could encroach the configuration materials. b) Install this product at a place not subject to vibration. c) Avoid humid environments, since condensation may occur with change in temperature.

(1) When using the valve in a cold district, an proper provision is required to prevent freezing of the valve.
(2) To use in a flammable gas environment, install the separate explosion proof solenoid valve on the pilot air circuit.
(3) This check valve cannot be used outdoor. It shall be protected by enclosing with a cover or panel.

2.2 Installation method

2.2.1 Installation

⚠ CAUTION	a) Always thoroughly read the Instruction Manual before installing this product. b) Always hold the body when handling or installing the product. c) After installing, check for leak from the pipe and make sure that the product is correctly installed.

(1) The installation posture of the valve is not restricted.

2.2.2 Space for maintenance

・ An adequate space shall be provided around the valve to assure the safety during the maintenance / troubleshooting work.

2.3 Piping method

⚠ CAUTION	a) Before the valve installation, confirm the absence of residual pressure. b) Tighten pipes with appropriate torque to prevent screw slack, air leakage and screw damage. c) Carry out the piping work after checking the JIS symbols stated on the nameplate attached to the main body. If the piping is connected in an incorrect direction, this may cause the customer's equipment to break. d) When performing the piping work, tighten the width across flat part using the tool. Additionally, when disconnecting this product from the pipe, loosen the width across flat of the pipe to be disconnected. e) Do not apply any lateral load to the main body during mounting and after mounting.

(1) Cleaning of piping

- Before piping, flush the inside of the pipe with 0.3MPa air, and remove any foreign matter, metal powder, rust and sealing tape, etc.

(2) Removal of foreign matter

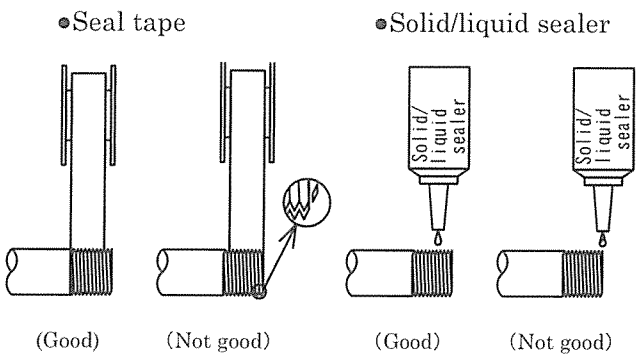
- Any dirt or foreign matter in the fluid can prevent the product from functioning correctly. Install an 80 mesh strainer when passing water, and a 5 μ or less filter when passing air.

(3) Piping

- Before starting the piping work, check the direction of the flow of the fluid, the IN mark, the OUT mark, and the JIS symbol.
  When the pressure is applied in the IN direction, the flow becomes free flow. On the contrary, when the pressure is applied in the OUT direction, the flow is shut out.

(4) Sealer

- The sealer shall be used with great care to prevent it from entering the pipes or leaking out.
- When taping a threaded portion, 1～2 threads at the end of the portion shall be exposed (see Figure 2-1).
- When using liquid sealer, take care not to apply too much sealer. Similarly to the case of taping, threads at the end of the threaded portion shall be exposed.
- Do not apply to the female screw of the apparatus.



(Figure 2.1)

(5) The torque is required for tightening pipes are shown in Table 2-1 for reference.

Table2.1 Recommended torque to tighten pipe

Port size	Recommended torque [N・m]
3/8	31 ～ 33
1/2	41 ～ 43
3/4	62 ～ 65

Fix the width across flat of the body of the piping side by the tool.

3. Pre-operation (post-installation) check

3.1 Appearance check

⚠WARNING	Shut off the fluid flow.(Close the main shut-off valve) Exhaust the fluid remaining in the valve.

(1) Push the check valve with finger to check that the check valve has been fixed to the pipe or mounting hole.

(2) Check that the screws of body and cap have not been loosened.

3.2 Check for leakage

(1) Apply pressure to the fluid to check for leakage at pipe joints.
It is recommended to check for leakage by supplying compressed air of 0.3 to 0.5MPa and applying soap water to the joints. Air bubbles will appear at the leaking joints.

4. Instructions for proper use

4.1 Precautions at use

⚠WARNING	a) Use it under piping and the pressure condition that chattering is not generated. ・ The structure of the check valve generates chattering by the Pressure condition. Confirm chattering is not generated before it uses it. b) Do not use this product for an emergency shut off valve. ・The valves listed in this catalog are not designed as valves to ensure safety such as emergency shut off valves. When using in this type of system, always take separate measures that will absolutely ensure safety. c) Take measures to prevent harm to operators or objects if this product fails. d) Working fluids ・ The check valve is not a product that evaluated adaptability of all the coolant liquids. When a lot of chlorines and sulfur are included, it might influence the product composition material. Select it after confirming adaptability. The liquid without the causticity shows the liquid that doesn't influence mutually even if it touches the product composition material. See section 8 "Internal construction drawings" for the product composition material.

⚠ CAUTION	a) Observe the working pressure range. b) Generally, the valve can be used with a fluid viscosity of up to 500mm²/s. However, the properties may differ according to the fluid type, so consult with CKD.

(1) Do not put any object on the valve.
(2) The working pressure range and temperature range of the fluid and ambient temperature range shall be satisfied.
(3) After it leaves it for a long term, the first cracking pressure might become higher than usual cracking pressure.
(4) Refer to "6. Troubleshooting" if any abnormality occurs.

4.2 Disassembly procedure

⚠ CAUTION	a) Close the main supply valve and stop fluid flow. b) Exhaust the fluid remaining in the valve.

(1) The disassembly shall be performed with reference to section 8 "Internal construction drawings".
(2) Detach piping from the check valve.
(3) Fix the hex-head part of the body. Turn the hex-head part of the cap counterclockwise using the tool.

4.3 Assembly procedure

(1) The assembly shall be performed with reference to section 8 "Internal construction drawings".
(2) Apply grease to O-ring.
※For grease, use Silicon base grease.
(3) Put spring and a main valve plate on the cap. Tighten the body temporarily.
(4) Fix the width across flat part of the body. Turn the width across flat part of the cap clockwise using the tool referring Table 5-1.

Table 5-1 Recommended torque for cap

Model	Recommended torque [N・m]
CCH-10A	70 ～ 90
CCH-15A	100 ～ 120
CCH-20A	200 ～ 245

(5) Supply fluids and check its leakage.

5. Maintenance

5.1 Maintenance and inspection

(1) Always read the instruction manual thoroughly before starting maintenance to ensure correct operations.

(2) In order to use this product in the best condition, usually perform a scheduled inspection every half a year.

(3) Always carry out trial run before operation if the product was not used for more than a month.

(4) Refer to "3. Pre-operation check " for the contents of inspection.

5.2 Service parts

(1) O-ring, main valve plate

Replace it with new one if fluid leaks or another abnormal condition is observed.

As a guideline, replace it every one million cycles.

6. Troubleshooting

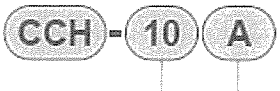
(1) If the check valve does not function as specified, check it according to following Table.

Symptom	Cause	Action
The fluid flows though the fluid is thrown in the direction of the interception.	Adhesion of the foreign particle to a valve seat.	Flush the interiors to remove foreign particle.
The fluid leaks to the outside.	When disconnecting this product from the pipe, the width across flat part on the side opposite to the pipe to be disconnected is loosened, causing the cap to become loose.	Fix either width across flat part, turn the other width across flat part clockwise using the tool, and close the cap.
Flux does not flow	The piping is connected reversely.	Check the JIS symbol stated on the nameplate attached to the product and perform the piping again.

(2) If further information is required, consult us or the nearest agency.

7. Product specification and model number display method

7.1 Meaning of the model No



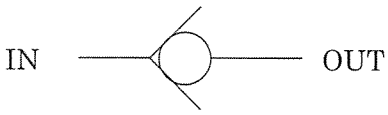
Ⓐ Port size

Ⓐ Port size	
10	3/8
15	1/2
20	3/4

Ⓑ Type of thread

Ⓑ Type of thread	
A	Rc
G	G
N	NPT

JIS Symbol

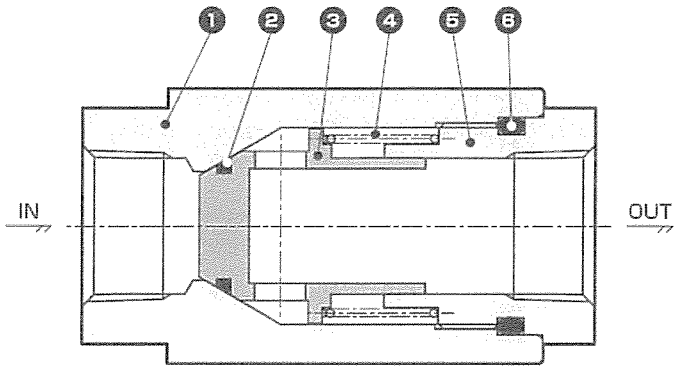


7.2 Specifications

Descriptions	CCH-10A	CCH-15A	CCH-20A
Working fluid	Coolant liquid or water or other non-corrosion liquids (*1)		
Fluid viscosity (mm^2/s)	500 or less		
Max. working pressure MPa	7.0		
Proof pressure (for water pressure) MPa	14.0		
Fluid temperature °C	-10 to 60 (no freezing)		
Ambient temperature °C	-10 to 60		
Cracking pressure kPa	5 (reference value) (*2)		
Valve base leak cm^3/min	1.0 or less (water)		
Cv	3.6	6.9	11.0
Weight kg	0.27	0.44	0.88
Mounting orientation	Free		

*1 Fluid that does not affect carbon steel (nickel plating), stainless steel, brass (chrome plated) or fluoro rubber.
*2 It may be higher depending on the type and viscosity of the fluid.
If the product is not used for a long period of time, the initial cracking pressure may be higher than the regular cracking pressure.

8. Internal construction drawings



No.	Parts name	Material	
1	Body	SUS303	Stainless steel
2	O-ring	FKM	Fluoro rubber
3	Main valve	SUS303 (plated)	Stainless steel (plated)
4	Spring	SUS304	Stainless steel
5	Cap	SUS303	Stainless steel
6	O-ring	FKM	Fluoro rubber