CKD

New Products

Check Valve (Nozzle)
CCN Series

CKD Corporation

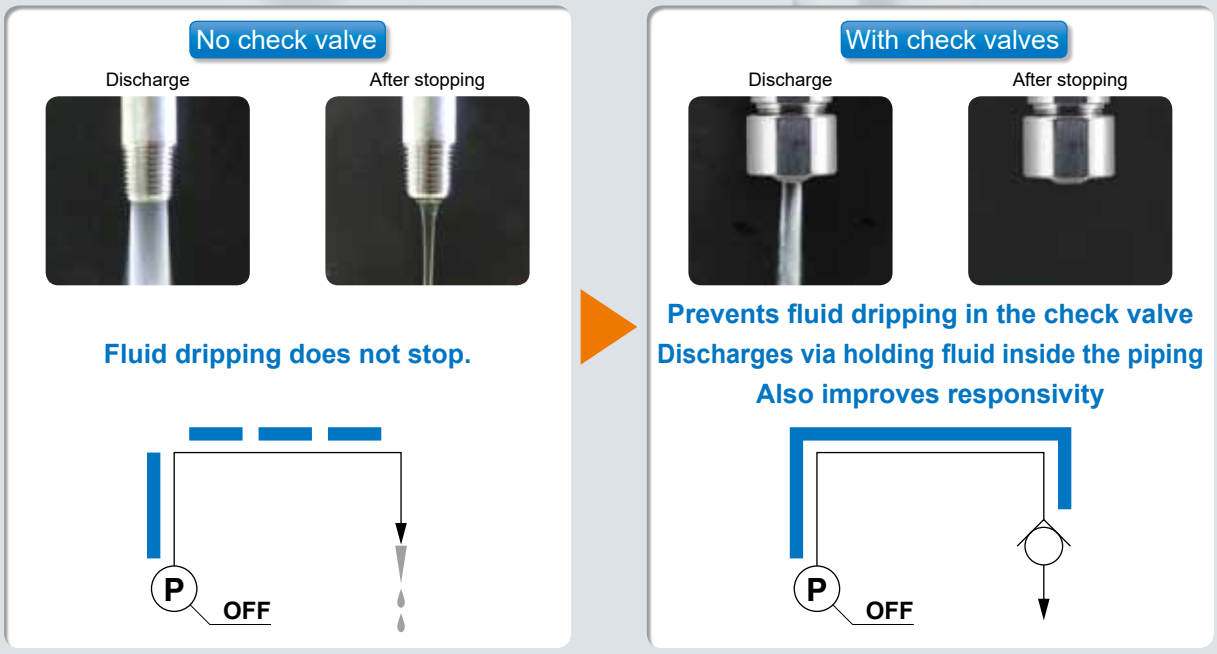
CC-1440A

The check valves that expand applications.

Contributes to improved workability and tact time. For coolants and wash water.

Improved workability

Stops precisely and continues to the next process smoothly, contributing to improved workability and tact time.



Example of applications

Nozzle for machine tool coolants

- Prevents fluid dripping from leading to incorrect detections of the cutting tool breakage sensor
- Improves discharge responsivity

Cleaning equipment

- Fluid dripping prevention protects workpieces

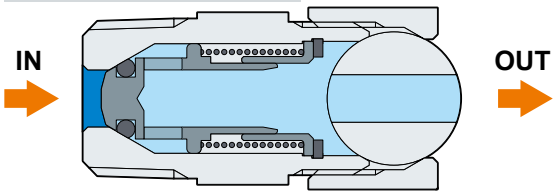
NOZZLE TYPE CHECK VALVE CCN SERIES

Resistant to foreign matter

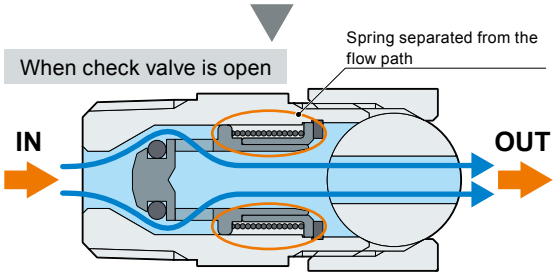
The spring and main valving element are not in the flow path while the coolant is passing, and thus problems due to catching foreign matter and clogging are minimized.

Flow path structure diagram

When check valve is closed

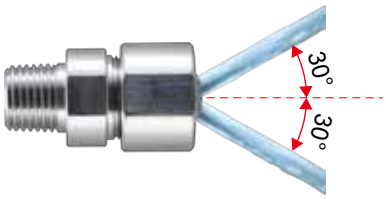


When check valve is open



Injection direction adjustment function

The direction of the discharge outlet is easily adjustable.

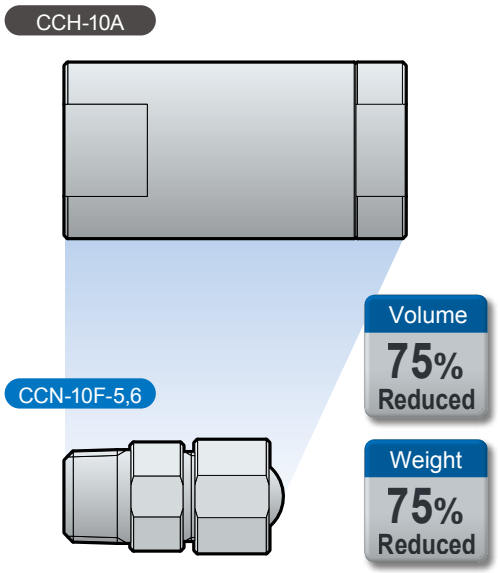


A wide range of connection options

Male and female threads now available for connection. The thread can be freely selected to match the necessary situation.

Compact and space saving

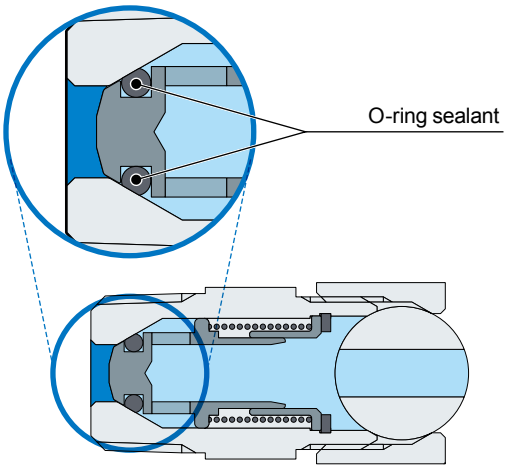
The integrated nozzle makes for a compact design.



Long service life

Due to the O-ring sealant and metal touch structure, we have realized long-lasting internal sealing performance.

Sealing mechanism



Corrosion-resistant material

Can be used in a variety of situations, such as water cooling of laser processing machines and cleaning equipment. They exhibit the same reliability demonstrated for liquid coolant applications due to the metal parts being all stainless steel.

Check valve (nozzle)

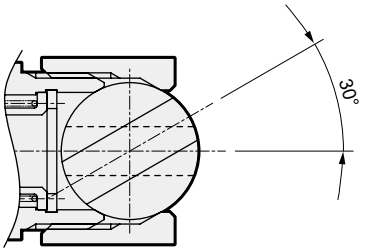
CCN Series

● Working pressure: 0.05 to 1.0 MPa

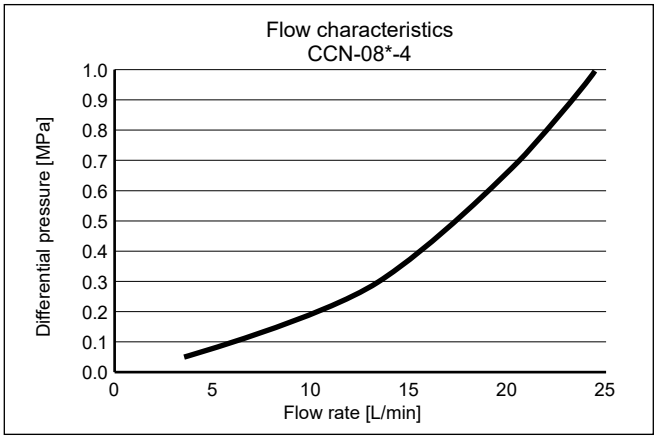
Specifications

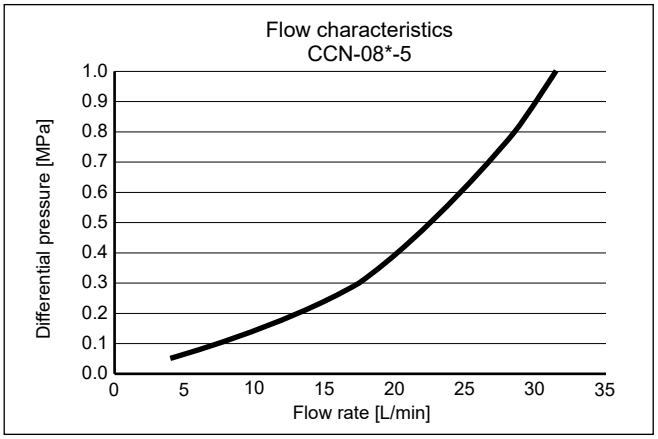
Descriptions		CCN	
Working fluid		Coolant/water/other non-corrosive liquids (*1)	
Fluid viscosity	mm^2/s	500 or less	
Max. working pressure	MPa	1.0	
Proof pressure (water)	MPa	2.0	
Fluid temperature	°C	−10 to 60 (no freezing)	
Ambient temperature	°C	−10 to 60	
Cracking pressure	kPa	25 (reference value) (*2)	
Closing pressure	kPa	10 (water head: 1 m)	
Port size		R1/4, G1/4, 1/4NPT	R3/8, G3/8, 3/8NPT
Weight	kg	0.05	0.06
Orifice size	mm	5	6
Mounting orientation		Unrestricted (*3)	

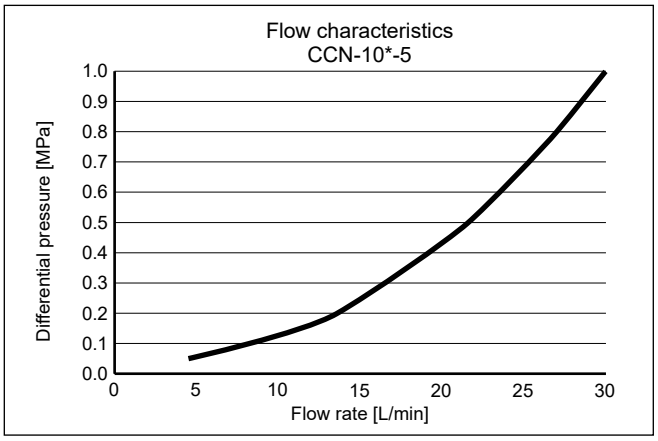
*1: Liquid that does not affect stainless steel (chrome plating) or fluoro rubber.
*2: Cracking pressure refers to the pressure at which a flow of 5 mL/min (AIR) is found.
The value may increase depending on the type and viscosity of the liquid. When the valve is used for the first time after being unused for long periods, the initial cracking pressure may be higher than normal.
*3: The nozzle can be adjusted up to 30°. (OUT side port size: when 4, 5, or 6 is selected)

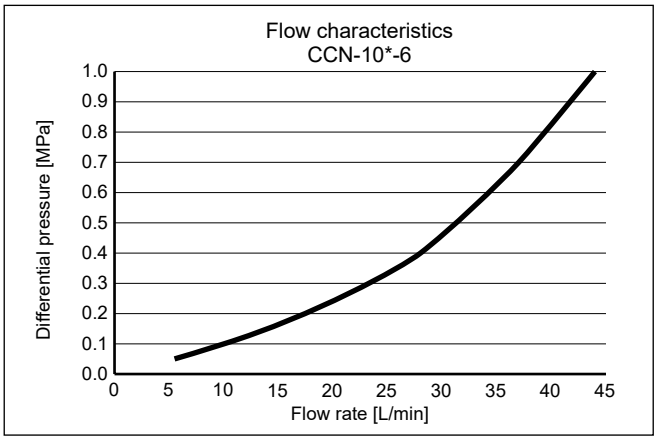


Flow characteristics









* Reference value based CKD test conditions.
Note that the flow characteristics change according to the piping conditions.

How to order

CCN - 08F - 4

Ⓐ IN side port size

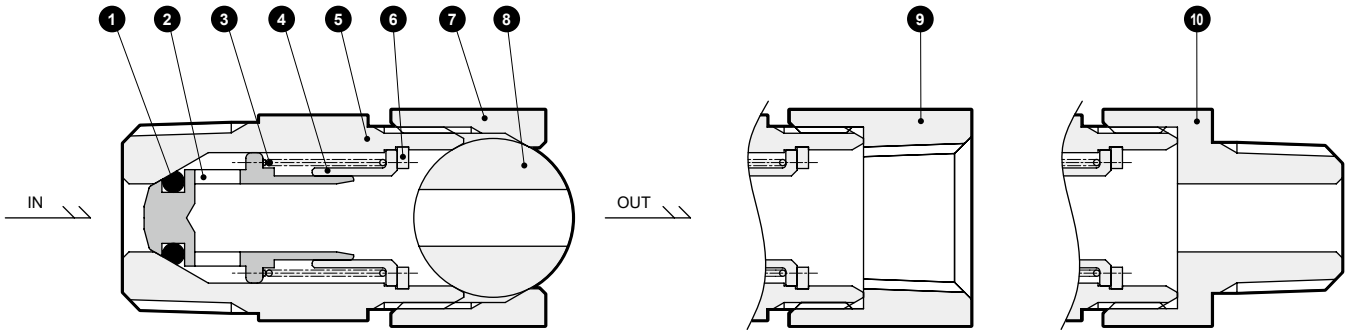
Ⓑ OUT side port size

Code	Content
Ⓐ IN side port size	
08F	R1/4
10F	R3/8
08G	G1/4 (male thread)
10G	G3/8 (male thread)
08H	1/4NPT (male thread)
10H	3/8NPT (male thread)

ⒷOUT side port size

		08F	10F	08G	10G	08H	10H
4	ø4	●		●		●	
5	ø5	●	●	●	●	●	●
6	ø6		●		●		●
A	Rc1/4	●	●				
B	R1/4	●	●				
C	G1/4 (female thread)			●	●		
D	G1/4 (male thread)			●	●		
E	1/4NPT (female thread)					●	●
F	1/4NPT (male thread)					●	●

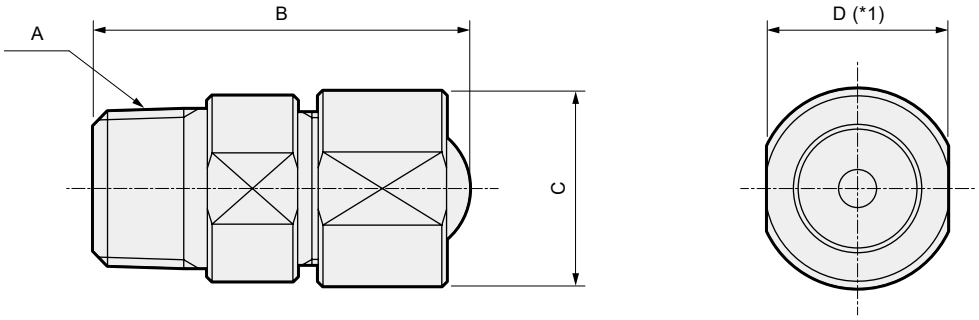
Internal structure and parts list



No.	Part name	Material	
1	O-ring	FKM	Fluoro rubber
2	Main Valve body	SUS303	Stainless steel (chrome plating)
3	Spring	SUS304	Stainless steel
4	Valve holder	SUS303	Stainless steel
5	Body	SUS303	Stainless steel
6	C-snap ring	SUS304	Stainless steel
7	Cover	SUS303	Stainless steel
8	Nozzle	SUS303	Stainless steel
9	Cover (female thread)	SUS303	Stainless steel
10	Cover (male thread)	SUS303	Stainless steel

Dimensions

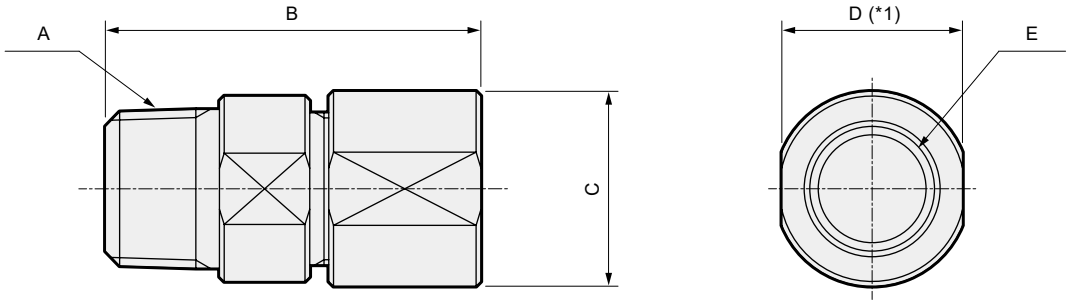
● CCN-08F/08H/10F/10H-4/5/6



Model No.	A	B	C	D (*1)
CCN-08F-4/5	R1/4	36.5	ø20.5	17
CCN-10F-5/6	R3/8	39.5	ø20.5	18
CCN-08H-4/5	1/4NPT (male thread)	37.5	ø20.5	17
CCN-10H-5/6	3/8NPT (male thread)	41	ø20.5	18

*1: The body side dimensions are tang dimensions.

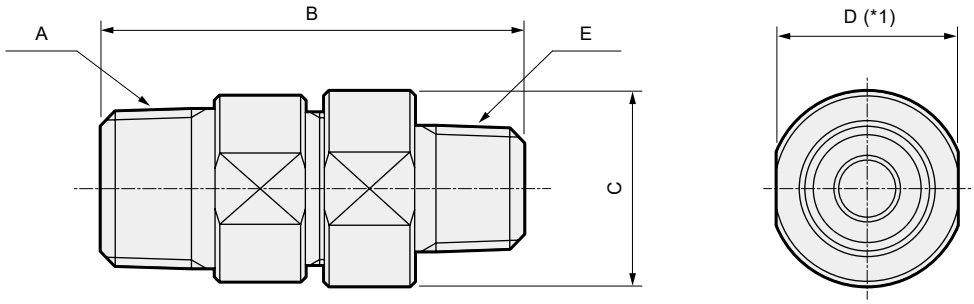
● CCN-08F/08H/10F/10H-A/E



Model No.	A	B	C	D (*1)	E
CCN-08F-A	R1/4	36.5	ø20.5	17	Rc1/4
CCN-10F-A	R3/8	39.5	ø20.5	18	Rc1/4
CCN-08H-E	1/4NPT (male thread)	39	ø20.5	17	1/4NPT (female thread)
CCN-10H-E	3/8NPT (male thread)	42.5	ø20.5	18	1/4NPT (female thread)

*1: The body side dimensions are tang dimensions.

● CCN-08F/08H/10F/10H-B/F

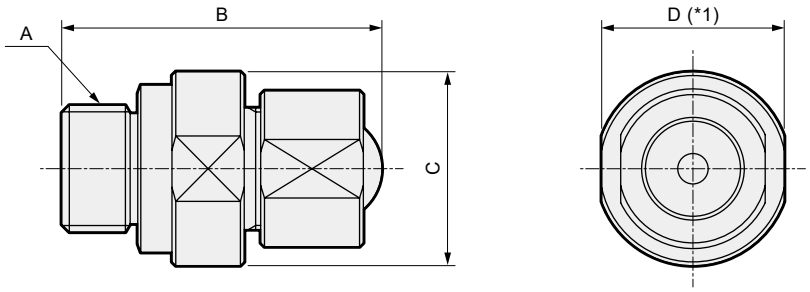


Model No.	A	B	C	D (*1)	E
CCN-08F-B	R1/4	41.5	ø20.5	17	R1/4
CCN-10F-B	R3/8	44.5	ø20.5	18	R1/4
CCN-08H-F	1/4NPT (male thread)	43.5	ø20.5	17	1/4NPT (male thread)
CCN-10H-F	3/8NPT (male thread)	47	ø20.5	18	1/4NPT (male thread)

*1: The body side dimensions are tang dimensions.

Dimensions

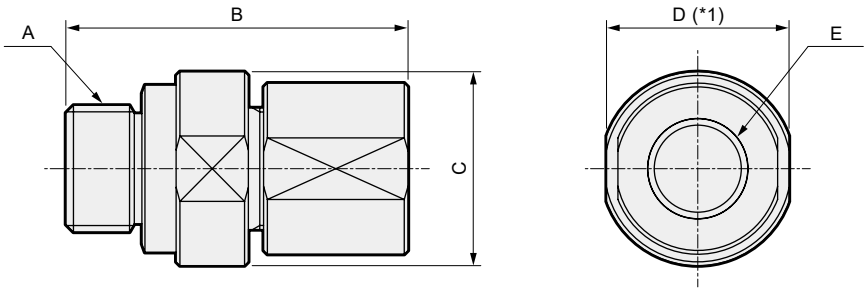
● CCN-08G/10G-4/5/6



Model No.	A	B	C	D (*1)
CCN-08G-4/5	G1/4 (male thread)	40	ø20.5	19
CCN-10G-5/6	G3/8 (male thread)	42	ø25.5	24

*1: The body side dimensions are tang dimensions.

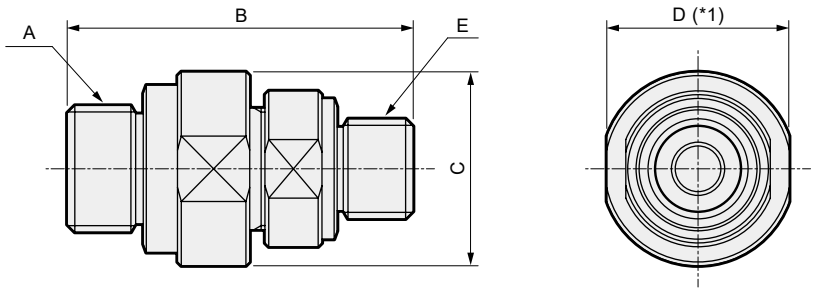
● CCN-08G/10G-C



Model No.	A	B	C	D (*1)	E
CCN-08G-C	G1/4 (male thread)	43	ø20.5	19	G1/4 (female thread)
CCN-10G-C	G3/8 (male thread)	45	ø25.5	24	G1/4 (female thread)

*1: The body side dimensions are tang dimensions.

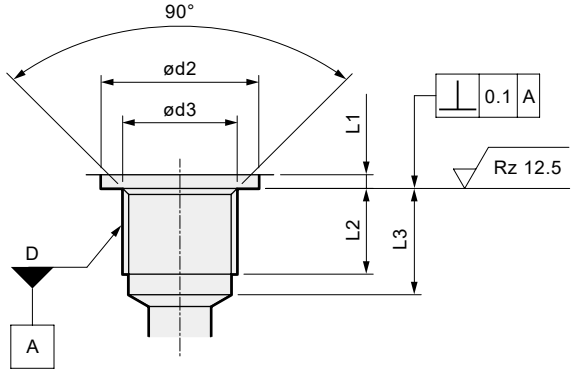
● CCN-08G/10G-D



Model No.	A	B	C	D (*1)	E
CCN-08G-D	G1/4 (male thread)	43.5	ø20.5	19	G1/4 (male thread)
CCN-10G-D	G3/8 (male thread)	45.5	ø25.5	24	G1/4 (male thread)

*1: The body side dimensions are tang dimensions.

<G screw rsecommended female screw dimension>



Thread nominal D	d2 (min.)	d3		L1 (max.)	L2 (min.)	L3 (min.)
		Reference	Tolerance			
G1/4	20	13.2	+0.2 0	1.5	12.5	15.5
G3/8	23	16.7		2		

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 CKD products appropriately to ensure their safe usage.
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 as a general-purpose industrial device or part. It is not intended for use outdoors or for use under the following conditions or environment. (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.)

❶ Use 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.
❷ Use 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 (General rules for pneumatic systems)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including High Pressure Gas Safety Act, Occupational Safety and Health Act, other safety rules, organization standards and regulations, etc.

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

❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ 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 attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety is secured, such as through pop-out prevention measures.

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:	If handled incorrectly, an imminently dangerous situation may occur, resulting in death or serious injury.
WARNING:	If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.
CAUTION:	If handled incorrectly, a dangerous situation may occur, resulting in minor injury or property damage only.

Note that some items indicated with "CAUTION" may lead to serious results depending on the conditions.
All items contain important information and must be observed.

Limited warranty and disclaimer

1 Warranty period

This warranty is valid for one (1) 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.
Note that the following faults are excluded from the warranty scope:
(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.

Fluid Control Components: Warnings and Cautions

Be sure to read this section before use.

Check valve (nozzle) CCN Series

When using the product

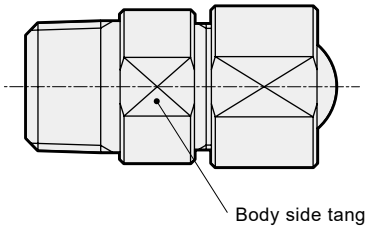
● If the product is used at a low flow rate, differential pressure will be insufficient and chattering may occur. In this case, take measures such as increasing the flow rate.

● Adjust the nozzle as desired.
Be careful to avoid tightening the cover too much after adjustment.

[Tightening torque for the cover after nozzle adjustment]

Appropriate tightening torque (N·m)
1.3 to 1.5

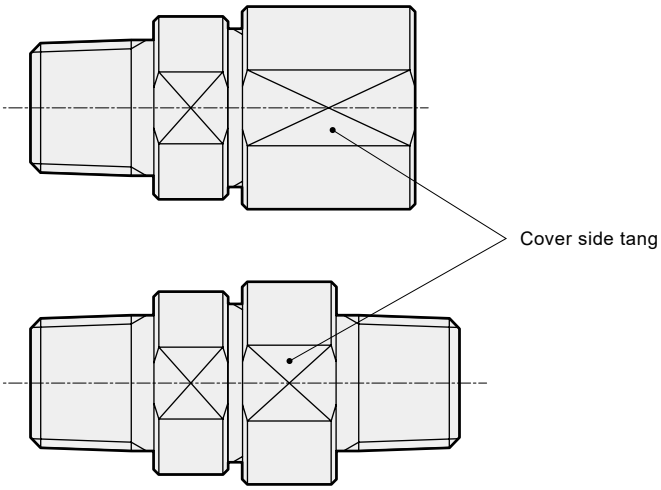
● Use the tang of the body side for tightening when piping the product.



[Piping tightening torque]

Piping nominal diameter	Recommended piping tightening torque (N·m)
R1/4, G1/4, 1/4NPT	6 to 8
R3/8, G3/8, 3/8NPT	13 to 15

● When using the female or male thread of the cover, use the tang of the cover side for tightening.



[Piping tightening torque]

Piping nominal diameter	Recommended piping tightening torque (N·m)
Rc1/4, R1/4, G1/4, 1/4NPT	6 to 8

● Consult with CKD when using inline.

Related products

Check valve (for fluids)

CCH Series

● Working pressure: 0.05 to 7.0 MPa

RoHS

JIS symbol

Specifications

Descriptions		CCH-10	CCH-15	CCH-20
Working fluid		Coolant/water/other non-corrosive liquids (*1)		
Fluid viscosity	mm^2/s	500 or less		
Max. working pressure	MPa	7.0		
Proof pressure (water)	MPa	14.0		
Fluid temperature	°C	−10 to 60 (no freezing)		
Ambient temperature	°C	−10 to 60		
Cracking pressure	kPa	6 (reference value) (*2)		
Valve seat leakage	cm^3/min	1.0 or less (water pressure)		
Port size		Rc3/8	Rc1/2	Rc3/4
Cv		3.6	6.9	11.0
Weight	kg	0.27	0.44	0.88
Mounting orientation		Unrestricted		

*1: Liquid that does not affect stainless steel (chrome plating) or fluoro rubber.
*2: Cracking pressure refers to the pressure at which a flow of 5 mL/min (AIR) is found.
The value may increase depending on the type and viscosity of the liquid.
When the valve is used for the first time after being unused for long periods, the initial cracking pressure may be higher than normal.

How to order

CCH - 10 A

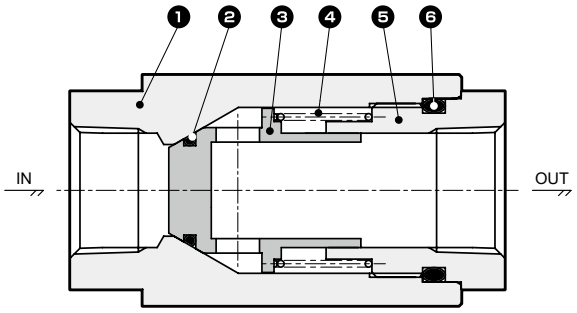
Ⓐ Port size

Ⓐ Port size	
10	3/8
15	1/2
20	3/4

Ⓑ Thread

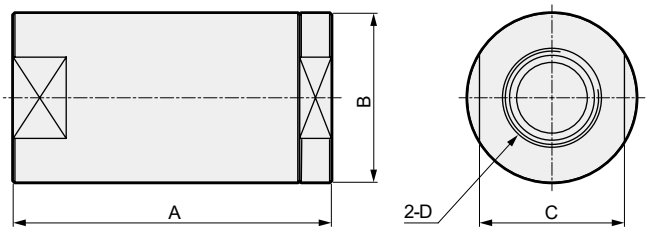
Ⓑ Thread	
A	Rc Thread
G	G Thread
N	NPT Thread

Internal structure and parts list



No.	Part name	Material	
1	Body	SUS303	Stainless steel
2	O-ring	FKM	Fluoro rubber
3	Main Valve body	SUS303	Stainless steel (chrome plating)
4	Spring	SUS304	Stainless steel
5	Cap	SUS303	Stainless steel
6	O-ring	FKM	Fluoro rubber

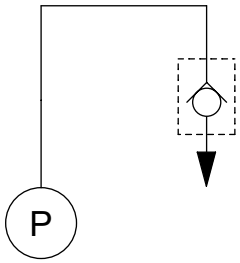
Dimensions



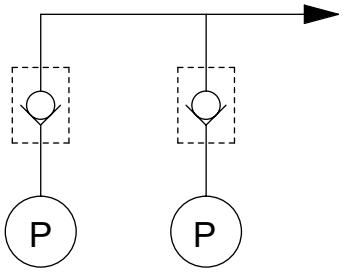
Model No.	A	B	C	D
CCH-10A/G/N	62	ø32	27	Rc3/8, G3/8, 3/8NPT
CCH-15A/G/N	75	ø38	34	Rc1/2, G1/2, 1/2NPT
CCH-20A/G/N	90	ø48	41	Rc3/4, G3/4, 3/4NPT

Example of usage circuit

● Coolant control of machine tools
Improves discharge responsivity and prevents fluid dripping



● Reverse flow prevention of 2 fluid control
Prevents reverse flow of multiple pressures and multiple fluids in merged circuits



⚠ WARNING

■ Design/selection

● Working fluids

① Compatibility has not been evaluated with all coolants. Particularly, if coolant contains high levels of chlorine or sulfur, materials used at wetted parts could be adversely affected. Non-corrosive fluids refer to fluids that are mutually unaffected when they contact the valve's wetted part materials.
Wetted part materials: stainless steel, chrome plating, fluoro rubber

② Internal parts may wear when the check valve operates. Caution is required because wear chips could enter the secondary side of the check valve.

● Quality of fluid
Iron rust and debris in the fluid can cause operation faults or leaks and deteriorate product performance.

● Fluid temperature
Be sure to use the coolant check valve within the specified fluid temperature range.

⚠ CAUTION

■ When using the product

● Check the IN and OUT directions before piping.

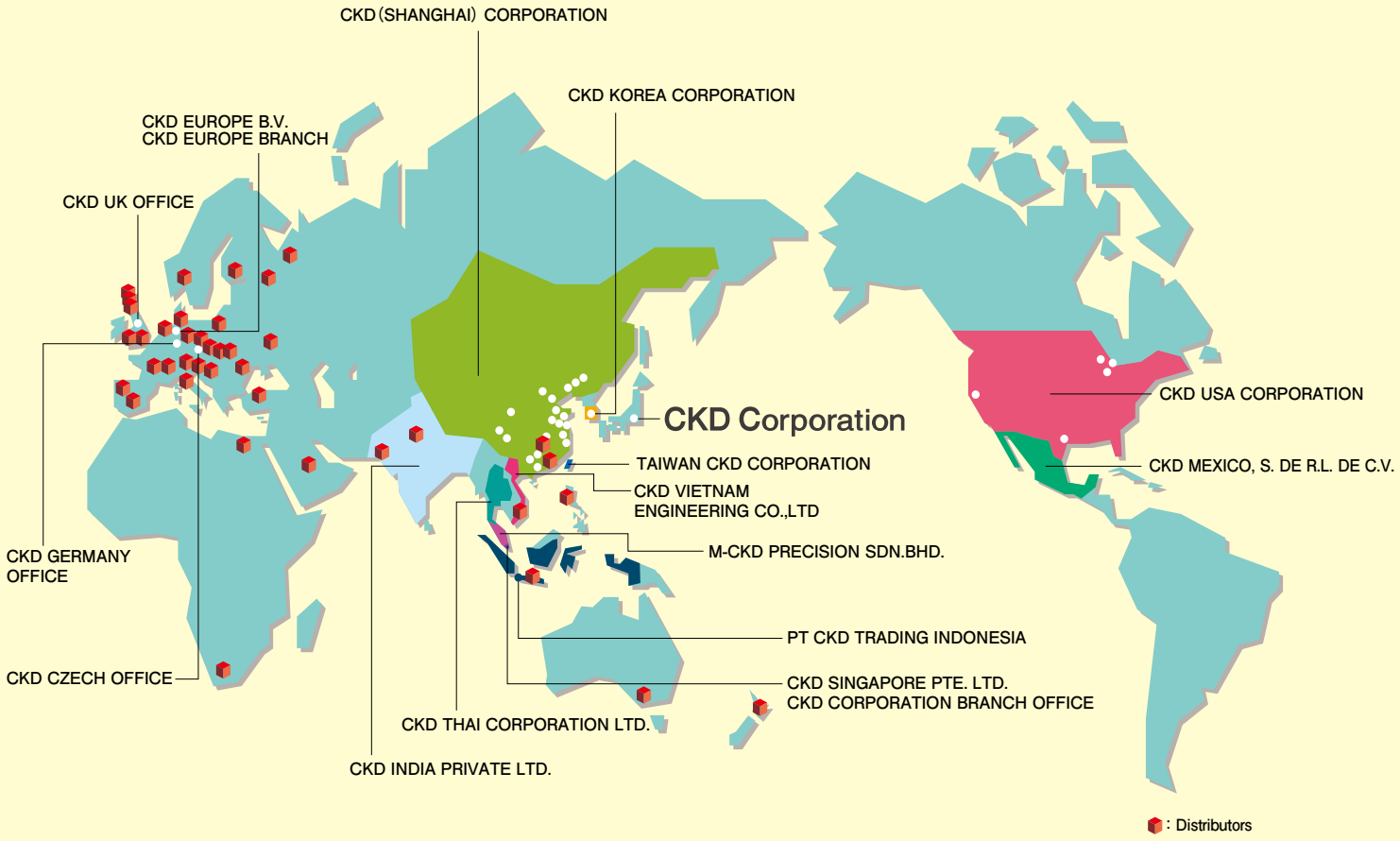
● If the product is used at a low flow rate, differential pressure will be insufficient and chattering may occur. In this case, take measures such as increasing the flow rate.

● Refer to the table below for the piping tightening torque.

[Piping tightening torque]

Piping nominal diameter	Recommended piping tightening torque (N·m)
Rc3/8	31 to 33
Rc1/2	41 to 43
Rc3/4	62 to 65

WORLD-NETWORK



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