CKD

New Products

New Products

Air-Operated Valve for Chemical Liquids LMD Series

AIR-OPERATED VALVE FOR CHEMICAL LIQUIDS

CKD Corporation

CC-1103A 1

RoHS

New series for the lineup of chemical liquid valves

Light LMD Series has arrived!

High quality and high performance

AMD Series

Easy to use with appropriate quality

LMD Series

Screw-in Type Resin Valve

LAD Series

Air-Operated Valve for Chemical Liquids

LMD Series

Orifice size 6 models

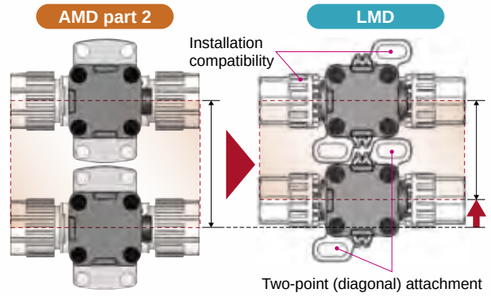
- 6 sizes (ø4, 6.3, 8, 10, 16, 20).
- 9 types of connection diameters: 1/4", 3/8", 1/2", 3/4", 1", ø6 mm, ø10 mm, ø12 mm, ø25 mm.

New type flared tube fitting

* For the new flare-type fitting, contact CKD.

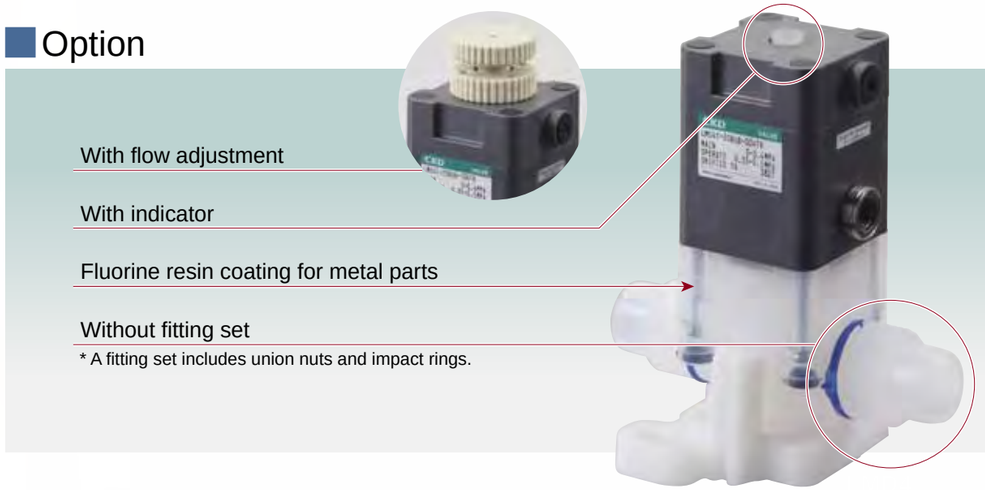
Installation method

- Two-point fixed bracket to provide installation dimensions that are compatible with AMD Series
- Like the popular AMD part 3, the shape of the bracket is designed to provide space saving installation.



* For: LMD3$\frac{1}{2}_{3}$, LMD4$\frac{1}{2}_{3}$, LMD5$\frac{1}{2}_{3}$

Option



* A fitting set includes union nuts and impact rings.

Size variation

Tube connection	1/4″	3/8″	1/2″	3/4″	1″
	6 mm	10 mm	12 mm		25 mm
New LMD0	●				
LMD3		●	●		
LMD4				●	
LMD5					●

Air-Operated Valve for Chemical Liquids

LMD*[1,2,3] Series

● Orifice: ø4, ø6.3, ø8, ø10, ø16, ø20

RoHS

Subject to Export Trade Control Ordinances

* For those with Orifice ø16 and ø20

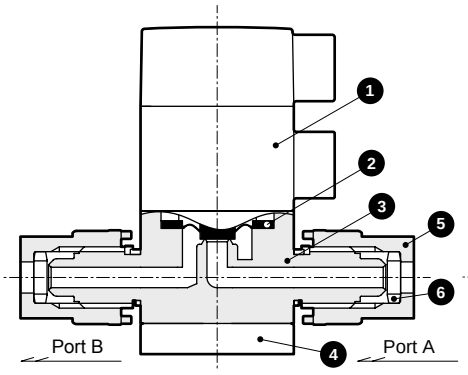
Specifications

Descriptions		LMD0[1,2,3]	LMD3[1,2,3]			LMD4[1,2,3]	LMD5[1,2,3]
Working fluid		Chemical liquids, pure water, air, N_2 gas (Note 1)					
Fluid temperature °C		5 to 60°C					
Proof pressure MPa		0.8					
Working pressure (A→B) MPa		See the figure “Working pressure” (below)					
Working pressure (B→A) MPa		See the figure “Working pressure” (below)					
Valve seat leakage cm^3/min		0 (under water pressure)					
Ambient temperature °C		0 to 60					
Frequency		30 times/min or less				20 times/min or less	
Mounting orientation		Free					
Connection		FIT-ONE fitting made by BUENO TECHNOLOGY CO., LTD.					
		1/4″ × 5/32″ ø6 × ø4	3/8″ × 1/4″	ø10 × ø8	1/2″ × 3/8″ ø12 × ø10	3/4″ × 5/8″	1″ × 7/8″ ø25 × ø22
Orifice size		ø4	ø6.3	ø8	ø10	ø16	ø20
Cv		0.32	0.8	1.25	1.8	5.0	8.0
Operation section	Operating pressure MPa	NC 0.35 to 0.5, NO 0.4 to 0.5, double acting 0.35 to 0.4					
	Operation pressure connection port	Rc1/8 (used operation port NC: port Y NO: port X double acting: ports X and Y)					

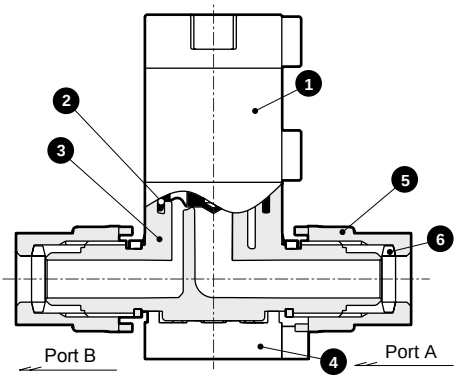
Note 1: Check compatibility between the material of each component and the working environment of the working fluid. (Refer to page 12 of the compatibility check list.)
Note 2: Refer to page 6 for flow characteristics.
Note 3: The Cv shown is the one at 23°C.

Internal structure and parts list

LMD0[1,2,3]



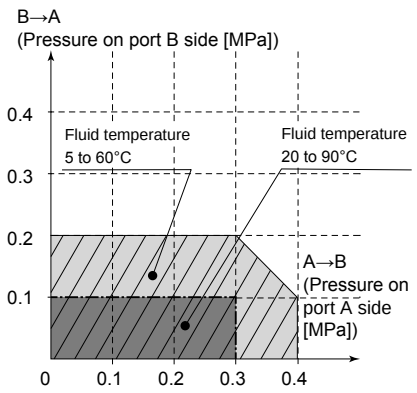
LMD3[1,2,3], LMD4[1,2,3], and LMD5[1,2,3]



No.	Parts name	Material
1	Actuator	PPS, etc.
2	Diaphragm	PTFE
3	Body	PFA
4	Mounting plate	PP
5	Union nut	PFA
6	Impact ring	PVDF

No.	Parts name	Material
1	Actuator	PPS, etc.
2	Diaphragm	PTFE
3	Body	PFA
4	Mounting plate	PP
5	Union nut	PFA
6	Impact ring	PVDF

Working pressure



How to order

LMD0 1 6UB 00 C 4 T F
LMD3 1 - 10UB - 00 C 4 T R (Note 1)
LMD4
LMD5

- R (Note 1): With stiffening ring
- F: Type of mounting plate
- T: Option for fitting set
- 4: Operation port direction
- C: Option for actuator
- 00: Model no.
- 10UB: Connection
- 1: Actuation

Ⓐ Actuation	
1	NC (Normally closed)
2	NO (Normally open)
3	Double acting

Model no.	LMD0	LMD3					LMD4	LMD5	
Ⓑ Connection	FIT-ONE fitting integrated type								
	6UB	8BUB	10BUB	10UB	12UB	15BUB	20BUB	25UB	25BUB
	ø6 × ø4 tube connection	1/4" × 5/32" tube connection	3/8" × 1/4" tube connection	ø10 × ø8 tube connection	ø12 × ø10 tube connection	1/2" × 3/8" tube connection	3/4" × 5/8" tube connection	ø25 × ø22 tube connection	1" × 7/8" tube connection

Symbol	Descriptions \ Orifice	ø4	ø6.3	ø8	ø10	ø16	ø20
Ⓒ Option for actuator							
Blank	ON • OFF Only	●			●		
00	With indicator	●			●		
10	With flow rate adjustment	●			●		
Ⓓ Option for metal coating (Note 3)							
Blank	Not coated	●			●		
C	Coated	●			●		
Ⓔ Operation port direction (Note 4)							
4	In the overhead view, ← indicates the fluid flow direction, ⇦ the operation port direction.	●			●		
1		●			●		
2		●			●		
3		●			●		
Ⓕ Option for fitting set (Note 5)							
Blank	With fitting set	●			●		
T	Without fitting set	●			●		

Ⓖ Type of mounting plate (Note 6)			
F	Flange type	●	
×	Bottom surface installation type	●	

⚠ Note on model no. selection

Note 1: Precautions for operation port, stiffening ring and piping
Stiffening ring can be omitted by leaving this section blank. However, metal and PPS fittings should not be used.
Piping on an operation port may cause a crack of the port or damage on the screw. Keep the tightening force within 0.4 to 0.6 N·m.

Note 2: "LMD0" does not support the stiffening ring.
For undiluted hydrochloric acid or hydrofluoric acid, use the AMD series because they are especially dangerous.

Note 3: If working fluid is corrosive fluid, select the metal coating option "Coated".
For undiluted hydrochloric acid or hydrofluoric acid, use the AMD series which is suitable for those liquid, because they are especially dangerous.

Note 4: Refer to "Dimensions" for the operation port direction.

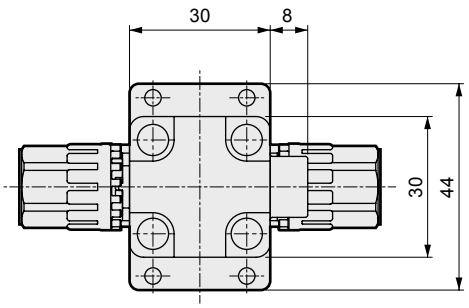
Note 5: If "Without fitting set" is selected, a union nut and impact ring are attached. Please purchase the item individually.

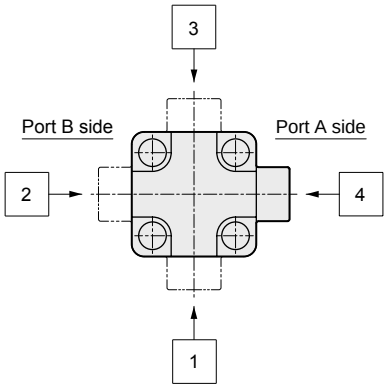
Note 6: Only "LMD0" is available for mounting plate selection.

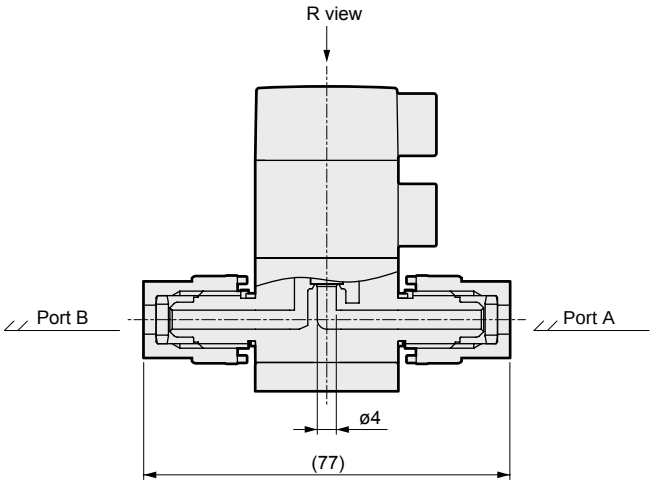
Dimensions

● Blank ON/OFF only, LMD0*-*-*4*F flange installation

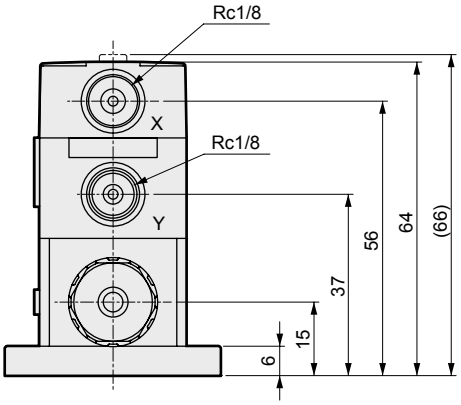
• LMD0[1/3]



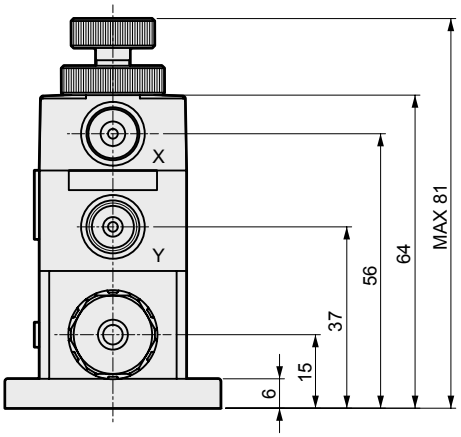


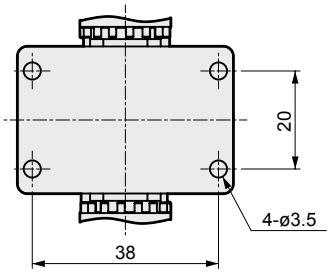


● 00 With indicator: LMD0*-*-00*4*F flange installation

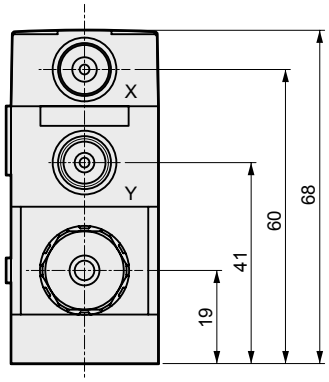


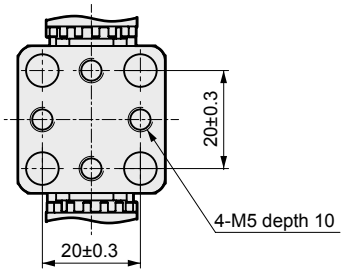
● 10 With flow rate control: LMD0*-*-10*4*F flange installation





● LMD0*-*-*4*X Bottom surface installation



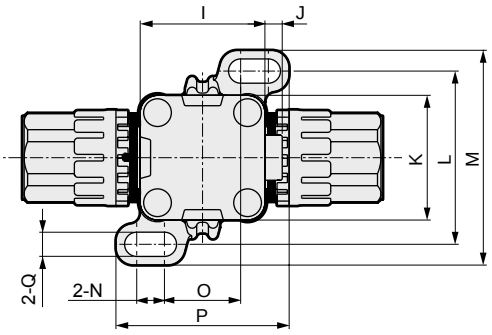


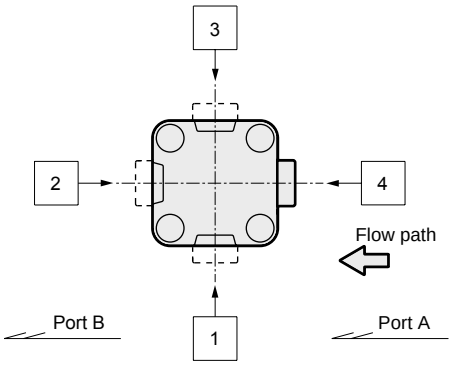
* For "Bottom surface installation", total height will be higher than "flange installation" by 4mm.

Dimensions

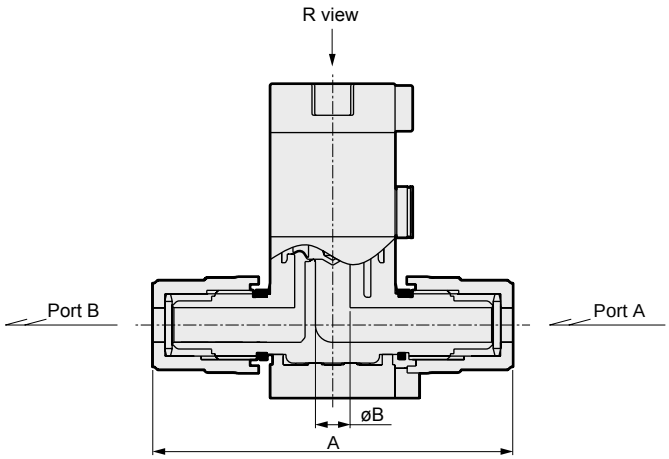
● Blank ON • OFF Only, LMD**-*-*4*R

LMD3$^{1}_{3}$, LMD4$^{1}_{3}$

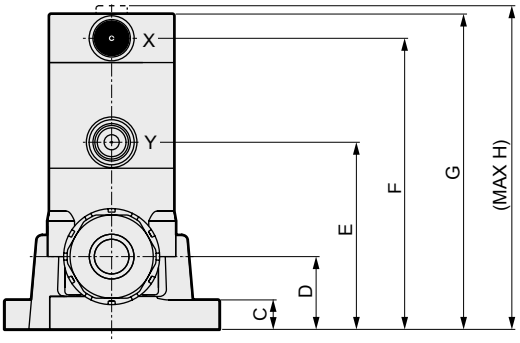




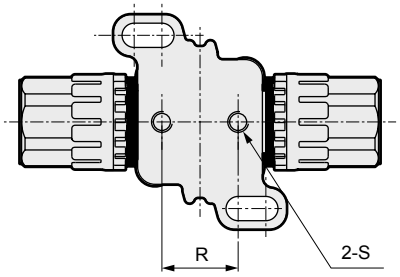
Operation port direction (R view)

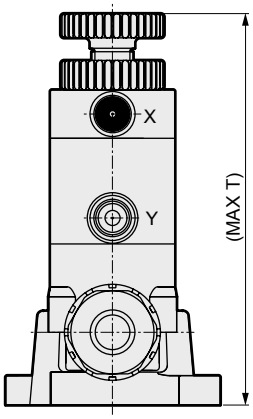


● 00 With indicator: LMD**-*-00*4*R



● 10 With flow rate adjustment: LMD**-*-10*4*R



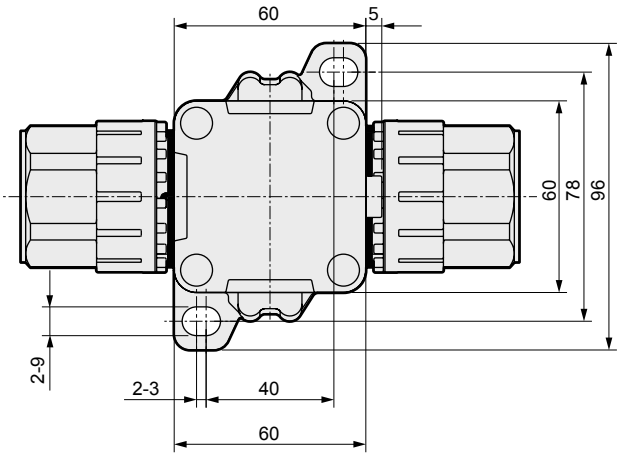


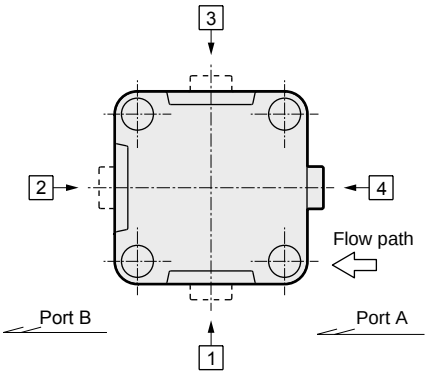
Model	Connected model number	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
LMD3	10BUB	94	6.3	8.5	21	54	84	91	94	37	4.5	37	50	62	8	22	50	7	22±0.3	M6 depth 9	116
	10UB		8																		
	12UB	104	10																		
	15BUB																				
LMD4	20BUB	129	16	9	27	73	110	119	123	46	5	46	64	82	11	28	66	9	28±0.3	M8 depth 10	143

Dimensions

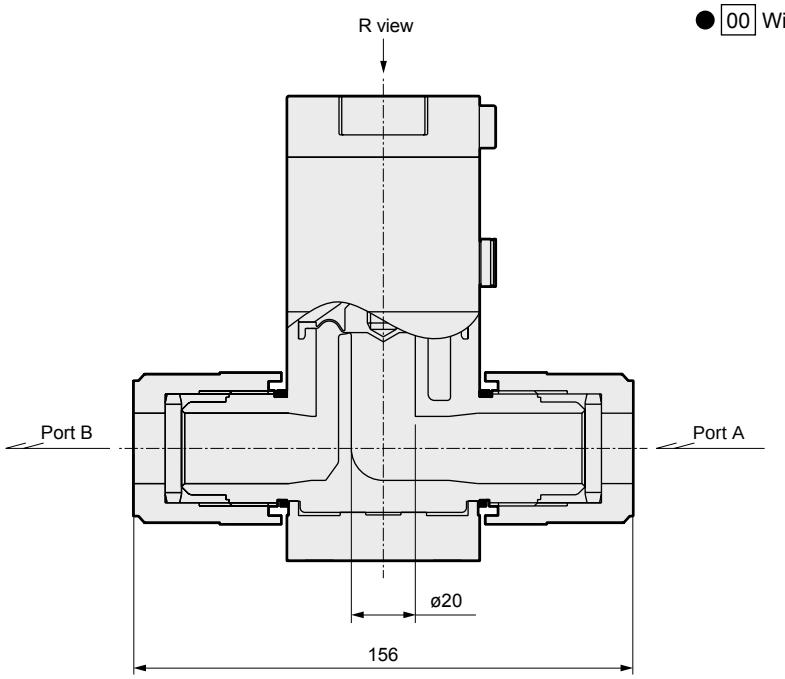
● Blank ON • OFF Only, LMD5*-*-*4*R

LMD5

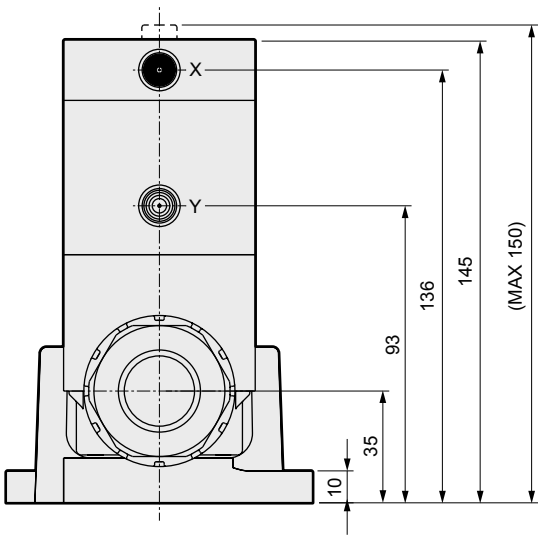




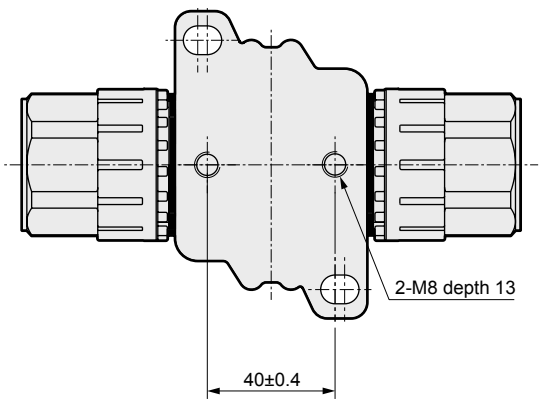
Operation port direction (R view)

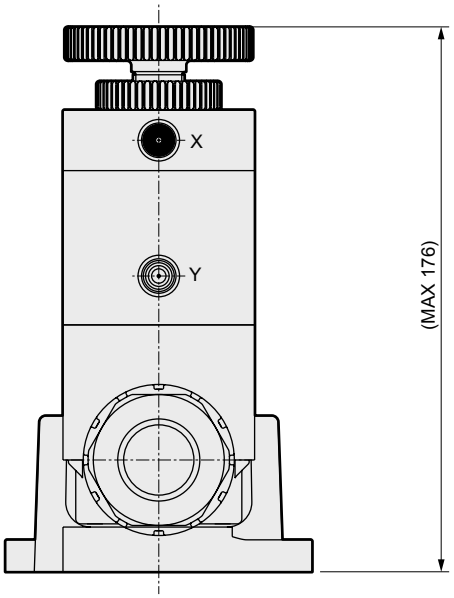


● 00 With indicator: LMD5*-*-00*4*R



● 10 With flow rate adjustment: LMD5*-*-10*4*R

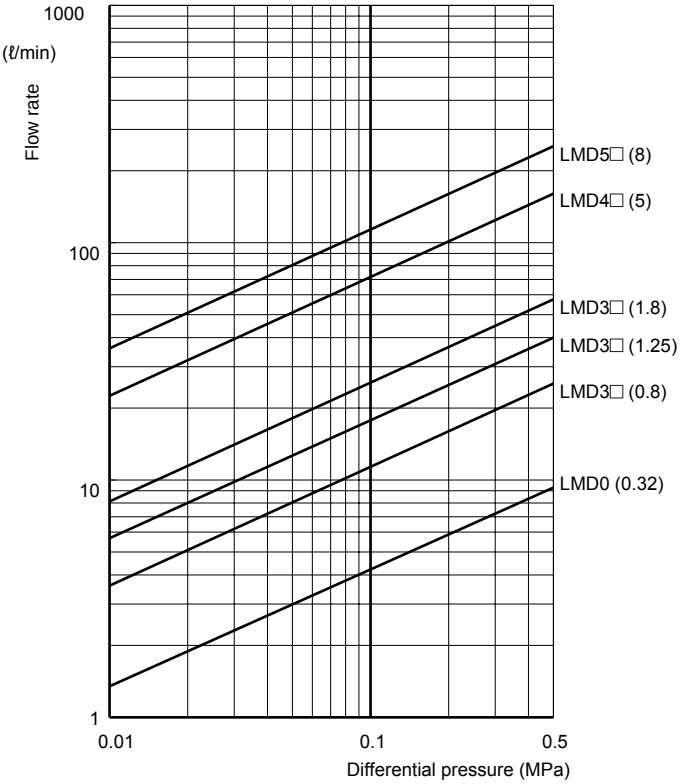




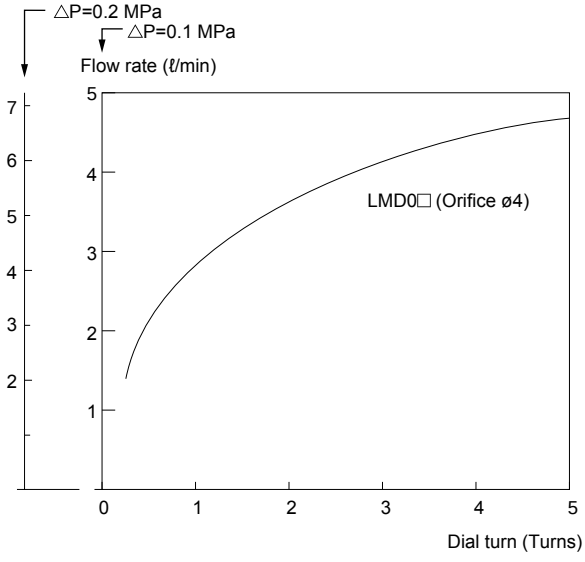
Flow characteristics

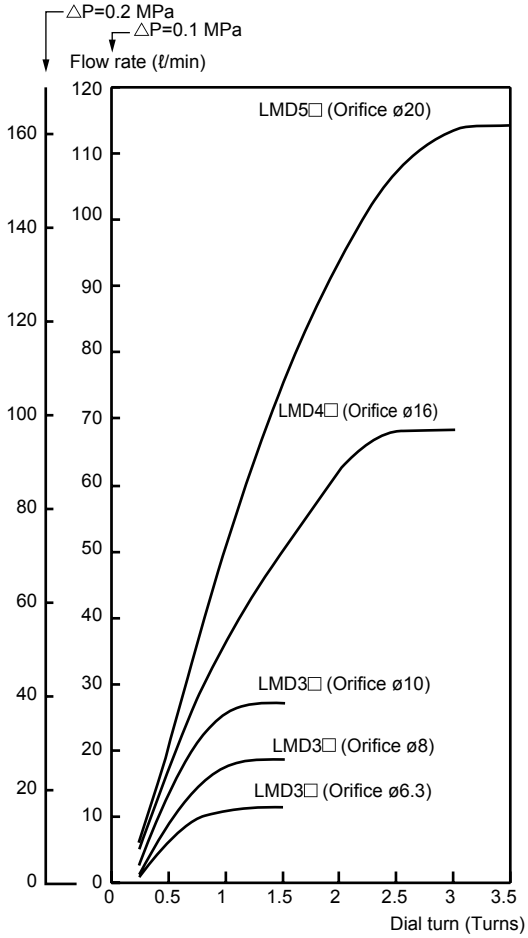
LMD3 to LMD5

● Flow characteristics (water)
Differential pressure - flow rate in ( ): Cv value



● With flow rate adjustment (water)
Number of rotations – flow rate





Note 1: Set the adjustment dial 1/4 round or more open from the complete closed position. Using the product with less opening may cause vibration or fluctuation in flow rate depending on the working conditions.

Safety precautions

Always read this section before starting 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 in handling.

2 Use this product in accordance of specifications.

This product must be used within its stated specifications. Do not attempt to modify or additionally machine the 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 use and the customer consents to CKD product specifications. The customer must provide safety measures to avoid risks in the event of problems.)

❶ Use for special applications including nuclear energy, railway, aircraft, marine vessel, vehicle, medicinal devices, devices or applications coming into contact with beverages or foodstuffs, amusement devices, emergency shutoff circuits, press machine, brake circuits, or for safeguard
❷ 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.

ISO 4414, 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.

❶ Inspect and service the machine and devices after confirming safety of the entire system 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, 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.

Disclaimer

1 Term of warranty

"Warranty Period" is 18 months from the first delivery to the customer.

2 Scope of warranty

In case any defect attributable to CKD is found during the Warranty Period, CKD shall, at its own discretion, repair the defect or replace the relevant product in whole or in part, according to its own judgment.

Note that the following faults are excluded from the warranty term:
(1) Product abuse/misuse contrary to conditions/environment recommended in its catalogs/specifications
(2) Failure caused by other than the delivered product
(3) Use other than original design purposes
(4) Third-party repair/modification
(5) Failure caused by reason that is unforeseeable with technology put into practical use at the time of delivery
(6) Failure attributable to force majeure.

In no event shall CKD be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special, indirect, incidental or consequential losses, costs or damages.

3 Compatibility confirmation

In no event shall CKD be liable for merchantability or fitness for a particular purpose, notwithstanding any disclosure to CKD of the use to which the product is to be put.

Precautions in Export

1 Security Trade Control

Products in this catalog and their related technology may require approval before export or provision.
To contribute to world peace and safety, there may be cases in which approval under the Foreign Exchange and Foreign Trade Control Law is required depending on the country to where the product or related technology is being exported or provided.
The scope of products and related technologies requiring approval are listed in "Export Trade Control Ordinance Appendix Table 1" or "Foreign Exchange and Foreign Trade Control Law Appendix Table".
Export Trade Control Ordinance Appendix Table 1 and Foreign Exchange Order Appendix Table contain the following two types of information:

- List Provisions indicating items 1 to 15 for each section
- Catchall Provisions that do not specify specifications by item, but restrict by application (Item 16)

Application for Approval:
The application is received by the Ministry of Economy, Trade, and Industry, Security Trade Control Review Section or local bureaus of the Ministry of Economy, Trade, and Industry.

2 Products and related technologies in this catalog

Products and related technologies in this catalog includes those subject to List Control of the Foreign Exchange and Foreign Trade Control Law.
For products and related technologies that are subject to List Control of the Foreign Exchange and Foreign Trade Control Law are so indicated in the pages of those products.
Please obtain an export permit of the Foreign Exchange and Foreign Trade Control Law when you export or provide a product or related technology subject to List Control.
Also, when exporting or providing products or related technologies in this catalog, ensure that they are not used for arms or weapons.

3 Contact

Contact your local CKD Sales Office for information on the Security Trade Control of products and related technologies in this technology.

Safety precautions

Always read this section before starting use.

Design & Selection

1. Confirmation of specifications

⚠ Warning

■ This product can not be used as an emergency shut off valve.
Valves in this catalog are not designed to ensure safety such as emergency shutoff. When using in such a system, provide other measures to ensure safety.

■ Incorrect selection and handling of devices could result in product problems and user system problems. The user is responsible for confirming the compatibility of the product specification and their system before selecting and handling the product.

■ Working fluid
The compatibility check list on page 11 provides basic information on compatibility. Refer to it to check whether the material of each component is compatible with the working fluid and working environment. For a fluid not listed on the check list or a newly introduced fluid (including those with high concentration), contact CKD before using it.

■ Fluid temperature
Use the product in the specified fluid temperature range.

■ Working fluid pressure
Use the product within the working pressure range specified in the catalog.

■ Working environment
(1) Check compatibility between the material of each components and the working environment before using the product. (Do not use it in a corrosive environment or flammable environment.)
(2) Make sure that fluids do not adhere to the product body.
(3) Use the product within the ambient temperature range.
(4) Do not use the product in a place with vibration or shock, a heat source neighborhood, or outdoors.

2. Design

⚠ WARNING

■ For a fluid that may cause personal injury, place the valve at a location that people cannot access.

■ Liquid ring
Opening and closing movement of the valve makes the diaphragm go up and down, changing the inner volume of the valve. Therefore, since the fluid is incompressible (liquid), operation with the fluid sealed within the valve (liquid ring) places an abnormal pressure on the valve. In such cases, install a relief valve on the primary or secondary side of the valve to avoid a liquid ring circuit.

■ Securing maintenance space
Secure sufficient space for maintenance and inspection.

Installation & Adjustment

1. Installation

⚠ WARNING

■ Incorrect installation and piping cause product problems and may cause problems in the user's system, resulting in death or serious injury. The user is responsible for ensuring that the system is operated by someone who understands safety precautions concerning the system, the fluid characteristics, compatibility of the fluid and the related products, and who has read the instruction manual thoroughly.

⚠ CAUTION

■ After installing, check for leaks from pipes, and check that the product is correctly installed.

2. Piping

⚠ WARNING

■ Always flush the piping before installing the valve. Dirt or foreign matter in fluid may prevent the valve from functioning correctly. If dirt or foreign matter may come inside, install a filter on the primary side of the valve in a way suiting the circuit used.

■ For a product with the arrow symbol, make sure that the flow direction of the fluid coincides with the arrow direction.

■ Do the piping so that tension, compression, bending, etc., caused by the pipe is not applied to the valve.

■ For NC and NO types, ports to which control pressure is not placed are released to the atmosphere. If direct intake and emission of air is not desirable due to the problem of working environment or dirt, release the set screw and do piping work so that intake and emission of air is made at a proper location.

■ Use the driving solenoid valve connected to the drive section in accordance with the specification and the use purpose.

⚠ CAUTION

■ For fittings for PFA tubes, be sure to use union nuts and impact rings made by BUENO TECHNOLOGY Co.,LTD. Refer to the instruction manual provided by the fitting manufacturer and follow the description for its application.
Application of a fitting requires a specialized jig. Consult the fitting manufacturer about it.

■ If inappropriate stress, such as bending, tension, or compression, is applied to the valve, the mounting plate can be taken off. Therefore, hold the valve for its application when connecting main pipes. Consider the position and method of supporting pipes in such a way that they do not impose the pipe weight on valves.

■ When installing a valve, do not support it only by the fitting, but fasten the mounting plate and the equipment.

■ Piping on an operation port may cause a crack of the port or damage on the screw. Keep the tightening force within 0.4 to 0.6 N • m.

During Use & Maintenance

1. Before Use of Product

⚠ Warning

■ Use within the max. working pressure and max. operating pressure range.

⚠ CAUTION

■ The compatibility check list on page 11 provides basic information on compatibility. Refer to it to check whether the material of each component is compatible with the working fluid and working environment. For a fluid not listed on the check list or a newly introduced fluid (including those with high concentration), contact CKD before using it.
- A fluid, such as slurry and UV hardener, that includes particles or that may become solid or gelatinous may affect the performance.
- When using fluids containing a surface acting agent or highly permeable fluids such as a peeling agent, the fluid could permeate the part.

Conduct regular inspections, and in the event of abnormality being found, take action such as replacement.

■ Gases such as N_2 and air may cause maximum of 1 cm^3/min valve seat leakage (by air pressure).

■ It should be noted that sudden changes of fluid temperature may have the valve seat distorted resulting in valve seat leakage.

■ For control air, use air or inert gas that has gone through a filter with filtration rating of 5 μm or over.

■ The product is provided after precision cleaning and with clean packing expecting it to be installed in a clean room. Please be careful in handling it.

■ Do not overturn the knob for flow rate adjustment.

■ Do not step the valve, nor put the heavy things on it.

■ If the product has not been used for a long period, carry out trial operation.

■ There occurs turbulent flow on the secondary side of the valve.
When you place, on the secondary side of the valve, a device such as a flow rate meter that requires the flow to be laminar, place it some distance away from the valve where the device is not affected by the turbulent flow.

■ This product must not be disassembled by the user. It is dangerous since some products have high load springs.

■ Make sure that fluids do not adhere to the product body.

■ If the product has the flow rate adjustment, set the adjustment knob at a position of the specified number of rotations or more to the open direction from the complete closed position. Using the product with less opening may cause vibration or fluctuation in flow rate depending on the working conditions. There may be flow rate fluctuation caused by fluid temperature fluctuation depending on the use condition.

■ Water-hammer or vibration may happen depending on the media pressure condition. Most cases will be improved by adjusting the open/close speed by the speed control valve. If the condition still does not improve, check the media pressure and piping conditions.

2. Maintenance Inspection

⚠ DANGER

■ When replacing a valve, evacuate enough the fluid inside with pure water or air beforehand so that remaining chemical liquids will not affect devices and people around.
Although the top of the diaphragm (on the cylinder side) is not a wet area, the area is chemical atmosphere due to gas permeation from the thin film section. Observe the following precautions when handling it for the sake of safety.
(1) The valve operation makes a little amount of permeated gas discharged from the bleed hole on the cylinder side surface. Make sure that people do not approach the neighborhood of the bleed hole when the valve is in operation.
(2) Crystal may adhere to the bleed hole or its neighborhood.
(3) Use a corrosion resistant glove when touching the valve; do not touch it barehanded.

■ A valve that has been used for chemical liquids may have chemical liquid atmosphere remaining between its actuator and diaphragm. This product must not be disassembled by the user.
Contact CKD or a distributor when disassembling is required.

■ To ensure optimum operation of the valve, conduct the following regular inspection once or twice a year.
(1) Checking leakage outside the valve
(2) Checking leakage from the fitting section
(3) Checking abnormality such as discoloration, deformation, and corrosion of a component.

Safety precautions

Always read this section before starting use.

During Use & Maintenance

⚠ WARNING

- Read the instruction manual thoroughly before starting maintenance to ensure correct operation.
- Always turn the power OFF and release any fluids or pressure before starting maintenance.
- When conducting a maintenance or inspection work, read the material safety data sheet (MSDS) of the chemical liquids used, and wear the required protective clothing.
- Long-term use of chemical liquids with high permeability such as hydrochloric acid, hydrofluoric acid, and nitric acid will have the permeated gas deteriorate not only wet areas but parts of other areas, which may result in an accident such as external leakage. For the sake of safety, be sure to conduct periodic inspection once or twice a year to check if there is any abnormality such as discoloration of a component, deformation, or corrosion.

⚠ CAUTION

- Use a product of the same model number when replacing a product. There are some products that have the same exterior appearance and different specifications.
- Store any unused product at a location where direct sunlight is not shed and the temperature is not high. When handling the product, do not give shock or flaw to it by throwing, dropping, or catching it.

Compatibility check list of the product and working fluid

* The check list has been created based on the past evaluations and experiences, but does not ensure a performance.
* When using this regulator for a substance other than pure water, the user is responsible for confirming the compatibility of the working fluid and product materials. A person familiar with chemicals should confirm the compatibility.

Fluid name		Compatibility
Pure water		●
Oxidized fluid	Sulfuric acid	●
	Hydrochloric acid	△
	Nitric acid	× (Note 2)
	Hydrofluoric acid	△
	Phosphoric acid	●
	Antimony fluoride	△
	Hydrogen peroxide	●
	Ozone	×
	Sulfuric acid + hydrogen peroxide water	●
	Sulfuric acid + ozone	×
Basic fluid	Sodium hydroxide	●
	Potassium hydroxide	●
	Aqueous ammonia	●
Organic fluid	Acetone	×
	Butyl acetate	×
	Isopropyl alcohol	●
Other / mixed fluid	Thinner	×
	Register	● (Note 1)
	Developer	● (Note 1)
	Slurry	● (Note 1)
	Plating	● (Note 1)
	Peel liquid	● (Note 1)
Gas	Air, nitrogen gas	● (Note 3)

Judgment		
	●	Available (Check the details at the page of the product.)
	△	Contact CKD for details. (Can be supported for some cases.)
	×	Not available

Note 1: In most cases the fluid is a mixture of many chemical liquids so that we cannot grasp all ramifications. Check the compatibility between the material of each components and the working fluid thoroughly to judge whether the product can be used.
Note 2: Use the AMD series for nitric acid.
Note 3: In the case of gas, maximum of 1 cm^3/min valve seat leakage (by air pressure) may occur.

Safety and performance precautions

- When an organic solvent is used with fluorine resin pipes, take measures against fire caused by static electricity.
- A fluid, such as slurry and UV hardener, that includes particles or that may become solid or gelatinous may affect the performance.
- When using fluids containing a surface acting agent or highly permeable fluids such as a peeling agent, the fluid could permeate the part.
- For the sake of safety, be sure to conduct periodic inspection once or twice a year to check if there is any abnormality such as discoloration of a component, deformation, or corrosion.
- If used with corrosive fluid, select the metal coating option "Coated".
  If the "Not coated" option is selected, the product comes equipped with uncoated stainless steel screws. When using fluid with high permeability or corrosive fluid, the screws can be corroded and fractured, resulting in leakage of the fluid. Contact CKD if you have any question about the need of the metal coating option, before determining whether to implement the option. For undiluted hydrochloric acid or hydrofluoric acid, use the AMD series because they are especially dangerous.

Related products

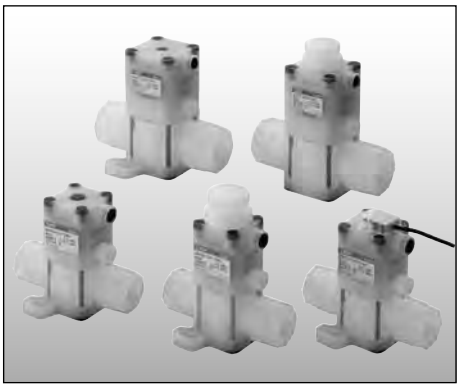
Diaphragm-type cylinder valve LAD series

Catalog No.CC-1082A

- Reduction of particles
  The particles are significantly reduced by using resin for all the wet areas and assembling in special environment.
- Adoption of port thread
  Any appropriate pipe can be selected and connected.
- Low-pressure loss flow path
  Effective cross-sectional area is significantly increased by adopting the flow path design that drastically reduces pressure loss. In addition, it is energy saving.

Air-operated valve for chemical liquids AMD part 3 series

Catalog No.CC-1098A

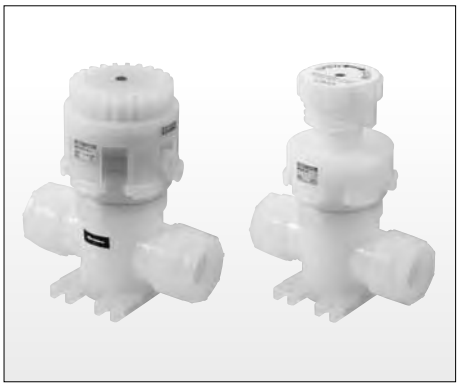


All-in-one model that supports various specifications

- 1/4”, 3/8”, 1/2”, 3/4” or 1” size
- Supporting various chemical liquids
- Specified pressure 0.5 MPa
- Working fluid temperature 120°C
- Indicator included as standard, sensor optionally available (excluding 1/4”)
- Supporting manifold, cutting

Metal-less valve AMD*1M, MMD*0M series

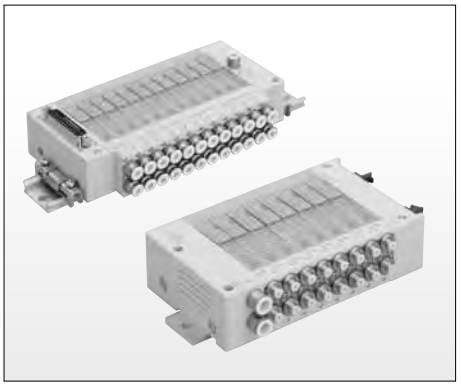
Please contact CKD for catalogs.



- No metal parts used (no metal bolts used)
- Safe and secure with the excessive tightening prevention structure (manual type)
- 3/8”, 1/2”, 3/4” or 1” size

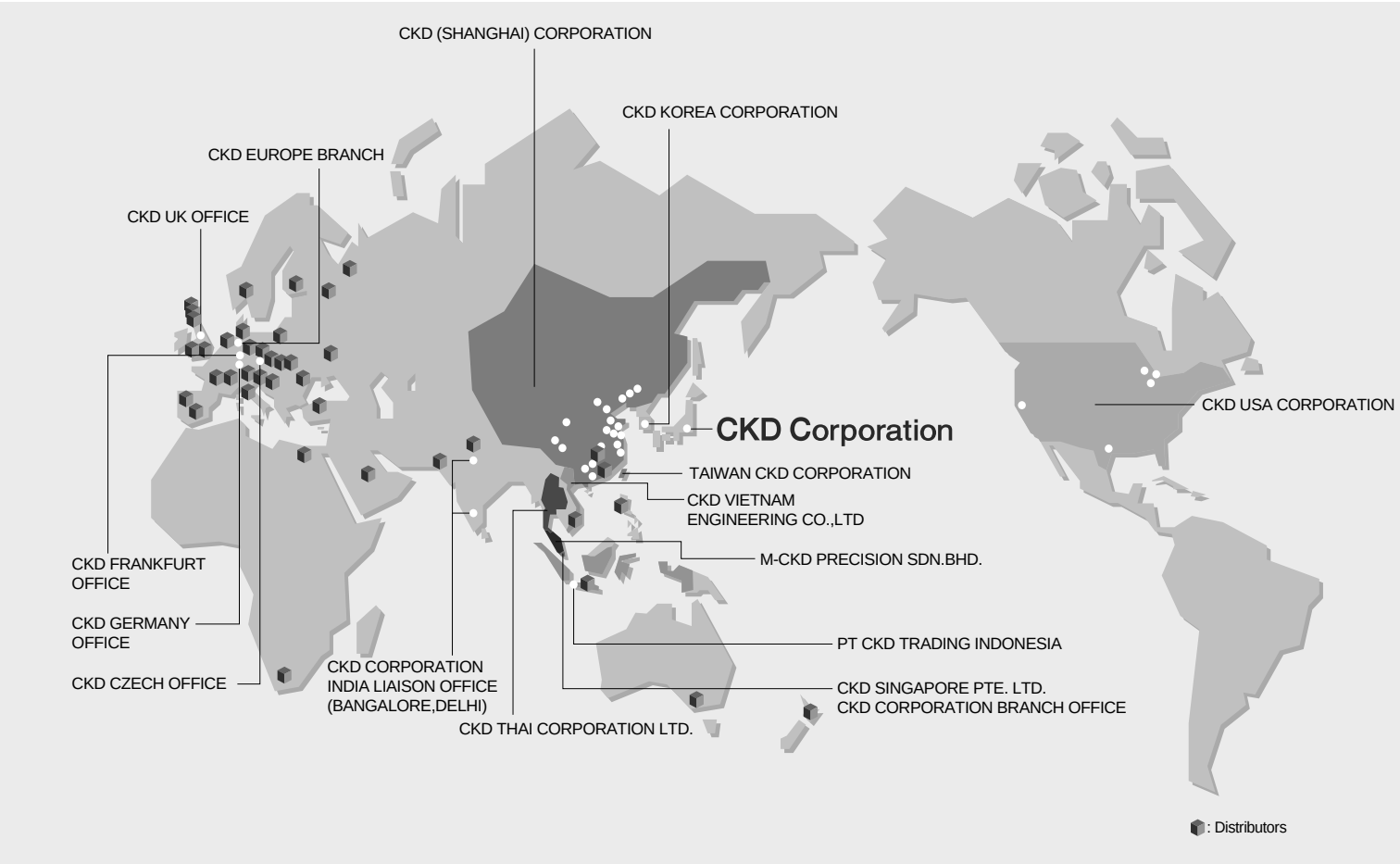
Dual 3-port solenoid valve integrated manifold MN3Q series

Catalog No.CC-1066A



- Compact
  Manifold height reduced to 34 mm. Installable in a narrow place.
- Installation
  Installation method can be selected between DIN rail installation and direct installation.
- Piping
  The supply/exhaust port removing position can be selected freely, increasing flexibility of piping.

WORLD-NETWORK



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