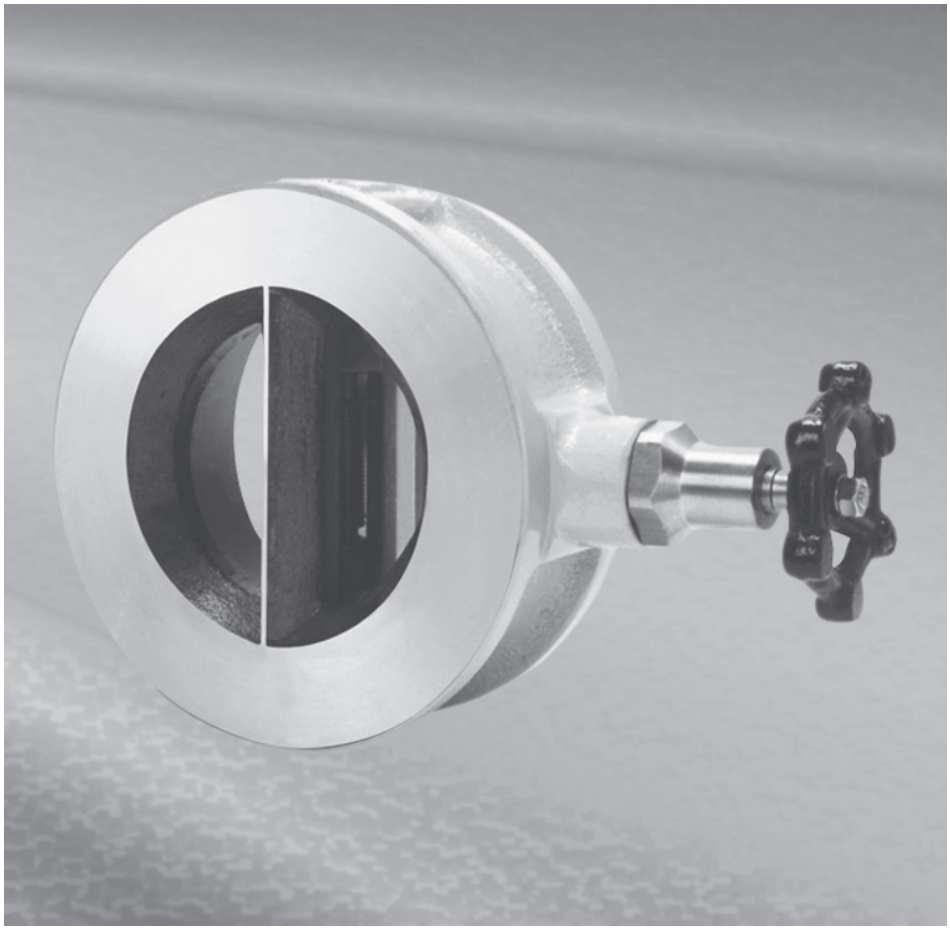
Open to the Future with Fluid Control

OKM

Check Valve



Instruction Manual

OKUMURA ENGINEERING corp.

Please be sure to read this instruction manual before use.

This instruction manual describes the general use of our check valve. In order to use it correctly, please read this instruction manual.

■Warranty

■Warrantyperiod

It shall be within 18 months after the shipment from our factory, or 12 months after the start of a trial run, whichever comes first.

■Warranty and exemptions

For any failure during the warranty period mentioned above caused by reasons attributable to our company, we will replace or repair the failed part of the relevant product, free of charge, at the place of purchase or of delivery of the relevant product. (Only in Japan)

However, we will charge a fee if it falls under any of the following items:

- Any failure caused by inappropriate condition, environment, operation or use, which are not specified in our catalogs, precautions for use, or specifications exchanged separately
- Any failure caused by factors other than the delivered product
- Any failure caused by modification or repair by others than our company
- Any failure caused by the use in conditions that were not specified in the design specification conditions of the valves, or an accident that could not be predicted from the specified conditions
- When the seat ring and consumable supplies, etc. are seriously worn out
- When the consumable supplies, such as lubricant, are not refilled properly
- Any failure and/or accident caused by inappropriate maintenance and inspection during frequent use of opening-closing operation, etc.
- Any failure and/or accident caused by power and/or air supply
- Any failure and/or accident caused by inclusion of foreign material to the product, including dust
- Any failure and/or accident caused by inappropriate storage of the product, including open-air storage
- Any failure and/or accident caused by fire, flood, earthquake, falling rocks, and other natural disasters
- Any failure and/or accident caused by reasons not attributable to the manufacturer

※The warranty hereof shall cover the delivered product itself.
※We are not liable for any damage induced by any failure of the delivered product.

■Charged repair and parts supply of discontinued products

This product is subject to discontinuation or modification without notice. When 5 years have elapsed after discontinuation, we may not repair or overhaul the discontinued product. In addition, we may also not supply the parts of such product.

■Standard product specification

Wafer type product model	110Z 111S	120Z 121S
Applicable flange	JIS10K	JIS16K · JIS 20K
Nominal valve size	50~600A	50~300A
Maximum allowable working pressure	1.0MPa	2.0MPa

Semi-lug type product model	111A	
Applicable flange	JIS5K	JIS10K
Nominal valve size	350~600A	200~600A
Maximum allowable working pressure	0.5 MPa ※400A is JIS 10K only.	1.0MPa

⚠**CAUTION:** The seat EPDM cannot be used for any lines containing oil. Once oil adheres or sticks, the seat may swell and break, which may cause leakage from the valve seat.

⚠**CAUTION:** It cannot be used for hot water supply lines.

Spring specification: Select the spring-mounted product according to the following working conditions.

Spring type	Working condition of check valve
Low torque spring	Air (not applicable to down-flow lines)
Standard torque spring	Horizontal pipes with a head of 80m or less and up-flow lines where fluid flows upwards
High torque spring	Pipes with a head of 80m or more and down-flow lines where fluid flows downwards

■Piping design and construction

- Do not store in a place with high humidity and vibration, at low temperature below -10°C or high temperature above 40°C.
- Remove any damage and foreign material on the flange surface to be connected and on the gasket surface to be used.
- The piping flange shall be free from damage and distortion, and the piping alignment and parallelism shall be ensured.
- Prior to the piping work, check that any slag, rust, and residue in the piping have been removed. Flushing after piping installation may damage the valve.
- Do not hang a hook on the bypass valve to suspend it or other items.
  To lift up a large-sized valve (250mm to 600mm), be sure to use the hanging bolt (Refer to Figure 1).
- The fluid flow direction shall be the same as the arrow direction indicated on the check valve body (Refer to Figure 2).
- Tighten the bolts and nuts in a diagonal pattern, so that the gasket is tightened uniformly.

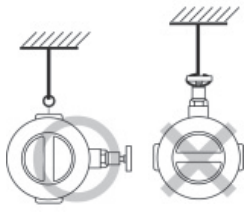


Figure 1

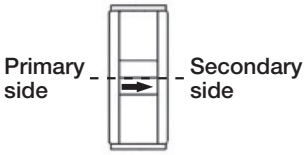


Figure 2

■Piping design and construction

- When the check valve is mounted immediately after welding the piping flange, serious effects may occur, including damage of the seat ring. Remove any welding spatter after the temperature drops sufficiently, and then mount the check valve to the piping. Never weld with the valve mounted to the piping.
- In the case of horizontal pipes, install the piping so that the fluid pressure applies to the 2 discs evenly, and the valve can be operated in a well-balanced condition, including the disc's own weight. When the check valve is equipped with a bypass valve, mount it so that the bypass valve is in a horizontal position (Refer to Figure 2).

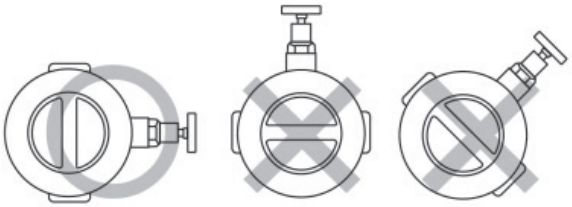


Figure 2

- When the valve is mounted near a bend, such as elbow, as shown in Figure 3, the turbulent flow may cause vibration, noise, and unbalanced disc operation. In such cases, keep it apart 4 times or more as much as is the the nominal valve diameter, or provide a sufficient straight pipe upstream of the valve. In addition, determine the valve stem direction so that the fluid pressure applies to each disc evenly.

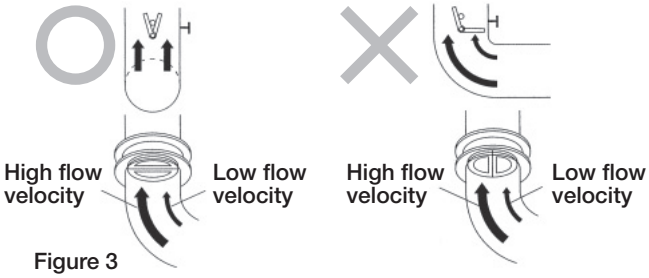


Figure 3

- Install the piping so that the disc may not contact the end of pipe, gasket, or machinery during operation. Be sure to check the operating state after the piping installation. Note that it cannot be connected directly to a wafer type butterfly valve.
- When a reducer is located near the valve, and the pipe size increases or decreases sharply, the turbulent flow generated nearby may cause fluttering of the disc, vibration, and noise. In such cases, keep the distance to the reducer 5 times or more as much as the nominal valve diameter (Refer to Figure 4).

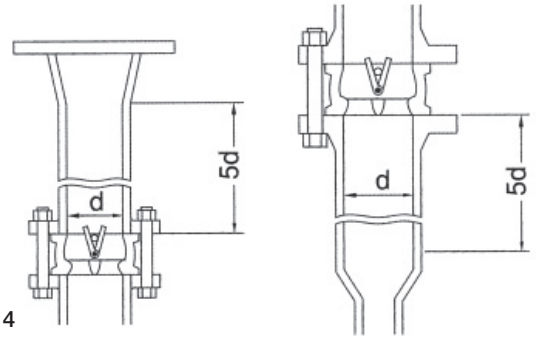


Figure 4

- When the valve is connected directly to the pump outlet, keep it apart 6 times or more as much as the nominal valve diameter.
- Do not use the bypass valve as scaffolding.

■Use and maintenance after piping installation

Precaution
Inspection
Solution

- Clean outside the piping by air purging and inside the piping by flushing before operation.
- Before operation, increase the piping pressure and check for any leakage from the flange using a soap and water solution.
- If there is any leakage from the flange, relieve the piping pressure, remove the check valve from the piping, and then check that there is no trouble in the flange surface of the check valve and the gasket for piping.
- Periodically inspect any abrasion inside the valve once a year.
- When there is any trouble with operation, or any trouble during operation, it may be due to clogging by foreign material, or damage of the seat ring. In the case of clogging by foreign material, remove the foreign material by flushing with the valve disc fully opened, if possible. When it is impossible, and when the seat ring is damaged, remove the check valve from the piping for inspection.
- The seat ring cannot be replaced, because of thermal insert type. Replace with a new one. When the spring is defective due to fatigue over time, replace with a new one.

■Precautions for use

- Limit the flow velocity in the valve to 5 m/sec or less, in the case of water. Use of a flow velocity higher than 5 m/sec may cause fluttering of the disc, impact noise, and cavitation.
- Use with a backpressure at a differential pressure of 0.05 MPa or more. Use at a differential pressure lower than 0.05 MPa may cause leakage from the seat.
- In a line with significant flow velocity change, surging may cause fluttering of the disc and impact noise.
- Close the bypass valve normally. The bypass valve has a soft seat and can be closed easily by hand; therefore, never use any secondary tool, such as a valve handle spanner. It may cause deformation and damage of the seat.

- This specification and design is subject to change without notice.
- Please contact our sales representative for details, and questions.

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OKM

Okumura Engineering Corporation

Okumura Engineering Corporation (OKM)
Head Office and Factory: 446-1, Otani, Hino-cho, Gamo-gun, Shiga 529-1608, Japan
Phone: 0748-52-2131; Fax: 0748-52-5025
http://www.okm-net.co.jp/

Tokyo Branch Office
Kayabacho No. 5 Nagaoka Bldg. 4F, 2-8-1, Nihonbashi Kayabacho, Chuo-ku, Tokyo 103-0025, Japan
Phone: 03-3667-1871; Fax: 03-3667-1880

Osaka Branch Office
Higobashi Center Bldg. 10F, 1-9-1, Edobori, Nishi-ku, Osaka 550-0002, Japan
Phone: 06-6445-1223 Fax: 06-6445-1333

Nagoya Sales Office
Hashimoto Bldg. 5F, 1-9-10, Ikeshita, Chikusa-ku, Nagoya 464-0067, Japan
Phone: 052-752-8831 Fax: 052-725-8833

Hiroshima Sales Office
Otemachi Chuo Bldg. 3F, 3-8-1, Otemachi, Chuo-ku, Hiroshima 730-0051, Japan
Phone: 082-246-7532; Fax: 082-246-7597

Fukuoka Sales Office
Toshiba Fukuoka Bldg. 16F, 2-4-1, Nagahama, Chuo-ku, Fukuoka 810-0072, Japan
Phone: 092-716-7090; Fax: 092-716-7091

Representative