LIFT CHECK & SWING CHECK VALVE OPERATION/ MAINTENANCE MANUAL

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1. SCOPE

This operation manual is for Lift Check valves or Swing Check valves with the following characteristics:-

Nominal Size: 15-600mm (1/2” ~ 24”)
Nominal Pressure: 1.0 ~ 32 MPa, ANSI 150Lb - 2500 Lb, JIS 10K ~ 63K
End Connections: Raised face flanges, buttweld, socket weld and screwed ends.

2. USAGE

2.1 These check valves can be installed in a pipeline to avoid backward flow.

2.2 MEDIUM

2.2.1 The medium through the carbon steel or alloy steel valve shall be non-corrosive, such as water, steam and oil.

2.2.2 The medium through the stainless steel valve can be corrosive and within the chemical resistance levels of the respective SS chosen.

2.3 TEMPERATURE

2.3.1 Body material suitable for the following temperature:-

Carbon Steel	- 29 C ~ + 425 C
Alloy Steel	-29 C ~ + 570 C
Stainless Steel	- 196 C ~ +550 C

2.3.2 Gasket suitable for the following temperature:-

PTFE	- 180 C ~ + 200 C
Flexible graphite	- 200 C ~ + 570 C (oxidizing medium) + 800 C (non-oxidizing medium)
Metal sealing ring	same as 2.3.1

3. STRUCTURE

3.1 Typical structure of check valve is shown in Figure 1. Their basic sructure conforms to the product standards specified in the purchase order.

3.2 The face-to-face dimension, ends and size meet the related standard as per the order’s request.

3.3 Gasket is made of stainless steel spiral wound with graphite or PTFE.

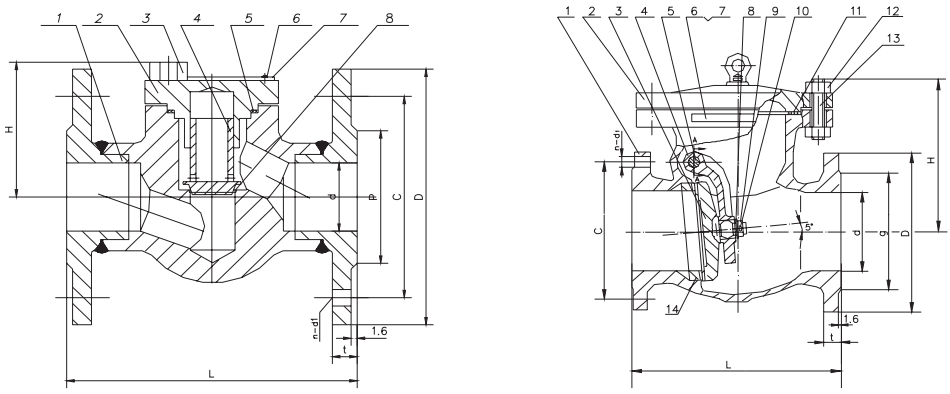

Figure 1

4. PRINCIPLE AND OPERATION

Valve opens or closes automatically due to flow pressure of the medium.

5. STORAGE, INSTALLATION, USE & MAINTENANCE

5.1 STORAGE

5.1.1 Cover the two ends of the valve to keep it free from dust and dirt.

5.1.2 Store the valve in a dry and ventilated place.

5.1.3 Valve stored for a long time needs to be checked and cleaned periodically. The machined surface must be smeared with antirust paint.

5.2 INSTALLATION

5.2.1 Check the valve before installing

a. Check the inner cavity, especially the seal surface to inspect if the seal surface is free from dirt and damage.

b. Check if the connecting screw is tightened uniformly. Be sure to tighten the plug screw on the arm axle of the swing check valve.

5.2.2 Check the valve specifications indicated on the nameplate prior to installation to verify that the valve meets the service requirements.

5.2.3 Insallation should meet the following requirements:-

a. Straightway lift check valves shall be installed in a horizontal line. Vertical lift check valves shall be installed in a vertical line to ensure that the medium can flow upwards.

b. Usually, swing check valves are installed in a horizontal line as well as a vertical or inclined line. Be sure to keep the flow direction upstream to downstream. For the valves in the vertical or inclined line, the upstream flow opens the disc in the same direction.

c. Keep the flow direction of the medium the same as the arrow marked on the valve during installation.

5.3 USAGE

5.3.1 During service, play pay attentino for any abnormal sound or vibration within the valve bodies.

5.3.2 During service, please pay attention to the pressure fluctuation of medium and avoid water hammer within the pipeline as it can damage the internal parts of a check valve.

5.4 MAINTENANCE

5.4.1 The installed valve shall be checked, maintained and repaired regularly as follows:-

a. Inspect for wear and tear of the sealing surface. If there is any damage, repair or replace it.

b. Inspect the gasket. If there is any damage or failure, replace it in time.

c. Check if connected bolts are secure.

5.4.2 After inspecting and repairing the valve in a disassembled condition, seat tests shall be done once the valve is reassembled. Keep detailed records for reference.

6. TROUBLE SHOOTING SUGGESTIONS:

Description	Cause	Solution
Leakage at the sealing surface.	1. Dirt on the sealing surface 2. Damage of sealing surface	1. Clean the dirt 2. Repair the sealing surface or replace the disc & seat ring.
Leakage at the connection of body and bonnet	1.Untightening of connecting bolt or improper tightening of it 2. Damage of the sealing suface of the body-bonnet flange or that of the bonnet and body of valve sealed by pressure.	1. Tighten the bolts uniformly. 2. Repair the sealing surface of the body-bonnet flange or that of the bonnet and body of valve sealed by pressure. 3. Replace gasket or repair the metal ring.
Leakage at the plug screw of arm axle	1. Untightening of the plug screw 2. Failure of the gasket	1. Retighten the plug screws 2. Replace the gasket
The cannot open or close	1. Overfitted the arm and arm axle 2. Being hampered by foreign matter.	1. Check the fitting condition and adjust the fit clearance. 2. Eliminate the fluctuation of pressure.