STEINBOCK VALVES

OPERATION AND MAINTENANCE MANUAL

(Wafer Check valves)

RECEIPT INSTRUCTIONS

Unloading should be carried out in a careful manner.
Upon receipt the interior of the valve should be inspected prior to installation. Paper tags are sometimes wired to the disc stop. These should be removed. Valve flange faces should be inspected for possible damage during shipment and any special coatings should be checked for nicks, scrapes, scratches or other types of damage they may have occurred during shipment.
The valve is furnished with a nameplate which identifies general information about the particular valve. Nameplate information can be documented at time of receipt at the discretion of the customer.

STORAGE INSTRUCTIONS

To minimize damage or deterioration of the valve supplied, the valve should be stored indoors. If the valve is stored in a dry indoor location it will not be necessary to cover the valve. A thin coat of easily removable rust preventative should be applied to all machined areas, including metal seating surfaces of the valve body and disc.

INSTALLATION INSTRUCTIONS

Horizontal Installation

Prior to installing the wafer body style between two flanges the bottom stud bolts should be loosely in place between the two flanges providing a foundation to set the valve on. The wafer check valve must be installed with the hinge shafts in a vertical alignment in order for the discs to swing properly. After the appropriate gasket has been placed between the valve body and the companion flanges nuts on the studs should be torqued alternately across the valve body in accordance with the recommendation of good standard piping practices.

Vertical Installation

After the appropriate gasket has been placed between the valve body and the companion flanges nuts on the studs should be torqued alternately across the valve body in accordance with the recommendation of good standard piping practices. The wafer check valve when installed downstream of an elbow should have the pin perpendicular to the piping elbow, dividing the flow velocity across the valve discs.

MAINTENANCE INSTRUCTIONS

The wafer check valve is maintenance free, meaning it needs no periodic lubrication, packing adjustment or seat adjustment. The valve should be inspected periodically in order to check for wear of the discs, spring, shafts and thrust bushings. The torque on the flange studs nuts should be checked at the same time to insure no loosening has occurred due to pipe vibration, thermal cycling and stretching of the stud.

APPLICATION AND OPERATIONS

The wafer check valve is a self operating check valve designed to prevent the backflow of gas or liquid media. Initial opening of the wafer check valve plates begins when the upstream pressure exceeds the downstream pressure and the effective torque of the spring. This pressure is called the "cracking" pressure. Once the valve plates open, flow velocity determines the position and stability of the plates. If the flow velocity upstream of the wafer check valve decreases and/or stops, the springs force the discs to a closed position. Ideally, the discs will be fully closed just prior to flow reversal, thus alleviating the potential for water hammer.

LIMITATIONS AND PRECAUTIONS

EDMUND VALVE COMPANY'S wafer check valves are not recommended for the following service conditions:
• Pulsating Flows •
• Service condition requiring a "Full Port" opening •
• Installation directly onto a Butterfly valve or other piping accessory that may interfere with the opening or closing of wafer check valve discs. •
• Vertical Flow DOWN without prior Factory Approval. The following precautions should be taken to insure long service life of wafer check valves. •

• A minimum of 5 (five) pipe diameters should maintained between the wafer check valve and likely causes of turbulence. (i.e. pump discharge, reducers, elbows and tees, etc.)

FAILURE TO CLOSE

The wafer check valve is a general purpose spring loaded dual dual-plate check valve designed to prevent back flow. This design has been installed and operates successfully in both liquid and gas applications.
In general, should the valve fail to close, a conventional single dual-plate check valve would have also failed. The cause of swing check valve failure, excluding warranted defects in material and workmanship, is usually, too low or high liquid velocities and turbulence or corrosion.
The discs position and movement is determined by the flow. Therefore, it is very important to size the valve correctly. Should the flow velocity be to low, less than 3 ft/sec liquid (dual disc) / 6 ft/sec (single plate) the discs will not be in a stable position and will "flutter". Disc flutter causes the discs to wear in the lug area and also causes the spring in the valve to cycle excessively and fail prematurely. Excessive velocities (11 ft/sec, liquid; f 250 ft/sec gas) will also cause the discs to flutter and wear out the spring.
Turbulent flows caused by pump discharges, elbows and swages upstream of a check valve will also cause the discs to flutter excessively. It is recommended that all check valves be installed a minimum 5 pipe diameters downstream from sources of turbulence.
Specifically addressing the EDMUND VALVE COMPANY'S valve; the failure of the spring will not prevent the valve from closing. The stop pin prevents the discs from travelling past 85 degrees. Thus, should the spring break, there is disc surface for the flow to push against and cause the discs to close. The spring is NOT necessary for the EDMUND VALVE COMPANY'S to close.

Should the valve fail to close, a missing spring would be the most obvious, however further inspection should be focused on the following areas:
1. Washout of the body around the hinge pin may have occurred allowing the hinge pin to be cocked, thus preventing the discs from seating properly. The plates could be missing due to the washout of the hinge pin.
2. The lugs of one or both plates may be worn out of round allowing the edge of the disc to contact the rib area in such a way as to jam the disc open. One or both discs could also be missing.
3. The stop pin may be missing due to body washout, breakage, or corrosion, allowing the discs to swing past the center line of the valve when in the open position. This would prevent the back flow from catching the discs properly to close them.
4. The hinge pin was not vertical when the valve was installed in a horizontal flow position.

WARNING! DO NOT LIFT THE VALVE BY THE DISC STOP, HINGE SHAFT, DISC, OR BY ANY OTHER MEANS OTHER THAN THE LIFTING EYE BOLT.

This will damage the valve and could become very dangerous, when handling.
Care should be taken so as not to drop the valve or cause damage to the valve flange or any exterior special coating. Large and heavy valves are furnished with lifting eye bolts for easy handling and lifting. For safe handling and lifting it is suggested that the item be lifted only by the eye bolt, when either being installed or removed.