

INSTALLATION, OPERATION & MAINTENANCE MANUAL

300-400 SERIES VALVES



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Ernst Flow Industries™ valves are simple, rugged instruments engineered and constructed throughout to give you accurate liquid level reading for the life of the vessel. With a complete range of models for any application, from pure water to highly corrosive chemical.

Like any instrument, Ernst Flow Industries™ gauge valves must be installed, operated and maintained with reasonable care and due regard for the application and environment.

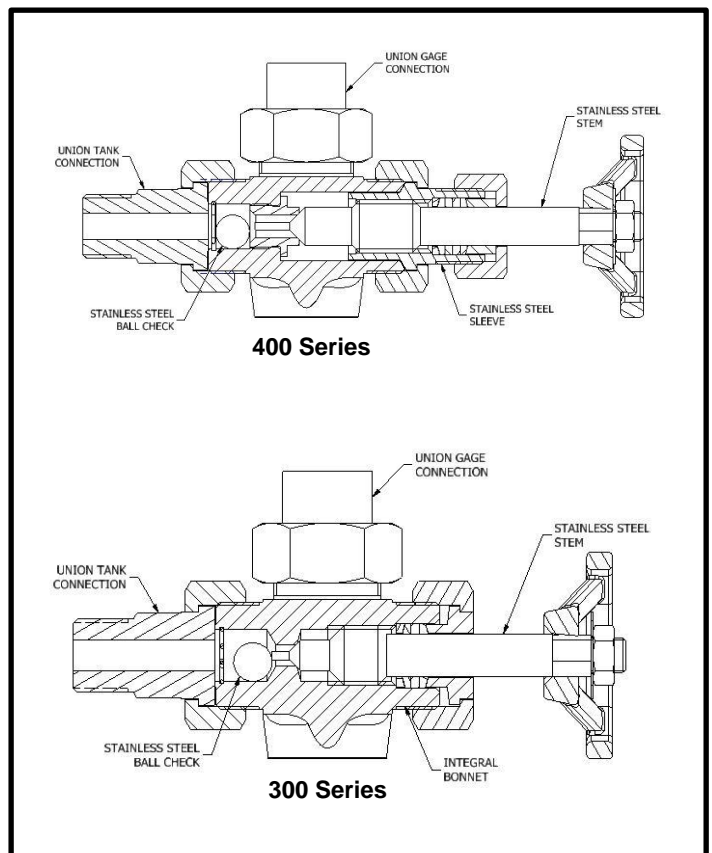
INSPECTION AND DELIVERY

Upon receiving valves, check all components carefully for damage incurred in shipping. Confirm that valve model number and pressure temperature ratings (on nameplate) meet application specifications. Also confirm that the material is compatible with both process fluid and surrounding atmosphere for your application.

CAUTION: Ernst Flow Industries™ gauge valves are not to be used for gauging lethal substances as defined by ASME Section VIII.

BEFORE YOU INSTALL THE GAUGE VALVES

- To avoid imposing piping strains on the valves, connect and mount the valves so that they do not support the piping.
- Support brackets should be considered, if level gauge is over four feet in length or over 100 pounds in weight, especially when exposed to vibration. Support brackets will prevent overloading the valves.
- When installing liquid level gauges, always provide shut off valves between gauge and vessel. Ernst Flow Industries™ automatic ball check valves are recommended to help provide protection against physical injury and loss of product if glass breakage should occur.



OPERATION

Ernst Flow Industries™ ball check valves are designed to isolate the gauge glass from the vessel in the event of a gasket or glass rupture. The stem of a Ernst Flow Industries™ ball check valve has an extended needle feature to dislodge the ball check when needed.

In the closed position, the needle portion of the valve stem extends through the valve seat and prevents the ball check from sealing against the ball check (backside) seating surface.

In the open position, the needle portion of the stem is retracted into the valve seat allowing the ball check to isolate in the event of a gauge failure causing rapid flow of fluid from the vessel to the gauge.

In order for the ball check to operate properly, the valve stem must be in the 100% open position to ensure that the extended needle does not prevent the ball check from seating.

CAUTION: Rapid opening of valves can cause glass breakage and / or possible injury to personnel.

For protection during shipments, packing gland is loosened and stem is in the open position. Adjust stem and packing after installation. Do not tighten packing more than enough to stop leakage.

Crack open the valves carefully, and wait until equipment is fully warmed up and / or pressure is equalized before opening valves all the way.

CAUTION: While the valves are in operation, they must be in their fully open position. A partially open valve will prevent automatic ball checks from seating which could result in physical injury to personnel and loss of product.

CAUTION: When a valve must be closed to dislodge a seated ball check, there is a brief period of time after the needle contacts the ball, but before the stem contacts the seat, when fluid is free to pass through the seat and into the gauge. Therefore, an operator could be injured and/or fires may result if hazardous liquids are involved. Primary block valves should be closed first **and** the ball check valves should be closed as rapidly as possible in this situation.

COMMISSIONING

It is important to commission a gauge glass equipped with safety ball check valves properly to avoid false level indications. If the valves are opened too quickly, the ball checks will isolate the gauge before the level can equalize with that of the vessel.

- Step 1: Open the top isolation valve by rotating the valve handle counterclockwise 1/4 to 1/2 turn.
- Step 2: Repeat step one for the bottom isolation valve.
- Step 3: Visually observe the level in the gauge and allow to reach equilibrium.
- Step 4: Open the top valve 100% (until the handle no longer rotates).
- Step 5: Repeat step four for the bottom valve.

MAINTENANCE

CAUTION: Prior to any disassembly of valves, first be sure that the valves are relieved of all internal pressure, and temperature is ambient, and has been drained and / or purged of any fluids. Failure to do this may result in a sudden release of pressure and / or physical injury to personnel.

CAUTION: When the gauge fails causing the ball checks to seat, closing the valve will allow fluid to flow from the vessel during that period when the pin pushes the ball off its seat and before the stem has contacted seat, the operator could be hurt if not realizing what is happening or fires could result if hazardous liquids are involved.

TO REPLACE STEM PACKING 300-400 Series Valves

Close valves and drain fluid. Disengage packing gland nut and pull packing gland out of stuffing box. Remove old packing and insert new packing. Put the packing gland and packing gland nut into position and tighten the nut. The gland nut should be tightened enough to stop leakage around the stem without causing excessive binding of stem during operation.

TO REPLACE VALVE SEAT 400 Series Valves

Close valves and drain fluid, disengage sleeve nut from valve body and remove stem, sleeve, sleeve nut, gland, gland nut as a unit from the valve. Using a standard 5/8" socket wrench remove seat. Before replacing seat apply lubricant (Molykote "G" or equivalent) to the threads to prevent seizure of metals. The seat is then replaced and tightened well to prevent leakage. Replace the stem unit in the valve body and tighten the sleeve unit.

WARNING: During system shut down, it is best to leave shut off valves open, the equipment then cools and depressurizes along with the system. Keeping valves closed during shut down can trap high pressure liquid in the valves.