Storage, Installation, Testing, Operation and Maintenance Guidelines for Horizontal and Vertical Check Valves

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Storage and handling

Because metal housings and plastic liners can become brittle at low temperatures, use care when handling valves at temperatures below freezing.

Also, do not remove wooden end protectors provided with each valve until you're ready to install the valve. After you remove them, inspect the valve and liner for possible physical damage.

Installation

- Gaskets are not required between flanges of lined diaphragm valves and lined pipe because the plastic faces of each provide the sealing.
- Retorque bonnet bolts immediately before installation. Torquing should only be done on the system in the ambient, cooled state, never while the process is at elevated temperature. Otherwise, excessive force could be applied to the plastic faces.

Bonnet hex nut torque values (ft-lbs)						
Horizontal Check Valves				Vertical Check Valves		
Valve size, inches	Elastomeric diaphragms	PTFE diaphragms	PFA no gasket	PP	PVDF	PFA
1	30	30	30	29	37	35
1 1/2	30	30	30	29	37	35
2	30	40	40	60	76	45
2 1/2	30	N/A	N/A	N/A	N/A	N/A
3	55	120	75	95	119	60
4	40	60	75	62	78	50
6	65	110	N/A	114	144	75
8	80	125		153	193	120

- Follow flange Bolt Torquing guidelines.
- Do not overtighten. This could damage the sealing faces.
- For connecting valves to unlined flanged faces, see pipe connect details.

Recommended spare parts

- Gasket for horizontal check valve
- Poppet

Spare parts should be protected from physical damage. Also, gasket and poppet materials should not be exposed to excessive temperatures, ozone, or ultraviolet radiation. Shelf life for elastomer gaskets is five years while all other spare parts have an indefinite life as long as they are properly protected.

Maintenance

Preventive maintenance -

- Do not steam-clean polypropylene, or PVDF-lined valves. You can use steam to clean PFA-lined valves, but be sure to keep the steam temperature below the maximum temperature limit of the plastic and the diaphragm.
- Periodically check the backflow characteristics of the check valve to make sure it's working properly. Here's how:
  - Isolate the valve.
  - Pressure the downstream side of the valve with water or another "safe" fluid.
  - Open a drain valve or crack a flange upstream of the check valve.
  - Check for fluid leakage at the upstream opening.

Corrective maintenance -

If fluid is leaking past the poppet in reverse direction, it will be necessary to repair or replace the valve. Here's how:

- Make certain the line is isolated, pressure relieved, drained, and appropriate safety equipment (chemical goggles, face shield, protective clothing, etc.) is worn before attempting to remove the valve.
- Remove the valve from the line. If the valve has been used in hazardous chemical service, make sure it is thoroughly cleaned and/or neutralized before repairing or disposing of it.
- Disassemble the valve and inspect the poppet, stem guide, and seat for score marks or other damage.
- If the poppet and/or stem guide are scored or damaged, they can be replaced. If the seat is scored or damaged, the entire valve should be replaced.
- Inspect the valve lining. If any cracks or defects are present, the valve should be replaced.
- Install the new or repaired valve according to procedures explained in the "Installation" section of this page.