

## INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

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# Operating, Maintenance and Installation Instructions for NIBCO<sup>®</sup> Flanged End and Wafer Style Check Valves (Series 910 & 960)

For Check Valves in pump applications, see Addendum II and NIBCO Technical Bulletin Check Valves-Design & Use NTB-0703

For Check Valve Cracking Pressures, see Addendum III and NIBCO Technical Bulletin Check Valve Cracking Pressure NTB-0596

### 1. Installation:

NIBCO recommends that check valves should not be used in close proximity to reciprocating pumps and compressors. The constantly fluctuating pressure curve causes pulsations to the moving parts of the valve, which severely shortens the life of the valve due to increased wear. Loose parts that have failed can also be passed down the line which would compound the problem.

Screw type and centrifugal pumps and compressors that deliver a constant pressure curve do not exhibit this issue.

In some carefully designed systems, check valves have been used successfully by incorporating surge tanks, hammer arrestors, and other piping modifications with the valve placed downstream from the pump. The ultimate decision for fitness of use however, lies in the hands of the end user and the system piping designer.

All NIBCO check valves should be protected from contamination, damage, and accumulation of dust or dirt on the seating surfaces. No internal blocking is used in valves shipped from the factory.

**NOTE: Check valves should never be installed immediately adjacent to a pump discharge or change in direction. Check valves should be installed downstream from all sources of line turbulence, including fittings and valves, at a minimum of FIVE times the nominal pipe diameter (preferably TEN times the nominal pipe diameter) with straight piping to provide laminar flow.**

**CAUTION:** Only qualified personnel should undertake the procedures outlined in this document. NIBCO INC., its agents, representatives and employees assumes no liability for the use of these procedures. These procedures are offered as suggestions only.

## **CAUTION**

**Care should be taken during handling, installation, and operation to prevent personal injury and damage to valve components, especially seating surfaces.**

## **2.0 OPERATION**

Check valves are designed to prevent flow reversal or backflow. Check valves seal adequately, when the back pressure is high, but leakage is expected when the reverse pressure is relatively low.

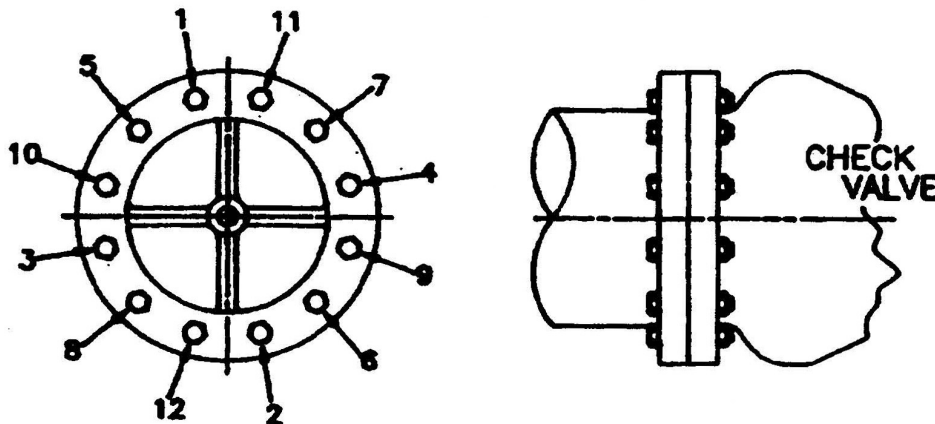
In testing procedures, a check valve is allowed to leak (4) times as much in the reverse flow (check) position as a metal-seated gate valve.

The allowable leakage rate for a check valve is 40ml per inch of nominal diameter per hour. This is in accordance with MSS SP-71 standard for check valves. (10ml =  $\approx$ 0.33 ounces).

The check valves described in this manual are not to be used as foot valves on a pump or pressure regulating devices. Their construction is not suited to these types of requirements.

### WARNING NOTICE:

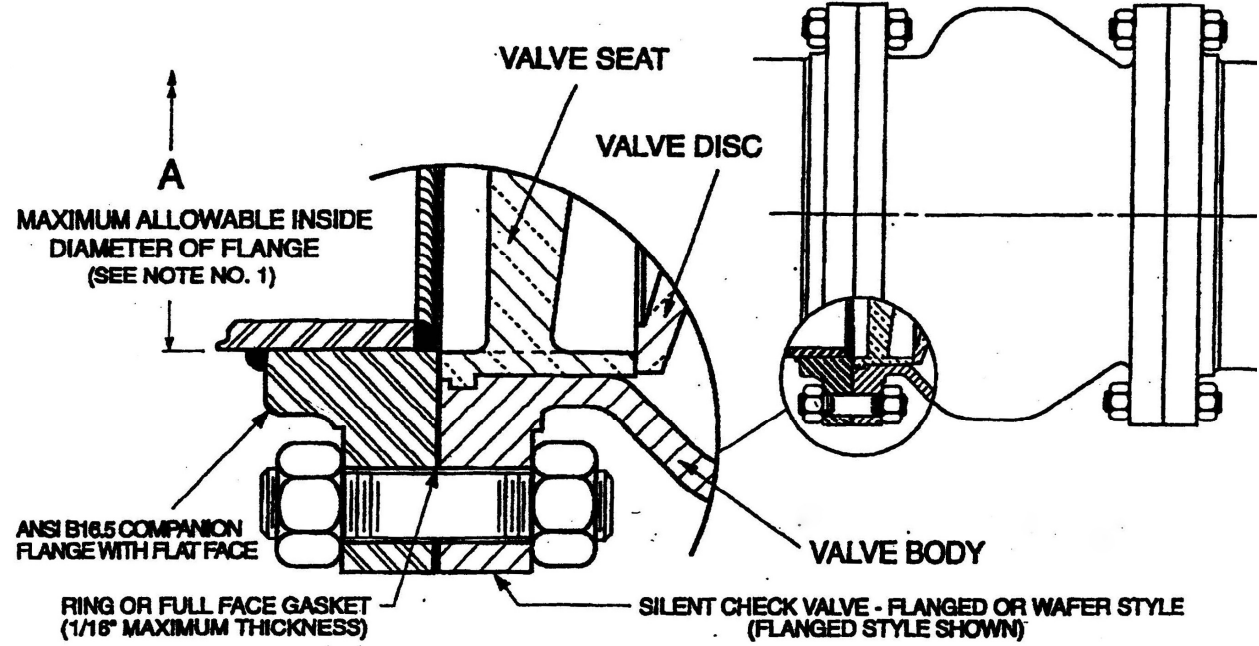
1. Damage to the valve and/or internal leakage may result if pipe flanges other than those with standard flat faces, conforming to ANSI B16.5 or AWWA C207-86, are used. Flanges having an expanded inside diameter (often found on mortar lined pipe) cannot be used on the inlet side of the valve. A ring flange having a maximum inside diameter as shown in "A" dimension (see next page) must be inserted between the valve and mortar lined pipe flange.
2. Proper centering of ring gasket is important to prevent internal valve leakage.
3. The valve and adjacent piping must be supported and aligned to prevent stress from being transferred to the valve's flanges. The torquing of the flange bolts should then be done in several graduated steps, using the number sequence shown below. This even loading of the flange bolts will eliminate concentrated stresses which could fracture the valve's flange.



### SILENT CHECK VALVE INSTALLATION REQUIREMENTS

DAMAGE TO THE VALVE AND / OR INTERNAL LEAKAGE MAY RESULT IF PIPE FLANGES OTHER THAN THOSE WITH STANDARD FLAT FACES, CONFORMING TO ANSI B16.5 OR AWWA C207 ARE USED.

**WARNING NOTICE:** FLANGES HAVING AN EXPANDED INSIDE DIAMETER (OFTEN FOUND ON MORTAR LINED PIPE) CANNOT BE USED ON THE INLET SIDE OF THE VALVE. A RING FLANGE HAVING A MAXIMUM INSIDE DIAMETER, AS SHOWN IN "A" DIMENSION BELOW, MUST BE INSERTED BETWEEN THE VALVE AND MORTAR LINED PIPE FLANGE.



- NOTE NO. 1 - THE MATING COMPANION FLANGE I.D. MUST OVERLAP THE VALVE SEAT. THIS IS REQUIRED TO PROVIDE PROPER SEAT RETENTION.
- NOTE NO. 2 - THE FLANGE GASKET MUST BE PROPERLY CENTERED AND OF THE SIZE INDICATED. THIS IS REQUIRED TO ACHIEVE A SEAL BETWEEN THE SEAT O.D. AND THE BODY I.D. INTERFACE AREA.

MAXIMUM ALLOWABLE INSIDE DIAMETER OF FLANGE (SEE NOTE NO. 1)			
VALVE SIZE	A	VALVE SIZE	A
2 1/2	2.940	14	14.140
3	3.570	16	16.160
4	4.570	18	18.180
5	5.660	20	20.200
6	6.720	24	24.250
8	8.720	30	30.250
10	10.880	36	36.250
12	12.880	42	42.250

STANDARD RING GASKET DIMENSIONS (SEE NOTE NO. 2)							
VALVE SIZE	I.D. FOR 125 LB. AND 250 LB. GASKET	O.D. FOR 125 LB. GASKET	O.D. FOR 250 LB. GASKET	VALVE SIZE	I.D. FOR 125 LB. AND 250 LB. GASKET	O.D. FOR 125 LB. GASKET	O.D. FOR 250 LB. GASKET
2 1/2	2.875	4.875	5.125	14	14.000	17.750	19.125
3	3.500	5.375	5.875	16	16.000	20.250	21.250
4	4.500	6.875	7.125	18	18.000	21.625	23.600
5	5.562	7.750	8.500	20	20.000	23.875	25.750
6	6.625	8.750	9.875	24	24.000	26.250	30.500
8	8.625	11.000	12.125	30	30.000	34.750	37.500
10	10.750	13.375	14.250	36	36.000	41.250	44.000
12	12.750	16.125	16.625	42	42.000	46.000	50.750

For any technical enquiries please call NIBCO Technical Services.