



# Two-Door Check Valves

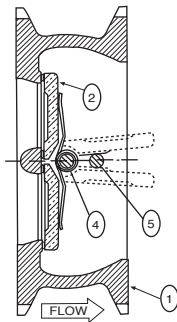


Figure 1 2" thru 12"

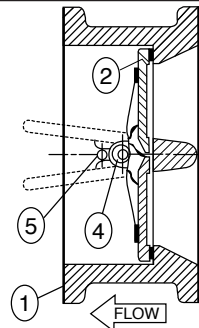


Figure 1A 14" thru 60"

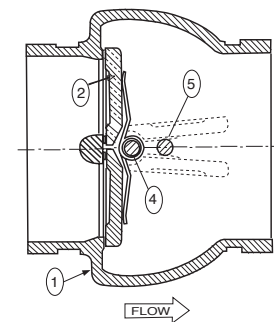


Figure 1B 2" thru 12"

## INTRODUCTION

The Cla-Val Series 582W, 582G Two Door Check Valves are ruggedly constructed with bronze doors and stainless steel trim for years of trouble-free operation. The valve should be installed in horizontal or vertical flow up pipes carrying clean water. The valves have special springs for operation in blower air service (Series 582A).

Two door check valves are designed to open allowing flow in the forward direction and close rapidly upon flow reversal. The valves are used to prevent reverse flow through pumps or piping systems. The size, cold working pressure, model number, and year of manufacture are stamped on the nameplate for reference. The valve is not intended for fluids containing suspended solids such as wastewater or hazardous fluids.

## RECEIVING AND STORAGE

Inspect valves upon receipt for damage in shipment.

When lifting, the valve, always lift by the body and never lift by the bronze or stainless steel trim. Lifting eyebolts are provided on NPS 10-12 (DN 250-300) valves.

The valves should remain boxed, clean and dry until installed to prevent weather related damage. For storage greater than six months, the rubber surfaces of the seat should be coated with a thin film of FDA approved grease.

## DESCRIPTION OF OPERATION

The Cla-Val Two Door Check Valves are designed to prevent reverse flow automatically. On pump start-up, the flow of water enters the valve from the seat end (right sided Figure 1) and forces the two door open until the strike the disc stop pin. On pump shut-down, the torsion spring closed the door before flow reversal takes place.

The valve body is supplied with compact wafer ends as shown in Figure 1 for installation between mating flanges.

The only moving parts in the valve are the doors and spring, which are guided in the body with a hinge pin and a full open disc stop pin. The pins are retained in the body by stabiliza-

tion spheres to prevent vibration. The valve has a resilient seat for drop tight shut off.

## INSTALLATION

**CAUTION:** The flow arrow on the valve body must point in the direction of flow when the system is in operation. The valve can be installed in horizontal lines with the disc hinge pin in the vertical position, or in vertical lines with flow up. Valves for air service (Series 582A require special springs to allow full valve opening. Install valve between standard flanges that correspond to the dimensions given in ANSI B16.1 for 125# flanges or to those given in ISO 7005 for PN10 and PN16 flanges. (See Table 1) Note: Integrally-cast locating wings around the exterior, enable the valves to mount between these different bolt patterns. (See Figure 2) The number of wings are not provided because the desired universal fit is accomplished without them.

The gasket can be rubber or compressed fiber. Ring gaskets are appropriate for this wafer style check valve, but full-face flange gaskets may be substituted. The studs or bolts used should span the full length of the valve.

Three diameters of straight pipe upstream of the valve are recommended to prevent turbulent flow through the valve, which can cause vibration and wear.

When mating the check valve with butterfly isolation valves, the isolation valve must be installed at least one diameter downstream of the check valve because, in most sizes the check valve discs extend beyond the downstream flange face and may interfere with the operation of adjacent valves. In these sizes, a short run of pipe or spacer is needed between the check valve and the isolation valve.

## INSTALLATION PROCEDURE:

Lower valve between mating flanges. NPS10 (DN 250-300) valves are provided with a lifting eyebolt to aid in this process. Lubricate the flange bolts or studs and insert them around the flange. lightly turn bolts or nuts in graduated steps using the cross-over tightening method. Recommended lubricated torques for use with resilient gaskets are given in Table 1.

Size	Class	Bolt Size	Qty	Bolt Torque
NPS 2	ANSI 125#	5/8 in.	4	25-75 ft-lb
DN 50	ISO 7005 PN16	M16	4	40-120 N-m
NPS 2.5	ANSI B16.1 125#	5/8 in.	4	25-75 ft-lb
DN 65	ISO 7005 PN16	M16	4	40-120 N-m
NPS 3	ANSI B16.1 125#	5/8 in.	8	25-75 ft-lb
DN 80	ISO 7005 PN16	M16	8	40-120 N-m
NPS 4	ANSI B16.1 125#	5/8 in.	8	25-75 ft-lb
DN 100	ISO 7005 PN16	M16	8	40-120 N-m
NPS 5	ANSI B16.1 125#	3/4 in.	8	40-120 ft-lb
DN 125	ISO 7005 PN16	M16	8	40-120 N-m
NPS 6	ANSI B16.1 125#	3/4 in.	8	40-120 ft-lb
DN 150	ISO 7005 PN16	M20	8	65-200 N-m
NPS 8	ANSI B16.1 125#	3/4 in.	8	50-150 ft-lb
DN 200	ISO 7005 PN10	M20	8	65-200 N-m
DN 200	ISO 7005 PN10	M20	12	65-200 N-m
NPS 10	ANSI B16.1 125#	7/8 in.	12	60-180 ft-lb
DN 250	ISO 7005 PN10	M20	12	65-200 N-m
DN 250	ISO 7005 PN16	M24	12	100-300 N-m
NPS 12	ANSI B16.1 125#	7/8 in.	12	65-200 ft-lb
DN 300	ISO 7005 PN10	M20	12	80-240 N-m
DN 300	ISO 7005 PN16	M24	12	125-375 N-m

Table 1. Flange Bolt Torques

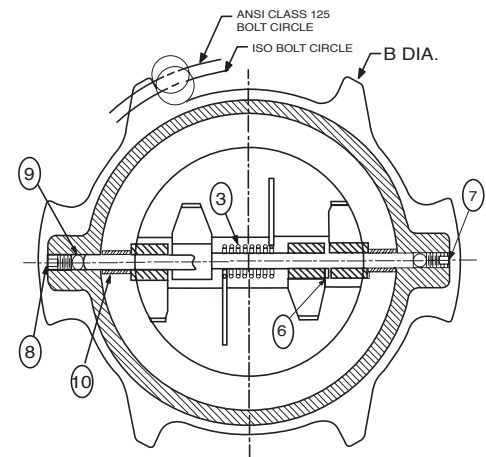


Figure 2 Integrally-Cast Locating Wings

**VALVE MATERIALS OF CONSTRUCTION**

**SERIES 582W and 582G**

Sizes 2" thru 12" Body (1) is Ductile Iron - Doors (2) are Bronze - the Torsion Spring (3) and Balance of Metal Parts are Type 316 Stainless Steel, Seat is Buna-N®.

**SERIES 582**

Sizes 14" thru 60" - Body (1) are cast Iron, Doors (2) are Bronze - Torsion Spring (3) and balance of material parts are Type 316 Stainless Steel, Seat is Buna-N®.

**Note:** Series 582W are Wafer Style, with plain ends 2" thru 12". No flange bolt holes.

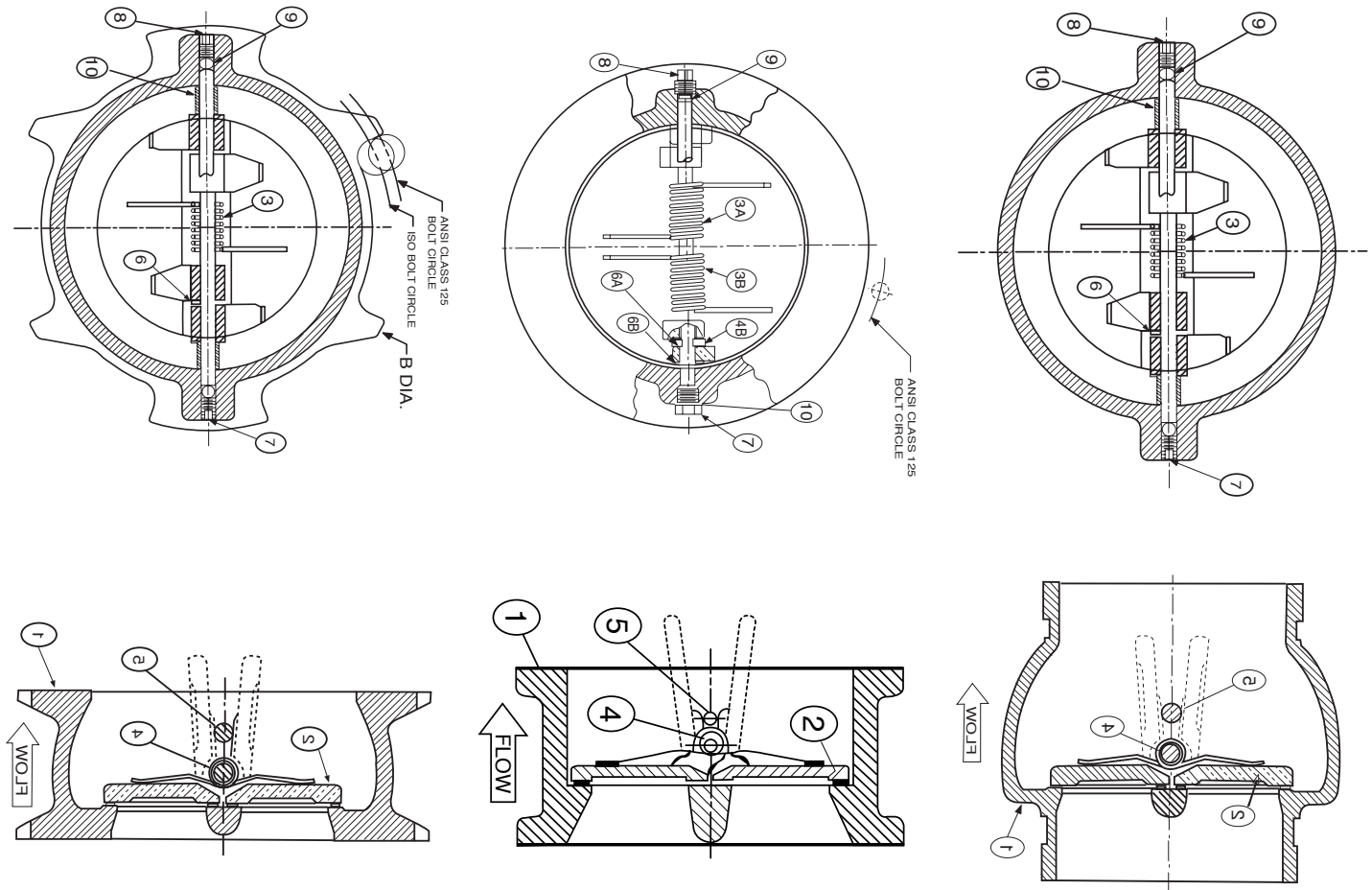
Series 582 are also Wafer Style 14" - 60", but some sizes are supplied with threaded flange holes..

For materials and Details of construction see Fig. 3, Fig 4, Fig. 5, Tables 3A, 4A, 5A.

SERIES 582W and 582 are Wafer Style to fit between two pipe flanges. SERIES 582G has Grooved End Body.

All have Buna-N® Seats; bonded to the bodies; not adjustable or field replaceable.

**Warning:** For valve inspection, do not disconnect mating flanges without first draining the pipeline.



Series 582W

Fig. 3 Two Door Check Valve

Item	Description	Material
1	Body	Ductile Iron w/ Buna-N® Seat
2	Disc	Bronze
3	Spring*	T316 Stainless Steel
4	Hinge Pin	T316 Stainless Steel
5	Stop Pin	T316 Stainless Steel
6	Bearing*	T316 Stainless Steel
7	Hinge Pin Ret.*	T316 Stainless Steel
8	Stop Pin Ret.*	T316 Stainless Steel
9	Stab. Sphere*	Buna-N®
10	Spacer*	HDPE

\*Recommended Spare Parts

Series 582 (14" thru 60")

Item	Description	Material
1	Body	Cast Iron w/ Buna-N® Seat
2	Disc	Bronze
3A,3B	Spring*	T316 Stainless Steel
4A	Hinge Pin	T316 Stainless Steel
4B	Shaft Collar	T316 Stainless Steel
5	Stop Pin	T316 Stainless Steel
6A	Inner Bearing*	T316 Stainless Steel
6B	Outer Bearing*	T316 Stainless Steel
7	Hinge Pin Ret.*	T316 Stainless Steel
8	Stop Pin Ret.*	T316 Stainless Steel
9	Stab. Sphere*	Buna-N®
10	O-Ring*	Buna-N®

Series 582G (2" Thru 12")

Fig. 5 Two Door Check Valve

Item	Description	Material
1	Body	Cast Iron w/ Buna-N® Seat
2	Disc	Bronze
3	Torsion Spring*	T316 Stainless Steel
4	Hinge Pin	T316 Stainless Steel
5	Stop Pin	T316 Stainless Steel
6	Thrust Bearing*	T316 Stainless Steel
7	Hinge Pin Ret.*	T316 Stainless Steel
8	Stop Pin Ret.*	T316 Stainless Steel
9	Stab. Sphere*	Buna-N®
10	Spacer*	HDPE

\*Recommended Spare Parts

## MAINTENANCE

Two Door Check Valves require no scheduled lubrication or maintenance.

### INSPECTION:

Periodic inspection for leakage can be performed by listening or leakage noise from the valve while the pump is shut down. If leakage is heard, drain the pipeline, remove the valve, and inspect the seating surfaces for wear or damage. If the resilient seat is damaged, replace the valve or return the valve to the factory for refurbishing.

## TROUBLE SHOOTING

Several problems and solutions are presented below to assist you in troubleshooting the valve assembly in an efficient manner.

### Valve Chatters or Vibrates:

Verify velocity is at least 4 ft/sec. (consult factory for air service). A partially open valve will wear prematurely. Verify there are three diameters of straight pipe upstream.

### Valve Leakage:

Check upstream gasket and flange bolt torque for flange leakage. Drain line, remove valve and inspect seating surfaces.

### Valve Does Not Pass Flow:

Check flow arrow direction on valve body is correct. Verify downstream isolation valve is open and there is no line blockage downstream.

### Valve Slams:

Remove valve and inspect spring. Heavier springs can be furnished for severe high-head applications. Consult factory if the valve is installed in a vertical pipe with the flow downstream. Pump discharge lines may have trapped air.

## DISASSEMBLY:

The valve must be removed from the pipeline for repair. All work on the valve should be performed by a skilled mechanic with proper tools. Refer to Figure 3, page 2.

### WARNING:

The line must be drained before removing the valve or pressure may be released causing injury.

1. remove the valve from the pipeline. NPS 10-12 (DN 250-300) valves are provided with a lifting eyebolt to aid in this process. Lay valve on flat surface or bench with the flow arrow facing upwards.

2. Remove the retainer set screws (7) & (8) and the rubber spheres (9). The retainer set screws are metric and should be removed, using standard metric hex drive bits or wrench.

3. Drive out the pins (4 & 5) with a round bar or punch while pressing down on the spring (3) to prevent it from unwinding.

**Warning:** Valves 18" and larger have 2 springs and require extreme care to prevent rapid uncoiling of the spring during disassembly. Restrain the spring with boards and clamps during disassembly.

4. Lift doors (2) from body. Inspect pins and seating surfaces for wear. The shaft diameter is normally about 1/16" (1.5mm) smaller in diameter than the hole in the disc lugs. Some minor dents and discolorations are normal. Wear areas in the Buna-N® resilient seat will cause leakage and require valve to be returned to Cla-Val factory to be refurbished.

5. Inspect spring (3) for wear or cracks.

## REASSEMBLY:

All parts must be cleaned and gasket surfaces cleaned with a stiff wire brush in the direction of the serration or machine marks. Worn parts, gaskets and seals should be replaced during reassembly.

1. Lay body on flat surface with arrow facing upwards. Carefully place the two doors with the machined sealing surfaces down on the body sealing surface. Align the door lugs with the pin holes in the body.

2. Insert the door hinge pin into the hole on one side of the body but not through the door lugs. Install a spacer (10) between the inside diameter of the body and the door lug. Push the door hinge pin further to engage the first door lug.

3. Install a thrust bearing (6) between the first and second door lugs and push the pin further to engage the second door lug.

4. While holding the torsion spring (3) with one of the ends facing you, wind the rear tab 180 degrees in a clockwise direction and then press the spring between the two sets of door lugs. Engage the pin further to retain the spring and the third door lug. The legs of the spring should apply a downward force on the door.

Note: 18" and larger valves have two springs and require extreme care to prevent rapid recoiling of the springs. Restrain the spring during assembly with boards and clamps. See Fig. 4, page 2.

5. While pushing the pin further, install the third thrust bearing (6), the fourth door lug and then the second spacer (10). The pin should now be centered in the body and the door should rotate without binding.

6. Insert the door stop pin (5) into the holes in the body.

7. Insert a stabilization sphere (9) into each of the four holes pin holes. 48" and larger valves will have rubber washers instead of spheres.

8. Place a small amount of pipe thread sealant such as Loctite PST on the retainer pipe plugs (7 & 8) and tighten in place. 48" and larger valves will have o-rings for two of the plugs instead of tapered threads.

9. Stand the valve on its edge with pins vertical and verify smooth operation of the valve before installation into the pipeline. Apply a light coat of silicone grease on the rubber seat for air service valves (Series 582A).

**Valve Construction (14" - 60")** The standard check valve body general details of construction are illustrated in Figure 6, 7, 8 tables. The body (1) is either wafer style to fit between two pipe flanges or lug style for bolting two pipes flanges. The resilient seat is bonded to the body and not adjustable or replaceable in the field.

The doors (2) and Torsion spring (3) are the only moving parts and require no maintenance or lubrication.

**Warning:** Removal of mating flanges with out draining the pipeline may cause injury or damage to the valve.

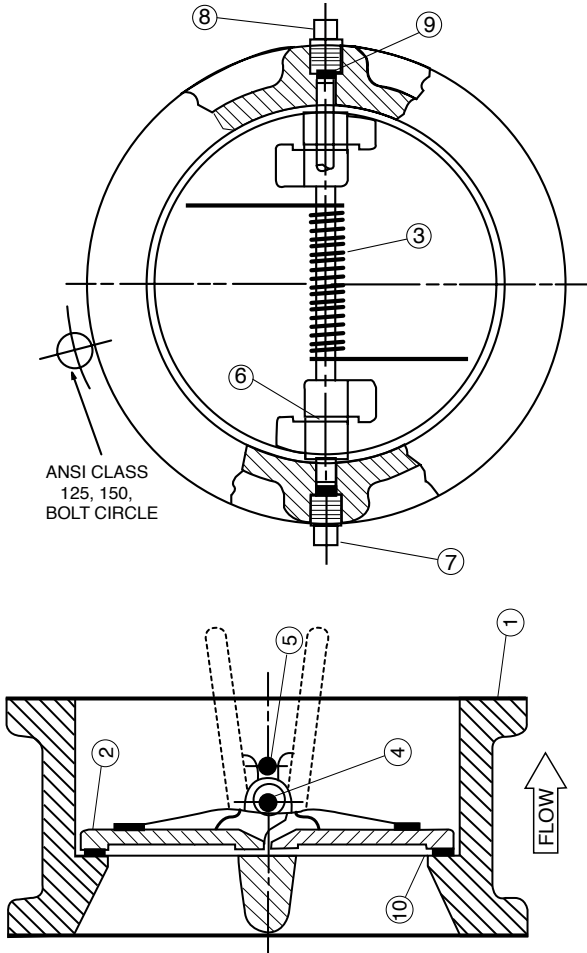
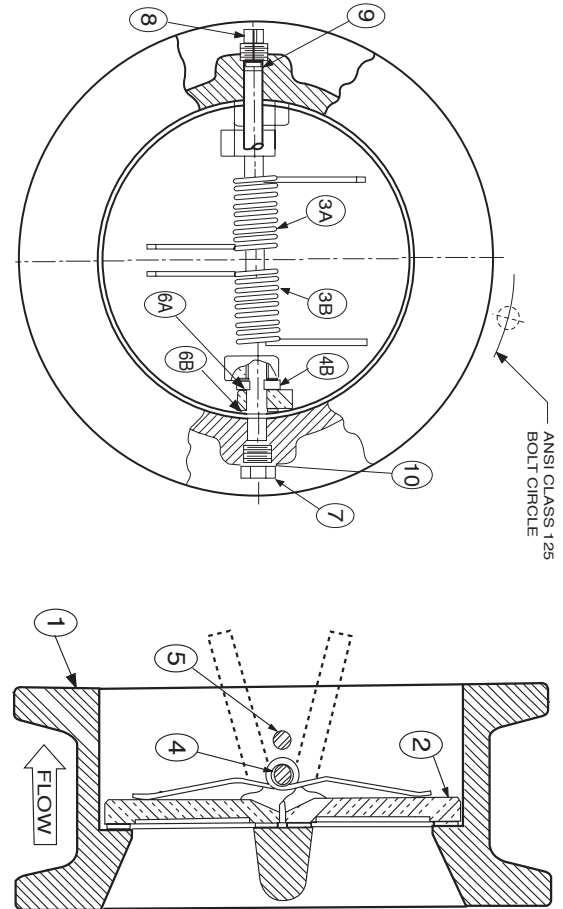


Figure 6 Two Door Check Valve

Table 6A Check Valve Parts List

DETAIL	DESCRIPTION	MATERIAL
1	Body	Cast Iron
2	Doors	Bronze
3, 3A, 3B	Spring* (qty 2springs on 18" and larger)	Stainless Steel
4	Hinge Pin	Stainless Steel
4A	Hinge Pin	Stainless Steel
4B	Shaft collar (item 4B on 36" and larger sizes only)	Stainless Steel
5	Stop Pin	Stainless Steel
6	Bearing* (qty. 4)	Stainless Steel
6A	Inner Bearing*	Stainless Steel
6B	Outer Bearing*	Stainless Steel
7	Hinge Pin Retainer*	Steel
8	Stop Pin Retainer*	Steel
9	Stabilizer Spheres*	Buna-N®
10	O-Ring*	Buna-N® (18" & Larger)

\*Recommended Spare Parts



Sizes 18" & Larger Utilizes (2) Springs

Figure 7 Two Door Check Valve

**PARTS AND SERVICE:**

Parts and service are available from your local representative or the factory. Make note of the Valve Size and Model No. located on the valve nameplate.

**Contact Your Local Cla-Val Representative or Distributor**

A sales representative will quote prices for parts or arrange for service as needed.