



**MODEL NZW  
AXIAL FLOW NOZZLE CHECK VALVE  
CENTER-GUIDED WAFER DESIGN**

**APPLICATION AND OPERATION**

This Instruction and Operation Manual should be read and understood thoroughly to ensure safe and proper operation of this product. An experienced, qualified technician should be used to install and maintain this product. Keep this manual with the product at all times for reference for the installation, operation and maintenance of this product.

**GENERAL**

The Champion Valves, Inc. (“CVI”) Model NZW Axial Flow Nozzle Check Valve (NZW) is a self-operating check valve designed to prevent the backflow of gas or liquid media. The valve permits flow in one direction while preventing flow in the other direction. Initial opening of the NZW’s disc begins when the upstream pressure of a pumping system exceeds the downstream pressure and the effective torque of the spring. This pressure is called the “cracking” pressure. Once the NZW’s disc opens, flow velocity determines the position and stability of the disc.

If the flow velocity upstream of the NZW decreases and/or stops, the internally housed spring forces the disc to a closed position. Ideally, the disc will be fully closed just prior to flow reversal, thus alleviating the potential for water hammer.



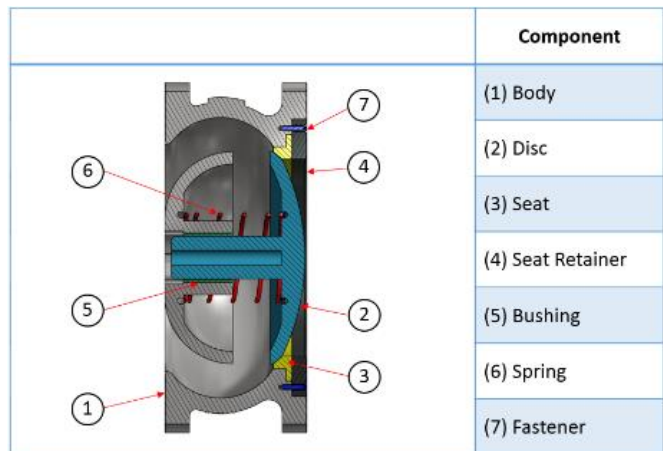
Figure 1: CVI Model NZW Axial Flow Nozzle Wafer Check Valve

Selection of the proper valve for an application requires knowledge of several factors:

- General conditions (frequency of valve operation, pressure drop, pipe dimensions, condensation, throttling requirements, flow reversal characteristics, etc.)
- Check valve materials of construction
- Working temperature and pressure ratings
- Space availability
- Service media type (gas, liquid, steam) and flow rate
- Fluid viscosity (clean, abrasive, corrosive, etc.)

CVI engineers are available to assist in selection of the proper valve for your application.

Fig. 2: Model NZW Axial Flow Nozzle Wafer Check Valve  
Materials of Construction





## **UNPACKING AND INSPECTION**

It is important to follow these instructions when unpacking and preparing to use this product:

- Inspect the product packaging for damage while the freight carrier is present. Any observed packaging damage should be reported to the carrier and a claim created.
- Carefully open the shipping container, leaving it intact. Follow any instructions marked on the container. Carefully remove any packing material and lift the NZW from the container. The shipping container and packing material may be kept and reused for product storage or shipment.
- Visually inspect the NZW for signs of possible damage, including missing, broken or loose parts, scratches, or other forms of damage that may have occurred during shipment. Items that are damaged during shipment are the responsibility of the purchaser. If damage is observed, file a claim with the freight carrier immediately. Refer to CVI Terms and Conditions of Sale for our full warranty policy.
- The protective rust proof coating on the internal parts of steel or cast iron valves should be removed by brushing out with any standard petroleum solvent (Varsol, Kerosene), and air dry. Insure internal parts operate freely.
- Stainless Steel or Bronze valves need only to be wiped clean and installed.
- Insert the valve between two companion flanges of the same series as the valve and place gaskets on flange faces. The arrow on the valve or name plate indicating direction of flow should coincide with line flow. Install studs through companion flanges and tighten, using standard industry practice.
- The NZW should be stored in its original shipping container, in a clean, dry, temperature controlled environment until installation. For long term storage, additional precautions may need to be considered. Contact CVI technical support for assistance.

## **PRE-INSTALLATION**

- Ensure all operating conditions are within the product specification ratings capacity. Refer to the individual product rating information to confirm rating values.
- Physically inspect the piping system to ensure no debris exists in the flow path where the NZW is to be installed. Unwanted debris could become lodged within the product to prevent proper sealing or hamper operation.
- The piping system should be properly aligned, and all sealing surfaces should be clean and smooth. The NZW should never be used to align the piping system as this will hamper performance and could damage the product.
- For proper performance and long service life, the NZW should be placed no closer than 3 pipe diameters from any turbulence producing devices (such as pumps, elbows, expansions/reductions, tees or swages). In positive displacement blower applications, the NZW should be mounted on the downstream side of the silencer.

## **NOTES**

- The NZW is designed for steady flow or pulsating flow conditions. The product is suitable for use in reciprocating pump, compressor or physical/thermal shock load applications, but it is recommended that CVI technical support be contacted for consultation in such applications.
- The NZW is designed for proper operation at flow rates between 5 ft./sec. and 10 ft./sec. Unreliable operation may occur when the product is used outside of its normal operating range.
- A particle strainers is recommended in any pumping system utilizing the NZW.

## **INSTALLATION**

P.O. Box 12901, WILMINGTON, NC 28405  
PHONE: 910-794-5547 - FAX: 910-794-5581  
WEBSITE: [WWW.WAFERCHECK.COM](http://WWW.WAFERCHECK.COM)



- Be sure that all packing materials, tape or other packaging materials are removed from the valve prior to installation.
- The rounded disc face should be positioned facing opposite of the primary direction of media flow. This will allow the valve disc to move away from the seat during the proper direction of media flow.
- The NZW may be installed in any position or angle. For downward flow vertical installations, please consult technical support for proper spring torque rating.
- **CAUTION:** The NZW should never be used to position or support the piping system before, during or after installation. Improper handling during the installation of the valve could void the warranty.

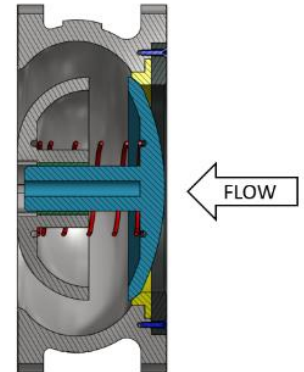


Fig. 3: Model NZW Axial Flow Nozzle Wafer Check Valve - Direction of Flow

### APPLICATION NOTES AND RATINGS

NZW valves are not recommended for the following service conditions.

- Pulsating flows
- Installation directly to a piping accessory that may interfere with the opening or closing of NZW's disc
- Vertical Flow **DOWN** without prior factory approval

Precautions should be taken to insure long service life of SCT Silent Check Valves. Accurate sizing of the valve is crucial to ensure an acceptable pressure drop and a long service life. Flow velocities should be in the following ranges:

MEDIA	FLOW RATE
Liquid	3 to 11 feet/second
	0.91 to 3.35 m/second
Gas	20 to 250 feet/second
	6.1 to 76.2 m/second

### ASSEMBLY/DISASSEMBLY

The NZW is packaged and delivered fully assembled and ready for use. The only normally serviceable items on the valve are the seat and spring. In the event of preventative maintenance activity, the NZW may be assembled/disassembled using an appropriate Phillips-Head screw driver and the following instructions:

- **CAUTION:** EYE PROTECTION IS RECOMMENDED WHEN ASSEMBLING AND DISASSEMBLING WAFER CHECK VALVES.
  - ALWAYS PROTECT THE VALVE'S FLANGE FACING.
1. Lay the body down with disc side facing upward.
  2. Remove the seat retainer screws from the valve face. Carefully remove the Seat Retainer and set it aside. There may be some spring tension on the valve Disc, so care should be taken to remove the Seat Retainer slowly.
  3. Remove the Seat, which should be free of obstruction. Carefully remove the Disc, exposing the Disc Spring.

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4. Inspect the Shaft Bushing for wear or damage. If damage or excessive wear are evident, the valve should be returned to the factory for repair. Otherwise, replace the spring, or return the original spring to its proper position.
5. Install the replacement Seat.
6. Place the Seat Retainer into the valve body and align screw holes on the Seat Retainer with matching holes in the valve body.
7. Apply pressure on the assembly with your hand so that the Seat Retainer is against the valve body.
8. Screw the retainer screws into the valve body until tight.

**ALWAYS USE EYE PROTECTION WHEN PERFORMING VALVE MAINTENANCE OR INSTALLATION!**

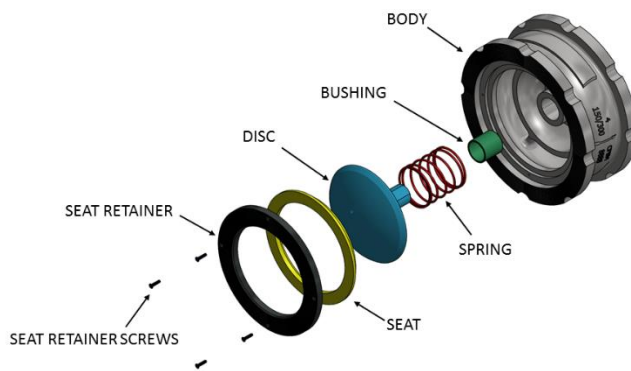


Fig. 4: Model NZW Axial Flow Nozzle Wafer Check Valve - Exploded View

#### **WARRANTY, REMEDY, AND DISCLAIMER**

CVI warrants for a period of one year from the date of shipment the equipment of its own manufacture to be delivered hereunder against defects in material and workmanship, under normal use and service when used and maintained in accordance with instructions supplied by CVI. This is CVI's sole and exclusive warranty. The customer is required to examine all parts and assemblies immediately upon receipt of shipment and promptly notify CVI of any defects or alleged defects of the parts and assemblies. If a defect appears within one year from the date of shipment and Purchaser has given CVI immediate written notice of same, CVI will repair the part, or at its option replace part by shipping a similar part F.O.B. shipping point, or at its option allow credit of the defective part's purchase price. CVI may require the return of the defective part, transportation prepaid, to establish the claim. No allowance will be made for repairs without CVI's written consent or approval. CVI MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED; AND ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY CVI AND EXCLUDED FROM THESE TERMS OF SALE.