

Pure-Flo[®]

IBV 3/16

Integrated Block Valves



ITT

ENGINEERED FOR LIFE

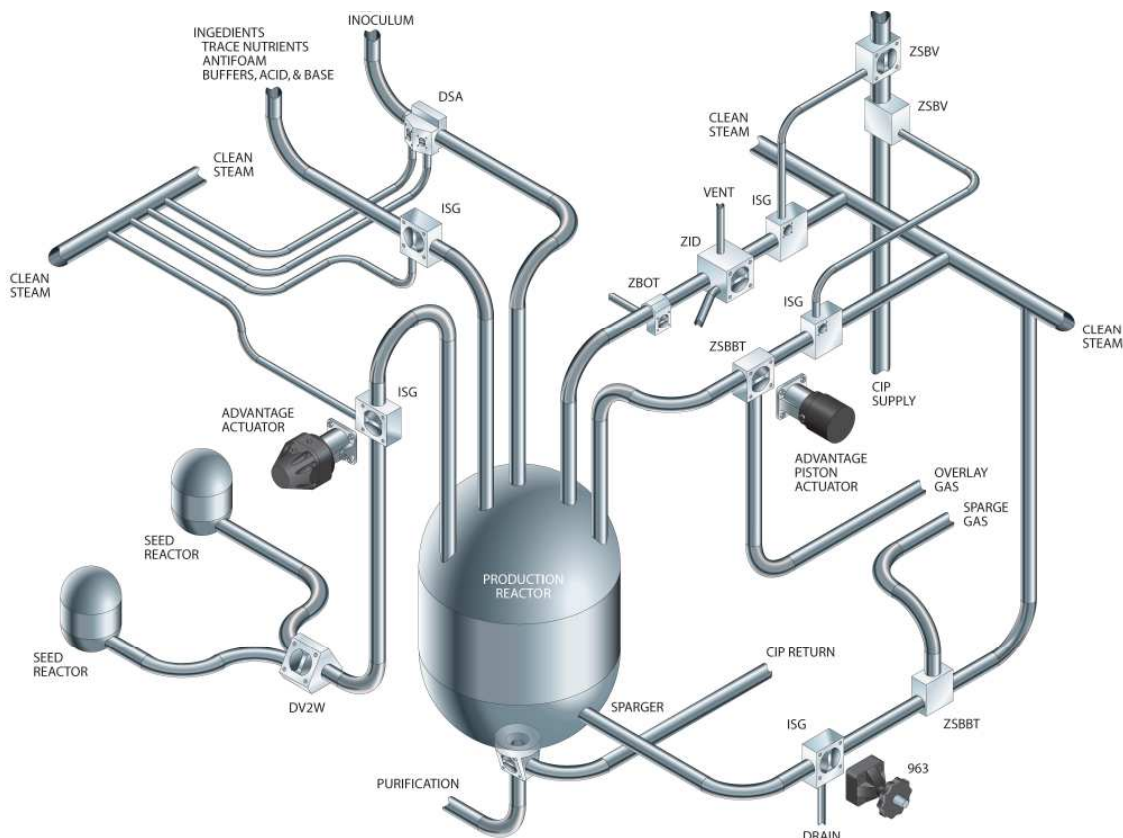
The Pure-Flo IBV - Integrated Block Valve product line is constantly changing to meet the rigorous demands of the Biopharmaceutical processing industry. An extensive array of innovative integrated block valves specifically designed to achieve the utmost in process efficiency. Pure-Flo developed the first integrated block body diaphragm valves over 30 years ago. We have a history of listening to customers and industry needs to develop valve solutions for the toughest applications.

Biopharm processes are complex and sensitive to system and environmental factors. Drug purity and process yield is greatly affected by system design. Integrated block valves can play a substantial role in developing a robust high yield process. Many valve solutions can produce acceptable results, but Pure-Flo integrated block valve technology can make a marginal process better and a good process great.

Integrated block technology is a cost effective means of reducing total cost of ownership. By optimizing drainability, hold-up volume, deadlegs and cleanability, block technology can decrease cleaning cycle times and increase process efficiency. Combining multiple valves into a single valve body can substantially reduce total installation and validation costs. Efficient designs pay for themselves over and over again.

Utilizing powerful 3D modeling software we can create almost any valve configuration imaginable. Working hand in hand our engineers will develop the valve configuration that fit your needs to a "T".

Integrated Block Valves in a Typical Bioreactor Process



Drainability and Hold Up Volume

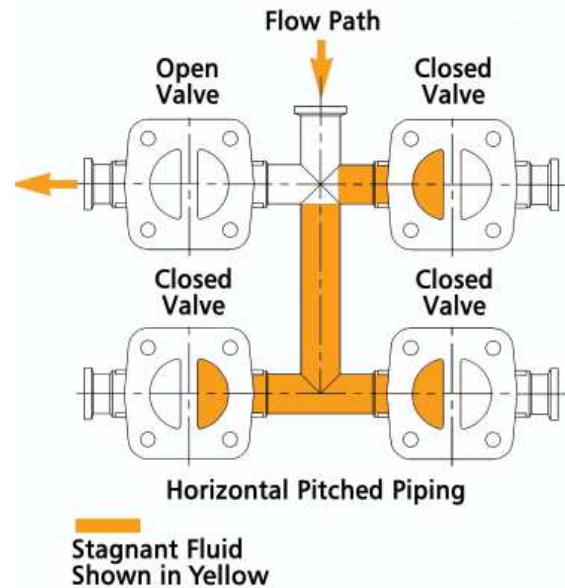
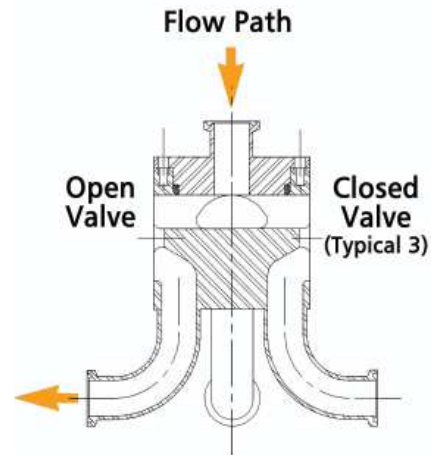
ITT Pure-Flo hygienic weir style diaphragm valves have become the most important control element of process piping systems utilized in the Pharmaceutical and Bio-processing industries. The weir style diaphragm valve has become the standard due to its unique ability to provide maximum drainability and minimized product hold up volumes.

Integral Block technology further improves drainability and minimizes hold up volumes by reducing the process pipe volume between control elements.

Utilizing the unique characteristics of the weir style diaphragm valve, valve manufacturers have helped develop many process fabrications that have reduced product contact surfaces, reduced hold up volumes, and minimized piping dead-legs. The theory is that as contact surfaces are minimized, and hold-up volume are reduced in a process piping system, product yields and product purity will be improved.

In the not so distant past, typical process fabrications were produced by welding of standard forged valve bodies in configurations designed specifically for certain applications and orientations. This fabrication has served the industry well, but has limitations. In many instances the dead leg between the two can fall outside FDA expectations.

4-Way Divert Valve vs. Conventional Divert Valve Assembly



Deadlegs

The FDA Guidelines for High Purity Water Systems has “defined dead legs as not having an unused portion greater in length than six diameters of the unused pipe, measured from the axis of the pipe in use. It should be pointed out that this was developed for hot (75-80° C) circulating systems. With colder systems (68-75° C) any drop or unused portion of any length of piping should be eliminated if possible, or have special sanitizing procedures”.

In case where process piping falls outside of FDA expectations, as noted from the High Purity Water Guide reference above, the owner of the system is expected to have special sanitizing procedures. These special sanitizing procedures can be costly in production time and processing cost and should be avoided whenever possible.

Current Good Manufacturing Practice (cGMP)

The cGMP regulation is a total quality concept applicable to processes and associated operations that assure the desired quality product. cGMP compliance, like quality, is fundamental and must be designed and built in from the earliest stages of a drug production project.

Drug manufacturers are required to maintain current Good Manufacturing Practices. This means that manufacturers must stay current with:

- New Technology
- New Methodology
- New Thinking
- New Requirements
- New Trends

One of the most critical factors in the production of drugs is the ability to clean and validate the drug production process. cGMPs require that processing equipment be designed to be cleaned and sterilized to minimize the potential for contamination, assuring the purity of the end drug product.

Hygienic weir style diaphragm valves have become the most important control element of process piping systems utilized in the Pharmaceutical and Bioprocessing industries, due to their unique ability to provide drainability with minimized product entrapment areas. Integrated block valve designs take these characteristics to an even higher level.

Block Valves: Total Cost of Ownership

Total cost of ownership for a process system can not be calculated by material costs alone. Installation and ongoing operational costs should be taken into account when making any component purchasing decision. In many cases the cost of integrated block valves are greatly offset by reductions in installation costs, space requirements and improvements in operational efficiency.

Integrated Block Valves can improve production efficiencies by:

- Minimizing internal valve volume
- Minimizing hold up
- Minimizing dead-legs
- Reducing CIP cycle times
- Increasing product purity
- Reducing qualification and validation efforts

Integrated Block Valves also reduce:

- Installation time and cost
- Expensive field welds
- Process piping footprint



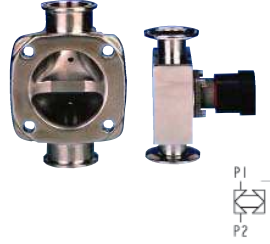
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Engineered Valves

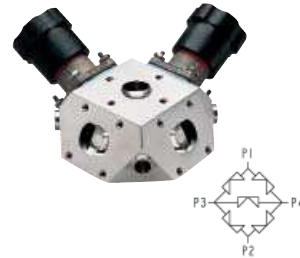
Pure-Flo[®] Block Valve Index



BBD/BBV



BYP



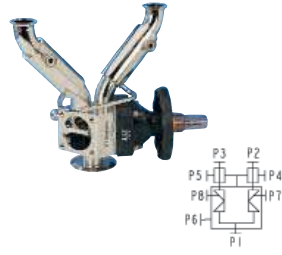
CHRO/CHN



CROD/CRO



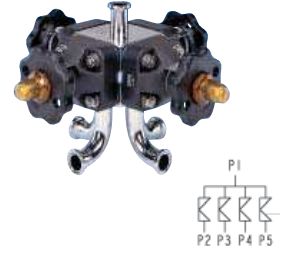
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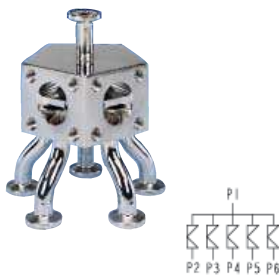
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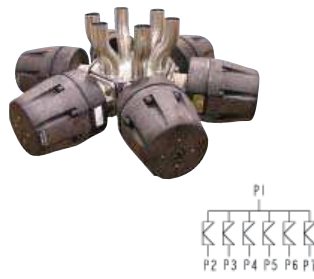
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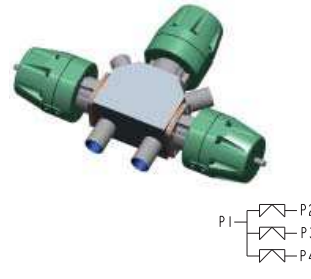
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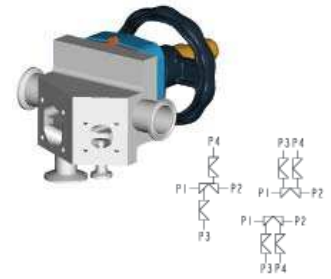
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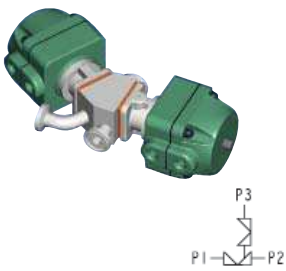
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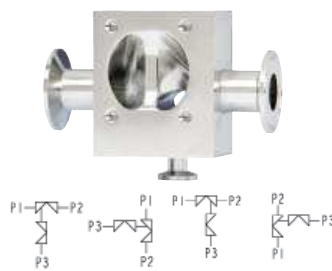
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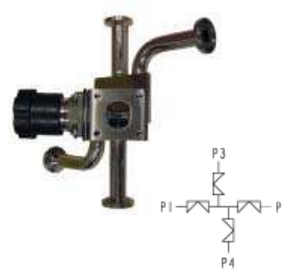
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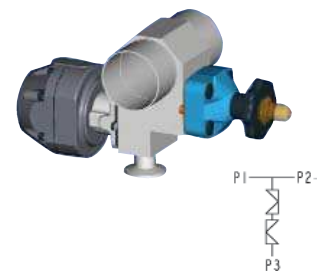
IHSA



ISG & Inverted ISG

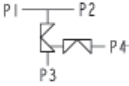


SB1

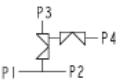


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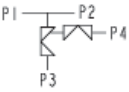
Pure-Flo Block Valve Index (cont.)



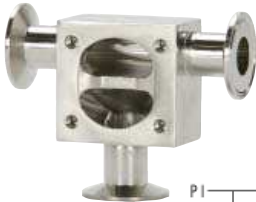
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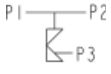
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ZSBBS



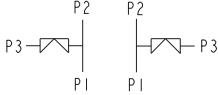
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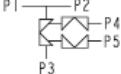
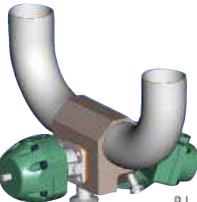
ZSBBT-BO



ZSBBVVHV



ZSBV



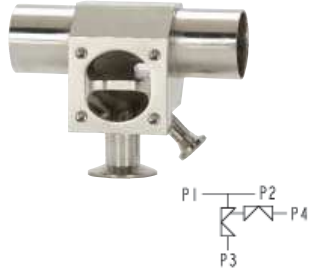
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Pure-Flo Block Valve Index by Product Type

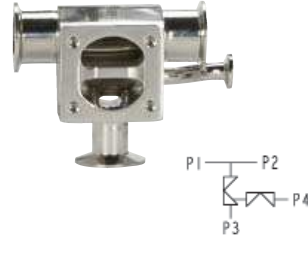
Zero Statics / Use Points



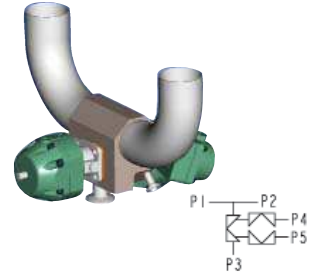
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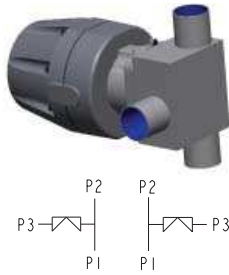
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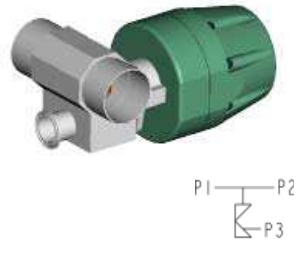
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ZUD



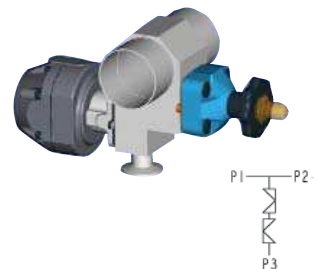
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ZSBBT-BO



ZID



ZDI

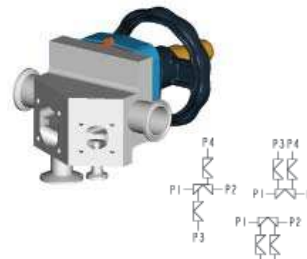
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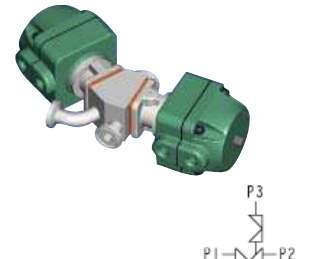
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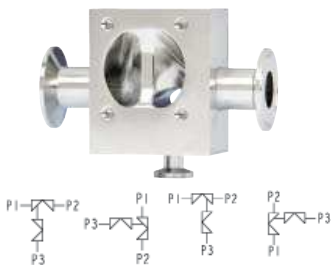
BBV



IDSA



IHSA



ISG



BYP

Pure-Flo Block Valve Index by Product Type (cont.)

Diverts



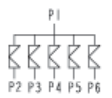
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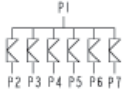
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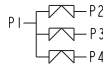
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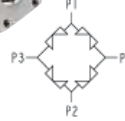
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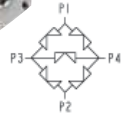
DV6W



HDV3W



CHN



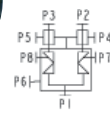
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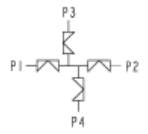
CRO



CROD

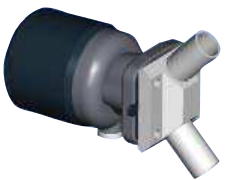


DV2WS



SB1

Specialty Valves



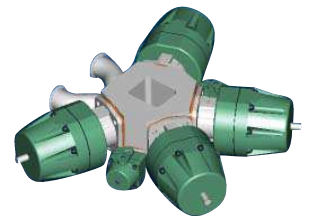
IHSA



Integrated 4 Valve



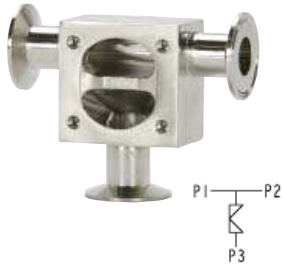
2-Way Divert with Dual Port Valves



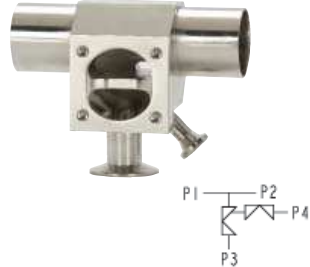
Special Distribution Valve

Pure-Flo Block Valve Index by Application (cont.)

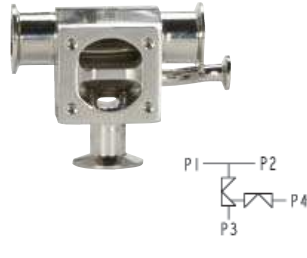
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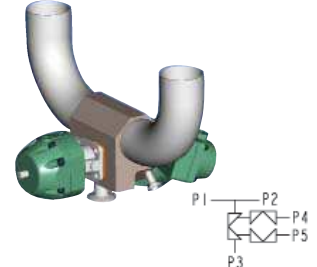
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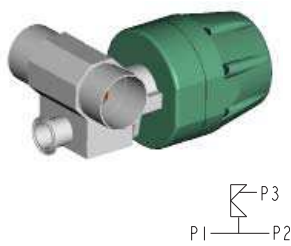
ZSB BS



ZDP



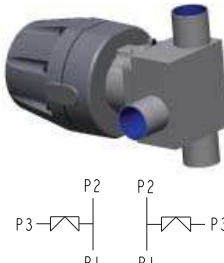
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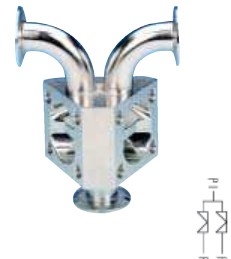
ZBOT &
Inverted ZBOT



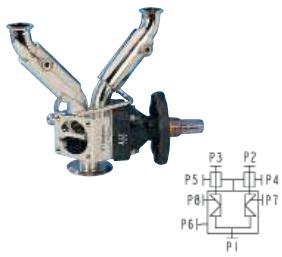
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ZSBV



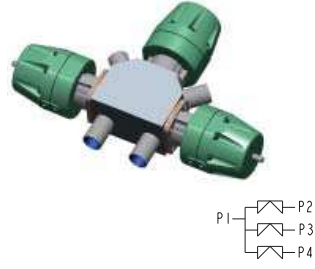
DV2W



DV2WS



DV3W



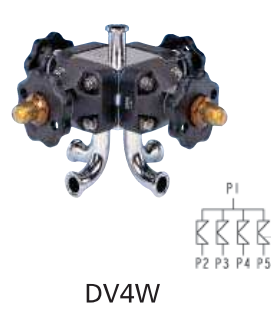
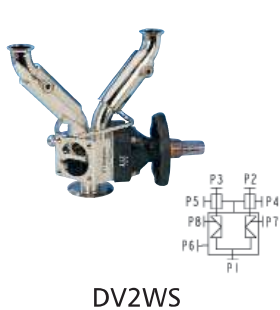
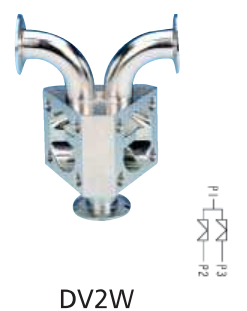
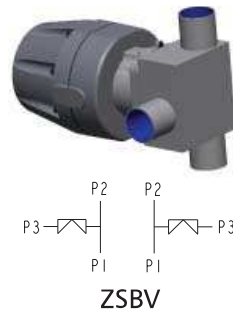
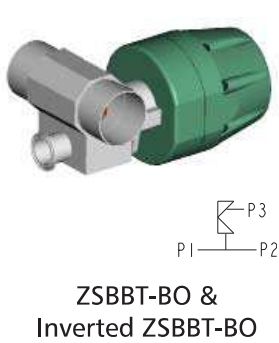
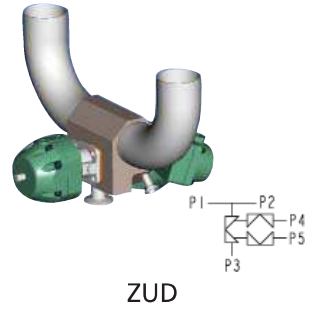
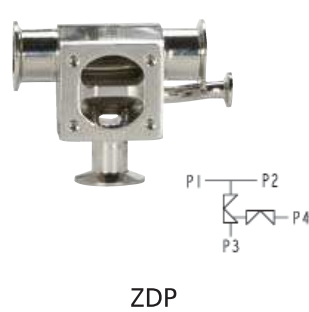
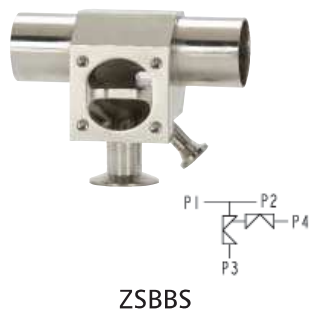
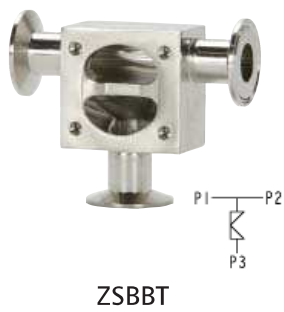
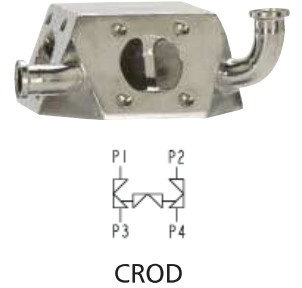
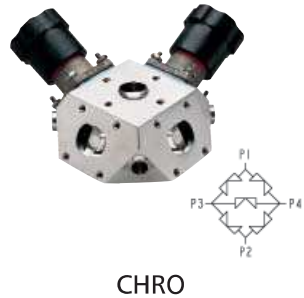
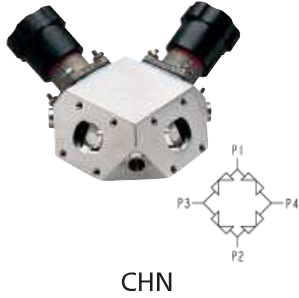
HDV3W



SB1

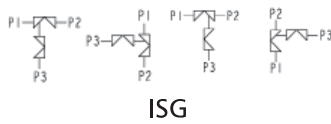
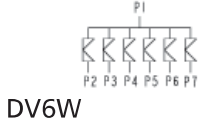
Pure-Flo Block Valve Index by Application (cont.)

Purification



Pure-Flo Block Valve Index by Application (cont.)

Purification (cont.)



CIP Systems

