



## D4 Series

DOUBLE SEAT MIX PROOF VALVES



SPX FLOW is a leading innovator of process solutions with decades of experience in valve design covering premium brands, such as APV™ and Waukesha Cherry-Burrell™. From the supply of engineered components to complete process engineering and design, we specialise in helping our customers improve their plant's performance and profitability.

Based on more than 60 years' experience in valve design and manufacturing, SPX FLOW has developed the D4 series hygienic double seat mix-proof valve to fulfil the demands of today's process industry. Installing the D4 Series valves is an investment in efficiency, production flexibility and uptime. When designing this valve, great emphasis has been put on a rapid return on investment, safety and maintenance.

SPX FLOW, Inc. (NYSE: FLOW) is a leading manufacturer of innovative flow technologies, many of which help define the industry standard in the market segments they serve. From its headquarters in Charlotte, North Carolina, it operates a sales and support network, centres of manufacturing excellence and advanced engineering facilities, throughout the world. Its cutting-edge flow components and process equipment portfolio includes a wide range of pumps, valves, heat exchangers, mixers, homogenisers, separators, filters, UHT and drying technology that meet many application needs. Its expert engineering capability also makes it a premium supplier of tailor-made solutions and complete turn-key packages to meet the most exacting installation demands.

Incorporating many leading brands, SPX FLOW has a long history of serving the food and drink, power and energy, and industrial market sectors. Its designs and engineered solutions help customers drive efficiency and productivity, increase quality and reliability, and meet the latest regulatory demands. In-depth understanding of applications and processes, state-of-the-art Innovation Centres, and advanced pilot/testing technology further assist in optimising processes and reducing time scales to reliably meet production targets.

To learn more about SPX FLOW capabilities, its latest technological innovations and complete service offerings, please visit [www.spxflow.com](http://www.spxflow.com).

## D4 Series Double Seat Mix-Proof Valves

The next generation of mix-proof valve technology is the result of continued development of both APV™ and Waukesha Cherry-Burrell™ process technologies. Used for the reliable separation of dissimilar fluids, the D4 Series helps fulfil today's customer demands for production flexibility, increased productivity, rapid return on investment (ROI) and improved product quality in the Food & Drink, Dairy, Personal Care and Brewing process industries.

### The D4 Series model range includes:

- D4 – primary, price-competitive model, which meets basic mix-proof needs for reliable separation, seat lift (SL) or non-seat lift (NSL) cleanability, and low product switching losses
- DA4 – ultra-hygienic model for critical applications requiring enhanced cleanability of product contact surfaces and low CIP losses to drain.

### FEATURES AND BENEFITS

#### High value, Low life cycle costs:

- Tiered model range helps to increase ROI and meet customer budgets
- "All-In" standard features provide exceptional value
- Reduced inventory costs with same seal kit used on multiple size ranges: DN40-DN65 (1.5"-3.0") and DN80-DN100 (4.0")
- Reduced CIP losses improve cost savings
- Low air consumption and air supply requirements
- Long housing ports ease manifold building
- Integrated shaft seal flush reduces need for external piping
- Replacement insert available to easily upgrade existing installations

#### Reliable performance:

- Fully balanced design helps to prevent hydraulic blocking and withstand pressure spikes, and enables flexible flow direction without slamming
- Innovative control unit design for fully integrated position and seat lift detection without external sensors
- Light overall weight helps support handling without lifting tools
- Slim stainless actuator is fully enclosed to prevent fluid ingress
- Range of control units and bus communication for automated operation
- No compressed air needed for removal and servicing

#### Cleanability:

- Designed to the latest hygiene standards
- Cavity spray cleaning as standard
- Extensive cleaning of product contact seals



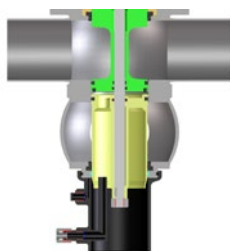
## TECHNICAL DATA

TECHNICAL DATA	
SIZES	DN 40 - 150 OD Tube 1.5" - 6" others on request
HOUSING TYPES	41, 42, 43, 44
PRODUCT-WETTED PARTS	1.4404/AISI 316L Other stainless steel parts 1.4301/AISI 304
SEAL MATERIALS	EPDM, HNBR, FPM All seals comply with the FDA requirements
SURFACES	Inside: electropolished Ra 0.8 µm (32 µ-in) with Electropolish Outside: Glass-blasted, satin finish
PRODUCT PRESSURE	10 bar (145 psi)
MAX. TEMPERATURE	EPDM & HNBR: 135°C/275°F (for short time) 140°C/284°F FPM 135°C/275°F (not to be used for steam)
STERILISATION TEMPERATURE	EPDM & HNBR: (for short time) 140°C/284°F
REQUIRED AIR PRESSURE	5 bar (73 psi), valve normally closed

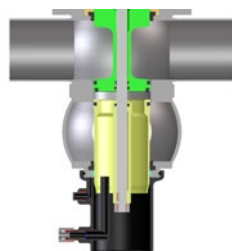
## THEORY OF OPERATION:

Double seat mix-proof valves are used to process two different fluids efficiently (typically product and CIP) through the valve simultaneously. The mix-proof design has two seats that isolate the upper and lower pipe lines when the valve is in the fail-safe closed position. The atmospheric vent cavity between the seats creates a path for any leaks, should the seals fail, as well as a drain for CIP solution during seat cleaning. An external CIP spray flush is included to provide enhanced cleaning of the leakage and vent cavity, while the valve is closed or open during production.

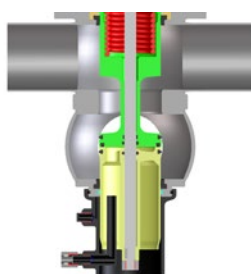
**Valve Closed**



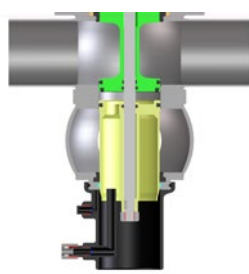
**Optional Lower Seat Clean**



**Valve Open**



**Optional Upper Seat Clean**



## Typical product applications

### Food and Drinks

Soups & Sauces  
Flavourings & Ingredients  
Dressings, Vinegars  
Soft/Fruit & Vegetable Drinks  
Brewery, Wort, Wine  
Pet Food  
Fats & Oils, Animal Oils  
Liquid Sugar  
Cereals



### Dairy

Cheese  
Cream  
Milk  
Whey  
Yoghurt



### Personal Care and Pharmaceutical

Fluid Medicines  
Extracts  
Face Creams & Lotions  
Perfumes  
Soaps  
High Purity Water  
Nutritional Supplements  
Hair Styling Gels & Liquids  
Dyes & Alcohols



### Chemical

Solvents, Paints  
Adhesives  
Coatings  
Oils & Lubricants  
Detergents  
Emulsions  
Fuels



## HOUSING COMBINATIONS

### Shut-Off Valves



41(16)



41(17)



41(18)



42



43



44

## CONTROL UNITS

### CU4 & CU4plus Series



#### FEATURES AND BENEFITS

- Automated control and position monitoring for reliable processing
- Reduces compressed air needs and electrical connections
- Helps reduce external solenoid valve cabinets
- Accelerates valve response time
- Innovative seat lift detection is fully integrated without need for external sensor wiring to provide additional position monitoring
- Reliable and long service life - robust clamp connection, water tight seals and reinforced stainless steel air coupling threads to avoid air leakages
- Ease of operation - contains manual override solenoids and adjustment screw to throttle air flow to actuator to ensure optimal opening and closing
- Clarity - clear and bright indication of valve position - 5 diodes in LED panel and convenient location
- Standardisation - same control top used on various SPX FLOW valve lines, offers common look and control interface
- IP67 (NEMA 6) wash-down rating

#### CONNECTOR OPTIONS

- S/O Cord Grip for hard wire (std)
- M12 pin connectors (optional)

#### INTERFACE OPTIONS

- 24 V DC Direct Connect
- AS-i Field Bus Card

#### POSITION INDICATION OPTIONS

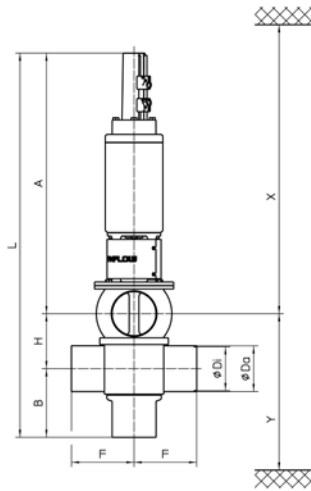
- CU4: 2 internal feedback sensors for valve open/valve closed position detection
- CU4plus: Automatic teaching of all positions with press of single button
- CU4plus: Detection of all positions (open, close, upper/lower seat lifts)

#### SOLENOID VALVES

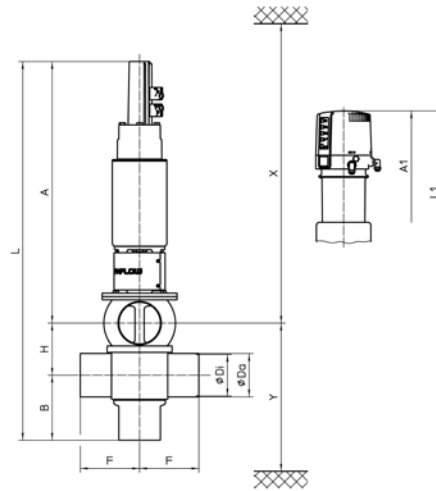
- 24 V DC
- Select 1 (non-seat lift) or 3 Solenoids (seat lift)

# PRODUCT DIMENSIONS

## D4



## D4SL and DA4



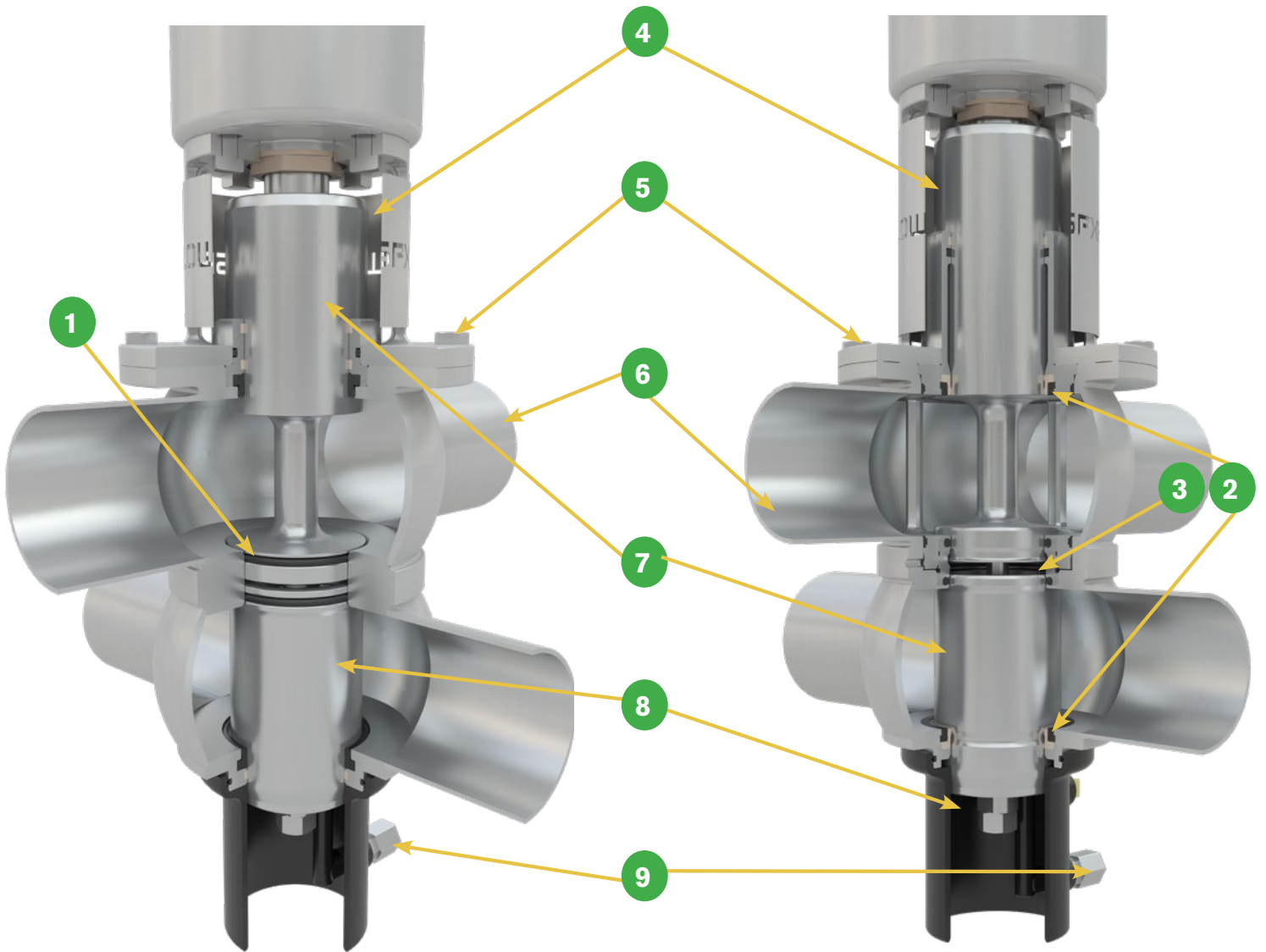
DIMENSIONS MM		A	A1	B	ØDa	ØDi	F	H	L	L1	X*	Y*
D4	DN											
	40	483	566	120	41	38	125	63	666	749	820	200
	50	487	570	126	53	50	125	75	688	771	830	218
	65	495	578	134	70	66	125	91	720	803	840	242
	80	583	666	146	85	81	142.5	106	835	918	930	274
	100	593	676	156	104	100	142.5	125	874	957	940	303
	125	677	760	179	129	125	150	150	1006	1089	1030	350
	150	725	793	194	154	150	150	175	1094	1162	1075	390
	INCH											
	1.5	485	568	119	38.1	34.8	125	63	667	750	820	197
	2.0	488	571	125	50.8	47.6	125	75	688	771	830	216
	2.5	492	575	131	63.5	60.3	125	85.3	708.3	791.3	840	233
	3.0	498	581	137	76.1	72.9	125	97.9	732.9	815.9	850	251
4.0	594	677	155	101.6	97.6	142.5	125	874	957	840	301	
6.0	726	795	193	152.4	147.3	149.8	175	1095	1161	1080	391	
D4 SL	DN											
	40	524	607	120	41	38	125	63	707	790	870	200
	50	528	611	126	53	50	125	75	729	812	880	218
	65	536	619	134	70	66	125	91	761	844	890	242
	80	618	701	146	85	81	142.5	106	870	953	980	274
	100	628	711	156	104	100	142.5	125	909	992	990	303
	125	677	760	179	129	125	150	150	1006	1089	1030	350
	150	725	793	194	154	150	150	175	1094	1162	1075	390
	INCH											
	1.5	526	609	119	38.1	34.8	125	63	708	791	870	197
	2.0	529	612	125	50.8	47.6	125	75	729	812	880	216
	2.5	534	617	131	63.5	60.3	125	85.3	750.3	833.3	890	233
	3.0	540	623	137	76.1	72.9	125	97.9	774.9	857.9	900	251
4.0	629	712	155	101.6	97.6	142.5	125	909	992	990	301	
6.0	726	795	193	152.4	147.3	150	175	1095	1161	1080	391	
DA4	DN											
	40	589	672	120	41	38	125	63	772	855	930	200
	50	593	676	126	53	50	125	75	794	877	940	218
	65	601	684	134	70	66	125	91	826	909	950	242
	80	678	761	146	85	81	142.5	106	930	1013	1030	274
	100	688	771	156	104	100	142.5	125	969	1052	1040	303
	INCH											
	1.5	588	671	119	38.1	34.8	125	63	770	853	930	197
	2.0	594	677	125	50.8	47.6	125	75	794	877	940	216
	2.5	598	681	131	63.5	60.3	125	85.3	814.3	897.3	950	233
	3.0	604	687	137	76.1	72.9	125	97.9	838.9	921.9	960	251
	4.0	689	772	155	101.6	97.6	142.5	125	969	1052	1050	301

\*Minimum installation and valve insert removal dimensions

# Engineered for Performance and Cleanability

## D4 NSL and SL

## DA4 Ultra-Hygienic Model



		FEATURE	BENEFIT
D4	1	Radial seal design for reduced losses of product fluids during switching	<ul style="list-style-type: none"> <li>Product cost savings</li> <li>Cleaner operating environment</li> </ul>
		Choice of seat lifting (SL) or non-seat lifting (NSL) actuator	Modular design to fit a wide range of cleanability and functionality needs
DA4	2	Integrated upper and lower shaft seal and balancer flushing	<ul style="list-style-type: none"> <li>Extensive cleaning of product contact surfaces</li> <li>Helps to reduce external flush piping</li> </ul>
	3	Metal orifices control CIP flow during seat lift	Reduces chemical and water loss consumption
		Replacement insert fits into existing DA3+ housing	Easy upgrade to next generation with improved features
D4 and DA4	4	Open yoke design	<ul style="list-style-type: none"> <li>Reduces heat transfer from product zone into actuator</li> <li>Provides visual leak detection of damaged shaft seals</li> <li>Safety guard provided to reduce pinch points</li> </ul>
	5	Bolted flange connection for housing/insert	<ul style="list-style-type: none"> <li>Heavy-duty, secure connection</li> <li>Reliable and controlled assembly and disassembly of valve insert</li> </ul>
	6	Long ports to ease manifold building	Helps to reduce spool pieces and welds to ease manifold building
		Only two seal kit sizes used on entire range: DN40-DN65 (1.5"-3.0") and DN80-DN100 (4.0")	Reduces inventory and maintenance costs
		Fully integrated sensors to detect all critical positions	<ul style="list-style-type: none"> <li>No external wires exposed to wash-down and mishandling</li> <li>Extra security to monitor seat positions during cleaning</li> </ul>
		No compressed air required for servicing	Easy and efficient maintenance
	7	Balanced upper and lower shafts (as standard)	<ul style="list-style-type: none"> <li>No hydraulic blocking</li> <li>Resistant against pressure spikes</li> <li>Flexibility in either flow direction through the valve (top-to-bottom or bottom-to-top) without water hammering</li> </ul>
		Reduced cleaning fluid losses to drain	<ul style="list-style-type: none"> <li>Chemical and water savings</li> <li>Cleaner environment due to fewer chemicals and fluids spilling to the floor</li> </ul>
	8	Large separation cavity drain port	Less product risk and prevention of pressure build-up that could cause cross-contamination.
	9	Flush cavity spray fixed connection (as standard)	<ul style="list-style-type: none"> <li>Enhanced cleaning</li> <li>Removal of residual media in separation cavity when full CIP is not readily available</li> <li>Hard-piped flush can be used without need to be removed during valve maintenance</li> </ul>
	Light overall weight	Easier handling for maintenance	

# D4 Series Double Seat Mix-Proof Valves



## Global locations

### AMERICAS

#### SPX FLOW

611 Sugar Creek Road  
Delavan, WI 53115  
USA  
+1 262 728 1900

### APAC

#### SPX FLOW

7F, No. 1568, Huashan Road  
Shanghai, 200052  
China  
+86 21 2208 5888

### EMEA

#### SPX FLOW

Gottlieb-Daimler-Straße 13  
D-59439 Holzwickede  
Germany  
+49 2301-9186-0

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Based in Charlotte, North Carolina, SPX FLOW, Inc. (NYSE: FLOW) is a multi-industry manufacturing leader. For more information, please visit [www.spxflow.com](http://www.spxflow.com)

SPX FLOW, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction, dimensional data and certifications as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing. Please contact your local sales representative for product availability in your region. For more information visit [www.spxflow.com](http://www.spxflow.com).

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