

# Diaphragm Valves

ASEPTIC APPLICATIONS



**ASCO**<sup>™</sup>

  
**EMERSON**<sup>™</sup>  
Industrial Automation

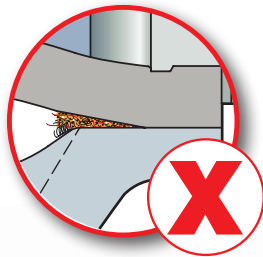
# An innovative design for demanding applications

ASCO diaphragm valves are technologically advanced and meet the most rigorous standards, enabling them to be applied to the most severe aseptic processes.

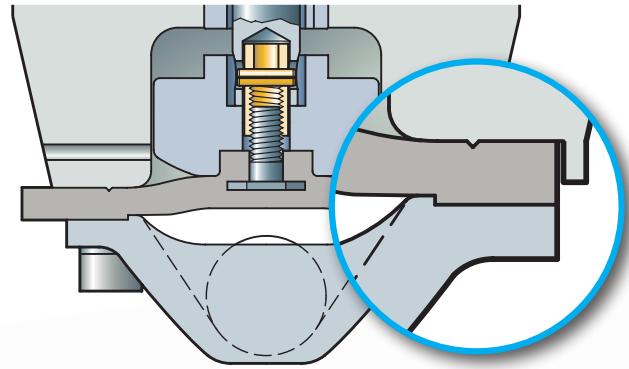


## Circumferential seat profile

Elimination of microscopic areas where fluid can be retained: Increased effectiveness of internal cleaning (EHEDG approved), reduction of the duration of SIP cleaning and the consumption of washing solutions during CIP.

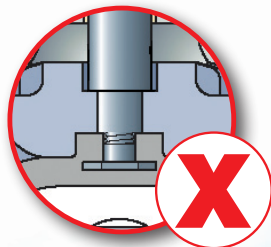


Conventional seat

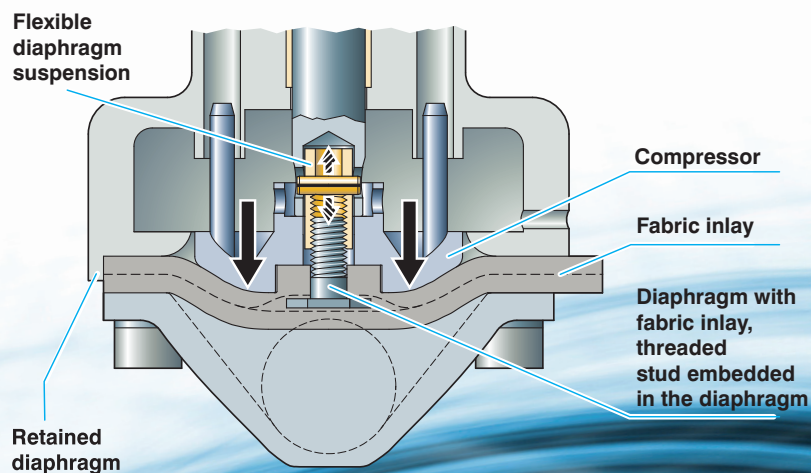


## Flexible diaphragm suspension

This new technology eliminates point loading at the centre of the diaphragm, enabling a longer service life. All diaphragm materials of the same size are interchangeable meaning there is no need to change the spindle or the compression plate.



Conventional attachment



# Aseptic valves

ASCO diaphragm valves have a reputation for quality and many unique characteristics making them ideal for aseptic processes.

## Positive closure

The resilient diaphragm bead in contact with the metal weir assures positive closure

## Ideal for CIP and SIP

Clean-in-place and Steam-in-Place operations may be performed in-line without valve disassembly or operation

## In-line maintenance

The top entry design enables in-line maintenance

## Bonnet isolation

The diaphragm isolates the working parts of the valve from the process media

## Streamlined fluid passage

A smooth contoured body, streamlined flow path and high quality, polished interior surface prevents the accumulation of process fluid or contaminants

## Minimal contact surfaces

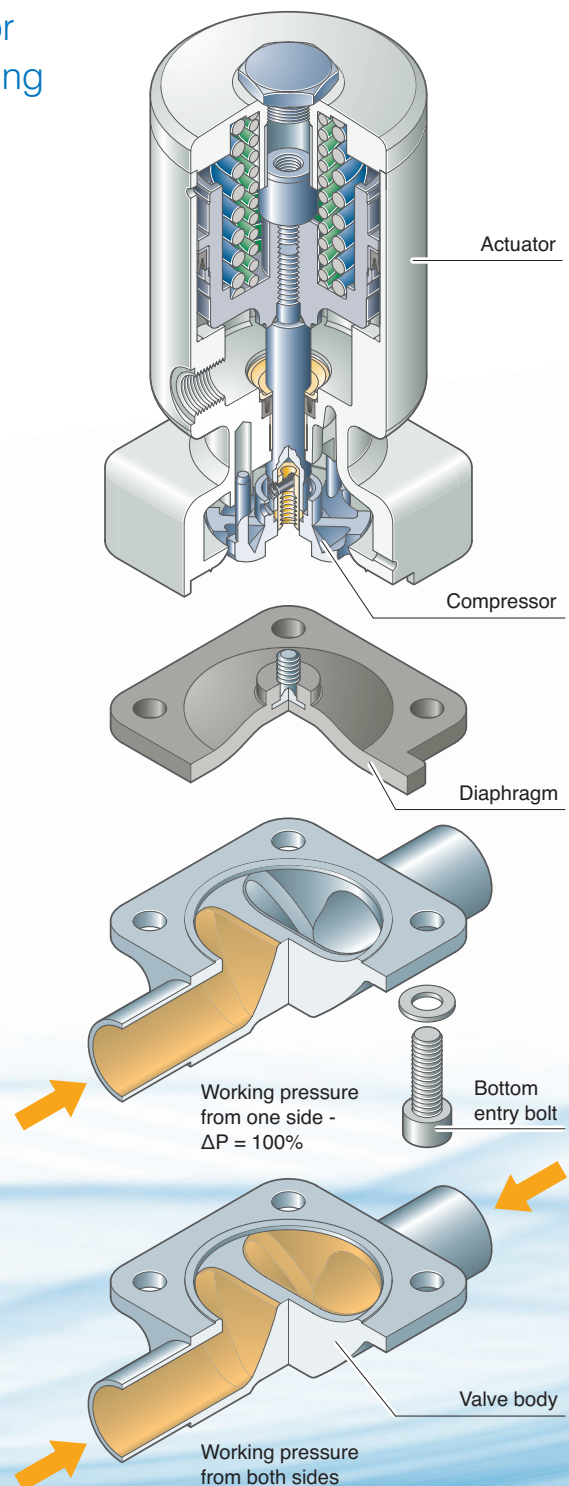
The process contact surfaces (body and diaphragm) are minimal, enhancing the ease of cleaning and sterilisation

## One centreline for inlet and outlet

One centreline for inlet and outlet simplifies installation and plant design work

## Modular construction system

Modular valve construction system reduces complexity and maintenance expense

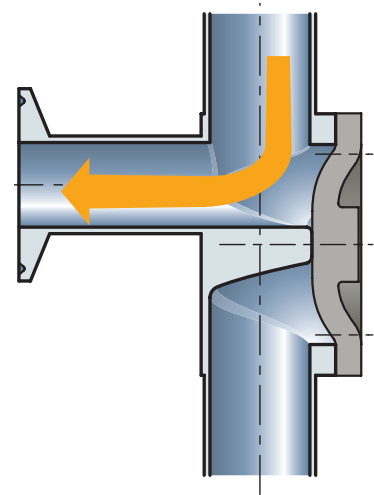


# Welded valve configurations

Welded valve configurations are engineered in accordance with current Good Manufacturing Practice (cGMP), they are totally self draining and will minimise dead legs.

## Advantages of welded valve configurations

- Totally self draining
- Minimised dead legs
- Reduced surface contact and hold up volume of the medium
- Compact assembly
- Reduced number of welds
- Provides a ready-made assembly for field installation

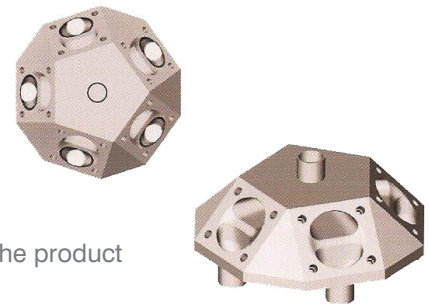


# Multiport valves

A multiport valve consists of a body machined from a solid block with a minimum of three tube ends. Multiport valves can be produced with a combination of nominal diameters and can have a main line open for circulation, or they can be configured so that all valve ports are able to close.

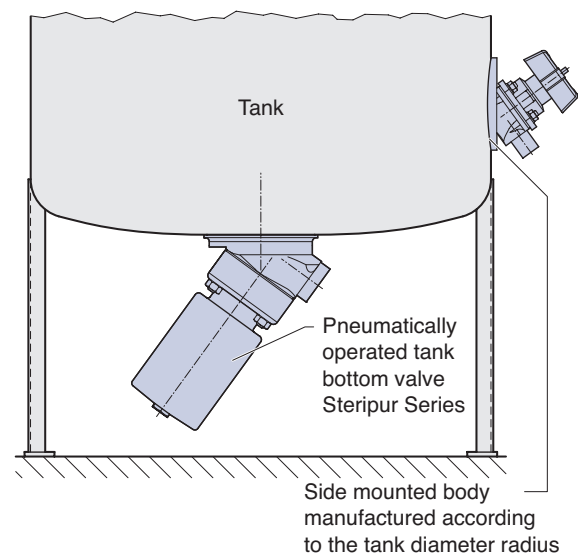
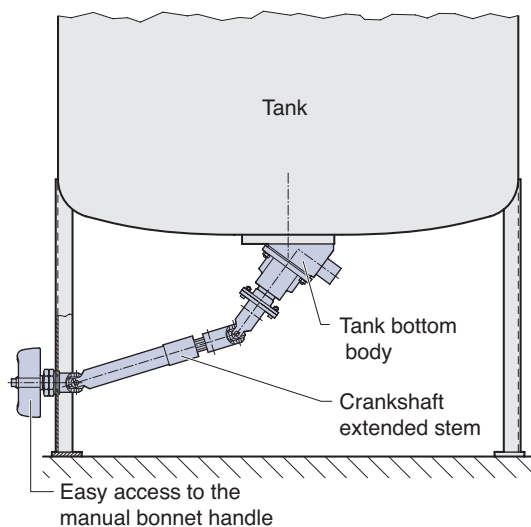
## Advantages of multiport valves

- Customer's specific design
- Compact design and smaller envelope dimension
- Can include a combination of nominal diameters
- Optimised drainability
- Minimised dead legs
- Reduced surfaces contact, hold up volume and cross contamination of the product
- Reduced requirement for qualification and validation documentation



## Tank valves

The ASCO tank bottom valve is designed for applications in the aseptic process industry offering a pocket-free interior surface, minimised sump, eliminating entrapment areas and minimizing flow resistance thus reducing the potential for process contamination.











## Process solutions

The sampling unit is suitable to take sterile samples from all liquids in aseptic processes i.e. high purity water, high purity steam, fermentation processes, parenteral drugs etc. Samples can be taken in a continuous process with pneumatic controlled diaphragm valves or typically as a system with manual valves.



Sampling bottle with pneumatic actuated valves

# Overview Aseptic Valves

Series	Description	Specification			
Steripur	Control function	Manual			
	Diaphragm size	MA 8	MA 10	MA 25 - 50	MA 80 - 100
	Diameter in mm (inch)	4 - 10 (1/4 - 1/2)	8 - 20 (3/8 - 3/4)	15 - 50 (3/4 - 2)	65 - 100 (2 1/2 - 4)
	Type	297	397	997	
	Image				
	Max. operating pressure (bar)	10			
	- EPDM diaphragm	10			
	- PTFE diaphragm	10		8	
	Max. operating temperature <sup>1</sup>	160°C			
KMA	Control function	Manual			
	Diaphragm size	MA 8	MA 10	MA 25 - 50	MA 80 - 100
	Diameter in mm (inch)	4 - 10 (1/4 - 1/2)	8 - 20 (3/8 - 3/4)	15 - 50 (3/4 - 2 1/2)	65 - 100 (2 1/2 - 4)
	Type	290	295	995	
	Image				
	Max. operating pressure (bar)	10			
	- EPDM diaphragm	10			
	- PTFE diaphragm	10		8	
	Max. operating temperature <sup>1</sup>	160°C			
KMD	Control function	Manual			
	Diaphragm size	MA 10	MA 25 - 50	MA 80 - 100	
	Diameter in mm (inch)	8 - 20 (3/8 - 3/4)	15 - 50 (3/4 - 2 1/2)	65 - 100 (2 1/2 - 4)	
	Type	289	985		
	Image				
	Max. operating pressure (bar)	10			
	- EPDM diaphragm	6	10		
	- PTFE diaphragm	6	10	8	
Max. operating temperature, design HS <sup>2</sup>	150°C			NA	
Max. operating temperature, design Standard	80°C				

<sup>1</sup> dependent on application

<sup>2</sup> KDM for steam sterilizing up to max. 150°C

MA = Diaphragm size

DA = Double Acting

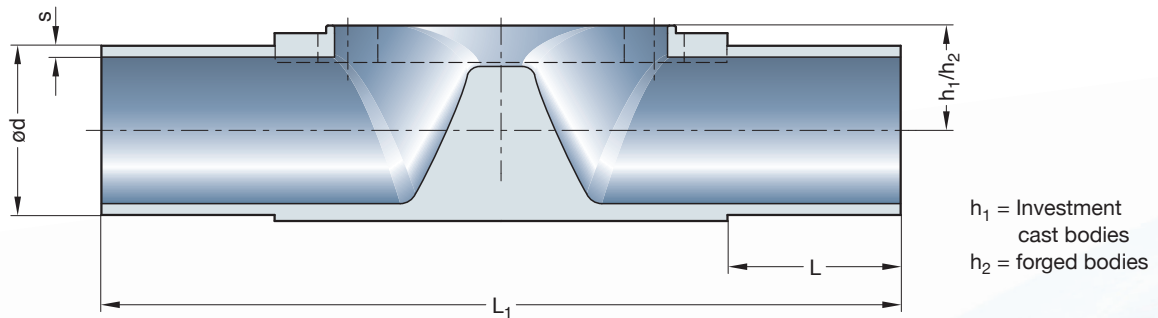
# Overview Aseptic Valves

Specification					Series
Pneumatically operated					Steripur
NC	NC, NO, DA				
MA 8		MA 10	MA 25 - 50	MA 80 - 100	
4 - 10 (1/4 - 1/2)		8 - 20 (3/8 - 3/4)	15 - 50 (3/4 - 2 1/2)	65 - 100 (2 1/2 - 4)	
207.30	207.25	307	407	407	
					
8	4,5	8	10	7 - 6	
7	4	7	8	6 - 5	
160°C					
Pneumatically operated					
NC, NO, DA					
MA 8		MA 10	MA 25 - 50	MA 80 - 100	
4 - 10 (1/4 - 1/2)		8 - 20 (3/8 - 3/4)	15 - 50 (3/4 - 2 1/2)	65 - 100 (2 1/2 - 4)	
190		195	495		
					
8		10	7 - 6		
7		8	6 - 5		
160°C					
Pneumatically operated					KMD
NC, NO, DA					
MA 10		MA 25 - 50	MA 25 - 80		
8 - 20 (3/8 - 3/4)		15 - 50 (3/4 - 2 1/2)	15 - 80 (3/4 - 3)		
188		402	385		
					
8		10	10 - 7		
7		8	8 - 6		
150°C					
80°C					

# Butt Weld Tube Ends

ASCO Numatics offers tube end outside diameter and wall thickness dimensions in accordance to several international standards. These standards and dimensions are listed in the below table. In order to install a proper aseptic process piping system, it is important that the correct and consistent international tube end standards will be followed throughout the aseptic process piping system. If the connecting tube ends are not identical and of

the same diameter standard, there may result in a reduction or step in the process piping system or the ability of self draining ends is not guaranteed. The most common standard connection is the butt-welding of the tube endings without any additional material. Examples of butt welding include automatic and orbital welding. Besides the standard any customer-specified connection type is possible.



Butt Weld Tube End Standard		ISO 1127	DIN 11850		DIN	ASTM 269		BS O.D.	SMS	JIS G	
			Series 1	Series 2	Selection Series	ASME BPE		4825	3008	3447	
Code		40	41	42	39	45*		94	49	97	
DN	NPS	MA	L <sub>(min)</sub>	L <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	ød x s	ød x s	ød x s	ød x s	ød x s
Valve Type Manually Operated 290 / 297											
Valve Type Pneumatically Operated 190 / 207											
4	-	8	20	72	9	9	-	-	-	-	-
6	-	8	20	72	9	9	-	-	-	-	-
8	1/4	8	20	72	9	9	13,5x1,6	-	-	10x1,0	6,35 0,89
10	3/8	8	20	72	9	9	-	12x1,0	13x1,5	-	9,53 0,89
15	1/2	8	20	72	9	9	-	-	-	-	12,7 1,65
Valve Type Manually Operated 289 / 295 / 397											
Valve Type Pneumatically Operated 188 / 195 / 307											
8	-	10	25	108	12	12	13,5x1,6	-	-	-	-
10	3/8	10	25	108	12	12	17,2x1,6	12x1,0	13x1,5	-	9,53 0,89
15	1/2	10	25	108	12	12	21,3x1,6	18x1,0	19x1,5	18x1,5	12,7 1,65
20	3/4	10	25	108	12	12	-	-	23x1,5	22x1,5	19,05 1,65
Valve Type Manually Operated 985 / 995 / 997											
Valve Type Pneumatically Operated 385 / 402 / 407 / 495											
15	-	25	25	120	13	16	21,3x1,6	18x1,0	19x1,5	-	-
20	3/4	25	25	120	16	16	26,9x1,6	22x1,0	23x1,5	-	19,05 1,65
25	1	25	25	120	19	19	33,7x2,0	28x1,0	29x1,5	-	25,4 1,65
32	1 1/4	40	25	153	24	26	42,4x2,0	34x1,0	35x1,5	-	31,75 1,65
40	1 1/2	40	25	153	24	26	48,3x2,0	40x1,0	41x1,5	-	38,1 1,65
50	2	50	30	173	32	32	60,3x2,0	52x1,0	53x1,5	-	50,8 1,65
65	2 1/2	50	30	173	32	32	-	-	-	-	63,5 1,65
65	2 1/2	80	25	216	47	47	76,1x2,0	-	70x2,0	-	63,5 1,65
80	3	80	30	254	47	47	88,9x2,3	-	85x2,0	-	76,2 1,65
100	4	100	30	305	61	58	114,3x2,3	-	104x2,0	-	101,6 2,11

Sizes in mm; MA = Diaphragm size  
Upon request, other tube end standards are available  
Preferred standards bold  
\*ASTM 269 ASME BPE tube diameter (Code 45) in forged version optional also available in tube end length according ASME BPE (Code 95);  
Tube Size 1/4 to 2,5 in. L 1,5 in., 38,1 mm; Tube Size 3 in. L 1,75 in., 44,45 mm; Tube Size 4 in. L 2 in., 50,8 mm and Tube Size 6 in. L 2,5 in., 63,5 mm



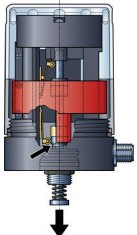





# Aseptic diaphragm valves

					
<b>STERIPUR</b>		<b>KMA</b>		<b>KMD</b>	
316L ss stainless steel body					
Actuator support 316L			Actuator support thermoplastic		
Compatible with multiport bodies					
316L stainless steel actuator			Thermoplastic actuator		
Designed for no external retention			Excellent resistance to vapour		Designed for no external retention
Compact/Resistant/Suitable for autoclaves			Light		

## Technical characteristics

Nominal diameter	4 to 100 mm
Operating pressure	0 - 10 bar
Stainless Steel body	316L cast or forged
Surface finish Ra	6.3 $\mu$ to 0.25 $\mu$ (mechanical polishing and electro polishing)
Connection: - Welded ends: - Aseptic connections:	DIN/ISO1127/ASME BPE/SMS 3008 clamps/connections to DIN 11864-2A
Diaphragm	EPDM/EPDM PTFE/FPM
Diaphragm approvals	3A medical 2, FDA, USP class VI
Fluid temperature	max. 175 °C

## Accessories

					
Control Box with switches & position indicator	Limit switch	Optical indicator and travel limiter	Mechanical switch to indicate fully open position	Manual operators	Inductive limit switch bracket

