CARTEN®

High Performance Valves & Flow Solutions

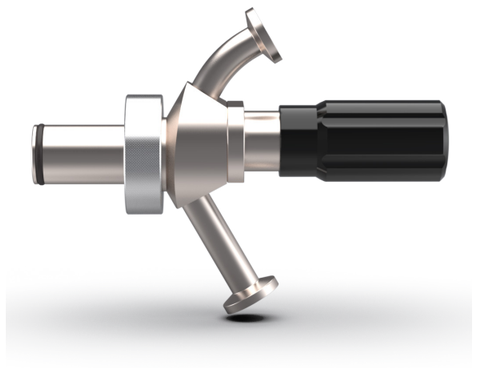
Sampling Valves (BSV Series)

Sterile, Aseptic and Sanitary Valves for Critical Process Systems

For Biotechnological, Pharmaceutical, Food and Beverage Process Systems

Why Choose a Carten Sampling Valve?

The Carten BSV Series sampling valve allows the drug manufacturer to capture samples for characterisation without the risk of contamination, assuring a consistent and reproducible capture each time a sample is required. This is possible as the internal structure contains no dead space, is fully gravity drainable, and can be CIP'd and SIP'd aseptically before the sample is captured.

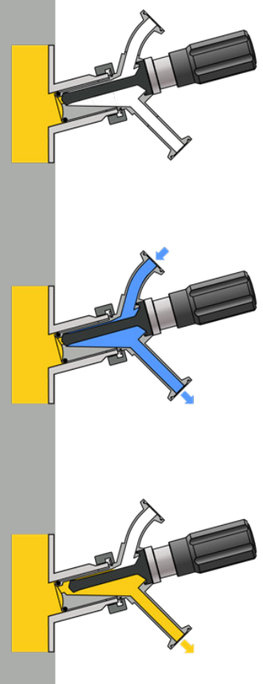


Typical Applications

- Bioreactors/Fermentors
- WFI Systems (Storage Tanks, POU sites)
- Process Lines
- Formulation Tanks
- Sterile Holding Tanks
- General Purpose Storage Tanks

Sampling Valves

Carten BSV Series



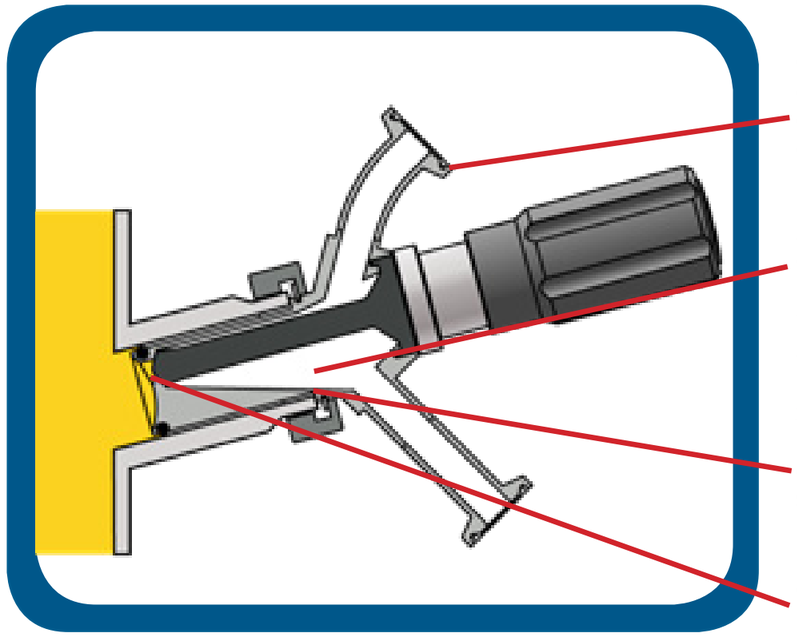
BSV Series Product Features

- Drainable even from inclined ports
- Retrofits existing ingold sensor ports or tri-clamp connections
- Cleans and sterilises in place
- Install or move in seconds, maintenance friendly
- Sanitary, dead space free design

Technical Specifications

Product Description	Carten BSV Series Sample Valve		
Valve Size	Tank Connection	1"	
	Sample Connection	1/2"	
Tank Connection	Ingold		
	Tri-Clamp		
	Weld-on		
Construction	Drainable from all ports even incline ports (up to 15°)		
Operating Pressure	6 Bar (90psi)		
Operating Temperature Range	0°C to 135°C (32°F to 275°F)		
Body Material	Barstock ASTM A276/A479 316L (S31603)		
Bonnet Material	ASTM A276/A479 316L (S31603)		
Handwheel Material	PPSU		
Diaphragm Material	EPDM (FKM or Silicon Options)		
Diaphragm Retainer	ASTM A276/A479 316L (S31603)		
Electropolishing	Validated as per ASME BPE (2014)		
Operating Mode	Manual		
Quality and Compliance	EN 10204 3.1 Certified Materials Certified as per the Pressure Equipment Directive 2014/68/EC		

Diaphragm Material	Steam	Liquid Media	
		Min	Max
EPDM	**Constant 135**°C (275°F)	-10°C (14°F)	90°C (194°F)



Choice of sanitary clamp or buttweld inlet and outlet connections. Custom connections also available

Fluids drain down and out of valve even when installed in inclined portholes.

Valve body machined from 316L stainless steel.

Smooth, declining internal passages to enhance drainability, cleanability and sterilisability

Large bore sample orifice opens directly into process.

Advantages of the BSV Series

1 Drainable up to 15-degree Incline Port

The Carten sample valve can be welded directly to the sample point required, however on this case the end user loses the flexibility to capture samples at multiple points, and results in a maintenance problem if issues occur in manufacturing. The Carten SV is retrofittable through Triclamp and Ingold connections as standard, as these fittings are the standard connections for the industry.

Vessels, tanks, fermenters, and bioreactors must all be constructed using GMP principles, and conform with essential standards such as ASME BPE. ASME BPE calls out for a minimum 5°, and maximum 15° angle for these port connections to ensure drainability of the vessel is not adversely affected. The Carten SV ensures drainability even at the maximum 15° angle of the Triclamp or Ingold fitting due to the unique internal profile of the valve structure. This ensures the integrity and repeatability of the sample at all times.

2 Sanitary design no dead space

It is critical equipment manufacturers clarify the difference between gravity drainable and simply drainable. Drainable can be achieved through additional processes such as an air assisted purge for example. Gravity drainable equates to a self-draining ability of the internal structure with no hold up volume causing contamination.
The Carten sampling valve is self-draining, with smooth and gradual internal profiles ensuring delicate proteins cannot become stressed, ensuring a representative sample of the process.

3 CIP/SIP

To ensure a sample suitable for analysis, the sample must be representative of the process. Therefore, it is necessary to CIP and SIP the sample valve internal product contact surfaces before the sample is taken. The Carten sampling valve includes a CIP/SIP port allowing these utilities without affecting the process within the vessel. The fully drainable internal structure leaves no risk of secondary contamination from the utilities themselves.

4 Flexible Design – connection type etc

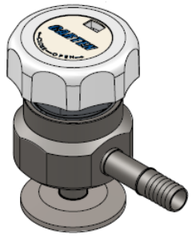
Tanks, vessels, fermenters, and bioreactors all contain multiple connections for instrumentation such as pH probes. These connections are either Triclamp or Ingold as standard, with spare ports available to future proof most units. The Carten sampling valve uses these pre-existing ports to connect to the vessel, allowing the end user the flexibility of multiple instrumentation or equipment installed using the same port.

BSV Series Product Description

1	2	3	4	5	6	7	8	9	10	11	12
BSV	STD	25	F	4	2	A	25	V	O	L	U

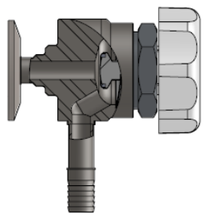
No.	Meaning		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Valve Series	Bio Sample Valve	BSV													
2	Body Configuration	Standard Insulated		STD INS												
3	Tank Connection	Ingold Tri-Clamp Weld-on			1 2 3											
4	Material of Body	A: ASTM A182 (Forging) F: ASTM A479/A276 (Bar Stock)				A F										
5	Surface Finish	MP SF1 (20µin/0.51µm) MP SF2 (25µin/0.64µm) MP SF3 (30µin/0.76µm) EP SF4 (15µin/0.38µm) EP SF5 (20µin/0.51µm) EP SF6 (25µin/0.64µm)					1 2 3 4 5 6									
6	SIP/CIP/Sample Connection Type	1: Tube 2: Clamp						1 2								
7	Connection Standard	ASME BPE- Tube/Clamp							A							
8	Connection Size	10: DN10 3/8” 15: DN15 1/2”								10 15						
9	Diaphragm - Wetted Area	EPDM SILICON VITON									E S V					
10	Diaphragm Back Up	No Back Up									O					
11	Control Type	Pneumatic Manual											C M			
12	Topworks Material	Stainless Steel Resin (Plastic)												U R		
13	Instrument Options	(Available on Request)														
14	Additional Requirements															

BSV Series Clean Sampling Valve



Also, Carten offers a Clean sampling series. When closed, dead space does exist from the vessel side to the seat of the valve. However, internally the valve is fully drainable and constructed from high grade materials, and a metal-to-metal external bonnet seal will never need to be re-torqued. As an option for the customer this valve can also be supplied with a SIP/CIP port for ease of cleaning and maintenance in the system.

The Carten BSV Clean Series is used for sampling from a liquid process. While provided with a SIP/CIP it ensures sterilisation before and after taking a sample. This design is well suited for the pharmaceutical, cosmetic, food and dairy industries.



- Constructed from high grade materials for cleanability
- The metal to metal seal requires no retorquing
- Provided with or without CIP/SIP port
- Multiple connections available -tri-clamp, buttweld, barb fittings
- Cost Effective Sampling Solution

Technical Specifications

Product Description	Carten BSV Series Clean Sampling Valve
Valve Size	1/2"
Tank Connection	1" Tri-Clamp as per ASME BPE
Construction	Bottom Entry Angle Valve
Pressure Rating	25 Bar (375psi)
Operating Temperature Range	Standard = 0 to 85oC, Special Seat = 0 to 150oC
Body Material	ASTM A276/A479 316L (S31603)
Bonnet Material	ASTM A276/A479 316L (S31603)
Handwheel Material	PC/POM
Diaphragm Material	Elgiloy, 316L (S31603) with PCTFE (standard)/VESPEL (special)
Diaphragm Retainer	ASTM A276/A479 316L (S31603)
Electropolishing	Validated as per ASME BPE (2014)
Operating Mode	Manual
Quality and Compliance	Certified as per the Pressure Equipment Directive 2014/68/EC

Carten Flow Distribution Valves

Point of Use valves (Flow Distibution Valves) are one of the most essential diaphragm valves used in the biotechnology, pharmaceutical, food and beverage industries. These valves allow process fluids to be transferred, sampled, drained or diverted with minimal impact on critical systems such as water for injection (WFI) and purified water. They can be provided with a SIP/CIP port that allows steam or materials to be purged rather than being trapped within the system.

Carten Point of Use and Flow Distribution valves provide the most efficient and best-in-class for drainability, cleanability, ease of maintenance and lightweight design for critical sterile processes.

Product Features

- Radial Diaphragm or Weir Diaphragm Designs available
- Valve remains flush with main process lines
- Integrated Elbow Option available for piping loops
- SIP/CIP port options available
- Simple Maintenance Friendly Design
- Sanitary Design, No Dead Space/Gravity Drainable Option Available
- Interchangability in Design
- Cost Effective (TCO) wirh Competitive Lead Times

Typical Applications

- Bioreactors/Fermentors
- WFI Systems (Storage Tanks, POU sites)
- Process Lines
- Formulation Tanks
- Sterile Holding Tanks
- General Purpose Storage Tanks

Point of Use Valves

Flow Distribution Valves

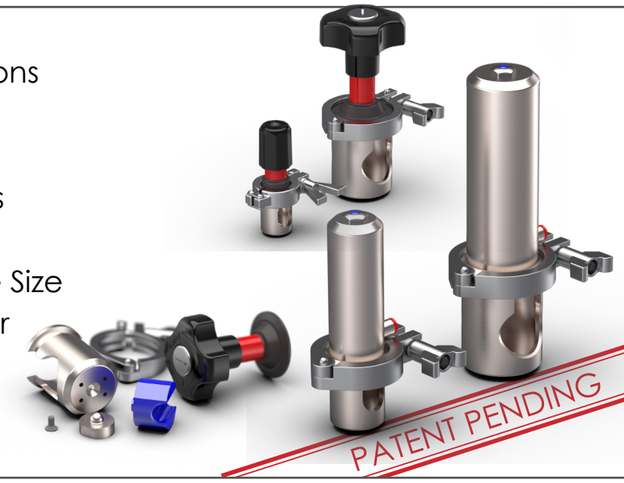
Other Carten Valves Available

BNW Series Diaphragm Valves

- ASME BPE Compliant Design and Dimensions
- SIP500 Rated Life Durability (ASME BPE rating)
- No Re-torquing Required
- Compact, Light Weight Stainless Steel Top Works
- Reduced Polymer Cold Flow Sealing Design
- Reduced TCO for Process Systems
- Range of Instrumentation Available
- 3-Way Zero Dead T (ZDT) leg configurations
- SIP & CIP Capability

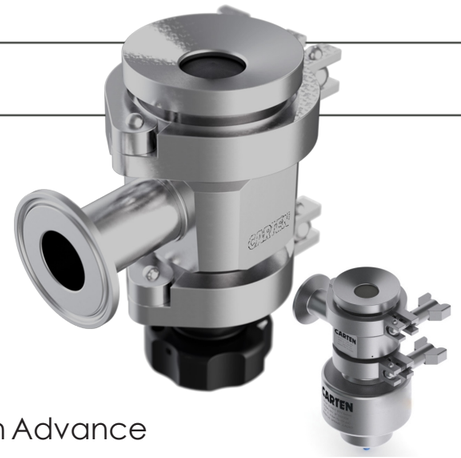
BPV Series Pinch Valves

- Quick Release and Control Versions
- Reusable Highly Durable Valve
- Interchangable Fittings
- For Use with Multiple Compounds
- For Use with Multiple Brands
- Rapid Changeout of Tubing, Line Size
- Lightweight Handwheel/Actuator
- No Particulate Generation
- Instrumentation Ready



BTV Series Tank Outlet Valves

- No hold up volume or pooling
- Self Draining at any orientation
- Higher Cv/ Superior Flow
- SIP/CIP Port
- Cost Efficient
- Maintenance Friendly
- No Delivery Delays -Weld Component Sent in Advance



BSP Series SipTube Valves

- Cleanable- and Sterilisable In-Place (CIP/SIP) while in operation
- Install in existing ports
- Simplistic design for reliability and fast, easy maintenance
- Body lengths up to 16 inches for sampling deep within the process system
- Suitable for process inoculating, media feeding and sampling
- 316L Stainless Steel construction
- Natural body insulation protects processes during sterilisation

BPU Series Point of Use Valves

- Lowest hold up volume in the industry
- Fully Cleanable/drainable
- Lightweight Design- Compare to ZDT
- Same High Flow as Carten TOV Valve
- 360-degree- Multiple Orientation
- Quick-release clamp topworks
- SIP/CIP port available

SBV Series Sanitary Ball Valves

- In-Line Maintenance
- Blow-out Proof Stem
- Cavity and Non-Cavity Filled Options
- 2-Way and 3-Way Configurations
- Bidirectional Sealing
- Anti-static features (on request)

CARTEN®

High Performance Valves & Flow Solutions

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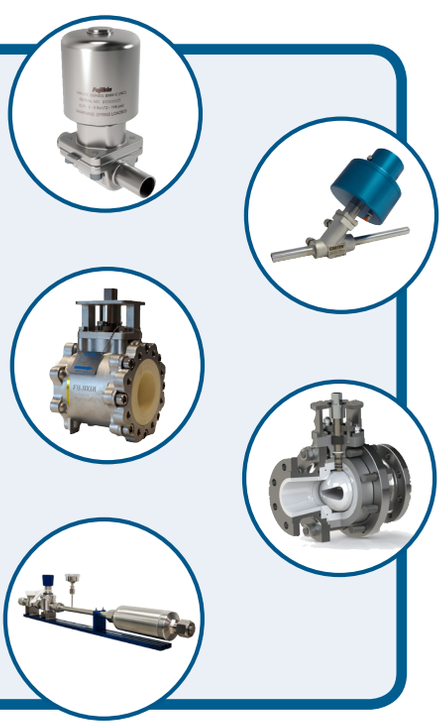
Carten Controls and Fujikin Deutschland are members of the Fujikin Carp Group (FCG) with Headquarters in Osaka Japan.

The Carten-Fujikin Range



- Bellows Valves
- Ball Valves
- Check Valves
- Diaphragm Valves
- Tank Valves
- Ceramic Valves
- Sanitary Pinch Valves
- Integrated Gas Sticks and Systems