

# CSSV

## Clean Steam Safety Valve

### Description

The Forbes Marshall Clean Steam Safety Valve, CSSV, is an angle pattern sanitary safety relief valve with stainless steel SS316L construction suitable for high purity steam, gas and liquid applications. It is available with hygienic sanitary clamp connections as per ASME BPE.

The valve opens with a gradual action once the set pressure is reached. When the over pressure reaches 10 % of the set pressure, it will open to its full stated capacity. Once the system pressure is restored, the valve will reseal with a positive action.

CSSV is available with two options namely sealed cap version and manual lifting device for Sterilize-in-place (SIP) / Clean-in-place (CIP) application..

### Typical Applications Include

- Storage vessels
- Manufacturing vessels
- CIP / SIP systems
- Bioreactors
- Autoclaves
- Sterilizers
- Culinary equipment
- Freeze dryers

### Certification

This product is available with following certifications:

- EN 10204 3.1 material certifications on request
- Certificate of conformity for internal surface finish
- Certificate of polymers FDA

### Standards

Design in accordance with ASME BPE 2007 Valve tightness : ANSI Class VI Overpressure and Reseat Accuracy :  $\pm 10\%$  of set pressure as per AD Merkblatt A2 Internal Surface Finish < Ra 0.5  $\mu\text{m}$

### Options

The safety valve has two variants.

#### 1. Sealed Cap Version - This is a standard version.

Sealed cap is just to close the safety valve and serve the sealing purpose in case process media leaks through the bellow. For setting the pressure the sealed cap needs to be removed.

#### 2. Manual lifting device for SIP/CIP application -

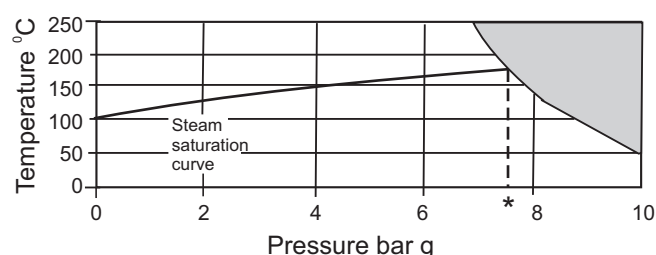
During SIP/CIP application the safety valve is required to be manually overridden i.e. safety valve has to be opened purposely. The manual lifting device allows free flow of SIP/CIP fluid through inlet to outlet of safety valve

### Sizes and End Connections

ASME BPE sanitary clamp end connections

Orifice Size (mm)	13	25
Inlet Clamp	1"	1-1/2"
Outlet Clamp	1-1/2"	2"

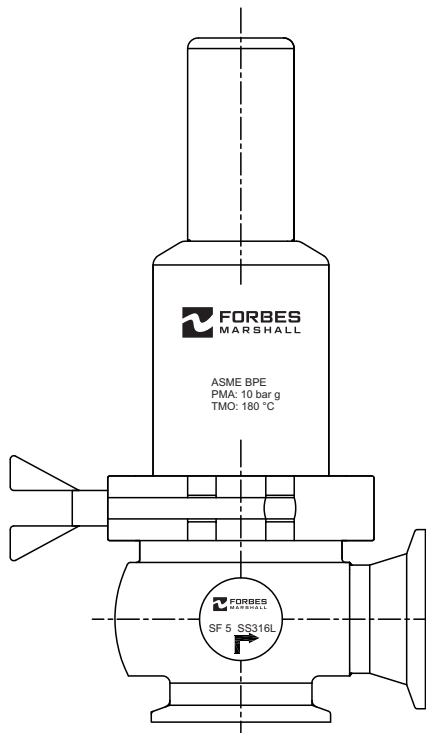
### Operating Range



**Note:** for hygienic / sanitary clamp ends the maximum pressure / temperature may be restricted by the gasket or sanitary clamp used. Please consult Forbes Marshall.

\*PMO Maximum operating pressure 7.6 bar g

PMAMaximum allowable pressure 10 bar g @ 50°C

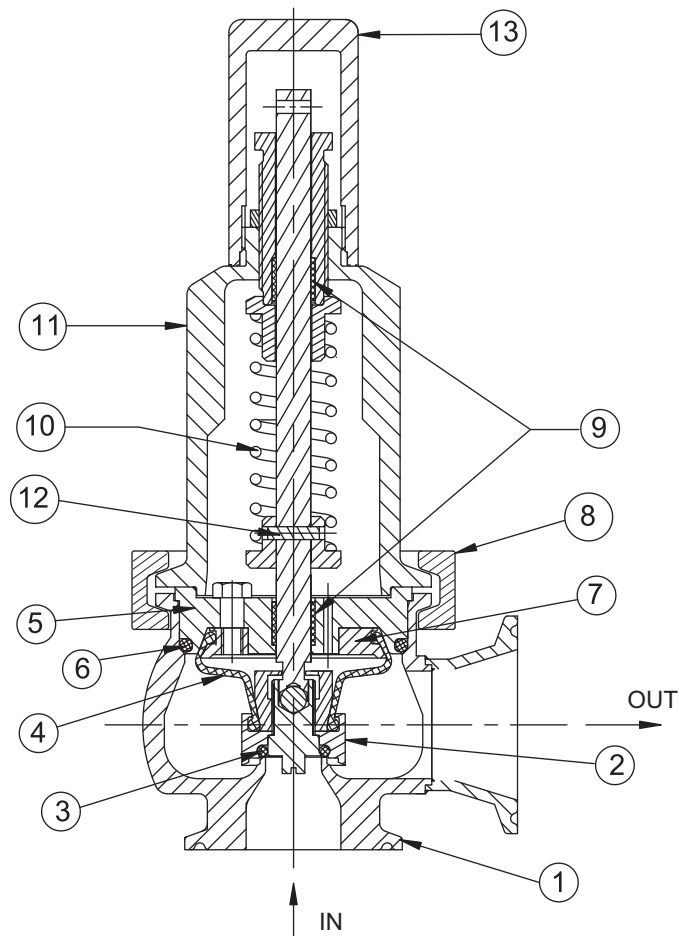


## Materials

Sr.No	Part	Material	Standard
1	Body	Stainless Steel	ASTM A276 SS316 L
2	Valve Head	Stainless Steel	ASTM A276 SS316 L
3	Valve Seat O-ring	Viton	
4	Bellow	Viton	
5	Upper Guide plate	Stainless Steel	ASTM A276 SS316 L
6	Guide plate O-ring	Viton	
7	Lower Guide plate	Stainless Steel	ASTM A276 SS316 L
8	Clamp	Stainless Steel	SS316 L
9	Guide Bush PTFE		
10	Spring	Stainless Steel	SS302
11	Bonnet	Stainless Steel	ASTM A351 CF3M
12	Slotted Spring pin	Stainless Steel	SS304
13	Sealing Cap / Lifting Device	Stainless Steel	ASTM A276 SS316 L

## Limiting Conditions

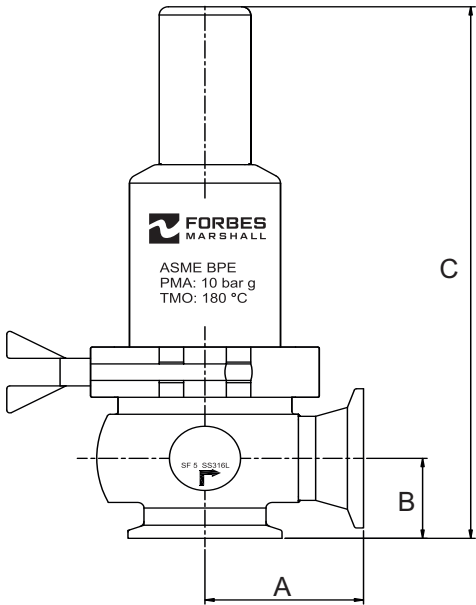
Body Design Conditions				PN10
Set Pressure range	Maximum			10 bar g
	Minimum			1 bar g
Temperature	Maximum			180 °C
	Minimum			-10 °C
Performance Data	Overpressure	Steam/ gas	Max	10%
		Liquid	Max	20%
	Blowdown limits	Steam/ gas	Max	10%
		Liquid	Max	20%
	Coefficient of discharge	Steam/ gas	13 mm orifice	0.6
			25 mm orifice	0.38
		Liquid	13 mm Orifice	0.4
			25 mm orifice	0.26
Maximum permitted back pressure				10 % of Set Pr.
Maximum inlet cold hydraulic test pressure				15 bar g



**Cross sectional view**

Sizing and Capacities

Media	Steam		Air		Water	
Actual Orifice diameter d° (mm)	13	25	13	25	13	25
Actual Orifice area A° (mm²)	133	491	133	491	133	491
Set Pressure (bar g)	Capacities (kg/hr)		Capacities (m³ / hr)		Capacities (10³ kg/hr)	
1	88	195	105	233	2.83	6.81
2	142	320	171	396	4.01	9.63
3	191	448	234	547	4.91	11.8
4	239	559	293	687	5.66	13.6
5	296	669	353	827	6.33	15.2
6	332	779	413	967	6.94	16.7
7	378	886	472	1106	7.49	18
8	425	995	532	1246	8.01	19.3
9	471	1104	592	1396	8.5	20.4
10	518	1213	651	1526	8.96	21.5



WITH SEALED CAP

Dimensions / Weights (approx.) in mm and kg

Size (orifice diameter)	A	B	C	Ø D	Ø E	W(kg)
13mm sealed cap version	52	29	193	50.5	50.5	2
13mm lifting device version	52	29	266	50.5	50.5	2.5
25mm sealed cap version	66	44	267	64	50.5	4
25mm lifting device version	66	44	339	64	50.5	4.5

Installation

The safety valve should always be fitted with the center line of the housing vertically above the line.

Safety Information, Installation and Maintenance

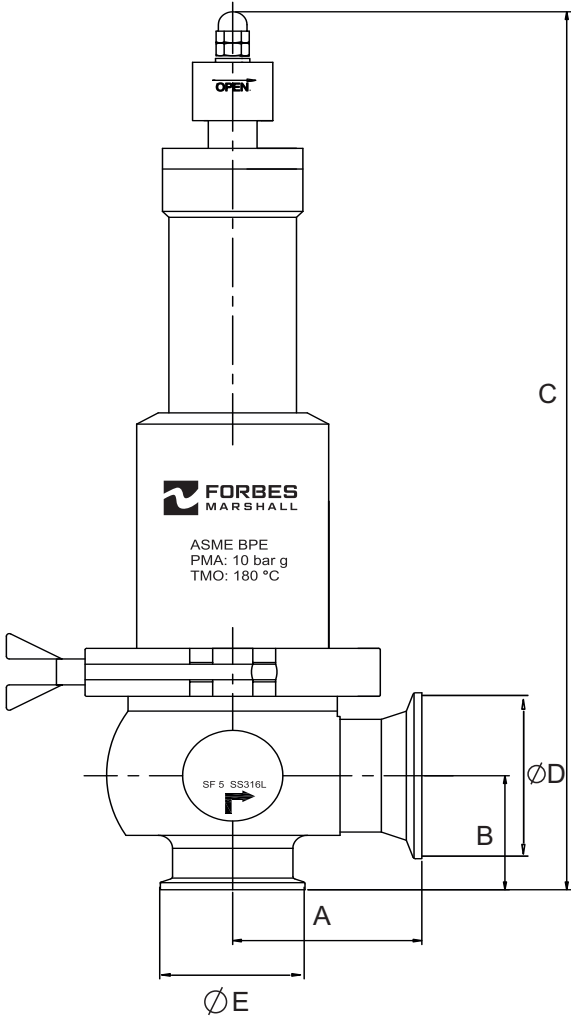
Please refer user manual for details

How to Order

Example: 1 No. CSSV Clean Steam Safety Valve 13mm orifice, ASME BPE end connections, sealed cap version with a set pressure of 2 bar g

Available Spares

Please refer user manual for details



WITH MANUAL LIFTING  
DEVICE FOR SIP/CIP

## Product Codification

Size (DN) options	Product name	End Connections	Versions	Spring options	Bellow
013-13mm orifice 025-25mm orifice	CSSV	A - ASME BPE sanitary clamp ends	A -sealed Cap version B- Manual lifting device for SR' CIP	Y : 1 to 2 bar g (yellow) G: 2 to 3.5 bar g (green) L : 3.5 to 5 bar g (black) B: 5 to 7 bar g (blue) R 7 to 10 bar g (red)	V : Viton

e.g 013CSSV-AA YV



Forbes Marshall  
Krohne Marshall  
Forbes Marshall Arca  
Codel International  
Forbes Solar  
Forbes Vyncke  
Forbes Marshall Steam Systems

Opp 106th Milestone  
Bombay Poona Road  
Kasarwadi, Pune - 411 034. INDIA  
Tel : 91(0)20-27145595, 39858555  
Fax : 91(0)20-27147413

Email : [seg@forbesmarshall.com](mailto:seg@forbesmarshall.com), [ccmidc@forbesmarshall.com](mailto:ccmidc@forbesmarshall.com)

© All rights reserved. Any reproduction or distribution in part or as a whole without written permission of Forbes Marshall Pvt Ltd, its associate companies or its subsidiaries ("FM Group") is prohibited.

Information, designs or specifications in this document are subject to change without notice. Responsibility for suitability, selection, installation, use, operation or maintenance of the product(s) rests solely with the purchaser and/or user. The contents of this document are presented for informational purposes only. FM Group disclaims liabilities or losses that may be incurred as a consequence of the use of this information.

B-85, Phase II, Chakan Indl Area  
Sawardari, Chakan, Tal. Khed  
Dist. Pune - 410 501. INDIA  
Tel : 91(0)2135-393400

A-34/35, MIDC H Block  
Pimpri, Pune - 411 018. INDIA.  
Tel : 91(0)20-27442020, 39851199  
Fax : 91(0)20-27442040

CIN No.: U28996PN1985PTC037806  
[www.forbesmarshall.com](http://www.forbesmarshall.com)