FB6C Series

BESTOBELL AQUATRONIX
SINCE / DEPUIS 1953
BEP-Bestobell
www.bestobell.com

Sanitary Pressure Regulators

*CRN Registration Number Available

The FB6C Sanitary Pressure Regulator is designed to regulate pressure in systems requiring the maintenance of sanitary conditions.

The FB6C operates by sensing pressure under the diaphragm on the downstream side of the seat. As the downstream pressure approaches the set point, the force caused by the pressure acting on the diaphragm overcomes the force of the range spring, and the plug begins to move up toward closed. This reduces the downstream pressure and maintains the set point. If the pressure underneath the diaphragm begins to fall, the spring forces the plug to move down towards open, to allow the set point to be maintained.

Features

- No guiding surfaces in the fluid - prevents particulate generation
- 316L investment cast body; wetted parts made from 316L
- Self-draining
- Great Accuracy (large diaphragm yields less droop) Ask your rep for a FB6C performance calculator demonstration
- Clean-in-Place, Steam-in-Place – dome lock pin to allow CIP/SIP
- Jorlon diaphragm: Provides excellent chemical resistance and is FDA and 3A approved.

Available Finishes

Body:

- Standard: 32 Ra (.81 Ra µm) mechanical finish on inside wetted surfaces; as cast finish on exterior.

Spring Housing:

- Standard: investment cast finished 316SST

Adjusting Screw and Handle:

- Standard: 32Ra (.81 Ra µm) (Note: adjusting screw is a threaded part)

3A® · EC 1025/2004 · FDA · ISO 9001:2008

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Specifications - High Temp Valves (FB6CHT)*

Sizes: 1/2", 3/4", 1", 1-1/2" 2", 3" (DN15 - DN80)
End Connections: Sanitary Clamp
Body Connections: Sanitary Clamp – Standard for all sizes
Body Materials: ASTM A351, CF3M 316L
Trim Materials:
- ASTM A479, 316L (other materials upon request)

Seat Materials:
- Standard hard seat – integral 316L SST seat
- Optional Soft seats
  - Jorlon (FDA & USP Class VI) for steam ad hot fluid service to 338°F (170°C), Cv 3.0 and larger only
  - PEEK (FDA & USP Class VI) for steam and hot fluid service to 350°F (177°C), Cv 0.5 and larger
  - PTFE to +252°F (122°C) continuous or 275°F (135°C) intermittent [not to exceed 15 min. in a one hour period] FDA, USP Class VI, Cv 0.5 and larger

Spring Housing Materials:
- 1/2" - 3" - Material: A351 CF8M 316SS Investment casting

Diaphragm Materials for High Temp Valves
- EPDM/Nylon (to 275°F, 135°C), FDA (1/2" - 1" only)
- Jorlon (to 350°F, 176°C)

O-Ring Materials for High Temp Valves
- EPDM (to 275°F, 135°C)
- Teflon-Encapsulated Viton (to 350°F, 176°C)

Shutoff: ANSI Class III hard seat
ANSI Class VI Soft Seat

Set Point Spring Ranges:

Valve Size	Set Point Ranges, PSI (bar)
1/2" - 1" DN20 & DN25	3-8* (0,2-0,5), 5-25 (0,37-1,7), 15-50 (1,0-3,4), 40-90 (2,7-6,2), or 75-135 (5,2-9,3)
1-1/2", DN40	10-25 (0,7-1,7), 15-50 (1,0-3,4) or 35-100 (2,4-6,9)
2", DN50	10-25 (0,7-1,7) or 15-60 (1,0-4,1)
3", DN80	15-25 (1,0-1,7) or 15-60 (1,0-4,1)

* Maximum pressure drop 40 psi, EPDM diaphragm only

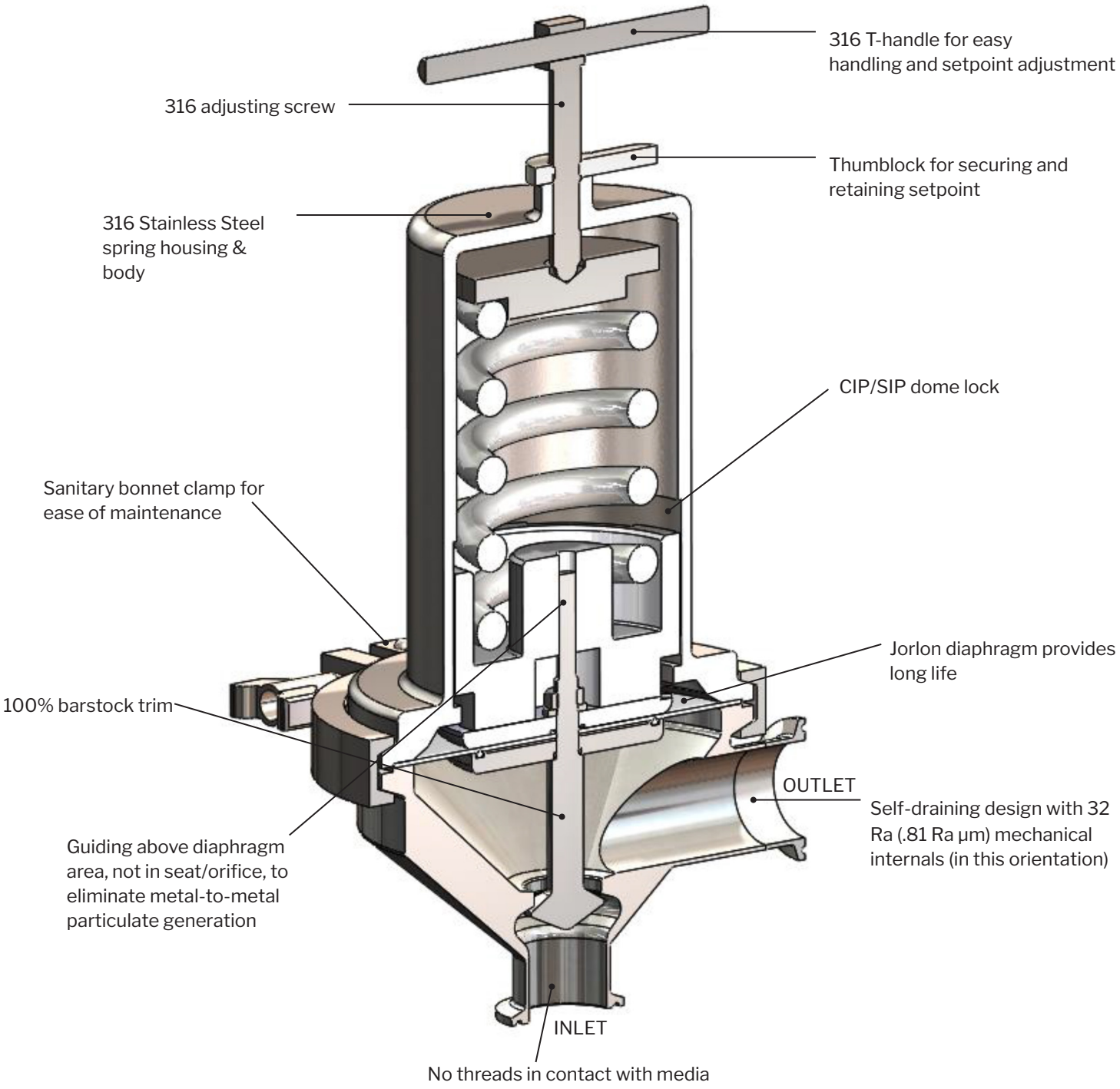
Cv (Kv) Ratings:

Valve Size	Available Cv (Kv)	Cv for Relief Valve Sizing
1/2"DN15	0.6 (0,5)	2.4 (2,0)
3/4"DN20	2.9 (2,5)	3.8 (3,3)
1"DN25	4.7 (4,1); 8.0 (7,0)	10.7 (9,2)
1-1/2"DN40	14.8 (12,8)	26.3 (22,6)
2"DN50	26.3 (22,8)	56.5 (48,6)
3"DN80	29.4 (25,4)	67.1 (57,7)

Body Pressure Temperature Rating for High Temperature Valves

Valve Size	PSIG @ 100F	PSIG @ 275F	PSIG @ 100F	PSIG @ 350F	ΔP
	EPDM Dia/ EPDM O-ring	EPDM Dia/ EPDM O-ring	Jorlon Dia/ TFE-Vit Encap O-ring	Jorlon Dia/ TFE-Vit Encap O-ring	
1/2", 3/4", 1"	200	100	200	150	100
1-1/2"	N/A	N /A	125	80	80
2", 3"	N/A	N/A	100	50	50

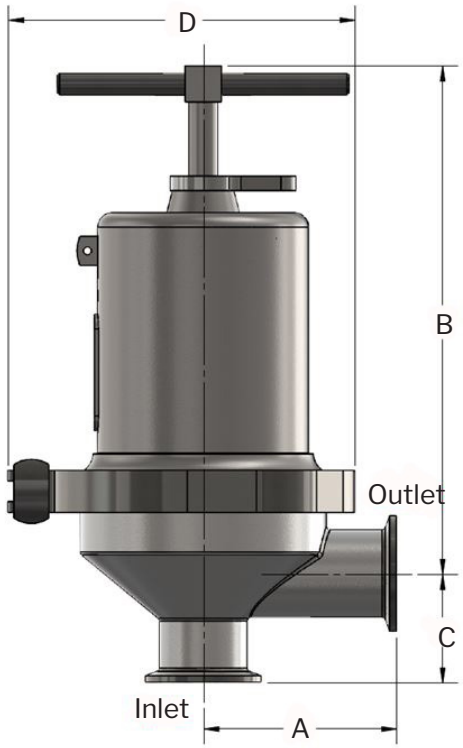
Features & Benefits



Applications

The FB6C is suitable for a variety of process and clean utility applications in the food, beverage, dairy and health and beauty industries including: CIP, SIP, centrifuges, autoclaves, culinary equipment, sterilizers, process tanks, nitrogen blanketing, etc.

Dimensions



F & B Valve	Dimensions (inches)				Weight Lbs
	A	B	C	D	
1/2", 3/4" Regulator	3.29	8.33	1.50	5.95	9.60
1" Regulator, Ø0.540 Orifice	3.31	8.74	1.87	5.95	11
1" Regulator, Ø0.758 Orifice	3.31	8.74	1.87	5.95	11
1-1/2" Regulator	4.20	10.98	2.57	8.78	23.5
2" Regulator	5.75	17.76	2.68	10.95	62
3" Regulator	6.00	17.81	3.23	10.95	68

F & B Valve	Dimensions (mm)				Weight Kgs
	A	B	C	D	
DN15, DN20 Back Pressure Regulator	83,5	211,5	38	151	4
DN25 Back Pressure Regulator, Ø0.540 Orifice	84	222	47,5	151	5
DN25 Back Pressure Regulator, Ø0.758 Orifice	84	222	47,5	151	5
DN40 Back Pressure Regulator	106,6	279	65,2	223	11
DN50 Back Pressure Regulator	146	451	68	278	28
DN80 Back Pressure Regulator	152,4	452,3	82	278	31

Sample Specification

Stainless steel sanitary pressure regulator shall be made from 316L material, which includes body and all wetted metal parts. Regulator shall be activated by 3A and FDA approved, EPDM or Jorlon diaphragm. Guiding of valve stem/plug shall be outside of the wetted, process areas of valve internal, above the diaphragm only. Regulator shall be free of threads or crevices within wetted, process areas of valve internal and shall be self draining when installed with inlet vertical and below valve assembly.

Ordering Schematic FB6CHT (High Temp)

Model	_	Size	_	Body Material	/	1 & 2	3 & 4	5 & 6	7 & 8	9 & 10	11 & 12

	Model
FB6CHT	Sanitary High Temp Pressure Reg (Not 3A)

	Size
050	1/2" (DN15)
075	3/4" (DN 20)
100	1" (DN25)
150	1-1/2" (DN40)
200	2" (DN50)
300	3" (DN80)

	Body Material
6L	316L SST

1 & 2	Body		
	Finish	Cv	
A	32 Ra (.81 Ra µm) Interior / Cast Exterior (Standard)	B	0.6 (0,5)
		A	2.9 (2,5)
		D	4.7 (4,1)
		K	8.0 (7,0)
		M	14.8(12,8)
		N	26.3 (22,8)
		P	29.4 (25,4)
ZZ	Non- Standard		

3 & 4	Trim		
	Finish	Cv & Seat	
A	32 Ra (Std) (.81 Ra µm)	3	Cv 0.6 (0,5) Hard Seat
		4	Cv 0.6 (0,5) PEEK Seat
		A	Cv 2.9 (2,5) Hard Seat
		9	Cv 2.9 (2,5) PEEK Seat
		B	Cv 4.7 (4,1) Hard Seat
		C	Cv 4.7 (4,1) TeflonSeat
		D	Cv 4.7 (4,1) Jorlon Seat
		5	Cv 4.7 (4,1) PEEK Seat
		L	Cv 8.0 (7,0) Hard Seat
		M	Cv 8.0 (7,0) Teflon Seat
		N	Cv 8.0 (7,0) Jorlon Seat
		8	Cv 8.0 (7,0) PEEK Seat
		P	Cv 14.8 (12,8) Hard Seat
		Q	Cv 14.8 (12,8) Teflon Seat
		R	Cv 14.8 (12,8) Jorlon Seat
		6	Cv 14.8 (12,8) PEEK Seat

3 & 4	Trim, Continued.		
	Finish	Cv & Seat	
A	32 Ra	S	Cv 26.3 (22,8) Hard Seat
		T	Cv 26.3 (22,8) Teflon Seat
		U	Cv 26.3 (22,8) Jorlon Seat
		4	Cv 26.3 (22,8) PEEK Seat
		V	Cv 29.4 (25,4) Hard Seat
		W	Cv 29.4 (25,4) Teflon Seat
		X	Cv 29.4 (25,4) Jorlon Seat
		Y	Cv 29.4 (25,4) PEEK Seat
		ZZ	Non-Standard
ZZ	Non-Standard		

5 & 6	O-Ring / Diaphragm
EE	EPDM / EPDM Diaph. (1/2", 3/4" & 1" only)
TY	Teflon Encaps. Viton / Jorlon Diaph. (3/4" - 3" only)
EJ	EPDM / Jorlon Diaph.
VJ	Viton / Jorlon Diaph (1/2" only)
ZZ	Non-Standard

7 & 8	Range		
	Adjusting Screw Finish		Range (PSI)
A	Standard	A	3-8 (0,2-0,6)
		C	5-25 (0,3-1,7)
		E	10-25 (0,7-1,7)
		P	15-25 (0,3-1,7)
		H	15-50 (0,3-3,4)
		J	15-60 (0,3-4,1)
		M	35-100 2,4-6,9)
		R	40-90 (2,8-6,2)
		T	75-135 (5,2-9,3)
ZZ	Non-Standard		

9 & 10	Diaphragm
EP	EPDM (1/2", 3/4" & 1" only)
JL	JORLON
ZZ	NON - STANDARD

11 & 12	Actuator
AA	Standard

Documentation

A Certificate of Compliance is available at no charge when requested at time of order. The "Unicert" is a chargeable document. If needed, a "Unicert" must be requested at time of order.

Richards Industrials reserves the right to make revisions to its products, specifications, literature, and related information without notice.

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I & M FB6C

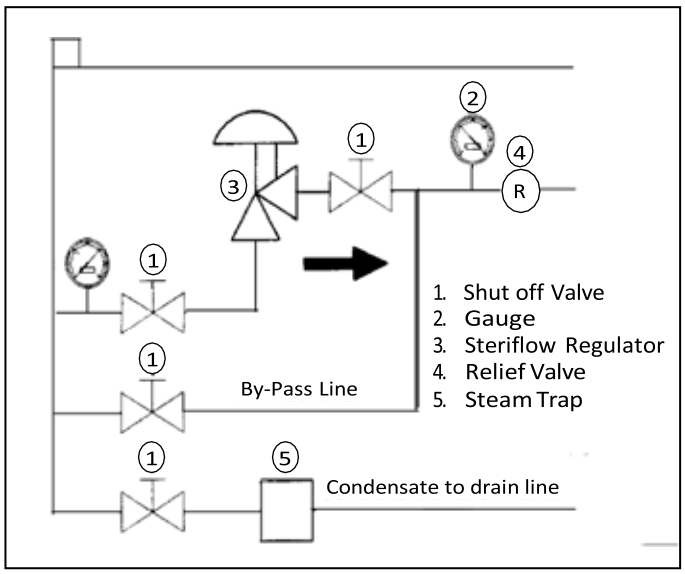
Installation & Maintenance Instructions for FB6C Sanitary Pressure Regulators

Warning: Steriflow Sanitary Pressure Regulators must only be used, installed and repaired in accordance with these Installation & Maintenance Instructions. Observe all applicable public and company codes and regulations. In the event of leakage or other malfunction, call a qualified service person; continued operation may cause system failure or a general hazard. Before servicing any valve, disconnect, shut off, or bypass all pressurized fluid. Before disassembling a valve, be sure to release all spring tension.

Please read these instructions carefully!

Your Steriflow product will provide you with long, trouble-free service if it is correctly installed and maintained. Spending a few minutes now reading these instructions can save hours of trouble and downtime later. When making repairs, use only genuine Steriflow Valve parts, available for immediate shipment from the factory.

Ideal Installation



1. The valve is designed for sanitary service and it is assumed that it will be installed into a clean system. It is highly recommended that upstream lines be blown down prior to installation to remove all welding, polishing, and other debris prior to installing the valve.
2. The regulator is to be installed with the inlet vertical, or the bottom, and the outlet horizontal, but for best drainage, install at a 2° angle. These restrictions apply only for drainage considerations; the valve will function in any position. Con- tact factory for other possible orientations.
3. Steam regulators are best located at the highest point in the piping with the take-off out of the top of the steam header. This will minimize the possibility of water in the regulator.
4. For best control, 3' 0" straight sections of pipe should be installed on either side of the regulator.
5. Use caution in tightening commercial sanitary fittings. Over-tightening can cause the gasket to extrude into the flow passage.
6. If possible, install a relief valve downstream from the regulator. Set at about 30% above the control point of the regulator.
7. If you are in gas or vapor service, and your control setpoint is 25% or less than the inlet pressure, you should expand your outlet piping by one pipe diameter for optimal performance.
8. Operate the regulator within its pressure and temperature rating as stamped on the valve nameplate.
9. It is recommended that you set and test this regulating valve under flowing conditions. Deadheading the valve to measure set point pressure can give faulty readings due to instantaneous pressure creep (opposite of pressure offset or droop).

Start-Up

1. Make sure that the CIP pin (12) is not inserted into the port in the side of the spring housing (14).
2. Fully open the outlet shutoff valve.
3. Slowly open the inlet shutoff valve.
4. Slowly open and close the outlet shutoff valve several times; this will stroke the valve and confirm satisfactory operation.
5. With both shutoff valves open, slowly turn the adjustment screw clockwise to increase the pressure; or counter-clockwise to decrease the pressure.

Maintenance

Caution: Make certain that there is no pressure in the valve before loosening any fittings or joints. The following steps are recommended:

1. Close the inlet shutoff valve.

PROTECT VALVES WITH LINE STRAINERS

2. Allow pressure to bleed off through downstream piping. Do not attempt to reverse the flow through the valve by bleeding pressure from the inlet side.
3. When the pressure gauges indicate that all pressure has been removed from the system, the valve may be serviced.

Note: refer to the drawing at the end of this document for description and proper orientation of parts.

Clean-In-Place

To perform this procedure, the valve is locked in the open position by the CIP pin (17). The pin is attached to the spring housing (11) by a chain. If the valve is open, the pin can be inserted into the port in the side of the spring housing. This prevents the valve from closing and allows cleaning and draining of the internals.

Note: the CIP pin must be removed prior to placing the valve back in service. Otherwise, the valve will not regulate or shutoff, and personal injury or property damage may occur.

Disassembling Valve

3/4" - 3" FB6C

1. Insure that the valve is not pressurized by following the Caution note at the beginning of the Maintenance Section.
2. Back off the adjusting screw subassembly (13) to remove the load from the range spring (9).
3. Remove the spring housing (11) by removing the clamp (18).
4. Remove the cylinder (8) from the spring housing (11) by rotating it approximately 90°.
5. Remove the spring (9) and spring guide (10).
6. Remove the hex jam nut (7).
7. Remove the spacer (5), upper diaphragm plate (3), diaphragm gasket (only included on 1/2" - 1" models with a 3-8 psi (0,2–0,5 bar) spring range), and diaphragm (4) from the stem (2). Remove the lower diaphragm plate (15) and o-ring (14) where applicable.
8. Remove the stem (2) from the body (1).

Preparing Valve for Assembly

1. All parts should be cleaned and examined. Damaged parts should be replaced.
2. Do not lubricate o-rings

Assembling the Valve

3/4" – 3" FB6C

1. Install stem (2) into body (1).
2. When supplied, lubricate o-ring (16) and install into the groove in the lower diaphragm plate (15) [or onto stem when applicable on low flow versions].
3. Install diaphragm (4) onto stem (2). Center diaphragm onto body (1).
4. Install diaphragm gasket (only included on 1/2" - 1" models with a 3-8 psi (0,2 -0,5 bar) spring range).
5. Install upper diaphragm plate (3) onto stem (2).
6. Install spacer (5) onto stem(2) as needed to obtain stroke.
7. Install lockwasher (6) & hex jam nut (7) onto stem (2) and tighten only ¼ turn. Apply Loctite Primer 7649 and Sealant 2046 (following Loctite's instructions) to threads to lock the joint.
8. Install spring (9) into the cylinder (8).
9. Install spring guide (10) onto the spring (9).
10. Lubricate the O.D. surfaces of the cylinder (8) and install the spring housing (11). Rotate the cylinder (8) about 90° to engage the bayonet lugs.
11. Center diaphragm (4) onto body (1). Install spring housing (11) onto the body (1).
12. Secure spring housing (14) to the body (1):
    - Clamped assemblies with two bolts: torque hex nuts (not shown) to 240 inch-pounds (20 foot-pounds).
    - Clamp assemblies with wing nut: torque wing nut (not shown) to 25 inch-pounds (2 foot-pounds)
13. Install thumb-lock (12) onto the adjusting screw (13).
14. Install nameplate onto valve.
15. Lubricate the threads on the adjusting screw (13) and thread into the spring housing (11). The adjusting screw should engage the hole on the spring guide (10) inside the spring housing (11). Turn the handle clockwise to place a light preload on the spring (9) to hold the parts in place.
16. Attach the CIP pin (17) and the instruction tag to the spring housing (11) using the chain and chain connector/

Troubleshooting

If You Experience Erratic Control:

- Oversizing causes cycling and hunting and reduces the rangeability of the valve. Make certain that your sizing is correct.
- Steam traps may require maintenance.
- Safety valve may be defective.
- Valve seat in FB6C may be defective ~ replace stem (2) and/or body (1).

Downstream Pressure Build-Up

- CIP pin (17) may be in place; if so, remove it.
- Valve seat in FB6C may be defective ~ replace Stem and/or stem (2) and/or body (1).
- Diaphragm in FB6C may have failed; replace diaphragm if necessary.

Cannot Maintain Regulated Pressure

- Piping may be blocked or inadequately sized.
- Inlet pressure may be set too low.
- Spring may be broken or set too low; check setting; replace spring if broken.
  Valve may be undersized for required flow; make certain that your sizing is correct.
- System demand exceeds pump or boiler capacity.

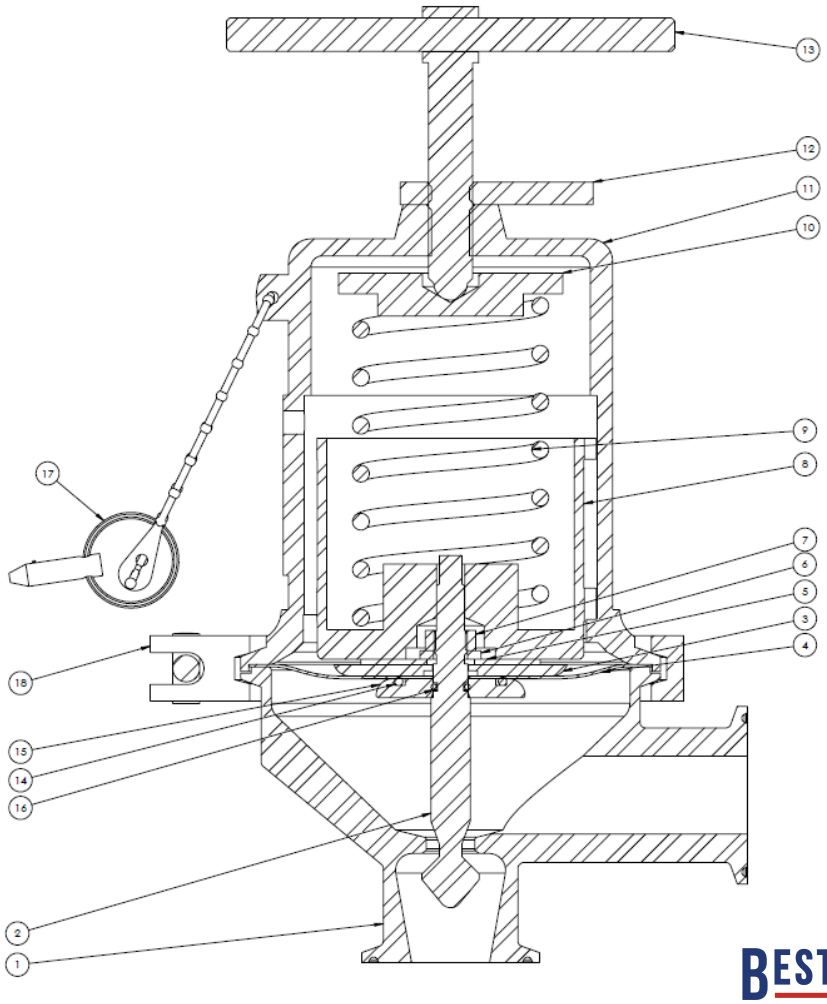
Ordering Spare Parts

Use only genuine Steriflow Valve parts to keep your valve in good working order. So that we can supply the parts, which were designed for your valve, we must know exactly which product you are using. The only guarantee to getting the correct replacement parts is to provide your Steriflow Representative with the valve serial number. This number is located on the valve identification tag. If the serial number is not available, the parts needed for your valve might be determined using the following information: Model Number, Valve Body Size, Seat Material and Cv Rating, Spring Range and Set Point, Trim Material, Part Name - Number and Quantity.

NOTE: Any parts ordered without a valve serial number that are found to be incorrect are subject to up to a minimum 25% restock charge when returned.

Illustration and Parts List ¾”-3”

NO.	DESCRIPTION	QTY
1	BODY	1
2	STEM	1
3	UPPER DIAPHRAM PLATE	1
4	DIAPHRAGM	1
5	SPACER (WASHER)(AS NEEDED)	1
6	LOCKWASHER	1
7	HEX JAM NUT	1
8	CYLINDER	1
9	SPRING	1
10	SPRING GUIDE	1
11	SPRING HOUSING	1
12	THUMBLOCK	1
13	ADJUSTING SCREW ASS'Y	1
14	O-RING (JORLON DIA. ONLY)	1
15	LOWER DIAPHRAGM PLATE	1
16	O-RING	1
17	CIP/SIP PIN S/A	1
18	4" TRI-CLAMP	1



¾”-3” FB6C Tri-Clamp

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SINCE/DEPUIS 1953

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