

Mark 95 Series

CRN Registration Number Available

Sanitary Back Pressure Regulators

The Mark 95 is available with a hard or soft seat and a variety of diaphragm and o-ring materials, making the valve well-suited for virtually any sterile back pressure application.

The Mark 95 operates by sensing the inlet pressure, or back pressure, beneath the diaphragm, as flow enters from either inlet side port. If pressure exceeds the setpoint, the diaphragm is pushed upward, compressing the range spring and lifting the stem and plug off the seat, relieving the excess pressure through the valve's bottom outlet. If the pressure decreases, the spring and diaphragm will relax, allowing the stem to return to the normally closed position.

If a different set point is desired, a simple turn of the adjusting screw will increase or decrease the setting to any set point within the range covered by the regulator's spring.

FEATURES

- NEW! Optional Lift Lever option allows the valve to be fully opened during CIP/SIP - See Page 6
- CRN Registration Number Available
- Soft seat capability for ANSI Class VI shutoff
- No guiding surfaces in the fluid – prevents particulate generation
- 100% 316L barstock body and trim
- Self-draining
- No threads to disassemble for cleaning
- Clean-in-Place, Steam-in-Place – dome features spring arrangement to allow CIP/SIP
- Lifetime warranty on Jorlon diaphragm
- DIN & ISO Tri-Clamp and tube weld ends - available as options
- Optional integral gauge port (3/4" ASME BPE)

DOCUMENTATION

The following documentation is kept in an electronic data base, and included with each order at no charge:

- Steriflow Unicert - Certificate of Compliance for:
 - Material, including MTR's
 - Surface Finish
 - FDA/USP Class VI

Each Unicert document lists the orders individual valve Serial/Suffix numbers and wetted component Heat numbers. MTR's for each Heat number follow on attached pages. The Serial numbers and Heat numbers are directly traceable to each individual valve.



AVAILABLE FINISHES (MK95/MK95FT)

Body

- Standard: 20 Ra μm (0,5 Ra μm) (ASME BPE SF5) mechanical finish and electropolish on inside wetted surfaces; machine finish and electropolish on exterior.
- Optional: 20 Ra μm (0,5 Ra μm) SF5 mechanical finish and electropolish on external surfaces; 8 Ra μm (0,2 Ra μm) finish on internal or external finishes and electropolish (Better than SF4)

Spring Housing

- Standard: machine finished 316SST, electropolished
- Optional: 20 Ra μm (0,5 Ra μm) mechanical finish and electropolish on external surfaces (SF5). 8 Ra μm (0,2 Ra μm) finish on external surfaces on all sizes and electropolish. (Better than SF4)

Adjusting Screw and Handle

- Mechanical finish standard
- Optional: 20 Ra μm (0,5 Ra μm) mechanical finish, 8 Ra μm (0,2 Ra μm) finish.

Note: optional finishes apply to handle only, threads cannot be polished

SPECIFICATIONS – O-RING DIAPHRAGM

Sizes: 1/2", 3/4", 1", 1-1/2" 2", 3"; DIN DN15, DN20, DN25, DN40, DN50, DN80; ISO DN15, DN20, DN25, DN40, DN50, DN80

End Connections

- ASME Tri-Clamp
- ASME Tube Weld Ends
- DIN/ISO Tri-Clamp Conn's to DIN 32676 Row A, B
- DIN/ISO Tube Weld Ends to DIN 11866 Row A, B
- Gauge Port - 3/4" ASME BPE Tri-clamp

Body & Wetted Trim Materials: 316L Stainless Steel (ASTM A47, S31603)

Seat Materials

- Standard hard seat – integral 316L SST seat, any Cv
- Optional soft seat*
 - Jorlon (FDA & USP Class VI) for steam and 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° (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

*Note: Soft seats cannot be used on 1/2" & 3/4" bodies if LL (Lift Lever) body option is selected

Spring Housing Materials

- CF8M cast SST (1/2" – 1") (DN15 - DN25)
- Fabricated 316L SST (1-1/2" – 3") (DN50 - DN80)

Diaphragm Materials

- 316L SST
- EPDM/Nylon (to 275°F, 135°C), FDA only
- Jorlon (to 400°F, 204°C), FDA, USP Class VI
- Ultra-thin Jorlon (to 400°F, 204°C), FDA, USP Class VI (for use with 3-8 range spring only)

O-Ring Materials

- EPDM (to 275°F, 135°C) - FDA, USP Class VI
- Buna-N (to 225°F, 107°C) - FDA
- Viton (to 400°F, 204°C) - FDA, USP Class VI*
- Silicone (to 400°F, 204°C) - FDA, USP Class VI*
- Teflon-Encapsulated Viton (to 400°F, 204°C) - FDA, USP Class VI)
- Teflon-Encapsulated Silicone (to 400°F, 204°C) - FDA, USP VI**.

* While rated to exceed normal Clean Steam operating temperatures, Steriflow does not recommend the use of non-encapsulated Viton, or Silicon for continuous clean steam service. Contact the factory if questions.

**This o-ring material was limited to certain sizes on older Mark 95's. If a replacement is needed, give us the original serial number.

Shutoff: ANSI Class III hard seat or Class VI soft seat
Body Pressure Temperature Rating: (dependent upon construction)

Valve Size	PSIG @ 100°F	PSIG @ 450°F
1/2", 3/4", 1", DN15, DN20, DN25	350 (24,1 bar)	250 (17,2 bar)
1-1/2", 2", 3", DN40, 50, 80	200 (13,8 bar)	200 (13,8 bar)

Pressure on 1/2", 3/4" & 1" size limited to 225 psig (15,5 bar) @ 100°F and 200 psig (13,8 bar) @ 400°F if using Ultra-thin Jorlon diaphragm.

Set Point Spring Ranges PSI (Bar)		
1/2"–1"	1 1/2"	2"–3"
3-8* (0,2–0,5)	3-25** (0,2–1,7)	5-25 (0,34–1,7)
5-30 (0,34–2,1)	10-25 (0,7–1,7)	10-25 (0,7–1,7)
15-50 (1,0–3,4)	15-40 (1,0–2,7)	15-60 (1,0–4,1)
35-90 (2,4–6,2)	35–85 (2,4–5,8)	
50–105 (3,4–7,2)		

* Ultra thin Jorlon or EPDM Diaphragm only. Max allowable differential pressure 40 psi

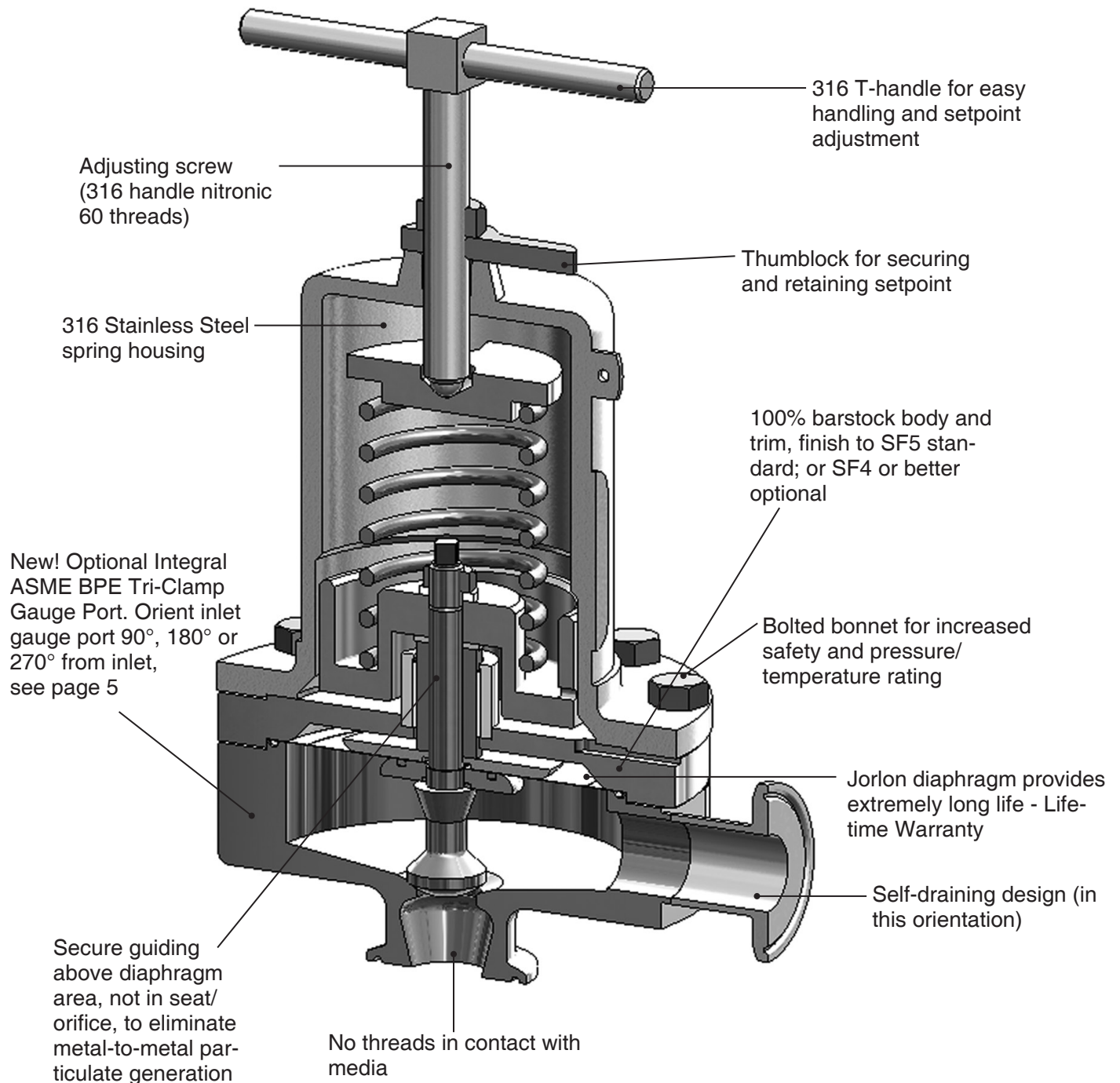
** EPDM Diaphragm only

Cv (Kv) Ratings:

Valve Size	Available Cv (Kv)	Cv for Relief Valve Sizing
1/2", DN15 3/4" DN20	0.5, 1.5 (0,43; 1,3)	0.45 (0.39)
1" DN25	1.5, 3.0, 4.5, 5.5** (1,3; 2,6; 3,9; 4,7)	10.7 (9,2)
1-1/2" DN40	4.5 or 10.0 (3,9 or 8,6)	6.7 (5,76); 26.3 (22,6)
2" DN50	10.0 or 19.0 (8,6 or 16,3)	16.5 (14,2), 56.5 (48,6)
3" DN80	10.0 or 28.0 (8,6 or 24,1)	16.5 (14,2); 67.1 (57,7)

** Not available with metal diaphragms, Jorlon and other elastomers acceptable

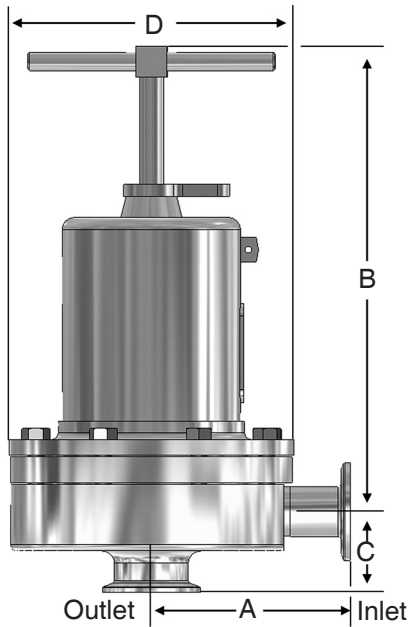
FEATURES & BENEFITS



APPLICATIONS

The MK95 is suitable for a variety of process and clean utility applications in the biopharmaceutical, semi-conductor, and food & beverage industries including: continuous circuit WFI pump deadhead diversion, bioreactor agitator seal pressure maintenance, large volume fill back pressure release, and zero dead leg pressure relief.

DIMENSIONS



ASME Tri-Clamp Ends

Valve Size	Dimensions (inches)				Weight Lbs
	A	B	C	D	
1/2"	3.29	8.00	1.37	5.75	18
3/4"	3.29	8.00	1.50	5.75	18
1"	4.00	8.00	1.64	5.70	20
1-1/2"	4.21	10.50	2.53	7.25	40/28.7*
2"	5.34	17.50	2.96	9.50	90/66**
3"	5.34	18.00	3.46	9.50	98

ASME Tri-Clamp Ends, mm

Valve Size	Dimensions (mm)				Weight Kgs
	A	B	C	D	
1/2"	83,6	203	34,8	146,1	8
3/4"	83,6	203	38,1	146,1	8
1"	101,6	203	41,7	146,1	9
1-1/2"	106,9	267	64,3	184,2	18/13*
2"	135,6	445	75,2	241	41/30**
3"	135,6	457	87,9	241	44

ASME Tube Weld Ends, inches

Valve Size	Dimensions (inches)				Weight Lbs
	A	B	C	D	
3/4"	3.32	8.00	1.88	5.75	18
1"	3.34	8.00	2.18	5.75	20
1-1/2"	4.68	10.50	3.67	7.25	40/28.7*
2"	5.34	17.50	2.96	9.50	90/66**
3"	5.34	18.00	3.46	9.50	98

ASME Tube Weld Ends, mm

Valve Size	Dimensions (mm)				Weight Kgs
	A	B	C	D	
3/4"	84,3	203	47,8	144,8	8,2
1"	84,8	203	55,4	144,8	9,1
1-1/2"	118,9	267	93,2	184,2	18/13*
2"	135,6	444	75,2	241	41/30**
3"	135,6	457	87,9	241	44

DIN Tri-Clamp Connections to DIN 32676 Row A

Valve Size	Dimensions (mm)				Weight Kgs
	A	B	C	D	
15	100,3	203,2	63,6	146,1	8,1
20	99,7	203,2	70,2	146,1	8,1
25	99,7	203,2	72,8	146,1	9,1
40	118,3	266,7	83,6	183,4	18/13*
50	145,8	444,5	93,9	240,5	41/30**
80	146,6	457,2	105	240,5	44,4

DIN Tube Weld Ends to DIN 11866 Row A

Valve Size	Dimensions (mm)				Weight Kgs
	A	B	C	D	
15	93,4	203,2	56,7	146,1	8,1
20	92,8	203,2	63,3	146,1	8,1
25	92,8	203,2	65,9	146,1	9,1
40	111,4	266,7	76,7	183,4	18/13*
50	138,9	444,5	87	240,5	41/30**
80	139,7	457,2	98,1	240,5	44,4

ISO Tri-Clamp Connections to DIN 32676 Row B

Valve Size	Dimensions (mm)				Weight Kgs
	A	B	C	D	
15	92,1	203,2	62,5	146,1	8,1
20	92,1	203,2	62,5	146,1	8,1
25	92,1	203,2	65,3	146,1	9,1
40	110,6	266,7	76,8	183,4	18/13*
50	138,2	444,5	93,9	240,5	41/30**
80	138,9	457,2	96,8	240,5	44,4

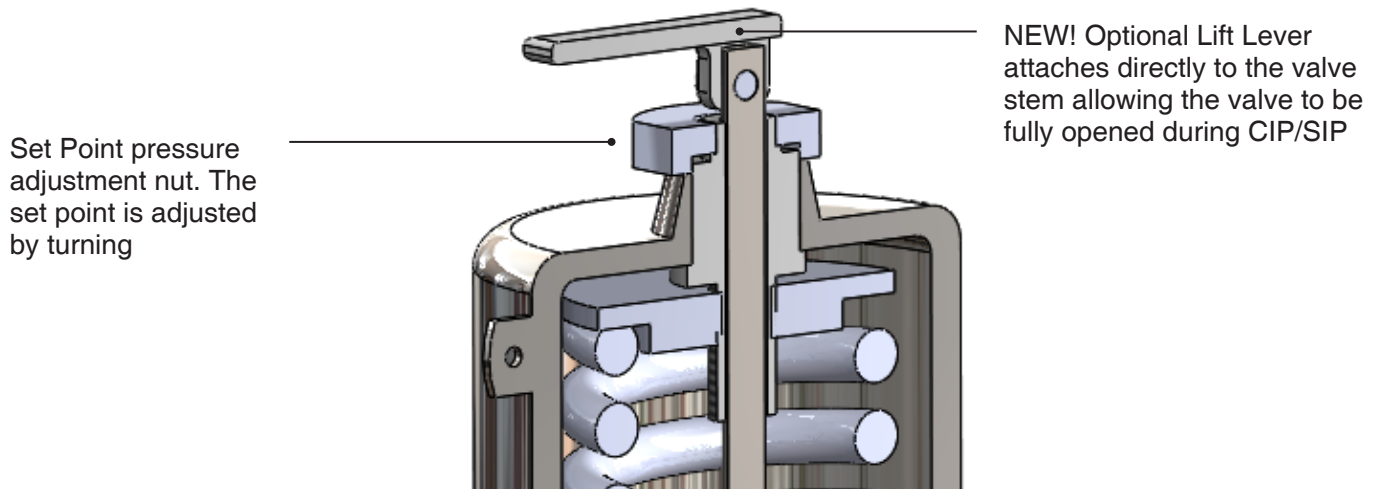
ISO Tube Weld Ends to DIN 11866 Row B

Valve Size	Dimensions (mm)				Weight Kgs
	A	B	C	D	
15	92,1	203,2	62,5	146,1	8,1
20	92,1	203,2	62,5	146,1	8,1
25	92,2	203,2	65,3	146,1	9,1
40	110,6	266,7	76,8	183,4	18/13*
50	138,2	444,5	93,9	240,5	41/30**
80	138,9	457,2	96,8	240,5	44,4

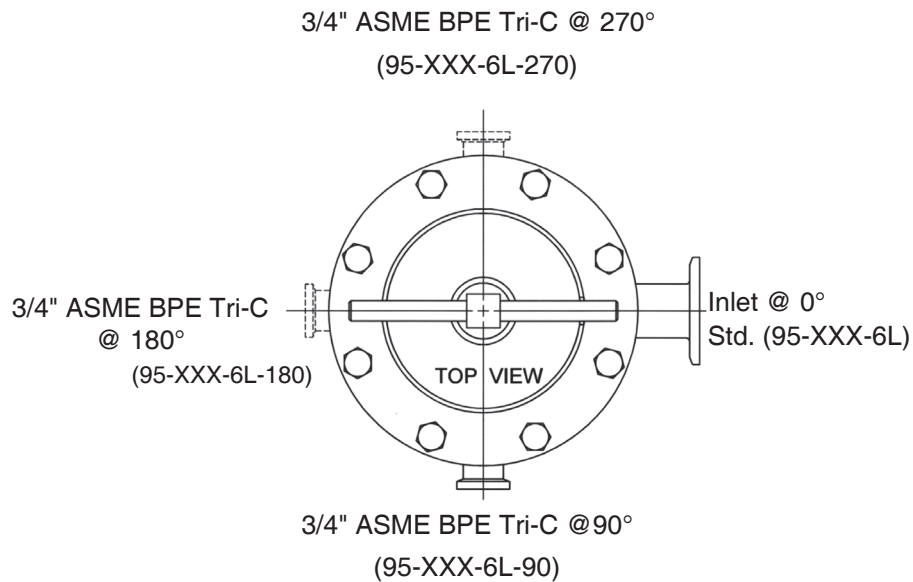
* 40 lbs (18,1 kgs) std; 28.7 lbs (13 kgs) with aluminum spring housing

** 90 lbs (40,7 kgs) std; 66 lbs (33 kgs) with aluminum spring housing

NEW! LIFT LEVER OPTION - MARK 95LL



GAUGE PORT CONFIGURATION OPTIONS



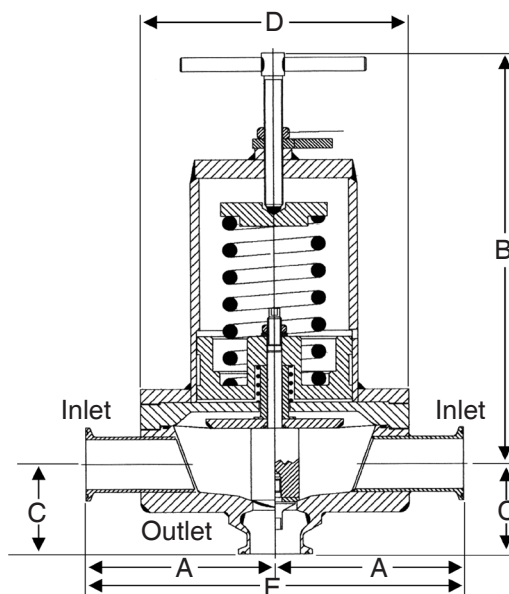
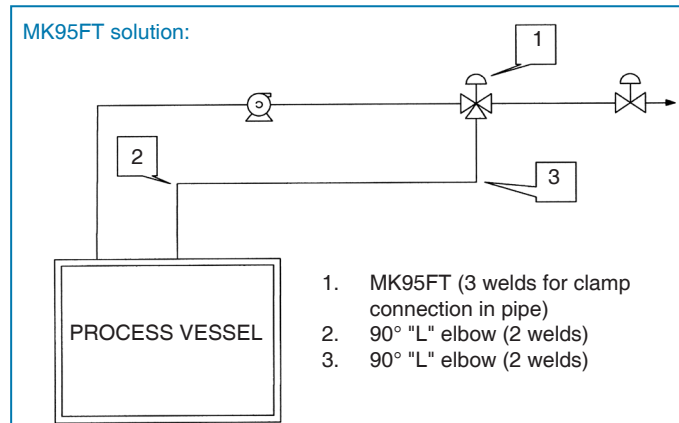
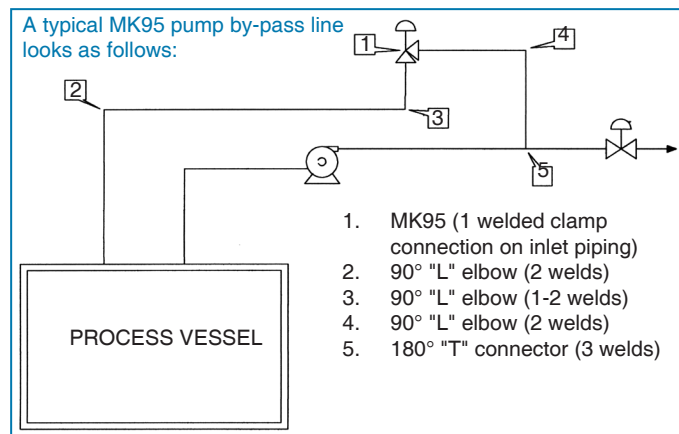
Mark 95FT Series

CRN Registration Number Available

Sanitary "Flow Through" Back Pressure Regulators

Starting with the features and benefits associated with the superior design of the Mark 95, Steriflow Valve has added a flow-through option that creates more application potential. The MK95FT can eliminate a portion of the by-pass line components by providing for installation in the primary pipe line - allowing fluid to bypass out the bottom of the valve should an overpressure event occur.

The Mark 95FT has a bi-directional inlet, and is found in liquid services such as WFI loops, CIP lines and filling lines. The valve is normally closed, allowing flow to pass straight through to downstream users. If pressure builds and reaches the setpoint, the Mark 95FT will open to relieve and maintain constant pressure. This design allows for elimination of pipe "T's" and elbows, reduction of weld joints, simplified by-pass piping and easier, quicker installation. Due to the unobstructed flow path through the valve, very little to no pressure loss through the valve can be expected. This is a key reason the MK95FT can be installed directly into the primary process piping.



Valve Size	Dimensions (inches)					Weight Lbs
	A	B	C	D	E	
3/4"	3.29	8.50	1.50	5.70	6.58	19
1"	4.00	8.50	1.64	5.70	8.00	21
1-1/2"	4.24	10.5	2.53	7.25	8.48	41
2"	5.34	17.5	2.96	9.50	10.7	91
3"	5.34	18.0	3.46	9.50	10.7	99

Valve Size	Dimensions (mm)					Weight Kgs
	A	B	C	D	E	
DN20	84	216	38	145	168	8,6
DN25	102	216	42	145	203	9,5
DN40	108	267	64	184	214	19
DN50	136	445	75	241	271	41
DN80	136	457	88	241	271	45

Based on US tri-clamp ends. Consult factory for DIN and ISO tri-clamp end dimensions

MARK 95 SERIES SANITARY BACK PRESSURE REGULATORS

ORDERING SCHEMATIC

Model	LL Option	Size	Body Material	Gauge Port Opt	1 & 2	3 & 4	5 & 6	7 & 8	9 & 10	11 & 12	13 & 14	15

Model	
95	ASME BPE Tri-Clamp Connections
95T	ASME BPE Tube Weld Ends
95D	DIN Tri-Clamp Conn's to DIN 32676 Row A
95DT	DIN Tube Weld Ends to DIN 11866 Row A
95S	ISO Tri-clamp Conn's to DIN 32676 Row B
95ST	ISO Tube Weld Ends to DIN 11866 Row B
95FT	Flow-Through with ASME BPE Tri-Clamp Connections

Note: Tube ends and Tri-clamp ends per standard stated in end item. Consult factory for other options.

Lift Lever Option	
LL*	Lift Lever (Leave blank if not needed)

* Not available for 0.5 or 1.5 Cv soft seats

Size	
050	1/2"
075	3/4"
100	1"
150	1-1/2"
200	2"
300	3"
15	DN15
15N*	DN15 Non-standard Clamp Face (MK95D or MK95S)
20	DN20
20N*	DN20 Non-standard Clamp Face (MK95D only)
25	DN25
40	DN40
50	DN50
80	DN80

* DIN or ISO tri-clamp face not conforming to DIN standard 32676. Customer must include required tri-clamp face dimensions on RFQ or Purchase order.

Body Material	
6L	316L

Body Configuration - Gauge Port	
	Leave blank if not needed
90	3/4" ASME BPE Tri-Clamp F/Gauge port @ 90°
180	3/4" ASME BPE Tri-Clamp F/Gauge port @ 180°
270	3/4" ASME BPE Tri-Clamp F/Gauge port @ 270°

1 & 2	Body		
	Finish		Cvs (Kvs)
A	20Ra Interior/63rms Exterior (Std)	A	0.5 & 1.5 (0,43 & 1,3)
B	20Ra Interior/20Ra Exterior	G	3.0 (2,6)
C	8Ra Interior/63rms Exterior*	H	4.5 (3,9)
D	20Ra Interior/8Ra Exterior	K	5.5 (4,7)
E	8Ra Interior/8Ra Exterior*	M	10.0 (8,6)
F	8Ra Interior/20Ra Exterior*	N	19.0 (16,3)
		P	28.0 (24,1)

* Handle and all external surfaces must be selected separately in boxes 7 and 11/12.

3	Trim Finish
A	20Ra (Standard)
B	8Ra

4	Trim		
	Finish	Cv & Seat	Available in Valve Size
A	20Ra (Standard)	5	Cv 0.5 Hard Seat 050 - 075
B	8Ra	8	Cv 0.5 Teflon Seat (no LL) 050 - 075
*C	20Ra LL	6	Cv 0.5 Peek Seat (no LL) 050 - 075
*D	8Ra LL	A	Cv 1.5 Hard Seat 050 - 100
		9	Cv 1.5 Teflon Seat (no LL) 050 - 100
		7	Cv 1.5 Peek Seat (no LL) 050 - 100
		E	Cv 3.0 Hard Seat 100
		F	Cv 3.0 Teflon Seat 100
		G	Cv 3.0 Jorlon Seat 100
		B	Cv 3.0 Peek Seat 100
		H	Cv 4.5 Hard Seat 100 - 150
		J	Cv 4.5 Teflon Seat 100 - 150
		K	Cv 4.5 Jorlon Seat 100 - 150
		C	Cv 4.5 Peek Seat 100 - 150
		L	Cv 5.5 Hard Seat 100
		M	Cv 5.5 Teflon Seat 100
		N	Cv 5.5 Jorlon Seat 100
		D	Cv 5.5 Peek Seat 100
		P	Cv 10 Hard Seat 150 - 300
		Q	Cv 10 Teflon Seat 150 - 300
		R	Cv 10 Jorlon Seat 150 - 300
		3	Cv 10 Peek Seat 150 - 300
		S	Cv 19 Hard Seat 200
		T	Cv 19 Teflon Seat 200
		U	Cv 19 Jorlon Seat 200
		4	Cv 19 Peek Seat 200
		V	Cv 28 Hard Seat 300
		W	Cv 28 Teflon Seat 300
		X	Cv 28 Jorlon Seat 300
		Y	Cv 28 Peek Seat 300
ZZ Non-Standard			

* Trim option C/D requires Actuator option LL

Continued on next page

ORDERING SCHEMATIC

Model	LL Option	Size	Body Material	Gauge Port Opt	1 & 2	3 & 4	5 & 6	7 & 8	9 & 10	11 & 12	13 & 14	15

5 & 6	O-Ring/Diaphragm
	Cv 0.5 thru 3.0
BS	Buna/SST Dia.
EL	EPDM/EPDM Dia.
ES	EPDM/SST Dia.
SS	Silicone/SST Dia.
TG	Teflon Encap. Viton/Jorlon Dia.
TE	Teflon Encap. Viton/SST Dia.
VS	Viton/SST Dia.
ZZ	Non-standard

5 & 6	O-Ring/Diaphragm
	Cv > 3.0
BU	Buna/SST Dia.
EE	EPDM/EPDM Dia.
EP	EPDM/SST Dia.
SL	Silicone/SST Dia.
TS	Teflon Encap. Silicone/SST Dia.
TY	Teflon Encap. Viton/Jorlon Dia.
TV	Teflon Encap. Viton/SST Dia.
VT	Viton/SST Dia.
ZZ	Non-standard

7	Adjusting Screw Finish (Except Threads)
A	Electro-polished (Standard)
B	20Ra (SF5)
C	8Ra

8	Spring Range PSI (Bar)				
1/2"-1"		1 1/2"		2"-3"	
A*	3-8* (0,2-0,5)	B**	3-25** (0,2-1,7)	F	5-25 (0,34-1,7)
D	5-30 (0,34-2,1)	E	10-25 (0,7-1,7)	E	10-25 (0,7-1,7)
H	15-50 (1,0-3,4)	G	15-40 (1,0-2,7)	J	15-60 (1,0-4,1)
L	35-90 (2,4-6,2)	K	35-85 (2,4-5,8)		
Q	50-105 (3,4-7,2)				

* Ultra thin Jorlon or EPDM Diaphragm only

** EPDM Diaphragm only

9 & 10	Diaphragm
6L	SST (all exterior)
EP	EPDM (all exterior)
JL	Jorlon (all exterior)
UJ	Ultra-thin Jorlon (all exterior)***

*** Ultra thin Jorlon available for 1/2" - 1" valves only

11 & 12	Actuator Finish/Type
AA	Standard
BA	20Ra (SF5) exterior
CA	8Ra exterior
DA	Electro-polished for 2" & 3"
LL	Lift Lever (95LL only)

13 & 14	PED Compliance
00	Not Required
0G	SEP (1/2", 3/4", 1") (DN15-DN25)
0F	CE Category I (1-1/2", 2", 3") (DN40-80)

15	Options
08	Clean for Oxygen Service
09	Clean for Oil Free Service
ZZ	Non-Standard Option

SAMPLE SPECIFICATION

Stainless steel sanitary back pressure regulator body and wetted components shall be made from 316L, ASTM A479, S31603 barstock material. Regulator shall be activated by FDA approved, USP Class VI certified Jorlon diaphragm with life-time guarantee. All guiding of valve stem/plug shall be outside of the wetted, process areas, above diaphragm. Regulator shall be free of threads within wetted, process areas of valve internal and shall be self draining when installed with outlet vertical and below valve assembly.

Steriflow Valve reserves the right to make revisions to its products, specifications, literature, and related information without notice. Please visit our website at www.steriflowvalve.com for the latest information on our products.