

Mark 978LF Series

Sanitary Low Flow Control Valves

The Mark 978LF Sanitary Low Flow Control Valve is designed to meet the stringent specifications for low flow sterile processes. Steriflow's strict adherence to ASME BPE, and sanitary regulations make these low flow control valves suitable for a wide variety of liquid and gaseous media. The Mark 978LF is ideal for use in Clean air or gas, USP Purified Water, and CIP service in pharmaceutical and bioprocess, and in a variety of applications in the cosmetic, dairy, and food & beverage industries.

Whether the need is to control pressure, temperature, flow pH, level, or other variables, the MK978LF's true characterized trims and excellent repeatability makes it the right choice for your sanitary process applications.

FEATURES

- Maintenance-friendly – easy to perform maintenance with simple disassembly, reassembly and steam-in-place/clean-in-place capabilities
- Wetted parts made of 100% 316L Stainless Steel barstock
- No guiding surfaces in the fluid – prevents particulate generation
- Epoxy coated multi-spring actuators provide excellent corrosion resistance during washdown
- Self-draining – when mounted in vertical or horizontal orientations
- No threads in contact with service media – prevents accumulation of contaminants
- Mechanically polished internal components – 20 Ra (0,5 µm) finish, electropolish – standard, 8 Ra optional
- FDA and USP Class VI conformity on all process seal materials

DOCUMENTATION

The following documentation is shipped at no charge:

- Steriflow Unicert: Certificate of Compliance for:
 - Material, including MTR's
 - Surface Finish
 - FDA/USP Class VI
- Traceability:
 - Each Unicert includes individual valve serial numbers, heat numbers and attached MTR's directly traceable to the valve serial number, and heat numbers on all wetted metallic components



AVAILABLE FINISHES

Body

- *Standard:* 20 Ra mechanical finish on internal wetted surfaces (0,5 µm); machine finish on exterior (63 RMS), and electropolished inside and out
- *Optional:* 20 Ra mechanical finish on external surfaces (0,5 µm); 8 Ra finish on internal or external surfaces (0,2 µm)

Stem

- *Standard:* 20 Ra mechanical finish and electropolish (0,5 µm)
- *Optional:* 8 Ra mechanical finish (0,2 µm)

APPLICATIONS

A wide variety of applications exist for the MK978LF in the pharmaceutical, biotech, cosmetic, and food and beverage industries.

- Clean air or gas, USP Purified Water, and CIP service
- Liquid ingredient addition

SPECIFICATIONS

Sizes: 1/2" (DN15) & 3/4" (DN20)

Material: 316L Barstock body and trim

End Connections: ASME Tri-Clamp, butt weld, for others, consult factory

Cv (Linear or Equal Percentage):

0.05

0.08

0.10

Body/Bonnet Seal: Teflon® gasket (FDA/USP Class VI)

Shutoff: ANSI Class III

Actuator: 14M multispring actuator, aluminum (standard) or SST (optional)

O-Ring Material: EPDM, Viton, Flouraz, Silicone, Kalrez (all FDA/USP Class VI)

Maximum Pressure @ 100°F (37,8°C): 450 psi (31,0 bar)

Pressure @ Maximum Temperature: 200 psi @ 300°F (13,8 bar @ 149°C) depending on o-ring selection

Maximum Pressure Drop: up to 450 psi (31,0 bar)

Weight:

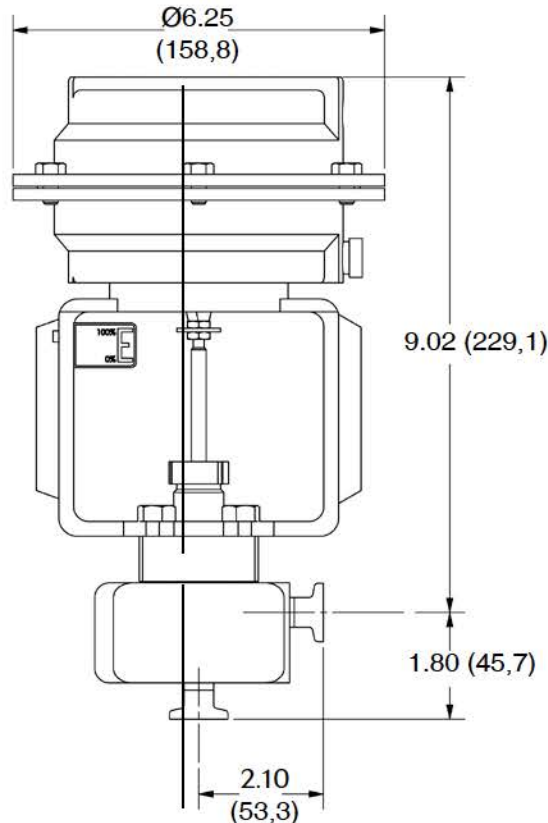
- 8.2 lbs (3,7 kgs) – with Aluminum MK14M actuator
- 10.2 lbs (4,6 kgs) – with Stainless Steel MK14M actuator

Cv vs TRAVEL

| Cv | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.10 EQ | 0.007 | 0.011 | 0.014 | 0.018 | 0.022 | 0.025 | 0.029 | 0.032 | 0.058 | 0.083 | 0.106 |
| 0.08 EQ | 0.007 | 0.010 | 0.012 | 0.015 | 0.018 | 0.020 | 0.023 | 0.025 | 0.046 | 0.066 | 0.085 |
| 0.10 LN | 0.007 | 0.018 | 0.028 | 0.038 | 0.048 | 0.058 | 0.068 | 0.078 | 0.088 | 0.098 | 0.107 |
| 0.08 LN | 0.007 | 0.015 | 0.023 | 0.031 | 0.039 | 0.046 | 0.054 | 0.062 | 0.069 | 0.077 | 0.084 |

other Cv's available upon request

DIMENSIONS

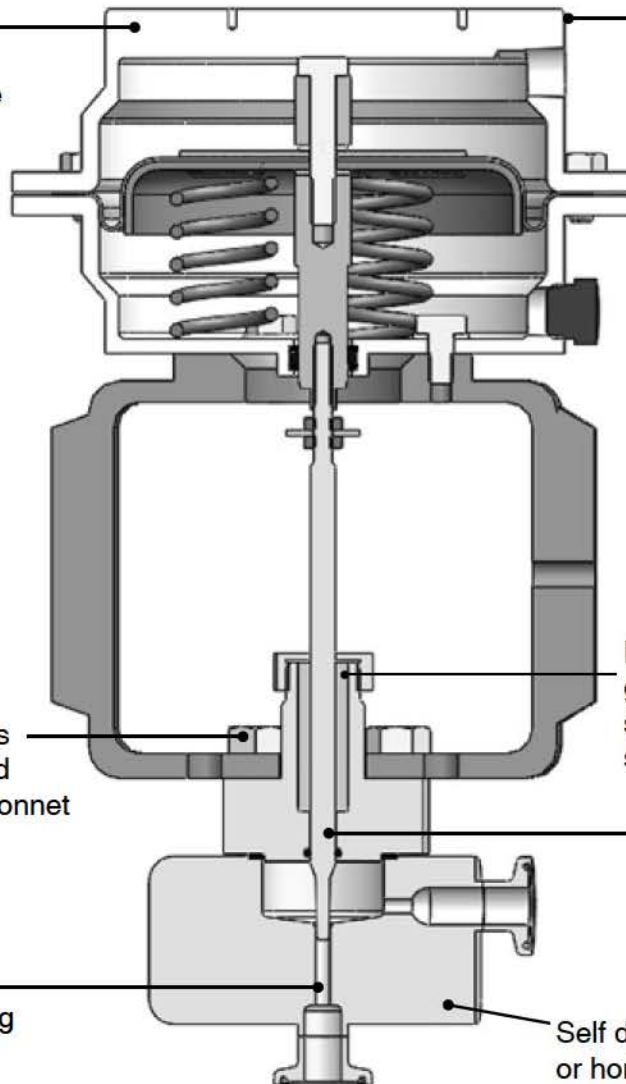


Tolerance: BWE, FE, Tri-Clamp & Tube End F-F
Dim are ± 1/16" all other dimensions: ± 1/2"

FEATURES & BENEFITS

Rugged 14M actuator has been field-proven for smooth operation over the life of the valve

Corrosion resistant coating with SST fasteners. SST actuator optional



Bolted bonnet provides enhanced strength and safety over clamped bonnet

Extended FDA/USP Class VI PEEK guide bushing ensures smooth, stable movement throughout entire stroke length

Broad selection of FDA/USP Class VI o-ring materials

316L SST solid barstock stem/plug

Self draining in either vertical (shown) or horizontal orientation

ORDERING SCHEMATIC

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | - | 2 | - | 3 | / | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| 1 | Model |
|-------|-------------------------|
| 978 | Standard |
| 978MV | Motor Valve |
| 978SP | Side Mounted Positioner |
| 978TP | Top Mounted Positioner |

| 2 | Size |
|-----|------|
| 050 | 1/2" |
| 075 | 3/4" |

| 3 | Low Flow |
|----|----------|
| LF | Low Flow |

continued

MARK 978LF SANITARY LOW FLOW CONTROL VALVES

| 4 | 1/2" Tri-C Body, Cv, Char. Finish |
|--------|--|
| AALN6A | 1/2" LIN Cv 0.05 20Ra int./63RMS ext. |
| A1LN6A | 1/2" LIN Cv 0.05 20Ra int./20Ra ext. |
| A2LN61 | 1/2" LIN Cv 0.05 8Ra int./20Ra ext. |
| A3LN61 | 1/2" LIN Cv 0.05 8Ra int./8Ra ext. |
| A4LN61 | 1/2" LIN Cv 0.05 8Ra int./63 RMS ext. |
| AAEPA6 | 1/2" EQP Cv 0.05 20Ra int./63 RMS ext. |
| A1EPA6 | 1/2" EQP Cv 0.05 20Ra int./20Ra ext. |
| A2EP16 | 1/2" EQP Cv 0.05 8Ra int./20Ra ext. |
| A3EP16 | 1/2" EQP Cv 0.05 8Ra int./8Ra ext. |
| A4EP16 | 1/2" EQP Cv 0.05 8Ra int./63 RMS ext. |
| AALN7A | 1/2" LIN Cv 0.08 20Ra int./63 RMS ext. |
| A1LN7A | 1/2" LIN Cv 0.08 20Ra int./20Ra ext. |
| A2LN71 | 1/2" LIN Cv 0.08 8Ra int./20Ra ext. |
| A3LN71 | 1/2" LIN Cv 0.08 8Ra int./8Ra ext. |
| A4LN71 | 1/2" LIN CV 0.08 8Ra int./63 RMS ext. |
| AAEPA7 | 1/2" EQP Cv 0.08 20Ra int./63RMS ext. |
| A1EPA7 | 1/2" EQP Cv 0.08 20Ra int./20RA ext. |
| A2EP17 | 1/2" EQP Cv 0.08 8Ra int./20RA ext. |
| A3EP17 | 1/2" EQP Cv 0.08 8Ra int./8RA ext. |
| A4EP17 | 1/2" EQP Cv 0.08 8Ra int./63RMS ext. |
| AALN8A | 1/2" LIN Cv 0.1 20Ra int./63 RMS ext. |
| A1LN8A | 1/2" LIN Cv 0.1 20Ra int./20Ra ext. |
| A2LN81 | 1/2" LIN Cv 0.1 8Ra int./20Ra ext. |
| A3LN81 | 1/2" LIN Cv 0.1 8Ra int./8Ra ext. |
| A4LN81 | 1/2" LIN CV 0.1 8Ra int./63 RMS ext. |
| AAEPA8 | 1/2" EQP Cv 0.1 20Ra int./63RMS ext. |
| A1EPA8 | 1/2" EQP Cv 0.1 20Ra int./20RA ext. |
| A2EP18 | 1/2" EQP Cv 0.1 8Ra int./20RA ext. |
| A3EP18 | 1/2" EQP Cv 0.1 8Ra int./8RA ext. |
| A4EP18 | 1/2" EQP Cv 0.1 8Ra int./63RMS ext. |

| 4 | 3/4" Tri-C Body, Cv, Char. Finish |
|--------|--|
| BALN6A | 3/4" LIN Cv 0.05 20Ra int./63RMS ext. |
| B1LN6A | 3/4" LIN Cv 0.05 20Ra int./20Ra ext. |
| B2LN61 | 3/4" LIN Cv 0.05 8Ra int./20Ra ext. |
| B3LN61 | 3/4" LIN Cv 0.05 8Ra int./8Ra ext. |
| B4LN61 | 3/4" LIN Cv 0.05 8Ra int./63 RMS ext. |
| BAEPA6 | 3/4" EQP Cv 0.05 20Ra int./63 RMS ext. |
| B1EPA6 | 3/4" EQP Cv 0.05 20Ra int./20Ra ext. |
| B2EP16 | 3/4" EQP Cv 0.05 8Ra int./20Ra ext. |
| B3EP16 | 3/4" EQP Cv 0.05 8Ra int./8Ra ext. |
| B4EP16 | 3/4" EQP Cv 0.05 8Ra int./63 RMS ext. |
| BALN7A | 3/4" LIN Cv 0.08 20Ra int./63 RMS ext. |
| B1LN7A | 3/4" LIN Cv 0.08 20Ra int./20Ra ext. |
| B2LN71 | 3/4" LIN Cv 0.08 8Ra int./20Ra ext. |
| B3LN71 | 3/4" LIN Cv 0.08 8Ra int./8Ra ext. |
| B4LN71 | 3/4" LIN CV 0.08 8Ra int./63 RMS ext. |
| BAEPA7 | 3/4" EQP Cv 0.08 20Ra int./63RMS ext. |
| B1EPA7 | 3/4" EQP Cv 0.08 20Ra int./20RA ext. |
| B2EP17 | 3/4" EQP Cv 0.08 8Ra int./20RA ext. |
| B3EP17 | 3/4" EQP Cv 0.08 8Ra int./8RA ext. |
| B4EP17 | 3/4" EQP Cv 0.08 8Ra int./63RMS ext. |
| BALN8A | 3/4" LIN Cv 0.1 20Ra int./63 RMS ext. |
| B1LN8A | 3/4" LIN Cv 0.1 20Ra int./20Ra ext. |
| B2LN81 | 3/4" LIN Cv 0.1 8Ra int./20Ra ext. |
| B3LN81 | 3/4" LIN Cv 0.1 8Ra int./8Ra ext. |
| B4LN81 | 3/4" LIN CV 0.1 8Ra int./63 RMS ext. |
| BAEPA8 | 3/4" EQP Cv 0.1 20Ra int./63RMS ext. |
| B1EPA8 | 3/4" EQP Cv 0.1 20Ra int./20RA ext. |
| B2EP18 | 3/4" EQP Cv 0.1 8Ra int./20RA ext. |
| B3EP18 | 3/4" EQP Cv 0.1 8Ra int./8RA ext. |
| B4EP18 | 3/4" EQP Cv 0.1 8Ra int./63RMS ext. |

MARK 978LF SANITARY LOW FLOW CONTROL VALVES

| 5 | Stem Seal |
|----|-------------------------|
| EP | EPDM / FDA/ USP CL6 |
| FZ | Fluoraz / FDA/ USP CL6 |
| KZ | Kalrez / FDA / USP CL6 |
| SI | Silicone / FDA/ USP CL6 |
| VI | Viton / FDA / USP CL6 |
| ZZ | Non-Standard |

| 8 | Accessories |
|----|---------------------------|
| 00 | None |
| 1A | I/P Trans. 4-20MA / 3-15P |
| 2A | Air regulator with gage |
| 3A | I/P Trans. 4-20MA / 6-30P |
| ZZ | Non-Standard |

| 6 | Actuator/Range |
|----|-------------------------------|
| | 978 / 978TP |
| D1 | 14M Aluminum / 3-15 / Direct |
| R1 | 14M Aluminum / 3-15 / Reverse |
| D2 | 14M Aluminum / 6-30 / Direct |
| R2 | 14M Aluminum / 6-30 / Reverse |
| D3 | 14M SST / 3-15 / Direct |
| R3 | 14M SST / 3-15 / Reverse |
| D4 | 14M SST / 6-30 / Direct |
| R4 | 14M SST / 6-30 / Reverse |
| | 978SP |
| D1 | 14M Aluminum / All / Direct |
| R1 | 14M Aluminum / All / Reverse |
| D3 | 14M SST / All / Direct |
| R3 | 14M SST / All / Reverse |
| | 978MV |
| 1D | MV1010 / 4-20MA Direct / All |
| 1R | MV1010 / 4-20MA Reverse / All |
| ZZ | Non-Standard |

| 9 | Positioners |
|---|------------------------|
| 0 | None |
| A | SMP Dir / Rev 3-15 |
| B | SMP Dir / Rev 3-9 |
| C | SMP Dir / Rev 9-15 |
| D | SMP/IP Dir / Rev 4-20 |
| E | SMP/IP Dir / Rev 4-12 |
| F | SMP/IP Dir / Rev 12-20 |
| G | MK 16IQ-S |
| H | MK 16IQ-B Dir / Rev |
| J | MK 16IQ-FF Dir / Rev |
| Z | Non-Standard |

| 7 | Action |
|----|--------------|
| DD | Direct |
| RR | Reverse |
| ZZ | Non-Standard |



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