



MERCER VALVE CO., INC.
AUTO SEAT TECHNOLOGY®

8100 SERIES



MERCER VALVE

THINK...MERCER FIRST™





8100 Series Product Overview

The Mercer Valve 8100 Series Pressure Relief Valve is “State of the Art” in soft seat, high flow rate, pressure relieving devices. The 8100 Series spring operated valve was the first pressure relief valve to incorporate Mercer Valve’s patented **Auto Seat Technology®** into its design. Our **Auto Seat Technology®** incorporates a fully guided disk and low rate spring to ensure an accurate and repeatable set pressure. The low rated, guided spring will reduce stresses on the spring, giving you a consistent, repeatable set pressure, which will continually outlast the competition. The soft seated 8100 Series has a field-proven lip seal design, which allows for a tighter seal up to set pressure. This tight seal reduces leaks and limits product loss. Our non-rising stem allows us to produce a valve with a shorter bonnet, which will be lighter and fit in tighter confined spaces.

The 8100 Series is manufactured in accordance with the requirements of ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 for Air/Gas. The 8100 Series is well suited for compressors, separators, transmission, gathering lines, and other production processes.



8100 Series Features

- **Designed with Auto Seat Technology®.**
- **Consistent Set Pressures allowing repeatable uses without repair or resetting.**
- **Open, Close, Seat and Seal™.**
- **Fully guided disk keeps the disk properly aligned, opening and closing, helping to reseal the valve.**
- **Mechanical Stop prevents wear on parts and controls valve lift.**
- **Low rated and fully guided spring allows for more consistent set pressures from pop to pop.**
- **Pop Action relief allows valve to go to full lift at set pressure. Helps with DOT regulated applications.**
- **Built in accordance with the requirements of ASME Boiler and Pressure Vessel Code. Sec. VIII Div 1.**
- **Non-rising stems allowing valves to be installed in small areas.**



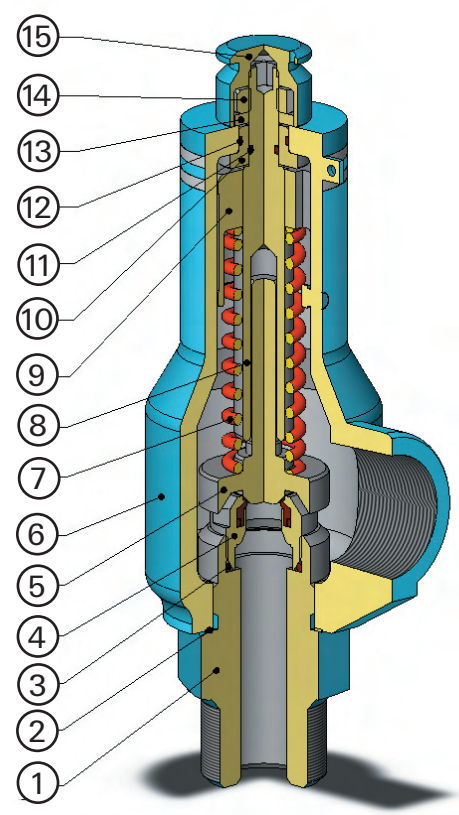
8100 Series Specifications

| Basic Valve Size | 1/2" Orifice | 3/4" Orifice |
|--|--|----------------------|
| Inlet Sizes Available | 3/4" NPT 1" NPT | 1 1/2" NPT 2" NPT |
| Outlet Sizes Available | 1" NPT | 2" NPT |
| Inlet and Outlet Connection Types Available | Male NPT x Female NPT Female NPT x Female NPT | |
| Orifice Diameter | .520 in. | .775 in. |
| Orifice Area | .212 in ² | .472 in ² |
| Equivalent API Letter | E | G |
| Pressure Ranges | 15 to 2400 psi | 15 to 2000 psi |
| Standard Temperature Range | -20°F to 400°F | -20°F to 400°F |
| ASME "Slope" (Gas) | 3.10 | 7.21 |
| Equivalent Flow Coefficient (Gas) | .800 | .830 |
| Approximate Weight | 4.5 lbs. | 10.0 lbs. |

NOTE: Mercer Valve reserves the right to change product designs and specifications without notice.



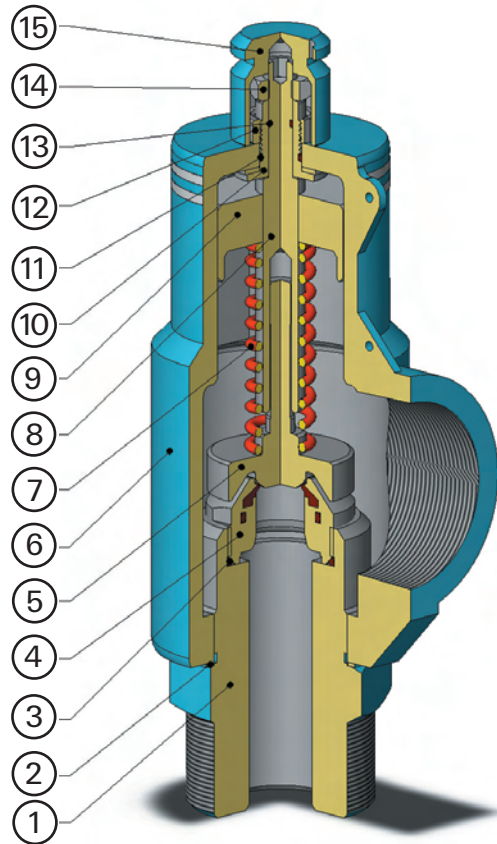
8100 Series Parts and Materials



8100 Series 1/2" Orifice

| ITEM NO | PART NAME | STANDARD MATERIALS |
|---------|-------------------------|--------------------------------|
| 1 | INLET BASE | CARBON STEEL |
| 2 | BASE SEAL | SOFT STEEL |
| 3 | NOZZLE O-RING | VITON |
| 4 | NOZZLE SUBASSEMBLY | STAINLESS STEEL WITH SOFT SEAT |
| 5 | DISK SUBASSEMBLY | STAINLESS STEEL |
| 6 | BODY SUBASSEMBLY | CARBON STEEL |
| 7 | SET SPRING | STAINLESS STEEL |
| 8 | ADJUSTMENT SCREW | STAINLESS STEEL |
| 9 | ADJUSTMENT BUSHING | CARBON STEEL |
| 10 | CENTER BUSHING | CARBON STEEL |
| 11 | ADJUSTMENT SCREW O-RING | BUNA N |
| 12 | CENTER BUSHING O-RING | BUNA N |
| 13 | WASHER | CARBON STEEL |
| 14 | LOCKNUT | CARBON STEEL |
| 15 | CLOSED CAP | ALUMINUM |

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8100 Series 3/4" Orifice

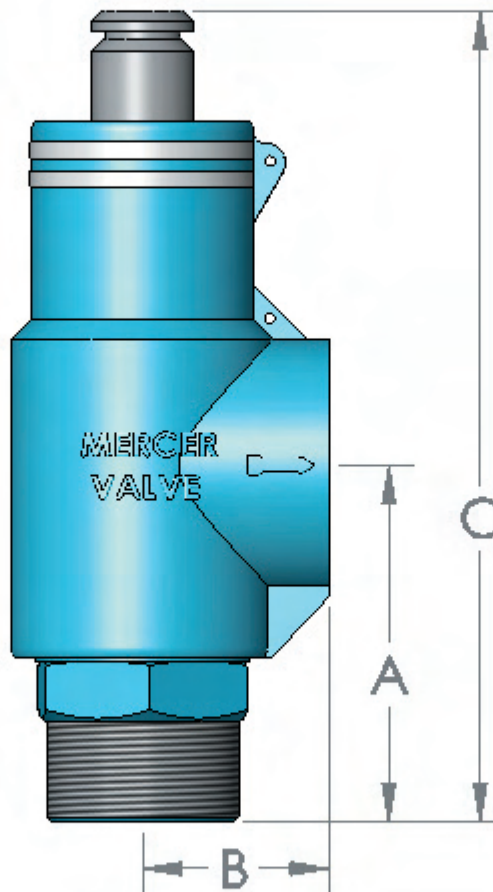
| ITEM NO | PART NAME | STANDARD MATERIALS |
|---------|-------------------------|--------------------------------|
| 1 | INLET BASE | CARBON STEEL |
| 2 | BASE SEAL | SOFT STEEL |
| 3 | NOZZLE O-RING | VITON |
| 4 | NOZZLE SUBASSEMBLY | STAINLESS STEEL WITH SOFT SEAT |
| 5 | DISK SUBASSEMBLY | STAINLESS STEEL |
| 6 | BODY SUBASSEMBLY | CARBON STEEL |
| 7 | SET SPRING | STAINLESS STEEL |
| 8 | ADJUSTMENT SCREW | STAINLESS STEEL |
| 9 | ADJUSTMENT BUSHING | CARBON STEEL |
| 10 | CENTER BUSHING | CARBON STEEL |
| 11 | CENTER BUSHING O-RING | BUNA N |
| 12 | CENTERNUT | CARBON STEEL |
| 13 | ADJUSTMENT SCREW O-RING | BUNA N |
| 14 | LOCKNUT | CARBON STEEL |
| 15 | CLOSED CAP | ALUMINUM |

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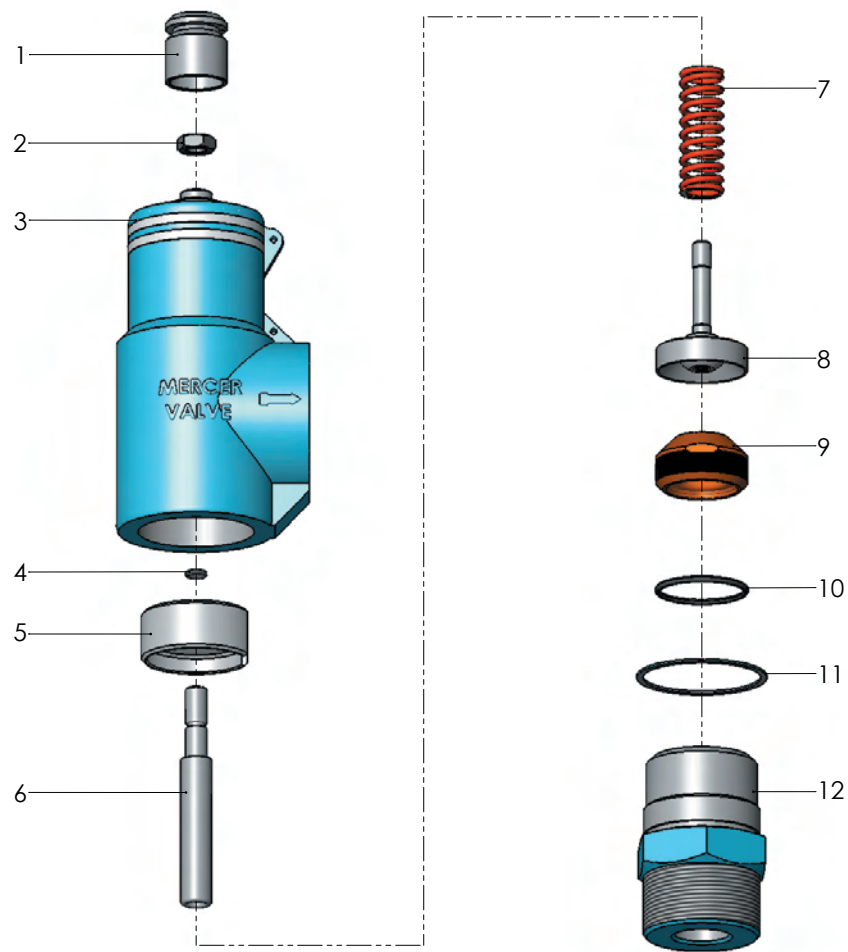


8100 Series Threaded Dimensions and Weights

| Inlet and Outlet Code | Inlet and Outlet Size | Orifice Available | Pressure Limit (psi) | Dimensions "A" x "B" x "C" (in ±1/16) | Approx. Weight (lbs) |
|-----------------------|-----------------------|-------------------|----------------------|---------------------------------------|----------------------|
| 11 | 3/4" FNPT x 1" FNPT | 1/2" | 15 - 2400 | 2-1/4 x 1-7/8 x 7-1/16 | 4.5 |
| 12 | 3/4" MNPT x 1" FNPT | 1/2" | 15 - 2400 | 3-1/4 x 1-7/8 x 8 | 4.5 |
| 16 | 1" FNPT x 1" FNPT | 1/2" | 15 - 2400 | 3-1/4 x 1-7/8 x 8 | 4.5 |
| 17 | 1" MNPT x 1" FNPT | 1/2" | 15 - 2400 | 3-1/4 x 1-7/8 x 8 | 4.5 |
| 33 | 1 1/2" FNPT x 2" FNPT | 3/4" | 15 - 2000 | 4-5/8 x 2-3/8 x 10-5/16 | 11.5 |
| 34 | 1 1/2" MNPT x 2" FNPT | 3/4" | 15 - 2000 | 4-7/16 x 2-3/8 x 10-1/16 | 11 |
| 42 | 2" FNPT x 2" FNPT | 3/4" | 15 - 2000 | 4-5/8 x 2-3/8 x 10-5/16 | 12 |
| 43 | 2" MNPT x 2" FNPT | 3/4" | 15 - 2000 | 4-7/16 x 2-3/8 x 10-1/16 | 12 |



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8100 Series Exploded View

| ITEM NO | PART NAME |
|---------|-------------------------|
| 1 | CAP |
| 2 | LOCKNUT |
| 3 | BODY SUBASSEMBLY |
| 4 | ADJUSTMENT SCREW O-RING |
| 5 | ADJUSTMENT BUSHING |
| 6 | ADJUSTMENT SCREW |
| 7 | SET SPRING |
| 8 | DISK SUBASSEMBLY |
| 9 | NOZZLE SUBASSEMBLY |
| 10 | NOZZLE O-RING |
| 11 | BASE SEAL |
| 12 | INLET BASE |

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8100 Series Capacity Chart

AIR CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

| Set Pressure (psi) | 1/2" Orifice | | | 3/4" Orifice | | |
|--------------------|--------------|--------|--------|--------------|--------|--------|
| | SCFM | MSCFH | MMSCFD | SCFM | MSCFH | MMSCFD |
| 15 | 101 | 6.08 | 0.15 | 236 | 14.15 | 0.34 |
| 20 | 117 | 7.01 | 0.17 | 272 | 16.31 | 0.39 |
| 25 | 132 | 7.94 | 0.19 | 308 | 18.47 | 0.44 |
| 30 | 148 | 8.87 | 0.21 | 344 | 20.64 | 0.50 |
| 50 | 216 | 12.96 | 0.31 | 503 | 30.15 | 0.72 |
| 75 | 301 | 18.08 | 0.43 | 701 | 42.05 | 1.01 |
| 100 | 387 | 23.19 | 0.56 | 899 | 53.95 | 1.29 |
| 125 | 472 | 28.31 | 0.68 | 1097 | 65.84 | 1.58 |
| 150 | 557 | 33.42 | 0.80 | 1296 | 77.74 | 1.87 |
| 200 | 728 | 43.65 | 1.05 | 1692 | 101.53 | 2.44 |
| 300 | 1069 | 64.11 | 1.54 | 2485 | 149.12 | 3.58 |
| 400 | 1410 | 84.57 | 2.03 | 3278 | 196.70 | 4.72 |
| 500 | 1751 | 105.03 | 2.52 | 4071 | 244.29 | 5.86 |
| 600 | 2092 | 125.49 | 3.01 | 4865 | 291.88 | 7.01 |
| 700 | 2433 | 145.95 | 3.50 | 5658 | 339.46 | 8.15 |
| 800 | 2774 | 166.41 | 3.99 | 6451 | 387.05 | 9.29 |
| 900 | 3115 | 186.87 | 4.48 | 7244 | 434.63 | 10.43 |
| 1000 | 3456 | 207.33 | 4.98 | 8037 | 482.22 | 11.57 |
| 1100 | 3797 | 227.79 | 5.47 | 8830 | 529.81 | 12.72 |
| 1250 | 4308 | 258.48 | 6.20 | 10020 | 601.18 | 14.43 |
| 1500 | 5161 | 319.63 | 7.43 | 12002 | 720.15 | 17.28 |
| 2000 | 6866 | 411.93 | 9.89 | 15968 | 958.08 | 22.99 |
| 2400 | 8230 | 493.77 | 11.85 | | | |



0.6 SG NATURAL GAS CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

| Set Pressure (psi) | 1/2" Orifice | | | 3/4" Orifice | | |
|--------------------|--------------|--------|--------|--------------|---------|--------|
| | SCFM | MSCFH | MMSCFD | SCFM | MSCFH | MMSCFD |
| 15 | 126 | 7.59 | 0.18 | 294 | 17.65 | 0.42 |
| 20 | 146 | 8.75 | 0.21 | 339 | 20.35 | 0.49 |
| 25 | 165 | 9.91 | 0.24 | 384 | 23.04 | 0.55 |
| 30 | 184 | 11.07 | 0.27 | 429 | 25.74 | 0.62 |
| 50 | 270 | 16.17 | 0.39 | 627 | 37.61 | 0.90 |
| 75 | 376 | 22.55 | 0.54 | 874 | 52.45 | 1.26 |
| 100 | 482 | 28.93 | 0.69 | 1122 | 67.30 | 1.62 |
| 125 | 589 | 35.32 | 0.85 | 1369 | 82.14 | 1.97 |
| 150 | 695 | 41.70 | 1.00 | 1616 | 96.98 | 2.33 |
| 200 | 908 | 54.46 | 1.31 | 2111 | 126.66 | 3.04 |
| 300 | 1333 | 79.98 | 1.92 | 3100 | 186.02 | 4.46 |
| 400 | 1758 | 105.50 | 2.53 | 4090 | 245.38 | 5.89 |
| 500 | 2184 | 131.03 | 3.14 | 5079 | 304.75 | 7.31 |
| 600 | 2609 | 156.55 | 3.76 | 6068 | 364.11 | 8.74 |
| 700 | 3035 | 182.07 | 4.37 | 7058 | 423.47 | 10.16 |
| 800 | 3460 | 207.60 | 4.98 | 8047 | 482.83 | 11.59 |
| 900 | 3885 | 233.12 | 5.59 | 9037 | 542.20 | 13.01 |
| 1000 | 4311 | 258.64 | 6.21 | 10026 | 601.56 | 14.44 |
| 1100 | 4736 | 284.17 | 6.82 | 11015 | 660.92 | 15.86 |
| 1250 | 5374 | 322.45 | 7.74 | 12499 | 749.96 | 18.00 |
| 1500 | 6438 | 386.26 | 9.27 | 14973 | 898.37 | 21.56 |
| 2000 | 8565 | 513.88 | 12.33 | 19920 | 1195.18 | 28.68 |
| 2400 | 10266 | 615.97 | 14.78 | | | |



8100 Series Product Numbering System

81 - 17 1 5 1

VALVE SERIES

81 – 8100 Series

INLET & OUTLET COMBINATION

- 11 – 3/4" FNPT x 1" FNPT
- 12 – 3/4" MNPT x 1" FNPT*
- 16 – 1" FNPT x 1" FNPT
- 17 – 1" MNPT x 1" FNPT*
- 33 – 1 1/2" FNPT x 2" FNPT
- 34 – 1 1/2" MNPT x 2" FNPT *
- 42 – 2" FNPT x 2" FNPT
- 43 – 2" MNPT x 2" FNPT*

ORIFICE SIZE

- 1 – 1/2" DIAMETER*
- 2 – 3/4" DIAMETER*

INLET BASE & BODY MATERIAL

- 5 – CARBON STEEL/WCB
CARBON STEEL*
- 6 – 316 STNLS STL/WCB
CARBON STEEL

CAP TYPE

- 1 – CLOSED CAP*
- 2 – OPEN LIFT LEVER
- 3 – CLOSED LIFT LEVER

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2 - DIGIT "SPECIAL" CODE
 (IF APPLICABLE ASSIGNED BY MERCER)

O-RING MATERIAL

1 - STANDARD O-RINGS*
 (VITON & BUNA-N)

TRIM CODES

G1 - GAS SERVICE (15-1225: 1/2" ORIFICE,
 15-520: 3/4" ORIFICE)*

G2 - GAS SERVICE (1226-2400: 1/2"
 ORIFICE, 521-2000: 3/4" ORIFICE)*

N1 - SOUR GAS SERVICE (15-1225: 1/2"
 ORIFICE, 15-520: 3/4" ORIFICE)*

N2 - SOUR GAS SERVICE (1226-2400: 1/2"
 ORIFICE, 521-2000: 3/4" ORIFICE)*

SPRING CODE*
 (ASSIGNED BY MERCER)

SEAT MATERIAL

V - VITON 90 DURO*

T - 15% GLASS FILLED TEFLON*

B - BUNA-N

P - VIRGIN PEEK*

*** = STANDARD MATERIALS**

Consult Factory for
 Additional Information



8100 SERIES CATALOG

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