



**MERCER VALVE CO., INC.®**  
"AUTO SEAT TECHNOLOGY"®

## **9100 SERIES**

### **Model 20**



# MERCER VALVE

**THINK...MERCER FIRST®**





## **9100 Series Model 20 Product Overview**

The 9100 Series Model 20 is a high pressure safety relief valve designed for CNG and other high pressure applications. The 9100 Series Model 20 unique design coupled with our patented "Auto Seat Technology"® allows for a longer life, less leakage, and more consistent set pressures in high pressure applications. The 9100 Series Model 20 is designed for applications from 3000 psi up to 8700 psi.

The patented soft seat design and fully guided disk allow the valve to continually outlast the competition. The soft seat 9100 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.

### **9100 Series Model 20 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.**

## 9100 Series Model 20 Specifications

Orifice Letter	C	D
Standard Inlet Connections	3/4" , 1"	1"
Threaded Outlet Sizes	1"	1-1/4"
Flanged Outlet Sizes	1-1/2"	1-1/2" , 2"
Actual Orifice Diameter (in)	.281	.394
Actual Orifice Area (in <sup>2</sup> )	.062	.122
API Orifice Area (in <sup>2</sup> )	---	.110
Pressure Ranges (psi)	3000 to 8700	3000 to 7500
Standard Temperature Range (°F)	-20 to 400	-20 to 400
ASME Flow Coefficient, K <sub>d</sub> (Gas)	.818	.818
ASME Flow Coefficient, K <sub>d</sub> (Liquid)	.707	.707

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



## 9100 Series Model 20 Dimensions and Weights

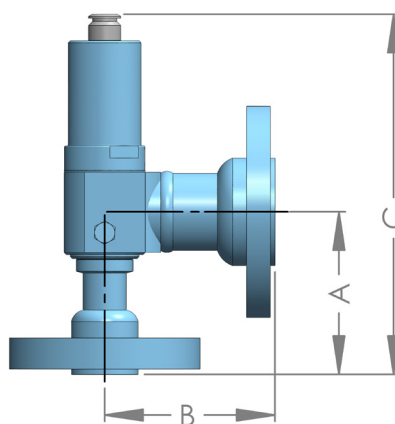
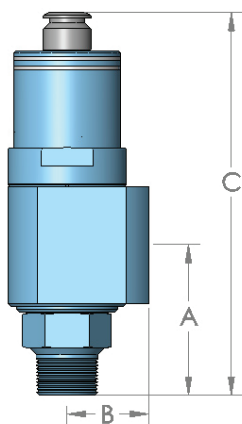
INLET AND OUTLET CODE	INLET AND OUTLET SIZE	PRESSURE LIMIT (psi)	DIMENSIONS "A" X "B" X "C" (IN.) + 1/16	APPROX. WEIGHT (lbs.)
-----------------------------	-----------------------	----------------------	---	-----------------------------

### C ORIFICE

THREADED M2	3/4" MNPT x 1" FNPT	3000 - 8700	3-1/4 x 1-13/16 x 8-1/8	6.5
M7	1" MNPT x 1" FNPT	3000 - 8700	3-1/4 x 1-13/16 x 8-1/8	6.5
FLANGED 26	1" 1500lb x 1-1/2" 300lb	3000 - 3750	5 x 5-1/4 x 9-3/8	9
76	1" 2500lb x 1-1/2" 300lb	3751-6170	5 x 5-1/4 x 9-3/8	9

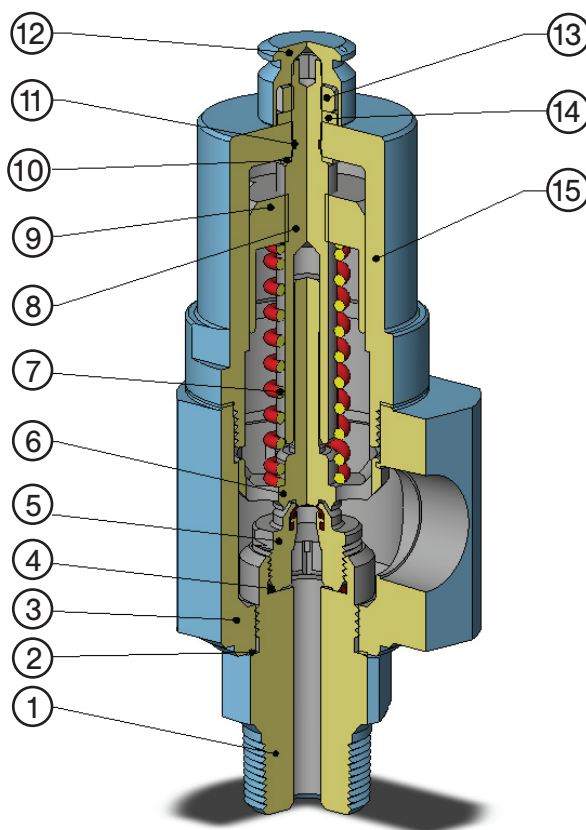
### D ORIFICE

THREADED M7	1" MNPT x 1 1/4" FNPT	3000-7500	3-1/4 x 1-13/16 x 9-1/4	8
FLANGED 26	1" 1500lb x 1-1/2" 300lb	3000-3750	5 x 5-1/4 x 11-1/8	9.5
76	1" 2500lb x 1-1/2" 300lb	3751-6170	5 x 5-1/4 x 11-1/8	9.5
32	1" 1500lb x 2" 300lb	3000-3750	5 x 5-1/4 x 11-1/8	9.5
77	1" 2500lb x 2" 300lb	3751-6170	5 x 5-1/4 x 11-1/8	9.5



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

## 9100 Series Model 20 Parts and Materials



### 9100 SERIES MODEL 20 C & D ORIFICES

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

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



## 9100 Series Model 20 Capacity Charts

AIR CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C	D
	0.062 SCFM	0.122 SCFM
3000	3082	6064
3100	3184	6265
3200	3286	6466
3300	3388	6667
3400	3491	6869
3600	3695	7271
3800	3900	7674
4000	4104	8076
4200	4309	8479
4400	4513	8881
4600	4718	9283
4800	4922	9686
5000	5127	10088
5200	5331	10491
5400	5536	10893
5600	5740	11296
5800	5945	11698
6000	6150	12101
6200	6354	12503
6400	6559	12906
6600	6763	13308
6800	6968	13711
7000	7172	14113
7200	7377	14515
7400	7581	14918
7500	7683	15119
7600	7786	
7800	7990	
8000	8195	
8200	8399	
8400	8604	
8600	8808	
8700	8911	

## NATURAL GAS CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C 0.062 SCFM	D 0.122 SCFM
3000	3844	7564
3100	3972	7815
3200	4099	8067
3300	4227	8318
3400	4355	8569
3600	4610	9071
3800	4865	9573
4000	5120	10075
4200	5375	10577
4400	5630	11079
4600	5885	11581
4800	6141	12083
5000	6396	12585
5200	6651	13087
5400	6906	13589
5600	7161	14091
5800	7416	14593
6000	7671	14091
6200	7927	15597
6400	8182	16099
6600	8437	16602
6800	8692	17104
7000	8947	17606
7200	9202	18108
7400	9457	18610
7500	9585	18861
7600	9713	
7800	9968	
8000	10223	
8200	10478	
8400	10733	
8600	10988	
8700	11116	



## NATURAL GAS CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C 0.062	D 0.122
	MMSCFD	MMSCFD
3000	5.54	10.89
3100	5.72	11.25
3200	5.90	11.62
3300	6.09	11.98
3400	6.27	12.34
3600	6.64	13.06
3800	7.01	13.78
4000	7.37	14.51
4200	7.74	15.23
4400	8.11	15.95
4600	8.47	16.68
4800	8.84	17.40
5000	9.21	18.12
5200	9.58	18.85
5400	9.94	19.57
5600	10.31	20.29
5800	10.68	21.01
6000	11.05	21.74
6200	11.41	22.46
6400	11.78	23.18
6600	12.15	23.91
6800	12.52	24.63
7000	12.88	25.35
7200	13.25	26.08
7400	13.62	26.80
7500	13.80	27.16
7600	13.99	
7800	14.35	
8000	14.72	
8200	15.09	
8400	15.46	
8600	15.82	
8700	16.01	

## CAPACITY IN GPM WATER AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C 0.062	D 0.122
	GPM	GPM
3000	96	188
3100	97	191
3200	99	194
3300	100	197
3400	102	200
3600	105	206
3800	108	212
4000	110	217
4200	113	223
4400	116	228
4600	118	233
4800	121	238
5000	124	243
5200	126	248
5400	128	253
5600	131	257
5800	133	262
6000	135	266
6200	138	271



## 9100 Series Model 20 Product Numbering System

**91 - M2 D 6 1**

**VALVE SERIES**

91 – 9100 Series

**INLET & OUTLET  
COMBINATION**

**C Orifice**

**M2** - 3/4" MNPT x 1" FNPT

**M7** - 1" MNPT x 1" FNPT

**D Orifice**

**M7** - 1" MNPT x 1 1/4" FNPT

**FLANGED**

**(SEE SELECTION TABLE ON PAGE 4)**

**ORIFICE SIZE**

C or D

**INLET BASE  
& BODY MATERIAL**

**THREADED**

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

**7** – 316 STNLS STL/CF3M STAINLESS STEEL

**FLANGED**

**1** – RF x RF /CARBON STEEL

**2** – RF x RF /STAINLESS STEEL

**3** – RTJ x RF /CARBON STEEL

**4** – RTJ x RF /STAINLESS STEEL

**CAP TYPE**

**1** – CLOSED CAP

**2** – OPEN LIFT LEVER

**3** – CLOSED LIFT LEVER

CONSULT FACTORY FOR  
ADDITIONAL INFORMATION  
AND OPTIONS

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

