

# D500 Series

# M5100 Series

*ASME Safety Relief Valves*

*D500 Series: 15 to 150 psig (1 – 10 bar)*

*M5100 Series: 20 to 1200 psig (1 – 83 bar)*



D500 Series

M5100 Series

## Features

D500 Series features cap design

M5100 Series offered with ring or lift handle

MD500 Series features cup design with manual override ring

Zero leakage from 0 psi up to 70% of the marked set pressure

## Technical Data

<b>ASME</b>	American Society of Mechanical Engineers
<b>Body Construction Materials</b>	Naval brass, 303 and 316 stainless steel
<b>O-ring Materials</b>	<ul style="list-style-type: none"> <li>• D500 Series: Buna N, neoprene, PTFE, Viton®, EPDM, and silicone</li> <li>• M5100 Series: Buna N, neoprene, PTFE, Viton®, and EPDM</li> </ul>
<b>Set Pressure</b>	<ul style="list-style-type: none"> <li>• D500 Series: 15 to 150 psig (¼")</li> <li>• M5100 Series: 20 to 1200 psig (⅛", ¼", 1"); 50 to 1200 psig (¼", ⅜", ½")</li> </ul>
<b>Temperature Range</b>	-100° F to +400° F (-73° C to +204° F) <i>Based on O-ring &amp; body material, see "How to Order"</i>
<b>Connection Sizes</b>	<ul style="list-style-type: none"> <li>• D500 Series: ¼" male pipe</li> <li>• M5100 Series: ⅜" to 1" male pipe</li> </ul>

*Note: Proper filtration is recommended to prevent damage to sealing surfaces.*

## Terminology for ASME Safety Relief Valves

### Safety Relief Valves

An automatic pressure relieving device actuated by the static pressure upstream of the valve, which opens in proportion to the increase over the opening pressure.

### Start-to-Leak Pressure

The pressure at the valve inlet where the relieved fluid is first detected (on the downstream side of the seat) before normal relieving action takes place

### Opening Pressure (Set Pressure)

The valve inlet pop point pressure at which there is a measurable lift or discharge becomes continuous as determined by seeing, hearing or feeling. In the pop type of safety valve, it is the inlet pressure at which the valve opens, allowing a larger

amount of fluid as compared with corresponding valve movements at higher or lower pressures

*Note: A safety relief valve is not considered to open when it is simmering at a pressure just below the popping point even though the simmering may be audible. This set pressure distinguishes our ASME relief valves from our standard relief valves whose cracking pressure indicates initial flow.*

### Relieving Pressure

(Opening pressure plus overpressure) The pressure measured at the valve inlet at which the relieving capacity is determined.

### Closing Pressure

(Reseat pressure) The pressure measured at the valve inlet, at which the valve closes,

flow is substantially shut off, and there is no measurable lift.

### Seal-off Pressure

The pressure (measured at the valve inlet) after closing at which no further gas is detected at the downstream side of the seat.

### Operating Pressure

The actual pressure at which a vessel is maintained in normal operation.

### Accumulation

Pressure buildup or overpressure beyond the set pressure of a safety relief valve, at which capacity flow is rated. Capacities are usually based on 10% accumulation.

*Note: Please specify 'ASME' when placing your order.*

## Circle Seal Controls

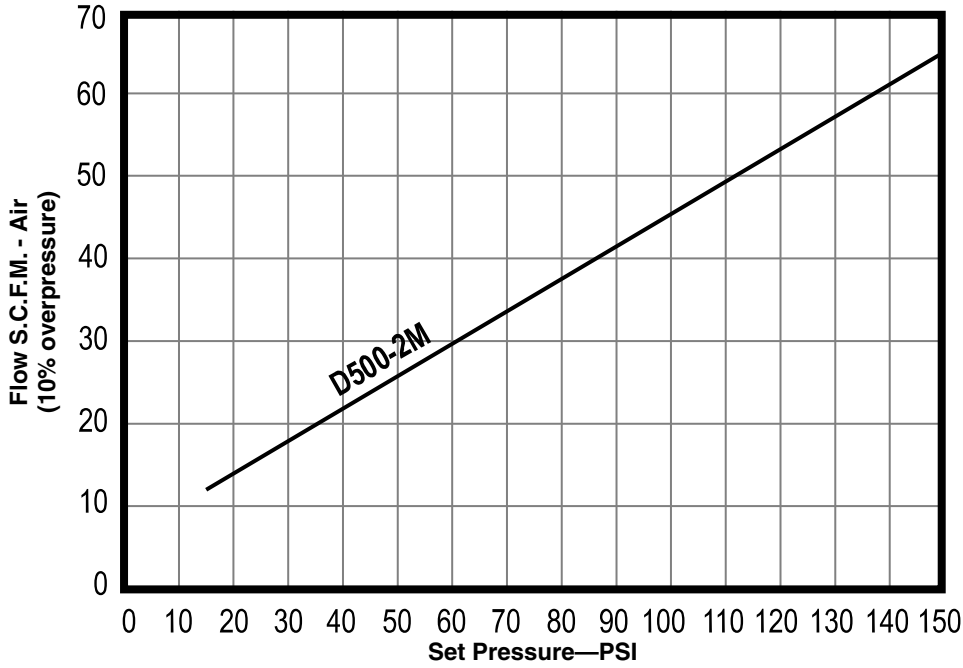
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relief valves

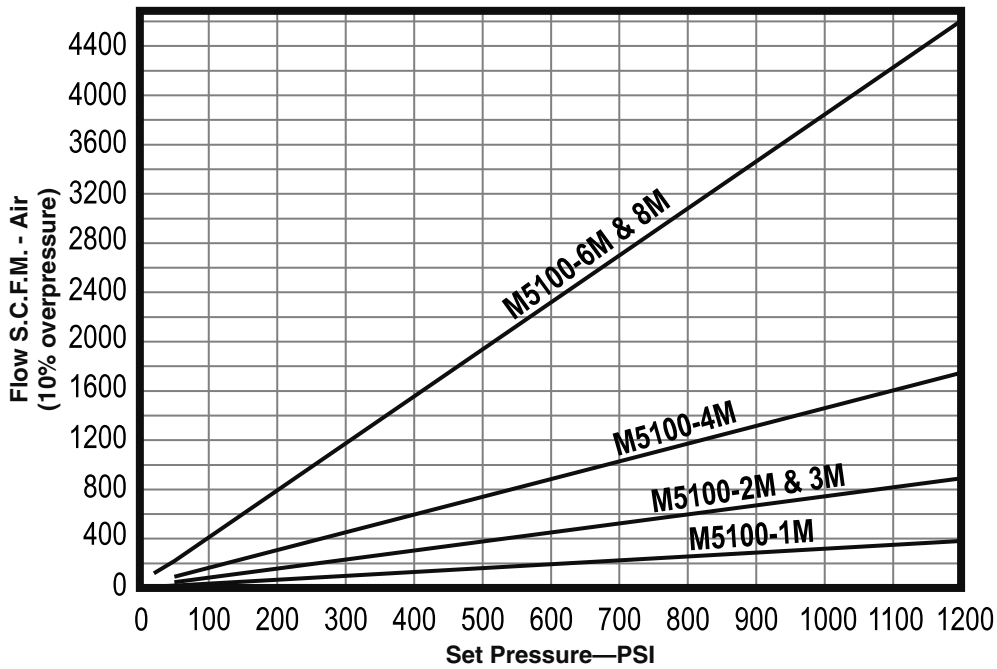
# ASME Safety Relief Valves

## Flow Curves

### D500 Series



### M5100 Series



# ASME Safety Relief Valves

## How to Order: D500 Series ASME Relief Valves (15 to 150 psig)

**M D5 32 T1 - 2 M - 20**

**MANUAL OVERRIDE OPTION**

**O-RING MATERIAL & TEMPERATURE**

- 20** PTFE, -100° F to +400° F (-73°C to +204°C)
- 24** Silicone, -65° F to +150° F (-54°C to +66°C)
- 32** Viton®, -20° F to +350° F (-29°C to +177°C)
- 33** Neoprene, -20° F to +240° F (-29°C to +116°C)
- 59** Buna N, -20° F to +250° F (-29°C to +121°C)
- 62** Ethylene propylene, -20° F to +250° F (-29°C to +121°C)

**MATERIAL & OTHER PRESSURE BOUNDARY COMPONENTS**

- N** Naval brass
- T1** 316 stainless steel

**SET PRESSURE**

Specify set pressure in psig  
(15 – 150 psig)

**CONNECTIONS—INLET**

**M** Male pipe

**VALVE SIZE**

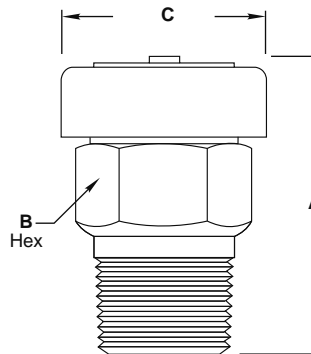
**2** ¼"

Please specify 'ASME' when placing your order.

Please consult your Circle Seal Controls distributor or our factory for information on special connections, lubricants, operating pressures and temperature ranges.

## Dimensions (inches)

Dash No.	Size	A	B Hex	C Dia.
-2M	¼"	1.1875	0.625	0.90



## Recommended Installation

1. Before installing a new safety relief valve, we recommend that a pipe tap be used to assure clean-cut and uniform threads in the vessel opening and to allow for normal hand engagement followed by a half to one turn by wrench.
2. Avoid over-tightening as this can distort the valve seat.
3. Avoid excess "popping" of the valve. Safety relief valves should only be operated often enough to assure they are in good working order.
4. Apply only a moderate amount of pipe compound or tape to the threads, leaving the first thread clean parts.
5. Don't oversize the valve, as this may cause chatter resulting in rapid wear of the moving parts.
6. Avoid wire, cable, or chain pulls for attachments to levers that do not allow a vertical pull. The weight of these devices should not be applied to the safety relief valve.
7. Avoid having the operation pressure too near the valve set pressure. A minimum differential of 10% is recommended.

## For Your Safety

It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Viton® is a registered trademark of DuPont Dow Elastomers.

# ASME Safety Relief Valves

## How to Order: M5100 Series ASME Relief Valves (20 to 1200 psig)

**M51 59 N - 4 M(L) - 20**

### O-RING MATERIAL & TEMPERATURE

- 20** PTFE, -100° F to +300° F (-73°C to +149°C)
- 32** Viton®, -20° F to +400° F (-29°C to +204°C)
- 33** Neoprene, -40° F to +250° F (-40°C to +121°C)
- 59** Buna N, -40° F to +250° F (-40°C to +121°C)
- 62** Ethylene propylene, -20° F to +200° F (-29°C to +93°C)

### BODY MATERIAL

- N** Naval brass
- T1** 316 stainless steel

### \* Set Pressure

- 1/8", 3/4", 1": 20 to 1200 psi (1 - 83 bar)
- 1/4", 3/8", 1/2": 50 to 1200 psi (3 - 83 bar)

Please specify 'ASME' when placing your order.

Please consult your Circle Seal Controls distributor or our factory for information on special connections, lubricants, operating pressures and temperature ranges.

### SET PRESSURE\*

Specify set pressure in psig  
(20 - 1200 psig)

### CONNECTIONS—INLET

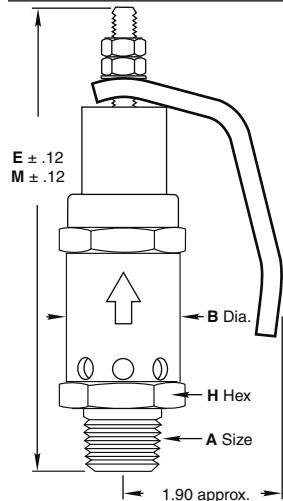
- M** Male pipe
- L** Lockwire

### VALVE SIZE

Pipe sizes in 1/8" increments

- 1** 1/8"
- 2** 1/4"
- 3** 3/8"
- 4** 1/2"
- 6** 3/4"
- 8** 1"

## Dimensions (inches)



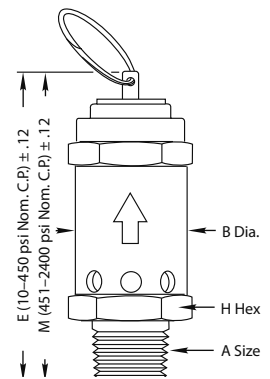
Dash No.	A Size	E	M	B Dia. H Hex
-1M	1/8"	2.84	3.45	0.71
-2M	1/4"	3.16	4.06	1.00
-3M	3/8"	3.19	4.09	1.00
-4M	1/2"	3.86	5.51	1.25
-6M	3/4"	5.41	7.54	1.50
-8M	1"	5.59	7.72	1.50

### Lift Handle

For 1/2", 3/4", and 1" valve sizes with set pressure of 451-1200 psi.

### Ring Handle

For set pressures to a maximum of 1200 psi in 1/8" through 3/8" valves sizes to a maximum of 450 psi in 1/2" through 1" sizes.



## Important

Complete part number MUST INCLUDE set pressure in psi. The ASME requires that valves be set at a "pop point". The ASME refers to this as the set pressure. This point is higher than the traditional Circle Seal Controls definition of cracking pressure.

After a prolonged period of storage with no system pressure, these relief valves will evidence an apparent high set pressure on first pop; therefore, in receiving inspection tests, true set pressure should be determined after first pop.

The following Circle Seal Controls valves have been tested in accordance with procedures in Paragraph UG 131, Section V111 of the ASME Unified Pressure Vessel Code:

- D500-2M      M5100-1M(L)    M5100-3M(L)    M5100-6M(L)
- M5100-2M(L)    M5100-4M(L)    M5100-8M(L)

ASME Certificate of Authorization, Number 4599

Note: These valves are not certified for steam or liquid service and are intended for air service applications only.

## For Your Safety

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