

5100 Series 10 to 2,400 PSIG

CRACKING PRESSURE SPRING RANGES

Consult your local distributor or the factory for replacement spring part numbers.
(Please have your complete valve part number ready when calling.)

| C.P. Range | C.P. Range | C.P. Range | C.P. Range |
|------------|------------|------------|------------|
| 10-15 | 82-117 | 346-450 | 1201-1400 |
| 16-24 | 118-162 | 451-575 | 1401-1900 |
| 25-41 | 163-230 | 576-710 | 1901-2400 |
| 42-57 | 231-285 | 711-999 | — |
| 58-81 | 286-345 | 1000-1200 | — |

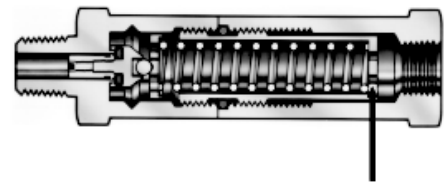
ADJUSTMENT

The 5100 Series Relief Valve is adjustable to $\pm 15\%$ of its nominal cracking pressure, as follows:

1. Remove discharge line (in-line mounted unit) or override ring & rod (ASME type).
2. "Break" body joint by wrenching hexes. DO NOT USE PIPE WRENCH.
3. Insert proper size hex wrench (see table) into the outlet end and turn clockwise to increase the cracking pressure or counter clockwise to decrease.
4. After adjustment, hold the hex wrench stationary relative to the inlet end and turn the body to tighten the joint.
5. Test adjusted unit for cracking pressure.

HEX WRENCH SIZE (see Adjustment)

| Size | Nominal Cracking Pressure | |
|--------|---------------------------|------------|
| | 450 & Under | 451 & Over |
| 1/8" | 7/32 | 7/32 |
| 1/4" | 5/16 | 1/4 |
| 3/8" | 5/16 | 1/4 |
| 1/2" | 1/2 | 3/8 |
| 3/4" | 9/16 | 1/2 |
| 1" | 9/16 | 1/2 |
| 1-1/4" | 3/4 | 3/4 |



Hex Adjustment Screw

For Your Safety

It is the sole 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 here in can cause personal injury or property damage.

Repair Kits

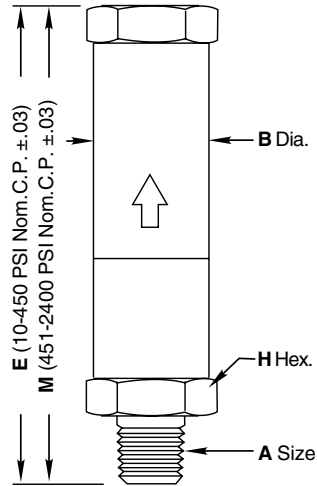
In normal service the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a K/ in front of the complete part number, (i.e. K/ 5159B-2MP-20).

5100 Series 10 to 2,400 PSIG

Replacement Parts

Dimensions (Inches)

MP

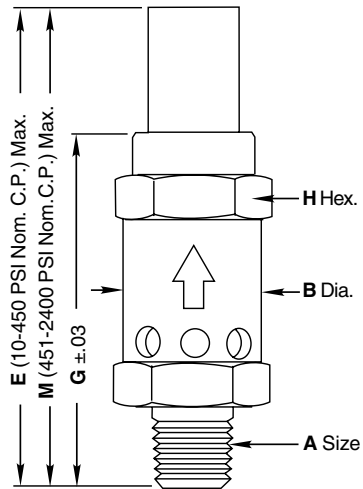


MP - 5100 SERIES INLINE

| Prod. No. | A Size | E | M | B Dia. H Hex. |
|-----------|--------|------|-------|---------------|
| 1MP | 1/8" | 2.89 | 3.49* | .81* |
| 2MP | 1/4" | 3.34 | 4.24 | 1.00 |
| 3MP | 3/8" | 3.36 | 4.26 | 1.00 |
| 4MP | 1/2" | 4.15 | 5.05 | 1.25 |
| 6MP | 3/4" | 5.61 | 7.11 | 1.50 |
| 8MP | 1" | 5.79 | 7.29* | 1.50 |
| 10MP | 1-1/4" | 7.46 | 10.22 | 2.00 |

*1/8" size; for C.P. 1201-2400 PSIG, "M" is 3.95, "B" and "H" are 1.00; 1" size; for C.P. 1201-2400 PSIG, "M" is 7.32, 1-1/4" size, not available above 1200 PSIG.

M



M - 5100 SERIES POPOFF

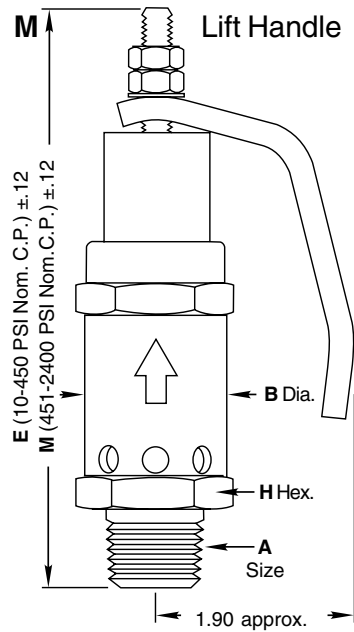
| Prod. No. | A Size | E | M | G | B Dia. H Hex. |
|-----------|--------|------|-------|-------|---------------|
| 1M | 1/8" | 2.56 | 3.16* | 2.39* | .81* |
| 2M | 1/4" | 2.87 | 3.77 | 2.65 | 1.00 |
| 3M | 3/8" | 2.89 | 3.79 | 2.74 | 1.00 |
| 4M | 1/2" | 3.59 | 4.49 | 3.27 | 1.25 |
| 6M | 3/4" | 5.00 | 6.50 | 4.16 | 1.50 |
| 8M | 1" | 5.18 | 6.68 | 4.34 | 1.50 |
| 10M | 1-1/4" | 6.70 | 8.65 | 4.96 | 2.00 |

* Exceptions: 1/8" size; for C.P. 1201-2400 psi "M" is 3.58, "G" is 2.48. "B" is 1.00; 1-1/4", not available above 1200 PSIG.

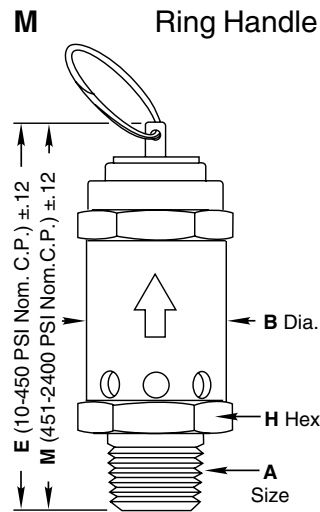
5100 Series 10 to 2,400 PSIG

Replacement Parts

Dimensions (Inches)



For 1/2" with cracking pressures of 451–2400 PSI and 3/4" through 1-1/4" with cracking pressures of 451–1200 PSI.



For 1/8" through 3/8" with cracking pressures of 10–2400 PSI and 1/2" through 1-1/4" with cracking pressures of 10–450 PSI.

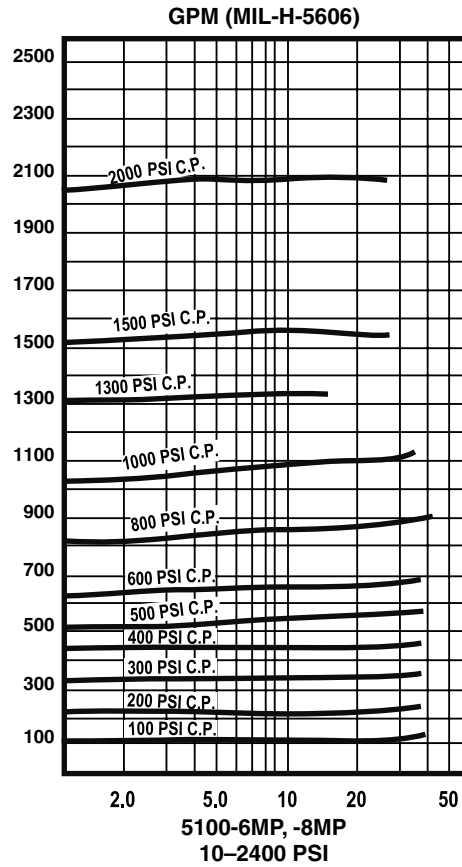
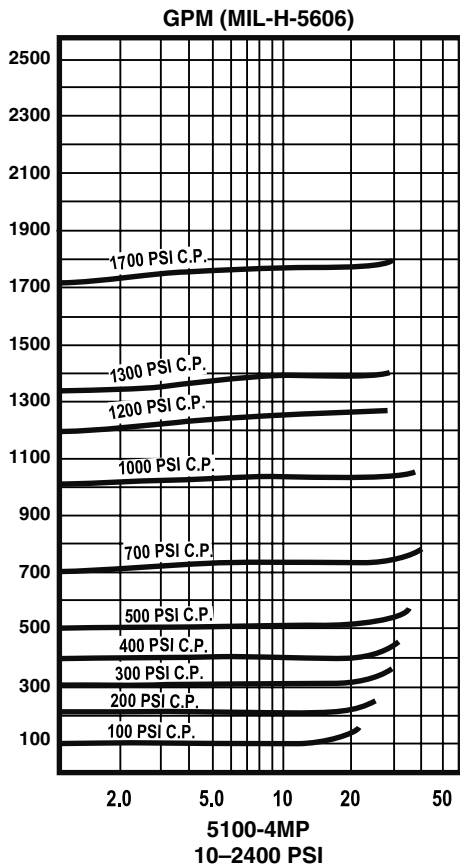
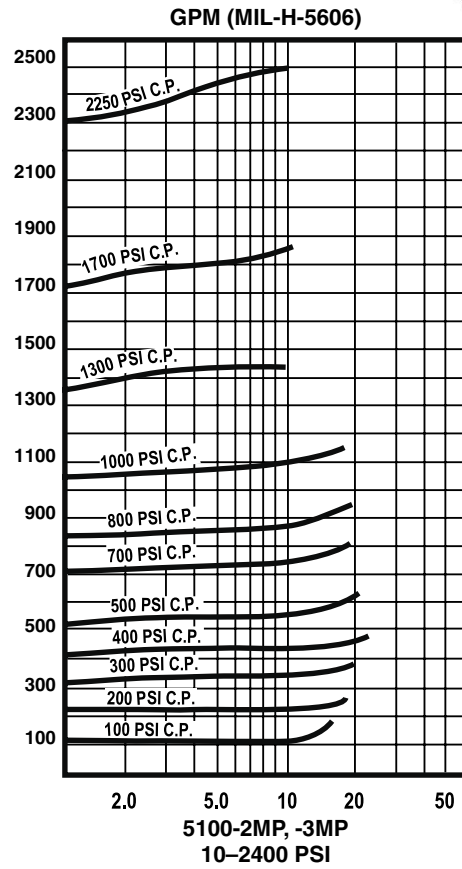
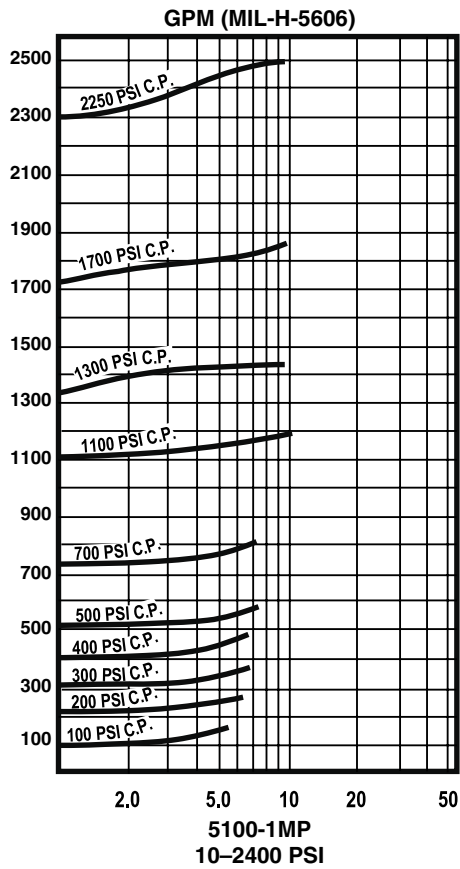
M - M5100 SERIES POPOFF WITH MANUAL OVERRIDE

| Prod. No. | A Size | E | M | B Dia. H Hex. |
|-----------|---------|------|-------|---------------|
| 1M | 1/8" | 2.84 | 3.45* | .81* |
| 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 |
| 10M | 1-1/4"* | 6.95 | 10.42 | 2.00 |

* Exceptions: 1/8" size; C.P. 1201-2400 psi "M" is 3.84, "H" and "B" are 1.00; 1-1/4" size, not available above 1200 psi

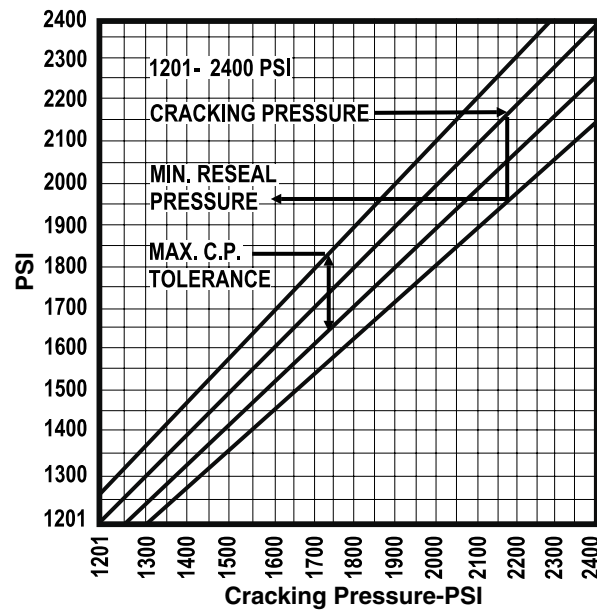
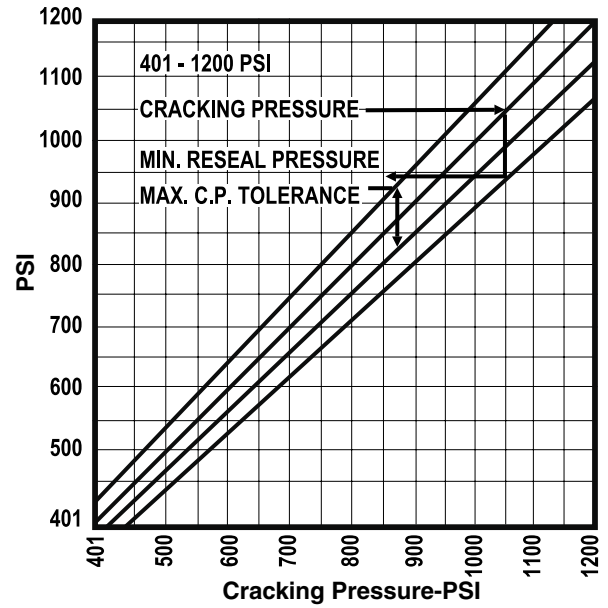
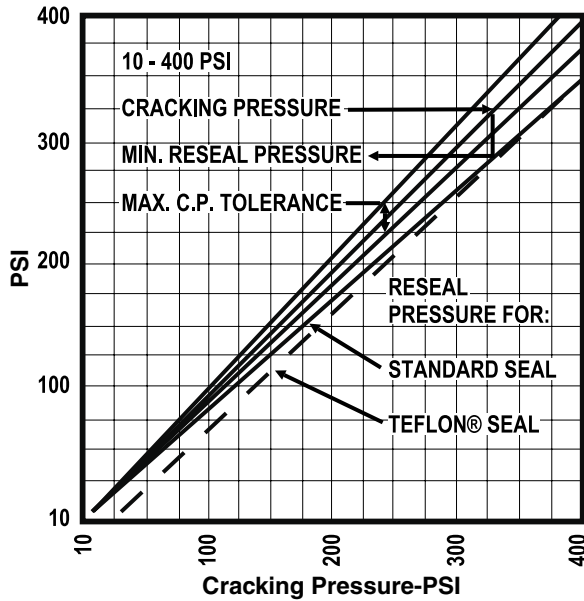
5100 Series 10 to 2,400 PSIG

Hydraulic Flow Curves



5100 Series 10 to 2,400 PSIG

Cracking & Reseal Pressure



Definitions

1. **Cracking pressure** is defined as 5cc/min. with gas (0.2 scfm for model 5120).
2. **Reseat point** is the point at which the valve closes, cutting off virtually all flow.
3. The **reseal point** is the point at which the valve seals absolutely tight so that there is no leakage detectable by normal means of measurement.

5100 Series 10 to 2,400 PSIG

Air Flow Rates – (5100-MP)

Inline valves 1/8"–1"

| Crack Pressure PSIG | Percent Over Pressure Beyond Cracking (SCFM air at room temperature) | | | | | | | |
|------------------------|-------------------------------------------------------------------------|---------|-----|---------|-----|---------|------|---------|
| | 10% | | | | 25% | | | |
| | 1MP | 2MP/3MP | 4MP | 6MP/8MP | 1MP | 2MP/3MP | 4MP | 6MP/8MP |
| 15 | 1.0 | 1.5 | 5.0 | 9.0 | 3.0 | 5.0 | 50 | 52 |
| 20 | 1.5 | 2.0 | 10 | 12 | 4.0 | 5.0 | 60 | 63 |
| 25 | 2.0 | 2.7 | 25 | 27 | 5.4 | 6.5 | 65 | 67 |
| 30 | 2.4 | 4.6 | 30 | 36 | 6.2 | 13 | 68 | 71 |
| 40 | 3.0 | 5.5 | 34 | 55 | 6.5 | 25 | 72 | 100 |
| 50 | 3.0 | 10.5 | 40 | 65 | 8.0 | 29 | 74 | 110 |
| 75 | 4.2 | 18 | 50 | 70 | 13 | 38 | 80 | 114 |
| 100 | 6.0 | 25 | 54 | 90 | 17 | 55 | 90 | 130 |
| 125 | 8.5 | 32 | 70 | 120 | 22 | 58 | 110 | 136 |
| 150 | 10 | 36 | 72 | 150 | 27 | 78 | 115 | 200 |
| 200 | 13 | 40 | 135 | 190 | 40 | 96 | 250 | 375 |
| 250 | 16 | 50 | 150 | 210 | 43 | 115 | 280 | 450 |
| 300 | 20 | 60 | 180 | 225 | 52 | 127 | 400 | 600 |
| 400 | 25 | 80 | 270 | 270 | 68 | 150 | 600 | 900 |
| 500 | 36 | 46 | 110 | 190 | 108 | 120 | 320 | 700 |
| 750 | 45 | 58 | 130 | 210 | 90 | 130 | 420 | 1200 |
| 1000 | 47 | 64 | 170 | 210 | 160 | 160 | 620 | 1280 |
| 1200 | 67 | 74 | 240 | 250 | 200 | 200 | 1000 | 1500 |
| 1400 | 84 | 84 | 450 | 3950 | — | — | — | — |
| 1600 | 110 | 110 | 720 | 4050 | — | — | — | — |
| 1800 | 160 | 160 | 810 | 5100 | — | — | — | — |
| 2000 | 190 | 190 | 850 | 5150 | — | — | — | — |
| 2200 | 220 | 220 | 900 | 5200 | — | — | — | — |
| 2400 | 240 | 240 | 990 | 6750 | — | — | — | — |

5100 Series 10 to 2,400 PSIG

How to Order

M 51 59 B - 2 MP (L) - 20

VARIATION

- K** - Cryogenic Service, special cleaning and testing (Stainless Steel valves only)
- M** - Manual override
- R** - Right angle configuration

BASIC MODEL NUMBER

5100 Series

O-RING MATERIAL, TEMPERATURE & CRACKING PRESSURE RANGE

| | |
|--------------------------------|--------------------|
| 59 - Buna N | -40° F to +250° F |
| 62 - Ethylene Propylene | -40° F to +300° F |
| 33 - Neoprene | -40° F to +250° F |
| 32 - Viton® | -20° F to +400° F |
| 20 - Teflon® (5120) | -100° F to +400° F |
| 20* - Teflon® (K5120) | -320° F to +165° F |
| 80* - Teflon® (5180) | -320° F to +165° F |

CRACKING PRESSURE

Specify cracking pressure setting in PSIG
20 - 20 PSIG

SPECIAL CHARACTERISTICS

- L** - Lockwire
- R** - Resonance dampener (std. for 1201-2400 C.P.'s with elastomeric seals)

CONNECTIONS - Inlet/Outlet

- M** - Popoff Male pipe
- MP** - Inline Male Pipe by Female Pipe

VALVE SIZE

(Pipe sizes in 1/8" increments)

| | |
|-----------------|-------------------|
| 2 - 1/4" | 5 - 3/4" |
| 3 - 3/8" | 6 - 1" |
| 4 - 1/2" | 8 - 1-1/4" |

BODY MATERIAL

- B** - Brass
- S** - Steel
- T** - 303 Stainless Steel
- T1** - 316 Stainless Steel

Notes:

* Unit is not rated for liquid Cryogenic Service below -100° F.
O-rings of Teflon® - Minimum cracking pressure is 20 psi; not available for use above 1200 psi in 3/4" and larger sizes.

Teflon® and Viton® are registered trademarks of Dupont.

Cracking Pressure Tolerance ±5%

Cracking pressures below 20 PSIG have a tolerance of ±20%.

Flow at Cracking Pressure

| | |
|-------------------|------------|
| Elastomeric Seals | 5cc/minute |
| Teflon® Seals | .02 SCFM |

Reseal Pressure**

| |
|-------------------|
| Elastomeric Seals |
| Teflon® Seals |

Crack Pressure

| |
|-------------|
| CP >100 PSI |
| CP <100 PSI |
| CP >450 PSI |

Reseal Pressures

| |
|------------------------------|
| 90% of CP |
| 70% to 89% of CP |
| 90% of CP |
| CP <450 PSI 52% to 90% of CP |

Leakage

| | |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elastomeric Seals | Ascending Pressure - zero up to 95% of CP Descending Pressure - zero at reseal and below |
| Teflon® Seals | Ascending Pressure - zero up to reseal pressure, then 10cc/min between reseal and CP Descending Pressure - zero @ reseal except with cracking pressure below 451 PSI then 1cc/min max |

First Crack Pressure After Standing Unactuated for a Prolonged Period:

| | | |
|--------------|-----------------|------------|
| Set Pressure | 5 - 19 PSI | 125% of CP |
| | 20 - 29 PSI | 120% of CP |
| | 30 - 49 PSI | 115% of CP |
| | 50 PSI & higher | 110% of CP |

**The reseal point is the point at which the valve seals absolutely tight so that there is no leakage detectable by normal means of measurement. The point at which the valve closes, cutting off virtually all flow, is called the reseal point. The reseal point is substantially above reseal.