

Anderson Greenwood Instrumentation Multi-Port Gauge Valves

Compact, lightweight multi-port valves for pressures up to 6,000 psig (414 barg) or 10,000 psig (690 barg).

General Application

M5 valves allow for versatile vertical or horizontal installation positioning of gauges or pressure switches without requiring additional penetration of the main piping. The M51 is a metal seat version for high-pressure applications.

TECHNICAL DATA

Materials

CS, 316 SS, Monel®

Seats:

Metal and soft

Connections:

½" to ¾" NPT; welded also available

Pressure (max):

M5: 6,000 psig (414 barg)

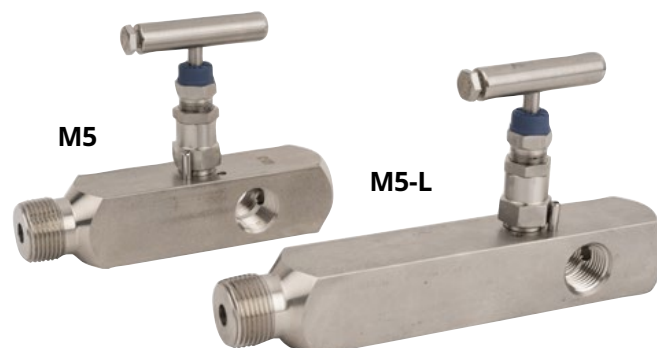
M51: 10,000 psig (690 barg)

Temperature (max):

M5: -313°F to 1000°F (-192°C to 538°C)

M51: -70°F to 500°F (-57°C to 260°C)

Monel® is a registered trademark of Special Metals Corporation.



Features

- Cost savings through minimized components and process penetrations for multiple instrument installations with reduced possible leak points.
- Compact design minimizes space requirements; low weight improves connection strength and reduces gauge whip.
- Long body option allows up to 4" (102 mm) pipe insulation.
- Replaceable soft seat and can operate in dirty service with repetitive bubble-tight shutoff.
- Repairable integral metal seat can be resurfaced without removing the valve from the line.
- Ball end stem eliminates seat galling, provides bubble-tight shutoff and long life. Hardened, non-rotating ball ensures perfect alignment closure.
- Packing below threads prevents lubricant washout, thread corrosion, process contamination and eliminates stem galling.
- Easily adjustable packing decreases replacement down time and increases valve life.
- Safety back seating prevents stem blowout or accidental removal and provides a metal-to-metal secondary stem seal while in the fully open position.
- ENC plated 316 SS stem prevents galling or freezing of stem threads.
- Rolled stem, bonnet and male NPT threads provide additional strength.
- Mirror stem finish in the packing area enables smooth operation and extends packing life.
- Metal-to-metal body-to-bonnet seal in constant compression prevents bonnet thread corrosion, eliminates possible tensile breakage and gives a reliable bonnet to body seal point.

M5/M51 SERIES

Anderson Greenwood Instrumentation Multi-Port Gauge Valves

Product Overview

The standard configuration has a male or female inlet and three ½" FNPT outlet ports. All valves with male inlet connections are available threaded or prepared for welding (socket weld or butt weld) and with either standard or extended length inlet.

Bonnet Assembly Options

The M5 offers the option of an integral metal seat or a roddable soft seated design with replaceable seats, providing easy cleanout.

The M51 is only available with an integral metal seated bonnet assembly for 10,000 psig (690 barg) service.

All stem threads are rolled and lubricated to prevent galling and reduce operating torque. The stem seal is PTFE (M51 only available in PTFE) or Graphite packed which is adjustable in service. All bonnets are assembled with a bonnet locking pin to prevent accidental removal while in service and a protective dust cap is fitted to contain stem lubricant and prevent the influx of contaminants. The M5 gauge valve is available with a Graphite bonnet for high temperature applications.

Optional Soft-Seated Bonnet Assembly

The soft-seated bonnet assembly has a one-piece rotating stem and plug. In addition to the adjustable PTFE packing gland, the bonnet is available with a FKM O-ring with PTFE back-up ring.

Metal-Seated Bonnet Assembly

The metal-seated bonnet assembly has a rotating stem with free swivel ball-type seat for long service life. The specially hardened ball seat is ideal for both gas and liquid service.

The high pressure M51 bonnet assembly uses a strengthened stem and bonnet which is fitted with a larger size T-bar handle.

The M5's high-temperature bonnet assembly utilizes a similarly designed stem and bonnet, incorporating adjustable graphite and back-up pressure rings to ensure a leak-free stem seal.

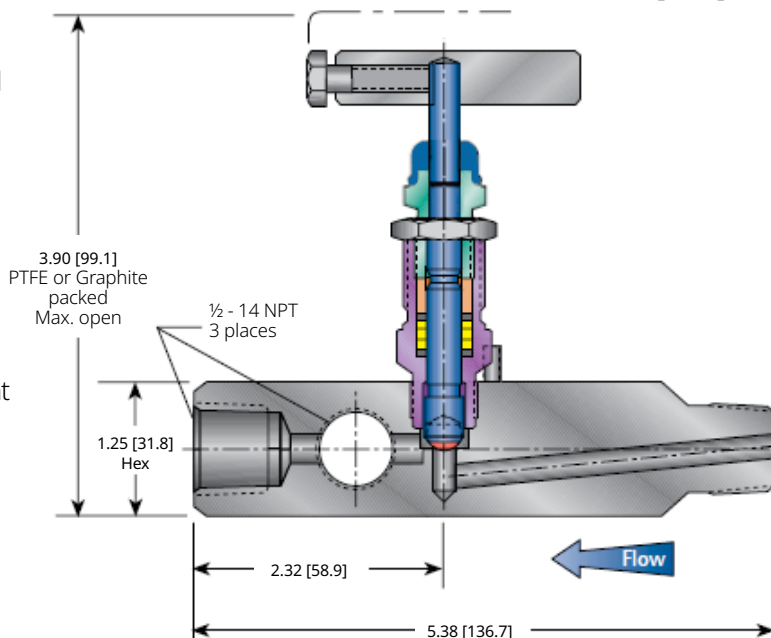
Bonnet Lock (BL)

The Anderson Greenwood bonnet lock prevents accidental loosening of the bonnet-to-body seal. A high-strength, short bonnet pin aligns a hex collar over the bonnet.

Tests indicate the minimum torque required to break the collar loose is greater than the torque required to twist off the handle.



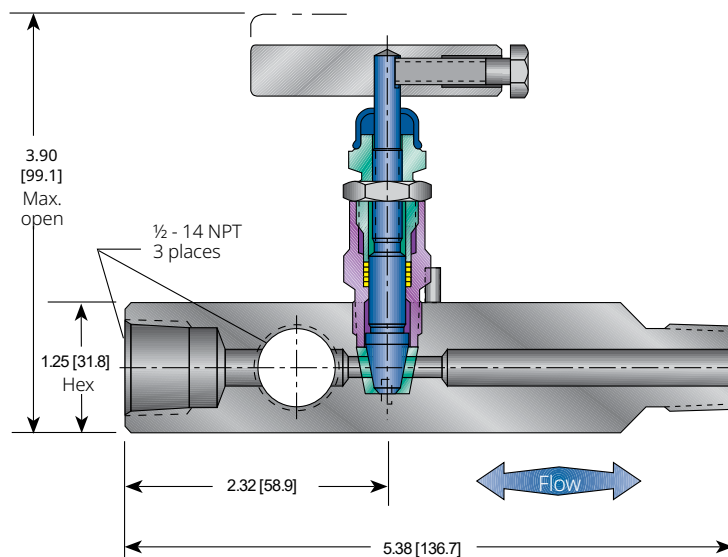
M5 AND M51 METAL SEAT DIMENSIONS, INCHES [mm]



NOTES

1. M5 metal seat only.
2. Approximate valve weight:
Standard 2.5 lb [1.1 kg].
Long 3.0 lb [1.4 kg].
Orifice size: 0.187 inch [4.8 mm] diameter. Valve Cv 0.523 maximum.
Long body length 7.25 inch [184.2 mm] for 4 inch [102.0 mm] insulation.
3. For Hastelloy® and SG3 call factory for dimensions and weights.

M5 SOFT SEAT DIMENSIONS, INCHES [mm]



NOTES

1. Approximate valve weight:
Standard 2.5 lb [1.1 kg].
Orifice size: 0.187 inch [4.8 mm] diameter. Valve Cv 0.83 maximum.
2. For Hastelloy® and SG3 call factory for dimensions and weights.

Anderson Greenwood Instrumentation Multi-Port Gauge Valves

Standard Materials

| M5 Metal seat | | | | | |
|--------------------|------------------|------------------|------------------|-------------|---------------------------------|
| Valve | Body | Bonnet | Stem | Ball | Packing |
| CS ^[1] | A105 CS | A479 316SS | A276 316SS | 17-4 PH | Graphite, Low emission graphite |
| CS ^[1] | A105 CS | A108 CS | A276 316SS | 17-4 PH | PTFE |
| 316 SS | A479 316 SS | A479 316 SS | A276 316 SS | 316 SS | Graphite, Low emission graphite |
| 316 SS | A479 316 SS | A479 316 SS | A276 316 SS | 316 SS | PTFE |
| Monel® | Monel® R405 | Monel® R405 | Monel® 400 | Monel® K500 | PTFE |
| SG ^[2] | A479 316 SS | A479 316 SS | Monel® 400 | Monel® K500 | Graphite, Low emission graphite |
| SG ^[2] | A479 316 SS | A479 316 SS | Monel® 400 | Monel® K500 | PTFE |
| SG3 ^[5] | Hastelloy® C-276 | Hastelloy® C-276 | Hastelloy® C-276 | Elgiloy® | Graphite, Low emission graphite |
| SG3 ^[5] | Hastelloy® C-276 | Hastelloy® C-276 | Hastelloy® C-276 | Elgiloy® | PTFE |

| M51 Metal seat | | | | |
|--------------------|------------------|------------------|------------------|-------------|
| Valve | Body | Bonnet | Stem | Ball |
| 316 SS | A479 316 SS | A479 316 SS | A276 316 SS | A151 316 SS |
| SG ^[2] | A479 316 SS | A479 316 SS | Monel® 400 | Monel® K500 |
| SG3 ^[5] | Hastelloy® C-276 | Hastelloy® C-276 | Hastelloy® C-276 | Elgiloy® |
| CS | A105 | A105 | A581-303SS | 17-4PH |

| M5 Soft seat | | | | | |
|--------------------|------------------|------------------|------------------|---------|---------|
| Valve | Body | Bonnet | Stem | Packing | Seat |
| CS ^[1] | A108 CS | A108 CS | A276 316SS | PTFE | Delrin® |
| 316 SS | A479 316 SS | A479 316 SS | A276 316 SS | PTFE | Delrin® |
| Monel® | Monel® R405 | Monel® R405 | Monel® 400 | PTFE | Delrin® |
| SG ^[2] | A479 316 SS | A479 316 SS | Monel® 400 | PTFE | Delrin® |
| SG3 ^[5] | Hastelloy® C-276 | Hastelloy® C-276 | Hastelloy® C-276 | PTFE | Delrin® |

NOTES

1. CS is zinc-TCP plated to prevent corrosion.
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005.
3. PEEK and PTFE also available.
4. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).
5. Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

Pressure vs. Temperature

Pressure and Temperature Ratings

| Valve | Packing | Ratings |
|-----------------------------|------------------------------------|---|
| M5 Metal seat | | |
| CS | Graphite, Low emission graphite | 6000 psig at 200°F [414 barg at 93°C] 1500 psig at 850°F [103 barg at 454°C] |
| 316 SS, SG, SG3 | Graphite, Low emission graphite | 6000 psig at 200°F [414 barg at 93°C] 1500 psig at 1000°F [103 barg at 454°C] |
| CS, 316 SS, Monel®, SG, SG3 | PTFE | 6000 psig at 200°F [414 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C] |
| M51 Metal seat | | |
| CS, 316 SS, SG, SG3 | PTFE | 10,000 psig at 200°F [689 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C] |
| M5 Soft seat | | |
| CS, SS, Monel®, SG, SG3 | PTFE | 6000 psig at 200°F [414 barg at 93°C] |

NOTES

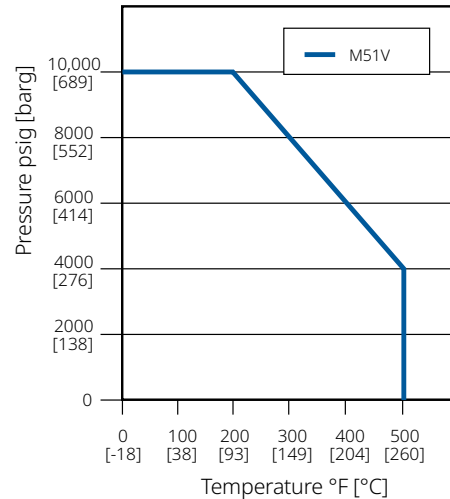
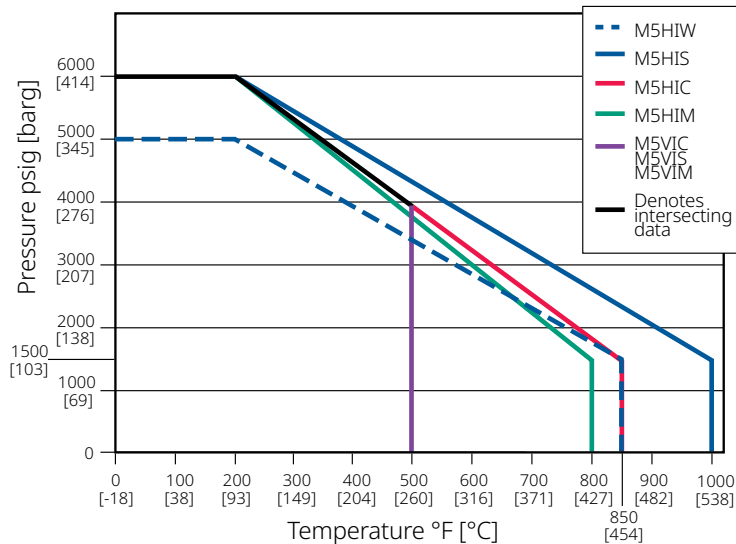
1. Temperature Minimum M5 Graphite and PTFE Packing -313°F (-192°C) in 316 SS Integral seat only @ 2,500 psi (172 bar)
2. M51 in 316L material maximum pressure rating: 9000 psi at 200°F; 4000 psi at 500°F. PCTFE and PEEK Seats. 316SS Delrin® Seats with PTFE or Graphite packing min -40°F (-40°C), Carbon Steel -20°F (-28°C).

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Pressure vs. Temperature

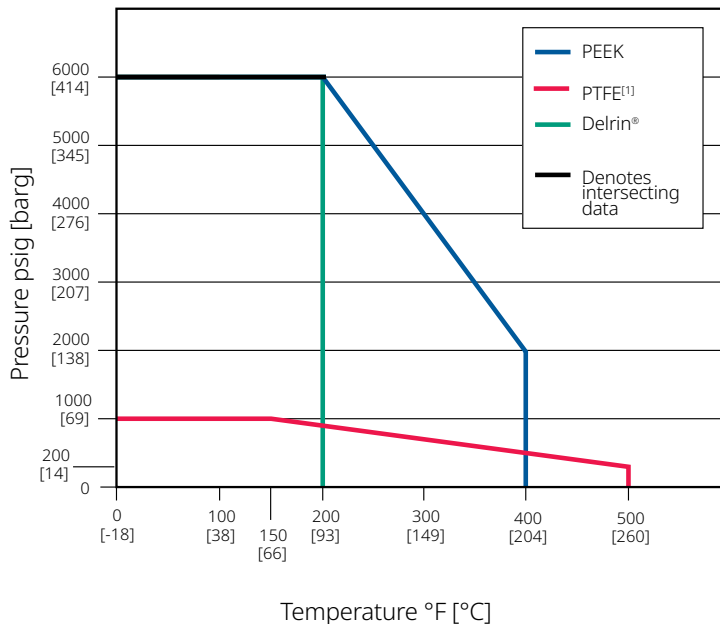
Pressure vs. Temperature1 - M5 and M51 Metal seat



NOTE

M51 in 316L material maximum pressure rating: 9000 psi at 200°F; 4000 psi at 500°F.

Pressure vs. Temperature - M5 Soft seat



NOTES

1. O-ring packed soft seat valve 400°F [204°C] maximum.
2. Temperature Minimum M5 Graphite and PTFE Packing -313°F (-192°C) in 316 SS Body and Integral Seat only @2,500PSI. Delrin® Seat -40°F (-40°C)

Anderson Greenwood Instrumentation Multi-Port Gauge Valves

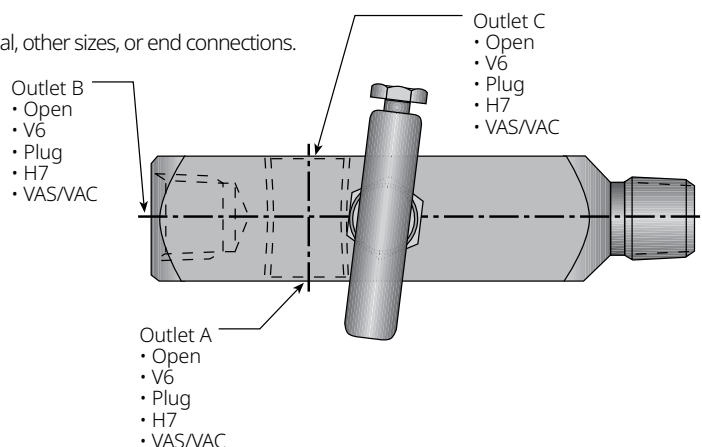
Selection Guide - Metal Seat

M5 Metal Seat Specifications

| M5 | H | I | S | -44L | -SG |
|--------------|-------------------------|------------|------------------------------|---|--|
| BASIC SERIES | PACKING | SEAT | BODY MATERIAL ⁽¹⁾ | CONNECTIONS | OPTIONS |
| M5 | H Graphite | I Integral | C CS, A105 | OUTLET/INLET⁽¹⁾ 44 ½-inch MNPT x (3) ½-inch FNPT | HD Hydrostatic testing (100%) (MSS-SP-61) |
| | | | S 316 SS, A479-316 | 46 ¾-inch MNPT x (3) ½-inch FNPT | LAT Lockable anti tamper BL Bonnet Lock |
| | R O-ring | | M Monel® | STYLE C Male plain end (CS is zinc coated) | MS Monel® Stem |
| | | | | | |
| | V PTFE | | | LENGTH L Long body extension (4-inch insulation) | OC00 Gaseous oxygen clean (OC) |
| | E Low emission graphite | | W 316L | | OC01 Liquid oxygen clean (OC) |
| | | | J Hastelloy® | | PMI00 PMI Body Only PMI01 PMI Body and Bonnet PMI02 PMI Body, Bonnet and Stem |
| | | | | | SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 |
| | | | | | SG3 SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)). If accessories are added, consult factory for materials. |
| | | | | | SS All 316 SS construction |
| | | | | | LT Low Temperature to -313°F (-192°C) 316SS material only, Graphite and PTFE packing only @ 2500psi (172 bar) M5 only |
| | | | | | SST 316SS Tag Circular (10 Characters max) |

NOTE

1.Call factory for optional material, other sizes, or end connections.



M5/M51 SERIES

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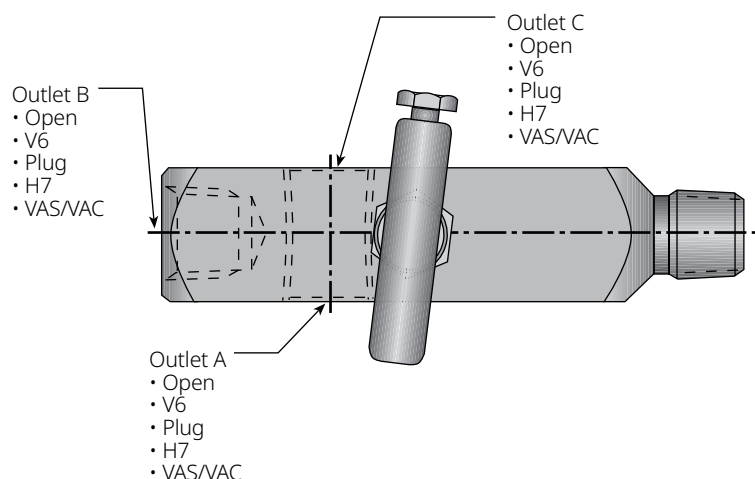
Selection Guide - Soft Seat

M5 Soft Seat Specifications

| M5 | V | D | S | -44L | -SG |
|--------------|---|----------------------|------------------------------|---|--|
| BASIC SERIES | PACKING | SEAT | BODY MATERIAL ^[1] | CONNECTIONS | OPTIONS |
| M5 | V PTFE | V PTFE | C CS, A108 | OUTLET/INLET^[2] 44 ½-inch MNPT x (3) ½-inch FNPT | HD Hydrostatic testing (100%) (MSS-SP-61) |
| | R FKM O-ring | D Derlin® (standard) | S 316 SS, A479-316 | 46 ¾-inch MNPT x (3) ½-inch FNPT | LAT Lockable anti tamper |
| | E Low emissions Graphite ^[3] | E PEEK | M Monel® | STYLE C Male plain end (CS is zinc coated coated) | MS Monel® Stem |
| | | | W 316L | LENGTH L Long body extension (4-inch insulation) | OC00 Gaseous oxygen clean (OC) |
| | | | J - Hastelloy® | | OC01 Liquid oxygen clean (OC) |
| | | | | | PMI00 PMI body only |
| | | | | | SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 |
| | | | | | SG3 SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)). If accessories are added, consult factory for materials. |
| | | | | | SS All 316 SS construction |

NOTES

1. Call factory for optional materials, other sizes, or end connections.
2. Temperature (min.) M5/M51 316SS PTFE Delrin Seat -40°F (-40°C)



Anderson Greenwood Instrumentation Multi-Port Gauge Valves

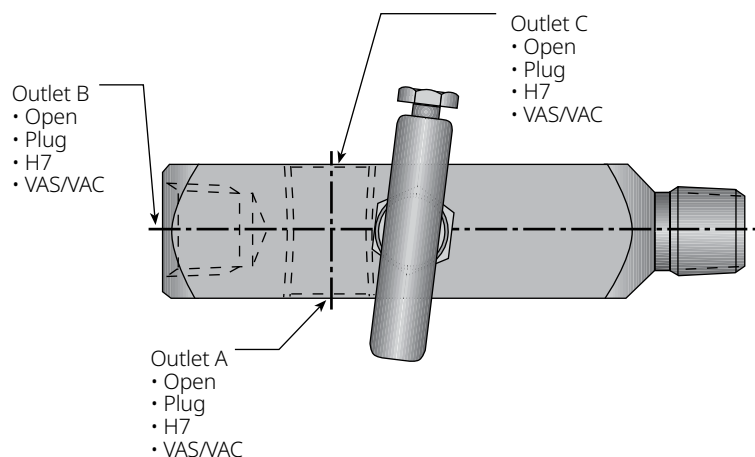
Selection Guide - Power Industry Applications ^[1]

M5 ASME B31.1 and B31.3 Specifications meets MSS SP-105

| M5HP | S | -44LC | -SG |
|--------------|--------------------|--------------------------------------|---|
| BASIC SERIES | BODY MATERIAL | CONNECTIONS | OPTIONS |
| M5HP | C CS, A105 | 44 ½-inch MNPT x (3) ½-inch FNPT | LAT Lockable anti tamper |
| | S 316 SS, A479-316 | 46 ¾-inch MNPT x (3) ½-inch FNPT | MS Monel® stem |
| | | STYLE | PMI00 PMI Body |
| | | C Male plain end (CS is zinc coated) | PMI01 PMI Body and Bonnet |
| | | LENGTH | PMI02 PMI Body Bonnet and Stem |
| | | L Long body (4-inch insulation) | SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 |
| | | | SST 316SS Tag Circular (10 Characters max) |
| | | | XP ASME B31.1 |

NOTE

1. All Power M5HP Gauge Valves come standard with Graphite packing, integral seats, bonnet locks, and are subjected to hydrostatic testing.



M5/M51 SERIES

Anderson Greenwood Instrumentation Multi-Port Gauge Valves

Selection Guide

M51 10,000 PSI Specifications

| M51 | V | I | S | -44LC | -SG |
|--------------|---|------------|------------------------------|---|--|
| BASIC SERIES | PACKING | SEAT | BODY MATERIAL ⁽¹⁾ | CONNECTIONS | OPTIONS |
| M51 | V PTFE Not available in Graphite | I Integral | C Carbon Steel | OUTLET/INLET⁽¹⁾ 44 ½-inch MNPT x (3) ½-inch FNPT | MS Monel® stem |
| | | | S 316 SS, A479-316 | 46 ¾-inch MNPT x (3) ½-inch FNPT | PM100 PMI body only |
| | | | J Hastelloy® | STYLE C Male plain end (CS is zinc coated) | BL Bonnet Lock |
| | | | | LENGTH L Long body extension (4-inch insulation) | SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 |
| | | | | | SS All 316 SS construction |

NOTE

1. Call factory for optional materials, other sizes, or end connections.

