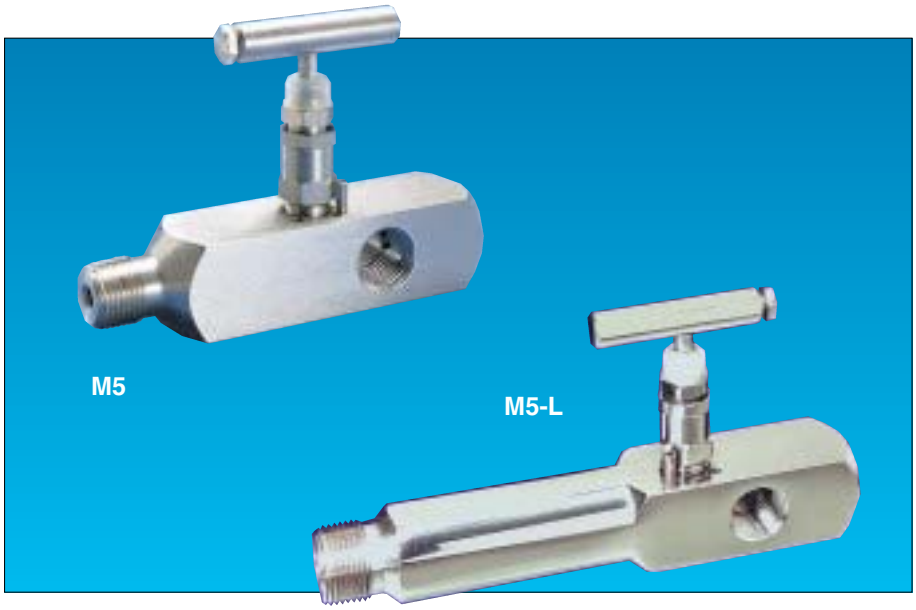
Multi-Port Gauge Valves – M5 and M51



Product Overview

The M5 and M51 are multi-port gauge valves allowing the versatile positioning of gauges or pressure switches without requiring additional penetration of the main piping. For high-pressure applications, the M51 is a metal seat version of the lightweight, compact instrument isolation valve.

The standard configuration has a male or female inlet and three 1/2-inch FNPT outlet ports. All valves with male inlet connections are available threaded or prepared for welding and with either standard or extended inlets. The M5 is available with an integral metal seat or as a soft seated plug type allowing the valve to be rodded out.

Features and Benefits

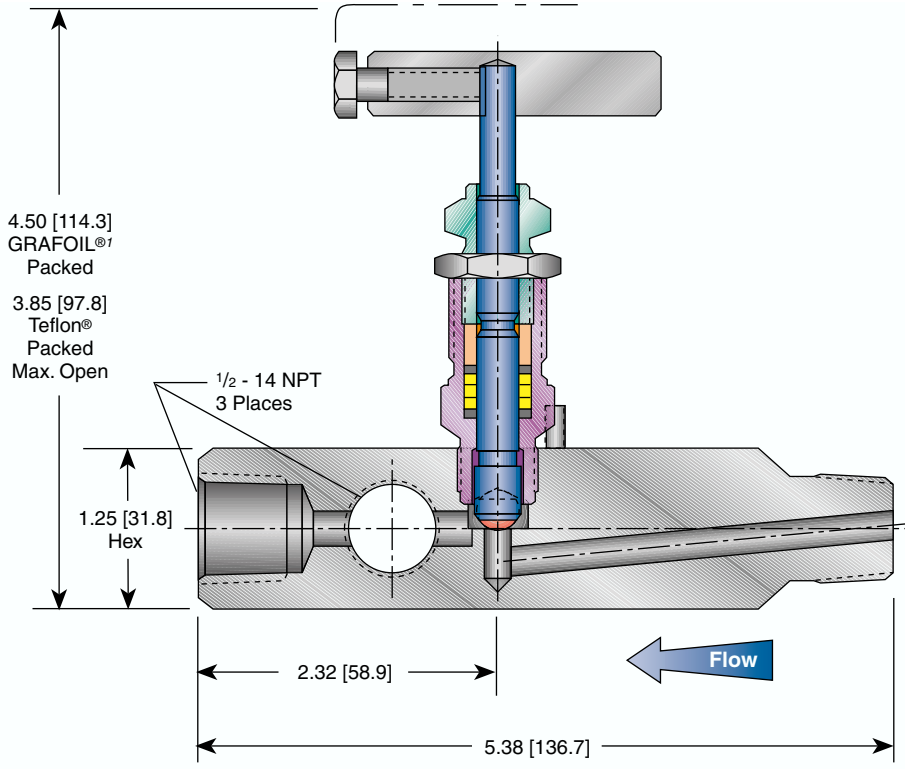
- **Cost savings** are realized with multi-port design by reducing the number of components and process penetrations required for multiple instrument installations. Possible leak points are decreased.
- **Compact design** requires minimum space for operation and installation. Lower valve weight increases strength at the process connection and reduces gauge whip.
- **Long body configuration** allows for a maximum of 4-inch [102 mm] pipe insulation.
- **Roddable seat design** is supplied with replaceable seats, providing easy clean-out and seat replacement.
- **Replaceable soft seat** allows replacement of the soft seat insert without removing the valve from the line. It operates in dirty service with repetitive bubble-tight shutoff.
- **Mirror stem finish** burnished to a 16 RMS finish in the packing area enables smooth stem operation and extends packing life.
- **Body-to-bonnet seal** is metal-to-metal in constant compression below the bonnet threads. Prevents bonnet thread corrosion, eliminates possible tensile breakage of bonnet, and gives a reliable seal point.
- **Ball end stem** eliminates seat galling, provides bubble-tight shutoff and long life. The hardened, non-rotating ball ensures perfect alignment closure.
- **Packing below threads** prevents lubricant washout, thread corrosion, and keeps solids from entering the thread area, which can cause galling. It also prevents process contamination.
- **Adjustable packing** adjusts easily – loosen jam nut, tighten bushing slightly, then retighten jam nut. Decreases packing replacement downtime and increases valve life.
- **Dust cover** prevents lubricant washout and keeps contaminants (dirt, rain, etc.) out of bonnet assembly.
- **Safety back seating** prevents stem blowout or accidental removal while in operation and provides a metal-to-metal secondary stem seal while in the full open position.
- **Chrome plating of 316 SS** prevents galling or freezing of stem threads when similar metals mate. CS valves use a 303 SS stem.
- **Rolled threads** provide additional thread strength. The stem, bonnet, and male NPT threads are rolled, not cut.
- **Bonnet lock pin** is another safety feature which prevents the accidental separation of the bonnet from the body. However, normal valve maintenance and repair are still easily accomplished.

Multi-Port Gauge Valves – M5 and M51 Specifications

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 C_v 0.523 maximum.
   Long body length 7.25-inch [184.2 mm] for 4-inch [102.0 mm] insulation.

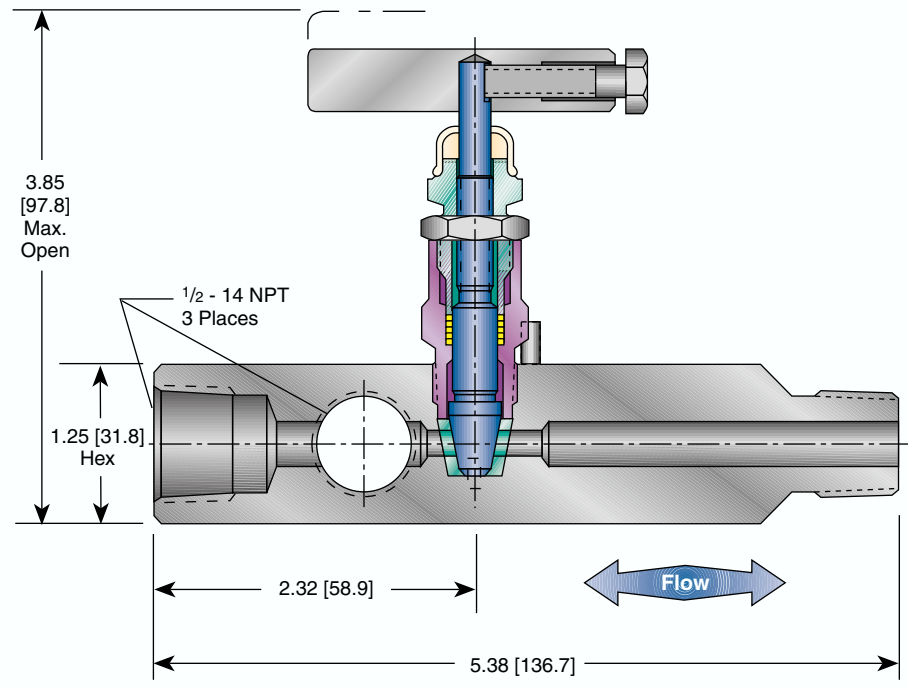
M5 and M51 Metal Seat Dimensions, inches [mm]



Note

1. Approximate valve weight:
   standard 2.5 lb [1.1 kg].
   Orifice Size: 0.187-inch [4.8 mm] diameter.
   Valve C_v 0.83 maximum.

M5 Soft Seat Dimensions, inches [mm]



Multi-Port Gauge Valves – M5 and M51 Specifications

Standard Materials

M5 Metal Seat

Valve	Body	Bonnet	Stem	Ball	Packing
CS[1]	A105 CS	A105 CS	A581 303 SS	17-4 PH	GRAFOIL®, Low Emission Graphite
CS[1]	A105 CS	A108 CS	A581 303 SS	17-4 PH	Teflon®
SS	A479 316 SS	A479 316 SS	A276 316 SS	316 SS	GRAFOIL®, Low Emission Graphite
SS	A479 316 SS	A479 316 SS	A276 316 SS	316 SS	Teflon®
Monel®	Monel® R405	Monel® R405	Monel® 400	Monel® K500	Teflon®
SG[2]	A479 316 SS	A479 316 SS	Monel® 400	Monel® K500	GRAFOIL®, Low Emission Graphite
SG[2]	A479 316 SS	A479 316 SS	Monel® 400	Monel® K500	Teflon®

M51 Metal Seat

Valve	Body	Bonnet	Stem	Ball
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

M5 Soft Seat

Valve	Body	Bonnet	Stem	Packing	Seat
CS[1]	A108 CS	A108 CS	A581 303 SS	Teflon®	Delrin®
SS	A479 316 SS	A479 316 SS	A276 316 SS	Teflon®	Delrin®
Monel®	Monel® R405	Monel® R405	Monel® 400	Teflon®	PCTFE[4]
SG[2]	A479 316 SS	A479 316 SS	Monel® 400	Teflon®	Delrin®

Pressure and Temperature Ratings

M5 Metal Seat

Valve	Packing	Ratings	
CS	GRAFOIL®, Low Emission Graphite	6000 psig @ 200°F 1500 psig @ 850°F	[414 barg @ 93°C] [103 barg @ 454°C]
SS, SG	GRAFOIL®, Low Emission Graphite	6000 psig @ 200°F 1500 psig @ 1000°F	[414 barg @ 93°C] [103 barg @ 454°C]
CS, SS, Monel®, SG	Teflon®	6000 psig @ 200°F 4000 psig @ 500°F	[414 barg @ 93°C] [276 barg @ 260°C]

M51 Metal Seat

CS, SS, SG	—	10,000 psig @ 200°F 4000 psig @ 500°F	[689 barg @ 93°C] [276 barg @ 260°C]

M5 Soft Seat

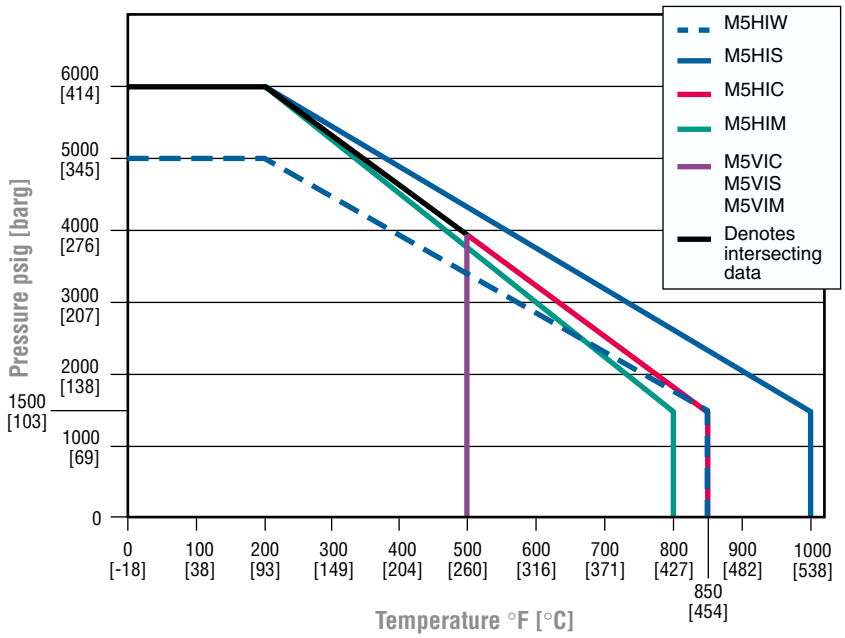
CS, SS, Monel®, SG	Teflon®	6000 psig @ 200°F	[414 barg @ 93°C]

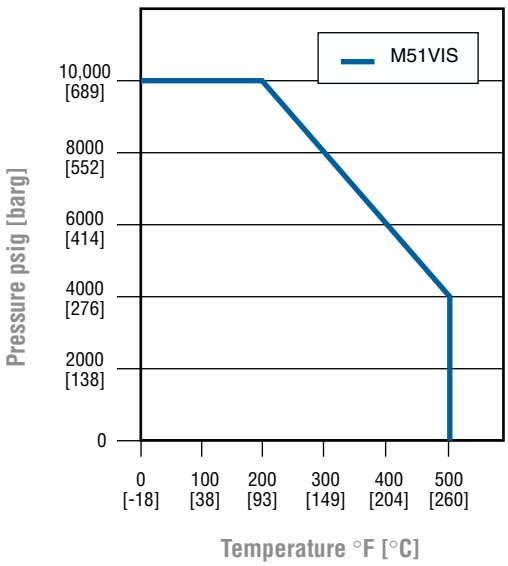
Notes

1. CS is zinc-cobalt plated to prevent corrosion.
2. SG (Sour Gas) meets the requirements of NACE MR0175-latest revision.
3. PEEK and Teflon® also available.
4. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

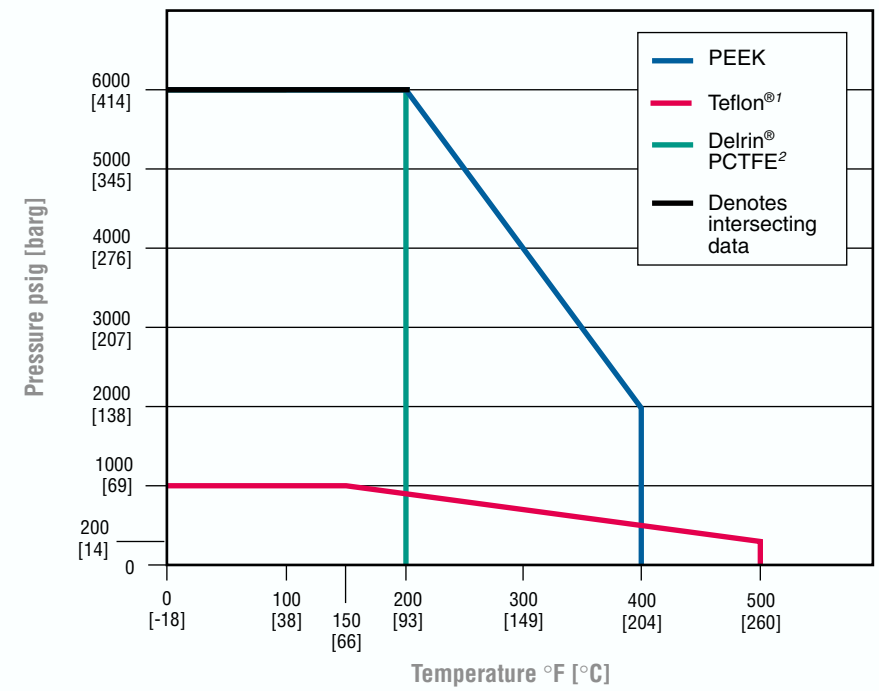
Multi-Port Gauge Valves – M5 and M51 Specifications

Pressure vs. Temperature[1] – M5 and M51 Metal Seat





Pressure vs. Temperature – M5 Soft Seat



Notes

1. O-ring packed soft seat valve 400°F [204°C] maximum.
2. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

Multi-Port Gauge Valves – M5 Specifications

Ordering Information – Metal Seat

M5 H I S – 44L –SG

Packing

H – GRAFOIL®
V – Teflon® (patent protected)
E – Low Emission Graphite

Seat

I – Integral

Body Material[1]

C – CS, A105
S – SS, A479-316
M – Monel®

Connections (Inlet/Outlet)[1]

44 – 1/2-inch MNPT x (3) 1/2-inch FNPT
46 – 3/4-inch MNPT x (3) 1/2-inch FNPT

C – Male plain end (CS is black oxide coated)
L – Long body extension (4-inch insulation)

Options

BL – Bonnet Lock Device (patent protected)
CLC – Chlorine Cleaning
HD – Hydrostatic Testing (100%)(MSS-MSP-61)
OC – Oxygen Cleaning
SG – Sour Gas meets the requirements of NACE MR0175-latest revision (SS only)
SP – Special Requirements - please specify

Note

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

Multi-Port Gauge Valves – M5 Specifications

Ordering Information – Soft Seat

M5 V D S – 44L –SG

Packing

V – Teflon® (patent protected)
R – Viton® O-ring

Seat

V – Teflon®
D – Delrin® (standard)
E – PEEK
K – PCTFE[1]

Body Material[2]

C – CS, A108
S – SS, A479-316
M – Monel®

Connections (Inlet/Outlet)[2]

44 – 1/2-inch MNPT x (3) 1/2-inch FNPT
46 – 3/4-inch MNPT x (3) 1/2-inch FNPT

C – Male plain end (CS is black oxide coated)
L – Long body extension (4-inch insulation)

Options

BL – Bonnet Lock Device (patent protected)
CLC – Chlorine Cleaning
HD – Hydrostatic Testing (100%)(MSS-MSP-61)
OC – Oxygen Cleaning
SG – Sour Gas meets the requirements of NACE MR0175-latest revision (SS only)
SP – Special Requirements - please specify

Notes

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Call factory for optional material, or other sizes and flange connections.

Multi-Port Gauge Valves – M5 ASME B31.1 Specifications

Ordering Information – Power Industry Applications[1]

M5HP	S	–	44	LC	–	XP	–	SP

Body Material

C – CS, A105
S – SS, A479-316

Connections (Inlet/Outlet)

44 – 1/2-inch MNPT x (3) 1/2-inch FNPT
46 – 3/4-inch MNPT x (3) 1/2-inch FNPT

C – Male plain end (CS is black oxide coated)
L – Long body (4-inch insulation)

Options

SP – Special Requirements - please specify

Note

1. All Power M5 Gauge Valves come standard with GRAFOIL® packing, integral seats, bonnet locks, and are subjected to hydrostatic testing.

Multi-Port Gauge Valves – M51 Specifications

Ordering Information

M51 V I S – 44LC – SG

Packing

V – Teflon® (patent protected)

Seat

I – Integral

Body Material[1]

S – SS, A479-316

Connections (Inlet/Outlet)[1]

44 – 1/2-inch MNPT x (3) 1/2-inch FNPT
46 – 3/4-inch MNPT x (3) 1/2-inch FNPT

C – Male plain end (CS is black oxide coated)
L – Long body extension (4-inch insulation)

Options

BL – Bonnet Lock Device (patent protected)
CLC – Chlorine Cleaning
HD – Hydrostatic Testing (100%)(MSS-MSP-61)
OC – Oxygen Cleaning
SG – Sour Gas meets the requirements of NACE MR0175-latest revision (SS only)
SP – Special Requirements - please specify

Note

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