

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 the versatile 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: 1000°F (538°C)

M251: 500°F (260°C)



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 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 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 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 seal point.

M5/M51 SERIES

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 10000 psig (690 barg) service. All stem threads are rolled and lubricated to prevent galling and reduce operating torque. The stem seal is a patented PTFE packing 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 Grafoil bonnet for high temperature applications.

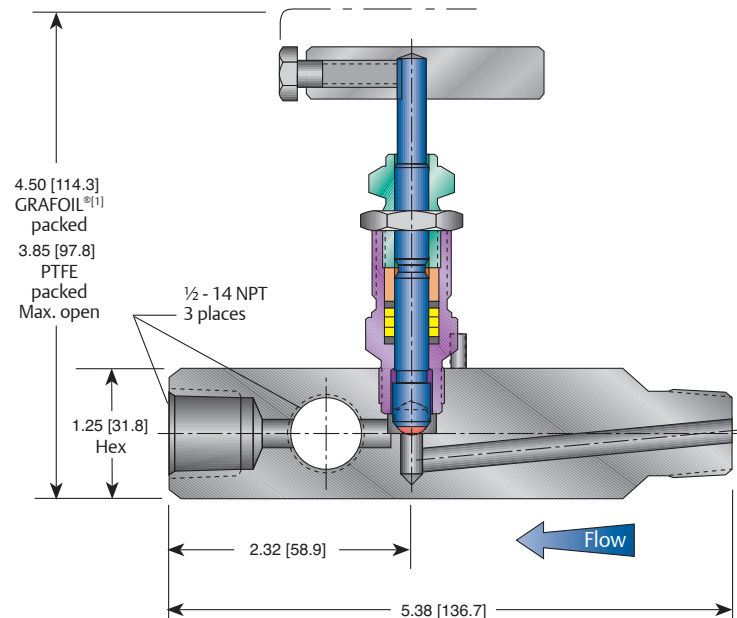
Soft-Seated Bonnet Assembly

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.

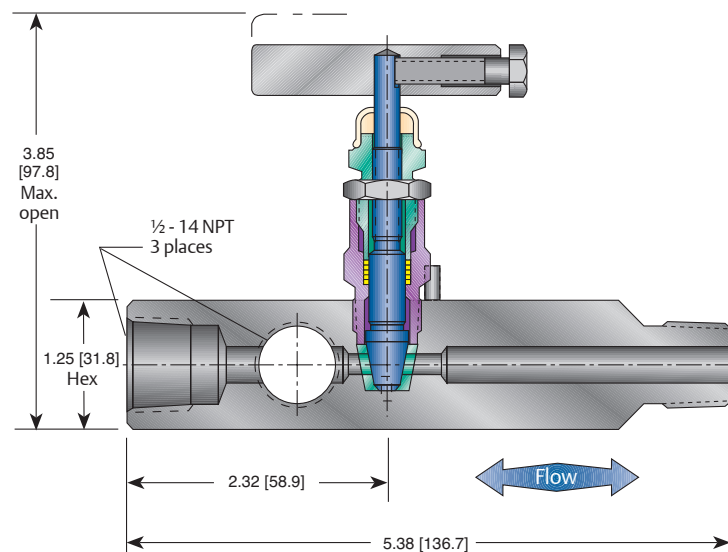
M5 AND M51 METAL SEAT DIMENSIONS, INCHES [mm]



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.

Multi-Port Gauge Valves

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	PTFE
316 SS	A479 316 SS	A479 316 SS	A276 316 SS	316 SS	GRAFOIL®, 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	GRAFOIL®, 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®	GRAFOIL®, 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	A581 303 SS	PTFE	Delrin®
316 SS	A479 316 SS	A479 316 SS	A276 316 SS	PTFE	Delrin®
Monel®	Monel® R405	Monel® R405	Monel® 400	PTFE	PCTFE ^[4]
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. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
5. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).
6. Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

Pressure vs. Temperature

Pressure and Temperature Ratings

Valve	Packing	Ratings
M5 Metal seat		
CS	GRAFOIL®, 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	GRAFOIL®, 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

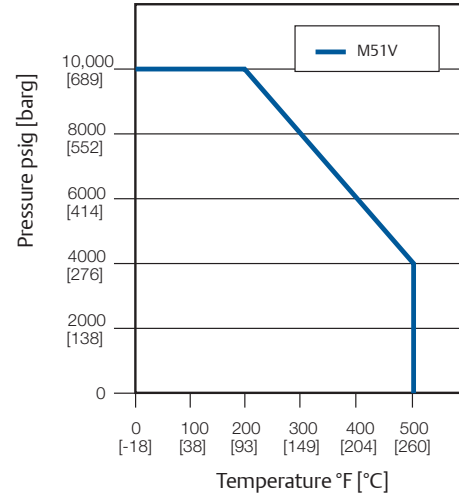
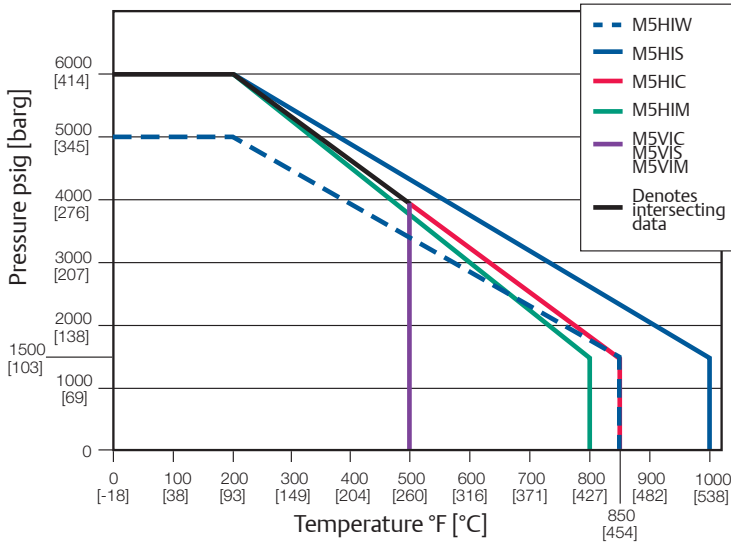
1. Temperature Minimum M5/M51 GRAFOIL® and Teflon® Packing -70°F (-57°C) in 316 SS only.
2. M51 in 316L material maximum pressure rating: 9000 psi at 200°F; 4000 psi at 500°F. PCTFE and PEEK Seats. 316SS Delrin® Seats with PTFE or GRAFOIL® packing min -40°F (-40°C). Carbon Steel -20°F (-28°C).

M5/M51 SERIES

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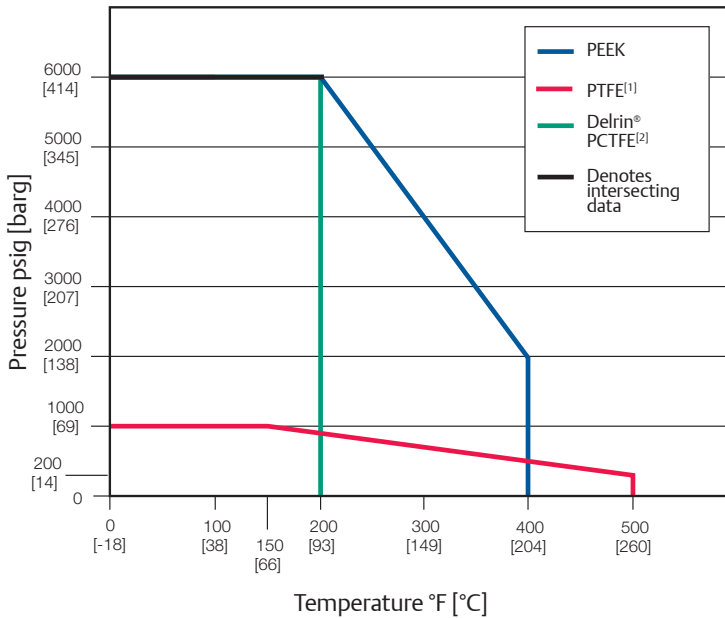
Pressure vs. Temperature

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

- O-ring packed soft seat valve 400°F [204°C] maximum.
- PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
- Temperature Minimum M5/M51 GRAFOIL® and Teflon® Packing -70 deg F (-57degC) in 316 SS only. Delrin® Seat -40°F (-40°C)

Multi-Port Gauge Valves

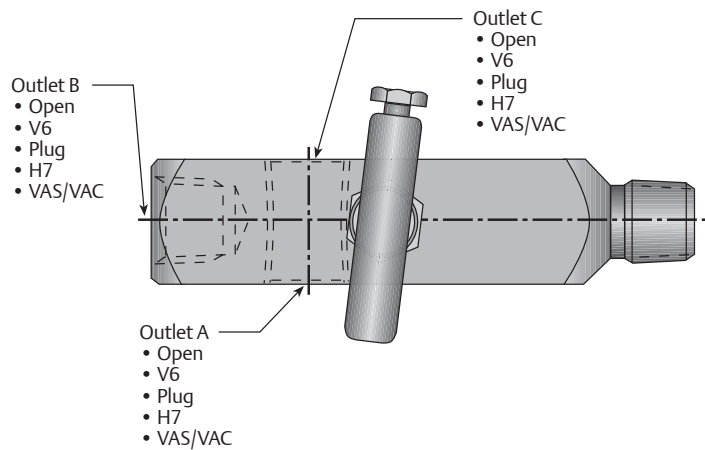
Selection Guide - Metal Seat

M5 Metal Seat Specifications

M5	H	I	S	-44L	-SG
BASIC SERIES	PACKING	SEAT	BODY MATERIAL ⁽¹⁾	CONNECTIONS	OPTIONS
M5	H GRAFOIL®	I Integral	C CS, A105	OUTLET/INLET⁽¹⁾ 44 ½-inch MNPT x (3) ½-inch FNPT	HD Hydrostatic testing (100%) (MSS-SP-61)
	R O-ring		S 316 SS, A479-316	46 ¾-inch MNPT x (3) ½-inch FNPT	LAT Lockable anti tamper
	V PTFE		M Monel®	STYLE C Male plain end (CS is black oxide coated)	MS Monel® Stem
	E Low emission graphite		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

NOTE

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



M5/M51 SERIES

Multi-Port Gauge Valves

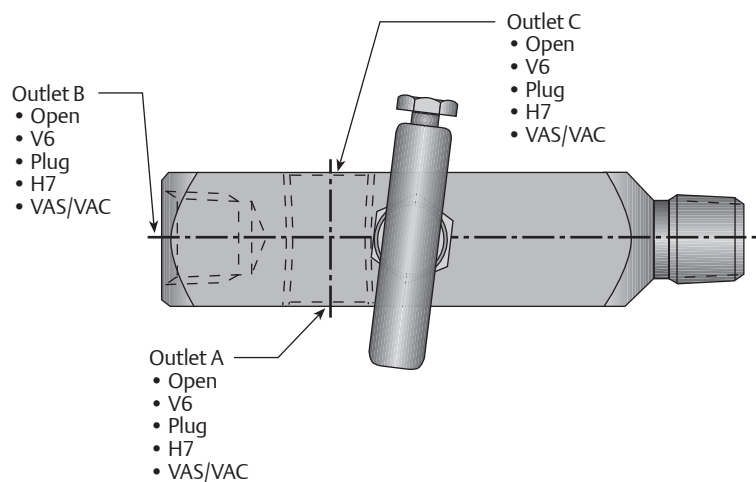
Selection Guide - Soft Seat

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	44 ½-inch MNPT x (3) ½-inch FNPT	HD Hydrostatic testing (100%) (MSS-SP-61)
	R FKMO 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®	C Male plain end (CS is black oxide coated)	MS Monel® Stem
		K PCTFE ^[1]	W 316L	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. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Call factory for optional materials, other sizes, or end connections.
3. Temperature (min.) M5/M51 316SS PTFE
4. Bonnet lock not available.



Multi-Port Gauge Valves

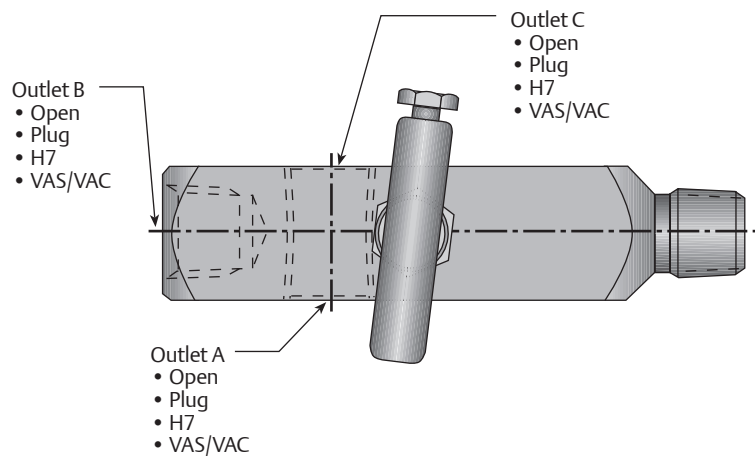
Selection Guide - Power Industry Applications ^[1]

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 C Male plain end (CS is black oxide coated)	PMI00 PMI body only
		LENGTH 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
			SS All 316 SS construction
			XP ASME B31.1

NOTE

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



M5/M51 SERIES

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 GRAFOIL®	I Integral	C Carbon Steel	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®	C Male plain end (CS is black oxide coated)	SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005
				LENGTH	
				L Long body extension (4-inch insulation)	SS All 316 SS construction

NOTE

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

