

OS&Y Gauge Valves

Root isolation valves with outside screw and yoke, bolted bonnet construction for pressures up to 6,000 psi (414 barg)

General Application

M5K series gauge valves are designed for use with gauge mountings and other pressure instruments in refineries and chemical plants. The M5YK can also be used as a root/primary isolation valve in differential pressure transmitter installations.

TECHNICAL DATA

Materials

CS, 316 SS and other exotic materials

Seats:

Metal, soft, Monel®

Connections:

Inlet: ½", ¾", 1" NPT or welded

Outlet: ½" NPT

Pressure (max):

6,000 psig (414 barg)

Temperature (min-max):

-70°F to 1000°F

(-57°C to 538°C)



Features

- True 4-bolt bonnet design provides easy access to the packing gland. Stem threads are completely isolated from the process.
- Protective stem bellows and cap protects against atmospheric contamination, increases valve life and helps contain stem lubricant, reducing thread galling.
- Compact design minimizes space requirements. Lower valve weight improves connection strength and reduces induced bending moments.
- Multi-port outlet means fewer fittings, fewer leak points and reduced installation cost.
- Standard CF8M investment cast yoke resists corrosion, increasing valve life.
- Single-piece yoke design eliminates stem binding.
- Widely compatible graphite or PTFE flange gasket ring minimizes bonnet-to-body gasket deterioration.
- Free-swivelling ball end stem design (M5K, M5YK) or non-rotating plug design (M5AK) provide bubble-tight valve closure without metal seat galling and low seating torque.
- Integral hard back seat (M5K, M5YK) protects against stem blowout and provides alternate sealing for longer packing life.
- Optional replaceable soft seat design (M5K, M5AK) provides bubble-tight seat with a fully roddable, bi-directional flow. M5AK metal or soft roddable seat.

M5K/M5AK/M5YK SERIES

OS&Y Gauge Valves

Product Overview

M5K Gauge valve

The M5K gauge valve is a multi-ported root/primary instrument isolation valve, designed for use with gauge mountings and other pressure instruments in refineries and chemical plants. The M5K facilitates installation of multiple measurement devices without additional penetrations of the main piping.

The M5K is available in integral metal seat globe pattern design or various replaceable, roddable soft seats. (1/4" [6.4 mm] diameter orifice).

M5AK Gauge Valve

The M5AK gauge valve is a multi-ported root/primary instrument isolation valve, designed for use with gauge mounting and other instrument ties in refineries and chemical plants. Additional penetrations of the main piping are not required.

The M5AK is available with a variety of replaceable, roddable, metal or soft seats, with 3/8" [9.5 mm] diameter orifice. The unique metal seat design offers bubble-tight shutoff with straight-through flow characteristics.

M5YK Gauge Valve

The M5YK gauge valve is a versatile, dual outlet valve for use in gauge mounting or as root/primary isolation valve in differential pressure transmitter installations. In-line construction of body and OS&Y bonnet allows installation and replacement of valves in orifice taps without removal of bonnet assembly.

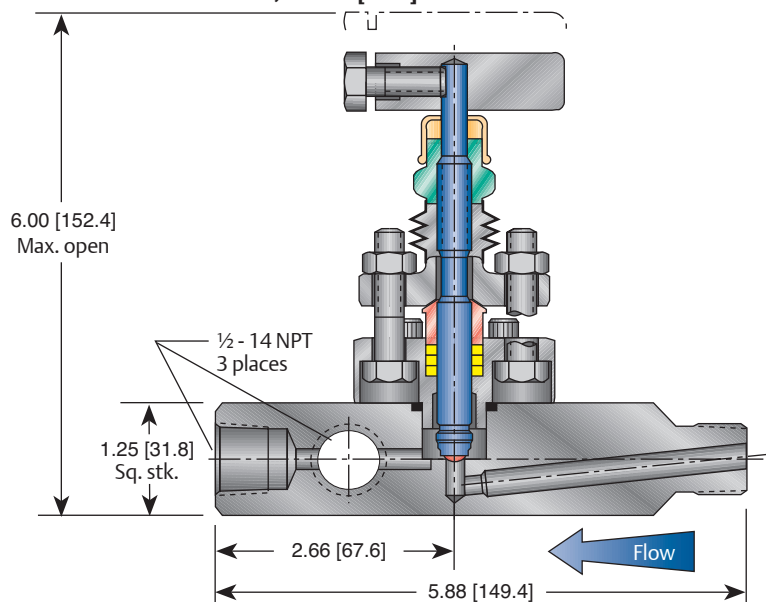
The valve is designed for safety, service and economy. The long-necked inlet provides room for insulation and the dual 1/2" NPT outlet ports provide an extra outlet for bleeder or sampling valves.

The M5YK is standard with 1/4" [6.4 mm] integral seat. Stem ball of selected metals to match process requirements.

OS&Y Gauge Valves

M5K - Bonnet Assembly

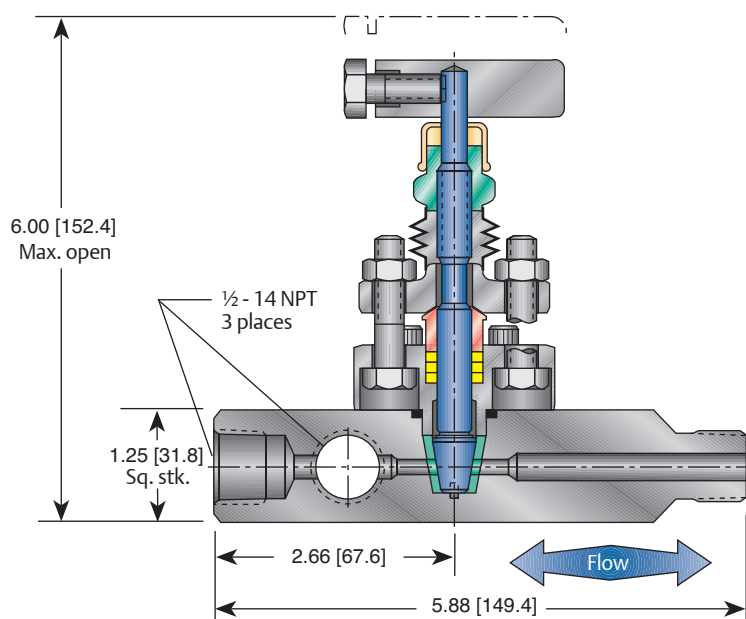
M5K metal seat dimensions, inches [mm]



NOTES

1. Approximate valve weight:
Standard 3.5 lb [1.6 kg]
Long 4.0 lb [1.8 kg]
 $\frac{3}{16}$ -inch [4.8 mm] diameter orifice
Valve Cv 0.52 maximum
2. For Hastelloy® and SG3 call factory for dimensions and weights.

M5K soft seat dimensions, inches [mm]



NOTES

1. Approximate valve weight:
Standard 3.5 lb [1.6 kg]
Long 4.0 lb [1.8 kg]
 $\frac{1}{4}$ -inch [6.4 mm] diameter orifice
Valve Cv 1.4 maximum
2. For Hastelloy® and SG3 call factory for dimensions and weights.

M5K SERIES

OS&Y Gauge Valves

M5K Standard Materials

Metal seat					
Valve	Body	Stem	Ball	Yoke	Bolt
CS ^[1]	A105 CS	A581-303 SS	17-4 PH	A351-CF8M	A286
316 SS	A479-316 SS	A276-316 SS	A276-316 SS	A351-CF8M	A286
316L SS	A479-316L SS	A276-316 SS	A276-316 SS	A351-CF8M	A286
SG ^[2]	A479-316 SS	Monel® 400	Monel® K500	A351-CF8M	A286
SG3 ^[4]	Hastelloy® C-276	Hastelloy® C-276	Elgiloy®	A494-CW12MW	A286

Soft seat					
Valve	Body	Stem	Yoke	Bolt	Seat
CS ^[1]	A105 CS	A582-303 SS	A351-CF8M	A286	Delrin®
316 SS	A479-316 SS	A276-316 SS	A351-CF8M	A286	Delrin®
316L SS	A479-316L SS	A276-316 SS	A351-CF8M	A286	Delrin®
SG ^[2]	A479-316 SS	Monel® R405	A351-CF8M	A286	Delrin®
SG3 ^[4]	Hastelloy® C-276	Hastelloy® C-276	A494-CW12MW	A286	Delrin®

M5K Pressure and Temperature Ratings

Metal seated		
Valve	Packing	Pressure and temperature rating
CS ^[1]	GRAFOIL®	6000 psig at 200°F [414 barg at 93°C] 1500 psig at 850°F [103 barg at 454°C]
316 SS, SG ^[2] , SG3 ^[4]	GRAFOIL®	6000 psig at 200°F [414 barg at 93°C] 1500 psig at 1000°F [103 barg at 538°C]
316L SS	GRAFOIL®	5000 psig at 200°F [345 barg at 93°C] 1500 psig at 850°F [103 barg at 454°C]
CS, 316 SS, SG3 ^[4]	PTFE	6000 psig at 200°F [414 barg at 66°C] 4000 psig at 500°F [276 barg at 260°C]

Soft seated			
Valve	Packing	Seat material	Pressure and temperature rating
CS ^[1]	PTFE or GRAFOIL®	Delrin® and PCTFE ^[3]	6000 psig at 200°F [414 barg at 93°C]
316 SS	PTFE or GRAFOIL®	PEEK	6000 psig at 200°F [414 barg at 93°C] 2000 psig at 400°F [138 barg at 93°C]
316L SS	PTFE or GRAFOIL®	PTFE	1000 psig at 150°F [69 barg at 66°C] 200 psig at 500°F [14 barg at 260°C]
SG3 ^[4]	PTFE or GRAFOIL®	PEEK	6000 psig at 200°F [414 barg at 93°C] 2000 psig at 400°F [138 barg at 93°C]
SG3 ^[4]	PTFE or GRAFOIL®	PTFE	1000 psig at 150°F [69 barg at 66°C] 200 psig at 500°F [14 barg at 260°C]

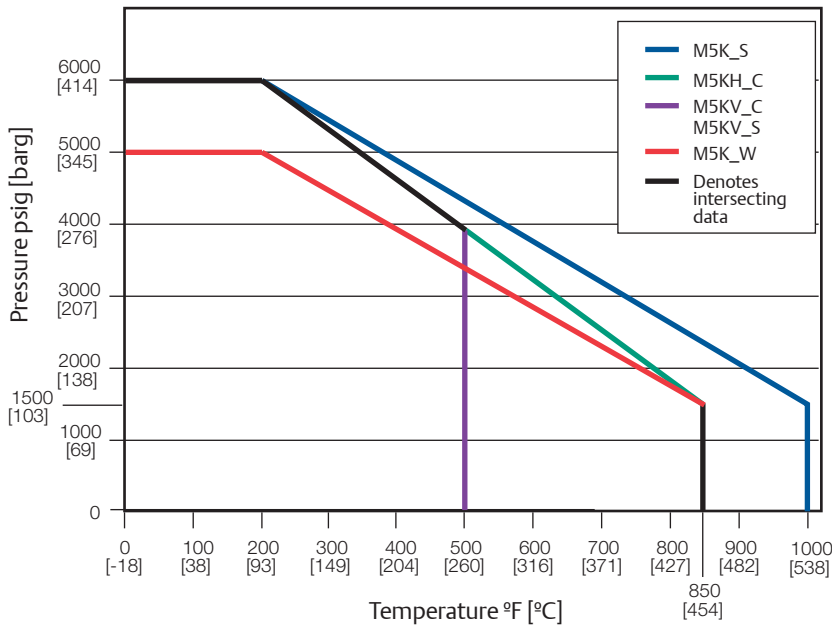
NOTES

- CS is zinc TCP plated to prevent corrosion (except male plain end is black oxide coated).
- SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005.
- PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
- 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.
- Temperature (min.) -70°F (-57°C) for all metal seated valves, PTFE, -40°F (-40°C) for Delrin soft seats.

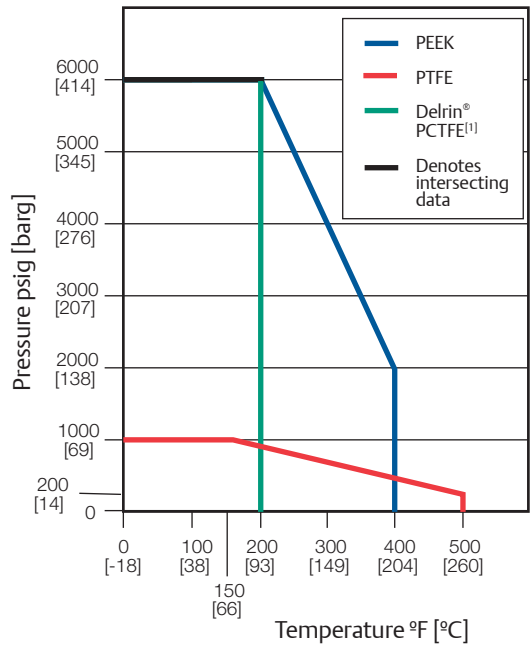
OS&Y Gauge Valves

M5K Pressure and Temperature Ratings

Pressure vs. Temperature - M5K Metal Seat



Pressure vs. Temperature - M5K Soft Seat



NOTE

1.PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

Pressure and temperature

Max. temperature	CS	1500 psig at 850°F [103 barg at 454°C]
	316 SS	1500 psig at 1000°F [103 barg at 538°C]
Max. pressure	316L SS	5000 psig at 200°F [345 barg at 93°C]

NOTE

Temperature (min.) -70°F (-57°C) for all metal seated valves, PTFE, -40°F (-40°C) for Delrin® soft seats.

M5K SERIES

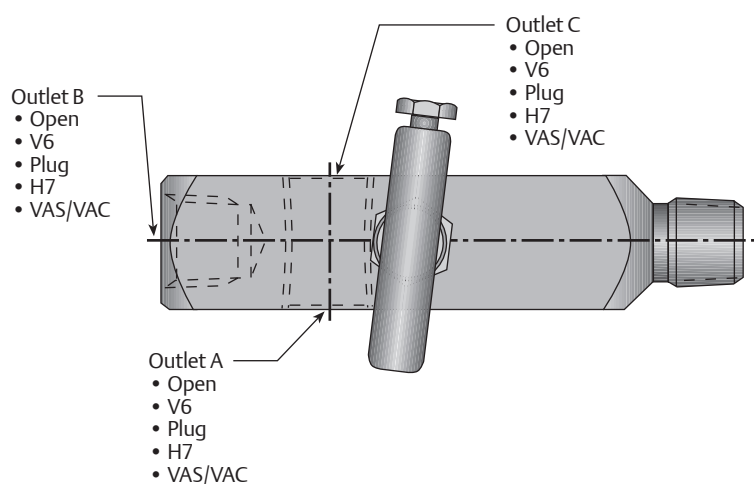
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Selection Guide - M5K Metal Seat

M5K	H	I	S	-44LC	-SG
BASIC SERIES	PACKING	SEAT ^[1]	BODY MATERIAL ^[2]	CONNECTIONS	OPTIONS
M5K	H GRAFOIL®	I Integral (standard)	C CS, A105 ^[3]	INLET/OUTLET^[4] 44 ½-inch MNPT x (3) ½-inch FNPT	HD Hydrostatic testing (100%) (MSS-SP-61)
	V PTFE		S SS, A479-316	46 ¾-inch MNPT x (3) ½-inch FNPT	SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005
			W SS, A479-316L	STYLE C Male plain end (CS is black oxide coated)	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.
				LENGTH L Long body extension (4-inch insulation)	SS All 316 SS construction

NOTES

1. 3/16 inch [4.8 mm] diameter orifice.
2. Call factory for optional materials.
3. CS is zinc TCP plated to prevent corrosion (except male plain end is black oxide coated).
4. Call factory for optional connection sizes.



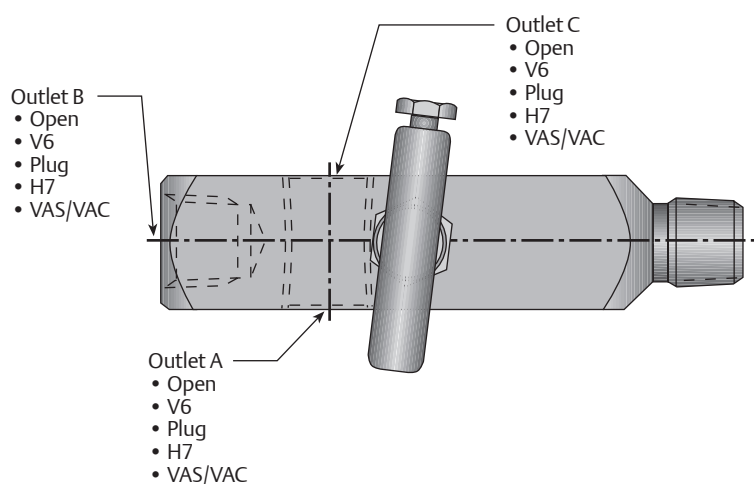
OS&Y Gauge Valves

Selection Guide - M5K Soft Seat

M5K	V	D	S	-44LC	-SG
BASIC SERIES	PACKING	SEAT ^[1]	BODY MATERIAL ^[3]	CONNECTIONS	OPTIONS
M5K	H GRAFOIL®	V PTFE	C CS, A105 ^[4]	INLET/OUTLET^[5] 44 ½-inch MNPT x (3) ½-inch FNPT	HD Hydrostatic testing (100%) (MSS-SP-61)
	V PTFE	K PCTFE ^[2]	S SS, A479-316	46 ¾-inch MNPT x (3) ½-inch FNPT	SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005
		E PEEK	W SS, A479-316L	STYLE C Male plain end (CS is black oxide coated)	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.
		D Delrin®		LENGTH L Long body extension (4-inch insulation)	SS All 316 SS construction

NOTES

1. ¼-inch [6.4 mm] diameter orifice.
2. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
3. Call factory for optional materials.
4. CS is zinc TCP plated to prevent corrosion (except Male plain end is black oxide coated).
5. Call factory for optional connection sizes.

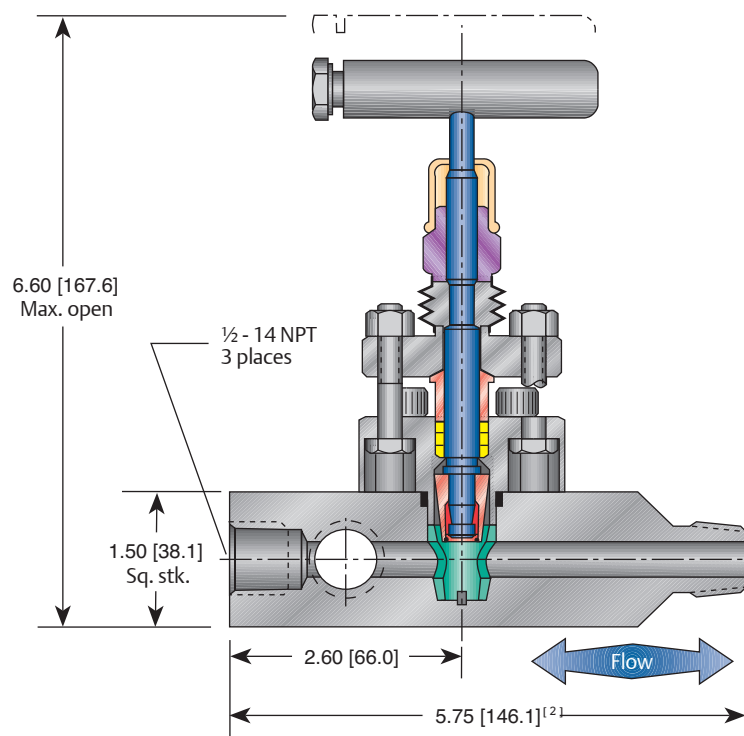


M5AK SERIES

OS&Y Gauge Valves

M5AK - Bonnet Assembly

M5AK Metal and Soft Seat Dimensions, inches [mm]



NOTES

1. Approximate valve weight:
Standard 4.0 lb [1.8 kg]
Long 4.5 lb [2.0 kg]
3/8-inch [9.5] diameter orifice
Valve Cv 3.0 maximum
2. Long body length 7.75-inch [196.8 mm]
4-inch insulation

M5AK Standard Materials

Metal seat				
Valve	Body	Stem	Yoke	Bolt
CS ^[1]	A105 CS	A581-303 SS	A351-CF8M	A574
316 SS	A479-316 SS	A276-316 SS	A351-CF8M	A574
316L SS	A479-316L SS	A276-316 SS	A351-CF8M	A574
SG ^[2]	A479-316 SS	Monel® R405	A351-CF8M	A574

Soft seat					
Valve	Body	Stem	Yoke	Bolt	Seat ^[3]
CS ^[1]	A105 CS	A581-303 SS	A351-CF8M	A574	Delrin®
316 SS	A479-316 SS	A276-316 SS	A351-CF8M	A574	Delrin®
316L SS	A479-316L SS	A276-316 SS	A351-CF8M	A574	Delrin®
SG ^[2]	A479-316 SS	Monel® R405	A351-CF8M	A574	Delrin®

NOTES

1. CS is zinc TCP plated to prevent corrosion (except male plain end is black oxide coated).
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005.
3. PTFE, PCTFE and PEEK are available.

OS&Y Gauge Valves

M5AK Pressure and Temperature Ratings

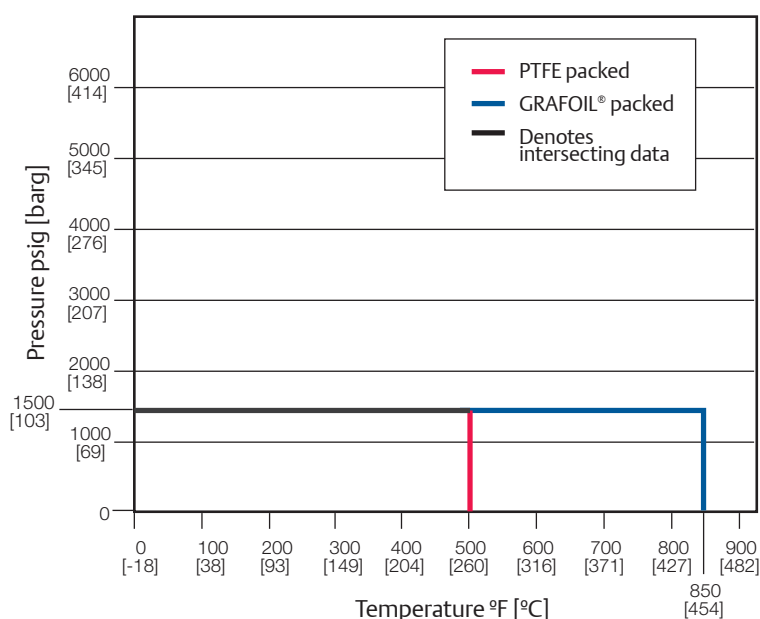
Metal seat		
Valve	PTFE packed	GRAFOIL® packed
CS ^[1]	1500 psig at 500°F [103 barg at 260°C]	1500 psig at 850°F [103 barg at 454°C]
316 SS	1500 psig at 500°F [103 barg at 260°C]	1500 psig at 1000°F [103 barg at 538°C]
316L SS	1500 psig at 500°F [103 barg at 260°C]	1500 psig at 850°F [103 barg at 454°C]
SG ^[2]	1500 psig at 500°F [103 barg at 260°C]	1500 psig at 850°F [103 barg at 454°C]

Soft seat				
Valve	Delrin®	PCTFE ^[3]	PEEK	PTFE
CS ^[1] , 316 SS, SG ^[2]	6000 psig at 200°F [414 barg at 93°C]	5000 psig at 200°F [345 barg at 93°C]	6000 psig at 200°F [414 barg at 93°C] 2000 psig at 400°F [138 barg at 204°C]	1000 psig at 150°F [69 barg at 66°C] 200 psig at 500°F [14 barg at 260°C]
316L SS	5000 psig at 200°F [345 barg at 93°C]	5000 psig at 200°F [345 barg at 93°C]	5000 psig at 200°F [345 barg at 93°C] 2000 psig at 400°F [138 barg at 204°C]	1000 psig at 150°F [69 barg at 66°C] 200 psig at 500°F [14 barg at 260°C]

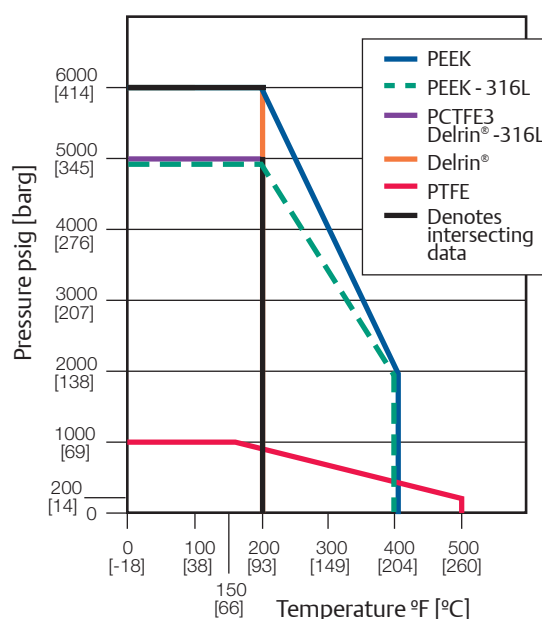
NOTES

1. CS is zinc TCP plated to prevent corrosion (except male plain end is black oxide coatexd).
2. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005.
3. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
4. Temperature (min.) -70°F (-57°C). Delrin -40°F (-40°C)

Pressure vs. Temperature - metal seat



Pressure vs. Temperature - soft seat



M5AK SERIES

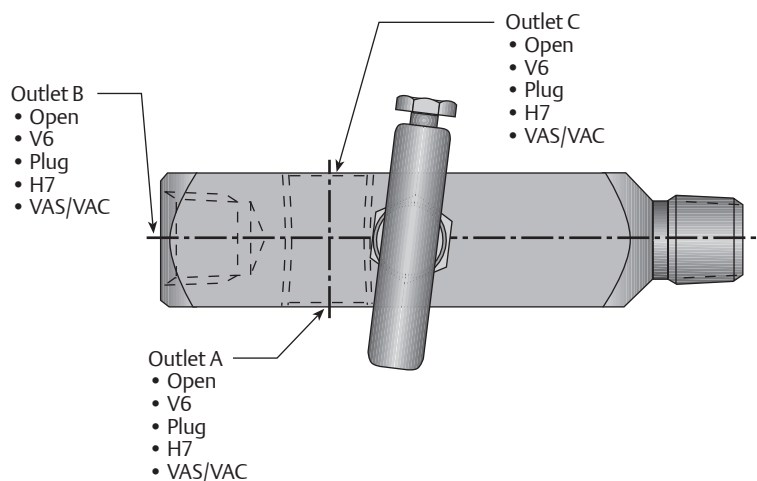
OS&Y Gauge Valves

Selection Guide - M5AK Metal Seat

M5AK	H	S	S	-44C	-SG
BASIC SERIES	PACKING	SEAT	BODY MATERIAL ^[1]	CONNECTIONS	OPTIONS
M5AK	H GRAFOIL®	S 316 SS	C CS, A105	INLET/OUTLET^[2] 44 ½-inch MNPT x (3) ½-inch FNPT	HD Hydrostatic testing (100%) (MSS-SP-61)
	V PTFE	M Monel®	S SS, A479-316	46 ¾-inch MNPT x (3) ½-inch FNPT	MS Monel stem
			W SS, A479-316L	STYLE C Male plain end (inlet) (CS is black oxide coated)	PMI00 PMI body only
				LENGTH L Long body for 4" 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

NOTES

1. Call factory for optional materials.
2. Call factory for optional connection sizes.



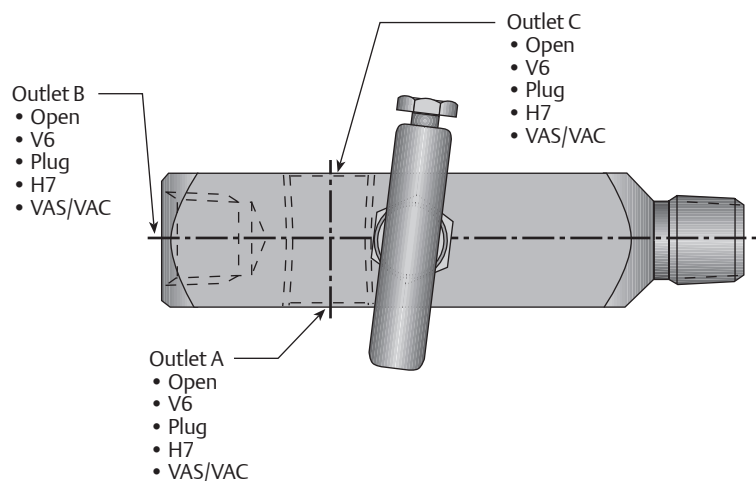
OS&Y Gauge Valves

Selection Guide - M5AK Soft Seat

M5AK	V	V	S	-44C	-SG
BASIC SERIES	PACKING	SEAT	BODY MATERIAL ^[2]	CONNECTIONS	OPTIONS
M5AK	H GRAFOIL®	V PTFE	C CS, A105	INLET/OUTLET^[3] 44 ½-inch MNPT x (3) ½-inch FNPT	HD Hydrostatic testing (100%) (MSS-SP-61)
	V PTFE	K Delrin®	S SS, A479-316	46 ¾-inch MNPT x (3) ½-inch FNPT	MS Monel stem
		E PEEK	W SS, A479-316L	STYLE C Male plain end (inlet) (CS is black oxide coated)	PMI00 PMI body only
		K PCTFE ^[1]		LENGTH L Long body for 4" insulation	SG SG (Sour Gas) meets the require- ments of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 SS All 316 SS construction

NOTES

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
2. Call factory for optional materials.
3. Call factory for optional connection sizes.

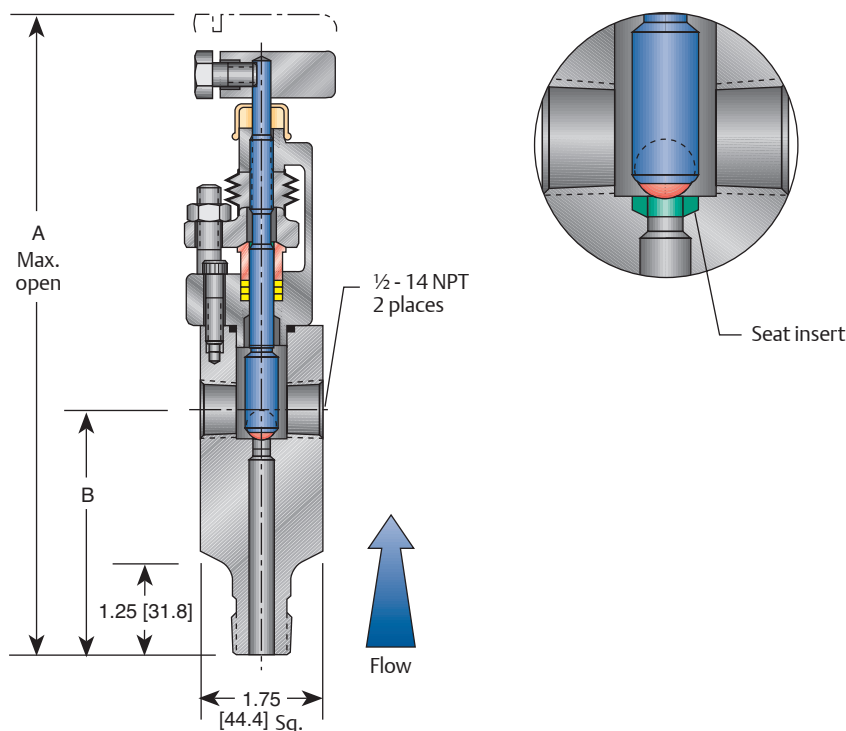


M5YK SERIES

OS&Y Gauge Valves

M5YK - Bonnet Assembly

M5YK dimensions, inches [mm]



Dimensions, inches [mm]

Body type	A	B	Weight lb [kg]
Standard	9.20 [233.7]	3.50 [88.9]	4.5 [2.0]
Long body	11.70 [297.2]	6.00 [152.4]	7.0 [3.2]

M5YK Standard Materials

Valve ^[1]	Body ^[2]	Stem	Ball	Yoke	Bolt
CS ^[3]	A696-Gr C	A276-316 SS	17-4PH	A351-CF8M	A286
316 SS	A479-316 SS	A276-316 SS	A276-316 SS	A351-CF8M	A286
316L SS	A479-316L SS	A276-316 SS	A276-316 SS	A351-CF8M	A286
SG ^[4]	A479-316 SS	Monel® R405	Monel® K500	A351-CF8M	A286
SG3 ^[5] [6]	Hastelloy® C-276	Hastelloy® C-276	Elgiloy®	A474-CW12MW	A286

NOTES

1. Orifice size 1/4-inch [6.4 mm].
Valve Cv 1.4 maximum.
2. Call factory for optional materials.
3. CS is zinc TCP plated to prevent corrosion.
4. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005.
5. For Hastelloy® and SG3 call factory for dimensions and weights.

OS&Y Gauge Valves

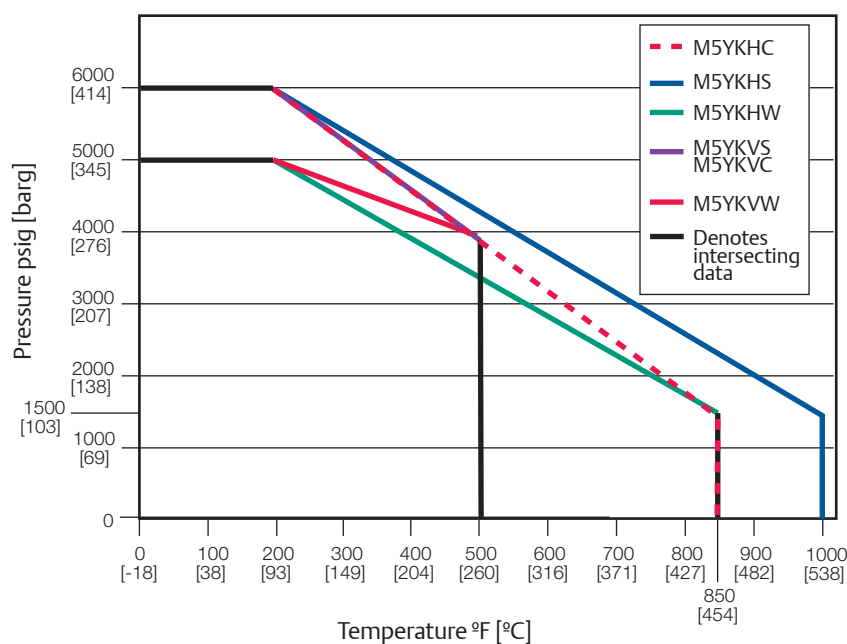
M5YK Pressure and Temperature Ratings

Valve	GRAFOIL® packing	PTFE packing
CS	6000 psig at 200°F [414 barg at 93°C] 1500 psig at 850°F [103 barg at 454°C]	6000 psig at 200°F [414 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C]
316 SS	6000 psig at 200°F [414 barg at 93°C] 1500 psig at 1000°F [103 barg at 538°C]	6000 psig at 200°F [414 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C]
316L SS	5000 psig at 200°F [345 barg at 93°C] 1500 psig at 850°F [103 barg at 454°C]	5000 psig at 200°F [345 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C]
SG ^[1] , SG3 ^[2]	6000 psig at 200°F [414 barg at 93°C] 1500 psig at 1000°F [103 barg at 538°C]	6000 psig at 200°F [414 barg at 93°C] 4000 psig at 500°F [276 barg at 260°C]

NOTES

1. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005.
2. Temperature (min.) -70°F (-57°C).

Pressure vs. Temperature



M5YK SERIES

OS&Y Gauge Valves

Selection Guide - M5YK

M5YK	H	I	S	-44C	-SG
BASIC SERIES	PACKING	SEAT*	BODY MATERIAL ^[1]	CONNECTIONS	OPTIONS
M5YK	H GRAFOIL®	I Integral (standard)	C ^[2] CS, A696 Gr C (A105)	INLET/OUTLET 44 ½-inch MNPT x (2) ½-inch FNPT	SG SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005
		S 316 SS insert (available in CS body only)	S 316 SS, A479-316	46 ¾-inch MNPT x (2) ½-inch FNPT	SS All 316 SS construction
	V PTFE	M Monel® insert	W 316 SS, A479-316L	48 1-inch MNPT x (2) ½-inch FNPT	XP ASME B31.1
				STYLE C Male plain end (inlet) (CS is black oxide coated)	SG3 (Sour Gas) NACE MR0175/ISO 15156-3 (latest edition)
		P Power version		LENGTH L Long body extension (4-inch [102 mm] insulation) (not available as -44L)	

* (orifice diameter ¼-inch [6.4 mm])

NOTES

1. Call factory for optional materials.
2. A696 Gr C is the bar stock equivalent to A105 carbon steel.