

Block and Bleed Gauge Valves

A valve with an interchangeable hard or soft seat and an integral bleed plug specifically designed to facilitate safe, compact, economical gauge installation and operation

General Application

M9 block and bleed valves are suitable for isolation and venting of static pressure gauge and instrument installations.

TECHNICAL DATA

Materials

CS, 316 SS, Monel®, Hastelloy®

Seats:

Metal and soft

Connections:

½" to ¾" (15 to 19 mm) NPT, welded also available

Pressure (max):

6,000 psig (414 barg)

Temperature (min/max):

-70°F to 1000°F
(-57°C to 538°C)



Features

- Packing below threads prevents lubricant washout, thread corrosion, process contamination and eliminates galling.
- Easily adjustable packing decreases replacement downtime and increases valve life.
- Metal-to-metal seated bleed plug enables safe pressure venting without breaking threaded connections.
- Safety back seating prevents stem blowout or removal during operation 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.
- One-piece handle design prevents loss due to vibration or during maintenance.
- Soft or metal seat for bubble-tight shutoff is field-replaceable for easy maintenance.
- Extended valve life: damaged soft seat can be removed, leaving a metal seated valve.

M9 SERIES

Block and Bleed Gauge Valves

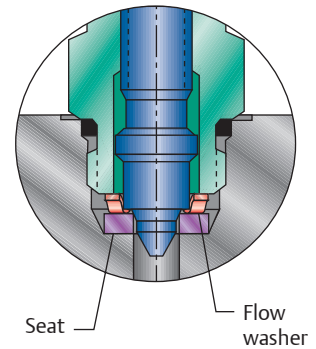
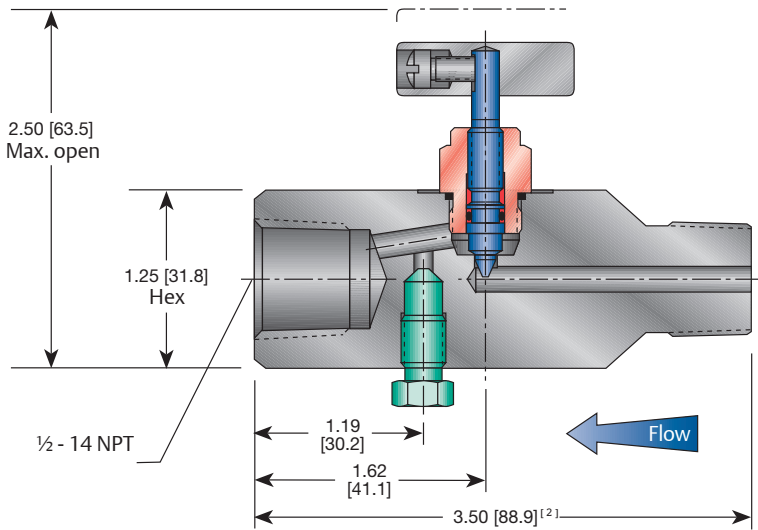
Bonnet Assembly Options

The M9 features the mini-valve bonnet assembly, with a compact design and a one-piece rotating stem which is 'V' tipped with a shoulder for use as a metal or soft seated valve. The stem threads are rolled and lubricated to prevent galling and reduce operating torque.

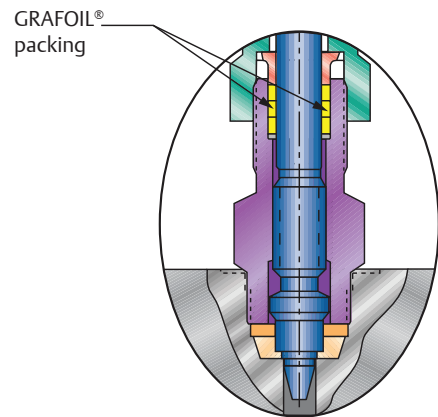
The mini-valve bonnet comes in three designs:

- An adjustable PTFE stem packed bonnet which is suitable for panel mounting via external bonnet threads.
- O-ring bonnet assemblies which use a FKM O-ring seal below the stem thread.
- A graphite-packed bonnet suitable for temperatures of up to 1000°F (538°C) which is available for 316 SS valves only.
- -70°F (-57°C) available on 316 Teflon® and GRAFOIL® packed bonnets and integral, PEEK and PCTFE seats. Delrin® Seats -40°F (-40°C)

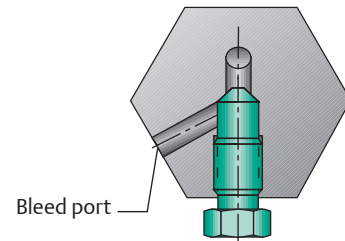
M9RIS - 44 dimensions with O-ring bonnet^[1], inches [mm]



Optional Soft Seat

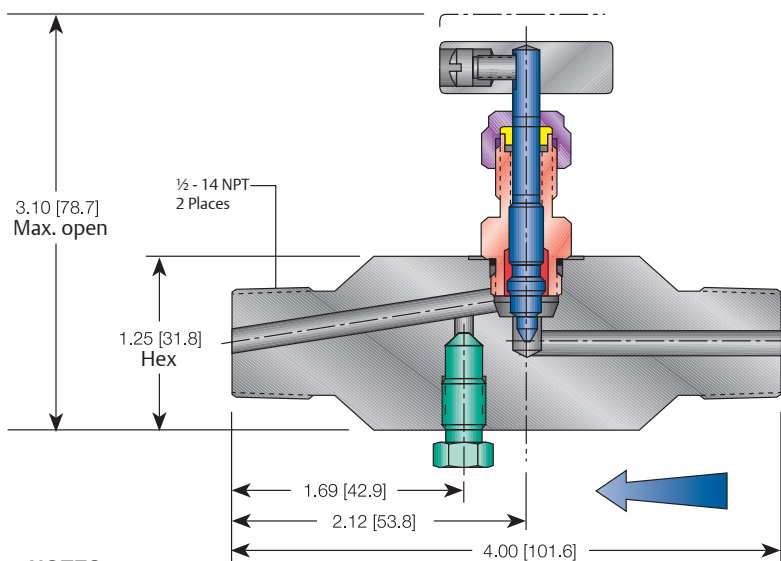


GRAFOIL® Packed Bonnet



Section Through Bleed Plug

M9VIS - 4M dimensions with PTFE bonnet^[1], inches [mm]



NOTES

1. Bonnets interchangeable between all body configurations.
2. 4.00-inch [101.6 mm] for -44C, -46C.
3. M9(-)4 body length 2.88-inch (73 mm).
4. For Hastelloy® and SG3 call factory for dimensions and weights.
5. Hastelloy® is a registered trademark of Haynes International.

Block and Bleed Gauge Valves

Standard Materials

| Metal seat | | | | | | |
|----------------------|------------------------------|------------------------------|------------------------------|--|------------------------------|----------|
| Valve ^[1] | Body | Bonnet | Stem | Packing | Bleed plug | Seat |
| CS ^[2] | A108 CS | A108 CS | A581-303 SS | PTFE or FKM O-ring | A108 CS | Integral |
| 316 SS | A479-316 SS | A479-316 SS | A276-316 SS | PTFE, FKM O-ring or Grafoil [®] | A276-316 SS | Integral |
| SG ^[3] | A479-316 SS | A479-316 SS | Monel [®] 400 | PTFE | A279-316 SS | Integral |
| Monel [®] | Monel [®] R405 | Monel [®] R405 | Monel [®] R405 | PTFE or Grafoil [®] | Monel [®] R405 | Integral |
| SG3 ^[8] | Hastelloy [®] C-276 | Hastelloy [®] C-276 | Hastelloy [®] C-276 | PTFE or Grafoil [®] | Hastelloy [®] C-276 | Integral |

| Soft seat | | | | | | | |
|----------------------|------------------------------|------------------------------|------------------------------|--------------------|------------------------------|------------------------------|----------------------|
| Valve ^[1] | Body | Bonnet | Stem | Packing | Flow washer | Bleed plug | Seat ^[4] |
| CS ^[2] | A108 CS | A108 CS | A581-303 SS | PTFE or FKM O-ring | 316 SS | A108 CS | Delrin [®] |
| 316 SS | A479-316 SS | A479-316 SS | A276-316 SS | PTFE or FKM O-ring | 316 SS | A276-316 SS | PCTFE ^[5] |
| SG ^[3] | A479-316 SS | A479-316 SS | Monel [®] 400 | PTFE | 316 SS | A276-316 SS | PCTFE ^[5] |
| SG3 ^[8] | Hastelloy [®] C-276 | Hastelloy [®] C-276 | Hastelloy [®] C-276 | PTFE | Hastelloy [®] C-276 | Hastelloy [®] C-276 | PCTFE ^[5] |

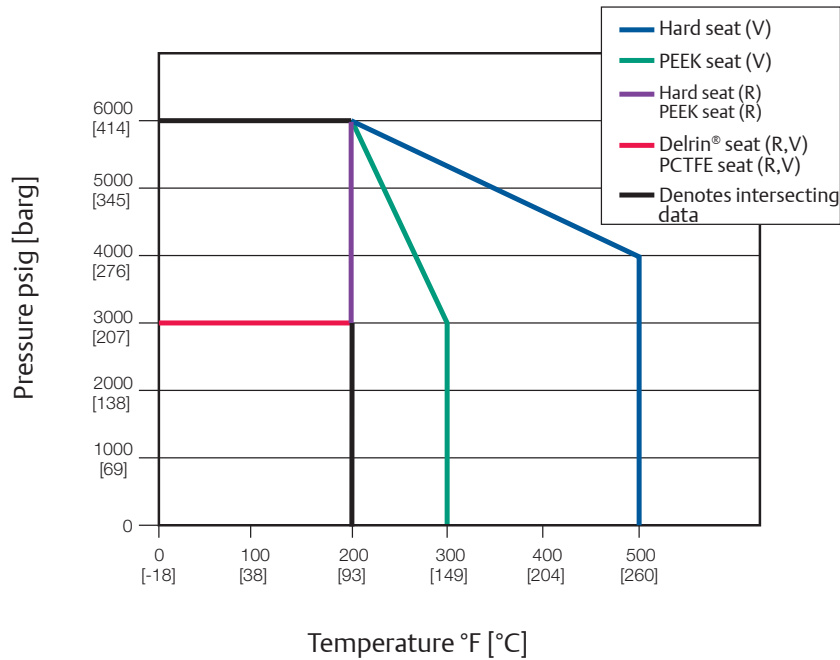
NOTES

1. Approximate valve weight 1.2 lb [.54 kg]. Orifice size .136-inch [3.5 mm] diameter. Valve Cv hard seat .25 maximum. Valve Cv soft seat .24 maximum.
2. CS is zinc TCP plated to prevent corrosion (except male plain end is black oxide coated).
3. SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005.
4. PEEK available.
5. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F[®].
6. Delrin[®] is a registered trademark of E.I. duPont de Nemours and Company.
7. Monel[®] is a registered trademark of the Special Metals Corporation.
8. SG3 (Sour Gas) meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)).

M9 SERIES

Block and Bleed Gauge Valves

Pressure vs. Temperature



Pressure and Temperature Ratings

| Ratings with PTFE bonnet | |
|----------------------------------|---|
| Hard seat | 6000 psig at 200°F [414 barg at 93°C] |
| | 4000 psig at 500°F [276 barg at 260°C] |
| Delrin® and PCTFE ^[5] | 3000 psig at 200°F [207 barg at 93°C] |
| PEEK seat | 6000 psig at 200°F [414 barg at 93°C] |
| | 3000 psig at 300°F [207 barg at 149°C] |

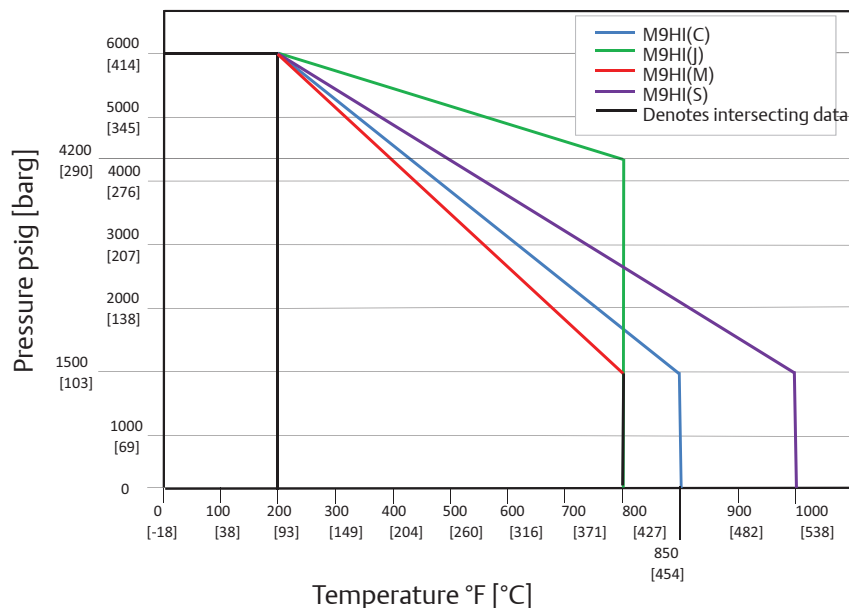
| Ratings with O-ring bonnet | |
|----------------------------------|--|
| Hard seat | 6000 psig at 200°F [414 barg at 93°C] |
| Delrin® and PCTFE ^[5] | 3000 psig at 200°F [207 barg at 93°C] |
| PEEK seat | 6000 psig at 200°F [414 barg at 93°C] |

(V)= with PTFE bonnet assembly
 (R)= with O-ring bonnet assembly
 (H)= with GRAFOIL® bonnet assembly (1000°F (538°C))

MINIMUM TEMPERATURE:

Carbon Steel -20°F (-29°C); 316SS -70°F (-57°C), except for O-ring -20°F (-29°C); and 316 SS Teflon bonnet delrin seats -40°F (-40°C)

Pressure vs. Temperature



Ratings with GRAFOIL® bonnet (hard seat)

| | |
|-----------------|--|
| Carbon steel | 6000 psig at 200°F (414 barg at 93°C) 1500 psig at 850°F (103 barg at 454°C) |
| Stainless steel | 6000 psig at 200°F (414 barg at 93°C) 1500 psig at 1000°F (103 barg at 538°C) |
| Hastelloy® | 6000 psig at 200°F (414 barg at 93°C) 4200 psig at 800°F (290 barg at 427°C) |
| Monel® | 6000 psig at 200°F (414 barg at 93°C) 1500 psig at 800°F (103 barg at 427°C) |

Block and Bleed Gauge Valves

Selection Guide

| M9 | V | I | S | -44 | C | -SG |
|--------------|-------------------------------------|----------------------|----------------|---|---|--|
| BASIC SERIES | PACKING | SEAT | BODY MATERIALS | CONNECTIONS | CONNECTION STYLE | OPTIONS |
| M9 | V PTFE bonnet (standard for 316 SS) | I Integral | C Carbon steel | 4 ½-inch FNPT (outlet) x ½-inch FNPT (inlet) | C Male plain end (CS is black oxide coated) | HD Hydrostatic testing (100%) (MSS-SP-61) |
| | R O-ring bonnet | D Derlin® (standard) | S 316 SS | 4M ½-inch MNPT (outlet) x ½-inch MNPT (inlet) | | MS Monel® stem |
| | H GRAFOIL® (1000°F(538°C) max) | E PEEK | M Monel® | 44 ½-inch FNPT (outlet) x ½-inch MNPT (inlet) | | OC00 Oxygen cleaning (316 SS only) |
| | | K PCTFE* | J Hastelloy® | 46 ½-inch FNPT (outlet) x ¾-inch MNPT (inlet) | | PHB Phenolic black handle |
| | | | | | | PM Panel mount (PTFE packed only) |
| | | | | | | SG Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions ≤ 50 mg/l (ppm)) and NACE MR0103-2005 (SS only) |
| | | | | | | SG3 Sour Gas meets the requirements of NACE MR0175/ISO 15156 (for chloride conditions > 50 mg/l (ppm)) |

* PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.
 * SS - All 316 SS construction.