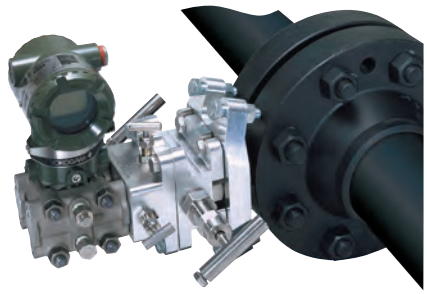
ANDERSON GREENWOOD SADDLEMOUNT®

MANIFOLD AND ISOLATION VALVE MOUNTING SYSTEM

Manifold and Isolation Valve Mounting System for Direct Mounting DP Transmitters



Introduction

The Anderson Greenwood SaddleMount® has been developed to overcome the problems associated with traditional transmitter/manifold installations that are connected with impulse lines. Traditional remote mounted DP transmitter/manifold installations with impulse lines were first used over 50 years ago to allow technicians access to transmitters that required regular calibration and continuous maintenance. Transmitter technology has been significantly increased, and today's high performance transmitters require less maintenance, and longer periods between calibration.

Impulse lines that connect the orifice flange union to the transmitter/manifold remain a constant source of maintenance and can cause dramatic measurement errors.

Typical problems associated with impulse lines installation:

- Plugging/Blocking
- Hydrostatic head error
- Gauge line error (pulsation induced)
- Leakage of process and environment hazards
- High installation and maintenance costs
- Problems associated with pipework routing and space
- Brackets and pipe supports for manifold/transmitter
- Freezing

Major chemical and gas companies have experienced measurement errors of up to 20% on poorly installed or long impulse lines.

Due to the problems associated with impulse lines, NPT screwed connections and resulting high maintenance costs, many leading companies are mandating that DP transmitter/manifold assemblies are mounted directly onto the orifice flange, negating the use of impulse line pipe work. Installing high accuracy DP Transmitters and Manifolds at the end of long impulse lines can prove to be a false economy. Anderson Greenwood developed the SaddleMount® to provide a compact, leak free and safe modular system with:

- Rigid connection to the orifice flange
- High performance isolation/block valve module
- Choice of instrument modules
- No impulse lines or brackets

Orifice flange isolation/block valves provide an additional source of leakage and installation issues. Many companies require that any pressure taps must have double block and bleed for high pressure or toxic process to provide guaranteed safe isolation and safety for technicians.

During field installation, conventional mounting systems require the assembly of several components. The SaddleMount®, assembled and tested with the transmitter, provides a "one box packaging" that eliminates this field installation problem.

Applications

The SaddleMount® system is designed for close coupling DP transmitters to orifice flange unions. The system can be used on DP measurement for gas, liquids and steam. The SaddleMount® is totally self draining and can be mounted horizontally or vertically. The system features a straight-through 3/8" [10 mm] bore directly from the orifice taps to the transmitter sensing module which reduces pulsation induced error. Pulsation error is one of the leading causes of inaccurate transmitter measurement. The system allows mounting of traditional DP or co-planer style (Rosemount 3051) DP transmitters with a choice of 3- or 5-valve instrument manifolds for power, process or natural gas measurement.

The system does not require impulse lines, thereby considerably reducing installation and maintenance costs.

The block module shown at right illustrates the double block and bleed option used in applications where a line block valve is required. It also provides guaranteed safe isolation and safety for technicians.

Features and benefits

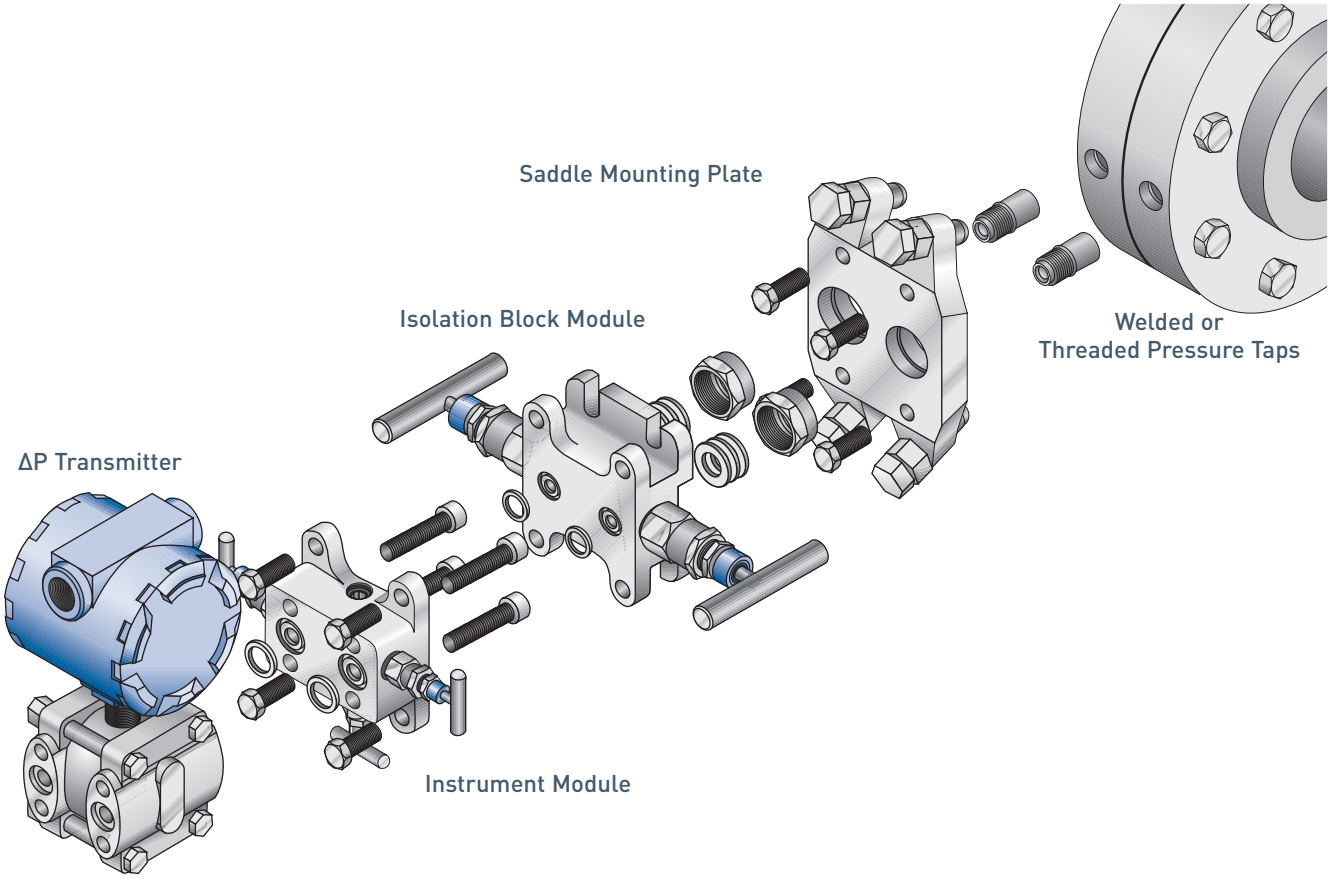
- Reduced weight and space envelope
- Close coupling compact system
  - Rigid connection to the orifice flange, no support brackets.
- Line class isolation (block) module valves 3/8" [10 mm] bore.
  - Provides compact replacement to bulky conventional isolation/root valves.
  - Choice of single block or double block and bleed configurations.
  - Choice of multi-turn rising stem plug valve with metal or soft seats.
  - Valves rated to ANSI 2500 - 6000 psig [414 barg] maximum.
  - Fully roddable.
- Suitable for gas liquid service
  - System mounts vertically or horizontally.
  - Fully self-draining.
- All flanged connections, reducing number of potential leakage points.
  - Reduced environmental hazards and process leakage.
  - No threaded process connections on welded nipples.
- Constant orifice size 3/8" [10 mm] bore from taps to transmitter.
  - Reduction of flow or pulsation induced gauge line error.
  - Increased transmitter measurement accuracy and repeatability.
- Choice of transmitter service modules.
  - Mounts single or dual transmitters (for gas measurement applications).
  - Mounts conventional Bi-planar electronic flow meters or Coplanar™ style transmitters.
  - Choice of 3-valve, 5-valve (gas) or 5-valve (power) pattern instrument modules.
- Factory assembled complete systems.
  - Fully assembled with tag plate identification.
  - Fully pressure tested and pre-packaged.
  - 70% savings in site time and installation cost.
  - "One box packaging" delivered to the field.
- No impulse lines required.
  - 65% savings on maintenance and operational costs.
  - No pipe work installation or manifold bracket.
  - No pipe work routing or space problems.
  - No leakage of process causing potential environment hazards.
  - No impulse line plugging, freezing or cleaning.
  - No hydrostatic head induced transmitter error.
  - Elimination of pulsation error.
  - Reduction in process loss on system depressurisation.
  - Enhanced transmitter performance and accuracy.

Product overview

Developed by the industry leader in instrumentation valves, the SaddleMount® represents the first compact manifold/transmitter mounting system that offers modular construction combining the following components:

- FIRESAFE
- The orifice flange taps feature 3/8" [10mm] bores which can be welded (optional thread) into the orifice flange unions (2.125" [54 mm] centers).
- Saddle Mounting Plate
  - Provides rigid connection to orifice flange.
  - Connects isolation/block module to orifice flange taps.
- Isolation Block Module, 3/8" [10mm] bore plug valve (metal or soft seated).
  - Flanges directly to tap connection.
  - Available in either single block or double block and bleed configurations.
- Instrument Module
  - Mounts directly to isolation/block module with flange connections.
  - Choice of 3-valve, 5-valve power or 5-valve gas pattern styles. Integral dual instrument connections (DP and P) are available for gas measurement applications.

Configurations

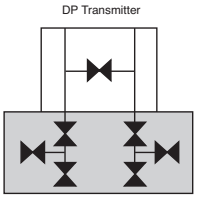


Instrument modules

The SaddleMount® instrument module features H7 3/16" [5.0 mm] and H5 1.3" [3.5 mm] bore needle/globe valves for venting and equalize duty. Instrument modules are available in three configurations to suit end user preference and process measurement applications:

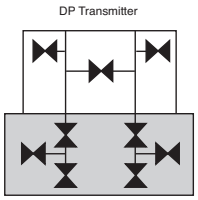
IM3 3-valve

IM3, Single Equalize
- Single Equalize
- 1/4" NPT female test connections to both high and low pressure taps



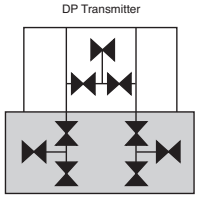
IM5P 5-valve power pattern

IM5P, Single Equalize With Vent Valves
- Single equalize
- 1/4" NPT female vent ports to both high and low pressure taps controlled by 2 x vent valves



IM5G 5-valve gas pattern

IM5G, Double Equalize, Single Vent
- Double equalize to both high and low pressure taps
- Single 1/4" NPT female vent port controlled by single vent valve
- 1/4" NPT female test connections to both high and low pressure taps.



Standard Configuration for Instrument Module

Double Block Configuration shown

Isolation/Block modules

The SaddleMount® isolation/block module features high performance 3/8" [10 mm] bore rising plug isolation valves with a choice of soft or metal seats. The block module provides primary isolation, with bubble-tight performance. The isolation/block modules can be FIRESAFE to API 607.

Isolation/block module is available in two configurations to suit end user preference and piping code requirements:

- SB, Single Block
  - Single isolation to both high and low pressure tap connections
- DB, Double Block and Bleed
  - Double block, with intermediate bleed to both high and low pressure tap connections
  - Bleed valves are H7's
  - Bleed vent ports are 1/4" [64 mm] NPT female

BD, RD, RDC, optional mounting of dual transmitters

Consult factory for details.

Bonnet Technology

Valve technical specifications

The IntelliMount™ features high performance valves for reliable bubble-tight performance.

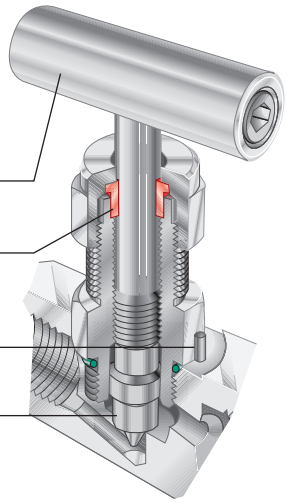
Isolation is achieved with the "H" series plug valve or the optional FIRESAFE "P" (use FS designation for FIRESAFE service) non-rotating stem bonnet assembly. Venting and equalizing are achieved with the H7/H5 needle/globe valve.

Features and benefits

- Body to bonnet pressure seals below threads preventing process from corroding bonnet retention threads which are loaded in compression for additional strength.
- Back seat design provides secondary stem seating and prevents stem blowout.
- Adjustable gland follower allows easy access to adjust the packing gland.
- Stem threads are located above the stem packing and are completely isolated from the process.
- Stem packing with GRAFOIL® or Teflon® for bubble-tight sealing.
- Optional FIRESAFE block valves to AP1 607.

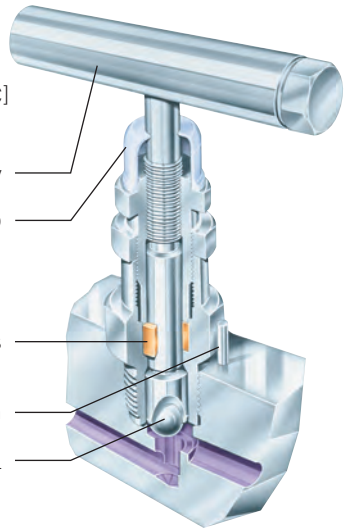
H5 Bonnet for Venting and Equalize Service

- Needle valve
- 0.14" [3.5 mm] bore
- Rotating stem and plug
- Soft or metal seats
- 6000 psig [414 barg]
- Soft seat - Delrin®, Teflon®, PEEK
- Hard seat - 316/316L SS



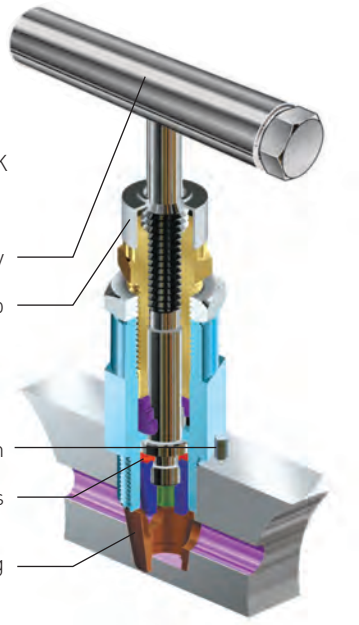
H7 Bonnet for Venting and Equalize Service

- Needle/globe valve
- 0.2" [5.0 mm] bore
- Free swivel ball end stem
- 6000 psig [414 barg]
- -71°F to 1000°F [-57°C to 538°C]



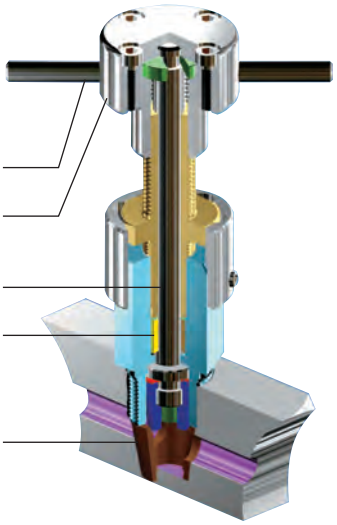
H Bonnet for Isolation Service

- Rising plug valve
- 3/8" [10 mm] bore
- Rotating stem and plug
- Soft or metal seats
- 6000 psig [414 barg]
- Soft seat - Delrin®, Teflon®, PEEK
- Hard seat - 316/316L SS

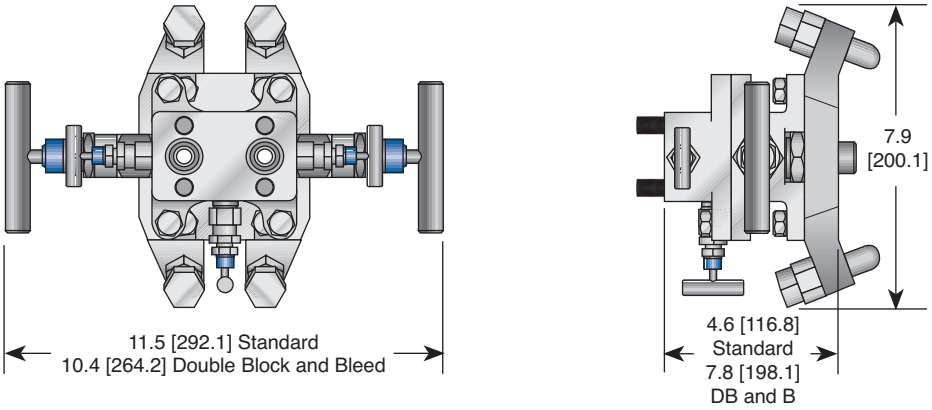


P Bonnet for FIRESAFE Service

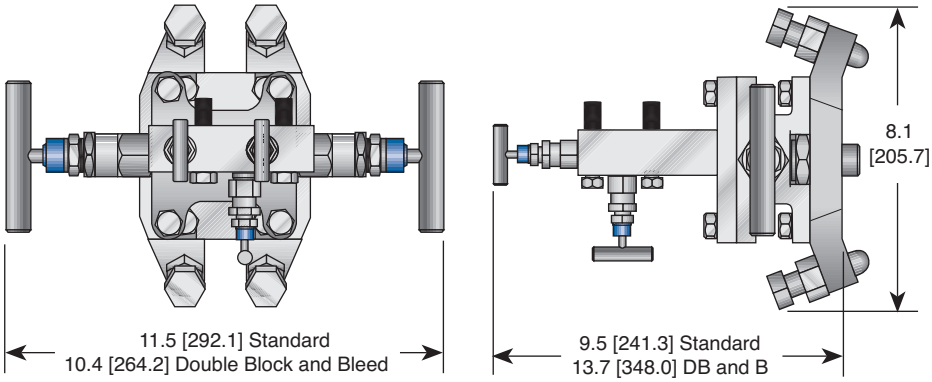
- API 607 FIRESAFE
- Rising (non-rotating stem) plug valve
- 3/8" [10 mm] bore
- 6000 psig [414 barg]
- Hard seat - 316/316L SS



Dimensions, inches [mm] - Horizontal shown



BI-Planar Model (B option)



Coplanar™ Model (RC and R options)

Notes:

1. Delrin® and Teflon® are registered trademarks of the E.I. duPont de Nemours and Company.
2. Monel® is a registered trademark of Special Metals Corporation.
3. Hastelloy® is a registered trademark of Haynes International.
4. GRAFOIL® is a registered trademark of GrafTech International Ltd.
5. Viton® is a registered trademark of DuPont Performance Elastomers.

Materials

Technical Data

Standard material traceability

Standard material traceability to EN10204-3.1, 50049-3.1, instrument and isolation/block modules bodies only.

Valve packings and flange seals

Teflon® (Standard)
- Maximum pressure: 6,000 psig [414 barg]
- Maximum temperature: 500°F [260°C]

GRAFOIL® (Optional)
- Maximum pressure: 6,000 psig [414 barg]
- Maximum temperature: 1000°F [538°C]

Seat temperatures

Delrin® 200°F [93°C] maximum
Teflon® 500°F [260°C] maximum
PEEK 400°F [204°C] maximum

Standard

SS Valve

Body	—	316 SS
Bonnet	—	316 SS
Stem	—	316 SS
Non-Wetted Parts	—	Austenitic SS

SG Valve

Body	—	A105 CS
Bonnet	—	316 SS
Stem	—	316 SS
Non-Wetted Parts	—	Austenitic SS

Special

For severe service, manifolds are available in the following exotic materials:

Monel® Alloy 400
Duplex S31803
Hastelloy® C276

Bolting

All SaddleMount® assemblies are supplied with high tensile steel bolts as standard. Optional stainless steel bolts (B8M Class 2) are available; please specify when ordering.

Note:

1. Coplanar™ is a trademark of Rosemount, Inc.

Ordering Information

SBM	SB	1	T	S	S	V	V	IM3	H	V	I	B	-SG

Block Module
SP – Single block plug 3/8" orifice
DP – Double block and bleed with plug valves 3/8" orifice
SB – Single block ball valve 3/8" orifice
DB – Double block and bleed with ball valves 3/8" orifice
SN – Single block plug 3/8" orifice FIRESAFE to API 607
DN – Double block and bleed plug 3/8" orifice FIRESAFE to API 607

Orifice Flange Size
1 – 2 thru 12"
2 – 14 thru 28"
3 – 28" + or special flange

Orifice Flange Tap Connection Type
T – Threaded 1/2" NPT Male
W – Socket Weld 1/2" NB pipe
S – Other (please specify)

Orifice Tap Connection Material
S – 316 SS

Block/Instrument Module Body Material
S – 316 SS

Block Module Packing
V – Teflon®
H – GRAFOIL®

Block Module Seat Material
S – 316 SS
V – Teflon®
M – Monel®
D – Delrin®

Instrument Module
IM3 – (instrument module has single equalize valve, 2 x test connections)
IM5P – (instrument module has single equalize and 2 vent valves)
IM5G – (instrument module has double equalize and single vent valve, 2 x test connections)

Tap Orientation
V – Vertical
H – Horizontal

Instrument Module Packing
V – Teflon®
H – GRAFOIL®

Instrument Module Seat
I – Integral
D – Delrin®

Instrument Module, Transmitter Connection
B – Bi-planar (e.g., 2.125" transmitter, conventional type)
R – Coplanar™ (Rosemount 3051/3095 with coplanar flange - 2.125" connections)
RC – Coplanar™ (Rosemount 3051/3095 without coplanar flange - 1.3" connections)
BD – Bi-planar dual instrument mounting (e.g., 2.125" transmitter, conventional type)
RD – Coplanar™ (dual instrument mounting with coplanar flange - 2.125"connections)
RDC – Coplanar™ (dual instrument mounting without coplanar flanges - 1.3" connections)

Options
SG – (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for Chloride conditions ⩽ 50 mg/l [ppm]) and NACE MR0103-2005 (SS valves only) (not available for O-ring packed valves)
SSA[1] – SS Flange Bolt (grade 18-8) - maximum pressure rating 4500 psi [310 barg]
SSB – 316 SS Flange Bolt (B8M Class 2) - will provide full pressure rating
SSC[1] – 316 Flange Bolt (B8M) - maximum pressure rating 4500 psi [310 barg]
OC – Cleaned for Oxygen Service

Note:
1. 316 SS bolts lower pressure ratings to a maximum of 4500 psi [310 barg]. Consult factory for full rating with 316 SS bolts.

PENTAIR VALVES & CONTROLS

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