

Manifolds - Three/Five Valve

A compact, leak free, safe, modular 3 or 5 valve system that enables DP transmitter/manifold assemblies to be mounted directly onto an orifice flange

General Application

The totally self draining system allows horizontal or vertical mounting of traditional DP or Coplaner™ style (Rosemount® 3051) DP transmitters for power, process or natural gas measurement of gas, liquids and steam.

TECHNICAL DATA

Materials

316 SS

Seats:

Metal or soft

Connections:

Threaded and socket weld

Orifice sizes:

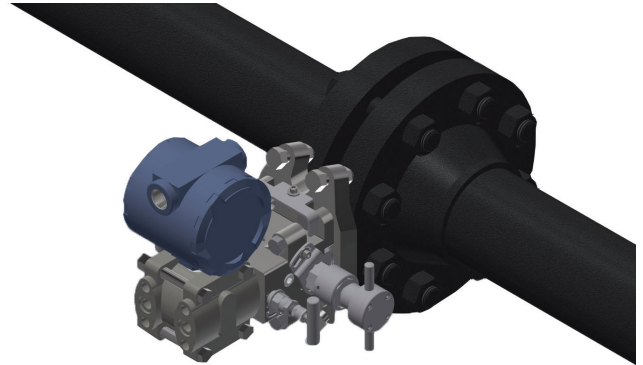
3/8" (10 mm) bore

Pressure (max):

6000 psig (414 barg) standard

Temperature range (min/max):

-70°F to 1000°F
(-57°C to 538°C)



Features

- Reduced weight and space envelope.
- Close coupling compact system provides rigid connection to the orifice flange without support brackets.
- High performance isolation/block valves module with 3/8" (10 mm) roddable bore provides compact replacement to bulky conventional isolation/root valves.
- Choice of single block or double block and bleed configurations.
- Direct mount system eliminates impulse lines, saving 65% on installation, maintenance and operational costs.
- All flanged connections reduces number of potential leakage points and environmental hazards.
- Constant straight through bore to transmitter reduces pulsation-induced gauge line error and enhances transmitter performance.
- Choice of transmitter service modules.
- Factory assembled and tested complete systems provide 70% savings in site time and costs. Total installation ships in one package to the field.

SADDLEMOUNT® SERIES

Manifolds - Three/Five Valve

Product Overview

The SaddleMount® system has been developed to overcome the problems associated with traditional transmitter/manifold installations that are connected with impulse lines, which were first used over 50 years ago to allow technicians access to transmitters that required regular calibration and continuous maintenance. Transmitter technology has advanced significantly 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 measurement errors of up to 20% on poorly installed or long impulse lines. Typical problems include:

- 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

These problems, NPT screwed connections and resulting high maintenance costs, have led many companies to mandate that DP transmitter/manifold assemblies are mounted directly onto the orifice flange, negating the use of impulse line pipe work.

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 processes 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 'one box packaging' that eliminates field installation problems.

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SaddleMount® Benefits

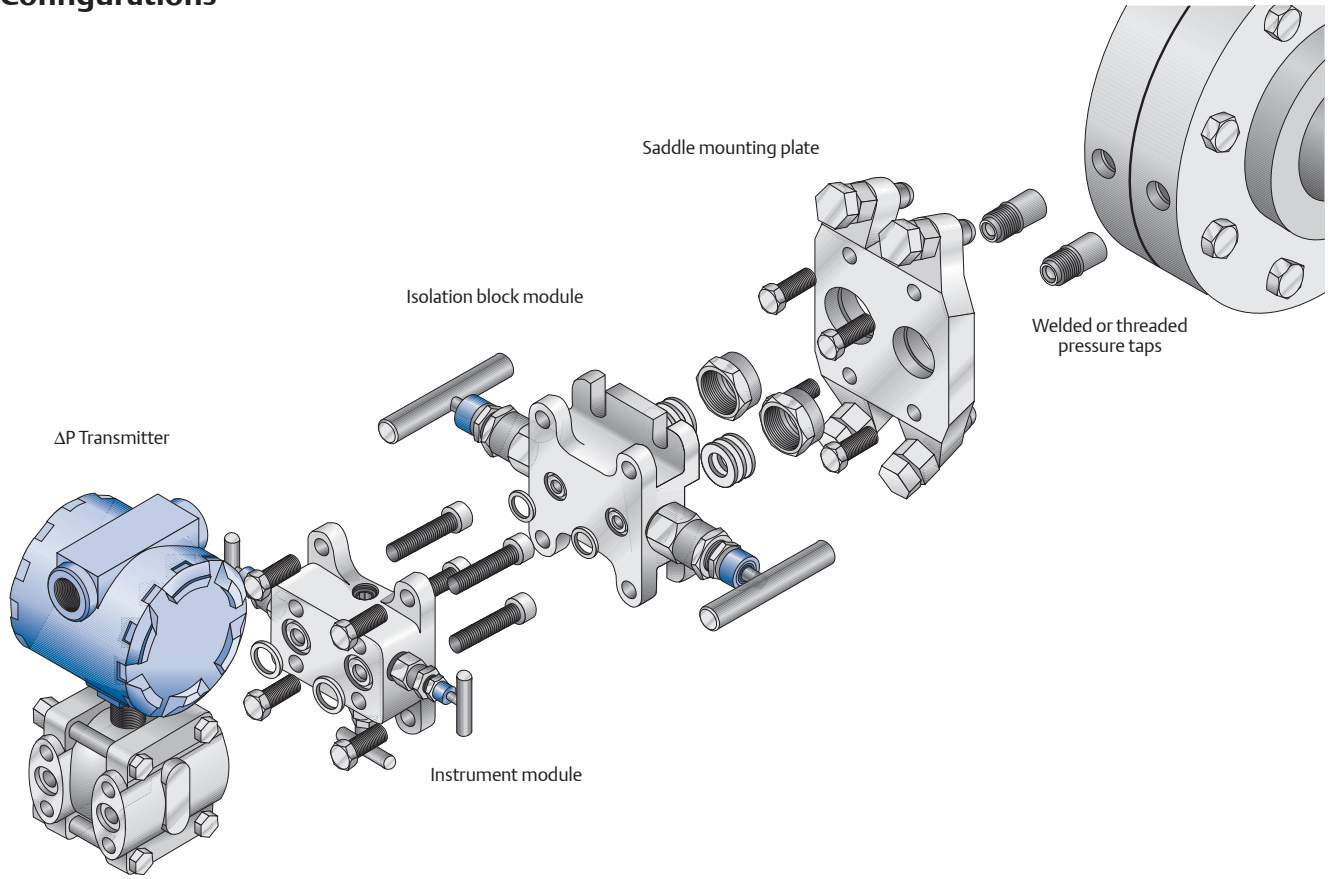
- **Elimination of impulse lines**
 - No pipe work installation or manifold bracket.
 - No pipe work routing or space problems.
 - No process leakage causing potential environment hazards.
 - No impulse line plugging, freezing or cleaning.
 - No hydrostatic head induced transmitter error.
 - Elimination of pulsation error.
 - Reduction in process loss on system depressurisation.
 - Enhanced transmitter performance and accuracy.
- **FIRESAFE option**
- **Orifice flange taps that feature 3/8" (10 mm) 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" (10 mm) 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.



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Configurations



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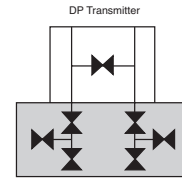
Instrument Modules

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

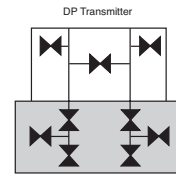
- Single equalize
- ¼" NPT female test connections to both high and low pressure taps



IM5P 5-valve power pattern

IM5P, single equalize with vent valves

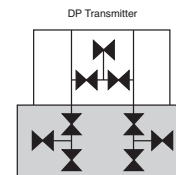
- Single equalize
- ¼" NPT female vent ports to both high and low pressure taps controlled by 2 x vent valves



IM5G 5-valve gas pattern

IM5G, double equalize, single vent

- Double equalize to both high and low pressure taps
- Single ¼" NPT female vent port controlled by single vent valve
- ¼" NPT female test connections to both high and low pressure taps.



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 fire-safe 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 ¼" (64 mm) NPT female

BD, RD, RDC, optional mounting of dual transmitters

Consult factory for details.

-  Standard configuration for instrument module
-  Double block configuration shown

SADDLEMOUNT® SERIES

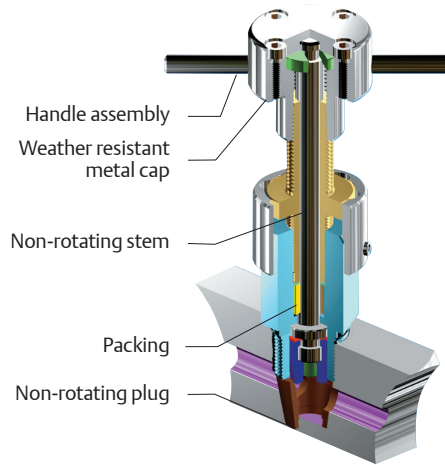
Manifolds - Three/Five Valve

Dimensions

P Bonnet for firesafe service

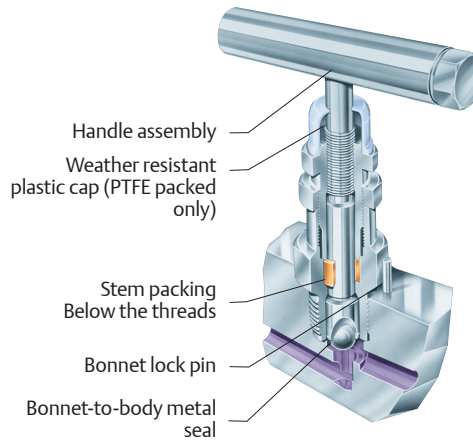


- API 607 Fire-safe
- Rising (non-rotating stem) plug valve
- 3/8 inch (10 mm) bore
- 6000 psig (414 barg)
- Hard seat - 316/316L SS



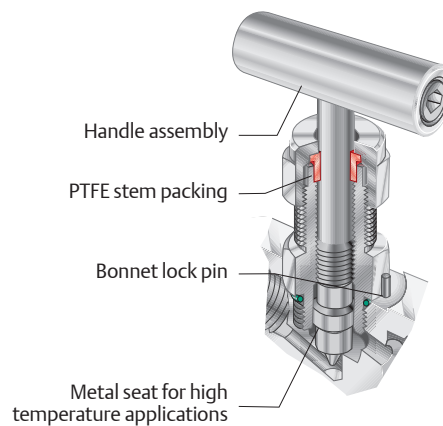
H7 Bonnet for venting and equalize service

- Needle/globe valve
- 0.2 inch (5.0 mm) bore
- Free swivel ball end stem
- 6000 psig (414 barg)
- -70°F to 1000°F (-57°C to 538°C)



H5 Bonnet for venting and equalize service

- Needle valve
- 0.14 inch (3.5 mm) bore
- Rotating stem and plug
- Soft or metal seats
- 6000 psig (414 barg)
- Soft seat - Delrin®, PTFE, PEEK
- Hard seat - 316/316L SS



Manifolds - Three/Five Valve

Bonnet Technology

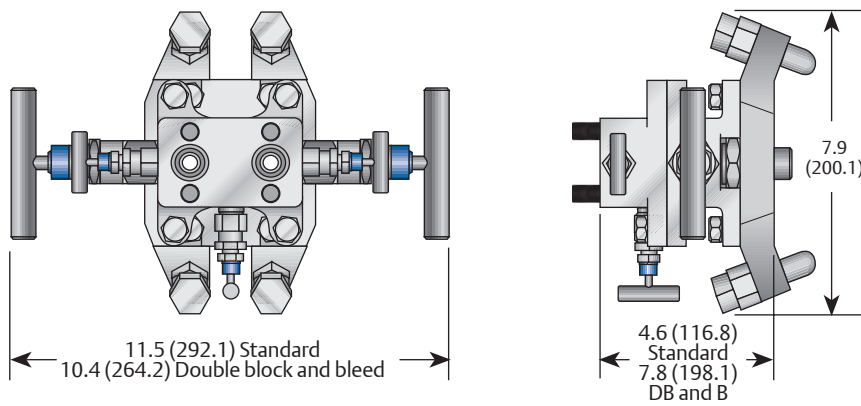
Valve Technical Specifications

The Saddlemount® features high performance valves for reliable bubble-tight performance. Isolation is achieved with the optional FIRE-SAFE 'P' (use FS designation for FIRE-SAFE service) non-rotating stem bonnet assembly. Venting and equalizing are achieved with the H7/H5 needle/globe valve.

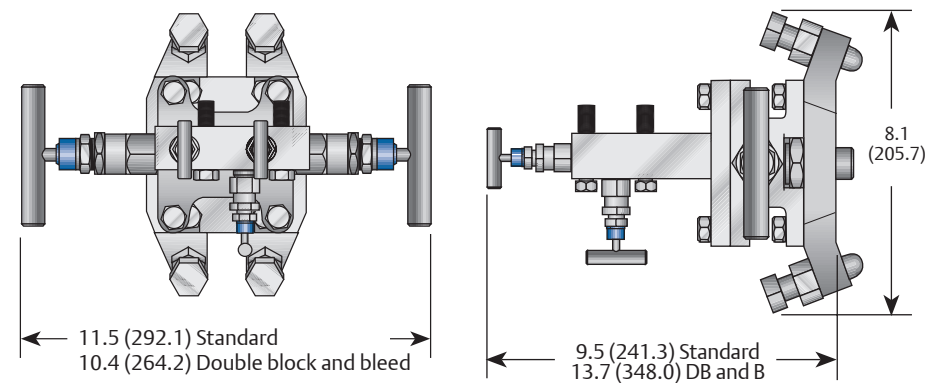
Features and Benefits

- 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 PTFE for bubble-tight sealing.
- Optional Fire-safe block valves to AP1 607.

Dimensions



BI-Planar model (B option)



Coplanar™ model (RC and R options)

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Technical data

Standard material traceability (body)

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

Valve packings and flange seals

PTFE (standard)

Maximum pressure - 6000 psig (414 barg)

Maximum temperature - 500°F (260°C)

GRAFOIL® (optional)

Maximum pressure: 6000 psig (414 barg)

Maximum temperature: 1000°F (538°C)

Seat temperatures

Delrin® 200°F (93°C) maximum

PTFE 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	316 SS
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.
2. Delrin® is registered trademark of the E.I. duPont de Nemours and Company.
3. Monel® is a registered trademark of Special Metals Corporation.
4. Hastelloy® is a registered trademark of Haynes International.
5. GRAFOIL® is a registered trademark of GrafTech International Ltd.



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Selection Guide

SB	1	T	S	S	V	V
BASIC SERIES	ORIFICE FLANGE SIZE	ORIFICE FLANGE TAP CONNECTION TYPE	ORIFICE TAP CONNECTION MATERIAL	BLOCK/INSTRUMENT MODULE BODY MATERIAL	BLOCK MODULE PACKING	BLOCK MODULE SEAT MATERIAL
Block Module						
SP Single block plug 3/8" orifice	1 2 thru 12"	T Threaded 1/2" NPT male	S 316 SS	S 316 SS	V PTFE	S 316 SS
DP Double block and bleed with plug valves 3/8" orifice	2 14 thru 28"	W Socket weld 1/2" NB pipe			H GRAFOIL®	V PTFE
SN Single block plug 3/8" orifice Fire-safe to API 607	3 28" + or special flange	S Other (please specify)				M Monel®
DN Double block and bleed plug 3/8" orifice Fire-safe to API 607						D Delrin®

IM3	H	V	I
INSTRUMENT MODULE	TAP ORIENTATION	INSTRUMENT MODULE PACKING	INSTRUMENT MODULE SEAT
IM3 (instrument module has single equalize valve, 2 x test connections)	V Vertical	V PTFE	I Integral
IM5P (instrument module has single equalize and 2 vent valves)	H Horizontal	H GRAFOIL®	D Delrin®
IM5G (instrument module has double equalize and single vent valve, 2 x test connections)			

B	SG
INSTRUMENT MODULE, TRANSMITTER CONNECTION	OPTIONS
B Bi-planar (e.g., 2.125" transmitter, conventional type)	SG (Sour Gas) meets the requirements of NACE MR0175/ISO 15156-3 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2005 (SS valves only) (not available for O-ring packed valves)
R Coplanar™ (Rosemount® 3051/3095 with Coplanar™ flange - 2.125" connections)	SSA¹ SS flange bolt (grade 18-8) - maximum pressure rating 4500 psi [310 barg]
RC Coplanar™ (Rosemount® 3051/3095 without Coplanar™ flange - 1.3" connections)	SSB 316 SS flange bolt (B8M Class 2) - will provide full pressure rating
BD Bi-planar dual instrument mounting (e.g., 2.125" transmitter, conventional type)	SSC¹ 316 flange bolt (B8M) - maximum pressure rating 4500 psi [310 barg]
RD Coplanar™ (dual instrument mounting with Coplanar™ flange - 2.125" connections)	OC00 Cleaned for oxygen service
RDC Coplanar™ (dual instrument mounting without Coplanar™ flanges - 1.3" connections)	SS All non wetted parts 316 SS
	-PMI00 PMI on bodies only

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.