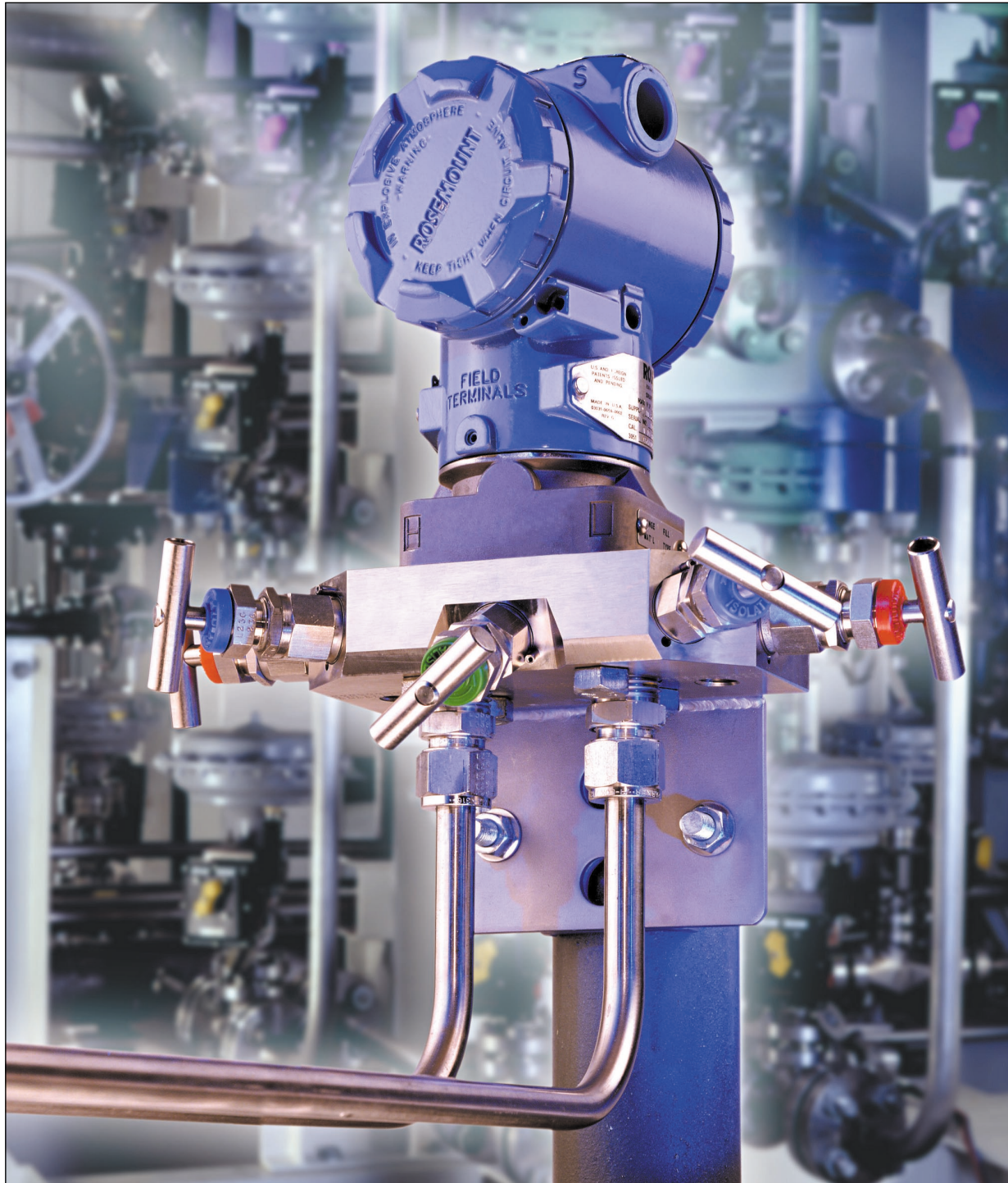




# **Instrumentation** **CP Integral Manifolds**

Catalog 4190-CP  
October 2000



## Introduction

Rosemount® has introduced the model 3051 transmitter which has led to the design of a new series of manifolds unique to this range of instruments.

Parker's CP Integral Manifolds have been designed for direct interface with the Coplanar™ platform.

All Parker CP Integral Manifolds have been designed and tested to comply with the requirements of the Rosemount® Specification.

Parker's standard range of direct mount manifolds is available with traditional mounting features and dimensions for use when the Coplanar™ flange is specified with the instruments.

## Features

- 2, 3 and 5 way versions available as standard
- Available in 316L stainless steel to ASTM A479 Grade S31603.
- Optional materials in Monel®, Hastelloy C-276®, Titanium, 6Mo and Alloy 625.
- Base/bracket mounting support standard in UNC and Metric threads.
- 2" NB pipe stand mountable.
- Heat code traceability.
- Complies with requirements of NACE MR-01-75 latest version.
- Standard bonnet assembly with colour coded valve function labels.
- Conforms to ANSI Class 2500 and to ASI B31.1 and B31.3.
- Wide variety of inlet connection sizes and types.
- Centre equalising valve is angled to allow ease of operation.

- Choice of four non-rotating stems:
  - All metal stem tip, 316L St.St. standard.
  - All metal stem tip, 17-4PH® optional.
  - K-stem tip, PCTFE optional.
  - PK-stem tip, PEEK optional.

## Specifications

Maximum cold working pressure (CWP) rating 6000 psig/414 barg to MSS SP99.

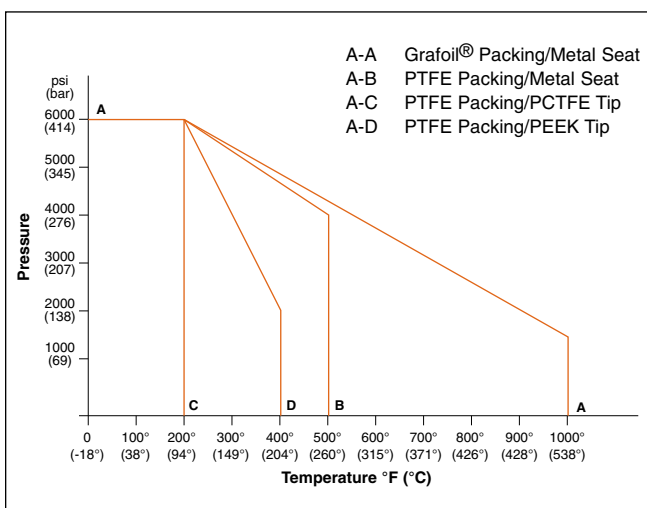
Pressure/temperature ratings for 316L St.St. manifolds with PTFE or Grafoil® packings

- 6000 psig @ 200°F/414 barg @ 93°C (PTFE packing)
- 4000 psig @ 500°F/276 barg @ 260°C (PTFE packing)
- 6000 psig @ 200°F/414 barg @ 93°C (Grafoil® packing)
- 1500 psig @ 1000°F/103 barg @ 538°C (Grafoil® packing)

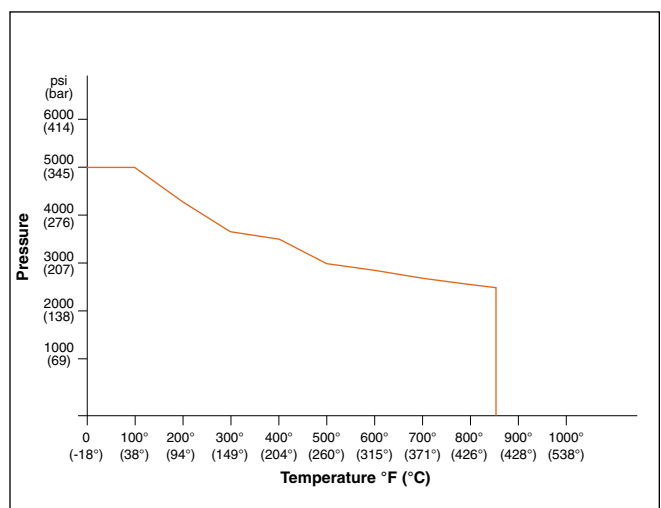
Maximum working pressure 5000psig/345 barg to ANSI Class 2500 for 316L St.St.:-

- 5000 psig @ 100°F = 345 barg @ 38°C
- 4220 psig @ 200°F = 291 barg @ 93°C
- 3180 psig @ 500°F = 219 barg @ 260°C
- 2680 psig @ 850°F = 345 barg @ 38°C

## Pressure vs Temperature for packing and seat materials



## Pressure vs Temperature for ANSI class 2500



Valves subject to temperature cycling may require gland packing adjustment at ambient. Maximum tightening torques PTFE 15lbs ft/19.16Nm, Grafoil® 40lbs ft/54.20Nm.

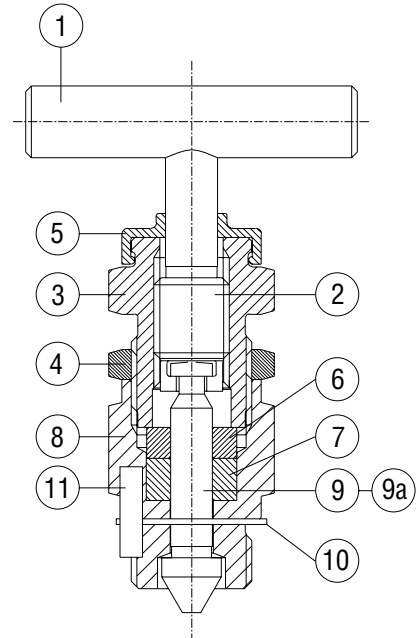
All dimensions are approximate and subject to change.

## Metal seat bonnet assembly

### Features:

- T-Bar handle for low torque operation.
- Stem actuator with separate lower stem (needle) provides two piece non-rotating stem arrangement for metal/metal seating. this results in better sealing and longer life. Needle has a ground 16 Ra finish for 100% shut off and sealing. **(For gaseous/low density fluids a lower stem with PCTFE seating is recommended)**. Both stems incorporate back stop designs.
- Packing nut for in service adjustment.
- Dust cap with color coded functions - protects operating threads from external contamination.
- PTFE adjustable packing installed below operating threads to prevent media contamination or lubricant washout of operating threads. Grafoil® alternative is available as an option.
- Stainless steel bonnet to body sealing washer.
- Bonnet locking pin, prevents detachment of the bonnet from the body.

**Note:** If the gland locknut is released for gland packing adjustment purposes then it is essential that it is re-tightened to its original torque range 17Nm min./28 Nm max (150/250 lbs. f.ins)



**Closed height from valve body = 2.13" (54mm)**  
**Open height from valve body = 2.24" (57mm)**  
**Standard T-Bar length = 1.73" (44mm)**

### Part description and materials

Item	Description	Material
1	T-Bar Handle	ASTM A479 S31603 St. St.
2	Stem Actuator	ASTM A479 S31603 St. St.
3	Packing Nut	ASTM A479 S31603 St. St.
4	Locknut	ASTM A479 S31603 St. St.
5	Dust Cap	Low Density Polyethylene
6	Thrust Bushing	ASTM A479 S31603 St. St.
7	Packing	PTFE
8	Bonnet	ASTM A479 S31603 St. St.
9	Lower Stem	ASTM A479 S31603 St. St.
9a	Soft Tip Lower Stem	Optional PCTFE or PEEK
10	Sealing Washer	ASTM A479 S31603 St. St.
11	Locking Pin	AISI 304 St. St.



Colour coded valve function labels

**PCTFE and PEEK**  
**Soft tip option 9a.**



**PCTFE and PEEK** soft tipped non-rotating stem for low density fluids and gases. Shut off torque should not exceed 70lbs.f.ins/7.9Nm.

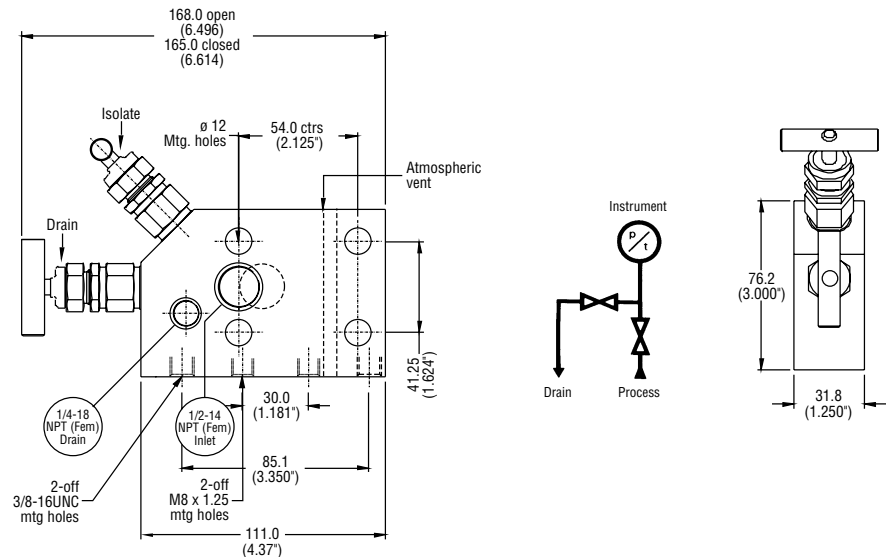
Items **1, 2, 3, 4, 6** and **11** are classed as non-wetted, ie parts which are never in contact with the process media. Unless otherwise specified with other optional material requirements, non-wetted parts will be supplied in the stainless steel grades shown.

17-4 PH® is a registered trademark of Armco Steel  
 Grafoil® is a registered trademark of the Union Carbide Corporation  
 Hastelloy C-276® is a registered trademark of the Haynes International Inc.  
 Monel® is a registered trademark of Inco Alloys International, Inc.  
 Coplaner™ is a trademark of Rosemount® Inc.  
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## Two Valve Integral Manifold for use with Gauge and Absolute Pressure Transmitters Model: DS2HLHCP

The manifold is provided with standard 1/2" NPT female inlet for process connection with one of the two valves providing for shut off and isolating the process fluid from the instrument. The manifold also features a 1/4" NPT female connection for draining, venting, calibration or testing of the instrument, the second valve controls these features. Outlet connections are provided for the direct mounting of the manifold to the standard Rosemount® series 3051 transmitters.



### Specification - Part number DS2HLHCP.

**Process connections:** 1/2" NPT female (ANSI B1.20.1)  
**Vent/drain/test connections:** 1/4" NPT female (ANSI B1.20.1).  
**Material:** Stainless Steel ASTM A479 Grade S31603 Werkstoff 1.4404  
**Base tapped holes for bracket mounting:** 2 x 3/8-16UNC.  
 2 x M8 x 1.25.

**Seat:** metal/metal.

**Packing:** PTFE.

**Bolts:** 4 x 7/16UNF x 1.75" high tensile zinc plated carbon steel.

**Weight:** 1.98 kg (4.40 lbs).

**Individual packing box size:** 170 x 77 x 33mm (6.70" x 3.00" x 1.30").

② Packing and seating material

Part Number	PTFE packing	Grafoil® packing	Metal to metal	PCTFE soft tip	PEEK soft tip	17-4PH® Lower spindle
<b>DS2HLHCP</b>	✓		✓			
DS2HLHCP9	✓			9		
DS2HLHCPPK	✓				PK	
DS2HLHCP17	✓					17
DS2HLHCP3		3	✓			
DS2HLHCP317		3				17

① Material

Part Number	Manifold body	Bonnet trim material (wetted)	Bonnet non-wetted	Material indicator
<b>DS2HLHCP</b>	St. St.	St. St.	St. St.	S
DM2HLHCP	Monel	Monel	St. St.	M
DI2HLHCP	Inconel 625	Inconel 625	St. St.	I
DN2HLHCP	Hastelloy	Hastelloy	St. St.	N
DT2HLHCP	Titanium (5)	Titanium (5)	St. St.	T
DA2HLHCP	6Mo	6Mo	St. St.	A

③ Standard and optional connections

Part Number	Inlet (process)	Outlet (instrument)	Drain/vent calib/test	Thread form	Part No. Adder
<b>DS2HLHCP</b>	1/2"	Flanged	1/4"	NPT Female	-
DS2HLHCP4N	1/4"	Flanged	1/4"	NPT Female	4N
DS2HLHCP8K	1/2"	Flanged	1/4"	BSPT Female	8K
DS2HLHCP4K	1/4"	Flanged	1/4"	BSPT Female	4K
DS2HLHCP8R	1/2"	Flanged	1/4"	BSPP Female	8R
DS2HLHCP4R	1/4"	Flanged	1/4"	BSPP Female	4R
APPLY	Weld	Flanged	Weld	Pipe	APPLY
APPLY	Weld	Flanged	Weld	Tube	APPLY

For PTFree connection see page 8

④ Plugs, bolts, anti-tamper, oxygen clean, NACE, brackets, test ports

Part Number	Plugged drain/test	St. St. bolts	Anti-tamper drain bonnets	Oxygen cleaned	NACE	Loose bracket	Upstream ports (1/4")	Downstream ports (1/4")
DS2HLHCPPDP	PD							
DS2HLHCPSSB		SSB						
DS2HLHCPATDR			ATDR					
DS2HLHCPDEG				DEG				
DS2HLHCPNACE					NACE			
DS2HLHCPMBL						MBL		
N/A							N/A	
N/A								N/A

Part No. (Red) - Standard Part No. (Black) - Optional

### Optional Part No. Construction

Optional combination Part No. construction

sequence: ① ② ③ ④

Example DS2HLHCP98KPD represents: 2 valve manifold St. St. construction (DS2HLHCP), PCTFE soft tip spindle (9), 1/2 BSPT female inlet and 1/4 BSPT drain (8K), plugged drain (PD).

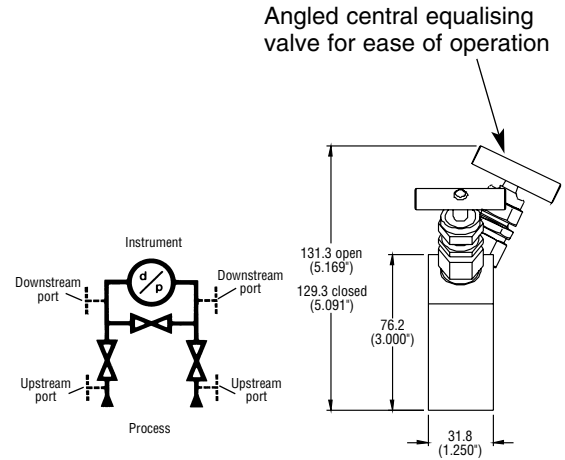
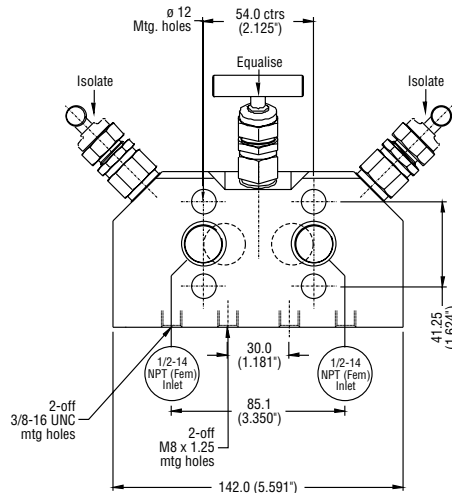
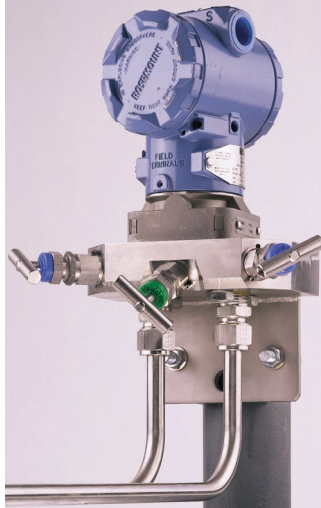
For combination options within a sequence, construct part number from left to right.

Example DM2HLHCP3ATDRDEGNACE

(DM2HLHCP), Grafoil® packing (3), anti tamper drain valve (ATDR), degreased for oxygen service (DEG), suitable to meet NACE material standards (NACE).

## Three Valve Integral Manifold for use with Differential Pressure Transmitters Model DS3CP

The manifold is provided with standard 1/2" NPT female inlets for process connection. It features two valves providing shut off facilities to isolate the process fluid from the instrument. The manifold also features a third valve providing for instrument equalising. Optional upstream and downstream connections are also available. Outlet connections are provided suitable for the direct mounting of the manifold to the standard Rosemount® series 3051 transmitters.



### Specification - Part number DS3CP.

**Process connections:** 2 x 1/2" NPT female (ANSI B1.20.1)  
**Optional upstream/downstream connections:** 1/4" NPT female (ANSI B1.20.1).  
**Material:** Stainless Steel ASTM A479 Grade S31603 Werkstoff 1.4404  
**Base tapped holes for bracket mounting:** 2 x 3/8-16UNC, 2 x M8 x 1.25.

**Seat:** metal/metal.  
**Packing:** PTFE.

**Bolts:** 4 x 7/16UNF x 1.75" high tensile zinc plated carbon steel.  
**Weight:** 2.50 kg (5.50 lbs).  
**Individual packing box size:** 155 x 125 x 51mm (6.00 x 5.00 x 2.00").

#### ② Packing and seating material

Part Number	PTFE packing	Grafoil® packing	Metal to metal	PCTFE soft tip	PEEK soft tip	17-4PH® Lower spindle
DS3CP	✓		✓			
DS3CP9	✓			9		
DS3CPPK	✓				PK	
DS3CP17	✓					17
DS3CP3		3	✓			
DS3CP317		3				17

#### ④ Plugs, bolts, anti-tamper, oxygen clean, NACE, brackets, test ports

Part Number	Plugged ports	St. St. bolts	Anti-tamper drain bonnets	Oxygen cleaned	NACE	Loose bracket	Upstream ports (1/4")	Downstream ports (1/4")
N/A	PD							
DS3CPSSB		SSB						
N/A			N/A					
DS3CPDEG				DEG				
DS3CPNACE					NACE			
DS3CPMBL						MBL		
DS3CPUTP							UTP	
DS3CPDTP								DTP

Part No. (Red) - Standard Part No. (Black) - Optional

#### ① Material

Part Number	Manifold body	Bonnet trim material (wetted)	Bonnet non-wetted	Material indicator
DS3CP	St. St.	St. St.	St. St.	S
DM3CP	Monel	Monel	St. St.	M
DI3CP	Inconel 625	Inconel 625	St. St.	I
DN3CP	Hastelloy	Hastelloy	St. St.	N
DT3CP	Titanium (5)	Titanium (5)	St. St.	T
DA3CP	6Mo	6Mo	St. St.	A

#### ③ Standard and optional connections

Part Number	Inlet (process)	Outlet (instrument)	Drain/vent calib/test	Thread form	Part No. Adder
DS3CP	1/2"	Flanged	N/A	NPT Female	-
DS3CP4N	1/4"	Flanged	N/A	NPT Female	4N
DS3CP8K	1/2"	Flanged	N/A	BSPT Female	8K
DS3CP4K	1/4"	Flanged	N/A	BSPT Female	4K
DS3CP8R	1/2"	Flanged	N/A	BSPP Female	8R
DS3CP4R	1/4"	Flanged	N/A	BSPP Female	4R
APPLY	Weld	Flanged	N/A	Pipe	APPLY
APPLY	Weld	Flanged	N/A	Tube	APPLY

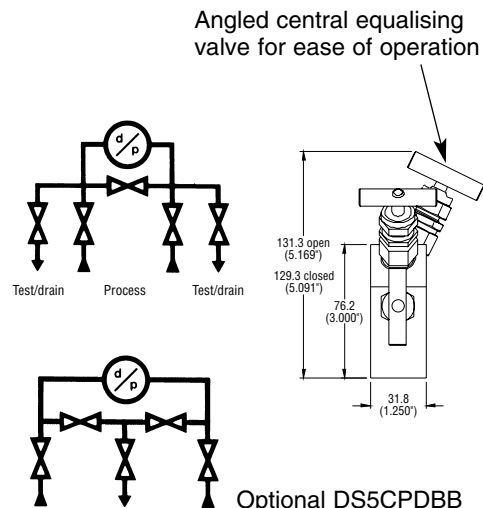
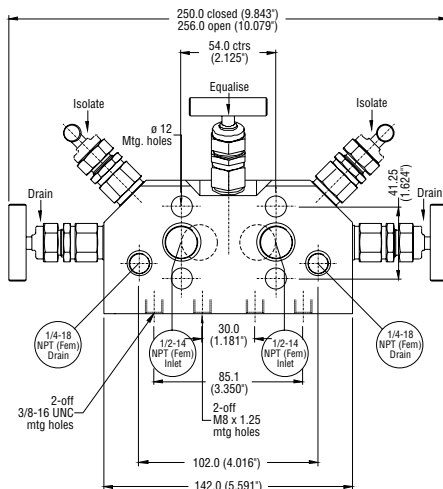
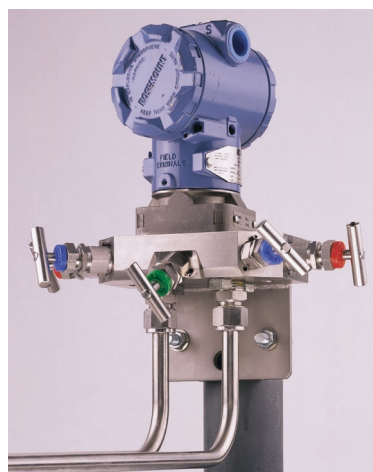
For PTFree connection see page 8

#### Optional Part No. Construction

Optional combination Part No. construction sequence: ① ② ③ ④  
 Example DS3CP98KDTP represents: 3 valve manifold St. St. construction (DS3CP), PCTFE soft tip spindle (9), 1/2 BSPT female inlets (8K), downstream test ports 1/4 BSPT (DTP).  
 For combination options within a sequence, construct part number from left to right.  
 Example DM3CP3SSBDEGNACE represents: 3 valve manifold Monel construction with St. St. non wetted parts, 1/2 NPT female inlets (DM3CP), Grafoil packing (3), St. St. bolts 4 - 7/16UNF x 1.75" (SSB), degreased for oxygen service (DEG), suitable to meet NACE material standards (NACE).

## Five Valve Integral Manifold for use with Differential Pressure Transmitters Model DS5CP

The manifold is provided with standard 1/2" NPT female inlets for process connection. It features two valves providing shut off facilities to isolate the process fluid from each side of the instrument. The manifold also features a third valve providing for instrument equalising. The remaining two valves control the high and low pressure sides of the instrument facilitating venting, draining, testing and calibration of each of these sides. Outlet connections are provided suitable for the direct mounting of the manifold to the standard Rosemount® series 3051 transmitters.



### Specification - Part number DS5CP.

**Process connections:** 2 x 1/2" NPT female (ANSI B1.20.1)  
**Drain/test/vent connections:** 2 x 1/4" NPT female (ANSI B1.20.1).  
**Material:** Stainless Steel ASTM A479 Grade S31603 Werkstoff 1.4404  
**Base tapped holes for bracket mounting:** 2 x 3/8-16UNC.  
 2 x M8 x 1.25.

**Seat:** metal/metal.  
**Packing:** PTFE.  
**Bolts:** 4 x 7/16UNF x 1.75" high tensile zinc plated carbon steel.  
**Weight:** 2.66 kg (5.86 lbs).  
**Individual packing box size:** 258 x 135 x 51mm (10.00 x 5.30 x 2.00").

② Packing and seating material						
Part Number	PTFE packing	Grafoil® packing	Metal to metal	PCTFE soft tip	PEEK soft tip	17-4PH® Lower spindle
DS5CP	-	-	-	-	-	-
DS5CP9	-	-	-	9	-	-
DS5CPPK	-	-	-	-	PK	-
DS5CP17	-	-	-	-	-	17
DS5CP3	-	3	-	-	-	-
DS5CP317	-	3	-	-	-	17

① Material				
Part Number	Manifold body	Bonnet trim material (wetted)	Bonnet non-wetted	Material indicator
DS5CP	St. St.	St. St.	St. St.	S
DM5CP	Monel	Monel	St. St.	M
DI5CP	Inconel 625	Inconel 625	St. St.	I
DN5CP	Hastelloy	Hastelloy	St. St.	N
DT5CP	Titanium (5)	Titanium (5)	St. St.	T
DA5CP	6Mo	6Mo	St. St.	A

③ Standard and optional connections					
Part Number	Inlet (process)	Outlet (instrument)	Drain/vent calib/test	Thread form	Part No. Adder
DS5CP	1/2"	Flanged	1/4"	NPT Female	-
DS5CP4N	1/4"	Flanged	1/4"	NPT Female	4N
DS5CP8K	1/2"	Flanged	1/4"	BSPT Female	8K
DS5CP4K	1/4"	Flanged	1/4"	BSPT Female	4K
DS5CP8R	1/2"	Flanged	1/4"	BSPP Female	8R
DS5CP4R	1/4"	Flanged	1/4"	BSPP Female	4R
APPLY	Weld	Flanged	Weld	Pipe	APPLY
APPLY	Weld	Flanged	Weld	Tube	APPLY

For PTFree connection see page 8

④ Plugs, bolts, anti-tamper, oxygen clean, NACE, brackets, test ports								
Part Number	Plugged ports	St. St. bolts	Anti-tamper drain bonnets	Oxygen cleaned	NACE	Loose bracket	Upstream ports (1/4")	Downstream ports (1/4")
DS5CPPD	PD							
DS5CPSSB		SSB						
DS5CPATDR			ATDR					
DS5CPDEG				DEG				
DS5CPNACE					NACE			
DS5CPMBL						MBL		
N/A							N/A	
N/A								N/A

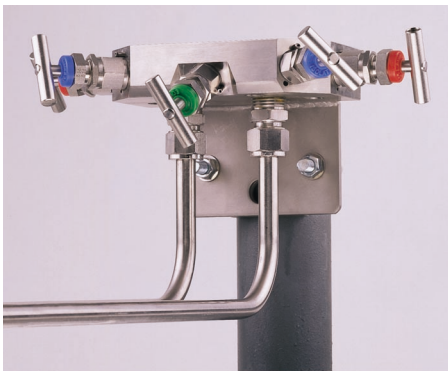
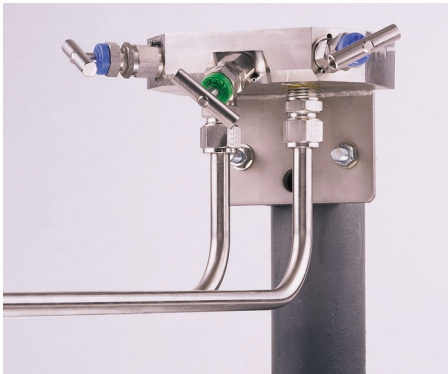
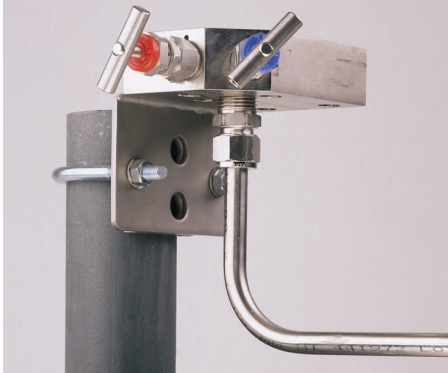
### Optional Part No. Construction

Optional combination Part No. construction sequence: ① ② ③ ④  
 Example DS5CP98KPD represents: 5 valve manifold St. St. construction (DS5CP), PCTFE soft tip spindle (9), 1/2 BSPT female inlets (8K), plugged drains (PD). For combination options within a sequence, construct part number form left to right.  
 Example DM5CP3SSBDEGNACE represents: 5 valve manifold Monel construction with St. St. non wetted parts, 1/2 NPT female inlets 1/4 NPT drains (DM5CP), Grafoil® packing (3), St. St. bolts 4 - 7/16UNF x 1.75" (SSB), degreased for oxygen service (DEG), suitable to meet NACE material standards (NACE).

Part No. (Red) - Standard Part No. (Black) - Optional

## Manifold mounting and support

The CP range of manifolds are provided as a standard with four threaded base mounting holes for ease of local installation. Two of the mounting threads are in UNC (3/8-16UNC) and two in Metric (M8 x 1.25) form with the CP bracket drilled at all four positions. This allows the user to select whichever base thread is standard to their location. The almost universal acceptance of manifold base mounting ensures the ease of installation and full manifold support in the event of instrument removal.



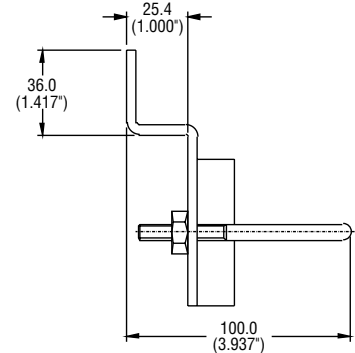
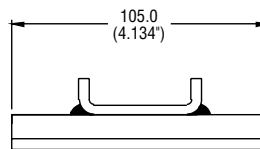
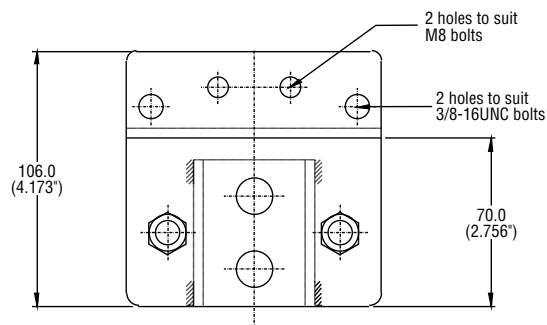
### Specification Part number AAGM0450/1.

**Material:** 4mm thick carbon steel, shot blasted and zinc sprayed.

**Securing:** Suitable for attachment to 2" NB standpipe, supplied with U bolt and nuts as standard.

**Manifold to bracket mounting:** 2 x 3/8-16UNC.  
2 x M8 x 1.25

Manifold to bracket mounting bolts not provided.



### WARNING

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# New . . . PTFree connect™

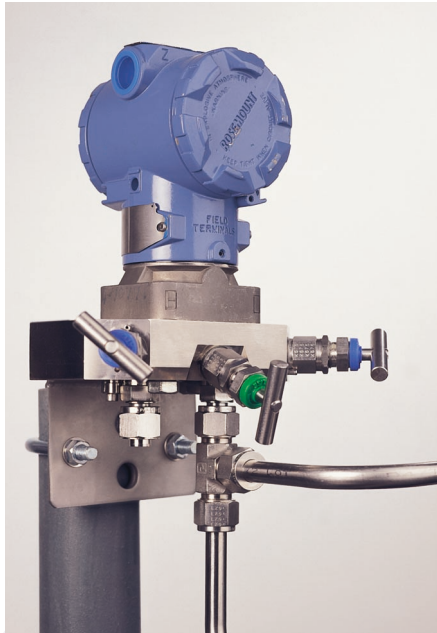
Eliminate taper threads, get rid of PTFE sealing tape and thread sealant.

Incorrect application of sealing tapes and other sealant mediums will cause tapered pipe thread damage and fragments of sealant material to contaminate the system. This will result in fluid containment difficulties and poor system performance. Consequential user costs will include equipment replacement and system cleaning downtime. By eliminating the cause of this problem users are now protected against such failures, replacement and downtime.

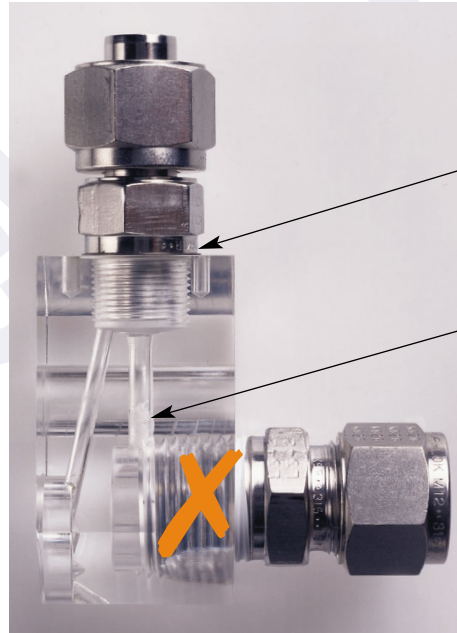
**The development of a unique combination of manifold and fitting enables the user to eliminate the use of ALL taper thread sealant.**

Parker manifold valve blocks can now be provided with a securely fastened and pinned tube fitting connection for sizes 6-12mm & 1/4 - 1/2" o/d tube\*. A parallel fastening thread with a stainless steel sealing washer provides a high-pressure leakproof and bubble tight connection to the manifold body.

Factory assembled PTFree connect™ are inclusively tested together with the manifold up to maximum valve testing values.



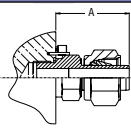
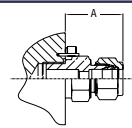
PTFree connect™ provides the user with complete flexible impulse line installation. Elbows and Tee's can be freely swivelled and positioned to suit tubing alignment



PTFree connect™ uses the same high pressure leakproof and bubble tight sealing principle as the valves.

PTFE particles

Eliminate taper thread sealants, Don't compromise your system.

PTFree connect™ Part Numbering					
Manifolds PTFree connect™ (FRC)			Manifolds PTFree male connections (FRCM)		
		A = 29.70mm (1.17") 6mm/1/4" tube A = 35.00mm (1.38") 10mm tube A = 35.00mm (1.38") 3/8" tube A = 36.90mm (1.45") 12mm/1/2" tube			A = 31.50mm (1.25") 6mm/1/4" tube A = 36.60mm (1.44") 10mm tube A = 36.60mm (1.44") 3/8" tube
Typical Manifold	Tube nut size	Manifold Part No. assembled with A-LOK® FRC	Typical Manifold	Tube nut size	Manifold Part No. assembled with A-LOK® FRCM
DS3CP	6mm	DS3CPFRCL6MM	DS2HLHCP	6mm	DS2HLHCPFRCL6MM
DS5CP	10mm	DS5CPFRCL10MM	DS5CP	10mm	DS5CPFRCL10MM
DS5CP3	12mm	DS5CP3FRCL12MM	DS3CPPK	1/4"	DS3CPPKFRCL4
DS5CPPK	1/4"	DS5CPPKFRCL4	DS3CP17	3/8"	DS3CP17FRCL6
DS3CP17	3/8"	DS3CP17FRCL6			
DS2HLHCP9	1/2"	DS2HLHCP9FRCL8			

For single ferrule CPI™ connections replace 'L' in part number with 'B'

\*Male connections (FRCM) positioned between instrument mounting bolt holes will be restricted to a maximum tube diameter of 3/8"-10mm.



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