# Rosemount<sup>™</sup> 585 Annubar<sup>™</sup> Flanged Assembly





## **NOTICE**

This guide provides basic guidelines for Rosemount 585 Annubar Assembly. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting, Explosion-proof, Flame-Proof, or intrinsically safe (I.S.) installations. Refer to the Rosemount 585 Reference Manual (document number 00809-0100-4585) for more instruction. This manual is also available electronically on www.rosemount.com.

If the Rosemount Annubar was ordered assembled to a Rosemount Pressure Transmitter, see the following Quick Start Guides for information on configuration and hazardous locations certifications:

- Rosemount 3051S Series Pressure Transmitter and Rosemount 3051SF Series Flowmeter <u>Quick Start</u> Guide.
- Rosemount 3051S MultiVariable Transmitter and Rosemount 3051SF Series Flowmeter MultiVariable Transmitter Ouick Start Guide.
- Rosemount 3051 Pressure Transmitter and Rosemount 3051CF Series Flowmeter Transmitter <u>Quick</u> Start Guide.
- Rosemount 2051 Pressure Transmitter and Rosemount 2051CF Series Flowmeter Transmitter <u>Quick</u> Start Guide.

## **AWARNING**

Process leaks may cause harm or result in death. To avoid process leaks, only use gaskets designed to seal with the corresponding flange and o-rings to seal process connections. Flowing medium may cause the Rosemount 585 Annubar Assembly to become hot and could result in burns.

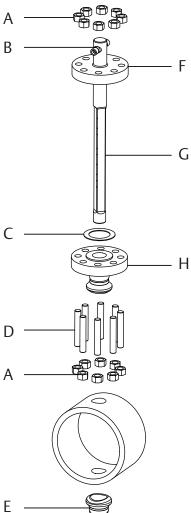
## **ACAUTION**

If pipe/duct wall is less than 0.125-in. (3,2 mm) use extreme caution when installing sensor. Thin walls can deform during welding, installation or from the weight of a cantilevered flowmeter. These installations may require a fabricated outlet, saddle or external flowmeter support. Consult factory for assistance

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Figure 1. Rosemount 585 Annubar Assembly Exploded View



- A. Nuts
- B. Remount mount instrument connection
- C. Gasket
- D. Studs

- E. Opposite side support
- F. Sensor flange
- G. Rosemount 585 Annubar Sensor
- H. Mounting flange assembly

## Note

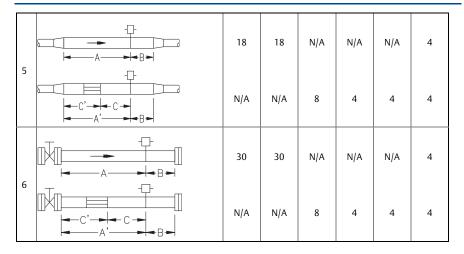
Use an appropriate pipe sealing compound rated for the service temperature on all threaded connections.

# 1.0 Location and orientation

Correct orientation and straight run requirements must be met for accurate and repeatable flow measurements. Refer to Table 1 for minimum pipe diameter distances from upstream disturbances.

Table 1. Straight Run Requirements

In plane Out of plane		Upstream pipe diameters				am ters		
			straigh	hout ntening nes	With	straighte vanes	ening	Downstream pipe diameters
			In plane A	Out of plane A	Α'	С	C,	В
1	A	B=	8	10	N/A	N/A	N/A	4
	c'—A'	-C	N/A	N/A	8	4	4	4
2	A	B =	11	16	N/A	N/A	N/A	4
2	C'-A'	- C	N/A	N/A	8	4	4	4
3	——————————————————————————————————————	₽ B =	23	28	N/A	N/A	N/A	4
	C'-A'-	-C-	N/A	N/A	8	4	4	4
4	A—A		12	12	N/A	N/A	N/A	4
4	-C'-A'-	C	N/A	N/A	8	4	4	4



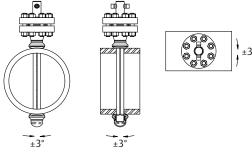
#### Note

- Consult the factory for instructions regarding use in square or rectangular ducts.
- "In plane A" means the sensor is in the same plane as the elbow. "Out of plane A" means the bar is perpendicular to the plane of the elbow.
- If proper lengths of straight run are not available, position the mounting such that 80% of the run is upstream and 20% is downstream.
- Use straightening vanes to reduce the required straight run length.
- Row 6 in Table 1 applies to gate, globe, plug, and other throttling valves that are partially opened, as well as control valves.

# 1.1 Misalignment

Rosemount 585 Annubar installation allows for a maximum misalignment of 3°.

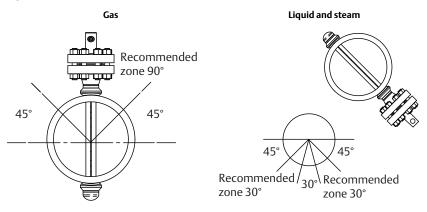
Figure 2. Misalignment



# 1.2 Horizontal Orientation

For proper venting and draining, the sensor should be located in the upper half of the pipe for gas applications. For liquid and steam applications, the sensor should be located in the bottom half of the pipe.

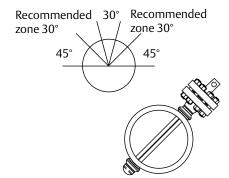
Figure 3. Horizontal Orientation



#### Note

Top mounting for steam applications is an appropriate mounting option in many cases. Consult Rosemount Customer Central for instructions regarding steam on top mounting.

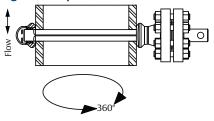
#### Steam on top



## 1.3 Vertical Orientation

The sensor can be installed in any position around the circumference of the pipe, provided the vents are positioned properly for bleeding or venting. Optimal results for liquid or steam are obtained when flow is up. For steam applications, a 90° spacer is included to provide water legs to ensure the transmitter stays within temperature limits.

Figure 4. Liquid, Gas, or Steam



# 2.0 Drill holes into pipe

- 1. Determine the sensor size based on the probe width (see Table 2).
- 2. Depressurize and drain the pipe.
- 3. Select the location to drill the hole.
- Determine the diameter of the hole to be drilled according to the specifications in Table 2. Drill the mounting hole into the pipe with a hole saw or drill. DO NOT TORCH CUT THE HOLE.

Table 2. Sensor Size/Hole Diameter Chart

Sensor size	Sensor width	Hole diameter		
11	0.80-in. (20,32 mm)	<sup>7</sup> /8-in. (19 mm)	+1/32-in (0,8 mm) – 0.00	
22	1.20-in. (30,48 mm)	1 <sup>5</sup> /16-in. (34 mm)	+ <sup>1</sup> /16-in. (1,6 mm) – 0.00	
44	2.30-in. (58,42 mm)	2 <sup>1</sup> /2-in. (64 mm)	+ <sup>1</sup> /16-in. (1,6 mm) – 0.00	

#### Note

Drill the hole 180° from the first hole for opposite- side support models.

5. A second identically sized hole must be drilled opposite the first hole so that the sensor can pass completely through the pipe. To drill the second hole, follow these steps:

- a. Measure the pipe circumference with a pipe tape, soft wire, or string. (For the most accurate measurement the pipe tape needs to be perpendicular to the axis of flow.)
- b. Divide the measured circumference by two to determine the location of the second hole.
- c. Re-wrap the pipe tape, soft wire, or string from the center of the first hole. Then, using the number calculated in the preceding step, mark the center of what will become the second hole.
- d. Using the diameter determined in step 3, drill the hole into the pipe with a hole saw or drill. DO NOT TORCH CUT THE HOLE.

Drill the appropriate diameter hole through the pipe wall.

6. Deburr the drilled holes on the inside of the pipe.

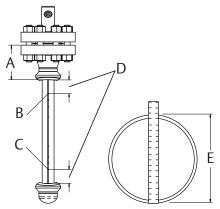
# 3.0 Assemble and check fit-up

For accurate measurement, use the following steps to ensure that Ports A and B are equal distances from the inside walls of the pipe.

- 1. Assemble the Rosemount 585 to the mounting hardware with the gaskets and bolts.
- 2. Hand tighten the bolts just enough to hold the position of the sensor centered in the mounting hardware.
- 3. Check the fit of the assembly to the pipe by inserting a rule or stiff wire through both mounting holes. Note the distance. All sensing holes must be inside the pipe inner diameter. See Figure 5.
- 4. Add <sup>1</sup>/16-in. (1,6 mm) to the measured distance for the weld gap and transfer to the assembly starting at the high point of the butt weld branch connection.
- 5. Measure the distance from the high point of the butt weld branch connection to the first sensing hole, port B, then subtract 1/16-in (1,6 mm).
- 6. Measure the distance from the end of the transferred length in step 4 to the last sensing hole, port A.
- 7. Compare the numbers obtained in steps 5 and 6.

Small discrepancies can be compensated for with the fit-up of the mounting hardware. Large discrepancies may cause installation problems or error.

Figure 5. Fit-up Check for Rosemount 585 with Opposite-Side Support



- A. Outer Diameter to Flange (ODF)
- B. Port A
- C. Port B
- D. The same within 1/8-in. (3 mm)
- E. Pipe outside diameter

# 4.0 Weld mounting hardware

1. Center the flanged assembly over the mounting hole, gap 1/16-in. (1,6 mm), and measure the distance from the outer diameter of the pipe to the face of the flange. Compare this to Table 3 and adjust the gap as necessary.

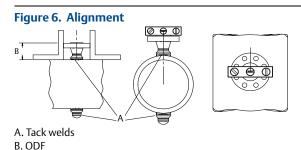
Table 3. Flange Sizes and ODF per Sensor Size

Sensor size	Flange type	Pressure class	Flange size/rating/type	ODF in. (mm) <sup>(1)</sup>
11		1	1 <sup>1</sup> /2-in. 150# RF	3.88 (99)
11		3	1 <sup>1</sup> /2-in. 300# RF	4.13 (105)
11	Α	6	1 <sup>1</sup> /2-in. 600# RF	4.44 (113)
11	A	N	1 <sup>1</sup> /2-in. 900# RF	4.94 (125)
11		F	1 <sup>1</sup> /2-in. 1500# RF	4.94 (125)
11		T	1 <sup>1</sup> /2-in. 2500# RF	6.76 (172)
11		1	1 <sup>1</sup> /2-in. 150# RTJ	4.07 (103)
11		3	1 <sup>1</sup> /2-in. 300# RTJ	4.32 (110)
11	R	6	1 <sup>1</sup> /2-in. 600# RTJ	4.44 (113)
11	К	N	1 <sup>1</sup> /2-in. 900# RTJ	4.94 (125)
11		F	1 <sup>1</sup> /2-in. 1500# RTJ	4.94 (125)
11		T	1 <sup>1</sup> /2-in. 2500# RTJ	6.82 (173)

11					
11	11		1	DN40 PN16 RF	3.21 (81)
1	11	D	3	DN40 PN40 RF	3.21 (81)
Second Part	11		6	DN40 PN100 RF	3.88 (99)
Company	22		1	2.0-in. 150# RF	4.13 (105)
N   2.0-in. 900# RF   5.88 (149)	22		3	2.0-in. 300# RF	4.38 (111)
N	22		6	2.0-in. 600# RF	4.76 (121)
T 3.0-in. 2500# RF 9.87 (251)  22	22	A	N	2.0-in. 900# RF	5.88 (149)
1	22		F	2.0-in. 1500# RF	5.88 (149)
3	22		Т	3.0-in. 2500# RF	9.87 (251)
22       R       6       2.0-in. 600# RTJ       4.82 (122)         22       N       2.0-in. 900# RTJ       5.94 (151)         5       F       2.0-in. 1500# RTJ       5.94 (151)         1       T       3.0-in. 2500# RTJ       10.00 (254)         22       D       3       DN50 PN16 RF       3.40 (86)         22       D       3       DN50 PN40 RF       3.52 (89)         22       6       DN50 PN100 RF       4.31 (109)         44       1       3.0-in. 150# RF       4.63 (117.5)         44       3       3.0-in. 300# RF       5.00 (126.9)         44       N       4.0-in. 300# RF       5.38 (136.6)         44       N       4.0-in. 900# RF       8.56 (217.5)         44       T       4.0-in. 1500# RF       11.19 (284.2)         44       T       3.0-in. 150# RTJ       4.82 (122)         44       T       3.0-in. 300# RTJ       5.25 (133)         44       T       3.0-in. 600# RTJ       5.44 (138)         44       N       4.0-in. 1500# RTJ       8.63 (219)         44       T       4.0-in. 1500# RTJ       8.63 (219)         44       T       4.0-in. 1500# RTJ	22		1	2.0-in. 150# RTJ	4.32 (110)
N   2.0-in. 900# RTJ   5.94 (151)	22		3	2.0-in. 300# RTJ	4.63 (117)
N   2.0-in. 900# RTJ   5.94 (151)	22	, n	6	2.0-in. 600# RTJ	4.82 (122)
T 3.0-in. 2500# RTJ 10.00 (254)  22	22	K	N	2.0-in. 900# RTJ	5.94 (151)
22       D       1       DN50 PN16 RF       3.40 (86)         22       D       3       DN50 PN40 RF       3.52 (89)         22       6       DN50 PN100 RF       4.31 (109)         44       44       1       3.0-in. 150# RF       4.63 (117.5)         44       4       6       3.0-in. 300# RF       5.00 (126.9)         44       6       3.0-in. 600# RF       5.38 (136.6)         N       4.0-in. 900# RF       8.19 (208.0)         44       F       4.0-in. 1500# RF       8.56 (217.5)         44       T       4.0-in. 2500# RF       11.19 (284.2)         44       1       3.0-in. 150# RTJ       4.82 (122)         44       3       3.0-in. 150# RTJ       5.25 (133)         44       6       3.0-in. 600# RTJ       5.44 (138)         44       R       6       3.0-in. 600# RTJ       8.25 (209)         44       F       4.0-in. 1500# RTJ       8.63 (219)         44       T       4.0-in. 2500# RTJ       11.38 (289)         44       D       3       DN80 PN40 RF       4.16 (106)	22		F	2.0-in. 1500# RTJ	5.94 (151)
22     D     3     DN50 PN40 RF     3.52 (89)       22     6     DN50 PN100 RF     4.31 (109)       44     1     3.0-in. 150# RF     4.63 (117.5)       44     3     3.0-in. 300# RF     5.00 (126.9)       44     6     3.0-in. 600# RF     5.38 (136.6)       N     4.0-in. 900# RF     8.19 (208.0)       F     4.0-in. 1500# RF     8.56 (217.5)       T     4.0-in. 2500# RF     11.19 (284.2)       44     1     3.0-in. 150# RTJ     4.82 (122)       44     3     3.0-in. 300# RTJ     5.25 (133)       44     6     3.0-in. 300# RTJ     5.25 (133)       44     7     4.0-in. 900# RTJ     8.25 (209)       44     7     4.0-in. 1500# RTJ     8.63 (219)       44     7     4.0-in. 2500# RTJ     11.38 (289)       44     1     DN80 PN40 RF     3.85 (98)	22		Т	3.0-in. 2500# RTJ	10.00 (254)
22     6     DN50 PN100 RF     4.31 (109)       44     1     3.0-in. 150# RF     4.63 (117.5)       44     3     3.0-in. 300# RF     5.00 (126.9)       44     6     3.0-in. 600# RF     5.38 (136.6)       N     4.0-in. 900# RF     8.19 (208.0)       F     4.0-in. 1500# RF     8.56 (217.5)       44     T     4.0-in. 2500# RF     11.19 (284.2)       44     1     3.0-in. 150# RTJ     4.82 (122)       44     3     3.0-in. 300# RTJ     5.25 (133)       44     6     3.0-in. 600# RTJ     5.44 (138)       44     R     4.0-in. 900# RTJ     8.63 (219)       44     T     4.0-in. 1500# RTJ     8.63 (219)       44     T     4.0-in. 2500# RTJ     11.38 (289)       44     D     3     DN80 PN40 RF     4.16 (106)	22		1	DN50 PN16 RF	3.40 (86)
44       1       3.0-in. 150# RF       4.63 (117.5)         44       3       3.0-in. 300# RF       5.00 (126.9)         6       3.0-in. 600# RF       5.38 (136.6)         N       4.0-in. 900# RF       8.19 (208.0)         44       F       4.0-in. 1500# RF       8.56 (217.5)         T       4.0-in. 2500# RF       11.19 (284.2)         44       1       3.0-in. 150# RTJ       4.82 (122)         3       3.0-in. 300# RTJ       5.25 (133)         44       6       3.0-in. 600# RTJ       5.44 (138)         N       4.0-in. 900# RTJ       8.25 (209)         44       F       4.0-in. 1500# RTJ       8.63 (219)         44       T       4.0-in. 2500# RTJ       11.38 (289)         44       D       3       DN80 PN40 RF       4.16 (106)	22	D	3	DN50 PN40 RF	3.52 (89)
44       3       3.0-in. 300# RF       5.00 (126.9)         44       6       3.0-in. 600# RF       5.38 (136.6)         N       4.0-in. 900# RF       8.19 (208.0)         F       4.0-in. 1500# RF       8.56 (217.5)         T       4.0-in. 2500# RF       11.19 (284.2)         44       1       3.0-in. 150# RTJ       4.82 (122)         44       3       3.0-in. 300# RTJ       5.25 (133)         44       6       3.0-in. 600# RTJ       5.44 (138)         N       4.0-in. 900# RTJ       8.25 (209)         44       T       4.0-in. 1500# RTJ       8.63 (219)         44       T       4.0-in. 2500# RTJ       11.38 (289)         44       D       3       DN80 PN40 RF       4.16 (106)	22		6	DN50 PN100 RF	4.31 (109)
44       A       6       3.0-in. 600# RF       5.38 (136.6)         44       N       4.0-in. 900# RF       8.19 (208.0)         F       4.0-in. 1500# RF       8.56 (217.5)         T       4.0-in. 2500# RF       11.19 (284.2)         44       1       3.0-in. 150# RTJ       4.82 (122)         3       3.0-in. 300# RTJ       5.25 (133)         44       6       3.0-in. 600# RTJ       5.44 (138)         N       4.0-in. 900# RTJ       8.25 (209)         F       4.0-in. 1500# RTJ       8.63 (219)         44       T       4.0-in. 2500# RTJ       11.38 (289)         44       D       3       DN80 PN40 RF       4.16 (106)	44		1	3.0-in. 150# RF	4.63 (117.5)
A N 4.0-in. 900# RF 8.19 (208.0)  F 4.0-in. 1500# RF 8.56 (217.5)  T 4.0-in. 2500# RF 11.19 (284.2)  44	44		3	3.0-in. 300# RF	5.00 (126.9)
44       N       4.0-in. 900# RF       8.19 (208.0)         44       F       4.0-in. 1500# RF       8.56 (217.5)         44       T       4.0-in. 2500# RF       11.19 (284.2)         44       1       3.0-in. 150# RTJ       4.82 (122)         3       3.0-in. 300# RTJ       5.25 (133)         44       6       3.0-in. 600# RTJ       5.44 (138)         N       4.0-in. 900# RTJ       8.25 (209)         44       F       4.0-in. 1500# RTJ       8.63 (219)         44       T       4.0-in. 2500# RTJ       11.38 (289)         44       D       3       DN80 PN40 RF       4.16 (106)	44	Δ.	6	3.0-in. 600# RF	5.38 (136.6)
44     T     4.0-in. 2500# RF     11.19 (284.2)       44     1     3.0-in. 150# RTJ     4.82 (122)       3     3.0-in. 300# RTJ     5.25 (133)       44     6     3.0-in. 600# RTJ     5.44 (138)       N     4.0-in. 900# RTJ     8.25 (209)       F     4.0-in. 1500# RTJ     8.63 (219)       44     T     4.0-in. 2500# RTJ     11.38 (289)       44     D     3     DN80 PN40 RF     3.85 (98)       44     D     3     DN80 PN40 RF     4.16 (106)	44	A	N	4.0-in. 900# RF	8.19 (208.0)
44     1     3.0-in. 150# RTJ     4.82 (122)       44     3     3.0-in. 300# RTJ     5.25 (133)       44     6     3.0-in. 600# RTJ     5.44 (138)       N     4.0-in. 900# RTJ     8.25 (209)       44     F     4.0-in. 1500# RTJ     8.63 (219)       44     T     4.0-in. 2500# RTJ     11.38 (289)       44     D     3     DN80 PN40 RF     3.85 (98)       44     D     3     DN80 PN40 RF     4.16 (106)	44		F	4.0-in. 1500# RF	8.56 (217.5)
44     A4       45     A4       46     A4       47     A4       48     A4       49     A4       40     A4       41     A4       42     A4       44     A4       44     A4       45	44		Т	4.0-in. 2500# RF	11.19 (284.2)
44     R       44     R       44     N       4.0-in. 900# RTJ     8.25 (209)       F     4.0-in. 1500# RTJ     8.63 (219)       44     T     4.0-in. 2500# RTJ     11.38 (289)       44     D     DN80 PN16 RF     3.85 (98)       44     D     3     DN80 PN40 RF     4.16 (106)	44		1	3.0-in. 150# RTJ	4.82 (122)
44     R     N     4.0-in. 900# RTJ     8.25 (209)       44     F     4.0-in. 1500# RTJ     8.63 (219)       44     T     4.0-in. 2500# RTJ     11.38 (289)       44     1     DN80 PN16 RF     3.85 (98)       44     D     3     DN80 PN40 RF     4.16 (106)	44		3	3.0-in. 300# RTJ	5.25 (133)
44     N     4.0-in. 900# RTJ     8.25 (209)       44     F     4.0-in. 1500# RTJ     8.63 (219)       44     T     4.0-in. 2500# RTJ     11.38 (289)       44     1     DN80 PN16 RF     3.85 (98)       44     D     3     DN80 PN40 RF     4.16 (106)	44	D.	6	3.0-in. 600# RTJ	5.44 (138)
44 T 4.0-in. 2500#RTJ 11.38 (289) 44 1 DN80 PN16 RF 3.85 (98) 44 D 3 DN80 PN40 RF 4.16 (106)	44	, K	N	4.0-in. 900# RTJ	8.25 (209)
1 DN80 PN16 RF 3.85 (98) 44 D 3 DN80 PN40 RF 4.16 (106)	44		F	4.0-in. 1500# RTJ	8.63 (219)
44 D 3 DN80 PN40 RF 4.16 (106)	44		Т	4.0-in. 2500# RTJ	11.38 (289)
	44		1	DN80 PN16 RF	3.85 (98)
44 6 DN80 PN100 RF 4.95 (126)	44	D	3	DN80 PN40 RF	4.16 (106)
	44		6	DN80 PN100 RF	4.95 (126)

<sup>1.</sup> Tolerances for the ODF dimension above a 10-in. (254 mm) line size is  $\pm 0.060$ -in. (1,6 mm). Below 10-in. (254 mm) line size is  $\pm 0.030$ -in. (0,8 mm).

2. Place four 1/4-in. (6-mm) tack welds at 90° increments. Check alignment of the mounting both parallel and perpendicular to the axis of flow (see Figure 6). If alignment of the mounting is within tolerances, finish weld per local codes. If alignment is outside of specified tolerance, make adjustments prior to making the finish weld.



- 3. Center the fitting for the opposite side support over the opposite side hole, gap ¹/16-in. (1,6 mm), and place four ¹/4-in. (6 mm) tack welds at 90° increments. Insert the sensor into the mounting hardware. Verify that the tip of the sensor is centered in the opposite side fitting and the plug will fit around sensor. Finish weld per local codes. If alignment of the bar does not allow enough clearance to insert the opposite side plug, make adjustments prior to making the finish weld.
- 4. To avoid serious burns, allow the mounting hardware to cool before continuing.

# 5.0 Insert the Rosemount Annubar Sensor

- 1. Align the flow arrow on the head with the direction of flow. Assemble the bar to the mounting flange using a gasket, bolts, and nuts.
- 2. Tighten the nuts in a cross pattern to allow even compression of the gasket.
- 3. If opposite side support is threaded, apply an appropriate thread sealing compound to the support plug threads and tighten.
- 4. If opposite side support is a socket-weld fitting, insert the plug into it fitting until the parts contact. Retract the plug 1/16-in. (1,6 mm), remove the Rosemount Annubar Sensor, and apply fillet weld per local codes.

# 6.0 Mount the transmitter

# 6.1 Transmitter mounting, direct mount head with valves

It is not necessary to retract the Annubar when direct mounting a transmitter with valves.

- 1. Place O-rings into grooves on the face of head.
- 2. Align the high side of the transmitter to the high side of the sensor ("Hi" is stamped on the side of the head) and install.
- 3. Tighten the nuts in a cross pattern to 384 in-lb (43 N-m).

# 6.2 Transmitter mounting, direct mount head without valves

- 1. Place O-rings into grooves on the face of head.
- 2. Orient the equalizer valve(s) so they are easily accessible. Install a manifold with the smooth face mating to the face of the head. Tighten in cross pattern to a torque of 384 in-lb (43 N-m).
- 3. Place O-rings into grooves on the face of the manifold.
- 4. Align the high side of the transmitter to the high side of the sensor ("Hi" is stamped on the side of the head) and install.
- 5. Tighten the nuts in a cross pattern to 384 in-lb (43 N-m).

# 6.3 Transmitter mounting with remote mount head

Temperatures in excess of 250 °F (121 °C) at the electronics will damage the transmitter. Remote mounted electronics are connected to the sensor by means of impulse piping, which allows service flow temperatures to decrease to a point where the transmitter is no longer vulnerable.

Different impulse piping arrangements are used depending on the process fluid and must be rated for continuous operation at the pipeline design pressure and temperature. A minimum of 1/2-in. (12 mm) outer diameter stainless steel tubing with a wall thickness of at least 0.035-in. (0,9 mm) is recommended including and under 600# ANSI (DN 50 PN100). Above 600# ANSI (DN 50 PN100), use 1/16-in. (1,6 mm) stainless steel tubing. Threaded pipe fittings are not recommended because they create voids where air can become entrapped and create leakage points.

The following restrictions and recommendations apply to impulse piping location:

- 1. Impulse piping that runs horizontally must slope at least one inch per foot (83 mm/m).
  - Slope downward (toward the transmitter) for liquid and steam applications
  - Slope upward (toward the transmitter) for gas applications.
- 2. For applications with temperature below 250 °F (121 °C), impulse piping should be as short as possible to minimize temperature changes. Insulation may be required.

3. For applications above 250 °F (121 °C), impulse piping should have a minimum length of 1 ft. (0,3048 m) for every 100 °F (38 °C) temperature increase over 250 °F (121 °C). Impulse piping must be non-insulated to reduce fluid temperature. Any threaded connections should be checked after the system reaches the intended temperature because connections may come loose with contraction and expansion caused by temperature change.

- 4. Outdoor installations for liquid, saturated gas, or steam may require insulation and heat tracing to prevent freezing.
- 5. When impulse piping is longer than 6 ft. (1,8 m) the high and low impulse lines must be positioned together to maintain equal temperature. They must be supported to prevent sagging and vibration.
- 6. Impulse lines should be positioned in protected areas or against walls or ceilings. Use appropriate pipe sealing compound rated for the service temperature on all threaded connections. Do not place the impulse piping near high temperature piping or equipment.

An instrument manifold is recommended for all installations. Manifolds allow an operator to equalize the pressures prior to zeroing and isolates the process fluid from the transmitter.

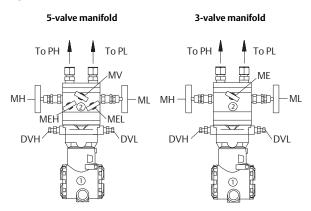


Figure 7. Valve Identification for 5-Valve and 3-Valve Manifolds

Table 4. Description of Impulse Valves and Components

Name	Description Purpose				
Compon	ents				
1	Transmitter	Reads Differential Pressure			
2	Manifold	Isolates and equalizes transmitter			
Manifold and impulse valves					
PH	Primary sensor <sup>(1)</sup>	High and low side process appropriate			
PL	Primary sensor <sup>(2)</sup>	High and low side pressure process connections.			

Name	Description	Purpose
DVH	Drain/vent valve <sup>(1)</sup>	Drains (for gas service) or vents (for liquid or steam service) the DP
DVL	Drain/vent valve <sup>(2)</sup>	transmitter chambers
МН	Manifold <sup>(1)</sup>	Indiana bishaida and a saida ann ann a farandh a saida ann ann a
ML	Manifold <sup>(2)</sup>	Isolates high side or low side pressure from the process
MEH	Manifold equalizer <sup>(1)</sup>	Allows high and low pressure side access to the vent valve, or for
MEL	Manifold equalizer <sup>(2)</sup>	isolating the process fluid
ME	Manifold equalizer	Allows high and low side pressure to equalize
MV	Manifold vent valve	Vents process fluid

- 1. High pressure
- 2. Low pressure

# 6.4 Recommended installations

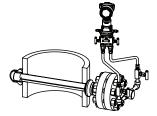
## Gas service

Secure the transmitter above the sensor to prevent condensable liquids from collecting in the impulse piping and the DP cell.

Figure 8. Horizontal Gas



Figure 9. Vertical Gas



## Steam and liquid service

Mount the transmitter below the process piping. Route the impulse piping down to the transmitter and fill the system with cool water through the two tee fittings.

Figure 10. Horizontal Steam and Liquid

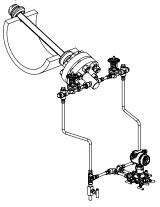
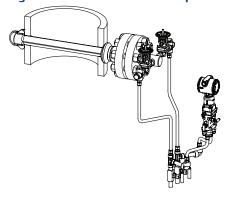


Figure 11. Vertical Steam and Liquid



#### Note

Ensure the drain legs are long enough to capture the dirt particles and sediment.

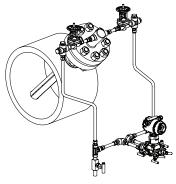
## Steam on top service

For remote mount installations the impulse piping should slope up slightly from the instrument connections on the Rosemount 585 to the cross fittings allowing condensate to drain back into the pipe. From the cross fittings, the impulse piping should be routed downward to the transmitter and the drain legs. The transmitter should be located below the instrument connections of the Rosemount 585. Depending on the environmental conditions, it may be necessary to insulate the mounting hardware.

**Table 5. Steam on Top Temperature Limits** 

Transmitter connection platform	Maximum temperature
Remote mount	850 °F (455 °C)
Direct mount	400 °F (205 °C)

Figure 12. Horizontal Steam on Top



### Note

Top mounting for steam applications is an appropriate mounting option in many cases. Consult Rosemount Customer Central for instructions regarding steam on top mounting.

# 7.0 Product certifications

# 7.1 Approved Manufacturing Locations

Emerson Process Management – Shakopee, Minnesota USA Rosemount DP Flow Design and Operations – Boulder, Colorado USA Emerson Process Management GmbH & Co. OHG – Wessling, Germany Emerson Process Management Asia Pacific Private Limited – Singapore

# 7.2 European Directive Information

Emerson Beijing Instrument Co., Ltd – Beijing, China

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at <a href="mailto:EmersonProcess.com/Rosemount">EmersonProcess.com/Rosemount</a>. A hard copy may be obtained by contacting our local sales office.

## European Pressure Equipment Directive (PED) (97/23/EC)

Rosemount 585 Annubar — Refer to EC declaration of conformity for conformity assessment

Pressure Transmitter — See appropriate Pressure Transmitter QSG

## 7.3 Hazardous Locations Certifications

For information regarding the transmitter product certification, see the appropriate transmitter QSG:

- Rosemount 3051S Series Pressure Transmitter and Rosemount 3051SF Series Flowmeter Ouick Start Guide.
- Rosemount 3051S MultiVariable Transmitter and Rosemount 3051SF Series Flowmeter MultiVariable Transmitter Ouick Start Guide.
- Rosemount 3051 Pressure Transmitter and Rosemount 3051CF Series Flowmeter Transmitter Quick Start Guide.
- Rosemount 2051 Pressure Transmitter and Rosemount 2051CF Series Flowmeter Transmitter Quick Start Guide.

## Figure 13. Rosemount 585 Declaration of Conformity



# EU Declaration of Conformity No: DSI 1000 Rev. L



We,

Rosemount, Inc. 8200 Market Boulevard Chanhassen, MN 55317-9685 USA

declare under our sole responsibility that the products,

Rosemount Primary Elements: 405x, 485, 585, 1195, 1495, 1595 Rosemount DP Flowmeters: 2051CFx, 3051CFx, 3051SFx

manufactured by,

Rosemount / Dieterich Standard, Inc. 5601 North 71<sup>st</sup> Street Boulder, CO 80301 USA

to which this declaration relates, is in conformity with the provisions of the European Union Directives as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.

Jsignature)

Vice President of Global Quality

(function)

Kelly Klein

(name)

19 Apr 2016

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# EU Declaration of Conformity No: DSI 1000 Rev. L



PED Directive (97/23/EC) This directive is valid until 18 July 2016 PED Directive (2014/68/EU) This directive is valid from 19 July 2016

Summary of Classifications					
	PED C	ategory			
Model/Range		Group 2 Fluid			
Rosemount 585 - 150#-900# All Lines	SEP	SEP			
Rosemount 585 - 1500# & 2500# All Lines	III	SEP			
Rosemount 405C, 405A, x051xFC	SEP	SEP			
Rosemount 1195, x051xFP with 150#, 1-1/2" Flange	I	SEP			
Rosemount 1195, x051xFP with 300# or 600#, 1" or 1-1/2" Flange	II	I			
Rosemount 1195, x051xFP with 1" or 1-1/2" Threaded & Welded Connection	II	I			
Rosemount 485/x051SxFA: 1500# & 2500# All Line Sizes, Flanged	III	SEP			
Rosemount 485/x051xFA: Sensor Size 2, 150#, 6"to 24" Line Sizes, FloTap	I	SEP			
Rosemount 485/x051xFA: Sensor Size 2, 300#, 6"to 24" Line Sizes, FloTap	II	I			
Rosemount 485/x051xFA: Sensor Size 2, 600#, 6"to 16" Line Sizes, FloTap	II	I			
Rosemount 485/x051xFA: Sensor Size 2, 600#, 18"to 24" Line Sizes, FloTap	III	II			
Rosemount 485/x051xFA: Sensor Size 3, 150#, 12"to 44" Line Sizes, FloTap	II	I			
Rosemount 485/x051xFA: Sensor Size 3, 150#, 46"to 72" Line Sizes, FloTap	III	II			
Rosemount 485/x051xFA: Sensor Size 3, 300#, 12" to 72" Line Sizes, FloTap	III	II			
Rosemount 485/x051xFA: Sensor Size 3, 600#, 12"to 36" Line Sizes, FloTap	III	II			
Rosemount 485/x051xFA: Sensor Size 3, 600#, 48" to 72" Line Sizes, FloTap	IV*	III			
All other Rosemount Primary Elements and DP Flowmeters	SEP	SEP			

#### Certificate of Assessment - CE-0041-H-RMT-001-13-USA

IV\* Category IV Flo Tap requires a B1 Certificate for design examination and H1 Certificate for special surveillance

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# EU Declaration of Conformity No: DSI 1000 Rev. L



Pressure Equipment Directive Notified Body:

Bureau Veritas UK Limited [Notified Body Number: 0041]
Parklands, Wilmslow Road, Didsbury
Manchester M20 2RE
United Kingdom

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表格 1B: 含有 China RoHS 管控物质超过最大浓度限值的部件型号列表 Rosemount 585 Table 1B: List of Rosemount 585 Parts with China RoHS Concentration above MCVs

	Table II	able 1B: List of Rosemount 585 Parts with China Rohs Concentration above MCVs						
	有害物质 / Hazardous Substances							
部件名称 Part Name	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers 多溴联苯醚 (PBDE)		
铝制温度传感器外壳组 件 Aluminum RTD Housing Assembly	0	0	0	Х	0	0		

本表格系依据 SJ/T11364 的规定而制作。

- This table is proposed in accordance with the provision of SJ/T11364
- O: 意为该部件的所有均质材料中该有害物质的含量均低于 GB/T 26572 所规定的限量要求.
- O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.
- X: 意为在该部件所使用的所有均质材料里,至少有一类均质材料中该有害物质的含量高于 GB/T 26572 所规定的限量要求.
- X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

上述申明仅适用于选择铝制外壳组件的产品。其他所有差压流量一次元件的组件所含有的 China RoHS 管控物质浓度均低于 GB/T 26572 所规定的限量要求。关于差压流量计变送器组件的管控物质浓度的申明,请参看变送器的快速安装指南。

The disclosure above applies to units supplied with aluminum connection heads. No other components supplied with DP Flow primary elements contain any restricted substances. Please consult the transmitter Quick Start Guide (QIG) for disclosure information on transmitter components.



**Quick Start Guide** 00825-0100-4585, Rev AB June 2016

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