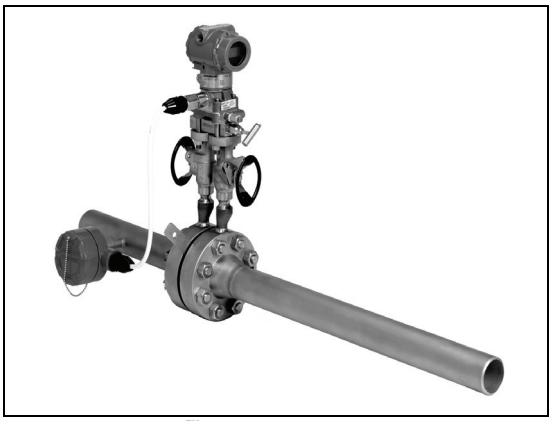
Product Data Sheet
00813-0100-4792, Rev FA
March 2005

Rosemount 1495 Orifice Plate, 1496 Flange Union, 1497 Meter Section

- *Comprehensive offering*
- *Easy to use, prove, and troubleshoot*
- *The Rosemount 1495 Orifice Plate is approved for custody transfer by AGA and API. Meets ISO and DIN specifications*
- *Suitable for most gas, liquid, and steam applications*



Rosemount 3095MV™ with Hookup into a Rosemount 1497 Meter Section with a Rosemount 1495 Orifice Plate

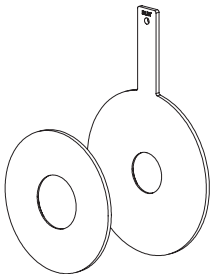
Content

The Rosemount 1495, 1496, and 1497

Rosemount 1495 Orifice Plate

- The most common primary element in the world with established standards for manufacture and installation
- Reliable technology measurement due to known historical flow data
- Easy to use, prove, and troubleshoot
- Approved for custody transfer by AGA and API
- Good for most gas, liquid, and steam as well as high temperature and pressure applications
- Meets AGA, ASME, ISO, and API standards, ensuring precision flow measurement.
- Available for DIN 19206 Part 1

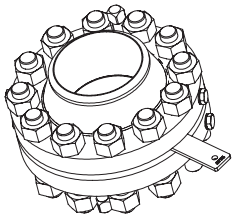
FIGURE 1. Orifice Plate



Rosemount 1496 Flange Union

- Cost effective flow measurement
- No on-site flange tap drilling required
- All hardware for complete assembly is provided, including studs, nuts, jack screws, gaskets, and pipe plugs
- Meets high pressure and temperatures requirement up to ANSI Class 2500#
- Meets ANSI B16.36
- Flange unions available per DIN 19214 Part 1

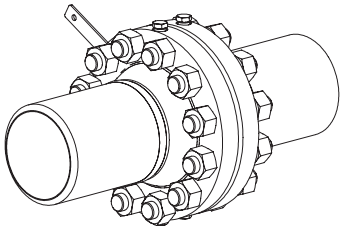
FIGURE 2. Flange Union



Rosemount 1497 Flange Union Meter Section

- Upstream and downstream piping provided
- Ease of installation with various piping connections
- Optional temperature tap is available

FIGURE 3. Meter Section



Shown with 1495 and 1496. Orifice Plate ordered separately

Rosemount DP Flow Solutions

Annubar **Flowmeter Series: Rosemount 3051SFA, 3095MFA, 485, and 285**

The state-of-the-art, fifth generation Rosemount 485 *Annubar* combined with the 3051S or 3095MV MultiVariable transmitter creates an accurate, repeatable and dependable insertion-type flowmeter. The Rosemount 285 provides a commercial product offering for your general purpose applications.

Compact Orifice Flowmeter Series: Rosemount 3051SFC, 3095MFC, and 405

Compact Orifice Flowmeters can be installed between existing flanges, up to a Class 600 (PN100) rating. In tight fit applications, a conditioning orifice plate version is available, requiring only two diameters of straight run upstream.

Integral Orifice Flowmeter Series: Rosemount 3051SFP, 3095MFP, and 1195

These integral orifice flowmeters eliminate the inaccuracies that become more pronounced in small orifice line installations. The completely assembled, ready to install flowmeters reduce cost and simplify installation.

Orifice Plate Primary Element Systems: Rosemount 1495 and 1595 Orifice Plates, 1496 Flange Unions and 1497 Meter Sections

A comprehensive offering of orifice plates, flange unions and meter sections that is easy to specify and order. The 1595 Conditioning Orifice provides superior performance in tight fit applications.

Specification

PERFORMANCE

Rosemount 1497 Meter Section Quality Assurance

Optional

- Code Welding to ASME Section IX
- Post Weld Heat treatment
- Non-Destructive Examination: Hydrostatic, Radiography, and Dye Penetrant

Standard Pipe Schedules

TABLE 1. Default Pipe Schedules for 1496 Orifice Flange Unions

Pipe Size(1)	ANSI 150# (WN)	ANSI 300# (WN, TH, SO)	ANSI 600# (WN, RJ)	ANSI 900# (WN, RJ)	ANSI 1500# (WN, RJ)	ANSI 2500# (WN, RJ)
1 (35.4)	Standard	Standard	Standard	Standard	80(2)	160
1½ (38.1)	Standard	Standard	Standard	Standard	160	XXS
2 (50.8)	Standard	Standard	Standard	Standard	160	XXS
2½ (63.5)	Standard	Standard	Standard	80(2)	160	XXS
3 (76.2)	Standard	Standard	Standard	80(2)	160	Wall thickness is beyond the available standard pipe schedules
4 (101.6)	Standard	Standard	Standard	80(2)	160	
6 (152.4)	Standard	Standard	80(2)	80(2)	XXS	
8 (203.2)	Standard	Standard	80(2)	120	Wall thickness is beyond the available standard pipe schedules	
10 (254)	Standard	Standard	80(2)	120		
12 (304.8)	Standard	Standard	80(2)	120		
14 (355.6)	Standard	Standard	80(2)	120		
16 (406.4)	Standard	XS	80(2)	120		
18(457.2)	Standard	XS	80(2)	120		
20 (508)	Standard	XS	80(2)	120		
24-(609.6)	Standard	40(3)	80(2)	120		

(1) Measurement is in inches (millimeters).

(2) Flange Unions are supplied with Schedule 80S if 316/316L SST or 304/304L SST materials are selected.

(3) Flange Unions are supplied with Schedule 40S if 316/316L SST or 304/304L SST materials are selected.

TABLE 2. Default Pipe Schedules for 1497 Orifice Meter Runs

Pipe Size(1)	ANSI 150# (WN)	ANSI 300# (WN, TH, SO)	ANSI 600# (WN, RJ)	ANSI 900# (WN, RJ)	ANSI 1500# (WN, RJ)	ANSI 2500# (WN, RJ)
1 (35.4)	Standard	Standard	Standard	Standard	80(2)	160
1½ (38.1)	Standard	Standard	Standard	Standard	160	XXS
2 (50.8)	Standard	Standard	Standard	Standard	160	XXS
2½ (63.5)	Standard	Standard	Standard	80(2)	160	XXS
3 (76.2)	Standard	Standard	Standard	80(2)	160	Not Available
4 (101.6)	Standard	Standard	Standard	80(2)	160	
6 (152.4)	Standard	Standard	80(2)	80(2)	XXS	
8 (203.2)	Standard	Standard	80(2)	120	Not Available	
10 (254)	Standard	Standard	80(2)	120		
12 (304.8)	Standard	Standard	80(2)	120		
14 (355.6)	Standard	Standard	80(2)	120		
16 (406.4)	Standard	XS	80(2)	120		
18(457.2)	Standard	XS	80(2)	120		
20 (508)	Standard	XS	80(2)	120		
24-(609.6)	Standard	40(3)	80(2)	120		

(1) Measurement is in inches (millimeters).

(2) Meter Runs are supplied with Schedule 80S if 316/316L SST or 304/304L SST materials are selected.

(3) Meter Runs are supplied with Schedule 40S if 316/316L SST or 304/304L SST materials are selected.

TABLE 3. Dimensions of Pipe Inner Diameter(1)

Nominal Pipe Size	Schedule					
	5S	10	10S	20	30	40
2 (51)	2.245 (57.02)	2.157 (54.79)	2.157 (54.79)	–	–	2.067 (52.501)
2½- (64)	2.709 (68.81)	2.635 (66.93)	2.635 (66.93)	–	–	2.469 (62.71)
3 (76)	2.224 (56.49)	3.26 (82.80)	3.26 (82.80)	–	–	3.068 (77.93)
4 (102)	4.334 (110.08)	4.26 (108.20)	4.26 (108.20)	–	–	4.026 (102.26)
6 (152)	6.407 (162.74)	6.357 (161.47)	6.357 (161.47)	–	–	6.065 (154.05)
8 (203)	8.407 (213.54)	8.329 (211.56)	8.329 (211.56)	8.125 (206.38)	8.071 (205)	7.981 (202.72)
10 (254)	10.482 (266.24)	10.42 (264.67)	10.42 (264.67)	10.25 (260.35)	10.136 (257.45)	10.20 (254.51)
12 (305)	12.438 (315.93)	12.39 (314.71)	12.39 (314.71)	12.25 (311.15)	12.09 (307.09)	11.938 (303.23)
14 (356)	–	13.5 (342.90)	13.624 (346.05)	13.376 (339.75)	13.25 (336.55)	13.124 (333.35)
16 (406)	–	15.5 (393.70)	15.624 (396.85)	15.376 (390.55)	15.25 (387.35)	15.0 (381.0)
18 (457)	–	17.5 (444.50)	17.624 (447.65)	17.376 (441.35)	17.126 (435.00)	16.976 (431.19)
20 (508)	–	19.5 (495.30)	19.564 (496.93)	19.25 (488.95)	19.0 (482.60)	18.814 (477.88)
24 (610)	–	23.5 (596.90)	23.5 (596.90)	23.25 (590.55)	22.876 (581.05)	22.626 (574.70)

	Schedule					
	40S	Standard	60	80	80S	XS
2 (51)	2.067 (52.501)	2.067 (52.50)	–	1.939 (49.25)	1.939 (49.25)	1.939 (49.25)
2½- (64)	2.469 (62.71)	2.469 (62.71)	–	2.323 (59.0)	2.323 (59.0)	2.323 (59.0)
3 (76)	3.068 (77.93)	3.068 (77.93)	–	2.90 (73.66)	2.90 (73.66)	2.90 (73.66)
4 (102)	4.026 (102.26)	4.026 (102.26)	–	3.826 (97.18)	3.826 (97.18)	3.826 (97.18)
6 (152)	6.065 (154.05)	6.065 (154.05)	–	5.761 (146.33)	5.761 (146.33)	5.761 (146.33)
8 (203)	7.981 (202.72)	7.981 (202.72)	7.813 (198.45)	7.625 (193.68)	7.625 (193.68)	7.625 (193.68)
10 (254)	10.02 (254.51)	10.20 (259.08)	9.75 (247.65)	9.564 (242.94)	9.75 (247.65)	9.75 (247.65)
12 (305)	12.0 (304.8)	12.00 (304.80)	11.626 (41.30)	11.376 (288.95)	11.75 (298.45)	11.75 (298.45)
14 (356)	–	13.250 (336.55)	12.814 (325.48)	12.50 (317.50)	–	13.0 (330.20)
16 (406)	–	15.250 (387.35)	14.688 (373.08)	14.314 (363.58)	–	15.0 (381.0)
18 (457)	–	17.250 (438.15)	16.5 (419.10)	16.126 (409.60)	–	17.0 (425.0)
20 (508)	–	19.252 (488.95)	18.376 (466.75)	17.938 (455.63)	–	19.0 (482.60)
24 (610)	–	23.250 (590.55)	22.064 (560.43)	21.564 (547.73)	–	23.0 (584.20)

	Schedule				
	100	120	140	160	XXS
2 (51)	–	–	–	1.689 (42.9)	1.503 (38.18)
2½- (64)	–	–	–	2.125 (53.98)	1.771 (44.98)
3 (76)	–	–	–	2.624 (66.65)	2.30 (58.42)
4 (102)	–	3.624 (92.005)	–	3.438 (87.33)	3.152 (78.80)
6 (152)	–	5.501 (139.73)	–	5.189 (131.80)	4.897 (124.28)
8 (203)	7.437 (188.90)	7.189 (157.15)	7.001 (177.83)	6.813 (173.05)	6.875 (174.63)
10 (254)	9.314 (236.58)	9.064 (230.23)	8.75 (222.25)	8.50 (215.90)	–
12 (305)	11.064 (281.03)	10.75 (273.05)	10.5 (266.70)	10.126 (257.20)	–
14 (356)	12.126 (308.00)	11.814 (300.08)	11.5 (37.50)	11.188 (284.18)	–
16 (406)	13.938 (354.03)	13.564 (344.53)	13.124 (333.35)	12.814 (325.48)	–
18 (457)	15.688 (398.27)	15.25 (387.35)	14.876 (377.85)	14.438 (366.73)	–
20 (508)	17.44 (443.98)	17.0 (431.80)	16.5 (410.10)	16.064 (408.03)	–
24 (610)	20.938 (531.83)	20.376 (517.55)	19.876 (504.85)	19.314 (490.58)	–

(1) Measurement is in inches (millimeters).

FUNCTIONAL

Service and Flow Range

Liquid, gas or vapor turbulent flow, for pipe Reynold's Numbers greater than 2,000.

Pipe Sizes

2-in. to 24-in. (50 mm to 600 mm). Contact Emerson Process Management for pipe sizes less than 2-in. (50 mm) or greater than 24-in. (600 mm).

Rosemount 1497 Meter Section Pipe Length

("D" is the inside diameter of the pipe)

Upstream

- 10D

Downstream

- 5D (standard)
- 8D (if temperature tap is selected)

Custom

- Contact Rosemount for more information

Operating Limits

Temperature Range: –320 to 1200 °F (–196 to 649 °C)

- – 320 to 800 °F (–196 to 427 °C) and differential pressure up to 800 inH_20
- 800 to 1200 °F (427 to 649 °C) and differential pressure up to 400 inH_20

Maximum Working Pressure

- Flange rating per ANSI B16.5.

PHYSICAL

Materials of Construction

Orifice Plate

304/304L or 316/316L Stainless Steel ASTM A240; DIN 1.4571 (316Ti SST); Hastelloy® C-276 ASTM B575; or Monel® 400 ASTM B127.

Flange Unions

Orifice Flanges (ANSI B16.36): Carbon Steel ASTM A105 / A350; Stainless Steel ASTM A182; Hastelloy ASTM B564/575; or Monel 400 ASTM B564/127; DIN 1.4571 (316Ti SST); DIN 1.0460 (carbon steel)

Flange Mounting Hardware

- Studs: ASTM A193 Grade B7M
- Nuts: ASTM A194 Gr 2H
- Jackscrews: ASTM A307
- Gaskets: Non-asbestos ring type, Durlon® 8500 Green or equivalent
- Pipe Plugs: Match flange material

NOTE:
Stainless Steel bolting is available as an option.

Meter Sections

- Pipe: Carbon Steel ASTM A106 Grade B; Stainless Steel ASTM A312; Hastelloy ASTM B619 / B622, or Monel ASTM B165
- Flanges (ANSI B16.5): Carbon Steel ASTM A105 / A350; Stainless Steel ASTM A182; Hastelloy ASTM B564/575, or Monel 400 ASTM B564/127
- See "Standard Pipe Schedules" and Table 3 on page 4.

Orifice Bore Sizes

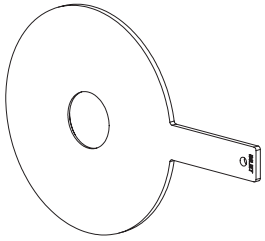
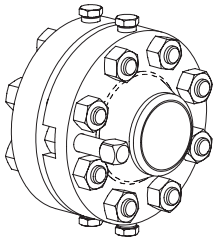
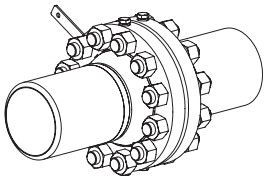
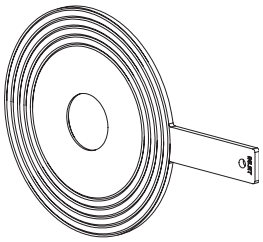
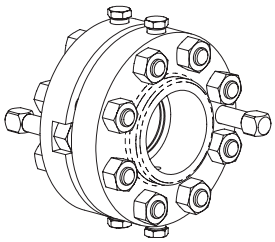
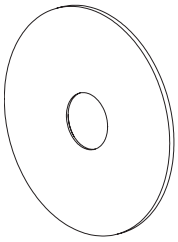
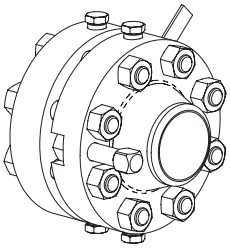
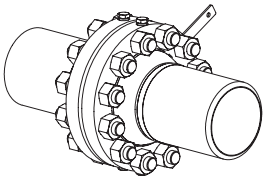
Standard bore sizes are in $^1/_8$-in. (3.2 mm) increments from ½-in. (12.7 mm) to 4-in. (101.6 mm) and in $^1/_4$-in. (6.3 mm) increments from $4^1/_4$ to 6-in. (107.95 mm to 152.4 mm).

If required, Rosemount Inc. can determine the orifice bore. Basic flow data is required at the time of order, see "Calculation Data Sheet" .

Bore tolerances are within AGA and ASME specifications. Pressure tap connections are ½ -in. (12.7 mm) NPT and 180° apart as standard. The tap hole diameter is ¼-in. (6.35 mm) for 2-in. (51 mm) size, $^3/_8$-in. (9.6 mm) for 2½ -in. (63.5 mm) size and 3-in. (76.2 mm), and ½-in. (12.7 mm) for 4-in. (101.6 mm) and larger sizes. Available options allow the user to have the Rosemount 1495 sized for specific operating conditions. The "Orifice Plate Dimensional Drawings" on page 8 specifies the physical parameters of the orifice from a detailed sizing calculation.

Sizing and How to Order

When making a selection, move from left to right, selecting an option in Column 1 and/or either Column 2 or Column 3.

	Column 1	Column 2	Column 3
	Orifice Paddle Type	**Flange Union**	**Meter Section**
Paddle Type	**1495 PC** Paddle, square edged, concentric 	**1496 WN** Raised Face (RF) Weld Neck (for use with paddle type orifice plates) 	**1497 WN** Raised Face (RF) Weld Neck (for use with paddle type orifice plates) 
	1495 PG Paddle, square edged, concentric, spiral finish 	**1496 SO / TH** Raised Face (RF) Slip On / Threaded (for use with paddle type orifice plates) 	
	Orifice Universal Type	**Flange Union**	**Meter Section**
Universal Type	**1495 UC** Universal, square edged, concentric 	**1496 RJ** Ring Type Joint (RTJ) Weld Neck (for use with universal orifice plates with plate holder) 	**1497 RJ** Ring Type Joint (RTJ) Weld Neck (for use with universal orifice plates with plate holder) 

Continued on next page

Column 1	Column 2	Column 3
Determine Bore Diameter:	**Flange Union**	**Meter Section**
Choose Flange Rating: ANSI Class 300#, 600#, 900#, 1500#, or 2500# DIN flange ratings: PN10, PN16, PN25, PN40, PN63, PN100	ANSI Class 300#, 600#, 900#, 1500#, or 2500# DIN flange ratings: PN10, PN16, PN25, PN40, PN63, PN100	ANSI Class 300#, 600#, 900#, 1500#, or 2500#
Material: • SST 316L or 304L DIN 1.4571 (316Ti SST) • Monel • Hastelloy	• A105 DIN 1.0460 (CS) • SST 316L or 304L DIN 1.4571 (316Ti SST) • Monel • Hastelloy	• A105 • SST 316L or 304L • Monel • Hastelloy
Choose Line Size: • 2 to 24-in. (50 to 600 mm) • Contact Emerson Process Management for lines over 24-in. (600 mm)	• 2 to 24-in. (50 to 600 mm) • Contact Emerson Process Management for lines over 24-in. (600 mm)	• 2 to 24-in. (50 to 600 mm) • Contact Emerson Process Management for lines less than 2-in. (51 mm) or greater than 24-in. (600 mm)
Choose Plate Thickness: • Default is 0.125-in. (3.2 mm) for 2 to 6-in (50 to 150 mm) line size • Default is 0.250-in. (6.35 mm) for 8 to 14-in (200 to 350 mm) line size • Default is 0.375-in. (9.53) for 16 to 20-in. (400 to 500 mm) • Default is 0.500-in. (12.7 mm) for 24-in (600 mm) line size • Contact Emerson Process Management for lines over 24-in. (600 mm).		**Choose Tap Location:** • Flange taps are standard. However, the radius of the pipe may also be selected. • Flange Taps/Pipe Taps ($2^1/_2$ Dx8D)/Radius taps (D & D/2) are available
Refer to Instrument Toolkit™ for orifice plate sizing. Or, Rosemount Inc. will calculate the bore diameter by specifying option code BC in the 1495 ordering table. Include all of the flowing conditions and pipe information for the application on the CDS. See the “Calculation Data Sheet” for a detailed sizing calculation.		**Choose Piping Connection:** • Beveled • Threaded • Flanged

CONFIGURATION

Standard configuration is with a square-edged concentric bore in both paddle and universal type plates. Also available with a spiral finish. Final inspection reports illustrating plate thickness, concentricity, outside dimensions, inside dimensions, roundness, and flatness are available.

- Bore calculations are available if the Configuration Data Sheet (CDS) is completed and Option BC is selected.
- Line sizes larger than 24-in. (609.6 mm) are available. Contact Rosemount.

Rosemount 1495 Orifice Plate

ORIFICE PLATE DIMENSIONAL DRAWINGS

1495PC Paddle Type Orifice Plate
(DIN, Paddle, Square edged, Concentric)

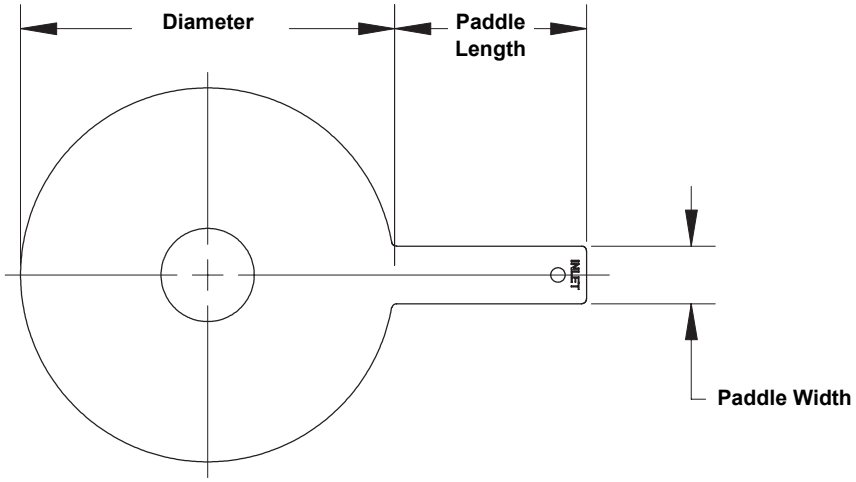
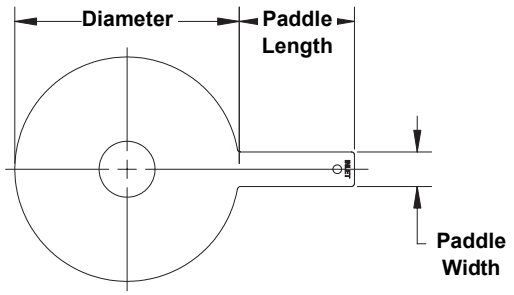


TABLE 4. Orifice Plate Dimensions[1]

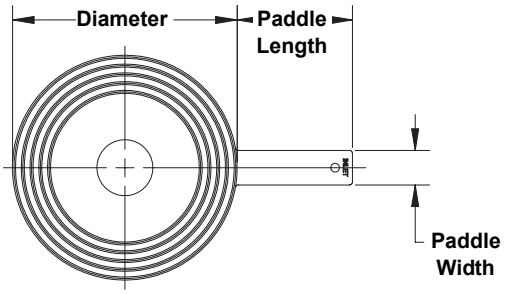
DN	Diameter (max) – by flange rating						Handle Dimensions
	PN 10	PN 16	PN 25	PN 40	PN 63/64	PN 100	
DN 50	4.21 (107)	4.21 (107)	4.21 (107)	4.21 (107)	4.45 (113)	4.69 (119)	4.72 (120)
DN 65	5 (127)	5 (127)	5 (127)	5 (127)	5.43 (138)	5.67 (144)	4.72 (120)
DN 80	5.6 (142)	5.6 (142)	5.6 (142)	5.6 (142)	5.82 (148)	6.06 (154)	4.72 (120)
DN 100	6.38 (162)	6.38 (162)	6.61 (168)	6.61 (168)	6.85 (174)	7.09 (180)	5.51 (140)
DN 125	7.56 (192)	7.56 (192)	7.64 (194)	7.63 (194)	8.27 (210)	8.54 (217)	5.51 (140)
DN 150	8.58 (218)	8.58 (218)	8.82 (224)	8.82 (224)	9.72 (247)	10.12 (257)	5.51 (140)
DN 200	10.74 (273)	10.74 (273)	11.18 (284)	11.42 (290)	12.17 (309)	12.76 (324)	5.51 (140)
DN 250	12.91 (328)	12.95 (329)	13.39 (340)	13.86 (352)	14.33 (364)	15.39 (391)	5.51 (140)
DN 300	14.88 (378)	15.11 (384)	15.75 (400)	16.42 (417)	16.69 (424)	18.03 (458)	5.51 (140)
DN 350	17.24 (438)	17.48 (444)	17.99 (457)	18.66 (474)	19.13 (486)	20.16 (512)	5.51 (140)
DN 400	19.25 (489)	19.49 (495)	20.24 (514)	21.49 (546)	21.38 (543)	22.52 (572)	5.51 (140)
DN 450	21.22 (539)	21.85 (555)	22.24 (565)	22.48 (571)	Not Applicable	Not Applicable	5.51 (140)
DN 500	23.39 (594)	24.29 (617)	24.57 (624)	24.72 (628)	25.87 (657)	27.72 (704)	6.30 (160)

(1) Measurement is in inches (millimeters)

1495PC Orifice Paddle Type
(Paddle, Square edged, Concentric)

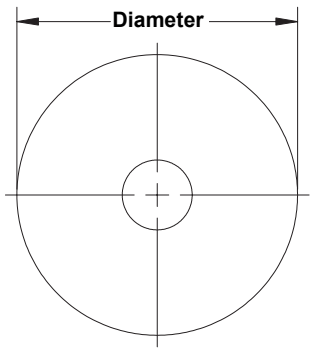


1495PG Orifice Paddle Type
(Paddle, Square edged, Concentric, Spiral finish)



Line Size	Diameter for Paddle Type 150#	300#	600#	900#	1500#	2500#	Paddle Length	Paddle Width
2-in.	4.125-in. (104.78 mm)	4.375-in. (111.13 mm)	4.375-in. (111.13 mm)	5.625-in. (142.875 mm)	5.625-in. (142.875 mm)	5.750-in. (146.05 mm)	4-in. (101.6 mm)	1-in. (25.4 mm)
2 1/2-in.	4.875-in. (123.82mm)	5.125-in. (130.18 mm)	5.125-in. (130.18 mm)	6.500-in. (165.1 mm)	6.500-in. (165.1 mm)	6.625-in. (168.275 mm)	4-in. (101.6 mm)	1-in. (25.4 mm
3-in.	5.375-in. (136.53 mm)	5.875-in. (149.23 mm)	5.875-in. (149.23 mm)	6.625-in. (168.275 mm)	6.875-in. (174.625 mm)	7.750-in. (196.85 mm)	4-in. (101.6 mm)	1 1/4-in. (31.75 mm)
4-in.	6.875-in. (174.63 mm)	7.125-in. (180.98 mm)	7.625-in. (266.7 mm)	8.125-in. (206.375 mm)	8.250-in. (209.55 mm)	9.250-in. (234.95 mm)	4-in. (101.6 mm)	1 1/4-in. (31.75 mm)
6-in.	8.750-in. (222.25 mm)	9.875-in. (250.83 mm)	10.500-in. (266.7 mm)	11.375-in. (288.925 mm)	11.125-in. (282.575 mm)	12.500-in. (317.5 mm)	5-in. (127 mm)	1 1/2-in. (38.1 mm)
8-in.	11.000-in. (279.4 mm)	12.125-in. (307.98 mm)	12.625-in. (320.675 mm)	14.125-in. (358.775 mm)	13.875-in. (352.425 mm)	15.250-in. (387.35 mm)	5-in. (127 mm)	1 1/2-in. (38.1 mm
10-in.	3.375-in. (85.73 mm)	14.250-in. (361.95 mm)	15.750-in. (400.05 mm)	17.125-in. (434.975 mm)	17.125-in. (434.975 mm)	18.750-in. (476.25 mm)	6-in. (152.4 mm)	1 1/2-in. (38.1 mm
12-in.	16.125-in. (409.58 mm)	16.625-in. (422.26 mm)	18.000-in. (457.2 mm)	19.625-in. (498.475 mm)	20.500-in. (520.7 mm)	21.625-in. (549.275 mm)	6-in. (152.4 mm)	1 1/2-in. (38.1 mm
14-in.	17.750-in. (450.85 mm)	19.125-in. (485.78 mm)	13.375-in. (339.725 mm)	20.500-in. (520.7 mm)	22.750-in. (577.85 mm)	—	6-in. (152.4 mm)	1 1/2-in. (38.1 mm
16-in.	20.250-in. (514.35 mm)	21.250-in. (539.75 mm)	22.250-in. (565.15 mm)	22.625-in. (574.675 mm)	25.250-in. (641.35 mm)	—	6-in. (152.4 mm)	1 1/2-in. (38.1 mm
18-in.	21.500-in. (546.1 mm)	23.375-in. (593.725 mm)	24.000-in. (609.6 mm)	25.000-in. (635.00 mm)	27.625-in. (701.675 mm)	—	6-in. (152.4 mm)	1 1/2-in. (38.1 mm
20-in.	23.750-in. (603.25 mm)	25.625-in. (650.875 mm)	26.750-in. (679.45 mm)	27.375-in. (695.325 mm)	29.625-in. (752.475 mm)	—	6-in. (152.4 mm)	1 1/2-in. (38.1 mm
24-in.	28.125-in. (714.375 mm)	30.375-in. (771.525 mm)	31.000-in. (787.4 mm)	32.875-in. (835.025 mm)	35.500-in. (901.7 mm)	—	6-in. (152.4 mm)	1 1/2-in. (38.1 mm

1495UC Orifice Universal Type
(Universal, Square edged, Concentric



Line Size	Diameter for Universal Type
2-in.	2.437-in. (61.8998 mm)
2 1/2-in.	2.812-in. (71.4248 mm)
3-in.	3.437-in. (87.2998 mm)
4-in.	4.406-in. (111.912 mm)
6-in.	6.437-in. (163.5 mm)
8-in.	8.437-in. (214.3 mm)
10-in.	10.687-in. (271.45 mm)
12-in.	12.593-in. (319.862 mm)
14-in.	14.000-in. (355.6 mm)
16-in.	16.000-in. (406.4 mm)
18-in.	18.000-in. (457.2 mm)
20-in.	20.000-in. (508 mm)
24-in.	24.000-in. (609.6 mm)

ORDERING INFORMATION—ROSEMOUNT 1495 ORIFICE PLATE

TABLE 5. Rosemount 1495 Orifice Plate Ordering Table

Model	Product Description
1495	Orifice Plate Primary
Code	**Orifice Plate Type**
PC	Paddle, Concentric
PG	Paddle, Concentric, Spiral finish (only available up to 12-in (305 mm) line size)
UC	Universal, Concentric
Code	**Line Size**
020	2-in. (50 mm)
025	2½-in. (64 mm)
030	3-in. (80 mm)
040	4-in. (100 mm)
060	6-in. (150 mm)
080	8-in. (200 mm)
100	10-in. (250 mm)
120	12-in. (300 mm)
140	14-in. (350 mm)
160	16-in. (400 mm)
180	18-in. (450 mm)
200	20-in. (500 mm)
240	24-in. (600 mm)
Code	**Flange Rating**
A3	Flange ANSI Class 300 Raised Face
A6	Flange ANSI Class 600 Raised Face
A9	Flange ANSI Class 900 Raised Face
AF	Flange ANSI Class 1500 Raised Face
AT	Flange ANSI Class 2500 Raised Face
D1	Flange DIN PN10 (only available with Orifice Plate Type code PC)
D2	Flange DIN PN16 (only available with Orifice Plate Type code PC)
D3	Flange DIN PN25 (only available with Orifice Plate Type code PC)
D4	Flange DIN PN40 (only available with Orifice Plate Type code PC)
D5	Flange DIN PN63[(1)] (only available with Orifice Plate Type code PC)
D6	Flange DIN PN100 (only available with Orifice Plate Type code PC)
R3	Flange ANSI Class 300 Ring Joint (only available with Orifice Plate Type code UC and requires Plate Holder code PH)
R6	Flange ANSI Class 600 Ring Joint (only available with Orifice Plate Type code UC and requires Plate Holder code PH)
R9	Flange ANSI Class 900 Ring Joint (only available with Orifice Plate Type code UC and requires Plate Holder code PH)
RF	Flange ANSI Class 1500 Ring Joint (only available with Orifice Plate Type code UC and requires Plate Holder code PH)
RT	Flange ANSI Class 2500 Ring Joint (only available with Orifice Plate Type code UC and requires Plate Holder code PH)
Code	**Orifice Plate Material Type**
S	316/316L Stainless Steel
T	DIN 1.4571 (316Ti Stainless Steel) (only available with Flange Rating codes D1, D2, D3, D4, D5, D6)
L	304/304L Stainless Steel (not available with Flange Rating codes D1, D2, D3, D4, D5, D6)
H	Hastelloy® C-276 (Hastelloy C4 is supplied for Flange Rating codes D1, D2, D3, D4, D5, D6)
M	Monel®

TABLE 5. Rosemount 1495 Orifice Plate Ordering Table

Code	Plate Thickness
A	0.125-in. (3.2 mm) – default for line size 2 to 6-in. (50 to 150 mm)
B	0.250-in. (6.35 mm) – default for line size 8 to 14-in. (200 to 350 mm)
C	0.375-in. (9.53 mm) – default for line size 16 to 20-in. (200 to 350 mm)
D	0.500-in. (12.7 mm) – default for 24-in. (600 mm) line size
E(2)	Plate Thickness per DIN 19206
Code	**Bore**
XXXXX	Bore (XXXXX = XX.XXX)
Code	**Options**
Bore Calculations	
BC	Bore Calculation
Drain / Vent Hole	
DV(3)	Drain / Vent Hole
Plate Holder	
PH(4)	Plate Holder for RTJ Flanges
Alternative Plate Holder	
TC(3)	Conical Entrance Bore
TE(3)	Eccentric Bore
TS(3)	Segmental Bore
TQ(3)	Quandrant Edged Bore
Special Cleaning	
P2	Cleaning for special processes
Special Inspection	
QC1	Visual and dimensional inspection with certificate
QC7	Inspection and performance certificate
Material Traceability Certification	
Q8	Material certificate per ISO 10474 3.1.B and EN 10204 3.1.B
Code Conformance	
J5(5)	NACE MR-0175 / ISO 15156
Country Certification	
J1	Canadian Registration
Typical Model Number: 1495 PC 040 A3 S A 02125	

(1) Previously PN64.

(2) Standard Plate Thickness:
DN50 = 2.5 mm
DN65 = 3 mm
DN80 – 450 = 4 mm
DN 500 = 6 mm

(3) This option requires that the Pipe I.D. be specified in the order.

(4) Integral Plate Holder (material matches plate material) for line sizes to 3-in., requires minimum 1/4-in plate thickness. Screw Type Plate Holder in 304SS for line sizes 4-in. and larger.

(5) Materials of Construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.

Rosemount 1496 Flange Union

CONFIGURATION

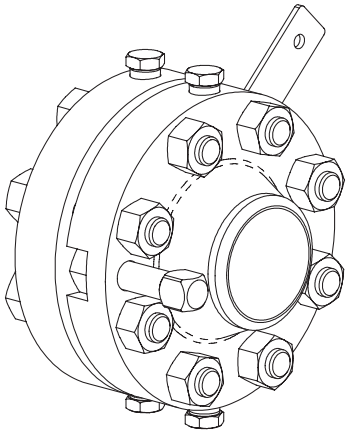
Standard flange styles are raised face (RF) weld neck or RF slip on (ANSI Class 300 only) for paddle type orifice plates, and ring type joint (RTJ) weld neck for universal type plates with plate holders. All flange unions are supplied with studs, nuts, jackscrews, gaskets, and pipe plugs. Table 1 and 2 lists standard pipe schedules.

- Meets ANSI B16.36
- Meets DIN part 19214 part 1
- Tap connection provided at 180-degrees apart

The following options are available.

- Socket weld tap connections can be specified in lieu of standard NPT
- High temperature flange gaskets for temperatures greater than 500 °F (260 °F)
- Stainless Steel flange bolting per ASTM A193 Grade B8M/A194 Grade 8M
- ANSI threaded flanges for connection to threaded process piping ($2^{1}/_{2}$-in. (63.5 mm) piping size maximum

Flange Union



Shown with 1495. Orifice Plate ordered separately

ORDERING INFORMATION—ROSEMOUNT 1496 FLANGE UNION

TABLE 6. Rosemount 1496 Orifice Flange Union Ordering Table

Model	Product Description
1496	Orifice Flange Union
Code	**Flange Union Type**
WN	Raised Face, Weld Neck
RJ	Ring Joint, Weld Neck
TH	Raised Face, Threaded (only available with Flange Rating code A3 and line sizes to 3-in.)
SO	Raised Face, Slip-On (only available with Flange Rating code A3)
DN	Raised Face, Weld Neck, DIN 19214 Part 1 (only available with Flange Rating codes D1, D2, D3, D4, D5, D6)
Code	**Line Size**
020	2-in. (50 mm)
025	2½-in. (64 mm)
030	3-in. (80 mm)
040	4-in. (100 mm)
060	6-in. (150 mm)
080	8-in. (200 mm)
100	10-in. (250 mm)
120	12-in. (300 mm)
140	14-in. (350 mm)
160	16-in. (400 mm)
180	18-in. (450 mm)
200	20-in. (500 mm)
240	24-in. (600 mm)
Code	**Flange Rating**
A3	Flange ANSI Class 300
A6	Flange ANSI Class 600
A9	Flange ANSI Class 900
AF	Flange ANSI Class 1500
AT	Flange ANSI Class 2500
D1	Flange DIN PN10 (only available with Flange Union Type code DN and line sizes 2-in (DN50) through 20-in. (DN500)
D2	Flange DIN PN16 (only available with Flange Union Type code DN and line sizes 2-in (DN50) through 20-in. (DN500)
D3	Flange DIN PN25 (only available with Flange Union Type code DN and line sizes 2-in (DN50) through 20-in. (DN500)
D4	Flange DIN PN40 (only available with Flange Union Type code DN and line sizes 2-in (DN50) through 20-in. (DN500)
D5	Flange DIN PN63[(1)](only available with Flange Union Type code DN and line sizes 2-in (DN50) through 20-in. (DN500)
D6	Flange DIN PN100 (only available with Flange Union Type code DN and line sizes 2-in (DN50) through 20-in. (DN500)
R3	Ring-Type Joint (RTJ) Class 300
R6	Ring-Type Joint (RTJ) Class 600
R9	Ring-Type Joint (RTJ) Class 900
RF	Ring-Type Joint (RTJ) Class 1500
RT	Ring-Type Joint (RTJ) Class 2500
Code	**Flange Union Material Type**
C	Carbon Steel (A105 DIN 1.4060)
S	316/316L Stainless Steel
T	DIN 1.4571 (316Ti Stainless Steel) (only available with Flange Union Type code DN)
L	304/304L Stainless Steel (not available with Flange Union Type code DN)
H	Hastelloy® C-276 (Hastelloy C4 is supplied for Flange Union Type code DN)
M	Monel®

TABLE 6. Rosemount 1496 Orifice Flange Union Ordering Table

Code	Options
Alternate Pipe Schedule / Wall Thickness[2]	
FA[3]	Schedule 5S
FB[3]	Schedule 10
FC[3]	Schedule 10S
FD[3]	Schedule 20
FE[3]	Schedule 30
FF[3]	Schedule 40
FG[3]	Schedule 40S
FH[3]	Schedule Standard (STD)
FI[3]	Schedule 60
FJ[3]	Schedule 80
FK[3]	Schedule 80S
FL[3]	Schedule Extra Strong (XS)
FM[3]	Schedule 100
FN[3]	Schedule 120
FP[3]	Schedule 140
FQ[3]	Schedule 160
FR[3]	Schedule Double Extra Strong (XXS)
High Temperature Gaskets	
G1	High Temperature Gaskets (spiral wound gaskets) (not available with Flange Union Type code DN)
Alternate Bolting Material	
SS	316SS Studs/Nuts
Alternate Pressure Tap Type	
ST	Socketweld Pressure Taps (not available with Flange Union Type code DN)
Special Cleaning	
P2	Cleaning for special processes
Special Inspection	
QC1	Visual and dimensional inspection with certificate
Material Traceability Certification	
Q8	Material certificate per ISO 10474 3.1.B and EN 10204 3.1.B
Code Conformance	
J5[4]	NACE MR-0175 / ISO 15156
Country Certification	
J1	Canadian Registration Number (not available with Flange Union Type code DN)
J6	Conformance to European Pressure Equipment Directive (PED) 97/23/EC
Typical Model Number: 1496 WN 040 A3 S	

(1) Previously PN64.

(2) Default pipe schedules are listed in Table 1 on page 3 for the 1496 Orifice Flange Unions.

(3) These options are not available with flange type DN. These options should only be selected if the required pipe schedule is different from the default pipe schedule, as shown in Table 1 on page 3. Standard wall thickness for DIN weldneck flanges is per ISO EN 1092-1 (2002). Consult the factory if a different wall thickness is required.

(4) Materials of Construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.

Rosemount 1497 Meter Section

CONFIGURATION

Meter sections are available in the same material selection as the Rosemount 1495 Orifice Plates and 1496 Flange Unions, with either Raised Face (RF) or Ring Type Joint (RTJ) weld neck flange connections. The standard meter section length is 10 pipe diameters upstream, 5 pipe diameters downstream, as shown in Table 8, with a choice of beveled, threaded, or flanged piping connection. Custom lengths available. Contact Rosemount for more information.

Piping conditions may require additional straight run, as shown in Table 7.

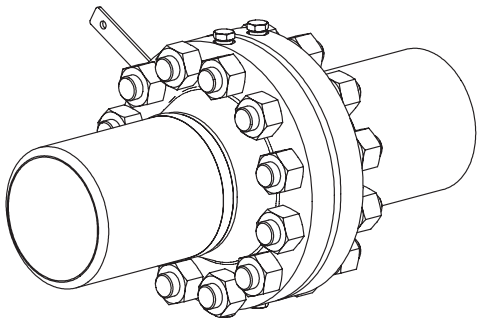
Numerous construction material options are available including 304/316 stainless steel, Hastelloy and Monel. Special materials, such as Inconel® 800H, Titanium or Alloy 20, can also be supplied if required.

Additional 1/2-in. (12.7 mm) or 1-in. (25.4 mm) NPT threaded (or socket-weld) fittings for auxiliary temperature are also available.

Meter section with special assemblies can be supplied. Contact Rosemount for more information.

Honed Meter Sections- Contact Rosemount Engineered Assemblies for more information.

Meter Section



Shown with 1495 and 1496. Orifice Plate ordered separately

TABLE 7. Recommended Straight Lengths for Nozzles and Orifice Plates for 0.5% Additional Uncertainty (From ASME MFC-3M1989)

	Upstream (Inlet) of the Primary Device											Downstream
β	Single 90° bend or tee (flow from one branch only)	Two or more 90° bends in the same plane[1]			Two or more 90° bends in different planes[1]			Reducer (2D to D over a length of 1.5D to 3D)	Expander (0.5D to D over a length of 1D to 2D)	Globe value fully open[2]	Full bore ball or gate valve fully open	All fittings included in this table
			C'	C		C'	C					
0.20	6	7	3.5	5	17	4.5	5	5[3]	8	6	6	2
0.25	6	7	3.5	5	17	4.5	5	5[3]	8	6	6	2
0.30	6	8	3.5	5	17	4.5	5	5[3]	8	6	6	2.5
0.35	6	8	3.5	5	18	4.5	5	5[3]	8	6	6	2.5
0.40	7	9	3.5	5	18	4.5	5	5[3]	8	10	6	3
0.45	7	9	4	5	19	5	5	5[3]	9	12	6	3
0.50	7	10	4	5	20	5	5	5	9	15	6	3
0.55	8	11	4	5	22	5.5	5.5	5	10	18	7	3
0.60	9	13	4.5	5.5	24	6	6	5	11	22	7	3.5
.065	11	16	5	6	27	6.5	6.5	6	13	25	8	3.5
0.70	14	18	5.5	6.5	31	7	7	7	15	25	10	3.5
0.75	18	21	6	7	35	8	8	11	19	25	12	4

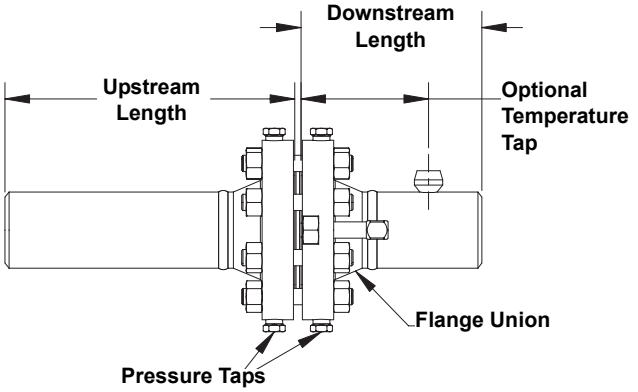
(1) The insertion of 5D to 10D straight lengths between the two bends is sufficient to make the combined effect the same as the single bends in the left column.

(2) These lengths require no additional uncertainty.

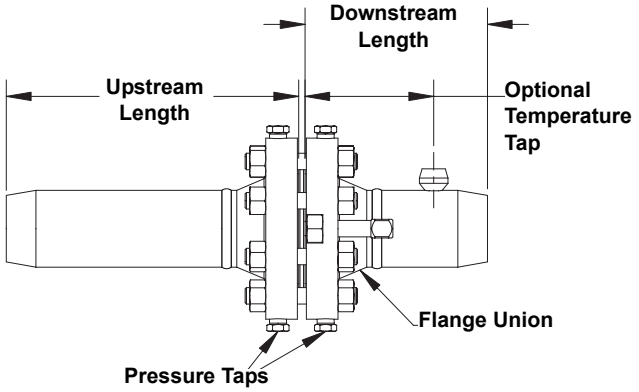
(3) These lengths require no additional uncertainty, but the uncertainties for shorter lengths are not well enough known to be given in this standard.

METER SECTION DIMENSIONAL DRAWINGS

Welded Meter Section



Threaded Meter Section



Flanged Meter Section

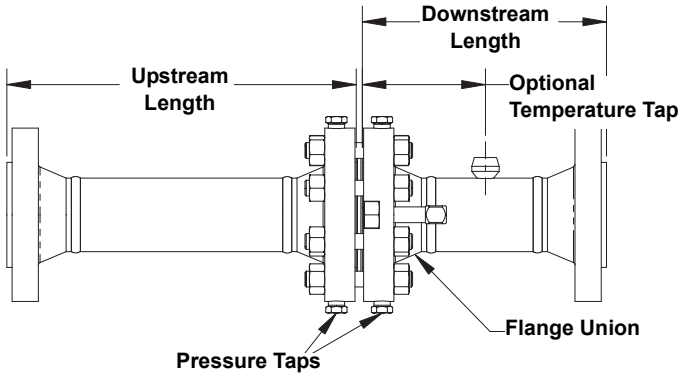


TABLE 8. Meter Section Lengths(1)

Nominal Size	Upstream Length	Downstream Length	Downstream Lengths (DSL) with Temperature Tap
2-in. (51 mm)	21-in. (533 mm)	11-in. (279 mm)	17-in. (432 mm)
2½-in. (64 mm)	26-in. (660 mm)	12.0-in. (305 mm)	21-in. (533 mm)
3-in. (76 mm)	32-in. (813 mm)	16-in. (406 mm)	24-in. (607 mm)
4-in. (102 mm)	41-in. (1041 mm)	21-in. (533 mm)	33-in. (838 mm)
6-in. (152 mm)	62-in. (1575 mm)	30.0-in. (762 mm)	48-in. (1219 mm)
8-in. (203 mm)	81-in. (2057 mm)	40-in. (1016 mm)	64-in. (1625 mm)
10-in. (254 mm)	101-in. (2565 mm)	51-in. (1295 mm)	82-in. (2082 mm)
12-in. (305 mm)	120.0-in. (3048 mm)	60.0-in. (1524 mm)	96.0-in. (2438 mm)
14-in. (356 mm)	134-in. (3404 mm)	66.0-in. (1676 mm)	106-in. (2692 mm)
16-in. (406 mm)	153-in. (3886 mm)	77-in. (1959 mm)	123-in. (3124 mm)
18-in. (457 mm)	173-in. (4394 mm)	87-in. (2209 mm)	138.0-in. (3505 mm)
20-in. (508 mm)	194-in. (4928 mm)	96.0-in. (2438 mm)	154-in. (3912 mm)
24-in. (610 mm)	230-in. (5842 mm)	115-in. (2921 mm)	171-in. (4343 mm)

(1) Standard length. See Table 7 for recommended straight run length.

TABLE 9. Meter Tube Pressure Tap Holes

Meter Tube Nominal Inside Diameter	Recommended Nominal Tap Hole Diameter	Maximum Nominal Tap Hole Diameter	Minimum Nominal Tap Hole Diameter
$2\frac{1}{2}$ to 3	$\frac{3}{8}$-in. (10 mm)	$\frac{3}{8}$-in. (10 mm)	$\frac{1}{4}$-in. (6 mm)
4 and larger	$\frac{1}{2}$-in. (13 mm)	$\frac{1}{2}$-in. (13 mm)	$\frac{1}{4}$-in. (6 mm)

Note: The finished tap hole will be $\pm\frac{1}{64}$-in. (0.4 mm) from the selected nominal tap hole diameter along the drilled length of the hole.

ORDERING INFORMATION—ROSEMOUNT 1497 METER SECTION

TABLE 10. Rosemount 1497 Orifice Meter Section Ordering Table

Model	Product Description
1497	Orifice Meter Section
Code	**Meter Section Type**
WN	Raised Face, Weld Neck
RJ	Ring Joint, Weld Neck
SO	Raised Face, Slip-On (only available with Flange Rating code A3)
Code	**Line Size**
020	2-in. (50 mm)
025	2½-in. (64 mm)
030	3-in. (80 mm)
040	4-in. (100 mm)
060	6-in. (150 mm)
080	8-in. (200 mm)
100	10-in. (250 mm)
120	12-in. (300 mm)
140	14-in. (350 mm)
160	16-in. (400 mm)
180	18-in. (450 mm)
200	20-in. (500 mm)
240	24-in. (600 mm)
Code	**Flange Rating**
A3	Flange ANSI Class 300
A6	Flange ANSI Class 600
A9	Flange ANSI Class 900
AF	Flange ANSI Class 1500
AT	Flange ANSI Class 2500
R3	Ring-Type Joint (RTJ) Class 300
R6	Ring-Type Joint (RTJ) Class 600
R9	Ring-Type Joint (RTJ) Class 900
RF	Ring-Type Joint (RTJ) Class 1500
RT	Ring-Type Joint (RTJ) Class 2500
Code	**Meter Section Material Type**
C	Carbon Steel
S	316/316L Stainless Steel
L	304/304L Stainless Steel
H	Hastelloy® C-276
M	Monel®
Code	**Pressure Tap Location / Type**
F	Flanged / 1/2-in. FNPT
G	Flanged / 1/2-in. Sock Tap
Code	**Meter Section End Connections**
B	Beveled (prepared for welding)
F	Flanged (flange rating matches orifice flange rating)
G	Flanged, ANSI Class 150
T	NPT Male Thread

TABLE 10. Rosemount 1497 Orifice Meter Section Ordering Table

Code	Options
Alternate Pipe Schedule / Wall Thickness[1]	
FA[2]	Schedule 5S
FB[2]	Schedule 10
FC[2]	Schedule 10S
FD[2]	Schedule 20
FE[2]	Schedule 30
FF[2]	Schedule 40
FG[2]	Schedule 40S
FH[2]	Schedule Standard (STD)
FI[2]	Schedule 60
FJ[2]	Schedule 80
FK[2]	Schedule 80S
FL[2]	Schedule Extra Strong (XS)
FM[2]	Schedule 100
FN[2]	Schedule 120
FP[2]	Schedule 140
FQ[2]	Schedule 160
FR[2]	Schedule Double Extra Strong (XXS)
Temperature Taps	
TO	Temperature Tap, fitting only, 1/2-in. NPT
TP	Temperature Tap, fitting only, 1/2-in. SW
TQ	Temperature Tap, fitting only, 3/4-in. NPT
TR	Temperature Tap, fitting only, 3/4-in. SW
TS	Temperature Tap, fitting only, 1-in. SW
TT	Temperature Tap, fitting only, 1-in. NPT
TV	Temperature Tap, fitting only, 1-in. flanged (rating matches orifice flange rating)
TW	Temperature Tap, fitting only, 1 1/2-in. flanged (rating matches orifice flange rating)
TX	Temperature Tap, fitting only, 2-in. flanged (rating matches orifice flange rating)
Additional Pressure Taps	
PO	Pressure Tap, fitting only, 1/2-in. NPT
PP	Pressure Tap, fitting only, 1/2-in. SW
PQ	Pressure Tap, fitting only, 3/4-in. NPT
PR	Pressure Tap, fitting only, 3/4-in. SW
PS	Pressure Tap, fitting only, 1-in. SW
PT	Pressure Tap, fitting only, 1-in. NPT
High Temperature Gaskets	
G1	High Temperature Gaskets (spiral wound gaskets)
Alternate Bolting Material	
SS	316 Stainless Steel Studs/Nuts
Hydrostatic Test	
P1	Hydrostatic Test (1.5 x design pressure for 10 minutes)
Dye Penetrant Examination	
V1	Dye Penetrant Examination
Radiographic Examination	
V2	Radiographic Examination
Special Inspection	
QC1	Visual and dimensional inspection with certificate

TABLE 10. Rosemount 1497 Orifice Meter Section Ordering Table

Material Traceability Certification	
Q8	Material certificate per ISO 10474 3.1.B and EN 10204 3.1.B
Code Conformance	
J2	ANSI B31.1
J3	ANSI B31.3
J4	ANSI B31.8
J5(3)	NACE MR-0175 / ISO 15156
Country Certification	
J1	Canadian Registration Number
J6	Conformance to European Pressure Equipment Directive (PED) 97/23/EC
Typical Model Number: 1497 WN 040 A3 C FF	

(1) Default pipe schedules are listed on Table 2 on page 3 for the 1497 Orifice Meter Runs.

(2) These options should only be selected if the required pipe schedule is different from the default pipe schedule, as shown in Table 2 on page 3. Standard wall thickness for DIN weldneck flanges is per ISO EN 1092-1 (2002). Consult the factory if a different wall thickness is required.

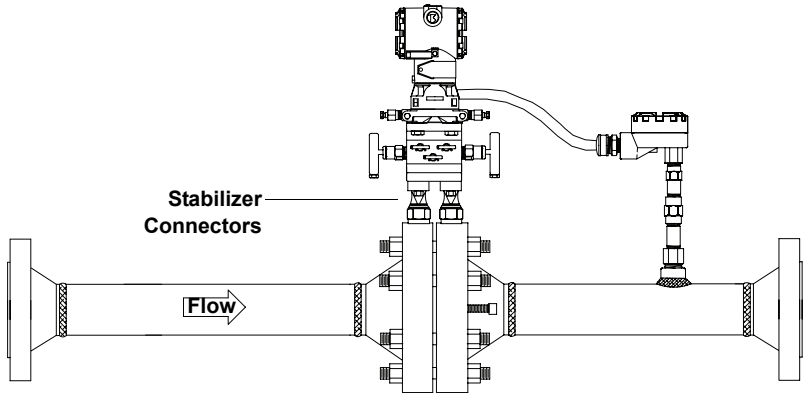
(3) Materials of Construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.

Accessories

STABILIZED CONNECTORS

Stabilized Connectors allow the direct connection between the manifold of the transmitter to the orifice flange union as shown in Figure 4.

FIGURE 4. Stabilized Connectors



Specifications

Process Connections

Short connectors

- ½-in. NPT threaded

Long connectors

- ½-in. NPT threaded

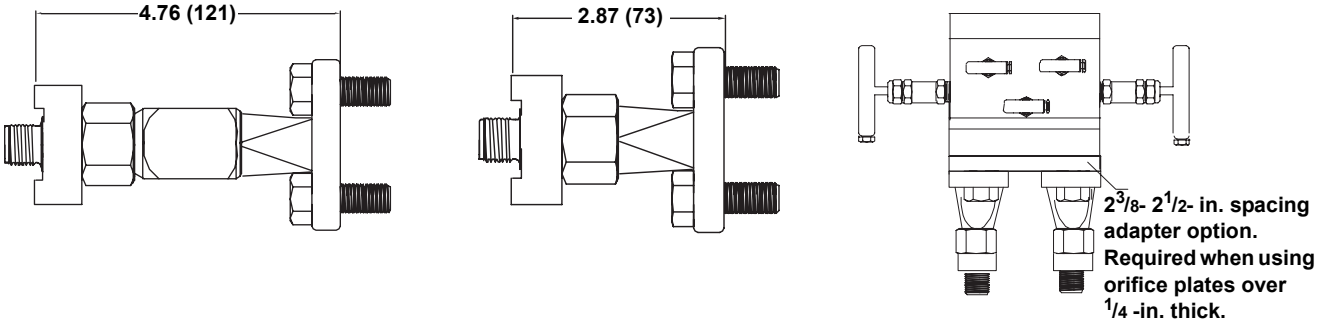
Body Material

316 SS

Pressure and Temperature limits

- 10,000 psi at 200°F
- 8,000 psi at 450°F

Long Connectors	Short Connectors	Adapter Plate for 3/8-in. and 1/2-in. Thick Plates



Dimensions are in inches (millimeters)

TABLE 11. Stabilized Connectors

Part Numbers	Description	Plate Thickness
116680830001	Short Connectors	1/8-in. and 1/4-in.
116680820001	Long Connectors	1/8-in. and 1/4-in.
116680830002	Short Connectors with SST Bolts	1/8-in. and 1/4-in.
116680820002	Long Connectors with SST Bolts	1/8-in. and 1/4-in.
116680820003	Long Connectors with spacing adaptor for Orifice Plates thicker than 1/4-in.	3/8-in. and 1/2-in.
116680820004	Long Connectors with SST Bolts with spacing adaptor for Orifice Plates thicker than 1/4-in.	3/8-in. and 1/2-in.
116680830004	Short Connectors with spacing adaptor for Orifice Plates thicker than 1/4-in.	3/8-in. and 1/2-in.
116680830005	Short Connectors with SST Bolts spacing adaptor for Orifice Plates thicker than 1/4-in.	3/8-in. and 1/2-in.

NOTE

The length of the Stabilized Connectors (4.76-inches vs. 2.87-inches) determines the distance between the Orifice Flange Union and the manifold.

Calculation Data Sheet

This Calculation Data Sheet can be provided. The detailed sizing calculation may be done through the “Configuration Data Sheet (CDS)” on page 22.

ROSEMOUNT INC.
1495 ORIFICE PLATE
CALCULATION DATA SHEET

GENERAL DATA

Customer:	Customer Name
Project:	2002 Official Calculations
S. O. No:	Sales Order Number
P. O. No:	Customer P.O Number
Calc. Date:	11/21/2001
Model No:	1495PC080A3SA04625BC
Tag No:	Tag Number

PRODUCT DESCRIPTION

Plate Type:	Square-edge	Tap Type:	Flange tapping
Plate Material:	316 SST	Tap Location:	Upstream
Drain/Vent Diameter:	None	Line Size:	8-inch
Process Connection		Pipe Schedule:	40
		Pipe Material:	Carbon Steel

INPUT DATA

Fluid Type:	Steam				
Fluid Description:					
Pipe I.D.	7.981	inch			
Pressure	60	psig	Base Pressure	14.6960001	psia
Temperature at Flow:	307.33	F	Base Temperature	59	F
Absolute Viscosity:	0.014093	cP			
Isentropic Exponent	1.317455				
Compressibility at Flow			Base Compressibility		
Density at Flow:	0.171328	lb/ft^3	Base Density		lb/ft^3
Flow Rates					
	Minimum:	6000	lb/hr		
	Normal:	8000	lb/hr		
	Maximum:	10000	lb/hr		
	Full Scale:	10000	lb/hr		

CALCULATED DATA (Calculation performed at normal conditions. DP in H_2O at 68 °F)

Orifice Bore Size:	4.000	inch	Bore Reynolds Number (Normal):	894278.832	
DP at Min. Flow:	16.379	in H_2O at 68 °F	Pipe Reynolds Number (Normal):	448514.484	
DP at Normal Flow:	29.117	in H_2O at 68 °F	Gas Expansion Factor:	0.99538888	
DP at Max. Flow:	45.496	in H_2O at 68 °F	Permanent Pressure Loss:		
URV (DP at Full Scale):	45.496	in H_2O at 68 °F	at Normal Flow:	21.2294996	in H_2O at 68 °F
Drain/Vent Corr. Factor:	1		at Max Flow:	33.1710931	in H_2O at 68 °F
Beta:	0.50119		Velocity at Max. Flow:	46.6687791	ft/sec
Discharge Coefficient	0.60366		Minimum Accurate Flow:	2111.34891	lb/hr

Notes

Calculation by VLB

Version: 3.0 (Build 91) Printed on: 11/27/01 11:07

Configuration Data Sheet (CDS)

DP FLOW CDS

Complete this form to define a custom flow configuration for DP Flowmeters. Unless specified, the flowmeter will be shipped with the default values identified by the H symbol.

For technical assistance in filling out this CDS, call a Rosemount representative.

NOTE
Any missing information will be processed with the indicated default values.

* = Required Item
★ = Default

Customer Information

Customer: Contact Name:

Customer Phone: Customer Fax:

Customer Approval Sign-Off: Customer PO:

Calculation Approval

❑ Check this box if you require a calculation for approval prior to manufacturing

Application and Configuration Data Sheet (Required with Order)

Tag:

Model No (1)

* **Select fluid type** ❑ Liquid ❑ Gas ❑ Steam

* **Fluid name**

Flowmeter Information (optional)

* Failure Mode Alarm Direction (select one) ❑ Alarm High★ ❑ Alarm Low

Software Tag: ___ ___ ___ ___ ___ ___ ___ ___ (8 characters)

Descriptor: ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ (16 characters)

Message: ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ (32 characters)

Date: Day __ __ (numeric) Month __ __ (numeric) Year __ __ (numeric)

(1) A complete model number is required before Rosemount Inc. can process the order.

For Rosemount Use Only

S.O.: LI
CHAMP: DATE:
ADMIN:

* = Required Item
★ = Default

Primary Element Information

* Select Differential Producer (Select One)

Annubar
- ❑ 485 Annubar/ 3095MFA Mass ProBar, 3051SFA ProBar
- ❑ Annubar Diamond II + / Mass Probar
- ❑ Long Radius Wall Taps, ASME
- ❑ Long Radius Wall Taps, ISO
- ❑ ISA 1932, ISO

Venturi
- ❑ Nozzle, ISO
- ❑ Rough Cast/Fabricated Inlet, ASME
- ❑ Round Cast Inlet, ISO
- ❑ Machined Inlet, ASME
- ❑ Machined Inlet, ISO
- ❑ Welded Inlet, ISO

Other (All options require a discharge coefficient value)
- ❑ Calibrated Orifice: Flange, Corner, or D & D/2 Taps.
  Discharge coefficient: _____
- ❑ Calibrated Orifice: $2^1/_2$ D & 8D Taps
  Discharge coefficient: _____
- ❑ Calibrating Nozzle
  Discharge coefficient: _____
- ❑ Calibrating Venturi
  Discharge coefficient: _____
- ❑ Area Averaging Meter
  Discharge coefficient: _____
- ❑ V-Cone®
  Discharge coefficient: _____

Orifice
- ❑ 3051SFP, 3095MFP, 1195
- ❑ 405C, 405P, 3051SFC, 3095MFC
- ❑ 1595 Conditioning Orifice
- ❑ $2^1/_2$D & 8D Taps, ASME
- ❑ Corner Taps, ASME
- ❑ Corner Taps, ISO
- ❑ D & D/2 Taps, ASME
- ❑ D & D/2 Taps, ISO
- ❑ D & D/2 Taps, ISO 99 Amendment 1
- ❑ Flange Taps, AGA
- ❑ Flange Taps, ASME
- ❑ Flange Taps, ISO
- ❑ Flange Taps, ISO 99 Amendment 1
- ❑ Small Bore, Flange Taps, ASME

Diameter (d) _____ ❑ inch★ ❑ millimeters at _____ ❑ °F ❑ °C ❑ 68 °F★

Special Annubar dimension (required if customer supplies mounting hardware). ❑ ODF _____ ❑ ODT _____

Pipe Information

* Orientation / Flow Direction: ❑ Vertical Up ❑ Vertical Down ❑ Horizontal

* Line Size / Schedule: _____ Body I.D. (D): _____

Materials of Construction

* Pipe Material ❑ Carbon Steel ❑ 304 SST ❑ 316 SST ❑ Hastelloy ❑ Other _____

* Primary Element Material ❑ 316 SST ❑ Hastelloy ❑ Other _____ (Please verify material availability)

Operating Conditions

	4 mA value	Minimum	Normal	Maximum	Full Scale:20 mA flow rate (design to P and T)	Design
Flow Rate	0	*(1)	*	*		
Pressure (P)	—	*(1)	*	*(1)	*(2)	
Temperature (T)	—	*(1)	*	*(1)	*	

RTD Mode

❑ Normal Mode ★ (Requires a RTD to be connected. If the RTD is disconnected or fails, the 3095MV output goes to alarm value)

❑ Fixed Temperature Mode: Specify the fixed temperature value _____ ❑ °F ❑ °C

❑ Backup Mode (Uses the connected RTD for temperature measurement. If the RTD is disconnected or fails, the transmitter uses a fixed temperature value as a backup. This will not cause the mA output to go to alarm value and can potentially cause inaccurate flow measurement.) Fixed temperature value to be used as backup_____ ❑ °F ❑ °C

Rosemount 1495, 1496, and 1497

* = Required Item
★ = Default

Base Conditions

❑ Standard Base (P=14.696 psia / 101.325 kPa abs, T= 60 °F (15.56 °C))

❑ Normal Base (P=14.696 psia / 101.325 kPa abs, T= 32 °F (0 °C))

❑ Standard Base for Natural Gas (AGA) (P=14.73 psia, T= 60°F (15.56 °C))

❑ User Defined: P= _____ Units: _____ T= _____ Units = _____

Compressibility at Base: _____ OR Density at Base: _____

(1) Operating ranges for pressure and temperature are needed for transmitter configuration.

(2) Required to verify that the product selection meets design criteria.

TABLE 12. Rosemount Fluids Database(1)

Acetic Acid	Divinyl Ether	Methane	n-Hexane	1-Heptanol
Acetone	Ethane	Methanol	n-Octane	1-Heptene
Acetonitrile	Ethanol	Methyl Acrylate	n-Pentane	1-Hexene
Acetylene	Ethylamine	Methyl Ethyl Ketone	Oxygen	1-Hexadecanol
Acrylonitrile	Ethylbenzene	Methyl Vinyl Ether	Pentafluorothane	1-0ctanol
Air	Ethylene	m-Chloronitrobenzene	Phenol	1-Octene
Allyl Alcohol	Ethylene	Neon	Propadiene	1-Nonanol
Ammonia	GlycolEthylene	Neopentane	Pyrene	1-Pentadecanol
Argon	Oxide	Nitric Acid	Propylene	1-Pentanol
Benzene	Fluorene	Nitric Oxide	Styrene	1-Pentene
Benzaldehyde	Furan	Nitrobenzene	Sulfer Dioxide	1-Undecanol
Benzyl Alcohol	Helium-4	m-Dichlorobenzene	Propane	1-Nonanal
Biphenyl	Hydrazine	Nitroethane	Toluene	1,2,4- Trichlorobenzene
Carbon Dioxide	Hydrogen	Nitrogen	Trichloroethylene	1,1,2- Trichloroethane
Carbon Monoxide	Hydrogen Chloride	Nitromethane	Vinyl Acetate	1,1,2,2- Tetrafluoroethane
Carbon Tetrachloride	Hydrogen Cyanide	Nitrous Oxide	Vinyl Chloride	1,2-Butadiene
Chlorine	Hydrogen Peroxide	n-Butane	Vinyl Cyclohexane	1,3-Butadiene
Chlorotrifluoroethylene	Hydrogen Sulfide	n-Butanol	Water	1,3,5- Trichlorobenzene
Chloroprene	Isobutane	n-Butyraldehyde	1-Butene	1,4-Dioxane
Cycloheptane	Isobutene	n-Butyronitrile	1-Decene	1,4-Hexadiene
Cyclohexane	Isobutyl benzene	n-Decane	1-Decanal	2-Methyl-1-Pentene
Cyclopentane	Isopentane	n-Dodecane	1-Decanol	2,2-Dimethylbutane
Cyclopentene	Isoprene	n-Heptadecane	1-Dodecene	
Cyclopropane	Isopropanol	n-Heptane	1-Dodecanol	

(1) This list is subject to change without notice. Steam per ASME Steam tables. All other fluids per AIChE.

Drawing/Notes

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