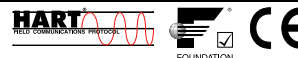


Rosemount Engineered Assemblies

A single, high performance, engineered solution designed to meet the highest industry standards:

- *Complete measurement solution, ready to install out of the box*
- *Designed and built to AGA3 Report No. 3 / API 14.3.2, ASME MFC-3M, ISO 5167 or other standards*
- *Engineered, tested, and calibrated*
- *Proven performance and technology*
- *Solutions designed for specific Pressure, Temperature, Level, and Flow applications*



Contents

How to Select your Engineered Assembly	page Flow-3
AGA Report Number 3 / API 14.3.2 Compliant Orifice Plate Flowmeter.	page Flow-5
1595 Conditioning Orifice Plate Flowmeter for Mass Flow	page Flow-6
1595 Conditioning Orifice Plate Flowmeter for Volumetric Flow	page Flow-8
1497/1495 Orifice Plate Flowmeter for Mass Flow	page Flow-10
1497/1495 Orifice Plate Flowmeter for Volumetric Flow	page Flow-11
1497/1495 Orifice Plate Flowmeter for Steam Flow	page Flow-12

One Application, One Purchase Order, One Assembly... Infinite Possibilities.

Rosemount Engineered Assemblies maintains the Emerson Process Management tradition of excellence by providing high quality solutions for all your measurement needs. Engineered to combine best products and best installation practices, Rosemount Engineered Assemblies provide a single, high performance, engineered solution designed to meet the highest industry standards.

Complete measurement solution, ready to install out of the box

The engineered assembly is factory configured, calibrated, leak tested, and ready to install right out of the box.

Designed and built to AGA3 Report No. 3 / API 14.3.2, ASME MFC-3M, ISO 5167 or other standards

Engineered Assemblies are engineered and built to the highest standards. Flowmeters are engineered to 40 CFR 75 Appendix D and E standards ensuring high accuracy and agency compliance (AGA3 Report No. 3 / API 14.3.2, EPA, etc.). Engineered Assemblies are ideal for EPA Acid Rain compliance or Custody Transfer applications.

Engineered, tested, and calibrated

Engineered Assemblies are engineered into a single assembly. One installation means reduced process penetrations, potential leak points, and lower installation costs saving start up time and money.

Proven performance and technology

The entire Rosemount transmitter family is available with Engineered Assemblies, bringing the communication benefits of Hart and Fieldbus, transmitter stability of up to 10 years, and flow accuracy better than $\pm 1.0\%$.

Solutions designed for specific Pressure, Temperature, Level and Flow applications

Emerson Process Management will work directly with you to meet the needs of your measurement solutions. For additional Engineered Assembly possibilities or capabilities please contact your local Emerson Process Management representative to design a specific application solution.

ADVANCED *PLANTWEB* FUNCTIONALITY



Engineered Assemblies Powers *PlantWeb* by combining the best installation practices with the best transmitters and field intelligence to reduce project risk and cost, and improve plant availability.

AGA3 Report No. 3 / API 14.3.2 Compliant Orifice Plate Flowmeter:

The highest accuracy orifice plate meter run when measuring gases and liquids.

1595 Conditioning Orifice Plate Flowmeter for Mass Flow:

High accuracy with the shortest piping requirements for gas and steam.

1595 Conditioning Orifice Plate Flowmeter for Volumetric Flow:

High accuracy with the shortest piping requirements for liquids.

1497/1495 Orifice Plate Flowmeter for Mass Flow: Repeatability when measuring gases.

1497/1495 Orifice Plate Flowmeter for Volumetric Flow:

Repeatability when measuring liquids.

1497/1495 Orifice Plate Flowmeter for Steam Flow: Repeatability when measuring steam.

How to Select your Engineered Assembly

Please review this entire procedure before specifying an assembly.

Step 1. Select type of assembly required.

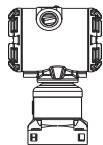
- AGA3 Report No. 3 / API 14.3.2 Compliant Orifice Plate Flowmeter: (See Table 1 on page 5)
- 1595 Conditioning Orifice Plate Flowmeter for Mass Flow: (See Table 4 on page 6)
- 1595 Conditioning Orifice Plate Flowmeter for Volumetric Flow: (See Table 7 on page 8)
- 1497/1495 Orifice Plate Flowmeter for Mass Flow: (See Table 10 on page 10)
- 1497/1495 Orifice Plate Flowmeter for Volumetric Flow: (See Table 13 on page 11)
- 1497/1495 Orifice Plate Flowmeter for Steam Flow: (See Table 16 on page 12)

Custom Application - For a custom application, skip directly to Step 4.

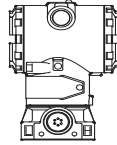
Step 2. Select the components.

a. Select a
Transmitter

3051S (See Table 20 on page 16)

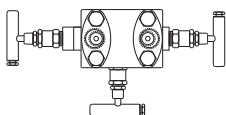


3095M (See Table 19 on page 13)

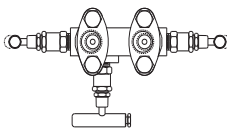


b. Select a Manifold

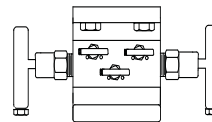
0305RT (See Table 21 on page 19)



0305RM (See Table 21 on page 19)

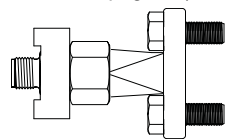


0304 (See Table 22 on page 20)

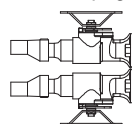


c. Select Connection
System

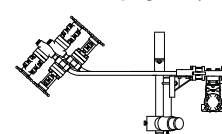
Stabilized Connectors
(See Table 23 on page 21)



0309 Connection System
(See Table 24 on page 22)

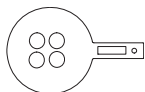


Steam Connection System
(See Table 25 on page 23)



d. Select a Primary
Element

1595 (See Table 26 on page 24)

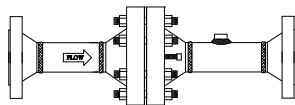


1495 (See Table 27 on page 25)

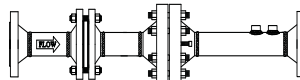


e. Select a Meter Run

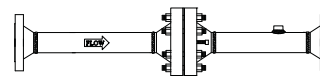
1497 w/ C0002
(See Table 29 on page 27)



AGA3 Compliant Meter Run
(See Table 28 on page 26)

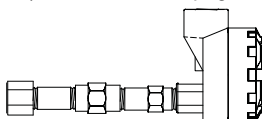


1497
(See Table 29 on page 27)



f. Select Temperature
Sensor (Optional)

0078 (See Table 30 on page 29)



g. Select a
Conditioner

CPA50 (See Table 31 on page 30)



Step 3. Put all the model numbers together and complete the Configuration Data Sheet (See Document number 00806-0100-4650).

Step 4. Contact your local Emerson Process Management Representative.

CONFIGURATION NOTES

It is possible to specify components from this PDS in an assembly that will not work together. Please contact your local Emerson Process Management representative to receive a full quote on any assembly. Below are two sample assemblies with correct model numbers.

The following Engineered Assembly example is an 8" AGA Report Number 3/API 14.3.2 Compliant Orifice Plate Flowmeter using explosion-proof components:

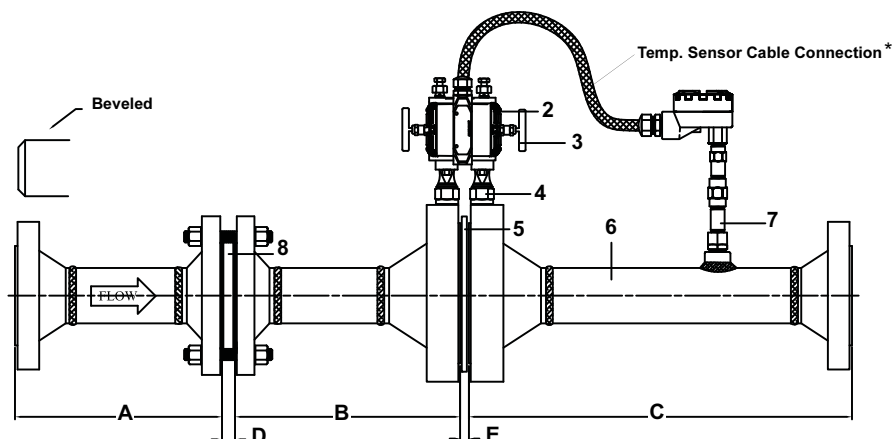
Quantity	Model Number
1	CPS / Assembly Part Number from Table 3 - CPSPDFL-00610-00
1	Mass flow transmitter from Table 19 - 3095MA23A0011AA00NABN500C2Q4Q8
1	Manifold from Table 19 - Included with transmitter (N500)
1	Connectors from Table 23 - 116680820003
1	Orifice Plate from Table 27 - 1495PC080A3SBxxxxBC
1	Meter Run from Table 28 - AGA3C080A3F
1	RTD from Table 30 - 0078P21C30A040T24E5X8Q4XA
1	Flow Conditioner from Table 31 - CPA50E.080

The following Engineered Assembly example is of a 3" 1497/1495 Orifice Plate Flowmeter for Volumetric Flow with a remote LCD display:

Quantity	Model Number
1	CPS / Assembly Part Number from Table 15 - CPSPDFL-00555-00
1	Volumetric flow transmitter from Table 20 - 3051S1CD2A2A11A2EC1M8Q4
1	Manifold from Table 21 - 0305RT32A11
1	Connectors from Table 23 - 116680830001
1	Orifice Plate from Table 27 - 1495PC030A3SAxxxxBC
1	Meter Section from Table 29 - 1497WN030A3CFF
1	RTD - not required

AGA Report Number 3 / API 14.3.2 Compliant Orifice Plate Flowmeter

FIGURE 1. AGA3 Report Number 3 / API 14.3.2 Compliant Orifice Plate Meter Run



(*) See 3095 Ordering Information - Process Temperature Input for specification.

TABLE 1. AGA Report Number 3 / API 14.3.2
Compliant Orifice Plate Flowmeter

Description	Ordering Information
1 CPS / Assembly Part Number	Table 3
2 3095 Flow transmitter	Table 19
3 Manifold	Table 21
4 Stabilized connectors	Table 23
5 1495 Orifice Plate	Table 27
6 AGA3 Compliant Orifice Plate Meter Runs	Table 28
7 0078 RTD and thermowell	Table 30
8 Flow Conditioner	Table 31

TABLE 2. Meter Run Lay-Lengths⁽¹⁾⁽²⁾

Line Size	A inch (mm)	B inch (mm)	C inch (mm)
2	10.1 (258)	16.1 (411)	20.3 (513)
3	15.2 (387)	24.2 (615)	24.3 (615)
4	20.2 (513)	32.2 (819)	32.3 (819)
6	30.2 (768)	48.2 (1224)	42.3 (1074)
8	40.2 (1020)	64.2 (1629)	52.4 (1329)
10	50.2 (1275)	80.2 (2037)	65.4 (1662)
12	60.2 (1530)	96.2 (2442)	78.4 (1992)

(1) Tolerances for all dimensions within ± 0.1 in (2.54 mm).

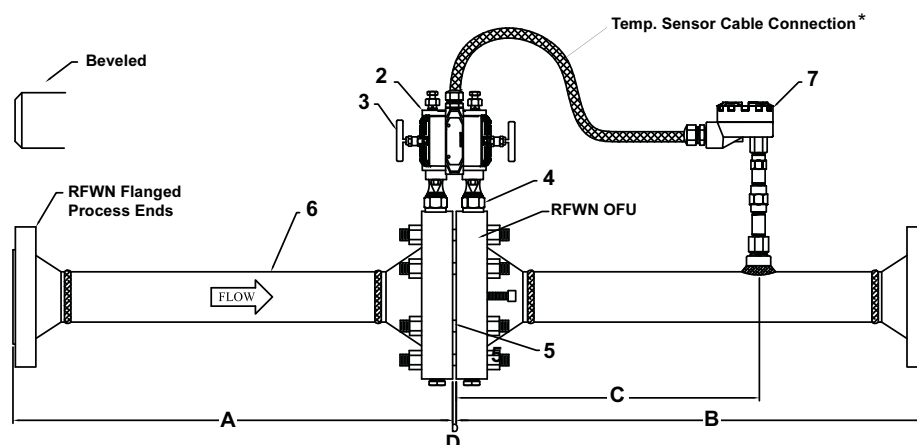
(2) For pipe sizes of 2-6 in., D equals $\frac{3}{8}$ -in. for standard gaskets and $\frac{1}{2}$ -in. for spiral wound gaskets. E equals $\frac{1}{4}$ -in. for standard gaskets and $\frac{3}{8}$ -in. for spiral wound gaskets. For pipe sizes 8-12 in., E equals $\frac{3}{8}$ -in. for standard gaskets and $\frac{1}{2}$ -in. for spiral wound gaskets.

TABLE 3. AGA Report Number 3 / API 14.3.2 Compliant Orifice Plate Meter Run Ordering Information⁽¹⁾

Line Size	Orifice Flange Union		
	ANSI Class 300	ANSI Class 600	ANSI Class 900
2 inch	CPSPDFL-00605-00	CPSPDFL-00605-01	CPSPDFL-00605-02
3 inch	CPSPDFL-00607-00	CPSPDFL-00607-01	CPSPDFL-00607-02
4 inch	CPSPDFL-00608-00	CPSPDFL-00608-01	CPSPDFL-00608-02
6 inch	CPSPDFL-00609-00	CPSPDFL-00609-01	CPSPDFL-00609-02
8 inch	CPSPDFL-00610-00	CPSPDFL-00610-01	CPSPDFL-00610-02
10 inch	CPSPDFL-00611-00	CPSPDFL-00611-01	CPSPDFL-00611-02
12 inch	CPSPDFL-00611-07	CPSPDFL-00611-08	CPSPDFL-00611-09

(1) Higher Flange Ratings available.

1595 Conditioning Orifice Plate Flowmeter for Mass Flow



(*) See 3095 Ordering Information - Process Temperature Input for specifications.

TABLE 4. 1595 Conditioning Orifice Plate Flowmeter for Mass Flow

Description	Ordering Information
1 CPS / Assembly Part Number	Table 5
2 3095 Flow transmitter	Table 19
3 305RM Manifold	Table 21
4 Stabilized connectors	Table 23
5 1595 Conditioning Orifice Plate	Table 26
6 1497 Orifice Meter Section	Table 29
7 0078 RTD and thermowell	Table 30

TABLE 5. 1595 Conditioning Orifice Plate Flowmeter for Mass Flow Orifice Plate Meter Run Ordering Information

Line Size	Orifice Flange Union				
	ANSI Class 300	ANSI Class 600	ANSI Class 900	ANSI Class 1500	ANSI Class 2500
2 inch	CPSDPFL-00769-00	CPSDPFL-00769-01	CPSDPFL-00769-02	CPSDPFL-00769-03	CPSDPFL-00769-04
3 inch	CPSDPFL-00771-00	CPSDPFL-00771-01	CPSDPFL-00771-02	CPSDPFL-00771-03	
4 inch	CPSDPFL-00772-00	CPSDPFL-00772-01	CPSDPFL-00772-02	CPSDPFL-00772-03	
6 inch	CPSDPFL-00773-00	CPSDPFL-00773-01	CPSDPFL-00773-02	CPSDPFL-00773-03	
8 inch	CPSDPFL-00774-00	CPSDPFL-00774-01	CPSDPFL-00774-02		
10 inch	CPSDPFL-00775-00	CPSDPFL-00775-01	CPSDPFL-00775-02		
12 inch	CPSDPFL-00776-00	CPSDPFL-00776-01			
14 inch	CPSDPFL-00777-00	CPSDPFL-00777-01			
16 inch	CPSDPFL-00778-00	CPSDPFL-00778-01			
18 inch	CPSDPFL-00779-00	CPSDPFL-00779-01			
20 inch	CPSDPFL-00780-00	CPSDPFL-00780-01			

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 6. 1595 Conditioning Orifice Plate Flowmeter for Mass Flow Dimensions^{(1) (2)}

METER SECTION LENGTHS					
Line Size	End Connection	OFU	A inch(mm)	B inch(mm)	C inch(mm)
2	150#	300#	5.9 (151)	11.9 (303)	6.3 (160)
	300# / Beveled	300#	6.2 (157)	12.1 (308)	6.3 (160)
	600# / Beveled	600#	6.6 (167)	12.5 (318)	6.3 (160)
	900# / Beveled	900#	8.6 (217)	14.5 (369)	7.2 (183)
	1500# / Beveled	1500#	8.6 (217)	14.5 (369)	7.2 (183)
	2500# / Beveled	2500#	10.6 (268)	16.5 (420)	8.2 (209)
3	150#	300#	6.3 (160)	12.3 (313)	6.5 (165)
	300# / Beveled	300#	6.7 (170)	12.6 (321)	6.5 (165)
	600# / Beveled	600#	7.1 (179)	13.0 (331)	6.5 (165)
	900# / Beveled	900#	8.6 (217)	14.5 (369)	7.2 (183)
	1500# / Beveled	1500#	9.8 (249)	15.7 (400)	8.1 (206)
4	150#	300#	10.0 (254)	14.0 (356)	8.0 (204)
	300# / Beveled	300#	10.0 (254)	14.0 (356)	8.0 (204)
	600# / Beveled	600#	8.6 (217)	15.3 (389)	8.0 (204)
	900# / Beveled	900#	9.6 (243)	15.7 (400)	8.0 (204)
	1500# / Beveled	1500#	10.3 (262)	16.3 (415)	8.1 (206)
6	150#	300#	12.0 (305)	20.0 (509)	12.0 (305)
	300# / Beveled	300#	12.0 (305)	20.0 (509)	12.0 (305)
	600# / Beveled	600#	12.0 (305)	20.0 (509)	12.0 (305)
	900# / Beveled	900#	11.6 (294)	20.0 (509)	12.0 (305)
	1500# / Beveled	1500#	14.1 (357)	22.0 (560)	12.0 (305)
8	All	All	16.0 (406)	25.0 (636)	16.0 (407)
10	All	All	20.0 (508)	30.0 (764)	20.0 (509)
12	All	All	24.0 (610)	35.0 (891)	24.0 (611)
14	All	All	28.0 (711)	43.0 (1095)	28.0 (713)
16	All	All	32.0 (813)	48.0 (1222)	32.0 (815)
18	All	All	36.0 (914)	53.0 (1349)	36.0 (916)
20	All	All	40.0 (1016)	58.0 (1476)	40.0 (1018)

(1) Tolerances for all dimensions within ± 0.1 in (2.54 mm)

(2) For pipe size of 2-4 in., D equals $\frac{1}{4}$ -in. for standard gaskets and $\frac{3}{8}$ -in. for spiral wound gaskets. For pipe sizes of 6-20 in., D equals $\frac{3}{8}$ -in. for standard gaskets and $\frac{1}{2}$ -in. for spiral wound gaskets.

1595 Conditioning Orifice Plate Flowmeter for Volumetric Flow

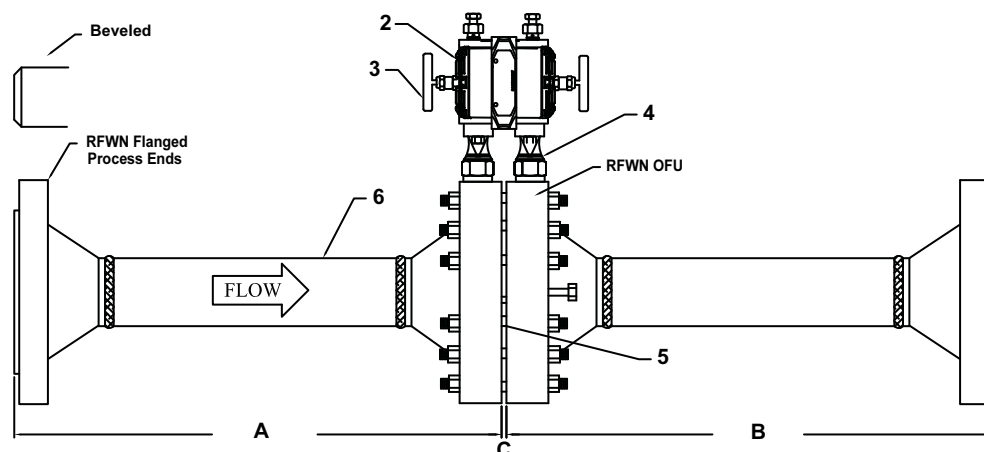


TABLE 7. 1595 Conditioning Orifice Plate Flowmeter for Volumetric Flow

Description	Ordering Information
1 CPS / Assembly Part Number	Table 8
2 3051S Differential Pressure Transmitter	Table 20
3 305RT Manifold	Table 21
4 Stabilized connectors	Table 23
5 1595 Conditioning Orifice Plate	Table 26
6 1497 Orifice Meter Section	Table 29

TABLE 8. 1595 Conditioning Orifice Plate Flowmeter for Volumetric Flow Ordering Information

Orifice Flange Union					
Line Size	ANSI Class 300	ANSI Class 600	ANSI Class 900	ANSI Class 1500	ANSI Class 2500
2 inch	CPSDPFL-00781-00	CPSDPFL-00781-01	CPSDPFL-00781-02	CPSDPFL-00781-03	CPSDPFL-00781-04
3 inch	CPSDPFL-00783-00	CPSDPFL-00783-01	CPSDPFL-00783-02	CPSDPFL-00783-03	
4 inch	CPSDPFL-00784-00	CPSDPFL-00784-01	CPSDPFL-00784-02	CPSDPFL-00784-03	
6 inch	CPSDPFL-00785-00	CPSDPFL-00785-01	CPSDPFL-00785-02	CPSDPFL-00785-03	
8 inch	CPSDPFL-00786-00	CPSDPFL-00786-01	CPSDPFL-00786-02		
10 inch	CPSDPFL-00787-00	CPSDPFL-00787-01	CPSDPFL-00787-02		
12 inch	CPSDPFL-00788-00	CPSDPFL-00788-01			
14 inch	CPSDPFL-00789-00	CPSDPFL-00789-01			
16 inch	CPSDPFL-00790-00	CPSDPFL-00790-01			
18 inch	CPSDPFL-00791-00	CPSDPFL-00791-01			
20 inch	CPSDPFL-00792-00	CPSDPFL-00792-01			

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 9. 1595 Conditioning Orifice Plate Flowmeter for Volumetric Flow Dimensions^{(1) (2)}

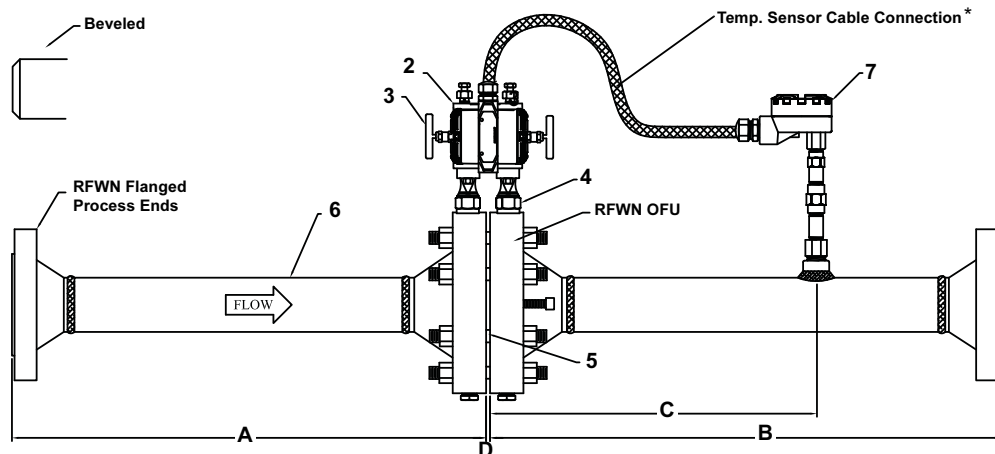
METER SECTION LENGTHS			
Line Size	End Connection	OFU	A and B inch(mm)
2	150#	300#	6.0 (155)
	300# / Beveled	300#	6.2 (159)
	600# / Beveled	600#	6.6 (167)
	900# / Beveled	900#	8.5 (215)
	1500# / Beveled	1500#	8.5 (215)
	2500# / Beveled	2500#	10.5 (266)
3	150#	300#	6.3 (160)
	300# / Beveled	300#	6.6 (168)
	600# / Beveled	600#	7.0 (178)
	900# / Beveled	900#	8.5 (215)
	1500# / Beveled	1500#	9.8 (249)
4	150#	300#	10.0 (254)
	300# / Beveled	300#	10.0 (254)
	600# / Beveled	600#	8.5 (215)
	900# / Beveled	900#	9.5 (241)
	1500# / Beveled	1500#	10.3 (262)
6	150#	300#	12.0 (305)
	300# / Beveled	300#	12.0 (305)
	600# / Beveled	600#	12.0 (305)
	900# / Beveled	900#	11.5 (292)
	1500# / Beveled	1500#	14.0 (355)
8	All	All	16.0 (406)
10	All	All	20.0 (508)
12	All	All	24.0 (610)
14	All	All	28.0 (711)
16	All	All	32.0 (813)
18	All	All	36.0 (914)
20	All	All	40.0 (1016)

(1) Tolerances for all dimensions within ± 0.1 in (2.54 mm)

(2) For pipe size of 2-4 in., C equals $\frac{1}{4}$ -in. for standard gaskets and $\frac{3}{8}$ -in. for spiral wound gaskets. For pipe sizes of 6-20 in., C equals $\frac{3}{8}$ -in. for standard gaskets and $\frac{1}{2}$ -in. for spiral wound gaskets.

1497/1495 Orifice Plate Flowmeter for Mass Flow

FIGURE 2. 1497/1495 Orifice Plate Flowmeter for Mass Flow



(*) See 3095 Ordering Information - Process Temperature Input for specification.

TABLE 10. 1497/1495 Flowmeter for Mass Flow

Description	Ordering Information
1 CPS / Assembly Part Number	Table 12
2 3095 Flow transmitter	Table 19
3 305RM Manifold	Table 21
4 Stabilized connectors	Table 23
5 1495 Orifice plate	Table 27
6 1497 Orifice meter section	Table 29
7 0078 RTD and thermowell	Table 30

TABLE 11. Meter Run Lay-Lengths ⁽¹⁾⁽²⁾

Line Size	A inch (mm)	B inch (mm)	C inch (mm)
2	21.0 (533)	11.0 (281)	17.0 (433)
2 1/2	26.0 (660)	12.0 (306)	21.0 (535)
3	32.0 (813)	16.0 (408)	24.0 (611)
4	41.0 (1041)	21.0 (535)	33.0 (839)
6	62.0 (1575)	30.0 (763)	48.0 (1220)
8	81.0 (2057)	40.0 (1015)	64.0 (1625)
10	101.0 (2565)	51.0 (1294)	82.0 (2082)
12	120.0 (3048)	60.0 (1523)	96.0 (2438)

(1) Tolerances for all dimensions within ± 0.1 in (2.54 mm)

(2) For pipe size of 2-6 in., D equals 1/4-in. for standard gaskets and 3/8-in. for spiral wound gaskets. For pipe sizes of 8-20 in., D equals 3/8-in. for standard gaskets and 1/2-in. for spiral wound gaskets.

TABLE 12. 1497/1495 Orifice Plate Meter Run for Mass Flow Ordering Information (Assembled with Explosion-Proof and Non Explosion-Proof Parts)

Line Size	Orifice Flange Union				
	ANSI Class 300	ANSI Class 600	ANSI Class 900	ANSI Class 1500	ANSI Class 2500
2 inch	CPSPDFL-00550-00	CPSPDFL-00550-02	CPSPDFL-00550-04	CPSPDFL-00550-06	CPSPDFL-00550-07
2 1/2 inch	CPSPDFL-00552-00	CPSPDFL-00552-02	CPSPDFL-00552-04	CPSPDFL-00552-06	
3 inch	CPSPDFL-00554-00	CPSPDFL-00554-02	CPSPDFL-00554-04	CPSPDFL-00554-06	
4 inch	CPSPDFL-00556-00	CPSPDFL-00556-02	CPSPDFL-00556-04	CPSPDFL-00556-06	
6 inch	CPSPDFL-00558-00	CPSPDFL-00558-02	CPSPDFL-00558-04		
8 inch	CPSPDFL-00560-00	CPSPDFL-00560-02	CPSPDFL-00560-04		
10 inch	CPSPDFL-00562-00	CPSPDFL-00562-02	CPSPDFL-00562-04		
12 inch	CPSPDFL-00564-00	CPSPDFL-00564-02	CPSPDFL-00564-04		

1497/1495 Orifice Plate Flowmeter for Volumetric Flow

FIGURE 3. 1497/1495 Orifice Plate Flowmeter for Volumetric Flow

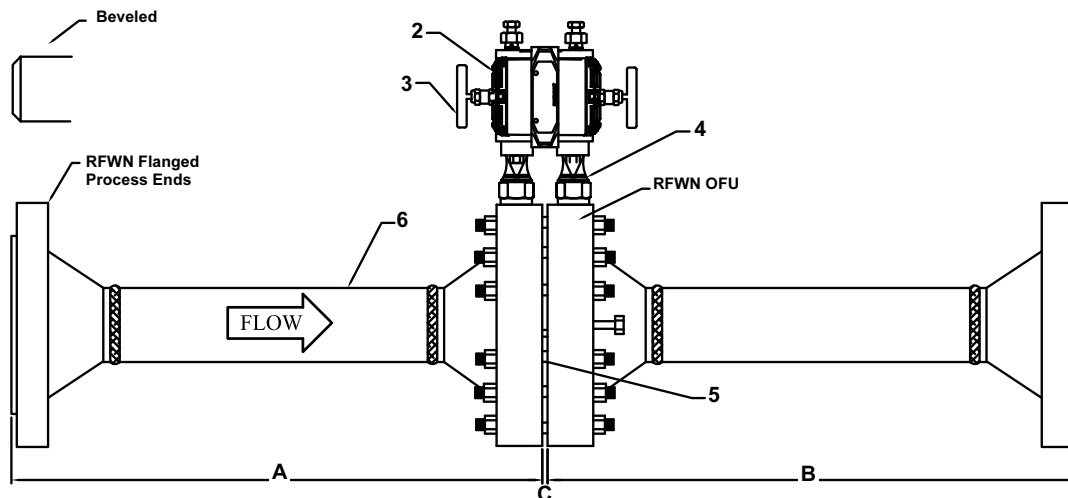


TABLE 13. 1497/1495 Flowmeter for Volumetric Flow

Description	Ordering Information
1 CPS / Assembly Part Number	Table 15
2 3051S Differential pressure transmitter	Table 18
3 305RT Manifold	Table 21
4 Stabilized connectors	Table 23
5 1495 Orifice plate	Table 27
6 1497 Orifice meter section	Table 29

TABLE 14. Meter Run Lay-Lengths⁽¹⁾⁽²⁾

Line Size	A inch (mm)	B inch (mm)
2	21.0 (533)	11.0 (281)
2½	26.0 (660)	12.0 (306)
3	32.0 (813)	16.0 (408)
4	41.0 (1041)	21.0 (535)
6	62.0 (1575)	30.0 (763)
8	81.0 (2057)	40.0 (1015)
10	101.0 (2565)	51.0 (1294)
12	120.0 (3048)	60.0 (1523)

(1) Tolerances for all dimensions within ± 0.1 in (2.54 mm)

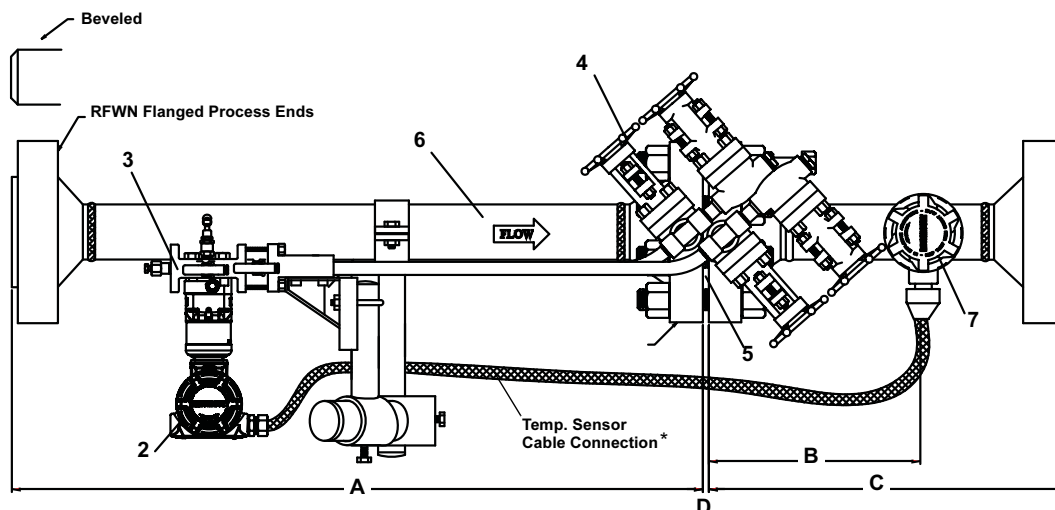
(2) For pipe size of 2-6 in., C equals ¼-in. for standard gaskets and ⅜-in. for spiral wound gaskets. For pipe sizes of 8-20 in., C equals ⅜-in. for standard gaskets and ½-in. for spiral wound gaskets.

TABLE 15. 1497/1495 Orifice Plate for Volumetric Flow Meter Run Ordering Information

Line Size	Orifice Flange Union				
	ANSI Class 300	ANSI Class 600	ANSI Class 900	ANSI Class 1500	ANSI Class 2500
2 inch	CPSPDFL-00551-00	CPSPDFL-00551-01	CPSPDFL-00551-02	CPSPDFL-00551-03	CPSPDFL-00551-04
2½ inch	CPSPDFL-00553-00	CPSPDFL-00553-01	CPSPDFL-00553-02	CPSPDFL-00553-03	
3 inch	CPSPDFL-00555-00	CPSPDFL-00555-01	CPSPDFL-00555-02	CPSPDFL-00555-03	
4 inch	CPSPDFL-00557-00	CPSPDFL-00557-01	CPSPDFL-00557-02	CPSPDFL-00557-03	
6 inch	CPSPDFL-00559-00	CPSPDFL-00559-01	CPSPDFL-00559-02		
8 inch	CPSPDFL-00561-00	CPSPDFL-00561-01	CPSPDFL-00561-02		
10 inch	CPSPDFL-00563-00	CPSPDFL-00563-01	CPSPDFL-00563-02		
12 inch	CPSPDFL-00565-00	CPSPDFL-00565-01	CPSPDFL-00565-02		

1497/1495 Orifice Plate Flowmeter for Steam Flow

FIGURE 4. 1497/1495 Orifice Plate Flowmeter for Steam Flow



(*) See 3095 Ordering Information - Process Temperature Input for specification.

TABLE 16. 1497/1495 Flowmeter for Steam Flow Assembled with Non Explosion-Proof Parts

Description	Ordering Information
1 CPS / Assembly Part Number	Table 18
2 3095 Flow transmitter	Table 19
3 0305RM Manifold	Table 21
4 Steam connection systems	Table 25
5 1495 Orifice plate	Table 27
6 1497 Flanged meter section	Table 29
7 0078 RTD and thermowell	Table 30

TABLE 17. Meter Run Lay-Lengths⁽¹⁾⁽²⁾

Line Size	A inch (mm)	B inch (mm)	C inch (mm)
2	21.0 (533)	11.0 (281)	17.0 (433)
2 1/2	26.0 (660)	12.0 (306)	21.0 (535)
3	32.0 (813)	16.0 (408)	24.0 (611)
4	41.0 (1041)	21.0 (535)	33.0 (839)
6	62.0 (1575)	30.0 (763)	48.0 (1220)
8	81.0 (2057)	40.0 (1015)	64.0 (1625)
10	101.0 (2565)	51.0 (1394)	82.0 (2082)
12	120.0 (3048)	60.0 (1523)	96.0 (2438)

(1) Tolerances for all dimensions within ± 0.1 in (2.54 mm).

(2) For pipe size of 2-6 in., D equals 1/4-in. for standard gaskets and 3/8-in. for spiral wound gaskets. For pipe sizes of 8-20 in., D equals 3/8-in. for standard gaskets and 1/2-in. for spiral wound gaskets.

TABLE 18. 1497/1495 Orifice Plate Flowmeter for Steam Flow Ordering Information

Line Size	Orifice Flange Union	
	ANSI Class 300	ANSI Class 600
2 inch	CPSPDFL-00574-00	CPSPDFL-00574-02
2 1/2 inch	CPSPDFL-00566-00	CPSPDFL-00566-02
3 inch	CPSPDFL-00567-00	CPSPDFL-00567-02
4 inch	CPSPDFL-00568-00	CPSPDFL-00568-02
6 inch	CPSPDFL-00569-00	CPSPDFL-00569-02
8 inch	CPSPDFL-00570-00	CPSPDFL-00570-02
10 inch	CPSPDFL-00571-00	CPSPDFL-00571-02
12 inch	CPSPDFL-00572-00	CPSPDFL-00572-02

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 19. 3095 Ordering Information (See Product Data Sheet 00813-0100-4716 for Product Specifications.)

Model	Product Description				
3095M	Multivariable Meter				
Code	Output				
A	4–20 mA with digital signal based on <i>HART</i> protocol				
V	FOUNDATION™ fieldbus protocol				
Code	Differential Pressure Range				
1 ⁽¹⁾	0–0.5 to 0–25 inH ₂ O (0–1,25 to 0–62,3 mbar)				
2	0–2.5 to 0–250 inH ₂ O (0–6,22 to 0–622,7 mbar)				
3	0–10 to 0–1000 inH ₂ O (0–0,0249 to 0–2,49 bar)				
Code	Static Pressure Ranges				
3	0.5-8 to 0.5–800 psia (3,447–55,16 to 3,447–5516 kPa)				
4	0.5-36.26 to 0.5–3626 psia (3,447-250 to 3,447–25000 kPa)				
C	0-8 to 0-800 psig (0–55,16 to 0–5516 kPa)				
D	0-36.26 to 0-3626 psig (0-250 to 0–25000 kPa)				
Code	Isolator Material	Fill Fluid			
A	316L SST	silicone			
B ⁽²⁾	Hastelloy C-276	silicone			
J ⁽³⁾	316L SST	inert			
K ⁽²⁾⁽³⁾	Hastelloy C-276	inert			
Code	Flange Style	Material			
A	Coplanar	CS			
B	Coplanar	SST			
C	Coplanar	Hastelloy C			
F ⁽⁴⁾	Coplanar	SST, non-vented			
J	DIN compliant traditional flange, SST 10 mm adapter/manifold bolting	SST, ⁷ / ₁₆ - 20 Bolting			
0	None (required for option code S5, N502, and N503)				
Code	Drain/Vent Material				
A	SST				
C ⁽²⁾	Hastelloy C				
0	None (required for option code S5)				
Code	O-ring				
1	Glass-filled TFE				
		1497 Line Size		AGA3 Line Size	
Code	Process Temperature Input	Explosion-Proof	Non explosion-proof	Explosion-Proof	Non explosion-proof
1	RTD Input with 12 ft. (3,66 m) of shielded cable (intended for use with conduit.)	6 to 12 inch		3 to 12 inch	
Z	Process Temperature RTD Input with 34 inch of shielded Cable & 24 inch FM Approved Coupling Flex	2 to 4 inch		2 to 2½ inch	
3	RTD Input with 12 ft. (3,66 m) of Armored, shielded cable	10 to 12 inch		6 to 12 inch	
5	RTD Input with 21 in. (53 cm) of Armored, shielded cable	2 to 3 inch			
6	RTD Input with 4 ft. (1,22 m) of Armored, shielded cable	4 to 8 inch		2 to 4 inch	

Rosemount Engineered Assemblies

TABLE 19. 3095 Ordering Information (See Product Data Sheet 00813-0100-4716 for Product Specifications.)

Code	Transmitter Housing Material	Conduit Entry Size
A	Polyurethane-covered aluminum	½–14 NPT
B	Polyurethane-covered aluminum	M20 × 1.5 (CM20)
C	Polyurethane-covered aluminum	PG 13.5
J	SST	½–14 NPT
K	SST	M20 × 1.5 (CM20)
L	SST	PG 13.5
Code	Terminal Block	
A	Standard	
B	With integral transient protection	
Code	Display	
0	None	
1	LCD Display	
Code	Bracket	
0	None	
Code	Bolts	
0	CS bolts	
1	Austenitic 316 SST bolts	
N	None (Required for Option Code S5)	
Code	Product Certifications (Transmitter only)	
0	None	
A	FM Explosion-Proof	
B	FM Explosion-Proof, Intrinsically Safe, and Non-Incendive (combination of A and J)	
C	CSA Explosion-Proof	
D	CSA Explosion-Proof, Intrinsically Safe, and Non-Incendive (combination of C and K)	
J	FM Intrinsically Safe	
K	CSA Intrinsically Safe	
V	FM FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only	
W	CSA FISCO Intrinsically Safe; for FOUNDATION fieldbus protocol only	
Y	IECEX FISCO Intrinsically Safe	
4	IECEX Intrinsically Safe	
5	IECEX Type n	
Code	Engineered Measurement Solution (EMS)	
B ⁽⁵⁾	Fully Compensated Mass Flow and Measured Variables (DP, P, and T) with HART or FOUNDATION fieldbus.	
V	Process Variable Measurement (DP, P and T) only for FOUNDATION fieldbus protocol	
Code	Manifolds	
S5	Assemble to Rosemount 305 Integral Manifold (Requires integral manifold model number – see Table 21)	
S6	Assemble to Rosemount 304 manifold or connection system	

Product Data Sheet

00813-0100-4650, Rev DA
Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 19. 3095 Ordering Information (See Product Data Sheet 00813-0100-4716 for Product Specifications.)

Code	Options
	Performance Class
U3 ⁽⁶⁾	Ultra for Flow: $\pm 0.05\%$ DP reading accuracy, up to 100:1 rangedown, 10 year stability, limited 12 year warranty
	PlantWeb Control Functionality
A01 ⁽⁷⁾	FOUNDATION fieldbus Advanced Control Function Block Suite
	Custom Configuration
C2	Custom Flow Configuration (Requires completed Configuration Data Sheet 00806-0100-4716.)
	Calibration Data Sheet
Q4 ⁽⁸⁾	Inspection Certificate for Calibration Data
	Material Traceability Certification
Q8 ⁽⁹⁾	Material Inspection Certificate per EN 10204 3.1B

(1) Available only with 3 or C sensor modules and A 316L SST/silicone, Isolator/Fill Fluid option.

(2) Materials of Construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 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.

(3) Only available with C or D Gage Sensor Modules.

(4) Requires that Drain/Vent Material Code set to 0 (none).

(5) Requires Rosemount 3095 Engineering Software Assistant to configure mass flow.

(6) Ultra for Flow applicable for DP ranges 2 and 3 with SST isolator material and silicone fill fluid only.

(7) Function Blocks include: Arithmetic, Integrator, Analog Output, Signal Characterizer, Control Selector, and Output Selector.

(8) Must be order to meet 40CFR 75 Appendix D and E standards when ordering AGA Report Number 3 / API 14.3.2.

(9) This option is available for the sensor module housing, Coplanar and Coplanar flange adapters.

Rosemount Engineered Assemblies

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

TABLE 20. 3051S Series Coplanar (See Product Data Sheet 00813-0100-4801 for Product Specifications.)

Model	Transmitter Type		
3051S	Scalable pressure transmitter		
Code	Performance Class		
1 ⁽¹⁾	Ultra: 0.025% span accuracy, 200:1 rangedown, 10-year stability, limited 12-year warranty		
3 ⁽²⁾	Ultra for Flow: 0.04% reading accuracy, 200:1 rangedown, 10-year stability, limited 12-year warranty		
2	Classic: 0.055% span accuracy, 100:1 rangedown, 5-year stability		
Code	Connection Type		
C	Coplanar		
Code	Measurement Type		
D	Differential		
Pressure Range			
Code	Differential	Gage	Absolute
0A ⁽³⁾	-3 to 3 inH ₂ O (-7,47 to 7,47 mbar)	N/A	0 to 5 psia (0 to 0,34 bar)
1A	-25 to 25 inH ₂ O (-62,2 to 62,2 mbar)	-25 to 25 inH ₂ O (-62,2 to 62,2 mbar)	0 to 30 psia (0 to 2,06 bar)
2A	-250 to 250 inH ₂ O (-623 to 623 mbar)	-250 to 250 inH ₂ O (-623 to 623 mbar)	0 to 150 psia (0 to 10,34 bar)
3A	-1000 to 1000 inH ₂ O (-2,5 to 2,5 bar)	-393 to 1000 inH ₂ O (-0,98 to 2,5 bar)	0 to 800 psia (0 to 55,2 bar)
Code	Isolating Diaphragm		
2 ⁽⁴⁾	316L SST		
3 ⁽⁴⁾	Hastelloy C-276		
Code	Process Connection		
A11	Assemble to Rosemount 305 integral manifold (See Table 21)		
A12	Assemble to Rosemount 304 or AMF		
Code	Output		
A	4–20 mA with digital signal based on HART protocol		
B ⁽⁵⁾	4–20 mA Safety Certified with digital signal based on <i>HART</i> protocol		
F ⁽⁶⁾	FOUNDATION fieldbus protocol		
Code	Housing Style	Material ⁽⁷⁾	Conduit Entry Size
01 ⁽⁸⁾	Assemble to Rosemount 753R Web-based Monitoring Indicator		
1A	<i>PlantWeb</i> housing	Aluminum	1/2–14 NPT
1B	<i>PlantWeb</i> housing	Aluminum	M20 x 1.5 (CM20)
1C	<i>PlantWeb</i> housing	Aluminum	G1/2
1J	<i>PlantWeb</i> housing	316L SST	1/2–14 NPT
1K	<i>PlantWeb</i> housing	316L SST	M20 x 1.5 (CM20)
1L	<i>PlantWeb</i> housing	316L SST	G1/2
2A	Junction Box housing	Aluminum	1/2–14 NPT
2B	Junction Box housing	Aluminum	M20 x 1.5 (CM20)
2C	Junction Box housing	Aluminum	G1/2
2J	Junction Box housing	316L SST	1/2–14 NPT
2E	Junction Box housing with output for remote interface	Aluminum	1/2–14 NPT
2F	Junction Box housing with output for remote interface	Aluminum	M20 x 1.5 (CM20)
2G	Junction Box housing with output for remote interface	Aluminum	G1/2
2M	Junction Box housing with output for remote interface	316L SST	1/2–14 NPT
7J ⁽⁹⁾	Quick Connect (A size Mini, 4-pin male termination)	316L SST	
Code	OPTIONS		
<i>PlantWeb</i> Control Functionality			
A01 ⁽¹⁰⁾	FOUNDATION fieldbus Advanced Control Function Block Suite		
<i>PlantWeb</i> Diagnostic Functionality			
D01 ⁽¹⁰⁾	<i>FOUNDATION</i> fieldbus Diagnostics Suite		
DA1 ⁽¹¹⁾	HART Diagnostics Suite		
<i>PlantWeb</i> Enhanced Measurement Functionality			
H01 ⁽¹⁰⁾⁽¹²⁾	Fully Compensated Mass Flow Block		

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 20. 3051S Series Coplanar (See Product Data Sheet 00813-0100-4801 for Product Specifications.)

Special Configuration (Software)	
C4 ⁽¹³⁾	NAMUR alarm and saturation levels, high alarm
C5 ⁽¹³⁾	NAMUR alarm and saturation levels, low alarm
C8 ⁽¹³⁾	Low alarm (standard Rosemount alarm and saturation levels)
Special Configuration (Hardware)	
D1 ⁽¹³⁾	Hardware adjustments (zero, span, alarm, security) <i>Note: Not available with Housing Style codes 00, 01, 2E, 2F, 2G, 2M, or 7J.</i>
D4	External ground screw assembly
Product Certifications (Transmitter only)⁽¹⁴⁾	
E1	ATEX Flameproof
I1	ATEX Intrinsically Safe
IA	ATEX FISCO Intrinsically Safe; for <i>Foundation</i> fieldbus protocol only
N1	ATEX Type n
K1	ATEX Flameproof, Intrinsically Safe, Type n, Dust (combination of E1, I1, N1, and ND)
ND	ATEX Dust
E4	JIS Flameproof
E5	FM Explosion-proof
I5	FM Intrinsically Safe, Non-incendive
IE	FM FISCO Intrinsically Safe; for <i>FOUNDATION</i> fieldbus protocol only
K5	FM Explosion-proof, Intrinsically Safe, Non-incendive (combination of E5 and I5)
E6	CSA Explosion-proof, Division 2
I6	CSA Intrinsically Safe
IF	CSA FISCO Intrinsically Safe; for <i>FOUNDATION</i> fieldbus protocol only
K6	CSA Explosion-proof, Intrinsically Safe, Division 2 (combination of E6 and I6)
D3 ⁽⁵⁾⁽¹⁵⁾	Measurement Canada Accuracy Approval
E7	SAA Flameproof, Dust Ignition-proof
I7	IECEx Intrinsically Safe
IG	IECEx FISCO Intrinsically Safe
N7	IECEx Type n
K7	SAA Flameproof, Dust Ignition-proof, IECEx Intrinsically Safe, and Type n (combination of E7, I7, and N7)
KA	ATEX and CSA Flameproof, Intrinsically Safe (combination of E1, I1, E6, and I6) <i>Note: Only available on Housing Style codes 00, IA, IJ, 2A, 2J, 2E, or 2M.</i>
KB	FM and CSA Explosion-proof, Intrinsically Safe, Division 2 (combination of E5, E6, I5, and I6) <i>Note: Only available on Housing Style codes 00, IA, IJ, 2A, 2J, 2E, or 2M.</i>
KC	FM and ATEX Explosion-proof, Intrinsically Safe, Non-incendive (combination of E5, E1, I5, and I1) <i>Note: Only available on Housing Style codes 00, IA, IJ, 2A, 2J, 2E, or 2M.</i>
KD	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe (combination of E5, I5, E6, I6, E1, and I1) <i>Note: Only available on Housing Style codes 00, IA, IJ, 2A, 2J, 2E, or 2M.</i>
Alternate Materials of Construction	
L1	Inert sensor fill fluid (differential and gage only) <i>Note: Silicone fill fluid is standard.</i>
L2	Graphite-filled PTFE o-ring
Digital Display⁽¹⁶⁾	
M5	<i>PlantWeb</i> LCD Display
M7 ⁽¹⁾⁽¹⁷⁾	Remote mount LCD display and interface, no cable; <i>PlantWeb</i> housing, SST bracket, requires 4-20 mA / HART output <i>Note: Use Belden 3084A cable or equivalent. Contact an Emerson Process Management representative for additional information.</i>
M8 ⁽¹⁾⁽¹⁷⁾	Remote mount LCD display and interface, 50 ft. (15 m) cable; <i>PlantWeb</i> housing, SST bracket, requires 4-20 mA / HART output
M9 ⁽¹⁾⁽¹⁷⁾	Remote mount LCD display and interface, 100 ft. (31 m) cable; <i>PlantWeb</i> housing, SST bracket, requires 4-20 mA / HART output
Special Certifications	
Q4	Calibration certificate
QP	Calibration certificate and tamper evident seal
Q8	Material traceability certification per EN 10204 3.1.B
QS ⁽¹⁸⁾	Certificate of FMEDA Data

TABLE 20. 3051S Series Coplanar (See Product Data Sheet 00813-0100-4801 for Product Specifications.)

Terminal Blocks	
T1 ⁽¹⁹⁾	Transient terminal block
T2 ⁽²⁰⁾	Terminal block with WAGO® spring clamp terminals
T3 ⁽²⁰⁾	Transient terminal block with WAGO spring clamp terminals
Conduit Electrical Connector	
GE ⁽²¹⁾	M12, 4-pin, Male Connector (<i>eurofast</i> ®)
GM ⁽²¹⁾	A size Mini, 4-pin, Male Connector (<i>minifast</i> ®)

- (1) Not available with Output code B.
- (2) Not available with output code B or Housing code 01. This option is only available with range codes 2A and 3A, 316L SST isolating diaphragm and silicone fill fluid.
- (3) 3051S_CD0 is only available with traditional flange, 316 SST diaphragm material, silicone fill fluid and bolting option L4.
- (4) Materials of Construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 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.
- (5) Requires PlantWeb housing and Hardware Adjustments option code D1. For the 3051S SIS Safety Transmitter, rangedown is limited to 10:1 on all models with the exception of range 0. The 3051S2CD0 is limited to 2:1 rangedown, the 3051S2CA0 is limited to 5:1 rangedown.
- (6) Requires PlantWeb housing.
- (7) Material specified is cast as follows: CF-8M is the cast version of 316 SST, CF-3M is the cast version of 316L SST, CW-12MW is the cast version of Hastelloy C-276, M-30C is the cast version of Monel 400. For housing, material is aluminum with polyurethane paint.
- (8) Available with output code A only. Not available with approvals. See Rosemount 753R Product Data Sheet, 00813-0100-4379, to specify Web-based Monitoring Indicator. Does not integrate into plant host systems.
- (9) Available with output code A only. Available approvals are FM Intrinsically Safe, Non-incendive (option code I5) or ATEX Intrinsically Safe (option code I1). Contact an Emerson Process Management representative for additional information.
- (10) Requires PlantWeb housing and output code F.
- (11) Requires PlantWeb housing and output code A. Includes Hardware Adjustments as standard. Contact an Emerson Process Management representative regarding availability.
- (12) Requires Rosemount 3095 Engineering Assistant to configure.
- (13) Not available with output code F or Housing code 01.
- (14) Valid when SuperModule Platform and housing have equivalent approvals.
- (15) Limited availability depending on transmitter type and range. Contact an Emerson Process Management representative for additional information.
- (16) Not available with Housing code 01 or 7J.
- (17) Not available with output code F, Housing code 01, or option code DA1.
- (18) Not available with Housing code 01.
- (19) Not available with Housing code 00, 01, or 7J.
- (20) Available with output code A and PlantWeb housing only.
- (21) Not available with Housing code 00, 01, or 7J. Available with Intrinsically Safe approvals only. For FM Intrinsically Safe, Non-incendive approval (option code I5) or FM FISCO Intrinsically Safe approval (option code IE), install in accordance with Rosemount drawing 03151-1009 to maintain NEMA 4X rating.

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 21. Rosemount 305R Integral Manifolds (Note: Only use this table if the S5 code from Table 19 is selected.)
(See Product Data Sheet 00813-0100-4733 for Product Specifications.)

Model	Product Description			
0305	Integral Manifold			
Code	Manufacturer			
R	Rosemount Inc.			
Code	Manifold Style			
T	Traditional (For use with 3051S)			
M	Traditional (Rosemount 3095-compatible; DIN-compliant flange) (For use with 3095M)			
Code	Manifold Type			
3	3-valve			
5 ⁽¹⁾	5-valve			
Materials of Construction				
Code	Body	Bonnet	Stem	Drain/Vent
2	316 SST	316 SST	316 SST	316 SST
Code	Process Connection			
A	¼–18 NPT			
Code	Packing Material			
1	PTFE			
2 ⁽²⁾	Graphite-based			
Code	Valve Seat			
1	Integral			
Code	305R Options			
L4	Austenitic 316 SST bolts			
L5	ASTM-A-193-B7M bolts			

(1) Not available with traditional manifold style T.

(2) Includes graphite tape on drains/vents and plugs.

Rosemount Engineered Assemblies

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

TABLE 22. Rosemount 304 Ordering Information

Model	Product Description			
0304	Conventional Manifold			
Code	Manufacturer			
R	Rosemount Inc.			
Code	Manifold Style			
T	Traditional (Flange x Flange or Flange x NPT)			
W ⁽¹⁾	Wafer			
Code	Manifold Type			
2 ⁽²⁾	2-valve			
3	3-valve			
5 ⁽³⁾	5-valve			
6 ⁽²⁾	5-valve Natural Gas Metering Pattern			
Code	Materials of Construction			
	Body	Bonnet	Stem	Tip
1	CS A108	316 SST	316 SST	Tungsten Carbide
2	316 SST	316 SST	316 SST	316 SST
5	CS A108	316 SST	316 SST	316 SST
Code	Process Connection			
B	1/2-14 NPT			
F ⁽²⁾	Flanged			
Code	Packing Material			
1	PTFE			
2 ⁽¹⁾	Graphite-based			
Code	Transmitter Type			
1	For assembly to 3051 Traditional Flange			
2	For assembly to 3051/3095 DIN Compliant Traditional Flange			
4	For assembly to 1151 range 3 - 5			
Code	Options			
	Mounting Bracket			
VC ⁽²⁾	Manifold Heavy Duty Mounting Bracket, CS for Traditional Style			
VS ⁽²⁾	Manifold Heavy Duty Mounting Bracket, SST for Traditional Style			
B4	Manifold SST Mounting Bracket for 2-in. pipe mount with series 300 SST bolts for wafer style			
B1	Transmitter Bracket for 2-in. pipe mounting, CS bolts			
B3	Transmitter Flat Bracket for 2-in. pipe mounting, CS bolts			
B7	Transmitter B1 Bracket with series 300 SST bolts			
B9	Transmitter B3 Bracket with series 300 SST bolts			
BA	Transmitter SST B1 Bracket with series 300 SST bolts			
BC	Transmitter SST B3 Bracket with series 300 SST bolts			
	Adapters			
DF ⁽⁴⁾	Flange Adapters			
	Bolts			
L4	Austentic 316 SST Bolts			
L5	ASTM A 193, Grade B7M Bolts			
Typical Conventional Manifold Model Number: 0304RT32B11VS				

(1) Not available with Material of Construction code 1.

(2) Not available with Manifold Style code W.

(3) Not available with Manifold Style code T.

(4) Only allowed with both Manifold Style code T and Process Connection code F. Not allowed with Packing Code 2 (Graphite-based).

STABILIZED CONNECTORS

FIGURE 5. Long Connectors

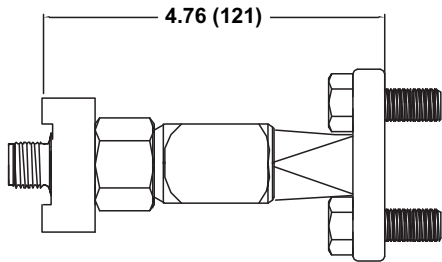


FIGURE 6. Short Connectors

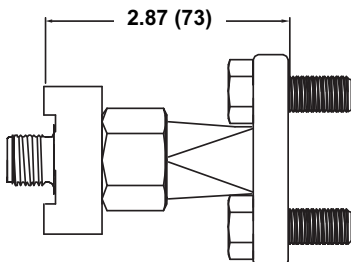
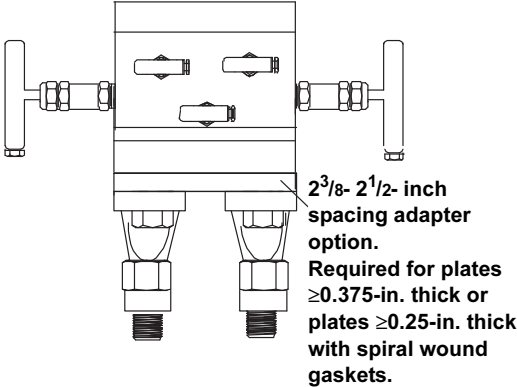


FIGURE 7. Adapter plate option



Note: Dimensions is inches (millimeters)

TABLE 23. Stabilized Connectors

Part Numbers	Description
116680830001	Short Connectors, CS Bolts (Standard configuration with best delivery)
116680830002	Short Connectors, SST Bolts
116680820001	Long Connectors, CS Bolts
116680820002	Long Connectors, SST Bolts
116680830004	Short Connectors, CS Bolts (for plates ≥0.375-in. thick or plates ≥0.25-in. thick with spiral wound gaskets)
116680830005	Short Connectors, SST Bolts (for plates ≥0.375-in. thick or plates ≥0.25-in. thick with spiral wound gaskets)
116680820003	Long Connectors, CS Bolts (for plates ≥0.375-in. thick or plates ≥0.25-in. thick with spiral wound gaskets)
116680820004	Long Connectors, SST Bolts (for plates ≥0.375-in. thick or plates ≥0.25-in. thick with spiral wound gaskets)

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.

ROSEMOUNT 309 PRESSURE CONNECTION SYSTEM

Rosemount 309 Connection System provides a root valve in the direct connection between the manifold of the transmitter to the orifice flange union.

Process Connections

Direct Weld

Flanged - 2 1/8-in. Traditional Spacing

Material

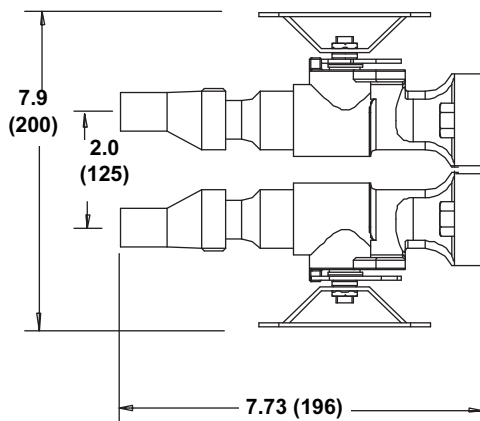
Carbon Steel

316 SST

Pressure Limits

2000 PSI at 100°F

FIGURE 8. Front View



Note: Dimensions is inches (millimeters)

FIGURE 9. Side View

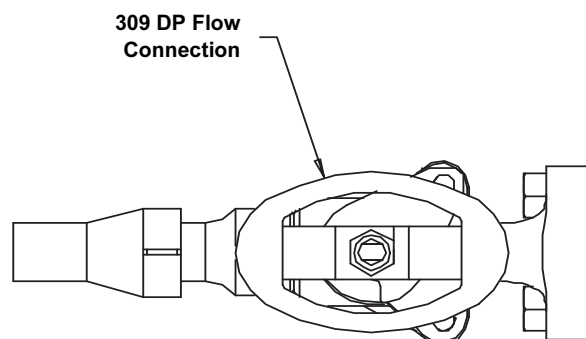


TABLE 24. 309 Pressure Connection System

Model	Product Description
0309	Differential Pressure Connection System
Code	Manufacturer
H	Cooper Cameron Valves
Code	Transmitter Connection
F	Flanged
Code	Valve Configuration
0	Primary block valve only
Code	Materials of Construction
12 ⁽¹⁾	Carbon Steel
22	316 SST
Code	Packing / Seat Material
1	PTFE
2	Grafoil / Ultrafil seat material
Code	Process Connections
W	Direct Weld
F	Flange
Code	Options
Q8	Material traceability certification per EN 10204 3.1B
L4	Austentic 316 SST bolts
Typical Model: 0309 H F 0 12 1 W	

(1) 316 ball/stem; CS painted with primer coat.

STEAM CONNECTION SYSTEM

Piping Specification

/CS-1

Piping Material

ASTM A106 GR B Carbon Steel:
Fittings - ASTM A105 Class 3000

Welded Specification

/SW-2-2

Welded Type

Socket Weld

Process Connection

Schedule 80 - Standard

Inst Detail Piping

Schedule 80 - Standard

Valve Specification

Valve Code

/V1

Root Valve / Vent / Drain Valve

Description

VELAN -Class 800 Gate Valves
(Root W-2184W-02TY)/(D/V C-218W-02TY)

Body Material

Forged Steel

Seat Material

Stellite 6

Packing

Graphite

Bypass Manifold Valve

Description

M2-110SRT PGI Bypass Manifold

Body Material

Forged Steel

Ball Material

Ceramic Rising Stem Ball

Packing

PTFE

Bracket Specification

/Line Size-V-X

Temperature Range

315 to 380°C

CS Pipe

Pipe clamp is painted CS. Thermal isolators (2) are hot dipped galvanized CS.

FIGURE 10. Steam Connection System

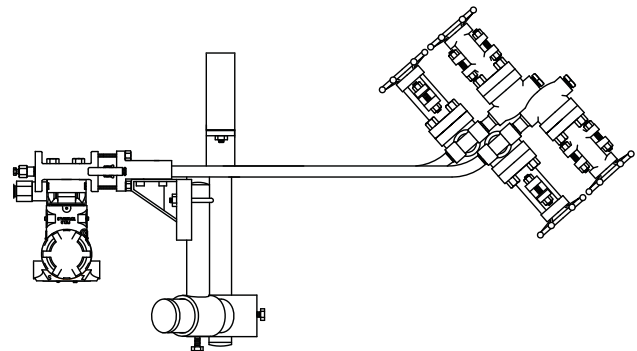


TABLE 25. Steam connection System

Part Number	Connection System	Line Size
A013340001-0144	3413-10/CS-1/SW-2-2/V1/2-V-X//	2-inch
A013340001-0145	3413-10/CS-1/SW-2-2/V1/3-V-X//	2 1/2- and 3-inch
A013340001-0146	3413-10/CS-1/SW-2-2/V1/4-V-X//	4-inch
A013340001-0147	3413-10/CS-1/SW-2-2/V1/6-V-X//	6-inch
A013340001-0148	3413-10/CS-1/SW-2-2/V1/8-V-X//	8-inch
A013340001-0149	3413-10/CS-1/SW-2-2/V1/10-V-X//	10-inch
A013340001-0150	3413-10/CS-1/SW-2-2/V1/12-V-X//	12-inch

TABLE 26. Rosemount 1595 Orifice Plate Ordering Table
(See Product Data Sheet 00813-0100-4828 for Product Specifications.)

Model	Product Description
1595	Conditioning Orifice Plate
Code	Plate Type
P	Paddle, Square Edged
Code	Line Size
020	2-in. (50 mm)
030	3-in. (76 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)
Code	Flange Rating
A3	ANSI Class 300 Raised Face
A6	ANSI Class 600 Raised Face
A9	ANSI Class 900 Raised Face
AF	ANSI Class 1500 Raised Face
AT	ANSI Class 2500 Raised Face
Code	Material Type
S	316/316L Stainless Steel
L	304/304L Stainless Steel
M	<i>Monel</i> [®]
H	<i>Hastelloy</i> [®] C-276
Code	Orifice Plate Thickness ⁽¹⁾
A	0.125-in. (default for Line Sizes 2 to 4-in. (50 mm to 100 mm))
B	0.250-in. (default for Line Sizes 6 to 12-in. (150 to 300 mm))
C	0.375-in. (default for line sizes 14 to 20-in. (350 to 500 mm))
Code	Beta Ratio
020	0.20 Beta Ratio
040	0.40 Beta Ratio
065	0.65 Beta Ratio (0.60 beta ratio for Line Size option 020 only)
Code	Options
Flow Calibration	
WC	Discharge Coefficient Verification (3 points)
WD	Discharge Coefficient Verification (full 10 points)
Special Inspection	
QC1	Visual and dimensional Inspection with certification
QC7	Inspection and performance certificate
Material Traceability Certification	
Q8	Material Certification per ISO 10474 3.1-B and EN 10204 3.1.B
Country Certification	
J1	Canadian Registration
Typical Model Number: 1595 P 060 A3 S A 040	

(1) Tolerances for all dimensions within ± 0.1 in (2.54 mm)

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 27. Rosemount 1495 Orifice Plate Ordering Table
(See Product Data Sheet 00813-0100-4792 for Product Specifications.)

Model	Product Description
1495	Orifice Plate Primary
Code	Orifice Plate Type
PC	Paddle, Concentric
Code	Line Size
020	2-in. (50 mm)
025	2.5-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)
Code	Flange Rating
A3	ANSI Class 300
A6	ANSI Class 600
A9 ⁽¹⁾	ANSI Class 900
Code	Orifice Plate Material Type
S	316/316L Stainless Steel
T	DIN 1.4571 (316Ti Stainless Steel)
L	304/304L Stainless Steel
H	Hastelloy [®] C-276
M	Monel [®]
Code	Plate Thickness ⁽²⁾
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)
Code	Bore
XXXXX	Bore (XXXXX = XX.XXX)
Code	Options
BC	Bore Calculation
Special Inspection	
QC1 ⁽³⁾	Visual and dimensional inspection with certificate
QC7	Inspection and performance certificate
Material Traceability Certification	
Q8	Material Certification per IS 10474 3.1-B and EN 10204 3.1.B
Typical Model Number: 1495 PC 040 A3 S A	

(1) Not available for Steam Flow option.

(2) Tolerances for all dimensions within ± 0.1 in (2.54 mm)

(3) Must be order to meet 40CFR 75 Appendix D and E standards when ordering AGA Report Number 3 / API 14.3.2.

BUY/RESALE AGA3 REPORT NUMBER 3 / API 14.3.2 COMPLIANT ORIFICE PLATE FLOWMETER SECTION

Material

Pipe: Carbon Steel ASTM A106 Grade B

Flanges: (ANSI B16.5): Carbon Steel ASTM A105

Studs: ASTM A193 Grade B7

Nuts: ASTM A193 Grade H2

Jackscrews: ASTM A307

Gaskets: Non-asbestos flat for ANSI Class 300. Spiral-wound for ANSI Class 600, 900, 1500, and 2500.

Pipe Plugs: ASTM A105

Pipe Schedule: Schedule Standard for ANSI Class 300 and 600. Schedule XS for ANSI Class 900, 1500, and 2500.

TABLE 28. Buy/Resale AGA3 Report Number 3 / API 14.3.2 Compliant Orifice Plate Meter Run

Model	Product Description
AGA3	AGA3 Orifice Meter Run Section
Code	Meter Section Material Type
C	Carbon Steel
Code	Line Size
020	2-in. (50 mm)
025	2.5-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)
Code	Orifice Flange Rating
A3	ANSI Class 300
A6	ANSI Class 600
A9 ⁽¹⁾	ANSI Class 900
AF	ANSI Class 1500 (only available in line sizes 2-in. through 4-in.)
AT	ANSI Class 2500 (only available in line size 2-in.)
Code	Meter Section End Connections
B ⁽²⁾	Beveled (prepared for welding)
F	Flanged (flange rating matches orifice flange rating)
G ⁽³⁾	Flanged, ANSI Class 150
Typical Part Number: AGA3 C 040 A3 F	

(1) This option is only available with 10-in. and 12-in. line sizes when Meter Section End Connections option code B is selected.

(2) Prepared for welding process ends.

Note: Flanged connections should be considered for vertical line applications to prevent possible flowmeter damage from weld splatter.

(3) This option is only available with orifice flange union rating code A3.

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 29. Rosemount 1497 Orifice Meter Section Ordering Table
(See Product Data Sheet 00813-0100-4792 for Product Specifications.)

Model	Product Description
1497	Orifice Meter Section
Code	Meter Section Type
WN	Raised Face, Weld neck
Code	Line Size
020	2-in. (50 mm)
025	2 ¹ / ₂ -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 ⁽¹⁾	14-in. (350 mm)
160 ⁽¹⁾	16-in. (400 mm)
180 ⁽¹⁾	18-in. (450 mm)
200 ⁽¹⁾	20-in. (500 mm)
Code	Flange Rating
A3	ANSI Class 300
A6	ANSI Class 600
A9 ⁽²⁾	ANSI Class 900
AF ⁽¹⁾⁽²⁾	ANSI Class 1500
AT ⁽¹⁾⁽²⁾	ANSI 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®
Pressure Tap Location / Type	
F	Flanged / 1/2-in. FNPT
G	Flanged / 1/2-in. Socket Tap
Meter Section End Connections	
B ⁽³⁾	Beveled (prepared for welding)
F	Flanged (flange rating matches orifice flange rating)
G	Flanged, ANSI 150#
T	NPT Male Thread

Rosemount Engineered Assemblies

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

TABLE 29. Rosemount 1497 Orifice Meter Section Ordering Table
(See Product Data Sheet 00813-0100-4792 for Product Specifications.)

Code	Options
Alternate Pipe Schedule / Wall Thickness⁽⁴⁾	
FA ⁽⁵⁾	Schedule 5S
FB ⁽⁵⁾	Schedule 10
FC ⁽⁵⁾	Schedule 10S
FD ⁽⁵⁾	Schedule 20
FE ⁽⁵⁾	Schedule 30
FF ⁽⁵⁾	Schedule 40
FG ⁽⁵⁾	Schedule 40S
FH ⁽⁵⁾	Schedule Standard (STD)
FI ⁽⁵⁾	Schedule 60
FJ ⁽⁵⁾	Schedule 80
FK ⁽⁵⁾	Schedule 80S
FL ⁽⁵⁾	Schedule Extra Strong (XS)
FM ⁽⁵⁾	Schedule 100
FN ⁽⁵⁾	Schedule 120
FP ⁽⁵⁾	Schedule 140
FQ ⁽⁵⁾	Schedule 160
FR ⁽⁵⁾	Schedule Double Extra Strong (XXS)
Temperature Taps (Note: Temperature Tap Option must match Thermowell size on page Flow-30)	
TO	Temperature Tap, fitting only, 1/2-in. NPT (For 2- through 3-inch line size only)
TQ	Temperature Tap, fitting only, 3/4-in. NPT (For 4-inch line size only)
TR	Temperature Tap, fitting only, 3/4-in. SW (For 2- through 4-inch line size only) (Steam Flow Assemblies Only)
TS	Temperature Tap, fitting only, 1-in. SW (For 6- through 12-inch line size only) (Steam Flow Assemblies Only)
TT	Temperature Tap, fitting only, 1-in. (25.4 mm) NPT ⁽⁴⁾ (For 6- through 20-inch line size only)
High Temperature Gaskets	
G1 ⁽⁶⁾	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
Material Traceability Certification	
Q8	Material certificate per ISO 10474 3.1.B and EN 10204 3.1.B
Short Length for Conditioning Meters	
C0002 ⁽⁷⁾	2-in. through 24-in. 1497 meter runs for 1595 (2D upstream / 2D downstream)

(1) Must be ordered with C0002 option.

(2) Not available with Steam Flow assemblies.

(3) Prepared for welding process ends.

Note: Flanged connections should be considered for vertical line applications to prevent possible flowmeter damage from weld splatter.

(4) These options should only be selected if the required pipe schedule is different from the default pipe schedule. Standard wall thickness for DIN weldneck flanges is per ISO EN 1092-1 (2002). Consult the factory if a different wall thickness is required.

(5) Materials of Construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 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.

(6) Add 1/8 inch to total lay-length of assembly.

(7) For 1595 Conditioning Orifice Plate Meter Runs.

Product Data Sheet

00813-0100-4650, Rev DA

Catalog 2008 - 2009

Rosemount Engineered Assemblies

TABLE 30. 78 Sensor (See Product Data Sheet 00813-0100-2654 for Product Specifications.)

Model	Product Description
0078	Platinum Wire-Wound Temperature Sensors and Sensor Assemblies
Code	Sensor Lead Wire Termination
D	Rosemount Aluminum Connection Head
R	Aluminum Connection Head, Six Terminals, Flat Cover, Unpainted
T	Aluminum Connection Head, Six Terminals, Extended Cover, Unpainted
P	Aluminum Connection Head, Six Terminals, Flat Cover, Painted
L	Aluminum Connection Head, Six Terminals, Extended Cover, Painted
Code	Sensor Type (single element -50 to 400 °C (-58 to 752 °F))
11	General-purpose style
21	Spring-loaded style
Code	Extension Type
A ⁽¹⁾	Nipple Coupling, SST
C ⁽¹⁾	Nipple Union, SST
N	None, Use with extension length option code 00
Code	Extension Length (E)
00	0.0 in.
30	3.0 in.
60	6.0 in.
Code	Material
A ⁽²⁾	Type 316 SST (standard)
B	Type 304 SST
C	Carbon Steel
D	316L SST
E	304L SST
J	Hastelloy C
L	Hastelloy B
Code ⁽³⁾	(U) Length Dimensions (in.) (NOTE: Must choose the 1/2 inch line size)
015	1.5 (Straight Stem only)
020	2.0 (Straight stem only)
025	2.5 (Straight stem only)
030	3.0
035	3.5
040	4.0
045 ⁽²⁾	4.5
050	5.0
055	5.5
060	6.0
065	6.5
070	7.0
075	7.5
080	8.0
085	8.5
090	9.0
095	9.5
100	10.0

TABLE 30. 78 Sensor (See Product Data Sheet 00813-0100-2654 for Product Specifications.)

Code	Thermowell
Note	
For 1497 Meter Runs, Thermowell connection must match Temperature Tap Option on page Flow-28.	
For AGA3 Compliant Meter Runs use 1/2 inch NPT connection for line sizes 2- 3 inch, 3/4 inch NPT for 4 inch, and 1 inch NPT for 6- 10 inch.	
T24 ⁽²⁾	Threaded 1-11.5 ANPT Stepped Steam Style
T32 ⁽⁴⁾	Threaded 1/2-14 ANPT Straight Steam Style
T34 ⁽⁴⁾	Threaded 3/4-11.5 ANPT Straight Steam Style
W40	Welded 1 inch pipe Stepped Steam Style
W48 ⁽⁴⁾	Welded 3/4 inch pipe Straight Steam Style
Code	Options
Product Certifications	
E5	FM Explosion-proof approval
E6	CSA Explosion-proof approval
Calibration Options	
X8Q4 ⁽⁵⁾	Calibrate to customer-specified temperature range
X9Q4	Calibrate to customer-specified temperature point
Thermowell Options	
Q8	Thermowell Material Certificate
Mounting Adapters, Lead Wire Extensions, Connectors, and Seals	
XA ⁽⁶⁾	Assemble connection head or transmitter to a sensor assembly (PTFE paste where appropriate, fully wired.)

(1) Codes A and C must be used with an extension length. Additional non-standard (E) lengths are available in 1/2-in. increments from 2.5 to 9-in.

(2) Standard configuration with best delivery.

(3) Thermowells with an overall lengths ("U" + "T" + 1.75-in.) of 42-in. or less are machined from solid bar stock. Thermowells with an overall length larger than 42-in. will be constructed using a welded 3-piece design and are available only with a stepped stem style.

(4) Straight thermowells are not recommended for (U) lengths greater than 6-in.

(5) Must be order to meet 40CFR 75 Appendix D and E standards when ordering AGA Report Number 3 / API 14.3.2.

(6) Required for Engineered Assemblies.

TABLE 31. Flow Conditioner

Line Size	ANSI Class 300, 600, and 900
2	CPA 50E.020
3	CPA 50E.030
4	CPA 50E.040
6	CPA 50E.060
8	CPA 50E.080
10	CPA 50E.100
12	CPA 50E.120

Rosemount Engineered Assemblies

Product Data Sheet
00813-0100-4650, Rev DA
Catalog 2008 - 2009

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