

8300 Series Flanged Magnetic Flowtubes
ptfe, Polyurethane, or Neoprene Lined
1/2 through 36 in Sizes



FLOWTUBE SIZES
15 TO 300 mm
(1/2 TO 12 in)

FLOWTUBE SIZES
350 TO 900 mm
(14 TO 36 in)



The 8300 Series Flanged Magnetic Flowtubes are used with the Intelligent IMT25 Magnetic Flow Transmitters to measure the volumetric flow rate of virtually any conductive liquid. The transmitter converts the low level, high impedance signal from the flowtube to a standard, transmission signal, either 4 to 20 mA, digital, or pulse output, that is proportional to flow rate. The flow tubes are available in 15 to 900 mm (1/2 to 36 in) line sizes, and are offered with either ANSI, AWWA, or metric flanges. As symbolized by the “CE” Logo marking on the product, these flow tubes conform to all applicable European Union directives.

**SUPERIOR REPUTATION FOR
DEPENDABILITY AND QUALITY**

Foxboro magnetic flow measurement systems were introduced to the process industries in 1954 and these systems have demonstrated the broadest and most time-proven application expertise with tens of thousands of successful installations.

USED WITH PULSED DC SUPPLY

The 8300 Series Magnetic Flowtubes are calibrated for use with pulsed dc coil excitation. The Foxboro Model IMT25 Intelligent Magnetic Flow Transmitters are used with these flowtubes.

FLOWTUBE CALIBRATION

All flow tubes are wet calibrated to verify their specified accuracy with traceability to the U.S. National Institute of Science and Technology (NIST).

USED WITH A WIDE VARIETY OF LIQUIDS

The stainless steel flowtube is lined with a choice of ptfе, neoprene, or polyurethane lining. Together with the choice of lining materials, a selection of electrode metals and shapes enables these flowtubes to handle a wide variety of liquids such as water, slurries, and sticky, abrasive, and highly corrosive processes.

DESIGNED FOR USE IN HAZARDOUS LOCATIONS

These flowtubes meet agency requirements for use in hazardous area locations.

PED QUALIFICATION

This product is qualified for SEP (Standard Engineering Practice) Category 1 with Group 2 fluids (nonhazardous).

HOUSING CONSTRUCTION

These flowtubes are offered with a selection of the following housing construction: a Weatherproof construction housing, an Accidental Submergence construction housing, a Total/Accidental Submergence construction housing, and a High Humidity/Condensate construction housing. See paragraphs below and also the Model Codes section for availability.

Weatherproof Construction

This housing is designed for harsh in-plant or outdoor environments. It is weatherproof as defined by IEC IP65, and provides the watertight and corrosion-resistant protection of NEMA Type 4X. Select Housing Code –G.

Accidental Submergence Construction

This housing is factory sealed to allow 48 hours of operation after being accidentally submerged in a maximum depth of 9 m (30 ft) of water. A field kit is provided to the customer for final sealing after site installation. Select Housing Code –H.

Total/Accidental Submergence Construction

This housing is factory sealed to allow operation after being submerged in a maximum depth of 9 m (30 ft) of water. A field kit is also provided to the customer for final sealing after site installation. Select Housing Code –N.

High Humidity/High Condensate Construction

This construction consists of special sealing techniques to help prevent internal formation of condensate in applications involving cold process temperature and warm ambient, e.g., brewery or dairy processes. Select using Flowtube Housing Code –C.

FlowExpertPro™

FlowExpertPro is a program primarily used to size Foxboro flowmeters. It also ensures that the user has selected the proper flowmeter type for his application. This meter selection tool is available as a free web site to all users, without the need for registration. In addition to flowmeter selection and sizing, FlowExpertPro includes the following features:

- ▶ Incorporates a large library of the physical properties of typical process fluids.
- ▶ Displays results in tabular or graphic format.
- ▶ Allows user to save, print, or E-mail results.
- ▶ Provides reference to applicable flowmeter PSSs and other related flowmeter documentation.

The program calculates minimum and maximum flow rates, range ability, pressure loss, and Reynolds Number, using established flow equations. It also allows for material and flange selection, and provides ANSI or metric flange recommendations for predicted flow pressure and temperature. You are invited to visit www.FlowExpertPro.com to access this program, or contact Global Customer Support for further information, and technical support.

OPERATING CONDITIONS

Influence	Reference Operating Conditions	Normal Operating Condition Limits	Operative Limits
Ambient Temperature	23 ±2°C (73 ±3°F)	-10 and +50°C (20 and 120°F)	-30 and +60°C (-20 and +140°F)
Process Pressure and Process Temperature	Varies with Line Size, Flange Rating, and Lining Material. Refer to Figure 1 and Tables 3, 4, and 5.		

PERFORMANCE SPECIFICATIONS

(Combined Flowtube and Transmitter System under Reference Operating Conditions)

8300 Flowtube with IMT25 Series Transmitter

Refer to PSS 1-6F5 B

FUNCTIONAL SPECIFICATIONS

Nominal Line Sizes

15, 25, 40, 50, 80, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 750, and 900 mm (1/2, 1, 1 1/2, 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, and 36 in)

End Connections

ANSI, AWWA, and Metric PN flanges (in accordance with EN 1092-1). Refer to Model Code Section for flange type and ratings.

Metering Tube

AISI Type 304 or 310 stainless steel, as specified.

Minimum and Maximum Upper Range Values

See Table 1. In this table, the minimum upper range value is **not** the lowest flow rate that the flowtube can measure; it is the lowest flow rate which can correspond to the 20 mA signal. For example: for the 25 mm (1 in) flowtube, the minimum range is 0 to 3.8 U.S. gpm, and this will generate 4 to 20 mA. Also visit FlowExpertPro.com.

Table 1. Flow Rate Upper Range Values (a)

Flowtube Line Size		Approximate Minimum and Maximum URVs(b)					
		with ptfe Lining (b)		with Polyurethane Lining (b)		with Neoprene Lining (b)	
mm	in	L/min	U.S. gpm	L/min	U.S. gpm	L/min	U.S. gpm
15	1/2	3.75 & 75	1 & 20	—	—	—	—
25	1	14.5 & 290	3.8 & 76	—	—	—	—
40	1 1/2	37 & 740	10 & 195	—	—	—	—
50	2	63 & 1260	17 & 335	30 & 600	8 & 160	—	—
80	3	145 & 2900	39 & 770	96 & 1930	25 & 510	—	—
100	4	255 & 5100	68 & 1350	162 & 3240	43 & 855	—	—
150	6	570 & 11400	150 & 3000	440 & 8800	115 & 2300	—	—
200	8	975 & 19500	260 & 5150	820 & 16400	220 & 4300	—	—
250	10	1550 & 31000	410 & 8200	1350 & 27000	360 & 7150	—	—
300	12	2210 & 44200	590 & 11700	1980 & 39600	525 & 10450	—	—
350	14	2725 & 54500	720 & 14400	2725 & 54500	720 & 14400	2725 & 54500	720 & 14400
400	16	3600 & 72000	950 & 19000	3600 & 72000	950 & 19000	3600 & 72000	950 & 19000

Table 1. Flow Rate Upper Range Values (a) (Continued)

Flowtube Line Size		Approximate Minimum and Maximum URVs(b)					
		with ptfe Lining (b)		with Polyurethane Lining (b)		with Neoprene Lining (b)	
mm	in	L/min	U.S. gpm	L/min	U.S. gpm	L/min	U.S. gpm
600	24	10500 & 162000	2780 & 43000	10500 & 162000	2780 & 43000	10500 & 162000	2780 & 43000
750	30	—	—	22700 & 258000	6000 & 68000	22700 & 258000	6000 & 68000
900	36	—	—	37800 & 374000	10000 & 99000	37800 & 374000	10000 & 99000

- (a) Refer to MI 021-381 for nominal calibration factors for each tube size.
 (b) The inside diameter of each flowtube size varies depending on the lining used. Therefore different URVs are indicated for flowtube sizes through 300 mm (12 in), depending on the lining used. However, on sizes larger than 300 mm (12 in), the variance in inside diameter is sufficiently small percentagewise to approximate the same URV for each line size regardless of the lining used.

Process Fluid Conductivity

The minimum process fluid conductivity required is 5 µS/cm. Refer to TI 027-072 for conductivity of various process fluids.

Signal and Coil Driver Cable Length

Using Foxboro cable Part Number R0101ZS, the maximum allowable cable length is 300 m (1000 ft) between flowtube and transmitter.

Lining and Electrode Application Guide

See Table 2 for recommended lining applications. Also refer to TI 27-71f for ratings of process-wetted materials with over 150 process liquids.

Process Pressure and Temperature Limits

See Figure 1 and Tables 3, 4, and 5.

Process Liquid Ground

If Connecting Pipping is Unlined Metal

System grounded through flange bolts or ground straps.

If Connecting Pipping is Lined Metal or Nonmetallic

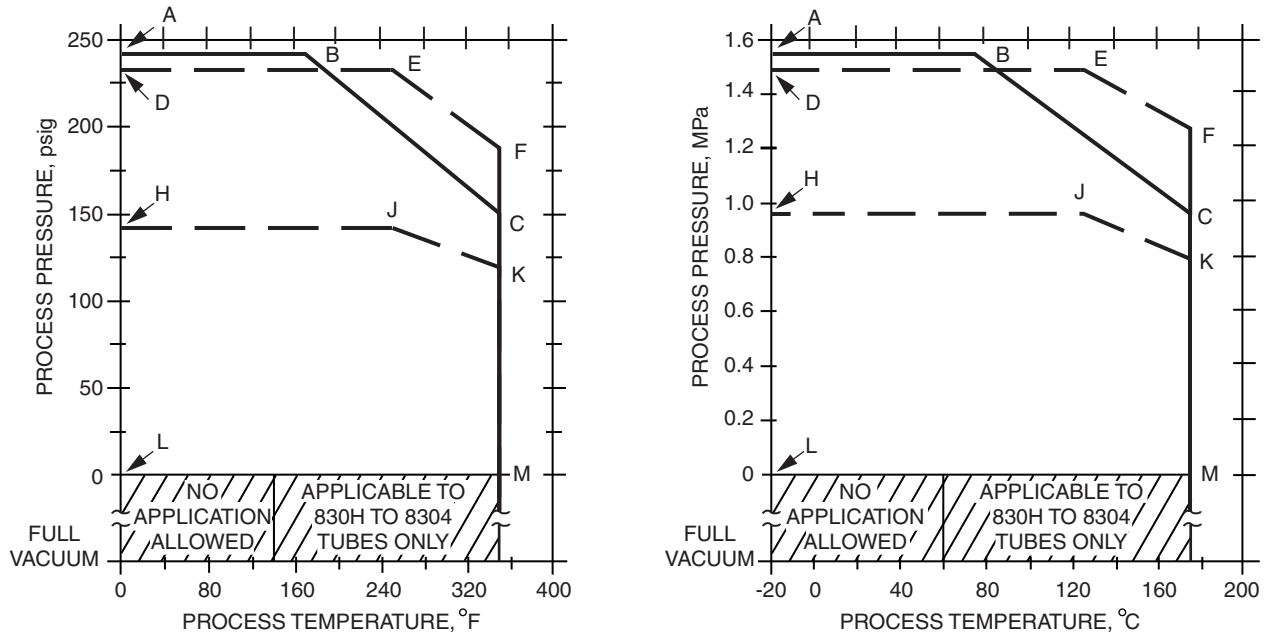
Systems grounded using grounding rings at each end of the flowtube. Foxbro grounding rings(i.e., orifice plates) are available if needed.

Table 2. Recommended Lining Application

Flowtube Construction	Fluid Characteristic (a)(b)					
	Clean	Mild Corrosion	Severe Corrosion	Mild Abrasion	Severe Abrasion	Mild Corrosion and Abrasion
ptfe Lining	A	A	A	B	X	B
Polyurethane Lining	A	B	X	A	A	B
Neoprene Lining	A	A	X	A	X	A

- (a) A = Preferred: Generally considered best choices. B = Satisfactory: Reasonable life under most conditions.
 X = Not Recommended: Generally considered unsuitable.
 (b) This product is PED qualified for SEP (Standard Engineering Practices) Category 1 with Group 2 fluids (nonhazardous).

Figure 1. Process Pressure and Temperature Limits – ptfе-Lined Flowtubes – 830H to 8312 Sizes Only
(See Table 3 for ptfе-Lined Flowtubes, 8314 to 8324 Sizes)



NOTES:

1. PROCESS PRESSURE AND TEMPERATURE MUST BE WITHIN THE BOUNDARIES:
 L ABCM FOR FLOWTUBES WITH ANSI CLASS 150 OR 300 FLANGES
 L HJKM FOR FLOWTUBES WITH PN 10 FLANGES
 L D E F M FOR FLOWTUBES WITH PN 16, 25, OR 40 FLANGES
2. REFER TO GLOBAL CUSTOMER SUPPORT FOR APPLICATIONS INVOLVING ELEVATED PRESSURE.

Table 3. Process Pressure and Temperature Limits – ptfе-Lined Flowtubes – 8314 to 8324 Sizes Only
(See Figure 1 for ptfе-Lined Flowtubes, 830H to 8312 Sizes)

cf Flange Rating	Flowtube Line Size (See Model Code Section)	Process Pressure Limits		Process Temperature Limits	
		Lower Limit	Upper Limit	Lower Limit	Upper Limit
ANSI Class 150	8314 and 8316	Zero (No Vacuum)	1.38 MPa (200 psig)	-18°C (0°F)	82°C (180°F)
	8318 to 8324	Zero (No Vacuum)	1.03 MPa (150 psig)	-18°C (0°F)	82°C (180°F)
Metric PN 6	8314 to 8324	Zero (No Vacuum)	.60 MPa (87 psig)	-18°C (0°F)	82°C (180°F)
Metric PN 10	8314 to 8324	Zero (No Vacuum)	1.00 MPa (145 psig)	-18°C (0°F)	82°C (180°F)

Table 4. Process Pressure and Temperature Limits—Polyurethane-Lined Flowtubes—8302 to 8336 Sizes\

Flange Rating	Flowtube Line Size (See Model Code Section)	Process Pressure Limits		Process Temperature Limits	
		Lower Limit	Upper Limit	Lower Limit	Upper Limit
ANSI Class 150	8302 to 8312	Full Vacuum	1.65 MPa (240 psig)	-18°C (0°F)	71°C (160°F)
	8314 and 8316	Full Vacuum	1.38 MPa (200 psig)	-18°C (0°F)	71°C (160°F)
	8316 to 8324	Full Vacuum	1.03 MPa (150 psig)	-18°C (0°F)	71°C (160°F)
ANSI Class 300	8302 to 8304	Full Vacuum	4.83 MPa (700 psig)	-18°C (0°F)	71°C (160°F)
	8306 and 8308	Full Vacuum	1.65 MPa (240 psig)	-18°C (0°F)	71°C (160°F)
Metric PN 10	8302 to 8324	Full Vacuum	1.00 MPa (145 psig)	-18°C (0°F)	71°C (160°F)
	8330	Full Vacuum	0.69 MPa (100 psig)	-18°C (0°F)	71°C (160°F)
	8336	Full Vacuum	0.62 MPa (90 psig)	-18°C (0°F)	71°C (160°F)
Metric PN 16	8302 to 8312	Full Vacuum	1.60 MPa (232 psig)	-18°C (0°F)	71°C (160°F)
Metric PN 25	8302 to 8304	Full Vacuum	2.50 MPa (362 psig)	-18°C (0°F)	71°C (160°F)
	8306 to 8312	Full Vacuum	1.65 MPa (240 psig)	-18°C (0°F)	71°C (160°F)
Metric PN 40	8302 to 8304	Full Vacuum	4.00 MPa (580 psig)	-18°C (0°F)	71°C (160°F)
	8306 to 8312	Full Vacuum	1.65 MPa (240 psig)	-18°C (0°F)	71°C (160°F)
Metric PN 6	8314 to 8336	Full Vacuum	0.60 MPa (87 psig)	-18°C (0°F)	71°C (160°F)
AWWA Class D	8330	Full Vacuum	0.69 MPa (100 psig)	-18°C (0°F)	71°C (160°F)
	8336	Full Vacuum	0.62 MPa (90 psig)	-18°C (0°F)	71°C (160°F)

Table 5. Process Pressure and Temperature Limits—Neoprene-Lined Flowtubes—8314 to 8336 Sizes

Flange Rating	Flowtube Line Size (See Model Code Section)	Process Pressure Limits		Process Temperature Limits	
		Lower Limit	Upper Limit	Lower Limit	Upper Limit
ANSI Class 150	8314 and 8316	Full Vacuum	1.38 MPa (200 psig)	-18°C (0°F)	82°C (180°F)
	8318 to 8324	Full Vacuum	1.03 MPa (150 psig)	-18°C (0°F)	82°C (180°F)
AWWA Class D	8330	Full Vacuum	0.69 MPa (100 psig)	-18°C (0°F)	82°C (180°F)
	8336	Full Vacuum	0.62 MPa (90 psig)	-18°C (0°F)	82°C (180°F)
Metric PN 6	8314 to 8336	Full Vacuum	0.60 MPa (87 psig)	-18°C (0°F)	82°C (180°F)
Metric PN 10	8314 to 8324	Full Vacuum	1.00 MPa (145 psig)	-18°C (0°F)	82°C (180°F)
	8330	Full Vacuum	0.69 MPa (100 psig)	-18°C (0°F)	82°C (180°F)
	8336	Full Vacuum	0.62 MPa (90 psig)	-18°C (0°F)	82°C (180°F)

PHYSICAL SPECIFICATIONS

Enclosure Construction

830H TO 8312

Housing is cast from low-copper aluminum alloy, and silicone sealant is used in all joints. Offered for high humidity, NEMA 4X, or total/accidental submergence applications, as specified.

8314 TO 8336

Housing is fabricated from fiberglass reinforced plastic (FRP), and gaskets are used to seal all joints. Offered for high humidity, NEMA 4X, or accidental submergence applications, as specified.

Enclosure Finish

830H TO 8312

High-build epoxy paint.

8314 TO 8336

Polyurethane paint.

Electrodes Material

Tantalum, 316 ss, Hastelloy C, platinum, or titanium, as specified. 316 ss and Hastelloy C are also offered in conical shaped configurations. See paragraph below and Model Codes.

Flat Head and Conical Head Electrodes

Standard flat head electrodes are offered with all electrode materials. The conical head electrode is offered when fluids can cause coatings to deposit on the electrode surface, possibly degrading measurement accuracy. Conical head electrodes are available in 316L ss or Hastelloy C materials with ptfе-lined flowtubes. The conical head extends out through deposits into a higher velocity area of the flow profile where process liquid tends to sweep the electrodes clean.

Electrical Connections

The housing has three 1/2 NPT tapped holes for signal and power connections. Refer to “Optional Features” section for cable glands (3) offered for nonconduit applications, or a signal cable seal (1) for conduit applications.

Mounting Position

The flowtube can be mounted in any orientation provided it remains full of process liquid, and the electrodes are in the horizontal plane.

End Connection

ANSI Class 150 and 300 raised face flanges, AWWA Class D flanges, and Metric PN 6, 10, 16, 25, and 40 raised face flanges, as specified. Refer to Model Code section.

Approximate Mass

830H	21 kg (46 lb)
8301	18 kg (40 lb)
831H	20 kg (45 lb)
8302	21 kg (47 lb)
8303	27 kg (60 lb)
8304	34 kg (76 lb)
8306	55 kg (122 lb)
8308	85 kg (188 lb)
8310	91 kg (200 lb)
8312	125 kg (275 lb)
8314	170 kg (375 lb)
8316	195 kg (425 lb)
8318	215 kg (475 lb)
8320	285 kg (625 lb)
8324	410 kg (900 lb)
8330	545 kg (1200 lb)
8336	660 kg (1450 lb)

PRODUCT SAFETY SPECIFICATIONS

Electrical Classification

Testing Laboratory, Types of Protection and Area Classification	Conditions of Certification	Electrical Safety Design Code
CSA certified for use in Class I, Division 2, Groups A, B, C, and D hazardous locations.	Model 830H through 8324. Temperature Class T6.	CNZ
CSA certified for Type Y Purging for Class I, Division 1, Groups A, B, C, and D.	Model 830H through 8312. Temperature Class T6.	CPZ
FM approved for use in Class I, Division 2, Groups A, B, C, and D hazardous locations.	Model 830H through 8324. Temperature Class T6. For use on non-hazardous process only.	FNA
FM approved for Type Y purging for Class I, Division 1, Groups A, B, C, and D hazardous locations.	Model 830H through 8312. Temperature Class T6. For use on non-hazardous process only.	FPA

OPTIONAL SELECTIONS AND ACCESSORIES

Options –U, –W, and –Z: Ultrasonic Electrode Cleaning

Vibration of 65 ±10 kHz continuously applied to electrodes helps to prevent or to remove accumulation of many kinds of hard, brittle coatings which can interfere with magnetic flow measurement. This option, identified by Model Code Suffix “–U”, consists of two main components: a pair of electrode drivers (transducers) internal to the flowtube housing, and a pipe- or wall-mounted oscillator power supply unit, with 7.6 m (25 ft) of interconnecting cable. To facilitate field-addition of ultrasonic cleaning, if needed, electrode drivers can be built-in (Model Code Suffix “–Z”), and the oscillator power supply can be purchased later. Also available is an ultrasonic driver assembly with cable and junction box (Model Code Suffix “–W”) for use with a portable ultrasonic electrode cleaner. These options are available for 50 to 900 mm (2 to 36 in) flowtube sizes.

Air Purge Connection for Use with Ultrasonic Electrode Cleaner Power Supply

For increased corrosion resistance, ultrasonic cleaner power supply can be air purged. Air supply connection can be either R 1/4 or 1/4 NPT. Specify AS Reference APC.

Option –G: Cable Glands

Usually selected for nonconduit applications. Used to provide rain-tight, strain-relieved entrance for 6.8 to 12.2 mm (0.27 to 0.48 in) diameter cable. External 3/4 NPT threads into flowtube junction box. Body and seal nut are nylon, and compression gland is neoprene. These same glands can also be used on the transmitter (see PSS 1-7F5 B). Three cable glands are provided. Select “–G”.

Option –S: Signal Cable Seal

Usually selected for signal cable conduit applications. External 1/2 NPT threads into flowtube junction box. As installed, the cable seal accommodates a 1 NPT conduit. By removing the reducer, a 3/4 NPT conduit can be used. One signal cable seal is provided. Select Option “–S”.

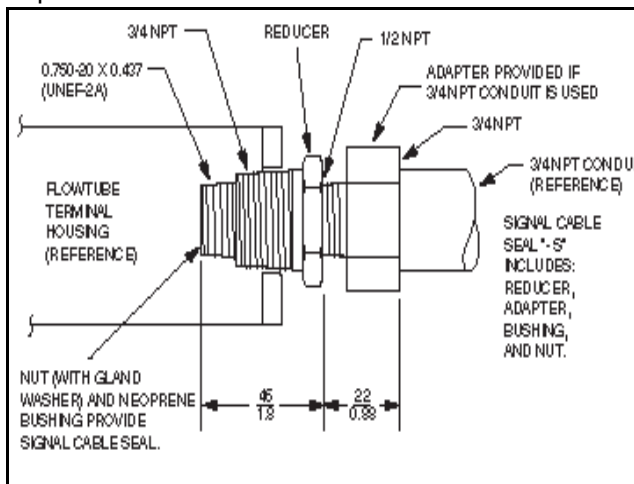
Signal Cable

Two-core (two-conductor), multiscreened (multishielded) cable with two driven screens (shields). Refer to Model IMT25 PSS and installation MI regarding the application and selection of this signal cable. Specify Part Number R0101ZS and length in feet if ordering the cable in units of feet; and Part Number B4017TE and length in meters if ordering the cable in units of meters.

OPTIONAL SELECTIONS AND ACCESSORIES

Option –T: ptfе Lining Protector (see figure below)

A 13 mm (0.5 in) thick ptfе gasket is centered over the lining flare by a stainless steel ring which is tack welded to the flange. This option helps to prevent damage to the lining flare if the bolts are overtorqued. It also helps to protect the lining from prying tool cuts when separating the mating flanges in the process line. Available for 15 to 300 mm (1/2 to 12 in) sizes with ptfе-lined flowtubes. Specify Option –T.

**Low Voltage Electrode Cleaning Assembly (Voltage Boil-off Procedure)**

The low voltage electrode cleaning assembly provides a convenient means of applying a low voltage to the electrodes, while simultaneously protecting the transmitter by short-circuiting the signal input. The low voltage and current removes sludge or film deposits from the electrodes so that the system continues normal, accurate operation. Offered for indoor use only, and not to be used in “hose down” environments. Supply voltage is 120 V ac, 50 to 60 Hz. Flowtube must be in ordinary locations. This option is available for 15 to 900mm(1/2 to 36 in) flowtubes. Specify Part Number D0128JW.

Grounding (Protective) Rings

Two grounding rings are required, one on each end of flowtube, if mating piping is lined or nonmetallic. Rings are available in 316 ss, Hastelloy C, Monel, Tantalum, or Titanium materials. Specify flowtube line (pipe) size, and flowtube lining material. Contact Global Customer Support Process Systems for further information.

Customer Tag

Stainless steel tag wired to instrument for customer tag data that doesn't fit on data plate. There can be a maximum of 10 lines of data with 40 characters and spaces per line. Specify AS Reference MTS.

Certified System Calibration

A comprehensive calibration report is provided with all data and graphs for a 5-point calibration over specified range. The calibration is for the flowtube and transmitter with pulse and/or analog output, and for flow rates up to 45 425 L/min (12 000 U.S. gpm). Specify “Certified System Calibration.”

MODEL CODES

8300 Series Magnetic Flowtube with ptfе Lining

Description	Model
15 mm (1/2 in) Line Size	830H
25 mm (1 in) Line Size	8301
40 mm (1 1/2 in) Line Size	831H
50 mm (2 in) Line Size	8302
80 mm (3 in) Line Size	8303
100 mm (4 in) Line Size	8304
150 mm (6 in) Line Size	8306
200 mm (8 in) Line Size	8308
250 mm (10 in) Line Size	8310
300 mm (12 in) Line Size	8312
350 mm (14 in) Line Size	8314
400 mm (16 in) Line Size	8316
450 mm (18 in) Line Size	8318
500 mm (20 in) Line Size	8320
600 mm (24 in) Line Size	8324
Tube Construction	
830H Only: 310 ss, Schedule 40	-SB
8301 to 8312 Only: 304 ss, Schedule 10	-SA
8314 to 8336 Only: 304 ss, 3.2 mm (0.125 in) Wall Thickness	-SE
<u>End Connections</u> (See Table 6 for End Connection/Lining Combinations Available)	
ANSI Class 150 Flange, Carbon Steel (cs)	BA
ANSI Class 150 Flange, 316 ss, 830H to 8308 Only	BB
ANSI Class 300 Flange, cs, 830H to 8308 Only	BD
Metric PN 10 Flange per EN 1092-1, cs (h)	ZD
Metric PN 16 Flange per EN 1092-1, cs, 830H to 8312 Only (h)	ZE
Metric PN 25 Flange per EN 1092-1, cs, 830H to 8312 Only (h)	ZF
Metric PN 40 Flange per EN 1092-1, cs, 830H to 8312 Only (h)	ZG
Metric PN 10 Flange per EN 1092-1, 316 ss, and 830H to 8308 Only (h)	ZL
Metric PN 16 Flange per EN 1092-1, 316 ss, and 830H to 8308 Only (h)	ZM
Metric PN 25 Flange per EN 1092-1, 316 ss, and 830H to 8308 Only (h)	ZN
Metric PN 40 Flange per EN 1092-1, 316 ss, and 830H to 8308 Only (h)	ZP
Metric PN 6 Flange per EN 1092-1, cs, 8314 to 8324 Only (h)	ZZ
<u>Linings</u> (See Table 6 for End Connection/Lining Combinations Available)	
ptfe	-T
Electrodes	
Tantalum	B
Conical-Shaped 316L ss, 8301 to 8324 Only	C
Hastelloy C	H
Conical-Shaped Hastelloy C, 8301 to 8324 Only	K
Platinum-10% Iridium	P
316L ss	S
Titanium	T

Coil Drive/Supply Pulsed dc	J
Flowtube Housing and Transmitter Mounting	
High Humidity/Condensate Housing, Remote Transmitter (a)	-C
General Purpose, NEMA 4X Housing, Remote Transmitter	-G
Accidental Submergence Housing, 8314 to 8324 Only, Remote Transmitter (b)	-H
Total/Accidental Submergence Housing, 830H to 8312 Only, Remote Transmitter (c)	-N
Electrical Certification (d)	
CSA, Class I, Division 2 Locations	CNZ
CSA, p (830H to 8312 Only)	CPZ
FM, n	FNA
FM, p (830H to 8312 Only)	FPA
Optional Selections	
Cable Glands (e)	-G
Select for Nonconduit Applications (not with "-S" Option)	
Signal Cable Seal (e),	-S
Select for Conduit Applications (not with "-G" Option)	
ptfe Lining Protector, 830H to 8312 Only (d)	-T
Ultrasonic Electrode Cleaning—Transducer with Oscillator and Cable, 8302 to 8324 Only (d)	-U
Ultrasonic Electrode Cleaning—Transducer, Cable, and Junction Box for Portable Oscillator, 8302 to 8324 Only (g)	-W
Ultrasonic Electrode Cleaning—Transducer Only, 8302 to 8324 Only (g)	-Z
Examples:	
8302-SABA-TSJ-GFNA-G	
8314-SEBA-TSJ-HCNZ-SU	

- (a) Recommended for warm ambient, cold process service; e.g., brewery, dairy.
- (b) Sealed for accidental operation under water up to 9 m (30 ft) deep for 48 hours. Also supplied with a kit for sealing after installation.
- (c) Sealed for accidental or continuous operation under water up to 9 m (30 ft) deep. Also supplied with a kit for sealing after installation.
- (d) Refer to "Product Safety Specifications" section for complete definition of Electrical Certification Code.
- (e) The cable glands ("-G" option) selected here provide glands for field wiring to the flowtube junction box. Glands are generally specified in nonconduit applications. For conduit applications, specify Signal Cable Seal Option "-S".
- (f) Contact Global Customer Support if ptfe lining protectors are required for flowtube sizes larger than 300 mm (12 in).
- (g) Not available with B or P Electrode Selection.
- (h) Mates with BS 4504 flange.

8300 Series Magnetic Flowtube with Polyurethane Lining

<u>Description</u>	<u>Model</u>
50 mm (2 in) Line Size	8302
80 mm (3 in) Line Size	8303
100 mm (4 in) Line Size	8304
150 mm (6 in) Line Size	8306
200 mm (8 in) Line Size	8308
250 mm (10 in) Line Size	8310
300 mm (12 in) Line Size	8312
350 mm (14 in) Line Size	8314
400 mm (16 in) Line Size	8316
450 mm (18 in) Line Size	8318
500 mm (20 in) Line Size	8320
600 mm (24 in) Line Size	8324
750 mm (30 in) Line Size	8330
900 mm (36 in) Line Size	8336
<u>Tube Construction</u>	
8302 to 8312 Only: 304 ss, Schedule 10	-SA
8314 to 8336 Only: 304 ss, 3.2 mm (0.125 in) Wall Thickness	-SE
<u>End Connections</u> (See Table 6 for End Connection/Lining Combinations Available)	
ANSI Class 150 Flange, Carbon Steel (cs) 8302 to 8324 Only	BA
ANSI Class 300 Flange, cs, 8302 to 8308 Only	BD
AWWA Class D Flat Face Flange, cs 8330 and 8336 Only	WB
Metric PN 10 Flange per EN 1092-1, cs, 8302 to 8336	ZD
Metric PN 16 Flange per EN 1092-1, cs, 8302 to 8312 Only (f)	ZE
Metric PN 25 Flange per EN 1092-1, cs, 8302 to 8312 Only (f)	ZF
Metric PN 40 Flange per EN 1092-1, cs, 8302 to 8312 Only (f)	ZG
Metric PN 6 Flange per EN 1092-1, cs, 8314 to 8336 Only (f)	
<u>Linings</u> (See Table 6 for End Connection/Lining Combinations Available)	
Polyurethane	-A
<u>Electrodes</u>	
316L ss	S
<u>Coil Drive/Supply</u>	
Pulsed dc	J
<u>Flowtube Housing and Transmitter Mounting</u>	
High Humidity/Condensate Housing, Remote Transmitter (a)	-C
General Purpose, NEMA 4X Housing, Remote Transmitter	-G
Accidental Submergence Housing, 8314 to 8336 Only, Remote Transmitter (b)	-H
Total/Accidental Submergence Housing, 8302 to 8312 Only, Remote Transmitter (c)	-N
<u>Electrical Certification</u> (d)	
CSA, Class I, Division 2 Locations	CNZ
CSA, p (8302 to 8312 Only)	CPZ
FM, n	FNA

FM, p (8302 to 8312 Only)	FPA
Optional Selections	
Cable Glands (e)	-G
Select for Nonconduit Applications (not with "-S" Option)	
Signal Cable Seal (e),	-S
Select for Conduit Applications (not with "-G" Option)	
8302	-T
Ultrasonic Electrode Cleaning—Transducer with Oscillator and Cable, 8302 to 8336 Only	-U
Ultrasonic Electrode Cleaning—Transducer, Cable, and Junction Box for Portable Oscillator, 8302 to 8336 Only	-W
Ultrasonic Electrode Cleaning—Transducer Only, 8302 to 8336 Only	-Z
Examples:	
8302-SABA-ASJ-GFNA-G	
8314-SEBA-ASJ-HCNZ-SU	

- (a) Recommended for warm ambient, cold process service; e.g., brewery, dairy.
- (b) Sealed for accidental operation under water up to 9 m (30 ft) deep for 48 hours. Also supplied with a kit for sealing after installation.
- (c) Sealed for accidental or continuous operation under water up to 9 m (30 ft) deep. Also supplied with a kit for sealing after installation.
- (d) Refer to "Product Safety Specifications" section for complete definition of Electrical Certification Code.
- (e) The cable glands ("-G" option) selected here provide glands for field wiring to the flowtube junction box. Glands are generally specified in nonconduit applications. For conduit applications, specify Signal Cable Seal Option "-S".
- (f) Mates with BS 4504 flange.

8300 Series Magnetic Flowtube with Neoprene Lining

<u>Description</u>	<u>Model</u>
350 mm (14 in) Line Size	8314
400 mm (16 in) Line Size	8316
450 mm (18 in) Line Size	8318
500 mm (20 in) Line Size	8320
600 mm (24 in) Line Size	8324
750 mm (30 in) Line Size	8330
900 mm (36 in) Line Size	8336
Tube Construction 304 ss, 3.2 mm (0.125 in) Wall Thickness	-SE
<u>End Connections</u> (See Table 6 for End Connection/Lining Combinations Available) ANSI Class 150 Flange, Carbon Steel (cs) 8314 to 8324 Only	BA
AWWA Class D Flat Face Flange, cs, 8330 and 8336 Only	WB
Metric PN 10 Flange per EN 1092-1, cs (Mates with BS 4504 Flange)	ZD
Metric PN 6 Flange per EN 1092-1, cs (Mates with BS 4504 Flange)	ZZ
<u>Linings</u> (See Table 6 for End Connection/Lining Combinations Available) Neoprene	-N
Electrodes 316L ss	S
Coil Drive/Supply Pulsed dc	J
Flowtube Housing and Transmitter Mounting High Humidity/Condensate Housing, Remote Transmitter (a) General Purpose, NEMA 4X Housing, Remote Transmitter Accidental Submergence Housing, Remote Transmitter (b)	-C -G -H
Electrical Certification CSA, Class I, Division 2 Locations FM, n	CNZ FNA
Optional Selections	
Cable Glands (d) Select for Nonconduit Applications (not with “-S” Option)	-G
Signal Cable Seal (d) Select for Conduit Applications (not with “-G” Option)	-S
Ultrasonic Electrode Cleaning—Transducer with Oscillator and Cable	-U
Ultrasonic Electrode Cleaning—Transducer, Cable, and Junction Box for Portable Oscillator	-W
Ultrasonic Electrode Cleaning—Transducer Only	-Z

Examples: 8302-SABA-ASJ-GFNA-G 8314-SEBA-NSJ-HCNZ-SU	
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- (a) Recommended for warm ambient, cold process service; e.g., brewery, dairy.
- (b) Sealed for accidental operation under water up to 9 m (30 ft) deep for 48 hours. Also supplied with a kit for sealing after installation.
- (c) Refer to "Product Safety Specifications" section for complete definition of Electrical Certification Code.
- (d) The cable glands ("-G" option) selected here provide glands for field wiring to the flowtube junction box. Glands are generally specified in nonconduit applications. For conduit applications, specify Signal Cable Seal Option "-S":

Table 6. Flowtube Size, End Connection, and Lining Configurations Available (a)

Nominal Line Size		Lining Available with the following Flanged End Connections												
		ANSI Class 150		ANSI Class 300	AWWA Class D	Metric PN 10		Metric PN 16		Metric PN 25		Metric PN 40		Metric PN 6
mm	in	CS	SS	CS	CS	CS	SS	CS	SS	CS	SS	CS	SS	CS
15	1/2	—	T	T	—	T	T	T	T	T	T	T	T	—
25	1	T	T	T	—	T	T	T	T	T	T	T	T	—
40	1 1/2	T	T	T	—	T	T	T	T	T	T	T	T	—
50	2	T,A	T	T,A	—	T,A	T	T,A	T	T,A	T	T,A	T	—
80	3	T,A	T	T,A	—	T,A	T	T,A	T	T,A	T	T,A	T	—
100	4	T,A	T	T,A	—	T,A	T	T,A	T	T,A	T	T,A	T	—
150	6	T,A	T	T,A	—	T,A	T	T,A	T	T,A	T	T,A	T	—
200	8	T,A	T	T,A	—	T,A	T	T,A	T	T,A	T	T,A	T	—
250	10	T,A	—	—	—	T,A	—	T,A	—	T,A	—	T,A	—	—
300	12	T,A	—	—	—	T,A	—	T,A	—	T,A	—	T,A	—	—
350	14	T,A,N	—	—	—	T,A,N	—	—	—	—	—	—	—	T,A,N
400	16	T,A,N	—	—	—	T,A,N	—	—	—	—	—	—	—	T,A,N
450	18	T,A,N	—	—	—	T,A,N	—	—	—	—	—	—	—	T,A,N
500	20	T,A,N	—	—	—	T,A,N	—	—	—	—	—	—	—	T,A,N
600	24	T,A,N	—	—	—	T,A,N	—	—	—	—	—	—	—	T,A,N
750	30	—	—	—	A,N	A,N	—	—	—	—	—	—	—	A,N
900	36	—	—	—	A,N	A,N	—	—	—	—	—	—	—	A,N

(a) Contact Global Customer Support for information regarding configurations not shown in this table.

Note: In the above Table, cs = carbon steel, ss = stainless steel, T = ptfе Lining, A = Polyurethane Lining, and N = Neoprene Lining

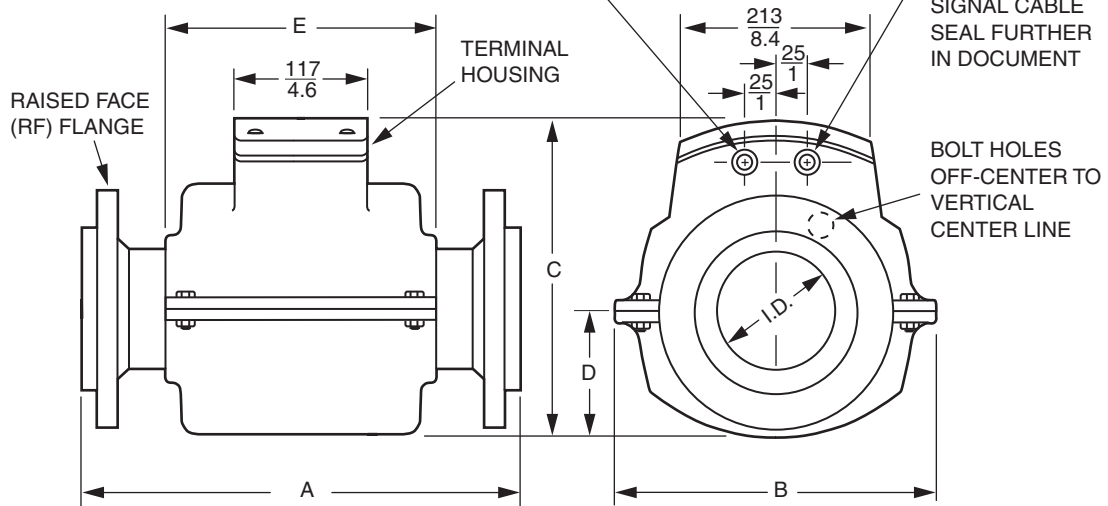
DIMENSIONS—NOMINAL

mm
in

830H TO 8312 FLOWTUBE SIZES, 15 TO 300 mm (1/2 to 12 in)

OUTPUT POWER CONNECTION TAPPED FOR 3/4 NPT.
INPUT POWER CONNECTION TAPPED FOR 3/4 NPT AT OPPOSITE END.
SEE OPTIONAL CABLE GLAND FURTHER IN DOCUMENT.

SIGNAL CONNECTION TAPPED FOR 3/4 NPT.
SEE OPTIONAL SIGNAL CABLE SEAL FURTHER IN DOCUMENT



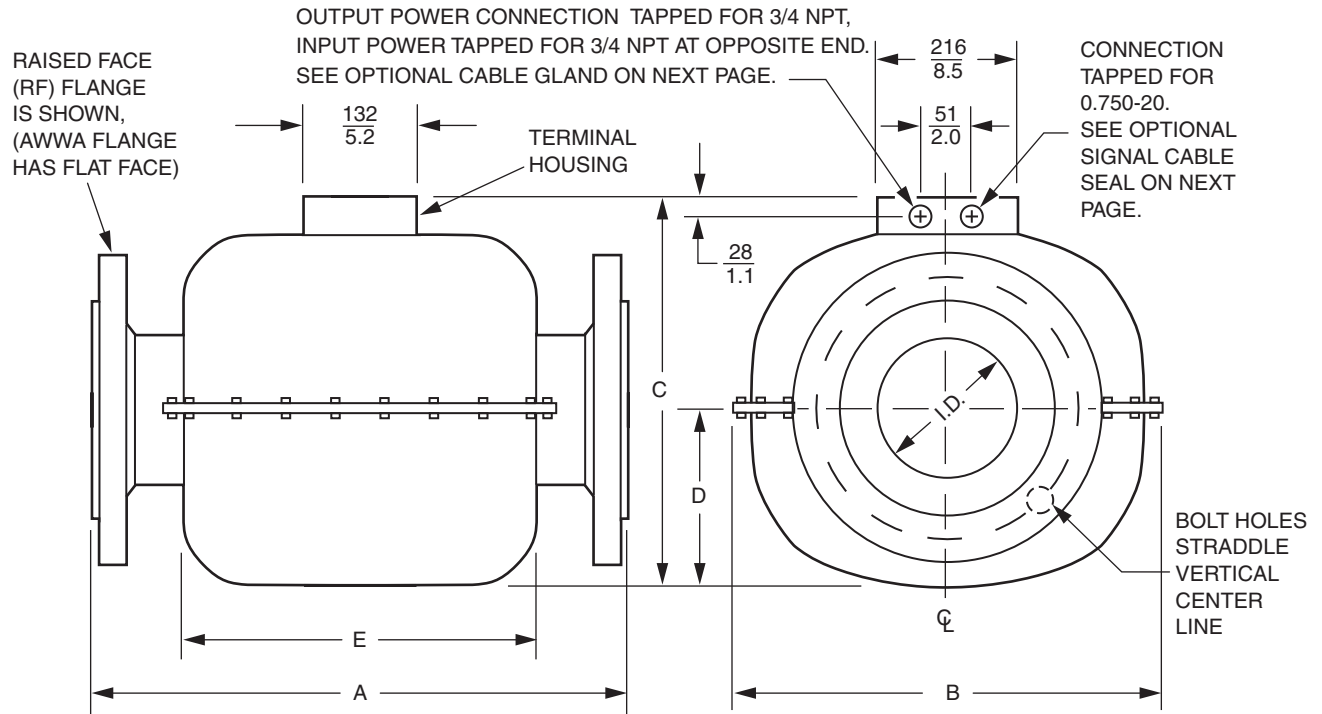
Nominal Line Size		Nominal Dimensions								Approximate Mass	
mm	in	A(a)	A(b)	B	C	D	E	ID(a)	ID(b)	kg	lb
15	1/2	<u>365</u>	—	<u>273</u>	<u>294</u>	<u>114</u>	<u>141</u>	<u>12.70</u>	—	21	46
		14.4		10.8	11.6	4.5	5.6	0.500			
25	1	<u>365</u>	—	<u>273</u>	<u>294</u>	<u>114</u>	<u>141</u>	<u>24.71</u>	—	18	40
		14.4		10.8	11.6	4.5	5.6	0.973			
40	1 1/2	<u>365</u>	—	<u>273</u>	<u>294</u>	<u>114</u>	<u>141</u>	<u>39.57</u>	—	20	45
		14.4		10.8	11.6	4.5	5.6	1.558			
50	2	<u>365</u>	<u>356</u>	<u>273</u>	<u>294</u>	<u>114</u>	<u>141</u>	<u>51.71</u>	<u>35.76</u>	21	47
		14.4	14.0	10.8	11.6	4.5	5.6	2.036	1.408		
80	3	<u>418</u>	<u>406</u>	<u>292</u>	<u>289</u>	<u>113</u>	<u>138</u>	<u>78.44</u>	<u>63.75</u>	27	60
		16.4	16.0	11.5	11.4	4.4	5.4	3.088	2.510		
100	4	<u>418</u>	<u>406</u>	<u>292</u>	<u>289</u>	<u>113</u>	<u>138</u>	<u>103.84</u>	<u>82.80</u>	34	76
		16.4	16.0	11.5	11.4	4.4	5.4	4.088	3.260		
150	6	<u>522</u>	<u>508</u>	<u>400</u>	<u>360</u>	<u>146</u>	<u>176</u>	<u>155.12</u>	<u>136.04</u>	55	122
		20.6	20.0	15.8	14.2	5.8	6.9	6.107	5.356		
200	8	<u>624</u>	<u>610</u>	<u>483</u>	<u>418</u>	<u>171</u>	<u>205</u>	<u>203.28</u>	<u>186.13</u>	85	188
		24.6	24.0	19.0	16.4	6.8	8.1	8.003	7.328		
250	10	<u>727</u>	<u>711</u>	<u>611</u>	<u>483</u>	<u>208</u>	<u>237</u>	<u>256.39</u>	<u>239.27</u>	91	200
		28.6	28.0	24.1	19.0	8.2	9.3	10.094	9.420		
300	12	<u>829</u>	<u>813</u>	<u>718</u>	<u>567</u>	<u>249</u>	<u>279</u>	<u>306.43</u>	<u>289.31</u>	125	275
		32.6	32.0	28.3	22.3	9.8	11.0	12.064	11.390		

(a) ptfe LINING

(b) POLYURETHANE LINING

Note: "A" LENGTH INCREASES BY APPROXIMATELY 25 mm (1 in) WHEN FLOWTUBE HAS OPTIONAL PROTECTOR FOR ptfe LINING; 15 TO 300 mm (1/2 TO 12 in) SIZES ONLY.

8314 TO 8336 FLOWTUBE SIZES, 350 TO 900 mm (14 to 16 in.)

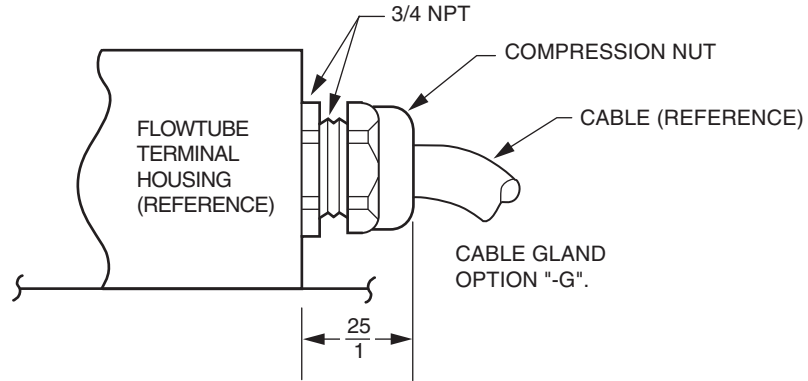


Nominal Line Size		Nominal Dimensions									Approximate Mass	
mm	in	A(a)	A(b)(c)	B	C	D	E	ID(a)	ID(b)	ID(c)	kg	lb
350	14	726 28.6	711 28.0	813 32.0	734 28.9	330 13.0	508 20.0	341.4 13.44	337.9 13.25	339.9 13.38	170	375
400	16	772 30.6	762 30.0	813 32.0	734 28.9	330 13.0	508 20.0	391.1 15.40	387.4 15.25	390.9 15.38	195	425
450	18	879 34.6	864 34.0	998 39.3	886 34.9	404 15.9	660 26.0	440.9 17.36	438.1 17.25	441.5 17.38	215	475
500	20	879 34.6	864 34.0	998 39.3	886 34.9	404 15.9	660 26.0	490.7 19.32	488.9 19.25	492.3 19.38	285	625
600	24	980 38.6	965 38.0	1209 47.6	1092 43.0	505 19.9	742 29.2	592.3 23.32	584.2 23.00	593.9 23.38	410	900
750	30	N/A	1067 42.0	1473 58.0	1214 47.8	579 22.8	889 35.0	N/A	736.6 29.00	746.3 29.38	545	1200
900	36	N/A	1219 48.0	1676 66.0	1372 54.0	645 25.5	1021 40.2	N/A	889.0 35.00	898.7 35.38	660	1450

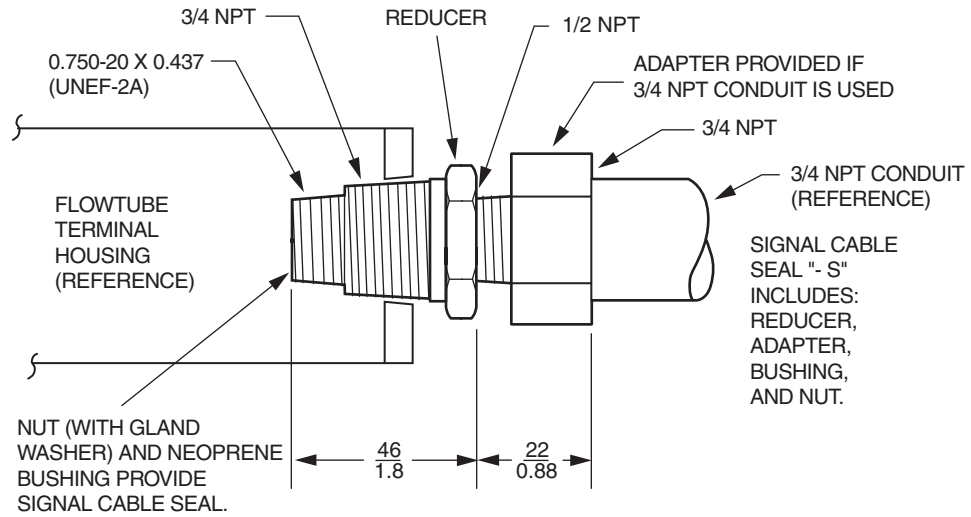
- (a) pftE LINING
- (b) POLYURETHANE LINING
- (c) NEOPRENE LINING

mm
in

OPTIONAL CABLE GLAND FOR NONCONDUIT APPLICATIONS



OPTIONAL SIGNAL CABLE SEAL FOR CONDUIT APPLICATIONS



ORDERING INSTRUCTIONS

- 1 Model Number
- 2 Flow Rate and Engineering Units Required. Value specified must be within minimum and maximum values listed in Table 1.
- 3 Process Pressure-Temperature Range
- 4 Process Composition and Conductivity
- 5 Grounding Rings (if Mating Piping is nonmetallic or Lined Metallic Piping)
- 6 Signal Cable Length
- 7 Optional Selections and Accessories (If not included in Model Number)
- 8 User Tag Data

OTHER FOXBORO PRODUCTS

The Foxboro product lines offer a broad range of measurement and instrument products, including solutions for pressure, flow, analytical, temperature, positioning, controlling, and recording.

For a list of these offerings, visit our web site at:

www.fielddevices.foxboro.com