

**4700S Series Sanitary Magnetic Flowtubes
DN 10 to DN 100 (1/2 to 4 in) Sizes; Ceramic-Lined and PFA-Lined**



FLOWTUBE
WITH
INTEGRALLY
MOUNTED
TRANSMITTER



FLOWTUBE WITH TERMINAL BOX;
TRANSMITTER MOUNTED IN
REMOTE LOCATION

The 4700S Series Sanitary Magnetic Flowtubes, together with a Model 47 or Model 48 Magnetic Flow Transmitter, combine to form an easy-to-use, versatile Sanitary Magnetic Flowmeter. This flowmeter is an economical microprocessor-based magnetic flow system for use with most common everyday conductive liquids used in sanitary process applications. The transmitter converts the low level, high impedance signal from lined flowtubes to a standard scaled transmission signal, either 4 to 20 mA, digital, or pulse output, that is proportional to volumetric flow rate. The flowtubes are offered in DN 10 to DN 100 (1/2 to 4 in) sizes.

FEATURES

- ▶ Sanitary metering tube assembly consistent with U.S. Food and Drug Administration (FDA) regulations for food contact service.
- ▶ Complies with 3-A sanitary standards.
- ▶ Choice of retained PFA liner or ceramic liner.
- ▶ Ceramic liner designed for high temperature, high pressure, or vacuum service.
- ▶ EPDM gasket for pfa-lined tubes; and FPM/FKM gaskets with metal insert for ceramic lined tubes.
- ▶ Hygienic seal design; Proven seal design also withstands severe temperature cycling.
- ▶ Quick-Disconnect end connection adapter can be welded, clamped, or threaded to pipeline; also allows for CIP service.

- ▶ Flowtube characteristics stored in SENSOR DATA PROM, ensuring accuracy.
- ▶ Transmitter remote or mounted to flowtube.
- ▶ Remote transmitters can be located at a distance of up to 500 m (1640 ft) from the flowtube.
- ▶ Enclosure meets IEC IP67 and NEMA 4X ratings.
- ▶ Complies with electromagnetic compatibility requirements of European EMC directive 2004/108/EC by conforming to the following EN standard: EN 61326-1.
- ▶ Conforms to applicable European union directives (product marked with “CE” Logo).
- ▶ A free-to-use, flow sizing program on the internet at www.FlowExpertPro.com.

AN INTELLIGENT PATH TO SANITARY MAGNETIC FLOW SYSTEMS

The merging of the latest technology in flowtube design and a microprocessor-based transmitter provides the food, beverage, and pharmaceutical industries a significant advancement in sanitary liquid flow measurement. This flowmeter is a natural path to the future: high or low rate pulse output and a 4 to 20 mA dc signal for today's systems; and the 4 to 20 mA dc signal software configurable to full digital communications with the I/A Series® System using HART Communication Protocol.

SANITARY METERING TUBE

The tube consists of a stainless steel housing with ceramic liner or retained PFA liner. These flowtubes have proven more hygienic than a polished pipe. All materials are consistent with U.S. FDA regulations for food contact service. The assembled flowtube complies with 3-A Sanitary Standards for flowmeters used with milk and milk products.

CLEAN-IN-PLACE AND QUICK-DISCONNECT CONSTRUCTION

The retained PFA or polished ceramic flowtube liners, and crevice-free construction, provide CIP (Clean-in-Place) operation. The quick-disconnect sanitary end connection adapters permit ease of flowtube installation and removal from line.

SUPERIOR REPUTATION FOR DEPENDABILITY AND QUALITY

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

A VARIETY OF APPLICATIONS

Flowtube is unaffected by changes in process liquid density and viscosity. It is ideally suited for many food applications, including viscous, sticky, solids-bearing, and shear-sensitive product. Proven high performance with dairy products such as milk, yogurt, ice cream mixes, as well as other products such as beer, soft drinks, coffee, molasses, and corn syrup. Processed products such as tomato paste, starch slurries, mayonnaise, dressings, whey, jams, jellies, and other viscous, sticky, or otherwise difficult-to-measure process products are easily measured.

STRAIGHT-THROUGH TUBE DESIGN

The straight-through, unobstructed design makes these flowtubes ideal for viscous products, or where minimal pressure drop is required.

LOW POWER CONSUMPTION

All Flowmeter configurations are designed to consume less than 6 W (dc) or 9 VA (ac) of power at reference voltage and frequency.

USED WITH PULSED dc SUPPLY

These Sanitary Magnetic Flowtubes are calibrated for use with pulsed dc coil excitation. A Foxboro Model 47 or Model 48 Intelligent Magnetic Flow Transmitter is offered for use with these flowtubes.

EXCELLENT ZERO STABILITY

Excellent zero stability is inherent in the design. The mechanical design and electronic package feature accurately located and securely mounted coil and electrode assemblies, spring-loaded electrodes, optimized field characterization, and power-driven screens (shields) on the signal leads. All of these features ensure the ultimate in long-term stability, signal integrity, and accurate measurement.

IMPROVED GASKET DESIGN FOR CERAMIC-LINED FLOWTUBES

An FPM/FKM gasket material with a metal insert is provided for ceramic-lined flowtubes. The design reduces the gasket intrusion into the flowtube bore, and the metal insert controls the seal compression and prevents lateral movement of the seal. It is used with ceramic-lined flowtubes for high temperature, high pressure, or vacuum service. This new 3A gasket material complies with FDA regulation CFR21, and also meets the requirements of USP25, NF20, 2002, Class 6.

FLOWTUBE CONFIGURATIONS

Ceramic-lined flowtubes have platinum electrodes, and PFA-lined flowtubes have Hastelloy C electrodes. The ceramic- and PFA-lined flowtubes are both offered in DN 10 through DN 100 (1/2 through 4 in) sizes; the DN 10 flowtube size is used with 1/2 inch Tri-Clover tubing, and the DN15 flowtube size is used with 3/4 inch Tri-Clover tubing. All flowtubes are used with either transmitters that mount remotely to a pipe or surface, or with transmitters that are integrally mounted to the flowtube.

FlowExpertPro™

FlowExpertPro is a program primarily used to size Foxboro flowmeters and ensures that the user has selected the proper flowmeter type for his application. This meter selection tool is provided 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, rangeability, 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.

WEATHERPROOF AND CORROSION RESISTANT CONSTRUCTION

These Sanitary Flowtubes are designed to operate in harsh outdoor or in-plant environments. The enclosure has the dusttight and weatherproof rating of IP67 as defined by IEC 60529, and provides the watertight and corrosion resistant protection rating of NEMA 4X.

FLOWTUBE CALIBRATION

All flowtubes are wet calibrated to verify their specified accuracy. The calibration facilities have been accredited to the EN 45001 standards.

OPERATING CONDITIONS

Influence	Reference Operating Conditions	Normal Operating Condition Limits (a)	
		Flowtube Only - Transmitter Remote	Flowtube with Integral Transmitter
Ambient Temperature (Limited by Transmitter Electronics)	20 ±2°C (68 ±3°F)	-40 and +100°C (-40 and +212°F)	-20 and +50°C (b) (-4 and +122°F)
Process Temperature (b)	20 ±2°C (68 ±3°F)	w/Ceramic Liner: -20 and +150°C (-4 and +302°F) suitable for steam sterilization w/PFA Liner: -30 and +130°C (-22 and +266°F) suitable for steam sterilization at 150°C (302°F)	
Process Pressure (c)	Ambient Pressure	w/Ceramic Liner: DN 10 to DN 65: 40 bar (580 psi) DN 80: 37.5 bar (540 psi) DN 100: 30 bar (435 psi) Vacuum Operation: 1 x 10 ⁻⁶ bara (14.5 x 10 ⁻⁶ psia) w/PFA Liner: 20 bar (290 psi) Vacuum Operation: 0.02 bara (0.29 psia)	
Temperature Shock	Not Applicable	w/Ceramic Liner - Duration >1 minute: DN 10, 15, and 25 (1/2, 3/4, and 1 in) Maximum ΔT ≤ 15°C/min (27°F/min) DN 40, 50, and 65 (1-1/2, 2, and 2-1/2 in) Maximum ΔT ≤ 10°C/min (18°F/min) DN 80 and 100 (3 and 4 in) Maximum ΔT ≤ 5°C/min (9°F/min) w/Ceramic Liner - Duration ≤ 1 minute followed by a 10 minute rest: DN 10, 15, and 25 (1/2, 3/4, and 1 in) Maximum ΔT ≤ 80°C (144°F) DN 40, 50, and 65 (1-1/2, 2, and 2-1/2 in) Maximum ΔT ≤ 70°C (126°F) DN 80 and 100 (3 and 4 in) Maximum ΔT ≤ 60°C/min (108°F/min) w/PFA Liner - Momentary or Instantaneous Change: All Line Sizes; ±100°C (212°F) maximum	
Vibration	Negligible	0 to 32 m/s ² (0 to 3.2 "g") from 18 to 1000 Hz random in all directions per EN 60068-2-36	

- a. During transportation or storage, ambient temperatures of -40 to +70°C (-40 to +158°F) at a maximum relative humidity of 95% are allowed.
- b. Ensure that the process temperature limits do not cause the ambient temperature to exceed 50°C (122°F) when the transmitter is integrally mounted to the flowtube. Refer to Figure 4.
- c. The mating end connections used may have a lower pressure limit than the process pressure limits of the flowtube itself. In this situation, the pressure limit of the end connection will be the maximum pressure allowed. Refer to End Connection Adapters Pressure Rating table in the "Functional Specifications" section.

PERFORMANCE SPECIFICATIONS

The 4700S Sanitary Magnetic Flowtube is used with either a Model 47 Series or Model 48 Series Magnetic Flow Transmitter to form a magnetic flow system. Performance specifications for the system are listed in the Magnetic Flow Transmitter specifications document PSS 1-6G1 A.

FUNCTIONAL SPECIFICATIONS

Nominal Flowtube⁽¹⁾ Sizes

10, 15, 25, 40, 50, 65, 80, and 100 mm
(1/2, 3/4, 1, 1-1/2, 2, 2-1/2, 3, and 4 in)

Flow Velocity (see Figure 1 and Figure 2)

MINIMUM MEASURING RANGE

0 to 0.25 m/s (0 to 0.82 ft/s)

MAXIMUM MEASURING RANGE

0 to 10 m/s (0 to 32.8 ft/s)

RECOMMENDED OPERATING VELOCITY

Approximately 1.0 to 3 m/s (3 to 10 ft/s)

Flow Rate

Refer to Figures 1 and 2 for the relationship between flow rate, flow velocity, and flowtube line size in both SI (metric) and U.S. Customary units.

Test Pressure

CERAMIC-LINED FLOWTUBE

80 bar (1160 psi) which is two times the maximum process pressure

PFA-LINED FLOWTUBE

40 bar (580 psi) which is two times the maximum process pressure

Figure 1. Sizing Curves - Metric Units⁽²⁾

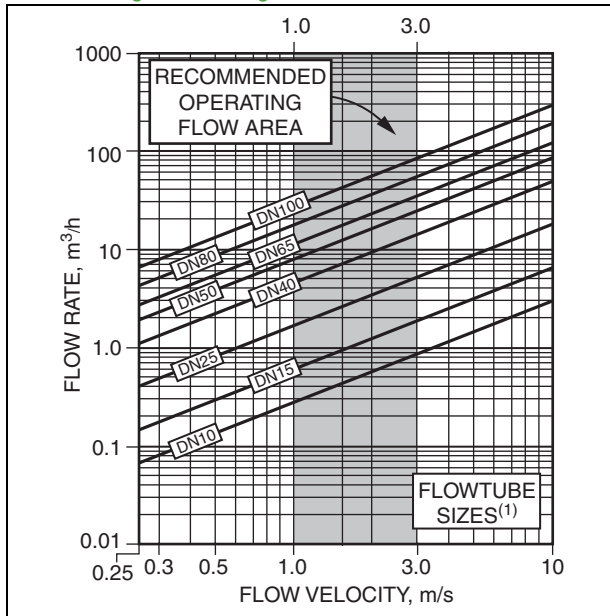
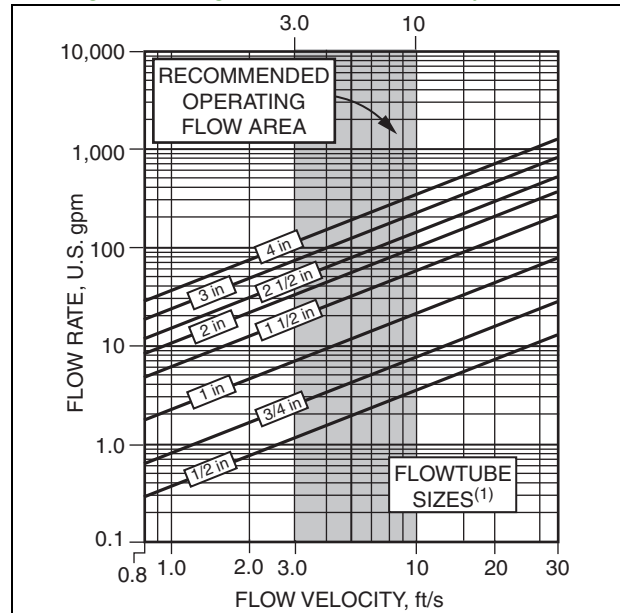


Figure 2. Sizing Curves - U.S. Customary Units⁽²⁾



1. The DN 10 flowtube is used with 1/2 inch Tri-Clover type tubing; while the DN 15 flowtube is used with 3/4 inch Tri-Clover type tubing.
2. Figure 1 and Figure 2 are shown for general information only. Use the FlowExpertPro sizing program for precise sizing.

Sanitary Approvals

CERAMIC-LINED FLOWTUBE

3-A Sanitary Standard

PFA-LINED FLOWTUBE

3-A Sanitary Standard

Flowtube Excitation Frequency

WHEN USED WITH MODEL 47 TRANSMITTER

3.125 Hz

WHEN USED WITH MODEL 48 TRANSMITTER

12.5 Hz for Line Sizes ≤ 65 mm (2-1/2 in)

6.25 Hz for Line Sizes >65 mm (2-1/2 in)

End Connections Adapters

FLOWTUBE END OF ADAPTER

Adapter clamped to flowtube using a sanitary clamp.

PIPELINE END OF ADAPTER

Adapter either welded, clamped, or threaded to pipeline; refer to Model Code, and see End Connection Adapters table below.

End Connection Adapters - Pressure Ratings

Type	Flowtube Description(a)	Rating
Welded to Pipeline	DIN 11850, ISO 2037, and BS 4825-1 DN 10 to 80 (1/2 to 3-in)(a) DN 100 (4 in)	40 bar (580 psi)
		25 bar (360 psi)
Clamped to Pipeline	DIN 32676, ISO 2852, and BS 4825-3 DN 10 to 50 (1/2 to 2 in)(a) DN 65 to 100 (2-1/2 to 4 in)	16 bar (230 psi)
		10 bar (145 psi)
Threaded to Pipeline	DIN 11851 DN 10 to 40 (1/2 to 1-1/2 in)(a) DN 50 to 100 (2 to 4 in) SMS 1145 DN 25 to 80 (1 to 3 in)	40 bar (580 psi)
		25 bar (360 psi)
		6 bar (87 psi)

(a) The DN 10 flowtube is used with 1/2 inch Tri-Clover type tubing; while the DN 15 flowtube is used with 3/4 inch Tri-Clover type tubing.

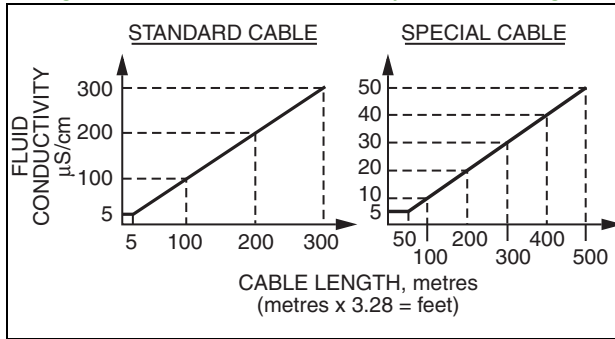
Process Fluid Conductivity

The minimum process fluid conductivity required is 5 µS/cm. For empty pipe detection, the minimum conductivity is 20 µS/cm. Refer to TI 027-072 for conductivities of various process liquids.

Signal and Coil Driver Cable Length

For remote transmitter installations, the maximum allowable cable length is 300 m (985 ft) between flowtube and transmitter when using standard 3-conductor (with shield) cable. This length can be increased to 500 m (1640 ft) by using a special cable. See Figure 3 for the relationship between minimum fluid conductivity and cable length. Also see the transmitter product specification document PSS 1-6G1 A for further data relating to the transmitter-to-flowtube cables.

Figure 3. Process Fluid Conductivity vs. Cable Length



PFA Lining

The PFA lining meets the sanitary material requirements of FDA. It is excellent when used with sanitary, clean, mildly corrosive, or severe corrosive fluids. It is satisfactory when used with mild abrasive fluids, and it is not recommended for use with severe abrasive fluids.

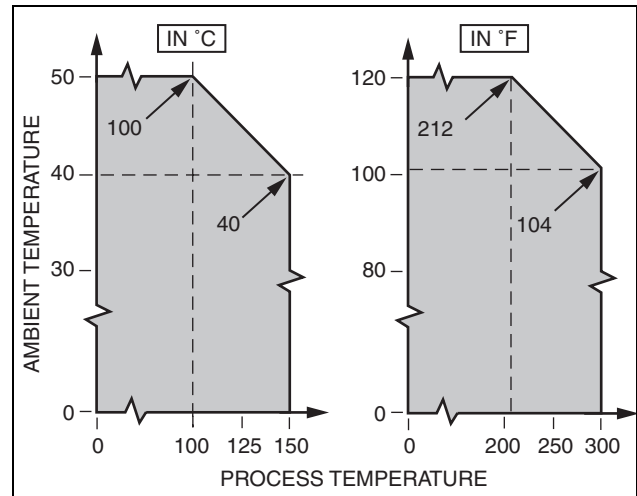
Ceramic Lining

This lining provides a crevice-free process surface. Ceramic also provides excellent corrosion and abrasion resistance and is suitable for high pressure, high temperature, or vacuum service applications.

Ambient Temperature vs. Process Temperature with Integrally Mounted Transmitters

The ambient temperature limits of 50°C (122°F) specified when the transmitter is directly mounted is restricted, depending on the process temperature of the liquid. Figure 4 shows the reduction in ambient temperature required as the process temperature increases to its maximum limit.

Figure 4. Ambient vs. Process Temperatures for Integrally Mounted Transmitters



PHYSICAL SPECIFICATIONS

Enclosure Construction (Including Terminal Box)

The overall enclosure construction meets IEC IP67 rating as defined by IEC 60529, and provides the environmental protection and corrosion resistant rating of NEMA 4X. When used with an optional submersion kit, the enclosure meets IP68 ratings, and NEMA 6 ratings. See Optional Selections section for the submersion kit part number.

Flowtube Enclosure

316 ss

Terminal Box Enclosure

Fiberglass reinforced polyamide, or 316 ss, as specified

Flowtube Liner and Electrodes

Ceramic (Al₂O₃) liner with platinum electrodes, or PFA liner with Hastelloy C-276 electrodes

Gaskets

See Optional Selections and Accessories section.

Clamps

AISI Type 304 stainless steel (304 ss)

End Connection Adapters

316 ss

Signal and Coil Driver Cables

Refer to Models 47 and 48 PSS 1-6G1 A.

Mounting Position

The flowtube can be mounted in any position without degrading performance. The only requirements are that the flowtube be completely full with the process liquid during measurement, and that the electrodes should not be near the top or bottom of the pipeline.

Electrical Connections (Terminal Box)

A terminal box is provided with remote mounted transmitters. The integrally mounted terminal box has four 1/2 NPT or M20 threaded holes for cable conduit connection. See Accessories section for cable glands available if conduit is not used.

Approximate Mass

Flowtube Size		Approximate Mass(a)	
SI (Metric)	U.S. Customary	kg	lb
DN 10	1/2 in	2.2	4.8
DN 15	3/4 in	2.2	4.8
DN 25	1 in	2.7	5.9
DN 40	1-1/2 in	3.4	7.5
DN 50	2 in	4.2	9.2
DN 65	2-1/2 in	5.5	12.1
DN 80	3 in	7.0	15.4
DN 100	4 in	10	22.0

(a) Mass does not include end connection adapters. Also, add approximately 0.8 kg (1.8 lb) when the Model 47 or Model 48 Transmitter is integrally mounted to the flowtube.

OPTIONAL SELECTIONS AND ACCESSORIES

Options -E or -F: Gaskets

EPDM or FDM/FKM gasket materials are offered. A gasket must be selected when an end connection adapter is selected (see Model Codes). Gasket ratings, applications, and part numbers are identified below:

EPDM GASKET – OPTION -E

Rated -50 to +150°C (-58 to +302°F); used with pfa-lined flowtubes only.

FPM/FKM GASKET – OPTION -F

Rated -26 to +204°C (-15 to +400°F); used with ceramic-lined flowtubes only.

Gasket Part Numbers

Nominal Flowtube Size		Part Number for the following Gasket Material (a)	
Metric	In	EPDM	FPM/FKM
DN 10	1/2	083G2206	A5E00915707
DN 15	3/4	083G2207	A5E00915764
DN 25	1	083G2209	A5E00915771
DN 40	1 1/2	083G2211	A5E00915773
DN 50	2	083G2212	A5E00915775
DN 65	2 1/2	083G2213	A5E00915780
DN 80	3	083G2214	A5E00915782
DN 100	4	083G2215	A5E00915784

(a) The gasket part number is for a kit of 2 gaskets.

Conduit Connection Adapter (Flowtube Terminal Box)

For users who still require the PG 13.5 fittings, a conduit connection adapter can be provided to adapt from 1/2 NPT to PG 13.5. See table below, and contact Global Customer Support for further information.

Description	Part Number (a)
Nickel Plated Brass Conduit Fitting, 1/2 NPT to PG 13.5	X0178LU

(a) Part number specified is for one fitting.

Submersion Kit to IEC IP68

The standard flowtube enclosure meets IEC IP67 rating relating to the effects of immersion in water. Use of the submersion kit upgrades the protection rating to IEC IP68. The table below compares the standard protection, and improved protection using the submersion kit. Specify Part Number 08540220 for the IP68 Submersion Kit.

Designation	Submersion Depth	Submersion Duration
IP67; NEMA 4X (Standard)	1.5 m Water (5 ft Water)	72 hours
IP68; NEMA 6 (Optional)	10 m Water (33 ft Water)	72 hours

Cable Glands (Terminal Box)

If cable gland cable entry is required, rather than conduit, see table below.

Description	Part Number (a)
Cable Gland, 1/2 NPT to 1/2 NPT	A5E00822501
Cable Gland, M20 to M20	A5E00822490

(a) Part number specified is for two cable glands.

MODEL CODE

4700 Series Sanitary Magnetic Flowtubes

Description	Model																																																					
4700S Sanitary Magnetic Flowtube	4700S																																																					
Nominal Flowtube Size																																																						
DN 10 (1/2 in) Flowtube	-010																																																					
DN 15 (3/4 in) Flowtube	-015																																																					
DN 25 (1 in) Flowtube	-025																																																					
DN 40 (1-1/2 in) Flowtube	-040																																																					
DN 50 (2 in) Flowtube	-050																																																					
DN 65 (2-1/2 in) Flowtube	-065																																																					
DN 80 (3 in) Flowtube	-080																																																					
DN 100 (4 in) Flowtube	-100																																																					
Liner and Electrode Materials																																																						
Ceramic Liner with Platinum Electrodes	C																																																					
PFA Liner with Hastelloy C Electrodes (a)	P																																																					
Terminal Box																																																						
Fiberglass Reinforced Polyamide with four 1/2 NPT holes	F																																																					
AISI Type 316 ss Stainless Steel with four 1/2 NPT holes	H																																																					
Fiberglass Reinforced Polyamide with four M20 holes	V																																																					
AISI Type 316 ss Stainless Steel with four M20 holes	W																																																					
Electrical Safety																																																						
UL, ULc, CE, C-Tick; For use in General Purpose (Ordinary) Locations	A																																																					
End Connection Adapters (b) (c)																																																						
NONE - Flowtube Only, Adapter not provided(c)	NN																																																					
End Connection Adapter Welded to Pipeline (d)																																																						
<table border="1"> <thead> <tr> <th rowspan="2">Adapter Type</th> <th colspan="8">Adapter Line Sizes Available with the following Flowtube Size Codes:</th> </tr> <tr> <th>010</th> <th>015</th> <th>025</th> <th>040</th> <th>050</th> <th>065</th> <th>080</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Tri-Clover Type</td> <td>1/2 in</td> <td>3/4 in</td> <td>1 in</td> <td>1 1/2 in</td> <td>2 in</td> <td>2 1/2 in</td> <td>3 in</td> <td>4 in</td> </tr> <tr> <td>DIN 11850</td> <td>10 mm</td> <td>15 mm</td> <td>25 mm</td> <td>40 mm</td> <td>50 mm</td> <td>65 mm</td> <td>80 mm</td> <td>100 mm</td> </tr> <tr> <td>ISO 2037</td> <td>10 mm</td> <td>15 mm</td> <td>1 in</td> <td>1 1/2 in</td> <td>2 in</td> <td>2 1/2 in</td> <td>3 in</td> <td>4 in</td> </tr> <tr> <td>BS 4825-1</td> <td>10 mm</td> <td>15 mm</td> <td>1 in</td> <td>1 1/2 in</td> <td>2 in</td> <td>2 1/2 in</td> <td>3 in</td> <td>4 in</td> </tr> </tbody> </table>	Adapter Type	Adapter Line Sizes Available with the following Flowtube Size Codes:								010	015	025	040	050	065	080	100	Tri-Clover Type	1/2 in	3/4 in	1 in	1 1/2 in	2 in	2 1/2 in	3 in	4 in	DIN 11850	10 mm	15 mm	25 mm	40 mm	50 mm	65 mm	80 mm	100 mm	ISO 2037	10 mm	15 mm	1 in	1 1/2 in	2 in	2 1/2 in	3 in	4 in	BS 4825-1	10 mm	15 mm	1 in	1 1/2 in	2 in	2 1/2 in	3 in	4 in	WA WB WC WE
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End Connection Adapter Clamped to Pipeline(d)																																																						
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BS 4825-3	N/A	N/A	1 in	1 1/2 in	2 in	2 1/2 in	3 in	N/A																																														
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<table border="1"> <thead> <tr> <th rowspan="2">Adapter Type</th> <th colspan="8">Adapter Line Sizes Available with the following Flowtube Size Codes:</th> </tr> <tr> <th>010</th> <th>015</th> <th>025</th> <th>040</th> <th>050</th> <th>065</th> <th>080</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>DIN 11851</td> <td>10 mm</td> <td>15 mm</td> <td>25 mm</td> <td>40 mm</td> <td>50 mm</td> <td>65 mm</td> <td>80 mm</td> <td>100 mm</td> </tr> <tr> <td>SMS 1145</td> <td>N/A</td> <td>N/A</td> <td>1 in</td> <td>1 1/2 in</td> <td>2 in</td> <td>2 1/2 in</td> <td>3 in</td> <td>N/A</td> </tr> </tbody> </table>	Adapter Type	Adapter Line Sizes Available with the following Flowtube Size Codes:								010	015	025	040	050	065	080	100	DIN 11851	10 mm	15 mm	25 mm	40 mm	50 mm	65 mm	80 mm	100 mm	SMS 1145	N/A	N/A	1 in	1 1/2 in	2 in	2 1/2 in	3 in	N/A	TA TE																		
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MODEL CODE

4700 Series Sanitary Magnetic Flowtubes

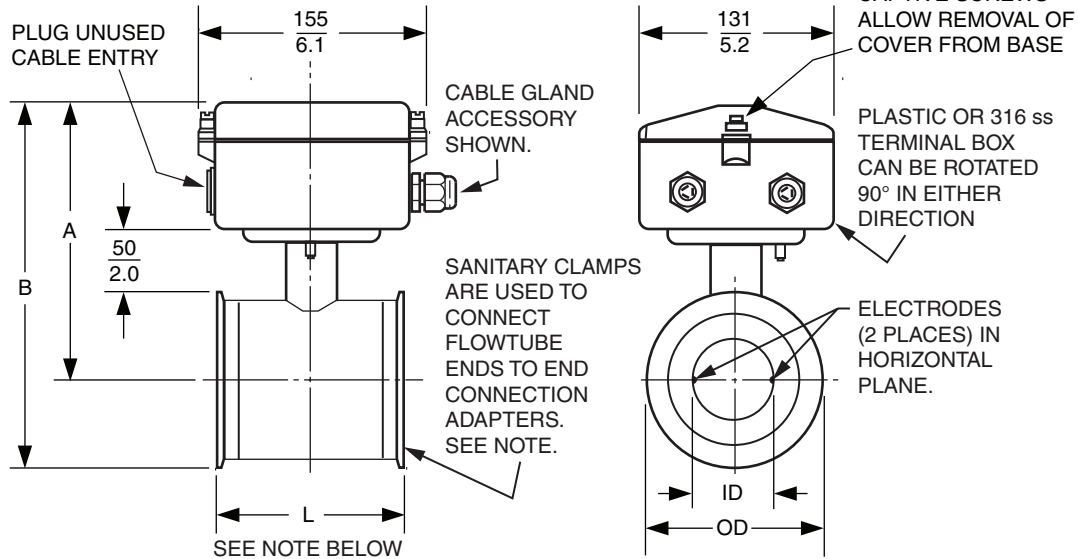
Description	Model
<u>Optional Selections (e)</u>	
EPDM Gasket Material (with PFA Liners only)	-E
FPM/FKM Gasket Material (with Ceramic Liners only)	-F

- a. Select only for pressures less than or equal to 40 bar (4 MPa, 580 psi).
- b. Select either NONE, adapter welded to pipeline, adapter clamped to pipeline, or adapter threaded to pipeline.
- c. Generally selected for flowtube replacement. Optional gaskets not required with this selection.
- d. Two adapters, two EPDM gaskets, and two clamps (for joining adapter to flowtube) are provided with these selections.
- e. Gaskets are a required selection with end connection codes WA to WE, CA to CE, or TA to TE. See Optional Selections section for temperature ratings of each material.

DIMENSIONS - NOMINAL

FLOWTUBE - WITH TRANSMITTER IN REMOTE LOCATION

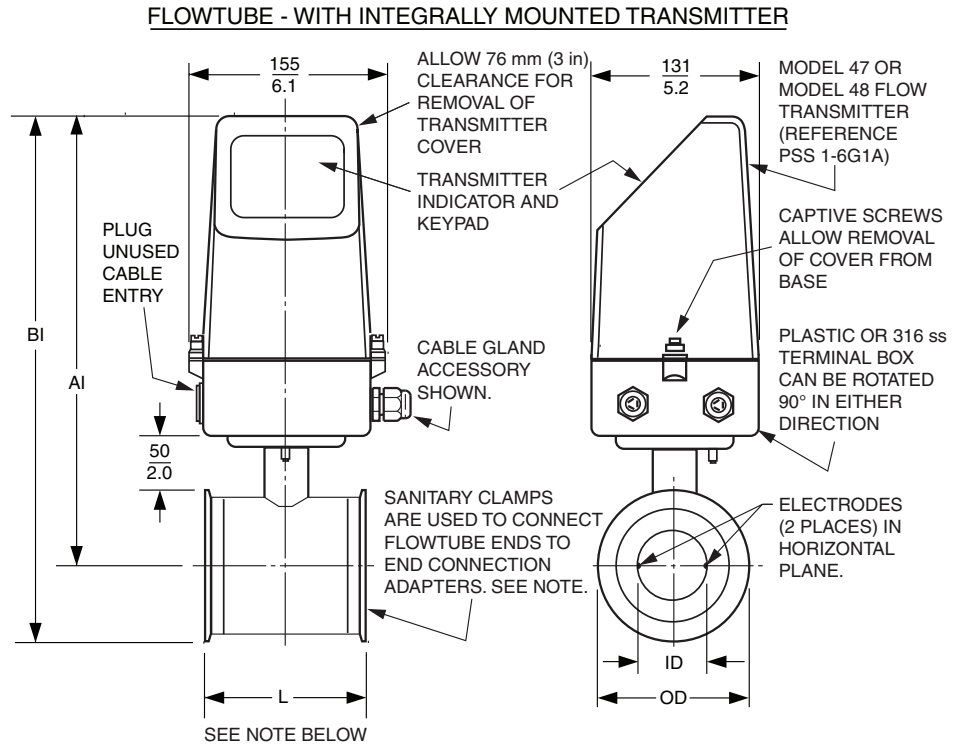
mm
in



Nominal Flowtube Size		Nominal Dimensions					
SI (Metric)	U.S. Customary	A	B	(See Note) L	OD	Ceramic ID	PFA ID
DN 10	1/2 in	$\frac{156}{6.1}$	$\frac{181}{7.1}$	$\frac{64}{2.5}$	$\frac{64}{2.5}$	$\frac{10}{0.39}$	$\frac{10}{0.39}$
DN 15	3/4 in	$\frac{156}{6.1}$	$\frac{181}{7.1}$	$\frac{64}{2.5}$	$\frac{64}{2.5}$	$\frac{15}{0.59}$	$\frac{16}{0.63}$
DN 25	1 in	$\frac{164}{6.5}$	$\frac{196}{7.7}$	$\frac{79}{3.1}$	$\frac{77}{3.0}$	$\frac{25}{0.98}$	$\frac{26}{1.02}$
DN 40	1-1/2 in	$\frac{176}{6.9}$	$\frac{218}{8.6}$	$\frac{94}{3.7}$	$\frac{91}{3.6}$	$\frac{40}{1.57}$	$\frac{38}{1.49}$
DN 50	2 in	$\frac{184}{7.2}$	$\frac{235}{9.3}$	$\frac{104}{4.1}$	$\frac{119}{4.7}$	$\frac{50}{1.97}$	$\frac{50}{1.97}$
DN 65	2-1/2 in	$\frac{194}{7.6}$	$\frac{254}{10.0}$	$\frac{131}{5.2}$	$\frac{130}{5.1}$	$\frac{65}{2.56}$	$\frac{66}{2.60}$
DN 80	3 in	$\frac{200}{7.9}$	$\frac{266}{10.5}$	$\frac{155}{6.1}$	$\frac{155}{6.1}$	$\frac{80}{3.15}$	$\frac{81}{3.19}$
DN 100	4 in	$\frac{213}{8.4}$	$\frac{292}{11.5}$	$\frac{186}{7.3}$	$\frac{183}{7.2}$	$\frac{100}{3.94}$	$\frac{100}{3.94}$

NOTE

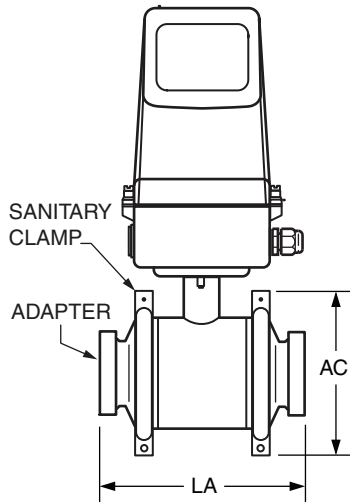
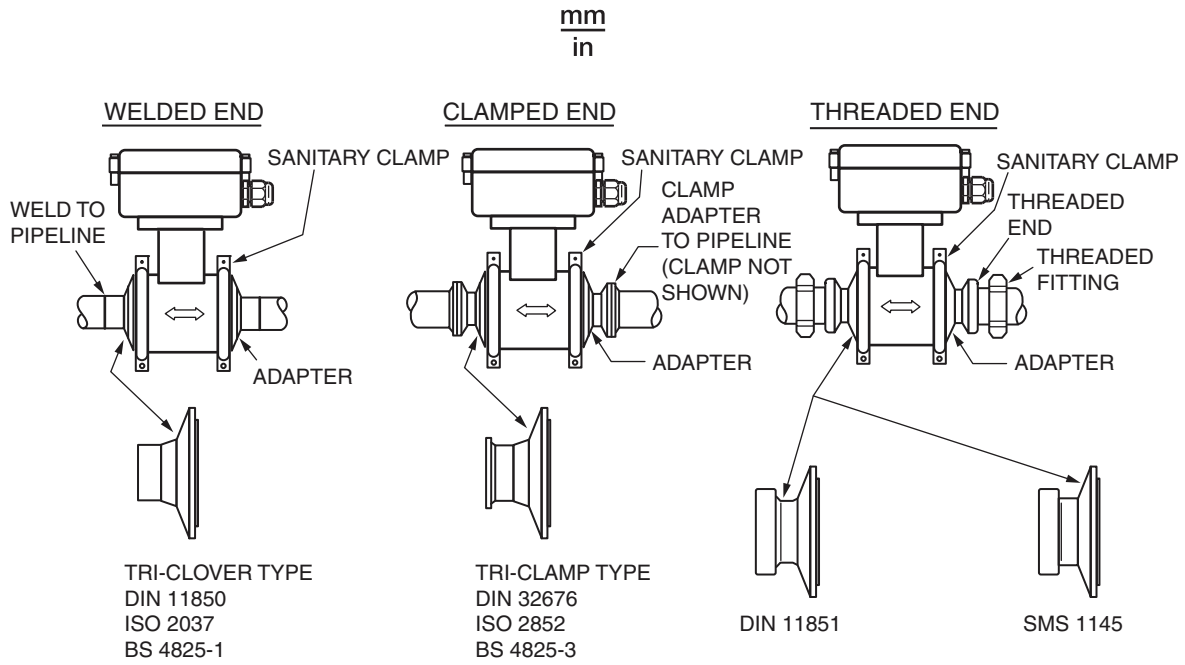
For end-to-end dimensions when end connection adapters are in place, see the "LA" dimension in table further in this document.



Nominal Flowtube Size		Nominal Dimensions					
SI (Metric)	U.S. Customary	AI	BI	(See Note) L	OD	Ceramic ID	PFA ID
DN 10	1/2 in	$\frac{309}{12.2}$	$\frac{334}{13.1}$	$\frac{64}{2.5}$	$\frac{64}{2.5}$	$\frac{10}{0.39}$	$\frac{10}{0.39}$
DN 15	3/4 in	$\frac{309}{12.2}$	$\frac{334}{13.1}$	$\frac{64}{2.5}$	$\frac{64}{2.5}$	$\frac{15}{0.59}$	$\frac{16}{0.63}$
DN 25	1 in	$\frac{317}{12.5}$	$\frac{349}{13.7}$	$\frac{79}{3.1}$	$\frac{77}{3.0}$	$\frac{25}{0.98}$	$\frac{26}{1.02}$
DN 40	1-1/2 in	$\frac{329}{13.0}$	$\frac{371}{14.6}$	$\frac{94}{3.7}$	$\frac{91}{3.6}$	$\frac{40}{1.57}$	$\frac{38}{1.49}$
DN 50	2 in	$\frac{337}{13.3}$	$\frac{388}{15.3}$	$\frac{104}{4.1}$	$\frac{119}{4.7}$	$\frac{50}{1.97}$	$\frac{50}{1.97}$
DN 65	2-1/2 in	$\frac{347}{13.7}$	$\frac{407}{16.0}$	$\frac{131}{5.2}$	$\frac{130}{5.1}$	$\frac{65}{2.56}$	$\frac{66}{2.60}$
DN 80	3 in	$\frac{353}{13.9}$	$\frac{419}{16.5}$	$\frac{155}{6.1}$	$\frac{155}{6.1}$	$\frac{80}{3.15}$	$\frac{81}{3.19}$
DN 100	4 in	$\frac{366}{14.4}$	$\frac{445}{17.5}$	$\frac{186}{7.3}$	$\frac{183}{7.2}$	$\frac{100}{3.94}$	$\frac{100}{3.94}$

NOTE

For end-to-end dimensions when end connection adapters are in place, see the "LA" dimension in the table on the next page.



NOTE

Refer to Model Code Section for availability of adapter type and size with each flowtube line size.

Flowtube Size		Nominal Dimensions			
		LA(a)		AC	
SI (Metric)	U.S. Customary	mm	in	mm	in
DN 10	1/2 in	146	5.7	99	3.9
DN 15	3/4 in	146	5.7	99	3.9
DN 25	1 in	161	6.3	113	4.5
DN 40	1-1/2 in	176	6.9	126	5.0
DN 50	2 in	186	7.3	154	6.1
DN 65	2-1/2 in	223	8.8	165	6.5
DN 80	3 in	258	10.2	200	7.9
DN 100	4 in	288	10.2	225	8.9

(a) The total built-in length "LA" is independent of the adapter type used.

NOTES

ORDERING INSTRUCTIONS

1. Model Number
2. Operating Flow Range
3. Options and Accessories not in Model Number.
Specify Part Number and Description from
Options/Accessories section.
4. Customer 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