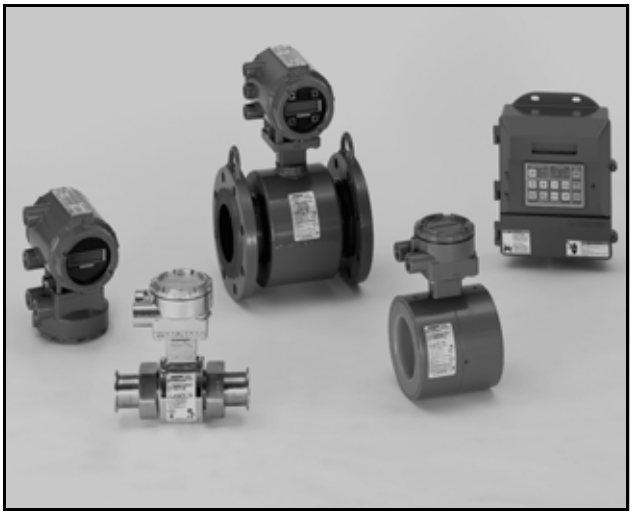
Product Data Sheet
00813-0100-4727, Rev TA
April 2009

Rosemount 8700 Series
Magnetic Flowmeter Systems

THE 8700 E-SERIES...

- *Industry leading performance with standard reference accuracy of 0.25% of rate with an optional High Accuracy of 0.15% of rate.*
- *Rosemount 8732 HART Transmitter - Integral-mount design, backlit display, and explosion-proof housing. Available with I.S. Outputs, Device Diagnostics, and Internal Meter Verification to improve reliability and performance*
- *Rosemount 8712 HART Transmitter - available with Device Diagnostics to improve reliability and performance. Quick setup with easy-to-use local operator interface*
- *Rosemount 8712H/8707 High-Signal System - Pulsed DC solutions for the most demanding flow measurement applications*
- *Rosemount 8705 Flanged sensor - Fully welded sensor for maximum protection (standard ISO lay length)*
- *Rosemount 8711 Wafer sensor - Economical, compact, and lightweight sensor, provided with alignment rings for easy installation*
- *Rosemount 8721 Hygienic sensor - Specifically designed for food, beverage, and life sciences applications*
- *Rosemount 8732 with FOUNDATION™ fieldbus Transmitter - Integral-mount design available with Device Diagnostics*



Contents

Rosemount 8700 Series System Overview

Rosemount 8732E

The Rosemount 8732E transmitter has multiple diagnostic suites available. Best in class performance coupled with advanced diagnostics provides unparalleled process management capabilities. With an optional backlit 2 line by 16 character display/local operator interface, the transmitter can be configured by optical switches to simplify adjustments in hazardous environments without removing the cover.

Rosemount 8712

The remote mount 8712 transmitter brings diagnostics to any HART/ 4-20mA system that can change how magmeters are installed, maintained, and verified. The Rosemount 8712 also features an easy-to-use operator interface, with quick access to all diagnostic information, and instant access to basic configuration setup through dedicated keys.

Rosemount 8714D

The Rosemount 8714D Calibration Standard attaches to an 8712D, 8712E, or 8732 transmitter's sensor connections to ensure traceability to NIST standards and long-term accuracy of the flowmeter system. The 8714D is not compatible with the 8712H High-Signal transmitter

Rosemount 8705 Flanged Sensors

All flanged sensors are fabricated from stainless and carbon steel and welded to provide a hermetic seal that protects against moisture and other contaminants. Sizes range from 1/2 in. (15 mm) to 36 in. (900 mm). The sealed housing ensures maximum sensor reliability by protecting all internal components and wiring from the most hostile environments.

Rosemount 8707/8712H High-Signal Magmeter System (1)

The 8707 High-Signal Sensor, used in conjunction with the 8712H High-Signal Transmitter, forms the Rosemount High-Signal Magnetic Flowmeter System. This system provides stable flow measurement in the most difficult high-noise applications while maintaining the benefits of DC technology. The increased signal strength of the high-signal system is made possible through a combination of sensor coil design that incorporates the most advanced materials and an extremely efficient and innovative coil drive circuit. The increased signal strength of the Rosemount high-signal system, coupled with advanced signal processing and superior filtering techniques, provide the solution to demanding flow measurement applications.

Rosemount 8711 Wafer Sensors

The flangeless design of the 8711 wafer sensor makes it an economical, compact, and lightweight alternative to flanged magnetic flowmeters. Alignment rings provided with every 8711, center the sensor in the process line and makes installation easier.

Rosemount 8721 Hygienic Sensors

The 8721 hygienic sensor is specifically designed for the demanding applications in food, beverage, and life sciences. The robust, all-welded, full diameter sensor is constructed of FDA approved materials and is authorized to display the 3-A Symbol (Authorization #1222) is certified by EHEDG (#C03-5229) and is approved for use in FDA Grade A milk meter based timing loops (M-b 350). Sizes range from 1/2" (15mm) to 4" (100mm) and are available in a variety of industry standard process connections.

(1) The high-signal magmeter system is not currently available with CE mark.

Rosemount Magmeter Diagnostics Power PlantWeb

Rosemount Mag Diagnostics Power PlantWeb to Reduce Cost & Improve Output by Enabling New Practices

Rosemount Magmeters provide device diagnostics that powers PlantWeb and informs the user of abnormal situations throughout the life of the meter - from Installation to Maintenance and Meter Verification. With Rosemount Magmeter diagnostics enabled, users can change their practices to improve plant availability and throughput, and reduce costs through simplified installation, maintenance and troubleshooting.

Diagnostics	Mag User Practice	8732E HART	8712E HART	8712H HART	8732E FOUNDATION fieldbus
Basic					
Empty Pipe	Process Management	•	•	•	•
Electronics Temperature	Maintenance	•	•		•
Coil Fault	Maintenance	•	•	•	•
Transmitter Faults	Maintenance	•	•	•	•
Reverse Flow	Process Management	•	•	•	•
Advanced (Suite 1)		DA1 Option	DA1 Option	N/A	D01 Option
High Process Noise	Process Management	•	•		•
Grounding/Wiring Fault	Installation	•	•		•
Advanced (Suite 2)		DA2 Option	DA2 Option	N/A	D02 Option
8714i Meter Verification	Meter Verification	•	•		•
4-20 mA Loop Verification	Maintenance	•			

OPTIONS FOR ACCESSING DIAGNOSTICS

Rosemount Magmeter Diagnostics can be accessed through the Local Operator Interface (LOI)(1), the 375 Field Communicator, and AMS™ Suite: Intelligent Device Manager.

Access diagnostics through the LOI for quicker installation, maintenance, and meter verification(1)

Rosemount Magmeter Diagnostics are available through the LOI to make maintenance of every magmeter easier.

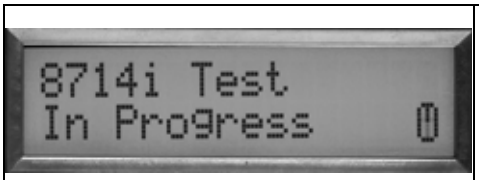
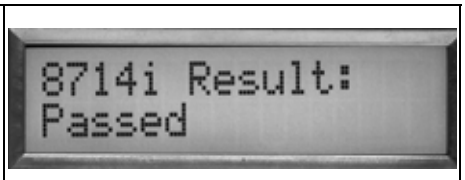
Access diagnostics through AMS Intelligent Device Manager for the ultimate value

The value of the diagnostics increases significantly when AMS is used. Now the user gets a simplified screen flow and procedures for how to respond to the diagnostic messages.

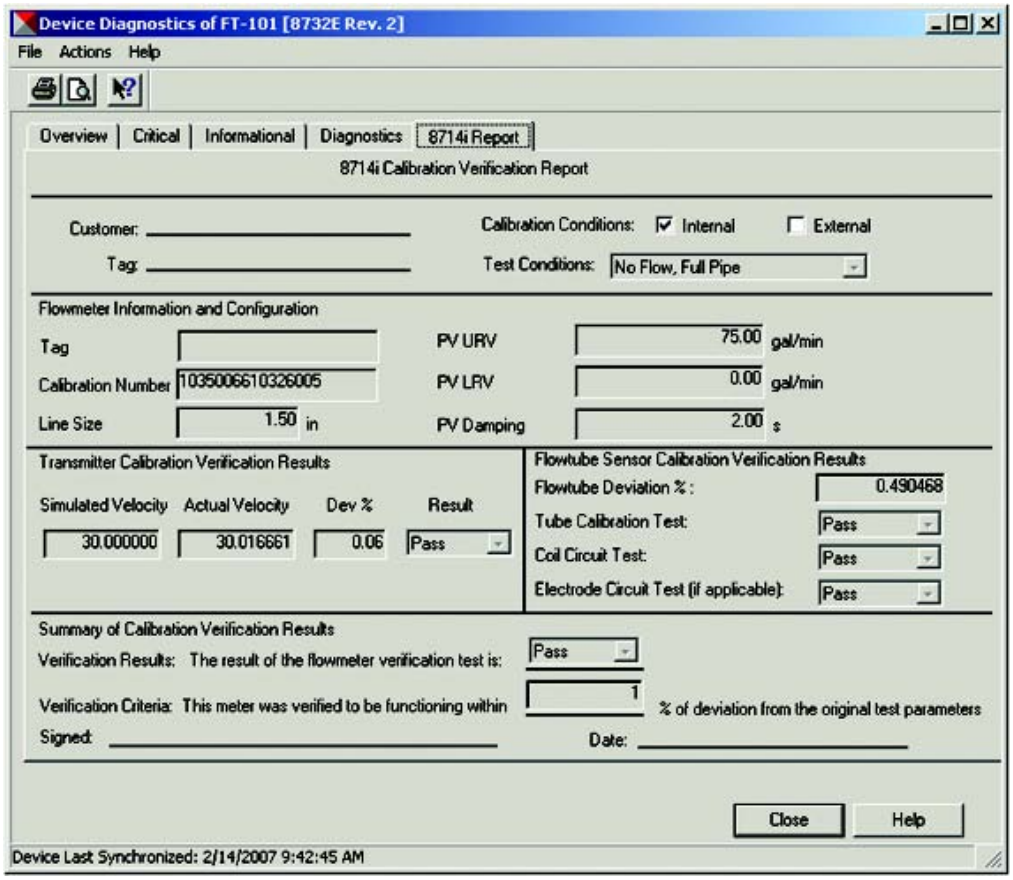
(1) Not available for the 8732E FOUNDATION fieldbus transmitter.

8714i Meter Verification Improves Magnetic Flowmeter Verification Practice

Diagnostic in LOI

		
8714i Meter Verification checks transmitter and sensor characteristics.	*Deviation from baseline values are reported.*	*Meter Calibration is verified.*

Diagnostic in AMS



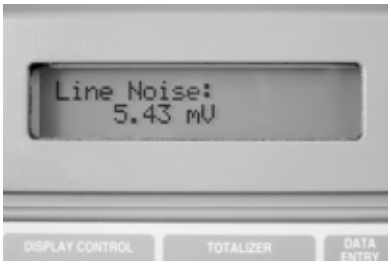
8714i Meter Verification Report from AMS

Grounding/ Wiring Diagnostic Improves Installation Practices

Diagnostic in LOI

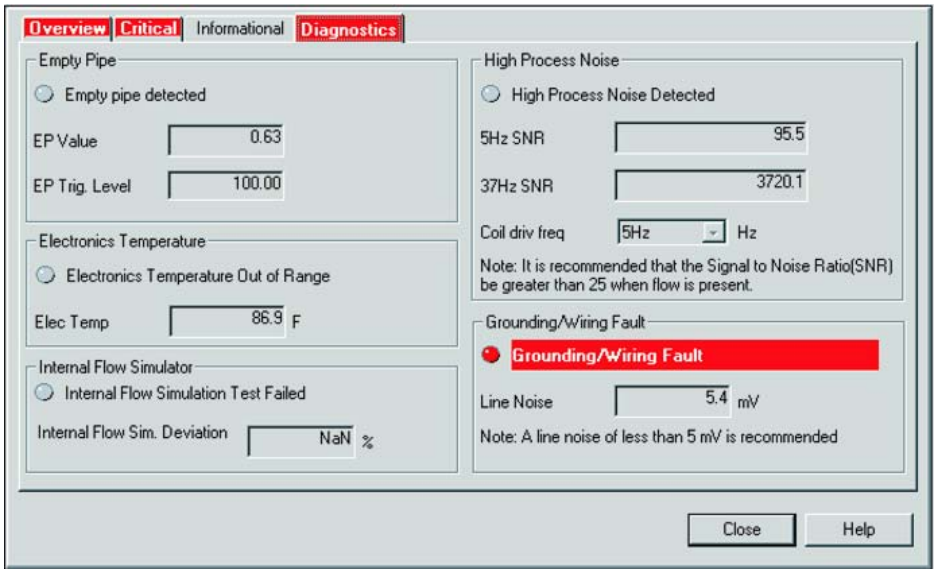
Grounding and wiring fault displays on LOI.

Error messages under Diagnostic menu.



Line noise value can be viewed. If line noise is > 5 mV, Diagnostic is tripped.

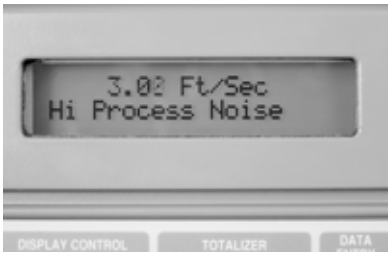
Diagnostic in AMS



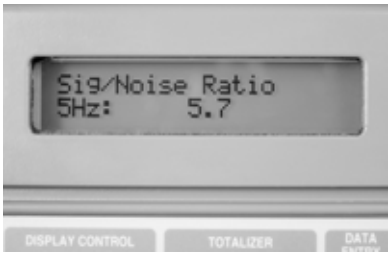
Grounding and wiring is tripped and shown in AMS status screen.

High Process Noise Diagnostic Improves Process Management

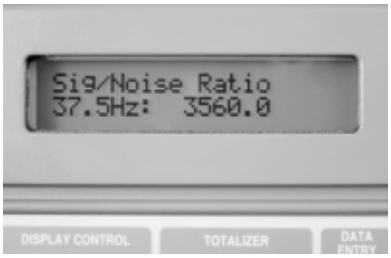
Diagnostic in LOI



LOI indicates high process noise is detected.

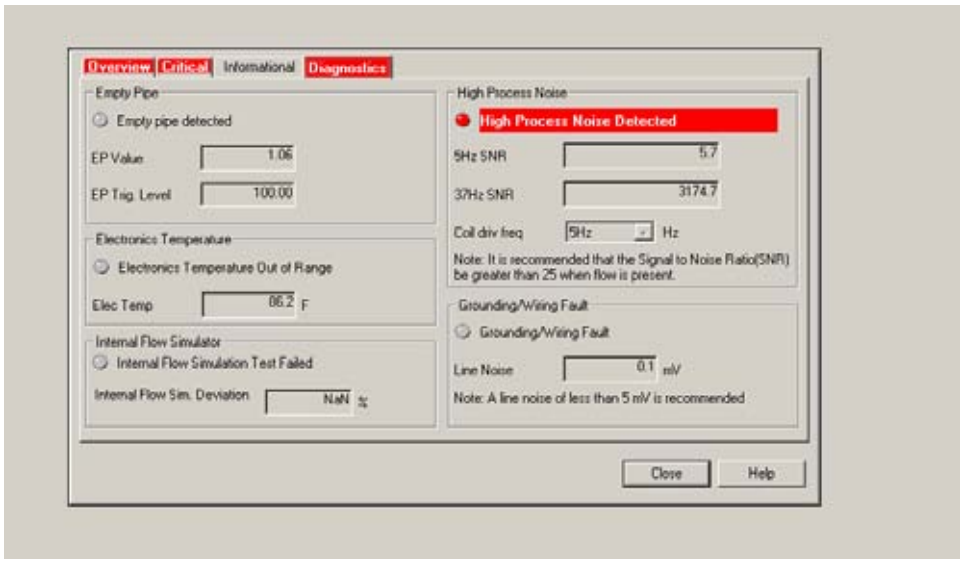


Signal-to-noise ratio (SNR) is viewed in Diagnostic menu. If < 25:1, diagnostic tripped.

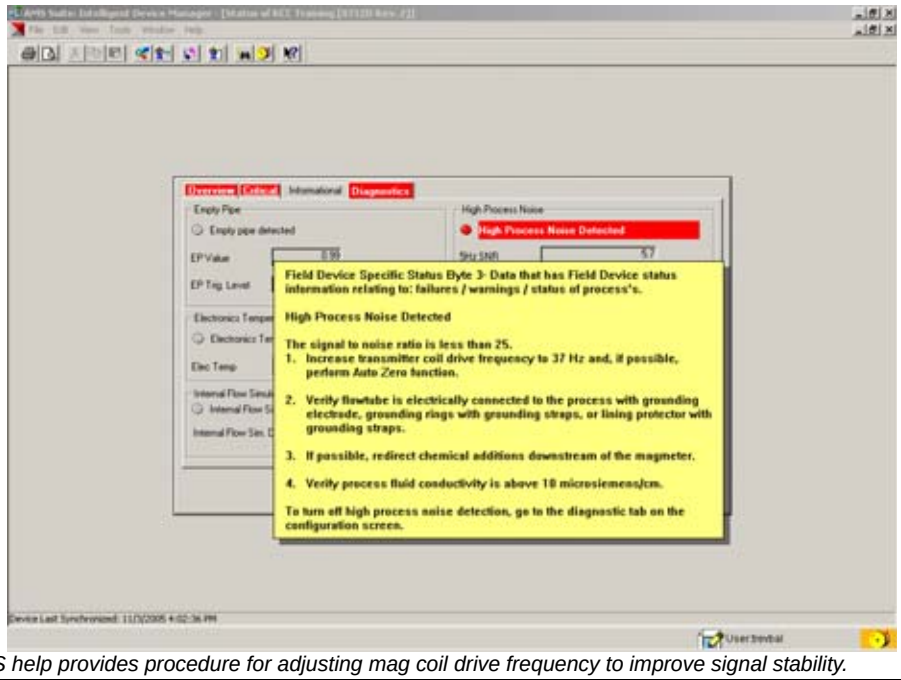


Improved SNR and signal stability by moving coil drive frequency from 5 Hz to 37 Hz.

Diagnostic in AMS



AMS status screen indicates high process noises detected and shows SNR at both coil drive frequencies.



AMS help provides procedure for adjusting mag coil drive frequency to improve signal stability.

Rosemount 8700 Series Product Specifications Overview

Listed below are tables that outline some of the basic performance, physical, and functional specifications of the Rosemount 8700 Series Magnetic Flowmeter products. Table 1 provides an overview of the Rosemount 8700 Series Transmitter products. Table 2 provides an overview of the Rosemount 8700 Series Sensor products.

TABLE 1. Rosemount 8700 Series Transmitter Specifications

	Model	Base Accuracy[(1)]	Mounting	Power Supply	User Interface	Communication Protocol	Diagnostics	Sensor Compatibility	Page for Detailed Specifications	Page for Ordering Information
	8732E	0.25% Standard 0.15% High Accuracy Option	Integral or Remote	Global AC or DC	4 Optical Switch LOI	HART	**Basic plus Optional DA1 and DA2 Suite**	All Rosemount plus other manufacturers	page 10	page 87
					Display Only	FOUNDATION fieldbus	**Basic plus Optional D01 and D02 Suite**			
	8712E	0.25% Standard 0.15% High Accuracy Option	Remote	Global AC or DC	**Dedicated 15 Button LOI**	HART	Basic plus Optional DA1 and DA2 Suite	All Rosemount plus other manufacturers	page 20	page 89
	8712D	0.25% Standard 0.15% High Accuracy Option	Remote	Global AC or DC	**Dedicated 15 Button LOI**	HART	Basic plus optional DA1 Suite	All Rosemount plus other manufacturers	page 25	page 91
	8712H	0.5% Standard 0.25% High Accuracy Option	Remote	**115 V AC**	Dedicated 15 Button LOI	HART	Basic	**8707 Only**	page 25	page 92

(1) For complete accuracy specifications, please refer to the transmitter detailed specifications.

TABLE 2. Rosemount 8700 Series Sensor Specifications

	Model	Style	Base Accuracy(1)	Line Sizes	Coil Drive Power	Design Features	Page for Detailed Specifications	Page for Ordering Information
	8705	Flanged	0.25% Standard 0.15% High Accuracy Option	0.5 to 36 in. (15 to 900 mm)	Pulsed DC	Standard Process Design	page 30	page 93
	8707	High-Signal (Flanged)	0.5% Standard 0.25% High Accuracy Option	3 to 36 in. (15 to 900 mm)	**High-Signal Pulsed DC**	Superior signal stability for Noisy Applications	page 30	page 98
	8711	Wafer	0.25% Standard 0.15% High Accuracy Option	0.15 to 8 in. (4 to 200 mm)	Pulsed DC	**Compact, Light Weight**	page 35	page 101
	8721	Hygienic	0.5% Standard 0.25% High Accuracy Option	0.5 to 4 in. (15 to 100 mm)	Pulsed DC	**3-A and EHEDG CIP/SIP**	page 37	page 104

(1) For complete accuracy specifications, please refer to the sensor detailed specifications.

Rosemount 8732E Transmitter Specifications

Functional Specifications

Sensor Compatibility

Compatible with Rosemount 8705, 8711, 8721, and 570TM sensors. Compatible with Rosemount 8707 sensor with D2 Dual calibration option. Compatible with AC and DC powered sensors of other manufacturers.

Sensor Coil Resistance

350 Ω maximum

Transmitter Coil Drive Current

500 mA

Flow Rate Range

Capable of processing signals from fluids that are traveling between 0.04 and 39 ft/s (0.01 to 12 m/s) for both forward and reverse flow in all sensor sizes. Full scale continuously adjustable between –39 and 39 ft/s (–12 to 12 m/s).

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8732E. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Power Supply

90 -250 V AC, 50–60 Hz or 12-42 V DC

AC Power Supply Requirements

Units powered by 90-250 V AC have the following power requirements.

AC Power Supply Requirements

Units powered by 90-250 V AC have the following power requirements.

FIGURE 1. AC Current Requirements

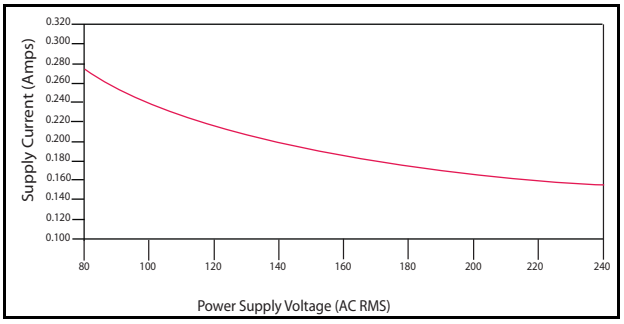
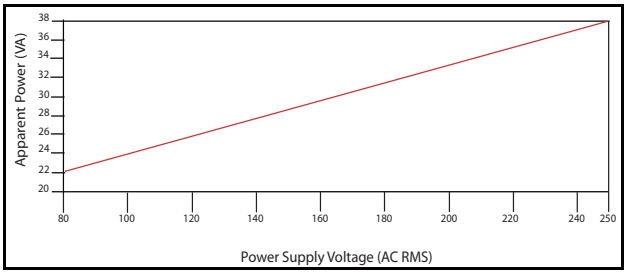


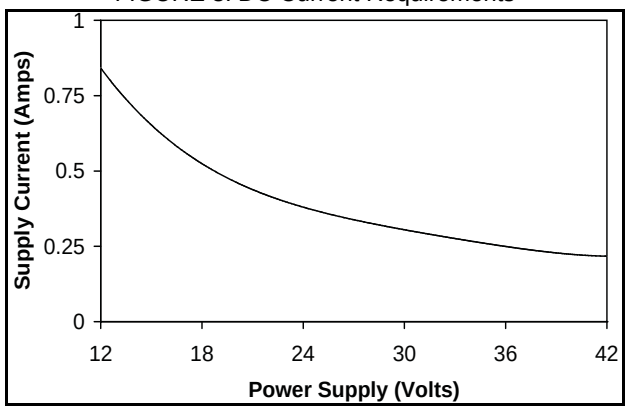
FIGURE 2. Apparent Power



DC Supply Current Requirements

Units powered by 12-42 V DC power supply may draw up to 1 amp of current steady state.

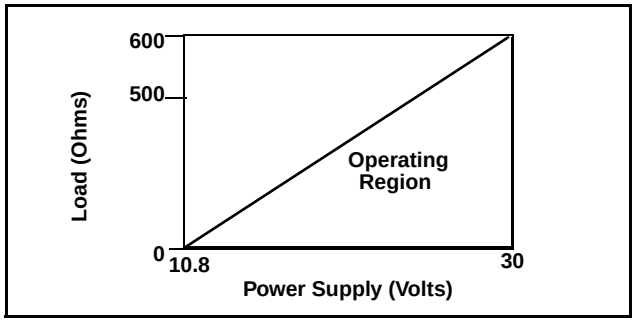
FIGURE 3. DC Current Requirements



DC Load Limitations (Analog Output)

Maximum loop resistance is determined by the voltage level of the external power supply, as described by:

FIGURE 4. DC Load Limitations



R_{max} = 31.25 (V_{ps} – 10.8)
V_{ps} = Power Supply Voltage (Volts)
R_{max} = Maximum Loop Resistance (Ohms)

NOTE
HART Communication requires a minimum loop resistance of 250 ohms.

Power Consumption

10 watts maximum

Switch-on current
AC: Maximum 26 A (< 5 ms) at 250 V AC

DC: Maximum 30 A (< 5 ms) at 42 V DC

Ambient Temperature Limits

Operating
–58 to 165 °F (–50 to 74 °C) without local operator interface

13 to 149 °F (–25 to 65 °C) with local operator interface

Storage
–40 to 185 °F (–40 to 85 °C)

–22 to 176 °F (–30 to 80 °C) with local operator interface

Humidity Limits

0–100% RH to 150 °F (65 °C)

Enclosure Rating

Type 4X, IEC 60529, IP66 (transmitter)

Output Signals

Analog Output Adjustment(1)
4–20 mA, switch-selectable as internally or externally powered 10 to 30 V DC; 0 to 600 Ω load.

Engineering units—lower and upper range values are user-selectable.

Output automatically scaled to provide 4 mA at lower range value and 20 mA at upper range value. Full scale continuously adjustable between -39 and 39 ft/s (-12 to 12 m/sec), 1 ft/s (0.3 m/s) minimum span.

HART Communications, digital flow signal, superimposed on 4–20 mA signal, available for control system interface. 250 Ω required for HART communications.

Scalable Frequency Adjustment(1)
0-10,000 Hz, switch-selectable as internally or externally powered 10 to 30 V DC, transistor switch closure up to 5.75 w. Pulse value can be set to equal desired volume in selected engineering units. Pulse width adjustable from 0.5 to 100 m/s. Local operator interface automatically calculates and displays maximum allowable output frequency.

Totalizer
Non-volatile totalizer for net, gross, forward and reverse totals.

(1) For transmitters with intrinsically safe outputs, power must be supplied externally.

Optional Digital Output Function (AX option)

Externally powered at 5 to 24 V DC, transistor switch closure up to 3 W to indicate either:

Reverse Flow:
Activates switch closure output when reverse flow is detected. The reverse flow rate is displayed.

Zero Flow:
Activates switch closure output when flow goes to 0 ft/s.

Empty Pipe:
Activates switch closure output when empty pipe is detected.

Transmitter Fault:
Activates switch closure output when a transmitter fault is detected.

Optional Digital Input Function (AX option)

Externally powered at 5 to 24 V DC, transistor switch closure up to 3 W to indicate either:

Net Total Reset:
Resets the net totalizer value to zero.

Positive Zero Return (PZR):
Forces outputs of the transmitter to zero flow. Activated by applying a contact closure.

Security Lockout

Security lockout switch on the electronics board can be set to deactivate all LOI and HART-based communicator functions to protect configuration variables from unwanted or accidental change.

Display Lockout

All optical switches on the display can be locked locally from the display layout configuration screen by holding the upper right optical switch for 10 seconds. The display can be reactivated holding the same switch for 10 seconds.

Output Testing

Analog Output Test
Transmitter may be commanded to supply a specified current between 3.5 and 23 mA.

Pulse Output Test
Transmitter may be commanded to supply a specified frequency between 1 and 10,000 Hz.

Turn-on Time

5 minutes to rated accuracy from power up; 5 seconds from power interruption.

Start-up Time

50 ms from zero flow.

Low Flow Cutoff

Adjustable between 0.01 and 38.37 ft/s (0.003 and 11.7 m/s). Below selected value, output is driven to the zero flow rate signal level.

Overrange Capability

Signal output will remain linear until 110% of upper range value or 44 ft/s (13 m/s). The signal output will remain constant above these values. Out of range message displayed on LOI and the HART Communicator.

Damping

Adjustable between 0 and 256 seconds.

Sensor Compensation

Rosemount sensors are flow-calibrated and assigned a calibration factor at the factory. The calibration factor is entered into the transmitter, enabling interchangeability of sensors without calculations or a compromise in standard accuracy.

8732E transmitters and other manufacturers' sensors can be calibrated at known process conditions or at the Rosemount NIST-Traceable Flow Facility. Transmitters calibrated on site require a two-step procedure to match a known flow rate. This procedure can be found in the Operations Manual 00809-0100-4662.

Diagnostics

Basic
Self test
Transmitter faults
Analog output test
Pulse output test
Tunable empty pipe
Reverse flow
Coil circuit fault
Electronics temperature

Advanced (DA1 Suite)
Ground/wiring fault
High process noise

Advanced (DA2 Suite)
8714i Meter Verification
4-20 mA loop verification

Performance Specifications

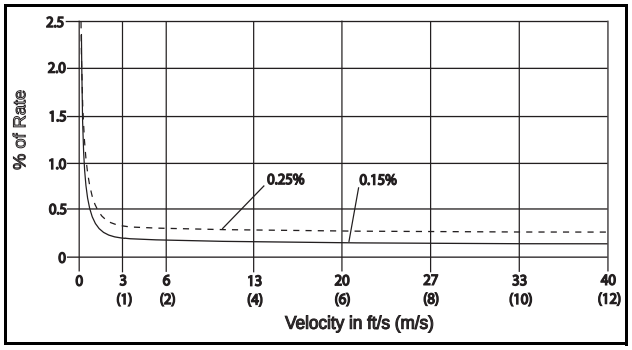
(System specifications are given using the frequency output and with the unit at reference conditions.)

Accuracy

Includes the combined effects of linearity, hysteresis, repeatability, and calibration uncertainty.

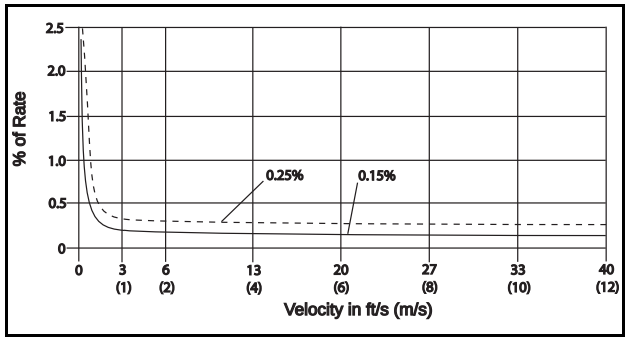
Rosemount 8732E with 8705/8707 Sensor:
Standard system accuracy is ±0.25% of rate ±1.0 mm/sec from 0.04 to 6 ft/s (0.01 to 2 m/s); above 6 ft/s (2 m/s), the system has an accuracy of ±0.25% of rate ±1.5 mm/sec.

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.(1)



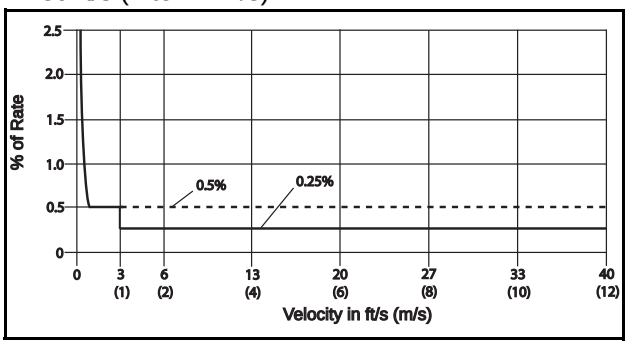
Rosemount 8732E with 8711 Sensor:
Standard system accuracy is ±0.25% of rate ±2.0 mm/sec from 0.04 to 39 ft/s (0.01 to 12 m/s).

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.



Rosemount 8732E with 8721 Sensor:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Optional high accuracy is ±0.25% of rate from 3 to 39 ft/s (1 to 12 m/s).



Rosemount 8732E with Legacy 8705 Sensors:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Rosemount 8732E with Legacy 8711 Sensors:
Standard system accuracy is ±0.5% of rate from 3 to 39 ft/s (1 to 12 m/s); between 0.04 and 3.0 ft/s (0.01 and 1 m/s), the system has an accuracy of ±0.015 ft/s (0.005 m/s).

Rosemount 8732E with Other Manufacturers' Sensors:
When calibrated in the Rosemount Flow Facility, system accuracies as good as 0.5% of rate can be attained.

There is no accuracy specification for other manufacturers' sensors calibrated in the process line.

Analog Output Effect

Analog output has the same accuracy as frequency output plus an additional ±4μA.

Vibration Effect

IEC 60770-1

Repeatability

±0.1% of reading

Response Time (Analog Output)

50 ms maximum response time to step change in input

(1) For Sensor sizes greater than 12 in. (300 mm) the high accuracy is ±0.25% of rate from 3 to 39 ft/sec (1 to 12 m/sec).

Stability

±0.1% of rate over six months

Ambient Temperature Effect

±0.25% change over operating temperature range

EMC Compliance

EN61326-1 : 2006 (Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus.

Physical Specifications

Materials of Construction

Housing
Low copper aluminum, Type 4X and IEC 60529 IP66

Paint
Polyurethane

Cover Gasket
Rubber

Electrical Connections

Two $^{1}/_{2}$–14 NPT connections provided on the transmitter housing (optional third connection available). PG13.5 and CM20 adapters are available. Screw terminals provided for all connections. Power wiring connected to transmitter only. Integrally mounted transmitters are factory wired to the sensor.

Transmitter Weight

Approximately 7 pounds (3.2 kg). Add 1 pound (0.5 kg) for Option Code M4.

Rosemount 8732E with FOUNDATION™ fieldbus Transmitter Specifications

Functional Specifications

Sensor Compatibility

Compatible with Rosemount 8705, 8711, 8721, and 570TM sensors. Compatible with Rosemount 8707 sensor with D2 Dual calibration option. Compatible with AC and DC powered sensors of other manufacturers.

Sensor Coil Resistance

350 Ω maximum

Transmitter Coil Drive Current

500 mA

Flow Rate Range

Capable of processing signals from fluids that are traveling between 0.04 and 39 ft/s (0.01 to 12 m/s) for both forward and reverse flow in all sensor sizes. Full scale continuously adjustable between –39 and 39 ft/s (–12 to 12 m/s).

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8732E. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Power Supply

90 -250 V AC, 50–60 Hz or 12-42 V DC

AC Power Supply Requirements

Units powered by 90-250 V AC have the following power requirements.

FIGURE 5. AC Current Requirements

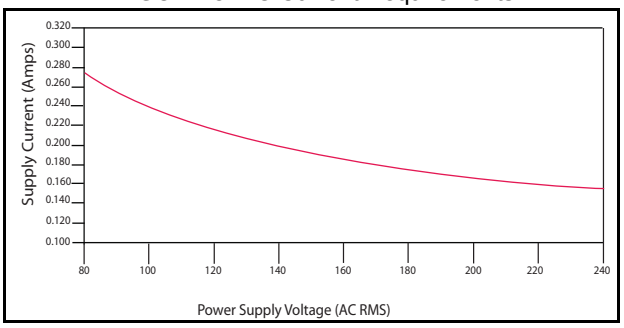
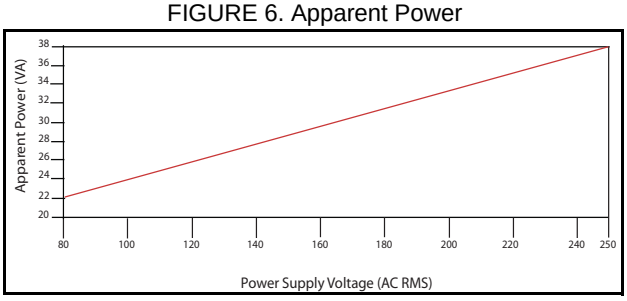


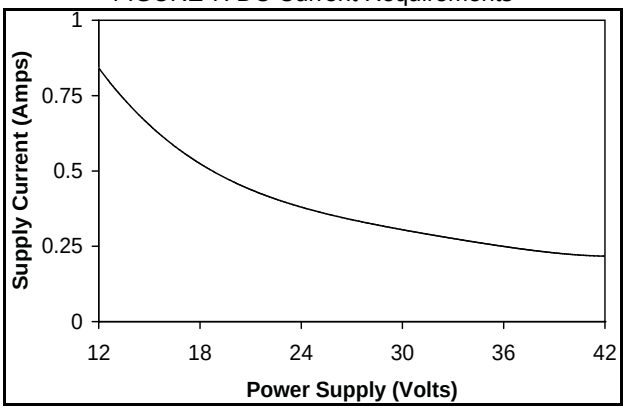
FIGURE 6. Apparent Power



DC Supply Current Requirements

Units powered by 12-42 V DC power supply may draw up to 1 amp of current steady state.

FIGURE 7. DC Current Requirements



Power Consumption

10 watts maximum

Switch-on current
AC: Maximum 26 A (< 5 ms) at 250 V AC

DC: Maximum 30 A (< 5 ms) at 42 V DC

Quiescent Current

16.5 mA

Ambient Temperature Limits

Operating
–58 to 165 °F (–50 to 74 °C) without local display

13 to 149 °F (–25 to 65 °C) with local display

Storage
–40 to 185 °F (–40 to 85 °C)

–22 to 176 °F (–30 to 80 °C) with local display

Humidity Limits

0–100% RH to 150 °F (65 °C)

Enclosure Rating

Type 4X, IEC 60529, IP66 (transmitter)

Output Signal

Manchester-encoded digital signal that conforms to IEC 1158-2 and ISA 50.02

FOUNDATION fieldbus Specifications

Schedule Entries

Seven (7)

Links

Twenty (20)

Virtual Communications Relationships (VCRs)

One (1) predefined (F6, F7) Nineteen (19) configurable (see Table 1)

TABLE 3. Block Information

Block	Execution Time (Milliseconds)
Resource (RB)	—
Transducer (TB)	—
Analog Input (AI)	10
Proportional/Integral/ Derivative (PID)	10
Integrator (INT)	10
Arithmetic (AR)	10

FOUNDATION Fieldbus Function Blocks

Transducer Block

The transducer block calculates flow from sensor frequency. The calculation includes information about damping, shedding frequency, K-factor, service type, pipe ID, and diagnostics.

Resource Block

The resource block contains physical transmitter information, including available memory, manufacturer identification, device type, software tag, and unique identification.

Backup Link Active Scheduler (LAS)

The transmitter is classified as a device link master. A device link master can function as a Link Active Scheduler (LAS) if the current link master device fails or is removed from the segment.

The host or other configuration tool is used to download the schedule for the application to the link master device. In the absence of a primary link master, the transmitter will claim the LAS and provide permanent control for the H1 segment.

Diagnostics

The transmitter automatically performs continuous self-diagnostics. The user can perform on-line testing of the transmitter digital signal. Advanced simulation diagnostics are available. This enables remote verification of the electronics via a flow signal generator built into the electronics. The sensor strength value can be used to view the process flow signal and provide information regarding filter settings.

Analog Input

The AI function block processes the measurement and makes it available to other function blocks. The AI function block also allows filtering, alarming, and engineering unit changes.

The 8732E Transmitter with FOUNDATION fieldbus comes standard with one AI function block for flow.

Arithmetic Block

Provides pre-defined application-based equations including flow with partial density compensation, electronic remote seals, hydrostatic tank gauging, ratio control and others.

Proportional/Integral/Derivative

The optional PID function block provides a sophisticated implementation of the universal PID algorithm. The PID function block features input for feed forward control, alarms on the process variable, and control deviation. The PID type (series or Instrument Society of America [ISA]) is user-selectable on the derivative filter.

Integrator

The standard integrator block is available for totalization of flow.

Reverse Flow

Detects and reports reverse flow

Software Lockout

A write-lock switch and software lockout are provided in the resource function block.

Turn-on Time

5 minutes to rated accuracy from power up; 10 seconds from power interruption.

Start-up Time

50 ms from zero flow.

Low Flow Cutoff

Adjustable between 0.01 and 38.37 ft/s (0.003 and 11.7 m/s). Below selected value, output is driven to the zero flow rate signal level.

Overrange Capability

Signal output will remain linear until 110% of upper range value or 44 ft/s (13 m/s). The signal output will remain constant above these values. Out of range message displayed on local display and field communicator.

Damping

Adjustable between 0 and 256 seconds.

Sensor Compensation

Rosemount sensors are flow-calibrated and assigned a calibration factor at the factory. The calibration factor is entered into the transmitter, enabling interchangeability of sensors without calculations or a compromise in standard accuracy.

8732E transmitters and other manufacturers' sensors can be calibrated at known process conditions or at the Rosemount NIST-Traceable Flow Facility. Transmitters calibrated on site require a two-step procedure to match a known flow rate. This procedure can be found in the Operations Manual 00809-0100-4663.

Diagnostics

Basic
Self test
Transmitter faults
Tunable empty pipe
Reverse flow
Coil circuit fault
Electronics temperature

Advanced (D01 Suite)
Ground/wiring fault
High process noise

Advanced (D02 Suite)
8714i Meter Verification

Performance Specifications

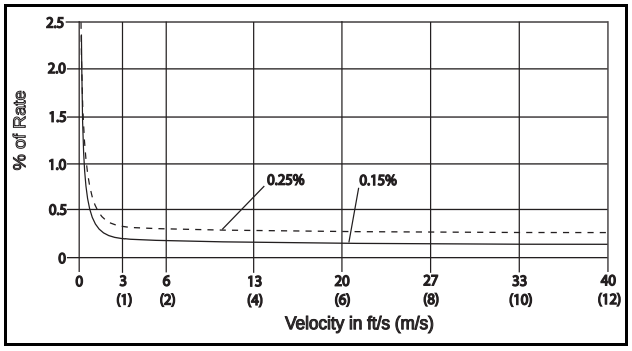
(System specifications are given using the frequency output and with the unit at reference conditions.)

Accuracy

Includes the combined effects of linearity, hysteresis, repeatability, and calibration uncertainty.

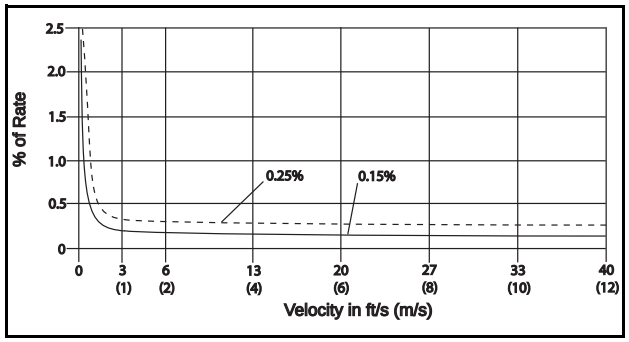
Rosemount 8732E with 8705/8707 Sensor:
Standard system accuracy is ±0.25% of rate ±1.0 mm/sec from 0.04 to 6 ft/s (0.01 to 2 m/s); above 6 ft/s (2 m/s), the system has an accuracy of ±0.25% of rate ±1.5 mm/sec.

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.(1)



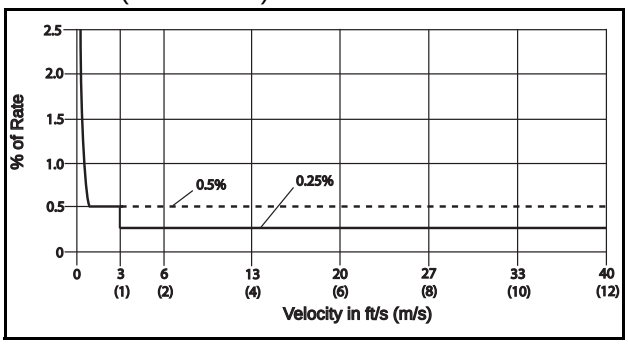
Rosemount 8732E with 8711 Sensor:
Standard system accuracy is ±0.25% of rate ±2.0 mm/sec from 0.04 to 39 ft/s (0.01 to 12 m/s).

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.



Rosemount 8732E with 8721 Sensor:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Optional high accuracy is ±0.25% of rate from 3 to 39 ft/s (1 to 12 m/s).



Rosemount 8732E with Legacy 8705 Sensors:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Rosemount 8732E with Legacy 8711 Sensors:
Standard system accuracy is ±0.5% of rate from 3 to 39 ft/s (1 to 12 m/s); between 0.04 and 3.0 ft/s (0.01 and 1 m/s), the system has an accuracy of ±0.015 ft/s (0.005 m/s).

Rosemount 8732E with Other Manufacturers' Sensors:
When calibrated in the Rosemount Flow Facility, system accuracies as good as 0.5% of rate can be attained.

There is no accuracy specification for other manufacturers' sensors calibrated in the process line.

Vibration Effect

IEC 60770-1

Repeatability

±0.1% of reading

Stability

±0.1% of rate over six months

Ambient Temperature Effect

±0.25% change over operating temperature range

(1) For Sensor sizes greater than 12 in. (300 mm) the high accuracy is ±0.25% of rate from 3 to 39 ft/sec (1 to 12 m/sec).

EMC Compliance

EN61326-1 : 2006 (Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus.

Physical Specifications

Materials of Construction

Housing
Low copper aluminum, Type 4X and IEC 60529 IP66

Paint
Polyurethane

Cover Gasket
Rubber

Electrical Connections

Two $^{1}/_{2}$–14 NPT connections provided on the transmitter housing (optional third connection available). PG13.5 and CM20 adapters are available. Screw terminals provided for all connections. Power wiring connected to transmitter only. Integrally mounted transmitters are factory wired to the sensor.

Transmitter Weight

Approximately 7 pounds (3.2 kg). Add 1 pound (0.5 kg) for Option Code M5.

Rosemount 8712E Transmitter Specifications

Functional Specifications

Sensor Compatibility

Compatible with Rosemount 8705, 8711, 8721, and 570TM sensors. Compatible with Rosemount 8707 sensor with D2 Dual calibration option. Compatible with AC and DC powered sensors of other manufacturers.

Sensor Coil Resistance

350 Ω maximum

Transmitter Coil Drive Current

500 mA

Flow Rate Range

Capable of processing signals from fluids that are traveling between 0.01 and 39 ft/s (0 to 12 m/s) for both forward and reverse flow in all sensor sizes. Full scale continuously adjustable between –39 and 39 ft/s (–12 to 12 m/s).

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for Rosemount 8712E. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

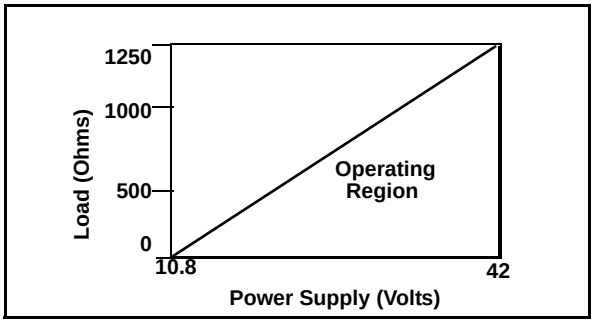
Power Supply

90-250 V AC, 50–60 Hz or 12–42 V DC

DC Load Limitations (Analog Output)

Maximum loop resistance is determined by the voltage level of the external power supply, as described by:

FIGURE 8. DC Load Limitations



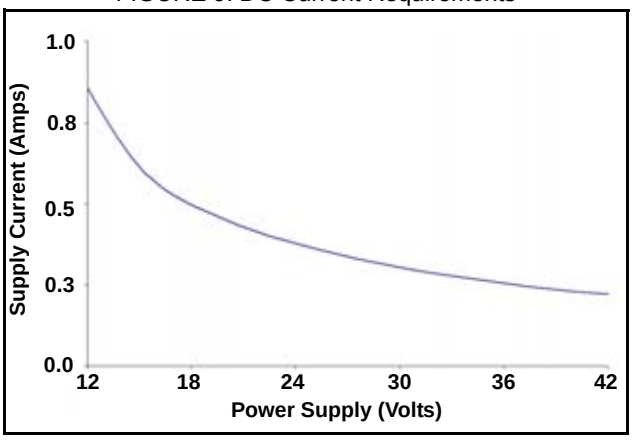
R_{max} = $41.7(V_{ps} – 10.8)$
V_{ps} = Power Supply Voltage (Volts)
R_{max} = Maximum Loop Resistance (Ohms)

NOTE
HART Communication requires a minimum loop resistance of 250 ohms.

Supply Current Requirements

Units powered by 12-42 V DC power supply may draw up to 1 amp of current steady state.

FIGURE 9. DC Current Requirements



Power Consumption

10 watts maximum

Ambient Temperature Limits

Operating
-20 to 140 °F (-29 to 60 °C) with local operator interface

-40 to 165 °F (-40 to 74 °C) without local operator interface

Storage
–40 to 176 °F (–40 to 80 °C)

Humidity Limits

0–100% RH to 120 °F (49 °C), decreases linearly to 10% RH at 130 °F (54 °C)

Enclosure Rating

Type 4X, IP66

Output Signals

Analog Output Adjustment(1)
4–20 mA, switch-selectable as internally or externally powered 5 to 24 V DC; 0 to 1000 Ω load.

Engineering units—lower and upper range values are user-selectable.

Output automatically scaled to provide 4 mA at lower range value and 20 mA at upper range value. Full scale continuously adjustable between -39 and 39 ft/s (-12 to 12 m/sec), 1 ft/s (0.3 m/s) minimum span.

HART Communications, digital flow signal, superimposed on 4–20 mA signal, available for control system interface. 250 Ωrequired for HART communications.

Scalable Frequency Adjustment(1)
0-10,000 Hz, switch-selectable as internally or externally powered 5 to 24 V DC, transistor switch closure up to 2 W for frequencies up to 4,000 Hz and 5 V DC at 0.1 W at maximum frequency of 10,000 Hz. Pulse value can be set to equal desired volume in selected engineering units. Pulse width adjustable from 1.5 to 500 msec, below 1.5 msec pulse width automatically switches to 50% duty cycle. Local operator interface automatically calculates and displays maximum allowable output frequency.

Totalizer
Non-volatile totalizer for net, gross, forward and reverse totals.

Optional Digital Output Function (AX option)

Externally powered at 5 to 24 V DC, transistor switch closure up to 3 W to indicate either:

Reverse Flow:
Activates switch closure output when reverse flow is detected. The reverse flow rate is displayed.

Zero Flow:
Activates switch closure output when flow goes to 0 ft/s.

Empty Pipe:
Activates switch closure output when an empty pipe condition is detected.

Transmitter Faults:
Activates switch closure output when a transmitter fault is detected.

Flow Limits (2):
Activates switch closure output when the transmitter measures a flow rate that meets the conditions established for this alert. There are two independent flow limit alerts that can be configured as discrete outputs.

Totalizer Limit:
Activates switch closure output when the transmitter measures a total flow that meets the conditions established for this alert.

Diagnostic Status:
Activates switch closure output when the transmitter detects a condition that meets the configured criteria of this output.

(1) For transmitters with intrinsically safe outputs, power must be supplied externally.

Optional Digital Input Function (AX option)

Externally powered at 5 to 24 V DC, transistor switch closure up to 3 W to indicate either:

Net Total Reset:
Resets the net totalizer value to zero.

Positive Zero Return (PZR):
Forces outputs of the transmitter to zero flow. Activated by applying a contact closure.

Security Lockout

Security lockout jumper on the electronics board can be set to deactivate all LOI and HART-based communicator functions to protect configuration variables from unwanted or accidental change.

Output Testing

Analog Output Test
Transmitter may be commanded to supply a specified current between 3.75 and 23.25 mA

Pulse Output Test
Transmitter may be commanded to supply a specified frequency between 1 pulse/ day and 10,000 Hz

Turn-on Time

5 minutes to rated accuracy from power up, 5 seconds from power interruption

Start-up Time

0.2 seconds from zero flow

Low Flow Cutoff

Adjustable between 0.01 and 38.37 ft/s (0.003 and 11.7 m/s). Below selected value, output is driven to the zero flow rate signal level.

Overrange Capability

Signal output will remain linear until 110% of upper range value. The signal output will remain constant above these values. Out of range message displayed on LOI and the HART Communicator.

Damping

Adjustable between 0.0 and 256 seconds

Sensor Compensation

Rosemount sensors are flow-calibrated and assigned a calibration factor at the factory. The calibration factor is entered into the transmitter, enabling interchangeability of sensors without calculations or a compromise in accuracy.

8712E transmitters and other manufacturers' sensors can be calibrated at known process conditions or at the Rosemount NIST-Traceable Flow Facility. Transmitters calibrated on site require a two-step procedure to match a known flow rate. This procedure can be found in the Operations Manual 00809-0100-4664.

Diagnostics

Basic
Self test
Transmitter faults
Analog output test
Pulse output test
Tunable empty pipe
Reverse flow
Coil circuit fault
Electronics temperature

Advanced (DA1 Suite)
Ground/wiring fault
High process noise

Advanced (DA2 Suite)
8714i Meter Verification

Performance Specifications

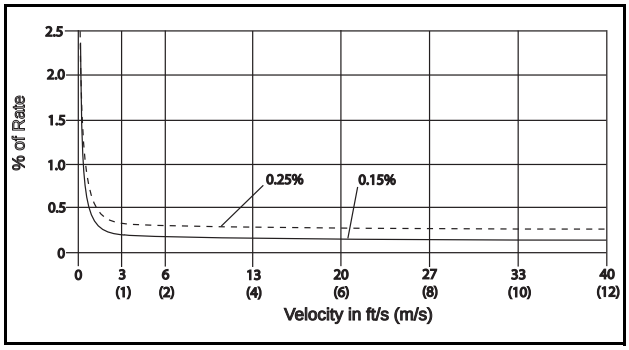
(System specifications are given using the frequency output and with the unit at referenced conditions.)

Accuracy

Includes the combined effects of linearity, hysteresis, repeatability, and calibration uncertainty.

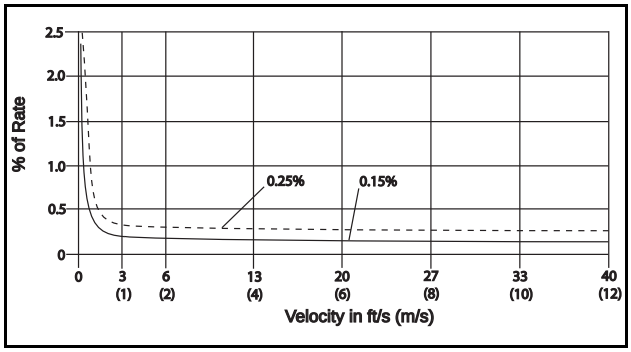
Rosemount 8712E with 8705/8707 Sensor:
Standard system accuracy is ±0.25% of rate ±1.0 mm/sec from 0.04 to 6 ft/s (0.01 to 2 m/s); above 6 ft/s (2 m/s), the system has an accuracy of ±0.25% of rate ±1.5 mm/sec.

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.(1)



Rosemount 8712E with 8711 Sensor:
Standard system accuracy is ±0.25% of rate ±2.0 mm/sec from 0.04 to 39 ft/s (0.01 to 12 m/s).

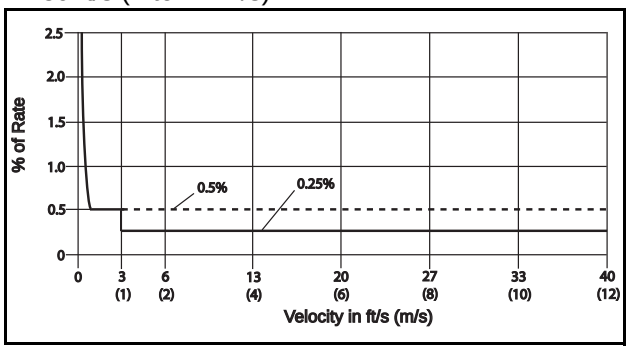
Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.



(1) *For sensor sizes greater than 12 in. (300 mm) the high accuracy is ±0.25% of rate from 3 to 40 ft/sec (1 to 12 m/sec).*

Rosemount 8712E with 8721 Sensor:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Optional high accuracy is ±0.25% of rate from 3 to 39 ft/s (1 to 12 m/s).



Rosemount 8712E with Legacy 8705 Sensors:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Rosemount 8712E with Legacy 8711 Sensors:
Standard system accuracy is ±0.5% of rate from 3 to 39 ft/s (1 to 12 m/s); between 0.04 and 3.0 ft/s (0.01 and 1 m/s), the system has an accuracy of ±0.015 ft/s (0.005 m/s).

Rosemount 8712E with Other Manufacturers' Sensors:
When calibrated in the Rosemount Flow Facility, system accuracies as good as 0.5% of rate can be attained.

There is no accuracy specification for other manufacturers' sensors calibrated in the process line.

Analog Output Effect

Analog output has the same accuracy as frequency output plus an additional 0.05% of span.

Vibration Effect

±0.1% of span per SAMA PMC 31.1, Level 2

Repeatability

±0.1% of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

±0.1% of rate over six months

Ambient Temperature Effect

0.25% over operating temperature range

EMC Compliance

EN61326-1 : 2006 (Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus.

Physical Specifications

Materials of Construction

Housing
Low-copper aluminum, Type 4X and IEC 60529 IP66

Paint
Polyurethane

Cover Gasket
Rubber

Electrical Connections

Four 1/2–14 NPT connections provided on the base of the transmitter. Screw terminals provided for all of the connections. Power wiring connected to the transmitter only. Remote mounted transmitters require only a single conduit connection to the sensor.

NOTE
If 3/4 - 14 NPT connections are required, 1/2 to 3/4 in. adapter kits are available for order.

Line Power Fuses

90–250 V ac systems
2 amp, Quick-acting Bussman AGCI or equivalent

12–42 V DC systems
3 amp, Quick-acting Bussman AGCI or equivalent

Transmitter Weight

Transmitter approximately 9 lb (4 kg). Add 1 lb (0.5 kg) for local operator interface.

Rosemount 8712D/H Transmitter Specifications

Functional Specifications

Sensor Compatibility

8712D: Compatible with Rosemount 8705, 8711, 8721, and 570TM sensors. Compatible with Rosemount 8707 sensor with D2 Dual calibration option. Compatible with AC and DC powered sensors of other manufacturers.

8712H: Only compatible with 8707 High-Signal sensor.

Sensor Coil Resistance

Rosemount 8712D: 350 Ω maximum

Rosemount 8712H: 12 Ω maximum

Transmitter Coil Drive Current

8712D: 500 mA

8712H: 5 A

Flow Rate Range

8712D: Capable of processing signals from fluids that are traveling between 0.01 and 39 ft/s (0 to 12 m/s) for both forward and reverse flow in all sensor sizes. Full scale continuously adjustable between –39 and 39 ft/s (–12 to 12 m/s).

8712H: Capable of processing signals from fluids that are traveling between 0.04 and 30 ft/s (0.01 to 10 m/s) for both forward and reverse flow in all sensor sizes. Full scale continuously adjustable between –30 and 30 ft/s (–10 to 10 m/s).

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for Rosemount 8712D. Process liquid must have a conductivity of 50 microsiemens/cm (50 micromhos/cm) for the 8712H. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Power Supply

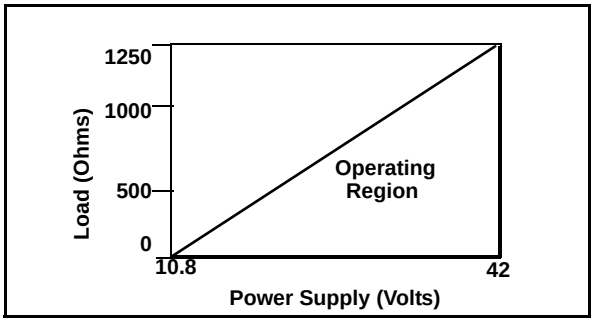
Rosemount 8712D: 90-250 V AC, 50–60 Hz or 12–42 V DC

Rosemount 8712H: 115 V AC, 50–60 Hz

DC Load Limitations (Analog Output)

Maximum loop resistance is determined by the voltage level of the external power supply, as described by:

FIGURE 10. DC Load Limitations



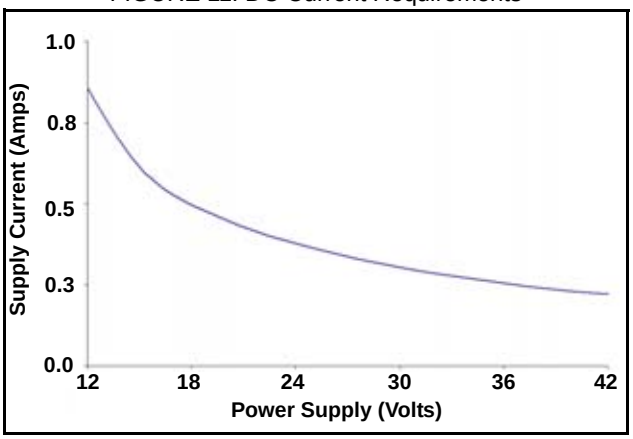
R_{max} = $41.7(V_{ps} – 10.8)$
V_{ps} = Power Supply Voltage (Volts)
R_{max} = Maximum Loop Resistance (Ohms)

NOTE
HART Communication requires a minimum loop resistance of 250 ohms.

Supply Current Requirements (8712D)

Units powered by 12-42 V DC power supply may draw up to 1 amp of current steady state.

FIGURE 11. DC Current Requirements



Power Consumption

8712D: 10 watts maximum

8712H: 300 watts maximum

Ambient Temperature Limits

Operating

8712D: –20 to 140°F (–29 to 60 °C) with local operator interface

–40 to 165°F (–40 to 74°C) without local operator interface

8712H: –20 to 130 °F (–29 to 54 °C) with or without local operator interface

Storage

–40 to 176 °F (–40 to 80 °C)

Humidity Limits

0–100% RH at 120 °F (49 °C), decreases linearly to 10% RH at 130 °F (54 °C)

Enclosure Ratings

Type 4X, IP66

Output Signals

Analog Output Adjustment

4–20 mA, switch-selectable as internally or externally powered 5 to 24 V DC; 0 to 1000 Ω load.

Engineering units—lower and upper range values are user-selectable.

Output automatically scaled to provide 4 mA at lower range value and 20 mA at upper range value.

8712D:

Full scale continuously adjustable between -39 and 39 ft/s (-12 to 12 m/sec), 1 ft/s (0.3 m/s) minimum span.

8712H:

Full scale continuously adjustable between -30 and 30 ft/s (-10 to 10 m/sec), 1 ft/s (0.3 m/s) minimum span.

HART Communications, digital flow signal, superimposed on 4–20 mA signal, available for control system interface. 250 Ω required for HART communications.

Scalable Frequency Adjustment

8712D:

0-10,000Hz, externally powered at 5 to 24 V DC, transistor switch closure supports power loads up to 2W for frequencies up to 4000Hz, and 5 V DC at 0.1 W at maximum frequency of 10,000 Hz. Pulse can be set to equal desired velocity or volume in user selectable engineering units. Pulse width is adjustable from 1.5 to 500 msec, below 1.5 msec pulse width automatically switches to 50% duty cycle.

8712H:

0-1000 Hz, externally powered at 5 to 24 V DC, transistor switch closure up to 5.75 W. Pulse value can be set to equal desired volume in selected engineering units. Pulse width adjustable from 0.5 to 100 m/s. Local operator interface automatically calculates and displays maximum allowable output frequency.

Auxiliary Output Function

Externally powered at 5 to 24 V DC, transistor switch closure up to 3 W to indicate either:

Reverse Flow:

Activates switch closure output when reverse flow is detected. The reverse flow rate is displayed.

Zero Flow:

Activates switch closure output when flow goes to 0 ft/s.

Positive Zero Return (PZR)[(1)]
Forces outputs of the transmitter to the zero flow rate signal level. Activated by applying a contact closure.

Security Lockout

Security lockout jumper on the electronics board can be set to deactivate all LOI and HART-based communicator functions to protect configuration variables from unwanted or accidental change.

Output Testing

Analog Output Test
Transmitter may be commanded to supply a specified current between 3.75 and 23.25 mA

Pulse Output Test

8712D:
Transmitter may be commanded to supply a specified frequency between 1 pulse/ day and 10,000 Hz

8712H:
Transmitter may be commanded to supply a specified frequency between 1 and 1000 Hz

Turn-on Time

8712D:
5 minutes to rated accuracy from power up, 5 seconds from power interruption

8712H:
30 minutes to rated accuracy from power up, 5 seconds from power interruption

Start-up Time

0.2 seconds from zero flow

Low Flow Cutoff

Adjustable between 0.01 and 38.37 ft/s (0.003 and 11.7 m/s). Below selected value, output is driven to the zero flow rate signal level.

Overrange Capability

Signal output will remain linear until 110% of upper range value. The signal output will remain constant above these values. Out of range message displayed on LOI and the HART Communicator.

Damping

8712D:

Adjustable between 0.0 and 256 seconds

8712H:

Adjustable between 0.2 and 256 seconds

Sensor Compensation

Rosemount sensors are flow-calibrated and assigned a calibration factor at the factory. The calibration factor is entered into the transmitter, enabling interchangeability of sensors without calculations or a compromise in accuracy.

8712D transmitters and other manufacturers' sensors can be calibrated at known process conditions or at the Rosemount NIST-Traceable Flow Facility. Transmitters calibrated on site require a two-step procedure to match a known flow rate. This procedure can be found in the Operations Manual 00809-0100-4661.

Diagnostics (8712D only)

Basic
Self test
Transmitter faults
Analog output test
Pulse output test
Tunable empty pipe
Reverse flow
Coil circuit fault
Electronics temperature

Advanced (DA1 Suite)
Ground/wiring fault
High process noise

(1) PZR is internally powered on the 8712H transmitter.

Performance Specifications

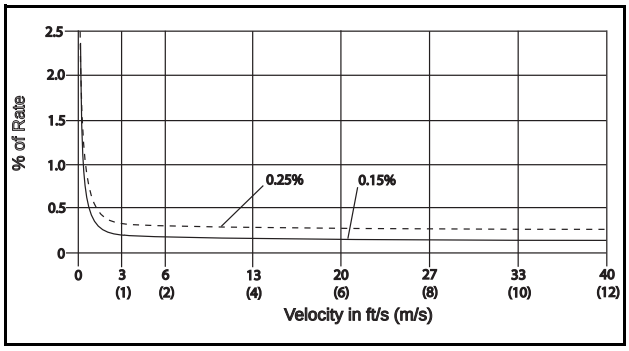
(System specifications are given using the frequency output and with the unit at referenced conditions.)

Accuracy

Includes the combined effects of linearity, hysteresis, repeatability, and calibration uncertainty.

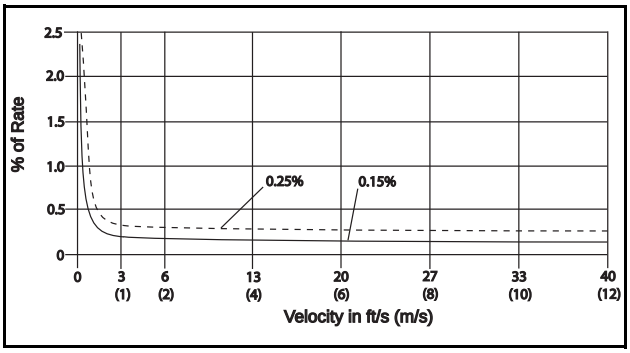
Rosemount 8712D with 8705/8707 Sensor:
Standard system accuracy is ±0.25% of rate ±1.0 mm/sec from 0.04 to 6 ft/s (0.01 to 2 m/s); above 6 ft/s (2 m/s), the system has an accuracy of ±0.25% of rate ±1.5 mm/sec.

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.(1)



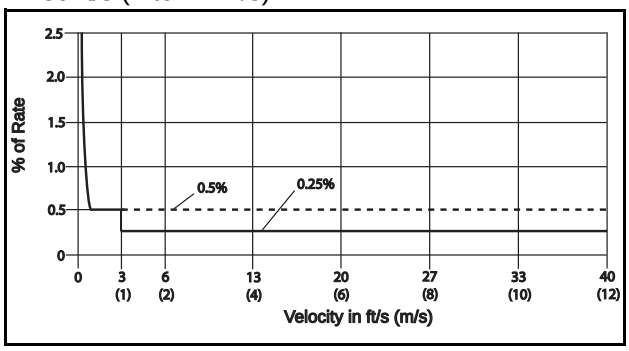
Rosemount 8712D with 8711 Sensor:
Standard system accuracy is ±0.25% of rate ±2.0 mm/sec from 0.04 to 39 ft/s (0.01 to 12 m/s).

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.



Rosemount 8712D with 8721 Sensor:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Optional high accuracy is ±0.25% of rate from 3 to 39 ft/s (1 to 12 m/s).



Rosemount 8712D with Legacy 8705 Sensors:
Standard system accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Rosemount 8712D with Legacy 8711 Sensors:
Standard system accuracy is ±0.5% of rate from 3 to 39 ft/s (1 to 12 m/s); between 0.04 and 3.0 ft/s (0.01 and 1 m/s), the system has an accuracy of ±0.015 ft/s (0.005 m/s).

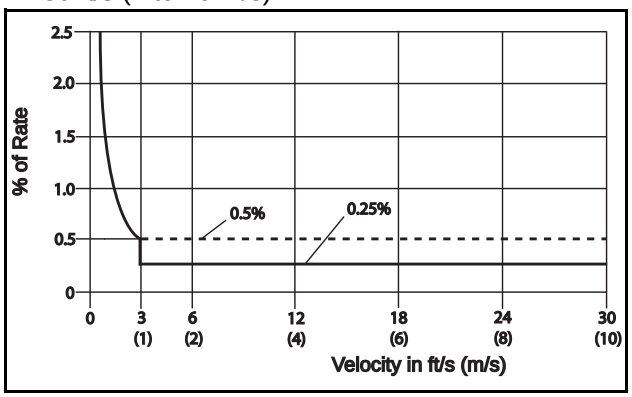
Rosemount 8712D with Other Manufacturers' Sensors:
When calibrated in the Rosemount Flow Facility, system accuracies as good as 0.5% of rate can be attained.

There is no accuracy specification for other manufacturers' sensors calibrated in the process line.

(1) For Sensor sizes greater than 12 in. (300 mm) the high accuracy is ±0.25% of rate from 3 to 40 ft/sec (1 to 12 m/sec).

Rosemount 8712H with 8707 Sensor
System accuracy is ±0.5% of rate from 3 to 30 ft/s (1 to 10 m/s); between 0.04 and 3.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.015 ft/s (0.005 m/s).

Optional high accuracy is ±0.25% of rate from 3 to 30 ft/s (1 to 10 m/s).



Analog Output Effect

8712D:
Analog output has the same accuracy as frequency output plus an additional 0.05% of span.

8712H:
Analog output has the same accuracy as frequency output plus an additional 0.1% of span.

Vibration Effect

±0.1% of span per SAMA PMC 31.1, Level 2

Repeatability

±0.1% of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

±0.1% of rate over six months

Ambient Temperature Effect

8712D:
0.25% over operating temperature range

8712H:
±1% per 100 °F (37.8 °C)

EMC Compliance

EN61326-1 : 2006 (Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus.

Physical Specifications

Materials of Construction

Housing
Low-copper aluminum, Type 4X and IEC 60529 IP66

Paint
Polyurethane

Cover Gasket
Rubber

Electrical Connections

Four $^{1}/_{2}$–14 NPT connections provided on the base of the transmitter. Screw terminals provided for all of the connections. Power wiring connected to the transmitter only. Remote mounted transmitters require only a single conduit connection to the sensor.

NOTE
If $^{3}/_{4}$ - 14 NPT connections are required, $^{1}/_{2}$ to $^{3}/_{4}$ in. adapter kits are available for order.

Line Power Fuses

90–250 V ac systems (8712D)
2 amp, Quick-acting Bussman AGCI or equivalent

12–42 V DC systems (8712D)
3 amp, Quick-acting Bussman AGCI or equivalent

115 V ac systems (8712H)
5 amp, Quick-acting Bussman AGCI or equivalent (Rosemount 8712H only).

Transmitter Weight

Transmitter approximately 9 lb (4 kg). Add 1 lb (0.5 kg) for local operator interface.

Rosemount 8705 and 8707 High-Signal Flanged Sensor Specifications

Functional Specifications

Service

Conductive liquids and slurries

Line Sizes

1/2–36 in. (15–900 mm) for Rosemount 8705

3–36 in. (80–600 mm) for Rosemount 8707

Interchangeability

Rosemount 8705 Sensors are interchangeable with 8732, 8712E, and 8712D Transmitters. Rosemount 8707 High-Signal Sensors are interchangeable with 8732, 8712E, 8712D, and 8712H High-Signal Transmitters. System accuracy is maintained regardless of line size or optional features. Each sensor nameplate has a sixteen-digit calibration number that can be entered into a transmitter through the Local Operator Interface (LOI) or the HART Communicator. In a FOUNDATION fieldbus environment, the 8732E can be configured using the DeltaV™ fieldbus configuration tool or another FOUNDATION fieldbus configuration device. No further calibration is necessary.

Upper Range Limit

39 ft/s (12 m/s)

Process Temperature Limits

PTFE Lining
–20 to 350 °F (–29 to 177 °C)

ETFE Lining
–20 to 300 °F (–29 to 149 °C)

PFA Lining
-20 to 350 °F (-29 to 177°C)

Polyurethane Lining
0 to 140 °F (–18 to 60 °C)

Neoprene Lining
0 to 176 °F (–18 to 80 °C)

Linatex Lining
0 to 158 °F (–18 to 70°C)

Ambient Temperature Limits

–30 to 150 °F (–34 to 65 °C)

Pressure Limits

See Table 4 and Table 6

Vacuum Limits

PTFE Lining
Full vacuum to 350 °F (177 °C) through 4-in. (100 mm) line sizes. Consult factory for vacuum applications with line sizes of 6 inches (150 mm) or larger.

All Other Standard Sensor Lining Materials
Full vacuum to maximum material temperature limits for all available line sizes.

Submergence Protection

IP68. Continuous submergence to 30 ft. (10 m). Requires conduit entries of the sensor remote junction box be properly sealed to prevent water ingress. This requires the user to install sealed IP68 approved cable glands, conduit connections, or conduit plugs.

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8705. Process liquid must have a conductivity of 50 microsiemens/cm (50 micromhos/cm) for 8707 when used with 8712H, 5 microsiemens/cm when used with other transmitters. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

TABLE 4. Temperature vs. Pressure Limits[1]

Sensor Temperature vs. Pressure Limits for ASME B16.5 Class Flanges (1/2- to 36-in. line sizes) [2]					
		Pressure			
Flange Material	**Flange Rating**	**@ -20 to 100 °F (-29 to 38 °C)**	**@ 200 °F (93 °C)**	**@ 300 °F (149 °C)**	**@ 350 °F (177 °C)**
Carbon Steel	Class 150	285 psi	260 psi	230 psi	215 psi
	Class 300	740 psi	675 psi	655 psi	645 psi
	Class 600 [3]	1000 psi	800 psi	700 psi	650 psi
	Class 600 [4]	1480 psi	1350 psi	1315 psi	1292 psi
	Class 900	2220 psi	2025 psi	1970 psi	1935 psi
	Class 1500	3705 psi	3375 psi	3280 psi	3225 psi
	Class 2500	6170 psi	5625 psi	5470 psi	5375 psi
304 Stainless Steel	Class 150	275 psi	235 psi	205 psi	190 psi
	Class 300	720 psi	600 psi	530 psi	500 psi
	Class 600 [5]	1000 psi	800 psi	700 psi	650 psi
	Class 600 [6]	1440 psi	1200 psi	1055 psi	997 psi
	Class 900	2160 psi	1800 psi	1585 psi	1497 psi
	Class 1500	3600 psi	3000 psi	2640 psi	2495 psi
	Class 2500	6000 psi	5000 psi	4400 psi	4160 psi

(1) Liner temperature limits must also be considered. Polyurethane, Linatex, and Neoprene have temperature limits of 140 °F (60 °C), 158 °F (70 °C), and 176°F (80 °C), respectively.

(2) 30- and 36-in. AWWA C207 Table 5 Class D rated to 150 psi at atmospheric temperature.

(3) Option Code C6

(4) Option Code C7

(5) Option Code S6

(6) Option Code S7

TABLE 5. Temperature vs. Pressure Limits [1]

Sensor Temperature vs. Pressure Limits for AS2129 Table D and E Flanges (4- to 24-in. line sizes)					
		Pressure			
Flange Material	**Flange Rating**	**@ -200 to 50 °F (-320 to 122 °C)**	**@ 100 °F (212 °C)**	**@ 150°F (302 °C)**	**@ 200 °F (392 °C)**
Carbon Steel	D	101.6 psi	101.6 psi	101.6 psi	94.3 psi
	E	203.1 psi	203.1 psi	203.1 psi	188.6 psi

(1) Liner temperature limits must also be considered. Polyurethane, Linatex, and Neoprene have temperature limits of 140 °F (60 °C), 158 °F (70 °C), and 176°F (80 °C), respectively.

TABLE 6. Temperature vs. Pressure Limits [1]

Sensor Temperature vs. Pressure Limits for DIN Flanges (15 to 600 mm line sizes)					
		Pressure			
Flange Material	**Flange Rating**	**@ -196 to 50 °C (-320 to 122 °F)**	**@ 100 °C (212 °F)**	**@ 150°C (302 °F)**	**@ 175°C (347 °F)**
Carbon Steel	PN 10	10 bar	10 bar	9.7 bar	9.5 bar
	PN 16	16 bar	16 bar	15.6 bar	15.3 bar
	PN 25	25 bar	25 bar	24.4 bar	24.0 bar
	PN 40	40 bar	40 bar	39.1 bar	38.5 bar
304 Stainless Steel	PN 10	9.1 bar	7.5 bar	6.8 bar	6.5 bar
	PN 16	14.7 bar	12.1 bar	11.0 bar	10.6 bar
	PN 25	23 bar	18.9 bar	17.2 bar	16.6 bar
	PN 40	36.8 bar	30.3 bar	27.5 bar	26.5 bar

(1) Liner temperature limits must also be considered. Polyurethane, Linatex, and Neoprene have temperature limits of 140°F, 158°F, and 176°F, respectively.

Performance Specifications

(System specifications are given using the frequency output and with the unit at referenced conditions.)

Accuracy

Includes the combined effects of linearity, hysteresis, repeatability, and calibration uncertainty.

Rosemount 8705/8707 with 8732 and 8712D/E:
Standard system accuracy is ±0.25% of rate ±1.0 mm/sec from 0.04 to 6 ft/s (0.01 to 2 m/s); above 6 ft/s (2 m/s), the system has an accuracy of ±0.25% of rate ±1.5 mm/sec.

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.(1)

Rosemount 8707 with 8712H:
System accuracy is ±0.5% of rate from 3 to 30 ft/s (1 to 10 m/s); between 0.04 and 3.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ±0.005 ft/s (0.0015 m/s).

Vibration Effect

IEC 60770-1

Mounting Position Effect

None when installed to ensure sensor remains full

Physical Specifications

Non-Wetted Materials

Sensor
AISI Type 304 SST (optional 316L SST)

Flanges
Carbon steel, AISI Type 304/304L SST, or Type 316/316L SST

Housing
Welded steel

Paint
Polyurethane

Process Wetted Materials

Lining
PFA, PTFE, ETFE, polyurethane, neoprene, Linatex

Electrodes
316L SST, Nickel Alloy 276 (UNS N10276), tantalum, 80% platinum-20% iridium, titanium

Process Connections

ASME B16.5 (ANSI) Class 150, Class 300, Class 600, Class 900, Class 1500, or Class 2500
0.5- to 36-in. (Class 150)

0.5- to 30-in. (Class 300)

0.5- to 24-in. (Class 600)(2)

1- to 12-in. (Class 900)(3)

1.5- to 12-in. (Class 1500)(3)

1.5- to 12-in. (Class 2500)(3)

AWWA C207 Table 3 Class D
30 and 36 in.

(1) For Sensor sizes greater than 12 in. (300 mm) the high accuracy is ±0.25% of rate from 3 to 40 ft/sec (1 to 12 m/sec).

(2) For PTFE and ETFE, maximum working pressure is derated to 1000 psig.

(3) For Class 900 and higher flange ratings,.liner selection is limited to resilient liners.

EN 1092 (DIN) PN 10, 16, 25, and 40
PN10: Not available for flange sizes from 15 to 150 mm

PN16: Not available for flange sizes from 15 to 80 mm

PN 25: Not available for flange sizes from 15 to 150 mm

PN40: Available for all flange sizes

AS 2129 Table D and E
0.5 to 36 in.

Electrical Connections

Two $^{1}/_{2}$–14 NPT connections with number 8 screw terminals are provided in the terminal enclosure for electrical wiring.

Grounding Electrode

An optional grounding electrode can be installed similarly to the measurement electrodes through the sensor lining on 8705 sensors. It is available in all electrode materials.

Grounding Rings

Optional grounding rings can be installed between the flange and the sensor face on both ends of the sensor. Single ground rings can be installed on either end of the sensor. They have an I.D. slightly smaller than the sensor I.D. and an external tab to attach ground wiring. Grounding rings are available in 316L SST, Nickel Alloy 276 (UNS N10276), titanium, and tantalum.

Lining Protectors

Optional lining protectors can be installed between the flange and the sensor face on both ends of the sensor. The leading edge of lining material is protected by the lining protector; lining protectors cannot be removed once they are installed. Lining protectors are available in 316L SST, Nickel Alloy 276 (UNS N10276), and titanium.

Dimensions

See Figure 27

Weight

See Table 7 and Table 8

TABLE 7. Sensor Weight (ASME)

Nominal Line Size[(1)] Inches (mm)	Sensor Flange Rating		Sensor Weight lb (kg)
	ASME B16.5 (ANSI)	EN 1092-1 (DIN)	
½ (15) ½ (15)	150 300	PN 40	20 (9) 22 (10)
1 (25) 1 (25)	150 300	PN 40	20 (9) 22 (10)
1½ (40) 1½ (40)	150 300	PN 40	22 (10) 24 (11)
2 (50) 2 (50)	150 300	PN 40	26 (12) 28 (13)
3 (80) 3 (80)	150 300	PN 40	40 (18) 47 (21)
4 (100) 4 (100)	150 300	PN 16	48 (22) 65 (30)
6 (150) 6 (150)	150 300	PN 16	81 (37) 93 (42)
8 (200) 8 (200)	150 300	PN 10	110 (50) 162 (74)
10 (250) 10 (250)	150 300	PN 10	220 (98) 300 (136)
12 (300) 12 (300)	150 300	PN 10	330 (150) 435 (197)
14 (350) 16 (400)	150 150	PN 10 PN 10	370 (168) 500 (227)
18 (450) 20 (500)	150 150	PN 10 PN 10	600 (272) 680 (308)
24 (600)	150	PN 10	1,000 (454)
30 (750) 36 (900)	125 125	- -	1,747 (792) 1,975 (898)

(1) 30- and 36-in. AWWA C207 Table 3 Class D rated to 150 psi at atmospheric temperature.

TABLE 8. Sensor weights (AS2129)

Nominal Line Size Inches (mm)	AS2129	Sensor Weight lb (kg)
4 (100) 4 (100)	D E	33 (15) 37 (17)
6 (150) 6 (150)	D E	66 (30) 71 (32)
8 (200) 8 (200)	D E	86 (39) 88 (40)
10 (250) 10 (250)	D E	187 (85) 201 (91)
12 (300) 12 (300)	D E	273 (124) 284 (129)
14 (350) 14 (350)	D E	293 (133) 317 (144)
16 (400) 16 (400)	D E	386 (175) 430 (195)
18 (450) 18 (450)	D E	516 (234) 569 (258)
20 (500) 20 (500)	D E	569 (258) 626 (284)
24 (600) 24 (600)	D E	855 (388) 974 (442)

Rosemount 8711 Wafer Sensor Specifications

SPECIFICATIONS

Functional Specifications

Service

Conductive liquids and slurries

Line Sizes

0.15 in. through 8 in. (4 through 200 mm)

Interchangeability

Rosemount 8711 Sensors are interchangeable with 8732, 8712D, and 8712E Transmitters. System accuracy is maintained regardless of line size or optional features. Each sensor nameplate has a sixteen-digit calibration number that can be entered into a transmitter through the Local Operator Interface (LOI) or the HART Communicator. In a FOUNDATION fieldbus environment, the 8732E can be configured using the DeltaV fieldbus configuration tool or another FOUNDATION fieldbus configuration device. No further calibration is necessary.

Upper Range Limit

39 ft/s (12 m/s)

Process Temperature Limits

ETFE Lining
-20 to 300 °F (–29 to 149 °C) for 0.5- through 8-in. (15–200 mm) line sizes

PTFE Lining
-20 to 350 °F (-29 to 177 °C)

PFA Lining
-20 to 200 °F (-29 to 93 °C)

Ambient Temperature Limits

–30 to 150 °F (–34 to 65 °C)

Maximum Safe Working Pressure at 100 °F (38 °C)

ETFE Lining
Full vacuum to 740 psi (5.1 MPa) for 0.5- through 8-in.
(15 through 200 mm) sensors

PTFE Lining
Full vacuum through 4-in. (100 mm) line sizes. Consult factory for vacuum applications with line sizes of 6 inches (150 mm) or larger.

PFA Lining
Full vacuum to 285 psi (1.96 MPa) for 0.15- and 0.30-in. (4 and 8 mm) sensors

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8711. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Performance Specifications

(System specifications are given using the frequency output and with the unit at referenced conditions.)

Accuracy

Rosemount 8711 with 8732E and 8712D:
Standard system accuracy is ±0.25% of rate ±2.0 mm/sec from 0.04 to 39 ft/s (0.01 to 12 m/s).

Optional high accuracy is ±0.15% of rate ±1.0 mm/sec from 0.04 to 13 ft/s (0.01 to 4 m/s); above 13 ft/s (4 m/s), the system has an accuracy of ±0.18% of rate.

Vibration Effect

IEC 60770-1

Mounting Position Effect

No effect when installed to ensure sensor remains full

Physical Specifications

Non-Wetted Materials

Sensor
303 SST (ASTM A-743)

Coil Housing
Investment cast steel (ASTM A-27)

Paint
Polyurethane

Process-Wetted Materials

Lining
ETFE, PTFE and PFA

Electrodes
316L SST, Nickel Alloy 276 (UNS N10276), tantalum,
80% platinum—20% iridium, titanium

Process Connections

Mounts between these Flange Configurations
ASME B16.5 (ANSI): Class 150, 300

EN 1092 (DIN): PN 10 and 25

BS: 10 Table D, E, and F

Studs, Nuts, and Washers(1)
ASME B16.5 (ANSI)

0.15- through 1-in. (4 through 25 mm):
316 SST, ASTM A193, Grade B8M, Class 1 threaded mounting studs; ASTM A194, Grade 8M heavy hex nuts; SAE per ANSI B18.2.1, Type A, Series N flat washers.

1.5- through 8-in. (40 through 200 mm):
CS, ASTM A193, Grade B7, Class 1 threaded mounting studs; ASTM A194, Grade 2H heavy hex nuts; SAE per ANSI B18.2.1, Type A, Series N flat washers; all items clear, chromate zinc-plated.

EN 1092 (DIN)

4 through 25 mm (0.15- through 1-in.):
316 SST ASTM A193, Grade B8M Class 1 threaded mounting studs; ASTM A194, Grade 8M, DIN 934 H=D, metric heavy hex nuts; 316 SST, A4, DIN 125 flat washers.

40 through 200 mm (1.5- through 8-in.):
CS, ASTM A193, Grade B7 threaded mounting studs; ASTM A194, Grade 2H, DIN 934 H=D, metric heavy hex nuts; CS, DIN 125 flat washers; all items yellow zinc-plated.

Electrical Connections

Two $^{1}/_{2}$–14 NPT connections with number 8 screw terminals are provided in the terminal enclosure for electrical wiring.

Grounding Electrode

An optional grounding electrode can be installed similarly to the measurement electrodes through the sensor lining. It is available in all electrode materials.

Grounding Rings

Optional grounding rings can be installed between the flange and the sensor face on both ends of the sensor. They have an I.D. slightly smaller than the sensor I.D. and an external tab to attach ground wiring. Grounding rings are available in 316L SST, Nickel Alloy 276 (UNS N10276), titanium, and tantalum.

Dimensions and Weight

See Figure 24, Figure 25, and Table 31

(1) 0.15 and 0.30 in. (4 and 80 mm) sensors mount between $^{1}/_{2}$-in. flange.

Rosemount 8721 Sanitary Sensor Specifications

3-A 28 CERTIFIED HYGIENIC EQUIPMENT DESIGN EHEDG EUROPEAN GROUP TYPE EL DECEMBER 2004

Functional Specifications

Service

Conductive liquids and slurries

Line Sizes

1/2 - 4 in. (15–100 mm)

Sensor Compatibility and Interchangeability

The Rosemount 8721 Sensors are interchangeable with Rosemount 8732, 8712D, and 8712E transmitters. System accuracy is maintained regardless of line size or optional features.

Each sensor nameplate has a sixteen-digit calibration number that can be entered into the transmitter through the Local Operator Interface (LOI) or the HART Communicator. In a FOUNDATION fieldbus environment, the 8732E can be configured using the DeltaV fieldbus configuration tool or another FOUNDATION fieldbus configuration device. No further calibration is necessary.

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Sensor Coil Resistance

5Ω to 10Ω (line size dependent)

Flow Rate Range

Capable of processing signals from fluids that are traveling between 0.04 and 39 ft/s (0.01 to 12 m/s) for both forward and reverse flow in all sensor sizes. Full scale continuously adjustable between –39 and 39 ft/s (–12 to 12 m/s).

Sensor Ambient Temperature Limits

14 to 140 °F (–15 to 60 °C)

Process Temperature Limits

PFA Lining
-20 to 350 °F (-29 to 177 °C)

Pressure Limits

Line Size	Max Working Pressure	CE Mark Max. Working Pressure
1/2 (15)	300 psi (20.7 bar)	300 psi (20.7 bar)
1 (25)	300 psi (20.7 bar)	300 psi (20.7 bar)
1 1/2 (40)	300 psi (20.7 bar)	300 psi (20.7 bar)
2 (50)	300 psi (20.7 bar)	300 psi (20.7 bar)
2 1/2 (65)	300 psi (20.7 bar)	240 psi (16.5 bar)
3 (80)	300 psi (20.7 bar)	198 psi (13.7 bar)
4 (100)	210 psi (14.5 bar)	148 psi (10.2 bar)

Vacuum Limits

Full vacuum at maximum lining material temperature; consult factory.

Submergence Protection (Sensor)

IP68. Continuous submergence to 30 ft. (10 m). Requires conduit entries of the sensor remote junction box be properly sealed to prevent water ingress. This requires the use of sealed IP68 approved cable glands, conduit connections, or conduit plugs.

Performance Specifications

(System specifications are given using the frequency output and with the unit at referenced conditions).

Accuracy

Rosemount 8732, 8712D, or 8712E with 8721 Sensor
System accuracy is ±0.5% of rate from 1 to 39 ft/s (0.3 to 12 m/s); includes combined effects of linearity, hysteresis, repeatability, and calibration uncertainty; between 0.04 and 1.0 ft/s (0.01 and 0.5 m/s), the system has an accuracy of ±0.005 ft/s.

Repeatability

±0.1% of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

±0.1% of rate over six months

Ambient Temperature Effect

±1% per 100 °F (37.8 °C)

Mounting Position Effect

None when installed to ensure sensor remains full.

Physical Specifications

Mounting

Integrally mounted transmitters are factory-wired and do not require interconnecting cables. The transmitter can rotate in 90° increments. Remote mounted transmitters require only a single conduit connection to the sensor.

Non-Wetted Materials

Sensor
304 Stainless Steel (wrapper), 304 Stainless Steel (pipe)

Terminal Junction Box
Cast aluminum, polyurethane coated
Optional: 304 Stainless Steel

Paint
Polyurethane

Weight

TABLE 9. 8721 Sensor weight

Line Size	Sensor Only	008721-0350 Tri-Clamp fitting (each)
0.5	4.84 lbs (2.2 kg)	0.58
1.0	4.52 (2.1 kg)	0.68
1.5	5.52 (2.5 kg)	0.88
2.0	6.78 (3.1 kg)	1.30
2.5	8.79 (2.1 kg)	1.66
3.0	13.26 (2.1 kg)	2.22
4.0	21.04 (2.1 kg)	3.28

Aluminum remote junction box
Approximately 1 pound (0.45 kg)

SST remote junction box
Approximately 2.5 pounds (1.13 kg)

Process Wetted Materials (Sensor)

Liner
PFA with Ra < 32µinch (0.81µm)

Electrodes
316L SST with Ra < 15µ in. (0.38µ m)

Nickel Alloy 276 (UNS N10276) with Ra < 15µ in. (0.38µ m)

80% Platinum-20% Iridium with Ra < 15µ in. (0.38µm)

Process Connections

The Rosemount 8721 Sanitary Sensor is designed using a standard IDF fitting as the basis for providing a flexible, hygienic interface for a variety of process connections. The Rosemount 8721 Sensor has the threaded or “male” end of the IDF fitting on the ends of the base sensor. The sensor can be directly connected with user supplied IDF fittings and gaskets. If other process connections are needed, the IDF fittings and gaskets can be provided and welded directly into the sanitary process tubing, or can be supplied with adapters to standard Tri-Clamp® process connections. All connections are PED compliant for group 2 fluids.

Tri-Clamp® Sanitary Coupling

IDF Sanitary Coupling (screw type)
IDF specification per BS4825 part 4

ANSI Weld Nipple

DIN 11850 Weld Nipple

DIN 11851 (Imperial and Metric)

DIN 11864-1 form A

DIN 11864-2 form A

SMS 1145

Cherry-Burrell I-Line

Process Connection Material

316L Stainless Steel with Ra < 32µinch (0.81µm)

Optional Electropolished Surface Finish with Ra < 15µ in. (0.38µ m)

Process Connection Gasket Material

Silicone

EPDM

Viton

Electrical Connections

Two $^{1}/_{2}$–14 NPT connections with number 8 screw terminals are provided in the terminal enclosure for electrical wiring.

Sensor Dimensions

Refer to Figure 26

Rosemount 8714D Reference Calibration Standard Specifications

Functional Specifications

Ambient Temperature Limits

Operating
–30 to 140 °F (–34 to 60 °C)

Storage
–40 to 140 °F (–40 to 60 °C)

Humidity Limits

0 to 95% relative humidity

Performance Specifications

Accuracy

±0.05% of rate at 30 ft/s at 25°C

±0.10% of rate at 10 ft/s and 3 ft/s

Warm-up Time

30 minutes

Ambient Temperature Effect

< 0.015% of rate per 10 °F (< 0.027% per 10 °C)

Humidity Effect

No effect from 0 to 60% relative humidity < 0.10% of rate from 60 to 90% relative humidity

Long-Term Stability

< 0.10% of rate shift in one year

Physical Specifications

Electrical Connections

Electrical connections are compatible with 8732, 8712D, or 8712E. Not for use with the 8712H High Signal Transmitter.

NOTE:
Use with an 8712H High-Signal Transmitter will cause permanent damage to the 8714D electrical components, resulting in failure of the 8714D.

Mounting

Any position is acceptable

Materials of Construction

Housing
Extruded aluminum

Covers
Stamped aluminum, silk-screened

Paint
Polyurethane

Weight
Approximately 3 lb (2 kg)

Product Certifications

Approved Manufacturing Locations

Rosemount Inc. — Eden Prairie, Minnesota, USA

Fisher-Rosemount Technologias de Flujo, S.A. de C.V. — Chihuahua Mexico

Emerson Process Management Flow — Ede, The Netherlands

Asia Flow Technologies Center — Nanjing, China

EUROPEAN DIRECTIVE INFORMATION

The EC declaration of conformity for all applicable European directives for this product can be found on our website at www.rosemount.com. A hard copy may be obtained by contacting your local sales office.

ATEX Directive

Rosemount Inc. complies with the ATEX Directive.

Type n protection type in accordance with EN50 021

- Closing of entries in the device must be carried out using the appropriate EExe or EExn metal cable gland and metal blanking plug or any appropriate ATEX approved cable gland and blanking plug with IP66 rating certified by an EU approved certification body.

For Rosemount 8732E transmitters:

Complies with Essential Health and Safety Requirements:
EN 60079-0: 2006
EN 60079-1: 2007
EN 60079-7: 2007
EN 60079-11: 2007
EN 60079-26: 2004
EN 60079-27: 2006
EN 50281-1-1: 1998 + A1

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

Rosemount 8705 and 8707 Magnetic Flowmeter sensors in line size and flange combinations:

Line Size: $1^1/_2$ in. - 24 in. with all DIN flanges and ANSI 150 and ANSI 300 flanges. Also available with ANSI 600 flanges in limited line sizes.

Line Size: 30 in. - 36 in. with AWWA 125 flanges
QS Certificate of Assessment - EC No. PED-H-100
Module H Conformity Assessment

Rosemount 8711 Magnetic Flowmeter Sensors Line Sizes: 1.5, 2, 3, 4, 6, and 8 in.

QS Certificate of Assessment - EC No. PED-H-100
Module H Conformity Assessment

Rosemount 8721 Sanitary Magmeter Sensors in line sizes of $1^1/_2$ in. and larger:

Module A Conformity Assessment

All other Rosemount 8705/8707/8711/8721 Sensors — in line sizes of 1 in. and less: Sound Engineering Practice

Sensors that are SEP are outside the scope of PED and cannot be marked for compliance with PED.

Mandatory CE-marking for sensors in accordance with Article 15 of the PED can be found on the sensor body (CE 0575).

Sensor category I is assessed for conformity per module A procedures.

Sensor categories II – IV, use module H for conformity assessment procedures.

Electro Magnetic Compatibility (EMC) (2004/108/EC)

Model 8732E, 8712E, and 8712D EN 61326: 2006

Installed signal wiring should not be run together and should not be in the same cable tray as AC power wiring.

Device must be properly grounded or earthed according to local electric codes.

Rosemount combination cable model number 08712-0752-0001 (ft) or 08712-0752-0003 (m) is required to be used to meet EMC requirements.

Low Voltage Directive (2006/95/EC)

Model 8732E, 8712E, and 8712D - EN 61010 -1: 2001

Other important guidelines

Only use new, original parts.

To prevent the process medium escaping, do not unscrew or remove process flange bolts, adapter bolts or bleed screws during operation.

Maintenance shall only be done by qualified personnel.

CE Marking

Compliance with all applicable European Union Directives. (Note: CE Marking is not available on Rosemount 8712H).

IECEx Certificates

Rosemount Inc. complies with the following IEC Requirements.

For Rosemount 8732E transmitters:

IEC 60079-0 : 2004
IEC 60079-1 : 2007-04
IEC 60079-11 : 2006
IEC 60079-26 : 2004
IEC 60079-7 : 2006-07
IEC 61241-0 : 2004
IEC 61241-1 : 2004

HAZARDOUS LOCATIONS PRODUCT APPROVALS OFFERING

The Rosemount 8700 Series Magnetic Flowmeters offer many different hazardous locations certifications. The table below provides an overview of the available hazardous area approval options. Equivalent hazardous locations certifications for sensor and transmitter must match in integrally mounted magnetic flowmeter systems. Remote mounted magnetic flowmeter systems do not require matched hazardous location certifications. For complete information about the hazardous area approval codes listed, see Hazardous Location Certifications starting on page 46.

TABLE 10. Factory Mutual (FM) Approvals Offering

	Transmitter	**8732E**			**8712D/E(1)**			**8712H(1)**
	Sensor	**8705**	**8707**	**8711**	**8705**	**8707**	**8711**	**8707**
Hazardous Area Approval Code								
Non-Classified Locations								
Transmitter		NA	NA	NA	NA	NA	NA	N0
Sensor		NA	N0	NA	NA	N0	NA	N0
Suitable for Class I, Division 1								
Explosion-Proof								
Trans: Groups C, D T6		E5(2)	-	E5	-	-	-	-
Sensor: Groups C, D T6		E5(2)	-	E5	-	-	-	-
Explosion-Proof with Intrinsically Safe Output								
Trans: Groups C, D T6		E5(2)(3)	-	E5(3)	-	-	-	-
Sensor: Groups C, D T6		E5(2)	-	E5	-	-	-	-
Suitable for Class I, Division 2								
Non-Flammable Fluids								
Trans: Groups A,B,C,D T4		N0	N0	N0	N0	N0	N0	N0
Sensor: Groups A,B,C,D T5		N0	N0(4)	N0	N0	N0(4)	N0	N0(4)
Flammable Fluids								
Trans: Groups A,B,C,D T4		N5	N5	N5	N5	N5	N5	N5
Sensor: Groups A,B,C,D T5		N5	N5(4)	N5	N5	N5(4)	N5	N5(4)
Non-Flammable Fluids with Intrinsically Safe Output								
Trans: Groups A,B,C,D T4		N0(3)	N0(3)	N0(3)	-	-	-	-
Sensor: Groups A,B,C,D T5		N0	N0(4)	N0	-	-	-	-
Other Certifications		**Product Certification Code(5)**						
European Pressure Equipment Directive (PED)		PD	-	PD	PD	-	PD	-
NSF 61 Drinking Water(6)		DW	-	DW	DW	-	DW	-

(1) Remote Transmitter Only

(2) Available in line sizes 0.5 in. to 8 in. (15 mm to 200 mm) only

(3) For I.S. Output, Output Code B or F must be ordered

(4) 8707 Sensor has Temp Code - T3C

(5) Product Certification Codes are added to the Sensor model number only

(6) Only available with PTFE or Polyurethane Lining Material and 316L SST Electrodes

TABLE 11. Canadian Standards Association (CSA) Approvals Offering

	Transmitter	**8732E**			**8712D/E[1]**			**8712H[1]**
	Sensor	**8705**	**8707**	**8711**	**8705**	**8707**	**8711**	**8707**
Hazardous Area Approval Code								
Non-Classified Locations								
Transmitter		NA	-	NA	NA	-	NA	-
Sensor		NA	-	NA	NA	-	NA	-
Suitable for Class I, Division 2								
Non-Flammable Fluids								
Trans: Groups A,B,C,D T4		N0	N0	N0	N0	N0	N0	N0
Sensor: Groups A,B,C,D T5		N0	N0[2]	N0	N0	N0[2]	N0	N0[2]
Other Certifications		**Product Certification Code[3]**						
European Pressure Equipment Directive (PED)		PD	-	PD	PD	-	PD	-
NSF 61 Drinking Water[4]		DW	-	DW	DW	-	DW	-

(1) Remote Transmitter Only

(2) 8707 Sensor has Temp Code - T3C

(3) Product Certification Codes are added to the Sensor model number only

(4) Only available with PTFE or Polyurethane Lining Material and 316L SST Electrodes

TABLE 12. ATEX Approvals Offering

	Transmitter	**8732E**		**8712D[1]**	
	Sensor	**8705**	**8711**	**8705**	**8711**
Hazardous Area Approval Code					
Non-Hazardous					
Trans: LVD and EMC		NA	NA	NA	NA
Sensor: LVD and EMC		NA	NA	NA	NA
Equipment Category 2					
Gas Group IIB					
Trans: Ex d IIB T6		ED	ED	-	-
Sensor: Ex e ia IIC T3...T6		KD[2]	KD[2]	-	-
Gas Group IIC					
Trans: Ex d IIC T6		E1	E1	-	-
Sensor: Ex e ia IIC T3...T6		E1	E1	-	-
Gas Group IIB with Intrinsically Safe Output					
Trans: Ex de [ia] IIB T6		ED[3]	ED[3]	-	-
Sensor: Ex e ia IIC T3...T6		KD[2]	KD[2]	-	-
Gas Group IIC with Intrinsically Safe Output					
Trans: Ex de [ia] IIC T6		E1[3]	E1[3]	-	-
Sensor: Ex e ia IIC T3...T6		E1	E1	-	-
Equipment Category 3					
Gas Group IIC					
Trans: Ex nA nL IIC T4		N1	N1	N1	N1
Sensor: Ex nA [L] IIC T3...T6		N1	N1	N1	N1
Equipment Category 1 - Dust Environment					
Dust Environment Only					
Trans: Dust Ignition Proof		ND	ND	-	-
Sensor: Dust Ignition Proof		ND	ND	-	-
Other Certifications		**Product Certification Code[4]**			
European Pressure Equipment Directive (PED)		PD	PD	PD	PD
NSF 61 Drinking Water[5]		DW	DW	DW	DW

(1) Remote Transmitter Only

(2) With integral mount transmitter, approval is valid for Gas Group IIB

(3) For I.S. Output, Output Code B or F must be ordered

(4) Product Certification Codes are added to the Sensor model number only

(5) Only available with PTFE or Polyurethane Lining Material and 316L SST Electrodes

TABLE 13. IECEx Approvals Offering

	Transmitter	8732E[1]		8712E	
	Sensor	**8705**	**8711**	**8705**	**8711**
Hazardous Area Approval Code					
Non-Hazardous					
Trans: Low Voltage and EMC		NA	NA	NA	NA
Sensor: Low Voltage and EMC		NA	NA	NA	NA
Suitable for Zone 1					
Gas Group IIB					
Trans: Ex d IIB T6		EF	EF		
Gas Group IIC					
Trans: Ex d IIC T6		E7	E7		
Gas Group IIB with Intrinsically Safe Output					
Trans: Ex de [ia] IIB T6		EF[2]	EF[3]		
Gas Group IIC with Intrinsically Safe Output					
Trans: Ex de [ia] IIC T6		E1[3]	E1[3]		
Suitable for Zone 2					
Gas Group IIC					
Trans: Ex nA nL IIC T4		N7	N7	N7	N7
Suitable for Zone 20					
Dust Environment Only					
Trans: Dust Ignition Proof		NF	NF		
Other Certifications		**Product Certification Code[3]**		**Product Certification Code[4]**	
European Pressure Equipment Directive (PED)		PD	PD	PD	PD
NSF 61 Drinking Water[5]		DW	DW	DW	DW

(1) Available in remote mount configuration only. Requires equivalent ATEX approval on the sensor

(2) For I.S. Output, Output Code B or F must be ordered

(3) Product Certification Codes are added to the Sensor model number only

(4) Product Certification Codes are added to the Sensor model number only

(5) Only available with PTFE or Polyurethane Lining Material and 316L SST Electrodes

HAZARDOUS LOCATION CERTIFICATIONS

Equivalent Hazardous Location Certifications for sensor and transmitter must match in integrally-mounted magnetic flowmeter systems. Remote-mounted systems do not require matched hazardous location certification option codes.

Transmitter Approval Information

TABLE 14. Transmitter Option Codes

Approval Codes	Rosemount 8732E	Rosemount 8712D	Rosemount 8712E	Rosemount 8712H
NA	•	•	•	
N0	•	•	•	•
N1	•	•	•	
N5	•	•	•	•
N7	•	•	•	
ND	•			
NF	•			
E1	•			
E2	•			
E3	•			
E5	•			
E7	•			
E8	•			
E9	•			
EB	•			
ED	•			
EF	•			
EK	•			
EM	•			
EP	•			

North American Certifications

Factory Mutual (FM)

NOTE
For intrinsically safe (IS) outputs on the 8732E output option code B or F must be selected.
IS outputs for Class I, Division 1, Groups A, B, C, D.
Temp Code – T4 at 60°C

NOTE
For the 8732E transmitters with a local operator interface (LOI), the lower ambient temperature limit is -20 °C.

N0 Division 2 Approval (All transmitters)

Reference Rosemount Control Drawing 08732-1052 (8732E).

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8712 at 40°C),
T4 (8732 at 60°C: -50 °C ≤Ta ≤60 °C)

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T4 (8712 at 40°C), T5 (8732 at 60°C), T6

Enclosure Type 4X

N5 Division 2 Approval (All Transmitters)
For sensors with IS electrodes only

Reference Rosemount Control Drawing 08732-1052 (8732E).

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8712 at 40°C
T4 (8732 at 60°C: -50 °C ≤Ta ≤60 °C)

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T4 (8712 at 40°C), T5 (8732 at 60°C),

Enclosure Type 4X

E5 Explosion-Proof Approval (8732 only)

Reference Rosemount Control Drawing 08732-1052

Explosion-Proof for Class I, Division 1, Groups C, D
Temp Code – T6 at 60°C

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T5 at 60°C

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8732 at 60°C)

Enclosure Type 4X

Canadian Standards Association (CSA)

NOTE
For intrinsically safe (IS) outputs on the 8732E output option code B or F must be selected.
IS outputs for Class I, Division 1, Groups A, B, C, D.
Temp Code – T4 at 60°C

N0 Division 2 Approval

Reference Rosemount Control Drawing 08732-1051 (8732E only)

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8732 at 60°C: -50 °C ≤Ta ≤60 °C),

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T4 (8712 at 40°C), T5 (8732 at 60°C)

Enclosure Type 4X

European Certifications

NOTE
For intrinsically safe (IS) outputs on the 8732E output option code B or F must be selected.
IS outputs for Ex de [ia] IIB or IIC T6

E1 ATEX Flameproof

Hydrogen gas group
8732 - Certificate No.: KEMA 07ATEX0073 X ⟨Ex⟩ II 2G
Ex de IIC or Ex de [ia] IIC T6 (-50°C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC
CE 0575

ED ATEX Flameproof

8732 - Certificate No.: KEMA 07ATEX0073 X ⟨Ex⟩ II 2G
Ex de IIB or Ex de [ia] IIB T6 (-50°C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC
CE 0575

ND ATEX Dust

8732 - Certificate No.: KEMA 06ATEX0006 ⟨Ex⟩ II 1D
max ΔT = 40 °K(1)
Amb. Temp. Limits: (-20 °C ≤Ta ≤+ 65 °C)
V_{max} = 250 V AC or 42 V DC
IP 66
CE 0575

SPECIAL CONDITIONS FOR SAFE USE (KEMA 07ATEX0073 X):
If the Rosemount 8732 Flow Transmitter is used integrally with the Rosemount 8705 or 8711 Sensors, it shall be assured that the mechanical contact areas of the Sensor and Flow Transmitter comply with the requirements for flat joints according to standard EN/IEC 60079-1 clause 5.2.

The relation between ambient temperature, process temperature, and temperature class is to be taken from the table under (15 - description) above. ***(See Table 17)***

The electrical data is to be taken from the summary under (15 - electrical data) above. ***(See Table 16)***

If the Rosemount 8732 Flow Transmitter is used integrally with the Junction Box, it shall be assured that the mechanical contact areas of the Junction Box and Flow Transmitter comply with the requirements for flanged joints according to standard EN/IEC 60079-1 clause 5.2.

Per EN60079-1: 2004 the gap of the joint between transmitter and remote junction box/ sensor is less than required per table 1 clause 5.2.2, and is only approved for use with an approved Rosemount transmitter and approved junction box/sensor.

INSTALLATION INSTRUCTIONS:
The cable and conduit entry devices and blanking elements shall be of a certified flameproof type, suitable for the conditions of use and correctly installed. With the use of conduit, a certified stopping box shall be provided immediately to the entrance of the enclosure.

INSTALLATION INSTRUCTIONS:
The cable and conduit entry devices and the closing elements shall be of a certified increased safety type, suitable for the conditions of use and correctly installed.

At ambient temperatures above 50°C, the flow meter shall be used with heat resistant cables with a temperature rating of at least 90°C.

A Junction Box in type of explosion protection increased safety “e” may be attached to the base of the Rosemount 8732E Flow Transmitter, permitting remote mounting of the Rosemount 8705 and 8711 Sensors..

The Junction Box is classified as II 2 G Ex e IIB T6 and certified under KEMA 07ATEX0073 X and KEMA 03ATEX2052X.

(1) Max surface temperature is 40 °C above the ambient temperature conditions. Tmax = 100 °C

N1 ATEX Type n

8712D - ATEX Certificate No: BASEEFA 05ATEX0170X

EEx nA nL IIC T4 (Ta = -40 °C to + 60 °C)
V_{max} = 42 V DC
CE 0575

8712E - ATEX Certificate No: BASEEFA 05ATEX0170X

EEx nA nL IIC T4 (Ta = -40 °C to + 60 °C)
V_{max} = 42 V DC
CE 0575

SPECIAL CONDITIONS FOR SAFE USE (X)

The apparatus is not capable of withstanding the 500V insulation test required by Clause 8.1 of EN 60079-15: 2003. This must be taken into account when installing the apparatus.

8732 - ATEX Certificate No: BASEEFA 07ATEX0203X

Ex nA nL IIC T4 (Ta = -50 °C to + 60 °C)
V_{max} = 42 V DC
CE 0575

SPECIAL CONDITIONS FOR SAFE USE (X)

The apparatus is not capable of withstanding the 500V insulation test required by Clause 6.8.1 of EN 60079-15: 2005. This must be taken into account when installing the apparatus.

International Certifications

IECEx

NOTE

For intrinsically safe (IS) outputs on the 8732E output option code B or F must be selected.

IS outputs for Ex de [ia] IIB or IIC T6

E7 IECEx Flameproof

8732 - Certificate No.: KEM 07.0038X
Ex de IIC or Ex de [ia] IIC T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

EF IECEx Flameproof

8732 - Certificate No.: KEM 07.0038X
Ex de IIB or Ex de [ia] IIB T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

NF IECEx Dust

8732 - Certificate No.: KEM 07.0038X
Ex tD A20 IP66 T 100 °C

T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

SPECIAL CONDITIONS FOR SAFE USE (KEM 07.0038X):

If the Rosemount 8732 Flow Transmitter is used integrally with the Rosemount 8705 or 8711 Sensors, it shall be assured that the mechanical contact areas of the Sensor and Flow Transmitter comply with the requirements for flat joints according to standard EN/IEC 60079-1 clause 5.2.

The relation between ambient temperature, process temperature, and temperature class is to be taken from the table under (15 - description) above. ***(See Table 17)***

The electrical data is to be taken from the summary under (15 - electrical data) above. ***(See Table 16)***

If the Rosemount 8732 Flow Transmitter is used integrally with the Junction Box, it shall be assured that the mechanical contact areas of the Junction Box and Flow Transmitter comply with the requirements for flanged joints according to standard EN/IEC 60079-1 clause 5.2.

INSTALLATION INSTRUCTIONS:

The cable and conduit entry devices and blanking elements shall be of a certified flameproof type, suitable for the conditions of use and correctly installed. With the use of conduit, a certified stopping box shall be provided immediately to the entrance of the enclosure.

N7 IECEx Type n

8712D - Certificate No: IECEx BAS 07.0036X

EEx nA nL IIC T4 (Ta = -40 °C to + 60 °C)
V_{max} = 42 V DC

8712E - Certificate No: IECEx BAS 07.0036X
Ex nA nL IIC T4 (Ta = -40 °C to + 60 °C)
V_{max} = 42 V DC

SPECIAL CONDITIONS FOR SAFE USE (X)

The apparatus is not capable of withstanding the 500V insulation test required by Clause 6.8.1of IEC 60079-15: 2005. This must be taken into account when installing the apparatus.

8732 - Certificate No: IECEx BAS 07.0062X

Ex nA nL IIC T4 (Ta = -50 °C to + 60 °C)
V_{max} = 42 V DC

SPECIAL CONDITIONS FOR SAFE USE (X)

The apparatus is not capable of withstanding the 500V insulation test required by Clause 6.8.1 of EN 60079-15: 2005. This must be taken into account when installing the apparatus.

NEPSI - China

NOTE
For intrinsically safe (IS) outputs on the 8732E output option code B or F must be selected.
IS outputs for Ex de [ia] IIB or IIC T6

E3 NEPSI Flameproof

8732 - Certificate No.: GYJ071438X
Ex de IIC or Ex de [ia] IIC T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

EP NEPSI Flameproof

8732 - Certificate No.: GYJ071438X
Ex de IIB or Ex de [ia] IIB T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

InMetro - Brazil

NOTE
For intrinsically safe (IS) outputs on the 8732E output option code B or F must be selected.
IS outputs for Ex de [ia] IIB or IIC T6

E2 InMetro Flameproof

8732 - Certificate No.: NCC 5030/08
BR-Ex de IIC or BR-Ex de [ia] IIC T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

EB InMetro Flameproof

8732 - Certificate No.: NCC 5030/08
BR-Ex de IIB or BR-Ex de [ia] IIB T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

KOSHA - Korea

NOTE
For intrinsically safe (IS) outputs on the 8732E output option code B or F must be selected.
IS outputs for Ex de [ia] IIB or IIC T6

E9 KOSHA Flameproof

8732 - Certificate No.: 2008-2094-Q1X
Ex de IIC or Ex de [ia] IIC T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

EK KOSHA Flameproof

8732 - Certificate No.: 2008-2094-Q1X
Ex de IIB or Ex de [ia] IIB T6 (-50 °C ≤Ta ≤+60 °C)
with LOI T6 (-20°C ≤Ta ≤+60 °C)
V_{max} = 250 V AC or 42 V DC

Sensor Approval Information

TABLE 15. Sensor Option Codes[1]

Approval Codes	Rosemount 8705 Sensor		Rosemount 8707 Sensor		Rosemount 8711 Sensor		Rosemount 8721 Sensors
	For Non-flammable Fluids	For Flammable Fluids	For Non-flammable Fluids	For Flammable Fluids	For Non-flammable Fluids	For Flammable Fluids	For Non-flammable Fluids
NA	•						•
N0	•		•		•		
ND	•	•	•	•	•	•	•
N1	•	•			•	•	
N5	•	•	•	•	•	•	
N7	•	•			•	•	
ND	•	•			•	•	
NF	•	•			•	•	
E1	•	•			•	•	
E2	•	•			•	•	
E3	•	•			•	•	
E5[2]	•	•			•	•	
E8	•	•			•	•	
E9	•	•			•	•	
EB	•	•			•	•	
EK	•	•			•	•	
EM	•	•			•	•	
EP	•	•			•	•	
KD	•	•			•	•	

(1) CE Marking is standard on Rosemount 8705, 8711, and 8721. No hazardous location certifications are available on the Rosemount 570TM.

(2) Available in line sizes up to 8 in. (200 mm) only.

North American Certifications

Factory Mutual (FM)

N0 Division 2 Approval for Non-Flammable Fluids (All Sensors)

Class I, Division 2, Groups A, B, C, D
Temp Code – T5 (8705/8711 at 60°C)
Temp Code – T3C (8707 at 60°C)

Dust-Ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T6 (8705/8711 at 60°C)
Temp Code – T3C (8707 at 60°C)

Enclosure Type 4X

N0 for 8721 Hygienic Sensor

Factory Mutual (FM) Ordinary Location;
CE Marking; 3-A Symbol Authorization #1222;
EHEDG Type EL

N5 Division 2 Approval for Flammable Fluids (All Sensors)

Class I, Division 2, Groups A, B, C, D
Temp Code – T5 (8705/8711 at 60°C)
Temp Code – T3C (8707 at 60°C)

Dust-Ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T6 (8705/8711 at 60°C)
Temp Code – T3C (8707 at 60°C)

Enclosure Type 4X

E5 Explosion-Proof (8705 and 8711 Only)

Explosion-Proof for Class I, Division 1, Groups C, D
Temp Code – T6 at 60°C

Dust-Ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T6 at 60°C

Class I, Division 2, Groups A, B, C, D
Temp Code – T5 at 60°C

Enclosure Type 4X

Canadian Standards Association (CSA)

N0 Suitable for Class I, Division 2, Groups A, B, C, D
Temp Code – T5 (8705/8711 at 60°C)
Temp Code – T3C (8707 at 60°C)

Dust-Ignition proof Class II/III, Division 1, Groups E, F, G

Enclosure Type 4X

N0 for 8721 Hygienic Sensor

Canadian Standards Association (CSA) Ordinary Location;
CE Marking; 3-A Symbol Authorization #1222;
EHEDG Type EL

European Certifications

ND **ATEX Dust**

Certificate No.: KEMA 06ATEX0006 Ⓔx II 1D max
T = 40 °K(1) Amb. Temp. Limits: (-20 °C = Ta = +65 °C)
Vmax = 40 V DC (pulsed)
IP 66
CE 0575

N1 **ATEX Non-Sparking/Non-incendive**

Certificate No: KEMA02ATEX1302X Ⓔx II 3G
EEx nA [L] IIC T3... T6
Ambient Temperature Limits -20 to 65°C

SPECIAL CONDITIONS FOR SAFE USE (X):
The relation between ambient temperature, process temperature and temperature class is to be taken from the table under (15-description) above. - (See Table 13) The electrical data is to be taken from the summary under (15-electrical data above). (See Table 12)

E1, **ATEX Increased Safety with IS Electrodes**

KD Certificate No: KEMA03ATEX2052X Ⓔx II 1/2G
EEx e ia IIC T3... T6 (Ta = -20 to +60°) (See Table 17)
CE 0575
V_{max} = 40 V

SPECIAL CONDITIONS FOR SAFE USE (X):
The relation between ambient temperature, process temperature and temperature class is to be taken from the table under (15-description) above. - (See Table 11) The electrical data is to be taken from the summary under (15-electrical data above). (See Table 12)

INSTALLATION INSTRUCTIONS:
At ambient temperature above 50°C, the flowmeter shall be used with heat resistant cables with a temperature rating of at least 90°C.

A fuse with a rating of maximum 0,7 A according to IEC 60127-1 shall be included in the coil excitation circuit if the sensors are used with other flow transmitters (e.g. Rosemount 8712).

International Certifications

NEPSI - China

E3, **NEPSI Increased Safety with IS Electrodes**

EP Certificate No: GYJ071438X
Ex e ia IIC T3... T6 (Ta = -20 to +60°) (See Table 17)
V_{max} = 40 V

InMetro - Brazil

E2, **InMetro Increased Safety with IS Electrodes**

EB Certificate No: NCC 5030/08
BR-Ex e ia IIC T3... T6 (Ta = -20 to +60°) (See Table 17)
V_{max} = 40 V

KOSHA - Korea

E9, **KOSHA Increased Safety with IS Electrodes**

EK Certificate No: 2005-2233-Q1X
Ex e ia IIC T3... T6 (Ta = -20 to +60°) (See Table 17)
V_{max} = 40 V

TABLE 16. Electrical Data

Rosemount 8732 Flow Transmitter	
Power supply:	250 V AC, 1 A or 50 V DC, 2,5 A, 20 W maximum
Pulsed output circuit:	30 V DC (pulsed), 0,25 A, 7,5 W maximum
4-20 mA output circuit:	30 V DC, 30 mA, 900 mW maximum
Rosemount 8705 and 8711 Sensors	
Coil excitation circuit:	40 V 0,5 A, 20 W maximum
Electrode circuit:	in type of explosion protection intrinsic safety EEx ia IIC, U_i = 5 V, I_i = 0.2 mA, P_i = 1 mW, U_m = 250 V

TABLE 17. Relation between ambient temperature, process temperature, and temperature class(1)

Meter Size (Inches)	Maximum Ambient Temperature	Maximum Process Temperature	Temperature Class
1/2	115°F (65°C)	239°F (115°C)	T3
1	149°F (65°C)	248°F (120°C)	T3
1	95°F (35°C)	95°F (35°C)	T4
1 1/2	149°F (65°C)	257°F (125°C)	T3
1 1/2	122°F (50°C)	148°F (60°C)	T4
2	149°F (65°C)	257°F (125°C)	T3
2	149°F (65°C)	167°F (75°C)	T4
2	104°F (40°C)	104°F (40°C)	T5
3 - 36	149°F (65°C)	266°F (130°C)	T3
3 - 36	149°F (65°C)	194°F (90°C)	T4
3 - 36	131°F (55°C)	131°F (55°C)	T5
3 - 36	104°F (40°C)	104°F (40°C)	T6
6	115°F (65°C)	275°F(135°C)	T3
6	115°F (65°C)	230°F (110°C)	T4
6	115°F (65°C)	167°F (75°C)	T5
6	140°F (60°C)	140°F (60°C)	T6
8-60	115°F (65°C)	284°F (140°C)	T3
8-60	115°F (65°C)	239°F (115°C)	T4
8-60	115°F (65°C)	176°F (80°C)	T5
8-60	115°F (65°C)	156°F (69°C)	T6

(1) This table is applicable for the KD approval code only.

TABLE 18. Relation between the maximum ambient temperature, the maximum process temperature, and the temperature class[1]

Maximum Ambient Temperature	Maximum process temperature °F (°C) per temperature class			
	T3	T4	T5	T6
0.5 in. sensor size				
149°F (65°C)	297°F (147°C)	138°F (59°C)	54°F (12°C)	18°F (-8°C)
140°F (60°C)	309°F (154°C)	151°F (66°C)	66°F (19°C)	28°F (-2°C)
131°F (55°C)	322°F (161°C)	163°F (73°C)	79°F (26°C)	41°F (5°C)
122°F (50°C)	334°F (168°C)	176°F (80°C)	90°F (32°C)	54°F (12°C)
113°F (45°C)	347°F (175°C)	189°F (87°C)	102°F (39°C)	66°F (19°C)
104°F (40°C)	351°F (177°C)	199°F (93°C)	115°F (46°C)	79°F (26°C)
95°F (35°C)	351°F (177°C)	212°F (100°C)	127°F (53°C)	90°F (32°C)
86°F (30°C)	351°F (177°C)	225°F (107°C)	138°F (59°C)	102°F (39°C)
77°F (25°C)	351°F (177°C)	237°F (114°C)	151°F (66°C)	115°F (46°C)
68°F (20°C)	351°F (177°C)	248°F (120°C)	163°F (73°C)	127°F (53°C)
1.0 in. sensor size				
149°F (65°C)	318°F (159°C)	158°F (70°C)	72°F (22°C)	34°F (1°C)
140°F (60°C)	331°F (166°C)	171°F (77°C)	84°F (29°C)	46°F (8°C)
131°F (55°C)	343°F (173°C)	183°F (84°C)	97°F (36°C)	59°F (15°C)
122°F (50°C)	351°F (177°C)	196°F (91°C)	109°F (43°C)	72°F (22°C)
113°F (45°C)	351°F (177°C)	207°F (97°C)	122°F (50°C)	84°F (29°C)
104°F (40°C)	351°F (177°C)	219°F (104°C)	135°F (57°C)	97°F (36°C)
95°F (35°C)	351°F (177°C)	232°F (111°C)	145°F (63°C)	109°F (43°C)
86°F (30°C)	351°F (177°C)	244°F (118°C)	158°F (70°C)	122°F (50°C)
77°F (25°C)	351°F (177°C)	257°F (125°C)	171°F (77°C)	135°F (57°C)
68°F (20°C)	351°F (177°C)	270°F (132°C)	183°F (84°C)	145°F (63°C)
1.5 in. sensor size				
149°F (65°C)	297°F (147°C)	160°F (71°C)	88°F (31°C)	55°F (13°C)
140°F (60°C)	307°F (153°C)	171°F (77°C)	97°F (36°C)	66°F (19°C)
131°F (55°C)	318°F (159°C)	181°F (83°C)	108°F (42°C)	77°F (25°C)
122°F (50°C)	329°F (165°C)	192°F (89°C)	118°F (48°C)	88°F (31°C)
113°F (45°C)	340°F (171°C)	203°F (95°C)	129°F (54°C)	97°F (36°C)
104°F (40°C)	351°F (177°C)	214°F (101°C)	140°F (60°C)	108°F (42°C)
95°F (35°C)	351°F (177°C)	223°F (106°C)	151°F (66°C)	118°F (48°C)
86°F (30°C)	351°F (177°C)	234°F (112°C)	160°F (71°C)	129°F (54°C)
77°F (25°C)	351°F (177°C)	244°F (118°C)	171°F (77°C)	140°F (60°C)
68°F (20°C)	351°F (177°C)	255°F (124°C)	181°F (83°C)	151°F (66°C)

Continued on Next Page

TABLE 18. Relation between the maximum ambient temperature, the maximum process temperature, and the temperature class[1]

Maximum Ambient Temperature	Maximum process temperature °F (°C) per temperature class			
	T3	T4	T5	T6
2.0 in. sensor size				
149°F (65°C)	289°F (143°C)	163°F (73°C)	95°F (35°C)	66°F (19°C)
140°F (60°C)	300°F (149°C)	172°F 78(°C)	104°F (40°C)	75°F (24°C)
131°F (55°C)	309°F (154°C)	183°F (84°C)	115°F (46°C)	84°F (29°C)
122°F (50°C)	318°F (159°C)	192°F (89°C)	124°F (51°C)	95°F (35°C)
113°F (45°C)	329°F (165°C)	201°F (94°C)	135°F (57°C)	104°F (40°C)
104°F (40°C)	338°F (170°C)	212°F (100°C)	144°F (62°C)	115°F (46°C)
95°F (35°C)	349°F (176°C)	221°F (105°C)	153°F (67°C)	124°F (51°C)
86°F (30°C)	351°F (177°C)	232°F (111°C)	163°F (73°C)	135°F (57°C)
77°F (25°C)	351°F (177°C)	241°F (116°C)	172°F (78°C)	144°F (62°C)
68°F (20°C)	351°F (177°C)	252°F (122°C)	183°F (84°C)	153°F (67°C)
3 to 60 in. sensor size				
149°F (65°C)	351°F (177°C)	210°F (99°C)	117°F (47°C)	75°F (24°C)
140°F (60°C)	351°F (177°C)	223°F (106°C)	129°F (54°C)	90°F (32°C)
131°F (55°C)	351°F (177°C)	237°F (114°C)	144°F (62°C)	102°F (39°C)
122°F (50°C)	351°F (177°C)	250°F (121°C)	156°F (69°C)	117°F (47°C)
113°F (45°C)	351°F (177°C)	264°F (129°C)	171°F (77°C)	129°F (54°C)
104°F (40°C)	351°F (177°C)	266°F (130°C)	183°F (84°C)	144°F (62°C)
95°F (35°C)	351°F (177°C)	266°F (130°C)	198°F (92°C)	156°F (69°C)
86°F (30°C)	351°F (177°C)	266°F (130°C)	203°F (95°C)	171°F (77°C)
77°F (25°C)	351°F (177°C)	266°F (130°C)	203°F (95°C)	176°F (80°C)
68°F (20°C)	351°F (177°C)	266°F (130°C)	203°F (95°C)	176°F (80°C)

(1) This table is applicable for N1 option codes only.

Dimensional Drawings

FIGURE 12. Rosemount 8732E Transmitter

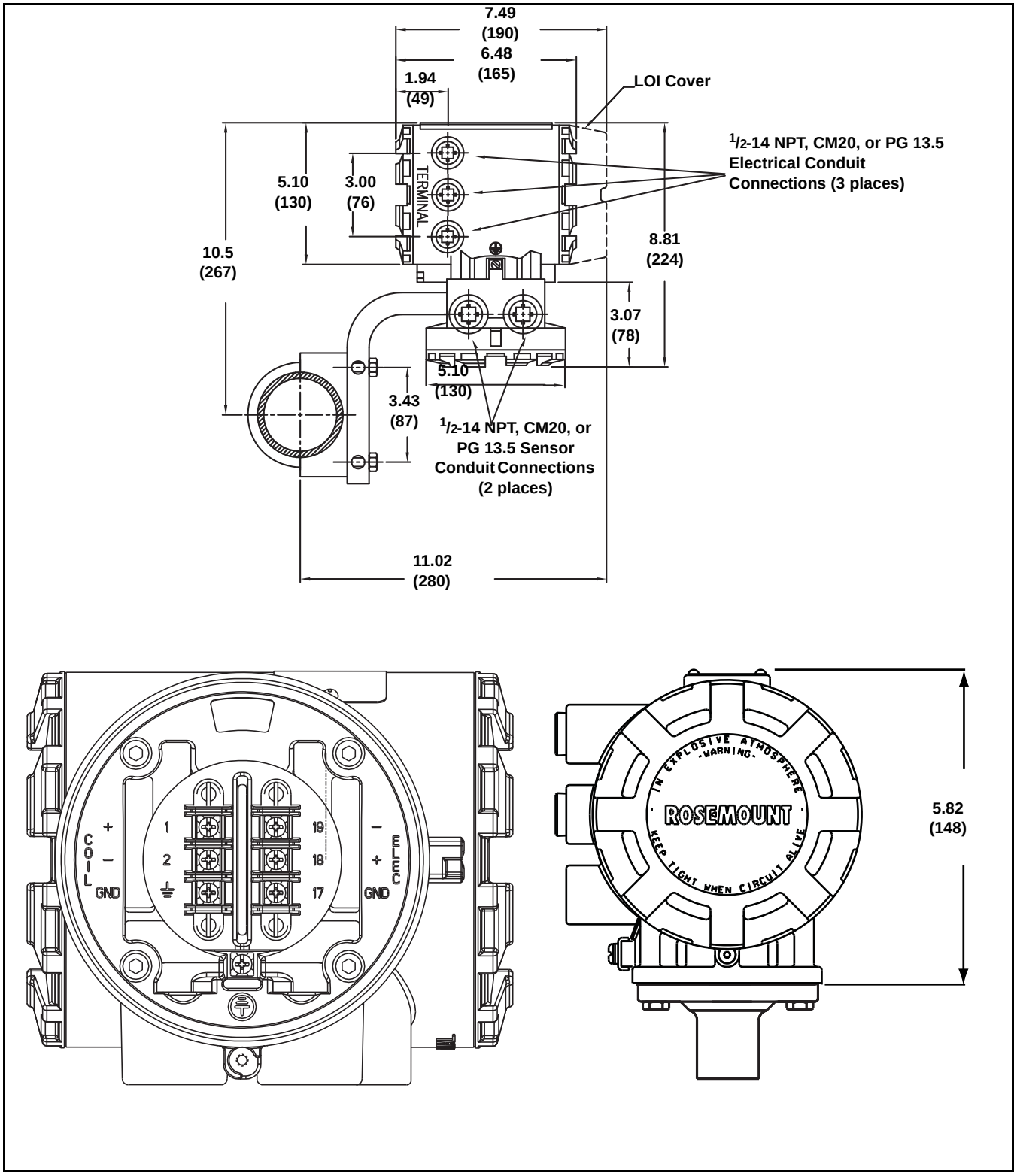
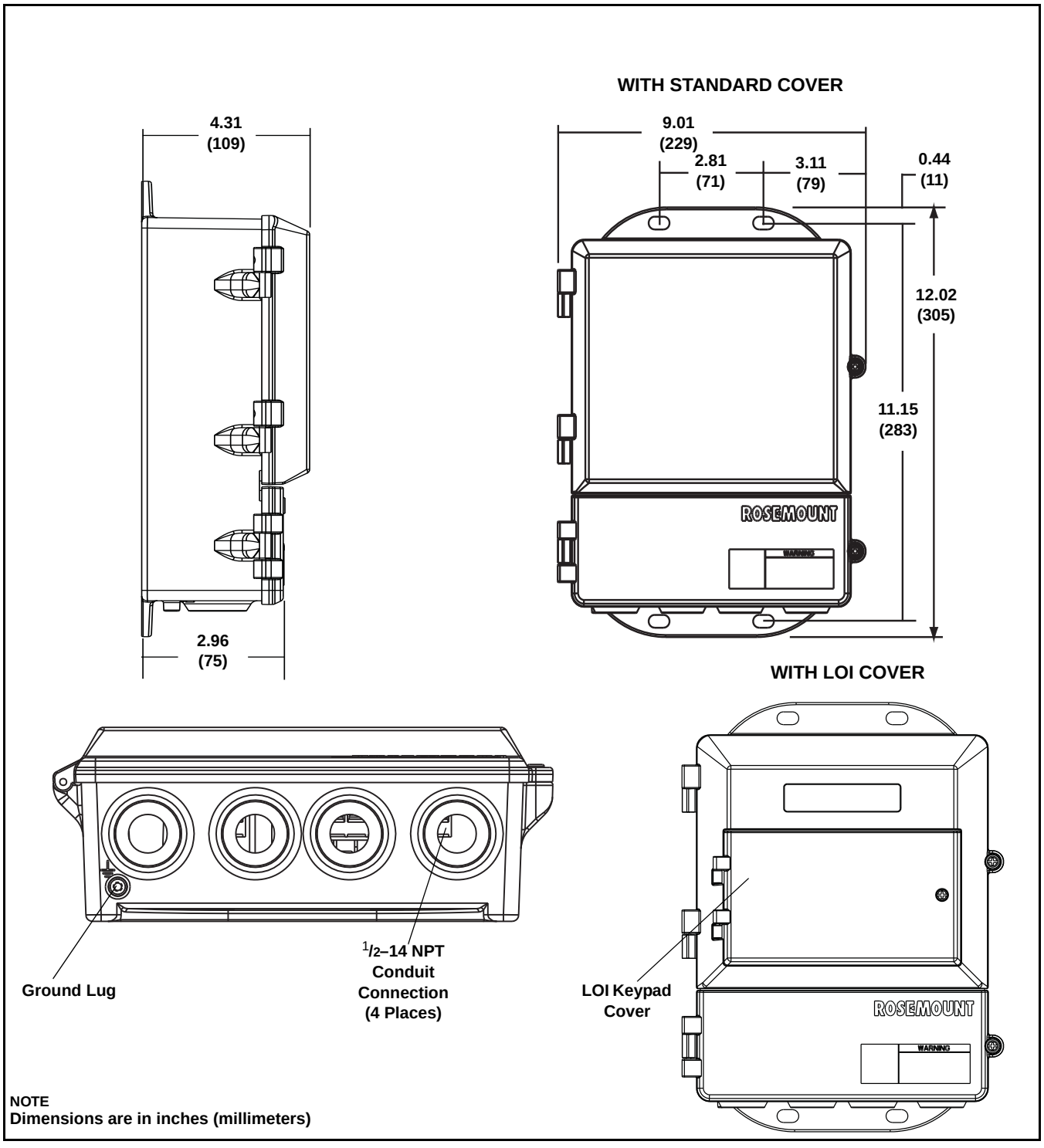


FIGURE 13. Rosemount 8712D/E/H Transmitter



NOTE
Dimensions are in inches (millimeters)

FIGURE 14. 0.5-in. through 2-in. Slip-on Flanges

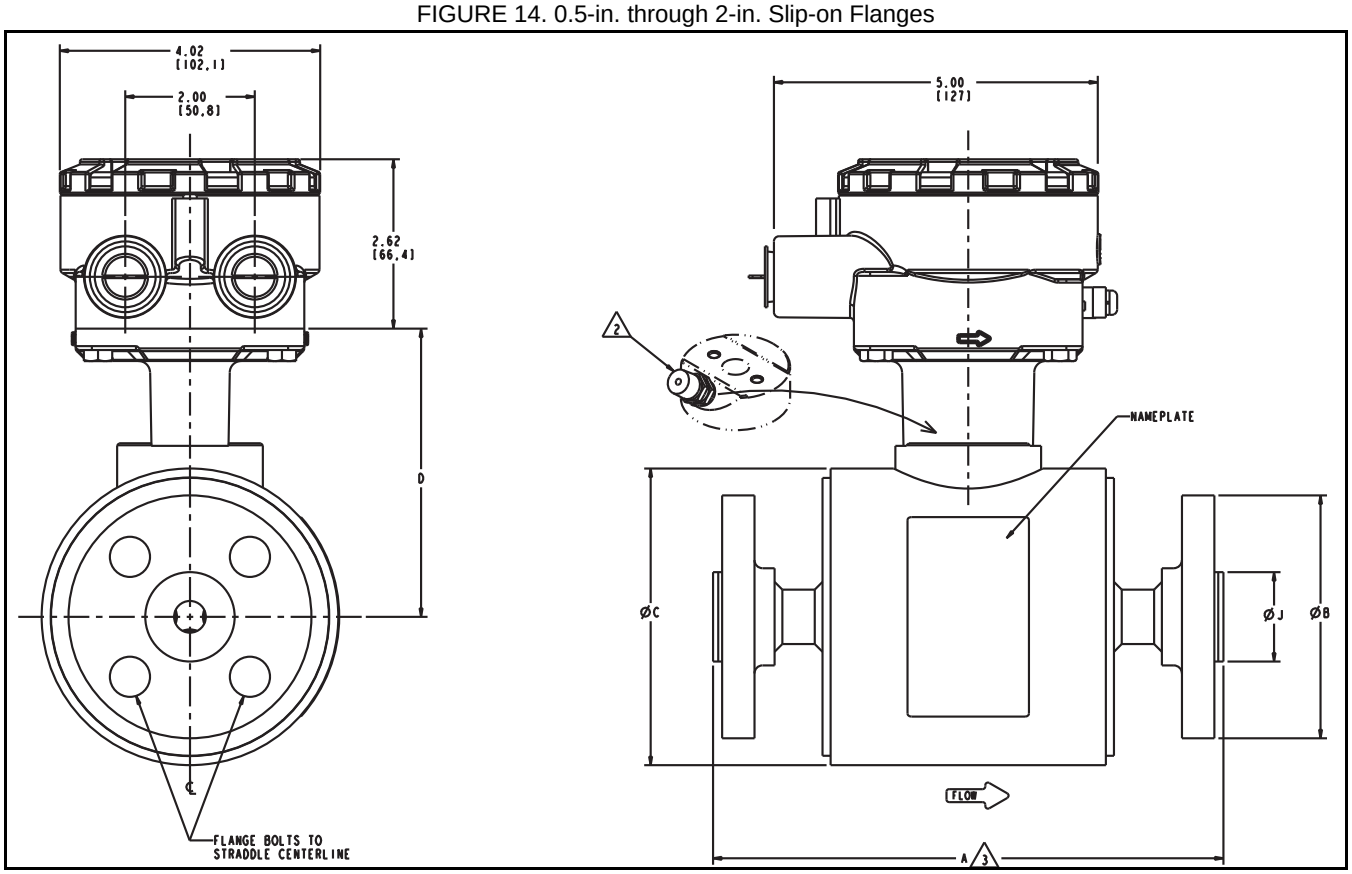


TABLE 19. 0.5-in. through 2-in. Slip-on Flanges (mm)

Size, Description	Overall Length Dim "A"	Dim "A" Poly	Body Dia. DIM "C"	CL to UMB DIM "D"	Liner Dia. on Face DIM "J"	Sensor Weight lbs. (kg)
"0.5 (15) ANSI - 150#, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	1.38 (35)	15 (6.8)
"0.5 (15) ANSI - 300#, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	1.38 (35)	22 (10.0)
"0.5 (15) DIN - PN40, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	1.77 (45)	20 (9.1)
"0.5 (15) AUST. TABLE ""D"", SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	1.38 (35)	15 (6.8)
"0.5 (15) AUST. TABLE ""E"", SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	1.38 (35)	22 (10.0)
"0.5 (15) JIS - 10K, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.01 (51)	
"0.5 (15) JIS - 20K, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.01 (51)	
"1 (25) ANSI - 150#, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.00 (51)	18 (8.2)
"1 (25) ANSI - 300#, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.00 (51)	22 (10.0)
"1 (25) DIN - PN40, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.88 (73)	20 (9.1)
"1 (25) AUST. TABLE ""D"", SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.00 (51)	18 (8.2)
"1 (25) AUST. TABLE ""E"", SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.00 (51)	22 (10.0)
"1 (25) JIS - 10K, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.64 (67)	
"1 (25) JIS - 20K, SO / RF	7.88 (200)	7.88 (200)	4.50 (114)	4.41 (112)	2.64 (67)	
"1.5 (40) ANSI - 150#, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	2.88 (73)	22 (10.0)
"1.5 (40) ANSI - 300#, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	2.88 (73)	24 (10.9)
"1.5 (40) DIN - PN40, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.46 (88)	22 (10.0)
"1.5 (40) AUST. TABLE ""D"", SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	2.88 (73)	22 (10.0)
"1.5 (40) AUST. TABLE ""E"", SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	2.88 (73)	24 (10.9)
"1.5 (40) JIS - 10K, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.19 (81)	
"1.5 (40) JIS - 20K, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.19 (81)	
"2 (50) ANSI - 150#, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.62 (92)	26 (11.8)
"2 (50) ANSI - 300#, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.62 (92)	28 (12.7)
"2 (50) DIN - PN40, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	4.02 (102)	26 (11.8)
"2 (50) AUST. TABLE ""D"", SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.62 (92)	26 (11.8)
"2 (50) AUST. TABLE ""E"", SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.62 (92)	28 (12.7)
"2 (50) JIS - 10K, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.78 (96)	
"2 (50) JIS - 20K, SO / RF	7.87 (200)	7.88 (200)	5.21 (132)	4.82 (122)	3.78 (96)	

FIGURE 15. 3-in. through 36-in. Slip-on Flanges

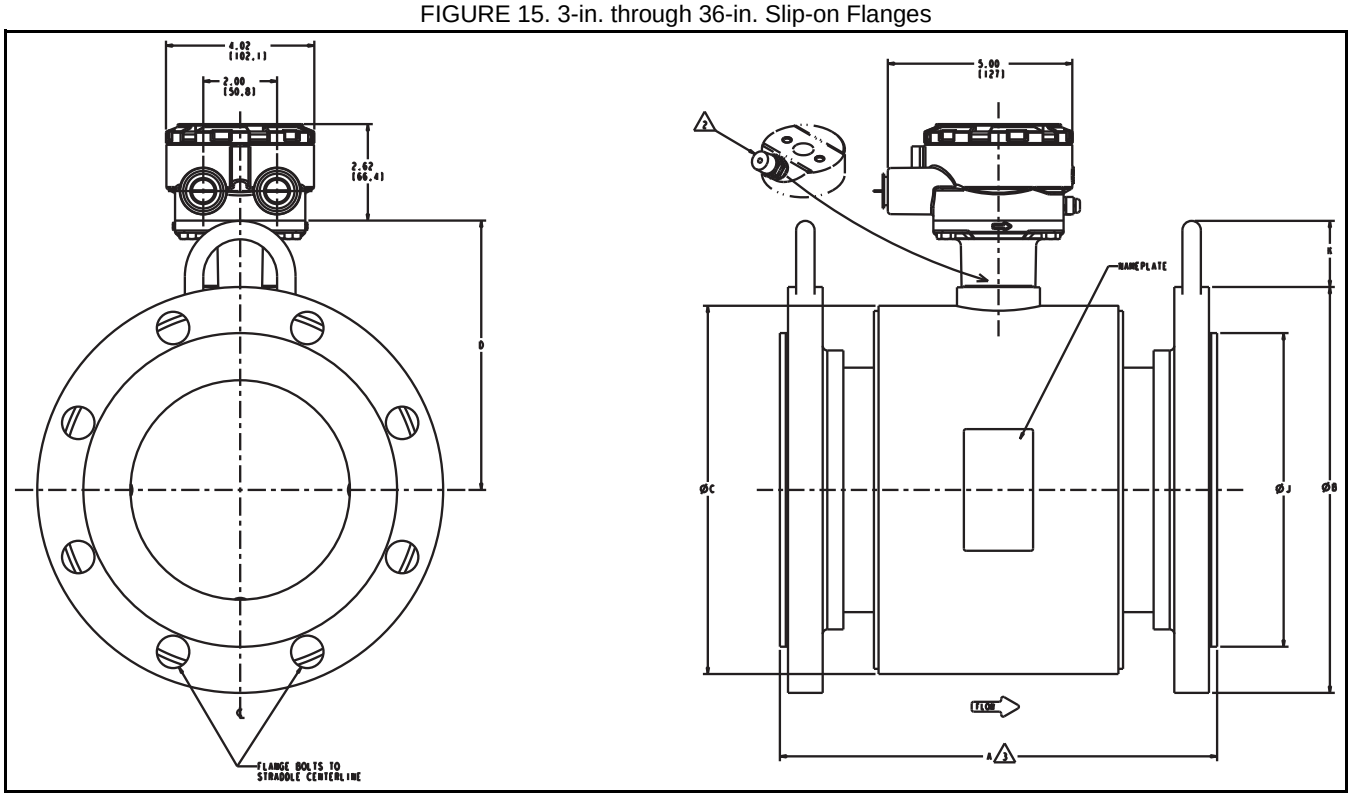


TABLE 20. 3-in. through 36-in. Slip-on Flanges (mm)

Size, Description	Overall Length Dim "A" PTFE	Dim "A" Poly	Body Dia. DIM "C"	CL to UMB DIM "D"	Liner Dia. on Face DIM "J"	Lift Ring Height DIM "K"	Sensor Weight lbs. (kg)
"3 (80) ANSI - 150# SO / RF"	7.87 (200)	7.87 (200)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	42 (19.1)
"3 (80) ANSI - 300# SO / RF"	8.63 (219)	8.63 (219)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	47 (21.3)
"3 (80) DIN - PN40 SO / RF"	7.87 (200)	7.87 (200)	7.21 (183)	5.82 (148)	5.43 (138)	1.70 (43)	26 (11.8)
"3 (80) AUST. TABLE ""D"" SO / RF"	7.87 (200)	7.87 (200)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	42 (19.1)
"3 (80) AUST. TABLE ""E"" SO / RF"	7.87 (200)	7.87 (200)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	47 (21.3)
"3 (80) JIS - 10K SO / RF"	7.87 (200)	7.87 (200)	7.21 (183)	5.82 (148)	4.96 (126)	1.70 (43)	
"3 (80) JIS - 20K SO / RF"	7.87 (200)	7.87 (200)	7.21 (183)	5.82 (148)	5.20 (132)	1.70 (43)	
"4 (100) ANSI - 150# SO / RF"	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	57 (25.9)
"4 (100) ANSI - 300# SO / RF"	10.88 (276)	10.87 (276)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	65 (29.5)
"4 (100) DIN - PN16 SO / RF"	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	6.22 (158)	1.70 (43)	48 (21.8)
"4 (100) DIN - PN40 SO / RF"	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	6.38 (162)	1.70 (43)	65 (29.5)
"4 (100) AUST. TABLE ""D"" SO / RF"	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	57 (25.9)
"4 (100) AUST. TABLE ""E"" SO / RF"	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	65 (29.5)
"4 (100) JIS - 10K SO / RF"	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	5.95 (151)	1.70 (43)	
"4 (100) JIS - 20K SO / RF"	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	6.30 (160)	1.70 (43)	
"6 (150) ANSI - 150# SO / RF"	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	71 (32.2)
"6 (150) ANSI - 300# SO / RF"	13.06 (332)	13.06 (332)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	93 (42.2)
"6 (150) DIN - PN16 SO / RF"	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	8.35 (212)	1.70 (43)	81 (36.7)
"6 (150) DIN - PN25 SO / RF"	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	8.58 (218)	1.70 (43)	
"6 (150) DIN - PN40 SO / RF"	13.06 (332)	13.06 (332)	9.98 (253)	7.30 (185)	8.58 (218)	1.70 (43)	93 (42.2)
"6 (150) AUST. TABLE ""D"" SO / RF"	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	71 (32.2)
"6 (150) AUST. TABLE ""E"" SO / RF"	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	93 (42.2)
"6 (150) JIS - 10K SO / RF"	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	8.35 (212)	1.70 (43)	
"6 (150) JIS - 20K SO / RF"	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	9.06 (230)	1.70 (43)	
"8 (200) ANSI - 150# SO / RF"	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	145 (65.8)
"8 (200) ANSI - 300# SO / RF"	15.60 (396)	15.60 (396)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	162 (73.5)
"8 (200) DIN - PN10 SO / RF"	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.55 (268)	1.70 (43)	110 (49.9)
"8 (200) DIN - PN16 SO / RF"	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.55 (268)	1.70 (43)	110 (49.9)
"8 (200) DIN - PN25 SO / RF"	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.94 (278)	1.70 (43)	162 (73.5)
"8 (200) DIN - PN40 SO / RF"	15.60 (396)	15.60 (396)	11.92 (303)	8.27 (210)	11.22 (285)	1.70 (43)	162 (73.5)
"8 (200) AUST. TABLE ""D"" SO / RF"	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	145 (65.8)
"8 (200) AUST. TABLE ""E"" SO / RF"	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	162 (73.5)
"8 (200) JIS - 10K SO / RF"	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.32 (262)	1.70 (43)	
"8 (200) JIS - 20K SO / RF"	15.60 (396)	15.60 (396)	11.92 (303)	8.27 (210)	10.83 (275)	1.70 (43)	
"10 (250) ANSI - 150# SO / RF"	15.00 (381)	14.76 (376)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	195 (88.5)
"10 (250) ANSI - 300# SO / RF"	17.13 (435)	16.89 (430)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	300 (99.8)
"10 (250) DIN - PN10 SO / RF"	15.00 (381)	14.76 (376)	14.64 (372)	9.69 (246)	12.60 (320)	2.00 (51)	220 (99.8)
"10 (250) DIN - PN16 SO / RF"	15.00 (381)	14.76 (376)	14.64 (372)	9.69 (246)	12.60 (320)	2.00 (51)	220 (99.8)
"10 (250) DIN - PN25 SO / RF"	15.00 (381)	14.76 (376)	14.64 (372)	9.69 (246)	13.19 (335)	2.00 (51)	220 (99.8)
"10 (250) DIN - PN40 SO / RF"	17.13 (435)	16.89 (430)	14.64 (372)	9.69 (246)	13.58 (345)	2.00 (51)	300 (99.8)
"10 (250) AUST. TABLE ""D"" SO / RF"	15.00 (381)	14.76 (376)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	195 (88.5)
"10 (250) AUST. TABLE ""E"" SO / RF"	15.00 (381)	14.76 (376)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	300 (99.8)
Continued on Next Page							
"12 (300) ANSI - 150# SO / RF"	18.00 (457)	17.76 (452)	16.80 (427)	10.77 (274)	15.00 (381)	2.00 (51)	330 (149.7)
"12 (300) ANSI - 300# SO / RF"	20.14 (512)	19.89 (506)	16.80 (427)	10.77 (274)	15.00 (381)	2.00 (51)	435 (197.3)
"12 (300) DIN - PN10 SO / RF"	18.00 (457)	17.76 (452)	16.80 (427)	10.77 (274)	14.57 (370)	2.00 (51)	330 (149.7)
"12 (300) DIN - PN16 SO / RF"	18.00 (457)	17.76 (452)	16.80 (427)	10.77 (274)	14.88 (378)	2.00 (51)	330 (149.7)
"12 (300) DIN - PN25 SO / RF"	18.00 (457)	17.76 (452)	16.80 (427)	10.77 (274)	15.55 (395)	2.00 (51)	330 (149.7)
"12 (300) DIN - PN40 SO / RF"	20.14 (512)	19.89 (506)	16.80 (427)	10.77 (274)	16.14 (410)	2.00 (51)	435 (197.3)
"12 (300) AUST. TABLE ""D"" SO / RF"	18.00 (457)	17.76 (452)	16.80 (427)	10.77 (274)	15.00 (381)	2.00 (51)	330 (149.7)
"12 (300) AUST. TABLE ""E"" SO / RF"	18.00 (457)	17.76 (452)	16.80 (427)	10.77 (274)	15.00 (381)	2.00 (51)	435 (197.3)

TABLE 21. 14-in. through 36-in. with Slip-On Flanges (mm)

Size, Description	Overall Length Dim. "A" PTFE	Overall Length Dim. "A" Poly	Body Dim. "C"	CL to UMB Dim. "D"	Liner on Face Dim. "J"	Lift Ring Height Dim. "K"	Sensor Weight (lbs.)
"14 (350) ANSI - 150# SO / RF"	20.91 (531)	20.83 (529)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	380 (172.4)
"14 (350) ANSI - 300# SO / RF"	23.16 (588)	23.08 (586)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	573 (259.9)
"14 (350) DIN - PN10 SO / RF"	20.91 (531)	20.83 (529)	18.92 (481)	11.83 (300)	16.93 (430)	2.00 (51)	370 (167.8)
"14 (350) DIN - PN16 SO / RF"	20.91 (531)	20.83 (529)	18.92 (481)	11.83 (300)	17.24 (438)	2.00 (51)	370 (167.8)
"14 (350) DIN - PN25 SO / RF"	23.16 (588)	23.08 (586)	18.92 (481)	11.83 (300)	17.72 (450)	2.00 (51)	370 (167.8)
"14 (350) DIN - PN40 SO / RF"	23.16 (588)	23.08 (586)	18.92 (481)	11.83 (300)	18.31 (465)	2.00 (51)	573 (259.9)
"14 (350) AUST. TABLE ""D"" SO / RF"	20.91 (531)	20.83 (529)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	380 (172.4)
"14 (350) AUST. TABLE ""E"" SO / RF"	20.91 (531)	20.83 (529)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	573 (259.9)
"16 (400) ANSI - 150# SO / RF"	23.88 (607)	23.80 (607)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	470 (213.2)
"16 (400) ANSI - 300# SO / RF"	26.13 (664)	26.05 (664)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	755 (213.2)
"16 (400) DIN - PN10 SO / RF"	23.88 (607)	23.80 (607)	20.94 (532)	12.84 (326)	18.98 (482)	3.13 (80)	500 (213.2)
"16 (400) DIN - PN16 SO / RF"	23.88 (607)	23.80 (607)	20.94 (532)	12.84 (326)	19.29 (490)	3.13 (80)	500 (213.2)
"16 (400) DIN - PN25 SO / RF"	26.13 (664)	26.05 (664)	20.94 (532)	12.84 (326)	19.88 (505)	3.13 (80)	500 (213.2)
"16 (400) DIN - PN40 SO / RF"	26.13 (664)	26.05 (664)	20.94 (532)	12.84 (326)	21.06 (535)	3.13 (80)	755 (213.2)
"16 (400) AUST. TABLE ""D"" SO / RF"	23.88 (607)	23.80 (607)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	470 (213.2)
"16 (400) AUST. TABLE ""E"" SO / RF"	23.88 (607)	23.80 (607)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	755 (213.2)
"18 (450) ANSI - 150# SO / RF"	26.85 (682)	26.77 (680)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	592 (268.5)
"18 (450) ANSI - 300# SO / RF"	29.97 (761)	29.89 (759)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	1010 (458.1)
"18 (450) DIN - PN10 SO / RF"	26.85 (682)	26.72 (679)	23.46 (596)	14.10 (358)	20.94 (532)	3.13 (80)	522 (236.8)
"18 (450) DIN - PN16 SO / RF"	26.85 (682)	26.72 (679)	23.46 (596)	14.10 (358)	21.65 (550)	3.13 (80)	595 (269.9)
"18 (450) DIN - PN25 SO / RF"	29.97 (761)	29.89 (759)	23.46 (596)	14.10 (358)	21.85 (555)	3.13 (80)	693 (314.3)
"18 (450) DIN - PN40 SO / RF"	29.97 (761)	29.89 (759)	23.46 (596)	14.10 (358)	22.05 (560)	3.13 (80)	915 (415.0)
"18 (450) AUST. TABLE ""D"" SO / RF"	26.85 (682)	26.77 (680)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	592 (268.5)
"18 (450) AUST. TABLE ""E"" SO / RF"	26.85 (682)	26.77 (680)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	1010 (458.1)
"20 (500) ANSI - 150# SO / RF"	29.78 (756)	29.70 (754)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	680 (308.4)
"20 (500) ANSI - 300# SO / RF"	33.04 (839)	32.96 (837)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	1180 (535.2)
"20 (500) DIN - PN10 SO / RF"	29.78 (756)	29.70 (754)	25.48 (647)	15.11 (384)	23.03 (585)	3.13 (80)	680 (535.2)
"20 (500) DIN - PN16 SO / RF"	29.78 (756)	29.70 (754)	25.48 (647)	15.11 (384)	24.02 (610)	3.13 (80)	680 (535.2)
"20 (500) DIN - PN25 SO / RF"	33.04 (839)	32.96 (837)	25.48 (647)	15.11 (384)	24.21 (615)	3.13 (80)	680 (535.2)
"20 (500) DIN - PN40 SO / RF"	33.04 (839)	32.96 (837)	25.48 (647)	15.11 (384)	24.21 (615)	3.13 (80)	1180 (535.2)
"20 (500) AUST. TABLE ""D"" SO / RF"	29.78 (756)	29.70 (754)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	680 (535.2)
"20 (500) AUST. TABLE ""E"" SO / RF"	29.78 (756)	29.70 (754)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	1180 (535.2)

Continued on Next Page

TABLE 21. 14-in. through 36-in. with Slip-On Flanges (mm)

“24 (600) ANSI - 150# SO / RF”	35.75 (908)	35.67 (906)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1020 (462.7)
“24 (600) ANSI - 300# SO / RF”	39.38 (1000)	39.30 (998)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1865 (845.9)
“24 (600) DIN - PN10 SO / RF”	35.75 (908)	35.67 (906)	30.03 (763)	17.39 (442)	26.97 (685)	3.13 (80)	1000 (453.6)
“24 (600) DIN - PN16 SO / RF”	35.75 (908)	35.67 (906)	30.03 (763)	17.39 (442)	28.54 (725)	3.13 (80)	1000 (453.6)
“24 (600) DIN - PN25 SO / RF”	39.38 (1000)	39.30 (998)	30.03 (763)	17.39 (442)	28.35 (720)	3.13 (80)	1000 (453.6)
“24 (600) DIN - PN40 SO / RF”			30.03 (763)	17.39 (442)	28.94 (735)	3.13 (80)	
“24 (600) AUST. TABLE “”D”” SO / RF”	35.75 (908)	35.67 (906)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1020 (462.7)
“24 (600) AUST. TABLE “”E”” SO / RF”	35.75 (908)	35.67 (906)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1865 (845.9)
“30 (750) AWWA CLASS D SO / RF”	37.00 (940)	36.93 (938)	35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	1400 (635.0)
“30 (750) MSS SP44 - 150# SO / RF”	41.56 (1056)	41.48 (1054)	35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	1782 (808.3)
“30 (750) MSS SP44 - 300# SO / RF”	47.25 (1200)	47.17 (1198)	35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	2610 (1183.9)
“30 (750) AUST. TABLE “”D”” SO / RF”	37.00 (940)	36.93 (938)	35.50 (902)	20.13 (511)	34.96 (888)	3.13 (80)	1530 (694.0)
“30 (750) AUST. TABLE “”E”” SO / RF”	41.56 (1056)	41.48 (1054)	35.50 (902)	20.13 (511)	34.84 (885)	3.13 (80)	1663 (754.3)
“36 (900) AWWA CLASS D SO / RF”	40.63 (1032)	40.55 (1030)	43.37 (1102)	24.00 (1022)	40.25 (1022)	3.13 (80)	1975 (895.8)
“36 (900) MSS SP44 - 150# SO / RF”	47.25 (1200)	47.17 (1198)	43.37 (1102)	24.00 (1022)	40.25 (1022)	3.13 (80)	2777 (1259.6)
“36 (900) MSS SP44 - 300# SO / RF”	53.17 (1351)	53.09 (1348)	43.37 (1102)	24.00 (1022)	40.25 (1022)	3.13 (80)	4204 (1906.9)
“36 (900) AUST. TABLE “”D”” SO / RF”	40.63 (1032)	40.55 (1030)	43.37 (1102)	24.00 (1022)	41.34 (1050)	3.13 (80)	2213 (1003.8)
“36 (900) AUST. TABLE “”E”” SO / RF”	47.25 (1200)	47.17 (1198)	43.37 (1102)	24.00 (1022)	41.34 (1050)	3.13 (80)	2437 (1105.4)

FIGURE 16. 0.5-in. through 36-in. Weld Neck Flanges

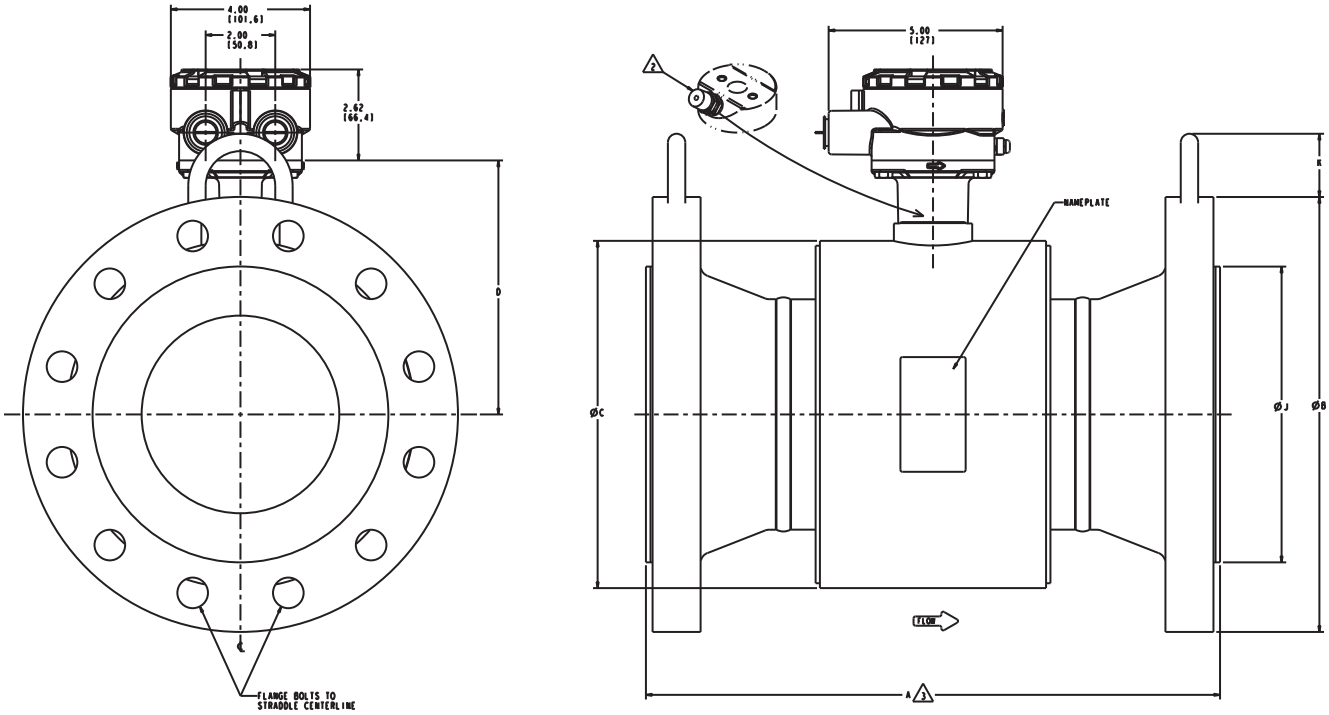


TABLE 22. 0.5-in. through 36-in. with Weld Neck Flanges (mm)

Size, Description	Overall Length DIM "A" PTFE	DIM "A" Poly	Body DIM "C"	CL to UMB DIM "D"	Liner on Face DIM "J"	Lift Ring Height DIM "K"	Sensor Weight lbs. (kg)
"0.5 (15) ANSI - 150# WN / RF"	10.34 (236)		4.50 (114)	4.41 (112)	1.38 (35)		15 (6.8)
"0.5 (15) ANSI - 300# WN / RF"	10.34 (236)		4.50 (114)	4.41 (112)	1.38 (35)		17 (7.7)
"1 (25) ANSI - 150# WN / RF"	11.17 (284)	11.17 (284)	4.50 (114)	4.41 (112)	2.00 (51)		19 (8.6)
"1 (25) ANSI - 300# WN / RF"	11.17 (284)	11.17 (284)	4.50 (114)	4.41 (112)	2.00 (51)		22 (10.0)
"1.5 (40) ANSI - 150# WN / RF"	11.08 (281)	11.07 (281)	5.21 (132)	4.82 (122)	2.88 (73)		24 (10.9)
"1.5 (40) ANSI - 300# WN / RF"	11.08 (281)	11.07 (281)	5.21 (132)	4.82 (122)	2.88 (73)		28 (12.7)
"2 (50) ANSI - 150# WN / RF"	11.20 (284)	11.19 (284)	5.21 (132)	4.82 (122)	3.62 (92)		28 (12.7)
"2 (50) ANSI - 300# WN / RF"	11.20 (284)	11.19 (284)	5.21 (132)	4.82 (122)	3.62 (92)		32 (14.5)
"3 (80) ANSI - 150# WN / RF"	12.17 (309)	12.18 (309)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	48 (21.8)
"3 (80) ANSI - 300# WN / RF"	12.17 (309)	12.18 (309)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	57 (25.9)
"4 (100) ANSI - 150# WN / RF"	13.94 (354)	13.96 (355)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	67 (30.4)
"4 (100) ANSI - 300# WN / RF"	13.94 (354)	13.96 (355)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	86 (39.0)
"6 (150) ANSI - 150# WN / RF"	16.66 (423)	16.60 (422)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	71 (32.2)
"6 (150) ANSI - 300# WN / RF"	16.66 (423)	16.60 (422)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	93 (42.2)
"8 (200) ANSI - 150# WN / RF"	19.21 (488)	19.15 (486)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	181 (82.1)
"8 (200) ANSI - 300# WN / RF"	19.21 (488)	19.15 (486)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	235 (106.6)
"10 (250) ANSI - 150# WN / RF"	19.95 (507)	19.80 (503)	14.64 (372)	9.69 (264)	12.75 (324)	2.00 (51)	245 (111.1)
"10 (250) ANSI - 300# WN / RF"	19.95 (507)	19.80 (503)	14.64 (372)	9.69 (264)	12.75 (324)	2.00 (51)	326 (147.9)
"12 (300) ANSI - 150# WN / RF"	23.83 (605)	23.61 (600)	16.50 (419)	10.77 (274)	15.00 (381)	2.00 (51)	371 (168.3)
"12 (300) ANSI - 300# WN / RF"	23.83 (605)	23.61 (600)	16.50 (419)	10.77 (274)	15.00 (381)	2.00 (51)	479 (217.3)
"14 (350) ANSI - 150# WN / RF"	27.19 (691)	27.11 (689)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	380 (172.4)
"14 (350) ANSI - 300# WN / RF"	27.19 (691)	27.11 (689)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	573 (259.9)
"16 (400) ANSI - 150# WN / RF"	29.77 (756)	29.69 (754)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	470 (213.2)
"16 (400) ANSI - 300# WN / RF"	29.77 (756)	29.69 (754)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	755 (342.5)
"18 (450) ANSI - 150# WN / RF"	31.96 (812)	31.88 (810)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	592 (268.5)
"18 (450) ANSI - 300# WN / RF"	31.96 (812)	31.88 (810)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	1010 (458.1)
"20 (500) ANSI - 150# WN / RF"	34.75 (883)	34.67 (881)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	680 (308.4)
"20 (500) ANSI - 300# WN / RF"	34.75 (883)	34.67 (881)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	1180 (535.2)
"24 (600) ANSI - 150# WN / RF"	38.29 (973)	38.21 (971)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1020 (462.7)
"24 (600) ANSI - 300# WN / RF"	38.29 (973)	38.21 (971)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1865 (845.9)
"30 (750) ANSI - 150# WN / RF"	41.04 (1042)	40.96 (1040)	35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	1782 (808.3)
"30 (750) ANSI - 300# WN / RF"	47.16 (1198)	47.08 (1196)	35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	2610 1183.9)
"36 (900) ANSI - 150# WN / RF"	46.04 (1169)	45.96 (1167)	43.37 (1102)	24.00 (610)	40.25 (1022)	3.13 (80)	2777 (1259.6)
"36 (900) ANSI - 300# WN / RF"	53.16 (1350)	53.08 (1348)	43.37 (1102)	24.00 (610)	40.25 (1022)	3.38 (86)	4204 (1906.9)

FIGURE 17. 0.5-in. through 36-in. with W3 Option

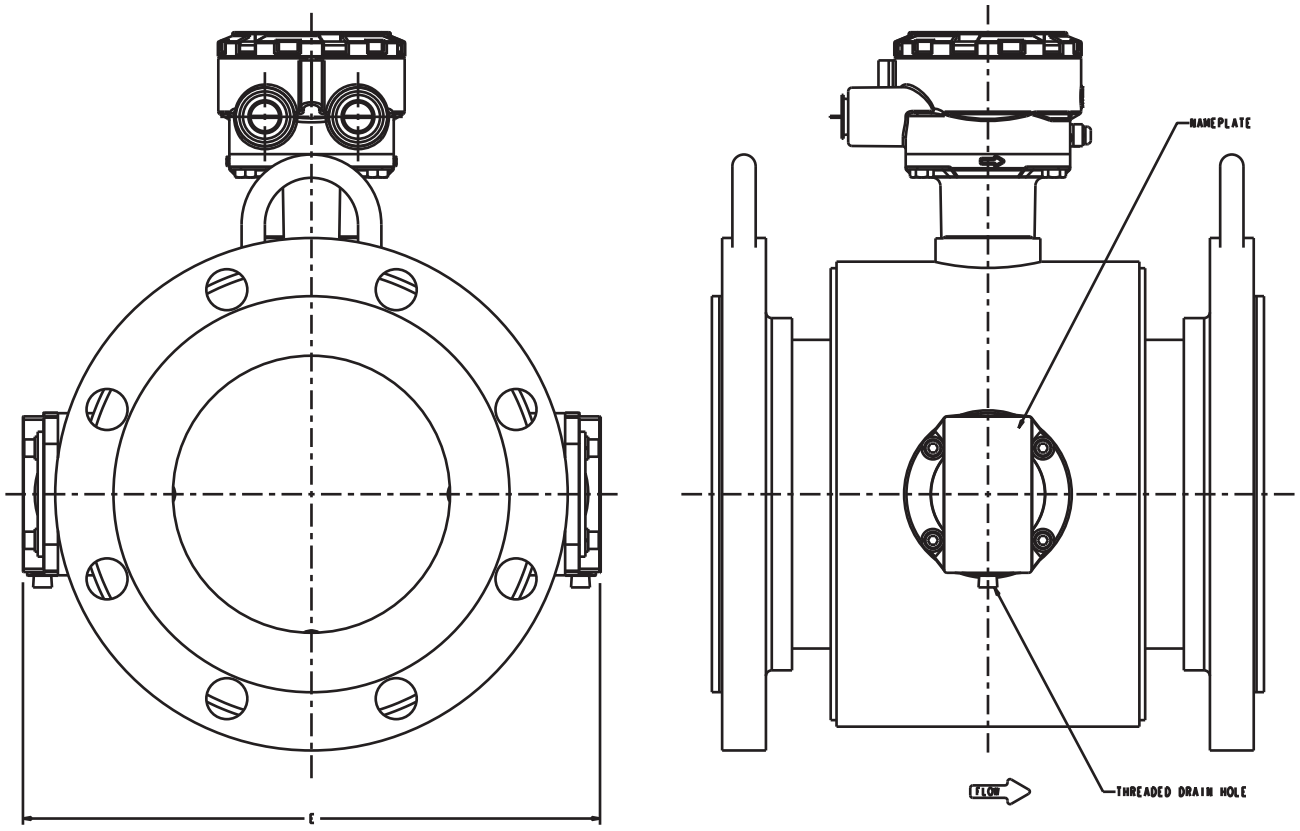


TABLE 23. Body Width with Electrode Access (W3)

Size -- in (mm) All Flanges	Body Width with W3 DIM "E" (in.)	Body Width with W3 DIM "E" (mm)
0.5 (15)	6.22	158
1 (25)	6.68	170
1.5 (40)	7.47	190
2 (50)	7.47	190
3 (80)	9.45	240
4 (100)	10.15	258
6 (150)	12.34	313
8 (200)	14.28	363
10 (250)	17.00	432
12 (300)	19.15	486
14 (350)	21.28	541
16 (400)	23.30	592
18 (450)	25.82	656
20 (500)	27.84	707
24 (600)	32.39	823
30 (750)	38.04	966
36 (900)	45.91	1166

FIGURE 18.

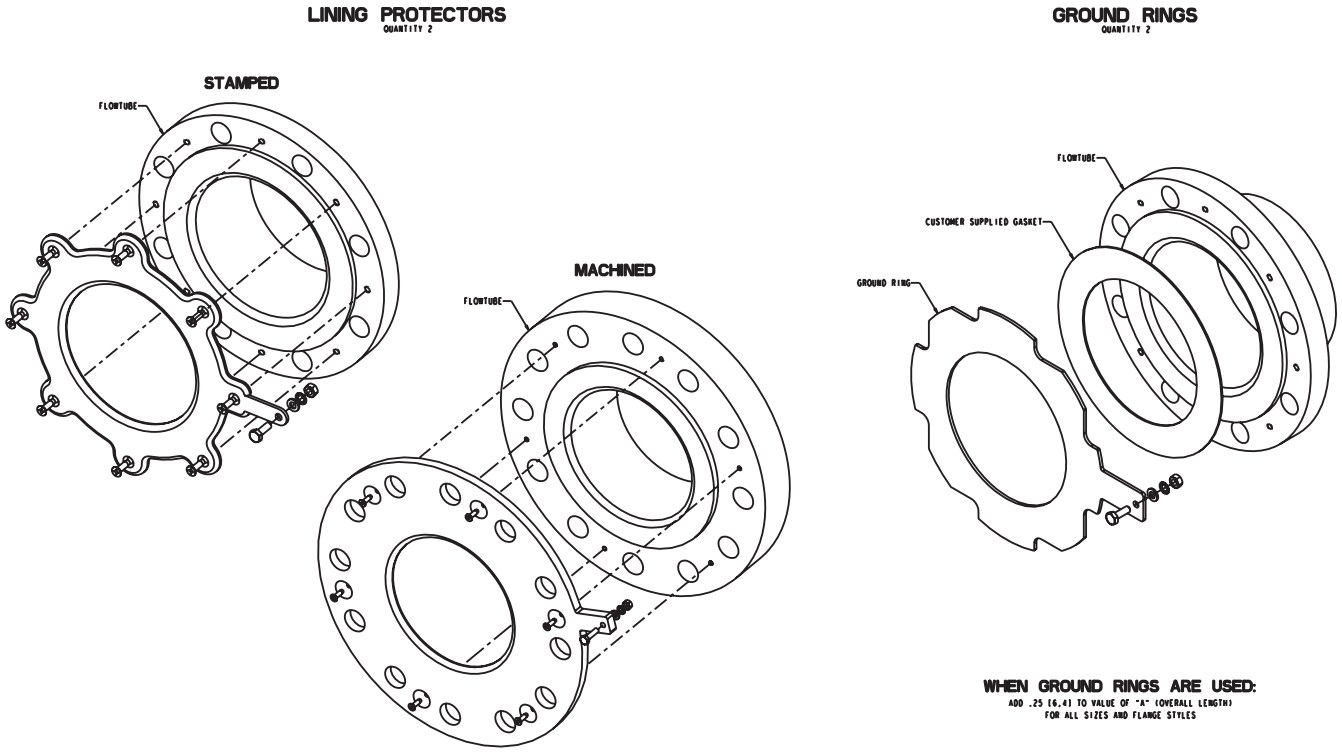


TABLE 24. When Liner Protectors Are Used

Flange Style	Sensor Size	Add This Value to “A” (Overall Length)
ANSI	0.5-in. through 10-in.	.25 (6,4)
	12-in. through 24-in.	.60 (15,2)
	30-in.	.75 (19)
	36-in.	1.0 (25,4)
DIN	0.5-in. through 8-in.	.25 (6,4)
	10-in.	.75 (19)
	12-in.	1.0 (25,4)
	14-in. through 24-in.	.60 (15,2)
	30-in.	.75 (19)
	36-in.	1.0 (25,4)

FIGURE 19.

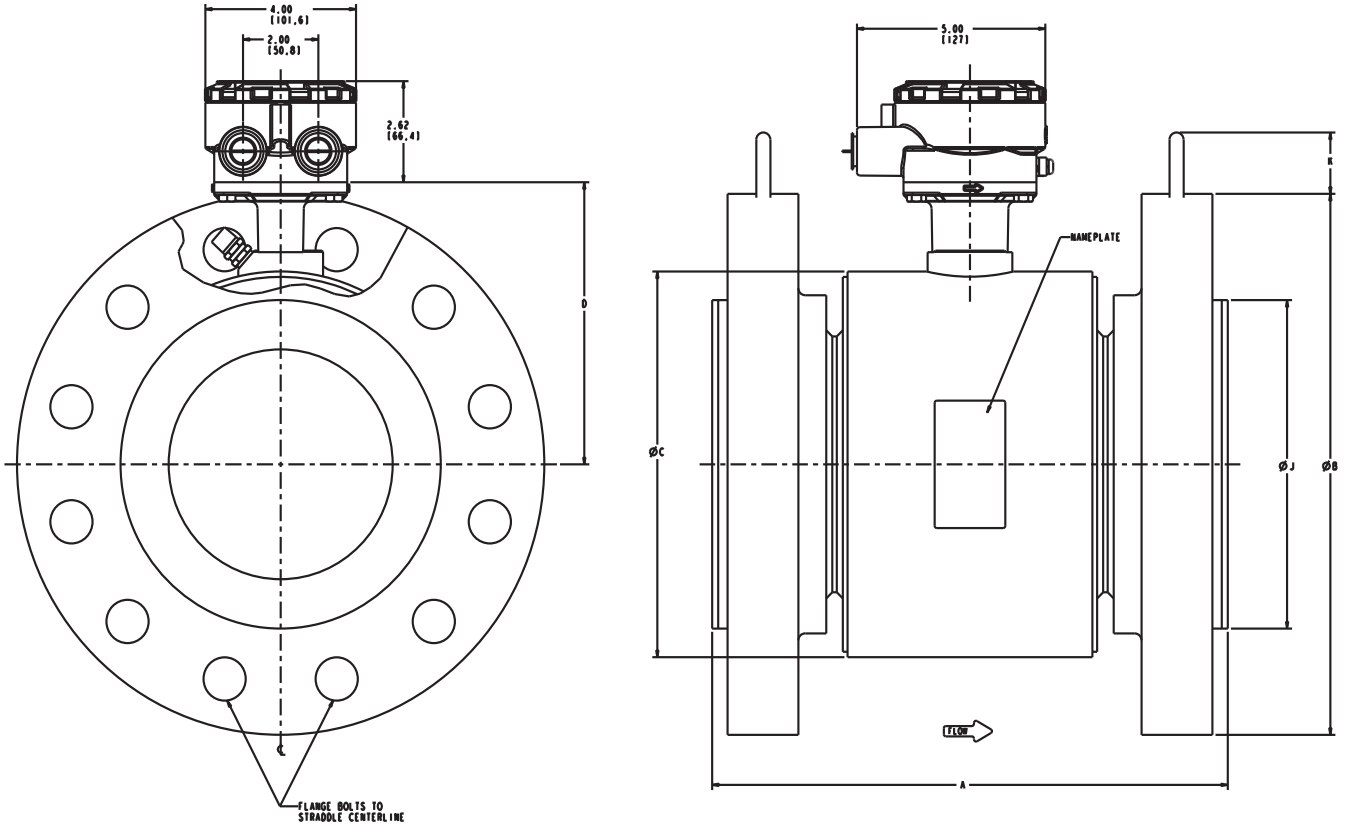

4.00
(101.6)
2.00
(50.8)
2.62
(66.4)
D
FLANGE BOLTS TO
STRADDLE CENTERLINE
5.00
(127)
NAMEPLATE
ØC
ØJ
ØB
FLOW
A

TABLE 25. 0.5-in. through 24-in. with Slip-on Flanges (mm)

Size, Description	Overall Length DIM "A" PTFE	DIM "A" Poly	Body DIM "C"	CL to UMB DIM "D"	Liner on Face DIM "J"	Lift Ring Height DIM "K"	Sensor Weight lbs. (kg)
"0.5 (15) ANSI - 600# DERAT. SO / RF"	8.38 (213)	8.38 (213)	4.50 (114)	4.41 (112)	1.38 (35)		15 (6.8)
"1 (25) ANSI - 600# DERAT. SO / RF"	8.67 (220)	8.67 (220)	4.50 (114)	4.41 (112)	2.00 (51)		24 (10.9)
"1 (25) ANSI - 600# FULL SO / RF"		8.56 (217)	4.50 (114)	4.41 (112)	2.00 (51)		24 (10.9)
"1 (25) ANSI - 900# SO / RF"		9.68 (246)	4.50 (114)	4.41 (112)	2.00 (51)	1.70 (43)	30 (13.6)
"1.5 (40) ANSI - 600# DERAT. SO / RF"	8.63 (219)	8.63 (219)	5.21 (132)	4.82 (122)	2.88 (73)		22 (10.0)
"1.5 (40) ANSI - 600# FULL SO / RF"		8.54 (217)	5.21 (132)	4.82 (122)	2.88 (73)		22 (10.0)
"1.5 (40) ANSI - 900# SO / RF"		9.52 (242)	5.21 (132)	4.82 (122)	2.88 (73)	1.70 (43)	42 (19.1)
"2 (50) ANSI - 600# DERAT. SO / RF"	8.78 (223)	8.78 (223)	5.21 (132)	4.82 (122)	3.62 (92)		30 (13.6)
"2 (50) ANSI - 600# FULL SO / RF"		8.66 (220)	5.21 (132)	4.82 (122)	3.62 (92)		30 (13.6)
"2 (50) ANSI - 900# SO / RF"		10.28 (261)	5.21 (132)	4.82 (122)	3.62 (92)	1.70 (43)	63 (28.6)
"3 (80) ANSI - 600# DERAT. SO / RF"	12.40 (315)	12.40 (315)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	52 (23.6)
"3 (80) ANSI - 600# FULL SO / RF"		12.22 (310)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	52 (23.6)
"3 (80) ANSI - 900# SO / RF"		12.82 (326)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	89 (40.4)
"4 (100) ANSI - 600# DERAT. SO / RF"	12.83 (326)	12.83 (326)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	75 (34.0)
"4 (100) ANSI - 600# FULL SO / RF"		12.65 (321)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	75 (34.0)
"4 (100) ANSI - 900# SO / RF"		13.89 (353)	7.91 (201)	6.17 (157)	6.19 (157)	2.00 (51)	138 (62.6)
"6 (150) ANSI - 600# DERAT. SO / RF"	14.23 (361)	14.21 (361)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	120 (54.4)
"6 (150) ANSI - 600# FULL SO / RF"		14.01 (356)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	120 (54.4)
"6 (150) ANSI - 900# SO / RF"		17.58 (447)	9.98 (253)	7.30 (185)	8.50 (216)	2.00 (51)	274 (124.3)
"8 (200) ANSI - 600# DERAT. SO / RF"	16.72 (425)	16.69 (424)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	200 (90.7)
"8 (200) ANSI - 600# FULL SO / RF"		16.49 (419)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	200 (90.7)
"8 (200) ANSI - 900# SO / RF"		20.61 (523)	11.92 (303)	8.27 (210)	10.62 (270)	3.13 (80)	499 (226.3)
"10 (250) ANSI - 600# DERAT. SO / RF"	19.54 (496)	19.30 (490)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	455 (206.4)
"10 (250) ANSI - 600# FULL SO / RF"		18.75 (476)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	455 (206.4)
"10 (250) ANSI - 900# SO / RF"		21.57 (548)	14.64 (372)	9.69 (246)	12.75 (324)	3.13 (80)	707 (320.7)
"12 (300) ANSI - 600# FULL SO / RF"		21.80 (554)	16.80 (427)	10.77 (274)	15.00 (381)	2.00 (51)	570 (258.5)
"12 (300) ANSI - 900# SO / RF"		23.49 (597)	16.80 (427)	10.77 (274)	15.00 (381)	3.13 (80)	1008 (457.2)
"14 (350) ANSI - 600# FULL SO / RF"		25.44 (646)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	
"16 (400) ANSI - 600# FULL SO / RF"		28.94 (735)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	
"18 (450) ANSI - 600# FULL SO / RF"		32.42 (823)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	
"20 (500) ANSI - 600# FULL SO / RF"		36.55 (928)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	
"24 (600) ANSI - 600# FULL SO / RF"		41.05 (1043)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	

FIGURE 20. 1-in. through 24-in. Welde Neck Flanges

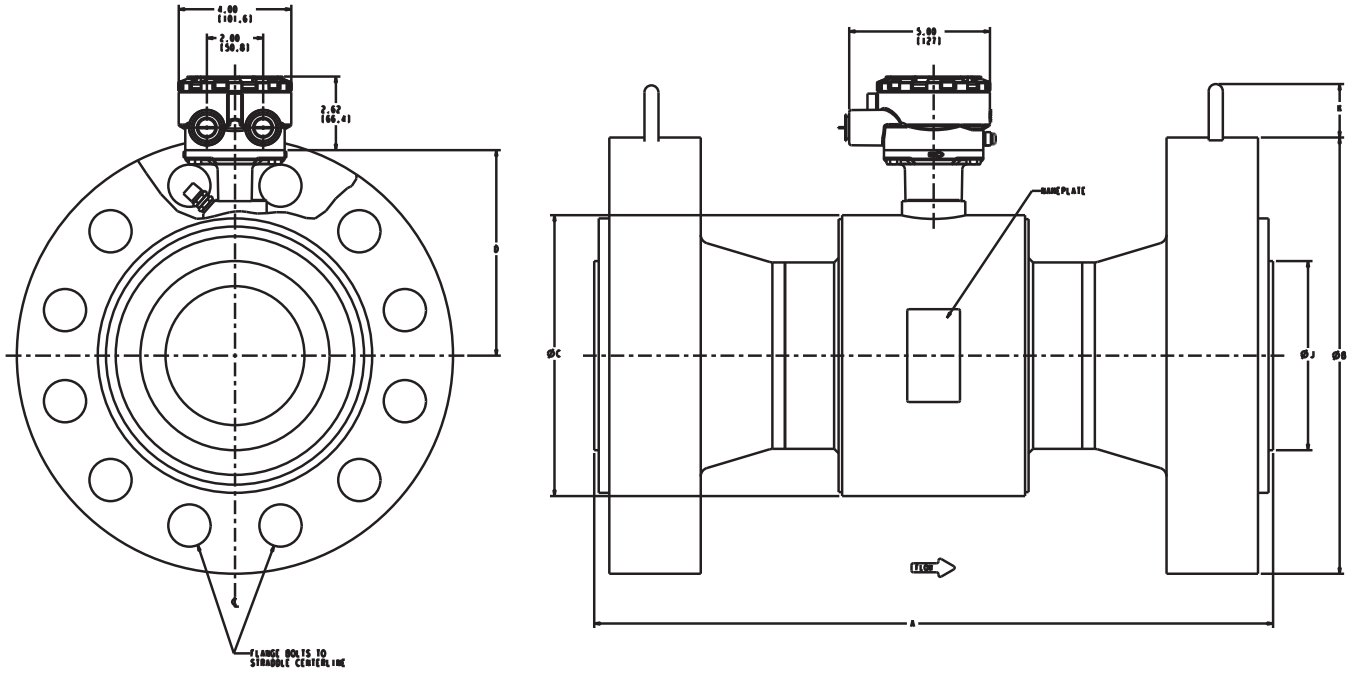


TABLE 26. 1-in. through 24-in. Weld Neck Flanges (mm)

Size, Description	DIM "A" Neoprene	DIM "A" Linatex	DIM "A" Poly	Body DIM "C"	CL to UMB DIM "D"	Liner on Face DIM "J"	Lift Ring Height DIM "K"	Sensor Weight lbs. (kg)
1 (25) ANSI - 600# FULL WN / RTJ	11.57 (294)	11.57 (294)	11.57 (294)	4.50 (114)	4.41 (112)	2.00 (51)		
1 (25) ANSI - 900# WN / RTJ	12.54 (319)	12.54 (319)	12.54 (319)	4.50 (114)	4.41 (112)	2.00 (51)	1.70 (43)	30 (13.6)
1 (25) ANSI - 1500# WN / RTJ	12.90 (328)	12.90 (328)	12.90 (328)	4.50 (114)	4.41 (112)	2.81 (71)	1.70 (43)	
1.5 (40) ANSI - 600# FULL WN / RTJ	11.59 (294)	11.59 (294)	11.59 (294)	5.21 (132)	4.82 (122)	2.88 (73)		
1.5 (40) ANSI - 900# WN / RTJ	12.68 (322)	12.68 (322)	12.68 (322)	5.21 (132)	4.82 (122)	2.88 (73)	1.70 (43)	42 (19.1)
1.5 (40) ANSI - 1500# WN / RTJ	13.12 (333)	13.12 (333)	13.12 (333)	5.21 (132)	4.82 (122)	3.62 (92)	1.70 (43)	
1.5 (40) ANSI - 2500# WN / RTJ	15.66 (398)	15.66 (398)	15.66 (398)	5.21 (132)	4.82 (122)	4.50 (114)	1.70 (43)	
2 (50) ANSI - 600# FULL WN / RTJ	11.99 (305)	11.99 (305)	11.99 (305)	5.21 (132)	4.82 (122)	3.62 (92)		
2 (50) ANSI - 900# WN / RTJ	14.42 (366)	14.42 (366)	14.42 (366)	5.21 (132)	4.82 (122)	3.62 (92)	1.70 (43)	63 (28.6)
2 (50) ANSI - 1500# WN / RTJ	14.92 (379)	14.92 (379)	14.92 (379)	5.21 (132)	4.82 (122)	4.88 (124)	1.70 (43)	
2 (50) ANSI - 2500# WN / RTJ	17.01 (432)	17.01 (432)	17.01 (432)	5.21 (132)	4.82 (122)	5.25 (133)	1.70 (43)	
3 (80) ANSI - 600# FULL WN / RTJ	12.94 (329)	12.94 (329)	12.94 (329)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	
3 (80) ANSI - 900# WN / RTJ	14.54 (369)	14.54 (369)	14.54 (369)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	89 (40.4)
3 (80) ANSI - 1500# WN / RTJ	16.42 (417)	16.42 (417)	16.42 (417)	7.21 (183)	5.82 (148)	6.62 (168)	1.70 (43)	
3 (80) ANSI - 2500# WN / RTJ	20.70 (526)	20.70 (526)	20.70 (526)	7.21 (183)	5.82 (148)	6.62 (168)	1.70 (43)	
4 (100) ANSI - 600# FULL WN / RTJ	15.73 (400)	15.73 (400)	15.73 (400)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	
4 (100) ANSI - 900# WN / RTJ	16.97 (431)	16.97 (431)	16.97 (431)	7.91 (201)	6.17 (157)	6.19 (157)	2.00 (51)	138 (62.6)
4 (100) ANSI - 1500# WN / RTJ	18.33 (466)	18.33 (466)	18.33 (466)	7.91 (201)	6.17 (157)	7.62 (194)	2.00 (51)	
4 (100) ANSI - 2500# WN / RTJ	24.12 (613)	24.12 (613)	24.12 (613)	7.91 (201)	6.17 (157)	8.00 (203)	2.00 (51)	
6 (150) ANSI - 600# FULL WN / RTJ	18.89 (480)	18.89 (480)	18.89 (480)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	
6 (150) ANSI - 900# WN / RTJ	20.74 (527)	20.74 (527)	20.74 (527)	9.98 (253)	7.30 (185)	8.50 (216)	2.00 (51)	274 (124.3)
6 (150) ANSI - 1500# WN / RTJ	24.12 (613)	24.12 (613)	24.12 (613)	9.98 (253)	7.30 (185)	9.75 (248)	2.00 (51)	
6 (150) ANSI - 2500# WN / RTJ	32.32 (821)	32.32 (821)	32.32 (821)	9.98 (253)	7.30 (185)	11.00 (279)	2.00 (51)	
8 (200) ANSI - 600# FULL WN / RTJ	21.75 (552)	21.75 (552)	21.75 (552)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	
8 (200) ANSI - 900# WN / RTJ	24.25 (616)	24.25 (616)	24.25 (616)	11.92 (303)	8.27 (210)	10.62 (270)	3.13 (80)	499 (226.3)

TABLE 26. 1-in. through 24-in. Weld Neck Flanges (mm)

Size, Description	DIM "A" Neoprene	DIM "A" Linatex	DIM "A" Poly	Body DIM "C"	CL to UMB DIM "D"	Liner on Face DIM "J"	Lift Ring Height DIM "K"	Sensor Weight lbs. (kg)
8 (200) ANSI - 1500# WN / RTJ	29.11 (739)	29.11 (739)	29.11 (739)	11.92 (303)	8.27 (210)	12.50 (318)	3.13 (80)	
8 (200) ANSI - 2500# WN / RTJ	37.53 (953)	37.53 (953)	37.53 (953)	11.92 (303)	8.27 (210)	13.38 (340)	3.13 (80)	
10 (250) ANSI - 600# FULL WN / RTJ	23.50 (597)	23.50 (597)	23.50 (597)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	
10 (250) ANSI - 900# WN / RTJ	26.28 (668)	26.28 (668)	26.28 (668)	14.64 (372)	9.69 (246)	12.75 (324)	3.13 (80)	707 (320.7)
10 (250) ANSI - 1500# WN / RTJ	32.44 (824)	32.44 (824)	32.44 (824)	14.64 (372)	9.69 (246)	14.62 (371)	3.13 (80)	
10 (250) ANSI - 2500# WN / RTJ	45.86 (1165)	45.86 (1165)	45.86 (1165)	14.64 (372)	9.69 (246)	16.75 (425)	3.13 (80)	
12 (300) ANSI - 600# FULL WN / RTJ	26.75 (679)	26.75 (679)	26.75 (679)	16.50 (419)	10.77 (274)	15.00 (381)	2.00 (51)	
12 (300) ANSI - 900# WN / RTJ	30.49 (774)	30.49 (774)	30.49 (774)	16.50 (419)	10.77 (274)	15.00 (381)	3.13 (80)	1008 (457.2)
12 (300) ANSI - 1500# WN / RTJ	37.76 (959)	37.76 (959)	37.76 (959)	16.50 (419)	10.77 (274)	17.25 (438)	3.13 (80)	
12 (300) ANSI - 2500# WN / RTJ	52.41 (1331)	52.41 (1331)	52.41 (1331)	16.50 (419)	10.77 (274)	19.50 (495)	3.13 (80)	
14 (350) ANSI - 600# FULL WN / RTJ	30.11 (765)	30.11 (765)	30.11 (765)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	
16 (400) ANSI - 600# FULL WN / RTJ	33.39 (848)	33.39 (848)	33.39 (848)	20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	
18 (450) ANSI - 600# FULL WN / RTJ	35.05 (890)	35.05 (890)	35.05 (890)	23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	
20 (500) ANSI - 600# FULL WN / RTJ	38.21 (971)	38.21 (971)	38.21 (971)	25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	
24 (600) ANSI - 600# FULL WN / RTJ	42.40 (1077)	42.40 (1077)	42.40 (1077)	30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	

FIGURE 21. 3-in. through 36-in. Slip-on Flanges

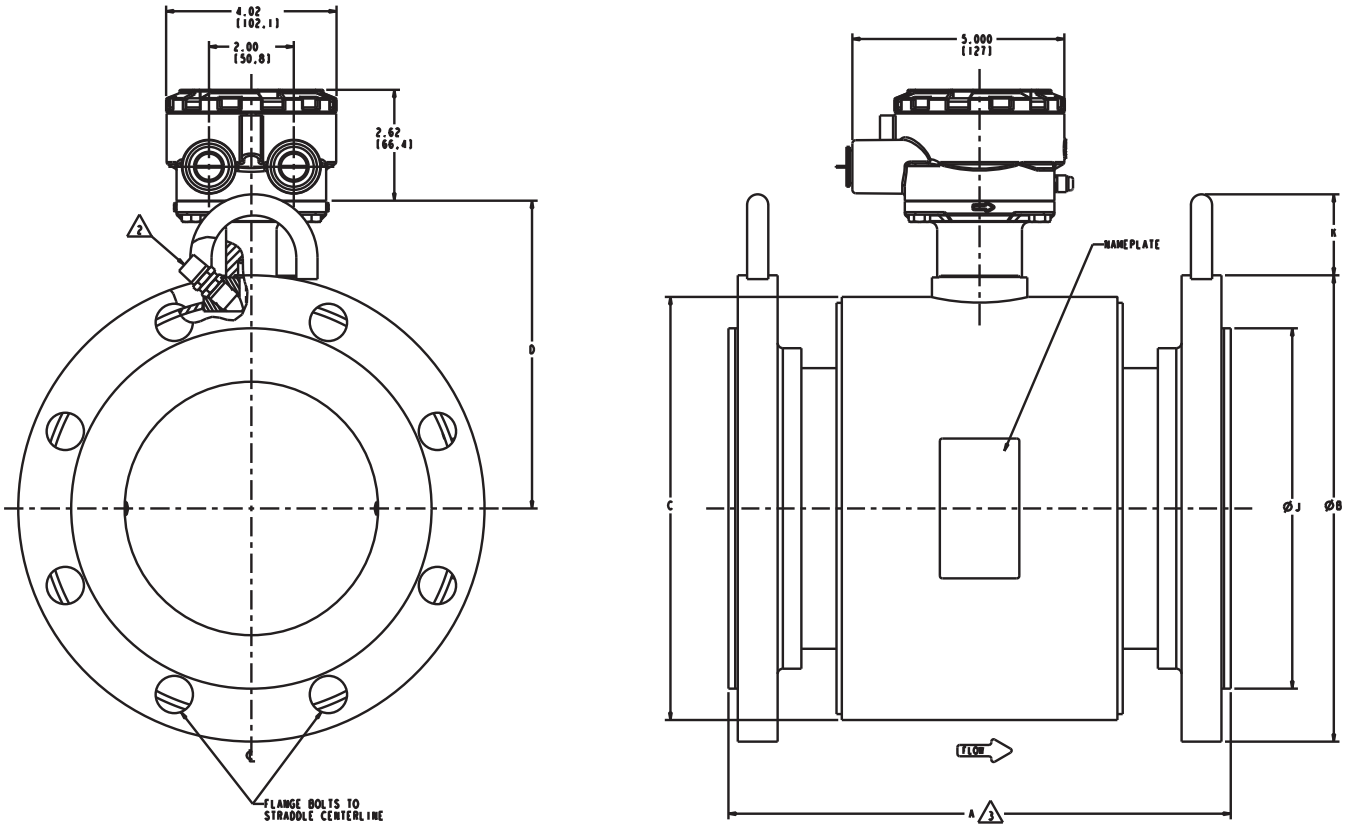


TABLE 27. 3-in. through 36-in. Slip-on Flanges

Size, Description	Overall Length DIM "A" PTFE	Overall Length DIM "A" PFA	Body DIM "C"	CL to UMB DIM "D"	Liner on Face DIM "J"	Lift Ring Height DIM "K"	Sensor Weight lbs. (kg)
3 (80) ANSI - 150# SO / RF	7.87 (200)	7.87 (200)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	42 (19.1)
3 (80) ANSI - 300# SO / RF	8.63 (219)	8.63 (219)	7.21 (183)	5.82 (148)	5.00 (127)	1.70 (43)	47 (21.3)
4 (100) ANSI - 150# SO / RF	9.84 (250)	9.84 (250)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	57 (25.9)
4 (100) ANSI - 300# SO / RF	10.88 (276)	10.88 (276)	7.91 (201)	6.17 (157)	6.19 (157)	1.70 (43)	65 (29.5)
6 (150) ANSI - 150# SO / RF	11.81 (300)	11.81 (300)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	71 (32.2)
6 (150) ANSI - 300# SO / RF	13.06 (332)	13.06 (332)	9.98 (253)	7.30 (185)	8.50 (216)	1.70 (43)	93 (42.2)
8 (200) ANSI - 150# SO / RF	13.78 (350)	13.78 (350)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	145 (65.8)
8 (200) ANSI - 300# SO / RF	15.60 (396)	15.60 (396)	11.92 (303)	8.27 (210)	10.62 (270)	1.70 (43)	162 (73.5)
10 (250) ANSI - 150# SO / RF	15.00 (381)	15.00 (381)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	195 (88.5)
10 (250) ANSI - 300# SO / RF	17.13 (435)	17.13 (435)	14.64 (372)	9.69 (246)	12.75 (324)	2.00 (51)	300 (136.1)
12 (300) ANSI - 150# SO / RF	18.00 (457)	18.00 (457)	16.80 (427)	10.77 (274)	15.00 (381)	2.00 (51)	330 (149.7)
12 (300) ANSI - 300# SO / RF	20.14 (512)	20.14 (512)	16.80 (427)	10.77 (274)	15.00 (381)	2.00 (51)	435 (197.3)
14 (350) ANSI - 150# SO / RF	20.91 (531)	21.00 (533)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	380 (172.4)
14 (350) ANSI - 300# SO / RF	23.16 (588)	23.25 (591)	18.92 (481)	11.83 (300)	16.25 (413)	2.00 (51)	573 (259.9)
16 (400) ANSI - 150# SO / RF	23.88 (607)		20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	470 (213.2)
16 (400) ANSI - 300# SO / RF	26.13 (664)		20.94 (532)	12.84 (326)	18.50 (470)	3.13 (80)	755 (342.5)
18 (450) ANSI - 150# SO / RF	26.85 (682)		23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	592 (268.5)
18 (450) ANSI - 300# SO / RF	29.97 (761)		23.46 (596)	14.10 (358)	21.00 (533)	3.13 (80)	1010 (458.1)
20 (500) ANSI - 150# SO / RF	29.78 (756)		25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	680 (308.4)
20 (500) ANSI - 300# SO / RF	33.04 (839)		25.48 (647)	15.11 (384)	23.00 (584)	3.13 (80)	1180 (535.2)
24 (600) ANSI - 150# SO / RF	35.75 (908)		30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1020 (462.7)
24 (600) ANSI - 300# SO / RF	39.38 (1000)		30.03 (763)	17.39 (442)	27.25 (692)	3.13 (80)	1865 (845.9)
30 (750) AWWA CLASS D SO / FF	37.00 (940)		35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	1400 (635.0)
30 (750) MSS SP44 - 150# SO / RF	41.56 (1056)		35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	1782 (808.3)
30 (750) MSS SP44 - 300# SO / RF	47.25 (1200)		35.50 (902)	20.13 (511)	33.75 (857)	3.13 (80)	2610 (1183.9)
36 (900) AWWA CLASS D SO / FF	40.63 (1032)		43.37 (1102)	24.00 (610)	40.25 (1022)	3.13 (80)	1975 (895.8)
36 (900) MSS SP44 - 150# SO / RF	47.25 (1200)		43.37 (1102)	24.00 (610)	40.25 (1022)	3.13 (80)	2777 (1259.9)
36 (900) MSS SP44 - 300# SO / RF	53.17 (1351)		43.37 (1102)	24.00 (610)	40.25 (1022)	3.38 (86)	4204 (1906.9)

FIGURE 22. Liner Protectors

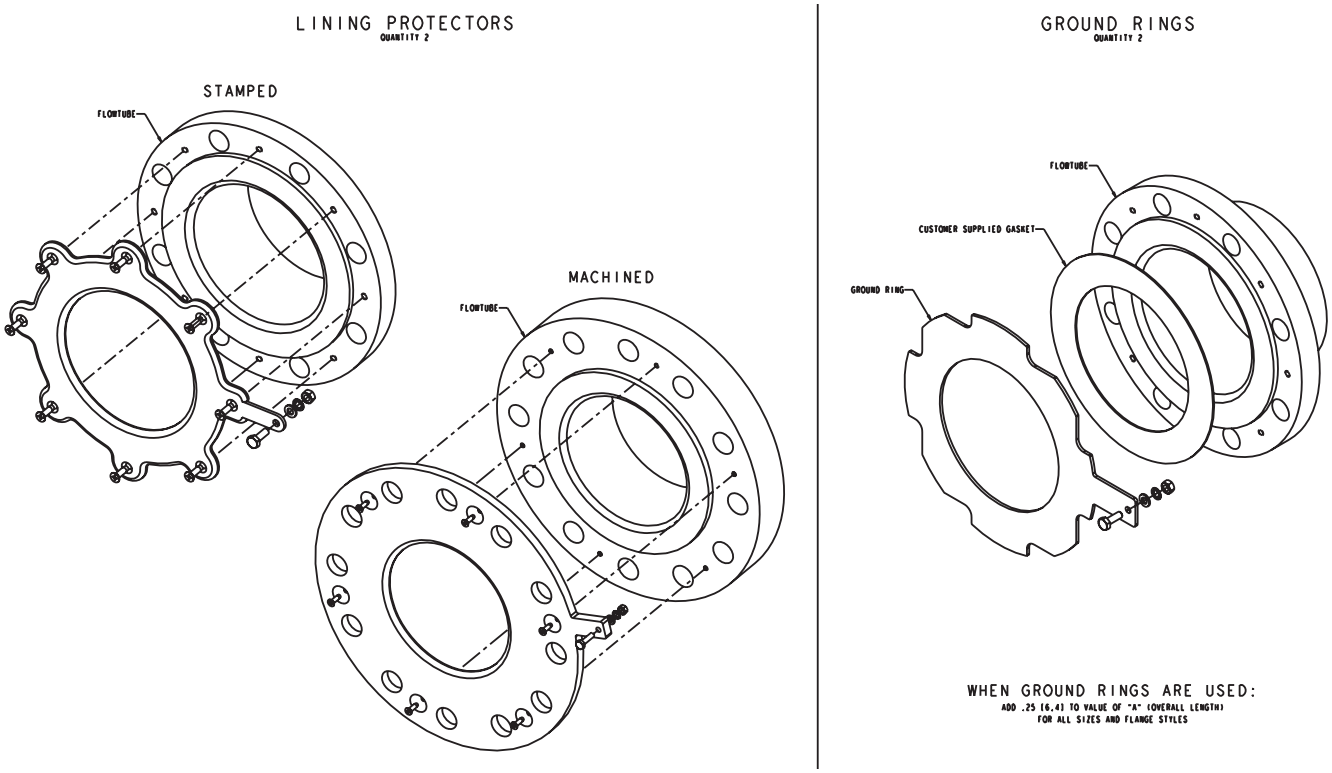


TABLE 28. When Liner Protectors Are Used

Flange Style	Sensor Size	Add This Value to “A” (Overall Length)
ANSI	3-in. through 10-in.	.25 (6,4)
	12-in. through 24-in.	.60 (15,2)
	30-in.	.75 (19)
	36-in.	1.0 (25,4)
DIN	3-in. through 8-in.	.25 (25,4)
	10-in.	.75 (19)
	12-in.	1.0 (25,4)
	14-in. through 24-in.	.60 (15,2
	30-in.	.75 (19)
	36-in.	1.0 (25,4)

FIGURE 23. Standard Wafer Magmeters

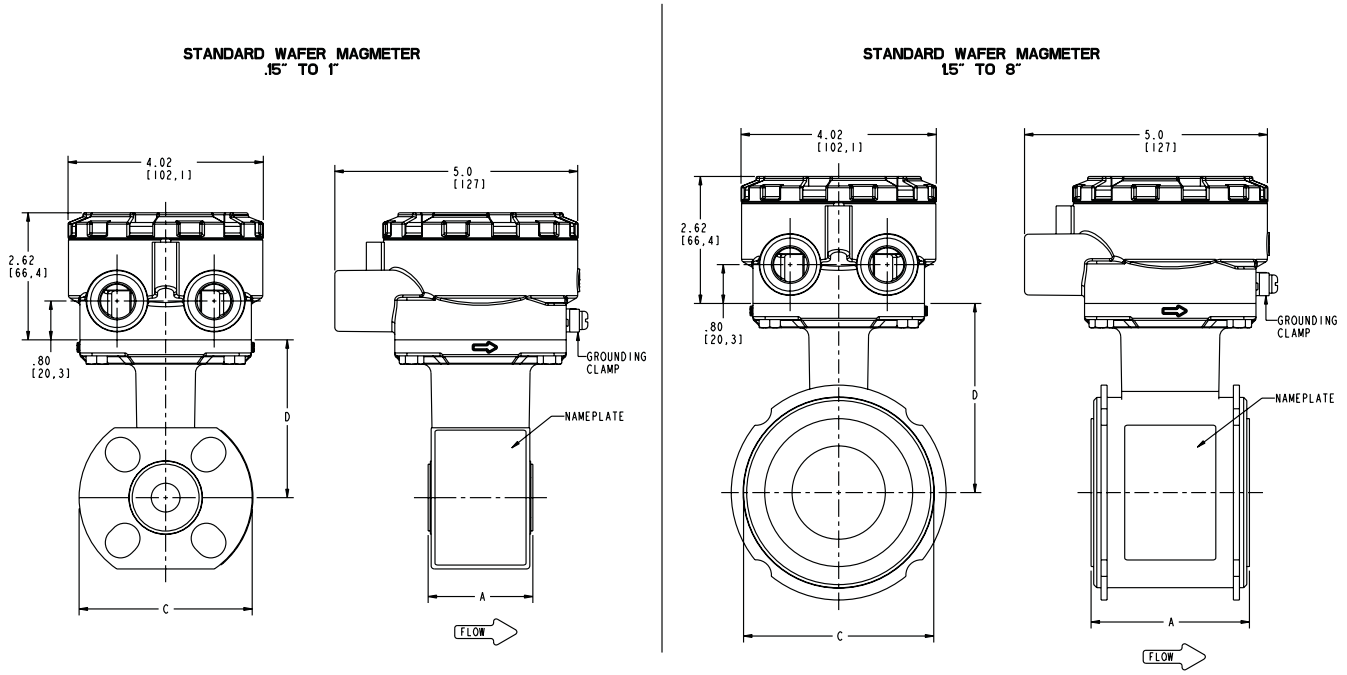


TABLE 29. 0.15-in. through 8-in. Wafer (mm)

	Overall Length						
Size, Description	DIM "A" PTFE	DIM "A" ETFE	DIM "A" PFA	Body DIM "C"	CL to UMB DIM "D"	Liner on Face DIM "J"	Sensor Weight lbs. (kg)
0.15 (4) WAFER UP TO ANSI - 150# / DIN PN16			2.17 (55)	3.56 (90)	3.25 (83)	1.37 (35)	4 (1.8)
0.3 (8) WAFER UP TO ANSI - 150# / DIN PN16			2.17 (55)	3.56 (90)	3.25 (83)	1.37 (35)	4 (1.8)
0.5 (15) WAFER UP TO ANSI - 300# / DIN PN40	2.21 (56)	2.16 (55)		3.56 (90)	3.25 (83)	1.38 (35)	4 (1.8)
1 (25) WAFER UP TO ANSI - 300# / DIN PN40	2.26 (57)	2.13 (54)		4.50 (114)	3.56 (90)	1.94 (49)	5 (2.3)
1.5 (40) WAFER UP TO ANSI - 300# / DIN PN40	2.88 (73)	2.73 (69)		3.29 (84)	3.67 (93)	2.42 (61)	5 (2.3)
2 (20) WAFER UP TO ANSI - 300# / DIN PN40	3.32 (84)	3.26 (83)		3.92 (99)	3.89 (99)	3.05 (77)	7 (3.2)
3 (80) WAFER UP TO ANSI - 300# / DIN PN40	4.71 (120)	4.62 (117)		5.17 (131)	4.51 (115)	4.41 (112)	13 (5.9)
4 (100) WAFER UP TO ANSI - 300# / DIN PN40	5.87 (149)	5.83 (148)		6.39 (162)	5.12 (130)	5.80 (147)	22 (10.0)
6 (150) WAFER UP TO ANSI - 300# / DIN PN40	7.08 (180)	6.87 (174)		8.57 (218)	6.22 (158)	7.86 (200)	35 (15.9)
8 (200) WAFER UP TO ANSI - 300# / DIN PN40	9.06 (230)	8.86 (225)		10.63 (270)	7.25 (184)	9.86 (250)	60 (27.2)

TABLE 30. Rosemount 8705 Sensor Dimensions with EN 1092-1 (DIN) Flanges in Millimeters (In.)

Line Size[1] and Flange Rating	Body Height "H"	Liner Face Diameter "A"	Overall Sensor Length "L"[2]	Flange Diameter "D"	Liner Thickness	Inside Diameter
15 mm PN 10–40	171 (6.75)	45 (1.77)	200 (7.88)	95 (3.74)	2.3 (0.09)	12.5 (.49)
25 mm PN 10–40	171 (6.75)	68 (2.68)	200 (7.88)	115 (4.53)	2.3 (0.09)	23.1 (.91)
40 mm PN 10–40	180 (7.10)	88 (3.46)	200 (7.87)	150 (5.91)	3.1 (0.12)	37 (1.44)
50 mm PN 10–40	180 (7.10)	102 (4.02)	200 (7.87)	165 (6.50)	3.1 (0.12)	49 (1.91)
80 mm PN 10–40	206 (8.10)	138 (5.43)	200 (7.87)	200 (7.87)	3.8 (0.15)	75.2 (2.96)
100 mm PN 10–16	215 (8.45)	162 (6.38)	250 (9.84)	220 (8.66)	3.8 (0.15)	100.6 (3.96)
100 mm PN 25–40	215 (8.45)	162 (6.38)	250 (9.84)	235 (9.25)	3.8 (0.15)	100.6 (3.96)
150 mm PN 10	240 (9.45)	212 (8.35)	300 (11.81)	285 (11.22)	4.7 (0.19)	152 (5.98)
150 mm PN 16	240 (9.45)	215 (8.46)	300 (11.81)	220 (8.66)	4.7 (0.19)	152 (5.98)
150 mm PN 25	240 (9.45)	218 (8.58)	300 (11.81)	300 (11.81)	4.7 (0.19)	152 (5.98)
150 mm PN 40	240 (9.45)	218 (8.58)	332 (13.07)	300 (11.81)	4.7 (0.19)	144 (5.67)
200 mm PN 10	265 (10.42)	268 (10.55)	350 (13.78)	240 (13.39)	4.9 (0.19)	202 (7.94)
200 mm PN 16	265 (10.42)	268 (10.55)	350 (13.78)	340 (13.39)	4.9 (0.19)	202 (7.94)
200 mm PN 25	265 (10.42)	278 (10.94)	350 (13.78)	360 (14.17)	4.9 (0.19)	202 (7.94)
200 mm PN 40	265 (10.42)	285 (11.22)	396 (15.60)	375 (14.76)	4.3 (0.17)	194 (7.64)
250 mm PN 10	299 (11.78)	320 (12.60)	381 (15.00)	395 (15.55)	6.6 (0.26)	251 (9.88)
250 mm PN 16	299 (11.78)	320 (12.60)	381 (15.00)	405 (15.94)	6.6 (0.26)	251 (9.88)
250 mm PN 25	299 (11.78)	335 (13.19)	381 (15.00)	425 (16.73)	6.6 (0.26)	251 (9.88)
250 mm PN 40	299 (11.78)	345 (13.58)	435 (17.13)	450 (17.72)	6.6 (0.26)	240 (9.45)
300 mm PN 10	327 (12.86)	370 (14.57)	457 (18.00)	445 (17.52)	6.6 (0.26)	302 (11.87)
300 mm PN 16	327 (12.86)	378 (14.88)	457 (18.00)	460 (18.11)	6.6 (0.26)	302 (11.87)
300 mm PN 25	327 (12.86)	395 (15.55)	457 (18.00)	485 (19.09)	6.6 (0.26)	302 (11.87)
300 mm PN 40	327 (12.86)	410 (16.14)	512 (20.14)	515 (20.28)	6.6 (0.26)	292 (11.48)
350 mm PN 10	354 (13.92)	430 (16.93)	531 (20.91)	505 (19.88)	4.8 (0.19)	334 (13.16)
350 mm PN 16	354 (13.92)	438 (17.24)	531 (20.91)	520 (20.47)	4.8 (0.19)	334 (13.16)
350 mm PN 25	354 (13.92)	450 (17.72)	531 (20.91)	555 (21.85)	4.8 (0.19)	334 (13.16)
350 mm PN 40	354 (13.92)	465 (18.31)	588 (23.16)	580 (22.83)	4.8 (0.19)	12.79 (325)
400 mm PN 10	379 (14.93)	482 (18.98)	607 (23.88)	565 (22.24)	4.8 (0.19)	384 (15.12)
400 mm PN 16	379 (14.93)	490 (19.29)	607 (23.88)	580 (22.83)	4.8 (0.19)	384 (15.12)
400 mm PN 25	379 (14.93)	505 (19.88)	607 (23.88)	620 (24.41)	4.8 (0.19)	384 (15.12)
400 mm PN 40	379 (14.93)	535 (21.06)	664 (26.13)	660 (25.98)	4.8 (0.19)	375 (14.75)
450 mm PN 10	411 (16.19)	532 (20.94)	682 (26.85)	615 (24.20)	4.8 (0.19)	438 (17.24)
450 mm PN 16	411 (16.19)	550 (21.65)	682 (26.85)	640 (25.20)	4.8 (0.19)	438 (17.24)
450 mm PN 25	411 (16.19)	555 (21.85)	682 (26.85)	670 (26.38)	4.8 (0.19)	438 (17.24)
450 mm PN 40	411 (16.19)	560 (22.05)	761 (29.97)	685 (26.97)	4.8 (0.19)	419 (16.49)
500 mm PN 10	437 (17.20)	585 (23.03)	756 (29.78)	670 (26.38)	4.8 (0.19)	482 (18.96)
500 mm PN 16	437 (17.20)	610 (24.02)	756 (29.78)	715 (28.15)	4.8 (0.19)	482 (18.96)
500 mm PN 25	437 (17.20)	615 (24.21)	756 (29.78)	730 (28.74)	4.8 (0.19)	482 (18.96)
500 mm PN 40	437 (17.20)	615 (24.21)	839 (33.04)	755 (29.72)	4.8 (0.19)	463 (18.21)
600 mm PN 10	495 (19.48)	685 (26.97)	908 (35.75)	780 (30.71)	4.8 (0.19)	583 (22.94)
600 mm PN 16	495 (19.48)	725 (28.54)	908 (35.75)	840 (33.07))	4.8 (0.19)	583 (22.94)
600 mm PN 25	495 (19.48)	720 (28.35)	908 (35.75)	845 (33.27)	4.8 (0.19)	581 (22.87)
Dimensions with EN 1092-1 (DIN) Flanges						

(1) Consult factory for larger line sizes.

(2) When 2 grounding rings are specified, add 6.35 mm (0.25 in.) for 15 mm through 350 mm (½- through 14 in.) sensors or 12.7 mm (0.50 in.) for 400 mm (16 in.) and larger. When lining protectors are specified, add 6.35 mm (0.25 in.) for 15 mm through 300 mm (½- through 12-in.) sensors, 12.7 mm (0.50 in.) for 350 mm through 900 mm (14- through 36-in.) sensors.

FIGURE 24. Rosemount 8711 Dimensional Drawings (0.15-in. through 1-in. line sizes)

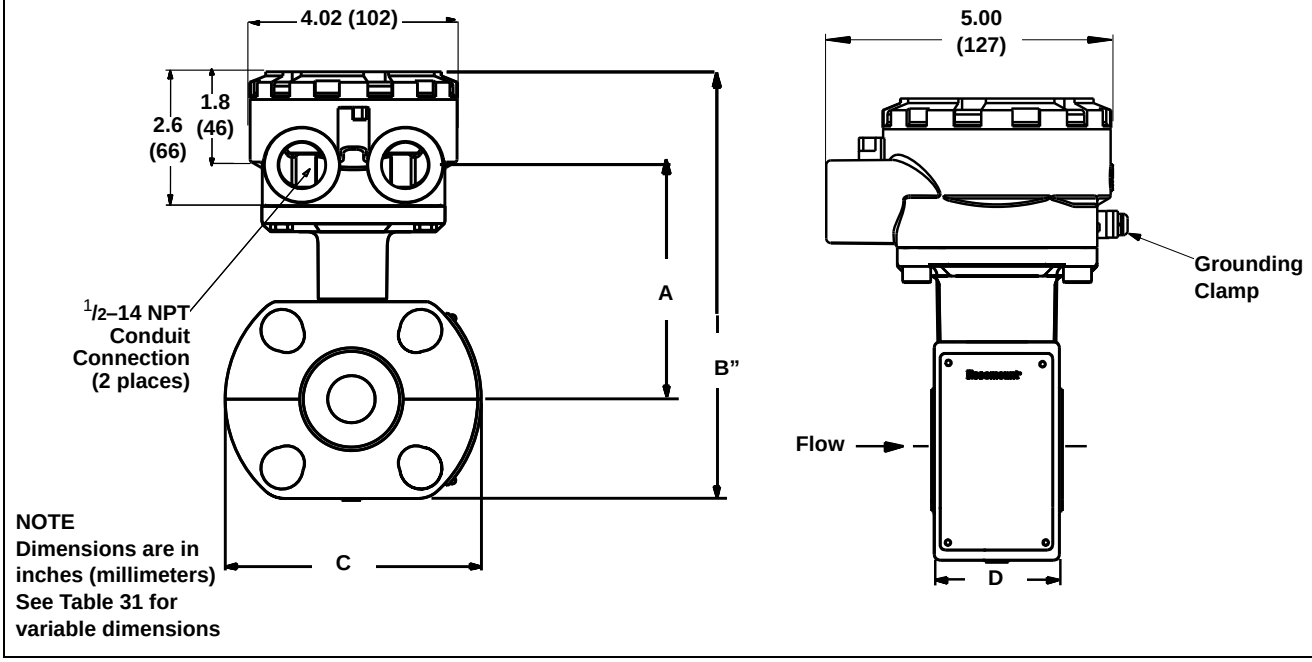


FIGURE 25. Rosemount 8711 Dimensional Drawings (1.5-in. through 8-in. line sizes)

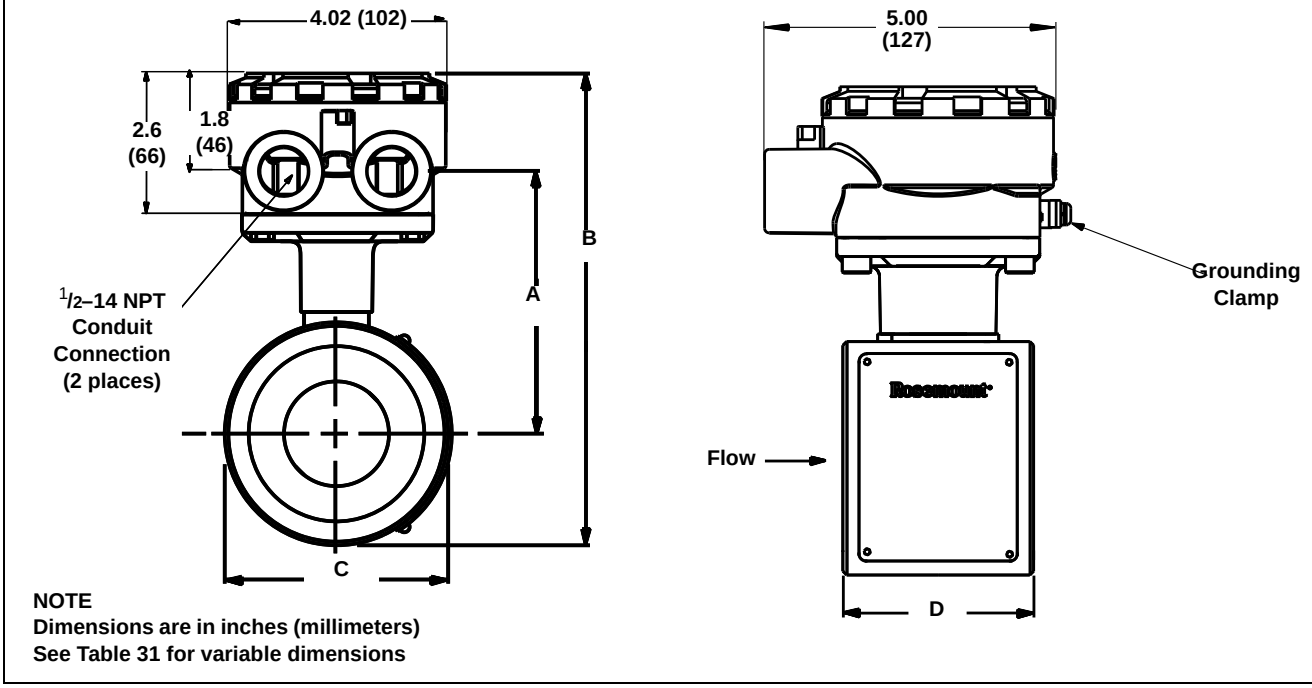


TABLE 31. Rosemount 8711 Sensor Dimensions and Weight

Nominal Line Size Inches (mm)		Sensor Housing Dimensions "A" Max.		"B"		"C"		Sensor Length "D"		Inside Diameter		Weight lb (kg)	
0.15[1]	(4)	4.00	(102)	5.44	(138)	3.56	(90)	2.17	(55)	.150	(4)	4	(2)
0.30[1]	(8)	4.00	(102)	5.44	(138)	3.56	(90)	2.17	(55)	.300	(7)	4	(2)
0.5	(15)	4.00	(102)	5.44	(138)	3.56	(90)	2.17	(55)	.593	(15)	4	(2)
1	(25)	4.31	(109)	6.06	(154)	4.50	(114)	2.17	(55)	.970	(24)	5	(2)
1.5	(40)	4.42	(112)	7.41	(188)	3.28	(83)	2.73	(69)	1.50	(38)	5	(2)
2	(50)	4.64	(118)	7.94	(202)	3.91	(99)	3.26	(83)	1.92	(50)	7	(3)
3	(80)	5.26	(134)	9.19	(233)	5.16	(131)	4.68	(119)	2.79	(76)	13	(6)
4	(100)	5.87	(149)	10.41	(264)	6.38	(162)	5.88	(149)	3.70	(99)	22	(10)
6	(150)	6.97	(177)	12.60	(320)	8.56	(217)	6.87	(174)	5.825	(148)	35	(16)
8	(200)	8.00	(2003)	14.66	(372)	10.63	(270)	8.86	(225)	7.875	(200)	60	(27)

(1) 0.15 and 0.30 in. (4 and 8 mm) sensors mount between ½-in. (13 mm) flanges.

FIGURE 26. Dimensional Drawings of Rosemount 8721 Sensors Typical of 1 through 4inch (25 through 100mm) line sizes.

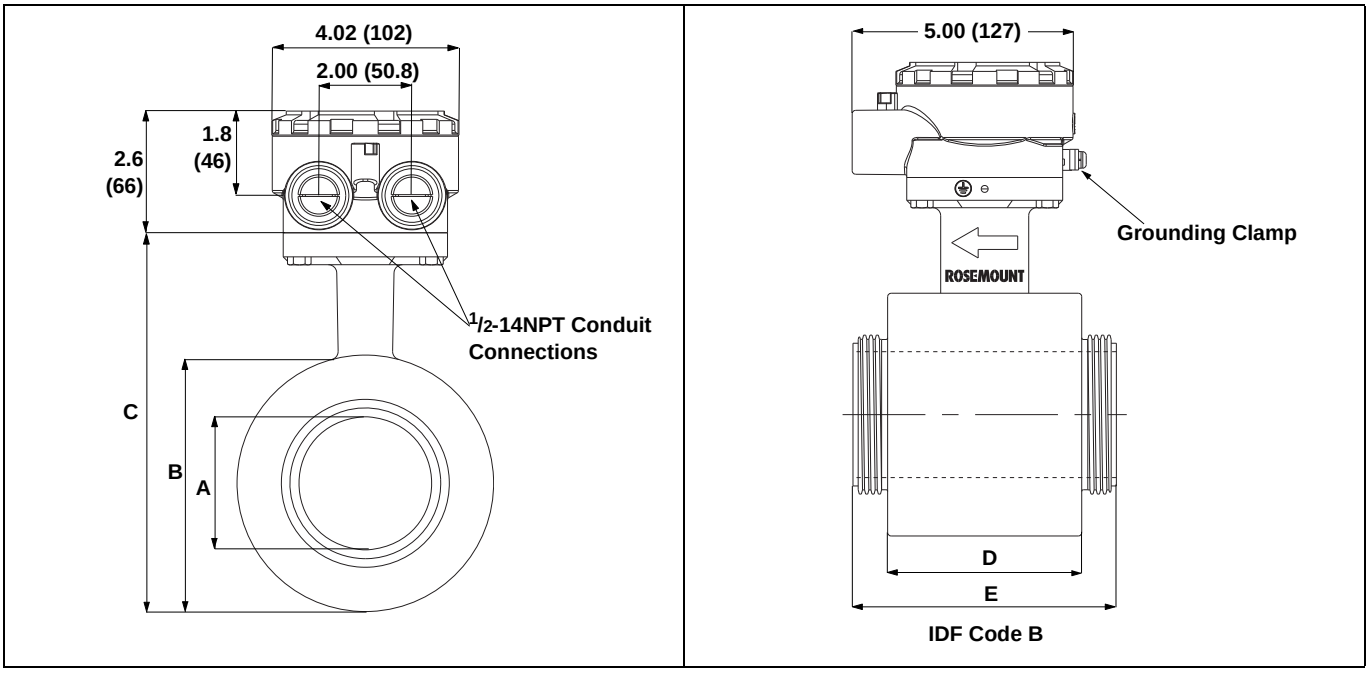


TABLE 32. Rosemount 8721 Dimensions in Inches (Millimeters). Refer to Dimensional Drawing Figure 26.

Line Size	Sensor Dimensions A	Body Diameter B	Sensor Height C	Body Length D	IDF Length E
1/2 (15)	0.62 (15.8)	2.87 (73.0)	5.51 (140.0)	2.13 (54.0)	3.66 (93.0)
1 (25)	0.87 (22.2)	2.87 (73.0)	5.51 (140.0)	2.13 (54.0)	3.66 (93.0)
1 1/2 (40)	1.37 (34.9)	3.50 (88.9)	6.14 (155.9)	2.40 (61.0)	3.96 (100.5)
2 (50)	1.87 (47.6)	4.00 (101.5)	6.63 (168.5)	2.83 (72.0)	4.41 (112.0)
2 1/2 (65)	2.38 (60.3)	4.53 (115.0)	7.17 (182.0)	3.58 (91.0)	5.23 (133.0)
3 (80)	2.87 (73.0)	5.57 (141.5)	8.21 (208.5)	4.41 (112.0)	5.98 (152.0)
4 (100)	3.84 (97.6)	6.98 (177.0)	9.61 (244.0)	5.20 (132.0)	6.77 (172.0)

FIGURE 27. Dimensional Drawings of Rosemount 8721 Sensors Typical of 1 through 4inch (25 through 100mm) line sizes

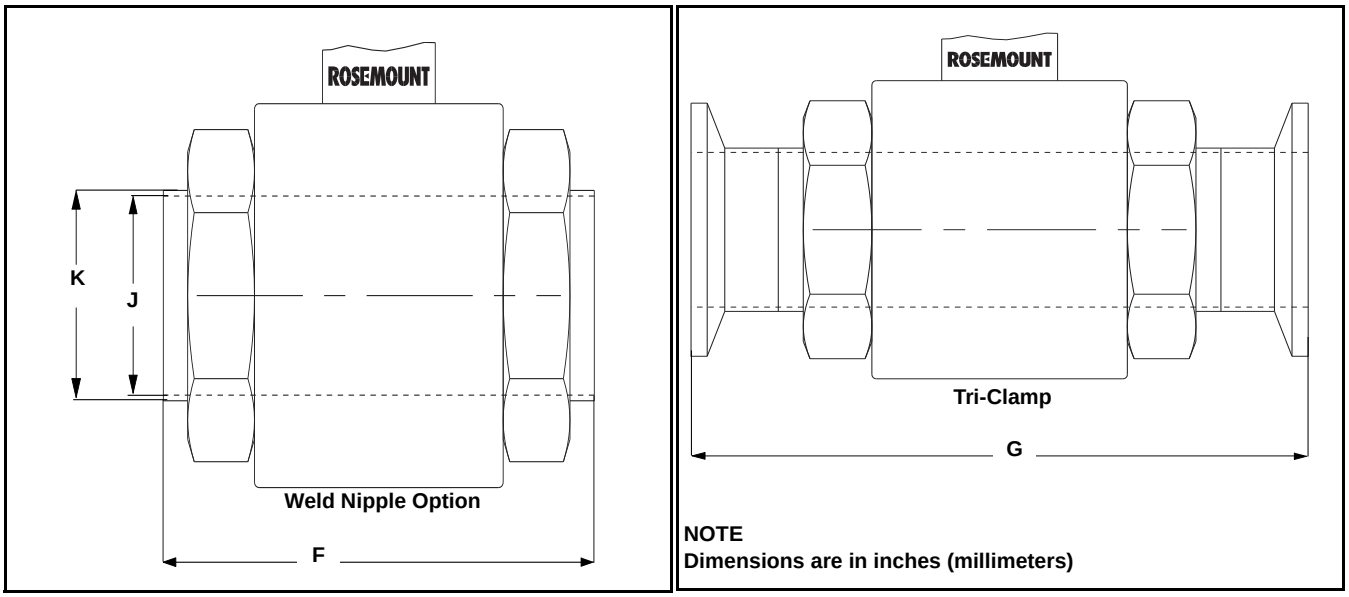
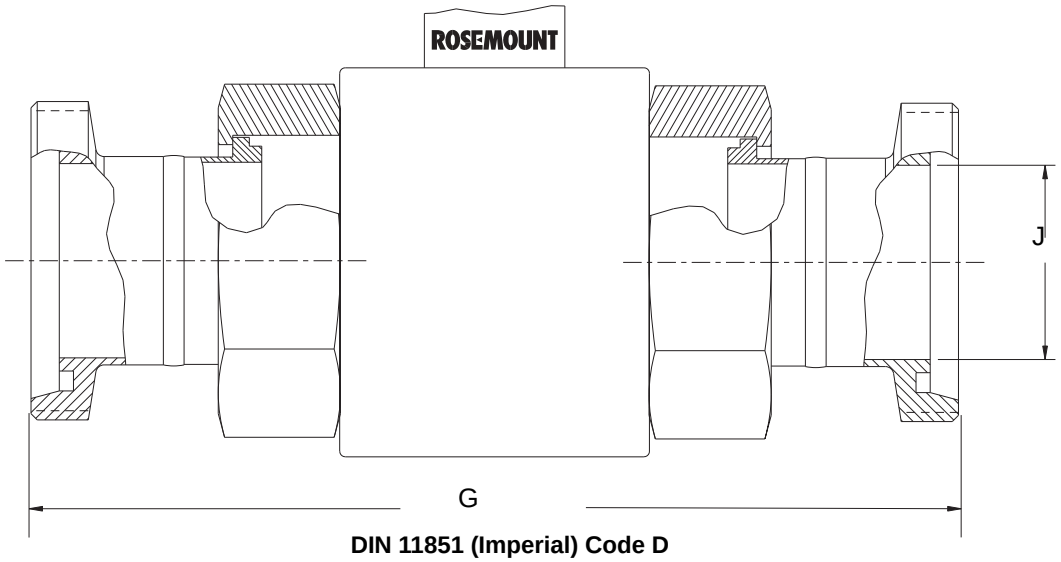


TABLE 33. Rosemount 8721 Process Connection Lay Length in Inches (Millimeters). Refer to Figure 27.

Line Size	Weld Nipple Length F	Weld Nipple Sensor ID J	Weld Nipple Sensor OD K	Tri Clamp Length G	HP Option Length G	DIN 11851 (Met and Imp) Length G	DIN 11851 (Met and Imp) ID J	DIN 11851 (Metric) ID J
1/2 (15)	5.61 (142)	0.62 (15.75)	0.75 (19.05)	8.31 (211)	NA	8.33 (211)	0.62 (15.75)	0.79 (19.99)
1 (25)	5.61 (142)	0.87 (22.2)	1.00 (25.65)	7.85 (199)	9.85 (250)	7.89 (200)	0.85 (21.52)	1.02 (26.01)
1 1/2 (40)	5.92 (150)	1.37 (34.9)	1.68 (42.7)	8.17 (207)	9.91 (252)	8.53 (217)	1.37 (34.85)	1.50 (38.00)
2 (50)	6.35 (161)	1.87 (47.6)	2.01 (51.05)	8.60 (218)	9.91 (252)	9.10 (231)	1.87 (47.60)	1.97 (50.01)
2 1/2 (65)	7.18 (182)	2.37 (60.3)	2.51 (63.75)	9.43 (239)	9.91 (252)	10.33 (262)	2.37 (60.30)	2.60 (65.99)
3 (80)	7.93 (201)	2.87 (73.0)	3.01 (76.45)	10.18 (258)	9.91 (252)	11.48 (291)	2.87 (72.97)	3.19 (81.03)
4 (100)	9.46 (240)	3.84 (97.6)	4.01 (101.85)	11.70 (297)	NA	13.72 (349)	3.84 (97.61)	3.94 (100.00)

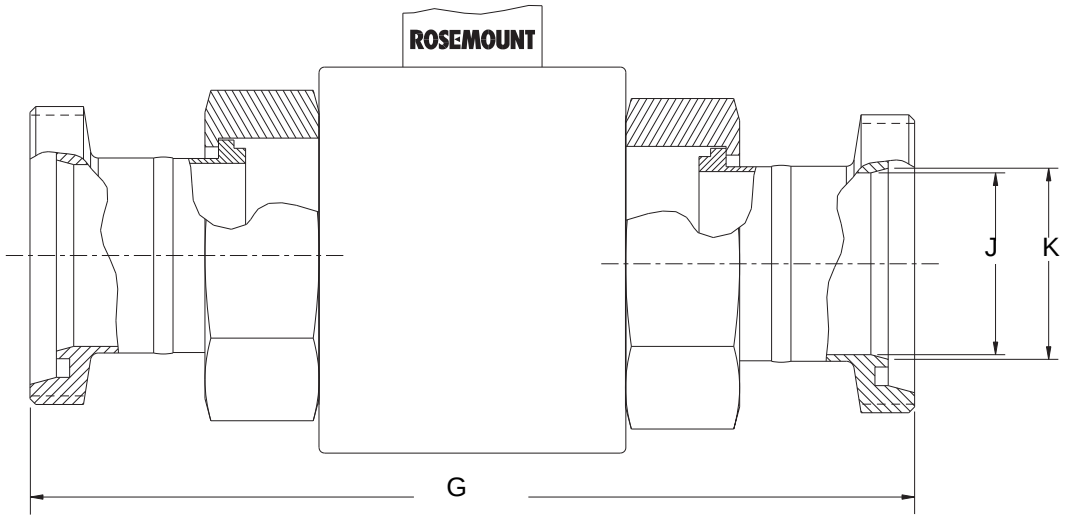
Line Size	DIN 11864-1 Length G	DIN 11864-2 Length G	SMS 1145 Length G	Cherry-Burrell I-Line Length G
1/2 (15)	NA	NA	NA	NA
1 (25)	8.98 (228.0)	8.86 (225.0)	6.87 (174)	7.17 (182)
1 1/2 (40)	9.72 (247.0)	9.57 (243.0)	7.50 (190)	7.80 (198)
2 (50)	10.16 (258.0)	10.00 (254.0)	7.93 (201)	8.42 (214)
2 1/2 (65)	11.89 (302.0)	11.54 (293.0)	9.07 (230)	9.49 (241)
3 (80)	12.95 (329.0)	12.44 (316.0)	9.82 (249)	10.37 (263)
4 (100)	14.57 (370.0)	14.21 (361.0)	11.67 (296)	12.15 (309)

FIGURE 28.



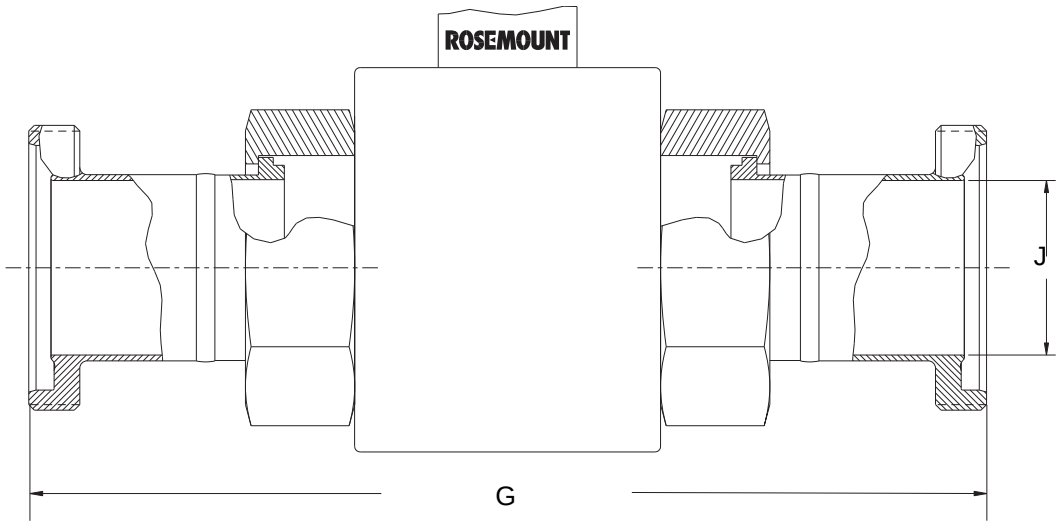
DIN 11851 (Imperial) Code D

FIGURE 29.



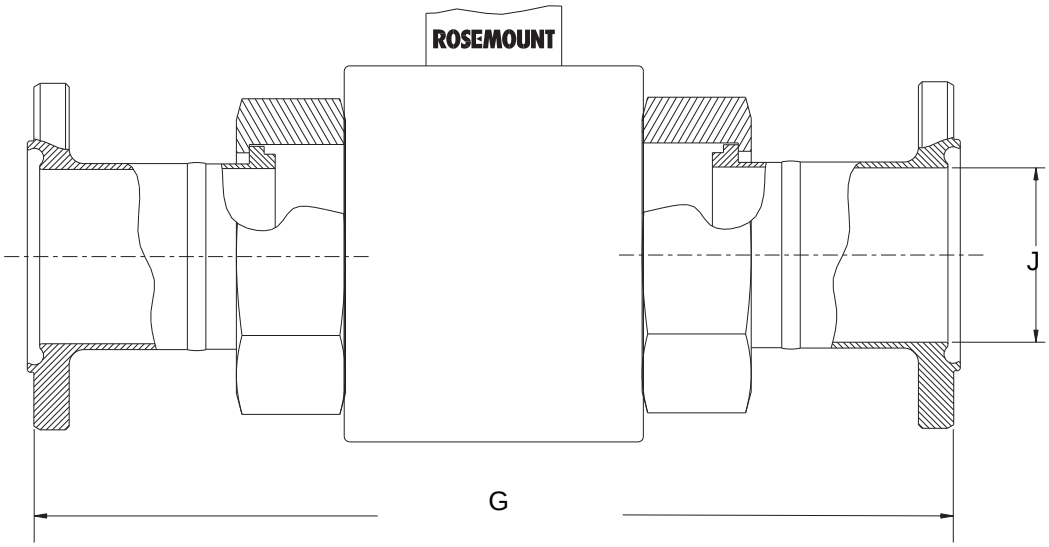
DIN 11851 (Metric) Code E

FIGURE 30.



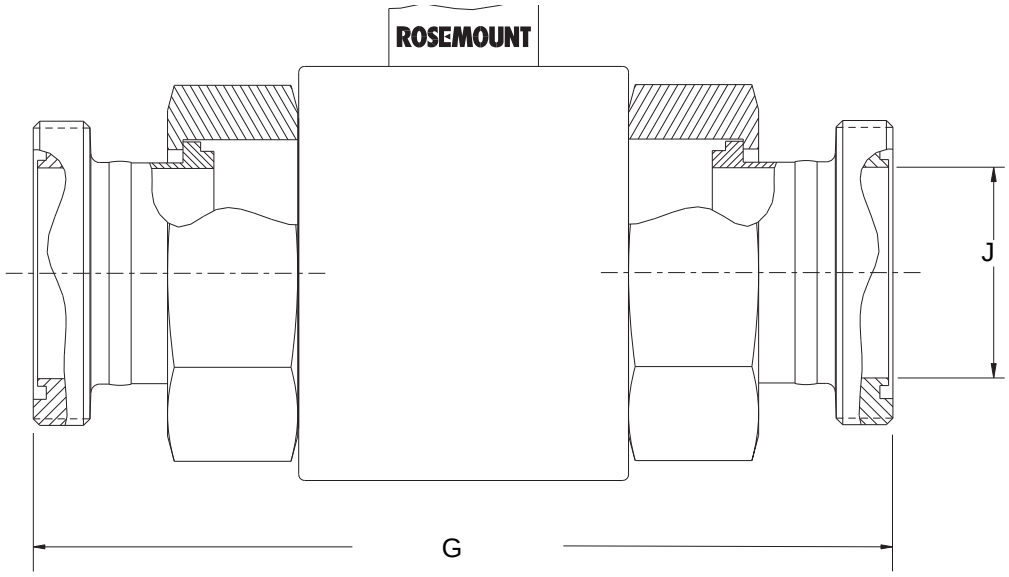
11864-1

FIGURE 31.



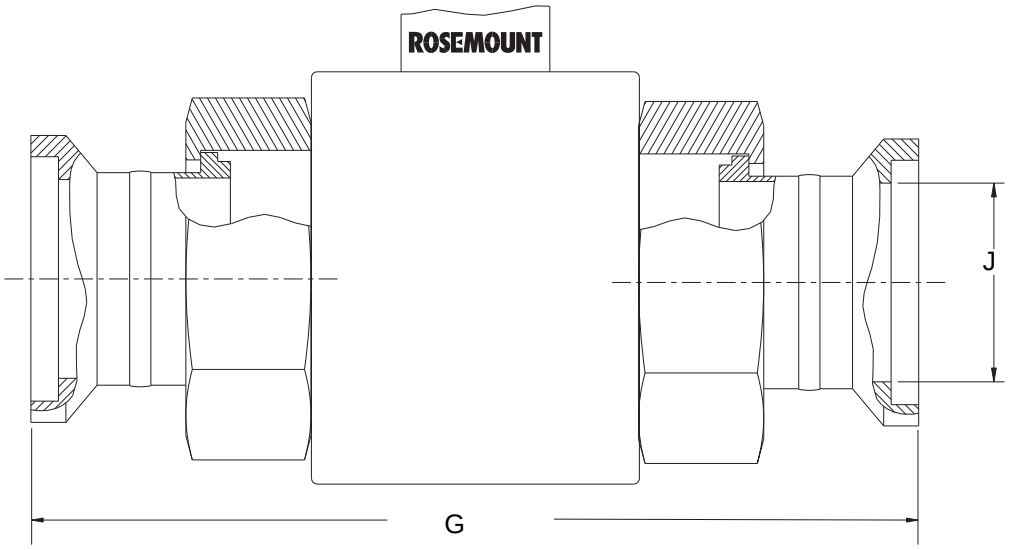
11864-2

FIGURE 32.



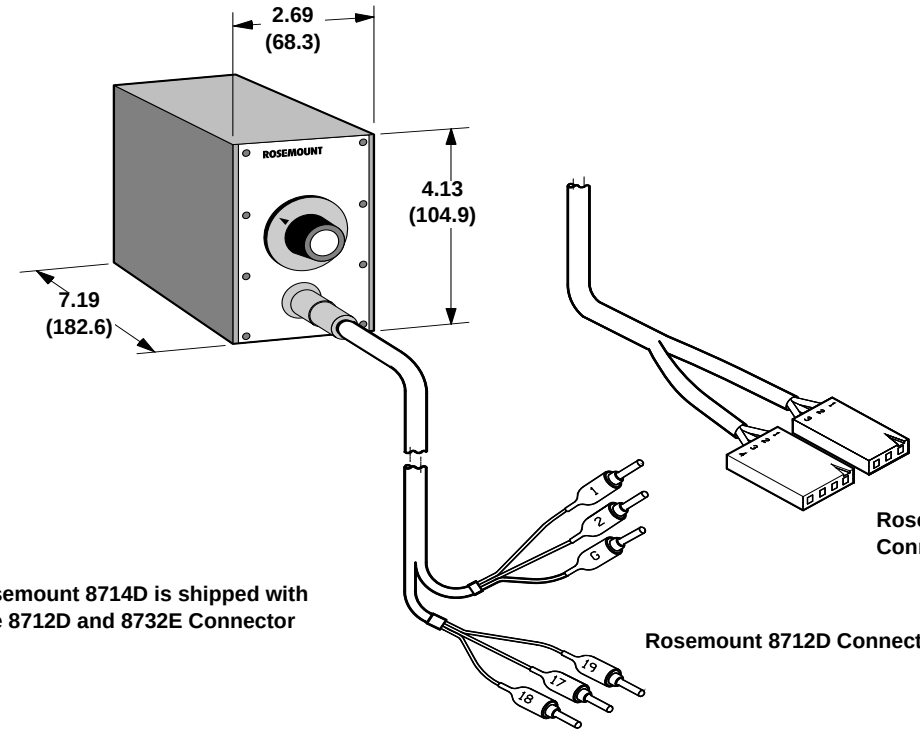
SMS1145 Code H

FIGURE 33.



Cherry Burrell I-Line Code J

FIGURE 34. Rosemount 8714D Calibration Standard



Note:
The Rosemount 8714D is shipped with both the 8712D and 8732E Connector Types

Magnetic Flowmeter Sizing

Flowmeter Sizing

Because of its effect on flow velocity, sensor size is an important consideration. It may be necessary to select a magnetic flowmeter that is larger or smaller than the adjacent piping to ensure the fluid velocity is in the specified measuring range of the sensor. Suggested guidelines and examples for sizing normal velocities in different applications are listed in Table 34, Table 35, and Table 36. Operation outside these guidelines may also give acceptable performance.

TABLE 34. Sizing Guidelines

Application	Velocity Range (ft/s)	Velocity Range (m/s)
Normal Service	0–39	0–12
Preferred Service	2–20	0.6–6.1
Abrasive Slurries	3–10	0.9–3.1
Non-Abrasive Slurries	5–15	1.5–4.6

To convert flow rate to velocity, use the appropriate factor listed in Table 35 and the following equation:

$$\text{Velocity} = \frac{\text{Flow Rate}}{\text{Factor}}$$

Example: SI Units

Magmeter Size: 100 mm **(factor from Table 35 = 492.0)**
Normal Flow Rate: 800 L/min

$$\text{Velocity} = \frac{800\ (\text{L/min})}{492.0}$$

Velocity = 1.7 m/s

Example: English Units

Magmeter Size: 4 in. **(factor from Table 35 = 39.679)**
Normal Flow Rate: 300 GPM

$$\text{Velocity} = \frac{300\ (\text{gpm})}{39.679}$$

Velocity = 7.56 ft/s

TABLE 35. Line Size vs. Conversion Factor

Nominal Line Size Inches (mm)	Gallons Per Minute Factor	Liters Per Minute Factor
0.15 (4)	0.055	0.683
0.30 (8)	0.220	2.732
½ (15)	0.947	11.745
1 (25)	2.693	33.407
1½ (40)	6.345	78.69
2 (50)	10.459	129.7
3 (80)	23.042	285.7
4 (100)	39.679	492.0
6 (150)	90.048	1,116
8 (200)	155.94	1,933
10 (250)	245.78	3,048
12 (300)	352.51	4,371
14 (350)	421.70	5,229
16 (400)	550.80	6,830
18 (450)	697.19	8,645
20 (500)	866.51	10,745
24 (600)	1,253.2	15,541
30 (750)	2,006.0	24,877
36 (900)	2,935.0	36,398

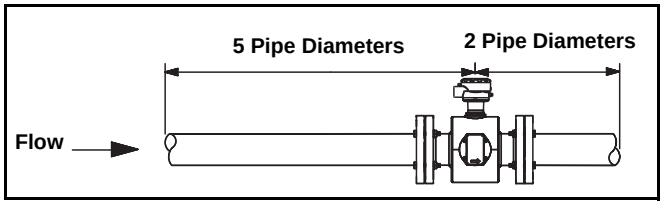
TABLE 36. Line Size vs. Velocity/Rate

Minimum/Maximum Flow Rate								
	Gallons per Minute				Liters per Minute			
Nominal Line Size in Inches (mm)	at 0.04 ft/s (Low-flow Cutoff)	at 1 ft/s (Min Range Setting)	at 3 ft/s	at 39 ft/s (Max Range Setting)	at 0.012 m/s (Low-flow Cutoff)	at 0.3 m/s (Min Range Setting)	at 1 m/s	at 12 m/s (Max Range Setting)
.15 (4)	0.002	0.055	0.16	2.14	0.01	0.21	0.68	8.16
.30 (8)	0.009	0.220	0.66	8.58	0.03	0.83	2.73	32.76
1/2 (15)	0.038	0.947	2.84	36.93	0.14	3.58	11.74	140.88
1 (25)	0.108	2.694	8.08	105.07	0.41	10.18	33.40	424.80
1 1/2 (40)	0.254	6.345	19.03	247.46	0.96	23.98	78.69	944.28
2 (50)	0.418	10.459	31.37	407.90	1.58	39.54	129.7	1,556
3 (80)	0.922	23.042	69.12	898.64	3.49	87.10	285.7	3,428
4 (100)	1.588	36.679	119.0	1430.4	6.00	138.6	492.0	5,904
6 (150)	3.600	90.048	270.1	3511.8	13.61	340.3	1,116	13,400
8 (200)	6.240	155.94	467.7	6081.7	23.59	589.4	1,933	23,204
10 (250)	9.840	245.78	737.3	9585.4	37.20	929.0	3,048	36,576
12 (300)	14.200	352.51	1,059	13,747	53.68	1,332	4,371	52,548
14 (350)	16.800	421.70	1,265	16,446	63.50	1,594	5,230	62,755
16 (400)	22.000	550.80	1,652	21,481	83.16	2,082	6,830	81,964
18 (450)	27.800	697.19	2,091	27,190	105.0	2,635	8,646	103,750
20 (500)	34.600	866.51	2,599	33,793	130.7	3,275	10,740	128,948
24 (600)	50.200	1,253.2	3,759	48,874	189.7	4,737	15,540	186,496
30 (750)	80.200	2,006.0	6,018	78,234	303.1	7,582	24,880	298,527
36 (900)	117.40	2,935.0	8,805	114,465	443.7	11,094	36,390	436,779

Upstream/Downstream Piping Length

To ensure specification accuracy over widely varying process conditions, install the sensor with a minimum of five straight pipe diameters upstream and two straight pipe diameters downstream from the electrode plane. See Figure 35. This procedure should adequately allow for disturbances created by elbows, valves, and reducers.

FIGURE 35. Upstream and Downstream Straight Pipe Diameters



Installations with reduced straight runs from 0 to five pipe diameters are possible. In reduced straight pipe run installations, performance will shift to as much as 0.5% of rate. Reported flow rates will still be highly repeatable.

Sensor Grounding

A reliable ground path is required between the sensor and the process fluid. Optional grounding rings, grounding electrodes, and lining protectors are available with 8700 Series sensors to ensure proper grounding. See Table 41 and Table 42.

Product Selection Guide

Several sensor types, liner types, electrode materials, electrode types, grounding options, and transmitters are available for the Rosemount 8700 Series Magnetic Flowmeter System to ensure compatibility with virtually any application and installation. See Table 39 for information on liner types, Table 40 for information on electrodes materials and electrode types, Table 41 and Table 42 for grounding options and installation, and Table 37 for transmitter selection. Other material options not mentioned here are available. Contact your local sales representative for alternative material selection. For further guidance on selecting materials, refer to the Magnetic Flowmeter Material Selection Guide located on Rosemount.com (Technical Data Sheet Number 00816-0100-3033). For more information regarding product offering and ordering information, refer to “Ordering Information” on page 87 in this product data sheet.

TABLE 37. Transmitter Selection

Transmitter	General Characteristics
8732E 	• Ideal for integral mount transmitter installations • HART or Foundation fieldbus available • Advanced Diagnostics available • Optical Switch LOI • Optional DI/DO available (HART only)
8712E 	• Remote mount transmitter • Easy to use LOI with dedicated configuration buttons • Advanced Diagnostics available
8712D 	• Remote mount transmitter • Easy to use LOI with dedicated configuration buttons • Advanced Diagnostics (DA1 Suite) available
8712H 	• Remote mount transmitter • High-Signal Pulsed DC for use with the High-Signal 8707 Sensor • Ideal for noisy applications - mining/pulp stock/other slurries • 115 V AC power only • Not CE Marked

TABLE 38. Sensor Selection

Sensor	General Characteristics
8705 	• Standard Process Sensor • Flanged Process Connections • Welded, sealed coil housing • 1/2-in. (15mm) to 36-in. (900mm) • Pulse DC Technology • Standard, grounding, and bulletnose electrodes available
8707 	• High Signal Sensor • Flanged Process System Sensor • Welded, sealed coil housing • 3-in. (80mm) to 36-in. (900mm) • High current pulsed DC technology ideal for high noise applications • Standard, grounding, and bulletnose electrodes available
8711 	• Wafer (flangeless) design • Economical, compact, and lightweight alternative to flanged sensors • 0.15-in. (4mm) to 8-in. (200mm) • Pulsed DC technology • Standard, grounding, and bulletnose electrodes available
8721 	• Hygienic sensor • Designed for food, beverage, and pharmaceutical applications • 3-A and EHEDG certified • 1/2-in. (15mm) to 4-in. (100mm) • Pulsed DC technology • Variety of industry standard process connections • Suitable for CIP/SIP

TABLE 39. Lining Material Selection

	Liner Material	General Characteristics
Flouropolymer Liners	PFA 	• Best chemical resistance
		• Better abrasion resistance than PTFE
		• Best high temperature capabilities
		• -20 to 350°F (-29 to 177°C)
	PTFE 	• Highly chemical resistant
		• Excellent high temperature capabilities
		• -20 to 350°F (-29 to 177°C)
	ETFE 	• Excellent chemical resistance
		• Better abrasion resistance than PTFE
		• -20 to 300°F (-29 to 149°C)
Resilient Liners	Polyurethane 	• Excellent abrasion resistance for slurries with small and medium particles
		• Limited chemical resistance
		• 0 to 140°F (-18 to 60°C)
		• Typically applied in clean water
	Neoprene 	• Very good abrasion resistance for small and medium particles
		• Better chemical resistance than polyurethane
		• 0 to 176°F (-18 to 80°C)
		• Typically applied in water with chemicals, and sea water
	Linatex Rubber 	• Very good abrasion resistance for large particles
		• Limited chemical resistance especially in acids
		• Softer material than polyurethane and neoprene
		• 0 to 158°F (-18 to 70°C)
		• Typically applied in mining slurries

TABLE 40. Electrode Selection

Electrode Material	General Characteristics
316L Stainless Steel	• Good corrosion resistance
	• Good abrasion resistance
	• Not recommended for sulfuric or hydrochloric acids
Nickel Alloy 276 (UNS N10276)	• Better corrosion resistance
	• High strength
	• Good in slurry applications
	• Effective in oxidizing fluids
Tantalum	• Excellent corrosion resistance
	• Not recommended for hydrofoils acid, fluorosilic acid, or sodium hydroxide
80% Platinum	• Best chemical resistance
	• Expensive material
	• not recommended for aquaregia
Titanium	• Better chemical resistance
	• Better abrasion resistance
	• Good for sea water applications
	• Not recommended for hydrofluoric or sulfuric acid
Electrode Type	**General Characteristics**
Standard Measurement	• Lowest cost
	• Good for most applications
Standard Measurement + Grounding (Also see Table 41 and Table 42 for grounding options and installation	• Low cost grounding option especially for large line sizes
	• Minimum conductivity of 100 microsiemens/cm
	• Not recommended for electrolysis or galvanic corrosion applications
Bulletnose	• Slightly more expensive
	• Best option for coating processes

TABLE 41. Grounding Options

Grounding Options	General Characteristics
No Grounding Options (grounding straps)	• Acceptable for conductive unlined pipe
	• Grounding straps provided at no cost
Grounding Electrodes	• Same material as measurement electrodes
	• Sufficient grounding option when process fluid conductivity is greater than 100 microsiemens/cm
	• Not recommended in electrolysis applications, galvanic corrosion applications, or applications where the electrodes may coat.
Grounding Rings	• Low conductivity process fluids
	• Cathodic or electrolysis applications that may have stray currents in or around the process
	• Variety of materials for process fluid compatibility
Lining Protectors	• Protect upstream edge of sensor from abrasive fluids
	• Permanently installed on sensor
	• Protect liner material from over torquing of flange bolts
	• Provide ground path and eliminate need for grounding rings or grounding electrode

TABLE 42. Grounding Installation

Type of Pipe	Grounding Options No Grounding Option (Straps Only)	Grounding Rings	Grounding Electrode	Lining Protectors
Conductive Unlined Pipe	Acceptable	Not Required	Not Required	Acceptable (Not Required)
Conductive Lined Pipe	Not Acceptable	Acceptable	Acceptable	Acceptable
Non-Conductive Pipe	Not Acceptable	Acceptable	Acceptable	Acceptable

Ordering Information

ROSEMOUNT 8732E ORDERING INFORMATION

Model	Product Description
8732E	Magnetic Flowmeter Transmitter
Code	**Transmitter Style**
S	Standard
Code	**Transmitter Mount**
T	Integral Mount
R	Remote Mount for 2 in. pipe or panel (includes CS mounting bolts and 316L SST bracket)
Code	**Transmitter Power Supply**
1	AC Power Supply (90 to 250 V AC, 50-60Hz)
2	DC Power Supply (12 to 42 V DC)
Code	**Outputs**
A	4-20 mA Digital Electronics (HART Protocol)
B	4-20 mA Digital Electronics (HART Protocol) with Intrinsically Safe Output(1)
F	FOUNDATION fieldbus digital elecetronics with FISCO Intrinsically Safe Output
G	FOUNDATION fieldbus digital electronics (Available with approval code NA only)
Code	**Conduit Entry**
	2 Conduits
1	1/2 - 14 NPT, 2 Conduit Entries
2	CM20, 2 Conduit Entries(2)
3	PG 13.5, 2 Conduit Entries(2)
	3 Conduits
4	1/2 - 14 NPT, 3 Conduit Entries
5	CM20, 3 Conduit Entries(2)
6	PG 13.5, 3 Conduit Entries(2)
Code	**Safety Approvals(3)**
NA	CE Marking, no hazardous location approval
	FM & CSA
N0	FM Class 1 Div 2 for non-flammable: CSA Class 1 Div 2
N5	FM Class 1 Div 2 for flammable fluids
E5	FM Class 1 Div 1, explosion-proof
	ATEX
E1(4)	ATEX flameproof Ex de IIC T6, and ATEX Dust Approval; Ex de [ia] IIC T6 with IS Output (Code B or F)
ED	ATEX flameproof Ex de IIB T6, and ATEX Dust Approval; Ex de [ia] IIB T6 with IS Output (Code B or F)
N1	ATEX Type n Ex nA nL IIC and ATEX Dust Approval(5)
ND	ATEX Dust Approval
	IECEx
E7(4)	IECEx flameproof Ex de IIC T6, and IECEx Dust Approval; Ex de [ia] IIC T6 with IS Output
EF	IECEx flameproof Ex de IIB T6, and IECEx Dust Approval; Ex de [ia] IIB T6 with IS Output
N7	IECEx Type n Ex nA nL IIC and IECEx Dust Approval(5)
NF	IECEx Dust Approval
	NEPSI and CMC (China)
E3(4)	NEPSI flameproof Ex de IIC T6; Ex de [ia] IIC T6 with IS output
EP	NEPSI flameproof Ex de IIB T6; Ex de [ia] IIB T6 with IS output
	InMetro (Brazil)
EB	InMetro flameproof BR-Ex de IIB T6; BR- Ex de [ia] IIB T6 with IS outputs
E2(4)	InMetro flameproof BR-Ex de IIC T6; BR- Ex de [ia] IIC T6 with IS outputs
	GOST (Russia)
EM	GOST flameproof EX de IIB T6; Ex de [ia] IIB T6 with IS outputs
E8(4)	GOST flameproof Ex de IIC T6; Ex de [ia] IIC T6 with IS outputs

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	KOSHA (Korea)
EK	KOSHA flameproof EX de IIB T6; Ex de [ia] IIB T6 with IS outputs
E9(4)	KOSHA flameproof Ex de IIC T6; Ex de [ia] IIC T6 with IS outputs
Code	**Options**
	PlantWeb Product/Process Diagnostics
DA1	Magmeter HART Diagnostic Suite 1: Includes High Process Noise and Ground/Wiring Fault Detection
DA2	Magmeter HART Diagnostic Suite 2: Includes 8714i Meter Verification
D01	Magmeter FOUNDATION fieldbus Diagnostic Suite 1: Includes High Process Noise and Ground/Wiring Fault Detection
D02	Magmeter FOUNDATION fieldbus Diagnostic Suite 2: Includes 8714i Meter Verification
	Discrete Input/Discrete Output
AX	DI/DO, see page 11 for more details(6) (7)
	Other Options
C1	Custom Configuration (CDS Required)
D1	High Accuracy Calibration (0.15% of rate for matched sensor and transmitter)(8)
DT	Heavy Duty Tagging
M4	Local Operator Interface
M5	Local Display (FOUNDATION fieldbus only)
B6	316L Stainless Steel 4-bolt Kit for 2-in. Remote Pipe Mount
GE	M12, 4-Pin, Male Connector (Eurofast)
GM	A Size Mini, 4-Pin, Male Connector (Minifast)
GT	A Size, Spade Terminal Mini, 5-pin, Male Connector (Minifast)
Q4	Inspection certificate; calibration data, ISO10474 3.1B
	QIG Language
YA	Danish
YD	Dutch
YF	French
YG	German
YH	Finnish
YI	Italian
YM	Mandarin
YN	Norwegian
YP	Portuguese
YS	Spanish
YR	Russian
YW	Swedish
Typical Model Number: 8732E S T 1 A 1 N0 DA1 DA2 M4	

(1) I.S. Output must be externally powered

(2) Adapter are used for this conduit entry type

(3) All product, ordered with or without Safety approvals, is compliant with local CE Marking and C-tick requirements unless specifically noted as a special

(4) Integral mount configuration only

(5) For DC Transmitter Power Supply (Code = 2) Only

(6) Not available with intrinsically safe outputs (output option B)

(7) Not available with conduit entry codes 1, 2 or 3

(8) D1 Option Code must be ordered with sensor and transmitter

ROSEMOUNT 8712E ORDERING INFORMATION

Model	Product Description
8712E	Remote Magnetic Flowmeter Transmitter
Code	**Transmitter Style**
S	Standard
Code	**Transmitter Mount**
R	Remote Mount for 2 in. pipe or panel (includes CS mounting bolts and 316L SST bracket)
Code	**Transmitter Power Supply**
1	AC Power Supply (90 to 250 V AC, 50-60Hz)
2	DC Power Supply (12 to 42 V DC)
Code	**Outputs**
A	4-20 mA Digital Electronics (HART Protocol)
Code	**Conduit Entry**
1	1/2 - 14 NPT, 4 Conduit Entries
2	CM20, 4 Conduit Entries(1)
3	PG 13.5, 4 Conduit Entries(1)
Code	**Safety Approvals(2)**
NA	CE Marking, no hazardous location approval
	FM & CSA
N0	FM Class 1 Div 2 for non-flammable: CSA Class 1 Div 2
N5	FM Class 1 Div 2 for flammable fluids
	ATEX
N1	ATEX Type n Ex nA nL IIC(3)
	IECEx
N7	IECEx Type n Ex nA nL IIC(3)
Code	**Options**
	PlantWeb Product/Process Diagnostics
DA1	Magmeter HART Diagnostic Suite 1: Includes High Process Noise and Ground/Wiring Fault Detection
DA2	Magmeter HART Diagnostic Suite 2: Includes 8714i Meter Verification
	Discrete Input/Discrete Output
AX	DI/DO, see page 21 for more details
	Other Options
C1	Custom Configuration (CDS Required)
D1	High Accuracy Calibration (0.15% of rate for matched sensor and transmitter)(4)
DT	Heavy Duty Tagging
M4	Local Operator Interface
B6	316L Stainless Steel 4-bolt Kit for 2-in. Remote Pipe Mount
GE	M12, 4-Pin, Male Connector (Eurofast)
GM	A Size Mini, 4-Pin, Male Connector (Minifast)
GT	A Size, Spade Terminal Mini, 5-pin, Male Connector (Minifast)
Q4	Inspection certificate; calibration data, ISO10474 3.1B

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	QIG Language
YA	Danish
YD	Dutch
YF	French
YG	German
YH	Finnish
YI	Italian
YM	Mandarin
YN	Norwegian
YP	Portuguese
YS	Spanish
YR	Russian
YW	Swedish

Typical Model Number: 8712E S R 1 A 1 N0 DA1 DA2 M4

(1) Adapter are used for this conduit entry type

(2) All product, ordered with or without Safety approvals, is compliant with local CE Marking and C-tick requirements unless specifically noted as a special

(3) For DC Transmitter Power Supply (Code = 2) Only

(4) D1 Option Code must be ordered with sensor and transmitter

ROSEMOUNT 8712D ORDERING INFORMATION

Model	Product Description
8712D	Magnetic Flowmeter Transmitter
Code	**Transmitter Style**
R	Remote (2-in. pipe or surface mounting)
Code	**Power Supply Voltage**
03	12–42 V DC
12	90-250 V ac, 50–60 Hz
Code	**Product Certifications**
NA	No Hazardous Area Approval; CE Marking
	FM & CSA
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval; CE Marking
N5	Factory Mutual (FM) Class I, Division 2 Approval for flammable fluids
	ATEX
N1	ATEX Type n EEx nA nL IIC(1)
	IECEx
N7	IECEx Type n Ex nA nL IIC(1)
	NEPSI
N3	NEPSI Type n Ex nA nL IIC(1)
Code	**Options**
DA1	Magmeter HART Diagnostic Suite 1: Includes High Process Noise, Ground/Wiring Fault Detection, and Transmitter Verification
B6	Stainless Steel 4-bolt Kit for 2-in. Pipe Mount
C1	Custom Configuration (Completed CDS required with order)
C4	Analog Output Levels Compliant with NAMUR recommendations NE43, 18-January-1994, and high alarm level(2)
CN	Analog Output Levels Compliant with NAMUR recommendations NE43, 18-January-1994,and low alarm level(2)
D1	High Accuracy Calibration (0.15% of rate for matched sensor and transmitter)(3)
DT	Heavy Duty Tagging
GE	M12, 4-Pin, Male Connector (Eurofast)
GM	A Size Mini, 4-Pin, Male Connector (Minifast)
GT	A Size, Spade Terminal Mini, 5-pin, Male Connector (Minifast)
M4	Local Operator Interface (LOI)
J1	CM 20 conduit adapter
J2	PG 13.5 conduit adapter
Q4	Inspection certificate; calibration data, ISO10474 3.1B
Code	**Quick Installation Guide (QIG) Language Options (Default is English)**
YA	Danish QIG
YD	Dutch QIG
YF	French QIG
YG	German QIG
YH	Finnish QIG
YI	Italian QIG
YM	Mandarin
YN	Norwegian QIG
YP	Portuguese QIG
YR	Russian QIG
YS	Spanish QIG
YW	Swedish QIG
Typical Model Number: 8712D R 12 N 0 M 4	

(1) For DC Transmitter Power Supply (Code = 03) Only

(2) NAMUR compliant operation and the Alarm latch options are preset at the factory and can not be changed to standard operation in the field

(3) D1 Option Code must be ordered with sensor and transmitter

ROSEMOUNT 8712H ORDERING INFORMATION

Model	Product Description
8712H	High-Signal Magnetic Flowmeter Transmitter (For use with 8707 High-Signal Sensor only.)
Code	**Transmitter Style**
R	Remote (2-in. pipe or surface mounting)
Code	**Power Supply Voltage**
12	115 V ac, 50–60 Hz
Code	**Product Certifications**
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval
N5	Factory Mutual (FM) Class I, Division 2 Approval for flammable fluids
Code	**Options**
B6	Stainless Steel 4-bolt Kit for 2-in. Pipe Mount
C1	Custom Configuration (Completed CDS required with order)
D1	High Accuracy Calibration [0.25% of rate from 3 to 30 ft/s (0.9 to 10 m/s)] matched sensor and transmitter system(1)
M4	Local Operator Interface (LOI)
Code	**Quick Installation Guide (QIG) Language Options (Default is English)**
YA	Danish QIG
YD	Dutch QIG
YF	French QIG
YG	German QIG
YH	Finnish QIG
YI	Italian QIG
YN	Norwegian QIG
YP	Portuguese QIG
YS	Spanish QIG
YW	Swedish QIG
Typical Model Number: 8712H R 12 N 0 M 4	

(1) D1 Option Code must be selected for both sensor and transmitter.

ROSEMOUNT 8705 ORDERING INFORMATION

Code	Product Description	Availability
8705	Magnetic Flowmeter Sensor	•

Code	Lining Material	
A	PFA[1]	•
T	PTFE[2]	•
F	ETFE[3]	•
P	Polyurethane[4]	•
N	Neoprene[5]	•
L	Linatex[6]	•

Code	Electrode Material	
S	316L Stainless Steel	•
H	Nickel Alloy 276 (UNS N10276)	•
T	Tantalum	•
P	80% Platinum - 20% Iridium	•
N	Titanium	•

		Electrode Material (From Above)				
Code	Electrode Type	Code S	Code H	Code T	Code P	Code N
A	2 Electrodes - Standard	•	•	•	•	•
B	2 Electrodes - Bullet Nose	•	•			
E	3rd Grounding Electrode	•	•	•	•	•
F	3rd Grounding Electrode Bullet Nose	•	•			

		Lining Material (From Above)				
Code	Line Size	Code A	Code T	Code F	Code P	Code N and L
005	1/2-in. (15 mm)	•	•	•	NA	NA
010	1-in. (25 mm)	•	•	•	•	•
015	1 1/2-in. (40 mm)	•	•	•	•	•
020	2-in. (50 mm)	•	•	•	•	•
030	3-in. (80 mm)	•	•	•	•	•
040	4-in. (100 mm)	•	•	•	•	•
060	6-in. (150 mm)	•	•	•	•	•
080	8-in. (200 mm)	•	•	•	•	•
100	10-in. (250 mm)	•	•	•	•	•
120	12-in. (300 mm)	•	•	•	•	•
140	14-in. (350 mm)	•	•	•	•	•
160	16-in. (400 mm)	NA	•	•	•	•
180	18-in. (450 mm)	NA	•	NA	•	•
200	20-in. (500 mm)	NA	•	NA	•	•
240	24-in. (600 mm)	NA	•	NA	•	•
300	30-in. (750 mm)	NA	•	NA	•	•
360	36-in. (900 mm)	NA	•	NA	•	•

Code	Flange Material and Type
C	Carbon Steel Raised Face Slip-On
S	Stainless Steel (304) Raised Face Slip-On
P	Stainless Steel (316) Raised Face Slip-On
J[7]	Carbon Steel Ring Type Joint (RTJ) Weld Neck
K[7]	Stainless Steel (304) Ring Type Joint (RTJ) Weld Neck

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Code	Flange Type and Rating	Availability
1	ASME B16.5 ANSI Class 150 (30 and 36 in. AWWA C207 Table 3 Class D Flat Face)	Refer to Table 43 on page 96 for Flange Material Code C Refer to Table 44 on page 97 for Flange Material Codes S and P
2	MSS SP44 Class 150 (30 and 36 in. line sizes only)	
3	ASME B16.5 (ANSI) Class 300	
6	ASME B16.5 (ANSI) Class 600 (Maximum Pressure: 1000 psig)(8)	
7	ASME B16.5 (ANSI) Class 600(9)	
9	ASME B16.5 (ANSI) Class 900(9)(10)	
M	ASME B16.5 (ANSI) Class 1500(11)	
N	ASME B16.5 (ANSI) Class 2500(11)	
D	EN 1092-1 (DIN) PN 10	Refer to Table 45 on page 97 for Flange Material Code C and S (Not available with Flange Material Code P)
E	EN 1092-1 (DIN) PN 16	
F	EN 1092-1 (DIN) PN 25	
H	EN 1092-1 (DIN) PN 40	
K	AS2129 Table D(12)	
L	AS2129 Table E(12)	
P	JIS B 2220, nominal pressure 10K(13)	
R	JIS B 2220, nominal pressure 20K(13)	

Code	Electrode Housing Configuration
W0	Sealed, Welded Housing(14)
W1	Sealed, Welded Housing with Pressure Relief
W3	Sealed, Welded Housing with Separate Electrode Compartments

Code	Hazardous Area Approvals
NA	No Hazardous Area Approval
	FM & CSA
N0	FM Class 1 Div 2 for Non-Flammable fluids; CSA Class 1 Div 2
N5	FM Class 1 Div 2 for Flammable fluids
E5(15)	FM Class 1 Div 1, Explosion Proof
	ATEX
E1	ATEX EEx e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
KD	ATEX EEx e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
N1	ATEX EEx nA [L] IIC Type n Approval
ND	ATEX Dust Approval
	NEPSI
E3	NEPSI Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EP	NEPSI Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
	KOSHA
E9	KOSHA Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EK	KOSHA Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
	InMetro
E2	InMetro BR-Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EB	InMetro BR-Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
	GOST
E8	GOST Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EM	GOST Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)

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Code	Options
	Certifications
PD	Pressure Equipment Directive Certification (PED, per 97/23/EC)
DW	NSF Drinking Water Certification(16)
	Optional Grounding Rings(17)
G1	(2) 316L SST Ground Rings
G2	(2) Nickel Alloy 276 (UNS N10276) Ground Rings(18)
G3	(2) Titanium Ground Rings(18)
G4	(2) Tantalum Ground Rings(19)
G5	(1) 316L SST Ground Rings
G6	(1) Nickel Alloy 276 (UNS N10276) Ground Rings(18)
G7	(1) Titanium Ground Rings(18)
G8	(1) Tantalum Ground Rings(19)
	Optional Lining Protectors(17)
L1	(2) 316L SST Lining Protectors
L2	(2) Nickel Alloy 276 (UNS N10276) Lining Protectors(18)
L3	(2) Titanium Lining Protectors(18)
H1	Lay-length matching 8701 using spool piece(18)
H2	Lay-length matching 8701(20)
H5	Lay-length matching Foxboro 2800 using spool piece(21)
H7	Lay-length ABB CopaX and MagX using spool piece(18)
	Other Options
B3	Integral Mount with 8732
D1	High Accuracy Calibration (0.15% of rate for matched sensor and transmitter)(22)
DT	Heavy Duty Tagging
J1	CM 20 Conduit Adapter
J2	PG 13.5 Conduit Adapter
SC	304 SST Junction Box, fully welded to housing
TA	High Temperature Permeable Fluid Option (Contains vent holes provided for permeable fluids such as nitric acid, hydrofluoric acid, or sodium hydroxide at high temperatures)
Q4	Calibration Certificate per ISO 10474 3.1B
QR	
Q8	Material Traceability 3.1B
Q9	Material Traceability Electrode only 3.1B
Q66	Welding Procedure Qualification Record Documentation
Q67	Welding Performance Qualification Record Documentation
Q70	Weld Examination Inspection Certificate, ISO 10474 3.1B

Typical Model Number: 8705 T SA 040 C1 W0 N0

(1) Available in 1/2 in. to 12 in. line sizes ANSI 150, ANSI 300, and DIN Flanges. Available in 14 in. ANSI 150 only. Not available with electrode housing code W3.

(2) Available in 1/2 in. to 36 in. line sizes ANSI 150, ANSI 300, and DIN Flanges. Available in 1 in. to 10 in. ANSI 600 Derated only.

(3) Available in 1/2 in. to 14 in. line sizes ANSI 150, ANSI 300, and DIN Flanges. Available in 16 in. ANSI 150 only. Available in 1 to 10 in. ANSI 600 Derated only.

(4) Available in 1 in. to 24 in. line sizes ANSI 150, ANSI 300, and DIN Flanges. Available in 30 and 36 in. AWWA Class 125 and ANSI 150. Available in 1 in. to 24 in. ANSI 600 full rated. Available in 1 to 12 in. ANSI 900, ANSI 1500, and ANSI 2500.

(5) Available in 1 in. to 24 in. line sizes ANSI 150, ANSI 300, and DIN Flanges. Available in 30 and 36 in. ANSI 150 only. Available in 1 to 24 in. ANSI 600 full rated. Available in 1 in. to 12 in. ANSI 900 only.

(6) Available in 1 in. to 24 in. line sizes ANSI 150, ANSI 300, and DIN Flanges. Available in 30 and 36 in. AWWA Class 125 and ANSI 150. Available in 1 to 24 in. ANSI 600 full rated. Available in 1 in. to 12 in. ANSI 900 only.

(7) Available in ANSI 1500 and ANSI 2500 only

(8) Electrode type options limited to two measurement electrodes or two measurement electrodes + third grounding electrode

(9) Electrode type options limited to two measurement electrodes only

(10) Lining protectors not available

(11) Available with liner options P or N, line size limited to 1.5-in. to 12-in., available with two measurement electrodes only, not available with ground rings or lining protectors

(12) Liner material options limited to T, P, or F; cannot be ordered with ground rings, lining protectors, or H(x) options

(13) Available with liner option T only, line size 1/2-in. to 8-in. only, not available with grounding rings or liner protectors

(14) Available with ANSI 150, ANSI 300, and DIN flanges.

(15) Available in sensor line sizes 0.5 through 8 in. (15 through 200 mm)

(16) Only available with PTFE or Polyurethane Liner Material with 316L SST Electrode Material

(17) Grounding Rings and Lining Protectors provide the same fluid grounding function. Lining Protectors available in PTFE and ETFE only

(18) Available in sensor line sizes 0.5 through 12 in. (15 through 300 mm)

(19) Available in sensor line sizes 0.5 through 8 in. (15 through 200 mm)

(20) Available in sensor line sizes 0.5 through 16 in. (15 through 400 mm)

(21) Available in sensor line sizes 3 through 18 in. (80 through 450 mm)

(22) D1 Option Code must be ordered with sensor and transmitter

TABLE 43. Rosemount 8705 Carbon Steel ASME B16.5 (ANSI) Flange Rating Availability

Line Size Code	Line Size Inches (mm)	Class 150 (C1)	Class 150 (C2)	Class 300 (C3)	Class 600 (C6)	Class 600 (C7)	Class 900 (C9)	Class 1500 (JM)	Class 2500 (JN)
005	0.5 (15)	•	NA	•	•	NA	NA	NA	NA
010	1 (25)	•	NA	•	•	•	•	NA	NA
015	1.5 (40)	•	NA	•	•	•	•	•	•
020	2 (50)	•	NA	•	•	•	•	•	•
030	3 (80)	•	NA	•	•	•	•	•	•
040	4 (100)	•	NA	•	•	•	•	•	•
060	6 (150)	•	NA	•	•	•	•	•	•
080	8 (200)	•	NA	•	•	•	•	•	•
100	10 (250)	•	NA	•	•	•	•	•	•
120	12 (300)	•	NA	•	NA	•	•	•	•
140	14 (350)	•	NA	•	NA	•	NA	NA	NA
160	16 (400)	•	NA	•	NA	•	NA	NA	NA
180	18 (450)	•	NA	•	NA	•	NA	NA	NA
200	20 (500)	•	NA	•	NA	•	NA	NA	NA
240	24 (600)	•	NA	•	NA	•	NA	NA	NA
300(1)	30 (750)	•	•	NA	NA	NA	NA	NA	NA
360(1)	36 (900)	•	•	NA	NA	NA	NA	NA	NA

(1) AWWA C207 Table 3 Class D Flat Face Flange for option C1 Only

TABLE 44. Rosemount 8705 Stainless Steel ASME B16.5 (ANSI) Flange Rating Availability

Line Size Code	Line Size Inches (mm)	Class 150 (S1)	Class 150 (S2)	Class 300 (S3)	Class 600 (S6)	Class 600 (S7)	Class 900 (S9)	Class 1500 (KM)	Class 2500 (KN)	Class 150 (P1)	Class 150 (P2)	Class 300 (P3)
005	0.5 (15)	•	NA	•	•	NA	NA	NA	NA	•	NA	•
010	1 (25)	•	NA	•	•	•	•	NA	NA	•	NA	•
015	1.5 (40)	•	NA	•	•	•	•	•	•	•	NA	•
020	2 (50)	•	NA	•	•	•	•	•	•	•	NA	•
030	3 (80)	•	NA	•	•	•	•	•	•	•	NA	•
040	4 (100)	•	NA	•	•	•	•	•	•	•	NA	•
060	6 (150)	•	NA	•	•	•	•	•	•	•	NA	•
080	8 (200)	•	NA	•	•	•	•	•	•	•	NA	•
100	10 (250)	•	NA	•	•	•	•	•	•	•	NA	•
120	12 (300)	•	NA	•	NA	•	•	•	•	•	NA	•
140	14 (350)	•	NA	•	NA	•	NA	NA	NA	•	NA	•
160	16 (400)	•	NA	•	NA	•	NA	NA	NA	•	NA	•
180	18 (450)	•	NA	•	NA	•	NA	NA	NA	•	NA	•
200	20 (500)	•	NA	•	NA	•	NA	NA	NA	•	NA	•
240	24 (600)	•	NA	•	NA	•	NA	NA	NA	•	NA	•
300[1]	30 (750)	•	•	NA	NA	NA	NA	NA	NA	•	•	NA
360[1]	36 (900)	•	•	NA	NA	NA	NA	NA	NA	•	•	NA

(1) AWWA C207 Table 3 Class D Flat Face Flange for option S1 or P1 Only

TABLE 45. Rosemount 8705 EN 1092-1 (DIN) Flange Rating Availability

Line Size Code	Line Size Inches (mm)	Carbon Steel PN 10 (CD)	Carbon Steel PN 16 (CE)	Carbon Steel PN 25 (CF)	Carbon Steel PN 40 (CH)	Carbon Steel Table D (CK)	Carbon Steel Table E (CL)	Stainless Steel PN 10 (SD)	Stainless Steel PN 16 (SE)	Stainless Steel PN 25 (SF)	Stainless Steel PN 40 (SH)
005	0.5 (15)	NA	NA	NA	•	•	•	NA	NA	NA	•
010	1 (25)	NA	NA	NA	•	•	•	NA	NA	NA	•
015	1.5 (40)	NA	NA	NA	•	•	•	NA	NA	NA	•
020	2 (50)	NA	NA	NA	•	•	•	NA	NA	NA	•
030	3 (80)	NA	NA	NA	•	•	•	NA	NA	NA	•
040	4 (100)	NA	•	NA	•	•	•	NA	•	NA	•
060	6 (150)	NA	•	NA	•	•	•	NA	•	NA	•
080	8 (200)	•	•	•	•	•	•	•	•	•	•
100	10 (250)	•	•	•	•	•	•	•	•	•	•
120	12 (300)	•	•	•	•	•	•	•	•	•	•
140	14 (350)	•	•	•	•	•	•	•	CF	CF	CF
160	16 (400)	•	•	•	•	•	•	•	CF	CF	CF
180	18 (450)	•	•	•	•	•	•	•	CF	CF	CF
200	20 (500)	•	•	•	•	•	•	•	CF	CF	CF
240	24 (600)	•	•	•	•	•	CF	•	CF	CF	CF

TABLE 46. Rosemount JIS 2220 B Flange Rating Availability

Line Size Code	Line Size Inches (mm)	Carbon Steel 10 K (CP)	Carbon Steel 20 K (CR)	304 SST 10 K (SP)	304 SST 20 K (SR)
005	0.5 (15)	•	•	•	•
010	1 (25)	•	•	•	•
015	1.5 (40)	•	•	•	•
020	2 (50)	•	•	•	•
030	3 (80)	•	•	•	•
040	4 (100)	•	•	•	•
060	6 (150)	•	•	•	•
080	8 (200)	•	•	•	•

ROSEMOUNT 8707 ORDERING INFORMATION

Code	Product Description	Availability
8707	High-Signal Magnetic Flowmeter Sensor	•
Code	**Lining Material**	
A	PFA	•
T	PTFE	•
F	ETFE	•
P	Polyurethane	•
N	Neoprene	•
L	Linatex	•
Code	**Electrode Material**	
S	316L Stainless Steel	•
H	Nickel Alloy 276 (UNS N10276)	•
T	Tantalum	•
P	80% Platinum - 20% Iridium	
N	Titanium	•

		Electrode Material (From Above)				
Code	**Electrode Type**	**Code S**	**Code H**	**Code T**	**Code P**	**Code N**
A	2 Electrodes - Standard	•	•	•	•	•
B	2 Electrodes - Bullet Nose	•	•			
E	3rd Grounding Electrode(1)	•	•	•	•	•
F	3rd Grounding Electrode Bullet Nose	•	•			

		Lining Material (From Above)				
Code	**Line Size**	**Code A**	**Code T**	**Code F**	**Code P**	**Code N and L**
030	3-in. (80 mm)	•	•	•	•	•
040	4-in. (100 mm)	•	•	•	•	•
060	6-in. (150 mm)	•	•	•	•	•
080	8-in. (200 mm)	•	•	•	•	•
100	10-in. (250 mm)	•	•	•	•	•
120	12-in. (300 mm)	•	•	•	•	•
140	14-in. (350 mm)	NA	•	•	•	•
160	16-in. (400 mm)	NA	•	•	•	•
180	18-in. (450 mm)	NA	•	NA	•	•
200	20-in. (500 mm)	NA	•	NA	•	•
240	24-in. (600 mm)	NA	•	NA	•	•
300	30-in. (750 mm)	NA	•	NA	•	•
360	36-in. (900 mm)	NA	•	NA	•	•

Code	**Flange Material**
C	Carbon Steel
S	Stainless Steel (304)

Code	**Flange Type and Rating**	**Availability**
1	ASME B16.5 ANSI Class 150 (30 and 36 in. AWWA C207 Table 3 Class D Flat Face)	
2	MSS SP44 Class 150 (30 and 36-in. only)	
3	ASME B16.5 (ANSI) RF Class 300	

Code	**Electrode Housing Configuration**
W0	Sealed, Welded Housing
W1	Sealed, Welded Housing with Pressure Relief
W3	Sealed, Welded Housing with Separate Electrode Compartments

Code	**Hazardous Area Approvals**
NA	No Hazardous Area Approval Required; CE Marking
N0	FM Class 1 Div 2 for Non-Flammable fluids; CSA Class 1 Div 2
N5	FM Class 1 Div 2 for Flammable fluids

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Code	Options
	Optional Grounding Rings[2]
G1	(2) 316L SST Ground Rings
G2	(2) Nickel Alloy 276 (UNS N10276) Ground Rings[3]
G3	(2) Titanium Ground Rings[3]
G4	(2) Tantalum Ground Rings[4]
G5	(1) 316L SST Ground Rings
G6	(1) Nickel Alloy 276 (UNS N10276) Ground Rings[3]
G7	(1) Titanium Ground Rings[3]
G8	(1) Tantalum Ground Rings[4]
	Optional Lining Protectors[2]
L1	(2) 316L SST Lining Protectors
L2	(2) Nickel Alloy 276 (UNS N10276) Lining Protectors[3]
L3	(2) Titanium Lining Protectors[3]
	Other Options
H1	Lay-length matching 8701 using spool piece[3]
H2	Lay-length matching 8701[5]
H5	Lay-length matching Foxboro 2800 using spool piece[6]
H7	Lay-length ABB CopaX and MagX using spool piece[3]
D1	High Accuracy Calibration[7]
D2	Dual Sensor Calibration Numbers for Rosemount 8732E, 8712D, and 8712E Transmitters
DT	Heavy Duty Tagging
Q4	Calibration Certificate per ISO 10474 3.1B
Q8	Material Traceability 3.1B
Q9	Material Traceability Electrode only 3.1B
Q66	Welding Procedure Qualification Record Documentation
Q67	Welding Performance Qualification Record Documentation
Q70	Weld Examination Inspection Certificate, ISO 10474 3.1B
Typical Model Number: 8707 T SA 040 C1 W0 N0	

(1) Available for 10 in. (250 mm) and larger line size only

(2) Grounding Rings and Lining Protectors provide the same fluid grounding function. Lining Protectors available in PTFE and ETFE only

(3) Available in sensor line sizes 3 through 12 in. (15 through 300 mm)

(4) Available in sensor line sizes 3 through 8 in. (15 through 200 mm)

(5) Available in sensor line sizes 3 through 16 in. (15 through 400 mm)

(6) Available in sensor line sizes 3 through 18 in. (15 through 450 mm)

(7) D1 Option Code must be ordered with sensor and transmitter. Accuracy with 8712H transmitter is 0.25% of rate from 3 to 30 ft/sec (1 to 10 m/sec). Accuracy with 8732E, 8712D, or 8712E transmitters is 0.15% of rate.

TABLE 47. Rosemount 8707 ASME B16.5 (ANSI) Flange Rating Availability

Line Size Code	Line Size Inches (mm)	Carbon Steel Class 150 (C1)	Carbon Steel Class 150 (C2)	Carbon Steel Class 300 (C3)	Stainless Steel Class 150 (S1)	Stainless Steel Class 300 (S3)
030	3 (80)	•	NA	•	•	•
040	4 (100)	•	NA	•	•	•
060	6 (150)	•	NA	•	•	•
080	8 (200)	•	NA	•	•	•
100	10 (250)	•	NA	•	•	•
120	12 (300)	•	NA	•	•	•
140	14 (350)	•	NA	•	•	•
160	16 (400)	•	NA	•	•	•
180	18 (450)	•	NA	•	•	•
200	20 (500)	•	NA	•	•	•
240	24 (600)	•	NA	•	•	•
300(1)	30 (750)	•	•	NA	•	NA
360(1)	36 (900)	•	NA	NA	•	NA

(1) AWWA C207 Table 3 Class D Flat Face Flange for option C1 Only

ROSEMOUNT 8711 ORDERING INFORMATION

Model	Product Description
8711	Magnetic Flowmeter Wafer Sensor
Code	**Lining Material**
A	PFA[1]
T	ETFE[2]
S	PTFE[3]
Code	**Electrode Material**
S	316L Stainless Steel
H	Nickel Alloy 276 (UNS N10276)
T	Tantalum
P	80% Platinum - 20% Iridium
N	Titanium
Code	**Electrode Type**
A	2 Electrodes - Standard
B	2 Electrodes - Bullet Nose
E	3rd Grounding Electrode - Standard
F	3rd Grounding Electrode Bullet Nose
Code	**Line Size**
15F	0.15 in. (4 mm)
30F	0.3 in. (8 mm)
005	½ in. (15 mm)
010	1in. (25 mm)
015	1½ in. (40mm)
020	2 in. (50mm)
030	3 in. (80 mm)
040	4 in. (100 mm)
060	6 in. (150 mm)
080	8 in. (200 mm)
Code	**Transmitter Mounting Configuration**
R	Remote
U	Integral, mounted to Rosemount 8732E/8742C Transmitter

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Code	Mounting Kit
	Expanded Kit: Includes two alignment rings (where applicable), threaded SST studs, and nuts
1	ASME B16.5 (ANSI) Class 150
2	EN 1092-1 (DIN) PN 10/16[4]
3	ASME B16.5 (ANSI) Class 300
4	EN 1092-1 (DIN) PN 25/40[5]
	Standard Kit: Includes two alignment rings (where applicable)
5	ASME B16.5 (ANSI) Class 150
6	EN 1092-1 (DIN) PN 10/16[4]
7	ASME B16.5 (ANSI) Class 300
8	EN 1092-1 (DIN) PN 25/40[5]
Code	**Hazardous Area Approval**
NA	No Hazardous Area Approval Required
	FM & CSA
N0	FM Class 1 Div 2 for Non-Flammable fluids; CSA Class 1 Div 2
N5	FM Class 1 Div 2 for Flammable fluids
E5	FM Class 1 Div 1, Explosion Proof
	ATEX
E1	ATEX EEx e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
KD	ATEX EEx e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
N1	ATEX EEx nA [L] IIC Type n Approval
ND	ATEX Dust Approval
	NEPSI
E3	NEPSI Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EP	NEPSI Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
	KOSHA
E9	KOSHA Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EK	KOSHA Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
	InMetro
E2	InMetro BR-Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EB	InMetro BR-Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
	GOST
E8	GOST Ex e ia IIC T3... T6, Increased Safety Approval (with I.S. electrodes), integral mount with 8732E only
EM	GOST Ex e ia IIC T3… T6, Increased Safety Approval (with I.S. electrodes)
Code	**Options**
	Certifications
PD	Pressure Equipment Directive Certification (PED, per 97/23/EC)
DW	NSF Drinking Water Certification[6]
	Optional Grounding Rings
G1	(2) 316L SST Ground Rings
G2	(2) Nickel Alloy 276 (UNS N10276) Ground Rings
G3	(2) Titanium Ground Rings
G4	(2) Tantalum Ground Rings
G5	Single 316L SST Ground Ring
G6	Single Nickel Alloy 276 (UNS N10276) Ground Ring
G7	Single Titanium Ground Ring
G8	Single Tantalum Ground Ring

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	Other Options
D1	High Accuracy Calibration (0.15% of rate for matched sensor and transmitter)(7)
DT	Heavy Duty Tagging
Q4	Calibration Certificate per ISO 10474 3.1B
QR	
Q8	Material Traceability 3.1B
Q9	Material Traceability Electrode only 3.1B
Q66	Welding Procedure Qualification Record Documentation(8)
Q67	Welding Performance Qualification Record Documentation(8)
Q70	Weld Examination Inspection Certificate, ISO 10474 3.1B(8)

Typical Model Number: 8711 TSA 020 R 5 N0

(1) Available with 0.15 and 0.30 in. (4 and 8 mm) line sizes only

(2) Not available with 0.15 and 0.30 in. (4 and 8 mm) line sizes

(3) Not available with 0.15 and 0.30 in. (4 and 8 mm) line sizes

(4) 8 in. (200 mm) has a PN 10 mounting kit only

(5) 8 in. (200 mm) has a PN 25 mounting kit only

(6) Only available with PTFE Liner Material with 316L SST Electrode Material

(7) D1 Option Code must be ordered with sensor and transmitter

(8) 6 and 8 in. (150 and 200 mm) line sizes only

ROSEMOUNT 8721 ORDERING INFORMATION

Model	Product Description
8721	Hygienic Magnetic Flowmeter Sensor
Code	**Lining Material**
A	PFA
Code	**Electrode Material**
S	316L SST (standard)
H	Nickel Alloy 276 (UNS N10276)
P	80% Platinum-20% Iridium
Code	**Electrode Construction**
A	Standard measurement electrodes
Code	**Line Sizes**
005	15 mm ($^1/_2$ in.)
010	25 mm (1 in.)
015	40 mm ($1^1/_2$ in.)
020	50 mm (2.0 in.)
025	65 mm ($2^1/_2$ in.)
030	80 mm (3.0 in.)
040	100 mm (4.0 in.)
Code	**Transmitter Mounting Configuration**
R	Remote, for use with 8712, or remote version of 8732 transmitter
U	Integral, mounted to 8732 transmitter
X	Sensor only (does not include terminal junction box)
Code	**Process Connection Type**
A	Tri-Clamp (1)
B	IDF Sanitary screw type (2)
C	ANSI Weld Nipple (2)
D	DIN 11851 (Imperial)
E	DIN 11851 (Metric)
F	DIN 11864-1 form A
G	DIN 11864-2 form A
H	SMS Connection
J	Cherry-Burrell I-Line
K	DIN 11850 Weld Nipple
Code	**Process Gasket Material**
1	Silicone gasket seal
2	EPDM
4	Viton
8	EPDM Compression - limiting (3)
9	Viton Compression - limiting (3)
X	No gasket (User supplied; only applicable with Process Connection B)

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Code	Product Certifications
NA	CE Marking; 3A; EHEDG Type EL(3); no hazardous location approvals
N0	Factory Mutual (FM) Ordinary Location; CSA; CE Marking; 3-A; EHEDG Type EL(3)
Code	**Options**
AH	Electropolished process connection surface finish < 15µinch Ra (0.38µm Ra)
D1	High Accuracy Calibration [0.25% of rate from 3-30 ft/s (0.9-10 m/s)] matched sensor and transmitter system
D3	High Velocity Meter Verification. Calibration verified at 1, 3, 10 and 20 ft/sec (0.3. 1, 3, and 6 m/s)
HD	DanFoss Lay Length
HP	Process Data PD340 (Alfa-Laval PD340) 250mm lay length and Tri-Clamp process connections
J1	CM20 Conduit Adapter (Applies to Transmitter Mount Option “R” only)
J2	PG13.5 Conduit Adapter (Applies to Transmitter Mount Option “R” only)
Q4	Inspection Certification for Calibration Data
Q8	Material Traceability Certificate per ISO 10474 3.1B (product contact surfaces)
SJ	304 Stainless Steel terminal junction box (Remote configuration only)
Typical Model Number: 8721 A S A 020 U A 1 N0	

(1) Tri-Clamp specification per BPE-2002

(2) IDF Specification per BS4825 Part 4

(3) EHEDG Document 8 requires mechanical compression limiting, provided by Compression - limiting gaskets for line sizes 1- 4 in. only.

ROSEMOUNT 8714D ORDERING INFORMATION

Model	Description
8714DQ4	Reference Calibration Standard

Tagging

The sensor and transmitter will be tagged, at no charge, in accordance with customer requirements.

Transmitter tag character height is 0.125 in. (3.18 mm). Sensor tag: 40 character maximum. Transmitter tag: see Configuration Data Sheet for character maximum.

Ordering Procedure

To order, select the desired sensor and/or transmitter by specifying model codes from the ordering table.

For remote transmitter applications, note the cable specification requirements.

Sensors and transmitters must be selected from Product Data Sheet 00813-0100-4727.

Standard Configuration

Unless the Configuration Data Sheet is completed, the transmitter will be shipped as follows:

Engineering Units:	ft/sec
4 mA (1 V DC):	0
20 mA (5 V DC):	30
Sensor Size:	3-in.
Empty Pipe:	Off
Sensor Calibration Number:	1000005010000000

Integrally Mounted Rosemount 8732E Transmitters are factory configured with the attached sensor size and appropriate calibration number.

Cable Requirements for Remote Transmitters

Description	Length	P/N
Signal Cable (20 AWG) Belden 8762, Alpha 2411 equivalent	ft m	08712-0061-0001 08712-0061-0003
Coil Drive Cable (14 AWG) Belden 8720, Alpha 2442 equivalent	ft m	08712-0060-0001 08712-0060-0003
Combination Signal and Coil Drive Cable (18 AWG)(1)	ft m	08712-0752-0001 08712-0752-0003

(1) Combination signal and coil drive cable is not recommended for high-signal magmeter system. For remote mount installations, combination signal and coil drive cable should be limited to less than 330 ft (100 m).

Remote transmitter installations require equal lengths of signal and coil drive cables. Integrally mounted transmitters are factory wired and do not require interconnecting cables.

Lengths from 5 to 1,000 feet (1.5 to 300 meters) may be specified, and will be shipped with the sensor. Cable longer than 100 feet (30 meters) is not recommended for high-signal systems.

Custom Configuration (Option Code C1)

If Option Code C1 is ordered, the Configuration Data Sheet (CDS) must be submitted at the time of order.

Rosemount 8700 Series Configuration Data Sheet

All sections up to C1 Note are required on this form.
★ = Default Value

◯ Select only one of the items provided
☐ One or more of the listed items can be selected

Customer Information

Customer: _____ Contact Name: _____

P.O./Reference No: _____ Fax No./Email: _____

Phone No.: _____ P.O. Line Item: _____

Quote No. _____ Model No.:_____

Customer Signoff: _____

Tagging

Hardware Tag.: _____ (21 characters max)

Software Tag: _____ (8 characters max)

Meter

Model Type: ◯ Sensor ◯ Magmeter System (Sensor and Transmitter) ◯ Transmitter

Transmitter Type: ◯ Integral Mount ◯ Remote

Fluid Selection

Liquid: ◯ Water ◯ Acetic Acid ◯ Nitric Acid ◯ Orange Juice Concentrate ◯ Milk ◯ Other(1)

Custom: Name: _____

Density or Specific Gravity(2): _____

Conductivity: _____

(1) Requires Custom information below.
(2) Required for Mass Units only.

Process Information(1)

	Units	Minimum	Normal	Maximum	Design
Flow Rate:					
Pressure:					
Process Temp:					

(1) Gray boxes are required values.

Process Variable Configuration

	LRV(1) (0.0 sec★)	URV(1) (30 ft/sec★)	UOM	
Flow:				(Not available in FOUNDATION fieldbus)

(1) Note that the LRV for the Process Variable that is mapped to the PV will determine the 4 mA set point of the transmitter. The URV for the Process Variable that is mapped to the PV will determine the 20 mA setpoint of the transmitter.

C1 NOTE

The following sections are required only if C1 option is selected.

Basic Configuration

Damping = 2.0 seconds★_____ (0.0 seconds for FOUNDATION fieldbus)
Sensor Size = _____ 3 – 36” (8712H) / .15 - 60” (All others)

Special Units (HART only)

For a list of all standard configurable units, consult the appropriate product manual available on www.emersonprocess.com/rosemount.

Volume Units: _____ (4 characters)

Base Units:
◯ Gallons ◯ Cubic Meters ◯ Barrels ◯ Short Ton ◯ Kilogram
◯ Liters ◯ Cubic Feet ◯ Barrels (beer) ◯ Pound ◯ Imperial Gallon
◯ Feet ◯ Meters ◯ Metric Ton

Conversion Factors: _____ where one special unit = Conversion Factor x Base Unit

Time Base: ◯ Seconds ◯ Minutes ◯ Hours ◯ Days

Rate Units: _____ (4 characters)

Totalizer Units: _____ (4 characters) Totalizer Units can be set independently of the flow units

HART / Transmitter Information

Write Protect ◯ Off★ ◯ On
Alarm Option ◯ High★ ◯ Low (8732E/8712E only)

Descriptor _____(16 characters maximum) Date (day/month/year): ___ / ___ / ___

Message _____ (32 characters maximum)

◯ 4–20 mA, scaled pulse, and auxiliary output with simultaneous digital signal based on HART® protocol★
◯ 4–20 mA and auxiliary output with simultaneous digital signal based on *HART* protocol (Rosemount 8732E only)
◯ Burst mode of *HART* digital process variable

Burst mode output options:
◯ Primary variable in engineering units.
◯ Primary variable in percent of range.
◯ All dynamic variables in engineering units.
◯ All dynamic variables in engineering units and the primary variable mA value.

◯ Multidrop Communications(1)
Choose transmitter address (1-15)(2) _____

(1) This option fixes the transmitter’s analog output at 4 mA.

(2) Default transmitter address is 1 if multidrop communication is selected.

Sensor Information (Data Only – Does Not Affect Transmitter Output)

Sensor Tag No. (Software) _____ (8 characters maximum)

Sensor Serial No. _____ (7 characters maximum)

Sensor Calibration No. _____ 16 Digits from sensor 1000005010000000★

SST Sensor Tag No. _____

Enter either the Rosemount sensor model number or select one option from each of the following groups of options:

Sensor Model No. _____

Electrode Material: ◯ 316 SST★ ◯ Tantalum ◯ Titanium ◯ Platinum-Iridium ◯ Nickel Alloy-276 ◯ Special	Electrode Type: ◯ Standard★ ◯ Standard, plus Grounding ◯ Bullet ◯ Special
Flange Material: ◯ Carbon Steel★ ◯ 304 SST ◯ 316 SST ◯ Special	Liner Material: ◯ PTFE★ ◯ Neoprene ◯ ETFE ◯ PFA ◯ Polyurethane ◯ Linatex ◯ Special

Advanced Configuration Options (Not Required for Typical Start-up)

Pulse Scaling: (Not available in FOUNDATION fieldbus)
◯ .03 ft★
◯ 1 Pulse = _____ units
Pulse Width: _____ 0.5 m/s★

Operation Mode:
◯ Normal★
◯ Filter

Signal Processing:
◯ Off★ ◯ On
_____ 90★ No. Samples
_____ 2★ Max.% Limit %
_____ 2★ Time Limit Sec

Low Flow Cutoff:_____ 0.1 ft/sec★

Coil Pulse Mode: (8712H not available)
◯ 5 Hz★
◯ 37.5 Hz

Local Display Language: (8732E only)
◯ English★ ◯ Spanish
◯ French ◯ German
◯ Portuguese

Flowrate Display (Not available in FOUNDATION fieldbus)	◯ Eng Units and % span★	◯ Eng Units and Gross Total	◯ % Span and Gross Total
Totalizer Display (Not available in FOUNDATION fieldbus)	◯ Net and Gross★	◯ Forward and Reverse	
Analog Loop Power	◯ Internal★	◯ External (8732E/8712E only)	
Pulse Loop Power (8732E only)	◯ Internal	◯ External★	
Simulate (FOUNDATION fieldbus only)	◯ Off★	◯ On	

Standard Diagnostics Information

Empty Pipe
◯ Enable
◯ Disable★
Trigger Level _____100★ (8732E/8712E only)
Empty Pipe Counts _____ 5★ (8732E/8712E only)

Electronics Temperature (8732E/8712E only)
◯ Enable
◯ Disable★

Advanced Diagnostics Information (Requires DA1/D01 Option) (8732E/8712E only)

High Process Noise
◯ Enable★
◯ Disable

Grounding/Wiring Faults
◯ Enable★
◯ Disable

NOTE
If DA1/D01 is selected in the model code, Empty Pipe and Electronics Temp Diagnostics will also be enabled.

8714i Meter Verification Diagnostic (Requires DA2/D02 Option) (8732E/8712E only)

Test Criteria
Empty Pipe: _____ 5%★
Flowing Full: _____ 3%★
Full, No Flow: _____ 2%★

NOTE
The Test Criteria value sets the pass fail value for the meter calibration verification check. This value must be an integer value between 1 and 10%.

Digital Input / Digital Output Information (Requires AX Option) (8732E/8712E only)

DI/DO Channel 1
◯ Input★
◯ Output (not available on 8732E)
◯ Disable

Digital Input Configuration
◯ Positive Zero Return (PZR)★
◯ Totalizer Reset
◯ Transmitter Reset

DO Channel 2
◯ Enable★
◯ Disable

DO Configuration (Select 2 options if channel 1 is configured as a DO)
☐ Empty Pipe★
☐ Zero Flow
☐ Reverse Flow
☐ Transmitter Fault
☐ Flow Limit 1 (8712E only)
☐ Flow Limit 2 (8712E only)
☐ Totalizer Limit (8712E only)
☐ Diagnostic Status Alert (8712E only)

Flow and Totalizer Alert Configuration (8712E only)

Flow Limit 1 Configuration
Control 1 ◯ ON ◯ OFF
Mode 1 ◯ > High Limit
◯ < Low Limit
◯ In Range
◯ Out of Range
High Limit 1:_____
Low Limit 1:_____

Flow Limit 2 Configuration
Control 2: ◯ ON ◯ OFF
Mode 2: ◯ > High Limit
◯ < Low Limit
◯ In Range
◯ Out of Range
High Limit 2:_____
Low Limit 2:_____

Totalizer Limit Configuration
Control: ◯ ON ◯ OFF
Mode: ◯ > High Limit
◯ < Low Limit
◯ In Range
◯ Out of Range
High Limit:_____
Low Limit:_____

Flow Limit Hysteresis:_____

Totalizer Limit Hysteresis:_____

Diagnostic Status Alert (8712E only)		
☐ Electronics Failure	☐ Reverse Flow	☐ Electronics Temp Out of Range
☐ Coil Open Circuit	☐ Grounding / Wiring Fault	
☐ Empty Pipe	☐ High Process Noise	*Select as many options as needed for the application

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