

Flow Through Toroidal Conductivity Sensor

- FLOW THROUGH DESIGN is ideal for use with viscous, abrasive, or fibrous process liquids.
- OVER 250 CONFIGURATIONS to meet customers' needs.
- REPLACEABLE LINER in glass-filled PEEK, TEFLON, or ALUMINA reduces long-term operating costs.
- DIN and ANSI FLANGES compatible with all piping installations.
- LINE SIZES of 1 through 4 inches (DN 25, 40, 50, 80 and 100).
- IN-LINE CALIBRATION saves money by reducing labor and down-time.
- TEMPERATURE SENSOR and JUNCTION-BOX included.



FEATURES AND APPLICATIONS

Rosemount Analytical Toroidal Conductivity Sensors are ideal for use in processes where contacting sensors -- those with electrodes exposed to the measured solution -- would corrode or become fouled.

The Model 242 Flow Through Toroidal conductivity sensor consists of two toroids surrounding a pipe through which the process liquid flows. One toroid acts as a transmitter and the other as a receiver. Energizing the transmitter toroid induces an electric current in the process solution which induces an electric current in the receiver toroid. The strength of the induced current is directly proportional to the conductivity of the solution.

The Model 242 sensor is available in over two hundred fifty configurations to meet the needs of many applications and installations. Line sizes of 1, 1.5, 2, 3, and 4 inches (25, 40, 50, 80, and 100 mm) are available with both ANSI and DIN compatible flanges. A variety of liner materials and O-rings are available to ensure compatibility with most process liquids.

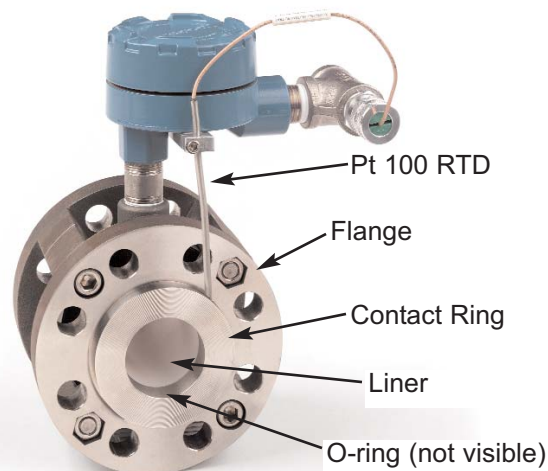
The Model 242 sensor is easy to install. It fits in the process piping between mounting flanges. Special grounding rings are not needed because the sensor has contact rings built into it. Recessed bolts hold the sensor together to ensure all internal parts stay in perfect alignment. A junction box and a Pt 100 RTD are included. The RTD slips easily into one of the sensor contact rings. There is no need to install a separate thermowell, and temperature measurements are made at the same point as the conductivity measurements.

The Model 242 is not sensitive to flow rate or direction. It does not obstruct the process flow. The sensor is rugged and constructed from chemically resistant materials. All these features make the sensor ideal for applications in mining and metals processing, pulp and paper processing, and the chemical processing industry.

The Model 242 Flow Through Conductivity Sensor is compatible with instrument Models 54eC, 1055, 3081T, 4081T, 5081-T, and Xmt-T.

SPECIFICATIONS

The Model 242 Flow Through Sensor comprises a toroid housing constructed from 316 stainless steel and polyethyleneterephthalate, process connection flanges of 316 stainless steel, two metal contact rings (available in choice of three materials), an insulating liner (choice of three materials), O-rings (choice of three materials), a Pt 100 RTD, and a sensor-mounted junction box. Only the liner, contact rings, and O-rings are wetted by the process. The Pt 100 RTD is designed for insertion into one pre-drilled contact ring. The NEMA 7D junction box is constructed of heavy duty epoxy-painted cast aluminum. The conductivity range is user-selectable with the tapped toroid windings. In-line calibration can be performed with resistors connected to an integral wire around the toroids that is terminated in the junction box.



Liners are available in Teflon, glass-filled Polyetheretherketone (PEEK), and alumina. These materials provide excellent chemical resistance. PEEK is recommended for high pressure or high temperature applications. Teflon is recommended when the process solution contains hydrofluoric acid or other strong oxidizing agents. Alumina is recommended if the process solution is abrasive, such as in alumina/caustic ratio applications.

Installation Type	Flow Through
Conductivity Range	100 μ S/cm to 2 S/cm
Process Connections	150# ANSI, 300# ANSI, PN16 DIN 2501 compatible flanges
Maximum Temperature	Depends on configuration. For plastic-lined sensors, see charts on facing page. For alumina-lined sensors, see charts on page 4.
Maximum Pressure	Depends on configuration. For plastic-lined sensors, see charts on facing page. For alumina-lined sensors, see charts on page 4.
Wetted Materials: Liner Contact Rings O-rings	Teflon [®] (PTFE), glass-filled PEEK, or alumina 316 SST, Carpenter 20Cb-3 [®] SST, or Hastelloy [®] C-276 EPDM, Viton [®] (FKM), or Chemraz [®] (FFKM)
Shipping Weight	1" to 2": 22 lbs. (10kg) 3" to 4": 86 lbs. (39 kg)

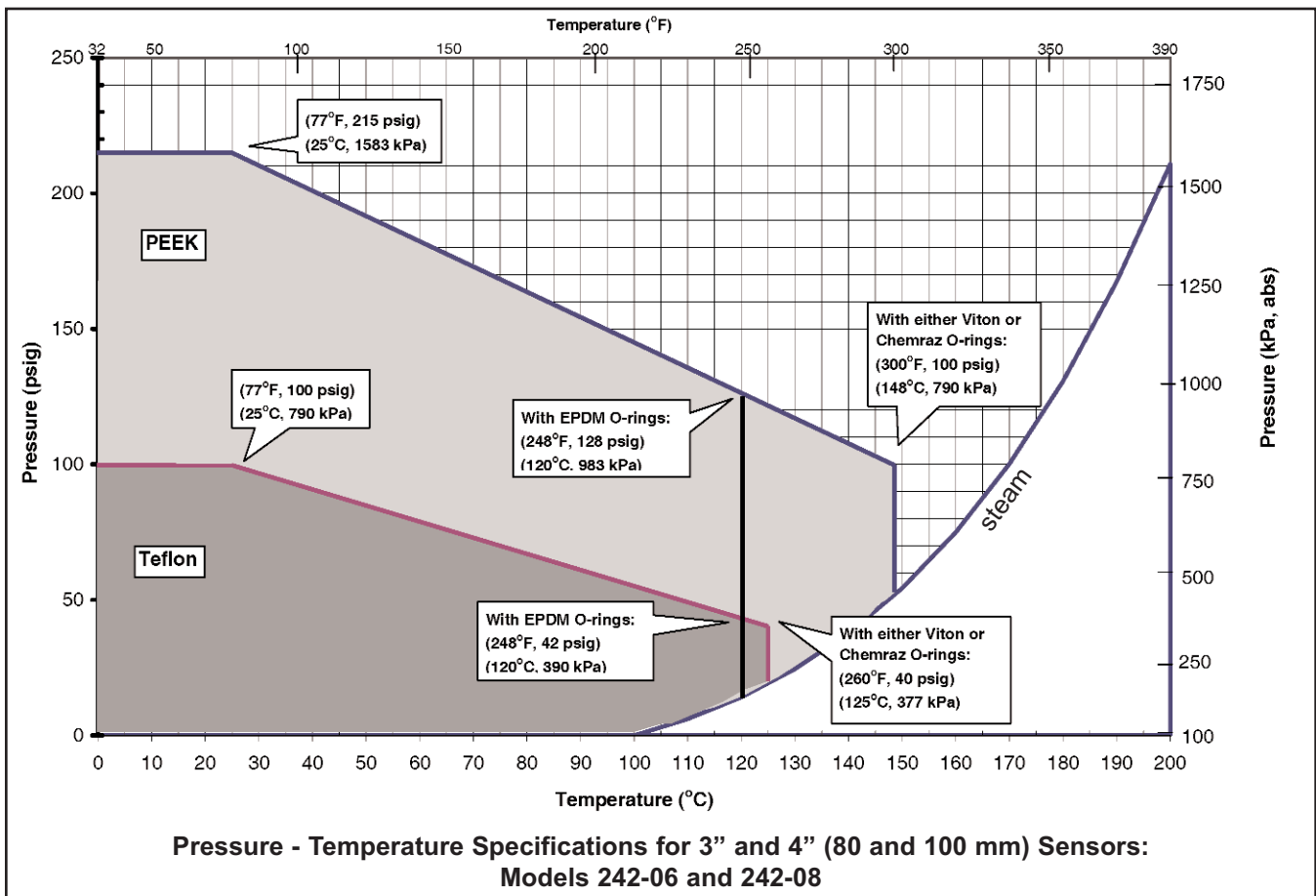
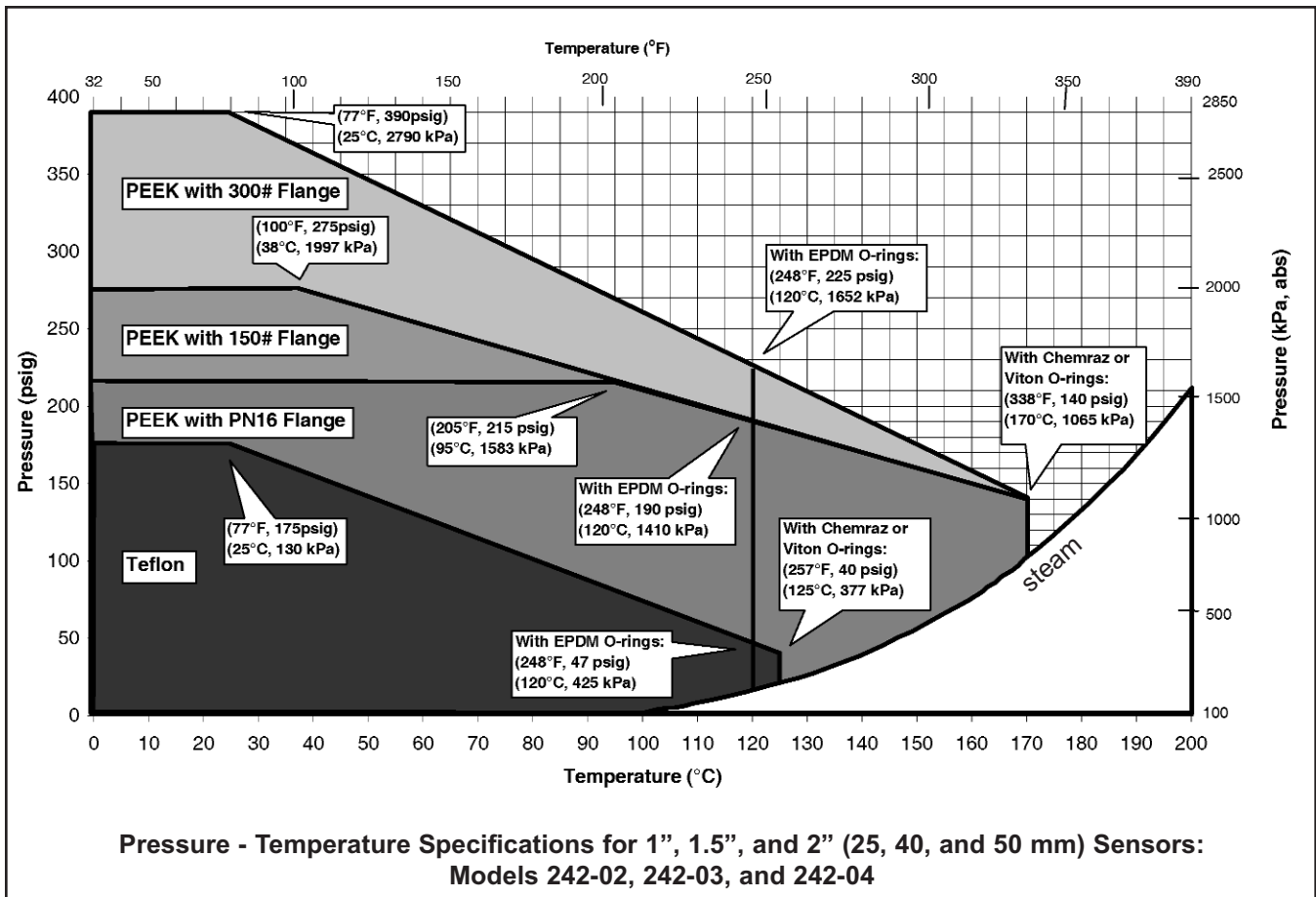
Teflon is a registered trademark of E.I. du Pont de Nemours & Co.

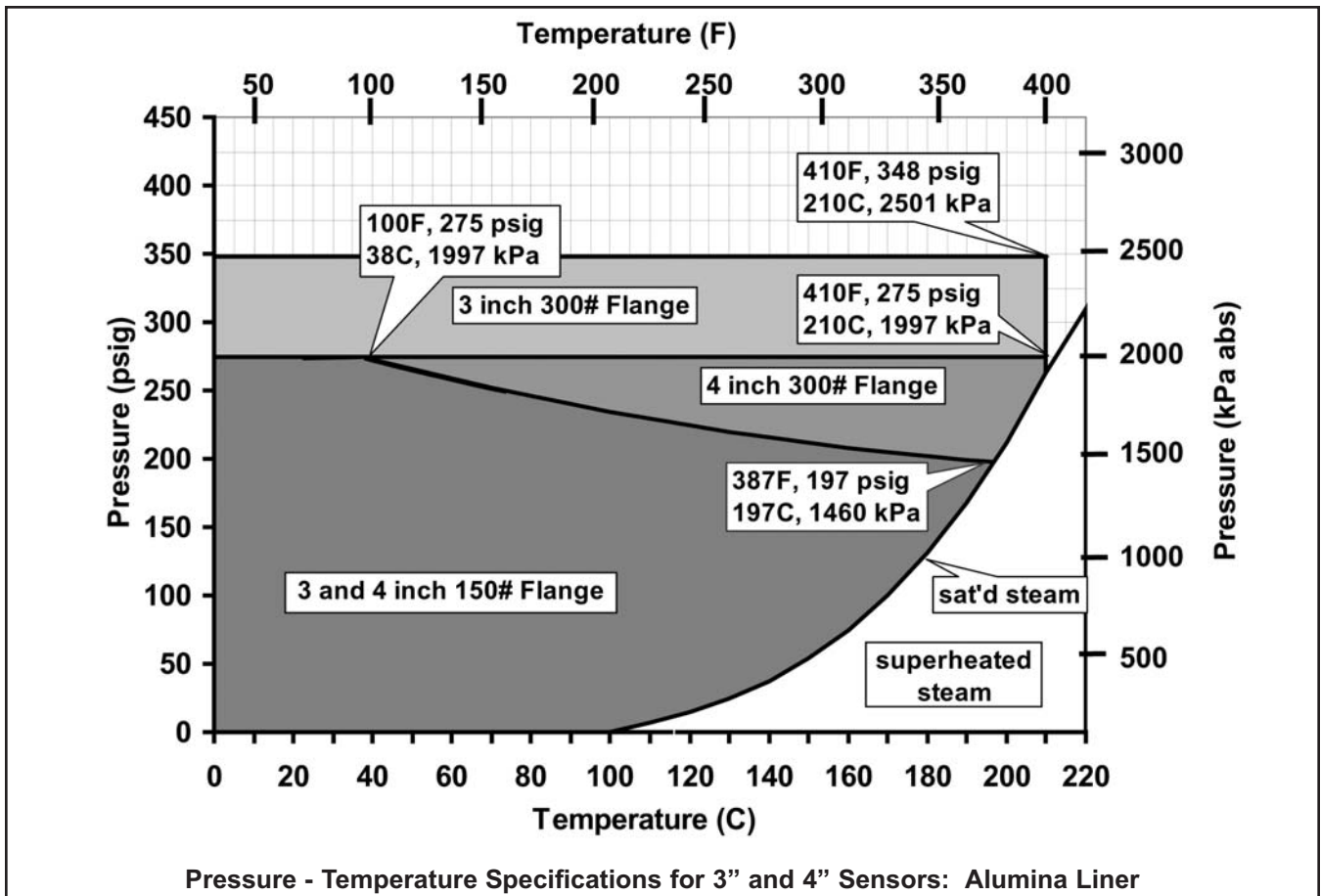
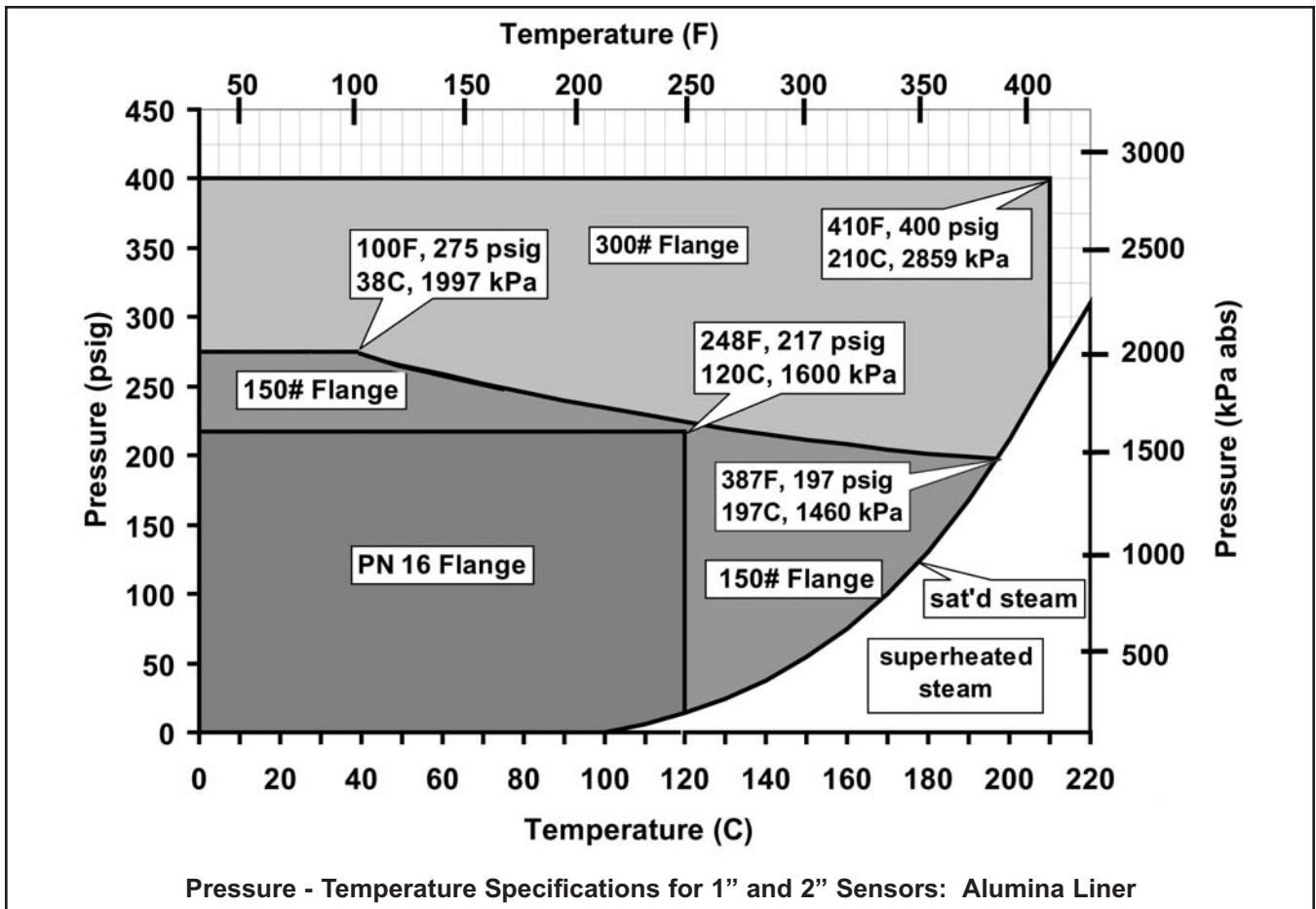
Viton is a registered trademark of Du Pont Dow Elastomers.

Carpenter 20Cb-3 is a registered trademark of Carpenter Technologies.

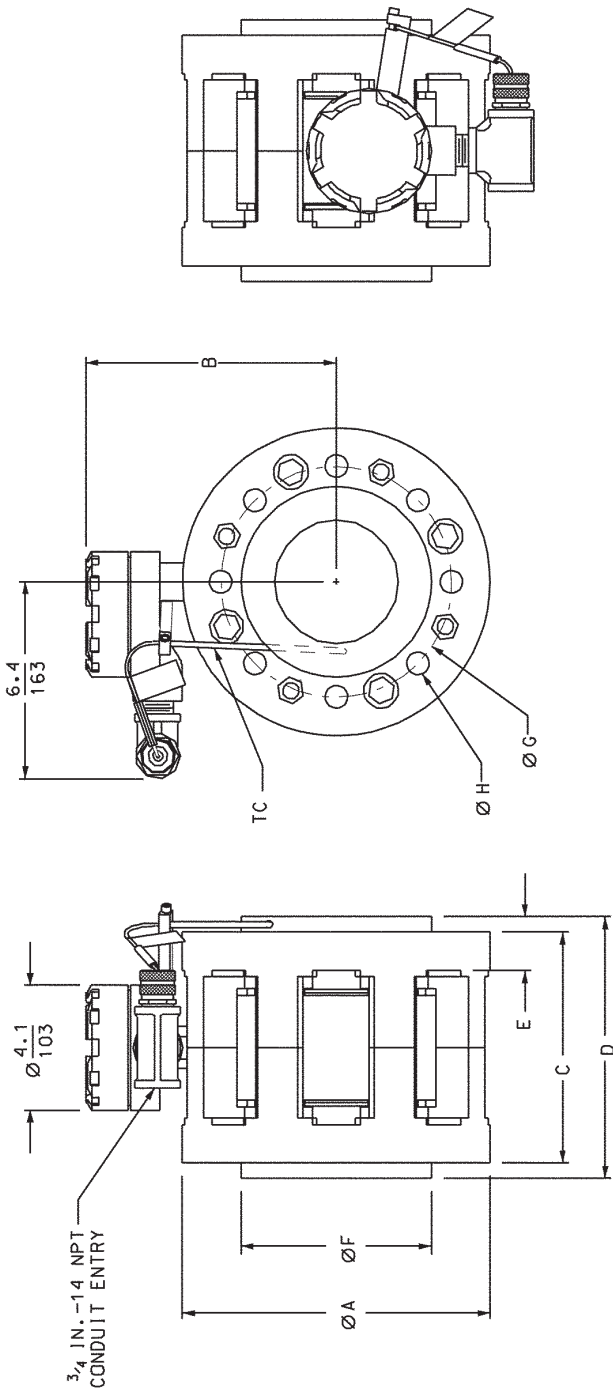
Hastelloy is a registered trademark of Haynes International.

Chemraz is a registered trademark of Greene, Tweed, & Co.





WHEN INCH AND METRIC DIMS
ARE GIVEN
INCH
MILLIMETER



TOP

END

SIDE

DIMENSIONAL DRAWING

MODEL 242 OPTIONS	-0210	-0211	-0214	-0310	-0311	-0314	-0410	-0411	-0414	-0610	-0611	-0614	-0810	-0811	-0814
LINE SIZE AND PROCESS CONNECTION	1" 300#	1 1/2" 300#	DN 25 PN16	1 1/2" 150#	1 1/2" 300#	DN 40 PN16	2" 150#	2" 300#	DN 50 PN16	3" 150#	3" 300#	DN 80 PN16	4" 150#	4" 300#	DN 100 PN16
A: OUTSIDE DIAMETER, in. (mm)	6.00	6.00	6.00 (152)	6.00	6.50	6.50 (152)	6.00	6.50	6.50 (165)	10.00	10.00	10.00 (254)	10.00	10.00	10.00 (254)
B: HEIGHT, in. (mm)	7.90	7.90	7.90 (201)	7.90	7.90	7.90 (201)	7.90	7.90	7.90 (201)	9.00	9.00	9.00 (229)	9.00	9.00	9.00 (229)
C: FLANGE TO FLANGE, in. (mm)	4.70	4.70	4.70 (120)	4.70	4.70	4.70 (120)	4.70	4.70	4.70 (120)	7.50	7.50	7.50 (191)	7.50	7.50	7.50 (191)
D: RAISED FACE TO RAISED FACE, in. (mm)	5.70	5.70	5.70 (145)	5.70	5.70	5.70 (145)	5.70	5.70	5.70 (145)	8.50	8.50	8.50 (216)	8.50	8.50	8.50 (216)
E: FLANGE BOLTING THICKNESS, in. (mm)	1.25	2.00	1.25 (32)	1.25	1.40	1.40 (32)	1.25	1.40	1.40 (35.5)	1.80	1.80	1.80 (45.7)	1.80	1.80	1.80 (45.7)
F: RAISED FACE DIAMETER, in. (mm)	2.00	3.50	2.00 (51)	2.88	2.88	2.88 (73)	3.62	3.62	3.62 (92)	5.00	5.00	5.00 (127)	6.19	6.19	6.19 (157)
G: BOLT HOLE CIRCLE DIAMETER, in. (mm)	3.12	3.50	3.12 (79)	3.88	4.50	4.50 (114)	4.75	5.00	5.00 (127)	6.00	6.62	6.62 (168)	7.50	7.88	7.88 (200)
H: HOLE DIAMETER, MTG. BOLTS, in. (mm)	0.62	0.75	0.62 (16)	0.62	0.88	0.88 (22)	0.75	0.75	0.75 (19)	0.75	0.88	0.88 (22)	0.75	0.88	0.88 (22)
MQUNTING BOLT HOLES PER FLANGE	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
SENSOR MASS, lb. (kg)	22	22	22 (10)	22	22	22 (10)	22	22	22 (10)	86	86	86 (39)	86	86	86 (39)

The dimensions of the Model 242 sensor depend on the selected line size and the flange option. Please refer to the dimensional drawing for the appropriate sensor dimensions.

ORDERING INFORMATION

The **Model 242 Flow-Through Sensor** is configurable to meet the needs of many applications and installations (both ANSI and DIN). After specifying line size and flange type, the customer selects the wetted materials most compatible with the process stream. A NEMA 7D junction box and Pt 100 RTD are also included. Compatible instruments include Rosemount Analytical Models 54eC, 1055, 3081T, 4081T, 5081-T, and Xmt-T.

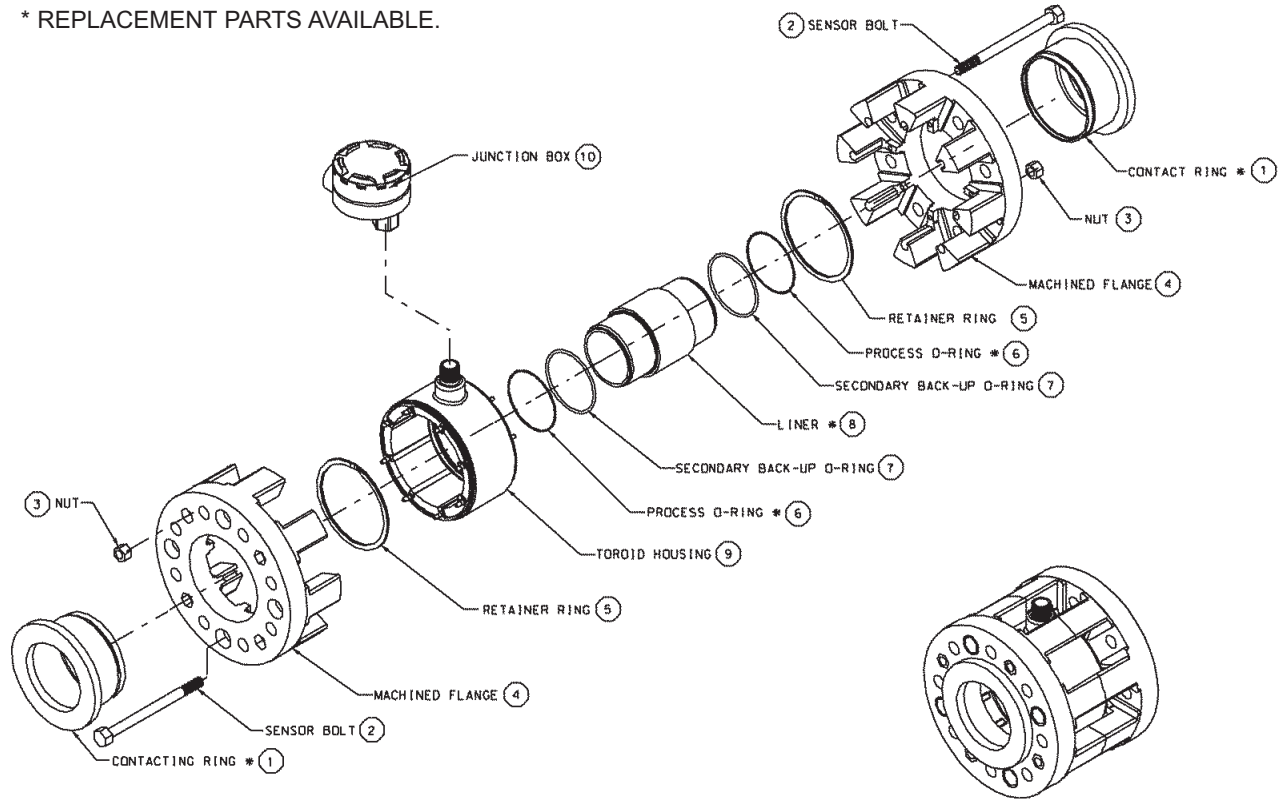
The extension cable required for wiring from the junction box to the instrument must be ordered separately. The customer supplies the gaskets, mating flanges, and flange bolts.

MODEL	
242 FLOW THROUGH TOROIDAL CONDUCTIVITY SENSOR	
CODE	LINE SIZE (Required Selection)
02	1" DN 25
03	1-1/2" DN 40
04	2" DN 50
06	3" DN 80 (no ATEX approval with 5081T)
08	4" DN 100 (no ATEX approval with 5081T)
CODE	PROCESS CONNECTION (Required Selection)
10	150# ANSI Flange (Line sizes 1", 1-1/2", 2", 3", 4")
11	300# ANSI Flange (Line sizes 1", 1-1/2", 2", 3", 4")
14	PN 16 Metric Flange (Line sizes DN 25, 40, 50, 80, 100)
CODE	CONTACT RING MATERIAL (Required Selection)
SS	316 Stainless Steel
H4	Hastelloy C-276 (Line Sizes 1", 1-1/2", 2", 25mm, 40mm, 50mm)
H8	Hastelloy C-276 (Line Sizes 3", 4", 80mm, 100mm)
C4	Carpenter 20-Cb3 (Line Sizes 1", 1-1/2", 2", 25mm, 40mm, 50mm)
C8	Carpenter 20-Cb3 (Line Sizes 3", 4", 80mm, 100mm)
CODE	LINER MATERIAL (Required Selection)
TE	PTFE (Teflon®)
G4	PEEK, 30% Glass-Filled (Line Sizes 1", 1-1/2", 2", 25mm, 40mm, 50mm)
G8	PEEK, 30% Glass-Filled (Line Sizes 3", 4", 80mm, 100mm)
A4	Alumina (Line sizes 1", 2", 25 mm, 50 mm); available only with option F4
A8	Alumina (Line sizes 3", 4", 80 mm, 100 mm); available only with option F8
CODE	PROCESS O-RING MATERIAL (Required Selection)
EP	Ethylene Propylene Rubber
VT	Fluorocarbon Rubber (Viton®)
F4	High Temp. Perfluoroelastomer (Chemraz®) (Line Sizes 1", 1-1/2", 2", 25mm, 40mm, 50mm)
F8	High Temp. Perfluoroelastomer (Chemraz®) (Line Sizes 3", 4", 80mm, 100mm)
242	-0611SSG8VT EXAMPLE

ACCESSORIES

PART NUMBER	DESCRIPTION	
23909-00	Extension cable, Pre-prepped, for connection to Instrument Models 54eC, 1055, 3081T, 4081T, 5081-T, and Xmt-T (<i>Specify length</i>)	
KIT PN	DESCRIPTION	FOR SENSOR MODELS
24005-00	Kit, Liner, 1" DN 25, Teflon PTFE	242-02[]TE[]
24005-01	Kit, Liner, 1" DN 25, glass-filled PEEK	242-02[]G4[]
24005-02	Kit, Liner, 1" DN 25, Alumina	242-02[]A4[]
24006-00	Kit, Liner, 1-1/2" DN 40, Teflon PTFE	242-03[]TE[]
24006-01	Kit, Liner, 1-1/2" DN 40, glass-filled PEEK	242-03[]G4[]
24007-00	Kit, Liner, 2" DN 50, Teflon PTFE	242-04[]TE[]
24007-01	Kit, Liner, 2" DN 50, glass-filled PEEK	242-04[]G4[]
24007-02	Kit, Liner, 2" DN 50, Alumina	242-04[]A4[]
24008-00	Kit, Liner, 3" DN 80, Teflon PTFE	242-06[]TE[]
24008-01	Kit, Liner, 3" DN 80, glass-filled PEEK	242-06[]G8[]
24008-02	Kit, Liner, 3" DN 80, Alumina	242-06[]A8[]
24009-00	Kit, Liner, 4" DN 100, Teflon PTFE	242-08[]TE[]
24009-01	Kit, Liner, 4" DN 100, glass-filled PEEK	242-08[]G8[]
24009-02	Kit, Liner, 4" DN 100, Alumina	242-08[]A8[]
KIT PN	DESCRIPTION	FOR SENSOR MODELS
24010-00	Kit, O-Ring, 1" DN 25, EPDM	242-02[]EP[]
24010-01	Kit, O-Ring, 1" DN 25, Viton	242-02[]VT[]
24010-02	Kit, O-Ring, 1" DN 25, Chemraz	242-02[]F4[]
24010-03	Kit, O-Ring, 1" DN 25, Chemraz for use with Alumina liner	242-02[]A4-F4
24011-00	Kit, O-Ring, 1-1/2" DN 40, EPDM	242-03[]EP[]
24011-01	Kit, O-Ring, 1-1/2" DN 40, Viton	242-03[]VT[]
24011-02	Kit, O-Ring, 1-1/2" DN 40, Chemraz	242-03[]F4[]
24012-00	Kit, O-Ring, 2" DN 50, EPDM	242-04[]EP[]
24012-01	Kit, O-Ring, 2" DN 50, Viton	242-04[]VT[]
24012-02	Kit, O-Ring, 2" DN 50, Chemraz	242-04[]F4[]
24012-03	Kit, O-Ring, 2" DN 50, Chemraz for use with Alumina liner	242-04[]A4-F4
24013-00	Kit, O-Ring, 3" DN 80, EPDM	242-06[]EP[]
24013-01	Kit, O-Ring, 3" DN 80, Viton	242-06[]VT[]
24013-02	Kit, O-Ring, 3" DN 80, Chemraz	242-06[]F8[]
24013-03	Kit, O-Ring, 3" DN 80, Chemraz for use with Alumina liner	242-06[]A8-F8
24014-00	Kit, O-Ring, 4" DN 100, EPDM	242-08[]EP[]
24014-01	Kit, O-Ring, 4" DN 100, Viton	242-08[]VT[]
24014-02	Kit, O-Ring, 4" DN 100, Chemraz	242-08[]F8[]
24014-03	Kit, O-Ring, 4" DN 100, Chemraz for use with Alumina liner	242-08[]A8-F8

* REPLACEMENT PARTS AVAILABLE.



EXPLODED VIEW OF MODEL 242



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the right answers,
right now.*

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Liquid Division

2400 Barranca Parkway
Irvine, CA 92606 USA
Tel: (949) 757-8500
Fax: (949) 474-7250

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