Product Data Sheet
00813-0100-4016, Rev RH
July 2019

Rosemount™ DP Level Transmitters and 1199 Diaphragm Seal Systems

Applications

- Level, flow, pressure, interface, density
- Extreme hot and cold temperatures
- Corrosive, clogging, or viscous processes
- Hygienic requirements
- Special process connections

ROSEMOUNT™

EMERSON™

Proven, reliable, and innovative DP Level technologies

To meet your application requirements, Rosemount™ DP Level technologies deliver an unsurpassed product offering that is easy to specify, order, and install. The offering includes a wide variety of process connections, direct mount or capillary connections, and materials of construction to address almost any application. If you don't see what you need listed here, ask us. We can create a custom engineered solution to meet your needs.

Rosemount Level Transmitters

Level transmitters combine world-class Rosemount pressure instrumentation with direct-mount seals, all in a single integrated model number.

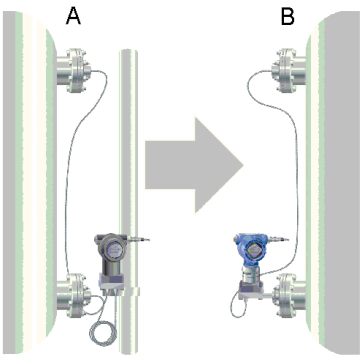
Rosemount 3051SAL, 3051L, and 2051L Level Transmitters

- Achieve best-in-class system reliability with all welded systems
- Wireless configurations provide new data access
- Connect to virtually any process with a comprehensive offering of process connections, fill fluids, direct mount or capillary connections, and materials
- Quantify and optimize total system performance with QZ option

Rosemount Tuned-System™ Assemblies optimize results

Rosemount Tuned-System Assemblies utilize a direct mount seal on the high pressure connection and a remote mount (Capillary) connection on the low pressure connection. This improves overall performance and installation compared to a traditional Balanced Seal System.

Contents



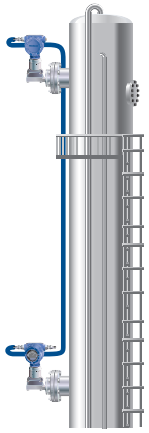
A. Balanced system with two equal lengths of capillary

B. Tuned-system assembly with direct mount plus capillary

- Reduce installed costs by 20 percent by eliminating excess capillary and transmitter mounting hardware
- Improve performance by up to 30 percent
- Increase response time by up to 80 percent
- Reduce risk with up-front quantified performance reports

Rosemount 3051S Electronic Remote Sensor (ERS)™ System

The Rosemount 3051S ERS System is a digital DP Level architecture that links two Rosemount 3051S Pressure Sensors together electronically. The pressure sensors are synchronized on a single power loop where the differential pressure, level, and volume are calculated and transmitted using a standard two-wire 4–20 mA HART® signal.



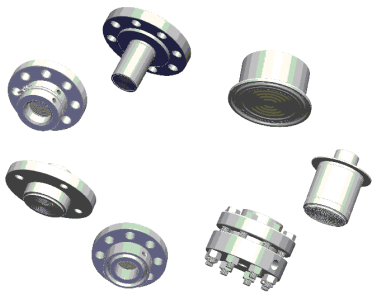
A digital upgrade to a proven technology

- 90 percent improvement in time response
- Elimination of temperature effects and measurement drift
- Multivariable capabilities including DP, P_{LO}, P_{HI}, volume, and level
- Proven Rosemount 3051S Sensor technology

Simplified installations and maintenance routines

- Elimination of wet legs or dry legs
- Easy installations without need for heat tracing and insulation
- Proactive maintenance and troubleshooting with sensor alerts and diagnostics
- Simplified inventories with sensors and standard cable

Rosemount 1199 Seal Systems



Seal systems provide a reliable process pressure measurement and prevent the process medium from contacting the transmitter diaphragm. Transmitter/diaphragm seal systems should be considered when:

- Process temperature is outside of the operating ranges of the transmitter.
- Process is corrosive and/or requires specific exotic materials of construction.
- Process contains suspended solids or is viscous and is prone to plugging of connections.

- Application requires the use of flush-mount hygienic connections that facilitates CIP/SIP service.
- There is a requirement for easier cleaning of the process from the connections to avoid contamination between batches.

Application flexibility

- Flanged, threaded, and hygienic process connections
- Meets industry standards such as EN 1092-1, ANSI/ASME B16.5, JIS B2238, ANSI/ASME B1.20.1, EN 10226-1, GOST 33259-15, ISO 228-1
- Variety of fill fluids applications including cold temperature, hot temperature, and hygienic and food grade
- Three different capillary diameters allow for optimization of accuracy and time response

Reliable system construction

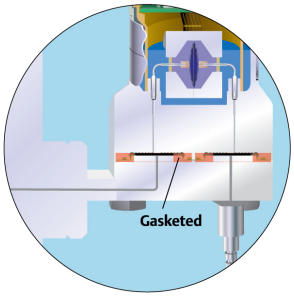
- Welded design with no threaded connections
- 100 percent helium leak tested
- Advanced manufacturing techniques ensure air-free, leak-tight system that is stable over time
- Reliable operation in full vacuum applications

Robust seal design

- Backup convolutions on the diaphragm protect seal integrity
- Recessed diaphragms reduce potential for handling damage

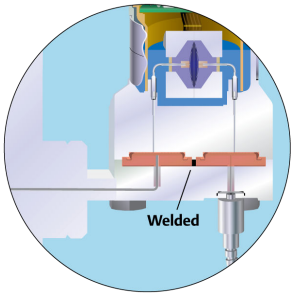
Seal system construction options

Figure 1: Welded-Repairable Construction



- All connection points welded except gasket between sensor module and transmitter flange
- Transmitter can be re-used if repair work is required

Figure 2: All Welded (Vacuum) Construction



- All connection points welded including welded disk over sensor module isolators
- Ideal for vacuum applications (< 6 psia, 400 mbar-a)
- Seal system and transmitter are not repairable

Rosemount™ 3051S Electronic Remote Sensor (ERS™) System

Table 1:

The Rosemount 3051S ERS System is a flexible, 2-wire 4-20 mA HART architecture that calculates differential pressure (DP) electronically using two pressure sensors that are linked together with a non-proprietary electrical wire.

Ideal applications for the Rosemount 3051S ERS System include tall vessels and distillation columns that have traditionally required long lengths of capillary or impulse piping. When used in these types of applications, the Rosemount 3051S ERS System can deliver:

- More accurate and repeatable DP measurements
- Faster time response
- Simplified installations
- Reduced maintenance

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How to order

Procedure

1. Choose two Rosemount 3051S ERS Transmitter models. These may be any combination of Rosemount 3051SAM and Rosemount 3051SAL models.

   Example

   Rosemount 3051SAM

   

   Coplanar

   

   In-line

   Example

   Rosemount 3051SAL

   

   Coplanar

   

   In-line

2. Decide which model will be the ERS Primary (4–20 mA loop termination and optional LCD display) and which will be the ERS Secondary. This will be specified by the “Configuration Type” code in each model number.

   Example

   A. Secondary
   B. Primary

3. Specify two full model numbers per the desired configuration.

   Example

   3051SAL1PG4AA1A1020DFF71DA00M5

   3051SAM1ST2A2E11A2A

Rosemount 3051SAM Transmitter for ERS Applications

- Coplanar and in-line sensor module platforms
- Variety of process connections including threaded NPT, flanges, manifolds, and Rosemount 1199 Remote Seals
- Available with 15-year stability and 15-year limited warranty

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Transmitter type	
3051SAM	Scalable ERS Measurement Transmitter	
Performance class(1)		
1	Ultra: 0.025% span accuracy, 200:1 rangedown, 15-year stability, 15-year limited warranty	★

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information *(continued)*

2	Classic: 0.035% span accuracy, 150:1 rangedown, 15-year stability				★
4	Enhanced ERS System performance, 15-year stability, 15-year limited warranty				★
Configuration type					
P	ERS - primary				★
S	ERS - secondary				★
Pressure module type		**Pressure sensor type**			
G	Coplanar	Gage			★
T	In-Line	Gage			★
E	In-Line	Absolute			★
A	Coplanar	Absolute			
Pressure range[2]					
	Coplanar gage	In-line gage	In-line absolute	Coplanar absolute	
1A	N/A	–14.7 to 30 psig (–1,01 to 2,06 bar)	0 to 30 psia (0 to 2,06 bar)	0 to 30 psia (0 to 2,06 bar)	★
2A	–250 to 250 inH_2O (–621,60 to 621,60 mbar)	–14.7 to 150 psig (–1,01 to 10,34 bar)	0 to 150 psia (0 to 10,34 bar)	0 to 150 psia (0 to 10,34 bar)	★
3A	–393 to 1000 inH_2O (–0,97 to 2,48 bar)	–14.7 to 800 psig (–1,01 to 55,15 bar)	0 to 800 psia (0 to 55,15 bar)	0 to 800 psia (0 to 55,15 bar)	★
4A	–14.2 to 300 psig (–0,97 to 20,68 bar)	–14.7 to 4000 psig (–1,01 to 275,79 bar)	0 to 4000 psia (0 to 275,79 bar)	0 to 4000 psia (0 to 275,79 bar)	★
5A	–14.2 to 2000 psig (–0,97 to 137,89 bar)	–14.7 to 10000 psig (–1,01 to 689,47 bar)	0 to 10000 psia (0 to 689,47 bar)	N/A	★
Isolating diaphragm					
2[3][4]	316L stainless steel (SST)				★
3[3]	Alloy C-276				★
4[3][4]	Alloy 400				
5[4][5]	Tantalum				
6[3][4]	Gold-plated Alloy 400 (includes graphite-filled PTFE O-Ring)				
7[3][4]	Gold-plated 316L SST				
Process connection					
	Coplanar module type		In-line module type		
A11[6]	Assemble to Rosemount 305 Manifold		Assemble to Rosemount 306 Manifold		★
A12[6]	Assemble to Rosemount 304 or AMF Manifold with SST traditional flange		Assemble AMF Manifold to ½-14 NPT female process connection		★
A15[6]	Assemble to Rosemount 304 or AMF manifold to SST traditional flange with alloy C-276 drain vents		N/A		★

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information *(continued)*

A22[6]	Assemble to Rosemount 304 or AMF manifold to SST coplanar flange	N/A	★
B11[6][7]	Assemble to one Rosemount 1199 Remote Diaphragm Seal with SST transmitter flange	Assemble to one Rosemount 1199 Remote Diaphragm	★
E11	Coplanar flange (CS), ¼–18 NPT, 316 SST drain vents	½ –14 NPT female	★
E12	Coplanar flange (SST), ¼–18 NPT, 316 SST drain vents	N/A	★
E13[3]	Coplanar flange (Cast C-276), ¼–18 NPT, Alloy C-276 drain vents	N/A	★
E14	Coplanar flange (Cast Alloy 400), ¼–18 NPT, Alloy 400/K-500 drain vents	N/A	★
E15[3]	Coplanar flange (SST), ¼–18 NPT, Alloy C-276 drain vents	N/A	★
E16[3]	Coplanar flange (CS), ¼–18 NPT, Alloy C-276 drain vents	N/A	★
E21	Coplanar flange (CS), RC ¼, 316 SST drain vents	N/A	★
E22	Coplanar flange (SST), RC ¼, 316 SST drain vents	N/A	★
E23[3]	Coplanar flange (Cast C-276), RC ¼, Alloy C-276 drain vents	N/A	★
E24	Coplanar flange (Cast Alloy 400), RC ¼, alloy 400/ K-500 drain vents	N/A	★
E25[3]	Coplanar flange (SST), RC ¼, Alloy C-276 drain vents	N/A	★
E26[3]	Coplanar flange (CS), RC ¼, Alloy C-276 drain vents	N/A	★
F12	Traditional flange (SST), ¼–18 NPT, 316 SST drain vents	N/A	★
F13[3]	Traditional flange (Cast C-276), ¼–18 NPT, Alloy C-276 drain vents	N/A	★
F14	Traditional flange (Cast Alloy 400), ¼–18 NPT, Alloy 400/K-500 drain vents	N/A	★
F15[3]	Traditional flange (SST), ¼–18 NPT, Alloy C-276 drain vents	N/A	★
F22	Traditional flange (SST), RC ¼, 316 SST drain vents	N/A	★
F23[3]	Traditional flange (Cast C-276), RC¼, Alloy C-276 drain vents	N/A	★
F24	Traditional flange (Cast Alloy 400), RC¼, Alloy 400/ K500 drain vents	N/A	★
F25[3]	Traditional flange (SST), RC ¼, Alloy C-276 drain vents	N/A	★
F52	DIN-compliant traditional flange (SST), ¼–18 NPT, 316 drain vents, 7 to 16-in. bolting	N/A	★
G11	Vertical mount level flange (SST), 2-in. ANSI Class 150, 316 SST drain vents	G½ A DIN 16288 male (range 1–4 only)	★

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information *(continued)*

G12	Vertical mount level flange (SST), 2-in. ANSI Class 300, 316 SST drain vents	N/A		★
G21	Vertical mount level flange (SST), 3-in. ANSI Class 150, 316 SST drain vents	N/A		★
G22	Vertical mount level flange (SST), 3-in. ANSI Class 300, 316 SST drain vents	N/A		★
G31	Vertical mount level flange (SST), DIN-DN 50 PN 40, 316 SST drain vents	N/A		★
G41	Vertical mount level flange (SST), DIN-DN 80 PN 40, 316 SST drain vents	N/A		★
P11	N/A	Level flange (SST), 2-in. ANSI Class 150		★
P12	N/A	Level flange (SST), 2-in. ANSI Class 300		★
P21	N/A	Level flange (SST), 3-in. ANSI Class 150		★
P22	N/A	Level flange (SST), 3-in. ANSI Class 300		★
P31	N/A	Level flange (SST), DIN-DN 50 PN 40		★
F11	Traditional flange (CS), ¼–18 NPT, 316 SST drain vents	Non-threaded instrument flange (I-Flange)		
F32	Bottom vent traditional flange (SST), ¼–18 NPT, 316 SST drain vents	N/A		
F42	Bottom vent traditional flange (SST), RC¼, 316 SST drain vents	N/A		
F62	DIN-compliant traditional flange (316 SST), ¼–18 NPT, 316 drain vents, M10 bolting	N/A		
F72	DIN-compliant traditional flange (316 SST), ¼–18 NPT, 316 drain vents, M12 bolting	N/A		
Transmitter output				
A	4–20 mA with digital signal based on HART protocol			★
Housing style		**Material**	**Conduit entry size**	
Housings for ERS primary - configuration type code P				
1A	Plantweb™ housing	Aluminum	½–14 NPT	★
1B	Plantweb housing	Aluminum	M20 x 1.5 (CM 20)	★
1J	Plantweb housing	SST	½–14 NPT	★
1K	Plantweb housing	SST	M20 x 1.5 (CM 20)	★
2E	Junction box with remote display output	Aluminum	½–14 NPT	★
2F	Junction box with remote display output	Aluminum	M20 x 1.5 (CM 20)	★
2M	Junction box with remote display output	SST	½–14 NPT	★
1C	Plantweb housing	Aluminum	G½	
1L	Plantweb housing	SST	G½	

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information *(continued)*

2G	Junction box with remote display output	Aluminum	G½	
Housings for ERS secondary - configuration type code S				
2A	Junction box	Aluminum	½–14 NPT	★
2B	Junction box	Aluminum	M20 x 1.5 (CM 20)	★
2J	Junction box	SST	½–14 NPT	★
2C	Junction box	Aluminum	G½	
Options (include with selected model number)				
Extended product warranty				
WR3	3-year limited warranty			★
WR5	5-year limited warranty			★
ERS connection cable				
R02	25 ft. (7,62 m) of ERS cable (gray color)			
R05	50 ft. (15,2 m) of ERS cable (gray color)			★
R10	100 ft. (30,5 m) of ERS cable (gray color)			★
R15	150 ft. (45,72 m) of ERS cable (gray color)			★
R20[8]	200 ft. (60,96 m) of ERS cable (gray color)			
R22[9]	225 ft. (68,58 m) of ERS cable (gray color)			
R30	300 ft. (91,44 m) of ERS cable (gray color)			
R40	400 ft. (121,92 m) of ERS cable (gray color)			
R50	500 ft. (152,4 m) of ERS cable (gray color)			
H02	25 ft. (7,62 m) of ERS cable (blue color)			
H05	50 ft. (15,2 m) of ERS cable (blue color)			
H10	100 ft. (30,5 m) of ERS cable (blue color)			
H15	150 ft. (45,7 m) of ERS cable (blue color)			
H20[8]	200 ft. (60,96 m) of ERS cable (blue color)			
H22[9]	225 ft. (68,58 m) of ERS cable (blue color)			
J02	25 ft. (7,62 m) of ERS armored cable			
J05	50 ft. (15,2 m) of ERS armored cable			
J07	75 ft. (22,8 m) of ERS armored cable			
J10	100 ft. (30,5 m) of ERS armored cable			
J12[9]	125 ft. (38,1 m) of ERS armored cable			
Mounting bracket				
B1[4]	Traditional flange bracket, CS, 2-in. pipe			★
B2[4]	Traditional flange bracket, CS, panel			★
B3[4]	Traditional flange flat bracket, CS, 2-in. pipe			★

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information *(continued)*

B4	Bracket, all SST, 2-in. pipe and panel	★
B7[4]	Traditional flange bracket, B1 with SST bolts	★
B8[4]	Traditional flange bracket, B2 with SST bolts	★
B9[4]	Traditional flange bracket, B3 with SST bolts	★
BA[4]	Traditional flange bracket, B1, all SST	★
BC[4]	Traditional flange bracket, B3, all SST	★
Special configuration (software)		
C1[10]	Customer software configuration (Configuration Data Sheet must be completed)	★
C3	Gage pressure calibration on Rosemount 3051SAM A4 only	★
C4[10]	NAMUR alarm and saturation levels, high alarm	★
C5[10]	NAMUR alarm and saturation levels, low alarm	★
C6[10]	Custom alarm and saturation levels, high alarm (requires C1 and Configuration Data Sheet)	★
C7[10]	Custom alarm and saturation levels, low alarm (requires C1 and Configuration Data Sheet)	★
C8[10]	Low alarm (standard Rosemount alarm and saturation levels)	★
Special configuration (hardware)		
D2[11]	¼–14 NPT flange adapters	★
D4[12]	External ground screw assembly	★
D5[11]	Delete transmitter drain/vent valves (install plugs)	★
D7[11]	Coplanar flange without drain/vent ports	
D9[11]	RC ½ flange adapters	
Product certifications		
E1	ATEX Flameproof	★
I1	ATEX Intrinsic Safety	★
N1	ATEX Type n	★
K1	ATEX Flameproof and Intrinsically Safe, Type n, Dust	★
ND	ATEX Dust	★
E4	TIIS Flameproof	★
E5	FM Explosion-proof, Dust Ignition-proof	★
I5	FM Intrinsically Safe, Division 2	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
E6[13]	CSA Explosion-proof, Dust Ignition-proof, Division 2	★
I6	CSA Intrinsically Safe	★
K6[13]	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
E7	IECEx Flameproof	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Type n	★

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information *(continued)*

K7	IECEx Flameproof, Intrinsic Safety, Type n	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsically Safe	★
K2	INMETRO Flameproof, Intrinsic Safety, Type n	★
E3	China Flameproof	★
I3	China Intrinsic Safety, Dust Ignition-proof	★
EP	Korea Flameproof	★
IP	Korea Intrinsic Safety	★
KP	Korea Flameproof, Intrinsic Safety	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof, Intrinsic Safety	★
KA[13]	ATEX and CSA Flameproof, Intrinsically Safe, Division 2	★
KB[13]	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
KC	FM and ATEX Explosion-proof, Intrinsically Safe, Division 2	★
KD[13]	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe	★
Shipboard approvals		
SBS	American Bureau of Shipping (ABS) Type Approval	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyds Register (LR) Type Approval	★
Calibration certification		
Q4	Calibration certificate	★
QP	Calibration certificate and tamper evident seal	★
Material traceability certification		
Q8	Material traceability certification per EN 10204 3.1	★
Quality certification for safety		
QS	Prior-use certificate of FMEDA Data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA data	★
Surface finish certification		
Q16	Surface finish certification for hygienic remote seals	★
Toolkit performance reports[14]		
QZ	Remote seal system performance calculation report	★
Terminal blocks[15]		
T1	Transient terminal block	★

Table 2: Rosemount 3051SAM Transmitter for ERS Applications Ordering Information *(continued)*

Sensor fill fluid[16]		
L1	Inert sensor fill fluid	★
O-ring		
L2	Graphite-filled PTFE O-ring	★
Bolting material[11]		
L4	Austenitic 316 SST bolts	★
L5[3]	ASTM A 193, Grade B7M bolts	★
L6	Alloy K-500 bolts	★
L7[3]	ASTM A 453, Class D, Grade 660 bolts	★
L8	ASTM A 193, Class 2, Grade B8M bolts	★
Display type (ERS primary only)[10]		
M5	Plantweb LCD display	★
M7[17]	Remote mount LCD display and interface, Plantweb housing, no cable, SST bracket	★
M8	Remote mount LCD display and interface, Plantweb housing, 50 ft. (15,2 m) cable, SST bracket	★
M9	Remote mount LCD display and interface, Plantweb housing, 100 ft. (30,5 m) cable, SST bracket	★
Pressure testing		
P1	Hydrostatic testing with certificate	
Special cleaning[11]		
P2	Cleaning for special services	
P3	Cleaning for less than 1 PPM Chlorine/Fluorine	
NACE® certificate[3]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Typical model number: 3051SAM 1 S T 2A 2 E11 A 2A		

(1) See "Specifications" section for more detail. The Rosemount 3051S ERS System offers three performance class options; Classic, Ultra, and Enhanced ERS system performance. The Classic and Ultra performance classes are suited to lower static pressure and stable temperature conditions. The Enhanced ERS system performance class provides better performance across temperature (–40 to 185 °F) with improved performance at higher static pressure.

(2) The pressure range should be specified based on the maximum static pressure, not differential pressure.

(3) Materials of construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

(4) Not available with pressure sensor/module codes T or E.

(5) Tantalum diaphragm material is only available with Pressure Sensor/Module code G.

(6) "Assemble to" items are specified separately and require a completed model number.

(7) Consult an Emerson representative for performance specifications.

(8) Maximum cable distance for SIS installations. See Rosemount 3051S ERS Reference Manual for more information.

(9) Maximum cable distance for IS (Intrinsically safe) installations. Other options may not be valid at longer distances.

(10) Not available with Configuration Type code S.

(11) Not available with Process Connection code A11.

(12) This assembly is included with options E1, N1, K1, ND, E4, E7, N7, K7, E2, KA, KC, KD, K2, T1, EP, and KP.

(13) Not available with M20 or G½ conduit entry size.

(14) The QZ report quantifies the performance of the entire ERS system. One report is provided per ERS system. The QZ option is specified on the primary transmitter (configuration type code P).

(15) Not available with configuration type code S.
(16) Silicone fill fluid is standard.
(17) See the Rosemount 3051S Reference Manual for cable requirements. Contact an Emerson representative for additional information.

Rosemount 3051SAL Transmitter for ERS Applications

- Integrated transmitter and direct mount seal in a single model number
- Variety of process connections including flanged, threaded, and hygienic remote seals
- Available with 15-year limited warranty

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information .

A Rosemount 3051SAL Scalable ERS Level Transmitter consists of three parts. First, specify the transmitter model codes found in Table 3 . Then, specify a direct mount seal found here: Diaphragm seals for Rosemount 3051SAL. Finish the model number by specifying all desired options from the "Options" section of Table 3.

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	**Transmitter type**				
3051SAL	Scalable level transmitter				
Performance class(1)					
1	Ultra: 0.055% span accuracy, 150:1 rangedown, 15-year limited warranty				★
2	Classic: 0.065% span accuracy, 150:1 rangedown				★
4	Enhanced ERS system performance, 15-year limited warranty				★
Configuration type					
P	ERS - primary				★
S	ERS - secondary				★
Pressure module type		**Pressure sensor type**			
G	Coplanar	Gage			★
T	In-line	Gage			★
E	In-line	Absolute			★
A	Coplanar	Absolute			
Pressure range(2)					
	Coplanar gage	In-line gage	In-line absolute	Coplanar absolute	
1A	N/A	–14.7 to 30 psig (–1,01 to 2,06 bar)	0 to 30 psia (0 to 2,06 bar)	0 to 30 psia (0 to 2,06 bar)	★
2A	–250 to 250 inH_2O (–621,60 to 621,60 mbar)	–14.7 to 150 psig (–1,01 to 10,34 bar)	0 to 150 psia (0 to 10,34 bar)	0 to 150 psia (0 to 10,34 bar)	★

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information *(continued)*

3A	–393 to 1000 inH_2O (–0,97 to 2,48 bar)	–14.7 to 800 psig (–1,01 to 55,15 bar)	0 to 800 psia (0 to 55,15 bar)	0 to 800 psia (0 to 55,15 bar)	★
4A	–14.2 to 300 psig (–0,97 to 20,68 bar)	–14.7 to 4000 psig (–1,0 to 275,79 bar)	0 to 4000 psia (0 to 275,79 bar)	0 to 4000 psia (0 to 275,79 bar)	★
5A	–14.2 to 2000 psig (–0,97 to 137,89 bar)	–14.7 to 10000 psig (–1,01 to 689,47 bar)	0 to 10000 psia (0 to 689,47 bar)	N/A	★
Transmitter output					
A	4–20 mA with digital signal based on HART Protocol				★
Housing style		**Material**	**Conduit entry size**		
Housings for ERS primary - configuration type code P					
1A	Plantweb housing	Aluminum	½–14 NPT		★
1B	Plantweb housing	Aluminum	M20 x 1.5 (CM 20)		★
1J	Plantweb housing	SST	½–14 NPT		★
1K	Plantweb housing	SST	M20 x 1.5 (CM 20)		★
2E	Junction box with remote display output	Aluminum	½–14 NPT		★
2F	Junction box with remote display output	Aluminum	M20 x 1.5 (CM 20)		★
2M	Junction box with remote display output	SST	½–14 NPT		★
1C	Plantweb housing	Aluminum	G½		
1L	Plantweb housing	SST	G½		
2G	Junction box with remote display output	Aluminum	G½		
Housings for ERS secondary - configuration type code S					
2A	Junction box	Aluminum	½–14 NPT		★
2B	Junction box	Aluminum	M20 x 1.5 (CM 20)		★
2J	Junction box	SST	½–14 NPT		★
2C	Junction box	Aluminum	G½		
Seal system type(3)					
Coplanar pressure module type					
1	Single direct mount seal system	Welded-repairable			★
2	Single direct mount seal system	All welded			★
In-line pressure module type					
1	Single direct mount seal system	All welded			★

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information *(continued)*

High side connection type							
Single direct mount seal system (between transmitter and remote seal)							
0	No extension						★
2	2-in. (50 mm) extension						★
4	4-in. (100 mm) extension						★
5[4]	Thermal Optimizer						★
6[5]	Thermal Range Expander - Silicone 200 secondary fill fluid						★
7[5][6]	Thermal Range Expander - SYLTHERM™ XLT secondary fill fluid						★
Low side connection type (reference pressure connection)							
Single direct mount seal system							
00	None (In-line style sensor)						★
20	316L SST isolator/SST transmitter flange						★
30	Alloy C-276 isolator/SST transmitter flange						★
Seal fill fluid		**Specific gravity at 77 °F (25 °C)**	**Temperature limits[7][8]**				
			No extension	**2-in. (50 mm) extension**	**4-in. (100 mm) extension**	**Thermal Range Expander[9]**	
D	Silicone 200	0.934	–49 to 401 °F (–45 to 205 °C)			N/A	★
F	Silicone 200 for vacuum applications	0.934	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
J[10]	Tri-Therm 300	0.795	–40 to 401 °F (–40 to 205 °C)	–40 to 464 °F (–40 to 240 °C)	–40 to 572 °F (–40 to 300 °C)	N/A	★
Q[10]	Tri-Therm 300 for vacuum applications	0.795	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
L	Silicone 704	1.07	32 to 401 °F (0 to 205 °C)	32 to 464 °F (0 to 240 °C)	32 to 572 °F (0 to 300 °C)	Up to 599 °F (315 °C)	★
C	Silicone 704 for vacuum applications	1.07	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
R	Silicone 705	1.09	68 to 401 °F (20 to 205 °C)	68 to 464 °F (20 to 240 °C)	68 to 572 °F (20 to 300 °C)	Up to 698 °F (370 °C)	★
V	Silicone 705 for vacuum applications	1.09	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
A	SYLTHERM XLT	0.85	–157 to 293 °F (–105 to 145 °C)			N/A	★
H	Inert (Halocarbon)	1.85	–49 to 320 °F (–45 to 160 °C)			N/A	★
G[10][11]	Glycerin and water	1.13	5 to 203 °F (–15 to 95 °C)			N/A	★
N[10]	Neobee® M-20	0.94	5 to 401 °F (–15 to 205 °C)	5 to 437 °F (–15 to 225 °C)		N/A	★

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information *(continued)*

P[10][11]	Propylene glycol and water	1.02	5 to 203 °F (–15 to 95 °C)	N/A	★
Y[12]	UltraTherm™ 805	1.20	N/A	Up to 770 °F (410 °C)[13]	★
Z[12]	UltraTherm 805 for vacuum applications	1.20	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.		★

Continue specifying a completed model number by choosing a remote seal type below:

Seal style		Process connections
	FF Flush Flanged Seal	2-in./DN 50/50A 3-in./DN 80/80A 4-in./ DN 100/100A
	EF Extended Flanged Seal	3-in./DN 80/80A 4-in./DN 100/100A
	RF Remote Flanged Seal	½-in. ¾-in 1-in./DN 25/25A 1½-in./DN 40/40A
	PF Pancake Seal	2-in./DN 50/50A 3-in./DN 80/80A
	FC Flush Flanged Seal - Ring Type Joint (RTJ) gasket surface	2-in. 3-in.
	RC Remote Flanged Seal - Ring Type Joint (RTJ) gasket surface	½-in. ¾-in 1-in. 1½-in.
	RT Remote Threaded Seal	¼ –18 NPT ½ –14 NPT ¾ –14 NPT 1–11.5 NPT 1¼–11.5 NPT
	SC Hygienic Tri-Clamp Seal	1½-in. 2-in. 3-in.

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information *(continued)*

	SS Hygienic Tank Spud Seal	4-in.
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
ERS connection cable[14]		
R02	25 ft. (7,62 m) of ERS cable (gray color)	
R05	50 ft. (15,2 m) of ERS cable (gray color)	★
R10	100 ft. (30,5 m) of ERS cable (gray color)	★
R15	150 ft. (45,72 m) of ERS cable (gray color)	★
R20[15]	200 ft. (60,96 m) of ERS cable (gray color)	
R22[16]	225 ft. (68,58 m) of ERS cable (gray color)	
R30	300 ft. (91,44 m) of ERS cable (gray color)	
R40	400 ft. (121,92 m) of ERS cable (gray color)	
R50	500 ft. (152,4 m) of ERS cable (gray color)	
H02	25 ft. (7,62 m) of ERS cable (blue color)	
H05	50 ft. (15,2 m) of ERS cable (blue color)	
H10	100 ft. (30,5 m) of ERS cable (blue color)	
H15	150 ft. (45,7 m) of ERS cable (blue color)	
H20[15]	200 ft. (60,96 m) of ERS cable (blue color)	
H22[16]	225 ft. (68,58 m) of ERS cable (blue color)	
J02	25 ft. (7,62 m) of armored ERS cable	
J05	50 ft. (15,2 m) of armored ERS cable	
J07	75 ft. (22,8 m) of armored ERS cable	
J10	100 ft. (30,5 m) of armored ERS cable	
J12[16]	125 ft. (38,1 m) of armored ERS cable	
Software configuration[17]		
C1	Custom software configuration (requires Configuration Data Sheet)	★
Gage pressure calibration		
C3	Gage pressure calibration on Rosemount 3051SAL A4 only	★
Alarm limit[17]		
C4	NAMUR alarm and saturation levels, high alarm	★
C5	NAMUR alarm and saturation levels, low alarm	★

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information *(continued)*

C6	Custom alarm and saturation levels, high alarm (requires C1 and Configuration Data Sheet)	★
C7	Custom alarm and saturation levels, low alarm (requires C1 and Configuration Data Sheet)	★
C8	Low alarm (standard Rosemount alarm and saturation levels)	★
Ground screw[18]		
D4	External ground screw assembly	★
Conduit plug		
DO	316 SST conduit plug	★
Product certifications		
E1	ATEX Flameproof	★
I1	ATEX Intrinsic Safety	★
N1	ATEX Type n	★
K1	ATEX Flameproof and Intrinsically Safe, Type n, Dust	★
ND	ATEX Dust	★
E4	TIIS Flameproof	★
E5	FM Explosion-proof, Dust Ignition-proof	★
I5	FM Intrinsically Safe, Division 2	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
E6[19]	CSA Explosion-proof, Dust Ignition-proof, Division 2	★
I6	CSA Intrinsically Safe	★
K6[19]	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
E7	IECEx Flameproof	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Type n	★
K7	IECEx Flameproof, Intrinsic Safety, Type n	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsically Safe	★
K2	INMETRO Flameproof, Intrinsic Safety, Type n	★
EP	Korea Flameproof	★
E3	China Flameproof	★
I3	China Intrinsic Safety, Dust Ignition-proof	★
IP	Korea Intrinsic Safety	★
KP	Korea Flameproof, Intrinsic Safety	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
IN	Technical Regulations Customs Union (EAC) FISCO Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof, Intrinsic Safety	★

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information *(continued)*

KA[19]	ATEX and CSA Flameproof, Intrinsically Safe, Division 2	★
KB[19]	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
KC	FM and ATEX Explosion-proof, Intrinsically Safe, Division 2	★
KD[19]	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe	★
Shipboard approvals		
SBS	American Bureau of Shipping (ABS) Type Approval	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyds Register (LR) Type Approval	★
Sensor fill fluid[20]		
L1	Inert sensor fill fluid	★
O-ring		
L2	Graphite-filled PTFE O-ring	★
Bolting material		
L4	Austenitic 316 SST bolts	★
Display type (ERS primary only)[17]		
M5	Plantweb LCD display	★
M7[21]	Remote mount LCD display and interface, Plantweb housing, no cable, SST bracket	★
M8	Remote mount LCD display and interface, Plantweb housing, 50 ft. (15,2 m) cable, SST bracket	★
M9	Remote mount LCD display and interface, Plantweb housing, 100 ft. (30,5 m) cable, SST bracket	★
Pressure testing		
P1	Hydrostatic testing with certificate	
Special cleaning		
P2	Cleaning for special services	
P3	Cleaning for Less than 1 PPM Chlorine/Fluorine	
Calibration certification		
Q4	Calibration certificate	★
QP	Calibration certificate with tamper evident seal	★
Material traceability certification		
Q8	Material traceability certification per EN 10204 3.1	★
Quality certification for safety		
QS	Prior-use certificate of FMEDA Data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA data	★
Toolkit performance reports[22]		
QZ	Remote seal system performance calculation report	★

Table 3: Rosemount 3051SAL Transmitter for ERS Applications Ordering Information *(continued)*

Transient protection[17]		
T1	Transient terminal block	★
NACE® certificate[23]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Typical model number: 3051SAL 1 P G 4A A 1A 1 0 20 D FF 7 1 DA 0 0 M5		

(1) See "Specifications" section for more detail. The Rosemount 3051S ERS System offer three performance class options; Classic, Ultra, and Enhanced ERS system performance. The Classic and Ultra performance classes are suited to lower static pressure and stable temperature conditions. The Enhanced ERS system performance class provides better performance across temperature (–40 to 185 °F) with improved performance at higher static pressure.

(2) Not suitable for vacuum applications.

(3) See Seal system type in Rosemount DP Level Product Data Sheet for more detail.

(4) Maximum working pressure (MWP) of the Thermal Optimizer is 4000 psi (275 bar). See Figure 6, Figure 7, or Table 53 for Thermal Optimizer temperature limits.

(5) Maximum working pressure (MWP) of the Thermal Range Expander is 3750 psi (258,6 bar).

(6) Thermal Range Expander with SYLTHERM XLT secondary fill fluid is not recommended for use in vacuum applications below 6 psia (400 mbar-a).

(7) At ambient pressure of 14.7 psia (1 bar-a) and ambient temperature of 70 °F (21 °C). Temperature limits are reduced in vacuum service and may be limited by seal selection.

(8) Due to heat transfer to the transmitter, the maximum process temperature of the transmitter will be de-rated if ambient or process temperatures exceed 185 °F (85 °C). Consult Instrument Toolkit™ to verify the application.

(9) For complete process and ambient temperature limits, see Thermal Range Expander temperature operating range.

(10) This is a food grade fill fluid.

(11) Not suitable for vacuum applications.

(12) Only available with Thermal Range Expander.

(13) UltraTherm 805 supports maximum design temperature of 454 °C (850 °F). Design temperature rating is for non-continuous use with a cumulative exposure time less of than 12 hours.

(14) The pressure range should be specified based on the maximum static pressure, not differential pressure.

(15) Maximum cable distance for SIS installations. See "Safety Instrumented Systems (SIS) Certification" section of Rosemount 3051S ERS Reference Manual for more information.

(16) Maximum cable distance for IS (Intrinsically safe) installations. Other options may not be valid at longer distances.

(17) Not available with configuration type code S.

(18) This assembly is included with options EP, KP, E1, N1, K1, ND, E4, E7, N7, K7, E2, KA, KC, KD, K2, T1, E3, EM, KM.

(19) Not available with M20 or G½ conduit entry size.

(20) Silicone fill fluid is standard.

(21) See the Rosemount 3051S Reference Manual for cable requirements. Contact an Emerson representative for additional information.

(22) The QZ report quantifies the performance of the entire ERS system. One report is provided per ERS system. The QZ option is specified on the primary transmitter (configuration type code P).

(23) Materials of construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments. UltraTherm 805 supports maximum design temperature of 850 °F (454 °C). Design temperature rating is for non-continuous use with a cumulative exposure time less of than 12 hours.

Rosemount™ 3051S Scalable™ Level Transmitter

Rosemount 3051S Scalable Level Transmitters combine the features and benefits of a high-performance Rosemount 3051S with the durability and reliability of diaphragm seals all in a single model number.

Rosemount 3051SAL In-line with “FF” Flanged Seal

Rosemount 3051SAL Coplanar™ with “SS” Hygienic Tank Spud Seal

Rosemount 3051SAL Tuned-System Assembly with Thermal Range Expander

Rosemount 3051SAL Balanced System

Product features and capabilities include:

- Variety of process connections including flanged, threaded, and hygienic seals
- Quantified performance for the entire transmitter/seal assembly (QZ option)
- HART, FOUNDATION™ Fieldbus, and wireless protocols

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Rosemount 3051SAL Scalable Level Transmitter

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

A Rosemount 3051SAL Transmitter consists of three parts. First, specify the transmitter model codes found in Table 4. Then, specify a direct mount seal found here: Diaphragm seals for Rosemount 3051SAL. Finish the model number by specifying all desired options from the "Options" section of Table 4.

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Transmitter type	
3051SAL	Scalable level transmitter	
Performance class(1)		
1	Ultra: 0.055% span accuracy, 150:1 rangedown, 15-year limited warranty	★
2	Classic: 0.065% span accuracy, 150:1 rangedown	★
Configuration type		
C	Liquid level transmitter	★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

Pressure module type						
D	Coplanar		Differential			★
G	Coplanar		Gage			★
T	In-line		Gage			★
E	In-line		Absolute			★
A	Coplanar		Absolute			
Pressure range						
	Coplanar DP	Coplanar Gage	In-line Gage	In-line Absolute	Coplanar Absolute	
1A	N/A	N/A	–14.7 to 30 psig (–1,01 to 2,06 bar)	0 to 30 psia (0 to 2,06 bar)	0 to 30 psia (0 to 2,06 bar)	★
2A	–250 to 250 inH_2O (–621,60 to 621,60 mbar)	–250 to 250 inH_2O (–621,60 to 621,60 mbar)	–14.7 to 150 psig (–1,01 to 10,34 bar)	0 to 150 psia (0 to 10,34 bar)	0 to 150 psia (0 to 10,34 bar)	★
3A	–1000 to 1000 inH_2O (–2,48 to 2,48 bar)	–393 to 1000 inH_2O (–0,97 to 2,48 bar)	–14.7 to 800 psig (–1,01 to 55,15 bar)	0 to 800 psia (0 to 55,15 bar)	0 to 800 psia (0 to 55,15 bar)	★
4A	–300 to 300 psi (–20,68 to 20,68 bar)	–14.2 to 300 psig (–0,97 to 20,68 bar)	–14.7 to 4000 psig (–1,01 to 275,79 bar)	0 to 4000 psia (0 to 275,79 bar)	0 to 4000 psia (0 to 275,79 bar)	★
5A	–2000 to 2000 psi (–137,89 to 137,89 bar)	–14.2 to 2000 psig (–0,97 to 137,89 bar)	–14.7 to 10000 psig (–1,01 to 689,47 bar)	0 to 10000 psia (0 to 689,47 bar)	N/A	★
Transmitter output						
A	4–20 mA with digital signal based on HART protocol					★
F[2]	FOUNDATION Fieldbus™ protocol					★
X[3]	Wireless (requires wireless options and wireless Plantweb housing)					★
Housing style				**Material**	**Conduit entry**	
1A	Plantweb housing			Aluminum	½–14 NPT	★
1B	Plantweb housing			Aluminum	M20 x 1.5	★
1J	Plantweb housing			SST	½–14 NPT	★
1K	Plantweb housing			SST	M20 x 1.5	★
2A	Junction box housing			Aluminum	½–14 NPT	★
2B	Junction box housing			Aluminum	M20 x 1.5	★
2E	Junction box with output for remote interface			Aluminum	½–14 NPT	★
2F	Junction box with output for remote interface			Aluminum	M20 x 1.5	★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

2J	Junction box housing		SST	½–14 NPT	★
5A[4]	Wireless Plantweb housing		Aluminum	½–14 NPT	★
5J[4]	Wireless Plantweb housing		SST	½–14 NPT	★
7J[5]	Quick connect (a size mini, 4-pin male termination)		SST	N/A	★
1C	Plantweb housing		Aluminum	G½	
1L	Plantweb housing		316L SST	G½	
2C	Junction box housing		Aluminum	G½	
2G	Junction box with output for remote interface		Aluminum	G½	
Seal system type					
Coplanar pressure module type			**In-line pressure module type**		
1	Direct mount single seal system	Welded-repairable	Direct mount single seal system	Welded- repairable	★
2	Direct mount single seal system	All welded	N/A	N/A	★
3[6]	Tuned-system assembly - one direct mount and one remote mount seal with capillary	Welded-repairable	N/A	N/A	★
4[6]	Tuned-system assembly - one direct mount and one remote mount seal with capillary	All welded	N/A	N/A	★
5[6]	Balanced system - two remote mount seals with equal lengths of capillary	Welded-repairable	N/A	N/A	★
6[6]	Balanced system - two remote mount seals with equal lengths of capillary	All welded	N/A	N/A	★
7	Remote mount single seal system with capillary - 316L low side transmitter isolator	Welded-repairable	Remote mount single seal system with capillary	All welded	★
8	Remote mount single seal system with capillary - 316L low side transmitter isolator	All welded	N/A	N/A	★
9	Remote mount single seal system with capillary - Alloy C-276 low side transmitter isolator	Welded-repairable	N/A	N/A	★
A	Remote mount single seal system with capillary - Alloy C-276 low side transmitter isolator	All welded	N/A	N/A	★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

High side connection type (select based on seal system type chosen)							
	Single seal system				**Dual seal system**		
	Direct mount		**Remote mount with capillary**		**Tuned-system assembly**	**Balanced system**	
	Coplanar	In-line	Coplanar	In-line	Coplanar	Coplanar	
0	No extension		Standard	Standard	No extension/ Standard	Standard	★
2	2-in. (50 mm) extension	N/A	N/A	N/A	2-in. (50 mm) extension	N/A	★
4	4-in. (100 mm) extension	4-in. (100 mm) extension (7)	N/A	N/A	4-in. (100 mm) extension	N/A	★
5	N/A	Thermal optimizer	N/A	N/A	N/A	N/A	★
6(8)	Thermal Range Expander - Silicone 200 secondary fill		Thermal Range Expander - Silicone 200 secondary fill fluid single capillary		Thermal Range Expander - Silicone 200 secondary fill with low side capillary		★
7(8)	Thermal Range Expander - SYLTHERM™ XLT secondary fill fluid		Thermal Range Expander - SYLTHERM XLT secondary fill fluid single capillary		Thermal Range Expander - SYLTHERM XLT secondary fill with low side capillary		★
Low side connection type or capillary I.D.							
	Material for low side reference connection		**Capillary I.D.**				
	Direct mount		**Remote mount with capillary**		**Tuned-system assembly**	**Balanced system**	
	Coplanar	In-line	Coplanar or In-line		Coplanar	Coplanar	
0	N/A	No reference connection	N/A		N/A	N/A	★
1(9)(10)	Assemble to one Rosemount 1199 remote seal	N/A	N/A		N/A	N/A	★
2	316L SST isolator and SST transmitter flange	N/A	N/A		N/A	N/A	★
3	Alloy C-276 isolator and SST transmitter flange	N/A	N/A		N/A	N/A	★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

B	N/A	N/A	0.03-in. (0,711 mm) ID capillary	0.03-in. (0,711 mm) ID capillary	0.03-in. (0,711 mm) ID capillary	★
C	N/A	N/A	0.04-in. (1,092 mm) ID capillary	0.04-in. (1,092 mm) ID capillary	0.04-in. (1,092 mm) ID capillary	★
D	N/A	N/A	0.075-in. (1,905 mm) ID capillary	0.075-in. (1,905 mm) ID capillary	0.075-in. (1,905 mm) ID capillary	★
E[11]	N/A	N/A	0.03-in. (0,711 mm) ID capillary, PVC coated with closed end	0.03-in. (0,711 mm) ID capillary, PVC coated with closed end	0.03-in. (0,711 mm) ID capillary, PVC coated with closed end	★
F[11]	N/A	N/A	0.04-in. (1,092 mm) ID capillary, PVC coated with closed end	0.04-in. (1,092 mm) ID capillary, PVC coated with closed end	0.04-in. (1,092 mm) ID capillary, PVC coated with closed end	★
G[11]	N/A	N/A	0.075-in. (1,905 mm) ID capillary, PVC coated with closed end	0.075-in. (1,905 mm) ID capillary, PVC coated with closed end	0.075-in. (1,905 mm) ID capillary, PVC coated with closed end	★
Capillary length[12]						
0	No capillary (required for direct mount single seal system)					★
A	1 ft. (0,3 m)					★
B	5 ft. (1,5 m)					★
C	10 ft. (3,0 m)					★
D	15 ft. (4,5 m)					★
E	20 ft. (6,1 m)					★
F	25 ft. (7,6 m)					★
G	30 ft. (9,1 m)					★
H	35 ft. (10,7 m)					★
J	40 ft. (12,2 m)					★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

K	45 ft. (13,7 m)							★
L	50 ft. (15,2 m)							★
M	1.6 ft. (0,5 m)							★
N	3.3 ft. (1,0 m)							★
P	4.9 ft. (1,5 m)							★
R	6.6 ft. (2,0 m)							★
T	8.2 ft. (2,5 m)							★
U	9.8 ft. (3,0 m)							★
V	11.5 ft. (3,5 m)							★
W	13.1 ft. (4,0 m)							★
Y	16.4 ft. (5,0 m)							★
Z	19.7 ft. (6,0 m)							★
1	23 ft. (7,0 m)							★
2	26.2 ft. (8,0 m)							★
3	29.5 ft. (9,0 m)							★
4	32.8 ft. (10,0 m)							★
5	36.1 ft. (11,0 m)							★
6	39.4 ft. (12,0 m)							★
7	42.6 ft. (13,0 m)							★
8	45.9 ft. (14,0 m)							★
9	49.2 ft. (15,0 m)							★
Seal fill fluid		**Specific gravity at 77 °F (25 °C)**	**Temperature limits[13][14]**					
			No extension	**2-in. (50 mm) extension**	**4-in. (100 mm) extension**	**Thermal range expander[15]**	**Capillary**	
D	Silicone 200	0.934	–49 to 401 °F (–45 to 205 °C)			N/A	–49 to 401 °F (–45 to 205 °C)	★
F	Silicone 200 for vacuum applications	0.934	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.					★
J[16]	Tri-Therm 300	0.795	–40 to 401 °F (–40 to 205 °C)	–40 to 464 °F (–40 to 240 °C)	–40 to 572 °F (–40 to 300 °C)	N/A	-40 to 572 °F (-40 to 300 °C)	★
Q[16]	Tri-Therm 300 for vacuum applications	0.795	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.					★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

L	Silicone 704	1.07	32 to 401 °F (0 to 205 °C)	32 to 464 °F (0 to 240 °C)	32 to 572 °F (0 to 300 °C)	Up to 599 °F (315 °C)	-32 to 599 °F (0 to 315 °C)	★
C	Silicone 704 for vacuum applications	1.07	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.					★
R	Silicone 705	1.09	68 to 401 °F (20 to 205 °C)	68 to 464 °F (20 to 240 °C)	68 to 572 °F (20 to 300 °C)	Up to 698 °F (370 °C)	68 to 698 °F (20 to 370 °C)	★
V	Silicone 705 for vacuum applications	1.09	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.					★
Y[17]	UltraTherm™ 805	1.20	N/A			Up to 770 °F (410 °C)[18]	N/A	★
Z[17]	UltraTherm 805 for vacuum applications	1.20	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.					★
A	SYLTHERM XLT	0.85	–157 to 293 °F (–105 to 145 °C)			N/A	-157 to 293 °F (-105 to 145 °C)	★
H	Inert (Halocarbon)	1.85	–49 to 320 °F (–45 to 160 °C)			N/A	-49 to 320 °F (-45 to 160 °C)	★
N [16]	Neobee® M-20	0.94	5 to 401 °F (–15 to 205 °C)	5 to 437 °F (–15 to 225 °C)		N/A	5 to 437 °F (-15 to 225 °C)	★
G[10][16]	Glycerin and water	1.13	5 to 203 °F (–15 to 95 °C)			N/A	5 to 437 °F (-15 to 225 °C)	★
P[10][16]	Propylene glycol and water	1.02	5 to 203 °F (–15 to 95 °C)			N/A	5 to 203 °F (-15 to 95 °C)	★

Continue specifying a completed model number by choosing a remote seal type below:

Seal style		Process connections
	FF Flush Flanged Seal	2-in./DN 50/ 50A 3-in./DN 80/80A 4 in./DN 100/100A
	EF Extended Flanged Seal	3-in./DN 80/80A 4-in./DN 100/100A

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

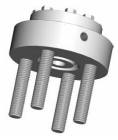
	Remote Flanged (RF) Seal	½-in. ¾-in. 1-in./DN 25/25A 1½-in./DN 40/40A
	PF Pancake Seal	2-in./DN 50/50A 3-in./DN 80/80A
	FC Flush Flanged Seal - Ring Type Joint (RTJ) gasket surface	2-in. 3-in.
	RC Remote Flanged Seal - Ring Type Joint (RTJ) gasket surface	½-in. ¾-in. 1 in. 1½-in.
	RT Remote Threaded Seal	¼–18 NPT ½–14 NPT ¾–14 NPT 1–11.5 NPT 1¼–11.5 NPT
	SC Hygienic Tri-Clamp Seal	1½-in. 2-in. 3-in.
	SS Hygienic Tank Spud Seal	4-in.
Wireless options (requires option code X and wireless Plantweb housing)		
Update rate[4]		
WA	User configurable update rate	★
Operating frequency and protocol		
3	2.4 GHz DSSS, IEC 62591 (*Wireless*HART)	★
Omni-directional wireless antenna		
WK[4]	External antenna	★
WM[4]	Extended range, external antenna	★
WN	High-gain, remote antenna	

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

SmartPower™[19][20]		
1	Adapter for Black Power Module (I.S. Power Module sold separately)	★
Other options (include with selected model number)		
HART Revision configuration (requires HART Protocol output code A)		
HR7	Configured for HART Revision 7	★
Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
Plantweb control functionality[20][21][22]		
A01	FOUNDATION Fieldbus advanced control function block suite	★
Diagnostics suite		
D01[20][21]	FOUNDATION Fieldbus diagnostics suite (Process Intelligence, Plugged Impulse Line diagnostic)	★
DA2[23]	Advanced HART diagnostics suite (Process Intelligence, Loop Integrity, Plugged Impulse Line diagnostic, Process Alerts, Service Alerts, Variable Log, Event Log)	★
Mounting bracket		
B4	Bracket, all SST, 2-in. pipe panel	★
BE	Bracket, 316 SST, B4-style with 316 SST bolting	★
Software configuration[24]		
C1	Custom software configuration (requires Configuration Data Sheet)	★
Gage pressure calibration		
C3	Gage pressure calibration on Rosemount 3051SAL_ _A4 only	★
Alarm limit[21][24]		
C4	NAMUR alarm and saturation levels, high alarm	★
C5	NAMUR alarm and saturation levels, low alarm	★
C6	Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet)	★
C7	Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)	★
C8	Low alarm (standard Rosemount alarm and saturation levels)	★
Hardware adjustments[24][25][26]		
D1	Hardware adjustments (zero, span, alarm, security)	★
Flange adapter		
D2	½–14 NPT flange adapter	★
D9	RC½ SST flange adapter	
Ground screw[27]		
D4	External ground screw assembly	★
Drain/vent valve		
D5	Delete transmitter drain/vent valves (install plugs)	★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

Conduit plug[28]		
DO	316 SST conduit plug	★
Product certifications[29]		
E1	ATEX Flameproof	★
I1	ATEX Intrinsic Safety	★
IA	ATEX FISCO Intrinsic Safety (FOUNDATION Fieldbus protocol only)	★
N1	ATEX Type n	★
K1	ATEX Flameproof, Intrinsic Safety, Type n, Dust	★
ND	ATEX Dust	★
E4	TIIS Flameproof	★
E5	FM Explosion-proof, Dust Ignition-proof	★
I5	FM Intrinsically Safe; Nonincendive	★
IE	FM FISCO Intrinsically Safe (FOUNDATION Fieldbus protocol only)	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
E6[30]	CSA Explosion-proof, Dust Ignition-proof, Division 2	★
I6	CSA Intrinsically Safe	★
IF	CSA FISCO Intrinsically Safe (FOUNDATION Fieldbus protocol only)	★
K6[30]	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
D3[31]	Measurement Canada Accuracy Approval	★
E7	IECEx Flameproof, Dust Ignition-proof	★
I7	IECEx Intrinsic Safety	★
IG	IECEx FISCO Intrinsic Safety (FOUNDATION Fieldbus protocol only)	★
N7	IECEx Type n	★
K7	IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, Type n	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO Intrinsic Safety	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety, Dust Ignition-proof	★
EP	Korea Flameproof	★
IP	Korea Intrinsic Safety	★
KP	Korea Flameproof, Intrinsic Safety	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
IN	Technical Regulations Customs Union (EAC) FISCO Intrinsic Safety	★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

KM	Technical Regulations Customs Union (EAC) Flameproof, Intrinsic Safety	★
KA[30]	ATEX and CSA Flameproof, Intrinsically Safe, Division 2	★
KB[30]	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
KC	FM and ATEX Explosion-proof, Intrinsically Safe, Division 2	★
KD[30]	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe	★
Shipboard approvals		
SBS	American Bureau of Shipping (ABS) Type Approval	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyds Register (LR) Type Approval	★
Stainless steel tagging		
Y2	316 SST nameplate, top tag, wire-on tag(s), and fasteners	★
Sensor fill fluid[32]		
L1	Inert sensor fill fluid	★
O-ring		
L2	Graphite-filled PTFE O-ring	★
Bolting material		
L4	Austenitic 316 SST bolts	★
L5[33]	ASTM A193, Grade B7M bolts	★
L6	Alloy K-500 bolts	★
L7[33]	ASTM A453, Class D, Grade 660 bolts	★
L8	ASTM A193, Class 2, Grade B8M bolts	★
Display type[21][34][35]		
M5[35]	Plantweb LCD display	★
M7	Remote mount LCD display and interface, Plantweb housing, no cable, SST bracket	★
M8	Remote mount LCD display and interface, Plantweb housing, 50 ft. (15 m) cable, SST bracket	★
M9	Remote mount LCD display and interface, Plantweb housing, 100 ft. (31 m) cable, SST bracket	★
Pressure testing		
P1	Hydrostatic testing with certificate	
Special cleaning		
P2	Cleaning for special services	
P3	Cleaning for special services with testing for <1PPM chlorine/fluorine	
Calibration certification		
Q4	Calibration certificate	★
QP	Calibration certificate and tamper evident seal	★

Table 4: Rosemount 3051SAL Scalable Level Transmitter Ordering Information *(continued)*

Material traceability certification		
Q8	Material traceability certification per EN 10204 3.1	★
Quality certification for safety		
QS[21][24]	Prior-use certificate of FMEDA Data	★
QT[36]	Safety-certified to IEC 61508 with certificate of FMEDA data	★
Toolkit performance reports		
QZ	Remote seal system performance calculation report	★
Transient protection[37][38]		
T1	Transient terminal block	★
Conduit electrical connector[39]		
GE	M12, 4-pin, male connector (eurofast®)	★
GM	A size mini, 4-pin, male connector (minifast®)	★
NACE certificate[33]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Typical model number: 3051SAL 1 C G 2A A 1A 10 20 D FF G 1 DA 0 0		

(1) For details, see Specifications. The Rosemount 3051S ERS System offers three performance class options; Classic, Ultra, and Enhanced ERS System Performance. The Classic and Ultra performance classes are suited to lower static pressure and stable temperature conditions. The Enhanced ERS System Performance class provides better performance across temperature (–40 to 185 °F) with improved performance at higher static pressure.

(2) Requires Plantweb housing.

(3) Only intrinsically safe approval codes apply.

(4) Only available with output code X.

(5) Available with output code A only. Available approvals are FM Intrinsically Safe; Nonincendive (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), or IECEx Intrinsic Safety (option code I7). Contact an Emerson representative for additional information.

(6) Low side seal identical to high side seal.

(7) Maximum working pressure is 4000 psi (275 bar).

(8) Maximum working pressure (MWP) of the Thermal Range Expander is 3750 psi (258,6 bar).

(9) Requires separate Rosemount 1199 model number to be selected. With option code 1, user must select Seal Location Option code M (low side of transmitter) in the Rosemount 1199 Remote Mount Seal System Model.

(10) Not suitable for vacuum applications.

(11) PVC coating should not be exposed to temperatures above 212 °F (100 °C) to avoid possibility of thermal breakdown.

(12) Capillary length applies to both high and low side for balanced systems. Applies to low side only for tuned-system assemblies. Applies to high side only for remote mount single seal systems with capillary.

(13) At ambient pressure of 14.7 psia (1 bar-a) and ambient temperature of 70 °F (21 °C). Temperature limits are reduced in vacuum service and may be limited by seal selection.

(14) Due to heat transfer to the transmitter, the maximum process temperature of the transmitter will be de-rated if ambient or process temperatures exceed 185 °F (85 °C). Consult Instrument Toolkit to verify the application.

(15) For complete process and ambient temperature limits, see thermal range expander temperature operating range.

(16) This is a food grade fill fluid.

(17) Only available with Thermal Range Expander.

(18) UltraTherm 805 supports maximum design temperature of 850 °F (454 °C). Design temperature rating is for non-continuous use with a cumulative exposure time less of than 12 hours.

(19) Long-life power module must be shipped separately, order power module 701PBKKF.

(20) Not available with output code A.

(21) Not available with output code X.

(22) With option code 10, user must select seal location option code M in Rosemount DP Level PDS.

(23) Requires Plantweb housing and output code A. Includes hardware adjustments as standard.

(24) Not available with output code F.

(25) Not available with output code F, option code DA2, or option code QT.

(26) Not available with housing style codes 2E, 2F, 2G, 2M, 5A, 5J, or 7J.

(27) This assembly is included with options EP, KP, E1, N1, K1, ND, E4, E7, N7, K7, E2, E3, KA, KC, KD. IA, IB, IE. IF, IG, K2, T1, EM, and KM.

(28) Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of carbon steel conduit plug.

(29) Valid when SuperModule™ Platform and housing have equivalent approvals.

(30) Not available with M20 or G½ conduit entry size.

(31) Requires Plantweb housing and hardware adjustments option code D1. Limited availability depending on transmitter type and range. Contact an Emerson representative for additional information.

(32) Silicone fill fluid is standard.

(33) Materials of construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

(34) Not available with housing code 01 or 7J.

(35) See the Rosemount 3051S Reference Manual for cable requirements. Contact an Emerson representative for additional information.

(36) Not available with output code F or X. Not available with housing code 7J.

(37) Not available with Housing code 5A, 5J, or 7J.

(38) The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA, IB, IE, IF, and IG.

(39) Not available with Housing code 5A, 5J, or 7J. Available with Intrinsically Safe approvals only. For FM Intrinsically Safe; Nonincendive (option code I5) or FM FISCO Intrinsically Safe (option code IE), install in accordance with Rosemount drawing 03151-1009.

Diaphragm seals for Rosemount 3051SAL

Flush Flanged (FF) Seal

- Most common seal
- Good for use in general applications
- Easy installation on flanged connections ranging from 2-in. (DN 50) to 4-in. (DN 100)

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information .

Table 5: Flush Flanged (FF) Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Process connection			
FF	Flush flanged seal			
Process connection size				
	ANSI/ASME B16.5	EN 1092-1/GOST 33259-15	JIS B2238	
G	2-in.	DN 50	50 A	★
7	3-in.	N/A	80 A	★
J	N/A	DN 80	N/A	★
9	4-in.	DN 100	100 A	★
Flange/pressure rating				
1	ANSI/ASME B16.5 Class 150			★
2	ANSI/ASME B16.5 Class 300			★
4	ANSI/ASME B16.5 Class 600			★
G	PN 40 per EN 1092-1			★
5	ANSI/ASME B16.5 Class 900			
6	ANSI/ASME B16.5 Class 1500			
7	ANSI/ASME B16.5 Class 2500			
H	PN 63 per EN 1092-1			
J	PN 100 per EN 1092-1			
A	10K per JIS B2238			
B	20K per JIS B2238			
D	40K per JIS B2238			
E	PN 10/16 per EN 1092-1, available with DN 100 only			

Table 5: Flush Flanged (FF) Seal Ordering Information *(continued)*

Materials of construction				
	Isolating diaphragm	Upper housing	Flange	
CA	316L SST	316L SST	CS	★
DA	316L SST	316L SST	316 SST	★
CB[1]	Alloy C-276	316L SST	CS	★
DB[1]	Alloy C-276, seam-welded	316L SST	316 SST	★
CC	Tantalum	316L SST	CS	★
DC	Tantalum, seam-welded	316L SST	316 SST	★
C6	Duplex 2205 SST	316 SST	CS	
D6	Duplex 2205 SST	316 SST	316 SST	
Flushing connection ring (lower housing)				
0	None			★
A[2]	316 SST			★
B[2]	Alloy C-276			★
Flushing connection quantity and size				
0	None			★
1	One ¼–18 NPT flushing connection			★
3	Two ¼–18 NPT flushing connections			★
7	One ½–14 NPT flushing connection			★
9	Two ½–14 NPT flushing connections			★
Options (include with selected model number)				
Cold temperature remote seal applications				
RB	Extra fill fluid for cold temperature applications			
Remote seal diaphragm thickness[3]				
SC	0.006-in. (150 μm) available with 316L SST and Alloy C-276			
Flushing connection ring plugs				
SF	Alloy C-276 plug(s) for flushing connection(s)			★
SG	SST plug(s) for flushing connection(s)			★
SH	SST drain/vent(s) for flushing connection(s)			★
Lower housing alignment clamp				
SA	Lower housing alignment clamp			★
Intermediate gasket material				
S0	No gasket for flushing ring connection (lower housing)			★
SY	Thermo-tork® TN-9000			★
SJ	PTFE gasket			★
SK	Barium Sulfate-filled PTFE gasket			

Table 5: Flush Flanged (FF) Seal Ordering Information *(continued)*

SN	GRAFOIL® gasket	
Remote seal diaphragm coating		
SZ(3)	0.0002-in. (5 μm) gold-plated diaphragm	
SV	PTFE coated diaphragm for non-stick purposes	
Complete the 3051SAL model number by specifying options as needed:		
Table 3	ERS Transmitter options	
Table 4	Scalable level transmitter options	

(1) Not available with option code SC.
(2) Supplied with Thermo-tork TN-9000 gasket if no other flushing connection ring gasket option is selected.
(3) Not available with Tantalum diaphragms (Material of Construction codes CC and DC).

Extended Flanged (EF) Seal

- Good for use in viscous applications with plugging issues
- Seal diaphragm installed flush with inner tank wall to prevent process plugging
- Easy installation on 3-in. (DN 80) and 4-in. (DN 100) flanged connections

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information .

Table 6: Extended Flanged (EF) Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	**Process connection**				
EF	Extended flanged seal				
Process connection size					
	ANSI/ASME B16.5	EN 1092-1/GOST 33259-15	JIS B2238	Extension diameters	
7	3-in. schedule 80	DN 80	80A	2.58-in. (66 mm)	★
9	4-in. schedule 80	DN 100	100A	3.50-in. (89 mm)	★
Flange/pressure rating					
1	ANSI/ASME B16.5 Class 150				★
2	ANSI/ASME B16.5 Class 300				★
4	ANSI/ASME B16.5 Class 600				★
G	PN 40 per EN 1092-1				★
5	ANSI/ASME B16.5 Class 900				
6	ANSI/ASME B16.5 Class 1500				
7	ANSI/ASME B16.5 Class 2500				

Table 6: Extended Flanged (EF) Seal Ordering Information *(continued)*

H	PN 63 per EN 1092-1			
J	PN 100 per EN 1092-1			
A	10K per JIS B2238			
B	20K per JIS B2238			
D	40K per JIS B2238			
E	PN 10/16 per EN 1092-1, available with DN 100 only			
Materials of construction				
	Isolating diaphragm	Extension/gasket surface	Mounting flange	
CA	316L SST	316L SST	CS	★
DA	316L SST	316L SST	316 SST	★
CB	Alloy C-276	Alloy C-276	CS	★
DB	Alloy C-276	Alloy C-276	316 SST	★
C6	Duplex 2205 SST	Duplex 2205 SST	CS	
D6	Duplex 2205 SST	Duplex 2205 SST	316 SST	
Seal extension length				
20	2-in. (50 mm)			★
40	4-in. (100 mm)			★
60	6-in. (150 mm)			★
Options (include with selected model number)				
Cold temperature remote seal applications				
RB	Extra fill fluid for cold temperature applications			★
Remote seal diaphragm thickness				
SC	0.006-in. (150 μm) diaphragm thickness			
Remote seal diaphragm coating				
SZ	0.0002-in. (5 μm) gold-plated diaphragm			
SV	PTFE coated diaphragm for non-stick purposes			
Complete the 3051SAL model number by specifying options as needed:				
Table 3	ERS Transmitter options			
Table 4	Scalable level transmitter options			

Remote Flanged (RF) Seal

- Designed to improve performance on smaller process connections
- Easy installation on flanged connections ranging from ½- to 1½-in. (DN 25– DN 40)
- Lower housing/flushing ring required

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information .

Table 7: Remote Flanged (RF) Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Process connection			
RF	Remote flanged seal			
Process connection size				
	ANSI/ASME B16.5	EN 1092-1/GOST 33259-15	JIS B2238	
2	1-in.	N/A	25A	★
4	1½-in.	N/A	40A	★
D	N/A	DN 25	N/A	★
F	N/A	DN 40	N/A	★
1	½-in.	N/A	N/A	
A	¾-in.	N/A	N/A	
Flange/pressure rating				
1	ANSI/ASME B16.5 Class 150			★
2	ANSI/ASME B16.5 Class 300			★
4	ANSI/ASME B16.5 Class 600			★
G	PN 40 per EN 1092-1			★
5	ANSI/ASME B16.5 Class 900			
6	ANSI/ASME B16.5 Class 1500			
7	ANSI/ASME B16.5 Class 2500			
A	10K per JIS B2238			
B	20K per JIS B2238			
D	40K per JIS B2238			
Materials of construction				
	Isolating diaphragm	Upper housing	Flange	
CA	316L SST	316L SST	CS	★
DA	316L SST	316L SST	316 SST	★
CB	Alloy C-276	316L SST	CS	★
DB	Alloy C-276	316L SST	316 SST	★
CC	Tantalum	316L SST	CS	★
DC	Tantalum	316L SST	316 SST	★
C6	Duplex 2205 SST	316 SST	CS	
D6	Duplex 2205 SST	316 SST	316 SST	
Flushing connection ring material (lower housing)[(1)]				
A	316L SST			★

Table 7: Remote Flanged (RF) Seal Ordering Information *(continued)*

B	Alloy C-276	★
Flushing connection quantity and size		
5	None	★
1	One ¼–18 NPT flushing connection	★
3	Two ¼–18 NPT flushing connections	★
7	One ½–14 NPT flushing connection	
9	Two ½–14 NPT flushing connections	
Options (include with selected model number)		
Cold temperature remote seal application		
RB	Extra fill fluid for cold temperature applications	★
Remote seal diaphragm thickness		
SC(2)	0.006-in. (150 µm) diaphragm thickness	
Large diaphragm size		
S9	4.1-in. (104 mm) diaphragm diameter	
Flushing connection ring plugs		
SF	Alloy C-276 plug(s) for flushing connection(s)	★
SG	316 SST plug(s) for flushing connection(s)	★
SH	316 SST drain/vent(s) for flushing connection(s)	★
Flushing ring connection gaskets		
SY	C-4401 gasket	★
SJ	PTFE gasket	★
SR	Ethylene Propylene gasket	
SN	GRAFOIL gasket	
S6	TopChem 2000	
SK	Barium Sulfate-filled PTFE gasket	
Remote seal bolt material		
S3	304 SST bolts	★
S4	316 SST bolts	
Remote seal diaphragm coating		
SZ(2)	0.0002-in. (5 µm) gold-plated diaphragm	
SV	PTFE coated diaphragm for non-stick purposes	
Complete the 3051SAL model number by specifying options as needed:		
Table 3	ERS Transmitter options	
Table 4	Scalable level transmitter options	

(1) Supplied with C-4401 Aramid fiber gasket if no other remote seal gasket material is selected.
(2) Not available with Tantalum diaphragms (Material of Construction codes CC and DC).

PF Pancake Seal

- Remote mount connection with capillary on the side of the seal
- Support tube used to facilitate installation
- Can be ordered with or without flange

Table 8: PF Pancake Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Process connection			
PF	Pancake seal			★
Process connection size				
	ANSI	EN 1092-1/GOST 33259-15		
G	2-in.	DN 50		★
7	3-in.	N/A		★
J	N/A	DN 80		★
Flange/pressure rating				
	ANSI	EN 1092-1/GOST 33259-15		
0	No flanged supplied, seal maximum working pressure (MWP) based on customer supplied flange	N/A		★
9	N/A	No flanged supplied, seal MWP based on customer supplied flange		★
1	Class 150	N/A		★
2	Class 300	N/A		★
4	Class 600	N/A		★
G	N/A	PN40		★
5	Class 900	N/A		
6	Class 1500	N/A		
7	Class 2500	N/A		
H	N/A	PN63		
J	N/A	PN100		
Diaphragm and wetted, upper housing, flange material				
	Diaphragm and wetted	Upper housing	Flange	
LA[(1)]	316L SST	316L SST	None	★
CA[(1)]	316L SST	316L SST	CS	★
DA[(1)]	316L SST	316L SST	316 SST	★
LB	Alloy C-276, seam welded	316L SST	None	★

Table 8: PF Pancake Seal Ordering Information *(continued)*

CB	Alloy C-276, seam welded	316L SST	CS	★
DB	Alloy C-276, seam welded	316L SST	316 SST	★
LC	Tantalum, seam welded	316L SST	None	★
CC	Tantalum, seam welded	316L SST	CS	★
DC	Tantalum, seam welded	316L SST	316 SST	★
L6	Duplex 2205 SST	316 SST	None	
C6	Duplex 2205 SST	316 SST	CS	
D6	Duplex 2205 SST	316 SST	316 SST	
Flushing connection ring (lower housing)				
0	None			★
A[(2)]	316 SST			★
B[(2)]	Alloy C-276			★
Flushing connection quantity and size				
0	None			★
1	One ¼–18 NPT flushing connection			★
3	Two ¼–18 NPT flushing connections			★
7	One ½–14 NPT flushing connection			★
9	Two ½–14 NPT flushing connections			★
Options (include with selected model number)				
Lower housing alignment clamp				
SA	Lower housing alignment clamp			★
Flushing connection ring gaskets[(2)]				
S0	No gasket for lower housing			★
SY	Thermo-tork TN-9000			★
SJ	PTFE gasket			★
SK	Barium Sulfate-filled PTFE gasket			
SN	GRAFOIL gasket			
Flushing connection ring plugs				
SF	Alloy C-276 plug(s) for flushing connection(s)			★
SG	SST plug(s) for flushing connection(s)			★
SH	SST drain/vent(s) for flushing connection(s)			★
Remote seal diaphragm thickness[(3)]				
SC	0.006-in. (150 μm) diaphragm thickness			
Cold temperature remote seal applications				
RB	Extra fill fluid for cold temperature applications			

Table 8: PF Pancake Seal Ordering Information *(continued)*

Remote seal diaphragm coating		
SZ[3]	0.0002-in. (5 μm) gold-plated diaphragm	
SV	PTFE coated diaphragm for non-stick purposes	
Complete the 3051SAL model number by specifying options as needed:		
Table 4	Scalable level transmitter options	

(1) For use with customer supplied spiral metallic gaskets.
(2) Supplied with Thermo-tork TN-9000 gasket if no other flushing connection ring gasket option is selected.
(3) Not available with Tantalum diaphragms (Material of Construction codes CC and DC).

FC Flush Flanged Seal - Ring Type Joint (RTJ) gasket surface

- RTJ gaskets are metallic sealing rings, often used in high pressure/high temperature applications
- Gasket surface on seal contains groove for RTJ gasket (user supplied)

Table 9: FC Flush Flanged Seal - Ring Type Joint (RTJ) Gasket Surface Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	**Process connection**			
FC	Flush flanged seal - Ring Type Joint (RTJ) gasket surface			
Process connection size				
G	2-in.			
7	3-in.			
9	4-in.			
Flange/pressure rating				
1	Class 150			
2	Class 300			
4	Class 600			
5	Class 900			
6	Class 1500			
7	Class 2500			
Diaphragm and wetted, upper housing, flange material				
	Diaphragm and wetted	Upper housing	Flange	
DA	316L SST	316L SST	316 SST	
KB	Alloy C-276	316L SST	316 SST	
K6	Duplex 2205 SST	316 SST	316 SST	
MB	Alloy C-276	316L SST	CS	
CA	316L SST	316L SST	CS	

Table 9: FC Flush Flanged Seal - Ring Type Joint (RTJ) Gasket Surface Ordering Information *(continued)*

M6	Duplex 2205 SST	316 SST	CS	
Flushing connection ring material (lower housing)				
0	None			
A	316 SST			
B	Alloy C-276			
Flushing connection quantity and size				
0	None			
1	One ¼–18 NPT flushing connection			
3	Two ¼–18 NPT flushing connection			
7	One ½–14 NPT flushing connection			
9	Two ½–14 NPT flushing connection			
Options (include with selected model number)				
Flushing ring connection plugs				
SF	Alloy C-276 plug(s) for flushing connection(s)			
SG	316 SST plug(s) for flushing connection(s)			
SH	316 SST vent/drain for flushing connection(s)			
Remote seal diaphragm thickness				
SC	0.006-in. (150 µm) available with 316L SST, Alloy C-276, and duplex 2205 SST for abrasive applications			
Cold temperature remote seal application				
RB	Extra fill for cold temp application			
Remote seal diaphragm coating(1)				
SZ	0.002-in. (5 µm) gold-plated diaphragm			
SV	PTFE coated diaphragm for nonstick purposes only			
Complete the 3051SAL model number by specifying options as needed:				
Table 3	ERS Transmitter options			
Table 4	Scalable level transmitter options			

(1) Only available on 316LSST and Alloy C-276.

RC Remote Flanged Seal - Ring Type Joint (RTJ) gasket surface

- Remote mounted with capillary
- RTJ gaskets are metallic sealing rings, often used in high pressure/high temperature applications
- Gasket surface on seal contains groove for RTJ gasket (user supplied)

Table 10: RC Remote Flanged Seal - Ring Type Joint (RTJ) Gasket Surface Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Process connection		
RC	Remote flanged seal - Ring Type Joint (RTJ) gasket surface		
Process connection sizes			
1	½-in. (Class 150 to 1500 includes mounting ring bolts and mounting studs)		
A	¾-in. (Class 150 includes mounting ring bolts and mounting studs)		
2	1-in.		
4	1½-in.		
Flange/pressure rating			
1	Class 150		
2	Class 300		
4	Class 600		
5	Class 900		
6	Class 1500		
7	Class 2500		
Diaphragm and wetted, upper housing			
	Diaphragm and wetted	Upper housing	
LA	316L SST	316L SST	
LB	Alloy C-276	316L SST	
LC	Tantalum	316L SST	
Flushing connection ring material (lower housing)[(1)]			
A	316L SST		
B	Alloy C-276		
Flushing ring connection and size			
0	None		
1	One ¼–18 NPT flushing connections		
3	Two ¼–18 NPT flushing connection		
7	One ½–14 NPT flushing connection		
9	Two ½–14 NPT flushing connection		
Options (include with selected model number)			
Flushing connection ring gaskets			
SY	C-4401 gasket		★
SJ	PTFE gasket		★
SR	Ethylene Propylene gasket		
SN	GRAFOIL gasket		

Table 10: RC Remote Flanged Seal - Ring Type Joint (RTJ) Gasket Surface Ordering Information *(continued)*

S6	TopChem 2000	
SK	Barium Sulfate-filled PTFE gasket	
Flushing connection ring plugs		
SF	Alloy C-276 plug(s) for flushing connection(s)	
SG	316 SST plug(s) for flushing connection(s)	
SH	316 SST vent/drain for flushing connection(s)	
Remote seal diaphragm thickness		
SC	0.006-in. (150 µm) available with 316L SST, Alloy C-276, and duplex 2205 SST for abrasive applications	
Remote seal bolt material		
S3[(2)]	304 SST bolts (only available for stud bolt design)	
S4	316 SST bolts (only available for stud bolt design)	★
Large diaphragm size		
S9	4.1 in. (104 mm) diaphragm diameter	
Cold temperature remote seal application		
RB	Extra fill for cold temp application	
Remote seal diaphragm coating[(3)]		
SZ	0.002-in. (5 µm) gold-plated diaphragm	
SV	PTFE coated diaphragm for nonstick purposes only	
Complete the 3051SAL model number by specifying options as needed:		
Table 3	ERS Transmitter options	
Table 4	Scalable level transmitter options	

(1) Supplied with C-4401 aramid fiber gasket if no other remote seal gasket material is selected.
(2) Standard stud bolts are carbon steel.
(3) Only available on 316LSST and Alloy C-276.

Remote Threaded (RT) Seal

- For use with threaded process connections (¼-18 to 1-11.5 NPT)
- Rated for use in high-pressure applications (up to 2500 PSI)
- Optional flushing connections available

Table 11: RT Threaded Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Process connection	
RT	Remote threaded seal	★

Table 11: RT Threaded Seal Ordering Information *(continued)*

Process connection size				
3	½-14 NPT			★
4	¾-14 NPT			★
5	1-11.5 NPT			★
1	¼-18 NPT			
6	1¼ - 11.5 NPT			
Pressure rating				
0	2500 psi			★
8[1]	1500 psi			★
Isolating diaphragm material		**Upper housing material**	**Flange**	
CA	316L SST	316L SST	CS	★
DA	316L SST	316L SST	316 SST	★
CB	Alloy C-276	316L SST	CS	★
DB	Alloy C-276	316L SST	316 SST	★
CC	Tantalum	316L SST	CS	★
DC	Tantalum	316L SST	316 SST	★
Flushing connection ring material (lower housing)[2][3]				
A	316L SST			★
B	Alloy C-276			★
Flushing ring connection quantity and size				
1	One ¼-in. flushing connection			★
3	Two ¼-in. flushing connections			★
5	None			★
7	One ½-14 NPT flushing connection			★
9	Two ½-14 NPT flushing connection			★
Options (include with selected model number)				
Cold temperature remote seal application				
RB	Extra fill fluid for cold temperature applications			★
Remote seal diaphragm thickness				
SC[4]	0.006-in. (150 μm) diaphragm thickness			
Remote seal flushing plug, drain/vent				
SF	Alloy C-276 plug(s) for flushing connection(s)			★
SG	316 SST plug(s) for flushing connection(s)			★
SH	316 SST drain/vent(s) for flushing connection(s)			★
Remote seal gasket material				
SY	C-4401 gasket (for use with flushing connection ring)			★

Table 11: RT Threaded Seal Ordering Information *(continued)*

SJ	PTFE gasket (for use with flushing connection ring)	★
SR	Ethylene Propylene gasket (for use with flushing connection ring)	★
SN	GRAFOIL gasket (for use with flushing connection ring)	★
S6	TopChem 2000 (for use with flushing connection ring)	
SK	Barium Sulfate-filled PTFE gasket (for use with flushing connection ring)	
Remote seal bolt		
S3	304 SST bolts	★
S4	316 SST bolts	
Large diaphragm size		
S9(5)	4.1-in. (104 mm) diaphragm diameter	
Remote seal diaphragm coating		
SZ(4)	0.0002-in. (5 μm) gold-plated diaphragm	
SV	PTFE coated diaphragm for non-stick purposes	
Special threads in lower housing		
R9	Male lower housing threads	
Complete the 3051SAL model number by specifying options as needed:		
Table 3	ERS transmitter options	
Table 4	Scalable level transmitter options	

(1) Only available with 4.1 in. (104 mm) diaphragm (large diaphragm side code S9).
(2) Supplied with C4401 aramid fiber gasket if no other remote seal gasket material is selected.
(3) Flushing connection ring/lower housing assembly bolts provided as standard are carbon steel.
(4) Not available with Tantalum diaphragms (Material of Construction codes CC and DC).
(5) Only available with Pressure Rating code 8.

SC Hygienic Tri-Clamp® Seal

- Good for use in hygienic applications
- Easy installation on Tri-Clover style Tri-Clamp connections (1.5-in. to 3-in.)
- Conforms to 3-A® standard 74-03

Table 12: SC Hygienic Tri-Clover Style Tri-Clamp Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Process connection		
SC(1)(2)	Tri-Clover style Tri-Clamp seal	★
Process connection size		
3 (3)	1½-in.	★

Table 12: SC Hygienic Tri-Clover Style Tri-Clamp Seal Ordering Information *(continued)*

5[4]	2-in.		★
7	3-in.		★
Maximum working pressure			
0	1000 PSI		★
Isolating diaphragm material		**Upper housing material**	
LA00	316L SST	316L SST	★
LB00	Alloy C-276	316L SST	
Options (include with selected model number)			
Remote seal diaphragm polishing			
RE	Electropolishing		
Remote seal diaphragm surface finish			
RD	10 µin. (0.25 µm) R_a diaphragm surface finish		
RG	15 µin. (0.375 µm) R_a diaphragm surface finish		
RH	20 µin. (0.5 µm) R_a diaphragm surface finish		
Surface finish certification[5]			
Q16	Surface finish certification for hygienic remote seals		★
Complete the Rosemount 3051SAL model number by specifying options as needed:			
Table 3	ERS Transmitter options		
Table 4	Scalable level transmitter options		

(1) Clamp and gasket furnished by user. The maximum working pressure is dependent upon the clamp pressure rating.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Min span is 1000 inH_2O or 2490 mbar for 1½-in. Tri- Clamp seal.
(4) Min span is 150 inH_2O or 373 mbar for 2-in. Tri-Clamp seal.
(5) Q16 is only available when the diaphragm seal has surface finish options (RD, RG, and RH).

SS Hygienic Tank Spud Seal

- Commonly used in hygienic level applications
- Seal diaphragm installed flush with inner tank wall
- Conforms to 3-A standard 74-03

Table 13: SS Hygienic Tank Spud Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Process connection		
SS[1][2]	Hygienic Tank Spud Seal	★

Table 13: SS Hygienic Tank Spud Seal Ordering Information *(continued)*

Process connection size			
A	4-in. Sch. 5 Tri-Clamp		★
Maximum working pressure (clamp rating)			
0	150 psi (10,3 bar)		★
Upper housing			
A	316L SST		★
Diaphragm and wetted, extension material			
	Diaphragm and wetted	Extension	
AL[3]	316L SST	316L SST	★
BB	Alloy C-276	316L SST	
Extension length			
2	2-in. (50 mm) extension		★
6	6-in. (150 mm) extension		★
Options (include with selected model number)			
Remote seal diaphragm thickness			
SC	0.006-in. (150 µm) diaphragm thickness		
Tank spud included with shipment			
S1	Tank spud included with shipment		★
Remote seal diaphragm polishing			
RE	Electropolishing		
Remote seal diaphragm surface finish			
RH	20 µin. (0.5 µm) R_a diaphragm surface finish		
RG[4]	15 µin. (0.375 µm) R_a diaphragm surface finish		
Surface finish certification[5]			
Q16	Surface finishing certification for hygienic remote seals		★
Complete the 3051SAL model number by specifying options as needed:			
Table 3	ERS Transmitter options		
Table 4	Scalable level transmitter options		

(1) Clamp and Ethylene Propylene O-ring (conforms to 3-A standard 74 and USP Class VI) supplied.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Diaphragm brazed and TIG-welded to extension.
(4) Requires option code RE (Electropolishing).
(5) Q16 is only available when the diaphragm seal has surface finish options (RG and RH).

Rosemount™ 3051L Level Transmitter

The Rosemount 3051L Level Transmitter combines the performance and capabilities of Rosemount 3051 Transmitters with the reliability and quality of a direct mount seal in one model number. Rosemount 3051L Level Transmitters offer a variety of process connections, configurations, and fill fluid types to meet a breadth of level applications. Capabilities of a Rosemount 3051L Level Transmitter include:

- Quantify and optimize total system performance (option code QZ)
- Tuned-system assembly (option code S1)
- Power advisory can pro actively detect degraded electrical loop integrity issues (option code DA0)
- Local Operator Interface (LOI) with straightforward menus and built-in configuration buttons (option code M4)

Additional information:

See Specifications and options for more details on each configuration. Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 14: Rosemount 3051L Level Transmitter Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Transmitter type(1)	
3051L	Level transmitter	
Pressure range		
2	–250 to 250 inH_2O (–621,60 to 621,60 mbar)	★
3	–1000 to 1000 inH_2O (–2,48 to 2,48 bar)	★
4	–300 to 300 psi (–20,68 to 20,68 bar)	★
Transmitter output		
A(2)	4–20 mA with digital signal based on HART Protocol	★
F	FOUNDATION™ Fieldbus Protocol	★
W(3)	PROFIBUS® PA	★
X(4)	Wireless	★
M(5)	Low-power 1–5 Vdc with digital signal based on HART Protocol	
Process connection size, diaphragm material (high side)		
Code	Process connection size	Diaphragm
G(6)	2-in./DN 50	316L SST ★
H(6)	2-in./DN 50	Alloy C-276 ★
J	2-in./DN 50	Tantalum ★
A(6)	3-in./DN 80	316L SST ★
B(6)	4-in./DN 100	316L SST ★
C(6)	3-in./DN 80	Alloy C-276 ★
D(6)	4-in./DN 100	Alloy C-276 ★

Table 14: Rosemount 3051L Level Transmitter Ordering Information *(continued)*

E	3-in./DN 80		Tantalum	★
F	4-in./DN 100		Tantalum	★
Seal extension length (high side)				
0	None, flush mount			★
2	2-in./50 mm			★
4	4-in./100 mm			★
6	6-in./150 mm			★
Mounting flange size, rating, material (high side)				
	Size	Rating	Material	
M	2-in.	ANSI/ASME B16.5 Class 150	CS	★
A	3-in.	ANSI/ASME B16.5 Class 150	CS	★
B	4-in.	ANSI/ASME B16.5 Class 150	CS	★
N	2-in.	ANSI/ASME B16.5 Class 300	CS	★
C	3-in.	ANSI/ASME B16.5 Class 300	CS	★
D	4-in.	ANSI/ASME B16.5 Class 300	CS	★
P	2-in.	ANSI/ASME B16.5 Class 600	CS	★
E	3-in.	ANSI/ASME B16.5 Class 600	CS	★
X[(6)]	2-in.	ANSI/ASME B16.5 Class 150	316 SST	★
F[(6)]	3-in.	ANSI/ASME B16.5 Class 150	316 SST	★
G[(6)]	4-in.	ANSI/ASME B16.5 Class 150	316 SST	★
Y[(6)]	2-in.	ANSI/ASME B16.5 Class 300	316 SST	★
H[(6)]	3-in.	ANSI/ASME B16.5 Class 300	316 SST	★
J[(6)]	4-in.	ANSI/ASME B16.5 Class 300	316 SST	★
Z[(6)]	2-in.	ANSI/ASME B16.5 Class 600	316 SST	★
L[(6)]	3-in.	ANSI/ASME B16.5 Class 600	316 SST	★
Q	DN 50	PN 10–40 per EN 1092-1	CS	★
R	DN 80	PN 40 per EN 1092-1	CS	★
S	DN 100	PN 40 per EN 1092-1	CS	★
V	DN 100	PN 10/16 per EN 1092-1	CS	★
K[(6)]	DN 50	PN 10–40 per EN 1092-1	316 SST	★
T[(6)]	DN 80	PN 40 per EN 1092-1	316 SST	★
U[(6)]	DN 100	PN 40 per EN 1092-1	316 SST	★
W[(6)]	DN 100	PN 10/16 per EN 1092-1	316 SST	★
7[(6)]	4-in.	ANSI/ASME B16.5 Class 600	316 SST	★
1	N/A	10K per JIS B2238	CS	
2	N/A	20K per JIS B2238	CS	

Table 14: Rosemount 3051L Level Transmitter Ordering Information *(continued)*

3	N/A	40K per JIS B2238		CS	
4[6]	N/A	10K per JIS B2238		316 SST	
5[6]	N/A	20K per JIS B2238		316 SST	
6[6]	N/A	40K per JIS B2238		316 SST	
Seal fill fluid (high side)		**Specific gravity**	**Temperature limits[7][8]**		
D	Silicone 200	0.934	–49 to 401 °F (–45 to 205 °C)		★
F	Silicone 200 for vacuum applications	0.934	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.		★
J[9]	Tri-Therm 300	0.795	–40 to 401 °F(–40 to 205 °C)		★
Q[9]	Tri-Therm 300 for vacuum applications	0.795	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.		★
L	Silicone 704	1.07	32 to 401 °F (0 to 205 °C)		★
C	Silicone 704 for vacuum applications	1.07	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.		★
A	SYLTHERM XLT	0.85	–157 to 293 °F (–105 to 145 °C)		★
H	Inert (halocarbon)	1.85	–49 to 320 °F (–45 to 160 °C)		★
G[9][10]	Glycerin and water	1.13	5 to 203 °F (–15 to 95 °C)		★
N[9]	Neobee M-20	0.94	5 to 401 °F (–15 to 205 °C)		★
P[9][10]	Propylene glycol and water	1.02	5 to 203 °F (–15 to 95 °C)		★
Low pressure side					
	Configuration	Flange adapter	Diaphragm material	Sensor fill fluid	
11[6]	Gage	SST	316L SST	Silicone	★
21	Differential	SST	316L SST	Silicone	★
22	Differential	SST	Alloy C-276 (SST valve seat)	Silicone	★
27[6]	Differential	SST	Alloy C (Alloy C-276 valve seat)	Silicone	★
2A[11]	Differential	SST	316L SST	Inert (halocarbon)	★
2B[11]	Differential	SST	Alloy C-276 (SST valve seat)	Inert (halocarbon)	★
31[6]	Tuned-system assembly with remote seal	None	316L SST	Silicone (requires option code S1)	★
O-ring					
A	Glass-filled PTFE				★
Housing material		**Conduit entry size**			
A	Aluminum	½–14 NPT			★
B	Aluminum	M20 ×1.5			★

Table 14: Rosemount 3051L Level Transmitter Ordering Information *(continued)*

J	SST	½–14 NPT	★
K	SST	M20 × 1.5	★
P[12]	Engineered polymer	No conduit entries	★
D[13]	Aluminum	G½	
M[13]	SST	G½	
Wireless options (requires wireless output code X and engineered polymer housing code P)			
Wireless transmit rate, operating frequency, and protocol			
WA3	User configurable transmit rate, 2.4 GHz *Wireless*HART® Protocol		★
Antenna and SmartPower			
WP5	Internal antenna, compatible with Green Power module (I.S. Power Module sold separately)		★
HART Revision configuration[2] (requires HART output code A)			
HR5	Configured for HART Revision 5		★
HR7	Configured for HART Revision 7		★
Options (include with selected model number)			
Extended product warranty			
WR3	3-year limited warranty		★
WR5	5-year limited warranty		★
Plantweb control functionality			
A01[14]	FOUNDATION Fieldbus Control Function Block Suite		★
DA0[15]	Power Advisory HART Diagnostic		★
D01[14]	FOUNDATION Fieldbus Diagnostics Suite		★
Seal assemblies[16]			
S1	Assembled to one Rosemount 1199 Seal		★
Product certifications			
E8	ATEX Flameproof and Dust Certification		★
I1[17]	ATEX Intrinsic Safety and Dust		★
IA	ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus or PROFIBUS PA protocols only		★
N1	ATEX Type n Certification and Dust		★
K8	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E8, I1, and N1)		★
E4[18]	TIIS Flameproof		★
E5	FM Explosion-proof, Dust Ignition-proof		★
I5[19]	FM Intrinsically Safe, Nonincendive		★
IE	FM FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only		★
K5	FM Explosion-proof, Dust Ignition-Proof, Intrinsically Safe, and Division 2		★
C6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2		★
I6[12]	CSA Intrinsic Safety		★

Table 14: Rosemount 3051L Level Transmitter Ordering Information *(continued)*

K6	CSA and ATEX Explosion-proof, Intrinsically Safe, and Division 2 (combination of C6, E8, and I1)	★
E7	IECEx Flameproof, Dust Ignition-proof	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Type n Certification	★
K7	IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7, and E7)	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
N3	China Type n	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety	★
KB	FM and CSA Explosion-proof, Dust Ignition Proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★
Shipboard approvals		
SBS[11]	American Bureau of Shipping	★
SBV[7][20]	Bureau Veritas (BV)	
SDN[7]	Det Norske Veritas	
SLL[7][20]	Lloyds Register (LR)	
Bolting material		
L4	Austenitic 316 SST bolts	★
L5	ASTM A 193, Grade B7M bolts	★
L6	Alloy K–500 bolts	★
L8	ASTM A 193 Class 2, grade B8M bolts	★
Display and interface options		
M4[21]	LCD display with Local Operator Interface	★
M5	LCD display	★
Calibration certification		
Q4	Calibration certificate	★
QP	Calibration certificate and tamper evident seal	★
QG[22]	Calibration certificate and GOST 33259-15 Verification Certificate	★
Material traceability certification		
Q8	Material Traceability Certification per EN 10204 3.1	★

Table 14: Rosemount 3051L Level Transmitter Ordering Information *(continued)*

Quality certification for safety[15]				
QS	Prior-use certificate of FMEDA data			★
QT	Safety certified to IEC 61508 with certificate of FMEDA			★
Toolkit total system performance reports				
QZ	Seal System Performance Calculation Report			★
Conduit electrical connector[11]				
GE	M12, 4-pin, male connector (eurofast®)			★
GM	A size mini, 4-pin, male connector (minifast®)			★
Configuration buttons				
D4[15]	Analog zero and span			★
DZ[23]	Digital zero trim			★
Transient protection[11][24]				
T1	Transient protection			★
Software configuration[23]				
C1	Custom software configuration (completed Rosemount 3051 Configuration Data Sheet for wired and Rosemount 3051 Wireless Configuration Data Sheet for wireless required with order)			★
Low power output				
C2	0.8–3.2 Vdc Output with digital signal based on HART protocol (available with Output code M only)			
Alarm levels[15]				
C4	NAMUR alarm and saturation levels, high alarm			★
CN	NAMUR alarm and saturation levels, low alarm			★
CR	Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet)			★
CS	Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)			★
CT	Rosemount standard low alarm			★
Conduit plug[11]				
DO	316 SST conduit plug			★
Ground screw[11][25]				
V5	External ground screw assembly			★
Lower housing flushing connection options[26]				
	Ring material	Number	Size	
F1	316 SST	1	¼–18 NPT	★
F2	316 SST	2	¼–18 NPT	★
F3	Alloy C-276	1	¼–18 NPT	★
F4	Alloy C-276	2	¼–18 NPT	★
F7	316 SST	1	½–14 NPT	★
F8	316 SST	2	½–14 NPT	★

Table 14: Rosemount 3051L Level Transmitter Ordering Information *(continued)*

F9	Alloy C-276	1	½–14 NPT	★
F0	Alloy C-276	2	½–14 NPT	★
Lower housing alignment clamp				
SA	Lower housing alignment clamp			★
Lower housing intermediate gasket material				
S0	No gasket for lower housing			★
SY	Thermo-Tork TN-9000			★
NACE certificate[27]				
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials			★
Q25	Certificate of compliance to NACE MR0103 for wetted materials			★
Typical model number: 3051L 2 A A0 D 21 A A F1				

(1) Select Configuration Buttons (option code D4 or DZ) or Local Operator Interface (option code M4) if local configuration buttons are required.
(2) Option HR5 configures the HART output to HART Revision 5. Option HR7 configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 or 7 if desired. HART Revision 5 is the default HART output.
(3) Option code M4 - LCD Display with Local Operator Interface required for local addressing and configuration.
(4) Requires wireless options and engineered polymer housing. Available approvals are FM Intrinsically Safe, (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), IECEx Intrinsic Safety (option code I7) and EAC Intrinsic Safety (option code IM).
(5) Only available with C6, E2, E5, I5, K5, KB and E8 approval. Not available with GE, GM, SBS, DA0, M4, D4, DZ, QT, HR5, HR7, CR, CS, CT.
(6) Materials of Construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
(7) At ambient pressure of 14.7 psia (1 bar-a) and ambient temperature of 70 °F (21 °C). Temperature limits are reduced in vacuum service.
(8) Due to heat transfer to the transmitter, the maximum process temperature of the transmitter will be de-rated if ambient or process temperatures exceed 185 °F (85 °C). Consult Instrument Toolkit to verify the application.
(9) This is a food grade fill fluid.
(10) Not suitable for vacuum applications.
(11) Not available with Wireless output (code X).
(12) Only available with Wireless output (code X).
(13) Not available with Product certifications options E8, K8, E5, K5, C6, K6, E7, K7, E2, K2, E3, KB, KD.
(14) Only valid with FOUNDATION Fieldbus output (code F).
(15) Only available with HART 4–20 mA output (code A).
(16) "Assemble-to" items are specified separately and require a completed model number.
(17) Dust approval not applicable to output code X. See #unique_18 for wireless approvals.
(18) Only available with output codes A - 4–20 mA HART, F - FOUNDATION Fieldbus, and W - PROFIBUS PA. Also only available with G½ housing thread types.
(19) Nonincendive certification not provided with Wireless output option code (X).
(20) Only available with product certifications E7, E8, I1, I7, IA, K7, K8, KD, N1, N7.
(21) Not available with FOUNDATION Fieldbus (Output Code F) or Wireless output (code X) or Low Power (output code M).
(22) Contact an Emerson representative for availability.
(23) Only available with 4–20 mA HART output (code A) and Wireless output (code X).
(24) The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA, IB, and IE.
(25) The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
(26) Supplied with C-4401 aramid fiber gasket.
(27) NACE compliant wetted materials are identified by (6).

Rosemount™ 2051L Liquid Level Transmitter

See Specifications and options for more details on each configuration. Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 15: Rosemount 2051L Liquid Level Transmitter Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Transmitter type		
2051L	Liquid level transmitter		★
Pressure range			
2	–250 to 250 inH_2O (–0,6 to 0,6 bar)		★
3	–1000 to 1000 inH_2O (–2,5 to 2,5 bar)		★
4	–300 to 300 psi (–20,7 to 20,7 bar)		★
Transmitter output			
A(1)	4–20 mA with digital signal based on HART Protocol		★
F	FOUNDATION™ Fieldbus Protocol		★
W	PROFIBUS PA Protocol		★
X	Wireless		★
M	Low-power, 1–5 Vdc with digital signal based on HART Protocol		
Process connection size, diaphragm material (high side)			
Code	Process connection size	Diaphragm	
G(2)	2-in./DN 50	316L SST	★
H(2)	2-in./DN 50	Alloy C-276	★
J	2-in./DN 50	Tantalum	★
A(2)	3-in./DN 80	316L SST	★
B(2)	4-in./DN 100	316L SST	★
C(2)	3-in./DN 80	Alloy C-276	★
D(2)	4-in./DN 100	Alloy C-276	★
E	3-in./DN 80	Tantalum	★
F	4-in./DN 100	Tantalum	★
Seal extension length (high side)			
0	None, flush mount		★

Table 15: Rosemount 2051L Liquid Level Transmitter Ordering Information *(continued)*

2	2-in./50 mm			★
4	4-in./100 mm			★
6	6-in./150 mm			★
Mounting flange size, rating, material (high side)				
	Size	Rating	Material	
M	2-in.	ANSI/ASME B16.5 Class 150	CS	★
A	3-in.	ANSI/ASME B16.5 Class 150	CS	★
B	4-in.	ANSI/ASME B16.5 Class 150	CS	★
N	2-in.	ANSI/ASME B16.5 Class 300	CS	★
C	3-in.	ANSI/ASME B16.5 Class 300	CS	★
D	4-in.	ANSI/ASME B16.5 Class 300	CS	★
X[2]	2-in.	ANSI/ASME B16.5 Class 150	SST	★
F[2]	3-in.	ANSI/ASME B16.5 Class 150	SST	★
G[2]	4-in.	ANSI/ASME B16.5 Class 150	SST	★
Y[2]	2-in.	ANSI/ASME B16.5 Class 300	SST	★
H[2]	3-in.	ANSI/ASME B16.5 Class 300	SST	★
J[2]	4-in.	ANSI/ASME B16.5 Class 300	SST	★
Q	DN50	PN 10–40 per EN 1092-1	CS	★
R	DN80	PN 40 per EN 1092-1	CS	★
K[2]	DN50	PN 10–40 per EN 1092-1	SST	★
T[2]	DN80	PN 40 per EN 1092-1	SST	★
Seal fill fluid (high side)		**Specific gravity at 77 °F (25 °C)**	**Temperature limits[3][4]**	
D	Silicone 200	0.934	–49 to 401 °F (–45 to 205 °C)	★
F	Silicone 200 for vacuum applications	0.934	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.	★
J[5]	Tri-Therm 300	0.795	–40 to 401 °F (–45 to 205 °C)	★
Q[5]	Tri-Therm 300 for vacuum applications	0.795	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.	★
L	Silicone 704	1.07	32 to 401 °F (0 to 205 °C)	★
C	Silicone 704 for vacuum applications	1.07	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.	★
A	SYLTHERM XLT	0.85	–157 to 293 °F (–105 to 145 °C)	★
H	Inert (Halocarbon)	1.85	–49 to 320 °F (–15 to 160 °C)	★
G[5][6]	Glycerin and water	1.13	5 to 203 °F (–15 to 95 °C)	★
N[5]	Neobee M-20	0.94	5 to 401 °F (–15 to 205 °C)	★

Table 15: Rosemount 2051L Liquid Level Transmitter Ordering Information *(continued)*

P[5][6]	Propylene Glycol and water	1.02	5 to 203 °F (–15 to 95 °C)	★
Sensor module configuration, flange adapter (low side)				
	Configuration		Flange adapter	
1	Gage		SST	★
2	Differential		SST	★
3 [7]	Tuned-System with remote seal		None	★
Sensor module diaphragm material, sensor fill fluid (low side)				
	Diaphragm material		Sensor fill fluid	
1	316L SST		Silicone	★
2	Alloy C-276 (SST Valve seat)		Silicone	★
7[2]	Alloy C-276 (Alloy C-276 valve seat)		Silicone	★
A [8]	316L SST		Inert (Halocarbon)	★
B[5]	Alloy C-276 (SST Valve seat)		Inert (Halocarbon)	★
O-ring				
A	Glass-filled PTFE			★
Housing material			**Conduit entry size**	
A	Aluminum		½–14 NPT	★
B	Aluminum		M20 × 1.5	★
J	SST		½–14 NPT	★
K[9]	SST		M20 × 1.5	★
P[10]	Engineered polymer		No conduit entries	★
D	Aluminum		G½	
M[5]	SST		G½	
Wireless options (requires wireless output code X and engineered polymer housing option code P)				
Wireless transmit rate, operating frequency and protocol				
WA3	User configurable transmit rate, 2.4 GHz *Wireless*HART			★
Antenna and SmartPower				
WP5	Internal antenna, compatible with Green Power Module (I.S. Power Module sold separately)			★
Options (include with selected model number)				
Extended product warranty				
WR3	3-year limited warranty			★
WR5	5-year limited warranty			★
Plantweb control functionality[11]				
A01	FOUNDATION Fieldbus advanced control function block suite			★

Table 15: Rosemount 2051L Liquid Level Transmitter Ordering Information *(continued)*

Seal assemblies[12]		
S1	Assemble to one Rosemount 1199 Seal (requires Rosemount 1199M)	★
Product certifications		
E1[9]	ATEX Flameproof	★
E2[9]	INMETRO Flameproof	★
E3[9]	China Flameproof	★
E4	TIIS Flameproof	★
E5	FM Explosion-proof, Dust Ignition-proof	★
E6	CSA Explosion-proof, Dust Ignition-proof, Division 2	★
E7[9]	IECEx Flameproof	★
EW[9]	India (CCOE) Flameproof Approval	★
I1[9]	ATEX Intrinsic Safety	★
I2[9]	INMETRO Intrinsically Safe	★
I3[9]	China Intrinsic Safety	★
I4[9][10]	TIIS Intrinsic Safety	★
I5	FM Intrinsically Safe, Division 2	★
I6	CSA Intrinsically Safe	★
I7[9]	IECEx Intrinsic Safety	★
IA[11]	ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus and PROFIBUS PA Protocol only	★
IE[11]	FM FISCO Intrinsically Safety; for FOUNDATION Fieldbus and PROFIBUS PA Protocol only	★
IF[11]	CSA FISCO Intrinsically Safety; for FOUNDATION Fieldbus and PROFIBUS PA Protocol only	★
IG[11]	IECEx FISCO Intrinsically Safety; for FOUNDATION Fieldbus and PROFIBUS PA Protocol only	★
IW[9]	India (CCOE) Intrinsically Safety Approval	★
K1[9]	ATEX Flameproof, Intrinsic Safety, Type n, Dust	★
K2	INMETRO Flameproof and Intrinsic Safety	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
K6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
K7[9]	IECEx Flameproof, Intrinsic Safety, Type n, and Dust	★
KA[9]	ATEX and CSA Flameproof, Intrinsically Safe, Division 2	★
KB	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2	★
KC[9]	FM and ATEX Explosion-proof, Intrinsically Safe, Division 2	★
KD[9]	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe	★
N1[9]	ATEX Type n	★
N7[9]	IECEx Type n	★
ND[9]	ATEX Dust	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★

Table 15: Rosemount 2051L Liquid Level Transmitter Ordering Information *(continued)*

IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety	★
Shipboard approvals[9]		
SBS	American Bureau of Shipping (ABS) Type Approval	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyds Register (LR) Type Approval	★
Display and interface options[13]		
M4	LCD display with Local Operator Interface	★
M5	LCD display	★
Hardware adjustments		
D4[14]	Zero and span configuration buttons	★
DZ[15]	Digital zero trim	★
Flange adapters[16]		
DF	½–14 NPT flange adapters	★
Conduit plug[8][17]		
DO	316 SST conduit plug	★
Ground screw[8][18]		
V5	External ground screw assembly	★
Transient protection[8][19]		
T1	Transient terminal block	★
Software configuration[11]		
C1	Custom software configuration (requires completed Configuration Data Sheet)	★
Alarm limit[10]		
C4[20]	NAMUR alarm and saturation levels, high alarm	★
CN[16]	NAMUR alarm and saturation levels, low alarm	★
CR	Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet)	★
CS	Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)	★
CT	Low alarm (standard Rosemount alarm and saturation levels)	★
Calibration certification		
Q4	Calibration certificate	★
QG	Calibration certificate and GOST 33259-15 verification certificate	★
GP	Calibration certificate and tamper evident seal	★
Material traceability certification		
Q8	Material traceability certification per EN 10204 3.1	★

Table 15: Rosemount 2051L Liquid Level Transmitter Ordering Information *(continued)*

Quality certification for safety[21]				
QS	Prior-use certificate of FMEDA data			★
QT	Safety certified to IEC 61508 with certificate of FMEDA			★
Toolkit total system performance reports				
QZ	Remote seal system performance calculation report			★
Conduit electrical connector[8]				
GE	M12, 4-pin, male connector (eurofast®)			★
GM	A size mini, 4-pin, male connector (minifast®)			★
Lower housing flushing connection options[22]				
	Ring material	Number	Size	
F1	316 SST	1	¼–18 NPT	★
F2	316 SST	2	¼–18 NPT	★
F3[23]	Alloy C-276	1	¼–18 NPT	★
F4[23]	Alloy C-276	2	¼–18 NPT	★
F7	316 SST	1	½–14 NPT	★
F8	316 SST	2	½–14 NPT	★
F9	Alloy C-276	1	½–14 NPT	★
F0	Alloy C-276	2	½–14 NPT	★
Lower housing alignment clamp				
SA	Lower housing alignment clamp			★
Lower housing intermediate gasket material				
S0	No gasket for lower housing			★
SY	Thermo-Tork TN-9000			★
NACE certificate				
Q15[24]	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials			★
Q25	Certificate of compliance to NACE MR0103 for wetted materials			★
Typical model number: 2051L 2 A A0 X D 21 A A B4 M5 F1				

(1) HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.

(2) Materials of Construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

(3) At ambient pressure of 14.7 psia (1 bar-a) and ambient temperature of 70 °F (21 °C). Temperature limits are reduced in vacuum service.

(4) Due to heat transfer to the transmitter, the maximum process temperature of the transmitter will be de-rated if ambient or process temperatures exceed 185 °F (85 °C). Consult Instrument Toolkit to verify the application.

(5) This is a food grade fill fluid.

(6) Not suitable for vacuum applications.

(7) Requires option code S1.

(8) Not available with output code X.

(9) Not available with Low Power output code m.

(10) Only available with output code X.

(11) Only valid with FOUNDATION Fieldbus output code F.

(12) "Assemble-to" items are specified separately and require a completed model number.
(13) Not valid with FOUNDATION Fieldbus output code F and Wireless Output Code X.
(14) Only available with 4–20 mA HART (output codes A and M).
(15) Only available with HART 4–20 mA output (output codes A) and Wireless output (output code X).
(16) Not available with Remote Mount Seal Assembly option S1.
(17) Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
(18) The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
(19) The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA, IE, IF, and IG.
(20) NAMUR-Compliant operation is pre-set at the factory.
(21) Only available with HART 4–20 mA output (output code A).
(22) Supplied with C-4401 aramid fiber gasket.
(23) Not available with Option Codes A0, B0, and G0.
(24) NACE Compliant wetted materials are identified by (2).

Rosemount™ 1199 Direct Mount Seal Systems

Rosemount 1199 Direct Mount Seals reduce installation costs by eliminating mounting hardware. Their advanced design also minimizes oil volume improving performance.

Product features and capabilities include:

- Direct mount gage or absolute seal system can be used for open or vented to atmosphere tank applications
- Tuned-System™ Assembly order codes can be used to improve performance for DP measurements in closed or pressurized tank applications
- Variety of process connections
- Quantified performance for the entire transmitter/seal assembly (QZ option)

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Rosemount 1199 Direct Mount Seal

The Rosemount 1199 Direct Mount Seal also requires specification of a Rosemount pressure device. See the appropriate Product Data Sheet for the desired device and include the option indicated in the table below for the configuration desired.

When ordering Rosemount 1199 Direct and Remote Mount Seals, add the correct seal system ordering code to the transmitter or gage model.

Table 16: Direct Mount Seal Attach To Code Per Transmitter or Gage Model

Rosemount model	Two seals	One seal
3051S_C	B12	B11
3051C	S2	S1
2051C	S2	S1
3051S_T	N/A	B11
3051T, 3051HT, 2051T, 2088	N/A	S1
WPG, SPG	N/A	S1

A Rosemount 1199 Direct Mount Seal consists of two parts. First, specify the direct mount connection model codes, then specify a remote seal. Model codes for both components are listed in the Rosemount™ 1199 Direct Mount Seal Ordering Information.

Rosemount™ 1199 Direct Mount Seal Ordering Information

Table 17: Rosemount 1199 Direct Mount Seal Systems Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Product description			
1199	Seal systems			
Connection type		**Seal system**	**Seal location**	
All coplanar devices (Rosemount 3051S_C, 3051C, and 2051C)				
W	Welded-repairable	One or two seal system	High side of transmitter	★

Table 17: Rosemount 1199 Direct Mount Seal Systems Ordering Information *(continued)*

R[1]	All welded		One seal system		High side of transmitter	★
T[1]	All welded		Two seal system		High side of transmitter	★
All In-line devices (Rosemount 3051S_T, 3051T, 3051HT, 2051T, 2088, WPG and SPG)						
W	All welded		One seal system		N/A	★
Seal fill fluid		**Specific gravity at 77 °F (25 °C)**	**Temperature limits[2][3]**			
			No extension	**2-in. (50 mm) extension**	**4-in. (100 mm) extension**	**Thermal Optimizer**	
D	Silicone 200	0.934	–49 to 401 °F (–45 to 205 °C)	–49 to 401 °F (–45 to 205 °C)	–49 to 401 °F (–45 to 205 °C)	–49 to 401 °F (–45 to 205 °C)	★
F	Silicone 200 for vacuum applications	0.934	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
J[4]	Tri-Therm 300	0.795	–40 to 401 °F (–40 to 205 °C)	–40 to 464 °F (–40 to 240 °C)	–40 to 572 °F (–40 to 300 °C)	N/A	★
Q[4]	Tri-Therm 300 for vacuum Applications	0.795	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
L	Silicone 704	1.07	32 to 401 °F (0 to 205 °C)	32 to 464 °F (0 to 240 °C)	32 to 572 °F (0 to 300 °C)	32 to 599 °F (0 to 315 °C)	★
C	Silicone 704 for vacuum applications	1.07	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
R	Silicone 705	1.09	68 to 401 °F (20 to 205 °C)	68 to 464 °F (20 to 240 °C)	68 to 572 °F (20 to 300 °C)	68 to 698 °F (20 to 370 °C)	★
V	Silicone 705 for vacuum applications	1.09	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.				★
A	SYLTHERM XLT	0.85	–157 to 293 °F (–105 to 145 °C)	–157 to 293 °F (–105 to 145 °C)	–157 to 293 °F (–105 to 145 °C)	–157 to 293 °F (–105 to 145 °C)	★
H	Inert (Halocarbon)	1.85	–49 to 320 °F (–45 to 160 °C)	–49 to 320 °F (–45 to 160 °C)	–49 to 320 °F (–45 to 160 °C)	–49 to 320 °F (–45 to 160 °C)	★
G[4][5]	Glycerine and water	1.13	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	★
N[4]	Neobee M-20	0.94	5 to 401 °F (–15 to 205 °C)	5 to 437 °F (–15 to 225 °C)	5 to 437 °F (–15 to 225 °C)	5 to 437 °F (–15 to 225 °C)	★
P[4][5]	Propylene Glycol and water	1.02	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	★
Seal connection type							
A	Direct mount						★

Table 17: Rosemount 1199 Direct Mount Seal Systems Ordering Information *(continued)*

Direct mount connection type				
	Seal system	Extension length	Connection type	
All coplanar devices (Rosemount 3051S_C, 3051C and 2051C)				
93	Coplanar one-seal system	Direct mount, no extension	Welded-repairable	★
B3		Direct mount, 2-in. (50mm) extension	Welded-repairable	★
D3		Direct mount, 4-in. (100mm) extension	Welded-repairable	★
97		Direct mount, no extension	All welded	★
B7		Direct mount, 2-in. (50mm) extension	All welded	★
D7		Direct mount, 4-in. (100mm) extension	All welded	★
94	Tuned-System Assembly	Direct mount, no extension	Welded-repairable	★
B4		Direct mount, 2-in. (50mm) extension	Welded-repairable	★
D4		Direct mount, 4-in. (100mm) extension	Welded-repairable	★
96		Direct mount, no extension	All welded	★
B6		Direct mount, 2-in. (50mm) extension	All welded	★
D6		Direct mount, 4-in. (100mm) extension	All welded	★
All In-line devices (Rosemount 3051S_T, 3051T, 3051HT, 2051T, 2088, WPG, and SPG)				
95	In-line one-seal system	Direct mount, no extension	All welded	★
C5[6]		Direct mount, 4-in. (100mm) extension	All welded	★
D5[6]		Direct mount, Thermal Optimizer	All welded	★
Continue specifying a completed model number by choosing a remote seal type below:				

Flanged seal assemblies		**● = Transmitter available – = Unavailable**					
		In-line	**Coplanar extensions**			**Process connections**	
			0-in.	**2-in.**	**4-in.**		
	FFW flush flanged seal	●	–	●	●	2-in./DN 50/50A 3-in./DN 80/80A 4-in./ DN 100/100A	★

Table 17: Rosemount 1199 Direct Mount Seal Systems Ordering Information *(continued)*

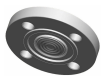
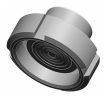
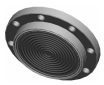
	RFW remote flanged seal	•	–	•	•	½-in./DN 15 ¾-in 1-in./DN 25/25A 1½-in./DN 40/40A	★
	EFW extended flanged seal	•	(7)	•	•	1½-in./DN 40/40A 2-in./DN 50/50A 3-in./ Headbox/DN 80/80A 4-in./ Headbox/DN 100/100A	★
	FCW flush flanged seal – RTJ gasket surface	•	(7)	•	•	2-in. 3-in.	
	RCW remote flange seal - RTJ gasket surface	•	–	•	•	½-in. ¾-in 1-in. 1½-in.	
	FUW and FVW flush flanged type seals	•	(8)	•	•	DN 50 DN 80	
	RTW remote threaded seal	•	–	•	•	¼ –18 NPT ⅜ –18 NPT ½ –14 NPT ¾ –14 NPT 1–11½ NPT 1¼–11½ NPT 1½–11½ NPT G½ A DIN 16288 R½ per ISO 7/1	★
	HTS male threaded seal	•	•	•	•	G1 G1½ G2 1–11½ NPT 1½–11½ NPT 2–11½ NPT	
Hygienic seal assemblies							
	SCW hygienic Tri-Clover style Tri-Clamp seal	•	•	•	•	1½-in. 2-in. 2½-in. 3-in. 4-in.	

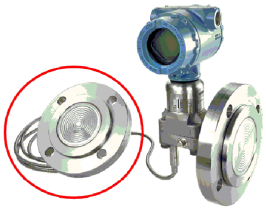
Table 17: Rosemount 1199 Direct Mount Seal Systems Ordering Information *(continued)*

	SSW hygienic tank spud seal	•	•	•	•	2-in. extension 6-in. extension	
	STW hygienic thin wall tank spud seal	•	–	•	•	0.8-in. extension	
	EES hygienic flanged tank spud extended seal	•	•	•	•	DN 50 DN 80	
	VCS Tri-Clamp in-line seal	•	–	–	–	1-in. 1½-in. 2-in. 3-in. 4-in.	
	SVS VARIVENT® compatible hygienic connection seal	•	•	•	•	Tuchenhagen VARIVENT Compatible	
	SHP hygienic Cherry-Burrell® “I” line seal	•	–	–	–	2-in. 3-in.	
	SLS dairy process connection - female thread seal per DIN 11851	•	–	–	–	DN 40 DN 50	
Specialty seal assemblies							
	WSP saddle seal	•	–	•	•	2-in. 3-in. 4-in. or larger	
	UCP male threaded pipe mount seals and PMW paper mill sleeve seals	•	–	–	–	1½-in. with threaded nut 1-in. with cap screw retainer	
	CTW chemical tee seal	•	–	•	•	Retro-fit	
	TFS wafer style in-line seal	•	–	–	–	1-in./DN 25 1½-in./DN 40 2-in./DN 50 3-in./DN 80 4-in./DN 100	
	WFW flow-through flanged seal	•	–	•	•	1-in. 2-in. 3-in.	

(1) All welded system connection types require either a 316L SST or Alloy C-276 isolating diaphragm in the pressure transmitter model codes.
(2) At ambient pressure of 14.7 psia (1 bar-a) and ambient temperature of 70 °F (21 °C).
(3) Due to heat transfer to the transmitter, the maximum process temperature of the transmitter will be de-rated if ambient or process temperatures exceed 185 °F (85 °C). Consult Instrument Toolkit to verify the application.
(4) This is a food grade fill fluid.

(5) Not suitable for vacuum applications.
(6) Maximum working pressure is 4000 psi (275 bar). Temperature limits of the Thermal Optimizer can be found in the specification section.
(7) Available with ANSI Class 300 or EN 1092-1 PN 40 or JIS B2238 20K or lower flange ratings.
(8) FUW and FVW with diaphragm options DA and DC are only available with one piece design (option code E).

Rosemount 1199 Remote Mount Seal Systems



Rosemount 1199 Remote Mount Seals are used commonly at the top of the vessel when a DP measurement is required. The capillary that is used is available in three different diameters to optimize time response and reduce temperature effects.

Product features and capabilities include:

- Remote Mount Seals can be used for high temperature applications.
- Remote Mount Seals are used on the low pressure side of the transmitter for Tuned-System Assemblies that can be used for DP measurements in closed or pressurized tank applications.
- Variety of process connections.
- Quantified performance for the entire transmitter/seal assembly (QZ option).

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Rosemount 1199 Remote Mount Seal

The Rosemount 1199 Remote Mount Seal also requires specification of a Rosemount pressure transmitter. See the appropriate product data sheet for the desired transmitter and include the option indicated in the table below for the configuration desired.

When ordering Rosemount 1199 Direct and Remote Mount Seals, make sure to add the correct seal system ordering code to the transmitter or gage model.

Table 18: Direct Mount Seal Attach To Code Per Transmitter or Gage Model

Rosemount model	Two seals	One seal
3051S_C	B12	B11
3051C	S2	S1
2051C	S2	S1
3051S_T	N/A	B11
3051T, 3051HT, 2051T, 2088	N/A	S1
WPG, SPG	N/A	S1

A Rosemount 1199 Remote Mount Seal consists of two parts. First, specify the direct mount connection model codes, then specify a remote seal. Model codes for both components are listed in the ordering table.

Rosemount 1199 Remote Mount Seal Systems Ordering Information

Table 19: Rosemount 1199 Remote Mount Seal Systems Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Product description			
1199	Seal system			
Connection type		**Seal system**	**Seal location**	
All coplanar devices (Rosemount 3051S_C, 3051C, and 2051C)				
W	Welded-repairable	One or two seal system	High side of transmitter	★

Table 19: Rosemount 1199 Remote Mount Seal Systems Ordering Information *(continued)*

M	Welded-repairable	One or two seal system	Low side of transmitter	★
D	Welded-repairable	Two seal system	Balanced system - identical high and low sides	★
R(1)	All welded	One seal system	High side of transmitter	★
T(1)	All welded	Two seal system	High side of transmitter	★
S(1)	All welded	Two seal system	Low side of transmitter	★
All In-line devices (Rosemount 3051S_T, 3051T, 3051HT, 2051T, 2088, WPG, and SPG)				
W	All welded	One seal system	N/A	★
Seal fill fluid		**Specific gravity at 77 °F (25 °C)**	**Remote mount with capillary temperature limits(2)(3)**	
D	Silicone 200	0.934	–49 to 401 °F (–45 to 205 °C)	★
F	Silicone 200 for vacuum applications	0.934	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.	★
J(6)	Tri-Therm 300	0.795	–40 to 572 °F (–40 to 300 °C)	★
Q(6)	Tri-Therm 300 for vacuum applications	0.795	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.	★
L(4)	Silicone 704	1.07	32 to 599 °F (0 to 315 °C)	★
C(4)	Silicone 704 for vacuum applications	1.07	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.	★
R(4)	Silicone 705	1.09	68 to 698 °F (20 to 370 °C)	★
V(5)	Silicone 705 for vacuum applications	1.09	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note.	★
A	SYLTHERM XLT	0.85	–157 to 293 °F (–105 to 145 °C)	★
H	Inert (Halocarbon)	1.85	–49 to 320 °F (–45 to 160 °C)	★
G(6)(7)	Glycerin and water	1.13	5 to 203 °F (–15 to 95 °C)	★
N(6)	Neobee M-20	0.94	5 to 437 °F (–15 to 225 °C)	★
P(4)(7)	Propylene Glycol and water	1.02	5 to 203 °F (–15 to 95 °C)	★
Seal connection type/capillary ID, description				
B	0.03-in. (0,711 mm) ID			★
C	0.04-in. (1,092 mm) ID			★
D	0.075-in. (1,905 mm) ID			★
E(8)	0.03-in. (0,711 mm) ID, PVC coated with closed end			★
F(8)	0.04-in. (1,092 mm) ID, PVC coated with closed end			★
G(8)	0.075-in. (1,905 mm) ID, PVC coated with closed end			★
H	0.03-in. (0,711 mm) ID, 4-in. support tube			★
J	0.04-in. (1,092 mm) ID, 4-in. support tube			★

Table 19: Rosemount 1199 Remote Mount Seal Systems Ordering Information *(continued)*

K	0.075-in. (1,905 mm) ID, 4-in. support tube	★
M[8]	0.03-in. (0,711 mm) ID, PVC coated, 4-in. support tube with closed end	★
N[8]	0.04-in. (1,092 mm) ID, PVC coated, 4-in. support tube with closed end	★
P[8]	0.075-in. (1,905 mm) ID, PVC PVC coated, 4-in. support tube with closed end	★
Capillary length		
01	1.0 ft. (0,3 m)	★
05	5.0 ft. (1,5 m)	★
10	10.0 ft. (3,0 m)	★
15	15.0 ft. (4,5 m)	★
20	20.0 ft. (6,1 m)	★
51	1.6 ft. (0,5 m)	★
52	3.3 ft. (1,0 m)	★
53	4.9 ft. (1,5 m)	★
54	6.6 ft. (2,0 m)	★
55	8.2 ft. (2,5 m)	★
56	9.8 ft. (3,0 m)	★
57	11.5 ft. (3,5 m)	★
58	13.1 ft. (4,0 m)	★
59	16.4 ft. (5,0 m)	★
60	19.7 ft. (6,0 m)	★
25	25.0 ft. (7,6 m)	
30	30.0 ft. (9,1 m)	
35	35.0 ft. (10,7 m)	
40	40.0 ft. (12,2 m)	
45	45.0 ft. (13,7 m)	
50	50.0 ft. (15,2 m)	
61	23.0 ft. (7,0 m)	
62	26.2 ft. (8,0 m)	
63	29.5 ft. (9,0 m)	
64	32.8 ft. (10,0 m)	
65	36.1 ft. (11,0 m)	
66	39.4 ft. (12,0 m)	
67	42.6 ft. (13,0 m)	
68	45.9 ft. (14,0 m)	
69	49.2 ft. (15,0 m)	

Table 19: Rosemount 1199 Remote Mount Seal Systems Ordering Information *(continued)*

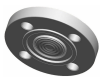
Continue specifying a completed model number by choosing a remote seal type below:			
Flanged seal assemblies		**Process connections**	
	FFW flush flanged seal	2-in./DN 50/50A 3-in./DN 80/80A 4-in./ DN 100/100A	★
	RFW remote flanged seal	½-in./DN 15 ¾-in 1-in./DN 25/25A 1½-in./DN 40/40A	★
	EFW extended flanged seal	1½-in./DN 40/40A 2-in./DN 50/50A 3-in./Headbox/DN 80/80A 4-in./Headbox/DN 100/100A	★
	PFW pancake seal	2-in./DN 50 3-in./DN 80	★
	FCW flush flanged seal – RTJ gasket surface	2-in. 3-in.	
	RCW remote flange seal - RTJ gasket surface	½-in. ¾-in. 1-in. 1½-in.	
	FUW and FVW flush flanged type seals	DN 50 DN 80	
Threaded seal assemblies		**Process connections**	
	RTW remote threaded seal	¼ –18 NPT ⅜ –18 NPT ½ –14 NPT ¾ –14 NPT 1–11½ NPT 1¼–11½ NPT 1½–11½ NPT G½ A DIN 16288 R½ per ISO 7/1	★
	HTS male threaded seal	G1 G1½ G2 1–11½ NPT 1½–11½ NPT 2–11½ NPT	

Table 19: Rosemount 1199 Remote Mount Seal Systems Ordering Information *(continued)*

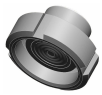
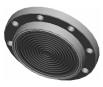
Hygienic seal assemblies		**Process connections**	
	SCW hygienic Tri-Clover style Tri-Clamp seal	1½-in. 2-in. 2½-in. 3-in. 4-in.	★
	SSW hygienic tank spud seal	2-in. extension 6-in. extension	★
	STW hygienic thin wall tank spud seal	0.8-in. extension	
	EES hygienic flanged tank spud extended seal	DN 50 DN 80	
	VCS Tri-Clamp in-line seal	1-in. 1½-in. 2-in. 3-in. 4-in.	
	SVS VARIVENT® compatible hygienic connection seal	Tuchenhagen VARIVENT Compatible	
	SHP hygienic Cherry-Burrell® “I” line seal	2-in. 3-in.	
	SLS dairy process connection - female thread seal per DIN 11851	DN 40 DN 50	
Specialty seal assemblies		**Process connections**	
	WSP saddle seal	2-in. 3-in. 4-in. or larger	
	UCP male threaded pipe mount seals and PMW paper mill sleeve seals	1½-in. with threaded nut 1-in. with cap screw retainer	
	CTW chemical tee seal	Retro-fit	
	TFS wafer style in-line seal	1-in./DN 25 1½-in./DN 40 2-in./DN 50 3-in./DN 80 4-in./DN 100	

Table 19: Rosemount 1199 Remote Mount Seal Systems Ordering Information *(continued)*

	WFW flow-through flanged seal	1-in. 2-in. 3-in.	

(1) All welded system connection types require either a 316L SST or Alloy C-276 isolating diaphragm in the pressure transmitter model codes.
(2) At ambient pressure of 14.7 psia (1 bar-a) and ambient temperature of 70 °F and must be further de-rated if ambient, temperature exceeds 70 °F (21 °C).
(3) Due to heat transfer to the transmitter, the maximum process temperature of the transmitter will be de-rated if ambient or process temperatures exceed 185 °F (85 °C). Consult Instrument Toolkit to verify the application.
(4) Only available with Seal Connection Type/Capillary ID, Description Codes C, D, F, G, J, K, N, and P.
(5) Only available with Seal Connection Type/Capillary ID, Description Codes D, G, K, and P.
(6) This is a food grade fill fluid.
(7) Not suitable for vacuum applications.
(8) PVC coating should not be exposed to temperatures above 212 °F (100 °C) to avoid the possibility of thermal breakdown.

Flanged seals

FFW flush flanged seal

Table 20: FFW Flush Flanged Seal – Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Code	Industry standards			
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)			★
D	EN 1092-1 (European Standard)			★
T	GOST 33259-15 (Russian Standard)			★
J	JIS B2238 (Japanese Industrial Standard)			
Process connection style				
FFW	Flush flanged seal			★
Process connection size				
	ANSI/ASME B16.5	EN 1092-1/GOST 33259-15	JIS B2238	
G	2-in.	DN 50	50 A	★
7	3-in.	N/A	80 A	★
J	N/A	DN 80	N/A	★
9	4-in.	DN 100	100 A	★
Flange/pressure rating				
1	Class 150	N/A	10K	★
2	Class 300	N/A	20K	★
4	Class 600	N/A	40K	★
G	N/A	PN 40	N/A	★
E	N/A	PN 10/16 (DN 100 only)	N/A	
5	Class 900	N/A	N/A	
6	Class 1500	N/A	N/A	
7	Class 2500	N/A	N/A	
H	N/A	PN 63	N/A	
J	N/A	PN 100	N/A	
K	N/A	PN 160	N/A	
Diaphragm and wetted, upper housing, flange material				
	Diaphragm and wetted	Upper housing	Flange	
CA[(1)(2)]	316L SST	316L SST	CS	★
DA[(2)]	316L SST	316L SST	316 SST	★

Table 20: FFW Flush Flanged Seal – Ordering Information *(continued)*

CB[1]	Alloy C-276, seam welded	316L SST	CS	★
DB	Alloy C-276, seam welded	316L SST	316 SST	★
CC[1]	Tantalum, seam welded	316L SST	CS	★
DC	Tantalum, seam welded	316L SST	316 SST	★
C3[1][2][3][4]	Tantalum, brazed	316L SST	CS	★
D3[1][2][3][4]	Tantalum, brazed	316L SST	316 SST	★
MB[1][2]	Alloy C-276, solid faceplate	Alloy C-276/316L SST	CS	
KB [1][2]	Alloy C-276, solid faceplate	Alloy C-276/316L SST	316 SST	
DJ	Alloy B, seam welded	316L SST	316 SST	
DF	304L SST, seam welded	316L SST	316 SST	
DV	Alloy 400, seam welded	316L SST	316 SST	
RH[2][5]	Titanium Gr. 4	Titanium GR.4	316 SST	
DH[6]	Titanium Gr. 4, seam welded	316L SST	316 SST	
DE	Alloy 600, seam welded	316L SST	316 SST	
DP	Nickel 201, seam welded	316L SST	316 SST	
DZ[6]	Zirconium 702, seam welded	316L SST	316 SST	
D4	Alloy C-22, seam welded	316L SST	316 SST	
D6	Duplex 2205 SST	316L SST	316 SST	
CP	Nickel 201	316L SST	CS	
CV	Alloy 400	316L SST	CS	
CH[6]	Titanium Gr. 4	316L SST	CS	
C6	Duplex 2205 SST	316L SST	CS	
Flushing connection ring material (lower housing)[7]				
0	None			★
A	316L SST			★
B	Alloy C-276			★
2	Duplex 2205 SST			
H	Titanium Gr. 4			
6	Nickel 201			
V	Alloy 400			
Flushing connections (connection size)				
0	None			★
1	One connection (¼–18 NPT)			★
3	Two connections (¼–18 NPT)			★
7	One connection (½–14 NPT)			★
9	Two connections (½–14 NPT)			★

Table 20: FFW Flush Flanged Seal – Ordering Information *(continued)*

Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
Intermediate gasket material		
0	No gasket for flushing connection ring (lower housing)	★
Y	Thermo-tork TN-9000 (for use with flushing connection ring)	★
J	PTFE gasket (for use with flushing connection ring)	★
N	GRAFOIL gasket (for use with flushing connection ring)	
K	Barium sulfate filled PTFE gasket (for use with flushing connection ring)	
Lower housing alignment clamp		
SA	Lower housing alignment clamp	★
Flushing plug, vent/drain valve		
D	Alloy C-276 plug(s) for flushing connection(s)	★
G	316 SST plug(s) for flushing connection(s)	★
H	316 SST vent/drain for flushing connection(s)	★
Diaphragm thickness		
C	0.006-in. (150 μm) available with 316L SST, Alloy C-276, and Duplex 2205 SST for abrasive applications	
7	0.002-in. (50 μm) available with 316L SST and Alloy C-276	
Mounting flange[8]		
4	Flat face, flush flanged	
NACE certificate[9]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Gasket surface finish		
1	Gasket Surface Ra 125 Max./EN 1092-1 Type B2	
Cold temperature application		
B	Extra fill for cold temp application	★
Diaphragm coating[10]		
Z	0.0002-in. (5 μm) gold plated diaphragm	
V	PTFE coated diaphragm for nonstick purposes only	
Capillary change		
2	Radial capillary connection	
Alternate design		
E	One piece design	★
Typical model number: 1199 W DC 1 0 A FFW 7 1 DA 0 0		

(1) *Only available with two-piece design.*
(2) *For use with spiral wound metallic gaskets.*
(3) *Not available with option code C.*
(4) *Only available in Process Connection Size code G, 7, and J.*
(5) *Not available with welded capillary connections or direct mount.*
(6) *Operating temperature limited to 302 °F (150 °C).*
(7) *Supplied standard with Thermo-tork TN-9000 if no other gasket option is selected.*
(8) *The mounting flange and upper housing are a single item for the one-piece design. Only available with diaphragm and wetted part material codes DA, DB, DJ, DF, DV, DH, DE, DP, WW, DZ, D4, DC, and D5.*
(9) *Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.*
(10) *Only available on 316LSS, Alloy 400 and Alloy C-276.*

RFW remote flanged seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 21: RFW Flanged Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Code	Industry standard			
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)			★
D	EN 1092-1 (European Standard)			★
T	GOST 33259-15 (Russian Standard)			★
J	JIS B2238 (Japanese Industrial Standard)			
Process connection style				
RFW	Flanged seal			★
Process connection size				
	ANSI/ASME B16.5	EN 1092-1/GOST 33259-15	JIS B2238	
2	1-in.	N/A	25A	★
4	1½-in.	N/A	40A	★
D	N/A	DN 25	N/A	★
F	N/A	DN 40	N/A	★
1	½-in.	N/A	N/A	
A	¾-in.	DN 10	10A	
B	N/A	DN 15	15A	
C	N/A	DN 20	20A	
Flange/pressure rating				
1	Class 150	N/A	10K	★
2	Class 300	N/A	20K	★

Table 21: RFW Flanged Seal Ordering Information *(continued)*

4	Class 600	N/A	40K	★
G	N/A	PN 40	N/A	★
5	Class 900	N/A	N/A	
6	Class 1500	N/A	N/A	
7	Class 2500	N/A	N/A	
C	N/A	PN 6	N/A	
H	N/A	PN 63	N/A	
J	N/A	PN 100	N/A	
K	N/A	PN 160	N/A	
Diaphragm, upper housing, flange material				
	Diaphragm	Upper housing	Flange	
CA	316L SST	316L SST	CS	★
DA	316L SST	316L SST	316 SST	★
CB	Alloy C-276	316L SST	CS	★
DB	Alloy C-276	316L SST	316 SST	★
CC	Tantalum	316L SST	CS	★
DC	Tantalum	316L SST	316 SST	★
DF	304L SST	316L SST	316 SST	
DJ	Alloy B	316L SST	316 SST	
DE	Alloy 600	316L SST	316 SST	
DV	Alloy 400	316L SST	316 SST	
DP	Nickel 201	316L SST	316 SST	
DK	Alloy 20	316L SST	316 SST	
RH[(1)]	Titanium Gr. 4	Titanium Gr. 4	316 SST	
DH	Titanium Gr. 4	316L SST	316 SST	
D4	Alloy C-22	316L SST	316 SST	
D6	Duplex 2205 SST	316L SST	316 SST	
DZ	Zirconium 702	316L SST	316 SST	
CV	Alloy 400	316L SST	CS	
CP	Nickel 201	316L SST	CS	
Flushing connection ring material (lower housing)[(2)]				
A	316L SST			★
B	Alloy C-276			★
2	Duplex 2205			
F	304L SST			
H	Titanium Gr. 4			

Table 21: RFW Flanged Seal Ordering Information *(continued)*

V	Alloy 400	
C	Tantalum lined 316L SST (no flushing connection allowed)	
Flushing connections (connection size)		
5	None	★
1	One connection (¼–18 NPT)	★
3	Two connections (¼–18 NPT)	★
7	One connection (½–14 NPT)	
9	Two connections (½–14 NPT)	
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Intermediate gasket material		
Y	C-4401 gasket (for use with flushing connection ring)	★
J	PTFE gasket (for use with flushing connection ring)	★
N	GRAFOIL gasket (for use with flushing connection ring)	
K	Barium sulfate filled PTFE gasket (for use with flushing connection ring)	
R	Ethylene propylene gasket (for use with flushing connection ring)	
Flushing plug, vent/drain valve		
D	Alloy C-276 plug(s) for flushing connection(s)	★
G	316 SST plug(s) for flushing connection(s)	★
H	316 SST vent/drain for flushing connection(s)	★
Diaphragm thickness		
C	0.006-in. (150 μm) available with 316L SST, Alloy C-276, and Duplex 2205 SST for abrasive applications	
Bolt material		
3	304 SST bolts (only available for stud bolt design)	
FA	316 SST bolts (only available for stud bolt design)	
Gasket surface finish		
1	Gasket surface Ra 125 Max./EN 1092-1 Type B2	
Cold temperature application		
B	Extra fill for cold temp application	★
Diaphragm coating[3]		
Z	0.0002-in. (5 μm) gold plated diaphragm	
V	PTFE coated diaphragm for nonstick purposes only	
Large diaphragm size		
9	4.1-in. (104 mm) diaphragm diameter	

Table 21: RFW Flanged Seal Ordering Information *(continued)*

NACE certificate[4]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Typical model number: 1199 W DC 1 0 A RFW 2 1 DA A 5		

(1) Not available with welded capillary connections or direct mount.
(2) Supplied with C-4401 Aramid fiber gasket if no other gasket option is selected.
(3) Only available on 316LSS, Alloy 400 and Alloy C-276.
(4) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.

EFW extended flanged seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 22: EFW Extended Flanged Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Code	**Industry standard**			**● = Available – = Unavailable**	
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)				★
D	EN 1092-1 (European Standard)				★
T	GOST 33259-15 (Russian Standard)				★
J	JIS B2238 (Japanese Industrial Standards)				
Process connection style					
EFW	Extended flanged seal				★
Process connection size					
	ANSI/ASME B16.5	EN 1092-1/GOST 33259-15	JIS B2238	Extension diameters	
7	3-in.	X	80A	2.58-in. (66 mm)	★
9	4-in.	X	100A	3.50-in. (89 mm)	★
4	1½-in.	DN 40	40A	1.45-in. (37 mm)	
G	2-in.	DN 50	50A	1.90-in. (48 mm)	
H	3-in. (Headbox)	DN 80 (Headbox)	–	2.875-in. (73 mm)	
K	4-in. (Headbox)	DN 100 (Headbox)	–	3.780-in. (96 mm)	
Flange/pressure rating					
	ANSI/ASME B16.5	EN 1092-1/GOST 33259-15	JIS B2238		

Table 22: EFW Extended Flanged Seal Ordering Information *(continued)*

1	Class 150		–		10K						★
2	Class 300		–		20K						★
4	Class 600		–		40K						★
G	–		PN 40		–						★
E	–		PN 10/16 (DN 100 only)		–						
5	Class 900		–		–						
6	Class 1500		–		–						
7	Class 2500		–		–						
H	–		PN 63		–						
J	–		PN 100		–						
K	N/A		PN 160		N/A						
Diaphragm, extension and gasket surface, upper housing, flange material					**Available with process connection code**						
Code	Diaphragm	Extension/ gasket surface	Upper housing	Mounting flange	7	9	4	G	H	K	
DA	316L SST	316L SST	316L SST	316 SST	●	●	●	●	●	●	★
CA	316L SST	316L SST	316L SST	CS		●	●	●	●	●	★
DB	Alloy C-276	Alloy C-276	316L SST	316 SST		●	●	●	●	●	★
CB	Alloy C-276	Alloy C-276	316L SST	CS		●	●	●	●	●	★
DM	Alloy C-276	316L SST	316L SST	316 SST		●	●	●	●	●	
DD	Tantalum	316L SST	316L SST	316 SST	●	●	–	–	–	–	
DC[(1)]	Tantalum	Tantalum lined	316L SST	316 SST	●	●	–	●	–	–	
D6	Duplex 2205 SST	Duplex 2205 SST	316L SST	316 SST	●	●	●	●	●	●	
D7	Duplex 2205 SST	316L SST	316L SST	316 SST	●	●	●	●	●	●	
Extension length											
	ANSI/ASME B16.5		EN 1092-1/JIS B2238/GOST 33259-15								
2	2-in.		50 mm								★
4	4-in.		100 mm								★
6	6-in.		150 mm								★
8	8-in.		200 mm								
1	1-in.		25 mm								
3	3-in.		75 mm								
5	5-in.		125 mm								
7	7-in.		175 mm								
9	9-in.		225 mm								
Fractional extension length											
	ANSI/ASME B16.5		EN 1092-1/JIS B2238/GOST 33259-15								

Table 22: EFW Extended Flanged Seal Ordering Information *(continued)*

0	0-in.	0 mm	★
Options (include with selected model number)			
Extended product warranty			
WR3	3-year limited warranty		★
WR5	5-year limited warranty		★
Diaphragm thickness			
C	0.006-in. (150 µm) available with 316L SST, Alloy C-276, and Duplex 2205 SST for abrasive applications		
NACE certificate(2)			
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials		★
Q25	Gasket surface Ra 125 maximum		★
Gasket surface finish			
1	Gasket Surface Ra 125 Max./EN 1092-1 Type B2		
Cold temperature application			
B	Extra fill for cold temperature application		★
Diaphragm coating(3)			
Z	0.0002-in. (5 µm) gold plated diaphragm		
V	PTFE coated diaphragm for nonstick purposes only		
Typical model number: 1199 W DC 1 0 A EFW 7 1 DA 2 0			

(1) Requires Gasket Surface Finish Code 1 Gasket Surface Finish Ra 125 Max. Available in extension lengths 2, 4, and 6-in. For all other lengths consult factory.

(2) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.

(3) Only available on 316LSS, Alloy 400 and Alloy C-276.

PFW pancake seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 23: PFW Pancake Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Code	Industry standard	
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)	★
D	EN 1092-1 (European Standard)	★
T	GOST 33259-15 (Russian Standard)	★

Table 23: PFW Pancake Seal Ordering Information *(continued)*

Process connection style				
PFW	Pancake seal			★
Process connection size				
	ANSI	EN 1092-1/GOST 33259-15		
G	2-in.	DN 50		★
7	3-in.	N/A		★
J	N/A	DN 80		★
Flange/pressure rating				
	ANSI	EN 1092-1/GOST 33259-15		
0	No flange supplied, seal MWP based on customer supplied flange	No flange supplied, seal MWP based on customer supplied flange		★
1	Class 150	N/A		★
2	Class 300	N/A		★
4	Class 600	N/A		★
G	N/A	PN40		★
5	Class 900	N/A		
6	Class 1500	N/A		
7	Class 2500	N/A		
H	N/A	PN 63		
J	N/A	PN 100		
Diaphragm and wetted, upper housing, flange material				
	Diaphragm and wetted	Upper housing	Flange	
LA[(1)]	316L SST	316L SST	None	★
CA[(1)]	316L SST	316L SST	CS	★
DA[(1)]	316L SST	316L SST	316 SST	★
LB	Alloy C-276, seam welded	316L SST	None	★
CB	Alloy C-276, seam welded	316L SST	CS	★
DB	Alloy C-276, seam welded	316L SST	316 SST	★
LC	Tantalum, seam welded	316L SST	None	★
CC	Tantalum, seam welded	316L SST	CS	★
DC	Tantalum, seam welded	316L SST	316 SST	★
L6	Duplex 2205 SST	316 SST	None	
C6	Duplex 2205 SST	316 SST	CS	
D6	Duplex 2205 SST	316 SST	316 SST	
Flushing connection ring material (lower housing)[(2)]				
0	None			★

Table 23: PFW Pancake Seal Ordering Information *(continued)*

A	316L SST	★
B	Alloy C-276	★
2	Duplex 2205 SST	
H	Titanium grade 4	
6	Nickel 201	
V	Alloy 400	
Flushing connections (connection size)		
0	None	★
1	One connection (¼–14 NPT)	★
3	Two connections (¼–14 NPT)	★
7	One connection (½–14 NPT)	★
9	Two connections (½–14 NPT)	★
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Intermediate gasket material		
0	No gasket for flushing connection ring (lower housing)	★
Y	Thermo-tork TN-9000 (for use with flushing connection ring)	★
J	PTFE gasket (for use with flushing connection ring)	★
N	GRAFOIL gasket (for use with flushing connection ring)	
K	Barium sulfate filled PTFE gasket (for use with flushing connection ring)	
Lower housing alignment clamp		
SA	Lower housing alignment clamp	
Flushing plug, vent/drain valve		
D	Alloy C-276 plug(s) for flushing connection(s)	★
G	316 SST plug(s) for flushing connection(s)	★
H	316 SST vent/drain for flushing connection(s)	★
Diaphragm thickness		
C	0.006-in. (150 μm) available with 316L SST, Alloy C-276, and Duplex 2205 SST for abrasive applications	
NACE certificate[3]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Gasket surface finish		
1	Gasket surface Ra 125 Max./EN 1092-1 Type B2	

Table 23: PFW Pancake Seal Ordering Information *(continued)*

Cold temperature application		
B	Extra fill for cold temp application	★
Diaphragm coating[4]		
Z	0.0002-in. (5 μm) gold plated diaphragm	
V	PTFE coated diaphragm for nonstick purposes only	
Typical model number: 1199 W DC 1 0 A PFW 7 1 DA 0 0		

(1) For use with customer supplied spiral wound metallic gaskets.
(2) Supplied with Thermo-tork TN-9000 gasket if no other gasket option is selected.
(3) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.
(4) Only available on 316LSST, Alloy 400, and Alloy C-276.

FCW flush flanged seal – RTJ gasket surface

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 24: FCW Flush Flanged Seal – RTJ Gasket Surface Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	**Industry standards**		
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)		
Process connection style			
FCW	Flush flanged seal - ring type joint (RTJ) gasket surface		
Process connection size			
G	2-in.		
7	3-in.		
Flange/pressure rating			
1	Class 150		
2	Class 300		
4	Class 600		
5	Class 900		
6	Class 1500		
7	Class 2500		
Diaphragm and wetted, upper housing, flange material			
	Diaphragm and wetted	Upper housing	Flange
DA	316L SST	316L SST	316 SST
KB[1]	Alloy C-276	316L SST	316 SST

Table 24: FCW Flush Flanged Seal – RTJ Gasket Surface Ordering Information *(continued)*

K6[1]	Duplex 2205 SST	316L SST	316 SST	
MB[1]	Alloy C-276	316L SST	CS	
CA[1]	316 L SST	316L SST	CS	
M6	Duplex 2205 SST	316L SST	CS	
Flushing connection ring material (lower housing)				
0	None			
A	316L SST			
B	Alloy C-276			
2	Duplex 2205 SST			
Flushing connections (connection size)				
0	None			
1	One connection (¼–18 NPT)			
3	Two connections (¼–18 NPT)			
7	One connection (½–14 NPT)			
9	Two connections (½–14 NPT)			
Options (include with selected model number)				
Extended product warranty				
WR3	3-year limited warranty			
WR5	5-year limited warranty			
Flushing plug, vent/drain valve				
D	Alloy C-276 plug(s) for flushing connection(s)			
G	316 SST plug(s) for flushing connection(s)			
H	316 SST vent/drain for flushing connection(s)			
Diaphragm thickness				
C	0.006-in. (150 μm) available with 316L SST, Alloy C-276, and Duplex 2205 SST for abrasive applications			
7	0.002-in. (50 μm) available with 316L SST and Alloy C-276			
NACE certificate[2]				
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials			★
Q25	Certificate of compliance to NACE MR0103 for wetted materials			★
Cold temp application				
B	Extra fill for cold temp application			
Diaphragm coating[3]				
Z	0.0002-in. (5 μm) gold plated diaphragm			
V	PTFE coated diaphragm for nonstick purposes only			
Alternate design				
E	One-piece design			

Table 24: FCW Flush Flanged Seal – RTJ Gasket Surface Ordering Information *(continued)*

Typical model number: 1199 W DC 1 0 A FCW 7 1 DA 0 0

(1) Not available with one-piece design (option code E).
(2) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.
(3) Only available on 316LSST and Alloy C-276.

RCW remote flange seal - RTJ gasket surface

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 25: RCW Remote Flange Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	**Industry standard**	
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)	
Process connection style		
RCW	Remote flanged seal - ring type joint (RTJ) surface	
Process connection size		
1	½-in. (bolts and studs included for ANSI Class 300 to 1500, not available for ANSI Class 150)	
A	¾-in. (not available for Class 150)	
2	1-in.	
4	1½-in.	
Flange/pressure rating		
1	Class 150	
2	Class 300	
4	Class 600	
5	Class 900	
6	Class 1500	
7	Class 2500	
Diaphragm, upper housing, flange material		
	Diaphragm (wetted)	Upper housing (non-wetted)
LA	316L SST	316L SST
LB	Alloy C-276	316L SST
LC	Tantalum	316L SST
LE	Alloy 600	316L SST

Table 25: RCW Remote Flange Seal Ordering Information *(continued)*

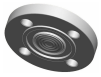
LF	304L SST	316L SST	
LJ	Alloy B 316L SST	316L SST	
LV	Alloy 400	316L SST	
LP	Nickel 201	316L SST	
BH	Titanium Gr. 4	Titanium Gr. 4	
LH[1]	Titanium Gr. 4	316L SST	
L4	Alloy 22	316L SST	
L6	Duplex 2205 SST	316L SST	
LZ[1]	Zirconium 702	316L SST	
LK	Alloy 20	316L SST	
Flushing connection ring material (lower housing)[2]			
A	316L SST		
B	Alloy C-276		
F	304L SST		
H	Titanium Gr. 4		
2	Duplex 2205 SST		
V	Alloy 400		
Flushing connections (connection size)			
5	None		
1	One connection (¼–18 NPT)		
3	Two connections (¼–18 NPT)		
7	One connection (½–14 NPT)		
9	Two connections (½–14 NPT)		
Options (include with selected model number)			
Extended product warranty			
WR3	3-year limited warranty		
WR5	5-year limited warranty		
Intermediate gasket material			
Y	C-4401 gasket (for use with flushing connection ring)		★
J	PTFE gasket (for use with flushing connection ring)		
N	GRAFOIL gasket (for use with flushing connection ring)		
K	Barium sulfate filled PTFE gasket (for use with flushing connection ring)		
R	Ethylene propylene gasket (for use with flushing connection ring)		
Flushing plug, vent/drain valve			
D	Alloy C-276 plug(s) for flushing connection(s)		
G	316 SST plug(s) for flushing connection(s)		

Table 25: RCW Remote Flange Seal Ordering Information *(continued)*

H	316 SST vent/drain for flushing connection(s)	
Diaphragm thickness		
C	0.006-in. (150 Xm) available with 316L SST, Alloy C-276, and Duplex 2205 SST for abrasive applications	
Bolt material (optional)		
3	304 SST bolts (only available for stud bolt design)	
FA	316 SST bolts (only available for stud bolt design)	
NACE certificate(3)		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	
Q25	Certificate of compliance to NACE MR0103 for wetted materials	
Cold temperature application		
B	Extra fill for cold temp application	
Diaphragm coating		
Z(4)	0.0002-in. (5 µm) gold plated diaphragm	
V(3)	PTFE coated diaphragm for nonstick purposes only	
Large diaphragm size		
9	4.1-in. (104 mm) diaphragm diameter	
Typical model number: 1199 W DC 1 0 A RCW 2 1 LA A 5		

(1) Operating temperature is limited to 302 °F (150 °C).
(2) Supplied with C-4401 aramid fiber gasket if no other gasket option is selected.
(3) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.
(4) Only available on 316LSS, Alloy 400, and Alloy C-276.

FUW and FVW flush flanged type seals



Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 26: FUW and FVW Flush Flanged Type Seals – EN Ordering Information

This seal is part of the Expanded offering is subject to additional delivery lead time.

Code	Industry standard
D	EN 1092-1 (European Standard)
T	GOST 33259-15 (Russian Standard)
Process connection style	
FUW	Flush flanged, EN 1092-1 type D (groove)
FVW	Flush flanged, EN 1092-1 type C (tongue)

Table 26: FUW and FVW Flush Flanged Type Seals – EN Ordering Information *(continued)*

Process connection size				
G	DN 50			
J	DN 80			
Flange/pressure rating				
G	PN 40			
Diaphragm and wetted, upper housing, flange material				
	Diaphragm (wetted)	Upper housing (non-wetted)	Flange	
DA(1)	316L SST	316L SST	316 SST	
KB(2)	Alloy C-276	316L SST	316 SST	
DC(1)	Tantalum	316L SST	316 SST	
Flushing connection ring material (lower housing)				
0	None			
Flushing connection options, quantity (size)				
0	None			
Options (include with selected model number)				
Extended product warranty				
WR3	3-year limited warranty			
WR5	5-year limited warranty			
Cold temperature application				
B	Extra fill for cold temperature application			
Alternate design				
E	One piece design			
NACE certificate(3)				
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials			★
Q25	Certificate of compliance to NACE MR0103 for wetted materials			★
Typical model number: 1199 W DC 1 0 A FUW J G DA 0 0				

(1) Only available with one-piece design, option code E.

(2) Only available with two-piece design.

(3) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.

Threaded seals

RTW remote threaded seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 27: RTW Remote Threaded Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Code	Industry standard			
A	ANSI/ASME B1.20.1 (American National Standards Institute/American Society of Mechanical Engineers)			★
D	EN 10226-1 / ISO 228-1			★
Process connection style				
RTW	Threaded (standard thread is female, for male select Option code 9)			★
Process connection size				
	ANSI/ASME B1.20.1	EN 10226-1	ISO 228-1	
3	½–14 NPT	N/A	N/A	★
4	¾–14 NPT	N/A	N/A	★
5	1–11½ NPT	N/A	N/A	★
7(1)	1½–11½ NPT	N/A	N/A	★
1	¼–18 NPT	N/A	N/A	
C	N/A	N/A	G½ (EN 837-1)	
2	⅜–18 NPT	N/A	N/A	
6(1)	1¼–11½ NPT	N/A	N/A	
N	N/A	Tapered thread: R½ per ISO 7/1	N/A	
Pressure rating				
	ANSI/ASME B1.20.1	EN 10226-1	ISO 228-1	
0	2500 psi	172 bar H	172 bar H	★
2(2)	5000 psi	344 bar	344 bar	
3(2)(3)	10000 psi	N/A	N/A	
8	1500 psi (4.1-in. [104 mm]) diaphragm	103 bar (4.1-in. [104 mm]) diaphragm	103 bar (4.1-in. [104 mm]) diaphragm	
Diaphragm, upper housing, flange material				
	Diaphragm (wetted)	Upper housing (non-wetted)	Flange	
CA	316L SST	316L SST	CS	★
DA	316L SST	316L SST	316 SST	★

Table 27: RTW Remote Threaded Seal Ordering Information *(continued)*

CB	Alloy C-276	316L SST	CS	★
DB	Alloy C-276	316L SST	316 SST	★
CC	Tantalum	316L SST	CS	★
DC	Tantalum	316L SST	316 SST	★
DJ	Alloy B	316L SST	316 SST	
DF	304L SST	316L SST	316 SST	
DP	Nickel 201	316L SST	316 SST	
DV	Alloy 400	316L SST	316 SST	
RH[4]	Titanium Gr. 4	Titanium Gr. 4	316 SST	
DH[5]	Titanium Gr. 4	316L SST	316 SST	
D4	Alloy 22	316L SST	316 SST	
D6	Duplex 2205 SST	316L SST	316 SST	
DE	Alloy 600	316L SST	316 SST	
DZ[5]	Zirconium 702	316L SST	316 SST	
DK	Alloy 20	316L SST	316 SST	
RZ[4]	Zirconium 702	Zirconium 702	316 SST	
Flushing connection ring material (lower housing)[6][7]				
A	316L SST			★
B	Alloy C-276			★
D	Plated carbon steel			
2	Duplex 2205 SST			
H	Titanium Gr. 4			
V	Alloy 400			
F	304L SST			
Flushing connections (connection size)				
5	None			★
1	One connection (¼–18 NPT)			★
3	Two connections (¼–18 NPT)			★
7	One connection (½–14 NPT)			
9	Two connections (½–14 NPT)			
Options (include with selected model number)				
Extended product warranty				
WR3	3-year limited warranty			
WR5	5-year limited warranty			
Intermediate gasket material				
Y	C-4401 gasket (for use with flushing connection ring)			★

Table 27: RTW Remote Threaded Seal Ordering Information *(continued)*

J	PTFE gasket (for use with flushing connection ring)	★
N	GRAFOIL gasket (for use with flushing connection ring)	★
R	Ethylene propylene gasket (for use with flushing connection ring)	★
K	Barium sulfate filled PTFE gasket (for use with flushing connection ring)	
Flushing plug, vent/drain valve		
D	Alloy C-276 plug(s) for flushing connection(s)	★
G	316 SST plug(s) for flushing connection(s)	★
H	316 SST vent/drain for flushing connection(s)	★
Diaphragm thickness		
C	0.006-in. (150 μm) available with 316L SST, Alloy C-276, and Duplex 2205 SST for abrasive applications	
Bolt material		
3	304 SST bolts	★
4	316 SST bolts	
NACE certificate(8)		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Cold temperature application		
B	Extra fill for cold temp application	★
Diaphragm coating(9)		
Z	0.0002-in. (5 μm) gold plated diaphragm	
V	PTFE coated diaphragm for nonstick purposes only	
Special threads in lower housing		
9	Male threads	
Typical model number: 1199 W DC 1 0 A RTW 3 0 DA A 5		

(1) Flushing connection not available.
(2) Consult an Emerson representative for pricing and availability on Pressure Rating codes 2 or 3.
(3) The following process connection sizes are derated: ¾-in. (9000 psi/621 bar), 1-in. (8700 psi/600 bar), 1¼-in. (7000 psi/483 bar), and 1½-in. (6000 psi/414 bar).
(4) Not available with welded capillary connections or direct mount.
(5) Operating temperature is limited to 302 °F (150 °C).
(6) Supplied with C-4401 aramid fiber gasket if no other gasket option is selected.
(7) Flushing Connection Ring/Lower Housing assembly bolts provided as standard are carbon steel for ANSI and 304 SST for EN.
(8) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.
(9) Only available on 316LSS, Alloy 400, and Alloy C-276.

HTS male threaded seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 28: HTS Male Threaded Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
A	ANSI/ASME B1.20.1 (American National Standards Institute/American Society of Mechanical Engineers)	
D	ISO 228-1	
Process connection style		
HTS	Threaded - male threaded seal	
Process connection size, pressure rating		
	ANSI/ASME B1.20.1	ISO 228-1
5A(1)	1–11½ NPT, 8700 psi (600 bar)	N/A
7A(2)	1½–11½ NPT, 6000 psi (414 bar)	N/A
9A(3)	2–11½ NPT, 4000 psi (276 bar)	N/A
EA(1)	N/A	G1 (ISO 1179-3)
GA(2)	N/A	G1½ (ISO 1179-3)
JA(3)	N/A	G2 (ISO 1179-3)
Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
LA00	316L SST	316L SST
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Typical model number: 1199 W DC 1 0 A HTS 7 A LA 0 0		

(1) Consult factory for calibrated spans lower than 300 psi (21 bar).
(2) Consult factory for calibrated spans lower than 100 psi (7 bar).
(3) Consult factory for calibrated spans lower than 50 psi (3.4 bar).

Hygienic seals

SCW hygienic Tri-Clover style Tri-Clamp seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 29: SCW Hygienic Tri-Clover Style Tri-Clamp Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Industry standard			
S	Hygienic seal (conforms to 3-A Standard 74-06 and EHEDG Type EL Class I)		★
Process connection style			
SCW(1)(2)	Tri-Clover style Tri-Clamp seal		★
Process connection size			
30(3)	1½-in.		★
50(4)	2-in.		★
70	3-in.		★
60	2½-in.		
90	4-in.		
Diaphragm and wetted, upper housing material			
	Diaphragm (wetted)	Upper housing (non-wetted)	
LA00	316L SST	316L SST	★
LB00	Alloy C-276	316L SST	
Options (include with selected model number)			
Extended product warranty			
WR3	3-year limited warranty		
WR5	5-year limited warranty		
Surface finish			
D	10 µin. (0.25 µm) R_a surface finish		
G	15 µin. (0.375 µm) R_a surface finish		
H	20 µin. (0.50 µm) R_a surface finish		
Non-hygienic fill fluid			
P	Non-hygienic fill fluid (does not conform to 3-A Standard 74)		
Clamp and gasket material(5)			
2(6)	High-Pressure Ladish™ Clamp and Nitrile Butadiene (NBR) Gasket		
3	Nitrile Butadiene (NBR) gasket		

Table 29: SCW Hygienic Tri-Clover Style Tri-Clamp Seal Ordering Information *(continued)*

Polishing		
6	Electropolishing	
Typical model number: 1199 W NC 1 0 S SCW 7 0 LA 0 0		

(1) For gaskets furnished by the user, ensure EGEDG-approved gaskets are used to ensure conformity. EHEDG conformity is not retained if clamp and gasket material codes 2 or 3 are selected.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Consult factory for calibrated spans lower than 1000 inH_2O (2490 mbar).
(4) Consult factory for calibrated spans lower than 150 inH_2O (373 mbar).
(5) Not EHEDG approved.
(6) See Table 30.

Table 30: High Pressure Ladish Clamp MWP

Process connection size	70 °F (21 °C)	250 °F (121 °C)
1½-in.	1,500 psi (103 bar)	1,200 psi (83 bar)
2-in.	1,000 psi (69 bar)	800 psi (55 bar)
2½-in.	1,000 psi (69 bar)	800 psi (55 bar)
3-in.	1,000 psi (69 bar)	800 psi (55 bar)
4-in.	1,000 psi (69 bar)	800 psi (55 bar)

SSW hygienic tank spud seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 31: SSW Hygienic Tank Spud Seal Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Code	Industry standard		
S	Hygienic seal (conforms to 3-A Standard 74-06)		★
Process connection style			
SSW(1)(2)	Tank spud seal		★
Process connection size, pressure rating			
A0	150 psi (10.3 bar)		★
Upper housing			
A	316L SST		★
Diaphragm and wetted, extension material			
	Diaphragm and wetted	Extension	

Table 31: SSW Hygienic Tank Spud Seal Ordering Information *(continued)*

AL[3]	316L SST	316L SST	★
BB	Alloy C-276	316L SST	★
Extension length			
2	2-in.		★
6	6-in.		★
Options (include with selected model number)			
Extended product warranty			
WR3	3-year limited warranty		
WR5	5-year limited warranty		
Surface finish			
G[4]	15 µin. (0.375 µm) diaphragm surface finish		
H	20 µin.(0.5 µm) diaphragm surface finish		
Diaphragm thickness			
C	0.006-in. (150 µm)		
Tank spud			
1	SST Tank spud included with shipment		★
Non-hygienic fill fluid			
P	Non-hygienic fill fluid (does not conform to 3-A Standard 74)		
Special O-rings			
3	Nitrile Butadiene (NBR) O-ring instead of standard ethylene propylene O-ring (conforms to 3-A Standard 74)		
4	Fluorocarbon (FKM) O-ring, instead of standard ethylene propylene O-ring (conforms to 3-A Standard 74)		
Polishing			
6	Electropolishing		
Typical model number: 1199 W NC 1 0 S SSW A 0 AA L 2			

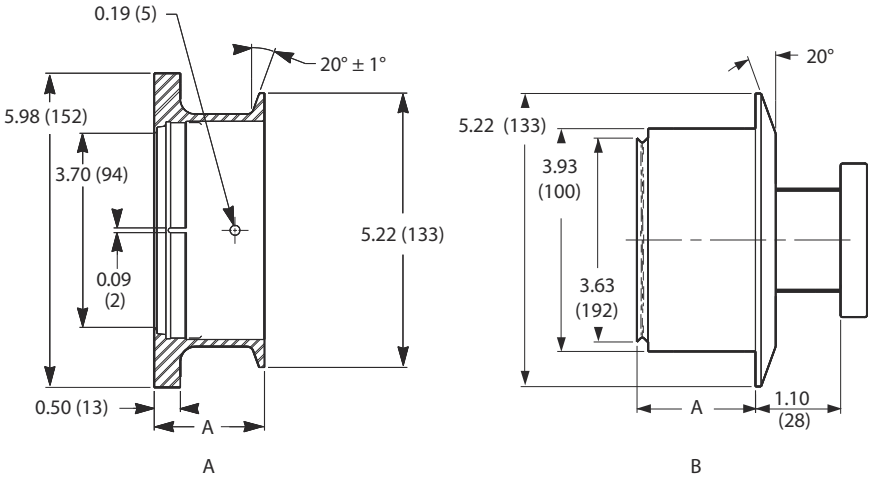
(1) Ethylene Propylene O-ring (conforms to 3-A standard 74 and USP Class VI) and clamp are supplied with the SSW Seal.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Diaphragm brazed and TIG-welded to extension.
(4) Requires Option code 6, Electropolishing.

Sanitary tank spud accessories

Tank spud and clamp

Rosemount 3051S with direct mount sanitary tank spud with clamp

Spud dimensions



A. Tank spud
B. Tank spud plug

Dimensions are in inches (millimeters).

Table 32: Sanitary Tank Spud Optional Accessories

Welding procedures and material certifications are shipped with the tank spud. Standard material is cast equivalent of 316L SST per ASTM- A351 grade CF3M.

Model	Description
01199-0061-0001	2-in. SST sanitary tank spud
01199-0061-0002	6-in. SST sanitary tank spud

Table 33: Sanitary Tank Spud Spare Parts

Part number	Description
01199-0526-0002	Clamp
C53185-0070-0341	Ethylene propylene O-ring

STW hygienic thin wall tank spud seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 34: STW Hygienic Thin Wall Tank Spud Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
S	Hygienic seal (conforms to 3-A® Standard 74-06)	
Process connection style(1)		
STW(2)	Thin wall tank spud seal	
Process connection size, pressure rating		
B0	4-in. Tri Clamp, 150 psi (41 bar)	
Diaphragm and wetted, extension material		
	Diaphragm and wetted	Extension
LA00	316L SST	316L SST
BB00	Alloy C-276	Alloy C-276
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Surface finish		
G(3)	15 µin. (0.375 µm) diaphragm surface finish	
H	20 µin.(0.5 µm) diaphragm surface finish	
Non-hygienic fill fluid		
P	Non-hygienic fill fluid (does not conform to 3-A Standard 74)	

Table 34: STW Hygienic Thin Wall Tank Spud Seal Ordering Information *(continued)*

Polishing	
6	Electropolishing
Typical model number: 1199 W NC 1 0 S STW B 0 LA 0 0	

(1) For tank walls up to 3/16-in. thick. Ethylene Propylene O-ring (conforms to 3-A standard 74 and USP Class VI) and clamp are supplied with the STW Seal.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Requires Option code 6, Electropolishing.

EES hygienic flanged tank spud extended seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 35: EES Hygienic Flanged Tank Spud Extended Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
S	Hygienic seal (conforms to 3-A® Standard 74-06)	
Process connection style		
EES(1)	Flanged tank spud seal	
Process connection size, pressure rating		
GG	DN 50, PN 40	
JG	DN 80, PN 40	
Diaphragm and wetted, extension material		
	Diaphragm and wetted	Extension
LA	316L SST	316L SST
LB	Alloy C-276	316L SST
Extension length(2)		
10	25 mm (1-in.)	
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Surface finish		
G(3)	15 µin. (0.375 µm) R_a surface finish	
H	20 µin. (0.50 µm) R_a surface finish	
Gasket material		
1	Fluorocarbon (FMK) O-ring, instead of Standard Ethylene Propylene O-ring (conforms to 3-A Standard 74).	

Table 35: EES Hygienic Flanged Tank Spud Extended Seal Ordering Information *(continued)*

Non-hygienic fill fluids	
P	Non-hygienic fill fluid (does not conform to 3-a standard 74)
Cold temperature application	
B	Extra fill for cold temperature application
Polishing	
6	Electropolishing
Typical model number: 1199 W NC 1 0 S EES J G LA 1 0	

(1) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(2) Other extension lengths are available upon request.
(3) Requires Option code 6, Electropolishing.

VCS Tri-Clamp in-line seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 36: VCS Tri-Clamp In-Line Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
S	Hygienic seal (conforms to 3-A Standard 74-06 and EHEDG Type EL Class I)	
Process connection style		
VCS(1)(2)	In-line Tri-Clover style Tri-Clamp seal	
Process connection size		
20(3)	1-in.	
30(4)	1½-in.	
50	2-in.	
70	3-in.	
90	4-in.	
Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
LA00	316L SST	316L SST
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	

Table 36: VCS Tri-Clamp In-Line Seal Ordering Information *(continued)*

Surface finish	
G[5]	15 µin. (0.375 µm) Ra surface finish
H	20 µin. (0.50 µm) Ra surface finish
Non-hygienic fill fluid	
P	Non-hygienic fill fluid (does not conform to 3-A Standard 74)
Polishing	
6	Electropolishing
Typical model number: 1199 W NC 1 0 S VCS 7 0 LA 0 0	

(1) Clamp and gasket to be furnished by user. Ensure to use EHEDG approved gasket if EHEDG conformity is needed. The MWP is dependent upon the clamp pressure rating.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Consult factory for calibrated spans lower than 15 psi (1034 mbar).
(4) Consult factory for calibrated spans lower than 5 psi (345 mbar).
(5) Requires Option code 6, Electropolishing.

SVS VARIVENT® compatible hygienic connection seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 37: SVS VARIVENT Compatible Hygienic Connection Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
S	Hygienic seal (conforms to 3-A® Standard 74-06 and EHEDG Type EL Class I)	
Process connection style		
SVS[1][2]	Tuchenhagen VARIVENT compatible seal	
Process connection size[3]		
V0	VARIVENT type N DN 40-125.	
Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
LA00	316L SST	316L SST
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Non-hygienic fill fluid		
P	Non-hygienic fill fluid (does not conform to 3-A Standard 74)	

Table 37: SVS VARIVENT Compatible Hygienic Connection Seal Ordering Information *(continued)*

Cold temperature application	
B	Extra fill for cold temperature application
Polishing	
6	Electropolishing
Typical model number: 1199 W NC 1 0 S SVS V 0 LA 0 0	

(1) Gasket to be furnished by user. Ensure to use EHEDG approved gasket if EHEDG conformity is needed. The MWP is dependent upon the clamp pressure rating.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Consult factory for calibrated spans lower than 5,4 psi (373 mbar).

SHP hygienic Cherry-Burrell® "I" line seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 38: SHP Hygienic Cherry-Burrell "I" Line Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	**Industry standard**	
S	Hygienic seal (conforms to 3-A Standard 74-06)	
Process connection style(1)		
SHP(2)	Cherry-Burrell "I" line style seal	
Process connection size		
50(3)	2-in.	
70	3-in.	
Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
AA00	316L SST	316L SST
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Non-hygienic fill fluid		
P	Non-Hygienic fill fluid (does not conform to 3-A Standard 74)	
Typical model number: 1199 W NC 1 0 S SHP 7 0 AA 0 0		

(1) Clamp and gasket furnished by user. MWP is the lesser of either clamp pressure rating or 500 psi.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Consult factory for calibrated spans lower than 5 psi (345 mbar).

SLS dairy process connection - female thread seal per DIN 11851

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 39: SLS Hygienic Dairy Process Connection Female Thread Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
S	Hygienic seal (conforms to 3-A® Standard 74-06 and EHEDG Type EL Class I)	
Process connection style		
SLS(1)(2)	Hygienic female threaded seal per DIN 11851	
Process connection size, pressure rating, material		
F0(3)	DIN 11851 with coupling nut DN 40, PN 40, 304 SST	
G0(4)	DIN 11851 with coupling nut DN 50, PN 25, 304 SST	
Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
LA00	316L SST	316L SST
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Polishing		
6	Electropolishing	
Non-hygienic fill fluids		
P	Non-hygienic fill fluid (does not conform to 3-A Standard 74)	
Typical model number: 1199 W HC 1 0 S SLS J 0 LA 0 0		

(1) Gasket to be furnished by user. Ensure to use EHEDG approved gasket if EHEDG conformity is needed.
(2) All process wetted parts have surface finish of Ra < 32 µin (0.81 µm) standard unless otherwise specified.
(3) Consult factory for calibrated spans lower than 15 psi (1034 mbar).
(4) Consult factory for calibrated spans lower than 5 psi (345 mbar).

Specialty seals

WSP saddle seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 40: WSP Saddle Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
N	Non-industry standard	
Process connection style		
WSP	Saddle seal	
Process connection size		
G	2-in. pipe size	
7	3-in. pipe size	
9	4-in. or larger pipe size	
Pressure rating		
1	1500 psig at 100 °F (103 bar at 38 °C); eight bolt holes	
0	1250 psig at 100 °F (86 bar at 38 °C); six bolt holes	
Diaphragm, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
LA	316L SST	316L SST
LB	Alloy C-276	316L SST
LC	Tantalum	316L SST
L6	Duplex 2205 SST	316 SST
Lower housing material[(1)(2)]		
00	None	
L5	316L SST	
B5	Alloy C-276	
D5	Plated carbon steel	
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	

Table 40: WSP Saddle Seal Ordering Information *(continued)*

Intermediate gasket material		
Y	C-4401 gasket	
J	PTFE gasket	
N	GRAFOIL gasket	
NACE certificate[3]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Diaphragm coating		
V	PTFE coated diaphragm for nonstick purposes (316L SST and Alloy C-276 diaphragms only)	
Typical model number: 1199 W DC 1 0 N WSP 7 1 LA L N		

(1) Standard pipe schedule 40/40S, for other pipe schedules consult the factory.
(2) Supplied with C-4401 Aramid fiber gasket if no gasket option is selected.
(3) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.

UCP male threaded pipe mount seals and PMW paper mill sleeve seals

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 41: UCP and PMW Threaded Pipe Mount Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

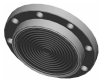
Industry standard		
N	Non-industry standard	
Process connection style		
UCP	Male threaded pipe mount seal	
PMW	Paper mill sleeve	
Process connection size, pressure rating		
30[1]	1½-in., threaded knurled nut, 600 psi at 100 °F (41 bar at 38 °C) (UCP only)	
50[2]	1-in., cap screw retainer, 300 psi at 100 °F (21 bar at 38 °C) (PMW only)	
Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
AA	316L SST	316L SST
BB	Alloy C-276	Alloy C-276
Lower housing material		
00	None	

Table 41: UCP and PMW Threaded Pipe Mount Seal Ordering Information *(continued)*

A0	316L SST
B0	Alloy C-276
Options (include with selected model number)	
Extended product warranty	
WR3	3-year limited warranty
WR5	5-year limited warranty
Diaphragm coating	
V	PTFE coated diaphragm for nonstick purposes only
Typical model number: 1199 W DC 1 0 N UCP 3 0 AA A 0	

(1) Only available with UCP process connection size. Consult factory for calibrated spans lower than 50 psi (3,4 bar).
(2) Only available with PMW process connection size. Consult factory for calibrated spans lower than 100 psi (6,9 bar).

CTW chemical tee seal



Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 42: CTW Chemical Tee Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	**Industry standard**	
N	Non-industry standard	
Process connection style		
CTW	Chemical tee seal	
MWP (flange rating)		
20	300 psi (21 bar)	
Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
AA	316L SST	316L SST
BB	Alloy C-276	Alloy C-276
Lower housing		
00	None	
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	

Table 42: CTW Chemical Tee Seal Ordering Information *(continued)*

NACE certificate[1]		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Diaphragm coating		
V	PTFE coated diaphragm for nonstick purposes only	
Typical model number: 1199 W NC 1 0 N CTW 2 0 AA 0 0		

(1) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.

TFS wafer style in-line seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 43: TFS Wafer Style In-Line Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	Industry standard	
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)	
D	EN 1092-1 (European Standard)	
Process connection style		
TFS	Wafer style in-line seal	
Process connection size		
	ANSI/ASME B16.5	EN 1092-1
G	2-in.	DN 50
7	3-in.	N/A
J	N/A	DN 80
9	4-in.	N/A
2[1]	1-in.	N/A
4[2]	1½-in.	N/A
D[1]	N/A	DN 25
F[2]	N/A	DN 40
K	N/A	DN 100
Pressure rating		
0	Seal MWP based on customer supplied flange	

Table 43: TFS Wafer Style In-Line Seal Ordering Information *(continued)*

Diaphragm and wetted, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)
LA	316L SST	316L SST
Housing body length		
00	3.54-in. (90 mm)	
Options (include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	
WR5	5-year limited warranty	
Typical model number: 1199 W DC 1 0 A TFS 7 0 LA 0 0		

(1) Consult factory for calibrated spans lower than 15 psi (1034 mbar).
(2) Consult factory for calibrated spans lower than 5 psi (345 mbar).

WFW flow-through flanged seal

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See Material selection for more information.

Table 44: WFW Flow-Through Flanged Seal Ordering Information

This seal is part of the Expanded offering and is subject to additional delivery lead time.

Code	**Industry standard**	
A	ANSI/ASME B16.5 (American National Standards Institute/American Society of Mechanical Engineers)	
Process connection style(1)		
WFW	Flow-through flanged seal	
Process connection size(2)		
G	2-in.	
7	3-in.	
2	1-in.	
Flange rating(2)		
1	Class 150	
Diaphragm, upper housing material		
	Diaphragm (wetted)	Upper housing (non-wetted)(2)
LA	316L SST	316L SST
LC	Tantalum	316L SST

Table 44: WFW Flow-Through Flanged Seal Ordering Information *(continued)*

Lower housing material[1]	
L	316L SST
Pipe schedule[2]	
N	40/40S
Options (include with selected model number)	
Extended product warranty	
WR3	3-year limited warranty
WR5	5-year limited warranty
Gasket material	
Y	C-4401 gasket
J	PTFE O-ring
K	Barium sulfate filled PTFE gasket
N	GRAFOIL gasket
R	Ethylene propylene gasket
Bolt material	
3	304 SST bolts
NACE certificate[3]	
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials
Q25	Certificate of compliance to NACE MR0103 for wetted materials
Cold temperature application	
B	Extra fill for cold temperature application
Typical model number: 1199 W DC 1 0 A WFW 7 1 LA L N	

(1) Supplied with C-4401 Aramid fiber gasket if no other gasket option is selected.
(2) Consult factory for special process connection sizes, flange pressure ratings, diaphragm/lower housing materials, and pipe schedules.
(3) Materials of Construction comply with metallurgical requirements highlighted within NACE MR 0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR 0103 for sour refining environments.

Specifications

Liquid level transmitter specifications

Performance specifications

For zero-based spans, reference conditions, silicone oil fill, glass-filled PTFE O-rings, SST materials, coplanar flange (Rosemount 3051SMV, 3051S_C) or ½–14 NPT (Rosemount 3051S_T) process connections, digital trim values set to equal range points.

Conformance to specification (±3σ [Sigma])

Technology leadership, advanced manufacturing techniques, and statistical process control ensure measurement specification conformance to ±3σ or better.

Reference accuracy

Stated reference accuracy equations include terminal based linearity, hysteresis, and repeatability, but does not include analog output reference accuracy of ±0.005% of span.

Table 45: DP Total Accuracy for Enhanced ERS System Performance

Includes full ambient and temperature range from –40 to 85 °C (–40 to 185 °F) requires two transmitters with identical sensor ranges. Specification are only applicable for spans down to 10:1.

Sensor type	3051SAM_ _G2, 3051SAL_ _G2 250 inH_2O (622,1 mbar)	3051SAM_ _G3, 3051SAL_ _G3 1000 inH_2O (2488,4 mbar)	3051SAM_ _T1, 3051SAL_ _T1 30 psi (2,1 bar)	3051SAM_ _T2, 3051SAL_ _T2 150 psi (10,34 bar)	3051SAM_ _G4, 3051SAL_ _G4 300 psi (20,7 bar)	3051SAM_ _T3, 3051SAL_ _T3 800 psi (55,2 bar)
Rosemount™ 3051SAM[1]	0.2 inH_2O (0,5 mbar)	0.6 inH_2O (1,4 mbar)	0.9 inH_2O (2,2 mbar)	1.5 inH_2O (4,0 mbar)	6.2 inH_2O (15 mbar)	7.8 inH_2O (19 mbar)
Rosemount 3051SAL with direct mount seal types and sizes below[2] ■ FF, FC, PF ≥ 2-in./ DN50 ■ EF ≥ 3-in./DN80 ■ All RT, RF, RC, SS ■ SC ≥ 2.5-in.	2.2 inH_2O (5,5 mbar)	2.3 inH_2O (5,8 mbar)	3.0 inH_2O (7,5 mbar)	3.2 inH_2O (8,0 mbar)	6.5 inH_2O (16 mbar)	8.3 inH_2O (21 mbar)
Rosemount 3051SAL with other seal types and sizes	Consult Instrument Toolkit™ for performance.					

(1) For Rosemount 3051SAM assembled to a Rosemount 1199 Diaphragm Seal, use Rosemount 3051SAL specification for identical seal types and sizes.

(2) For Rosemount 3051SAL with direct mount seals, specification applies to process temperatures from -45 to 205 °C and excludes diaphragm option code SC, 6-mil diaphragm thickness. Seal types outside these parameters will require a Toolkit calculation for performance.

Table 46: DP Reference Accuracy of Rosemount 3051S ERS System

	Ultra	Classic
Two coplanar gage sensors (Rosemount 3051SAM_ _G)		
Ranges 2–4	±0.035% of DP span	±0.049% of DP span
Range 5	±0.071% of DP span	±0.092% of DP span
Two coplanar (Rosemount 3051SAM_ _A)		
Ranges 1–4	±0.035% of DP span	±0.049% of DP span
Two in-line gage sensors (Rosemount 3051SAM_ _T) Two in-line absolute sensors (Rosemount 3051SAM_ _E)		
Ranges 1–4	±0.035% of DP span	±0.049% of DP span
Two liquid level sensors (Rosemount 3051SAL)		
Ranges 1–5	±0.092% of DP span	±0.092% of DP span

Table 47: Reference Accuracy for FOUNDATION™ Fieldbus and Wireless Devices

For FOUNDATION Fieldbus and wireless devices, use calibrated range in place of span.

Table 47: Reference Accuracy for FOUNDATION™ Fieldbus and Wireless Devices *(continued)*

Sensor type	Ultra	Classic
Rosemount 3051SAM[1][2]	±0.025% of Span For spans less than 10:1, ±(0.005% URL + 0.015% span)	±0.035% of Span. For spans less than 10:1, ±(0.005% URL + 0.015% span)
Rosemount 3051SAL_C	±0.055% of Span. For spans less than 10:1, ±(0.005% URL + 0.015% span)	±0.065% of Span. For spans less than 10:1, ±(0.005% URL + 0.015% span)
Rosemount 3051SMV assembled to Rosemount 1199 (Code B11)	N/A	±0.065% span For spans less than 10:1, +/-(0.005% URL + 0.015% span)
Rosemount 3051L Rosemount 3051C or 3051T assembled to Rosemount 1199 (code S1)	±0.075% of Span. For spans less than 10:1, ±(0.005% URL + 0.025% span)	
Rosemount 2051L Rosemount 2051C or 2051T assembled to Rosemount 1199 (code S1)	±0.075% of Span. For spans less than 10:1, ±(0.005% URL + 0.025% span)	

(1) Stated reference accuracy equations include terminal based linearity, hysteresis, and repeatability, but does not include analog only reference accuracy of ±0.005% of span.
(2) For the Rosemount 3051SAM with 1199 assemble to code B11, use 3051SAL_C specifications.

Warranty

Warranty details can be found in Emerson™ Terms and Conditions of Sale, Document 63445, Rev G (10/06).

Models[1]	Ultra/Enhanced	Classic
Rosemount 3051SAM	15-year limited warranty[2]	1-year limited warranty[3]

(1) Warranty details can be found in Emerson Terms and Conditions of Sale, Document 63445, Rev G (10/06).
(2) Rosemount Ultra transmitter has a limited warranty of fifteen (15) years from date of shipment. All other provisions of Emerson standard limited warranty remains the same.
(3) Goods are warranted for twelve (12) months from the date of initial installation or eighteen (18) months from the date of shipment by seller, whichever period expires first.

Dynamic performance

Rosemount™ Level Transmitters

Rosemount 3051SAL_C, 3051L, and 2051L models - have an 4–20 mA HART® (1–5 Vdc HART Low Power) update rate of 22 updates per second.

ERS Systems

Rosemount 3051SAM, 3051SAL_P, and 3051SAL_S models - have an 4–20 mA HART (1–5 Vdc HART Low Power) update rate of 11 updates per second. See Rosemount 3051SAL_C Wireless self-organizing networks for *Wireless*HART® update rates. For total response time, see Instrument Toolkit™.

Ambient temperature effect

See Instrument Toolkit.

Mounting position effects

With liquid level remote mount seal in vertical plane, zero shift of up to ±1 inH_2O (2,49 mbar); with remote mount seal in horizontal plane, zero shift of up to ±5 inH_2O (12,45 mbar) plus extension length on extended units; all zero shifts can be zeroed; no span effect.

Vibration effect

Rosemount 3051SAM 3051SAL	Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21mm displacement peak amplitude/60–2000 Hz 3g). For Housing Style codes 1J, 1K, 1L, 2J, and 2M: Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field with general application or pipeline with low vibration level (10–60 Hz 0.15 mm displacement peak amplitude/60–500 Hz 2g).
Rosemount 3051L	Measurement effect due to vibrations is negligible except at resonance frequencies. When at resonance frequencies, vibration effect is less than ±0.1% of URL per g when tested between 15 and 2000 Hz in any axis relative to pipe-mounted process conditions.
Rosemount 2051L	Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3 g)

Power supply effect

Less than ±0.005 percent of calibrated span per volt.

Transient protection (option T1)

Rosemount 3051SAM 3051SAL	Meets IEEE C62.41.2-2002, Location Category B 6 kV crest (0.5 µs–100 kHz) 3 kA crest (8 × 20 microseconds) 6 kV crest (1.2× 50 microseconds).
Rosemount 3051L	Meets IEEE C62.41, Category B 6 kV crest (0.5 µs–100 kHz) 3 kV crest (8 × 20 microseconds) 6 kV crest (1.2 × 50 microseconds).
Rosemount 2051L	Meets IEEE C62.41, Location Category B 6 kV crest (0.5 µs–100 kHz) 3 kV crest (8 × 20 microseconds) 6 kV crest (1.2 × 50 microseconds).

Electromagnetic compatibility (EMC)

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation < 1% Span during EMC disturbance.

Rosemount 3051S

Note
NAMUR NE-21 does not apply to Wireless (Transmitter output code X) or FOUNDATION™ Fieldbus (Transmitter output code F) or ERS configurations or Junction Box or Remote Display (housing styles 2A-2C, 2E-2G, 2J, 2M).

Note
During surge event, device may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

Note
During ESD event, Wireless device (Transmitter output code X) may exceed maximum EMC deviation limit or reset, however, device will self-recover and return to normal operation within specified start-up time.

Note
For devices with Junction Box housing or Remote Display (housing styles 2A-2C, 2E-2G, 2J, 2M) testing performed with shielded cable.

Rosemount 3051L/2051L

Note
NAMUR NE-21 does not apply to Low-Power (Transmitter output option code M) or Wireless (Transmitter output code X).

Note
During surge event, device with 4-20mA (Transmitter output option code A) may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

Functional specifications

Range and sensor limits

Table 48: Rosemount 3051SAM_ _G, 3051SAL_ _D, 3051SAL_ _G

Range	Minimum span		Range limits		
	Ultra	Classic	Upper (URL)	Lower (LRL)	
				3051SAL_G[1][2]	3051SAL_D[1]
2	1.3 inH_2O (3,11 mbar)	2.5 inH_2O (6,23 mbar)	250.0 inH_2O (0,62 bar)	–250.0 inH_2O (–0,62 bar)	–250.0 inH_2O (–0,62 bar)
3	5.0 inH_2O (12,4 mbar)	10.0 inH_2O (24,9 mbar)	1000.0 inH_2O (2,49 bar)	–393.0 inH_2O (–979 mbar)	–1000.0 inH_2O (–2,49 bar)
4	1.5 psi (103,4 mbar)	3.0 psi (206,8 mbar)	300.0 psi (20,7 bar)	–14.2 psig (–979 mbar)	–300.0 psi –20,7 bar)
5	10.0 psi (689,5 mbar)	20.0 psi (1,38 bar)	2000.0 psi (137,9 bar)	–14.2 psig (–979 mbar)	–2000.0 psi (–137,9 bar)

(1) When specifying a Rosemount 3051SAL Ultra, use Classic minimum span. Minimum span limits may also be limited by the remote seal that is specified with the system.
(2) Assumes atmospheric pressure of 14.7 psig (1 bar).

Table 49: Rosemount 3051SAM_ _A, 3051SAL_ _A

When specifying a Rosemount 3051SAL Ultra, use Classic minimum span. Minimum span limits may also be limited by the remote seal that is specified with the system.

Range	Minimum span		Range and sensor limits	
	Ultra	Classic	Upper (URL)	Lower (LRL)
1	0.3 psia (20,7 mbar)	0.3 psia (20,7 mbar)	30 psia (2,07 bar)	0 psia (0 bar)
2	0.75 psia (51,7 mbar)	1.5 psia (0,103 bar)	150 psia (10,34 bar)	0 psia (0 bar)
3	4 psia (275,8 mbar)	8 psia (0,55 bar)	800 psia (55,16 bar)	0 psia (0 bar)
4	20 psia (1,38 bar)	40 psia (2,76 bar)	4000 psia (275,8 bar)	0 psia (0 bar)

Table 50: Rosemount 3051SAM_ _T, 3051SAM_ _E, 3051SAL_ _T, 3051SAL_ _E

Range	Minimum span		Range and sensor limits		
	Ultra	Classic	Upper (URL)	Lower (LRL) (Abs.)	Lower[1] (LRL) (Gage)
1	0.3 psi (20,7 mbar)	0.3 psi (20,7 mbar)	30 psi (2,07 bar)	0 psia (0 bar)	–14.7 psig (–1,01 bar)
2	0.75 psi (51,7 mbar)	1.5 psi (0,103 bar)	150 psi (10,34 bar)	0 psia (0 bar)	–14.7 psig (–1,01 bar)
3	4 psi (275,8 mbar)	8 psi (0,55 bar)	800 psi (55,16 bar)	0 psia (0 bar)	–14.7 psig (–1,01 bar)
4	20 psi (1,38 bar)	40 psi (2,76 bar)	4000 psi (275,8 bar)	0 psia (0 bar)	–14.7 psig (–1,01 bar)
5	1000 psi (68,9 bar)	2000 psi (137,9 bar)	10000 psi (689,5 bar)	0 psia (0 bar)	–14.7 psig (–1,01 bar)

(1) Assumes atmospheric pressure of 14.7 psig (1 bar).

Table 51: Rosemount 3051L

Range	Minimum span	Range and sensor limits		
		Upper (URL)	Lower (LRL)	
			Rosemount 3051L Differential	Rosemount 3051L Gage(1)
2	2.5 inH_2O (6,2 mbar)	250 inH_2O (0,62 bar)	–250 inH_2O (–0,62 bar)	–250 inH_2O (–0,62 bar)
3	10 inH_2O (24,9 mbar)	1000 inH_2O (2,49 bar)	–1000 inH_2O (–2,49 bar)	-393 inH_2O (-979 mbar)
4	3 psi (0,20 bar)	300 psi (20,6 bar)	–300 psi (–20,6 bar)	-14.2 psig (979 mbar)
5	20 psi (1,38 bar)	2000 psi (137,9 bar)	N/A	N/A

(1) Assumes atmospheric pressure of 14.7 psig.

Table 52: Rosemount 2051L

Range	Minimum span	Range and sensor limits		
		Upper (URL)	Lower (LRL)	
			Rosemount 2051L Differential	Rosemount 2051L Gage(1)
2	2.5 inH_2O (6,2 mbar)	250 inH_2O (0,62 bar)	–250 inH_2O (–0,62 bar)	–250 inH_2O (–0,62 bar)
3	10 inH_2O (24,9 mbar)	1000 inH_2O (2,49 bar)	–1000 inH_2O (–2,49 bar)	–393 inH_2O (–979 mbar)
4	3 psi (0,207 bar)	300 psi (20,6 bar)	–300 psi (–20,7 bar)	–14.2 psig (–979 mbar)

(1) Assumes atmospheric pressure of 14.7 psig.

Service

Liquid, gas, and vapor applications

Protocols

4–20 mA (output code A)

Output

Two-wire 4–20 mA, user-selectable for linear or square root output. Digital process variable superimposed on 4–20 mA signal, available to any host that conforms to the HART® protocol.

Power supply

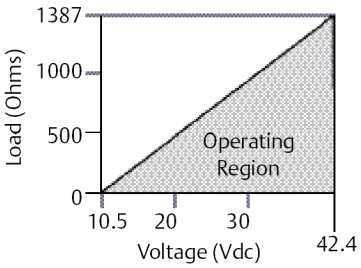
External power supply required. Standard transmitter (4–20 mA) operates on 10.5 to 42.4 Vdc with no load. The Rosemount™ 3051S ERS System operates on 16 to 42.4 Vdc with no load.

Load limitations

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

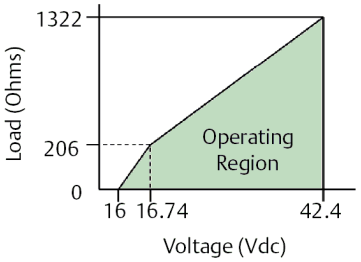
Figure 3: Standard HART Transmitter

Maximum Loop Resistance = 43.5 * (Power supply voltage – 10.5)



The Field Communicator requires a minimum loop resistance of 250Ω for communication.

Figure 4: Rosemount 3051S ERS System



If supply voltage ≤ 16.74 Vdc:

Maximum Loop Resistance = 277 * (Power supply voltage – 16.0)

If supply voltage > 16.74 Vdc:

Maximum Loop Resistance = 43.5 * (Power supply voltage – 12.0)

The Field Communicator requires a minimum loop resistance of 250Ω for communication.

FOUNDATION™ Fieldbus (output code F)

Power supply

External power supply required; transmitters operate on 9.0 to 32.0 Vdc transmitter terminal voltage.

Current draw

17.5 mA for all configurations (including LCD display option)

Indication

Optional two-line LCD display

FOUNDATION Fieldbus function block execution times

Block	Execution time (milliseconds)		
	3051SAL_C	3051L	2051L
Resource	N/A	N/A	N/A
Transducer	N/A	N/A	N/A
LCD Block	N/A	N/A	N/A
Analog Input 1, 2	20	30	35
PID	35(1)	45	45

Block	Execution time (milliseconds)		
	3051SAL_C	3051L	2051L
Input Selector	20	30	30
Arithmetic	20	35	35
Signal Characterizer	20	40	40
Integrator	20	35	35
Output Splitter	20	N/A	N/A
Control Selector	20	N/A	N/A

(1) PID with Auto-tune.

FOUNDATION Fieldbus parameters

Schedule entries: 7 (max.)

Links: 20 (max.)

Virtual Communications Relationships (VCR): 12 (max.)

Standard function blocks

Resource block

Contains hardware, electronics, and diagnostic information.

Transducer block

Contains actual sensor measurement data including the sensor diagnostics and the ability to trim the pressure sensor or recall factory defaults.

LCD block

Configures the local display.

Two analog input blocks

Processes the measurements for input into other function blocks. The output value is in engineering units or custom and contains a status indicating measurement quality.

PID block

Contains all logic to perform PID control in the field including cascade and feedforward.

Backup Link Active Scheduler (LAS)

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

Advanced control function block suite (option code A01)

Input selector block

Selects between inputs and generates an output using specific selection strategies such as minimum, maximum, midpoint, average, or first “good.”

Arithmetic block

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

Signal characterizer block

Characterizes or approximates any function that defines an input/output relationship by configuring up to twenty X, Y coordinates. The block interpolates an output value for a given input value using the curve defined by the configured coordinates.

Integrator block

Compares the integrated or accumulated value from one or two variables to pre-trip and trip limits and generates discrete output signals when the limits are reached. This block is useful for calculating total flow, total mass, or volume over time.

FOUNDATION™ Fieldbus diagnostics suite (option code D01)

The FOUNDATION Fieldbus Diagnostics provide Abnormal Situation Prevention (ASP) indication. The integral statistical process monitoring (SPM) technology calculates the mean and standard deviation of the process variable 22 times per second. The Rosemount™ 3051S_L and 3051L use these values and highly flexible configuration options for customization to detect many user-defined or application specific abnormal situations (e.g. detecting plugged impulse lines and fluid composition change).

PROFIBUS® PA (output code W)

Profile version

3.02

Power supply

External power supply required; transmitters operate on 9.0 to 32.0 Vdc transmitter terminal voltage.

Current draw

17.5 mA for all configurations (including LCD display option)

Output update rate

Four times per second

Standard function blocks

Analog input (AI block)

The AI function block processes the measurements and makes them available to the host device. The output value from the AI block is in engineering units and contains a status indicating the quality of the measurement.

Physical block

The physical block defines the physical resources of the device including type of memory, hardware, electronics, and diagnostic information.

Transducer block

Contains actual sensor measurement data including the sensor diagnostics and the ability to trim the pressure sensor or recall factory defaults.

Indication

Optional two-line LCD display

Local Operator Interface

Optional external configuration buttons

Rosemount 3051SAL_C Wireless self-organizing networks

Output

IEC 62591 (*Wireless*HART®), 2.4 GHz DSSS

Radio frequency power output from antenna

External antenna (WK option): Maximum of 10 mW (10 dBm) EIRP

Extended range, external antenna (WM option): Maximum of 18 mW (12.5 dBm) EIRP

High-gain, remote antenna (WN option): Maximum of 40 mW (16 dBm) EIRP

Local display

The optional seven-digit LCD display can display primary variable in engineering units, percent of range, sensor module temperature, and electronics temperature. Display updates at update rate up to once per minute. The display updates based on the wireless update rate.

Update rate

User selectable 1 second to 60 minutes.

Power module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride Power Module with polybutadine terephthalate (PBT) enclosure. Ten-year life at one-minute update rate.

Note
Reference conditions are 70 °F (21 °C), and routing data for three additional network devices. Continuous exposure to ambient temperature limits of –40 °F or 185 °F (–40 °C or 85 °C) may reduce specified life by less than 20 percent.

Overpressure limits

Limit is 0 psia to the flange rating or sensor rating, whichever is lower.

Table 53: Rosemount 3051L, 2051L, and Level Flange Rating Limits

Standard	Type	CS Rating	SST Rating
ANSI/ASME	Class 150	285 psig	275 psig
ANSI/ASME	Class 300	740 psig	720 psig
ANSI/ASME	Class 600	1480 psig	1440 psig
At 100 °F (38 °C), the rating decreases with increasing temperature, per ANSI/ASME B16.5.			
DIN	PN 10–40	40 bar	40 bar
DIN	PN 10/16	16 bar	16 bar
DIN	PN 25/40	40 bar	40 bar
At 122 °F (50 °C), the rating decreases with increasing temperature per EN 1092-1 Annex F.			

Temperature limits

Ambient

–40 to 185 °F (–40 to 85 °C) With LCD display(1): –40 to 175 °F (–40 to 80 °C) With option code P0: –20 to 185 °F (–29 to 85 °C)

Storage

–50 to 185 °F (–46 to 85 °C) With LCD display: –40 to 185 °F (–40 to 85 °C) With wireless output: –40 to 185 °F (–40 to 85 °C)

(1) LCD display may not be readable and LCD display updates will be slower at temperatures below –4 °F (–20 °C).

Process

Table 54: Rosemount 3051SAM ERS Process temperature Limits (Gage/Absolute Sensor)

Configuration	Coplanar gage/absolute sensor (Rosemount 3051SAM_ _G, 3051SAM_ _A)	In-line gage sensor/absolute sensor (Rosemount 3051SAM_ _T, 3051SAM_ _E)
Silicone fill fluid(1)	N/A	–40 to 250 °F (–40 to 121 °C)(3)
with coplanar flange(2)	–40 to 250 °F (–40 to 121 °C)(3)	N/A
with traditional flange(2)	–40 to 300 °F (–40 to 149 °C)(3)	N/A
with level flange(2)	–40 to 300 °F (–40 to 149 °C)(3)	N/A
with Rosemount 305 Integral Manifold(2)	–40 to 300 °F (–40 to 149 °C)(3)	N/A
Inert fill fluid(2)(4)	–40 to 185 °F (–40 to 85 °C)(5)	–22 to 250 °F (–30 to 121 °C)(3)

(1) Process temperatures above 185 °F (85 °C) require de-rating the ambient limits by a 1.5:1 ratio. For example, for process temperature of 195 °F (91 °C), new ambient temperature limit is equal to 170 °F (77 °C). This can be determined as follows: (195 °F – 185 °F) × 1.5 = 15 °F, 185 °F –15 °F = 170 °F.

(2) Process temperatures above 185 °F (85 °C) require de-rating the ambient limits by a 1:1 ratio.

(3) 220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.

(4) Not available with Rosemount 3051SAM_ _A.

(5) 160 °F (71 °C) limit in vacuum service.

Fill fluid specifications

Note

Temperature limits are reduced in vacuum service. For more information on fill fluids see Rosemount DP Level Fill Fluid Specification Technical Note.

Table 55: Fill Fluid Specifications

Seal fill fluid		Specific gravity at 77 °F (25 °C)	Viscosity at 77 °F (25 °C) (centistokes)	Temperature limits(1)(2)				
				No extension	2-in. (50 mm) extension	4-in. (100 mm) extension	Thermal optimizer	Capillary
D	Silicone 200	0.934	9.5	–49 to 401 °F (–45 to 205 °C)	–49 to 401 °F (–45 to 205 °C)	–49 to 401 °F (–45 to 205 °C)	–49 to 401 °F (–45 to 205 °C)	–49 to 401 °F (–45 to 205 °C)
F	Silicone 200 for vacuum applications	0.934	9.5	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note				
J(5)	Tri-Therm 300	0.795	8.6	–40 to 401 °F (–40 to 205 °C)	–40 to 464 °F (–40 to 240 °C)	–40 to 572 °F (–40 to 300 °C)	N/A	–40 to 572 °F (–40 to 300 °C)
Q(5)	Tri-Therm 300 for vacuum applications	0.795	8.6	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note				
L	Silicone 704	1.07	39	32 to 401 °F (0 to 205 °C)	32 to 464 °F (0 to 240 °C)	32 to 572 °F (0 to 300 °C)	32 to 599 °F (0 to 315 °C)	32 to 599 °F (0 to 315 °C)

Table 55: Fill Fluid Specifications *(continued)*

Seal fill fluid		Specific gravity at 77 °F (25 °C)	Viscosity at 77 °F (25 °C) (centistokes)	Temperature limits[1][2]				
				No extension	2-in. (50 mm) extension	4-in. (100 mm) extension	Thermal optimizer	Capillary
C	Silicone 704 for vacuum applications	1.07	39	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note				
R	Silicone 705	1.09	175	68 to 401 °F (20 to 205 °C)	68 to 464 °F (20 to 240 °C)	68 to 572 °F (20 to 300 °C)	68 to 698 °F (20 to 370 °C)	68 to 698 °F (20 to 370 °C)
V	Silicone 705 for Vacuum Applications	1.09	175	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note				
Y[3]	UltraTherm805	1.20	1000	UltraTherm 805 is only available with Thermal Range Expander. SeeTable 3 for temperature limits.				
Z[3]	UltraTherm805 for Vacuum Applications	1.20	1000	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note				
A	SYLTHERM XLT	0.85	1.6	–157 to 293 °F (–105 to 145 °C)	–157 to 293 °F (–105 to 145 °C)	–157 to 293 °F (–105 to 145 °C)	–157 to 293 °F (–105 to 145 °C)	–157 to 293 °F (–105 to 145 °C)
H	Inert (Halocarbon)	1.85	6.5	–49 to 320 °F (–45 to 160 °C)	–49 to 320 °F (–45 to 160 °C)	–49 to 320 °F (–45 to 160 °C)	–49 to 320 °F (–45 to 160 °C)	–49 to 320 °F (–45 to 160 °C)
G[4][5]	Glycerin and Water	1.13	12.5	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)
N[5]	Neobee M–20	0.94	9.8	5 to 401 °F (–15 to 205 °C)	5 to 437 °F (–15 to 225 °C)	5 to 437 °F (–15 to 225 °C)	5 to 437 °F (–15 to 225 °C)	5 to 437 °F (–15 to 225 °C)
P[4] [5]	Propylene Glycol and Water	1.02	2.85	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)	5 to 203 °F (–15 to 95 °C)

(1) Temperature limits are reduced in vacuum service. For more information on fill fluids see Rosemount DP Level Fill Fluid Specification Technical Note.

(2) Due to heat transfer to the transmitter, the maximum process temperature of the transmitter will be de-rated if ambient or process temperatures exceed 185 °F (85 °C). Consult Instrument Toolkit to verify the application.

(3) Only available with Thermal Range Expander.

(4) Not suitable for vacuum applications.

(5) This is a food grade fill fluid.

Figure 5: Thermal Range Expander Temperature Operating Range

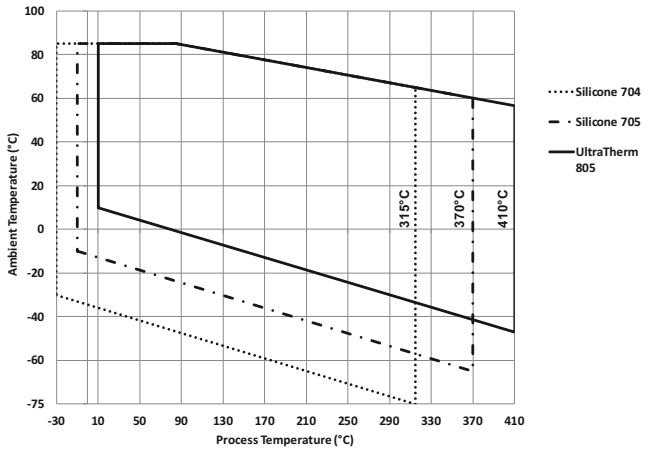


Figure 6: Thermal Optimizer with Silicone 704 Fill Fluid Temperature Limits

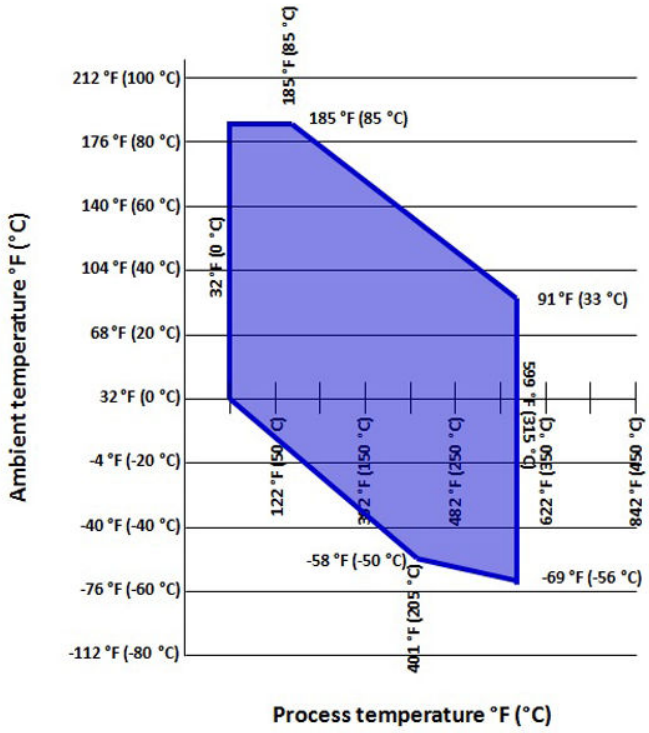
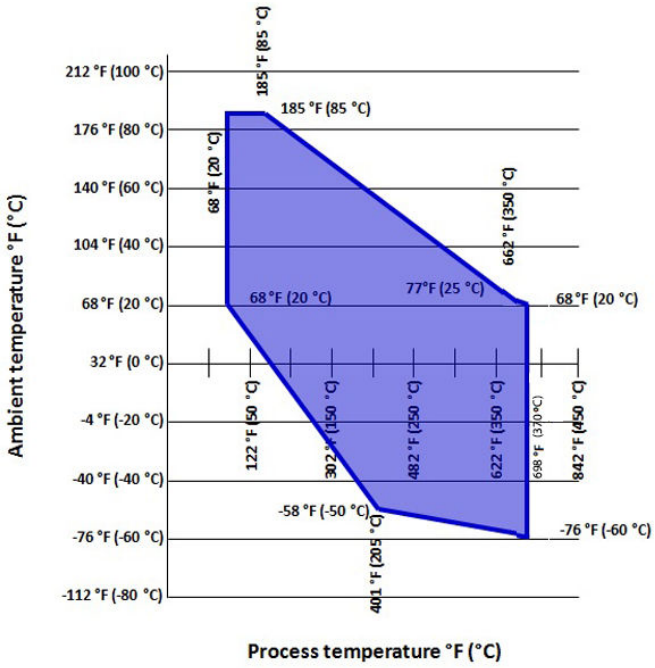


Figure 7: Thermal Optimizer with Silicone 705 Fill Fluid Temperature Limits



Humidity limits

0–100 percent relative humidity

Turn-on time

Rosemount 3051SAL_C	Performance within specifications less than 2.0 seconds after power is applied to the transmitter.
Rosemount 3051L	Performance within specifications less than 2.0 seconds (10.0 s for PROFIBUS protocol) after power is applied to the transmitter
Rosemount 2051L	Performance within specifications less than 2.0 seconds after power is applied to the transmitter.
Rosemount ERS System	Performance within specifications less than 6.0 seconds after power is applied.

Volumetric displacement

Less than 0.005-in.^{3} (0.08 cm^3)

Damping

Software damping is in addition to sensor module response time.

Note
Does not apply to wireless option code X.

Rosemount 3051SAL_C	Analog output response to a step change is user-selectable from 0 to 60 seconds for one time constant.
Rosemount 3051L	Analog output response to a step input change is user-selectable from 0 to 36 seconds for one time constant.
Rosemount 2051L	Analog output response to a step input change is user-selectable from 0 to 25.6 seconds for one time constant.

Rosemount ERS System	The PHI and PLO pressure measurements and the DP calculation may be independently dampened from 0 to 60 seconds for one time constant.

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Electrical connections

½–14 NPT, PG 13.5, G½, and M20 × 1.5 conduit. HART interface connections fixed to terminal block.

Non-wetted parts

Transmitter flange is CF-3M (cast version of 316L SST, material per ASTM-A743)

Capillary tube is 316L SST

Capillary armor is SST or PVC coated SST

	Rosemount™ 3051SAL	**Rosemount 3051L**	**Rosemount 2051L**
Electrical housing	Low-copper aluminum alloy or CF-8M (Cast 316 SST) NEMA® 4X, IP 66, IP 68 (66 ft. [20 m] for 168 hours)(1)	Low-copper aluminum or CF-3M (Cast version of 316L SST, material per ASTM-A743). NEMA 4X, IP 65, IP 66	Low-copper aluminum or CF-8M (Cast version of 316 SST). Enclosure Type 4X, IP 65, IP 66, IP 68
Coplanar sensor module housing	CF-3M (Cast version of 316LSST, material per ASTM-A743)	CF-3M (Cast version of 316L SST, material per ASTM-A743)	CF-3M (Cast version of 316LSST, material per ASTM-A743)
Bolts	Plated carbon steel per ASTM A449, Type 1 Austenitic 316 SST per ASTM F593 ASTM A453, Class D, Grade 660 SST ASTM A193, Grade B7M alloy steel ASTM A193, Class 2, Grade B8M SST Alloy K–500	ASTM A449, Type 1 (zinc-cobalt plated carbon steel) ASTM F593G, Condition CW1 (Austenitic 316 SST) ASTM A193, Grade B7M (zinc plated alloy steel) Alloy K–500	ASTM A449, Type 1 (zinc-cobalt plated carbon steel) ASTM F593G, Condition CW1 (Austenitic 316 SST) ASTM A193, Grade B7M (zinc plated alloy steel)
Sensor module fill fluid	Silicone or inert halocarbon (Inert is not available with Rosemount 3051S_CA). In-Line series uses Fluorinert™ FC-43	Silicone 200 or Fluorocarbon oil (Halocarbon or Fluorinert FC-43 for Rosemount 3051T)	Silicone 200 or Fluorocarbon oil (Halocarbon or Fluorinert FC-43 for 2051T)
Process fill fluid	SYLTHERM™ XLT, Silicone 705, Silicone 704, UltraThem 805, Silicone 200,Tri-Therm 300, inert, glycerin and water, Neobee M-20®, propylene glycol and water	SYLTHERM XLT, Silicone 705, Silicone 704, Silicone 200, Tri-Therm 300, inert, glycerin and water, Neobee M-20, propylene glycol and water	SYLTHERM XLT, Silicone 705, Silicone 704, Silicone 200, Tri-Therm 300, inert, glycerin and water, Neobee M-20, propylene glycol and water
Paint for aluminum housing	Polyurethane	Polyurethane	Polyurethane
Cover O-ring	Nitrile butadiene (NBR)	Nitrile butadiene (NBR)	Nitrile butadiene (NBR)

	Rosemount™ 3051SAL	Rosemount 3051L	Rosemount 2051L
Wireless antenna	External Antenna (WK1/WM1): PBT/PC integrated omni-directional antenna Remote Antenna (WN1): Fiberglass omni-directional antenna	N/A	N/A
Power module	Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride Power Module with PBT enclosure	N/A	N/A

(1) IP 68 not available with wireless output.

Note
If a lower housing is supplied, the following gaskets are the default gaskets for each seal unless another gasket material is selected.

Rosemount 3051SAL Transmitter default gasket options

Seal	Gaskets
FF	ThermoTork® TN-9000 gasket
EF	No gasket is supplied
FC	No gasket is supplied
RC	Klinger C-4401 gasket
RF	Klinger C-4401 gasket
RT	Klinger C-4401 gasket
PF	ThermoTork TN-9000 gasket
SS	Ethylene Propylene O-ring

Shipping weights

Table 56: Rosemount 3051SAL Weights without SuperModule Platform, Housing, or Transmitter Options

Weights are listed in lb (kg).

Flange	Flush	2-in. ext.	4-in. ext.	6-in. ext.
2-in., Class 150	9.5 (4,3)	N/A	N/A	N/A
3-in., Class 150	15.7 (7,1)	16.4 (7,4)	17.6 (8,0)	18.9 (8,6)
4-in., Class 150	21.2 (9,6)	20.9 (9,5)	22.1 (10,0)	23.4 (10,6)
2-in., Class 300	11.3 (5,1)	N/A	N/A	N/A
3-in., Class 300	19.6 (8,9)	20.3 (9,2)	21.5 (9,8)	22.8 (10,3)
4-in., Class300	30.4 (13,8)	30.3 (13,7)	31.5 (14,3)	32.8 (14,9)
2-in., Class 600	12.8 (5,8)	N/A	N/A	N/A
3-in., Class 600	22.1 (10,0)	22.8 (10,3)	24.0 (10,9)	25.3 (11.5)
DN 50/PN 40	11.3 (5,1)	N/A	N/A	N/A
DN 80/PN 40	16.0 (7,3)	16.7 (7,6)	17.9 (8.1)	19.2 (8,7)
DN 100/PN 10/16	11.2 (5,1)	11.9 (5,4)	13.1 (5,9)	14.4 (6,5)

Table 56: Rosemount 3051SAL Weights without SuperModule Platform, Housing, or Transmitter Options *(continued)*

Flange	Flush	2-in. ext.	4-in. ext.	6-in. ext.
DN 100/PN 40	12.6 (5,7)	13.3 (6,0)	14.5 (6,6)	15.8 (7,1)

Table 57: Rosemount 3051SAM and 3051SAL Transmitter Option Weights

Option code	Option	Add lb (kg)
1J, 1K, 1L	SST Plantweb™ housing	3.5 (1,6)
2J	SST Junction box housing	3.4 (1,5)
7J	SST Quick Connect	0.4 (0,2)
2A, 2B, 2C	Aluminum junction box housing	1.1 (0,5)
1A, 1B, 1C	Aluminum Plantweb housing	1.1 (0,5)
M5	LCD display for aluminum Plantweb housing(1) LCD display for SST Plantweb housing (1) Aluminum standard cover SST standard cover Aluminum display cover SST display cover Wireless extended cover LCD display(2) Junction box terminal block Plantweb terminal block Power module Thermal Range Expander	0.8 (0,4) 1.6 (0,7) 0.4 (0,2) 1.3 (0,6) 0.7 (0,3) 1.5 (0,7) 0.7 (0,3) 0.1 (0,04) 0.2 (0,1) 0.2 (0,1) 0.5 (0,2) 4.1 (1,9)

(1) Includes LCD display and display cover.
(2) Display only.

Table 58: Rosemount 3051L Weights without Options

Weights are listed in lb (kg).

Flange	Flush	2-in. ext.	4-in. ext.	6-in. ext.
2-in., Class 150	12.5 (5,7)	N/A	N/A	N/A
3-in., Class 150	17.5 (7,9)	19.5 (8,8)	20.5 (9,3)	21.5 (9,7)
4-in., Class 150	23.5 (10,7)	26.5 (12,0)	28.5 (12,9)	30.5 (13,8)
2-in., Class 300	17.5 (7,9)	N/A	N/A	N/A
3-in., Class 300	22.5 (10,2)	24.5 (11,1)	25.5 (11,6)	26.5 (12,0)
4-in., Class 300	32.5 (14,7)	35.5 (16,1)	37.5 (17,0)	39.5 (17,9)
2-in., Class 600	15.3 (6,9)	N/A	N/A	N/A
3-in., Class 600	25.2 (11,4)	27.2 (12,3)	28.2 (12,8)	29.2 (13,2)
DN 50/PN 40	13.8 (6,2)	N/A	N/A	N/A
DN 80/PN 40	19.5 (8,8)	21.5 (9,7)	22.5 (10,2)	23.5 (10,6)
DN 100/ PN 10/16	17.8 (8,1)	19.8 (9,0)	20.8 (9,5)	21.8 (9,9)
DN 100/ PN 40	23.2 (10,5)	25.2 (11,5)	26.2 (11,9)	27.2 (12,3)

Table 59: Rosemount 3051L Transmitter Option Weights

Code	Option	Add lb (kg)
J, K, L, M	Stainless steel housing (T)	3.9 (1.8)
J, K, L, M	Stainless steel housing (C, L, H, P)	3.1 (1.4)
M5	LCD display for aluminum housing	0.5 (0.2)
M6	LCD display for SST housing	1.25 (0.6)

Table 60: Rosemount 2051L Weights without Options

Weights are listed in lb (kg).

Flange	Flush	2-in. ext.	4-in. ext.	6-in. ext.
2-in., Class 150	12.5 (5,7)	N/A	N/A	N/A
3-in., Class 150	17.5 (7,9)	19.5 (8,8)	20.5 (9,3)	21.5 (9,7)
4-in., Class 150	23.5 (10,7)	26.5 (12,0)	28.5 (12,9)	30.5 (13,8)
2-in., Class 300	17.5 (7,9)	N/A	N/A	N/A
3-in., Class 300	22.5 (10,2)	24.5 (11,1)	25.5 (11,6)	26.5 (12,0)
4-in., Class 300	32.5 (14,7)	35.5 (16,1)	37.5 (17,0)	39.5 (17,9)
DN 50/PN 40	13.8 (6,2)	N/A	N/A	N/A
DN 80/PN 40	19.5 (8,8)	21.5 (9,7)	22.5 (10,2)	23.5 (10,6)
DN 100/ PN 10/16	17.8 (8,1)	19.8 (9,0)	20.8 (9,5)	21.8 (9,9)
DN 100/ PN 40	23.2 (10,5)	25.2 (11,5)	26.2 (11,9)	27.2 (12,3)

Table 61: Rosemount 2051L Transmitter Option Weights

Code	Option	Add lb (kg)
J, K, L, M	Stainless steel housing	3.9 (1,8)
M5	LCD display for aluminum housing	0.5 (0,2)

Rosemount 1199 Seal specifications

Functional specifications

Hygienic seal approvals

3-A

The following seals are 3-A® approved and labeled:

- SCW (Tri-Clover style Tri-Clamp seal)
- STW (Thin wall tank spud seal)
- EES Flanged Tank spud extended seal
- VCS (In-line Tri-Clover style Tri-Clamp seal)
- SVS (Tuchenhagen VARIVENT® compatible seal
- SHP (Cherry-Burrell® "I" line style seal

- SLS (Dairy process connection - female thread)

EHEDG (Type EL Class I)

The following seals are EHEDG Type EL Class I approved and labeled:

- SCW (Tri-Clover style Tri-Clamp seal)
- VCS (In-line Tri-Clover style Tri-Clamp seal)
- SVS (Tuchenhagen VARIVENT compatible seal
- SLS (Dairy process connection - female thread)

Ensure gasket selected for installation is approved to meet both application and EHEDG certification requirements.

Hygienic fill fluids

The hygienic fill fluids glycerin and water and Propylene Glycol and water meet United States Pharmacopeia(USP) and Food Chemical Codex (FCC) requirements and is Generally Recognized as Safe (GRAS) in accordance with the FDA Code of Federal Regulations Title 21. The hygienic fill fluid Neobee M-20 is approved under 21CFR 172.856 as a direct food additive and under 21 CFR 174.5 as an indirect food additive. Tri-Therm 300 is registered by NSF as meeting FDA 21 CFR regulatory requirements and is acceptable for use where there is possibility of incidental food contact (HT 1).

Hygienic O-rings

The EPDM, Fluorocarbon (FMK), and Nitrilebutadiene (NBR) O-rings for the SSW Tank Spud Seal meet 3-A Hygienic Standard Number 18 Class 1 requirements. The EPDM O-ring also meets USP Class VI approval requirements.

Transmissible Spongiform Encephalopathy (TSE) Declaration

Emerson certifies no process wetted components used in hygienic seal products contain substances of animal origin. Materials used in the production or processing of wetted components for hygienic seals meet the requirements stated in EMA/410/01 Rev. 3 and ISO 22442-1:2015. Wetted components in hygienic seals are considered free of TSE.

Surface finish certification (Q16 option)

When ordering the Q16 option in the pressure transmitter model number, the surface finish of the seal diaphragm is certified per BPE 2002 requirements. This surface finish certification is available for Tri Clamp, Tri Clamp Inline, Tank Spud, and Thin Wall Tank Spud seal types.

NACE Standard (Q15 or Q25 option)

NACE (National Association of Corrosion Engineers) standard MR0175/ISO 15156 defines metallic material requirements for resistance to sulfide stress cracking when applied on petroleum production, drilling, gathering and flow line equipment, and field processing facilities to be used in H2S bearing hydrocarbon service. MR0103 provides material requirements exclusive to sour petroleum refining environments. Compliance guidelines are intended to include “wetted” materials as recommended by both NACE standards. The option code T in several of the general purpose seal types limits the wetted material offering. Metallurgical requirements for alloys used are virtually identical for the two standards, but application conditions enforced are different and can limit material acceptance. Contact an Emerson representative to aid in selecting the proper materials to meet the NACE standard.

Material traceability (Q8 Option)

Material traceability is provided for the seal, upper housing, and if applicable, lower housing/flushing connection or diaphragm extension, upon selecting the option code Q8 in the pressure transmitter model number. Material traceability for the transmitter/ seal system is provided per the DIN EN10204 3.1 standard, and is only available for general purpose seal types.

Performance specifications

For zero-based spans, reference conditions, silicone oil fill, glass-filled PTFE O-rings, SST materials, coplanar flange (Rosemount 3051SMV, 3051S_C) or ½–14 NPT (Rosemount 3051S_T) process connections, digital trim values set to equal range points.

Remote seal system performance calculation report (QZ Option)

Instrument Toolkit™ calculates the remote seal system performance and validates model number configuration.

When the QZ option code is specified within the pressure transmitter model structure, Emerson will generate a remote seal system calculation report for the given application. This report quantifies all aspects of remote seal system performance including seal temperature effects, head temperature effects, seal response time, and transmitter total probable error.

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Wetted materials

Seal	Gaskets
FFW	Thermo-Tork® TN-9000 gasket
EFW	No gasket is supplied
FCW	No gasket is supplied
FUW	No gasket is supplied
FVW	No gasket is supplied
RCW	Klinger C-4401 gasket
RFW	Klinger C-4401 gasket
RTW	Klinger C-4401 gasket
PFW	Thermo-Tork TN-9000 gasket
PCW	No gasket is supplied
SSW	Ethylene Propylene O-ring
STW	Ethylene Propylene O-ring
UCW	PTFE O-ring
UCP	Barium-sulfate Filled PTFE O-ring
WSP	Klinger C-4401 gasket
WBW	Klinger C-4401 gasket
WFW	Klinger C-4401 gasket
WTW	Klinger C-4401 gasket
WWW	Klinger C-4401 gasket

Tagging

The Rosemount 1199 Remote Seal model number is marked on the transmitter nameplate (neck or top label). The pressure transmitter will be tagged in accordance with customer requirements. The standard stainless steel tag is wired to the transmitter. Tag is 0.02-in. (0.051 cm) thick with 0.125-in. (0.318 cm) high letters. A permanently attached tag is available upon request.

Calibration

Transmitters are factory calibrated to customer's specified range. If calibration is not specified, then the transmitters are calibrated at maximum range. Calibration is performed at ambient temperature and pressure.

Product certifications

Rev: 0.1

Rosemount 3051S/3051SFx/3051S-ERS

Rev 2.2

European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

Ordinary Location Certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Installing Equipment in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

USA

E5 US Explosionproof (XP) and Dust-Ignitionproof (DIP)

Certificate	FM16US0090
Standards	FM Class 3600 - 2011, FM Class 3615 - 2006, FM Class 3616 - 2011, FM Class 3810 - 2005, ANSI/NEMA 250 - 2003
Markings	XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(–50 °C≤ T_a ≤ +85 °C); Factory Sealed; Type 4X

I5 US Intrinsic Safety (IS) and Nonincendive (NI)

Certificate	FM16US0089X
Standards	FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3611 - 2004, FM Class 3810 - 2005, NEMA® 250 - 2003
Markings	IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; Class 1, Zone 0 AEx ia IIC T4; NI CL 1, DIV 2, GP A, B, C, D; T4(–50 °C ≤ T_a ≤ +70 °C) [HART]; T4(–50 °C ≤ T_a ≤ +60 °C) [Fieldbus]; when connected per Rosemount drawing 03151-1006; Type 4X

Special Condition for Safe Use:

1. The Model 3051S/3051S-ERS Pressure Transmitter contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.

Note

Transmitters marked with NI CL 1, DIV 2 can be installed in Division 2 locations using general Division 2 wiring methods or Nonincendive Field Wiring (NIFW). See Drawing 03151-1006.

IE US FISCO Intrinsically Safe

Certificate	FM16US0089X
Standards	FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3611 - 2004, FM Class 3810 - 2005, NEMA 250 - 2003
Markings	IS CL I, DIV 1, GP A, B, C, D; T4(–50 °C ≤ T_a ≤ +60 °C); when connected per Rosemount drawing 03151-1006; Type 4X

Special Condition for Safe Use:

1. The Rosemount 3051S/3051S-ERS Pressure Transmitter contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.

Canada

E6 Canada Explosionproof, Dust-Ignitionproof, and Division 2

Certificate 1143113

Standards CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 213-M1987, ANSI/ISA 12.27.01-2003, CSA Std C22.2 No. 60529:05

Markings Explosionproof Class I, Division 1, Groups B, C, D; Dust-Ignitionproof Class II, Division 1, Groups E, F, G; Class III; suitable for Class I, Zone 1, Group IIB+H2, T5; suitable for Class I, Division 2, Groups A, B, C, D; suitable for Class I, Zone 2, Group IIC, T5; when connected per Rosemount drawing 03151-1013; Type 4X

I6 Canada Intrinsically Safe

Certificate 1143113

Standards CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 157-92, ANSI/ISA 12.27.01-2003, CSA Std C22.2 No. 60529:05

Markings Intrinsically Safe Class I, Division 1; Groups A, B, C, D; suitable for Class 1, Zone 0, IIC, T3C; when connected per Rosemount drawing 03151-1016 [3051S] 03151-1313 [ERS]; Type 4X

IF Canada FISCO

Certificate 1143113

Standards CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 30-M1986, CAN/CSA C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 157-92, ANSI/ISA 12.27.01-2003, CSA Std C22.2 No. 60529:05

Markings FISCO Intrinsically Safe Class I, Division 1; Groups A, B, C, D; suitable for Class 1, Zone 0, IIC, T3C; when connected per Rosemount drawing 03151-1016 [3051S] 03151-1313 [ERS]; Type 4X

Europe

E1 ATEX Flameproof

Certificate KEMA 00ATEX2143X

Standards EN 60079-0:2012+A11:2013, EN 60079-1:2014, EN 60079-26:2015

Markings Ⓔx II 1/2 G Ex db IIC T6...T4 Ga/Gb, T6(–60 °C ≤ T_a ≤ +70 °C), T5/T4(–60 °C ≤ T_a ≤ +80 °C)

Table 62: Process Temperature

Temperature class	Process temperature
T6	–60 °C to +70 °C
T5	–60 °C to +80 °C
T4	–60 °C to +120 °C

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between Category 1 (process connection) and Category 2 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions

to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.

I1 ATEX Intrinsic Safety

Certificate	BAS01ATEX1303X
Standards	EN 60079-0: 2012+A11:2013, EN 60079-11: 2012
Markings	Ⓔx II 1 G Ex ia IIC T4 Ga, T4(–60 °C ≤ T_a ≤ +70 °C)

Table 63: Input Parameters

	U_i	I_i	P_i	C_i	L_i
SuperModule	30 V	300 mA	1.0 W	30 nF	0
3051S...A; 3051SF...A; 3051SAL...C	30 V	300 mA	1.0 W	12 nF	0
3051S...F; 3051SF...F	30 V	300 mA	1.3 W	0	0
3051S ...A...M7, M8, or M9; 3051SF ...A...M7, M8, or M9; 3051SAL...C... M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	60 µH
3051SAL or 3051SAM	30 V	300 mA	1.0 W	12 nF	33 µH
3051SAL...M7, M8, or M9 3051SAM...M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	93 µH
RTD Option for 3051SF	5 V	500 mA	0.63 W	N/A	N/A

Special Conditions for Safe Use (X):

1. The Model 3051S Transmitters fitted with transient protection are not capable of withstanding the 500V test as defined in Clause 6.3.13 f EN 60079-11:2012. This must be taken into account during installation.
2. The terminal pins of the Model 3051S SuperModule must be provided with a degree of protection of at least IP20 in accordance with IEC/EN 60529.
3. The Model 3051S enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 area.

IA ATEX FISCO

Certificate	BAS01ATEX1303X
Standards	EN 60079-0: 2012+A11:2013, EN 60079-11: 2012
Markings	Ⓔx II 1 G Ex ia IIC T4 Ga, T4(–60 °C ≤ T_a ≤ +70 °C)

Table 64: Input Parameters

Parameter	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA

Table 64: Input Parameters *(continued)*

Power P_i	5.32 W
Capacitance C_i	0
Inductance L_i	0

Special Conditions for Safe Use (X):

1. The Model 3051S Transmitters fitted with transient protection are not capable of withstanding the 500 V test as defined in Clause 6.3.13 of EN 60079-11:2012. This must be taken into account during installation.
2. The terminal pins of the Model 3051S SuperModule must be provided with a degree of protection of at least IP20 in accordance with IEC/EN 60529.
3. The Model 3051S enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 area.

ND ATEX Dust

Certificate	BAS01ATEX1374X
Standards	EN 60079-0: 2012+A11:2013, EN 60079-31: 2009
Markings	Ⓔx II 1 D Ex ta IIIC T105 °C T_{500} 95 °C Da, (–20 °C ≤ T_a ≤ +85 °C), V_{max} = 42.4 V

Special Conditions for Safe Use (X):

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient temperature range of the apparatus and capable of withstanding a 7J impact test.
4. The SuperModule(s) must be securely screwed in place to maintain the ingress protection of the enclosure(s).

N1 ATEX Type n

Certificate	BAS01ATEX3304X
Standards	EN 60079-0: 2012+A11:2013, EN 60079-15: 2010
Markings	Ⓔx II 3 G Ex nA IIC T5 Gc, (–40 °C ≤ T_a ≤ +85 °C), V_{max} = 45 V

Special Condition for Safe Use (X):

1. The equipment is not capable of withstanding the 500 V insulation test required by clause 6.5 of EN 60079-15:2010. This must be taken into account when installing the equipment.

Note
RTD Assembly is not included with the 3051SFx Type n Approval.

International

E7 IECEx Flameproof and Dust

Certificate	IECEx KEM 08.0010X (Flameproof)
Standards	IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-26:2014
Markings	Ex db IIC T6...T4 Ga/Gb, T6(–60 °C ≤ T_a ≤ +70 °C), T5/T4(–60 °C ≤ T_a ≤ +80 °C)

Table 65: Process Temperature

Temperature class	Process temperature
T6	–60 °C to +70 °C
T5	–60 °C to +80 °C
T4	–60 °C to +120 °C

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic buildup on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.

Certificate IECEx BAS 09.0014X (Dust)

Standards IEC 60079-0:2011, IEC 60079-31:2008

Markings Ex ta IIIC T105 °C T50095 °C Da, (–20 °C ≤ T_a ≤ +85 °C), V_{max} = 42.4 V

Special Conditions for Safe Use (X):

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient temperature range of the apparatus and capable of withstanding a 7J impact test.
4. The 3051S SuperModule must be securely screwed in place to maintain the ingress protection of the enclosure.

I7 IECEx Intrinsic Safety

Certificate IECEx BAS 04.0017X

Standards IEC 60079-0: 2011, IEC 60079-11: 2011

Markings Ex ia IIC T4 Ga, T4(–60 °C ≤ T_a ≤ +70 °C)

Table 66: Input Parameters

	U_i	I_i	P_i	C_i	L_i
SuperModule	30 V	300 mA	1.0 W	30 nF	0
3051S...A; 3051SF...A; 3051SAL...C	30 V	300 mA	1.0 W	12 nF	0
3051S...F; 3051SF...F	30 V	300 mA	1.3 W	0	0
3051S ...A...M7, M8, or M9; 3051SF ...A...M7, M8, or M9; 3051SAL...C... M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	60 µH

Table 66: Input Parameters *(continued)*

	U_i	I_i	P_i	C_i	L_i
3051SAL or 3051SAM	30 V	300 mA	1.0 W	12 nF	33 µH
3051SAL...M7, M8, or M9 3051SAM...M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	93 µH
RTD Option for 3051SF	5 V	500 mA	0.63 W	N/A	N/A

Special Conditions for Safe Use (X):

1. The Model 3051S Transmitters fitted with transient protection are not capable of withstanding the 500 V test as defined in Clause 6.3.13 of EN 60079-11:2012. This must be taken into account during installation.
2. The terminal pins of the Model 3051S SuperModule must be provided with a degree of protection of at least IP20 in accordance with IEC/EN 60529.
3. The Model 3051S enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 area.

I7 IECEx Intrinsic Safety - Group I - Mining (I7 with Special A0259)

Certificate	IECEx TSA 14.0019X
Standards	IEC 60079-0: 2011, IEC 60079-11: 2011
Markings	Ex ia I Ma (–60 °C ≤ T_a ≤ +70 °C)

Table 67: Input Parameters

	U_i	I_i	P_i	C_i	L_i
SuperModule	30 V	300 mA	1.0 W	30 nF	0
3051S...A; 3051SF...A; 3051SAL...C	30 V	300 mA	1.0 W	12 nF	0
3051S...F; 3051SF...F	30 V	300 mA	1.3 W	0	0
3051S ...A...M7, M8, or M9; 3051SF ...A...M7, M8, or M9; 3051SAL...C... M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	60 µH
3051SAL or 3051SAM	30 V	300 mA	1.0 W	12 nF	33 µH
3051SAL...M7, M8, or M9 3051SAM...M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	93 µH
RTD Option for 3051SF	5 V	500 mA	0.63 W	N/A	N/A

Special Conditions for Safe Use (X):

1. If the apparatus is fitted with optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by Clause 6.3.13 of IEC60079-11. This must be taken into account when installing the apparatus.
2. It is a condition of safe use that the above input parameters shall be taken into account during installation.
3. It is a condition of manufacture that only the apparatus fitted with housing, covers and sensor module housing made out of stainless steel are used in Group I applications.

IG IECEx FISCO

Certificate	IECEx BAS 04.0017X
Standards	IEC 60079-0: 2011, IEC 60079-11: 2011

Markings Ex ia IIC T4 Ga, T4(–60 °C ≤ T_a ≤ +70 °C)

Table 68: Input Parameters

Parameter	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0
Inductance L_i	0

Special Conditions for Safe Use (X):

1. The Model 3051S Transmitters fitted with transient protection are not capable of withstanding the 500 V test as defined in Clause 6.3.13 of EN 60079-11:2012. This must be taken into account during installation.
2. The terminal pins of the Model 3051S SuperModule must be provided with a degree of protection of at least IP20 in accordance with IEC/EN 60529.
3. The Model 3051S enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 area.

IG IECEx Intrinsic Safety - Group I - Mining (IG with Special A0259)

Certificate IECEx TSA 04.0019X

Standards IEC 60079-0: 2011, IEC 60079-11: 2011

Markings FISCO FIELD DEVICE Ex ia I Ma , (–60 °C ≤ T_a ≤ +70 °C)

Table 69: Input Parameters

Parameter	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0
Inductance L_i	0

Special Conditions for Safe Use (X):

1. If the apparatus is fitted with optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by Clause 6.3.13 of IEC60079-11. This must be taken into account when installing the apparatus.
2. It is a condition of safe use that the above input parameters shall be taken into account during installation.
3. It is a condition of manufacture that only the apparatus fitted with housing, covers and sensor module housing made out of stainless steel are used in Group I applications.

N7 IECEx Type n

Certificate IECEx BAS 04.0018X

Standards IEC 60079-0: 2011, IEC 60079-15: 2010

Markings Ex nA IIC T5 Gc,(–40 °C ≤ T_a ≤ +85 °C)

Special Condition for Safe Use (X):

1. The equipment is not capable of withstanding the 500 V insulation test required by clause 6.5 of EN 60079-15:2010. This must be taken into account when installing the equipment.

Brazil

E2 INMETRO Flameproof

Certificate	UL-BR 15.0393X
Standards	ABNT NBR IEC 60079-0:2008 + Corrigendum 1:2011, ABNT NBR IEC 60079-1:2009 + Corrigendum 1:2011, ABNT NBR IEC 60079-26:2008 + Corrigendum 1: 2008
Markings	Ex db IIC T* Ga/Gb, T6(–60 °C ≤ T_a ≤ +70 °C), T5/T4(–60 °C ≤ T_a ≤ +80 °C), IP66

Special Conditions for Safe Use (X):

1. The device contains a thin wall diaphragm less than 1mm thick that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment).The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic buildup on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

I2/IB INMETRO Intrinsic Safety/FISCO

Certificate	UL-BR 15.0392X
Standards	ABNT NBR IEC 60079-0:2013, ABNT NBR IEC 60079-11:2013
Markings	Ex ia IIC T4 Ga (–60 °C ≤ T_a ≤ +70 °C), IP66

Special Conditions for Safe Use (X):

1. The surface resistivity of the antenna is greater than 1 GΩ. To avoid electrostatic charge buildup, it must not be rubbed or cleaned with solvents or a dry cloth.
2. The Model 701PBKKF Power Module may be replaced in a hazardous area. The Power Module has a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge buildup.
3. The 3051S enclosure may be made of aluminium alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in areas that requires EPL Ga.

Table 70: Input Parameters

	U_i	I_i	P_i	C_i	L_i
SuperModule	30 V	300 mA	1.0 W	30 nF	0
3051S...A; 3051SF...A; 3051SAL...C	30 V	300 mA	1.0 W	12 nF	0
3051S...F; 3051SF...F	30 V	300 mA	1.3 W	0	0
3051S...F...IB; 3051SF...F...IB	17.5 V	380mA	5.32W	0	0
3051S ...A...M7, M8, or M9; 3051SF ...A...M7, M8, or M9; 3051SAL...C... M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	60 µH

Table 70: Input Parameters *(continued)*

	U_i	I_i	P_i	C_i	L_i
3051SAL or 3051SAM	30 V	300 mA	1.0 W	12 nF	33 µH
3051SAL... M7, M8, or M9 3051SAM... M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	93 µH
RTD Option for 3051SF	5 V	500 mA	0.63 W	N/A	N/A

China

E3 China Flameproof and Dust Ignition-proof

Certificate 3051S: GYJ16.1249X
3051SFx: GYJ16.1466X
3051S-ERS: GJY15.1406X

Standards 3051S: GB3836.1-2010, GB3836.2-2010, GB3836.20-2010, GB12476.1-2013, GB12476.5-2013
3051SFx: GB3836.1-2010, GB3836.2-2010, GB3836.20-2010, GB12476.1-2013, GB 12476.5-2013
3051S-ERS: GB3836.1-2010, GB3836.2-2010, GB3836.20-2010

Markings 3051S: Ex d IIC T6...T4; Ex tD A20 T105 °C T_{500}95 °C; IP66
3051SFx: Ex d IIC T4~T6 Ga/Gb; Ex tD A20 IP66 T105 °CT_{500}95 °C; IP66
3051S-ERS: Ex d IIC T4~T6 Ga/Gb

I3 China Intrinsic Safety

Certificate 3051S: GYJ16.1250X[Mfg USA, China, Singapore]
3051SFx: GYJ16.1465X [Mfg USA, China, Singapore]
3051S-ERS: GYJ16.1248X [Mfg USA, China, Singapore]

Standards 3051S: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
3051SFx: GB3836.1/4-2010, GB3836.20-2010, GB12476.1-2013, GB12476.5-2013
3051S-ERS: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010

Markings 3051S: Ex ia IIC T4 Ga
3051SFx: Ex ia IIC T4 Ga, Ex tD A20 IP66 T105 °CT_{500}95 °C
3051S-ERS: Ex ia IIC T4 Ga

N3 China Type n

Certificate 3051S, 3051SHP: GYJ17.1354X
3051SFX: GYJ17.1355X

Markings Ex nA IIC T5 Gc

EAC - Belarus, Kazakhstan, Russia

EM Technical Regulation Customs Union (EAC) Flameproof and Dust Ignition-proof

Certificate RU C-US.AA87.B.00378

Markings Ga/Gb Ex d IIC T6...T4 X
Ex tb IIIC T105 °C T_{500}95 °C Db X
Ex ta IIIC T105 °C T_{500}95 °C Da X

IM Technical Regulation Customs Union (EAC) Intrinsic Safety

Certificate RU C-US.AA87.B.00378

Markings 0Ex ia IIC T4 Ga X

IN Technical Regulation Customs Union (EAC) Intrinsic Safety

Certificate: RU C-US.AA87.B.00378

Markings: 0Ex ia IIC T4 Ga X

Japan

E4 Japan Flameproof

Certificate TC15682, TC15683, TC15684, TC15685, TC15686, TC15687, TC15688, TC15689, TC15690, TC17099, TC17100, TC17101, TC17102, TC18876

3051ERS: TC20215, TC20216, TC20217, TC20218, TC20219, TC20220, TC20221

Markings Ex d IIC T6 Ga/Gb

Temperature class	Ambient temperature	Process temperature
T6	-40 °C to +70 °C	-60 °C to +70 °C

Special Conditions for Safe Use:

1. This device contains a thin wall diaphragm less than 1mm thickness that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall consider the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions fr installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

Republic of Korea

EP Republic of Korea Flameproof

Certificate 12-KB4BO-0180X [Mfg USA], 11-KB4BO-0068X [Mfg Singapore]

Markings Ex d IIC T6...T4

IP Republic of Korea Intrinsic Safety

Certificate 12-KB4BO-0202X [HART - Mfg USA],12-KB4BO-0204X [Fieldbus - Mfg USA], 12-KB4BO-0203X [HART - Mfg Singapore], 13-KB4BO-0296X [Fieldbus - Mfg Singapore]

Markings Ex ia IIC T4

Combinations

K1 Combination of E1, I1, N1, and ND

K2 Combination of E2 and I2

K5	Combination of E5 and I5
K6	Combination of E6 and I6
K7	Combination of E7, I7, and N7
KA	Combination of E1, I1, E6, and I6
KB	Combination of E5, I5, E6, and I6
KC	Combination of E1, I1, E5, and I5
KD	Combination of E1, I1, E5, I5, E6, and I6
KG	Combination of IA, IE, IF, and IG
KM	Combination of EM and IM
KP	Combination of EP and IP

Additional Certifications

SBS American Bureau of Shipping (ABS) Type Approval

Certificate 17-RJ1679518-PDA

Intended Use Measure gauge or absolute pressure of liquid, gas or vapor applications on ABS classed vessels, marine, and offshore installations.

SBV Bureau Veritas (BV) Type Approval

Certificate 31910 BV

Requirements Bureau Veritas Rules for the Classification of Steel Ships

Application Class Notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.

SDN Det Norske Veritas (DNV) Type Approval

Certificate TAA00000K9

Intended Use Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft, and Det Norske Veritas' Offshore Standards

Application

Location classes	
Type	3051S
Temperature	D
Humidity	B
Vibration	A
EMC	A
Enclosure	D/IP66/IP68

SLL Lloyds Register (LR) Type Approval

Certificate 11/60002

Application Environmental categories ENV1, ENV2, ENV3, and ENV5

D3 Custody Transfer - Measurement Canada Accuracy Approval [3051S Only]

Certificate	AG-0501, AV-2380C

Rosemount 3051S and 3051SMV Wireless

Rev 2.4

European directive information

A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EC Declaration of Conformity can be found at Emerson.com/Rosemount.

Telecommunication Compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification.

Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

Ordinary location certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Installing Equipment in North America

The US National Electrical Code (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

USA

I5 USA Intrinsically Safe (IS), Nonincendive (NI), and Dust-Ignitionproof (DIP)

Certificate	FM18US0009X
Standards	FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005, NEMA® 250 – 2003
Markings	IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; CL III T4; CL 1, Zone 0 AEx ia IIC T4; NI CL 1, DIV 2, GP A, B, C, D T4; DIP CL II, DIV 1, GP E, F, G; CL III, T5; T4(–50 °C ≤ Ta ≤ +70 °C)/ T5(–50 °C ≤ Ta ≤ +85 °C); when connected per Rosemount drawing 03151-1000; Type 4X

Special Conditions for Safe Use (X):

1. The Rosemount 3051S and SMV Wireless Transmitters shall only be used with the 701PBKKF Rosemount SmartPower Battery Pack (P/N 00753-9220-0001), Computational Systems Inc Battery Pack (P/N MHM-89004) or alternatively the Perpetuum Intelligent Power Module Vibration Harvester (P/N IPM71008).
2. The transmitter may contain more than 10% aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.
3. The surface resistivity of the antenna is greater than 1GΩ. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

Canada

I6 Canada Intrinsically Safe

Certificate	CSA 1143113
Standards	CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 30-M1986, CAN/CSA C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 157-92, ANSI/ISA 12.27.01-2003, CSA Std C22.2 No. 60529:05
Markings	Intrinsically Safe Class I, Division 1; suitable for Class 1, Zone 0, IIC, T3C; when connected per Rosemount drawing 03151-1010; Type 4X

Europe

I1 ATEX Intrinsic Safety

Certificate	Baseefa13ATEX0127X
Standards	EN 60079-0: 2012, EN 60079-11: 2012
Markings	Ex II 1 G Ex ia IIC T4 Ga, T4(–60 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. The Rosemount 3051S Wireless and Rosemount 3051SMV Wireless enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 area.
2. The surface resistivity of the antenna is greater than 1 GΩ. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or dry cloth.

International

I7 IECEx Intrinsic Safety

Certificate	IECEx BAS 13.0068X
Standards	IEC 60079-0:2011, IEC 60079-11:2011
Markings	Ex ia IIC T4 Ga, T4(–60 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. The Rosemount 3051S Wireless and Rosemount 3051SMV Wireless enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 area.
2. The surface resistivity of the antenna is greater than 1GΩ . To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or dry cloth.

Brazil

I2 INMETRO Intrinsic Safety

Certificate	UL-BR 14.0760X
Standards	ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-11: 2009
Markings	Ex ia IIC T4 Ga, T4(–60 °C ≤ T_a ≤ +70 °C)

Special Condition for Safe Use (X):

1. See certificate.

China

I3 China Intrinsic Safety

Certificate	3051S Wireless: GYJ161250X 3051SFX: GYJ16.1465X [flow meters]
Standards	GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
Markings	Ex ia IIC T4 Ga, T4(–60~70 °C)

Special Condition for Safe Use (X):

1. See appropriate certificate.

Note
Not currently available on the Rosemount 3051S MultiVariable Wireless Transmitter.

Japan

I4 TIIS Intrinsically Safe

Certificate	TC18649, TC18650, TC18657
Markings	Ex ia IIC T4, T4(–20~60 °C)

Note
Not currently available on the Rosemount 3051S MultiVariable Wireless Transmitter.

EAC - Belarus, Kazakhstan, Russia

IM EAC Intrinsic Safety

Certificate	TC RU C-US.AA87.B.00378
Markings	0Ex ia IIC T4 Ga X (–60 °C ≤ T_a ≤ +70 °C)

Special Condition for Safe Use (X):

1. See certificate for special conditions.

Note
Not currently available on the Rosemount 3051S MultiVariable Wireless Transmitter.

Republic of Korea

IP Korea Intrinsic Safety

Certificates	12-KB4BO-0202X, 12-KB4BO-0203X
Markings	Ex ia IIC T4, (–60 °C ≤ T_a ≤ +70 °C)

Note
Not currently available on the Rosemount 3051S MultiVariable Wireless Transmitter.

Special Condition for Safe Use (X):

1. See certificate for special conditions.

Combinations

KQ	Combination of I1, I5, and I6

Rosemount™ 3051 product certifications

Rev 2.6

European directive information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

Ordinary location certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

North America

E5 USA Explosionproof (XP) and Dust-Ignitionproof (DIP) Range 1–5

Range 1-5 Certificate	FM16US0121
Standards	FM Class 3600 - 2011, FM Class 3615 - 2006, FM Class 3810 - 2005, ANSI/NEMA 250 - 2003
Markings	XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(–50 °C ≤ T_a ≤ +85 °C); Factory Sealed; Type 4X
Range 6 Certificate	1053834
Standards	ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30 -M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2 No. 213 - M1987
Markings	XP Class I, Division 1, Groups B, C and D, T5, (–50 °C ≤ Ta ≤ +85 °C) Suitable for Class I, Zone 1, Group IIB+H2, T5; DIP Class II and Class III, Division 1, Groups E, F and G, T5, (–50 °C ≤ Ta ≤ +85 °C);Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

I5 FM Intrinsic Safety (IS) and Nonincendive (NI)

Range 1-5 Certificate	FM16US0120X
Standards	FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3611 - 2004, FM Class 3810 - 2005, ANSI/NEMA 250 - 2008
Markings	IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 03031-1019; NI CL 1, DIV 2, GP A, B, C, D; T4(–50 °C≤ T_a ≤ +70 °C) [HART]; T4(–50 °C ≤ T_a ≤ +60 °C) [Fieldbus/ PROFIBUS]; Type 4x

Special Conditions for Safe Use (X):

1. The Rosemount 3051 Transmitter housing contains aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.
2. The Rosemount 3051 Transmitter with the transient terminal block (option code T1) will not pass the 500 Vrms dielectric strength test and this must be taken into account during installation.

Range 6

Certificate 1053834

Standards ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2. No.157-92

Markings IS Class I, II, III, Division 1 Groups A, B, C, D, E, F, and G when connected in accordance with Rosemount drawing 03031-1024, Suitable for Class I, Zone 0 Group IIC;
Class I, Division 2, Groups A, B, C and D; NIFW; Suitable for Class I Zone 2, Group IIC;
HART T4 (–60 °C ≤ T_a ≤ 70 °C); T5 (–60 °C ≤ T_a ≤ 40 °C)
Fieldbus/PROFIBUS: T4 (–60 °C ≤ T_a ≤ 60 °C)
Type 4X

IE USA FISCO

Range 1–5 Certificate FM16US0120X

Standards FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3611 - 2004, FM Class 3810 - 2005

Markings IS CL I, DIV 1, GP A, B, C, D when connected per Rosemount drawing 03031-1019 (–50 °C≤ T_a ≤ +60 °C); Type 4x

Special Conditions for Safe Use (X):

1. The Rosemount 3051 Transmitter housing contains aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.
2. The Rosemount 3051 Transmitter with the transient terminal block (option code T1) will not pass the 500 Vrms dielectric strength test and this must be taken into account during installation.

Range 6 Certificate 1053834

Standards ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2. No.157-92

Markings IS Class I, Division 1 Groups A, B, C, D, T4 (–60 °C≤ T_a ≤ +60 °C) when connected in accordance with Rosemount drawing 03031-1024, Suitable for Class I, Zone 0 Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

C6 Canada Explosionproof, Dust-Ignitionproof, Intrinsic Safety and Nonincendive

Certificate 1053834

Standards ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30 -M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2. No.157-92, CSA Std. C22.2 No. 213 - M1987

Markings Explosionproof for Class I, Division 1, Groups B, C and D; Suitable for Class I, Zone 1, Group IIB+H2, T5 (–50 °C≤ T_a ≤ 85 °C); Dust-Ignitionproof Class II, III, Division 1, Groups E, F, G, T5 (–50 °C ≤ T_a ≤ 85 °C); Class III Division 1; Intrinsically Safe Class I, Division 1 Groups A, B, C, D when connected in accordance with Rosemount drawing 03031-1024, Temperature Code T4; Suitable for Class I, Zone 0; Class I Division 2 Groups A, B, C and D, T5 (–50 °C ≤ T_a ≤ 85 °C); Suitable for Class I Zone 2, Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

E6 Canada Explosionproof, Dust-Ignitionproof and Division 2

Certificate 1053834

Standards ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30 -M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2 No. 213 - M1987

Markings Explosionproof Class I, Division 1, Groups B, C and D; Suitable for Class I, Zone 1, Group IIB+H2, T5;Dust-Ignitionproof for Class II and Class III, Division 1, Groups E, F and G; T5 (–50 °C ≤ T_a ≤ 85 °C);Class I, Division 2, Groups A, B, C and D; T5; Suitable for Class I Zone 2, Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

Europe

E8 ATEX Flameproof and Dust

Certificate KEMA00ATEX2013X; Baseefa11ATEX0275X

Standards EN60079-0:2012 + A11:2013, EN60079-1:2014, EN60079-26:2015, EN60079-31:2009

Markings Ex II 1/2 G Ex db IIC T6...T4 Ga/Gb, T6 (–60 °C ≤ T_a ≤+70 °C), T4/T5(–60 °C ≤ T_a ≤ +80 °C);
Ex II 1 D Ex ta IIIC T95 °C T_{500}≤$_a$105 °C Da (–20 °C ≤ T +85 °C)

Table 71: Process Temperature

Temperature class	Process temperature
T6	–60 to +70 °C
T5	–60 to +80 °C
T4	–60 to +120 °C

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between Category 1 (process connection) and Category 2 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance, and use the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

I1 ATEX Intrinsic Safety and Dust

Certificate BAS97ATEX1089X; Baseefa11ATEX0275X

Standards EN60079-0:2012 + A11:2013, EN60079-11:2012, EN60079-31:2014

Markings HART: Ex II 1 G Ex ia IIC T5/T4 Ga, T5 (–60 °C ≤ T_a ≤ +40 °C), T4(–60 °C ≤ T_a ≤ +70 °C) Fieldbus/PROFIBUS: Ex II 1 G Ex ia IIC Ga T4(–60°C ≤ T_a ≤ +60°C) DUST: Ex II 1 D Ex ta IIIC T95 °C T_{500} 105 °C Da (–20 °C ≤ T_a ≤ +85 °C)

Table 72: Input Parameters

Parameter	HART	Fieldbus/PROFIBUS
Voltage U_i	30 V	30 V
Current I_i	200 mA	300 mA
Power P_i	0.9 W	1.3 W
Capacitance C_i	0.012 µF	0 µF
Inductance L_i	0 mH	0 mH

Special Conditions for Safe Use (X):

1. The apparatus is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of EN60079-11:2012. This must be taken into account when installing the apparatus.

2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact or abrasion if located in Zone 0.
3. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

IA ATEX FISCO

Certificate	BAS97ATEX1089X
Standards	EN60079-0:2012 + A11:2013, EN60079-11:2012
Markings	Ⓔx II 1 G Ex ia IIC T4 Ga (–60 °C ≤ Ta ≤ +60 °C)

Table 73: Input Parameters

Parameter	Fieldbus/PROFIBUS
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	≤5 nF
Inductance L_i	≤10 µH

Special Conditions for Safe Use (X):

1. The apparatus is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of EN60079-11: 2012. This must be taken into account when installing the apparatus.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion of located in Zone 0.

N1 ATEX Type n and Dust

Certificate	BAS00ATEX3105X; Baseefa11ATEX0275X
Standards	EN60079-0:2012 + A11:2013, EN60079-15:2010, EN60079-31:2014
Markings	Ⓔx II 3 G Ex nA IIC T5 Gc (–40 °C ≤ Ta ≤ +70 °C); Ⓔx II 1 D Ex ta IIIC T95 °C T_{500}105 °C Da (–20 °C ≤ Ta ≤ +85 °C)

Special Conditions for Safe Use (X):

1. This apparatus is not capable of withstanding the 500 V insulation test that is required by clause 6.8.1 of EN60079-15. This must be taken into account when installing the apparatus.
2. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

International

E7 IECEx Flameproof and Dust

Certificate	IECEx KEM 09.0034X; IECEx BAS 10.0034X
Standards	IEC60079-0:2011, IEC60079-1:2014-06, IEC60079-26:2014-10,IEC60079-31:2013
Markings	Ex db IIC T6...T4 Ga/Gb, T6(–60 °C ≤ T_a ≤ +70 °C), T4/T5(–60 °C ≤ T_a ≤ +80 °C); Ex ta IIIC T95 °C T_{500}105 °C Da (–20 °C ≤ T_a ≤ +85 °C)

Table 74: Process Temperature

Temperature class	Process temperature
T6	–60 °C to +70 °C
T5	–60 °C to +80 °C
T4	–60 °C to +80 °C

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance, and use the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

I7 IECEx Intrinsic Safety

Certificate	IECEx BAS 12.0124X
Standards	IEC 60079-0: 2011, IEC 60079-11: 2011
Markings	Ex ia IIC T4 Ga, T4(–40 °C ≤ T_a ≤ +70 °C) IP66/IP68

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

IA IECEx FISCO

Certificate	IECEx BAS 09.0076X
Standards	IEC60079-0:2011, IEC60079-11:2011
Markings	Ex ia IIC T4 Ga (–60 °C ≤ T_a ≤ + 60 °C)

Table 75: Input Parameters

Parameter	Fieldbus/ PROFIBUS
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	≤5 nF
Inductance L_i	≤10 µH

Special Conditions for Safe Use (X):

1. If the apparatus is fitted with an optional 90V transient suppressor, it is not capable of withstanding the 500V insulation test required by clause 6.3.12 of IEC 60079-11. This must be taken into account when installing the apparatus.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in Zone 0.

N7 IECEx Type n

Certificate	IECEx BAS 09.0077X
Standards	IEC60079-0:2011, IEC60079-15:2010
Markings	Ex nA IIC T5 Gc (–40 °C ≤ T_a ≤ +70 °C)

Special Condition for Safe Use (X):

1. The apparatus is not capable of withstanding the 500 V insulation test required by clause 6.5.1 of IEC60079-15. This must be taken into account when installing the apparatus.

Brazil

E2 INMETRO Flameproof

Certificate	UL-BR 13.0643X
Standards	ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-1:2009 + Errata 1:2011, ABNT NBRIEC60079-26:2008 + Errata 1:2008
Markings	Ex db IIC T6...T4 Ga/Gb, T6(–60 °C ≤ T_a ≤ +70 °C), T4/T5(–60 °C ≤ T_a ≤ +80 °C)

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

I2 INMETRO Intrinsic Safety

Certificate	UL-BR 13.0534X
Standards	ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-11:2009
Markings	Ex ia IIC T4 IP66 Ga, T4(–40 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions .

IB INMETRO FISCO

Certificate	UL-BR 13.0584X
Standards	ABNT NBR IEC60079-0:2013, ABNT NBR IEC60079-11:2013
Markings	Ex ia IIC T4 Ga (-60 °C ≤ Ta ≤ +60 °C)

Table 76: Input Parameters

Parameter	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	≤5 nF
Inductance L_i	≤10 µH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by ABNT NBR IEC 60079-11. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if equipment requires EPL Ga.

China

E3 China Flameproof

Certificate GYJ14.1041X; GYJ15.1368X [Flow Meters]

Standards GB12476-2000; GB3836.1-2010, GB3836.2-2010, GB3836.20-2010

Markings 3051 Series: Ex d IIC T6/T5 Ga/Gb, DIP A21 T_A90 °C IP66
3051CF Series: Ex d IIC T5/T6 Ga/Gb

I3 China Intrinsic Safety

Certificate GYJ13.1362X; GYJ15.1367X [Flow Meters]

Standards GB3836.1-2010, GB3836.4-2010, GB3836.20-2010, GB12476.1-2000

Markings 3051 Series: Ex ia IIC T4/T5 Ga, DIP A20 T_A 80 °C IP66
3051 CF Series: Ex ia IIC T4/T5 Ga

N3 China Type n

Certificate GYJ15.1105X

Standards GB3836.1-2010, GB3836.8-2003

Markings Ex nA nL IIC T5 Gc (-40 °C ≤ Ta ≤ +70 °C)

Japan

E4 Japan Flameproof

Certificate TC20577, TC20578, TC20583, TC20584 [HART]; TC20579, TC20580, TC20581, TC20582 [Fieldbus]

Markings Ex d IIC T5

Republic of Korea

EP Republic of Korea Flameproof

Certificate 11-KB4BO-0188X [Mfg Singapore]

Markings Ex d IIC T6...T4

IP Republic of Korea Intrinsic Safety

Certificate 13-KB4BO-0203X [HART – Mfg USA], 13-KB4BO-0204X [Fieldbus – Mfg USA], 10-KB4BO-0138X [HART – Mfg Singapore], 13-KB4BO-0206X [Fieldbus – Mfg Singapore]

Markings Ex ia IIC T5/T4 (HART); Ex ia IIC T4 (Fieldbus)

Technical Regulations Customs Union (EAC)

EM EAC Flameproof

Markings Ga/Gb Ex d IIC T4... T6 X,
T4/T5(–60 °C ≤ T_a ≤ +80 °C),
T6(–60 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

IM EAC Intrinsically Safe

Markings HART: 0Ex ia IIC T4/T5 Ga X, T4(–60 °C ≤ T_a ≤ +70 °C), T5(–60 °C ≤ T_a ≤ +40 °C) Fieldbus/PROFIBUS: 0Ex ia IIC T4 Ga X (–60 °C ≤ T_a ≤ +60 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Combinations

K2	Combination of E2 and I2
K5	Combination of E5 and I5
K6	Combination of C6, E8, and I1
K7	Combination of E7, I7, and N7
K8	Combination of E8, I1, and N1
KB	Combination of E5, I5, and C6
KD	Combination of E8, I1, E5, I5, and C6
KM	Combination of EM and IM
KP	Combination of EP and IP

Conduit plugs and adapters

Additional certifications

Rosemount™ 2051 Product Certifications

Rev 1.11

European directive information

A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EC Declaration of Conformity can be found at www.Emerson.com.

Ordinary Location Certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous location certifications

Note
Device ambient temperature ratings and electrical parameters may be limited to the levels dictated by the hazardous location certificate parameters.

North America

E5 USA Explosionproof (XP) and Dust-Ignitionproof (DIP)

Certificate FM16US0232

Standards FM Class 3600 – 2011, FM Class 3615 – 2006, FM Class 3616 – 2011, FM Class 3810 – 2005, ANSI/NEMA 250 – 2008. ANSI/IEC 60529 2004

Markings XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(-50 °C ≤ T_a ≤ +85 °C); Factory Sealed; Type 4X

I5 USA Intrinsic Safety (IS) and Nonincendive (NI)

Certificate FM16US0231X

Standards FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005, ANSI/NEMA 250 – 2008

Markings IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 02051-1009; Class I, Zone 0; AEx ia IIC T4; NI CL 1, DIV 2, GP A, B, C, D; T4(-50 °C ≤ T_a ≤ +70 °C); Type 4x

Special Condition for Safe Use (X):

1. The Model 2051 transmitter housing contains aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.

IE USA FISCO

Certificate FM16US0231X

Standards FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005

Markings IS CL I, DIV 1, GP A, B, C, D when connected per Rosemount drawing 02051-1009 (-50°C ≤ T_a ≤ +60°C); Type 4x

Special Condition for Safe Use (X):

1. The Model 2051 transmitter housing contains aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.

E6 Canada Explosion-Proof, Dust Ignition Proof

Certificate 2041384

Standards CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No.142-M1987, CAN/CSA-C22.2 No.157-92, CSA Std C22.2 No. 213-M1987, CAN/CSA-E60079-0:07, CAN/CSA-E60079-1:07, CAN/CSA-E60079-11-02, CAN/CSA-C22.2 No. 60529:05, ANSI/ISA-12.27.01–2003

Markings Explosion-Proof for Class I, Divisions 1, Groups B, C, and D. Dust-Ignition Proof for Class II and Class III, Division 1, Groups E, F, and G. Suitable for Class I, Division 2; Groups A, B, C, and D for indoor and outdoor hazardous locations. Class I Zone 1 Ex d IIC T5. Enclosure type 4X, factory sealed. Single Seal.

I6 Canada Intrinsic Safety

Certificate 2041384

Standards CSA Std. C22.2 No. 142 - M1987, CSA Std. C22.2 No. 213 - M1987, CSA Std. C22.2 No. 157 - 92, CSA Std. C22.2 No. 213 - M1987, ANSI/ISA 12.27.01 – 2003, CAN/CSA-E60079-0:07, CAN/CSA-E60079-11:02

Markings Intrinsically safe for Class I, Division 1, Groups A, B, C, and D when connected in accordance with Rosemount drawing 02051-1008. Ex ia IIC T3C. Single Seal. Enclosure Type 4X

IF Canada FISCO

Certificate 2041384

Standards CSA Std. C22.2 No. 142 - M1987, CSA Std. C22.2 No. 213 - M1987, CSA Std. C22.2 No. 157 - 92, CSA Std. C22.2 No. 213 - M1987, ANSI/ISA 12.27.01 – 2003, CAN/CSA-E60079-0:07, CAN/CSA-E60079-11:02

Markings Intrinsically safe for Class I, Division 1, Groups A, B, C, and D when connected in accordance with Rosemount drawing 02051-1008. Ex ia IIC T3C. Single Seal. Enclosure Type 4X

Europe

E1 ATEX Flameproof

Certificate KEMA 08ATEX0090X

Standards EN 60079-0:2012 + A11:2013, EN 60079-1:2014, EN 60079-26:2015

Markings Ⓔx II 1/2 G Ex db IIC Ga/Gb T6(–60 °C ≤ T_a ≤ +70 °C), T4/T5 (–60 °C ≤ T_a ≤ +80 °C)

Table 77: Process Connection Temperature

Temperature class	Process temperature	Ambient temperature
T6	-60 °C to +70 °C	-60 °C to +70 °C
T5	-60 °C to +80 °C	-60 °C to +80 °C
T4	-60 °C to +120 °C	-60 °C to +80 °C

Special Conditions for Safe Use (X):

1. Appropriate cable, glands and plugs need to be suitable for a temperature of 5°C greater than maximum specified temperature for location where installed.
2. Non- standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
3. The device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm shall be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
4. Flameproof joints are not intended for repair.

I1 ATEX Intrinsic Safety

Certificate Baseefa08ATEX0129X

Standards	EN60079-0:2012+A11:2013, EN60079-11:2012
Markings	⟨Ex⟩II 1 G Ex ia IIC T4 Ga (–60 °C ≤ T_a ≤ +70 °C)

Table 78: Input Parameters

Input parameter	HART®	Fieldbus/PROFIBUS®
Voltage U_i	30 V	30 V
Current I_i	200 mA	300 mA
Power P_i	1 W	1.3 W
Capacitance C_i	0.012 µF	0 µF
Inductance L_i	0 mH	0 mH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90V transient suppressor, it is incapable of withstanding the 500V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.

IA ATEX FISCO

Certificate	Baseefa08ATEX0129X
Standards	EN60079-0:2012+A11:2013, EN60079-11:2012
Markings	⟨Ex⟩II 1 G Ex ia IIC T4 Ga (–60 °C ≤ T_a ≤ +60 °C)

Table 79: Input Parameters

Input parameter	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0 µF
Inductance L_i	0 mH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90V transient suppressor, it is incapable of withstanding the 500V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.

N1 ATEX Type n

Certificate	Baseefa08ATEX0130X
Standards	EN60079-0:2012+A11:2013, EN60079-15:2010
Markings	⟨Ex⟩II 3G Ex nA IIC T4 Gc (–40 °C ≤ T_a ≤ +70 °C)

Special Condition for Safe Use (X):

1. If the equipment is fitted with an optional 90V transient suppressor, it is incapable of withstanding the 500V electrical strength test as defined in clause 6.5.1 of by EN 60079-15:2010. This must be taken into account during installation.

ND ATEX Dust

Certificate	Baseefa08ATEX0182X
Standards	EN60079-0:2012+A11:2013, EN60079-31:2009
Markings	Ex II 1 D Ex ta IIIC T95 °C T_{500} 105 °C Da (–20 °C ≤ T_a ≤ +85 °C)

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90V transient suppressor, it is incapable of withstanding the 500V isolation from earth test and this must be taken into account during installation.

International

E7 IECEx Flameproof

Certificate	IECExKEM08.0024X
Standards	IEC 60079-0:2011, IEC 60079-1:2014-06, IEC 60079-26:2014-10
Markings	Ex db IIC T6...T4 Ga/Gb T6(-60 °C ≤ T_a ≤ +70 °C), T4/T5(-60 °C ≤ T_a ≤ +80 °C)

Table 80: Process Connection Temperature

Temperature class	Process temperature	Ambient temperature
T6	-60 °C to +70 °C	-60 °C to +70 °C
T5	-60 °C to +80 °C	-60 °C to +80 °C
T4	-60 °C to +120 °C	-60 °C to +80 °C

Special Conditions for Safe Use (X):

1. The device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm shall be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Appropriate cable, glands and plugs need to be suitable for a temperature of 5°C greater than maximum specified temperature for location where installed.
3. Flameproof joints are not intended for repair.
4. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

I7 IECEx Intrinsic Safety

Certificate	IECEx BAS 08.0045X
Standards	IEC60079-0:2011, IEC60079-11:2011
Markings	Ex ia IIC T4 Ga (-60 °C ≤ T_a ≤ +70 °C)

Table 81: Input Parameters

Parameter	HART	Fieldbus/PROFIBUS
Voltage U_i	30 V	30 V
Current I_i	200 mA	300 mA
Power P_i	1 W	1.3 W
Capacitance C_i	12 nF	0 µF
Inductance L_i	0 mH	0 mH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90V transient suppressor, it is incapable of withstanding the 500V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in Zone 0.
3. The equipment contains thin wall diaphragms. The installation, maintenance and use shall take into account the environmental conditions to which the diaphragms will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

IG IECEx FISCO

Certificate IECEx BAS 08.0045X

Standards IEC60079-0:2011, IEC60079-11:2011

Markings Ex ia IIC T4 Ga (–60 °C ≤ T_a ≤ +60 °C)

Table 82: Input Parameters

Parameter	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0 nF
Inductance L_i	0 µH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90V transient suppressor, it is incapable of withstanding the 500V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.
3. The equipment contains thin wall diaphragms. The installation, maintenance and use shall take into account the environmental conditions to which the diaphragms will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

N7 IECEx Type n

Certificate IECEx BAS 08.0046X

Standards IEC60079-0:2011, IEC60079-15:2010

Markings Ex nA IIC T4 Gc (-40 °C ≤ T_a ≤ +70 °C)

Special Condition for Safe Use (X):

1. If fitted with a 90V transient suppressor, the equipment is not capable of withstanding the 500V electrical strength test as defined in clause 6.5.1 of IEC60079-15:2010. This must be taken into account during installation.

Brazil

E2 INMETRO Flameproof

Certificate UL-BR 14.0375X

Standards ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-1:2009 + Errata 1:2011, ABNT NBR IEC 60079-26:2008 + Errata 1:2009

Markings Ex db IIC T6...T4 Ga/Gb IP66, T6(-60 °C ≤ T_a ≤ +70 °C), T4/T5(-60 °C ≤ T_a ≤ +80 °C)

Special Conditions for Safe Use (X):

1. The device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

I2 INMETRO Intrinsic Safety

Certificate UL-BR 14.0759X

Standards ABNT NBR IEC 60079-0:2013; ABNT NBR IEC 60079-11:2013

Markings Ex ia IIC T4 Ga (-60 °C ≤ T_a ≤ +70 °C)

Table 83: Input Parameters

Parameter	HART	Fieldbus/PROFIBUS
Voltage U_i	30 V	30 V
Current I_i	200 mA	300 mA
Power P_i	1 W	1.3 W
Capacitance C_i	12 nF	0
Inductance L_i	0	0

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V insulation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminium alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in atmospheres that require EPL Ga.

IB INMETRO FISCO

Certificate UL-BR 14.0759X

Standards ABNT NBR IEC 60079-0:2008 + Errata 1:2011; ABNT NBR IEC 60079-11:2009

Markings Ex ia IIC T4 Ga (–60 °C ≤ T_a ≤ +60 °C)

Table 84: Input Parameters

Parameter	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0 nF
Inductance L_i	0 μH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V insulation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminium alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in atmospheres that require EPL Ga.

China

E3 China Flameproof

Certificate GYJ18.1432X; GYJ15.1366X [Flow meters]

Standards GB3836.1-2010, GB3836.2-2010, GB3836.20-2010

Pressure Transmitter Ex d IIC Gb, T6~T4 Ga/Gb

Flowmeter Ex d IIC T5/T6 Ga/Gb

I3 China Intrinsic Safety

Certificate GYJ17.1225X; GYJ15.1365X [Flow meters]

Standards GB3836.1-2010, GB3836.4-2010, GB3836.20-2010

Markings Ex ia IIC T4 Ga

产品安全使用特殊条件

1. 产品防爆合格证号后缀“X”代表产品安全使用有特殊条件:
   - 产品选用铝合金外壳，使用时需注意防止由于冲击或摩擦产生的点燃危险.
   - 当选择 T1 瞬态抑制端子时此设备不能承受 GB3836.4-2010 标准中第 6.3.12 条规定的 500V 交流有效值试验电压的介电强度试验.
   - 当输出选项代码为 X 时，需使用由厂家提供的型号为 701PG 的 SmartPower Green Power Module 电池。产品外壳含有非金属部件，使用时须防止产生静电火花，只能用湿布清理.
2. 产品使用注意事项
   - 产品使用环境温度范围:

c Transmitter Output	环境温度范围
A, F, W, M	-60℃ ~ +70℃
F, W (FISCO)	-60℃ ~ +60℃
X	-40℃ ~ +70℃

- 本安电气参数:

c Transmitter Output	最高输入电压 Ui (V)	最大输入电流 Ii (mA)	最大输入功率 Pi (W)	最大内部等效参数	
				Ci(nF)	Li(µH)
A, M	30	200	1.0	12	0
F, W	30	300	1.3	0	0
F, W (FISCO)	17.5	380	5.32	0	0

注：Transmitter Output 为 F, W（FISCO）时, 本安电气参数符合 GB3836.19-2010 对 FISCO 现场仪表的参数要求.

- 该产品必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可使用于爆炸性气体环境。其系统接线必须同时遵守本产品和所配关联设备的使用说明书要求，接线端子不得接错.
- 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生.
- 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB3836.15-2000“爆炸性气体环境用电气设备 第 15 部分：危险场所电气安装（煤矿除外）”、GB3836.16-2006“爆炸性气体环境用电气设备 第 16 部分：电气装置的检查和维护（煤矿除外）”、GB3836.18-2010“爆炸性环境 第 18 部分：本质安全系统”和 GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”的有关规定.

Korea

EP Korea Flameproof

Certificate 12-KB4BO-0342X, 12-KB4BO-0344X

Markings Ex d IIC T6...T4, T4/T5(–60 °C ≤ T_a ≤ +80 °C), T6(–60 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

IP Korea Intrinsic Safety

Certificate 12-KB4BO-0343X, 12-KB4BO-0345X, 13-KB4BO-0205X, 13-KB4BO-0207X

Markings Ex ia IIC T4 (–60 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Japan

E4 Japan Flameproof

Certificate TC20598, TC20599, TC20602, TC20603 [HART]; TC20600, TC20601, TC20604, TC20605 [Fieldbus]

Markings Ex d IIC T5

Technical Regulations Customs Union (EAC)

EM EAC Flameproof

Certificate TC RU C-US.AA87.B.00588

Markings Ga/Gb Ex d IIC X, T5(–50 °C ≤ T_a ≤ +80 °C), T6(–50 °C ≤ T_a ≤ +65 °C)

Special Condition for Safe Use (X):

1. See certificate for special conditions.

IM EAC Intrinsically Safe

Certificate	TC RU C-US.AA87.B.00588
Markings	0Ex ia IIC T4 Ga X (–60 °C ≤ T_a ≤ +70 °C)

Special Condition for Safe Use (X):

1. See certificate for special conditions.

Combinations

K1 Combination of E1, I1, N1, and ND

K2 Combination of E2 and I2

K5 Combination of E5 and I5

K6 Combination of E6 and I6

K7 Combination of E7, I7, N7 and IECEx Dust

IECEx Dust

Certificate	IECEx BAS 08.0058X
Standards	IEC60079-0:2011, IEC60079-31:2008
Markings	Ex tA IIIC T95 °C T500 105 °C Da (–20 °C ≤ T_a ≤ +85 °C)

Special Condition for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding a 500V isolation from earth test and this must be taken into account during installation.

KA Combination of E1, I1, and K6

KB Combination of K5 and K6

KC Combination of E1, I1, and K5

KD Combination of K1, K5, and K6

KP Combination of EP and IP

KM Combination of EM and IM

Additional Certifications

SBS American Bureau of Shipping (ABS) Type Approval

Certificate	18-HS1753847-PDA
Intended Use	Marine & Offshore Applications – Measurement of either Gauge or Absolute Pressure for Liquid, Gas, and Vapor
ABS Rules	2018 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 1-1-Appendix 4

SBV Bureau Veritas (BV) Type Approval

Certificate	23157/BV
BV Rules	Bureau Veritas Rules for the Classification of Steel Ships

Application Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS; Pressure transmitter type 2051 cannot be installed on diesel engines

SDN Det Norske Veritas (DNV) Type Approval

Certificate TAA000004F

Intended Use DNV GL Rules for Classification - Ships and offshore units

Application

Location classes	
Type	Rosemount 2051
Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	D

SLL Lloyds Register (LR) Type Approval

Certificate 11/60002

Application Environmental categories ENV1, ENV2, ENV3 and ENV5

Rosemount 3051 Wireless

Rosemount 3051 Wireless Product Certifications

Rev 1.5

European directive information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

Telecommunication compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

Ordinary location certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Installing in North America

The US National Electrical Code (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

USA

I5 U.S.A. Intrinsically Safe (IS)

Ranges 1–5

Certificate	FM 3046325
Standards	FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3810 - 2005, ANSI/ISA 60079-0 - 2009, ANSI/ISA 60079-11 - 2009, NEMA 250 - 2003, ANSI/IEC 60529
Markings	IS CL I, DIV 1, GP A, B, C, D T4; CL 1, Zone 0 AEx ia IIC T4; T4(–40 °C ≤ T_a ≤ +70 °C) when installed per Rosemount drawing 03031-1062; Type 4X/IP66/IP68

Special Conditions for Safe Use (X):

1. The Rosemount 3051 Wireless Pressure Transmitter shall only be used with the 701PGNKF Rosemount SmartPower Battery Pack.
2. The inline pressure sensor may contain more than 10% aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and used to prevent impact and friction.
3. The surface resistivity of the transmitter housing is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

Range 6

Certificate	CSA 2526009
Standards	FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3810 - 2005, ANSI/ISA 60079-0 - 2009, ANSI/ISA 60079-11 - 2009, UL 61010-1 (3rd edition), UL50E (1st Edition)
Markings	IS CL I, DIV 1, GP A, B, C, D T4; CL 1, Zone 0 AEx ia IIC T4; T4(-40 °C ≤ T_a ≤ +70 °C) when installed per Rosemount drawing 03031-1063; Type 4X/IP66/IP68

Canada

I6 Canada Intrinsically Safe

Certificate	CSA 2526009
Standards	CAN/CSA C22.2 No. 0-M91, CAN/CSA C22.2 No.94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 157-92, CSA Std C22.2 No. 60529:05
Markings	Intrinsically Safe for Class I, Division 1, Groups A, B, C, D, T4 when installed per Rosemount drawing 03031-1063; Type 4X/IP66/IP68

Europe

I1 ATEX Intrinsic Safety

Certificate	Baseefa12ATEX0228X
Standards	EN 60079-0: 2012, EN 60079-11: 2012
Markings	Ex II 1 G Ex ia IIC T4 Ga, T4(–40 °C ≤ T_a ≤ +70 °C) IP66/IP68

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

International

I7 IECEx Intrinsic Safety

Certificate	IECEx BAS 12.0124X
Standards	IEC 60079-0: 2011, IEC 60079-11: 2011
Markings	Ex ia IIC T4 Ga, T4(–40 °C ≤ T_a ≤ +70 °C) IP66/IP68

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

Brazil

I2 INMETRO Intrinsic Safety

Certificate	UL-BR 13.0534X
Standards	ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-11:2009
Markings	Ex ia IIC T4 IP66 Ga, T4(–40 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions .

China

I3 China Intrinsic Safety

Certificate	GYJ13.1362X, GYJ15.1367X [Flow meters]
Standards	GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
Markings	Ex ia IIC T4 Ga, T4(–40~+70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Japan

I4 TIIS Intrinsic Safety

Certificate	TC22022X (Rosemount 3051C/L), TC22023X (Rosemount 3051T), TC22024X (Rosemount 3051CFx)
Markings	Ex ia IIC T4 Ga, T4(–20 ≤ T_a ≤ +60 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

EAC - Belarus, Kazakhstan, Russia

IM Technical Regulation Customs Union (EAC) Intrinsic Safety

Certificate	TU RU C-US.AA87.B.00534
Markings	0Ex ia IIC T4 Ga X; (–40 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Korea

IP Korea Intrinsic Safety

Certificate	13-KB4BO-0295X
Markings	Ex ia IIC T4 (–40 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Additional certifications

SBS American Bureau of Shipping (ABS) Type Approval

Certificate	15-HS1405241-PDA
Intended Use	Marine & Offshore Applications – Measurement of either gauge or absolute pressure for liquid, gas and vapor.

SBV Bureau Veritas (BV) Type Approval

Certificate	23155
Requirements	Bureau Veritas Rules for the Classification of Steel Ships
Application	Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS; Pressure transmitter type 3051 cannot be installed on diesel engines.

SDN Det Norske Veritas (DNV) Type Approval

Certificate	TAA000004F
Intended Use	DNV GL Rules for Classification - Ships and offshore units

Application

Location classes	
Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	D

Rosemount 2051 Wireless

Rosemount 2051 Wireless Product Certifications

Rev 1.4

European directive information

A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EC Declaration of Conformity can be found at Emerson.com/Rosemount.

Telecommunication compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

Ordinary location certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Installing in North America

The US National Electrical Code (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area Classification, gas, and temperature Class. This information is clearly defined in the respective codes.

USA

I5 U.S.A. Intrinsically Safe (IS)

Certificate FM 3046325

Standards FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3810 - 2005, ANSI/ISA 60079-0 - 2009, ANSI/ISA 60079-11 - 2009, NEMA 250 - 2003, ANSI/IEC 60529

Markings IS CL I, DIV 1, GP A, B, C, D T4; CL 1, Zone 0 AEx ia IIC T4; T4(–40 °C ≤ T_a ≤ +70 °C) when installed per Rosemount drawing 03031-1062; Type 4X/IP66/IP68

Special Conditions for Safe Use (X):

1. The Model 2051 Wireless Pressure Transmitter shall only be used with the 701PGNKF Rosemount SmartPower Battery Pack.
2. The inline pressure sensor may contain more than 10% aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and used to prevent impact and friction.
3. The surface resistivity of the transmitter housing is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

Canada

I6 Canada Intrinsically Safe

Certificate CSA 2526009

Standards CAN/CSA C22.2 No. 0-M91, CAN/CSA C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 157-92, CSA Std C22.2 No. 60529:05

Markings	Intrinsically Safe for Class I, Division 1, Groups A, B, C, D, T4 when installed per Rosemount drawing 03031-1063; Type 4X/IP66/IP68

Europe

I1 ATEX Intrinsic Safety

Certificate	Baseefa12ATEX0228X
Standards	EN 60079-0: 2012, EN 60079-11: 2012
Markings	II 1 G Ex ia IIC T4 Ga, T4(–40 °C ≤ T_a ≤ +70 °C) IP66/IP68

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

International

I7 IECEx Intrinsic Safety

Certificate	IECEx BAS 12.0124X
Standards	IEC 60079-0: 2011, IEC 60079-11: 2011
Markings	Ex ia IIC T4 Ga, T4(–40 °C ≤ T_a ≤ +70 °C) IP66/IP68

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

Brazil

I2 INMETRO Intrinsic Safety

Certificate	UL-BR 13.0534X
Standards	ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-11:2009
Markings	Ex ia IIC T4 IP66 Ga, T4(–40 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

China

I3 China Intrinsic Safety

Certificate	GYJ17.1225X GYJ17.1225X GYJ15.1365X [Flow meters]
Standards	GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
Markings	Ex ia IIC Ga T4, –40~+70 °C

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Japan

I4 TIIS Intrinsic Safety

Certificate	TC22022X (2051C/L) TC22023X (2051T)
Standards	TC22024X (2051CFx)
Markings	Ex ia IIC T4 Ga, T4(-20~+60 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

EAC - Belarus, Kazakhstan, Russia

IM Technical Regulation Customs Union (EAC) Intrinsic Safety

Certificate	RU C-US.ГБ05.В.00390
Markings	0Ex ia IIC T4 Ga X;

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Korea

IP Korea Intrinsic Safety

Certificate	13-KB4BO-0220X
Markings	Ex ia IIC T4 (–40 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Additional certifications

SBS American Bureau of Shipping (ABS) Type Approval

Certificate	15-HS1405241-PDA
Intended Use	Marine & Offshore Applications – Measurement of either gauge or absolute pressure for liquid, gas and vapor.

SBV Bureau Veritas (BV) Type Approval

Certificate	23157 BV
Requirements	Bureau Veritas Rules for the Classification of Steel Ships
Application	Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS; Pressure transmitter type 2051 cannot be installed on diesel engines.

SDN Det Norske Veritas (DNV) Type Approval

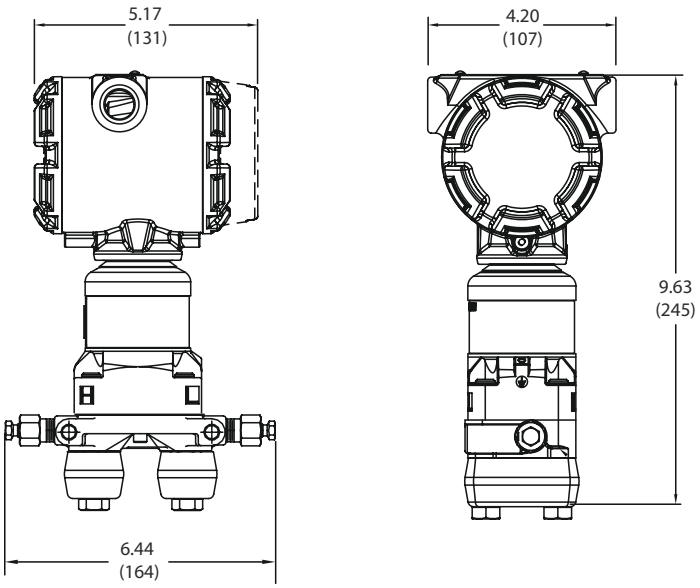
Certificate	TAA000004F
Intended Use	DNV GL Rules for Classification - Ships and offshore units

Application

Location classes	
Type	2051
Temperature	B
Humidity	B
Vibration	A
EMC	B
Enclosure	D

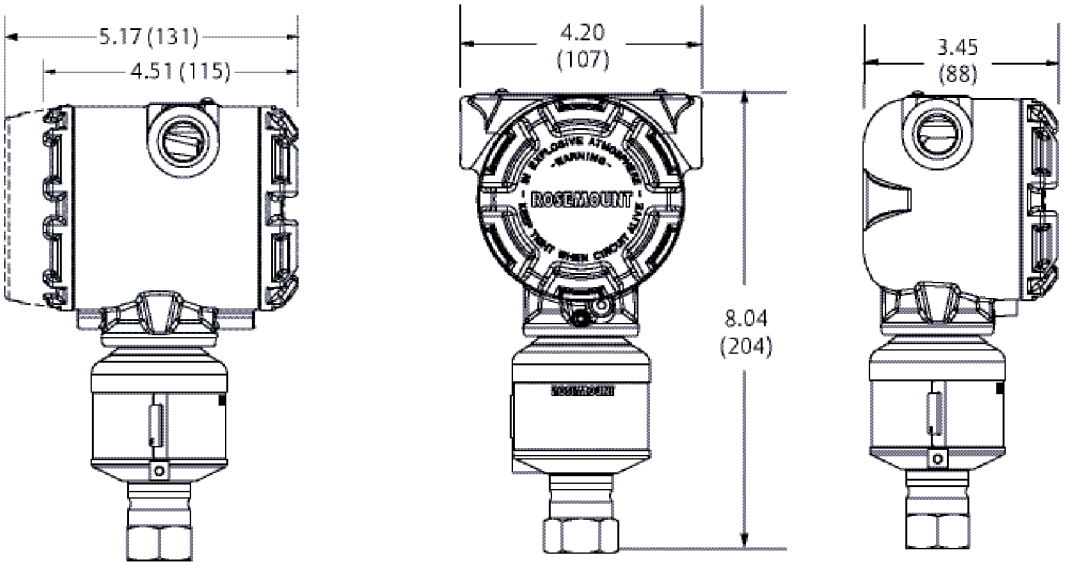
Dimensional drawings

Figure 8: Rosemount 3051S ERS Measurement Transmitter - Coplanar Style



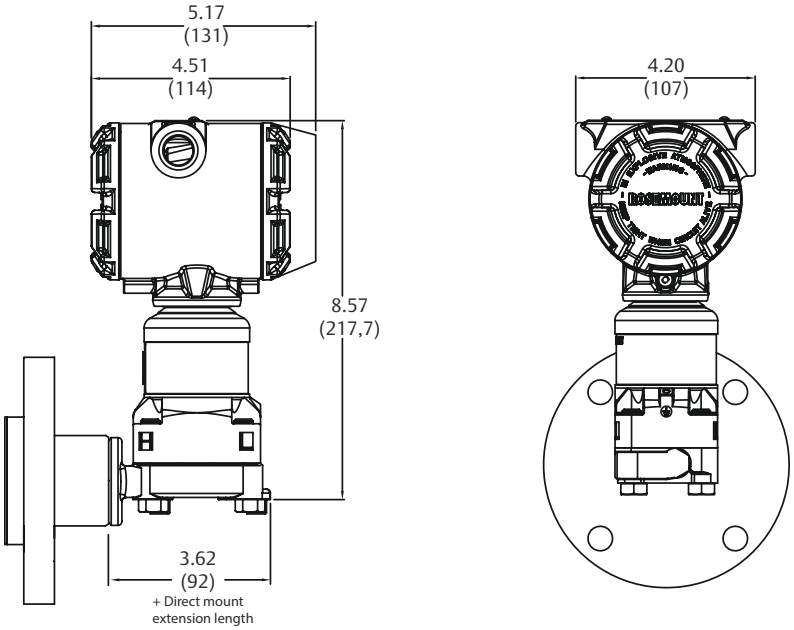
Dimensions are in inches (millimeters).

Figure 9: Rosemount 3051S ERS Measurement Transmitter - In-Line Style



Dimensions are in inches (millimeters).

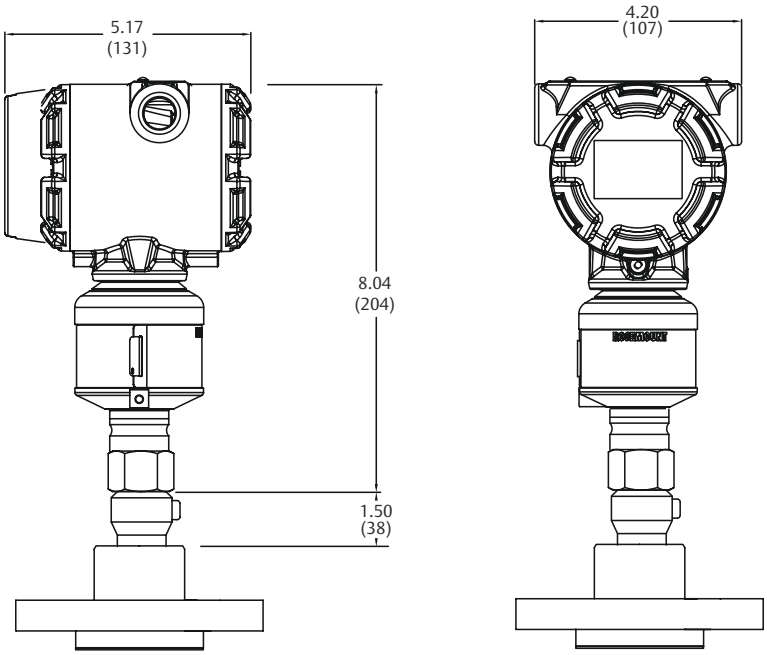
Figure 10: Rosemount 3051S Scalable Level Transmitter with FF - Coplanar Style



Lower housing (flushing ring) is available with FFW style flange.

Dimensions are in inches (millimeters).

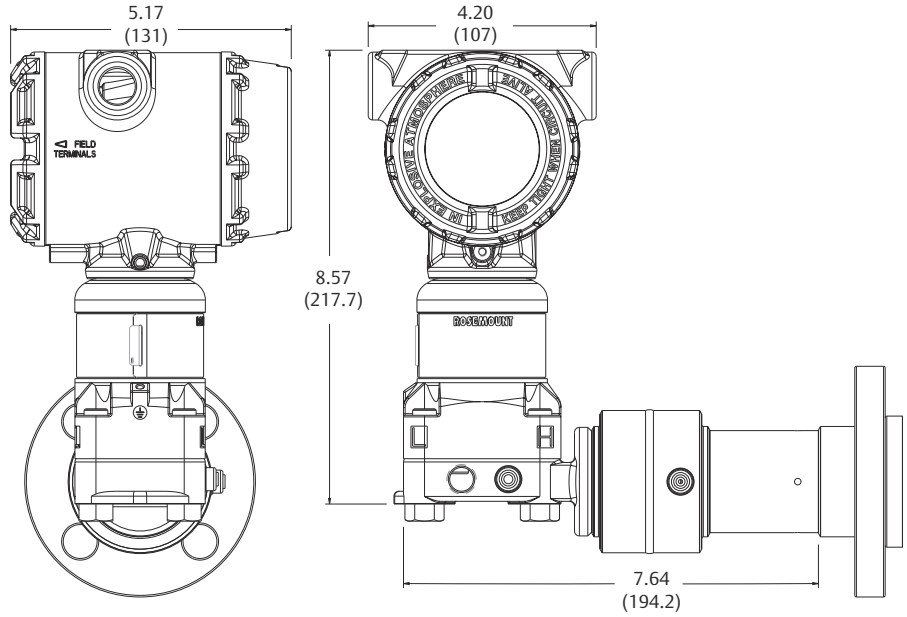
Figure 11: Rosemount 3051S Scalable Level Transmitter with FF - In-Line Style



Lower housing (flushing ring) is available with FFW style flange.

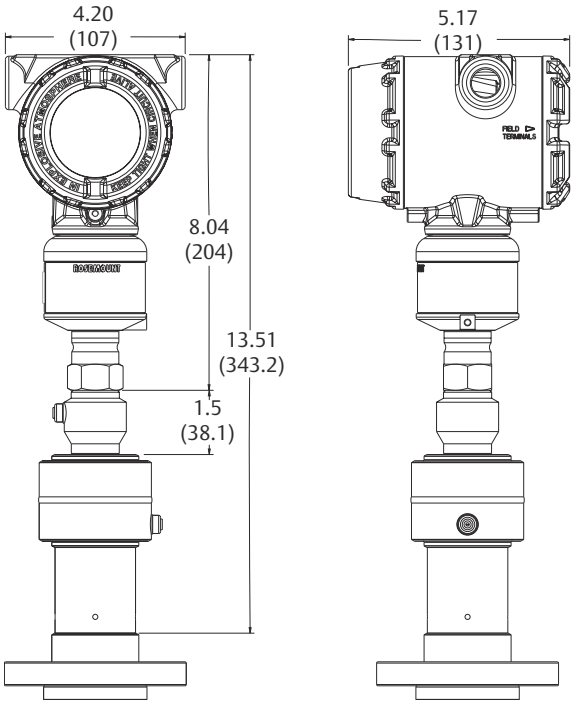
Dimensions are in inches (millimeters).

Figure 12: Rosemount 3051S Scalable Level Transmitter with Thermal Range Expander – Coplanar Style



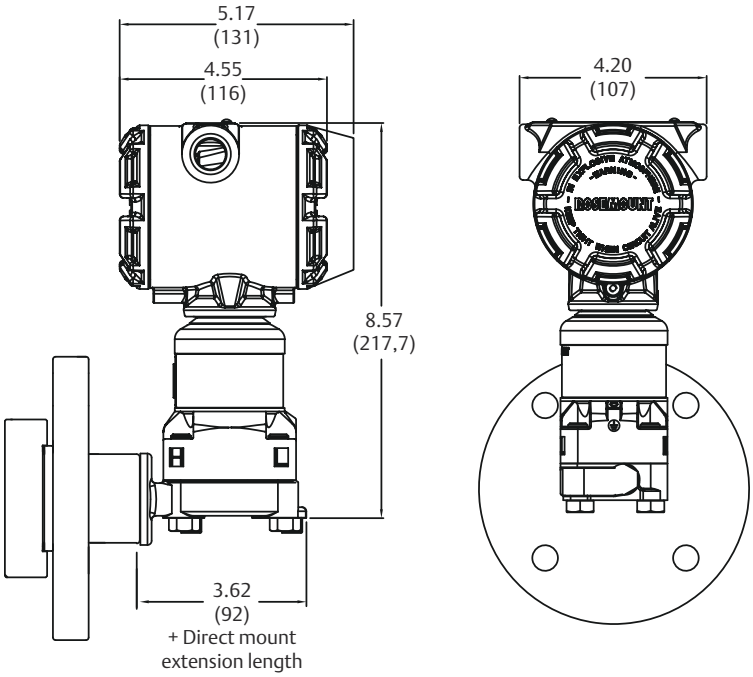
Dimensions are in inches (millimeters).

Figure 13: Rosemount 3051S Scalable Level Transmitter with Thermal Range Expander – In-Line Style



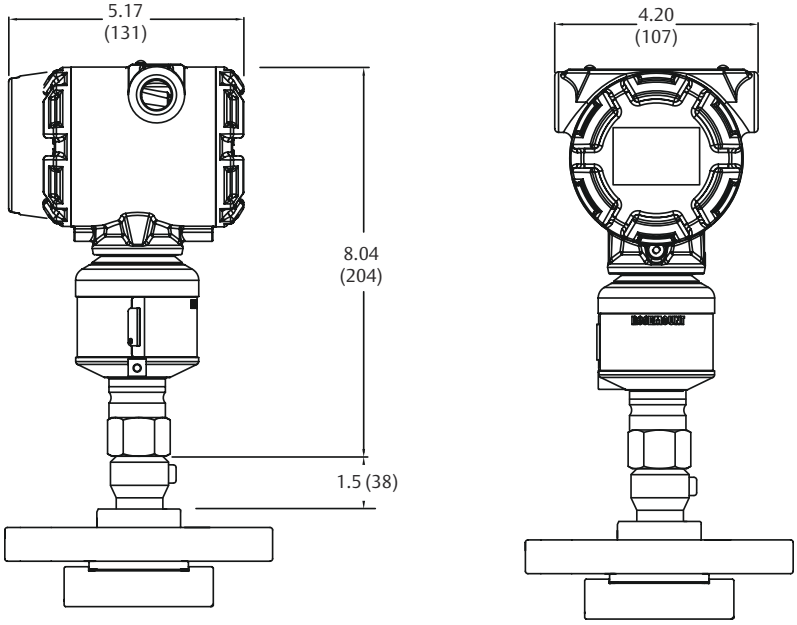
Dimensions are in inches (millimeters).

Figure 14: Rosemount 3051S Scalable Level Transmitter with RF - Coplanar Style



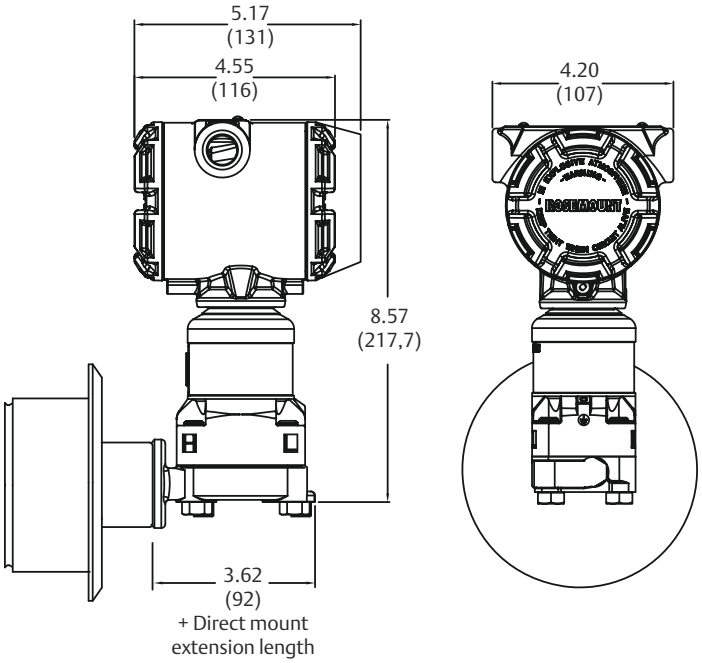
Dimensions are in inches (millimeters).

Figure 15: Rosemount 3051S Scalable Level Transmitter with RF - In-Line Style



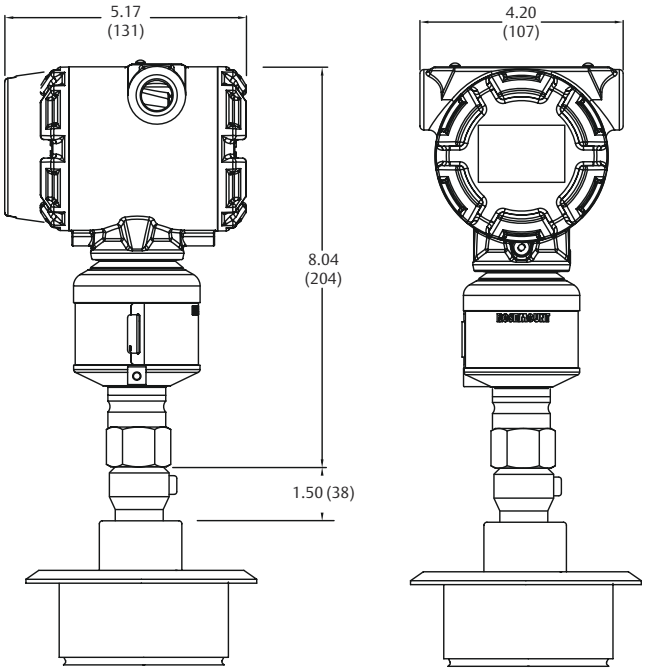
Dimensions are in inches (millimeters).

Figure 16: Rosemount 3051S Scalable Level Transmitter with SS - Coplanar Style



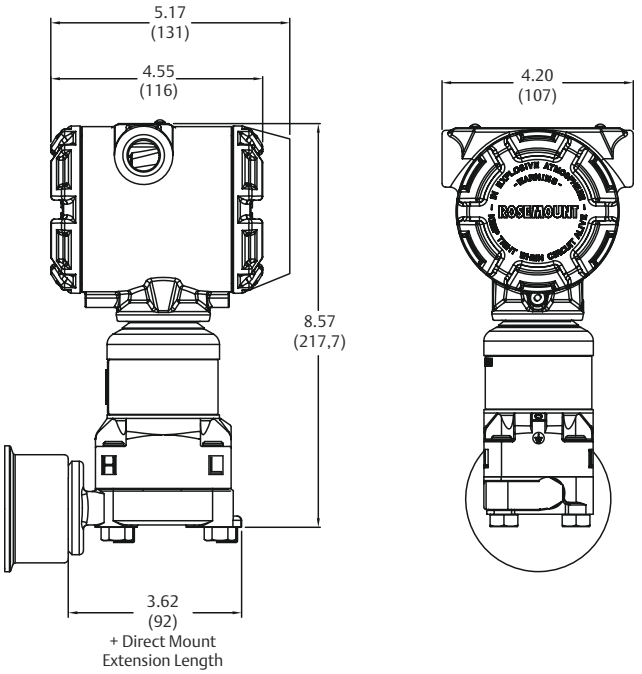
Dimensions are in inches (millimeters).

Figure 17: Rosemount 3051S Scalable Level Transmitter with SS - In-Line Style



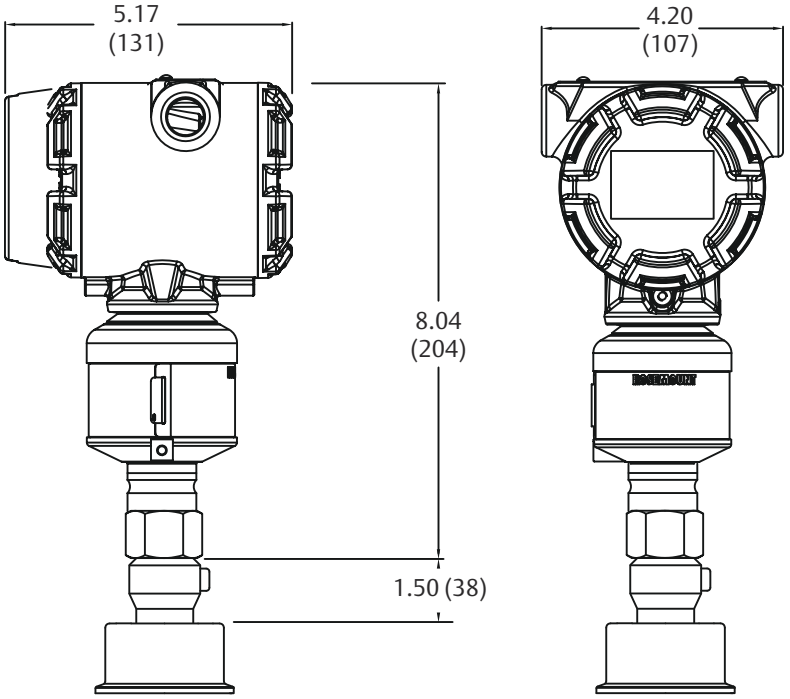
Dimensions are in inches (millimeters).

Figure 18: Rosemount 3051S Scalable Level Transmitter with SC - Coplanar Style



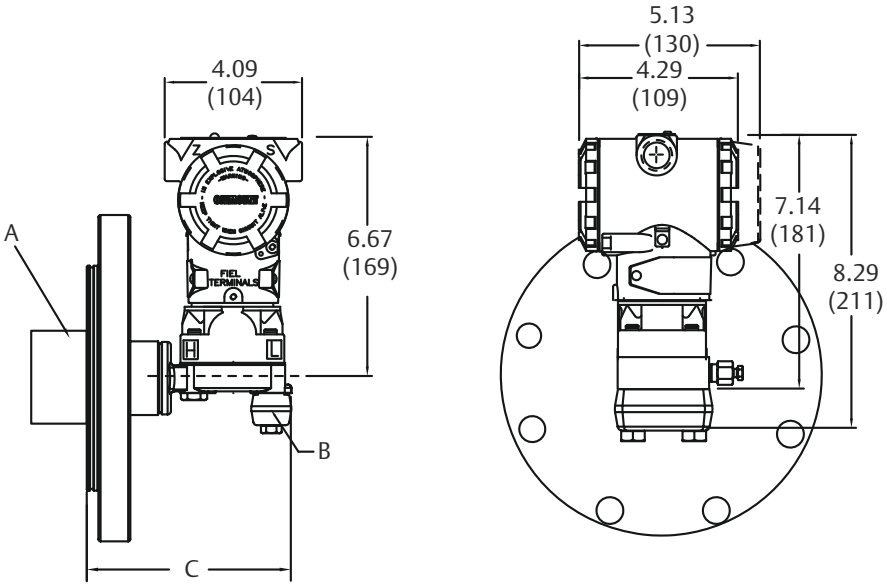
Dimensions are in inches (millimeters).

Figure 19: Rosemount 3051S Scalable Level Transmitter with SC - In-Line Style



Dimensions are in inches (millimeters).

Figure 20: Rosemount 3051L Level Transmitter with FF or EF Seal



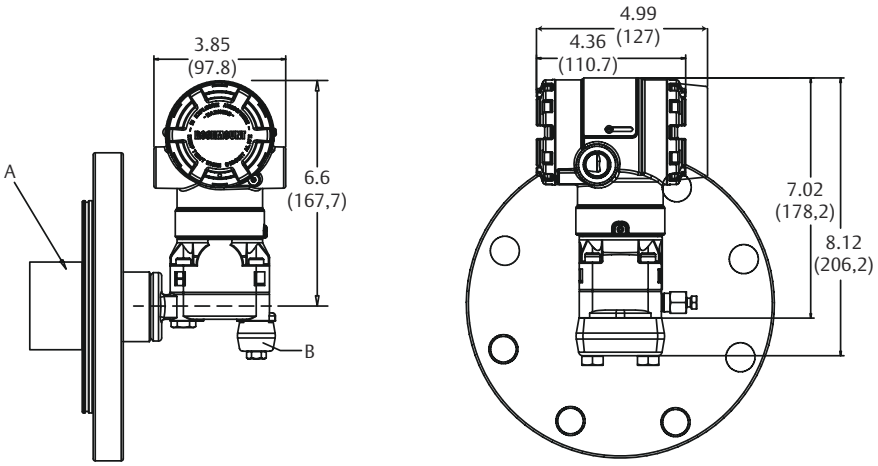
A. 2-, 4-, or 6-in. extension (only available with 3- and 4-in. flange configurations)
B. Flange adapters (optional, differential configuration only)
C. Extension dimension

Dimensions are in inches (millimeters).

Table 85: Transmitter Direct Mount Extension

Flange rating	Transmitter flange extension	Extension dimension
ANSI/ASME B16.5 Class 600	2-in.	7.65-in. (194,3 mm)
All others	0-in.	5.65-in. (143,5 mm)

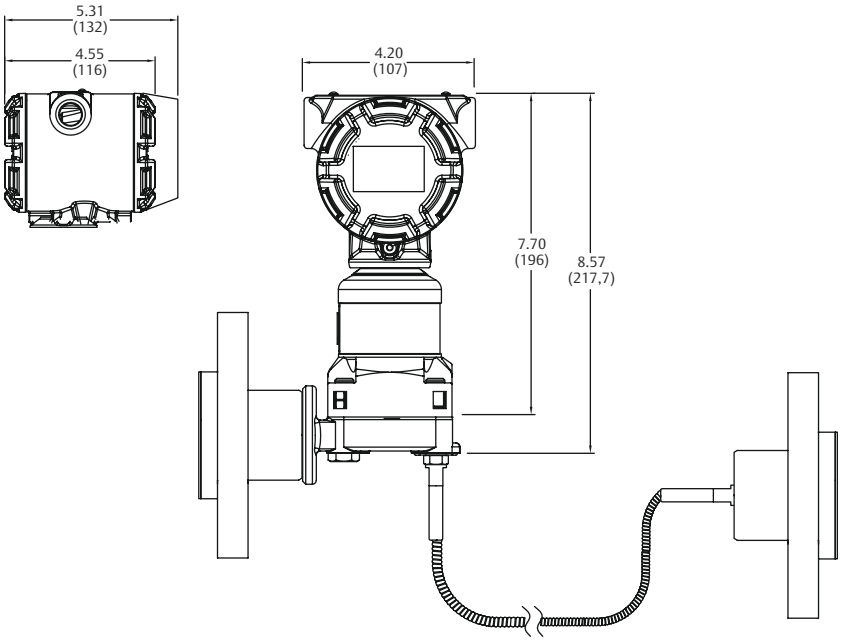
Figure 21: Rosemount 2051L Level Transmitter with FF or EF Seal



A. 2-. 4-, or 6-in. extension (only available with 3- and 4-in. flange configurations)
B. Flange adapters (optional, differential configuration only)

Dimensions are in inches (millimeters).

Figure 22: Tuned System Assembly with Rosemount 3051S Scalable Level Transmitter

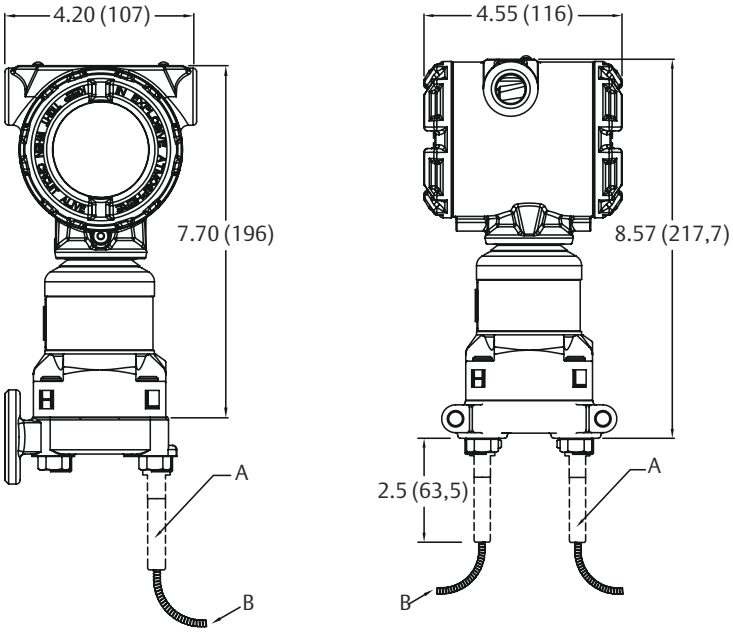


Tuned System Assemblies require specification of capillary length and addition Rosemount 1199 Remote Seal.

Tuned System Assemblies are available on all level transmitters.

Dimensions are in inches (millimeters).

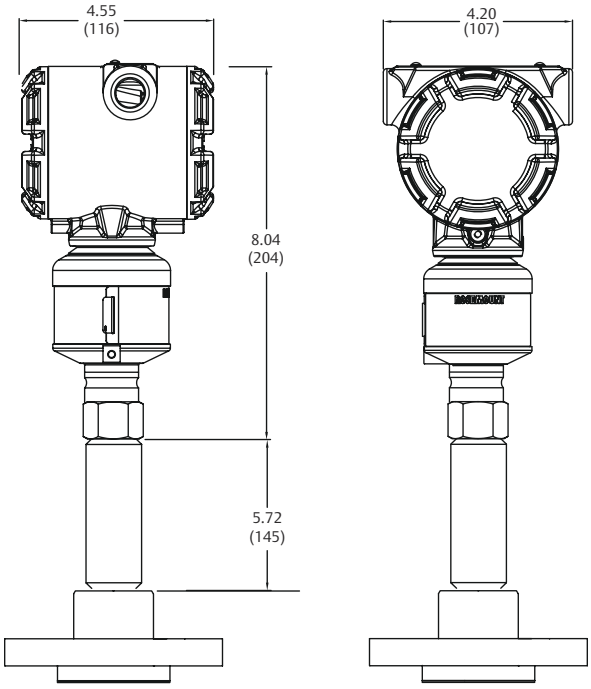
Figure 23: Rosemount 1199 Remote Seal System Assembly with Rosemount 3051S Scalable Transmitter



A. Capillary connection only
B. Capillary connects to Rosemount 1199 Remote seals

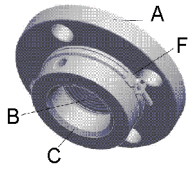
Dimensions are in inches (millimeters).

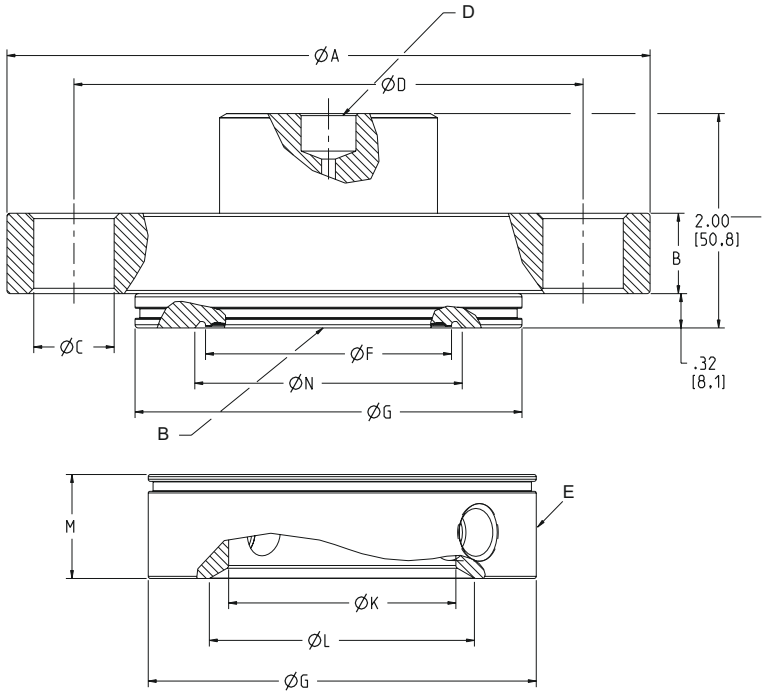
Figure 24: Thermal Optimizer (D5) with FFW



Dimensions are in inches (millimeters).

Figure 25: FFW Flush Flanged Seal - Standard (Two-Piece) Design (Shown with Flushing Ring)





A. Process flange
B. Diaphragm
C. Flushing connection
D. Connection to transmitter
E. Flushing ring
F. Lower housing alignment clamp (option code SA)

Dimensions are in inches (millimeters).

Table 86: Dimensions for FFW Flush Flanged Raised Face Seals-Two Piece (Upper Housing and Flange) Design

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Number of bolts	Bolt hole diameter "D" in. (mm)	Standard diaphragm diameter "F" in. (mm)	Raised face outer diameter "G" in. (mm)
ANSI/ASME								
2-in.	150	6.00 (152)	0.69 (18)	4.75 (121)	4	0.75 (19)	2.30 (58)	3.62 (92)
	300	6.50 (165)	0.81 (21)	5.00 (127)	8	0.75 (19)	2.30 (58)	3.62 (92)
	600	6.50 (165)	1.00 (25)	5.00 (127)	8	0.75 (19)	2.30 (58)	3.62 (92)
	900	8.50 (216)	1.50 (38)	6.50 (165)	8	1.00 (25)	2.30 (58)	3.62 (92)
	1500	8.50 (216)	1.50 (38)	6.50 (165)	8	1.00 (25)	2.30 (58)	3.62 (92)
	2500	9.25 (235)	2.00 (51)	6.75 (172)	8	1.13 (29)	2.30 (58)	3.62 (92)
3-in.	150	7.50 (191)	0.88 (22)	6.00 (152)	4	0.75 (19)	3.50 (89)	5.00 (127)
	300	8.25 (210)	1.06 (27)	6.62 (168)	8	0.88 (22)	3.50 (89)	5.00 (127)
	600	8.25 (210)	1.25 (32)	6.62 (168)	8	0.88 (22)	3.50 (89)	5.00 (127)
	900	9.50 (241)	1.50 (38)	7.50 (191)	8	1.00 (25)	3.50 (89)	5.00 (127)
	1500	10.50 (267)	1.88 (48)	8.00 (203)	8	1.25 (32)	3.50 (89)	5.00 (127)
	2500	12.00 (305)	2.62 (67)	9.00 (229)	8	1.38 (35)	3.50 (89)	5.00 (127)
4-in.	150	9.00 (229)	0.88 (22)	7.50 (191)	8	0.75 (19)	3.50 (89)	6.20 (157)

Table 86: Dimensions for FFW Flush Flanged Raised Face Seals-Two Piece (Upper Housing and Flange) Design *(continued)*

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Number of bolts	Bolt hole diameter "D" in. (mm)	Standard diaphragm diameter "F" in. (mm)	Raised face outer diameter "G" in. (mm)
	300	10.0 (254)	1.19 (30)	7.88 (200)	8	0.88 (22)	3.50 (89)	6.20 (157)
	600	10.75 (273)	1.50 (38)	8.50 (216)	8	1.00 (25)	3.50 (89)	6.20 (157)
	900	11.50 (292)	1.75 (45)	9.25 (235)	8	1.25 (32)	3.50 (89)	6.20 (157)
	1500	12.25 (311)	2.12 (54)	9.50 (241)	8	1.38 (35)	3.50 (89)	6.20 (157)
	2500	14.00 (356)	3.00 (76)	10.75(274)	8	1.63 (41)	3.50 (89)	6.20 (157)
EN1092-1								
DN 50	PN 40	6.50 (165)	0.67 (17)	4.92 (125)	4	0.71 (18)	2.30 (58)	4.00 (102)
	PN 63	7.09 (180)	0.91 (23)	5.31 (135)	4	0.87 (22)	2.30 (58)	4.00 (102)
	PN 100	7.68 (195)	0.99 (25)	5.71 (145)	4	1.02 (26)	2.30 (58)	4.00 (102)
	PN 160	7.68 (195)	1.06 (27)	5.71 (145)	4	1.02 (26)	2.30 (58)	4.00 (102)
DN 80	PN 40	7.87 (200)	0.83 (21)	6.30 (160)	8	0.71 (18)	3.50 (89)	5.43 (138)
	PN 63	8.46 (215)	0.99 (25)	6.69 (170)	8	0.88 (22)	3.50 (89)	5.43 (138)
	PN 100	9.06 (230)	1.15 (29)	7.09 (180)	8	1.02 (26)	3.50 (89)	5.43 (138)
	PN 160	9.06 (230)	1.30 (33)	7.09 (180)	8	1.02 (26)	3.50 (89)	5.43 (138)
DN 100	PN 10/16	8.66 (220)	0.67 (17)	7.09 (180)	8	0.71 (18)	3.50 (89)	6.20 (157)
	PN 40	9.25 (235)	0.94 (24)	7.48 (190)	8	0.87 (22)	3.50 (89)	6.20 (157)
	PN 63	9.84 (250)	0.83 (21)	7.87 (200)	8	1.02 (26)	3.50 (89)	6.20 (157)
	PN 100	10.43 (265)	1.30 (27)	8.27 (210)	8	1.18 (30)	3.50 (89)	6.20 (157)
	PN 160	10.43 (265)	1.46 (37)	8.27 (210)	8	1.18 (30)	3.50 (89)	6.20 (157)
JIS								
50A	10K	6.10 (155)	0.63 (16)	4.72 (120)	4	0.75 (19)	2.30 (58)	3.62 (92)
	20K	6.10 (155)	0.71 (18)	4.72 (120)	8	0.75 (19)	2.30 (58)	3.62 (92)
	40K	6.50 (165)	1.02 (26)	5.12 (130)	8	0.75 (19)	2.30 (58)	4.00 (102)
80A	10K	7.28 (185)	0.71 (18)	5.91 (150)	8	0.75 (19)	3.50 (89)	5.00 (127)
	20K	7.87 (200)	0.87 (22)	6.30 (160)	8	0.91 (23)	3.50 (89)	5.00 (127)
	40K	8.27 (210)	1.26 (32)	6.69 (170)	8	0.91 (23)	3.50 (89)	5.43 (138)
100A	10K	8.27 (210)	0.71 (18)	6.89 (175)	8	0.75 (19)	3.50 (89)	6.20 (157)
	20K	8.86 (225)	0.95 (24)	7.28 (185)	8	0.91 (23)	3.50 (89)	6.20 (157)
	40K	9.84 (250)	1.42 (36)	8.07 (205)	8	0.98 (25)	3.50 (89)	6.20 (157)

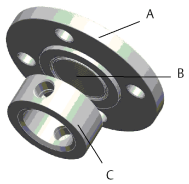
Table 87: Dimensions for FFW Flush Flanged Raised Face Seals-Two Piece (Upper Housing and Flange) Design

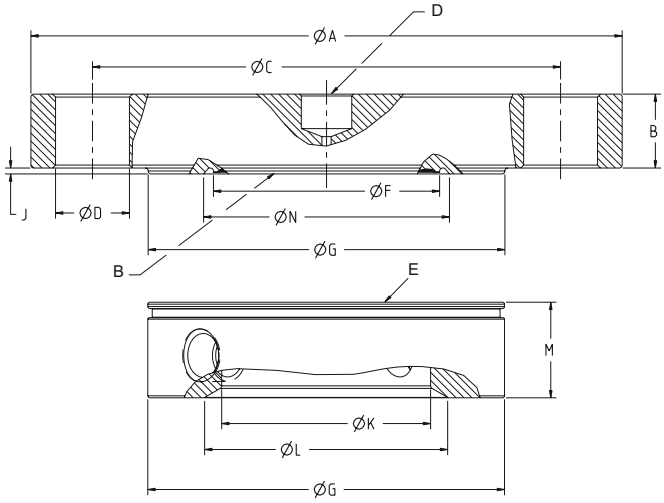
Pipe size	Class	Inner diameter "K" in. (mm)	Beveled edge "L" in. (mm)	Thickness with ¼-NPT F.C. "M" in. (mm)	Thickness with ½-NPT F.C. "M" in. (mm)	Minimum gasket I.D. "N" in. (mm)	Weight lb (kg)
ANSI/ASME							
2-in.	150	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.50 (64)	7.40 (3,33)
	300	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.50 (64)	8.99 (4,05)
	600	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.50 (64)	10.44 (4,70)
	900	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.50 (64)	24.62 (11,08)
	1500	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.50 (64)	24.62 (11,08)
	2500	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.50 (64)	36.71 (16,52)
3-in.	150	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	13.79 (6,21)
	300	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	17.84 (8,03)
	600	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	20.31 (9,14)
	900	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	33.21 (14,94)
	1500	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	46.76 (21,04)
	2500	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	81.34 (36,60)
4-in.	150	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	19.56 (8,80)
	300	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	29.56 (13,30)
	600	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	40.73 (18,33)
	900	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	53.16 (23,92)
	1500	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	71.72 (32,27)
	2500	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	125.72 (56,57)
EN1092-1							
DN 50	PN 40	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.50 (64)	9.02 (4,06)
	PN 63	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.50 (64)	12.58 (5,66)
	PN 100	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.50 (64)	15.23 (6,85)
	PN 160	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.50 (64)	16.12 (7,25)
DN 80	PN 40	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	15.03 (6,76)
	PN 63	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	18.87 (8,49)
	PN 100	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	23.34 (10,50)
	PN 160	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	25.83 (11,62)
DN 100	PN 10/16	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	16.08 (7,24)
	PN 40	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	20.31 (9,14)
	PN 63	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	26.74 (12,03)
	PN 100	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	34.26 (15,42)

Table 87: Dimensions for FFW Flush Flanged Raised Face Seals-Two Piece (Upper Housing and Flange) Design *(continued)*

Pipe size	Class	Inner diameter "K" in. (mm)	Beveled edge "L" in. (mm)	Thickness with ¼-NPT F.C. "M" in. (mm)	Thickness with ½-NPT F.C. "M" in. (mm)	Minimum gasket I.D. "N" in. (mm)	Weight lb (kg)
	PN 160	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	37.44 (16,85)
JIS							
50A	10K	2.12 (54)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	6.93 (3,15)
	20K	2.12 (54)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	7.11 (3,20)
	40K	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	10.41 (4,68)
80A	10K	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	10.52 (4,73)
	20K	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	13.61 (6,12)
	40K	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	20.08 (9,04)
100A	10K	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	14.03 (6,31)
	20K	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	19.16 (8,62)
	40K	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.70 (94)	32.12 (14,45)

Figure 26: FFW Flush Flanged Seal - One-Piece Design (Option Code "E", Shown with Flushing Ring)





A. Process flange
B. Diaphragm
C. Flushing connection
D. Connection to transmitter
E. Flushing ring

Dimensions are in inches (millimeters).

Table 88: Dimensions for FFW Flush Flanged Seals- One Piece (Upper Housing and Flange) Design (Option Code E)

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Number of bolts
ANSI/ASME					
2-in.	150	6.00 (152)	0.69 (18)	4.75 (121)	4
	300	6.50 (165)	0.81 (21)	5.00 (127)	8
	600	6.50 (165)	1.00 (25)	5.00 (127)	8
	900/1500	8.50 (216)	1.50 (38)	6.50 (165)	8

Table 88: Dimensions for FFW Flush Flanged Seals- One Piece (Upper Housing and Flange) Design (Option Code E) *(continued)*

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Number of bolts
	2500	9.25 (235)	2.00 (51)	6.75 (172)	8
3-in.	150	7.50 (191)	0.88 (22)	6.00 (152)	4
	300	8.25 (210)	1.06 (27)	6.62 (168)	8
	600	8.25 (210)	1.25 (32)	6.62 (168)	8
	900	9.50 (241)	1.50 (38)	7.50 (229)	8
	1500	10.50 (267)	1.88 (48)	8.00 (203)	8
	2500	12.00 (305)	2.62 (67)	9.00 (229)	8
4-in.	150	9.00 (229)	0.88 (22)	7.50 (191)	8
	300	10.00 (254)	1.19 (30)	7.88 (200)	8
	600	10.75 (273)	1.50 (38)	8.50 (216)	8
	900	11.50 (292)	1.75 (45)	9.25 (235)	8
	1500	12.25 (311)	2.12 (54)	9.50 (241)	8
	2500	14.00 (356)	3.00 (76)	10.75 (274)	8
EN 1092-1					
DN50	PN 40	6.50 (165)	0.67 (17)	4.92 (125)	4
	PN 63	7.08 (180)	0.91 (23)	5.31 (135)	4
	PN 100	7.68 (195)	0.99 (25)	5.71 (145)	4
	PN160	7.68 (195)	1.06 (27)	5.71 (145)	4
DN80	PN 40	7.87 (200)	0.83 (21)	6.30 (160)	8
	PN 63	8.46 (215)	0.99 (25)	6.69 (170)	8
	PN 100	9.06 (230)	1.15 (29)	7.09 (180)	8
	PN160	9.06 (230)	1.30 (33)	7.09 (180)	8
DN100	PN 10/16	8.66 (220)	0.67 (17)	7.09 (180)	8
	PN 40	9.25 (235)	0.83 (21)	7.48 (190)	8
	PN 63	9.84 (250)	1.07 (27)	7.87 (200)	8
	PN 100	10.43 (265)	1.30 (33)	8.27 (210)	8
	PN 160	10.43 (265)	1.46 (37)	8.27 (210)	8
JIS					
50A	10K	6.1 (155)	0.63 (16)	4.72 (120)	4
	20K	6.1 (155)	0.71 (18)	4.72 (120)	8
	40K	6.5 (165)	1.02 (26)	5.12 (130)	8

Table 88: Dimensions for FFW Flush Flanged Seals- One Piece (Upper Housing and Flange) Design (Option Code E) *(continued)*

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Number of bolts
80A	10K	7.28 (185)	0.71 (18)	5.91 (150)	8
	20K	7.87 (200)	0.87 (22)	6.3 (160)	8
	40K	8.27 (210)	1.26 (32)	6.69 (170)	8
100A	10K	8.27 (210)	0.71 (18)	6.89 (175)	8
	20K	8.86 (225)	0.95 (24)	7.28 (185)	8
	40K	9.84 (250)	1.42 (36)	8.07 (205)	8

Pipe size	Class	Bolt hole diameter "D" in. (mm)	Standard diaphragm diameter "F" in. (mm)	Raised face diameter "G" in. (mm)	Raised face height "J" in. (mm)	Minimum gasket I.D. "N" in. (mm)	Weight lb (kg)
ANSI/ASME							
2-in.	150	0.75 (19)	2.30 (58)	3.62 (92)	0.06 (1,50)	2.5 (64)	7.40 (3,33)
	300	0.75 (19)	2.30 (58)	3.62 (92)	0.06 (1,50)	2.5 (64)	8.99 (4,05)
	600	0.75 (19)	2.30 (58)	3.62 (92)	0.25 (6,40)	2.5 (64)	10.44 (4,70)
	900/1500	1.00 (25)	2.30 (58)	3.62 (92)	0.25 (6,40)	2.5 (64)	24.62 (11,08)
	2500	1.13 (29)	2.30 (58)	3.62 (92)	0.25 (6,40)	2.5 (64)	36.71 (16,52)
3-in.	150	1.13 (25)	3.50 (89)	5.00 (127)	0.06 (1,50)	3.70 (94)	13.79 (6,21)
	300	0.88 (22)	3.50 (89)	5.00 (127)	0.06 (1,50)	3.70 (94)	17.84 (8,03)
	600	0.88 (22)	3.50 (89)	5.00 (127)	0.25 (6,40)	3.70 (94)	20.31 (9,14)
	900	1.00 (25)	3.50 (89)	5.00 (127)	0.25 (6,40)	3.70 (94)	33.21 (14,94)
	1500	1.25 (32)	3.50 (89)	5.00 (127)	0.25 (6,40)	3.70 (94)	46.76 (21,04)
	2500	1.38 (35)	3.50 (89)	5.00 (127)	0.25 (6,40)	3.70 (94)	81.34 (36,60)
4-in.	150	0.75 (19)	3.50 (89)	6.20 (157)	0.06 (1,50)	3.70 (94)	19.56 (8,80)
	300	0.88 (22)	3.50 (89)	6.20 (157)	0.06 (1,50)	3.70 (94)	29.56 (8,80)
	600	1.00 (25)	3.50 (89)	6.20 (157)	0.25 (6.40)	3.70 (94)	40.73 (18,33)
	900	1.25 (32)	3.50 (89)	6.20 (157)	0.25 (6.40)	3.70 (94)	53.16 (23,92)
	1500	1.38 (35)	3.50 (89)	6.20 (157)	0.25 (6.40)	3.70 (94)	71.72 (32,27)
	2500	1.63 (41)	3.50 (89)	6.20 (157)	0.25 (6.40)	3.70 (94)	125.72 (56,57)
EN 1092-1							

Pipe size	Class	Bolt hole diameter "D" in. (mm)	Standard diaphragm diameter "F" in. (mm)	Raised face diameter "G" in. (mm)	Raised face height "J" in. (mm)	Minimum gasket I.D. "N" in. (mm)	Weight lb (kg)
DN50	PN 40	0.71 (18)	2.30 (58)	4.00 (102)	0.12 (3,00)	2.50 (64)	9.02 (4,06)
	PN 63	0.87 (22)	2.30 (58)	4.00 (102)	0.12 (3,00)	2.50 (64)	12,58 (5,66)
	PN 100	1.02 (26)	2.30 (58)	4.00 (102)	0.12 (3,00)	2.50 (64)	15.23 (6,85)
	PN160	1.02 (26)	2.30 (58)	4.00 (102)	0.12 (3,00)	2.50 (64)	16.12 (7,25)
DN80	PN 40	0.71 (18)	3.50 (89)	5.43 (138)	0.12 (3,0)	3.70 (94)	15.03 (6,76)
	PN 63	0.88 (22)	3.50 (89)	5.43 (138)	0.12 (3,0)	3.70 (94)	18.87 (8,49)
	PN 100	1.02 (26)	3.50 (89)	5.43 (138)	0.12 (3,0)	3.70 (94)	23.34 (10,50)
	PN160	1.02 (26)	3.50 (89)	5.43 (138)	0.12 (3,0)	3.70 (94)	25.83 (11,62)
DN100	PN 10/16	0.71 (18)	3.50 (89)	6.20 (157)	0.12 (3,0)	3.70 (94)	16.08 (7,24)
	PN 40	0.87 (22)	3.50 (89)	6.20 (157)	0.12 (3,0)	3.70 (94)	20.31 (9,14)
	PN 63	1.02 (26)	3.50 (89)	6.20 (157)	0.12 (3,0)	3.70 (94)	26.74 (1203)
	PN 100	1.18 (30)	3.50 (89)	6.20 (157)	0.12 (3,0)	3.70 (94)	34.26 (15,42)
	PN 160	1.18 (30)	3.50 (89)	6.20 (157)	0.12 (3,0)	3.70 (94)	37.44 (16,85)
JIS							
50A	10K	0.75 (19)	2.30 (58)	3.62 (92)	0.08 (2,0)	2.50 (64)	6.93 (3,15)
	20K	0.75 (19)	2.30 (58)	3.62 (92)	0.08 (2,0)	2.50 (64)	7.11 (3,20)
	40K	0.75 (19)	2.30 (58)	4.00 (102)	0.08 (2,0)	2.50 (64)	10.41 (4,68)
80A	10K	0.75 (19)	3.50 (89)	5.00 (127)	0.08 (2,0)	3.70 (94)	10.52 (4,73)
	20K	0.91 (23)	3.50 (89)	5.00 (127)	0.08 (2,0)	3.70 (94)	13.61 (6,12)
	40K	0.91 (23)	3.50 (89)	5.43 (138)	0.08 (2,0)	3.70 (94)	20.08 (9,04)
100A	10K	0.75 (19)	3.50 (89)	6.20 (157)	0.08 (2,0)	3.70 (94)	14.03 (6,31)
	20K	0.91 (23)	3.50 (89)	6.20 (157)	0.08 (2,0)	3.70 (94)	19.16 (8,62)
	40K	0.98 (25)	3.50 (89)	6.20 (157)	0.08 (2,0)	3.70 (94)	32.12 (14,45)

Figure 27: FFW Flush Flanged Seal - Flushing Connection Ring (Lower Housing)

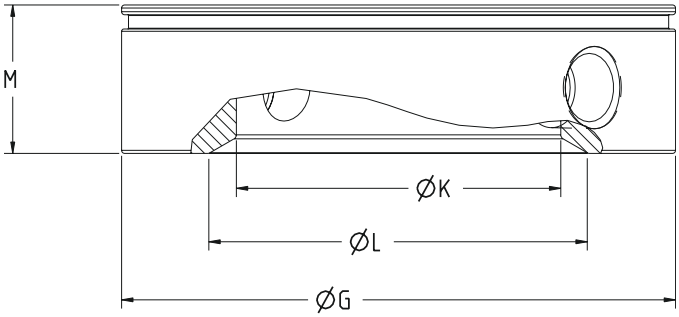


Table 89: Dimensions for FFW Flushing Connection Ring (Lower Housing)

Pipe size	Class	Raised face diameter "G" in. (mm)	Inner diameter "K" in. (mm)	Beveled edge "L" in. (mm)	Thickness with ¼-NPT F.C. "M" in. (mm)	Thickness with ½-NPT F.C. "M" in. (mm)	Weight lb (kg)
ANSI/ASME							
2-in.	150	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	7.41 (3,33)
	300	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	8.99 (4,05)
	600	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	10.44 (4,70)
	900/1500	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	24.62 (11,08)
	2500	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	36.71 (16,52)
3-in.	150	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	13.79 (6,21)
	300	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	17.84 (8,03)
	600	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	20.31 (9,14)
	900	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	33.21 (14,94)
	1500	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	46.76 (21,04)
	2500	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	81.34 (36,60)
4-in.	150	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	19.56 (8,80)
	300	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	29.56 (13,30)
	600	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	40.73 (18,33)
	900	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	53.16 (23,92)

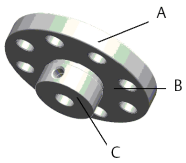
Table 89: Dimensions for FFW Flushing Connection Ring (Lower Housing) *(continued)*

Pipe size	Class	Raised face diameter "G" in. (mm)	Inner diameter "K" in. (mm)	Beveled edge "L" in. (mm)	Thickness with ¼-NPT F.C. "M" in. (mm)	Thickness with ½-NPT F.C. "M" in. (mm)	Weight lb (kg)
	1500	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	71.72 (32,27)
	2500	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	125.72 (56,57)
EN1092-1							
DN 50	PN 40	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	9.02 (4,06)
	PN 63	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	12.58 (5,66)
	PN 100	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	15.23 (6.85)
	PN 160	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	16.12 (7,25)
DN 80	PN 40	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	15.03 (6,76)
	PN 63	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	18.87 (8,49)
	PN 100	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	23.34 (10.50)
	PN 160	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	25.83 (11,62)
DN 100	PN 10/16	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	16.08 (7,24)
	PN 40	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	20.31 (9,14)
	PN 63	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	26.74 (12,03)
	PN 100	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	34.26 (15,42)
	PN 160	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	37.44 (16,85)
JIS							
50A	10K	3.62 (92)	2.12 (54)	N/A	0.97 (25)	1.30 (33)	6.93 (3,15)
	20K	3.62 (92)	2.12 (54)	N/A	0.97 (25)	1.30 (33)	7.11 (3,20)
	40K	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	10.41 (4,68)
80A	10K	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	10.52 (4,73)

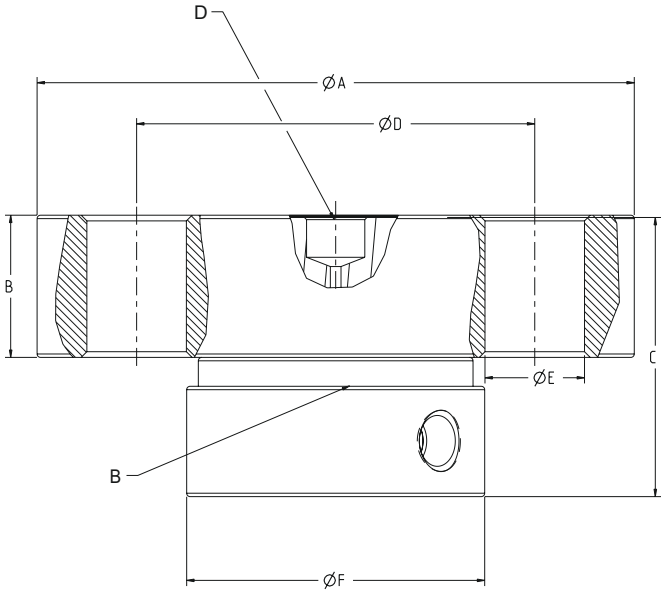
Table 89: Dimensions for FFW Flushing Connection Ring (Lower Housing) *(continued)*

Pipe size	Class	Raised face diameter "G" in. (mm)	Inner diameter "K" in. (mm)	Beveled edge "L" in. (mm)	Thickness with ¼-NPT F.C. "M" in. (mm)	Thickness with ½-NPT F.C. "M" in. (mm)	Weight lb (kg)
	20K	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	13.61 (6,12)
	40K	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	20.08 (9,04)
100A	10K	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	14.03 (6,31)
	20K	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	19.16 (8,62)
	40K	6.20 (157)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	32.12 (14,45)

Figure 28: RFW Flanged Seal Standard Design



A. Process flange
B. Diaphragm
C. Lower housing or flushing connection
D. Connection to transmitter



Dimensions are in inches (millimeters).

Table 90: RFW Flanged Seal Standard Design Dimensions

Lower housing is loose on standard design, consult factory for retained lower housing options.

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Overall height "C" in. (mm)		Bolt circle diameter "D" in. (mm)	Bolt hole diameter "E" in. (mm)	Lower housing diameter "F" in. (mm)	Weight lb (kg)
				No or ¼-in. NPT flush connection	½-in. NPT flush connection				
ANSI/ASME									
½-in.	2500	5.25 (133)	1.19 (30)	2.45 (62)	2.79 (71)	3.50 (89)	0.88 (22)	2.62 (67)	8.49 (3,82)

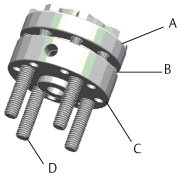
Table 90: RFW Flanged Seal Standard Design Dimensions *(continued)*

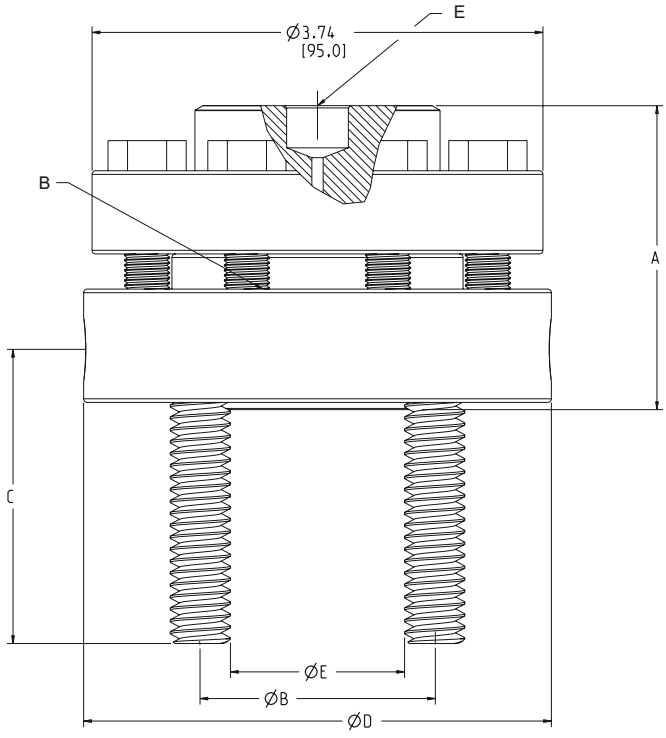
Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Overall height "C" in. (mm)		Bolt circle diameter "D" in. (mm)	Bolt hole diameter "E" in. (mm)	Lower housing diameter "F" in. (mm)	Weight lb (kg)
				No or ¼-in. NPT flush connection	½-in. NPT flush connection				
¾-in.	300/600	4.62 (117)	0.62 (16)	2.45 (62)	2.79 (71)	3.25 (83)	0.88 (22)	2.62 (67)	4.99 (2,25)
	900/1500	5.12 (130)	1.00 (25)	2.45 (62)	2.79 (71)	3.50 (89)	0.88 (22)	2.62 (67)	7.25 (3,26)
	2500	5.50 (140)	1.25 (32)	2.45 (62)	2.79 (71)	3.75 (95)	0.88 (22)	2.62 (67)	9.52 (4,28)
1-in.	150	4.25 (108)	0.50 (13)	2.45 (62)	2.79 (71)	3.12 (79)	0.63 (16)	2.62 (67)	4.19 (1,89)
	300	4.88 (124)	0.62 (16)	2.45 (62)	2.79 (71)	3.50 (89)	0.75 (19)	2.62 (67)	5.30 (2,39)
	600	4.88 (124)	0.69 (18)	2.45 (62)	2.79 (71)	3.50 (89)	0.75 (19)	2.62 (67)	5.58 (2,51)
	900/1500	5.88 (150)	1.12 (29)	2.45 (62)	2.79 (71)	4.00 (102)	1.00 (25)	2.62 (67)	9.68 (4,36)
	2500	6.25 (159)	1.38 (35)	2.45 (62)	2.79 (71)	4.25 (108)	1.00 (25)	2.87 (73)	13.68 (6,16)
1½-in.	150	5.00 (127)	0.62 (16)	2.45 (62)	2.79 (71)	3.88 (99)	0.63 (22)	2.62 (67)	5.63 (2,53)
	300	6.12 (155)	0.75 (19)	2.45 (62)	2.79 (71)	4.50 (114)	0.88 (22)	2.88 (73)	8.20 (3.69)
	600	6.12 (155)	0.88 (22)	2.45 (62)	2.79 (71)	4.50 (114)	0.88 (22)	2.88 (73)	9.09 (4,09)
	900	7.00 (178)	1.25 (32)	2.45 (62)	2.79 (71)	4.88 (124)	1.12 (28)	2.88 (73)	14.48 (6,52)
	1500	7.00 (178)	1.25 (32)	2.45 (62)	2.79 (71)	4.88 (124)	1.13 (29)	2.88 (73)	14.48 (6,62)
	2500	8.00 (203)	1.75 (45)	2.45 (62)	2.79 (71)	5.75 (146)	1.25 (32)	2.88 (73)	25.34 (11,40)
EN 1092-1									
DN 25	PN 40	4.53 (115)	0.71 (18)	2.45 (62)	2.79 (71)	3.35 (85)	0.55 (14)	2.68 (68)	5.09 (2,29)
DN 40	PN 40	5.91 (150)	0.71 (18)	2.45 (62)	2.79 (71)	4.33 (110)	0.71 (18)	3.47 (88)	8.04 (3,62)
JIS									
20A	40K	4.72 (120)	0.79 (20)	2.45 (62)	2.79 (71)	3.35 (85)	0.75 (19)	2.62 (67)	5.59 (2,52)
25A	10K	4.92 (125)	0.55 (14)	2.45 (62)	2.79 (71)	3.54 (90)	0.75 (19)	2.62 (67)	5.00 (2,25)
	20K	4.92 (125)	0.63 (16)	2.45 (62)	2.79 (71)	3.54 (90)	0.75 (19)	2.62 (67)	5.31 (2,39)

Table 90: RFW Flanged Seal Standard Design Dimensions *(continued)*

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Overall height "C" in. (mm)		Bolt circle diameter "D" in. (mm)	Bolt hole diameter "E" in. (mm)	Lower housing diameter "F" in. (mm)	Weight lb (kg)
				No or ¼-in. NPT flush connection	½-in. NPT flush connection				
	40K	5.12 (130)	0.87 (22)	2.45 (62)	2.79 (71)	3.74 (95)	0.75 (19)	2.76 (70)	6.86 (3,09)
40A	10K	5.51 (140)	0.63 (16)	2.45 (62)	2.79 (71)	4.13 (105)	0.75 (19)	3.19 (81)	6.20 (2,79)
	20K	5.51 (140)	0.71 (18)	2.45 (62)	2.79 (71)	4.13 (105)	0.75 (19)	3.19 (81)	7.36 (3,31)
	40K	6.30 (160)	0.94 (24)	2.45 (62)	2.79 (71)	4.72 (120)	0.91 (23)	3.54 (90)	11.06 (4,98)

Figure 29: RFW Flanged Seal Stud Bolt Design





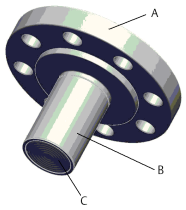
A. Upper housing
B. Diaphragm
C. Lower housing or flushing connection
D. Bolts
E. Connection to transmitter

Dimensions are in inches (millimeters).

Table 91: RFW Flanged Seal Stud Bolt Design Dimensions

Pipe size	Class	Overall height "A" in. (mm)		Stud circle diameter "B" in. (mm)	Stud (size, length) "C" in. (mm)	Lower housing diameter "D" in. (mm)	Raised face diameter "E" in. (mm)	Weight lb (kg)
		No or ¼-in. NPT flush connection	½-in. NPT flush connection					
ANSI/ASME								
½-in.	150	2.52 (64)	2.82 (72)	2.38 (61)	½–13NC, 2.5-in.	3.74 (95)	1.38 (35)	6.28 (2,83)
	300/600	2.77 (70)	2.87 (73)	2.62 (67)	½–13NC, 2.5-in.	3.75 (95)	1.38 (35)	6.53 (2,94)
¾-in.	150	2.52 (64)	2.82 (72)	2.75 (70)	½–13NC, 2.5-in.	3.88 (99)	1.69 (43)	6.46 (2,91)
EN 1092-1								
DN 15	PN 40	2.52 (64)	2.82 (72)	2.56 (65)	M12 × 1.75, 60 mm	3.74 (95)	1.77 (45)	6.27 (2,82)
	PN 100/160	2.52 (64)	2.82 (72)	2.95 (75)	M12 × 1.75, 60 mm	4.13 (105)	1.77 (45)	6.92 (3,11)
DN 20	PN 40	2.52 (64)	2.82 (72)	2.95 (75)	M12 × 1.75, 60 mm	4.13 (105)	2.28 (58)	6.90 (3,11)
JIS								
10A	10/20K	2.52 (64)	2.82 (72)	2.56 (65)	M12 × 1.75, 60 mm	3.74 (95)	1.81 (46)	6.30 (2,84)
	40K	2.52 (64)	2.82 (72)	2.95 (75)	M16 × 2.00, 70 mm	4.33 (110)	2.05 (52)	7.70 (3,47)
15A	10K	2.52 (64)	2.82 (72)	2.76 (70)	M12 × 1.75, 60 mm	3.74 (95)	2.01 (51)	6.39 (2,88)
	20K	2.52 (64)	2.82 (72)	2.76 (70)	M12 × 2.00, 60 mm	3.74 (95)	2.01 (51)	6.39 (2,88)
	40K	2.52 (64)	2.82 (72)	3.15 (80)	M16 × 2.00, 70 mm	4.53 (115)	2.17 (55)	8.26 (3,72)
20A	10/20K	2.52 (64)	2.82 (72)	2.95 (75)	M12 × 1.75, 60 mm	3.94 (100)	2.21 (56)	6.68 (3,01)

Figure 30: EFW Extended Flanged Seal - Extended Flanged Assembly



A. *Process flange*
B. *Extension*
C. *Diaphragm*
D. *Connection to transmitter*
E. *Extension length*

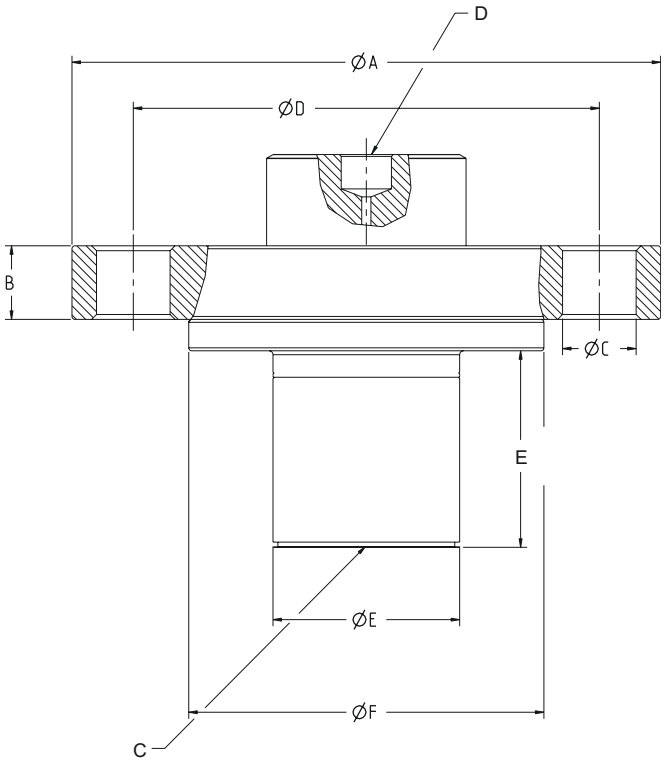


Table 92: EFW Extended Flanged Seal Dimensions

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Number of bolts	Bolt hole diameter "D" in. (mm)	Raised face diameter "F" in. (mm)
ANSI/ASME							
1½-in.	150	5.00 (127)	0.62 (16)	0.63 (16)	4	3.88 (99)	2.88 (73)
	300	6.12 (156)	0.75 (19)	0.88 (22)	4	4.50 (114)	2.88 (73)
	600	6.12 (156)	0.88 (22)	0.88 (22)	4	4.50 (114)	2.88 (73)
	900/1500	7.00 (178)	1.25 (32)	1.13 (28)	4	4.88 (124)	2.88 (73)
	2500	8.00 (203)	1.75 (45)	1.25 (32)	4	5.75 (146)	2.88 (73)
2-in.	150	6.00 (152)	0.69 (18)	0.75 (19)	4	4.75 (121)	3.62 (92)
	300	6.50 (165)	0.82 (21)	0.75(19)	8	5.00 (127)	3.62 (92)
	600	6.50 (165)	1.00 (25)	0.75 (19)	8	5.00 (127)	3.62 (92)
	900/1500	8.50 (216)	1.50 (38)	1.00 (25)	8	6.50 (165)	3.62 (92)
	2500	9.25 (235)	2.00 (51)	1.13 (29)	8	6.75 (172)	3.62(92)
3-in.	150	7.50 (191)	0.88 (22)	0.75 (19)	4	6.00 (152)	5.00 (127)
	300	8.25 (210)	1.06 (27)	0.88 (22)	8	6.62 (168)	5.00 (127)
	600	8.25 (210)	1.25 (32)	0.88 (22)	8	6.62 (168)	5.00 (127)
	900	9.50 (241)	1.50 (38)	1.00 (25)	8	7.50 (191)	5.00 (127)

Table 92: EFW Extended Flanged Seal Dimensions *(continued)*

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Number of bolts	Bolt hole diameter "D" in. (mm)	Raised face diameter "F" in. (mm)
	1500	10.50 (267)	1.88 (48)	1.25(32)	8	8.00 (203)	5.00 (127)
	2500	12.00 (305)	2.62 (67)	1.38 (35)	8	9.00 (229)	5.00 (127)
4-in.	150	9.00 (229)	0.88 (22)	0.75 (19)	8	7.50 (191)	6.20 (158)
	300	10.00 (254)	1.19 (30)	0.88 (22)	8	7.88 (200)	6.20 (158)
	600	10.75 (273)	1.50 (38)	1.00 (25)	8	8.50 (216)	6.20 (158)
	900	11.50 (292)	1.75 (45)	1.25 (32)	8	9.25 (235)	6.20 (158)
	1500	12.25 (311)	2.12 (54)	1.38 (35)	8	9.50 (241)	6.20 (158)
	2500	14.00 (356)	3.00 (76)	1.63 (41)	8	10.75 (274)	6.20 (158)
EN 1092-1							
DN 50	PN 40	6.50 (165)	0.67 (17)	0.71 (18)	4	4.92 (125)	4.02 (102)
	PN 63	7.08 (180)	0.91 (23)	0.87 (22)	4	5.31 (135)	4.02 (102)
	PN 100	7.68 (195)	0.98 (25)	1.02 (26)	4	5.71 (145)	4.02 (102)
	PN 160	7.68 (195)	1.06 (27)	1.02 (26)	4	5.71 (145)	4.02 (102)
DN 80	PN 40	7.87 (200)	0.83 (21)	0.71 (18)	8	6.30 (160)	5.43 (138)
	PN 63	8.46 (215)	0.98 (25)	0.88 (22)	8	6.69 (170)	5.43 (138)
	PN 100	9.06 (230)	1.14 (29)	1.02 (26)	8	7.09 (180)	5.43 (138)
	PN 160	9.06 (230)	1.30 (33)	1.02 (26)	8	7.09 (180)	5.43 (138)
DN 100	PN 10/16	8.66 (220)	0.67 (17)	0.71 (18)	8	7.09 (180)	6.20 (158)
	PN 40	9.25 (235)	0.83 (21)	0.87 (22)	8	7.48 (190)	6.20 (158)
	PN 63	9.84 (250)	1.06 (27)	1.02 (26)	8	7.87 (200)	6.20 (158)
	PN 100	10.43 (265)	1.30 (33)	1.18 (30)	8	8.27 (210)	6.20 (158)
	PN 160	10.43 (265)	1.46 (37)	1.18 (30)	8	8.27 (210)	6.20 (158)
JIS							
50A	10K	6.10 (155)	0.63 (16)	0.75 (19)	4	4.72 (120)	3.62 (92)
	20K	6.10 (155)	0.71 (18)	0.75 (19)	8	4.72 (120)	3.62 (92)
	40K	6.50 (165)	1.02 (26)	0.75 (19)	8	5.12 (130)	4.00 (102)
80A	10K	7.28 (185)	0.71 (18)	0.75 (19)	8	5.91 (150)	5.00 (127)
	20K	7.87 (200)	0.87 (22)	0.91 (23)	8	6.30 (160)	5.00 (127)
	40K	8.27 (210)	1.26 (32)	0.91 (23)	8	6.69 (170)	5.43 (138)
100A	10K	8.27 (210)	0.71 (18)	0.75 (19)	8	6.89 (175)	6.20 (158)
	20K	8.86 (225)	0.94 (24)	0.91 (23)	8	7.28 (185)	6.20 (158)
	40K	9.84 (250)	1.42 (36)	0.98 (25)	8	8.07 (205)	6.20 (158)

Table 93: EFW Extended Flanged Seal Dimensions

Process connection size			Diameter "E" in. (mm)
ANSI B16.5	**EN 1092-1**	**JIS B2238**	
3-in.	DN 80	80A	2.58 (66)
4-in.	DN 100	100A	3.50 (89)
1½-in.	DN 40	40A	1.45 (37)
2-in.	DN 50	50A	1.90 (48)
3-in. Headbox	DN 80 Headbox	N/A	2.88 (73)
4-in. Headbox	DN100 Headbox	N/A	3.78 (96)

Table 94: EFW Extended Flanged Seal Weights in Pounds (Kilograms)

Pipe size	Class	Extension length								
		1-in. (25 mm)	**2-in. (51 mm)**	**3-in. (76 mm)**	**4-in. (102 mm)**	**5-in. (127 mm)**	**6-in. (152 mm)**	**7-in. (178 mm)**	**8-in. (203 mm)**	**9-in. (229 mm)**
ANSI/ASME										
1½-in.	150	5.53 (2,49)	5.99 (2,70)	6.46 (2,91)	6.92 (3,11)	7.38 (3,32)	7.85 (3,53)	8.31 (3,74)	8.78 (3,95)	7.47 (3,36)
	300	8.11 (3,65)	8.57 (3,86)	9.04 (4,07)	9.50 (4,28)	9.96 (4,48)	10.43 (4,69)	10.89 (4,90)	11.36 (5,11)	10.05 (4,52)
	600	9.00 (4,05)	9.46 (4,56)	9.93 (4,47)	10.39 (4,68)	10.86 (4,89)	11.32 (5,09)	11.78 (5,30)	12.25 (5,51)	10.94 (4,92)
	900/1500	15.19 (6,86)	15.66 (7,05)	16.12 (7,25)	16.59 (7,47)	17.05 (7,67)	17.51 (7,88)	17.98 (8,09)	18.44 (8,30)	18.70 (8,42)
	2500	25.38 (11,42)	25.84 (11,63)	26.31 (11,84)	26.77 (12,05)	27.23 (12,25)	27.70 (12,47)	28.16 (12,67)	28.63 (12,88)	28.89 (13,00)
ANSI/ASME										
2-in.	150	8.22 (3,70)	8.80 (3,96)	9.41 (4,23)	10.00 (4,50)	10.60 (4,77)	11.19 (5,04)	11.79 (5,31)	12.38 (5,57)	11.16 (5,02)
	300	9.81 (4,41)	10.39 (4,68)	11.00 (4,95)	11.60 (5,22)	12.19 (5,49)	12.79 (5,76)	13.38 (6,02)	13.98 (6,29)	12.75 (5,74)
	600	11.26 (5,07)	11.84 (5,33)	12.44 (5,60)	13.05 (5,87)	13.64 (6,14)	14.23 (6,40)	14.83 (6,67)	15.42 (6,94)	14,20 (6.39)
	900/1500	25.50 (11,48)	26.31 (11,84)	27.12 (12,20)	27.92 (12,56)	28.73 (12,93)	29.54 (13,29)	30.34 (13,65)	31.15 (14,02)	31.32 (14,09)
	2500	36.58 (16,46)	37.38 (16,82)	38.19 (17,19)	39.00 (17,55)	39.80 (17,91)	40.61 (18,27)	41.42 (18,64)	42.22 (19,00)	42.40 (19,08)
3-in.	150	15.89 (7,15)	17.64 (7,94)	19.48 (8,77)	21.27 (9,57)	23.08 (10,39)	24.88 (11,20)	26.69 (12,01)	28.50 (12,83)	22.47 (10,11)
	300	19.94 (8,97)	21.69 (9,76)	23.53 (10,59)	25.32 (11,39)	27.13 (12,21)	28.93 (13,02)	30.74 (13,83)	32.54 (14,64)	26.52 (11,93)

Table 94: EFW Extended Flanged Seal Weights in Pounds (Kilograms) *(continued)*

Pipe size	Class	Extension length								
		1-in. (25 mm)	2-in. (51 mm)	3-in. (76 mm)	4-in. (102 mm)	5-in. (127 mm)	6-in. (152 mm)	7-in. (178 mm)	8-in. (203 mm)	9-in. (229 mm)
	600	22.43 (10,09)	24.18 (10,88)	26.02 (11,71)	27.81 (12,51)	29.62 (13,33)	31.42 (14,14)	33.23 (14,95)	35.03 (15,76)	29.01 (13,05)
	900	33.26 (14,97)	35.10 (15,80)	36.90 (16,61)	38.71 (17,42)	40.51 (18,23)	42.32 (19,04)	44.12 (19,85)	45.93 (20,67)	48.80 (21,96)
	1500	47.88 (21,55)	49.71 (22,37)	51.52 (23,18)	53.33 (24,00)	55.13 (24,81)	56.94 (25,62)	58.74 (26,43)	60.55 (27,25)	63.42 (28,54)
	2500	83.46 (37,56)	85.30 (38,39)	87.10 (39,20)	88.91 (40,01)	90.71 (40,82)	92.52 (41,63)	94.33 (42,45)	96.13 (43,26)	99.00 (44,55)
3-in. Headbox	150	15.76 (7,09)	17.40 (7,83)	19.07 (8,58)	20.90 (9,41)	22.40 (10,08)	24.07 (10,83)	25.74 (11,58)	27.41 (12,33)	23.24 (10,46)
	300	19.81 (8,91)	21.45 (9,65)	23.12 (10,40)	24.95 (11,23)	26.45 (11,90)	28.12 (12,65)	29.79 (13,41)	31.45 (14,15)	27.29 (12,28)
	600	22.30 (10,04)	23.94 (10,77)	25.61 (11,52)	27.44 (12,35)	28.94 (13,02)	30.61 (13,77)	32.28 (14,53)	33.94 (15,27)	29.78 (13,40)
	900	33.13 (14,91)	34.83 (15,67)	36.50 (16,53)	38.17 (17,18)	39.84 (17,93)	41.51 (18,68)	43.15 (19,42)	44.85 (20,18)	47.58 (21,41)
	1500	47.75 (21,49)	49.45 (22,25)	51.12 (23,00)	52.79 (23,76)	54.46 (24,51)	56.13 (25,26)	57.76 (25,99)	59.46 (26,76)	62.20 (27,99)
	2500	83.33 (37,50)	85.03 (38,26)	86.70 (39,02)	88.37 (39,77)	90.04 (40,52)	91.71 (41,27)	93.35 (42,01)	95.05 (42,77)	97.78 (44,00)
4-in.	150	28.61 (12,87)	39.17 (17,63)	49.62 (22,33)	60.07 (27,03)	70.52 (31,73)	80.94 (36,42)	91.42 (41,14)	101.88 (45,85)	31.74 (14,28)
	300	38.62 (17,38)	49.18 (22,13)	59.63 (26,83)	70.08 (31,54)	80.54 (36,24)	90.96 (40,93)	101.44 (45,65)	111.89 (50,35)	41.75 (18,79)
	600	48.37 (21,77)	58.93 (26,52)	69.38 (31,22)	79.83 (35,92)	90.28 (40,63)	100.70 (45,32)	111.19 (50,04)	121.64 (54,74)	51.50 (23,18)
	900	55.27 (24,87)	58.50 (26,33)	61.73 (27,78)	64.96 (29,23)	67.31 (30,29)	70.34 (31,65)	73.36 (33,01)	76.38 (34,37)	80.30 (36,14)
	1500	72.28 (32,53)	75.51 (33,98)	78.74 (35,43)	81.97 (36,89)	84.33 (37,95)	87.35 (39,31)	90.37 (40,67)	93.39 (42,03)	97.31 (43,79)
	2500	126.52 (56,93)	129.75 (58,39)	132.98 (59,84)	136.20 (61,29)	138.57 (62,36)	141.59 (63,72)	144.61 (65,07)	147.63 (66,43)	151.55 (68,20)
4-in. Headbox	150	22.84 (10,28)	25.85 (11,63)	28.90 (13,01)	31.99 (14,40)	35.00 (15,75)	38.06 (17,13)	41.11 (18,50)	44.13 (19,86)	32.00 (14,40)
	300	32.85 (14,78)	35.87 (16,14)	38.92 (17,51)	42.00 (18,90)	45.02 (20,26)	48.07 (21,63)	51.12 (23,00)	54.14 (24,36)	42.02 (18,91)

Table 94: EFW Extended Flanged Seal Weights in Pounds (Kilograms) *(continued)*

Pipe size	Class	Extension length								
		1-in. (25 mm)	2-in. (51 mm)	3-in. (76 mm)	4-in. (102 mm)	5-in. (127 mm)	6-in. (152 mm)	7-in. (178 mm)	8-in. (203 mm)	9-in. (229 mm)
	600	42.60 (19,17)	45.62 (20,53)	48.67 (21,90)	51.75 (23,29)	54.77 (24,65)	57.82 (26,02)	60.8 7(27,39)	63.89 (28,75)	51.7 7 (23,30)
	900	55.24 (24,86)	58.32 (26,24)	61.37 (27,62)	64.41 (28,98)	67.47 (30,36)	70.52 (31,73)	73.5 7(33,11)	76.62 (34,48)	80.74 (36,33)
	1500	72.25 (32,51)	75.33 (33,90)	78.38 (35,27)	81.43 (36,64)	84.48 (38,02)	87.53 (39,39)	90.58 (40,76)	93.63 (42,13)	97.75 (43,99)
	2500	126.49 (56,92)	129.57 (58,31)	132.62 (59,68)	135.67 (61,05)	138.72 (62,42)	141.78 (63,80)	144.83 (65,17)	147.88 (66,55)	152.00 (68,4)
EN 1092-1										
DN 40	PN 40	7.46 (3,36)	7.92 (3,56)	8.38 (3,77)	8.85 (3,98)	9.31 (4,19)	9.77 (4,40)	10.24 (4,61)	10.70 (4,82)	9.39 (4,23)
	PN 63/100	11.52 (5,18)	11.98 (5,39)	12.44 (5,60)	12.91 (5,81)	13.37 (6,23)	13.84 (6,34)	14.30 (6,44)	14.76 (6,64)	13.45 (6,05)
	PN 160	13.17 (5,93)	13.63 (6,13)	14.10 (6,35)	14.56 (6,55)	15.03 (6,76)	15.49 (6,97)	15.95 (7,18)	16.42 (7,39)	16.83 (7,57)
DN 50	PN 40	9.87 (4,44)	10.45 (4,70)	11.06 (5,00)	11.66 (5,25)	12.25 (5,51)	12.84 (5,78)	13.44 (6,05)	14.03 (6,31)	12.81 (5,76)
	PN 63	13.37 (6,02)	13.96 (6,28)	14.56 (6,55)	15.16 (6,82)	15.75 (7,09)	16.35 (7,36)	16.94 (7,62)	17.54 (7,89)	16.31 (7,34)
	PN 100	16.05 (7,22)	16.63 (7,48)	17.23 (7,75)	17.83 (8,02)	18.43 (8,29)	19.02 (8,56)	19.61 (8,82)	20.21 (9,09)	18.99 (8,55)
	PN 160	18.14 (8,16)	18.95 (8,53)	19.76 (8,89)	20.56 (9,25)	21.37 (9,62)	22.18 (9,98)	22.98 (10,34)	23.79 (10,71)	23.96 (10,78)
DN 80 Schedule 40	PN 40	16.85 (7,58)	18.47 (8,31)	20.08 (9,04)	21.70 (9,77)	23.32 (10,49)	24.94 (11,22)	26.56 (11,95)	28.18 (12,68)	23.97 (10,79)
	PN 63	20.70 (9,32)	22.32 (10,04)	23.93 (10,77)	25.55 (11,50)	27.17 (12,23)	28.79 (12,96)	30.41 (13,68)	32.03 (14,41)	27.82 (12,52)
	PN 100	25.29 (11,38)	26.90 (12,11)	28.51 (12,83)	30.13 (13,56)	31.75 (14,29)	33.37 (15,02)	34.99 (15,75)	36.61 (16,47)	32.40 (14,58)
	PN 160	29.45 (13,25)	31.10 (14,00)	32.72 (14,72)	34.33 (15,45)	35.95 (16,18)	37.57 (16,91)	39.17 (17,64)	40.81 (18,36)	43.50 (19,58)
DN 80 Schedule 80	PN 40	16.53 (7,44)	17.76 (7,99)	19.07 (8,58)	20.36 (9,16)	21.65 (9,74)	22.93 (10,32)	24.22 (10,90)	25.51 (11,48)	21.12 (9,50)
	PN 63	20.38 (9,17)	21.61 (9,72)	22.92 (10,31)	24.21 (10,89)	25.50 (11,48)	26.78 (12,05)	28.07 (12,63)	29.36 (13,21)	24.97 (11,24)
	PN 100	24.97 (11,24)	26.20 (11,79)	27.51 (12,38)	28.79 (12,96)	30.08 (13,54)	31.37 (14,12)	32.65 (14,69)	33.94 (15,27)	29.56 (13,30)

Table 94: EFW Extended Flanged Seal Weights in Pounds (Kilograms) *(continued)*

Pipe size	Class	Extension length								
		1-in. (25 mm)	2-in. (51 mm)	3-in. (76 mm)	4-in. (102 mm)	5-in. (127 mm)	6-in. (152 mm)	7-in. (178 mm)	8-in. (203 mm)	9-in. (229 mm)
	PN160	29.17 (13,13)	30.67 (13,80)	32.17 (17,48)	33.67 (15,15)	35.17 (15,83)	36.66 (16,50)	38.16 (17,17)	39.66 (17,85)	40.51 (18,23)
DN 80 Headbox	PN 40	16.92 (7,61)	18.56 (8,35)	20.23 (9,10)	22,06 (9,93)	23.56 (10,60)	25.23 (11,35)	26.90 (12,11)	28.56 (12,85)	24.40 (10,98)
	PN 63	20.77 (9,35)	22.41 (10,08)	24.08 (10,84)	25.91 (11,66)	27.41 (12,33)	29.08 (13,09)	30.75 (13,84)	32.41 (14,58)	28.25 (12,71)
	PN 100	25.35 (11,41)	26.99 (12,15)	28.66 (12,90)	30.49 (13,72)	31.99 (14,40)	33.66 (15,15)	35.33 (15,90)	37.00 (16,65)	32.84 (14,78)
	PN 160	29.49 (13,27)	31.19 (14,04)	32.86 (14,79)	34.53 (15,54)	36.20 (16,29)	37.87 (17,04)	39.50 (17,78)	41.20 (18,54)	43.94 (19,77)
DN 100 Schedule 40	PN 10/16	19.23 (8,65)	22.07 (9,93)	24.95 (11,23)	27.85 (12,53)	30.73 (13,83)	33.62 (15,13)	36.50 (16,43)	39.39 (17,73)	29.81 (13,41)
	PN 40	23.32 (10,50)	26.16 (11,77)	29.05 (13,07)	31.94 (14,37)	34.83 (15,67)	37.71 (16,97)	40.60 (18,27)	43.48 (19,57)	33.90 (15,26)
	PN 63	29.83 (13,42)	32.67 (14,70)	35.56 (16,00)	38.45 (17,30)	41.34 (18,60)	44.22 (19,90)	47.11 (21,20)	50.00 (22,50)	40.41 (18,18)
	PN 100	37.37 (16,82)	40.21 (18,09)	43.10 (19,40)	45.99 (20,70)	48.88 (22,00)	51.76 (23,29)	54.65 (24,59)	57.53 (25,89)	47.95 (21,58)
	PN 160	42,48 (19,12)	45.4 (20,43)	48.29 (21,73)	51.17 (23,03)	54.05 (24,32)	56.94 (25,62)	59.82 (26,92)	52.71 (28,22)	66.63 (29,98)
DN 100 Schedule 80	PN 16	18.85 (8,48)	21.43 (9,64)	23.98 (10,79)	26.53 (11,94)	29.08 (13,09)	31.66 (14,25)	34.17 (15,38)	36.72 (16,52)	26.81 (12,06)
	PN 40	22.95 (10,33)	25.53 (11,49)	28.07 (12,63)	30.62 (13,78)	33.17 (14,93)	35.75 (16,09)	38.27 (17,22)	40.82 (18,37)	30.90 (13,91)
	PN 63	29.46 (13,26)	32.04 (14,42)	34.58 (15,56)	37.13 (16,71)	39.68 (17,86)	42.26 (19,02)	44.78 (20,15)	47.33 (21,30)	37.41 (16,83)
	PN 100	36.99 (16,65)	39.57 (17,81)	42.12 (18,95)	44.67 (20,10)	47.22 (21,25)	49.80 (22,41)	52.32 (23,54)	84.87 (24,69)	44.95 (20,23)
	PN 160	42.18 (18,98)	44.73 (20,13)	47.30 (21,29)	49.85 (22,43)	52.40 (23,58)	54.94 (24,72)	57.49 (25,87)	60.03 (27,01)	63.62 (28,63)
DN 100 Headbox	PN 16	19.38 (8,72)	22.40 (10,08)	25.45 (11,45)	28.53 (12,84)	31.55 (14,20)	34.60 (15,57)	37.65 (16,94)	40.67 (18,30)	28.55 (12,85)
	PN 40	23.48 (10,57)	26.49 (11,92)	29.54 (13,29)	32.63 (14,68)	35.65 (16,04)	38.70 (17,42)	41.75 (18,79)	44.77 (20,15)	32.64 (14,69)
	PN 63	29.99 (13,50)	33.00 (14,85)	36.05 (16,22)	39.14 (17,61)	42.16 (18,97)	45.21 (20,34)	48.26 (21,72)	51.28 (23,08)	39.15 (17,62)
	PN 100	37.52 (16,88)	40.54 (18,24)	43.59 (19,62)	46.68 (21,01)	49.69 (22,36)	52.74 (23,73)	55.80 (25,11)	58.81 (26,46)	46.69 (21,01)

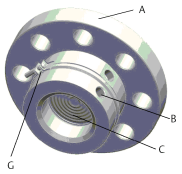
Table 94: EFW Extended Flanged Seal Weights in Pounds (Kilograms) *(continued)*

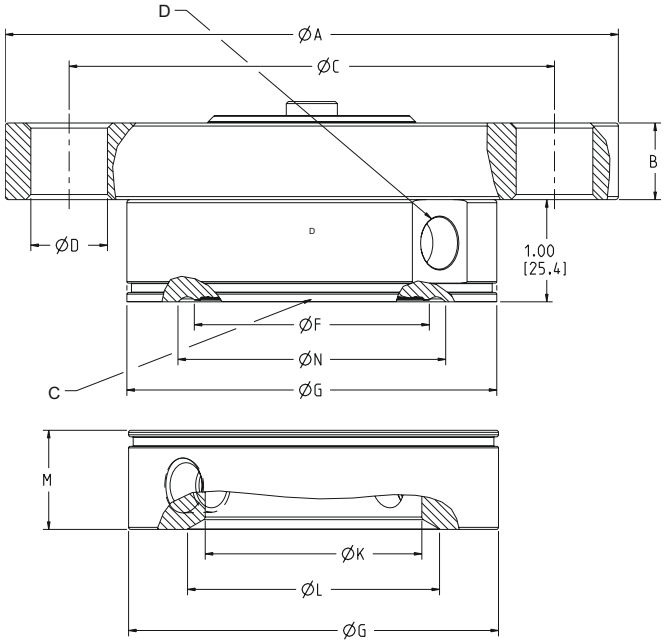
Pipe size	Class	Extension length								
		1-in. (25 mm)	2-in. (51 mm)	3-in. (76 mm)	4-in. (102 mm)	5-in. (127 mm)	6-in. (152 mm)	7-in. (178 mm)	8-in. (203 mm)	9-in. (229 mm)
	PN 160	42.68 (19,21)	45.76 (20,59)	48.81 (21,96)	51.86 (23,34)	54.91 (24,71)	57.96 (26,08)	61.01 (27,45)	64.06 (28,83)	68.15 (30,67)
JIS										
40A	10K	6.09 (2,74)	6.55 (2,95)	7.01 (3,15)	7.48 (3,37)	7.94 (3,57)	8.41 (3,78)	8.87 (3,99)	9.33 (4,20)	8.02 (3,61)
	20K	6.52 (2,93)	6.98 (3,14)	7.45 (3,35)	7.91 (3,56)	8.38 (3,77)	8.84 (3,98)	9,30 (4,19)	9.33 (4,20)	8.02 (3,81)
	40k	9.64 (4,34)	10.10 (4,55)	10.57 (4,76)	11.03 (4,96)	11.50 (5,18)	11.96 (5,38)	12.43 (5,59)	12.89 (5,80)	11.85 (5,21)
50A	10K	7.73 (3.48)	8,31 (3.74)	8,91 (4.01)	9,51 (4.28)	10,11 (4,55)	10.70 (4,82)	11.30 (5,08)	11.89 (5,35)	10.67 (4,80)
	20K	7.91 (3,56)	8.49 (3,82)	9.10 (4,10)	9.70 (4,37)	10.29 (4,63)	10.89 (4,90)	11,48 (5,17)	12.07 (5,43)	10,85 (4,88)
	40K	11.18 (5,03)	11.76 (5,29)	12.37 (5,57)	13.00 (5,85)	13.56 (6,10)	14.16 (6,37)	14.75 (6,64)	15.35 (6,91)	14.12 (6,35)
80A Schedule 40	10K	12.41 (5,58)	14.02 (6,31)	15.63 (7,03)	17.25 (7,76)	18.87 (8,49)	20.49 (9,22)	22.11 (9,95)	23.73 (10,68)	19.52 (8,78)
	20K	15.51 (6,98)	17.12 (7,70)	18.73 (8,43)	20.35 (9,16)	21.97 (9,89)	23.59 (10,62)	25.21 (11,34)	26.83 (12,07)	22.62 (10,18)
	40K	21.92 (9,86)	23.53 (10,59)	25.15 (11,32)	26.77 (12,05)	28.39 (12,78)	30.00 (13,50)	31.62 (14,23)	33.24 (14,96)	29.04 (13,07)
80A Schedule 80	10K	12.09 (5,44)	13.32 (5,99)	14.63 (6,58)	15.91 (7,16)	17.20 (7,74)	18.49 (8,32)	19.78 (8,90)	21.06 (9,48)	16.68 (7,51)
	20K	15.19 (6,84)	16.42 (7,39)	17.73 (7,98)	19.01 (8,55)	20.30 (9,14)	21.59 (9,72)	22.88 (10,30)	24.16 (10,87)	19.78 (8,90)
	40K	21.60 (9,72)	22.83 (10,27)	24.14 (10,86)	25.43 (11,44)	26.72 (12,02)	28.00 (12,60)	29.29 (13,18)	30.58 (13,76)	26.19 (11,79)
100A Schedule 40	10K	17.15 (7,72)	19.99 (9,00)	22.87 (10,29)	25.77 (11,60)	28.65 (12,89)	31.54 (14,19)	34.42 (15,49)	37.31 (16,79)	27.73 (12,48)
	20K	22.16 (9,97)	24.99 (11,25)	27.88 (12,55)	30.78 (13,85)	33.66 (15,15)	36.55 (16,45)	39.43 (17,74)	42.31 (19,04)	32.73 (14,73)
	40K	35.21 (15,84)	38.05 (17,12)	40.94 (18,42)	43.83 (19,72)	46.72 (21,02)	49.60 (22,32)	52.49 (23,62)	55.37 (24,92)	45.79 (20,61)
100A Schedule 80	10K	16.77 (7,55)	19.35 (8,71)	21.90 (9,86)	24.45 (11,00)	27.00 (12,15)	29.58 (13,31)	32.09 (14,44)	34.64 (15,59)	24.73 (11,13)
	20K	21.78 (9,80)	24.36 (10,96)	26.91 (12,11)	29.46 (13,26)	32.00 (14,40)	34.59 (15,57)	37.10 (16,70)	39.65 (17,84)	29.73 (13,38)

Table 94: EFW Extended Flanged Seal Weights in Pounds (Kilograms) *(continued)*

Pipe size	Class	Extension length								
		1-in. (25 mm)	2-in. (51 mm)	3-in. (76 mm)	4-in. (102 mm)	5-in. (127 mm)	6-in. (152 mm)	7-in. (178 mm)	8-in. (203 mm)	9-in. (229 mm)
	40K	34.83 (15,67)	37.41 (16,83)	39.96 (17,98)	42.51 (19,13)	45.06 (20,28)	47.64 (21,44)	50.16 (22,57)	52.71 (23,72)	42.79 (19,26)

Figure 31: PFW Pancake Seal





A. *Process flange*
B. *Flushing connection*
C. *Diaphragm*
D. *Connection to transmitter*
E. *Flushing connection*
F. *Lower housing alignment clamp (option code SA)*

Dimensions are in inches (millimeters).

Table 95: PFW Pancake Seal Dimensions

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Number of bolts	Bolt circle "C" in. (mm)	Bolt hole diameter "D" in. (mm)	Standard diaphragm diameter "F" in. (mm)
ANSI/ASME							
2-in.	150	6.00 (152)	0.69 (18)	4	4.75 (121)	0.75 (19)	2.30 (58)
	300	6.50 (165)	0.81 (21)	8	5.00 (127)	0.75 (19)	2.30 (58)
	600	6.50 (165)	1.00 (25)	8	5.00 (127)	0.75 (19)	2.30 (58)
	900/1500	8.50 (216)	1.50 (38)	8	6.50 (165)	1.00 (25)	2.30 (58)
	2500	9.25 (235)	2.00 (51)	8	6.75 (172)	1.13 (29)	2.30 (58)
3-in.	150	7.50 (191)	0.88 (22)	4	6.00 (152)	0.75 (19)	3.50 (89)
	300	8.25 (210)	1.06 (27)	8	6.62 (168)	0.88 (22)	3.50 (89)
	600	8.25 (210)	1.25 (32)	8	6.62 (168)	0.88 (22)	3.50 (89)

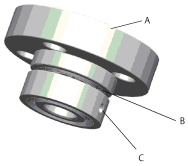
Table 95: PFW Pancake Seal Dimensions *(continued)*

	900	10.50 (267)	1.50 (38)	8	8.00 (203)	1.25 (32)	3.50 (89)
	1500	10.50 (267)	1.88 (48)	8	8.00 (203)	1.25 (32)	3.50 (89)
	2500	12.00 (305)	2.62 (67)	8	9.00 (229)	1.38 (35)	3.50 (89)
EN1092-1							
DN 50	PN 40	6.50 (165)	0.67 (17)	4	4.92 (125)	0.71 (18)	2.30 (58)
	PN 63	7.09 (180)	0.91 (23)	4	5.31 (135)	0.87 (22)	2.30 (58)
	PN 100	7.68 (195)	0.98 (25)	4	5.71 (145)	1.10 (28)	2.30 (58)
DN 80	PN 40	7.87 (200)	0.83 (21)	8	6.30 (160)	0.71 (18)	3.50 (89)
	PN 63	8.46 (215)	0.98 (25)	8	6.69 (170)	0.87 (22)	3.50 (89)
	PN 100	9.06 (230)	0.98 (25)	8	7.09 (180)	1.10 (28)	3.50 (89)

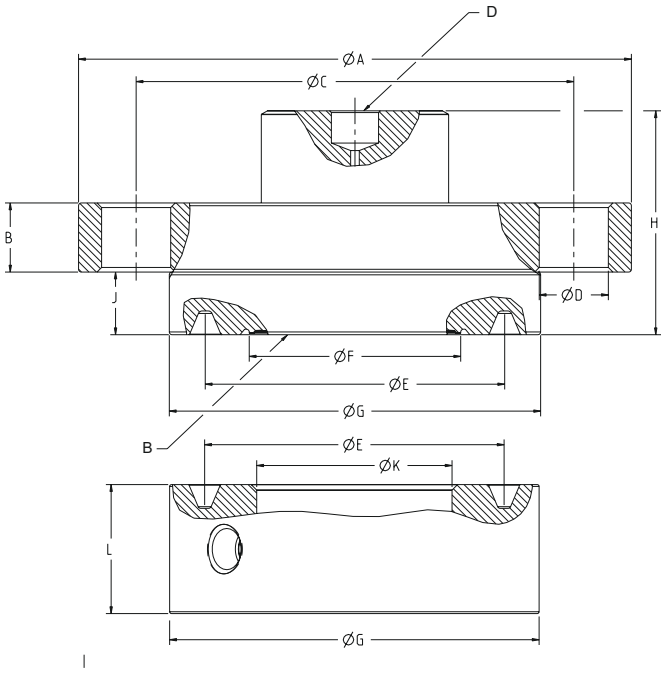
Table 96: Additional PFW Pancake Seal Dimensions

Pipe size	Outer diameter "G" in. (mm)	Inner diameter "K" in. (mm)	Beveled diameter "L" in. (mm)	Thickness with ¼- NPT F.C. "M" in. (mm)	Thickness with ½-NPT F.C. "M" in. (mm)	Minimum gasket I.D. "N" in. (mm)	Weight lb (kg)
ANSI/ASME							
2-in.	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.5 (64)	8.61 (3,87)
	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.5 (64)	10.20 (4,59)
	3.62 (92)	2.12 (54)	2.48 (63)	0.97 (25)	1.30 (33)	2.5 (64)	11.65 (5,24)
	3.62 (92)	2.12 (54)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	24.84 (11,18)
	3.62 (92)	2.12 (54)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	36.92 (16,61)
3-in.	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	16.83 (7,57)
	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	20.88 (9,40)
	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	23.35 (10,51)
	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	33.83 (15,22)
	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	47.39 (19,98)
	5.00 (127)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	81.97 (36,89)
EN1092-1							
DN 50	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	10.67 (4,80)
	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	14.24 (6,41)
	4.00 (102)	2.40 (61)	N/A	0.97 (25)	1.30 (33)	2.5 (64)	16.89 (7,60)
DN 80	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	18.76 (8,44)
	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	22.60 (10,17)
	5.43 (138)	3.60 (91)	N/A	0.97 (25)	1.30 (33)	3.7 (94)	27.07 (12,18)

Figure 32: FCW Flush Flanged Seal – RTJ Gasket Surface Two-Piece Design (shown with flushing ring)



A. *Process flange*
B. *Diaphragm*
C. *Flushing connection*
D. *Connection to transmitter*



Dimensions are in inches (millimeters).

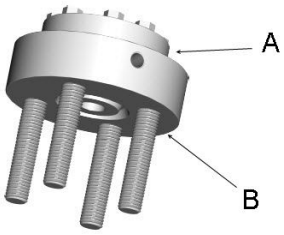
Table 97: Dimensions for FCW Two-Piece Flange Type Flush Diaphragm Seal

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle diameter "C" in. (mm)	Bolt hole diameter "D" in. (mm)	Overall height "H" in. (mm)	Raised face height "J" in. (mm)
ANSI/ASME							
2-in.	150	6.00 (152)	0.69 (18)	4.75 (121)	0.75 (19)	2.43 (62)	0.68 (17)
	300	6.50 (165)	0.82 (21)	5.00 (127)	0.75 (19)	2.43 (62)	0.68 (17)
	600	6.50 (165)	1.00 (25)	5.00 (127)	0.75 (19)	2.43 (62)	0.68 (17)
	1500	8.50 (216)	1.50 (38)	6.50 (165)	1.00 (25)	2.57 (65)	0.82 (21)
	2500	9.25 (235)	2.00 (51)	6.75 (171)	1.14 (29)	3.07 (78)	0.82 (21)
3-in.	150	7.50 (191)	0.88 (22)	6.00 (152)	0.75 (19)	2.43 (62)	0.68 (17)
	300	8.25 (210)	1.06 (27)	6.62 (168)	0.88 (22)	2.43 (62)	0.68 (17)
	600	8.25 (210)	1.25 (32)	6.62 (168)	0.88 (22)	2.43 (62)	0.68 (17)
	900	9.50 (241)	1.50 (38)	7.50 (191)	1.00 (25)	2.57 (65)	0.82 (21)
	1500	10.50 (267)	1.88 (48)	8.00 (203)	1.25 (32)	3.07 (78)	0.82 (21)
	2500	12.00 (305)	2.62 (67)	9.00 (229)	1.38 (35)	4.07 (103)	0.82 (21)

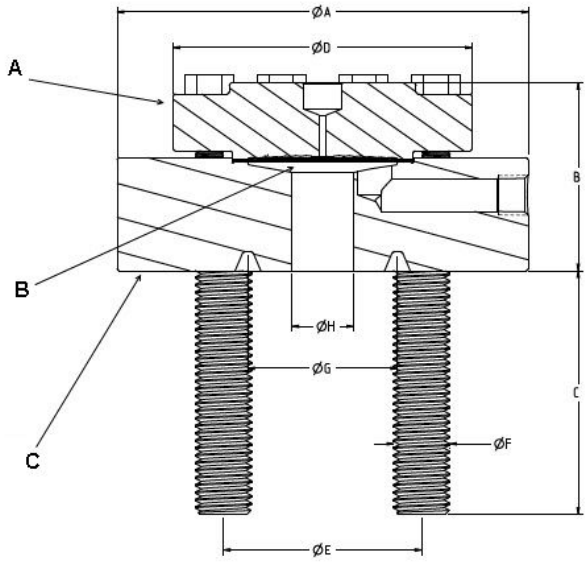
Table 98: Dimensional Table for FCW 2-Piece Flange Type Flush Diaphragm Seal

Pipe size	RTJ diameter "E" in. (mm)	Diaphragm diameter "F" in. (mm)	Raised face diameter "G" in. (mm)	Inner diameter "K" in. (mm)	Thickness with ¼- NPT F.C. "L" in. (mm)	Thickness with ½- NPT F.C. "L" in. (mm)	Weight lb (kg)
ANSI/ASME							
2-in.	3.25 (83)	2.30 (58)	4.00 (102)	2.12 (54)	1.40 (36)	1.70 (43)	8.78 (3,95)
	3.25 (83)	2.30 (58)	4.25 (108)	2.12 (54)	1.40 (36)	1.70 (43)	10.56 (4,75)
	3.25 (83)	2.30 (58)	4.25 (108)	2.12 (54)	1.40 (36)	1.70 (43)	12.01 (5,40)
	3.75 (95)	2.30 (58)	4.88 (124)	2.12 (54)	1.40 (36)	1.70 (43)	26.81 (12,06)
	4.00 (102)	3.50 (89)	5.25 (133)	2.12 (54)	1.40 (36)	1.70 (43)	39.98 (17,99)
3-in.	4.50 (114)	3.50 (89)	5.25 (133)	3.60 (91)	1.50 (38)	1.80 (46)	16.04 (7,22)
	4.88 (124)	3.50 (89)	5.75 (146)	3.60 (91)	1.50 (38)	1.80 (46)	20.72 (9,32)
	4.88 (124)	3.50 (89)	5.75 (146)	3.60 (91)	1.50 (38)	1.80 (46)	23.19 (10,44)
	4.88 (124)	3.50 (89)	6.12 (155)	3.60 (91)	1.50 (38)	1.80 (46)	35.56 (16,00)
	5.38 (137)	3.50 (89)	6.62 (168)	3.60 (91)	1.50 (38)	1.80 (46)	50.72 (22,82)
	5.00 (127)	3.50 (89)	6.62 (168)	3.60 (91)	1.50 (38)	1.80 (46)	86.12 (38,75)

Figure 33: RCW Flanged Remote Seal RTJ and Flushing Connection Ring



A. Upper housing
B. Diaphragm
C. Flushing connection/lower housing



Dimensions are in inches (millimeters).

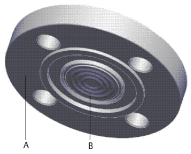
Table 99: RCW Flanged Remote Seal Dimensions

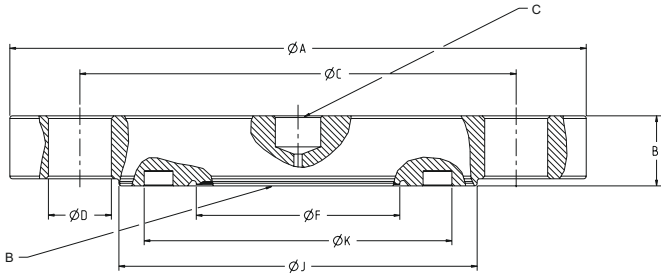
Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle diameter "C" in. (mm)	Bolt hole diameter "D" in. (mm)	Lower housing inner diameter "E" in. (mm)
ANSI/ ASME						
½-in.	2500	5.25 (133)	1.19 (30)	3.50 (89)	0.88 (22)	0.62 (16)
¾-in.	300/600	4.62 (117)	0.62 (16)	3.25 (83)	0.75 (19)	0.82 (21)
	900/1500	5.12 (130)	1.00 (25)	3.50 (89)	0.88 (22)	0.82 (21)
	2500	5.50 (140)	1.25 (32)	3.75 (95)	0.88 (22)	0.82 (21)
1-in.	150	4.25 (108)	0.50 (13)	3.12 (79)	0.63 (16)	1.05 (27)
	300	4.88 (124)	0.62 (16)	3.50 (89)	0.75 (19)	1.05 (27)
	600	4.88 (124)	0.69 (183)	3.50 (89)	0.75 (19)	1.05 (27)
	900/1500	5.88 (149)	1.12 (29)	4.00 (102)	1.00 (25)	1.05 (27)
	2500	6.25 (159)	1.38 (35)	4.25 (108)	1.00 (25)	1.05 (27)
1½-in.	150	5.00 (127)	0.62 (16)	3.88 (98)	0.63 (16)	1.61 (41)
	300	6.12 (156)	0.75 (19)	4.50 (114)	0.88 (22)	1.61 (41)
	600	6.12 (156)	0.88 (22)	4.50 (114)	0.88 (22)	1.61 (41)
	900/1500	7.00 (178)	1.25 (32)	4.88 (124)	1.12 (28)	1.61 (41)
	2500	8.00 (203)	1.75 (45)	5.75 (146)	1.25 (32)	1.61 (41)

Pipe size	Class	RTJ groove diameter "F" in. (mm)	Lower housing outer diameter "G" in. (mm)	Overall height "H" in. (mm)		Weight lb (kg)
				No or ¼-in. NPT flush connection	½-in. NPT flush connection	
ANSI/ ASME						
½-in.	2500	1.69 (43)	2.64 (67)	2.88 (73)	3.18 (81)	1.49 (0,67)
¾-in.	300/600	1.69 (43)	2.64 (67)	2.88 (73)	3.18 (81)	5.22 (2,35)
	900/1500	1.75 (45)	2.64 (67)	2.88 (73)	3.18 (81)	7.45 (3,35)
	2500	2.00 (51)	2.90 (74)	2.88 (73)	3.18 (81)	10.11 (4,55)
1-in.	150	1.88 (48)	2.64 (67)	2.88 (73)	3.18 (81)	4.38 (1,97)
	300	2.00 (51)	2.77 (70)	2.88 (73)	3.18 (81)	5.67 (2,55)
	600	2.00 (51)	2.77 (70)	2.88 (73)	3.18 (81)	5.95 (2,68)
	900/1500	2.00 (51)	2.83 (72)	2.88 (73)	3.18 (81)	10.15 (4,57)
	2500	2.38 (60)	3.27 (83)	2.88 (73)	3.18 (81)	14.55 (6,55)
1½-in.	150	2.56 (65)	3.27 (83)	2.88 (73)	3.18 (81)	6.78 (3,05)

Pipe size	Class	RTJ groove diameter "F" in. (mm)	Lower housing outer diameter "G" in. (mm)	Overall height "H" in. (mm)		Weight lb (kg)
				No or ¼-in. NPT flush connection	½-in. NPT flush connection	
	300	2.69 (68)	3.58 (91)	2.88 (73)	3.18 (81)	10.01 (4,50)
	600	2.69 (68)	3.58 (91)	2.88 (73)	3.18 (81)	10.90 (4,91)
	900/1500	2.69 (68)	3.64 (93)	2.88 (73)	3.18 (81)	16.43 (7,39)
	2500	3.25 (83)	4.52 (115)	2.88 (73)	3.18 (81)	29.39 (13,23)

Figure 34: FUW Flush Flanged Type Seal - EN1092-1 Type D





A. Process flange
B. Diaphragm
C. Connection to transmitter

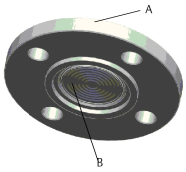
Dimensions are in inches (millimeters).

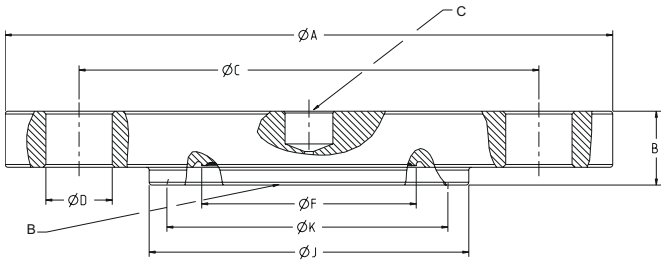
Table 100: FUW Flush Flanged Type Seal Dimensions

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Bolt hole diameter "D" in. (mm)	Number of bolts
EN 1092-1						
DN 50	PN 40	6.50 (165)	0.79 (20)	4.92 (125)	0.71 (18)	4
DN 80	PN 40	7.87 (200)	0.94 (24)	6.30 (160)	0.71 (18)	8

Standard diaphragm diameter "F" in. (mm)	Raised face diameter "G" in. (mm)	Groove O.D. "J"	Groove I.D. "K"	Groove depth "L"	Weight lb (kg)
EN 1092-1					
2.30 (58)	4.00 (102)	3.46 (88)	2.83 (72)	0.16 (4,00)	6.29 (2,83)
3.50 (89)	5.43 (138)	4.76 (121)	4.13 (105)	0.16 (4,00)	11.29 (5,08)

Figure 35: FVW Flush Flanged Type Seal - EN1092-1 Type C





A. Process flange
B. Diaphragm
C. Connection to transmitter

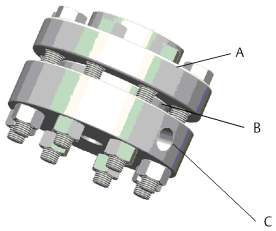
Dimensions are in inches (millimeters).

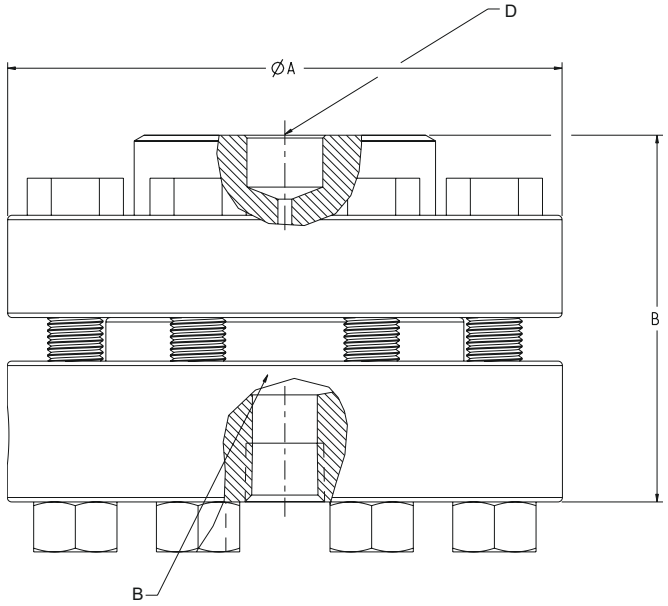
Table 101: FVW Flush Flanged Type Seal Dimensions

Pipe size	Class	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Bolt circle "C" in. (mm)	Bolt hole diameter "D" in. (mm)	Number of bolts
EN 1092-1						
DN 50	PN 40	6.50 (165)	0.79 (20)	4.92 (125)	0.71 (18)	4
DN 80	PN 40	7.87 (200)	0.94 (24)	6.30 (160)	0.71 (18)	8

Standard diaphragm diameter "F" in. (mm)	Groove O.D. "J" in. (mm)	Tongue I.D. "K" in. (mm)	Tongue depth "L" in. (mm)	Weight lb (kg)
EN 1092-1				
2.30 (58)	3.43 (87)	2.87 (73)	0.18 (4,50)	5.52 (2.48)
3.50 (89)	4.72 (120)	4.17 (106)	0.18 (4,50)	10.01 (4,50)

Figure 36: RTW Threaded Seal





A. Upper housing
B. Diaphragm
C. Lower housing or flushing connection
D. Connection to transmitter

Dimensions are in inches (millimeters).

Table 102: RTW Threaded Seal Dimensions

Rating	Overall diameter 'A' in. (mm)	Overall height "B" in. (mm)	
		No or ¼-in. NPT flush connection	½-in. NPT flush connection
2500 psi (173 bar)	3.74 (95)	2.47 (63)	2.82 (72)
5000 psi (345 bar)	3.74 (95)	1.95 (50)	2.31 (59)
10000 psi (690 bar)	4.00 (102)	1.95 (50)	N/A

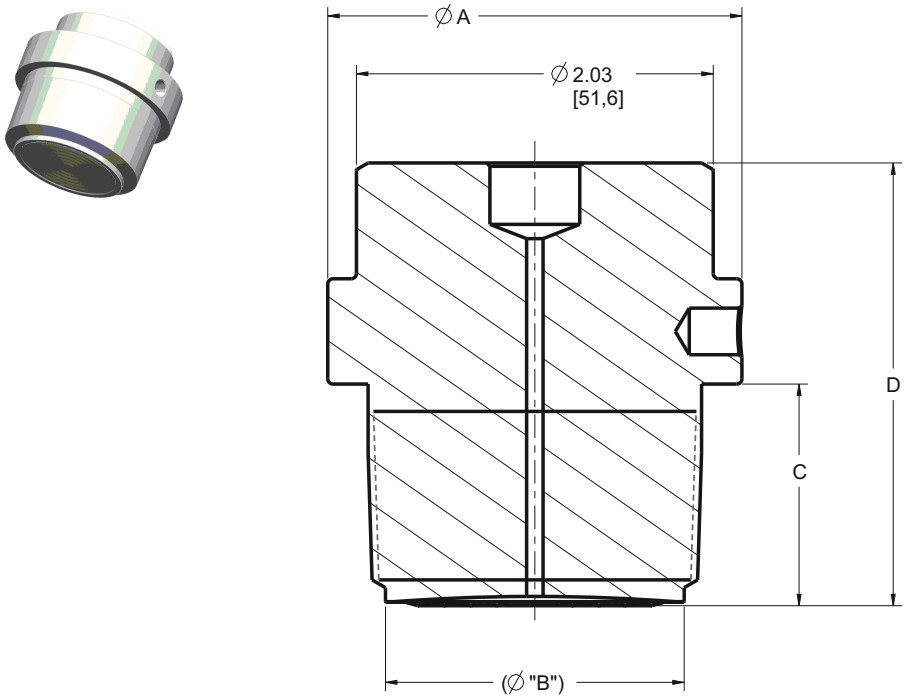
Table 103: RTW Threaded Seal Weights in Pounds (Kilograms)

Pipe size	Class						
	1500 psi	2500 psi	5000 psi	10000 psi	103 bar	172 bar	344 bar
ANSI/ASME							
¼–18 NPT	10.73 (4,83)	6.15 (2,77)	5.72 (2,57)	6.95 (3,13)	N/A	N/A	N/A
⅜–18 NPT	10.72 (4,82)	6.13 (2,76)	5.70 (2,57)	6.93 (3,12)	N/A	N/A	N/A
½–14 NPT	10.67 (4,80)	6.09 (2,74)	5.66 (2,55)	6.89 (3,10)	N/A	N/A	N/A
¾–14 NPT	10.62 (4,78)	6.03 (2,71)	5.60 (2,52)	6.83 (3,07)	N/A	N/A	N/A
1–11.5 NPT	10.52 (4,73)	5.93 (2,67)	5.50 (2,48)	6.73 (3,03)	N/A	N/A	N/A

Table 103: RTW Threaded Seal Weights in Pounds (Kilograms) *(continued)*

1¼–11.5 NPT	10.38 (4,67)	5.76 (2,59)	5.33 (2,40)	6.56 (2,95)	N/A	N/A	N/A
1½–11.5 NPT	10.23 (4,60)	5.61 (2,52)	5.18 (2,33)	6.41 (2,88)	N/A	N/A	N/A
EN 1092-1							
Parallel thread: G½ A DIN 16288	N/A	N/A	N/A	N/A	12.93 (5,82)	7.07 (3,18)	6.64 (3,00)
Tapered thread: R½ per ISO 7/1	N/A	N/A	N/A	N/A	10.67 (4,80)	6.10 (2,75)	5.67 (2,55)

Figure 37: HTS Male Threaded Seal



Dimensions are in inches (millimeters).

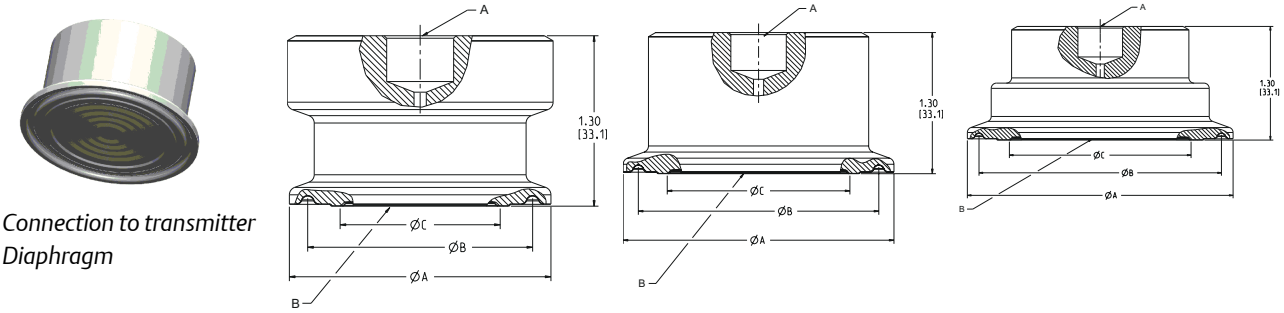
Table 104: HTS Male Threaded Seal Dimensions

Connection size	Outer diameter "A" in. (mm)	Diaphragm diameter "B" in. (mm)	Length "C" in. (mm)	Overall height "D" in. (mm)	Weight lb (kg)
ANSI NPT					
1-in. NPT	2.03 (51,6)	1.09 (27,9)	1.24 (31,5)	2.50 (63,5)	1.60 (0,72)
1½-in. NPT	2.36 (59,9)	1.70 (43,2)	1.24 (31,5)	2.50 (63,5)	2.32 (1,04)
2-in. NPT	2.74 (69,6)	1.90 (48,3)	1.24 (31,5)	2.50 (63,5)	3.09 (1,39)
ISO 228-1 BSP					

Table 104: HTS Male Threaded Seal Dimensions *(continued)*

G1 BSP	2.03 (51,6)	1.09 (27,9)	0.87 (22,0)	2.15 (54,6)	1.48 (0,67)
G1½ BSP	2.36 (59,9)	1.70 (43,2)	0.98 (24,9)	2.24 (56,9)	2.10 (0,95)
G2 BSP	2.74 (69,6)	1.90 (48,3)	1.24 (31,5)	2.50 (63,5)	3.06 (1,38)

Figure 38: SCW Tri-Clamp Seal



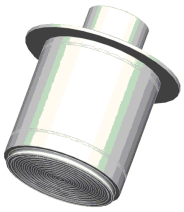
A. Connection to transmitter
B. Diaphragm

Dimensions are in inches (millimeters).

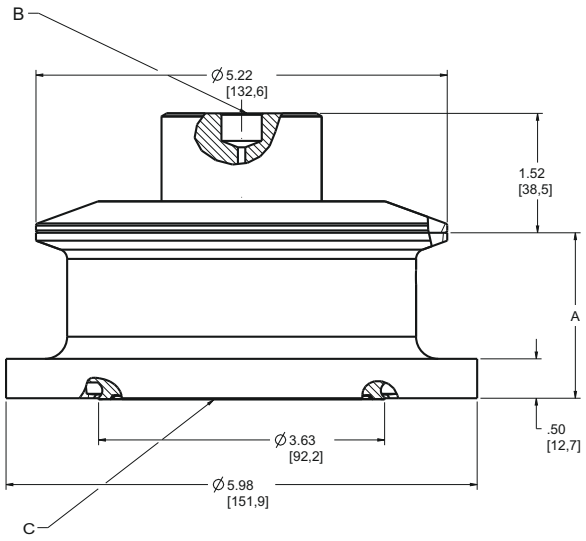
Table 105: SCW Tri-Clamp Seal Dimensions

Pipe size	Outer diameter "A" in. (mm)	O-ring groove diameter "B" in. (mm)	Diaphragm diameter "C" in. (mm)	Weight lb (kg)
1½-in.	2.00 (51)	1.72 (44)	1.21 (31)	0.97 (0,44)
2-in.	2.50 (64)	2.22 (56)	1.68 (43)	1.23 (0,55)
2½-in.	3.05 (77)	2.78 (71)	2.07 (53)	1.56 (0,70)
3-in.	3.58 (91)	3.28 (83)	2.58 (66)	1.98 (0,89)
4-in.	4.68 (119)	4.35 (110)	3.66 (93)	3.02 (1,36)

Figure 39: SSW Tank Spud Seal



A. *Extension length*
B. *Connection to transmitter*
C. *Diaphragm*



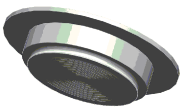
Dimensions are in inches (millimeters).

Note
Wetted surfaces of spud are 32 Ra max.

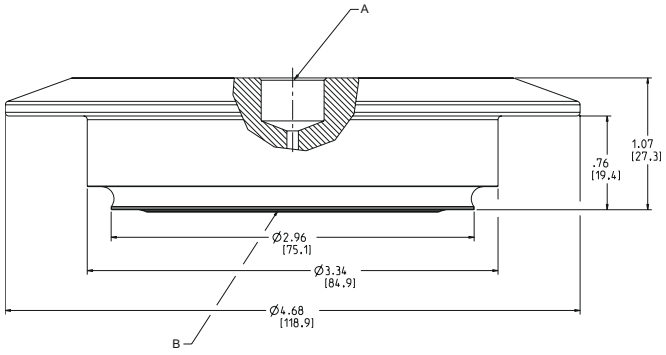
Table 106: SSW Tank Spud Seal Dimensions

Pipe size	Extension length	"A" in. (mm)	Weight lb (kg)
4-in. SCH 5	2-in.	2.12 (54)	9.20 (4,14)
	6-in.	6.12 (156)	12.66 (5,70)

Figure 40: STW Hygienic Thin Wall Tank Spud Seal



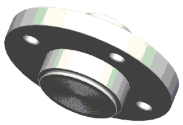
A. *Connection to transmitter*
B. *Diaphragm*



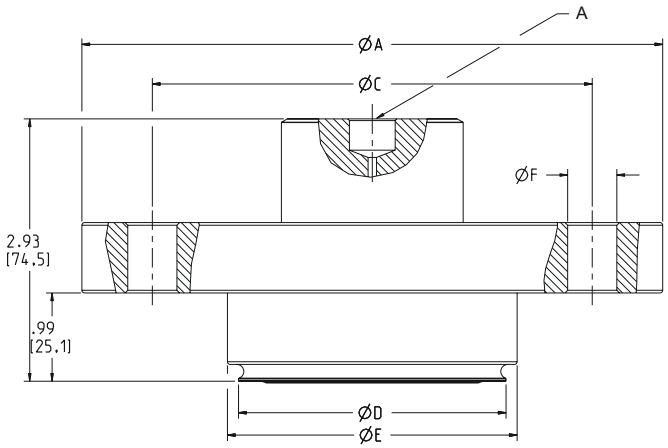
Weight = 3.09 lb (1,39 kg)

Dimensions are in inches (millimeters).

Figure 41: EES Hygienic Flanged Tank Spud Extended Seal



A. Connection to transmitter
B. Diaphragm

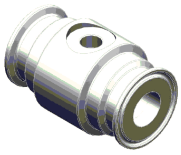


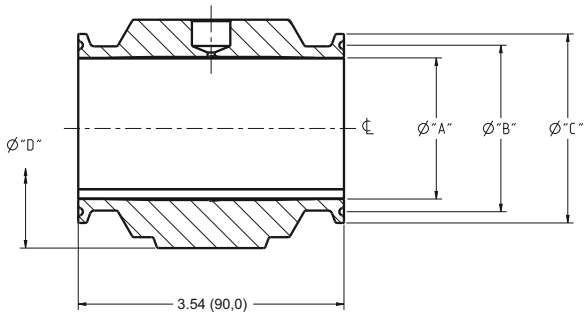
Dimensions are in inches (millimeters).

Table 107: EES Hygienic Flanged Tank Spud Extended Seal Dimensions

Pipe size	Flange diameter "A" in. (mm)	Flange thickness "B" in. (mm)	Number of bolts	Bolt circle diameter "C" in. (mm)	Standard diaphragm diameter "D" in. (mm)	Extension diameter "E" in. (mm)	Bolt hole diameter "F" in. (mm)	Weight lb (kg)
DN50	6.50 (165)	0.79 (20)	4	4.92 (125)	2.99 (76)	3.24 (82)	0.55 (14)	10.48 (4,72)
DN80	7.87 (200)	0.94 (24)	8	6.30 (160)	4.04 (102)	4.24 (108)	0.55 (14)	17.34 (7,80)

Figure 42: VCS Tri-Clamp In-Line Seal



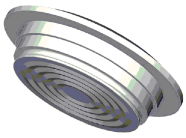


Dimensions are in inches (millimeters).

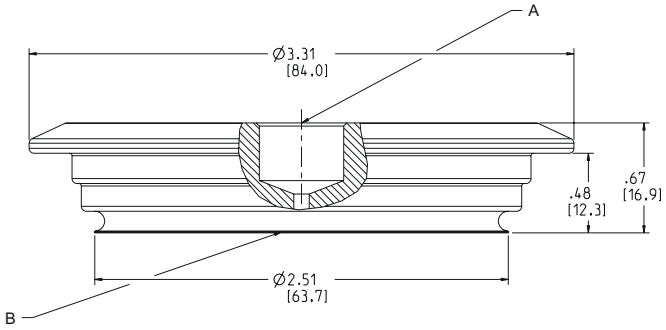
Table 108: VCS Tri-Clamp In-Line Seal Dimensions

Pipe size	Inner diameter "A" in. (mm)	Groove diameter "B" in. (mm)	Flange diameter "C" in. (mm)	Outer diameter "D" in. (mm)	Weight lb (kg)
1-in.	0.87 (22)	1.72 (44)	1.99 (51)	2.33 (59)	2.67 (1,20)
1½-in.	1.37 (35)	1.72 (44)	1.99 (51)	2.73 (69)	2.69 (1,21)
2-in.	1.87 (48)	2.22 (56)	2.52 (64)	3.19 (81)	3.43 (1,54)
3-in.	2.87 (73)	3.28 (83)	3.58 (91)	4.14 (105)	4.76 (2,14)
4-in.	3.82 (97)	4.35 (110)	4.69 (119)	5.06 (129)	6.24 (2,81)

Figure 43: SVS VARIVENT Compatible Connection Seal



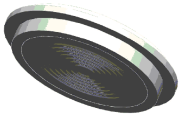
A. Connection to transmitter
B. Diaphragm



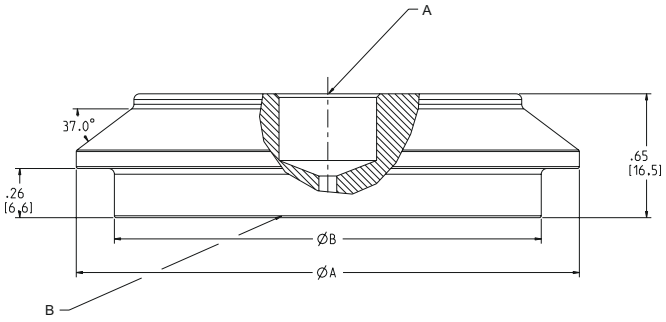
Weight = 1.13 lb (0,51 kg)

Dimensions are in inches (millimeters).

Figure 44: SHP Cherry-Burrell "I" Line Seal



A. Connection to transmitter
B. Diaphragm

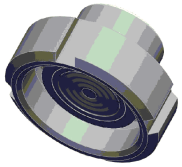


Dimensions are in inches (millimeters).

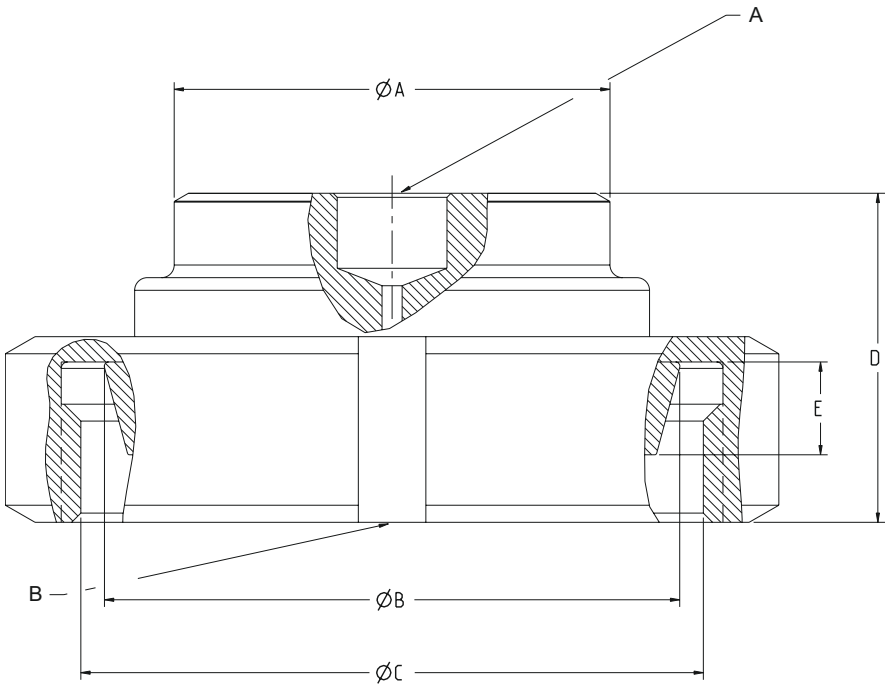
Table 109: SHP Cherry-Burrell "I" Line Seal Dimensions

Size	Outer diameter "A" in. (mm)	Extension diameter "B" in. (mm)	Weight lb (kg)
2-in.	2.64 (67)	2.24 (57)	0.74 (0,33)
3-in.	3.88 (98)	3.31 (84)	1.76 (0,79)

Figure 45: SLS Hygienic Dairy Process Connection Female Thread Seal per DIN 11851



A. *Connection to transmitter*
B. *Diaphragm*



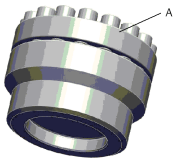
Dimensions are in inches (millimeters)

Table 110: SLS Hygienic Dairy Process Connection Female Thread Seal per DIN 11851 Dimensions

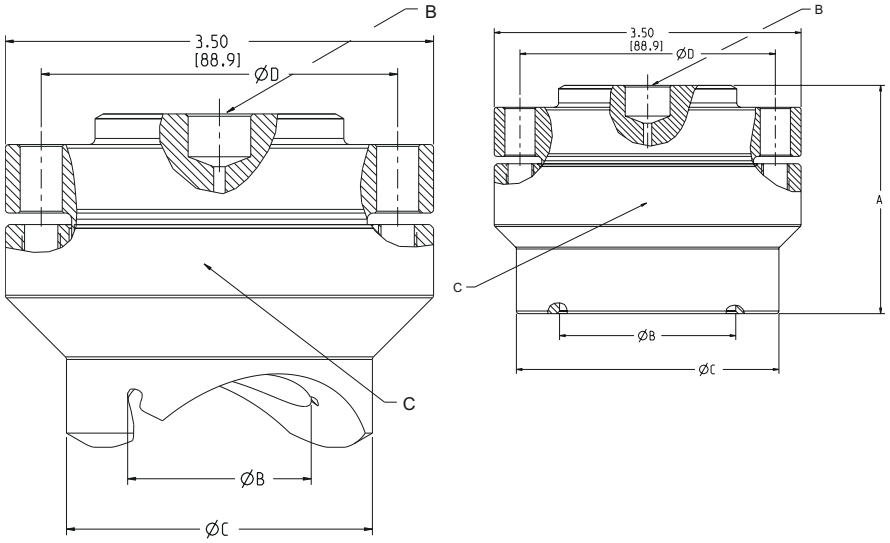
Female thread	Process size/ rating	Hub diameter "A" in. (mm)	"B" in. (mm)	Thread diameter "C" in. (mm)	Hub height "D" in. (mm)	"E" in. (mm)	Weight lb (kg)
DIN 11851	DN 40 PN 40	1.89 (48)	2.20 (56)	Rd 65 x 1/6-in.	1.18 (30)	0.39 (10)	1.61 (0,72)
	DN 50 PN 25	2.40 (61)	2.70 (69)	Rd 78 x 1/6-in.	1.22 (31)	0.43 (11)	2.32 (1,04)

Figure 46: WSP Saddle Seal

2- and 3-in. size (6-bolt design) 4-in. size (8-bolt design)



A. Upper housing
B. Connection to transmitter
C. Diaphragm



Dimensions are in inches (millimeters).

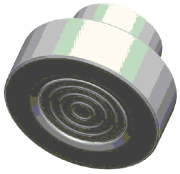
Table 111: WSP Saddle Seal Dimensions

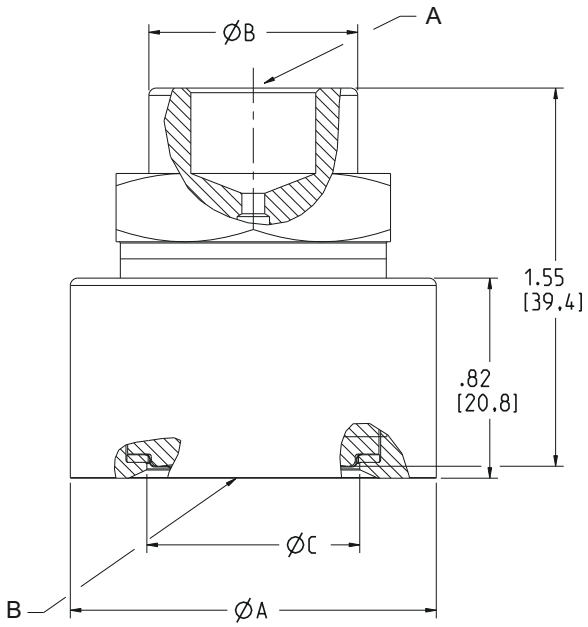
Size	Overall height "A" in. (mm)	Inner diameter "B" in. (mm)	Outer diameter "C" in. (mm)	Bolt circle diameter "D" in. (mm)	
				6-Bolt	8-Bolt
2-in.	2.72 (69)	1.50 (38)	2.50 (64)	2.99 (76)	2.91 (74)
3-in.	2.46 (63)	2.01 (51)	3.02 (77)	2.99 (76)	2.91 (74)
4-in. and larger	2.60 (66)	2.01 (51)	3.00 (76)	2.99 (76)	2.91 (74)

Table 112: WSP Saddle Seal Weights

Pipe size	Class	Weights lb (kg)
ANSI/ ASME		
2-in.	1250 psig	4.61 (2,09)
	1500 psig	4.63 (2,10)
3-in.	1250 psig	4.36 (1,98)
	1500 psig	4.38 (1,99)
4-in.	1250 psig	5.46 (5,48)
	1500 psig	5.60 (2,54)

Figure 47: UCP Threaded Type Seal



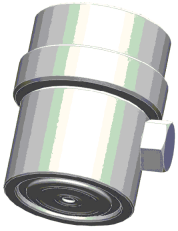


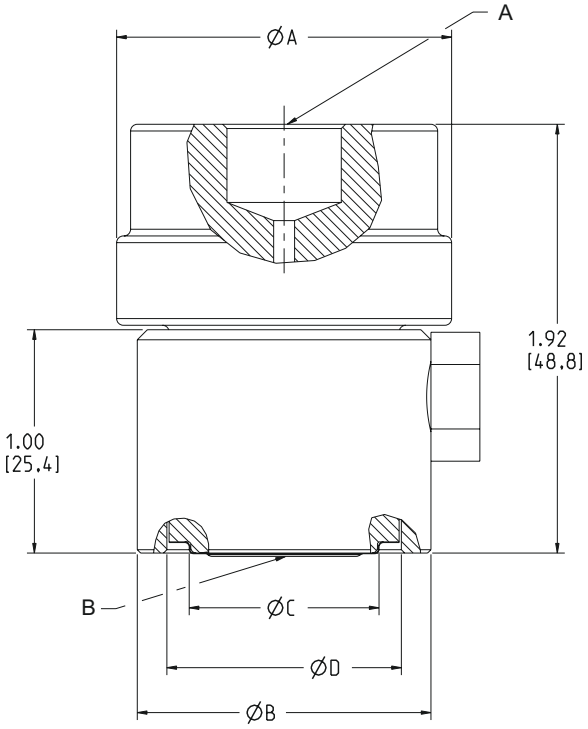
A. Connection to transmitter
B. Diaphragm

Weight = 1.33 lb (0,60 kg)

Dimensions are in inches (millimeters).

Figure 48: PMW Sleeve Type Seal



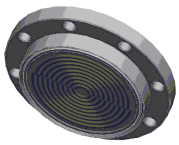


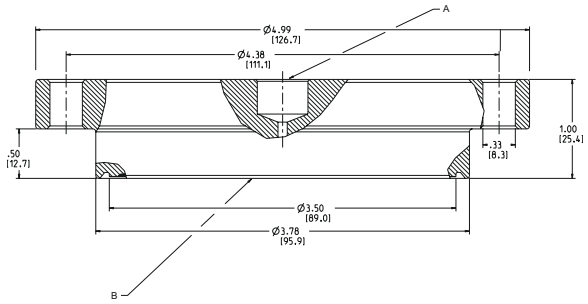
A. Connection to transmitter
B. Diaphragm

Weight = 0.77 lb (0,35 kg)

Dimensions are in inches (millimeters).

Figure 49: CTW Chemical Tee Seal



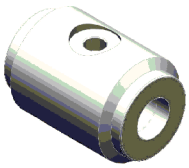


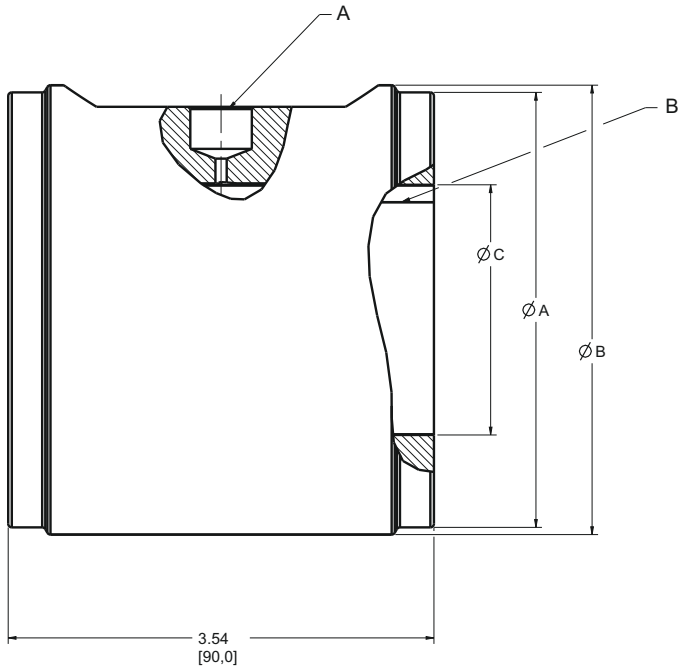
A. Connection to transmitter
B. Diaphragm

Weight = 4.18 lb (1,88 kg)

Dimensions are in inches (millimeters).

Figure 50: TFS Wafer Style In-Line Seal





A. Connection to transmitter
B. Diaphragm

Dimensions are in inches (millimeters).

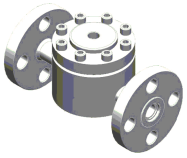
Table 113: TFS Wafer Style In-Line Seal Dimensions

Pipe size	Flange face diameter "A" in. (mm)	Outer diameter "B" in. (mm)	Inner diameter "C" in. (mm)	Weight lb (kg)
1-in.	2.00 (51)	2.64 (67)	1.090 (28)	3.91 (1,76)
1½-in.	2.88 (73)	3.23 (82)	1.61 (41)	5.73 (2,58)
2-in.	3.62 (92)	3.74 (95)	2.07 (52)	7.42 (3,34)
3-in.	5.00 (127)	5.00 (127)	3.07 (78)	12.20 (5,49)
4-in.	6.19 (157)	6.19 (157)	4.00 (102)	17.56 (7,90)
DN25	2.68 (68)	2.72 (69)	1.09 (28)	4.76 (2,14)

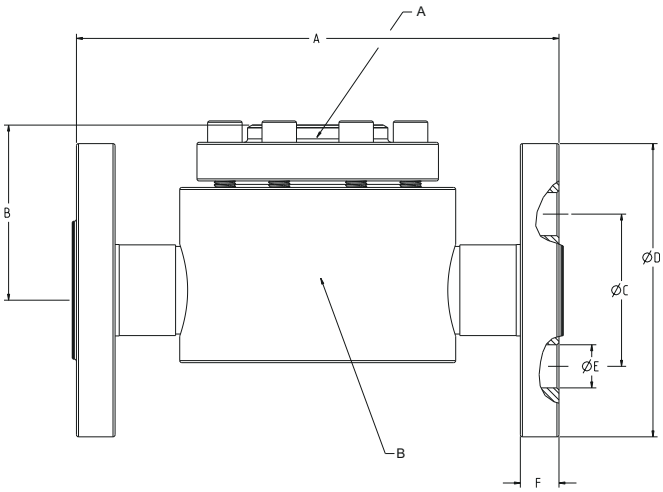
Table 113: TFS Wafer Style In-Line Seal Dimensions *(continued)*

Pipe size	Flange face diameter "A" in. (mm)	Outer diameter "B" in. (mm)	Inner diameter "C" in. (mm)	Weight lb (kg)
DN40	3.46 (88)	3.46 (88)	1.61 (41)	7.35 (3,31)
DN50	4.02 (102)	4.09 (104)	1.99 (51)	9.97 (4,49)
DN80	5.43 (138)	5.47 (139)	3.24 (82)	15.24 (6,86)
DN100	6.38 (162)	6.46 (164)	4.22 (107)	18.69 (8,41)

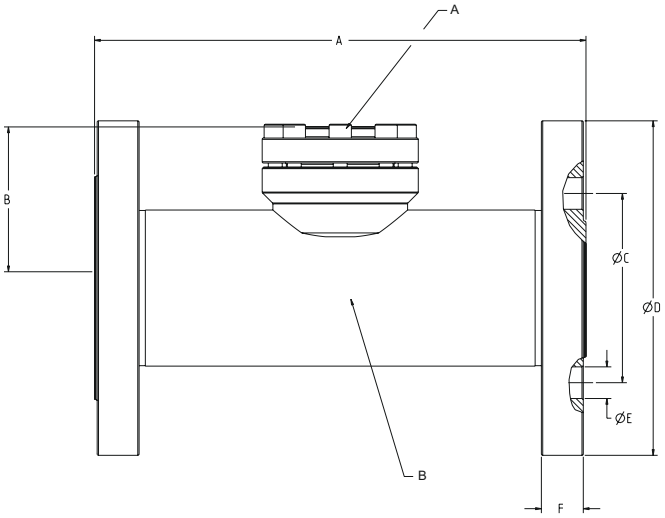
Figure 51: WFW Flow-Thru Flanged Seal



1-in. size



2- and 3-in. sizes



A. Connection to transmitter
B. Diaphragm

Dimensions are in inches (millimeters).

Table 114: WFW Flow-Thru Flanged Seal Dimensions

Nominal pipe size	ANSI class	Overall length "A" in. (mm)	Upper to centerline height "B" in (mm)	Bolt circle diameter "C" in. (mm)	Outside diameter "D" in. (mm)	Bolt hole diameter "E" in. (mm)	Flange thickness "F" in. (mm)	Weight lb (kg)
1-in.	150	7.00 (178)	2.40 (61)	3.12 (79)	4.25 (108)	0.62 (16)	0.50 (13)	11.80 (5,31)
2-in.		9.00 (229)	3.31 (84)	4.75 (121)	6.00 (152)	0.75 (19)	0.69 (18)	23.66 (10,73)
3-in.		11.00 (279)	3.61 (92)	6.00 (152)	7.50 (191)	0.75 (19)	0.88 (22)	29.08 (13,09)

Table 115: Capillary and Support Tube Weights Measured per Foot (.30 m) of Capillary

Part	Weight lb (kg)
0.03-in. ID, SST armor	0.095 (0,043)
0.04-in. ID, SST armor	0.091 (0,041)
0.075-in. ID, SST armor	0.100 (0,045)
0.03-in. ID, PVC armor	0.105 (0,048)
0.04-in. ID, PVC armor	0.100 (0,045)
0.075-in. ID, PVC armor	0.110 (0,050)
Capillary adapter	0.085 (0,039)
2-in. support tube	0.035 (0,016)
4-in. support tube	0.090 (0,041)

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Global Headquarters
Emerson Automation Solutions
6021 Innovation Blvd.
Shakopee, MN 55379, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 204 8889
RFQ.RMD-RCC@Emerson.com

North America Regional Office
Emerson Automation Solutions
8200 Market Blvd.
Chanhassen, MN 55317, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 204 8889
RMT-NA.RCCRFQ@Emerson.com

Latin America Regional Office
Emerson Automation Solutions
1300 Concord Terrace, Suite 400
Sunrise, FL 33323, USA
+1 954 846 5030
+1 954 846 5121
RFQ.RMD-RCC@Emerson.com

Europe Regional Office
Emerson Automation Solutions Europe
GmbH
Neuhofstrasse 19a P.O. Box 1046
CH 6340 Baar
Switzerland
+41 (0) 41 768 6111
+41 (0) 41 768 6300
RFQ.RMD-RCC@Emerson.com

Asia Pacific Regional Office
Emerson Automation Solutions
1 Pandan Crescent
Singapore 128461
+65 6777 8211
+65 6777 0947
Enquiries@AP.Emerson.com

Middle East and Africa Regional Office
Emerson Automation Solutions
Emerson FZE P.O. Box 17033
Jebel Ali Free Zone - South 2
Dubai, United Arab Emirates
+971 4 8118100
+971 4 8865465
RFQ.RMTMEA@Emerson.com

Linkedin.com/company/Emerson-Automation-Solutions
Twitter.com/Rosemount_News
Facebook.com/Rosemount
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