

STR700 SmartLine Remote Diaphragm Seals Specification 34-ST-03-104, March 2020



Introduction

Part of the SmartLine® family of products, the STR700 is suitable for monitoring, control and data acquisition. STR700 products feature piezoresistive sensor technology combining pressure sensing with on chip temperature compensation capabilities providing high accuracy, stability and performance over a wide range of application pressures and temperatures. The SmartLine family is also fully tested and compliant with Experion® PKS providing the highest level of compatibility assurance and integration capabilities. SmartLine easily meets the most demanding application needs for pressure measurement applications



Best in Class Transmitter Features:

- Accuracies up to 0.075% Span standard
- Automatic static pressure & temperature compensation
- Rangeability up to 100:1
- Local display capabilities
- External zero, span, & configuration capability
- Polarity insensitive electrical connections
- Comprehensive on-board diagnostic capabilities
- Integral Dual Seal design for highest safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- World class overpressure protection
- Full compliance to SIL 2/3 requirements.
- Modular design characteristics

Figure 1 – STR700 Remote Diaphragm Seal Unit

Typical Diaphragm Seal applications

- High Process Temperatures
- Viscous or Suspended Solids
- Highly Corrosive Process Materials
- Sanitary Applications
- Applications with Hydrogen Permeation Possibilities
- Level Applications with Maintenance Intensive Wet Legs
- Applications requiring remote Transmitter Mounting
- Tank Applications with Density or Interface Measurements

Remote Seal/Transmitter Span & Range Limits:

Model	URL psid (bar)	LRL psid (bar)	Max Span psid (bar)	Min Span psid (bar)
STR73D	100 (7.0)	-100 (-7.0)	100 (7.0)	0.9 (0.062)
Model	psig (bar)	psig (bar)	psig (bar)	psig (bar)
STR74G	500 (35.0)	-14.7 (-1.0)	500 (35.0)	5 (0.35)

Communications/Output Options:

- Honeywell Digitally Enhanced (DE)
- HART® (version 7.0)
- FOUNDATION™ Fieldbus

All transmitters are available with the above listed communications protocols.

Description

The SmartLine family pressure transmitters are designed around a high performance piezo-resistive sensor. This one sensor actually integrates multiple sensors linking process pressure measurement with on-board static pressure (DP Models) and temperature compensation measurements. This level of performance allows the ST 700 to replace most competitive transmitters available today.

Indication/Display Option

The ST 700 modular design accommodates a basic alphanumeric LCD display.

Basic Alphanumeric LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90,180, & 270 degree position adjustments
- Configurable (HART only) and standard (Pa, KPa, MPa, KGcm2, Torr, ATM, inH₂O, mH₂O, bar, mbar, inH₂O, inHG, FTH₂O, mmH₂O, mm HG, & psi) measurement units
- 2 Lines 16 Characters (4.13H x 1.83W mm)
- Square root output indication (√)

Simple LCD Display Features

- Modular (may be added or removed in the field)
- Supports HART protocol variant
- 0, 90,180, & 270 degree position adjustments
- Configurable (HART only) and standard (Pa, KPa, MPa, KGcm2, Torr, ATM, inH₂O, mH₂O, bar, mbar, inH₂O, inHG, FTH₂O, mmH₂O, mm HG, & psi) measurement units.
- Supports Flow engineering units
- 2 Lines 6 digits PV (9.95H x 4.20W mm) 8 Characters
- Square root output indication (√) and Write protect Indication
- Built in Basic Device Configuration through Internal Buttons – Range/Engineering Unit/Loop Test /Loop Calibration/Zero /Span Setting

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics which aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing **lower overall operational costs**

System Integration

- SmartLine communications protocols all meet the most current published standards for HART/DE/Fieldbus.
- Integration with Honeywell's Experion PKS offers the following unique advantages.
 - Tamper reporting
 - FDM Plant Area Views with Health summaries
 - All ST 700 units are Experion tested to provide the highest level of compatibility assurance

Configuration Tools

External Three Button Configuration Option

Suitable for all electrical and environmental requirements, SmartLine offers the ability to configure the transmitter and display via three externally accessible buttons when a display option is selected. Zero/span capabilities are also optionally available via these buttons with or without selection of the display option.

Internal Two Button Configuration Option

The Simple display has two buttons that can be used for Basic configuration such as re ranging, PV Engineering unit setting, Zero/Span settings and Loop testing and calibration functions.

Hand Held Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. This is accomplished via Honeywell's field-rated Multiple Communication Configurator (MCT404). The MCT404 is capable of field configuring DE and HART Devices and can also be ordered for use in intrinsically safe environments. All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any properly validated hand held configuration device.

Personal Computer Configuration

Honeywell's SCT 3000 Configuration Toolkit provides an easy way to configure Digitally Enhanced (DE) instruments using a personal computer as the configuration interface. Field Device Manager (FDM) Software and FDM Express are also available for managing HART & Fieldbus device configurations.

Modular Design

To help contain maintenance & inventory costs, all ST 700 transmitters are modular in design supporting the user's ability to replace meter bodies, add indicators or change electronic modules without affecting overall performance or approval body certifications. Each meter body is uniquely characterized to provide in-tolerance performance over a wide range of application variations in temperature and pressure and due to the Honeywell advanced interface, electronic modules may be swapped with any electronics module without losing in-tolerance performance characteristics.

Modular Features

- Meter body replacement
- Exchange/replace electronics/comms modules*
- Add or remove integral indicator*
- Add or remove lightning protection (terminal connection)*

* Field replaceable in all electrical environments (including IS) except flameproof without violating agency approvals.

With no performance effects, Honeywell's unique modularity results in **lower inventory needs and lower overall operating costs.**

Performance Specifications

Reference Accuracy (conformance to +/-3 Sigma)

Model	URL	LRL	Min Span	Maximum Turndown Ratio	Reference Accuracy ^{1,2} (% Span)
STR73D	100 psid/7.0 bar	-100 psi/-7.0bar	0.9 psi/.062bar	100:1	0.075
STR74G	500 psi/35 bar	-14.7 psi/-1.0 bar	5 psi/.035 bar	100:1	0.075

Zero and span may be set anywhere within the listed (URL/LRL) range limits

Model	URL	Accuracy ^{1,2} (% of Span)				Temperature Effect ³ (% Span/50°F)		
		Turn down greater than	A	B	C psi(bar)	D	E	F psi(bar)
STR73D	100 psi/7.0 bar	27.7:1	0.0250	0.050	3.61 (0.249)	0.275	1.200	7.2 (0.50)
STR74G	500 psig/35 bar	25:1	0.0250	0.050	20 (1.4)			
Turn Down Effect					Temp Effect			
$\pm \left[A + B \left(\frac{C}{\text{Span}} \right) \right]$ % Span					$\pm \left[D + E \left(\frac{F}{\text{Span}} \right) \right]$ % Span per 28°C (50°F)			

Accuracy at Specified Span, Temperature and Static Pressure: (conformance to +/-3 Sigma)

Total Performance (% of Span):

$$\text{Total Performance} = \pm \sqrt{(\text{Accuracy})^2 + (\text{Temp Effect})^2}$$

Total Performance Examples: (5:1 Turndown, up to 50 °F shift)

STR73D @ 20 psid: 1.03% of span

Typical Calibration Frequency:

Calibration verification is recommended every four (4) years

Notes:

1. Terminal Based Accuracy – Includes combined effects of linearity, hysteresis, and repeatability. Analog output adds 0.005% of span.
2. For zero based spans and reference conditions of 25°C (77°F), 0 psi static pressure for DP, >= 0 psia for GP, 10 to 55% R.H, and 316Stainless Steel barrier diaphragms
3. Specification applies to transmitter with 2 balanced remote seals. Apply a factor of 1.5 for temperature effect of capillary lengths greater than 10 feet.

Operating Conditions – All Models

Parameter	Reference Condition (at zero static)		Rated Condition		Operative Limits		Transportation and Storage																									
	°C	°F	°C	°F	°C	°F	°C	°F																								
Ambient Temperature¹	25±1	77±2	-	-	-	-	-55 to 90	-67 to 194																								
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100																									
Vacuum Region, Minimum Pressure mmHg absolute	Atmospheric (See Figure 4 for vacuum limitation)																															
Supply Voltage, Current, and Load Resistance	10.8 to 42.4 Vdc at terminals (IS versions limited to 30 Vdc) 0 to 1,440 ohms (as shown in Figure 2)																															
Maximum Allowable Working Pressure (MAWP)⁴ <small>(ST 700 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)</small>	MAWP is minimum of Body Rating or Seal Rating (See Model Selection Guide for Seal MAWP) <table border="0"> <tr> <td>Body</td> <td>MAWP</td> <td colspan="6"></td> </tr> <tr> <td>STR73D</td> <td>750 psig (51.7 bar)</td> <td colspan="6">Bolted Process Heads</td> </tr> <tr> <td>STR74G</td> <td>500 psig (35 bar)</td> <td colspan="6"></td> </tr> </table>								Body	MAWP							STR73D	750 psig (51.7 bar)	Bolted Process Heads						STR74G	500 psig (35 bar)						
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- ¹ Ambient Temperature Limit is a function of Process Interface Temperature. (See Figures 3 & 4)
LCD Display operating temperature -20°C to +70°C . Storage temperature -30°C to 80°C
- ⁴ Consult factory for MAWP of ST 700 transmitters with CRN approval.

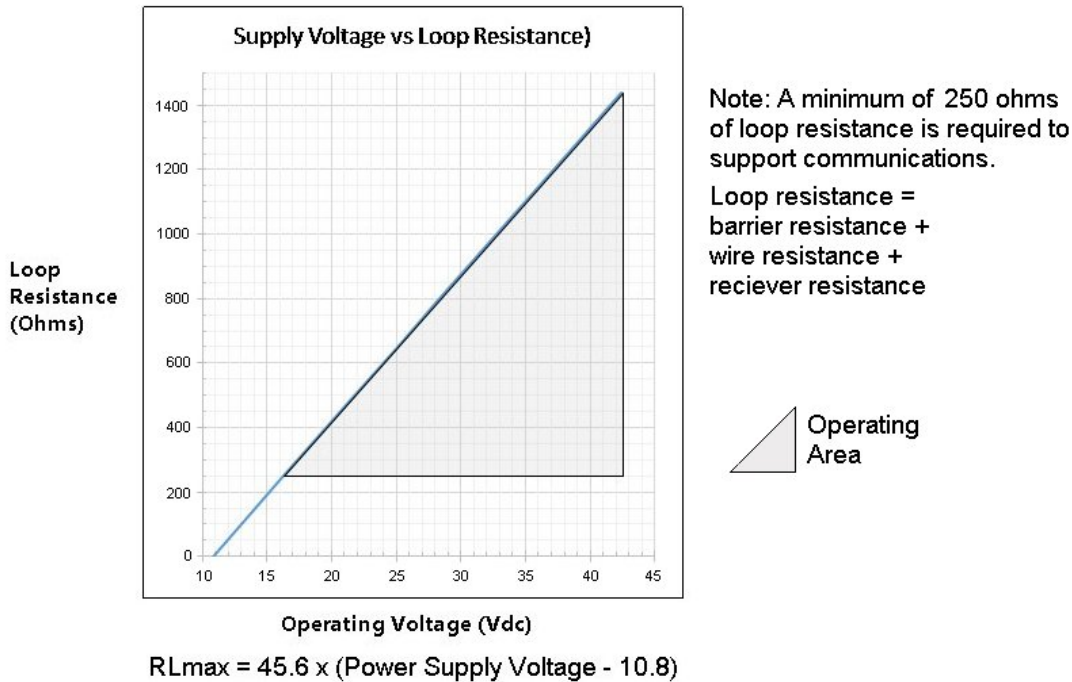


Figure 2- Supply voltage and loop resistance

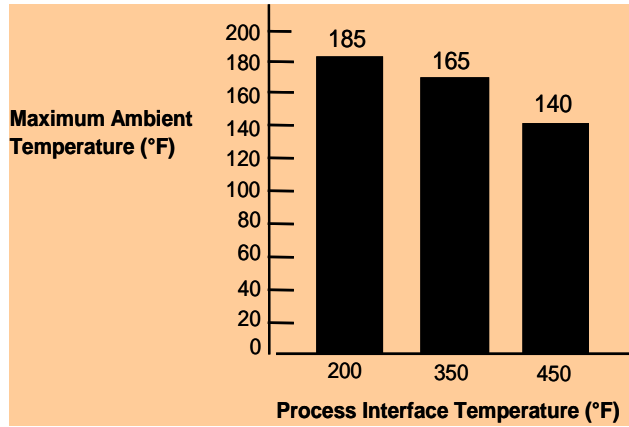


Figure 3- Ambient temperature Limits

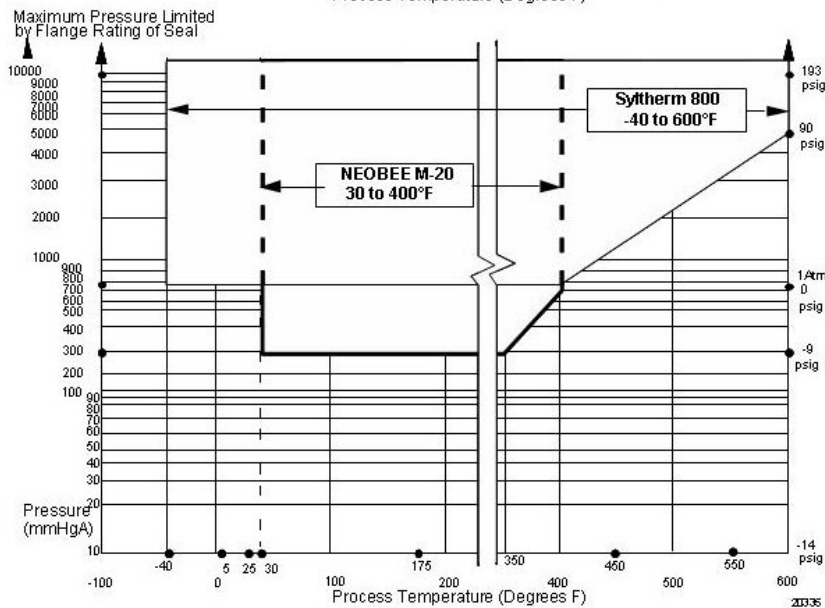
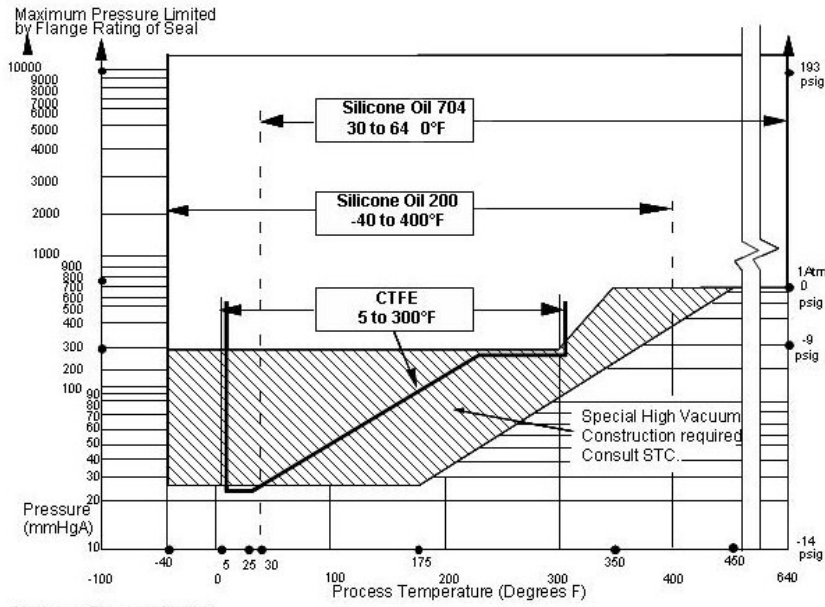


Figure 4 - STR700 Remote Seals operable limits for pressure vs. temperature

Minimum recommended span for STR73D Transmitter with two Seals

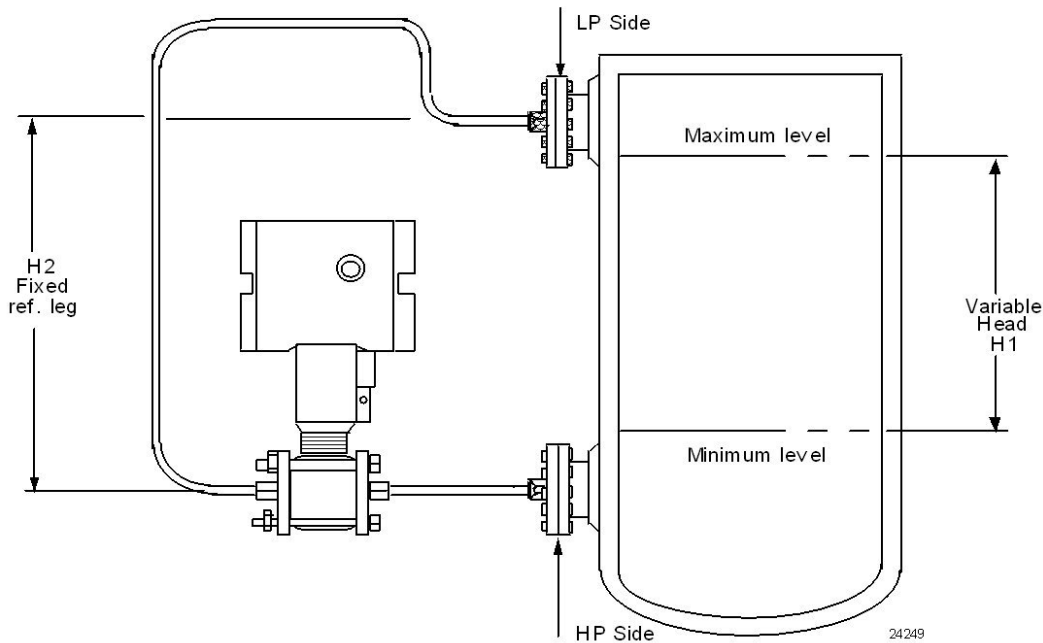
Diaphragm Size (Inch)	Capillary Length (Feet)						Maximum Capillary Length (Feet)
	5	10	15	20	25	35	
1.9	15 psi	20 psi	25 psi	-	-	-	15
2.4	5.4 psi	7.2 psi	9.0 psi	10.8 psi	12.6 psi	14.4 psi	35
2.9	1.8 psi	2.7 psi	3.6 psi	4.5 psi	5.4 psi	7.2 psi	35
3.5	0.9 psi	0.9 psi	0.9 psi	1.0 psi	1.2 psi	1.4 psi	35
4.1	0.9 psi	0.9 psi	0.9 psi	0.9 psi	0.9 psi	1.1 psi	35

Minimum recommended span for STR74G and STR73D Transmitter with one Remote Seal

Diaphragm Size (Inch)	Direct Mount	Capillary Length (Feet)						Maximum Capillary Length (Feet)
		5	10	15	20	25	35	
1.9	25 psi	30 psi	40 psi	50 psi	-	-	-	15
2.4	10 psi	15 psi	20 psi	25 psi	30 psi	35 psi	50 psi	35
2.9	8 psi	9 psi	10 psi	11 psi	12 psi	13 psi	15 psi	35
3.5	2 psi	2 psi	3 psi	4 psi	5 psi	6 psi	8 psi	35
4.1	0.9 psi	0.9 psi	1 psi	2 psi	3 psi	3.5 psi	5 psi	35

Note: The minimum span is the higher of the higher of the value from the table above or the value defined under the Performance Conditions for the range transmitter.

Figure 5– Typical Maximum capillary length and diaphragm size chart

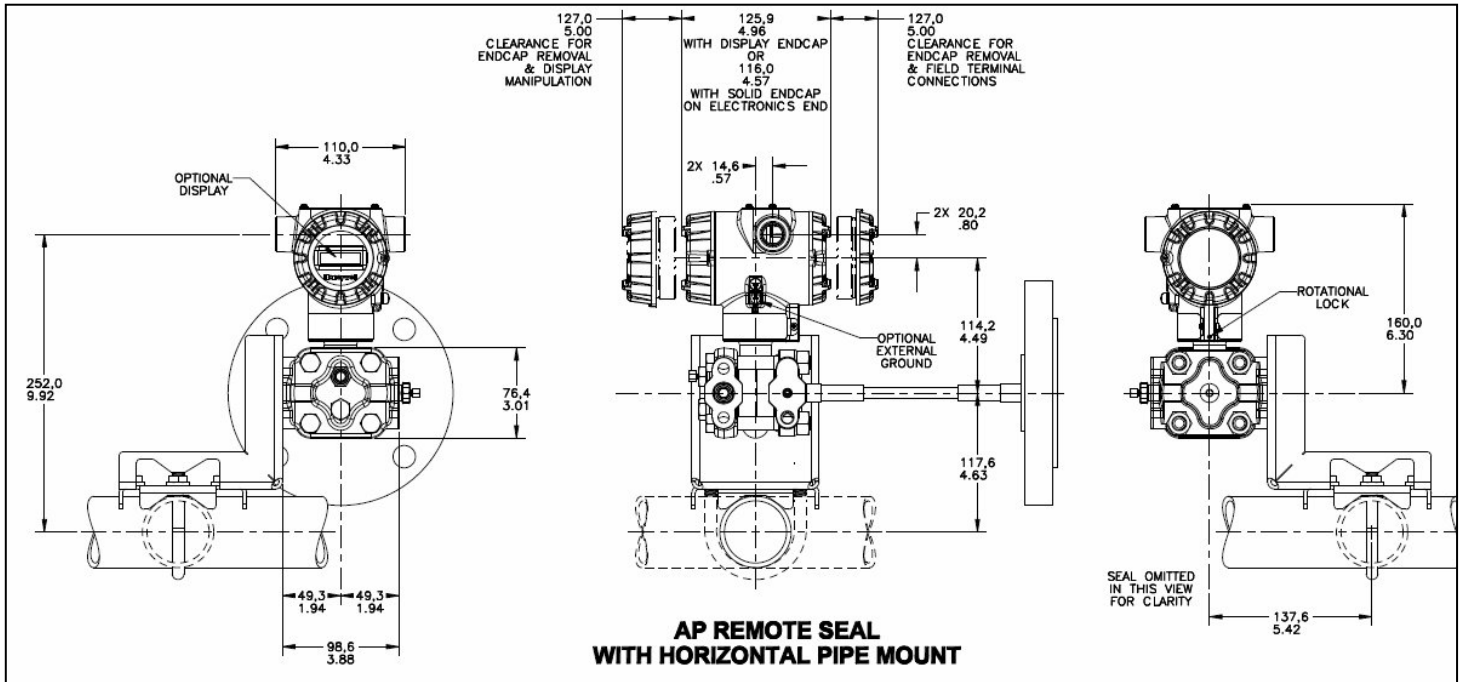
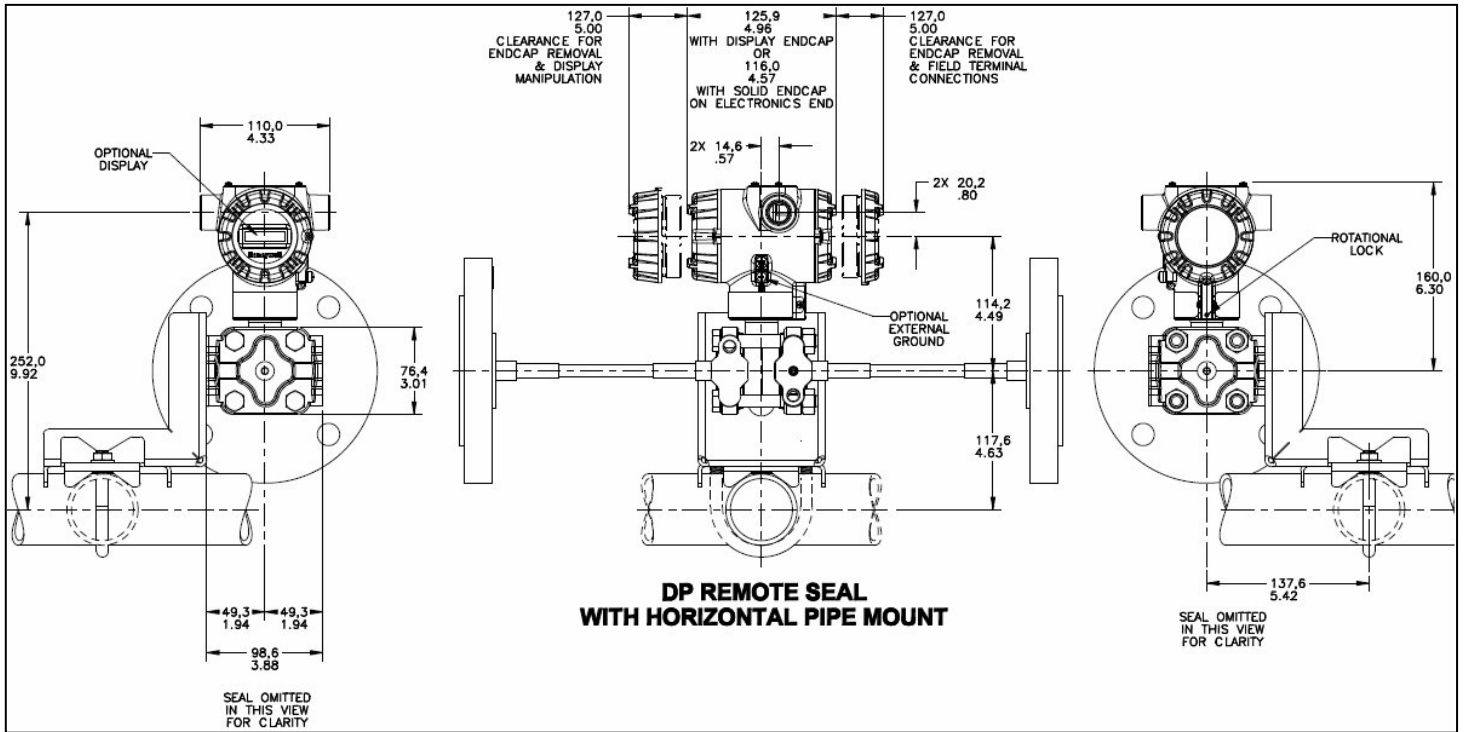


NOTE: Lower flange seal should not be mounted over 22 feet below or above the transmitter for silicone fill fluid (11 feet for CTFE fill fluid) with tank at one atmosphere. The combination of tank vacuum and high pressure capillary head effect should not exceed 9 psi vacuum (300 mmHg absolute).

Consult Honeywell for installation of STR73D.

Figure 6 - STR700 transmitter with remote diaphragm seals shown mounted on a tank

Reference Dimensions Horizontal Mounting



Reference Dimensions Horizontal Mounting (cont'd)

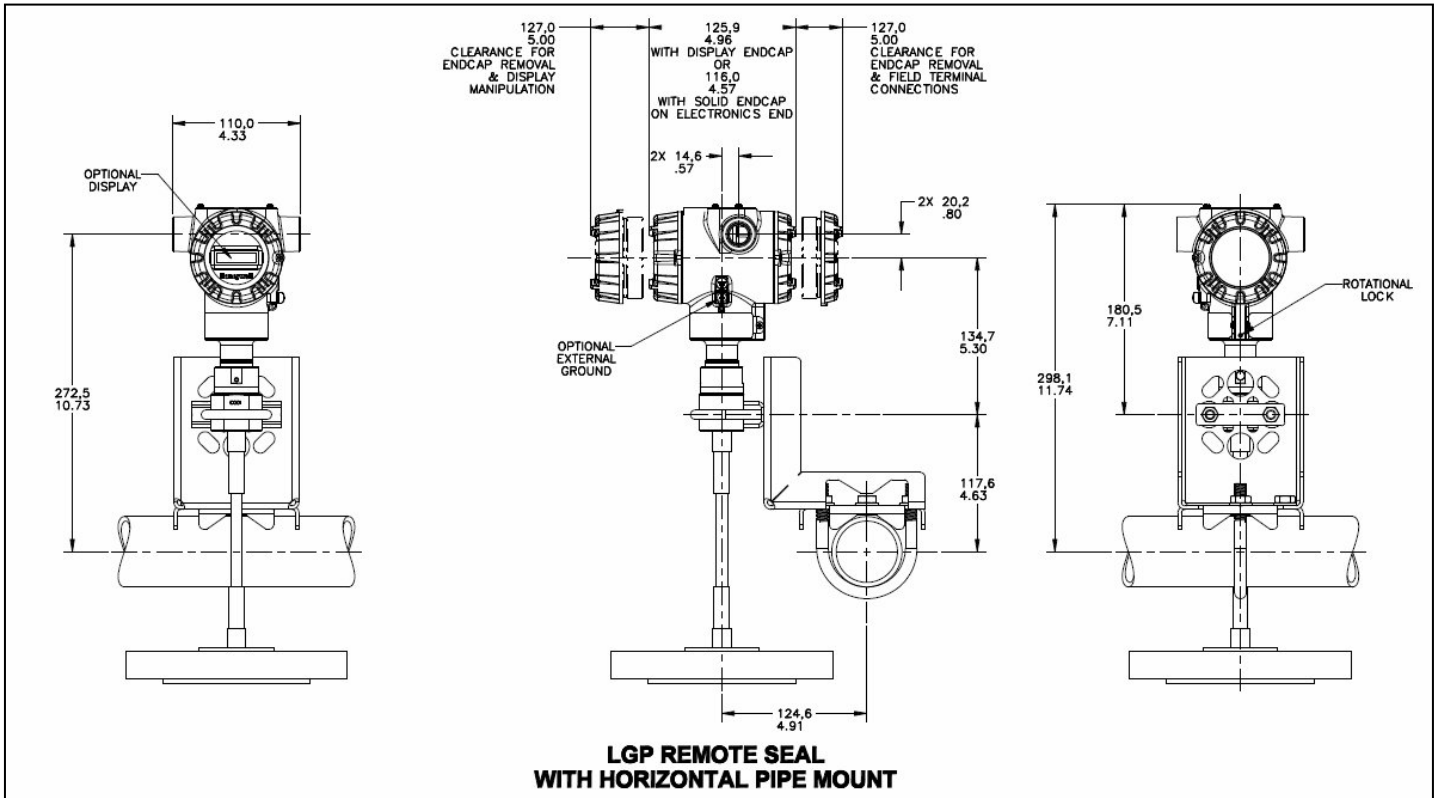
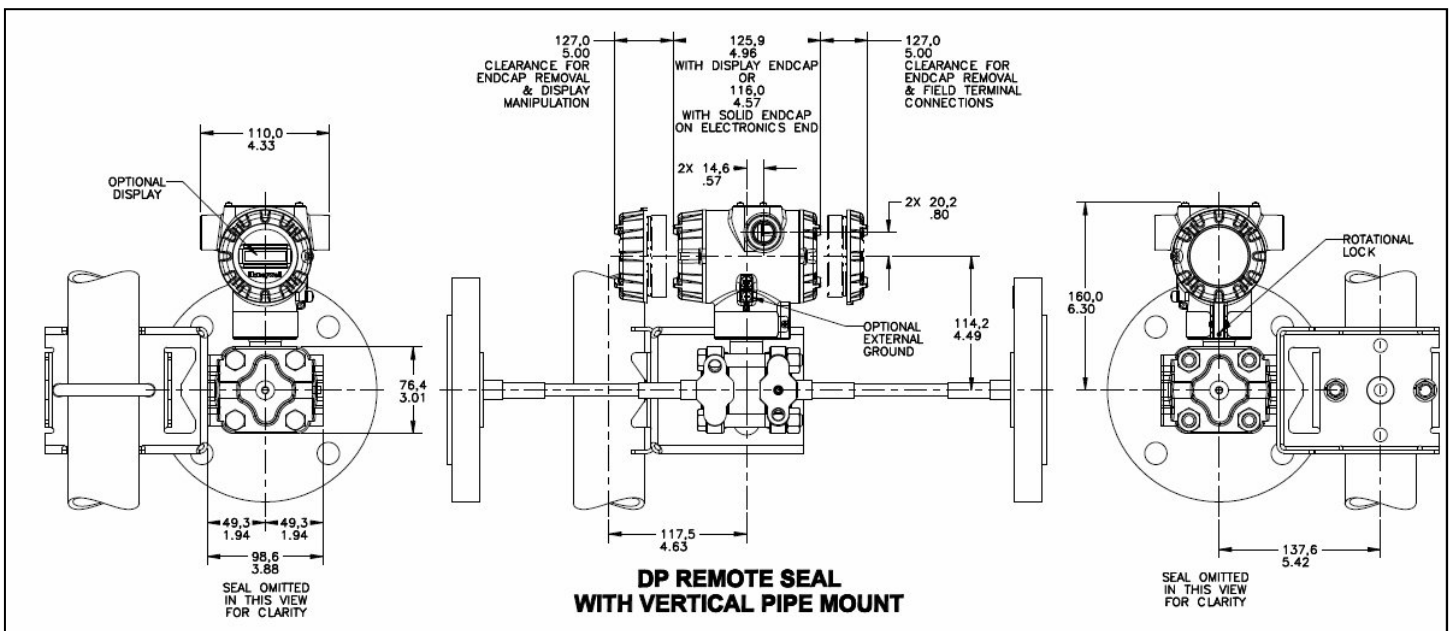


Figure 7 — Approximate horizontal mounting dimensions for Remote Seal Transmitter

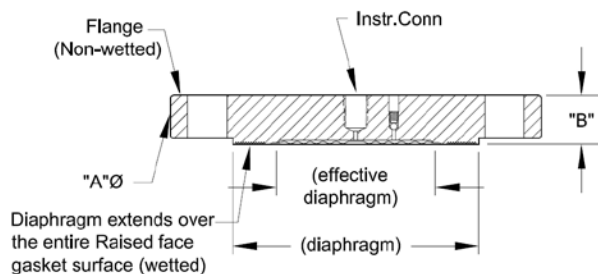
Reference Dimensions Vertical Mounting



Reference Dimensions (cont'd)

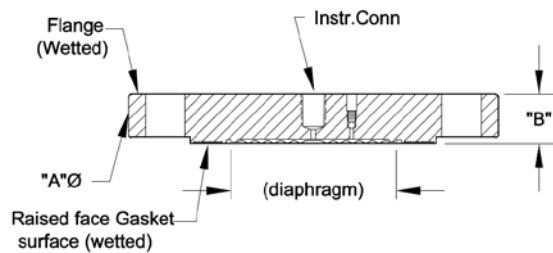
Flush Flanged Seal Dimensions

Type	ANSI/DIN Rating	Flange Material	Wetted Materials		Construction See figure	Dimensions	
			Diaphragm	Body		A	B
Flush Flanged Seal	3" Class 150#	CS	SS	SS	D	7.5	1.37
			Hastelloy C	SS	C		
			Hastelloy C	Hastelloy C	D		
			Monel	Monel	D		
		Tantalum	SS	C			
		SS	SS	N/A	B	7.50	0.94
			Hastelloy C	SS	A		
			Hastelloy C	Hastelloy C	D		
	Monel		Monel	D			
	Tantalum	SS	C				
	3" Class 300#	CS	SS	SS	D	8.25	1.56
			Hastelloy C	SS	C		
			Hastelloy C	Hastelloy C	D		
			Monel	Monel	D		
		Tantalum	SS	C			
		SS	SS	N/A	B	8.25	1.12
			Hastelloy C	SS	A		
			Hastelloy C	Hastelloy C	D		
	Monel		Monel	D			
	Tantalum	SS	C				
3" Class 600#	CS	SS	SS	D	8.25	1.75	
		Hastelloy C	SS	C			
		Hastelloy C	Hastelloy C	D			
		Monel	Monel	D			
	Tantalum	SS	C				
	SS	SS	N/A	B	8.25	1.5	
		Hastelloy C	SS	A			
		Hastelloy C	Hastelloy C	D			
Monel		Monel	D				
Tantalum	SS	C					
DN80-PN40	CS	SS	SS	D	7.87	1.32	
		Hastelloy C	SS	C			
		Hastelloy C	Hastelloy C	D			
		Monel	Monel	D			
	Tantalum	SS	C				
	SS	SS	N/A	B	7.87	0.94	
		Hastelloy C	SS	A			
		Hastelloy C	Hastelloy C	D			
Monel		Monel	D				
Tantalum	SS	C					



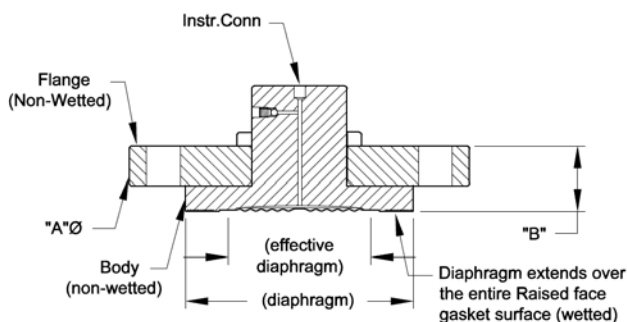
Configuration "HS"

Figure A



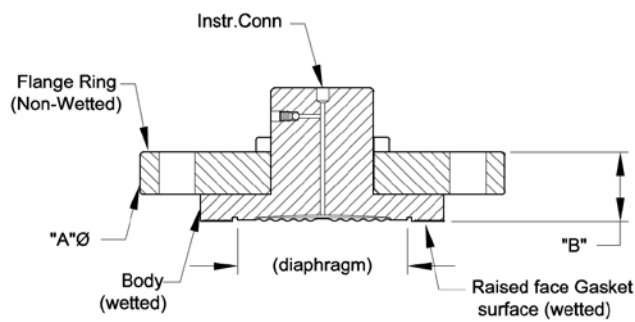
Configuration "HT"

Figure B



Configuration "IS"

Figure C



Configuration "IT"

Figure D

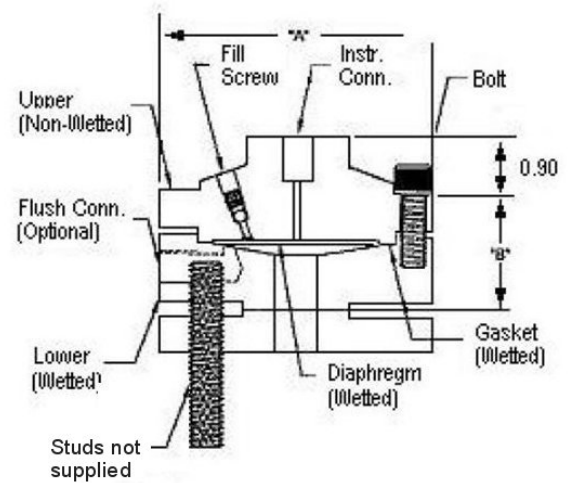
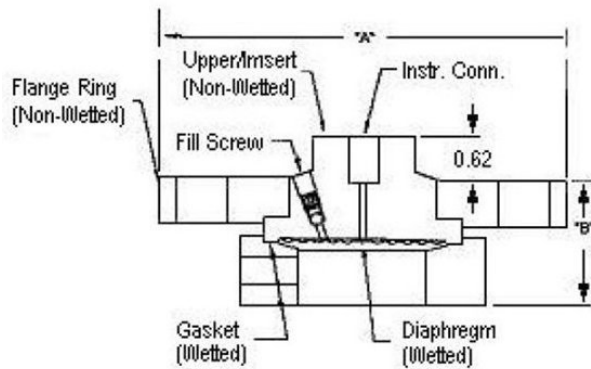
Figure 9 - Seal Dimensions (Flush Flanged)

Reference Dimensions (cont'd)

Flush Flanged Seal with Lower

Type	ANSI/DIN Rating	Size	Dimension	2.4" Diaph. Dia. (in.)	2.9" Diaph. Dia. (in.)	4.1" Diaph. Dia. (in.)
Flush Flanged Seal with Lower	Class 150#	1/2"	A	3.50	4.00	5.25
			B0	1.72	1.72	1.84
			B1	1.72	1.72	1.84
			B2	2.22	2.22	2.34
		1"	A	4.25	4.00	5.25
			B0	1.12	1.72	1.84
			B1	1.62	1.72	1.84
			B2	1.98	1.72	2.34
		1-1/2"	A	5.00	5.00	5.25
			B0	2.50	2.50	1.78
			B1	3.00	3.00	2.12
			B2	3.50	3.40	2.12
	2"	A	6.00	6.00	6.00	
		B0	2.50	2.50	2.12	
		B1	3.00	3.00	2.12	
		B2	3.50	3.40	2.12	
	3"	A	7.50	7.50	7.50	
		B0	2.58	2.88	2.80	
		B1	2.88	2.88	3.00	
		B2	3.50	3.40	3.40	
	Class 300#	1"	A	4.88	4.00	5.25
			B0	2.50	1.72	1.88
			B1	3.00	1.72	2.12
			B2	3.50	2.22	2.12
1-1/2"		A	6.12	6.12	5.25	
		B0	2.50	2.50	2.12	
		B1	3.00	3.00	2.12	
		B2	3.50	3.40	2.12	
2"		A	6.50	6.50	6.50	
		B0	2.50	2.50	2.70	
		B1	3.00	3.00	3.00	
		B2	3.50	3.40	3.50	
3"	A	8.25	8.25	8.25		
	B0	3.48	3.48	3.20		
	B1	3.48	3.48	3.60		
	B2	4.10	4.00	4.00		
Class 600#	1"	A	4.88	4.50	5.25	
		B0	2.50	2.15	2.28	
		B1	3.00	2.15	2.28	
		B2	3.50	2.40	2.50	
	1-1/2"	A	6.12	6.12	5.25	
		B0	2.50	1.53	2.50	
		B1	3.00	2.09	3.00	
		B2	3.50	2.49	3.50	
	2"	A	6.50	6.50	6.50	
		B0	3.10	3.10	3.30	
		B1	3.60	3.60	3.60	
		B2	4.10	4.00	4.10	
3"	A	8.25	8.25	8.25		
	B0	3.48	3.48	3.20		
	B1	3.48	3.48	3.60		
	B2	4.10	4.00	4.00		

B0 Without Flush
 B1 B Dimension with 1/4 NPT Flushing Connection
 B2 B dimension with 1/2 NPT Flushing Connection



Flush Flanged Seal with Lower

Note: 0.90 dimension is 0.70 for 4.1" Dia Diaphragm

Flush Flanged Seal with Lower

Figure 10- Seal Dimension (Flush Flanged)

Reference Dimensions (cont'd)

Flanged Seal with Extended Diaphragm

Type	ANSI/DIN Rating	Dimension	2.8" Diaphragm Dia. (in.)	3.5" Diaphragm Dia. (in.)
Flanged Seal with Extended Diaphragm	3" Class 150#	A	7.50	-
		B	0.94	-
		C	2.80	-
	3" Class 300#	A	8.25	-
		B	1.12	-
		C	2.80	-
DIN DN80-PN40	A	7.87	-	
	B	0.94	-	
	C	2.80	-	
4" Class 150#	A	-	9.00	
	B	-	0.94	
	C	-	3.70	
4" Class 300#	A	-	10.00	
	B	-	1.25	
	C	-	3.70	
DIN DN100-PN40	A	-	9.25	
	B	-	0.94	
	C	-	3.70	

Designed to meet with schedule 40 pipe

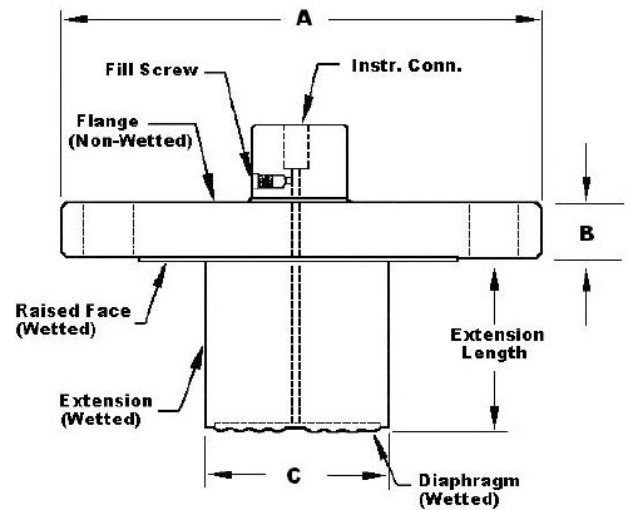


Figure 11 — Seal Dimensions (Extended Diaphragms)

Pancake Seal

Type	ANSI/DIN	Dimension	3.5" Diaph. (in.)
Pancake Seal	Class 150#, 300#, 600# DN80-PN40	A	5.00
		B	1.08

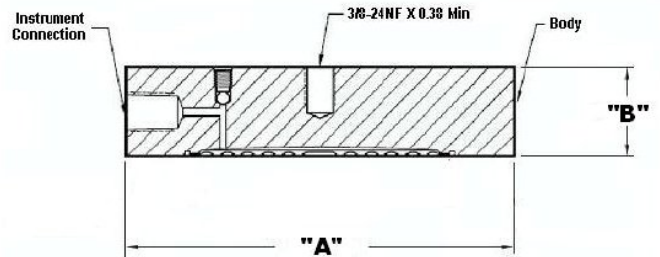


Figure 12 — Seal Dimensions (Pancake)

Chemical Tee "Taylor Wedge" Seal

Type	Size	Dimension	3.5" Diaph. (in.)
Chemical Tee "Taylor Wedge" Seal	750 psi	A	5.00
		B	0.50

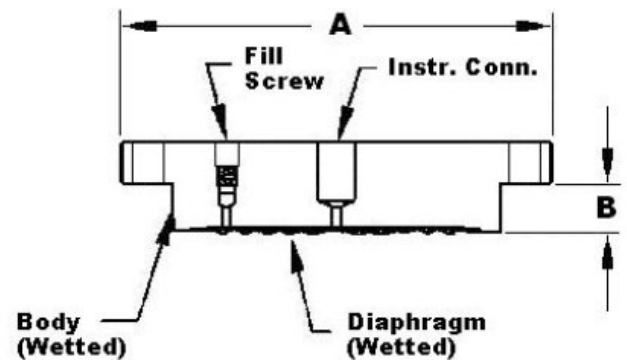


Figure 13 — Seal Dimensions (Chemical TEE "Taylor Wedge" Seals)

Seal with Threaded Process Connection

Type	Size	Dimension	2.4" Diaphragm Dia. (in.)	2.9" Diaphragm Dia. (in.)	4.1" Diaphragm Dia. (in.)
Threaded Process Conn. Seal	1/4" or 1/2"	A	3.50	4.00	5.25
		B0	1.66	1.66	1.79
		B1	1.66	1.66	1.79
		B2	2.18	2.18	2.14
	3/4" or 1"	A	3.50	4.00	5.25
		B0	1.66	1.66	1.79
		B1	1.66	1.66	1.79
		B2	8.25	2.18	2.14

- B0 Without Flush
- B1 B Dimension with 1/4 NPT Flushing Connection
- B2 B dimension with 1/2 NPT Flushing Connection

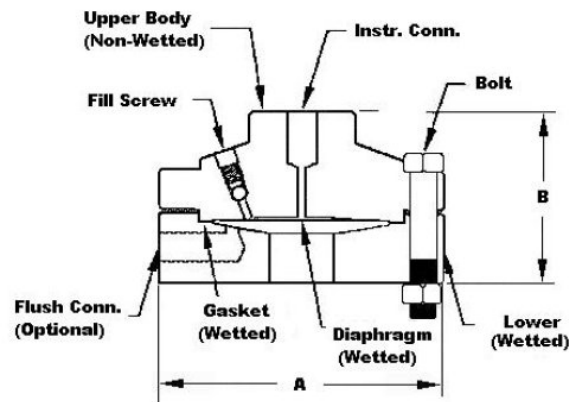


Figure 14— Seal Dimensions (Threaded Process Connection Seals)

Sanitary Seal

Type	Size	Dimension	1.9" Diaphragm Dia. (in.)	2.4" Diaphragm Dia. (in.)	2.9" Diaphragm Dia. (in.)	4.1" Diaphragm Dia. (in.)
Sanitary Seal	2"	A	2.50	-	-	-
		B	1.42	-	-	-
	2- 1/2"	A	-	3.00	-	-
		B	-	1.28	-	-
	3"	A	-	-	3.57	-
		B	-	-	1.38	-
	4"	A	-	-	-	4.68
		B	-	-	-	1.60

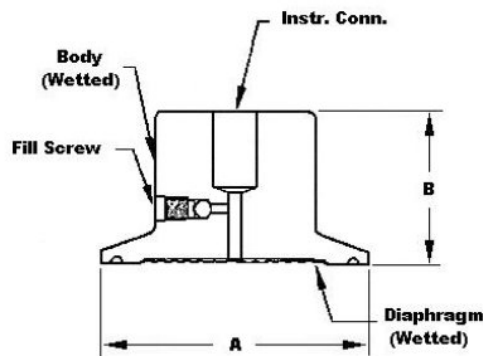


Figure 15— Seal Dimensions (Sanitary Seals)

Saddle Seal

Type	Size	Dimension	2.4" Diaph. (in.)
Saddle Seal	3"	A	3.50
		B	2.90
Saddle Seal	4" or larger	A	3.50
		B	3.04

Note: Specify 6 or 8 bolt pattern

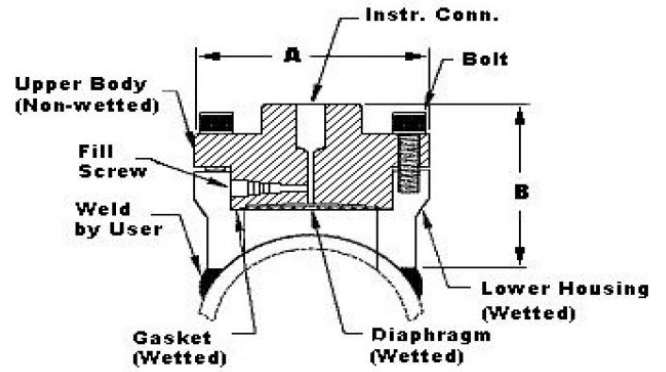


Figure 16— Seal Dimensions (3" Saddle Seal)

Type	Size	Dimension	2.4" Diaph. (in.)
Saddle Seal	3"	A	3.50
		B	2.90
Saddle Seal	4" or larger	A	3.50
		B	3.04

Note: Specify 6 or 8 bolt pattern

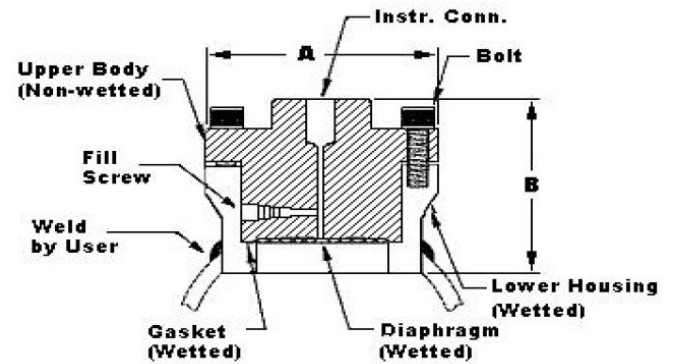


Figure 17— Seal Dimensions (4" Saddle Seal)

Calibration Ring

Type	Size	Rating	Dimension	1/4 NPT	1/2 NPT
Calibration Ring	3"	150# / 800#	A	5.00	5.00
			B	1.00	1.50
			C	3.00	3.00

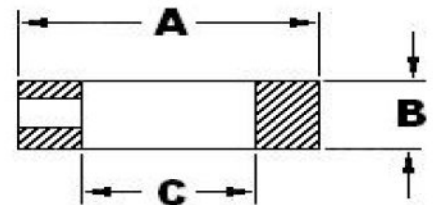


Figure 18— Calibration Ring

Communications Protocols & Diagnostics

HART Protocol

Version:

HART 7

Power Supply

Voltage: 10.8 to 42.4Vdc at terminals

Load: Maximum 1440 ohms. See Figure 2.

Minimum Load: 0 ohms. (For handheld communications a minimum load of 250 ohms is required)

Foundation Fieldbus (FF)

Power Supply Requirements

Voltage: 9.0 to 32.0Vdc at terminals

Steady State Current: 17.6mA_{dc}

Software Download Current: 27.4mA_{dc}

Available Function Blocks

Block Type	Qty	Execution Time
Resource	1	n/a
Transducer	1	n/a
Diagnostic	1	n/a
Analog Input	1*	30 ms
PID w/Autotune	1	45 ms
Integrator	1	30 ms
Signal Char (SC)	1	30 ms
LCD Display	1	n/a
Flow Block	1	30 ms
Input Selector	1	30 ms
Arithmetic	1	30 ms

* AI block may have two (2) additional instantiations.

All available function blocks adhere to FOUNDATION Fieldbus standards. PID blocks support ideal & robust PID algorithms with full implementation of Auto-tuning.

Link Active Scheduler

Transmitters can perform as a backup Link Active Scheduler and take over when the host is disconnected. Acting as a LAS, the device ensures scheduled data transfers typically used for the regular, cyclic transfer of control loop data between devices on the Fieldbus.

Number of Devices/Segment

Entity IS model: 6 devices/segment

Schedule Entries

18 maximum schedule entries

Number of VCR's: 24 max

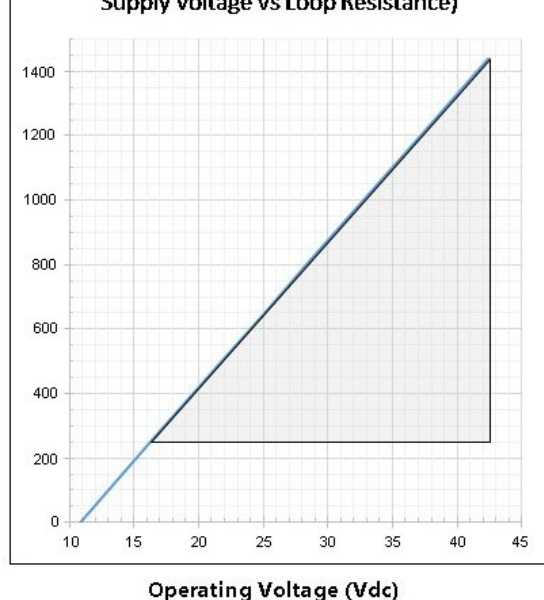
Compliance Testing: Tested according to ITK 6.0.1

Software Download

Utiliz
proc
any I
host

Hon
DE i:
digit
field

Pow
Volts



$$RL_{max} = 45.6 \times (\text{Power Supply Voltage} - 10.8)$$

Standard Diagnostics

ST 700 top level diagnostics are reported as either critical or non-critical and readable via the DD/DTM tools or integral display as shown below.

Critical Diagnostics

HART DD/DTM Tools	Basic Display	Simple Display
Electronic Module DAC Failure	Electronics module fault	Fault Comm EI
Meter Body NVM Corrupt	Meter Body fault	Fault Mtrbody
Config. Data Corrupt	Electronics module fault	Fault Comm EI
Electronic Module Diag Failure	Electronics module fault	Fault Comm EI
Meter Body Critical Failure	Meter Body fault	Fault Mtrbody
Sensor Comms Timeout	Meter Body Comm fault	Fault Mbd Com

Non-Critical Diagnostics

HART DD/DTM Tools
Display Failure
Electronic Module Comm Failure
Meter Body Excess Correct
Sensor Over Temperature
Fixed Current Mode
PV Out of Range
No Factory Calibration
No DAC Compensation
LRV Set Error – Zero Config. Button
URV Set Error – Zero Config. Button
AO Out of Range
Loop Current Noise
Meter Body Unreliable Comm
Tamper Alarm,
No DAC Calibration
Sensor Supply Voltage Low

Refer to ST 700 manuals for additional level diagnostic information.

Approval Certifications:

AGENCY	TYPE OF PROTECTION	COMM. OPTION	FIELD PARAMETERS	AMBIENT TEMP (Ta)
FM Approvals™	Explosionproof: Class I, Division 1, Groups A, B, C, D; Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G; T4 Class I, Zone 0/1, AEx d IIC Ga/Gb Class II, Zone 21, AEx tb IIIC Db T 95°C	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
	Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T4 Class I, Zone 0, AEx ia IIC Ga T4 FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
		Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Nonincendive: Class I, Division 2, Groups A, B, C, D locations, Class I, Zone 2, AEx nA IIC Gc T4	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
	Enclosure: Type 4X/ IP66/ IP67	All	All	-
Canadian Standards Association (CSA)	Explosion Proof: Class I, Division 1, Groups A, B, C, D; Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G; Ex d IIC Ga Ex tb IIIC Db T 95°C	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
	Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T4 Ex ia IIC Ga T4 FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
		Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Nonincendive: Class I, Division 2, Groups A, B, C, D; T4 Ex nA IIC Gc T4	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
	Enclosure: Type 4X/ IP66/ IP67	All	All	-

Approval Certifications: (Continued)

ATEX	Flameproof: II 1/2 G Ex d IIC Ga/Gb II 2 D Ex tb IIIC Db T 95°C	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
	Intrinsically Safe: II 1 G Ex ia IIC Ga T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
	FISCO Field Device (Only for FF Option) Ex ia IIC T4	Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Nonincendive: II 3 G Ex nA IIC Gc T4	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
	Enclosure: IP66/ IP67	All	All	-
IECEX (World)	Flameproof : Ex d IIC Ga/Gb T4 Ex tb IIIC Db T 95°C	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
	Intrinsically Safe: Ex ia IIC Ga T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
	FISCO Field Device (Only for FF Option) Ex ia IIC T4	Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Nonincendive: Ex nA IIC Gc T4	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
	Enclosure: IP66/ IP67	All	All	-
SAEx (South Africa)	Flameproof : Ex d IIC Ga/Gb T4 Ex tb IIIC Db T 95°C	All	Note 1	-50 °C to 85°C
	Intrinsically Safe: Ex ia IIC Ga T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
	FISCO Field Device (Only for FF Option) Ex ia IIC T4	Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Nonincendive: Ex nA IIC Gc T4	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
	Enclosure: IP66/ IP67	All	All	-
INMETRO (Brazil)	Flameproof: Ex d IIC Ga/ Gb T4 Ex tb IIIC Db T 95°C	All	Note 1	-50 °C to 85°C
	Intrinsically Safe: Ex ia IIC Ga T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
	FISCO Field Device (Only for FF Option) Ex ia IIC T4	Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Nonincendive: Ex nA IIC Gc T4	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
	Enclosure : IP 66/67	All	All	-

Approval Certifications: (Continued)

NEPSI (China)	Flameproof: Ex d IIC Ga/Gb T4 Ex tb IIIC Db T 85°C	All	Note 1	-50 °C to 85°C
	Intrinsically Safe: Ex ia IIC Ga T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
	FISCO Field Device (Only for FF Option) Ex ia IIC T4	Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Nonincendive: Ex nA IIC Gc T4	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
	Enclosure : IP 66/67	All	All	-
EAC Russia, Belarus and Kazakhstan	Flameproof: 1 Ex d IIC Ga/Gb T4 Ex tb IIIC Db T 85°C	All	Note 1	-50 °C to 85°C
	Intrinsically Safe: 0 Ex ia IIC Ga T4	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
	FISCO Field Device (Only for FF Option) Ex ia IIC T4	Foundation Fieldbus	Note 2b	-50 °C to 70°C
	Enclosure : IP 66/67	All	All	-
KOSHA Korea	Flameproof : Ex d IIC T6..T5 Ex tD T 95°C	All	Note 1	T6: Ta= -50 °C to 65°C T5: Ta= -50 °C to 85°C
	Intrinsically Safe: Ex ia IIC T4	4-20 mA / DE/ HART	Note 2a	Ta= -50 °C to 70°C
		Foundation Fieldbus	Note 2b and 2c	Ta= -50 °C to 70°C
	Enclosure: IP66/ IP67	All	All	-

Notes:

1. Operating Parameters:

Voltage= 11 to 42 V DC Current= 4-20 mA Normal
= 10 to 30 V (FF) = 30 mA (FF)

2. Intrinsically Safe Entity Parameters

a. Analog/ DE/ HART Entity Values:

Vmax= Ui = 30V Imax= li= 105mA Ci = 4.2nF Li =984 uH Pi =0.9W

Transmitter with Terminal Block Revision E or Later

Vmax= Ui = 30V Imax= li= 225mA Ci = 4.2nF Li = 0 Pi =0.9W

Note : Transmitter with Terminal Block Revision E or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-001 or 50049839-002
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

b. Foundation Fieldbus- Entity Values

Vmax= Ui = 30V Imax= li= 180mA Ci = 0nF Li = 984 uH Pi =1W

Transmitter with Terminal Block Revision F or Later

Vmax= Ui = 30V Imax= li= 225mA Ci =0nF Li = 0 Pi =1 W

FISCO Field Device

$V_{max} = U_i = 17.5V$ $I_{max} = I_i = 380 \text{ mA}$ $C_i = 0nF$ $L_i = 0$ $P_i = 5.32 \text{ W}$

Note : Transmitter with Terminal Block Revision F or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-003 or 50049839-004
- Second line has the supplier information, along with the REVISION:
XXXXXXX-EXXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

Approval Certifications: (Continued)

Marine Certificates	This certificate defines the certifications covered for the SmartLine Pressure Transmitter family of products, including the SMV SmartLine Multivariable Transmitter. It represents the compilation of the five certificates Honeywell currently has covering the certification of these products into marine applications.
	American Bureau of Shipping (ABS) - 2009 Steel Vessel Rules 1-1-4/3.7, 4-6-2/5.15, 4-8-3/13 & 13.5, 4-8-4/27.5.1, 4-9-7/13. Certificate number: 04-HS417416-PDA
	Bureau Veritas (BV) - Product Code: 389:1H. Certificate number: 12660/B0 BV
	Det Norske Veritas (DNV) - Location Classes: Temperature D, Humidity B, Vibration A, EMC B, Enclosure C. For salt spray exposure; enclosure of 316 SST or 2-part epoxy protection with 316 SST bolts to be applied. Certificate number: A-11476
	Korean Register of Shipping (KR) - Certificate number: LOX17743-AE001
	Lloyd's Register (LR) - Certificate number: 02/60001(E1) & (E2)
SIL 2/3 Certification	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.

Other Certification Options

Materials

- NACE MRO175, MRO103, ISO15156

Application Data

Liquid Level: Closed Tank

Determine the minimum and maximum pressure differentials to be measured (Figure 16).

$$\begin{aligned} P_{\text{Min}} &= (SG_p \times a) - (SG_f \times d) \\ &= \text{LRV when HP at bottom of tank} \\ &= -\text{URV when LP at bottom of tank} \end{aligned}$$

$$\begin{aligned} P_{\text{Max}} &= (SG_p \times b) - (SG_f \times d) \\ &= \text{URV when HP at bottom of tank} \\ &= -\text{LRV when LP at bottom of tank} \end{aligned}$$

Where:

minimum level at 4mA
maximum level at 20 mA

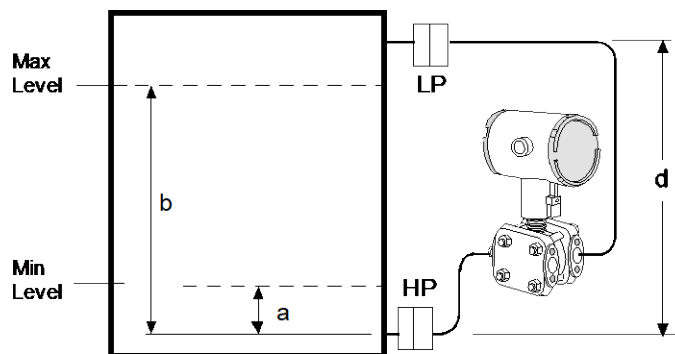
a = distance between bottom tap and minimum level

b = distance between bottom tap and maximum level

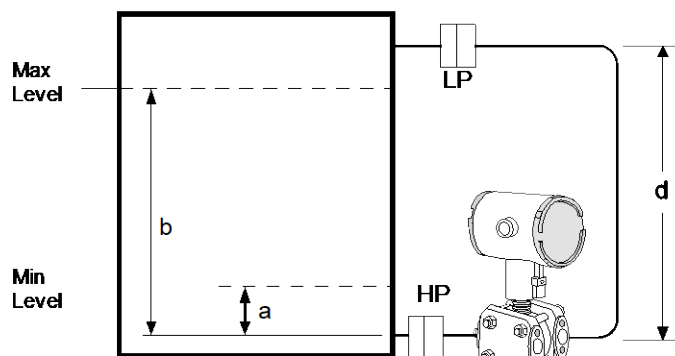
d = distance between taps

SG_f = Specific Gravity of capillary fill fluid (See Page 6 "Material Specifications" for values.)

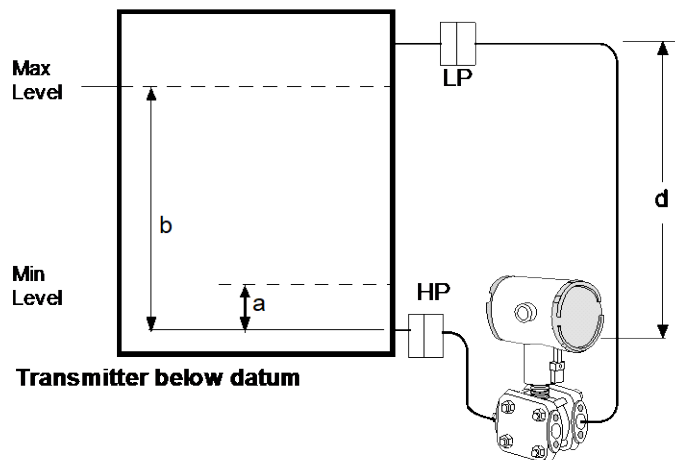
SG_p = Specific Gravity of process fluid



Transmitter above datum



Transmitter at datum



Transmitter below datum

24253

Figure 16—Closed tank liquid level measurement distance

Application Data (Cont'd)

Density or Interface*

Calculate the minimum and maximum pressure differentials to be measured (Figure 19).

$P_{\min} = (SG_{\min} - SG_f) \times (d)$;
minimum density, 4mA output

$P_{\max} = (SG_{\max} - SG_f) \times (d)$;
maximum density, 20mA output

Where:

d = distance between the taps

SG_{\max} = maximum Specific Gravity

SG_{\min} = minimum Specific Gravity

SG_f = Specific Gravity of capillary fill fluid (See Page 6 "Material Specifications" for values.)

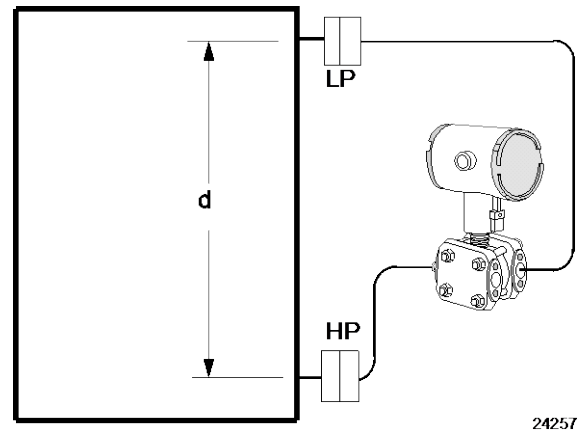


Figure 19- Density, direct acting transmitter configuration

Seal Configurations



Figure 20—Flush Flange Seals

Flush Flange Seals can be used with differential, gauge and absolute pressure transmitters and are available with 3" ANSI Class 150, ANSI Class 300 and DIN DN80-PN40 process connections. Flush flange seals can also be provided with Lowers. Lowers are essentially calibration rings, which allow flushing connections if needed.



Figure 22—Pancake Seals

Pancake Seals can be used with differential, gauge and absolute pressure transmitters and are available with 3" ANSI Class 150, 300 and 600 process connections.



Figure 21 — Flange Seal with Extended Diaphragm

Flange Seal with Extended Diaphragm can be used with differential, gauge and absolute pressure transmitters and are available with 3" and 4" ANSI Class 150, ANSI Class 300, DIN DN80-PN40 and DIN DN100-PN40 process connections. 2", 4" and 6" extension lengths are available



Figure 23— Chemical Tee "Taylor" Wedge

Chemical Tee "Taylor" Wedge can be used with differential pressure transmitters and are available with Taylor Wedge 5" O.D. process connection.

Seal Configurations (cont'd)



Figure 24— Seals with Threaded Process Connections

Seals with Threaded Process Connections can be used with differential, gauge and absolute pressure transmitters and are available with ½", ¾" and 1" NPT Female process connections.



Figure 25 — Sanitary Seals

Sanitary Seals can be used with differential, gauge and absolute pressure transmitters and are available with 3" and 4" Tri-Clover-Tri-Clamp process connections.



Figure 26— Saddle Seals

Saddle Seals can be used with differential, gauge and absolute pressure transmitters and are available with 3" and 4" (6 bolt or 8 bolt designs) process connections.



Figure 27 — Calibration Rings

Calibration Rings are available with Flush Flange Seals and Pancake Seals. Flushing ports (1/4" or 1/2") are available with calibration rings.



Figure 28 — Stainless Steel Armor and PVC Coated Stainless Steel Armor Capillaries

Stainless Steel Armor and PVC Coated Stainless Steel Armor Capillaries are available with Honeywell Remote Seal Solutions.



Figure 29 — 2" Stainless Steel Nipples
2" Stainless Steel Nipples are available for Close-Coupled remote seal solutions



Figure 30 — Welded Meter Body for All-Welded Remote Seal Solution

Welded Meter Body for All-Welded Remote Seal Solution. The welded ST 700 meter body is an important part of an All-Welded Remote Seal Solution, which is commonly used in Vacuum applications.

Model Selection Guide

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.

**Model STR700
(DP, GP) Remote Seals**

Model Selection Guide
34-ST-16-104 Issue 23

Instructions

- Select the desired Key Number. The arrow to the right marks the selection available.
- Make selections from each Table (I, II and IX) using the column below the proper arrow.
- A (•) denotes unrestricted availability. A letter denotes restricted availability.
- Restrictions follow Table IX.

Key Number	I	II	III	IV	V	VI	VII	VIII	IX
STR7 __	- [] -	- [] -	- [] -	- [] -	- [] -	- [] -	- [] -	- [] -	+ [0000]

KEY NUMBER	URL	LRL	Max Span	Min Span	Units	Selection	Availability
Measurement Range Std Accuracy	100 (7)	-100 (-7)	100 (7)	0.9 (0.062)	psi (bar)	STR73D	↓
	500 (35)	-14.7 (-1.0)	500 (35)	5 (0.35)	psi (bar)	STR74G	↓

Note: Remote seal system pressure rating is body rating or seal rating, whichever is less.

TABLE I	Description	Selection				
Meter Body & Capillaries	a. Number of Seals	1 Remote Seal (High Side) 2 Remote Seals 1 Remote Seal (Low Side)	1 [] - 2 [] - 3 [] -	• • •		
	b. Primary Fill Fluid (Meter body)	Silicone Oil 200 Fluorinated Oil CTFE Silicone Oil 704 NEOBEE® M-20 ¹¹	- 1 [] - - 2 [] - - 3 [] - - 4 [] -	• 2 • •		
	c. Construction	Non-Wetted Adapter Head Materials				
	In-Line Gauge	316 SS Bonnet	- A [] -		•	
		316 SS Bonnet for Close-Couple	- B [] -		3	
	Dual Head DP	316 SS (bolt-on heads)	- C [] -	•		
		316 SS for Close-Couple 316 SS with all-welded meter body	- D [] - - E [] -	3 4		
	d. Bolts and Nuts for Transmitter Heads	None Carbon Steel Bolts and Nuts 316 SS Bolts and Nuts A286 SS (NACE) Bolts and 304 SS (NACE) Nuts B7M (NACE) Bolts and 7M (NACE) Nuts	- 0 [] - - C [] - - S [] - - N [] - - B [] -	22 • • • •	•	
	e. Secondary Fill Fluid (capillary & seal)	No Fill Fluid Silicone Oil 200 Fluorinated Oil CTFE Silicone Oil 704 Neobee® M20 ¹¹ Syltherm® 800 ¹²	- 0 [] - - 1 [] - - 2 [] - - 3 [] - - 4 [] - - 5 [] -	5 • • • • •	5 • •	
		No Capillary, No Nipple (Specify for VAM Unit Only)		- 0 [] -	5	5
	f. Connection of Remote Seal to Meter Body	Capillary Length	5 feet 1.5 m	- A [] -	•	•
			10 feet 3.0 m	- B [] -	•	•
			15 feet 4.5 m	- C [] -	•	•
			20 feet 6.1 m	- D [] -	•	•
			25 feet 7.5 m	- E [] -	•	•
			35 feet 10.7 m	- F [] -	•	•
			5 feet 1.5 m	- G [] -	•	•
			10 feet 3.0 m	- H [] -	•	•
			15 feet 4.5 m	- J [] -	•	•
			20 feet 6.1 m	- K [] -	•	•
25 feet 7.5 m			- L [] -	•	•	
35 feet 10.7 m			- M [] -	•	•	
2 inch long SS nipple close-coupled			- 2 [] -	6	6	
g. Seal Option			None	- 0 [] -	•	•
	Std Gold Plated Seal Diaph. = 50 µin	- 1 [] -	7	7		
	Teflon Coated Seal Diaphragm - only for anti-sticking	- 4 [] -	7	7		

¹¹ Limited vacuum availability.

¹² Minimum static pressure requirement. No vacuum allow ed. See Specifications 34-ST-03-88 Figure 15



In-Line Gauge




Dual Head DP



All welded

STR74G
STR73D

Note: When selecting required seal, you must specify only the 9 selections within the required seal type.

TABLE I		Description				Selection			
Seals	 Flush Flanged Seal	No Seal Attached to Core Transmitter (Specify for VAM Unit Only)				0 0 0 0 0 0 0 0	21	21	
		Seal Type	Diaphragm Diameter	Flange Size	Flange Pressure Rating ¹		Selection		
					ANSI Class 150		AFA	•	•
					ANSI Class 300		AFC	•	•
		3.5"		80mm	DIN DN80-PN40		AFM	•	•
		Wetted Material	Diaphragm		Upper Insert		Selection		
			316L SS		316L SS		AA	•	•
			Hastelloy [®] C-276		316L SS		AB	•	•
			Hastelloy [®] C-276		Hastelloy [®] C-276		AC	•	•
			Monel 400 [®]		Monel 400 [®]		AE	8	8
		Tantalum ⁵		316L SS		AF	8	8	
		Non-Wetted Material (upper)		CS (Nickel Plated)		1	•	•	
				316L SS		2	•	•	
		Seal-Capillary Connection		Center Seal		1	•	•	
				Side Seal		2	9	9	
Calibration Rings		None		A	•	•			
		316L SS		B	10	10			
		Hastelloy [®] C-276		C	10	10			
		Monel 400 [®]		D	10	10			
Flushing Connections and Plugs ⁴ (Metal plug material will be the same as Cal. ring material if metal plug is chosen)		None		0	•	•			
		One 1/4" with plastic plug		H	11	11			
		One 1/4" with metal plug		J	11	11			
		Two 1/4" with plastic plugs		M	11	11			
		Two 1/4" with metal plugs		N	11	11			
		One 1/2" with plastic plug		P	11	11			
		One 1/2" with metal plug		Q	11	11			
		Two 1/2" with plastic plugs		R	11	11			
		Two 1/2" with metal plugs		S	11	11			

STR74G
STR73D


TABLE II		Description				Selection							
Seals (continued)	 Flush Flanged Seal with Lower	Diaphragm Diameter	Flange Size	Flange Pressure Rating ¹	Const. - See Spec. Figure 34-ST-03-104	Construction - See Spec. Figure 34-ST-03-104	Selection						
							BCA	•	•				
							ANSI 150	22	BCC	•	•		
							ANSI 300	22	BGA	•	•		
							1-1/2"	ANSI 150	22	BGC	•	•	
							ANSI 300	22	BDA	•	•		
							2"	ANSI 150	22	BDC	•	•	
							ANSI 300	22	BFA	•	•		
							3"	ANSI 150	22	BFC	•	•	
							ANSI 300	22	CAA	•	•		
							2.9"	1/2"	ANSI 150	23	CCA	•	•
								1"	ANSI 150	23	CCB	•	•
								ANSI 300	23	CCC	•	•	
								1-1/2"	ANSI 150	22	CGA	•	•
							ANSI 300	22	CGC	•	•		
							2"	ANSI 150	22	CDA	•	•	
							ANSI 300	22	CDC	•	•		
							4.1"	1/2"	ANSI 150	22	DA	•	•
								1"	ANSI 150	23	DCA	•	•
								ANSI 300	23	DCC	•	•	
								1-1/2"	ANSI 150	23	DGA	•	•
								ANSI 300	23	DGC	•	•	
								2"	ANSI 150	23	DDA	•	•
							ANSI 300	22	DDC	•	•		
							3"	ANSI 150	22	DFA	•	•	
ANSI 300	22	DFC	•	•									
Wetted Material	Diaphragm		Lower		Selection								
	316L SS		316L SS		BA	•	•						
	Hastelloy [®] C-276		316L SS		BB	•	•						
Hastelloy [®] C-276		Hastelloy [®] C-276		BC	•	•							
Monel 400 [®]		Monel 400 [®]		BE	8	8							
Tantalum		316L SS		BF	8	8							
Tantalum		Hastelloy [®] C-276		BG	8	8							
Tantalum		Tantalum Clad		BH	13	13							
Non-Wetted Material (upper, upper insert)		Upper		Upper Insert		Selection							
		316L SS		316L SS		4	•	•					
		Carbon Steel		316L SS		5	•	•					
Bolts ⁶		No Selection				0	•	•					
Flushing Connections and Plugs ⁴ (Metal plug material will be the same as Lower material, if metal plug is chosen - (SS Plug for CS Lower and Tantalum Clad)		None				0	•	•					
		One 1/4" with plastic plug				H	•	•					
		One 1/4" with metal plug				J	•	•					
		Two 1/4" with plastic plugs				M	•	•					
		Two 1/4" with metal plugs				N	•	•					
		One 1/2" with plastic plug				P	•	•					
		One 1/2" with metal plug				Q	•	•					
		Two 1/2" with plastic plugs				R	•	•					
		Two 1/2" with metal plugs				S	•	•					
Gasket		Klinger [®] C-4401 (non-asbestos)				K	•	•					
		Grafal [®]				G	•	•					
		Teflon [®]				T	•	•					
		Gylon [®] 3510				L	15	15					

Table II continued next page

¹ Standard facing 125-250 AARH RF (raised face) serrated surface finish.
² Bolt material will be same as Upper Material. However, if Table I bolts/nuts material is NACE or B7M, seal bolt material will be 304 SS NACE.
³ Plastic Plugs are TEMPORARY ONLY to protect threads and MUST be REMOVED before installation.
 Note: Remote seal system pressure rating is body rating or seal rating, whichever is less.


TABLE II		Description						
Seal Type	Diaphragm Diameter	Flange Size	Flange Pressure Rating ¹		Selection			
 Flange Seal with Extended Diaphragm	2.8"	3" (2.8" OD extension)	ANSI Class 150		EFA _____	•	•	
			ANSI Class 300		EFC _____	•	•	
			DIN DN80-PN40		EFM _____	•	•	
	3.5"	(3.70" OD extension)	ANSI Class 150		FGA _____	•	•	
			ANSI Class 300		FGC _____	•	•	
			DIN DN100-PN40		FGP _____	•	•	
	Wetted Material	316L SS		Diaphragm		Selection		
				Ext. Tube		EA _____	•	•
				316L SS		EB _____	•	•
		Hastelloy [®] C-276		316L SS		EC _____	•	•
Hastelloy [®] C-276		Hastelloy [®] C-276						
Non-Wetted Material (flange)		CS (Nickel Plated)		7 _____	•	•		
Bolts		316L SS		8 _____	•	•		
Extension Length		No Selection		0 _____	•	•		
		2"		2 _____	•	•		
		4"		4 _____	•	•		
		6"		6 _____	•	•		
No Selection	No Selection	No Selection		0 _____	•	•		

Table II continued below



TABLE II		Description							
Seal Type	Diaphragm Diameter	Flange Size	Flange Pressure Rating Dependent on Customer Flange ¹		Selection				
 Seals (continued)	3.5"	3"	ANSI Class 150/300/600		GFA _____	•	•		
	Wetted Material		Diaphragm		Body				
			316L SS		316L SS		GA _____	•	•
			Hastelloy [®] C-276		316L SS		GB _____	•	•
			Hastelloy [®] C-276		Hastelloy [®] C-276		GC _____	•	•
			Monel 400 [®]		Monel 400 [®]		GE _____	8	8
	Tantalum		Tantalum ⁷		GG _____	8	8		
	Non-Wetted Material		No Selection		0 _____	•	•		
	Bolts		No Selection		0 _____	•	•		
	Calibration Rings 		None		A _____	•	•		
			316L SS		B _____	10	10		
			Hastelloy [®] C-276		C _____	10	10		
Monel 400 [®]			D _____	10	10				
Flushing Connections and Plugs ⁴ (Metal plug material will be the same as Cal. Ring material, if metal plug is chosen)		None		0 _____	•	•			
		One 1/4" with plastic plug		H _____	11	11			
		One 1/4" with metal plug		J _____	11	11			
		Two 1/4" with plastic plugs		M _____	11	11			
		Two 1/4" with metal plugs		N _____	11	11			
		One 1/2" with plastic plug		P _____	11	11			
		One 1/2" with metal plug		Q _____	11	11			
		Two 1/2" with plastic plugs		R _____	11	11			
		Two 1/2" with metal plugs		S _____	11	11			

Table II continued below

¹ Standard facing 125-250 AARH RF (raised face) serrated surface finish.
⁴ Plastic Plugs are TEMPORARY ONLY to protect threads and MUST be REMOVED before installation
⁷ Tantalum Body has Tantalum wetted parts and 316 SS non-wetted parts

Note: Remote seal system pressure rating is body rating or seal rating, whichever is less.


TABLE II		Description					
Seal Type	Diaphragm Diameter	Flange Size	Flange Pressure Rating ¹		Selection		
 Chemical Tee "Taylor" Wedge	3.5"	Taylor Wedge 5" O.D.	750 psi		HMO _____	16	
	Wetted Material		Diaphragm	Body	Selection		
			316L SS Hastelloy® C-276	316L SS 316L SS Hastelloy® C-276	--- HA --- --- HB --- --- HC ---	• • •	
	Non-Wetted Material		No Selection		----- 0 -----	•	
	Bolts		No Selection		----- 0 -----	•	
	Styles		No Selection		----- 0 -----	•	
No Selection		No Selection		----- 0 -----	•		

Table II continued next page


TABLE II		Description					
Seal Type	Diaphragm Diameter	Threaded Process Connection Size (NPT Female)	Pressure Rating		Selection		
			CS Bolts	304 SS Bolts			
 Seal with Threaded Process Connection	2.4"	1/2 NPT	2,500 psi	1,250 psi	JJG _____	•	•
		3/4 NPT			JKG _____	•	•
		1 NPT			JLG _____	•	•
	2.9"	1/2 NPT	2,500 psi	1,250 psi	KJG _____	•	•
		3/4 NPT			KKG _____	•	•
		1 NPT			KLJ _____	•	•
	4.1"	1/2 NPT	1,500 psi	750 psi	LJG _____	•	•
		3/4 NPT			LKG _____	•	•
		1 NPT			LLG _____	•	•
	Wetted Material		Diaphragm	Lower		Selection	
			316L SS 316L SS Hastelloy® C-276 Hastelloy® C-276 Monel 400® Tantalum Tantalum	Carbon Steel 316L SS 316L SS Hastelloy® C-276 Monel 400® 316L SS Hastelloy® C-276	--- JA --- --- JB --- --- JC --- --- JD --- --- JE --- --- JF --- --- JG ---	• • • • 8 8 8 8	
	Non-Wetted Material (upper)		CS (Nickel Plated) 316 Stainless Steel		----- A ----- ----- C -----	• 17	• 17
Bolts ⁸		Carbon Steel 304 SS		----- C ----- ----- D -----	• •	• •	
Flushing Connections and Plugs ⁴ (Metal plug material will be the same as Lower material, if metal plug is chosen - (SS Plug for CS Lower and Tantalum Clad))		None		----- 0 -----	•	•	
		One 1/4" with plastic plug		----- H -----	•	•	
		One 1/4" with metal plug		----- J -----	•	•	
		Two 1/4" with plastic plugs		----- M -----	•	•	
		Two 1/4" with metal plugs		----- N -----	•	•	
		One 1/2" with plastic plug		----- P -----	18	18	
One 1/2" with metal plug		----- Q -----	18	18			
Two 1/2" with plastic plugs		----- R -----	18	18			
Two 1/2" with metal plugs		----- S -----	18	18			
Gasket		Klinger® C-4401 (non-asbestos)		----- K -----	•	•	
		Grafoil®		----- G -----	•	•	
		Teflon®		----- T -----	•	•	
		Gylon® 3510		----- L -----	15	15	

Table II continued below

¹ Standard facing 125-250 AARH RF (raised face) serrated surface finish.

⁴ Plastic Plugs are TEMPORARY ONLY to protect threads and MUST be REMOVED before installation

⁸ If Table I Bolts and Nuts material option is NACE, Bolts and Nuts will ship with Alloy Steel NACE and MAWP may change.

Note: Remote seal system pressure rating is body rating or seal rating, whichever is less.



TABLE II		Description						
Seal Type	Diaphragm Diameter	Flange Size	Pressure Rating		Selection			
 Sanitary Seal ⁹	1.9"	2"	Customer clamp rating or 600 psi, whichever is less		MDO _____	20	19	
	2.4"	2-1/2"			NEO _____	19	19	
	2.9"	3"			PF0 _____	19	19	
	4.1"	4"			QG0 _____	19	19	
	Wetted Material		Diaphragm	Body	Selection			
			316L SS	316L SS	--- N A ---	•	•	
Non-Wetted Material		No Selection		----- 0 -----	•	•		
Bolts		No Selection		----- 0 -----	•	•		
Styles		Tri-Clover Tri-Clamp®		----- 8 -----	•	•		
Gasket		No Selection		----- 0 -----	•	•		

Table II continued next page

TABLE II	Description							
	Seal Type	Diaphragm Diameter	Size and Bolt Pattern	Seal Pressure Rating		Selection		
				C.S. Bolts	304 SS Bolts			
Seals (continued)		2.4" 8-Bolt Design	for 3" Pipe ≥ 4" pipe	2,500 psi	1,250 psi	RFK _____ RGK _____	• • • •	
				2,000 psi	1,000 psi	RPK _____ RQK _____	• • • •	
		Wetted Material	2.4" 6-Bolt Design	for 3" Pipe ≥ 4" pipe	Diaphragm	Lower Housing	Selection	
					316L SS	Carbon Steel	___ RA ___	• •
					316L SS	316L SS	___ RB ___	• •
					Hastelloy® C-276	316L SS	___ RC ___	• •
					Hastelloy® C-276	Hastelloy® C-276	___ RD ___	• •
		316L SS	N/A-Body Only ¹⁰	___ SB ___	• •			
		Hastelloy® C-276	N/A-Body Only ¹⁰	___ SC ___	• •			
		Non-Wetted Material			Body	Bolts ^{10,11}	Selection	
Carbon Steel	Carbon Steel				___ B ___	8 8		
			316L SS	316 SS	___ C ___	• •		
			Bolts	No Selection	___ 0 ___	• •		
			Styles	No Selection	___ 0 ___	• •		
			Gasket	Klinger® C-4401 (non-asbestos) Grafoil® Teflon® Gylon® 3510	___ K ___	• •		
					___ G ___	• •		
					___ T ___	• •		
					___ L ___	• •		

STR74G
STR73D

⁹ All sanitary seals have dairy grade 3A approval.
¹⁰ Bolts are not included with "body only" selection.
¹¹ If Table I Bolts and Nuts material option is NACE, seal bolt material will be 304 SS NACE.
 Note: Remote seal system pressure rating is body rating or seal rating, whichever is less.

TABLE III	Agency Approvals (see data sheet for Approval Code Details)
Approvals	No Approvals Required
	FM Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	ATEX Explosion proof, Intrinsically Safe & Non-incendive
	IECEX Explosion proof, Intrinsically Safe & Non-incendive
	SAEx/CCoE Explosion proof, Intrinsically Safe & Non-incendive
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive
	KOSHA Explosion proof, Intrinsically Safe & Non-incendive
	EAC Customs Union(Russia,Belarus,Kazakhstan)Ex Approval,Flame proof, Intrinsically Safe

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0	•	•	•
A	•	•	•
B	•	•	•
C	•	•	•
D	•	•	•
E	•	•	•
F	•	•	•
G	•	•	•
H	•	•	•
I	•	•	•

TABLE IV	TRANSMITTER ELECTRONIC SELECTIONS		
a. Electronic Housing Material & Connection Type	Material	Connection	Lightning Protection
	Polyester Powder Coated Aluminum	1/2 NPT	None
	Polyester Powder Coated Aluminum	M20	None
	Polyester Powder Coated Aluminum	1/2 NPT	Yes
	Polyester Powder Coated Aluminum	M20	Yes
	316 Stainless Steel (Grade CF8M)	1/2 NPT	None
	316 Stainless Steel (Grade CF8M)	M20	None
	316 Stainless Steel (Grade CF8M)	1/2 NPT	Yes
316 Stainless Steel (Grade CF8M)	M20	Yes	
b. Output/ Protocol	Analog Output		Digital Protocol
	4-20mA dc		HART Protocol
	4-20mA dc		DE Protocol
	none		Foundation Fieldbus
c. Customer Interface Selections	Indicator	Ext Zero, Span & Config Buttons	Languages
	None	None	None
	None	Yes (Zero/Span Only)	None
	Basic	None	English
	Basic	Yes	English
	Standard (w/Internal Zero, Span & Conf Buttons)	None	English

A __	•	•
B __	•	•
C __	•	•
D __	•	•
E __	•	•
F __	•	•
G __	•	•
H __	•	•
_ H _	•	•
_ D _	•	•
_ F _	•	•
_ _ 0	•	•
_ _ A	f	f
_ _ B	•	•
_ _ C	•	•
_ _ D	u	u

TABLE V		CONFIGURATION SELECTIONS		
a. Application Software	Diagnostics			
	Standard Diagnostics			
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits ³	
	Disabled	High> 21.0mAcd	Honeywell Std (3.8 - 20.8 mAcd)	
	Disabled	Low< 3.6mAcd	Honeywell Std (3.8 - 20.8 mAcd)	
	Enabled	High> 21.0mAcd	Honeywell Std (3.8 - 20.8 mAcd)	
	Enabled	Low< 3.6mAcd	Honeywell Std (3.8 - 20.8 mAcd)	
	Enabled	N/A	N/A Fieldbus	
c. General Configuration	Factory Standard			
	Custom Configuration (Unit Data Required from customer)			

1 _ _	•	•
_ 1 _	f	f
_ 2 _	f	f
_ 3 _	f	f
_ 4 _	f	f
_ 5 _	g	g
_ 6 _	g	g
_ _ S	•	•
_ _ C	•	•

TABLE VI		CALIBRATION & ACCURACY SELECTIONS		
Accuracy and Calibration	Accuracy	Calibrated Range	Calibration Qty	
	NA	None	None	
	Standard	Factory Std	Single Calibration	
	Standard	Custom (Unit Data Required)	Single Calibration	

0	21	21
A	•	•
B	•	•

³ NAMUR Output Limits 3.8 - 20.5mAcd can be configured by the customer or select custom configuration Table Vc

TABLE VII		ACCESSORY SELECTIONS	
a. Mounting Bracket	Bracket Type	Material	
	None	None	
	Angle Bracket	Carbon Steel	
	Angle Bracket	304 SS	
	Angle Bracket	316 SS	
	Marine Approved Bracket	Carbon Steel	
	Marine Approved Bracket (In - Line)	Carbon Steel	
	Marine Approved Bracket	304 SS	
	Marine Approved Bracket (In - Line)	304 SS	
	Flat Bracket	Carbon Steel	
	Flat Bracket	304 SS	
Flat Bracket	316 SS		
b. Customer Tag	Customer Tag Type		
	No customer tag		
	One Wired Stainless Steel Tag (Up to 4 lines 26 char/line) Two Wired Stainless Steel Tag (Up to 4 lines 26 char/line)		
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters		
	No Conduit Plugs or Adapters Required		
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter		
	1/2 NPT 316 SS Certified Conduit Plug		
	M20 316 SS Certified Conduit Plug		
	Minifast® 4 pin (1/2 NPT) Minifast® 4 pin (M20)		

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0 _ _ _	•	•
1 _ _ _	•	•
2 _ _ _	•	•
3 _ _ _	•	•
8 _ _ _	y	•
9 _ _ _	•	•
4 _ _ _	y	•
A _ _ _	•	•
5 _ _ _	•	•
6 _ _ _	•	•
7 _ _ _	•	•
_ 0 _ _	•	•
_ 1 _ _	•	•
_ 2 _ _	•	•
_ _ A0	•	•
_ _ A2	n	n
_ _ A6	n	n
_ _ A7	m	m
_ _ A8	n	n
_ _ A9	m	m

TABLE VIII		OTHER Certifications & Options : (String in sequence comma delimited (XX, XX, XX,....))	
Certifications & Warranty	None - No other options		
	NACE MR0175; MR0103; ISO15156 (FC33338) Process wetted parts only		
	NACE MR0175; MR0103; ISO15156 (FC33339) wetted and non-wetted parts		
	Marine (DNV,ABS,BV,KR,LR)		
	EN10204 Type 3.1 Material Traceability (FC33341)		
	Certificate of Conformance (F3391)		
	Calibration Test Report & Certificate of Conformance (F3399)		
	Certificate of Origin (F0195)		
	FMEDA (SIL 2/3) Certification (FC33337)		
	Over-Pressure Leak Test Certificate (1.5X MAWP) (F3392)		
	Cert Clean for O2 or CL2 service per ASTM G93		
	Extended Warranty Additional 1 year		
	Extended Warranty Additional 2 years		
	Extended Warranty Additional 3 years		
	Extended Warranty Additional 4 years		

00	*	*	
FG	•	•	b
F7	d	d	
MT	c	c	b
FX	•	•	
F3	•	•	
F1	•	•	
F5	•	•	b
FE	j	j	
TP	•	•	
OX	e	e	
01	•	•	
02	•	•	
03	•	•	
04	•	•	

TABLE IX		Manufacturing Specials	
Factory	Factory Identification		

0000	•	•
------	---	---

MODEL RESTRICTIONS

Restriction Letter	Available Only With		Not Available With	
	Table	Selection(s)	Table	Selection(s)
b		Select only one option from this group		
d			VIIa	1,2,3,5,6,7
c	Id	___ 0, N, B ___		
e	lb	_ 2 ___ 2 _		
f			IVb	_ F _
g			IVb	_ H, D _
j	IVb	_ H _	Vb	_ 1,2,6 _
m	IVa	B, D, F, H ___		
n	IVa	A, C, E, G ___		
u	IVb	_ H _	.	.
y			lc	_ E _ _ _ _
2	le	___ 0 ___		
		___ 2 ___		
		___ 4 ___		
3	If	___ 2 _	la	2 _ _ _ _ _
4	I	2 ___ 0 ___		
5	II	000000000	VIII	FG, F7, FX, OX, TP, MT, F1
6	I	_ B, D _ _ _	la	2 _ _ _ _ _
7	II		II	AF
				BF
				BG
				BH
				GG
				JF
8	II		VIII	FG, F7
9	II	AA2		
		AB2		
10			II	___ 0
11			II	___ A _
13	II		II	___ T
		___ 0 _	VIII	FG, F7
15	II			BF
				BG
				BH
				JF
				JG
16	I	2 _ _ _ _ _		
17			II	___ JA _ _ _
18			II	JJG
				JKG
				JLG
19			If	___ 2 _
20	If	___ A, G _		
21	I	___ 000		
22	lc	_ E _ _ _		
23			II	000000000

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 Monel 400[®] is a registered trademark of Special Metals Corporation.
 HART[®] is a registered trademark of HART Communication Foundation.
 FOUNDATIONTM Fieldbus is a registered trademark of Fieldbus Foundation.
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 GRAFOIL[®] is a registered trademarks of GrafTech International Holdings Inc
 Gylon[®] 3510 is registered trademark of Garlock Sealing Technologies
 Tri-Clover Tri-Clamp[®] is a registered trademark of Alfa-Laval

FIELD INSTALLABLE REPLACEMENT PARTS

Description	Kit Number
Integrally Mounted Basic Indicator Kit (Compatible with all Electronic Modules)	50049911-501
Terminal Strip w/Lightning Protection Kit for HART or DE Modules	50075472-532
Terminal Strip w/Lightning Protection Kit for FFB/ <i>Profibus</i> Module	50075472-534
Terminal Strip w/o Lightning Protection for HART or DE Modules	50075472-531
Terminal Strip w/o Lightning Protection FFB Module	50075472-533
HART Electronics Module	50049849-501
HART Electronics Module w/connection for external configuration buttons	50049849-502
DE Electronics Module	50049849-503
DE Electronics Module w/connection for external configuration buttons	50049849-504
FFB Electronics Module Kit	50049849-509
FFB Electronics Module w/connection for external configuration buttons	50049849-510
Standard Display Module	50126003-501

PRODUCT MANUALS

Description	Part Number
ST 700 SmartLine Transmitter User Manual - English	34-ST-25-44
ST 700 SmartLine Transmitter HART/DE Communications Manual - English	34-ST-25-47
ST 700 SmartLine Transmitter Safety Manual - English	34-ST-25-37
ST 700 SmartLine Transmitter Foundation Fieldbus Manual - English	34-ST-25-48
ST 700 SmartLine Transmitter Function Block Manual - English	34-ST-25-49

All product documentation is available at www.honeywellprocess.com.

Sales and Service

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

ASIA PACIFIC

Honeywell Process Solutions,
(TAC) hfs-tac-support@honeywell.com

Australia

Honeywell Limited
Phone: +(61) 7-3846 1255
FAX: +(61) 7-3840 6481
Toll Free 1300-36-39-36
Toll Free Fax:
1300-36-04-70

China – PRC - Shanghai

Honeywell China Inc.
Phone: (86-21) 5257-4568
Fax: (86-21) 6237-2826

Singapore

Honeywell Pte Ltd.
Phone: +(65) 6580 3278
Fax: +(65) 6445-3033

South Korea

Honeywell Korea Co Ltd
Phone: +(822) 799 6114
Fax: +(822) 792 9015

EMEA

Honeywell Process Solutions,
Phone: + 80012026455 or
+44 (0)1344 656000

Email: (Sales)

FP-Sales-Apps@Honeywell.com

or

(TAC)

hfs-tac-support@honeywell.com

AMERICA'S

Honeywell Process Solutions,
Phone: (TAC) 1-800-423-9883 or
215/641-3610
(Sales) 1-800-343-0228

Email: (Sales)

FP-Sales-Apps@Honeywell.com

or

(TAC)

hfs-tac-support@honeywell.com

Specifications are subject to change without notice.

For more information

To learn more about SmartLine Transmitters,
visit www.honeywellprocess.com
Or contact your Honeywell Account Manager

Process Solutions

Honeywell
1250 W Sam Houston Pkwy S
Houston, TX 77042

Honeywell Control Systems Ltd
Honeywell House, Skimped Hill Lane
Bracknell, England, RG12 1EB

Shanghai City Centre, 100 Jungi Road
Shanghai, China 20061

www.honeywellprocess.com



34-ST-03-104
March 2020

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