Honeywell

34-ST-03-64
7/04

ST 3000 Smart Transmitter
Series 100 Remote Diaphragm Seals Models

STR12D	0-10 to 0-400 inH_2O	0-25 to 0-1000 mbar
STR13D	0-5 to 0-100 psid	0-0.35 to 0-7 bar
STR14G	0-5 to 0-500 psig	0-0.35 to 0-35 bar
STR17G	0-100 to 0-3000 psig	0-7 to 0-210 bar
STR14A	0-5 to 0-500 psia	0-0.35 to 0-35 bar

Specification and Model Selection Guide

Introduction

In 1983, Honeywell introduced the first Smart Pressure Transmitter— the ST 3000®. In 1989, Honeywell launched the first all digital, bi-directional protocol for smart field devices. Today, its ST 3000 Series 100 Remote Seal Transmitters continue to bring proven "smart" technology to a wide spectrum of measurement applications. Typical applications include high accuracy level measurement in pressurized vessels in the chemical and hydrocarbon processing industries. A second application consists of accurate flow measurement for slurries and high viscosity fluids in the chemical industry. Honeywell remote seal transmitters demonstrate proven reliability in hundreds on installations in a wide variety of industries and applications with a wide variety of secondary fill fluids for corrosive or high temperature process fluids.

All ST 3000 transmitters can provide a 4-20 mA output, Honeywell Digitally Enhanced (DE) output, HART* output, or FOUNDATION™ Fieldbus output. When digitally integrated with Honeywell's Process Knowledge System™, EXPERION PKS™, ST 3000 instruments provide a more accurate process variable as well as advanced diagnostics.

Honeywell's high-performance ST 3000 S100 transmitters lead the industry in:

- Accuracy
- Stability
- Reliability
- Rangeability
- Warranty

Includes Lifetime™ Tranmsitters:

- Accuracy = +/-0.0375%
- Stability = +/-0.01% per year
- Reliability = 470 years MTBF
- Rangeability = 400 to 1
- Lifetime Warranty = 15 years

Figure 1—Series 100 Remote Seal Pressure Transmitters feature proven piezoresistive sensor technology.

The devices provide comprehensive self-diagnostics to help users maintain high uptime, meet regulatory requirements, and attain high quality standards. S100 transmitters are ideal for critical applications, such as custody transfer of natural gas and energy and material balances, where accuracy and stability are of the utmost importance.

"Our commitment to Honeywell field instruments is based on seamless integration with our Honeywell system and the enhanced fault detection that the Honeywell DE protocol offers. Honeywell instruments also offer us a better way of ensuring database integrity over simple analog instruments. In addition, Honeywell's high-quality support has enabled us to better implement solutions to some of our more difficult problems. We have used Honeywell differential pressure smart transmitters for the past eight years. Based on their accuracy and low failure rates, we are now targeting critical flow applications that require the robustness that these transmitters bring."

DCS Systems Engineer
International Integrated Oil Company

Description

The ST 3000 transmitter can replace any 4 to 20 mA output transmitter in use today and operates over a standard two-wire system.

The measuring means is a piezoresistive sensor, which actually contains three sensors in one. It contains a differential pressure sensor, a temperature sensor, and a static pressure sensor.

Microprocessor-based electronics provide higher span-turndown ratio, improved temperature and pressure compensation, and improved accuracy.

The transmitter's meter body and electronics housing resist shock, vibration, corrosion, and moisture. The electronics housing contains a compartment for the single-board electronics, which is isolated from an integral junction box. The single-board electronics is replaceable and interchangeable with any other ST 3000 Series 100 or Series 900 model transmitter.

Like other Honeywell transmitters, the ST 3000 features two-way communication between the operator and the transmitter through our Smart Field Configurator (SFC). You can connect the SFC anywhere that you can access the transmitter signal lines.

The SCT 3000 Smartline® Configuration Toolkit provides an easy way to configure instruments using a personal computer. The toolkit enables configuration of devices before shipping or installation. The SCT 3000 can operate in the offline mode to configure an unlimited number of devices. The database can then be loaded downline during commissioning.

Features

- Choice of linear or square root output conformity is a simple configuration selection.
- Direct digital integration with Experion PKS and other control systems provides local measurement accuracy to the system level without adding typical A/D and D/A converter inaccuracies.
- Unique piezoresistive sensor automatically compensates input for temperature and static pressure.Added "smart" features include configuring lower and upper range values, simulating accurate analog output, and selecting preprogrammed engineering units for display.
- Smart transmitter capabilities with local or remote interfacing means significant manpower efficiency improvements in commissioning, start-up, and ongoing maintenance functions.

Specifications

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature *	25 ±1	77 ±2	—	—	—	—	–55 to 90	–67 to 194
Humidity % RH	10 to 55		0 to 100		0 to 100		0 to 100	
Maximum Allowable Working Pressure (MAWP)	MAWP is minimum of Body Rating or Seal Rating (See Model Selection Guide for Seal MAWP) Body — MAWP STR12D — 2500 psig (172 bar) STR13D — 2500psig (172 bar) STR14G — 500 psig (35 bar) STR17G — 3000psig (207 bar) STR14A — 500 psia (35 bar).							
Vacuum Region - Minimum Pressure mmHg absolute	Atmospheric (See Figure 4 for vacuum limitations.)							
Supply Voltage, Current, and Load Resistance	**Voltage Range:** 10.8 to 42.4 Vdc at terminals **Current Range:** 3.0 to 21.8 mA **Load Resistance:** 0 to 1440 ohms (as shown in Figure 5)							

* Ambient Temperature Limit is a function of Process Interface Temperature. (See Figure 2.)

Performance Under Rated Conditions * - Model STR12D (0-10 to 0-400 inH_2O)

Parameter	Description
Upper Range Limit ** inH2O mbar	400 (39.2°F/4°C is standard reference temperature for inH_2O range.) 1000
Minimum Span inH2O mbar	10 Note: Recommended minimum span in square root mode is 20 inH_2O (50 mbar). 25
Turndown Ratio	40 to 1
Zero Elevation and Suppression	No limit except minimum span within ±100% URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*	**In Analog Mode:** ±0.2% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (50 inH_2O), accuracy equals: $\pm 0.1 + 0.1 \left(\frac{50\ \text{in}H_2O}{\text{span in}H_2O}\right)$ or $\pm 0.1 + 0.1 \left(\frac{125\ \text{mbar}}{\text{span mbar}}\right)$ in % span **In Digital Mode:** ±0.175% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (50 inH_2O), accuracy equals: $\pm 0.075 + 0.10 \left(\frac{50\ \text{in}H_2O}{\text{span in}H_2O}\right)$ or $\pm 0.075 + 0.10 \left(\frac{125\ \text{mbar}}{\text{span mbar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F) * **	**In Analog Mode:** ±1.2% of span. For URV below reference point (100 inH_2O), effect equals: $\pm 0.2 + 1.0 \left(\frac{100\ \text{in}H_2O}{\text{span in}H_2O}\right)$ or $\pm 0.2 + 1.0 \left(\frac{250\ \text{mbar}}{\text{span mbar}}\right)$ in % span **In Digital Mode:** ±1.175% of span. For URV below reference point (100 inH_2O), effect equals: $\pm 0.175 + 1.0 \left(\frac{100\ \text{in}H_2O}{\text{span in}H_2O}\right)$ or $\pm 0.175 + 1.0 \left(\frac{250\ \text{mbar}}{\text{span mbar}}\right)$ in % span

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

** Transmitter URL limit or maximum seal pressure rating, whichever is lower.

*** Apply 1.5 times factor to capillary lengths greater than 10 feet.

Performance Under Rated Conditions * - Model STR13D (0-5 to 0-100 psid)

Parameter	Description
Upper Range Limit ** psid bar	100 7
Minimum Span psid bar	5 0.35
Turndown Ratio	20 to 1
Zero Elevation and Suppression	No limit except minimum span within –18% and +100% of URL. Specifications valid from –5% to 100% of URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Stated accuracy **does not** apply for models with 2.9 inch diameter remote seal diaphragms.* • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*	**In Analog Mode:** ±0.1% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (30 psi), accuracy equals: $\pm 0.05 + 0.05 \left(\frac{30 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.05 + 0.05 \left(\frac{2 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (30 psi), accuracy equals: $\pm 0.025 + 0.05 \left(\frac{30 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.025 + 0.05 \left(\frac{2 \text{ bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F) * **	**In Analog Mode:** ±0.33% of span. For URV below reference point (30 psi), effect equals: $\pm 0.05 + 0.28 \left(\frac{30 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.05 + 0.28 \left(\frac{2 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.305% of span. For URV below reference point (30 psi), effect equals: $\pm 0.025 + 0.28 \left(\frac{30 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.025 + 0.28 \left(\frac{2 \text{ bar}}{\text{span bar}}\right)$ in % span

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

** Transmitter URL limit or maximum seal pressure rating, whichever is lower.

*** Apply 1.5 times factor to capillary lengths greater than 10 feet.

Performance Under Rated Conditions * - Model STR14G (0-5 to 0-500 psig)

Parameter	Description
Upper Range Limit ** psig bar	500 35
Minimum Span psig bar	5 0.35
Turndown Ratio	100 to 1
Zero Elevation and Suppression	No limit except minimum span from absolute zero to 100% of URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*	**In Analog Mode:** ±0.1% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (20 psi), accuracy equals: $\pm 0.05 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.05 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (20 psi), accuracy equals: $\pm 0.025 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.025 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F) * **	**In Analog Mode:** ±1.88% of span. For URV below reference point (75 psi), effect equals: $\pm 0.2 + 1.68 \left(\frac{75 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.2 + 1.68 \left(\frac{5.25 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±1.855% of span For URV below reference point (75 psi), effect equals: $\pm 0.175 + 1.68 \left(\frac{75 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.175 + 1.68 \left(\frac{5.25 \text{ bar}}{\text{span bar}}\right)$ in % span

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

** Transmitter URL limit or maximum seal pressure rating, whichever is lower.

*** Apply 1.5 times factor to capillary lengths greater than 10 feet.

Performance Under Rated Conditions * - Model STR17G (0-100 to 0-3000 psig)

Parameter	Description
Upper Range Limit ** psig bar	3000 210
Minimum Span psig bar	100 7
Turndown Ratio	30 to 1
Zero Elevation and Suppression	No limit except minimum span from absolute zero to 100% of URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*	**In Analog Mode:** ±0.15% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (300 psi), accuracy equals: $\pm 0.10 + 0.05 \left(\frac{300\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.10 + 0.05 \left(\frac{21\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.125% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (300 psi), accuracy equals: $\pm 0.075 + 0.05 \left(\frac{300\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.075 + 0.05 \left(\frac{21\ \text{bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F) * **	**In Analog Mode:** ±0.70% of span. For URV below reference point (500 psi), effect equals: $\pm 0.20 + 0.50 \left(\frac{500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.2 + 0.50 \left(\frac{34.5\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.675% of span. For URV below reference point (500 psi), effect equals: $\pm 0.175 + 0.50 \left(\frac{500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.175 + 0.50 \left(\frac{34.5\ \text{bar}}{\text{span bar}}\right)$ in % span

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

** Transmitter URL limit or maximum seal pressure rating, whichever is lower.

*** Apply 1.5 times factor to capillary lengths greater than 10 feet.

Performance Under Rated Conditions * - Model STR14A (0-5 to 0-500 psia)

Parameter	Description
Upper Range Limit ** psia **bar absolute**	500 35
Minimum Span psia **bar absolute**	5 0.35
Turndown Ratio	100 to 1
Zero Elevation and Suppression	No limit except minimum span from 0 to 100% URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*	**In Analog Mode:** ±0.1% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (20 psi), accuracy equals: $\pm 0.05 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.05 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (20 psi), accuracy equals: $\pm 0.025 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.025 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F) * **	**In Analog Mode:** ±1.88% of span. For URV below reference point (50 psi), effect equals: $\pm 0.2 + 1.68 \left(\frac{50 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.2 + 1.68 \left(\frac{3.5 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±1.855% of span For URV below reference point (50 psi), effect equals: $\pm 0.175 + 1.68 \left(\frac{50 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.175 + 1.68 \left(\frac{3.5 \text{ bar}}{\text{span bar}}\right)$ in % span

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

** Transmitter URL limit or maximum seal pressure rating, whichever is lower.

*** Apply 1.5 times factor to capillary lengths greater than 10 feet.

Performance Under Rated Conditions – General for all Models

Parameter	Description
Output (two-wire)	Analog 4 to 20 mA or digital communications DE mode. Options available for FOUNDATION Fieldbus and HART protocol.
Supply Voltage Effect	±0.005% span per volt.
Damping Time Constant	Adjustable from 0 to 32 seconds digital damping.
RFI Protection (Standard)	Negligible (20 to 1000 MHz at 30 volts per meter).
CE Conformity (Europe)	89/336/EEC, Electromagnetic Compatibility (EMC) Directive.

Physical and Approval Bodies

Parameter	Description
Process Interface	See Model Selection Guide for Material Options for desired seal type.
Seal Barrier Diaphgram	316L Stainless Steel, Monel, Hastelloy C, Tantalum
Seal Gasket Materials	Klinger C-4401 (non-asbestos) Grafoil
Mounting Bracket	Carbon Steel (Zinc-Chromate plated) or Stainless Steel.
Fill Fluid (Meter Body)	Silicone (DC 200) S.G. @ 25°C = 0.94 CTFE (Chlorotrifluoroethylene) S.G. @ 25°C = 1.89
Fill Fluid (Secondary)	Silicone (DC 200) S.G. @ 25°C = 0.94 CTFE (Chlorotrifluoroethylene) S.G. @ 25°C = 1.89 Silicone (DC 704) S.G. @ 25°C = 1.07 NEOBEE M-20 S.G. @ 25°C = 0.90 Sylltherm 800 S.G. @ 25°C = 0.93
Electronic Housing	Epoxy-Polyester hybrid paint. Low copper-aluminum alloy. Meets NEMA 4X (watertight) and NEMA 7 (explosion proof). Stainless steel optional.
Capillary Tubing	Armored Stainless Steel or PVC Coated Armored Stainless Steel. **Length:** 5, 10, 15, 20, 25, and 35 feet (1.5, 3, 4.6, 6.1, 7.5, and 10.7 meters). A 2 inch (51 millimeter) S.S. close-coupled nipple is also available. See Model Selection Guide. Refer to Figure 3 for guide to maximum capillary length vs. diaphragm diameter.
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Mounting	See Figure 6.
Dimensions	**Transmitter:** See Figures 9 and 10. **Seal:** See Model Selection Guide.
Net Weight	**Transmitter:** 15.4 pounds (7 Kg). Total weight is dependent on seal type and capillary length.
Approval Bodies - **Hazardous Areas** - **Canadian Registration Number (CRN)**	Approved as explosion proof and intrinsically safe for use in Class I, Division 1, Groups A, B, C, D locations, and nonincendive for Class I, Division 2, Groups A, B, C, D locations. Approved EEx ia IIC T4, T5, T6 and EEx d IIC T5, T6 per ATEX standards. See attached Model Selection Guide for options. - All ST 3000 model designs, except STG19L, STG99L, STG170, STG180, have been registered in all provinces and territories in Canada and are marked CRN: 0F8914.5C.
Pressure Equipment Directive (97/23/EC)	The ST 3000 pressure transmitters listed in this Specification have no pressurized internal volume or have a pressurized internal volume rated less than 1,000 bar (14,500 psig) and/or have a maximum volume of less than 0.1 liter. Therefore, these transmitters are either; not subject to the essential requirements of the directive 97/23/EC (PED, Annex 1) and shall not have the CE mark, or the manufacturer has the free choice of a module when the CE mark is required for pressures > 200 bar (2,900 psig).

NOTE: Pressure transmitters that are part of safety equipment for the protection of piping (systems) or vessel(s) from exceeding allowable pressure limits, (equipment with safety functions in accordance with Pressure Equipment Directive 97/23/EC article 1, 2.1.3), require separate examination.

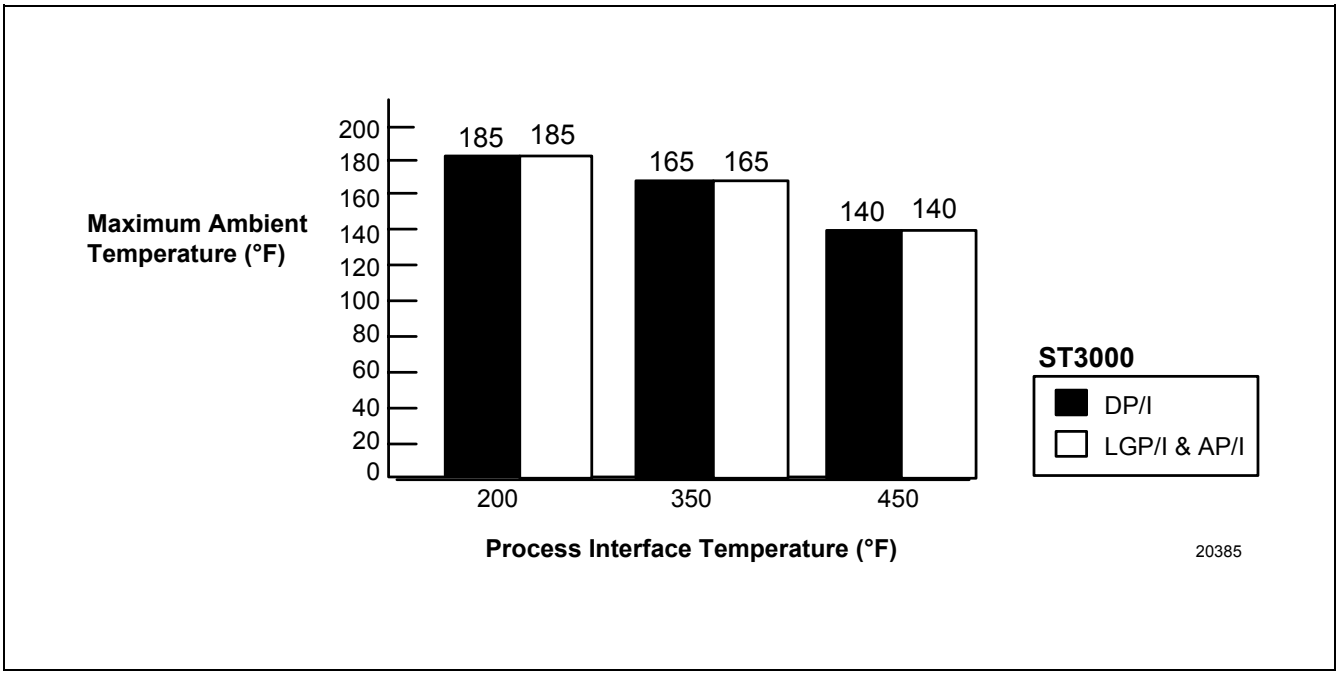


Figure 2—Ambient temperature and process interface chart.

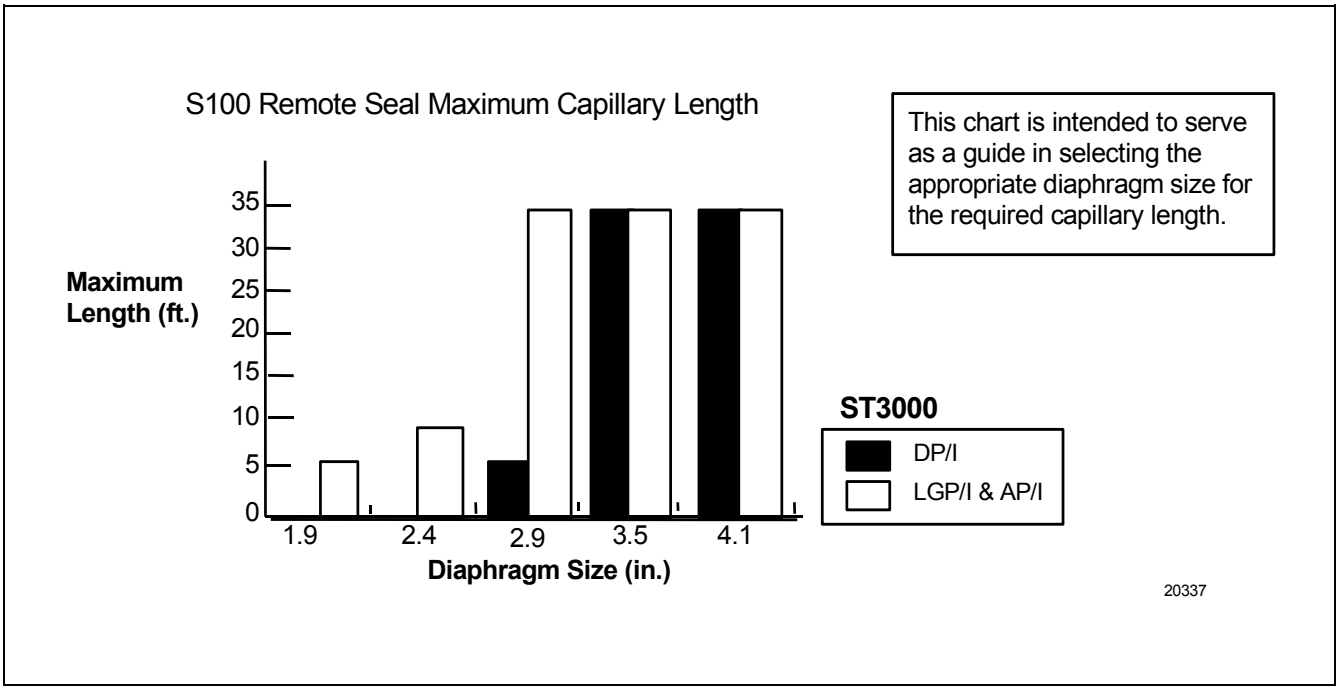


Figure 3—Maximum capillary length and diaphragm size chart.

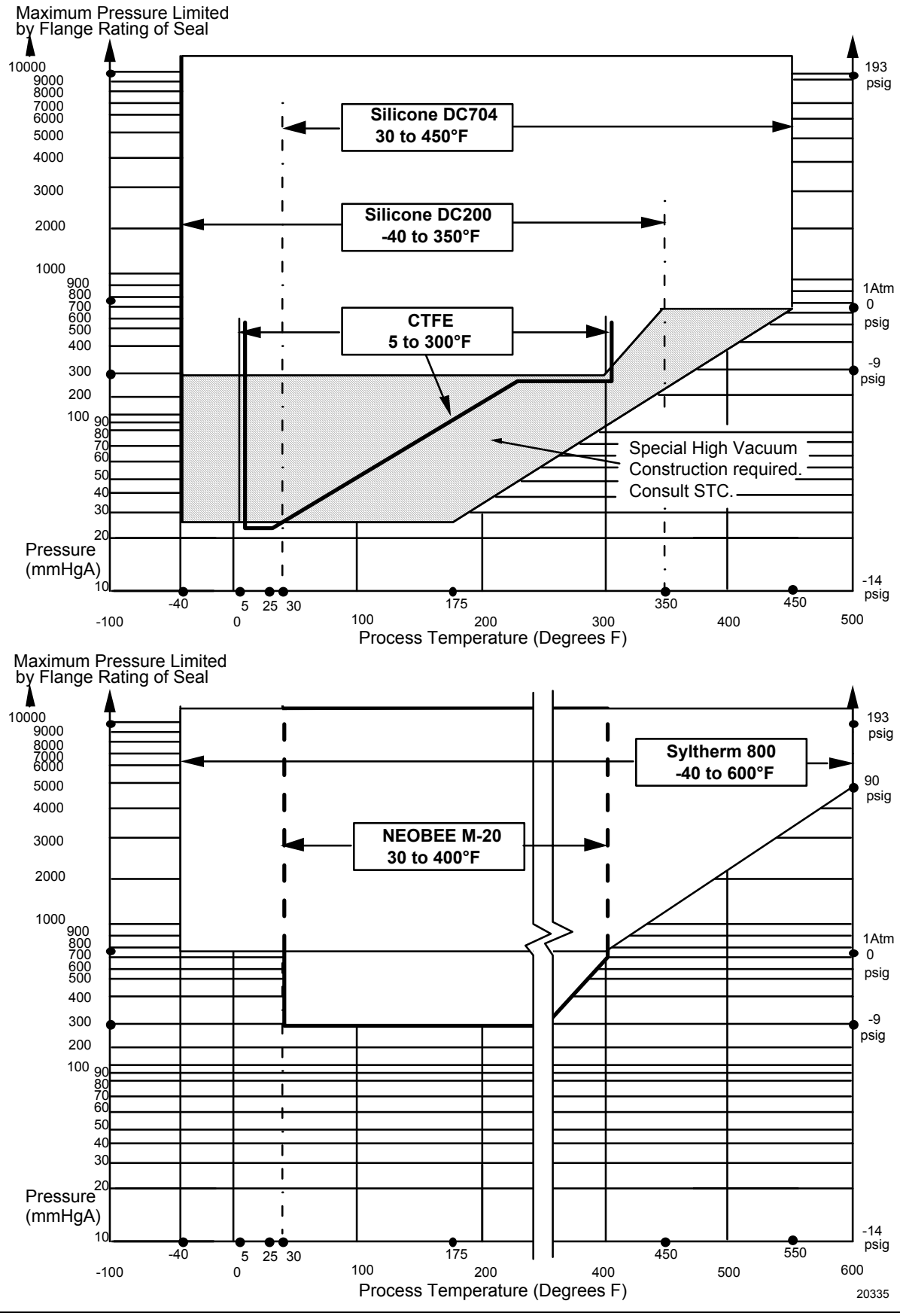


Figure 4—ST 3000 Remote Seals operable limits for pressure vs. temperature.

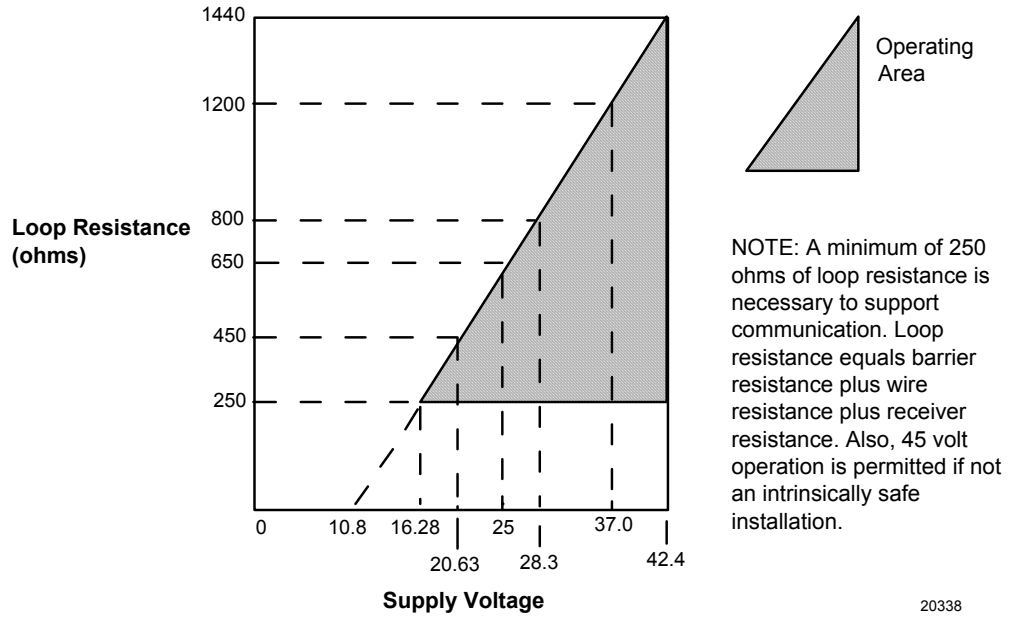
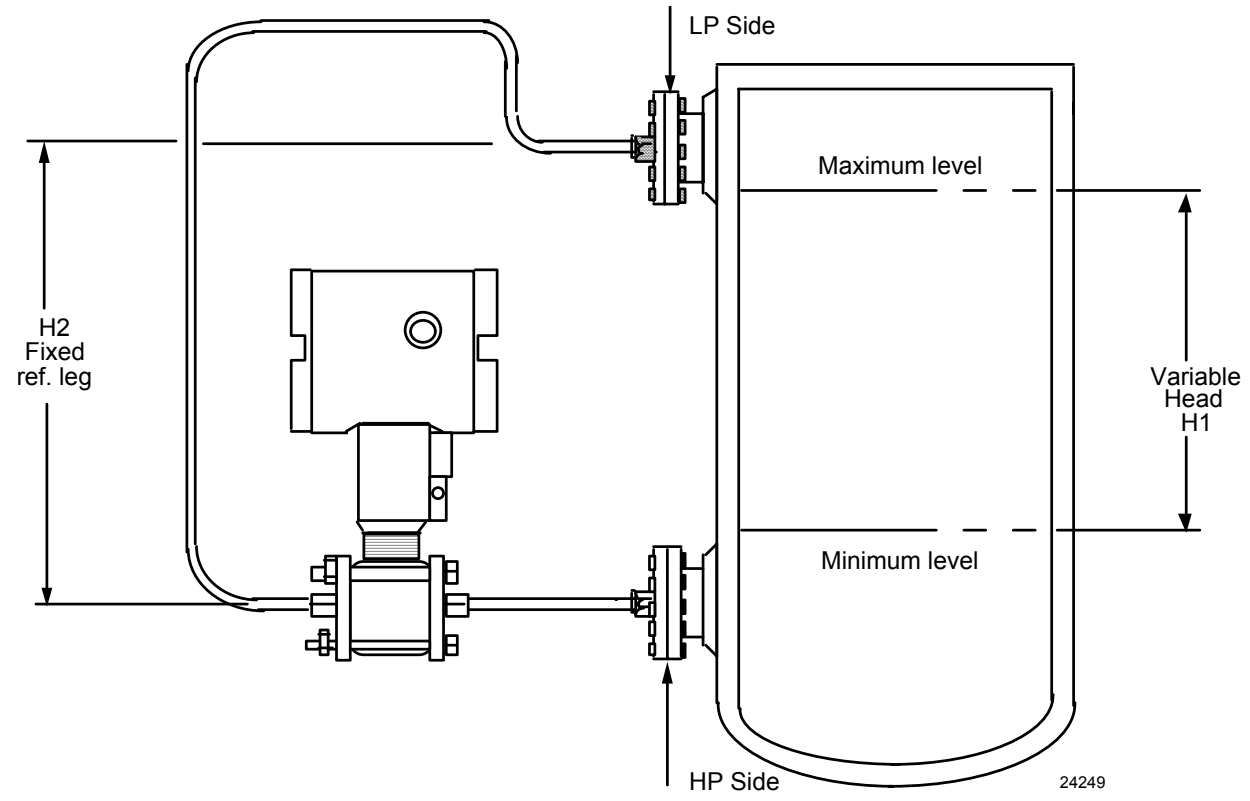


Figure 5—Supply voltage/loop resistance chart.



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 STR13D.

Figure 6—The ST 3000 transmitter with remote diaphragm seals shown mounted on a tank.

Application Data*

Liquid Level: Closed Tank
Determine the minimum and maximum pressure differentials to be measured (Figure 7).

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

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

Where:

Minimum level at 4 mA
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 8 for values)

SG_p = Specific Gravity of process fluid

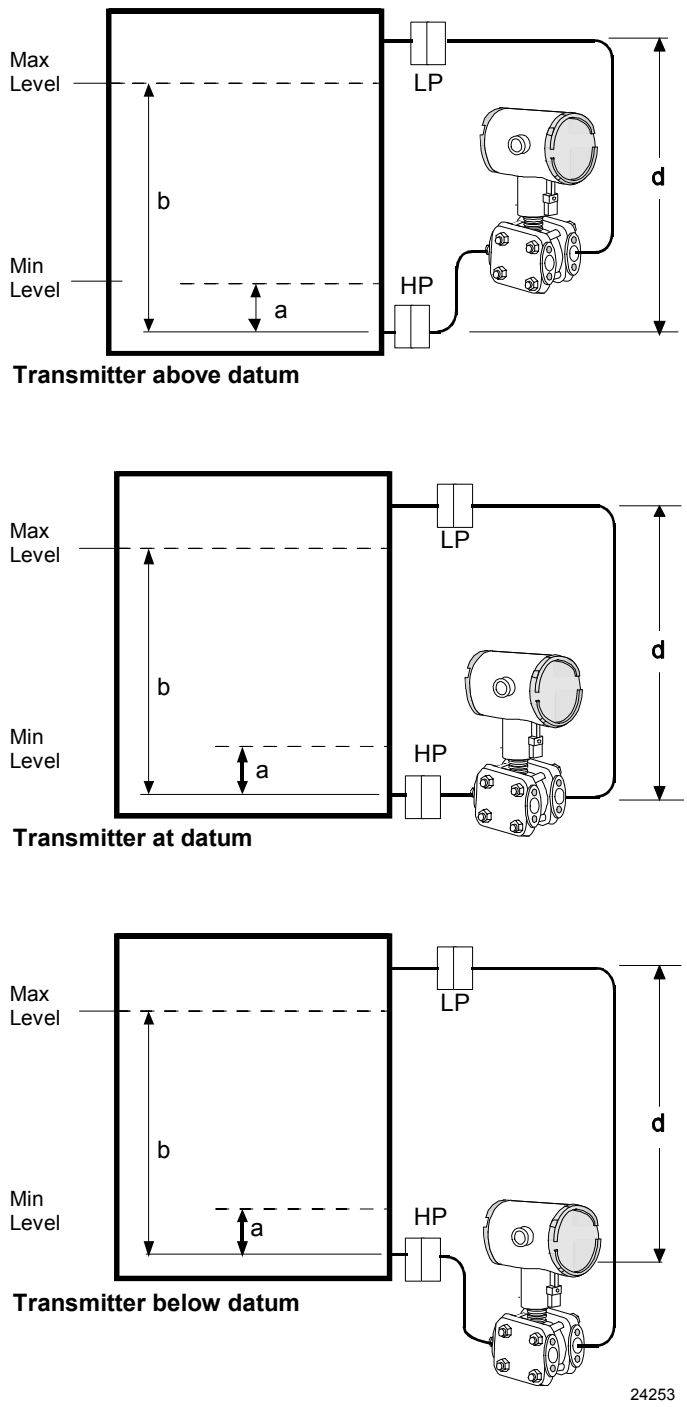


Figure 7—Closed tank liquid level measurement distances.

* Contact STC-Phoenix concerning applications for model STR13D.

Density or Interface*
Calculate the minimum and maximum pressure differentials to be measured.

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

SGf = Specific Gravity of capillary fill fluid (see page 8 for values)

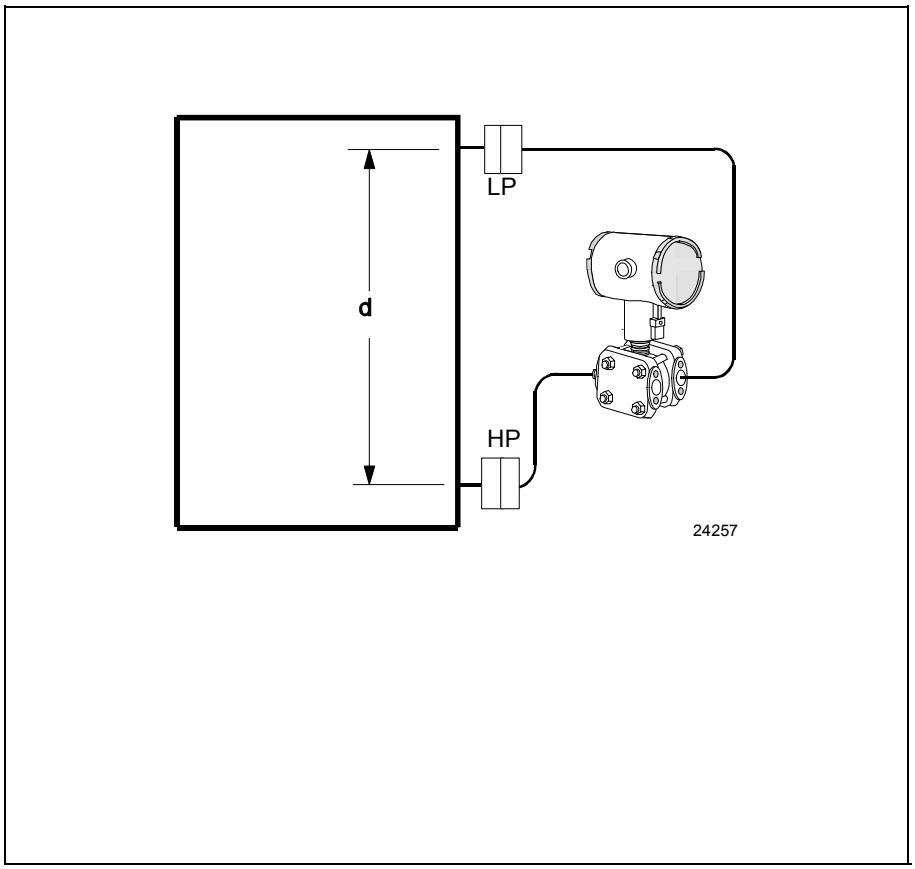


Figure 8—Density, direct acting instrument configuration.

* Contact STC-Phoenix concerning applications for model STR13D.

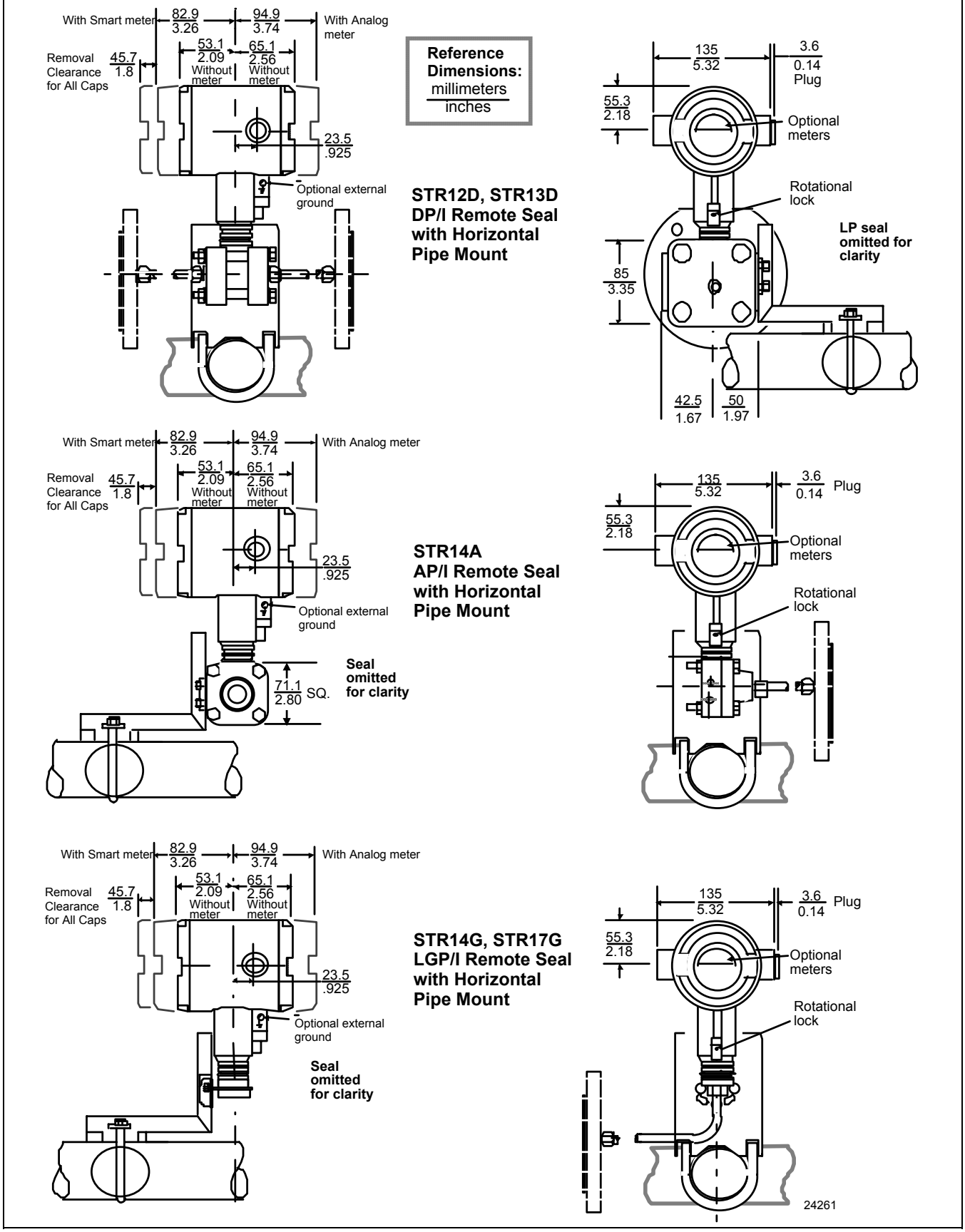


Figure 9a —Approximate horizontal mounting dimensions for Remote Seal Transmitter.

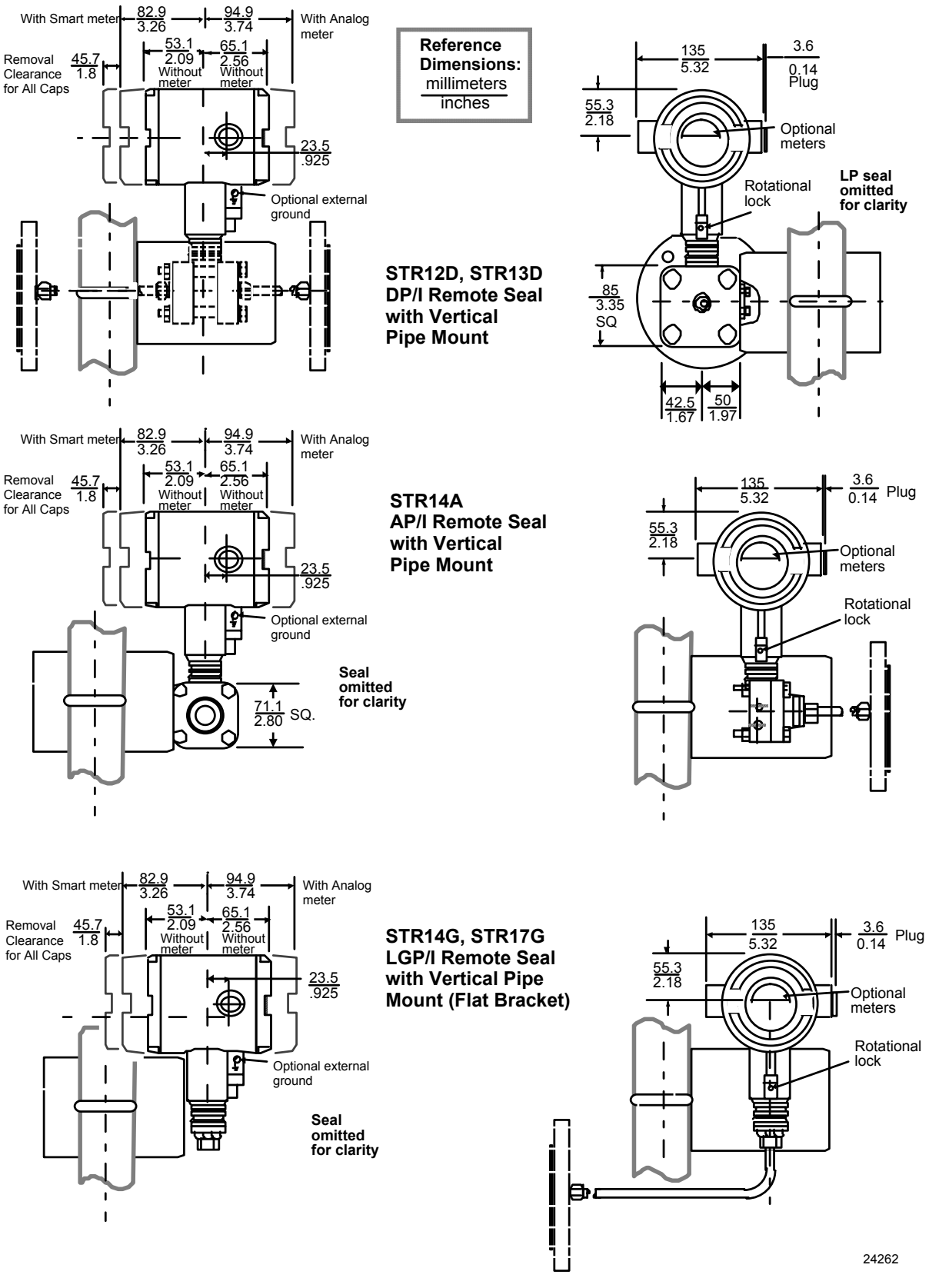


Figure 9b —Approximate vertical mounting dimensions for Remote Seal Transmitter.

Options

Mounting Bracket
The angle mounting bracket is available in either zinc-plated carbon steel or stainless steel and is suitable for horizontal or vertical mounting on a two inch (50 millimeter) pipe, as well as wall mounting. An optional flat mounting bracket is also available in carbon steel for two inch (50 millimeter) pipe mounting.

Indicating Meter (ME and SM Options)
Two integral meter options are available. An analog meter (option ME) is available with a 0 to 100% linear scale. The Smart Meter (option SM) provides an LCD display for both analog and digital output and can be configured to display pressure in pre-selected engineering units.

HART Protocol Compatibility (Option HC)
An optional electronics module is available for the ST 3000 that provides HART Protocol compatibility. Transmitters with the HART Option are compatible with the AMS System. (Contact your AMS Supplier if an upgrade is required.)

Lightning Protection (Option LP)
A terminal block with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes is available.

Indicator Configuration (Option CI)
Provides custom configuration of Smart Meters

Tagging (Option TG)
Up to 30 characters can be added on the stainless steel nameplate mounted on the transmitter's electronics housing at no extra cost. Note that a separate nameplate on the meter body contains the serial number and body-related data. A stainless steel wired on tag with additional data of up to 4 lines of 28 characters is also available. The number of characters for tagging includes spaces.

Transmitter Configuration (Option TC)
The factory can configure the transmitter linear/square root extraction, damping time, LRV, URV and mode (analog/digital) and enter an ID tag of up to eight characters and scratchpad information as specified.

Custom Calibration and ID in Memory (Option CC)
The factory can calibrate any range within the scope of the transmitter's range and enter an ID tag of up to eight characters in the transmitter's memory.

FOUNDATION Fieldbus (Option FF)
Equips transmitter with FF protocol for use in 31.25 kbit/s FF networks. See document 34-ST-03-72 for additional information on ST 3000 Fieldbus transmitters.

Specifications are subject to change without notice.

Ordering Information

Contact your nearest Honeywell sales office, or

In the U.S.:
Honeywell
Industrial Automation & Control
16404 North Black Canyon Hwy.
Phoenix, AZ 85053
1-800-288-7491

In Canada:
The Honeywell Centre
155 Gordon Baker Rd.
North York, Ontario M2H 3N7
1-800-461-0013

In Latin America:
Honeywell Inc.
480 Sawgrass Corporate Parkway,
Suite 200
Sunrise, FL 33325
(954) 845-2600

In Europe and Africa:
Honeywell S. A.
Avenue du Bourget 1
1140 Brussels, Belgium

In Eastern Europe:
Honeywell Praha,
s.r.o. Budejovicka 1
140 21 Prague 4,
Czech Republic

In the Middle East:
Honeywell Middle East Ltd.
Khalifa Street,
Sheikh Faisal Building
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34-ST-16-32 Issue 24

Instructions

- Select the desired Key Number. The arrow to the right marks the selection available.
- Make one selection from each Table I and II using the column below the proper arrow.
- Select as many Table III options as desired (if no options or approvals are desired, specify 9X).

A (◆) denotes unrestricted availability. A letter denotes restricted availability.
Restrictions follow Table IV.

Key Number		I		II		III (Optional)		IV
_ _ _ _ _ _	-	_ _ _	-	_ _ _ _ _ _ _ _ _ _ _ _	-	_ _, _ _	+	XXXX

KEY NUMBER Description	Selection	Availabil	
0-10" to 0-400" H_2O/0-25 to 0-1000 mbar	STR12D (**Note**)	↓	
Body Rating*: 3000 psi (172 bar) Compound Characterized			
0-5 to 0-100 psi/0-0.34 to 0-7 bar	STR13D		↓
Body Rating*: 3000 psi (172 bar)			

Note: With Model STR12D, Table III, Option CM must be specified.

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

TABLE I - METER BODY

Number of Seals	1 Remote Seal (High Side)	1 _ _	◆	◆
	2 Remote Seals	2 _ _	◆	◆
	1 Remote Seal (Low Side)	3 _ _	◆	◆
Fill Fluid (Meter Body)	Silicone (DC 200)	_ 1 _	◆	◆
	CTFE	_ 2 _	q	q
Construction	**Non-Wetted Adapter Head Material**			
Standard Dual Head	316 St. St.	_ _ A	◆	◆
	Carbon St. (zinc-plated)	_ _ B	◆	◆
	316 St. St. for Close-Couple	_ _ D	y	y

See Specification Sheet 34-ST-03-64 for figures on construction.

STR1_D

TABLE II - SEALS					Selection	2	3
Format for Seal Selection: Specify 12 characters _ _ _ | _ _ _ _ _ _ _ _ _ Common Required Seal **Note:** The first 3 characters are common to all seals. When selecting required seal, you must specify only the 9 selections within the required seal.							
Secondary Fill	Silicone (DC 200)				1 _ _ _ _ _ _ _ _ _ _	◆	◆
	CTFE				2 _ _ _ _ _ _ _ _ _ _	◆	◆
	Silicone (DC 704)				3 _ _ _ _ _ _ _ _ _ _	p	p
	Neobee(M20) **				4 _ _ _ _ _ _ _ _ _ _	◆	◆
	Syltherm 800 ***				5 _ _ _ _ _ _ _ _ _ _	p	p
Connection of Remote Seal to Meter Body	Capillary Length	5 feet	1.5 m	SS Armor	_ 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	PVC Coated SS Armor	_ 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 _ _ _ _ _ _ _ _ _	z	z
No Selection					_ _ 0 _ _ _ _ _ _ _ _	◆	◆
Flush Flanged Seal	**Diaphragm Diameter**	**Flange Size**	**Flange Pressure Rating ***				
	3.5"	3"	ANSI Class 150		_ _ _ AFA _ _ _ _ _ _	◆	◆
			ANSI Class 300		_ _ _ AFC _ _ _ _ _ _	◆	◆
			DIN DN80-PN40		_ _ _ AFM _ _ _ _ _ _	◆	◆
	Wetted Material		**Diaphragm**	**Upper Insert**			
			316L SS	316 St. St.	_ _ _ _ _ _ AA _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ AB _ _ _ _	◆	◆
			Hastelloy C	Hastelloy C	_ _ _ _ _ _ AC _ _ _ _	◆	◆
			Monel	Monel	_ _ _ _ _ _ AE _ _ _ _	◆	◆
	Non-Wetted Material (upper)		CS with Polyester Powder Coating		_ _ _ _ _ _ _ 1 _ _ _	◆	◆
			316 St. St.		_ _ _ _ _ _ _ 2 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ 0 _ _	◆	◆
	Sytles		No Selection		_ _ _ _ _ _ _ _ 0 _	◆	◆
	Gasket		No Selection		_ _ _ _ _ _ _ _ 0	◆	◆

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

** Limited vacuum availability.

*** Minimum static pressure requirement. No vacuum allowed. See Specifications' Figure 4.

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

Table II cc

TABLE II - SEALS (continued)

	Diaphragm Diameter	Flange Size	Flange Pressure Rating *	Const. - See Spec. Figure 34-ST-03-64	Construction - See Spec. 34-ST-03-64 figure	STR1_D Selection 2	3
Flush Flanged Seal with Lower	2.9"	1/2"	ANSI 150	12	_ _ _ CAA _ _ _ _ _ _	t	t
		1"	ANSI 150	12	_ _ _ CCA _ _ _ _ _ _	t	t
			ANSI 300	12	_ _ _ CCC _ _ _ _ _ _	t	t
		1-1/2"	ANSI 150	11	_ _ _ CGA _ _ _ _ _ _	t	t
			ANSI 300	11	_ _ _ CGC _ _ _ _ _ _	t	t
		2"	ANSI 150	11	_ _ _ CDA _ _ _ _ _ _	t	t
			ANSI 300	11	_ _ _ CDC _ _ _ _ _ _	t	t
	4.1"	1/2"	ANSI 150	12	_ _ _ DAA _ _ _ _ _ _	◆	◆
		1"	ANSI 150	12	_ _ _ DCA _ _ _ _ _ _	◆	◆
			ANSI 300	12	_ _ _ DCC _ _ _ _ _ _	◆	◆
		1-1/2"	ANSI 150	12	_ _ _ DGA _ _ _ _ _ _	◆	◆
			ANSI 300	12	_ _ _ DGC _ _ _ _ _ _	◆	◆
		2"	ANSI 150	12	_ _ _ DDA _ _ _ _ _ _	◆	◆
			ANSI 300	11	_ _ _ DDC _ _ _ _ _ _	◆	◆
		3"	ANSI 150	11	_ _ _ DFA _ _ _ _ _ _	◆	◆
			ANSI 300	11	_ _ _ DFC _ _ _ _ _ _	◆	◆
	Wetted Material		**Diaphragm**	**Lower**			
			316L SS	316 St. St.	_ _ _ _ _ _ BA _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ BB _ _ _ _	◆	◆
			Hastelloy C	Hastelloy C	_ _ _ _ _ _ BC _ _ _ _	◆	◆
			Monel	Monel	_ _ _ _ _ _ BE _ _ _ _	◆	◆
			Tantalum	316 St. St.	_ _ _ _ _ _ BF _ _ _ _	◆	◆
			Tantalum	Hastelloy C	_ _ _ _ _ _ BG _ _ _ _	◆	◆
	Non-Wetted Material (upper, upper insert)		**Upper**	**Upper Insert**			
			316 St. St.	316 St. St.	_ _ _ _ _ _ _ _ 4 _ _ _	◆	◆
			CS	316 St. St.	_ _ _ _ _ _ _ _ 5 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ _ _ 0 _ _	◆	◆
	Styles		Without 1/4" NPT Flushing Connection		_ _ _ _ _ _ _ _ _ _ 0 _	◆	◆
			With 1/4" NPT Flushing Connection		_ _ _ _ _ _ _ _ _ _ 7 _	◆	◆
	Gasket		Klinger C-4401 (non-asbestos)		_ _ _ _ _ _ _ _ _ _ K	c	c
			Grafoil		_ _ _ _ _ _ _ _ _ _ G	d	d

Table II continued next page

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

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

STR1_D

TABLE II - SEALS (continued)

					Selection	2	3
Flange Seal with Extended Diaphragm	**Diaphragm Diameter**	**Flange Size**	**Flange Pressure Rating ***				
	2.9" (2.85")	3" (2.85" OD extension)	ANSI Class 150		_ _ _ EFA _ _ _ _ _ _	t	t
			ANSI Class 300		_ _ _ EFC _ _ _ _ _ _	t	t
			DIN DN80-PN40		_ _ _ EFM _ _ _ _ _ _	t	t
	3.5"	4" (3.70" OD extension)	ANSI Class 150		_ _ _ FGA _ _ _ _ _ _	◆	◆
			ANSI Class 300		_ _ _ FGC _ _ _ _ _ _	◆	◆
			DIN DN100-PN40		_ _ _ FGP _ _ _ _ _ _	◆	◆
	Wetted Material		**Diaphragm**	**Lower**			
			316L SS	316 St. St.	_ _ _ _ _ _ EA _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ EB _ _ _ _	◆	◆
			Hastelloy C	Hastelloy C	_ _ _ _ _ _ EC _ _ _ _	◆	◆
	Non-Wetted Material (flange)		CS with Polyester Powder Coating		_ _ _ _ _ _ _ _ 7 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ _ _ 0 _ _	◆	◆
	Extension Length		2"		_ _ _ _ _ _ _ _ _ _ 2 _	◆	◆
			4"		_ _ _ _ _ _ _ _ _ _ 4 _	◆	◆
			6"		_ _ _ _ _ _ _ _ _ _ 6 _	◆	◆
			No Selection		_ _ _ _ _ _ _ _ _ _ 0	◆	◆
Pancake Seal	**Diaphragm Diameter**	**Flange Size**	**Flange Pressure Rating Dependent on customer flange**				
	3.5"	3"	ANSI Class 150/300/600		_ _ _ GFA _ _ _ _ _ _	◆	◆
	Wetted Material		**Diaphragm**	**Body**			
			316L SS	316 St. St.	_ _ _ _ _ _ GA _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ GB _ _ _ _	◆	◆
			Hastelloy C	Hastelloy C	_ _ _ _ _ _ GC _ _ _ _	◆	◆
			Monel	Monel	_ _ _ _ _ _ GE _ _ _ _	◆	◆
	Non-Wetted Material		No Selection		_ _ _ _ _ _ _ _ 0 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ _ _ 0 _ _	◆	◆
	Styles		No Selection		_ _ _ _ _ _ _ _ _ _ 0 _	◆	◆
			No Selection		_ _ _ _ _ _ _ _ _ _ 0	◆	◆

Table II continued next page

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

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

TABLE II - SEALS (continued)

					STR1_D Selection	2	3
Flange Seal with Extended Diaphragm	Diaphragm Diameter	Flange Size	Flange Pressure Rating *				
	2.9" (2.85")	3" (2.85" OD extension)	ANSI Class 150		_ _ _ EFA _ _ _ _ _ _	t	t
			ANSI Class 300		_ _ _ EFC _ _ _ _ _ _	t	t
			DIN DN80-PN40		_ _ _ EFM _ _ _ _ _ _	t	t
	3.5"	4" (3.70" OD extension)	ANSI Class 150		_ _ _ FGA _ _ _ _ _ _	◆	◆
			ANSI Class 300		_ _ _ FGC _ _ _ _ _ _	◆	◆
			DIN DN100-PN40		_ _ _ FGP _ _ _ _ _ _	◆	◆
	Wetted Material		Diaphragm	Lower			
			316L SS	316 St. St.	_ _ _ _ _ _ EA _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ EB _ _ _ _	◆	◆
			Hastelloy C	Hastelloy C	_ _ _ _ _ _ EC _ _ _ _	◆	◆
	Non-Wetted Material (flange)		CS with Polyester Powder Coating		_ _ _ _ _ _ _ 7 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ _ 0 _ _	◆	◆
	Extension Length		2"		_ _ _ _ _ _ _ _ _ 2 _	◆	◆
			4"		_ _ _ _ _ _ _ _ _ 4 _	◆	◆
			6"		_ _ _ _ _ _ _ _ _ 6 _	◆	◆
			No Selection		_ _ _ _ _ _ _ _ _ 0	◆	◆
Pancake Seal	Diaphragm Diameter	Flange Size	Flange Pressure Rating Dependent on customer flange				
	3.5"	3"	ANSI Class 150/300/600		_ _ _ GFA _ _ _ _ _ _	◆	◆
	Wetted Material		Diaphragm	Body			
			316L SS	316 St. St.	_ _ _ _ _ _ GA _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ GB _ _ _ _	◆	◆
			Hastelloy C	Hastelloy C	_ _ _ _ _ _ GC _ _ _ _	◆	◆
			Monel	Monel	_ _ _ _ _ _ GE _ _ _ _	◆	◆
	Non-Wetted Material		No Selection		_ _ _ _ _ _ _ 0 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ _ 0 _ _	◆	◆
	Styles		No Selection		_ _ _ _ _ _ _ _ _ 0 _	◆	◆
			No Selection		_ _ _ _ _ _ _ _ _ _ 0	◆	◆

Table II continued next page

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

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

STR1_D

TABLE II - SEALS (continued)

					Selection	2	3
Chemical Tee "Taylor" Wedge	Diaphragm Diameter	Flange Size	Flange Pressure Rating				
	3.5"	Taylor Wedge 5" O.D.	750 psi		_ _ _ HM0 _ _ _ _ _	v	v
			Diaphragm	Lower			
	Wetted Material		316L SS	316 St. St.	_ _ _ _ _ _ HA _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ HB _ _ _ _	◆	◆
	Non-Wetted Material		No Selection		_ _ _ _ _ _ _ _ 0 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ _ _ 0 _ _	◆	◆
	Styles		No Selection		_ _ _ _ _ _ _ _ _ _ 0 _	◆	◆
			No Selection		_ _ _ _ _ _ _ _ _ _ _ 0	◆	◆
Seal with Threaded Process Connection	Diaphragm Diameter	Threaded Process Connection Size (NPT Female)	Pressure Rating CS Bolts	Pressure Rating 304 SS Bolts			
	2.9"	1/2" NPT	2500 psi	1250 psi	_ _ _ KJG _ _ _ _ _ _	t	t
		3/4" NPT			_ _ _ KKG _ _ _ _ _ _	t	t
		1" NPT			_ _ _ KLG _ _ _ _ _ _	t	t
	4.1"	1/2" NPT	1500 psi	750 psi	_ _ _ LJG _ _ _ _ _ _	◆	◆
		3/4" NPT			_ _ _ LKG _ _ _ _ _ _	◆	◆
		1" NPT			_ _ _ LLG _ _ _ _ _ _	◆	◆
			Diaphragm	Lower			
	Wetted Material		316L SS	CS	_ _ _ _ _ _ JA _ _ _ _	◆	◆
			316L SS	316 St. St.	_ _ _ _ _ _ JB _ _ _ _	◆	◆
			Hastelloy C	316 St. St.	_ _ _ _ _ _ JC _ _ _ _	◆	◆
			Hastelloy C	Hastelloy C	_ _ _ _ _ _ JD _ _ _ _	◆	◆
			Monel	Monel	_ _ _ _ _ _ JE _ _ _ _	◆	◆
			Tantalum	316 St. St.	_ _ _ _ _ _ JF _ _ _ _	◆	◆
			Tantalum	Hastelloy C.	_ _ _ _ _ _ JG _ _ _ _	◆	◆
	Non-Wetted Material (upper)		CS with Polyester Powder Coating		_ _ _ _ _ _ _ _ A _ _ _	◆	◆
			Stainless Steel		_ _ _ _ _ _ _ _ C _ _ _	w	w
	Bolts		C.S.		_ _ _ _ _ _ _ _ _ C _ _	◆	◆
			304 St. St.		_ _ _ _ _ _ _ _ _ D _ _	◆	◆
	Styles		W/O Flushing Connection		_ _ _ _ _ _ _ _ _ _ A _	◆	◆
			With Flushing Connection		_ _ _ _ _ _ _ _ _ _ F _	◆	◆
	Gasket		Klinger C-4401 (non-asbestos)		_ _ _ _ _ _ _ _ _ _ _ K	c	c
			Grafoil		_ _ _ _ _ _ _ _ _ _ _ G	d	d

Table II continued next page

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

STR1_D

TABLE II - SEALS (continued)

					Selection	2	3
	Diaphragm Diameter	**Flange Size**	**Pressure Rating**				
	2.9"	3"	Customer clamp rating or		_ _ _ PF0 _ _ _ _ _ _	t	t
	4.1"	4"	600 psi, whichever is less		_ _ _ QG0 _ _ _ _ _ _	◆	◆
Sanitary			**Diaphragm**	**Body**			
Seal	Wetted Material		316L SS	316 St. St.	_ _ _ _ _ _ N A _ _ _ _	◆	◆
	Non-Wetted Material		No Selection		_ _ _ _ _ _ _ _ 0 _ _ _	◆	◆
	Bolts		No Selection		_ _ _ _ _ _ _ _ _ 0 _ _	◆	◆
	Styles		Tri-Clover Tri-Clamp		_ _ _ _ _ _ _ _ _ _ 8 _	◆	◆
	Gasket		No Selection		_ _ _ _ _ _ _ _ _ _ _ 0	◆	◆

Note: All sanitary seals have dairy grade 3A approval.

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

TABLE III - OPTIONS

None	00	◆	◆	
FOUNDATION Fieldbus Communications	FF	r	r	b
HART Protocol compatible electronics	HC	e	e	
Analog Meter (0-100 Even 0-10 Square Root)	ME	◆	◆	b
Smart Meter	SM	◆	◆	
Customer Configuration of Smart Meter	CI	f	f	
Local Zero & Span	ZS	m	m	b
Local Zero	LZ	x	x	
Lightning Protection	LP	◆	◆	
Custom Calibration and I.D. in Memory	CC	◆	◆	
Transmitter Configuration - non-Fieldbus	TC	◆	◆	
Write Protection	WP	◆	◆	
End Cap Live Circuit Warning Label in Spanish (only with ATEX 3D)	SP	a	a	
End Cap Live Circuit Warning Label in Portuguese (only with ATEX 3D)	PG	a	a	b
End Cap Live Circuit Warning Label in Italian (only with ATEX 3D)	TL	a	a	
End Cap Live Circuit Warning Label in German (only with ATEX 3D)	GE	a	a	
A286SS (NACE) Bolts and 302/304SS (NACE) Nuts for Heads	CR	◆	◆	
Stainless Steel Customer Wired-On Tag (4 lines, 28 characters per line, customer supplied information)	TG	◆	◆	
Stainless Steel Customer Wired-On Tag (blank)	TB	◆	◆	
Mounting Bracket - Carbon Steel	MB	◆	◆	
Mounting Bracket - ST. ST.	SB	◆	◆	b
Flat Mounting Bracket	FB	◆	◆	
316 ST.ST. Electronics Housing - *with M20 Conduit Connections*	SH	n	n	
1/2" NPT to M20 316SS Conduit Adapter (BASEEFA EEx d IIC)	A1	n	n	b
1/2" NPT to 3/4" NPT 316 SS Conduit Adapter	A2	u	u	
Stainless Steel Housing with M20 to 1/2" NPT 316 SS Conduit Adapter *(use for FM and CSA Approvals)*	A3	i	i	
Clean Transmitter for Oxygen or Chlorine Service with Certificate	0X	h	h	
Marine Type Approvals (DNV, ABS, BV & LR)	MT	2	2	
Over-Pressure Leak Test with F3392 Certificate	TP	◆	◆	
Calibration Test Report and Certificate of Conformance (F3399)	F1	◆	◆	b
Certificate of Conformance (F3391)	F3	◆	◆	
Certificate of Origin (F0195)	F5	◆	◆	
FMEDA (SIL) Certificate	F6	◆	◆	
NACE Certificate (F0198)	F7	o	o	
Additional Warranty - 1 year	W1	◆	◆	
Additional Warranty - 2 years	W2	◆	◆	b
Additional Warranty - 3 years	W3	◆	◆	
Additional Warranty - 4 years	W4	◆	◆	

STR1_D

TABLE III - OPTIONS (continued)

Approval Body	Approval Type	Location or Classification	Selection	2	3
No hazardous location approvals			9X	◆	◆
Factory Mutual	Explosion Proof	Class I, Div. 1, Groups A,B,C,D	1C	◆	◆
	Dust Ignition Proof	Class II, III Div. 1, Groups E,F,G			
	Non-Incendive	Class I, Div. 2, Groups A,B,C,D			
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G			
CSA	Explosion Proof	Class I, Div. 1, Groups B,C,D	2J	◆	◆
	Dust Ignition Proof	Class II, III, Div. 1, Groups E,F,G			
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G			
SA (Australia)	Intrinsically Safe	Ex ia IIC T4	4G	◆	◆
	Non-Sparking	Ex n IIC T6 (T4 with SM option)			
ATEX*	Intrinsically Safe, Zone 0/1	Ex II 1G EEx ia IIC T4, T5,T6	3S	◆	◆
	Flameproof, Zone 1	Ex II 2G EEx d IIC T5, T6, Enclosure IP 66/67	3D	◆	◆
	Non-Sparking, Zone 2	Ex II 3G EEx nA, IIC T6 (Honeywell). Enclosure IP 66/67	3N	◆	◆
	Multiple Marking** Int. Safe, Zone 0/1, or Flameproof, Zone 1, or Non-Sparking, Zone 2	Ex II 1 G EEx ia IIC T4, T5, T6 Ex II 2 G EEx d IIC T5, T6 Ex II 3 G EEx nA, IIC T6 (Honeywell) Enclosure IP 66/67	3H	◆	◆
INMETRO (Brazil)	Flameproof, Zone 1	Ex d IIC T5	6D	◆	◆

b

*See ATEX installation requirements in the ST 3000 User's Manual

**The user must determine the type of protection required for installation of the equipment. The user shall then check the box [a] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, the equipment shall not then be reinstalled using any of the other certification types.

TABLE IV

Factory Identification	XXXX	◆	◆

RESTRICTIONS

Restriction		Available Only With		Not Available With
Letter	**Table**	**Selection**	**Table**	**Selection**
a	III	3D or 3H		
b	Select only one option from this group			
c			II	_ _ _ _ _ _ BF _ _ _ _, _ _ _ _ _ _ BG _ _ _ _, _ _ _ _ _ _ JF _ _ _ _, _ _ _ _ _ _ JG _ _ _ _,
d	II	_ _ _ _ _ _ BF _ _ _ _, _ _ _ _ _ _ BG _ _ _ _, _ _ _ _ _ _ JF _ _ _ _, _ _ _ _ _ _ JG _ _ _ _,		
e			III	4G
f	III	SM		
h	I, II	_ 2 _ - 2 _ _ _ _ _ _ _ _ _ _ _		
i	III	1C or 2J		
m			III	ME, FF
n			III	1C, 2J
o	III	CR		
p			II	DC704 and Syltherm 800 fills and close-couple require SS seal upper. _ _ _ CAA _ _ 5 _ _ _, _ _ _ CCA _ _ 5 _ _ _, _ _ _ CCC _ _ 5 _ _ _, _ _ _ DAA _ _ 5 _ _ _, _ _ _ DCA _ _ 5 _ _ _, _ _ _ DCC _ _ 5 _ _ _, _ _ _ DGA _ _ 5 _ _ _, _ _ _ DGC _ _ 5 _ _ _, _ _ _ DDA _ _ 5 _ _ _, _ _ _ _ _ _ GE _ _ _ _, _ _ _ _ _ _ _ _ A _ _ _
q	II	2 _ _ _ _ _ _ _ _ _ _ _ _, 4 _ _ _ _ _ _ _ _ _ _ _ _		
r			III	TC, ME, 4G, 3S
s	Must be specified with Model STR12D			
t			I II	2 _ _ _ B _ _ _ _ _ _ _ _ _ _, _ C _ _ _ _ _ _ _ _ _ _, _ D _ _ _ _ _ _ _ _ _ _, _ E _ _ _ _ _ _ _ _ _ _, _ F _ _ _ _ _ _ _ _ _ _, _ H _ _ _ _ _ _ _ _ _ _, _ J _ _ _ _ _ _ _ _ _ _, _ K _ _ _ _ _ _ _ _ _ _, _ L _ _ _ _ _ _ _ _ _ _, _ M _ _ _ _ _ _ _ _ _ _

RESTRICTIONS Continued

u	III	1C, 2J		
w			II	_ _ _ _ _ _ JA _ _ _ _
x	III	FF, SM		
y	I II	1 _ _, 3 _ _ _ 2 _ _ _ _ _ _ _ _ _ _	III II	MB, SB, FB DC704 and Sylthern 800 fills and close-couple require SS seal upper. _ _ _ CAA _ _ 5 _ _ _, _ _ _ CCA _ _ 5 _ _ _, _ _ _ CCC _ _ 5 _ _ _, _ _ _ DAA _ _ 5 _ _ _, _ _ _ DCA _ _ 5 _ _ _, _ _ _ DCC _ _ 5 _ _ _, _ _ _ DGA _ _ 5 _ _ _, _ _ _ DGC _ _ 5 _ _ _, _ _ _ DDA _ _ 5 _ _ _, _ _ _ _ _ _ GE _ _ _ _, _ _ _ _ _ _ _ _ A _ _ _
z	I	_ _ D		
2			III	FB

Note: See ST-83 for Published Specials with pricing.
See ST-89 and User's Manual for part numbers.
See ST-OE-9 for OMS Order Entry Information including TC, manuals, certificates, drawings and SPINS.
See ST-OD-1 for tagging, ID, Transmitter Configuration (TC) and calibration including factory default values.
To request a quote for a non-published "special", fax RFQ w/ Application Data Sht (34-ST-18-01) to Mktg. Applications.
See Specification 34-ST-03-64 for Seal dimensions.

TABLE 1 - Flush Flanged Seals **Diaphragm Diameter = 3.5"**

Number of	Seal Materials		Flange Size - Pressure Rating - Code		
Seals	Wetted	Non-wetted	AFA	AFC	AFM
1	AA	1	407	421	473
1	AB	1	464	478	530
1	AC	1	640	741	780
1	AE	1	549	563	615
1	AA	2	580	638	647
1	AB	2	638	696	706
1	AC	2	741	828	860
1	AE	2	681	740	748
2	AA	1	814	843	947
2	AB	1	928	957	1061
2	AC	1	1279	1481	1561
2	AE	1	1098	1126	1230
2	AA	2	1161	1275	1289
2	AB	2	1275	1391	1412
2	AC	2	1481	1656	1720
2	AE	2	1363	1479	1495

TABLE 2 - Flush Flanged Seals with Lowers **Diaphragm Diameter = 2.9"**

Number of	Seal Materials		Flange Size - Pressure Rating - Code						
Seals	Wetted	Non-wetted	CAA	CCA	CCC	CGA	CGC	CDA	CDC
1	BA	4	496	496	496	496	496	635	685
1	BB	4	516	516	516	516	516	658	708
1	BC	4	1002	1002	1002	1002	1002	983	1027
1	BE	4	567	567	567	567	567	722	810
1	BF	4	548	548	548	548	548	687	738
1	BG	4	1032	1032	1032	1032	1032	1013	1057
1	BA	5	357	357	357	357	357	411	432
1	BB	5	378	378	378	378	378	432	455
1	BC	5	865	865	865	865	865	759	773
1	BE	5	429	429	429	429	429	498	556
1	BF	5	409	409	409	409	409	463	485
1	BG	5	895	895	895	895	895	788	803
2	BA	4	990	990	990	990	990	1271	1371
2	BB	4	1032	1032	1032	1032	1032	1315	1415
2	BC	4	2004	2004	2004	2004	2004	1967	2053
2	BE	4	1134	1134	1134	1134	1134	1444	1619
2	BF	4	1094	1094	1094	1094	1094	1375	1477
2	BG	4	2064	2064	2064	2064	2064	2027	2114
2	BA	5	714	714	714	714	714	822	866
2	BB	5	758	758	758	758	758	866	909
2	BC	5	1729	1729	1729	1729	1729	1517	1546
2	BE	5	860	860	860	860	860	995	1111
2	BF	5	819	819	819	819	819	926	970
2	BG	5	1789	1789	1789	1789	1789	1577	1607

TABLE 3 - Flush Flanged Seals with Lowers Diaphragm Diameter = 4.1"

Number of Seals	Seal Materials		Flange Size - Pressure Rating - Code								
	Wetted	Non-wetted	DAA	DCA	DCC	DGA	DGC	DDA	DDC	DFA	DFC
1	BA	4	748	748	770	748	770	685	599	881	1082
1	BB	4	814	814	835	814	835	751	853	947	1146
1	BC	4	1379	1379	1429	1379	1429	1280	1294	1490	1669
1	BE	4	891	891	979	891	979	866	968	1047	1246
1	BF	4	857	857	879	857	879	795	896	990	1190
1	BG	4	1422	1422	1473	1422	1473	1323	1338	1533	1712
1	BA	5	596	596	618	596	618	533	533	577	655
1	BB	5	662	662	683	662	683	600	600	643	719
1	BC	5	1227	1227	1278	1227	1278	1128	1041	1186	1241
1	BE	5	740	740	826	740	826	714	714	743	820
1	BF	5	706	706	727	706	727	643	643	685	763
1	BG	5	1270	1270	1320	1270	1320	1172	1084	1094	1285
2	BA	4	1496	1496	1540	1496	1540	1371	1575	1763	2164
2	BB	4	1627	1627	1671	1627	1671	1502	1706	1893	2293
2	BC	4	2757	2757	2859	2757	2859	2559	2589	2979	3337
2	BE	4	1783	1783	1958	1783	1958	1731	1935	2093	2493
2	BF	4	1715	1715	1758	1715	1758	1590	1791	1961	2381
2	BG	4	2845	2845	2947	2845	2947	2647	2675	3067	3423
2	BA	5	1192	1192	1236	1192	1236	1068	1068	1155	1309
2	BB	5	1323	1323	1367	1323	1367	1199	1199	1286	1438
2	BC	5	2641	2641	2555	2641	2555	2255	2255	2373	2481
2	BE	5	1479	1479	1652	1479	1652	1427	1427	1486	1640
2	BF	5	1411	1411	1455	1411	1455	1286	1286	1371	1525
2	BG	5	2541	2541	2641	2541	2641	2343	2343	2459	2569

TABLE 4 - Price Add for Flush Flanged Seals with Lowers and Flushing Connection: Code = 7

Number of Seals	Seal Materials	Flange Size - Pressure Rating - Code	
	Wetted	Diaph. Dia. = 2.9" CAA, CCA, CCC, CGA, CGA, CDA, CDC	Diaph. Dia. = 4.1" DAA, DCA, DCC, DGA, DGC, DDA, DDC, DFA, DFC
1	BA	44	115
1	BB	44	115
1	BC	138	159
1	BE	131	145
1	BF	44	115
1	BG	138	159
2	BA	88	231
2	BB	88	231
2	BC	274	318
2	BE	260	290
2	BF	88	231
2	BG	274	318

TABLE 5 - Flanged Seals with Extended Diaphragms

Number of Seals	Seal Materials		Flange Size - Pressure Rating - Code					
	Wetted	Extension	Diaphragm Diameter = 2.9"			Diaphragm Diameter = 3.5"		
			EFA	EFC	EFM	FGA	FGC	FGP
1	EA	2	744	760	811	807	832	890
1	EB	2	766	781	832	865	890	948
1	EC	2	1135	1151	1201	1973	2001	2057
1	EA	4	787	803	854	865	890	948
1	EB	4	810	825	876	922	948	1006
1	EC	4	1346	1364	1412	2252	2282	2338
1	EA	6	831	847	898	922	948	1006
1	EB	6	853	869	920	980	1006	1064
1	EC	6	1559	1577	1623	2533	2560	2618
2	EA	2	1488	1519	1621	1613	1665	1781
2	EB	2	1531	1563	1665	1729	1781	1895
2	EC	2	2271	2301	2401	3945	4004	4114
2	EA	4	1575	1607	1709	1729	1781	1895
2	EB	4	1619	1650	1752	1843	1895	2012
2	EC	4	2693	2727	2823	4505	4563	4676
2	EA	6	1663	1694	1796	1843	1895	2012
2	EB	6	1706	1737	1839	1960	2012	2129
2	EC	6	3117	3155	3246	5064	5120	5238

TABLE 6 - Seals with Threaded Process Connection with Carbon Steel Uppers: Code = A

Number of Seals	Material - Wetted without Flushing Connection	Flange Size - Pressure Rating - Code	
		Diaph. Dia. = 2.9" KJG, KKG, KLG	Diaph. Dia. = 4.1" LJG, LKG, LLG
1	JA	173	371
1	JB	233	459
1	JC	254	523
1	JD	605	1089
1	JE	307	553
1	JF	285	567
1	JG	658	1199
2	JA	348	743
2	JB	466	919
2	JC	508	1047
2	JD	1209	2179
2	JE	614	1105
2	JF	570	1134
2	JG	1315	2397

TABLE 7 - Seals with Threaded Process Connection with Stainless Steel Uppers: Code = C

Number of Seals	Material - Wetted without Flushing Connection	Flange Size - Pressure Rating - Code	
		Diaph. Dia. = 2.9" KJG, KKG, KLG	Diaph. Dia. = 4.1" LJG, LKG, LLG
1	JB	370	611
1	JC	393	676
1	JD	743	1241
1	JE	445	705
1	JF	422	719
1	JG	795	1349
2	JB	741	1221
2	JC	784	1353
2	JD	1486	2483
2	JE	888	1409
2	JF	845	1438
2	JG	1590	2699

TABLE 8 - Price Add for Seals with Threaded Process Connection and Flushing Connection: Code = F

	Seal Materials	Flange Size - Pressure Rating - Code	
Number of Seals	Wetted	Diaph. Dia. = 2.9" KJG, KKG, KLG	Diaph. Dia. = 4.1" LJG, LKG, LLG
1	JA	19	88
1	JB	30	88
1	JC	30	88
1	JD	55	159
1	JE	30	88
1	JF	30	88
1	JG	55	159
2	JA	40	174
2	JB	58	174
2	JC	58	174
2	JD	110	318
2	JE	58	174
2	JF	58	174
2	JG	110	318

Type	Size	Non-wetted Material	Wetted Materials		Construction	Dimension 3.5" Diaphragm Dia. (in.)	
			Diaphragm	Upper Insert	See Figure	A	B
Flush Flanged Seal	3" 150	CS	316 LSS Hast C Hast C Monel Monel	SS SS Hast C SS Monel	10a	7.50	1.10
		SS	316 LSS Hast C Monel	N/A	10b 10a 10b		0.94 1.10 0.94
	3" 300	CS	316 LSS Hast C Hast C Monel Monel	SS SS Hast C SS Monel	10a	8.25	1.31
		SS	316 LSS Hast C Monel	N/A	10b 10a 10b		1.12 1.31 1.12
	DIN DN80-PN40	CS	316 LSS Hast C Hast C Monel Monel	SS SS Hast C SS Monel	10a	7.87	1.07
		SS	316 LSS Hast C Monel	N/A	10b 10a 10b		0.94 1.07 0.94

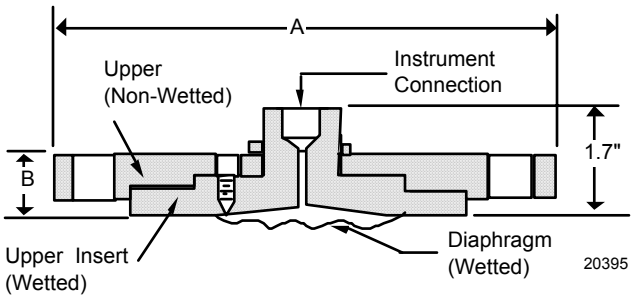

Figure 10a. Flush Flanged Seal

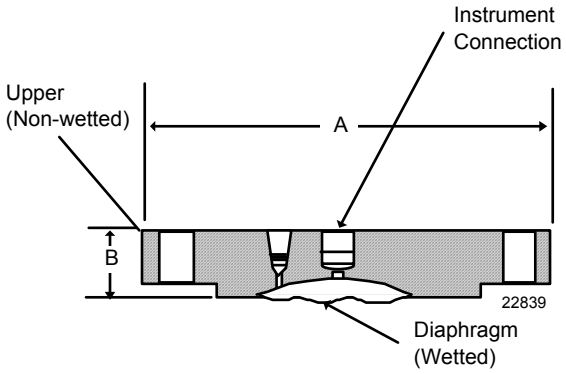

Figure 10b. Flush Flanged Seal

Model Selection Guide, cont.

Type	Size		Dim.	2.4" Diaph. Dia. (in.)	2.9" Diaph. Dia. (in.)	4.1" Diaph. Dia. (in.)
Flush Flanged Seal with Lower	150	1/2"	A	□3.50	□4.00	□5.30
			B	□2.00	□1.90	□2.10
			C	—	—	—
		1"	A	■ 4.00	□4.00	□5.30
			B	■ 1.70	□2.00	□2.10
			C	■ 1.10	—	—
		1-1/2"	A	■ 5.00	■ 5.00	□5.30
			B	■ 1.80	■ 1.80	□2.10
			C	■ 1.20	■ 1.20	—
		2"	A	■ 6.00	■ 6.00	□5.80
			B	■ 1.90	■ 1.80	□2.00
			C	■ 1.40	■ 1.30	—
		3"	A	■ 7.50	■ 7.50	■ 7.50
			B	■ 2.30	■ 2.30	■ 2.00
			C	■ 1.90	■ 1.90	■ 1.60
	300	1"	A	■ 4.90	□4.50	□5.30
			B	■ 1.90	□2.10	□2.10
			C	■ 1.30	—	—
		1-1/2"	A	■ 6.10	■ 6.10	□5.80
			B	■ 1.80	■ 1.80	□2.30
			C	■ 1.20	■ 1.30	—
		2"	A	■ 6.50	■ 6.50	■ 6.50
			B	■ 1.90	■ 1.80	■ 2.30
			C	■ 1.50	■ 1.40	■ 1.90
		3"	A	■ 8.30	■ 8.30	■ 8.30
			B	■ 2.70	■ 2.40	■ 2.30
			C	■ 2.10	■ 1.80	■ 2.10

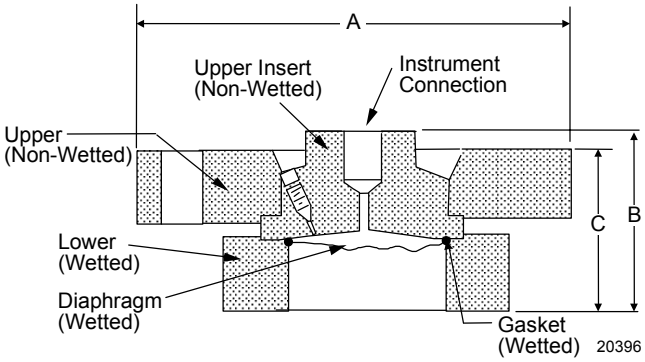

Figure 11. Flush Flanged Seal with Lower (■)

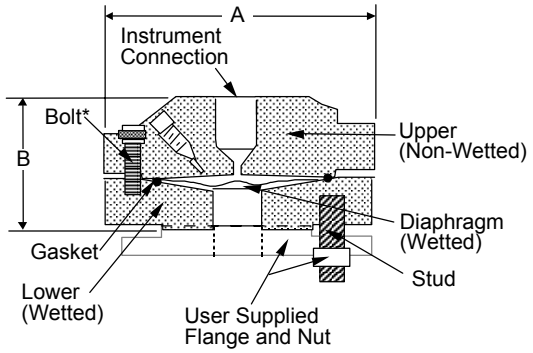

Figure 12. Flush Flanged Seal with Lower (□)

Model Selection Guide, cont.

Type	Size	Dim.	2.4" Diaph. Dia. (in.)	2.9" Diaph. Dia. (in.)
Flanged Seal with Extended Diaphgram	3" 150	A B C*	7.50 0.94 2.85	— — —
	3" 300	A B C*	8.25 1.12 2.85	— — —
	DIN DN80-PN40	A B C*	7.87 0.94 2.85	— — —
	4" 150	A B C*	— — —	9.00 0.94 3.70
	4" 300	A B C*	— — —	10.00 1.25 3.70
	DIN DN100-PN40	A B C*	— — —	9.25 0.94 3.70

*Designed to mate with Sch 40 pipe.

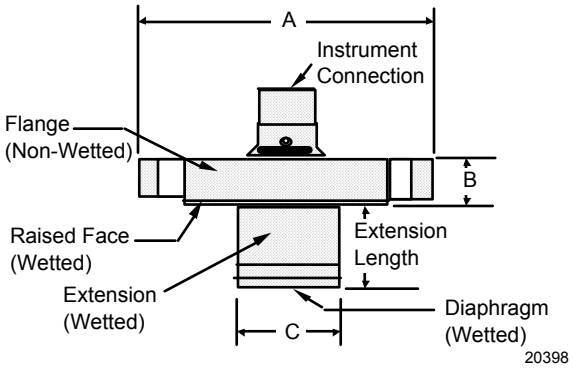

Figure 13. Flanged Seal with Extended Diaphragm

Type	Size	Dimension	3.5" Diaph. Dia. (in.)
Pancake Seal	3" 150/300/600	A B	5.00 0.90

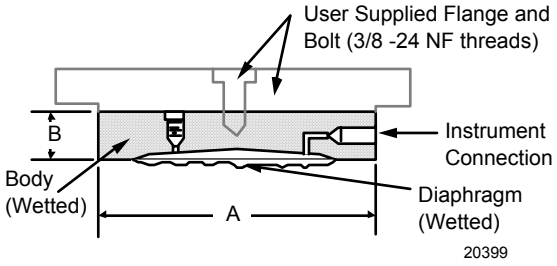

Figure 14. Pancake Seal

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

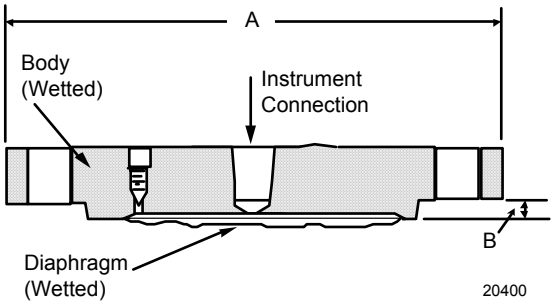

Figure 15. Chemical Tee "Taylor Wedge"

Model Selection Guide, cont.

Type	Size	Dim.	2.4" Diaph. Dia. (in.)	2.9" Diaph. Dia. (in.)	4.1" Diaph. Dia. (in.)
Seal with Threaded Process Connection	1/4" or 1/2"	A	3.50	4.00	5.30
		B	1.80	1.80	1.80
	3/4" or 1"	A	3.50	4.00	5.30
		B	2.10	2.10	2.10

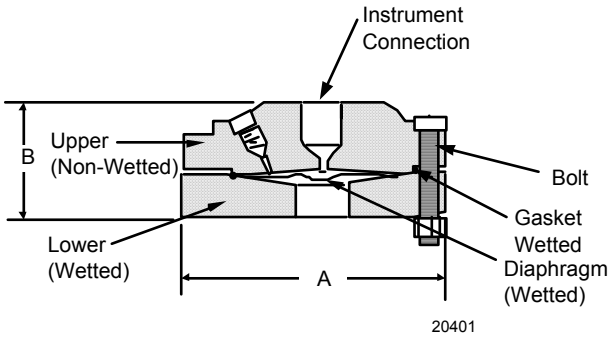

Figure 16. Seal with Threaded Process Connection

Type	Size	Dim.	1.9" Diaph. Dia. (in.)	2.4" Diaph. Dia. (in.)	2.9" Diaph. Dia. (in.)	4.1" Diaph. Dia. (in.)
Sanitary Seal	2"	A	2.50	—	—	—
		B	1.20	—	—	—
	2-1/2"	A	—	3.00	—	—
		B	—	1.20	—	—
	3"	A	—	—	3.60	—
		B	—	—	1.20	—
	4"	A	—	—	—	4.7
		B	—	—	—	1.0

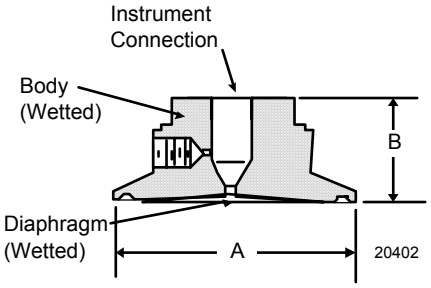

Figure 17. Sanitary Seal

Model Selection Guide, cont.

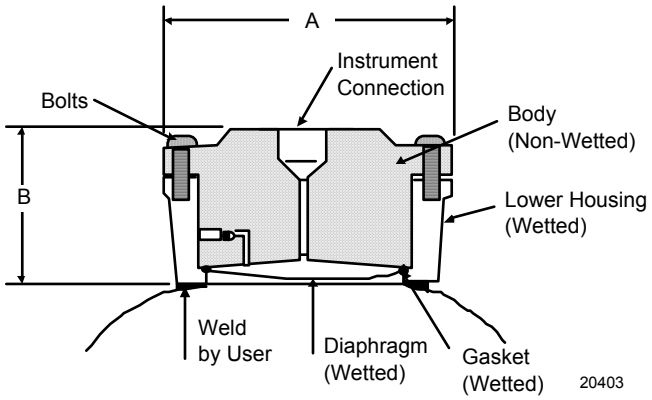

Figure 18. 3" Saddle Seal

Type	Size	Dimension	2.4" Diaph. Dia. (in.)
Saddle Seal	3"	A B	3.50 2.30
	4" or larger	A B	3.50 2.40

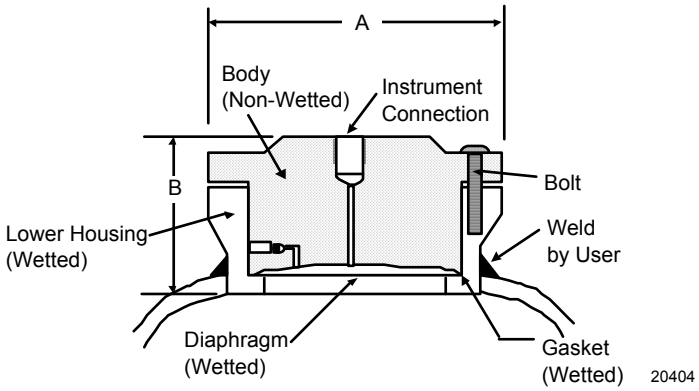

Figure 19. 4" or larger Saddle Seal

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