Model 204D
High Accuracy/Differential Pressure

0 - 25 psid to 0 - 10,000 psid
0 - ±10 psid to 0 - ±500 psid
(Positive Pressure: Liquids / Reference Pressure: Dry Non-Corrosive Gases)

Setra Systems Model 204D pressure transducer is intended for accurate differential pressure measurement of gas or liquid media compatible with 17-4PH stainless steel. The high level output signal and excellent stability, combined with fast dynamic response, make this unit ideal for industrial, laboratory, and aerospace applications requiring the highest accuracy. The 204D is thermally compensated for both zero and span shifts due to environmental temperature variations. Setra's unique high output electronic circuitry requires no additional signal conditioning.

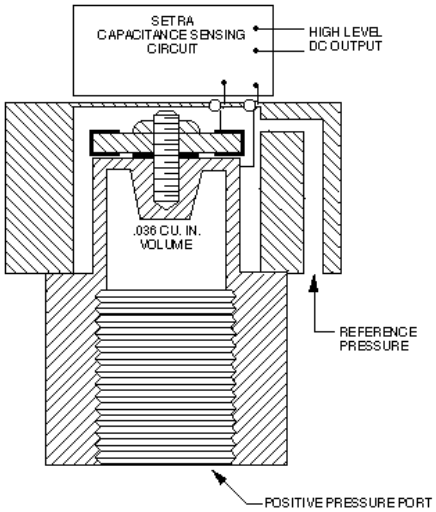
Setra's patented variable capacitance sensor approaches the ultimate in design simplicity. It features a one-piece 17-4PH stainless steel pressure sensor and an insulated electrode, which form a variable capacitor. As pressure increases, the capacitance decreases. This change in capacitance is detected and converted to a linear DC signal by Setra's unique electronic circuit.

Pressure Ranges

Pressure Range PSID	Proof Pressure* PSID		Burst Pressure*
0 to ±10	±50		±150 psid
0 to 25			
0 to ±25	±75		±200 psid
0 to 50			
0 to ±50	±150		±500 psid
0 to 100			
0 to ±100	±375		±1000 psid
0 to 250			
0 to ±250	±750	positive port:	+1500 psid
0 to 500		reference port:	1000 psig
0 to ±500	+1250	positive port:	+3000 psid
0 to 1000	–1000	reference port:	1000 psig
0 to 3000	+3750	positive port:	+4500 psid
	–1000	reference port:	1000 psig
0 to 5000	+6000	positive port:	+7500 psid
	–1000	reference port:	1000 psig
0 to 10000	+11000	positive port:	+12500 psid
	–1000	reference port:	1000 psig

*** Maximum pressure on reference port must not exceed 1000 psig.**

NOTE: Setra quality standards are based on ANSI-Z540-1.
The calibration of this product is NIST traceable.



Extremely low hysteresis and very stable operation under extreme temperature conditions are inherent in this design.

U.S. Patent Nos. 3859575, 4093915

Applications

- High Accuracy General Purpose
- R&D Test and Measurement
- Vacuum Systems
- Dynamometers
- Engine Test Cells

Features

- Instant Warm-up
- High Output: 5 VDC or ±2.5 VDC
- 0.02% Non-Repeatability
- 0.08% Hysteresis
- 0.07% Non-Linearity
- Low Thermal Effect
- Low Output Noise
- Fast Response, Less Than 1 Millisecond
- Stainless Steel Sensor
- Very Low Line Pressure Effect

When it comes to a product to rely on - choose the Model 204D. When it comes to a company to trust - choose Setra, an ESOP (Employee-Owned) company.

ISO 9001 Certified

TEESING

Model 204D Specifications

Performance Data

	Unidirectional & Bidirectional Ranges ±10, ±25, ±50 PSID	Bidirectional Ranges ±100, ±250, ±500 PSID	10,000 PSID Range
Accuracy RSS* (at constant temp)	±0.11% FS	±0.22%FS	±0.14%FS
Non-Linearity, BFSL	±0.07% FS	±0.20% FS	±0.10% FS
Hysteresis	0.08% FS	0.08% FS	0.10% FS
Non-Repeatability	0.02% FS	0.02% FS	0.02% FS

Thermal Effects**

Compensated Range °F(°C)	+30 to +150 (-1 to +65)
Zero Shift %FS/100°F(%FS/50°C)	1.0 (.09)
Span Shift %FS/100°F(%FS/50°C)	1.0 (.09)
Acceleration Response	<0.05 psi/g, pressure port axis only
Volume Increase due to FS Pressure	5 x 10^{-5} cu. in.
Warm-up Shift	0.5% Total; 0.1% residual shift after 5 minutes at constant temperature.
Line Pressure Effect	Zero shift ±0.1% FS/100 psig of reference pressure.

*RSS of Non-Linearity, Hysteresis and Non-Repeatability.
**Units calibrated at nominal 70°F. Maximum thermal error is computed from this datum.

Environmental Data

Temperature	
Operating* °F (°C)	0 to +175 (-18 to +79)
Storage °F (°C)	-65 to +250 (-55 to +121)
Vibration	2g from 5 Hz to 500 Hz
Acceleration	10g
Shock	50g

*Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher or lower.

Physical Description

Electrical Connection	2 Foot Multiconductor Cable
Positive Pressure Fitting	1/4"-18 NPT Internal
Reference Pressure Fitting	1/8"-27 NPT Internal
Weight	10 ounces

Pressure Media

Positive Pressure Media	Gas or liquid compatible with 17-4 PH Stainless Steel.*
Reference Pressure Media	Clean dry air or non-corrosive gas (1000 psig maximum).

* Hydrogen not recommended for use with 17-4 PH Stainless Steel.

Electrical Data 204D

Circuit	4-Wire (+Exc, - Exc, +Out, -Out)
Excitation*	22 to 30 VDC Reverse Excitation Protected
Output**	0 to 5 VDC*** (for unidirectional ranges) ±2.5 VDC*** (for bidirectional ranges)
Zero Adjustment	Accessible Inside of Case, or External Remote Adjustment (using customer-supplied 10K ohm potentiometer to the remote zero lead of the transducer cable.
Span Adjustment	Accessible Inside of Case, or External Remote Adjustment (Option 642)
Output Impedance	10 ohms
Output Noise	<100 microvolts RMS (0 to 10K Hz)
Current Consumption	10 mA (0.25 Watts)

*Will operate on 28 VDC aircraft power per MIL-STD-704A and not be damaged by emergency power conditions. Nominal excitation is 24 VDC. Excitation variation effect is less than 0.2% FS output change.
**Calibrated into a 50K ohm load, operable into 5000 ohms or greater.
***Zero output factory set to within ±10mV.
***Span (Full Scale) output factory set to within ±10mV.
Note: Both output leads are nominally 4.7 VDC above the negative excitation lead at zero pressure. Either negative excitation or negative output should be connected to case (ground). But both leads cannot be connected to case (ground). Unit is calibrated at the factory with the negative excitation connected to case (ground).

Available Options

Electrical Options

Option #602	1 to 5 VDC output
Option #603	1 to 6 VDC output
Option #604	0 to 10 VDC output
Option #606	0 to 2.5 VDC output
Option #607	0 to 5 VDC output (bidirectional ranges)
Option #621	±24 VDC excitation
Option #622	±15 VDC excitation
Option #642	Remote Span Adjustment
Option #643	Remote Calibration Adjustment (Adjustable)
Option #644	Remote Calibration Adjustment (Fixed, Specify %FS Required)

Performance Options

Option #702	Widened Temperature Compensation Range (-65°F to +250°F) 2 x Standard Thermal Effects Specification.
Option #710	±0.73% FS Accuracy (Not available on 10,000 PSID unidirectional range or bidirectional ranges ≥ ±100 PSID).

Mechanical Options

Option #803-825	Up to 25 ft. of cable can be supplied Please specify cable length when ordering (i.e. 805 for 5 ft. cable). Consult factory for cable lengths longer than 25 ft.
904	Oxygen Clean Service
911	Etched Metal Stainless Steel Tag.

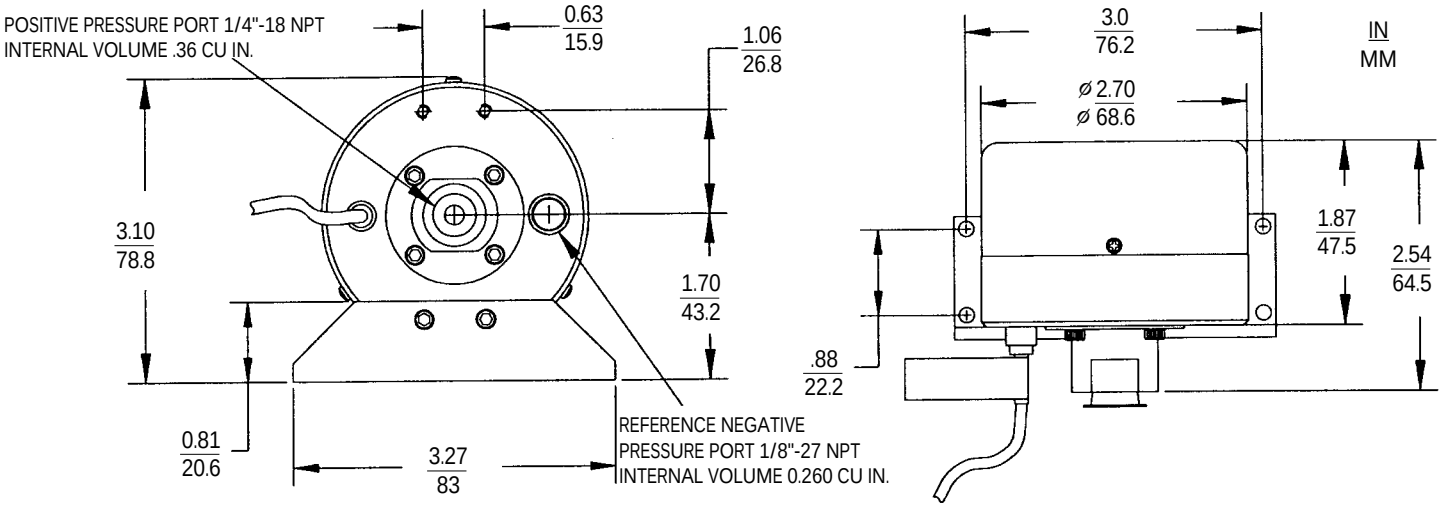
Special Range Option

SR	Special Range (Specify Range Required)

Specifications subject to change without notice.

SSP204D Rev.E 01/24/2000

Outline Drawings



ORDERING INFORMATION

Order as Model 204D pressure transducer. Specify pressure range and options.