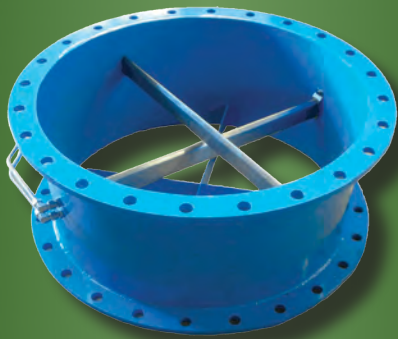


EASTERN INSTRUMENTS



VAP³®/PA

VAP³®/SA

DUCT
SECTION
VAP³® (DSV)



Precision Air Flow Measurement

Eastern Instruments

Precision Flow Measurement

About Eastern Instruments

Eastern Instruments, a Certified Women's Business Enterprise, is an engineered solutions company located adjacent to the North Carolina International State Port in Wilmington, North Carolina. Since 1984, we have been engaged in the design and manufacture of devices that accurately measure and profile the flow of air and gases in the industrial and power sectors. These devices have been integrated into a variety of systems for regulating operations and improving efficiency across nearly every industry. Every device within Eastern Instruments' air flow measurement product line provides a high degree of accuracy, easy installation and an extremely simple and intuitive operation and maintenance schedule that is perfect for nearly every application. The following catalog is an overview of our industrial air flow measurement Duct Section VAPs, however we also offer a complete line of insertion pitots, flow conditioners and air flow measurement equipment for the power industry, as well as a complete line of solids flow meters, feeders and fillers, so if you are in need of equipment other than those found within this catalog, Eastern Instruments can help. Contact us today.

Mildred R. Brandt

President and CEO

FOR MORE INFORMATION
CALL (910) 392-2490



416 Landmark Drive
Wilmington, NC 28412
Phone: 910.392.2490

Fax: 910.392.2123

www.easterninstruments.com



Applications



Round Ducts



Rectangular Ducts



Options

Accurate Air Flow Measurement and the Duct Section VAP³® (DSV)

The DSV offers a simple and convenient way of installing an array of VAP³® pitots into either round or rectangular duct work. The key to the accuracy of the DSV, however, is the VAP³® pitots themselves. How are the air flow measurement devices from Eastern Instruments so accurate? The accuracy lies within the proprietary design of the VAP³® Insertion Style Pitot.

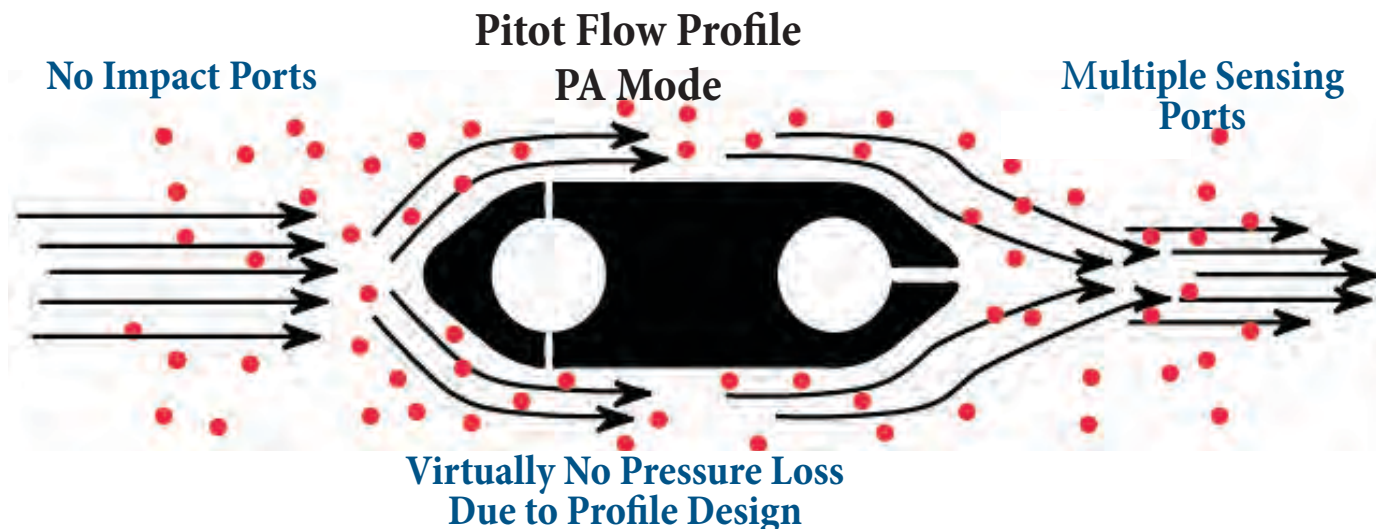
One of the most important aspects of proper air flow measurement is choosing the correct measurement technology. Insertion style pitot tubes are a time-tested method of measuring air flow in ducts. Pitots are cost-effective, easily maintained and can be installed in nearly any duct work. One significant advantage of pitot tubes over other technologies such as orifice plates, venturis or airfoils is that pitots offer a minimal unrecovered pressure drop across the flow element which can result in significant cost-savings associated with reduction in fan horsepower requirements.

The VAP³® Pitot from Eastern Instruments utilizes differential pressure based measurement technology in order to measure the velocity of air in a duct. When coupled with a Multivariable Transmitter, the pitots will offer a true mass flow measurement.

Unlike some pitot tube technologies which offer only single-port measurement, the VAP³® Pitot technology from Eastern Instruments ensures that each pitot installation has multiple sensing ports which average the velocity across the entire traverse of the duct, thus providing a more representative sample of duct velocity.

In most cases, pitot tubes have one port facing into the air stream (high port) and one port at 90° to the air stream (low port). The differential pressure between the high port and the low port represents the velocity. This configuration works well in air with no particulate in the air stream, however the high port is very susceptible to plugging if any airborne particulate is present.

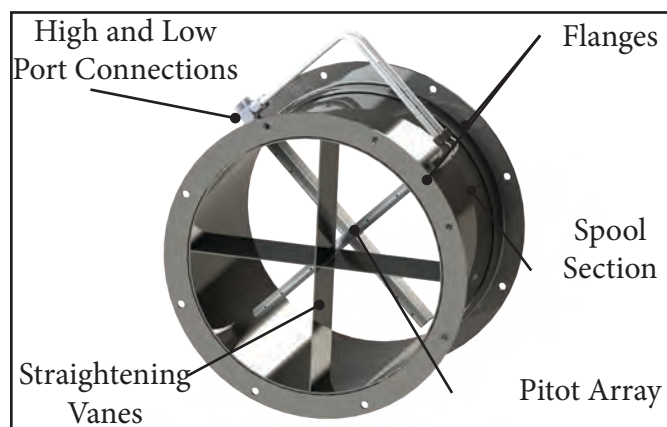
A notable exception to the plugging issues plaguing many air flow measurement technologies is the VAP³® Pitot technology from Eastern Instruments. For applications in which airborne particulate is present, the VAP³® Pitot is mounted so that the high port is in-line with the airflow, not facing it, so that the pitot has no impact ports. Because the pitot has no impact ports when mounted in this orientation, it is not subject to plugging and so costly purge systems are rarely required.



Applications

What is a DSV?

Featuring a set of straightening vanes that eliminates cyclonic turbulence at the point of measurement, as well as an integral VAP pitot array, the DSV offers an exceptionally accurate Differential Pressure based air/gas flow measurement. With simple and convenient bolt-in installation, the DSV can be used for either round or rectangular duct work. The DSV comes in a variety of flange patterns, that can be customized in order to fit any existing flange pattern. The DSV will work with any DP only or Multivariable Transmitter, including our own QVT Multivariable Transmitter.



Process Applications

- Coating/Drying
- Process Exhaust
- Dust Collection
- Pneumatic Systems
- Cooling
- Ventilation
- Fluid Bed Dryers
- Stack Flow

Industries Served

- Food Industry
- Petrochemical Industry
- Industrial Chemicals
- Pet Product Industry
- Agricultural Industry
- Recycled Materials

Power Applications

- Burner Flow
- Primary Air
- Secondary Air
- Stack Flow
- Tempering Air
- Overfire Air
- HVAC

Industries Served

- Coal-Fired Power
- Waste-To-Energy
- Oil-Fired
- Nuclear
- Cyclone Burner

The DSV Duct Section VAP³®:
Exceeding Expectation in Every Industry.



Why choose Eastern Instruments?

Accuracy

Because all Eastern Instruments' flow measurement devices are based on the accuracy delivered by the VAP³® Pitot, the DSV as well, will retain its extreme accuracy of $\pm 2.00\%$ for either clean or particulate-laden applications when calibrated.

Plug-Resistance

When installed in the PA (Particulate Application) mode, the DSV's VAP³® Pitot array has no impact ports, offering a plug resistant design that rarely requires the use of expensive purging systems.

Parallel Plate Cross Sectional Design

The VAP³® Pitot's unique cross sectional design minimizes disturbances of the air flow at and around the sensing ports, thus minimizing the potential for particulate to build up on and around the ports.

Material of Construction

The DSV spool section is manufactured out of either painted carbon steel or Stainless Steel, while the integral VAP³® Pitot array will be constructed of 6063 Anodized Aluminum, Stainless Steel or even PVC for increased temperatures or resistance to the corrosive properties of the air/gas.

No "K" Factor is Required

Because the flow measurement of the integral VAP³® Pitots is not dependant on velocity, no "K" factor is required in the calculation of flow (the flow coefficient is not Reynolds Number dependent).

Multiple Sensing Ports

With multiple sensing ports on each pitot, the integral VAP³® Pitot array within the DSV ensures velocity averaging across the full traverse of the duct, thus ensuring an accurate averaging of the air flow across the entire duct.

Integral Straightening Vanes

Both the round and rectangular versions of the DSV contain a set of integral straightening vanes which are positioned directly before the measurement point. These straightening vanes will straighten the flow by eliminating cyclonic turbulence within the duct.

Low Unrecovered Pressure Loss

When utilizing the DSV with integral VAP³® pitots, the unique low profile design ensures that pressure loss due to the pitots themselves is negligible. Even when utilizing the High Beta® Flow Conditioner, pressure loss is remarkably low.



Duct Section VAP

ROUND DUCTS

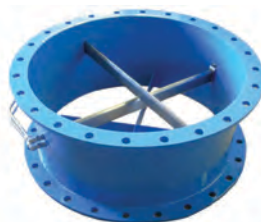
The Duct Section VAP (DSV) is a flanged duct section which includes an integral array of VAP³® pitots. The DSV allows for the easy installation of pitots within both new or existing duct work. The Round DSV can be equipped with nearly any flange pattern to make retrofitting them into any duct work extremely simple. Offered in both a painted carbon steel or a stainless steel version, the DSV can be used in conjunction with any DP only or Multivariable transmitter to deliver extremely accurate air flow measurement.

The following pages are dedicated to DSV units specifically made for round ducts, however the DSV Duct Section VAP³® can be utilized in square or rectangular ducts as well. Please see the corresponding section in this catalog for rectangular duct installations.

DSV: Duct Section VAP³® Models

DSV: Carbon Steel

- CS Flanged Spool Section
- Simple Bolt-in Installation
- For Clean/Particulate-laden air flow streams
- Can be used with either Aluminum or SS Pitots



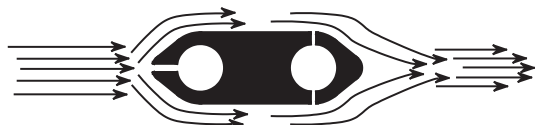
DSV: Stainless Steel

- SS Flanged Spool Section
- Simple Bolt-in Installation
- For Clean/Particulate-laden air flow streams
- Used with SS Pitots only
- Great for Corrosive Air and for High Temperatures



VAP³®/SA CLEAN AIR

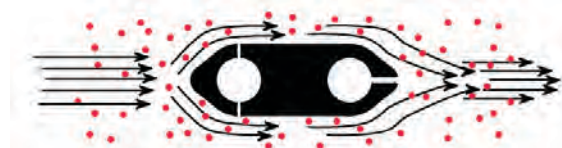
When mounted in SA (Superior Accuracy) mode, all of the models mentioned above will accurately measure the flow of relatively clean air through nearly any duct. While positioning the High Port so that it faces into the air stream (shown below) makes the measurement more accurate, it also limits the use of SA mode to particulate-free air. Mounted in SA mode, VAP³® pitots provide an accurate differential pressure output that allows for precise air flow measurement and control of your process to within $\pm 2.00\%$ accuracy when calibrated.



VAP³®/SA PITOT PROFILE: "CLEAN" AIR

VAP³®/PA PARTICULATE-LADEN AIR

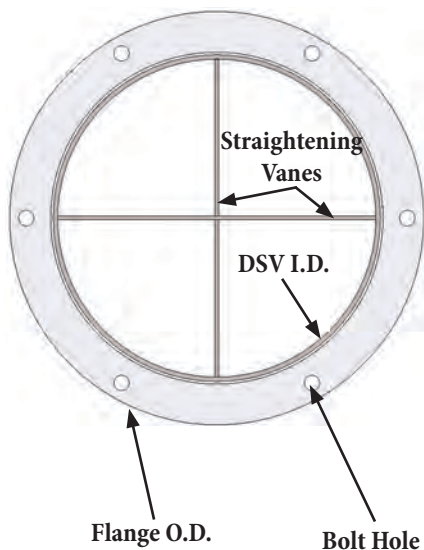
When mounted in PA (Particulate-laden Air) mode, all of the models mentioned above will accurately measure the flow of "dirty" or particulate-laden air through nearly any duct. In PA mode, the High Port is positioned so that it faces away from the oncoming air stream, making the pitot resistant to plugging. Mounted in PA mode, VAP³® pitots provide an accurate differential pressure output which allows for precise air flow measurement and control of your process to within $\pm 2.00\%$ accuracy when calibrated.



VAP³®/PA PITOT PROFILE: "DIRTY" AIR

DSV Installation: Round Ducts

DSV STANDARD
ANGLE RING FLANGE

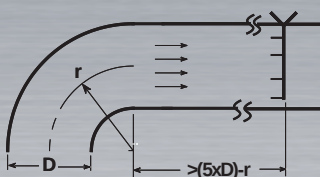


DSV FLANGE SPECIFICATIONS:
ANGLE RING FLANGE

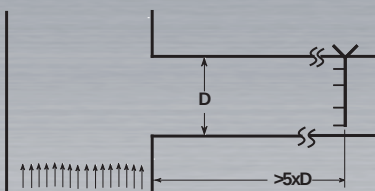
Size	Bolt Hole Dia.	No. of Bolts	Flange Thickness
6"	9/32"	6	1/8"
8"	3/8"	6	1/8"
10"	7/16"	6	3/16"
12" - 18"	7/16"	8	3/16"
20" - 24"	7/16"	12	3/16"
26" - 36"	7/16"	16	3/16"

*Information given is for Standard Angle Ring Flanges only. More flange patterns as well as custom flange patterns also available.

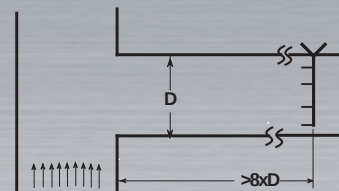
Recommended Upstream Duct Run Requirements



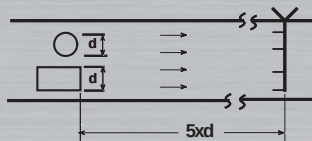
Upstream Radius 45° or 90°



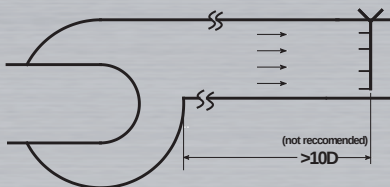
Upstream Plenum



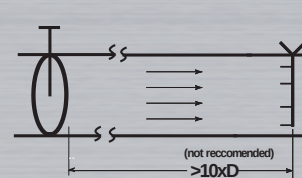
Upstream Tee



Upstream Obstruction

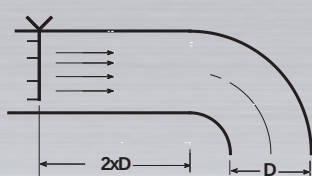


Upstream Fan

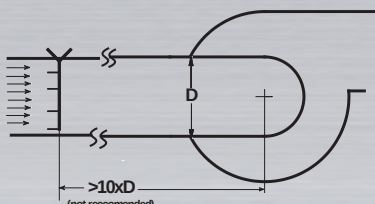


Upstream Damper

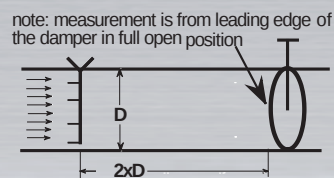
Recommended Downstream Duct Run Requirements



Downstream Radius 45° or 90°



Downstream Fan

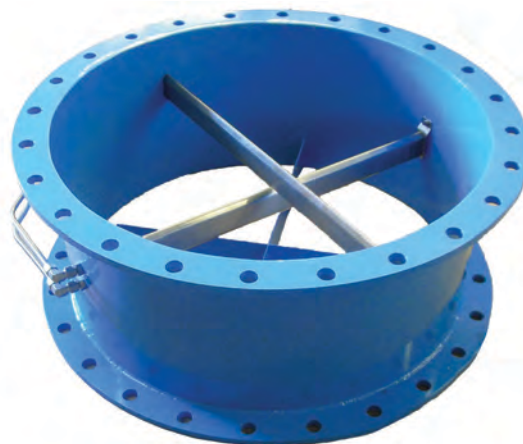


Downstream Damper

DSV - Carbon Steel

The DSV with AES Style Pitots is a flanged duct section which contains both straightening vanes for profiling turbulent air, as well as an array of flow measurement pitots. The DSV offers the same accuracy as the VAP³® Pitot with the added benefit of extremely easy installation. This model of the DSV is specifically designed for installation within round, Carbon Steel ducts and is equipped with an array of AES Anodized Aluminum Pitots for accurate Differential Pressure based flow measurement. The DSV can be coupled with Eastern Instruments' QVT transmitter as well as any other brand of DP or Multivariable Transmitter.

ROUND DUCTS



FEATURES AND BENEFITS

- Easy Bolt-in Installation for any Duct
- Integral Straightening Vanes help Reduce the effects of Cyclonic Flow
- Perfect for most air flow measurement applications
- Perfect for Clean air/Particulate-laden air
- Customizable Flange Pattern Options
- Works well with Eastern Instruments QVT Transmitter or any other brand of DP or Multivariable Transmitter

DESIGN SPECIFICATIONS

- Painted Carbon Steel Spool Section
- Small Footprint: all DSVs 12" in depth
- Anodized Aluminum Pitots resist wear
- Integral Pitot Array (2 pitots) with Multiple Sensing ports for complete duct traversal
- Pitots are tubed together and customer connections are made via a single manifold for simple, easy installation
- Customizable Flange Patterns, Materials of Construction and Pitot Material

System Requirements: "Clean" Air

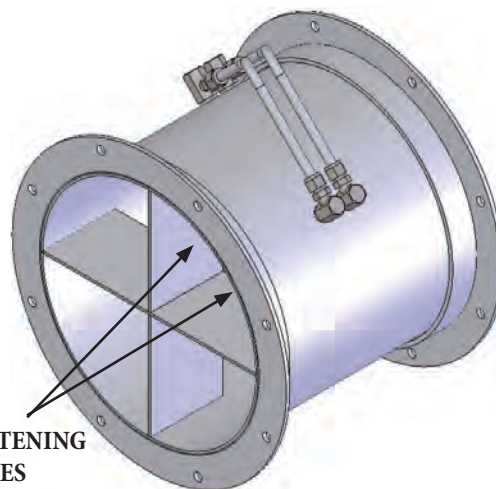
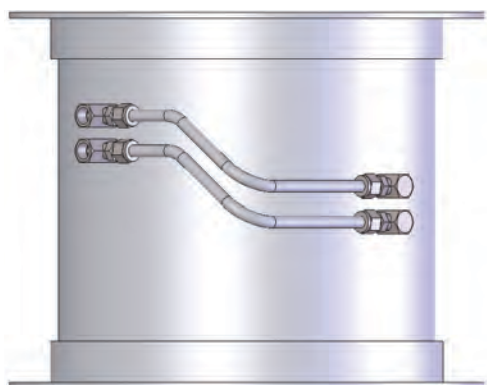
- **Duct Configuration:** Round
- **Duct Size:** 6" to 36" Diameter
- **MOC:** Carbon Steel/Anodized Aluminum
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 300 F (-40 to 149 C)
- **Medium:** Clean Air or Gas
- **Velocity Clean Air:** (250 - 12,500 ft/min)

System Requirements: "Dirty" Air

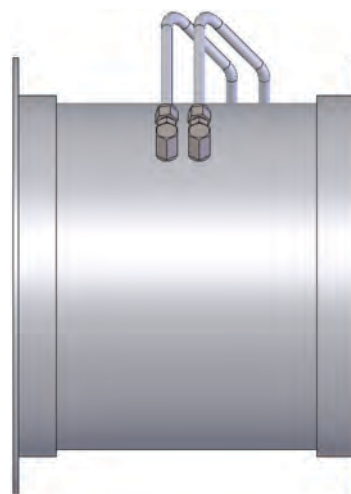
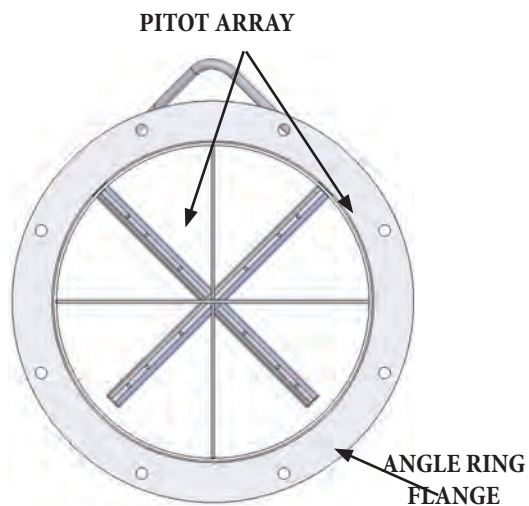
- **Duct Configuration:** Round
- **Duct Size:** 6" to 36"
- **MOC:** Carbon Steel/Anodized Aluminum
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 300 F (-40 to 149 C)
- **Medium:** Particulate-Laden Air or Gas
- **Velocity Air:** (1,500 - 12,500 ft/min)

DSV CARBON STEEL - SPECS

ROUND DUCTS: MOST APPLICATIONS



STRAIGHTENING
VANES



DSV SPECIFICATIONS							
DSV Size	Inner Diameter	No. of Pitots	DSV Length	DSV Size	Inner Diameter	No. of Pitots	DSV Length
6"	5.782	2	12"	22"	21.782	2	12"
8"	7.782	2	12"	24"	23.782	2	12"
10"	9.782	2	12"	26"	25.782	2	12"
12"	11.782	2	12"	28"	27.782	2	12"
14"	13.782	2	12"	30"	29.782	2	12"
16"	15.782	2	12"	32"	31.782	2	12"
18"	17.782	2	12"	34"	33.782	2	12"
20"	19.782	2	12"	36"	35.782	2	12"

DSV - Stainless Steel

The DSV with SFS Style Pitots is a Stainless Steel flanged duct section which contains both straightening vanes for profiling turbulent air, as well as an array of Stainless Steel flow measurement pitots. The DSV offers the same accuracy as the VAP³® Pitot with the added benefit of extremely easy installation. This version of the DSV is specifically designed for installation within round, Stainless Steel ducts and delivers an accurate Differential Pressure based flow measurement when coupled with any DP or Multivariable Transmitter. The Stainless Steel DSV is perfect for Corrosive Environments or for high temperature applications where the temperature could reach 900 F.

ROUND DUCTS



FEATURES AND BENEFITS

- Stainless Steel Spool Section
- Integral Straightening Vanes help Reduce the effects of Cyclonic Flow
- Stainless Steel Pitot Array (2 pitots) with Multiple ports for full duct traversal (Aluminum Pitots also available)
- Perfect for Clean air/Particulate-laden air
- Variety of Gasket Materials Available
- Works with any DP or Multivariable Transmitter

DESIGN SPECIFICATIONS

- Painted Stainless Steel Spool Section
- Small Footprint: all units are 12" in depth
- SS Pitots are corrosive/heat resistant
- Integral Pitot Array (2 pitots) with Sensing ports for full duct traversal
- Pitots are tubed together and customer connections are made via a single manifold for simple, easy installation
- Customizable Flange Patterns, Materials of Construction and Pitot Material

System Requirements: "Clean" Air

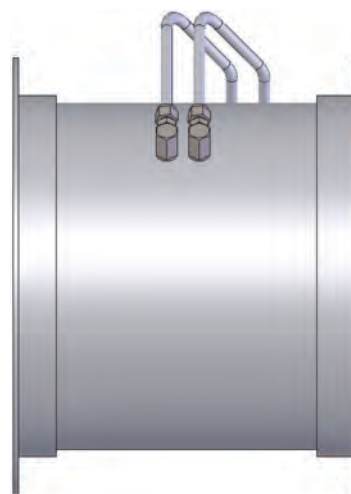
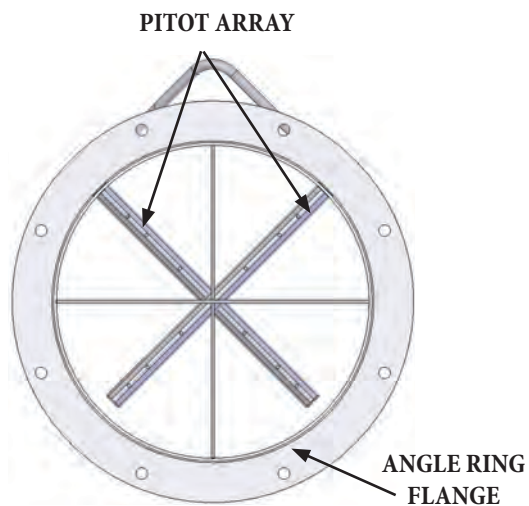
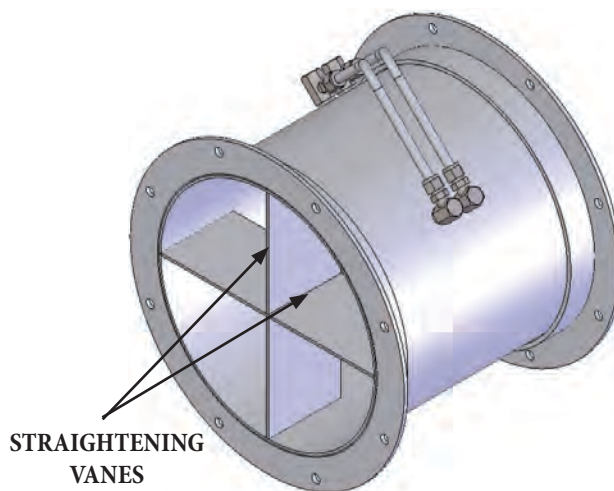
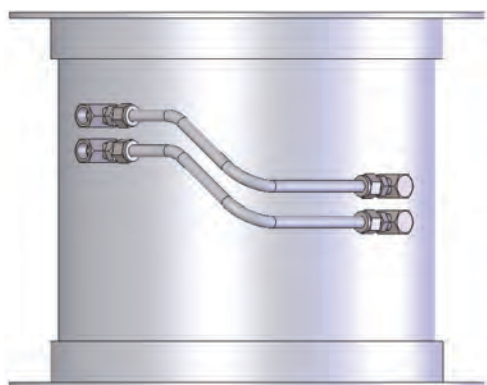
- **Duct Configuration:** Round
- **Duct Size:** 6" to 36" Diameter
- **MOC:** Stainless Steel
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 1500 F (-40 to 815 C)
- **Medium:** Clean Air or Gas
- **Velocity Clean Air:** (250 - 12,500 ft/min)

System Requirements: "Dirty" Air

- **Duct Configuration:** Round
- **Duct Size:** 6" to 36"
- **MOC:** Stainless Steel
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 1500 F (-40 to 815 C)
- **Medium:** Particulate-Laden Air or Gas
- **Velocity Air:** (1,500 - 12,500 ft/min)

DSV STAINLESS STEEL - SPECS

ROUND DUCTS: HIGH TEMPERATURE



DSV SPECIFICATIONS

DSV Size	Inner Diameter	No. of Pitots	DSV Length	DSV Size	Inner Diameter	No. of Pitots	DSV Length
6"	5.782	2	12"	22"	21.782	2	12"
8"	7.782	2	12"	24"	23.782	2	12"
10"	9.782	2	12"	26"	25.782	2	12"
12"	11.782	2	12"	28"	27.782	2	12"
14"	13.782	2	12"	30"	29.782	2	12"
16"	15.782	2	12"	32"	31.782	2	12"
18"	17.782	2	12"	34"	33.782	2	12"
20"	19.782	2	12"	36"	35.782	2	12"

Duct Section VAP

RECTANGULAR OR SQUARE DUCTS

The DSV Duct Section VAP³® for Square or Rectangular ducts allows easy installation of pitots within existing square or rectangular duct work. VAP³® Pitots are mounted within a flanged duct section and the pitots are tubed together for single point easy installation and setup. Whether inserting the DSV into Carbon Steel ducts or Stainless Steel ducts, there is a DSV which will work for your specific applications.

The following pages are dedicated to DSV Duct Section VAP³® units for square and rectangular ducts, using either VAP³®/SA or VAP³®/PA pitots as detailed below. For additional information about the DSV Duct Section VAP³® unit designed for round ducts, please see the corresponding section of this catalog.

DSV: Duct Section VAP³® Models

DSV: Carbon Steel

- CS Flanged Spool Section
- Simple Bolt-in Installation
- For Clean/Particulate-laden air flow streams
- Can be used with either Aluminum or SS Pitots
- Takes up only 12" of duct



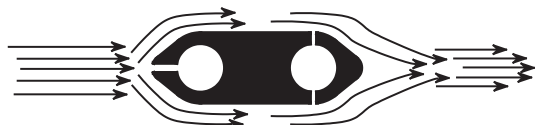
DSV: Stainless Steel

- SS Flanged Spool Section
- Simple Bolt-in Installation
- For Clean/Particulate-laden air flow streams
- Used with SS Pitots only
- Great for Corrosive Air and for High Temperatures
- Takes up only 12" of duct



VAP³®/SA CLEAN AIR

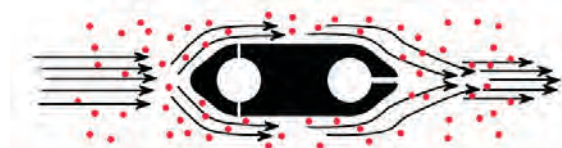
When mounted in SA (Superior Accuracy) mode, all of the models mentioned above will accurately measure the flow of relatively clean air through nearly any duct. While positioning the High Port so that it faces into the air stream (shown below) makes the measurement more accurate, it also limits the use of SA mode to particulate-free air. Mounted in SA mode, VAP³® pitots provide an accurate differential pressure output that allows for precise air flow measurement and control of your process to within $\pm 2.00\%$ accuracy when calibrated.



VAP³®/SA PITOT PROFILE: "CLEAN" AIR

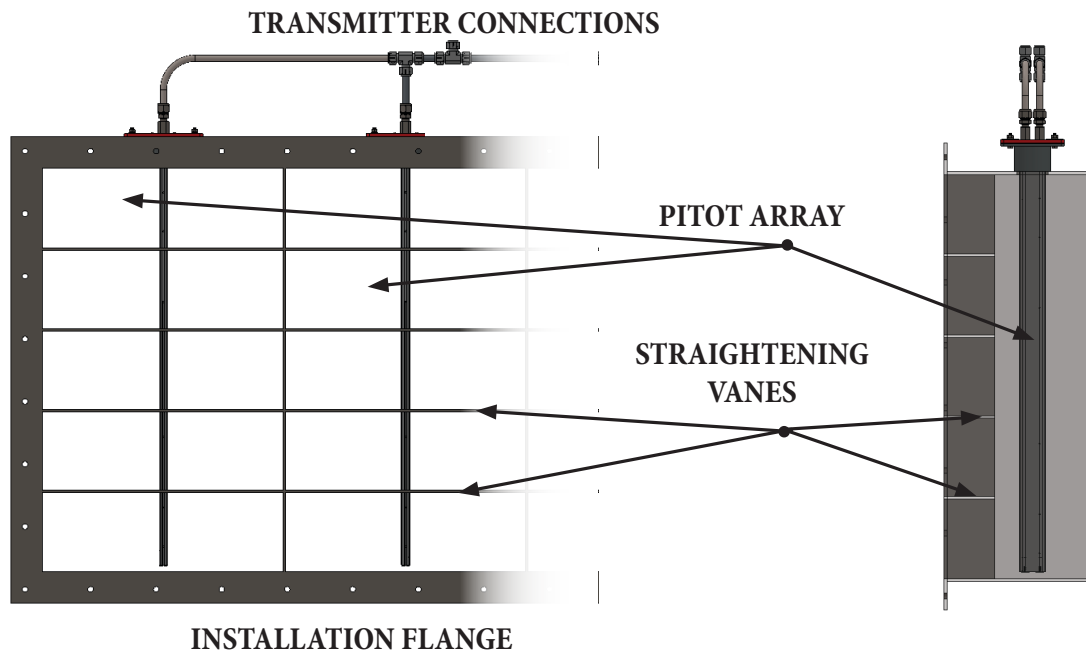
VAP³®/PA PARTICULATE-LADEN AIR

When mounted in PA (Particulate-laden Air) mode, all of the models mentioned above will accurately measure the flow of "dirty" or particulate-laden air through nearly any duct. In PA mode, the High Port is positioned so that it faces away from the oncoming air stream, making the pitot resistant to plugging. Mounted in PA mode, VAP³® pitots provide an accurate differential pressure output which allows for precise air flow measurement and control of your process to within $\pm 2.00\%$ accuracy when calibrated.

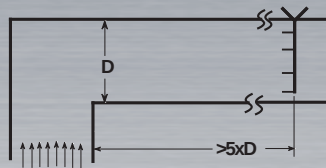


VAP³®/PA PITOT PROFILE: "DIRTY" AIR

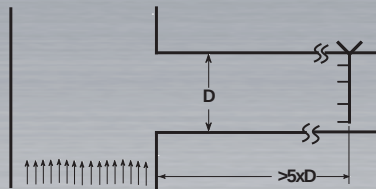
DSV Installation: Rectangular Ducts



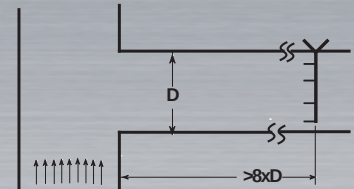
Recommended Upstream Duct Run Requirements



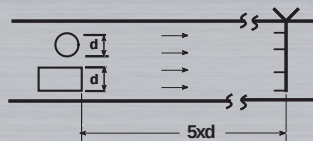
Upstream Radius 45° or 90°



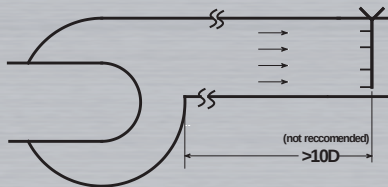
Upstream Plenum



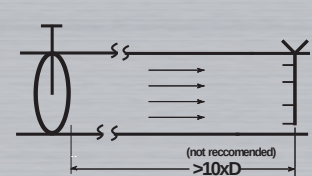
Upstream Tee



Upstream Obstruction

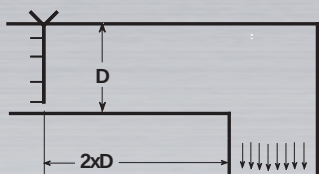


Upstream Fan

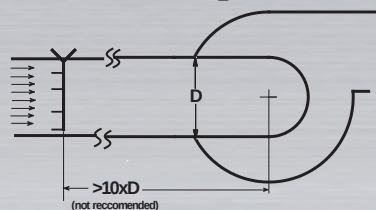


Upstream Damper

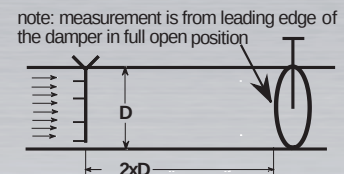
Recommended Downstream Duct Run Requirements



Downstream Radius 45° or 90°



Downstream Fan



Downstream Damper

DSV - Carbon Steel

The Carbon Steel version of the DSV is a flanged duct section which contains both straightening vanes for profiling turbulent air, as well as an array of flow measurement pitots. The DSV offers the same accuracy as the VAP³® Pitot with the added benefit of extremely easy installation. This version of the DSV is specifically designed for installation within square or rectangular, Carbon Steel ducts and is equipped with an array of AES Anodized Aluminum Pitots, that deliver accurate differential pressure flow measurement when coupled with any DP or Multivariable Transmitter.

RECTANGULAR DUCT



FEATURES AND BENEFITS

- Easy Bolt-in Installation for any Duct
- Integral Straightening Vanes help Reduce the effects of Cyclonic Flow
- Perfect for most air flow measurement applications
- Perfect for Clean air/Particulate-laden air
- Customizable Flange Pattern Options
- Works well with Eastern Instruments QVT Transmitter or any other brand of DP or Multivariable Transmitter

DESIGN SPECIFICATIONS

- Painted Carbon Steel Spool Section
- Requires only 12" of duct run to install
- Anodized Aluminum Pitots resist wear
- Integral Pitot Array (2 or more pitots) with Multiple Sensing ports for complete duct traversal
- Pitots are tubed together and customer connections are made via a single manifold for simple, easy installation
- Customizable Flange Patterns, Materials of Construction and Pitot Material

System Requirements: "Clean" Air

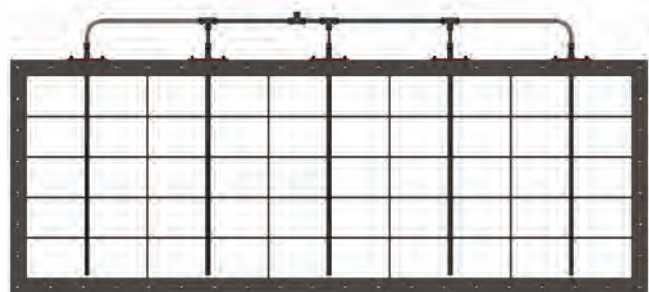
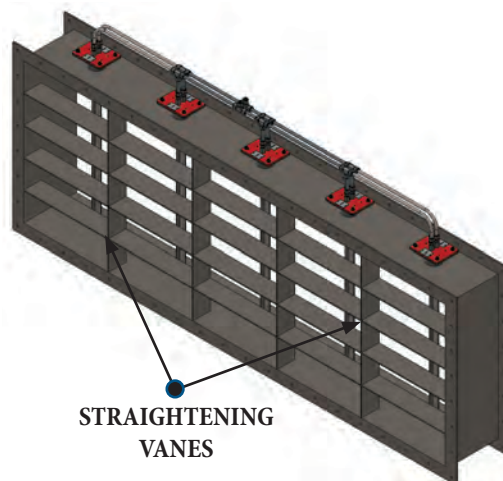
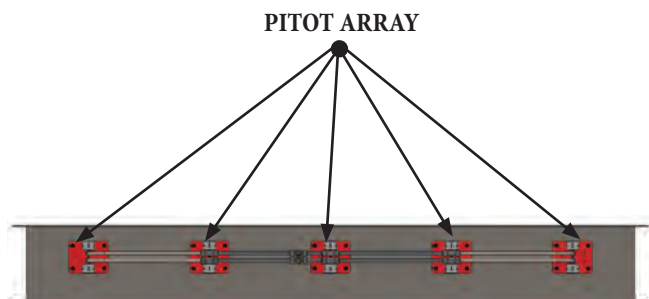
- **Duct Configuration:** Square/Rectangular
- **Duct Size:** Length/Width 6" or larger
- **MOC:** Carbon Steel/Anodized Aluminum
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 300 F (-40 to 149 C)
- **Medium:** Clean Air or Gas
- **Velocity Clean Air:** (250 - 12,500 ft/min)

System Requirements: "Dirty" Air

- **Duct Configuration:** Square/Rectangular
- **Duct Size:** Length/Width 6" or larger
- **MOC:** Carbon Steel/Anodized Aluminum
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 300 F (-40 to 149 C)
- **Medium:** Particulate-Laden Air or Gas
- **Velocity Air:** (1,500 - 12,500 ft/min)

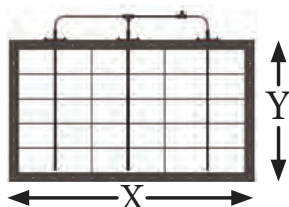
DSV CARBON STEEL - SPECS

SQUARE DUCTS: MOST APPLICATIONS



DUCT SECTION
SHOWN AS
TRANSPARENT
FOR CLARITY



DSV SPECIFICATIONS				
(X) Dimension	No. of Pitots	No. of Vertical Straightening Vanes	Flange Pattern*	 "X" longer side; "Y" shorter side
6" - 8"	1	0	Customizable	
10 - 22"	2	1	Customizable	
24" - 26"	2	1	Customizable	
28" - 36"	3	2	Customizable	
38" - 60"	4	3	Customizable	
62" - larger	5	4	Customizable	

*PLEASE NOTE THAT CUSTOMER SPECIFIED FLANGE PATTERNS ARE AVAILABLE UPON REQUEST

DSV - Stainless Steel

The Stainless Steel version of the DSV is a flanged duct section which contains both straightening vanes for profiling turbulent air, as well as an array of flow measurement pitots. The DSV offers the same accuracy as the VAP³® Pitot with the added benefit of extremely easy installation. This version of the DSV is specifically designed for installation within square or rectangular, Stainless Steel ducts and is equipped with an array of SFS Stainless Steel Pitots for a Differential Pressure flow measurement when coupled with any nearly any Transmitter.

RECTANGULAR DUCT



FEATURES AND BENEFITS

- Easy Bolt-in Installation for any Duct
- Integral Straightening Vanes help Reduce the effects of turbulent flow
- Perfect for High Heat Applications or Corrosive Environments
- Perfect for Clean air/Particulate-laden air
- Customizable Flange Pattern Options
- Works well with Eastern Instruments QVT Transmitter or any other brand of DP or Multivariable Transmitter

DESIGN SPECIFICATIONS

- Stainless Steel Spool Section
- Requires only 12" of duct run to install
- SS Pitots resist corrosion and heat
- Integral Pitot Array (2 or more pitots) with Multiple Sensing ports for complete duct traversal
- Pitots are tubed together and customer connections are made via a single manifold for simple, easy installation
- Customizable Flange Patterns, Materials of Construction and Pitot Material

System Requirements: "Clean" Air

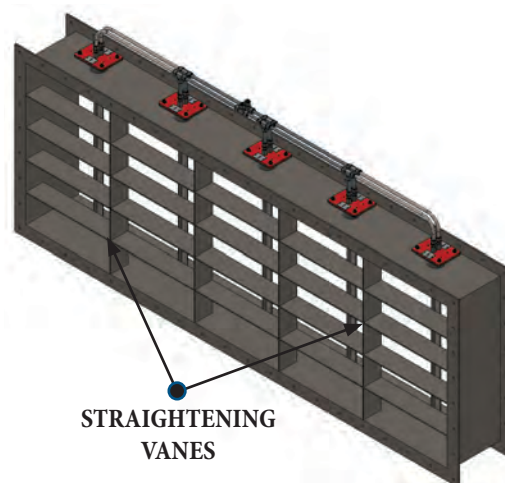
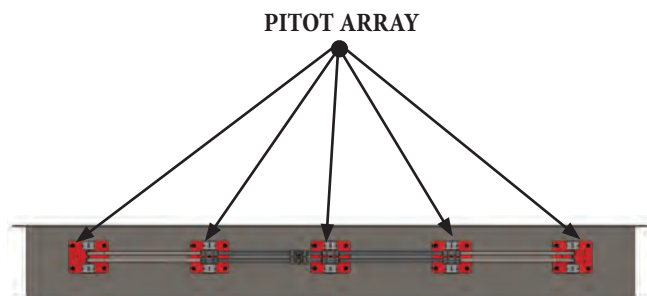
- **Duct Configuration:** Square/Rectangular
- **Duct Size:** Length/Width 6" or larger
- **MOC:** Stainless Steel
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 1500 F (-40 to 815 C)
- **Medium:** Clean Air or Gas
- **Velocity Clean Air:** (250 - 12,500 ft/min)

System Requirements: "Dirty" Air

- **Duct Configuration:** Square/Rectangular
- **Duct Size:** Length/Width 6" or larger
- **MOC:** Stainless Steel
- **Duct Pressure:** -7 to 7 PSI (-48 to 48 kPa)
- **Temperature:** -40 to 1500 F (-40 to 815 C)
- **Medium:** Particulate-Laden Air or Gas
- **Velocity Air:** (1,500 - 12,500 ft/min)

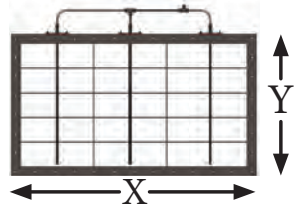
DSV STAINLESS STEEL - SPECS

SQUARE DUCTS: HIGH TEMPERATURE



DUCT SECTION
SHOWN AS
TRANSPARENT
FOR CLARITY



DSV SPECIFICATIONS				
(X) Dimension	No. of Pitots	No. of Vertical Straightening Vanes	Flange Pattern*	 "X" longer side; "Y" shorter side
6" - 8"	1	0	Customizable	
10 - 22"	2	1	Customizable	
24" - 26"	2	1	Customizable	
28" - 36"	3	2	Customizable	
38" - 60"	4	3	Customizable	
62" - larger	5	4	Customizable	

*PLEASE NOTE THAT CUSTOMER SPECIFIED FLANGE PATTERNS ARE AVAILABLE UPON REQUEST

Options

MATERIAL OF CONSTRUCTION

Pitots and Spool Section

Depending on the application, most of the DP Based flow measurement devices and/or spool sections found in this catalog can be constructed out of Aluminum, Carbon Steel, Stainless Steel (either 304 or 316), or PVC. If your ducts are constructed of another material or if your flows contain caustic materials that will react with these materials, other materials of construction may be available.

Coatings

A variety of coatings are also available for coating the spool sections of the various elements for increased corrosion resistance or increased heat tolerance.



Various Materials of Construction

AIRBORNE PARTICULATE

Line Mounted Purge

For heavily particulate-laden air streams a line mounted purge is available. The line mounted purge discharges a steady stream of clean, dry instrument air either through the impulse lines of the transmitter, or as positive pressure through the ports of the pitots in order to reduce the possibility of particulate or moisture disrupting the measurement devices' measurement accuracy.

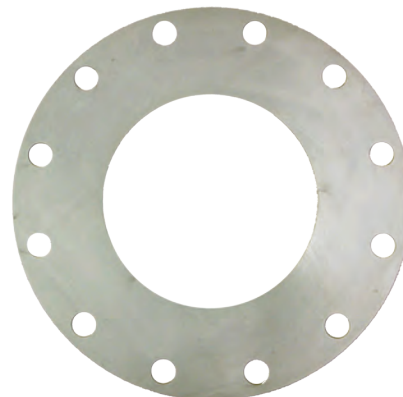


Line Mounted Purge Block

EASY INSTALLATION

Custom Flanges

The flanges that come standard with our round, spooled flow measurement devices such as the DSV or HBP are angle ring flanges with a standard angle ring hole pattern. Custom Flanges for any of the devices are available upon request. Please let us know the desired hole pattern and we will be happy to customize the flanges for easy installation into your process. For easy installation of electronics such as transmitters or temperature sensors, a variety of customizable mounts are also available.



Custom Flanges Available Upon Request

QVT Multivariable Transmitter



The QVT Multivariable Transmitter from Eastern Instruments is a Smart Transmitter that can be used for the accurate measurement of up to four separate process variables including Differential Pressure, Temperature and Absolute Pressure. When coupled with any DP based flow measurement element, the QVT will calculate the fully compensated mass flow of air/gas travelling through any process which is at or near atmospheric pressure (5 - 25 psia). The QVT is uniquely designed for high accuracy at ultra low DP ranges and can accurately measure differential pressures from 0.001 up to 10 in WC. This broad operating range is unique among multivariable transmitters and allows a single QVT transmitter to replace multiple transmitters when covering this large range. Another feature of the QVT is its unique process seal that requires no diaphragm seal. Diaphragm seals often cause inaccuracies in transmitter's sensor readings due to condensate.

FEATURES AND BENEFITS

- **Modes of Operation:** Multivariable Transmitter (Measurement of two or more of DP, Temperature and Absolute Pressure), DP Transmitter (DP Measurement only)
- **DP Measurement:** Operating Range is 10000:1 (0.0009 in WC to 9.0 in WC) measuring Differential Pressure across any primary flow element such as VAP Averaging Pitot or HBP Flow Conditioner
- **AP Measurement:** Measurement of Absolute Pressure (integral sensor tied to low port of primary flow element)
- **Temperature Measurement:** Measurement of Temperature via 100 ohm 3-Wire Class A DIN RTD
- **Process Seal:** Our unique method of isolating sensors from the process requires no diaphragm seal and can be further enhanced with a Purge Seal (Low Volume Continuous Purge coupled directly to transmitter)
- **Flow Accuracy:** The accuracy of the flow measurement can be as high as $\pm 0.50\%$ of Reading over 100:1 DP (10:1 flow) range
- **Rangeability:** the span of the 4-20 mA signal corresponding to DP can be ranged from 0 to 0.05 in WC up to 0 to 8 in WC (160:1)
- **Response Time:** Updates flow calculation 10 times a second
- **Functionality:** All measured and calculated variables are available on LCD panel
- **Output:** 4-20 mA Compensated flow output using measured/input values for Differential Pressure, Absolute Pressure and Temperature (Can also be a single variable output only)
- **Simplicity:** Ae and the 4-20 mA full scale value are set from LCD panel's push buttons
- **Zero:** Differential pressure can be zeroed from the LCD/push button interface
- **Power Supply:** Loop Power 8.8 - 42.5 vDC range
- **Versatility:** LCD can be rotated independently of the head (LCD rotates 270° and head can rotate 180°) for ultimate adjustability



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6,640,158; 6,814,108; 6,679,125. Other patents pending.

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