

VPP VELOPROBE AIR VELOCITY SENSOR

- Ideal for average air volume measurement
- Multiple differential pressure sensing points
- Averaging impact pressure measurement
- Averaging static pressure measurement
- Ultra low velocity detection
- Ideal for installation in existing duct work
- Made to measure from 100 mm to 1500 mm
- Length manufactured in 50 mm increments
- Adjustable airtight flanges with 'O' ring seals
- Easy field positioning and installation
- Veloprobe is made of Polypropylene (PP)
- 40 years in service worldwide



VPP Veloprobe velocity pressure sensor

The CMR Veloprobes have been designed to measure air volume in ventilation ducts. They work in conjunction with the CMR P-Sensor as it provides a linear output signal in m³/s, m³/h, l/s or m/s. This means, the combination Veloprobes and P-Sensor provide an accurate and repeatable air volume measurement from 25-100% of the controlled air volume.

In order to read a velocity pressure, the Veloprobes are mounted either horizontally or vertically in the duct, using mounting flanges. The Veloprobe can be installed in various configurations but preferably in a straight duct with relatively little air turbulence.

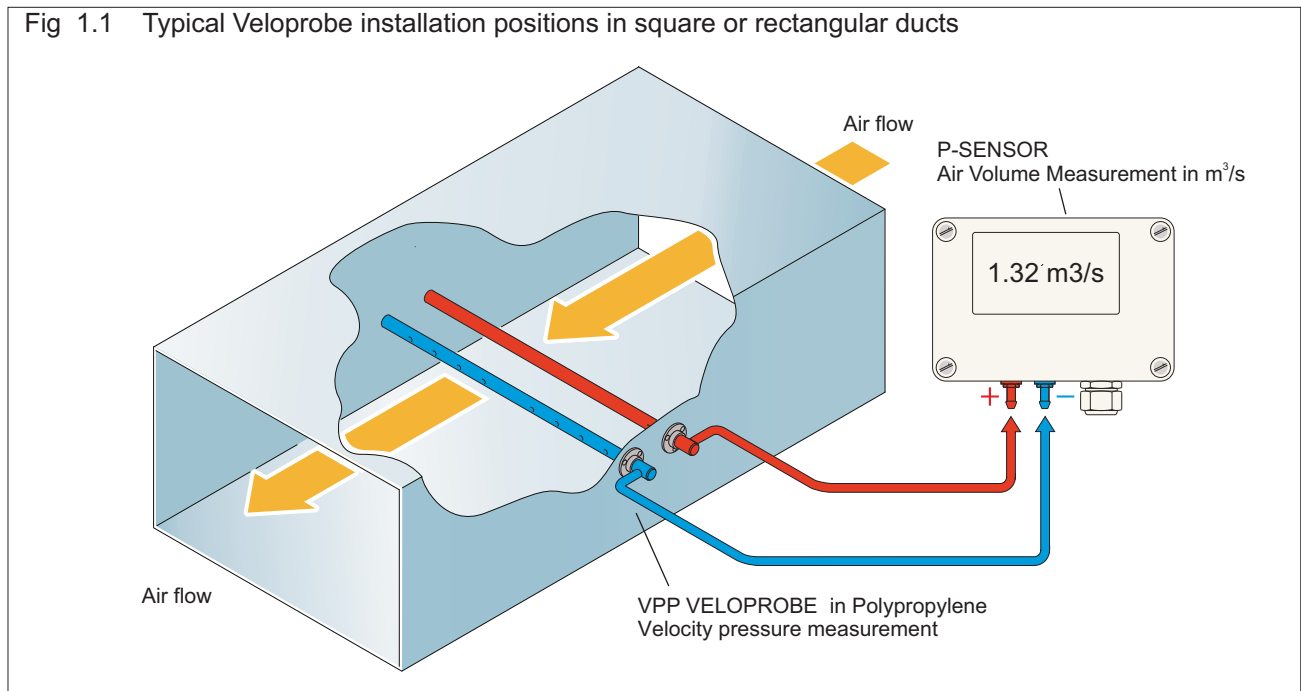
The installation is easy. Fit one Veloprobe facing (+) and one opposing (-) the airflow. The magnification factor, the duct height and width or diameter can be configured via the keyboard of the P-Sensor. Take a Pitot traverse reading and compare the actual volume with the displayed volume and simply re-adjust magnification factor on the P-Sensor to get the same results.

In many applications, the ducts are short and have many branches and elbows, which means, the Veloprobes have to be calibrated to suit the duct flow characteristic as follows. Adjust the fan airflow to a fixed volume, preferably to 50% of the desired maximum volume. Turn the impact Veloprobe (+ red tube) so that the outside tube nipple, which is in line with the measurement holes, faces the anticipated air flow direction in order to get the maximum impact pressure.

Turn the static pressure Veloprobe (- blue tube) 180° away from the airflow and take a Pitot traverse reading to measure the actual air volume. If there are differences between the P-Sensor display and the Pitot tube reading, re-adjust the magnification factor in the P-Sensor until it is equal. Check the air volume reading at 25%, 75% and at 100%.

If there are differences, the P-Sensor can also linearize the measurements.

Fig 1.1 Typical Veloprobe installation positions in square or rectangular ducts



VPP (PP) VELOPROBE SPECIFICATIONS

Selection of Veloprobes

It is essential to determine the air volume during the design stage. Normally there is a minimum and a maximum volume which has to be measured. The duct area should be calculated so that the velocity is approximately 2.5 m/s at the minimum volume and preferably 5 m/s at the operating point if possible. If the velocity is more than 5 m/s at the maximum volume then the noise level criteria needs to be considered of the whole installation. The maximum velocity should not exceed 9 m/s as the duct resistance shall increase and the overall energy consumption shall go up. Use selection table 1 on page 6.

Installation

The CMR Veloprobes are made in increments of 50 mm length, which means the correct length of Veloprobe can be ordered to suit the duct width or height. It is very important that the length is chosen correctly, so that it can be insulated and lagged to avoid thermal transfer and condensation on the outside of the duct in the plant room. Also, it guarantees that the measurement holes are in the correct duct area to produce the best results. The mounting flanges are adjustable with an allen key and a tolerance of +/- 50 mm adjustment can be done on site. A VPP-A-1000 is designed for a duct width of L=1000 mm - the overall length of the probe is L3 = 1100 mm. If the duct on site is 1040 mm then the flanges can be adjusted to L=1040 mm. The VPP Veloprobe can be installed horizontally or vertically but the tube connections should be on the side or on top. It works best if it has a reasonable length of duct so that the air flow is laminar when approaching the VPP Veloprobe. If a reasonable length is not available then the magnification factor (mf) can be adjusted on the P-Sensor and it can be linearized over 10 points for unusual measuring positions. This is easily achieved by measuring the air volume with a Pitot Tube at a different location of the duct and adjusting the P-Sensor via the keyboard accordingly.

Accuracy

The VPP Veloprobe can achieve an accuracy of 5% between 20 and 100% of the design volume if it is used with a P-Sensor and the linearisation function. If a higher accuracy is to be achieved over the whole range it is better to use multiple VPP Probes and an averaging manifold.

Maintenance

The VPP Veloprobe is maintenance free and when used in conjunction with the P-Sensor there is no air flow going through the Veloprobes and therefore no dust particles can enter the measuring holes as they are pressurised and any particles would be deflected from the Veloprobes.

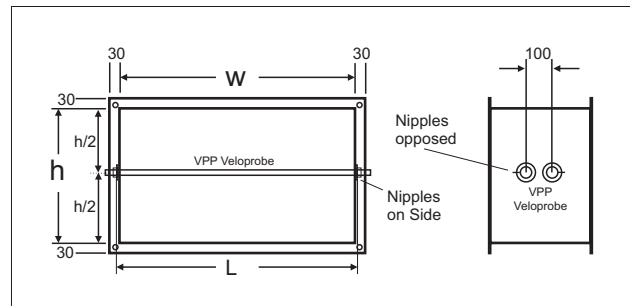
Materials

Veloprobes	- Polypropylene	25.0 mm Ø
Flanges	- Stainless Steel	57.0 mm Ø
Gasket	- Neoprene	
'O' Rings	- Neoprene	
Tube Nipples	- Stainless Steel	6.0 mm Ø
Mounting Screws	- Stainless Steel	Size 6

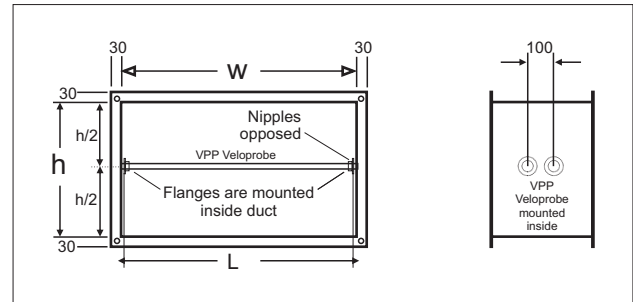
Specifications

Recommended minimum air velocity is	2.5 m/s
Recommended operating air velocity is	5.0 m/s
Recommended maximum air velocity is	9.0 m/s

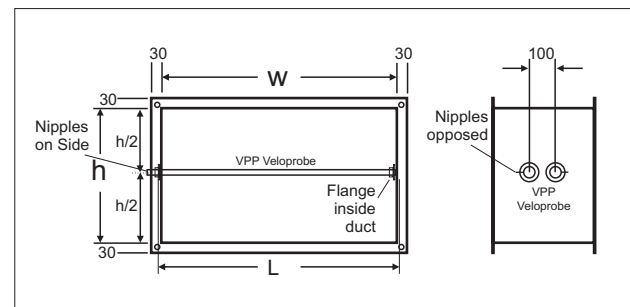
Humidity 10% to 90% non condensing.
 Operating Temperature (dry condition) -20 to 80°C
 Air density factor must be considered



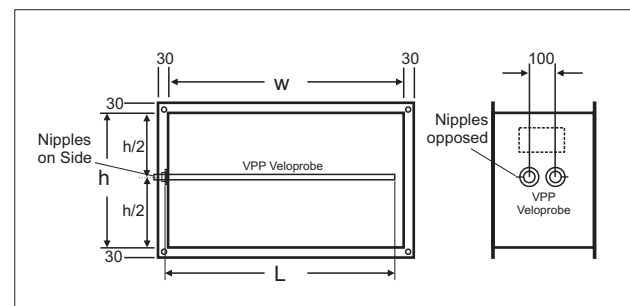
Type 'A' VPP Veloprobe across mounting dimensions



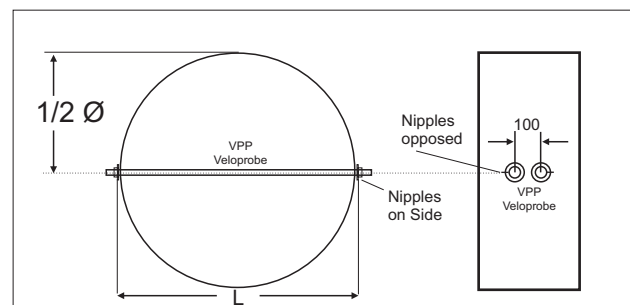
Type 'B' VPP Veloprobe inside/inside mounting dimensions



Type 'C' VPP Veloprobe inside/outside mounting dimensions



Type 'D' VPP Veloprobe single side mounting dimensions

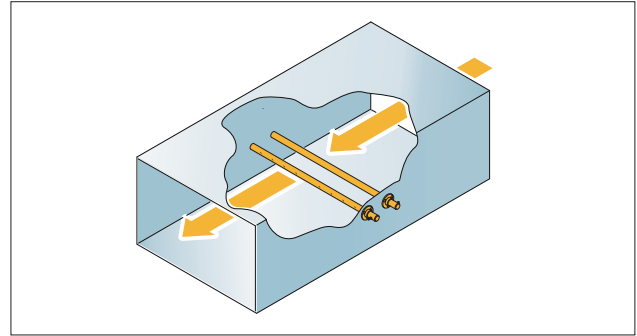


Type 'A' VPP Veloprobe round duct mounting dimensions

VPP (PP) VELOPROBE APPLICATIONS

The VPP Veloprobe is best installed in a straight duct with a minimum length before and after the Veloprobe.

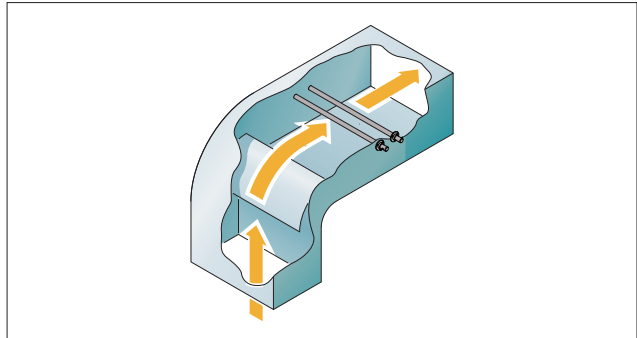
The Veloprobe does not work after a damper which moves. It can be installed vertically or horizontally but care must be taken that the tube connections are either on the side or at the top. Never at the bottom as condensation might block the measurement tubes.



VPP Veloprobe in a straight duct section

The VPP Veloprobe can be installed after an elbow as shown on the right.

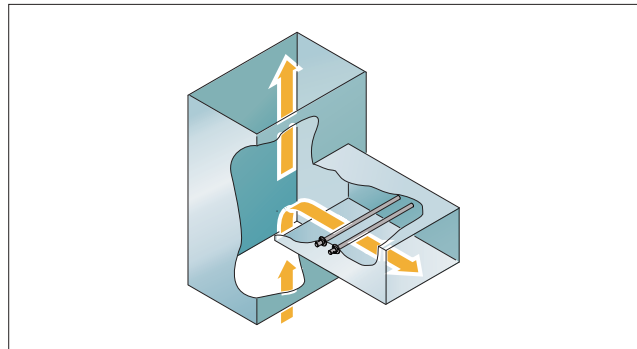
If it has to be installed within the elbow due to very short duct runs, then the Veloprobes can be turned in their flanges to face the air flow to get the maximum impact pressure. The static probe can then be adjusted to be opposed.



VPP Veloprobe after an elbow

The VPP Veloprobe can be installed after a T-Section shown on the right. Best is to move the probes further into the T so that is not at the beginning of the T.

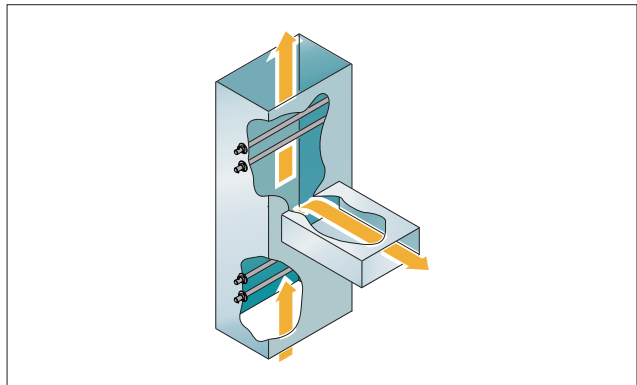
The Veloprobes can be turned in their flanges to face the air flow to get the maximum impact pressure. The static probe can then be adjusted to be opposed.



VPP Veloprobe after T- section

If the duct on the right cannot be fitted with a Veloprobe then the bottom Veloprobe measures the total volume and the top Veloprobe measures what is left over. The difference is the volume which passes through the duct on the right hand side.

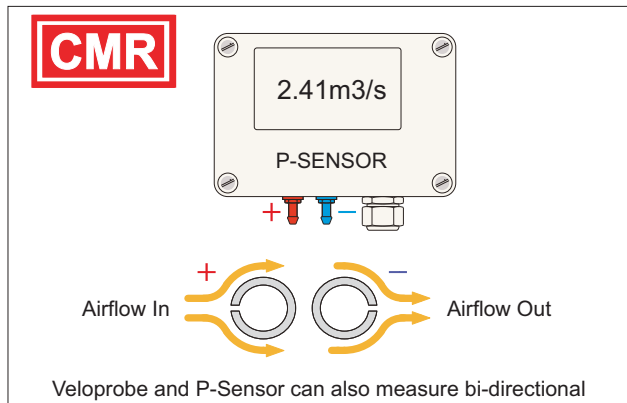
The Veloprobes can be turned in their flanges to face the air flow to get the maximum impact pressure. The static probe can then be adjusted to be opposed.



VPP Veloprobe before and after T- section

Send a drawing or hand sketch to CMR to provide a selection and full dimensional specification and a recommendation how to measure the air volume accurately.

VPP VELOPROBE VELOCITY PRESSURES



VPP Veloprobe and P-Sensor tube connections

The velocity pressure is measured by the Veloprobes mounted in the duct and the total impact pressure is measured on the positive (+red) and the static pressure is measured on the negative (- blue) Veloprobe. The P-Sensor shall be connected to the corresponding (+) and (-) port using CMR red and blue tube.

If the P-Sensor is ordered with the VPP Veloprobe then it is pre-adjusted at the factory - i.e. duct width and height, density and VPP Veloprobe magnification factor (mf) and the range is in l/s, m³/s, m³/h. It is ready for connection to the control or monitoring system.

If the P-Sensor was ordered separately and it was not factory adjusted then it is quite simple to adjust the parameters on site.

The P-Sensor has a keyboard and the duct height and width must be entered. The magnification factor of the VPP Veloprobe must be entered which is normally 2.00, if it is installed in a straight duct.

If the volume indicated on the P-Sensor display is deviating from the actual measurements, then the magnification factor can be adjusted to suit the installation abnormalities via the P-Sensor keyboard.

Adjust the fan to a constant volume – start with 50% of the minimum and maximum operating volume and take a pitot travers reading with an independent instrument. Once the average volume has been established and it is not the same as displayed on the P-Sensor, then adjust the magnification factor (mf) until the same display is achieved. For higher accuracy try this at 25%, 75% and 100% volume set point The P-Sensor has parameters to linearize the measurements for more precise applications.

Useful VPP Veloprobe scaling formula:

$$\text{velocity m/s} = \sqrt{\frac{2 \times (\Delta P \text{ in Pa} / \text{mag factor})}{1.2 \text{ Density}}}$$

Example:

$$2 \times (50 \text{ Pa on the VPP} / 2.0 \text{ mf}) = 50.0 / 1.2 = 41.666$$

$$\sqrt{41.666} = 6.454 \text{ m/s}$$

$$6.454 \text{ m/s} \times (\text{duct height 'h' x duct width 'w'}) = \dots \text{ m}^3/\text{s} \times 3600 = \text{m}^3/\text{h}$$

Conversion Table - Velocity in m/s at standard density to Velocity Pressure in Pa

m/s	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	0.00	0.01	0.02	0.05	0.10	0.15	0.22	0.29	0.38	0.49
1	0.60	0.73	0.86	1.01	1.18	1.35	1.54	1.73	1.94	2.17
2	2.40	2.65	2.90	3.17	3.46	3.75	4.06	4.37	4.70	5.05
3	5.40	5.77	6.14	6.53	6.94	7.35	7.78	8.21	8.66	9.13
4	9.60	10.09	10.58	11.09	11.62	12.15	12.70	13.25	13.82	14.41
5	15.00	15.61	16.22	16.85	17.50	18.15	18.82	19.49	20.18	20.89
6	21.60	22.33	23.06	23.81	24.58	25.35	26.14	26.93	27.74	28.57
7	29.40	30.25	31.10	31.97	32.86	33.75	34.66	35.57	36.50	37.45
8	38.40	39.37	40.34	41.33	42.34	43.35	44.38	45.41	46.46	47.53
9	48.60	49.69	50.78	51.89	53.02	54.15	55.30	56.45	57.62	58.81
10	60.00	61.21	62.43	63.65	64.90	66.15	67.42	68.69	69.98	71.29
11	72.60	73.93	75.26	76.61	77.98	79.35	80.74	82.13	83.54	84.97
12	86.40	87.85	89.30	90.77	92.26	93.75	95.26	96.77	98.30	99.85
13	101.40	102.97	104.54	106.23	107.74	109.35	110.98	112.61	114.26	115.93
14	117.60	119.29	120.98	122.69	124.42	126.15	127.90	129.65	131.42	133.21
15	135.00	136.81	138.62	140.45	142.30	144.15	146.02	147.89	149.78	151.69
16	153.60	155.53	157.46	159.41	161.38	163.35	165.34	167.33	169.34	171.36
17	173.40	175.45	177.50	179.57	181.66	183.75	185.86	187.97	190.10	192.25
18	194.40	196.57	198.74	200.93	203.14	205.35	207.58	209.81	212.06	214.33
19	216.60	218.89	221.18	223.49	225.82	228.15	230.50	232.85	235.22	237.61
20	240.00	242.41	244.82	247.25	249.70	252.15	254.62	257.09	259.58	262.09
21	264.60	267.13	269.66	272.21	274.78	277.35	279.94	282.53	285.14	287.77
22	290.40	293.05	295.70	298.37	301.06	303.75	306.46	309.17	311.90	314.65
23	317.40	320.17	322.94	325.73	328.54	331.35	334.18	337.01	339.86	342.73
24	345.60	348.49	351.38	354.29	357.22	360.15	363.10	366.05	369.02	372.01
25	375.00	378.01	381.02	384.05	387.10	390.15	393.22	396.29	399.38	402.49

To get the range of the P-Sensor use the keyboard and display the range. This is the sensor range in l/s, m³/s or m³/h at 10 V / 20 mA. Enter this range into your control system. No further calculations are necessary. If you want to use the table above, use the range of the transmitter in Pa and divide it by the (mf) of the VPP. Look up the velocity above. i.e. 100 Pa / 2.0 (mf) = 50.0 Pa.

Look up above ~ 50.0 Pa and read on side and top ~ 9.12 m/s then multiply with duct area in m² to get m³/s and multiply by 3600 to get m³/h.

VPP VELOPROBE AIR MEASUREMENT

GENERAL

The drawing shows a typical application for CMR Veloprobes.

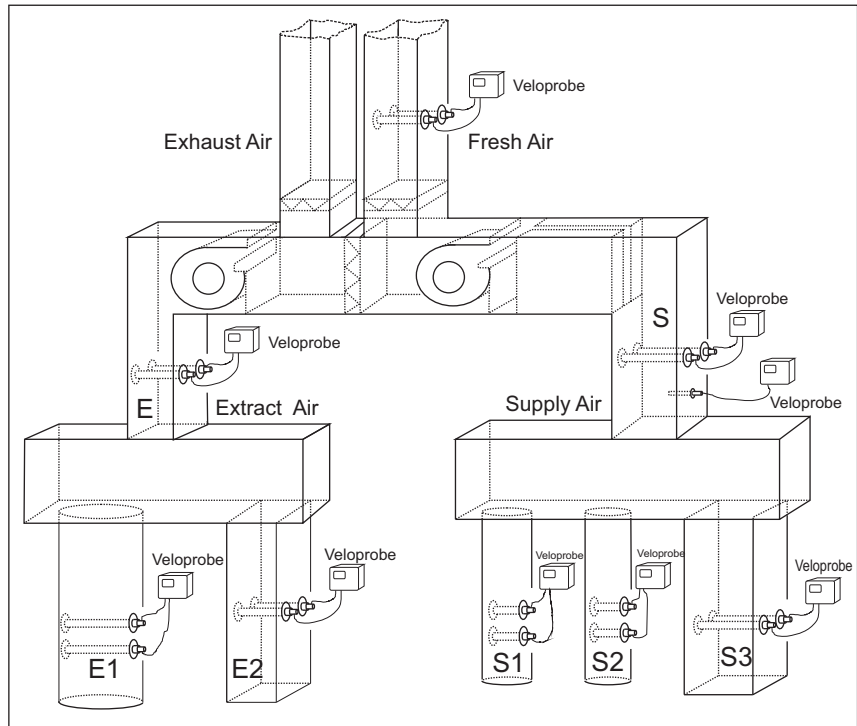
The supply air duct can either be fitted with one central Veloprobe or individual Veloprobes on each of its branches.

In many cases, the positions of the Veloprobes are very much dictated by the design of the building. The CMR Veloprobe can be fitted in almost any position in order to provide accurate measurements.

In a single supply and extract duct application, the Veloprobe measures the building's actual total supply and return volumes. As both Veloprobes are calibrated to provide a linear air volume, tracking of supply and extract air is now made easy.

The duct height, width or diameter, density and magnification(mf) or ('K' factors) can be entered in the P-Sensor via the keyboard very easily and only the measurement range for 0-10 V or 4-20 mA must be given to the BMS at final commissioning.

For multiple duct applications, the total supply and extract air volume is derived by adding all air volumes from the individual ducts.



Example of Volume adding: $S = E \pm \text{an offset for positive or negative building pressure}$
 $S1 + S2 + S3 = E1 + E2 \pm \text{offset or } S = E1 + E2 \pm \text{offset} - \text{etc}$

Veloprobe - scaling in m3/s - m3/h - l/s - ACR air change rate

Adjust the Impact Veloprobe (red +) to face the airflow and adjust the Static Veloprobe (blue -) to approx. 180° away from the airflow.

Use the keyboard and enter the duct height and width or enter the width of a round duct and adjust the height to '0'. Adjust the magnification factor (mf) to 2.000. Use the display and select m3/s, m3/h, l/s or ACR (Air Change Rate) and adjust the decimal places.

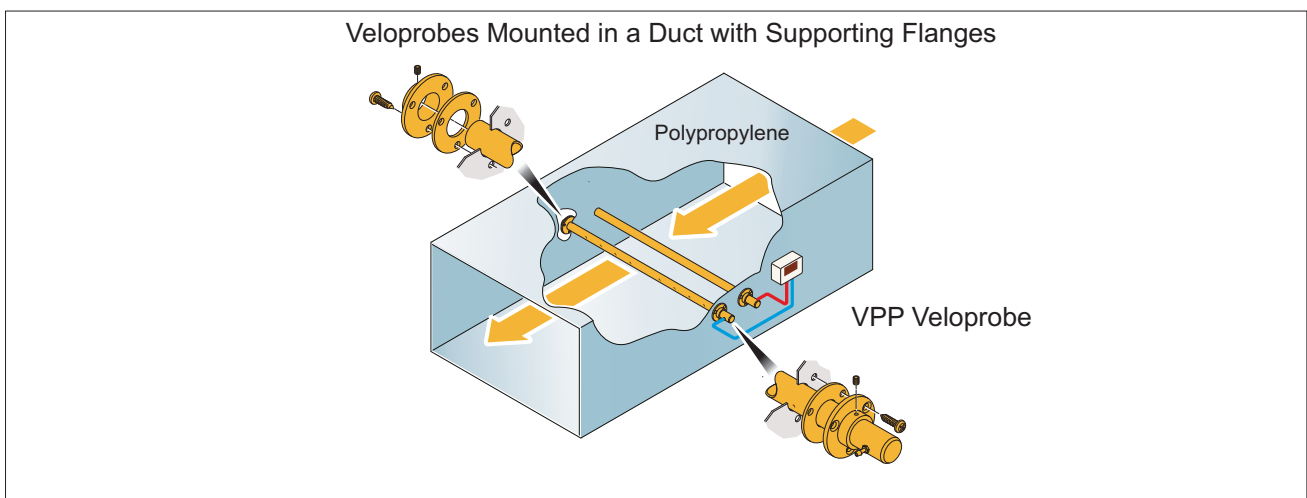
Take a Pitot Tube reading in the duct and if the volume is not equal to the display then adjust the magnification factor {mf} until it is equal.

P-Sensor - scaling in m/s only.

Adjust the Impact Veloprobe (red +) to face the airflow and adjust the Static Veloprobe (blue -) to approx. 180° away from the airflow.

The scaling of the duct height and width is done in the BMS. Use the keyboard and adjust the display to m/s. Adjust the height and width to 1 and adjust the (mf) to 2.000. If the range of the sensor is 50 Pa then it should display 9.128 m/s.

Take a Pitot Tube reading in the duct and if the velocity is not equal to the display then adjust the magnification factor until it is equal.



VPP SELECTION

Type A and B

Part Number	Description	Duct	Length	Probe	Weight
		Size 'L' mm	m	Diameter m	Kg
VPP-A-25-0500	Veloprobe PP Type A L = 0500mm	500	0.600	0.025	1.088
VPP-A-25-0550	Veloprobe PP Type A L = 0550mm	550	0.650	0.025	1.152
VPP-A-25-0600	Veloprobe PP Type A L = 0600mm	600	0.700	0.025	1.216
VPP-A-25-0650	Veloprobe PP Type A L = 0650mm	650	0.750	0.025	1.280
VPP-A-25-0700	Veloprobe PP Type A L = 0700mm	700	0.800	0.025	1.344
VPP-A-25-0750	Veloprobe PP Type A L = 0750mm	750	0.850	0.025	1.408
VPP-A-25-0800	Veloprobe PP Type A L = 0800mm	800	0.900	0.025	1.472
VPP-A-25-0850	Veloprobe PP Type A L = 0850mm	850	0.950	0.025	1.536
VPP-A-25-0900	Veloprobe PP Type A L = 0900mm	900	1.000	0.025	1.600
VPP-A-25-0950	Veloprobe PP Type A L = 0950mm	950	1.050	0.025	1.664
VPP-A-25-1000	Veloprobe PP Type A L = 1000mm	1000	1.100	0.025	1.728
VPP-A-25-1050	Veloprobe PP Type A L = 1050mm	1050	1.150	0.025	1.792
VPP-A-25-1100	Veloprobe PP Type A L = 1100mm	1100	1.200	0.025	1.856
VPP-A-25-1150	Veloprobe PP Type A L = 1150mm	1150	1.250	0.025	1.920
VPP-A-25-1200	Veloprobe PP Type A L = 1200mm	1200	1.300	0.025	1.984
VPP-A-25-1250	Veloprobe PP Type A L = 1250mm	1250	1.350	0.025	2.048
VPP-A-25-1300	Veloprobe PP Type A L = 1300mm	1300	1.400	0.025	2.112
VPP-A-25-1350	Veloprobe PP Type A L = 1350mm	1350	1.450	0.025	2.176
VPP-A-25-1400	Veloprobe PP Type A L = 1400mm	1400	1.500	0.025	2.240
VPP-A-25-1450	Veloprobe PP Type A L = 1450mm	1450	1.550	0.025	2.304
VPP-A-25-1500	Veloprobe PP Type A L = 1500mm	1500	1.600	0.025	2.368
VPP-B-25-0500	Veloprobe PP Type B L = 0500mm	500	0.500	0.025	0.960
VPP-B-25-0550	Veloprobe PP Type B L = 0550mm	550	0.550	0.025	1.024
VPP-B-25-0600	Veloprobe PP Type B L = 0600mm	600	0.600	0.025	1.088
VPP-B-25-0650	Veloprobe PP Type B L = 0650mm	650	0.650	0.025	1.152
VPP-B-25-0700	Veloprobe PP Type B L = 0700mm	700	0.700	0.025	1.216
VPP-B-25-0750	Veloprobe PP Type B L = 0750mm	750	0.750	0.025	1.280
VPP-B-25-0800	Veloprobe PP Type B L = 0800mm	800	0.800	0.025	1.344
VPP-B-25-0850	Veloprobe PP Type B L = 0850mm	850	0.850	0.025	1.408
VPP-B-25-0900	Veloprobe PP Type B L = 0900mm	900	0.900	0.025	1.472
VPP-B-25-0950	Veloprobe PP Type B L = 0950mm	950	0.950	0.025	1.536
VPP-B-25-1000	Veloprobe PP Type B L = 1000mm	1000	1.000	0.025	1.600
VPP-B-25-1050	Veloprobe PP Type B L = 1050mm	1050	1.050	0.025	1.664
VPP-B-25-1100	Veloprobe PP Type B L = 1100mm	1100	1.100	0.025	1.728
VPP-B-25-1150	Veloprobe PP Type B L = 1150mm	1150	1.150	0.025	1.792
VPP-B-25-1200	Veloprobe PP Type B L = 1200mm	1200	1.200	0.025	1.856
VPP-B-25-1250	Veloprobe PP Type B L = 1250mm	1250	1.250	0.025	1.920
VPP-B-25-1300	Veloprobe PP Type B L = 1300mm	1300	1.300	0.025	1.984
VPP-B-25-1350	Veloprobe PP Type B L = 1350mm	1350	1.350	0.025	2.048
VPP-B-25-1400	Veloprobe PP Type B L = 1400mm	1400	1.400	0.025	2.112
VPP-B-25-1450	Veloprobe PP Type B L = 1450mm	1450	1.450	0.025	2.176
VPP-B-25-1500	Veloprobe PP Type B L = 1500mm	1500	1.500	0.025	2.240

VPP SELECTION

Type C and D

Part Number	Description	Duct	Length	Probe	Weight
		Size 'L'		Diameter	
		mm	m	m	Kg
VPP-C-25-0500	Veloprobe PP Type C L = 0500mm	500	0.550	0.025	1.024
VPP-C-25-0550	Veloprobe PP Type C L = 0550mm	550	0.600	0.025	1.088
VPP-C-25-0600	Veloprobe PP Type C L = 0600mm	600	0.650	0.025	1.152
VPP-C-25-0650	Veloprobe PP Type C L = 0650mm	650	0.700	0.025	1.216
VPP-C-25-0700	Veloprobe PP Type C L = 0700mm	700	0.750	0.025	1.280
VPP-C-25-0750	Veloprobe PP Type C L = 0750mm	750	0.800	0.025	1.344
VPP-C-25-0800	Veloprobe PP Type C L = 0800mm	800	0.850	0.025	1.408
VPP-C-25-0850	Veloprobe PP Type C L = 0850mm	850	0.900	0.025	1.472
VPP-C-25-0900	Veloprobe PP Type C L = 0900mm	900	0.950	0.025	1.536
VPP-C-25-0950	Veloprobe PP Type C L = 0950mm	950	1.000	0.025	1.600
VPP-C-25-1000	Veloprobe PP Type C L = 1000mm	1000	1.050	0.025	1.664
VPP-C-25-1050	Veloprobe PP Type C L = 1050mm	1050	1.100	0.025	1.728
VPP-C-25-1100	Veloprobe PP Type C L = 1100mm	1100	1.150	0.025	1.792
VPP-C-25-1150	Veloprobe PP Type C L = 1150mm	1150	1.200	0.025	1.856
VPP-C-25-1200	Veloprobe PP Type C L = 1200mm	1200	1.250	0.025	1.920
VPP-C-25-1250	Veloprobe PP Type C L = 1250mm	1250	1.300	0.025	1.984
VPP-C-25-1300	Veloprobe PP Type C L = 1300mm	1300	1.350	0.025	2.048
VPP-C-25-1350	Veloprobe PP Type C L = 1350mm	1350	1.400	0.025	2.112
VPP-C-25-1400	Veloprobe PP Type C L = 1400mm	1400	1.450	0.025	2.176
VPP-C-25-1450	Veloprobe PP Type C L = 1450mm	1450	1.500	0.025	2.240
VPP-C-25-1500	Veloprobe PP Type C L = 1500mm	1500	1.550	0.025	2.304
VPP-D-25-0200	Veloprobe PP Type D L = 0200mm	200	0.250	0.025	0.480
VPP-D-25-0250	Veloprobe PP Type D L = 0250mm	250	0.300	0.025	0.544
VPP-D-25-0300	Veloprobe PP Type D L = 0250mm	300	0.350	0.025	0.608
VPP-D-25-0350	Veloprobe PP Type D L = 0350mm	350	0.400	0.025	0.672
VPP-D-25-0400	Veloprobe PP Type D L = 0400mm	400	0.450	0.025	0.736
VPP-D-25-0450	Veloprobe PP Type D L = 0450mm	450	0.500	0.025	0.800

VPP SELECTION

Type C and D

Part Number	Description	Duct Size	Overall Length	O/D	Weight
		L	L3		
		mm	m	m	kg
VPS-C-25-0500	Veloprobe SS Type C L = 0500mm	500	0.550	0.025	1.024
VPS-C-25-0550	Veloprobe SS Type C L = 0550mm	550	0.600	0.025	1.088
VPS-C-25-0600	Veloprobe SS Type C L = 0600mm	600	0.650	0.025	1.152
VPS-C-25-0650	Veloprobe SS Type C L = 0650mm	650	0.700	0.025	1.216
VPS-C-25-0700	Veloprobe SS Type C L = 0700mm	700	0.750	0.025	1.280
VPS-C-25-0750	Veloprobe SS Type C L = 0750mm	750	0.800	0.025	1.344
VPS-C-25-0800	Veloprobe SS Type C L = 0800mm	800	0.850	0.025	1.408
VPS-C-25-0850	Veloprobe SS Type C L = 0850mm	850	0.900	0.025	1.472
VPS-C-25-0900	Veloprobe SS Type C L = 0900mm	900	0.950	0.025	1.536
VPS-C-25-0950	Veloprobe SS Type C L = 0950mm	950	1.000	0.025	1.600
VPS-C-25-1000	Veloprobe SS Type C L = 1000mm	1000	1.050	0.025	1.664
VPS-C-25-1050	Veloprobe SS Type C L = 1050mm	1050	1.100	0.025	1.728
VPS-C-25-1100	Veloprobe SS Type C L = 1100mm	1100	1.150	0.025	1.792
VPS-C-25-1150	Veloprobe SS Type C L = 1150mm	1150	1.200	0.025	1.856
VPS-C-25-1200	Veloprobe SS Type C L = 1200mm	1200	1.250	0.025	1.920
VPS-C-25-1250	Veloprobe SS Type C L = 1250mm	1250	1.300	0.025	1.984
VPS-C-25-1300	Veloprobe SS Type C L = 1300mm	1300	1.350	0.025	2.048
VPS-C-25-1350	Veloprobe SS Type C L = 1350mm	1350	1.400	0.025	2.112
VPS-C-25-1400	Veloprobe SS Type C L = 1400mm	1400	1.450	0.025	2.176
VPS-C-25-1450	Veloprobe SS Type C L = 1450mm	1450	1.500	0.025	2.240
VPS-C-25-1500	Veloprobe SS Type C L = 1500mm	1500	1.550	0.025	2.304
VPS-C-25-1550	Veloprobe SS Type C L = 1550mm	1550	1.600	0.025	2.368
VPS-C-25-1600	Veloprobe SS Type C L = 1600mm	1600	1.650	0.025	2.432
VPS-C-25-1650	Veloprobe SS Type C L = 1650mm	1650	1.700	0.025	2.496
VPS-C-25-1700	Veloprobe SS Type C L = 1700mm	1700	1.750	0.025	2.560
VPS-C-25-1750	Veloprobe SS Type C L = 1750mm	1750	1.800	0.025	2.624
VPS-C-25-1800	Veloprobe SS Type C L = 1800mm	1800	1.850	0.025	2.688
VPS-C-25-1850	Veloprobe SS Type C L = 1850mm	1850	1.900	0.025	2.752
VPS-C-25-1900	Veloprobe SS Type C L = 1900mm	1900	1.950	0.025	2.816
VPS-C-25-1950	Veloprobe SS Type C L = 1950mm	1950	2.000	0.025	2.880
VPS-C-25-2000	Veloprobe SS Type C L = 2000mm	2000	2.050	0.025	2.944
VPS-C-25-2050	Veloprobe SS Type C L = 2050mm	2050	2.100	0.025	3.008
VPS-C-25-2100	Veloprobe SS Type C L = 2100mm	2100	2.150	0.025	3.072
VPS-C-25-2150	Veloprobe SS Type C L = 2150mm	2150	2.200	0.025	3.136
VPS-C-25-2200	Veloprobe SS Type C L = 2200mm	2200	2.250	0.025	3.200
VPS-C-25-2250	Veloprobe SS Type C L = 2250mm	2250	2.300	0.025	3.264
VPS-C-25-2300	Veloprobe SS Type C L = 2300mm	2300	2.350	0.025	3.328
VPS-C-25-2350	Veloprobe SS Type C L = 2350mm	2350	2.400	0.025	3.392
VPS-C-25-2400	Veloprobe SS Type C L = 2400mm	2400	2.450	0.025	3.456
VPS-C-25-2450	Veloprobe SS Type C L = 2450mm	2450	2.500	0.025	3.520
VPS-C-25-2500	Veloprobe SS Type C L = 2500mm	2500	2.550	0.025	3.584
VPS-C-25-2550	Veloprobe SS Type C L = 2550mm	2550	2.600	0.025	3.648
VPS-C-25-2600	Veloprobe SS Type C L = 2600mm	2600	2.650	0.025	3.712
VPS-C-25-2650	Veloprobe SS Type C L = 2650mm	2650	2.700	0.025	3.776
VPS-C-25-2700	Veloprobe SS Type C L = 2700mm	2700	2.750	0.025	3.840
VPS-C-25-2750	Veloprobe SS Type C L = 2750mm	2750	2.800	0.025	3.904
VPS-C-25-2800	Veloprobe SS Type C L = 2800mm	2800	2.850	0.025	3.968
VPS-C-25-2850	Veloprobe SS Type C L = 2850mm	2850	2.900	0.025	4.032
VPS-C-25-2900	Veloprobe SS Type C L = 2900mm	2900	2.950	0.025	4.096
VPS-D-25-0200	Veloprobe SS Type D L = 0200mm	200	0.250	0.025	0.480
VPS-D-25-0250	Veloprobe SS Type D L = 0250mm	250	0.300	0.025	0.544
VPS-D-25-0300	Veloprobe SS Type D L = 0300mm	300	0.350	0.025	0.608
VPS-D-25-0350	Veloprobe SS Type D L = 0350mm	350	0.400	0.025	0.672
VPS-D-25-0400	Veloprobe SS Type D L = 0400mm	400	0.450	0.025	0.736
VPS-D-25-0450	Veloprobe SS Type D L = 0450mm	450	0.500	0.025	0.800

