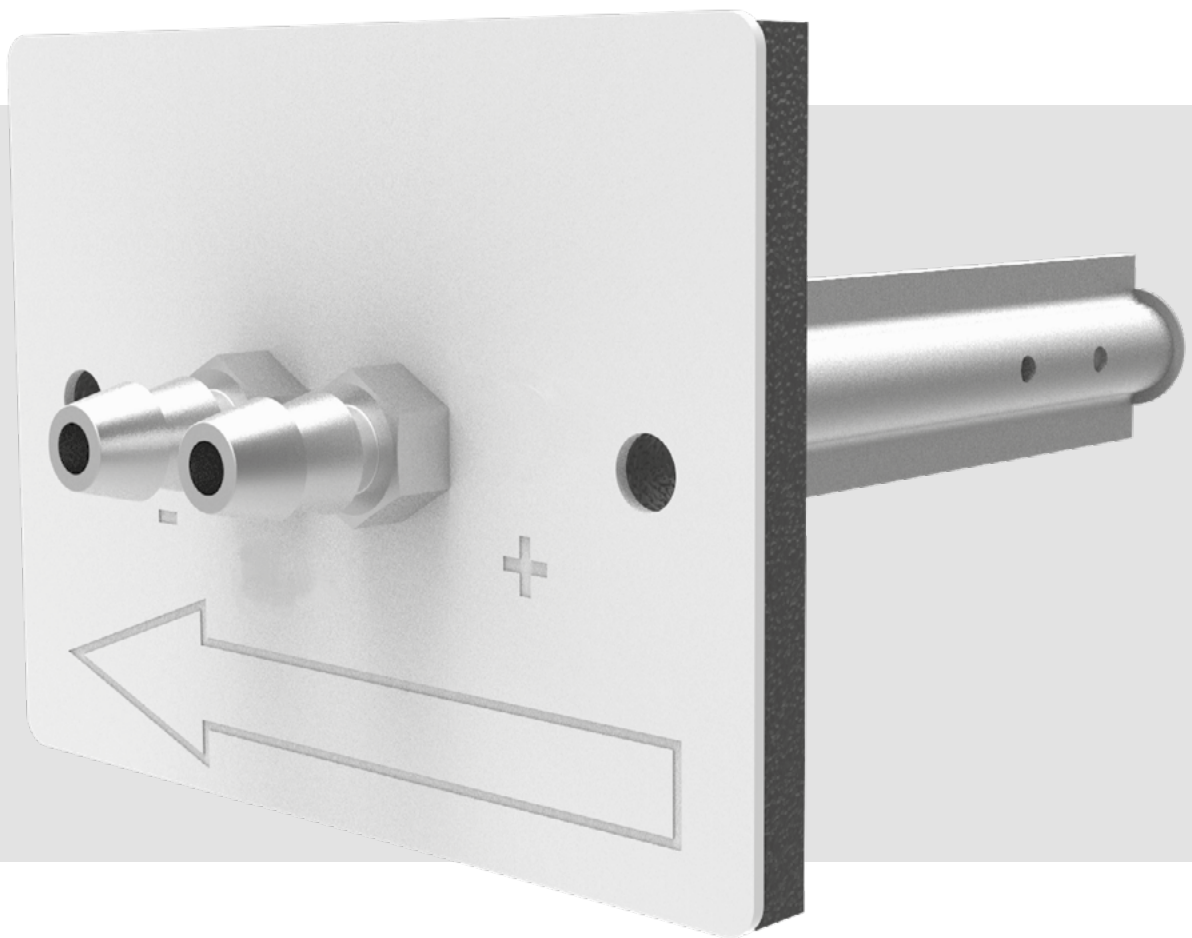


INSTALLATION INSTRUCTION

ZVP/MVP



Probe and duct air flow measurement module

PURPOSE

The probes are designed to measure air flow in air ducts. Operating on the pitot tube principle, the probes measure the total and static pressure values, which allows calculating air flow.



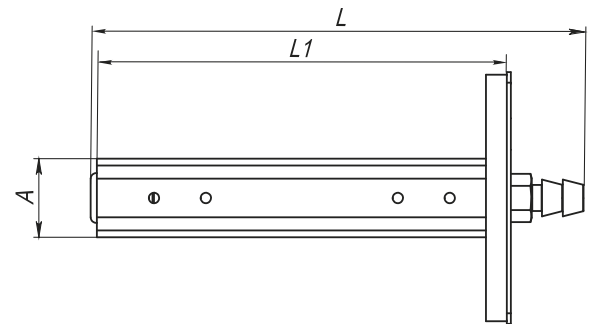
THE UNIT SHOULD NOT BE OPERATED BY CHILDREN OR PERSONS WITH REDUCED PHYSICAL, MENTAL, OR SENSORY CAPACITIES, OR THOSE WITHOUT THE APPROPRIATE TRAINING.

THE UNIT MUST BE INSTALLED AND CONNECTED ONLY BY PROPERLY QUALIFIED PERSONNEL AFTER THE APPROPRIATE BRIEFING.

THE CHOICE OF UNIT INSTALLATION LOCATION MUST PREVENT UNAUTHORISED ACCESS BY UNATTENDED CHILDREN.

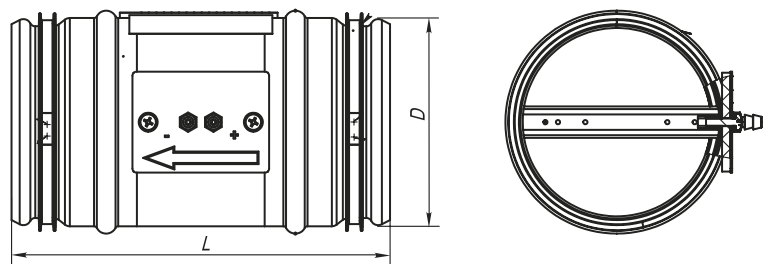
OVERALL DIMENSIONS

Model	Dimensions [mm]			Weight [kg]
	A	L	L1	
ZVP 80	15	95	79	0,043
ZVP 100		115	99	0,049
ZVP 125		140	124	0,057
ZVP 150		165	149	0,065
ZVP 160		175	159	0,068
ZVP 200		215	199	0,081
ZVP 250		265	249	0,26
ZVP 315	25	330	314	0,36
ZVP 355		379	355	0,14
ZVP 400		424	400	0,16
ZVP 450		474	450	0,18
ZVP 500		524	500	0,19
ZVP 560		584	560	0,2
ZVP 630		654	630	0,24

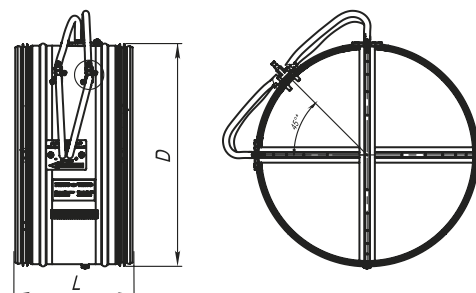


ZVP

Model	Dimensions [mm]		Weight [kg]
	D	L	
MVP 100	99	180	0,45
MVP 125	124	180	0,56
MVP 150	149	180	0,67
MVP 200	199	180	0,88
MVP 250	249	180	1,27
MVP 315	314	180	1,6
MVP 355	354	190	2,55
MVP 400	399	190	3,08
MVP 500	449	190	3,16
MVP 560	499	190	3,5
MVP 630	559	190	3,92
MBП 630	629	190	4,41

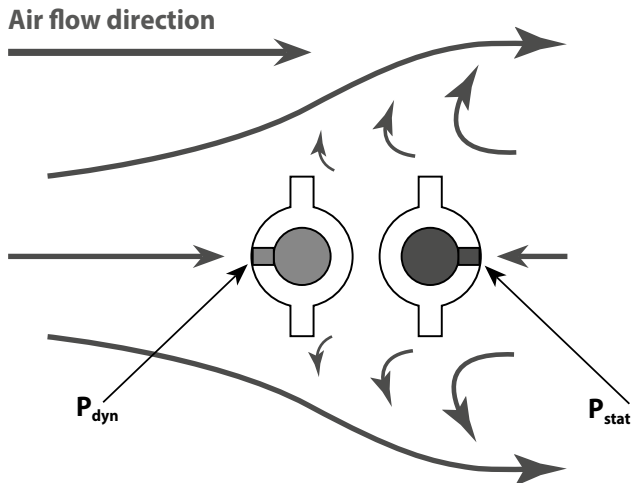


MVP 100-315



MVP 355-630

DESIGN AND OPERATING PRINCIPLE



ZVP probes operate on the pitot tube principle.

The total pressure P is measured on one surface of the probe; the static pressure P_{stat} is measured on the opposite side of the probe. The difference between these pressures is velocity pressure P_{dyn} , which is expressed by the following formula:

$$P_{dyn} = \frac{1}{2} \times \rho \times v^2 \text{ where}$$

P_{dyn} = velocity pressure in Pa

ρ = density of the gas (air) in kg/m^3

V = velocity in m/s

Air volume can be determined with this formula:

$$Q = KV \times \sqrt{dP} \text{ where}$$

Q – air volume in l/s

KV – KV value

dP – pressure difference measured by the ZVP probe in Pa

Determining duct air flow

Model	ZVP 100	ZVP 125	ZVP 150	ZVP 160	ZVP 200	ZVP 250	ZVP 315	ZVP 355	ZVP 400	ZVP 450	ZVP 500	ZVP 560	ZVP 630
Kv	5,14	8,94	13,07	18,5	24,1	36,49	61,7	81,88	98,22	130,32	174,93	198,38	274,6
S, m²	0,0074	0,0117	0,017	0,0194	0,0305	0,048	0,0766	0,097	0,1237	0,1566	0,1939	0,2433	0,3076
dP, Pa	Air flow [m³/h]												
1	19	32	47	67	87	131	222	295	354	469	630	714	989
2	26	46	67	94	123	186	314	417	500	663	891	1010	1398
3	32	56	81	115	150	228	385	511	612	813	1091	1237	1712
4	37	64	94	133	174	263	444	590	707	938	1259	1428	1977
5	41	72	105	149	194	294	497	659	791	1049	1408	1597	2210
6	45	79	115	163	213	322	544	722	866	1149	1543	1749	2421
7	49	85	124	176	230	348	588	780	936	1241	1666	1890	2615
8	52	91	133	188	245	372	628	834	1000	1327	1781	2020	2796
9	56	97	141	200	260	394	666	884	1061	1407	1889	2143	2966
10	59	102	149	211	274	415	702	932	1118	1484	1991	2258	3126
12	64	111	163	231	301	455	769	1021	1225	1625	2182	2474	3424
14	69	120	176	249	325	492	831	1103	1323	1755	2356	2672	3699
16	74	129	188	266	347	525	888	1179	1414	1877	2519	2857	3954
18	79	137	200	283	368	557	942	1251	1500	1990	2672	3030	4194
20	83	144	210	298	388	587	1001	1318	1581	2098	2816	3194	4421
25	93	161	235	333	434	657	1111	1474	1768	2346	3149	3571	4943
30	101	176	258	365	475	720	1217	1615	1937	2570	3449	3912	5415
35	109	190	278	394	513	777	1314	1744	2092	2776	3726	4225	5848
40	117	204	298	421	549	831	1405	1864	2236	2967	3983	4517	6252
45	124	216	316	447	582	881	1490	1977	2372	3147	4224	4791	6631
50	131	228	333	471	613	929	1571	2084	2500	3317	4453	5050	6990
60	143	249	364	516	672	1018	1721	2283	2739	3634	4878	5532	7657
70	155	269	394	557	726	1099	1858	2466	2958	3925	5269	5975	8271
80	166	288	421	596	776	1175	1987	2636	3163	4196	5633	6388	8842
90	176	305	446	632	823	1246	2107	2796	3354	4451	5974	6775	9378
100	185	322	471	666	868	1314	2221	2948	3536	4692	6297	7142	9886
125	207	360	526	745	970	1469	2483	3296	3953	5245	7041	7985	11052
150	227	394	576	816	1063	1609	2720	3610	4331	5746	7713	8747	12107
175	245	426	622	881	1148	1738	2938	3899	4678	6206	8331	9448	13077
200	262	455	665	942	1227	1858	3141	4169	5000	6635	8906	10100	13980
225	278	483	706	999	1301	1970	3332	4422	5304	7037	9446	10713	14828
250	293	509	744	1053	1372	2077	3512	4661	5591	7418	9957	11292	15631
275	307	534	780	1104	1439	2178	3683	4888	5864	7780	10443	11843	16393
300	320	557	815	1154	1503	2275	3847	5106	6124	8126	10908	12370	17122

Determining air velocity inside the air duct

Model	ZVP 100	ZVP 125	ZVP 150	ZVP 160	ZVP 200	ZVP 250	ZVP 315	ZVP 355	ZVP 400	ZVP 450	ZVP 500	ZVP 560	ZVP 630
Kv	5,14	8,94	13,07	18,5	24,1	36,49	61,7	81,88	98,22	130,32	174,93	198,38	274,6
S, m²	0,0074	0,0117	0,017	0,0194	0,0305	0,048	0,0766	0,097	0,1237	0,1566	0,1939	0,2433	0,3076
dP, Pa	Velocity [m/s]												
1	0.69	0.76	0.77	0.95	0.79	0.76	0.81	0.84	0.79	0.83	0.90	0.82	0.89
2	0.98	1.08	1.09	1.35	1.12	1.08	1.14	1.19	1.12	1.18	1.28	1.15	1.26
3	1.20	1.32	1.33	1.65	1.37	1.32	1.40	1.46	1.38	1.44	1.56	1.41	1.55
4	1.39	1.53	1.54	1.91	1.58	1.52	1.61	1.69	1.59	1.66	1.80	1.63	1.79
5	1.55	1.71	1.72	2.13	1.77	1.70	1.80	1.89	1.78	1.86	2.02	1.82	2.00
6	1.70	1.87	1.88	2.34	1.94	1.86	1.97	2.07	1.94	2.04	2.21	2.00	2.19
7	1.84	2.02	2.03	2.52	2.09	2.01	2.13	2.23	2.10	2.20	2.39	2.16	2.36
8	1.96	2.16	2.17	2.70	2.23	2.15	2.28	2.39	2.25	2.35	2.55	2.31	2.52
9	2.08	2.29	2.31	2.86	2.37	2.28	2.42	2.53	2.38	2.50	2.71	2.45	2.68
10	2.20	2.42	2.43	3.02	2.50	2.40	2.55	2.67	2.51	2.63	2.85	2.58	2.82
12	2.41	2.65	2.66	3.30	2.74	2.63	2.79	2.92	2.75	2.88	3.13	2.82	3.09
14	2.60	2.86	2.88	3.57	2.96	2.84	3.01	3.16	2.97	3.11	3.38	3.05	3.34
16	2.78	3.06	3.08	3.81	3.16	3.04	3.22	3.38	3.18	3.33	3.61	3.26	3.57
18	2.95	3.24	3.26	4.05	3.35	3.23	3.42	3.58	3.37	3.53	3.83	3.46	3.79
20	3.11	3.42	3.44	4.26	3.53	3.40	3.60	3.78	3.55	3.72	4.03	3.65	3.99
25	3.47	3.82	3.84	4.77	3.95	3.80	4.03	4.22	3.97	4.16	4.51	4.08	4.46
30	3.80	4.19	4.21	5.22	4.33	4.16	4.41	4.62	4.35	4.56	4.94	4.47	4.89
35	4.11	4.52	4.55	5.64	4.67	4.50	4.77	4.99	4.70	4.92	5.34	4.82	5.28
40	4.39	4.83	4.86	6.03	5.00	4.81	5.09	5.34	5.02	5.26	5.71	5.16	5.65
45	4.66	5.13	5.16	6.40	5.30	5.10	5.40	5.66	5.33	5.58	6.05	5.47	5.99
50	4.91	5.40	5.44	6.74	5.59	5.38	5.70	5.97	5.61	5.88	6.38	5.77	6.31
60	5.38	5.92	5.96	7.39	6.12	5.89	6.24	6.54	6.15	6.45	6.99	6.32	6.91
70	5.81	6.39	6.43	7.98	6.61	6.36	6.74	7.06	6.64	6.96	7.55	6.82	7.47
80	6.21	6.83	6.88	8.53	7.07	6.80	7.20	7.55	7.10	7.44	8.07	7.29	7.98
90	6.59	7.25	7.29	9.05	7.50	7.21	7.64	8.01	7.53	7.89	8.56	7.74	8.47
100	6.95	7.64	7.69	9.54	7.90	7.60	8.05	8.44	7.94	8.32	9.02	8.15	8.93
125	7.77	8.54	8.60	10.66	8.83	8.50	9.01	9.44	8.88	9.30	10.09	9.12	9.98
150	8.51	9.36	9.42	11.68	9.68	9.31	9.87	10.34	9.72	10.19	11.05	9.99	10.93
175	9.19	10.11	10.17	12.62	10.45	10.06	10.66	11.17	10.50	11.01	11.93	10.79	11.81
200	9.82	10.81	10.87	13.49	11.17	10.75	11.39	11.94	11.23	11.77	12.76	11.53	12.62
225	10.42	11.46	11.53	14.30	11.85	11.40	12.08	12.66	11.91	12.48	13.53	12.23	13.39
250	10.98	12.08	12.16	15.08	12.49	12.02	12.74	13.35	12.55	13.16	14.26	12.89	14.12
275	11.52	12.67	12.75	15.81	13.10	12.61	13.36	14.00	13.17	13.80	14.96	13.52	14.80
300	12.03	13.23	13.32	16.52	13.69	13.17	13.95	14.62	13.75	14.41	15.63	14.12	15.46

INSTALLATION

ZVP

Make sure the size of the probe matches the duct in which it will be installed.

Drill a hole in the duct of the appropriate diameter (ZVP 80...200 – 21 mm/ZVP 250...630 – 30 mm).

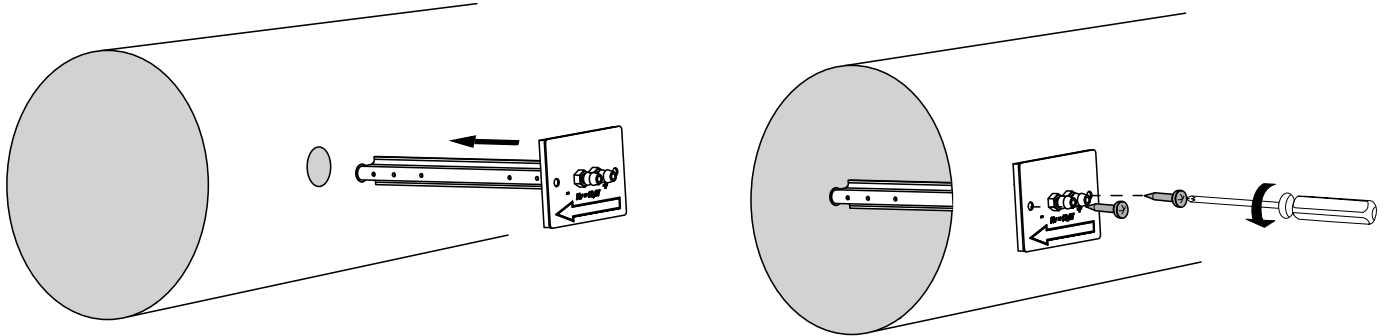
Install the probe into the duct.

The direction of air flow in the duct must correspond to the direction indicated on the probe.

Fasten the probe with two self-tapping screws.

Connect the tubes from the inlet ports to the inlet port in the pressure transmitter.

Connect the positive tube to the positive input and the negative tube to the negative output.



MVP

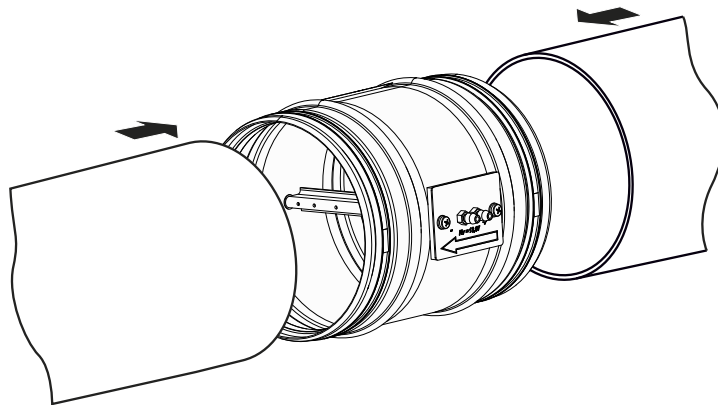
The MVP modules are mounted in the gap of round ducts and do not require special fastening.

Connect the air ducts of the corresponding diameter to the MVP module.

The direction of air flow in the duct must correspond to the direction indicated on the probe.

Connect the tubes from the inlet ports to the inlet port in the pressure transmitter.

Connect the positive tube to the positive input and the negative tube to the negative output.





VENTS

