

2.1.1 FLOXACT-R

Air velocity sensor for
round air ducts



Application

The FloXact™ Stick is used for air velocity measurements in air ducts. Depending on the model, an average velocity is determined over a minimum of 2x6 measuring points. The unique shape of the measuring profile amplifies the measuring signal by at least 2.5x, enabling accurate measurements from 1.0 m/s air velocity.

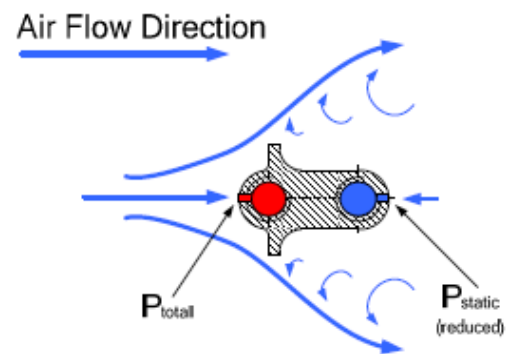
The FloXact-R is available in 14 standard sizes from ø100 to ø1500, but other diameters are also available on request. The FloXact-R is available in lengths up to 1500 mm.

Features

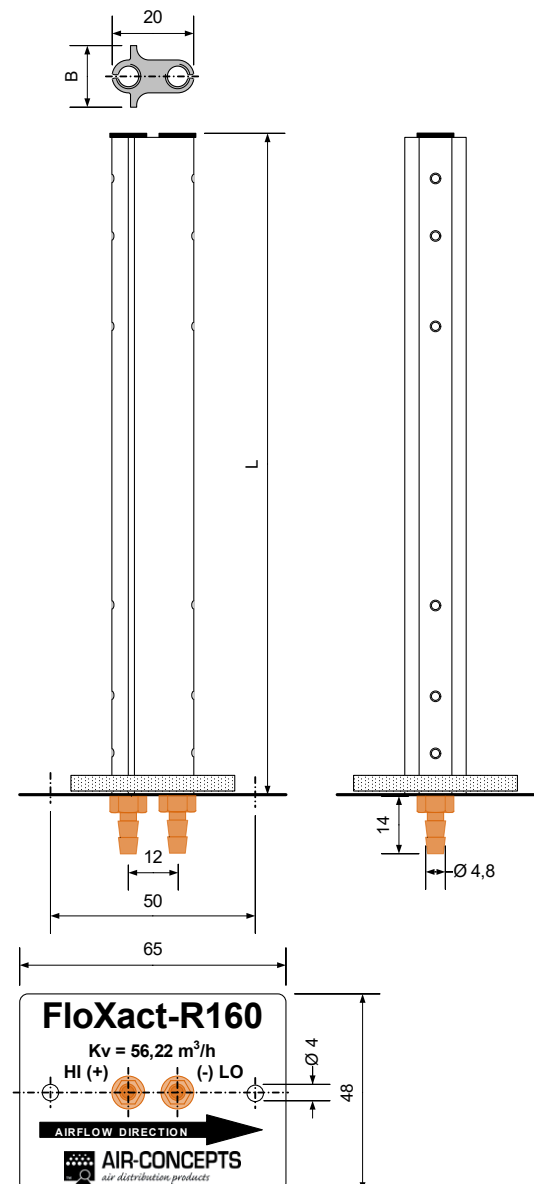
- Easy installation in existing air ducts or VAV units.
- 2% accuracy (if installed correctly, see installation instructions).
- Hole distribution according to the log-Tchebycheff method.
- Average measurement over at least 2x6 measuring points.
- Amplification of measurement signal by at least 2.5x.
- Accurate measurement from 0.7 m/s air velocity. Rounded measuring openings make the FloXact™-Stick insensitive to skewed or turbulent flow up to 30° in all directions relative to the profile axis.
- Measuring profile: extruded aluminium.
- Connection sleeves: brass standard for hose internal diameter 4 mm. For hose internal diameter 6 mm on request.
- Above a length of 350 mm, the sensors are equipped with an additional M6 fastening at the tip for stable mounting in the air duct.
- Ambient temperature +5 to 95°C (non-condensing)

Dimensions and Kv value

Model	L	B	N° holes	Kv m3/h/pa	Kv l/s/pa
100	100	15	2 x 6	20,2	5,60
125	125			33,0	9,17
160	160			56,2	15,6
200	200			90,2	25,1
250	250	25	2 x 8	138,3	38,4
315	315			226,3	62,8
355	355			291,0	80,8
400	400		2 x 10	373,5	103,8
450	450			477,3	132,6
500	500		2x12	593,8	164,9
560	560			750,2	208,4
630	630			955,9	265,5
710	710			1221,3	339,3
800	800			1558,8	433,0



Operation of the FloXact™



FloXact™-R160

Operation

The FloXact™-X operates on the pitot tube principle and measures the total and static pressure components of airflow. The pressure ports located on the leading surface are sensing the total pressure (Pt) and sensing ports positioned at the rear, sense the static pressure (Ps). The difference between the total pressure and the static pressure is the dynamic pressure (Pd)

which re-lates to the squared air velocity as:

$$P_d = \frac{1}{2} \times r \times v^2$$

P_d = dynamic pressure in Pa

r = density of the gas (air) in kg/m³

v = velocity in m/s

To simplify mathematics and include the amplification and duct area, the FloXact™-X are provided with a Kv value.

The air volume can be determined with the following formula:

$$Q = K_v \times \sqrt{P_{fs}}$$

Q = airvolume in m³/h

K_v = K_v value in m³/h/Pa

P_{fs} = pressure difference measured by the FloXact™ in Pa

Model	100	125	160	200	250	315	355	400	450	500	560	630	710	800
Kv	20,2	33,0	56,2	90,2	138,3	226,3	291,0	373,5	477,3	593,8	750,2	955,9	1221,3	1558,8
Pa	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
2	29	47	80	128	196	320	412	528	675	840	1.061	1.352	1.727	2.204
3	35	57	97	156	240	392	504	647	827	1.028	1.299	1.656	2.115	2.700
4	40	66	112	180	277	453	582	747	955	1.188	1.500	1.912	2.443	3.118
5	45	74	126	202	309	506	651	835	1.067	1.328	1.678	2.137	2.731	3.486
6	49	81	138	221	339	554	713	915	1.169	1.454	1.838	2.341	2.992	3.818
7	53	87	149	239	366	599	770	988	1.263	1.571	1.985	2.529	3.231	4.124
8	57	93	159	255	391	640	823	1.057	1.350	1.679	2.122	2.704	3.454	4.409
9	61	99	169	271	415	679	873	1.121	1.432	1.781	2.251	2.868	3.664	4.676
10	64	104	178	285	437	715	920	1.181	1.509	1.878	2.372	3.023	3.862	4.929
12	70	114	195	313	479	784	1.008	1.294	1.653	2.057	2.599	3.311	4.231	5.400
14	75	124	210	338	518	847	1.089	1.398	1.786	2.222	2.807	3.577	4.570	5.832
16	81	132	225	361	553	905	1.164	1.494	1.909	2.375	3.001	3.824	4.885	6.235
18	86	140	239	383	587	960	1.235	1.585	2.025	2.519	3.183	4.055	5.182	6.613
20	90	148	251	404	619	1.012	1.301	1.671	2.135	2.655	3.355	4.275	5.462	6.971
25	101	165	281	451	692	1.131	1.455	1.868	2.387	2.969	3.751	4.779	6.107	7.794
30	111	181	308	494	758	1.239	1.594	2.046	2.614	3.252	4.109	5.236	6.690	8.538
35	119	195	333	534	818	1.339	1.722	2.210	2.824	3.513	4.438	5.655	7.226	9.222
40	128	209	356	571	875	1.431	1.840	2.363	3.019	3.755	4.745	6.046	7.724	9.859
45	135	221	377	605	928	1.518	1.952	2.506	3.202	3.983	5.033	6.412	8.193	10.457
50	143	233	398	638	978	1.600	2.058	2.641	3.375	4.199	5.305	6.759	8.636	11.022
60	156	256	435	699	1.072	1.753	2.254	2.893	3.697	4.599	5.811	7.404	9.460	12.074
70	169	276	470	755	1.158	1.893	2.435	3.125	3.993	4.968	6.277	7.997	10.218	13.042
80	180	295	503	807	1.237	2.024	2.603	3.341	4.269	5.311	6.710	8.550	10.924	13.942
90	191	313	533	856	1.312	2.146	2.761	3.544	4.528	5.633	7.117	9.068	11.587	14.788
100	202	330	562	902	1.383	2.263	2.910	3.735	4.773	5.938	7.502	9.559	12.213	15.588
150	247	404	689	1.105	1.694	2.771	3.564	4.575	5.846	7.272	9.189	11.707	14.958	19.091
200	285	467	795	1.276	1.957	3.200	4.115	5.283	6.750	8.397	10.610	13.518	17.272	22.045
250	319	522	889	1.427	2.187	3.577	4.601	5.906	7.547	9.388	11.862	15.114	19.311	24.647
300	349	572	974	1.563	2.396	3.919	5.040	6.470	8.267	10.284	12.995	16.556	21.154	26.999
350	377	618	1.052	1.688	2.588	4.233	5.444	6.988	8.930	11.108	14.036	17.883	22.849	29.162
400	404	660	1.124	1.805	2.767	4.525	5.820	7.471	9.546	11.875	15.005	19.118	24.427	31.176
450	428	700	1.193	1.914	2.935	4.800	6.173	7.924	10.125	12.596	15.915	20.277	25.909	33.067
500	451	738	1.257	2.018	3.094	5.059	6.507	8.353	10.673	13.277	16.776	21.374	27.310	34.856

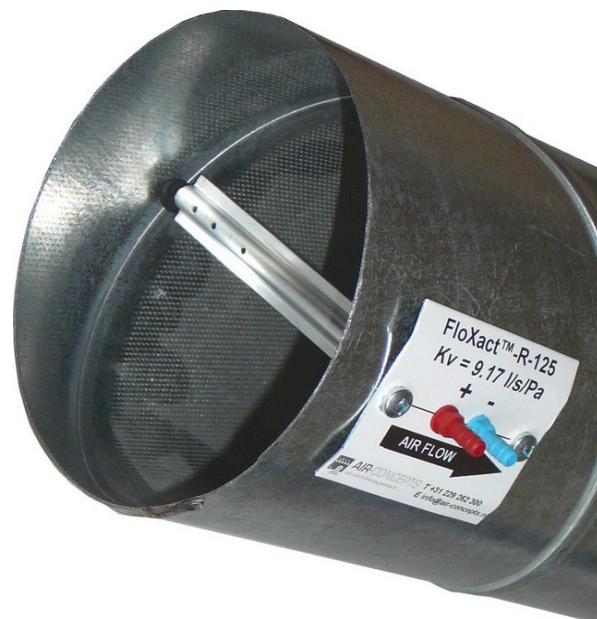
- Kv values are based on Dnom. = D - 3 mm.
- The table above is for air with 1.20 kg/m³ density (20° C, 50% r.h. and 1013 mbar).

The correction for different densities is determined with the following formula :

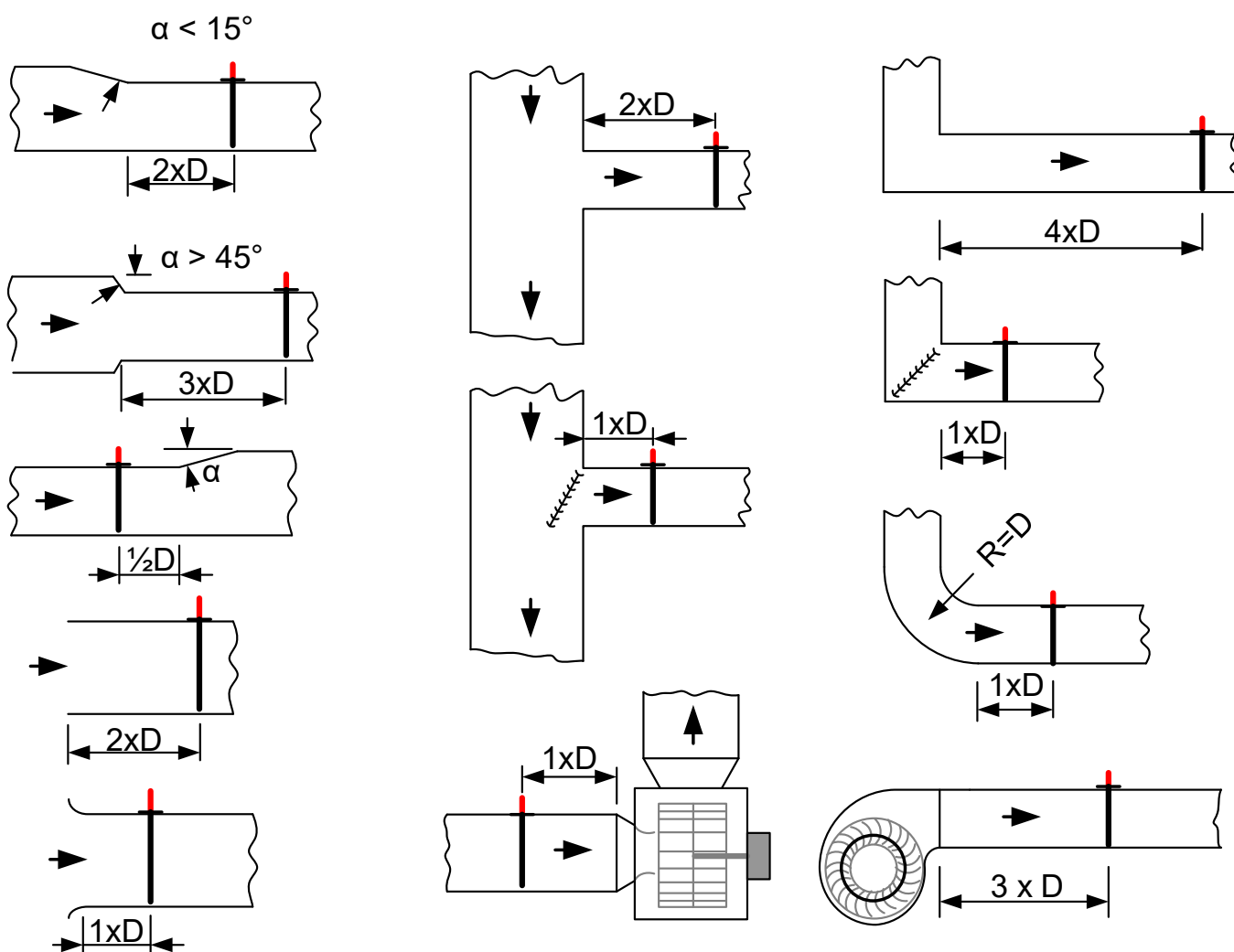
$$C = \sqrt{(r/1.20)}$$

Installation instructions

- Check that the FloXact™ Stick size matches the size of the duct in which it will be installed.
- The FloXact™ Stick is installed by drilling a hole with a diameter of 25 mm in the duct.
- Check that the direction of air flow corresponds to the arrow on the FloXact™ Stick.
- For round ducts, we recommend installing the FloXact™ Stick diagonally in the duct to even out both horizontal and vertical irregularities in the air flow.
- Stick diagonally in the duct to even out both horizontal and vertical irregularities in the air flow.
- For non-standard solutions, we recommend contacting the technicians at Air-Concepts.



Minimum straight duct approach: (VAV installation preferences)



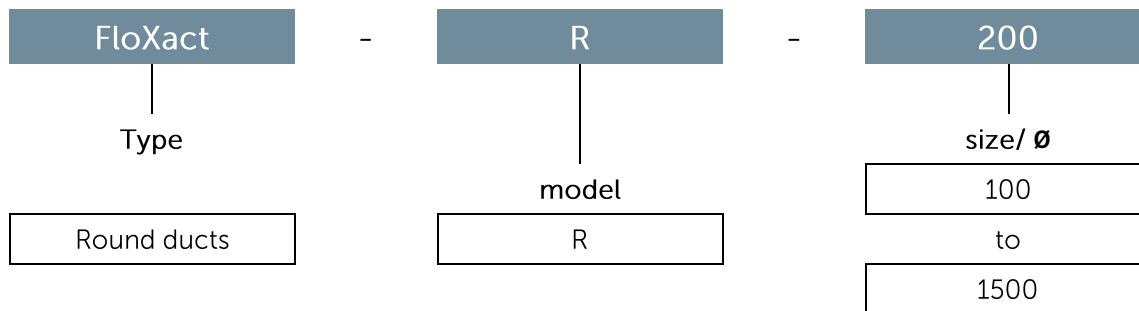
Round ducts : D = duct diameter

Rectangular ducts : $D = 2 \times (H \times W) / (H + W)$

Example:

$W = 600$, $H = 300$

$D = 2 \times (600 \times 300) / (600 + 300) = 400 \text{ mm}$



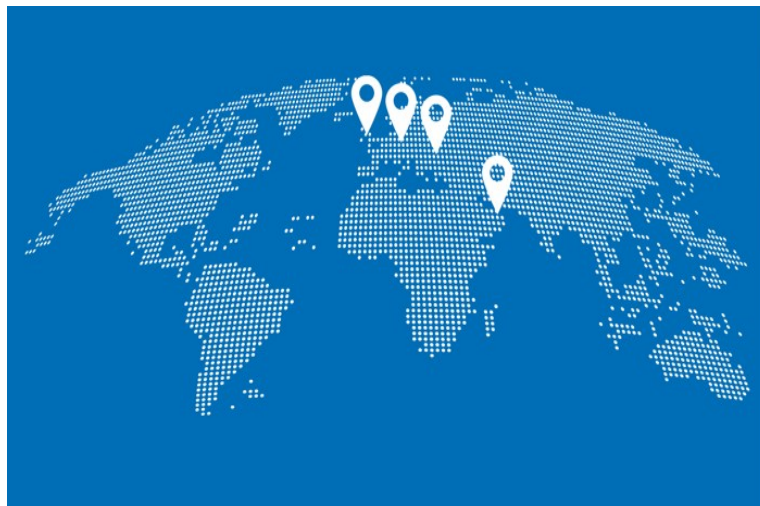
Delivery

The FloXact™ is supplied complete with foam gasket and mounting plate with Kv value.

Air-Concepts locations

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