



# Installation and Operation Manual Diamond Flow Sensor K-Factors for VAV Terminal Units

## Model Series:

- 3000** Single Duct
- 3210** Dual Duct
- 35S-OAI** Series Fan Powered w/ O.A. Damper
- 38S** Underfloor Fan Powered

Inlet Size	Type	Duct Area (sq. ft.)	K-Factor (cfm)	Velocity (fpm)	F-Factor (amp.)	
4	ROUND	0.087	182	2092	3.67	
5		0.136	325	2390	2.81	
6		0.196	455	2321	2.98	
7		0.267	657	2461	2.65	
8		0.349	899	2576	2.42	
9		0.442	1158	2620	2.34	
10		0.545	1497	2747	2.13	
12		OVAL	0.754	2058	2729	2.15
14			0.970	2554	2633	2.31
16			1.186	3035	2559	2.45
24 x 16	RECT.		2.667	6797	2549	2.47

## Model Series:

- 36VRS** Square/Retangular Retrofit

Unit Size	Type	Damper (valve) Size (inches)	Damper (valve) Area (sq. ft.)	K-Factor (cfm)	Velocity (fpm)	F-Factor (amp.)
7	SQUARE OR RECT.	5 x 5	0.174	479	2753	2.12
8		6 x 6	0.250	689	2756	2.11
9		8 x 6	0.333	919	2760	2.11
10		10 x 8	0.555	1531	2759	2.11
11		14 x 8	0.778	2150	2763	2.10
11A		18 x 6	0.750	2068	2757	2.11
12		12 x 10	0.833	2297	2758	2.11
13		18 x 10	1.250	3446	2757	2.11
14		18 x 12	1.500	4135	2757	2.11
15		20 x 14	1.944	5360	2757	2.11
15A		30 x 12	2.500	6892	2757	2.11
16		22 x 16	2.444	6739	2757	2.11
17		24 x 18	3.000	8270	2757	2.11
18		30 x 20	4.167	11486	2756	2.11
19		40 x 20	5.555	15315	2757	2.11

## Model Series:

- 3100** Single Duct
- 3230** Dual Duct
- 3240** "Blendmaster" Dual Duct
- 35N** Parallel Fan Powered
- 35S** Series Fan Powered
- 35S-CVP** Pressurization Series Fan Powered
- 35SST** "Stealth™" Series Fan Powered
- 36VRR** Round Retrofit

Inlet Size	Type	Duct Area (Sq. ft.)	K-Factor (cfm)	Velocity (fpm)	F-Factor (amp.)
4	ROUND	0.087	182	2092	3.67
5		0.136	325	2390	2.81
6		0.196	455	2321	2.98
7		0.267	657	2461	2.65
8		0.349	899	2576	2.42
9		0.442	1158	2620	2.34
10		0.545	1497	2747	2.13
12		0.785	2048	2609	2.36
14		1.069	2742	2565	2.44
16		1.395	3683	2640	2.30
18	OVAL	1.683	4323	2569	2.43

## Model Series:

- 37N** Low Profile Parallel Fan Powered
- 37S** Low Profile Fan Powered
- 37SST** Low Profile "Stealth™" Fan Powered

Inlet Size	Type	Duct Area (Sq. ft.)	K-Factor (cfm)	Velocity (fpm)	F-Factor (amp.)
4	ROUND	0.087	182	2092	3.67
5		0.136	325	2390	2.81
6		0.196	455	2321	2.98
8		0.349	899	2576	2.42
10		0.545	1497	2747	2.13
14 x 8		RECT.	0.777	2035	2619
14 x 10	RECT.	0.972	2417	2487	2.59

## Equations:

$$Q = K \times \sqrt{\Delta P} \quad \Delta P = \left( \frac{Q}{K} \right)^2 \quad F = \left( \frac{4005 \times A}{K} \right)^2$$

Where: Q = Airflow Rate (cfm)

ΔP = Sensor Differential Pressure ("w.g.)

K = K-Factor Calibration Constant (standard air)

F = Amplification Factor (sensor gain)

A = Nom. Duct Area (sq. ft.)

The K-Factors tabulated in the above tables are the airflow required to produce a 1.0" w.g. differential pressure at the Diamond Flow Sensor.

**Model Series:**  
**30HQX Single Duct Exhaust (Hospital Grade)**  
**30X Single Duct Exhaust**

Unit Size	Type	Valve Inlet Size (inches)	Valve Inlet Area (sq. ft.)	K-Factor (cfm)	Velocity (fpm)	F-Factor (amp.)
4	SQUARE OR RECT.	3.4 x 3.4	0.080	210	2625	2.33
5		4.3 x 4.3	0.128	345	2695	2.21
6		5.5 x 5.5	0.210	580	2762	2.10
7		5.8 x 6.3	0.254	680	2677	2.24
8		6.7 x 7.2	0.335	970	2896	1.91
9		8.6 x 7.1	0.424	1209	2851	1.97
10		9.5 x 8.0	0.528	1539	2915	1.89
12		13.6 x 8.1	0.765	2269	2966	1.82
14		12.9 x 10.8	0.968	2521	2604	2.36
16		18.3 x 10.8	1.373	3586	2612	2.35
24 x 16		26.1 x 16.3	2.954	7009	2373	2.85

**Equations:**

$$Q = K \times \sqrt{\Delta P} \quad \Delta P = \left( \frac{Q}{K} \right)^2 \quad F = \left( \frac{4005 \times A}{K} \right)^2$$

Where: Q = Airflow Rate (cfm)

ΔP = Sensor Differential Pressure ("w.g.)

K = K-Factor Calibration Constant (standard air)

F = Amplification Factor (sensor gain)

A = Nom. Duct Area (sq. ft.)

The K-Factors tabulated in the above tables are the airflow required to produce a 1.0" w.g. differential pressure at the Diamond Flow Sensor.



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