Recommended Airflow Ranges For Single Duct Pressure Independent Terminal Units

The recommended airflow ranges below are for 3100 Series single duct terminal units with pressure independent controls and are presented as ranges for total and controller specific minimum and maximum airflow. Airflow ranges are based upon maintaining reasonable sound levels and controller limits using Nailor's Diamond Flow Sensor as the airflow measuring device. For a given unit size, the minimum, auxiliary minimum (where applicable) and the maximum flow setting must be within the range limits to ensure pressure independent operation, accuracy, and repeatability.

Actual minimum airflow limits are based upon the sensitivity of the pressure transducer on the controller. Values for .004" (1 Pa) and .02" w.g. (5 Pa) differential pressure signal from Diamond Flow Sensor on digital controls are provided as a reference. For analog controls we show .02" (5 Pa) and .03" (7.5) for pneumatic controllers. These are realistic low limit pressure readings for many transducers used in the digital controls industry. Check your controls supplier for minimum limits. Setting airflow minimums lower than what the transducer will sense, may cause damper hunting and result in a failure to meet minimum ventilation requirements. Factory settings will therefore not be made outside these ranges; however, a minimum setting of zero (shut-off) is an available option on pneumatic units. Where an auxiliary setting is specified, the value must be greater than the minimum setting.

Model 31RW

The high end of the tabulated Total Airflow Range on pneumatic and analog electronic controls represents the Diamond Flow Sensor's differential pressure reading at 1" w.g. (249 Pa). The high end airflow range for digital controls is represented by the indicated transducer differential pressure.

ASHRAE 130 "Performance Rating of Air Terminals" is the method of test for the certification program. The "standard rating condition" (certification rating point) airflow volumes for each terminal unit size are tabulated below per AHRI Standard 880. These air volumes equate to an approximate inlet velocity of 2000 fpm (10.2 m/s).

When digital or other controls are mounted by Nailor, but supplied by others, these values are guidelines only, based upon experience with most controls currently available. Controls supplied by others for factory mounting are configured and calibrated in the field. Airflow settings on pneumatic and analog controls supplied by Nailor are factory preset when provided.

Imperial Units, Cubic Feet per Minute

Unit Size	Inlet Type	Total Airflow Range, cfm	Airflow at 2000 fpm Inlet Velocity (nom.), cfm	Range of Minimum and Maximum Settings, cfm							
				Pneumatic 3000 Controller		Analog Electronic Controls		Digital Controls			
						Transducer Differential Pressure ("w.g.)					
				Min.	Max.	Min.	Max.	Min.		Max.	
				.03	1.0	.02	1.0	.004	.002	1.0	1.5
4	Round	0 – 225	150	30	180	26	182	12	26	182	223
5		0 – 400	250	55	325	46	325	21	46	325	398
6		0 – 550	400	80	450	64	455	29	64	455	557
7		0 – 800	550	115	650	93	657	42	93	657	805
8		0 – 1100	700	155	900	127	899	57	127	899	1101
9		0 – 1400	900	200	1150	164	1158	73	164	1158	1418
10		0 – 1840	1100	260	1500	212	1497	95	212	1497	1833
12		0 – 2500	1600	355	2050	290	2048	130	290	2048	2508
14		0 – 3370	2100	440	2550	388	2742	173	388	2742	3358
16		0 – 4510	2800	525	3040	521	3683	233	521	3683	4511
24 x 16	Rect.	0 – 8330	5350	1180	6800	961	6797	430	961	6797	8325

Metric Units, Liters per Second

Unit Size	Inlet Type	Total Airflow Range, l/s	Airflow at 10.2 m/s Inlet Velocity (nom.), l/s	Range of Minimum and Maximum Settings, l/s							
				Pneumatic 3000 Controller		Analog Electronic Controls		Digital Controls			
						Transducer Differential Pressure (Pa)					
				Min.	Max.	Min.	Max.	Min.		Max.	
				7.5	249	5	249	1	5	249	374
4	Round	0 – 106	71	14	85	12	86	6	12	86	105
5		0 – 189	118	26	153	22	153	10	22	153	188
6		0 – 260	189	38	212	30	215	14	30	215	263
7		0 – 378	260	54	307	44	310	20	44	310	380
8		0 – 519	330	73	425	60	425	27	60	425	520
9		0 – 661	425	94	543	77	547	34	77	547	670
10		0 – 868	519	123	708	100	707	45	100	707	866
12		0 – 1180	755	168	967	137	967	61	137	967	1184
14		0 – 1590	991	208	1203	183	1295	82	183	1295	1586
16		0 – 2128	1321	248	1435	246	1739	110	246	1739	2130
24 x 16	Rect.	0 – 3931	2525	557	3209	454	3210	203	454	3210	3931