SERVICE AND APPLICATION BULLETIN

GUIDELINES FOR VENTING OF CONDENSING FURNACES AT HIGH ALTITUDE

FOR USE WITH MODELS: All 33" 95%+ Efficiency Furnaces

GENERAL INFORMATION

These guidelines are intended to cover installations of high-efficiency condensing furnaces in locations where the altitude is between 2,000 and 10,000 feet above sea level. It is recommended that the maximum equivalent vent length shown in the furnace installation instructions be reduced as shown in the tables below. These are not mandatory requirements. However, use of these guidelines will reduce the likelihood of service calls due to pressure switch shutoff in areas subject to gusty winds and/or low pressure inversions.

NOTICE

These guidelines only apply to the 33" tall condensing furnaces that have been produced since April 2008, and DO NOT apply to any furnaces built BEFORE April 2008. Refer to the furnace installation manual for all other requirements and recommendations. Modulating input/capacity 33" tall furnaces do not require the use of high altitude pressure switches, as the control used in these models self-adjusts the inducer airflow as required for application installations up to 10,000 feet in altitude.

EXAMPLE – You have a 100,000 BTUH furnace to be installed in a home located at 5,200 feet of elevation. The installation requires 65 equivalent feet of vent pipe. Look below at the table for elevations of 5,001 – 6,000 feet. The table shows that for a 100,000 BTU furnace, you can use 2" diameter vent pipe only if the vent equivalent length is 10 feet or less, so you cannot use 2" vent pipe. The same table shows that 3" vent pipe can be used for equivalent vent lengths up to 70 feet, so you may use 3" vent pipe in this installation. The installation is above 5,000 feet, so if the furnace is a single-stage or two-stage furnace, it is also required to install the high-altitude pressure switch shown in the "High Altitude Pressure Switches" table on Page 3.

Elevation Sea level – 2,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	65
40,000	3	90
40,000	4	150
60,000	2	65
60,000	3	90
60,000	4	150
80,000	2	65
80,000	3	90
80,000	4	150
100,000	2	30
100,000	3	90
100,000	4	150
120,000	3	90
120,000	4	150
130,000	3	85
130,000	4	150

Elevation 2,001 – 4,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	55
40,000	3	80
40,000	4	145
60,000	2	55
60,000	3	80
60,000	4	145
80,000	2	55
80,000	3	80
80,000	4	145
100,000	2	20
100,000	3	80
100,000	4	145
120,000	3	80
120,000	4	145
130,000	3	75
130,000	4	145

Elevation 4,001 – 5,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	50
40,000	3	75
40,000	4	140
60,000	2	50
60,000	3	75
60,000	4	140
80,000	2	50
80,000	3	75
80,000	4	140
100,000	2	15
100,000	3	75
100,000	4	140
120,000	3	75
120,000	4	140
130,000	3	70
130,000	4	140

Elevation 5,001 – 6,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	45
40,000	3	70
40,000	4	135
60,000	2	45
60,000	3	70
60,000	4	135
80,000	2	35
80,000	3	70
80,000	4	135
100,000	2	10
100,000	3	70
100,000	4	135
120,000	3	70
120,000	4	135
130,000	3	65
130,000	4	135

Elevation 6,001 – 7,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	40
40,000	3	65
40,000	4	130
60,000	2	40
60,000	3	65
60,000	4	130
80,000	2	30
80,000	3	65
80,000	4	130
100,000	2	5
100,000	3	65
100,000	4	130
120,000	3	65
120,000	4	130
130,000	3	60
130,000	4	130

Elevation 7,001- 8,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	35
40,000	3	60
40,000	4	125
60,000	2	35
60,000	3	60
60,000	4	125
80,000	2	25
80,000	3	60
80,000	4	125
100,000	2	NA
100,000	3	60
100,000	4	125
120,000	3	60
120,000	4	125
130,000	3	55
130,000	4	125

Elevation 8,001-9,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	30
40,000	3	55
40,000	4	120
60,000	2	30
60,000	3	55
60,000	4	120
80,000	2	20
80,000	3	55
80,000	4	120
100,000	2	NA
100,000	3	55
100,000	4	120
120,000	3	55
120,000	4	120
130,000	3	50
130,000	4	120

Elevation 9,001-10,000 feet		
Model Input (BTUH)	**Pipe Size (in)**	**Max. equivalent Length (ft)**
40,000	2	25
40,000	3	50
40,000	4	115
60,000	2	25
60,000	3	50
60,000	4	115
80,000	2	15
80,000	3	50
80,000	4	115
100,000	2	NA
100,000	3	50
100,000	4	115
120,000	3	50
120,000	4	115
130,000	3	45
130,000	4	115

HIGH ALTITUDE PRESSURE SWITCHES

It is not required that high-altitude pressure switches be installed except for units installed in locations where the elevation is 5,000 feet above. For those installations, use the high-altitude pressure switch listed below.

High Altitude Pressure Switches required for all installations above 5,000 feet		
Model Series	**Part Number**	**Models**
Single Stage 95%	S1-1PS3302	**95%** 100k, 120k,130k
	S1-1PS3306	**95%** 60k
	S1-1PS3307	**95%** 40k, 80k
All 96% Two-Stage	S1-1PS3308	All two-stage 96% models

EQUIVALENT VENT LENGTHS

Use the table below to calculate the equivalent length of your vent system.

Equivalent Length of Elbows			
Long Radius Elbows	**Equivalent Length**	**Standard Elbows**	**Equivalent Length**
2" 90° Long Radius Elbow	5 feet of 2" pipe	2" 90° Standard Elbow	7 feet of 2" pipe
2" 45° Long Radius Elbow	2 1/2 feet of 2" pipe	2" 45° Standard Elbow	3-1/2 feet of 2" pipe
3" 90° Long Radius Elbow	5 feet of 3" pipe	3" 90° Standard Elbow	7 feet of 3" pipe
3" 45° Long Radius Elbow	2 1/2 feet of 3" pipe	3" 45° Standard Elbow	3-1/2 feet of 3" pipe
4" 90° Long Radius Elbow	5 feet of 4" pipe	4" 90° Standard Elbow	5 feet of 4" pipe
4" 45° Long Radius Elbow	2-1/2 feet of 4" pipe	4" 45° Standard Elbow	2-1/2 feet of 4" pipe

NOTES

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Supersedes: Nothing

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