

# COMPRESSOR COOLING REQUIREMENT DOCUMENT

## 1. Compressor Ventilation Information:

When installing a compressor system the most common error is made in the inadequate ventilation of the room and the compressor unit leading to early component failure and a short purification cartridge life. Even a larger room will have an over heating issue if there is not an appropriately sized exhaust fan and the movement of air.

### Installation procedures:

- Place the equipment as close as possible to the fresh cooling air source. It is very important to have a continuous supply of cool air to maintain the compressor at the correct operating temperature.
- It is recommended the inlet source of the cooling air be as low as possible in the wall and preferably located close to the compressor mounted cooling fan assembly.
- The opening area of the intake air is to be 2.5 times the area in square feet of the compressor mounted cooling fan.
- A full flow exhaust fan is to be installed high on the wall above the compressor to exhaust the hot air; the fan is to be interlocked to start when the compressor is in operation.
- Enclosed ultra-silent units are to have a duct installed from the compressor to the exhaust fan.

## 2. Fan volume in SCFM based on the compressor size:

- **Compressors of 5 to 7.5 HP** are to have an exhaust fan size of 1200 to 1500 SCFM (for unit size IK100II to IK120II).
- **Compressors of 10 HP** are to have an exhaust fan size of 1800 to 2200 SCFM (for unit size IK12.14II).
- **Compressors of 15 to 20 HP** are to have an exhaust fan size of 3000 to 3500 SCFM (for unit size IK15.1II to IK18.1II).
- **Compressors of 30 to 50 HP** are to have an exhaust fan size of 5000 to 7500 SCFM (for unit size IK22.0 to IK23.0).

**Note:** compressor rooms will always require an exhaust-venting fan in order to stop the recycling of the cooling air and provide reliable compressor service life and the longest filter cartridge process capacity.

## RECOMMENDED SIZE FOR COMPRESSOR INTAKE PIPING

The testing of high pressure breathing air can often result in a failure to meet the CSA standard unless procedures are followed to provide a source of fresh air for the compressor intake. The inlet source is to be provided from the cleanest ambient air supply possible. A compressor intake pipe is not a substitute for a cooling exhaust air fan.

The factors to consider when installing compressor intake piping in a building are the length of pipe, the diameter of the pipe and the number of 90-degree bends. All intake pipes must have a bug screen on the inlet end to avoid birds or bugs from entering the inlet system. Install a gooseneck end on the pipe or water trap to avoid water entry to the compressor air inlet filter.

### Installation guidelines for a maximum of four 90° bends

INLET CAPACITY	DISTANCE	* PIPE DIAMETER
≤ 13 SCFM	≤ 50 ft	3"
	50 – 100 ft	3"
	100 – 150 ft	4"
13 – 30 SCFM	≤ 50 ft	3"
	50 – 100 ft	4"
	100 – 150 ft	6"
30 – 50 SCFM	≤ 50 ft	4"
	50 – 100 ft	8"
	100 – 150 ft	10"

\* Add 1" in pipe diameter if the number of bends exceeds four.

### INSTALLATION PROCEDURES

- For ease of installation use PVC plastic pipe.
- The pipe is to be secured to the wall with proper clamps and fasteners in accordance with the manufacturers recommendations.
- The PVC plastic pipe is to be terminated three to 5 feet from the compressor intake with a stub reducer of equal size as the compressor inlet housing entrance pipe.
- Be sure to not terminate the suction pipe over the compressor cooling air exhaust.

## Motor Voltage and Amp Load

Single phase AC Motors Full-Load Current in Amperes (see Notes (1) to (4))

HP Rating	115 V	230 V
1/6	4.4	2.2
1/4	5.8	2.9
1/3	7.2	3.6
1/2	9.8	4.9
3/4	13.8	6.9
1	16	8
1 1/2	20	10
2	24	12
3	34	17
5	56	28
7 1/2	80	40
10	100	50

**Notes:**

1. For full-load currents of 208 and 200 V motors, increase the corresponding 230 V motor full-load current by 10 and 15% respectively.
2. These values of motor full-load current are to be used as guides only. Where exact values are required (e.g., for motor protection), always use those appearing on the motor nameplate.
3. These values of full-load current are for motors running at usual speeds and motors with normal torque characteristics. Motors built for especially low speeds or high torques may have higher full-load currents, and multi speed motors will have full-load current varying with speed, in which case the nameplate current ratings shall be used.
4. The voltages listed are rated motor voltages. Corresponding Nominal System Voltages are 120 and 240 V. Refer to CSA Standard CAN3-C235-M83, Preferred Voltage Level for AC Systems, 0 to 50,000 volts.

Three-phase AC Motors Full-Load Current in Amperes  
Induction Type, Squirrel Cage and Wound Rotor

HP Rating	115 V	230 V	460 V	575 V	2300 V
1/2	4	2	1	0.8	
1/4	5.6	2.8	1.4	1.1	
1	7.2	3.6	1.8	1.4	
1 1/2	10.4	5.2	2.6	2.1	
2	13.6	6.8	3.4	2.7	
3		9.6	4.8	3.9	
5		15.2	7.6	6.1	
7 1/2		22	11	9	
10		28	14	11	
15		42	21	17	
20		54	27	22	
25		68	34	27	
30		80	40	32	
40		104	52	41	
50		130	65	52	
60		154	77	62	16
75		192	96	77	20
100		248	124	99	26