

IMPORTANT THINGS TO KNOW : RECIPROCATING COMPRESSOR APPLICATIONS

1. Oil bath reciprocating compressors have a 70% maximum duty cycle. Operating the compressor over the 70% duty cycle will result in a premature failure of standard wear parts as well as other components. On initial install a 50% duty cycle or less is recommended. Air leaks in tools, air lines, tool connections and equipment fittings will occur over time. Therefore, a properly sized compressed air system must be able to function within the duty cycle as the air requirements change over time.
2. Oil free reciprocating air compressors have a maximum of a 50% duty cycle. Operating the compressor over the 50% duty cycle will result in a premature failure of the standard wear parts as well as other components. On initial install a 30% duty cycle is recommended. Air leaks in tools, air lines, tool connections and equipment fittings will occur over time. Therefore, a properly sized compressed air system must be able to function within the duty cycle as the air requirements change over time.
 - A. A 1/8 inch hole in a fitting or air line with air pressure at 100 PSI can lose up to 26 CFM. It would require a 10hp compressor just to feed this leak.
 - B. A 1/32 inch hole in a fitting or airline can lose up to 5 CFM at 100PSI. The higher the pressure the higher the air loss. It would take a 3hp compressor just to feed this leak.
 - C. (Note Duty cycle of oil bath reciprocating compressor)
Example: Duty cycle of a compressor that compresses 10 CFM
 - n Maximum usable air is 7CFM (10 x .70 (70% duty cycle))
 - n Ideal usable air is 5 CFM (10 x .50 (50% duty cycle))
3. Minimum distance recommended around the compressor for cooling and operation is 18 inches. Confirm there is adequate fresh air flow around the package. Not having adequate cooling and fresh air flow to the compressor package will result in premature failure of standard wear parts as well as other components.
4. Standard reciprocating compressor packages are designed to operate in an ambient air temperature of 32F to 105F. Additional measures can be taken for higher or lower ambient operating conditions.
5. Electric voltage: Know what the voltage is going to be where the compressor will be located. Compressed Air Systems primarily uses tri-voltage (208-230-460) motors on our industrial, 3 phase compressor packages (5-50hp). On single phase (5-10hp) industrial packages, 208-230 volt motors are used.
6. For 3 phase units, the site voltage needs to be known prior to assembly of the compressor package so the controls can be built for either the low or high voltage.
7. On a 3 phase compressor application voltages below 207 or above 500 require specific voltage motors. Without these motors the packages will not operate properly or not at all.
8. For 1 phase motor applications with a site voltage below 207 volts, specific low voltage motors are required for proper operation.
9. Mobile applications where the electric motor is being driven by a generator: Follow the recommendation to ensure the generator can start and run the electric motor. An electric motor requires 4-5 times the maximum running amps for approximately 3 seconds to start correctly.
 - A. Example: 5hp electric motor standard amps 20.7 with a service factor of 1.15 at 230 volt (Amps x Volts = Watts)
 - n $20.7 \times 1.15 = 23.805$ maximum operating amps
 - n $23.80 \text{ amps} \times 230 \text{ volts} = 5474 \text{ watts}$ required to run once started
 - n $5474 \text{ watts} \times 4 = 21,896 \text{ watts}$ minimum required to start the electric motor
 - n Failure to have adequate starting watts available will result in premature failure of electric components or generator.
 - n When starting an electric motor driven compressor that is powered by a generator, always make sure generator is fully operational prior to starting the compressor package. Failure to do so may result in premature failure of electric components
 - n Make sure compressor is completely powered down before turning off generator. Failure to do so can result in premature failure of electric components.
10. For reciprocating compressor packages driven by a gas/diesel/electric motor that are equipped for dual control (continuous run), a maximum continuous run time of 45 minutes should not be exceeded. Continuous run time of more than 45 minutes may result in premature failure of the pump and/or pump components.

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