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Industrial Compressors and the UL 1450 Standard

UL 1450, *Standard for Safety for Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment*, was developed to provide a means of testing smaller, household and contractor-type compressors that are manufactured in relatively large quantities and batches. The UL standard and the UL listing process are well suited to this type of equipment, in which there is not a significant amount of variation in options or features within a particular manufacturer's model families. A test of sample units and file review lead to results that apply to a relatively large number of units.

Larger, industrial compressors are not produced in the same fashion. Quantities are much smaller, and the amount of variation in customer-specified options or features is quite large. In many cases, each unit is a unique combination of features and options that meet the needs of a particular customer. Different customers may end up purchasing units that are constructed identically, but the manufacturer does not maintain a large inventory of units that are bought off the shelf. Often industrial compressors are made to order due to the large number of options and configurations that are available.

Products that are produced in the way industrial compressors are produced do not fit into the UL standards and listing model. Instead of applying to a large number of units, the tests and file reviews lead to results that apply to a very small number of units, or even to one unit. This introduces significant delays and costs that make application of the UL testing and listing model infeasible, or impossible.

As a result of increasing application of the UL 1450 standard to industrial compressors, to which the standard was never intended to apply, the UL 1450 Standards Technical Panel revised the scope of the UL 1450 standard to specifically exclude industrial compressors from the scope of the standard. Some components of industrial compressors are still tested to UL standards, but the entire compressor package cannot be tested to the UL 1450 standard, as the scope of the standard specifically excludes industrial compressors.

Other standards are used to evaluate the safety of industrial compressors. A list of some of the standards that may apply can be found on the following page.

This Tech Sheet was developed by the members of the Compressed Air and Gas Institute (CAGI). CAGI is the leading organization representing manufacturers of compressed air system equipment, including air compressors, blowers, pneumatic tools, and air and drying and filtration equipment. CAGI Tech Sheets are information tools and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific instructions regarding their equipment.

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Safety and Related Standards that Apply to Industrial Compressors

There are several standards regarding compressor safety that have been developed specifically for industrial compressors and compressed air systems, including ANSI/CAGI B19.1, EN 1012, and ISO 5388. A new ISO standard is also being developed to update and replace 5388. That standard should be released in the next year or two.

Industrial compressors may be required to comply with a host of additional standards, depending on where they will be put into service, including several UL standards. Following is a short list, as there are others not included here:

- NEC, National Electrical Code (NFPA 70)
- UL/CSA, Electrical components
- ASME Section VIII Pressure Vessel Code
- ISO 1217, Annex C (Positive displacement compressors only.)
- ANSI B19.3 Safety Standards for Compressors for Process Industry
- ANSI/UL, All electrical panels are listed and marked 508A Industrial Control Panels

Compressors that are sold in Europe must also comply with the following:

- Directives
 - 73/23/EC Low-Voltage Directive
 - 2006/42/EC Machinery Directive
 - 97/23/EC Pressure Equipment Directive
 - 2009/105/EC Simple Unfired Pressure Vessel Directive
 - 89/336/EEC Electromagnetic Compatibility Directive

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