

How Healthy Is Your Compressor?

by Art Sutherland

High Temperature Safety Control

The discharge temperature of a compressor is an excellent indication of the compressor's general health. A high discharge temperature (+250 for R-22 or +325 for ammonia) is an early warning of bad things to come. If either the suction or discharge valves start to leak, it will result in the recompression of already hot gas. The result is an elevated discharge temperature. A high discharge temperature will rapidly accelerate the wear and tear on a compressor. For every 18 degrees the discharge temperature increases above normal, the compressor life expectancy can be cut in half.

The high temperature safety control on a compressor is generally a manual reset control. One is usually installed on the discharge line of the compressor and another is often installed on the compressor water cooling system. The purpose of the high discharge temperature cut-out control is to shut down your compressor at a safe operating temperature.

If you find that your compressor is cutting out on high discharge temperature and there is not an obvious reason such as high head pressure that would be caused by a condenser problem, be sure to get it checked right away. Become familiar with your discharge temperature so you will be aware of any minor valve problems before they become a major compressor problem.

Oil Failure Control

The oil failure control is a manual reset control that is designed to shut off the compressor if there is a lack of oil pressure. The control does not check the oil level in the compressor. It only checks the oil delivery pressure from the oil pump and compares it to the crankcase suction pressure. If the oil pressure rises to the required set-point within the prescribed time limit (30 to 120 seconds), the control will allow the compressor to continue to run. If for any reason the oil pressure does not rise to the set-point in the prescribed time limit, the compressor will lock out and require resetting.

If you find that one of your compressors has cut out on oil failure, you should check the following items:

- Is there oil in the compressor?
- Has the compressor filled with liquid refrigerant causing the oil to foam up with no increase in pressure?
- Has the compressor blown a fuse or tripped an overload preventing it from running and allowing the pressure to build up? This only happens on certain control wiring arrangements.

If the oil failure control has tripped for no apparent reason, it is highly recommended that you consult your refrigeration contractor. The oil failure control is a safety control and not an operational control, so it is easy to allow years to go by without checking it. The oil failure control is frequently found to be inoperative in older systems and occasionally in newer systems that have not had a high level of maintenance. The oil failure control can save your compressor, so ensure that it is inspected and calibrated at least twice a year.

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