discus compressor

Discus compressors are refrigeration compressors used in supermarkets, walk-in coolers and freezers, and industrial applications. They range in horsepower from 5 to 60-hp. Discus compressors are available with capacity modulation from 10 to 100 percent. This provides the ability to match capacity to the desired load of refrigeration equipment. Capacity modulation reduces the suction pressure and temperature variation of the refrigerated space and provides for a decrease in the compressor’s cycling rate. A reduced cycling rate increases the compressor reliability.

The Discus compressor has been used in the refrigeration industry for years. Its valve design allows for less-clearance-volume vapors to be trapped when the piston is at top dead center.

Less-clearance-volume discharge gas will be re-expanded on the down stroke of the piston. In fact, re-expansion is almost zero, allowing for the suction valve to open sooner, letting new refrigerant gases in from the suction line. This gives the system a greater volumetric efficiency. The Discus valve arrangement also has larger openings that will allow more mass flow rate of refrigerant through the opening in a shorter period of time.

Modulation is accomplished with a blocked suction technology by feeding a variable voltage to a solenoid for its open and close intervals. (The blocked suction technology will be covered in the Oct. 1 issue of *The NEWS.*)

Discus compressor technology also offers onboard diagnostics. This technology provides real-time intelligence monitoring, letting the service technician know the status of what is happening inside the compressor before any major problems develop. Compressor monitoring operations can now become centralized. This allows service technicians to systematically troubleshoot compressor problems before arriving at the site.

It also improves troubleshooting accuracy and speed of service. It gathers data, transmits operating information, and visually displays compressor status and alarm codes on the front control box. It also records and retains a history of compressor operating information and past alarms. This technology allows service technicians to be dispatched automatically if an alarm problem exists.

A modern discus compressor (Figure 1) incorporates on-board diagnostics. This new technology has the following advantages:

**•** Monitors compressor’s discharge temperature

**•** Provides contactor protection

**•** Enables remote diagnostics

**•** Integrates the compressor’s system electronics including high- and low-pressure controls, compressor cooling and temperature control, oil pressure monitoring, motor protection devices, and input/output (I/O) boards

**•** Reduces the number of brazed joints on the compressor that can develop leaks

**•** Allows consistent field in-stallations because of less wiring with fewer components.

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