

Copeland™ horizontal variable speed scroll compressor with R-290

For refrigeration applications

Improved efficiency with natural refrigerants

Emerson offers a new solution for operators looking for improved energy efficiency using natural refrigerants. The Copeland YBVH™ horizontal variable speed scroll compressor represents the latest innovation in compliant scroll technology for refrigeration equipment. It is more efficient than standard reciprocating compressors with 70% less moving parts for increased reliability.

The Copeland™ YBVH horizontal variable speed scroll compressor answers the call for more sustainable compression technology within the commercial refrigeration sector. For manufacturers of self-contained, reach-in coolers and freezers, display cases and walk-in coolers, this low-profile, variable speed solution delivers an ideal combination of energy efficiency, low global warming potential (GWP) refrigerant options, reliability and design flexibility.

The combination of food retail market trends and environmental and energy regulations is driving a transition toward more distributed refrigeration architectures. As the emergence of smaller-format stores has increased the adoption of self-contained display cases, operators are transitioning to refrigerants with lower GWP and selecting equipment that supports their corporate sustainability initiatives.



For OEMs of self-contained refrigeration systems, meeting these new requirements can present significant design challenges. The low-profile Copeland horizontal variable speed scroll compressor solves these design challenges while delivering significant energy efficiency and performance improvements. Available in capacity ranges from 1 to 4 HP and approved for use with low-GWP R-290 refrigerant, this innovative variable speed compression solution is ideal for a wide variety of self-contained commercial refrigeration applications.

YBVH model summary

Cooling capacity (shown in kBtu/hr)

Compressor	1500 rpm	3000 rpm	4500 rpm	5500 rpm
YBVH021	3.1	6.0	9.0	11.1
YBVH029	4.1	8.3	12.6	15.3
YBVH046	6.4	13.7	20.7	25.3

Capacity at 14°F / 113°F / 18 SH / 0 SC

Matching drives available in 100-120V single phase, 220-240V single phase, 208-230V three phase, 380-400V three phase, 440-480V three phase, and 575-600V three phase. Consult your application engineer.

These compressors have a speed range of 1500 to 5500 revolutions per minute, corresponding to 25 up to 92 Hz. They are intended for use in refrigeration applications. They feature a three-phase brushless permanent magnet (BPM) motor which is controlled by a motor control drive, either single-phase or three-phase.

Copeland YBVH™ horizontal variable speed compressors have been qualified for use with Copeland variable frequency drives, EVM series, and the matched pairs have been designed for maximum efficiency and reliability. The drive powers the compressor, optimizes the running speed, and has a variety of communication options to streamline integration with system controls or building management systems.

To achieve required energy efficiency gains, the Copeland horizontal variable speed scroll compressor combines brushless permanent magnet (BPM) motors with our advanced Copeland variable frequency drives, EVM series to deliver the following performance enhancements:

- Increased equipment reliability through proactive motor failure prevention
- Decreased susceptibility to power issues
- Reduced start/stop events
- Lower noise levels
- Full system integration with supervisory control platforms

A twin-oil pump design helps to ensure optimal lubrication and reliability.

Variable speed compression technology has been historically underutilized within commercial refrigeration. The low-profile, variable speed horizontal scroll can be used in a wide range of self-contained, reach-in and walk-in refrigeration applications. Copeland compressors provide OEMs and end users with a means to achieve significant energy reductions and reap the benefits of variable capacity modulation:

- Advanced temperature precision
- Significant reliability and performance improvements
- Ability to meet and/or exceed ENERGY STAR efficiency requirements

By leveraging the next generation of sustainable, lower-GWP refrigerants, we're helping OEMs and end users to prepare for current and future refrigeration regulations. At roughly half the height of a vertical scroll, its low-profile, horizontal package gives OEMs additional design flexibility, allowing them to reclaim valuable merchandising space while keeping noise levels to a minimum. With the ability to modulate its capacity from 1 to 4 HP, this product covers a variety of applications with only one SKU.

Today, there are very few design options left to help OEMs achieve ENERGY STAR certification or address future energy efficiency reductions mandated by the Department of Energy (DOE) on commercial refrigeration equipment. By integrating a Copeland horizontal variable speed scroll compressor in their self-contained, reach-in coolers and freezers, display cases and walk-ins, OEMs can significantly improve system energy efficiency and performance.

As refrigerant regulations evolve, refrigeration system approaches will continue to leverage self-contained, distributed systems and utilize lower-GWP refrigerant alternatives. The Copeland variable speed horizontal scroll compressor helps OEMs to meet these low-profile design challenges while allowing end users to adopt sustainable refrigeration strategies.

For more information about Copeland YBVH scroll compressors refer to Application Engineering bulletins or visit Climate.Emerson.com.