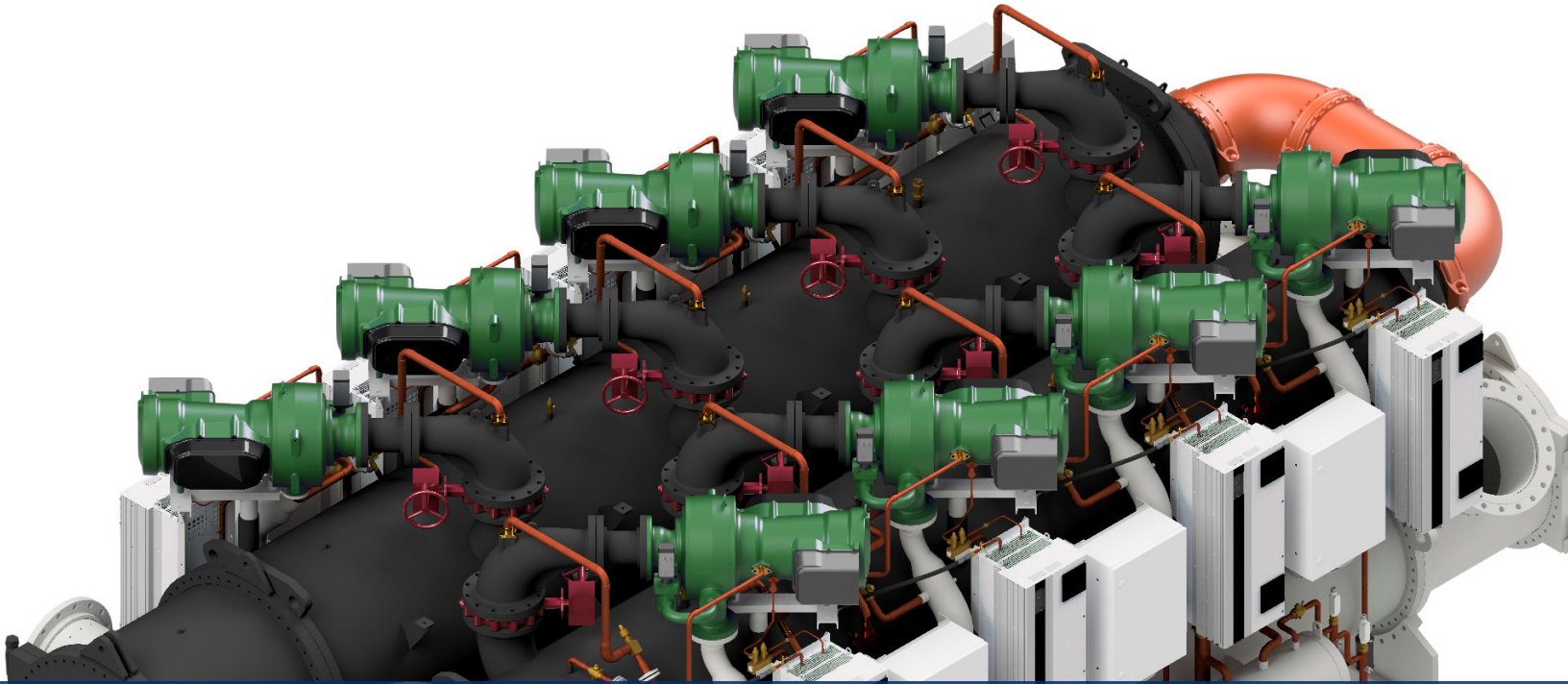
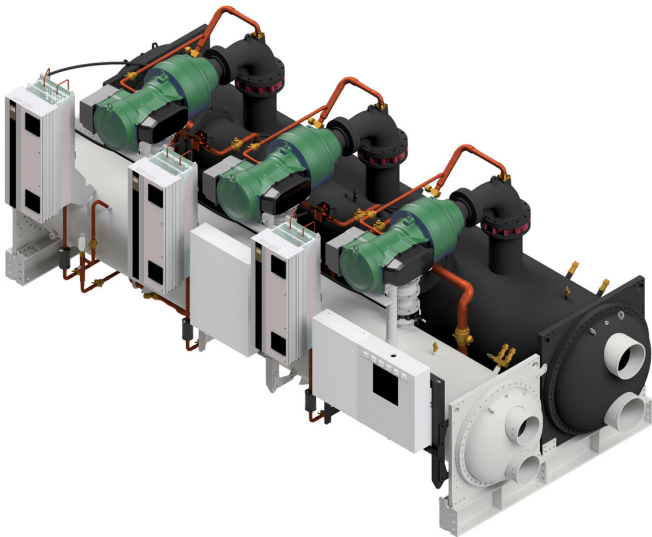


PRODUCT OVERVIEW



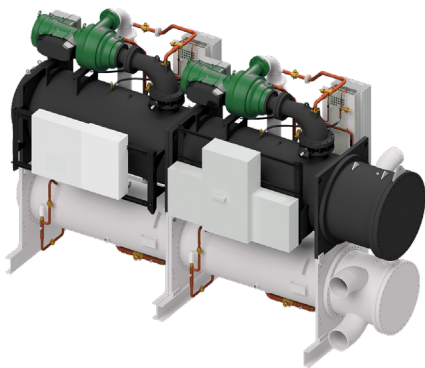
G-CLASS V-SERIES WATER-COOLED CHILLERS



SMARTD
GLOBAL #1 IN OIL-FREE CHILLERS

G-Class V-Series Water-Cooled Chillers

Smardt's G-Class of chillers is distinguished by its use of environmentally-friendly refrigerants boasting ultra-low GWP ratings. G-Class Water-Cooled V-Series Chillers are Smardt's large-capacity chillers that utilize Smardt's oil-free chiller technology and Turbocor's VTX compressors with ultra-low GWP R1234ze refrigerant. G-Class V-Series Chillers are available from 300 to 2900 TR (1055 to 10200 kW) and can be supplied in multiple configurations, which Smardt can customize per the requirements of your application.



A Smardt G-Class V-Series Chiller in a narrow (stacked) configuration

G-Class Water-Cooled

Smardt has brought its extensive experience in oil-free chiller development, sales and service into designing the G-Class V-Series — a range of large-capacity water-cooled chillers that deliver the highest level of reliability, outstanding efficiency and the lowest total cost of ownership.*

G-Class V-Series Chillers offer valuable benefits to owners and operators, such as ease of installation, simple streamlined operation and maintenance, and lower lifetime operating and maintenance costs. These advantages are the hallmark of Smardt chillers.

Oil-Free Operation

Smardt oil-free centrifugal chillers use magnetic bearings and a variable-speed drive to deliver IPLV efficiencies that far surpass those of conventional oil-lubricated centrifugal, reciprocating, scroll and screw chillers.

Smardt utilizes totally oil-free Turbocor compressor technology, achieving the highest part-load efficiencies for our chillers and chilled water systems (including water-, air- and evaporatively-cooled applications).

Proprietary magnetic bearings replace conventional oil-lubricated bearings. This eliminates the high friction losses, mechanical wear, and the higher-

maintenance oil management systems that are inherent with conventional compressor designs.

Turbocor's primary moving part (the rotor shaft and impellers) is levitated during rotation by a digitally controlled magnetic bearing system. Position sensors at each magnetic bearing provide real-time feedback to the bearing control system, 120 times each revolution, ensuring constantly centered rotation.

The result is oil-free operation that delivers significant chiller energy savings compared with standard chillers, and provides an extended service life without the efficiency decrease seen in oil-based systems.

Global Number One

Smardt is the industry leader in oil-free centrifugal chillers. Smardt pioneered oil-free centrifugal compressor technology to provide plant owners and operators a line of chillers that broke through industry norms of lifetime performance, energy conservation (reducing operating expenses), streamlined maintenance, and ease of operation.

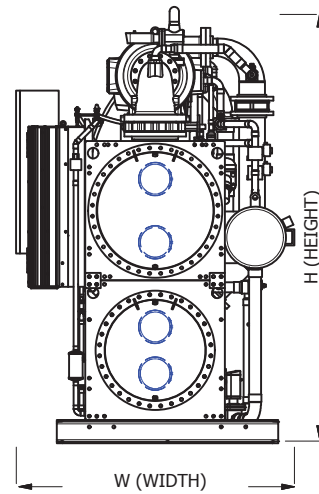
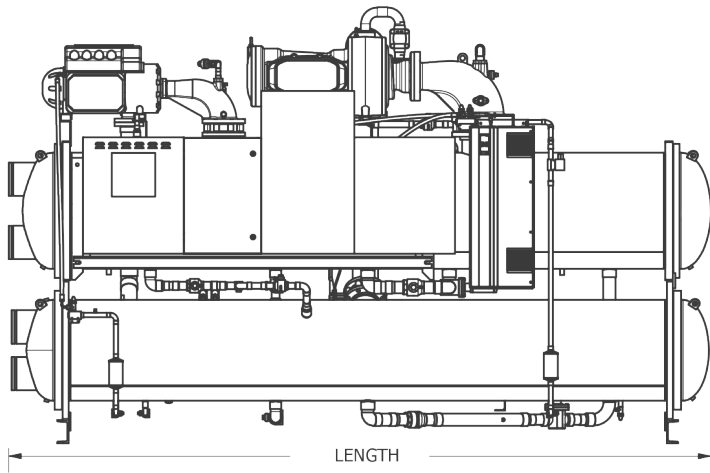
Since our first oil-free centrifugal chiller in 2002, more than 10,000 Smardt chillers, ranging from 60 TR up to 3200 TR, are now saving money, energy and CO₂ emissions across the globe.

*For applications 45 to 1100 TR (160 to 3900 kW) capacity, see Smardt's G-Class Water-Cooled Chillers.

G-Class V-Series Water-Cooled Chillers



G-Class V-Series Water-Cooled Chillers



Side and front views of a Smardt G-Class Water-Cooled Chiller, V-Design Series customized in a stacked configuration to fit a smaller footprint within a plant room. This example also illustrates a Pony Express configuration.

Commitment to Environment

Smardt's commitment to the environment is fundamental to our chiller engineering and design, and is central to our company and in our products. Smardt played a vital role in the innovation and development of oil-free compressor technology, and we engineered chillers that leveraged that oil-free technology. We develop true optimization systems that enable plants to operate in the most energy-efficient and effective manner possible. And Smardt's environmental commitment extends to supporting evolving refrigerant policies worldwide.

Largest Capacity Chiller

Smardt G-Class V-Series chillers are designed for projects with ambitious kW/TR requirements. The world's largest

installed oil-free chiller is a Smardt V-Class chiller, which serves a district cooling application.

Turbocor VTX Compressor

The G-Class V-Series can be equipped with 1–8 Turbocor VTX oil-free compressors. The Turbocor VTX compressors boast outstanding full-load efficiencies. On V-Series chillers, Turbocor VTX compressors use R1513A, R1234ze, or R515B refrigerants.



VTX Compressor

V Design Series Variations

The Smardt G-Class V-Series chiller is also available in two versions that are tailored for projects with special project requirements. These are the Modular and the Pony Express versions.

Modular Version





Smardt's modular chillers are specially designed to enable safe and efficient transport in sections that fit within a typical freight elevator. This can avoid costly and time-consuming wall demolition and rebuilding that might otherwise be necessary for access.

Pony Express

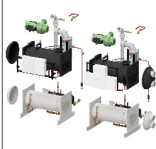
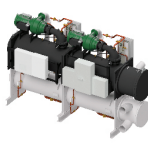
Smardt's Pony Express configuration eliminates the need to have an additional

G-Class V-Series Water-Cooled Chillers

Smardt Chiller Barrel Configuration Options

Standard Configuration	Configuration Options for Dimensional Considerations		Additional Options for Special Requirements
Narrow	Side-by-Side		Compact - Modular
 <p>1-4 compressors</p> <ul style="list-style-type: none"> Stacked orientation Slim design 	 <p>3-5 compressors</p> <ul style="list-style-type: none"> Barrels beside each other For short and wide layouts Panels mounted above condenser barrel 	 <p>6-8 compressors</p> <ul style="list-style-type: none"> Barrels beside each other For short and wide layouts Panels mounted above condenser barrel 	 <p>1-8 compressors</p> <ul style="list-style-type: none"> For tight fits Can be modular Dimensioned to fit through elevators and doors

Plant Room Access Options

Configuration Options for Plant Room Access Considerations	
Knocked-Down Kit	Split Barrel
 <p>1-8 compressors</p> <ul style="list-style-type: none"> Fully-built chiller tested at factory Disassembly of components: compressors, control panel, and even complete disassembly if needed 	 <p>1-8 compressors</p> <ul style="list-style-type: none"> Ideal for applications with limited plant room area

Smardt G-Class V-Series Water-Cooled Chillers offer barrel configuration flexibility for applications with restricted footprints or access challenges.

low-load “pony chiller” for reduced-load situations such as nighttime or weekends. This extends the chiller’s capabilities at full or part load. It is achieved by utilizing a combination of multiple Turbocor VTX compressors running parallel with a single, smaller-capacity TGS compressor. This Pony Express compressor mix efficiently handles all types of loads. In a Pony Express configuration, the G-Class V-Series Chiller can use either R513A, R515B, or R1234ze refrigerants.

Turbocor TGS Compressor

The TGS is from Turbocor’s “green” range of compressors, so-named because they use next-generation refrigerants. The TGS can operate with R1234ze (GWP <1), and R515B (GWP is 299).*

Smardt’s G-Class chillers can be equipped with up to eight Turbocor TGS oil-free compressors. VFDs are built-in, and drives are internal to the machine. As with all oil-free compressors, the TGS features reduced vibration and quiet operation (up to 8dBA lower than screw



TGS Compressor

compressors) — ideal for noise-sensitive applications.

Multiple Configurations

Smardt can configure your G-Class V-Series chiller to fit any footprint or height restriction, with multiple barrel configurations available (see illustration above).

Extended Service Life

The G-Class V-Series chiller is designed for a service life of 25 years.

Chiller Options

Options for Smardt’s G-Class V-Series chillers include our integrated pump packages, and economizers.

Smardt Restart ensures that in the event of a power failure, your Smardt chiller is back on line as quickly as 45 seconds. Chilled water supply for critical applications is not impacted by intermittent power loss, eliminating the need for additional thermal storage. The start-up mode includes additional motor and surge protection.

Applications

Energy conscious plant owners and operators want optimized performance

with savings over the life of the chiller. Smardt’s G-Class V-Series chillers support critical-load applications in a variety of markets, including commercial, data center, pharmaceutical, hospital, higher education, district cooling, hotels, malls, and manufacturing.

Highlights

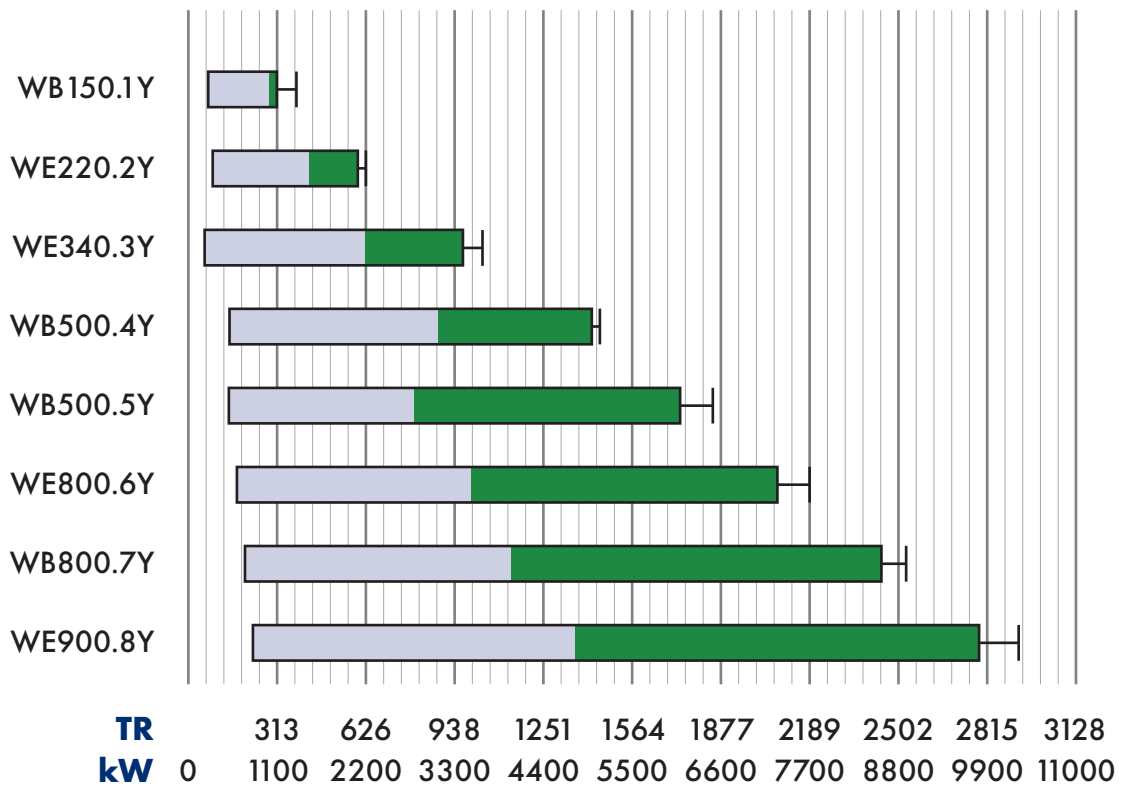
- Uses environmentally-friendly refrigerants having low-GWP ratings.
- Smardt’s largest capacity range of low GWP water-cooled chillers.
- Class leading part-load efficiencies, achieving optimum IPLV in total capacity range.
- Typically smaller footprint than chillers of comparable capacity.
- Responsive chilled water control under all conditions.
- Inbuilt redundancy with multiple compressors.
- Designed for ease of maintenance and serviceability, featuring field-serviceable compressors.
- Smardt quality, acceptance tested and pre-commissioned prior to delivery ensuring trouble-free commissioning and start-up on every project.

G-Class V-Series Water-Cooled Chillers

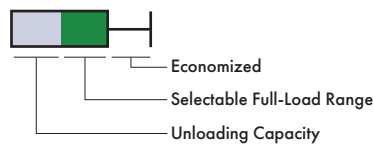
Smardt's G-Class V-Series Chillers with full-load capacities of units with R1234ze refrigerant, range from 300 to 2900 TR (1055 to 10200 kW)

Representative Models

Smardt can customize your G-Class V-Series Chiller to meet your project's needs and specifications. The models included in this capacity chart are considered representative of the G-Class V-Series Chiller, but selection is not limited to these specific models. Your Smardt representative can provide capacity data for your project.



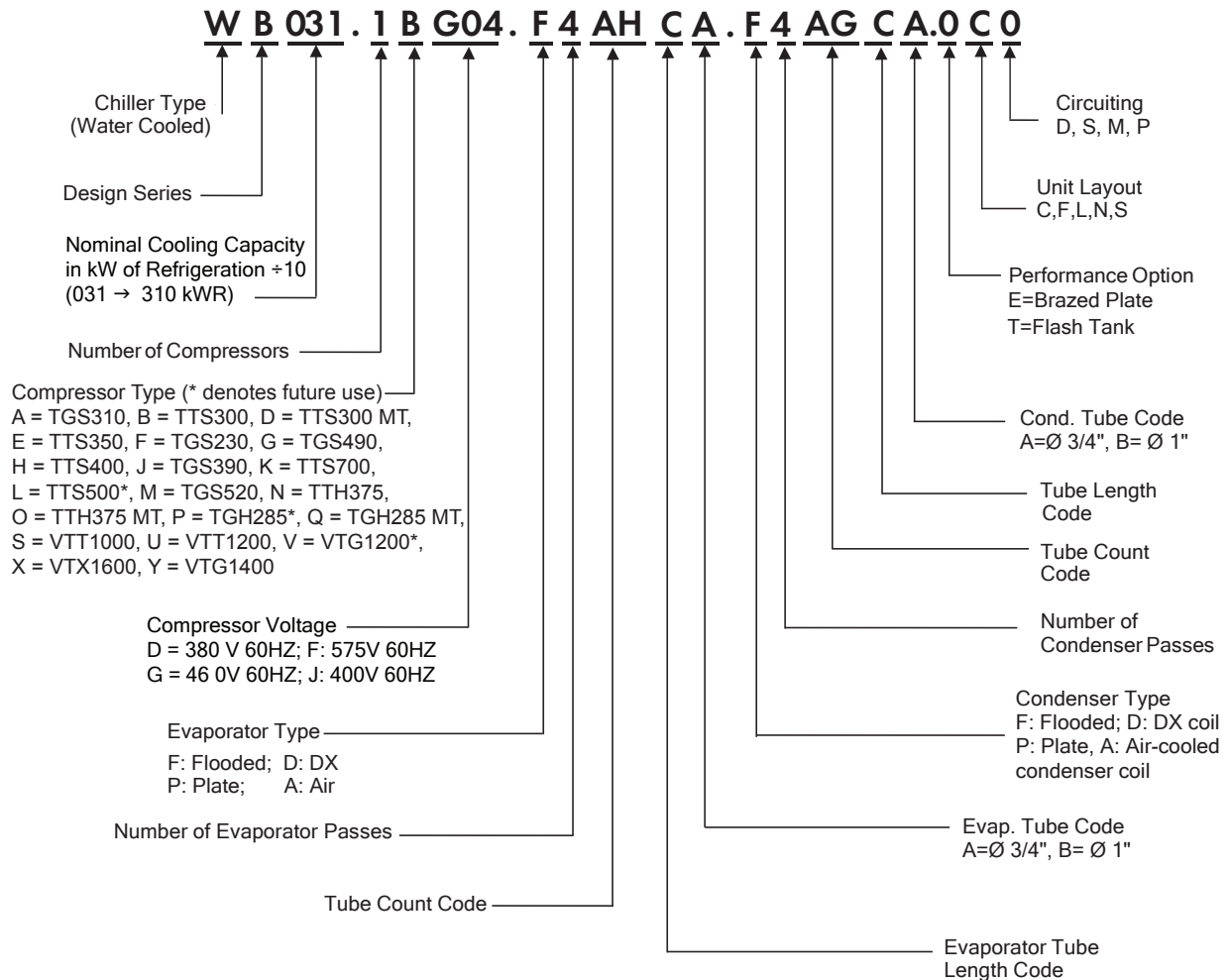
Cooling Capacity TR (kW)



Note: Available cooling capacity will vary with operating conditions and chiller configuration. Capacities shown are based on standard AHRI conditions.

G-Class V-Series Water-Cooled Chillers

Model Number Nomenclature



Global reach, single focus

Smardt is both the pioneer and world-leader in oil-free centrifugal chillers, with production facilities in Canada (Montreal area), Australia (Melbourne area), United States (Plattsburgh, New York), Germany (Stuttgart area), and China (Guangzhou and Nanjing).

Smardt service networks extend across the globe to monitor and support the world's largest installed base of oil-free high-efficiency chillers, with more than 10000 chillers installed globally.



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