



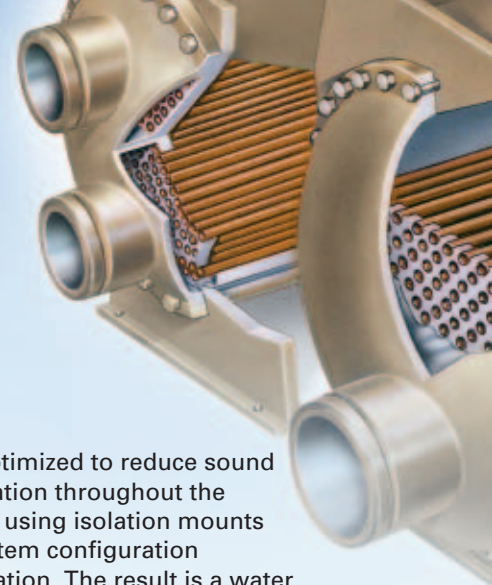
Water-cooled Series R[™] Chiller

Model RTHD

175–450 Tons 60 Hz, 125–450 Tons 50 Hz

*Industry leading performance and flexibility
for engineers*





R*eliability is achieved through the use of a direct-drive, low-speed, semi-hermetic compressor with only three moving parts.*

The RTHD chiller offers high reliability, improved energy efficiency, low sound levels, improved controls capability, increased application flexibility, and ease of installation. This is all due to its advanced design, low speed-direct drive compressor, and proven Series R™ chiller performance.

The Next Generation—Designed for You

The fourth generation of the successful water-cooled Series R products has several benefits over the previous design. Your suggestions led to the improvements we've incorporated, including:

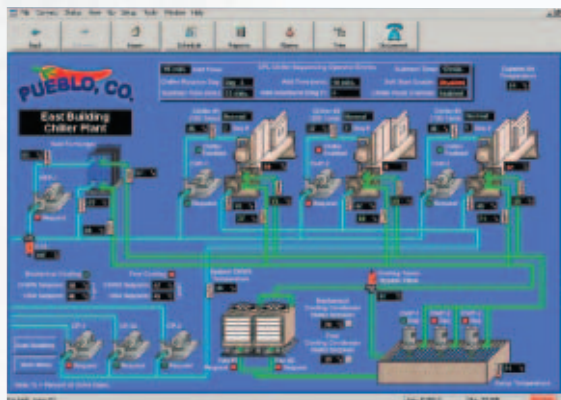
- Higher full-load energy efficiency for lower operating and life-cycle costs
- CH530 controls, with touch-screen display and LonTalk capability
- Less sensitivity to condenser-water temperatures, alleviating concerns based on startup temperatures
- Lighter weight for easier and less-expensive handling and installation

Reliability

Trane is the world's largest manufacturer of large helical-rotary compressors, with a reliability rate of over 99 percent in the first year of operation. Over 60,000 commercial and industrial chiller installations and

100,000 compressors operate worldwide. This reliability is achieved through the use of a direct-drive, low-speed, semi-hermetic compressor with only three moving parts.

With no gearboxes, compression pistons, shaft seals, or shaft-alignment problems, there is less chance of failure and thus lower maintenance costs and fewer service calls. In addition, the suction-cooled design means that the compressor motor operates in a cool, clean, and constant-temperature environment.



The CH530 controller features the Adaptive Control microprocessor, which has the ability to keep the chiller online, producing reliable cold water during extreme operating conditions when other chillers would usually trip off.

Sound—Lower Sound Levels Through Compressor and Chiller Design

Trane has a proven track record of continuously improving the sound levels of water chillers. With the RTHD, sound generation is less of a consideration in the choice of compressor technologies.

One primary design goal of the RTHD was to further reduce sound levels over previous marketplace designs. To meet this goal, the compressor was designed to minimize sound generation, and chiller components

were optimized to reduce sound propagation throughout the system, using isolation mounts and system configuration optimization. The result is a water chiller with reduced sound and vibration levels and improved tonal qualities.

Applications—Operation and Control Advantages for Most Any Application

The highly reliable semi-hermetic design with excellent lift and linear-unloading capabilities, as well as CH530 feedforward and Adaptive Controls™, and the Electronic Expansion Valve, allow the Series R to be used in a wide variety of applications including:

- Comfort cooling—designed for reliability, energy efficiency, and system-design optimization

- Industrial process cooling—reliable operation with tight control of temperatures
- Ice/thermal storage
- Heat recovery
- Low-temperature process cooling

System Design and Control—Greater Application Flexibility for Increased Savings

First-cost- and operating-cost-minimizing system-design concepts are catching on as their validity is proven through applications. These designs can provide lower equipment costs and lower operating costs than those possible with the traditional design methods and past chiller technologies. The concepts include:

- Lower-than-normal design chilled leaving-water temperature (higher evaporator delta T)



- Higher-than-normal design condenser leaving-water temperature (higher condenser delta T)
- Thermal storage
- Variable primary (evaporator) chilled-water flow
- Series evaporator and/or condenser arrangements

The next generation Series R chiller is designed for a wide range of applications and is especially suited for the dynamics of these system-saving job designs. The dynamic benefits include:

- Efficient lift capability
- Tight temperature control

For thermal storage, the yearly savings in demand charges can offset the higher lift for normal operation, the extra pumping, and the first cost of the storage system. For lower design evaporator temperatures and higher design condenser temperatures, the savings in pump and tower costs can be significantly higher than the larger chiller required, and the pump and tower operating cost savings can significantly exceed the chiller power consumption increase. The savings generally become larger with lower loads.

Linear compressor unloading, use of an Electronic Expansion Valve, short anti-recycle timers, and CH530 controls mean that the RTHD can maintain tight leaving-water temperature control in almost any application. These benefits fit especially well with the system-design savings ideas listed above. As the compressor reaches the operating temperatures for the application, the controls, in conjunction with the linear unloading slide valve, make sure you have total temperature control, even with chilled-water flow and/or load changes.

The RTHD will generally maintain chilled-water temperature control within $\pm 0.5^{\circ}\text{F}$ (0.28°C) for flow changes up to 10 percent of design per minute or instantaneous load changes, and will maintain control sufficient for most comfort-cooling applications with changes of flow up to 30 percent per minute. With industry-leading, 2-minute stop-to-start, and 5-minute start-to-start compressor timers, you can be confident of maintaining this control when the cooling load is far below design.

The savings possible depend on the application dynamics and the capabilities of the chiller. Consult your local Trane solutions provider to analyze the possibilities for a particular job.

LEED™ Certification

Because of its energy efficiency and use of HFC-134a, the Series R Chiller can move you forward on your path to LEED Building Certification. Both full- and part-load performance of the RTHD exceed the ASHRAE 90.1 standard, which LEED uses as a baseline.

In addition to the points specific to chillers, prudent chiller selection and creative system design can help you obtain other points. Several LEED points apply to the use, reuse, and treatment of water, as well as the control and monitoring of energy and water usage.

The RTHD has features and capabilities that can contribute to LEED points in the following areas:

1. **Water-Use Reduction:** Points are obtained by reducing non-landscaping usage. The efficient lift capabilities of the RTHD compressor provide the opportunity for the high-condenser-temperature system savings designs, which also lower water usage.

2. **Renewable Energy:** Higher condenser temperatures can also be used for heat recovery as well as corresponding energy savings and LEED points. The lift capabilities of the RTHD can reach the temperatures needed for heat recovery in the form of preheat for a boiler or domestic hot water.


3. **Measurement and Verification:** Points are obtained with continuous measurement of energy and water use. Tracer Summit controls offer the capability to continuously optimize, monitor, and provide documentation on system energy usage.

Designing to obtain the possible 9 points will depend on the application and tradeoffs. See your Trane Solutions Professional to determine the best design to minimize total costs and maximize your LEED Certification.

Energy Efficiency— Reduced Annual Operating Expenses

Trane offers superior full-load performance and optimized part-load performance with the RTHD. Energy efficiencies at or below .60 kW/ton at ARI conditions are available throughout the product tonnage range. These full-load efficiencies are comparable to most centrifugals, with part-load efficiencies exceeding most.

Using a compressor with infinite unloading has minimized part-load energy consumption. Some competitive compressors actually have step unloading similar to reciprocating compressors of the past. Under part-load conditions,



The only required maintenance for an RTHD is an annual oil analysis.

these chillers typically overcool or undercool the chilled water. This results in increased chiller operating costs and unwanted variations in chilled-water supply temperatures. The Series R compressor unloads the chiller smoothly and allows it to more closely match a building's cooling load or an industrial process load. This increases control over the chilled-water temperature, while reducing annual operating costs.

Controls

Trane's CH530 chiller control with Adaptive Control microprocessor is one of the most advanced chiller controllers available in the industry. With LCD touch-screen access, all operating information and reports are viewed using a scrolling display, with easy access to inputs and outputs. This makes it one of the most versatile and user-friendly control panels on the market. The CH530 display is also available with a choice of multiple languages.

In extreme operating conditions, when safeties on other chillers would generally shut the machine down, the Trane Series R chiller Adaptive Control modulates system components, keeping the chiller online producing reliable chilled water, while optimizing chiller performance and providing notification of the condition.

The Integrated Comfort System

The water-cooled Series R chiller, with the CH530, makes a powerful

combination with the Trane Tracer Summit Building Management System to become part of a Trane Integrated Comfort system (ICS). An Integrated Comfort system is a building comfort system comprised of Trane HVAC equipment, integral unit controllers, and building management. It is all designed and commissioned with Trane application expertise to provide comfort, efficiency, and reliability, as well as single-source warranty and service.

Whether you are replacing a chiller or adding one to any centrally controlled plant, the Tracer CH530 chiller controller offers a wide range of interface options. Its ability to communicate with other systems using industry-standard control signals allows you to upgrade the control of your chiller plant regardless of your current control system.

Quality

The Trane facility in Pueblo, Colorado, is ISO 9001 Certified. This level of dedication to quality is what chiller owners have come to expect from Trane chillers. Each Series R chiller goes through extensive factory testing, virtually eliminating startup problems.

Ease of Installation

The compact Series R chiller is an excellent choice for any retrofit or replacement job. All units fit through a standard double-width door. For extremely tight installations, the standard bolt-together design allows for easy unit disassembly.



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Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.