



# Water-cooled Series R™ Chiller

*Model RTHD*  
175–450 Tons 60 Hz, 125–450 Tons 50 Hz

*Helping today's owner maximize the bottom line.*

**T**he only required maintenance for an RTHD is an annual oil analysis.

matches system requirements and rapidly adjusts to match the changes seen by most processes.

## Ice/Thermal Storage

Helical-rotary chillers in general are frequently used in partial or full thermal-storage applications because of their excellent compressor lift (operating temperature range) capability. High reliability and low maintenance means thermal storage applications are possible without a full-time operation/maintenance staff, and Summit Controls can notify a computer or pager of any system issues.

## Heat Recovery

The RTHD compressor lift capabilities also play well in heat recovery, or just high-temperature condenser applications. Building energy saving initiatives such as using condenser water for reheat (dehumidification), preheating boiler water, and providing domestic hot water are compatible with its temperature capabilities.

## Refrigerant— The Right Refrigerant for the Chiller

The Model RTHD medium-pressure chiller was the second generation of the Water-Cooled Series R™ chiller specifically engineered to use the medium-pressure alternative refrigerant HFC-134a. This choice allows the RTHD to meet your performance requirements.

In an effort to lower refrigerant emissions, refrigerant cost (unit and life cycle), and increase energy efficiency, the RTHD was designed to use less refrigerant (2 lb/ton on average) than other chillers of comparable capacity. This also means less service time to evacuate and charge the refrigerant system, as well as lower replacement costs.

## 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 more efficient system operation 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

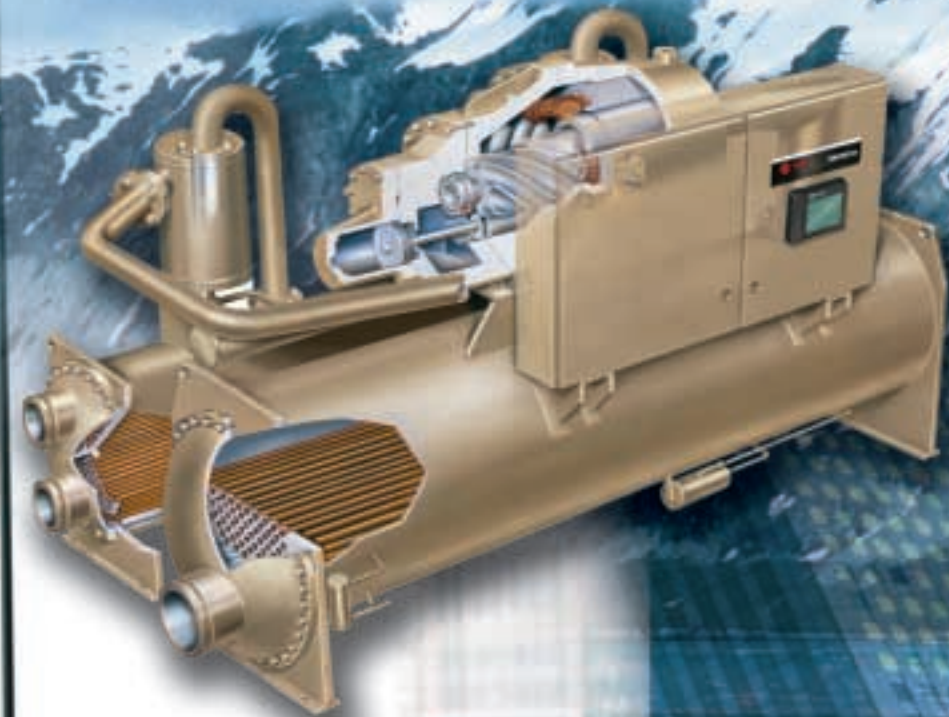


**Trane**  
A business of American Standard Companies  
[www.trane.com](http://www.trane.com)

For more information, contact your local Trane office or e-mail us at [comfort@trane.com](mailto:comfort@trane.com)

|                         |               |
|-------------------------|---------------|
| Literature Order Number | RLC-SLB009-EN |
| Date                    | May 2003      |
| Supersedes              | New           |
| Stocking Location       | Inland        |

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





## **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 chiller 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 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. Continuous, extensive research and development, testing,

and advanced manufacturing processes provide excellent reliability. Trane's helical-rotary compressor has an excellent 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, shaft seals, or shaft-alignment problems, there is less chance of failure. In addition, the semihermetic 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.

### **Energy Efficiency—Reduced Annual Operating Expenses**

The use of advanced heat-transfer technology with innovations in refrigerant distribution has allowed the Series R chiller to achieve record efficiency levels, even higher than the

industry-leading RTHC. With the Series R Compressor, control over the chilled-water temperature is increased, simultaneously reducing annual operating costs.

Trane offers superior full-load performance and optimized part-load performance. 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.

### **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.

### **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.

### **LEEDS Certification**

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

The RTHD has features and capabilities that can contribute to LEEDS points in these additional areas:

1. Water-use reduction
2. Renewable energy
3. Measurement and verification

### **Quality**

The Trane facility in Pueblo, Colorado, is ISO9001 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.

### **Reduced Maintenance—Less Time and Money Every Year**

The only required maintenance for the RTHD is an annual oil analysis. The only recommended maintenance includes cleaning the condenser tubes as needed. The semihermetic design allows the compressor to be driven by

a zero-maintenance motor. There are no shaft seals to leak or shaft-alignment problems.

Unlike some competitive gear-driven helical-rotary and centrifugal chillers, Trane's direct-drive design eliminates the need for a gearbox, thus eliminating the need for gear maintenance.

The Adaptive Control™ microprocessor also helps reduce unnecessary maintenance by monitoring, protecting, and taking corrective action so that the chiller stays on-line when you need it the most. Service calls for nuisance trip-outs are virtually eliminated.

### **Ease of Installation**

The compact Series R chiller is an excellent choice for any retrofit or replacement job. It is smaller than most chillers it might replace, and easier to fit into existing buildings. All units fit through a standard double-width door. For extremely tight installations, the standard bolt-together design allows for easy unit disassembly.

The decreased weight of the new generation Series R reduces the requirements for lifting, rigging, and installation.

Extensive factory testing helps ensure trouble-free startup, resulting in lower installation costs and faster job completion.

### **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.



Adaptive Controls provide internal control logic that monitors operation of the chiller and keeps it running during extreme operating conditions. While controls on other chillers generally shut the machine down, the Trane Series R chiller modulates system components, keeping the chiller online producing reliable chilled water, while optimizing chiller performance and providing notification of the condition.

### **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 chiller to be used in a wide variety of applications including:

### **Comfort Cooling—Designed for Reliability, Energy Efficiency, and System Design Optimization**

Most comfort-cooling applications consider reliability and energy efficiency above all else in the design requirements. With proven reliability and industry-leading chiller efficiency, the RTHD is perfectly suited for these applications.

### **Industrial Process Cooling / Low Temperature Process—Reliable Operation with Tight Control of Temperatures**

The Trane Water-Cooled Series R™ has the proven reliability required to keep the process running, eliminating concerns for chiller and resulting process downtime. The RTHD chiller