



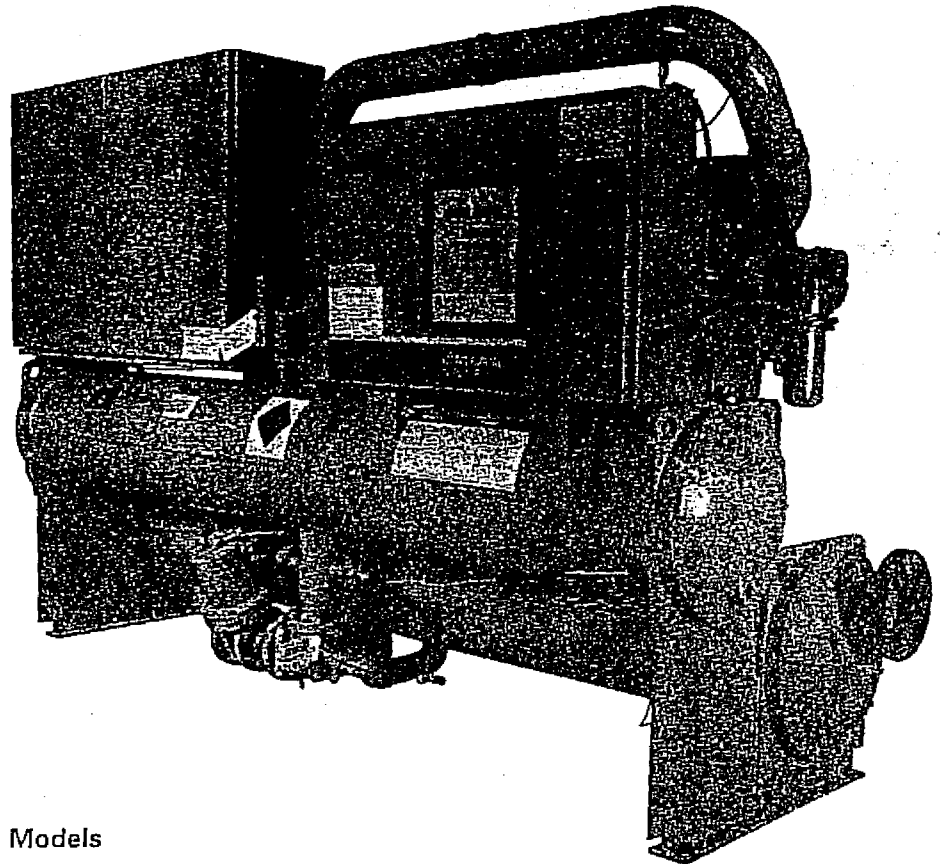
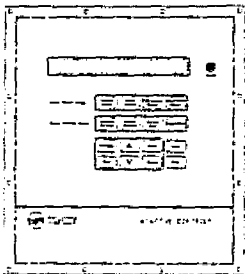
TRANE

**Installation
Operation
Maintenance**

RTHB-IOM-1

Library	Service Literature
Product Section	Refrigeration
Product	Rotary Liquid Chillers - Water-Cooled
Model	RTHB
Literature Type	Installation, Operation, Maintenance
Sequence	1
Date	February 1994
File No.	SV-RF-RLC-RTHB-IOM-1-294
Supersedes	Original

**Series R®
Water-Cooled
Hermetic
CentraVac®
Rotary Liquid
Chillers**



Models

- | | |
|----------|----------|
| RTHB-130 | RTHB-255 |
| RTHB-150 | RTHB-300 |
| RTHB-180 | RTHB-380 |
| RTHB-215 | RTHB-450 |

Since The Trane Company has a policy of continuous product improvement, it reserves the right to change specifications and design without notice. The installation and servicing of the equipment referred to in this booklet should be done by qualified, experienced technicians.

IMPORTANT NOTICE

Refrigerant Emission Control

World environmental scientists have concluded, based on the best currently available evidence, that the ozone in our upper atmosphere is being reduced, due to the release of CFC fully-halogenated compounds.

The Trane Company urges all HVAC servicers, working on Trane and other manufacturers' products, to make every effort to eliminate, if possible, or vigorously reduce emissions of CFC, HCFC and HFC refrigerants into the atmosphere that result from installation, operation, routine maintenance, or major service on this equipment. Always act in a responsible manner to conserve refrigerants for continued use, even when acceptable alternatives are available.

Conservation and emission reduction can be accomplished by following recommended Trane operation, maintenance and service procedures, with specific attention to the following:

1. Refrigerant used in any type of air conditioning or refrigerating equipment should be recovered for reuse, recovered and/or recycled for reuse, reprocessed (reclaimed), or properly destroyed, whenever it is removed from equipment. Never release refrigerant into the atmosphere.
2. Always determine possible recycle or reclaim requirements of the recovered refrigerant before beginning recovery by any method. Questions about recovered refrigerants and acceptable refrigerant quality standards are addressed in ARI Standard 700.
3. Use approved containment vessels and safety standards. Comply with all applicable transportation standards when shipping refrigerant containers.
4. In order to assist in reducing power generation emissions, always attempt to improve equipment performance with improved maintenance and operations that will help conserve energy resources.

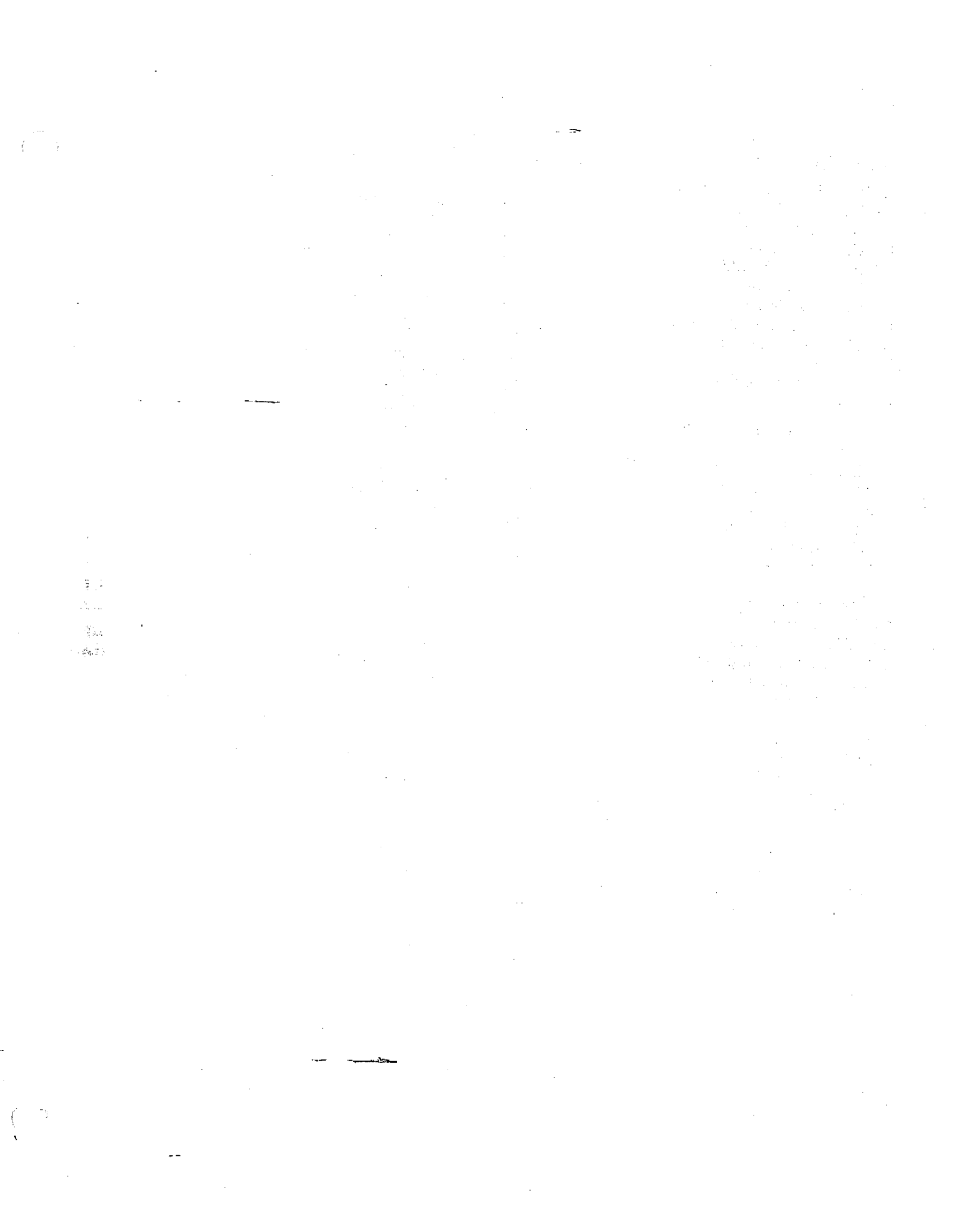


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Section 1

GENERAL INFORMATION

1-1. LITERATURE CHANGE HISTORY

RTHB-IOM-1 (May 1994)

Original manual. Covers installation, operation, and maintenance of RTHB-130 thru RTHB-450 units.

1-2. UNIT IDENTIFICATION

When the unit arrives, compare all nameplate data with ordering and shipping information.

1-3. UNIT INSPECTION

When the unit is delivered, verify that it is the correct unit and that it is properly equipped. Compare the information which appears on the unit nameplate with the ordering and submittal information. Refer to Paragraph 1-9.

Inspect all exterior components for visible damage. Report any apparent damage or material shortage to the carrier and make a "unit damage" notation on the carrier's delivery receipt. Specify the extent and type of damage found and notify the appropriate Trane Sales Office.

Do not proceed with installation of a damaged unit without sales office approval.

1-4. INSPECTION CHECKLIST

To protect against loss due to damage incurred in transit, complete the following checklist upon receipt of the unit.

- [] Inspect the individual pieces of the shipment before accepting the unit. Check for obvious damage to the unit or packing material.
- [] Inspect the unit for concealed damage as soon as possible after delivery and before it is stored. Concealed damage must be reported within 10 days.
- [] If concealed damage is discovered, stop unpacking the shipment. Do not remove damaged material from the receiving location. Take photos of the damage, if possible. The owner must provide reasonable evidence that the damage did not occur after delivery.
- [] Notify the carrier's terminal of the damage immediately, by phone and by mail. Request an immediate, joint inspection of the damage with the carrier and the consignee.

- [] Notify the Trane sales representative and arrange for repair. Do not repair the unit, however, until damage is inspected by the carrier's representative.

1-5. LOOSE PARTS INVENTORY

Check all items against the shipping list. Water vessel drain plugs, isolation pads, rigging and electrical diagrams, service literature and the starter panel wire pullbox, required on some unit-mounted starters, are shipped, unassembled, in the starter panel.

1-6. UNIT DESCRIPTION

The 130 thru 450-ton Model RTHB units are single compressor, helical-rotary type, water-cooled liquid chillers designed for installation indoors. Each unit is a completely assembled, hermetic package that is factory-piped, wired, leak-tested, dehydrated, charged, and tested for proper control operation before shipment.

Figures 1-1 and 1-2 show a typical RTHB unit and its components. Water inlet and outlet openings are covered before shipment. The compressor oil tank is factory charged with the proper amount of refrigeration oil. The unit is factory charged with refrigerant. On units with condenser isolation valves, 90% of the charge is isolated in the condenser.

1-7. COMMONLY USED ACRONYMS

The unit-mounted control panel used on the Model RTHB liquid chiller is referred to in this manual as the "UCP". The microprocessors, located in the UCP, are designated the "UCP2".

Acronyms used in this manual are defined below.

AMB	= Outdoor Ambient Temperature
BAS	= Building Automation System
BCL	= Bidirectional Communications Link
CLD	= Clear Language Display
CLS	= Current Limit Setpoint
CWR	= Chilled Water Reset
CWS	= Chilled Water Setpoint
DDT	= Design Delta-T (i.e., the difference between entering and leaving chilled water temperatures)
ENT	= Entering Chilled Water Temperature
HVAC	= Heating, Ventilating and Air Conditioning
I/O	= Input and Output Wiring
IPC	= Interprocessor Communication

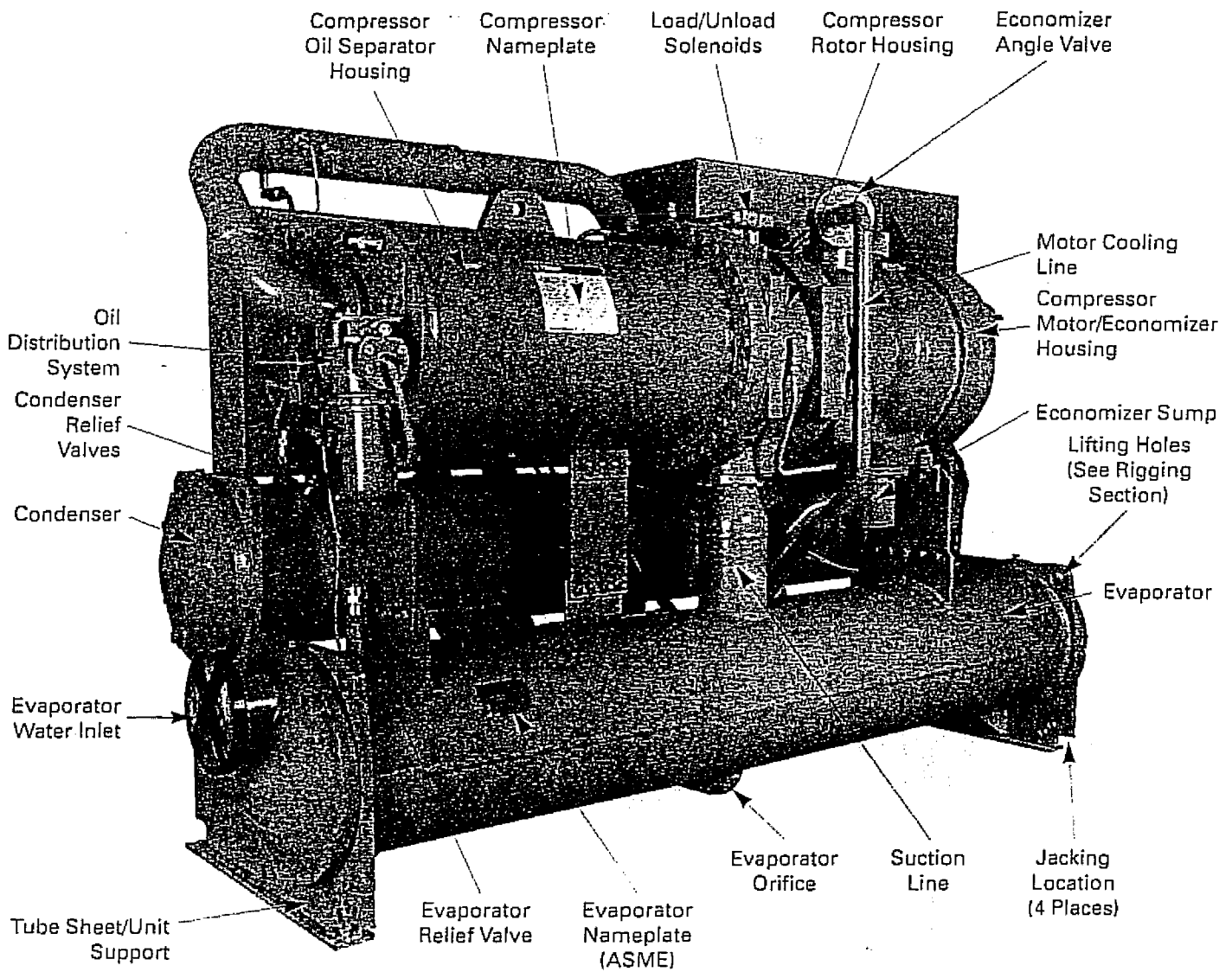
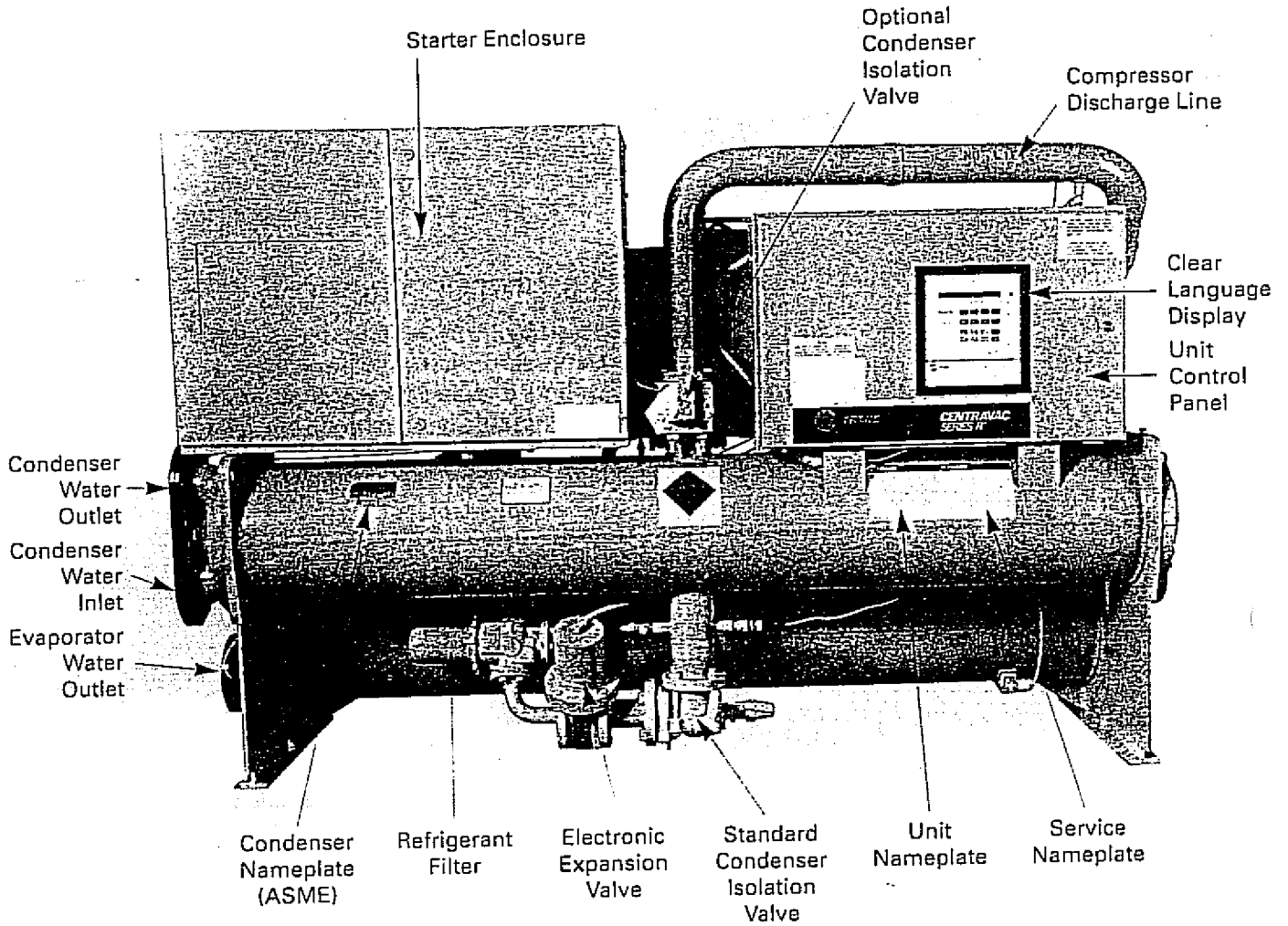


Figure 1-2.
Component Layout of Typical RTHB
(Back View)



*Figure 1-1.
Component Layout of Typical RTHB
with Unit-Mounted Starter (Front View)*

1-10. MODEL NUMBER CODING SYSTEM

The model numbers for the unit, the compressor, and the starter are comprised of numbers and letters which represent features of the equipment. Shown on the chart in Figure 1-3 are samples of typical unit, compressor, and starter model numbers, followed by the coding system for each.

Each position, or group of positions, in the number is used to represent a feature. For example, in Figure 1-3, position 08 of the unit model number, Unit Voltage, contains the letter "F". From the chart, it can be seen that an "F" in this position means that the unit voltage is 460/60/3.

Serial # U95FOB200

The Series R unit model number is as follows:

RTH B 150 F M A O L W P O T O U N N 3 L F 2 L F V O Q U
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 (digit position for above)

Digits 01, 02, 03 — Series R° CTV

RTH = Series R CenTraVac°

Digit 04 — Development Sequence

B = 2nd Major Development

Digits 05, 06, 07 — Nominal Tons

- 130 = 130 Nominal Tons
- 150 = 150 Nominal Tons
- ~~180~~ = 180 Nominal Tons
- 215 = 215 Nominal Tons
- 255 = 255 Nominal Tons
- 300 = 300 Nominal Tons
- 380 = 380 Nominal Tons
- 450 = 450 Nominal Tons

Digit 08 — Unit Voltage

- A = 200/60/3
- C = 230/60/3
- M = 346/50/3
- D = 380/60/3
- R = 380/50/3
- N = 400/50/3
- U = 415/50/3
- F** = 460/60/3
- H = 575/60/3
- S = SPECIAL

Digit 09

- L = Lowest Nominal Kw Motor for Compressor Size
- M** = Medium Nominal Kw Motor for Compressor Size
- H = Highest Nominal Kw Motor for Compressor Size

Digits 10, 11 — Design Sequence

AO = First Design, etc. Will increment when parts are affected for service purposes.

Digit 12 — Unit Specials

- 0** = No Unit Specials
- C** = All Unit Specials are denoted by digits elsewhere in the model number
- S** = Unit Has An Uncatagorized Special not denoted by a digit elsewhere in the model number

Digit 13 — Shell Length

- N** = Standard (Short) Shells
- L** = High Eff. (Long) Shells
- E** = Extended Shells

Digit 14 — Unit Structure

- W** = Welded
- B** = Separable

Digit 15 — Control Options

- 0** = Without Options Module
- P** = With Options Module

Digit 16 — Printer Interface

- 0** = Without Printer Interface
- P** = With Printer Interface

Digit 17 — ICS Interface

- 0** = Without Tracer Interface
- T** = Tracer Communications (COMM 3)
- M** = Tracer Summit Communications (COMM 4)

Digit 18 — Remote CLD Display Module

- 0** = Without
- R** = With

Digit 19 — Starter Type

- R** = Remote Starter (See Starter Model No.)
- U** = Unit Mounted Starter (See Starter Model No.)

Digit 20 — Evap Temp Range

- N** = Standard and Low Temp Range (Above 20 Deg F)
- V** = Very Low Temp Range (20 Deg F and Below)

Digit 21 — Design Pressure Ratio

- N** = Standard Pressure Ratio
- S** = Special Customer Option

Digit 22 — Evap Water Passes

- 2** = 2 Pass
- 3** = 3 Pass
- 4** = 4 Pass
- S** = Special Customer Option

Digit 23 — Evap Connections

- 1** = 150 psi Flanged Connections
- H** = 300 psi Flanged Connections
- M** = 300 psi Marine Grooved Connections
- S** = Special Customer Option

Digit 24 — Evap Tubes

- F** = Standard 06A High-Perf Tubes
- M** = Smooth Bore Copper Tubes
- S** = Special Customer Option

Digit 25 — Cond Water Passes

- 2** = 2 Pass
- 3** = 3 Pass
- S** = Special Customer Option

Digit 26 — Cond Connections

- 1** = 150 psi Flanged Connections
- H** = 300 psi Flanged Connections
- M** = 300 psi Marine Grooved Connections
- S** = Special Customer Option

Digit 27 — Cond Tubes

- F** = Standard I-E Finned Tubes
- G** = Smooth Bore Copper Tubes
- H** = Smooth Bore 90/10 CU-NI Tubes

Digit 28 — Isolation Valve

- 0** = No Condenser Isolation Valve
- R** = With Condenser Isolation Valve

Digit 30 — Thermal Insulation

- 0** = Without Thermal Insulation
- 1** = With Thermal Insulation
- S** = Special Customer Option

Digit 31 — Agency Listing

- 0** = No Agency Listing
- U** = UL Listed
- C** = CSA Listed
- B** = UL and CSA Listed

Note: Position numbers not shown are currently unassigned. Not all combinations are available on all sizes.

Figure 1-3.
 Model Number Coding System
 (Continued on next page)

- LVG = Leaving Chilled Water Temperature
- NEC = National Electric Code
- PCWS = Front Panel Chilled Water Setpoint
- PFCC = Power Factor Correction Capacitors
- PSID = Pounds-per-Square-inch Differential (pressure differential)
- PSIG = Pounds-per-Square-inch (gauge pressure)
- RAS = Reset Action Setpoint
- RLA = Rated Load Amps
- RCWS = Reset Chilled Water Setpoint (CWR)
- RRS = Reset Reference Setpoint (CWR)
- Tracer = Type of Trane Building Automation System
- TCI = Tracer Communication Interface
- SCI = Serial Communications Interface
- UCLS = Unit Current Limit Setpoint
- UCM = Unit Control Modules
- UCP = Unit Mounted Control Panel
- UCP2 = Microprocessor-based, Chiller Controller
- UCWS = Unit Chilled Water Setpoint

1-8. WARNINGS AND CAUTIONS

Warnings and Cautions appear in boldface type at



appropriate points in this manual.

Warnings are provided to alert personnel to potential hazards that can result in personal injury or



death; they do not replace the manufacturer's recommendations. CAUTIONS alert personnel to conditions that could result in equipment damage. Your personal safety and reliable operation of this machine depend upon strict observance of these precautions. The Trane Company assumes no liability for installation or service procedures performed by unqualified personnel.

1-9. NAMEPLATES

Unit Nameplates

The RTHB "unit" and "service" nameplates are applied to the exterior surface of the condenser. The "compressor" nameplate is applied to the compressor. Refer to Figures 1-1 and 1-2 for locations.

Note: Nameplate locations may vary.

The "unit" nameplate provides the following information:

- Unit model and size descriptor.
- Unit serial number.
- Unit device number.
- Identifies unit electrical requirements.
- Lists correct operating charges of R-22 and refrigerant oil.
- Lists unit test pressures and maximum working pressures.

The "service" nameplate provides the following information:

- Unit model and size descriptor.
- Unit serial number.
- Product coding block which identifies all unit components and unit "design sequence" (used to order literature and make other inquiries about the unit).
- Identifies installation, operation and maintenance manuals.
- Lists drawing numbers for unit wiring diagrams.

The "compressor" nameplate provides the following information:

- Compressor model and size descriptor.
- Compressor serial number.
- Compressor device number.
- Motor serial number.
- Compressor electrical characteristics.
- Product coding block.
- Compressor test pressures and maximum working pressures.

