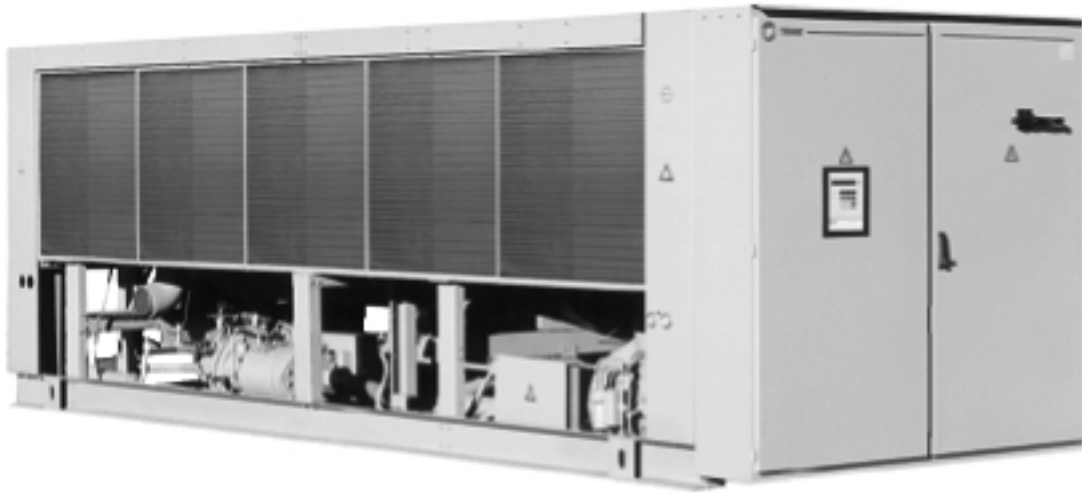




TRANE®

RTAA/RTAB Air-Cooled Helical Rotary Liquid Chillers

Installation Operation Maintenance



This manual should be used jointly
with the manual of the UCM-CLD
reference L80 IM 025 E



C20 IM 004 E

RTAA 213 - 214 - 215 - 216 - 217 - 322 - 324 - 328 - 430 - 432 - 434
RTAB 108 - 109 - 110 - 207 - 209 - 210 - 211 - 212 - 213 - 214 - 215 - 216 - 217 - 220 -
324 - 328 - 430 - 432 - 434

Foreword

These Installation Operation and Maintenance instructions are given as a guide to good practice in the installation, putting into service, operation and periodic maintenance by the user, of the Trane RTAA/RTAB, screw compressor liquid chiller.

They do not give the full service procedures necessary for the continued successful operation of these units. The services of a qualified service technician should be employed, through the medium of a maintenance contract with a reputable service company, to ensure correct long-term maintenance procedures are carried out.

Warranty

Warranty is based on the general terms and conditions of Société Trane. The warranty is void if the equipment is modified or repaired without the written approval of Trane, if the operating limits are exceeded, or if the control system or the electrical wiring is changed. Damage due to misuse, lack of maintenance, or failure to comply with the manufacturer's instructions, is not covered by the warranty obligation. Failure to have the maintenance procedures carried out, may entail cancellation of the warranty and liabilities by Trane.

Caution : Warranty is not Maintenance. Maintenance not carried out in accordance with this manual, may entail the cancellation of warranty and liabilities by Trane.

Reception

All RTAA/RTAB models arrive at jobsite factory assembled, with an operating charge of refrigerant and oil, and with control and starter panels mounted and wired. On arrival, inspect the unit before signing the delivery note. Specify any damage on the delivery note, and send a registered letter of protest to the last carrier of the goods within 72 hours of delivery. Notify the local Trane sales office at the same time.

The unit should be totally inspected within 7 days of delivery. If any concealed damage is discovered, send a registered letter of protest to the carrier within 7 days of delivery and notify the local Trane sales office.

General information

About this manual

Warnings and Cautions appear at appropriate places in this instruction manual. Your personal safety and the proper operation of this machine require that you follow them carefully. Société Trane assumes no liability for installations or servicing performed by unqualified personnel.

Important : This document must be used jointly with the Installation Operation Maintenance instructions for the Unit Control Module with Clear Language Display (UCM-CLD), referenced L80 IM 025 E.

About this unit

Trane RTAA/RTAB liquid chillers are assembled, pressure tested, dehydrated, charged with refrigerant and oil, and factory tested, before shipment. The RTAA /RTAB units are factory run tested under actual design conditions.

Refrigerant

The refrigerant provided by Société Trane or Trane UK Ltd meets all the requirements of our units. When using recycled or reprocessed refrigerant, it is advisable to ensure its quality is equivalent to that of a new refrige-

rant. For this, it is necessary to have a precise analysis made by a specialized laboratory. If this condition is not respected, the Société Trane or Trane UK Ltd warranty could be cancelled.

Table of contents

| | |
|------------------|---|
| Foreword | 2 |
| Warranty | 2 |
| Reception..... | 2 |
| General | 2 |
| Refrigerant..... | 2 |

Installation

| | |
|---------------------------|----|
| General information | 4 |
| Installation..... | 7 |
| Clearances | 8 |
| Lifting procedure | 11 |
| Water piping..... | 11 |
| Freeze protection..... | 14 |

Operation

| | |
|-------------------------------|----|
| Operating principles | 15 |
| Refrigeration cycle..... | 15 |
| Oil system..... | 18 |
| Remote CLD panel wiring | 19 |
| Pre-start procedure..... | 21 |
| Start-up procedure | 22 |
| Shut-down procedure | 23 |

Maintenance

| | |
|---|----|
| Maintenance..... | 24 |
| Chemical cleaning configuration..... | 24 |
| Start up log sheet (compressor A, B, C and D) | 29 |
| Safety recommendations..... | 32 |
| Maintenance contract | 32 |
| Training | 32 |

General information

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 «Nameplates».

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.

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 15 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 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.

Loose parts inventory

Check all the accessories and loose parts which are shipped with the unit against shipping list. Included in these items will be vessel drain plugs, rigging and electrical diagrams, and service literature, which are placed inside the control panel and/or starter panel for shipment.

Unit description

The RTAA/RTAB units are one, two, three or four compressor, helical-rotary type, air-cooled liquid chillers designed for installation outdoors. Compressor circuits are completely assembled hermetic packages that are factory-piped, wired, leak-tested dehydrated charged, and tested for proper control operation before shipment.

Figures 1 thru 3 show a typical RTAA/RTAB unit and its components. Table 1 contains general RTAA/RTAB mechanical specifications. Chilled water inlet and outlet openings are covered for shipment. Each circuit is factory charged with the proper amount of refrigerant and oil. Each circuit has a separate compressor motor starter.

Figure 1A - Typical RTAB unit

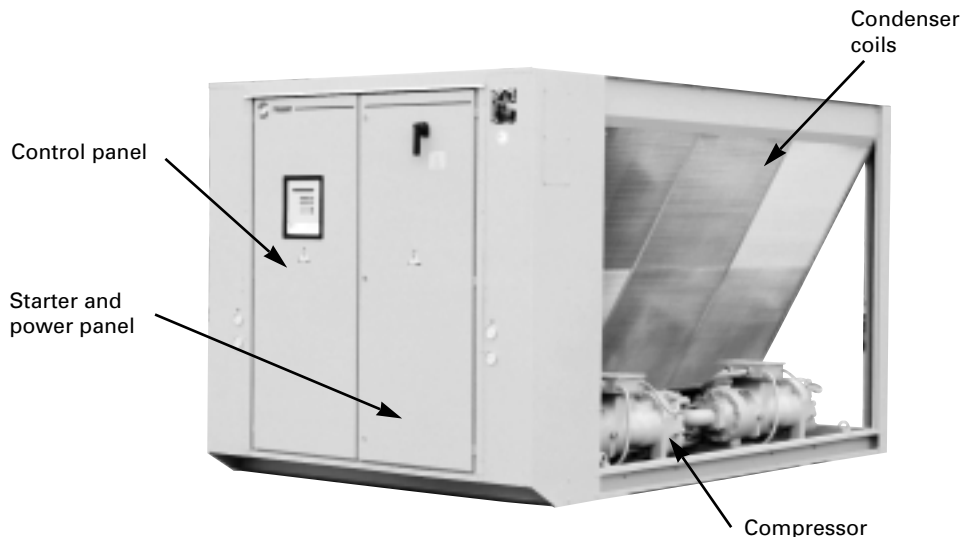


Figure 1B - Typical RTAA unit

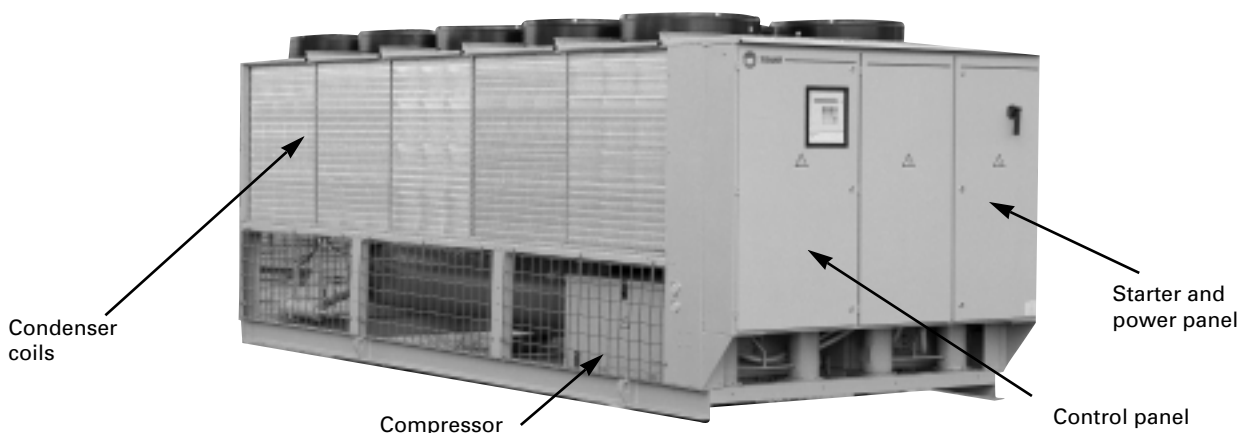


Figure 2 - Starter and control panels

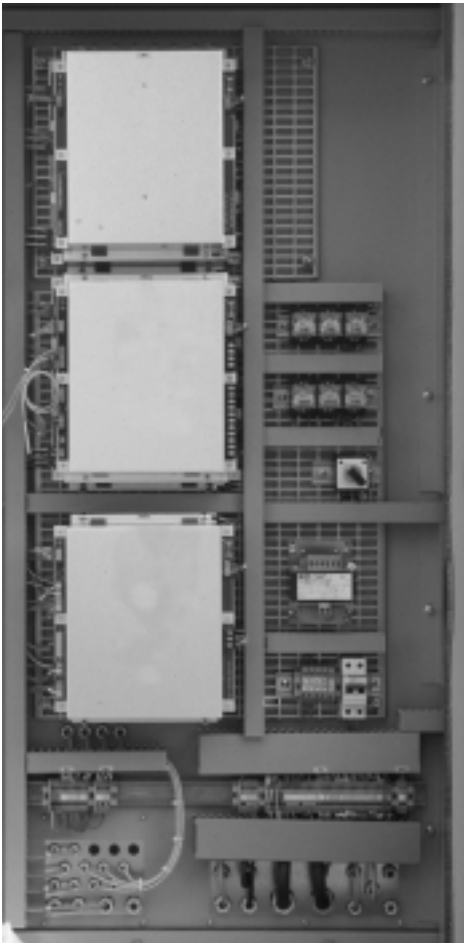


Figure 3 - Starter and control panels

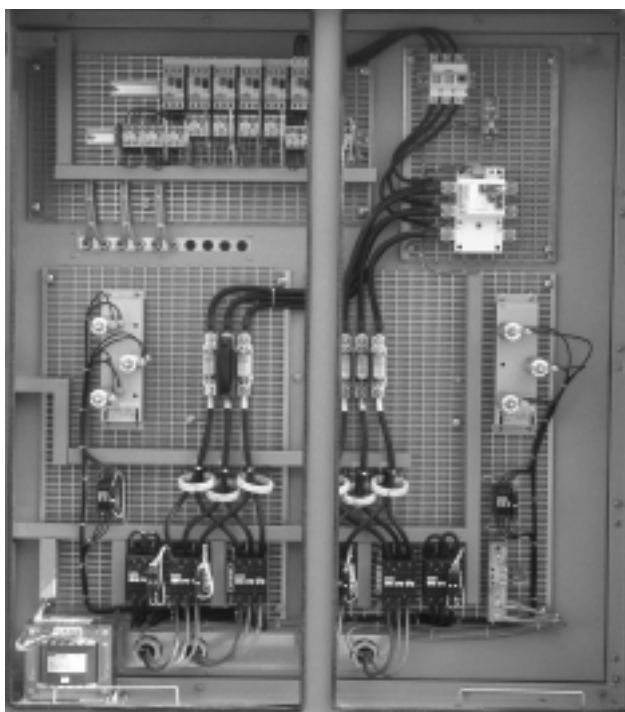


Table 1A : General data on units R22 (standard units)

| Model RTAA | | 213 | 214 | 215 | 216 | 217 | 322 | 324 | 328 | 430 | 432 | 434 |
|------------------------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | (kW) | 438 | 481 | 503 | 555 | 601 | 664 | 769 | 865 | 952 | 1036 | 1140 |
| Number of Circuit | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 2/1 | 2/1 | 2/1 | 2/2 | 2/2 | 2/2 |
| Maximum FLA 400/50/3 (2) | (A) | 308 | 331 | 354 | 384 | 414 | 485 | 561 | 621 | 708 | 768 | 828 |
| Number of fans | | 8 | 8 | 8 | 9 | 10 | 12 | 14 | 16 | 16 | 18 | 20 |
| Fan Motor Size (3) | (kW) | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 |
| Fan Speed (3) | (rpm) | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 |
| Oil sump heater | (W) | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 | 300/150 | 300/150 | 300/150 | 300/300 | 300/300 | 300/300 |
| Evaporator Model | | ES120 | ES140 | ES140 | ES170 | ES170 | ES225 | ES225 | ES250 | ES300 | ES300 | ES340 |
| Evaporator Heater Cable | (W) | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Evaporator Water Connection | (mm) | DN150 | DN150 | DN150 | DN150 | DN150 | vic 6" | vic 6" | vic 6" | vic 6" | vic 6" | vic 6" |
| Evaporator Water Volume | (l) | 106 | 270 | 270 | 222 | 222 | 442 | 442 | 415 | 665 | 665 | 610 |
| Oil Charge | (l) | 15/15 | 17/17 | 17/17 | 20/17 | 20/20 | 30/17 | 34/20 | 40/20 | 34/34 | 40/34 | 40/40 |
| R22 Operating Charge | (kg) | 47/47 | 56/56 | 56/56 | 58/58 | 58/58 | 94/53 | 117/53 | 120/55 | 116/116 | 116/116 | 120/120 |

| Modèle RTAB | | 108 | 109 | 110 | 207 | 209 | 210 | 211 |
|------------------------------|-------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | | 211 | 243 | 283 | 190 | 227 | 260 | 290 |
| Number of Circuit | | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1 | 1 | 1 | 1/1 | 1/1 | 1/1 | 1/1 |
| Maximum FLA 400/50/3 (2) | (A) | 154 | 177 | 207 | 158 | 180 | 196 | 212 |
| Number of fans | | 4 | 5 | 6 | 4 | 4 | 5 | 6 |
| Fan Motor Size (3) | (kW) | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 |
| Fan Speed (3) | (rpm) | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 |
| Oil sump heater | (W) | 150 | 150 | 150 | 150/150 | 150/150 | 150/150 | 150/150 |
| Evaporator Model | | ES71 | ES81 | ES81 | 587-2 | ES70 | ES80 | ES80 |
| Evaporator Heater Cable | (W) | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Evaporator Water Connection | (mm) | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 |
| Evaporator Water Volume | (l) | 145 | 134 | 118 | 95 | 145 | 134 | 134 |
| Oil Charge | (l) | 16 | 16 | 16 | 8/8 | 8/8 | 8/8 | 8/8 |
| R22 Operating Charge | (kg) | 46 | 48 | 50 | 18/18 | 23/23 | 24/24 | 24/24 |

| Model RTAB | | 212 | 213 | 214 | 215 | 216 | 217 | 220 |
|------------------------------|-------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | | 330 | 417 | 452 | 479 | 523 | 567 | 629 |
| Number of Circuit | | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 2/2 |
| Maximum FLA 400/50/3 (2) | (A) | 256 | 308 | 331 | 354 | 384 | 414 | 512 |
| Number of fans | | 6 | 8 | 9 | 10 | 9 | 10 | 10 |
| Fan Motor Size (3) | (kW) | 1.88/1.88 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 |
| Fan Speed (3) | (rpm) | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 |
| Oil sump heater | (W) | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 | 300/300 |
| Evaporator Model | | ES100 | ES120 | ES140 | ES140 | ES170 | ES170 | ES200 |
| Evaporator Heater Cable | (W) | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Evaporator Water Connection | (mm) | DN125 | DN125 | DN150 | DN150 | DN150 | DN150 | DN150 |
| Evaporator Water Volume | (l) | 118 | 106 | 270 | 270 | 222 | 222 | 204 |
| Oil Charge | (l) | 8/8 | 15/15 | 15/17 | 17/17 | 17/20 | 20/20 | 16/16 |
| R22 Operating Charge | (kg) | 29/29 | 47/41 | 44/44 | 44/44 | 54/54 | 54/54 | 75/75 |

Table 1B : General data on units R404 A (standard units)

| Model RTAA | | 213 | 214 | 215 | 216 | 217 | 322 | 324 | 328 | 430 | 432 | 434 |
|-------------------------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | (kW) | 385 | 422 | 422 | 487 | 528 | 596 | 689 | 804 | 856 | 934 | 1023 |
| Number of Circuit | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 2/1 | 2/1 | 2/1 | 2/2 | 2/2 | 2/2 |
| Maximum FLA 400/50/3 (2) | (A) | 308 | 331 | 354 | 384 | 414 | 485 | 561 | 621 | 708 | 768 | 828 |
| Number of fans | | 8 | 8 | 8 | 9 | 10 | 12 | 14 | 16 | 16 | 18 | 20 |
| Fan Motor Size (3) | (kW) | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 | 1.21/1.21 |
| Fan Speed (3) | (rpm) | 730/730 | 730/730 | 730/730 | 730/730 | 730/730 | 730/730 | 730/730 | 730/730 | 730/730 | 730/730 | 730/730 |
| Oil sump heater | (W) | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 | 300/150 | 300/150 | 300/150 | 300/300 | 300/300 | 300/300 |
| Evaporator Model | | ES120 | ES140 | ES140 | ES170 | ES170 | ES225 | ES225 | ES250 | ES300 | ES300 | ES340 |
| Evaporator Heater Cable | (W) | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Evaporator Water Connection | (mm) | DN150 | DN150 | DN150 | DN150 | DN150 | vic 6" | vic 6" | vic 6" | vic 6" | vic 6" | vic 6" |
| Evaporator Water Volume | (l) | 106 | 270 | 270 | 222 | 222 | 442 | 442 | 415 | 665 | 665 | 610 |
| Oil Charge | (l) | 15/15 | 17/17 | 17/17 | 20/17 | 20/20 | 30/17 | 34/20 | 40/20 | 34/34 | 40/34 | 40/40 |
| R404A Operating Charge | (kg) | 47/47 | 53/53 | 53/53 | 55/55 | 55/55 | | 111/50 | 114/52 | 110/110 | 110/110 | 132/132 |

Note :

(1) Operating conditions: chilled water 12/7°C, 35°C ambient, fouling factor = 0.044 m² K/kW

(2) To be used for sizing the power supply cables

(3) LN/SQ units (Except RTAB 213 to 434: Standard units/LN units)

| Model RTAB | | 108 | 109 | 110 | 207 | 209 | 210 | 211 | 212 |
|-------------------------------|---------|------------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | | 207 | 225 | 269 | 188 | 224 | 250 | 276 | 333 |
| Number of Circuit | | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1 | 1 | 1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| Maximum FLA 400/50/3 (2) | (A) | 154 | 177 | 207 | 158 | 180 | 196 | 212 | 256 |
| Number of fans | | 4 | 5 | 6 | 4 | 4 | 5 | 6 | 6 |
| Fan Motor Size (3) | (kW) | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 |
| Fan Speed (3) | (rpm) | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 |
| Oil sump heater | (W) | 150 | 150 | 150 | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 |
| Evaporator Model | | ES71 | ES81 | ES81 | 587-2 | ES70 | ES80 | ES80 | ES100 |
| Evaporator Heater Cable | (W) | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Evaporator Water Connection | (mm) | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 |
| Evaporator Water Volume | (l) | 145 | 134 | 118 | 95 | 145 | 134 | 134 | 118 |
| Oil Charge | (l) | 16 | 16 | 16 | 8/8 | 8/8 | 8/8 | 8/8 | 8/8 |
| R404A Opearting Charge | (kg) 40 | 48 | 50 | 18/18 | 23/23 | 24/24 | 24/24 | 29/29 | |

Table 1C : General data on units R134a (standard units)

| Model RTAA | | 213 | 214 | 215 | 216 | 217 | 322 | 324 | 328 | 430 | 432 | 434 |
|-------------------------------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | (kW) | 287 | 320 | 331 | 378 | 406 | 428 | 482 | 537 | 603 | 649 | 717 |
| Number of Circuit | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 2/1 | 2/1 | 2/1 | 2/2 | 2/2 | 2/2 |
| Maximum FLA 400/50/3 (2) | (A) | 234 | 245 | 256 | 283 | 309 | 363 | 413 | 466 | 513 | 565 | 618 |
| Number of fans | | 8 | 8 | 8 | 9 | 10 | 12 | 14 | 16 | 16 | 18 | 20 |
| Fan Motor Size (3) | (kW) | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 | 1.21/0.85 |
| Fan Speed (3) | (rpm) | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 | 730/680 |
| Oil sump heater | (W) | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 | 300/150 | 300/150 | 300/150 | 300/300 | 300/300 | 300/300 |
| Evaporator Model | | ES120 | ES140 | ES140 | ES170 | ES170 | ES225 | ES225 | ES250 | ES300 | ES300 | ES340 |
| Evaporator Heater Cable | (W) | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Evaporator Water Connection | (mm) | DN150 | DN150 | DN150 | DN150 | DN150 | vic 6" | vic 6" | vic 6" | vic 6" | vic 6" | vic 6" |
| Evaporator Water Volume | (l) | 106 | 270 | 270 | 222 | 222 | 442 | 442 | 415 | 665 | 665 | 610 |
| Oil Charge | (l) | 15/15 | 17/17 | 17/17 | 20/17 | 20/20 | 30/17 | 34/20 | 40/20 | 34/34 | 40/34 | 40/40 |
| R134a Opearting Charge | (kg)52/52 | 62/62 | 62/62 | 64/64 | 64/64 | 104/59 | 129/59 | 132/61 | 128/128 | 128/128 | 132/132 | |

| Model RTAB | | 108 | 109 | 110 | 207 | 209 | 210 | 211 | 212 | 213 | 214 |
|-------------------------------|---------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | | 137 | 153 | 180 | 118 | 146 | 165 | 180 | 215 | 261 | 285 |
| Number of Circuit | | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1 | 1 | 1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| Maximum FLA 400/50/3 (2) | (A) | 119 | 133 | 159 | 121 | 137 | 150 | 164 | 196 | 239 | 250 |
| Number of fans | | 4 | 5 | 6 | 4 | 4 | 5 | 6 | 6 | 6 | 6 |
| Fan Motor Size (3) | (kW) | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.88 | 1.88/1.21 | 1.88/1.21 |
| Fan Speed (3) | (rpm) | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/915 | 915/730 | 915/730 |
| Oil sump heater | (W) | 150 | 150 | 150 | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 | 150/150 |
| Evaporator Model | | ES71 | ES81 | ES81 | 587-2 | ES70 | ES80 | ES80 | ES100 | ES120 | ES140 |
| Evaporator Heater Cable | (W) | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Evaporator Water Connection | (mm) | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 | DN125 | DN150 |
| Evaporator Water Volume | (l) | 145 | 134 | 118 | 95 | 145 | 134 | 134 | 118 | 106 | 270 |
| Oil Charge | (l) | 16 | 16 | 16 | 8/8 | 8/8 | 8/8 | 8/8 | 8/8 | 15/15 | 15/15 |
| R134a Opearting Charge | (kg) 42 | 44 | 46 | 20/20 | 21/21 | 22/22 | 22/22 | 28/28 | 40/40 | 43/43 | |

| Model RTAB | | 215 | 216 | 217 | 220 | 324 | 328 | 430 | 432 | 434 |
|-------------------------------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Nominal Cooling Capacity (1) | | 301 | 337 | 364 | 418 | 478 | 543 | 601 | 648 | 715 |
| Number of Circuit | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Number of Compressor | | 1/1 | 1/1 | 1/1 | 2/2 | 2/1 | 2/1 | 2/2 | 2/2 | 2/2 |
| Maximum FLA 400/50/3 (2) | (A) | 261 | 289 | 317 | 379 | 412 | 464 | 515 | 567 | 619 |
| Number of fans | | 6 | 7 | 8 | 8 | 8 | 9 | 10 | 11 | 12 |
| Fan Motor Size (3) | (kW) | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 | 1.88/1.21 |
| Fan Speed (3) | (rpm) | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 | 915/730 |
| Oil sump heater | (W) | 150/150 | 150/150 | 150/150 | 300/300 | 300/150 | 300/150 | 300/300 | 300/300 | 300/300 |
| Evaporator Model | | ES140 | ES170 | ES170 | ES200 | ES225 | ES250 | ES300 | ES300 | ES340 |
| Evaporator Heater Cable | (W) | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Evaporator Water Connection | (mm) | DN150 | DN150 | DN150 | DN150 | vic 6" | vic 6" | vic 6" | vic 6" | vic 6" |
| Evaporator Water Volume | (l) | 270 | 222 | 222 | 204 | 442 | 415 | 665 | 665 | 610 |
| Oil Charge | (l) | 17/17 | 17/20 | 20/20 | 16/16 | 34/20 | 40/20 | 34/34 | 40/34 | 40/40 |
| R134a Opearting Charge | (kg)50/50 | 53/53 | 53/53 | 80/80 | 72/44 | 74/45 | 77/72 | 77/72 | 80/75 | |

Note :

(1) Operating conditions: chilled water 12/7°C, 35°C ambient, fouling factor = 0.044 m² K/kW

(2) To be used for sizing the power supply cables

(3) LN/SQ units (Except RTAB 213 to 434: Standard units/LN units)

Safety recommendations

To avoid accidents and damage, the following recommendations should be observed during maintenance and service visits :

1. The maximum allowable pressures for system leak testing on low and high pressure side are given in the chapter "Installation". Always provide a pressure regulator.

2. Disconnect the main supply before any servicing on the unit.

3. Service work on the refrigeration system and the electrical system should be carried out only by qualified and experienced personnel.

Maintenance contract

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your installation by a specialist in our equipment. Regular maintenance ensures that any malfunction is detected and corrected in good time and minimizes the possibility that serious

damage will occur. Finally, regular maintenance ensures the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.

Training

The equipment described in this manual is the result of many years of research and continuous development. To assist you in obtaining the best use of it, and maintaining it in perfect operating condition over a long period of time, the constructor have at your disposal a refrigeration and air conditioning service school. The principal aim of this is to give operators and

maintenance technicians a better knowledge of the equipment they are using, or that is under their charge. Emphasis is particularly given to the importance of periodic checks on the unit operating parameters as well as on preventive maintenance, which reduces the cost of owning the unit by avoiding serious and costly breakdown.

The constructor's policy is one continuous product improvement, and he reserves the right to alter any details of the products at any time without notice

This publication is a general guide to install, use and properly maintain our products. The information given may be different from the specification for a particular country or for a specific order. In this event, please refer to your nearest office.



All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the written authorization of the constructor.

For additional information, contact :

Distributor / Installer stamp

C20 IM 004 E - 1199•
Supersedes C20 IM 004 E - 0498