

FOREWORD

The information contained in:

- the "Refrigeration Family products": **REFRIBASE**, **REFREPAIR**, **REFRIDIAG**, **REFRILEC** and the **MANAGER Software**
- the "**REFRIBASE Manual**"
- the "**REFREPAIR Manual**"
- and this "**User's Manual**"

are liable to be amended without warning.

The organisation KOTZA INTERNATIONAL cannot be held responsible for any omissions, nor for any damage, accidental or otherwise, that results from the supply or use of its Software or any of its Manuals.



In this Manual, **the individual in possession of the password** (the supervisor, trainer etc.) will be referred to as: **THE SUPERVISOR**. Those individuals not in possession of the password (students, trainees, technicians, engineers etc.) will be referred to as: **THE USER**.

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**All versions of the software have been registered
with the Software Protection Agency since 1990.**

The Software will only operate on a multimedia PC using Windows 2000, XP, Vista or Seven. The PC should be configured to a *minimum* of 800 x 600 point mode with 65536 colours in small fonts.

In effect, the Software referred to in this Manual will not function on a PC if the corresponding demonstration version of the Software does not function on that PC.

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USER'S MANUAL FOR CHILREPAIR4

DETAILED DESCRIPTION OF CHILREPAIR

CHILREPAIR, the first program of the "Water Family", is at an "intermediate" level.

CHILREPAIR is training Software for refrigeration repairs that uses examples of air conditioning systems involving the use of water and which may be using several various refrigerants.



If a User has little or no knowledge of refrigeration systems, it is strongly recommended that they start by using REFRIBASE and then REFREPAIR, and fully master these programs before trying to get to grips with CHILREPAIR.

CHILREPAIR: USING AND DURATION OF TRAINING

Refrigeration and A/C skills are not easy to acquire. Similarly, the refrigeration and/or hydraulic aspects of CHILREPAIR may at times appear to be difficult.

This is why *we would recommend that you proceed as follows*:

- 1) **Study the REFREPAIR Manual** (average time required: from 10 to 20 hours, in several sessions).
- 2) **Make a first attempt using the PC**, making corrections with the help of the on-line HELP and REFREPAIR Manual (average time required: from 4 to 12 hours, in several sessions).
- 3) **Make a second study of the Manual** (average time required: from 5 to 10 hours, in several sessions).
- 4) **Make a second attempt using the PC**, alone, without using the REFREPAIR MANUAL, making final corrections by using the on-line help (average time required: from 4 to 10 hours, in several sessions).

A User who wishes to do so could run the CHILREPAIR Software as often as is needed until he achieves an 'excellent' score.

Note: These times are, of course, only indications, since they can vary enormously, depending on the initial knowledge of the User.

When a User obtains a good score using CHILREPAIR, and completes every step entirely on his own, he should be able to diagnose most of the usual problems that he is likely to come across in the plant room.

CHILREPAIR: THE SEQUENCE OF STEPS

Every time that the program is run, the User is taken automatically to the appropriate step and his last score (as points and percentage points) is displayed.



CHILREPAIR records the results of *every question in every step for every User*. **It is therefore perfectly OK to quit a step whenever you like.**

After every answer, CHILREPAIR updates the score, archives it on the hard disk and provides the User with the choice of continuing or ending the session. Each Step considers a particular refrigeration theme or a particular equipment configuration.

The progressive nature of the problems encountered, and the different methods used to present the questions result in a genuine improvement in knowledge, which is immediately of use on site or in the plant room.

This is a tried and tested self-teaching approach, used since the first version of REFREPAIR appeared in 1990.

Computer room air-conditioning units with water-cooled condensers.

- **Step 1:** Getting to know the installation.
- **Step 2:** Starting up. Fitting gauges, interpretation of the measurements obtained using different refrigerants (with and without temperature glides).
- **Step 3:** Fitting and adjusting a constant pressure valve.
- **Step 4:** Analysis of some refrigeration faults.
- **Step 5:** Faults specific to water-cooled condensers.

Chilled water plants with air-cooled condensers feeding several fan-coil units.

- **Step 6:** Getting to know the installation.
- **Step 7:** Starting up the installation and analysis of some faults specific to this type of equipment.
- **Step 8:** Basic repairs on the water system.
- **Step 9:** Various repairs on the installation.
- **Step 10:** Detailed analysis of various refrigeration faults.
- **Step 11:** Detailed analysis of various hydraulic faults.

Chilled water plant using a water-cooled condenser with multi-tubular heat exchangers.

- **Step 12:** Getting to know the installation.
- **Step 13:** Electrical problems associated with this type of equipment.

Air handling plant equipped with a chilled water cold unit.

- **Step 14:** Getting to know the installation.

Air handling plant supplied by a chilled water plant.

- **Step 15:** Problems associated with the control of the chilled water plant/air handling plant arrangement. Specific equipment.

Chilled water plant using a water-cooled condenser with multi-tubular heat exchangers.

- **Step 16:** Connection of the condenser and repairs specific to this type of equipment.

Chilled water plants with condensation using well water.

- **Step 17:** Various problems associated with this type of installation.

Chilled water plant using an air-cooled condenser

- **Step 18:** Various refrigeration problems.

Chilled water plant using a water-cooled condenser with an open cooling tower.

- **Step 19:** Operation of the tower and basic psychometry.
- **Step 20:** Control of the tower, and problems specific to this type of equipment.

Chilled water plant using a water-cooled condenser with a closed cooling tower.

- **Step 21:** Various problems associated with this type of installation.

Eff. : 4500 pts (30.2%)

After every answer, the cumulative score (in points and as a percentage score) is updated.

CHILREPAIR makes brief comments on the User's answer and offers him the chance (by clicking on the area shown) to access extracts from the REFREPAIR Manual on the screen.

Unfortunately you've fallen into the trap! If you want an explanation [click here](#)

Explanations: manual page 316

These provide additional information on the problem in question, and the result is an effective self-correction facility.

In total, CHILREPAIR poses 330 different questions, spread out over 21 Steps.

At the end of every question, CHILREPAIR archives the results on the hard disk and gives the User the choice of continuing or ending the session.

When a User chooses to end the session, then at the start of the next session, CHILREPAIR will bring him back to exactly the same point at which he left the program.



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