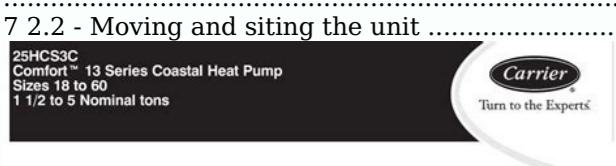


**I'm not a robot!**

## Carrier 30xa installation manual

Nominal cooling capacity: 267-1682 kW 50 Hz Installation, operation and maintenance instructions Contents 1 - IntRoDUction ..... 4 1.2 - Equipment and components under pressure ..... 5 1.3 - Maintenance safety considerations ..... 5 1.4 - Repair safety considerations ..... 6 2 - PreInstallinG CheCks ..... 7 2.1 - Check equipment received ..... 7 2.2 - Moving and siting the unit ..... 7 3 - Dimensions, CleaRanCes ..... 7



### Product Data

INDUSTRY LEADING FEATURES / BENEFITS
<b>Efficiency</b>
• MEER 10A - 11AFER (10A - 42 BHP (standard)) • Modulus Technology™ adaptive system • Indoor air quality accessories available
<b>Sound</b>
• Sound level as low as 27 dBA
<b>Comfort</b>
• System sequencer Thermostatic™ or standard thermostat • Standard or optional remote control
<b>Reliability</b>
• After 1000 hours of run time protection • Frost-sensing service valves • Internal drain pump • Internal pressure relief valve • Internal pump switch • Low of charge pressure switch • Low of refrigerant pressure switch • Balanced refrigeration system for maximum stability
<b>Durability</b>
• Protection package: • Solid, double sheet metal construction • Corrosion resistance • Color matched cosmetic coated cabinet series • Heat sink - complete coverage, powder paint
<b>Application</b>
• Long-life - up to 250 for 267 m³/s equivalent • Low ambient temperatures - up to 0°C (32°F) equivalent above • High ambient temperatures - up to 40°C (104°F) equivalent above • Low ambient pressures - down to -20° F (-28° C) with accessory • Low of charge pressure switch
<b>Warranty</b>
• 5 year limited compressor warranty • 5 year limited parts warranty

9.3.1 - 30XA 252-352 - MCHE heat exchanger (standard) and 30XA 252-302 - Cu/Al heat exchanger (option 254/255) .... 9.3.2 - 30XA 402-452 - MCHE heat exchanger (standard) and 352-452 - Cu/Al heat exchanger (option 254/255) ..... 9.3.3 - 30XA 502 MCHE heat exchanger (standard) and 30XA 502 Cu/Al heat exchanger (option 254/255) ..... 10.3.4 - 30XA 602-802 MCHE heat exchanger (standard) and 30XA 602-702 Cu/Al heat exchanger (option 254/255) ..... 10.3.5 - 30XA 852-902 MCHE heat exchanger (standard) and 30XA 752-852 Cu/Al heat exchanger (option 254/255) ..... 11.3.6 - 30XA 1002 MCHE heat exchanger (standard) and 30XA 902-1002 Cu/Al heat exchanger (option 254/255) ..... 11.3.7 - 30XA 1102-1352 MCHE heat exchanger (standard) and 30XA 1102-1352 Cu/Al heat exchanger (option 254/255) 12.3.8 - 30XA 1402-1502 module 1/2 - MCHE heat exchanger (standard) and 30XA 1402-1502 module 1/2 - Cu/Al heat exchanger (option 254/255) ..... 12.3.9 - 30XA 1402-1502 module 2/2 - MCHE heat exchanger (standard) and 30XA 1402-1502 module 2/2 - Cu/Al heat exchanger (option 254/255) ..... 13.3.10 - 30XA 1702 module 1/2 - MCHE heat exchanger (standard) and 30XA 1702 module 1/2 - Cu/Al heat exchanger (option 254/255) ..... 13.3.11 - 30XA 1702 module 2/2 - MCHE heat exchanger (standard) and 30XA 1702 module 2/2 - Cu/Al heat exchanger (option 254/255) ..... 13

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## 48HX030-060 Dual Fuel Heat Pump Units

### Installation, Start-Up and Service Instructions

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NOTE TO INSTALLER — READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY before installing this unit (Fig. 1). Also, please see the User's Manual and Replacement Guide are left with the unit after installation.

#### SAFETY CONSIDERATIONS

Installing and operating of all-compression equipment can be hazardous due to refrigerant and electrical components. Only trained and qualified personnel should install, repair, or service air-conditioning equipment. Untrained personnel should not attempt to service functions of cleaning coils and filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature attached to the unit, and other safety precautions that may apply.

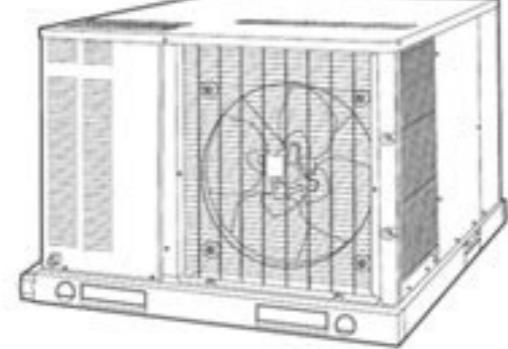


Fig. 1 - Typical 48HX Unit shown with Optional Base Rail

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

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### Installation Instructions

Read for proper installation and safe operating of this equipment.

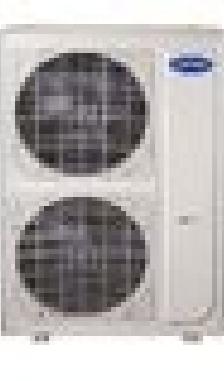


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on the front cover and inside this document are for illustrative purposes only and not part of any offer for sale or contract. 3.1 INTRODUCTION The 30XA Aquaforce units are designed to cool water for the air conditioning of buildings and industrial processes. These units are not designed to be lifted from above. Use slings with the correct capacity, and always follow the lifting instructions on the certified drawings supplied with the unit. Prior to the start-up of the 30XA units, all people involved in the on-site installation, start-up, operation, and maintenance of this unit should be thoroughly familiar with these instructions and the specific project data for the installation site.

Safety is only guaranteed, if these instructions are carefully followed. If this is not the case, there is a risk of material deterioration and injury to persons.

DO NOT COVER ANY PROTECTION DEVICES. The 30XA liquid chillers are designed to provide a very high level of safety during installation, start-up, operation and maintenance. They will provide safe and reliable service when operated within their application range.

This manual provides the necessary information to familiarize yourself with the control system before performing start-up procedures. The procedures in this manual are arranged in the sequence required for machine installation, start-up, operation and maintenance. This applies to fuse plugs and safety valves (if used) in the refrigerator or heat transfer medium circuits. Check if the original protection plugs are still present at the valve outlets. These plugs are generally made of plastic and should not be used. If they are still present, please remove them. Install devices at the valve outlets or drain piping that prevent the penetration of foreign bodies (dust, building debris, etc.) and atmospheric agents (water can form rust or ice). These devices, as well as the drain piping, must not impair operation and not lead to a pressure drop that is higher than 10% of the control pressure. Always ensure that all required safety measures are followed, including those in this document, such as: wearing protective clothing (gloves, ear defenders, safety glasses and shoes), using appropriate tools, employing qualified and skilled technicians (electricians, refrigeration engineers) and following local regulations. Classification and control. In accordance with the Pressure Equipment Directive and national usage monitoring regulations in the European Union the protection devices for these machines are classified as follows. To find out, if these products comply with European directives (machine safety, low voltage, electromagnetic compatibility under pressure etc.) check the declarations of conformity for these products. 1.1 Installation safety considerations Access to the unit must be reserved to authorised personnel, qualified and trained in monitoring and maintenance. The access limitation device must be installed by the customer (e.g. cut-off, enclosure). Refrigerant side: High-pressure switch External relief valve\*\*\* Rupture disk. Plug Heat transfer fluid side External relief valve\*\*\* Safety accessory\* Damage limitation accessory\*\* in case of an external fire x x x x \* Classified for protection in normal service situations. \*\* Classified for protection in abnormal service situations. \*\*\* The instantaneous over-pressure limited to 10% of the operating pressure does not apply to this abnormal service situation.

The control pressure can be higher than the service pressure. In this case either the design temperature or the high-pressure switch ensures that the service pressure is not exceeded in normal service situations. \*\*\*\* The classification of these safety valves must be made by the personnel that completes the whole hydronic installation. After the unit has been received, when it is ready to be installed or reinstalled, and after it is started up, it must be inspected for damage. Check if the refrigerant circuit(s) is (are) intact, especially that no components or pipes have shifted (e.g. following a shock). If in doubt, carry out a leak tightness check and verify with the manufacturer that the circuit integrity has not been impaired. If damage is detected upon receipt, immediately file a claim with the shipping company. Do not remove these valves and fuses, even if the fire risk is under control for a particular installation. There is no guarantee that the accessories are re-installed if the installation is changed or for transport with a gas charge. Carrier strongly recommends employing a specialised company to unload the machine. Do not remove the skids or the packaging until the unit is in its final position. These units can be moved with a fork lift truck, as long as the forks are positioned in the right place and direction on the unit. All factory-installed safety valves are lead-sealed to prevent any calibration change. If the safety valves are installed on a change-over manifold, this is equipped with a safety valve on each of the two outlets. Only one of the two safety valves is in operation, the other one is isolated. Never leave the change-over valve in the intermediate position, i.e. with both ways open (locate the control element in the stop position). The units can also be lifted with slings, using only the designated lifting points marked on the unit. If a safety valve is removed for checking or replacement please ensure that there is always an active safety valve on each of the change-over valves installed in the unit. 4 The external safety valves must always be connected to drain pipes for units installed in a closed room. Refer to the installation regulations, for example those of European standard EN 378 and EN 13136.

Never work on any of the electrical components, until the general power supply to the unit has been cut using the disconnect switch(es) in the control box(es). These pipes must be installed in a way that ensures that people and property are not exposed to refrigerant leaks. As the fluids can be diffused in the air, ensure that the outlet is far away from any building air intake, or that they are discharged in a quantity that is appropriate for a suitably absorbing environment.

If any maintenance operations are carried out on the unit, lock the power supply circuit in the open position ahead of the machine.

If the work is interrupted, always ensure that all circuits are still deenergized before resuming the work. Periodic check of the safety valves: See chapter 1.3 - "Maintenance safety considerations". ATTENTION: Even if the unit has been switched off, the power circuit remains energized, unless the unit or circuit disconnect switch is open. Refer to the wiring diagram for further details.

Attach appropriate safety labels. Provide a drain in the drain pipe, close to each safety valve, to avoid an accumulation of condensate or rain water. All precautions concerning handling of refrigerant must be observed in accordance with local regulations. Ensure good ventilation, as accumulation of refrigerant in an enclosed space can displace oxygen and cause asphyxiation or explosions. Operating checks: IMPORTANT INFORMATION REgARDING THE REFRIGERANT USED: • This product contains fluorinated greenhouse gas covered by the Kyoto protocol. Refrigerant type: R-134a global Warming Potential (GWP): 1300 Inhalation of high concentrations of vapour is harmful and may cause heart irregularities, unconsciousness, or death.

Vapour is heavier than air and reduces the amount of oxygen available for breathing. These products cause eye and skin irritation. Decomposition products are hazardous. 1.2 - Equipment and components under pressure See section "11.2 - Pressure vessels". 1.3 - Maintenance safety considerations Engineers working on the electric or refrigeration components must be authorized, trained and fully qualified to do so. Periodic inspections for refrigerant leaks may be required depending on European or local legislation. Please contact your local dealer for more information. • During the life-time of the system, inspection and tests must be carried out in accordance with national regulations. The information on operating inspections given in annex C of standard EN 378 can be used if no similar criteria exist in the national regulations. While working in the fan area, especially when grilles or casings are removed, disconnect the fan power supply to prevent their automatic restart. All refrigerant circuit repairs must be carried out by a trained person, fully qualified to work on these units. He must have been trained and be familiar with the equipment and the installation. All welding operations must be carried out by qualified specialists. Protection device checks: • If no national regulations exist, check the protection devices on site in accordance with standard EN 378: once a year for the high-pressure switches, every five years for external safety valves. • Refer to the 30XA/30XAS/30XW Pro-Diag control manual for a detailed explanation of the high-pressure switch test method.

Any manipulation (opening or closing) of a shut-off valve must be carried out by a qualified and authorised engineer. These procedures must be carried out with the unit shut-down. If the machine operates in a corrosive environment, inspect the protection devices more frequently.

NOTE: The unit must never be left shut down with the liquid line valve closed, as liquid refrigerant can be trapped between this valve and the expansion device and lead to the risk of a pressure increase. This valve is situated on the liquid line before the filter drier box. Regularly carry out leak tests and immediately repair any leaks. Ensure regularly that the vibration levels remain acceptable and close to those at the initial unit start-up. Before opening a refrigerant circuit, purge and consult the pressure gauges. During any handling, maintenance and service operations the engineers working on the unit must be equipped with safety gloves, glasses and protective clothing. Change the refrigerant after an equipment failure, following a procedure such as the one described in EN 129-95 or carry out a refrigerant analysis in a specialist laboratory. Never work on a unit that is still energized. 5 Plug all openings whenever the refrigerant circuit is opened for up to one day.

Use safety goggles and safety gloves. Wash any spills from the skin with soap and water. If liquid refrigerant enters the eyes, immediately and abundantly flush the eyes with water and consult a doctor. All installation parts must be maintained by the personnel in charge, in order to avoid material deterioration and injuries to people. Faults and leaks must be repaired immediately. The authorized technician must have the responsibility to repair the fault immediately. After each repair of the unit, check the operation of the protection devices and create a report of the parameter operation at 100%. Comply with the regulations and recommendations in unit and HVAC installation safety standards, such as 37.5, 75.7, ISO 154/10 etc.

Notes apply and/or operate live steam to a refrigerant container. Dangerous overpressure can result. If it is necessary to heat refrigerant, use only warm water. During refrigerant removal and storage operations follow applicable regulations.

These regulations, pertaining conditioning and recovery of halogenated hydrocarbons under optimum quality conditions for the products and optimum safety conditions for people, property and the environment are described in standard NF Z92-795. If a leak occurs or if the refrigerant becomes contaminated (e.g. by a short circuit in a motor) remove the complete charge using a recovery unit and store the refrigerant in mobile containers. Repair the leak detected and recharge the circuit with the total R-134a charge, as indicated on the unit name plate. Certain parts of the circuit can be isolated. Only charge liquid refrigerant R-134a at the liquid line. Any refrigerant transfer and recovery operations must be carried out using a transfer unit. A 3/8" SAE connector on the manual liquid line valve is supplied with all units for connection to the transfer station. The units must never be modified to add refrigerant and oil charging, removal and purging devices. All these devices are provided with the units. Please refer to the certified dimensional drawings for the units. Ensure that you are using the correct refrigerant type before recharging the unit. Charging any refrigerant other than the original charge type (R-134a) will impair machine operation and even destroy the compressors. The compressors operating with this refrigerant type are lubricated with a synthetic polyolester oil. Do not re-use disposable (non-returnable) cylinders or attempt to refill them. It is dangerous and illegal. When cylinders are empty, evacuate the remaining gas pressure, and move the cylinders to a place designated for their recovery. Do not incinerate them. ATTENTION: Only use refrigerant R134a, in accordance with 700 AhRI (Air conditioning, heating and Refrigeration Institute). The use of any other refrigerant may expose users and operators to unexpected risks. RISK OF EXPLOSION: Never use air or a gas containing oxygen during leak tests to purge lines or to pressurise a machine.

Pressurised air mixtures or gases containing oxygen can be the cause of an explosion. Only use dry nitrogen for leak tests, possibly with an appropriate tracer gas.

Do not attempt to remove refrigerant circuit components or fittings, while the machine is under pressure or while it is running. Be sure pressure is at 0 kPa and that the unit has been shut-down and de-energised before removing components or opening a circuit. If the recommendations above are not observed, this can have serious or even fatal consequences and damage the installation. Never exceed the specified maximum operating pressures. Verify the allowable maximum high- and low-side test pressures by checking the instructions in this manual and the pressures given on the unit name plate. Do not attempt to repair or recondition any safety devices when corrosion or build-up of foreign material (rust, dirt, scale, etc.) is found within the valve body or mechanism. If necessary, replace the device. Do not install safety valves in series or backwards. ATTENTION: No part of the unit must be used as a walkway, rack or support. Periodically check and repair or if necessary replace any component or piping that shows signs of damage. Do not rust or flame-cut the refrigerant lines or any refrigerant circuit component until all refrigerant (liquid and vapour) as well as the oil have been removed from chiller. Traces of vapour should be displaced with dry air nitrogen. Refrigerant in contact with an open flame produces toxic gases. The necessary protection equipment must be available, and appropriate fire extinguishers for the system and the refrigerant type used must be within easy reach. Do not siphon refrigerant. 6 The refrigerant lines can break under the weight and release refrigerant, causing personal injury. Do not climb on a machine.

Use a platform or staging to work at higher levels. Use mechanical lifting equipment (crane, hoist, winch, etc.) to lift or move heavy components; for lighter components, use lifting equipment when there is a risk of slipping or losing your balance. Use only original replacement parts for any repair or component replacement. Consult the list of replacement parts that corresponds to the specification of the original equipment. Do not drain water circuits containing industrial brines, without informing the technical service department at the installation site or a competent body first. Once the entering and leaving water shutoff valves and the unit water circuit, before working on the components installed on the circuit (screen filter, pump, water flow switch, etc.). Do not loosen the water box bolts until the water boxes have been completely drained. Periodically inspect all valves, fittings and pipes of the refrigerant and hydronic circuits to ensure that they do not show any corrosion or any signs of leakage.

2.2 - Moving and siting the unit 2.1.1 - moving See chapter 1.1 - "Installation safety considerations". In some cases vertical supports are added for the transport and handling of the unit. These supports can be removed for access or connection, if required. ATTENTION: follow the disassembly sequence shown in the disassembly instruction notes. • Unscrew screws marked 1 and 2 • Loosen screw 3, and lift and remove support 4 • Unscrew screw 5 and loosen screw 6 • Lift and remove support 7. • Unscrew screw 8 and remove plate 9. It is recommended to wear ear defenders, when working near the unit and the unit is in operation. 2 - PRElIMINARy CHECKS 2.1 - Check equipment received • Check that the unit has not been damaged during transport and that no parts are missing. If the unit has been damaged or the shipment is incomplete, send a claim to the shipping company. • Compare the name plate data with the order.

The name plate is attached in two places to the unit: - on one of the unit sides on the outside. - on the control box door on the inside. • The unit name plate must include the following information: - Version number - Model number - CE marking - Serial number - Year of manufacture and test date - Refrigerant used and refrigerant class - Refrigerant charge per circuit - Containment fluid to be used - PS: Min./max. allowable pressure (high and low pressure side) - Pressure switch cut-out pressure - Unit leak test pressure - Voltage, frequency, number of phases - Maximum current draw - Maximum power input - Unit net weight • Confirm that all accessories ordered for on-site installation have been supplied, are complete and undamaged.

9.7 5.6 1 Keep the vertical supports after commissioning the units and re-insert them when the unit is moved. 2.2.2 - siting the unit 1 3 2 4 2 The machine must be installed in a place that is accessible to the public or protected against access by non-authorised persons. In case of extra-high units the machine environment must permit easy access for maintenance operations. The unit must be checked periodically during its whole operating life to ensure that no shocks (handling accessories, tools etc.) have damaged it. If necessary, damaged parts must be repaired or replaced. See also chapter 13 - "Standard maintenance". Always refer to the chapter 3 "Dimensions, clearances" to confirm that there is adequate space for all connections and service operations. For the centre of gravity coordinates, the position of the unit mounting holes, and the weight distribution points, refer to the certified dimensional drawing supplied with the unit. 7 The support points under the chassis opening at the lifting point (minimum 220 x 180 mm) in order to prevent a deformation of the chassis. Typical applications of these units are in refrigeration systems, and they do not require earthquake resistance. Earthquake resistance has not been verified. CAUTION: Only use slings at the designated lifting points which are marked on the unit. 2.2.3 - Checks before system start-up Before the start-up of the refrigeration system, the complete installation, including the refrigeration system must be verified against the installation drawings, dimensional drawings, system piping and instrumentation diagrams and the wiring diagrams. For these checks national regulations must be followed. If the national regulation does not specify any details, refer to standard EN 378 as follows. Before siting the unit check that: • The permitted loading at the site is adequate or that appropriate strengthening measures have been taken. The unit is installed level on an even surface (maximum tolerance is 5 mm in both axes). There is adequate space above the unit for air flow and to ensure access to the components. The number of support points is adequate and that they are in the right places. The location is not subject to flooding, for outdoor installations, where heavy snowfall is likely and long periods of sub-zero temperatures are normal, provision has to be made to prevent snow accumulating by raising the unit above the height of drifts normally experienced. Baffles may be necessary to deflect strong winds. They must not restrict air flow into the unit. CAUTION: Before lifting the unit, check that all casing panels are securely fixed in place. Lift and set down the unit with great care.

Tilting and jarring can damage the unit and impair unit operation. If 30XA units are hoisted with rigging, it is advisable to protect coils against crushing while a unit is being moved. Use struts or spreader bar to spread the slings above the unit. Do not tilt a unit more than 15°. WARNING: Never push or lever on any of the enclosure panels of the unit.

Only the base of the unit frame is designed to withstand such stresses. If a unit includes a hydronic module (options 116B, C, t, g), the hydronic module and pump piping must be installed in a way that does not submit it to any strain. The hydronic module pipes must be fitted so that the pump does not support the weight of the pipes. External visual installation checks: • Compare the complete installation with the refrigeration system and power circuit diagrams. • Check that all protection documents and equipment provided by the manufacturer (dimensional drawings, Ps1D, declarations etc.) to comply with the regulations are present. • Verify that the environmental safety and protection and devices and arrangements provided by the manufacturer to comply with the regulations are in place. • Verify that all documents for pressure containers, certificates, name plates, files, instruction manuals provided by the manufacturer to comply with the regulations are present. • Verify the free passage of access and safety routes. • Check that ventilation in the plant room is adequate. • Check that refrigerant detectors are present. • Verify the instructions and devices to prevent the deliberate removal of refrigerant gases that are harmful to the environment. • Verify the installation of connections. • Verify the supports and fixing elements (materials, routing and connection). • Verify the quality of welds and other joints. • Check the protection against mechanical damage. • Check the protection against heat.

• Check the protection of moving parts. Verify the status of the valves. • Verify the sound pressure level, unit in a free field on a reflecting surface. For information, calculate from the sound power level Lw(A).

Verify the quality of the unit insulation and of the 30XA 252-302 - MCHE heat exchanger (standard) and 352-452 - Cu/Al heat exchanger (option 254/255) C legend All dimensions, clearances and distances for evaporator tube removal Water inlet for standard unit For options 5, 6, 100A, 100C, 107 refer to the certified drawing. Water outlet for standard unit For options 5, 6, 100A, 100C, 107 refer to the certified drawing. Air outlet - do not obstruct Power supply and control connection Control circuit connection for option 158 NOTES: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. - for the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings. • Drawings are not contractually binding. 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increase the operating life of the coils and the unit. • The maintenance and cleaning procedures below are part of the regular maintenance and will prolong the life of the coils. Removal of fibres that obstruct the surfaces Fibres and dirt collected on the coil surface must be removed with a vacuum cleaner. If you do not have a vacuum cleaner, a soft brush with non-metallic bristles can be used instead. In all cases cleaning must be done in the direction of the fins, as the coil surface is easily damaged. The fin bend easily and damage the protective coating of the coil, if cleaning is done at right angles to the fins. Clean against the air flow direction.

NOTE: Using a water jet from a spray hose on a polluted surface will result in fibres and dirt becoming trapped in the coil, making cleaning more difficult. All fibres and dirt must be removed from the surface, before using a low-speed rinsing jet.

Periodical cleaning with clean water: for coils installed in a coastal or industrial environment periodical cleaning by rinsing with water is beneficial. It is however essential that rinsing is done with a low-speed water jet to avoid damaging the fins. Monthly cleaning as described below is recommended. ATTENTION • Chemical cleaning agents, water containing bleach, acids or basic cleaning agents must never be used to clean the coil exterior or interior.

These cleaning agents may be difficult to rinse off and can accelerate corrosion at the joint between tube and fins, where two different materials come into contact. • High-speed water from a high-pressure cleaner, spray hose or compressed air cleaner must never be used for coil cleaning. The force of the water or air jet will bend the fins and increase the air-side pressure drop. This can result in reduced performance or nuisance shutdowns of the unit. 13.6.1.2 - Recommendations for maintenance and cleaning of micro (microchannel) condenser coils • Regular cleaning of the coil surface is essential for correct unit operation. Eliminating contamination and removal of harmful residue will increase the operating life of the coils and the unit. • The maintenance and cleaning procedures below are part of the regular maintenance and will prolong the life of the coils. ATTENTION: Do not use chemical cleaners on MCHF condenser coils. These cleaning agents can accelerate corrosion and damage the coils. • Remove foreign objects and debris attached to the coil surface or wedged between the chassis and the supports.

• Provide personal protection including safety glasses and/or a face mask, waterproof clothing and safety gloves. It is recommended to wear clothing that covers the whole body. • Start the high-pressure spray gun and remove any soap or industrial cleaner from it before cleaning the condenser coils. Only drinkable cleaning water is permitted to clean the condenser coils. • Clean the condenser face by rinsing the coil evenly and in a stable manner from bottom to top, directing the water jet at right angles to the coil. Do not exceed 6200 kPa (62 bar) or an angle of 45° related to the coil. The diffuser must be at least 300 mm away from the coil surface. It is essential to control the pressure and to be careful not to damage the fins. ATTENTION: Excessive water pressure can break the weld points between the fins and the flat MCHF microchannel tubes. 13.6.2 - level 2 Clean the coil, using appropriate products. We recommend cleaning with clear water to remove pollutants. If the use of cleaning products is necessary, we specify:

• pH between 7 and 8. • Absence of chlorine, sulphate, copper, iron, nickel or titanium • Chemical compatibility with aluminium and copper For RTPF coils this process can either be carried out using a high-pressure spray gun in the low-pressure position. With pressurised cleaning methods care should be taken not to damage the coil fins. 41 The spraying of the coil must be done: • in the direction of the fins • in the opposite direction of the air flow direction • with a large diffuser (25-30°) • at a minimum distance of 300 mm from the coil. It is not necessary to rinse the coil, as the products used are pH neutral.

To ensure that the coil is perfectly clean, we recommend rinsing with a low water flow rate. 13.8.3 - Compressor rotation control Correct compressor rotation is one of the most critical application considerations. Reverse rotation, even for a very short duration, damages the compressor. The reverse rotation protection scheme must be able to determine the direction of rotation and stop the compressor within 300 ms. Reverse rotation is most likely to occur whenever the wiring to the compressor terminals is disturbed. For MCHF condenser coils refer to chapter 13.6.1.2 under level 1 maintenance for use of a high-pressure spray gun.

IMPORTANT: • Never use pressurised water without a large diffuser. Do not use high-pressure cleaners for Cu/Cu and Cu/Al coils! high pressure cleaners are only permitted for MCHF coils (maximum permitted pressure 6200 kPa (62 bar). • Concentrated and/or rotating water jets are strictly forbidden. • Never use a fluid with a temperature above 45°C to clean the air heat exchangers. • Correct and frequent cleaning (approximately every three months) will prevent 2/3 of the corrosion problems. • Protect the control box during cleaning operations. 13.7 - Evaporator maintenance Check that: • the insulating foam is intact and securely in place. • the cooler heaters are operating, secure and correctly positioned. • the water-side connections are clean and show no sign of leakage. 13.8 - Filter maintenance 13.8.1 - oil separator Check the correct operation of the heaters and check that they are well attached to the oil separator ring. 13.8.2 - Integral oil filter change As system cleanliness is critical to reliable system operation, there is a filter in the oil line at the oil separator outlet. The oil filter is specified to provide a high level of filtration (5 µm) required for long bearing life. To minimize the opportunity for reverse rotation, the following procedure must be applied. Rewire the power cables to the compressor terminal pin as originally wired.

For replacement of the compressor, a low pressure switch is included with the compressor. This low pressure switch should be temporarily installed as a hard safety on the high pressure part of the compressor. The purpose of this switch is to protect the compressor against any wiring errors at the compressor terminal pin. The electrical contact of the switch would be wired in series with the high pressure switch. The switch will remain in place until the compressor has been started and direction of rotation has been verified; at this point, the switch will be removed. The switch that has been selected for detecting reverse rotation is Carrier part number HK01CB001. This switch opens the contacts when the pressure falls below 7 kPa. The switch is a manual reset type that can be reset after the pressure has once again risen above 70 kPa. It is critical that the switch be a manual reset type to preclude the compressor from short cycling in the reverse direction. 13.9 - Precaution for compressor power supply bus bar connection This note applies to units using power supply bus bars with riveted contact blocks at the level of the connection cages in the control box.

During re-connection it is imperative to: • engage each bus bar in the cage up to the stop • ensure visually that the bus bars have good contact at the connection areas: there must not be any free movement between the bus bar and the connection area created by the fixing rivet of the contact block. Connection of the contactor or current transformer 1 The filter should be checked after the first 500 hours of operation, and every subsequent 2000 hours. The filter should be replaced at any time when the pressure differential across the filter exceeds 200 kPa (2 bar). The pressure drop across the filter can be determined by measuring the pressure at the filter service port and the oil pressure port.

The difference in these two pressures will be the pressure drop across the filter, check valve, and solenoid valve. The pressure drop across the check valve and solenoid valve is approximately 40 kPa (0.4 bar), which should be subtracted from the two oil pressure measurements to give the oil filter pressure drop. 2 Power supply bus bar with riveted contact block 2 Contactor or current transformer connection zone 2 42 14 - START-UP CHECKLIST FOR 30XA IlQUD CHIIERS (USE FOR JOB FILE) Preliminary information Job name: Location: ....., Installing contractor: ....., Distributor: ....., Model number: .....

Serial number ..... Serial number ..... Motor number ..... Compressors Circuit a Circuit b Model number ..... Model number ..... Motor number ..... Motor number ..... Motor number ..... Model number ..... Model number ..... Serial number ..... Condenser Model number ..... Serial number ..... Additional optional units and accessories ..... Preliminary equipment check Is there any shipping damage? ..... If so, where? Will this damage prevent unit start-up? .....

Unit is level in its installation Power supply agrees with the unit nameplate Electrical circuit wiring has been sized and installed properly Unit ground wire has been connected Electrical circuit protection has been sized and installed properly All terminals are tight All chilled water valves are open All chilled water piping is connected properly All air has been vented from the chilled water circuit Chilled water pump (CWP) is operating with the correct rotation.

Check the phase sequence of the electrical connection. If the unit is equipped with a hydronic module, use the pump test function. Refer to the 30XA/30XAS/30XW Pro-Dialog control manual for a more detailed explanation. Circulate chilled water in the water circuit for at least two hours, then remove, clean and replace the screen filter. After the pump test has been completed, switch the unit off again. Inlet piping to cooler includes a 20 mesh strainer with a mesh size of 1.2 mm. The compressor flange has been removed. 43 Unit start-up a. Oil heaters have been energized for at least 24 hours (30XA) b. Oil level is correct c. All discharge and liquid valves are open. d. All suction valves are open, if equipped e. All oil line valves and economizer discharge bubbler valves (if equipped) are open f. The contactor g. Checks have been carried out for any possible leaks. Unit has been leak checked (including fittings) g1 - on the whole unit g2 - at all connections Locate, repair, and report any refrigerant leaks

h. Check voltage imbalance: AB ..... AC ..... BC ..... Average voltage = ..... V Maximum deviation = ..... V Voltage imbalance = ..... % i. Voltage imbalance is less than 2% WARNING: Operation of the chiller with an improper supply voltage or excessive phase imbalance constitutes abuse and will invalidate the Carrier warranty. If the phase imbalance exceeds 2% for voltage, or 10% for current, contact your local electricity supply at once and ensure that the chiller is not switched on until corrective measures have been taken. Check cooler water loop Water flow volume = ..... litres Calculated volume = ..... litres 3.25 litres/nominal kW capacity for air conditioning 6.5 litres/nominal kW capacity for process cooling Proper loop volume established Proper loop corrosion inhibitor included ..... litres ..... litres ..... Proper loop freeze protection included (if required) ..... litres of ..... Piping includes electric heater tape, if exposed to the outside Inlet piping to cooler includes a 20 mesh strainer with a mesh size of 1.2 mm Check pressure drop across the cooler Entering cooler = ..... kPa Leaving cooler = ..... kPa kPa Leaving - entering = ..... kPa WARNING: Plot cooler pressure drop on performance data chart (in product data literature) to determine total litres per second (l/s) and find unit's minimum flow rate. Total = ..... l/s Nominal kW = ..... l/s Total l/s is greater than unit's minimum flow rate Total l/s meets job specified requirement of ..... l/s WARNING: Once power is supplied to the unit, check for any alarms. Refer to the 30XA/30XAS/30XW Pro-Dialog control manual for the alarm menu.

Note all alarms: ..... Order No: 13452-76\_07.2012 - Supersedes order No: 13452-76\_05.2011. Manufacturer reserves the right to change any product specifications without notice. www.eurovent-certification.com www.certiflash.com Manufacturer: Carrier SCS, Montluç, France. Printed in the European Union, Seite 1 H A N D B U C H F Ü R D I E R E G E L U N G Touch Pilot-Regelung 30XA/XAS/XB/XW 30XA-ZE/XW-ZE AquaForce ® PUR-Etec mit R-1234ze(E) Überersetzung des Originaldokuments..... 7.21 - Option Trockenkühler Free Cooling (30XB) ..... 34 7.22 - Optionaler Zeitplanfunktion ..... 34 7.23 - Optionale Hydraulikmodul (30XA/30XB) ..... 34 7.24 - Geräte 30XA-ZE und 30XW-ZE (HFO) ..... 34 7.25 - Option hohe Verflüssigungs-/Gastemperatur (30XW) ..... 34 7.26 - Maximale Verflüssiger-Austrittswassertemperatur (30XW) ..... 34 7.27 -

Alarmprotokoll ..... 36 8.6 - Alarmcodes ..... 37 Die Abbildungen auf dem Titelblatt dienen nur der Illustration und sind nicht Bestandteil eines Kaufvertrages oder eines Kaufvertrages. Der Hersteller behält sich das Recht vor, ohne vorherige Ankündigung Änderungen vorzunehmen. Seite 4 Sprachinstellung Ihres Gerätes werden alle Zeichenfolgen in der vom Benutzer gewählten Sprache angezeigt. ■ Luftgekühlte Einkreis-Flüssigkeitssättigkeitskühler des Typs 30XA; Vor der Montage und Inbetriebnahme lesen Sie bitte ■ Luftgekühlte Zweikreis-Flüssigkeitssättigkeitskühler des Typs 30XB mit sorgfältig dieser Bedienungsanleitung durch. Kältemaschine. Die Regelung steuert den Betrieb der Lüfter, um den A. 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