



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS



Thermal Transfer Technology Ltd.



CONTENTS

1. Purpose.
2. Health and safety.
3. Delivery and off loading.
4. V units.
5. Handling and lifting instructions.
6. Lifting drawings.
7. Location.
8. Layout Instructions.
9. Initial set up.
10. Motors and fans.
11. Coils.
12. Electric defrost heaters.
13. Pipework.
14. Driptrays.
15. Unit set up.
16. Adiabatic systems.
17. Inverter and Adiabatic set up.
18. Defrost set up
19. Maintenance:
 - 19.1 General.
 - 19.2 Coil block.
 - 19.3 Casework.
 - 19.4 Electrical.
 - 19.5 Fan.
 - 19.6 Wiring.
 - 19.7 Motors.
 - 19.8 Thermostats.
 - 19.9 Control panel.
 - 19.10 Thermostat control.
 - 19.11 Inverter control.
 - 19.12 EC speed control.
 - 19.13 Defrost heaters.
20. Component Replacement:
 - 20.1 Motors.
 - 20.2 Defrost heaters.
21. Spares
22. Carbon dioxide units.
23. EC Declaration of Conformity.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

1. PURPOSE

The Installation, Operating & Maintenance Instructions have been developed to: -

1. Comply with the supply of machinery (safety) regulations 2008
2. Comply with the Pressure Equipment Directive
3. Satisfy essential health and safety requirements
4. Give instruction on handling, assembling and connecting
5. Give training instructions where necessary
6. Give warning of any potential hazards or risks
7. Give drawings/diagrams necessary for putting into service
8. Give information regarding noise emissions

These instructions shall be drawn in the language of the country in which the machinery is to be used.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

2. HEALTH & SAFETY

It is the responsibility of all individuals to ensure a safe working environment for both themselves and other people they may affect.

Before installation, ensure the unit being installed is suitable for the temperature and medium concerned and that pressure and temperature maximum limits are not exceeded.

Ensure the medium to be used, and any additives, is as indicated on the nameplate / order. Any medium other than that requested must be confirmed with 3T prior to use to ensure material compatibility.

The surface temperature of pipe-work may be excessively hot or cold to touch when in use.

Ensure the electrical supply voltage is as on the unit nameplate and also matches that on the motor nameplate.

If the unit is not designed to be a complete and functional whole then the unit may be part of an assembly. These installation, maintenance and operating instructions **MUST** be read in conjunction with the installation and maintenance instructions supplied with the relevant component parts.

It must be ensured that an installation, maintenance and operating instruction is available for all relevant pieces in the assembly and that they have been read and understood by the responsible person putting the unit into service.

Labelled design pressure must not be exceeded.

If further pressure tests are carried out they must not exceed the test pressure stated on the label.

When installed as an assembly the pressure limits of each of the pieces of equipment must be taken into account.

Protection against exceeding the allowable limits of pressure equipment:

Where, under reasonable foreseeable conditions, the allowable limits could be exceeded, it is the Customer's responsibility to ensure that provision is made for the fitting of suitable protective devices and combinations thereof comprising:

- a) Safety accessories.
- b) Where appropriate, adequate monitoring devices such as indicators and/or alarms, which enable adequate action to be taken either automatically or manually to keep the pressure equipment within the allowable limits.

Catastrophic failure may result if the pressure equipment is not within the allowable limits.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

Before putting the unit into service, the end user must complete a Hazard Analysis and Operability Analysis (HAZOP)

Sound pressure levels are reference in the specific sales literature for the individual unit, sound pressure levels are usually less than 70 dB(A) at 10 from the header end of the unit.

3. DELIVERY AND OFF LOADING.

Upon receipt, the units should be visually inspected prior to off-loading.

Any defects or short-falls must be marked on the delivery advice note, notified to the transport company and the manufacturer informed.

Once goods have been offloaded and signed for as being in good condition, consignee confirms goods are acceptable and no claim for loss or damage can be made.

Care must be taken to avoid shocks during handling and transport, i.e. there should be no shock lifting.

4. V UNITS:

For ease of transportation "V" units may be supplied in two halves.

On receipt the installer needs to join the two halves of the units using the sealant, joining the units and then bolting through the holes in the casework.

5. HANDLING AND LIFTING INSTRUCTIONS

Always be careful when lifting.

The exact method of handling and lifting the heat exchanger will depend on size of unit, final location, height of lift etc.

It is necessary for qualified riggers and movers to determine the specific lifting and positioning of the unit.

Safety slings and spreader bars must be used when lifting.

To avoid damage whilst lifting, a lifting frame must be used.

When lifting eyes are used consideration should be given to the use of slings as an additional precaution.

Care should be taken to avoid damaging the units whilst being moved to its final location.

The nameplate will give an indication of the weight of the unit before packaging.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

Never attach anything to headers.

Control that structural bearing of the floor is in relation to the weight of the unit and secure the unit using the foot fixing holes.

If the unit is installed in a closed area, it is necessary to control sufficient ambient ventilation available.

The legs must be fixed to the unit at the top set of holes to ensure the design air flow is reached.

All electrical connections should be carried out and in conformity to the local electrical standards and regulations, e.g. IEE regulations.

The motor(s) must be connected in accordance with the motor manufacturer's installation instructions and connected to an external main switch (isolator).

The electrical nameplate on the unit and the motor must match each other and also the electrical supply on site.

Ensure that the drain plugs are removed from the lowest point of the motor.

Access to unit installation area must be reserved to qualified personnel only, and in compliance with the standards in force.

Connection to the headers should be carried out in such a way that no mechanical stress is transferred to the headers/tubes. It is the user's responsibility to make sure that all vibration is eliminated.

When connected to the pipe system, care must be taken that the weight of the pipe-work systems does not load the coils.

Design consideration must be taken with regard to expansion and contraction forces.

The load of the pipe-work system and expansion forces must not load the coils.
COILS ARE NOT LOAD BEARING STRUCTURES.

No rotational force should be applied to the header when connecting the pipe-work.

If welding to the connections the welding earth lead must be connected to the pipe being welded to prevent stray arcing through the coils tubes. Also the return lead must be mounted adjacent to the joint being welded to avoid stray arcs, causing damage

Failure to follow this instruction may result in serious damage.

The unit should be placed in such a way that all the supports carry the load equally.

The heat transfer surface (coil) must be level.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

After lifting / installation ensure the fan is free to turn within the cowl.

Where fork lift channels are fitted, these must be removed prior to commissioning.

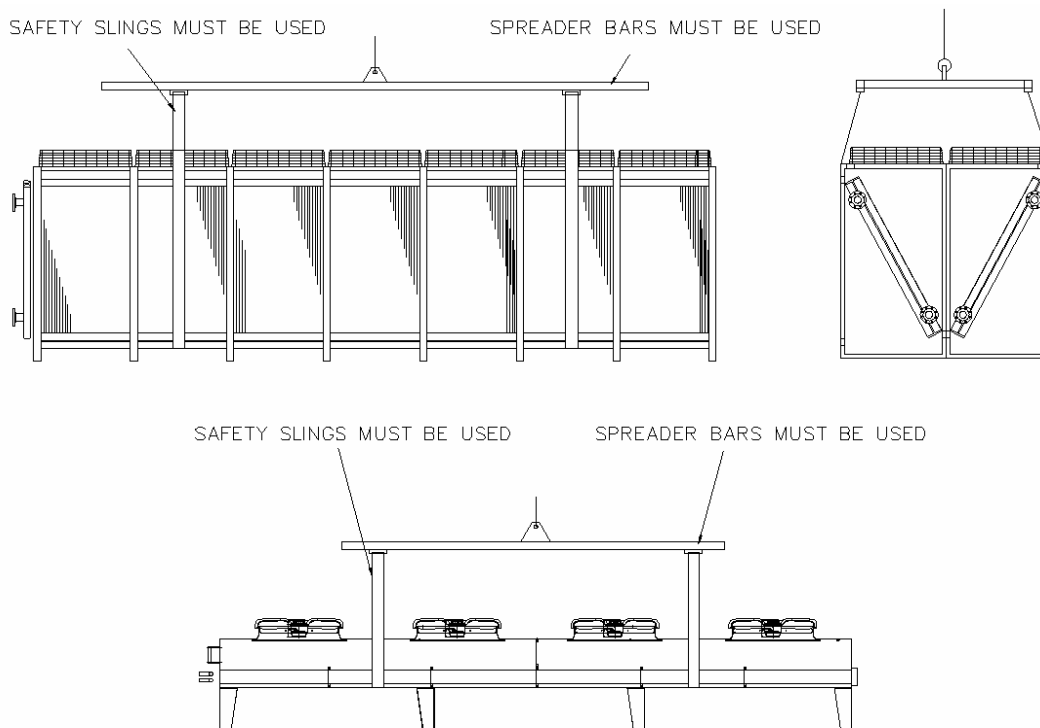
In cold air, where the air density is high, the rated current of the motor may be exceeded.

Labelled design pressure and temperatures must not be exceeded

Please note the weight of the unit, as labelled.

Care must be taken to avoid shocks during handling and transport there should be no shock lifting.

6. LIFTING DRAWINGS





INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

7. LOCATION

The most important consideration which must be taken into account when deciding upon the location of air-cooled equipment is the provision for the supply of ambient air to the unit and removal of heated air from the unit.

It is essential to allow for sufficient air flow and to avoid air re-circulation.

Unit layout should be in accordance with good engineering and where applicable refrigeration practice. The unit must be secured perfectly level to ensure the correct operation of refrigeration coils, and the venting and draining of fluid coils.

Adequate space must be allowed to supply unrestricted airflow to the coil face.

Space should be allowed for routine service and maintenance.

Consideration should be given to pipe-work, which may be an obstruction to airflow or a heat source.

Vertical coils should be shaded from direct sunlight.

Consideration needs to be given to the prevailing wind, especially with low power fans on vertical units.

The surface the units are mounted on / and or surrounding areas can create high solar gains.

Room coolers need particular attention with regard to product layout.

Where multiple units are installed the distance between them is critical, an increase in height from the ground, should be considered.

Where units are located in areas enclosed by decorative units or louvers, the fences or louvers must have a minimum of 70% free area and the unit fan discharge must be level with the top of the fence or louver.

It is not possible to fully drain a fluid coil; therefore the product should be protected by adding anti-freeze in sufficient quantity.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

8. LAYOUT INSTRUCTIONS:

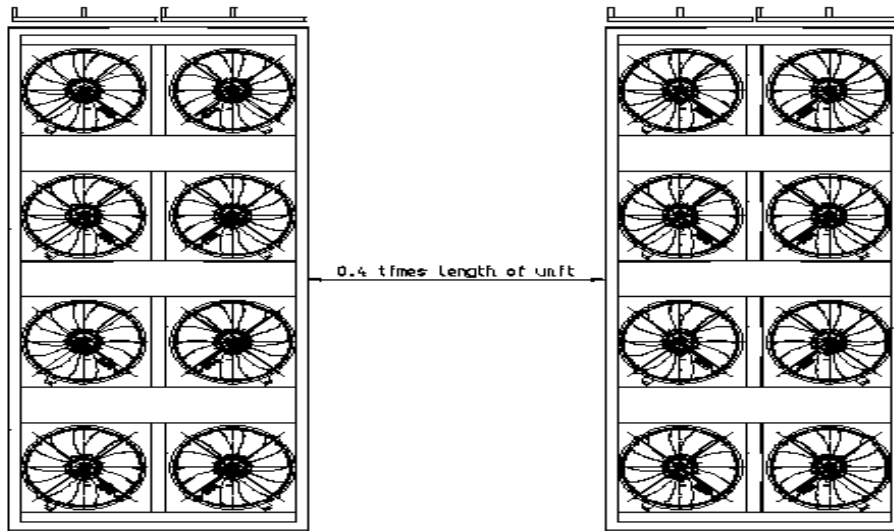
Where multiple units are installed, the distance between them is critical to prevent air starvation or recirculation.

An increase in height above the ground should be considered.

Where units are located in areas enclosed by decorative units or louvers, the fences or louvers must have a minimum of 70% free area and the unit fan discharge must be level with the top of the fence or louver.

Multiple units can be installed end to end providing there is sufficient air flow from the sides of the units.

Where two or more units are installed side by side then the minimum distance between them is 0.4 times the length of the unit



For specific location layout guidance please contact us.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

9. INITIAL SET UP

Make sure unit is level and evenly supported.

Ensure unit is electrically isolated.

Prior to running the unit check all guards, fan / motor fixings and electrical covers are fixed.

Check unit and fan nameplates correspond with the electrical supply on site.

Check position of isolators, where fitted.

Check holding down bolts, where applicable, are securely fitted.

Ensure inlet and outlet connections are piped correctly; the inlet connection is on the air off face of the coil.

Check the fan rotates freely.

Ensure the system is correctly vented.

Where lifting channels are fitted, these must be removed prior to commissioning.

Once running, check that there are no unusual noises or vibration.

10. MOTORS & FANS

The unit must only be installed and operated in accordance with the local standards in force. In the UK these include BS 7671, IEE wiring regulations 17th edition.

The motor(s) must be connected in accordance with the motor manufacturer's installation and connected to an external main switch (isolator).

The electrical nameplate on the unit and the motor must match each other and also the electrical supply on site.

Before putting the fan into service check the nameplate complies with the electrical supply on site.

During commissioning, unexpected and hazardous conditions can arise; remove all persons from the hazardous area.

The electrical supply must be isolated prior to working on a fan or motor.

Ensure free rotation of fan impeller.

The motor must be correctly earthed.

Drain plugs must be removed from the lowest point of the motor.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

11. COILS

All refrigerant coils should be vacuum dehydrated after installation to a minimum of 1 torr to avoid potential moisture related problems. This operation must be carried out at temperature greater than 10°C.

Fluid and refrigerant coils must be installed with the heat transfer tubing in the horizontal position. Steam coils must be installed with the head transfer tubing in the vertical position.

Steam coils must be correctly trapped and steam hammer must be prevented.

All heating and cooling coils must be filled with a suitable anti-freeze solution to prevent freezing.

Coils can not be completely drained off of all fluid.

12. ELECTRIC DEFROST HEATERS:

The following checks should be made before attempting to remove any elements.

- Check the phase fuse.
- Check for a phase imbalance as the elements are wired so that they are evenly spread across the three phases.
- Check the resistance of the element before removing.
- Check the ground leak resistance, by checking the resistance between the live and ground terminals.

13. PIPEWORK

The installer should ensure that the pipework sizes to and from the unit are of the correct size and are adequately supported, and if necessary lagged.

Vibration transmission to the coil must be eliminated.

Where applicable the pipework should be able to expand and contract with temperature.

For refrigeration coils it is necessary to dehydrate the complete refrigeration system to avoid potential moisture related problem.

Refrigerant coils are initially charged with a positive pressure of nitrogen and this will be heard to escape when the connections are made.

If coils are with steel connections, when welding pipe connections on site, return lead must be mounted adjacent to the joint being welded to avoid stray arcs causing damage.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

14. DRIPTRAYS

Ensure the drain lines installed are equivalent to the connection on the driptray.

Drain traps must be installed in the correct place and be of a suitable size.

Double driptrays, for example in duct mounted coils, need to be installed with two independent traps.

15. UNIT SET UP

Each unit is individual designed therefore the circuitry, header arrangement, connections centres etc., all change with each specific design.

Horizontal units can not be used in a vertical configuration and vertical units can not be used in a horizontal configuration.

Units are usually sent out with the control not set due to the changing requirements and site conditions.

16. ADIABATIC SYSTEMS

When positioning the unit, ensure adequate space is allowed for access to the adiabatic panel and the electrical control panel. These panels can be positioned at either end of the unit or supplied loose for fitting on site if required.

The Adiabatic Cooling System requires connection to a permanent clean water supply and should be fed from a break tank.

Ensure the installation follows all applicable Water Bylaws plus any further local building regulations.

The pump and valves should be checked periodically to ensure correct operation.

The pump must never be started in a dry condition.

The pump may be noisy when first switched on due to air remaining in the chamber. This should cease after a few minutes running. If the noise persists, check the water supply and re-vent the pump.

The nozzles should give a consistent spray pattern. If the spray is intermittent, the nozzles should be removed and cleaned or replaced.

Check all pipe joints for leaks and tighten as necessary.

The UV lamp gradually deteriorates in use and should be changed at regular intervals. It is not possible to tell the amount of UV being produced by the lamp merely by visual inspection, so a regular routine of lamp replacement is the only simple way to ensure correct performance. If the lamp is switched on occasionally and runs for several minutes at a time, as on the adiabatic system, a maximum life expectancy of 1000 operating hours should be allowed.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

UV light can harm the eyes and skin. Never operate the lamp outside the UV unit. A blue glow can be seen at the ends of the UV unit. The UV content of this light is negligible and the units are totally safe in normal use.

To ensure full penetration of UV light into the chamber, the quartz sleeve and chamber should be cleaned at 12 monthly intervals.

During idle periods, e.g. autumn through to spring, the flow adjustment valve and manual bypass valve must be fully open to ensure full drain down of the pipework. Failure to do so may result in severe damage.

Separate Technical Information on adiabatic units should be read and understood prior to putting the unit into service.

17. INVERTER AND ADIABATIC SET UP.

The signal to control the speed of the fans is from a 0-10V or 4-20mA temperature sensor mounted in the outlet header, or directly via the BMS.

Initial set up is with the fluid outlet temperature being maintained as the design /quote, depending on load and ambient temperature the fan speed will ramp up and down to maintain this temperature.

If this temperature needs to be changed then that parameter needs to be adjusted.

The ramp time from stopped to full speed is initially set up is one minute, if this is too fast or too slow that parameter should be adjusted to suit.

When the fans reach full speed a relay is triggered in the control panel which turns on the adiabatic spray. When the fan speed reduces to 70% the relay switches off again. It will only switch on again when the fan speed again reaches 100%. If the relay is to switch off earlier then supervised parameter for that relay needs to be adjusted.

The parameter's can be changed on the inverter control panel as required on site.

18. DEFROST SET UP:

Natural / off cycle:

This type of defrost can only be used on coolers operating in room temperatures of 3°C and above, with the fans running.

Electric coil and tray:

Recommended initial set-up is:

- a) 3 defrosts per 24 hour period
- b) 30 minute duration
- c) Temperature cut out set @ 11°C



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

Hot gas / reverse cycle coil and tray:

Recommended initial set-up is:

- a) Pressure to be equivalent to 25°C saturation temperature
- b) Hot gas through tray matrix first
- c) 25 minute duration

Hot gas / reverse cycle coil with electric tray:

Recommended initial set-up is:

- a) Tray defrost to be initiated 5 minutes prior to coil defrost
- b) Rest as hot gas / reverse cycle

Notes:

- a) System pump down (DX system) with fans running prior to defrost to ensure quick and even defrost.
- b) Drain down period of 5 – 10 minutes after defrost with fans off and no cooling to allow defrost water to clear the cooler.
- c) Hot gas entry to cooler coil block via suction connection.
- d) Fan peripheral heaters fitted to all aerofoil fans on coolers with defrost facility other than natural / off cycle.
- e) **THE ABOVE RECOMMENDATIONS ARE FOR INITIAL SET-UP ONLY. FROST PATTERNS AND DEFROST OPERATION MUST BE MONITERED AND DEFROST SET-UP MODIFIED ACCORDINGLY.**

Defrost Termination Thermostat

If a defrost termination thermostat is to be fitted then care must be taken in locating its sensor. It should initially be positioned between the coil fins on the air on side, away from heater elements.

Small sensors should be enclosed in a suitable copper tube to slow response.

Once the system is in operation it may be necessary to relocate the sensor to the area of the coil where ice remains the longest during defrost (possibly air off face).

Note: Even after correct set up periodically check frost pattern and defrost operation.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

19. MAINTENANCE

19.1 GENERAL:

The site should allow access to the units for cleaning, how much and how often depends on the environment, but should be checked at least every three months.

19.2 COIL BLOCK:

The coil block should be checked for a build up of dirt or grease on the tubes and fins, if necessary this should be removed with a mild detergent and water hose. Care must be taken not to damage the fins whilst cleaning.

If necessary a specific coil cleaner may be used.

For a finned tube heat exchanger to work properly the contact between the air going over the fins and the fluid in the tubes must be maintained.

19.3 CASEWORK:

The unit casing should be checked that any screw fastenings are tight and there is no deterioration of any paintwork, small areas can be re-touched with new paint. Any scratches should be painted over to prevent corrosion.

19.4 ELECTRICAL:

Before any maintenance work begins the unit must be electrically isolated by suitably qualified personal.

Ensure the electricity supply can not be accidentally switched on.

Individual isolators on the fans, if applicable, should be locked in the off position.

Individual isolators should not be used as disconnecting devices, in accordance with IEE regulations.

3 phase motors must be protected against over current and single phasing.

Overloads should be set to the full load current + 10%.

19.5 FAN:

The fan should be checked to ensure it runs in the correct direction.

The fan should be checked that it rotates smoothly and there are no unexpected sounds or excess vibration.

Fan currents should be checked regularly and any that are excessively high should be checked further as they may indicate bearing wear.

The fan guards should be checked to ensure their integrity



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

Care must be taken as fans can start and stop without warning.

Motors should be run in the correct direction, if they are not changing two phases will correct them.

Motors should periodically run if the units are not being used.

19.6 WIRING:

Wiring should be checked that it is smooth, kink free and not frayed or damaged in any way. Any that becomes damaged should be replaced by a suitably qualified electrician immediately in accordance to local regulations in force.

19.7 MOTORS:

Motor bearings are greased sealed for life.

19.8 THERMOSTATS:

Contacts should be checked for smooth operation.
Consideration should be given to changing leading fans to even out motor wear.

19.9 CONTROL PANEL

Maintenance will depend on the panel and the area it is situated.

If the panel is fan and filter cooled the filter mats should be inspected monthly and cleaned if necessary.
They should be replaced annually.

Inverter panels should be checked that the panel heater is operating correctly, the fan inside the panel should be checked to ensure it works correctly and the filter should be checked to ensure it is clean.

The temperature at which the panel heater comes on should be adjusted to above ambient and the heater checked that it operates correctly. Caution should be taken as the heater will get hot.

The temperature at which the heater comes on needs to be re-set to 10 °C.

The temperature at which the panel cooling fan comes on should be adjusted to below ambient and the fan checked that it operates correctly.

The temperature at which the cooling fan comes on needs to be re-set to 30 °C.

19.10 THERMOSTATIC CONTROL

Motors are designed to cope with fluctuation loads but should not be started more than 20 times per hour.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

Analogue thermostats are adjusted with set point and differential via screws fitted into thermostat.

Digital thermostat set points are adjusted using the arrow keys.

19.11 INVERTER CONTROL

The inverter must be installed and maintained only by a suitably qualified electrician.

Inverter should be used with screened cable and reference should be made to the motor manufacturers' guidelines with regards to the use of filters.

Care must be taken as even when the motor is stopped dangerous voltage is present at certain terminals.

Care must be taken as dangerous voltage is present when the input power is connected. After disconnecting the supply a 5 minute waiting time should have elapsed before checking the DC terminals for zero voltage.

Care must be taken as even when the power has been switched off there may be dangerous voltages on the terminals of the relay outputs.

Care must be taken as the inverter will start up automatically after a power interruption if the external run command is on.

Care must be taken as the inverter heat sink may become hot.

Whilst maintaining the drive the maximum number of start ups is three in any five minute period.

The fault history should be checked.

The heat sink should be checked for dust accumulation and cleaned with a vacuum cleaner and compressed air.

The inverter cooling fan should be checked and replaced every five years.

The battery in the control panel should be changed after ten years

More information on the maintenance of the inverter can be found in the inverter specific user manual.

If inverter driven the constructional speed of the motor must not be exceeded and the nameplate speed on the motor should not be exceeded.

Motors should be run in the forward direction; if they are running the wrong way then two phases should be changed.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

19.12 EC CONTROL

Care must be taken when operating or performing servicing on an EC fan as the outside housing can get up to 80 °C.

High voltage exists in the motor, the control head can only be opened when the fan has been switched off and a period of 5 minutes has elapsed.

If the operating conditions are such that the inside temperature of the motor exceeds 87 °C, the fan will slow down to protect itself from overheating – if this occurs then the cause needs to be investigated and removed.

If the internal temperature of the motor exceeds 97 °C the fan will switch off.

If the fan is switched off and running in the reverse direction due to existing wind conditions the fan speed will be moderated by the internal controller to prevent any damage to the internal electronics, when re-energised.

19.13 DEFROST HEATERS

Periodically check frost pattern and defrost operation.

Check there is not a build up of frost on the unit and that after a defrost cycle the coil is completely defrosted.

A build up of frost could indicate problems with one or more electrical defrost elements.

20. COMPONENT REPLACEMENT

20.1 MOTORS:

If a replacement motor is ordered the wiring must be checked prior to installation, motors will be sent out in the default wiring condition and this may need to be changed prior to installation.

Care must be taken with dual speed or dual voltage motors.

Drain plugs must be removed from the lowest point in the motor after installation.

20.2 DEFROST HEATERS:

The coil block heaters are fitted through holes in the coil block.

Replacement is achieved by opening both end covers, releasing the clamps and disconnecting the element from the terminal box.

Generally the heater elements are withdrawn individually from the electrical end by severing the link wire at the opposite end.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

The electrical link must be made (after fitting heater clamps) using a waterproof inline splice once replacement heaters have been fitted.

With care, the elements can be bent with a radius of 1m for removal and refitting purposes.

If the heater clamps are fitted at higher than operating temperature there must be an allowance for up to 5mm shrinkage of the element, otherwise the clamps should be as tight to the end plates as possible.

The drain pan heaters have to be disconnected from the terminal box and then withdrawn as an assembly with their aluminium plates from the tray underneath the coil block - this can be done from the drain end.

It may be necessary to remove the plates as they emerge and bend the elements, especially on the longer units to remove and replace them.

21. SPARES

Spare motors should be stored indoors, in dry, vibration free and dust free conditions.

Shafts are to be rotated sufficiently each month to prevent grease migration.

Further details can be found in the manual supplied with the motors.

22. CARBON DIOXIDE UNITS

Where applicable, suitable safety accessories and monitoring equipment should be used as needed for stand still conditions.

Safety devices such as bursting discs or pressure relief valves must be able to release to external ambient otherwise there is a risk of asphyxiation.

Any "HOT" work welding, brazing etc should only be done when the carbon dioxide is vented or stored.

In enclosed spaces it is recommended that carbon dioxide systems should be fitted with detectors.

Carbon dioxide can cause frost bite.



INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

23. EC DECLARATION OF CONFORMITY

	Thermal Transfer Technology Ltd	
	Hall Dene Way, Seaham Grange Industrial Estate, Seaham, County Durham, United Kingdom, SR7 0PU Tel : +44 (0) 191 523 8002 Fax : +44 (0) 191 523 7914	
		F1503/00 (P19)
EC Declaration of Conformity		
Date:	29 Mar 2010	
Description:	Copper tube air cooled heat exchangers, condensers and dry air coolers in accordance with the technical file project P19.	
The product specified conforms to the regulation of the following European directives and meets the requirements of the confirmed order.		
PED - 97/23/EEC and its amendments EMC - 2004/108/EC LVD - 2006/95/EC M.D. - 2006/42/EC		
PED Category:	CAT 1 - IV	
PED Conformity Assessment Procedure:	Module	B+D
Where appropriate, name and address of notified body:	Royal and Sun Alliance Certification Services, 17 York Street, Manchester, M2 3RS	
Where appropriate, EC type examination certificate:	RSACS 029925 EC	
Harmonized Standards Applied:	BS EN ISO 12100, ISO 13857	
Other technical standards and specifications used:	ASME IX & PD5500	
Declaration:		
The above equipment conforms to The Pressure Equipment Directive and The Supply of Machinery (Safety) Regulations 2008 and is designed and constructed so it complies with the relevant Health and Safety requirements as indicated in the Technical File.		
We further declare that the equipment identified above may be intended to be assembled with other equipment to constitute an assembly or machinery, which shall not be put into service until the assembly/machinery has been declared to be in conformity with the pressure equipment/machinery directives.		
The named person at the above address is also authorised to compile the technical file which would be made available to the official authorities on a reasonable request.		
		 Anders Thomsen - Director (3T Ltd)

	Thermal Transfer Technology Ltd	
	Hall Dene Way, Seaham Grange Industrial Estate, Seaham, County Durham, United Kingdom, SR7 0PU Tel : +44 (0) 191 523 8002 Fax : +44 (0) 191 523 7914	
		F1502/00 (P18)
EC Declaration of Conformity		
Date:	29 Mar 2010	
Description:	Stainless steel tube air cooled heat exchangers, condensers and dry air coolers in accordance with the technical file project P18.	
The product specified conforms to the regulation of the following European directives and meets the requirements of the confirmed order.		
PED - 97/23/EEC and its amendments EMC - 2004/108/EC LVD - 2006/95/EC M.D. - 2006/42/EC		
PED Category:	CAT 1 - IV	
PED Conformity Assessment Procedure:	Module	B+D
Where appropriate, name and address of notified body:	Royal and Sun Alliance Certification Services, 17 York Street, Manchester, M2 3RS	
Where appropriate, EC type examination certificate:	RSACS 018165 EC	
Harmonized Standards Applied:	BS EN ISO 12100, ISO 13857	
Other technical standards and specifications used:	EN 287, EN ISO 15614-1 & PD5500	
Declaration:		
The above equipment conforms to The Pressure Equipment Directive and The Supply of Machinery (Safety) Regulations 2008 and is designed and constructed so it complies with the relevant Health and Safety requirements as indicated in the Technical File.		
We further declare that the equipment identified above may be intended to be assembled with other equipment to constitute an assembly or machinery, which shall not be put into service until the assembly/machinery has been declared to be in conformity with the pressure equipment/machinery directives.		
The named person at the above address is also authorised to compile the technical file which would be made available to the official authorities on a reasonable request.		
		 Anders Thomsen - Director (3T Ltd)