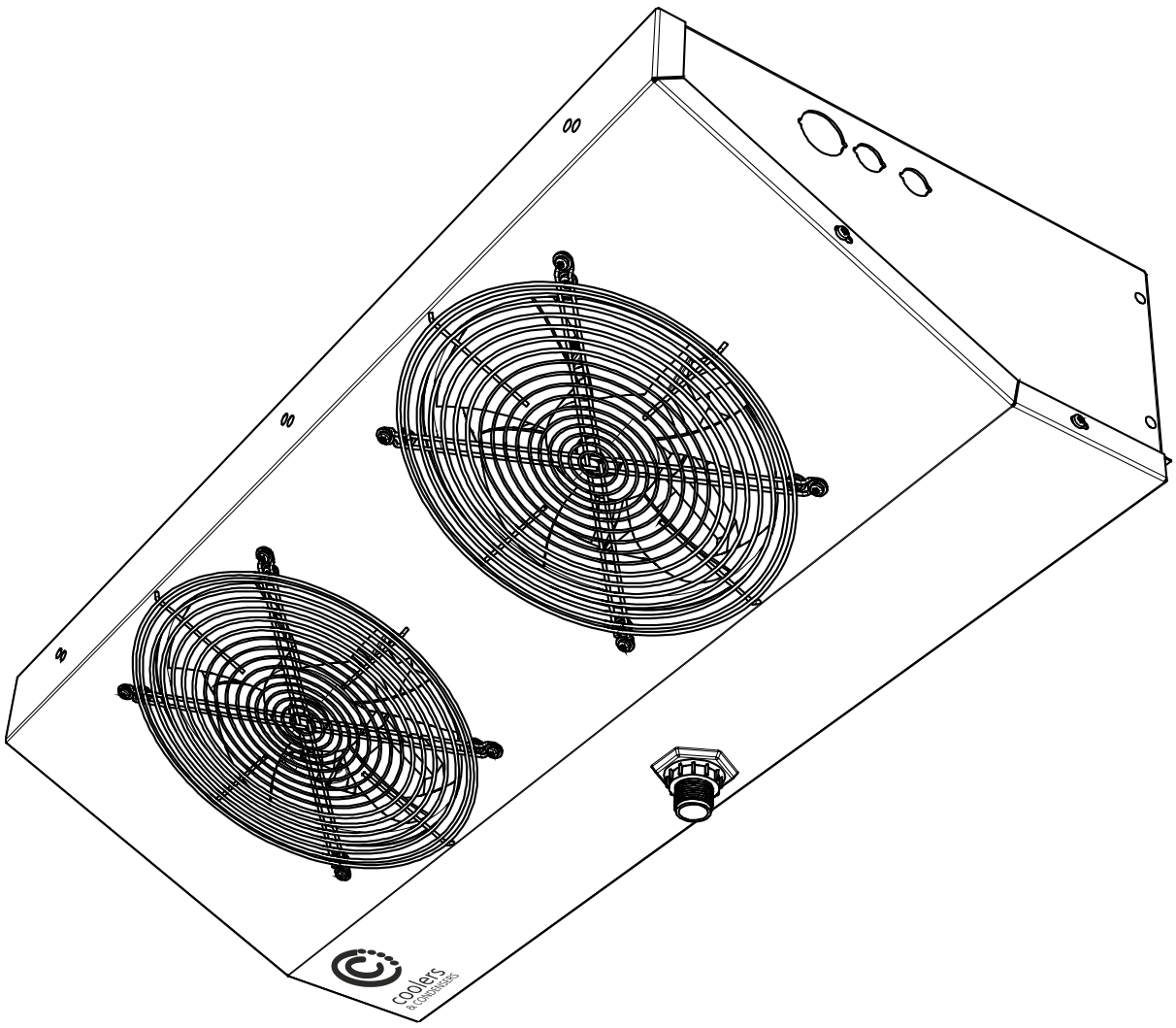
coolers
& CONDENSERS

TGCA

Wedge Coolers

Installation and Maintenance Instructions



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Health & Safety

Ensure that the following conditions are observed: -

1. The electrical supply is suited to the equipment supplied.
2. The cooler is suited to the refrigerant, temperature and pressure to which it will be applied.
3. The cooler is installed to a high standard of electrical and refrigeration practice.
4. The User is responsible for protection against over-pressurisation, including that caused by external fire. The maximum operating pressure is shown on the unit serial plate.
5. For fluid air coolers it is the responsibility of the user to ensure that the fluid is suitable for the operational temperatures, and that coil is protected from damage due to freezing.
6. Avoid disconnection under pressure.
7. It is the responsibility of the Refrigeration Contractor or End User to provide safe working platform to carry out routine Maintenance or Warranty repair. For further details refer to our Condition of Sales.

Upon Receipt

Check immediately for any signs of damage. In the event of any problems notify the carrier immediately and Coolers & Condensers Ltd within 48 hours. With regret an "unexamined" signature and delayed notification of damage will not be accepted

The coil is delivered with a 2 Barg holding charge. This can be verified by accessing the Schraeder valve on the end of the connection stub. When the unit is delivered the internal pressure should be checked to ensure the unit is holding pressure. If no pressure can be found, then a comment should be made on the delivery note.

Pressure Testing:

All equipment has been factory tested to 1.43 x the maximum operating pressure (MOP). The information about the unit operating pressures can be found on the unit label. The equipment must not be subjected to pressures greater than these during testing of the system. If a higher system pressure test is required, the unit must be isolated from the system to prevent damage. The MOP is taken as the condensing pressure of the refrigerant at 55°C.

Installation Instructions

The notes below should be read in conjunction with the following leaflets:

Location

Air movement: Coolers should be positioned to achieve the following criteria: -

1. Full air circulation through the cooler - coil air return face must not be obstructed.
2. No short circuiting of air which will lead to purely local air cooling.
3. Air discharge is arranged to provide the required air throw. (See air throw notes in leaflets CA.110 and VA.120).

Electric Defrost

Coil and tray heaters are arranged as a 230V 1Ph+Neutral load, with common Live terminals linked together. Alternatively, heaters may be wired for a 230V 3Ph+Neutral Load with the removal of the appropriate terminal links, refer to the wiring diagrams in this document. All units must be wired with a protective earth mains connection. The cooler may have two electrical termination boxes of which one only (marked in the appropriate way) will require the electrical supply. This is normally at the opposite end to the refrigerant connections, when fitted, the second box is a terminal box for the star point / Neutral of the load and an internal link wire passes through the cooler to the main connection box. All terminal boxes are rated to IP55.

Pump Down

It is essential that the cooler be pumped down thoroughly before defrosting commences. Failure to do so can cause ice build-up on the coil during the defrost cycle.

Electric Defrost Termination

If on time termination, depending on cooler size, we suggest the initial period be set between 35 and 45 minutes.

If using temperature termination care must be taken in positioning the thermostat bulb. In general, this should be positioned where the last trace of frost disappears, usually on the external cooler finned face. Several factors, including cooler position relative to a door or produce, precise TEV setting etc. may cause identical coolers to frost differently (see maintenance notes). Termination bulbs should not be placed in the space immediately above a heater element.

Cooling re-start after defrosting

Whilst the defrost system is more than adequate to prevent icing during defrost, the system should incorporate a drain down time and ensure that the fans operate, if only briefly, once the defrost is completed to expel any condensate from the fan casing.

Pressure Limitation

Pressure limitation during defrost must be considered. A cooler which cycles on and off high pressure during defrost may not clear properly. Fluctuation in pressure may lead to liquid loading in the lowest circuits and subsequent ice build-up.

Fixings

Cooler weights are given in the appropriate leaflet. All fixings are suitable for a maximum of M12 bolts. On the Smaller ranges the hanger bars are rated at 50 kg per hanging point. Coolers & Condensers Ltd. expect its coolers to be handled and lifted using appropriate mechanical lifting equipment.

Occasionally customers may prefer to lift the cooler the ceiling using a turfing method where the cooler is pulled up to the ceiling using the four corner hanging points. It expected that this lifting method is to be carried out by an experienced lifting team and provision should be made in the case of a wire failure. The corner hangers must be raised evenly with the unit kept level. Uneven lifting may overload the corner brackets causing permanent damage to the cooler casing. Coolers & Condensers Ltd recommend that the cooler be followed up by a lifting platform to support the cooler to avoid any problems during the lift. It is the responsibility of the installer to ensure that a proper risk assessment is conducted prior to the lift and all measures to eliminate risk are taken.

Drainage

The drain line connector is supplied loose in a linen bag. Fit the rubber washer onto the male threaded stub and push the thread through the drain tray hole, locate the hexagon part flush into the drain tray outlet. Fit the female threaded nut on the outer protruding thread and tighten by hand only.

Drain lines must have adequate fall and be trapped. In low temperature applications drains must have either an internal or external heat source and should be insulated.

MOST IMPORTANT!

The heater tape, if external, must provide heating right up to the cooler casing.

Refrigeration Connections

Refrigeration connections should be made in accordance with good refrigeration practice. Pipework must be adequately supported to prevent vibration or external load on the cooler headers etc. Any vibration in the connecting pipe work can risk damage and potential leaks in the coil.

Cooler Circuiting

The liquid inlet tube and distributor will be fitted on DX systems and will require an externally equalised TEV or electronic expansion device. For high glide refrigerants it is recommended that only electronic expansion devices are used.

Electrical Connections

Fan electrical connections must be made in accordance with IEE Regulation and good electrical practice. Standard cooler fans are suitable for 230V, 1 phase, 50/60Hz electrical supply and 1 phase + neutral wire and earth connections are required.

Units are supplied with defrost heaters wired for 1 phase 230V + Neutral supply. Alternatively defrost heaters may be configured for a 3 phase 3 Wire + Neutral Supply, with each heater pair wired between Live and Neutral.

The heater terminal box is fitted with links for 1 phase 230V as standard. Please refer to the appropriate wiring diagram to ensure the terminal block links are correct for each arrangement.

Changing Heater Elements

If the situation should arise where a Coil heater element needs to be changed it should be ensured that the power supply to the unit is disconnected and locked off from accidental reconnection. It is assumed that whoever is responsible for changing the elements is working in a safe manner and the power is prevented from being applied until the work is finished and checked.

A heating element kit is available for the TG range of evaporators; this may be pre-fitted by the supplier. To remove an element from the unit, remove the side fixing on the fan plate, and open it to 90°, open the junction box cover and disconnect both supply and neutral wires from the terminal box. Remove the coil bottom tray fixings, and coil bottom tray, then unclip the two spring clips from around the heater and coil tubes. These will require replacement when fitting the new element. The heater can then be withdrawn from the unit.

To fit the replacement heater, refer to the instructions shown later in this document.

Reconnect the heater wiring into the correct terminals of the supply box.

Liquid Line Sight Glass

On DX systems it is recommended that a sight glass is fitted immediately before the TEV. In the event of plant problems confirmation of a full liquid glass prior to the valve is essential before any worthwhile investigation of the cooler can be made.

Maintenance Instructions

IMPORTANT

The cooler should be isolated from all electrical supplies during any maintenance operations.

It is essential that the following should be checked at regular intervals: -

1. Fans and motors, for free operation (check tip clearance), correct rotation and undue vibration.
2. Cooler fastenings, motor mounts, impellor grub screw fixings.
3. Electric wiring.
4. Incoming refrigeration piping for any sign of chafe or wear on cooler casing.
5. Cooler coil block ends for any signs of leaks (oil etc).
6. Fin for accumulation of dirt, debris or minor damage. Minor fin damage can be combed out.
7. Drain pans and drain lines for signs of blockage or ice build-up.
8. Casing for minor damage. Casing should be touched up with matching paint, standard colour will be RAL9010 semi-gloss. The

underlying material is pre-galvanised sheet but should be sealed from the surrounding environment.

Electric Defrost

Should ice form on the coil we suggest the following procedure:

1. Commence manual defrost and check all heaters using 'Clip-on' ammeter (a phase amperage check at the control panel is not accurate enough).
2. Replace any inoperative heaters (see special note) and remove ice from coil using extended defrost. Ice removal can be accelerated by covering fan apertures and exposed fin faces with polythene sheeting etc.
3. Assuming all heaters are operational, and the coil is now clear operate the cooler for sufficient time to accumulate a generous frost load (a loaded one which holds the heat and provides a greater 'washing' effect).

Cooler Cleaning

External casework should be kept clean with the use of a mild dedicated soap cleaner and warm water only. Coils should only be cleaned with plain water or a dedicated pH neutral coil cleaning solution, prepared in accordance with the manufacturer's instructions, and applied with a soft brush only, avoiding damage to the coil fins and tubing.

IMPORTANT Do not allow high pressure water jets to contact the fans, as this may penetrate the motor leading to failure, do not use high pressure water jets on the coil surface as damage to the fins will occur.

Coolers & Condensers Ltd. cannot recommend a specific cleaning regime or period of cleaning, this is to be decided by the management of the final user and to be appropriate to the type of product in the room. The most important issue after the reduction of bacteria within the casing is the corrosion potential and wash down which are the only way of keeping corrosion at a minimum. For extremely corrosive environments a freshwater wash down at the end of every shift on both sides of the coil is recommend.

Fan plates may be hinged to provide access to the cooler plenum and fans, ELECTRICAL SUPPLY MUST BE ISOLATED before these components are open. There are no interlocks provided on the unit. Access inside the cooler and in the coil plenum must be undertaken with care, whilst every effort is made during manufacture to ensure all sharp edges are removed personnel must wear safety gloves when cleaning inside the unit due the number of fins and metal edges.

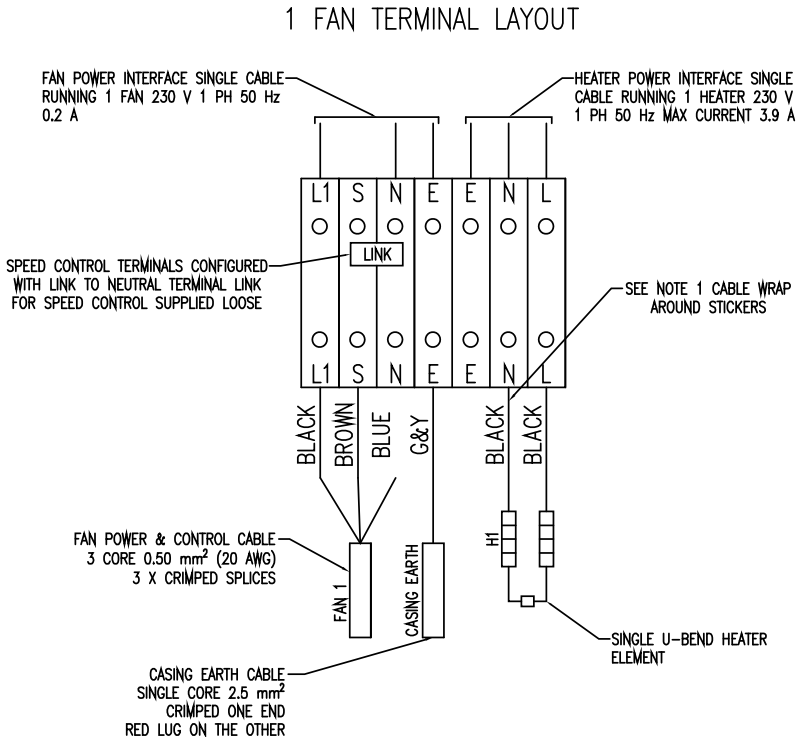
It has been found on many sites that there may be regular washing of the more easily exposed finned areas, but less accessible areas are neglected. It is these neglected areas that corrode more readily. It has also been seen that coolers can be exposed to aggressive cleaning substance because of over spray from the cleaning of other items within the same room, if the fans are left running whilst there is over spray, fluids will be deposited onto the finned surfaces. It is imperative that corrosive substances are washed off with freshwater to prevent corrosion. All materials used in evaporators that are exposed to a moist air stream containing corrosive chemicals (even stainless steel) will be corroded if not cleaned and washed down correctly.

Corrosion

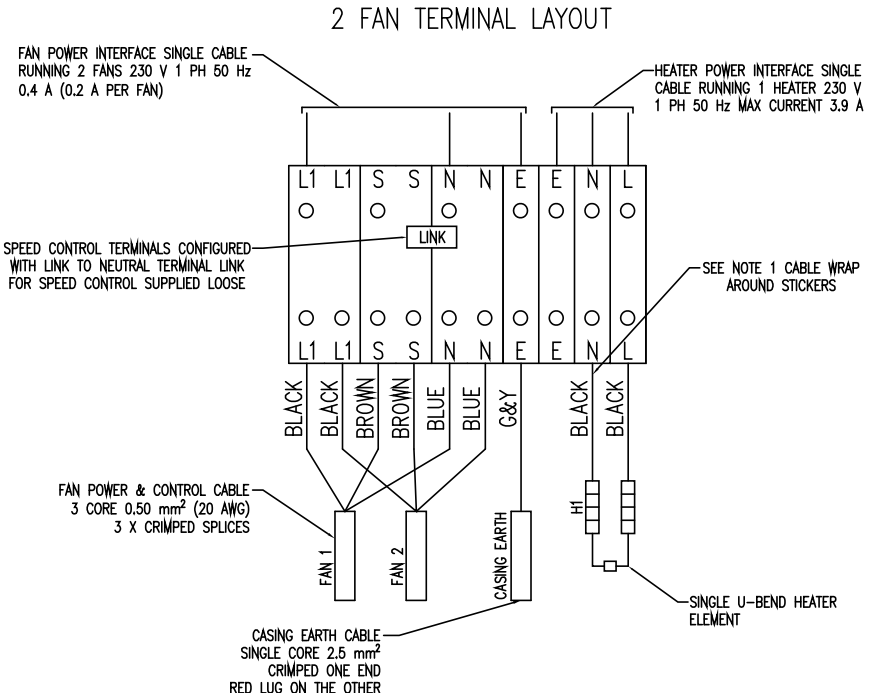
If it is felt that the environment that the cooler will work in will have harmful effect upon the materials of the cooler, it is vital that the information is given to Coolers & Condensers Ltd at the quote stage so provision in the selection of materials can be made.

Cooler Wiring

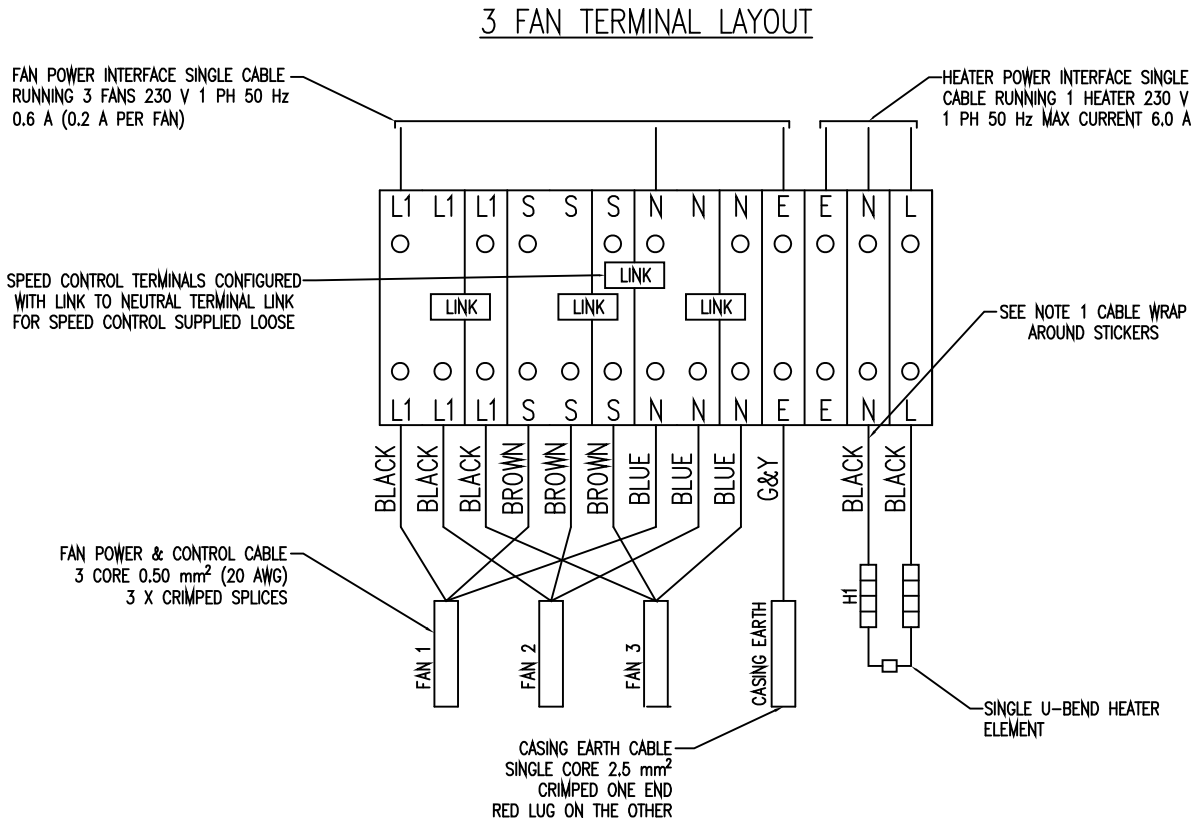
1 Fan Terminal Layout



2 Fan Terminal Layout



3 Fan Terminal Layout

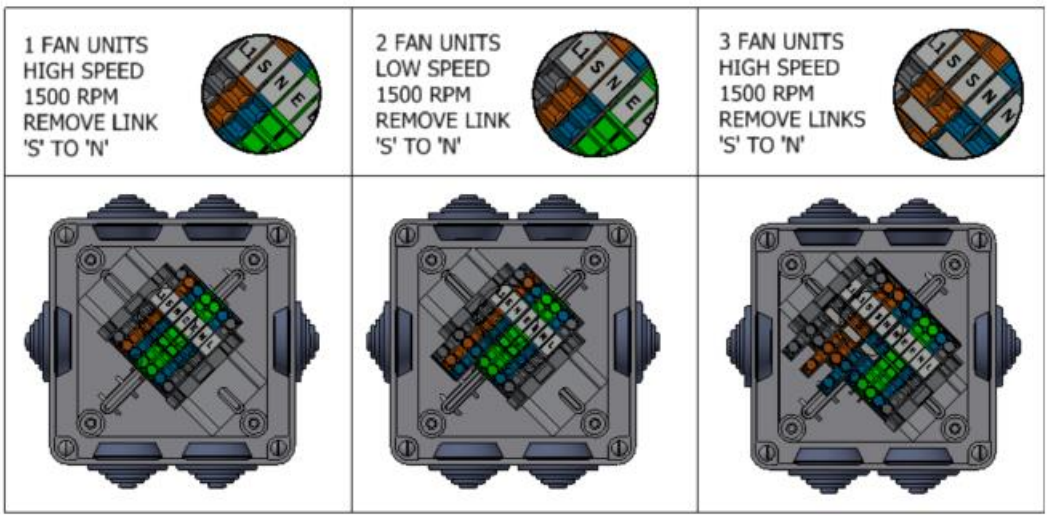


2 Speed Fan Wiring

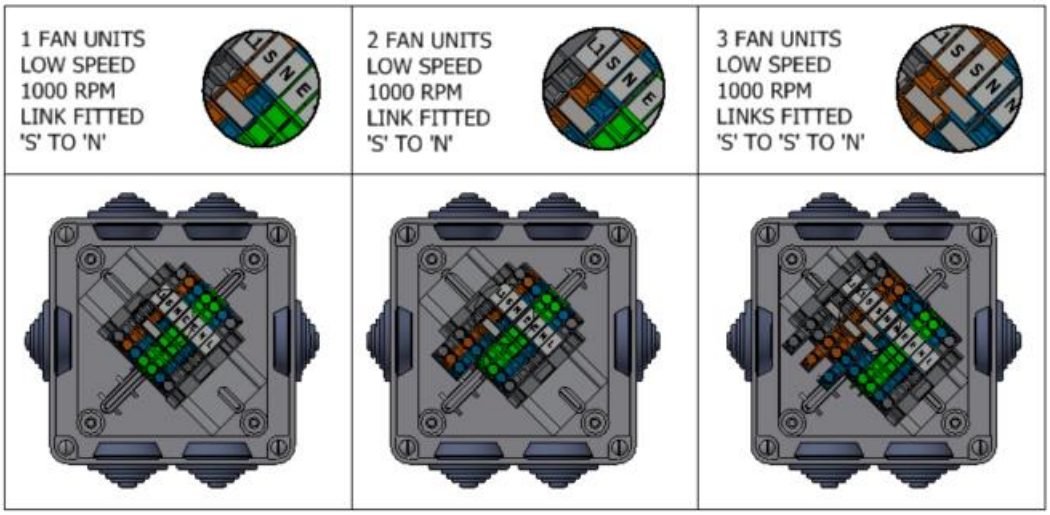
Unit fans utilise Energy Saving, 2 Speed motors. The units are supplied with the fans connected for full speed (1500rpm) as default. The links, supplied loose, must be connected as shown below to enable the different speeds.

1. 1500rpm = No Links
2. 1000rpm = S Link to Neutral Fitted

High Speed Link Arrangement, 1500 rpm



Low Speed Link Arrangement, 1000 rpm



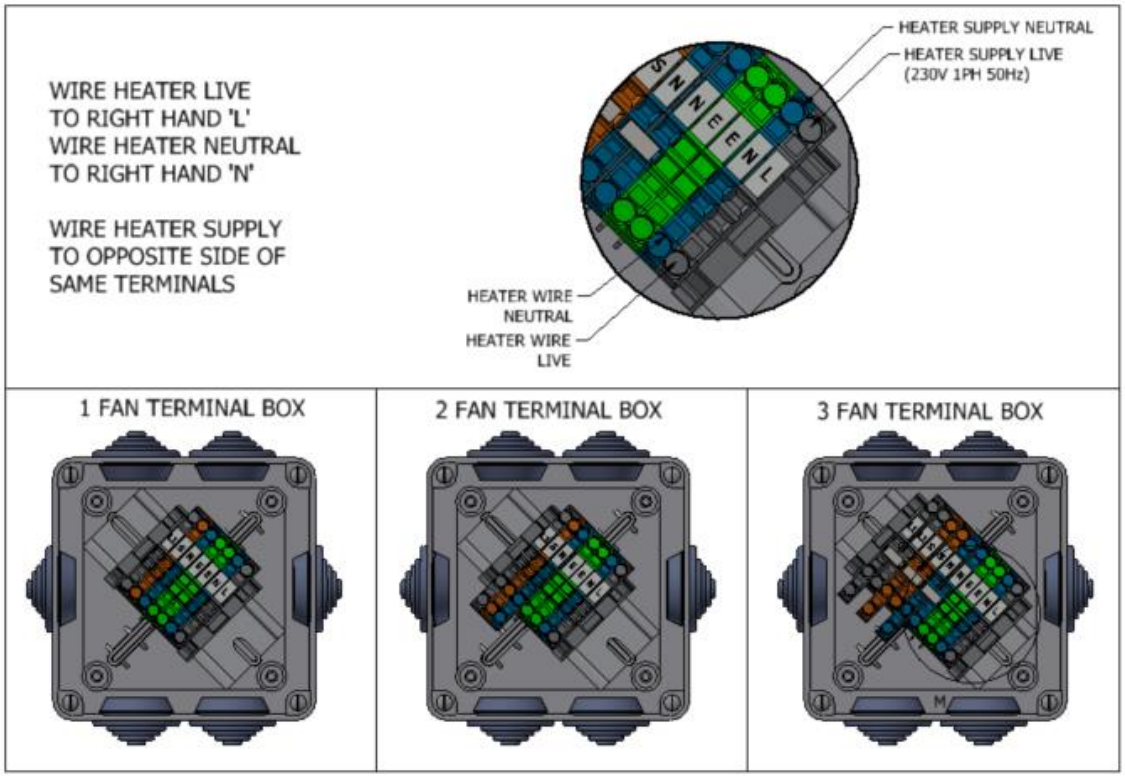
Defrost Heater Fitting & Wiring, 1ph

Defrost Heaters are available as an add on kit for the TG range of evaporators. All kits are 1ph 230V 50Hz and sized to match the length of the evaporator

Heater kits are easier to fit before mounting the evaporator to the ceiling of the cold-room.

Heaters must be fitted to the underside of the coil, inside the aluminium coil bottom tray, and secured with the wire clips supplied. The heater leads must be routed into the common terminal box and wired into the pre-fitted ‘N’ and ‘L’ terminals.

Defrost Heater Wiring, typical to all units



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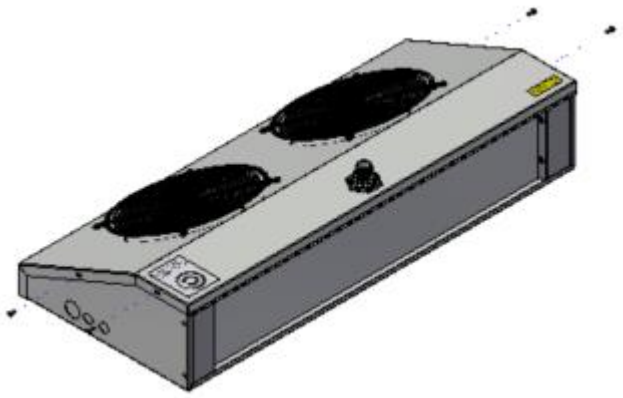
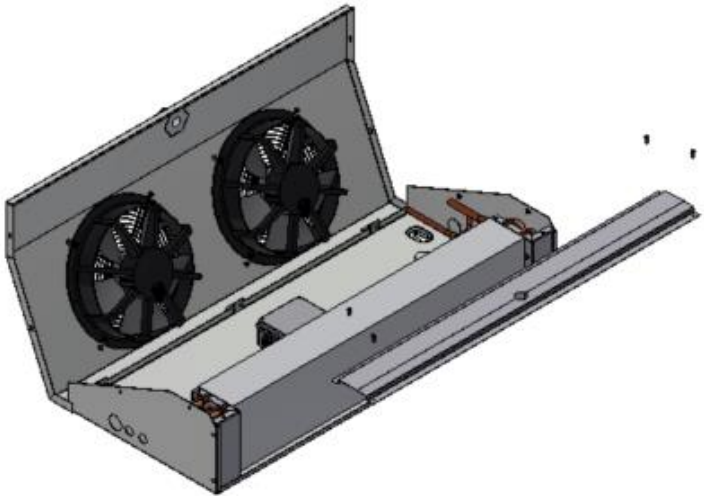
Defrost Heater Fitting, typical to all units

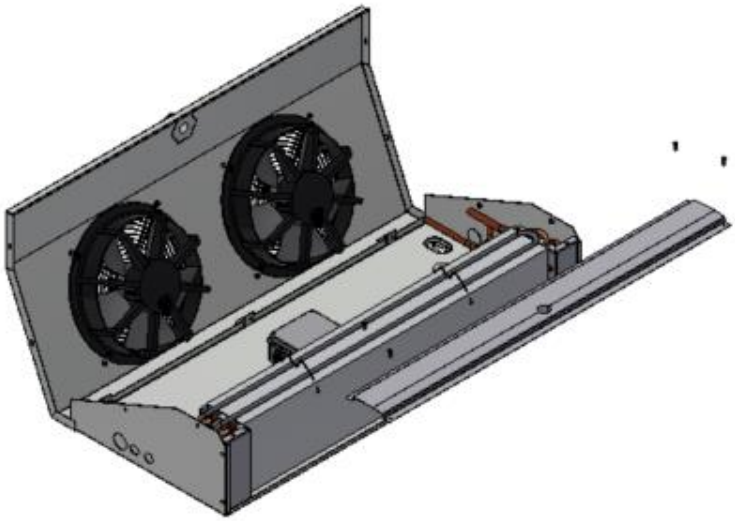
Step 1 : Remove the Fan Plate End Screws



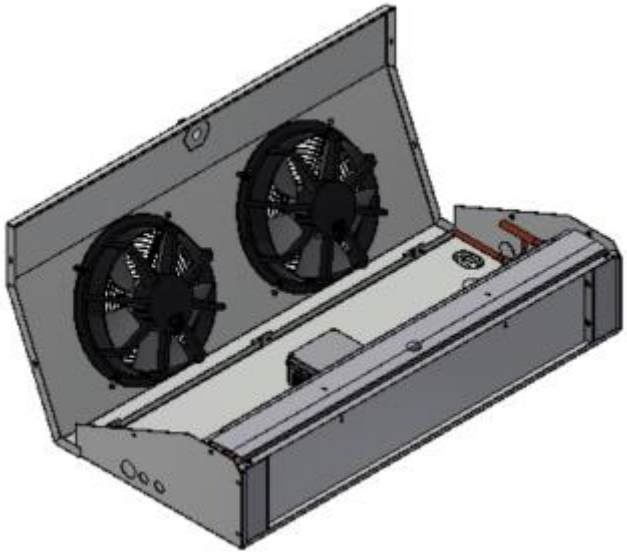
Step 2 : Open the Fan Plate to 90°, and remove the coil bottom cover



Step 3 : Place the heater onto the coil, with the leads at the opposite end to the coil connections, and bent legs protruding into the cooler. Snap fit the wire clips around the coil tubes either side of the heater, spaced 1/3 along the heater length.



Step 4 : Replace the coil bottom cover and secure with the fixings removed in step 2
Wire the Heater Leads into the junction box as shown below. Ensure Heater Leads are secured and prevented from any contact with the heater or the fans.



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All Units Fan & Heater Electrical Data

Unit Type	No. Fans	FLA / Fan	Total FLA Fans	Fan Power Total W	Heater Kit	Heater FLA (230V 1Ph+Neutral)	Heater Power W
TGCA-06B1	1	0.2	0.2	26	TGB1-LTKIT	2.4	550
TGCA-06D1 TGCA-08D1	1	0.2	0.2	26	TGD1-LTKIT	3.0	700
TGCA-06E1	1	0.2	0.2	26	TG-E1-LTKIT	3.9	900
TGCA-06A2 TGCA-08A2	2	0.2	0.4	52	TG-E1-LTKIT	3.9	900
TGCA-06C2 TGCA-08C2	2	0.2	0.4	52	TG-C2-LTKIT	4.3	1000
TGCA-06C3 TGCA-08C3	3	0.2	0.6	78	TG-C3-LTKIT	6.1	1400

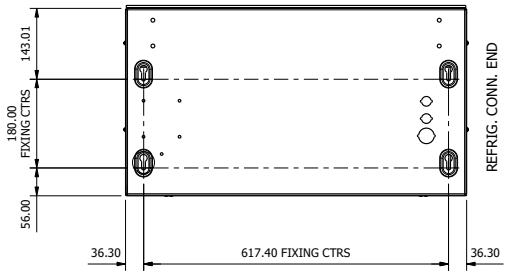
TG Spares List

Model	No. Fans	Fan P.N.	Guard P.N.	Fanplate Kit P.N.	No. Htrs	Htr Kit P.N.	Drain Connector
TGCA-6B1	1	1852301	1852302	TG-FP-6B1	1	TGB1-LTKIT	480-3BP-DCA
TGCA-6D1	1	1852301	1852302	TG-FP-6D1	1	TGD1-LTKIT	480-3BP-DCA
TGCA-6E1	1	1852301	1852302	TG-FP-6E1	1	TGE1-LTKIT	480-3BP-DCA
TGCA-6A2	2	1852301	1852302	TG-FP-6A2	1	TGE1-LTKIT	480-3BP-DCA
TGCA-6C2	2	1852301	1852302	TG-FP-6C2	1	TGC2-LTKIT	480-3BP-DCA
TGCA-8D1	1	1852301	1852302	TG-FP-8D1	1	TGD1-LTKIT	480-3BP-DCA
TGCA-8A2	2	1852301	1852302	TG-FP-8A2	1	TGE1-LTKIT	480-3BP-DCA
TGCA-8C2	3	1852301	1852302	TG-FP-8C2	1	TGC2-LTKIT	480-3BP-DCA
TGCA-6C3	3	1852301	1852302	TG-FP-6C3	1	TGC3-LTKIT	480-3BP-DCA
TGCA-8C3	3	1852301	1852302	TG-FP-8C3	1	TGC3-LTKIT	480-3BP-DCA

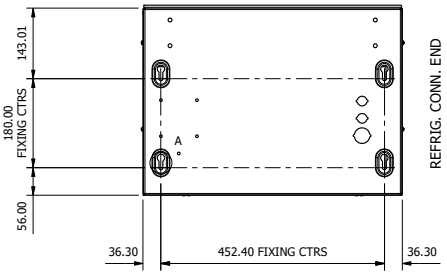
Unit Dimensions

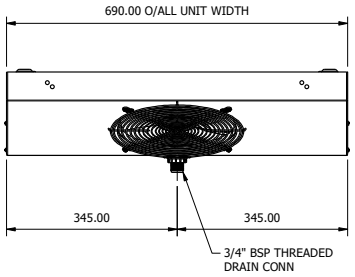
TG06 - 1 Fan Unit Dimensions

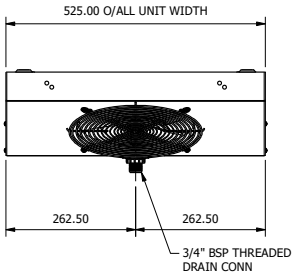
TGCA-6D1

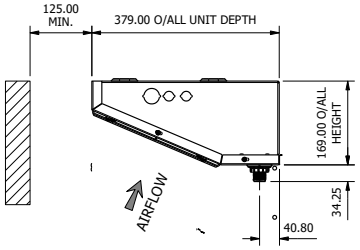


TGCA-6B1

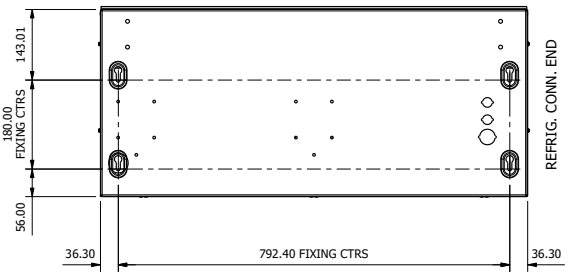


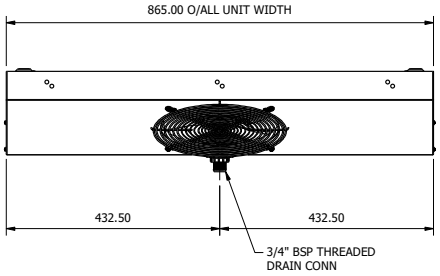


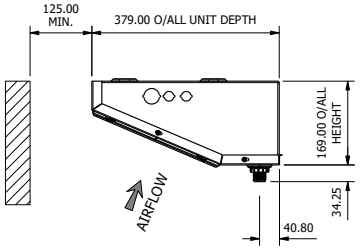




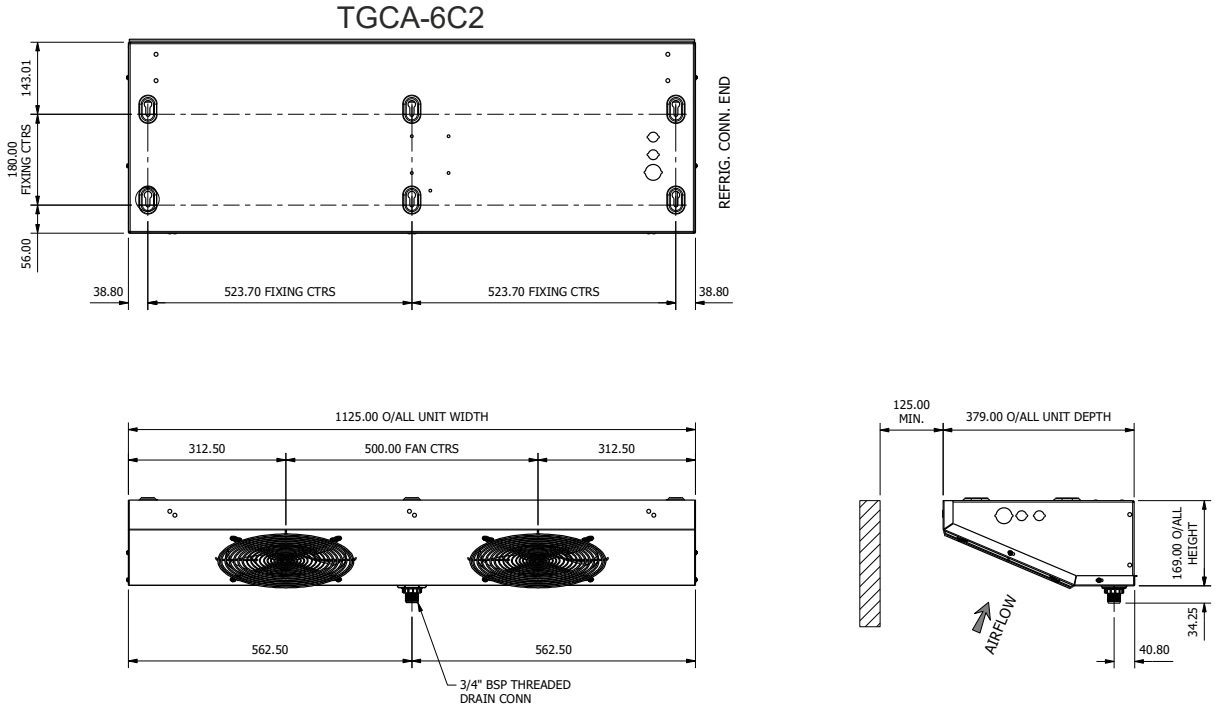
TGCA-6E1



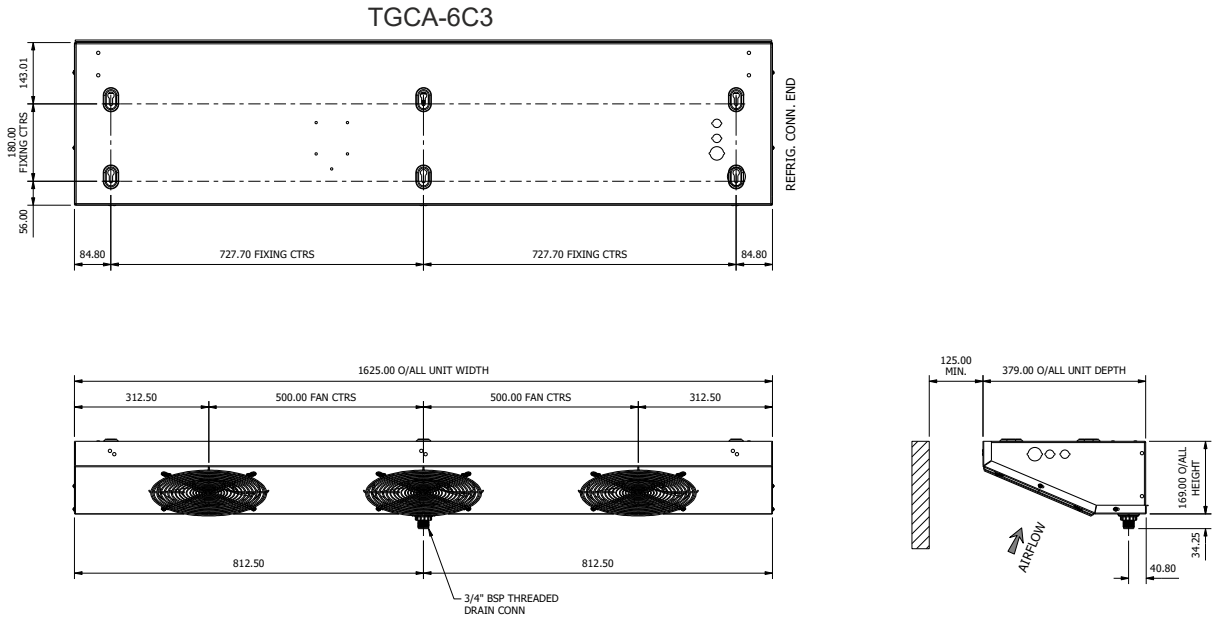




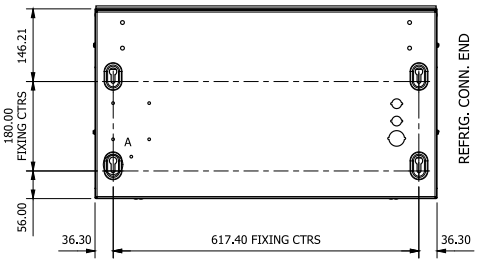
TG06 - 2 Fan Unit Dimensions

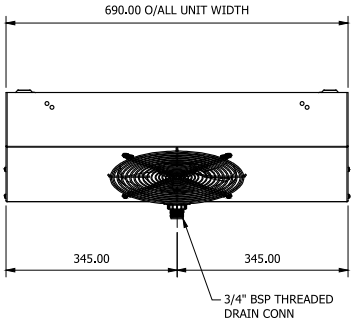


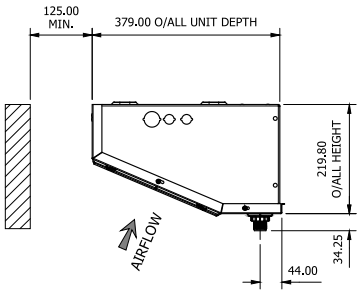
TG06 - 3 Fan Unit Dimensions



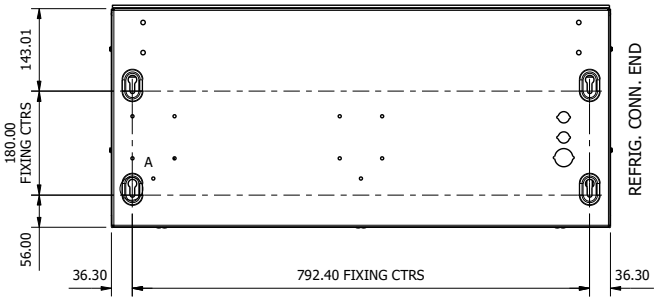
TG08 - 1 Fan D1 - Unit Dimensions

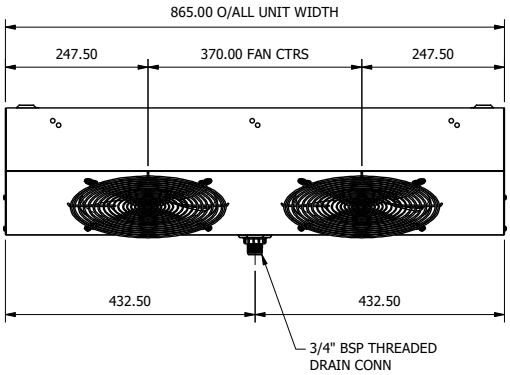


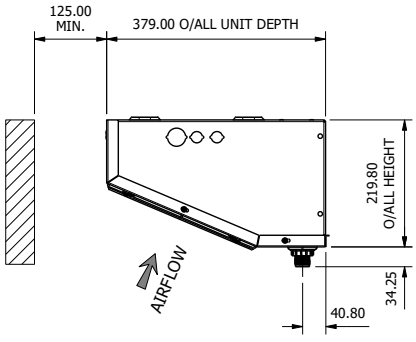




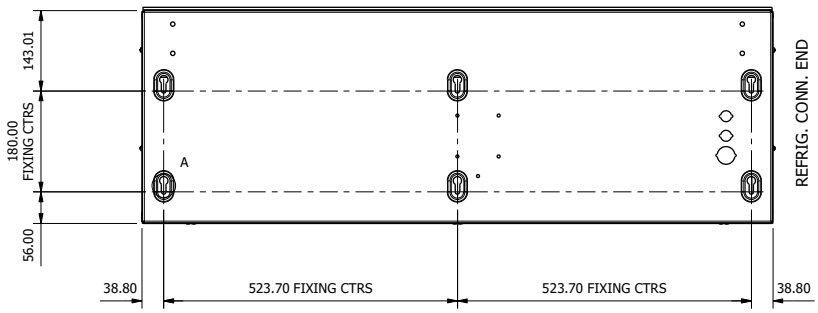
TG08 - 2 Fan A2 - Unit Dimensions

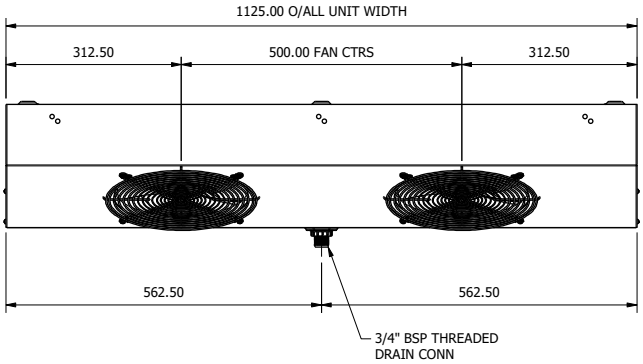


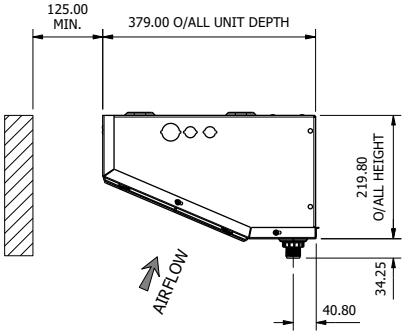




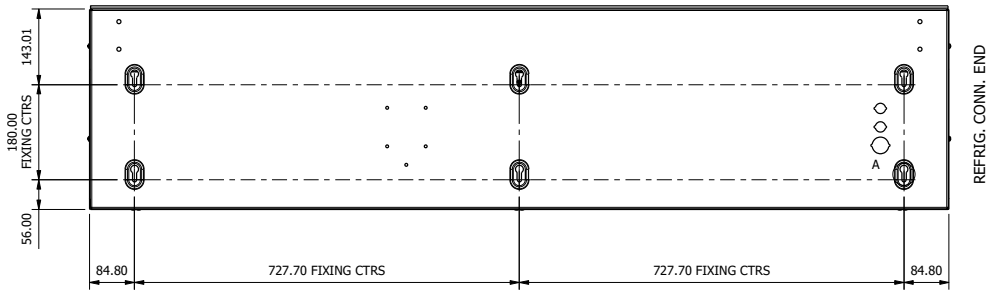
TG08 - 2 Fan C2 - Unit Dimensions

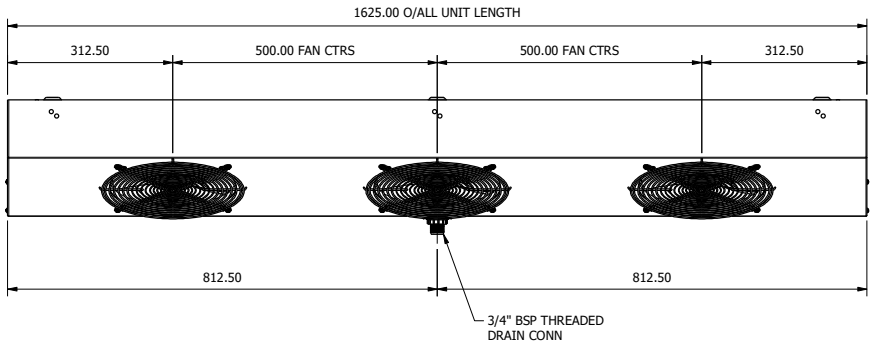


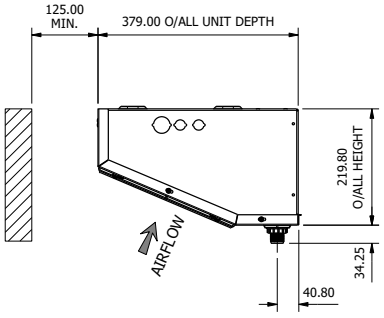




TG08 - 3 Fan C3 - Unit Dimensions







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