



OPERATING & MAINTENANCE INSTRUCTIONS BRLE SERIES LOW TEMPERATURE EVAPORATORS

MODELS BRLE12 to BRLE127

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1. IMPORTANT RECOMMENDATIONS

BRLE evaporators are intended for installation only by **Qualified Refrigeration Personnel**, and are to be installed in accordance with the guidelines mentioned in this manual.

(All electrical work is to be carried out by **Qualified Electrical Personnel** and to be in accordance with local electrical regulations)

2. SAFETY RECOMMENDATIONS

Evaporators supplied with **Nitrogen Holding Charge. (Release fully before removing seals)**

Electrical power to be **isolated** prior to the commencement of any electrical work

During normal operation, **Pressurized Refrigerant** is contained within the evaporator. Extreme care should be taken to avoid leakage, as personal injury may occur. **(Avoid the use of sharp objects in close proximity to refrigeration piping)**

Extensive gas loss in enclosed area may result in asphyxiation.

Contact with refrigerant may cause personal injury. (Freeze Burns)

Normal operating conditions involve **Hot and Cold** surfaces within the evaporator. Extreme care should be taken to avoid contact.

These evaporators are designed to operate in temperatures below 0°C. As such, all care should be taken to avoid any fluid spillage within cool room, as this may result in ice formation and personal injury due to slippage.

Avoid contact with evaporator fins, as sharp edges may cause personal injury.

Insertion of any object into evaporator fans is to be avoided, as this may result in personal injury and/or equipment damage.

3. APPLICATION RANGES

These evaporators are intended for use in commercial application cool rooms, with an operating temperature between -35°C and 0°C. **(Standard evaporator circuiting to suit -18°C room temperature, -24°C SST)**

Recommended refrigerants: **HFCs, HCFCs**. Refer to identification label. (Also suitable for CFCs)

This series evaporator is **not suitable** for use with NH₃. (Ammonia)

Standard evaporators are not to be installed in hazardous/combustible environments. **(Special designs available on application)**

4. REFRIGERANT DISTRIBUTORS

BRLE series evaporators are supplied with a replaceable orifice plate within the distributor body. Standard production evaporators are supplied with R404A orifice plates “ex factory” (orifice plates suitable for other refrigerants available on request).

To replace orifice plate:

Cut the end from the copper distributor stub, approx. 30mm from brass body.

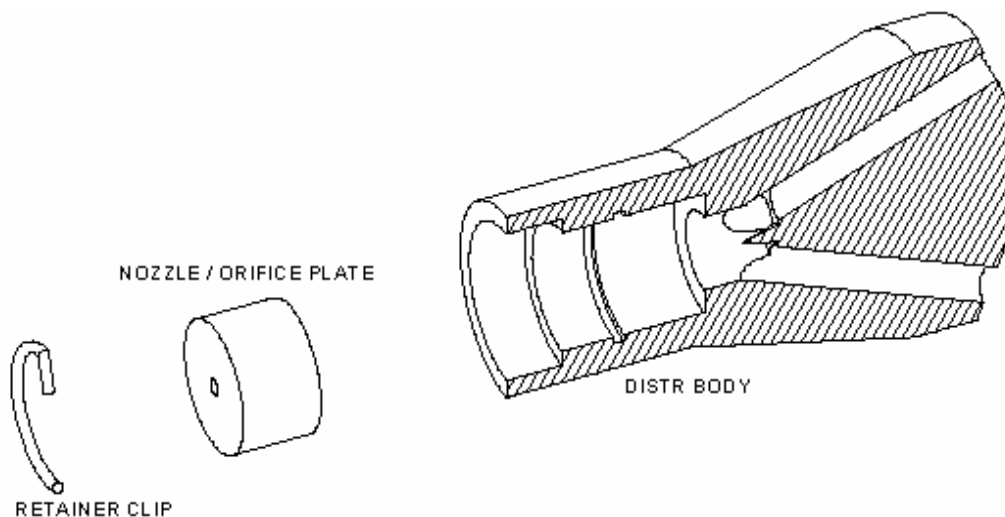
Remove stainless steel retaining clip located inside body using a small, flat bladed screwdriver or similar instrument.

Orifice plate should now fall out with distributor stub in downward position.

Fit replacement orifice plate with distributor stub in upward position.

Refit stainless steel retaining clip, using same tool as used to remove clip, or alternatively, use a piece of copper tube with the same outside diameter as the orifice plate to snap the retaining ring into its original position..

Please Note: Refrigeration system must not be commissioned without the orifice plate and retaining clip in position, otherwise damage to compressor may occur.



5. INSTALLATION GUIDE

Using the flush mounting brackets provided, the evaporator should be fixed to the ceiling, allowing a **minimum** of 300mm between the wall and air-on side of the coil, a minimum of 500mm from right hand side (looking at fans) for heater element access, and a minimum of 265mm from the left hand side for service access.

Mounting of evaporator above doors should be avoided to reduce excessive frosting.

Please Note: Minimum diameter of fixing bolts to be 9.525mm (3/8").
The use of lifting devices during installation is recommended where applicable.

Fit externally equalized TX valves to all BRLE models. Locate TX valve bulb on the upper horizontal section of suction line (as per valve manufacturers recommendations), between the coil block and heat exchanger.

Refrigeration piping connections should be carried out in accordance with the current “Refrigeration Code of Good Practice”*. (Beware of **HOT** surfaces present during welding procedure)

The BRLE low profile evaporators are fitted with electric heater elements, a fan delay/defrost termination thermostat and a heater safety thermostat. The fan delay/defrost termination thermostat can be replaced by an electronic thermostat providing the sensor is located in the same position as the fan delay/defrost termination thermostat. A small flat aluminium bracket found within the plastic bag containing the Operating and Maintenance Instructions can be used to mount the electronic sensor in the same position as the fan delay/defrost termination thermostat. The electronic thermostat can be set at approximately $13^{\circ}\text{C} \pm 2^{\circ}\text{C}$ to terminate defrost and $2^{\circ}\text{C} \pm 2^{\circ}\text{C}$ to re-start the fan motors.

NOTE: The heater safety thermostat must remain in circuit at all times; to exclude the heater safety thermostat would become an OH&S issue and void Warranty.

This arrangement achieves a positive defrost in approximately 20 minutes. Defrost time may vary subject to room duty and atmospheric conditions. A defrost period of 30 minutes will be sufficient for most applications, but should be checked during commissioning of the system.

As the defrost method relies on the refrigerant within the coil to transfer heat to all parts of the evaporator, **it is essential that a pump down system is not used.** Furthermore, the suction line should lift towards the ceiling immediately after leaving the evaporator, to avoid coil drainage. (Drainage will result in partial defrost and possible liquid slugging to the compressor)

Drains should have a minimum I.D. of 32mm, and a fall of 150mm per meter should be provided within the refrigerated space. It is also advisable to keep the length of drain inside the room to a minimum, and once outside, a water trap must be provided to prevent air and/or odors entering the room via the drain. Plastic or rubber drains are usually suitable for room temperatures above -15°C .

Below this temperature, metal drains, electrically heated from 50 to 100 watts per meter, should be installed.

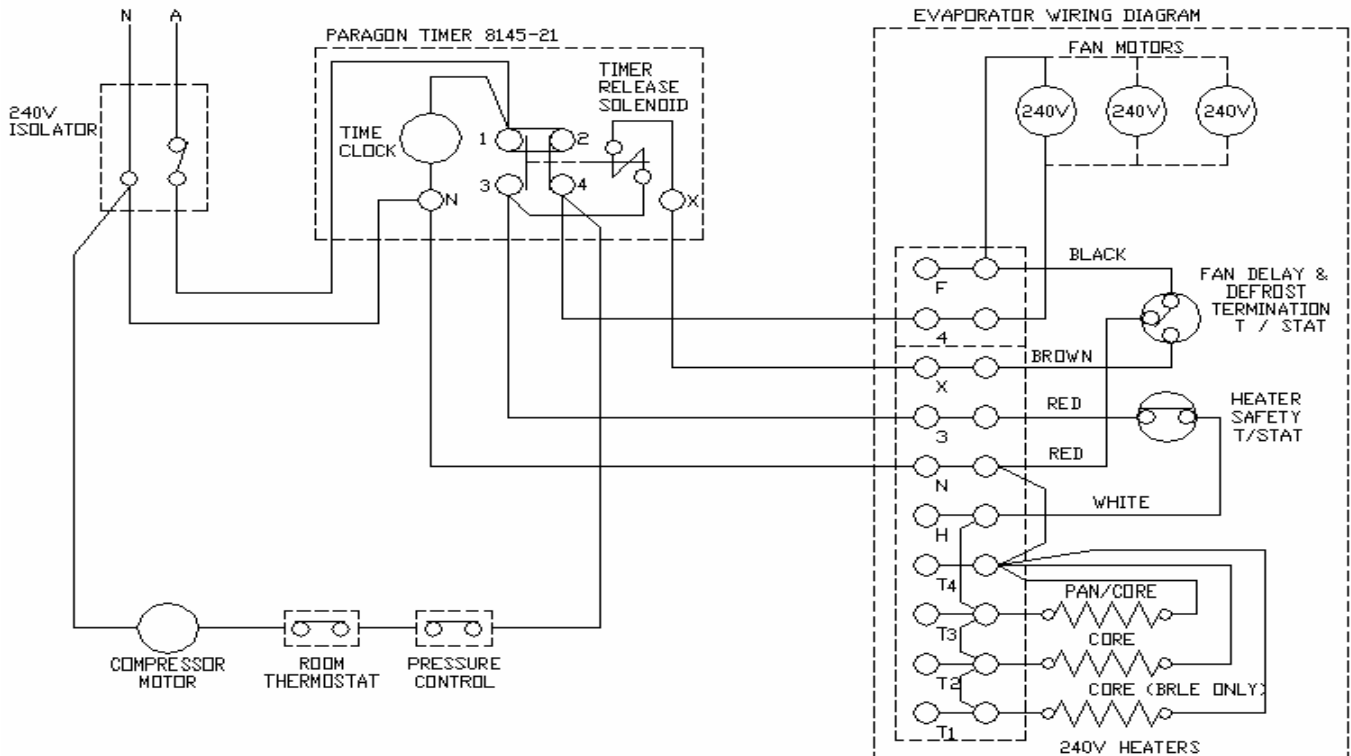
6. ELECTRICAL CONNECTIONS

Fan motors are suitable for 240 Volt 50 Hz operations only, and are supplied pre-wired to terminal strip located in electrical junction box.

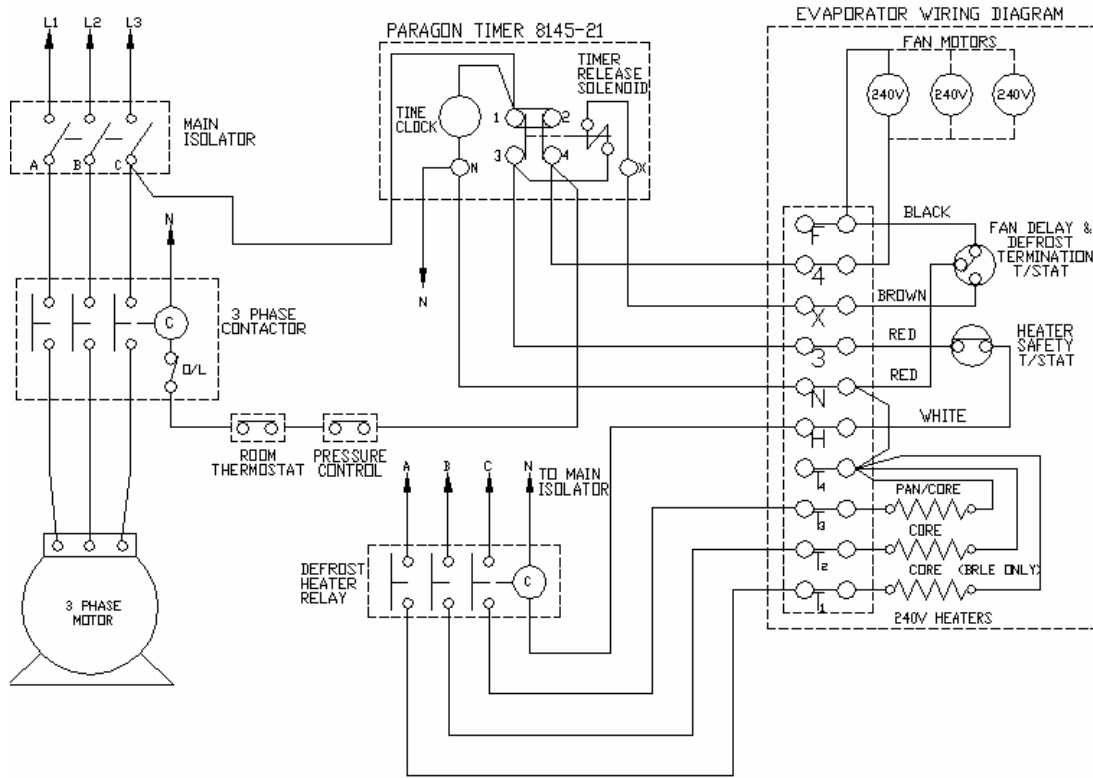
All coils up to and including model BRLE45, are supplied pre-wired for single phase 240 Volt operation, as per drawing 55000022. Evaporators above this model (BRLE53/60, BRLE44-127) are supplied pre-wired for three phase, 240 Volt "Star" connection, as per drawing 55000024. (Multiple evaporator installations should be wired as per drawing 55000023)

NOTE: A neutral wire must be provided to the "Star" point or heater failure will occur.

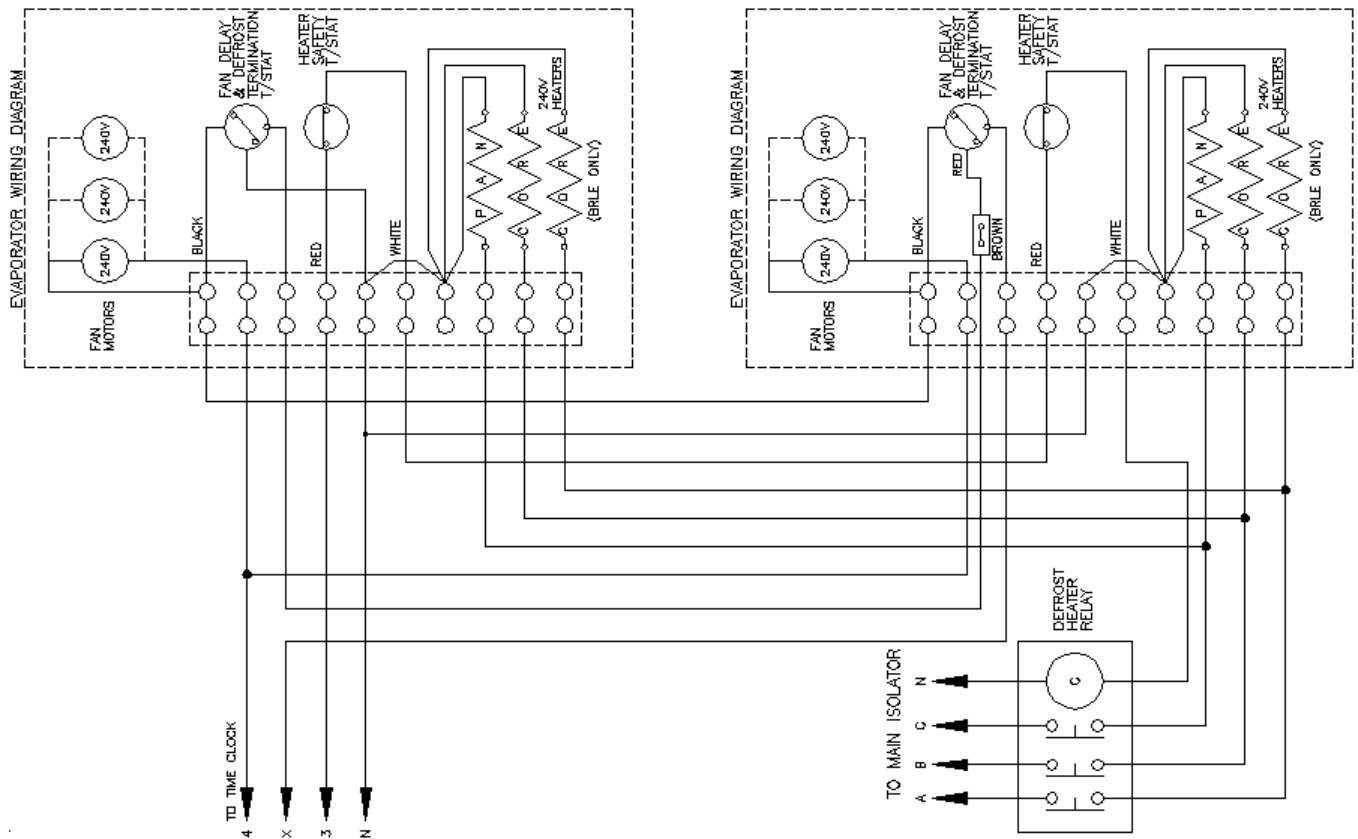
Wiring Diagram: 55000022



Wiring Diagram: 55000024



Wiring Diagram: 55000023



7. COMMISSIONING INSTRUCTIONS

Leak testing should be carried out in accordance with the current "Refrigeration Code of Good Practice".

Following leak testing, the system should be evacuated using accepted refrigeration practices. The vacuum pump should be connected to both the high and low pressure sides of the system with all shutoff valves open.

Refrigerant charging should be carried out in liquid form, directly into the condenser or receiver.

Extreme care should be taken to avoid direct contact with liquid refrigerant. (Freeze Burns)

Ensure that electrical wiring is in accordance with previously mentioned drawings, and that fan motor direction is correct (clockwise looking at junction box).

8. MAINTENANCE INSTRUCTIONS

Buffalo Trident evaporators require low maintenance, apart from regular cleaning of the fin face, drip tray, and drain. Frequency is dependent upon the operating environment of the evaporator.

It is recommended that fin surfaces are cleaned using a soft bristle brush and/or low pressure water, taking care to avoid all electrical components. **(Electrical power must be isolated prior to cleaning)**

Drip trays are easily removable for cleaning by disconnecting drain pipe and removing tray fixing screws located on the front of the evaporator only. This will allow the tray to be hinged from the rear of the evaporator.

All fan motors contain sealed bearings and are maintenance free.

9. HEATER REPLACEMENT

A. COIL HEATER ELEMENT

- Isolate evaporator electrically.
- Remove junction box cover, and open or remove both hinged access doors to obtain access to rear of electrical junction box and heater elements.
- Disconnect heater element from junction box, and remove the earth wire from heater element.
- Remove heater retaining screw from end plate.
- Remove heater element from coil block. Depending on the space available, the heater element can be coiled up for easier removal.
- Install the replacement heater element. If limited space is available, the element can be formed into a tight arc and fed gently through the coil block.
- Refit retaining screw into end plate.
- Reconnect earth wire to element, followed by heater element wire to the same terminals in the junction box.
- Replace junction box cover.
- Reconnect power supply.

B. COMBINATION DRIP TRAY/COIL HEATER ELEMENT

- Isolate evaporator electrically.
- Remove junction box cover, and open both hinged access doors to obtain access to rear of electrical junction box.
- Disconnect drain pipe.
- Remove drip tray fixing screws located on the front of the evaporator only. This will allow the tray to be hinged from the rear of the evaporator.
- Disconnect faulty heater element from junction box, and remove the earth wire from heater element.
- Remove heater element from retaining clips fitted to reflector plate.
- The replacement heater element can be fitted using the existing retaining clips.
- Refit drip tray fixing screws.
- Reconnect earth wire to element, followed by heater element wire to the same terminals in the junction box.
- Replace junction box cover.
- Reconnect power supply.

CAUTION: Care should be taken to ensure that wiring cannot come into contact with element during operation.

10. DECOMMISSIONING INSTRUCTIONS

- Pump down refrigeration system into the receiver or suitable container. (As per "Refrigeration Code of Good Practice"*)
 - Isolate power, and remove electrical wiring (**Remove earth wire last**) and associated components where necessary.
 - Disconnect drain pipe.
 - Disconnect refrigeration piping, and seal both the system and evaporator connections. (**Ensure that positive/negative pressure does not exist in evaporator prior to disconnection**)
 - Evaporator can now be removed from ceiling. (The use of lifting devices during removal is recommended where applicable)
- **"Code of Good Practice" produced in conjunction with AFCAM.**

