



OPERATING INSTRUCTIONS

BITZER AUSTRALIA
BUFFALO TRIDENT HEAT EXCHANGE

PSLE SERIES - Low Temperature Evaporators -

Models

PS1LE016 – PS2LE233

Content

1	Important Recommendations
2	Safety Recommendations
3	Application Ranges
4	Refrigerant Distributors
5	Installation Guide
6	Commissioning Instructions
7	Maintenance Instructions
8	Defrost Heater Replacement
9	Decommissioning Instructions
10	Manufacturer
11	Service Address

1 Important Recommendations

- PSLE 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 are supplied with a **Nitrogen Holding Charge. (Release fully before removing seals).**
- Electrical power to be isolated prior to the commencement of any electrical work.
- During normal operation Pressurised 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 coolroom, 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.

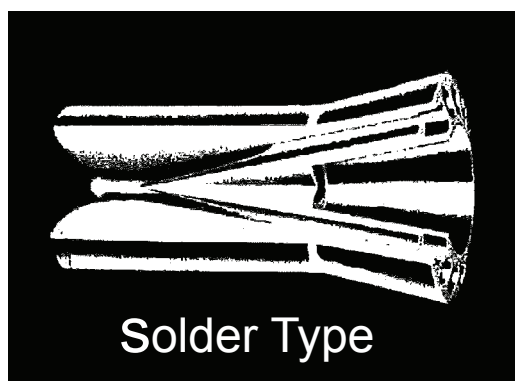
3 Application Ranges

- 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.** (Also suitable for CFCs)
- These series of evaporators are **not suitable** for use with NH₃. (Ammonia), Hydrocarbons and CO₂.
- Standard evaporators are not to be installed in hazardous/combustible environments. (**Special designs available on application**)

 **Please be aware that these evaporators are not suitable for corrosive environments .**

4 Refrigerant Distributors

- PS series evaporators are supplied with a Venturi distributor.
- There is NO orifice plate change required if you change between refrigerants.



Venturi Distributor

- PSLE series evaporators are supplied with a Venturi-Type distributor as per Figure 2.
- There is NO orifice plate change required if you change between most commonly used refrigerants (e.g. R404A, R507A, R134a, R22, etc.). If you are uncertain about your application, please contact our nearest sales support office for advice.

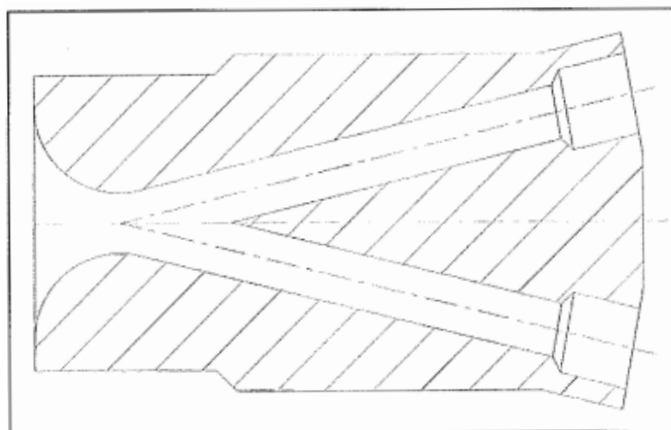


Figure 2, Venturi Distributor (PSLE)

5 Installation Guide

- Using the flush mounting brackets provided, the evaporator should be fixed to the ceiling allowing a **minimum** of 360mm 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 9.525 mm ($\frac{3}{8}$ ").
- The use of lifting devices during installation is recommended where applicable.
- Fit externally equalised TX valves or electronic TX valve to all models. Locate TX valve bulb or probe on the upper horizontal section of suction line (as per valve manufacturer's recommendations). Between the coil block.
- 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)
- PSLE low profile evaporators are fitted with electric heater elements and a heater safety thermostat.



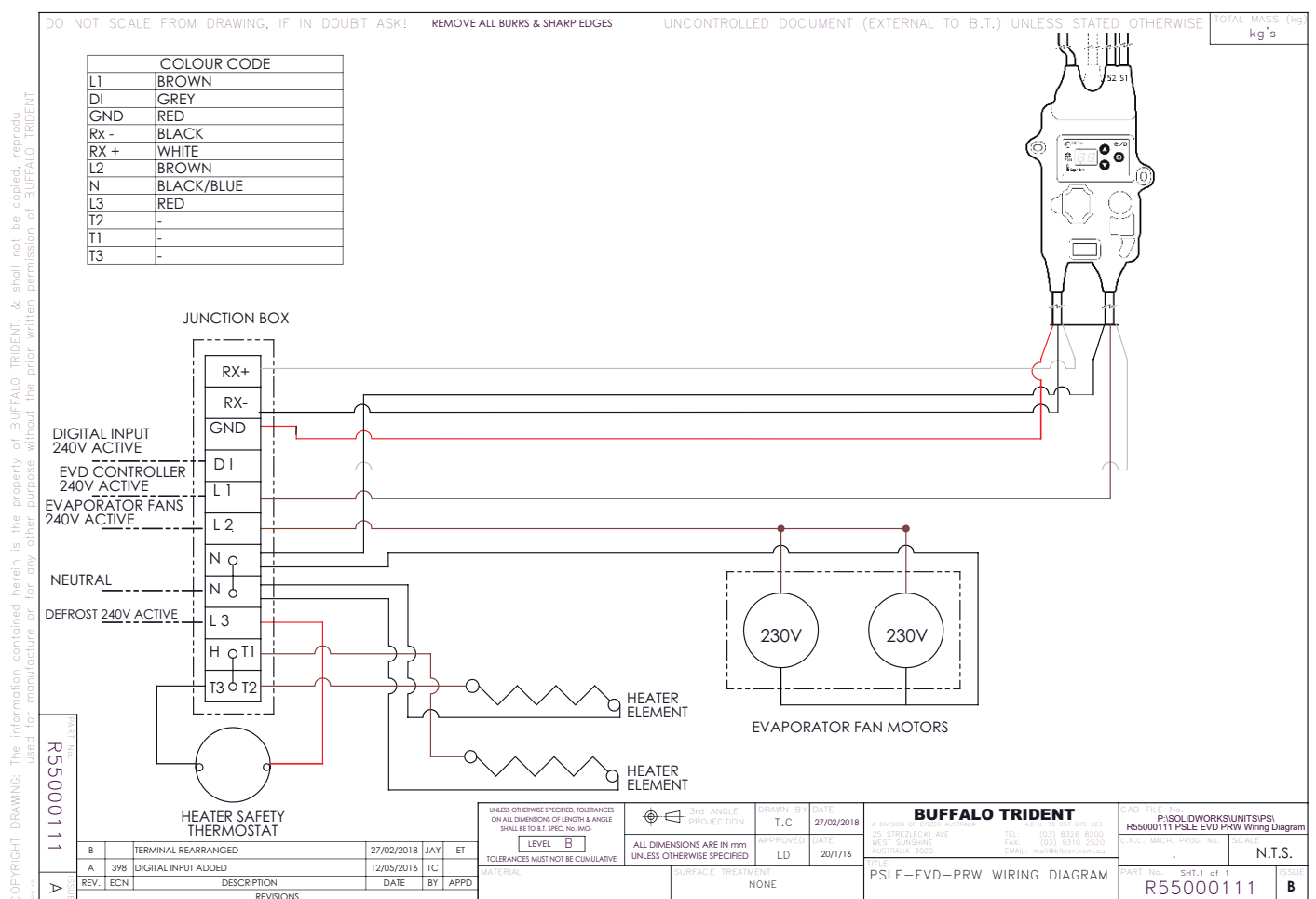
- A small flat aluminium bracket found within the plastic bag containing the Operating and Maintenance Instructions can be used to mount the electronic sensor in the same position as the fan delay/defrost determination thermostat.
- otherwise defrost termination probes should be located near the bottom of the coil away from heater locations or on suction pipes out of the suction header in the coil determination thermostat.
- For PSLE models the fan delay/defrost termination thermostat is optional equipment available.
- 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.
- 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 odours 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 should be installed.

NOTES:

- **A neutral wire must be provided to the “Star” point or heater failure will occur.**
- If using defrost probe a neutral must be connected to fan motors (no fan delay Klixon).





6 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).

7 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.

8 DEFROST 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 arch 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 and replace junction box cover.
- Reconnect power supply.

b) DRIP TRAY 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 and replace junction box cover.
- Reconnect power supply.

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

9 DE-COMMISSIONING 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.



10 MANUFACTURER

- Our products are manufactured in compliance with applicable international standards and regulations. If you have any questions about how to use our products or if you are planning special applications, please contact:

BITZER Australia Pty Ltd
Buffalo Trident Division
25 Strzelecki Avenue
Sunshine VIC 3020, Australia
Tel.: +61 (0)3 8326 8200
Fax: +61 (0)3 9310 2520

Please contact us via email and visit our websites:
info@buffalotrident.com.au

www.bitzer.com.au

11 SERVICE ADDRESS

- For local support please refer to our website for a list of our nearest branch office.



In the interest of continuous improvement BITZER reserves the right to change the specifications or design of any of its products without notice. The BITZER Symbol, Name BITZER and model numbers are registered trade marks. All products manufactured are pending design and specification registration and must not be copied or duplicated in any way.

NSW	Victoria	SA	WA	QLD	NZ
tel +61 (2) 8801 9300 fax +61 (2) 9673 4698	tel +61 (3) 8326 8200 fax +61 (3) 9310 2520	tel +61 (8) 6350 6297 fax +61 (8) 8268 4555	tel +61 (8) 8345 6110 fax +61 (8) 9359 2077	tel +61 (7) 3725 1360 fax +61 (7) 3274 3621	tel +64 9 415 2030 fax +64 9 415 2031