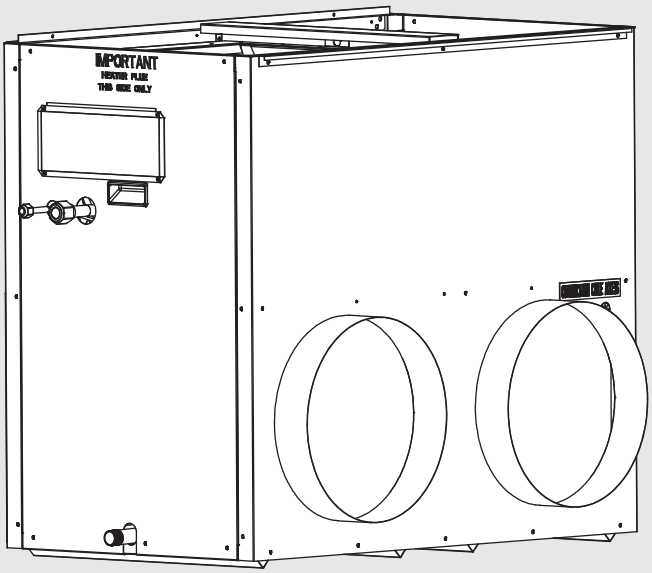
Models:

Outdoor Units	Indoor Units
DONSC10Z71	**DINIB10Z7**
DONSC13Z71	**DINIB13Z7**
DONSC15Z71	**DINIB15Z7**

REFRIGERANT
R410A



Brivis Inverter Icebox

Installation Manual

brivis
by Rinnai

This appliance must be installed in accordance with:

- Manufacturer's Installation Instructions
- Current AS/NZS 3000, AS/NZS 1677.2, AS 4211.3, AS 4254, AS/NZS 5141, HB 276-2004
- Local Regulations and Municipal Building Codes including local OH&S requirements

This appliance must be installed, maintained and removed by an Authorised Person.

For continued safety of this appliance it must be installed and maintained in accordance with the manufacturer's instructions.

IMPORTANT NOTICE:

To be read in conjunction with Brivis ICE Inverter Installation, Start-Up, Maintenance & User Operating Guide accompanying the outdoor condensing unit. Prior to positioning the Icebox, heater flue location and service clearances shall be considered.

Table of Contents

INSTALLATION INSTRUCTIONS

1.0 INTRODUCTION

Read all instructions before proceeding with the installation and start up.
This equipment must be installed in accordance with all relevant regulatory authority and industry requirements. Only qualified, licensed technicians shall perform works on these units; failure to do so will result in warranty being void.

Definitions:
"**Shall**" indicates a mandatory requirement of this manual
"**Should**" indicates a recommended requirement of this manual

Deviation from these instructions, may at the discretion of Brivis, void the warranty. As a result, the homeowner and or installer may be charged a fee for non-product warranty related call outs. Also note that failure to comply with these instructions may preclude Brivis from being able to service the appliance.

THE USER SHOULD RETAIN THIS MANUAL FOR FUTURE REFERENCE.

1.1 Brivis ICE R410a Inverter Range

The Brivis Inverter ICE series is a refrigerated cooling split only type air conditioner designed for connection to compatible Brivis Ducted Gas Heaters. Brivis Inverter ICE utilises the heating system's ductwork and air circulation fan to distribute cool, filtered refrigerated air.

Table 1: Brivis Icebox models and Heater Compatibility

ICE Outdoor Model	ICE Indoor Model	Nominal Cooling Capacity - kW	Rated Cooling Capacity - kW (Range)	Recommended Brivis Gas Ducted Heater Model
DONSC10Z71	DINIB10Z7-L	10	9.4 (4.8 -10.1)	All Buffalo 20XA
DONSC10Z71	DINIB10Z7-R	10	9.4 (4.8 -10.1)	All Buffalo 20XA
DONSC13Z71	DINIB13Z7	13	12.4 (6.3 -13.6)	All Buffalo 26
DONSC15Z71	DINIB15Z7	15	14.7 (7.5 -16.0)	All Buffalo 26XA

- Ensure minimum specified air quantity requirements passes through the ICE cooling coil at all times
- Ductwork and fittings must be sized to handle the total cooling airflow through the system on either whole home or zoned basis.

1.2 MANDATORY INSPECTION PRIOR TO INSTALLATION

Immediately report any damage or discrepancies to the Supplier of the appliance. This appliance was inspected and tested at the time of manufacture and packaging, and released for transportation without known damage. Upon receipt, inspect the exterior for evidence of rough handling in shipment.
Ensure that the appliance is labelled correctly for the gas and electrical supply, and/or other services it is intended to be connected to.
For safety and warranty purposes, appliances that may be damaged or incorrect MUST NOT be installed or operated under any circumstances. Installation of damaged or incorrect appliances may contravene local government regulations. Rinnai disclaims any liability or responsibility whatsoever in relation to the installation or operation of damaged or incorrect appliances.

1.3 Safety / Warnings

The unit is designed to provide safe and reliable service when operating within design specifications. To avoid injury to personnel and damage to equipment or property when operating the equipment, the following safe practices should be observed as a minimum.

- Check the unit weight to be sure the lifting equipment is adequate
- Disconnect power to the unit before working on it
- Do not remove access panels or doors until fans have completely stopped
- Do not enter a fan cabinet while the fan is running
- Protect materials when welding or flame cutting. Use suitable cloth to contain sparks. Have a fire extinguisher at hand and ready for immediate use

- Do not place articles on or against this appliance
- Do not use or store flammable materials near this appliance
- Do not spray aerosols in the vicinity of this appliance while it is in operation
- Do not modify this appliance

Note: The communication cable installed between the Icebox coil and outdoor unit shall be:

1. Field supplied
2. 2-core shielded cable
3. Earthed at the CDU end, refer to Diagram 15.

Failure to do so may prevent the correct operation of the unit

1.4 Codes / Regulations

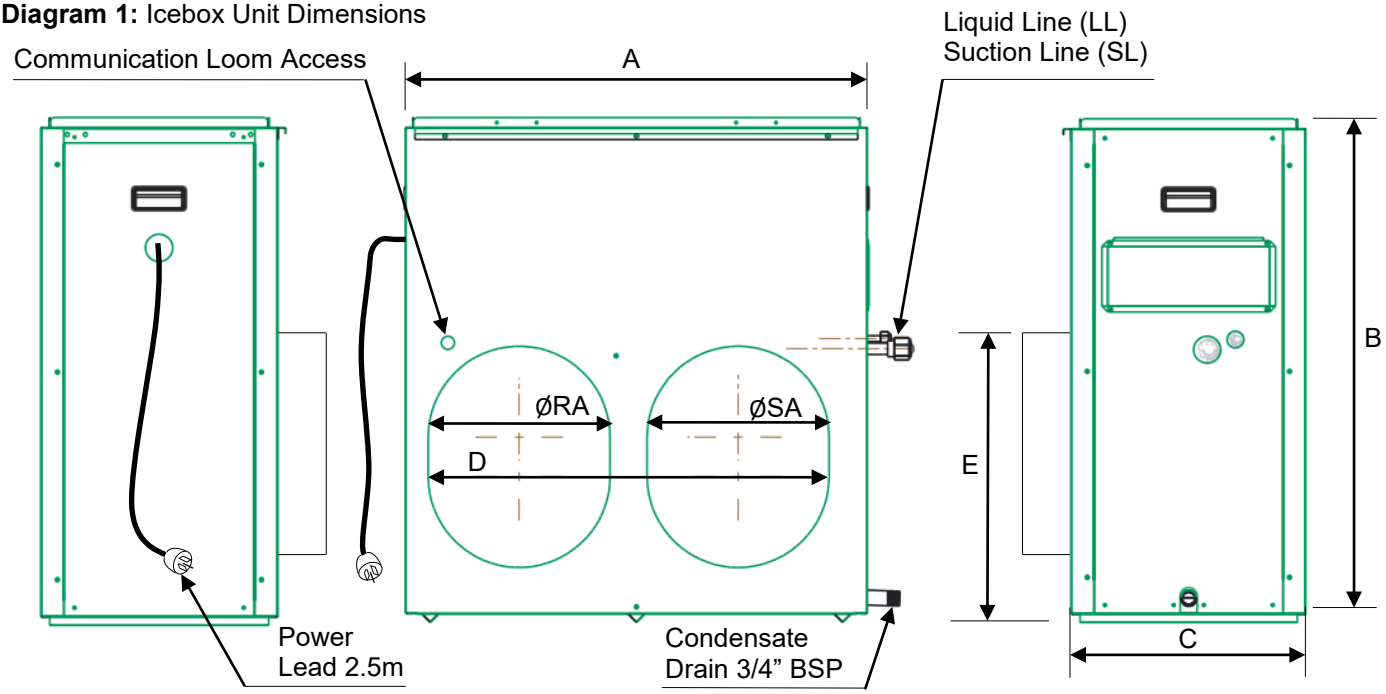
Brivis ICE units must be installed, serviced or repaired in accordance with these instructions and related regulations, codes, standards, and authorities. These include but may not be limited to:

- Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995
- AS/ NZS 1677.2 - Australian Standard, Refrigeration systems, safety requirements for fixed applications
- AS 4211.3 Gas recovery or combined recovery and recycling equipment
- HB 276-2004 : A Guide to Good Practice for Energy Efficient Installation of Residential Heating, Cooling & Air Conditioning Plant & Equipment
- AS 4254 - Ductwork for air-handling systems in buildings
- AS/NZS 5141 – Residential Heating and Cooling Systems
- Local Electricity Authority
- Local Building Regulations
- Environment Authorities
- Building Code of Australia (BCA)
- Brivis “SuperSizeGuide” / Brivisize

It is recommended the Brivis “SuperSizeGuide” / Brivisize be followed in estimating cooling requirements and for system design that will result in efficient installation and provide a higher level of comfort and economical operation. Brivis assumes no responsibility for equipment installed in violation of any code or regulations and these installation instructions.

2.0 ICEBOX DIMENSIONS

Diagram 1: Icebox Unit Dimensions



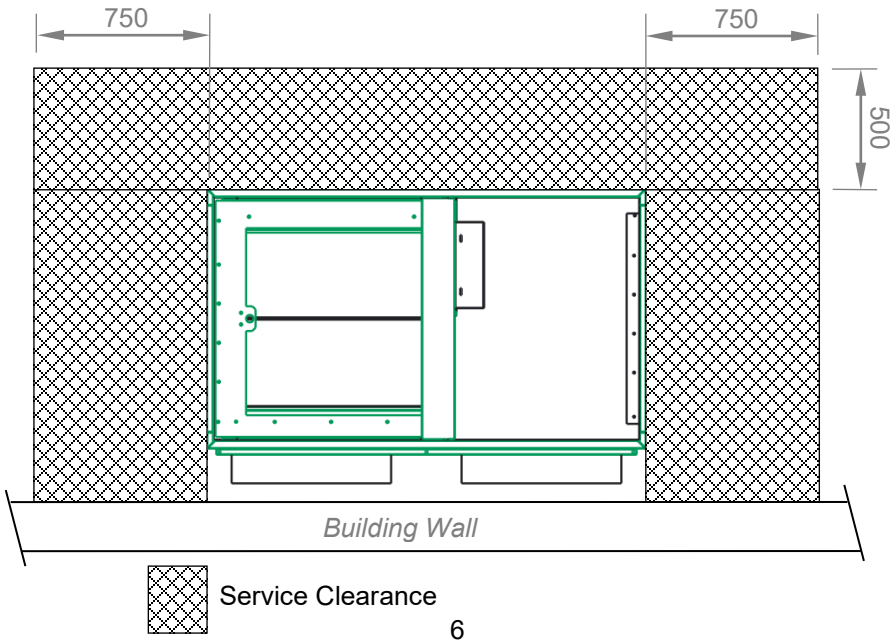
Model	A	B	C	D	E	Duct ØRA	Duct ØSA	Flare ØLL	Flare ØSL
DINIB10Z7-L	772	844	392	670	460	350	350	9.5	15.9
DINIB10Z7-R				670	460				
DINIB13Z7	956	881	566	846	417				19.05
DINIB15Z7	1026			955	496	400	400		

All dimensions in [mm]

2.1 Service Clearances

For servicing, a minimum clearance of 750mm shall be provided on the sides and 500mm from the front of the unit, as shown in Diagram 2, and extend vertically to one meter above the heater roof. Consideration shall be made for flue terminal location and clearance requirements; refer to heater installation manual.

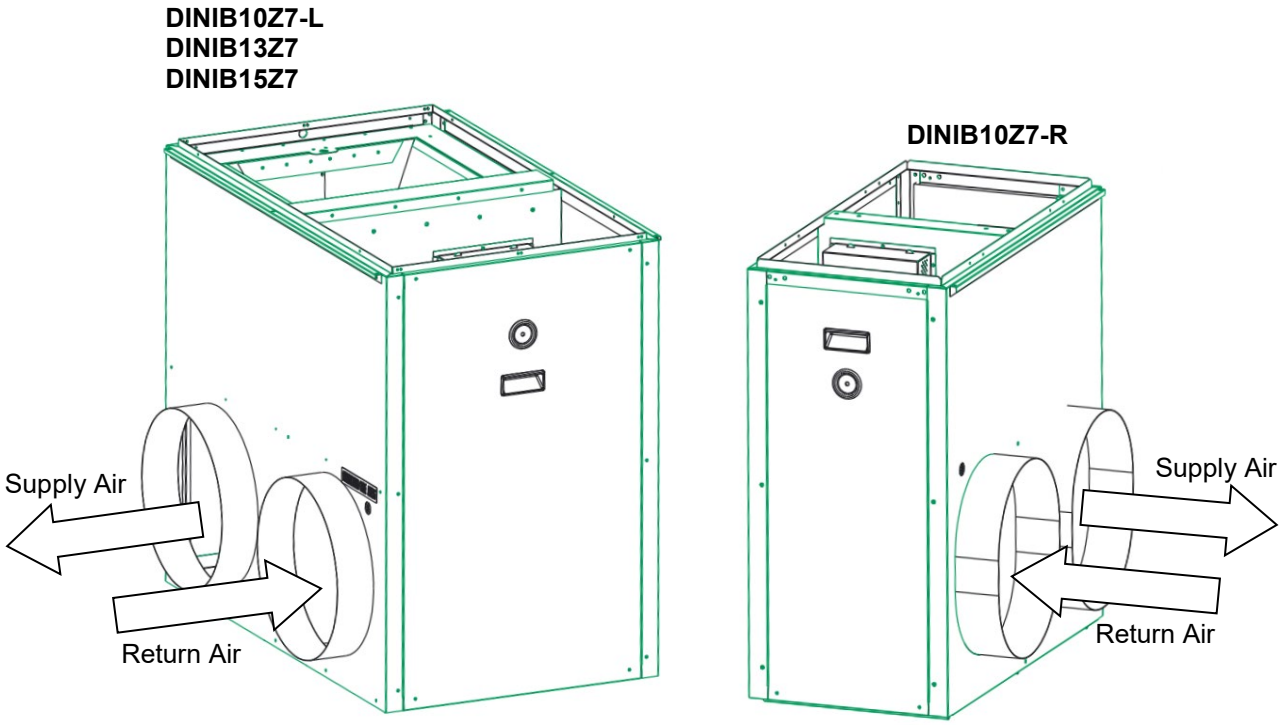
Diagram 2: Icebox Service Clearances



2.2 Icebox Supply & Return Air Side

The 10kW Icebox model is available in left hand orientation (DINIB10Z7-L) and right hand orientation (DINIB10Z7-R). The 13kW and 15kW Icebox is available in left hand orientation from factory with the capability of being converted to right hand orientation.

Diagram 3: Icebox Supply & Return Air Side

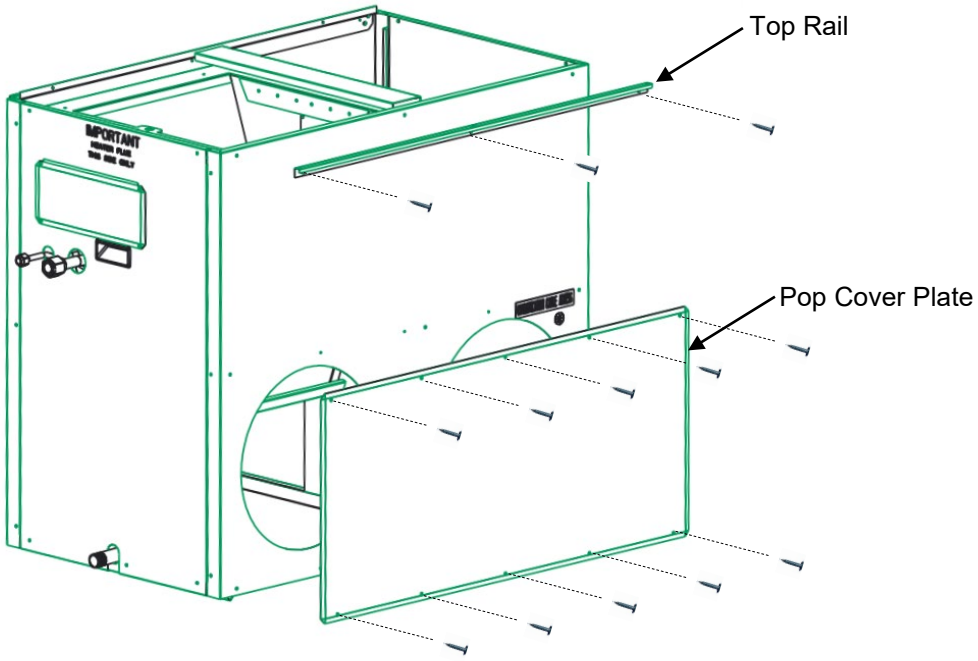


2.3 Changing Icebox Supply & Return Air Side

To change the supply and return air side for the 13kW or 15kW Icebox, do the following:

1. Remove the three screws supporting the '**Top Rail**' and relocate to the opposite side.
2. Remove the ten screws supporting the '**Pop Cover Plate**' and relocate to the opposite side.

Diagram 4: Changing Supply & Return Air Side



3.0 COMPONENTS

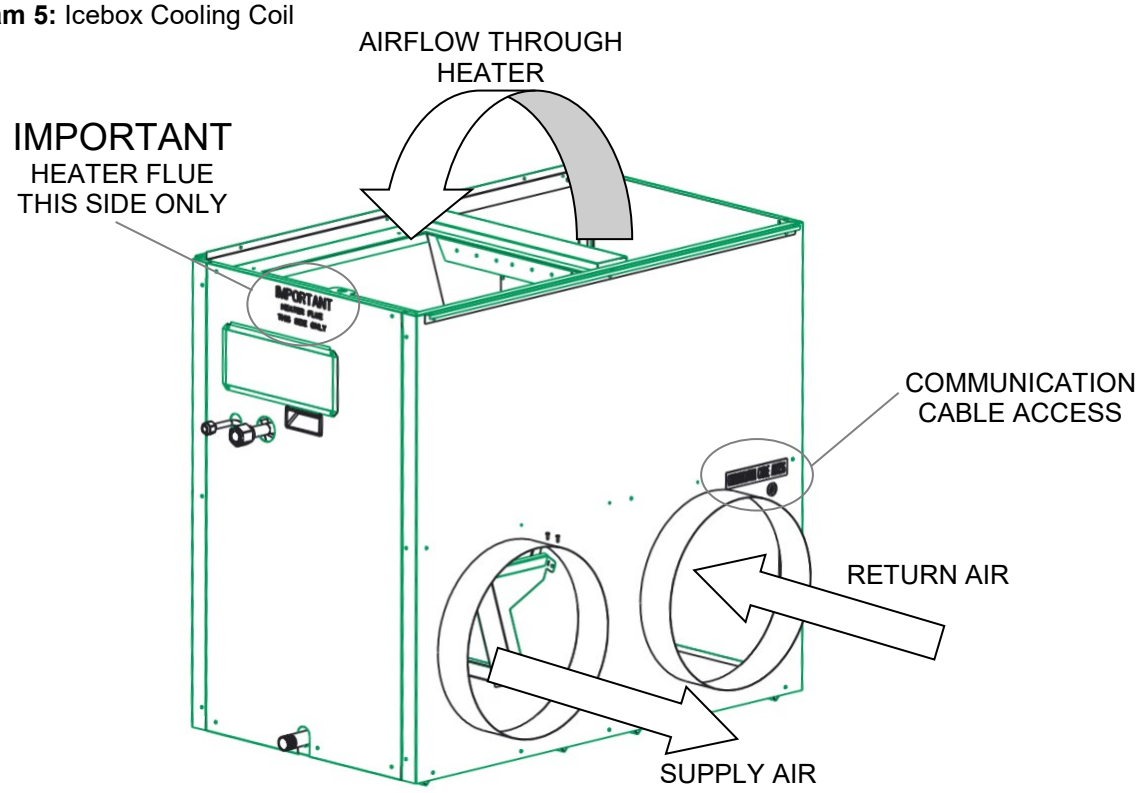
Upon receiving units, inspect for damage and ensure appliances match your order. In the event of damage, or incorrect delivery, notify supplier immediately. Brivis accepts no responsibility for installation of damaged or incorrect units.

3.1 Icebox Unit

Remove packaging from unit and any protective foam packing from coils and pipes. Icebox units are shipped with a holding charge of dry nitrogen. Check to confirm the holding charge. For lifting details refer to the General Arrangement drawings.

> **Note:** Brivis Inverter ICE is not designed for installation on a marine craft, houseboat, or any similar environment.

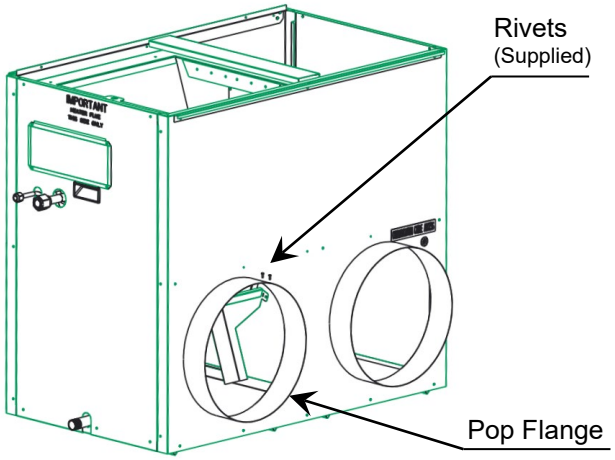
Diagram 5: Icebox Cooling Coil



3.2 Starting Collars

Insert starting collar (pop) into the hole in pop plate, ensuring pop flange is placed over the inner supply air wall of the cabinet. Spread the pop flange to fit tight in the cabinet's hole with the notch side of the collar over lapping the other. Secure the pops with the rivets supplied.

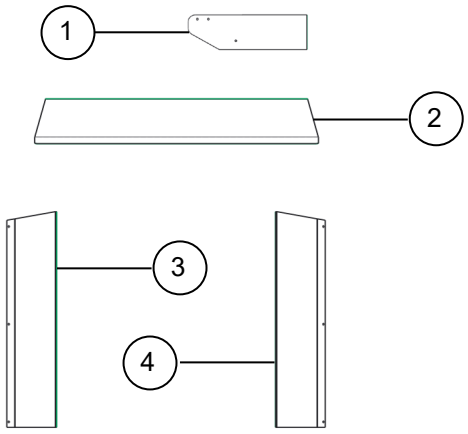
Diagram 6: Icebox Starting Collar Assembly



3.3 Flashing Kit

All ductwork shall be adequately weather protected by a flashing kit designed for a 10kW, 13kW or 15kW Icebox. The flashing kit is available in two sizes, 150mm and 250mm, each containing four parts.

Diagram 7: Flashing Kit



Item	Description	Quantity
1	Heater Support Bracket	1
2	Flashing Top	1
3	Flashing Left Hand	1
4	Flashing Right Hand	1

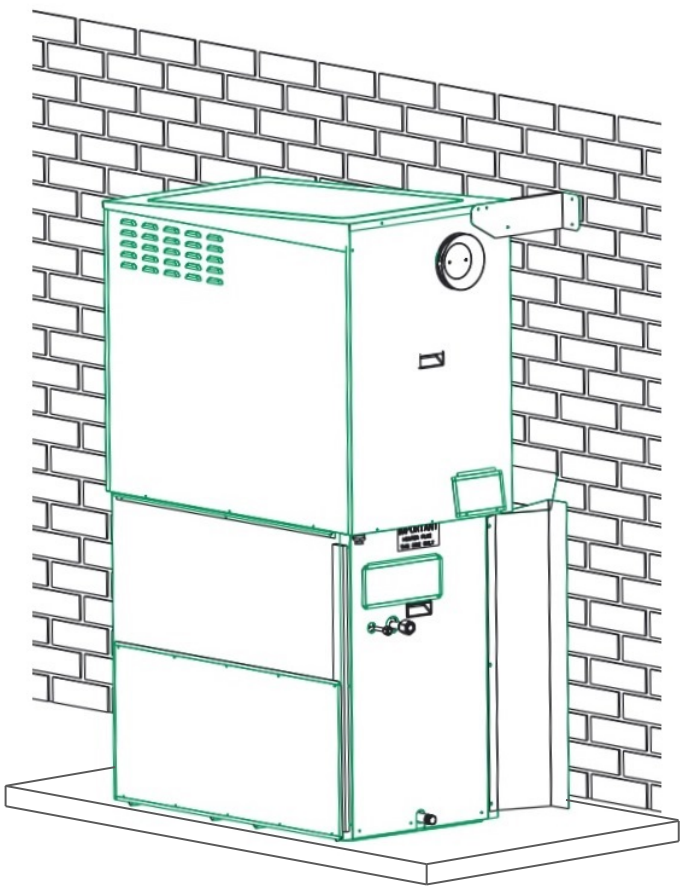
Model	Flashing Kit Number	
	Width 150mm	Width 250mm
DINIB10Z7-L	B062743	B062744
DINIB10Z7-R	B062743	B062744
DINIB13Z7	B062745	B062746
DINIB15Z7	B062939	B062940

3.4 Fixing Screws

Six screws have been supplied in a bag with this installation manual and are required to secure the heater to the Icebox.

4.0 ICEBOX INSTALLATION

Diagram 8: Typical Icebox Installation



- Icebox coils are supplied with a nitrogen holding charge ranging from 400kPa to 700kPa.
- Connect a suitable pressure gauge to the Icebox coil valve to ensure the internal pressure is at least 400kPa.
- If the measured pressure is less than 400kPa, check and if necessary repair any leaks found before proceeding.
- Remove the nitrogen holding charge by connecting a charging line with valve depressor.
- For connection to condenser refer to the installation manual supplied with the condenser.
- Ensure minimum specified air quantity requirement passes through the Icebox cooling coil at all times.
- Ductwork and fittings must be sized to handle the total cooling airflow through the system on either whole home or zoned basis.
- 24 volt control wiring shall be installed from the Icebox electric box (Terminals A1, A2) to the Heater (StarPro series) or to Brivis Thermostat as required.
- The electric box has standard 10A power cord and plug, please do not cut or modify the cord.
- 2-core shielded communication cable shall be installed from the Icebox unit (Terminals Q, P, E) to the outdoor condenser unit (Terminals S1 & S2) with the shield earthed at condenser end only.

Note: For the communication cable use 2-Core Shielded Cable only and earth the shield at condenser end.

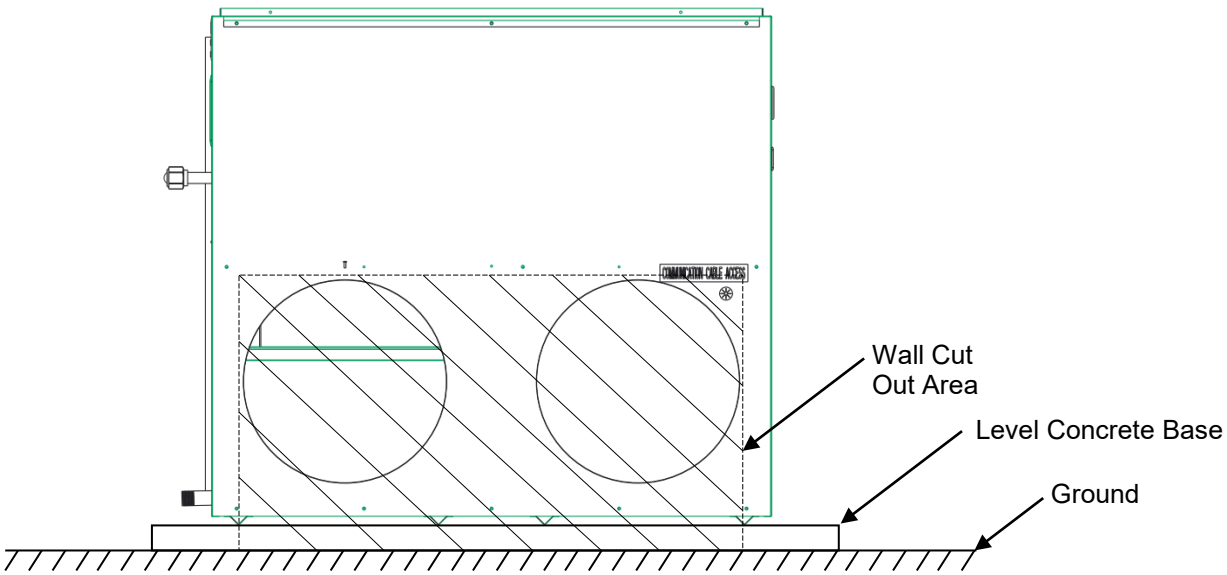
4.1 Location

- Choose a location that is suitable for refrigeration piping and condensate drainage.
- Adequate provision shall be made available for service access.
- Where the unit is installed the wall of the building shall be capable of effectively anchoring the heater.
- Never put the Icebox coil unit in the return air part of the duct system, this may result in condensation forming in the Heater, causing corrosion and damage to vital components.
- Ensure a minimum of 1m, or preferably 2½ times the duct diameter of straight ductwork, is installed immediately downstream of the Icebox unit before any divergence or branch-take-offs occur. **Failure to do so may compromise airflow, system performance and reliability.**
- Icebox shall be mounted on a solid level foundation, i.e. concrete base, to enable proper condensate removal.

4.2 Area to cut into the wall

Prior to installing the Icebox create a hole in the building wall all the way to ground level to suit location of the supply and return air pops, refer to 'Icebox Dimensions' for cut out requirements. There shall be no impediment to the structural integrity of the dwelling.

Diagram 9: Cut out in wall for duct



4.3 Condensate Drain

All Icebox models have a **3/4" BSPM** thread protruding from the bottom of the cabinet to facilitate connection to a drain.

- A non-flexible drainpipe shall be installed for condensate run-off with a continuous downward grade away from the unit of not less than 1:50.
- The drain shall be plumbed to a suitable point in order to disperse the waste water away without causing damage or nuisance, i.e. pooling of water, accelerated corrosion.

4.4 Electrical Connection

The unit is pre-wired with a 3-pin plug and 2.5m lead, and should be plugged into a standard 10 Amp 220 to 240 Volt fixed switched socket outlet adjacent to the unit, in a convenient location so it can be turned OFF quickly and easily.

Note: A qualified electrician must install the 220 to 240 Volt wiring according to local regulations.

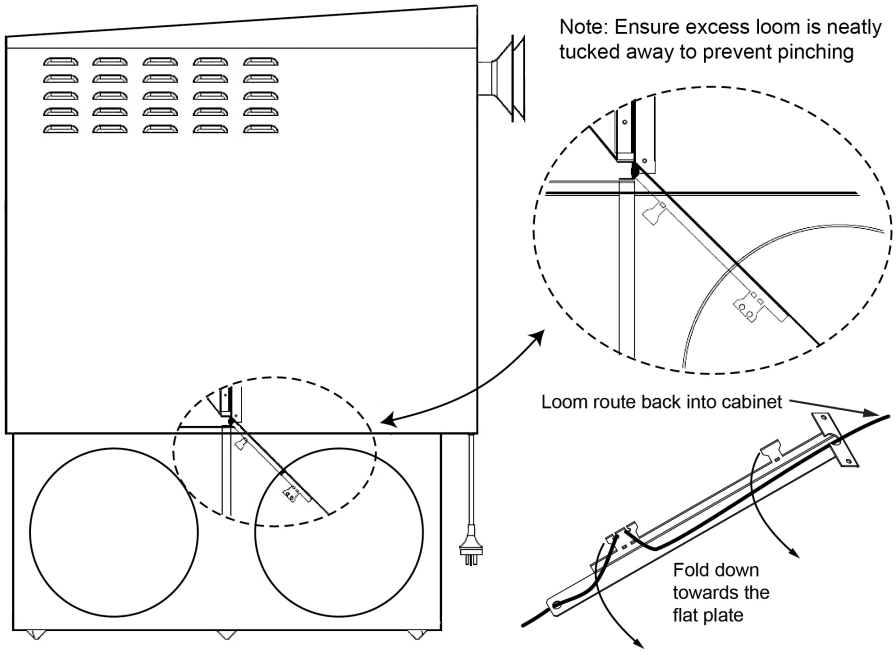
The electricity supply shall be 220 to 240 Volt at 50 Hz, and from an authorised power supplier. Generators should never be used, as their output may be incompatible with, or prone to damage the unit's electronic components.

4.5 Thermistor Location – BX5 Models

The thermistor will have to be repositioned to the in-cabinet thermistor arm. Install the thermistor as follows:

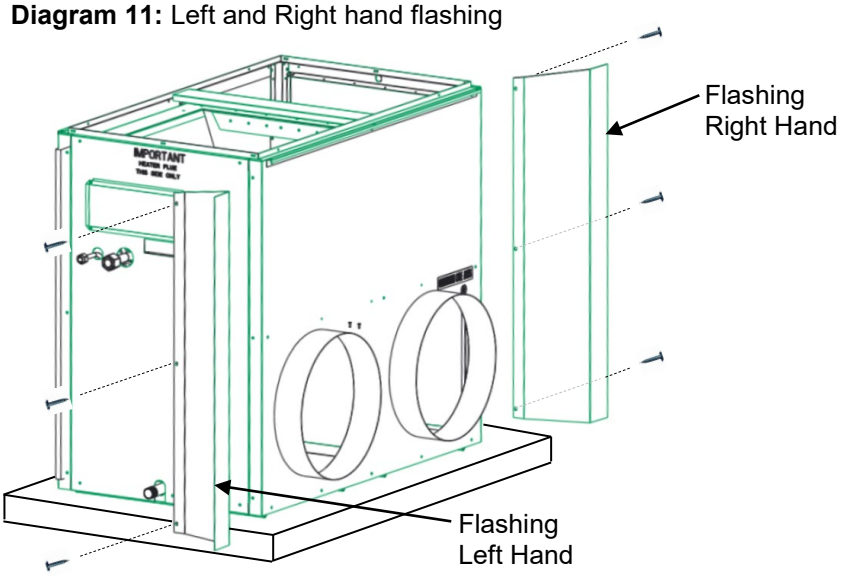
a. Orientate the unit onto the fan cabinet end and remove all packaging.
b. Remove the thermistor loom from thermistor L-bracket.
c. Attach thermistor head to the inbuilt thermistor arm. Ensure excess wiring is safely routed away from the heat source.
d. Bend the thermistor arm down to an angle of 45 degrees and away from the heat exchanger until it touches the stopper plate. Excessive force is not required. See Diagram 10.

Diagram 10: Thermistor Mounting Location - BX5 Models



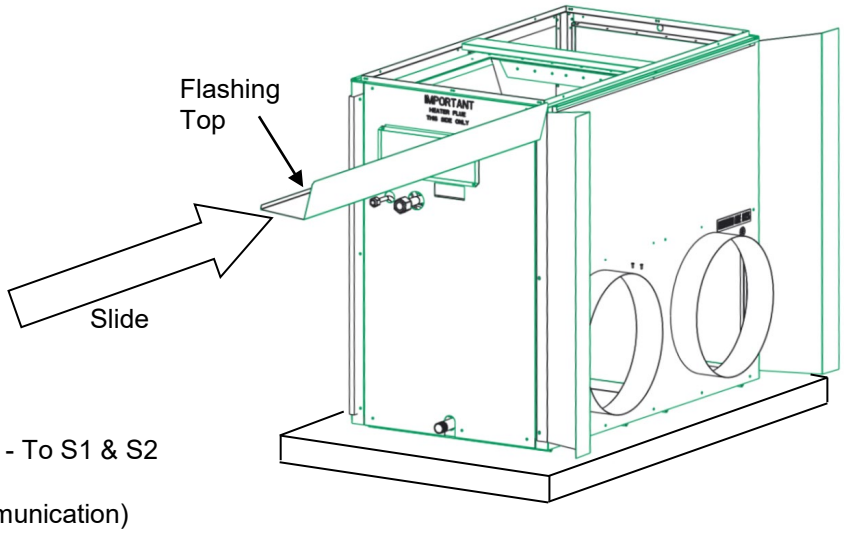
4.6 Flashing & Wiring Installation

Diagram 11: Left and Right hand flashing



1. Position the Icebox on hard level base in front of wall penetration and secure supply and return air duct.
2. Remove screws from the Icebox as shown, three each side.
3. Position the left and right hand side flashings as shown and secure with screws removed in previous step.

Diagram 12: Top flashing installation



4. Slide the top flashing in from either side of the Icebox so that it is equally spaced.
5. The small return on the top flashing must be beneath the rail on the Icebox.
6. Wiring into the Icebox

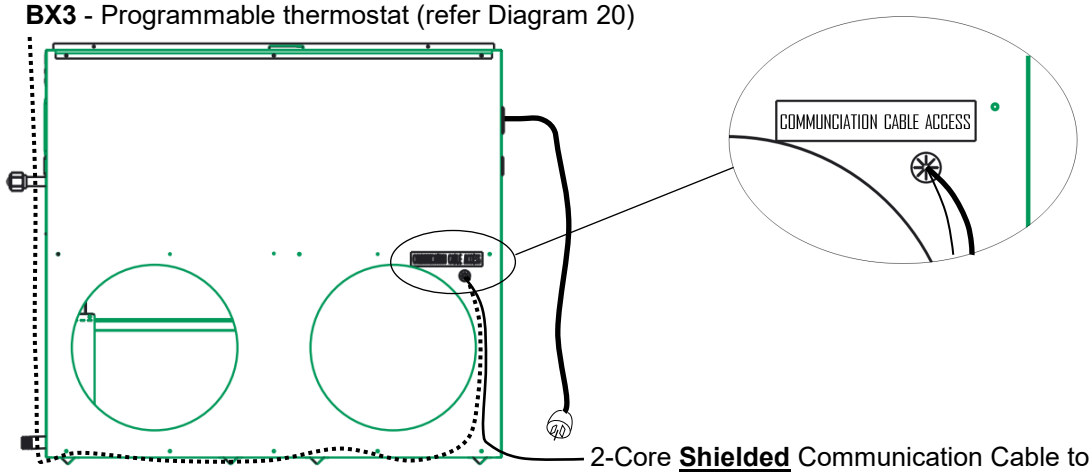
The Icebox shall be wired with:

- 2-core **shielded** communication cable - To S1 & S2 (Refrigeration communication)
- 2-core cable – To A1 A2 (Heater communication)

This cable is field supplied and shall access the Icebox through a grommet located beneath the flashings on the return air side, refer to Diagram 13. Run the cables under the flashing; do not drill any holes in the flashing for cable access.

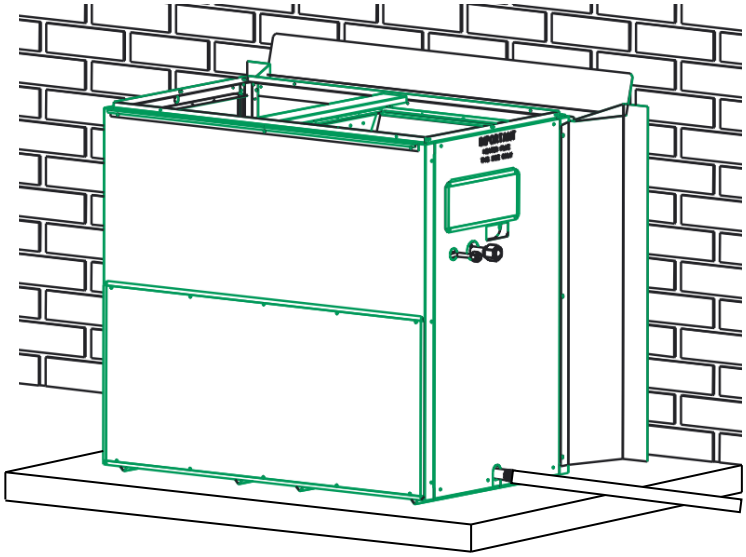
Diagram 13: Wiring into the Icebox

2-Core Cable to:
BX5 - Heater PCB (refer Diagram 19)
BX3 - Programmable thermostat (refer Diagram 20)



Note: 2-core **shielded** communication cable shall be installed from the Icebox unit (Terminals S1 & S2) to the condenser unit. The shield of the cable shall be earthed at the condenser end only, refer Diagram 15.

Diagram 14: Flashing & Condensate installation



7. Run a bead of silicone on the flashing faces that will mate with the house.
8. Push Icebox into position up against the building wall.
9. Install condensate drain.

Diagram 15: 3-Core shielded communication cable between indoor and outdoor units

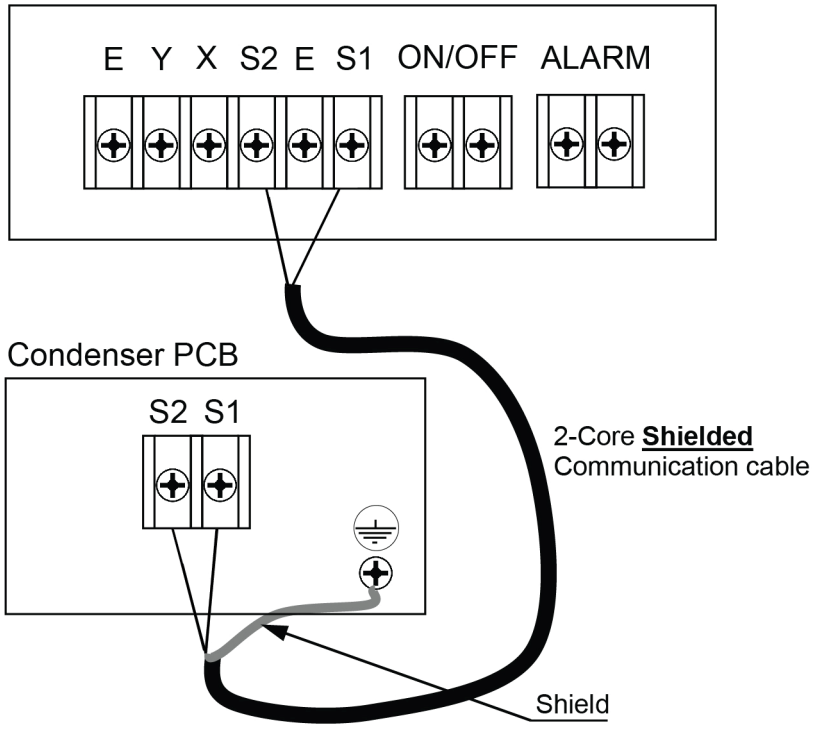
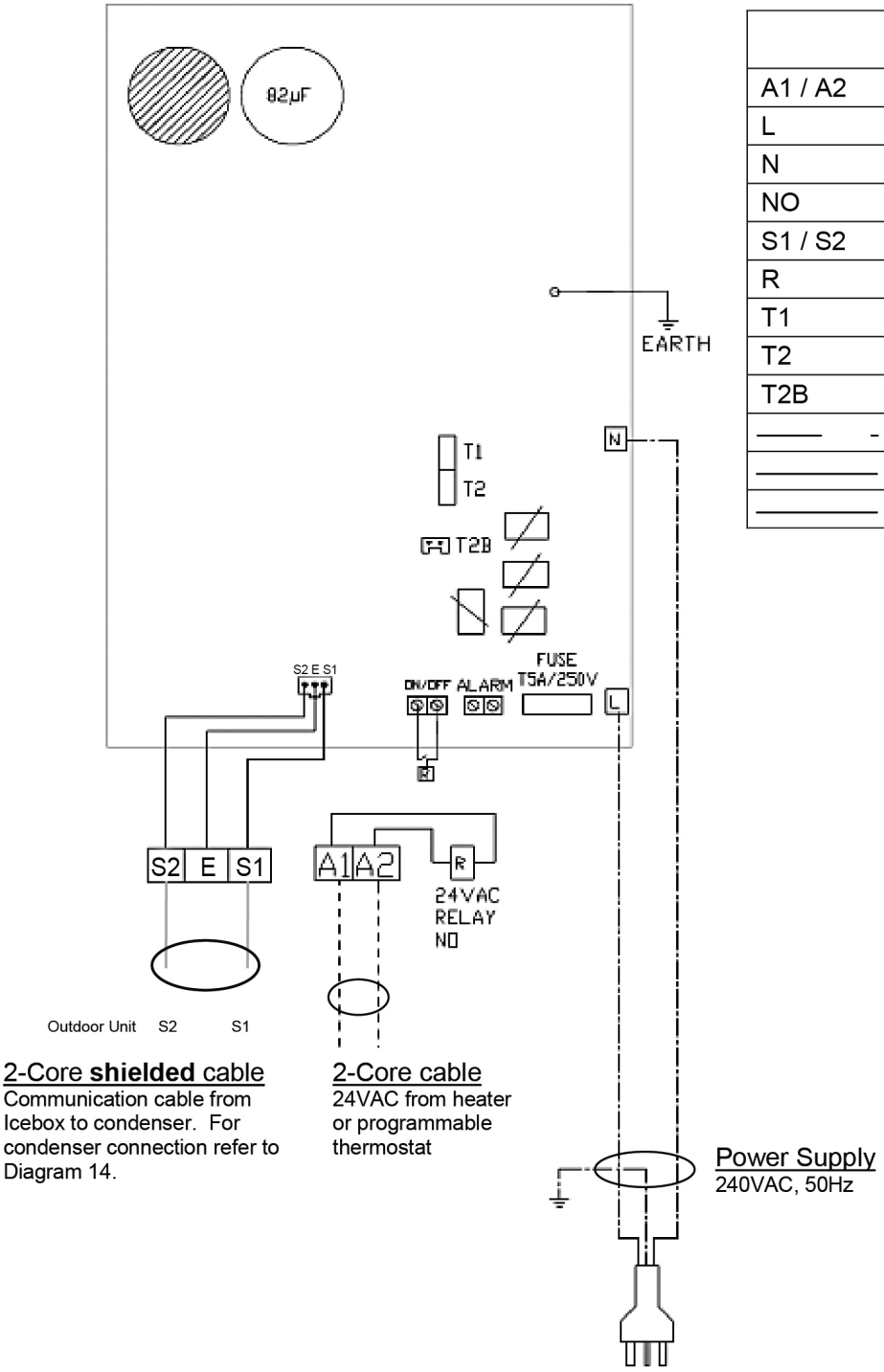


Diagram 16: Wiring at the Icebox PCB

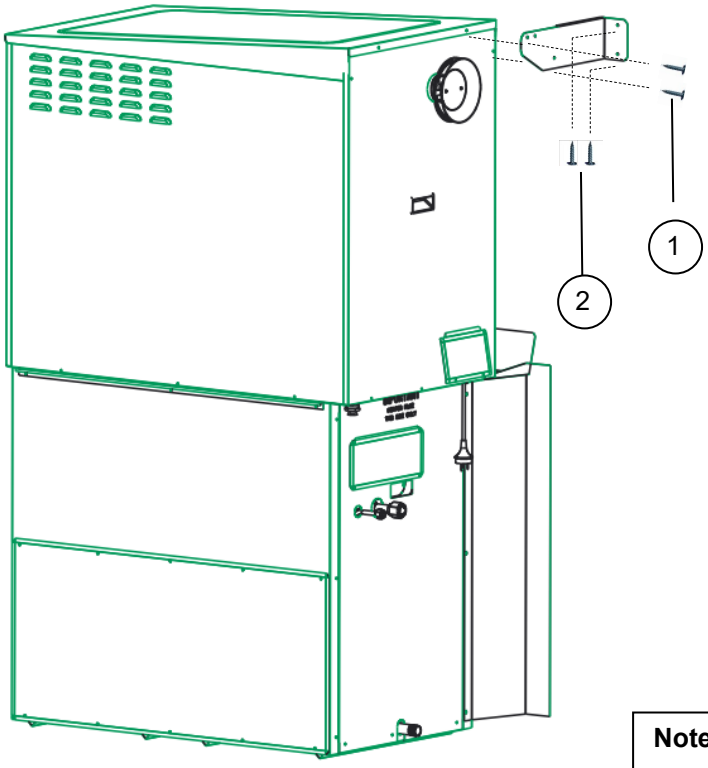


LEGEND	
A1 / A2	Relay coil terminals
L	Load (Active)
N	Neutral
NO	Normally Open
S1 / S2	Communication Terminals
R	Relay
T1	Return Air Temperature
T2	Coil Temperature
T2B	Suction Temperature
——— -	Field Wiring
———————	Control Wiring
———————	240 Wiring

Note: For installation requirements of the outdoor condenser refer to the installation manual supplied with it.

4.7 Mounting and secure the Heater

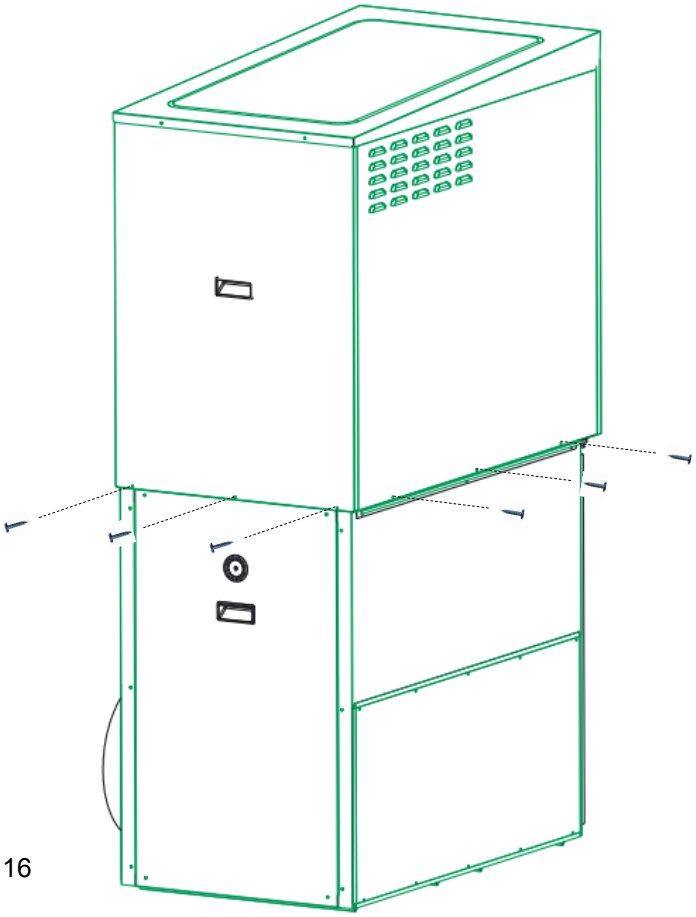
Diagram 17: Securing heater support bracket



1. Remove the two screws positioned in top corner of the heater (item 1), building side.
2. Secure the 'Heater Support Bracket" to the heater with screws removed in the above step. There are excess holes in the bracket to accommodate all heaters and only two are utilised.
3. Using suitable screws (item 2, field supplied) secure bracket to the building wall.

Note: The 'Heater Support Bracket can be used on left and right handed models.

Diagram 18: Securing heater to base box

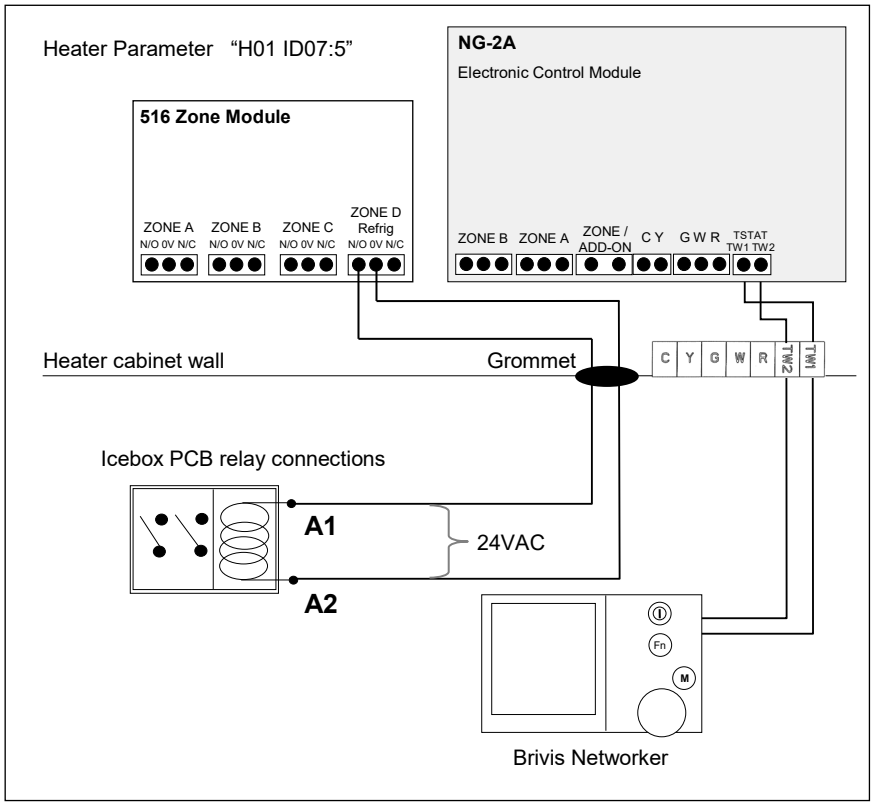


4. Remove the six screws from the base of the heater as shown.
5. Replace with the six long series screws supplied with the unit.

4.8 Wiring the Icebox to a BX3 & BX5 heater

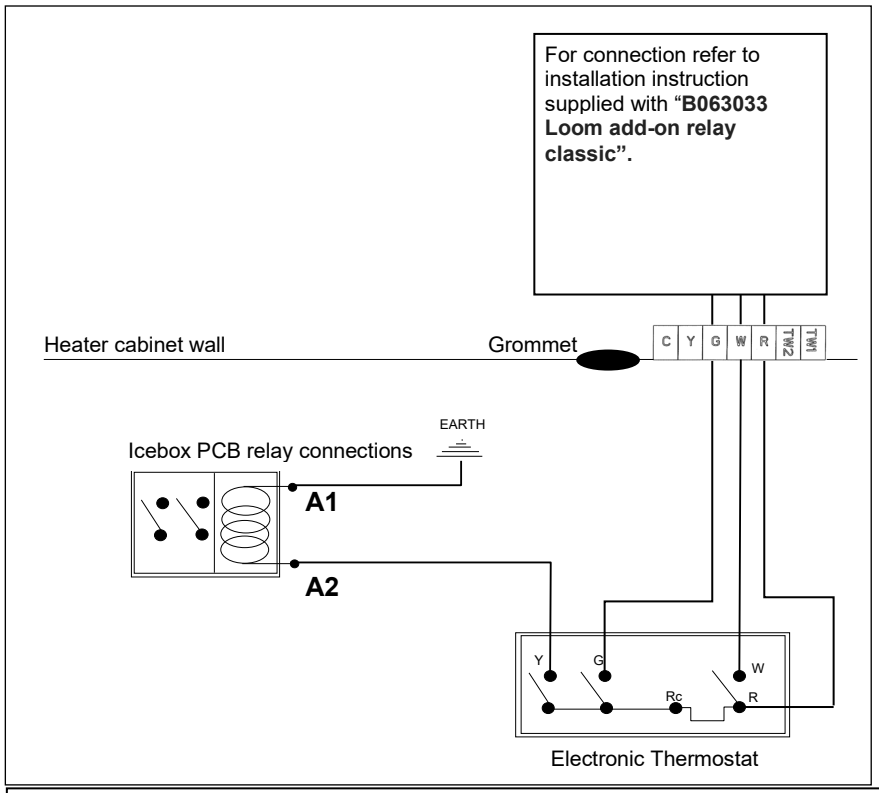
Terminals '**A1**' & '**A2**' are not polarity sensitive and the connecting conductors shall be routed through the grommet adjacent to the terminal block (C Y G W R TW1 TW2). The end panel will need to be temporarily removed to assist with routing conductors back to the control board.

Diagram 19: BX5 Wiring circuit for NG-2A to Icebox and Networker



Add-On connections (A1 & A2) at '**516 Zone Module**' (B023178).

Diagram 20: BX3 Wiring circuit for HCDSI24 to Icebox and Brivis Programmable Thermostat



Add-On connections (A1 & A2) at Brivis Programmable Thermostat and CDU for earth. For 'G' connection additional relay is required (B063033)

Note: Early model Buffalos may have on board provisions for add-on cooling. For more information contact the Brivis Technical Support Group (TSG) on 1300 361 295.

5.0 SYSTEM AND DUCTWORK DESIGN

Good duct design and sizing are essential to every Brivis ICE cooling system. Use the Brivis "SuperSizeGuide" / Brivisize, Technical Data Sheets or HB276.
In general:

- Ductwork should be airtight and have a minimum insulation rating of R1.0
- It should also be properly sized, and curves and bends should be smooth enough to ensure that the air flows through efficiently, quietly and with minimal resistance
- The registers and diffusers should be large enough and of good design. They should minimise noise, while providing the correct distribution pattern
- The positive return air system should be fitted with a grille large enough to accept the full air capacity of the system at low noise levels
- Adequate air filtration must be provided
- If the system uses high level outlets (e.g. ceiling diffusers), then the return air inlet should be at a low level

Note: It is important that all ductwork and fittings be insulated. It is mandatory under some building codes to also install fire rated duct. Check with your local authority.

5.1 Filtration

A filter must be fitted into the system, and should be easily accessible for regular cleaning. Please refer to the guidelines for return air filter grilles accompanying the Gas Ducted Heater.

6.0 CONDENSER UNIT INSTALLATION

For the following installation requirements refer to the installation manual supplied with the condenser unit:

- OUTDOOR UNIT INSTALLATION
- REFRIGERATION CHARGE & PIPE-WORK
- START-UP AND COMMISSIONING
- SERVICE, MAINTENANCE AND WARRANTY

7.0 SPECIFICATIONS

Icebox Unit			DINIB10Z7-L/R	DINIB13Z7	DINIB15Z7
Power supply		V-ph-Hz	220~240-1-50		
Maximum input current		A	< 0.1		
Rated input power		W	10		
Power connection		Type	Power Cord & Plug 2.5m		
Airflow	Rated	L/s	600	688	736
	Minimum		459	550	620
Coil Static Pressure Drop	@ Rated Airflow (Dry / Wet)	Pa	95 / 118	96 / 120	88 / 110
	@ Minimum Airflow (Dry / Wet)		56 / 70	62 / 77	62 / 78
Indoor unit	Dimension (L x W x H)	mm	772x 392 x 839	956 x 566 x 876	1026 x 566 x 876
	Packing (L x W x H)	mm	870 x 395 x 842	1100 x 570 x 880	1170 x 570 x 880
	Weight (Net)	kg	35	45	50
Duct Connection (Outlet)		mm	Φ350		Φ400
Duct Connection (Inlet)		mm	Φ350		Φ400
Moisture Removal		L/h	2.2	2.9	3.4
Condensate drain pipe diameter		BSPM	3/4"		
Refrigerant pipe connections	Liquid / Gas	mm	Φ9.5 / Φ15.9	Φ9.5 / Φ19.0	
Operating temperature limits		^{0}C	19 ~ 32		
Capacities tested in accordance with AS/NZS3823.3. Due to our policy of continuous improvement specifications are subject to change without notice.					

For details on the condenser unit, please refer to the Brivis ICE Inverter - Technical Specifications page.

Rinnai Australia Pty Ltd

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Fax: (03) 9271 6622

National Help Line
Tel: 1300 555 545* Fax: 1300 555 655
Monday to Friday, 8.00 am to 5.00 pm EST.

**Cost of a local call higher from mobile or public phones.*

For further information visit **www.rinnai.com.au** or email **enquiry@rinnai.com.au**

Rinnai has a Service and Spare Parts network with personnel who are fully trained and equipped to give the best service on your Rinnai appliance. If your appliance requires service, please call our National Help Line. Rinnai recommends that this appliance be serviced every 2 years.

With our policy of continuous improvement, we reserve the right to change, or discontinue at any time, specifications or designs without notice.