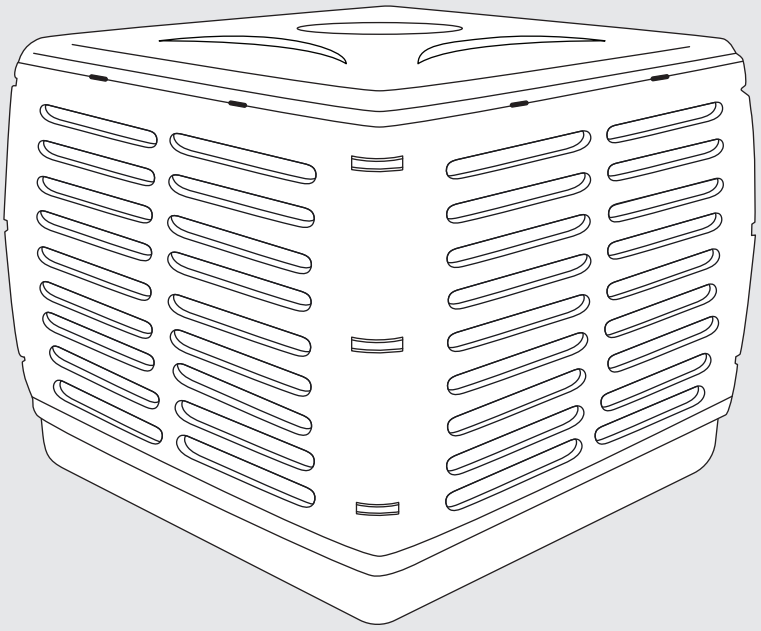
Models:

B50BAL (Charcoal)
B70BAL (Charcoal)



Balaero Evaporative Coolers (BAL)

Installation Manual

brivis by Rinnai

Rinnai

This appliance must be installed in accordance with:

- Manufacturer's Installation Instructions
- Current AS/NZS 3000
- Local Regulations and Municipal Building Codes including local OH&S requirements

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

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

WARNINGS AND IMPORTANT INFORMATION

IMPORTANT

READ ALL INSTRUCTIONS BEFORE INSTALLING OR USING THE APPLIANCE.

Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

WARNINGS: **WHEN IGNORED, CAN RESULT IN SERIOUS INJURY OR DEATH.**

CAUTIONS: **WHEN IGNORED, CAN RESULT IN MINOR INJURY OR PRODUCT DAMAGE.**

SHALL / MUST / IMPORTANT: **INDICATES A MANDATORY REQUIREMENT OF THIS MANUAL.**

SHOULD: **INDICATES A RECOMMENDED REQUIREMENT OF THIS MANUAL.**

Any deviations from these instructions may, at the discretion of Rinnai, void the warranty. As a result, the customer and/or installer may be charged a fee for product non-warranty related call outs. Also, note that failure to comply with these instructions may preclude Rinnai from being able to service the unit.

DISCLAIMER: **This document is a guide only. Laws, regulations and industry standards can vary between States and Territories.**

Accordingly, this guide MUST be read in conjunction with, and subject to, all laws, regulations and industry standards applicable in the State or Territory in which the products are installed.

You MUST ensure that the installation of the products will comply with those laws, regulations and standards, and that the products recommended to customers are fit for the purpose for which they are intended.

WARNING

REGULATORY / INSTALLATION

This appliance shall be installed in accordance with:

Manufacturer's Installation Instructions.

Current AS/NZS 3000 (electrical codes).

Local Regulations and Municipal Building Codes including local OH&S requirements.

Local water authority regulations, EPA guidelines

AS 4254 for Ductwork and HB 276 "Guide to Good Practice for Installation"

ALWAYS comply with the following precautions to avoid dangerous situations and to ensure optimum performance.

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

This appliance is heavy, use 2 people or mechanical lifting device. Improper lifting may result in serious injury.

Take care when opening or unpacking this appliance. Failure to do so may result in serious injury or product failure.

DO NOT modify the electrical wiring of this appliance. If the control power wiring is damaged or deteriorated then it MUST be replaced by an authorised person. Failure to do so may result in electric shock, fire, serious injury or product failure.

DO NOT install or service the Cooler during adverse weather conditions, or drain water onto the roof where it could cause a slippery and hazardous work environment.

MODELS COVERED IN THIS MANUAL

B50BAL	The BAL50 and BAL70 coolers are certified to BAL 12.5 from factory, no additional accessories are required. They may be installed in areas designated up to BAL 12.5.
B70BAL	

MANDATORY INSPECTION PRIOR TO INSTALLATION

IMPORTANT

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 water 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.

A NOTE ON ILLUSTRATIONS

NOTE

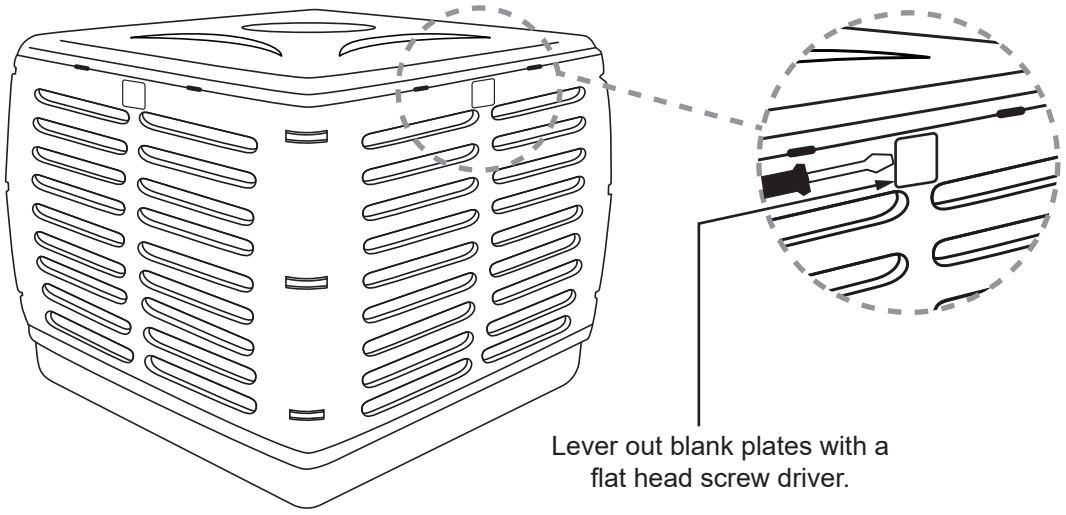
The illustrations used in this manual are for explanatory purposes only and the shape of your unit may vary slightly from that which is shown in this manual.

NOTE TO INSTALLER

The Balaero cooler is fitted with blank brand plates to facilitate customisation. Rinnai and Brivis brand plates (4 each) may be found inside of the cooler with the manuals.

Select the correct brand plates and using a flat screw driver dislodge the blank brand plates from the cooler as shown below and replace with Rinnai or Brivis brand plates, a push fit on all four sides.

Insert the correct brand plate by state:	
Brivis	VIC, NSW & TAS
Rinnai	WA, SA, NT & QLD



Lever out blank plates with a flat head screw driver.

TABLE OF CONTENTS

1. GENERAL GUIDELINES

1.1 UNPACKING THE COOLER

The unit is supplied on a pallet and enclosed with protective packaging.

To unpack:

- Carefully remove the outer packaging and any retaining brackets/straps that secure the cooler to the pallet.

Rinnai coolers **MUST BE** installed in accordance with these instructions and related regulations, codes, standards, and authorities. These include but may not be limited to:

- AS 3500.2 - Plumbing & Drainage
- AS 4254 - Ductwork for air-handling systems in buildings
- Local Building Regulations
- HB 276 - A Guide to Good Practice
- Environment Authorities
- Local Plumbing and Electricity Authorities
- Building Code of Australia (BCA)

1.2 UNLOADING THE COOLER

When lifting the cooler onto the roof, ensure the lifting equipment is in good operating condition and capable of lifting the total weight. Be sure there is a clear area to place the cooler down, which is within reach of the lifting equipment.

1.3 COOLER POSITIONING

The cooler shall be installed in a position that allows adequate and safe access for service, and enables only fresh outside air to be drawn into the unit. The cost of any equipment and additional labour involved in accessing cooler installations will not be accepted by Rinnai.

Avoid positioning the cooler near any source of smoke, dust or objectionable fumes so that only fresh outside air will be drawn into it. Coolers should not be sited close to the windows or bedrooms of neighbouring houses.

The cooler shall not be installed within a 5m (6m in WA) radius of a sanitary vent, 1.5m radius from a gas appliance flue terminal and 3m horizontal radius from a wood stove flue terminal.

1.4 WEATHER PROOFING

All ductwork, electrical cables and water pipes **MUST BE** flashed and sealed, to prevent water entry into the building. Exposed ductwork **MUST BE** weatherproofed and coated with reflective aluminium paint.

1.5 INSULATION

It is important that ducting should be well insulated. It is mandatory under some building codes to install insulated, fire rated ducting on Evaporative Cooling systems. Check with your local authority.

1.6 INSTALLING DUCTWORK

The duct system should be designed and installed in accordance with the following:

- These installation instructions.
- Standard engineering practices.
- Rinnai Sizing Guide and Installation Guidelines.

1.7 SYSTEM

The installation unit **MUST** comply with all laws, regulations and industry standards applicable in the state or territory in which the products are installed.

1.8 INSPECTION

This appliance has been inspected and tested at the time of manufacture and packaging, and was 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/or electrical supply it is intended to be connected to. Immediately report to supplier any discrepancies or damage.

For safety, appliances that may be damaged or incorrect must not be installed or operated under any circumstances. No responsibility will be accepted for installation or operation of damaged or incorrect appliances. Installation of damaged or incorrect appliances may also contravene local regulations.

2. COOLER SERVICE REQUIREMENTS

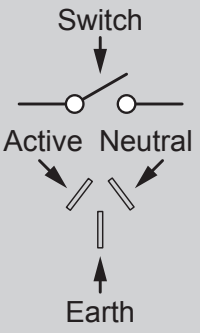
IMPORTANT

A qualified electrician MUST install the 240 Volt wiring according to local regulations.

Switch OFF the power and unplug the cooler before touching any wiring. If any electrical wiring is damaged, it MUST BE replaced by the manufacturer, its service agents or an electrically qualified technician, in order to avoid a hazard.

The electricity supply MUST BE 240 Volt / 50 Hertz, and from an authorised power supplier. Generators should NEVER be used, as their output may be incompatible with or damage the cooler's electronic control system.

Diagram 1.



2.1 ELECTRICAL POWER SUPPLY TO THE COOLER

The cooler is pre-wired with a 3-pin plug and lead, 4.7m long and should be plugged into a standard 240 Volt fixed switched socket outlet located within the roof cavity, in close proximity to the dropper duct. The fixed switched socket outlet should be wired back to the meter box on a dedicated power circuit.

Model	Circuit Rating Amps
B50BAL	15
B70BAL	15

NOTE

A power isolation switch is mounted on the controller housing inside the cooler.

2.2 WATER SUPPLY TO THE COOLER

The cooler's water system is designed to operate with a water supply pressure up to 600 kPa.

If the supply pressure is excessive, a pressure-reducing regulator will be required. If the pressure is insufficient the cooler's operation will be compromised. In areas subject to water pipes freezing, provision **MUST BE** made to drain water piping to prevent damage to the cooler.

- Ensure the supply piping has been flushed before connecting it to the cooler.
- A registered licensed plumber **MUST** install the water supply piping and connection to the cooler in accordance with the local water supply regulations.
- An bi-directional isolating valve on the supply pipe **MUST** be placed external and adjacent to the unit, not inside the ceiling. This **MUST BE** provided to facilitate isolation of the water or to disconnect the water supply piping when servicing.
- Non-return isolating valves on the water supply are not suitable as they may cause damage or lock up the cooler's inlet mechanism where high lock-up pressures or freezing water in pipes may occur. Use an isolating ball valve or equivalent.
- For the owner's convenience, an additional isolating valve may be provided at ground level to isolate the water supply.
- The water supply pipe **MUST BE** supported and secured so as not to place strain on the cooler's water connection fittings or cause water hammer noise.
- Water quality should be checked and filtration fitted where necessary e.g. tank or bore water.

2.3 INSTALLING THE WALL CONTROL

The Rinnai Balaero Wall Control is part of a sophisticated control system. The wall control must be positioned correctly as follows:

- **Install the wall control within the area being cooled:**

  It is important that the Wall Control is placed in a position that will provide the most accurate reading of the temperature within the area being cooled.

- **Attach to an internal wall:**

  The temperature difference on an external wall can affect the reading, so always mount the wall control on an internal wall.

  Also keep the hole in the wall for your wiring as small as possible to prevent draughts from within the wall cavity affecting the temperature sensing.

- **Get the height right:**

  The Wall Control should be approximately 1500mm above floor level.

- **Avoid hot spots:**

  Keep it as far away as possible from heat sources, e.g. above electrical equipment, direct sunlight and walls backing onto wall-ovens and stoves.

  Avoid cold spots:

  Ensure that the Wall Control is not affected by draughts coming through doorways, windows and stairwells, and is not placed too close to cooling outlets.

- **Avoid dead spots:**

  Don’t site it in areas with no or little circulation, e.g. behind doors, in corners or alcoves.

- **Interference from other electrical connections:**

  Ensure the thermostat and wiring are kept away from other electrical, data and antenna cables.

- **Use the right cable:**

  Use only the cable supplied with your Balaero Wall Control.

- **Connect the cable correctly**

2.4 BENDS AND ELBOWS

- Where square ducting elbows are to be used, install turning vanes within the elbow to aid airflow.
- Use unrestricted ductwork with smooth changes of duct cross section.
- Bends in ducting should have a large radius and branches should have shallow angles.

2.5 DAMPERS

Dampers may be required to balance the air distribution of the duct system.

3. CLEARANCES

3.1 ROOF MOUNTED EVAPORATIVE COOLER POSITIONING

The cooler must be installed in a position that allows for optimal performance and adequate and safe access for service, as per installation guidelines and any applicable regulations.

Extra service charges may apply for the cost of any equipment or additional labour involved in accessing the cooler if these guidelines are not met.

These extra charges apply to both product warranty claims, general repairs and service maintenance calls.

REQUIRED CLEARANCES	
Low Profile Units (Slopping Base)	1m on three (3) sides (front and two sides)
Traditional Units (Flat Base)	1m on all four (4) sides

Working at heights requires additional safety precautions, and the following should be considered when determining the location of an evaporative cooler.

- Ensure there is a clear pathway from the roof access point to cooler
- Remain clear of solar panels or other roof mounted fixtures that would adversely affect the required service clearances or safe access to the cooler
- For Multi Storey Flat Roof
  - □ Maintain a safe distance from a fall edge (>3m)
  - □ Consider installing a roof hatch to avoid extension ladders or two person job requirements

Certain job sites will automatically incur extra charges for safe service access when special access arrangements must be made. These include but are not limited to:

- A roof pitch of >35° (metal or glazed tile) or a roof pitch of 40° (non-glazed tile)
- No provision for safe and secure ladder access
- The cooler is located too close to a fall edge
- The roof access point is 6m above ground level
- The structure is unsound

All service works are governed by the Rinnai Australia Pty Ltd Safe Work Method Statements (SWMS) for Evaporative coolers and Working at Heights.

4. COOLER INSTALLATION

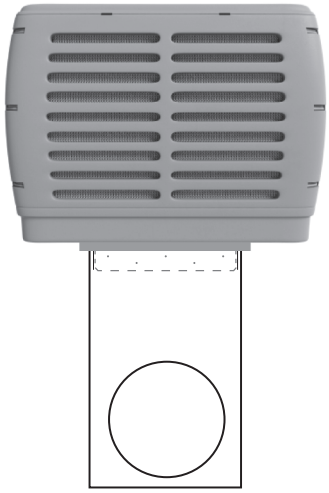
The Rinnai Balaero B50BAL is designed to mount onto a 550mm x 550mm dropper duct. The Rinnai Balaero B70BAL is designed to mount onto a 650mm x 650mm dropper duct. The dropper duct and flashing kit must be metal when installed in a BAL designated area.

Dropper duct configuration option

Model	550x550 (no return)	550x550 (15-20mm return)	650x650 (no return)	650x650 (15-20mm return)
B50BAL	YES	YES	N/A	N/A
B70 BAL	N/A	N/A	YES	NO

NOTE **For both models, the cooler connection is to be fastened into the dropper duct.**

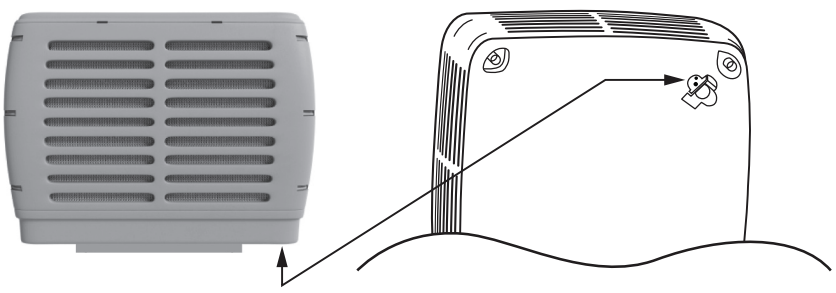
Diagram 2. Dropper Duct connection



4.1 DROPPER DUCT INSTALLATION GUIDELINES

- The dropper duct on which the cooler is mounted **MUST BE** properly secured to the roof structure or timbers.
- Ensure the dropper duct does not contact the ceiling joists or other structural members that can transmit vibration.
- If possible, the dropper duct should be positioned to the rear or on the service side of the home.
- It should also be as far down the roof as practicable.
- Rinnai recommend installing a diffuser or cone in the base of the dropper box. This will assist distributing the airflow evenly into the duct system and can also reduce noise levels.
- The power and communication looms must remain separated at all times. They **MUST NOT** enter the roof space through the same access point. The looms exit the bottom of the cooler directly beneath the coolers PCB. (See Diagram 3 below.)

Diagram 3. Loom separation



4.2 FITTING A METAL DROPPER DUCT TO THE ROOF

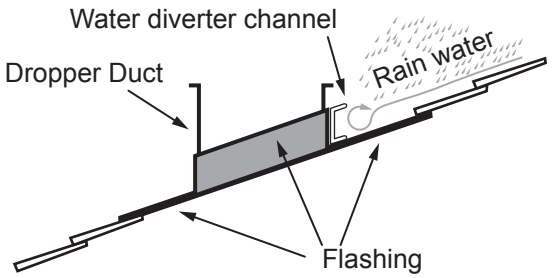
Mount the dropper duct at a suitable height above the rafter to ensure there is enough clearance at the rear of the Rinnai Balaero with roofing material in place. Dropper duct shall be secured on all four sides to supporting framework.

4.3 FIX AND SEAL THE ROOF FLASHING

The roof flashing **MUST BE** fixed and sealed to the dropper duct to prevent water entry into the building.

Installations where the cooler is more than 4000mm downstream from the roof peak should be fitted with an additional water-diverting channel on the dropper duct high side, that extends beyond the dropper duct sides by at least 50mm (see Diagram 4).

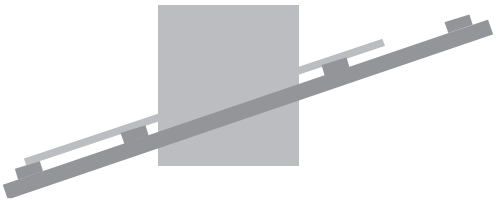
Diagram 4. Installation of flashing



4.4 FITTING A METAL DROPPER & FLASHING COMBINATION TO THE ROOF

The metal dropper duct and flashing combination shall be installed in accordance with the supplier's installation instructions (see Diagram 5).

Diagram 5. Metal dropper & flashing



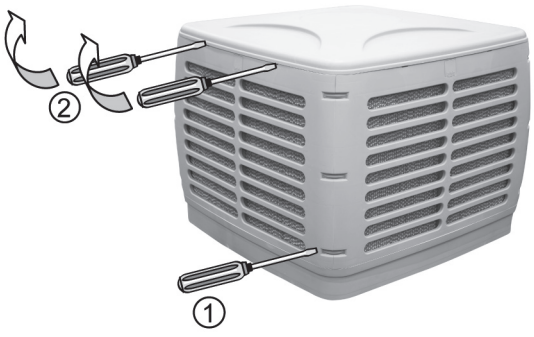
NOTE **The outer dimension of the metal dropper duct on which the cooler mounts shall be no greater than 545mm x 545mm square.**

4.5 REMOVING THE PADS FOR ACCESS

The cooler can be secured for lifting in the following way.

1. Levering out the retaining clips, three each corner ①.
2. For each pad insert two flat head screw drivers as shown, lever up and remove pad ② (see Diagram 6 below).

Diagram 6. Accessing the cooler internals



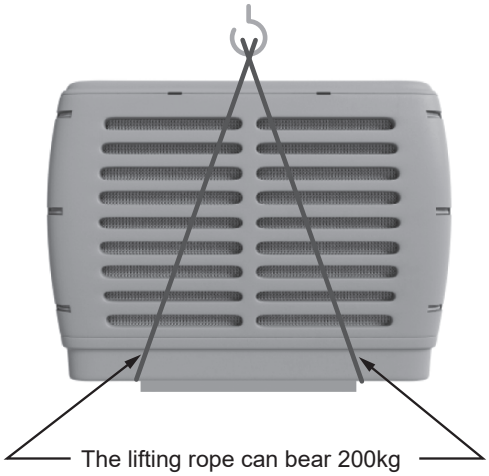
4.6 SECURING FOR LIFTING

3. Secure load rated lifting slings around the base (as shown in Diagram 7) and lift onto roof.
4. The cooler may be broken down to assist with lifting and installation. Take care not to damage or scratch cooler parts.

NOTE

Please be aware of the chassis extension, power loom, communications loom and winter seal when rotating, lifting and positioning.

Diagram 7. Lifting the Cooler

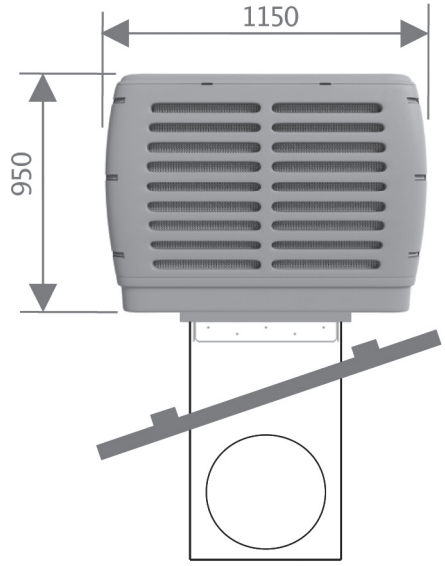


The lifting rope can bear 200kg weight. The cooler weight is 96kgs.

4.7 FITTING TO A METAL DROPPER DUCT

The base of the Rinnai Balaero locates **inside** of the sheet metal dropper duct. Secure on all four sides with suitable 10g screws, a minimum of two each side. When secure install all four pad assemblies (see Diagram 8).

Diagram 8. Cooler mounted to a metal dropper duct

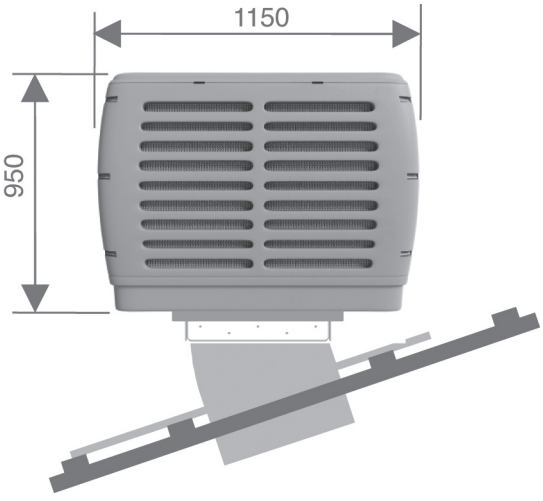


4.8 FITTING TO A PLASTIC DROPPER DUCT

(Non BAL areas only)

The base of the Rinnai Balaero cooler locates **outside** of the plastic dropper duct. Secure on all four sides with suitable 10g screws, a minimum of two each side, through holes provided. When secure install all four pad assemblies (see Diagram 9 right).

Diagram 9. Cooler mounted to a plastic dropper duct



5. WATER CONNECTION

5.1 INLET CONNECTION

The water inlet connection point is a 1/2" BSP male fitting located on the side of the coolers base. This will need to be assembled during the installation process.

5.2 TANK WATER QUALITY MANAGEMENT.

The Rinnai Balaero water level sensor automatically maintains the correct water level within the tank. The Rinnai Balaero is programmed to periodically flush the tank and refill it with clean water and automatically maintain the water quality within the tank.

5.3 WATER DRAIN CONNECTION

The Rinnai Balaero has a drainage connection point at the underside of the coolers base. A 32-20mm reducing socket is supplied with the cooler which may be fitted during the installation process.

Local jurisdictions may require a discharge pipe to be fitted to the drain outlet of evaporative coolers. Where the roof or catchment area is used for the collection of potable water, the manufacturer recommends that the outlet of the discharge pipe is separately drained to avoid any contamination of water intended for potable use.

If a discharge pipe is required, the manufacturer recommends that the outlet is located such that water is adequately dispersed and does not cause nuisance or damage, for example gutter overflow and accelerated corrosion.

Check requirements with your local jurisdiction and relevant codes.

Ensure any drain has a continuous fall, the joints and fittings are adequately sealed, and that all penetrations in and out of the roof cavity are sealed against water entry into the building.

The drain pipe must also be properly supported along its entire run, and must not place strain on the cooler’s outlet fitting or base.

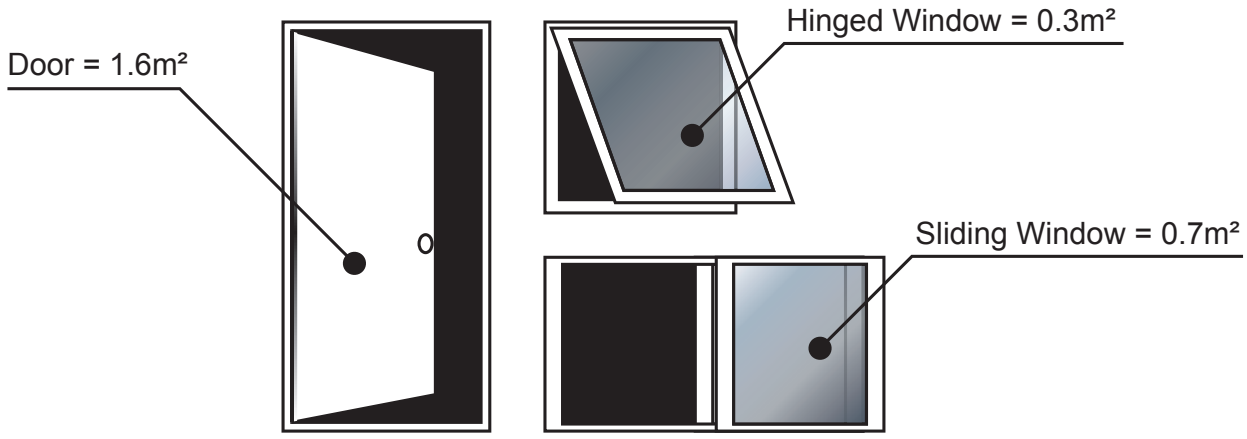
For installations on tiled roofs where a drain may not be required, Rinnai recommend fitting a water distribution spreader to the cooler's drain outlet.

6. VENTILATION

6.1 EXHAUST & VENTILATION

IMPORTANT

Exhaust fans may be required if insufficient free exhaust area exists. If the exhaust fan is the only exhaust or ventilation outlet, then its capacity should be at least equal to the cooler's air output.



Average ventilation area provided by various openings when fully opened.

Model	Number of average size windows & doors *(suggestive only)*	Highest Fan Setting	Lowest Fan Setting
B50BAL	One door and a hinged window	1.9 m²	1.1 m²
B70BAL	Three sliding windows or one door & two hinged windows	2.3 m²	1.4 m²

7. COMMISSIONING CHECKLIST

Switch OFF the power and unplug the Cooler before touching any wiring. Care must be taken to ensure electrical components have been isolated before performing any service work, i.e. water inlet valve. Only an electrically qualified technician should carry out any service to electrical wiring.

7.1 ISOLATING SWITCH

The Rinnai Balaero has an external power-isolating switch to facilitate servicing, which is located on the control box. To access the switch, remove the front pad from the cooler. Always test for electrical voltage before commencing any work on the cooler.

7.2 CHECKLIST

- The damper is not catching and opens fully.
- The isolating valve on the water supply is the bi-directional type and turned ON.
- The water tank fills with water and the water inlet valve closes when the tank is full.
- There is no foreign matter in the water tank or fan housing.
- The pads are correctly located.
- The pump operates when turned ON at the Wall Control.
- The fan operates through the entire speed range.
- Even water distribution with the pads in position and the cooler in operation.
- The water drains completely from the tank and that any external drain piping is not blocked or restricted.

New cooling pads should be thoroughly flushed before use so, following commissioning, run the system for 30 minutes with the fan on low speed. Turn the system "OFF" and press the "CLEAN" button to dump the water. This will prime the pads, flush out some of the new pad odour, and remove any foreign matter that may have settled in the system during transport.

7.3 WHAT IF THE FAN MOTOR WILL NOT START?

Check:

- The 15 Amp fuse in the meter box has not blown.
- The cooler's 3-pin supply plug is correctly located in the power socket.
- For power at the power socket (plug in another appliance and test).
- The isolating switches at the unit and the supply power socket are turned ON.
- The unit is turned ON at the Rinnai Wall Control.
- The fan is not in a delay due to tank filling or pad Pre-Wet operation.
- The motor is not hot, causing the auto-reset thermal overload switch in the fan motor to open circuit.
- That all electrical connections are secure, and if the motor will not start, call Rinnai for service.

7.4 WHAT IF THE PUMP WILL NOT START?

Check:

- The 15 Amp fuse in the meter box has not blown.
- The cooler's 3-pin supply plug is correctly located in the power socket.
- For power at the power socket (plug in another appliance and test).
- The isolating switches at the unit and the supply power socket are turned ON.
- The unit is turned ON at the Rinnai Wall Control.
- The pump is not in a delay due to tank filling operation.
- The pump impeller is not blocked or obstructed.
- All electrical connections are secure, and if the pump will not start, call Rinnai for service.

8. TECHNICAL SPECIFICATIONS

Model	Weight (kg)		Tank Capacity (L)	Motor		Supply Circuit Rating Amps	Fan Impeller Blades	Water Connection	Control Loom	Dropper Box Size	Angle Of Dropper Box	Dump Drain Size Of Unit OD
	Dry	Wet		Watts	Amps Max.							
B50BAL	99	119	13	1100	9.0	15	6	Flexible hose connection 1/2" BSP thread	Supplied	550mm x 550mm	90°	20mm
B70BAL	94	114								650mm x 650mm		

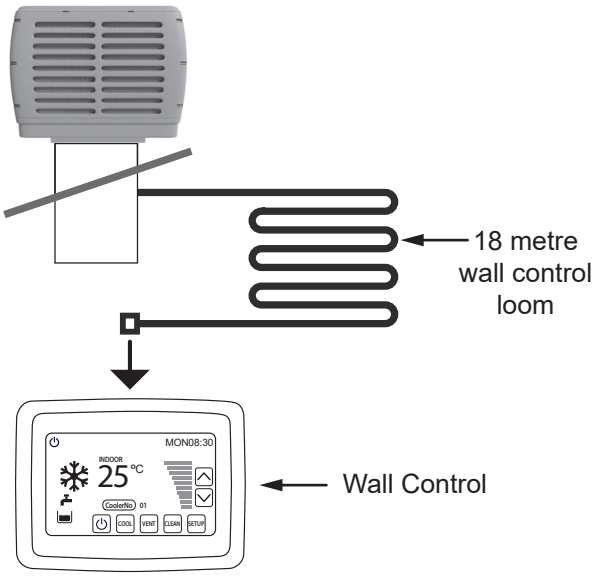
8.1 WALL CONTROL

8.2 WIRING THE WALL CONTROL

The cooler is supplied with a pre-wired wall control loom 18m long and power lead 4.7m long, both exiting the base of the cooler.

After the Cooler's power supply and pre-wired wall control leads are fed down into the roof cavity, do the following:

- Ensure the wall control is positioned so that it is within reach of the cooler using the 18-metre wire loom assembly supplied.
- Wall Controls accept the polarised plug connection. The wall control connection is located on a short loom connected to the side of the controller.



NOTES

NOTES

Rinnai Australia Pty Ltd

ABN 74 005 138 769 | AU45204

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Tel: (03) 9271 6625
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 may be higher from a mobile phone. (National calls from public phones in Australia are free.)*

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.