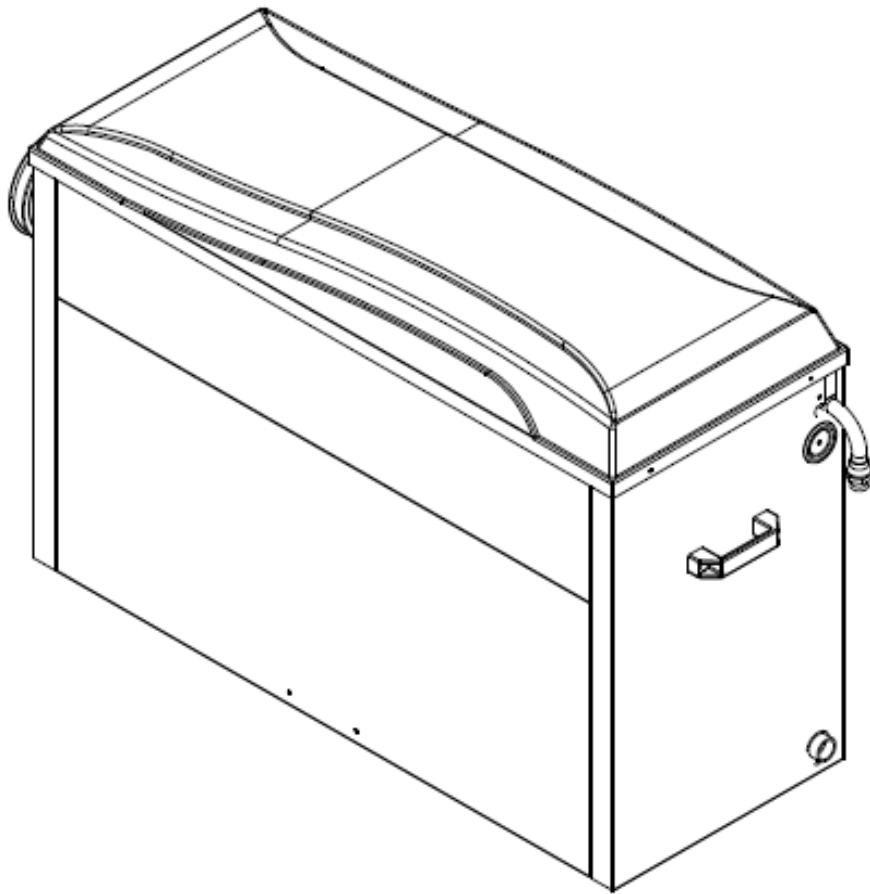


Brivis StarPro Ducted Gas Heater

Installer's Manual

SP4, SP5, SP6 & BX5 Series



**PLEASE READ THESE INSTRUCTIONS CAREFULLY
BEFORE INSTALLING THIS PRODUCT**



Scope

This Installer's Manual is intended to be used as a guideline for the installation of Brivis Gas Fired Central Heaters. It covers only the installation and commissioning of the heater and the allowable flueing configurations. Although recommended return air grilles and allowable duct outlet quantities are specified, it does not cover the actual ducting design required to suit the installation.

This Installer's Manual is based on Australian codes – for all other applications, please refer to local codes and regulations. Brivis heaters must be installed and serviced by qualified personnel.

Models covered in this manual are as follows:

Brivis StarPro SP6 Series Heaters

Internal Models	External Models
SP615IN	SP623EN
SP623IN	SP623EN-XA
SP623IN-XA	SP630EN
SP630IN	SP630EN-XA
SP630IN-XA	
SP635IN	

Brivis StarPro SP5 Series Heaters

Internal Models	External Models
SP521IN	SP521EN
SP521IN-XA	SP521EN-XA
SP530IN	SP530EN
SP530IN-XA	SP530EN-XA
SP535IN	BX520EN
	BX526EN

Brivis StarPro SP4 Series Heaters

Universal Models
SP415UN
SP421UN
SP430UN
SP435UN

StarPro SP6 models are condensing furnaces.

StarPro SP4 & SP5 models are non-condensing.

Universal models may be used in both internal & external applications.

For more details refer to Technical Specifications section.

Definitions

Shall

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 Brivis, void the warranty. As a result, the customer 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 unit.

Disclaimer

IMPORTANT NOTICE: 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.

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1. General Guidelines

Brivis heaters are designed to provide a central source of heat for a ducted central heating system.

Brivis heaters should not be installed downstream from an air washer, an evaporative cooler or refrigerative cooling system. Nor are they designed to be installed on a marine craft, houseboat, or any similar environment.

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

- AS 5601 - Gas installations
- AS 4254 - Ductwork for air-handling systems in buildings
- HB 276 - A Guide to Good Practice
- Local Gas and Electricity Authority Codes
- Brivis "SuperSizeGuide"
- Local Building Regulations
- Environment Authorities
- Building Code of Australia (BCA)

Brivis assumes no responsibility for equipment installed in violation of any code, regulations and these installation instructions.

It is recommended the Brivis "SuperSizeGuide" or "Brivisize" be followed in estimating heating requirements and for system design that will result in efficient installation and provide a higher level of comfort and economical operation.

For the hourly input and the gas type to be used, see the appliance data label located inside the service compartment or the Technical Specifications at the rear of this manual.

Note: All installations should only be carried out by a qualified tradesperson. Installations at altitudes above 1000m above sea level may require main burner injector upgrading. Please contact the Brivis Customer Service Centre for advice.

1.1 Inspection

This appliance has been 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 to which it is intended to be connected. Immediately report to supplier any discrepancies or damage.

1.2 Unpacking the Heater

Some heaters are supplied on a pallet with a plastic sleeve. To unpack:

- Cut and remove the external plastic packaging and dispose of thoughtfully.
- Remove heater from pallet (if supplied).

Some heaters are supplied with a base box assembly that is wrapped with a plastic film to protect the surface.

Note: Always remove and dispose of the plastic film before mounting the heater onto the base box.

1.3 Unloading or Lifting the Heater

When unloading or lifting the heater, ensure lifting equipment is in good operating condition and capable of lifting the total load. Be sure there is a clear area to place the heater down, which is within reach of the lifting equipment.

Note: Do not use the lifting handles provided to lift the heater above head height. If fitting the heater to elevated heights such as a roof, use suitable lifting equipment.

1.4 Gas Inlet Connection

- All piping must be in accordance with AS 5601 and any local gas regulations.
- The connection point for external model heaters is a female G3/4 compression fitting to AS 3688 located on the outer cabinet of the heater.
- The connection point for internal model heaters is a male G3/4 compression fitting to AS 3688 located in the heater cabinet.
- A gas cock shall be fitted in the gas line adjacent to the heater and in a convenient location so it can be turned OFF quickly and easily.
- The gas supply shall in no way interfere with any servicing of the heater.

Note: The gas supply must be installed by a licensed gas fitter. The gas pipe and gas meter should be sized so the heater can maintain its required incoming gas pressure at maximum consumption with all other gas appliances operating at their maximum capacity at the same time as the heater.

1.5 Electrical Power Supply

The heater is pre-wired with a 3-pin plug and lead, and shall be plugged into a standard 10 Amp 220 to 240 volt fixed switched socket outlet adjacent to the heater, 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.

IMPORTANT: Switch OFF the power and unplug the heater 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 220 to 240 V 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 heater’s electronic components.

1.6 Installation of Duct Connection Pops

On all StarPro heaters, the pops need to be fastened to the heater cabinet as follows:

- Insert pops into the hole in the pop plate, ensuring the pop flange is placed over the prescribed wall of the cabinet, refer to the “Pop Installation Matrix” below.
- Spread pop flange to fit tightly into the hole in the cabinet (the notch side overlapping the other).
- Secure pops with the rivets supplied.

Pop Installation Matrix		Return Air		Supply Air	
		No. of Walls	Install Pop	No. of Walls	Install Pop
Internal Model Cabinet	SP4	2	Inner Wall	2	Inner Wall
	SP5	1	No Option	2	Inner Wall
	SP6	1	No Option	2	Inner Wall
External Model Cabinet	SP4	2	Inner Wall	2	Inner Wall
	SP5	1	No Option	1	No Option
	SP6	1	No Option	1	No Option

1.7 Heater Positioning

Install the heater in a position that allows adequate and safe access for service as per guidelines in this manual and applicable standards. The cost of any equipment and additional labour involved in accessing such heater installations will not be accepted by Brivis.

Note: All service clearance measurements must be adhered to, otherwise this will impede the serviceability of the heater.

1.8 Installation of Internal Heaters

All internal StarPro models, including Universal models, are designed to be installed in the roof or beneath the floor. This must be done in accordance with the following guidelines and AS 5601.

Installing in the Roof Space

- The area under the heater must be capable of supporting the additional load, without causing deformation of any part of the building structure.
- The appliance must be accessible by means of fixed access, a normal ladder or steps.
- A passage of 600mm wide must be provided between the roof access opening and the heater.
- This passage must have a suitable walkway of at least 19mm thick particle board or equivalent.
- A permanent level platform must be provided beneath the heater and this platform area must extend 750mm out from the controls access panel side and fan motor access panel side/s for the entire length of the heater.
- The air gap created between the base of the heater and the platform by the heater’s legs must be maintained.
- Permanent artificial lighting must be provided at the heater, with the switch located at the roof access opening.
- If a Brivis lay down kit is used the supporting platform must be covered with a fire resistant material.

Installing Beneath the Floor

- There must be a minimum clearance of 200mm between any part of the appliance and the lowest part of the floor structure. In addition to this, refer to “Service Clearances” under the “SP5 & SP6 Internal Model Guidelines” section on page 4.
- The heater must be located within 2m of the access opening, or there is to be a minimum clearance of 1.2m between the lowest part of the floor structure and ground level, maintained from the access opening to the heater.
- All under floor installations must be on a level concrete base (50mm thick), and provision made to drain any condensate, seepage or ground water away from the heater.
- Permanent artificial lighting must be provided at the heater with the switch located at the access opening.
- Lateral (horizontal) flues may be installed in accordance with AS 5601, ensuring that the lateral flue section has a minimum rise of a 20mm per metre of lateral run.
- The flue must be terminated outside the building in accordance with AS 5601. For StarPro heaters, termination can be performed using a Brivis Remote Terminal. Refer to Internal Model Flueing instructions - StarPro Series on page 5.

1.9 Installation of Internal Heaters in a room, enclosure, residential garage or plant room with natural ventilation conditions

Installation of a gas appliance in a room or enclosure for properties approved for construction prior to 31st March 2014.

- Determine if the unit(s) MJ/hr rating for each cubic metre of the room or enclosure, is greater than 3 MJ/hr per m³.
 e.g. Unit rating (Ur) = 120MJ/hr
 Room volume (Rv) = 1m x 1m x 2.4m = 2.4m³
 Ur/Rv = 120/2.4 = 50 MJ/hr per m³ > 3 MJ/hr per m³
 Additional ventilation required in the room or enclosure.
- Two permanent openings are required, each equivalent in area to the determined value "A". The lower vent shall be located close to the floor or at burner level for a Downflow unit. The upper vent shall be located at or above the top of the unit. The two openings may be combined as long as the above conditions are met.

Determine free ventilation area using $A = T \times F$.

Where A = The minimum free ventilation area, mm²

T = The total gas consumption of all gas appliances, MJ/hr, i.e. U20 = 92MJ/hr

F = The factor detailed in the below table

Gas appliance location	Source of Ventilation	Factor F
Gas appliance in a room or enclosure	Directly to outside	300
	Via an adjacent room	600
Gas appliance in a plant room	Directly to outside	150
	Via an adjacent room	300

Note: *Directly to outside* is either through an outside wall, into a cavity vented to outside, into an underfloor space or roof space vented to outside.

Installation of a gas appliance in a room, enclosure, residential garage or plant room for properties approved for construction after 31st March 2014.

- Determine if the unit(s) MJ/hr rating for each cubic metre of the room, enclosure, residential garage or plant room is greater than 0.4 MJ/hr per m³
 e.g. Unit rating (Ur) = 120MJ/hr
 Room volume (Rv) = 1m x 1m x 2.4m = 2.4m³
 Ur/Rv = 120/2.4 = 50 MJ/hr per m³ > 0.4 MJ/hr per m³
 Additional ventilation required in the room, enclosure, residential garage or plant room.
 Refer to AS5601 for natural ventilation requirements.

Note: For all other applications, e.g. Mechanical Ventilation, refer AS5601.

1.10 Installation of External Heaters

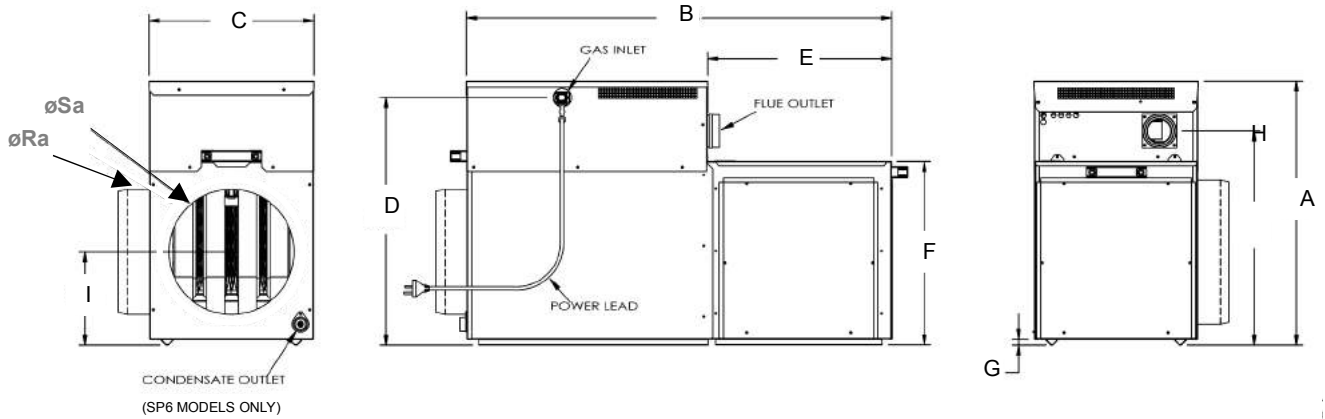
SP5 & SP6 External, SP4 Universal and BX5 models can be installed outside of the house. For an installation under a house floor, an SP5 & SP6 Internal or SP4 Universal model should be chosen.

All heaters that are installed externally on the ground should be installed on a level concrete base or pad, and there must be provision made to drain away any surface water from the heater and condensate for SP6 models. If the heater is to be installed in an elevated position or on a roof, the installation must comply with AS 5601. It must be secured to prevent movement and it must have adequate provision for service access.

2. SP5 & SP6 Internal Model Guidelines

2.1 Heater Dimensions

Diagram 1.

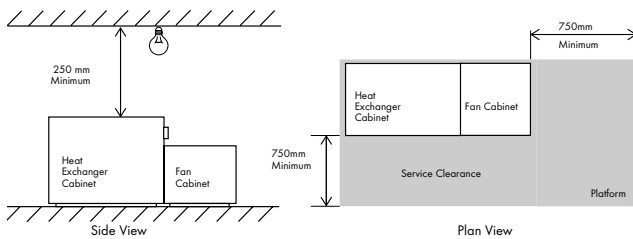


Dimension [mm]	A	B	C	D	E	F	G	H	I	øSa	øRa
SP615IN	634	1021	395	594	440	440	15	513	224	300	300
SP623IN	634	1021	395	594	440	440	15	513	224	300	300
SP623IN-XA	634	1021	395	594	440	440	15	513	224	350	350
SP630IN	684	1070	547	643	491	490	15	563	253	350	350
SP630IN-XA	684	1070	547	643	491	490	15	563	253	400	400
SP635IN	684	1070	547	643	491	490	15	563	253	450	450
SP521IN	634	1021	395	594	440	440	15	513	224	300	300
SP521IN-XA	634	1021	395	594	440	440	15	513	224	350	350
SP530IN	684	1070	547	643	491	490	15	563	253	350	350
SP530IN-XA	684	1070	547	643	491	490	15	563	253	400	400
SP535IN	684	1070	547	643	491	490	15	563	253	450	450

2.2 Service Clearances

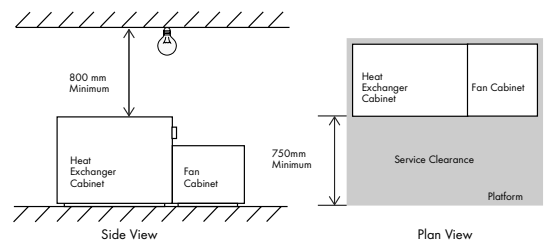
Method 1 - In Ceiling & Under Floor

Diagram 2.



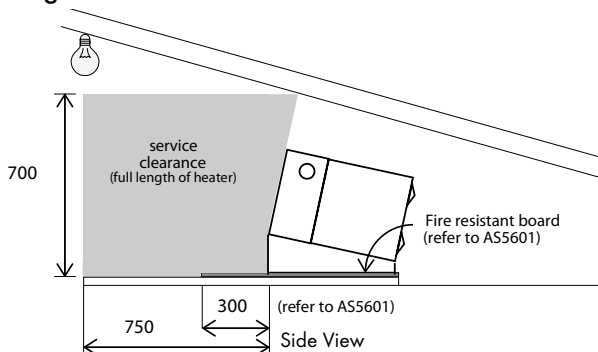
Method 2 - In Ceiling & Under Floor

Diagram 3.



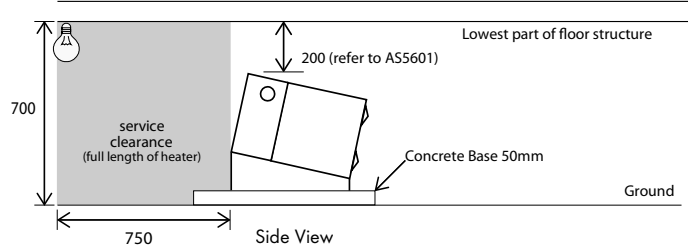
Method 3 - Lay Down Option - In Ceiling

Diagram 4.



Method 4 - Lay Down Option - Under Floor

Diagram 5.



2.3 Splitting Internal Model Heaters

The SP5 & SP6 Internal model heaters can be split for ease of installation. To split the heater, follow these simple instructions:

- Remove the heater's roof after removing the 4 roof screws.
- Disconnect the speed sensor loom from the control board and remove it from the heat exchanger cabinet.
- Remove the main fan motor and speed sensor loom access plate located on top of the fan cabinet compartment by removing the single screw.
- Unplug the main fan loom at the connection located inside the access hole which has just been uncovered.
- Remove the 2 screws fastening the fan cabinet tabs to the heat exchanger cabinet. These are located at the top of the fan cabinet on the heater's split line.
- Pivot the fan cabinet upwards high enough to dislodge the lower locking tabs fixed to the fan cabinet near the base.
- The heater is now split in two.
- Protect the exposed looms and tabs from damage while the heater is split in two parts.
- Once ready, reassemble in reverse order.

Note: Ensure when reassembling the heater that everything is put back and connected correctly.

2.4 Changing the Return Air Pop Orientation

The return air pop orientation can be changed from side to side or to the rear of the heater if necessary.

Reversing the Side Entry

- Remove the screws securing the side pop blanking plate and remove the blanking plate.
- Swap to the other side and fasten with the same screws.

Changing to Rear Entry

Note: If this is done, predominantly when a unit is laid down, then the total number of outlets normally permitted for that installation must be reduced by 2 (refer to the outlet register chart located on page 20).

- Remove the screws securing the end pop blanking plate and remove the blanking plate.
- Swap to the open side and fasten with the same screws.

IMPORTANT NOTE – RETURN AIR CONNECTION AT THE END OF THE UNIT (REAR ENTRY)

On applicable models, connecting the Return Air duct to the end of the unit (rear entry) will result in reduced air flow – for example, when using a Brivis Lay Down Kit. In this situation:

- The total number of outlets normally permitted for a heating system shall be reduced by 2 (refer to the outlet register chart located on page 20).
- DO NOT USE this configuration in Add-On Cooling applications, unless you ensure Minimum Recommended Airflow required for the cooling is maintained.

2.5 Internal Model Flueing Instructions – StarPro Series

2.5.1 General

- All flues must be installed in accordance with AS 5601.
- Horizontal flues must have a minimum rise of 20mm per 1m run.
- Horizontal flues terminating on a wall must be at least 300mm above ground level.
- An external flue terminal clearance to an opening in a building shall be no less than 1000mm in the vertical direction and 300mm in the horizontal direction.
- Systems with both vertical and horizontal flue runs should be treated as all horizontal.
- 1 x 45° bend is equivalent to 0.5 x 90° bend (i.e. 2 x 45° bends = 1 x 90° bend).
- Provide adequate support to flue sections (e.g. saddles / strapping).

2.5.2 SP4 & SP5 Internal Models – 100mm non-corrosive metal flue.

- Requires a 100mm round single or twin wall non-corrosive metal flue, suitably terminated.
- All flues must have a bolted flue sleeve connection to allow for repairs and/or removal of the appliance.
- Twin Wall flue - maximum flue length of 6m.
- Single Wall flue - maximum flue length of 2m.
- Up to 4 x 90° elbows are permitted with the same length requirements specified above.

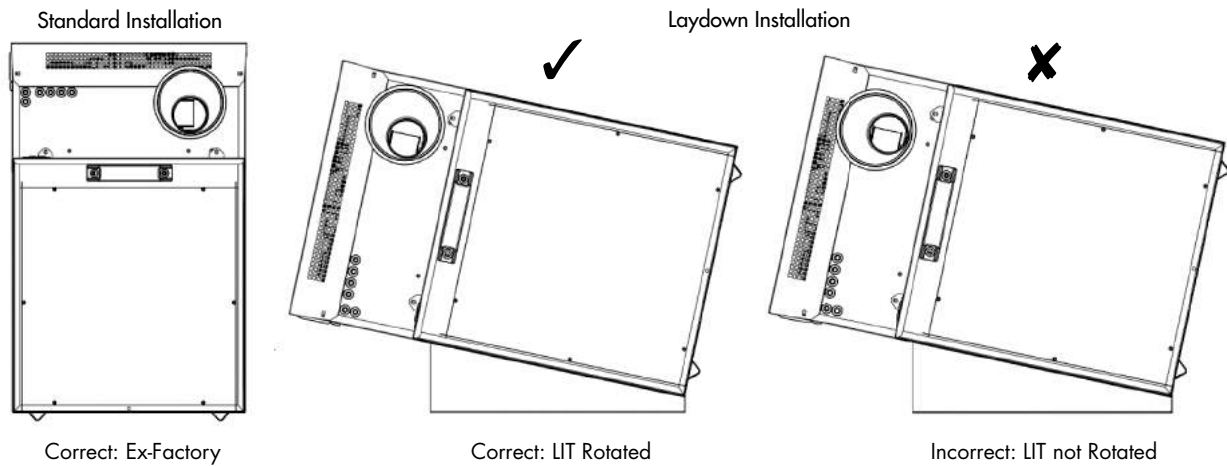
2.5.3 SP6 Internal Models – 100mm DWV flue

All SP6 internal model heaters are supplied with a Level Invert Taper (LIT) fitting and flue connection to unit is with 100mm Drain Waste Vent pipe (DWV to AS/NZS 1260).

Flue must be installed in accordance with the following:

- Exit heater with a minimum 300mm straight run of 100mm DWV flue before the first elbow.
- All flue joints must be adequately sealed to prevent condensate leakage.
- Ensure there is continual fall back to the flue outlet on the heater from flue termination point.
- Flue must be removable from the heater to allow for repairs and/or removal of the appliance.
- Flat side of the LIT (not tapered side) must be positioned so it is always the lowest part of the fitting or the closest point to ground. **If a lay down kit is used the LIT must be rotated to ensure the flat side of LIT fitting is closest to ground, refer Diagram 6.**

Diagram 6.



A maximum length of 25m x 100mm DWV flue pipe is allowed in all situations with no more than 4 x 90° bends, refer Table 1. Note a 1 x 45° bend is equivalent to a 0.5 x 90° bend.

Table 1.

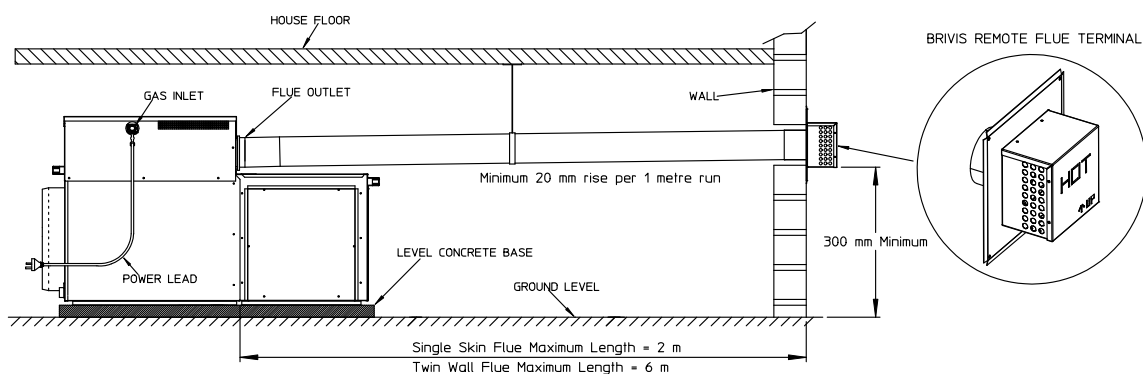
All Internal SP6 Models		100mm DWV Flue	
HEATER ORIENTATION	FLUE ORIENTATION	90° BENDS Up to 4	TERMINAL TYPE
Standard	Vertical	25m	100mm DWV Plain Vent Cowl
	Horizontal	25m	Brivis Remote Flue Terminal
Laydown	Vertical	25m	100mm DWV Plain Vent Cowl
	Horizontal	25m	Brivis Remote Flue Terminal

* All Vertical Flue Orientations will have at least one 90° bend.

2.5.4 Brivis Remote Terminal (Part No. B018384) All Internal Model applications

In specific installations, for example under the floor, it is recommended that a remote terminal be used to terminate the flue on the outside wall of the building. Please refer to instructions supplied with a Brivis Remote Flue Terminal. Diagram 7 depicts typical SP5 underfloor configuration.

Diagram 7.

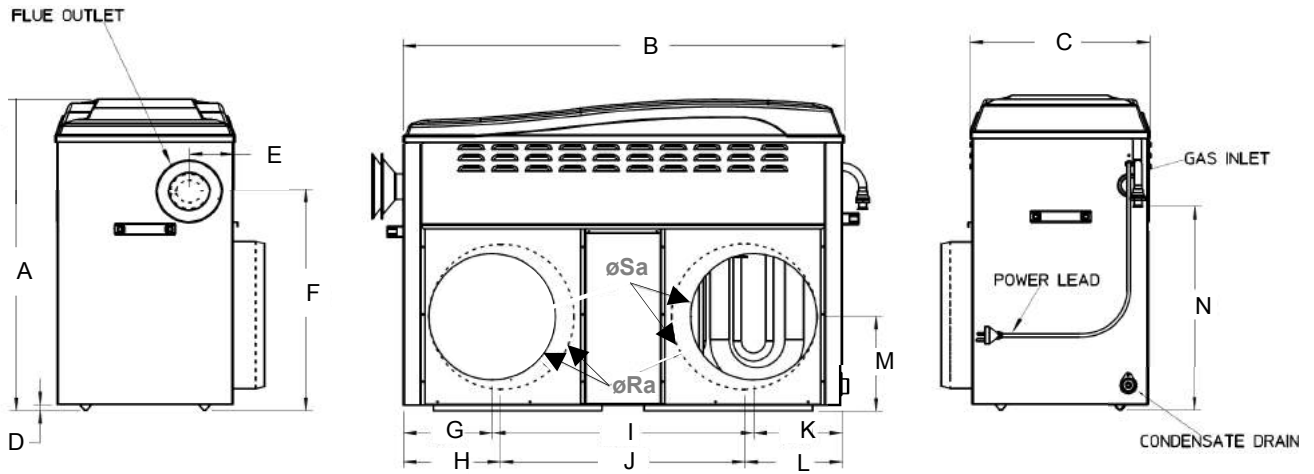


3. SP5 & SP6 External Model Guidelines

3.1 Heater Dimensions

SP6 External

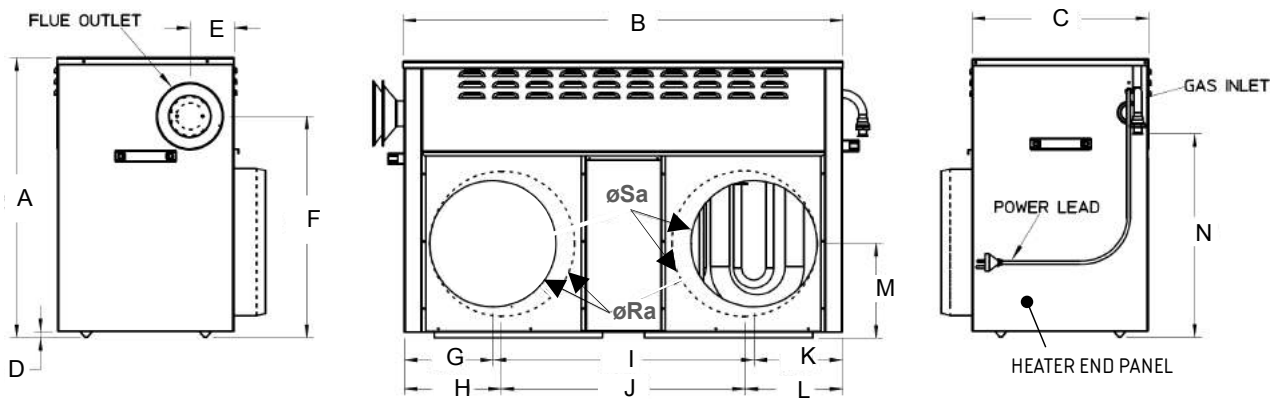
Diagram 8a.



Dimension [mm]	A	B	C	D	E	F	G	H	I	J	K	L	M	N	øSa	øRa
SP623EN	750	1046	416	15	104	520	211	n/a	620	n/a	210	-	224	480	300	300
SP623EN-XA	750	1046	416	15	104	520	-	230	-	580	-	231	224	480	350	350
SP630EN	790	1102	575	15	255	570	236	-	620	-	236	-	249	530	350	350
SP630EN-XA	790	1102	575	15	255	570	-	261	-	570	-	261	249	530	400	400

SP5 External

Diagram 8b.



Dimension [mm]	A	B	C	D	E	F	G	H	I	J	K	L	M	N	øSa	øRa
SP521EN	657	1046	416	15	104	520	211	-	620	-	210	-	224	480	300	300
SP521EN-XA	657	1046	416	15	104	520	-	230	-	580	-	231	224	480	350	350
SP530EN	707	1096	568	15	255	570	236	-	620	-	236	-	249	530	350	350
SP530EN-XA	707	1096	568	15	255	570	-	261	-	570	-	261	249	530	400	400

3.2 Service Clearances

Front/Back

A minimum clearance of 500mm must be provided at the side facing away from the house.

End

A minimum clearance of 300mm must be provided at each end of the heater.

Top

A minimum clearance of 1000mm must be provided above the heater roof. This clearance must be maintained for the entire surface area of the heater roof.

3.3 Reversing the Heater

The duct orientation of StarPro SP5 & SP6 External heaters can be reversed if the installation requires it.

- Remove the screws at the bottom edge of the front panel of the heater, and carefully lift away the front panel, without scratching or marking it.
- There are two blanking plates behind the front panel, which cover the two pop holes. Remove the two blanking plates.
- Fit the two blanking plates to cover the original pop holes to prevent air leakage.
- Above the original pop holes there will be a flashing bracket secured by screws, which needs to be reversed. Remove the flashing bracket, and fit it to the new pop outlet side of the heater.
- Gently fit the front panel back in place on the reverse side from where it was removed, and fasten using the screws along the bottom edge.

3.4 Installation of Flashing

A minimum 75mm flashing must be fitted to ensure the ductwork is adequately weather protected.

- Clip flashing into position by placing the lugs of the flashing firmly into the slots on either side of the cabinet wrap flanges at the rear of appliance.
- Place a bead of silicone along the upstanding face of the top flashing then push the heater up against wall and secure sides of flashing to the wall.

Note: *It is important to allow for sufficient slack in the ducting connected to the heater's pops, to allow the heater to be moved out from the wall if required for servicing.*

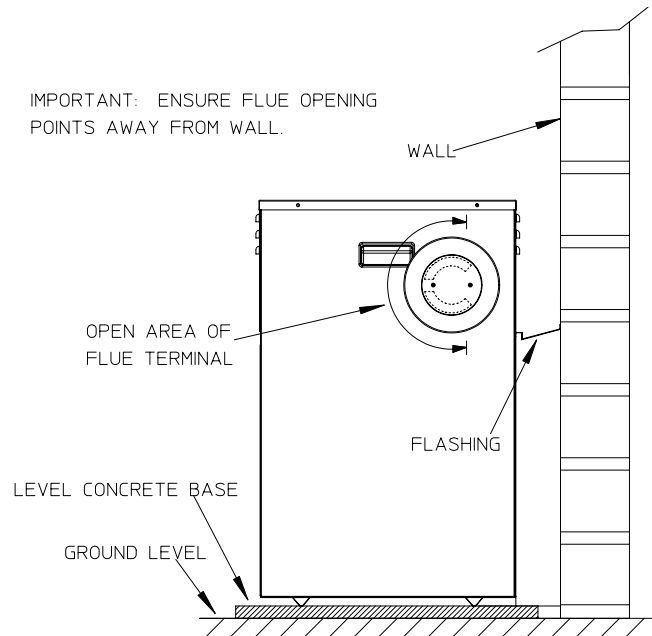
3.5 Installation of Flue Terminal

The flue terminal for External models is supplied inside the heater under the roof. On one end of the heater you will find the flue outlet socket under an installer instruction label.

- Remove the label and insert the flue terminal firmly into the flue outlet socket in the correct orientation to ensure flue gases are expelled away from the house (see Diagram 9).

Note: The flue terminal must always be installed before starting up the heater.

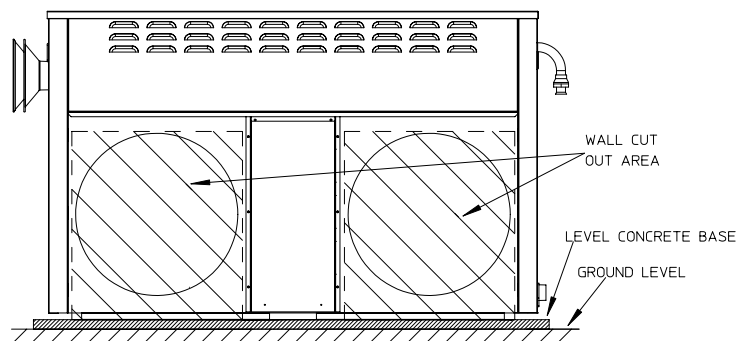
Diagram 9.



3.6 Area to Cut in the Wall

When installing the heater at ground level, create two holes to suit the pops all the way to ground level (see Diagram 10), or one rectangular hole to cover the distance of both pops ensuring there is no impediment to the structural integrity of the dwelling.

Diagram 10.



Note: Refer to heater dimensions to obtain the required dimensions.

3.7 Flue Terminal Clearances

Heaters that are installed outside the house should be positioned so that, when measured from the edges of the flue, the following minimum clearances exist, which are in accordance with AS 5601:

75mm

- Out from the wall against which it is mounted.
- From a drain or soil pipe.

300mm

- From a flue terminal, cowl or combustion air intake.
- Below eaves, balconies or other projections.
- From the ground, above a balcony or other surface.
- To a return wall or external corner.
- Measured horizontally, from an opening window, door, non-mechanical air inlet or any other opening into the building (except sub floor ventilation) or 1500mm in direction of discharge.

500mm

- From an electricity meter or fuse box (prohibited area extends to ground level).

1000mm

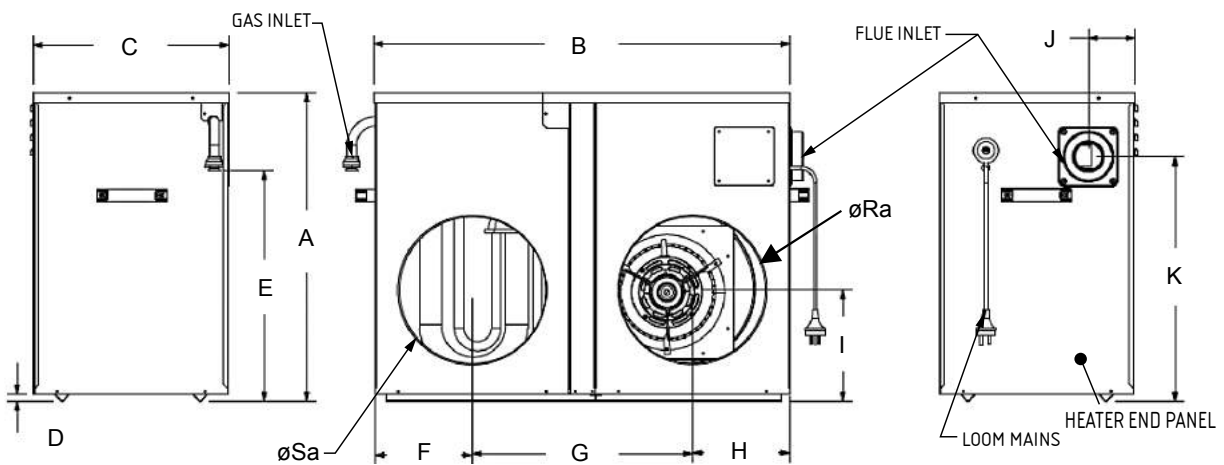
- Measured vertically, from an opening window, door, non-mechanical air inlet or any other opening into the building (except sub floor ventilation).
- From a gas meter.
- From a mechanical air inlet, including a spa blower, measured both vertically and horizontally.
- A flue terminal of this type shall not be located under a roofed area, unless the roofed area is fully open on at least two sides, and a free flow of air at the appliance is achieved.

4. SP4 Model Guidelines

4.1 Heater Dimensions

SP4 Universal

Diagram 11.



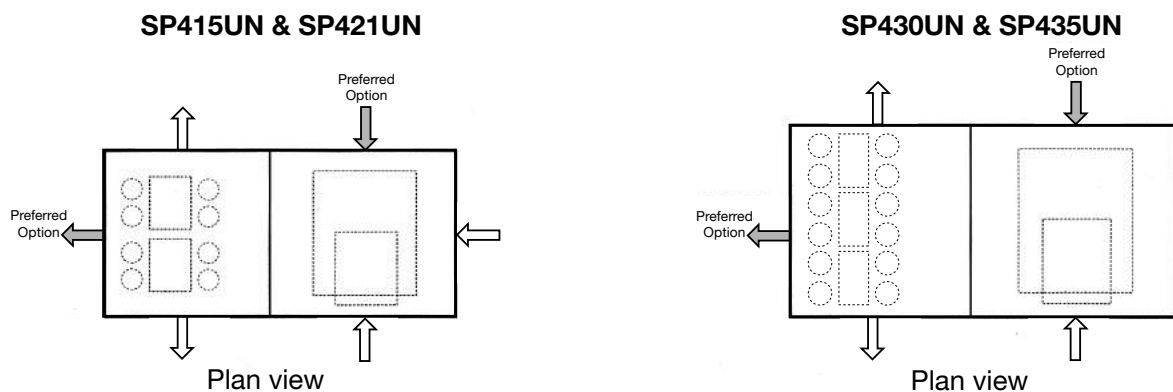
Dimension [mm]	A	B	C	D	E	F	G	H	I	J	K	ϕSa	ϕRa
SP415UN	625	845	397	14	467	197	447	197	235	95	495	300	300
SP421UN	625	845	397	14	467	197	447	197	235	95	495	300	300
SP430UN	644	923	549	14	487	197	487	237	235	250	515	350	350
SP435UN	644	923	549	14	487	197	487	237	235	250	515	400	400

Note: SP4 Universal is approved for internal or external applications.

4.2 Internal Installation

Diagram 12.

Duct Connection Options



4.2.1 Service Clearances

There are four methods of installing the SP415/SP421 internally and two for the SP430/SP435.

Only SP415 & SP421 may be used with a Brivis Lay Down Kit. Method 1 and method 2 are the only installation options available for SP430 & SP435. Method 1 through to Method 4 are available for SP415 & SP421.

Method 1 (In Ceiling & Under Floor), refer to page 3

Method 2 (In Ceiling & Under Floor), refer to page 3

Method 3 (Lay Down - In Ceiling), refer to page 3

Method 4 (Lay Down - Under Floor), refer to page 3

4.2.2 Splitting the Heater

The SP4 model can be split for ease of installation. To split the heater, follow these simple instructions.

- Remove the heater's roof after removing the 4 roof screws.
- Disconnect the gas valve, overheat/pressure switch loom, ignitor and flame sensor from the control board.
- Disconnect the flue pipe.
- Remove the screws fastening the fan cabinet tabs to the heat exchanger cabinet. These are located at the top of the heat exchanger cabinet on the heater's split line.
- Pivot the fan cabinet upwards high enough to dislodge the lower locking tabs fixed to the fan cabinet near the base.
- The heater is now split in two.
- Protect the exposed looms and tabs from damage while the heater is split in two.
- Once ready, reassemble in reverse order.

Note: Ensure when reassembling the heater that everything is put back and connected correctly.

4.2.3 Changing the Return Air and/or Supply Air Pop Orientation

SP415/SP421: The return air pop and supply air pop can be changed from the end to either the front or rear of the heater if necessary.

SP430/SP435: The return air pop can be changed from front to rear only. The supply air pop can be changed from front to rear or end of heater. Please refer to Diagram 11.

Reversing Side Entry/Exit

- Remove the screws securing the side pop blanking plate and remove the blanking plate.
- Swap to the other side and fasten with the same screws.

Changing to Rear Entry (SP415 & SP421 only)

Note: If this is done, predominantly when a unit is laid down then the total number of outlets normally permitted for that installation must be reduced by 2 (refer to the outlet register chart located on page 20).

- Remove the screws securing the end pop blanking plate and remove the blanking plate.
- Swap to the open side and fasten with the same screws.

IMPORTANT NOTE – RETURN AIR CONNECTION AT THE END OF THE UNIT (REAR ENTRY)

On applicable models, connecting the Return Air duct to the end of the unit (rear entry) will result in reduced air flow – for example, when using a Brivis Lay Down Kit. In this situation:

- The total number of outlets normally permitted for a heating system shall be reduced by 2 (refer to the outlet register chart located on page 20).
- DO NOT USE this configuration in Add-On Cooling applications, unless you ensure Minimum Recommended Airflow required for the cooling is maintained.

Changing to Front Exit

- Remove the screws securing the front panel and discard handles.

4.2.4 Internal Flueing Instructions

Refer to sections 2.5.1, 2.5.2 and 2.5.4 on page 5 and 6.

4.3 External Installation

4.3.1 Service Clearances

Front/Back

A minimum of 500mm must be provided at the side facing away from the house.

End

A minimum of 300mm must be provided at each end of the heater.

Top

A minimum of 1000mm must be provided above the heater roof. This clearance must be maintained for the entire surface area of the heater roof.

4.3.2 Installation of Flashing

The flashing must be fitted to ensure the ductwork is adequately weather protected.

4.3.3 Installation of Flue Terminal

On one end of the heater you will find the flue outlet socket under an installer instruction label.

Remove the label and insert the flue terminal firmly into the flue outlet socket in the correct orientation to ensure the flue gases are expelled away from the house (see Diagram 9 on page 9).

Note: The flue terminal must be ordered separately when SP4 is used externally, Brivis Part No. B021385.

Note: The flue terminal must always be installed before starting the heater.

4.3.4 Flue Terminal Clearances

Heaters should be positioned so that when measured from the edges of the flue the following minimum clearances exist.

75mm

- From the wall against which the heater is mounted.
- From a drain or soil pipe.

300mm

- From a flue terminal, cowl or combustion air intake.
- Below eaves, balconies or other projections.
- From the ground, above a balcony or other surface.
- To a return wall or external corner.
- Measured horizontally, from an opening window, door, non-mechanical air inlet or any other opening into the building (except sub floor ventilation) or 1500mm in direction of discharge.

500mm

- From an electricity meter or fuse box (prohibited area extends to ground level).

1000mm

- Measured vertically, from an opening window, door, non-mechanical air inlet or any other opening into the building (except sub floor ventilation).
- From a gas meter.
- From a mechanical air inlet, including a spa blower, measured both vertically and horizontally.
- A flue terminal of this type shall not be located under a roofed area, unless the roofed area is fully open on at least two sides, and a free flow of air at the appliance is achieved.

5. SP4, SP5 & SP6 Installation of Thermistor

All StarPro heaters are supplied with a remote thermistor assembly. The thermistor must be installed in the supply air duct, between 1m to 3m away from the heater, but never beyond the first branch take off (BTO) fitting.

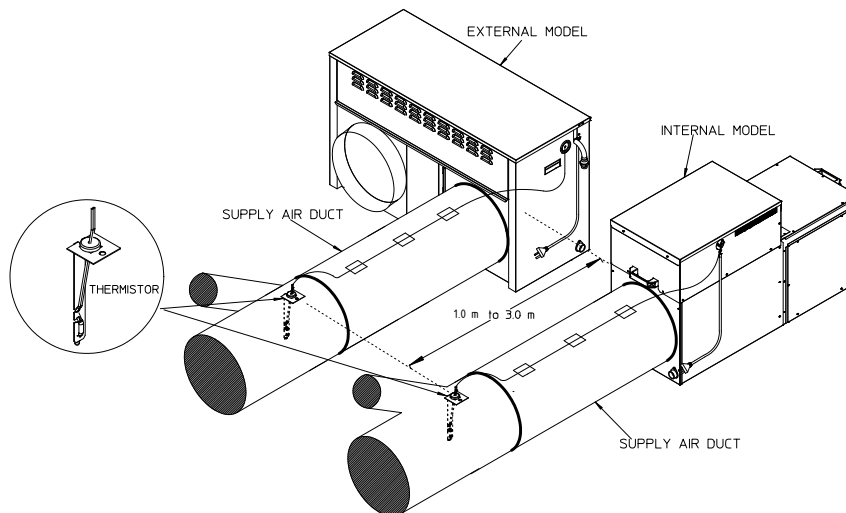
Note: Where a Brivis Add-On air conditioning indoor evaporator coil is installed, the thermistor must be located in the discharge air pop of the indoor coil.

These installation practices promote more accurate supply air temperature control and optimise heater performance.

- Ensure that there is at least 1 metre of appropriately sized ducting installed between the heater and the first BTO fitting (or evaporator coil).
- Drill a 20mm diameter hole through the top of the inlet end of the first BTO fitting (see diagram below) or through the top of the evaporator coil's inlet pop.
- Carefully insert the thermistor assembly (probe end first) into this hole and secure using the self drilling screw provided. Seal any remaining openings with duct tape.
- Ensure that the thermistor lead is secured to timbers or duct outer casing (see diagram) to prevent damage.

Where the first BTO fitting is installed more than 3m away from the heater, an additional duct joiner (installer supplied) will be required so that the thermistor assembly can be fitted correctly. Install the joiner between 1m to 3m away from the heater ensuring that the thermistor can reach this joint. Then follow the steps above as per normal practice.

Diagram 13.



6. SP6 Condensate Removal

All SP6 models have a condensate drain outlet. A fitting and clamp are provided for connection to the drain (see Diagram 14).

- For External models, the outlet is located in the bottom corner below the gas supply connection point.
- For Internal models, the outlet is located in the bottom corner of the supply air pop hole panel.
- The condensate is mildly acidic, and should be run via a PVC pressure pipe (to AS 1477), with an outside diameter of approximately 27 mm, away from the heater to a suitable area (i.e. to above a drain, sewer or pit)
- Use PVC cement on all joints to prevent any condensate leakage.
- Do not connect the condensate drain directly to the sewer or below ground level of a storm water drain. A blockage in the drain system would cause the heater's condensate tank to flood with water and shut down. Check for any additional local drainage codes which may apply.
- Under no circumstances should it be allowed to run onto electrical connections, earth stakes, copper pipes or concrete paths. It should also not discharge onto metallic roofs or guttering, however the condensate drain may terminate into the vertical section of a downpipe above ground level.
- Tube length should be minimised and a continuous fall of 20mm per metre created. Maximum equivalent tube length of 12m is recommended (or increase diameter size).

- Under no circumstances should any part of the tube sag or run uphill.
- Special consideration is required for installation in areas experiencing sub-zero temperature as condensate could freeze in the drain. In these cases, larger diameter drainage piping is required.
- Approximately 2 to 3 litres per hour of condensate may be produced under continuous running conditions, depending on the size of the heater.

Note: It is important that the above guidelines are adhered to as incorrect drainage may cause serious damage to the heater or its surroundings.

Diagram 14a.

FITTING CONDENSATE DRAIN TO INTERNAL UNITS

- ① FIT BARBED CONNECTOR TO FLEXIBLE CONDENSATE HOSE
- ② FIT CLAMP TO HOSE
- ③ FIT DN20 PRESSURE PIPE DRAIN INTO BARBED CONNECTOR

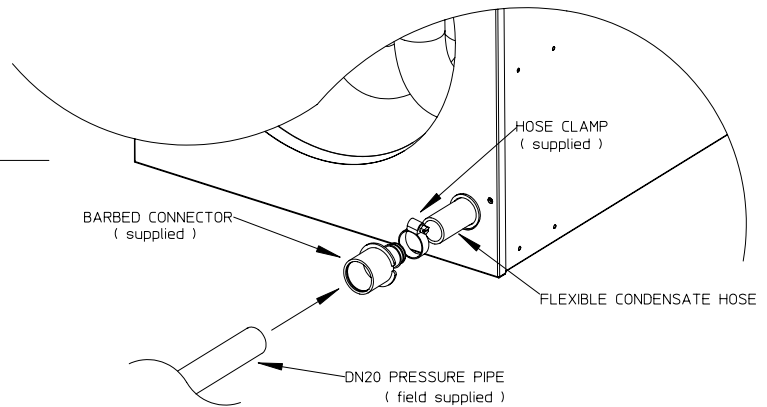
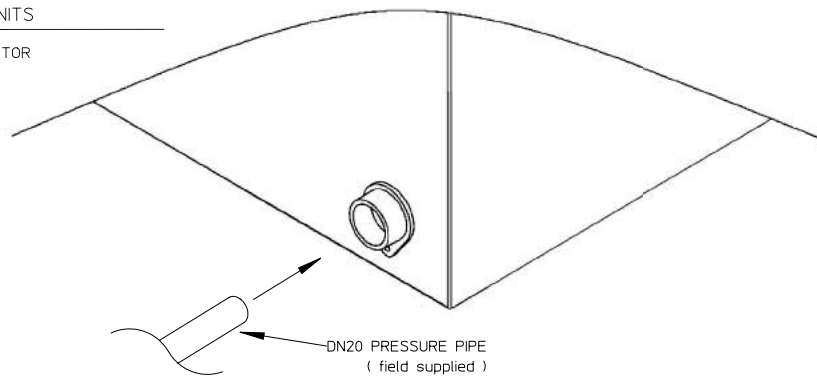


Diagram 14b.

FITTING CONDENSATE DRAIN TO EXTERNAL UNITS

- ① FIT DN20 PRESSURE PIPE DRAIN INTO CONNECTOR



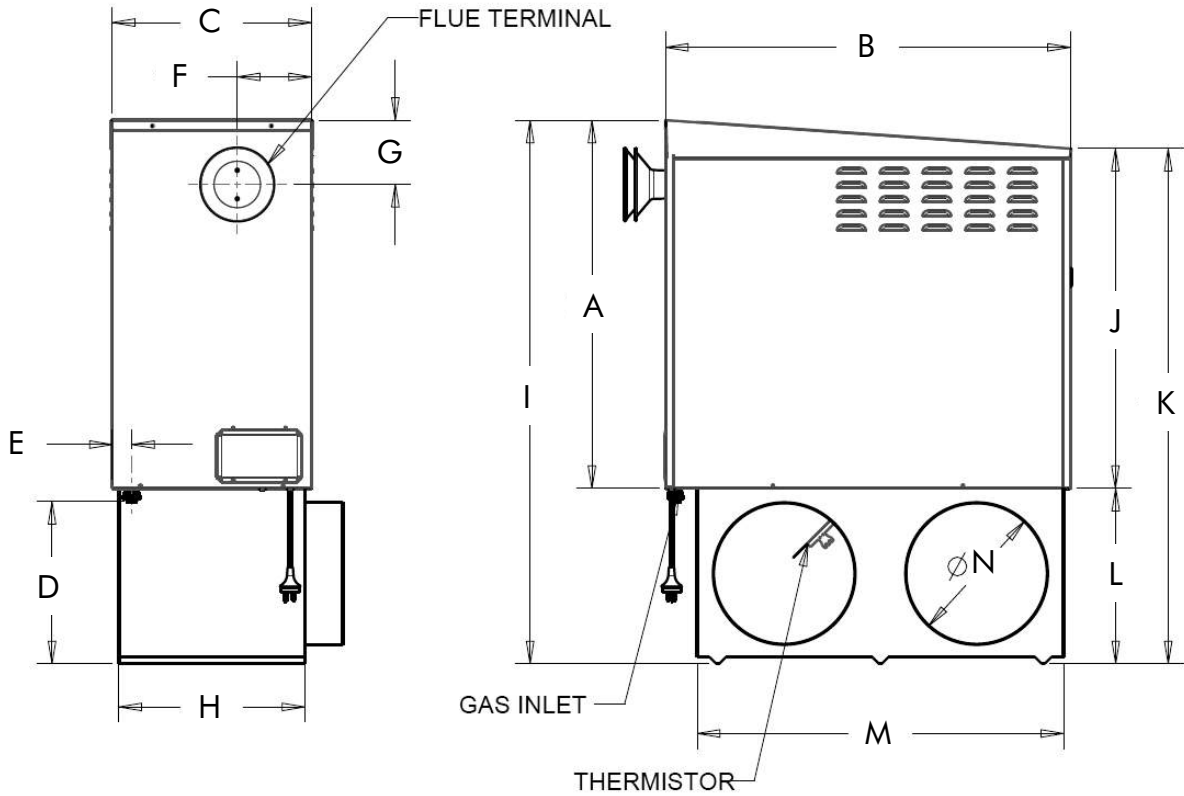
Note: Always use the correct PVC cement to bond the field supplied PVC pressure pipe to the barbed connector, following the instructions as detailed for the PVC cement for proper bonding and curing.

7. BX5 Model Guidelines

The BX520 and BX526 ducted heaters are designed primarily to replace Brivis Buffalo 85 and Brivis Buffalo 120 heaters respectively. Their configuration allows for seamless changeover onto an existing base box, where applicable, with identical service connections, capacities and airflows commensurate with the original units. They also incorporate on-board controls providing greater flexibility for thermostat and zone control options.

7.1 Heater Dimensions

Diagram 15.



Dimension [mm]	A	B	C	D	E	F	G	H	I	J	K	L	M	øN
BX520	775	852	420	341	41	156	135	391	1145	715	1085	370	771	300
BX526	866	1028	582	387	41	238	135	557	1280	805	1220	415	951	350

7.2 Service Clearances

Front & Back

A minimum of 500mm must be provided at the side facing away from the house.

End

A minimum of 300mm must be provided at each end of the heater.

Top

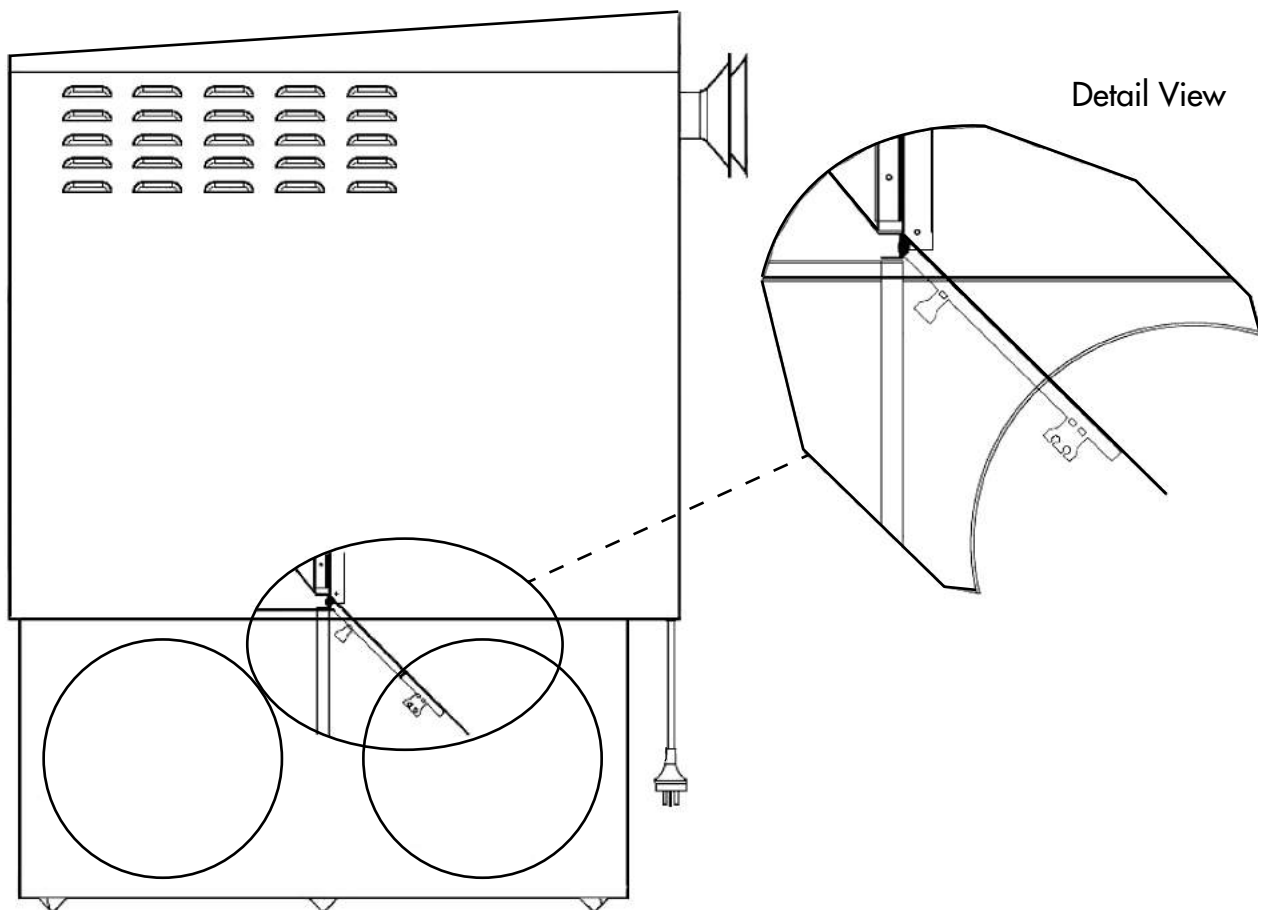
A minimum of 1000mm must be provided above the heater roof. This clearance must be maintained for the entire surface area of the heater roof.

7.3 Thermistor Installation

The thermistor is located on a bracket beneath the heat exchanger and must be positioned correctly prior to installing unit onto base box:

1. Locate unit next to the base box and orientate onto fan cabinet end.
2. Remove all packaging.
3. Bend thermistor arm down away from the heat exchanger until it touches the stopper plate. The arm will rotate through an angle of 45° only, excessive force is not required.

Diagram 16.



BX520 Illustrated

Note: The BX520 thermistor is centrally mounted and the BX526 thermistor is mounted at the unit's end.

7.4 Installation of Flue Terminal

The flue terminal is supplied and fitted to the heater as seen in Diagram 16. The flue terminal must be orientated correctly to ensure flue gases are expelled away from the house (see Diagram 9, page 9).

Note: The flue terminal must always be installed before starting the heater.

7.5 Flue Terminal Clearances

Heaters should be positioned so that when measured from the edges of the flue the following minimum clearances exist.

75mm

- From the wall against which the heater is mounted.
- From a drain pipe or soil pipe.

300mm

- From a flue terminal, cowl or combustion air intake.
- Below eaves, balconies or other projections.
- From the ground, above a balcony or other surface.
- To a return wall or external corner.
- Measured horizontally, from an openable window, door, non-mechanical air inlet or any other opening into a building with the exception sub-floor ventilation.

500mm

- From an electricity meter or fuse box (prohibited area extends to ground level).
- Horizontally from any building structure

1000mm

- Measured vertically, from an openable window, door, non-mechanical air inlet or any other opening into a building with the exception of sub-floor ventilation.
- From a gas meter.
- From a mechanical air inlet, including a spa blower, measured both vertically and horizontally.
- A flue terminal of this type shall not be located under a roofed area, unless the roofed area is fully open on at least two sides, and a free flow of air at the appliance is achieved.

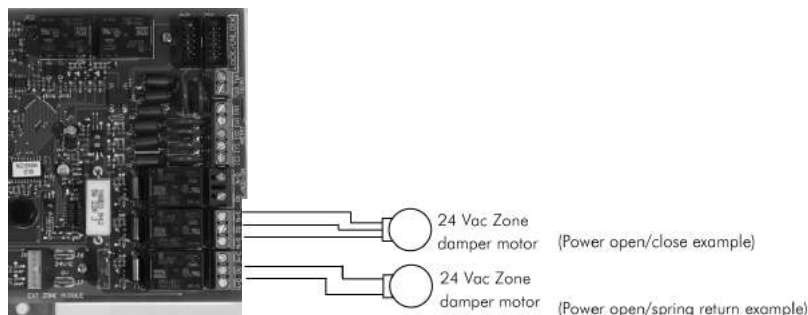
8. SP4, SP5, SP6 & BX5 - Adaptive Zoning & Add-On Air Conditioning

All Brivis StarPro Series Heaters (SP4, SP5, SP6 & BX5) fitted with an NG-2 PCB, will require the use of a Brivis Network 516 Module (Part no. B023178) when used with Brivis ICE Add-on Cooling.

StarPro heaters can be configured for adaptive zoning and/or Add-On Refrigerative Air Conditioning. There are two 24 Vac relays on the heater's control module, which can be configured for control of up to two zone motors, shown in the Diagram 17 below.

For Add-on refrigerative air conditioning and control of up to three zones a 'Brivis Network 516 module' (Part No. B023178) must be fitted.

Diagram 17.



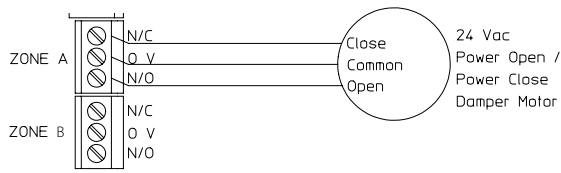
StarPro Control module

Note: Refer to Brivis Network 516 module installation instructions for further information.
Refer to Brivis Networker Advanced Programming manual for zone setup on the Brivis Networker Thermostat.
For Brivis ZonePlus configuration, please refer to the ZonePlus Installation Manual.

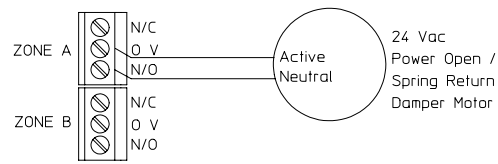
8.1 Wiring a Damper Motor to the Heater's Control Module

Diagram 18.

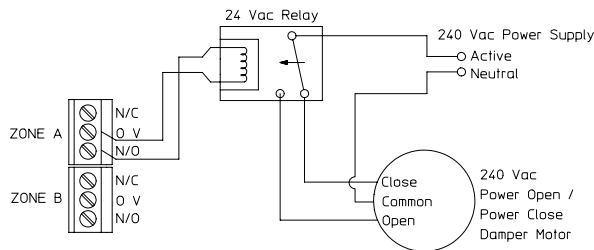
a) 24 Vac Power Open / Power Close Damper Motor



b) 24 Vac Power Open / Spring Return Damper Motor



c) 240 Vac Power Open / Power Close Damper Motor



9. Ducting Information

Good duct design and sizing are essential to every Brivis Central Heating system. Use the Brivis "SuperSizeGuide" and technical data within this manual for the best results and follow these guidelines:

- Ductwork should be well insulated and airtight and have a minimum insulation rating of R1.0 (R1.5 in some areas). Ensure that ducting complies with the Building Code of Australia.
- The ducting should be well fastened to pops, BTO's, outlet boots and neck adapters adequately with duct tape, in accordance with AS 4254 and HB 276.
- 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.
- If the system uses high level outlets (e.g. ceiling diffusers), then the return air inlet should be at a low level. Ceiling systems with a high level return air may result in reduced performance.
- For SP4, SP5 & SP6 heaters, access to the ductwork must be provided for general maintenance and service to the supply air thermistor sensor.

Note: It is important that the ducting should be well insulated. It is mandatory under building codes to install insulated, fire rated duct.

If a filter is fitted to the return air grille, it should be easily accessible for regular cleaning.

Table 2 gives the minimum recommended return air grille sizes for each model heater.

Minimum Recommended Return Air Grille Selection Chart

Table 2.

Model	Without Filter		With Filter	
	Grille Size (m ²)	Example of Size (mm)	Grille Size (m ²)	Example of Size (mm)
SP615/SP623/SP521/BX520/ SP415/SP421	0.26	(400x650)	0.39	(400x1000)
SP623-XA/SP521-XA	0.28	(400x700)	0.42	(400x1050)
SP630/SP530/SP435/BX526	0.36	(400x900)	0.54	(400x1350)
SP630-XA/SP530-XA	0.38	(400x1000)	0.57	(400x1450)
SP430	0.31	(400x800)	0.47	(400x1200)

Note: Grille sizes are based on maximum airflow with typical Egg-Crate Grille type. For all other types, consult grille manufacturer's specifications.

For example a grille with a free ventilation opening measuring 400mm x 750mm, the grille size is 0.4m x 0.75m = 0.3m². This grille would be suitable for a StarPro SP623-XA heater provided the grille does not have a filter fitted.

10. Outlet Guide

The outlet chart provides recommendations based on using the Brivis "SuperSizeGuide" or a system designed using accepted design principles. These figures also relate to typical size registers and diffusers used on domestic heating systems i.e. 300mm x 100mm floor registers and 150mm round ceiling diffusers, with 150mm ductwork connection. For all systems, a minimum number of outlets must remain fully open (this includes both the outlet grille and the damper in the duct) if the heater is to operate properly without overheating. Similarly, ceiling outlet systems have a maximum number of outlets that can remain fully open, to ensure that the velocity through each outlet is sufficient. These maximum ceiling outlet figures relate to fully open outlets, however, the system will operate efficiently with more outlets open, if it has been properly balanced. There is no maximum number for floor outlets, so the following chart below lists the typical number of floor outlets for each heater model.

The outlet chart has been divided up into four columns as follows:

- A. The maximum number of outlets that should remain fully open for a ceiling outlet system.
- B. The typical number of outlets for a floor outlet system.
- C. The minimum number of outlets that should remain fully open for floor/ceiling systems where the system does not have zone dampers installed or, where there are zone dampers but these zones are not operated from a Brivis Networker Thermostat (e.g. wall switches).
- D. The minimum number of outlets that should be fully open for floor/ceiling systems where the system has zone dampers installed, and these zones are being operated from a Brivis Networker Thermostat using the heater's on-board zone relays or a Network 516 module. Systems fitting this description are deemed to have Adaptive Zoning active, hence minimum outlet numbers are reduced. Where it shows half figures such as 1.5, it is possible to operate with 1 outlet fully open, and another outlet half closed (such as a bathroom). Refer to Section 12 for balancing guidelines.

Note: Column D should not be used unless the Brivis Networker has been configured for Adaptive Zoning only. If not refer to column C instead. For a Brivis ZonePlus configuration please refer to the Brivis ZonePlus Installation Manual.

Note: For SP5 & SP6 Internal models, the normal return air pop configuration is side entry, but can be changed to the end of the fan cabinet if necessary. If this is done, a total of two outlets must be removed from the allowable maximum number of outlets.

IMPORTANT NOTE – RETURN AIR CONNECTION AT THE END OF THE UNIT (REAR ENTRY)

On applicable models, connecting the Return Air duct to the end of the unit (rear entry) will result in reduced air flow – for example, when using a Brivis Lay Down Kit. In this situation:

- The total number of outlets normally permitted for a heating system shall be reduced by 2 (refer to the outlet register chart located on page 20).
- DO NOT USE this configuration in Add-On Cooling applications, unless you ensure Minimum Recommended Airflow required for the cooling is maintained.

Outlet Register Chart

Table 3.

System Model	Airflow Rate (L/s)	A Maximum Ceiling	B Typical Floor	C Minimum Floor/Ceiling	D Minimum Floor/Ceiling (Adaptive Zoning Only)
SP5 & SP6 Heaters					
External					
SP630EN	850	15	23	7	3
SP630EN-XA	985	17	23	7	3
SP530EN	960	16	23	7	2
SP530EN-XA	965	17	23	7	2
SP623EN	715	12	12	5	2
SP623EN-XA	755	13	12	5	2
SP521EN	700	12	12	5	1.5
SP521EN-XA	740	13	12	5	1.5
SP5 & SP6 Heaters					
Internal					
SP635IN	1130	17	24	7	2.5
SP535IN	1160	17	24	7	2.5
SP630IN	1065	16	22	7	3
SP630IN-XA	1095	17	22	7	3
SP530IN	1080	17	24	7	2
SP530IN-XA	1140	17	24	7	2
SP623IN	765	12	13	5	2
SP623IN-XA	795	14	13	5	2
SP521IN	785	12	13	5	1.5
SP521IN-XA	830	14	13	5	1.5
SP615IN	695	12	13	5	2
SP4 Heaters					
Universal					
SP415UN	620	10	12	6	2
SP421UN	621	10	12	6	2
SP430UN	918	16	23	7	2
SP435UN	1004	17	23	7	3
Buffalo BX5					
External					
BX520EN (300mm)**	605	10	12	5	2
BX520EN (350mm)**	667	12	13	6	2
BX526EN (350mm)**	944	16	23	7	2
BX526EN (400mm)**	1011	17	23	7	3

** Model and basebox duct size

Note: Airflow figures are based on a total static pressure of 125 Pa for 30 & 35 models and 50 Pa for other models.

Note: Brivis Network 516 modules can only be used on heaters manufactured after 1 Mar 2010.

11. Thermostat Installation

All Brivis heating systems can be controlled by various Brivis Thermostats, each explained in detail below. A Thermostat inside the house is wired to the control module in the heater. The Thermostat monitors the temperature in the house, and switches the system ON and OFF in order to maintain a set temperature. So it must be positioned correctly.

- **Install in the living area:** It is important that the Thermostat is placed in a position that will provide the most accurate reading of the temperature, i.e. in the area most often used for family living.
- **Attach on an internal wall:** The temperature difference on an external wall can also affect it, so always mount it on an internal wall. Keep the hole in the wall for the wiring as small as possible to prevent draught from within the wall cavity affecting the temperature setting.
- **Get the height right:** The Thermostat should be approximately 1500mm above the floor level.

- **Avoid hot spots:** Keep it as far away as possible from warm air outlets, radiation from the sun, fireplaces, radio and television sets or warm pipes and duct running in the wall behind it.
- **Avoid cold spots:** Keep it as far away as possible from draughts caused by doorways, stairwells, windows or return air inlets.
- **Avoid dead spots:** Keep it away from areas of less than normal air circulation e.g. behind doors, in alcoves or corners.
- **Interference from other electrical connections:** Ensure the Thermostat and wiring are kept away from other electrical, data and antenna cables. This includes keeping the Thermostat's wiring away from the spark igniter loom within the heater's cabinet.
- **Use the right cable:** Ensure the cable is 0.75mm² in cross section and less than 100m in length.

Note: Do not install the wiring with the power turned on, as the fuse may blow, which would not be covered under warranty.

Note: Only use Brivis Thermostats, as any failure relating to a non-Brivis Thermostat will not be covered under warranty.

11.1 Brivis Networker Installation

Brivis Networkers can be wired directly to StarPro heaters. Refer to Brivis Networker Advanced Programming Manual for additional programming information not provided in this manual.



Wiring Connection at Brivis Networker

The Brivis Networker backing plate has 4 terminal points for the connection of control wires. When connecting, use only the two top terminals marked TW1 and TW2 or the two bottom terminals also marked TW1 and TW2. Never use a combination of terminals when connecting to a single appliance. For example, a Brivis Networker operating a Brivis cooler and a Brivis heater would have the two bottom terminals connected to the heater and the two top terminals connected to the cooler.

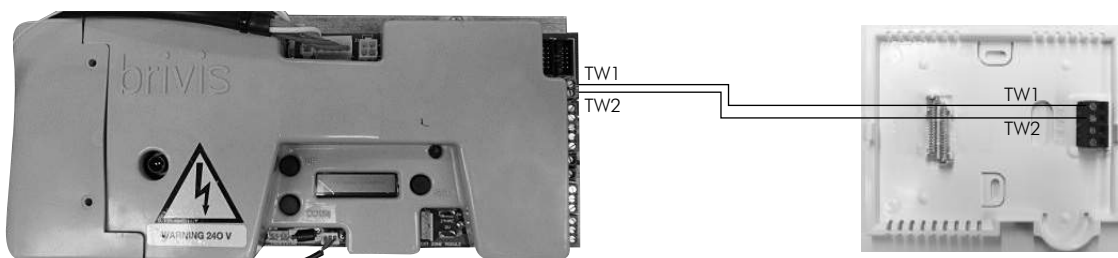
Note: When there is more than one Brivis appliance connected to a Brivis Networker or multiple Brivis Networkers on a system, always ensure that the TW1 and TW2 polarity is correct at both ends of the wire cable.

Wiring a Brivis Networker to a StarPro heater

- Run a twin wire cable (i.e. figure 8 cable - 0.75mm²) from the heater to the Brivis Networker.
- Remove the backing plate from the Brivis Networker by unclipping it at the sides.
- Draw the wires from the wall cavity and feed them through the opening in the backing plate.
- Connect the cable to the terminal connections on the backing plate before mounting it on the wall and re-assembling the Brivis Networker.
- Connect the other end of the cable to the terminals marked TW1 and TW2 in the heater's electronic control module, refer Diagram 19.

Note: If connecting multiple heaters see "Setting up Multiple Heaters on the Brivis Networker" on page 22.

Diagram 19.



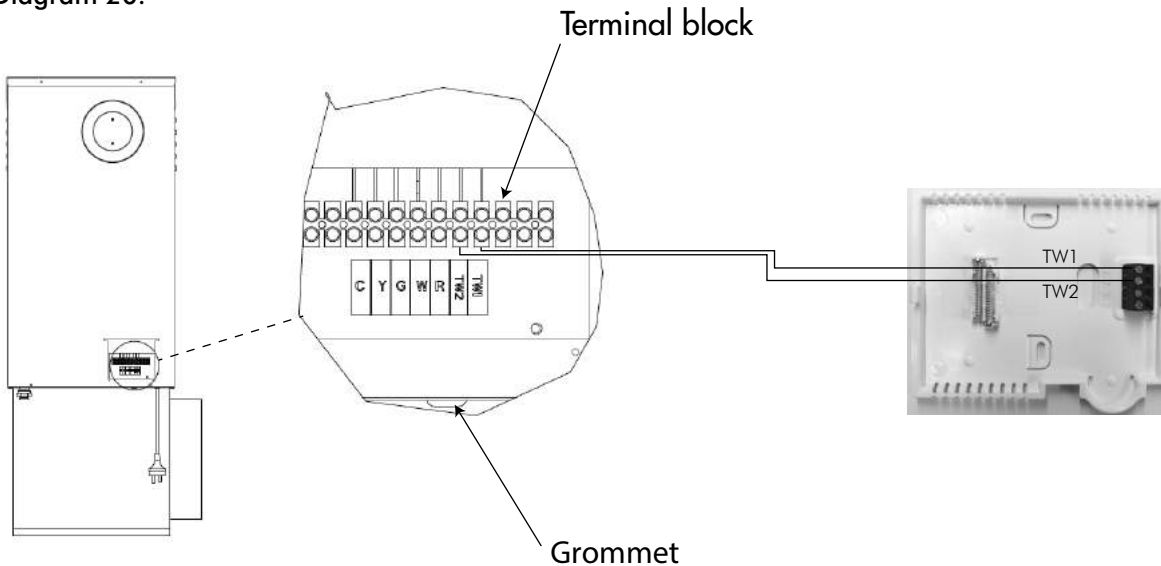
StarPro Control Module

Brivis Networker backing plate

Wiring a Bravis Networker to a Buffalo BX5 heater

- Run a twin wire cable (i.e. figure 8 cable - 0.75mm²) from the heater to the Bravis Networker.
- Remove the backing plate from the Bravis Networker by unclipping it at the sides.
- Draw the wires from the wall cavity and feed them through the opening in the backing plate.
- Connect the cable to the terminal connections on the backing plate before mounting it on the wall and re-assembling the Bravis Networker.
- At the heater access the terminal block by removing the cover panel.
- Feed your cables through the grommet at the base of the unit.
- Connect to TW1 and TW2 on the heater's terminal block, refer Diagram 20.

Diagram 20.



Setting up Multiple Heaters on the Bravis Networker

To ensure each heater is configured correctly to the Bravis Networker, each heater must be wired to the network in parallel.

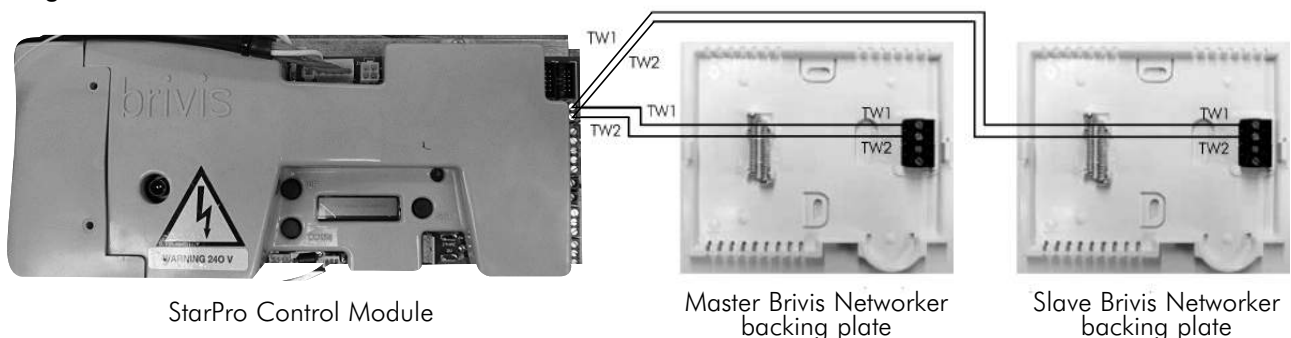
Each heater must be given a different identification number (address), starting at Number 1. To change the identification number, see section 12.1 Heater Control Settings" on page 25.

Each heater must then be assigned to a zone. Refer to the Bravis Networker Advanced Programming Manual for further details.

Setting up Dual Bravis Networkers on a System

It is possible to install two Bravis Networkers on a single StarPro heater to allow for dual control. This is particularly useful where Adaptive Zoning is present, to allow for independent zone control from each Bravis Networker. For example, one Bravis Networker can control one zone, while the other Bravis Networker can control another zone. To connect two Bravis Networkers to a system they must be wired in parallel, not in series. Adjustments to the heaters settings can be made from either Bravis Networker, but settings are common to both Bravis Networkers. If an adjustment is made on one Bravis Networker it is immediately reflected on the other Bravis Networker.

Diagram 21.

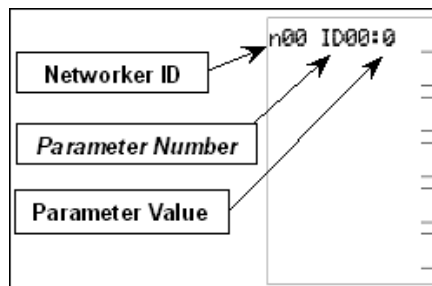


- Mount the Bravis Networkers in their ideal locations and connect the wiring as shown in the diagram above.
- Determine which controller will be the Master and which one will be the Slave. There must be a Master and Slave Bravis Networker for a dual Bravis Networker system to operate correctly. All Bravis Networkers come set as Masters by default, which means only the Slave Bravis Networker needs to be configured.

Note: A Master Bravis Networker can be identified by the word "Clock" beside key 5 (while the Bravis Networker is in the off position). Refer to the Bravis Networker Advanced Programming manual for further information if required.

- Press key 5 on the proposed Slave Bravis Networker, and the screen will display the message "Clock setting mode". Ensure that the clock is flashing on the display before proceeding.
- Press and hold keys 2 & 4, until the screen displays the message "Installer parameter access".
- After the message has finished, push the Mode key until the screen displays - n01 ID00:1 at the top (see Diagram 22).

Diagram 22.



- Turn the rotary dial to change the parameter value displayed at the top right of the screen to the number required for the Slave. (Master = 1, Slave = 2)
- Once this parameter value has been set, push the ON/OFF button to exit this installer set-up program.

This Bravis Networker will then become the Slave Bravis Networker, and the installer parameters will no longer be accessible from this Bravis Networker. The Master Bravis Networker must then be used to access the installer parameters.

Note: All Bravis Networkers come configured as Masters by default. Two Masters cannot be connected to one system otherwise the system will not function properly. Also if both Bravis Networkers are set as Slaves, the Bravis Networkers will lock out and will not be accessible.

Changing a Slave to a Master Bravis Networker

- Use this method if altering a current installation or if both Bravis Networkers have been set to Slave by mistake.
- Remove the Bravis Networker off the backing plate so that the controller is powered down.
- Press and hold keys 3 & 5, then place the Bravis Networker on the backing plate ensuring keys 3 & 5 are still depressed.
- Continue holding keys 3 & 5 for five seconds after the control is placed on the backing plate.
- After holding keys 3 & 5 for five seconds, release the two keys. The screen should now scroll this message "Set this Bravis Networker's address!" If this message does not appear please repeat the resetting procedure.
- Now the parameter value can be set to "1" by rotating the dial, which will make this Bravis Networker a Master.
- Push the on/off button to exit.

Note: For more information on the topics listed below please refer to the **Bravis Advanced Programming Manual**.

- Networker Installer Parameters
- Adaptive Zoning
- Controlling multiple appliances with one Networker
- Grouping multiple appliances into zones using one Networker

For the installation of Bravis ZonePlus control systems please refer to the Bravis ZonePlus Installer's Manual.

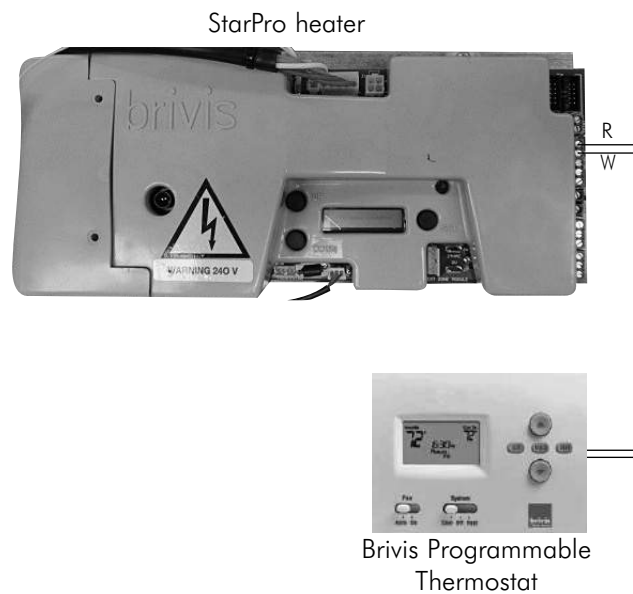
11.2 Brivis Programmable and Brivis Manual Thermostat Installation

Brivis Programmable and Brivis Manual Thermostats can be wired directly to a StarPro heater.

Wiring the Brivis Programmable Thermostat (Part No. B019873)

- Run the appropriate wiring from the heater to the Thermostat.
- Remove the backing plate from the Thermostat. Draw the wires from the wall cavity and feed them through the centre opening of the backing plate. Then mount the backing plate on the wall before making the wiring connections.
- Connect terminals R and W on the heater to terminals R and W on the Thermostat.
- For fan only operation - Connect terminal G on the heater to terminal G at the Thermostat. This will allow for fan only operation to circulate air through the house.
- Insert batteries and mount Thermostat onto the backing plate.
- Refer to the Installation Guide and Operating Manual supplied with the Brivis Programmable Thermostat.

Diagram 23.



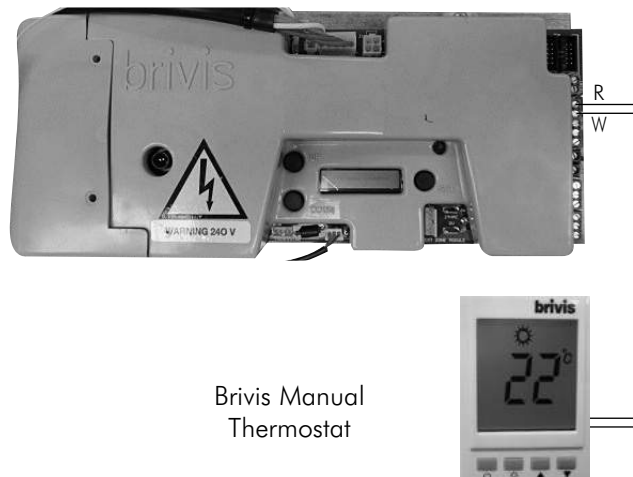
Note: For a BX5 unit connect the thermostat wiring at the terminal block, refer Diagram 20.

Wiring the Brivis Manual Thermostat (Part No. B022880)

- For manual Thermostats remove the front cover and mount the Thermostat in a suitable position, following the instructions supplied with the control. Ensure the batteries are correctly installed.
- Make wiring connections (see diagram), then mount level on the wall before replacing the front cover.
- Connect terminals R and W at the heater to terminals A and B on the Thermostat.
- For fan only operation - Wire a switch in circuit between the R and G terminals at the heater.
- Refer to the Installation Guide supplied with the Manual Thermostat.

Diagram 24.

StarPro Heater



Note: For a BX5 unit connect the thermostat wiring at the terminal block, refer Diagram 20.

Note: Only use alkaline batteries in a manual Thermostat. Other types can cause unwanted operation of the heater when the batteries reach the end of their life.

12. Commissioning and Control Settings

All Brivis heaters have been factory tested, but should be commissioned and adjusted in accordance with the following instructions to ensure efficient and optimal heating performance.

Remember:

- Switch the mains power OFF before touching any wiring.
- All these steps must be carried out by a qualified tradesperson.
- If the heater cannot be adjusted to operate in accordance with these instructions, then contact the Brivis Customer Service Centre (contact details are on the back cover of this manual).

12.1 SP4, SP5, SP6 & BX5 Heater Control Settings

The heater module has 3 push buttons. On the right is a SET button and on the left are the UP and DOWN buttons.

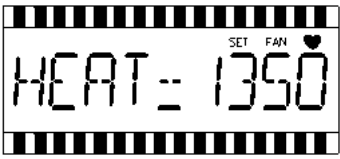




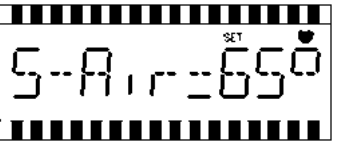


- To change an installer set-up parameter, press and quickly release the SET button, the word "SET" should now appear on the top line of the screen.
- The UP and DOWN buttons may now be used to increase or decrease the value on any setting displayed on the screen.
- By pressing the SET button the display will cycle through the installer set-up parameters in the order on the following page.

Diagram 25.



Installer Parameters - SP4, SP5, SP6 & BX5 Control LCD Display Settings

Table 4.

No.	DISPLAY APPEARANCE	DESCRIPTION														
1		HEATING MAXIMUM FAN SPEED SETTING The number displayed is the fan's default fan speed setting i.e. the RPM the fan is set to run at for normal heating operation. It can be adjusted between a maximum of 1350 and a minimum of 500, and should be set to meet the installation's airflow requirements. It is recommended to use a fan speed between 1000 to 1350, as lower speeds are more likely to result in overheat conditions if the system has not been balanced correctly.														
2		COOLING MAXIMUM FAN SPEED SETTING This displays the RPM the fan is set to run at for normal refrigerative cooling. It can be adjusted between a maximum of 1350 and a minimum of 500.														
3		HEATING-ZONING MINIMUM FAN SPEED SETTING This is the minimum RPM the fan will operate to with the maximum outlets closed due to the Networker zoning in heating mode. The default is 950, but it can be adjusted between 500 and 1350.														
4		HEATER IDENTIFICATION NUMBER (Do not alter unless multiple heaters are installed) This parameter is used to identify each heater in priority order when more than one heater is connected on the system.														
5		CIRCULATION FAN OPERATION This displays the RPM of the fan motor in circulation mode for fan operation between heating/refrigerative cooling cycles. E.g. when the system achieves the set room temperature and is cycled off by the thermostat, the heater's fan will continue to operate, to circulate the room air.														
6		SUPPLY AIR THERMISTOR SET POINT TEMPERATURE This displays the temperature the heater's gas valve will modulate to maintain. The default will vary across the different models, but it can be adjusted between 45° C and 70° C. This should be set to provide a comfortable outlet temperature.														
7		ZONE / REFRIGERATION MODE (NETWORK 516 MODULE MODE AND ON-BOARD RELAYS) This is the selection mode for incorporating adaptive zoning and refrigeration onto the system. <table border="1" data-bbox="614 1388 1364 1758"> <thead> <tr> <th>Parameter Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>No zone or add-on refrigeration</td> </tr> <tr> <td>1</td> <td>On-board or Brivis Network or 516 Module relays can be used for Heating only zone control (up to 2 with on-board or 4 with Module)</td> </tr> <tr> <td>2</td> <td>On-board or Brivis Network or 516 Module relays can be used for zone control (up to 2 on-board or 3 with Module) for Heating and Add-On refrigeration.</td> </tr> <tr> <td>3</td> <td>Brivis Network 516 zone control (up to 3), for Heating only.</td> </tr> <tr> <td>4</td> <td>Brivis Network 516 zone control (up to 2), for Heating and Add-On refrigeration.</td> </tr> <tr> <td>5</td> <td>Brivis Network 516 zone control (up to 4), for Heating. Add-on refrigeration Control on-board</td> </tr> </tbody> </table>	Parameter Value	Description	0	No zone or add-on refrigeration	1	On-board or Brivis Network or 516 Module relays can be used for Heating only zone control (up to 2 with on-board or 4 with Module)	2	On-board or Brivis Network or 516 Module relays can be used for zone control (up to 2 on-board or 3 with Module) for Heating and Add-On refrigeration.	3	Brivis Network 516 zone control (up to 3), for Heating only.	4	Brivis Network 516 zone control (up to 2), for Heating and Add-On refrigeration.	5	Brivis Network 516 zone control (up to 4), for Heating. Add-on refrigeration Control on-board
Parameter Value	Description															
0	No zone or add-on refrigeration															
1	On-board or Brivis Network or 516 Module relays can be used for Heating only zone control (up to 2 with on-board or 4 with Module)															
2	On-board or Brivis Network or 516 Module relays can be used for zone control (up to 2 on-board or 3 with Module) for Heating and Add-On refrigeration.															
3	Brivis Network 516 zone control (up to 3), for Heating only.															
4	Brivis Network 516 zone control (up to 2), for Heating and Add-On refrigeration.															
5	Brivis Network 516 zone control (up to 4), for Heating. Add-on refrigeration Control on-board															
8		COOLING - ZONING MINIMUM FAN SPEED SETTING This is the minimum RPM the fan will operate to with the maximum outlets closed due to the Networker zoning in cooling mode. DO NOT SET BELOW 1000														

Note: All settings are saved automatically as you leave the set up mode. To leave the set up mode and return to normal operation, either leave the control untouched for 20 seconds, or keep pressing the SET button until the normal operation screen resumes, or press and hold the SET button for 3 seconds.

12.2 SP4, SP5, SP6 & BX5 Commissioning Instructions

With a correctly designed and installed ducted system, generally, the balancing damper in an outlet should be initially set as follows:

- Living areas 100% open
- Bedrooms 50% open
- Bathrooms, ensuite & Laundry: 25% open

Initial Ignition and Gas Inlet Pressure Check

- Attach a manometer to the inlet gas pressure test point on the gas valve (refer to label on gas valve for location) after unscrewing the captive screw 3 full turns anti-clockwise (DO NOT remove the screw completely).
- Ensure that all air has been purged from the gas piping, and then turn on the gas supply at the supply tap.
- Turn on the 240 V power supply at the power point.
- Go to the Thermostat and turn it on and temporarily set the temperature setting to maximum for commissioning purposes (see the Owner's Manual for operating instructions). Ensure that all zones (if any) are open.
- Go back to the heater and wait for the heating module screen to display "Heat = ##-##", which is a measure of the supply air temperature to one decimal place (for example the diagram below shows 23.0° C).



- You should also be able to see the burners operating; a small flame symbol will be visible on the LCD bottom line along with the words STAT (Thermostat is calling for heat), VAC (vacuum pressure is sufficient for combustion), and FAN (once the fan begins to operate). Note that the heater may not ignite on first attempt due to the presence of air in the gas line. Ignition re-attempts will be repeated automatically.
- Initially the fan will only be running at a low speed (approx 500 RPM) and then begin to ramp up to the "HEAT" set fan speed.
- Measure the gas inlet pressure after the heater has been operating for at least 1 minute. Ensure the gas pressure does not fall below 1.1 kPa for NG models at all times (2.7 kPa for LPG models) **while all other gas appliances are operating at their full capacity**. If the reading is below minimum figures stated above, then the incoming gas supply is inadequate (check supply pipe for blockage, and check pipe sizing and gas meter sizing).
- Remove the manometer after the heater has been set up and switched off, and re-tighten the inlet gas pressure test point screw.

Note: The gas valve should not be adjusted under any circumstances.

If everything seems to be functioning correctly up to this point, please continue on with the commissioning procedure. SP4, SP5, SP6 & BX5 heaters will automatically reattempt ignition a few times should the ignition process be unsuccessful (IGN_RTRY will be displayed on the LCD), so give the heater time to rectify itself. It may simply be purging any remaining air through the gas components. In any event, the heater will cease ignition re-attempts and lock out with an error code if there is any problem that it can't rectify itself. If the heater does lock out with an error code, please make a note of the code then reset the heater (see the Owner's manual).

Heater Fan Speed and Temperature Settings

The next part of the procedure requires you to set the heating settings to suit the installation. The settings are critical to provide adequate and efficient heating for the installation.

- Ensure that the Thermostat is still set much higher than the actual room temperature.
- Set the fan speed to suit the installation, adjusting it to provide sufficient but not excessive airflow. Remember, typically the fan speed is less for floor outlet systems than for ceiling outlet systems. With down-vent type ceiling diffusers, airflow in main living areas should be able to be felt down near floor level.
- You should not need to adjust the thermistor set temperature. This setting should only be adjusted if the system is NOT achieving the following temperature rise; ceiling outlets: 25° to 30° C and floor outlets: 35° to 40° C. This temperature rise is measured from the closest outlet to the heater, minus the return air intake temperature. (i.e. with a return air intake temperature of 20° C the temperature at the closest floor outlet to the heater should not register more than 60° C). This temperature rise should never exceed 45° C.

If the desired temperature rise is too low or too high the following adjustments may be required.

Increase the room set temperature to maximum to turn the heater on and watch the thermistor temperature until it stabilises.

Ideally, the fan speed setting should be sufficient for the heater to operate at full capacity, when all of the outlets are open and balanced as described previously. The gas rate will then be maintained at the maximum rate during the initial heating cycle, and will only decrease (modulate) the gas rate once the supply air temperature has been reached on subsequent heating cycles. This will initially allow the heater to increase the house temperature at a faster rate to maintain the customer's desired temperature level.

So, with a floor outlet system, which usually requires a low fan speed, you may have to increase the thermistor set temperature to achieve a 35° to 40° C rise and avoid modulation. If the heater still reaches the thermistor set temperature or the rise is greater than 40° C, increase the fan speed.

With a ceiling outlet system, which usually requires a higher fan speed, it is unlikely the heater will reach the thermistor set temperature and modulate. However, if it does, increase the thermistor set temperature and/or increase the fan speed to achieve a 25° to 30° C rise and avoid modulation. If the temperature rise is above 40° C investigate the reason:

- Small number of outlets on the system.
- Restrictive or poorly balanced ductwork.
- Oversized heater for the installation.
- Inadequate fan speed or thermistor set point.

Systems that have zone damper motors that are being operated from the Brivis Networker (Adaptive Zoning) will require the zone minimum fan speed to be set to suit the duct system. This ensures optimum performance from the Adaptive Zoning functions within the heater. To do this:

- Go to the Brivis Networker and close all but one zone. If the system does not have a common zone, leave only the zone key that operates the least number of outlets turned ON (ensure this zone does not have less than the minimum number of outlets required for the heater size). If the system has a common zone then all zone keys can be turned OFF.
- Adjust the EHTG fan speed setting to provide the required amount of air from the remaining open outlets. Ensure that the temperature rise does not exceed 45° C. Do not adjust the thermistor set temperature while setting up the EHTG fan speed.

Final Checks (SP4, SP5, SP6 & BX5 Heaters)

- Check the temperature rise through the heater. The temperature of the warm air at any outlet should not be more than 45° C above the return air temperature. If it is, the heater will be approaching an overheat situation.
- Check that the fan continues to run while the gas burner is operating.
- Check that the fan operates in fan only mode, by operating the Brivis Networker in fan only mode (see Owners Manual).
- Ensure the required gas inlet pressure is supplied at all times during the heater's operation (this should be with all other gas appliances operating at the same time and at their full capacity).
- Go back to the Thermostat and press the ON/OFF button to turn the heater off.
- Ensure that the burners and fan turn off, then turn off the gas supply at the supply tap and remove the manometer hose from the inlet test point on the gas valve.
- Tighten the inlet test point screw, turn on the gas supply at the supply tap and test for leaks using a soapy water solution or leak detector spray.
- Replace the heater's roof, and then proceed to instruct the customer on the correct operation of the system and assist the customer with filling in the Warranty Card details enclosed in the Owner's Manual.
- Issue any required documentation to the relevant people/authorities in regard to the installation of the heater, the gas connection and power supply. For example, a Certificate of Compliance and Certificate of Electrical Safety.

Note: Please assist the customer with filling in the Warranty Card Details in the Owner's Manual or via the Brivis website.

13. Technical Specifications

Table 5.

Model	Gas Input		Heat Output		Duct Connection Pop Sizes (mm)	Minimum Recommended Return		Airflow @ Total Static Pressure (L/s)				Weight (kg)	Fan motor		Total Maximum Current (A)	Maximum recommended Add-On Cooling capacity (kw)
	MJ/hr		kW			No filter (m ²)	With filter (m ²)	50 Pa	75 Pa	100 Pa	125 Pa		Power (W)	Current (A)		
	Max. Input NG	Max. Input ULPG	Max. Output NG	Max. Output ULPG												
SP615IN	58	N/A	14	N/A	300	0.26	0.39	695	665	630	595	57	315	4.2	6	10
SP623EN	86	86	23	23	300	0.26	0.39	715	690	660	630	67	315	4.2	6	13
SP623EN-XA	86	86	23	23	350	0.28	0.42	755	730	705	675	67	315	4.2	6	13
SP623IN	86	86	23	23	300	0.26	0.39	765	745	720	695	59	315	4.2	6	13
SP623IN-XA	86	86	23	23	350	0.28	0.42	795	775	755	730	59	315	4.2	6	15
SP630EN	110	110	29	29	350	0.36	0.54	960	930	890	850	89	650	4.3	6	18
SP630EN-XA	110	110	29	29	400	0.38	0.57	1075	1050	1020	985	89	650	4.3	6	18
SP630IN	110	110	29	29	350	0.36	0.54	1125	1110	1085	1065	72	650	4.3	6	18
SP630IN-XA	110	110	29	29	400	0.38	0.57	1165	1145	1120	1095	72	650	4.3	6	18
SP635IN	129	129	35	35	450	0.39	0.58	1205	1180	1155	1130	76	650	4.3	6	22
SP521EN	90	N/A	21	N/A	300	0.26	0.39	700	675	645	615	66	315	4.2	6	13
SP521EN-XA	90	N/A	21	N/A	350	0.28	0.42	740	710	685	655	66	315	4.2	6	13
SP521IN	90	N/A	21	N/A	300	0.26	0.39	785	765	740	715	53	315	4.2	6	13
SP521IN-XA	90	N/A	21	N/A	350	0.28	0.42	830	800	770	735	53	315	4.2	6	15
SP530EN	130	N/A	30	N/A	350	0.36	0.54	1055	1030	995	960	85	650	4.3	6	18
SP530EN-XA	130	N/A	30	N/A	400	0.38	0.57	1055	1030	1000	965	85	650	4.3	6	18
SP530IN	130	N/A	30	N/A	350	0.36	0.54	1170	1140	1110	1080	71	650	4.3	6	18
SP530IN-XA	130	N/A	30	N/A	400	0.38	0.57	1220	1195	1170	1140	71	650	4.3	6	18
SP535IN	150	N/A	35	N/A	450	0.39	0.58	1245	1215	1190	1160	72	650	4.3	6	22
SP415UN	65	N/A	14	N/A	300	0.26	0.39	620	585	555	530	65	315	4.2	6	10
SP421UN	90	N/A	21	N/A	300	0.26	0.39	620	585	555	530	65	315	4.2	6	10
SP430UN	130	N/A	30	N/A	350	0.31	0.47	1010	984	953	918	84	650	4.3	6	15
SP435UN	150	N/A	35	N/A	400	0.36	0.54	1098	1068	1041	1004	84	650	4.3	6	18
BX520EN (300mm)**	82	N/A	20	N/A	300	0.26	0.39	604	576	545	519	57	315	4.2	6	-
BX520EN (350mm)**	82	N/A	20	N/A	350	0.26	0.39	667	631	609	582	57	315	4.2	6	10
BX526EN (350mm)**	125	N/A	30	N/A	350	0.36	0.54	1026	998	972	944	67	650	4.3	6	-
BX526ENA (400mm)**	125	N/A	30	N/A	400	0.36	0.54	1099	1069	1042	1011	67	650	4.3	6	15

ULPG capacities are based on propane. All ULPG units are compatible with butane/propane blends.

** Model and basebox duct size

Note: Brivis reserves the right to change specifications without notice.

Notes

Notes

Notes



For all your Sales and Service enquiries call us on **1300 BRIVIS** (1300 274 847).

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