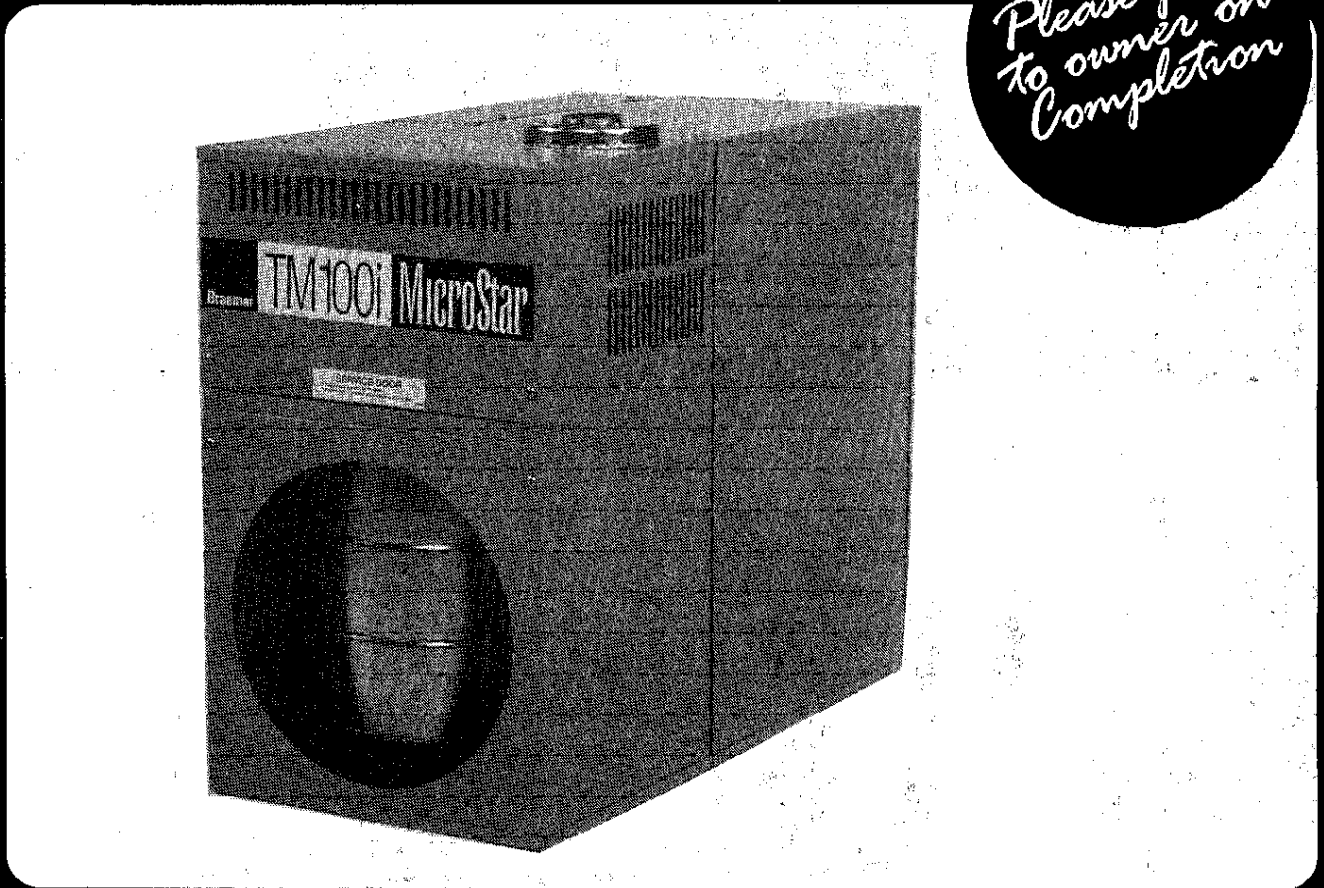


B

Installation, Operating & Service Instructions



Gas Ducted Heater

Model

TM 100i MicroStar

WELCOME
to THE
Comfort
ZONE

IMPORTANT



- DO NOT** Operate this appliance before reading the instruction booklet.
- DO NOT** Place articles on or against this appliance.
- DO NOT** Store chemicals, flammable materials or spray aerosols near this appliance.
- DO NOT** Operate with panels, covers or guards removed from this appliance.

**FOR INSTALLATION INDOORS ONLY
TO BE INSTALLED BY AN AUTHORISED PERSON ONLY**

Braemar Gas Ducted Heater TM 100i MicroStar

INTRODUCTION

Congratulations on choosing a Braemar Gas Ducted Heating Unit. Your Braemar Heater is built from the highest quality materials and is engineered to provide many years of trouble free performance. Please take a moment to read these instructions and keep them for future reference.

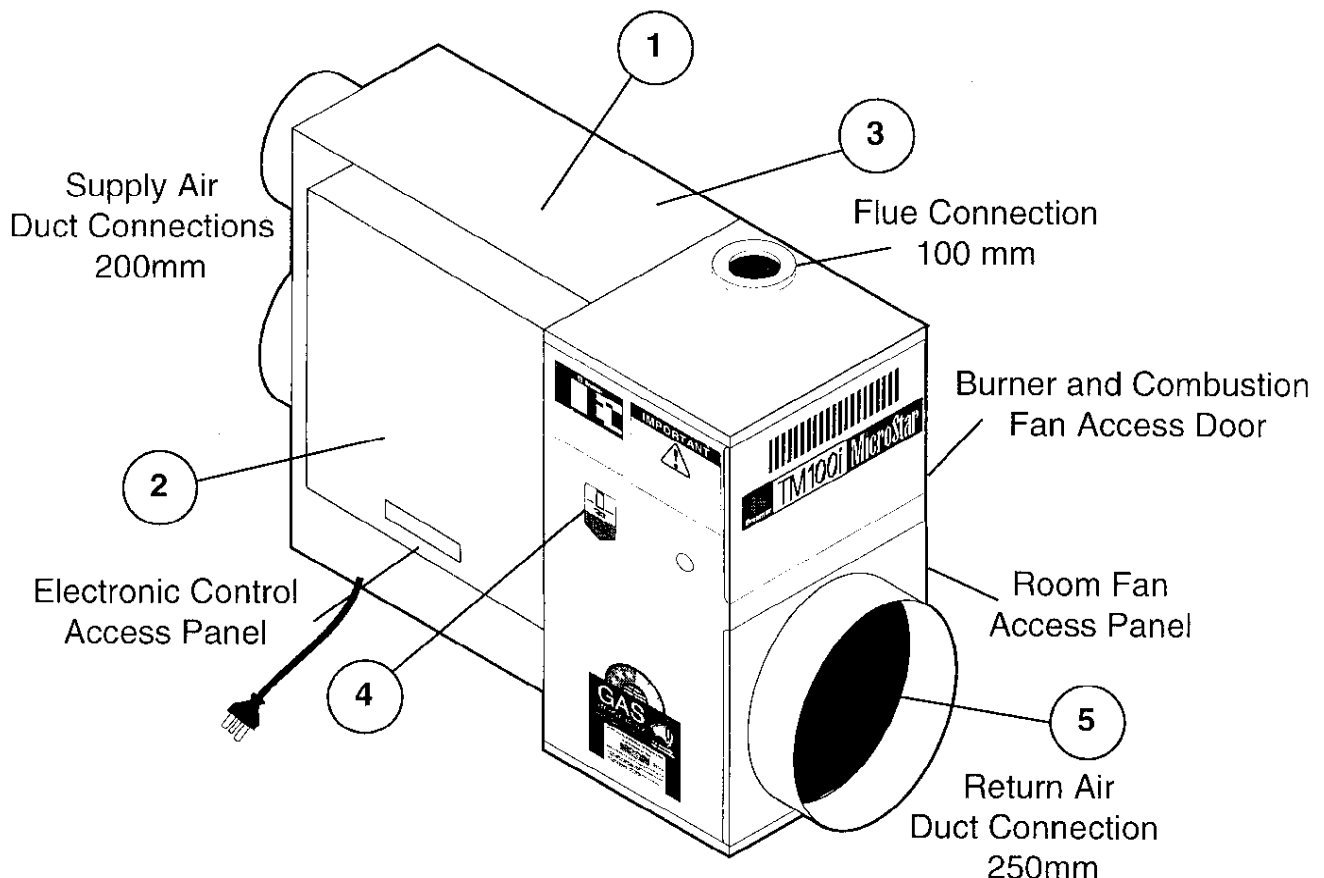
Delivery

The customer or installer, upon delivery of the heater should ensure that the model number and gas type is as requested. A data plate on the side of the heater details both the model number and gas type. Please check the heater and report any freight damage.

Features

1. Heat exchanger - 10 year warranty
2. Fully automatic electronic ignition
3. Insulated cabinet
4. Approved by the Australian Gas Association
5. Variable speed fan

Figure 1. TM 100i MicroStar Diagram



Designed and manufactured in Australia to exacting standards.

SPECIFICATIONS

Model No.	TM 100i MicroStar
Heat Input	40 MJ
Heat Output	9 kW / 33 MJ
Supply Air Size	2 @ 200 mm
Return Air Size	250 mm
Air Flow @ 75 Pa	230 Litre / Sec
Temperature Rise	30 ⁰ Celsius typical, (depending on duct resistance)
Blower Motor	330 Watts Input
Electrical Specification	240 Volt, 50 Hz, Single Phase
Electrical Connection	3 Pin Plug and Lead
Gas Inlet	1/2 inch BSP Female
Heater Weight	25 Kg

INSTALLATION INSTRUCTIONS

General

The heater should be installed in accordance with these instructions, local gas fitting regulations, municipal building codes, electrical wiring regulations, Australian Gas Association Installation Code AG601 and any other relevant statutory requirements.

This heater is to be installed only by an authorised tradesperson.

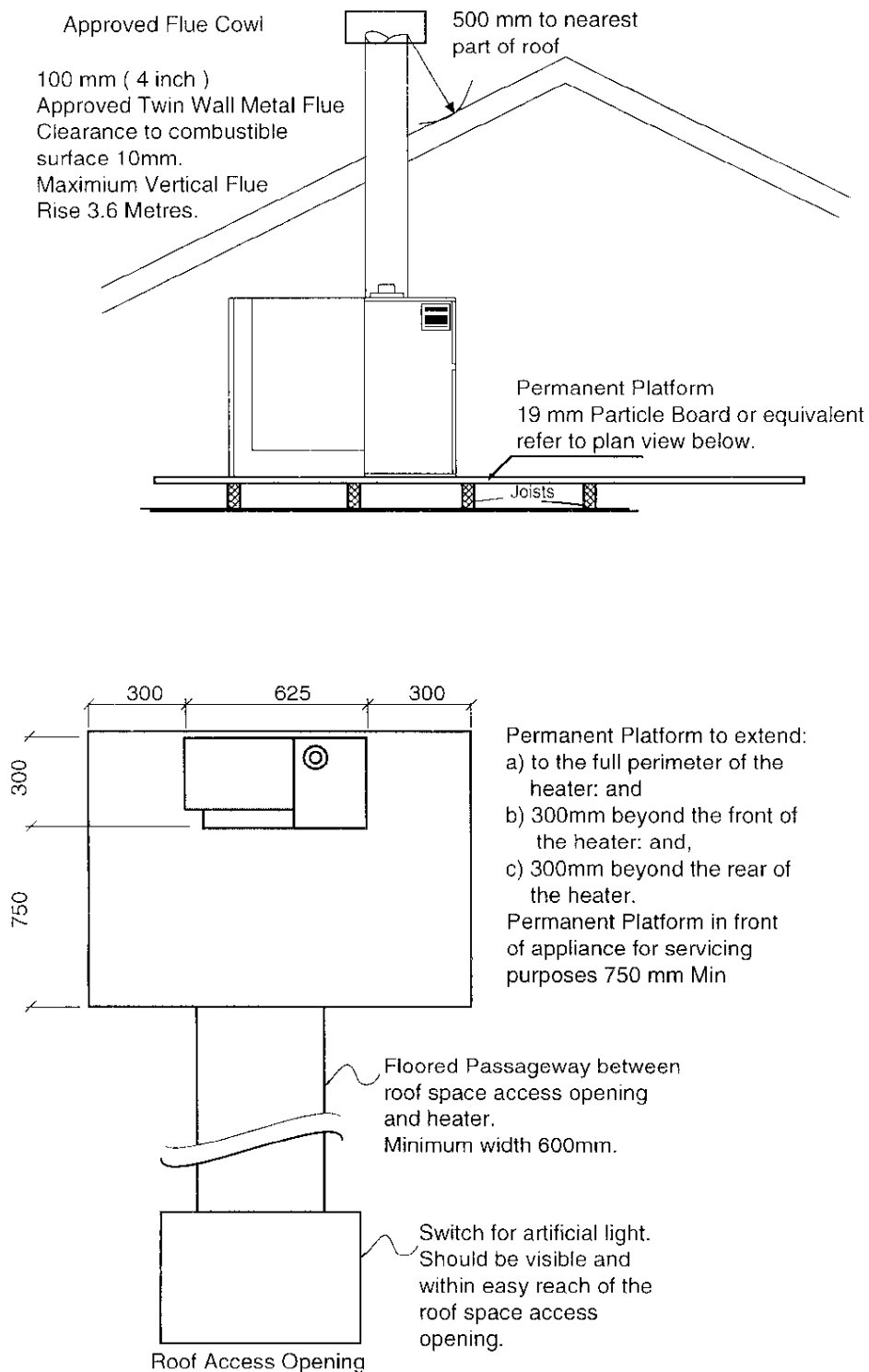
Your Microstar heater is designed **for indoor installation only** and should be located in the ceiling space or under the floor. This appliance is not suitable for installation downstream of an Evaporative Cooler. This appliance is not suitable for installation in a marine environment.

Ceiling Installation.

1. Inspect the roof space and check that it is strong enough to support the extra load. The heater should be mounted over a wall so that it is not being supported by the ceiling joists alone.
2. A service platform 750 mm wide should be provided adjacent to the heater.
A permanent walkway 600 mm wide from the ceiling access point to the service platform should be provided.
3. The heater must be mounted on a permanent platform. (19 mm particle board or equivalent)
The platform must extend to the full perimeter of the heater and 300 mm beyond the front and rear of the heater.
4. Permanent artificial lighting should be provided at the heater. The switch for the light should be at the ceiling access point.
5. The maximum recommended Vertical flue rise for a ceiling installed heater is 3.6 Metres.
6. The Approved twin wall metal flue must be terminated with an approved flue cowl.

Braemar Gas Ducted Heater TM 100i Microstar

Figure 2. Ceiling Installation Diagram



INSTALLATION INSTRUCTIONS

Under Floor Installation.

When installing your Braemar heater under the floor, the heater may be installed in the upright position (as for ceiling installation) or on its side with the flue outlet horizontal and electrical access panel facing up. Figure 3 details the side installation.

It is important that all aspects of safety are considered and that provision is made for easy service of the heater.

WARNING! - If heater is installed on its side, a minimum air gap of 50mm is required between the concrete base and the unit. Ensure that no blockage of the Flue Fan air intake holes located on the side of the unit can occur.

General Guidelines as per AG601

1. The minimum clearance required to locate an appliance is 650mm between the underside of the floor joists and the ground level. At all times a clearance of at least 300mm should be provided between the underside of the floor joists and any portion of the appliance or its components to allow for minimum flue rise and servicing.
2. Where the clearance between the underside of the the floor joists and the ground level is 1.2 metres or less, the heater should be installed within 2 metres of an access door.
3. Where clearance between the underside of the floor and the ground level exceeds 1.2 m, the heater may be installed at any distance from the access door, subject to the maximum flue length restriction.
4. The heater should be mounted on a level 50mm thick concrete base over the whole area of the base of the appliance. Provision must be made to drain any seepage or ground water away so that water cannot come in contact with the heater.
5. Permanent artificial lighting should be provided at the heater. The switch for the light should be at the access door.
6. Lateral Flues must be metal twin skin and shall not exceed 3 m in length with a minimum rise of 20mm per metre run. If location does not permit this, provision should be made for a duct to carry the flue gas vertically off the heater through the buiding to terminate in open atmosphere with an approved gas cowl.

These notes should be read in conjunction with AG106 Gas Installation Code.

Any additional enquiries on underfloor installations can be directed to your Braemar Service Centre.

Gas Pressure

Natural gas and LPG

The gas pressure is factory set at 0.87 kPa (3.5 " WG) for Natural gas and 2.75 kPa (11 " WG) for LPG.

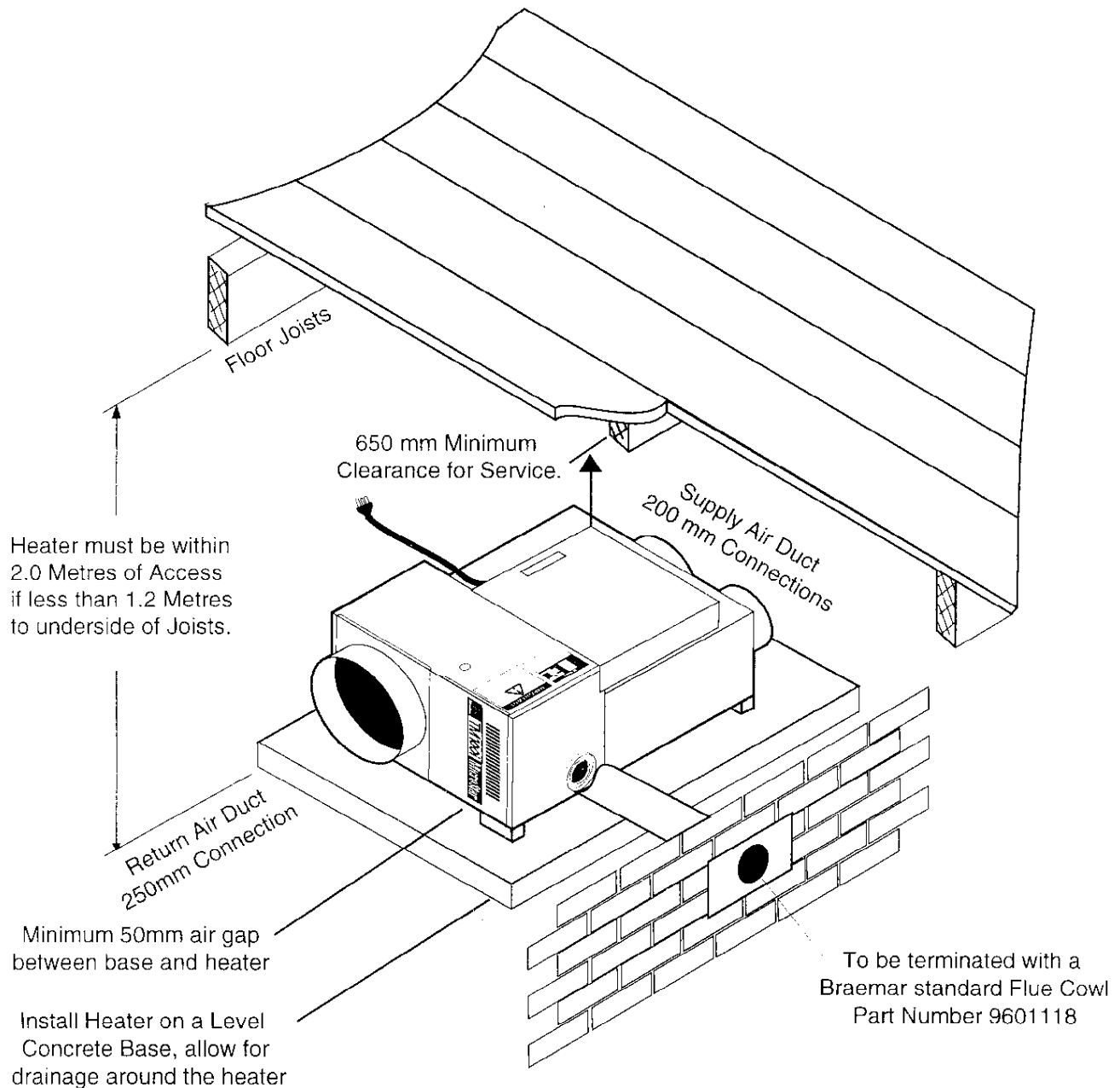
Should the pressure require field adjustment, remove the cover screw from the gas valve regulator, to expose the adjusting screw. Tightening the screw will increase the gas pressure, a small blade screwdriver is required to make this adjustment.

IMPORTANT

Adjustments to the gas pressure should not be made unless proper measuring equipment is available. Incorrect adjustment to the gas pressure could cause premature failure of the burner or the heat exchanger.

Braemar Gas Ducted Heater TM 100i Microstar

Figure 3. Under Floor Installation Diagram



Notes.

When installing a Braemar Microstar heater under floor, it is important that all aspects of safety are considered and provision made for ease of service of the heater. Artificial lighting must be provided to assist servicing. The light switch must be at the access door.

A Lateral metal twin skin flue from the heater shall not exceed 3.0 Metres in length with a minimum rise of 20mm per metre of run. If the location does not permit this, provision should be made for a duct to carry the flow vertically through the building to terminate in open atmosphere with an approved gas cowl.

WARNING! - If heater is installed on its side, a minimum air gap of 50mm is required between the concrete base and the unit. Ensure that no blockage of the Flue Fan air intake holes located on the side of the unit can occur.

INSTALLATION INSTRUCTIONS

Flueing the Heater.

Your Braemar heater must be flued to terminate in open atmosphere. The metal twin skin flue should be terminated with an approved Australian Gas Association anti downdraught gas cowl. Flue Size. TM 100i Microstar - 100mm (4 inch)

In Ceiling Installations. Position heater so that flue outlet is facing upwards.

Maximum Vertical Flue Length. 3.6 Metres

Under floor Installation. Position heater so that flue outlet faces the direction of the horizontal flue run.

Maximum Horizontal Flue Length. 3.0 Metres

Refer to Gas Installation Code AG601, Section 5.13 for full flueing requirements.

Electrical Connection.

The heater comes pre-wired with a 3 metre long lead and 3 pin plug. This will plug into a conventional 10 amp power outlet.

Thermostat Location.

The room thermostat should be located approximately 1.5 metres above the floor level.

Avoid placing the thermostat in draughty areas, or where hot spots could occur due to the radiation from the sun's rays, television sets, refrigerators or warm air outlets. Central hallways generally have no windows and retain the heat longer than surrounding rooms, this may mean that the thermostat does not sense the true temperature of the living area.

Check with the end user, the room/s that will be lived in most, this area will need to have the thermostat located central to it. Consideration should be given to all factors before deciding on the final location.

Thermostat Wiring.

The thermostat wiring is 24 Volt AC. Before connecting the thermostat wires to the heater, the testing loop wire MUST be removed. Failure to do so will cause damage to the thermostat.

Damper Connection (optional)

When a zone damper is required, a Braemar electronic thermostat Stock Code 9601085 should be ordered with pre terminated wiring loom. No additional switches are required.

Gas Connection.

Your Braemar heater is provided with a 15mm (1/2" BSP) Female socket for connection to the gas line. A gas cock must be provided adjacent to the heater for servicing. Before connecting the gas to the heater, **the gas line should be carefully purged** to remove any air and debris from the line.

COMMISSIONING, to be completed by the installer or the commissioning agent.

Heater Check.

No leaks in gas lines, do not use flame, use a soap solution.

Blower running as per specification. Controls correctly wired and adjusted.

Filters are clean and in place. Supply air registers and return air grille are open.

Check temperature rise across heat exchanger is the recommended 30°C, correct ductwork and balance airflows through registers as required.

Thermostat Check.

In suitable location, and level on wall.

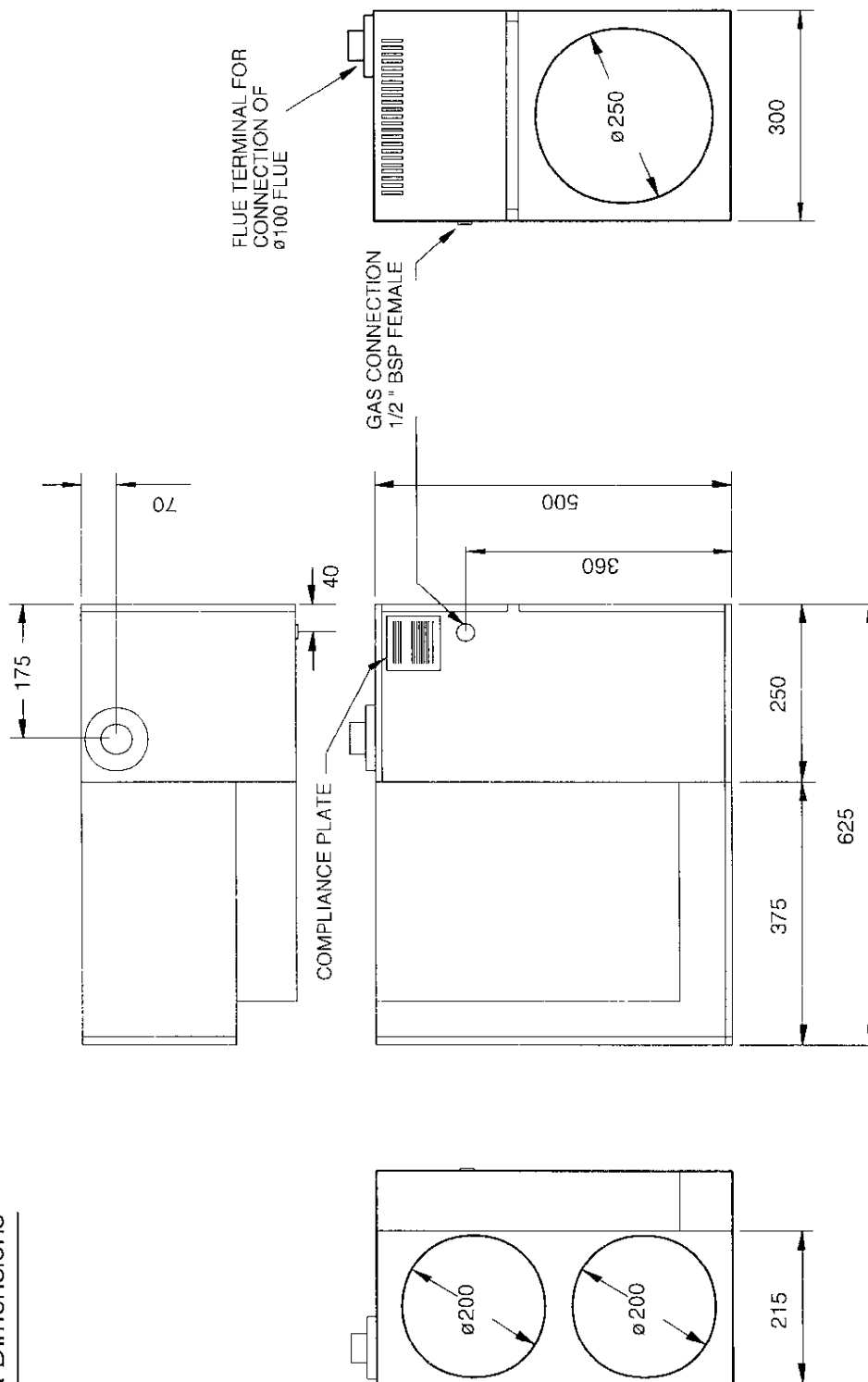
Correctly wired, with heat anticipator on thermostat set to 0.7 amps.

Run the heater through the full operating sequence detailed on page 11.

Explain the operation of the Thermostat and the Heater to the Owner.

Braemar Gas Ducted Heater TM100i MicroStar

Figure 4 Cabinet Dimensions



INSTALLATION INSTRUCTIONS

Ducting

Ductwork Connections.

The heater is supplied standard with a 250mm (10 inch) panel for connection of the return air starter and duct. A supply air panel with 2 x 200mm (8 inch) holes for connection of starters and duct is provided.

The heater has been designed to operate with either 2 x 200mm or 4 x 150mm outlets or 1 x 200mm and 2 x 150mm .

Supply and Return air connections are critical parts of the heater design and must not be modified in any way, all outlets must be open for the heater to function correctly.

Outlet Registers.

An outlet register must be provided in all areas to be heated, care should be taken to prevent cold spots , from too much draught or inadequate outlets.

Ductwork should be adequately supported and free from air leaks.

Volume dampers should be provided for proper balancing of the system.

Follow the recommended duct sizing guide on the following page, ductwork should be adequately sized to prevent backpressure on the heater. Inadequate duct may cause premature failure of the fan, or the heat exchanger.

Return Air Ducting

Return air should be drawn from a suitably heated area. The return air grille should never be located such that it can be accidentally blocked by placing clothing, carpet or the like over it. Where a filter is fitted to the return air grille, it should be cleaned fortnightly and replaced yearly. The fitting of filters in return air grilles may generate some noise. If a filter is fitted, the return air grille must be increased by at least 30 %.

Recommended Return Air grille sizes are as follows,

TM 100i Microstar, Grille No Filter	350mm x 350mm	250mm Duct connection
Grille with Filter	400mm x 400mm	250mm Duct connection

Add on Cooling.

Consult with the Braemar Customer Service Department before adding refrigerated cooling to the TM100i Microstar Heater.

INSTALLATION INSTRUCTIONS

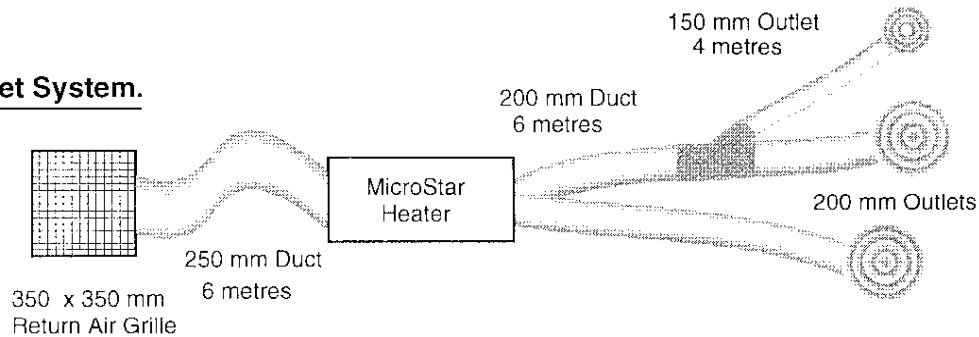
Ducting TM 100i Microstar

Ductwork Connections.

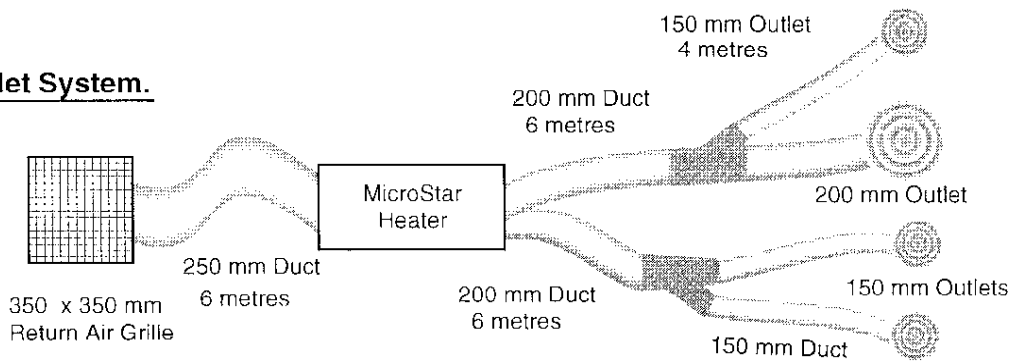
The heater is supplied standard with a 250mm (10 inch) panel for connection of the return air starter and duct. A supply air panel with 2 x 200mm (8 inch) holes for connection of starters and duct is provided.

The heater has been designed to operate in any of the following configurations.

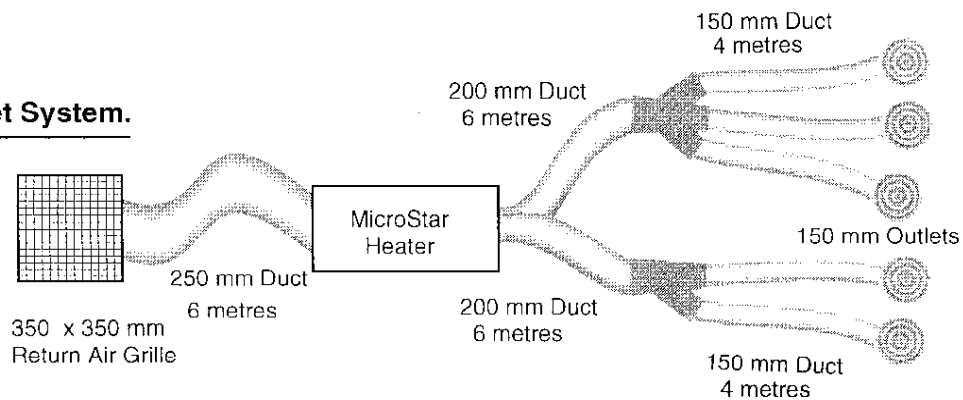
3 Outlet System.



4 Outlet System.



5 Outlet System.



Note: For return air duct runs greater than 6 metres, a 300 x 300 duct adaptor is available for connection of 300mm duct to the heater.

Return air grille should be increased to 400 x 400

Design air delivery is 230 L/sec @ 75 Pa. ie around 45 L/sec per 150mm outlet

All duct lengths shown are recommended maximum lengths.

Braemar Gas Ducted Heater

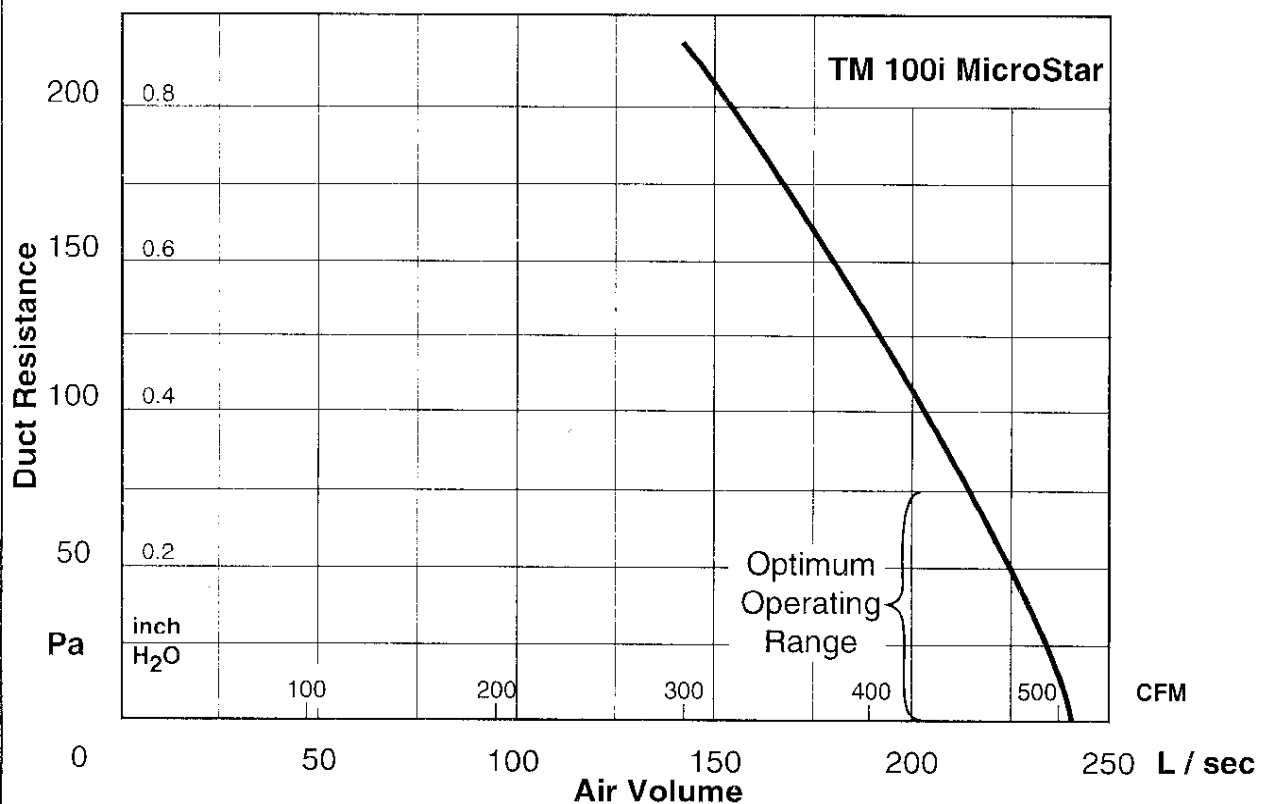
TM 100i MicroStar

Fan Performance

Specifications

Type: Centrifugal Blower, Double Inlet.
Motor: External Rotor Variable speed
Voltage: 100 - 240 Volt
Input: 80 - 330 Watt
Amps: 0.5 - 1.44 Amp
Capacitor: 8.0 μ F
Noise Level: 55 - 58 dBA

Fan Curve



Fan Performance at Maximum Speed.

OPERATING INSTRUCTIONS

Important.

Before operating the heater, please ensure that the following precautions are strictly adhered to.

1. Do not place articles on or against the appliance.
2. Do not store flammable materials near this appliance.
3. Do not spray aerosols in the vicinity of this appliance while it is in operation.

Your Braemar Heater is fitted with fully automatic electronic ignition. This energy saving device eliminates the need for lighting a pilot.

TO TURN THE HEATER ON, simply follow the 5 steps below.

1. Set the room thermostat to below room temperature.

2. Ensure the gas tap and power are turned on.

The first time power is applied to the heater, if the heater is above 21 °C, the room fan will run for about 2 minutes. This is normal operation.

3. Set room thermostat to above room temperature.

4. The heater is now in automatic mode.

The combustion fan will start.

After 15 seconds the sparkers will commence to spark. (7 seconds max)

As soon as the heater lights the sparkers will stop.

(it will normally take only 1 or 2 sparks for the heater to light)

After a short period of time, the room fan will commence to slowly blow warm air through the vents. (no more blasts of cold air)

As the temperature within the heater increases so does the fan speed.

5. Set the room thermostat to the desired temperature.

When desired room temperature is reached the gas and combustion fan will turn off.

The room fan will continue to run (about 2 minutes) to extract all the heat from the heat exchanger.

As the temperature within the heater decreases so does the fan speed.

This ensures that the air delivered into a room is always at its highest temperature.

MAINTENANCE SCHEDULE

Periodic maintenance of the TM 100i MicroStar heater will ensure a long and satisfactory service life with the heater operating at optimum performance. Maintenance should be performed on a yearly basis by an Authorised person trained in the service of the Braemar TM Series Heaters.

The main points for maintenance are detailed in the Service Instructions commencing on page 12.

If heater does not operate satisfactorily refer to the trouble shooting chart at the rear of this book or contact your nearest Braemar Service Agent or call.

FREECALL: 1800 816 815

SERVICE INSTRUCTIONS

NOTE.

Service work should only be carried out by an Authorised person trained in the service of the Braemar Microstar Gas Ducted Heater.

WARNING

Before attempting to service the heater, turn off the power and gas to the unit.
If the heater is running, turn off the gas supply first and let the fan cool the heat exchanger, otherwise damage to the heater may result.

ROOM BLOWER MAINTENANCE

The room blower is direct driven by an external rotor motor with lifetime lubricated bearings. Blower motor and wheel will need periodic (yearly) cleaning of any lint deposits. A vacuum cleaner and soft brush are best for this job.

Access to the blower is by removing the screws securing the inlet panel to the front of the heater.

Remove the panel and duct work to expose the blower.

Clean around the blower without removing from heater.

Replace the inlet panel and secure with screws.

BURNER AND COMBUSTION FAN MAINTENANCE

The Combustion Fan is driven by a shaded pole motor with lifetime lubricated bearings, periodic (yearly) cleaning of any lint deposits is required.

To remove the Burner and Combustion Fan assembly, Turn off the power and gas to the heater. Remove the 2 screws securing the top access panel to the front of the heater. Remove the access panel.

Disconnect the short copper pipe connecting the gas valve to the side of the heater.

Disconnect the wires from the gas valve and from the combustion fan.

Disconnect the sparker and sense wires from the ignition control.

Remove the plastic tube from the pressure switch.

Remove the 4 screws securing the assembly to the heater, 2 at the top, 2 at the bottom. Pull the entire assembly out, including the sparker and sense wires.

Inspect the burner, clean as required.

Clean the flue fan of any dust or lint deposits.

Clean any lint from the air intake slots in sides the metal cabinet.

Replace the assembly accurately and secure with the 4 screws.

Test all gas connections for leaks. (soapy water)

Run heater as per operating instructions, check for satisfactory operation.

SERVICE INSTRUCTIONS continued

AIR FLOW ADJUSTMENT

Air flow during the heat up and cool down part of the heating cycle is infinitely variable and no adjustment is possible. The maximum voltage that the Room Fan can achieve is the same as the Mains voltage (240 Volt).

POWER FAILURE

In the event of a power failure during the operating cycle, the heater will automatically shut down. When power is restored, the room fan will come on and run for about 2 minutes to cool the heat exchanger down. If the thermostat is still calling for heat, the heater will go through a normal start-up procedure.

Power failure during the operating cycle may cause the overtemperature switch to trip. In this event it will be necessary for it to be reset by an authorised service person.

ELECTRONIC CONTROL SERVICE

No in field service is advised for the electronic control module.

There is however a diagnostic LED incorporated into the ignition part of the electronic control module to indicate faults to the ignition or its related components.

IGNITION PROBLEMS

LED Status	Fault	Remedy
LED steady ON	Internal Control failure	Replace Electronic Control.
LED 1 flash	Air flow fault	Pressure Switch not made. Check connections to Switch. Check Combustion Fan. Check for obstructions in the flue
LED 2 flashes	Flame with no call for heat	Voltage detected at Sensor check wiring.
LED 3 flashes	Ignition Lockout	Burner tried to light but unsuccessful. Check gas ON. Wiring to Gas Valve OK.

If there is some doubt as to the fault of the electronic control module, contact your nearest Braemar Service Centre for advice or call.

FREECALL : 1 800 816 815

SERVICING GUIDE

1. Check Power is ON at roof space isolating switch, at fuse box.

2. Turn gas on at all cocks.

3. Light heater as per lighting instructions.

PROBLEM	CAUSE	REMEDY
Flue Fan does not start.	Power not turned on.	Check Status of Power LED on. Turn ON
	240 Volt Fuse Blown	Replace Electronic Control
	24 Volt Fuse Blown	Replace Fuse
	Thermostat set too low .	Adjust Thermostat
	Wiring disconnected to Flue Fan.	Check wiring as per diagram
	Manual reset Overtemp tripped.	Reset Overtemp Switch Determine cause of Overtemp and rectify.
	Pressure Switch closed when it should be open.	Replace Switch.
	Flue Fan Motor burnt out	Replace Fan
Ignitor does not spark.	Pressure Switch not closed. (with the Thermostat closed the Flue Fan will run until the Pressure Switch closes)	Check hose connections at Pressure Switch, at flue pipe, at combustion fan. Replace Hose as required. Check voltage at Fan Motor 225 Volt minimum.
	Faulty Ignition Lead causing shorting to Cabinet.	Replace Ignition Lead
	Cracked Ceramic Insulator on Sparker Electrode	Replace Electrode
	Electrode grounded on Burner	Position to 8 mm from Burner
	Ignition Control incorrectly wired	Check wiring as per diagram
	Faulty Ignition Control.	Replace

SERVICING GUIDE

Ignitor Sparks but fails to light (Ignitor will spark for 7 seconds to light Burner)	Air in Gas Line.	Purge gas line, turn Thermostat off for 3 seconds, then turn on.
	Gas turned off.	Turn on
	Faulty Gas Valve.	Replace Gas Valve
	Incorrect wiring at Gas Valve.	Check wiring as per diagram
Burner Lights explosively	Gas pressure too low.	Adjust to 0.87 kPa Natural Gas 2.75 kPa LPG
	Flue Fan Voltage too Low	Check connections.
	Blocked Flue	Clear blockage from Flue

4. Check for Gas Leakage. Do not use a flame, use soapy water.

5. Check blower operation, check air quantity against specifications.

PROBLEM	CAUSE	REMEDY
Blower starts but little or no air flow. (Blower speed is proportional to temp of heat exchanger @21C Blower min @60C Blower max.)	Ductwork broken	Repair.
	Return Air blocked.	Replace or clean filter.
	Ducting possibly blocked or crushed.	Remove obstruction or replace Duct.
	Gas rate not high enough to warm heat exchanger.	Check gas pressure, adjust. 0.87 kPa NG 2.75 kPa LPG
Blower fails to start.	Faulty Fan Control.	Replace.
	Loose or broken wiring.	Check wiring as per diagram.
	Faulty Temperature Sensor.	Replace.
	Motor Burnt Out	Replace

6. Turn Room Thermostat to less than ambient temperature.

Main Burner fails to cut out.	Faulty Room Thermostat	Replace
	Short circuit in wiring	Check wiring as per diagram.

7. Run Heater through full Operating Cycle.

If Heater does not operate satisfactorily contact your nearest Braemar Service Agent or call

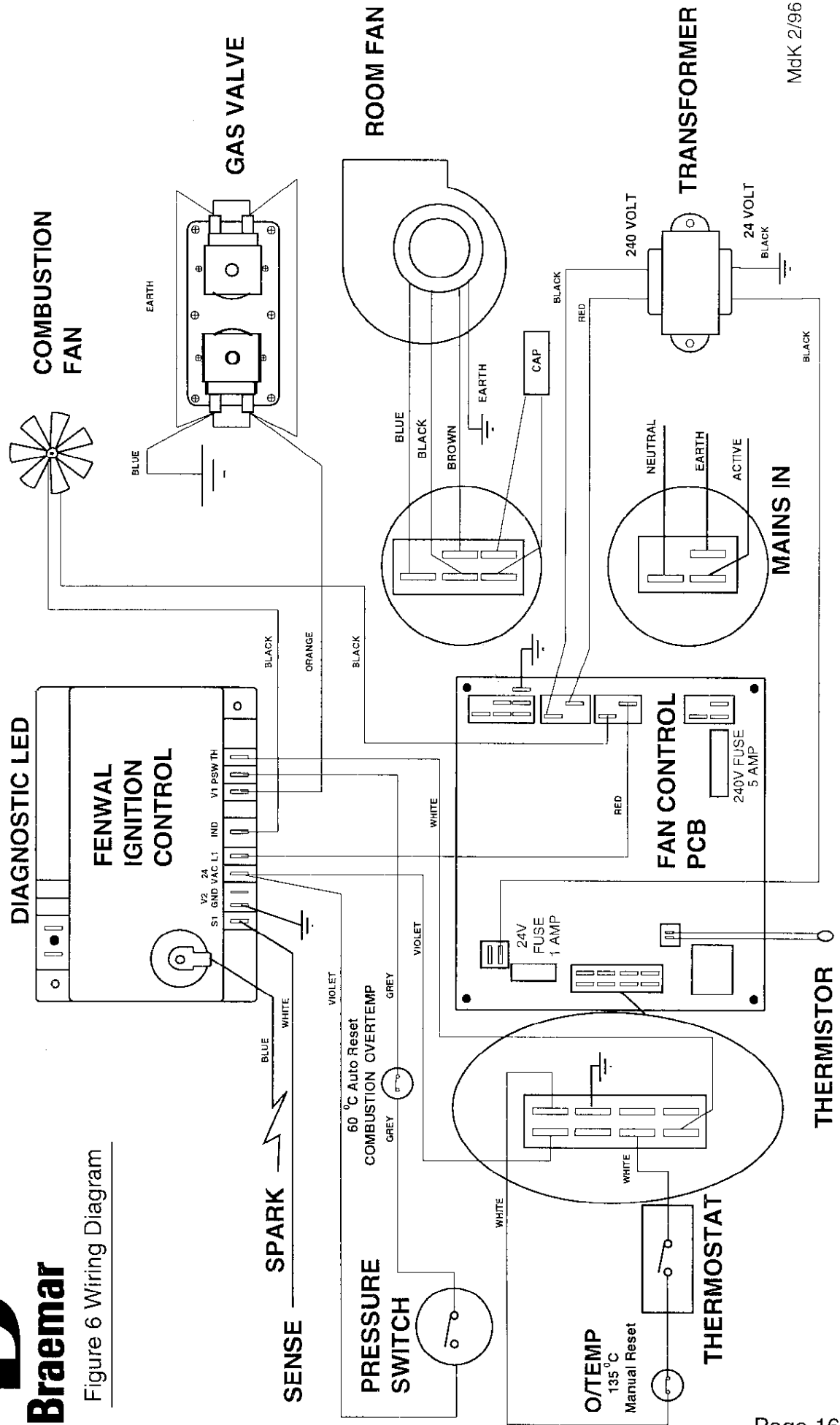
FREECALL : 1 800 816 815



Braemar

Braemar Gas Ducted Heater TM 100i MicroStar

Figure 6 Wiring Diagram



WARRANTY

The manufacturer warrants that the product is free from defects in material and factory workmanship. Subject to the terms of the warranty, the manufacturer will repair or replace at its option, the product or any part thereof, which examination shows to be defective, for a period of Two (2) years from the date of purchase.

Ten (10) years warranty is available on the following components.

1. BURNER
2. HEAT EXCHANGER

Warranty on any replacement parts is limited to the balance of their original warranty period.

This is the sole warranty of the manufacturer, who is not responsible for any obligation, assumed or expressed by any other person or persons.

Conditions

The warranty is available to the first purchaser only, being the purchaser who purchases without the intent of reselling for profit.

The structural warranty covers any metal structural components which fail to perform their intended function due to faulty manufacture or deterioration, within the warranty period.

The warranty does not cover any component parts or equipment used in conjunction with the heater, which were not supplied by the manufacturer. The warranty does not cover faulty installation, maintenance or abnormal conditions of service.

The warranty does not cover damage to the heater or other, resulting from acts of god.

The warranty shall not apply to the heater or any part thereof, which in the opinion of the manufacturer has been subject to accident, alteration, abuse, misuse or unauthorised repair.

This warranty shall not be extended to any loss suffered by or resulting from the non operation of the heater or part thereof.

Travelling costs incurred for work beyond a 25km radius of an Authorised Braemar service agent must be met by the purchaser.

The Manufacturer and its Agents reserve the right to refuse service unless safety and accessibility to the unit can be guaranteed.

The cost of any extra equipment required to provide access to the unit for servicing is the responsibility of the owner.

NOTE. Should you require warranty work on your Braemar heater, we recommend that you first contact your local Braemar Dealer, they are best placed to attend to any problem, no matter how small. If however a service call reveals no fault with your Braemar heater, you may well be charged for the call, even during the warranty period.



Braemar

Braemar Industries Pty Ltd A.C.N. 006 810 617

Head Office

77 North Street Albury N.S.W. 2640

Telephone: 060 411 611

Facsimile: 060 412 208

Melbourne Office

Telephone: 03 9545 6922

Facsimile: 03 9545 6933

Adelaide Office

Telephone: 08 8347 4488

Facsimile: 08 8347 4801

Freecall 1800 816 815

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