

Braemar

HEATING

COOLING

INSTALLATION MANUAL and OWNER'S MANUAL

INTEGRATED COOLING SYSTEM

Y3500-Y3000

Y3510-Y3010

Y3520-Y3020



Heater Model	Indoor Coil	Outdoor Unit	Nominal Air Flow	Rated Capacity
TH5X23	Y3500	Y3000	740 L/s	11.5 kW
TH5X23	Y3510	Y3010	740 L/s	13.0 kW
TH5X32	Y3520	Y3020	1060 L/s	18.0 kW
TH4X20	Y3500	Y3000	700 L/s	10.8 kW
TH4X25	Y3510	Y3010	820 L/s	14.1 kW
TH4X30	Y3520	Y3020	1060 L/s	18.0 kW
TH3X20	Y3500	Y3000	700 L/s	10.8 kW
TH3X25	Y3510	Y3010	820 L/s	14.1 kW
TH3X30	Y3520	Y3020	1060 L/s	18.0 kW

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NOTE: HOMEOWNER

Please keep this manual in a safe place along with a copy of your receipt and all relevant certificates of compliance relating to the installation work performed.

The **Braemar Integrated Cooling** unit is a refrigerated cooling only, split type air conditioning system, designed specifically for connection to a **Braemar “TH Extra Air”** Series gas ducted heating unit, using **ONLY Braemar Spectrolink Comfort Control**.

Read this manual before installation and operation.
Make sure that it is kept for later references.

Installation training is available from Seeley International for qualified and licensed installers; please contact your local office for training dates.



PREFACE

Checking Received Product:

Upon receiving your unit, please inspect for damage. Claims for damage should be reported immediately with the transportation company. Check the model number of the unit and ensure it matches your order. In the event an incorrect unit is delivered, or, a damaged unit, it must be returned to the supplier and must **NOT** be installed. The manufacturer assumes no responsibility for installation of incorrectly delivered units and/or damaged units.

Before Installation:

Read all instructions carefully prior to installation. Please ensure every step described in this manual is understood and taken into account before starting installation.

Proper installation will help ensure trouble free operation.

Improper installation may result in problems such as noisy operation, compressor damage, improper operation or dangerous conditions that could result in injury or property damage or void the warranty.

Over-current Protection:

Over-current protection which is less than the recommendation could result in unnecessary fuse failure and a chargeable service call. The manufacturer bears no responsibility for damage caused to the equipment as a result of deviation from the recommended rating.

Refrigerant tubing

Keep refrigerant tubing clean and dry prior to and during installation to avoid equipment damage. Tubing **MUST** comply with all relevant local, state and national standards.

Homeowner

The user should retain this manual for future reference. To ensure the warranty is continued and valid, the unit shall be required to be serviced as per section on "MAINTENANCE and SERVICE".

Attention should be given to the air inlet side of the outdoor coil to ensure grass, leaf and other matter are not drawn into or onto the Inlet side of the unit. Restriction to air flow across the coil will reduce the system capacity, result in high operation pressures and excessive operating cost.

A return air filter **MUST** be installed at the return air grille. Air filters should be inspected and cleaned at least every two weeks.

Low level return air grilles are recommended.

Your air conditioner is designed and built with reliable components to provide years of trouble free dependable service. However, it does require regular maintenance either by yourself (end user) and/or a licensed technician to keep your warranty on the unit valid.

IMPORTANT- THE AUSTRALIAN GREENHOUSE OFFICE HAS ISSUED VARIOUS REGULATIONS ON THE USE AND DISPOSAL OF REFRIGERANTS IN THE UNIT. FAILURE TO FOLLOW THESE REGULATIONS MAY HARM THE ENVIRONMENT AND COULD LEAD TO THE IMPOSITION OF SUBSTANTIAL FINES.

ONLY QUALIFIED AND LICENSED TECHNICIANS SHOULD PERFORM WORK ON THIS UNIT, FAILING WHICH THE WARRANTY ON THE UNIT WILL BE VOID.

Warning:

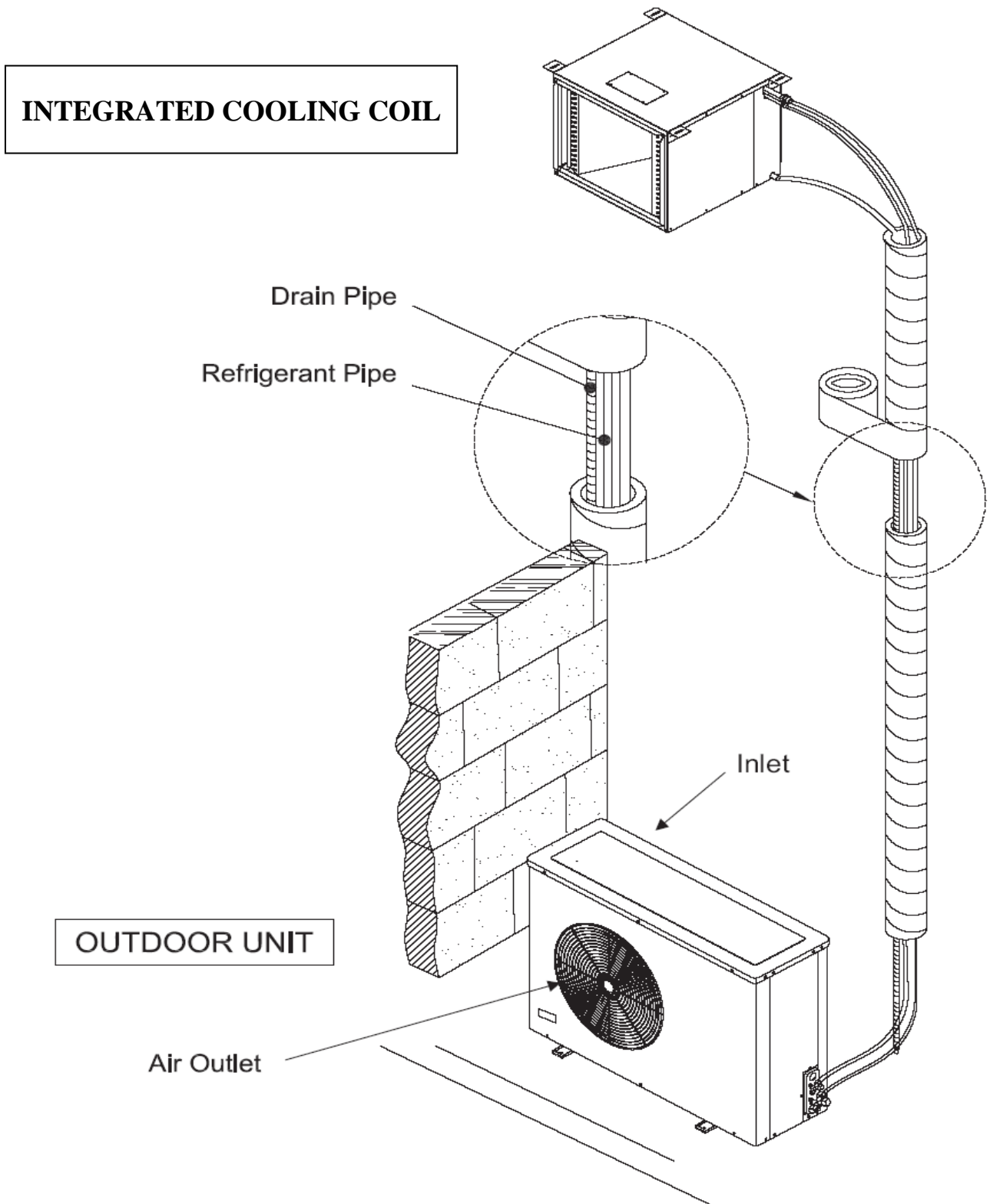
This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

- The appliance shall be installed in accordance with national wiring regulations.

- Disconnecting devices must be incorporated in the fixed wiring in accordance with the wiring rules.

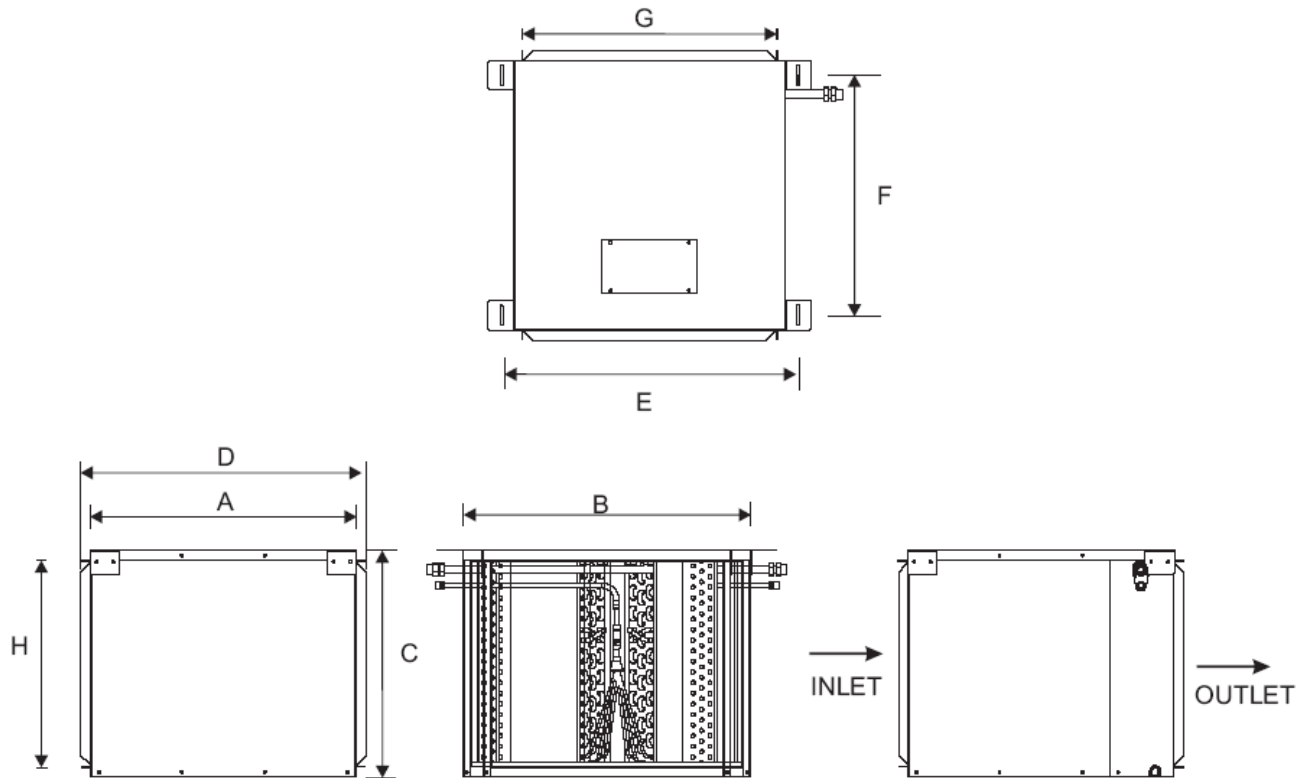
TYPICAL INSTALLATION



Indoor and Outdoor unit operating temperature range:

Indoor Unit	Outdoor Unit
18°C - 32°C	20°C - 43°C

INDOOR COOLING COIL UNIT INSTALLATION

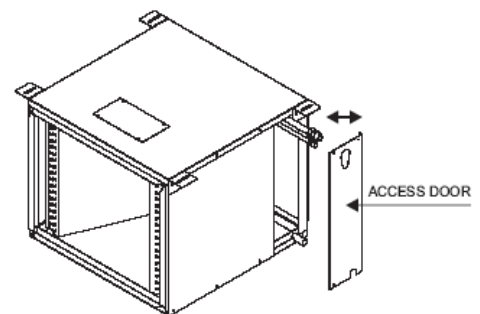


DIMENSION (mm)								
MODEL	A	B	C	D	E	F	Inlet / Outlet	
							G	H
Y3500	585	638	548	635	686	475	605	498
Y3510	585	638	548	635	686	475	605	498
Y3520	585	638	650	635	686	475	605	600

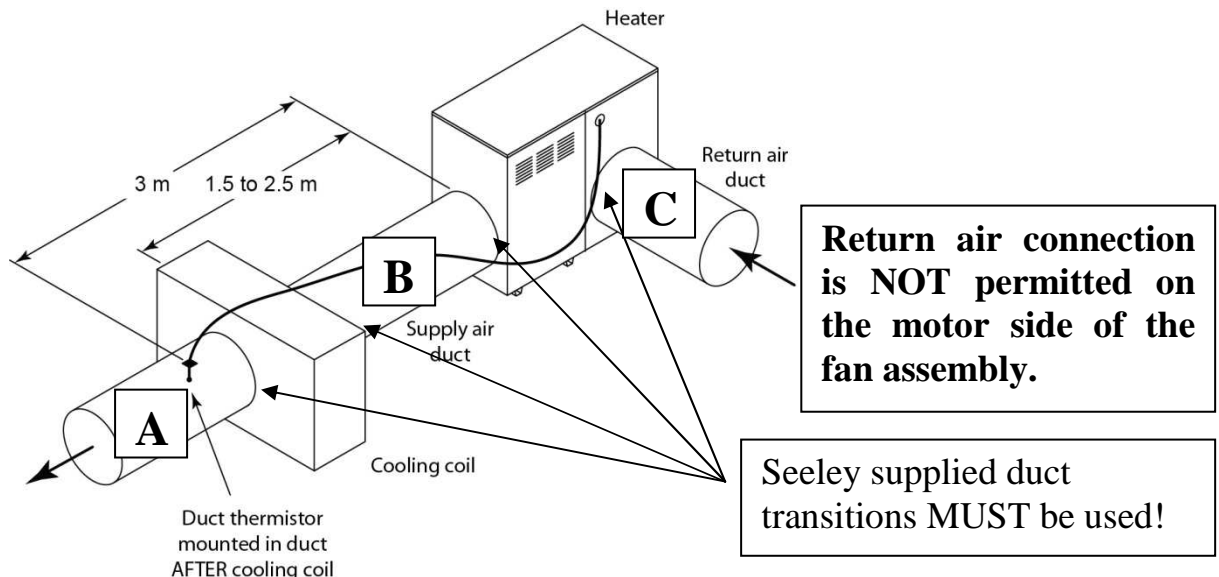
COOLING COIL LOCATION

Select the location by choosing a place;

- that is easy for refrigeration piping and condensate drainage.
- that can handle the weight of indoor cooling coil unit.
- which has easy access for maintenance.
- which should not be near any heat source or moisture.
- where water is easily drained out.



INDOOR COOLING COIL UNIT INSTALLATION



MAKE SURE THE COOLING COIL IS INSTALLED WITH AIRFLOW IN THE DIRECTION AS SHOWN ON THE DECAL ON THE UNIT.

Seeley recommends the use of a safe tray under the cooling coil, complete with a separate drain.

- The cooling coil can be mounted on a suitable base. Ensure that the base is level and that the drains are free to be piped correctly with enough height to allow for condensate trap and fall to waste.

Alternative method – hanging from above;

- Measure and mark the position for the suspension bolts or rods. Be sure the position does not interfere with anything and there is sufficient height to allow for adequate drainage from the unit.

“TH” Extra Air heaters are designed for use with an Integrated Cooling refrigerated cooling systems.

- These models include an “X” in their model numbers, eg, TH3X20, TH4X30 and TH5X32. The following points must be taken into account to ensure correct operation of both the refrigerated cooler and the heater.
- Ensure that the refrigerated cooling unit is sized correctly to suit the house and the heater.
- The cooling coil (evaporator) should be installed 1.5 to 2.5 m from the heater supply air outlet.
- To prevent excessive air flow restriction, the ducting between the heater and the cooling coil should be as straight as possible. If bends are required, use the largest bend radius possible.
- The thermistor must be located after the cooling coil 3m along the duct from the heater outlet, and fitted centrally in the top of the duct.
- A correctly-sized low level return air grille with a filter **MUST** be fitted when installing Integrated Cooling refrigerated cooling – refer table ON PAGE 9 as a guide:

NOTE:

The “A/C” terminals on the BSC circuit board in the heater supply 24Vac control voltage to operate the cooling system. The connection from the “TH” heater is direct to the Terminals marked “1 & 2” on the Integrated Cooling outdoor terminal strip. Refer Page 12.

Ensure that “COOL 2” is selected during system set-up to enable the system to operate the refrigerated cooling system - refer to “Commissioning” section in these instructions.

DUCT CONNECTIONS:

OUTLET TRANSITION HALVES			INLET TRANSITION HALVES		
P/n	# Scallops	Collar Diameter	P/n	# Scallops	Collar Diameter
638881	2	400	638874	1	400
638904	4	450	638898	3	450

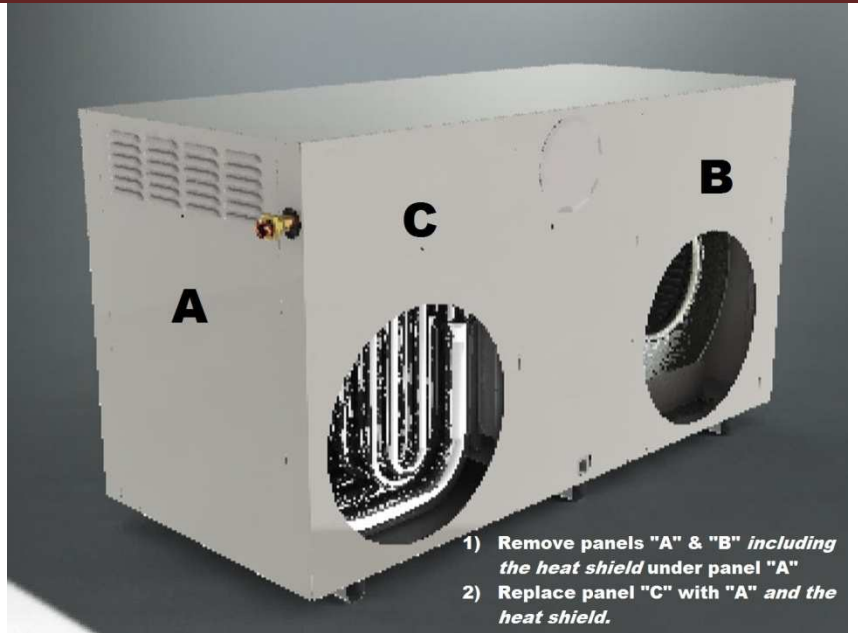
INFILL PANEL - OUTLET		INFILL PANEL - INLET	
P/n	Outlet Diameter	P/n	Inlet Diameter
638942	400	638935	400
638966	450	638959	450

OUTLET

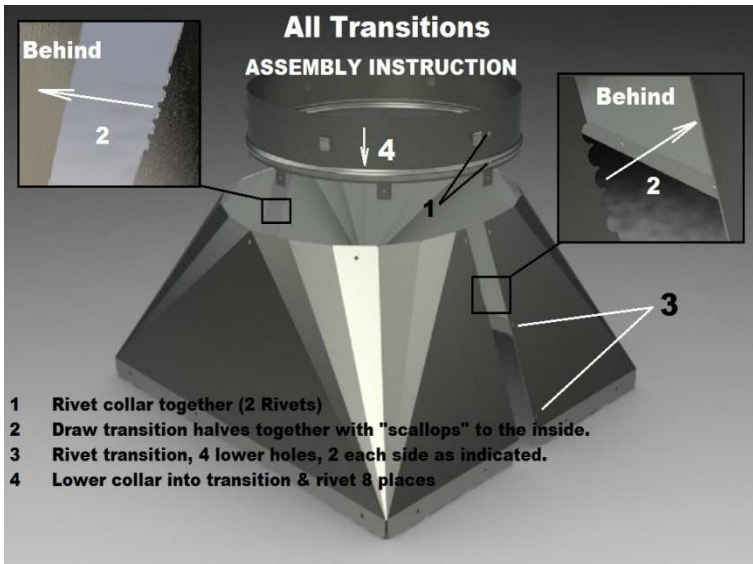
INLET

"Identifier" scallops found at transition joins.
SEE INSTRUCTION FOR TRANSITION ASSEMBLY

- 1) Replace front and side panels with the appropriate infill panels.
- 2) Place the appropriate transition and attach, using existing screws.
- 3) Square sides of transitions and attach, using "Machine Tec" screws.



- 1) Remove panels "A" & "B" including the heat shield under panel "A"
- 2) Replace panel "C" with "A" and the heat shield.



- 1 Rivet collar together (2 Rivets)
- 2 Draw transition halves together with "scallops" to the inside.
- 3 Rivet transition, 4 lower holes, 2 each side as indicated.
- 4 Lower collar into transition & rivet 8 places

INDOOR COIL

INLET & OUTLET TRANSITION HALVES

P/n	# Scallops	Collar Diameter
638911	5	400
638928	6	450



INDOOR COOLING COIL UNIT INSTALLATION

Heater Model	Indoor Coil	Outdoor Unit	Nominal Air Flow	Rated Capacity	Min Return Air Filter Size	Duct Connection Sizes		
						A	B	C
TH5X23	Y3500	Y3000	740 L/s	11.5 kW	0.36m ²	400	400	400
TH5X23	Y3510	Y3010	740 L/s	13.0 kW	0.36m ²	400	400	400
TH5X32	Y3520	Y3020	1060 L/s	18.0 kW	0.48m ²	450	450	450
TH4X20	Y3500	Y3000	700 L/s	10.8 kW	0.36m ²	400	400	400
TH4X25	Y3510	Y3010	820 L/s	14.1 kW	0.40m ²	400	400	400
TH4X30	Y3520	Y3020	1060 L/s	18.0 kW	0.48m ²	450	450	450
TH3X20	Y3500	Y3000	700 L/s	10.8 kW	0.36m ²	400	400	400
TH3X25	Y3510	Y3010	820 L/s	14.1 kW	0.40m ²	400	400	400
TH3X30	Y3520	Y3020	1060 L/s	18.0 kW	0.48m ²	450	450	450

FLEXIBLE DUCTWORK CONNECTIONS

- It is important that all ductwork be fitted securely and with airtight connection.
- *Use the supplied square to round transitions for proper and even air flow across the coil and through the heater.*
- For flexible duct to transition, unit or outlets, provide a mechanical connection using strapping or banding in addition to duct tape for air seal. Do not rely on tape only.

Important Notes:

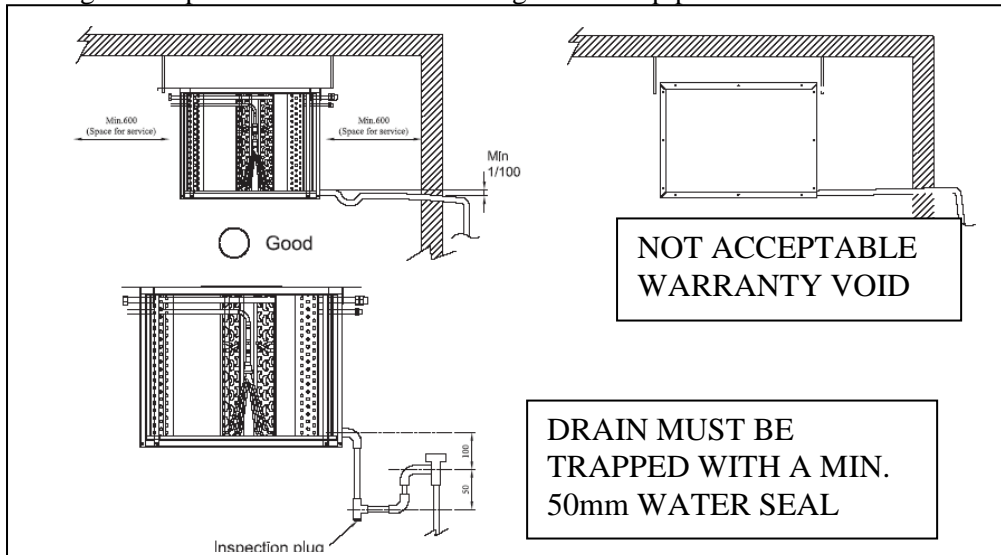
1. *Ensure 1.5m to 2.5m of straight duct between DGH and INTEGRATED COOLING.*
2. *Ensure DGH duct thermistor is located downstream of INTEGRATED COOLING and not more than 3m from the DGH.*
3. *Ensure that a minimum of 2 1/2 times the duct diameter of straight ductwork is installed, immediately downstream of the indoor unit before any divergence or branch-take offs.*
4. *Fill and test drain before running the system.*

IN CEILING INSTALLATION

When the indoor unit is installed in roof or ceiling space, an additional Safety Drain Tray (not supplied) must be installed under the indoor unit.

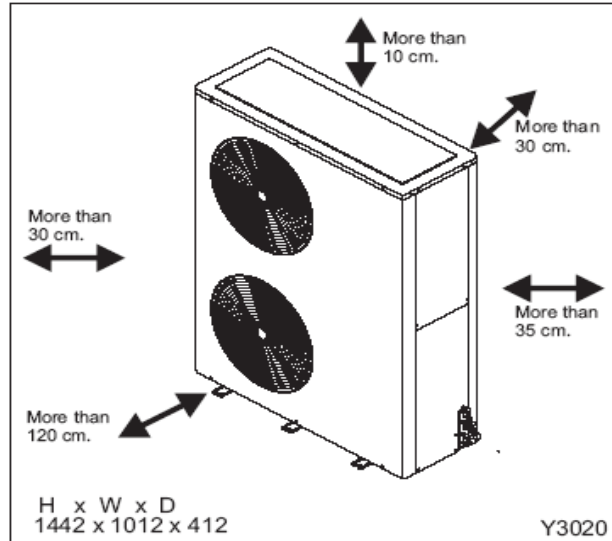
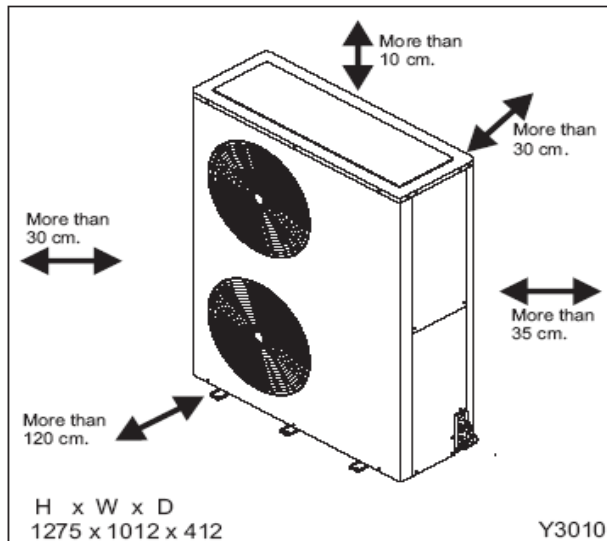
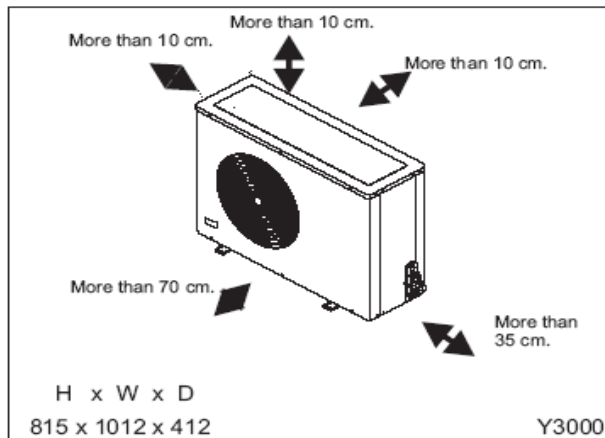
- For servicing, a minimum clearance of 600 mm must be provided in front of the access panel side of the unit for its entire length.

- Always install the "P" trap as close to the unit as possible. Fill the "P" trap with water during installation before starting unit to prevent air movement through the drainpipe.



Drain MUST have a minimum 1:100 fall to waste. Drain MUST comply with all local, State and Prescribed laws governing its termination and installation. Indoor Coil may be suspended on hanging rods or placed on a suitable platform.

OUTDOOR UNIT INSTALLATION



Location considerations should:

- Most importantly, do not install the outdoor unit where there is a possibility it will cause a noise complaint from your neighbours. Be mindful of the environment.
- Allow sufficient clearances for maintenance around the unit. (See above)
- Be well ventilated, so that the unit can draw and distribute sufficient air.
- Be capable of bearing the weight of the outdoor unit whilst also isolating noise and vibration. See the technical section of this booklet for weights and dimensions.
- Wherever possible protect the unit from direct sunlight.
- When installing by the seaside remember to make allowances to have the unit washed down to protect against the salt spray.
- Allow for drainage of rainwater.
- Not discharge air towards the prevailing wind. This may stall the condenser fan.
- Ensure air discharge and operating sound levels conform to local requirements.
- Not be susceptible to dust or oil mist.
- Ensure intake air temperature is no higher than ambient temperature. (Max. 45°C)
- Adequate and reliable power supply.
- Proximity to Indoor Coil – Minimum 3m Maximum 30m (Note: Capacity is based on 7.5m field installed pipe)

OUTDOOR UNIT INSTALLATION

PIPE-WORK

Pipe-work must be installed in a manner which prevents drainage of liquid into the compressor, and ensures adequate oil return. **Pipes should be at least 3 m. in length**, incorporating at least two direction changes. This will reduce transmission between indoor and outdoor units.

Pipe-work to be installed according to the Current Code of Good Practice for refrigeration and Airconditioning

- Select pipe-work size from Table.
- Both interconnection lines must be insulated (minimum 10 mm thickness).
- Do not allow moisture, dust or other foreign particles to enter the pipe-work.
- Only use refrigeration grade copper tubing, suitable for R410a and to Australian Standards.
- Installed pipe-work must be pressure tested to a minimum of 300 kPa for at test 1 hour using dry nitrogen
- Pipe work must not be buried underneath the ground.

Vertical/Horizontal Pipe-work

Maximum vertical rise is 15m with all traps risers every 6 m.

Maximum Total length of pipe-work must not exceed 30m.

Brazing

If brazing of pipe-work is required, dry nitrogen must be used to purge the pipe-work during welding. When brazing close to the flare nuts, a wet cloth must be used to protect the valves.

Flaring

All flares must be done with a quality flaring tool, suitable for R410A and refrigeration flares.

Orifice

Ensure the orifice connections are tight and leak free on the indoor coil before releasing the refrigerant gas charge.

Pipe-work

Select copper pipes for gas and liquid as information in specific table (see the pipe table below) For dust and moisture protection, before assembly of the pipe and its insulation, both ends of the pipe must be covered, Avoid pipe bending as much as possible, If it is necessary to bend, the bending radius must be more than 4 cm.

The field installed pipe work and indoor coil MUST be connected to a vacuum pump and evacuated down to a vacuum pressure of 100 microns minimum.

Connection between indoor unit and outdoor unit.

Unscrew the flare nut for releasing pressure gas in the indoor unit. If there is no high pressure gas blowing out, it is the signal of a leaking indoor unit, check and test for leaks, repair and/or replace as required.

Flare the pipe's end with flare tool, ensuring a good quality flare is achieved.

Tighten flare nuts onto gas pipe and liquid pipe at the indoor unit and outdoor unit, with two holding spanners.

Pressure the Indoor unit & pipe work again with dry nitrogen and check for any joint leaks. Repair as necessary but ensure the system under repair is not under pressure prior to brazing.

With the indoor unit pressure again released, **evacuate the pipe work and indoor coil to a vacuum pressure of 100 microns minimum.**

Hold Vacuum for at least 15 minutes.

Disconnect the vacuum pump whilst retaining the system vacuum.

Open the liquid line valve fully and then suction line valve and hold for 15 minutes.

Model Number Indoor / Outdoor	Pipe Sizes Liquid / Vapour	Min, Pre-charge, Max Pipe Length	Capacity (kW) Cool	Duct Connection Sizes		
				A	B	C
Y3500 / Y3000	9.53 (³ / ₈) / 19.05 (³ / ₄)	3 - 7.5 - 30	11.50	400	400	400
Y3510 / Y3010	12.70 (¹ / ₂) / 19.05 (³ / ₄)	3 - 7.5 - 30	14.20	400	400	400
Y3520 / Y3020	12.70 (¹ / ₂) / 19.05 (³ / ₄)	3 - 7.5 - 30	18.00	450	450	450

OUTDOOR UNIT INSTALLATION

MAINS & CONTROL WIRING

Licensed trades persons must carry out all the wiring work. Check SAA WIRING RULES for PROTECTION sizing and cable sizes. Always refer to the relevant wiring standard for the electrical installation.

Some local Supply authorities have restrictions on starting current of systems. Check Authority for starting requirements for large single-phase compressor models.

Depending on model requirements 240-volt single phase, Neutral & Earth OR 415 volt 3 phase, Neutral & Earth is required. All units are for 50 Hz operation.

Voltage at the unit, under load conditions, must be within the range of

Single phase **240V minus 10% or +5%**

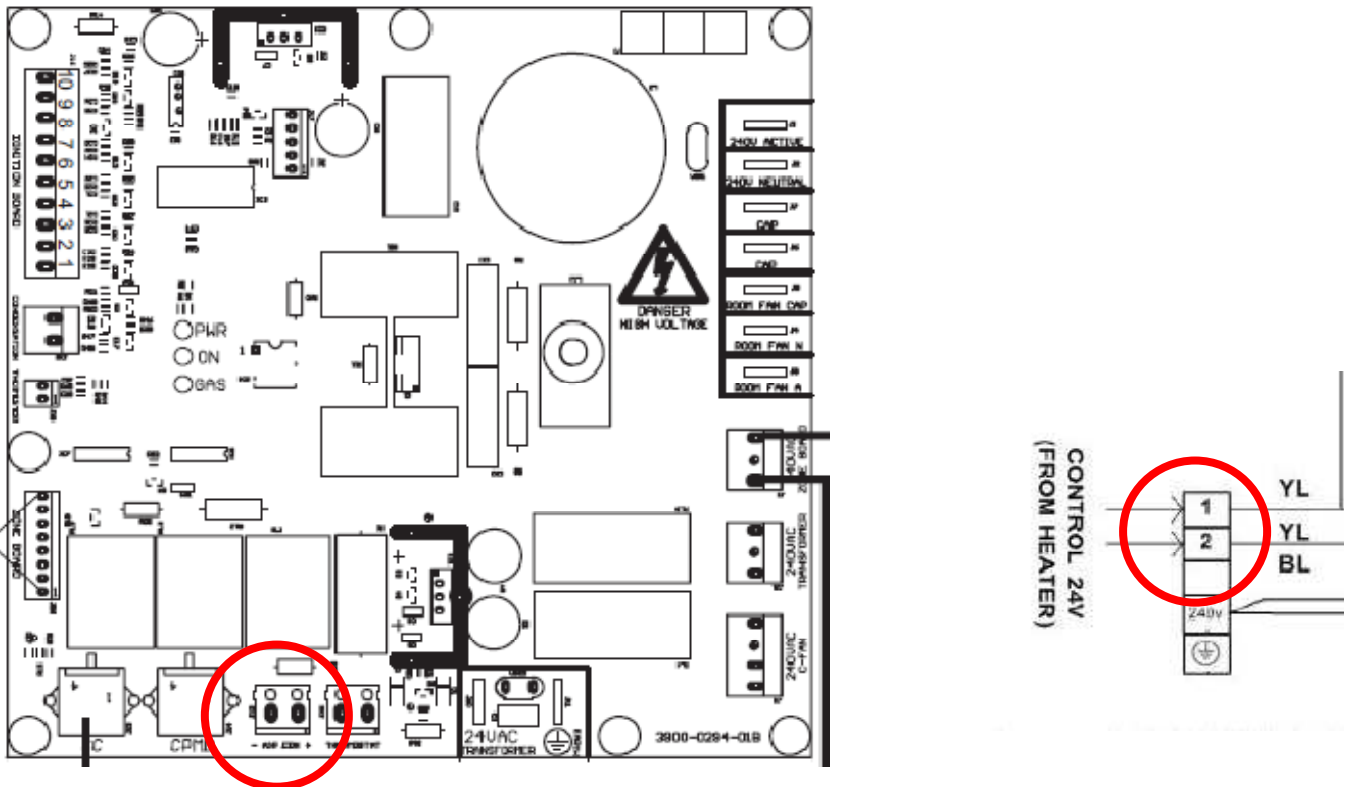
Three phase **415V minus 10% or +5%**

24 volt Electrical Supply Connections

A control wire (24Volt) is required between the heater's Integrated Cooling board and the Outdoor Unit.

A separate mains power feed is required for the Outdoor Unit.

24 volt supply is standard from the Braemar gas ducted heater "BSC" board

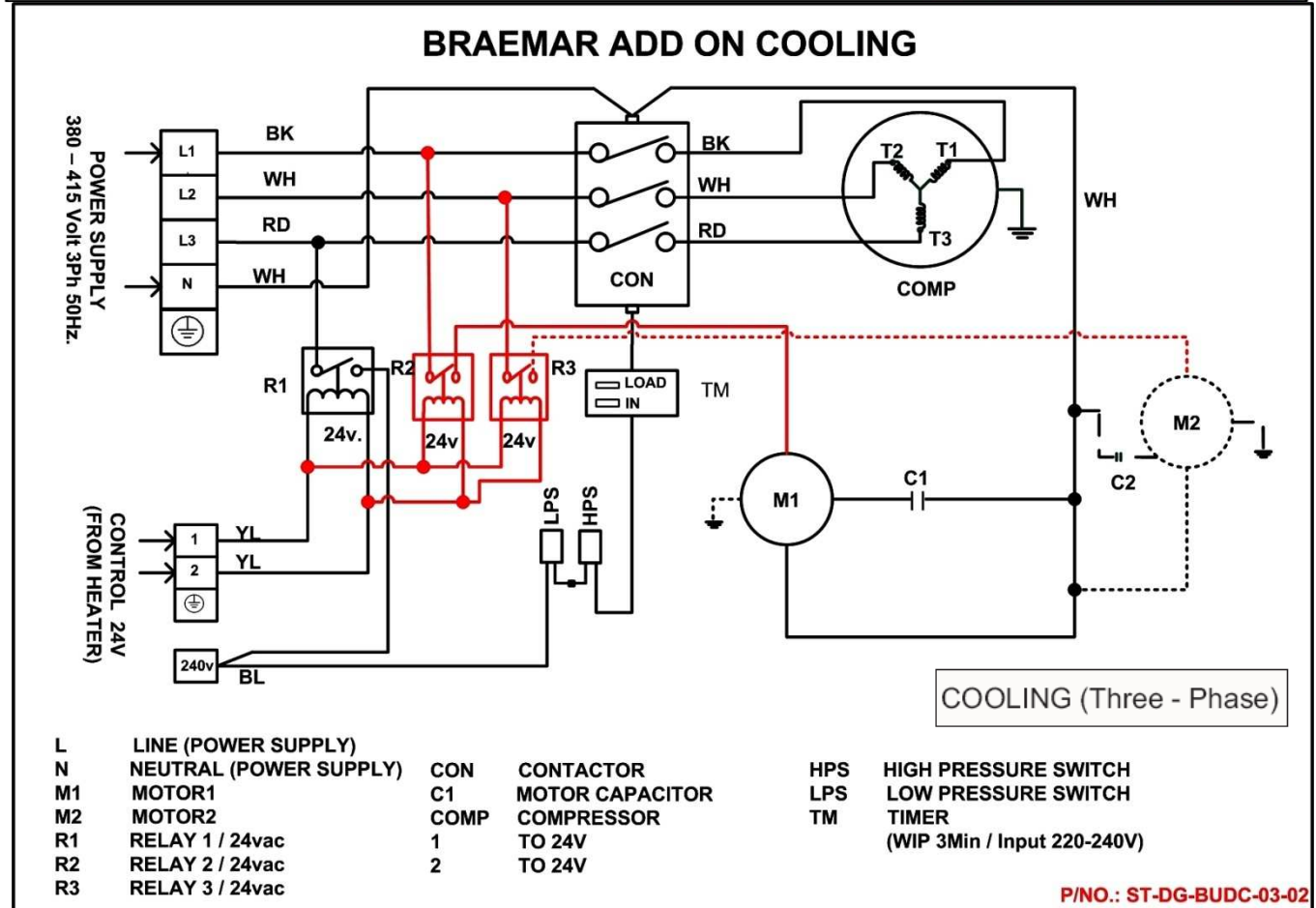
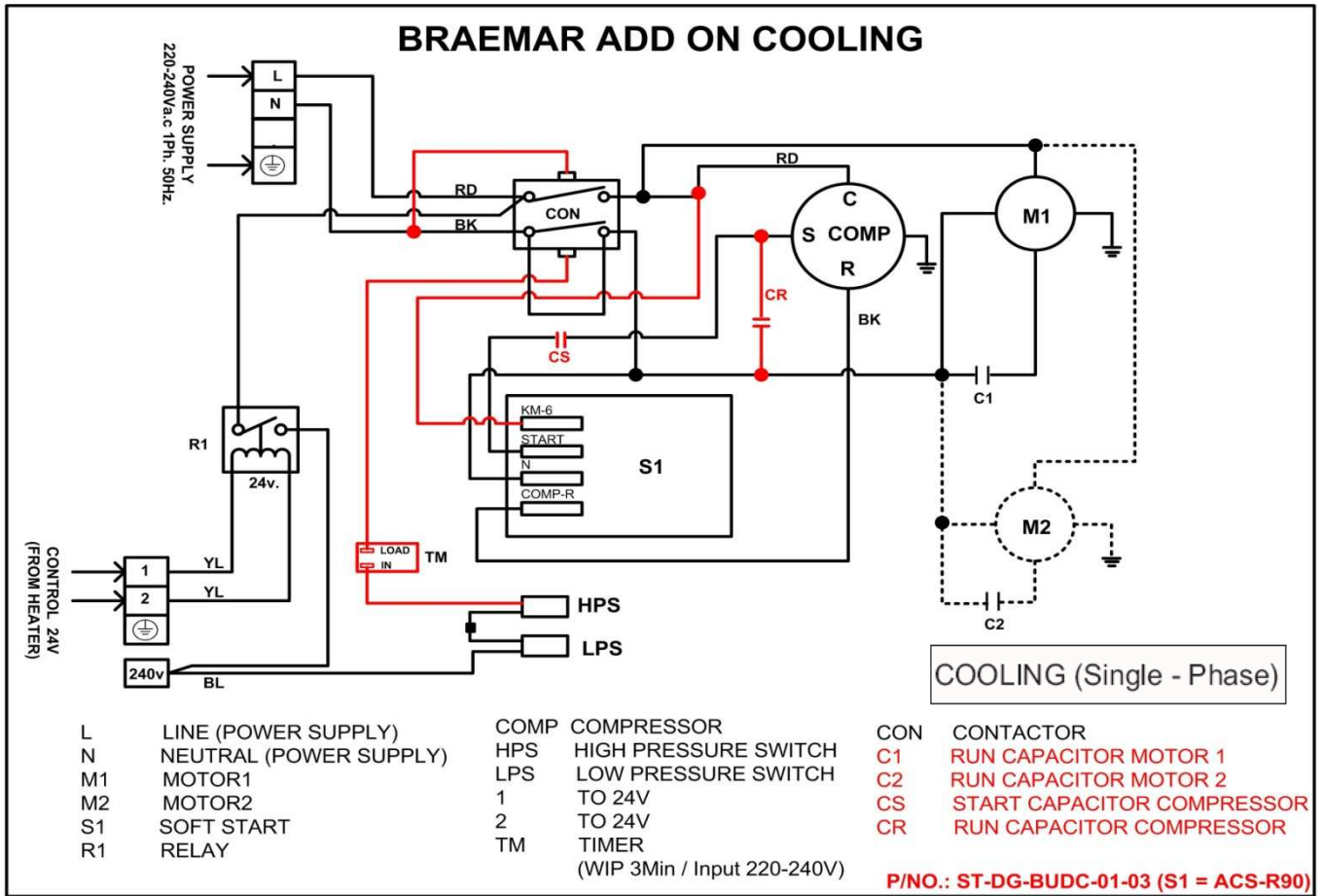


Connect 2 wire (1.5mm²) from "A/C 24 volt Refrig Output" to Terminals "1 & 2" on the Integrated

Outdoor unit wiring is to be done as shown in the electrical wiring diagram (Do not change the internal wiring) 24 Volt control wiring is required to be installed between the Outdoor Unit and the Heater (NOT SUPPLIED) in accordance with the wiring instructions.

After fitting the wire, check that all the terminal screws are firmly tightened.

ELECTRICAL WIRING



ELECTRICAL WIRING

Warning:

The insulation of the fixed wiring may come into contact with hot surfaces, eg. Discharge pipe, the fixed wiring insulation must be protected and/or separated properly from hot surface.

The minimum nominal cross-sectional area of supply cord shall be not less than:

MODEL	ELECTRICAL RATING					Minimum cross-sectional area of conductors (mm ²)
	VOLTS	PHASE	HERTZ	POWER*	FUSE	
Y3500 / Y3000	220-240	1	50	4.70kW	25 amp	4.0
Y3510 / Y3010	220-240	1	50	6.70kW	40 amp	6.0
Y3520 / Y3020	380-415	3	50	6.80 kW	11 amp	1.5
Control cable from heater	24	1	50			1.5 (2 Core Multi Stranded Cable)

WARNING:

If incorrect rotation continues severe irreversible damage will result. This will void the warranty. Some units are fitted with a phase rotation relay and will not start if the rotation is incorrect.

On three phase units correct compressor rotation must be checked. If the compressor is noisy and there is no suction pressure this will indicate incorrect rotation. To change the direction of rotation, turn the power off and change any two phases on the main terminal block.

The system must be started under the guidance of a qualified and accredited air-conditioning mechanic.

ELECTRICAL SHOCK CAN CAUSE PERSONAL INJURY OR DEATH

Before start up the electrical wiring must be checked for correct terminal locations, and that power is available on each phase. On three phase units there must be 415 V

*Power shown is at the Maximum Test Conditions, refer below

Maximum Conditions *	Cooling
Indoor Temperature	32°C DB/23°C WB
Outdoor Temperature	43°C DB/--°C WB

SPECTROLINK COMFORT CONTROL SET UP:

One hour time limit on settings adjustment

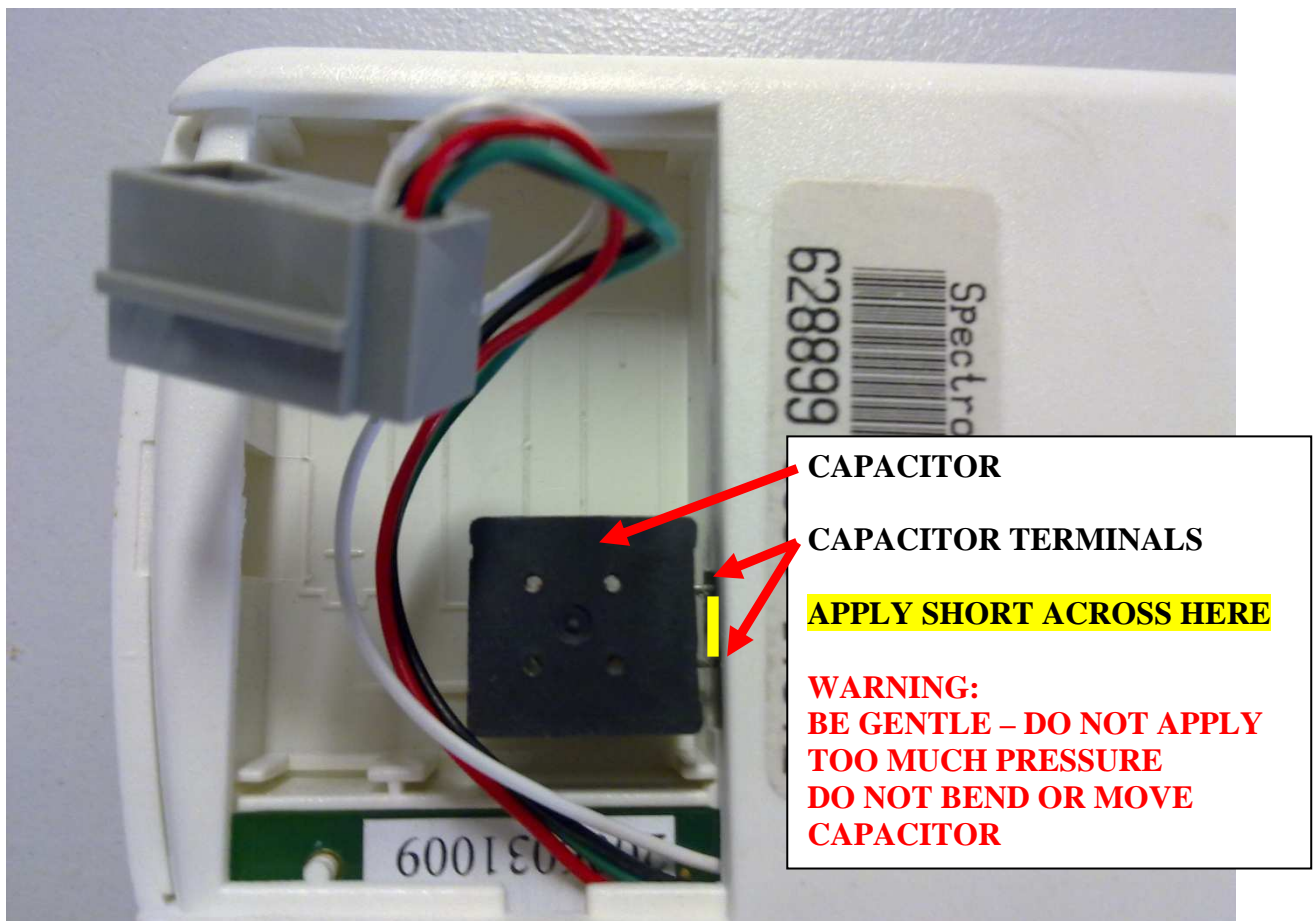
To help guard against inadvertent adjustment by the customer, setting the maximum fan speed, zones installed, zone fan speeds and heater and cooler type must be done within the first hour of powering the SCC thermostat. After this time the SCC must be disconnected, its capacitor discharged and re-connected.

The procedure on the following pages refers to commissioning the Spectrolink Comfort Control within the 1st hour of the first time power is applied to the system. However if you are commissioning the Integrated Cooling more than 1 Hour after first applying power the following procedure is required.

Discharge SCC Capacitor;

1. Isolate the power to the heater
 - a. Remove SCC from wall bracket and unplug loom
2. Short the 2 terminals on the capacitor
 - a. Care needs to be taken
 - b. Use only a small device such as a paper clip or similar
 - c. Hold short for 30 seconds or until display is completely blank
3. Reconnect loom and replace SCC in wall bracket
4. Reapply power to the heater

Note: Time and day will need to be reset. All previous programming set by the homeowner/installer will remain in the memory. (To change refer to Home Owners Manual).



SPECTROLINK COMFORT CONTROL SET UP:

For 3, 4 & 5 Star Gas Ducted Heaters.

DEFAULT HEATER & COOLER TYPE:

SCC thermostats are set to the following **default** heater and cooler type:

- **HEAT 3:** TH series heater (or any other Braemar heater fitted with BSC control system)
- **COOL 1:** Evaporative cooler (with CPMD control)

CHANGING THE DEFAULT TO SUIT INTEGRATED COOLING

- With the SCC in **OFF** mode, press **SET** & **AC MODE** simultaneously
- **HEAT 3** – will appear first, **DO NOT CHANGE**, press **SET** to move to **COOLING**:
- **COOL 1** – will appear as this is the default setting
- Use the **UP/DOWN** arrows to adjust the cooler type to **COOL 2**, press **SET** when satisfied



This can only be done within the first 15 minutes of powering the SCC. After this time:

- Disconnect SCC from the loom
- Discharge capacitor at back of SCC
- Re-connect to loom

CHANGING THE DEFAULT FAN SPEEDS:

Applicable to 4 & 5 Star Gas Ducted Heaters Only

The Table below shows the default fan speeds for each "Zone"

DEFAULT FAN SPEEDS							
Operating Mode		Maximum Fan speed	Zone Fan Speeds				
			Common	Zone 1	Zone 2	Zone 3	Zone 4
HEAT 3	1 SCC	10	8	8	8	5	5
	Multiple SCC	10	N/A	8	8	5	5
COOL 2	1 SCC	10	Heat + 2	Heat + 2	Heat + 2	Heat + 2	Heat + 2
	Multiple SCC	10	N/A	Heat + 2	Heat + 2	Heat + 2	Heat + 2

The same procedure is used when either HEAT or COOL mode is selected. If the fan speed is set when HEAT is selected, the default value for COOL will be the HEAT setting plus 2. Thus if "Zone 1" is configured with a fan speed of "5" for HEAT, when COOL is selected, "Zone 1" fan speed will be "7" by default. This applies to all four zones.

Therefore, as part of the commissioning procedure, "Zone" fan speeds must be set to reflect the number of outlets available and the design air flow required, thus, supplying the correct amount of heated or cooled air to each Zone.

SETTING THE HEATER MAXIMUM FAN SPEED

With SCC in off state:

- Press and hold "SET" button, and while still holding SET button, press "FAN" button
- Room fan starts at speed 10
- SCC displays:
 - Flashing "SET"
 - Rotating fan symbol
 - Flashing Fan Speed
- Use up/down arrows to adjust fan speed between 7, 8, 9 or 10 to desired air flow
- Press "SET" when satisfied to lock in selection
- SCC returns to off state



REFRIGERATED COOLING ZONING

TH3 SERIES:

The TH3 Series Braemar Ducted Gas Heaters do not have the ability for zoning; a Spectrolink Comfort Control must be used to operate the Integrated Cooling.

Therefore, any 3.7 star ducted heaters will have all outlets open for heating and all open for cooling. Unless the zoning is controlled by an after-market zoning control system. If this is fitted to your 3.7 star system, please refer all zoning issues back to your installer.

TH4 & TH5 SERIES: SPECTROLINK COMFORT CONTROL (SCC)

TH4 and TH5 model heaters can be installed and set-up to independently heat different areas within the home, either from a single Spectrolink Comfort Control (SCC) or from up to four independent SCC's.

In each case zone dampers must be installed into selected duct runs to allow the air flow to a zone/s to be switched "ON" or "OFF".

1 SCC Thermostat: Includes a "Common Zone" with 1 to 4 Zones.

Each zone is controlled independently from a single SCC. The SCC must be located in a "common zone", ie, a zone that cannot be turned off, and that includes the return air.

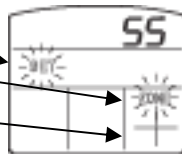
Multiple SCC thermostats: No "Common Zone" with up to 4 Zones.

Each zone is controlled independently from its own SCC - this allows zones to be set at different temperatures, and to be controlled from within the zone. Each zone that has its own SCC thermostat must include a zone damper.

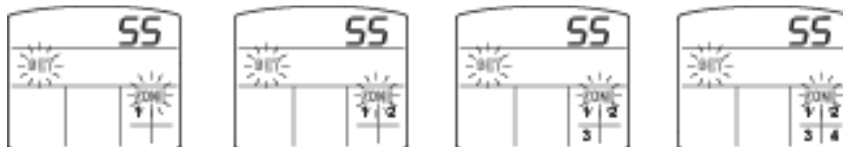
SETTING ZONES INSTALLED IN A SINGLE "SCC" INSTALATION

With SCC in off state:

- Press and hold "SET" button, and while still holding the SET button, press "ZONE 1" button
- SCC displays:
 - Flashing "SET"
 - Flashing "ZONE"
 - Zone cross



- Press zone buttons "ZONE 1/2/3/4" to enable required zones
- SCC displays:
 - Zone No as each zone button is pressed
 - Zone cross
 - Flashing SET



- Press SET when all required zones are displayed to lock in selection
- SCC returns to off state

SETTING ZONES INSTALLED IN A MULTIPLE “SCC” INSTALLATION

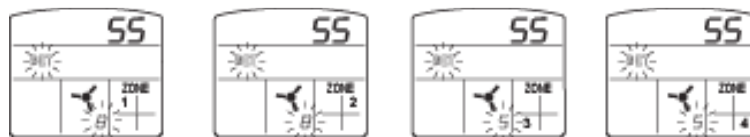
For TH4/5 models fitted with multiple SCC thermostats, the system automatically detects the number of SCC's connected and enables those zones - manual setting of zones installed is not required. If the displayed zones and the installed SCC's do not match it indicates that the system has not detected all SCC's (check looms and connections).

SETTING ZONE FAN SPEEDS

SINGLE “SCC” INSTALLATION

With SCC in OFF state: Mode: **HEAT**

- Press and hold "FAN" button, and while still holding the FAN button, press "ZONE 1" button
- Room fan starts at speed 8 (default for common zone)
- Set fan speed for common zone:
 - All zone dampers close
 - SCC displays:
 - ZONE and zone cross
 - Flashing SET
 - Rotating fan symbol
 - Flashing fan speed (initial speed displayed is default speed)
 - Use up/down arrows to adjust fan speed between 1/2/3/4/5/6/7/8/9/10 to desired air flow for common zone
 - Press "SET" when satisfied to lock in selection
- Set fan speed for zone 1:
 - Zone 1 damper open, all others closed
 - SCC displays:
 - ZONE and zone cross
 - 1 (zone number)
 - Flashing SET
 - Rotating fan symbol
 - Flashing fan speed (initial speed shown is default or previous set speed)
 - Use up/down arrows to adjust fan speed to achieve desired air flow for the common + zone 1 – this cannot be less than the common zone fan speed



- Press "SET" when satisfied to lock in selection
- Go to next zone until all enabled zone are set

SCC returns to off state once the fan speed for the last zone is set.

Change Mode to **COOL**, repeat above procedure.

MULTIPLE “SCC” INSTALLATION

NOTE:

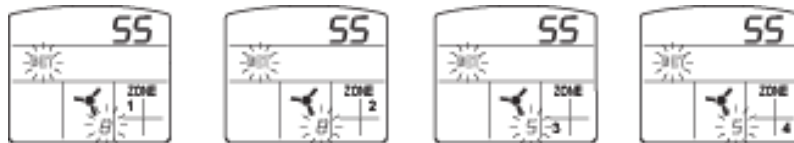
For TG/TH Heaters prior to 31st December 2010, Zone 1 will default OPEN for COOL as it becomes the COMMON ZONE.

For TH Extra Air Heaters manufactured after 1st January 2011, each zone operates individually, in both Heating and Cooling Mode. There is no COMMON ZONE, thus the appliance has the ability to HEAT or COOL any one zone.

Care must be taken to ensure the correct amount of air is set, thus, supplying each zone with sufficient cooling capacity.

With SCC in off state: Mode **HEAT**

- Press and hold "FAN" button, and while still holding the FAN button, press "ZONE 1" button
- Room fan starts at speed 8
- Set fan speed for zone 1:
 - Zone 1 damper open, all others closed
 - SCC displays:
 - ZONE and zone cross
 - 1 (zone number)
 - Flashing SET
 - Rotating fan symbol
 - Flashing fan speed (initial speed displayed is default or previous set speed)
 - Use up/down arrows to adjust fan speed between 1/2/3/4/5/6/7/8/9/10 to achieve desired air flow for zone 1
 - Press "SET" when satisfied to lock in selection
 - Go to next zone, repeat above procedure, until all enabled zones are set



- SCC returns to off state once the fan speed for the last zone is set.

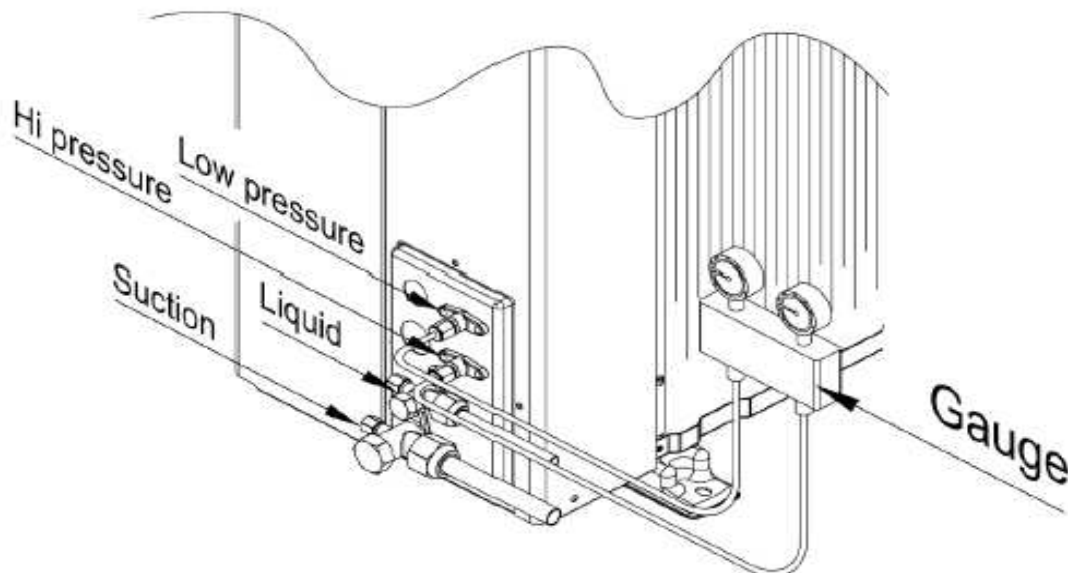
If a fan speed greater than HEAT fan Speed + 2 are required, then you must change Mode to **COOL**, and repeat above procedure.

One hour time limit on settings adjustment

To help guard against inadvertent adjustment by the customer, setting the maximum fan speed, zones installed, zone fan speeds and heater and cooler type must be done within the first hour of powering the SCC thermostat. After this time the SCC must be disconnected, its capacitor discharged and re-connected.

START UP & COMMISSIONING

- Ensure that a Return Air Filter is fitted prior to fan start up. (Filters are not supplied with the unit as standard).
- Ensure the Electrical has been connected and switch on at Isolator.
- Switch the unit on in cooling mode with the thermostat set to minimum temperature set point.
- Check suction and liquid pressure, check running current, check for noise and vibration, repair and/or rectify as required.
 - If all of the above are satisfactory, allow the system to run before starting to test the Super Heat.
- If charging by weight, it is best to calculate the required additional weight, according to the chart below, and add the refrigerant R410A after successfully evacuating and testing the field installed pipes. Add the extra refrigerant prior to opening the service valves, check for leaks, and then open the service valves fully.
- There is a Schroeder Valve under the service port cap.



Important Note:

All Braemar Integrated Systems are required to be commissioned and the data recorded on the Commissioning Sheet included with these Installation Instructions provided with the unit. Commissioning sheets require a signature from the customer. The cost associated with a customer warranty call will be charged back to the original Dealer / Contractor if evidence of commissioning at the date of start-up is not available

WARNING:

THE INDOOR UNIT IS SUPPLIED WITH A HOLDING CHARGE OF DRY NITROGEN.

THE OUTDOOR UNIT COMES WITH R410A CHARGE FOR LINES UP TO 7.5 m.

Condensing units are supplied with R410A sufficiently charged for matching evaporator and approximately of interconnecting tubing, depending on models. However during installation many things may happen, for example accidental release of gas. The recommended procedures stated below are used to determination refrigerant charge in the system.

DETERMINATION OF CORRECT REFRIGERANT CHARGE

2 METHODS OF ADDING REFRIGERANT FOR PIPE LENGTHS OVER 7.5m

1/ WEIGHING EXTRA REFRIGERANT

CHARGE BY LENGTH OF PIPE

The unit is shipped with a charge suitable for 3 to 7.5 meters of pipe. Extra refrigerant, (g/m), determined from the table below, **MUST** be added for each meter that the field installed pipe extends beyond 7.5m.

Model	Refrigerant Charge (g/m) over 7.5m
Y3000	58
Y3010	110
Y3020	110

Note: Where the difference in elevation between the indoor unit and the outdoor unit is greater than 5 meters, install an oil trap every 5 meters, in the vertical pipe section.

2/ SUPERHEAT METHOD

CHARGE BY SUPERHEAT METHOD (COOLING CYCLE)

- With both base valves fully open, connect a set of service gauges to the base valves service port, being careful to purge the lines.
- Allow the system to operate at least 10 minutes or until the pressures stabilize.
- Temporarily install a thermometer on the **suction (large)** line near the condensing unit base valve. Make sure that there is good contact between the thermometer and the refrigerant line and wrap the thermometer and line with insulating tape to ensure accurate readings.
- Determine the systems superheat as follows:
 - Read the system suction pressure.
 - Using the Saturated Suction Pressure (R410A) Table 1, determine the system saturated suction temperature.
 - Read the suction line temperature from the thermometer.
 - The system superheat = the suction line temperature - the saturated suction temperature**
- Adjust the charge as necessary by adding charge to lower the superheat or RECLAIMING the charge to raise the superheat in accordance to the operating parameter of the unit as shown in Table 2.

SYSTEM SUPERHEAT					
Ambient condenser inlet temperature (°C Dry Bulb)	Return Air Temperature (°C Dry Bulb)				
	18	21	24	27	30
38				3	3
35			3	3	3
32			4	7	10
30		3	6	9	11
27		3	7	12	14
24	3	6	9	14	16
21	3	8	11	16	18
19	7	10	14	18	19
16	9	14	17	18	20

Table 2 : SYSTEM SUPERHEAT

Suction Pressure (kPa)	Saturation Suction Temperature(°C)
345	-3.4
365	-2.1
380	-1.1
400	0
420	1.3
435	2.2
455	3.4
475	4.5
495	5.6
515	6.6
535	7.7
560	8.9

Table 1 : SATURATION SUCTION TEMPERATURE

CAUTION:

REMOVE THE SERVICE GAUGE SET FROM THE LINES CAREFULLY. ESCAPING LIQUID REFRIGERANT CAN CAUSE BURNS.

BRAEMAR INTEGRATED - COMMISSIONING SHEET

Please complete at time of commissioning on site

CUSTOMER:

Name Date
 Street Dealer
 Suburb Installer
 State
 Post Code Phone (H).....(W).....

Gas heater Model Serial No.
 Indoor Coil Model Serial No.
 Outdoor Unit Model Serial No.

Air On Indoor Coil °C – DB °C – WB° C Air on Outdoor Coil °C – DB
 Air Off Indoor Coil °C – DB °C – WB° C Air off Outdoor Coil °C – DB
 Airflow –l/s (Measured) If not measured please estimate l/s

Suction Pressure - kPa / psi on on Temperature °C measured at suction Port
 Discharge Pressure – kPa / psi Discharge Temperature calculated at compressor
 Liquid Line temperature °c
 Superheat Temperature °k (calculated) Suction Temperature required °c

Piping run in meters (one way) Suction line insulated – yes
 Refrigerant added if any - kg
 Outdoor unit position in relation to indoor coil in metres – Above or Level
 Condensate drain tested for leaks and water flow – yes Full load amps

Customer
 Signature.....Date.....

Installer signature.....Date.....

Signature Date.....


Customer System design notes:

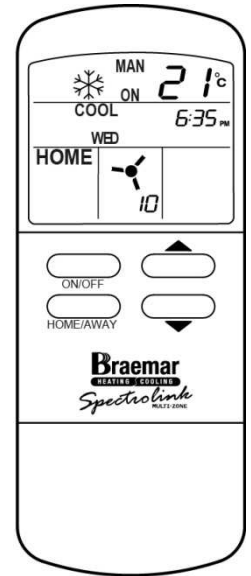
Zone details- please provide room details

Common zone	Heating mode:
Zone one
Zone two
Zone three
Zone four.....

Check Before Calling for Service

Before calling Service, please check the following:

1. If a new installation, please contact the installer to ensure the installation has been completed and commissioned.
2. You **MUST** have a control as shown – **Braemar SCC**, if not, please refer back to your installer.
3. Does the display show any information?
 - a. If Yes, go to Step 4.
 - b. If No, check power supply to Heater.
 - i. Repair power supply and set time and day.
 - ii. Follow procedure in “Home Owner’s Manual” on how to set up and operate your system.
 - iii. After completing the above checks and any fault rectified as required and your appliance continues not to operate, CALL 1300 650 644
4. Does the display show a “Snow Flake” symbol? 
 - a. If Yes,
 - i. Is there air coming out of the outlets in your home?
 - ii. If No,
 1. Ensure SCC is set to COOL and the set point is below the room temperature
 2. Check and clean return air filter
 3. Check and open outlets and/or zones
 4. Check duct for disconnection or damage
 5. After the above have been checked and repaired as required, Call 1300 650 644
 - b. If Yes, continue below:
 - i. Check Circuit Breaker and/or Isolator to Integrated Cooling unit. If electricity is available, the unit may be timing out on the inbuilt safety timer. Wait 5 minutes and re-check.
 - ii. If fan is blowing on Outdoor unit, check large pipe’s temperature, this pipe should be cold to touch.
 1. If not cold, please have the installer check for refrigerant leaks before calling Braemar Service on 1300 657 506
 - iii. Does the Integrated Cooling run for short periods of time?
 1. If No, refer 4.a.ii above
 2. If Yes,
 - a. Check to ensure enough outlets are open
 - b. Check and clean return air filter
 - c. The Braemar SCC has special safety features built in to protect your Integrated Cooling system. It will switch off the Integrated Cooling output signal when the supply air temperature drops below a pre-set minimum value and will restart after the supply air temperature rises by a pre-set value and the delay timer has elapsed.
 - d. Call the installer to check you have the required number of outlets open
 - e. Once the above have been checked and repaired as required,
Call 1300 657 506



Please NOTE:

It is important you recognise if the fault is with the Ducted Heater or if the fault is with the Refrigerated Cooling System. For prompt, efficient service, please follow the above before calling the appropriate number below.

For Refrigerated Cooling Issues
For Ducted Heater Issues

1300 657 506
1300 650 644

Troubleshooting:

Problem	Probable cause	Remedy
A. The air conditioner does not run.	<ol style="list-style-type: none"> 1. Power failure. 2. Fuse blown or circuit breaker open. 3. Voltage is too low. 4. Faulty contractors or relay. 5. Electrical connections loose. 6. Thermostat adjustment too low (in heating mode) or too high (in cooling mode). 7. Faulty capacitor. 8. Incorrect wiring terminal loose. 9. Pressure switch tripped. 	<ol style="list-style-type: none"> 1. Wait for power to resume. 2. Replace the fuse or reset the breaker. 3. Find the cause and fix it. 4. Replace the faulty component. 5. Retighten the connection. 6. Check thermostat setting. 7. Find the cause then replace capacitor. 8. Check and retighten. 9. Find the cause before reset.
B. The outdoor fan runs but the compressor will not start.	<ol style="list-style-type: none"> 1. Motor winding cut or grounded. 2. Faulty capacitor. 	<ol style="list-style-type: none"> 1. Check the wiring and the compressor winding resistance. 2. Find the cause then replace capacitor.
C. There is insufficient cooling.	<ol style="list-style-type: none"> 1. There is a gas leak. 2. Liquid and gas line insulated together. 3. The room was probably very hot when you started the system. 	<ol style="list-style-type: none"> 1. Remove charge, repair, evacuate and recharge. 2. Insulate them separately. 3. Wait while unit has enough time to cool the room.
D. The compressor runs continuously.	<ol style="list-style-type: none"> 1. Thermostat adjustment too high (in heating mode) or too low (in cooling mode). 2. Faulty fan. 3. Refrigerant charge too low, leak. 4. Air or incondensable in refrigerant circuit. 	<ol style="list-style-type: none"> 1. Remove charge, repair, evacuate and recharge. 2. Insulate them separately. 3. Wait while unit has enough time to cool the room. 2. Find the cause then replace capacitor.
E. The compressor starts but shuts down quickly.	<ol style="list-style-type: none"> 1. Too much or too little refrigerant. 2. Faulty compressor. 3. Air or incondensable in refrigerant circuit. 4. Blocked expansion device. 	<ol style="list-style-type: none"> 1. Remove charge, evacuate and recharge. 2. Determine the cause and replace compressor. 3. Remove charge, evacuate and recharge. 4. Replace it.
F. Clicking sound is heard from the air conditioner.	In heating or cooling operation any plastic parts may expand or shrink due to a sudden temperature change in this event, a clicking sound may occur.	This is normal.

Operation Tips

The following events may occur during normal operation.

1. Protection of the air conditioner.

Compressor protection

- The compressor cannot restart for 3 minutes after it stops.
- The supply air drops below a pre-determined set point; this prevents the indoor coil from freezing.

2. A white mist coming out from the indoor unit.

- A white mist may generate due to a large temperature difference between air inlet and air outlet on COOL mode in an indoor environment that has a high relative humidity.

3. Low noise of the air conditioner.

- You may hear a low hissing sound when the compressor is running or has just stopped running. This sound is the sound of the refrigerant flowing or coming to a stop.
- You can also hear a low “squeak” sound when the compressor is running or has just stopped running. This is caused by heat expansion and cold contraction of the plastic parts in the unit when the temperature is changing.

4. Dust is blown out from the indoor unit.

This is a normal condition when the air conditioner has not been used for a long time or during first use of the unit.

5. A peculiar smell comes out from the indoor unit.

This is caused by the indoor unit giving off smells permeated from building material, from furniture, smoke, or from the duct work.

6. The air conditioner turns to FAN only mode from COOL mode.

When indoor temperature reaches the temperature setting on air conditioner, the compressor will stop automatically, and the air conditioner turns to FAN only mode. The compressor will start again when the indoor temperature rises above the set point.

TECHNICAL SPECIFICATION:

Braemar Part		OD/ID	Y3000/Y3500	Y3010/Y3510	Y3020/Y3520
Power Supply		V/Ph/Hz	220-240/1/50	220-240/1/50	380-415/3/50
Cooling Capacity Rating*	Capacity	kW	11.5	14.2	18.0
	Power Consumption	kW	3.6	4.8	5.6
	EER	W/W	3.19	2.96	3.21
Maximum current **		A	25	34	11
Fuse		A	25	40	11
Cabling (minimum)		mm ²	4	6	1.5
Starting current		A	32	44	45
Soft starter			Y	Y	N
Evaporator coil	Number of row		3	3	3
	Fin spacing	mm	1.80	1.80	1.80
	Fin material		Un-hydrophilic aluminium		
	Tube outside diameter	mm	Ø9.50	Ø9.50	Ø9.50
	Tube material		Inner-grooved copper tube		
	Coil face area	m ²	0.20	0.20	0.24
	Air Flow Rate (rating)*	l/sec.	733	813	1052
Goes with	HEATER - TH5X23	l/sec	755	755	
	HEATER - TH5X32	l/sec			1070
	HEATER - TH4X20	l/sec	695		
	HEATER - TH4X25	l/sec		810	
	HEATER - TH4X30	l/sec			1050
	HEATER - TH3X20	l/sec	695		
	HEATER - TH3X25	l/sec		810	
	HEATER - TH3X30	l/sec			1050
Indoor dimension	Unit (H x W x D)	mm	545x635x638	545x635x638	645x635x638
	Net	Kg	30	30	40
Indoor weight	Gross	Kg	38	38	47.5
Outdoor coil	Number of row		2	2	2
	Fin spacing	mm	1.2	1.2	1.2
	Fin material		Un-hydrophilic aluminium		
	Tube outside diameter	mm	Ø7	Ø7	Ø7
	Tube material		Inner-grooved copper tube		
	Coil face area	m ²	0.73	1.18	1.34
Compressor	Type		Rotary	Scroll	Scroll
	Input	W	3210	4700	5130
	Rated current(RLA)	A	16.1	27.3	12.5
	Locked rotor Amp(LRA)	A	88	153	68
	Thermal protector		Internal	Internal	Internal
	Capacitor	mF	60	50	-
	Refrigerant oil	ml	1300	1656	1700
Outdoor fan motor	Power Input	W	225	166 x 2	225 x 2
	Running Current	A	1.1	0.92 x 2	1.1 x 2
	Capacitor	µF	7.5	5	7.5
	Speed	rpm	900	900	900
Outdoor noise level		dB(A)	68	70	71
Outdoor dimension	Unit (W x H x D)	mm	1012x815x412	1012x1275x412	1012x1442x412
	Net	Kg	85	110	115
Outdoor weight	Gross	Kg	91	122	125
Refrigerant	Type		R410-A	R410-A	R410-A
	Charge	g	3300	4000	4200
Piping Connection	Liq / Gas / Drain	mm	Ø9.5 / Ø19 / ID.24	Ø12.7 / Ø19 / ID.24	Ø12.7 / Ø19 / ID.24
	Max. refig pipe length	m	30	30	30
	Max. difference in level	m	15	15	15
Qty' per 20/40/40HQ		Set	30/60/90	23/45/65	23/45/45

Remark: The above design and specification are subject to change without prior notice for product improvement.

Rating Conditions *	Cooling
Indoor Temperature	26°C DB/19°C WB
Outdoor Temperature	35°C DB/24°C WB

Maximum Conditions **	Cooling
Indoor Temperature	32°C DB/23°C WB
Outdoor Temperature	43°C DB/-- °C WB

REMOVAL AND DISPOSAL

This product contains refrigerant under pressure, rotating parts and electrical connections which may be a danger and cause injury!

All work must only be carried out by competent persons using suitable protective clothing and safety precautions.



1. Isolate all sources of electrical supply to the unit including any control system supplies switched by the unit. Ensure that all points of electrical and gas isolation is secured in the OFF position. The supply cables and gas pipe-work may then be disconnected and removed. For points of connection refer to unit installation instructions.
2. Remove all refrigerant from each system of the unit into a suitable container using a refrigerant reclaim or recovery unit. This refrigerant may then be reused, if appropriate or returned to the manufacturer for disposal. **Under no circumstances should refrigerant be vented to atmosphere.** Where appropriate, drain the refrigerant oil from each system into a suitable container and dispose of according to local laws and regulations governing disposal of oily wastes.
3. Packaged unit can generally be removed in one piece after disconnection as above. Any fixing down bolts should be removed and then unit lifted from position using the points provided and equipment of adequate lifting capacity. Reference **MUST** be made to the unit installation instructions for unit weight and correct methods of lifting. Note that any residual or spilt refrigerant oil should be mopped up and disposed of as described above.
4. After removal from position the unit parts may be disposed of according to local laws and regulations

CONNECTION TO OTHER GAS DUCTED HEATERS

Although we do not recommend it, you can connect the Braemar Integrated Cooling Unit to the gas ducted heaters of other manufacturers. You will need to ensure that the gas ducted heater has the appropriate capability and performance, and meets the specifications, that are required for safe and satisfactory operation of the Integrated Cooling Unit. You will also need to ensure that the controller selected in place of the Braemar Spectrolink Comfort Control is suitable to operate the Integrated Cooling Unit, and is correctly programmed. Proper installation and commissioning is essential. Failure to comply with all of these requirements may result in the Integrated Cooling Unit not performing adequately or at all, and void the warranty.

NOTE:

For complete warranty terms and conditions, refer to separate Warranty Card and/or www.braemar.net.au
Warranty conditions are subject to property access and industry Safety Standards. Seeley International strives for continuous product improvements, therefore specifications are subject to change without notice. Unit colour may vary slightly from that depicted in this booklet.

Installation and commissioning of this system to the manufacturer's specification, compliance with industry standards, and local, state and national regulatory codes are the responsibility of the installer.

Information in this booklet was true and correct at the time of publishing. E & OE.

Warranty Service

For Refrigerated Cooling Issues **1300 657 506**

For Ducted Heater Issues **1300 650 644**

Prior to calling the service number please, read the trouble shooting section, “*Check Before Calling for Service*” on page 22. When calling Warranty Service number, please ensure you have your model and serial number available, along with date of purchase and if possible a description of the problem.

Technical support **1300 650 399**

Technical Support is for Installers and Dealers ONLY.

Prior to calling Technical support please ensure you have the appliance model and serial number and any relevant fault information.

Sales order office **1300 650 141**
siso@seeleyinternational.com

Head Office

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Sales Tax No. 8 671 721

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