



Raypak Commercial Power Vent Water Heaters

Installation and Operating Instructions



Models
B0520
B0670
B0770
B0870

This Installation and Operating Instructions Manual is provided with the information for the installation, operation and maintenance of your Raypak Heater. Please review and follow these procedures carefully. Keep this manual in a safe and accessible place for easy reference in the future.

Notice to Victorian Customers from the Victorian Plumbing Industry Commission.

This water heater must be installed by a licensed person as required by the Victorian Building Act 1993.

Only a licensed person will give you a Compliance Certificate, showing that the work complies with all the relevant standards. Only a licensed person will have insurance protecting their workmanship for 6 years. Make sure you use a licensed person to install this water heater and ask for your Compliance Certificate.

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Upon completion of the installation and commissioning of the water heater, leave this guide with the householder or responsible officer. **DO NOT** leave this guide inside of the cover of the water heater, as it may interfere with the safe operation of the water heater or ignite when the water heater is turned on.

FOR YOUR SAFETY

WARNING

For your safety do not operate this appliance before reading this instruction booklet



Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. For assistance or additional information consult the Rheem Service Department or accredited Service Agent.

WHAT TO DO IF YOU SMELL GAS?

- **DO NOT** try to light any gas appliance.
- **DO NOT** touch or operate any electrical switch.
- **TURN OFF** the gas supply at the gas meter or isolation valve.
- **DO NOT** use a mobile phone in the vicinity. Vacate the area and call your gas supplier or qualified gasfitter.

NOTE: Some gases are heavier than air and it may be necessary to check for gas leaks at floor level.

SAFETY

- **DO NOT** place articles on or against appliance.
- **DO NOT** store chemicals or combustible materials in the same room as, or vicinity of, this appliance.
- **DO NOT** spray aerosols near this appliance. Gases from some aerosol sprays become corrosive when drawn into a flame.
- **DO NOT** operate with panels, covers, flues or guards removed from appliance.
- **DO NOT** enclose this appliance if it is installed outdoors.
- **CHECK** that the combustion air openings are not obstructed.

ABOUT THE WATER HEATER

MODEL TYPE

Congratulations for choosing a Raypak® Commercial Gas water heater. The model is an On/Off or Modulating type suitable for indoor or outdoor installation.

Raypak heaters utilise a finned copper tube heat exchanger resulting in a low water content and reduced 'stand by' heat losses. Therefore a circulator pump of sufficient capacity to match the water heater model must be installed in the system.

Raypak water heaters are fitted with Australian Gas Association approved components and are designed to comply with AS 3814.

HOW HOT SHOULD THE WATER BE?

The required temperature of the water will have been determined by a qualified designer to suit the application and set during commissioning. Under normal conditions the temperature should not require adjustment.

For potable water applications requiring temperatures no greater than 75°C, a water heater with On/Off operation should be installed. For temperatures above 75°C or for mechanical heating a water heater with Modulating operation must be installed.

To meet the requirements of the National Plumbing Standard, for potable water applications, the temperature of the stored water must not be below 60°C.

If this water heater is installed as a booster as part of a commercial solar water heating system, to maximise solar contribution it is recommended the thermostat is set at 60°C, unless sanitising temperatures are required.

HOTTER WATER INCREASES THE RISK OF SCALD INJURY.

This water heater can deliver water at temperatures which can cause scalding. Check the water temperature before use, such as when entering a shower or filling a bath or basin, to ensure it is suitable for the application and will not cause scald injury.

We recommend and it may also be required by regulations that an approved temperature limiting device be fitted into the hot water pipe work to the ablution and public areas. This will keep the water temperature below the maximum permitted by AS/NZS 3500.4 to these areas. The risk of scald injury will be reduced and still allow hotter water to the kitchen, laundry and other areas requiring sanitising temperatures.

TEMPERATURE ADJUSTMENT

This appliance is not intended to be adjusted by the user. Please consult the installer if you are concerned with the temperature of the water.



This water heater is not intended to be operated, adjusted or tampered with by young children or infirm persons. Young children should be supervised to ensure they do not interfere with the water heater.

Removal of the access cover(s) will expose 240 V wiring. They must only be removed by an authorised or service person.

This water heater is supplied with a thermostat, an over-temperature cut-out, pressure switch and pressure relief valve. These devices must not be tampered with or removed. The water heater must not be operated unless each of these devices is fitted and is in working order.

The warranty can become void if relief valves or other safety devices are tampered with or if the installation is not in accordance with these instructions.

WATER SUPPLIES

WATER QUALITY

The standard finned copper tube heat exchanger has proved to be very resilient and capable of operating for many trouble free years on most public water supplies.

Should the installation be in an area where 'corrosive' or 'hard' water is present contact Raypak to ensure that the quality of the water is satisfactory.

DAMAGE CAUSED BY CORROSIVE, HARD OR OTHERWISE POOR QUALITY WATER, IS NOT COVERED BY THE WARRANTY.

INSTALLATION

THIS WATER HEATER IS NOT SUITABLE FOR POOL HEATING.

BEFORE COMMENCING THE INSTALLATION:

- 1. Read these instructions in full.**
- 2. Check that the heater you have been supplied is suitable for the type of installation and the gas that is available. The gas supply pressure must be between the minimum and maximum as shown on the water heater rating plate.**

Note: In Australia, natural gas models can be connected to SNG, however the hourly gas consumption may be reduced (typically by 10%).

This water heater must be installed by an authorised person.

The installation must comply with the requirements of AS/NZS 3500.4, AS/NZS 3000, AS 5601 and all local codes and regulatory authority requirements. The appliance must be commissioned by a properly licensed person in accordance with AS 3814 and certified by the state gas authority.

In New Zealand, the installation must conform with NZS 5261 Code of Practice for Installation of Gas Burning Appliances and the New Zealand Building Code.

INSPECTION OF EQUIPMENT

Check the heater and associated equipment for any damage and notify your local representative for any further instructions.

COMPONENTS PROVIDED WITH THE WATER HEATER

1 x 305mm x 60° elbow with grill

DO NOT INSTALL OR START UP THIS WATER HEATER IF IT HAS BEEN DAMAGED, WITHOUT FIRST CONSULTING RHEEM. ANY DAMAGE OR FAULT CAUSED BY UNAUTHORISED START UP MAY NOT BE COVERED BY WARRANTY.

This water heater is supplied with the following safety devices:

- An electronic thermostat
 - A manual reset flame safeguard system
 - An adjustable manual reset over-temperature device
 - A pressure relief valve
 - An automatic reset flame rollout sensor
 - Two main burner and one pilot flame sensor
 - An adjustable air pressure switch
 - An adjustable water flow switch
-
- The flame safeguard system ensures the safe operation of the burner.
 - The manual reset over-temperature device may need to be adjusted if the water heater is operating at water temperatures above those preset by the factory.
 - The air pressure switch ensures the unit does not operate without the fan running.
 - The water flow switch may need to be adjusted to accommodate the specific flow rate of the installation.



The water heater must not be operated unless each of these devices is fitted and is in working order. Warranty may be voided any of these devices are tampered with or the installation is not in accordance with these instructions.

INSTALLATION

IMPORTANT: When installing a new water heater to an existing system, it is a Raypak requirement that the system and its equipment be inspected, drained and flushed with clean fresh water, before the new water heater is connected.

Failure to do this may cause blockages and/or water heater damage which is NOT COVERED BY WARRANTY.

WATER HEATER LOCATION

This water heater is suitable for installation indoors or outdoors with the correct flue configuration. The water heater should be installed either close to the most frequently used outlets or with a circulated flow and return system and its position chosen with safety and service in mind. Make sure people (particularly children) will not touch the flue outlet. The flue terminal must be clear of obstructions and shrubbery.

Clearance must be allowed for servicing of the water heater. The water heater must be accessible without the use of a ladder or scaffold. Make sure the pressure relief valve lever is accessible and the front covers or panels, thermostats and burner can be removed for service.

Gas or water piping, electrical conduits, trees, fences, or other equipment, etc must not obstruct the front or top of the heater.

You must be able to read the information on the rating plate. Remember you may have to take the entire water heater out later for servicing.

If a safe tray is required, it should be large enough for all the equipment and must not restrict combustion airflow.

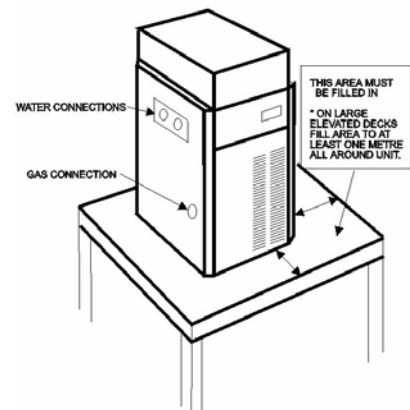
The water heater must be mounted on a level non-combustible base such as a concrete slab, concrete plinth, steel plate etc. Raypak water heaters must not be installed on carpeting.

RAISED OR MESH PLATFORM

Water heaters installed on a raised platform must be installed on a solid non-combustible base to prevent wind affecting the performance of the water heater.

If steel mesh decking is used, a base of suitable non-combustible material must be used to cover the mesh.

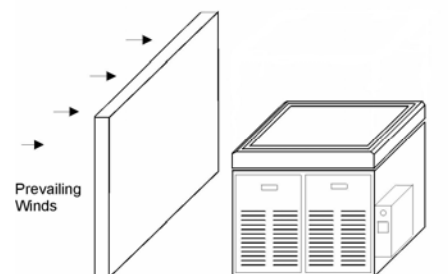
The base must extend 1m on all sides of the water heater.



HIGH WIND CONDITIONS

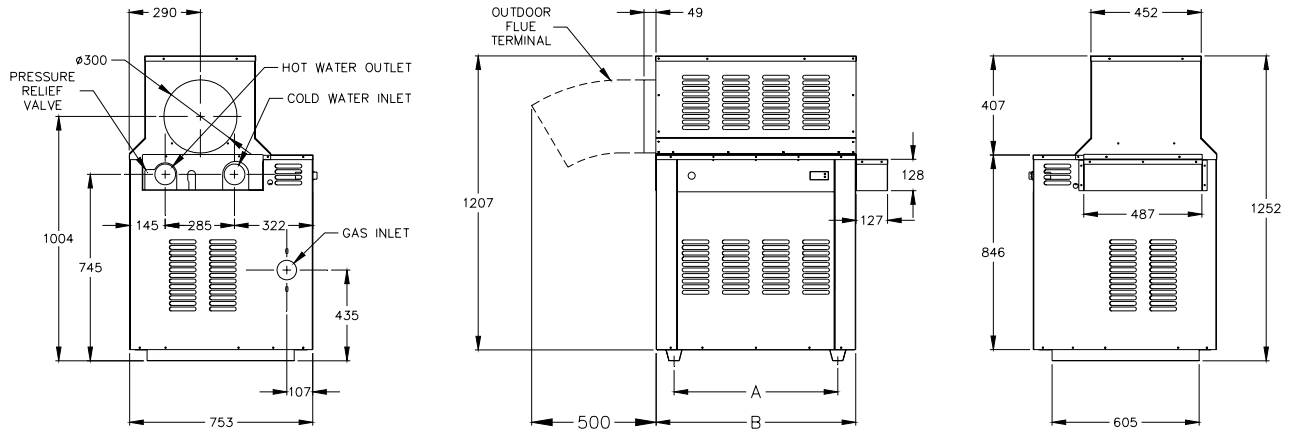
In areas where high winds occur frequently it may be necessary to install a wind break so that the water heater is not subject to direct wind gusts.

High rise or multi storey installations can present problems with excessive winds and we recommend that the common practice of surrounding the water heater within an open top enclosure be adhered to.



INSTALLATION

WATER HEATER DIMENSIONS



Model	520	670	770	870
A	674mm	797mm	901mm	1006mm
B	821mm	944mm	1048mm	1153mm

CLEARANCES – INDOOR INSTALLATIONS

	from combustible materials:	from non-combustible materials:
Rear	600mm	150mm
Front (access)	750mm	750mm
Flue Outlet Side*	700mm	700mm
Left Side*	600mm	600mm
Right Side*	600mm	300mm
Top (access)	600mm	600mm

*Indoor clearances given for Left Hand Side models. For models Right Hand configured apply clearances accordingly. Clearances for models installed outdoors must comply with AS5601.

COMBUSTION / VENTILATION AIR

Water heaters installed indoors must be provided with adequate ventilation in accordance with AS 5601.

Note: The flue gases from this water heater have a CO₂ level of 1%. Additional ventilation will be required.

Ventilation shall be via two permanent openings directly to outside, one at an upper level and one at low level. The minimum dimension of any opening shall be 6mm.

The **free ventilation area** for all models is as shown in the table below:

Ventilation Requirement - All Models			
Natural Ventilation / opening / water heater		Mechanical Ventilation / water heater	
Direct to Outside	1225 cm ²	Low Level Air supply	770 L/sec
Via Adjacent Room	2450cm ²	High Level Exhaust	
		Mechanical	193 – 254 L/sec
		Natural	1300cm ²

NOTE: Air supply to the area where the water heater is located must not be affected by mechanical exhaust vents or other equipment, eg cooling towers, chillers, heat pumps. Incorrect ventilation may create a negative pressure that can become a hazard by asphyxiation, explosion or fire.

INSTALLATION

FLUEING

Outdoor Installations

The flue terminal location of a water heater installed outdoors must comply with figure 5.3 of AS 5601. The supplied 60° bend must be fitted to the outlet of the water heater.

Semi Enclosed Outdoor Installations

Depending on the installation, eg covered areas, it may be necessary to extend the flue on an outdoor installation to discharge in a suitable location. In this case the 60° bend should be fitted to the terminating point of the secondary flue.

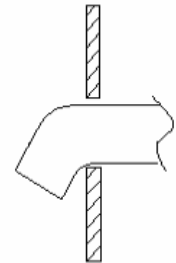
Indoor Installations

The secondary flue connected to this water heater may discharge horizontally or vertically.

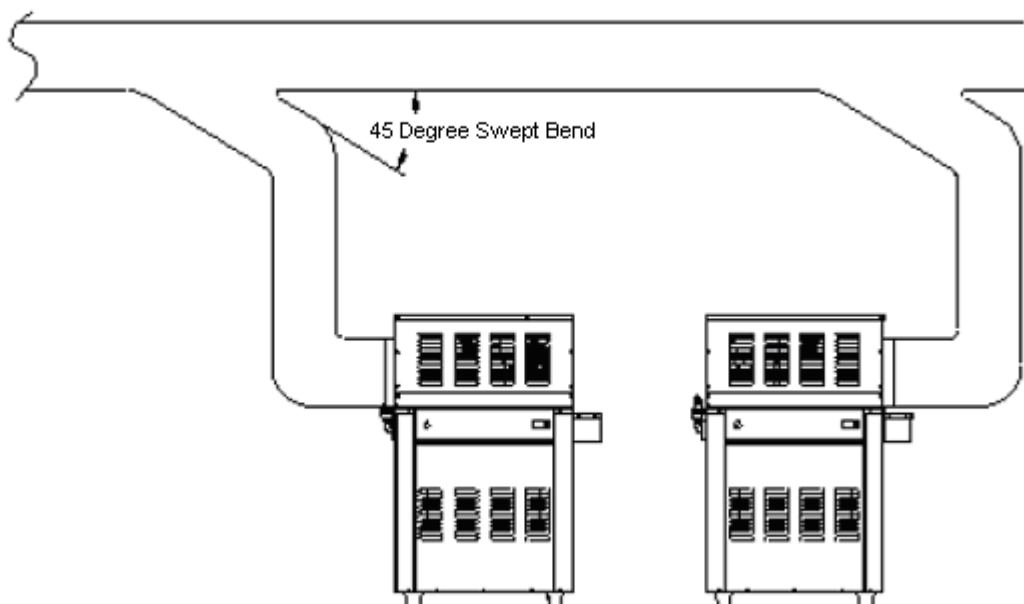
- All indoor installations require a 250mm barometric damper to be installed in the connector from each water heater. A barometric damper is available from Raypak.

Horizontal Discharge

- For horizontal discharge applications where each water heater is individually flued, the 300mm diameter flue for each water heater can be run for a total length of 20m with 3 x 90° bends plus the supplied 60° terminal (see diagram opposite).
- For horizontal discharge applications where each water heater is connected to a common flue, the 300mm connector from each water heater must join the common flue using a 45° swept junction positioned so as to direct the flue gasses into the common flue in the direction of discharge. The flue length is measured from the most disadvantaged water heater and should not exceed 20m with up to 3 x 90° elbows plus the 45° swept junction. The common flue must be sized in accordance with AS 5601 and terminate with an appropriately sized 60° terminal. Dampers may be required to be installed in each connector in accordance with AS5601



Note: The flue gasses from this water heater have a CO₂ level of 1%. The flue must be designed to accommodate the amount of additional air accordingly.



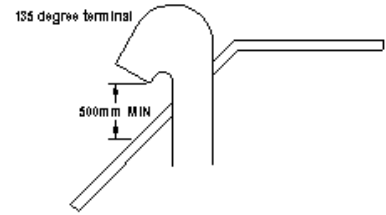
Typical Installation – Common Flue Manifold

INSTALLATION

Vertical discharge

For vertical discharge applications the installation must be in accordance with AS 5601.

For vertical discharge applications where each water heater is individually flued, the 300mm diameter flue for each water heater can be run for a total length of 20m with up to 3 x 90° elbows plus a 135° terminal. N.B. Jaks cowls are **NOT** to be used to terminate the flue as they will prevent adequate venting of the flue gases. See diagram opposite.



- For vertical discharge applications where each water heater is connected to a common flue, the 300mm connector from each water heater must join the common flue using a 30° swept junction positioned so as to direct the flue gases into the common flue in the direction of discharge. The common flue must be sized in accordance with AS 5601 and terminate with an appropriately sized 135° terminal. Dampers may be required to be installed in each connector in accordance with AS5601 (see 'Typical Installation – Common Flue Manifold' diagram above).

Note: The flue gasses from this water heater have a CO₂ level of 1%. The flue must be designed to accommodate the amount of excess air accordingly.

POWER FLUEING

If the flue cannot be designed as described above, then a power flue may be required. Power flues must be designed by persons competent to do so and must be interlocked with the water heater. Contact Raypak for power flue wiring diagrams.

INSTALLATION

Flue Outlet Direction

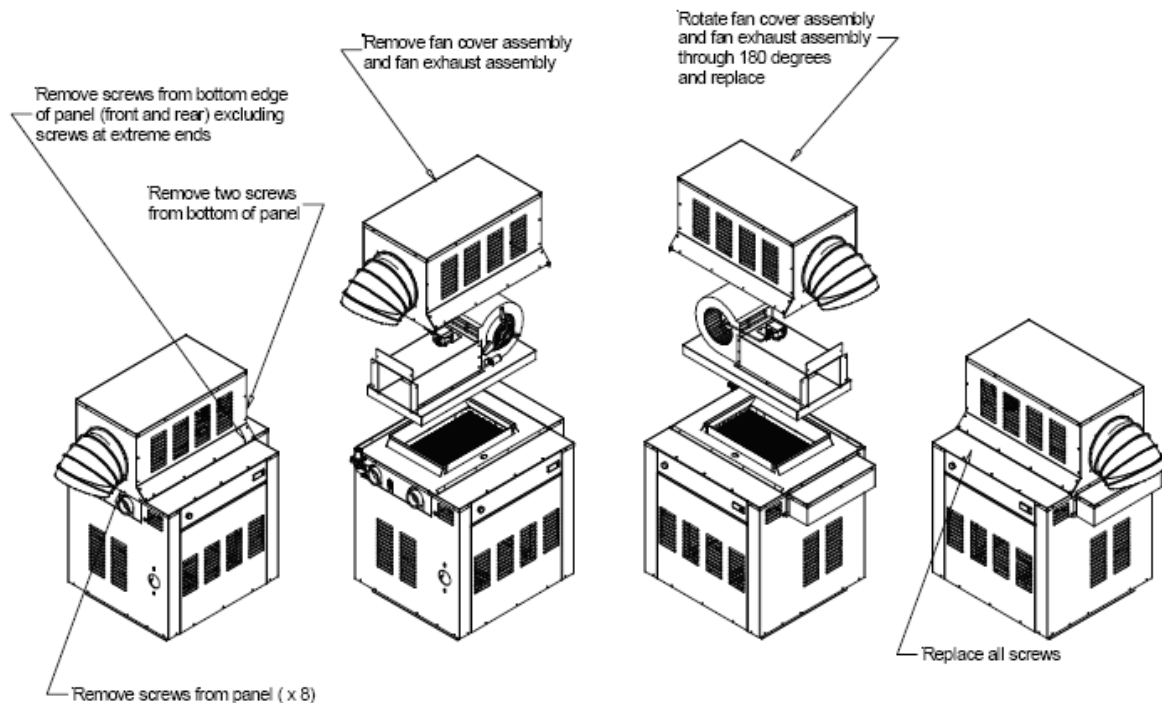
The flue connection on this water heater can be repositioned from the left hand side to the right hand side if required.

- Ensure the water heater is isolated from the mains power supply.
- Remove the 18 screws holding the fan cover assembly to the water heater body and the 6 screws around the flue connection.
- Remove the fan cover assembly from the water heater.
- Lift and rotate the fan exhaust assembly through 180°. Sufficient electrical cable has been provided to accommodate full rotation of the fan exhaust assembly.



Ensure the electrical cable is clear of the combustion chamber opening and cannot be pinched when replacing the fan cover assembly.

- Replace the fan cover assembly in the new direction and replace all screws



GAS INLET

The pipe work must be cleared of foreign matter before connection and purged before attempting to light the water heater. An isolation valve and disconnection union must be used to allow servicing and removal of the water heater. Refer to AS 5601 for the correct pipe sizing.



Always isolate the water heater before pressure testing the gas supply system. Disconnect the water heater after the isolating cock to prevent the risk of serious damage to the gas train. Warranty does not cover damage of any nature resulting from failure to observe this precaution. Refer to rating label for gas types and pressures.

The heater and its gas connection must be thoroughly leak tested before placing in operation. Use soapy water and a manometer for leak test.

DANGER! Do not use an open flame to check for gas leaks.

INSTALLATION

PUMP SELECTION

For the most efficient operation of the water heating system the circulating pump must be sized correctly.

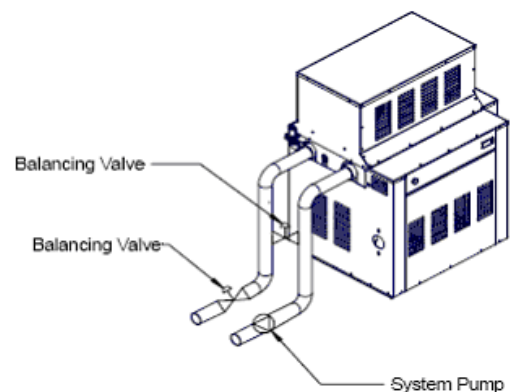
The pump should be installed on the inlet to the water heater especially where the system water pressure is low.

Refer to the 'flow rate and pressure drop table' on page 13 for the minimum and maximum flow rates for each model to determine the pressure loss through the water heater for the required temperature rise and add this to the other system pressure losses when sizing the pump.

Note: The flow rate must never be below the minimum stated in the Flow Rate and Pressure Drop table.

Where the water flow rate exceeds the maximum shown in the Flow Rate and Pressure Drop table, a bypass with a balancing valve must be installed to reduce the water flow through the water heater (see diagram opposite).

For pump sizing where the water heating system incorporates Rheem storage tanks, refer to the 'pump selection and pipe size table' on page 13.



Intermittent pump operation

Where pump operation is intermittent, a remote thermostat must be fitted in the system and a pump run on timer is required to remove residual heat from the water heater and prevent nuisance tripping of the high limit switch. A run on timer is available as an optional kit (Rheem part No 56076874).

Flow Rate and Pressure Drop Table

Model	Max Flow Rate Modulating (10°C Rise)		Max Flow Rate On/Off (15°C Rise)		Min Flow Rate (20°C Rise)	
	l/sec	kPa	l/sec	kPa	l/sec	kPa
520	2.87	6	1.91	3	1.43	3
670	3.58	10	2.39	4	1.79	3
770	4.06	14	2.71	6	2.03	4
870	4.66	22	3.11	8	2.33	5

* Where marked as maximum water flow, the temperature rise will be greater than 10°C or 15°C as noted.

Pipe Size and Pump Selection Table

Model	Pump			Branch Size	Minimum Manifold Header Size (mm)			
	UPS Series	Speed	TP Series		1 Unit	2 Units	3 Units	4 Units
B0520	32-80B	3		1 ^{1/4} 32mm	32	50	65	80
B0670	32-80B	3		1 ^{1/2} 40mm	40	50	65	80
B0770	32-80B	3	50-30/4B	2 50mm	50	80	100	100
	40-60/2B	2		1 ^{1/2} 40mm	40	50	80	80
B0870	32-80B	3	50-30/4B	2 1/2 65mm	65	100	125	150
	40-60/2B	1		2 50mm	50	65	80	100

INSTALLATION

- * TP series circulator is recommended for hard water areas in lieu of UPS series circulator
- * Manifold header sizes are minimum requirements for water heater performance

Minimum Pump Inlet Pressure

Circulating pumps require a minimum inlet pressure in order to operate without cavitation. Refer to the table below for minimum pressure requirements for Grundfos UPS series pumps. Minimum pressure requirements for TP series pumps depend on system characteristics and need to be calculated. Contact your pump supplier for more information.

Pump	Models	Minimum Inlet Head Required at Operating Temperature (m)				
		75°C	80°C	85°C	90°C	95°C
UPS32-80B	350,430,507,520,670,770,870	0.5	0.5	0.5	3.0	5.0
UPS40-60/2B	768,868,972,992,1142,1182,1242,1292	1.5	2.5	3.5	4.5	7.0
UPS50-120B	1362,1412,1492,1552,1662,1722,1852,1922,2004,2214	4.0	5.0	6.0	7.0	9.0
UPS80-120B	2404,2634,2804,3164,3304,3694,3804,4224	16.0	17.0	18.0	19.0	20.5

COLD WATER SUPPLY / MAKE-UP

All pipe work must be cleared of foreign matter before connection and purged before attempting to operate the water heater. All olive compression fittings must use brass or copper olives. Use thread sealing tape or approved thread sealant on all fittings.

Mechanical, Hydronic and Process Heating Applications

The pressure of the make up supply must be controlled. This may be achieved by the use of a pressure limiting valve or a header tank which is designed to provide the correct operating pressure for the system.

Where the water heater is fitted with a 60PSI relief valve, the maximum pressure setting must not exceed 330kPa. The minimum inlet pressure is dependant on a number of factors including operating temperature, minimum inlet pressure for circulating pumps and system pressure losses.

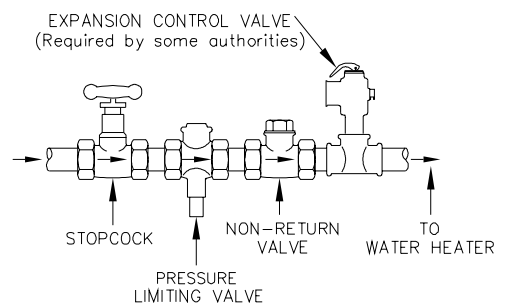
Backflow prevention in accordance with AS/NZS 3500.1 may be required, please check with the local water supply authority for any local code requirements.

A suitably sized expansion vessel must be fitted to a closed heating system to prevent discharge of system fluid during the heating cycle.

Domestic Hot Water Applications

An isolation valve and non-return valve must be installed on the cold water line to the system. An acceptable arrangement is shown in the diagram opposite.

The cold water supply to a domestic water heating system must be fitted with a pressure limiting valve if the water supply pressure exceeds 80% of the lowest rated relief valve in the system.



INSTALLATION

The cold water supply pressure must be sufficient to provide adequate flow at the fixtures.

EXPANSION CONTROL VALVE

Local regulations may make it mandatory to install an expansion control valve (ECV) in the cold water line to the water heating system. In other areas, an ECV is not required unless the saturation index is greater than +0.4 (refer to 'Water Supplies' on page 6). However, an ECV may be needed in a corrosive water area where there are sufficient quantities of silica dissolved in the water.

The expansion control valve must always be installed after the non return valve and be the last valve installed prior to the water heater (refer to diagram on page 13). A copper drain line must be run separately from the drain of the relief valve.

RELIEF VALVE DRAIN

A copper drain line must be fitted to the relief valve to carry the discharge clear of the water heater. Connect the drain line to the relief valve using a disconnection union. The pipe work from the relief valve to the drain should be as short as possible and fall all the way from the water heater with no restrictions. It should have no more than three right angle bends in it. Use DN20 pipe.

The outlet of the drain line must be in such a position that flow out of the pipe can be easily seen (refer to AS/NZS 3500.4) - but arranged so hot water discharge will not cause injury, damage or nuisance. The drain line must discharge at an outlet or air break not more than 9 metres from the relief valve.

In locations where water pipes are prone to freezing, the drain line must be insulated and not exceed 300 mm in length. In this instance, the drain line is to discharge into a tundish through an air gap of between 75 mm and 150 mm.

For multiple installations the drain line from each water heater can discharge into a common tundish.



As the function of the temperature pressure relief valve on this water heater is to discharge high temperature water under certain conditions, it is strongly recommended the pipe work downstream of the relief valve be capable of carrying water exceeding 93°C. Failure to observe this precaution may result in damage to pipe work and property.

PLUMBING CONNECTIONS

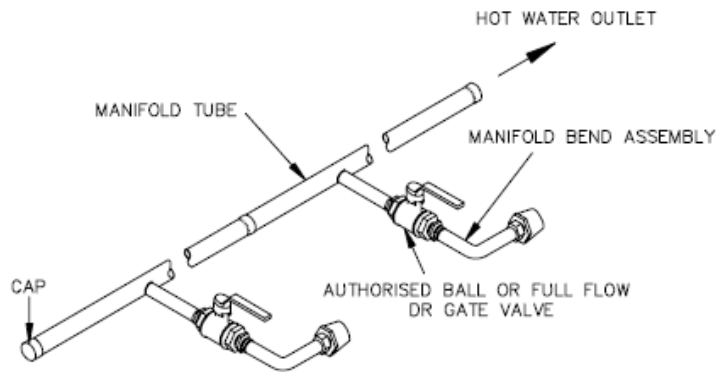
Domestic Hot Water Applications

For domestic hot water applications, one or more storage tanks are required. Connect the water heater, pump and storage tanks in accordance with the principles shown in the diagrams below and on pages 16 and 17 with the following in mind:

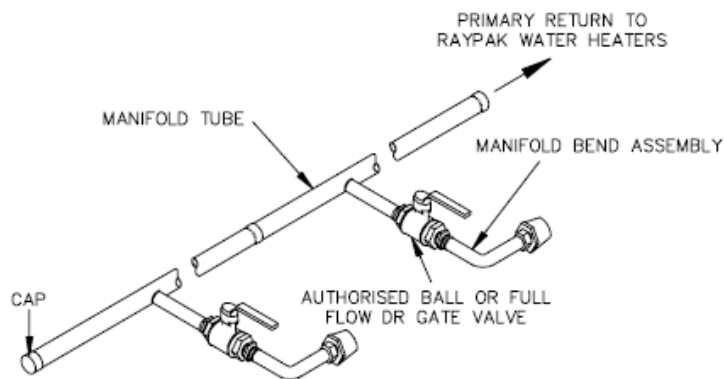
- Install the storage tanks according to Equa-flow® principles as described in the installation instructions supplied with the storage tanks and on page 16.
- Install the water heaters according to Equa-flow® principles as shown in the diagram on page 18
- A disconnection union must always be provided at the cold water inlet and hot water outlet on the water heater to allow for disconnection of the water heater.

INSTALLATION

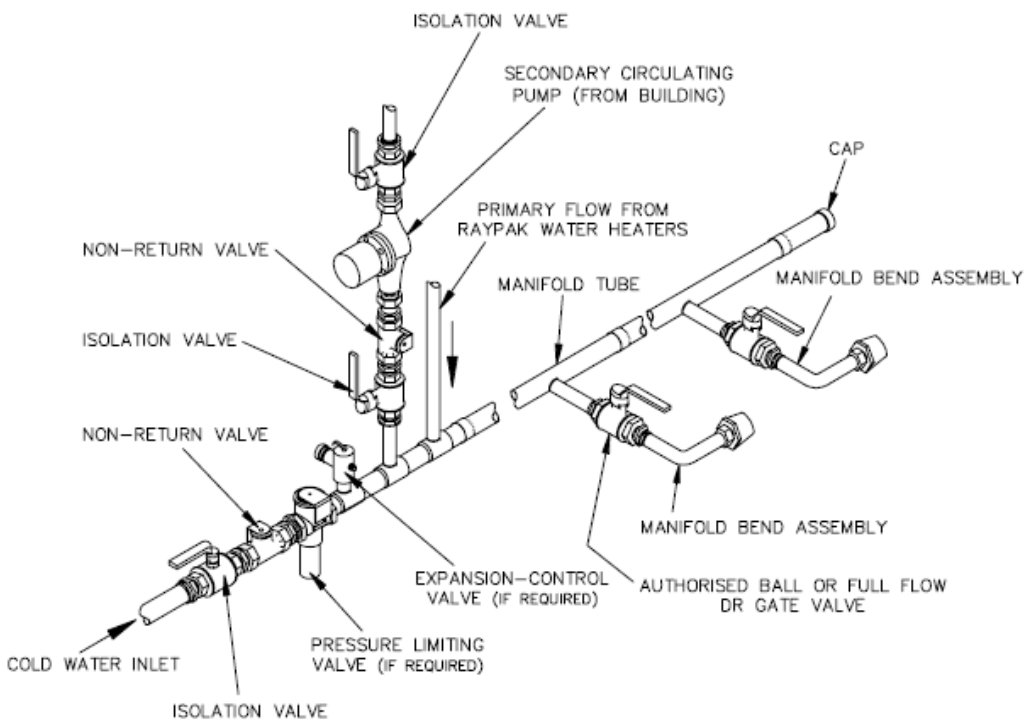
MANIFOLD ARRANGEMENT:



HOT HEADER ASSEMBLY

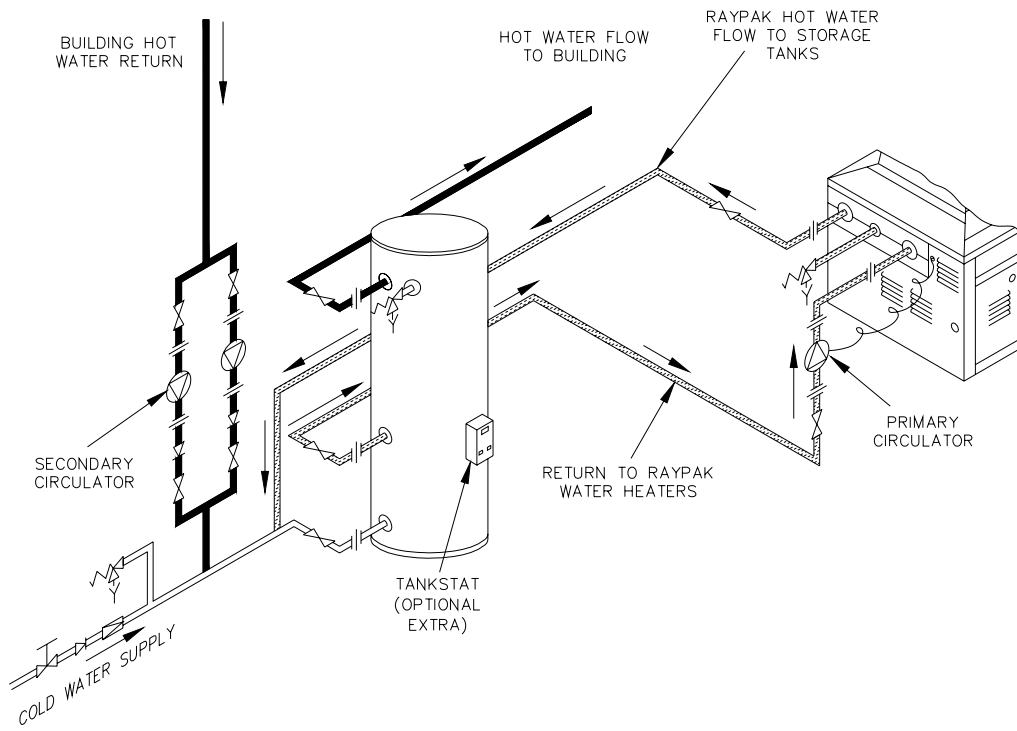


HEATING HEADER ASSEMBLY



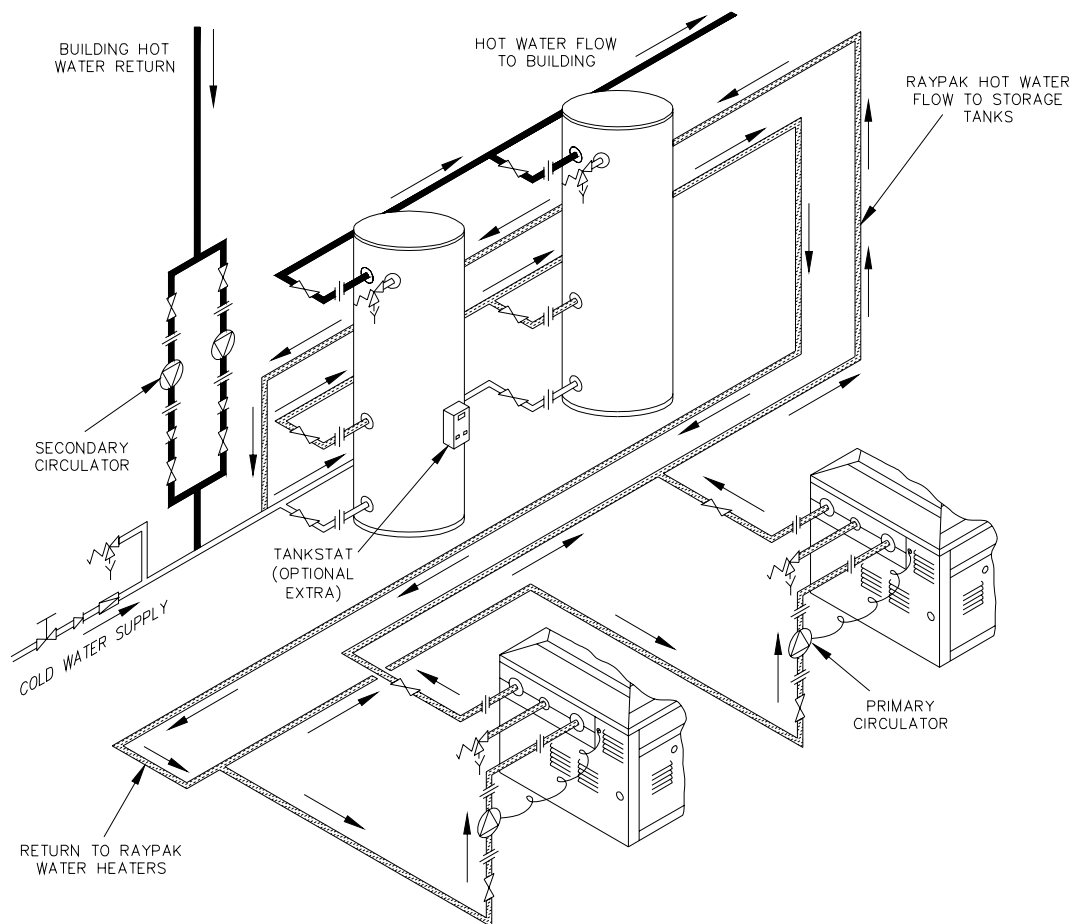
COLD HEADER ASSEMBLY

INSTALLATION



Typical Installation one water heater one tank

INSTALLATION



Typical Installation two water heaters, two tanks

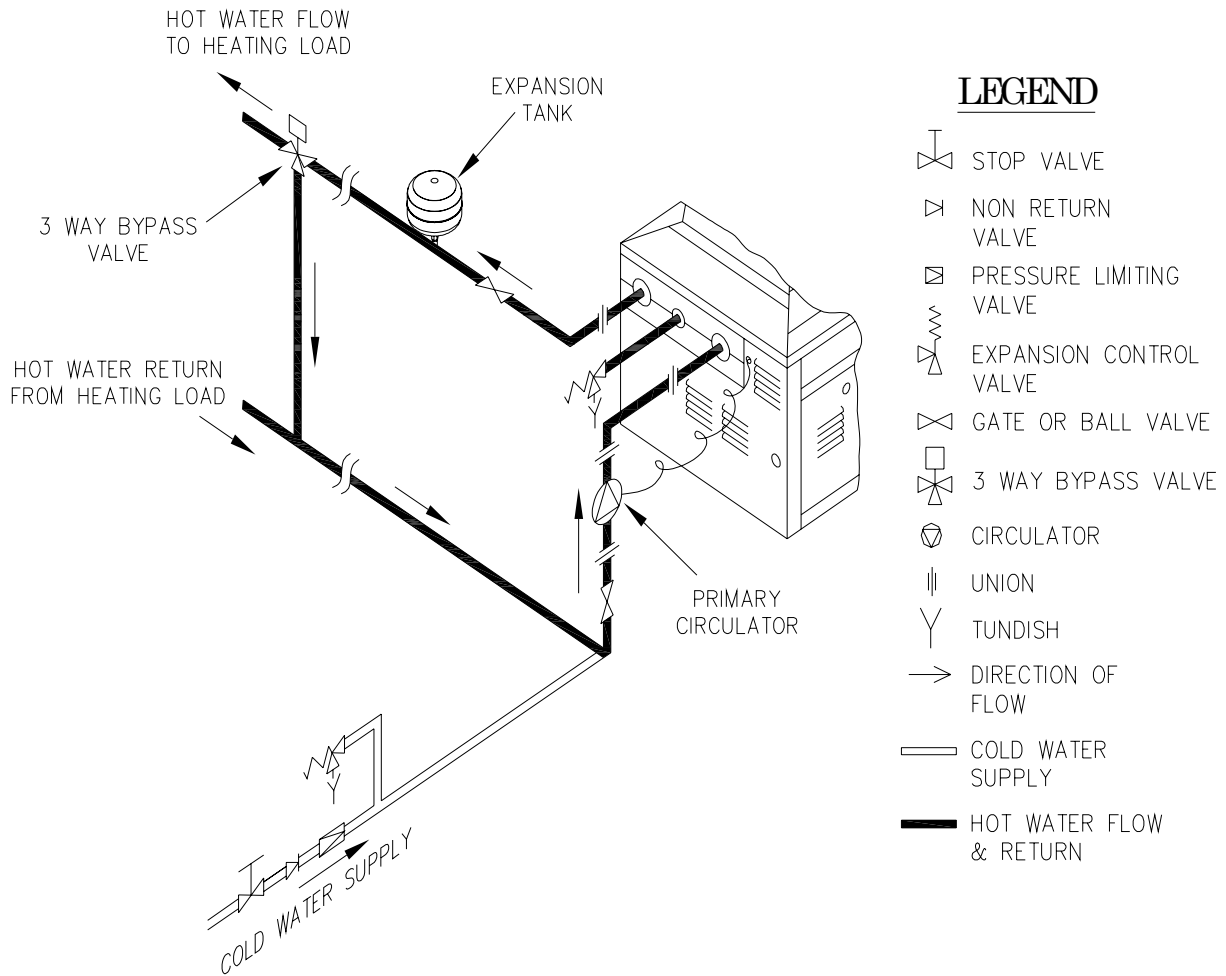
Mechanical, Hydronic and Process Heating Applications

For these applications, storage tanks are normally not required. Connect the water heaters and pumps in accordance with the principles shown in the diagram below with the following in mind:

- Install the water heaters according to Equa-flow® principles as shown in the diagrams on page 18.
- A disconnection union must always be provided at the cold water inlet and hot water outlet on the water heater to allow for disconnection of the water heater.
- Each high point of the system should be fitted with an air bleed valve or automatic air eliminator.
- On radiator or heating systems where thermostatic or zone valves will vary the water flow through the load, a by-pass with a suitable control valve must be installed to control the system water flow rate.

BY-PASS VALVES must be installed at the end of the system furthest from the water heater.

INSTALLATION



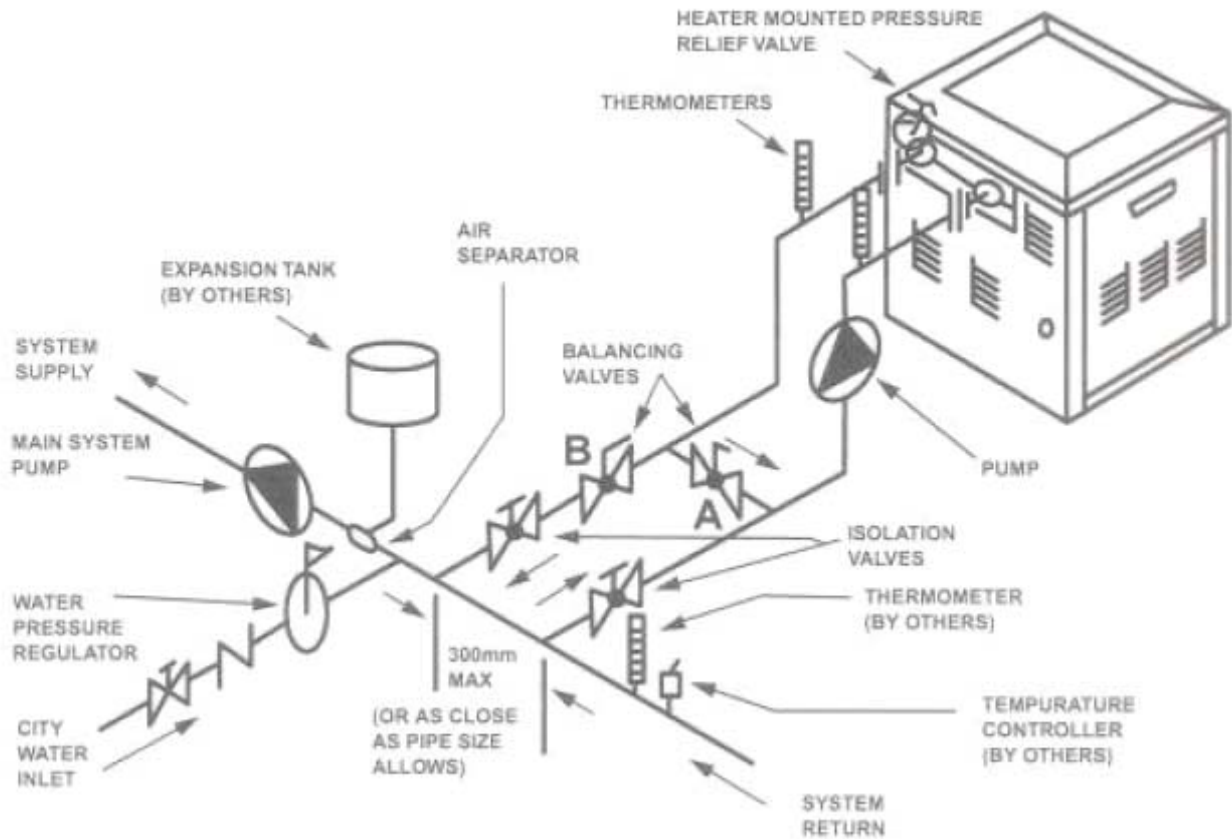
Typical Installation - Raypak mechanical heating system

CLOSED LOOP WATER SOURCE HEAT PUMP

Refer to diagram below

1. Only use a heater with on/off controls.
2. The bypass pipe diameter **MUST** be the same as the inlet and outlet pipes.
3. Select the pipe size between the heater and the system loop main, equal to the inlet/outlet header connections of the water heater (as a minimum).
4. Install the correct pump. The temperature rise must be between 10°C and 15°C. Refer to 'pipe size and pump selection table' on page 13.

INSTALLATION



ELECTRICAL SUPPLY

The electrical installation must comply with AS/NZS 3000 and any local requirements.

This water heater must be hard wired to a 240V AC 50 Hz M.E.N. (multiple earthed neutral) mains power supply with an all pole isolating switch installed adjacent to and accessible from the water heater (refer to AS 5601, 5.2.11). A suitable warning label must be affixed to the water heater if there are additional control circuits not isolated by this switch. This label should direct the service person to the isolation switch for that circuit.

Do not locate conduits across the doors, control panel or the top of the water heater.

Where conduit is to be mounted on the water heater cabinet there must be a 10mm air gap between

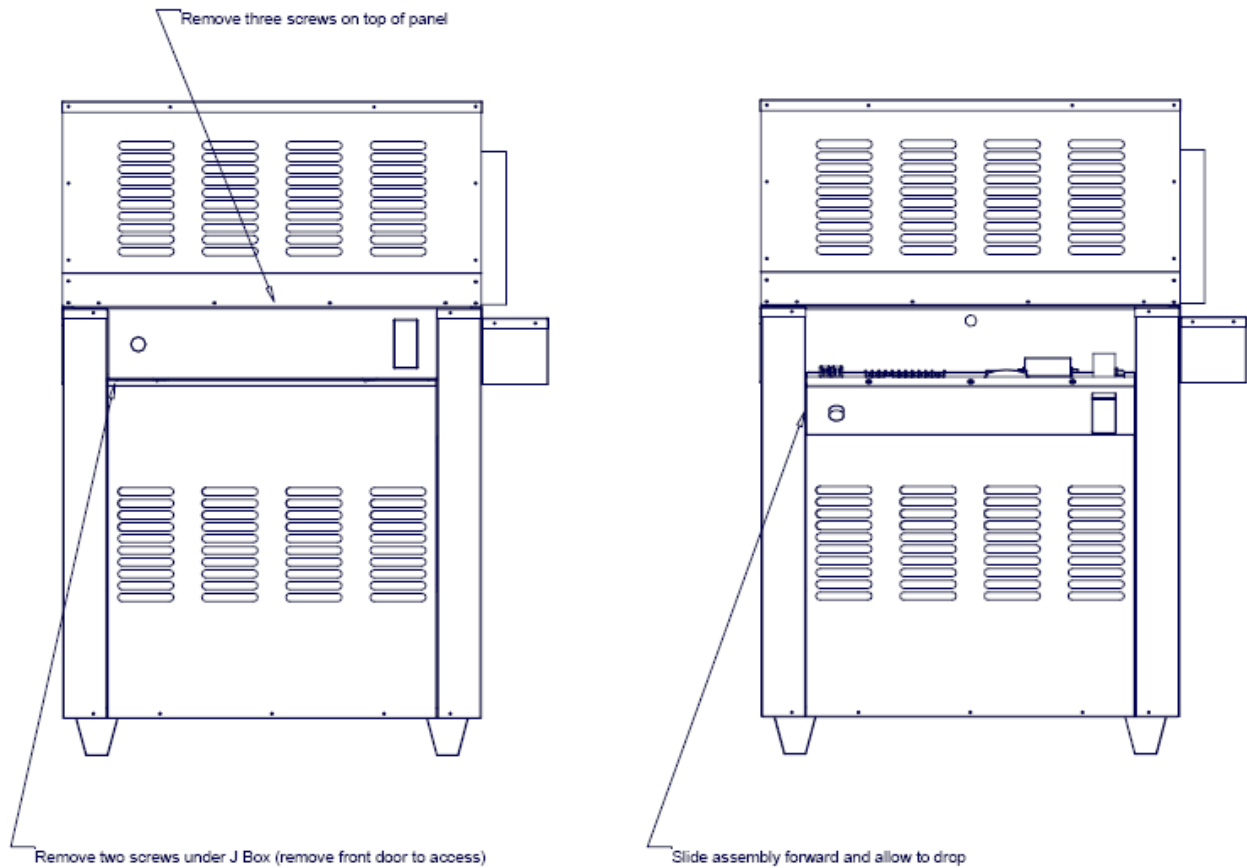
INSTALLATION

the conduit and the water heater cabinet to prevent overheating of the wiring.

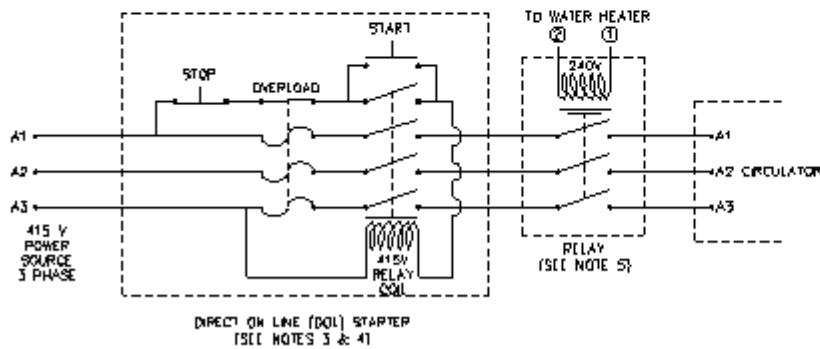
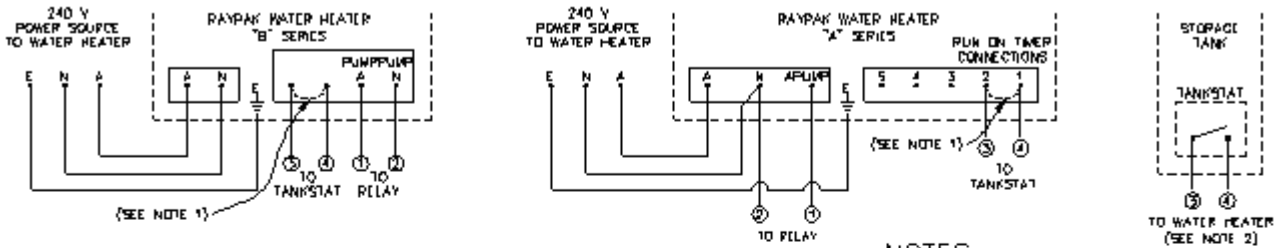
The power for the pump and the water heater must be supplied from the same circuit and isolating switch; alternatively the water heater power supply may be switched by the auxiliary contacts of the pump contactor (refer to diagrams on page 22).

THE WATER HEATER MUST NOT OPERATE WITHOUT THE CIRCULATING PUMP RUNNING.

Access to the electrical connection of the water heater is achieved by opening the control panel located on the front of the water heater (see diagram below).



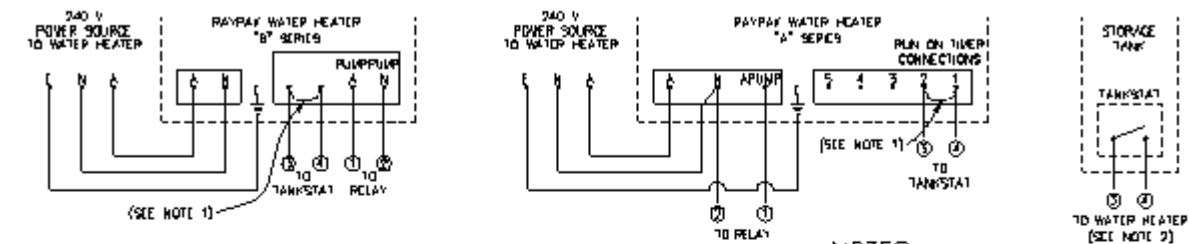
INSTALLATION



NOTES

1. THE BRIDGING WIRE STRAP MUST BE REMOVED FROM THE TERMINAL BLOCK WHEN CONNECTING THE WIRING FROM THE WATER HEATER TO THE TANKSTAT IN ORDER FOR THE RUN ON TIMER TO OPERATE.
2. THE TANKSTAT MUST BE FITTED TO AT LEAST ONE STORAGE TANK PER WATER HEATER IN ORDER FOR THE RUN ON TIMER TO BE UTILISED.
3. A DIRECT ON LINE (DOL) STARTER MUST BE INSTALLED IF THE CIRCULATOR DOES NOT INCORPORATE OVERLOAD PROTECTION. THIS PROTECTS THE CIRCULATOR AGAINST POWER SURGES.
4. A DIRECT ON LINE (DOL) STARTER IS REQUIRED TO BE INSTALLED WITH-
 - * GRUNDFOSS LPS SERIES SINGLE PHASE AND THREE PHASE CIRCULATORS.
 - * GRUNDFOSS TP SERIES THREE PHASE CIRCULATORS (GRUNDFOSS TP SERIES SINGLE PHASE CIRCULATORS INCORPORATE THEIR OWN MOTOR PROTECTION, SO A (DOL) STARTER EXTERNAL TO THE CIRCULATOR IS NOT REQUIRED.)
5. THE RELAY ACTS AS A SWITCHING DEVICE BETWEEN THE WATER HEATER AND CIRCULATOR.
6. PROVISION MUST BE MADE DURING THE PROJECT DESIGN STAGE FOR THE ELECTRICAL TRADE TO MAKE WIRING CONNECTIONS.

Wiring diagram Raypak water heater with 415V 3 phase circulator

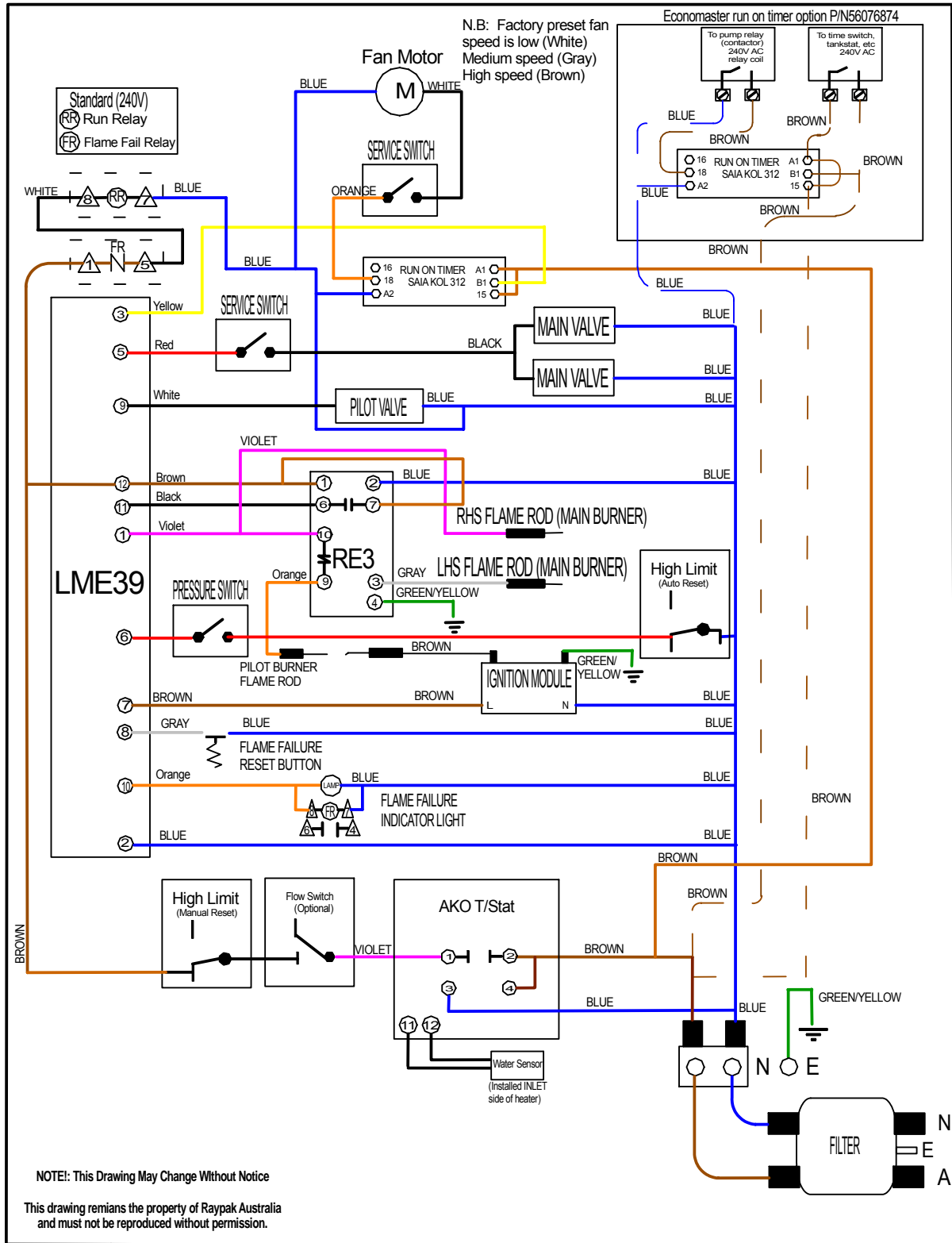


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Wiring diagram Raypak Water Heater with 240V Single Phase Circulator

INSTALLATION



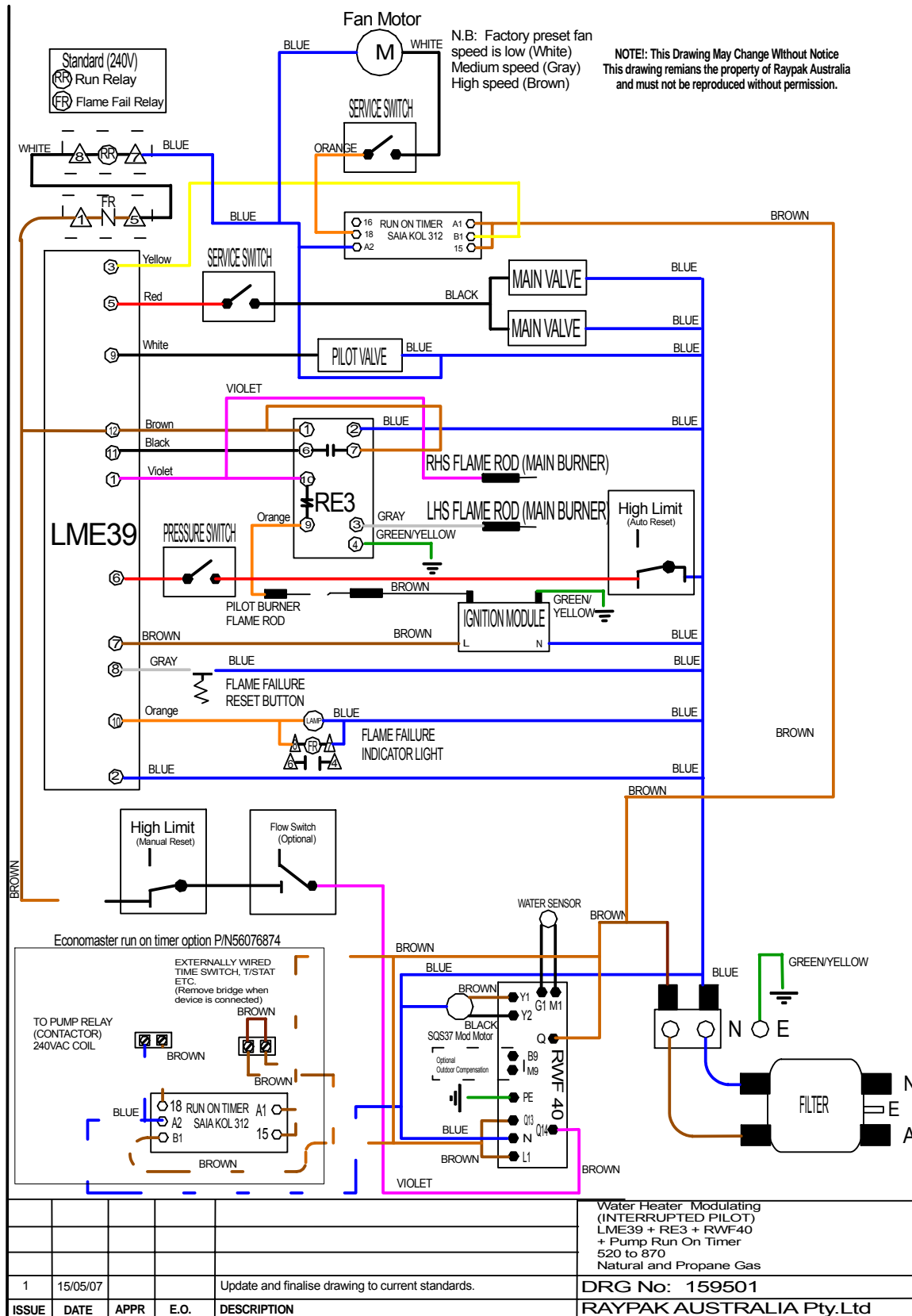
NOTE: This Drawing May Change Without Notice

This drawing remains the property of Raypak Australia and must not be reproduced without permission.

					Water Heater On/Off (INTERRUPTED PILOT) LME39 + RE3 + AKO + Run On Timer (Option) 520 to 870 Natural and Propane Gas
1	15/05/07			Update and finalise drawing to current standards.	DRG No: 159502
ISSUE	DATE	APPR	E.O.	DESCRIPTION	RAYPAK AUSTRALIA Pty.Ltd

Wiring Diagram – On/Off Water Heaters

INSTALLATION



A

Wiring Diagram – Modulating Water Heaters

INSTALLATION

AMBIENT AIR COMPENSATION

QAC22 / QAC32 Mounting and Installation

Mounting Position

Mounting instructions are printed on the packaging however the following points should be noted

- The sensor is to be mounted externally, preferably at the mid point of the house or building or heating zone, but at least 2.5 m above the ground

The sensor must not be fitted at the following locations:

- Above windows, doors, air extracts or other heat sources
- Below balconies or the eave of the roof

To prevent measurement errors the sensor should:

- Be sealed.
- Not painted over

Connection

The ambient air sensor is connected to terminals B9 and M9 on the RWF40 thermostat

Programming

When utilising outdoor compensation it is necessary to reprogram some of the parameters within the RWF 40 controller to recognise the outdoor sensor.

The table below details the parameters that require alteration and the new settings required.

Parameter	Original Setting	New Setting
C111	9000	9030
C112	0000	C010
SPL	0	55
SPH	95	85
AL	0	24
HYS _t	0	2
H	0	4

NOTE: Prior to altering the factory settings, advice should be sought on the function of parameters, other than those listed above, to prevent malfunction of the RWF40 controller.



COMMISSIONING

COMMISSIONING MUST ONLY BE UNDERTAKEN BY A PROPERLY QUALIFIED AND IN MOST CASES APPROPRIATELY LICENSED PERSON WHO IS FAMILIAR WITH THE COMMISSIONING REQUIREMENTS OF AS3814. MOST REGULATORY AUTHORITIES REQUIRE THE APPLIANCE AND ITS INSTALLATION TO BE INSPECTED AND CERTIFIED.

PRE-COMMISSIONING CHECK LIST

1. Conduct a visual inspection of the water heater and equipment for damage and report as necessary.
2. Ensure the water heater is suitable for the type of gas available.
3. Ensure the correct power supply is available and the water heater and circulation pump are correctly wired (Refer to page 20).
4. Ensure the pump is installed in the correct orientation, the flow direction is correct and (for three phase pumps) the phase rotation is correct.
5. Ensure the position of the water heater complies with the installation requirements of this manual, AS 5601 and local authority requirements.
6. Ensure the ventilation to the plant room complies with the requirements of AS 5601 and local authority regulations. Mechanical ventilation, if provided, must be interlocked with the water heater as required by AS 5601.
7. Ensure the flue complies with the installation requirements of this manual, AS 5601 and local authority requirement. A power flue, if provided, must be interlocked with the water heater as required by AS 5601.
8. Ensure flammable or combustible materials are not stored near the water heater. Flammable liquids (such as petrol), newspapers and similar articles must be kept well away from the water heater and the flue system.
9. Ensure swimming pool chemicals, household cleaners, etc., are not stored near the water heater.
10. Ensure nothing is placed on top of the water heater or in contact with the flue system. Ensure the flue terminal is not obstructed in any way at any time.
11. Ensure the combustion air openings are not obstructed.
12. Ensure the system is filled with water and any air has been expelled.
13. Purge all air from gas supply piping.
14. Test ALL gas connections for leaks using soapy water **(DO NOT USE A NAKED FLAME)**

WHAT TO DO IF YOU SMELL GAS?

- **DO NOT TRY TO LIGHT ANY GAS APPLIANCE**
- **DO NOT TOUCH OR OPERATE ANY ELECTRICAL SWITCH**
- **TURN OFF THE GAS SUPPLY AT THE GAS METER OR ISOLATION VALVE**
- **DO NOT USE A MOBILE PHONE IN THE VICINITY. VACATE THE AREA AND CALL YOUR GAS SUPPLIER OR QUALIFIED GASFITTER**

COMMISSIONING THE WATER HEATER

THE WATER HEATER MUST BE COMMISSIONED IN ACCORDANCE WITH AS 3814, appendix F.

Refer to Operation section on page 28 for instructions on lighting the water heater.

Refer to Adjustment section on page 30 for instructions on adjustment of the water heater.

COMMISSIONING

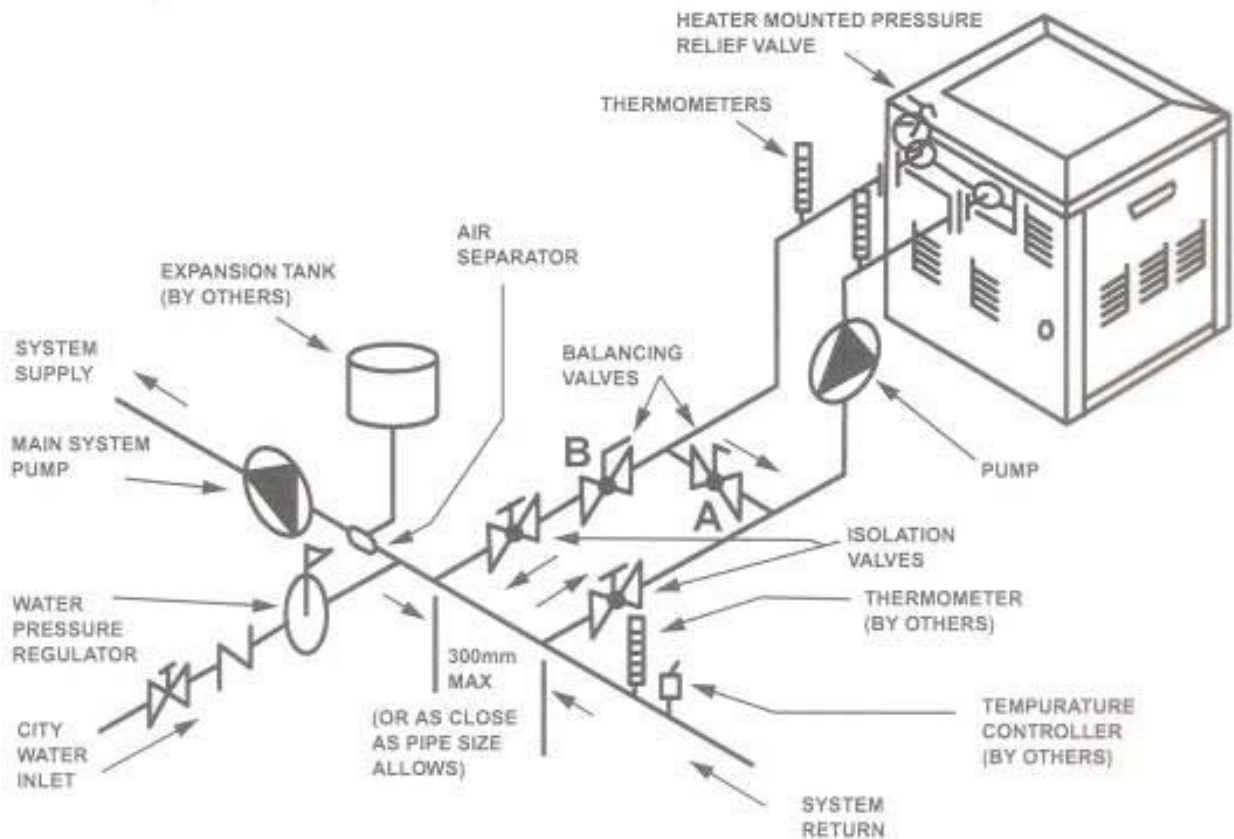
CLOSED LOOP WATER SOURCE HEAT PUMP

Commissioning procedure – refer to diagram below

- 1 Check that both isolation valves are open.
- 2 Adjust balancing valve **A** to half open and balancing valve **B** to fully open.
- 3 Start up the heater and adjust balancing valve **A** to obtain a heater inlet temperature of approximately 10°C greater than the system loop return temperature, (turning valve **A** in the open direction will increase the heater inlet temperature and closing valve **A** will lower the heater inlet temperature).

NOTE: The heater inlet should never be less than 41°C.

- 4 If the heater inlet temperature remains less than 10°C higher than the system loop return temperature and valve **A** is fully open, leave valve **A** fully open and throttle valve **B** until the heater inlet temperature rises to be 10°C higher than the system loop return temperature.
- 5 Main loop and heater temperatures should be checked regularly throughout the season to prevent heater condensation. If the balancing valves are adjusted at the coldest loop temperature (typically 10°C) and the heater temperature to 41°C then the entire heating season should have a proper 41°C operation. The heater inlet temperature can be higher than 41°C without heater damage, but operating at less than 41°C inlet can cause damage from condensation.



OPERATION

FIRST FIRING OF WATER HEATER

- It is quite normal for the water heater to produce some smoke, fumes and possible condensation for the first thirty (30) minutes of firing from new.
- Avoid breathing fumes. Vacate and ventilate area.

LIGHTING PROCEDURE

CAUTION

- Do not use this heater if any part has been under water. Call a qualified service technician **immediately** to replace any part or control system that has been under water.
- Propane Gas is heavier than air and sinks to the ground, exercise extreme care in lighting the water heater in confined areas.

STOP refer to “For Your Safety” on page 4.

This water heater is equipped with electronic ignition and a number of other features for automatic operation.

1. Open the gas isolation valve at the inlet to the water heater.

STOP!

If you smell gas, follow the safety instructions. Refer to 'What To Do If You Can Smell Gas' on page 26
If you do not smell any gas continue.

2. Ensure the pilot gas isolation valve is open.

- Use **only** your hand to turn the pilot gas isolation valve.
- **Never use any tools.** If the knob will not turn by hand do not try to repair it, call a qualified service technician.
- Force or attempted repair may result in a fire or explosion.

3. Ensure water heater is full of water.

4. Switch on electrical power to the water heater and ancillary equipment (if fitted).

5. The water heater will commence the start up sequence.

Note: The start up sequence will only commence if the thermostat is calling for heat and the flow switch and all external interlocks (if fitted) are closed.

6. The fan will start and when the pressure switch is closed the pre-purge period (up to 30 seconds) will commence.

7. The ignition sequence will commence following the pre-purge period, as follows:

- Ignition of pilot burner (up to 5 seconds)
- Proving of pilot flame (10 seconds)
- Opening of main gas valves
- Proving of main flame (2-5 seconds)
- Extinction of pilot flame

Note: If the burner fails to light the water heater will lock out and the “red” reset light will illuminate, except that for heaters with a nominal gas input less than 2000MJ/h the system will make one re-ignition attempt following a further pre-purge period. To reset the water heater refer to 'Resetting The Water Hater' on page 37.

OPERATION

TO TURN OFF THE WATER HEATER

1. Turn off the power supply to the water heater at the isolation switch.

EMERGENCY SHUT-DOWN

1. Turn off the power supply to the water heater at the isolation switch.
2. Turn off the gas isolation valve at the inlet to the water heater or the main gas supply.

CHECK FOR NORMAL OPERATION

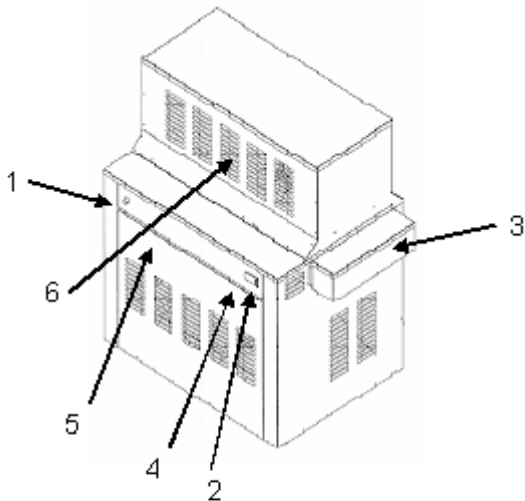
- With the water heater operating, remove the door and make a visual check of the burners. The flame should be blue with a well-defined pattern.
- A yellow or floating flame indicates restricted air openings, incorrect gas type, incorrect orifice size or possible excessive draught.
- Observe for any indication of soot. The presence of soot accumulation would indicate an abnormal operating condition.

Should abnormalities be observed, turn off the water heater and contact Rheem Service or your nearest Accredited Service Agent.



Operation of the water heater due to poor combustion will result in rapid and severe damage, which is not covered by warranty.

LOCATION OF CONTROLS



1. **FLAME FAILURE RESET:** This is a combination reset button and indicator lamp. It indicates, when illuminated, that the ignition system has shutdown on its safety control. During normal operation the lamp is out and the button will not require any operation.
2. **TEMPERATURE CONTROL:** This may vary with the type of Heater installed and is explained later in this section.
3. **FLOW SWITCH:** (Located in the return header) This device will shut off power to the heater internal controls in the event of low or no water flow.
4. **GAS VALVE ISOLATION SWITCH:** (Located under the control panel behind the door) Used to isolate the gas valve during the commissioning process only.
5. **FAN ISOLATION SWITCH:** (Located under the control panel behind the door) Used to isolate the fan during the commissioning process only.
6. **FAN PROVING PRESSURE SWITCH:** Used to prove fan operation prior to ignition. Test point

located here for commissioning purposes.

ADJUSTMENT

THERMOSTATS

On/Off Models

Water heaters with On/Off operation are fitted with an AKO adjustable thermostat with the temperature sensor located in the inlet side of the header.

This type of control is used where the system load is constant, e.g. potable hot water supplied from a storage tank or underfloor heating.



To adjust Set Temperature

- Press the “▼” button for 5 seconds to display the current ‘Set Point’.
- Press the “▲” or “▼” buttons to increase or decrease the set point to that required.
- Press the “▲” and “▼” buttons simultaneously to lock the new setting into the controller, the current water temperature will be redisplayed.

To adjust Parameters

The thermostat has a number of parameters that are programmed during manufacture (refer to the ‘AKO Parameter table’ on page 31 for values); advice should be sort from your local Raypak representative prior to altering any values other than the set point or the differential.

- Press the “▲” and “▼” buttons simultaneously until ‘C0’ is displayed (approx 10 seconds).
- Press the “▲” or “▼” buttons to display the parameter that requires setting i.e. C1 (refer to the AKO Parameter Table on page 31 for parameter values).
- Press the “▲” and “▼” buttons simultaneously to display the current value of the parameter selected in step b.
- Press the “▲” or “▼” buttons to alter the value of the parameter.
- Press the “▲” and “▼” buttons simultaneously to exit the parameter adjustment. The parameter selected in step b is redisplayed
- Press the “▲” or “▼” buttons to select the next parameter that requires setting or if all parameters are set until ‘EP’ is displayed.
- Press the “▲” and “▼” buttons simultaneously to save the setting changes and exit programming.

NOTE:

- If a button is not pressed within any 25 second period the controller will exit programming mode without saving any changes.
- Failure to exit the programming mode via EP will result in the new settings not being saved

NOTE: If a remote thermostat is used to control the water temperature e.g. a Tankstat, the water heater thermostat should be set to a slightly higher temperature than that of the remote thermostat.

Fault Codes

In the event a fault occurs with the thermostat or the temperature sensor a 2-digit code will be displayed on the thermostat LED.

Code	Fault
AL	Temperature below the minimum set point parameter C3
AH	Temperature above the maximum set point parameter C2
EE	Memory error
E1	Temperature sensor set open circuit

ADJUSTMENT

AKO Parameter Table

Parameter	Operation	Setting
C0	Sensor calibration	0
C1	Differential	2
C2	Upper set point limit	80
C3	Lower set point limit	20
C4	Compressor protection delay type	0
C5	Protection delay time	0
C7	Relay time ON in case of faulty sensor	0
C8	Relay time OFF in case of faulty sensor	0
d0	Defrost frequency	0
d1	Defrost maximum duration	0
d2	Type of message during defrost	0
d3	Message maximum duration	0
L5	Access password	0
L6	Parameters transfer	0
P0	Type of operation	1
P1	Delay of all functions at power up	0
P2	Allocation of password to set point	0
P3	Initial Parameters	0
P5	Address for units with communication	0
P7	Temperature display mode	0
EP	Exit Program	

Modulating Models

Water heaters with modulating operation are fitted with an RWF40 adjustable controlling thermostat with the temperature sensor located in the outlet side of the header.

This type of control is used where the system load is variable e.g. Mechanical Heating.

This type of control will cycle the burner from full fire to 30% and then off.

The thermostat has a number of parameters that are programmed during manufacture (refer to the 'RWF40 Parameter Table' on page 32 for values); advice should be sort from your local Raypak representative prior to altering any values other than the set point or the differentials.

To adjust the Set Temperature (SP1)

1. Press and release the 'PGM' button momentarily, 'SP1' and the current set point will be displayed.
2. Press the ▲ button to increase the set point value or the ▼ button to decrease the set point value.
3. Press and release the 'PGM' button momentarily to accept the new setting
4. Press and release the 'EXIT' button



ADJUSTMENT

To adjust the Differential (HyS1 and HyS3)

To adjust the differential it is necessary to enter the programming mode (refer to 'To adjust parameters' below).

To adjust parameters

1. Press the 'PGM' button for 2 seconds, the display will show 'AL'
2. Press the 'PGM' button again for 2 seconds. Display shows 'C111' and the current setting for C111 (9000).
3. Press the ▲ button to change the value of the right hand digit.
4. Press the ▼ button to select the next digit position from right to left.
5. Press the ▲ button to change the value of the selected digit.
6. Press and release the "PGM" button to select the next parameter.

Repeat steps 3 - 6 until all parameters are set correctly. (Refer to the RWF40 PARAMETER TABLE below)

When all parameters are set correctly press the 'EXIT' button to exit programming mode.

Fault Codes

In the event a fault occurs with the temperature sensor a code will be displayed on the thermostat.

Code		Fault
Upper window (red)	Lower window (green)	
1999 (flashing)	Current set point	Water temperature sensor open or short circuited
1999 (flashing)	tA	Outdoor compensation sensor open or short circuited

RWF40 Parameter Table

Parameter	Setting	Parameter	Setting	Parameter	Setting
C111	9000	OFF 2	0	HyS1	-3
C112	0000	OFF 3	0	HyS2	0
C113	0000	DF	1	HyS3	4
SCL	0	AL	0	q	0
SCH	100	HySt	0	H	0
SCL2	0	Pb. 1	20	P	0
SCH2	0	dt	15	SP1	78
SPL	0	rt	60	SP2	0
SPH	95	db	3	Dsp	0
OFF 1	0	tt	30		

ADJUSTMENT

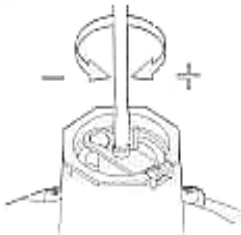
BURNER GAS PRESSURE ADJUSTMENT

On/Off Models

The burner pressure is set by adjusting the Jeavons J48 appliance regulator.

To adjust the burner pressure:

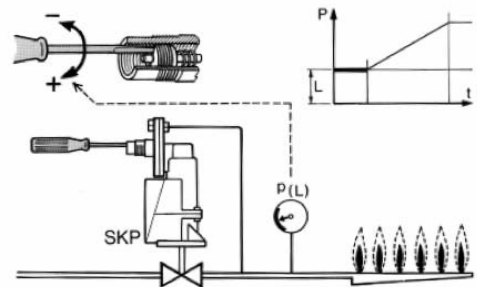
1. Fit manometer to main burner test point
2. Turn on electrical power to heater
3. Allow main burner to light
4. Remove adjustment screw cover (refer to diagram opposite)
5. To increase the burner pressure rotate the adjusting screw clockwise, to decrease the burner pressure rotate the adjusting screw anti-clockwise.
6. Adjust burner pressure to that indicated on the rating label.
7. Extinguish burner, refit adjustment screw cover, remove manometer and refit test point screw.



Modulating Models

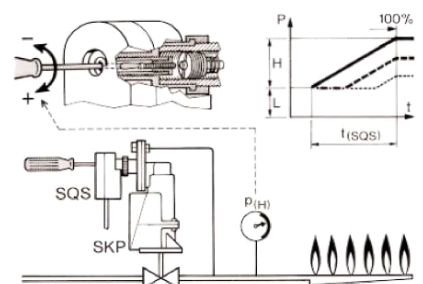
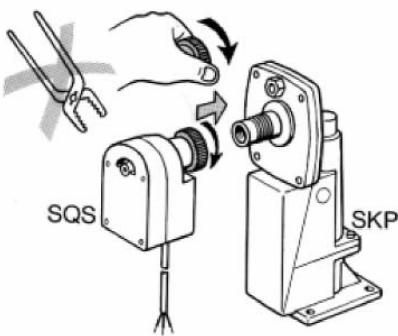
Low Gas Rate Adjustment

1. Fit manometer to main burner test point.
2. Remove the SQS37 motor drive from SKP25 actuator.
3. Light the water heater. Refer to the 'Lighting Procedure' on page 28.
4. Adjust the low fire gas pressure to 0.3kPa (Natural Gas Models) or 1.3kPa (propane models) by turning the outer regulator screw on the SKP25 actuator (Refer to diagram opposite)



High Gas Rate Adjustment

5. Press the "EXIT" button on the RWF40 controller for 5 seconds to enter the manual mode. The red LED adjacent to the hand symbol will illuminate.
6. Refit the SQS37 drive motor to the SKP25 actuator (Refer to figure opposite) NOTE: The lock nut should be hand tight only do NOT use tools
7. Drive the SQS37 motor to the high fire position by pressing the up (▲) button until the motor cam stops turning (approximately 2 revolutions)
8. Adjust the high gas pressure to 0.92kPa (natural gas models) or 2.75kPa (propane models) by turning the small screw through the centre of the SQS37 drive motor (refer to figure opposite)
9. Press the "EXIT" button for 5 seconds to re-enter the auto mode. The red LED adjacent to the hand symbol will extinguish.



ADJUSTMENT

TEMPERATURE RISE

The correct temperature rise across the water heater heat exchanger is the result of correct pump selection and speed, pipe sizing (refer to the section on 'Pump Selection' on page 13) and good plumbing.

The typical temperature rises for most applications will be between 10°C and 20°C.

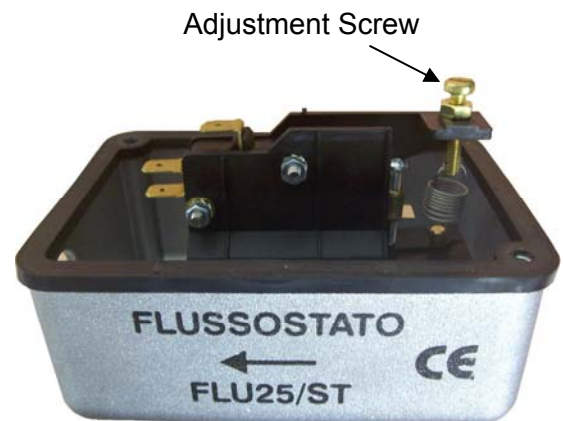
A temperature rise of less than 10°C is indicative of excessive flow rate that can lead to erosion of the tube bundle and/or headers. A temperature rise greater than 25°C indicates insufficient water flow which can lead to warpage of the tube bundle and nuisance tripping of the high limit thermostat.

Damaged to the water heater caused by insufficient or excessive temperature rise across the heat exchange is not covered by warranty.

FLOW SWITCH

The adjustment screw alters the amount of pressure or flow required to activate the micro-switch. To adjust the setting:

1. Loosen the locknut
2. Turn the screw clockwise to decrease the amount of flow required to operate the micro-switch or anticlockwise to increase the amount of flow required to operate the micro-switch
3. Tighten the locknut



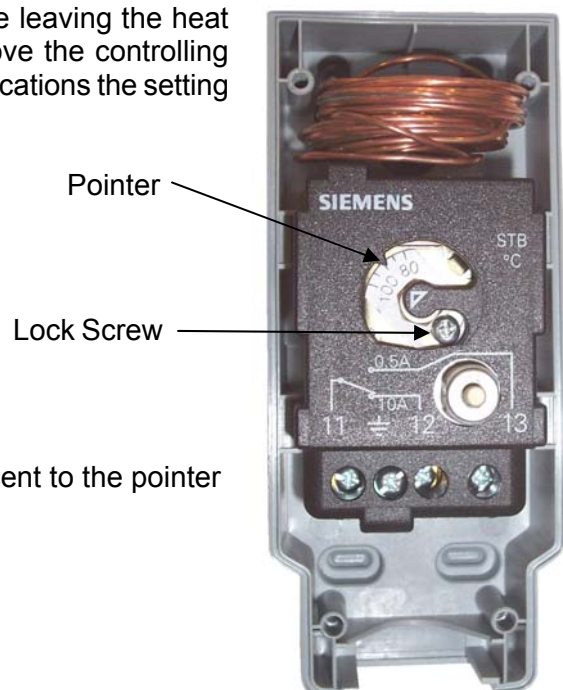
HIGH LIMIT

The high limit thermostat senses the water temperature leaving the heat exchanger and is typically set approximately 15°C above the controlling thermostat 'set' point however for high temperature applications the setting must not exceed

- 85°C for installations utilizing storage tanks
- 90°C for all other installations

To adjust the limit temperature:

1. Remove the front cover
2. Loosen the lock screw
3. Turn the dial until the required temperature is adjacent to the pointer
4. Tighten the lock screw
5. Refit the front cover



ADJUSTMENT

AIR PRESSURE SWITCH

The air pressure switch is calibrated at the time of manufacture. The pressure switch contacts are adjusted to close when the pressure detected at the test point is 150Pa or greater. Depending on the installation it may be necessary to adjust the pressure switch setting.



WARNING: Under no circumstances is the pressure switch to be adjusted to cause the contacts to close at a pressure less than 150Pa. Operation at a pressure of less than 150Pa will cause damage to the water heater due to incomplete combustion.

If a pressure of 150Pa cannot be achieved it may be necessary to increase the fan speed from low to medium or high. Refer to the section on 'Fan Speed Adjustment' on page 36.

To adjust the pressure switch

- a. Remove the fan chamber top panel.
- b. Remove the sealing screw from the test point in the tube between the pressure switch and the fan (refer to figure 1 opposite).
- c. Connect a digital manometer to the test point (refer to figure 2 below).
NOTE: Ensure the manometer is calibrated prior to connection.
- d. Slightly loosen the union between the test point and the tube sensing fan pressure.
- e. Undo the Phillips head screw (refer to Figure 4, item 1) and remove the cover from the pressure switch.
- f. Allow the main burner to light.



The fan will be rotating during this procedure. Keep hands and fingers clear of the blade to prevent injury.

- g. Carefully rotate the pressure tube (refer to figure 3 below) away from the fan while observing the pressure reading on the manometer.
- h. Rotate the dial (refer to figure 4, item 2) clockwise to increase the pressure at which the contacts open or anticlockwise to decrease the pressure at which the contacts open, the pressure setting is indicated by the pointer (refer to figure 4, item 3). NOTE: The pressure marking on the dial is indicative, some variance occurs due to losses in the pressure tube.
- i. Once the correct pressure setting is achieved reposition the pressure tube to the original position and tighten the union to prevent further movement during operation.
- j. Remove manometer, refit test point screw and pressure switch cover
- k. Refit top panel.



Figure 1



Figure 2



Figure 3



Figure 4

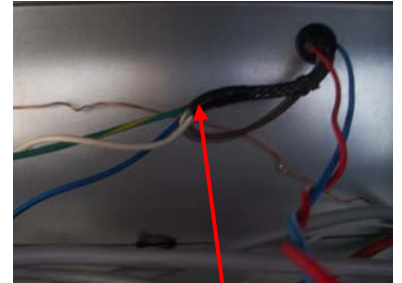
ADJUSTMENT

FAN SPEED ADJUSTMENT

The fan motor has 3 possible speeds, **low, medium** or **high**. The appliance is wired for low speed at the time of manufacture; depending on the installation it may be necessary to increase the fan speed.

To alter the fan speed

- Isolate power to the water heater / pool heater
- Open the control panel
- Locate the wiring to the fan motor. (refer to picture opposite)
- Disconnect the existing fan wire at the spade terminal and connect the wire for the required speed (refer to the 'Fan Speed Table' below).
- Insulate all unused fan connections and cable tie in a safe position.



Fan Wiring

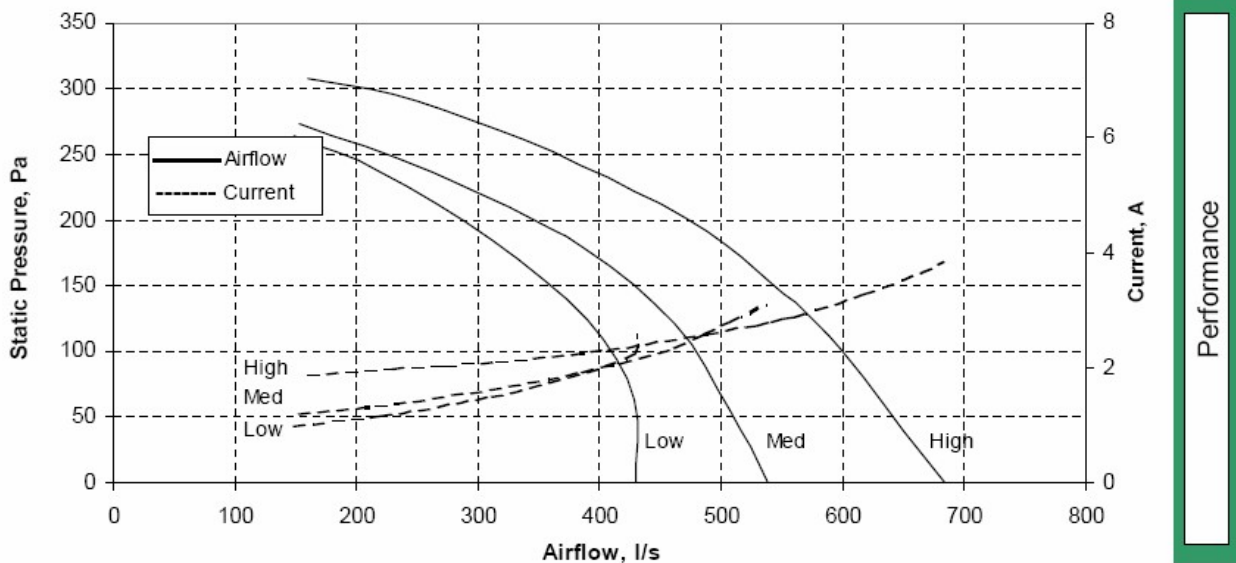
FAN SPEED TABLE

Fan Speed	Wire Colour
LOW	White
MEDIUM	Grey
HIGH	Brown

NOTE:

Adjustment of the fan speed;

- Alters the purge period required at start up. A new submission document must be submitted to the state gas authority detailing the revised fan speed and the new purge time calculations.
- Will require the air pressure switch opening pressure to be checked and if necessary adjusted. Refer to the 'Air Pressure Switch' adjustment' procedure on page 35.



TROUBLESHOOTING

RESETTING THE WATER HEATER

If the pilot OR main burner fail to light within a prescribed time the ignition system will enter a lockout condition, indicated by the illuminating of a RED light on the control panel.

Turning the power off and then on again will not reset this condition. To reset the water heater:

- Push the reset button for at least 1 second, the red light will extinguish and the start up sequence will recommence (refer to the 'Lighting Procedure' page 28).

If the water heater still does not light, turn off the gas and power supplies and contact your qualified service technician.

FAN DOES NOT OPERATE

When a call for heat occurs the fan should commence operation. If the fan does not start up check the fan isolation switch is in the ON position (refer to 'Location Of Controls' on page 29).

If the fan still does not operate turn off the gas and power supplies and contact your qualified service technician.

MAIN BURNER DOES NOT LIGHT

During the ignition sequence the pilot is lit and after a delay of approximately 10 seconds the main burner is lit. Should the pilot burner light but the main burner fail to light (initiating lockout) check the gas valve isolation switch is in the ON position (refer to 'Location Of Controls' on page 29).

After checking the position of the gas valve isolation switch it will be necessary to reset the water heater (refer to 'Resetting The Water Heater' above).

If the main burner still does not light turn off the gas and power supplies and contact your qualified service technician.

SERVICING

REPAIRS, SERVICE AND/OR COMMISSIONING OF GAS APPLIANCES MUST ONLY BE PERFORMED BY A SUITABLY LICENSED PERSON

RECOMMENDED SERVICE PROCEDURES

It is a requirement of Raypak and all gas authorities that the heater be serviced at least once per year. Where it is used in a specific application, e.g. mechanical heating, it would be practical to perform the service at the commencement of the heating season, or at any time there may be an indication of a problem.

In some installations, due to the appliance location and/or workload it may be necessary to perform a service every six months.

Contact your nearest Rheem Service Department or Accredited Service Agent to arrange a service.

Annual Service procedure

1. Isolate gas, electricity and water as required.
2. Remove access covers and door(s) as required.
3. Disconnect and remove Burner Tray.
4. Dismantle and clean pilot assembly(s), including injector(s).
5. Clean and re-align electrode(s) and/or flame rod(s) and /or thermocouple(s).
6. Clean main burner injectors and burner bars as required.
7. Inspect, repair if minor and clean combustion chamber.
8. Report on any major combustion chamber damage.
9. Inspect external area of heat exchanger, clean fins and repair if minor.
10. Check water seal area and report any damage.
11. Operate Pressure Relief Valve manually to check that the drain is clear and the valve reseals.
12. Refit Burner Tray and reconnect gas train etc.
13. Perform gas soundness tests to the gas train (Any failures must be reported and repaired before recommissioning appliance).
14. Check all air vents and louvres, clean as required.
15. Restore gas, electricity and water as required.
16. Recommission unit, check and prove the operation of all safety devices.
17. Check and monitor the operation of the appliance for at least ten (10) minutes.
18. Refit access covers and doors as required.
19. Clear and remove any dust and debris from the appliance and its immediate area.



SERVICING

Six Monthly Service Procedure

1. Isolate gas, electricity and water as required.
2. Remove access covers and doors as required.
3. Visually inspect main burner and pilot, check operation if needed.
4. If necessary, remove Burner Tray and service as required. (Refer to Annual Service).
5. Check over the appliance thoroughly and report any damage immediately.
6. Check the heat exchanger and water seal areas and report any damage, if necessary.
7. Check air vents and louvres, clean as required.
8. Restore the gas, electricity and water as required.
9. Check operation of ignition system and all safety devices.
10. Check operation and calibration of all temperature control devices.
11. Check operation of appliance for at least ten (10) minutes.
12. Refit access covers and doors as required.
13. Clear and remove any dust and debris from the appliance and its immediate area.

FIRE TILE (REFRACTORY) HANDLING



CAUTION: Ceramic refractories are used in Raypak heaters. Please refer to the Material Safety Data Sheet (MSDS) provided for safe handling of this insulation.

- Possible risks of irreversible effects
- Harmful by inhalation
- May be irritating to the skin, eyes and respiratory system

When Handling

- Minimise airborne dust
- Wear an approved mask or respirator
- Avoid any contact with the skin and eyes
- Wear suitable loose-fitting. Long-sleeved clothing
- Wear gloves and eye protection
- Consult Occupational Health and Safety Authority for any further information

After Handling

- Rinse any exposed skin areas with clean water
- Wash work clothing separately

Removal of Used Product

- Wear an approved mask. Over-exposure to dust formed after service may cause respiratory disease since cristobalite, a form of crystalline silica, may be formed above 900 degrees Celsius.
- Consult Occupational Health and Safety Authority for further information regarding removal of used ceramic fiber linings.

RAYPAK COMMERCIAL WATER HEATER WARRANTY

Raypak Australia Pty Ltd* will:

- a) repair or, if necessary, replace any Raypak water heater; or
- b) replace any component (or, if necessary, arrange the installation of a new water heater),

which falls within the Warranty Periods specified below, in accordance with and subject to the following table and terms and conditions.

Period	Installation	Model	Warranty
Component and Heat Exchanger Warranty (From Date of Installation)			
12 Months	All Installations	B0507 – B4224	New component, tube bundle or heat exchanger (at Raypak's sole discretion) free of charge, including labour**
Heat Exchanger Warranty (From Date of Installation)			
Years 2 - 5	All Installations	B0507 – B4224	New tube bundle or heat exchanger (at Raypak's sole discretion) free of charge, with installation and labour costs being the responsibility of the owner.

Notes:

*Rheem Australia Pty Ltd provides warranty service on behalf of Raypak Australia Pty Ltd.

**Refer to item 5 of warranty conditions.

Rheem Australia Pty Ltd reserves the right to transfer fully functional components from the defective water heater to the replacement water heater if required.

WARRANTY CONDITIONS

1. This warranty is applicable only to water heaters manufactured from 1st June 2007.
2. The water heater must be correctly commissioned by an authorised and licensed person and certified by the relevant State Gas Authority.
3. The water heater must be installed in accordance with the Raypak installation instructions, supplied with the water heater, and in accordance with all relevant statutory and local requirements of the State in which the water heater is to be installed.
4. Where a failed component or water heater is replaced under Warranty, the balance of the original warranty period will remain effective. The replaced part or water heater does not carry a new warranty.
5. Where the water heater is installed outside the boundaries of a metropolitan area as defined by Rheem Australia Pty Ltd or further than 25 km from a regional Rheem branch office or a Rheem Accredited Service Agent, the costs of transport, insurance and traveling between the nearest Rheem Australia Pty Ltd Accredited Service Agent's premises and the installed site shall be the owner's responsibility.
6. The warranty only applies to the water heater and original or genuine (company) component replacement parts and therefore does not cover any plumbing or electrical parts supplied by the installer and not an integral part of the water heater, e.g. pressure limiting valve, stop cock, non-return valve, electrical switches, pumps, or fuse.
7. The water heater must be sized to supply the hot water demand in accordance with the guidelines in Rheem Water Heater literature.

WARRANTY EXCLUSIONS

1. REPAIR AND REPLACEMENT WORK WILL BE CARRIED OUT AS SET OUT IN THE RAYPAK WATER HEATER WARRANTY ABOVE, BUT THE FOLLOWING EXCLUSIONS MAY CAUSE THE WATER HEATER WARRANTY TO BECOME VOID, AND MAY INCUR A SERVICE CHARGE AND/OR COST OF PARTS.
 - a) Accidental damage to the water heater or any component, including: acts of God, failure due to misuse; incorrect installation; attempts to repair the water heater other than by a Rheem Accredited Service Agent or Rheem Service.
 - b) Where it is found there is nothing wrong with the water heater, where the complaint is related to excessive discharge from the pressure relief valve due to high water pressure; where there is no flow of water due to faulty plumbing; where water leaks are related to plumbing and not the water heater components; where there is a failure of gas, electricity or water supplies; where the supply of gas, electricity or water does not comply with relevant codes or acts.
 - c) Where the water heater or water heater component failed directly as a result of; excessive water pressure, temperature and/or thermal input; incorrect flow rate through the heat exchanger; corrosive atmosphere.
 - d) Where the water heater is located in a position that does not comply with the Raypak installation instructions or relevant statutory requirements, causing the need for major dismantling or removal of cupboards, doors or walls, or use of special equipment to bring the water heater to floor level, or to a serviceable position.
 - e) Repairs to the water heater due to corrosion or scale formation in the waterways when the water heater has been connected to a harmful water supply as outlined in the Operating and Installation Instructions.

2. SUBJECT TO ANY STATUTORY PROVISIONS TO THE CONTRARY, THIS WARRANTY EXCLUDES ANY AND ALL CLAIMS FOR DAMAGE TO FURNITURE, WALLS, FOUNDATIONS OR ANY OTHER CONSEQUENTIAL LOSS EITHER DIRECTLY OR INDIRECTLY DUE TO LEAKAGE FROM THE WATER HEATER.

In addition to this warranty, the Trade Practices Act 1974 and similar laws in each state and territory provide the owner under certain circumstances with certain minimum statutory rights in relation to your Raypak water heater. This warranty must be read subject to that legislation and nothing in this warranty has the effect of excluding, restricting or modifying those rights.

RHEEM AUSTRALIA PTY LTD
A.B.N. 21 098 823 511

FOR SERVICE TELEPHONE
131 031 AUSTRALIA
0800 657 335 NEW ZEALAND
or refer to local Yellow Pages

NOTE: Every care has been taken to ensure accuracy in preparation of this publication. No liability can be accepted for any consequences, which may arise as a result of its application



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