Rheem Australia Pty Ltd

ABN 21 098 823 511

SERVICE INSTRUCTIONS

Raypak Pool & Spa Heat Pump

TM022

Revision: C

Published: March 06

Model
RHP 33

Safety Warning

The purpose of this Service Manual is to provide sufficient information to allow a person with the skills as required by the controlling Regulatory Authorities to carry out effective repairs to a Raypak pool and spa heat pump in the minimum of time.

Safety precautions or areas where extra care should be observed when conducting tests outlined in this manual are indicated by print in ***bold italics*** and/or a warning symbol. Take care to observe the recommended procedure.

Certain diagnostic procedures outlined in these service instructions require "live" testing to be conducted. Personal Protective Equipment (PPE) should be worn when conducting these tests to prevent the risk of electric shock (Refer to Rheem Safety Procedure on electrical testing).

R22 is a controlled substance under the fair trading act. Personnel qualified and licensed to work with refrigerants may only carry out service and repair to the sealed refrigeration system. During repair the refrigerant must be recovered, not vented to atmosphere.

Environmental

At the end of the service life of a Raypak heat pump the R22 refrigerant must be recovered by personnel qualified and licensed to work with refrigerants prior to the unit being disposed of. R22 must not be vented to atmosphere.

Introduction

The information provided in these instructions is based on the pool/spa heater being installed in accordance with the Installation Instructions provided with each pool/spa heater.

Should you require further technical advice on a Raypak Heat Pump, contact your nearest Rheem Service Department where all genuine replacement parts are also available.

General Description

The cabinet is manufactured from polyester coated Dura Steel™ whilst the heat exchanger is of alloy construction. The unit comes with two temperature dials to allow separate pool and spa temperature settings selectable by a Spa-Remote-Pool selector switch.

Raypak Heat Pump is suitable for external locations only and must not be installed in a totally enclosed area such as a shed or garage unless ventilation is provided to ensure adequate air exchange for proper operation. Recirculation of cold discharge air back into the evaporator coil will greatly reduce the units heating capacity and efficiency.

Preventative Maintenance

It is suggested for peak performance that the pool/spa heater be serviced annually.

1. Check for leaks at all water connections and fittings.
2. Check for signs of excessive corrosion on the jacket.
3. ***Isolate power*** to the pool/spa heater and check all electrical connections for signs of overheating due to poor connection.
4. Conduct an insulation test on the pool/spa heater (Refer to page 31).
5. Check evaporator fins and fan blade for build up of dust or debris.
6. Check condensate drainage holes in base of unit are not blocked with dirt or debris.

Specifications

Model RHP 33	
Heat KW output (@ 26ºC air, 80% relative humidity, 26ºC water)	33
C.O.P	6.4
Voltage	240V 50Hz
Amps	24
Electrical input KW	5.2
Water flow (litres per min)*	60 – 227
Degree of protection	IPX4
Shipping weight (kgs)	150
Inlet and outlet water connections	50mm
Refrigeration charge pressure min (Kpa)	1003
Refrigeration charge pressure max (Kpa)	2760
R22 Refrigerant charge (kg)	2.72
Superheat setting	8ºC
Compressor	Start winding - Red & Yellow: 2.7 ohms Run winding - Red & Blue: 1.2 ohms Weight – 39.46 Kg
Compressor contactor coil	9.4 ohms
Fan motor	Start winding - Black & Brown: 44.2 ohms Run winding - Black & Purple: 19.0 ohms
Fan motor relay coil	11.2 ohms
Compressor and fan motor Capacitor (dual capacitor)	Compressor terminals: 50.0 MFD Fan motor terminals: 5.0 MFD
Transformer	240VAC – 24VAC Primary winding @ 240V terminal: 77 ohms Secondary winding: 1.7 ohms
Delay timer coil	553 ohms
Water sensor	Approx 10 Kilo ohms @ 25ºC
Spa potentiometer	0 – 10 Kilo ohms
Pool potentiometer	0 – 10 Kilo ohms
High pressure switch	Opens @ 400 Kpa - Closes @ 300 Kpa
Low pressure switch	Opens @ 35 Kpa Closes @ 60 Kpa
Noise Level	Approx 65 dB @ 1.5metres
Water manifold bypass valve	Starts to open at approx 27kPa

* For water flow greater than 227 Litres p/min an external bypass arrangement must be used to reduce water flow through the Heat Pump. See page 12 for more information.

Water Treatment (Pool Balance)

Maintenance level	Fibreglass Pools	Fibreglass Spas	Other Pool/Spa types
Water temp (ºC)	20 – 31	32 – 40	20 – 40
PH	7.3 – 7.4	7.3 – 7.4	7.6 – 7.8
Total Alkalinity (PPM)	120 – 150	120 – 150	150 – 200
Calcium Hardness (PPM)	200 – 300	150 – 200	80 – 100
Salt (PPM)	**6000 MAXIMUM**		
Free Chlorine (PPM)*	2 – 3	2 – 3	2 – 3

*Free Chlorine must not exceed 5ppm, however occasional chemical shock dosing of the pool or spa water should not damage the heater providing that the water is balanced to the above conditions.

Automatic chemical dosing devices and salt chlorinators are usually more efficient in heated water. Unless controlled, they can lead to excessive chlorine levels that can damage the pool / spa heater.

Excessive chemical content in a swimming pool or spa will damage the Heat Pump. DO NOT skimmer feed chemicals.

Ensure chlorinators and chemical dosing units are installed AFTER the Heat Pump.

Operation

Normal Operation

The RHP33 series Heat Pump pool and spa heaters utilise R22 refrigerant to transfer heat from the atmosphere to the pool or spa water flowing through the Heat Pump.

When the pool pump operates the resulting water flow operates the Heat Pump flow switch enabling operation of the system. When the thermostat contacts close the evaporator fan motor commences operation followed by the compressor motor (The compressor motor has a six minute time delay). The action of the compressor creates a pressure difference that causes the refrigerant to circulate through the sealed refrigeration system.

The refrigerant enters the evaporator as a liquid, as heat is absorbed from the atmosphere by the refrigerant it changes state, at low pressure, from a sub cooled liquid to a super heated vapour or gas (evaporates). The vapour then enters the compressor and obtains more heat, known as heat of compression, and passes into the spiral condenser (heat exchanger) as a super heated vapour at high pressure.

As the refrigerant passes through the spiral condenser (heat exchanger) it gives off heat which is absorbed by the water flowing through a separate chamber inside the heat exchanger. As the refrigerant gives off heat it cools and changes state back into a liquid (condenses). The refrigerant then enters the evaporator again and the cycle is repeated.

A metering device, called a TX or expansion valve, is positioned between the condenser and evaporator to control, or meter the flow of refrigerant into the evaporator. The TX valve senses the temperature of the suction line and automatically meters the flow of refrigerant based on the detected temperature.

Defrost Operation

At low ambient air temperatures it is possible for the evaporator to freeze. At an evaporator temperature of approximately 3ºC the defrost switch activates switching off the compressor (no heating). The fan will continue to run allowing the evaporator to defrost. Normal operation will resume when the evaporator temperature returns to approximately 5.5ºC.

Start Up

1. Verify that the **Power** LED is ON and that the pool pump is running and circulating properly.
2. Verify that the control panel **Spa-Remote-Pool** switch is in the **Remote** (OFF) position; See figure on page 7.
3. Turn the control switch to either **Pool** or **Spa** to turn the system ON and raise the appropriate temperature dial above the current water temperature. At this time the two green LED's (water flow and heat demand LED's) should illuminate. The fan and compressor should start up and run (Note: The compressor has a six minute time delay).
4. Allow the Heat Pump to operate for a few minutes to stabilise operating pressures and to allow various component temperatures to normalise.
5. Verify that the discharge air temperature is approximately 4ºC - 6ºC cooler than the air entering the unit.

Spa-Remote-Pool switch and thermostat controls

Refrigeration Terms and their Meaning

Sub Cooled Liquid – A substance below its saturation temperature at a given pressure.

Super Heated Vapour – A substance above its boiling point at a given pressure.

Saturated Vapour – A substance at its boiling point at a given pressure.

Latent Heat – Hidden (invisible) heat removed or added to a substance that results in a change of state (i.e. liquid to a vapour) without an increase or decrease in temperature.

Heat of Compression – The additional heat added to a substance by the act of compressing it.

Low Side – Components and pipe work of a refrigeration system operating at low pressure, generally considered to be the evaporator, suction line and accumulator.

High Side – Components and pipe work of a refrigeration system operating at high pressure, generally considered to be the condenser, discharge line, liquid receiver/filter drier and compressor case where a rotary compressor is utilized.

Boil Off – The action of a substance as it absorbs heat and changes state (evaporates) from a liquid to a vapour (gas).

Give Up Heat – The action of a substance as it releases heat and changes state (condenses) from a vapour (gas) to a liquid.

Components and their Function

Spa and Pool Temperature Dials - Two adjustable dials (potentiometers) that allow a water temperature selection of 16 - 40ºC, one for Spa and one for Pool.

Spa/Remote/Pool Selector Switch - A three position selector switch that allows operation of the selected temperature dial. In the “Remote” position external temperature selectors or switches are used to control water temperature.

Thermostat - A device responsive to temperature that controls the supply of electrical energy to the compressor, which results in the stored water being maintained at the required temperature. For Heat Pumps the control board acts as the thermostat by comparing inputs from the selected temperature dial and water sensor to determine if a call for heat is required.

Flow Switch - A switch responsive to water flow (pressure) that controls operation of the compressor to ensure that the system does not operate without adequate water flow.

Defrost Switch - A switch responsive to temperature that controls operation of the compressor motor to perform defrosting of the evaporator in cold weather, typically below 10 degrees Celsius.

High Pressure Switch - A switch responsive to pressure installed in the refrigeration circuit (high side) that controls operation of the compressor if refrigerant pressure becomes too high as a result of a malfunction.

Low Pressure Switch - A switch responsive to pressure installed in the refrigeration circuit (low or suction side) that controls operation of the compressor if refrigerant pressure becomes too low as a result of a malfunction or loss of refrigerant charge.

Compressor - An electro-mechanical device that adds heats to the refrigerant by compressing it, known as “heat of compression” the resulting increase in refrigerant temperature increases its pressure and causes the refrigerant to circulate through the system.

Evaporator - A finned copper coil mounted around the sides of the Heat Pump. The refrigerant enters as a liquid, as it passes through the coil it absorbs heat from the surrounding atmosphere and “boils off” (evaporates) to a gas.

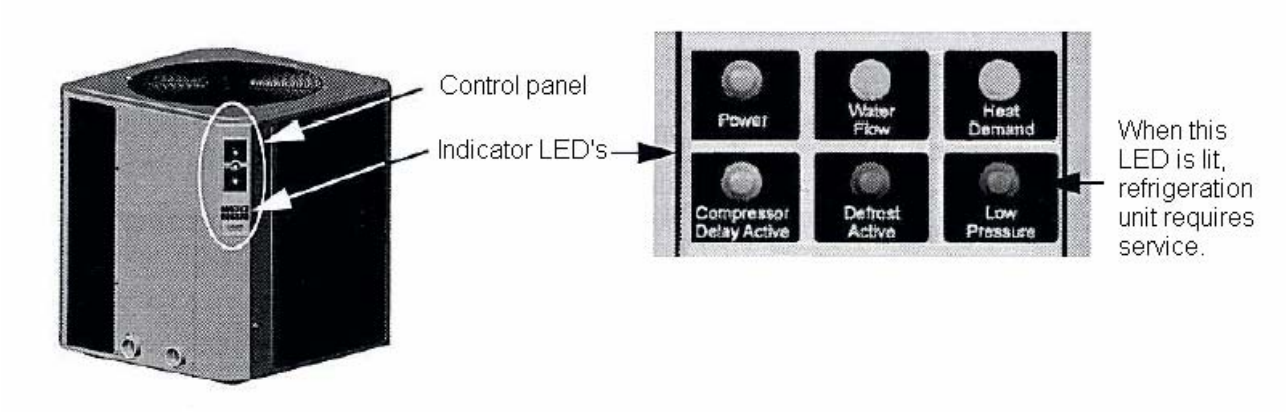
Condenser or heat exchanger – An alloy coil containing two separate chambers. The refrigerant enters one chamber as a gas, as it passes through the coil it transfers (“gives up”) the heat absorbed via the evaporator to the flowing water in the second chamber, during this process the refrigerant cools and changes state (condenses) back to a liquid.

Receiver Filter Drier - This device, fitted between the condenser/heat exchanger and thermal expansion (TX) valve, receives and stores liquid refrigerant from the condenser for delivery to the evaporator. The receiver also incorporates a filter and drier to trap impurities and remove moisture from the sealed refrigeration system

Thermal Expansion (TX) Valve - A valve, installed between the condenser and evaporator that controls (meters) the amount of refrigerant delivered to the evaporator. The TX valve has an external temperature sensor fitted to the suction line and increases or decreases the refrigerant flow to the evaporator depending on the detected suction line temperature. There is also a small diameter pipe fitted between the TX valve and the suction side of the evaporator designed to equalise the operating pressure.

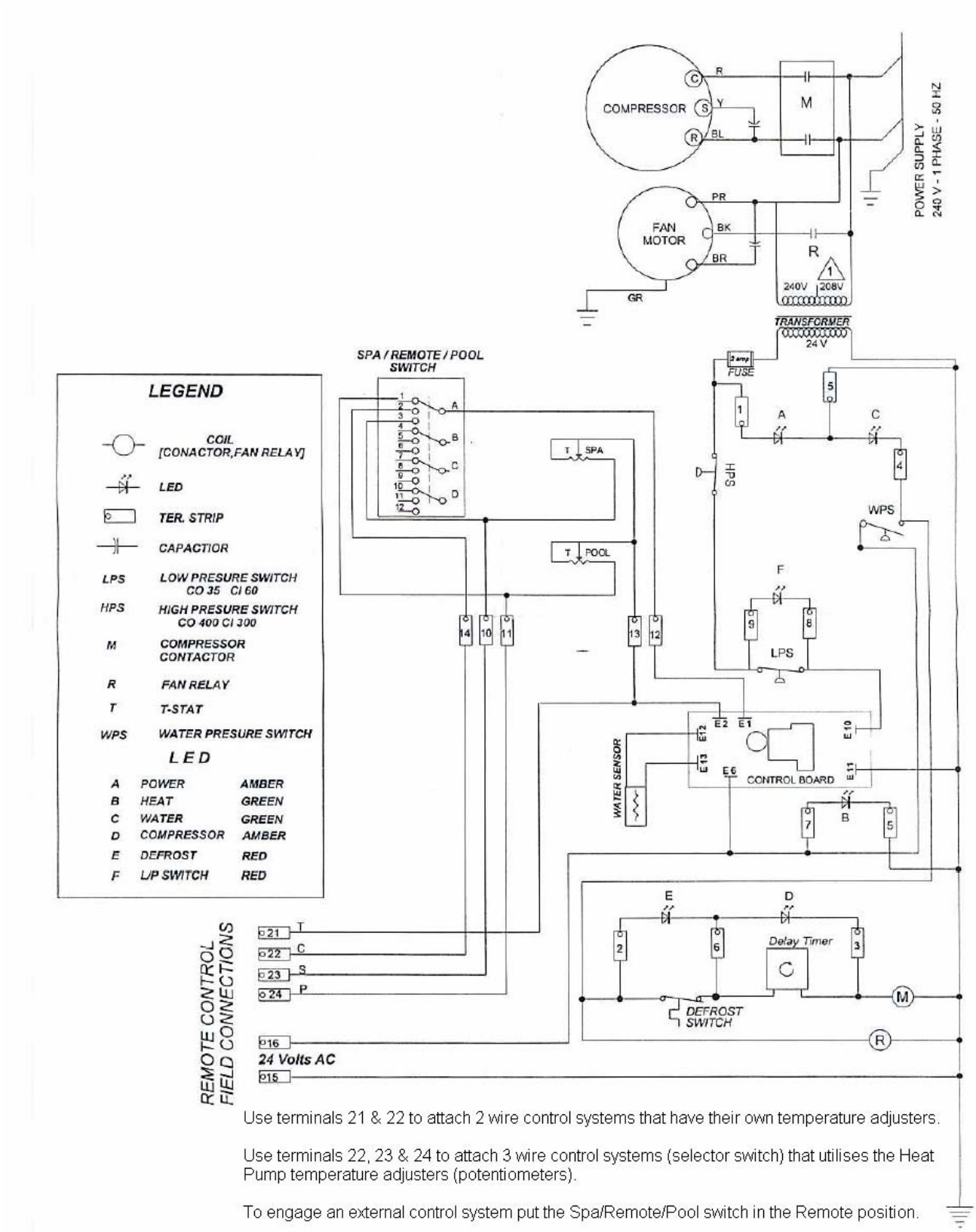
Delay Timer - A timing device connected in series with the compressor relay that prevents the compressor from short cycling. This device will delay the starting of the compressor for a period of approximately 6 minutes after power is supplied or resupplied to the compressor relay by any control circuit component or upon power failure or interruption.

Indicator Lamps (LED's)

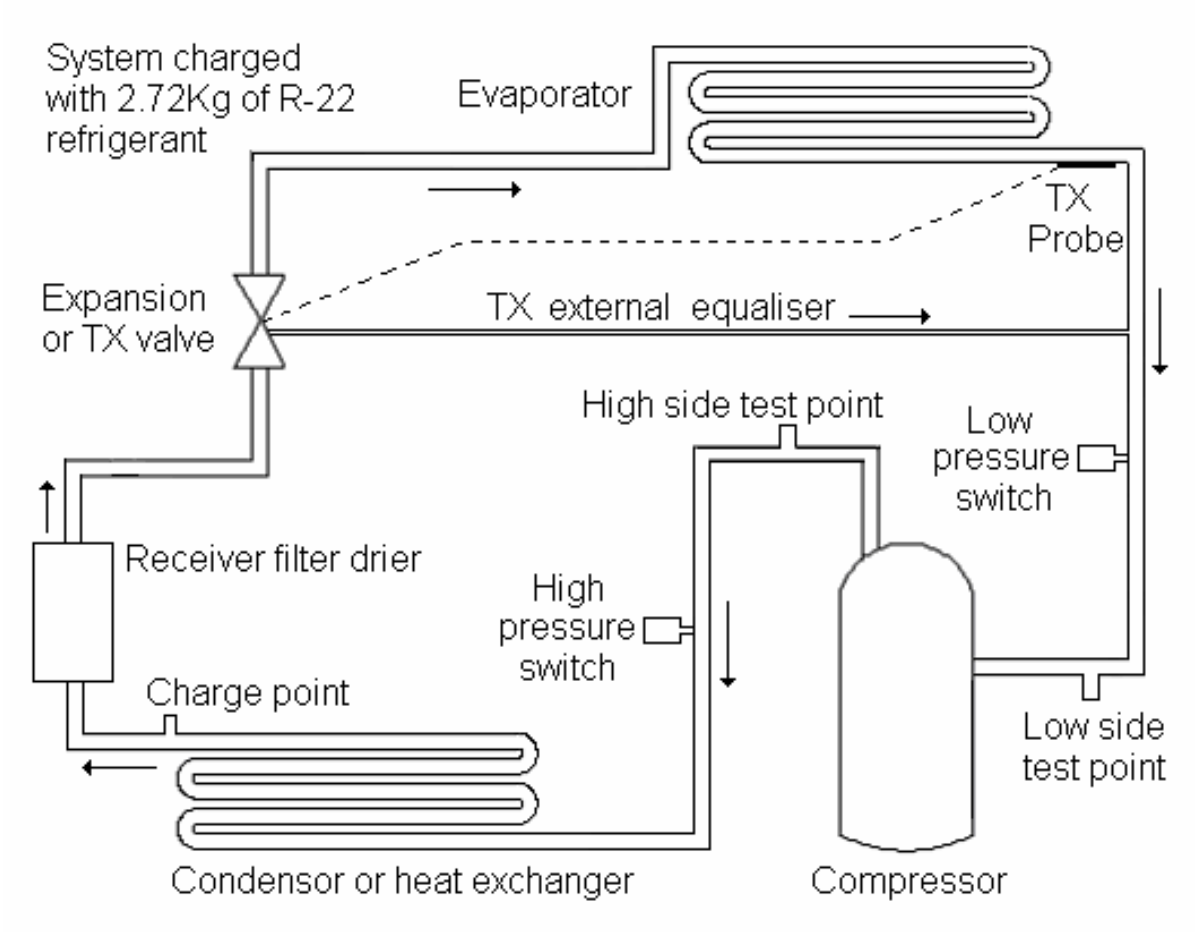


- **Power** – Amber LED: When lit indicates power is applied to the unit.
- **Water Flow** – Green LED: When lit indicates there is acceptable water flow through the Heat Pump and that the water flow switch has closed enabling operation. It should be noted that this LED will only illuminate whist the unit is calling for heat and the flow switch is closed.
- **Heat Demand** – Green LED: When lit indicates the actual water temperature is below the target water temperature and that the control board is calling for heat.
- **Compressor Delay Active** – Amber LED: Under normal operation, when lit indicates compressor anti short cycle timer is active. See "Delay Timer" above.
- **Defrost Active** – Red LED: When lit indicates the unit is in defrost mode. See "Defrost Operation" on page 6.
- **Low Pressure** – Red LED: When lit indicates a failure in the refrigeration circuit.

Wiring Diagram



Refrigeration Sealed System Diagram



Refrigerant Charge

1. Evacuate the unit to 300 microns and hold for 40 minutes.
2. Charge the unit with 2.72 kg of R22 refrigerant.
3. After the charge is in place the unit can be run.

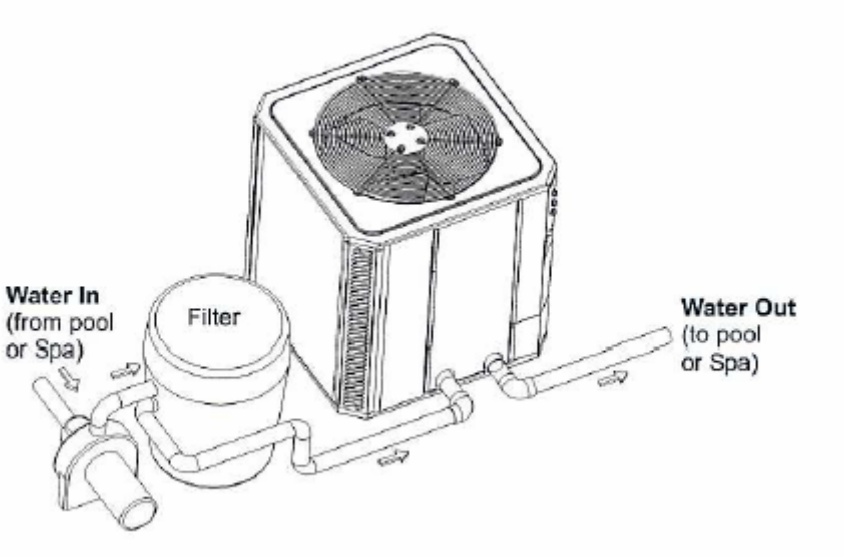
Note: Trickle charging is not possible due to the low pressure switch.

Indication of correct refrigerant charge - Compressor current draw and system pressures are within the normal range and temperatures should be consistent with system pressure.

Indication of undercharged system – If current draw is very low combined with low discharge line temperature then the system is totally empty. **Note:** Unusual current draw or low suction pressure can be a sign of other problems such as a blockage or malfunctioning TX valve.

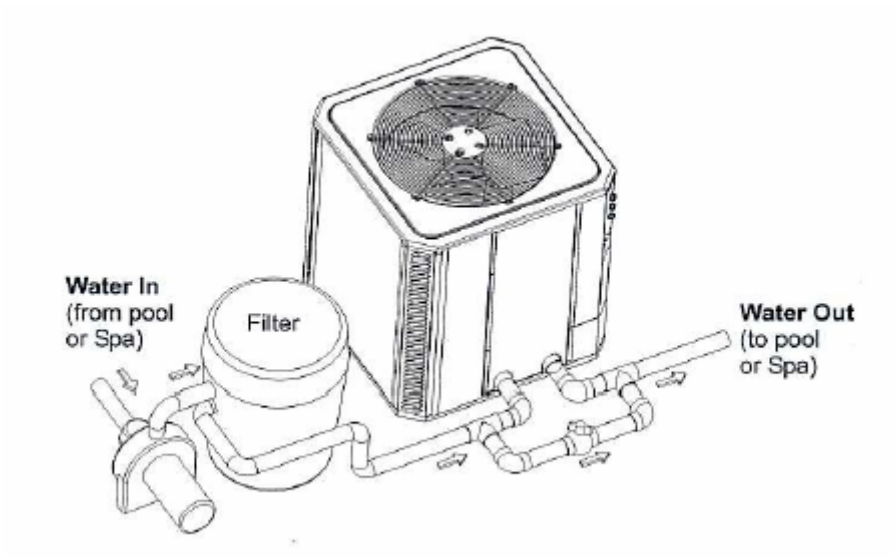
Indication of overcharged system - Evaporator tends to flood, head pressure high, compressor current draw high and compressor noisy. **Note:** Unusual current draw or high head pressure can be a sign of other problems such as a blockage or malfunctioning TX valve.

Plumbing Diagrams



For systems with pumps of less than 1.5HP (1.1KW) (under 227 l/min) no external bypass is required. Connections are 50mm pipe slip. Plumb the Heat Pump **after** the filter and **before** the chlorinator.

Ensure chlorinators and chemical dosing units are installed AFTER the Heat Pump.



For systems with pumps of 1.5HP (1.1KW) or greater (over 227 l/min) an external bypass is required. Adjust the bypass valve to divert a minimum of 150 l/min through the Heat Pump. Connections are 50mm pipe slip. Plumb the Heat Pump **after** the filter and **before** any chlorinators.

Ensure chlorinators and chemical dosing units are installed AFTER the Heat Pump.

Common Faults

Unit is running but not heating

When a complaint is lodged about the performance of a pool heating system there are a number of causes that should be checked and eliminated. In an attempt to pinpoint the most likely cause it is important to discuss with the customer their reasons for the complaint, the duration of the problem, any change in circumstances or usage and recent weather conditions. This information in conjunction with the following listed common faults will assist you in locating the most likely cause.

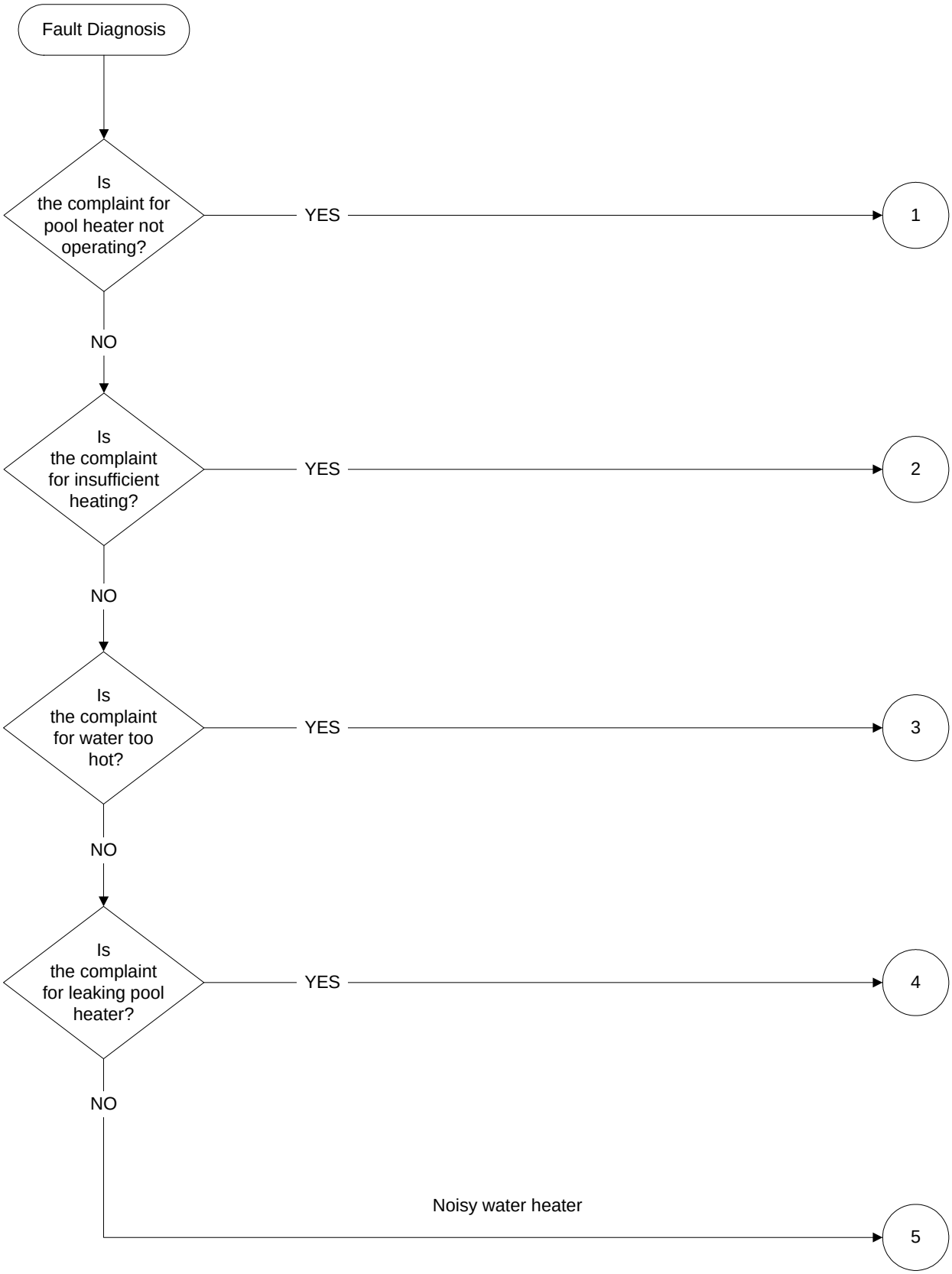
When first attending a call of this nature it will help to check the following:

- Ensure water flow through the unit is adequate. Check the system for obstructions such as a clogged filter pump strainer or a dirty filter. Check that valves are in the correct position.
- Is the ejected air from the unit 4 to 6 degrees cooler than incoming air? If so the unit is extracting heat from the air and transferring it to the pool.
- Are the evaporator and internal copper pipes “sweating”? This is also evidence of heat removal from the air. When the air is cool with low humidity, “sweating” may not be evident.
- Ask the customer how long the unit has been operating. During initial pool heating in cold weather it may require a week to elevate the pool temperature to a comfortable level. Normally it takes about 4 days.
- Check how many hours per day the unit is operating. **Remember that the heat pump only operates while the pool pump is operating**. Set the pool system time clock to permit 24 hours per day operation. After the desired temperature is reached the system can be returned to normal operation.
- Check that airflow through the unit is not being obstructed by shrubbery, tall grass, dirty evaporator coils or any other obstruction which could reduce performance.
- Is a pool blanket/cover being used? Unblanketed pools can loose up to 6º per night compared to 2º or less when a blanket is used. Without a blanket/cover the total heat gained during the day can be lost over night.
- Are rapid heat losses occurring in some other way such as high wind, waterfalls, spa spillage, bubblers, rainfall, flow through solar panels at nights or a high water table.

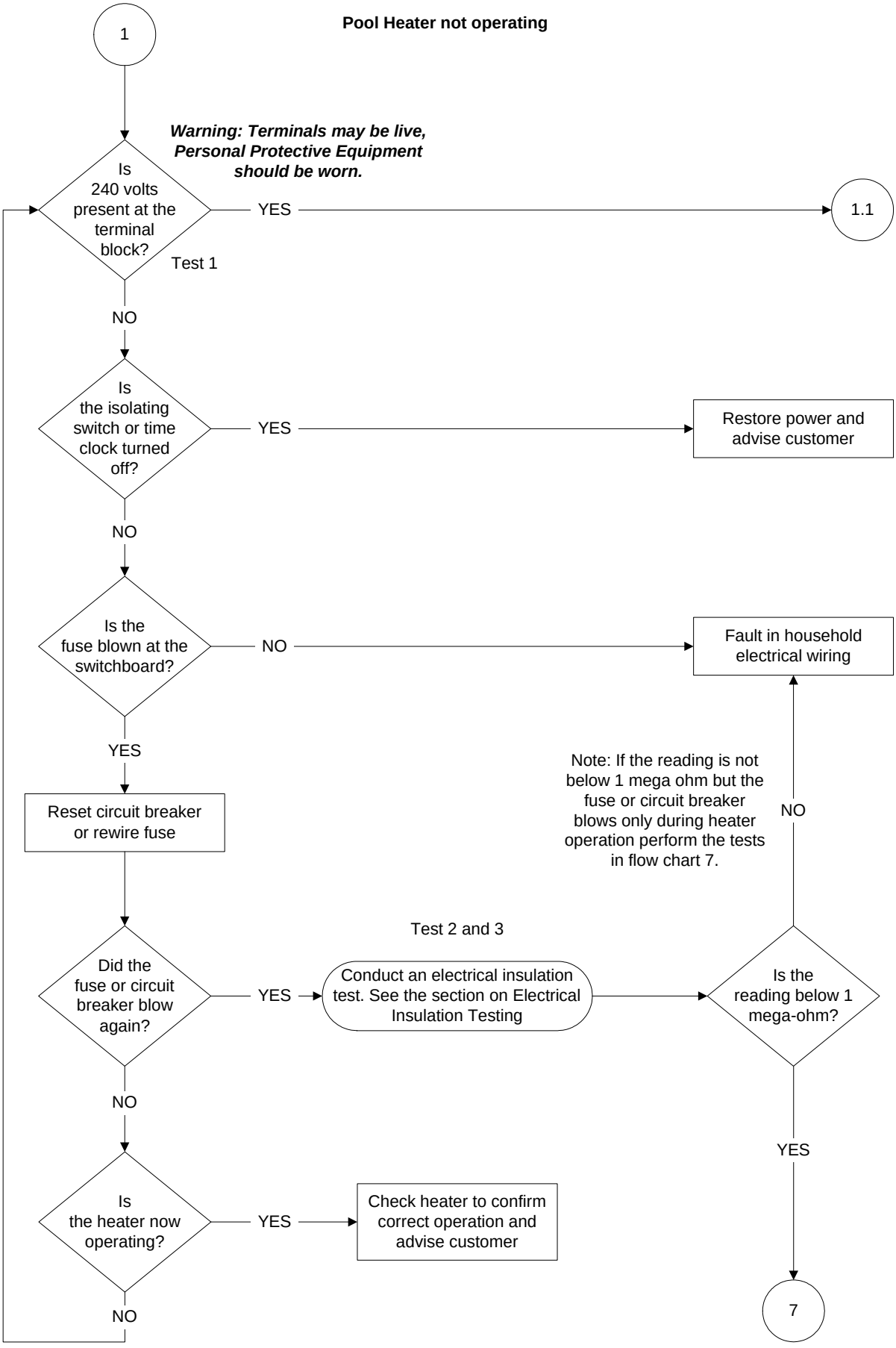
Fault Finding Charts and Tests

Fault Finding Chart Index

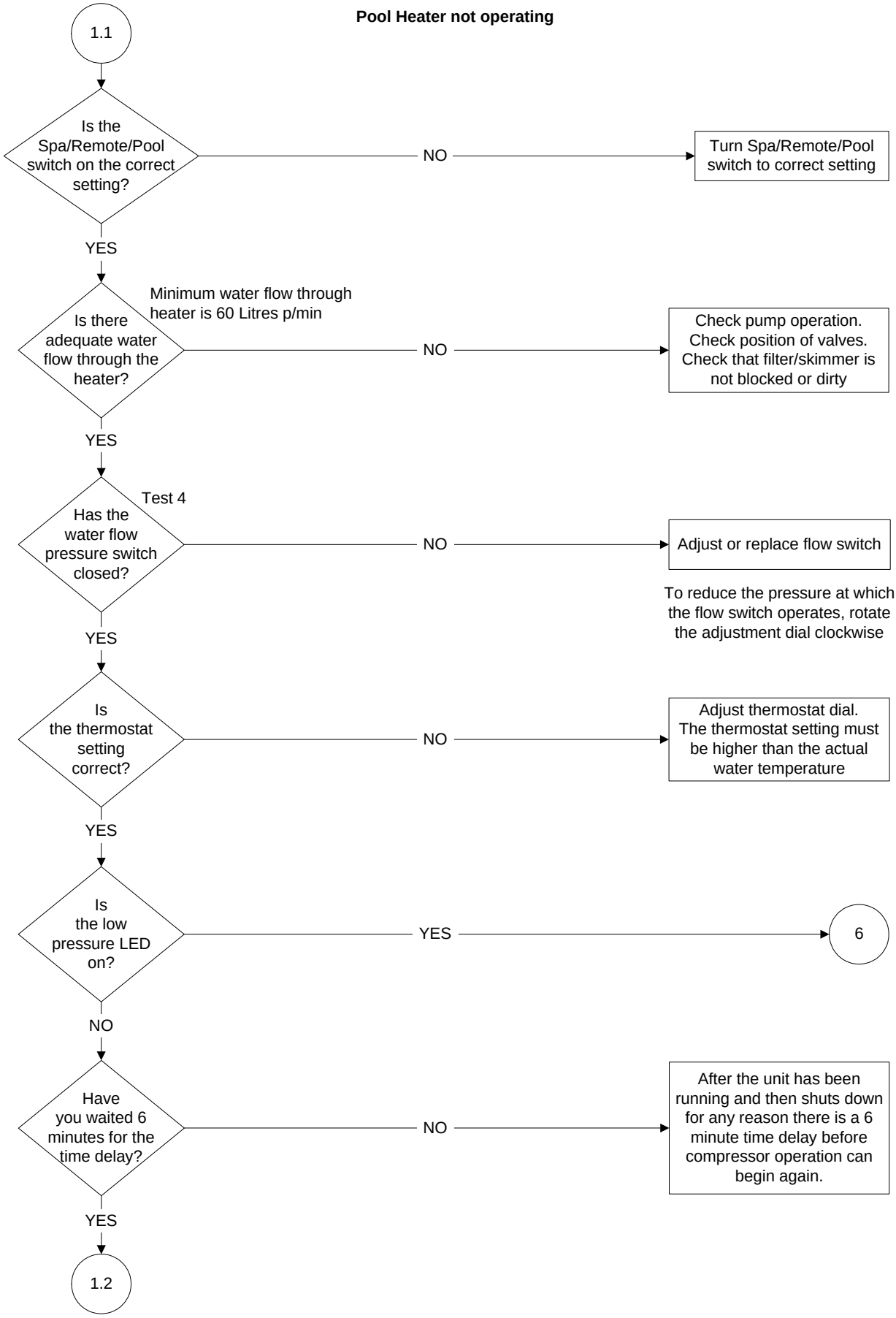
General Fault Finding Chart



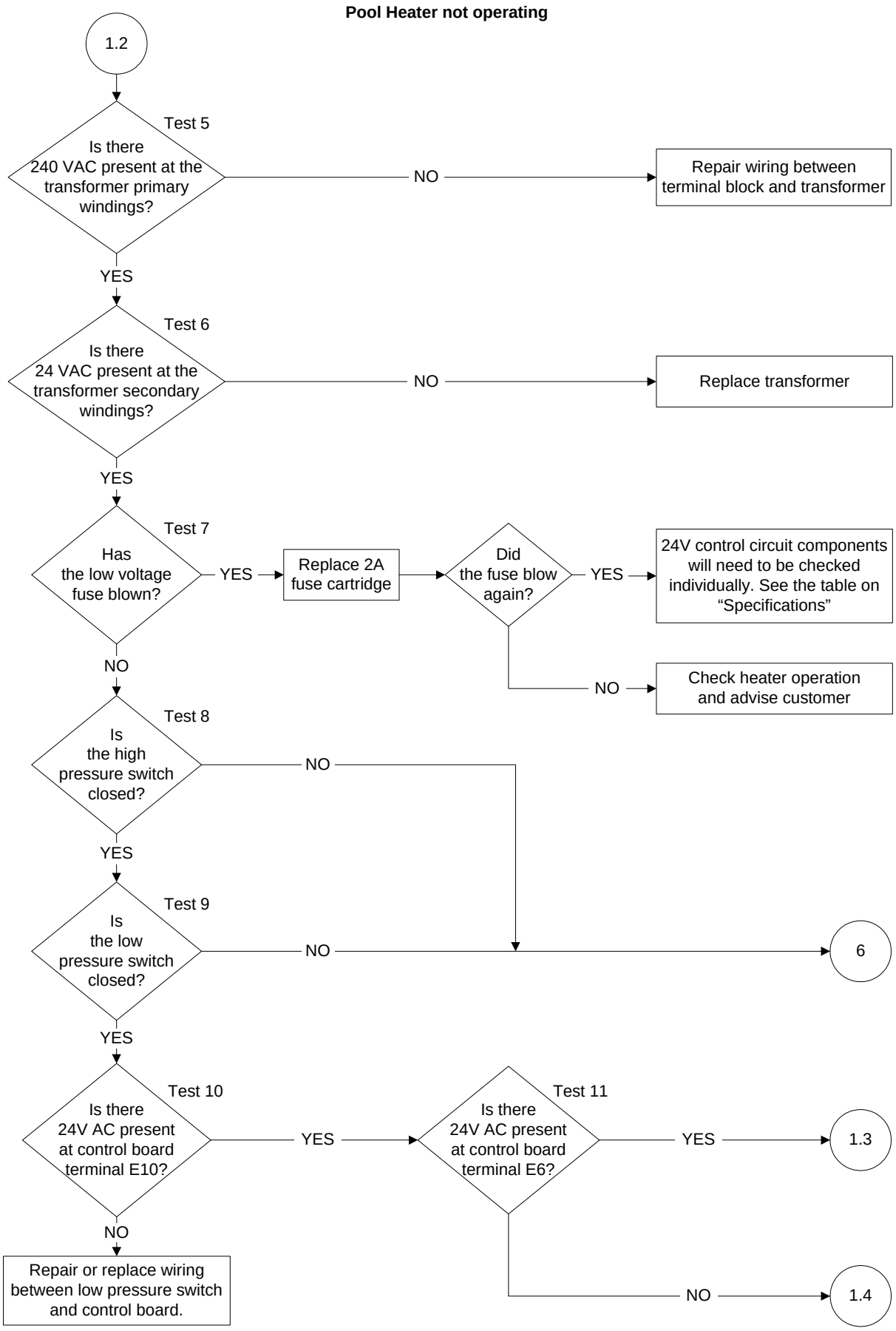
Fault Finding Chart 1



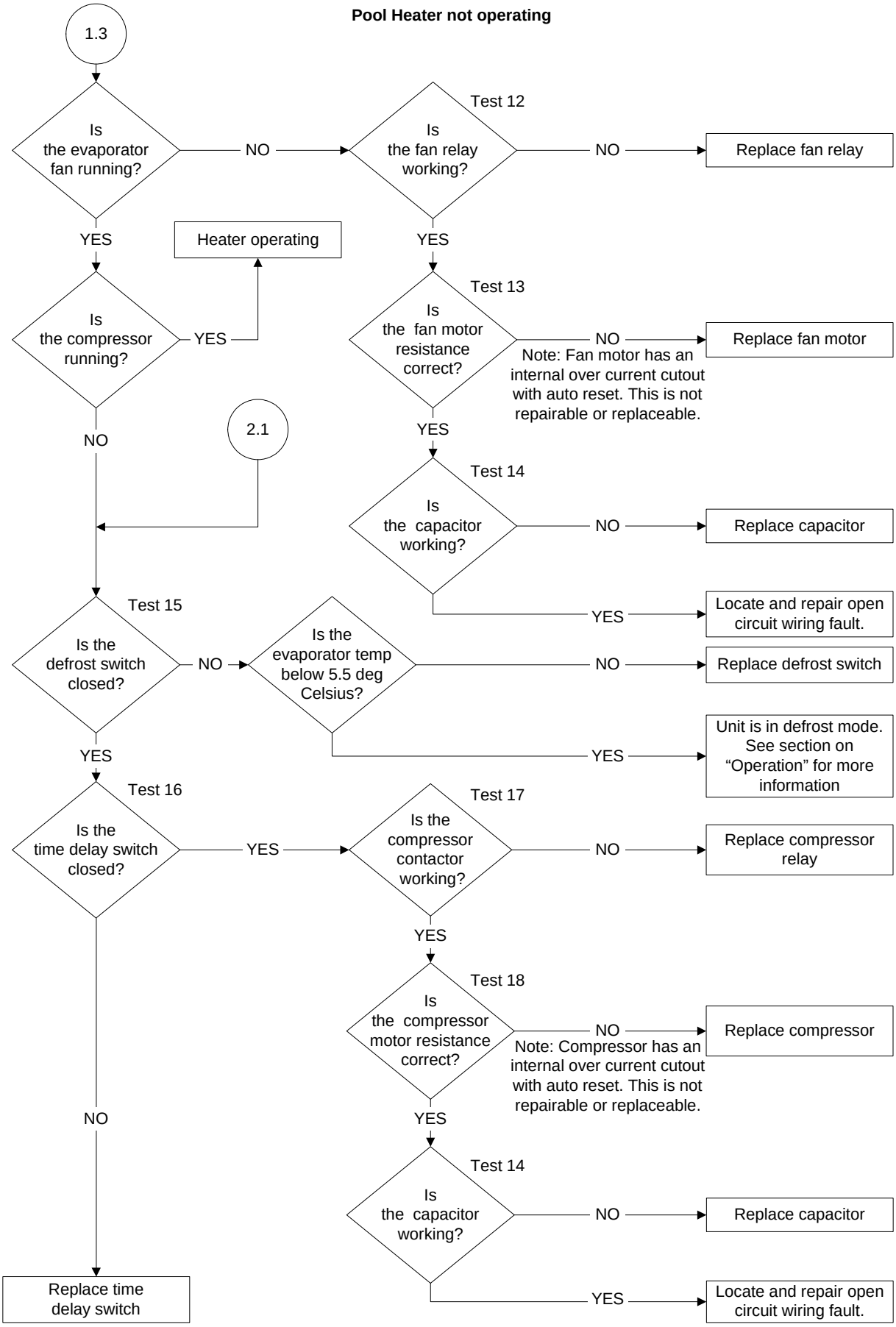
Fault Finding Chart 1.1



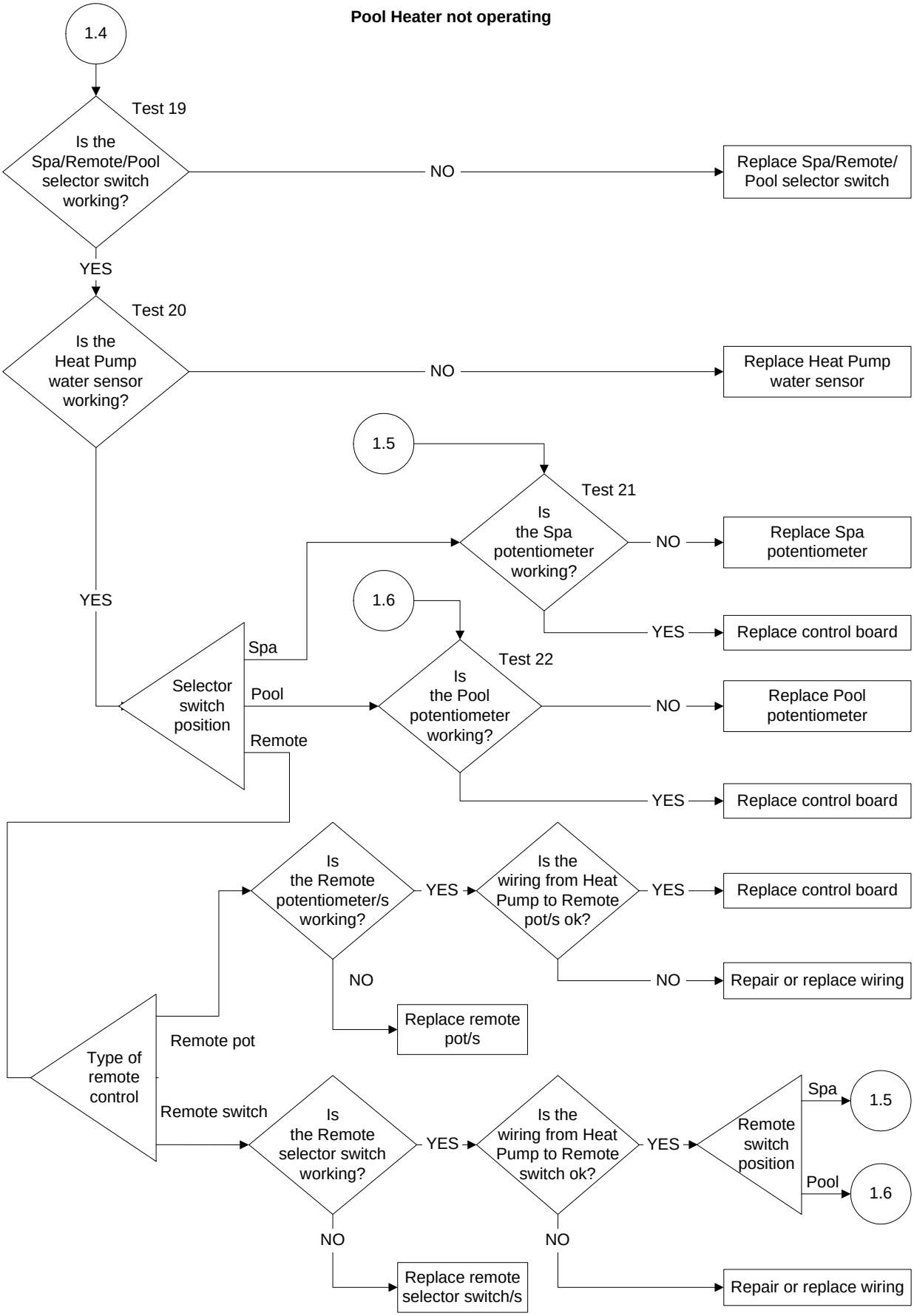
Fault Finding Chart 1.2



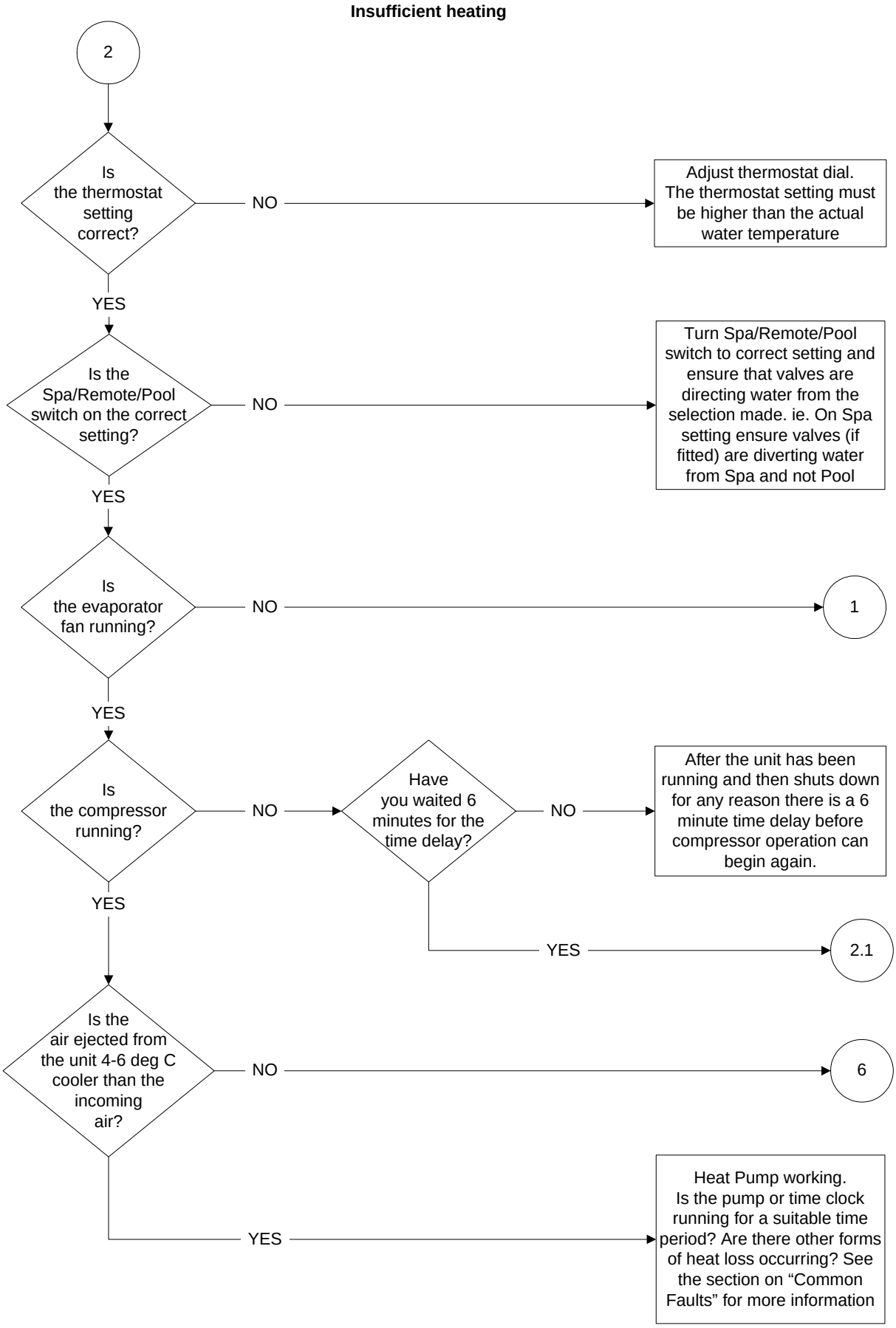
Fault Finding Chart 1.3



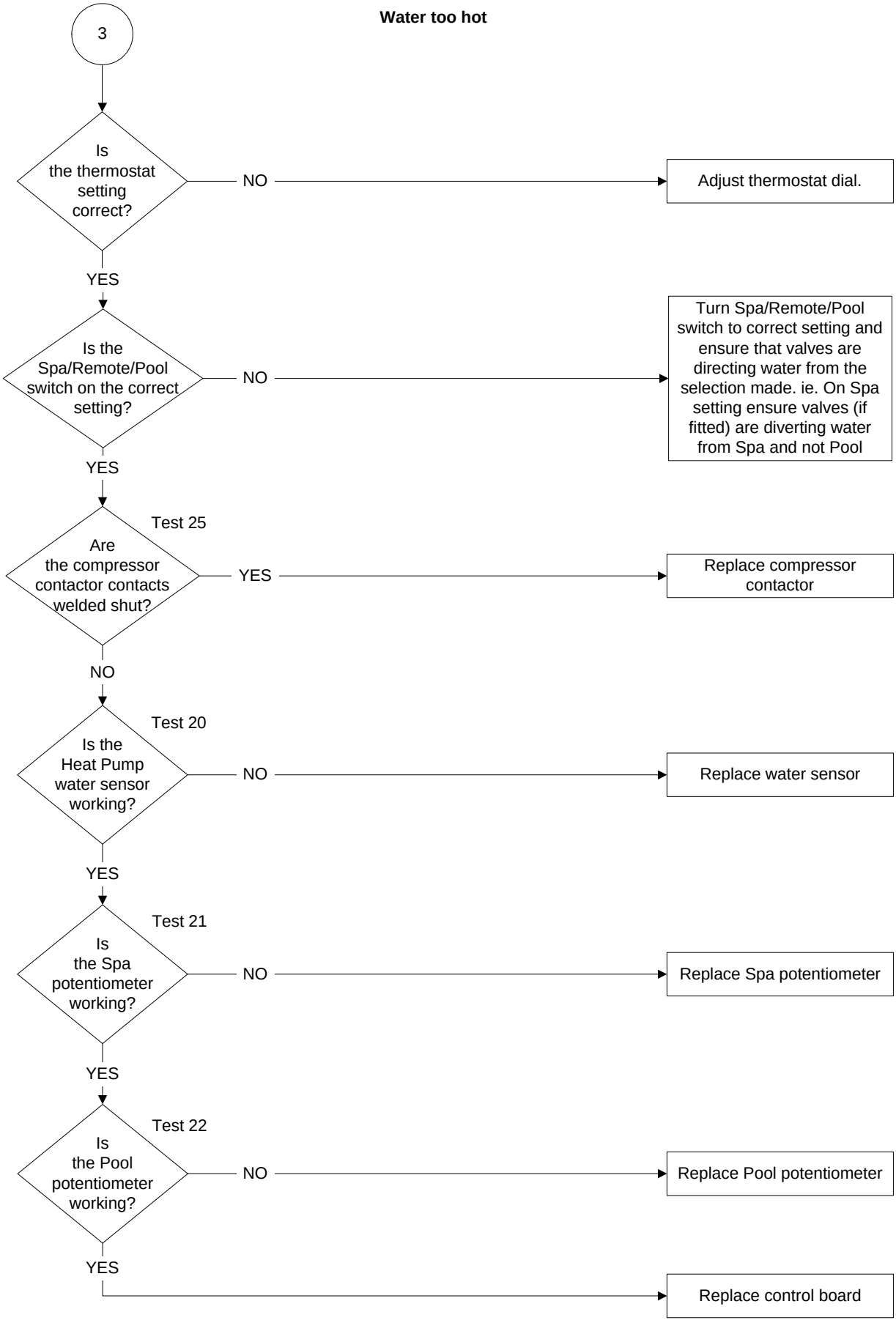
Fault Finding Chart 1.4



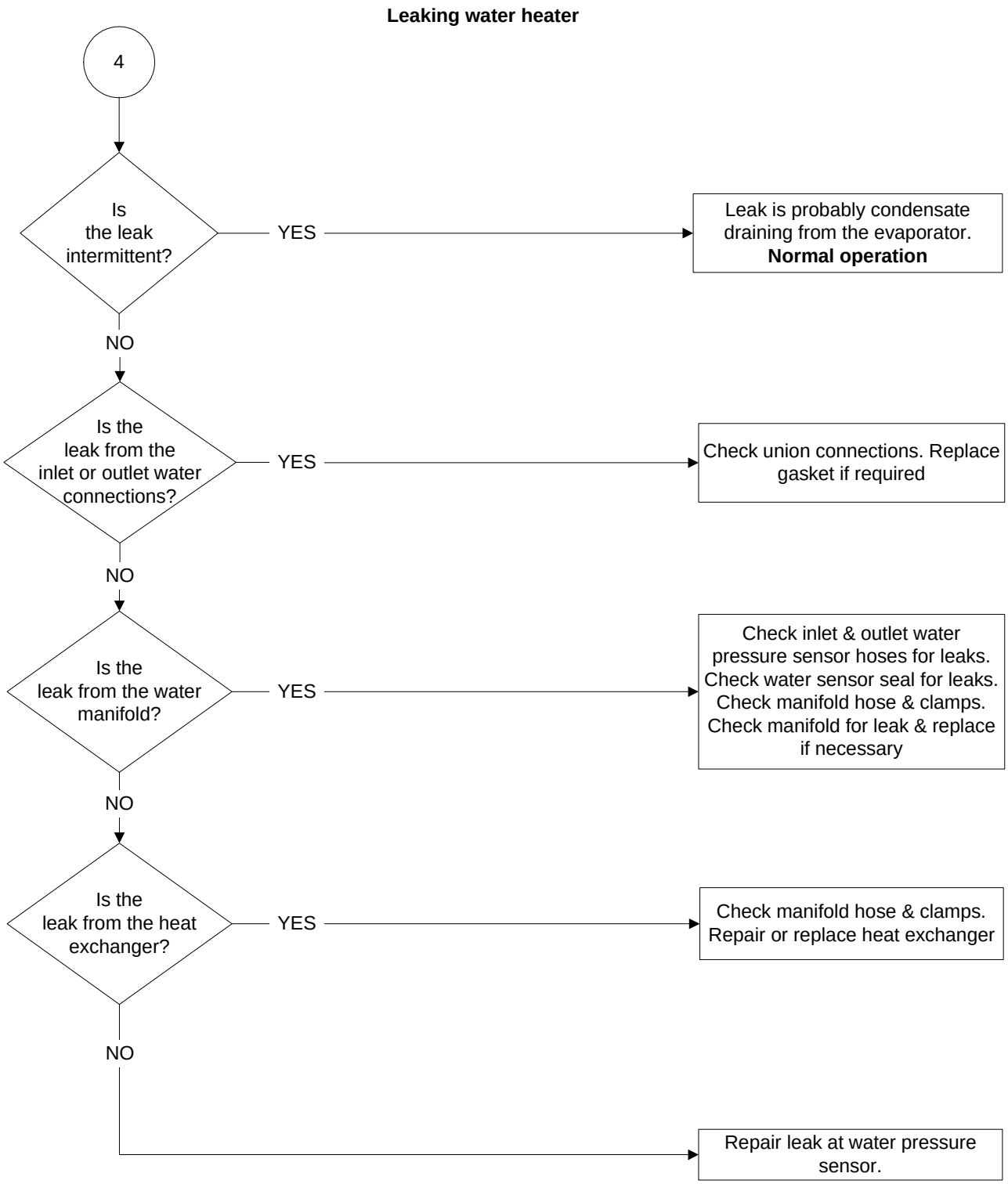
Fault Finding Chart 2



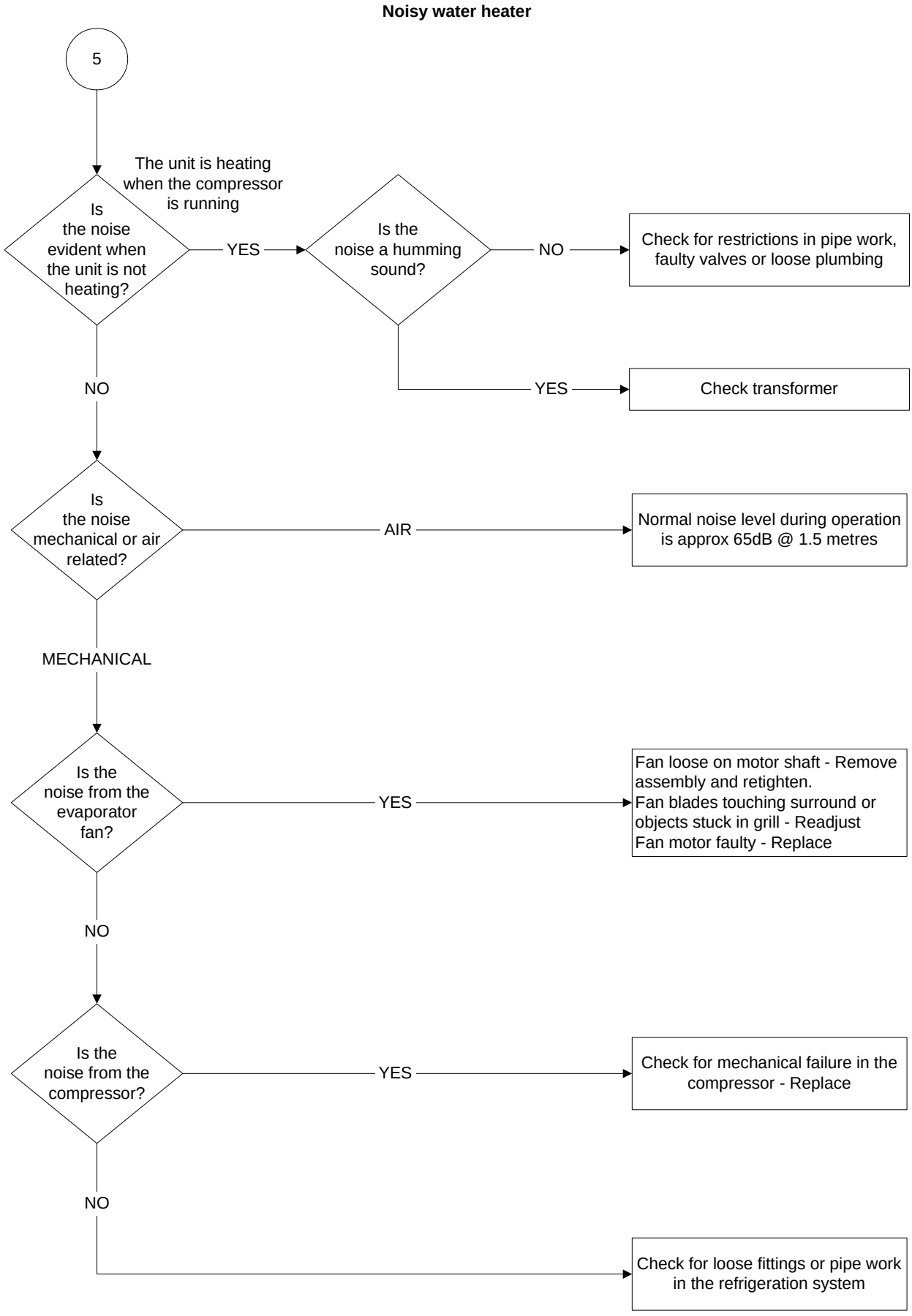
Fault Finding Chart 3



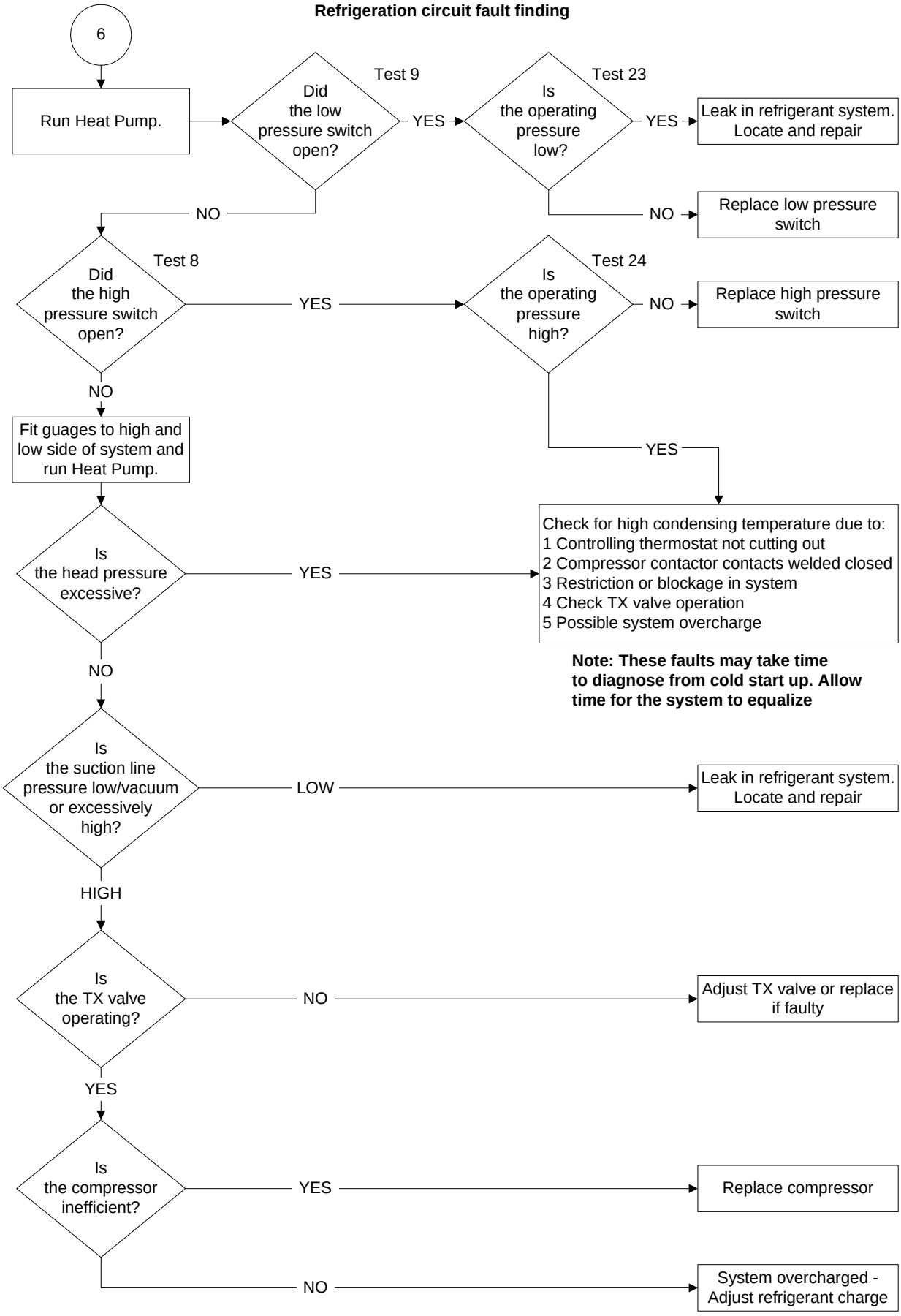
Fault Finding Chart 4



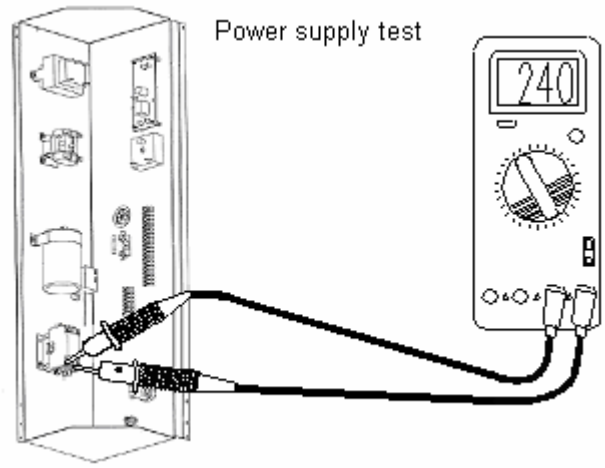
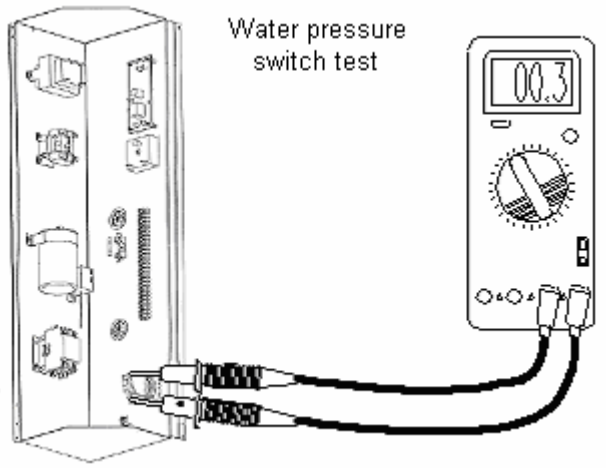
Fault Finding Chart 5

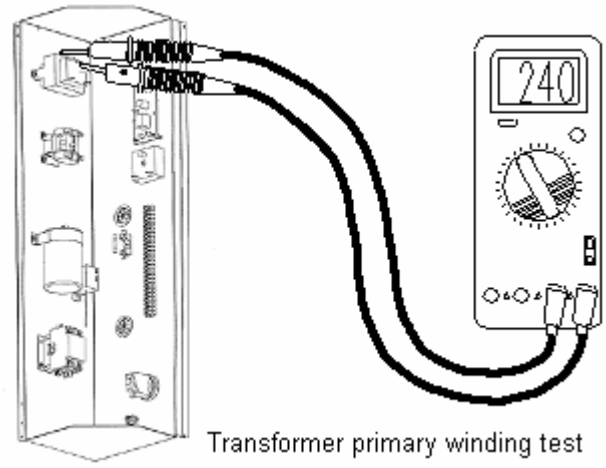
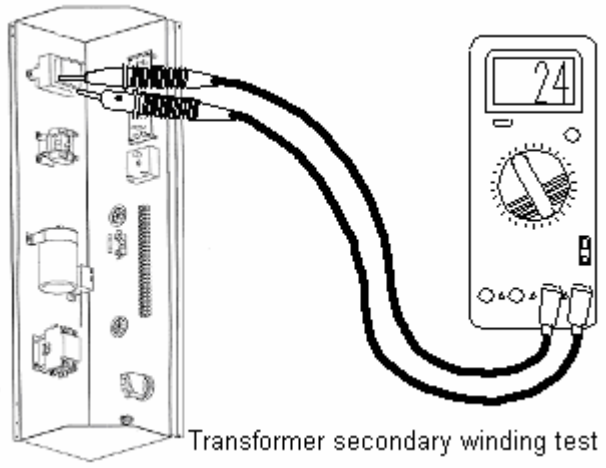


Fault Finding Chart 6

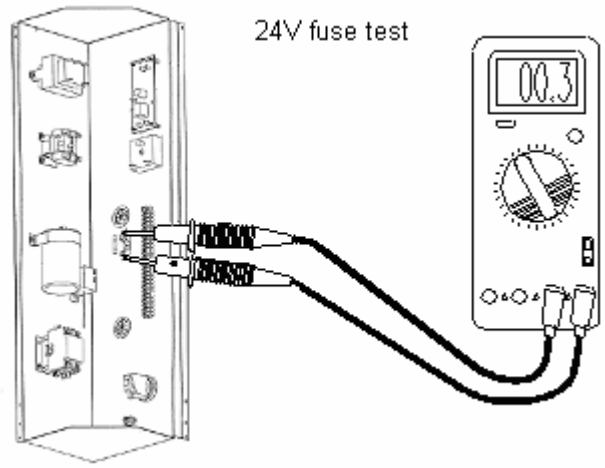
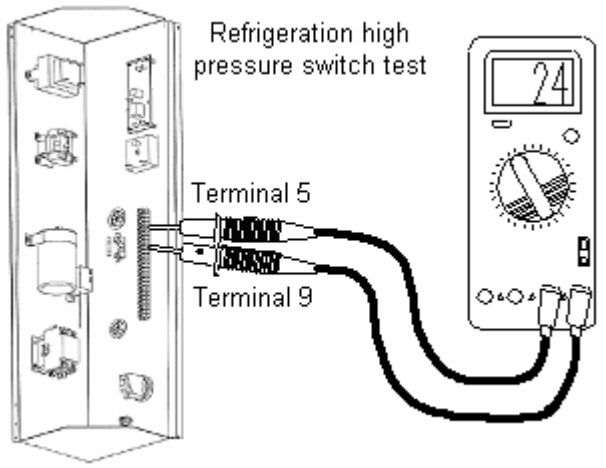


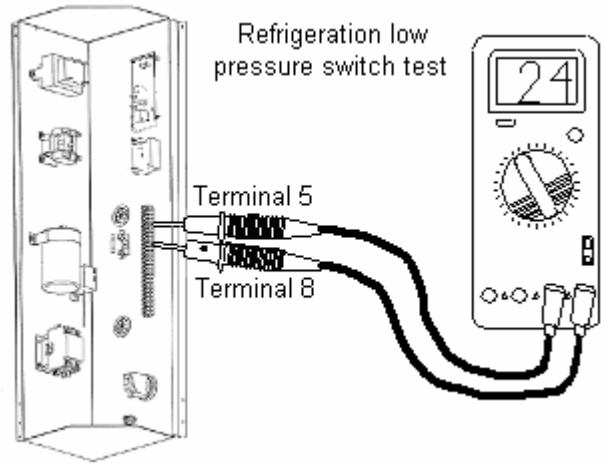
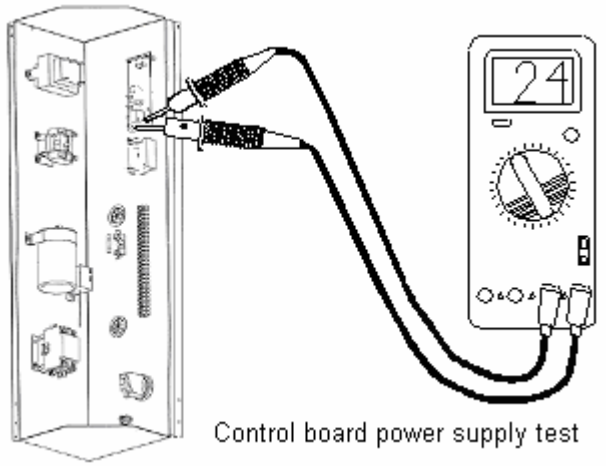
Component Tests 1, 4, 5 & 6

Test 1	Test 4
	
Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test. Using a multimeter on the AC voltage scale, measure across Line 1 and Line 2 on the compressor contactor. Normal voltage is 240 volts.	***Ensure power is isolated before conducting test*** Using a multimeter on the x1 resistance scale, measure across the top (orange wire) and centre terminals (black wires) on the water pressure switch. The reading should be less than 1 ohm when switch is closed.

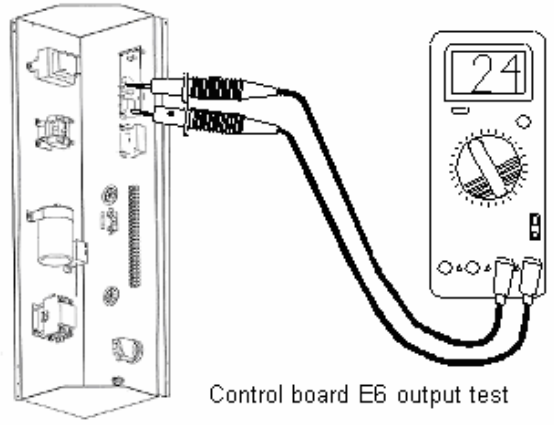
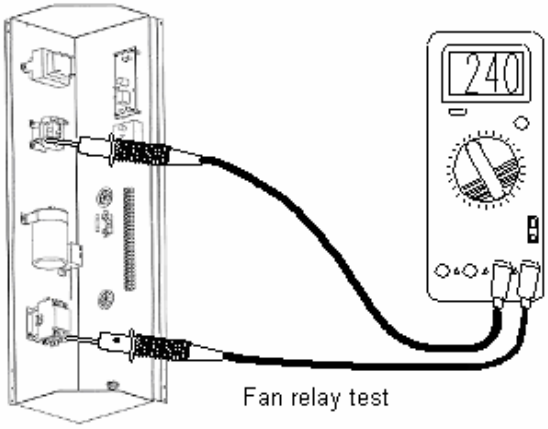
Test 5	Test 6
	
Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test. Using a multimeter on the AC voltage scale, measure between the primary 240V active and neutral on the transformer terminal block. Normal voltage is 240 volts.	***Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test.*** Using a multimeter on the AC voltage scale, measure between the secondary 24V active and neutral on the transformer terminal block. Normal voltage is 24 volts.

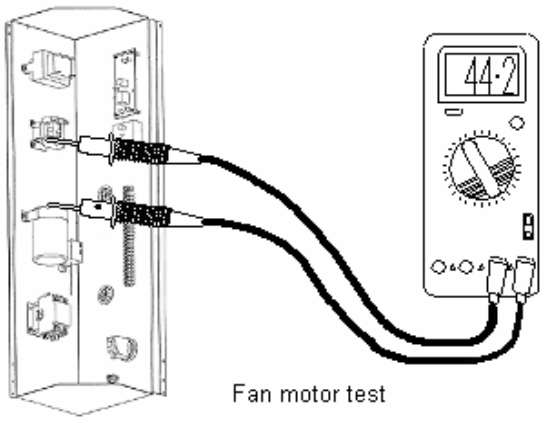
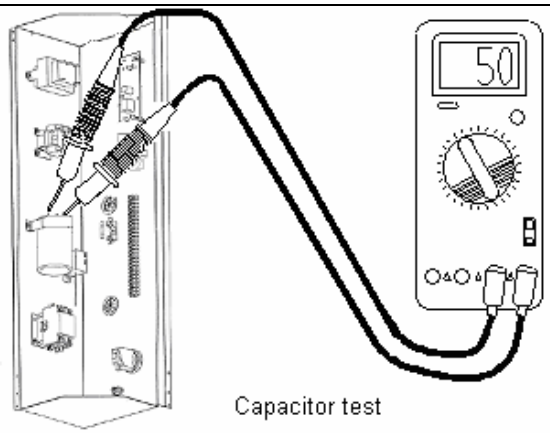
Component Tests 7 - 10

Test 7	Test 8
	
Ensure power is isolated before conducting test Using a multimeter on the x1 resistance scale, measure across the two fuse terminals. The reading should be less than 1 ohm.	***Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test.*** Using a multimeter on the AC voltage scale, measure across terminals 5 and 9 on the terminal block. Normal voltage is 24 volts.

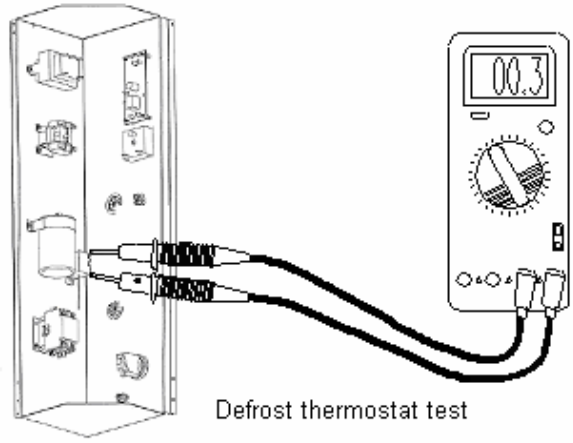
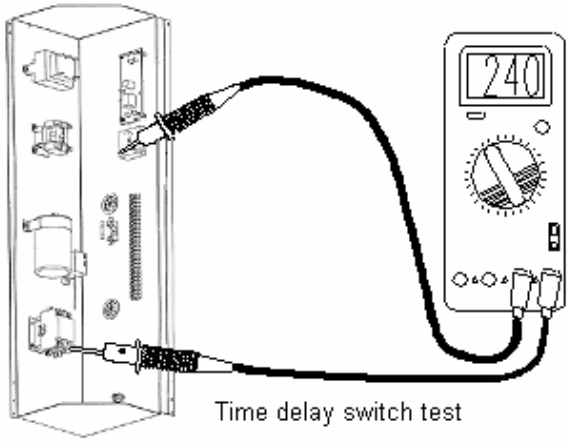
Test 9	Test 10
	
Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test. Disconnect the black wire to the control panel cover from terminal 9 of the terminal block and using a multimeter on the AC voltage scale, measure across terminals 8 and 5 on the terminal block. Normal voltage is 24 volts.	***Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test.*** Using a multimeter on the AC voltage scale, measure across terminals E10 & E11 on the control board. Normal voltage is 24 volts.

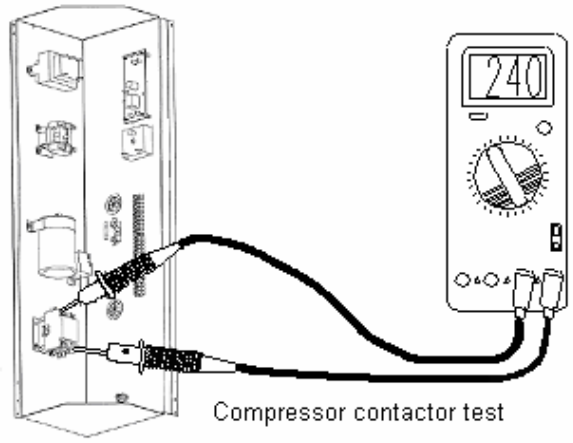
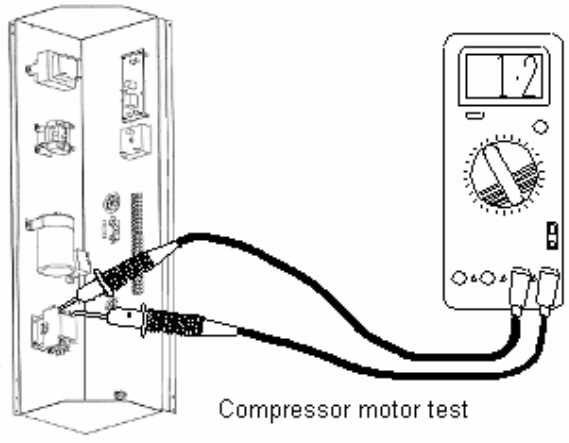
Component Tests 11 - 14

Test 11	Test 12
 Control board E6 output test	 Fan relay test
Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test. Using a multimeter on the AC voltage scale, measure across terminals E6 & E11 on the control board. Normal voltage is 24 volts.	***Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test.*** Using a multimeter on the AC voltage scale, measure across terminal 1 on the fan relay and Line 2 on the compressor contactor. Normal voltage is 240 volts. Note: Control board must be calling for heat for this test.

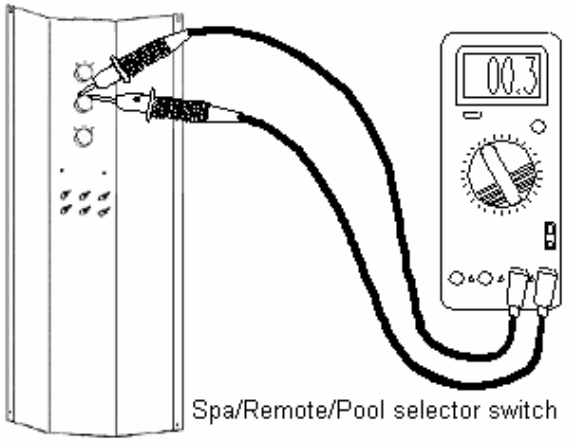
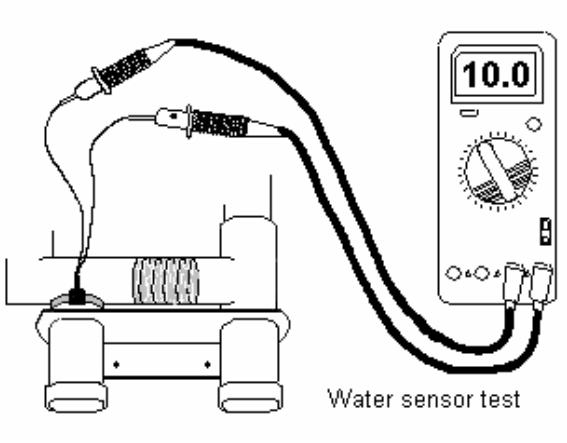
Test 13	Test 14
 Fan motor test	 Capacitor test
Ensure power is isolated before conducting test Using a multimeter set on the resistance scale, measure across the black wire on terminal 1 of the fan relay and the purple wire on the capacitor (run winding), and across the black wire on terminal 1 of the fan relay and the brown wire on the capacitor (start winding). Normal resistance for the run winding is 19 ohms. Normal resistance for the start winding is 44.2 ohms when the fan is cold.	***Ensure power is isolated before conducting test*** Disconnect the wiring to the capacitor and using a multimeter set on the capacitance (µf) scale measure across the capacitor terminals. Black to white terminals (compressor) Normal capacitance is 50 µf Black to green terminals (fan) Normal capacitance is 5 µf

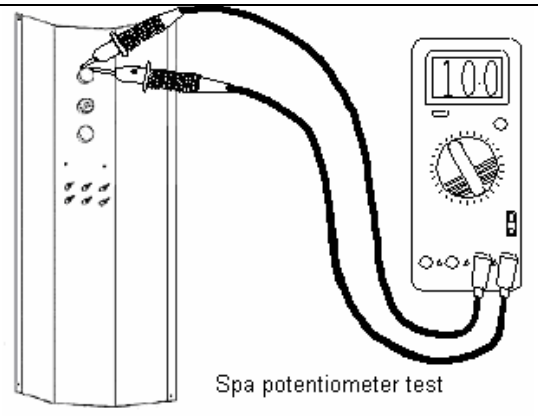
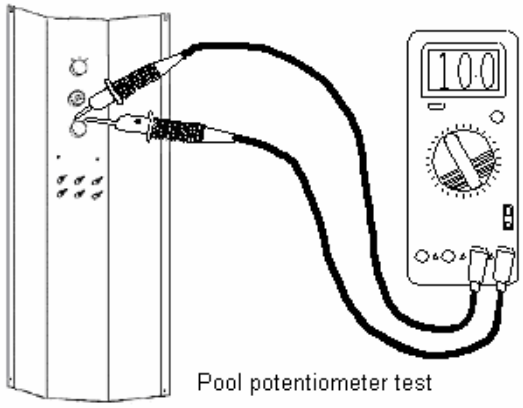
Component Tests 15 - 18

Test 15	Test 16
 Defrost thermostat test	 Time delay switch test
Ensure power is isolated before conducting test Using a multimeter on the x1 resistance scale, measure across the two terminals on the defrost switch. The reading should be less than 1 ohm.	***Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test.*** Using a multimeter on the AC voltage scale, measure across the load terminal on the time delay switch and Line 2 on the compressor contactor. Normal voltage is 240 volts.

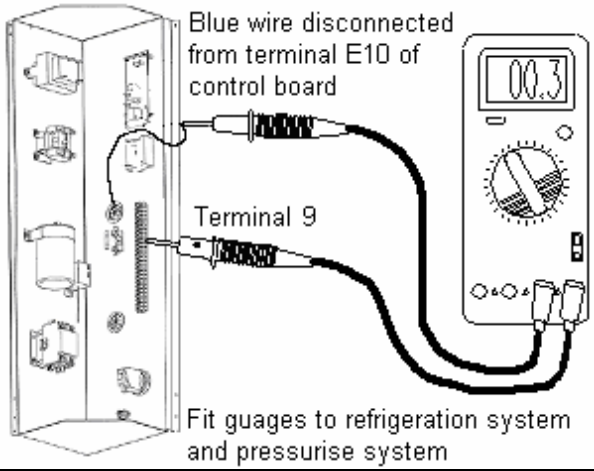
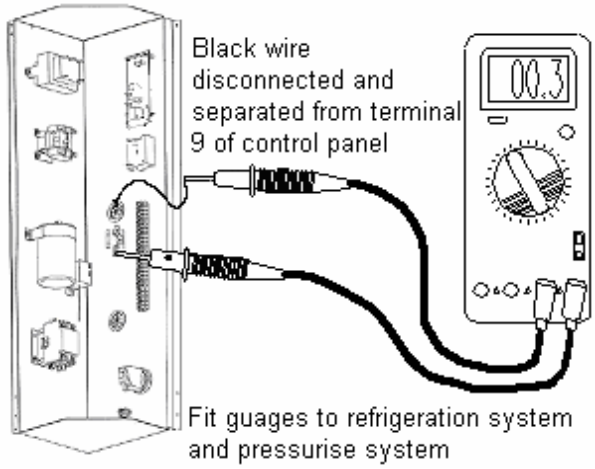
Test 17	Test 18
 Compressor contactor test	 Compressor motor test
Warning – 'Live' equipment Personal Protective Equipment should be worn when conducting this test. Using a multimeter on the AC voltage scale, measure across Load 1 and Line 2 terminals on the compressor contactor. Normal voltage is 240 volts. Then measure across Load 2 and Line 2 terminals on the compressor contactor. Normal voltage is 0 volts. Note: Control board must be calling for heat for this test.	***Ensure power is isolated before conducting test*** Using a multimeter set on the resistance scale, measure across Load 1 and Load 2 terminals on the compressor contactor (run winding), and across Load 1 terminal on the compressor contactor and the yellow wire on the capacitor (start winding). Normal resistance for the run winding is 1.2 ohms. Normal resistance for the start winding is 2.7 ohms when the compressor is cold.

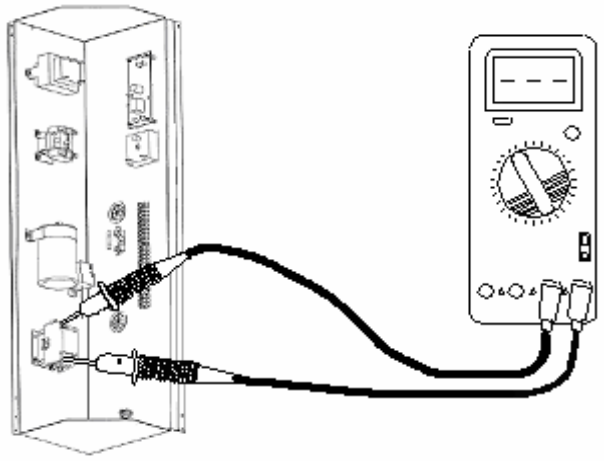
Component Tests 19 - 22

Test 19	Test 20
 Spa/Remote/Pool selector switch	 Water sensor test
Ensure power is isolated before conducting test Mark and disconnect switch wiring and using a multimeter on the x1 resistance scale, measure across switch terminals. The readings should be as follows. On Spa: Term A - 1 (red wire) less than 1 ohm Term A - 2 (black wire) infinity ohms Term A - 3 (blue wire) infinity ohms On Remote: Term A - 1 (red wire) infinity ohms Term A - 2 (black wire) less than 1 ohm Term A - 3 (blue wire) infinity ohms On Pool: Term A - 1 (red wire) infinity ohms Term A - 2 (black wire) infinity ohms Term A - 3 (blue wire) less than 1 ohm	***Ensure power is isolated before conducting test*** Disconnect water sensor at cable joiners. Using a multimeter on the resistance scale, measure across the two sensor leads. Normal reading should be approximately 10 kilo ohms @ 25º C. For other temperatures refer to the "Water Sensor V's Temperature Chart" on page 42.

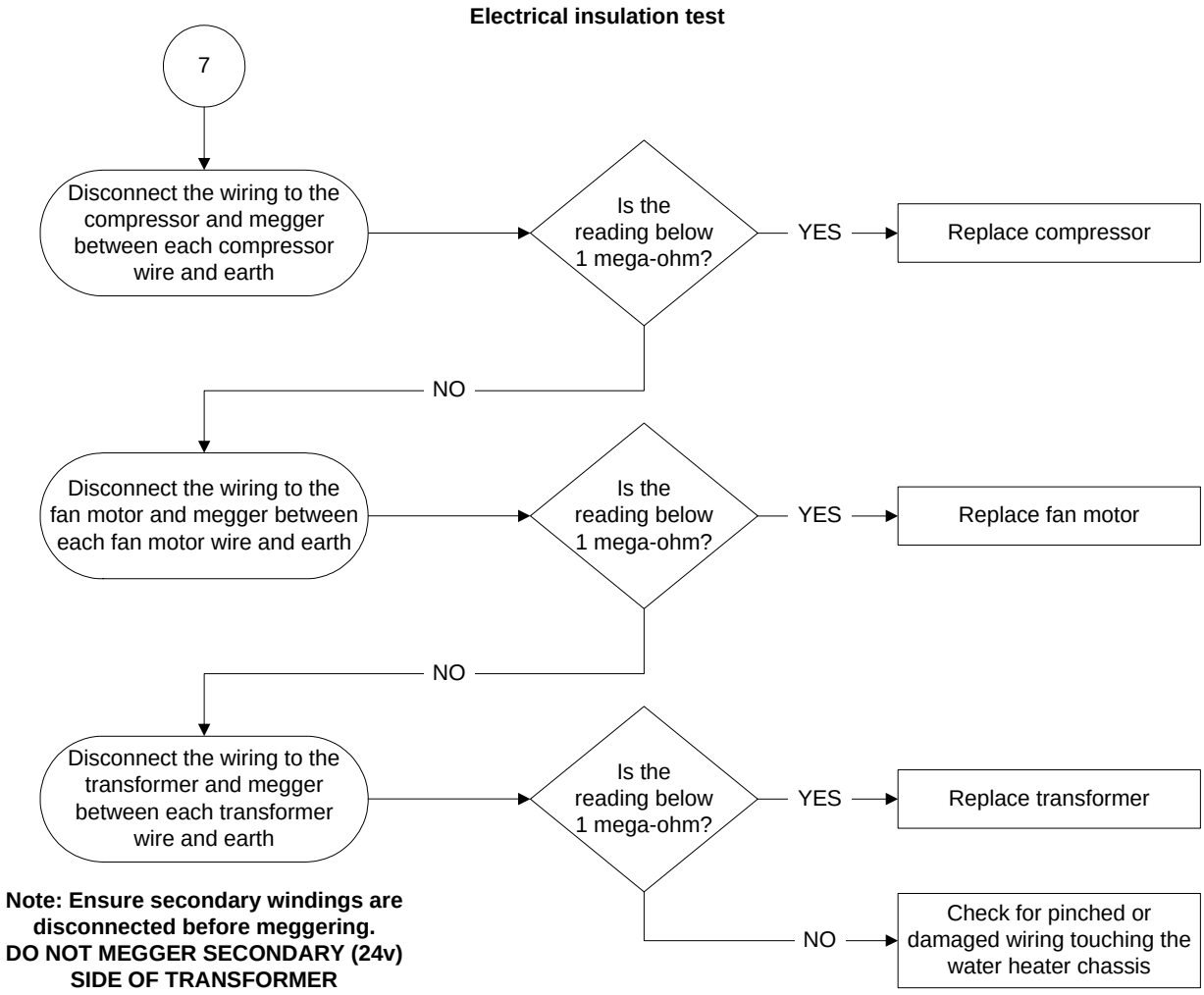
Test 21	Test 22
 Spa potentiometer test	 Pool potentiometer test
Ensure power is isolated before conducting test Switch selector switch to "Remote". Using a multimeter on the resistance scale, measure across the red and black wires on the Spa potentiometer whilst rotating throughout its range. The resistance value should change smoothly from 0 – 10 kilo ohms (approx).	***Ensure power is isolated before conducting test*** Switch selector switch to "Remote". Using a multimeter on the resistance scale, measure across the blue and black wires on the Spa potentiometer whilst rotating throughout its range. The resistance value should change smoothly from 0 – 10 kilo ohms (approx).

Component Tests 23 - 26

Test 23	Test 24
	
Ensure power is isolated before conducting test Disconnect the blue wire from terminal E10 on the control board and using a multimeter on the x1 resistance scale, measure across this blue wire and terminal 9 on the terminal strip. For pressures below 35kPa the reading should be infinity ohms and for pressures above 60kPa the reading should be less than 1 ohm.	***Ensure power is isolated before conducting test*** Disconnect the black & blue wire from terminal 9 on the terminal block and separate by untwisting. Using a multimeter on the x1 resistance scale, measure across the black wire and bottom terminal of fuse holder. For pressures above 400kPa the reading should be infinity ohms and for pressures below 300kPa the reading should be less than 1 ohm.

Test 25

Ensure power is isolated before conducting test Using a multimeter on the resistance scale, measure across Line 1 and Load 1 terminals on the compressor contactor. Normal resistance is infinity ohms.

Fault Finding Chart 7



Electrical Insulation Testing

There are two basic test procedures that should be carried out when the operation and function of a water heater's electrical system containing electronic equipment is in doubt.

Personal Protective Equipment should be worn when conducting step 1 of this procedure to reduce the risk of electric shock. Refer to Rheem safety procedure on electrical testing.

The Heat Pump electrical system contains electronic equipment that may be damaged by megger operation. Ensure that the Active and Neutral wires are bridged (short circuited) together when conducting Test No 2.

Test No.2

To check insulation resistance of the pool/spa heater active and neutral circuit. (Reading not to be below 1 mega-ohm).

1. ***Isolate power to the water heater by removing fuse. Confirm with multi-meter across Line 1 and Line 2 terminals of the compressor contactor that voltage is not present.***

2. Once satisfied, disconnect the active and neutral supply wires from the compressor contactor Line 1 and Line 2 terminals.
3. Short circuit the Line 1 and Line 2 terminals of the compressor contactor by inserting a wire bridge between these two terminals.
4. Connect megger leads to the Line 1 terminal of the compressor contactor and earth.
5. Operate megger. A reading above 1 mega-ohm should be obtained.
6. If a reading below 1 mega-ohm is indicated, all component parts will need to be individually tested to locate the fault. Refer to flow diagram 7 on page 31.
7. ***Remove bridging wire between Line 1 and Line 2 terminals of the compressor contactor.***

Test No. 3

To check "Continuity" of pool/spa heater electrical circuit.

8. Set multimeter to resistance scale.
9. If a reading between the compressor Line 1 and Line 2 terminals is greater than approximately 75.9 ohms is indicated, all electrical component parts will need to be individually tested to locate the fault. Refer to Specifications on page 5 for indicative resistances.
10. Reconnect active cable to Line 1 terminal and neutral cable to Line 2 terminal on compressor contactor.
11. Replace fuse. ***Note: If continuing with any diagnostic procedures do not replace the fuse.***

Component Replacement Procedures

Control Panel cover: (Procedure 1)

1. ***Isolate the power to the pool/spa heater.***
2. Back off top two screws and remove bottom two screws on control panel cover.
3. Slide cover down and out to remove being careful not to damage wiring.
4. Reassemble in reverse order of above.

Access Panel Removal: (Procedure 2)

1. Remove 3 lower and 2 side retaining screws and lift out access panel.

Top Cover Removal: (Procedure 3)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect purple and brown wires from capacitor and push through control panel grommet.

4. Disconnect black wire from terminal 1 of fan relay and push through control panel grommet.
5. Cut cable ties holding fan wiring to back of control panel.
6. Remove 9 screws around top cover and lift out whole top cover assembly including fan and grill.
7. Reassemble in reverse order of above.

Transformer: (Procedure 4)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from transformer paying attention to where each wire is connected.
4. Remove two tapped screws on transformer base and remove transformer.
5. Reassemble in reverse order of above.

High Pressure Switch: (Procedure 5)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Recover refrigerant charge.
4. Cut cable ties and disconnect pressure switch wiring from terminals 1 and 9 of the terminal block pulling wires through control panel grommet.
5. Unscrew and remove high pressure switch from refrigeration pipe.
6. Reassemble in reverse order of above.
7. Recharge system with R22. Refer to “refrigerant charge” on page 11.

Low Pressure Switch: (Procedure 6)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Recover refrigerant charge.
4. Cut cable ties and disconnect pressure switch wiring from terminals 8 and 9 of the terminal block pulling wires through control panel grommet.
5. Unscrew and remove high pressure switch from refrigeration pipe.
6. Reassemble in reverse order of above.
7. Recharge system with R22. Refer to “refrigerant charge” on page 11.

Control Board: (Procedure 7)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from control board paying attention to where each wire is connected.
4. Remove control board from insulated stand-offs by closing protrusion with long nose pliers whilst lifting off control board.
5. Reassemble in reverse order of above.

Water Flow Pressure Switch: (Procedure 8)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from pressure switch.
4. Remove pressure hose from rear of pressure switch by closing spring clamp with pliers whilst gently pulling hose.
5. Unscrew retaining nut from rear of switch and remove pressure switch.
6. Reassemble in reverse order of above.

Defrost Switch: (Procedure 9)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from defrost switch.
4. Remove temperature probe from left hand side of evaporator by gently lifting out from foil retainer.
5. Remove two tapped screws from defrost switch base and remove defrost switch whilst gently feeding evaporator probe through control panel grommet.
6. Reassemble in reverse order of above paying attention to ensure probe is correctly inserted into and covered by foil retainer.

Delay Timer: (Procedure 10)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from delay timer.
4. Remove single tapped screw from centre of timer and remove delay timer.
5. Reassemble in reverse order of above.

Compressor Contactor: (Procedure 11)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from compressor contactor paying attention to where each wire is connected.
4. Remove two tapped screws from contactor base and remove compressor contactor.
5. Reassemble in reverse order of above.

Compressor: (Procedure 12)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Remove the top cover (see procedure 3).
4. Remove compressor terminal box cover by squeezing sides in centre to detach tabs and then pulling forward.
5. Disconnect terminal box cable plug by grasping rubber flap with pliers and pulling outwards.
6. Recover refrigerant charge.
7. Un-braze the discharge and suction line pipe work from the compressor.
8. Undo 4 tapped bolts at base of compressor.
9. Lift compressor out of Heat Pump. As the compressor weighs approximately 40 kilograms lifting equipment such as an “A” frame and block and tackle will be required.
10. Reassemble in reverse order of above.
11. Pressurise system to 3000kPa and conduct a leak test.
12. Evacuate system to 300 microns for a period of at least 40 minutes.
13. Recharge system with R22. Refer to “refrigerant charge” on page 11.

Evaporator Fan Relay: (Procedure 13)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from fan relay paying attention to where each wire is connected.
4. Remove two tapped screws from relay base and remove fan relay.
5. Reassemble in reverse order of above.

Evaporator Fan: (Procedure 14)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***

3. Remove fan blade by undoing bolt on retaining boss. Pay attention to the distance from bottom of boss to end of shaft for when reassembling.
4. Disconnect fan motor wiring from fan relay, capacitor and earth connection, cut cable ties and feed wiring through control panel grommet.
5. Remove 6 screws around outside of fan grill and lift out fan and grill together whilst feeding cables through conduit hole in top cover.
6. Remove four dome nuts holding fan to grill.
7. Reassemble in reverse order of above ensuring that fan boss is the correct distance from base of shaft as noted in step 2.

Compressor and Evaporator Fan Capacitor: (Procedure 15)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Disconnect wiring from capacitor paying attention to where each wire is connected.
4. Remove two tapped screws from clamp and remove clamp and capacitor.
5. Reassemble in reverse order of above.

Water Temperature Sensor: (Procedure 16)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Cut sensor cables close to joint with extension cable.
4. Undo and remove hose clamp holding sensor to water manifold.
5. Gently prise sensor up from hole with a flat bladed screwdriver and remove sensor.
6. Reassemble in reverse order of above (sensor has an in built rubber seal).

Thermostat Adjustment POT spa: (Procedure 17)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Unsolder wires to potentiometer paying attention to where each wire is connected.
4. Unscrew retaining screw on side of knob opposite white line and gently prise off knob with a flat bladed screwdriver.
5. Undo hex retaining nut from rear and remove potentiometer.

6. Reassemble in reverse order of above ensuring potentiometer locating pin aligns with locating hole in control panel cover.

Thermostat Adjustment POT pool: (Procedure 18)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Unsolder wires to potentiometer paying attention to where each wire is connected.
4. Unscrew retaining screw on side of knob opposite white line and gently prise off knob with a flat bladed screwdriver.
5. Undo hex retaining nut from rear and remove potentiometer.
6. Reassemble in reverse order of above ensuring potentiometer locating pin aligns with locating hole in control panel cover.

Spa-Remote-Pool Selector Switch: (Procedure 19)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

1. Remove control panel cover (see procedure 1).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Unsolder wires to switch paying attention to where each wire is connected.
4. Unscrew retaining screw on side of knob opposite white line and gently prise off knob with a flat bladed screwdriver.
5. Undo hex retaining nut from rear and remove selector switch.
6. Reassemble in reverse order of above ensuring selector switch locating pin aligns with locating hole in control panel cover.

Evaporator Coil: (Procedure 20)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***

3. Remove the top cover (see procedure 3).
4. Remove the three corner supports by removing 2 bottom screws on each support.
5. Gently remove the defrost thermostat probe from foil surround on left hand side of evaporator.
6. Remove 3 screws on left hand side of control panel and 1 screw on bottom left hand side of water inlet connector.
7. Remove tape holding TX probe to evaporator suction line and remove probe.
8. Recover R22 refrigerant.
9. Cut refrigeration suction line between evaporator and first bend to compressor.
10. Unsolder refrigeration octopus fitting from TX valve.
11. Lift out evaporator.
12. Reassemble in reverse order of above paying attention to ensure defrost thermostat probe is correctly inserted into and covered by foil retainer. Cut pipe work will need to be joined and re-brazed.
13. Pressurise system to 3000kPa and conduct a leak test.
14. Evacuate system to 300 microns for a period of at least 40 minutes.
15. Recharge system with R22. Refer to “refrigerant charge” on page 11.

Heat Exchanger: (Procedure 21)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Remove the evaporator fan (see procedure 14).
4. Un-braze the suction line pipe work from the compressor.
5. Un-braze the suction line pipe work from the heat exchanger after the charging point joint.
6. Cut the discharge pipe work near the first bend from the compressor so as the heat exchanger can be lifted out without catching on this pipe work.
7. Remove compressor terminal box cover by squeezing sides in centre to detach tabs and then pulling forward.
8. Disconnect terminal box cable plug by grasping rubber flap with pliers and pulling outwards.
9. Remove four tapped screws holding heat exchanger legs to base.
10. Undo hose clamps on heat exchanger inlet and outlet.
11. Push heat exchanger back towards compressor to disconnect inlet and outlet hose pipes.
12. Lift heat exchanger out over compressor and through fan opening.

13. Reassemble in reverse order of above. Cut pipe work will need to be joined and re-brazed.
14. Pressurise system to 3000kPa and conduct a leak test.
15. Evacuate system to 300 microns for a period of at least 40 minutes.
16. Recharge system with R22. Refer to “Specifications” table on page 5.

Water Manifold Assembly: (Procedure 22)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Undo and remove hose clamp holding sensor to water manifold.
4. Gently prise sensor up from hole with a flat bladed screwdriver and remove sensor.
5. Remove water pressure switch hose from water manifold by closing spring clamp with pliers whilst gently pulling hose.
6. Undo hose clamps on water manifold inlet and outlet connections to heat exchanger.
7. Remove clamp holding outlet white flexible hose to control panel by removing screw.
8. Undo 2 nuts and bolts holding water manifold bracket to base of Heat Pump and lift out water manifold.
9. Reassemble in reverse order of above.

Expansion (TX) Valve: (Procedure 23)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Remove tape holding TX probe to evaporator suction line and remove probe.
4. Recover R22 refrigerant.
5. Un-braze and remove TX valve.
6. Reassemble in reverse order of above. Cut pipe work will need to be joined and re-brazed.
7. Pressurise system to 3000kPa and conduct a leak test.

8. Evacuate system to 300 microns for a period of at least 40 minutes.
9. Recharge system with R22. Refer to “refrigerant charge” on page 11.
10. If installing a new TX valve it will need to be adjusted. See the procedure on page 41.

Receiver Filter Drier: (Procedure 24)

Personal Protective Equipment should be worn when conducting step 2 of this procedure to reduce the risk of electric shock. Refer to Rheem Safety Procedure on electrical testing.

The fan motor may commence operation without warning. Failure to isolate the power may result in serious injury if the fan commences operation.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

1. Remove control panel cover and access panel (see procedures 1 & 2).
2. ***Confirm with a multi-meter between Active and Neutral at the Compressor contactor Line terminals that voltage is not present.***
3. Recover R22 refrigerant.
4. Un-braze and remove receiver filter drier.
5. Reassemble in reverse order of above. Cut pipe work will need to be joined and re-brazed.
6. Pressurise system to 3000kPa and conduct a leak test.
7. Evacuate system to 300 microns for a period of at least 40 minutes.
8. Recharge system with R22. Refer to “refrigerant charge” on page 11.

Adjusting the TX Valve

The fan motor may commence operation without warning.

Personnel qualified and licensed to work with refrigerants may only carry out the following repair procedures to the sealed refrigeration system.

The following procedures assume that all work conducted conforms to the refrigeration code of good practice. During repair the R22 refrigerant must be recovered, not vented to atmosphere.

Measure the suction line temperature at the bulb of the expansion valve. Measure the suction pressure at the same time. Refer to the saturated temperature chart for R-22 shown on page 42 and compare the saturated temperature to the readings taken. Turn the stem of the TX valve clockwise to raise the suction temperature and counter clockwise to lower the temperature. The target Superheat is 8 degrees Celsius at 27 degrees Celsius wet bulb at 80% relative humidity.

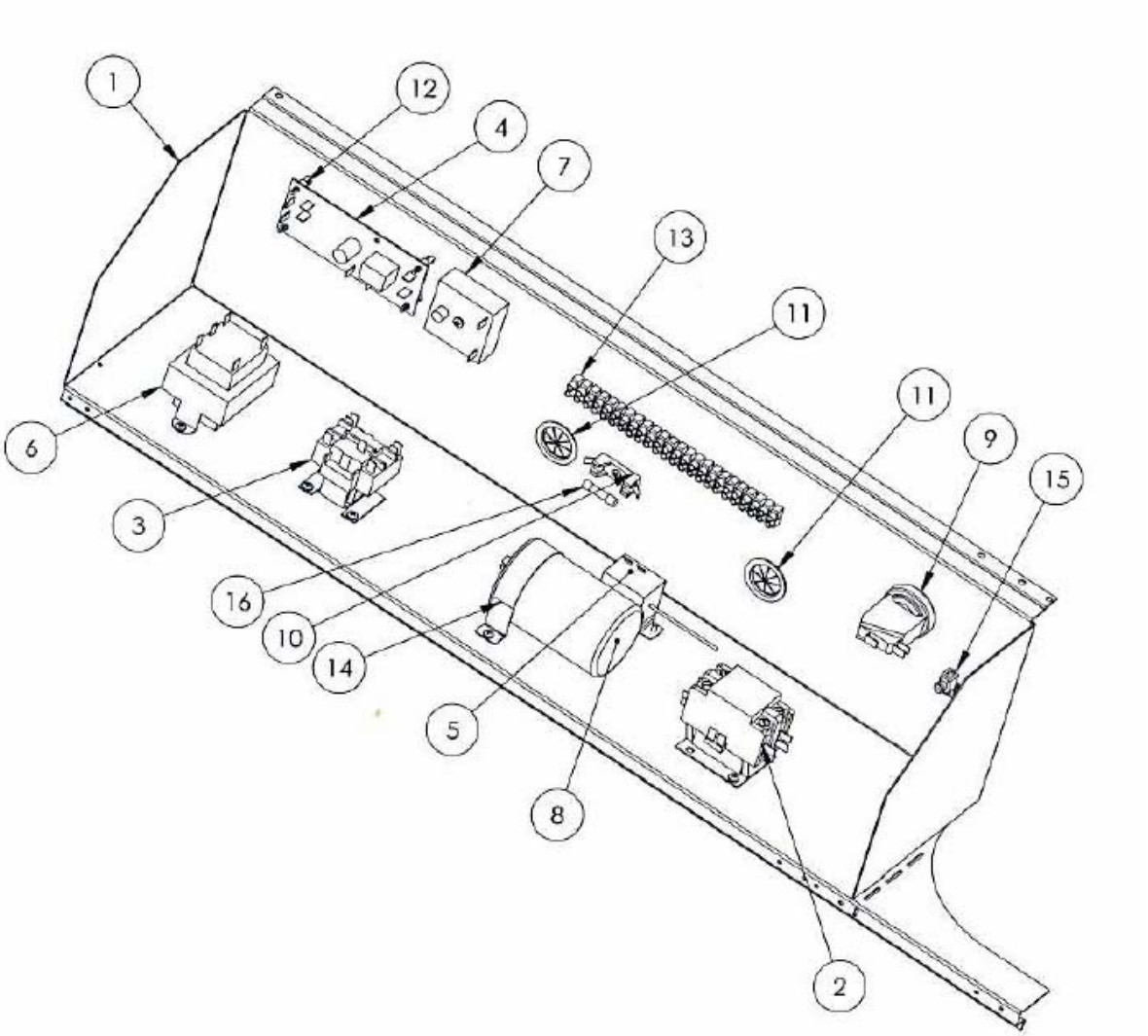
R22 Saturated Temperature Chart

ºC	kPa	ºC	kPa	ºC	kPa	ºC	kPa	ºC	kPa
- 60	- 64	**- 28**	62	**- 8**	253	**12**	579	**42**	1432
- 56	- 55	**- 26**	76	**- 6**	279	**14**	621	**44**	1508
- 52	- 43	**- 24**	92	**- 4**	306	**16**	665	**46**	1587
- 48	- 30	**- 22**	108	**- 2**	334	**18**	711	**48**	1669
- 44	- 15	**- 20**	125	**0**	365	**20**	759	**50**	1753
- 38	4	**- 18**	143	**2**	396	**24**	808	**52**	1841
- 36	14	**- 16**	163	**4**	429	**28**	915	**54**	1931
- 34	25	**- 14**	184	**6**	464	**32**	1029	**56**	2025
- 32	36	**- 12**	205	**8**	501	**36**	1154	**58**	2122
- 30	49	**- 10**	229	**10**	539	**40**	1288	**60**	2325

Water Sensor Temperature V's Resistance Chart

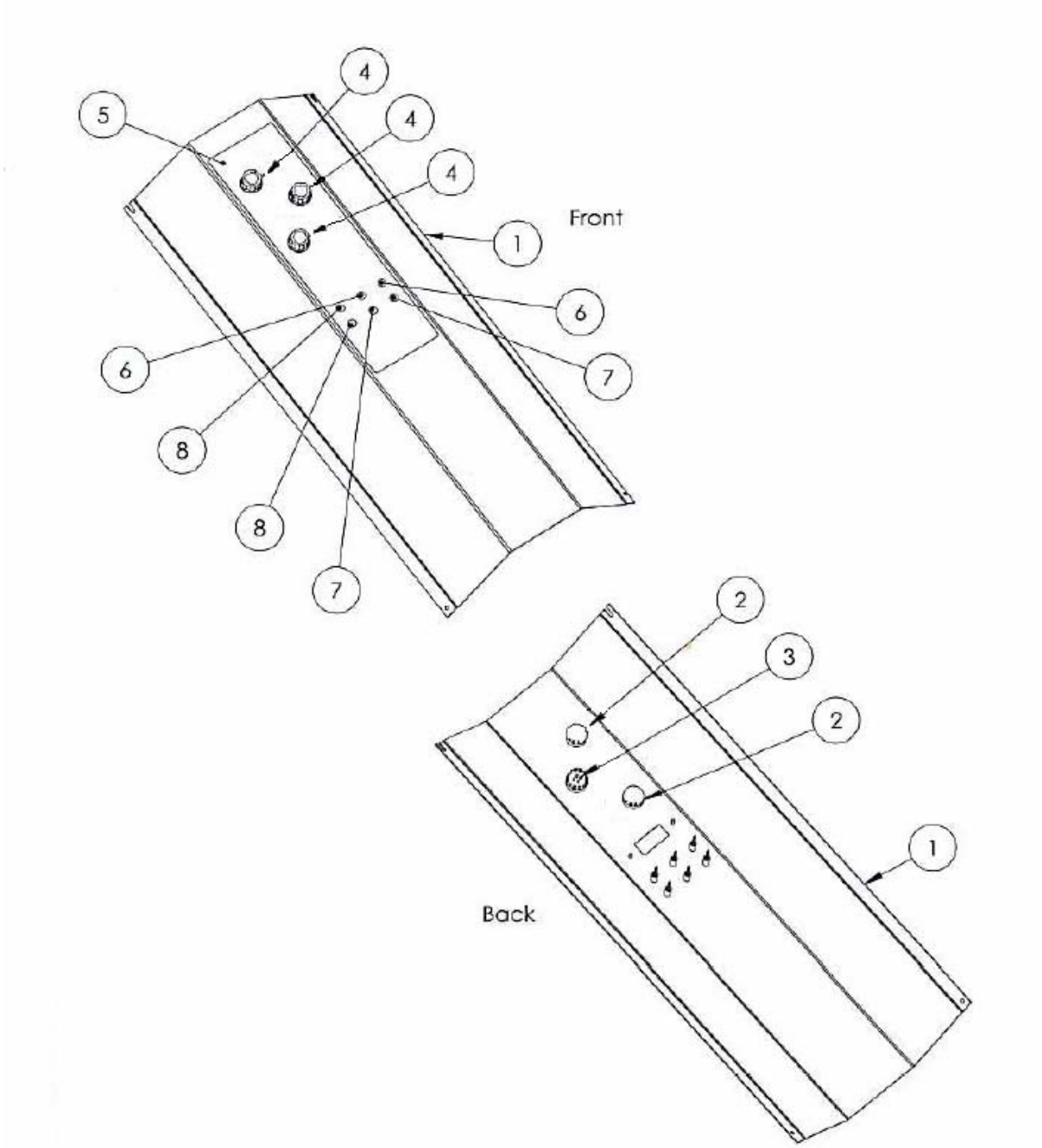
ºC	Ohms	ºC	Ohms	ºC	Ohms	ºC	Ohms	ºC	Ohms
0	32648	**12**	18075	**24**	10412	**36**	6199	**48**	3875
1	31070	**13**	17215	**25**	9999	**37**	5959	**49**	3742
2	29428	**14**	16473	**26**	9475	**38**	5764	**50**	3602
3	27965	**15**	15711	**27**	9154	**39**	5561	**51**	3442
4	26798	**16**	14997	**28**	8786	**40**	5326	**52**	3359
5	25391	**17**	14345	**29**	8412	**41**	5132	**53**	3213
6	24235	**18**	13623	**30**	8056	**42**	4911	**54**	3101
7	23220	**19**	13016	**31**	7612	**43**	4701	**55**	2987
8	21850	**20**	12491	**32**	7433	**44**	4557		
9	20756	**21**	11998	**33**	7098	**45**	4368		
10	19900	**22**	11412	**34**	6801	**46**	4204		
11	18978	**23**	10958	**35**	6530	**47**	4051		

Control Panel Assembly Exploded View & Replacement Parts List



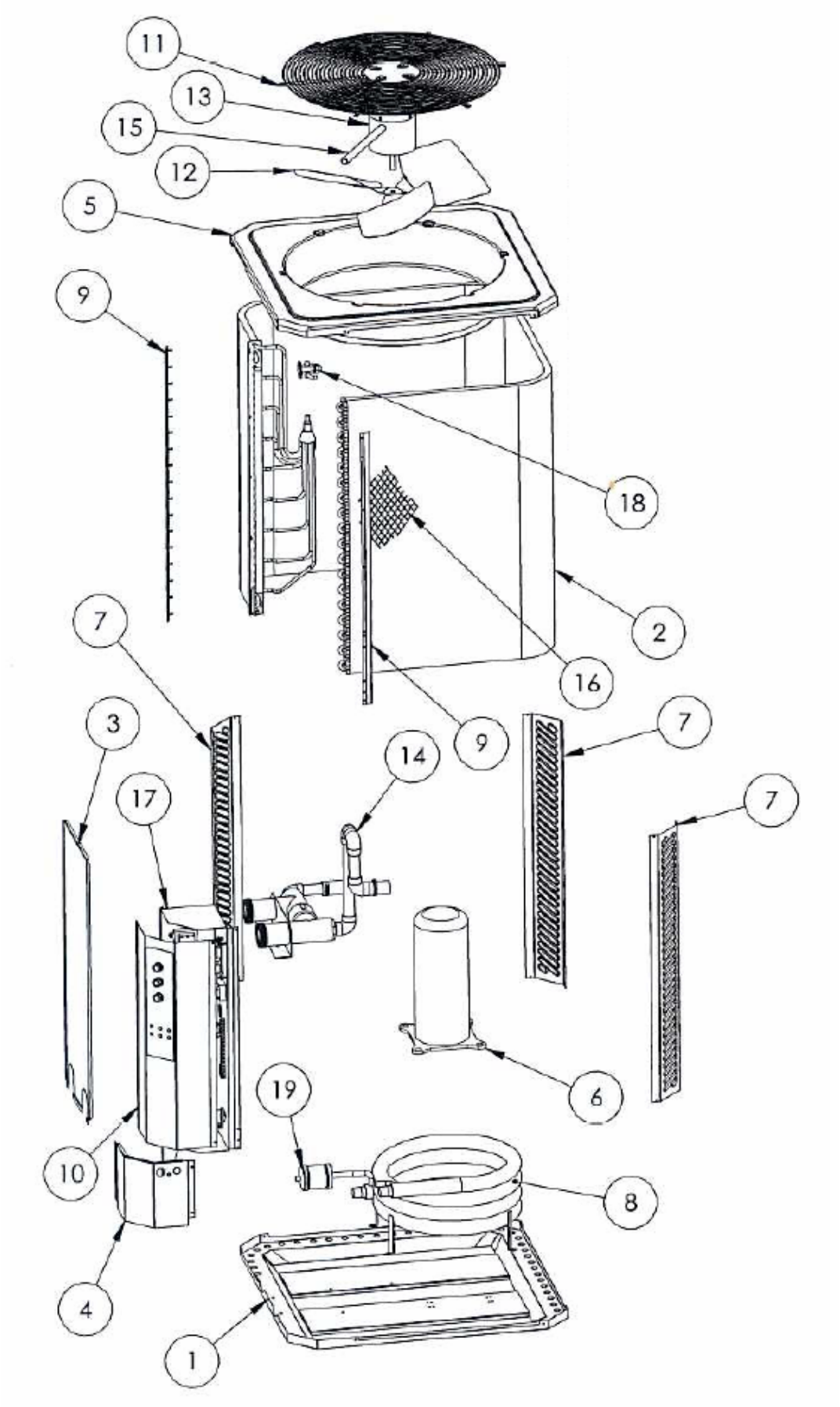
Item	Description	Part No.
1	Control Panel	8310002
2	Compressor Contactor	5410002
3	Fan Relay	5010010
4	Control Board 24V (thermostat) SP-332	5010007
5	Defrost Thermostat	2110003
6	Transformer 240V – 24V AC	5010014
7	Delay Timer IMC 203	5010011
8	Compressor & Fan Capacitor	5510008
9	Water Flow Pressure Switch	5010015
10	Fuse Block	5010003
11	Bushing	7010001
12	Stand-off (4 required) RLCBSR1	9910001
13	Terminal Strip	5210006
14	Capacitor Clamp	7010004
15	Earth Lug	5010017
16	Fuse 2A (Type 3AG 10 per bag)	100-121

Control Panel Cover Assembly Exploded View & Replacement Parts List



Item	Description	Part No.
1	Control Panel Cover	8130152
2	Thermostat Adjustment POT	100-107
3	Spa-Remote-Pool Selector Switch Type A403	100-106
4	Selector Switch Knob	5610001
5	Label Control Panel	8410017
6	LED Green	5310001
7	LED Red	5310003
8	LED Amber	5310002

Exploded View Heat Pump Assembly



Replacement Parts List Heat Pump Assembly

Item	Description	Part No.
1	Assembly Base	8120140
2	Evaporator Coil	4010001
3	Access Panel	8150142
4	Power Input Panel	8140152
5	Top Cover	8110140
6	Compressor	3010002
7	Corner support	8160152
8	Heat Exchanger CTCHN-67-ES-6S-LH	2010009
9	Screen Retainer	7010007
10	Control Panel Cover assembly HC	*
11	Fan Guard	8210001
12	Fan Blade	8210002
13	Fan Motor including 1.5mtrs cabling	8210010
14	Water Manifold Assembly HC	6310002
15	Fan Conduit	6210014
16	Coil Guard	4110002
17	Control Panel assembly HC	*
18	Expansion (TX) Valve	2110008
19	Receiver Filter Drier BFK-165 S	2110002
**	indicator tube	100-116
**	Low pressure switch (refrigeration)	5010012
**	High pressure switch (refrigeration)	5010013
**	Union for water connections	6210032
**	Water sensor	5010006

* See assembly drawings on page 43 & 44.
** Not shown on drawing.

Raypak Heat Pump Water Heater Warranty – Australia Only

WARRANTY CONDITIONS

1. This warranty is applicable only to heat pump pool heaters manufactured from 1st October 2004.
2. The pool heater must be installed in accordance with the Raypak heat pump pool heater installation instructions, supplied with the pool heater, and in accordance with all relevant statutory and local requirements of the State in which the pool heater is installed.
3. Where a failed component or heat pump pool heater is replaced under warranty, the balance of the original warranty period will remain effective. The replaced part or heat pump pool heater does not carry a new warranty.
4. Where the heat pump pool heater is installed outside the boundaries of a metropolitan area as defined by Rheem or further than 25 km from a regional Rheem branch office, or an Accredited Service Agent, the cost of transport, insurance and travelling costs between the nearest Rheem Accredited Service Agent's premises and the installed site shall be the owner's responsibility.
5. The warranty only applies to the heat pump pool 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 heat pump pool heater, e.g. pressure limiting valve; isolation valves; non-return valves; electrical switches; pumps or fuse.
6. The heat pump pool heater must be sized to suit the pool in accordance with the guidelines in the Raypak heat pump pool heater literature.

WARRANTY EXCLUSIONS

1. REPAIR AND REPLACEMENT WORK WILL BE CARRIED OUT AS SET OUT IN THE RAYPAK HEAT PUMP POOL HEATER WARRANTY, HOWEVER THE FOLLOWING EXCLUSIONS MAY CAUSE THE POOL HEATER WARRANTY TO BECOME VOID AND MAY INCUR A SERVICE CHARGE AND / OR COST OF PARTS.

   a) Accidental damage to the heat pump pool heater or any component, including: Acts of God; failure due to misuse; incorrect installation; relocation of the heat pump pool heater to another premises; attempts to repair the heat pump pool heater other than by a Rheem Accredited Service Agent or the Rheem Service Department.
   b) Where it is found there is nothing wrong with the heat pump pool heater; where the complaint is related to excessive discharge from the temperature and / or pressure relief valve due to high water pressure; where there is no flow of hot water due to faulty plumbing; where water leaks are related to plumbing and not the heat pump pool heater or heat pump pool 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 heat pump pool heater or heat pump pool heater component has failed directly or indirectly as a result of: excessive water pressure; excessive temperature and / or thermal input; corrosive atmosphere; incorrect pool water chemical balance; ice formation in the pipe work to or from the heat pump pool heater; ice formation in the waterways of the heat pump pool heater.
   d) Where the heat pump pool heater is located in a position that does not comply with the Raypak heat pump pool heater 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 heat pump pool heater to floor or ground level or to a serviceable position.
   e) Repairs to the heat pump pool heater due to scale formation in the waterways when the heat pump pool heater has been connected to a harmful water supply as outlined in the Owner's Guide and Installation Instructions booklet.

2. SUBJECT TO ANY STATUTORY PROVISIONS TO THE CONTRARY, THIS WARRANTY EXCLUDES ANY AND ALL CLAIMS FOR DAMAGE TO FURNITURE, CARPETS, WALLS, FOUNDATIONS OR ANY OTHER CONSEQUENTIAL LOSS EITHER DIRECTLY OR INDIRECTLY DUE TO LEAKAGE FROM THE HEAT PUMP POOL HEATER, OR DUE TO LEAKAGE FROM FITTINGS AND / OR PIPE WORK OF METAL, PLASTIC OR OTHER MATERIALS CAUSED BY WATER TEMPERATURE, WORKMANSHIP OR OTHER MODES OF FAILURE.

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 Rheem water heater. This warranty must be read subject to that legislation and nothing in this warranty has the effect of excluding, restricting 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 local Yellow Pages

Document Revision History

Title:	Raypak Pool and Spa Heat Pump	Document Number:	TM022

Revision	Details of change	D.O.I.
A	Service Instructions issued for Raypak Heat Pump.	08/05
B	Correction to fault finding chart 1.4	09/05
C	Additional part numbers added.	03/06