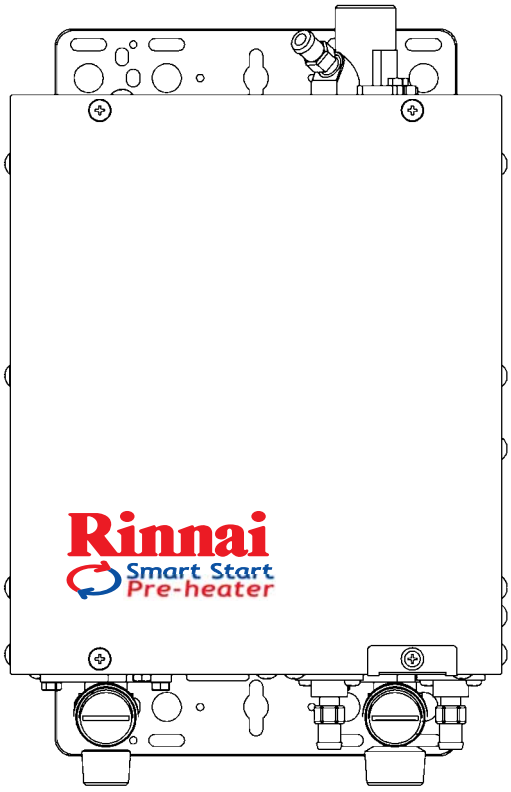
Rinnai

REU-CUG1 Smartstart®
- Preheat System

SERVICE MANUAL



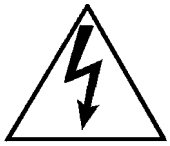
Quality System™ Quality Endorsed Company ISO 9001 Lic 4983 SAI Global Head Office Certified Distributed and serviced in Australia under a Quality System certified as complying with ISO 9001 by SAI Global	Rinnai Australia Head Office is certified as complying with ISO 9001 by SAI Global.
Certified Product WaterMark AS3498 Lic W208 SAI Global	All Rinnai Water Heating products are Certified to WaterMark by SAI Global. WaterMark certification is awarded to products and fittings complying with safety and water contamination standards.

Produced by Technical Services Department

3 October 2005 - Issue No. 1

WARNINGS:

Failure to comply with these instructions may result in serious personal injury or damage to the appliance.



All wiring inside this appliance may be at 240 Volts potential. All Service work must be carried out by an authorised person.

Please follow instructions carefully to ensure safe and appropriate service.
After completing the service and confirming that there are no leaks or incorrect wiring, test operation in accordance with these instructions.
After confirming normal operation, explain what was serviced to the customer and explain operation principles if necessary.

This manual has been produced by Rinnai Australia Technical Services Department.
If you have any comments or queries, please contact us.

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1. Introduction

The "Smartstart®" system heats the water in the pipework water connected between the water heater and the hot water outlets before any outlets are opened using the ‘flow and return’ pipework principle.
This results in water savings and reduced waiting time for heated water delivery from the outlet when opened.

Smartstart® is Certified and compatible with the Rinnai continuous flow water heater models below.
For connection with other Rinnai models, please contact Rinnai.

- REU-V1616W
- REU-V1620W
- REU-V2018W
- REU-V2020W
- REU-2425W
- REU-V2626W
- REU-V2632WC
- REU-V2632FFU
- REU-V2632FFUC
- REU-V3232W
- REU-V3232WC

This includes appliances marked as stating they deliver water not exceeding 50°C.

At least one temperature controller model MC-91Q must be used in conjunction with the water heater and the Smartstart® system. Alternatively if Temperature Controllers cannot be used, a manual activation switch is available. Contact Rinnai for more information. The Smartstart® system will not work by itself or with another manufacturers water heater or temperature controllers.

For controller compatibility and functionality refer to the service manuals and operating instructions for the Rinnai Continuous Flow Water Heaters.

2. Specifications

General

Model identification			**Smartstart® REU-CUG1**
Installation - Location			External / Internal
Dimensions	mm	Width Height Depth	220 260 229
Weight	Kg		7.5
Anti-frost heaters			Standard
Pump	Pump type		Centrifugal
	Amps	Rated current	0.14
	Watts	Rated power consumption	30
	rpm	Rated revolution	2700
	Watts	Standby Power Consumption	1
	For further Pump Specifications refer to separate Tables below		
Operating switch	Remote Controller		MC-91Q-2A
	Continuous Operation Switch		Dip Switch No. 8
Connections	Water Inlet		R 3/4 - 20mm (Right)
	Water Outlet		R 3/4 - 20mm (Top)
	Heating Loop Return		R 1/2 - 15mm (Left)
Water Operating pressure range			Maximum 500 kPa
Ingress Protection Rating			IPX4 (AS 1939)
Power supply	Appliance		AC 240 Volts 50 Hz (10 Amp power point required)
	Communication Cable		DC 12 Volts (Digital)
Body Colour			White

Pump Motor Characteristics

Rated Frequency	Hz	50
Rated Current	A	0.14
Rated Power Consumption	W	30
Rated Revolution	RPM	2700
Capacitor Capacity	µf	1
Starting Current	A	0.26
Insulation Class		E
Pump Type		Centrifugal
Rotation		Counter-clock wise when viewed from front. (refer to arrow on outlet)
Protection		Impedance protection
Poles		2

Pump Operational Characteristics

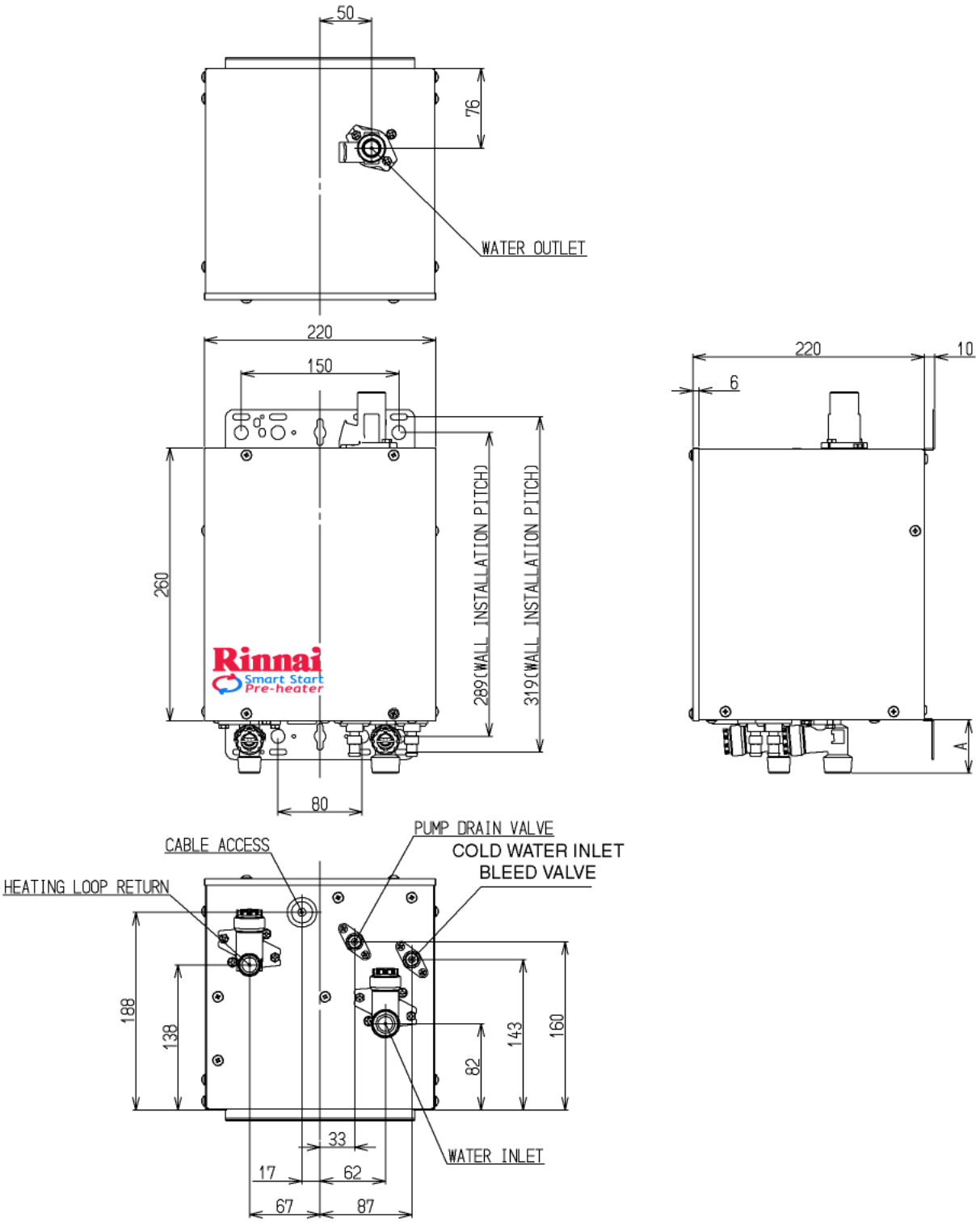
H = (water pressure metres/head)	Water Flow (L/min)	Current draw (Amps)	Power consumption (Watts)
3.5±0.3	5.0	0.12	28
3.4±0.4	5.0	0.13	30

Operating Conditions

Ambient Temperature	°C	- 20 ~ 60
Ambient Humidity	%RH	Less than 95
Liquid		Fresh water
Temperature of Liquid	°C	0 ~ 75°C (exclude freezing of liquid)
Suction Height	m	0

Rinnai reserves the right to modify specifications

3. Dimensions



4. Operation Principles

Traditional ‘flow and return’ systems usually keep the water in the pipework heated continuously.
The Smartstart® system however, only heats the water before the outlet is opened. This results in significant energy savings because water is not heated unnecessarily whilst retaining the benefits of traditional flow and return systems.

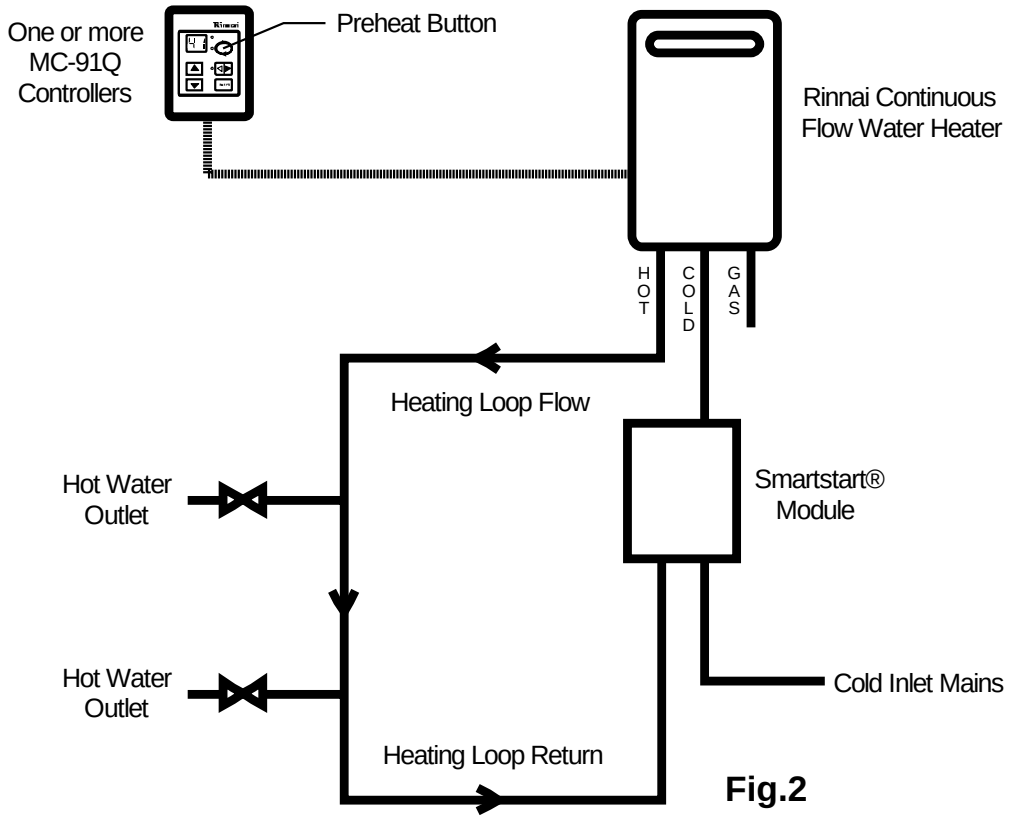


Fig.2

The Smartstart® system works as follows:

1. Before hot water is required select desired water temperature via temperature controller, the user activates the Smartstart® system by pressing the ‘preheat’ button on the temperature controller.

2. This activates the Smartstart® system and the integral pump is switched on.

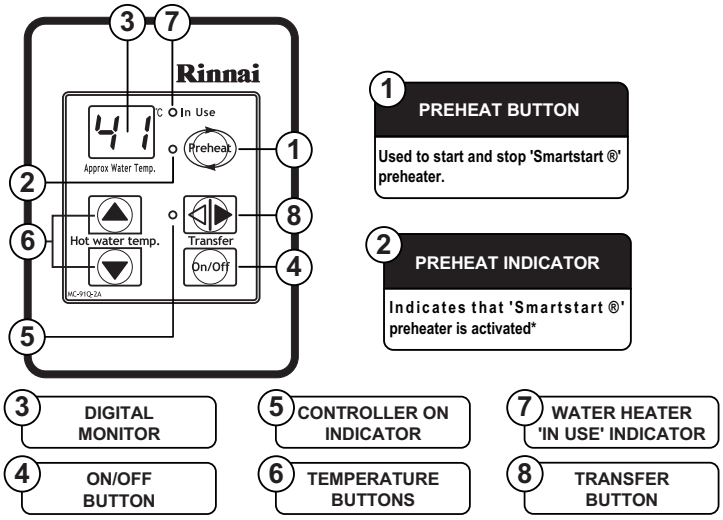
3. Water flows from the pump and passes through the water heater. This in turn activates the water heater burner and water in the flow and return heating loop begins to heat.

4. When the Smartstart® control module senses that the water in the full length of the flow and return heating loop has been heated, the pump and water heater stop operating.

5. The user opens the desired hot water outlet. Preheated water will be delivered from the flow and return heating loop to the outlet.

6. Pump will not activate for 10 minutes after water temperature reaches desired water temperature.

About the Smartstart® Pre-heat System



Preheat Function

The “preheat” function works in conjunction with various Rinnai water heater models and the separately installed and optional Rinnai “Smartstart®” module.

When the “preheat” function is activated and used in accordance with these instructions, water in the pipework connected between the water heater and the hot water outlets in your house is warmed before any outlets are opened. This results in water savings and added convenience.

The preheat function is activated as follows:

1. Ensure that the hot water unit is on (temperature digits are displayed in the digital monitor ③). If more than one controller is fitted press the ‘Transfer’ ⑧ button to pass on priority to your desired controller, the ‘Priority’ ⑤ indicator will illuminate to confirm that priority has been assigned to this controller and that the hot water unit is ready to deliver hot water.
2. Select the desired temperature using the 'Temperature' ⑥ buttons until the required temperature is displayed in the digital monitor ③.
3. Press the ‘Preheat’ ① button once. The ‘preheat’ ② indicator and the ‘In Use’ ⑦ indicators will illuminate, signifying that the preheat system has been activated.
4. Wait approximately two minutes before opening an outlet. This will allow the water in the pipework to be warmed.

NOTE

The waiting time may be longer or shorter than two minutes depending on your particular installation configuration.

The preheat function is cancelled 5 minutes after activation and the ‘preheat’ indicator will go out. This is to conserve energy. To reactivate, simply repeat steps 2-4 above.

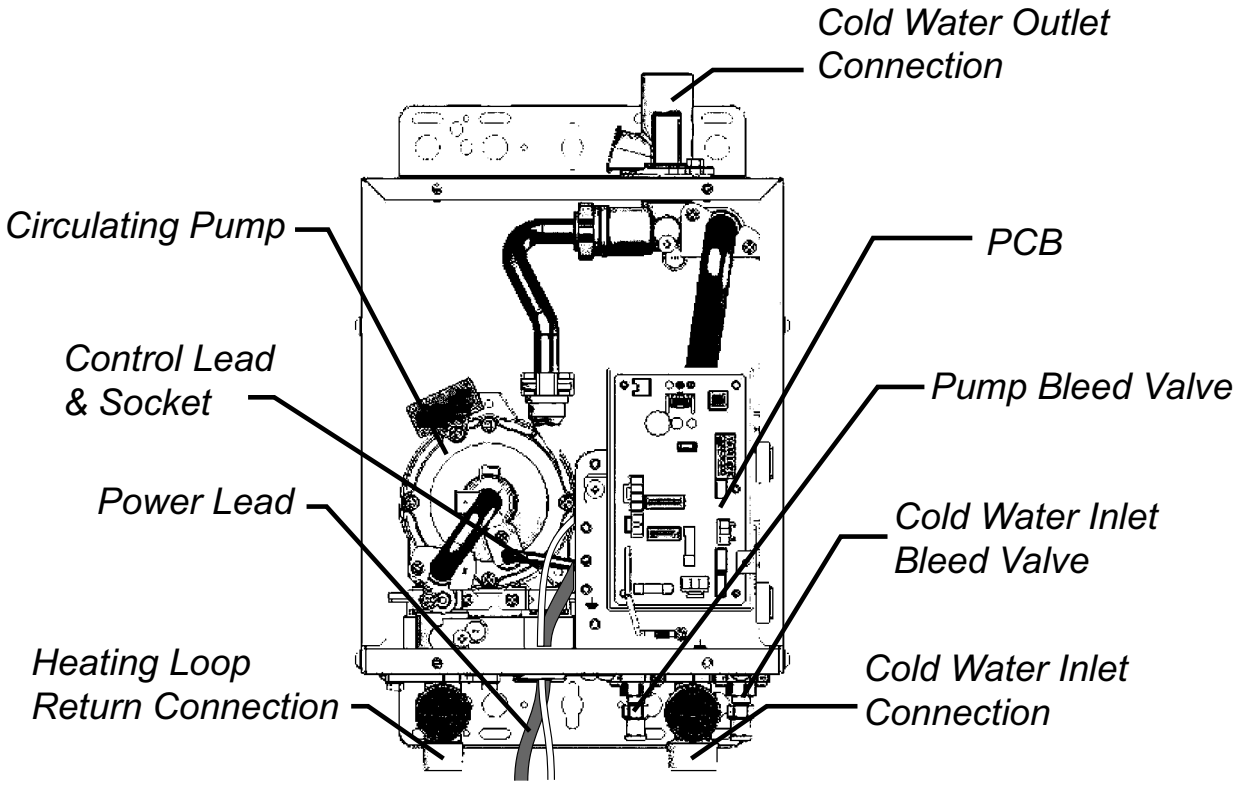
*** If the ‘preheat’ button is pressed and the ‘Smartstart®’ preheat unit is not installed, the ‘preheat’ indicator will still light but there will be no preheat function. The ‘preheat’ indicator will go out after a short time and will not affect the other functions of the remote controller or water heater.**

After using the Shower Saver / Bath Fill function wait 30 seconds before activating the preheat function. Attempting to use the preheat function earlier will result in voice prompts being repeated until the system is reset. The system can be reset by pressing the ‘On /Off' button twice.

Other Remote Controller Functions

Remote controller functions such as temperature control and transfer of priority between multiple controllers is not affected by the operation of the preheat.

5. Cutaway Diagram and Main Components



Main Components:

- Circulating Pump
- Return Temperature Thermistor
- PCB
- Transformer
- Anti-Frost heater
- Dip Switches (No. 8 for manual pump operation)
- Water Strainers

Service Connection Points:

Positions and sizes of the connection points to the Smartstart® module and pipework are shown in Fig.3 and the Dimensional drawings.

6. Installation

For full installation details refer to the Installation Instructions supplied with the Smartstart® module or contact Rinnai.

A schematic of the Smartstart® system installed in conjunction with a Rinnai Continuous Flow Water Heater and temperature Controller is shown below:

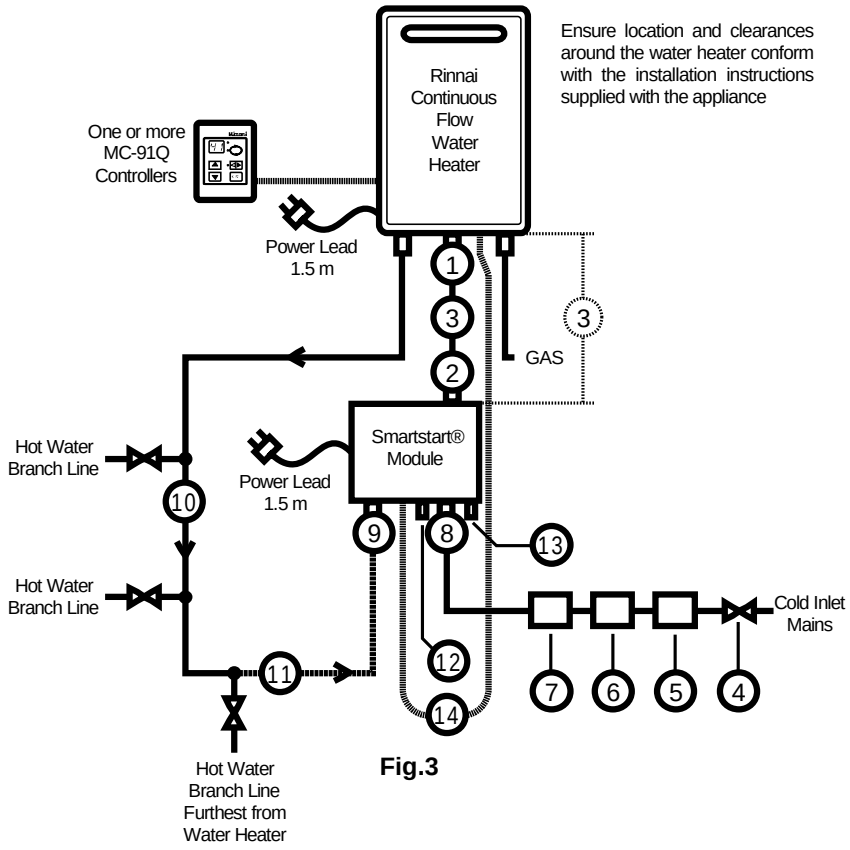


Fig.3

LEGEND TO FIG. 3

1. Water heater cold water inlet connection R¾ (20 mm).
2. Smartstart® module cold water outlet connection R¾ (20 mm).
3. Copper tube R¾ (20 mm), length approximately 300mm (maximum length 1000 mm).
4. Isolating valve.
5. Non Return valve.
6. Pressure limiting valve, 500 kPa rating. OTHER RATINGS ARE UNSUITABLE!
7. Expansion control valve, 700 kPa rating. OTHER RATINGS ARE UNSUITABLE!
   Ensure the drain line is installed in accordance with the requirements of AS/NZS 3500.
8. Smartstart® module cold water inlet connection R¾ (20 mm).
9. Smartstart® module heating return loop inlet connection R½ (15mm).
10. Insulated heating loop 'Flow' pipework R¾ (20 mm).
11. Insulated heating loop 'Return' pipework R½ (15mm).
    Note: Total length of items 10 and 11 not to exceed 60 metres
12. Pump bleed valve
13. Cold water inlet bleed valve
14. Smartstart® water heater communication cable.

Smartstart® with Manifold Packs, MECS and PAM Valves

Rinnai Australia does not recommend fitting a Rinnai Smartstart® pump to an installation of manifolded Water Heaters.

Installations that require manifolding Water Heaters to obtain the required hot water demand are normally fitted to larger than average house sizes and commercial projects.

Manifolded Water Heater installations normally have larger diameter hot water pipes which are required to deliver the expected greater hot water flow rates over longer than usual distances, hence the volume of water within the hot water system is much greater than a normal single Water Heater domestic installation.

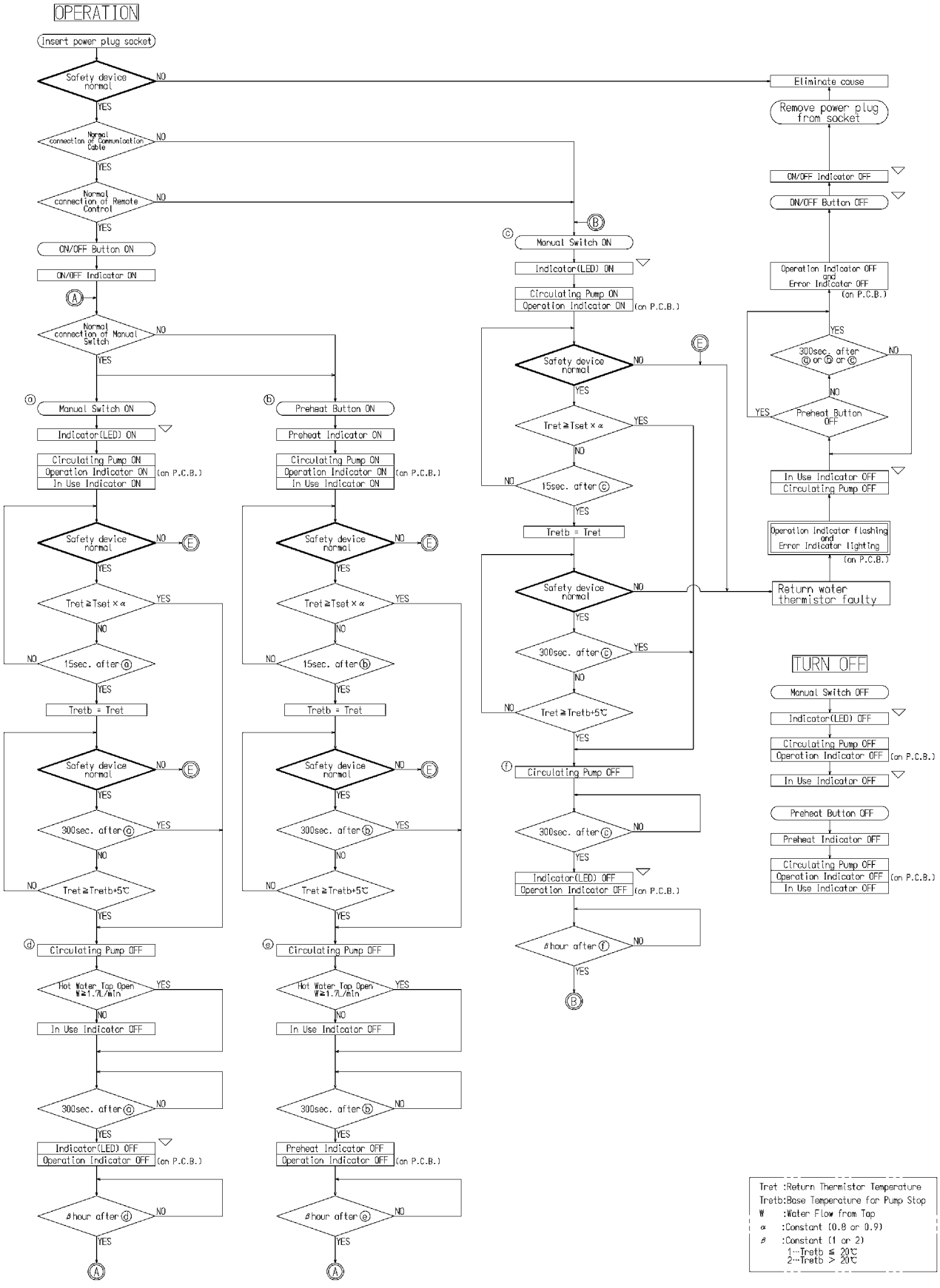
The small circulating pump in the Smartstart® module offers a flow rate of approx. 5.0 litres per minute, which will allow the loop to reach the desired temperature within an acceptable time on a typical domestic single Water Heater installation.

However on a larger manifolded (Commercial) installation, the time to bring the loop to the desired temperature may be unacceptable to the customers. A circulating pump should be specified by the plumber or hydraulic consultant for each job and runs continuously or via a timer switch.

In these systems water heaters are to be set to a minimum of 60 degrees C and no temperature controllers can be fitted.

Appropriate tempering valves will need to be fitted to ensure compliance with 50-degree requirements for personal hygiene areas.

7. Operational Flow Chart

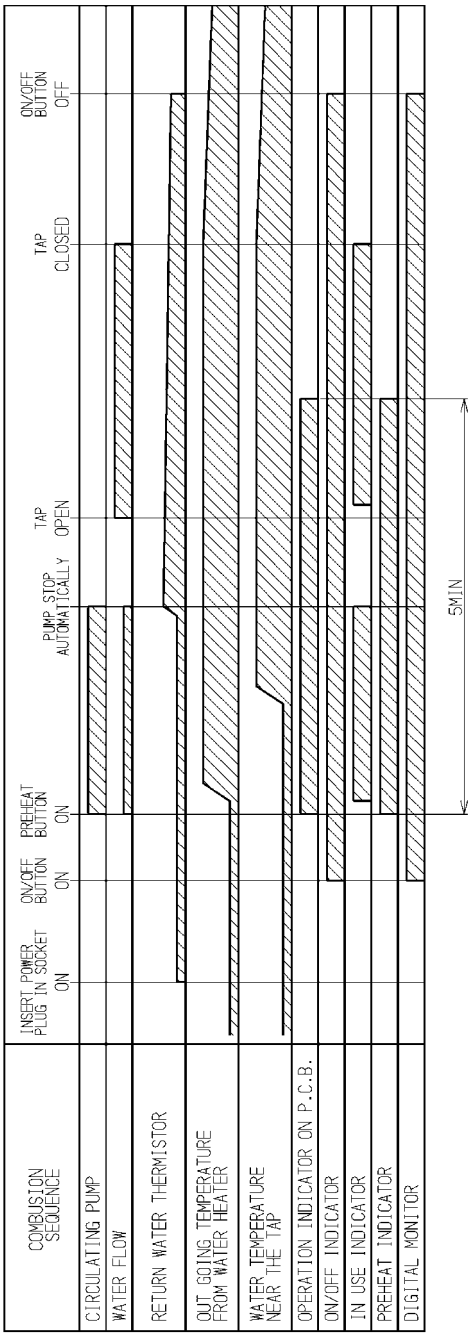


8. Time Charts

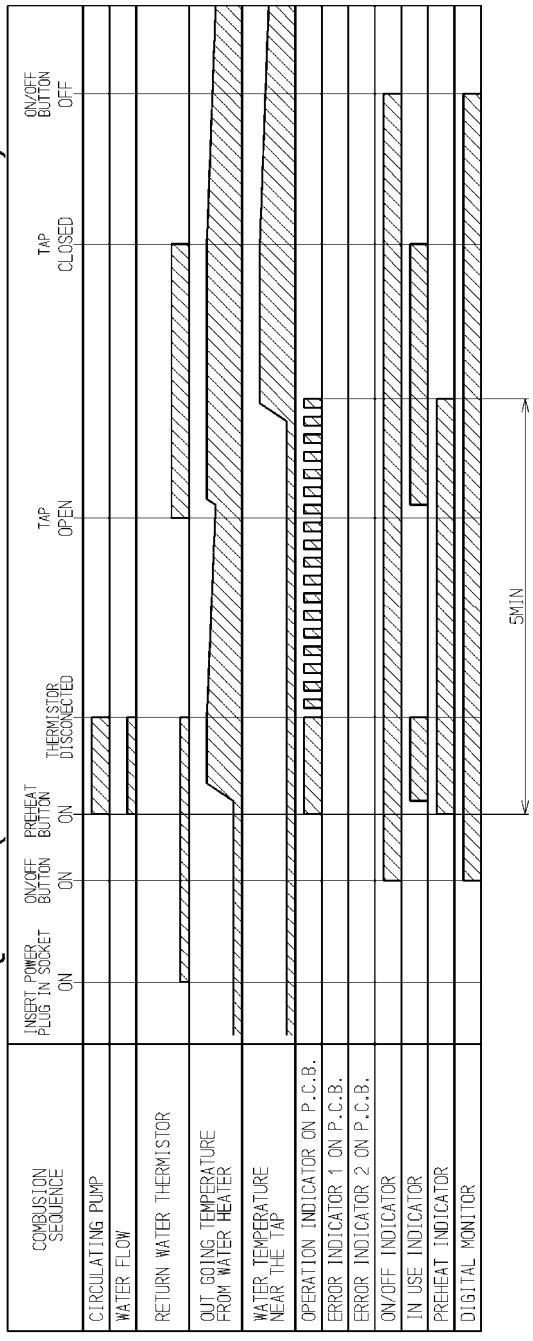
TIME CHART

MODEL : REU-CUG1-AK

NORMAL OPERATION SEQUENCE



ERROR SEQUENCE (RETURN WATER TEMPERATURE SENSOR FAULTY)

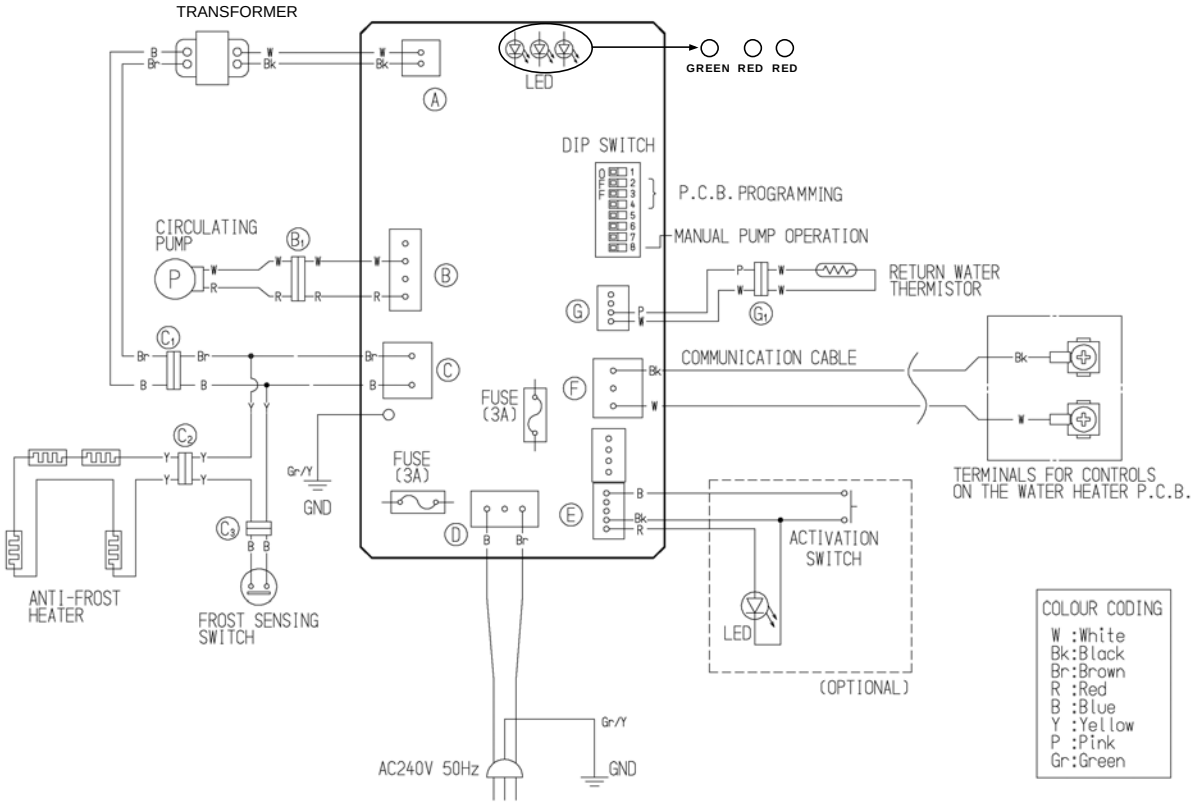


9. Wiring Diagram

CAUTION

240 VOLT EXPOSURE. ISOLATE THE ELECTRICAL SUPPLY TO THE APPLIANCE AND RECONFIRM WITH THE NEON SCREWDRIVER OR MULTIMETER. DISCONNECT WATER AND POWER SUPPLY.

NOTE: *Before proceeding with dismantling, be sure to follow the CAUTION instructions before each explanation.*



COMPONENT	MEASUREMENT POINT		NORMAL VALUE
	CN	WIRE COLOR	
CIRCULATING PUMP	B_1	W-R	AC216~264V~300Ω
RERURN WATER THERMISTOR	G_1	W-W	15℃:11.4~14.0kΩ 30℃: 6.4~ 7.8kΩ 45℃: 3.6~ 4.5kΩ 60℃: 2.2~ 2.7kΩ 105℃: 0.6~ 0.8kΩ
COMMUNICATION CABLE	F	(TERMINAL)	DC11~13V
POWER SUPPLY	D	Br-B	AC-240V
ANTI FROST HEATER	C_2	Y-Y	AC-240V~1.1 kΩ

TRANSFORMER VOLTAGES AND RESISTANCES

CN	WIRE COLOR	NORMAL VALUE
A	Bk-W	AC18~22V~.6Ω
C_1	Br-B	900 Ω~AC-240V

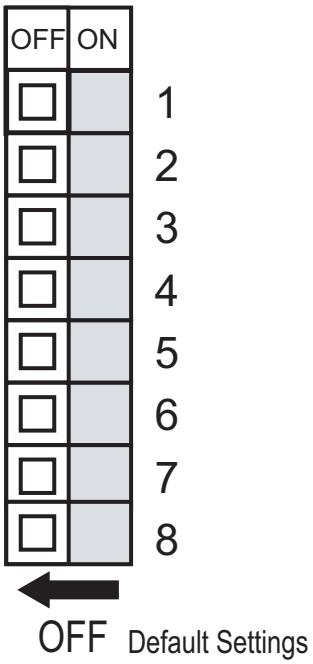
	Green (left)	Red (middle)	Red (right)
Pump active	lit	extinct	extinct
Pump runs continuously Dip SW No.8 ON	blinking	blinking	blinking
Circulation thermistor error	blinking	extinct	extinct

NOTE

Important Note:
If the electric cord or communication cable is damaged, it must be replaced by the manufacturer, or the manufacturer's agent or similarly qualified person in order to avoid a hazard. ONLY a genuine Rinnai replacement spare parts is to be used (Electrical Supply Cord Part No. 92097062).

10. Dip Switch Settings

WARNING: Dip Switch settings must only be changed by an authorised person.



Switches 1 - 7 deal with software programming of the PCB.

Such programming varies between the different countries in which the Smartstart® units are sold. For the Australian model, Switches 1 - 7 are all in the 'OFF' position.

Switch 8 deals with pump activation. During normal operation, Switch 8 is to be in the 'OFF' position. In the 'OFF' position the Smartstart® system is activated by the customer as required and the Smartstart® pump stops when the hot water loop reaches the desired temperature. In the 'ON' position, the Smartstart® pump runs continuously. This may be useful during fault finding or servicing.

11. Fault Finding

If the Smartstart® unit fails to operate perform fault finding in accordance with Table 11.1 below.
The PCB has 3 LED's to indicate the operational mode and whether the return temperature thermistor appears faulty or not. The wiring diagram in Section 9 shows position of LED's. Refer to Table 11.2 for LED codes.

Fault Finding - Table 11.1

Perform checks and remedies in the order shown in this Table.
This table is used in conjunction with the Wiring Diagram in Section 9 and Table 11.2, Component and Circuit Checks.

Fault / Symptom	Check and remedy
'Pre heat' button on temperature controller has been pressed and the pump fails to start. Green LED on PCB not illuminated.	- Check Smartstart® unit is actually installed with Infinity. - Check Smartstart® is connected to appropriate model Infinity. (Refer installation instructions). - Check power is available to Smartstart® pump module from GPO. - Confirm 'pre-heat' button has not been previously pressed within the safety delay time (10 minutes). Turn power supply OFF and then ON again to reset PCB within Smartstart® module. - Check communication cable from Smartstart® is connected to PCB on Infinity. (Connection F). - Check all Smartstart® components in accordance with Table 11.2
'Pre heat' button on temperature controller has been pressed and the pump fails to start. Green LED flashing.	- Check for faulty return temperature thermistor in accordance with Table 11.2
Pump starts and then quickly stops	- Check return water temperature is not already warm (feel temperature of Smartstart® return pipe). - Check green LED on PCB. If it is flashing, check for faulty return temperature thermistor in accordance with Table 11.2. - Check pump is full of water and all air is bled from the system as follows: 1. Isolate electric power supply to both the Smartstart® and water heater units. 2. Crack open the pump and cold water inlet bleed valves on the base of the Smartstart® module until all air pockets are released and a steady stream of bubble free water is discharged – Close bleed valves. 3. Activate the power supply to the water heater and Smartstart® unit . 4. Activate the Smartstart® unit in the normal manner. - Check all Smartstart® components in accordance with Table 11.2.
Pump operates for an extended period (longer than 5 minutes) but the water heater does not operate during this period	- Check manual operation dip switch (Switch no. 8 on the PCB) is not switched to the "ON" position. To rectify, switch off power to both the water heater and Smartstart® module, change switch position, then reactivate power supply to both the water heater and Smartstart® module. - Open a hot water tap. The water heater should activate. If it does not, there is a problem with the water heater. Refer to relevant Service Manual to rectify. If the water heater activates there is a problem with water circulation or with the Smartstart® unit itself. Check as follows: 1. Check water strainers on both the return and cold water inlet connections at the bottom of the Smartstart® unit – clean if required. 2. Check pump is full of water and all air is bled from the system as follows: a. Isolate electric power supply to both the Smartstart® and water heater units b. Crack open the pump and cold water inlet bleed valves on the base of the Smartstart ® module until all air pockets are released and a steady stream of bubble free water is discharged, then close bleed valves. c. Activate the power supply to the water heater and Smartstart® unit d. Activate the Smartstart® unit in the normal manner.

Pump operates for an extended period (longer than 5 minutes) but the water heater does not operate during this period (cont).	3. Check all air is bled from the flow and return pipework by isolating the power supply to both the Smartstart® and water heater units and then opening all available hot water taps, including the shower, until water from all the outlets is cold and free of bubbles. Then close the hot water taps (Ensure building occupants do not have access to hot water outlets during this procedure) 4. Check for obstructions in flow and return pipe work and rectify such as closed isolating valves, jammed or incorrectly installed non-return valves, cross connections between hot and cold pipework, blockages etc. 5. Activate Smartstart® and water heater in the normal manner. - Check all Smartstart® components in accordance with Table 11.2.
Pump operates for an extended period (longer than 5 minutes) and water heater operates continuously or intermittently during this period but pipework does not get warm	- Ensure a hot water tap is not inadvertently left open in the building. - Confirm return water temperature is not already warm (feel temperature of Smartstart® return pipe). - Check to ensure the Smartstart® flow and return pipework length and pipe size do not exceed the limits in the Smartstart® Installation Instructions. Confirm the length of 'deadlegs' between flow and return pipework and hot water outlets is minimized. - Check all air is bled from the flow and return pipework by isolating the power supply to both the Smartstart® and water heater units and then opening all available hot water taps, including the shower, until water from all the outlets is cold and free of bubbles. Then close the hot water taps (Ensure building occupants do not have access to hot water outlets during this procedure). - Check for obstructions in flow and return pipe work and rectify such as closed isolating valves, jammed or incorrectly installed non-return valves, cross connections between hot and cold pipework, blockages etc. - Activate Smarstart® and water heater in the normal manner and check operation. - Check all Smartstart® components in accordance with Table 11.2.

12. Component and Circuit Checks

Component and Circuit Checks

If the Smartstart® unit fails to operate, the components should be checked in the order shown in this table.

The PCB has 3 LED's to indicate operational mode and whether the return temperature thermistor appears faulty or not (see Table 11.2).

TABLE 11.2 – Component and Circuit checks

Perform component and circuit checks only as dictated in Table 11.1 'Fault Finding'.

This table is used in conjunction with Table 11.1 'Fault Finding' and the Wiring Diagram in Section 9.

Perform component and circuit checks in the order shown in this Table. Components are removed and replaced in accordance with Section 12.

Component	Testing Procedure
Check the power supply and electric fuses	1. Check voltages across the fuses. Replace fuses if defective 2. Check voltage to transformer. If voltages not OK replace PCB. 3. Check voltages from transformer. If voltages from transformer are incorrect, check resistances of transformer winding. Replace transformer if defective.
Communications cable	1. Check the communications cable is connected to the water heater controller terminals. 2. Check voltage from water heater to communications cable. If voltage is zero or too low, confirm power supply to water heater and operation of the water heater.
Check return temperature thermistor	- Check LED display on PCB. If PCB LED indicates the thermistor might be faulty (Green LED flashing) check resistance of thermistor. - If resistance is incorrect, replace thermistor.
Circulating pump	1. Check voltage to circulating pump. If voltages not OK replace PCB. 2. If voltages to circulating pump OK, check resistances of circulating pump. If resistances not OK replace circulating pump.
Antifrost heaters	1. Check power supply from PCB to to antifrost heaters. 2. If power supply OK, check resistance of antifrost heater circuit. If resistance not OK replace antifrost heater circuit. 3. If resistances of antifrost heater circuit OK, check frost sensing switch by placing in a mixture of water and ice. Resistance of frost sensing switch should be less than 1 ohm when cold (switch closed). If resistance is high, frost sensing switch is defective. Replace antifrost heater circuit.

13. Dismantling for Servicing

NOTE: *Before proceeding with dismantling, be sure to follow the CAUTION instructions before each explanation.*

CAUTION

240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter. Disconnect water and power supply.

All dismantling and service work should be carried out by an Authorised person

ITEM **PAGE**

Unless otherwise stated, re-assembly is the reverse of dismantling.

CAUTION

240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter. Disconnect water and power supply.

All dismantling and service work should be carried out by an Authorised person

1) Removal of front cover

a. Isolate power and water to Smartstart® and water heater.

b. Remove 4 screws from front cover.

IMPORTANT: Screw without plastic washer is the earth screw for front cover and should be fitted to the lower right hand corner.

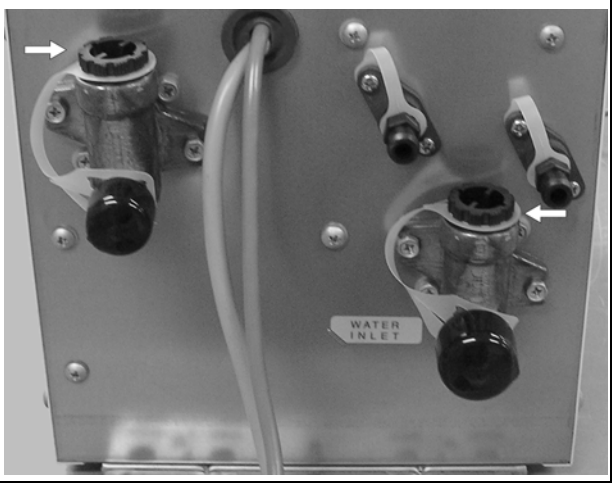
c. Lift off front cover.

2) Removal of water strainers

a. Waters filters for the return loop and the cold water inlet are located on the connections underneath the Smartstart® pump kit.

b. Turn off water to Water heater and Smartstart®

c. Unscrew water filter by rotating in an anti clockwise direction.



3) Removal of PCB

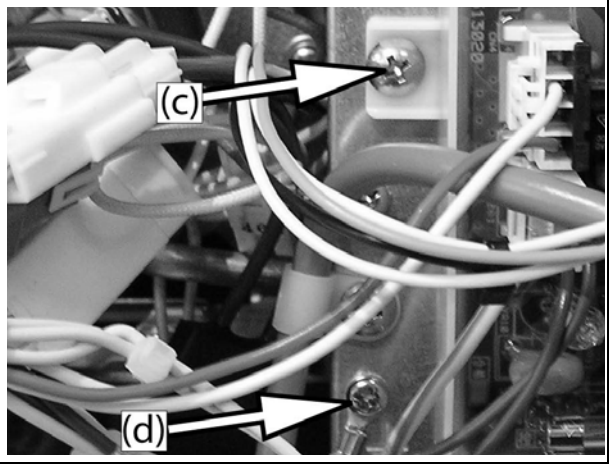
a. Isolate power supply to Water heater and Smartstart® pump kit.

b. Remove front cover.

c. Remove PCB mounting screw located on the left hand side of PCB.

d. Undo earth screw.

e. Unplug polarized plug connectors and lift PCB out of Smartstart® pump kit.



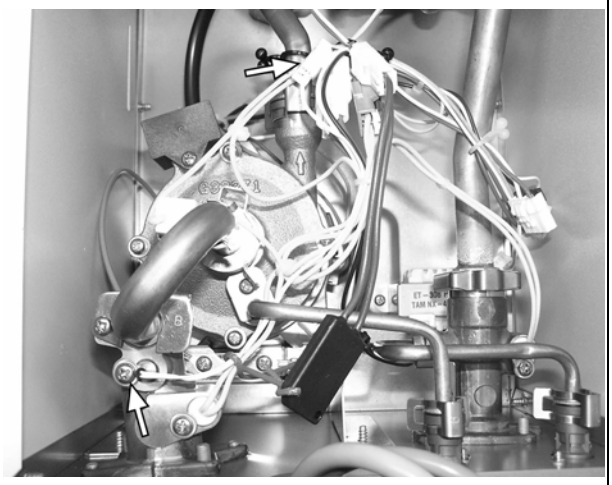
CAUTION

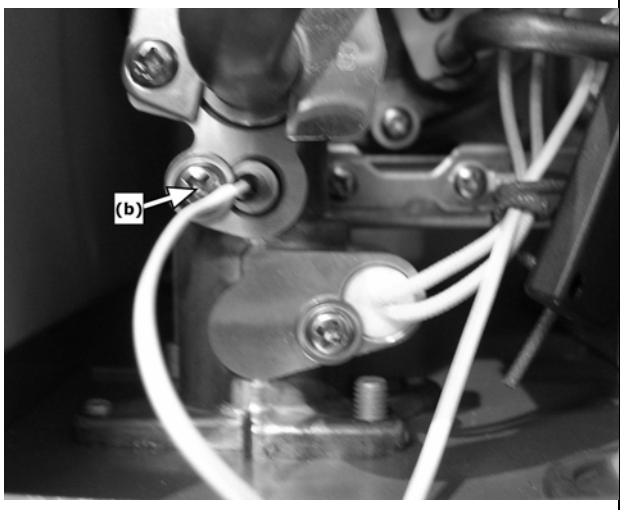
240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter. Disconnect water and power supply.

All dismantling and service work should be carried out by an Authorised person

4) Removal of return temperature thermistor

a. Isolate water and power to Smartstart® pump kit and Water heater.
b. Remove front cover panel of Smartstart®.
c. Remove (1) screw on thermistor retaining washer.
d. Lift out thermistor. Be careful not to damage rubber the 'O' ring seal.
e. Unplug thermistor connection (2 pin white plug).





5) Removal of Pump

a. Isolate water and power to Smartstart® pump kit and Water heaters.
b. Remove front cover panel of Smartstart®.
c. Remove PCB and remove PCB mounting plate 2 screws on the external face of the bottom panel as shown.
d. Feed cables up and out of the way.

CAUTION

240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter. Disconnect water and power supply.

All dismantling and service work should be carried out by an Authorised person

Removal of Pump (Continued)

e. Remove top pipe retaining clip by pulling towards you.

f. Remove pipe retaining clip on left hand side pump bleed screw and return pump inlet securing bracket.

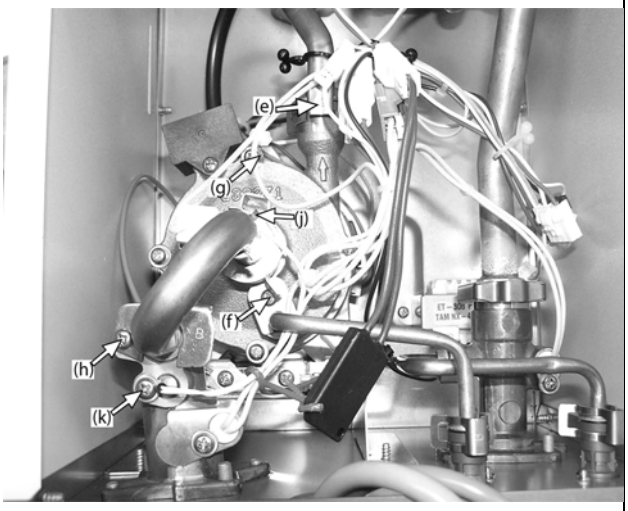
g. Remove clip on front of pump body by pulling upwards.

h. Remove pump return pipe securing clip.

i. Remove and lift out 'U' shape piece of tube.

j. Unclip antifrost resistor and undo pump mounting bracket screws 3 of underneath base of Smartstart® pump kit.

k. Disconnect return temperature thermistor and release wiring harness.



6) Removal of transformer

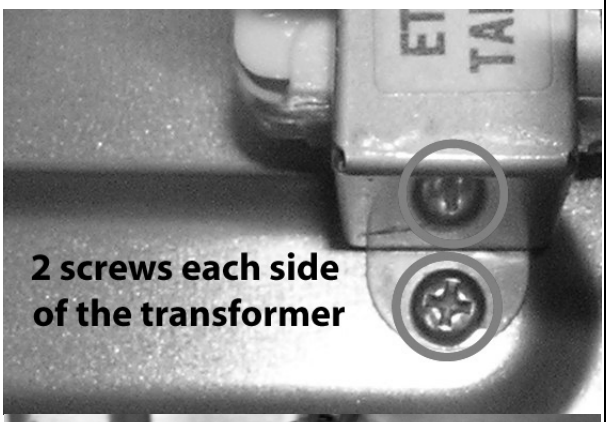
a. Isolate water and power to Smartstart® pump kit and Water Heater.

b. Remove front cover panel of Smartstart®.

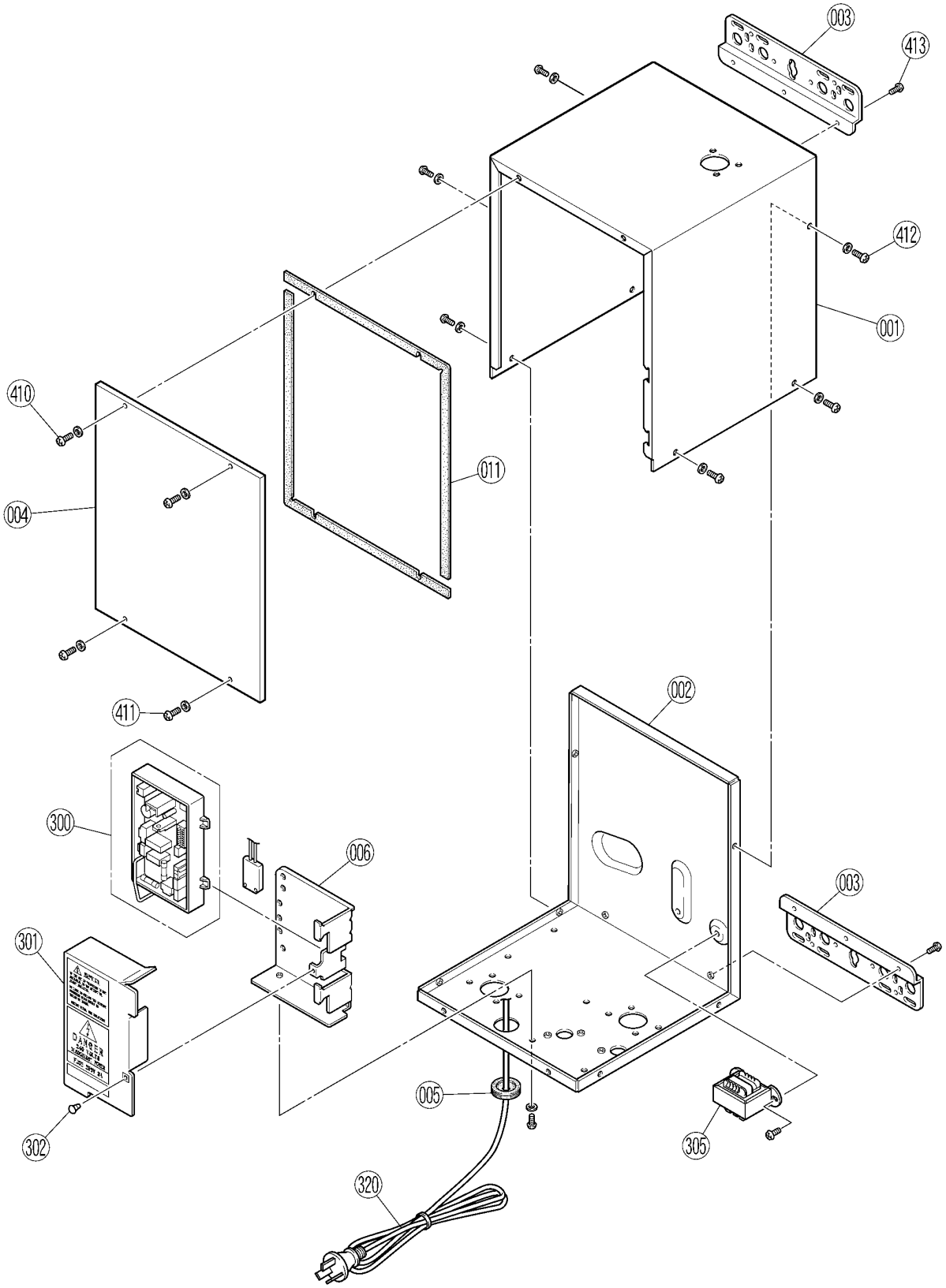
c. Remove PCB and remove PCB mounting plate 2 screws beneath Smartstart® pump kit.

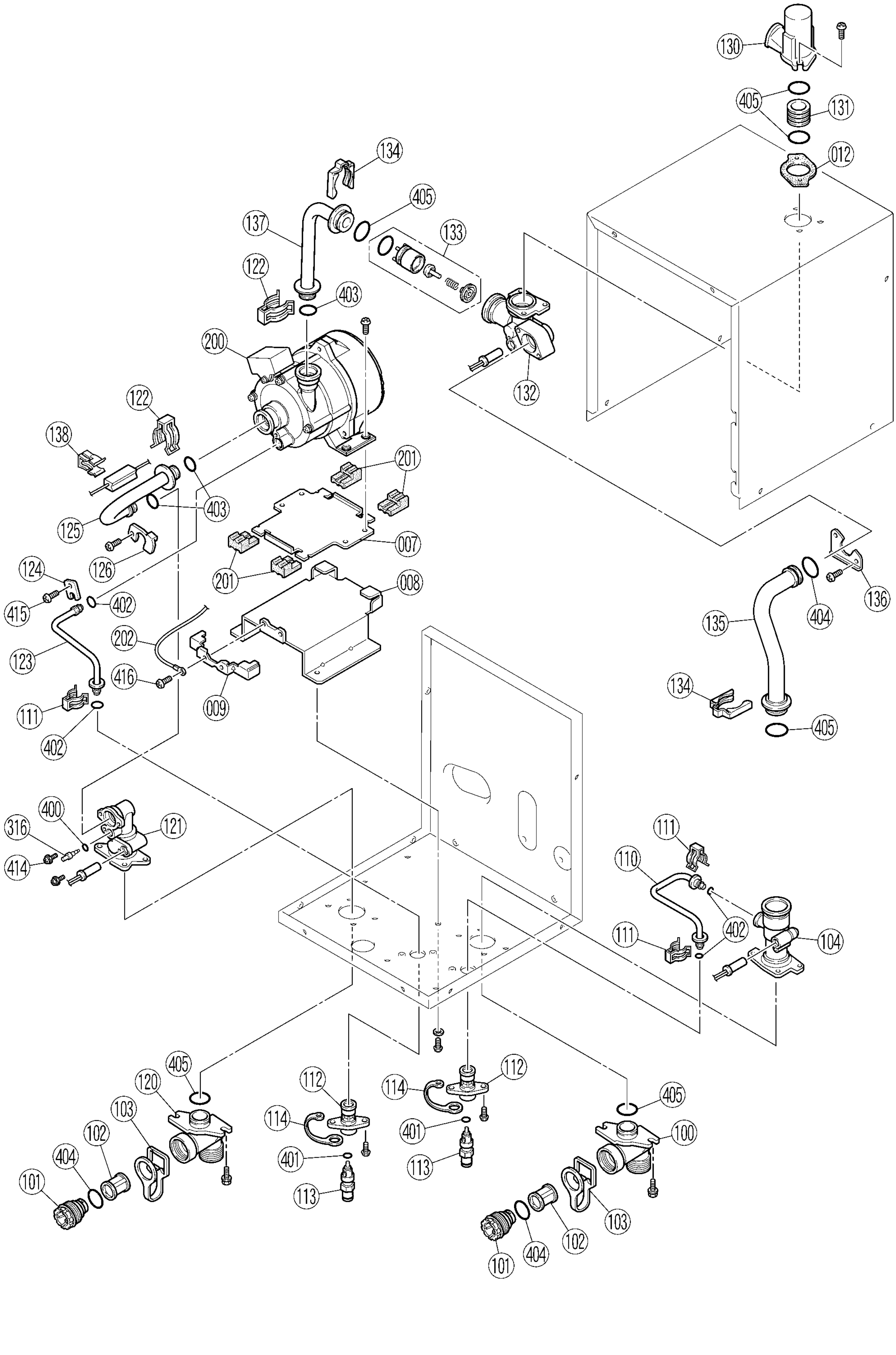
d. Feed cables up and out of the road.

e. Remove the screw from the transformer.



14. Exploded Diagram

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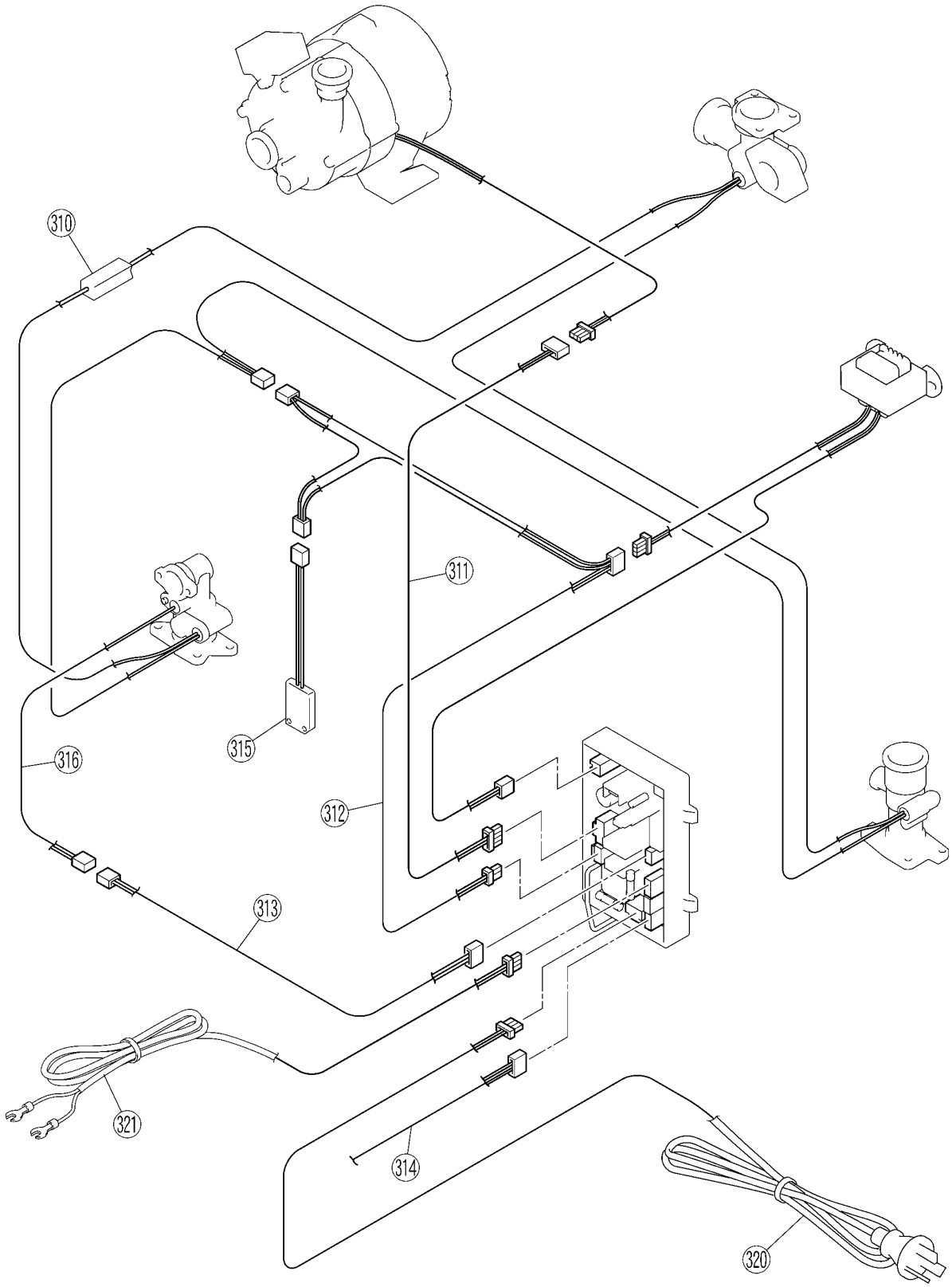
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15. Parts List

Effective: 19/08/2005

SMARTSTART® - REU-CUG1-AK

No.	Part Name	RA Part No.	11 Digit Code	RJ Dwg No.	QTY
1	CASE, Main Body		098-1233000	U268-111	1
2	PLATE, Bottom Main Body		005-217-000	U268-113	1
3	PLATE, Bottom Wall Hang		106-292-000	BH59-092	1
4	PANEL, Front Main Body	92097021	019-2708000	U268-121	1
5	BUSHING, Rubber		194-143-000	ACF10-120-2	1
6	CONTROL, Unit Electric		537-0362000	U268-170	1
7	BASE, Pump S		013-385-000	U251-341	1
8	PUMP, Base Bracket		013-434-000	U268-160	1
			538-357-000	BH29-555	1
11	PACKING, Main Body		580-0264000	U268-115	1
12	GASKET, Outlet Water	92097112	582-947-000	H89-1519	1
100	INLET Water 3/4	92089044	333-301-000	H73-500	1
101	PLUG - Inlet	92089036	196-037-000	H98-510-S	1
102	FILTER Water O Large	92083773	017-268-000	H73-511	2
103	BAND, Plug		553-119-000	U250-631	1
104	VALVE, Non Return		340-071-000	U268-411	1
105	VALVE		338-014-000	H73-1542	1
106	PACKING		580-0205000	M5E1-11	1
107	VALVE		161-442-000	M9C1-13	2
108	SPRING, Valve Non Return		560-643-000	M5E1-9	1
109	GUIDE		551-224-000	M5E1-3	1
110	DRAIN, Valve Non-Return		337-131-000	U268-340	1
111	FASTENER		512-247-000	M10A-5-2	1
112	INLET, Drain Valve	92097138	333-380-000	H86-585	1
113	VALVE, Drain	92097120	337-034-000	AH50-590	2
114	VALVE, Drain Band A		324-003-000	AU84-607	1
120	INLET, Water 1/2	92097104	TBA		1
121	CONNECTOR		326-185-000	U268-421	1
122	CLIP, Hose/Pipe	92092485	512-249-000	M10A-1-5-5	1
123	DRAIN TUBE, Assy Pump		337-132-000	U268-345	1
124	RETAINER, Drain Tube		508-623-000	CH4-545	1
125	TUBE, Pump		332-922-000	U268-320	1
126	BRACKET, Fixing B		537-501-000	AU195-322	1
130	OUTLET, Water	92097146	333-422-000	BH57-521-3	1
131	BUSH		194-105-000	AH57-525	1
132	INLET Bypass	92097096	333-420-000	U268-435	1
133	VALVE, Inlet Non-Return	92097088	340-044-000	M5F-4	1
134	U Quick (16A)		0U331067300	H81-434	1
135	CONNECTION, Assy Water		332-923-000	U268-310	1
136	BRACKET		333-317-000	H73-428	1

SMARTSTART® - REU-CUG1-AK

No.	Part Name	RA Part No.	11 Digit Code	RJ Dwg No.	QTY
137	TUBE, Pump		332-924-000	U268-325	1
138	CLIP, Heater Fixing	92076123	537-174-000	AU100-721	1
200	PUMP, Water Assy	92097039	270-076-000	U268-550	1
201	CAP, Rubber		540-038-000	BH35-425	1
202	HARNESS-2 Electric Wire	92097161	204-836-000	CH21-496-2	1
300	PCB, Main	92097047	210-680-000	U268-500-B	1
301			098-1234000	U268-171-A	1
302	CLIP		504-058-000	CP-90200	1
305	TRANSFORMER	92097054	224-347-000	ET-308	1
310	HEATER, A-Frost	92097153	235-351-000	U268-510	1
311	HARNESS, Pump		290-0971000	U268-601	1
312	HARNESS, Transformer		290-0972000	U268-602	1
313	HARNESS, Sensor		290-0973000	U268-603	1
314	HARNESS, Manual Switch		290-0974000	U268-604	1
315	SWITCH, Thermal	92097187	234-444-000	H73-750	1
316	THERMISTOR	92073675	233-108-000	BH45-650	1
320	ELECTRIC Cord	92097062	206-251-000	CP-90567	1
321	CABLE, Comms	92098276	214-053-000	AH59-1076	1
400	O-Ring, Thermistor	92062249	520-209-010	M10B-2-4	1
401	O-Ring B Bypass	92071455	520-194-010	M105-2-5	1
402	O-Ring Water 6mm	92043223	520-074-010	M105-2-6	1
403	O Ring Heat Exchanger	92072800	520-255-010	M10B-2.12.5	1
404	O-Ring Heat Exchanger Inlet	92062199	520-048-010	M10B-2.16	1
405	O-Ring, Water Inlet / Outlet	92071182	520-049-010	M10B-2.18	1
410	SCREW, Truss		501-973-010	CP-30587	1
411	SCREW		501-889-000	CP-30583	1
412	SCREW, Tapping		501-0007000	U217-449	1
413	SCREW		501-865-000	ZAA0408UK	1
414	SCREW, Thermistor		501-0008000	ZAA0408UK	1
415	SCREW, Tapping		501-262-000	ZFAB0408SZ	1
416	SCREW, Tapping		501-249-010		1

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