

## Operation and Installation Manual



DDLT160E180L, DDLT160E180N, DDLT160E340L and DDLT160E340N

External installations only.  
Not suitable or approved as a pool heater.

Appliance must be installed, commissioned and serviced by a licensed tradesperson in accordance with these instructions and all applicable local rules and regulations.

Customer, please retain this manual for future reference.

# RINNAI LIMITED WARRANTY

## Warranty Summary Table and General Warranty Terms

		<b>Rinnai Continuous Flow Water Heater</b>	<b>Demand Duo Lite Tank</b>
<b>Domestic Applications</b>			
Heat Exchanger and Tank	Parts	10 years pro rata	5 years
	Labour	3 years	3 years
All Other Parts (pump, thermostat etc)	Parts	3 years	1 year
	Labour	3 years	1 year
<b>Commercial Applications</b>			
Heat Exchanger and Tank	Parts	5 years pro rata	3 years
	Labour	3 years	1 year
All Other Parts (pump, thermostat etc)	Parts	3 years	1 year
	Labour	3 years	1 year

All terms of the warranty are effective from the date of installation of the Rinnai Demand Duo system. Rinnai New Zealand Limited (Rinnai) reserves the right to verify this date.

### Domestic vs. Commercial Application

The reason for distinguishing between a domestic and commercial application is because the expected life of a system is directly related to the hours of use.

A domestic application is defined as an installation that serves a single residential dwelling which is not used for commercial purposes, such as a hair salon, catering kitchen, motel or communal care facility.

All other installations are defined as a commercial application.

### General Warranty Terms

Rinnai reserves the right to make modifications and change specifications and its parts without notice.

For the purposes of the Consumer Guarantees Act 1993, Rinnai only guarantees the availability of repair facilities and spare parts for the express warranty periods recorded in the Rinnai Warranty Summary Table.

If the Rinnai Demand Duo system is being acquired for personal, domestic or household use, this warranty does not limit any consumer rights or guarantees that may apply under the Consumer Guarantees Act 1993. If the product is being acquired for the purposes of a business, the provisions of the Consumer Guarantees Act 1993 do not apply and no other warranties (either express or implied by law) apart from those stated in this warranty apply.

# RINNAI LIMITED WARRANTY

## Warranty Terms for Rinnai Continuous Flow Water Heater

### Extended Warranty for Rinnai Continuous Flow Water Heater Heat Exchanger

The parts warranty on heat exchangers in a Rinnai continuous flow water heater installed for domestic use is 10 years pro rata (i.e. in the 4th year, 70% of the value of the part is covered by the warranty and 40% of the value of the part is covered by warranty in the 7th year).

For Rinnai continuous flow water heater units installed for commercial use the parts warranty for the heat exchanger is 5 years pro rata (i.e. in the 4th year, 40% of the value of the part is covered by the warranty and 20% of the value of the part is covered by the warranty in the 5th year).

This warranty is subject to Terms and Conditions below.

All other parts and labour for the Rinnai continuous flow water heater are covered for 3 years in accordance with the Terms and Conditions below.

### Rinnai Continuous Flow Water Heater Warranty - Terms and Conditions

1. During the warranty period and subject to clauses 2 and 3 below, Rinnai will, at its own discretion, either replace or repair any defective product at no charge to the customer.
2. This warranty covers manufacturing defects only. This warranty will not apply (for example) if the Rinnai continuous flow water heater has been improperly installed or is otherwise installed contrary to manufacturer's recommendations, has been damaged during or after installation, or has been subjected to damage or abuse beyond that expected from conditions of normal use.
3. Warranty claims may be invalid if not accompanied by details of the installing or supervising gas fitters registration number and the gas fitting certification number.
4. This warranty commences from the date of installation. Proof of purchase is required at the time of the warranty claim.
5. Servicing of the Rinnai continuous flow water heater is to be carried out by a Rinnai authorised service centre.

### Water Quality for Rinnai Continuous Flow Water Heater

Water quality outside the maximum recommended limits (as set down below) will void this warranty. Water quality tests must be carried out at the customer's own cost but Rinnai will reimburse any reasonable test costs if the product is found to be defective.

Water chemistry and impurity limits are detailed in the table below. Most metropolitan water supplies fall within these requirements. If you are unsure about water quality, contact your water authority. If sludge or foreign matter is present in the water supply, a suitable filter should be incorporated.

Water Quality Limits - Standard Rinnai Continuous Flow Water Heater									
TDS (Total Dissolved Solids)	Total Hardness CaCO <sub>3</sub>	Alkalinity (as CaCO <sub>3</sub> )	Dissolved (free) CO <sub>2</sub>	pH	Chlorides	Magnesium	Sodium	Iron	Langelier Index
Up to 600mg/litre or ppm	Up to 200mg/litre or ppm	Up to 200mg/litre or ppm	Up to 25mg/litre or ppm	6.5 to 8.5	Up to 300mg/litre or ppm	Up to 10mg/litre or ppm	Up to 150mg/litre or ppm	Up to 1mg/litre or ppm	Between -1.0 and 0.8

Examples of water quality issues where water may need to be treated:

- Hard water (Wanganui)
- Aggressive water (some areas of Christchurch)
- Both hard and aggressive water (some bore water)

# RINNAI LIMITED WARRANTY

## Warranty Terms for Demand Duo Lite Tanks

### In Relation to Storage Tanks

The following exclusions apply:

- Accessibility - Where the cylinder is not easily accessible for maintenance and replacement, this warranty will not cover any additional costs caused by access difficulty.
- Leaks - To the fullest extent permitted by law, this warranty does not cover any consequential loss resulting from leaks to a cylinder. Accordingly it is important that a suitably drained catch pan is fitted where damage could be caused by discharge from the cylinder.

Please keep these instructions in a safe place for future reference.

RECORD AND ATTACH YOUR PROOF OF PURCHASE BELOW:

Your Retailer: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone: ( \_\_\_\_\_ ) \_\_\_\_\_

Date of Purchase: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**Rinnai**

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### **WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.



For assistance or additional information contact Rinnai on 0800 RINNAI (0800 746 624).

# Customer Information - Introduction

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This manual has been written to:

- Help you understand how your Demand Duo Lite operates
- Identify what you need to do to maintain your Demand Duo Lite system
- Assist in troubleshooting in the unlikely event a problem occurs

## Some facts about your Demand Duo Lite system

**How it works** The thermostat senses the temperature of the water in the tank, and when it drops below the set point, the primary pump is activated. This flow starts the Rinnai continuous flow water heater which returns heated water to the tank.

**Safety devices** For safe operation the tank component of your system is fitted with a:

- Temperature Pressure and Relief (TPR) Valve that ensures the water remains at a safe pressure and temperature
- Automatic tank thermostat to maintain water temperature, do not adjust the thermostat which is set to 65 °C

It is important that you do not tamper with or remove these devices. In the case of the TPR valve, do not block or seal the valve or drain pipe.

**Anode** The tank is fitted with a sacrificial anode designed to extend the life of the tank. It will slowly dissipate protecting the cylinder and should be changed every 5 years (more frequently in hard/aggressive water areas).

Space should left above the cylinder to allow anode replacement.

**Reset timer** Your system is equipped with a reset timer to ensure the pump does not run continuously. This may occur if for some reason the Rinnai continuous flow water heater does not ignite.

The timer will shut off the pump every 15 minutes for a few seconds to ensure the continuous flow water heater resets itself.

# Customer Information - For Your Safety

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## Scald Hazard



- Hot water can cause scalds
- Children, elderly and disabled are the highest at risk of being scalded
- Feel the water temperature before bathing or showering
- Scalds from hot water taps can result in severe injuries
- Scalds can occur when children are exposed directly to hot water when they are placed into a bath which is too hot

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## Hydrogen Gas



If the hot water is not used for 2 weeks or more, a quantity of hydrogen gas which is highly flammable, may accumulate in the storage tank.

To dissipate this safely, it is recommended a hot tap (non electrical) be turned on for 2 minutes at a sink, basin or bath. During this procedure there must be no smoking, open flame or any other appliance operating nearby.

If hydrogen is discharged through the tap, it will make a sound like air escaping.

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## Safety Devices



Your system is supplied with various safety devices including temperature sensors, overheat sensors/switches and a Temperature & Pressure Relief (TPR) valve.

Do Not:

- Tamper or remove safety devices
- Block or seal the TPR and drain pipe
- Operate the system unless all safety devices are fitted and in working order

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## Legionella Protection

Your system has been preset with specific temperature settings to disinfect water for Legionella. Do not adjust these unless instructed by an authorised person.

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## Flue Outlet of Water Heater

Do not touch or insert any objects in the flue outlet.

Keep flammable materials, spray cans, fuel containers, trees, shrubs, pool chemicals etc clear of the flue outlet.

If flue product discharge causes annoyance, an upwards or sideways flue diverter can be purchased as an accessory.

# Customer Information - Maintenance

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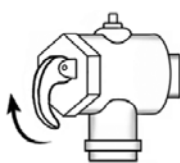
Your Rinnai Demand Duo Lite requires little maintenance, but for maximum performance the following is recommended.

## **Temperature & Pressure Relief Valve (TPR)**

This valve is located near the top of the tank and is essential for safe operation. Every 6 months operate the easing gear to flush the valve. As this will discharge hot water, ensure no one is near the drain line.

It is very important that you raise and lower the easing gear gently. During this operation, if the valve does not discharge water when the easing gear is lifted, or does not seal again when closed, attendance by an authorised person must be arranged immediately.

lift until water flows  
from drain line,  
lower gently



During servicing the TPR valve needs to be checked and/or replaced. This needs to be done by an authorised person at intervals not exceeding 5 years, or more frequently in areas where the water is classified as hard.

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## **Rinnai continuous flow water filter**

Inlet water filter should be cleaned regularly.

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## **Draining and flushing of the cylinder**

Normally only occurs during installation or servicing and must be carried out by an authorised person.

Draining and flushing the cylinder on a yearly basis is recommended if the water supply contains excessive levels of silt.

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## **Anodes in glass lined tanks**

Storage tanks manufactured from metal can be susceptible to corrosion. The combined effects of water pressure, temperature and water chemistry can create an aggressive environment for corrosion of some materials. For this reason anodes are placed in glass lined tanks so as to corrode first. They should be changed every 5 years (more frequently in hard/aggressive water areas).

# Customer Information - Servicing

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Rinnai has a service and spare parts network with personnel who are fully trained and equipped to give the best advice on your Rinnai system. If your Demand Duo Lite needs servicing, please call Rinnai (0800 746 624) from your land line and select option 1 for a service centre in your area.

For reliable operation Rinnai recommends regular servicing of the Demand Duo system. Regular servicing is not covered by the Rinnai warranty.

If any electrical component of the system is damaged, it must be replaced by an authorised person. These components must be a genuine replacement part available from Rinnai.

Do not attempt to carry out any service work other than mentioned in the troubleshooting section. If you have any other faults or problems, please refer to your installer or call Rinnai.

## Customer Information - Troubleshooting

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### Lack of hot water or no hot water

**Is the gas on?** If the gas supply has been interrupted the water heater will display error code 11 or 12. Turn off the power to the system, wait 10 seconds before turning on again.

**Is there electricity to the system?** Check isolating switches and electrical connections to ensure everything is turned on.

Check the fuse or circuit breakers at the meter box. Repeated failure of a fuse or tripping of a circuit breaker indicates a fault which must be investigated by a licensed tradesperson.

**Cold Water Relief Valve discharging continuously?** It's normal for the Cold Water Relief Valve to discharge a small quantity of water through the drain line. If water is discharging continuously there may be a fault with one of the valves, contact your installer to discuss.

### High electricity/gas bills

If you think your electricity/gas bill is too high, investigate the following:

- There may have been a change to your tariffs since your last bill
- Cold Water Relief Valve is discharging continuously, refer above
- You may be using more hot water than you think
- There may be hot water pipe/tap leakages, check with your local plumber
- The tank thermostat may not be set to 65 °C

# Installation Information - General

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## Before installation



Unpack the appliance and components and check for damage. DO NOT install any damaged items.



Check all components have been supplied and that you have the correct gas type.



Read these instructions to get an overview of the steps required before starting the installation. Failure to follow these instructions could cause a malfunction of the system. This could result in serious injury and property damage.

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## Location

The cylinder should be installed to AS/NZS3500.4, with reference to G12/AS1 where appropriate.

**Base requirements** The cylinder should be installed on a flat level base of sufficient strength to support the weight of the water heater when full. It must also be restrained against seismic activity.

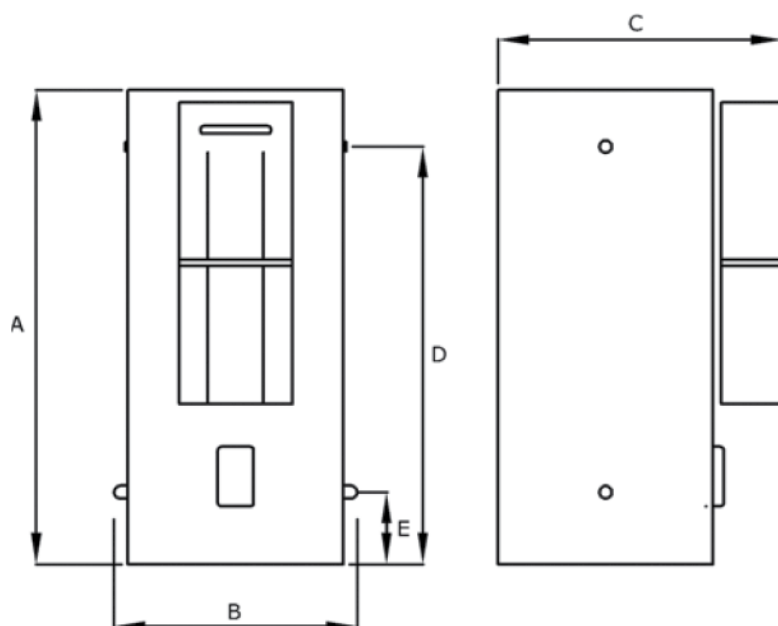
**Access to system** The Demand Duo Lite system should not be located where it will be difficult to remove. Where a system is not easily accessible for maintenance and replacement, the Rinnai Warranty will not cover any additional costs caused by access difficulty.

**Catch pan** It's important a suitably drained catch pan is fitted where damage could be caused by discharge from the cylinder.

**Flue clearance** This is a power flued appliance and flue clearances must comply with NZS:5261, "Table 16 - Minimum clearances required for flue terminals".

**Electricity** A single 10 amp outdoor power point is required adjacent to the installation.

# Installation Information - Specification



	<b>DD180 LITE</b>	<b>DD340 LITE</b>
<b>CONNECTIONS</b> - Gas Supply - Cold Water Inlet - Hot Water Outlet	20 mm 20 mm 20 mm	
<b>DELIVERY<sup>1</sup></b> (litres) - 1st Hour at 40 °C - 1st Hour at 55 °C	1019, 947, 837 719, 652, 545	1411, 1247, 1117 952, 870, 978
<b>DIMENSIONS</b> (mm) A. Overall Height B. Overall Width C. Overall Depth D. Height to Hot Outlets E. Height to Cold Inlets	1510 590 730 1310 225	1530 760 800 1200 260
Efficiency	81% (thermal efficiency of Rinnai continuous flow water heater)	
Input	160 MJ/h or 44 kW (max)	
Pump	Grundfos UPS 20-60 B 150	
Recovery at 50 ° Rise	36 minutes (approx.)	67 minutes (approx.)
Storage Capacity	180 litres	340 litres
Tank Construction	high quality glass lined inner, sturdy corrosion resistant outer and high density expanded polyurethane foam insulation	
TPR Setting	1000 kPa	850 kPa
Thermostat	preset to 65 °C	
<b>WEIGHT</b> - Empty/Full (kg)	100 and 280	142 and 482

<sup>1</sup> Based on incoming water temperatures of 15, 10 and 5 °C

# Installation Information - Connections

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- Cold water inlet**
- DD180 20 mm fitting on right side of tank, 225 mm above the ground
  - DD340 20 mm fitting on right side of tank, 260 mm above the ground

For ease of draining it's advisable to fit a "Tee" piece with a capped valve or drain line between the cold water isolation valve and cold water inlet connection of the tank.

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- Hot water outlet**
- DD180 20 mm fitting on left or right hand side of tank, 1310 mm above the ground
  - DD340 20 mm fitting on left or right hand side of tank, 1200 mm above the ground

Ensure adequate insulation/lagging is fitted to hot water pipe to minimise heat loss. Pipe sizing must be sized to allow sufficient water flow to hot water fixtures.

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- Pressure Limiting Valve**
- DD180 700 kPa (approx.)
  - DD340 500 kPa (approx.)
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- Cold Water Pressure Relief Valve**
- DD180 850 kPa (approx.)
  - DD340 700 kPa (approx.)
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- TPR Valve (supplied)**
- DD180 1000 kPa
  - DD340 850 kPa

A TPR valve must not be replaced with one that has a higher pressure/kW rating than that specified for your system.

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**Drain Valve** Provision must be made to drain the cylinder if required for servicing.

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**Drain Lines** These must be installed in accordance with AS3500 and/or G12/AS1.

G12 is available online from:  
[www.dbh.govt.nz/building-code-compliance-documents](http://www.dbh.govt.nz/building-code-compliance-documents)

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**Maximum thermostat setting** The tank thermostat is factory set to shut off at 65 °C. The Rinnai continuous flow water heater is set to 75 °C. No adjustment should be made to these settings.

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**Ingress protection rating** IPX4 (cylinder, control box and Rinnai continuous flow water heater)

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# Installation Information - Filling

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## **Important**

- Do not plug in the water heater until the cylinder is completely full of water
- Please read these instructions carefully as failure to follow this procedure will void any warranty
- Thermostat is factory set and should not be reset

1. Flush cold water inlet pipe to remove any debris before final connection to cold water inlet on cylinder.
2. Turn on hot water tap at kitchen sink or similar to allow air to be expelled while cylinder is filling with cold water.
3. Slowly open cold water isolation valve on cold water supply pipe.
4. Allow cylinder to fill. Turn off hot water tap once non-aerated water flows through hot water tap.
5. Check all connections for water leakage, tighten as required.
6. Prime circulating pump on start up, refer page 15 for extract from Grundfos Instructions on how to do this.
7. The thermostat on the cylinder is set to 65 °C and the Rinnai continuous flow water heater is set to 75 °C. If the cylinder thermostat does not appear to be set correctly, refer to procedure on next page.

If hotter water is required both the cylinder thermostat and Rinnai continuous flow water heater, dip switches must be adjusted. Ensure Rinnai continuous flow water heater is set at least 10 °C hotter than the cylinder thermostat cut out temperature.

8. Plug 3 core flex into suitably earthed general purpose socket outlet. Turn on power supply. Pump should start and the Rinnai continuous flow water heater should ignite.
9. Loosen bleed screw on pump. The Rinnai continuous flow water heater will continue to operate until the thermostat is satisfied water temperature is up to 65 °C. When temperature has been reached thermostat will turn off the primary circulating pump.

# Installation Information - Draining

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1. Isolate power supply to the Demand Duo system.
2. Close cold water isolation valve.
3. Open hot water tap to relieve pressure.
4. Remove cap on cold water drain valve if no drain line fitted.
5. Connect hose or similar to allow water to drain to a safe location.
6. Open cold water drain valve and allow water to drain from system.

# Installation Information - Commissioning

Fill tank as detailed on previous page and commission the Rinnai continuous flow water heater in accordance with the commissioning check sheet attached to the front cover of the unit.

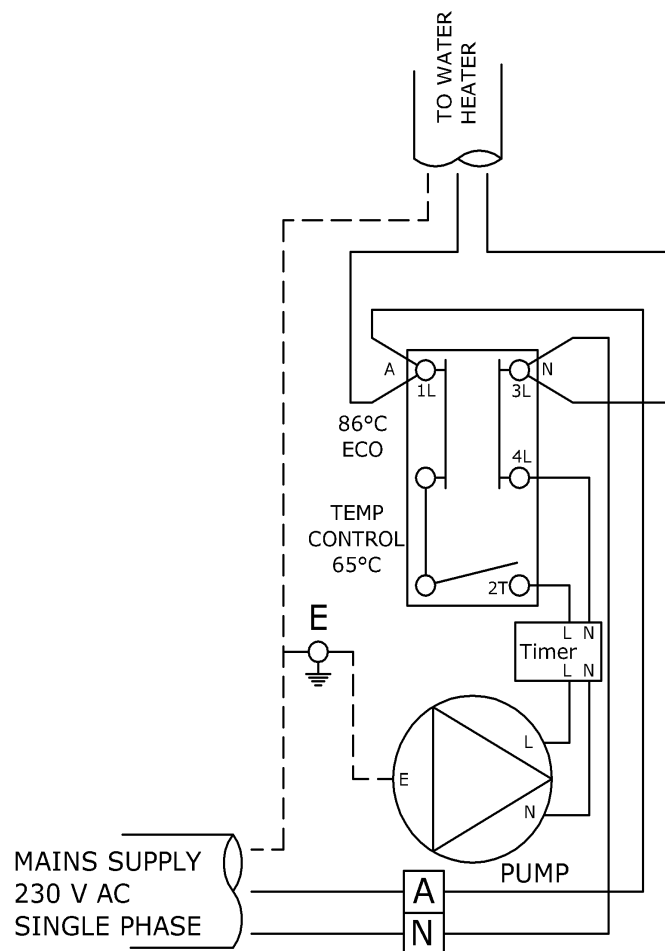
## Installation Information - Thermostat

To ensure the over-temperature and energy cutout is set, press the 'reset' button on the thermostat.

### Thermostat setting

The thermostat must be set to 65 °C. Turning the adjustment knob clockwise decreases the temperature setting and turning it clockwise increases the temperature setting.

Rinnai advise that the thermostat must only be adjusted or removed by an electrician or other suitably qualified tradesperson.

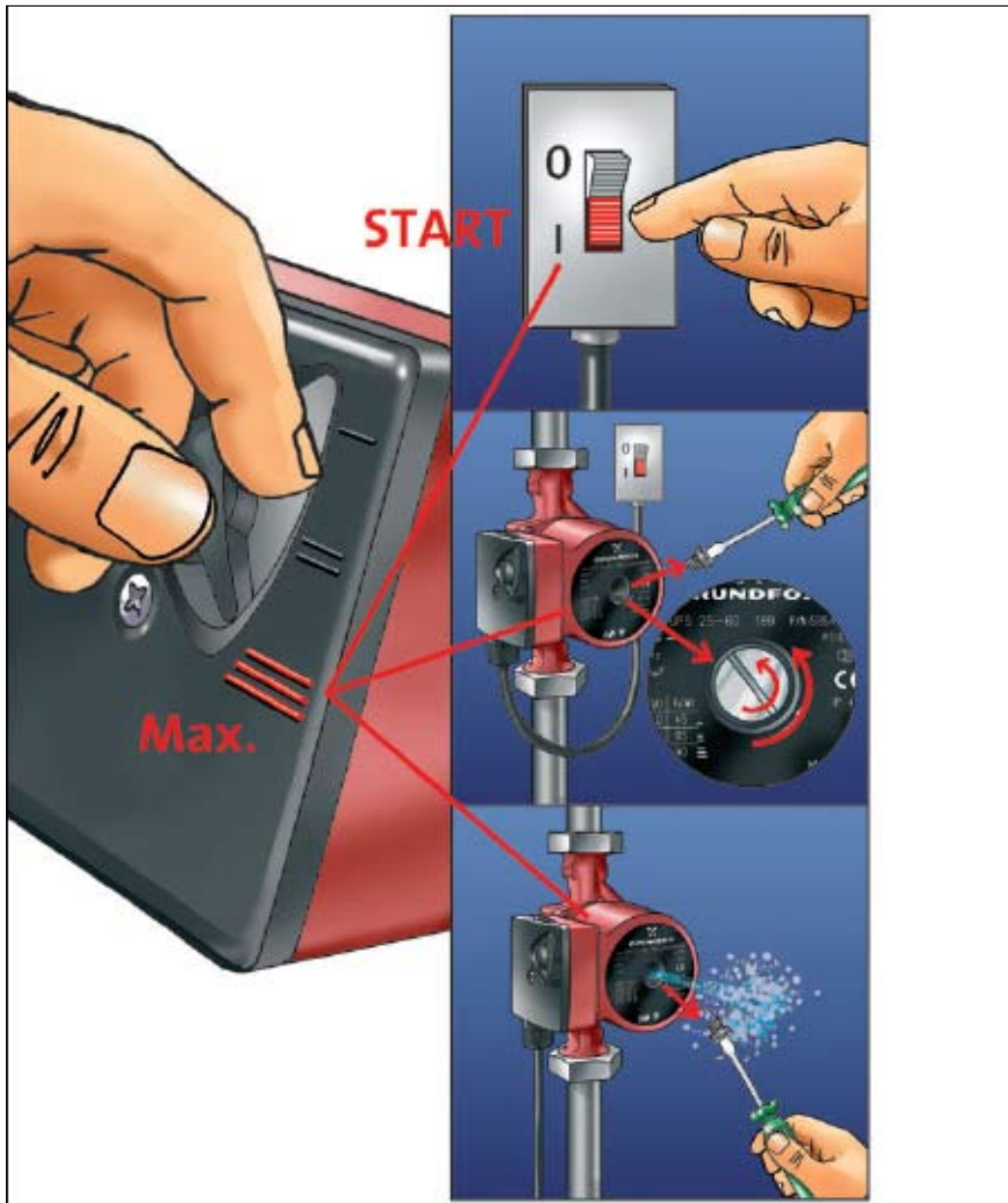


Reset timer will shut off the pump every 15 minutes for a few seconds.

# Installation Information - Pump

## Prime circulating pump on start up

The following extract has been taken from page 12 of the Grundfos Instructions UP, UPS, UPD, UPSD, version 50 41 10 0802 - 104.





**Consumers:** 0800 RINNAI (746 624)  
**Installers:** 0800 TO RINNAI (86 746 624)

**Address:** 105 Pavilion Drive, Airport Oaks, Mangere, Manukau  
PO Box 53177, Auckland Airport, Manukau 2150

**Phone:** (09) 257 3800  
**Fax:** (09) 257 3899

**Email:** [info@rinnai.co.nz](mailto:info@rinnai.co.nz)  
**Websites:** [www.rinnai.co.nz](http://www.rinnai.co.nz) and [www.rinnai-tradesmart.co.nz](http://www.rinnai-tradesmart.co.nz)