Rinnai INFINITY® Training

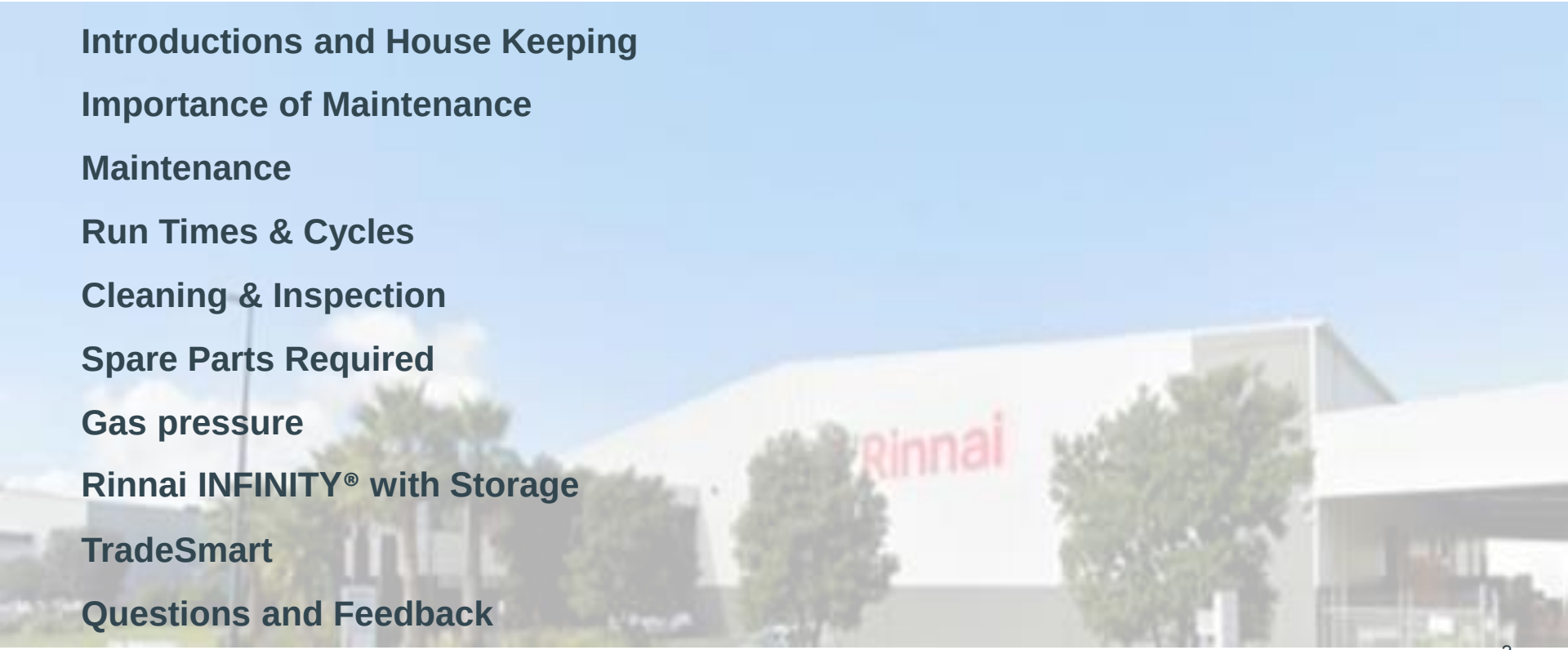
Commercial Maintenance of HD and N-Series

October 2023

Rinnai New Zealand

Rinnai

Agenda



- Introductions and House Keeping
- Importance of Maintenance
- Maintenance
- Run Times & Cycles
- Cleaning & Inspection
- Spare Parts Required
- Gas pressure
- Rinnai INFINITY® with Storage
- TradeSmart
- Questions and Feedback

Introductions

Welcome everyone

My name is Rob Beardmore and I'll be your Rinnai Trainer for today and will be supported by my work colleagues:

- Charles Chu (*Demand Creation Manager*)
- Grant Bourke (*Commercial Hot Water Specialist*)
- Vaughan Harman (*Trades Partner*)
- Vasuda Mistry (*Learning Content Specialist*)

This session will cover INFINITY® Commercial Maintenance Training.

House Keeping

Please listen carefully to information about the following:

- Toilets
- Tea / coffee / refreshments
- Phones on silent please
- No wandering
- Use of hand tools
- Mains power
- Fire exits/emergency alarms
- Safety and hazards
- Questions during and after this session

Importance of Maintenance

Rinnai INFINITY® HD and N-Series

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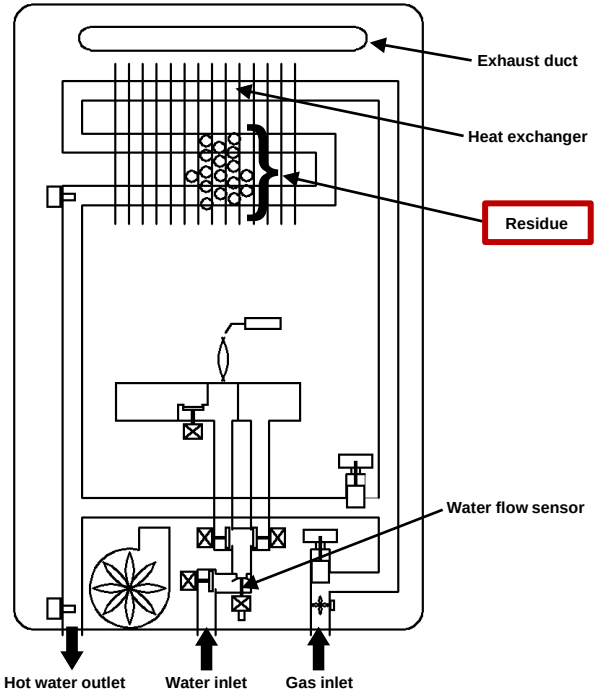
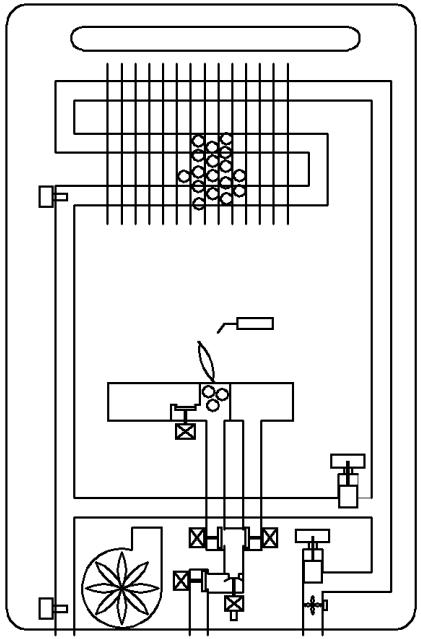
Rinnai INFINITY® HD

Low Burner Rates and Condensate

- **Condensation** forms on the fins.
- **Residue** blocks the heat exchanger.
- Flame is disrupted and **sooting** occurs.
- Flame detection system is disrupted and the **unit fails** (an error code appears).

To prevent unit failure, the burner must be removed periodically for cleaning.



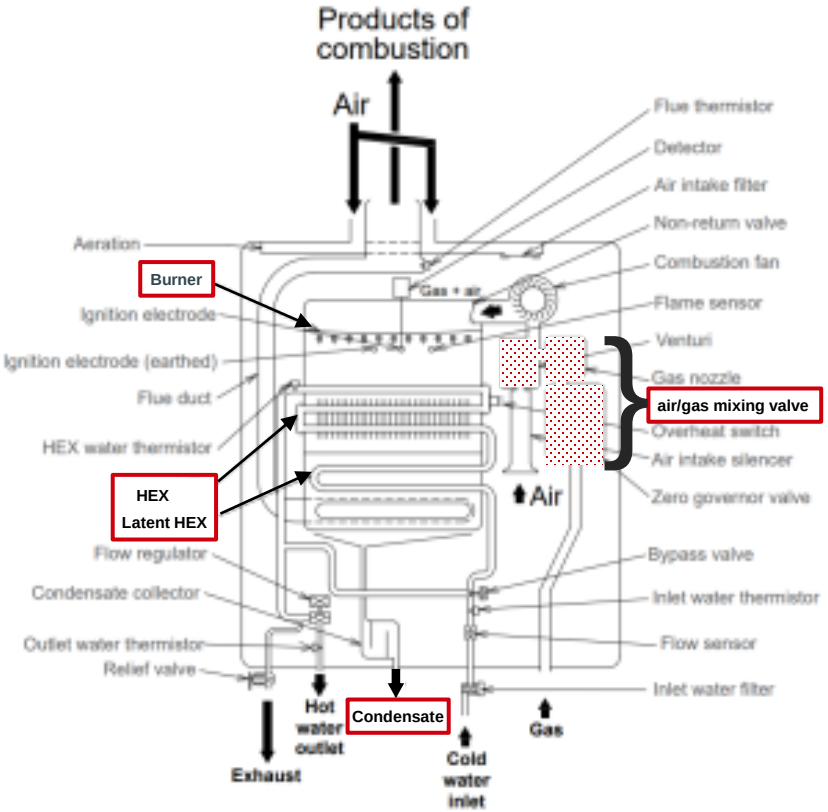


Rinnai INFINITY® N-Series

Condensate Formation and Build-up

- The **burner** is **one section** only and faces down.
- **Condensate** falls away from the burner.
- The **air/gas** mixing valve needs regular cleaning if in a really **dusty** environment.
- Heat exchanger is less susceptible to blocking, but **difficult to get inside** the heat exchanger.

You only need to get inside the heat exchanger for cleaning if a fault occurs.



Maintenance

General Maintenance and Standard Maintenance Schedule

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General Maintenance

- Commercial units typically subject to **high running hours**.
- Lots of **on/off cycles**.
- Those with tanks have high running hours on **low burn rates**.
- The best way to ensure reliable operation is to **regularly maintain** units.
- For **new** installs with tanks:
  Service **after 6 months** then consider lengthening this interval.
- Most other installations checked **annually** or every **two years**.

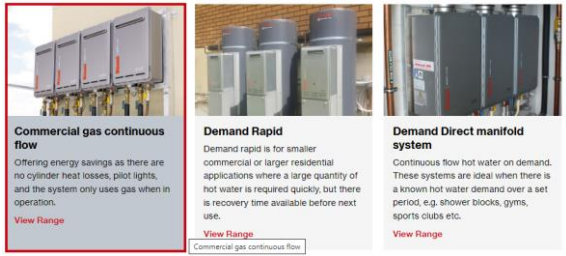
Standard Maintenance Schedule

How to find the Maintenance Schedule online:

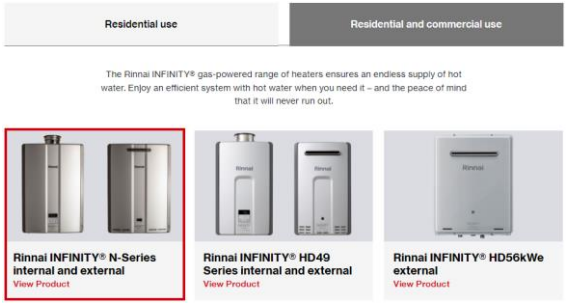
1) Go to https://www.rinnai.co.nz

2) Click “Commercial”:

3) Click “Commercial gas continuous flow”:



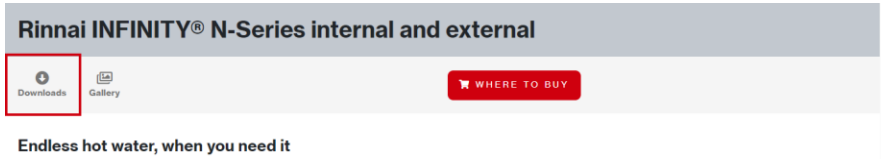
4) Click on the **specific** unit you require:



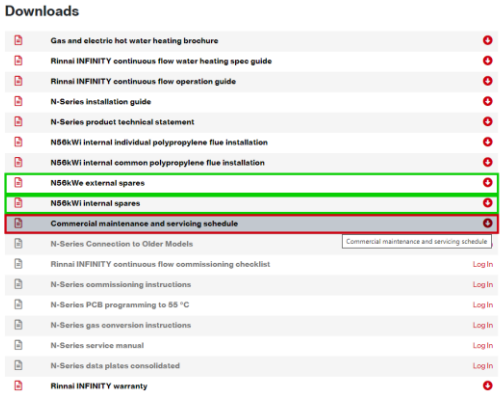
Standard Maintenance Schedule – Continued

How to find the Maintenance Schedule online:

5) Click “Downloads” at the top of the page:



6) Click “Commercial maintenance and servicing schedule”.
You will also find spare parts lists (as shown in the green outline):



7) Alternatively: access the Commercial Maintenance and Servicing Schedule here:

Standard Maintenance Schedule – Continued

Site name and address:

Model and serial numbers:

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
Error codes, hours run and ignition data recorded										
Burners removed and cleaned—HD models only										
Heat exchanger fins cleaned and burners removed—HD models only										
General cleaning inside case and inspection										
Flame rods and igniters removed and cleaned										
Gas pressures checked										
N-Series: Air control valve, remove, check, and clean										
N56kWi internal: Air filters										
Hard water areas, flush with food grade vinegar or citric acid										
Water flow valves replaced										
Heat exchanger replaced										
Systems with storage backup										
Verify tank thermostat control of pump[1]										
Clean filters in circuit to Rinnai INFINITY units										
Technician Name										
Date serviced										
[1] Standard settings INFINITY 75 °C, pump ON 60 °C, OFF 65 °C										

Run Times & Cycles

Information and How to Read it all Correctly

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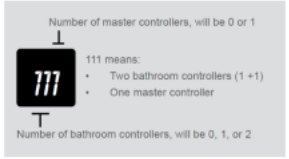
Run Times – Information

- Lifetime of heat exchanger
- Subject to duty cycle, water quality, water temperature: - 10,000 hours
  - 60,000 operating cycles
- Noting there are 8760 hours per year

06 Controllers connected	
Master controller	Can either be the Kitchen Deluxe (MC-100V) or the Compact Controller (MC-601), programmed by pressing 'Priority' and the On/Off button.
Bathroom controller	Can either be the Bathroom Deluxe (BC-100V) or the Compact Controller (MC-601). Maximum temperature is 50 °C



Number	Maintenance Parameter	Data range
01	Inlet water flow rate e.g. 205 (205 × 0.1) = 20.5 L/m (0.1 L/m increments)	0-400 L/m
02	Outgoing temperature e.g. 20 = 20°C	0-999°C
03	Combustion hours e.g. (1 x 100) = 100 Hrs (100 Hr increments)	0-999 Hrs
04	Combustion cycles 125: 125 × 100 = 12,500 times 12-: 12 × 10,000 = 120,000 times 1--: 1 × 1,000,000 = 1,000,000 times (max. 6,000,000 times)	0-999
05	Fan rotation frequency HZ x 15 = rpm	0-999 Hz pulses/sec
06	Additional remote controllers connected, refer below	0, 1, 2
07	Water flow servo position 0 = Half 1 = Open 2 = Closed	0-2
08	Inlet water temperature e.g. 25 = 25°C	0-999°C
09	Fan current e.g. 102 (102 × 10) = 1020 mA (10 mA increments)	0-999 mA
10	Bath fill amount Counts the litres during the operation	0-999 L
11	Heat exchanger outlet temperature	0-999°C
12	Bypass flow control position	11 = closed, 111 = open
15	N56kWi internal freeze protection temperature °C	0-999°C
17	N56kWi external freeze protection temperature °C	0-999°C
19	Pump hours (x 100 hours)	
20	Number of pump starts	
21	Exhaust temperature °C, detects heat and will run the fan to dispel heat to stop the plastic melting	0-999°C
A0-A2	Only for use by the manufacturer, can't be changed	-
C0-C2	Only for use by the manufacturer, can't be changed	-

Run Times – How to Read it all Correctly

- **HD49**: Has an **internal** controller. **N56**: on-board controller.
- Other models: connect external controller (with power off).
- 03 x 100 = running hours
- 04 x 100 = operating cycles (refer to Slide 14)

How to Access Maintenance Mode:

- Press & hold ▼ and **on/off** ⏻ for 2 seconds.
- The ‘maintenance parameter number’ (Slide 14) will show briefly, followed by the value.
- To see the next value, push either ▲ or ▼, to go through all **19** maintenance parameters.
- Some values will only display if the INFINITY® is working.
- To operate the INFINITY®, press **on/off** ⏻ a second time to allow the working values to show on the monitor display.
- If the INFINITY® isn’t working, just leave it off.
- Maintenance codes are displayed for 3 minutes. To **exit** this mode, press ▼ then **on/off** ⏻, or it’ll reset automatically after 3 minutes.

Run Times – How to Read it all Correctly

How to Access Maintenance Mode – video demonstration of Slide 15:

Run Times – How to Read Correctly

How to Access Error Codes:

- Start with a blank screen (turn unit off).
- Press & hold **on/off** ⏻ and ▼ .
- Up to 9 error codes will show. The **latest will show first**.
- If there are **less than 9** codes, or **no** error codes, the display will show **- -**
- Error codes will keep cycling through the monitor display for up to **3 minutes**.
- To **exit** this mode, press & hold **on/off** ⏻ then ▲ .

Run Times – How to Read Correctly

How to Insert a Service Marker: FF CODE

- Start with a blank screen (turn unit off).
- Press & hold ▲. Then ▼ followed by **on/off** ⏻.
- This inserts an FF Service Marker into Error Code History, to denote when last serviced or repaired.
- The FF symbol will briefly show on the monitor display to confirm this.
- To **exit** this mode, press and hold ▲. Then ▼ followed by **on/off** ⏻.

Note: An FF Code can be entered to determine if a common error has occurred after maintenance.

Cleaning & Inspection

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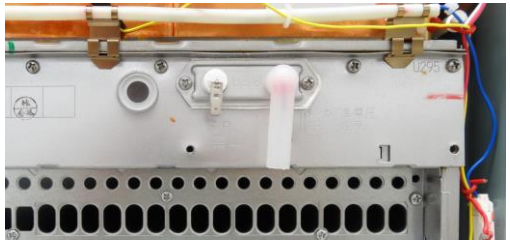
N56 *Carburettor* Inspection and Clean

- Don’t loosen non-return valve (at the top of the burner).
- If air valve has **no dirt**, don’t repeat this next time.
- If air valve is in poor condition:
  - arrange to **replace** at an early opportunity
  - advise customer of need for **regular cleaning**.
- Where possible, plant room should be clean.
- Rinnai will cover the first valve part replacement.
  Where customers **don’t have valves regularly cleaned**, subsequent replacements will be **chargeable**.

HD Cleaning

- Burner / flame rod / electrode cleaned **together**:
  1 – Remove combustion chamber front to clean flame rod/electrode.
  2 – Don't remove just flame rod / electrode retaining plate unless replacing.
  3 – Polish with *Scotchbrite* or >320g sandpaper.



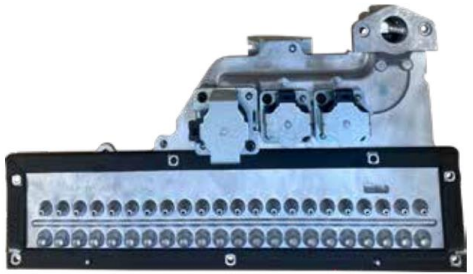
- For **HD56**: Long magnetic #2 Phillips needed to remove burner. (Cover fan outlet)

- **Invert** burner and **blow out** with compressed air.

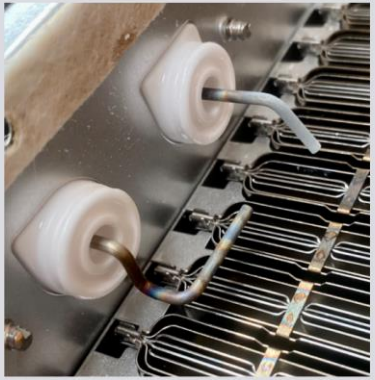
- Use **compressed air** to blow out **heat exchanger fins**. (keep face away from external flue terminal)

HD Cleaning – Continued

- **Don’t** pinch wires in **manifold / gas valve** join.
- **Don’t** lose the manifold **o-rings**.
- Clean and replace gaskets **only** if they don’t come away “clean”.
- **Tighten** combustion chamber screws **gently**.
  - They are into thin sheet metal
  - Don’t use power tool to tighten



Spare Parts Required



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Spare Parts Required

- Combustion chamber gaskets (replace only if damaged)
- Electrode / flame rod packing if replacing

	HD56	HD250	HD49	HD200	N56
Gasket	40570	3443	40382	3600	N/A
Packing Upper	40564	3324	40379	3589	N/A
Packing Lower	40565	3325	40380	3597	N/A
Electrode packing	40573	3465	40436*	3465	40240
Electrode	40571	3445	With 40436	3445	40238
Flame Rod	40572	4916	With 40436	3464	40239

*combustion chamber front assembly

Gas Pressure

How to Check & Set Gas pressure

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How to Check and Set Gas Pressure

Not required for N56

- Refer to **commissioning sheet** for process (Inside of cover or website).
- Will force burner to **high** (makes really hot water).
- Ensure **water flow rate** as **high** as possible.
- Keep people away from flowing hot water.
- “Screwdriver” models – adjust slowly
  Particularly PCB potentiometer: 15˚ at a time.

Rinnai INFINITY® with Storage

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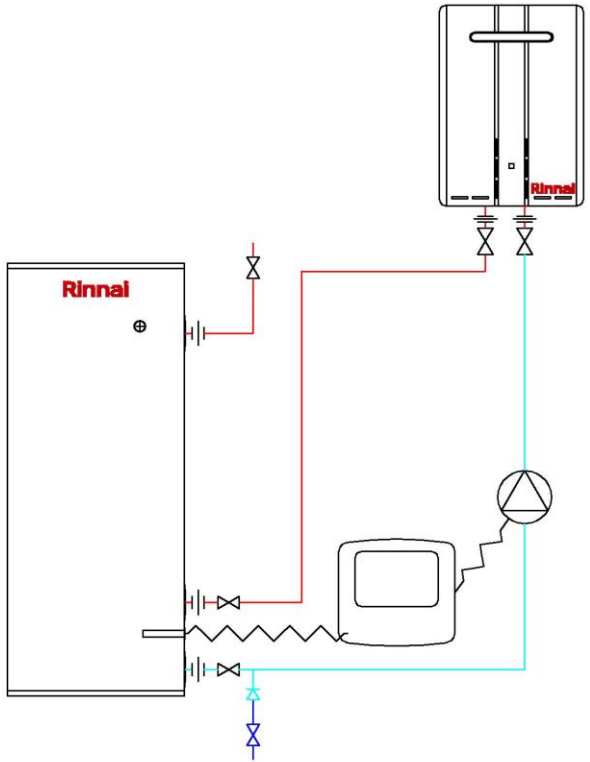
Rinnai INFINITY® with storage

- Standard settings
- Rinnai Infinity 70 or 75˚C
- Pump OFF 60˚C
- Pump ON 50 or 55˚C
- Multiple boilers should not be electronically linked
- For Rinnai DDTSTAT controller, select “Interrupt” mode



TradeSmart

Access to the Essentials of Rinnai Products

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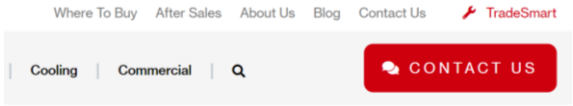
TradeSmart

On TradeSmart, you can access:

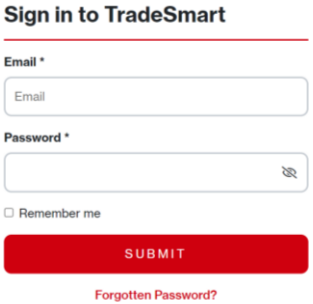
- Free **training courses**
- Product **registration**
- Product **information** & updates
- Latest **news**

Access TradeSmart using this QR Code

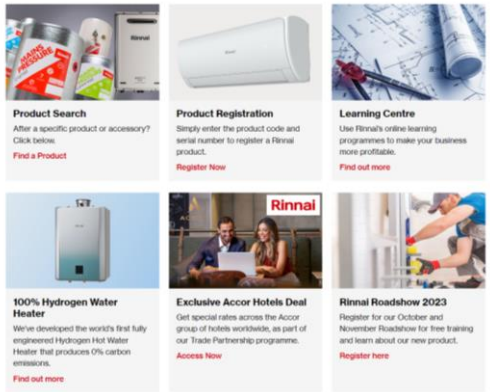
1. Click on '**TradeSmart**' on the top, right corner of the Rinnai Homepage:



2. Create a **login** and **password**:



3. Click on the **category** to access the information you need:



Questions and Feedback

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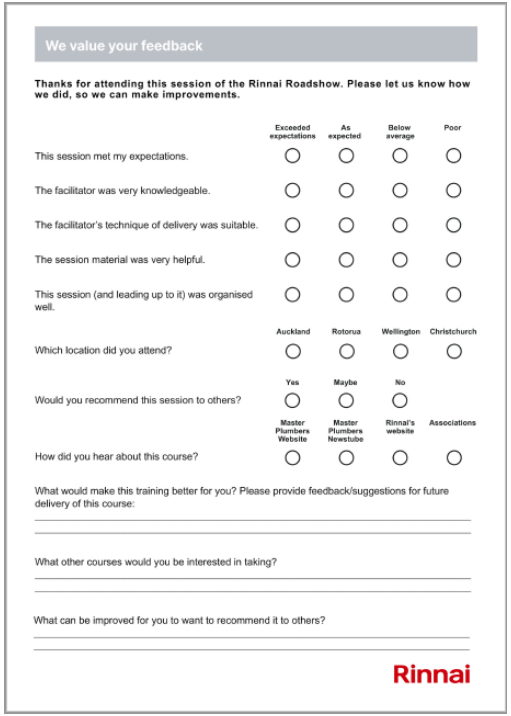
Questions and Feedback

Do you have any questions about what was covered in today's presentation, or Rinnai's Commercial INFINITY® units?

We really value your feedback. Please help us improve our future roadshows, by completing a feedback form.



We value your feedback

Thanks for attending this session of the Rinnai Roadshow. Please let us know how we did, so we can make improvements.

	Exceeded expectations	As expected	Below average	Poor
This session met my expectations.	○	○	○	○
The facilitator was very knowledgeable.	○	○	○	○
The facilitator's technique of delivery was suitable.	○	○	○	○
The session material was very helpful.	○	○	○	○
This session (and leading up to it) was organised well.	○	○	○	○

	Auckland	Rotorua	Wellington	Christchurch
Which location did you attend?	○	○	○	○

	Yes	Maybe	No
Would you recommend this session to others?	○	○	○

	Master Plumbers Website	Master Plumbers Newstube	Rinnai's website	Associations
How did you hear about this course?	○	○	○	○

What would make this training better for you? Please provide feedback/suggestions for future delivery of this course:

What other courses would you be interested in taking?

What can be improved for you to want to recommend it to others?

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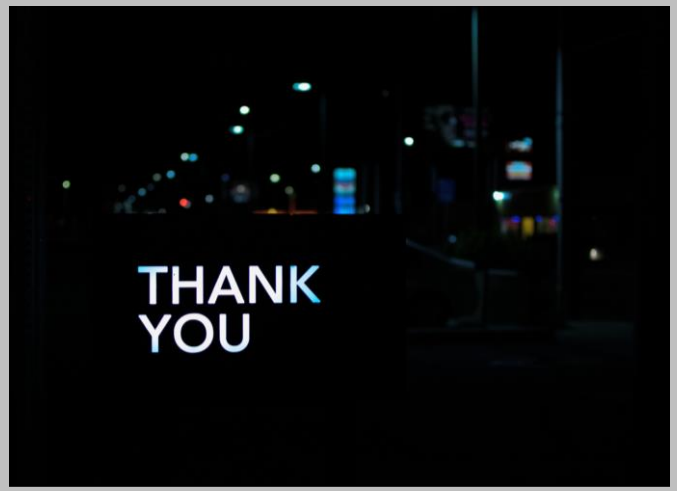
Thank you

We hope to see you again soon.

Any queries please contact:
0800 RINNAI
0800 746624



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