Rinnai

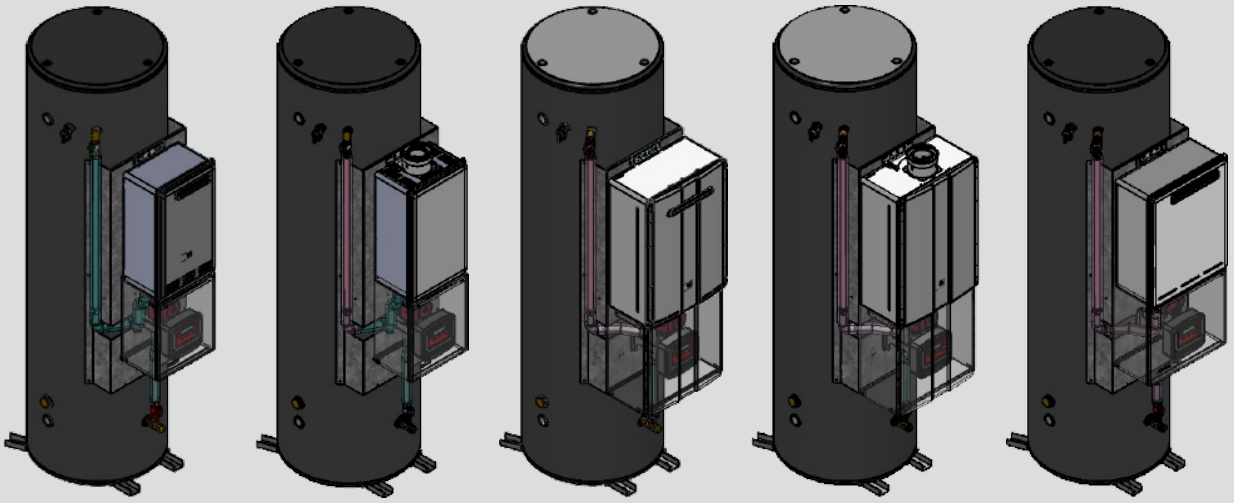
Owner and installer guide

Demand Rapid

rapid recovery storage system

Models

- DD1200E315N/L DD1200i315N/L
- DD1212E315N/L DD1212i315N/L
- DD1250E315N/L



Installer

Please leave this guide with the owner as it contains important safety and warranty information.

Important

This appliance must be installed in accordance with:
- Manufacturer's installation instructions
- Current AS/NZS 3000, AS/NZS 3500, AS/NZS 5601.1 and G12/AS1

For use with Natural Gas or Universal LPG as indicated on the appliance.

Not suitable as a spa or swimming pool heater

Appliance must be installed, commissioned and serviced by an authorised person, being in New Zealand a licensed gasfitter.

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

For more information about buying, using, and servicing of Rinnai appliances call: 0800 RINNAI (0800 746 624).

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Contents

About the Demand Rapid system

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

Reset timer
The system is equipped with a reset timer to ensure the pump does not run continuously. This may occur if the Rinnai INFINITY does not ignite. The timer will shut off the pump every 30 minutes for a few seconds to ensure the Rinnai INFINITY resets itself.

Safety devices
For safe operation the cylinder component of the system is fitted with:

- Temperature Pressure and Relief (TPR) valve(s), to ensure the water stays at a safe pressure and temperature.
- Thermostat to maintain the water temperature.

It is important that you do not tamper with or remove these devices. In the case of the TPR valve(s), do not block or seal the valve(s) or drain pipe(s). The system must not be operated unless these devices are fitted and are in good working order.

Rinnai INFINITY safety devices; flame failure, boil-dry protection, overheat protection, fusible link, pressure relief valve and combustion fan rpm check.

Cylinder thermostat setting
To meet the New Zealand Building code requirement[1] to disinfect water for legionella bacteria[2], the cylinder thermostat has been set to 65 °C.

1 Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3
2 Legionella is a bacterium that can cause Legionnaires' disease—a severe form of pneumonia

General safety

Power cords
Power leads from the system MUST BE plugged into a weatherproof electrical outlet. If the power supply cord of the system is damaged it must be replaced by an authorised person in order to avoid a hazard, using genuine replacement parts from Rinnai. Take care not to touch power cords with wet hands.

Rinnai INFINITY external flue outlet

- Do not touch or insert objects into the flue outlet
- Keep flammable materials, spray cans, fuel containers, pool chemicals well clear of the system and flue outlet

Important

Only a licensed tradesperson can install, adjust, maintain and service this water heating system. Any work carried out by a non-licensed tradesperson is illegal and will void any warranty.

Catch pan
It is important a suitably drained catch pan (or drain system) is fitted where damage could be caused by discharge from the cylinder. This is a mandatory requirement of the installation. If damage is caused by a leaking cylinder that has not been installed with a suitable drain system the owner can seek compensation through the installer or consider claiming on insurance.

In the event of a power failure
The system will not operate without electricity. In the event of a power failure, when power is restored the water flow may need to be stopped and restarted to get the system working again.

Frost protection
Frost protection[1] is fitted as standard on all Rinnai INFINITY models. Frost protection operates automatically, as required, whenever the appliance is connected to the power supply.

If power has failed and there is risk of damage from frost, turn off the gas supply to the unit, and open a tap slightly to allow flow through the unit. This may prevent damage from freezing. If the system is not going to be used for an extended period and the power supply is disconnected, turn off the water and gas supply and arrange for a plumber to drain all water from the system to prevent frost damage.

Flue outlet discolouration
The colour of the flue outlet on an external Rinnai INFINITY may change over time due to condensate in the exhaust gases. This is normal. The discolouration will not damage the unit, and will not affect performance of the water heater.

Do not adjust the thermostat settings
The warranty is not valid unless the following settings remain:

- Rinnai INFINITY 75 °C
- Cylinder set temperature 65 °C
- Cylinder low limit temperature 60 °C

[1] Frost protection turns on when the temperature inside the unit drops below 3.5 °C and switches off when the temperature reaches 7 °C. The heat inside the unit is provided by ceramic heating elements that stop the water within the pipework of the unit from freezing.

Maintenance and servicing

Hot water systems, like cars, require regular maintenance and servicing. To ensure longevity of your system we recommend the following.

Period	What needs to be done
Every six months	TPR valve(s)—operate the easing gear
Annually	Inspection and service of the entire hot water system, including inspection of the flue system (if applicable), cleaning of the INFINITY inlet water filter, draining and flushing of the cylinder if the water supply contains excessive levels of silt

TPR valve(s)
Located near the top of the cylinder—essential for safe operation. The TPR valve(s) automatically vent hot water if the temperature or pressure of the water in the cylinder gets too high.

Every six months operate the easing gear to remove lime deposits and check that it is not blocked. As the valve(s) will discharge hot water, ensure no one is near the drain line.

WARNING Failure to operate the relief valve easing gear at least once every six months may result in the water heater exploding.

Continuous leaking of water from the valve(s) may indicate a problem. It is important that you raise and lower the easing gear gently. During operation, if the valve does not discharge water when the easing gear is lifted, or does not seal again when closed, arrange for an authorised person to come and inspect the system immediately.

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

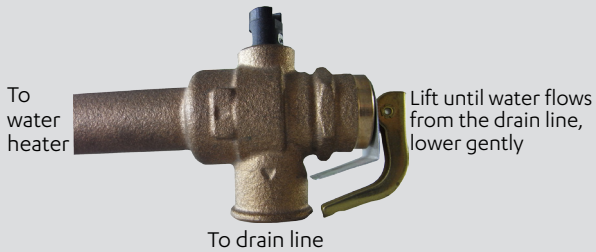
A TPR valve must not be replaced with one that has a higher pressure rating than that specified for the cylinder.

Maintenance and servicing
Rinnai has a maintenance, service, and spare parts network with personnel who are fully trained and equipped to give the best advice on your Rinnai product. Regular maintenance and servicing is not covered by the Rinnai warranty.

For help locating a service person on your area call 0800 746 624.

TPR position - top of cylinder

How to operate the easing gear



Troubleshooting: Rinnai INFINITY error codes troubleshooting with controllers or status monitor

Your Rinnai INFINITY has a self diagnostic capability. If a fault occurs, an error code will flash on the status monitor (HD200 external and EF models) or on the digital controller (if fitted). This assists with diagnosing the fault and may enable you to overcome a problem without a service call. Please quote the code displayed when contacting Rinnai.

In some cases you may be able to clear the error code by turning the lower water valve off, wait 20 seconds, then on again.

Error code	Fault	Possible solution
-	Noticeable reduction in water flow	Inlet water filter needs to be cleaned—service call.
03	Power interruption, water will not flow when power is back on	Turn off all hot water taps and press On/Off (on the controller twice)
10	Combustion fan current is too high. Unit operates then stops.	Owner: Service call Installer: Check blockage of air intake/flue outlet, and combustion fan.
11	No ignition. Unit stops without flame igniting.	Owner: Check gas is turned on at the water heater, gas meter, or cylinder. Installer: Check; gas supply, sparker unit, and gas valves.
12	Flame failure, earth leakage	Owner: Check gas is turned on at the water heater, gas meter, or cylinder. Check there are no obstructions to the flue outlet. Installer: Check; gas supply, flame rod, earth wire lead, and water control.
14	Thermal fuse and/or OH switch activated. Unit operates then stops.	Owner: Service call Installer: Check thermal fuse and OH switch. If either are faulty check the heater for damage, confirm gas type, pressure settings, and test point pressures.
16	Over temperature warning. Unit operates then stops.	Owner: Service call Installer: Confirm gas type, pressure settings, and test point pressures. Check; gas valves, water flow sensor and servo, and HEX outlet temperature thermistor.
25	Condensate trap error	Check condensate drain for blockage
32	Outlet water temperature faulty	Owner: Service call Installer: Check hot water outlet thermistor
33	Heat exchanger outlet sensor faulty	Owner: Service call Installer: Check HEX thermistor
34	Air temperature sensor faulty (internal models only)	Service call. Will require; checking sensor wiring for damage, measuring sensor resistance, checking combustion fan, checking internal flue leakage, checking flue system integrity, and possibly replacing the sensor
52	Modulating solenoid valve fault. Unit stops without flame ignition.	Owner: Service call Installer: Check modulating solenoid valve
61	Combustion fan failure	Owner: Service call. Installer: Check combustion fan.
65	Water flow control error. Water flow is not controlled. Water temperature too low.	Owner: Service call. Installer: Check water flow servo.
71	Solenoid valve circuit error. Unit does not operate.	Owner: Service call. Installer: Check gas valves
72	Flame rod circuit error. Unit does not operate.	Owner: Service call. Installer: Check flame rod
LC	Scale buildup in heat exchanger—when checking maintenance code history, 00 is substituted for LC	Service call

Troubleshooting
troubleshooting without controllers or status monitor

Fault	Possible solution
Unit does not start	Check power is on at the unit. Check gas isolation valve at the unit and gas meter are fully open.
Unit starts and then shuts down immediately	Check power is on at the unit. Check gas isolation valve at the unit and gas meter are fully open.
Unit starts then water goes cold	Check power is on. Open hot water tap fully.
Excessive temperature fluctuation while water is flowing	Service call.
Excessive noise or vibration from the water heater	Service call.

Faults caused by insufficient gas and/or water supply, gas quality, water quality, installation errors or operation errors are not covered by the Rinnai warranty.

Troubleshooting
general system troubleshooting

What's happening	Possible cause	Explanation and/or possible solution
Delivery temperature not hot enough	No electrical or gas supplies to the heat source	Check and turn on the power and gas supplies
	Insufficient gas	Check gas supply, availability and pressure
	Temperature sensor has dislodged or failed	Check temperature sensor is correctly positioned and providing information to the thermostat
	Excessive load on system	Check maximum demand does not exceed rated capacity
	Inadequate heating circuit—pump not working properly	Check all valves are fully open
	Tempering or thermostatic mixing valve malfunctioning	Service call
Delivery temperature too hot	Tempering or thermostatic mixing valve malfunctioning	Service call
Make-up water flowing continuously	Leak in cylinder and/or heating circuit	Check for leaks

Installation

Installation, servicing and repair shall be carried out only by authorised personnel.

Supplied with the system:

- Pump
- Controller
- UV pipe resistant insulation 15-18 mm
- TPR valve(s)

Demand Rapid specification summary

Description

A complete storage hot water system (top down heating) made up of a Rinnai INFINITY commercial continuous flow gas water heater (external or internal unit), a pump, a thermostat and controller, and a 315 L Demand Duo cylinder.

Suitability

For smaller commercial or larger residential applications where a large quantity of hot water is required quickly, but there is recovery time available before next use. For example filling a machine or spa bath.

Hard or aggressive water will need to be treated in order to use this system, if in doubt please test before use.

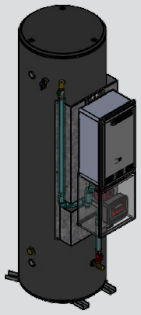
Not suitable as a pool or spa heater.

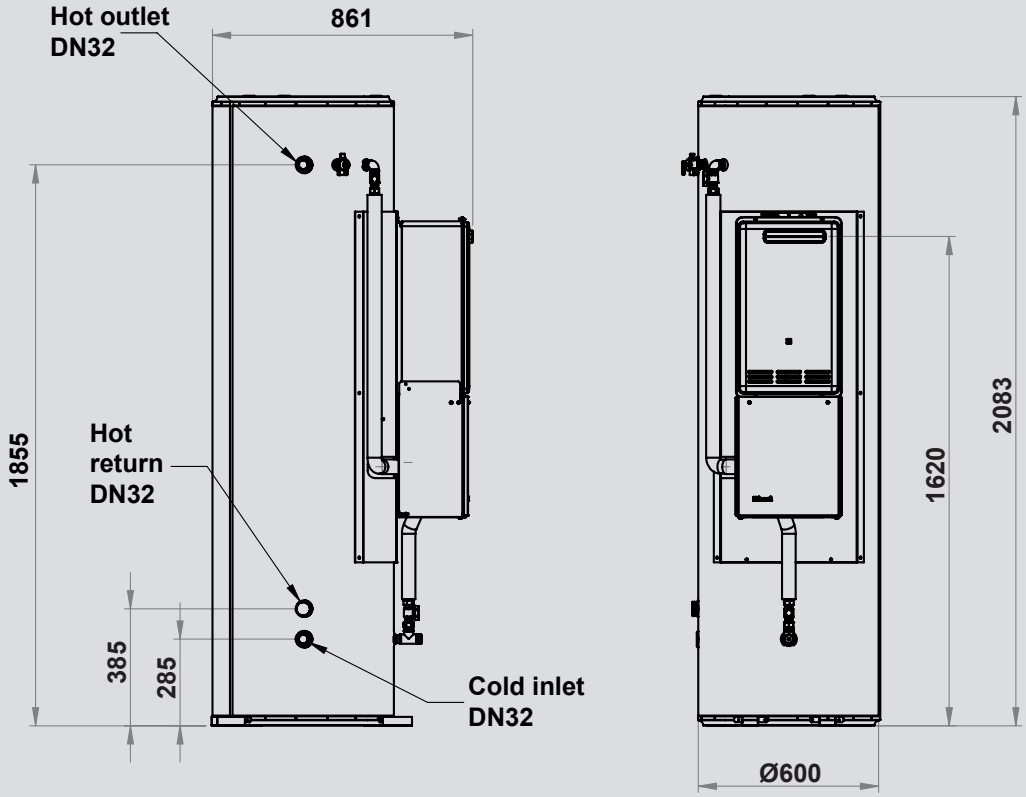
System configuration

Thermostat pump on	60 °C
Thermostat pump off	65 °C
INFINITY setting	75 °C
Max. outlet water temp.	75 °C

Input	195-249 MJ/h	
Output	44.5-57.8 kW	
Connections	Gas	DN20 ¾ “ BSP male
	Cold water inlet	DN32 1¼ “ BSP female
	Hot water outlet	DN32 1¼ “ BSP female
	Hot water return	DN32 1¼ “ BSP female (not used)
	Condensate	DN15 ½ “
	TPR	DN20 ¾ “ BSP female
	Electricity	230 V AC GPO
Ingress protection	IPX4	
Weights	Empty	82-90 kg
	Full	402-410 kg

DD1200E315 specification



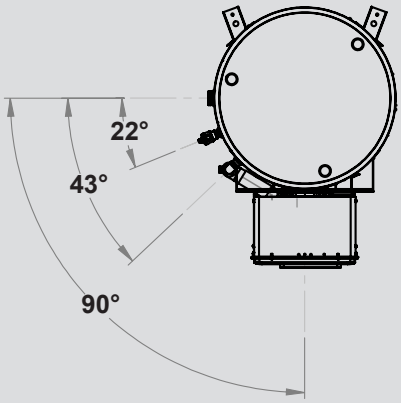


Gas consumption: 199 MJ/h

Output: 45.9 kW

Weights
Empty 82 kg
Full 402 kg

Water pressure
Min. 150 kPa
Max. 850 kPa



Hot water delivery
Raised 25 °C 1500 L/h
Raised 35 °C 1250 L/h
Raised 45 °C 950 L/h
Raised 50 °C 875 L/h
Raised 55 °C 800 L/h

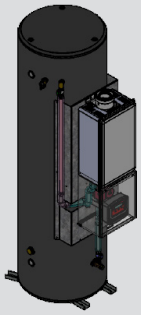
TPR rating: 850 kPa, 99 °C, 46 kW (supplied)

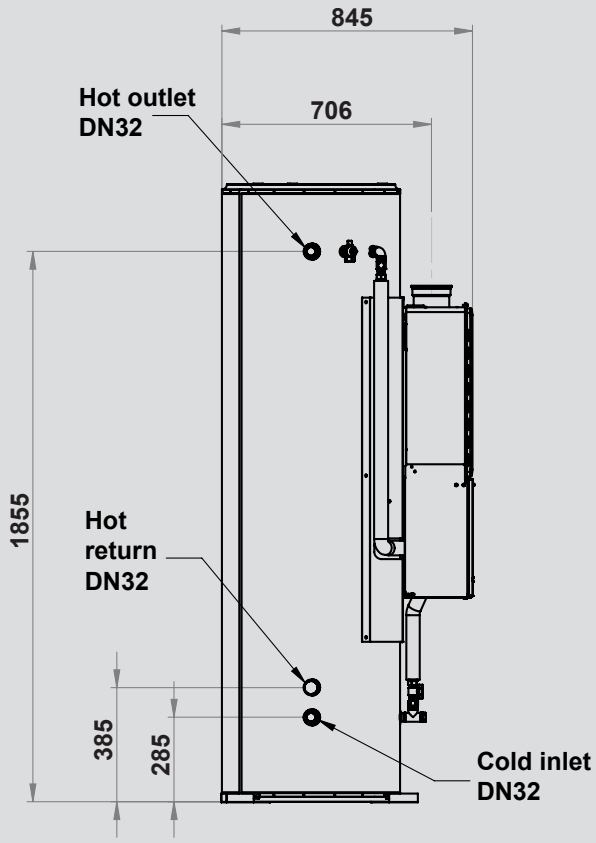
ECV: 700 kPa (not supplied)

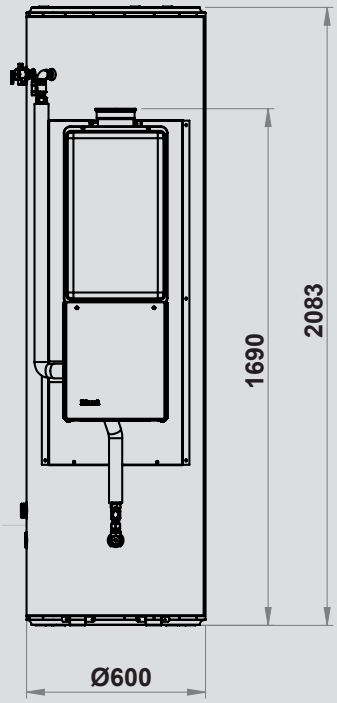
PLV: 500 kPa (not supplied)

INFINITY power consumption
Normal: 72 W, standby: 2 W, automatic frost protection: 116 W

DD1200i315 specification



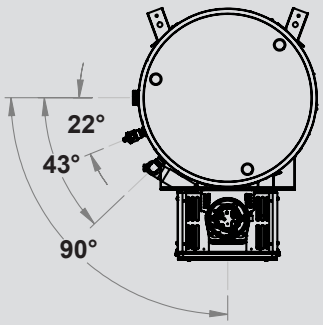




Gas consumption: 195 MJ/h

Output: 44.5 kW

Weights
Empty 82 kg
Full 402 kg



Water pressure
Min. 150 kPa
Max. 850 kPa

Hot water delivery
Raised 25 °C 1500 L/h
Raised 35 °C 1250 L/h
Raised 45 °C 950 L/h
Raised 50 °C 875 L/h
Raised 55 °C 800 L/h

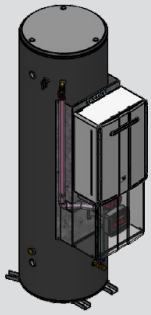
TPR rating: 850 kPa, 99 °C, 46 kW (supplied)

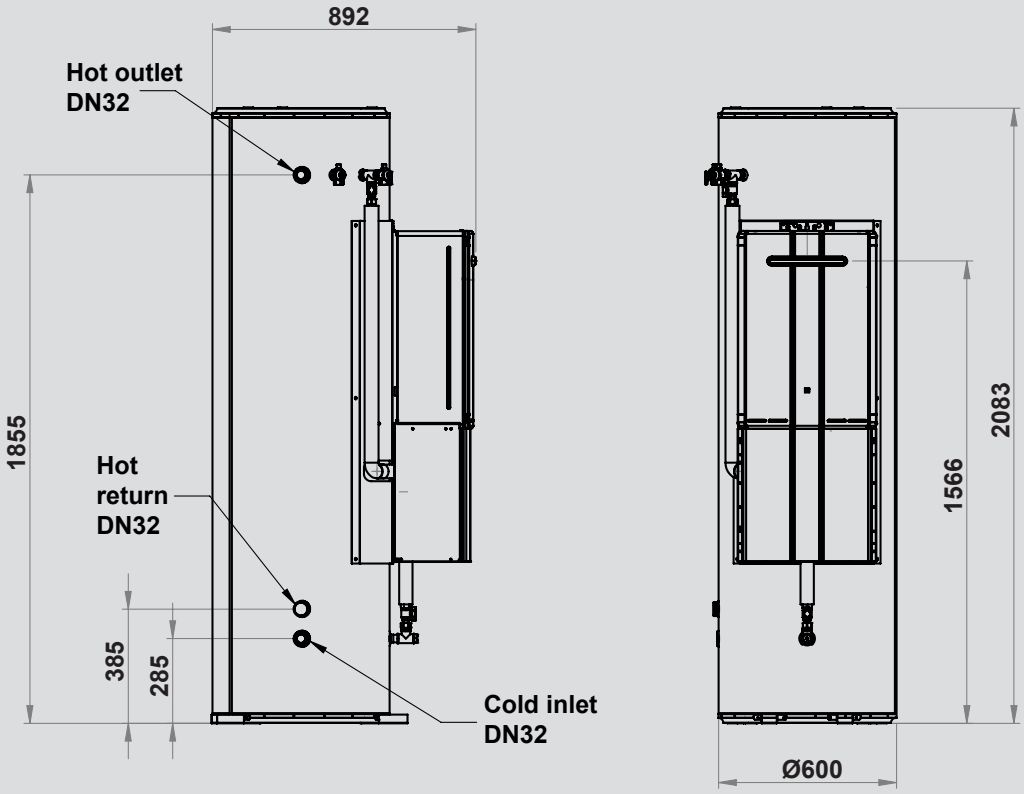
ECV: 700 kPa (not supplied)

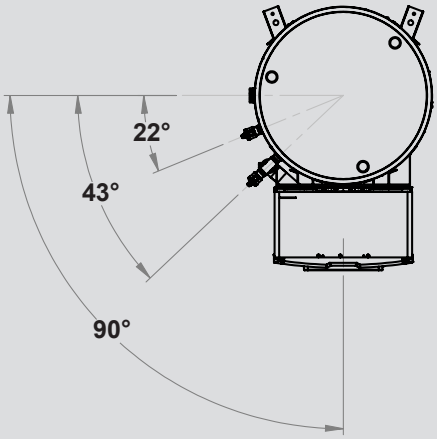
PLV: 500 kPa (not supplied)

INFINITY power consumption
Normal: 64 W (NG), 67 W (LPG), standby: 2 W, automatic frost protection: 100 W

DD1212E315 specification







Gas consumption: 211 MJ/h

Output: 55.7 kW

Weights
Empty 90 kg
Full 410 kg

Water pressure
Min. 150 kPa
Max. 850 kPa

Hot water delivery
Raised 25 °C 1700 L/h
Raised 35 °C 1400 L/h
Raised 45 °C 1200 L/h
Raised 50 °C 1100 L/h
Raised 55 °C 1000 L/h

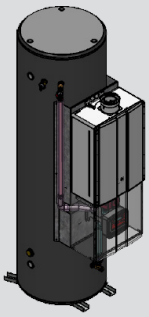
TPR rating: 850 kPa, 99 °C, 46 kW (two valves supplied)

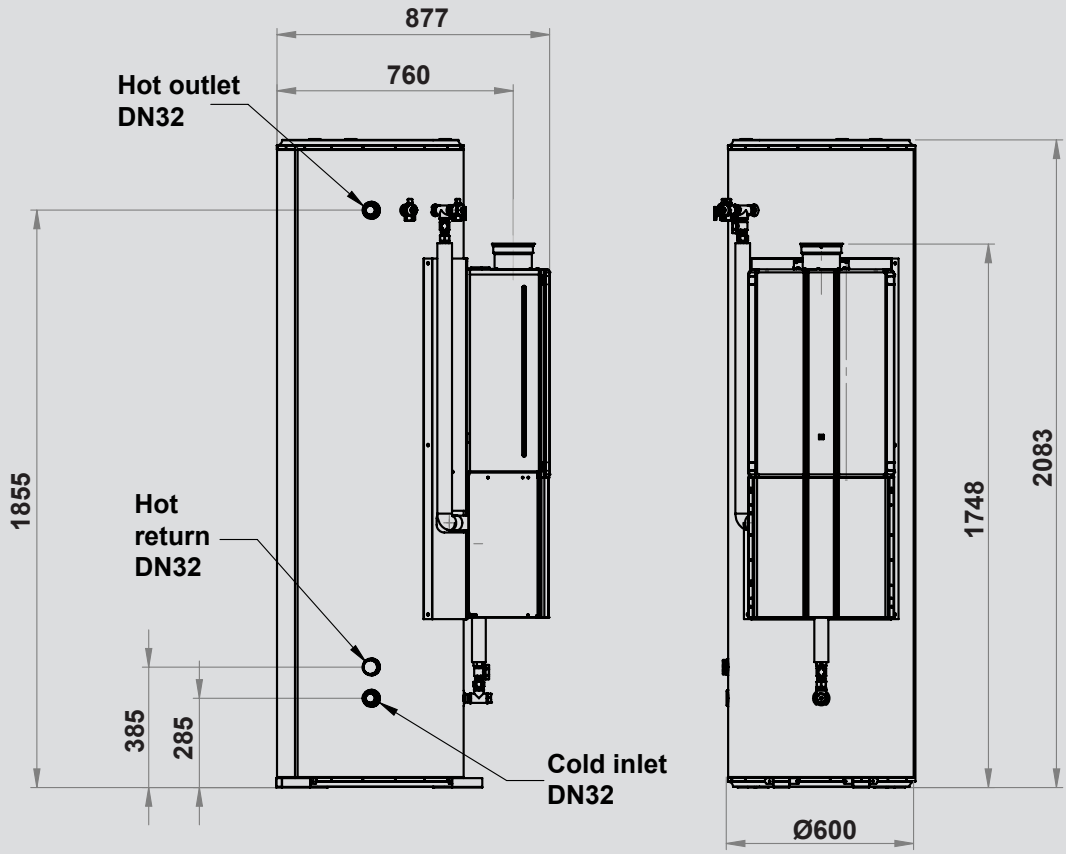
ECV: 700 kPa (not supplied)

PLV: 500 kPa (not supplied)

INFINITY power consumption
Normal: 62 W (LPG) 51 W (NG), standby: 2.4 W, automatic frost protection: 170 W

DD1212i315 specification



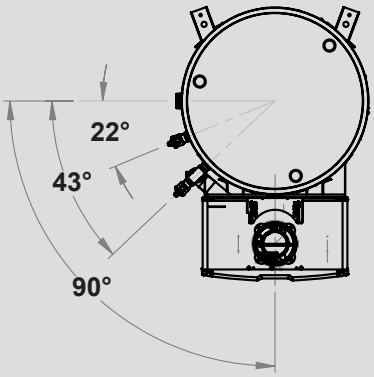


Gas consumption: 211 MJ/h

Output: 55.7 kW

Weights
Empty 90 kg
Full 410 kg

Water pressure
Min. 150 kPa
Max. 850 kPa



Hot water delivery
Raised 25 °C 1700 L/h
Raised 35 °C 1400 L/h
Raised 45 °C 1200 L/h
Raised 50 °C 1100 L/h
Raised 55 °C 1000 L/h

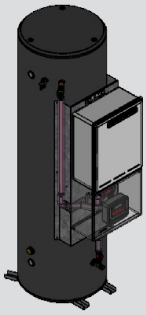
TPR rating: 850 kPa, 99 °C, 46 kW (two valves supplied)

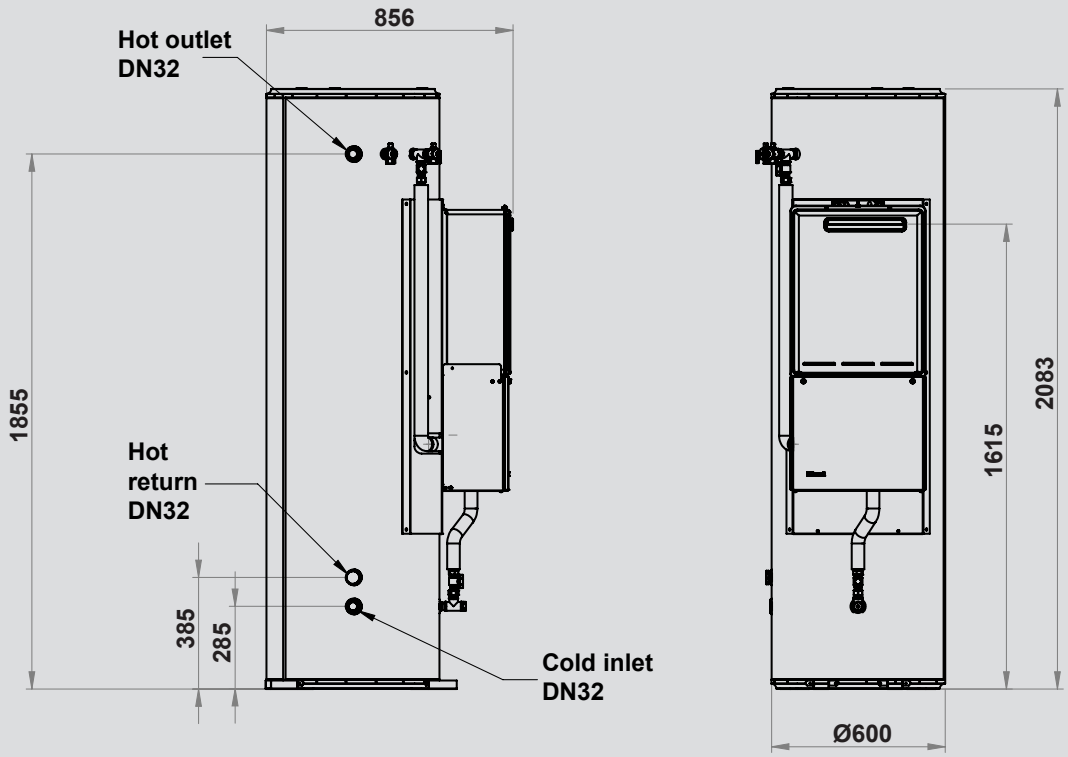
ECV: 700 kPa (not supplied)

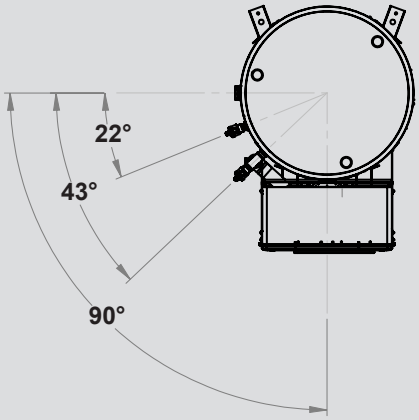
PLV: 500 kPa (not supplied)

INFINITY power consumption
Normal: 92 W (LPG), 72 W (NG), standby: 2.4 W, automatic frost protection: 218 W

DD1250E315 specification







Gas consumption: 249 MJ/h

Output: 57.8 kW

Weights
Empty 90 kg
Full 410 kg

Water pressure
Min. 150 kPa
Max. 850 kPa

Hot water delivery
Raised 25 °C 1700 L/h
Raised 35 °C 1400 L/h
Raised 45 °C 1200 L/h
Raised 50 °C 1100 L/h
Raised 55 °C 1000 L/h

TPR rating: 850 kPa, 99 °C, 46 kW (two valves supplied)

ECV: 700 kPa (not supplied)

PLV: 500 kPa (not supplied)

INFINITY power consumption
Normal: 72 W, standby: 2 W, automatic frost protection: 116 W

Location

System should be installed in accordance with G12 and AS/NZS 3500.4. For servicing and maintenance, please allow sufficient room for access of all components of the system.

Ensure the hot water system is installed in a corrosive free environment and free from chemicals as this could potentially create an atmosphere that attacks the Rinnai INFINITY water heater.

Base requirements
System should be installed in a flat level surface of sufficient strength to support the weight of the Demand Rapid system when full of water.

The frame must be secured to the floor using anchor bolts (not supplied). The water heating system must also be suitably restrained against seismic activity, ‘G12/AS1 Figure 14’.

Access to the system
All components of the system must be installed to ensure access can be gained without hazard or undue difficulty for inspection, repair, replacement, or operational purposes. Sufficient clearances shall allow access to remove all serviceable components.

Where the system is not accessible, the Rinnai warranty will not cover any additional costs caused by access difficulty. The system must be accessible without the use of a ladder or scaffold.

Catch pan
It is important a suitably drained catch pan (or drain system) is fitted where damage could be caused by discharge from the cylinder. This is a mandatory requirement of the installation. If damage is caused by a leaking cylinder that has not been installed with a suitable catch pan and drain system the owner can seek compensation through the installer or consider claiming on insurance.

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

- **Drain lines**
  These must be installed in accordance with AS/NZ 3500 and/or G12/AS1

Rinnai INFINITY flue clearances
Flue clearances must comply with AS/NZS 5601.1.

Demand Rapid systems installed with internal units must use a Rinnai approved flue system.

Condensate drain required for DD1212i315
The Rinnai INFINITY EF internal unit generates condensate continuously as a by-product of a highly efficient gas burner. Provision must be made to drain the condensate to a suitable point of discharge, refer Appendix 1 on p. 22 for more information.

General installation information

Cold water inlet
32 mm fitting on the left hand side of the cylinder, approximately 285 mm above the ground. For ease of draining it is advisable to fit a ‘tee’ piece with a capped valve or drain line between the cold water isolation valve and cold water inlet connection on the cylinder.

Hot water outlet
32 mm fitting on the left hand side of the cylinder. Ensure adequate insulation/lagging is fitted to the hot water pipe to minimise heat loss. Pipe sizing must be sized to allow sufficient water flow to the hot water fixtures.

WARNING

The Demand Rapid will deliver 75 °C water to the plumbing system. Ensure the system components are designed to operate continuously at this temperature.

For installations where the hot water supply temperature must be lower, one of the following plumbing modifications are required.

1. Install a tempering valve between the inlet and outlet of the storage water heater to reduce the temperature.

2. Re-plumb the INFINITY gas water heater to the hot water return connection as shown. This will reduce the hot water temperature being delivered to approximately 70 °C.

Pressure limiting valve
500 kPa maximum

Cold water expansion valve
700 kPa maximum

Cylinder thermostat setting
To meet the New Zealand Building code requirement[1] to disinfect water for legionella bacteria[2], the cylinder thermostat has been set to 65 °C.

1 Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3
2 Legionella is a bacterium that can cause Legionnaires’ disease—a severe form of pneumonia

Delivery temperatures

Sanitary fixture delivery temperatures
Water temperatures over 55 °C can cause severe scalds. Local regulations must be considered regarding temperature limitations of hot water supplied to areas used primarily for personal hygiene. The temperature is limited to 45 °C for early childhood centres, schools, nursing homes or similar facilities, and 55 °C for all other buildings. To comply with these requirements a temperature limiting device, such as a tempering or thermostatic mixing valve will be required on all installations.

Connections

TPR valve(s)
One TPR valve (two for the DD1212 and DD1250), supplied and fitted to a 20 mm fitting near the top of the cylinder.

Relief valve drain lines
Connect an independent 20 mm copper tube relief valve drain line to the TPR valve outlet. Drain should be installed with a continuous fall toward a visible discharge point over a drain or gully in accordance with AS/NZS 3500.4 sections 5.8 and 5.9.

- Drain line should not exceed 9 m in length
- Valves or other restrictions should not be installed with the relief vent line
- TPR valve drain line should not be joined to other drain lines

Gas connection
Check gas type of the Rinnai INFINITY matches the gas supply available on site.

Ensure gas pipe sizing is adequate to deliver the required volume/pressure. The pipe size used on the inlet fitting is no indication of the pipe size required. Refer to appropriate pipe sizing chart in AS/NZS 5601.1.

Gas meter or LPG cylinders and regulator should also be of a suitable size to ensure sufficient gas supply to the gas installation.

Purge gas line and ensure removal of debris prior to final connection. Check for gas leaks using suitable methods as listed in AS/NZS 5601.1

Filling and draining

Do not turn on the pump or system until the cylinder is completely full of water. Damage to the system as a result of not following this instruction will void any warranty.

Filling

1. Flush the cold water inlet pipe to remove any debris before final connection to the cold water inlet of the Demand Duo cylinder.

2. Ease the TPR valve open to expel air while the cylinder is filling with cold water.

3. Slowly open the cold water expansion valve on the cold water supply pipe.

4. Allow the cylinder to fill.

5. Check all connections for water leaks and tighten as required.

6. Prime circulating pump before start up.

7. The thermostat on the Demand Duo cylinder is set to 65 °C and the Rinnai INFINITY is set to 75 °C. If the cylinder thermostat does not appear to be set correctly the thermostat may need to be reprogrammed—contact Rinnai for assistance.

   If hotter water is required the cylinder and the Rinnai INFINITY dip switches will need to be adjusted.

8. Plug 3-core flex into suitably earthed general power outlet (GPO). Turn on power supply. The thermostat will display the current water temperature in the cylinder, the pump should start and the Rinnai INFINITY unit should ignite.

9. The Rinnai INFINITY unit will continue to operate until the thermostat reaches 65 °C. Once the set temperature has been reached the thermostat will turn off the primary circulating pump.

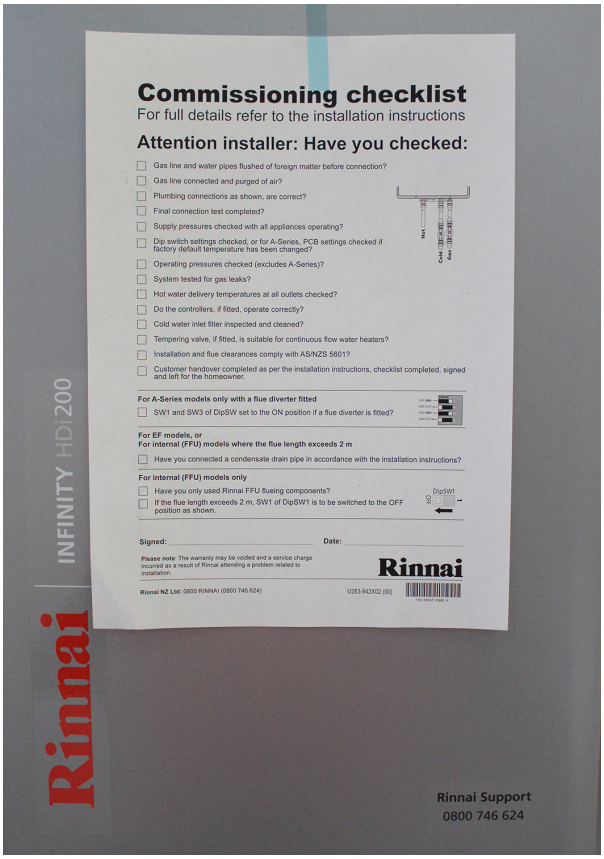
10. When the storage water heater temperature drops below 60 °C the controller switches on the recirculation pump, which ignites the INFINITY to reheat the water.

Draining

1. Isolate power supply to the Demand Rapid system.
2. Close the cold water isolation valve.
3. Ease the TPR valve open to expel air.
4. Remove cap on the cold water drain valve if no drain line is fitted.
5. Connect a hose or something similar to allow water to drain to a safe location.
6. Open cold water drain valve and allow water to drain from the system.

Commissioning

Fill the cylinder as detailed on the previous page, and commission the Rinnai INFINITY in accordance with the commissioning sheet attached to the front cover of each unit.



Limited Warranty
Rinnai Demand Rapid

All terms of the warranty, subject to the conditions below, are effective from the date of first installation. The attending service person reserves the right to verify this by requesting a copy of the gas certificate of compliance prior to commencement of any warranty work. Proof of purchase and installation date will be required at the time of any warranty claim.

Component	Heat exchanger		All other parts	
	Parts	Labour	Parts	Labour
Rinnai INFINITY	5000 hours or three years*	1500 hours or one year*	1500 hours or one year*	1500 hours or one year*

* Whichever comes first

Component	Parts	Labour
Cylinder	Five years	One year
Pump	Two years	One year
Thermostat, controls, valves, pipework	One year	One year

For commercial applications, the water heating system must be sized and installed to written guidelines from Rinnai.

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 period recorded in the table above.

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 the warranty will apply.

Warranty terms and conditions
1. All terms of the warranty are effective from the date of first installation. The attending service person reserves the right to verify this by requesting a copy of the gas certificate of compliance prior to commencement of any warranty work. The installer must issue a certificate of compliance by law in New Zealand. Warranty claims may be invalid if not accompanied by details of the installing or supervising gasfitter's registration number and the gas certification number.
2. All Rinnai hot water systems must be installed, commissioned, serviced, repaired and removed in accordance with the manufacturer's installation instructions, local regulations, and building codes by persons authorised by local regulations to do so.
3. All Rinnai hot water systems must be operated and maintained in accordance with the manufacturer's operating instructions.
4. Servicing of the system is to be carried out by a Rinnai authorised service centre.

Warranty terms and conditions continued

5. The warranty only applied to components supplied by Rinnai. It does not apply to components supplied by others, such as electrical switches and cables, fuses, and where applicable flue systems, but it is not limited to these.

6. Where the appliance has not been sited in accordance with the installation instructions or installed such that normal access is difficult, a service charge will apply. If at the discretion of the attending service person the installation is deemed illegal or access is dangerous, service will be refused. Any work required to gain reasonable access to the appliance will be chargeable by the attending service person (for example, removal of cupboards, doors, walls, or the use of special equipment to move components, but not limited to these).

7. Where the failed component is replaced under warranty, the balance of the original warranty will remain effective.

8. Rinnai reserves the right to transfer functional components from defective appliances if they are suitable.

9. Rinnai reserves the right to have installed product returned to the factory for inspection.

10. Where the system is installed outside the metropolitan area or further than 40 km from a Rinnai authorised service centre, travel costs shall be the owner's responsibility.

Warranty exclusions

The following exclusions may cause the warranty to become void and will result in a service charge and costs of parts (if required).

1. Accidental damage and acts of God.

2. Failure due to abuse or misuse, improper maintenance or improper storage.

3. Failure due to incorrect or unauthorised installations.

4. Failure or damage caused by alterations, service or repair work carried out by persons other than Rinnai service persons or service centres.

5. Where the system has failed directly or indirectly as a result of poor water quality outside the limits specified.

TDS (Total Dissolved Solids)	Total hardness $CaCO_3$	Alkalinity (as $CaCO_3$)	Dissolved (free) CO_2	pH	Chlorides	Magnesium	Sodium	Iron	Langelier Index
Up to 600 mg/L or ppm	Up to 200 mg/L or ppm	Up to 200 mg/L or ppm	Up to 25 mg/L or ppm	6.5-8.5	Up to 300 mg/L or ppm	Up to 10 mg/L or ppm	Up to 150 mg/L or ppm	Up to 1 mg/L or ppm	Between -1.0-0.8

6. Where it is found that there is no fault with the appliance and the issue is related to the installation or is due to failure of electric or gas supplied.

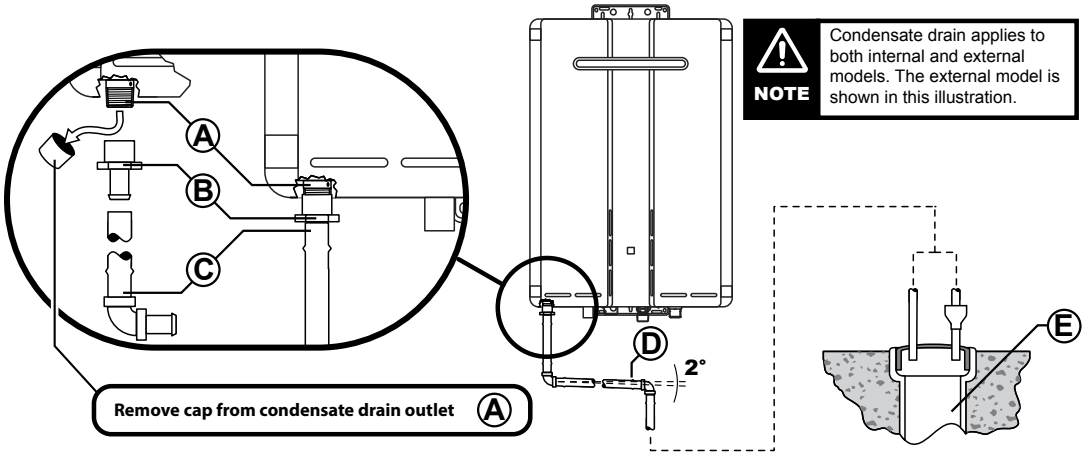
7. Subject to any statutory provisions to the contrary, Rinnai does not accept
   a. liability for consequential damage or incidental expenses resulting from any breach of the warranty.

   b. claims for damage to building or any other consequential loss either directly or indirectly due to leaks from the appliance or any other faults.

Appendix 1: Condensate

The Rinnai INFINITY condensing water heaters generate condensate continuously at a rate of up to 5 litres per hour as a by-product of a highly efficient gas burner. This condensate must be drained via a pipe to a suitable point of discharge. As condensate is a by-product of gas combustion it is mildly acidic. For this reason copper tube MUST NOT be used as it will corrode. Instead Rinnai recommend plastic pipes and fittings.

Important considerations for the condensate drain pipe
The content of AS/NZS 3500 ' Temperature / Pressure Relief and Expansion Control Valve Drain Lines' has been used as a guide in preparing the information below.



A. Water heater drain outlet connection, R½" (15 mm) BSP male. Condensate drain outlet connection, ½" (15 mm) BSP male nylon.

N.B: The black plastic shipping cap MUST BE removed from the condensate drain outlet prior to water heater operation.

B. PE R½" BSP (15 mm) female to barbed irrigation system connector (13-19 mm) or equivalent plastic fitting[1].

C. Drain pipe and fittings to match B.

D. Continuous fall of at least 2° from water heater to discharge point. Lengths and bends in accordance with the table below.

Lengths and changes of direction				
Max. length (m)	9	8	7	6
Max. changes of direction greater than 45°	3	4	5	6

E. Suitable points of discharge are deemed to be drains, sewers or pits. DO NOT discharge onto electrical connections, earth stakes, copper pipes, concrete paths or into a pond.

Installation
The drain line MUST NOT discharge onto electrical connections, earth stakes, copper pipes, concrete paths or into a pond.

The point of discharge from each drain line shall be located so that the release of condensate does not cause a nuisance, is readily discernible and incurs no risk of damage to the building.

There shall be no tap, valve or other restrictions in any line.

Each line shall fall continuously from the valve to the approved point of discharge.

Drain lines shall not discharge into a storage water heater safe tray.

The end of the condensate line shall be:
- Not lower than 200 mm or higher than 300 mm above an unpaved surface; or
- Not lower than 75 mm, or higher than 300 mm above a gravel pit not less than 100 mm in diameter in a paved surface.
- Where discharging over a tundish or gully trap, drain lines shall have an air gap of a size at least twice the diameter of the drain line.

[1] Non-PE plastics will fail over time due to contact with the acidic condensate. Damage caused by installation of non-PE plastics will not be covered by warranty.

Interconnection of condensate drain lines
Condensate drain lines from multiple water heaters may be joined together provided they conform with the requirements detailed on the previous page.

Common stack discharge
Where individual water heaters are installed in a multi-storey building, the condensate drain lines may discharge into a common stack, subject to the following:

- The discharge from the common stack is to a tundish, having a discharge line, that is not less than the size of the common stack, directly connected to a fixture trap, and installed in connection with any adjacent soil or waste stack.

- The discharge point of the common stack is such that any discharge is readily visible and will not cause any nuisance.

- The common stack is vented by extending the pipe upwards, above the roof level.

Tundish drain lines
The drain line from any tundish shall not be less than DN 20 or less than one size larger than that of the largest drain line discharging into a tundish. Tundish drain lines shall comply with the requirements detailed on the previous page.

Areas subject to freezing
In areas where water pipes are prone to freezing, the drain pipe from any valve shall be insulated and not exceed 300 mm in length. It shall discharge into a tundish through an air gap of not less than 75 mm and not more than 150 mm measured from the outlet of the drain pipe to the rim of the tundish.

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