

Demand Duo | Specification Guide



Rinnai

What is a Demand Duo?



A Rinnai Demand Duo is a combination of Heavy Duty Continuous Flow Water Heaters that maintain the temperature in a heavily insulated grade of 444 Stainless Steel storage tank. The storage tank acts as a hydraulic separator between the primary and secondary loop of the Hot Water System whilst balancing the pressure between the cold and hot water.

Demand Duos are designed and made in Australia (HD water heaters manufactured in Japan) and backed by Rinnai's global commitment to quality.

How does it work?

As a complete packaged storage hot water system a Demand Duo is made up of one or more HD water heaters Manifoldd in parallel, primary pump(s), controller and a 444 grade Stainless Steel Storage tank.

The inbuilt controller detects the temperature of the water in the tank and when it drops below the set value, the primary pump is activated. This flow in turn activates the Continuous Flow HD Water Heater(s) which returns heated water to the tank.

Packages are available in standard customisable form or as a complete engineered system mounted on a skid base. Both are supplied in modular form for ease of installation and transport. In a Single Lift scenario it will not be transported in modular form.

What are the key benefits?

- A short period of high hot water flow rate
- Various Heavy Duty Continuous Flow heater options available
- 444 Stainless Steel Storage Tanks with 250L and 315L storage volumes
- Option of 32mm or 50mm plumbing connections on storage tanks to cater for higher flow rates
- Heat source can be located away from the tank to suit installation requirements per project
- Modular construction for ease of installation and transport
- Perfect for projects with a limited gas supply
- External or internal units available
- A single HD water heater Demand Duo (DD1) is a stand-alone appliance for ease of installation which is perfect for quick replacements
- Single Lift option of the heat source, primary pump(s) and controller(s) for fast site installation
- Dual Primary Pump(s) and Control System(s) available in back to back systems.
- Innovative controller with push button interface and LCD display

What are suitable applications?

- Hotels and Motels
- Apartment Blocks
- Student Accommodation
- Variety of other applications where a quick recovery rate is required
- Shower Blocks
- Commercial Kitchens
- Commercial Laundries

Heart of the system

Our Heavy Duty Continuous Flow range of water heaters are specifically designed for commercial use with inbuilt intelligence and durability to stand the test of time in the harshest of commercial environments. With various efficiency and flow rate options available Rinnai can provide the perfect solution based on your application, whether internally or externally mounted. Generally, projects with very high energy costs would benefit from the use of our HD210 higher efficiency condensing technology as the increased capital expenditure is absorbed by the annual energy cost savings.

Heavy Duty Non Condensing (83% Thermal Efficiency)



HD28E
28l/min



HD28I
28l/min



HD250E
32 L/Min

Heavy Duty Condensing (97% Thermal Efficiency)



HD210E
32 L/Min



HD210i
32 L/Min

Demand Duo Standard Options

How are standard packages supplied?

Demand Duo is available in a wide variety of options to suit your budget. These various forms offer installation flexibility or a complete package resulting in no plumbing or installation work being required. From an integrated Demand Duo with one heater to multiple tanks with multiple heaters there is a solution that can easily be selected to streamline your project.

Integrated Demand Duo 1 gas storage option

Replacement of an existing gas storage heater is made simple with our Demand Duo 1 unit. Lightweight yet robust construction allows for easy transportation into those hard to get to places while offering many years of consistent hot water. Your choice of HD water heater is integrated with our long lasting stainless-steel tank making it lighter than most other commercial grade gas storage options available. The smallest unit available with a 250L tank and HD28 weighs in at approximately 100 kgs.



Demand Duo using multiple HD's

If your project has a large hot water demand where high peak flow rates are expected then selecting a Demand Duo with multiple water heaters is ideal. A modular system using a stainless steel storage tank will cater for this hot water load. Installation is made easy with our three options under the Demand Duo range available – whether it's a retrofit project or a complete package you're looking for we have the solution.

Demand Duo

The tried and tested Demand Duo, that has widely become accepted as the go-to product for centralised hot water systems, is supplied in a modular form being split into 3 major components.

1. Stainless Steel Storage Tank(s)
2. Primary activation pump(s) and required fittings
3. Heat source (using the HD water heaters of your choice) with integrated intelligent controller

The heat source is bundled in modules for ease of transportation to the installation site which is ideal for those upgrade projects to replace existing outdated hot water plants.

When working in a tight space, particularly an internal plant room, the flexibility of this Demand Duo system will allow a solution to be designed that could even be installed in stages to minimise interruption to hot water supply.

Demand Duo Plus

As a relatively new addition to the range the Demand Duo Plus is also supplied in modules but in a slightly different format being split into 2 major components reducing on-site installation time.

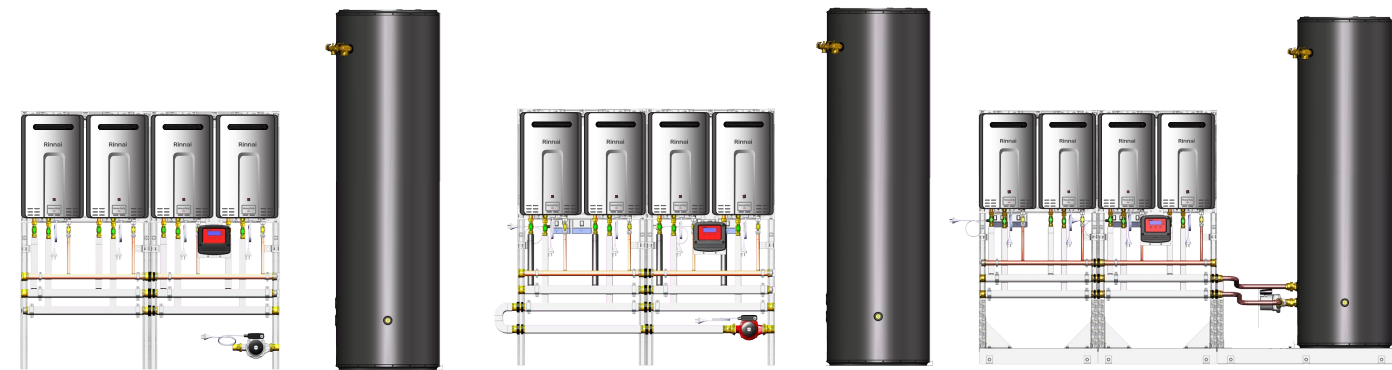
1. Stainless Steel Storage Tank(s)
2. Heat source (using the HD Water Heaters of your choice) with integrated intelligent controller and primary activation pump

The heat source is also bundled in modules for ease of transportation but with additional features to save valuable assembly time. The primary activation pump(s) is pre-mounted and appropriately plumbed, including insulation, with the added inclusion of electrical GPO's for the water heaters and the intelligent controller.

Demand Duo Pro

The Demand Duo Pro is the ultimate hot water package that removes all the worry of assembling modules on site effectively removing all on-site installation time. It is uniquely designed to be sited in position with minimal fuss as all plumbing, insulation and electrical work is provided.

The complete package is engineered to suit your project requirements and mounted on a suitably robust skid base. All you need to do is connect your pipework, plug it in to an electrical outlet and away you go!



Solutions and Accessories

Rinnai can offer a customised solution with a high focus on your core deliverables. The aesthetic appearance of developments is paramount. We can tailor solutions to suit your business, bespoke systems can be constructed to suit specific requirements including (but not limited to) lower frame size, precise wall mounting application or different size pipework. Rinnai's Commercial Hot Water Solutions match minimum height requirements, are modular and compact, and can be easily integrated into the building, with easy access for future serviceability. To compliment this, we have an extensive range of accessories.

Accessories

- 315L Horizontal Storage Tank with 32mm plumbing connections
- Single circulation pumps for reticulation systems
- Dual circulation pumps for reticulation systems with intelligent controller packed with features
- Building Management System (BMS) integration
- Common flueing for internal installations
- Centralised Warm Water Management Valve
- Legionella control devices
- Heat exchange systems offering flexibility in design of pressure zones or water quality management
- Remote monitoring systems to manage your hot water plants from anywhere at anytime
- Non-modular packages with engineered frame and lifting points for easy hoisting and placement on site



Large Pumpset



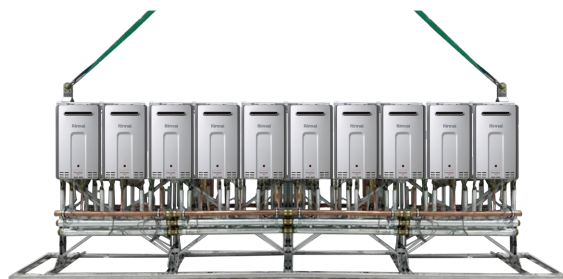
Pump Plate



Heat Exchange Systems



Horizontal Tank



Large MP Lifting with engineered frame



Tradewinds Cairns | QLD Riley Crystalbrook Resort

Crystalbrook Collection embarked on developing its first five-star hotel, Riley, A Crystalbrook Collection Resort. Located at the northern end of Cairns iconic waterfront Esplanade, the resort features 311 rooms and suites, three restaurants and bars, an expansive lagoon pool and private beach, the Elème Day Spa and much more.

Rinnai provided two Demand Duo Systems using high efficiency condensing Heavy Duty Water Heaters split over 2 plants. One of which was specifically designed on a low frame to suit the stringent design constraints.

Skye Suites | NSW

A striking new 25-storey high rise, with 73 suites for guests it was designed by the Tokyo-born Sydney architect Koichi Takada. At street level, Arc presents as a handsome 19th-century warehouse, its red-brick columns holding up elegant arches. Twin towers above are topped with arched ribs that look from a distance like white armadillo shells.

Rinnai provided a complex mixture of four Demand Duo systems using Heavy Duty Water Heaters. Common flue was a key feature to minimise the aesthetic impact on the building's exterior which is often the case with multiple flue terminals.



City West Police Complex | VIC

In a prime location on Spencer Street in Melbourne's CBD the brief for this brand new state of the art police station was quite specific – construct to exacting security standards but with a 5 star green energy rating.

The internal hot water plant was very specific with two sources of preheated water (to save on fuel costs) and a maximum allowable water temperature to be circulated around the building. Using our Warm Water valve as the basis Rinnai was able to design and construct a complex safety and preheat blending valve system.

Selecting a Demand Duo System

What information do I need?

The following information is required to select a Demand Duo System:

- Delivery temperature required. The available temperatures are 65°C - 82°C in 1°C increments
- Volume of hot water used per event (i.e. people having a shower)
- Number of times this event occurs (i.e. 6 uses of each shower head per hour)
- Internal or external installation (i.e. whether a flue system is required)

A Demand Duo is selected based on the volume of water used per event multiplied by the number of events that occur. This is calculated over a set period of time which is usually one hour.

With our predetermined sizing criteria its never been easier to determine the first hour hot water demand and select the appropriate system.

Apartments

1 bedroom unit = 45 litres in the first hour
2 bedroom unit = 75 litres in the first hour
3 bedroom unit = 105 litres in the first hour

Amenities

Each shower outlet = 27 litres per shower with a maximum of 6 showers per hour

Note: For constant usage showers (sporting clubs as an example) a Rinnai Manifold Pack would be a better option.

Hotel

1 bed in a 1-3 star Hotel = 22 litres in the first hour
1 bed in a 4-5 star Hotel = 35 litres in the first hour
Note: This allows for showers, meals and laundry

Example:

An apartment block in Melbourne consisting of 40 apartments with 2 bedrooms and 10 apartments with 1 bedroom requires hot water at a delivery temperature of 65°C:

1. Calculate the hot water demand for the 2 bedroom apartments = 40 x 75 litres = 3000 litres
2. Calculate the hot water demand for the 1 bedroom apartments = 10 x 45 litres = 450 litres
3. Once you have arrived at the total first hour requirement, 3450 litres in this instance you can select your system
4. Determine which HD heat source you wish to employ and refer to the tables below to select a system. Using a HD28 external in this example the resulting selection is DD4 28 250



Demand Duo systems using HD28 Heaters for internal or external applications							
Apartments	Apartments	Hotel	Amenities	First Hour	Recovery Rate	Model	Gas Rate MJ/H
No. of 2 Bedrooms	No. of 2&3 Bedrooms	No.of Beds (3 Star)	No. of Showers	L/H 50°C rise	L/H 50°C rise		
15	12	50	7	1110	835	DD128 250	210
16	13	53	7	1170	835	DD128 315	210
26	22	88	12	1940	1670	DD 2 28 250	420
27	22	91	12	2000	1670	DD 2 28 315	420
37	31	126	17	2775	2505	DD 3 28 250	630
38	32	129	18	2835	2505	DD 3 28 315	630
48	40	164	22	3610	3340	DD 4 28 250	840
49	41	167	23	3670	3340	DD 4 28 315	840
59	49	202	27	4445	4175	DD 5 28 250	1050
60	50	205	28	4505	4175	DD 5 28 315	1050
70	59	240	33	5280	5010	DD 6 28 250	1260
71	59	243	33	5340	5010	DD 6 28 315	1260
82	68	278	38	6115	5845	DD 7 28 250	1470
82	69	281	38	6175	5845	DD 7 28 315	1470
96	80	328	45	7220	6680	DD 8 28 500	1680
98	82	334	45	7350	6680	DD 8 28 630	1680
107	90	366	50	8055	7515	DD 9 28 500	1890
109	91	372	51	8185	7515	DD 9 28 630	1890
119	99	404	55	8890	8350	DD 10 28 500	2100
120	100	410	56	9020	8350	DD 10 28 630	2100

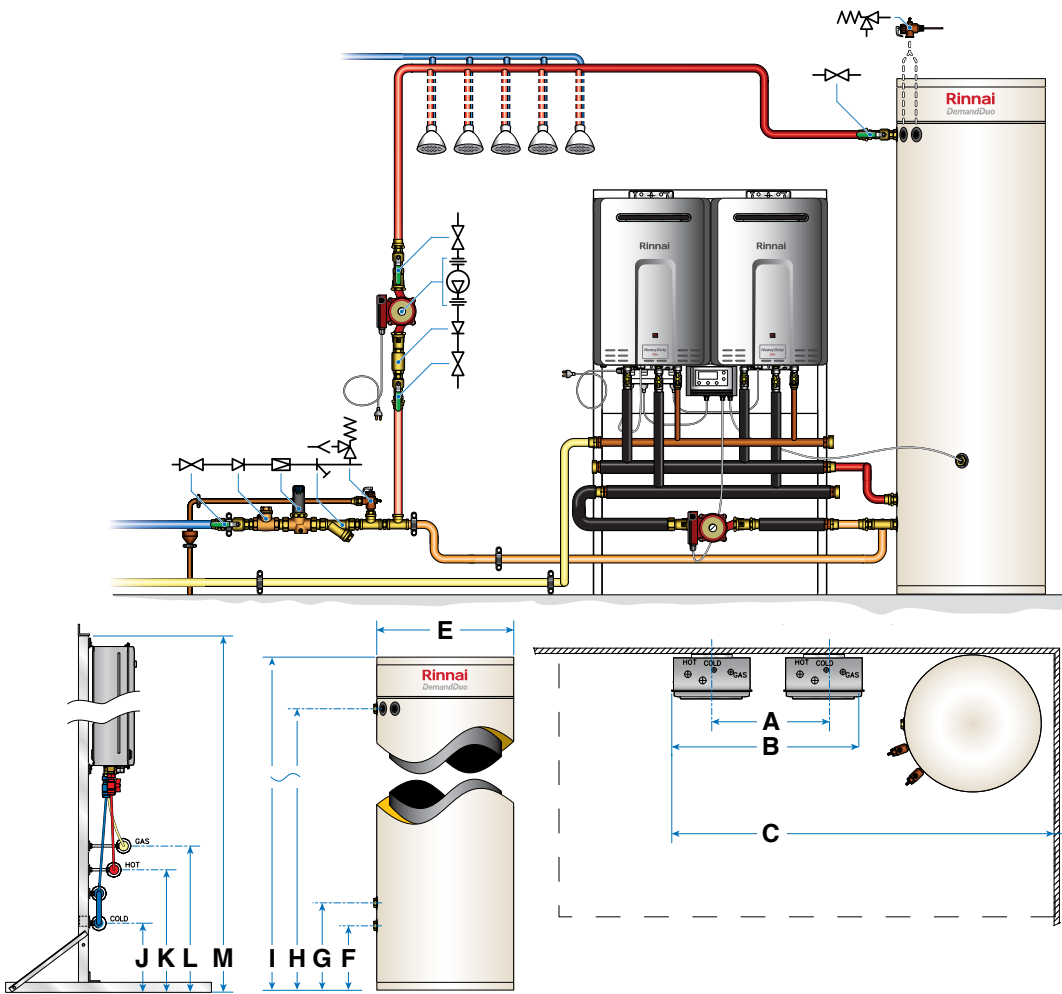
Output calculated on an incoming water temperature of 15°C.

Demand Duo systems using HD250E Heaters for external applications							
Apartments	Apartments	Hotel	Amenities	First Hour	Recovery Rate	Model	Gas Rate MJ/H
No. of 2 Bedrooms	No. of 2&3 Bedrooms	No.of Beds (3 Star)	No. of Showers	L/H 50°C rise	L/H 50°C rise		
17	14	59	8	1290	1015	DD 1250E 250	250
18	15	61	8	1350	1015	DD 1250E 315	250
31	26	105	14	2310	2035	DD 2 250E 250	500
32	26	108	15	2370	2035	DD 2 250E 315	500
44	37	151	21	3325	3055	DD 3 250E 250	750
45	38	154	21	3390	3055	DD 3 250E 315	750
58	48	198	27	4345	4075	DD 4 250E 250	1000
59	49	200	27	4405	4075	DD 4 250E 315	1000
72	60	244	33	5365	5090	DD 5 250E 250	1250
72	60	247	33	5425	5090	DD 5 250E 315	1250
85	71	290	39	6385	6110	DD 6 250E 250	1500
86	72	293	40	6445	6110	DD 6 250E 315	1500
99	82	337	46	7405	7130	DD 7 250E 250	1750
100	83	339	46	7465	7130	DD 7 250E 315	1750
116	97	395	54	8695	8325	DD 8 250E 500	2000
109	91	370	50	8150	8325	DD 8 250E 630	2000
129	108	441	60	9710	9170	DD 9 250E 500	2250
131	109	447	61	9835	9170	DD 9 250E 630	2250
143	119	488	66	10730	10190	DD 10 250E 500	2500
145	121	493	67	10855	10190	DD 10 250E 630	2500

Output calculated on an incoming water temperature of 15°C.

Demand Duo systems using HD210E/i Condensing Heaters for external or internal applications							
Apartments	Apartments	Hotel	Amenities	First Hour	Recovery Rate	Model	Gas Rate MJ/H
No. of 2 Bedrooms	No. of 2&3 Bedrooms	No.of Beds (3 Star)	No. of Showers	L/H 50°C rise	L/H 50°C rise		
16	14	56	8	1225	955	DD 1 210 250	210
17	14	59	8	1290	955	DD 1 210 315	210
29	24	99	13	2185	1910	DD 2 210 250	420
30	25	102	14	2245	1910	DD 2 210 315	420
42	35	143	19	3140	2870	DD 3 210 250	630
43	36	146	20	3205	2870	DD 3 210 315	630
55	46	186	25	4100	3825	DD 4 210 250	840
55	46	189	26	4160	3825	DD 4 210 315	840
67	56	230	31	5055	4785	DD 5 210 250	1050
68	57	233	32	5115	4785	DD 5 210 315	1050
80	67	273	37	6010	5740	DD 6 210 250	1260
81	68	276	38	6075	5740	DD 6 210 315	1260
93	77	317	43	6970	6700	DD 7 210 250	1470
94	78	320	43	7030	6700	DD 7 210 315	1470
109	91	373	51	8200	7655	DD 8 210 500	1680
111	93	378	51	8325	7655	DD 8 210 630	1680
122	102	416	57	9155	8615	DD 9 210 500	1890
124	103	422	57	9280	8615	DD 9 210 630	1890
135	112	460	62	10115	9570	DD 10 210 500	2100
136	114	465	63	10235	9570	DD 10 210 630	2100

Specifications



HD28 External/Internal Demand Duo														
Model	A	B	C	E	F	G	H	I	J	K	L	M	Dry Weight	No. Of Tanks
DD2 28 250	375	750	1600	600	285	385	1465	1690	260	440	540	1500	120 Kg	1
DD2 28 315	375	750	1600	600	285	385	1855	2080	260	440	540	1500	132 Kg	1
DD3 28 250	375	1125	1925	600	285	385	1465	1690	260	440	540	1500	150 Kg	1
DD3 28 315	375	1125	1925	600	285	385	1855	2080	260	440	540	1500	162 Kg	1
DD4 28 250	375	1500	2350	600	285	385	1465	1690	260	440	540	1500	180 Kg	1
DD4 28 315	375	1500	2350	600	285	385	1855	2080	260	440	540	1500	192 Kg	1
DD5 28 250	375	1875	2725	600	285	385	1465	1690	260	440	540	1500	210 Kg	1
DD5 28 315	375	1875	2725	600	285	385	1855	2080	260	440	540	1500	222 Kg	1
DD6 28 250	375	2250	3100	600	285	385	1465	1690	260	440	540	1500	240 Kg	1
DD6 28 315	375	2250	3100	600	285	385	1855	2080	260	440	540	1500	252 Kg	1
DD7 28 250	375	2625	3475	600	285	385	1465	1690	260	440	540	1500	270 Kg	1
DD7 28 315	375	2625	3475	600	285	385	1855	2080	260	440	540	1500	282 Kg	1
DD8 28 500	375	3000	4700	600	285	385	1465	1690	260	440	540	1500	370 Kg	2
DD8 28 630	375	3000	4700	600	285	385	1855	2080	260	440	540	1500	394 Kg	2
DD9 28 500	375	3375	5075	600	285	385	1465	1690	260	440	540	1500	400 Kg	2
DD9 28 630	375	3375	5075	600	285	385	1855	2080	260	440	540	1500	424 Kg	2
DD10 28 500	375	3750	5450	600	285	385	1465	1690	260	440	540	1500	430 Kg	2
DD10 28 630	375	3750	5450	600	285	385	1855	2080	260	440	540	1500	454 Kg	2
DD11 28 500	375	4125	5825	600	285	385	1465	1690	260	440	540	1500	460 Kg	2
DD11 28 630	375	4125	5825	600	285	385	1855	2080	260	440	540	1500	484 Kg	2
DD12 28 500	375	4500	6200	600	285	385	1465	1690	260	440	540	1500	490 Kg	2
DD12 28 630	375	4500	6200	600	285	385	1855	2080	260	440	540	1500	514 Kg	2

HD250 External Demand Duo														
Model	A	B	C	E	F	G	H	I	J	K	L	M	Dry Weight	No. Of Tanks
DD2 250 250	500	1000	1850	600	285	385	1465	1690	260	440	540	1500	143 Kg	1
DD2 250 315	500	1000	1850	600	285	385	1855	2080	260	440	540	1500	155 Kg	1
DD3 250 250	500	1500	2350	600	285	385	1465	1690	260	440	540	1500	183 Kg	1
DD3 250 315	500	1500	2350	600	285	385	1855	2080	260	440	540	1500	195 Kg	1
DD4 250 250	500	2000	2850	600	285	385	1465	1690	260	440	540	1500	228 Kg	1
DD4 250 315	500	2000	2850	600	285	385	1855	2080	260	440	540	1500	240 Kg	1
DD5 250 250	500	2500	3350	600	285	385	1465	1690	260	440	540	1500	268 Kg	1
DD5 250 315	500	2500	3350	600	285	385	1855	2080	260	440	540	1500	280 Kg	1
DD6 250 250	500	3000	3850	600	285	385	1465	1690	260	440	540	1500	308 Kg	1
DD6 250 315	500	3000	3850	600	285	385	1855	2080	260	440	540	1500	320 Kg	1
DD7 250 250	500	3500	4350	600	285	385	1465	1690	260	440	540	1500	348 Kg	1
DD7 250 315	500	3500	4350	600	285	385	1855	2080	260	440	540	1500	360 Kg	1
DD8 250 500	500	4000	5700	600	285	385	1465	1690	260	440	540	1500	450 Kg	2
DD8 250 630	500	4000	5700	600	285	385	1855	2080	260	440	540	1500	474 Kg	2
DD9 250 500	500	4500	6200	600	285	385	1465	1690	260	440	540	1500	490 Kg	2
DD9 250 630	500	4500	6200	600	285	385	1855	2080	260	440	540	1500	514 Kg	2
DD10 250 500	500	5000	6700	600	285	385	1465	1690	260	440	540	1500	530 Kg	2
DD10 250 630	500	5000	6700	600	285	385	1855	2080	260	440	540	1500	554 Kg	2
DD11 250 500	500	5500	7200	600	285	385	1465	1690	260	440	540	1500	570 Kg	2
DD11 250 630	500	5500	7200	600	285	385	1855	2080	260	440	540	1500	594 Kg	2
DD12 250 500	500	6000	7700	600	285	385	1465	1690	260	440	540	1500	610 Kg	2
DD12 250 630	500	6000	7700	600	285	385	1855	2080	260	440	540	1500	634 Kg	2

HD210 External/Internal Demand Duo														
Model	A	B	C	E	F	G	H	I	J	K	L	M	Dry Weight	No. Of Tanks
DD2 210 250	500	1000	1850	600	285	385	1465	1690	260	440	540	1500	160 Kg	1
DD2 210 315	500	1000	1850	600	285	385	1855	2080	260	440	540	1500	172 Kg	1
DD3 210 250	500	1500	2350	600	285	385	1465	1690	260	440	540	1500	205 Kg	1
DD3 210 315	500	1500	2350	600	285	385	1855	2080	260	440	540	1500	217 Kg	1
DD4 210 250	500	2000	2850	600	285	385	1465	1690	260	440	540	1500	250 Kg	1
DD4 210 315	500	2000	2850	600	285	385	1855	2080	260	440	540	1500	262 Kg	1
DD5 210 250	500	2500	3350	600	285	385	1465	1690	260	440	540	1500	295 Kg	1
DD5 210 315	500	2500	3350	600	285	385	1855	2080	260	440	540	1500	307 Kg	1
DD6 210 250	500	3000	3850	600	285	385	1465	1690	260	440	540	1500	340 Kg	1
DD6 210 315	500	3000	3850	600	285	385	1855	2080	260	440	540	1500	352 Kg	1
DD7 210 250	500	3500	4350	600	285	385	1465	1690	260	440	540	1500	385 Kg	1
DD7 210 315	500	3500	4350	600	285	385	1855	2080	260	440	540	1500	397 Kg	1
DD8 210 500	500	4000	5700	600	285	385	1465	1690	260	440	540	1500	490 Kg	2
DD8 210 630	500	4000	5700	600	285	385	1855	2080	260	440	540	1500	514 Kg	2
DD9 210 500	500	4500	6200	600	285	385	1465	1690	260	440	540	1500	535 Kg	2
DD9 210 630	500	4500	6200	600	285	385	1855	2080	260	440	540	1500	559 Kg	2
DD10 210 500	500	5000	6700	600	285	385	1465	1690	260	440	540	1500	580 Kg	2
DD10 210 630	500	5000	6700	600	285	385	1855	2080	260	440	540	1500	604 Kg	2
DD11 210 500	500	5500	7200	600	285	385	1465	1690	260	440	540	1500	625 Kg	2
DD11 210 630	500	5500	7200	600	285	385	1855	2080	260	440	540	1500	649 Kg	2
DD12 210 500	500	6000	7700	600	285	385	1465	1690	260	440	540	1500	670 Kg	2
DD12 210 630	500	6000	7700	600	285	385	1855	2080	260	440	540	1500	694 Kg	2

All dimensions current at time of going to print. Rinnai reserves the right to make changes in-line with product improvements

Order Information

Ordering a Demand Duo could not be any simpler

For example a Demand Duo built to our Premium PLUS range with 3 x HD210E heaters with a 315L tank using Natural Gas would be **DDPL3210E315N**.

Demand Duo	Demand Duo Options	Number of HD's	Model / Internal / External	Tank Size	Gas Type	Demand Duo Pro
• DD (Demand Duo)	• Blank (DD1 Only) • F (Demand Duo) • PL (Demand Duo Plus)	• HD Quantity	• 250E (HD250 ext.) • 210E (HD210 ext.) • 210i (HD210 int.) • 28E (HD28 ext.) • 28i (HD28 int.)	• 250 (250L tank) • 315 (315L tank) • 500 (2x 250L tanks) • 630 (2x 315L tanks)	• N (NG) • L (LPG)	• Blank • SS (Demand Duo Pro)

Note: The Demand Duo with one heater is an integrated unit so the PLUS and PRO designs are not relevant in the order code so leave these blank

Warranty Info

Warranty	Domestic Use	Commercial Use
Heavy Duty Continuous Flow	12 Years (heat exchanger)	5 Years (heat exchanger)
Storage Cylinder	10 Years	5 Years
Common flue	N/A	3 Years

Rinnai Australia Pty Ltd

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TOTAL HOME COMFORT



HOT WATER



HEATING



COOLING

Rinnai