

Rinnai



Demand Duo

Specification Guide

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 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 Manifolded in parallel, primary pump(s), controller and a 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
- Vitreous Enamel coated tanks with 270L, 330L and 440L storage volumes
- Large plumbing connections on storage tanks to cater for high 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 HDC32 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
28 L/Min



HD28I
28 L/Min



HD32E
32 L/Min

Heavy Duty Condensing (97% Thermal Efficiency)



HDC32E
32 L/Min



HDC32I
32 L/Min

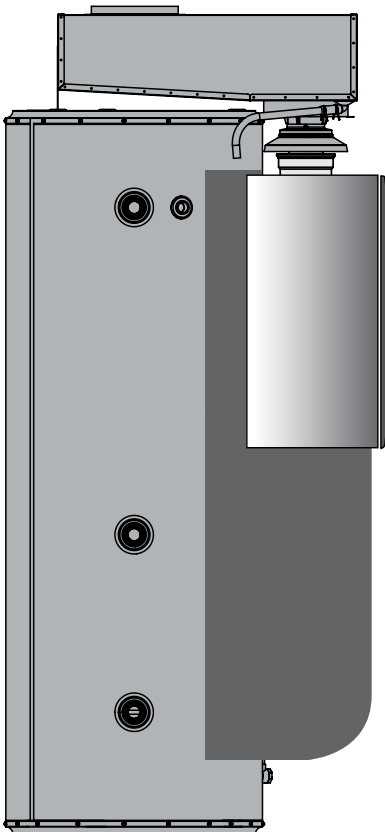
Demand Duo Standard Options

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 can be integrated with either a vitreous enamel or Stainless steel storage tank offering flexibility of choice to suit all applications and water quality restrictions. The smallest unit available using a Stainless Steel 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 one or more storage tanks 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. 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.

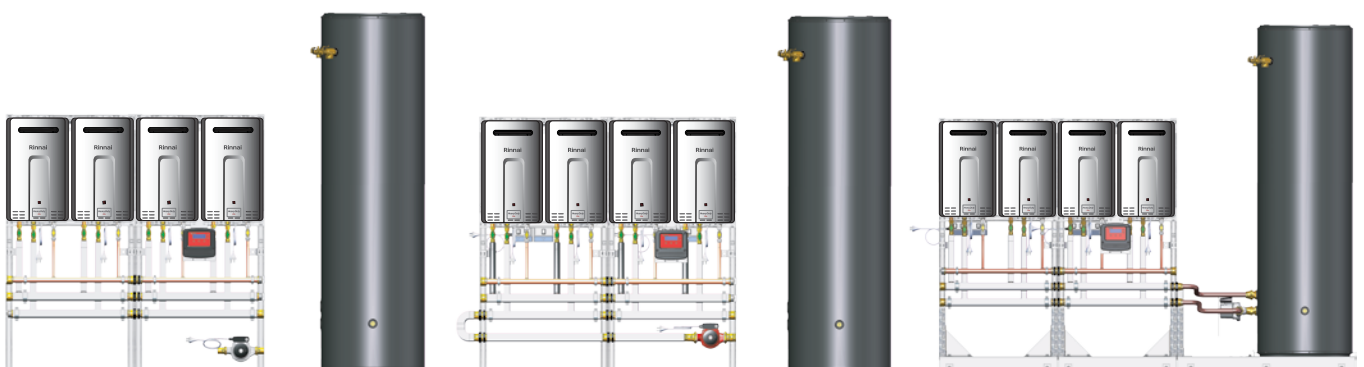
1. Storage Tank(s)
2. Heat source (using the HD Water Heaters of your choice) with integrated intelligent controller and primary activation pump

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



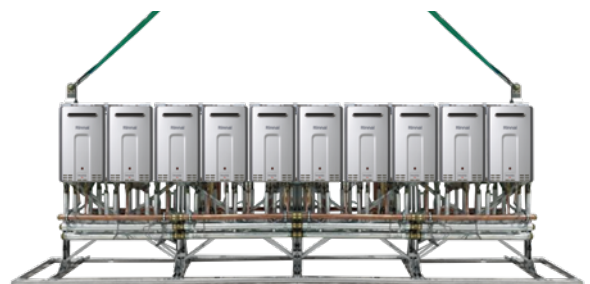
Pump Plate



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 Eléme 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 it's 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:

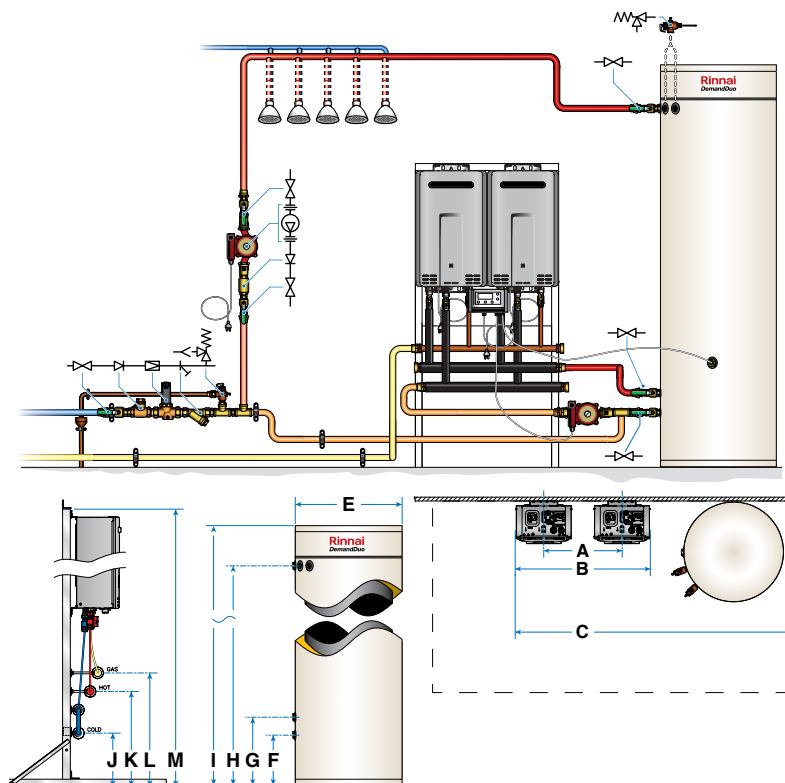
An apartment block in Melbourne consisting of 40 apartments with 2 bedrooms and 10 apartments with 1 bedroom requires hot water at a delivery temperature of 65°C:

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

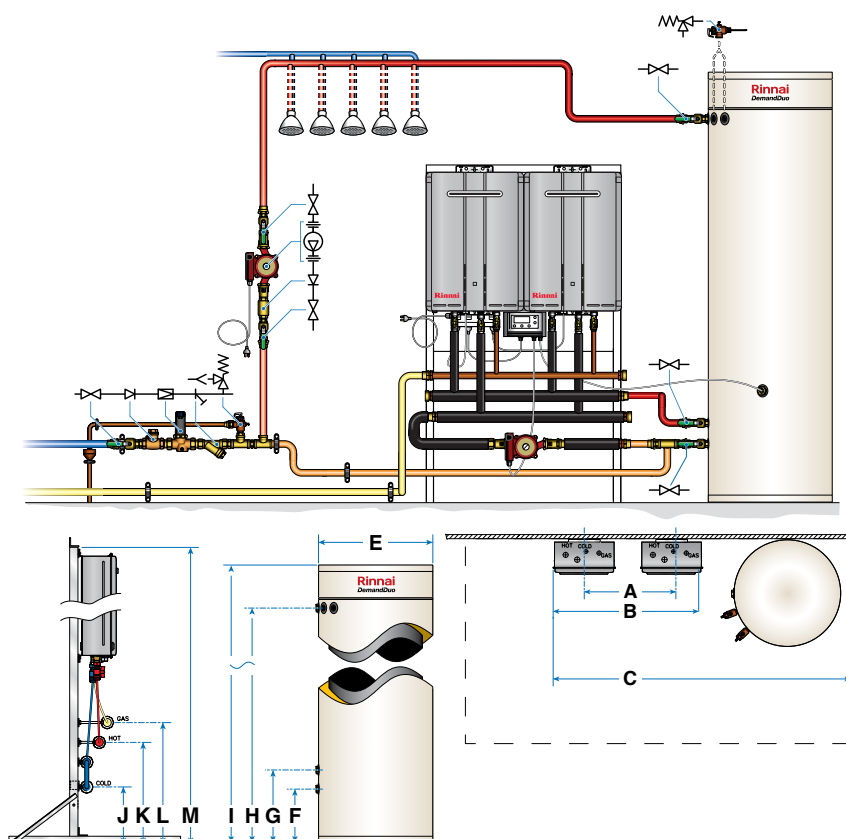


Specifications

Typical Installation for Demand Duo



Typical Installation for Demand Duo Plus



Non condensing HD28 external/internal							
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	Litres/Hour (50°C rise)	Litres/Hour (50°C rise)		
15	12	50	7	1110	835	DD128 250/270	210
16	13	53	7	1170	835	DD128 315/330	210
26	22	88	12	1940	1670	DD 2 28 250/270	420
27	22	91	12	2000	1670	DD 2 28 315/330	420
28	23	96	13	2110	1670	DD2 28 420/440	420
37	31	126	17	2775	2505	DD 3 28 250/270	630
38	32	129	18	2835	2505	DD 3 28 315/330	630
39	33	134	18	2945	2505	DD3 28 420/440	630
48	40	164	22	3610	3340	DD 4 28 250/270	840
49	41	167	23	3670	3340	DD 4 28 315/330	840
50	42	172	23	3780	3340	DD4 28 420/440	840
59	49	202	27	4445	4175	DD 5 28 250/270	1050
60	50	205	28	4505	4175	DD 5 28 315/330	1050
62	51	210	28	4615	4175	DD5 28 420/440	1050
70	59	240	33	5280	5010	DD 6 28 250/270	1260
71	59	243	33	5340	5010	DD 6 28 315/330	1260
73	61	248	34	5450	5010	DD6 28 420/440	1260
82	68	278	38	6115	5845	DD 7 28 250/270	1470
82	69	281	38	6175	5845	DD 7 28 315/330	1470
84	70	286	39	6285	5845	DD7 28 420/440	1470
96	80	328	45	7220	6680	DD 8 28 500/540	1680
98	82	334	45	7340	6680	DD 8 28 630/660	1680
101	84	344	47	7560	6680	DD8 28 840/880	1680
107	90	366	50	8055	7515	DD 9 28 500/540	1890
109	91	372	50	8175	7515	DD 9 28 630/660	1890
112	93	382	52	8395	7515	DD9 28 840/880	1890
119	99	404	55	8890	8350	DD 10 28 500/540	2100
120	100	410	56	9010	8350	DD 10 28 630/660	2100
123	103	420	57	9230	8350	DD10 28 840/880	2100

Non condensing HD32 external							
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	Litres/Hour (50°C rise)	Litres/Hour (50°C rise)		
17	14	59	8	1290	1015	DD 132E 250	250
18	15	61	8	1350	1015	DD 132E 315	250
31	26	105	14	2300	2030	DD 2 32E 250/270	500
31	26	107	15	2360	2030	DD 2 32E 315/330	500
33	27	112	15	2470	2030	DD2 32E 420/440	500
44	37	151	20	3320	3050	DD 3 32E 250/270	750
45	38	154	21	3380	3050	DD 3 32E 315/330	750
47	39	159	22	3490	3050	DD3 32E 420/440	750
58	48	197	27	4335	4065	DD 4 32E 250/270	1000
59	49	200	27	4395	4065	DD 4 32E 315/330	1000
60	50	205	28	4505	4065	DD4 32E 420/440	1000
71	60	243	33	5355	5085	DD 5 32E 250/270	1250
72	60	246	33	5415	5085	DD 5 32E 315/330	1250
74	61	251	34	5525	5085	DD5 32E 420/440	1250
85	71	290	39	6370	6100	DD 6 32E 250/270	1500
86	71	292	40	6430	6100	DD 6 32E 315/330	1500
87	73	297	40	6540	6100	DD6 32E 420/440	1500
99	82	336	46	7390	7120	DD 7 32E 250/270	1750
99	83	339	46	7450	7120	DD 7 32E 315/330	1750
101	84	344	47	7560	7120	DD7 32E 420/440	1750
116	96	394	54	8675	8135	DD 8 32E 500/540	2000
117	98	400	54	8795	8135	DD 8 32E 630/660	2000
120	100	410	56	9015	8135	DD8 32E 840/880	2000
129	108	441	60	9695	9155	DD 9 32E 500/540	2250
131	109	446	61	9815	9155	DD 9 32E 630/660	2250
134	112	456	62	10035	9155	DD9 32E 840/880	2250
143	119	487	66	10710	10170	DD 10 32E 500/540	2500
144	120	492	67	10830	10170	DD 10 32E 630/660	2500
147	123	502	68	11050	10170	DD10 32E 840/880	2500

Condensing HDC32 external/internal							
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	Litres/Hour (50°C rise)	Litres/Hour (50°C rise)		
16	14	56	8	1225	955	DD 1 C32 250/270	210
17	14	59	8	1290	955	DD 1 C32 315/330	210
29	24	99	13	2180	1910	DD 2 C32 250/270	420
30	25	102	14	2240	1910	DD 2 C32 315/330	420
31	26	107	15	2350	1910	DD2 C32 420/440	420
42	35	143	19	3140	2870	DD 3 C32 250/270	630
43	36	145	20	3200	2870	DD 3 C32 315/330	630
44	37	150	20	3310	2870	DD3 C32 420/440	630
55	46	186	25	4095	3825	DD 4 C32 250/270	840
55	46	189	26	4155	3825	DD 4 C32 315/330	840
57	47	194	26	4265	3825	DD4 C32 420/440	840
67	56	230	31	5055	4785	DD 5 C32 250/270	1050
68	57	233	32	5115	4785	DD 5 C32 315/330	1050
70	58	238	32	5225	4785	DD5 C32 420/440	1050
80	67	273	37	6010	5740	DD 6 C32 250/270	1260
81	67	276	37	6070	5740	DD 6 C32 315/330	1260
82	69	281	38	6180	5740	DD6 C32 420/440	1260
93	77	317	43	6970	6700	DD 7 C32 250/270	1470
94	78	320	43	7030	6700	DD 7 C32 315/330	1470
95	79	325	44	7140	6700	DD7 C32 420/440	1470
109	91	373	51	8195	7655	DD 8 C32 500/540	1680
111	92	378	51	8315	7655	DD 8 C32 630/660	1680
114	95	388	53	8535	7655	DD8 C32 840/880	1680
122	102	416	57	9155	8615	DD 9 C32 500/540	1890
124	103	422	57	9275	8615	DD 9 C32 630/660	1890
127	106	432	59	9495	8615	DD9 C32 840/880	1890
135	112	460	62	10110	9570	DD 10 C32 500/540	2100
136	114	465	63	10230	9570	DD 10 C32 630/660	2100
139	116	475	65	10450	9570	DD10 C32 840/880	2100

Demand Duo & Demand Duo Plus with Stainless Steel Tanks and Multiple Gas Water Heater (all dimensions in mm)											
DD Model	A	B	C 250L 315L	C 420L	E Per Tank	PTR Inclusions	Primary Pump	Total System Weight - 250L Tank	Total System Weight - 315L Tank	Total System Weight - 420L Tank	No. Of Tanks
DD2 28 Ext/Intl	375	750	1850	1960	600	PTR25/850 (132kW) + PTR20/850 (46kW)	UPS25-80N	120	132	145	1
DD3 28 Ext/Intl		1125	2225	2335				150	162	175	1
DD4 28 Ext/Intl		1500	2600	2710		2 x PTR25/850 (132kW) + PTR20/850 (46kW)	UPM25-125N	180	192	205	1
DD5 28 Ext/Intl		1875	2975	3085				210	222	235	1
DD6 28 Ext/Intl		2250	3350	3460		3 x PTR25/850 (132kW) + 1 PTR20/850 (46kW)	UPS32-100N	240	252	265	1
DD7 28 Ext/Intl		2625	3725	3835				270	282	295	1
DD8 28 Ext/Intl		3000	4100	4210		4 x PTR25/850 (132kW) + 2 x PTR20/850 (46kW)	2 x UPS32-100N	360	384	410	2
DD9 28 Ext/Intl		3375	4475	4585				390	414	440	2
DD10 28 Ext/Intl		3750	4850	4960				450	444	500	2
DD2 C32/32 Ext/Intl	500	1000	2100	2210	710*	PTR25/850 (132kW) + PTR20/850 (46kW)	UPS32-100N	143	155	168	1
DD3 C32/32 Ext/Intl		1500	2600	2710				183	195	208	1
DD4 C32/32 Ext/Intl		2000	3100	3210		2 x PTR25/850 (132kW) + PTR20/850 (46kW)	2 x UPM25-125N	228	240	253	1
DD5 C32/32 Ext/Intl		2500	3600	3710				268	280	293	1
DD6 C32/32 Ext/Intl		3000	4100	4210		3 x PTR25/850 (132kW) + 1 PTR20/850 (46kW)	2 x UPS32-100N	308	320	333	1
DD7 C32/32 Ext/Intl		3500	4600	4710				348	360	373	1
DD8 C32/32 Ext/Intl		4000	5100	5210		4 x PTR25/850 (132kW) + 2 x PTR20/850 (46kW)	1 x CM10-1	448	472	473	2
DD9 C32/32 Ext/Intl		4500	5600	5710				488	512	513	2
DD10 C32/32 Ext/Intl		5000	6100	6210				528	552	556	2

* Dimension for systems with 420L tank

Tank Model (L)	F	G	H	I	Dry Weight (Kg)	Wet Weight (Kg)
250	285	385	1465	1690	60	310
315	285	385	1855	2080	72	385
420	262	362	1559	1840	86	505

HD Model	J	K	L	M	MJ Rating
HD28e	340	440	540	1500	210
HD28i					
HD32e					250
HD210e					209
HD210i					
HDC32					



Demand Duo and Demand Duo Plus with Vitreous Enamel Tanks and Multiple Gas Water Heaters (all dimension in mm)										
DD Model	A	B	C	E Per Tank	PTR Inclusions	Primary Pump	Total System Weight - 270L Tank	Total System Weight - 330L Tank	Total System Weight - 440L Tank	No. Of Tanks
DD2 28 Ext/Intl	375	750	1950	Refer to table below	PTR25/1000 (132kW) + PTR20/1000 (46kW)	UPS25-80N	151	167	180	1
DD3 28 Ext/Intl		1125	2325				181	199	210	1
DD4 28 Ext/Intl		1500	2700		2 x PTR25/1000 (132kW) + PTR20/1000 (46kW)	UPM25-125N	211	227	240	1
DD5 28 Ext/Intl		1875	3075				241	257	270	1
DD6 28 Ext/Intl		2250	3450		3 x PTR25/1000 (132kW) + 1 PTR20/1000 (46kW)	UPS32-100N	271	287	300	1
DD7 28 Ext/Intl		2625	3825				301	317	330	1
DD8 28 Ext/Intl		3000	4200		4 x PTR25/1000 (132kW) + 2 x PTR20/1000 (46kW)	2 x UPS32-100N	391	419	432	2
DD9 28 Ext/Intl		3375	4575				421	449	462	2
DD10 28 Ext/Intl		3750	4950				481	479	492	2
DD2 C32/32 Ext/Intl	500	1000	2200	Refer to table below	PTR25/1000 (132kW) + PTR20/1000 (46kW)	UPS32-100N	174	190	203	1
DD3 C32/32 Ext/Intl		1500	2700				214	230	243	1
DD4 C32/32 Ext/Intl		2000	3200		2 x PTR25/1000 (132kW) + PTR20/1000 (46kW)	2 x UPM25-125N	259	59	288	1
DD5 C32/32 Ext/Intl		2500	3700				299	315	328	1
DD6 C32/32 Ext/Intl		3000	4200		3 x PTR25/1000 (132kW) + 1 PTR20/1000 (46kW)	2 x UPS32-100N	339	355	368	1
DD7 C32/32 Ext/Intl		3500	4700				379	395	408	1
DD8 C32/32 Ext/Intl		4000	5200		4 x PTR25/1000 (132kW) + 2 x PTR20/1000 (46kW)	1 x CM10-1	479	507	520	2
DD9 C32/32 Ext/Intl		4500	5700				519	547	560	2
DD10 C32/32 Ext/Intl		5000	6200				559	587	600	2

Tank Model (L)	E	F	G	H	I	Dry Weight (Kg)	Wet Weight (Kg)
270	625	108	386	1143	1484	84	354
330	625	108	386	1431	1772	98	428
440	720	108	415	1409	1763	122	562

HD Model	J	K	L	M	MJ Rating
HD28e	340	440	540	1500	210
HD28i					
HD32e					250
HD210e					209
HD210i					
HDC32					

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 (VE) / 7 years (SS)
Common flue	N/A	3 Years

Notes

[illegible]

Rinnai Australia Pty Ltd

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TOTAL HOME COMFORT



Rinnai