

Warm Water Valve | Specification Guide



Rinnai

Warm Water Valve

The Rinnai Demand Duo Warm Water Valve (DDWWV) is a circulating warm water valve designed to accept 60°C or more incoming hot water from a storage hot water system and deliver a reduced constant outlet temperature across a full range of flow rates with minimal pressure drop.

Save on Installation & Maintenance Costs

The DDWWV is suitable for commercial applications such as apartments, hotels, hospitals and nursing homes where multiple tempering or thermostatic mixing valves can now be replaced with a centralised valve.

The installation of a centralised DDWWV has many benefits:

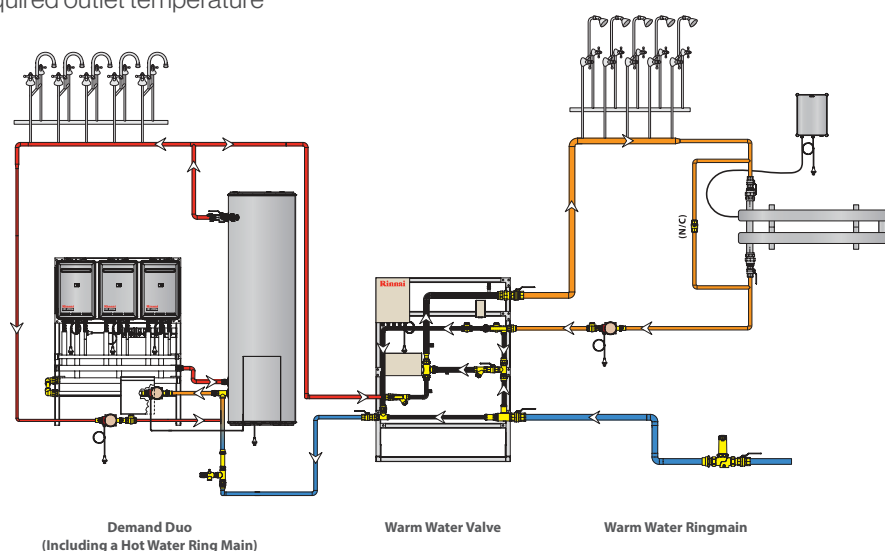
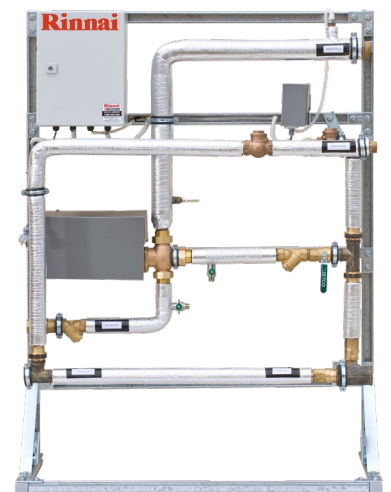
- Reduces the installation cost of multiple valves
- Reduces the cost and inconvenience of having to service multiple units
- Maintenance can be fully managed at the hot water plant room
- Improved maintenance scheduling with reduced interruption
- Improves the aesthetics

Hot Water Temperature Overview

The delivery temperature of hot water to ablution areas is normally 42°C or 50°C to reduce the risk of scalding (AS3500 part 4). Storage water on the other hand, must be kept at a minimum of 60°C (AS 3498).

While the two seem incompatible, there are several ways to satisfy both requirements.

- Store the water at 60°C and circulate throughout a building and passing through multiple tempering valves or thermostatic mixing valves (i.e. at each dead leg branch)
- Heat the water to the required outlet temperature with a heat exchange system and circulate it throughout a building and now...
- Store the water at 60°C - 65°C and pass it through a central Rinnai DDWWV and circulate it throughout the building at the required outlet temperature



Features and Benefits

In operation, the DDWWV has an electronic controller that constantly measures the warm water outlet temperature. The system automatically adjusts a magnetically actuated three way mixing valve, positioning the actuator to mix hot and cold water at a precise rate to achieve the programmed outlet temperature. The outlet temperature is also adjustable to compensate for temperature losses along the ringmain, ensuring correct water temperature is delivered at the point of use. It should be noted that a correct ringmain design with appropriate insulation is required to minimise temperature losses around the building.

Easy Installation

The valve, controller and temperature sensors, as well as all plumbing, are supplied as a complete assembly on a freestanding or wall mounted frame. In addition, the controller is pre-set to the nominated temperature to allow fast installation on site. The installer simply needs to plumb to the connection points: cold water inlet, warm water outlet, ringmain return, feed to hot water storage and the hot return from the stored water, as well as any necessary isolation valves and UV or other disinfection system. One GPO is required. Commissioning may be required for projects where DDWWV is used to replace TMV's.

Retrofit

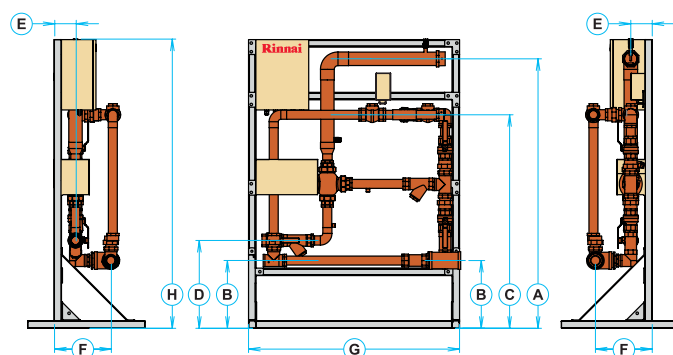
The Rinnai DDWWV is also suitable to retrofit to existing (non-Rinnai) storage hot water systems. Simply connect the cold feed and hot return to the storage hot water system, cold water and warm water flow and return to the valve assembly. There must be a ringmain with a suitable pump fitted to allow the valve to function as designed. See minimum flow rate on table overleaf.

Solar Pre-Heating

As part of the Rinnai Demand Duo range, the DDWWV is also compatible with Solar Boosting. Contact Rinnai Commercial for details.

Fully Approved

The DDWWV is approved to AS4032.1 as a Thermostatic Mixing Valve. It is also approved as a Warm Water System by NSW Health.



Connection Points		A		B		C		D		E	F	G	H
		Warm Water Outlet	Pipe Diameter	Cold Inlet	Pipe Diameter	Warm Water Return	Pipe Diameter	Hot Inlet	Pipe Diameter	Warm Water Outlet	Cold Inlet	Width	Height
Systems	DDWW32	1486	32	462	32	1182	20	546	20	147	291	1200	1640
	DDWW50	1485	50	395	50	1187	32	576	32	147	238	1200	1640
	DDWW80	1533	80	385	80	1215	50	499	50	100	323	1200	1640

Selection guide

1. Select storage hot water heater based on expected first hour and hourly hot water demand
2. Calculate total hot water flow rate. Estimate 6.5 l/min for a sink and 4.5 l/min for showers when using 3 star water saver fittings
3. Multiply this by a diversity (20-30%) for estimated number of fixtures operating simultaneously
4. Convert hot water flow rate to equivalent tempered flow rate (50°C) by multiplying hot flow rate by 1.4 or convert to warm flow rate (42°C) by multiplying by 2. This assumes 15°C inlet and 50°C rise when selecting the storage hot water system
5. Select Demand Duo Warm Water valve on this flow rate, the desired pressure loss through valve and outlet pipe velocity
6. Select ringmain pump and return pipe size to ensure minimum flow rate is maintained

Note: Valve does not require any temperature loss around ringmain to operate.

Model	Outlet Pipe Size	Flow Rate @ 60kPa loss and 1.5 m/s outlet pipe velocity	Flow Rate @ 100kPa loss and 2.0 m/s outlet pipe velocity	Peak Flow Rate @ 200kPa loss and 3.0 m/s outlet pipe velocity	Minimum Required Ringmain Flow Rate	Pressure Loss through valve at Minimum Ringmain Flow Rate
DDWW32	32mm	61 l/min	83 l/min	117 l/min	14 l/min	< 10kPa
DDWW50	50mm	165 l/min	200 l/min	267 l/min	24 l/min	< 10kPa
DDWW80	80mm	360 l/min	500 l/min	667 l/min	54 l/min	< 10kPa

Example:

25 x 2 bedroom apartments:

Hot water system 25 apartments x 75 litres = 1875 litres in first hour

Each apartment = 2 showers and 1 x kitchen sink

2 x 9 l/min shower @ 40°C -

2 x 4.5 l/min hot water flow rate

1 x 9 l/min kitchen sink @ 50°C -

1 x 6.5 l/min hot water flow rate

Total -

15.5 l/min hot water flow rate per apartment

25 apartments x 15.5 l/min x 20% diversity = 77.5 l/min peak hot water flow rate

x 1.4 = 109 l/min peak tempered water flow rate = DDWW32 set at 50°C

Hot Water Flow Rate (65° @ 50° rise) l/min	Equivalent Tempered Flow Rate (50° @ 35° rise) l/min	Equivalent Warm Water Flow Rate (42° @ 25° rise) l/min
25	36	50
50	71	100
75	107	150
100	143	200
125	179	250
150	214	300
175	250	350
200	286	400
250	357	500
300	429	600
350	500	700
400	571	800
450	643	900
500	714	1000
600	857	1200
700	1000	1400
800	1143	1600
900	1286	1800
1000	1429	2000

Need Assistance?

Rinnai offers a service whereby we can assist with the design of your Commercial Hot Water system. This includes advice on the full range of Rinnai Commercial products including Heavy Duty Continuous Flow, Manifold Packs, Demand Duo, Quick Recovery Electric, Solar Pre-heating, Warm Water and Common Flues. Please contact Rinnai Commercial on 1300 555 545.

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For further information
call 1300 555 545 or visit
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TOTAL HOME COMFORT



HOT WATER



HEATING



COOLING

Rinnai