

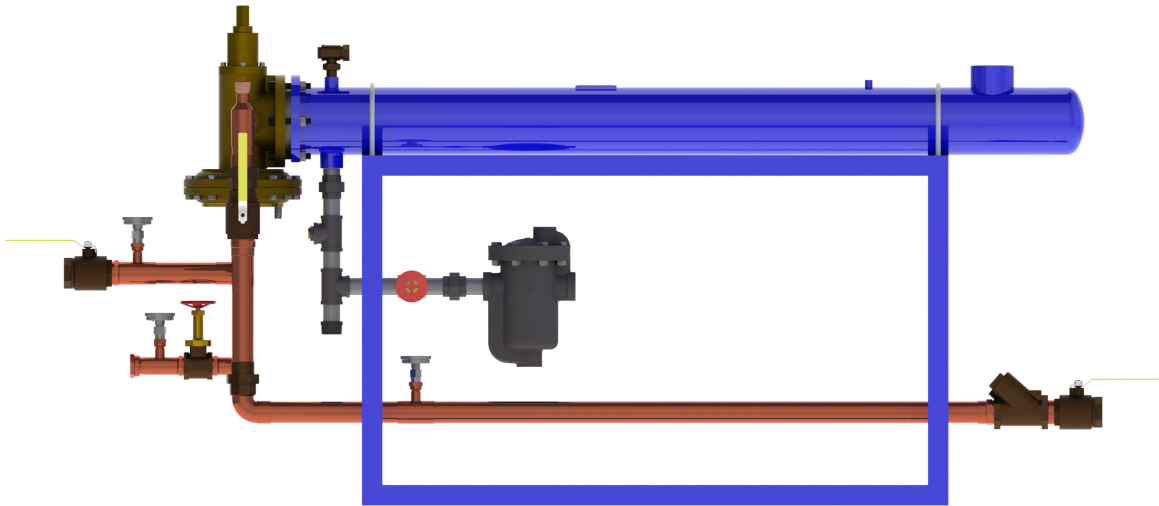
FLO-RITE-TEMP® FRT665 & FRT665DW

INSTANTANEOUS WATER HEATER for NON-RECIRCULATING HOT WATER SYSTEMS

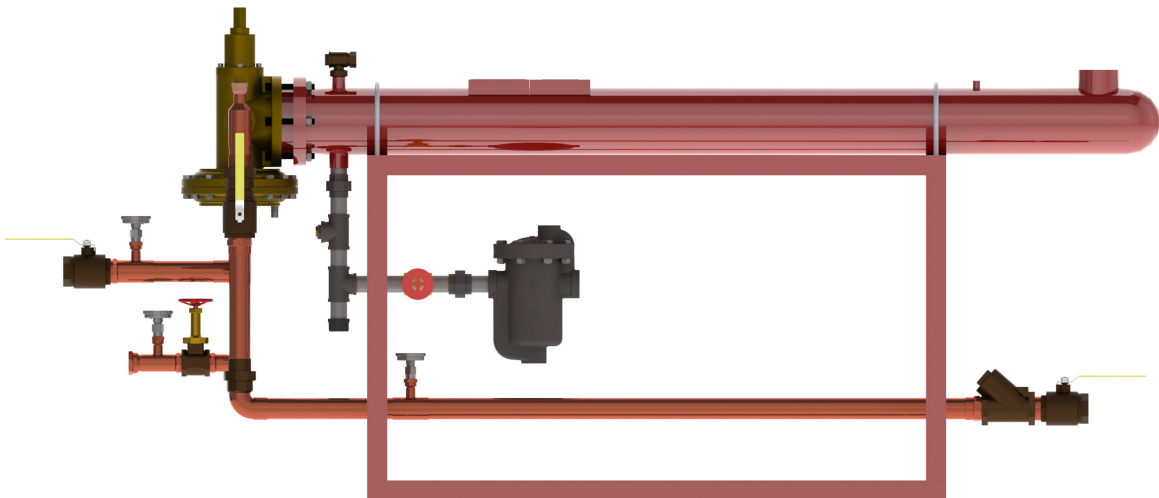
Flo-Rite-Temp® Pre-Piped for Thermostatic Control of Non-Recirculating Hot Water Systems is a packaged water heating solution inclusive of a shell and tube heat exchanger fitted with an integral control valve for water heating and system temperature control.

The feed forward design instantly determines downstream hot water demand and directs cold water through the heat exchanger. Water is heated above legionella survival temperatures with constant pressure steam and then blended with a proportional amount of cold water to set point temperature.

Flo-Rite-Temp® Pre-Piped for Thermostatic Control of Recirculating Hot Water Systems is available with single wall or double wall heat exchangers in four standard sizes, with parallel and redundant configurations available. Flo-Rite-Temp® can be customized to suit specific application needs.



Flo-Rite-Temp® FRT665 Single Wall Instantaneous Water Heater



Flo-Rite-Temp® FRT665DW Double Wall Instantaneous Water Heater

Designs, materials, weights, and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for the most up-to-date information.

FLO-RITE-TEMP® FRT665 & FRT665DW

TECHNICAL SPECIFICATIONS - SIZING

FRT665 and FRT665DW Water and Steam Capacities - Imperial Units									
Inlet Temperature	Set Temperature	Hot Water Capacities in GPM				Steam Capacities in lb/hr			
		Steam Pressure				Steam Pressure			
		2 psig	5 psig	10 psig	15 psig	2 psig	5 psig	10 psig	15 psig
40°F	120°F	69	74	80	80	2,855	3,067	3,356	3,601
	130°F	58	63	68	73	2,723	2,936	3,226	3,472
	140°F	50	54	59	63	2,585	2,799	3,091	3,338
	160°F	37	40	45	48	2,286	2,508	2,806	3,057
	180°F	23	26	39	32	1,663	1,866	2,134	2,355
50°F	120°F	76	80	80	80	2,767	2,977	3,264	3,508
	130°F	64	68	75	80	2,637	2,848	3,137	3,381
	140°F	54	58	64	68	2,502	2,715	3,005	3,250
	160°F	39	42	47	51	2,210	2,429	2,725	2,974
	180°F	24	27	30	33	1,605	1,805	2,069	2,289
60°F	130°F	70	76	80	80	2,550	2,760	3,046	3,288
	140°F	58	63	69	75	2,418	2,629	2,917	3,160
	160°F	41	45	50	55	2,132	2,349	2,642	2,889
	180°F	25	28	32	35	1,546	1,743	2,004	2,221

FRT665 and FRT665DW Water and Steam Capacities - Metric Units									
Inlet Temperature	Set Temperature	Hot Water Capacities in m ³				Steam Capacities in kg/hr			
		Steam Pressure				Steam Pressure			
		0.14 bar	0.35 bar	0.7 bar	1 bar	0.14 bar	0.35 bar	0.7 bar	1 bar
4°C	49°C	15.7	16.8	18.2	18.2	1,290	1,386	1,517	1,628
	54°C	13.2	14.3	15.4	16.6	1,230	1,327	1,458	1,569
	60°C	11.3	12.2	13.3	14.3	1,168	1,265	1,397	1,509
	71°C	8.4	9.1	10.2	10.9	1,033	1,134	1,268	1,382
	82°C	5.2	5.9	6.6	7.3	754	846	968	1,068
50°C	49°C	17.3	18.2	18.2	18.2	1,251	1,346	1,475	1,586
	54°C	14.5	15.4	17.0	18.2	1,192	1,287	1,418	1,528
	60°C	12.2	13.2	14.5	15.4	1,131	1,227	1,358	1,474
	71°C	8.9	9.5	10.7	11.6	999	1,098	1,232	1,344
	82°C	5.4	6.1	6.8	7.5	728	819	938	1,037
60°C	54°C	15.9	17.3	18.2	18.2	1,152	1,247	1,377	1,486
	60°C	13.2	14.3	15.7	17.0	1,093	1,188	1,318	1,428
	71°C	9.3	10.2	11.3	12.5	964	1,062	1,194	1,306
	82°C	5.7	6.4	7.3	7.9	701	791	909	1,007

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FLO-RITE-TEMP® FRT665 & FRT665DW

TECHNICAL SPECIFICATIONS

General		
Ambient Temperature	Minimum Ambient Temperature: 35°F (2°C)	Maximum Ambient Temperature: 122°F (50°C)
Installation Environment	Suitable for indoor use only	
Materials		
FRT Control Valve	Bronze	
Heat Exchanger Shell	Carbon steel, ASTM SA-106, Gr. B, ASME "U" stamped with Type 316 stainless steel two-pass head	
Heat Exchanger Tube Bundle	Single Wall	Admiralty brass tubes; 5/8" OD x 16 BWG wall
	Double Wall	Copper tubes; 5/8" OD inner with 3/4" OD grooved outer
Heat Exchanger Tube Sheets	Single Wall	Lead-free brass
	Double Wall	Brass on water side; Steel on steam side
Tube Bundle End Cap (Single Wall ONLY)	Lead-free brass	
Integral Supply Pipe Work	Lead-free brass / Type L copper	
Integral Valves and Fittings	Lead-free brass or bronze	
Condensate Piping	Cast iron and carbon steel	
Connections		
Water Side	Cold Water Inlet	2" NPT Connection
	Mixed Water Outlet	2" NPT Connection
Steam Side	Steam Inlet	3" NPT Connection
	Condensate Outlet	1-1/4" NPT Connections (Armstrong Steam Trap 814)
Pressures		
Water Inlet Supply Pressures	Maximum Water Pressure: 150 psig (10 barg)	Minimum Pressure: 20 psig (1.5 barg)
Steam Inlet Supply Pressures	Maximum Allowable Steam Pressure: 150 psig (10 barg)	
	Maximum Operating Steam Pressure: 15 psig (1 barg)	
Temperatures		
Control Range	+ / - 4°F (within 25' downstream during demand)	

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FLO-RITE-TEMP® FRT665 & FRT665DW

WRITTEN SPECIFICATIONS

Category: Steam to Water Heater with Shell and Tube Heat Exchanger

Type: Flo-Rite-Temp® for Thermostatic Control of Non-Recirculating Systems

Model: FRT665 and FRT665DW

Part 1 - GENERAL

1.0 Flo-Rite-Temp® FRT665 and FRT665DW Overview

1.1 The assembly shall be pre-piped steam to water shell and tube heater with performance matched components and pressure-tested before delivery.

1.1.1 FRT665 shall be of single wall construction with straight admiralty brass tubes expanded into naval brass tube sheets with a bolted end cover.

1.1.2 FRT665DW shall be of double wall construction with 5/8" copper inner tube, 3/4" ID grooved copper outer tube expanded into steel (steam side) and brass (water side) tube sheets.

Heat exchanger will be fixed on one end of the shell and free-floating on the opposite end designed and manufactured in accordance with ASME Code Section VIII.

2.0 FRT665 and FRT665DW Assembly

2.1 The assembly shall comprise of domestic side check valves, strainers, thermometers, ball valves, and a shell and tube heat exchanger, pre-piped with Type L copper on a carbon steel frame with industrial grade enamel paint.

2.2 Complete assembly shall be lead-free compliant.

2.3 Steam pressure on the system to be no more than 15 psig. Designed to generate 63 GPM with a 40°F entering cold water temperature, a 140°F mixed water set point utilizing 15 psig at a maximum of 3,150 lbs/hr.

3.0 FRT665 and FRT665DW shall have the following operational specifications:

3.1 +/- 4° F (2° C) water temperature control from zero-system demand to full system demand

3.2 Pressure drop not to exceed 10 psi at maximum flow

3.3 Operating steam pressure (constant) between 2-15 psig

3.4 Operating water pressure between 20-150 psig

3.5 Pressure-sensitive mixing valve is integrally mounted to shell and tube exchanger using feed-forward sensing

3.6 Pressure-sensitive mixing valve shall fail in the cold position in the event of diaphragm failures

3.7 Isolation valves and clean-in-place connections allow for chemical cleaning of the exchanger without disassembly of the exchanger

3.8 1/4" domestic side pressure relief pop-off valve with 165 psig (11.4 barg) crack pressure, self-seating

3.9 Thermostatic air vent to vent the exchanger air on start-up

3.10 Inverted bucket steam trap for condensate return

3.11 Exchanger tubes:

3.11.1 FRT665: 16-gauge, 5/8" OD admiralty brass straight tubes expanded into naval brass tube sheets

3.11.2 FRT665DW: 5/8" copper inner tubes, 3/4" outer tubes expanded into steel / brass tube sheets

3.12 Carbon steel shell with 3" NPT steam inlet and 1-1/4" condensate outlet connections

3.13 Assembly includes vacuum breaker installed between the condensate outlet of the shell and steam trap

4.0 Warranty

4.1 Water heater assembly shall have a 2-year warranty from date of installation, but not longer than 27 months from date of shipment.

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