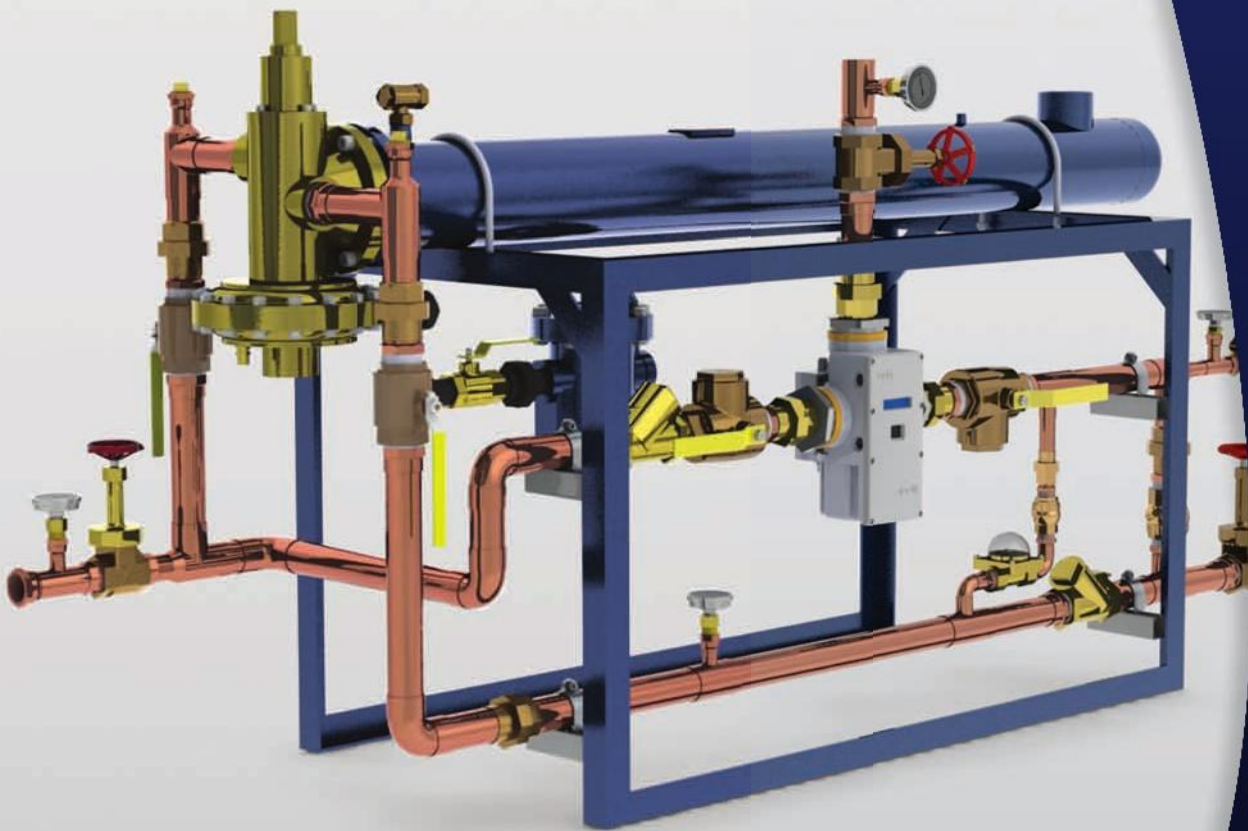


Water Heating & Water Temperature Control

- Feed Forward
- Digital



Armstrong®



Armstrong® Flo-Rite-Temp® Instantaneous Steam/Water Heater

The Flo-Rite-Temp® instantaneous Steam/Water heater has a unique feed forward design which features a differential pressure diaphragm actuated mixing unit integral to a shell and tube heat exchanger.

The Flo-Rite-Temp® mixing unit manages the water flow through the heat exchanger based upon downstream hot water demand and eliminates the requirement for a modulating steam control valve.

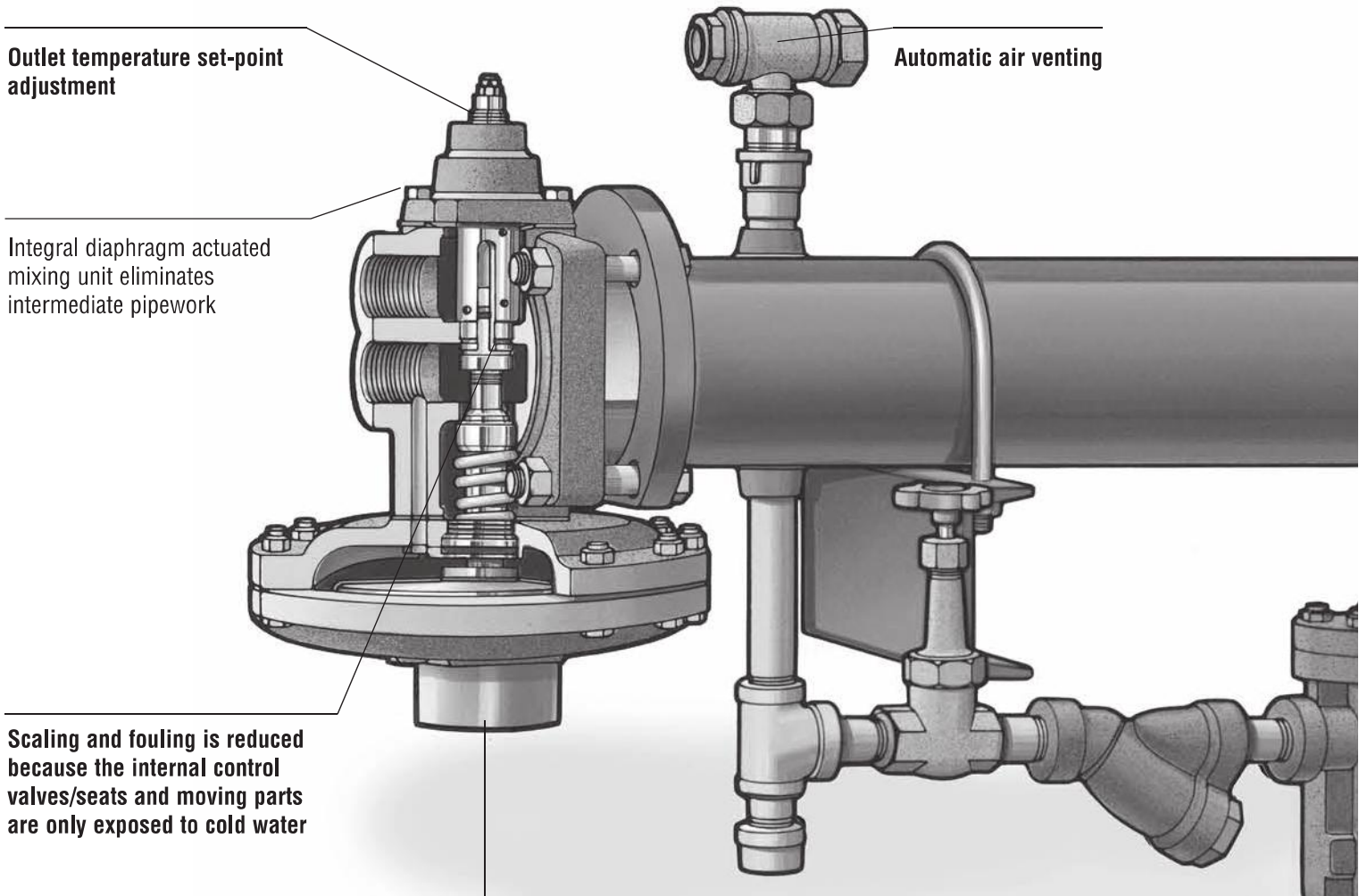
Operating on constant low pressure (2-15PSI) steam, the Flo-Rite-Temp® mixing unit supplies water to the heat exchanger where it is overheated and then returned to the mixing unit for proportional re-mixing with cold water to a pre-set outlet temperature.

Speed of response

The differential pressure diaphragm within the mixing unit rapidly responds to a change in system demand and significantly reduces the lag times typically associated with feed back/modulating steam control valve systems.

Failure Safe

The Flo-Rite-Temp® mixing units diaphragm actuated design can be described as “failure safe” because in the event of a diaphragm failure the mixing unit will fail with a cold bias and will not allow hot water to exit the heat exchanger.



Outlet temperature set-point adjustment

Automatic air venting

Integral diaphragm actuated mixing unit eliminates intermediate pipework

Scaling and fouling is reduced because the internal control valves/seats and moving parts are only exposed to cold water

Differential pressure diaphragm rapidly responds to a change in system demand and significantly reduced the lag time

Temperature Control and User Safety

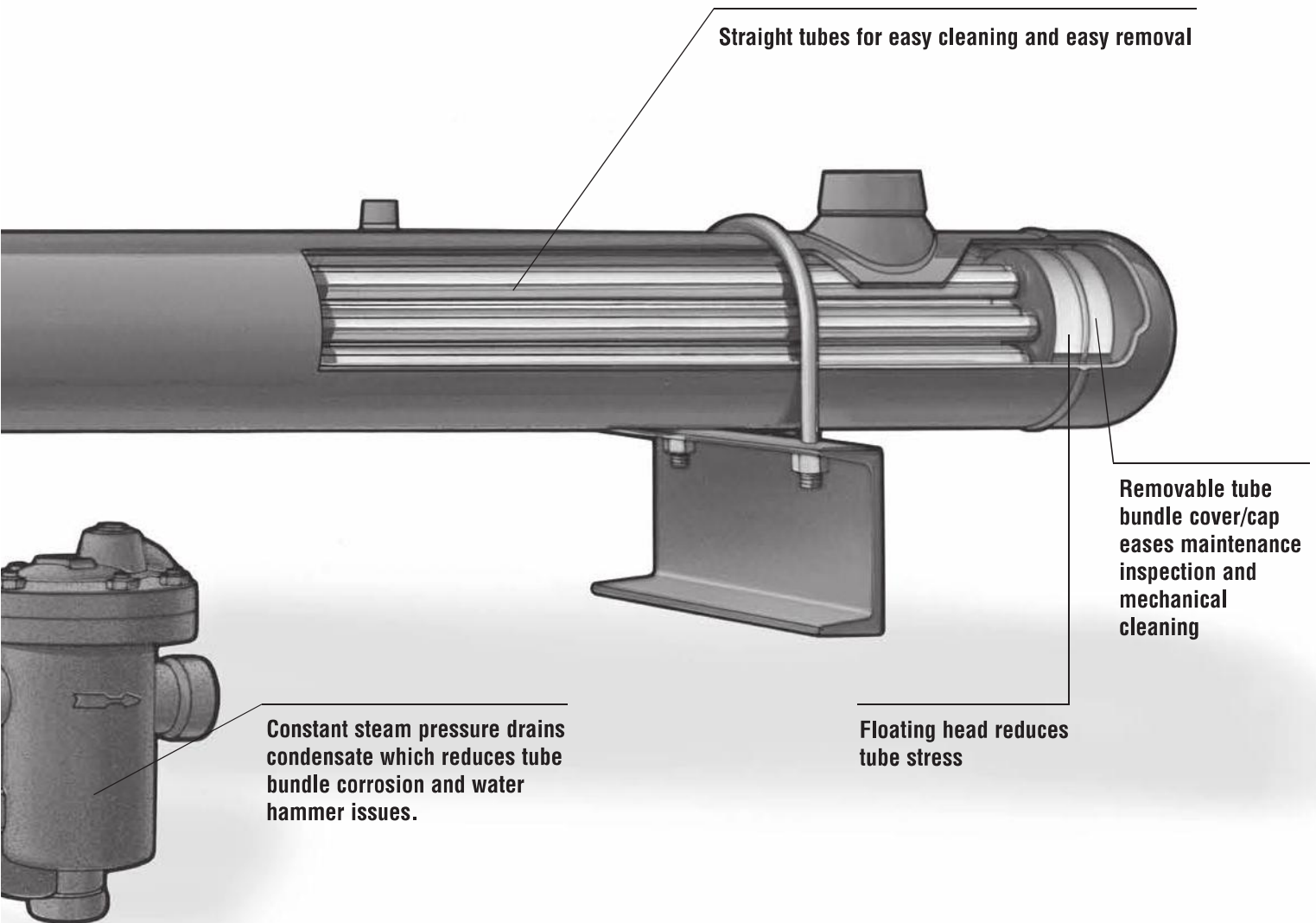
Capable of controlling outlet temperatures +/- 4F, this principal of operation offers the additional relevant benefit of reducing the waterborne bacterial content of the water during the overheating process. In addition, with no water storage requirement, Flo-Rite-Temp® water heaters are a sensible selection as a component of a broader system design initiative for Legionella risk reduction.

Ease of Maintenance

Accessible “non helical” admiralty brass straight tubes inside the carbon steel shell available mechanical cleaning and visual inspection. Non modulating constant steam pressure ensures condensate drainage and removes the potential for water hammer damage and corrosion. There in no steam control valve to maintain and typically no supplemental condensate return equipment required.

Ease of Installation

No storage tank, small footprint, access via a standard doorway and pre-piped packaged solutions reduce installation time, space and expenditure.



Straight tubes for easy cleaning and easy removal

Removable tube bundle cover/cap eases maintenance inspection and mechanical cleaning

Constant steam pressure drains condensate which reduces tube bundle corrosion and water hammer issues.

Floating head reduces tube stress

Flo-Rite-Temp® Instantaneous Steam/Water Heater Stainless Steel Sizing Chart



Capacities and Steam Loads																				
Inlet Temp. °F	Set Temp. °F	Standard								Inlet Temp. °C	Set Temp. °C	Metric								Model
		Hot Water Capacities*				Steam Capacities						Hot Water Capacities*				Steam Capacities				
		Steam Pressure				Steam Pressure						Steam Pressure				Steam Pressure				
		psig				psig						bar				bar				
		2	5	10	15	2	5	10	15			0.14	0.35	0.7	1	0.14	0.35	0.7	1	
		gpm				lbs/hr						m³/h				kg/h				
40	120	41	44	47	51	1,695	1,821	1,993	2,138	4	49	9.3	10	10.7	11.6	769	826	904	970	665 SS
		84	89	97	103	3,351	3,720	4,100	4,368			19.1	20.2	22	23.4	1,520	1,687	1,860	1,981	8120 SS
	130	35	37	41	43	1,617	1,743	1,915	2,061		54	7.9	8.4	9.3	9.8	733	791	869	935	665 SS
		66	72	80	86	2,974	3,239	3,611	3,956			15	16.4	18.2	19.5	1,349	1,469	1,638	1,794	8120 SS
	140	30	32	35	37	1,535	1,662	1,836	1,982		60	6.8	7.3	7.9	8.4	696	754	833	899	665 SS
		52	57	64	71	2,596	2,862	3,216	3,540			11.8	12.9	14.5	16.1	1,178	1,298	1,459	1,606	8120 SS
	160	17	18	19	21	1,011	1,110	1,242	1,353		71	3.9	4.1	4.3	4.8	459	503	563	614	665 SS
		44	48	53	57	2,726	2,990	3,346	3,646			10	10.9	12	12.9	1,237	1,356	1,518	1,654	8120 SS
	180	12	13	15	17	860	964	1,103	1,217		82	2.7	3	3.4	3.9	390	437	500	552	665 SS
		32	35	40	44	2,316	2,598	2,971	3,280			7.3	7.9	9.1	10	1,051	1,178	1,348	1,488	8120 SS
50	120	45	48	53	56	1,643	1,768	1,938	2,083	10	49	10.2	10.9	12	12.7	745	802	879	945	665 SS
		91	97	105	113	3,300	3,550	3,892	4,183			20.7	22	23.8	25.7	1,497	1,610	1,765	1,897	8120 SS
	130	38	41	44	47	1,566	1,691	1,862	2,007		54	8.6	9.3	10	10.7	710	767	845	910	665 SS
		75	81	89	95	2,997	3,257	3,740	4,031			17	18.4	20.2	21.6	1,359	1,477	1,696	1,828	8120 SS
	140	32	34	38	41	1,486	1,612	1,784	1,930		60	7.3	7.7	8.6	9.3	674	731	809	875	665 SS
		58	64	71	79	2,628	2,867	3,212	3,558			13.2	14.5	16.1	17.9	1,192	1,300	1,457	1,614	8120 SS
	160	17	19	21	23	978	1,075	1,206	1,316		71	3.9	4.3	4.8	5.2	444	488	547	597	665 SS
		46	51	56	61	2,635	2,896	3,249	3,545			10.4	11.6	12.7	13.9	1,195	1,314	1,474	1,608	8120 SS
	180	12	14	16	18	830	993	1,070	1,183		82	2.7	3.2	3.6	4.1	376	423	485	537	665 SS
		33	37	42	47	2,235	2,513	2,882	3,188			7.5	8.4	9.5	10.7	1,014	1,140	1,307	1,446	8120 SS
60	120	51	55	60	64	1,590	1,713	1,883	2,027	16	49	11.6	12.5	13.6	14.5	721	777	854	919	665 SS
		71	104	122	130	3,247	3,500	3,846	4,139			16.1	23.6	27.7	29.5	1,473	1,588	1,745	1,877	8120 SS
	130	42	45	49	53	1,514	1,639	1,808	1,952		54	9.5	10.2	11.1	12	687	743	820	885	665 SS
		86	92	100	108	3,093	3,347	3,694	3,988			19.5	20.9	22.7	24.5	1,403	1,518	1,676	1,809	8120 SS
	140	35	37	41	44	1,436	1,561	1,732	1,876		60	7.9	8.4	9.3	10	651	708	786	851	665 SS
		66	73	81	87	2,620	2,903	3,233	3,703			15	16.6	18.4	19.8	1,188	1,317	1,466	1,680	8120 SS
	160	18	20	22	24	943	1,040	1,170	1,279		71	4.1	4.5	5	5.5	428	472	531	580	665 SS
		49	54	60	65	2,543	2,801	3,151	3,445			11.1	12.3	13.6	14.8	1,154	1,271	1,429	1,563	8120 SS
	180	13	14	17	19	799	901	1,035	1,148		82	3	3.2	3.9	4.3	362	409	469	521	665 SS
		35	39	44	49	2,152	2,427	2,791	3,093			7.9	8.9	10	11.1	976	1,101	1,266	1,403	8120 SS

*Units may be piped in parallel when desired capacities exceed that of a single unit.

NOTES: Minimum water temperature increase is 60°F (33°C). Consult factory if less than 60°F (33°C) increase is required or a set temperature below 120°F (49°C) is required.



Non-Recirculating Hot Water Systems

Pre-Piped Single Temperature

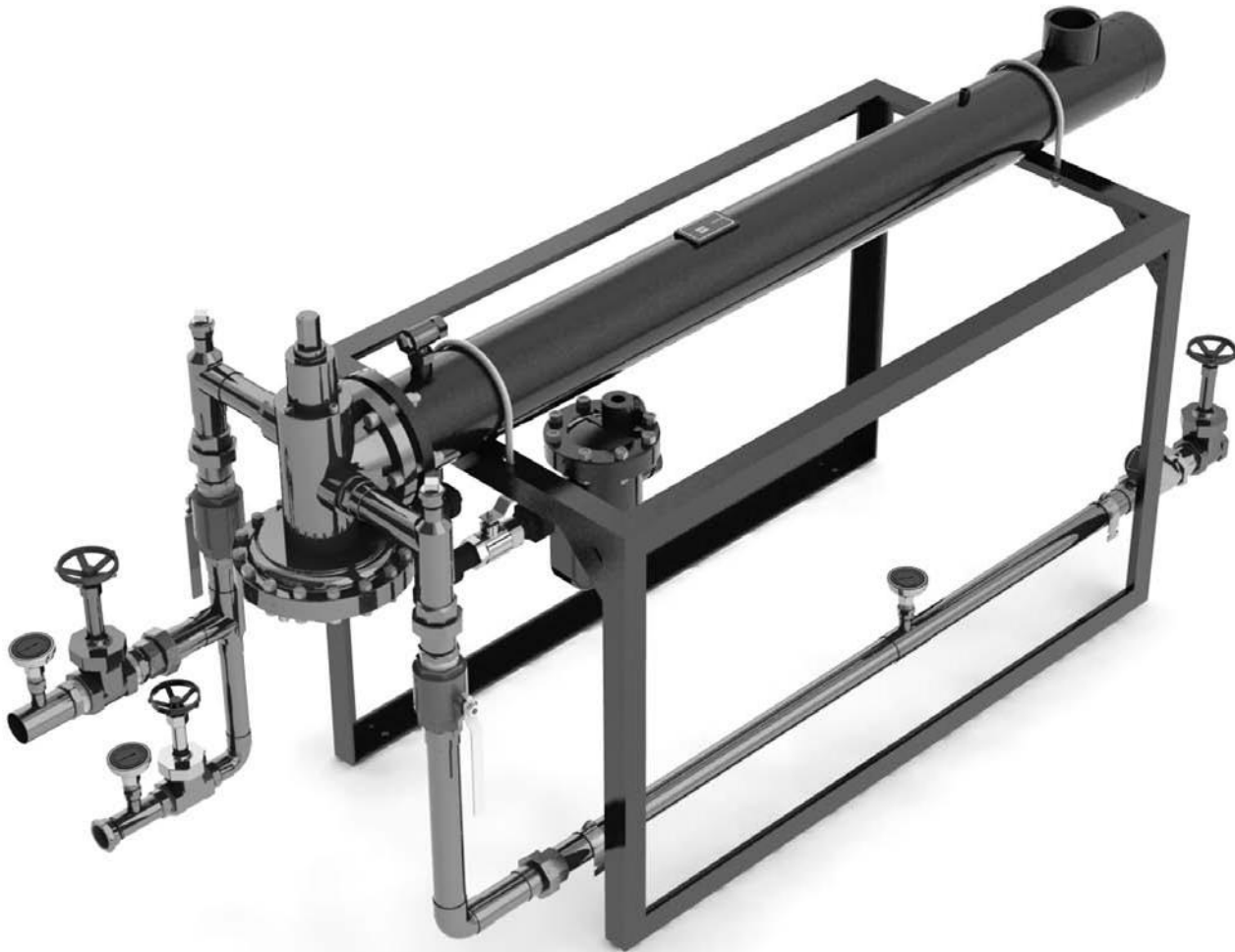
Flo-Rite-Temp® Instantaneous Steam/Water Heaters-Non Recirculating Hot Water Systems feature four single heat exchanger and four double (parallel) heat exchanger pre-piped single temperature packaged assemblies.

Parallel heat exchangers offer increased flow rates and/or system redundancy within the same footprint and allows for tube bundle and control valve servicing while the water heater remains online.

Flo-Rite-Temp® Pre-Piped Single Temperature Systems are fully assembled and include the following installation components:

- Steam Trap
- Air Vent
- Thermometers
- CIP connection port
- Flow Control/Isolation Valves

Ideal for both new construction and retrofit installation within an existing building infrastructure. Flo-Rite-Temp® Pre-Piped Single Temperature Systems are designed to fit through a standard 32" doorway (Model 8120 36" doorway).



Non-Recirculating Hot Water Systems

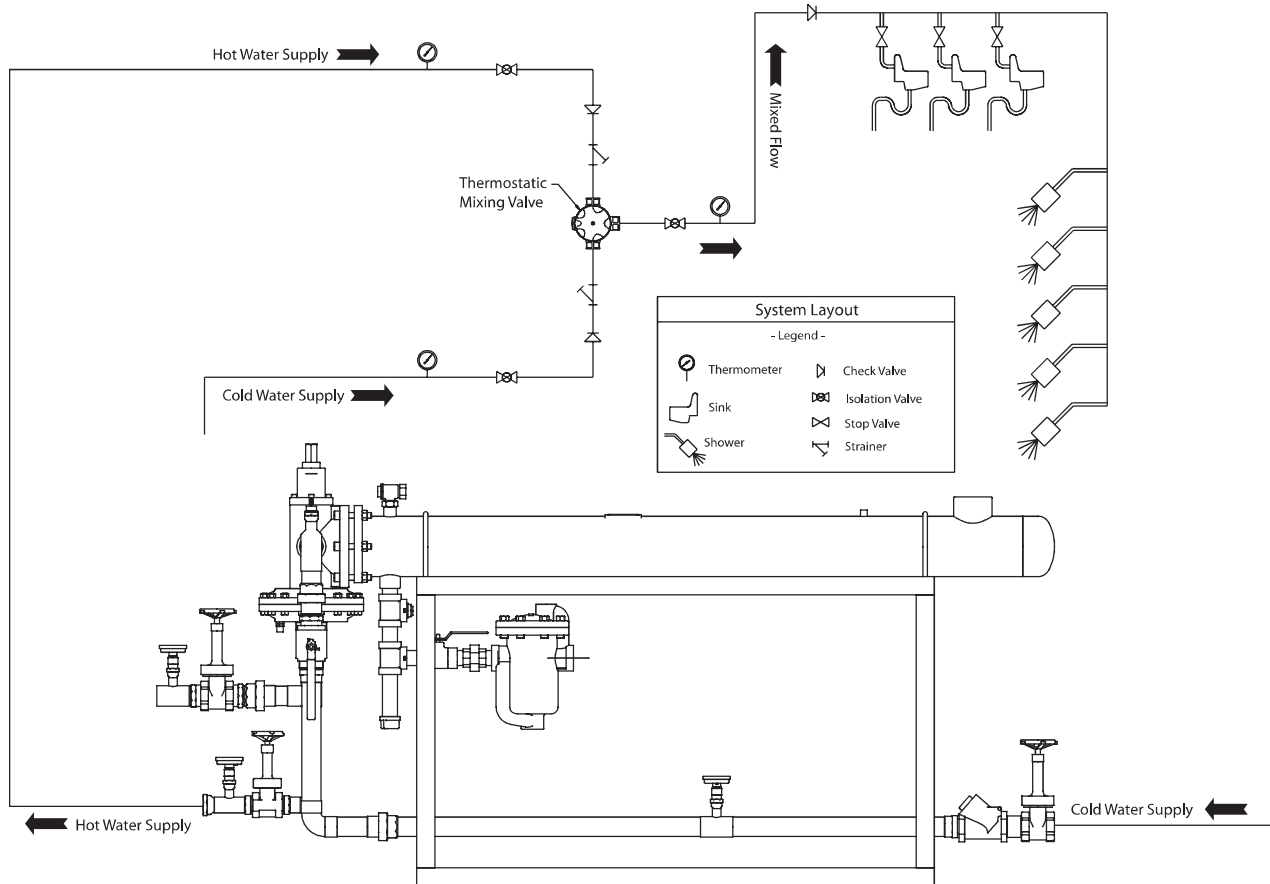
Pre-Piped Single Temperature

Armstrong Flo-Rite-Temp® Instantaneous Steam/Water Heater pre-piped packages are available in standard configurations per the specification matrix on page 26.

Customized Hot Water System Solutions are our specialty. Multiple orientations, configurations and options are available.

Hot Water System Solutions which include condensate recovery, circulating pumps, additional mixed water temperature controls/loops and varied other components can be application engineered specifically to meet the projects requirements.

Additionally, where appropriate, Armstrong can integrate engineering services, turn key installation and project management, system assessment and optimization along with energy conservation measure (ECM) capability through Armstrong Service Incorporated.





Armstrong® Flo-Rite-Temp® Instantaneous Steam/Water Heater

Non-Recirculating Hot Water Systems

Pre-Piped Single Temperature (P-P)

Flo-Rite-Temp® Instantaneous Steam/Water Heater for Non-Recirculating Hot Water Systems feature four heat exchanger options offered as pre-piped single temperature packaged assemblies.

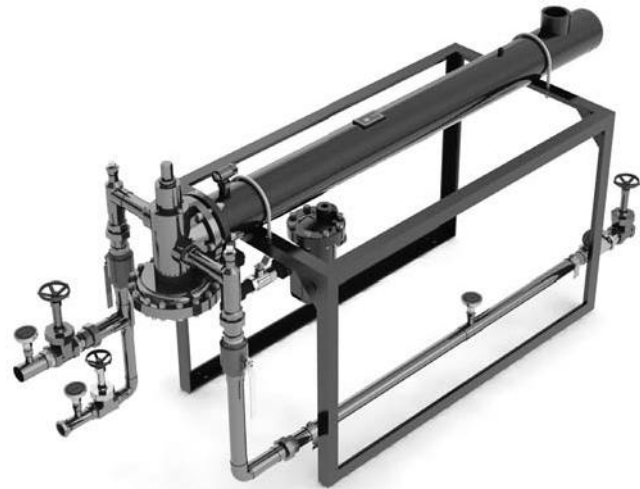
Flo-Rite-Temp® Pre-Piped (P-P) Single Temperature Systems are fully assembled and include the following installation components:

- Steam Trap
- Air Vent
- Thermometers
- CIP connection port
- Flow Control/Isolation Valves

Ideal for both new construction and retrofit installation within an existing building infrastructure. Flo-Rite-Temp® Pre-Piped (P-P) Single Temperature Systems are designed to fit through a standard 32" doorway (Model 8120 36" doorway). Armstrong Flo-Rite-Temp® Instantaneous Steam/Water Heater pre-piped packages are available in standard configurations per the specification matrix on pages 26.

Customized Hot Water System Solutions are our specialty. Multiple orientations, configurations and options are available.

Hot Water System Solutions which include condensate recovery, circulating pumps, additional mixed water temperature controls/loops and varied other components can be application engineered specifically to meet the projects requirements.



For submittal drawing refer to:		
Model 415P-P	Single Wall	S5453
Model 415DWP-P	Double Wall	S5499
Model 535P-P	Single Wall	S5454
Model 535DWP-P	Double Wall	S5500
Model 665P-P	Single Wall	S5455
Model 665DWP-P	Double Wall	S5501
Model 8120P-P	Single Wall	S5456
Model 812DWP-P	Double Wall	S5502

Flo-Rite-Temp™ Instantaneous Steam/Water Heater						
Model	Entering Water Temperature	Outlet Temperature				
		120	130	140	160	180
415P-P	40	20	18	16	12	7
	50	20	20	17	13	7
	60	-	20	19	14	7
535P-P	40	45	39	34	26	16
	50	45	43	37	28	17
	60	-	45	40	30	18
665P-P	40	80	73	63	48	32
	50	80	80	68	51	33
	60	-	80	75	55	35
8120P-P	40	145	145	120	95	59
	50	145	145	134	102	72
	60	-	145	145	115	90

NOTE: All flow rates in gallons per minute and using 15 PSIG steam.

Non-Recirculating Hot Water Systems

Parallel/Redundant Pre-piped Single Temperature (PP-P)

Flo-Rite-Temp® Instantaneous Steam/Water Heater for Non-Recirculating Hot Water Systems feature four heat exchanger options offered as pre-piped parallel single temperature packaged assemblies.

Flo-Rite-Temp® Pre-Piped (P-P) Parallel (P) Single Temperature Systems are fully assembled and include the following installation components:

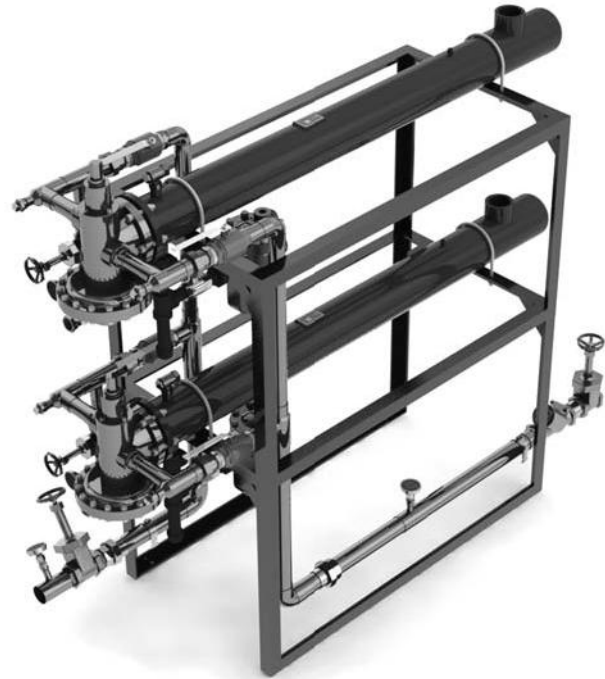
- Steam Trap
- Air Vent
- Thermometers
- CIP connection port
- Flow Control/Isolation Valves

Ideal for both new construction and retrofit installation within an existing building infrastructure. Flo-Rite-Temp® Pre-Piped (P-P) Parallel (P) Single Temperature Systems are designed to fit through a standard 32" doorway (Model 8120 36" doorway).

Armstrong Flo-Rite-Temp® Instantaneous Steam/Water Heater pre-piped packages are available in standard configurations per the specification matrix on page 26.

Customized Hot Water System Solutions are our specialty. Multiple orientations, configurations and options are available.

Hot Water System Solutions which include condensate recovery, circulating pumps, additional mixed water temperature controls/loops and varied other components can be application engineered specifically to meet the projects requirements.



For submittal drawing refer to:		
Model 415PP-P	Single Wall	\$5457
Model 415DWPP-P	Double Wall	\$5503
Model 535PP-P	Single Wall	\$5458
Model 535DWPP-P	Double Wall	\$5504
Model 665PP-P	Single Wall	\$5459
Model 665DWPP-P	Double Wall	\$5505
Model 8120PP-P	Single Wall	\$5460
Model 8120DWPP-P	Double Wall	\$5506

If unit is operated in parallel then double flow rate given for total available capacity.

Flo-Rite-Temp™ Instantaneous Steam/Water Heater						
Model	Entering Water Temperature	Outlet Temperature				
		120	130	140	160	180
415PP-P	40	20	18	16	12	7
	50	20	20	17	13	7
	60	-	20	19	14	7
535PP-P	40	45	39	34	26	16
	50	45	43	37	28	17
	60	-	45	40	30	18
665PP-P	40	80	73	63	48	32
	50	80	80	68	51	33
	60	-	80	75	55	35
8120PP-P	40	145	145	120	95	59
	50	145	145	134	102	72
	60	-	145	145	115	90

NOTE: All flow rates in gallons per minute and using 15 PSIG steam.