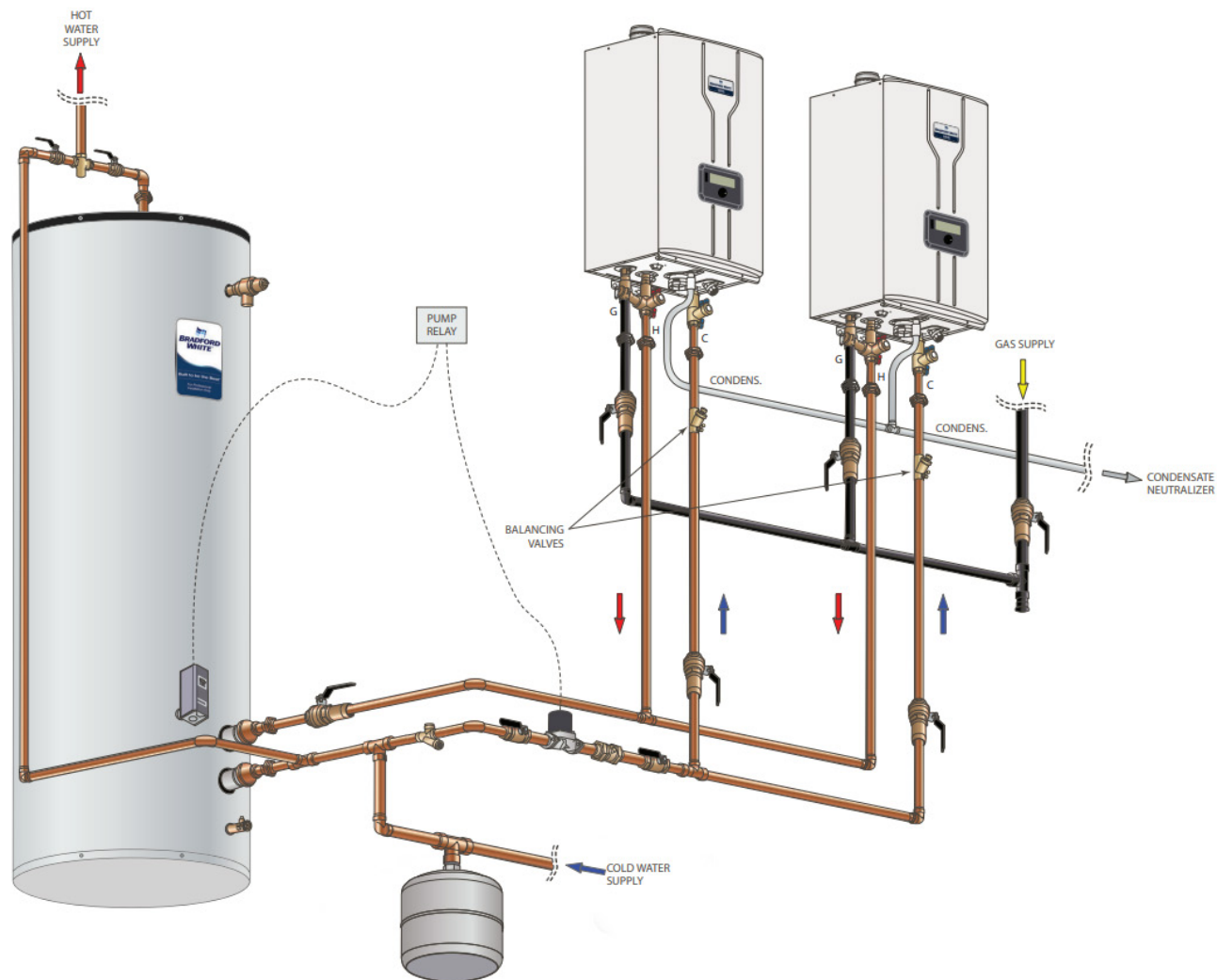


COMMERCIAL TANKLESS WITH STORAGE

This document provides the information needed to size a commercial tankless with storage system.



Commercial tankless with storage diagram is depicting two tankless units with one system pump and no recirculation. Please reference application manual for additional configurations.

Step 1: Determine Number of Tankless Units & Tank Capacity based on Flow Rates or First Hour Rating

Tankless Count	Tankless only Application Flowrates		Residential Storage Tanks				Commercial Storage Tanks			Large Volume Storage Tanks											
	GPM Flow @ 100°F Rise	GPH Flow @ 100°F Rise	AST-40-6	AST-50-6	AST-80-6	AST-120-6	M-3ST-80R5	M-3ST-120R5	M-3ST-200R5	N†193***A	N†229***A	N†260***A	N†303***A	N†318***A	N†340***A	N†344***A	N†375***A	N†397***A	N†432***A	N†449***A	N†486***A
			40 Gallon	50 Gallon	80 Gallon	120 Gallon	80 Gallon	120 Gallon	200 Gallon	193 Gallon	229 Gallon	260 Gallon	303 Gallon	318 Gallon	340 Gallon	344 Gallon	375 Gallon	397 Gallon	432 Gallon	449 Gallon	486 Gallon
1	3.9	234	264	272	289	316	289	316	370	366	392	414	444	448	474	467	489	504	523	546	561
2	7.8	468	498	506	523	550	523	550	604	600	626	648	678	682	708	701	723	738	757	780	795
3	11.7	702	732	740	757	784	757	784	838	834	860	882	912	916	942	935	957	972	991	1014	1029
4	15.6	936	966	974	991	1018	991	1018	1072	1068	1094	1116	1146	1150	1176	1169	1191	1206	1225	1248	1263
5	19.5	1170	1200	1208	1225	1252	1225	1252	1306	1302	1328	1350	1380	1384	1410	1403	1425	1440	1459	1482	1497
6	23.4	1404	1434	1442	1459	1486	1459	1486	1540	1536	1562	1584	1614	1618	1644	1637	1659	1674	1693	1716	1731
7	27.3	1638	1668	1676	1693	1720	1693	1720	1774	1770	1796	1818	1848	1852	1878	1871	1893	1908	1927	1950	1965
8	31.2	1872	1902	1910	1927	1954	1927	1954	2008	2004	2030	2052	2082	2086	2112	2105	2127	2142	2161	2184	2199
9	35.1	2106	2136	2144	2161	2188	2161	2188	2242	2238	2264	2286	2316	2320	2346	2339	2361	2376	2395	2418	2433
10	39	2340	2370	2378	2395	2422	2395	2422	2476	2472	2498	2520	2550	2554	2580	2573	2595	2610	2629	2652	2667
11	42.9	2574	2604	2612	2629	2656	2629	2656	2710	2706	2732	2754	2784	2788	2814	2807	2829	2844	2863	2886	2901
12	46.8	2808	2838	2846	2863	2890	2863	2890	2944	2940	2966	2988	3018	3022	3048	3041	3063	3078	3097	3120	3135
13	50.7	3042	3072	3080	3097	3124	3097	3124	3178	3174	3200	3222	3252	3256	3282	3275	3297	3312	3331	3354	3369
14	54.6	3276	3306	3314	3331	3358	3331	3358	3412	3408	3434	3456	3486	3490	3516	3509	3531	3546	3565	3588	3603
15	58.5	3510	3540	3548	3565	3592	3565	3592	3646	3642	3668	3690	3720	3724	3750	3743	3765	3780	3799	3822	3837
16	62.4	3744	3774	3782	3799	3826	3799	3826	3880	3876	3902	3924	3954	3958	3984	3977	3999	4014	4033	4056	4071

(1) Tankless unit only system has controlled outlet temperature/flow. GPH requirement should be considered to be the peak maximum GPM flow rate x 60 min.

Ex: One RTGS199N1/RTGR199N1 is 3.9 GPM @ 100° F Rise x 60 min = 234 GPH

(2) Tankless with Storage GPH First Hour Rating is calculated by tankless recovery rate and 75% of available storage capacity.

If using pump other than those listed in table to the left, reference the below pump flow requirements based on the number of tankless units

Step 2: Select the Correct Pump Make and Model Based on the Number of Tankless Units

RTGS Unit Count	Unit Flow Rate	Total Flowrate (GPM)	Recommended Pipe Manifold Size	Armstrong	Bell and Gossett	Grundfos	Taco	Wilo
1	5 Gallons per minute for each Unit	5	3/4"	-	NRF-36, NRF-45	UP 26-96	0011-SF4	Top Z 2X40
2		10	1-1/4"	EE.2B	NRF-36, NRF-45	UPS 26-99	0013-SF3, 2400-20S	Top Z 2X40
3		15	1-1/2"	EE.2B, E9.2B	PL-36	UPS26-150, UPS32-160	2400-45S, 133B	Top Z 2X40
4		20	1-1/2"	E9.2B, E23.2B	PL-55, PDB-40	UPS26-150, UPS32-160	2400-45S, 133B	Top Z 2X40
5		25	1-1/2"	E23.2B	PL-55, PDB-40	UPS26-150, UPS32-160	2400-50S, 133B	Top Z 2X40
6		30	2"	E23.2B	PL-55, PDB-40	UPS32-160, UPS 40-160	2400-50S, 133B	Top Z 2X40
7		35	2"	E23.2B, E22.2B, H64B	PDB-40	UPS32-160, UPS 40-160	133B	Top Z 2X40
8		40	2"	E23.2B, E22.2B, H64B	PDB-40	UPS32-160, UPS 40-160	133B	Top Z 2X40
9		45	2-1/2"	E23.2B, E22.2B, H64B	PDB-40	UPS32-160, UPS 40-160	133B	Top Z 2X40
10		50	2-1/2"	E22.2B, H67B	PDB-40	UPS32-160, UPS 40-160	133B	Top Z 2X40
11		55	2-1/2"	H67B	PDB-40	UPS 40-160	133B	Top Z 2X40
12		60	2-1/2"	H67B		UPS 40-160	133B	Top Z 2X40

Pump selections are based on the storage tank(s) placed at 30' away from RTGS units, full pipe size.

90° elbows should be considered 5 equivalent feet.

45° elbows should be considered 2 equivalent feet.

RTGS199N1 Tankless	
Number of Heaters	Pump Flow Requirements*
1	5 GPM @ 26' head (11 PSI)
2	10 GPM @ 26' head (11 PSI)
3	15 GPM @ 26' head (11 PSI)
4	20 GPM @ 26' head (11 PSI)
5	25 GPM @ 26' head (11 PSI)
6	30 GPM @ 26' head (11 PSI)
7	35 GPM @ 26' head (11 PSI)
8	40 GPM @ 26' head (11 PSI)
9	45 GPM @ 26' head (11 PSI)
10	50 GPM @ 26' head (11 PSI)
11	55 GPM @ 26' head (11 PSI)
12	60 GPM @ 26' head (11 PSI)

*Additional pressure losses in plumbing between the water heater(s) and the storage tank or total piping of recirculation loop must also be taken into consideration and added.