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7145 Boone Avenue North Suite 200B, Brooklyn Park, MN 55428

	Gas Fired Condensing Boilers, Water Heaters, Semi-Instantaneous Water Heaters and Steam Generators
	The world's leading supplier of plate heat exchangers, which are all characterized by their compact design and high thermal efficiency.
	Gas Fired Water Heaters, Storage Tanks, Semi-Instantaneous Water Heaters, Steam Generators, Storage Water Heaters
	Pressure Booster Systems, Packaged Constant Speed and Variable Speed Pumping Systems
	Glycol Feed Packages
	Boiler stack economizers
	Single and Double Wall Appliance Venting Fabricated of AL29-4C Stainless Steel for Category IV Appliances (Condensing, Forced Draft)
	Supplier of gas, oil & wood fired boilers
	Storage Tanks, Steel Sump Basins, Replacement Condensate Receivers and Glycol Fill Tanks
	Steam boilers, hot water boilers, thermal liquid heaters, and indirect water heaters.
	Oil, gas, dual-fuel and low NOx burners

	Positive Pressure Venting Products
	Siemens Linkageless Burner Management System
	Condensate Return/Boiler Feed Systems, Pumps, Vacuum Condensate/Boiler Feeder Systems, and Replacement Receivers
	Adjustable Frequency Drives
	Centrifugal Pumps, Hydronic Equipment, Shell/Tube and Plate/Frame Heat Exchangers, Tank Coils, Balancing Valves
	Innovative equipment for hot water systems/high efficiency condensing boilers
	Modular Cooling Towers
	Manufacturing uniquely rugged hot water and steam boilers since 1926
	Flexible Connectors and Expansion Compensation Devices
	Inertia Base Forms and Spring Isolators
	ASME and non-ASME certified pressure vessels
	W&D products include steam boilers, vertical steam boilers, and hot water boilers.

since 1956

Volume of Water in Standard Pipe and Tube

Standard Steel Pipe			Type L Copper Tube							
Nominal Pipe Size			Inside Diameter		Volume		Inside Diameter		Volume	
In.	(mm)	Schedule No.	in.	(mm)	gal/ft	(L/m)	in.	(mm)	gal/ft	(L/m)
3/8	10	-	-	-	-	-	0.430	1.09	0.0075	0.09
1/2	15	40	0.622	1.58	0.0157	0.19	0.545	1.38	0.0121	0.15
5/8	16	-	-	-	-	-	0.666	1.69	0.0181	0.22
3/4	20	40	0.824	2.09	0.0277	0.34	0.785	1.99	0.0251	0.31
1	25	40	1.049	2.66	0.0449	0.56	1.025	2.60	0.0429	0.53
1 1/4	32	40	1.380	3.50	0.0779	0.97	1.265	3.21	0.0653	0.81
1 1/2	40	40	1.610	4.09	0.106	1.32	1.505	3.82	0.0924	1.15
2	50	40	2.067	5.25	0.174	2.16	1.985	5.04	0.161	2.00
2 1/2	65	40	2.469	6.27	0.249	3.09	2.465	6.26	0.248	3.08
3	80	40	3.068	7.79	0.384	4.77	2.945	7.48	0.354	4.40
3 1/2	90	40	3.548	9.01	0.514	6.38	3.425	8.70	0.479	5.95
4	100	40	4.026	10.23	0.661	8.21	3.905	9.92	0.622	7.73
5	125	40	5.047	12.82	1.04	12.92	4.875	12.38	0.97	12.05
6	150	40	6.065	15.41	1.50	18.63	5.845	14.85	1.39	17.26
8	200	30	8.071	20.50	2.66	33.03	7.725	19.62	2.43	30.18
10	250	30	10.136	25.75	4.19	52.04	9.625	24.45	3.78	46.95
12	300	30	12.090	30.71	5.96	74.02	11.565	29.38	5.46	67.81

Useful Formulas

$$\text{GPM} = \frac{\text{BTU/HR}}{500 \times \text{H}_2\text{O } \Delta T}$$

$$\text{PUMP HP} = \frac{\text{GPM} \times \text{FT. HD.}}{3960 \times \text{EFF. OF PUMP}}$$

1 CU. FT. H₂O = 7.48 GAL H₂O

BOILER HP = 33476 BTU/HR

1 GAL. H₂O = 8.33 LBS.

$$\text{LBS/HR OF CONDENSATE} = \frac{\text{BTU/HR}}{\text{BTU/LB OF STEAM}}$$

1 CU. FT. H₂O = 62.3 LBS.

$$\text{GPM} = \frac{\text{LBS/HR OF CONDENSATE}}{500}$$

746 WATTS = 1 HP

1 WATT = 3.415 BTU

Max GPM	Size (IN)
UP TO 4	3/4"
4 TO 8	1"
8 TO 16	1-1/4"
16 TO 24	1-1/2"
24 TO 50	2"
50 TO 80	2-1/2"
80 TO 150	3"
150 TO 300	4"
300 TO 750	6"
750 TO 1600	8"
1600 TO 2800	10"
2800 TO 4500	12"