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Sizing of Gastite CSST for Tankless Water Heaters

Tankless Water Heaters are gaining in popularity due to the many advantages they offer over traditional models. However, the installation of these units does present a few gas-pipe sizing challenges. Tankless Water Heaters require significantly more BTU capacity than traditional Water Heaters and often require higher inlet gas pressures.

It is common for a Tankless Water Heater to require four to five times the typical BTU input of a standard water heater. Consequently, the gas line to the existing tank water heater in a retro-fit installation may not have sufficient capacity to supply a Tankless Water Heater, and a new dedicated line may be needed. For new installations, it is often easiest and most cost-effective to supply gas to this appliance with a dedicated run from the meter and/or the line-pressure regulator (on a dual-pressure system) to the appliance rather than upsizing the whole house piping.

It is also important to note that some Tankless Water Heaters may require higher than normal gas inlet pressures. While many natural gas appliances will operate with 5"WC inlet pressure or less, Tankless Water Heaters may require gas inlet pressures of 6"WC or higher. It is very important that the installer verify the required gas inlet pressure requirements so that the appropriate pressure drop is used to size the gas piping.

The sizing tables on the back of this document are extracted from the Gastite Design & Installation Guide and are reprinted here for the installer's convenience when running a dedicated supply line from the meter to the Tankless Water Heater. Choosing the appropriate table will depend upon the minimum inlet pressure and BTU's required by the appliance, starting pressure available at the meter and the allowable pressure drop as dictated by local code.

Example 1: The pressure supplied at the meter is 7"WC, the minimum inlet pressure for the appliance is 5"WC and the local code will allow the resultant 2"WC pressure drop. Using the table for 2"WC drop we find that ¾" Gastite will supply 203,000 BTU's at a distance of 25', thus adequately supplying this 200,000 BTU unit.

Example 2: Consider the same installation with a higher inlet pressure requirement. The pressure at the meter is still 7"WC, the minimum inlet pressure for the appliance is now 6"WC, thus the resultant allowable pressure drop is only 1"WC. Using the table for 1"WC drop we find that ¾" Gastite will only supply 148,000 BTU's at a distance of 25'. To adequately supply the 200,000 BTU unit, 1" Gastite will be required.

Turn over for sizing charts



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Maximum capacity of Gastite flexible gas piping in cubic feet per hour of Natural Gas with a gas pressure of 0.5 psi or less

Pressure Drop: 0.5" WC

Size	Tubing Length														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
1/2"	120	85	69	62	56	49	42	37	34	32	30	29	28	25	22
3/4"	225	161	132	116	106	96	83	75	68	63	60	57	54	46	42
1"	601	421	341	296	268	240	206	185	169	155	145	138	136	118	100

Pressure Drop: 1.0" WC

Size	Tubing Length														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
1/2"	148	125	106	88	80	72	63	56	51	47	44	42	40	36	32
3/4"	351	303	202	168	148	133	113	99	89	82	76	71	66	58	52
1"	659	547	450	384	345	312	269	240	219	202	189	178	169	150	137

Pressure Drop: 1.5" WC

Size	Tubing Length														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
1/2"	197	141	115	100	90	82	71	64	58	54	51	48	45	41	37
3/4"	381	273	225	197	177	162	141	127	116	108	101	96	91	82	75
1"	958	672	547	472	421	384	331	295	269	249	232	219	207	185	169

Pressure Drop: 2.0" WC

Size	Tubing Length														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
1/2"	227	162	133	115	103	94	82	74	67	62	58	55	52	47	43
3/4"	437	314	259	225	203	186	162	146	133	124	116	110	105	94	86
1"	1110	779	633	547	488	444	384	342	312	288	269	253	240	214	195

Maximum capacity of Gastite flexible gas piping in thousands of BTU per hour of LPG with a gas pressure of 0.5 psi or less

Pressure Drop: 0.5" WC

Size	Tubing Length														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
1/2"	166	142	115	98	93	90	65	58	54	50	48	46	44	41	35
3/4"	391	280	219	180	162	151	131	118	107	94	94	90	85	76	66
1"	950	666	539	468	410	379	328	292	266	245	229	217	205	176	158

Pressure Drop: 1.0" WC

Size	Tubing Length														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
1/2"	256	183	150	130	117	107	93	83	76	70	66	62	59	53	48
3/4"	497	357	294	257	231	212	184	166	152	141	133	125	119	107	98
1"	1235	866	704	608	542	494	427	381	347	320	299	282	267	238	217

Pressure Drop: 2.0" WC

Size	Tubing Length														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
1/2"	360	256	210	183	164	150	130	117	107	99	93	87	83	74	68
3/4"	692	497	410	357	321	294	257	231	212	197	184	174	166	149	137
1"	1759	1235	1004	866	773	704	608	542	494	457	427	402	381	340	309

Turn over for Tankless Water Heater Recommendations