

GAS SUPPLY AND PIPING

GENERAL INFORMATION



THIS WATER HEATER IS EQUIPPED FOR ONE TYPE OF GAS ONLY. DO NOT USE THIS WATER HEATER WITH ANY GAS OTHER THAN THE ONE LISTED ON THE DATA PLATE LOCATED NEAR THE GAS CONTROL. FAILURE TO USE THE CORRECT GAS CAN RESULT IN PROPERTY DAMAGE, BODILY INJURY, OR DEATH.

This water heater must only be connected to gas supplied by a commercial utility.

GAS PIPING

Install the gas piping according to all local and state codes or with the "National Fuel Gas Code", ANSI Z223.1 (NFPA 54)-Latest Edition.

Do not use copper and brass piping and fittings (except tin-lined copper tubing) if the gas contains more than 0.3 grains of hydrogen sulfide per 100 standard cubic feet of gas. Contact your local gas utility company if you are unsure about this.

Table 2 and Table 3 are provided as a sizing reference for commonly used gas pipe materials. Consult the "National Fuel and Gas Code" for the recommended gas pipe size of other materials.



THE GAS LINE MUST BE OF ADEQUATE SIZE SO AS TO PREVENT UNDUE PRESSURE DROP AND NEVER SMALLER THAN THE PIPE SIZE TO THE GAS VALVE ON THE WATER HEATER. FAILURE TO PROPERLY SIZE THE GAS LINE CAN CAUSE A FIRE OR EXPLOSION RESULTING IN PROPERTY DAMAGE, BODILY INJURY OR DEATH.

When installing gas piping, use a pipe joint compound that is resistant to the action of propane (LPG) gases. Apply the compound to male threads only. Do not apply the compound to the first 2 threads. Do not use TEFLON tape.

Do not use pipe joint compound or TEFLON tape on the union connection.



CONTAMINANTS IN THE GAS PIPING MAY FOUL THE THERMOSTAT CAUSING A MALFUNCTION, FIRE, OR EXPLOSION. BE SURE ALL GAS PIPING IS CLEAN AND CLEAR ON THE INSIDE BEFORE ATTACHING THE GAS LINE.

When making pipe connections, use a back-up wrench to prevent any twisting of the control valve/ thermostat assembly. Do not use excessive force when tightening the pipe joint at the thermostat inlet.

Refer to Figure 16 page 15 and install as follows:

1. Install a readily accessible manual shutoff valve in the gas supply line as recommended by the local utility. Know the location of this valve and how to turn off the gas to this unit.
2. Install a drip leg (if not already incorporated as part of the water heater) as shown. The drip leg must be no less than 3 inches long for the accumulation of dirt, foreign material and water droplets.
3. Install a ground joint union between the gas valve/thermostat and the manual shutoff valve. This is to allow easy removal of the gas valve/ thermostat.

IMPORTANT: Refer to the "Gas Pressure Testing" section on the next page before pressure testing the gas lines.

TABLE 2

NATURAL GAS PIPE CAPACITY TABLE (CU. FT./HR)

Capacity of gas pipe of different diameters and lengths in cu. ft. per hr. with pressure drop of 0.3 in. and specific gravity of 0.60 (natural gas).

Nominal Iron Pipe Size, Inches	Length of Pipe, Feet													
	10	20	30	40	50	60	70	80	90	100	125	150	175	200
1/2	132	92	73	63	56	50	46	43	40	38	34	31	28	26
3/4	278	190	152	130	115	105	96	90	84	79	72	64	59	55
1	520	350	285	245	215	195	180	170	160	150	130	120	110	100
1-1/4	1050	730	590	500	440	400	370	350	320	305	275	250	225	210
1-1/2	1600	1100	890	760	670	610	560	530	490	460	410	380	350	320

After the length of pipe has been determined, select the pipe size which will provide the minimum cubic feet per hour required for the gas input rating of the water heater. By formula:

$$\text{Cu. Ft. Per Hr. Required} = \frac{\text{Gas Input of Water Heater (BTU/HR)}}{\text{Heating Value of Gas (BTU/FT}^3\text{)}}$$

The gas input of the water heater is marked on the water heater data plate. The heating value of the gas (BTU/FT³) may be determined by consulting the local natural gas utility.

TABLE 3

LP GAS PIPE CAPACITY TABLE

Maximum capacity of pipe in thousands of BTU per hour of undiluted liquefied petroleum gases (at 11 inches water column pressure). Based on a Pressure Drop of 0.5 Inch Water Column.

Nominal iron pipe size, in.	Length of Pipe, Feet												
	10	20	30	40	50	60	70	80	90	100	125	150	
1/2	275	189	152	129	114	103	96	89	83	78	69	63	
3/4	567	393	315	267	237	217	196	185	173	162	146	132	
1	1071	732	590	504	448	409	378	346	322	307	275	252	
1-1/4	2205	1496	1212	1039	913	834	771	724	677	630	567	511	

Example: Input BTU requirement of the water heater, 100,000 BTUH
Total pipe length, 80 feet = 3/4" IPS required.