

**THIS QUICK TUTORIAL
WILL GUIDE YOU
THROUGH THE STEPS
ON CALCULATING THE
FIRING RATE ON THE
CG4 GAS BURNER**

The primary method for verifying the burner's firing rate, for either natural gas or propane, is to assure that the correct fuel orifice is properly installed and that the gas valve outlet pressure is accurately set to 3.5" water column.

Determine the correct fuel orifice using the appliance's fuel type, firing rate and **Table 5** and insert it into the recess in the manifold adapter on the top of the burner's air tube. Notice in **Table 5** that not all natural gas applications use a fuel orifice.

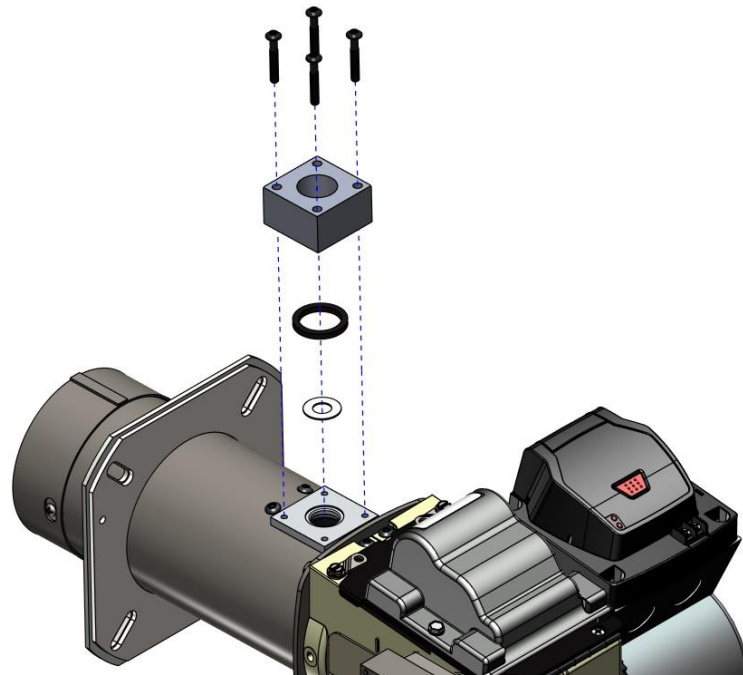
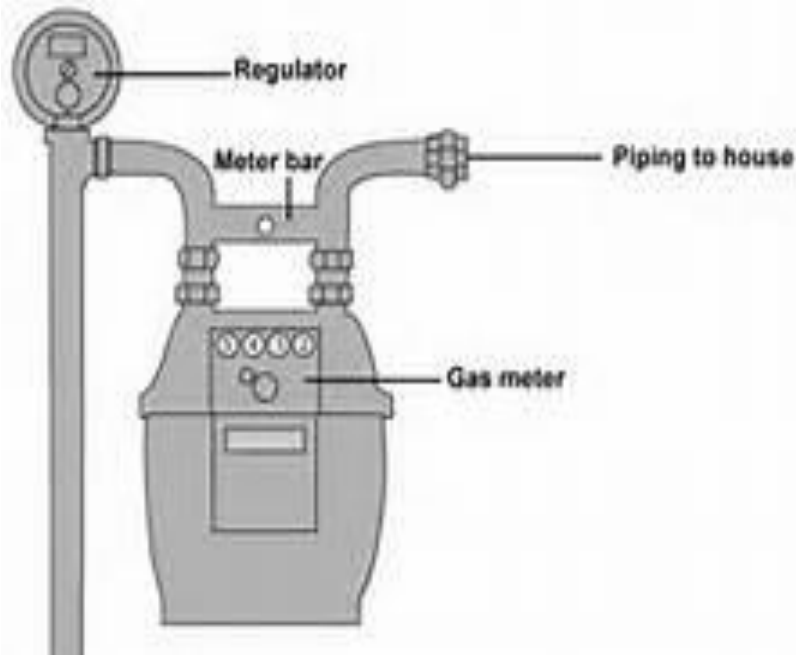


Table 5 – Firing Rates and Configurations

Firing Rate BTU/Hr. ❶	Fuel Orifices		Air Tube Components ❷			Chassis Components ❸		Initial Settings ❹	
	Natural Gas Orifice Dia. Inches ❺	L P Orifice Dia. Inches ❻	Burner Head	Nozzle	Static Plate	Baffle	Band	Shutter	Band
80,000	0.219	0.166	F3G	01	32910-001	5880	Blank	2-1/2	Blank
90,000	0.234	0.177	F3G	01	32910-001	5880	Blank	4	Blank
100,000	0.25	0.189	F3G	01	32910-001	5880	Blank	5-1/2	Blank
110,000	0.277	0.206	F3G	01	32910-001	5880	Blank	7-1/2	Blank
120,000	0.316	0.219	F3G	01	32910-001	5880	4-slot	9	0
130,000	0.364	0.234	F3G	01	32910-001	n/a	4-slot	5-1/2	0
140,000	N/A	0.242	F3G	01	32910-001	n/a	4-slot	7-1/2	0
130,000	0.281	0.217	F4G	02	32910-001	5880	4-slot	8	0
145,000	0.316	0.234	F4G	02	32910-001	5880	4-slot	10	0
160,000	0.348	0.246	F4G	02	32910-001	n/a	4-slot	6-1/2	0
175,000	0.406	0.261	F4G	02	32910-001	n/a	4-slot	8-1/2	0
190,000	N/A	0.281	F4G	02	32910-001	n/a	4-slot	10	0
180,000	0.332	0.246	F6G	03	n/a	n/a	4-slot	5-1/2	0
190,000	0.354	0.256	F6G	03	n/a	n/a	4-slot	7	0
205,000	0.377	0.266	F6G	03	n/a	n/a	4-slot	8-1/2	0
220,000	0.422	0.281	F6G	03	n/a	n/a	4-slot	10	0
235,000	0.484	0.295	F6G	03	n/a	n/a	4-slot	10	2
250,000	N/A	0.312	F6G	03	n/a	n/a	4-slot	10	4

Clocking a Gas Meter

Locate the gas meter and examine its display to be sure that you can determine a 1 cubic foot usage of gas and that the meter is temperature compensated.



Clocking a Gas Meter

Start the burner and use a stopwatch to measure the number of **timed seconds** it takes for the burner to fire 1 cubic foot of gas.

1. Turn off all Gas Appliances in the home.

2. Turn on the appliance being tested, to the highest firing rate (be careful of two-stage furnaces and variable capacity boilers, etc.)

3. Once at steady-state, use a stopwatch (last check there are about 219 Apps for that) to time how long it takes the smallest unit of measure (typically the 1/2 Cubic Foot) dial to make a full revolution on the gas meter.

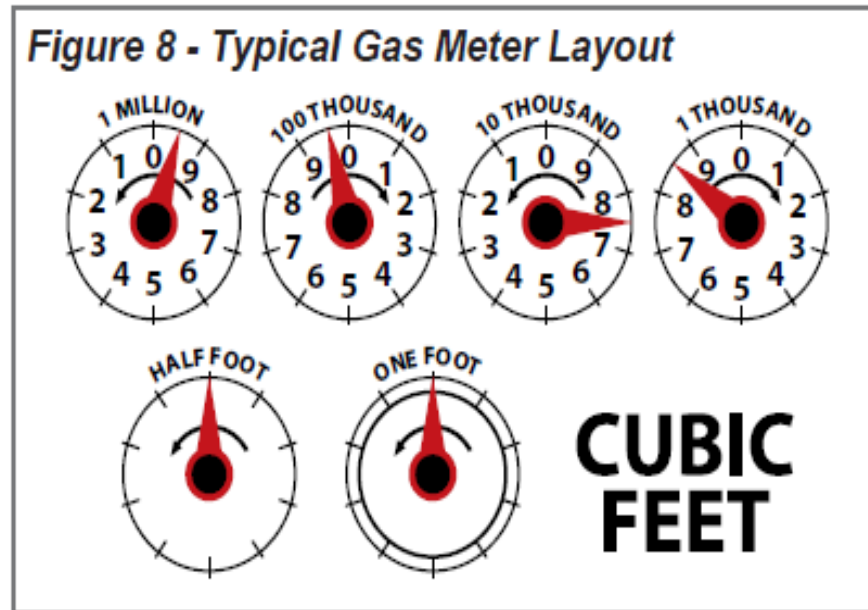
4. Cubic Feet per Hour (CFH) = $(3600 \times \text{Dial Size}) / \text{Time (seconds)}$

5. CFH x 1000 Btu's = Input Btu/hr

Clocking a Gas Meter

**Firing rate BTU/Hr. = Heating value (BTU/Cu. Ft.) x 3,600
÷ Timed Seconds**

For example, if the heating value is 1,050 BTU/Cu. Ft. and you timed 1 cubic foot of gas at 42 seconds then firing rate BTU/Hr. = 1050 x 3,600 ÷ 42 which calculates to 90,000 BTU/Hr.



Clocking a Gas Meter

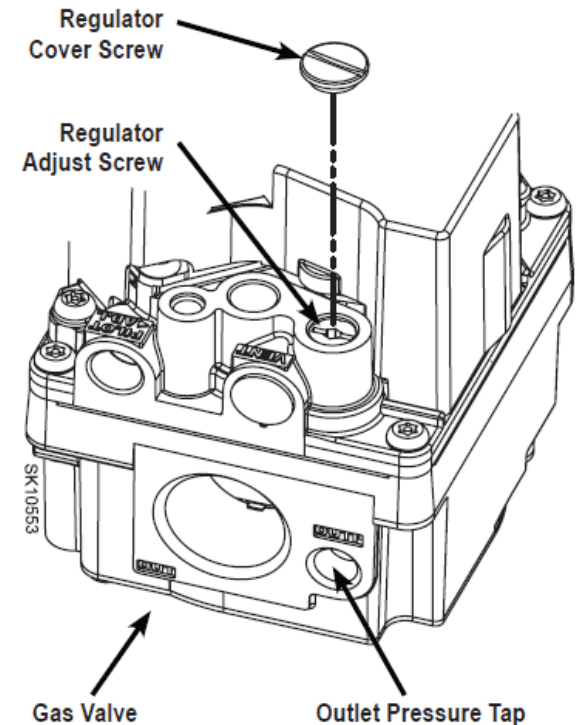
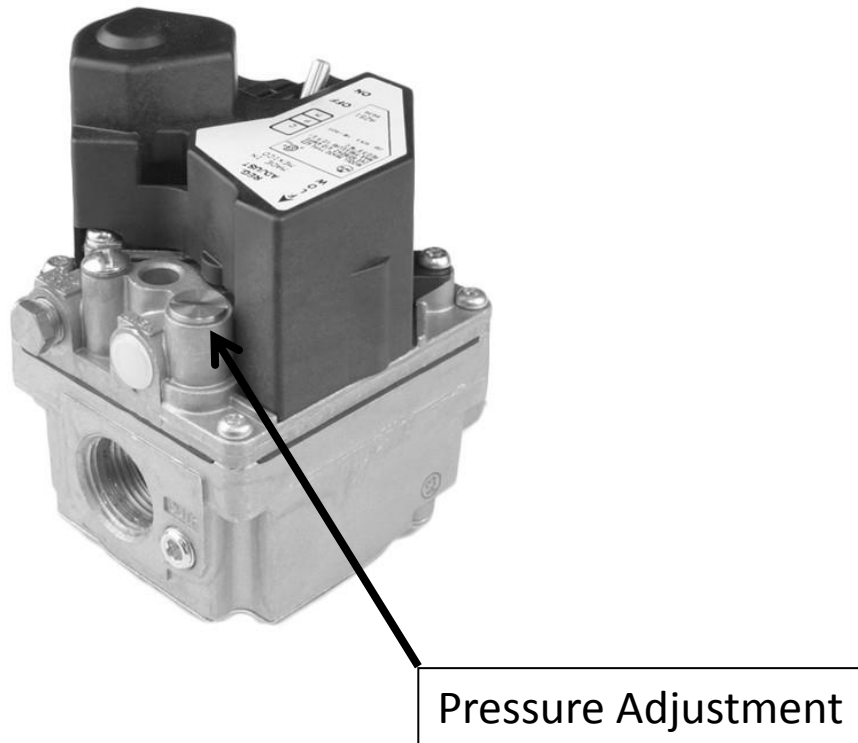
For a more accurate calculation, replace the 1,050 Btu in the formula with the actual amount of Btu's per Cubic Foot. This can be obtained by contacting your gas supplier. Otherwise, it would be very tough to account for altitude. For instance, Denver operates about 860 Btu's per cubic foot or so.

Also, I would recommend you clock (3) revolutions of the meter, then divide the time by three for an average reading in seconds. When working with propane, it helps to temporarily pipe in a meter to accurately clock as most tanks only have regulators. Also, propane has approximately 2,500 Btu's per cubic foot.

NOTICE

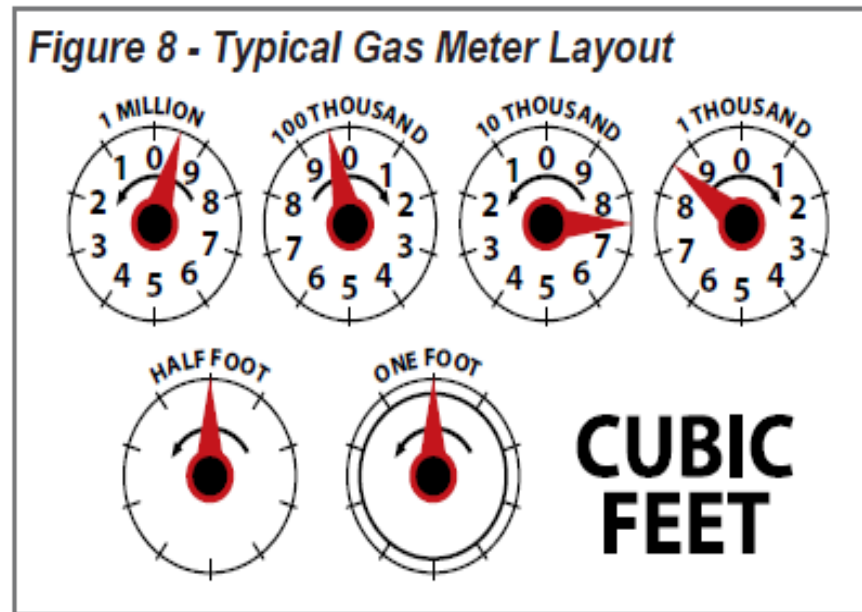
If the firing rate is too low or too high, you can change the rate by increasing or decreasing the manifold pressure. You can also change the orifice and clock the gas meter again until the correct rate is achieved.

The manometer should show 3.5" water column pressure. If it doesn't, let the burner continue to run and adjust the gas valve pressure regulator in the following steps.



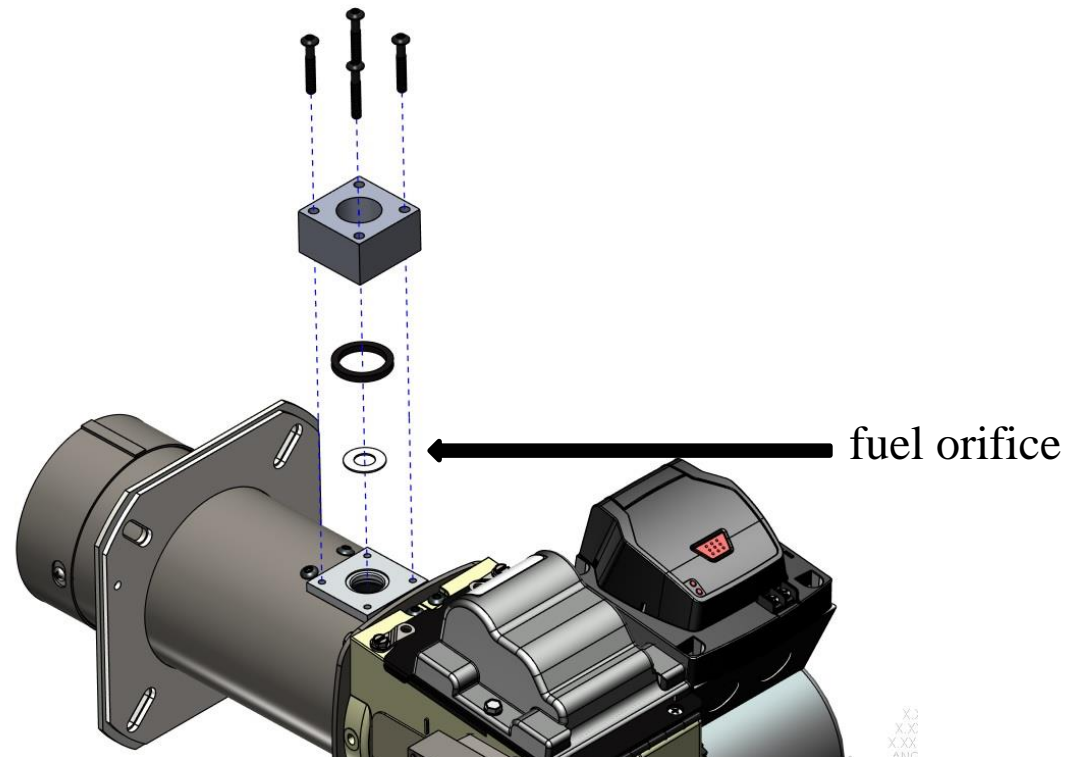
Remove the regulator cover screw from the regulator adjustment tower and turn the regulator adjust screw clockwise to increase pressure or counterclockwise to decrease pressure. Set the regulator to produce a 3.5" water column reading in the manometer.

After you adjust the manifold pressure. Clock the gas meter again to calculate the firing rate.

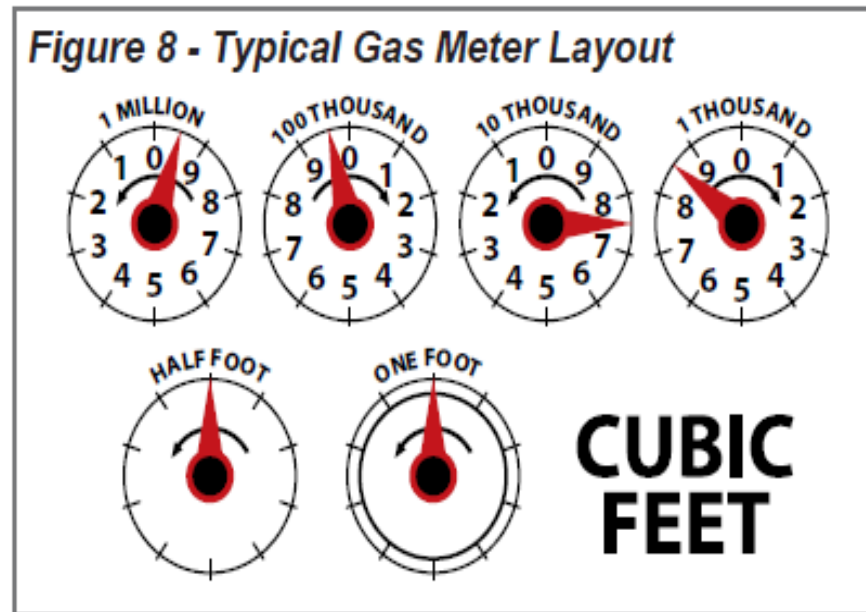


Start the burner and use a stopwatch to measure the number of **timed seconds** it takes for the burner to fire 1 cubic foot of gas.

Change the fuel orifice using the appliance's fuel type, firing rate and *Table 5* and insert it into the recess in the manifold adapter on the top of the burner's air tube as shown.



After you change the orifice. Clock the gas meter again to calculate the firing rate.



Start the burner and use a stopwatch to measure the number of **timed seconds** it takes for the burner to fire 1 cubic foot of gas.