



TECH TIP #37 GAS REGULATOR SELECTION

Sizing Gas Regulators and Meters

When sizing a **gas regulator** the following must be known:

- > Available inlet pressure
- > Desired outlet (regulated) pressure
- > Required maximum flow rate (capacity) Btu/h, ft³/h or m³/h
- > Pipe size

Helpful things to also know:

- > Is the application requiring:
 - service regulator (normally outside the building to convert “pounds to ounces”) example brands – Sensus, Fisher
 - line regulator (frequently inside the building to reduce 2-5 psi to 1/2 psi, and ventless) example brand – Maxitrol
 - appliance regulator (frequently furnished on an appliance, having a max. pressure of 1/2 psi) example brand – Maxitrol
- > Will the regulator be used for main burner and pilot application OR main burner only?
- > Will the regulator provide positive dead-end lock up? (dead-end lock up means pressure will not “creep up” while regulator is in closed, no-flow position)

With this information, one can go to the literature of the manufacturers and make the selection. Accessories may include moisture protectors, vent restrictors, and relief valves.

Helpful Facts and definitions:

Pressure conversion in gas service:

1 psi = 16 ounces = 27.7 inches, w.c. (water column)

With this relationship, one can convert pressure from psi to oz. to in. wc

CFH – cubic feet per hour

Natural gas – normally 1 CFH = 1000 Btu/hr

Propane – normally 1 CFH = 2550 Btu/hr

Butane – normally 1 CFH = 3200 Btu/hr

SCFH – standard cubic feet per hour flow (at 14.4 psia – sea level atmospheric pres. at 60F)



SERVICE REGULATOR



LINE REGULATOR



APPLIANCE REGULATOR

Proper sizing of **gas meters** involve two main variables:

- ▷ Inlet pressure
- ▷ Volume of flow

With these two pieces of information, a type of regulator is selected:

- ▷ Diaphragm – normally used in residential and commercial applications up to 800 CFH, example brand – Sensus
- ▷ Rotary – popular because of size, weight and ease of installation, used up to 7000-8000 CFH, example brand – Dresser Roots
- ▷ Turbine – for applications over 7000-8000 CFH, example brand – Sensus



DIAPHRAM



ROTARY



TURBINE