



## Gas Piping and Generator Operation

An adequate natural gas supply is the least understood and the most critical step in the installation of a standby generator. Gas meter capacity, pressure and pipe sizing directly influence a generator's (engine) performance and lifespan. Improper installation can void a manufacturer's warranty leaving the customer to pay the price.

We have witnessed licensed plumbers improperly size and install natural gas piping, reasoning that since the gas inlet on the generator is ½", the gas piping can be ½" also. This may be harmless for the installation of a gas clothes dryer or water heater, with the result that the appliance will only take longer to perform its function; but for a gas engine this is detrimental to engine performance and lifespan.

The proper installation of a natural gas supply includes the following:

- A properly sized gas meter that has the capacity (volume of gas flow) to support the generator at full load and all gas appliances operating during generator operation.
- Correct gas supply pressure per manufacturer requirements. (GUARDIAN® 8-20kW air cooled standby generators require between 5-7 inches of water column pressure for natural gas)
- Gas piping properly sized for the length of piping required to deliver the necessary gas volume at the correct pressure to the generator.

A deficiency in any of the above requirements will lead to poor generator (engine) performance. This is characterized by limited generator output, sluggish response to additional loads, stalling and even failure to start. More importantly, the lifespan of the engine will be limited. An engine that does not receive adequate fuel is described as a "lean-burning" engine. This condition causes the engine to run hotter (at higher temperatures) than normal, leading to premature engine failure. The manufacturer's warranty will be void, leaving the customer to pay for the significant repair costs.

The ideal generator installation provides for the generator to receive its gas supply directly from the source (gas meter) without competing with other household gas appliances. An untrained or inexperienced installer may connect the generator to the existing gas piping without properly accessing the generator requirements in addition to the existing gas appliances that may be in use during generator operation. The fast, easy, low cost installation could actually be the most expensive when generator performance and lifespan are sacrificed.

The purpose of upsizing the gas piping is to compensate for the restriction (resistance) to gas flow, characterized by pressure loss. Larger (diameter) sized gas piping is necessary, due to the inherent resistance to gas flow that the piping and fittings pose to the already small gas pressure. Ask the generator installer to demonstrate his knowledge, to correctly size the gas pipe as required by the manufacturer's installation literature. Guardian® requires a minimum of ¾" gas piping, at a maximum of 55 feet for their 8kW generator. The larger the generator the more gas volume required and the larger the gas piping necessary. A 20kW generator requires a minimum of 1" gas piping at a maximum of 20 feet. [Click here for gas pipe sizing chart.](#)

Saturn Electrical Services promises to educate you, the consumer, on the available gas supply options, and strive to provide an affordable and proper installation to protect your investment.