

SOP 001: RESIDENTIAL DIAPHRAGM GAS METER READING

PURPOSE

The main objectives of this Standard Operation Procedure are to assist the employee to

- Understand the basics of natural gas and diaphragm meter operation
- Locate and identify natural gas diaphragm meters attached to residential units
- Read analog and digital diaphragm gas meters

OVERVIEW

Residential units and other facilities commonly use natural gas for air/water heating and cooking. Natural gas consists primarily of methane, and is produced by decaying organic matter. It is also employed in electricity generation.

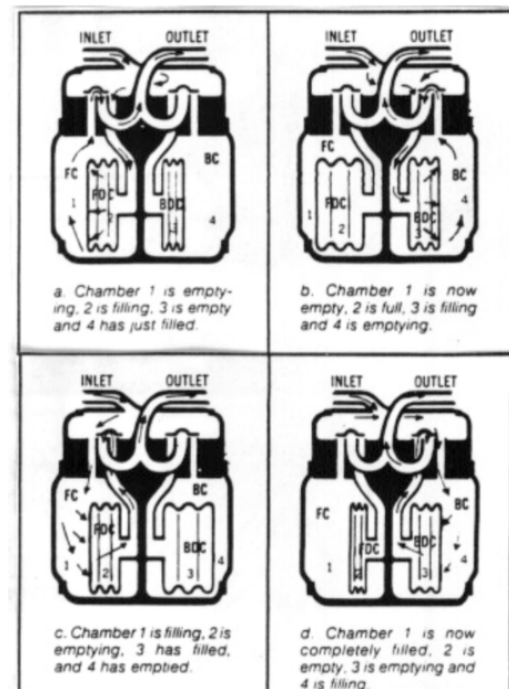
Where gas is supplied from the utility, there is an inline meter that measures the amount being consumed by the client, which is then read for billing and troubleshooting purposes. There are many types of meters: diaphragm, turbine, ultrasound, etc.

DIAPHRAGM GAS METER OPERATION

Diaphragm meters run on “positive displacement”; that is, the meter rotates as the compartments fill and empty. Gas enters the house from the utility through the meter, and remains until the occupant uses gas.

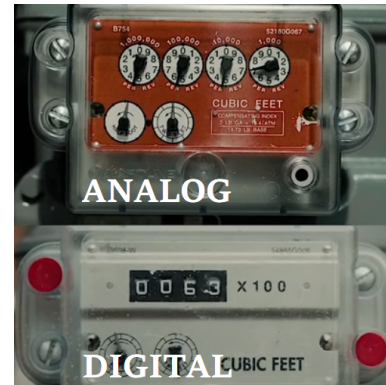
When the occupant uses gas, the burning, escaping gas draws more into the house. This creates negative pressure that is displaced by the positive pressure in the diaphragm meter. The chamber diaphragms are connected to valves, flywheels, and gears that operate valves above the chambers. As gas is used, there is a constant rotation of chambers filling and emptying. In this way, there is a measurable and highly available supply of gas to the end user.

See References B and C for more detailed information and Reference E for a demonstration of this process.



METER READING PROCEDURE

1. Approaching the property, verify the address.
2. Locate the gas meter.
 - a. Gas meters tend to be on the side of the property, against the outside of the house.
 - b. They may also be located at the front.
 - c. See if there are any notes on this property in regard to the meter.
3. Determine if the meter has an analog or digital counter, and record the value.
 - a. **Analog:**
 - i. Analog counters utilize a series of dials.
 - ii. These dials have values with zeros after them, such as 10,000, 1,000, etc. and typically alternate their rotation from clockwise to counterclockwise.
 1. Regardless of rotation, every dial moves from 0 towards 9.
 - iii. Record the number that each dial is closest to, and has passed.
 1. Example: if a dial is between 6 and 5, and is closer to 6, record the dial as "5".
 - iv. If a dial appears to be indicating a number exactly, check the dial to its right.
 1. If the dial to its right is 8 or 9, mark the preceding dial one number less.
 2. If the dial to its right is 1 or 2, mark the preceding dial as normal.
 - a. Example 1: Dial A indicates exactly 5, Dial B indicates 8.5.
 - i. Mark Dial A as 4, and Dial B as 8.
 - b. Example 2: Dial A indicates exactly 5, Dial B indicates 1.
 - i. Mark Dial A as 5, and Dial B as 1.
 - b. **Digital:**
 - i. Digital counters use an odometer-style set of rotating numbers that are clear to read.
 - ii. They are typically measured in multiples of 100.
 1. Example: if a meter displays "[0063]x100", record it as 6,300.
 - c. Record values from left to right, adding any trailing zeros to the end as indicated by the face plate.



REFERENCES

- A. [Natural gas explained - U.S. Energy Information Administration \(EIA\)](#)
- B. [Fundamentals and Principals of Diaphragm Meters - pdf](#)
- C. [How Gas Meters Work - pdf](#)
- D. [How to Read your Natural Gas Meter - YouTube](#)
- E. [What's inside a gas meter? Breaking open gas meters to see how they work. - YouTube](#)