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# GLOSSARY OF TERMS

**A.F.U.E.** - Annual Fuel Usage Efficiency. Ratio of annual output of useful energy or heat to annual energy input to heater. Only heat leaving as hot water deemed usable and calculated as part of space heating efficiency.

**A.S.M.E.** - American Society of Mechanical Engineers.

**BAROMETER** - Device for measuring atmospheric pressure.

**BAFFLE** - Object placed in appliance to change direction of or retard flow of air, gas or mixtures of flue gases.

**BTU** (British Thermal Unit) - Energy required to raise the temperature of 1 lb of water from 60°F to 61°F at 1 atmosphere pressure.

**CALORIE** - Energy required to raise the temperature of 1 gram of water by 1°C at 1 atmosphere pressure.

**CENTRAL SYSTEM HEATING** - Unit that produces heat from a centralized location and distributes it throughout a structure.

## **CIRCULATING WATER HEATER -**

1. **Automatic** - Furnishes hot water to be stored in separate vessel. Storage tank temperatures controlled by thermostat installed on heater. Circulation either natural or forced.

2. **Non-automatic** - Same as automatic except thermostat installed in storage vessel.

**CIRCULATING TANK SYSTEM** - Water heater is connected to separate storage tank, allowing large amounts of hot water to be built up for use during short periods of peak demand. Recovery to storage ratio: 1 GPH recovery to 1 gallon stored.

**COIL CIRCULATION** - Water heater with heat transfer surface composed primarily of water tubes less than 1 1/2" in internal diameter and requiring circulation.

**COLD INLET TEMPERATURE** - Temperature of water coming into water heating system.

**COMBUSTION EFFICIENCY** - Measurement of how well the heating equipment is converting a specific fuel into usable heat energy at a specific period of time in the operation of a heating system.

**COMMERCIAL WATER HEATER** - Water heater with input rate of more than 75,000 BTU/HR (gas) and 105,000 BTU/HR (oil).

**CONDENSATE** - A liquid obtained by condensation (usually initiated by a reduction in temperature of a vapor).

**CONDUCTION** - Heat transfer through a material from more energetic particles to less energetic particles.

**CONVECTION** - Heat transfer occurring between a fluid in motion and a bounding surface when the two are at different temperatures.

**DELIVERY** - Amount of hot water a heater can supply, most commonly over the period of one hour. Delivery = Recovery + 80% of storage.

**DIRECT VENT** - System with indoor water heater, combustion air connections between heater and outside atmosphere, flue gas connections between heater and vent cap, vent cap for outdoors so all air for combustion is obtained from outside atmosphere and all flue gases are discharged to outside.

**DUCT** - A channel, typically made from sheet metal, through which a substance, such as air, may flow.

**ELECTRODE** - Conductor that transfers electric charges into or out of another conducting medium, or that influences the flow of current in another conducting medium.

**ENERGY FACTOR** - Measure of overall efficiency of heater based on model's recovery efficiency, standby loss and energy inputs.

**FORCED AIR** - Air that is mechanically moved using fans or blowers.

**FUEL OIL** - Petroleum products used as fuels.

#1 - distillate oil for vaporizing-type burners

#2 - distillate oil for general purpose burners

#4 - blended oil for use without preheating

#5 - blended oil for use with preheating

#6 - residual oil for use in burners with preheaters using high viscosity fuel

**FLOW CONTROL VALVE** - Devices installed between supply pipe and plumbing fixture (shower head, faucet, etc.) to regulate water flow. Recommended for large shower installations; can reduce water flow in half without disturbing spray pattern for water resulting in energy savings.

**FLOW RATE** - Amount of water in gallons flowing in plumbing fixture or pipe during period of time. Typically, measured in GPM (gallons per minute).

**GPH/GPM** - (Gallons Per Hour/Gallons Per Minute)- Amount of water flowing through plumbing fixture or pipe per hour/per minute.

**HEAT EXCHANGER** - Device specifically designed to transfer heat between two physically separate fluids.

**HYDRONICS** - Systems of heating or cooling involving heat transfer by a circulating fluid in a closed system of pipes.

**INSTANTANEOUS WATER HEATER** - Produces hot water on demand. Heater with rated minimum recovery of 3.5 GPH (at 100°F rise) and 4000 BTUs per hour per gallon of self-stored water.

**NATURAL GAS** - Combustible mixture of methane and higher hydrocarbons used chiefly as a fuel or raw material.

**N.P.T. INLETS** - National pipe thread standard.

**PROPANE** - Component of raw natural gas.

**RADIATION** - The combined processes of emission, transmission, and absorption of energy traveling as electromagnetic waves.

**REAR OUTLET UNIT** - Exhaust stack located at rear of unit (as opposed to the top).

**RECOVERY** - Amount of water per hour (GPH) heater will deliver not including storage.

**ROUGHING IN** - Sizes for space left around heater.

**SEMI-INSTANTANEOUS** - Heater has steam in tubes and water in shell (Instantaneous: steam in shell, water in tubes).

**SIZING** - Procedure to estimate the total demand on a heating unit. A properly sized heating unit will account for peak demand times where maximum delivery will occur.

**STANDBY LOSS** - Amount of heat lost per hour (measured in %) while heater is in standby mode (no water being drawn). Loss can occur through jacket or piping.

**TEMPERATURE RISE** - Number of degrees (F) that water temperature is raised to achieve the desired outlet temperature.

**THERM** - Measurement of heat. One (1) therm = 100,000 BTUs.

**VENTING** -

**Type A:** Three (3) walls of stainless steel, used for oil-fired water heaters. Withstands higher temperatures.

**Type B:** Single wall of aluminum, used for atmospheric gas water heaters only.

**Type L:** Two (2) walls, inner of stainless, outer of aluminum. For oil-fired and power gas heaters.

**THERMAL EFFICIENCY** - Ratio of output energy (in water) to input energy (fuel). Output only includes what is delivered from heater as hot water.

**VACUUM (psi)** - Any pressure less than 0 psi (gage) or 14.7 psi (absolute).

**VALVE** -

1. **Automatic** - Valve and operator controlling gas supply to burner(s) during normal operation of appliance. Operator may be actuated by gas pressure on flexible diaphragm, electrical or mechanical means or any other means.

2. **Semiautomatic** - Valve opens manually and closes automatically, or vice versa.

3. **Burner** - Manually or mechanically operated valve permitting control of gas flow.

4. **Diaphragm-type Automatic** - Device consisting of automatic valve actuated by application of gas pressure on flexible diaphragm.

5. **Electric-type Automatic** - Device actuated by electricity for controlling gas supply.

6. **Manual Main Shutoff** - Manually operated valve in gas line for completely turning on or shutting off gas supply to appliance (pilots may have independent shutoff valves).

7. **Safety Shutoff** - Valve automatically closed by safety control system or by emergency device. May be automatic or manual type.

**VENT-AIR TERMINAL** - Used with direct vent water heater, located on outside of tank. Takes in combustion air from outside atmosphere and discharges combustion products.

1. **Vent Terminal** - Fitting at end of vent pipe that directs flue products into outside atmosphere.

2. **Air Intake Terminal** - Fitting at inlet of air intake pipe allowing outside atmosphere into air intake pipe.

**VENT LIMITER** - Limits flow of air or gas from atmospheric diaphragm chamber of gas pressure regulator to atmosphere. May be device or orifice.

**VENTING SYSTEM** - Gas vent, chimney or single-wall pipe (and vent connector, if used) assembled to form continuous open passageway from gas appliance to outdoor atmosphere to remove vent gasses.

**ZONED HEATING** - Living areas separated into different spaces, with each space's heat controlled independently.



