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propane

Propane Autogas Dispenser Specifications

THIS DOCUMENT PROVIDES RECOMMENDED MINIMUM SPECIFICATIONS, FROM THE PROPANE EDUCATION & RESEARCH COUNCIL, TO ENSURE POSITIVE END-USER EXPERIENCES WITH THE INSTALLATION AND OPERATION OF PROPANE AUTOGAS DISPENSING EQUIPMENT.

Following these specifications will ensure that new propane autogas dispensing equipment installed:

- Complies with federal, state, and local codes, regulations, and requirements.
- Dispenses fuel in a manner comparable to conventional fuels.
- Will be the correct dispenser for the type of vehicle that will be refueled.
- Ensures a fast, safe, and reliable refueling experience for all propane autogas powered vehicles.

SYSTEM PERFORMANCE REQUIREMENTS

- Dispensing rate minimum of 12 or more gallons per minute (GPM).
- Pump packages (motor, pump, bypass, piping, system sizing, and electrical) must provide the differential pressure required for a fleet's vehicle types, geographic locations, and climate conditions.
- Location of dispensing station and proximity to the pump package must comply with manufacturer requirements. Failure to comply can impact system performance.
- Vehicle refueling area (surface area where vehicle is parked) must be level to accommodate complete fuel fills.

EQUIPMENT REQUIREMENTS

DISPENSER CABINET

- Shall be constructed of nonflammable, noncombustible materials; including but not limited to powder coat steel, stainless steel, aluminum, or equivalent materials.
- Shall meet all federal, state, and local codes and regulations applicable at the installation location.
- Shall be constructed with lockable access panels to prevent tampering.
- Shall provide separation of the base classified area from the non-classified area (above 48ẅ) by a permanent seal.

DISPENSER METERING

- Shall have a digital display capable of providing gross and/or net volumes.
- Where required, temperature compensation shall be provided and meet all federal, state, and local codes and regulations.
- The metering system selected must have a minimum capacity sufficient to meet the performance standard listed in the system performance requirements section.
- Electronic dispensing systems shall be equipped with a pulse transmitter capable of providing the minimum required pulses per gallon (PPG) for retail sales and/or custody transfer. Mechanical temperature compensation without pulse output is acceptable.
- Meter accuracy shall be in accordance with federal, state, and local codes and regulations, with a minimum accuracy of ±0.6% (.006) linearity and ±0.24% (.0024) repeatability when dispenser is used for retail sales and/or custody transfer.
- The meter shall be inspected prior to operation to ensure compliance with state weights and measure standards applicable at the location of installation when dispenser is used for retail sales and/or custody transfer.

DISPENSER DISPLAY

- Shall indicate gallons dispensed, with mechanical or electronic register.
- If equipment is mechanical, indicate gallons dispensed and totalizer display.
- If equipment is electronic: Indicate gallons dispensed, net or gross gallons. Dispenser may include display with an alpha numeric keypad for ease of entering data.

ELECTRICAL REQUIREMENTS

- All electrical installations shall be performed by a licensed, bonded electrician with motor control experience to ensure compliance with all federal, state, and local codes and regulations at the location of installation.
- Dispenser and all internal electrical components and connections shall comply with the full intent of the manufacturer's written specifications. Electrical components located within the dispenser cabinet, shall be Class 1 Group D Division 1 or Division 2, and be equipped with all required seal off devices as required in NFPA 70.
- Meters shall be installed in accordance with manufacturers' installation requirements.

PIPING, VALVES, AND FITTINGS

- All piping within the dispenser cabinet shall be A53 Grade B or better, schedule 80 or approved equivalent materials.
- All threaded fittings shall be forged steel, brass, or other materials approved for use with liquid propane.
- All threaded fittings and valves shall be minimum 400 PSIG water, oil, or gas (WOG) rated.
- Ball valves shall be full port for liquid service.
- Internal valves, excess flow valves, and backflow check valves shall be installed in appropriate locations in accordance with federal, state, and local codes and regulations.

HOSE ASSEMBLY

- Propane delivery hose shall be listed and continuously marked "LP-GAS 350 PSI WP, 1750 burst pressure," maximum 18 foot length per NFPA 58 code.
- Hose assembly shall have a UL 567 compliant hose breakaway device.
- Fueling nozzle shall be an approved K-15 quick connect apparatus with quick-acting shutoff, low emission release, and failsafe discharge feature which ensures a fast, safe, and reliable refueling experience for all propane autogas powered vehicles.

PUMP SYSTEM AND PUMP ASSEMBLY

- Dispenser provider shall evaluate the fueling requirements and provide the appropriate pump and differential bypass valve to meet these requirements. Vendor shall provide as a minimum pump curve showing flow, differential pressure, and horsepower required to meet system needs.
- Electrical service wire must be installed by a licensed, bonded electrician with knowledge and experience for the installation of the electrical equipment associated with this specific application. Electrical service wiring must comply with the motor manufacturer's specified gauge requirements for necessary voltage and amperage required for safe operation.
- Most propane vehicles require a minimum differential pressure of 125 PSIG.
- Pump inlet strainer (minimum 80 mesh) or any restrictions shall be minimum of 10 pipe-diameters from the pump inlet. Pump manufacturer's installation instructions shall be followed.
- Pump inlet and outlet shall have isolation full port ball valves.
- In-line fuel filters are recommended.*
- Filter capable of filtering particles measuring five microns should be used.
- Filter should be placed after the propane autogas pump, to filter the stored fuel prior to entering the vehicle.

TANK ASSEMBLY

- Tank must be manufactured for its intended purpose and the tank installation must be compliant with federal, state, and local codes and regulations.
- In an effort to reduce or eliminate the introduction of contaminants into the fuel system, new tank installations are recommended. However, used tanks that are thoroughly cleaned using an approved method are acceptable.
- Tank provided shall be equipped with a bottom liquid connection. The pump location and inlet piping shall be designed to supply the pump with the volume of fuel sufficient to comply with the manufacturer's recommended performance.

INSTALLATION FOUNDATION

- Tank and dispensing unit shall be assembled and installed in accordance with NFPA 58, NFPA 30A, and the AHJ (Authorities Having Jurisdiction).

ADDITIONAL INFORMATION

Dispensers designated for retail sales must comply with the National Institute of Standards and Technology Handbook 44, as well as all other requirements based on the location of the installation.

RESOURCES

- UL 495: Power-Operated Dispensing Devices for LP-Gas.
- NIST Handbook 44, National Conference on Weights and Measures.
- International Fire Code.
- NFPA 58 LP Gas Code.
- NFPA 30A Code for Motor Fuel Dispensing Facilities and Repair Garages.
- NFPA 70 National Electrical Code.
- Authorities Having Jurisdiction (AHJ) local codes and regulations.
- *Donaldson and Blue Moon in-line filters: contact PERC for more product information.

FOR MORE INFORMATION

To learn more about propane autogas, and the Propane Education & Research Council, visit **Propane.com**.

THE PROPANE EDUCATION & RESEARCH COUNCIL was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.

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