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INSTALLATION INSTRUCTIONS

ALTRONIC GAS SHUT OFF VALVE 690040-1, 690045-1

FORM GSV II 1-07

WARNING: DEVIATION FROM THESE INSTRUCTIONS MAY LEAD TO IMPROPER OPERATION OF THE ENGINE WHICH COULD CAUSE PERSONAL INJURY TO OPERATORS OR OTHER NEARBY PERSONNEL.

CAUTION: ALTRONIC GAS SHUT OFF VALVES ARE SUITABLE FOR USE IN CLASS 1, GROUPS C & D, DIVISION 1 OR 2 HAZARDOUS LOCATIONS WHEN INSTALLED IN ACCORDANCE WITH THESE INSTRUCTIONS.

1.0 OVERVIEW

1.1 This manual provides installation and operating instructions for the Altronic Gas Shut Off Valves, 690040-1 and 690045-1 (2" NPT). It is recommended that the user read this manual in its entirety before commencing operations.

CAUTION: DO NOT ATTEMPT TO OPERATE, MAINTAIN, OR REPAIR THE GAS SHUT OFF VALVE UNTIL THE CONTENTS OF THIS DOCUMENT HAVE BEEN READ AND ARE THOROUGHLY UNDERSTOOD.

1.2 These 2-inch electromechanical, semi-automatic fuel shut off valves are intended for use on natural gas fueled engines. There are two models:

CD IGNITION POWERED (690040-1) is opened manually, is held open mechanically and draws no electrical power. The valve closes when its internal coil is energized by a pulse from a shutdown system.

12–24 VDC POWERED (FAILSAFE) (690045-1) is opened manually and held open electromechanically. It uses a voltage regulator circuit to keep current draw independent of the DC voltage applied and to a low 0.25 amps maximum in the energized (open) mode. The valve closes when its internal coil is de-energized by a shutdown system.

An external indicator shows whether the valve is open or closed. The valve has a positive closure and vents gasses after shutdown.

WARNING: THIS GAS SHUT OFF VALVE IS NORMALLY USED WITH NATURAL GAS. NATURAL GAS AND AIR, WHEN COMBINED, BECOME VERY COMBUSTIBLE AND WHEN CONTAINED WITHIN AN ENCLOSURE, SUCH AS A GAS ENGINE OR ITS EXHAUST SYSTEM, CAN EXPLODE IN A VIOLENT MANNER WHEN IGNITED. IT IS NECESSARY TO ALWAYS USE EXTREME CAUTION WHEN WORKING WITH ANY FUEL SYSTEM.

1.3 Maximum gas working pressure is 100 psig.

WARNING: GAS PRESSURE AT THE VALVE MUST NOT EXCEED 100 PSIG AT ANY TIME.

2.0 BEFORE INSTALLING THE FUEL SHUT OFF VALVE

2.1 Lock out the engine so that it cannot be inadvertently started. Display a "DO NOT START" warning tag.

2.2 Manually disconnect all electrical power to the engine.

2.3 Shut off the fuel gas supply and ensure there is no pressure in the lines. Bleed trapped pressure from the lines before installing or repairing the valve. Make sure the area is made non-hazardous.

2.4 The fuel system should be designed in such a way that:

- no failure of a single component will cause the fuel system to admit fuel to the engine when the engine has been shutdown, and
- no single failure can result in grossly over-fueling the engine when attempting to start.

WARNING: FAILURE TO FOLLOW THE ABOVE RULES MAY LEAD TO SERIOUS DAMAGE TO EQUIPMENT OR TO PERSONNEL.

NOTE: If possible, keep the original shipping container. If future transportation or storage of the valve is necessary, this container will provide the optimum protection.

3.0 MOUNTING

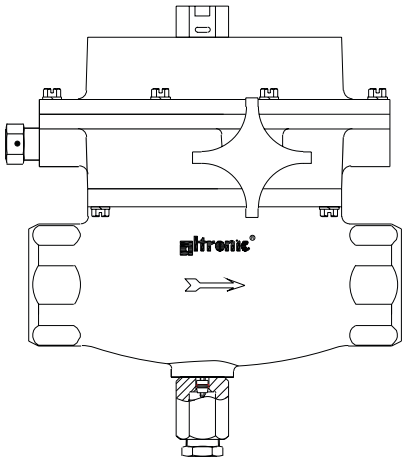
3.1 The Gas Shut Off Valve is designed to be installed in the fuel line on natural gas fired, reciprocating engines. The CD ignition powered valve (690040-1) is an on/off type that closes when its internal coil is energized by a pulse from an annunciator safety shutdown system. The DC powered (failsafe) valve (690045-1) is an on/off type that closes when its internal coil is de-energized by a loss of power to the valve or deactivated by a safety shutdown system. When considering where to place the gas valve, choose a location away from any extreme sources of heat. Operating ambient temperature is –40° F to +185° F (–40° C to +85° C). DO NOT expose the valve to temperatures outside this range.

3.2 The valve may be installed in any of three planes. However, it is recommended that the valve be mounted horizontally with the vent pointing down. DO NOT install the valve with the top in the down position or in any location which causes excessive vibration.

3.3 An arrow on the side of the valve indicates the direction of flow. The valve MUST be installed with the arrow pointing in the direction of gas flow.

3.4 When using pipe compound or sealing material, apply it only to the male threads of the plumbing that will be inserted into the valve. DO NOT apply pipe compound to the valve as it may enter the valve and cause operational difficulties.

SEE FIG. 1 DIMENSIONS AND SPECIFICATIONS



4.0 INSTALLATION

4.1 Hold the valve in the desired position. Use a wrench on the flats of the valve to hold it in place and tighten each pipe into the inlet and the outlet. Avoid pipe strain by aligning valve with piping. Do not allow the valve body to twist with the pipe during installation.

4.2 A vent line should be used to allow gas trapped between the fuel valve and the engine carburetor to escape. This can be done by removing the vent plug and attaching a line to the bottom of the housing. Route the line to a nonhazardous area. See **FIG. 1** for vent location. If the vent is not used, remove plug and then remove sealing o-ring in vent connection to avoid problems caused by the accumulation of condensation in plug.

5.0 WIRING (SEE FIGS. 2 AND 3)

5.1 Wiring must comply with both local and national electrical codes. The use of rigid or liquid tight conduit for the protection of the wiring is recommended.

5.2 **CD Ignition Powered Model 690040-1:** A 100 to 400-volt pulse from a capacitor charged by a CD Ignition System will trip and close the valve. This pulse typically comes from an Altronic Annunciator System or a Panel Board Adaptor. No additional external power source should ever be connected to valve 690040-1.

DC Powered (Failsafe) Model 690045-1: The valve is held in the open position by the current supplied from the DC power source. If this power is interrupted by the control system, or power is lost, the valve closes. Typical current draw is 250 milliamps or less. The valve coil winding will not overheat when continuously powered.

5.3 The valve contains a ½" electrical conduit fitting. Remove the electrical housing cover bolts and separate the cover from the body of the valve to expose the terminal block.

CD Ignition Powered Model 690040-1: Run field wires (16 AWG or heavier) through the conduit fitting and connect the positive polarity wire coming from the Panel Board Adaptor or Annunciator Power Supply to the terminal marked (+). Connect the wire going to the grounding switch of the system to the terminal marked (-). Replace the electrical housing cover.

DC Powered (Failsafe) Model 690045-1: Run field wires (16 AWG or heavier) through the conduit fitting and connect the positive polarity wire coming from the DC Power Supply to the terminal marked (+). Connect the wire going to the grounding switch of the control system to the terminal marked (-). Replace the electrical housing cover.

5.4 HAZARDOUS AREA OPERATION:

Altronic Gas Shut Off Valves are CSA certified for use in **CLASS I, DIVISION 1, GROUPS C & D areas or CLASS I, DIVISION 2, GROUPS C & D** areas. The wiring practices used for the installation must match the requirements for the application's hazardous rating.

WARNING: DIVISION 1 USE REQUIRES USE OF APPROVED SEAL. DIVISION 2 USE REQUIRES USE OF APPROVED SEAL UNLESS VALVE IS CONNECTED TO AN APPROVED NON-INCENDIVE CIRCUIT.

In all cases, the valve must be installed per the local inspection authority having jurisdiction. The electrical connections must be in accordance with the National Electrical Code and in Canada, the Canadian Electrical Code. In addition, the following requirements must be met:

1. Run the wires entering the shut off valve in conduit with approved seals.
2. Keep wires separate from all other wiring.
3. Wires must have a grade of insulation capable of withstanding an AC voltage of 500 volts RMS.

WARNING: EXPLOSION HAZARD

DO NOT REMOVE ELECTRICAL HOUSING COVER OR DISCONNECT WIRES IN A DIV. 1 OR 2 ENVIRONMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

NOTE: There is a GREEN indicator button on the top of the valve that indicates whether the valve is open or closed.

- *If the Green indicator button is LEVEL with the top of button guard, valve is OPEN (gas flowing).*
- *If the Green indicator button is RECESSED, valve is CLOSED OFF.*

6.0 FLOW CHARACTERISTICS

6.1 The Gas Shut Off valve is ideally sized for the control of fuel flow to a gaseous fueled engine. The valve introduces a relatively small pressure drop even at high flow rates. For the flow rate versus pressure drop chart, see **FIG. 4**.

7.0 OPERATION

7.1 **CD Ignition Powered Model 690040-1:** To place the valve in the run (open) position, rotate the reset knob clockwise, the valve will latch open allowing the fuel to flow and the pressure across the valve will equalize. When the valve coil receives a shutdown pulse, the valve unlatches and closes. The remaining fuel on the down side of the valve will then be vented through the vent line.

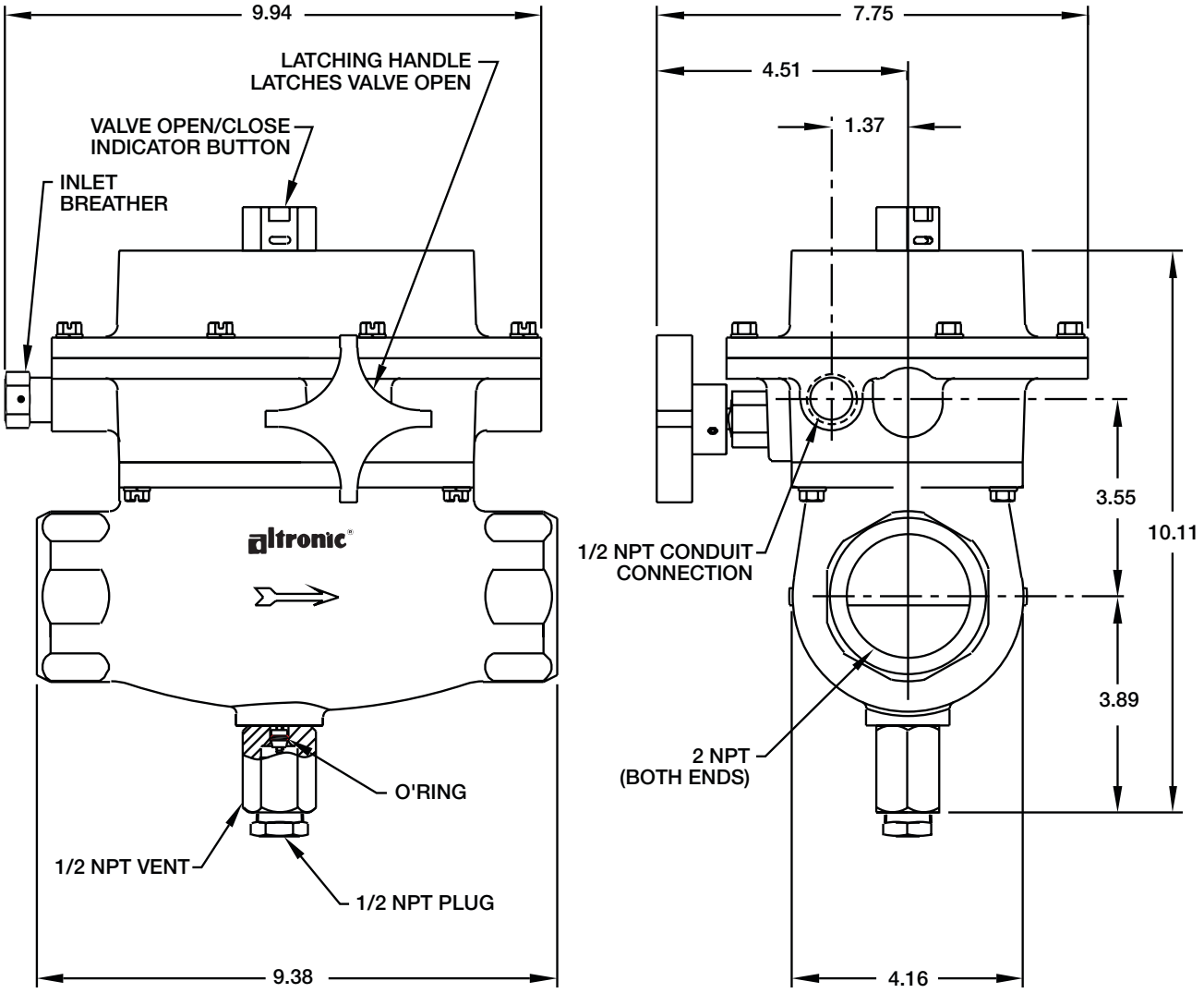
DC Powered (Failsafe) Model 690045-1: To place the valve in the run (open) position, turn on 12–24 VDC power, then rotate the reset knob clockwise, the valve will latch open allowing the fuel to flow and the pressure across the valve will equalize. When power is removed from the valve coil, the valve unlatches and closes. The remaining fuel on the down side of the valve will then be vented through the vent line.

NOTE: Manual shutoff of the valve is accomplished by pressing down firmly on the GREEN status indicator/push button.

8.0 VALVE SERVICE REQUIREMENTS

8.1 The valve has been designed to provide reliable operation with a minimum amount of maintenance. To ensure optimum performance, periodic inspection and cleaning is necessary. Be sure to remove the vent line connection and clean the vent periodically. If the vent is not used, remove the pipe plug and clean the vent area periodically. Most valve problems are caused by liquids and foreign matter collecting in the valve; periodic inspection and cleaning are the most effective ways to avoid these problems.

FIG. 1 DIMENSIONS AND SPECIFICATIONS



VALVE BODY ..... **SAND-CAST ALUMINUM**

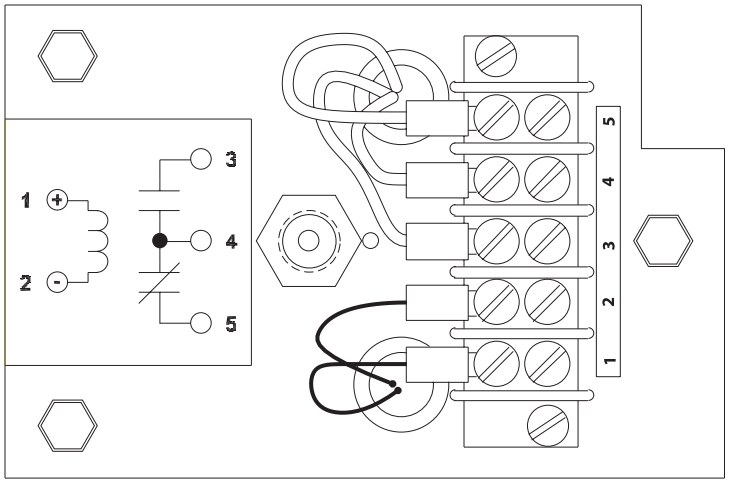
VALVE SEAT ..... **VITON**

ELECTRICAL SPECIFICATION ..... **CD IGNITION ADAPTER 100–400 VOLTS (MODEL 690040-1)**
10–32 VDC (MODEL 690045-1)

MAX. WORKING PRESSURE..... **100 PSIG**

MAX. OPERATING TEMPERATURE ..... **–40˚ F TO 185˚ F**

FIG. 2 WIRING

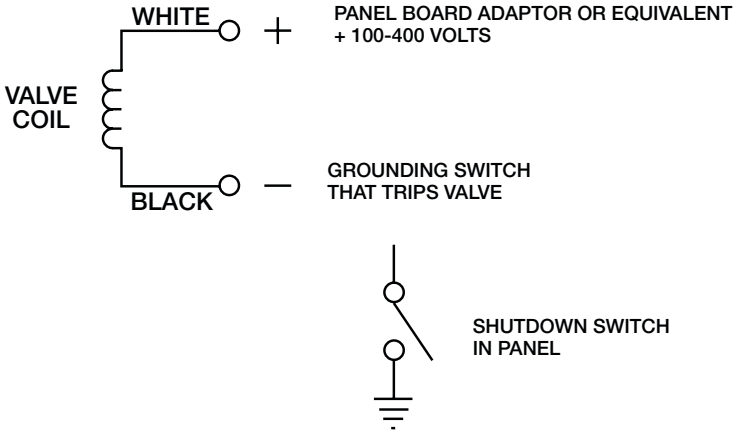


NOTE:

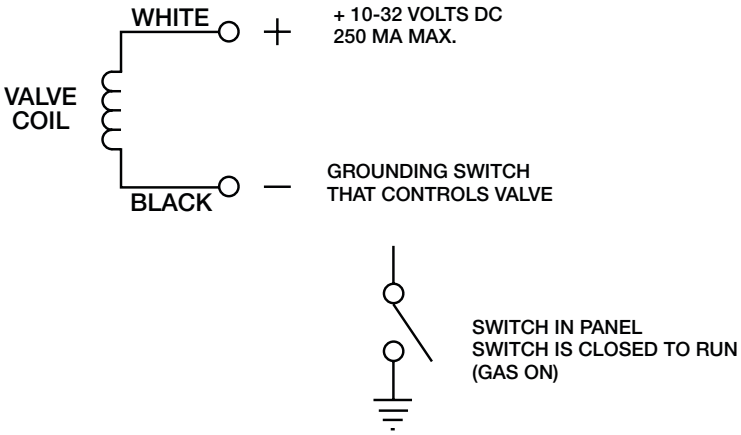
- ***Terminals 3 and 4 are open (N.O.) when the valve is closed (no gas flowing).***
- ***Terminals 4 and 5 are closed (N.C.) when the valve is closed (no gas flowing).***

FIG. 3 SCHEMATIC

CD Ignition Powered Model 690040-1:



DC Powered (Failsafe) Model 690045-1:



OUTPUT SWITCH RATING:

- ***4.0 Amps at 125 VAC***
- ***0.5 Amps at 125 VDC***

FIG. 4 FLOW RATES