

INSTALLATION AND OPERATION MANUAL

AST-4010 FUEL TRANSFER CONTROLLER

SYSTEM CONCEPT

The AST-4010 Aboveground Storage Tank Controller facilitates the transfer of fuel from a delivery truck to a storage tank. This is accomplished through control of the site mounted transfer pump. The fuel level in the AST is also monitored to prevent overfilling of the tank.

Drawing number 1595-010 illustrates wiring of both the power circuits and the level detector switches. The diagram shows the interconnection of the circuits, but should not be interpreted as illustrating relative size and location of the components.

OPERATION

The following statements outline the operation of the AST-4010 Controller. The *start* and *stop* switches are lever activated devices.

1. With power applied to the power mains, the controller is active and monitors for pump commands and fuel level signals.
2. While the fuel level is below the *high level* switch, moving the *start* switch will cause the pump to start. The pump will continue to run while the fuel level remains below the *high level* switch.
3. When the fuel level rises above the *high level* switch, the pump will automatically turn off and the alarm circuit will become active. This is a warning to the operator that final fuel transfer procedures should be initiated. Moving the *stop* switch will silence the alarm.
4. While the fuel level is above the *high level* switch, but below the *high alarm* switch, the *start* switch will operate in the jog mode. The pump will run only while the operator continuously holds the *start* switch.
5. When the fuel level rises above the *high alarm* level, the pump will automatically turn off and no further pump operation can be initiated.

CONTROLLER LABELING

The following information is provided on the control unit's label.

- Controller name and model number
- Voltage, current and load specifications
- Hazardous environment classification
- Warnings and cautions
- Reference to the installation control drawing
- Manufacture's name and telephone number

The installer should be familiar with the information presented on the label.

ENCLOSURE AND MOUNTING

The control unit is designed for operation in a Class I, Division 1, Group D hazardous environment. However, it is the responsibility of the installer to provide an appropriate configuration which meets National Electrical Code and local code requirements.

Elbow fittings exit the enclosure. DO NOT attempt to reposition these elbows. Turning an elbow will result in damage to the seal and wiring.

A mounting plate is attached to the back of the control unit. This plate may be detached and used as a template for bolt location.

POWER CIRCUIT INSTALLATION NOTES

1. The AST-4010 controls the coil of the transfer pump's motor contactor. The unit is capable of controlling pumps installed in single-phase or three-phase power systems. Drawing number 1595-010 illustrates the wiring of a three-phase system. Disregard circuit L3 for single-phase installations.
2. The AST-4010 is provided as a sealed unit. There are no field connections inside of the unit. Connection of the unit to the control circuits is made using the six color-coded wires which exit the unit. Refer to the wiring

diagram drawing 1595-010 for connection information.

3. Six 18 awg wires exit the upper left corner of the unit. These wires provide for all power connections to the unit. The following color code is used:

Black AC L1
White AC L2
Red One side of pump relay contacts
Orange One side of pump relay contacts
Yellow One side of alarm relay contacts
Blue One side of alarm relay contacts

4. To maintain the integrity of the system in the hazardous environment, all power wire runs must be made in rigid conduit and all connections made in appropriate enclosures. It is the responsibility of the installer to provide an appropriate configuration which meet National Electrical Code and local code requirements.

LEVEL SENSOR INSTALLATION NOTES

1. The AST-4010 controller includes inputs for two remote fuel level sensor switches. These inputs are dedicated to specific functions defined as the *high level* and *high alarm* set points and are required for operation of the system.

2. The fuel level sensors are each single pole normally closed switches. These switches are not supplied with the controller, but are readily available through normal distribution channels.

3. Four 18 awg wires exit the bottom of the unit. These wires provide for all sensor connections to the unit. The following color code is used:

Brown High Level
Red High Level Return
Orange High Alarm Return
Yellow High Alarm

4. The voltage to power the sensor switches is supplied from the controller and meets UL intrinsic safety requirements. A junction box including switch wires does not have to be explosion proof, but should be weather proof.

5. The level sensor switches may be mounted to a single support column or to individual support columns. If they are mounted to a single support column, a single four-wire cable will attach to the unit's sensor wires. If the switches are mounted to separate support columns, a two-wire cable will exit each support and each will attach to the unit's sensor wires.