INSTALLATION AND OPERATION MANUAL
AST-4012 FUEL TRANSFER CONTROLLER

SYSTEM CONCEPT

The AST-4012 Aboveground Storage Tank Controller facilitates the transfer of fuel from a delivery truck to a pair of storage tanks. This is accomplished through the selection of diverting valves and the control of a site mounted transfer pump. The fuel level in the ASTs is also monitored to prevent overfilling of the tanks.

Drawing number 1595-011 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. The operator is responsible for the manual setting of the diverter valves to their correct position for the proper transfer of fuel.
3. The operator is responsible for the manual setting of the level sensor selector switch to allow for correct monitoring of fuel levels.
4. While the fuel level is below the *high level* switch in the selected tank, 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.
5. When the fuel level rises above the *high level* switch in the selected tank, 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.
6. While the fuel level is above the *high level* switch in the selected tank, 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.
7. When the fuel level rises above the *high alarm* level in either of the two tanks, the pump will automatically turn off and no further transfer operation can be performed on either tank.

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.

An elbow fitting exits the enclosure. DO NOT attempt to reposition this elbow. Turning the 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.

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POWER CIRCUIT INSTALLATION NOTES

1. The AST-4012 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 1595-011 illustrates the wiring of a three-phase system. Disregard circuit L3 for single-phase installations.

2. The AST-4012 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 18 awg color-coded wires which exit the upper left corner of the unit. Refer to the wiring diagram drawing 1595-011 for connection information.

3. The following color code is used for the six control circuit wires:

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-4012 controller includes inputs for remote fuel level sensor switches located in each of the two tanks monitored by this unit. 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. Each of the two tanks monitored by this unit must contain their own pair of level sensor switches.

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. Connection of the sensors is made using the five 18 awg color-coded wires which exit the bottom of the unit. These wires provide for all sensor connections to the unit. The following color code is used:

Brown 1	High Level, Tank 1
Brown 2	High Level, Tank 2
Red	High Level Return
Yellow 1	High Alarm Signal
Yellow 2	High Alarm Return

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