STYLE 9313 CONTROLLER
INSTALLATION & OPERATING INSTRUCTIONS

The Style 9313 Controller from Akron is designed to provide reliable and accurate valve control with valve position indication through 10 LED (Light Emitting Diodes) indicators identifying the degree of Open/Close.

Features of the Akron Style 9313 Controller include:

- Protected against EMI (Electro Magnetic Interference), both incoming and outgoing
- Programmable Auto Open (not preset)
- Works with both 12 and 24 Volt systems
- Retrofits to existing apparatus
- 4 ¼" square face
- Meets all aspects of NFPA 1901
- Carries Akron's 5 year warranty against manufacturing defects

Standard Components

- Controller
- Wiring Harness for connection to the valve-10' length standard

Note: the Controller is designed for use only with Akron Brass Electric Valves. Do not use with any other manufacture of valve. Doing so will void any warranty.

INSTALLATION INSTRUCTIONS

Select the mounting location for the Controller. The Controller can be mounted from the outside with (4) Screws and Delrin Nuts (included). Torque requirement is 6-8 lb-in for the nuts. The unit requires 2 ½" clearance behind the panel. Dimensions for a panel cutout are shown in figure #1.

Warning: The Controller is a sealed unit. Disassembly of the unit will void any warranty. There are no user serviceable parts in the Controller. If service is required the unit should be returned to the factory. Also, do not cut any connections. Doing so will void any warranty and prevent product returns.

Note: The Valve and Auxiliary wires are plugged prior to shipment. These plugs must be removed before connections can be made. If a lead is not being utilized, the plug should be left in place to prevent moisture damage.

CONTROLLER LEADS

Each Controller has three (3) Connectors extending from the back of the unit.

Power Connection lead

The Controller Power connection utilizes a 2 prong Weather-Pack connector. A mating Weather-Pack connector is required (customer supplied-see appendix for purchasing information). Proper wire gauge is required to assure a quality connection. 12 gauge wire is recommended. Heavier gauge wire is required for runs over 10'.

Note: when using larger than 12 gauge wire, be sure to use a 12 gauge connector and splice after the connector so as to not void any warranty. The splice should be made close to the Controller.

For best connections all grounds should be made to either the frame or to a similar solid surface. A faulty ground will lead to unit malfunction.
Added loads on any power wire should be avoided.
Direct runs are recommended for all connections.
12 Volt systems require a minimum of 11.5 volts at the valve under full load (28 amps).
24 Volt systems require a minimum of 22 volts at the valve under full load (14 amps).
Typical current draw for a 2"-3" valve is 2-4 amps in a 12 volt system (1-2 amps for 24 volt). It will be slightly higher for larger sized valves. When the mechanical stops are reached (full open or full closed) current draw can reach 28 amps in a 12 Volt system and 14 Amps in a 24 Volt system.

Note: The truck should always be running before operating the Controller.

Electric Valve Connection lead

Use an Akron Wiring Harness to connect the Controller to the Valve Motor. The standard length is 10'. All Wiring Harnesses have Deutsch connectors. See the appendix for a complete list of Wiring Harnesses.

Auxiliary Connection lead

The Controller Auxiliary connection is a 3 prong Weather-Pack connector.
To connect a Master to an Auxiliary, an Auxiliary Cable is required. Standard length is 10'. See the appendix for a list of Auxiliary Cables.
NOTE: When utilizing an Auxiliary, a separate power lead is required for the Auxiliary

AUTO OPEN FEATURE
Auto Open allows a pump operator to open a fully closed valve by momentarily pressing the "OPEN" button.
The Auto Open feature is factory set in the DISABLED position. The Auto Open option can be changed to on or off in the Setup Mode.
If Auto Open is disabled, the valve only operates as long as an "OPEN", or a "CLOSE" button is being pressed.

INITIAL SETUP

The Controller must be calibrated when used for the first time with a new valve or with a different valve. When used for the first time, the LED Bar Graph Display will flash indicating calibration is needed.
Calibration can be done easily by accessing the Setup Mode shown below.

Note: When a Controller is used as an Auxiliary, the Setup Mode is not accessible. Calibration and setup are only necessary for a Master Controller.

SETUP MODE

Press and hold both the "OPEN" and "CLOSE" buttons for 15 seconds. The display will flash once. The Controller is now in the SETUP MODE. Both buttons can be released.
The middle YELLOW LED should be the only LED illuminated.
The "OPEN" button can be used to move through the setup options.
The "CLOSE" button will activate a selected function.

FUNCTIONS when the LED is lighted

Valve Calibration	Middle Yellow LED
Auto Open Feature	Green LED
Exit Setup Mode	Red LED

VALVE CALIBRATION
With the middle Yellow LED lighted, press the "CLOSE" button. The valve will cycle to fully closed, fully open, and back to the fully closed position.
The Valve is now calibrated to the Controller and ready for operation.
TO EXIT CALIBRATION MODE
Press and release open button, if the green LED is blinking, Auto open is disabled. If the green LED is not blinking, Auto open is enabled. If you wish to change the auto open setting use the close button to change option. Press & release the green button again until only the red LED is lighted. Press the close button. All

LED's will flash once before the controller returns to normal operation.

AUTO OPEN Option

While in the SETUP MODE, press and hold the "OPEN" button until the GREEN LED is lighted.
If the green LED is BLINKING, Auto Open is DISABLED
If the green LED is SOLID, Auto Open is ENABLED
Use the "CLOSE" button to change the setting.

CONTROLLER INSTALLATION DIAGRAM

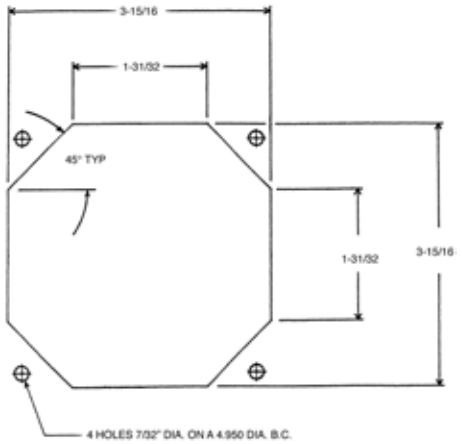

FIG. 1

SPECIFICATIONS:

Electrical Inputs:

Power	9-32VDC@300mAmax (no load)
Valve Control	12 or 24VoltsDC
Communication	Modbus Serial Connection

Environmental

Temperature	-40C to +80C (Operating)
	-40C to +85C (Storage)

Minimum Operations Voltage – 11.5 VoltsDC
Maximum Operations Voltage – 32 VoltsDC
Display Type – LED

TROUBLESHOOTING

Problem	*Cause*	*Solution*
Red or Green LED's do not illuminate but the Valve will open and close.	Too much voltage drop or not enough current for the unit to sense the end of travel.	1. Truck engine must be running 2. Check the voltage to the Controller. 12 Volt systems require 11.5 volts @ 28 amps. 24 Volt systems require 22 volts @ 14 amps. 3. Check all wiring from the power source to the Controller. A minimum of 12 gauge wire should be used. For lengths over 10' heavier gauge wire is required. 4. Check all connections and grounds for loose connections.
Red and Green LED's illuminate prematurely before the Valve is fully open or closed.	1. Short in the Motor or Controller 2. Gear system is jammed. 3. Seat or Valve Ball is damaged	1. Remove the Motor from the Gear Housing and measure the amps needed to operate the Motor. The Motor should require approximately 1.5 amps on 12 Volt systems; .75 amps for 24 volt systems. 2. Operate the Manual Override on the Actuator. If difficulty is found, check under the housing cover for damaged parts causing the Valve not to operate properly. 3. Check the Valve waterway for any obstruction or damage to the Ball or Seats.
The yellow LED illuminates but the Valve does not move while the Motor continues to run.	Worm Gear is disengaged	Remove the Gear Housing Cover and check for damaged parts. Check the Groove Pin in the Worm Gear for proper engagement.
Valve Actuator moves at the end of the open or closed function.	Loose screws	While some motion is normal from torque, excessive movement may be caused by loosened screws. Before tightening the screws, remove them and apply Permabond LM 113 or Loctite 222 and retighten.
No Power to the Controller	Bad wiring Open breaker or blown fuse Power not connected.	Check all power connections, wires, fuses or breakers. Be sure a separate power wire is connected to any Controller used as an Auxiliary.

Valve Actuator does not work. Motor does not drive.	1. No signal from the Controller to the Actuator Motor. 2. Defective Actuator Motor 3. Worm Gear system jammed. 4. Planet Gear system jammed.	1. Check all connectors are fully engaged. Check the voltage through the Wiring Harness should be at least 11.5 volts for 12 volt systems and 22 volts for 24 volt systems. Check the signal from the Controller. 2. Remove the Motor from the Actuator and operate the Motor to be sure the Motor Shaft turns freely. 3. Check the Worm Gear. Operate the Valve using the Manual Override. 4. Remove the Motor and check the Planet Gears.
Motor Runs but Valve does not operate	1. Grove Pin is missing from the Shaft. 2. Gear Sector is not engaging the Worm Gear. 3. Motor Shaft is disengaged from the Planet gears.	1. Check the Groove Pin is fully engaging the Worm Gear and Shaft. 2. Check if the Worm Gear and Sector Gear are engaged. 3. Remove the Motor and check for engagement of the Motor Shaft and Planet Gears.
Valve closes when the OPEN Button is pressed and vice versa.	1. Sector Gear is in the wrong position. 2. Cable wiring is reversed.	1. Reposition the Sector Gear. 2. Replace the Cable.
Valve OPEN/CLOSE LED's switch immediately from Red to Green and vice versa.	1. Wiring 2. Mechanical Binding	1. Check wiring as explained in Problem #1. 2. Remove the Motor and check the Shaft turns freely. Also, operate the Valve manually via the Override to check for binding.

APPENDIX

Mating Weather-Pack Connectors for Power Cable

A Mating Weather-Pack connector must be used to connect to the power source.
DO NOT CUT THE CONNECTOR on the power wire of the controller.
Doing so will void the warranty.
Part number 9300-0058 is a packet of (5) mating Weather-Pack connections.

Wiring Harnesses

Part Number	Description
7-21-290	10' long (standard length)
7-21-381	15' long
9303-0016	20' long
9303-0012	30' long (utilizes Potting Shells and 10 gauge wire)
9303-0013	38' long (utilizes Potting Shells and 10 gauge wire)
9303-0014	50' long (utilizes Potting Shells and 8 gauge wire)

Auxiliary Cables

Part Number	Description
9300-0052	10' long (standard length)
9300-0055	25' long
9300-0056	50' long

Style 9313 Controller Ordering Information	
Part Number	*Description*
9313-0001	Controller Only
9313-0002	Controller w/ 10' Wiring Harness
9313-0003	Controller w/ 10' Auxiliary Cable

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