



STYLE 9315 NAVIGATOR INSTALLATION & OPERATING INSTRUCTIONS

INTRODUCTION

The Style 9315 Navigator from Akron is designed to offer reliable and accurate service with an easy to install, lightweight housing designed to optimize pump panel space.

The Navigator is designed to identify its intended use and adapt to individual situations.

The Navigator can be used for the following situations:

- Valve Controller only
- Valve Controller with Pressure readout
- Valve Controller with Flow readout
- Valve Controller with Pressure and Flow readout
- Pressure and/or Flow readout

It can also be used with another Style 9315 Navigator as an Auxiliary

Features of the Akron Style 9315 Navigator include:

- No added plumbing, no gears, no linkage, no hassle
- Easy connection to a Pressure Sensor, Flow Sensor, Electric Valve or Auxiliary
- Protected against EMI (Electro Magnetic Interference), both incoming and outgoing
- 4 1/4" square face
- Programmable Auto Open (not preset)
- Works with both 12 and 24 Volt systems
- Field Programmable to GPM or LPM and PSI or kPa
- Retrofits to existing apparatus
- Meets all aspects to NFPA 1901
- Carries Akron's 5 year warranty against manufacturing defects

Standard Components

- Navigator
- Wiring Harness for connection to the valve-10' length standard
- Flow Sensor
- Pressure Sensor
- Cables for Sensor connection-10' length standard

Note: The Navigator is designed for use only with Akron Brass Electric Valves. Do not use with any other manufacturer of valves. Doing so will void any warranty.

NAVIGATOR INSTALLATION INSTRUCTIONS

Select the mounting location for the Navigator. The Navigator 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 1/2" clearance behind the panel. Dimensions for a panel cutout are shown in figure #1.

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

Note: All connector wires (except the power connector) 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.

NAVIGATOR LEADS

Each Navigator has five (5) Connectors extending from the back of the unit.

Power Connection lead

The Navigator 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 Navigator.

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 Navigator to insure sufficient voltage to the Navigator.

Electric Valve Connection lead

Use an Akron Wiring Harness to connect the Navigator 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 Navigator 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. See Power Connection lead information above for attachment information.

Flow and Pressure Sensor Connection leads

Use a Flow and Pressure Cable to connect the Flow and Pressure Sensors. The standard length is 10'. Flow and Pressure Cables have 4 prong Weather-Pack connectors. See the appendix for a list of Cables.

Flow Sensor Installation

Note: Flow Sensors must be installed topside between the 9:00 and 3:00 positions.

Avoid placing the Flow Meter immediately before an eductor or immediately after a valve or elbow. Also, the Flow Meter should not be positioned immediately before any pipe size reduction.

Unique plumbing configurations may require Custom Flow Calibration for a more accurate reading.

See Flow Menu Section for custom Flow Calibration instructions.

Akron Flow Sensors can be installed in one of 3 ways:

Akron Valve Adapters- Specially designed inlet adapters for Swing-Out™ Valves (see current catalog or web site for a complete listing of adapter options)

Saddle Clamps- 2", 2 ½", 3" and 4" Schedule 40 pipe

Weld Bosses- 4", 4 ½" and 5" aluminum pipe and 4" and 5" steel pipe

Valve Adapter

1. Remove the Retainer Nut or Plug from the Adapter
2. Grease the O-Rings on the Flow Sensor with O-Ring lube or silicone grease
3. Insert the Flow Sensor into the port
4. Align the locator pin on the Flow Sensor with the hole in the adapter
5. Push in until fully seated
6. Replace the Nut/Plug and tighten with a wrench

Saddle Clamp

1. Determine the location in the pipe
2. Drill a 1 ¼" hole in the pipe*
3. Deburr the edge and clean the area for a proper gasket seal
4. Center the saddle on the hole in the pipe
5. Insert the strap(s) into the saddle and hand tighten
6. Tighten the nuts alternately to 80 pound-feet
7. Install the Flow Sensor as outlined above

*After cutting pipe be sure to flush the system before Valve installation.

Weld Boss

Detailed installation instructions are included with each Weld Boss ordered from Akron.

See appendix for a complete list of Saddle Clamps and Weld Bosses.

Pressure Sensor Installation

Pressure Sensors are designed for installation on the discharge side of the valve. The Pressure Sensor should be located as close as possible to valve for more accurate readings. Akron offers a wide variety of valve adapters with a tapped ¼" hole for easy installation. The pressure sensor should be mounted as near vertical as possible-not exceeding the 10:00 to 2:00 position. Be sure the placement of the Pressure Sensor allows for proper draining.

CAUTION: Improper installation may cause damage during freezing conditions.

Note: Placing the Pressure Sensor in a drain line away from the valve adapter is not recommended.

1. Apply pipe sealant to the thread of the Pressure Sensor and insert into the tapped hole in the Valve Adapter.
2. Hand tighten till snug then use a wrench to torque and additional ¼ turn.
3. Pressurize and check for leaks

When used with an Akron valve and Navigator, the pressure read out will show zero at powerup. Therefore, custom calibration is not required.

Initial setup

After the Navigator is installed and connections are made to the intended Valve, Sensors and/or Auxiliary the system is ready for power up.

Once powered up a quick AKRON logo will appear, followed by a screen showing what device(s) have been connected.



Figure #1 shows a Valve, Pressure Sensor and Flow Sensor connected.

The ROOT (MAIN) MENU will need to be accessed to synchronize the Navigator when used with a Valve.

To access the ROOT (MAIN) MENU, hold down both buttons for approximately 15 seconds to access the ROOT MENU.

Note: While holding both buttons TOTAL VOLUME will appear. This should be ignored during setup.

However, once flowing, holding both buttons for approximately 2 seconds will provide the total flow since the last start up.

The ROOT (MAIN) MENU contains 5 Sub Menus:

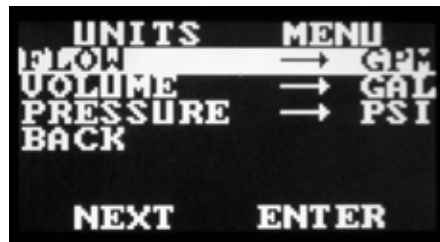
- Units Menu
- Flow Menu
- Pressure Menu
- Display Menu
- Valve Menu



To navigate through all menus the left button (**SELECT**) will highlight an individual line. Once highlighted, the right button (**ENTER**) will open the selected menu.

EXPLANATION OF INDIVIDUAL MENU SCREENS

UNITS MENU



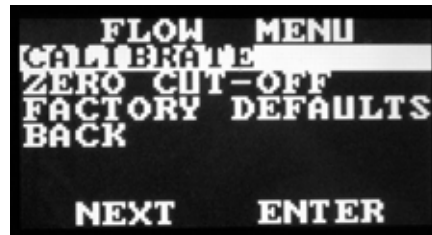
Units Menu

This Menu is used to select GPM or LPM, Gallons or Liters and PSI or kPa.

Example: With FLOW highlighted, press ENTER to choose between GPM and LPM. Once the correct selection is made, press NEXT to move to the next menu item.

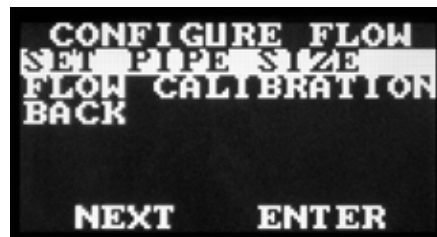
When finished, press NEXT to move to the BACK selection. Press ENTER to return to the ROOT (MAIN) MENU.

FLOW MENU



Flow Menu

The FLOW MENU provides the ability to set the pipe size and add a “zero cutoff” for the flow.



Configure Flow Screen

When initially connecting a Navigator and Valve this screen must be accessed to assign the pipe size:

2", 2 ½", 3", 4" or 5" pipe.

Once CALIBRATE is selected, press ENTER to record the valve size. The unit will automatically assign the flow ranges.

This will complete this step of the initial set up unless a unique plumbing configuration requires Custom Flow Calibration.

To custom calibrate the flow, follow these steps:

- 1 - In order to Custom Calibrate the 9315, it is necessary to use an outside flow meter (such as the Akron Apparatus Flow Test Kit - Style FK 25).
- 2 - If not already in the “ROOT MENU”, Hold both buttons in for 15 seconds, then select the “FLOW MENU” option.
- 3 - Select “CALIBRATE”
- 4 - Select “FLOW CALIBRATION”
- 5 - Select the Internal Diameter that most closely matches that of the pipe where the flow sensor (paddle wheel) is located.

6 - Set the pump flow for the high end of operation. See recommended ranges in chart below.

NOTE: The controller will accept values above or below this range. To obtain the highest accuracy during custom calibration, it is recommended that flows are used that fall within this range.

Pipe Size	High Flow Ranges	
2"	160-250 gpm	605-946 Lpm
2 ½"	250-350 gpm	946-1324 Lpm
3"	375-550 gpm	1419-2081 Lpm
4"	625-1000 gpm	2365-3785 Lpm
5"	1000-1500 gpm	3785-5678 Lpm

7 - Record the actual measured flow value from the outside flow meter into the 9315. The left button will cycle the highlighted digit, numbers 0 through 9. The right button, when pressed will "enter" the value shown in the highlighted digit, and proceed to the next digit. When done with the last digit, press the right button. Wait while the 9315 captures the average frequency signal from the paddle wheel flow sensor. To CANCEL, press either button.

8 - Set the pump flow for the low end of operation. See recommended ranges in chart below.

NOTE: The controller will accept values above or below this range. To obtain the highest accuracy during custom calibration, it is recommended that flows are used that fall within this range. Also, the minimum difference between Custom Calibration Flow values is 50 GPM or 150 LPM. If 500GPM was entered as the high value, the low value must be 450GPM or lower. If Low Flow value entered is too close to the High Flow value, the numbers just entered for the Low Flow value will all change back to zero, and the highlighted number block will jump back to the first digit. Change flow to an acceptable value and reenter value.

Pipe Size	Low Flow Ranges	
2"	20-60 gpm	75-227 Lpm
2 ½"	30-90 gpm	113-340 Lpm
3"	45-150 gpm	170-567 Lpm
4"	80-240 gpm	302-908 Lpm
5"	120-370 gpm	454-1400 Lpm

9 - Record the actual measured flow value into the 9315. The left button will cycle the highlighted digit, numbers 0 through 9. The right button, when pressed will "enter" the value shown in the highlighted digit, and proceed to the next digit. When done with the last digit, press the right button. Wait while the 9315 captures the average frequency signal from the paddle wheel flow sensor. To CANCEL, press either button.

Once these steps are completed, exit the configuration menu, and verify the indicated flow with the actual flow while the outside Flow Meter is still installed.

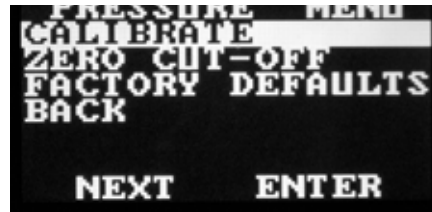
NOTES:

If displayed value for Flow ever goes over 9999, Custom Calibration values for Flow will be changed back to "Factory Defaults", which changes the pipe size selection back to a "Standard" 2 inch pipe.

Zero Cutoff is the ability to eliminate nuisance or shadow flow readings of up to 59 units.

The FACTORY DEFAULTS option, if entered, will change a custom flow setting back to the original factory setting.

PRESSURE MENU



The PRESSURE MENU provides the ability to change the pressure range and to add a “zero cutoff” for the pressure. The pressure range is 0 to 600 psi (0-4000 kPa).

When used with an Akron valve and Navigator, the pressure read out will show zero at powerup. Therefore, custom calibration is not required.

In the event that custom calibration for pressure is required, follow these steps:

CAUTION:

Do not proceed with Pressure Custom Calibration unless you intend to complete the procedure.

All previous pressure calibration settings will be reset during this Custom Calibration routine.

To recover, it will be necessary to do one of the following:

- Select Factory Defaults for Pressure, or
- Correctly complete the Custom calibration routine.

- 1 - If not already in the “ROOT MENU”, Press both buttons for 15 seconds to enter the setup menu.
- 2 - Use the left button to scroll down to the “Pressure Menu”, then press the right button.
- 3 - Once in the “Pressure Menu”, with the “Calibrate” option highlighted, press the right button.
- 4 - Apply a known pressure value (600 psi / 4137 KPa maximum) to the sensor and enter the pressure value into the 9315.
Example: Apply 400 psi to the sensor, and record the value 0400 into the 9315.
Press the right button once to select the next digit over. The left button will cycle the highlighted digit, numbers 0 through 9. The right button, when pressed will “enter” the value shown in the highlighted digit, and proceed to the next digit. When done with the last digit, press the right button.
- 5 - Wait while the 9315 captures the average voltage signal from the pressure sensor.
To CANCEL, and start over, press both buttons.
The next screen shown will be “Low Pres Value”.
- 6 - At this point, the preferred way, is to remove all pressure from the sensor. (Zero psi)

NOTE: The minimum difference between High and Low pressures is 15 PSI or 103 KPA for the controller to recognize the values. If the something other than 0 PSI is used for the low pressure value and it is too close to the High pressure value, the numbers just entered for the Low Pressure value will all change back to zero, and the highlighted number block will jump back to the first digit. Adjust pressure and re-enter the values.

- 7 - Press the right button four (4) times. Once back in the “Pressure Menu”, press the left button three (3) times to scroll down to “BACK”, then press the right button to go back to the “Root Menu”.
- 8 - Once back in the “Root Menu”, press the left button five (5) times to scroll down to “EXIT”, then press the right button to exit the setup menu.

NOTES:

- If you performed a Custom Calibration for Pressure, the 9315 will not attempt to do an “Auto-Zero” each time power is turned back on.
- If you selected Factory Defaults for Pressure, instead of Custom Calibration, make sure that there is ZERO pressure on the pressure sensor when the power to the 9315 is turned on. The 9315 (by default) will try to do an “Auto-Zero” every time power is turned back on.
- If displayed value for Pressure ever goes over 9999, Custom Calibration values for Pressure will be changed back to “Factory Defaults”

Zero Cutoff is the ability to eliminate nuisance or shadow pressure readings up to 59 units.
The FACTORY DEFAULTS option, if entered, will change a custom pressure setting back to the original factory setting.

DISPLAY MENU



The DISPLAY MENU provides the ability to determine “Brightness” and “Contrast”.
In this menu when BRIGHTNESS or CONTRAST is selected, the left button becomes NEXT. Use the NEXT button to move either the BRIGHTNESS or CONTRAST to the desired level. Press the ENTER button to lock in the setting.

VALVE MENU



The VALVE MENU provides the ability to synchronize the Navigator with the Valve and to change the “Auto Open” selection. **The Navigator must be synchronized with the valve whenever a Valve is initially connected to the Navigator.** Once “calibrate” is selected the Valve will cycle and end in the closed position.
‘Auto Open’ is disabled at the factory. Enabling Auto Open provides one touch auto open. This feature will only work if the valve starts in the full closed position. Auto Open can be overridden by pressing the open button a second time.
There are no provisions for auto close.

When ready to exit, return to the ROOT (MAIN) MENU and select EXIT.

Note: Once EXIT is entered access to the ROOT (MAIN) MENU is terminated. Reentry can be gained by holding both buttons for approximately 15 seconds as noted above.

NOTE: The Setup Menu is not accessible on a Navigator or Controller being used as an Auxiliary. Calibration and setup options are available only through the Master.

SPECIFICATIONS

Electrical Inputs:

Power	11.5-32VoltsDC@300mAmax
Valve Control	12 or 24VoltsDC
Communication	Modbus Serial Connection
Flow Sensor	+/- 5%
Pressure Sensor	3% Full Scale

Environmental

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

Display Type – LCD

Flow Sensor-Paddlewheel

Pressure Sensor-Ratio Metric, 0.5-4.5 VoltsDC, ¼” NPT Male, 0-600 psi (0-4100kPa)

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
LCD Screen will 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.	<ol style="list-style-type: none"> 1. Truck engine must be running 2. Check voltage and amps to the Navigator. 12 Volt systems require 11.5 volts and 28 amps. 24 Volt systems require 22 volts and 14 amps. 3. Check all wiring from the power source to the Navigator. 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.
Bar Graph shows fully closed or open before the Valve is fully open or closed.	<ol style="list-style-type: none"> 1. Short in the Motor or Navigator 2. Gear system is jammed. 3. Seat or Valve Ball is damaged. 	<ol style="list-style-type: none"> 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 Bar Graph shows Valve movement 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 from torque is normal, 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 Navigator	Loss of Power Open Breaker or Blown Fuse Power not connected.	Check all power connections, breakers/fuses. Be sure a separate power wire is connected to any an Auxiliary.
Valve Actuator does not work. Motor does not drive.	<ol style="list-style-type: none"> 1. No signal from the Navigator to the Actuator Motor. 2. Defective Actuator Motor. 3. Worm Gear system jammed. 4. Planet Gear system jammed. 	<ol style="list-style-type: none"> 1. Check all connectors for full engagement. 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 Navigator. 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	<ol style="list-style-type: none"> 1. Groove Pin is missing from the Shaft. 2. Gear Sector is not engaging the Worm Gear. 3. Motor Shaft is disengaged from the Planet gears. 	<ol style="list-style-type: none"> 1. Check the Groove Pin for full engagement. 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.	<ol style="list-style-type: none"> 1. Sector Gear is in the wrong position. 2. Cable wiring is reversed. 	<ol style="list-style-type: none"> 1. Reposition the Sector Gear. 2. Replace the Cable.
Bar Graph switches from OPEN to CLOSE (or vise versa) immediately without the Valve Ball moving.	<ol style="list-style-type: none"> 1. Wiring 2. Mechanical Binding 	<ol style="list-style-type: none"> 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

Style 9315 Navigator Ordering Information

Part Number	Description
9315-0001	Navigator only
9315-0002	Navigator with 10' Wiring Harness
9315-0003	Navigator with 10' Wiring Harness, Pressure and Flow Sensor and (2) 10' Cables
9315-0004	(2) Navigators with 10' Wiring Harness, Pressure and Flow Sensor, (2) 10' Cables and 10' Auxiliary Cable
9315-0005	Navigator and 10' Auxiliary Cable
9315-0006	Navigator with Pressure and Flow Sensors and (2) 10' Cables
9315-0007	Navigator with 10' Wiring Harness, Pressure Sensor and 10' Cable

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

Flow and Pressure Cables

Part Number	Description
9300-0037	5' long
9300-0038	10' long (standard length)
9300-0041	15' long
9300-0014	20' long
9300-0034	30' long
9300-0035	38' long
9300-0015	50' long

Sensors

Part Number	Description
9300-0046	Flow Meter Sensor
9300-0050	Pressure Sensor

Retrofitting

When replacing an old Navigator, Style 9305, (4 1/4" wide x 6 1/4" high) with a Style 9315 Navigator, a 1/4" stainless steel Adapter Plate (part number 9315-0100) can be used to adapt the size of the opening to fit the new Navigator.

Weld Bosses and Saddle Clamps

In addition to a wide variety of Swing-Out Valve Adapters, Akron offers the option to attach a Flow Sensor via Weld Bosses and Saddle Clamps.

Part Number	Description
9300-0021	Weld Boss for 4" aluminum pipe
9300-0022	Weld Boss for 4 1/2" aluminum pipe
9300-0023	Weld Boss for 5" aluminum pipe
9300-0024	Weld Boss for 4" steel pipe
9300-0026	Weld Boss for 5" steel pipe
9300-0006	Saddle Clamp for 2" schedule 40 pipe
9300-0007	Saddle Clamp for 2 1/2" schedule 40 pipe
9300-0008	Saddle Clamp for 3" schedule 40 pipe
9300-0011	Saddle Clamp for 4" schedule 40 pipe

NAVIGATOR INSTALLATION DIAGRAM

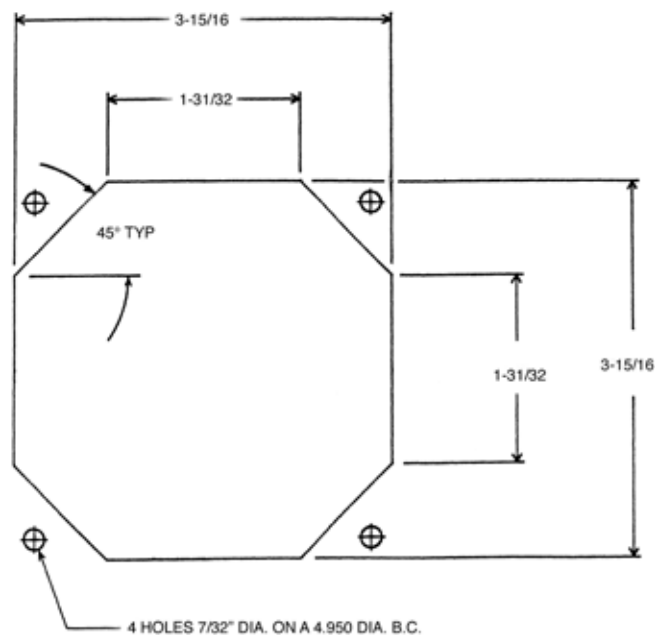


FIG. 1



Tested... Proven... Trusted.

ISO 9001 REGISTERED COMPANY

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REVISED: 4/12

WARRANTY AND DISCLAIMER: We warrant Akron Brass products for a period of five (5) years after purchase against defects in materials or workmanship. Akron Brass will repair or replace product which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Products must be promptly returned to Akron Brass for warranty service.

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