ICON10 / ICON1
Control Panel
Owner's Manual

0999955_D

Software Versions:

ICON10 v 1.01

Smart Relay Board (SRB) v 1.01

www.valleyirrigation.com

Table of Contents

To Run the Machine: (Refer to the Overview and Operation sections of the Owner's Manual, and to the Advanced Features Manual.)

- ALWAYS make sure that vehicles, other equipment, livestock, and people are clear of the machine before operating.
- Turn the control panel main disconnect switch to the on position. If the power is supplied by an engine driven generator, set generator to proper voltage/Hz. Do not exceed system specifications.

Run the Machine Wet (With Water)

1. Push the **Water** button on the Main Screen to turn the water on.
2. To set the water application, select either the **Depth** field or **Wet % Timer** field.
   - In the Depth field, set the water application depth by inches or millimeters.

   or
   - In the Wet % Timer field, adjust the percent to obtain the desired water application depth.

   a) Enter either the depth or percent timer setting.
   b) Push **ENTER** to retain the value.
3. Do one of the following:
   - Push button to start the machine in the forward direction.
   - Push button to start the machine in the reverse direction.
   - Push to stop the machine.

Run The Machine Dry (Without Water)

1. Push the **Water** button on the Main Screen to turn the water off.
2. To set the speed of travel, select the **Dry % Timer** field.
   - In the Dry % Timer field, adjust the percent to obtain the desired speed of travel.

   a) Enter the percent timer setting.
   b) Push **ENTER** to retain the value.
3. Do one of the following:
   - Push button to start the machine in the forward direction.
   - Push button to start the machine in the reverse direction.
   - Push to stop the machine.

If a control is not configured to be shown on the Main Screen, push Menu, System, Panel, and Controls to view it on the Controls Screen.

Controlling Auxiliary Relays:

1. Push Menu, System, Panel, and Controls.
2. Push the Aux1 or Aux2 button to turn on or off.

Turning Stop-In-Slot On/Off:

Push the **SIS (Stop In Slot)** button to turn on or off.

- SIS on to stop at the stop-in-slot location.
- SIS off to bypass the stop-in-slot location.

To Set the Stop-In-Slot Position:

1. Select the **SIS (Stop In Slot)** field.
2. Enter the desired stop-in-slot position in degrees and push **ENTER**.

Turning Power and Pressure Restart On:

1. Push **Menu, System, Panel,** and **Controls**.
2. Push the **Auto Restart** button to turn on or off.

   Refer to "Auto Restart Via:" in the Advanced Features Manual for more information.

Selecting Auto Reverse or Auto Stop:

1. Push **Menu, System, Panel, and Controls**.
2. Push the **Auto Reverse Auto Stop** button to toggle between Auto Reverse on or Auto Stop on.

   AR/AS must be Enabled. Only applicable with the drive-unit-mounted auto reverse hardware. Refer to "Auto Reverse Auto Stop (AR/AS)" in the Advanced Features Manual more information.

Setting the End Gun:

Refer to Figure 3-1.

1. Push Menu, Utilities and End Guns.
2. Check the EG (end gun) checkbox to enable it.
3. Push the EG configure button for the end gun.
4. Select the Left field (end gun on angle) for a sequence Pair, and enter the degrees on the numeric keypad. Push ENTER.
5. Select the Right field (end gun off angle) for a sequence Pair, and enter the degrees on the numeric keypad. Push ENTER.
6. Repeat steps 4 and 5 for other sequence pairs as needed. Use the arrows at the bottom of the screen to view other sequence pairs.

Figure 3-1

QUICK REFERENCE GUIDE

Quick Reference Guide

QUICK REFERENCE GUIDE

System Stops and Faults

System Stop	Threshold
Command	The machine was intentionally commanded to stop by pushing the Stop button.
Stop-In-Slot (SIS)	The current machine position matches the Stop-In-Slot position while the machine was waiting/running.
Daily Ops	With the Daily Ops Control enabled and Daily Ops Mode selected, the system was started outside of the start/stop range of Daily Ops.
Program	A stop command in a step or sector program shut down the machine.
Auto-Stop	The Auto Stop boundary was reached and shut down the machine.
System Fault	**Threshold**
System Power Lost	Voltage dropped below half the low voltage limit for 3 seconds or more while the machine was waiting/running with water on or more than 1 second if running with water off.
System Power Low	Voltage fell below the low voltage limit for 15 seconds or more while the machine was waiting/running.
System Safety	Safety circuit was de-energized for more than 3 seconds.
Low Pressure	Water pressure fell below the Low Pressure Limit for more than the Operating Pressure Delay time while the machine was running with water on and after the Startup Pressure Delay has expired.
High Pressure	Water pressure remained above the High Pressure Limit for at least the High Pressure Shutdown Delay time.
NVMEM	E01 error is active, Memory Error, Backup Battery failure.
Forward/Reverse	Both the forward and reverse circuits were on for more than 15 seconds while the machine was waiting/running.
Operating Sector	With AR/AS and For/Rev Position both enabled, the machine is waiting/running or was started outside of the Forward or Reverse Position angles.
Wind	With Wind Shutdown enabled, the Wind Speed went above the Wind Speed Limit for more than 1 minute while the machine is running with water on.
Temperature	With the Temperature Shutdown enabled, the Current Temperature goes below the Low Temperature Limit while water is on.
Rain	With the Rain Shutdown enabled, the Total Rainfall for the Rain Window goes above the Rain Shutdown Limit while water is on.
Flow	While the machine is running with water on, the Flow Rate falls below the Low Flow Limit after adequate water pressure has been achieved.
Water Timer	With the Water Timer enabled, the time accumulated by the Overwater Timer is greater than the Overwater Shutdown time.
Tire Pressure	With Shutdown Pressure Control enabled, the Reported Tire Pressure of a tire is below the Nominal Tire Pressure for that tire's tower by at least the Shutdown Pressure Drop for two consecutive sensor readings.
GPS Com	With GPS Position and Shutdown On Position Loss enabled, while the machine is waiting/running there has been no GPS communications and the Shutdown On Position Loss Delay time has expired.
GPS Lock	With GPS Position and Shutdown On Position Loss enabled, while the machine is waiting/running the GPS Lock Status is None and the Shutdown On Position Loss Delay time has expired.
Cut Cable	A cut cable was Detected when the machine was started.
PCB Hardware	PCB hardware issue detected while the machine is waiting/running.
12V Power	With Backup Battery enabled, the battery backup supply voltage fell below 10 volts or the unit has been powered from the battery backup supply and the Battery Backup Time has expired.
Position Encoder Com	With the Position Encoder option and Shutdown On Position Loss enabled, and while the machine is waiting/running the position encoder has not been communicating and the Shutdown On Position Loss Delay time has expired.
License	The protocol license is not valid.

Error Codes

Error	Description
E01	NVMEM corrupted
E02	PCB hardware issue
E03	Software reset
E04	Power drop below low voltage limit
E05	System safety lost
E06	Pressure too low after pressure delay
E07	Pressure (mV) sensor out of range high
E08	Pressure (mV) sensor out of range low
E09	Pressure (mA) sensor out of range high
E10	Pressure (mA) sensor out of range low
E11	Pressure switch active with pump off
E12	Valley GPS pressure sensor out of range high
E13	Valley GPS pressure sensor out of range low
E14	FWD/REV Sense shorted
E15	Underwater error

Error	Description
E16	VDC communication error- primary COM module
E17	VRI-iS sprinkler communication error
E18	GPS communications error
E19	GPS signal loss
E20	DGPS signal loss
E21	Flow rate below low flow limit
E22	Pressure above high pressure limit
E23	PLC communications error
E24	Valve duty cycles re-synced due to high pressure
E25	GPS coordinates out of range
E26	Low tire pressure
E27	TPMS communications error
E28	VDC Error Report message received
E29	Valley GPS communication error, master OPMC
E30	Valley GPS Error Report message received

EC Declaration of Conformity

CE

We: **Valmont Industries, Inc.**
28800 Ida Street
Valley, NE 68064
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Serial Number:

Purchase Order:

declare under our sole responsibility that the product,

Crop Irrigation System

to which this documentation relates, is in conformity with the following documents:

Machinery Directive 2006/42/EC
Low Voltage Directive 2014/35/EU
Electromagnetic Compatibility Directive 2014/30/EU

The above-referenced equipment is in conformity with all safety-related clauses (Not all clauses reflecting commercial preference are met) of the following documents:

EN 60204-1:2006	**Safety of Machinery – Electrical Equipment of Machines**
EN 12100:2010	**Safety of Machinery**
EN 909:1998+A1	**Irrigation Machines**

Statement regarding **Pressure Equipment Directive 97/23/EC:**

The Crop Irrigation System is excluded from the scope of the Pressure Equipment Directive, by the language of Article 1, Sections 3.2, 3.6 & 3.10. This equipment is classified less than Category 1.

Statement regarding **RoHS Directive 2011/65/EC**:

The Crop Irrigation System is excluded from the scope of the RoHS Directive, by the language of Article 2, Section 4(e), being a “Large Scale Fixed Installation.”

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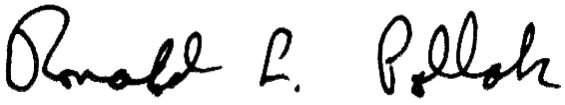

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Place of Issue: Valley, NE 68064

Electrical Safety Statement

Installation of the Valley Electric Irrigation Machine - European Union Only

Valmont Industries Inc. does not install a differential (ground fault) circuit breaker in the control panel of the Valley electric irrigation machine because the standards of protection vary according to country of destination. The distributor must provide and install a differential (ground fault) circuit breaker that meets the standards of the country where the Valley irrigation machine is installed.

In the European Union, differential circuit breaker protection is fixed at a maximum of 24 volts.

Good grounding of the Valley irrigation machine is required.

- If resistance to ground is lower than 80 ohms, a differential (ground fault) circuit breaker of 300 mA will meet requirements.
- If resistance to ground is between 80 and 800 ohms, a differential (ground fault) circuit breaker of 30 mA will meet requirements.

The power supply installation and inspection of equipment protection components or machines are the responsibility of the installer. Valmont Industries Inc. is not responsible for the failure of equipment protection components or machines not of their manufacture.

Valley pivot irrigation machines receiving power from a generator must have a cable connected from the irrigation machine structure to a ground rod and another cable from the irrigation machine structure to the ground terminal on generator in order for the differential (ground fault) circuit breaker to work.

- The resistance between the irrigation machine and the generator must be substantially below 80 ohms.

About This Manual

Information contained in this manual applies to Valley ICON10 / ICON1 Control Panels with Software Versions ICON10 v 1.01 and Smart Relay Board (SRB) v 1.01. Sections related to safety, pivot hardware, maintenance, towing, troubleshooting and winterization are covered in the appropriate Valley Pivot Owners Manual.

You, as the owner/operator, should familiarize yourself with the capabilities of the system in order to obtain optimum system performance. It should be remembered that the sprinkler will perform according to your knowledge of the equipment, soil and water relationships and equipment application concepts.

Specifications, descriptions and illustrative material contained herein were as accurate as known at the time this publication was approved for printing. Valmont Industries Inc. reserves the right to change specification or design without incurring obligation. Specifications are applicable to machines sold in the United States and may vary outside the United States.

Additional information is contained within the Advanced Features Manual part number 0999953 (English) for this control panel.

Ancillary Equipment Warranty

The owner is responsible for warranty registration of all ancillary equipment such as engines, pumps and generators with its respective manufacturer.

Recognize Safety Information

This irrigation equipment can be powered by high voltage, which can be extremely dangerous if used improperly. For maximum safety and optimum performance of the machine, all owner/operators and maintenance personnel must read and understand the owner/operator manual(s), all safety messages in this manual and safety signs/decals on the machine before operating this equipment.

Anyone assembling, operating, servicing or maintaining this machine must read and understand all operation, maintenance, troubleshooting, testing, installation, assembly instructions and all safety messages in this manual before operating the machine or beginning any maintenance, troubleshooting, testing, installation or assembly of components.

These instructions alert you to certain things you should do carefully; if you don't, you could hurt yourself or others, hurt the next person who operates the equipment, or damage the equipment.

Safety Messages

Safety messages in this manual are preceded by the hazard symbol and one of three words: DANGER, WARNING or CAUTION. These messages alert you to potential hazards that could hurt you or others and or cause property damage.

⚠ This HAZARD SYMBOL is used to alert you to information about unsafe actions or situations, and may be followed by the word DANGER, WARNING or CAUTION.

⚠ DANGER

The HAZARD SYMBOL used with the word DANGER describes immediate hazards that can result in severe personal injury or death.

⚠ WARNING

The HAZARD SYMBOL used with the word WARNING describes unsafe actions or situations that can result in severe injury, death and/or major equipment or property damage.

⚠ CAUTION

The HAZARD SYMBOL used with the word CAUTION describes unsafe actions or situations that can result in injury, and/or minor equipment or property damage.

Information Messages

Important information messages in this manual are preceded by the word NOTE.

NOTE

The word NOTE is used to alert you to information that describes procedures or tips to help you install, operate or maintain your equipment properly.

Safety

Use of Personal Protective Equipment

- People working in areas where there are potential electrical hazards must use, personal protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed. Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Safeguards for personnel protection. - 1910.335, or applicable national, state or local regulations, for additional information.
- Personal protective equipment must be maintained in a safe, reliable condition and periodically inspected or tested.
- Protective shields, protective barriers, or insulating materials must be used to protect each person from shock, burns, or other electrically-related injuries while that person is working near exposed energized parts which might be accidentally contacted or where dangerous electric heating or arcing might occur. When normally enclosed live parts are exposed for maintenance or repair, they must be guarded to protect unqualified persons from contact with the live parts.
- Safety signs and tags, safety signs, safety symbols, or accident prevention tags must be used where necessary to warn people about electrical hazards which may endanger them.

Conductive Materials and Equipment

Materials and equipment that can conduct electricity must be handled in a way that will prevent them from contacting energized power lines, exposed conductors or circuit parts.

- When handling long conductive objects (such as but not limited to truss rods, pipes, angles and ladders) in areas with energized power lines, exposed conductors or circuit parts, work practices (such as the use of insulation, guarding, and material handling techniques) must be used to minimize the hazard.
- Portable ladders must have non-conductive side rails.
- Do not wear conductive articles of jewelry and clothing (such as but not limited to watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) that could come in contact with energized power lines, exposed conductors or circuit parts.

Fall Protection

Identify potential fall hazards and determine if fall protection equipment is appropriate for the task, before beginning the work. Pay attention to hazards associated with routine and non-routine tasks. Inspect fall protection equipment (harnesses, lanyards) and devices (guardrails, tie-off points) before each use. Use fall protection equipment if required for the job. Be sure the fall protection equipment is right for the task, fits properly, and is in good condition. Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations Standards - 29 CFR 1926.500, 1926.501 and 1926.502, or applicable national, state or local regulations for more information.

- When using scaffolds, make sure there is proper access, full planking, stable footing, and guard railing.
- When using a boom lift, keep feet firmly on the platform of a boom lift, use fall protection equipment tied-off at all times to the guardrail or tie-off point.
- When using a ladder, make sure the ladder is non-conductive and the correct size for the task. Read the ladder user instructions and be sure the ladder is in good condition. Make sure ladder is set on stable footing and at the correct angle.

Minimum Working Clearance

To reduce the risk of injury, all persons require adequate working clearance around the electrical panel or other electrical equipment. The table below identifies the minimum working clearance needed. Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Safeguards for personnel protection -1910.303(g)(1)(i), or any other applicable national, state or local regulations, for additional information.

MINIMUM WORKING CLEARANCE 0-600 VOLTS				
WIDTH OF WORKING CLEARANCE AREA	HEIGHT OF WORKING CLEARANCE AREA	★MINIMUM WORKING CLEARANCE IN FRONT OF ELECTRICAL PANEL/EQUIPMENT		
		EXPOSED LIVE PARTS ON ONE SIDE OF WORK SPACE AND NO LIVE GROUNDED PARTS ON THE OTHER SIDE.	EXPOSED LIVE PARTS ON ONE SIDE OF WORK SPACE AND LIVE GROUNDED PARTS ON THE OTHER SIDE.	EXPOSED LIVE PARTS ON ONE SIDE OF WORK SPACE AND EXPOSED LIVE PARTS ON THE OTHER SIDE.
30 in (760 mm) MINIMUM OR WIDTH OF ENCLOSURE, WHICH EVER IS GREATER	78 in (1980 mm) MINIMUM OR HEIGHT OF ENCLOSURE, WHICH EVER IS GREATER	36 in (915 mm) MINIMUM	42 in (1065 mm) MINIMUM	48 in (1220 mm) MINIMUM

★Concrete, brick or tile walls shall be considered as grounded.

Qualified Person

A Qualified Person is one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Only qualified persons may work on electric circuit parts or equipment that have not been de-energized.

Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations Standards - 29 CFR 1926.32(m) and 1910.333, or applicable national, state or local regulations for additional information.

Safety

Overhead Power Lines

Assembling, towing or transporting irrigation machine components such as but not limited to the pivot point, linear cart, span/drive unit assemblies, overhangs and/or corner assemblies underneath or near power lines is extremely dangerous because of the risk of electrocution.

Operating equipment that elevates irrigation machine components, such as but not limited to an aerial lift or crane, near power lines is extremely dangerous because of the risk of electrocution. Only qualified personnel should operate this type of equipment. Before operating the equipment, qualified personnel must read the equipment manufacturers' operating and safety instructions.

Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Cranes and derricks. - 1926.550, or any other applicable national, state or local regulations for additional information.

- Always presume that any overhead power line is an energized line unless and until the person(s) owning the line and/or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Before operating any equipment near any power line make sure the line has been de-energized and visibly grounded at the point of work.
- Electrocution can occur without touching an electrical power line. Electricity, depending on the magnitude, can jump or become induced into equipment or conductive materials that come in close proximity to, but do not touch a power line. High wind, lightning, wet ground and other environmental conditions will increase the possibility of electrocution and require additional consideration.
- Transmitter towers can induce the equipment or materials being handled with an electrical charge. Before working or operating equipment near transmitter towers, make sure the transmitter is de-energized.
- Select the location where the span/drive unit will be assembled to ensure that neither the irrigation machine, or the equipment used during the assembly process, will violate the minimum clearance guidelines.
- Never operate equipment or allow the load, ropes or tag lines within 10 ft (3.05 m) of any power line rated 50 kV or lower whether it is energized or not. For lines rated over 50 kV, the minimum clearance shall be 10 ft (3.05 m) plus 0.4 in (1.1 cm) for each kV over 50 kVs.
- Never assemble, tow, transport or allow irrigation machine components underneath or within 10 ft (3.05 m) of any power line rated 50 kV or lower whether it is energized or not. For lines rated over 50 kV, the minimum clearance shall be 10 ft (3.05 m) plus 0.4 in (1.1 cm) for each kV over 50 kVs. Overhang support angles, cables and spinner drive components regularly extend 10 ft to 12 ft (3.1 m to 3.7 m) above the irrigation pipeline (span).
- Use barricades to identify areas where interference with overhead power lines could occur. Keep the assembly, towing or transporting of irrigation machine components and the operation of equipment including load, ropes or tag lines away from any power line, in the distances described above, whether the line is energized or not.
- Always designate a person to observe clearance between the power line and all equipment being operated or moved in order to give timely warning for all operations to STOP if the minimum clearance is violated.

Minimal Lockout / Tagout Procedure

The following procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It is used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before personnel perform any servicing or maintenance where the unexpectedly energized or start-up of the machine or equipment or release of stored energy could cause injury. All personnel, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance, shall not attempt to start, energize, or use that machine or equipment.

When the energy isolating devices are not lockable, tagout should be used and affected personnel must wear full personal protection.

Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Typical minimal lockout procedures - 1910.147 App A, or applicable national, state or local regulations, for additional information.

Sequence of Lockout

1. Notify all affected personnel that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
2. The authorized personnel shall identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).
4. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
5. Lock out the energy isolating device(s) with assigned individual lock(s).
6. Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
7. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

> **⚠ CAUTION**
>
> - **RETURN OPERATING CONTROL(S) TO THE NEUTRAL OR OFF POSITION AFTER VERIFYING THE ISOLATION OF THE EQUIPMENT.**

9. The machine or equipment is now locked out.

> **⚠ DANGER**
>
> - **WHEN PERSONNEL WILL BE EXPOSED TO CIRCUIT ELEMENTS AND ELECTRICAL PARTS, A QUALIFIED PERSON MUST USE TEST EQUIPMENT TO VERIFY THAT THE CIRCUIT ELEMENTS AND EQUIPMENT PARTS OF THE EQUIPMENT ARE DE-ENERGIZED.**

Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

1. Check the machine or equipment and the immediate area around the machine to ensure that non-essential items are removed and that the machine or equipment components are operationally intact.
2. Check the work area to ensure that all personnel are safely positioned or removed from the area.
3. Verify that the controls are in neutral.
4. Remove the lockout devices and re-energize the machine or equipment.
5. Notify affected personnel that the servicing or maintenance is completed and the machine or equipment is ready to be used.

Operate Safely

Valley Irrigation machines are designed with safety in mind. However, if this machine is operated incorrectly, it may pose a safety threat to the operator. A good safety program is much like a chain, it is only as strong as its weakest link. The manufacturer, dealer, and operator must maintain and improve all safety programs. The following is a list of safety operating tips which you and all other persons servicing or operating the machine must read and understand.

⚠ CAUTION

- **DO NOT OPERATE THIS MACHINE WITHOUT FIRST READING THE OWNER'S MANUALS FOR THE MACHINE.**
- **READ ALL SAFETY MESSAGES IN THIS MANUAL AND SAFETY SIGNS ON THE MACHINE.**
- **DO NOT LET ANYONE OPERATE THIS MACHINE WITHOUT PROPER INSTRUCTIONS.**
- **UNAUTHORIZED MODIFICATIONS MAY IMPAIR THE FUNCTION AND/OR SAFETY OF THE MACHINE.**
- **IF YOU DO NOT UNDERSTAND ANY PART OF THIS MANUAL, CONTACT YOUR VALLEY DEALER.**

Employee Instruction on Safety

It is very important to instruct your employees on the safe use of this equipment at the time of their initial assignment to operate it. DO NOT let anyone operate this equipment without proper instructions.

Safety training should be presented annually and the service manager should ensure employees fully understand the safety messages and what to do in case of emergencies.

Emergency Stopping

The machine can be stopped at any time at any tower by turning the disconnect switch, located underneath the tower box, to the Off position. See Figure 12-1.

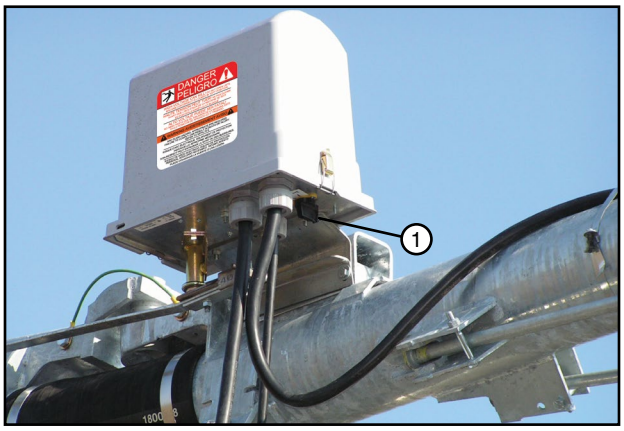


Figure 12-1 1. Disconnect Switch

⚠ WARNING

Proper Grounding

DO NOT attempt to start the machine until the electrical service is properly installed and grounded by a qualified electrician as per the electrical standards. See Figure 12-2.

If the power supplied to the machine is not grounded properly, severe injury or death can result should an electrical malfunction occur.

It is your responsibility to ensure that your power supplier and/or electrical contractor has grounded the irrigation machine as required by the National Electrical Code and by applicable local electrical codes. If a machine is properly grounded and fuse sizing is correct, there is extremely low probability of an individual being injured by electrical shock.

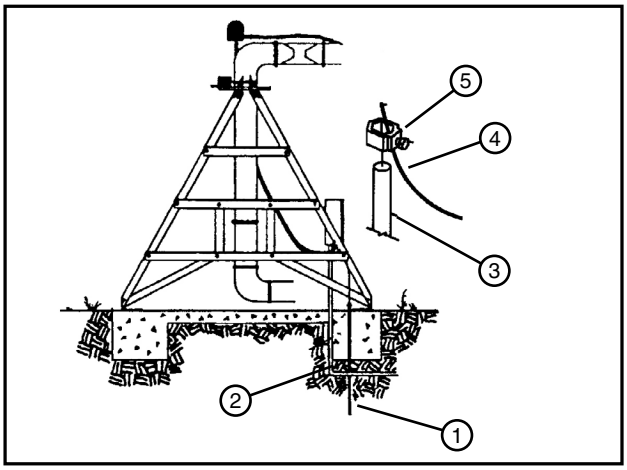


Figure 12-2
1. Ground Rod Installation
2. Service Conductor
3. Copper Ground Rod
4. Copper Ground Wire
5. Clamp

NOTE

- **All 480 VAC, 60 Hz. (380 VAC, 50 Hz.) power supply services MUST be a 4 conductor service. Three 480 VAC (380 VAC) power lines and one ground conductor which is as large as the power carrying conductors for that service.**
- **Each time a towable machine is moved, the ground wire MUST be reattached to the ground rod and checked for electrical integrity before restarting the machine.**

Operate Safely (Continued)

⚠ DANGER

Disconnect Power When Servicing

ALWAYS disconnect electrical power before servicing or performing maintenance to the machine.

If you are going to perform maintenance on the machine, **YOU MUST** shut off and lock the main power disconnect as shown below. See Figure 13-1.

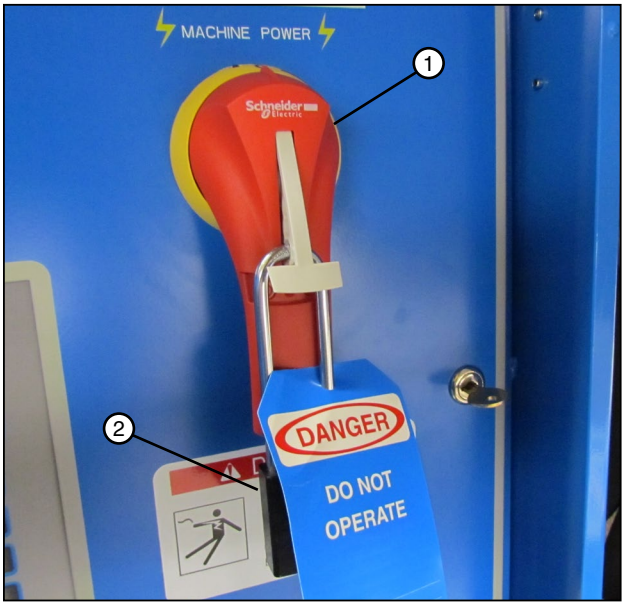


Figure 13-1 1. Main Power Disconnect
2. Lock

The blue (OSHA safety color code) tag shown below should also be filled out and attached to the disconnect after locking. See Figure 13-2.

The tag should reveal the name of a person to contact before restoring power to the machine.

Figure 13-2

⚠ CAUTION

Qualified Service Personnel

If you do not understand electricity or other parts of the machine, have qualified service personnel perform any hazardous repairs or maintenance.

⚠ CAUTION

Guard All Power Take-Off Drives

This includes all belt and power line drives.

Replace any guards and shields removed for maintenance.

⚠ WARNING

Mark and Guard All Power Lines

Do NOT deep rip or chisel near the buried power service wires.

Do NOT deep rip in a circle at the drive unit. The deep chisel track will cause severe stresses on the structure.

If you do deep rip your field, run the machine with the percent timer at 100% for the first revolution.

⚠ WARNING

Suspected Short Circuits

DO NOT touch the machine if you suspect a short-circuit situation. Call a qualified electrician or an authorized Valley dealer immediately.

Circumstances which may cause you to suspect hazardous voltage situations may include:

- Physical damage to the machine or span cable
- Recent electrical storms (lightning)
- Unusual operating characteristics of the machine

If you suspect a short circuit due to feeling a rippling tingle when touching the machine, DO NOT touch the machine again. Call a qualified electrician or an authorized Valley dealer immediately.

Operate Safely (Continued)

⚠ WARNING

Lightning and the Machine

Stay away from the machine during an electrical storm. An irrigation machine makes a good path to earth. It is also probably the tallest object in the field, which makes it a good lightning receptor!

⚠ CAUTION

Do Not Oversize Fuses

Fuses are sized for the protection of a specific machine.

Be certain you have the proper fuse sizes in place before initial start-up and when replacing fuses.

⚠ CAUTION

Plug - In Connectors

Disconnect power before connecting or disconnecting any plug-in connectors.

⚠ CAUTION

Do Not Operate at Freezing Temperatures

Spraying water has a cooling effect and water will freeze even though the air temperature is slightly above freezing.

Shut the machine down at 40 degrees Fahrenheit (4.5 degrees Celsius). Do not operate machine when temperature is below 40° F (4.5° C).

- **DAMAGE TO EQUIPMENT RESULTING FROM FREEZE-UP IS NOT COVERED UNDER WARRANTY.**
- **IT IS IMPORTANT TO MAKE SURE ALL PIPE DRAINS FUNCTION PROPERLY TO PREVENT PIPELINE FREEZE-UP DURING COLD WEATHER.**

⚠ CAUTION

Avoid High Pressure Water Streams

Avoid body contact with high pressure water streams.

⚠ WARNING

Avoid Chemicals

Avoid exposure to sprinkler spray while chemicals are being injected into the water. Read EPA Label Improvement Program (PR Notice 87-1) and all instructions for chemical applications.

If you plan on chemigating, make certain you have complied with state or local regulations in regard to safety equipment, certification, operation and calibration of the injector pump. Make certain you have first aid and fresh water available in case of an accident. You must also be familiar with the correct cleanup procedures in case of a spill.

- **USE OF PROTECTIVE CLOTHING IS RECOMMENDED WHEN HANDLING CHEMICALS. SAFETY GLASSES, GLOVES, AND PROTECTIVE OUTERWEAR SHOULD BE WORN WHEN HANDLING CHEMICALS.**
- **CONTAMINATION OF THE WATER SUPPLY MAY OCCUR IF EFFECTIVE SAFETY DEVICES ARE NOT INSTALLED/USED IN CONNECTION WITH INJECTION EQUIPMENT FOR CHEMIGATION.**

⚠ DANGER

Drive Shafts Start Without Warning

An electric motor on each tower of the center pivot powers two or more drive shafts connected to wheel gear drives. These drive shafts start and stop without warning.

- **DO NOT TOUCH ROTATING DRIVE SHAFT OR SHIELD, CLOTHING OR LIMBS MAY BECOME ENTANGLED, RESULTING IN SEVERE INJURY.**
- **DO NOT SERVICE THE MACHINE UNTIL THE MAIN DISCONNECT IS LOCKED IN THE OFF POSITION.**
- **ALWAYS REPLACE DRIVE SHAFT SHIELDS AFTER SERVICING.**
- **DRIVE SHAFT SHIELDS MUST ALWAYS BE IN PLACE WHEN OPERATING THE MACHINE.**

Operate Safely (Continued)

⚠ CAUTION

Check Wheel Tracks Before Starting

Make sure all objects, livestock or persons are clear of the machine before starting. Drive trains are powerful and can climb over vehicles, equipment, etc.

⚠ CAUTION

Keep Children Away

Pivots are NOT playground equipment.

Prevent children from playing or climbing around on the machine. This can be extremely dangerous, especially if the machine is operating.

⚠ CAUTION

Check Machine Direction

DO NOT operate the machine if it moves in the direction opposite to that which was chosen.

Forward should be clockwise and reverse counterclockwise.

⚠ CAUTION

Keep Water Off Roadways

It is against the law in most states to allow water to spray on state and county roadways. This is a serious hazard to passing motorists.

If end guns are used, make sure you read and understand the correct procedures for setting the on and off positions to avoid watering the roadways.

If an end gun is watering a roadway, immediately discontinue use and adjust the shutoff setting or call your Valley dealer to repair the end gun shut off mechanism.

⚠ CAUTION

Part Circle Operation Safety

If the machine reverses direction at a roadway or a physical object such as a building, tree line, power pole, etc., then you MUST provide a backup device to stop the machine if the reversing mechanism were to fail. See Figure 15-1.

Contact your Valley dealer for more information concerning physical barricades for machines under these circumstances.

Figure 15-1 1. Physical Barricade

⚠ CAUTION

Proper Use of the Safety Override

Caution MUST be taken by the operator when using the safety override function as it will bypass or disable all of the machine's automatic safety shutdown circuits.

- **NEVER DEPRESS AND HOLD THE START/STOP SAFETY OVERRIDE SWITCH IN THE START POSITION FOR MORE THAN 3 SECONDS.**

If the machine is not in full view by the operator, do not use the Safety Override function.

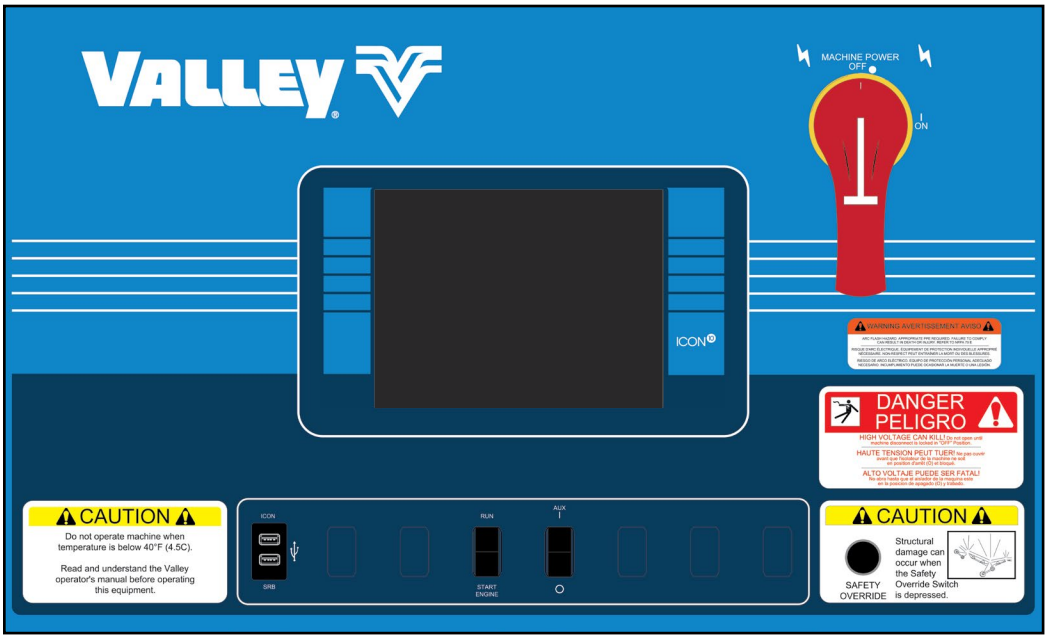
The operator MUST inspect the entire machine between each safety override start attempt.

Repeated safety override start attempts can cause severe structural damage.

Call your Valley dealer if the machine fails to start.

Safety Decals

These Danger, Warning, and Caution decals appear in various locations on a Valley irrigation machine. You MUST familiarize yourself and other operators with these safety decals. For replacement of any decal, contact your local Valley dealer.



CAUTION

Do not operate machine when temperature is below 40°F (4.5C).

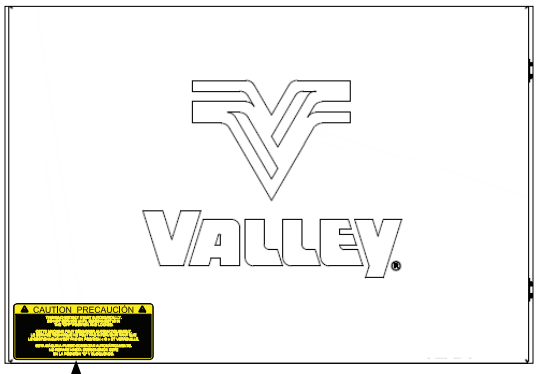
Read and understand the Valley operator's manual before operating this equipment.

WARNING AVERTISSEMENT AVISO

ARC FLASH HAZARD. APPROPRIATE PPE REQUIRED. FAILURE TO COMPLY CAN RESULT IN DEATH OR INJURY. REFER TO NFPA 70 E

RISQUE D'ARC ÉLECTRIQUE. ÉQUIPEMENT DE PROTECTION INDIVIDUELLE APPROPRIÉ NÉCESSAIRE. NON-RESPECT PEUT ENTRAÎNER LA MORT OU DES BLESSURES.

RIESGO DE ARCO ELÉCTRICO. EQUIPO DE PROTECCIÓN PERSONAL ADECUADO NECESARIO. INCUMPLIMIENTO PUEDE OCASIONAR LA MUERTE O UNA LESIÓN.



DANGER PELIGRO

HIGH VOLTAGE CAN KILL! Do not open until machine disconnect is locked in "OFF" Position.

HAUTE TENSION PEUT TUER! Ne pas ouvrir avant que l'isolateur de la machine ne soit en position d'arrêt (O) et bloqué.

ALTO VOLTAJE PUEDE SER FATAL! No abra hasta que el aislador de la maquina este en la posicion de apagado (O) y trabado.

CAUTION PRECAUCIÓN

THIS MACHINE MAY START AUTOMATICALLY.
DO NOT SERVICE UNTIL DISCONNECT IS IN THE "OFF" POSITION AND LOCKED.

CETTE MACHINE PEUT DÉMARRER AUTOMATIQUEMENT.
LE SERVICE TECHNIQUE NE PEUT PAS INTERVENIR TANT QUE LE SECTIONNEUR N'EST PAS EN POSITION « O » ET VERROUILLÉ.

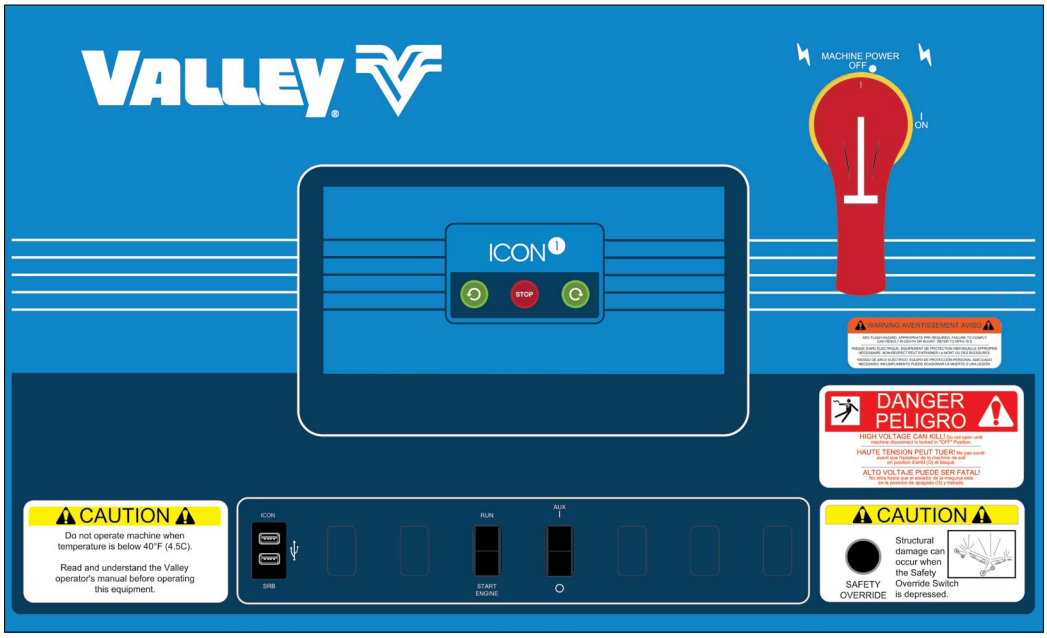
ESTA MÁQUINA PUEDE COMENZAR AUTOMÁTICAMENTE.
NO REPARE HASTA DESCONEXIÓN ESTÉ EN LA POSICIÓN "O" Y BLOQUEADO.

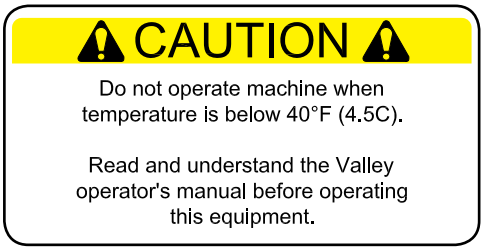
CAUTION

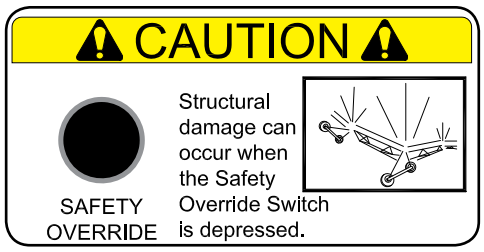
SAFETY OVERRIDE

Structural damage can occur when the Safety Override Switch is depressed.

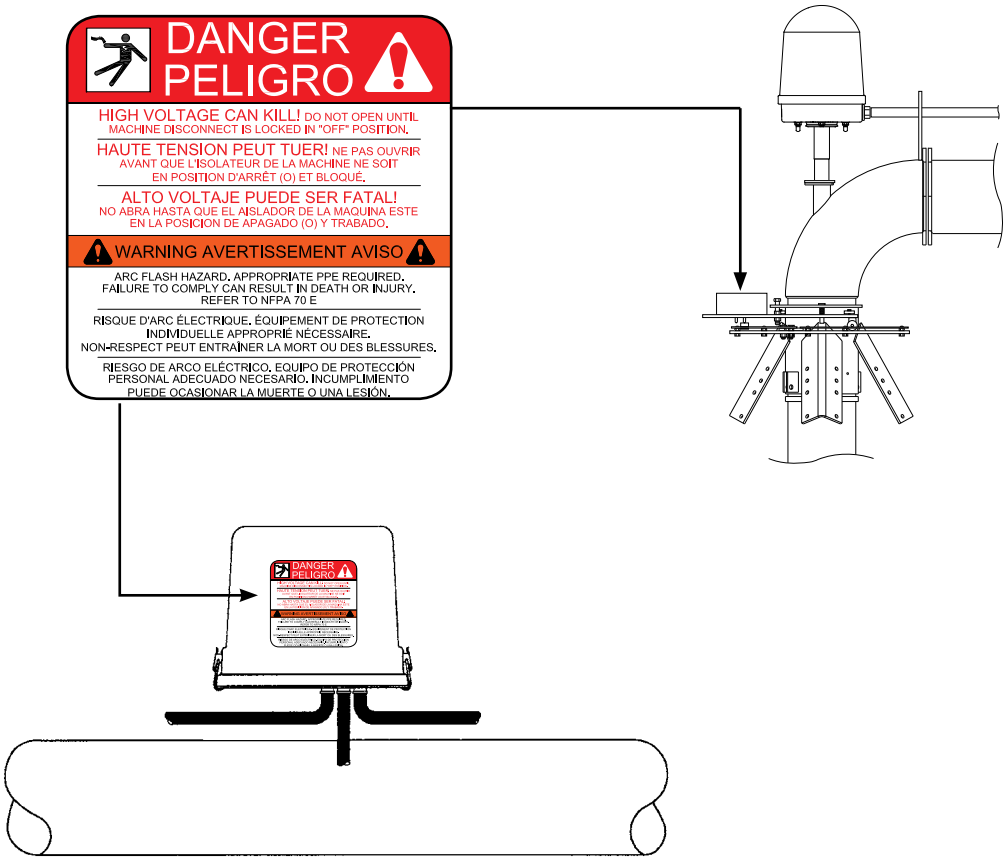
Safety Decals (Continued)

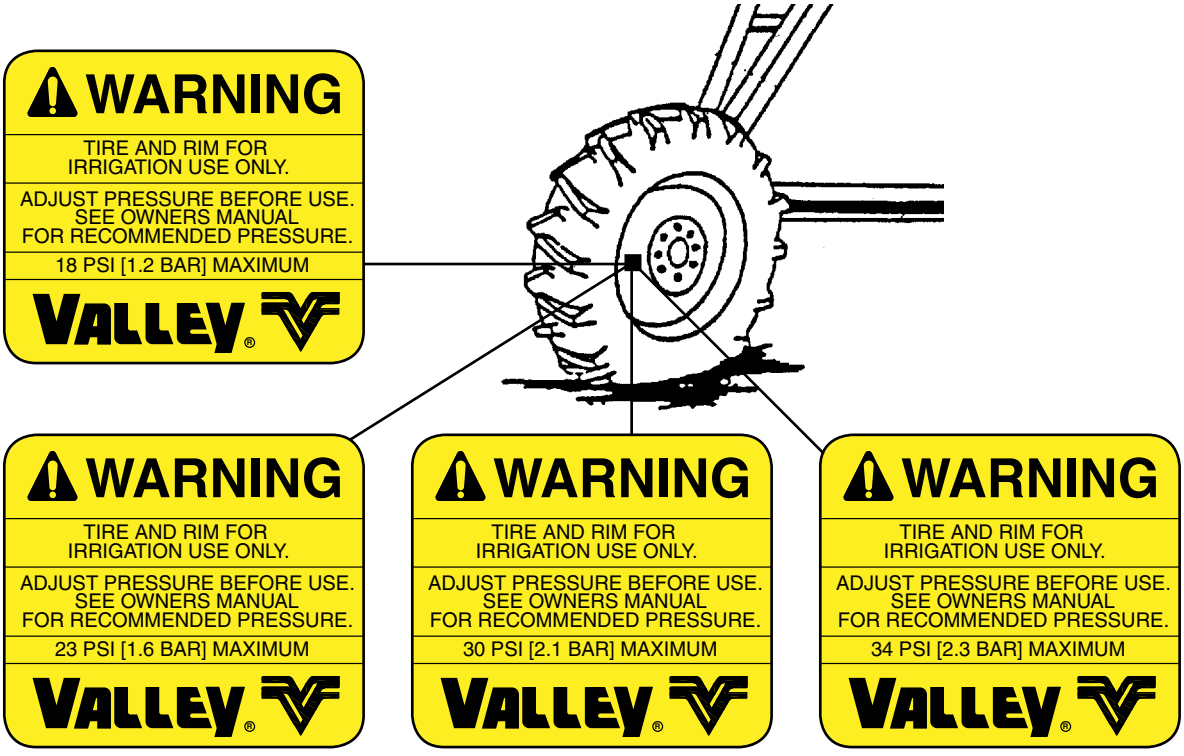




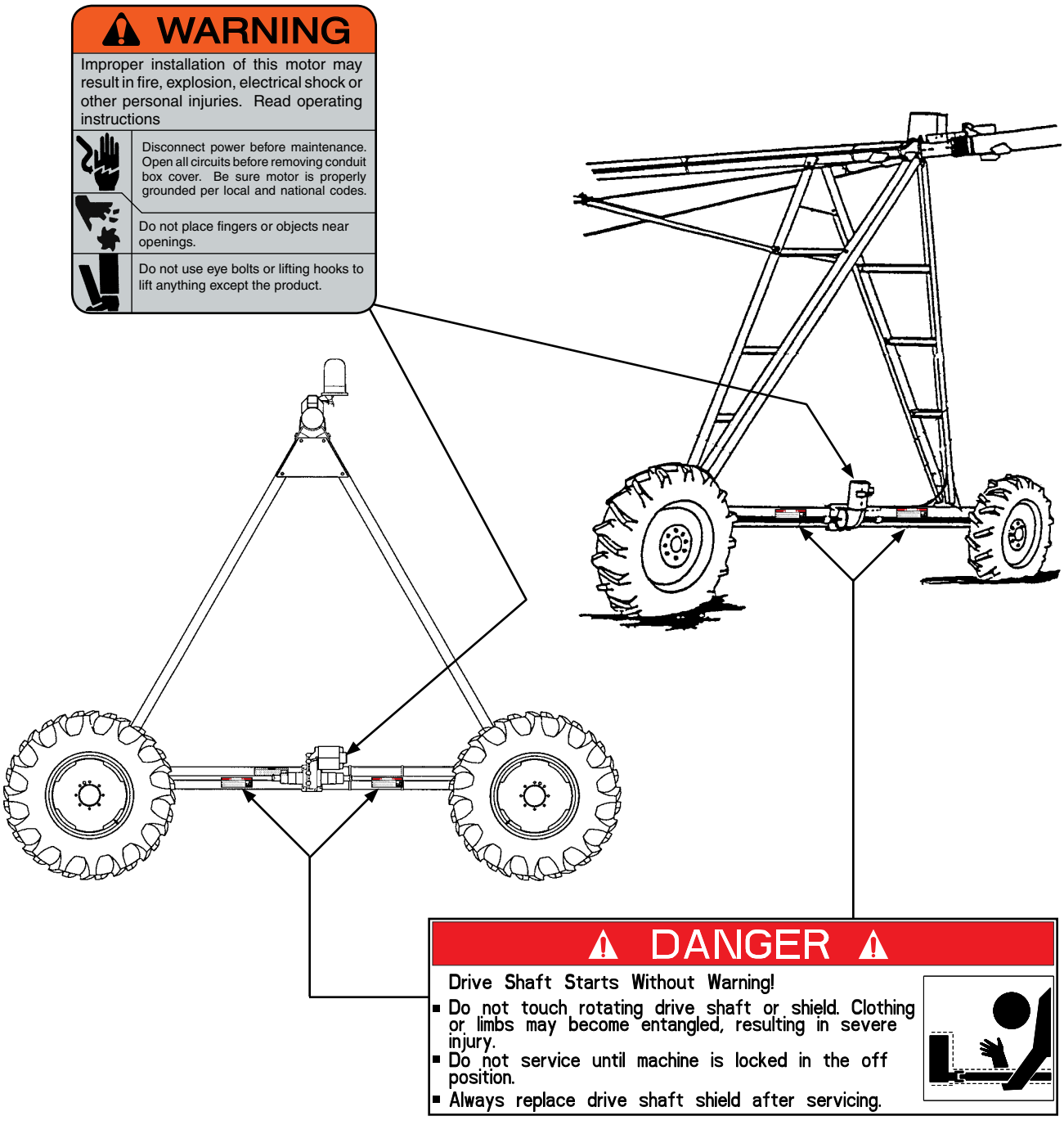


Safety Decals (Continued)





Safety Decals (Continued)



Overview

ICON Mobile Application

The use of the ICON Mobile Application is required with ICON1 and optional with ICON10. Prior to using any mobile devices: tablets, smartphones,or laptops, the Edge-of-Field WiFi™ must be configured. A WiFi router is required and the ICON mobile app will need to be downloaded from the app store compatible with your device. See Figure 20-1 which represents a typical Main Screen as viewed on a tablet. The mobile app provides a flyout menu of all connected devices on your WiFi Network, and allows control of the machine and configuration of the control panel remotely. **The Controls and Status fields can be customized and may look different than what is shown in Figure 20-1.**

Figure 20-1 1. ICON Mobile App Shown

AgSense ICON Link

AgSense® ICON Link is a remote management module which is typically included in every ICON control panel. It provides full remote programming of control panel functions and monitoring of center pivot agricultural equipment via the AgSense app or through Valley BaseStation3™. Contact your local Valley dealer to complete ICON Link installation , activate AgSense or purchase BaseStation3. The AgSense app is available on the App Store and Google Play™ store.

Product Features

- Pivot and panel monitoring and control*
  - » Access real-time status of your pivot and other inputs
  - » Control your irrigation machine from your mobile device or desktop
- Comprehensive reporting, learn from your past with historical data in easy to read, customizable formats*
- Email and text alerts*
- BaseStation3™ and third-party API links*
- Cable theft detection and pump control*

*additional hardware or subscription required.

AgSense is a registered trademark of AgSense, LLC.

Google Play™ store is a reregistered trademark of Google LLC.

The pages in this section provide a brief description of the control panel components and controls.

ICON10 / ICON1

Control Panel

This Valley control panel uses an ICON10 module for executing operator commands. See Figure 21-1.

Main Disconnect

This switch disconnects all power to the machine except at the incoming (upper) terminals on the Main Disconnect Switch inside the control panel. The function of this switch is to turn the power on or off. See Figures 21-1 and 21-2.

Safety Override Switch

The machine's safety circuit can be overridden by depressing this switch in conjunction with the start button. See Figure 21-1.

⚠ WARNING

- **NEVER DEPRESS THE SAFETY OVERRIDE SWITCH FOR LONGER THAN THREE SECONDS AT ANY TIME. USING THE SAFETY OVERRIDE CAN CAUSE SERIOUS STRUCTURAL DAMAGE. CALL YOUR LOCAL VALLEY DEALER, SHOULD YOUR MACHINE FAIL TO START.**

3-Second Delay Timer

A three-second delay timer is standard equipment built into the circuitry of the control panel.

In the event of a momentary power loss or voltage drop, the machine will remain running if power returns within three seconds.

Pump Restart Delay

When the control panel also controls an irrigation pump that is set to automatically start, the irrigation pump must be protected from damage with a pump restart delay. The pump restart delay must be in the pump circuit between the irrigation machine control panel and the pump.

⚠ CAUTION

- **TO REDUCE THE POSSIBILITY OF DAMAGE TO AN AUTOMATICALLY CONTROLLED ELECTRIC PUMP DUE TO A MOMENTARY POWER LOSS OF 3 SECONDS OR LESS, A PUMP RESTART DELAY IS REQUIRED IN THE PUMP CIRCUIT BETWEEN THE IRRIGATION MACHINE CONTROL PANEL AND THE PUMP.**

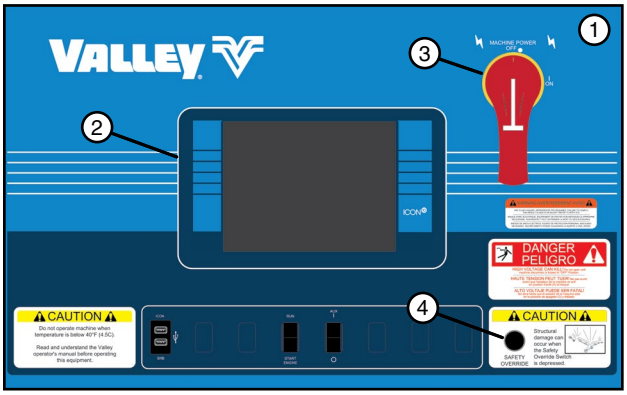


Figure 21-1
1. ICON10 Control Panel
2. ICON Module
3. Main Disconnect Switch
4. Safety Override Switch

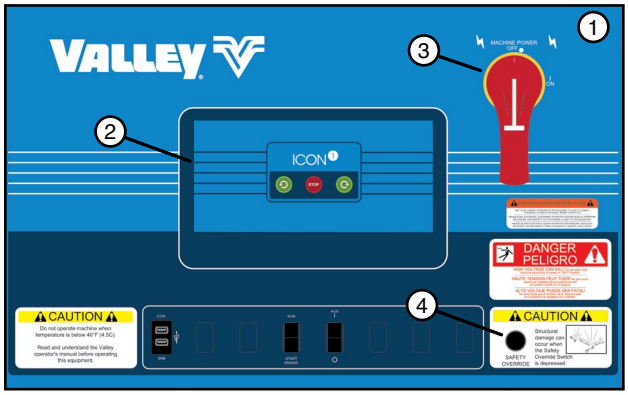


Figure 21-2
1. ICON1 Control Panel
2. ICON Module
3. Main Disconnect Switch
4. Safety Override Switch

Overview

Main Screen

The Main Screen is where you begin operating your irrigation machine, and where you learn its current status. Controls are located on the left side of the screen, the machine's current status is located on the right side of the screen. See Figure 22-1, which represents a typical main screen. The following pages describe the elements that can appear on the Main Screen. **The Controls and Status fields can be customized and may look different than what is shown in Figure 22-1.**

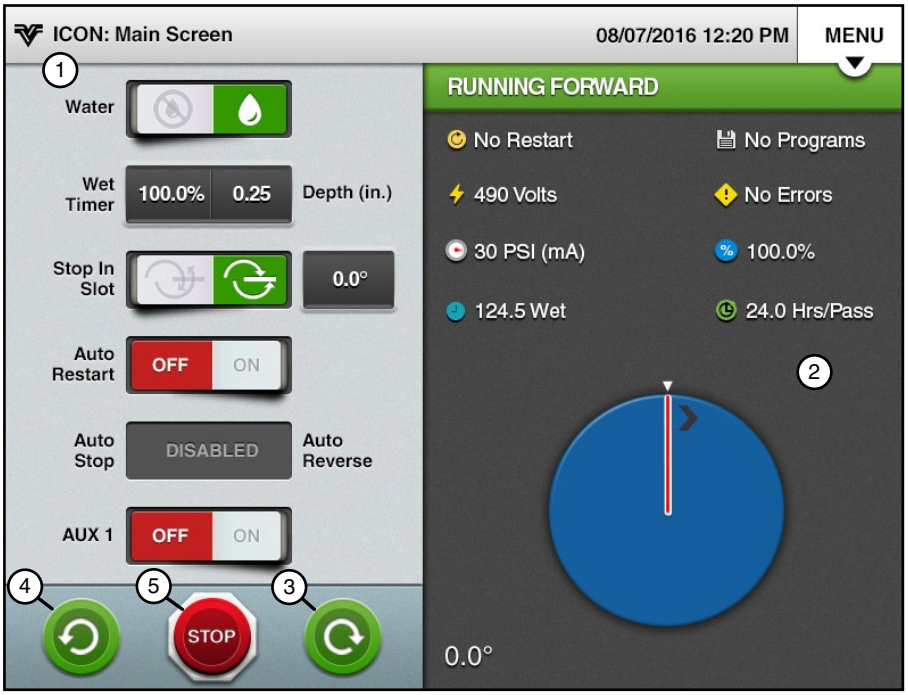


Figure 22-1

Controls - Item 1		Up to six control buttons can appear on the left side of the screen for programming and operating the machine.
Status - Item 2		Up to eight statuses can appear on the right side of the screen. Below the statuses is a graphic image depicting the machine's current position.
Start Forward - Item 3		Push to start the machine and move in the forward (clockwise) direction.
Start Reverse - Item 4		Push to start the machine and move in the reverse (counter-clockwise) direction.
Stop - Item 5		Push to halt machine movement, shut pump off, and close water valve (if wired to do so). The machine has a time delay that prevents it from restarting when you press a start button within five seconds after stopping the machine with water on.

Main Screen (Continued)

Control Buttons

Up to six control buttons can be selected to appear on the left side of the screen for operating the machine. You can access all the control buttons by pushing **Menu, System, Panel** and **Controls.** Below are descriptions of each available control button. It is very important to understand that, the control button indicates what the machine is currently doing.

Water		**Water On -** The pump and/or close water valve are currently on (if wired to do so). Push to turn them off.
		**Water Off -** The pump and/or close water valve are currently off. Push to command pump to turn on, valve to open, or both, when machine starts (if wired to do so). A pre-programmed pressure delay is automatically recalled to allow sufficient time for pressure to build up in the machine before it moves.
% Timer/Depth		**Wet % Timer/Depth Field -** When water is on, select the right side of the field for Depth and enter the water application depth by inches or millimeters, or select the left side of the field for Wet % Timer and adjust the percent to obtain the desired application depth. The percent timer indicates the percentage of time which the end tower runs.
		**Dry % Timer Field -** When water is off, select the Dry % Timer field and adjust the percent to obtain the desired speed of travel. The percent timer indicates the percentage of time which the end tower runs.
Cruise (Hrs)		**Cruise (Hrs) - On -** Cruise is on. Push to turn off.
		**Cruise (Hrs) Off -** Cruise is off. Push to turn on.
		**Cruise (Hrs) Field -** When Cruise is on, select the Cruise (Hrs) field to set the number of hours to complete one pass.
Stop-In-Slot		**Stop-In-Slot On -** Stop-In-Slot is on and will stop the machine at a preset location in the field that is user selected. Push to turn Stop-In-Slot off.
		**Stop-In-Slot Off -** Stop-In-Slot is off. Push to turn Stop-In-Slot on.
		**Stop-In-Slot Field -** When Stop-In-Slot is on, select the Stop-In-Slot field to set the angular location of the Stop-In-Slot.
Auto Restart		**Auto Restart On -** Automatic Restart is on. Push to turn off.
		**Auto Restart Off -** Automatic Restart is off. Push to turn on.
Auxiliary 1 and 2		**Aux On -** The Auxiliary is on. Push to turn off.
		**Aux Off -** The Auxiliary is off. Push to turn on.
Auto Reverse/Auto Stop		**AR/AS Disabled -** Auto Reverse/Auto Stop is disabled. Push **Menu, Utilities, AR/AS, Config ARAS, Auto Reverse / Auto Stop** to enable.
		**Auto Reverse On -** Auto Reverse is on. Push to turn Auto Stop on.
		**Auto Stop On -** Auto Stop is on. Push to turn Auto Reverse on.
End Gun		**End Gun Auto -** When end gun is set to Auto the selected end gun is enabled and ready. Push to turn off (disable). Check the checkbox to test end gun operation. The test will end when unchecked or after five minutes.
		**End Gun Off -** The end gun is off (disabled). Push to turn auto on (enable). Check the checkbox to test end gun operation. The test will end when unchecked or after five minutes.

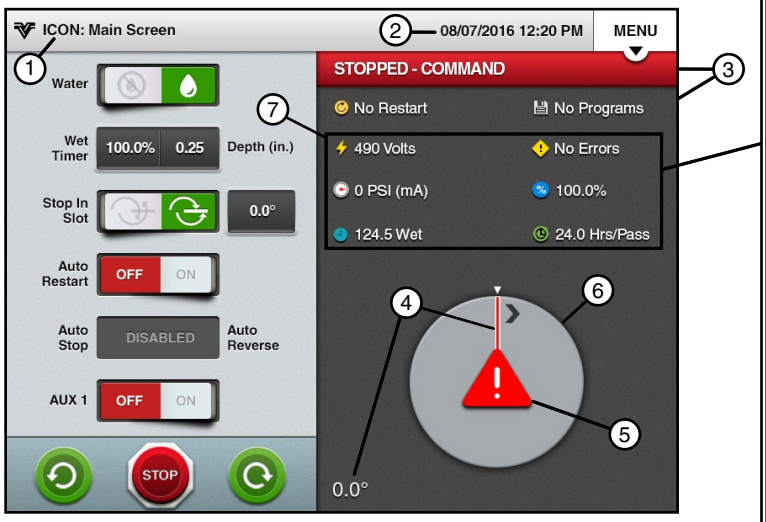
Main Screen (Continued)

Status

Up to six statuses can be configured below Restart and Programs which are fixed statuses. Below the statuses is a graphic image depicting the machine's current position. A description of each field and all the statuses appear below.

This Status section illustrates the operating conditions of a typical irrigation machine example.

The Status section of your machine will show different conditions.



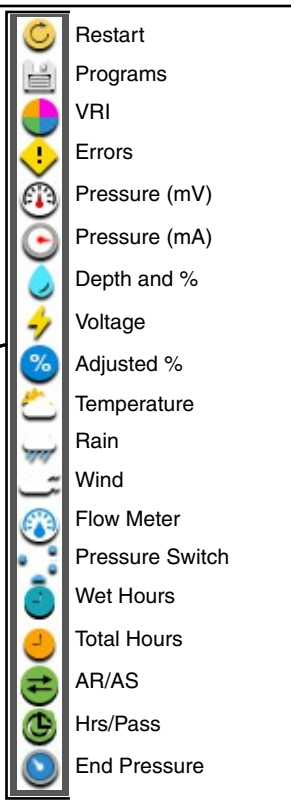


Figure 24-1

Machine Name - Item 1 - Displays the name associated with the machine.

Current Date and Time - Item 2 - Indicates current date and time.

Machine Status - Item 3 - Indicates the current known status of the machine.

Pivot Position - Item 4 - Indicates the machine location in the field. The location of the machine is expressed in degrees.

Fault Notice - Item 5 - Indicates whether any system faults have occurred. You can access the System Faults screen by pushing the icon.

Pivot Status - Item 6 - A color is displayed on the pivot graphic to represent the current known status of the machine. Refer to Pivot Circle Colors and Shapes on page 28.

Status Icons - Item 7

- **Restart** - Either No Restart or Restart. Restart indicates that the machine could restart due to Auto Restart, Cycle Repeat Restart or Daily Ops Restart.
- **Programs** - Either No Programs or Programs. Programs indicates that programs are currently running.
- **VRI** - Indicates that a VRI-S, VRI-Z, VRI-iS or Cruise program is running.
- **Errors** - Either No Errors or Errors. Errors indicates that an error has occurred.
- **Pressure (mV)** - Indicates the current water pressure at the (mV) pressure sensor. A (mV) pressure sensor is required.
- **Pressure (mA)** - Indicates the current water pressure at the (mA) pressure transducer. A (mA) pressure sensor is required.
- **Depth and %** - Displays the current application Depth and Percent.
- **Voltage** - Indicates current operating voltage. The machine shuts down when voltage drops below the Low Voltage Limit.
- **Adjusted %** - Indicates the current Adjusted % timer wet or dry.
- **Temperature** - Indicates the current outdoor temperature. Requires optional hardware.
- **Rain** - Indicates the current rain total. Requires optional hardware.
- **Wind** - Indicates the speed of the wind in mph or kph. Requires optional hardware.
- **Flow Meter** - Indicates the amount of water, in gallons per minute, that the machine uses to irrigate. Requires optional hardware.
- **Pressure Switch** - Indicates OK when the pressure switch is on and LOW when switch is off. A mechanical pressure switch is required.
- **Wet Hours** - Indicates the number of hours that the machine was irrigating while running.
- **Total Hours** - Indicates the total number of hours that the machine was running.
- **AR/AS** - Indicates that Auto Reverse or Auto Stop is on.
- **Hrs/Pass** - Indicates the time it will take for the machine to make a pass.
- **End Pressure** - Indicates the pressure at the end of the machine. Valley GPS is required.

Main Screen (Continued)

Menu

The Menu button is located on the right side of the screen. Use the Menu button to access other menus or screens that are used to program the panel, view data and select options not frequently used. Below are descriptions of each button.

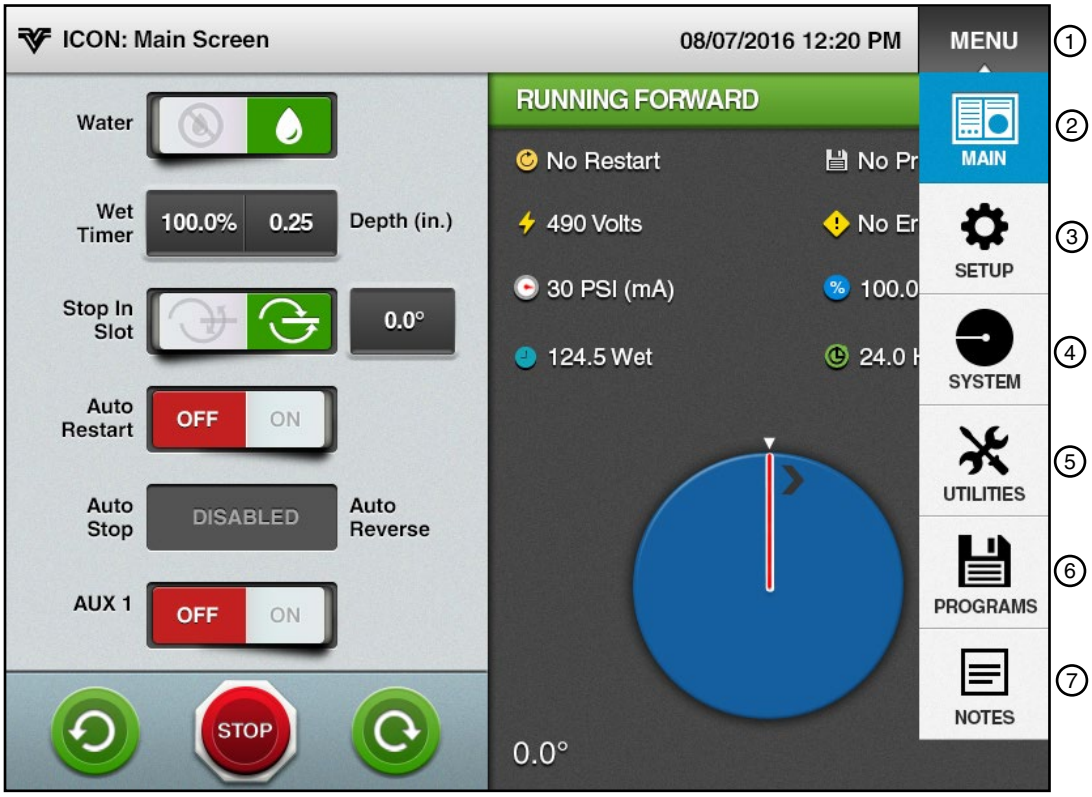


Figure 25-1

Menu - Item 1

Use the Menu button to access Setup, System, Utilities, Programs and Notes.

Main Screen - Item 2

Use to return to the main screen.

Setup - Item 3

Used to input the constant values of the irrigation machine.

System - Item 4

Used to access fault, error and history information.

Utilities - Item 5

Used to configure End Guns, Notice, TPMS, Weather, and AR/AS.

Programs - Item 6

Use to either write or run programs that automate specific functions of the machine.

Notes - Item 7

Used to view and enter notes.

Main Screen (Continued)

Keypad

The keypad is used to input values such as percentage timer setting, water application depth, SIS setting, etc. and is also used for programming the panel. The functions of these buttons are explained below:

Figure 26-1

Keypad Number Buttons - Item 1

Used to input numeric values.

Backspace - Item 2

Push to back space and delete the previous character.

Decimal Point - Item 3

Push when inputting numerical values in decimal form. Example: 1.75 in (44.45 mm).

Plus/Minus Sign - Item 4

Push to input positive or negative values (generally not used, except for entering GPS position values).

Cancel - Item 5

Push to step backward from the current screen to a previous screen without performing any changes.

Enter - Item 6

Push at the end of a value entry to retain the value.

Valid Range - Item 7

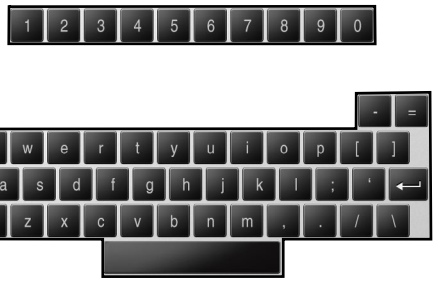
The range of values that will be accepted.

Main Screen (Continued)

Keyboard

The keyboard is used to input text values such as entering the pivot name and taking notes. The functions of these buttons are explained below.

Figure 27-1



Number Keypad - Item 1

Used to input numeric values.

Alpha Keypad - Item 2

Used to input letter and symbol values.

Shift - Item - 3

Push to capitalize letters on the alpha keypad.

Key Layout - Item - 4

Push to toggle between **acbdef** key layout and **qwerty**.

Symbols - Item - 5

Push to display symbols.

Delete - Item - 6

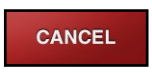
Push to back space and delete the previous character.

Clear - Item - 7

Push to clear entire field.

Backspace - Item - 8

Push to back space and delete the previous character.



Cancel - Item - 9

Push to step backward from the current screen to a previous screen without performing any changes.

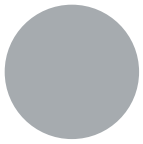
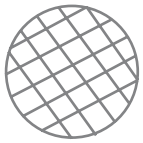
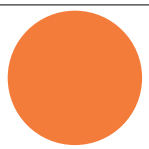
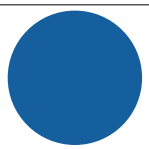
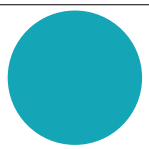
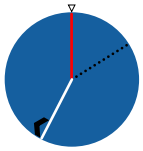
Enter - Item 10

Push at the end of a numerical value entry or programming sequence.

Main Screen (Continued)

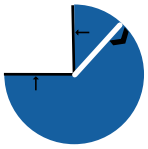
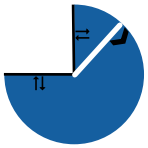
Pivot Circle Colors and Shapes

The table below and on the next page shows a list of all the colors and shapes the Main Screen uses to represent the current known status of the machine.

Status	Color And Shape	Graphic
Pivot is stopped.	Gray circle.	
Program is running.	Gray grid appears on the circle. The color of the circle will vary.	
Pivot is running dry.	Green circle.	
Pivot is running dry, with Auxiliary 1 on.	Orange circle.	
Pivot is running wet.	Blue circle.	
Pivot is running wet, with Auxiliary 1 on.	Cyan circle.	
Pivot representation and position in the field.	A white line represents the pivot and its position in the field.	
0° Indicator.	A white triangle on the outside of the pivot circle indicates 0°.	
Direction indicator.	A black arrow at the end of the pivot line indicates the direction that the pivot is moving.	
Stop-In-Slot is on.	A red line appears in the stop-in-slot location when turned on.	
Pivot road location.	An optional black dotted line represents pivot road location when enabled.	
System Fault.	A red triangle centered on the pivot represents a System Fault. Push on the triangle to view the system fault.	
Waiting.	A yellow triangle centered on the pivot, with a hourglass, represents Waiting.	

Main Screen (Continued)

Pivot Circle Colors and Shapes

Status	Color And Shape	Graphic
End Gun Enabled.	**Enabled State: For each End Gun a different colored line is shown indicating the angle range.** The enabled state is visible when the pivot position is outside the angle range The End Gun must be enabled and the angles must be set. The color of the device will vary. EG1 - **yellow** indicates EG1 is enabled EG2 - **purple** indicates EG2 is enabled EG3 - **gray** indicates EG3 is enabled EG4 - **red** indicates EG4 is enabled	
End Gun On (active state).	**Active State: For each End Gun that is on, a blue line is shown indicating the angle range.** The active state is visible when the machine is running and the pivot position is in the angle range. The End Gun must be enabled and the angles must be set. The color of the device will vary. EG1 - indicates EG1 is on EG2 - indicates EG2 is on EG3 - indicates EG3 is on EG4 - indicates EG4 is on	
Auto Stop On.	Position Indicator: A black arrow pointing toward the AR/AS Forward/Reverse Positions. The Position Indicator is only displayed when both the AR/AS and Forward/Reverse Position are enabled.	
Auto Reverse On.	Position Indicator: Black arrows pointing toward and away from the AR/AS Forward/Reverse Positions. The Position Indicator is only displayed when both the AR/AS and Forward/Reverse Position are enabled.	

Other Buttons and Functions

Next		Push to go to the next screen within the function.
Previous		Push to go back to the previous screen within the function.
Check Box		Check the check box to enable a function or uncheck the check box to disable a function.

Control Panel Setup

Display Setup

The steps below and on the following pages explain how to set up the Display and do the following:

- Set the Language and Units of Measure.
- Set the Screen Brightness and Sleep Delay Timer.
- Set the Date & Time.

Language and Units of Measure

1. On the Region screen set the Language, Numeric Format and Units of Measure for Distance, Volume, Temperature and Pressure. See Figure 30-1.
   (a) Push **Menu**, **Setup**, **Display** and **Region**.
   (b) Select the **Language** drop-down menu and choose the language.
   (c) Select the **Numeric Format** drop-down menu and choose a format.
   (d) Select a **Unit of Measure** drop-down menu and choose the unit of measure.
   - Distance: Imperial/US or Metric
   - Volume: Imperial/US or Metric
   - Temp: Fahrenheit or Celsius
   - Pressure: PSI or kPa

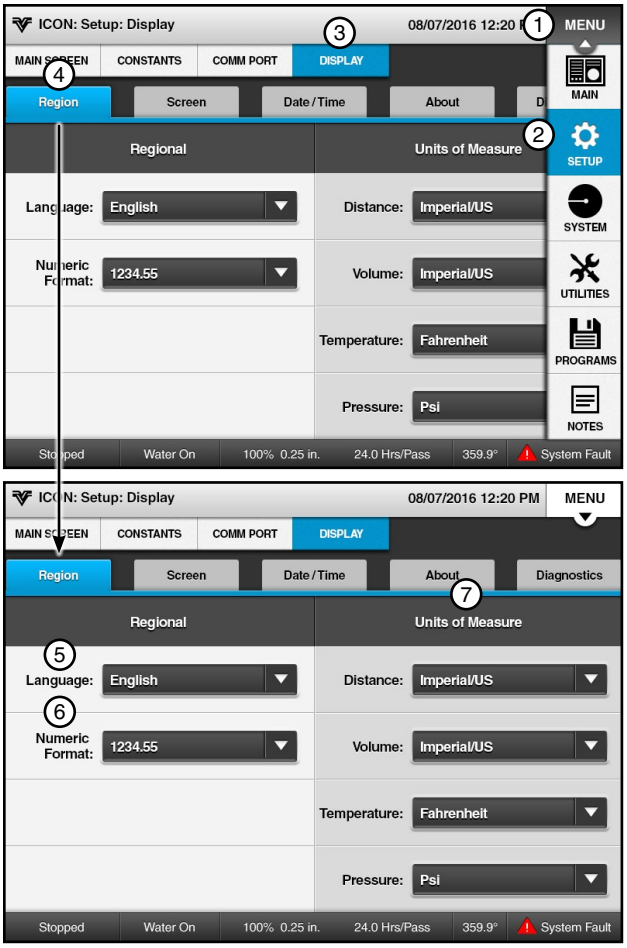


Figure 30-1

1. Menu
2. Setup
3. Display
4. Region
5. Language
6. Numeric Format
7. Unit of Measure

Display Setup (Continued)

Screen Brightness and Sleep Delay Timer

2. Use Screen to adjust the Screen Brightness and Display Sleep delay timer. See Figure 31-1.
   (a) Push **Menu**, **Setup, Display** and **Screen**.
   (b) Push the **Darker** or **Lighter** buttons to adjust the brightness of the screen in 1% increments from 1% to 100%.
   (c) Push the **+ Increase** or **- Decrease** buttons to adjust the Display Sleep delay timer in 1 minute increments from 0 to 127 minutes.

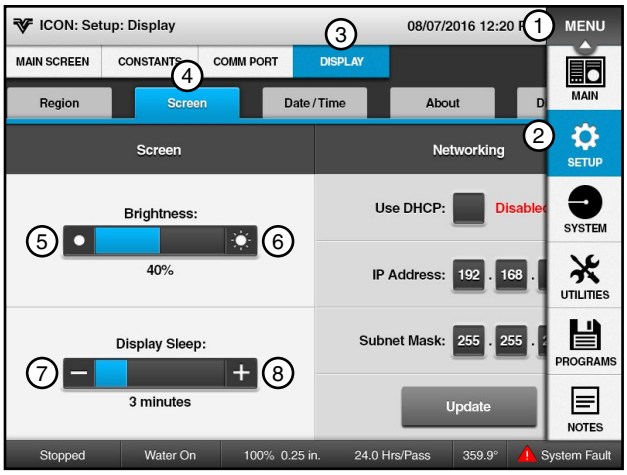


Figure 31-1

1. Menu
2. Setup
3. Display
4. Screen
5. Darker
6. Lighter
7. + Increase
8. - Decrease

Display Setup (Continued)

Date & Time

3. On the Date & Time screen you can set the Current Date and Time. See Figure 32-1.
   (a) Push **Menu**, **Setup**, **Display** and **Date/Time**.
   (b) Select the **Date Format** drop-down menu and choose how to display the date.
   (c) Select the **Day, Month** and **Year** fields individually, and enter the day, month and year on the numeric keypad.

> **NOTE**
> - **The location of the Month Day Year fields will change depending on the selected date format.**

   (d) Select the **Time** field and enter the hour and minutes on the numeric keypad.
   (e) Push to select **AM** or **PM** (12-hour clock format only).
   (f) Optional, check the **24 Hour Clock** check box to display time in the 24-hour format. An empty 24 Hour Clock check box indicates a 12-hour format.
   (g) Push the **Update** button to update the current date and time.

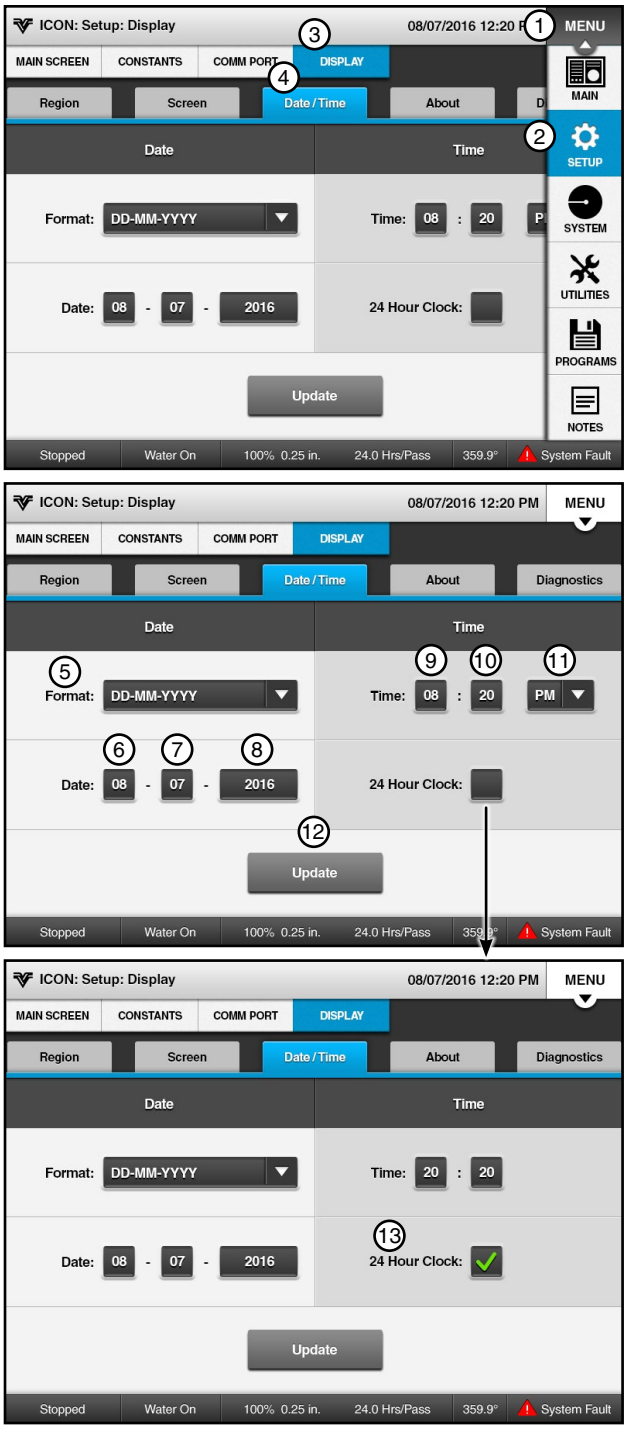


Figure 32-1

1. Menu
2. Setup
3. Display
4. Date & Time
5. Date Format
6. Day
7. Month
8. Year
9. Hours
10. Minutes
11. AM/PM
12. Update
13. 24 Hour Clock

Main Screen Setup

The steps below and on the following pages explain how to set up the Main Screen and do the following:

- Add a pivot name.
- Add a pivot road, enable or disable part circle and configure part circle angles.
- Select the control buttons and statuses that you want to display on the Main Screen, in the order you want.

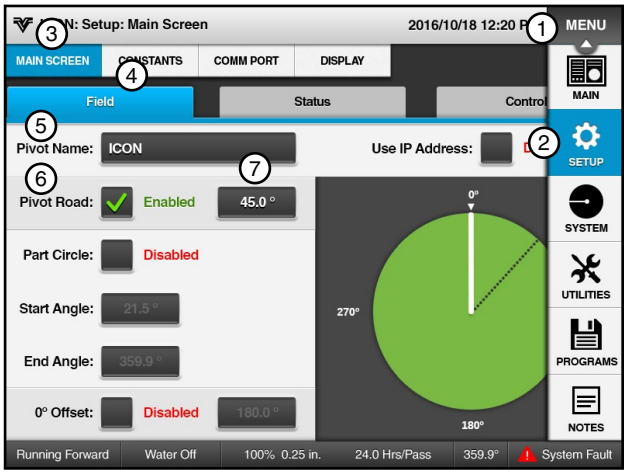
Field

1. On the Field screen, you can add the pivot road, enable or disable part circle and configure part circle angles. See Figures 33-1 and 33-2.
   (a) Push **Menu**, **Setup**, **Main Screen** and **Field**.
   (b) To change the Pivot Name select the **Pivot Name** field and enter a new name using the keyboard.
   (c) If desired, check the **Pivot Road** check box to enable it.
      (i) Select the Pivot Road field and enter its position, in degrees, where the road is located on the field using the numeric keypad.
   (d) If this is a part circle field, check the **Part Circle** check box to enable it.
      (i) Select the **Start Angle** field and enter the angle using the numeric keypad.
      (ii) Select the **End Angle** field and enter the angle using the numeric keypad.

NOTE

- **When Part Circle is enabled, you are creating a graphical representation of the pivot field. The control panel does NOT prevent the machine from running outside the designated zone. It also does NOT stop the machine at the start angle or end angle.**
- **An empty Part Circle check box indicates a full circle field.**

   (e) To use the IP address of the ICON module as the pivot name check the **Use IP Address** check box to enable it. The pivot name changes to the IP address.
   (f) To use **0° Offset** check the 0° Offset check box to enable it.
      (i) Select and enter the position, in degrees, where 0° is located on the field.



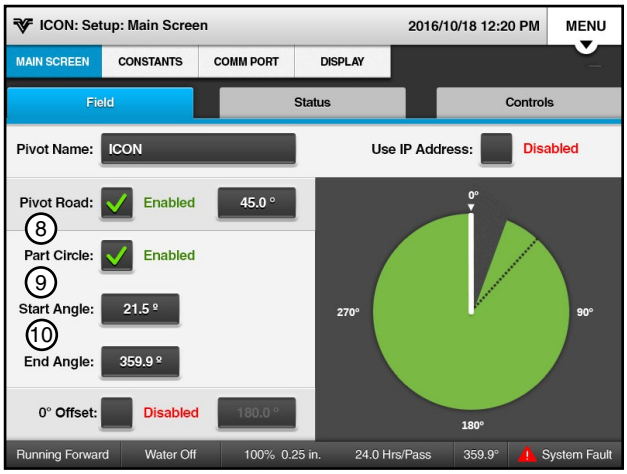


Figure 33-1
1. Menu
2. Setup
3. Main Screen
4. Field
5. Pivot Name
6. Pivot Road Check box
7. Pivot Road Position
8. Part Circle Check Box
9. Start Angle
10. End Angle

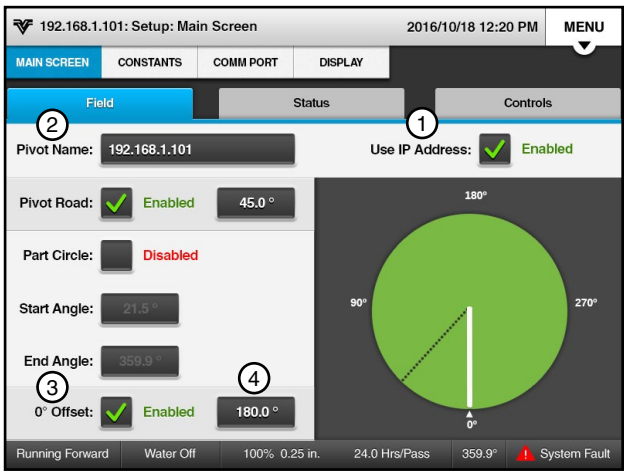


Figure 33-2
1. Use IP Address
2. IP Address
3. 0° Offset
4. 0° Offset Position

Main Screen Setup (Continued)

Statuses

2. On the Status screen select up to six statuses that you want to appear on the Main Screen. The Status Drop-Down Menu number relates to the location of the status on the Main Screen. See Figure 34-1.

   (a) Push **Menu**, **Setup**, **Main Screen** and **Status**.

   (b) Select a Status drop-down menu and choose a status. Choose Empty if you want to leave the field blank on the Main Screen.

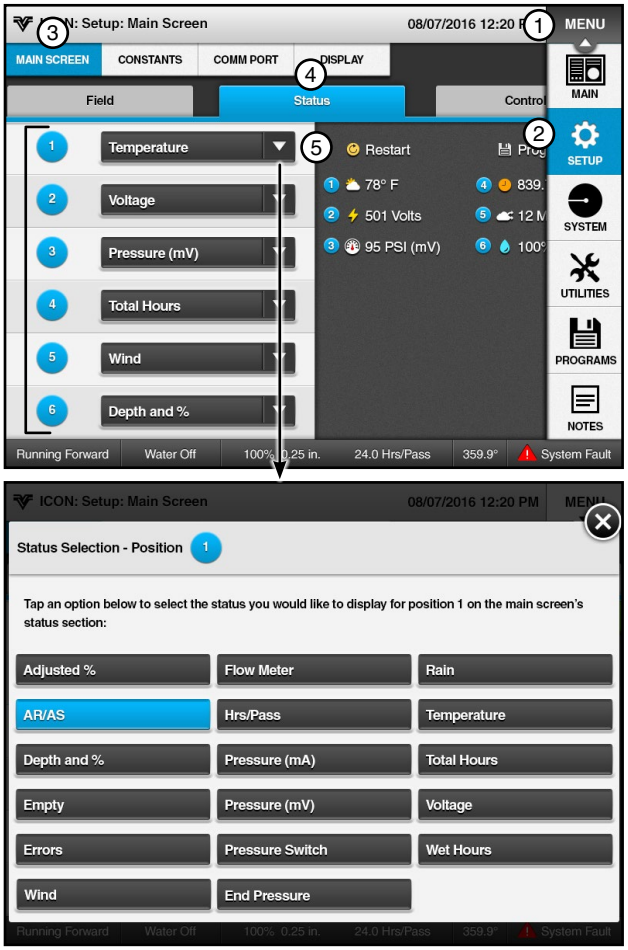


Figure 34-1
1. Menu
2. Setup
3. Main Screen
4. Status
5. Status Drop-Down Menu

Main Screen Setup (Continued)

Controls

3. On the Controls screen select up to six buttons that you want to appear on the Main Screen. The Controls Drop-Down Menu number relates to the location of the control on the Main Screen. See Figure 35-1.

   (a) Push **Menu**, **Setup**, **Main Screen** and **Controls**.

   (b) Select a drop-down menu and choose a button. Choose Empty if you want to leave the field blank on the Main Screen.

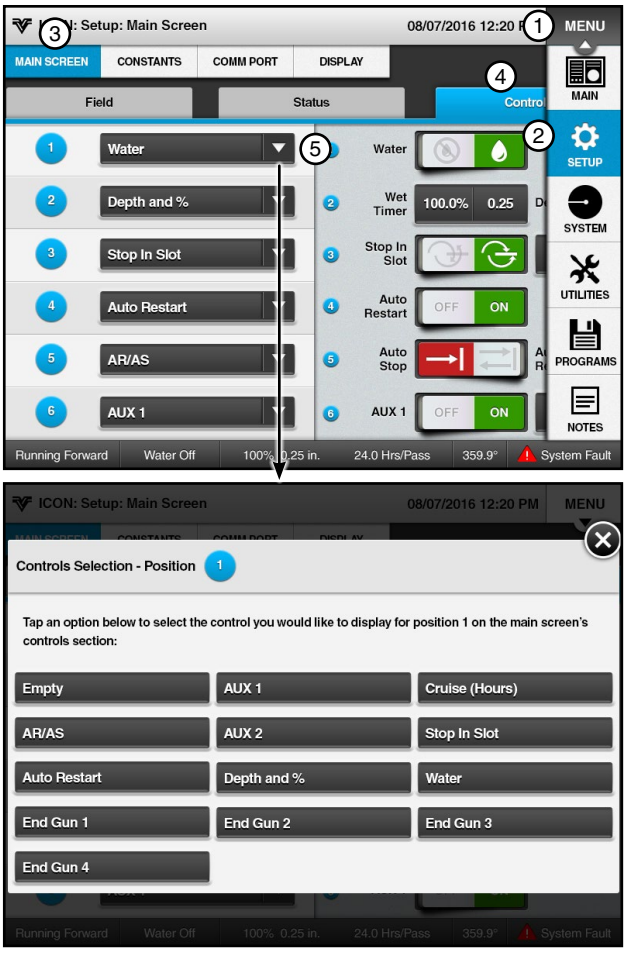


Figure 35-1

1. Menu
2. Setup
3. Main Screen
4. Controls
5. Control Pop Up Menu

Control Panel Setup

Minimum Control Panel Setup

Set up the control panel for use by completing the Minimum Control Panel Setup. If desired, control panel settings can be recorded on the System Constants Record at the end of this section.

Reference tables are included in this section for Voltage, Low Voltage, Estimated Drive Speed and GPS Angular Conversion of minutes and seconds into decimal degrees.

Listed below are the reference table locations:

To set up the control panel, do the following:

1. Go to the Constants screen to set the pivot minimum application, time per revolution, and voltage. See Figure 36-1.
   (a) Push **Menu**, **Setup**, **Constants** and **Constants**.
   (b) Select the **Minimum Application** field and enter the rate on the numeric keypad. Refer to the VChart Report for this machine.
   (c) Select the **Hours Per Revolution** field and enter the number on the keypad. Refer to the VChart Report for this machine.
   (d) Select the **Low Voltage** field and enter the limit number on the keypad, if it's lower than 440 volts. Refer to Low Voltage on page 47 for more information.
   (e) Push the **Calibrate** button and enter the actual voltage reading on the keypad. Refer to Voltage on page 47 for more information.

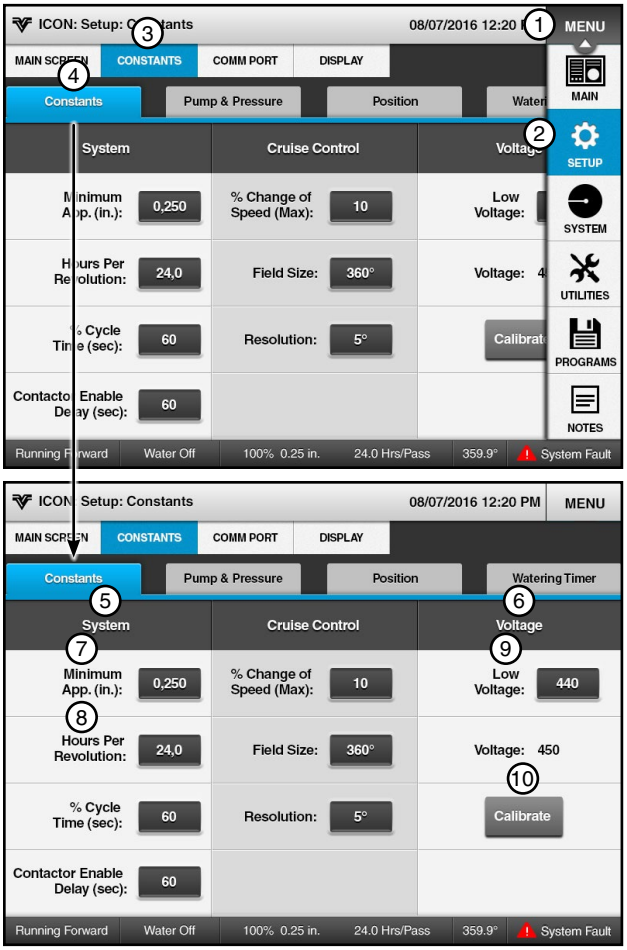


Figure 36-1
1. Menu
2. Setup
3. Constants
4. Constants
5. System
6. Voltage
7. Minimum Application
8. Hours Per Revolution
9. Low Voltage
10. Calibrate

Minimum Control Panel Setup (Continued)

2. Go to the Pump screen to verify settings and associate pressure sensor(s) with the machine status. See Figure 37-1.
   (a) Push **Menu, Setup, Constants, Pump & Pressure** and **Pump**.
   (b) Verify that the following are set to the required values.
      (i) **Auto Restart Via**: To change, choose between Pressure, Power or Both.
      (ii) **Pump Type**: To change, choose between Engine Pump or Electric Pump.
      (iii) **Low Pressure**: To change, select the Low Pressure field and enter the value on the numeric keypad.
      (iv) **High Pressure**: To change, select the High Pressure field and enter the value on the numeric keypad.
   (c) Push **Sensor Setup.**
   (d) Check the check box associated with the existing pressure sensor(s) that should be used for input when the machine is stopped and/or running.

      In this example only a Pressure (mA) Sensor is used.

      A minimum of two check boxes must be checked, one for stopped input and one for running input.

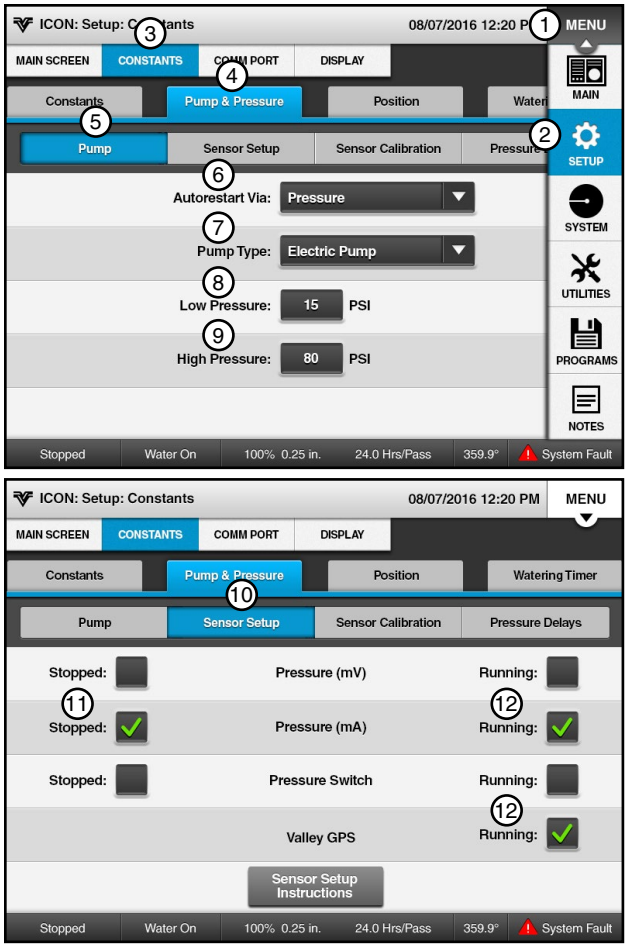


Figure 37-1

1. Menu
2. Setup
3. Constants
4. Pump
5. Pump
6. Auto Restart Via
7. Pump Type
8. Low Pressure
9. High Pressure
10. Sensor Setup
11. Stopped Inputs
12. Running Inputs

NOTE

- **If none of the boxes are checked the machine will run with Water on. If multiple sensors are checked for running, the machine will start after the first sensor reaches the low pressure limit. However if all sensors do not meet the low pressure limit before the pressure delay the machine will shut down.**
- **Valley GPS Pressure can be used as the only transducer on the system. It will be able to stop the pivot on pressure loss, but will not be able to do pressure restart.**
- **Valley GPS Pressure cannot be used to restart on water pressure. A transducer must be wired at the control panel and a "Stopped" transducer selected for this pressure restart.**

⚠ CAUTION

- **IF USING MORE THAN ONE PRESSURE SENSOR, WITH AUTORESTART VIA; SET TO EITHER PRESSURE OR BOTH, MAKE SURE THE PUMP HAS THE PROPER RESTART PROTECTION.**

Minimum Control Panel Setup (Continued)

3. Calibrate pressure sensors. See Figure 38-1.
   (a) Push **Sensor Calibration** to display the Pressure Sensor Setup screen.
   (b) Verify that the **Max Pressure**, **Value at Max Pressure** and **Value at 0 Pressure** are set to the required values for the sensor(s) being used.

   To change a value, select the value and enter a new value on the numeric keypad.
   (c) With the pump off and the machine dry, push the **Calibrate** button for the sensor being used.
   (d) Push **Yes** to set the water pressure sensor to the current water pressure of zero.
   (e) Repeat steps (c) and (d) for other sensors.

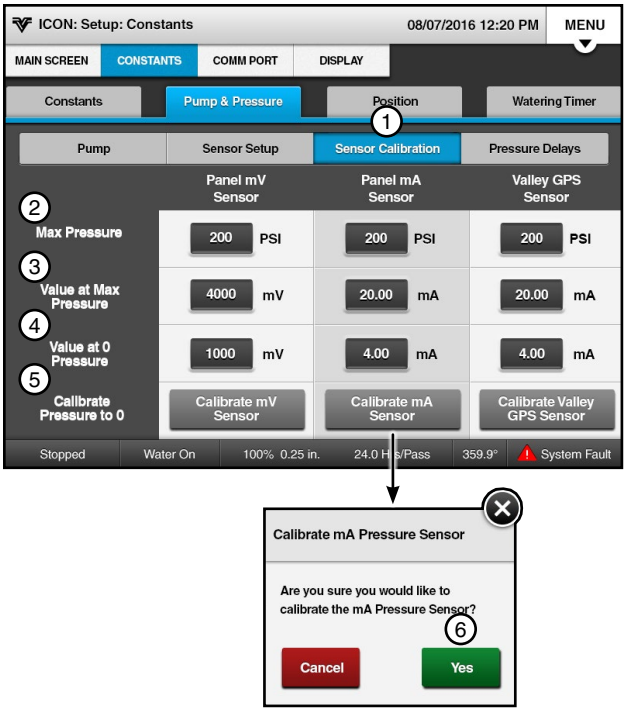


Figure 38-1
1. Sensor Calibration
2. Max Pressure
3. Value at Max Pressure
4. Value at 0 Pressure
5. Calibrate Pressure Sensor
6. Yes

Minimum Control Panel Setup (Continued)

4. Program the position-related control panel settings based on how the machine is equipped:
   - **If the machine is equipped with a Position Encoder, continue with Set Up Position Encoder on the next page.**
   - **If the machine is equipped with GPS Position, continue with Set GPS Position on page 41.**

Minimum Control Panel Setup (Continued)

Set Up Position Encoder

To setup the Position Encoder, do the following:

1. Set the RJ11 Communications Port protocol:
   (a) Push **Menu, Setup, Comm Port** and **RJ11**.
   (b) Select the **RJ11 Protocol** field and choose **Position Encoder** from the list. See Figure 40-1.
   (c) Push **Menu**, **Setup**, **Constants**, **Position** and **Pivot Position** to display the Position screen.
   (d) Push the **Calibrate** button and enter the pivot position in degrees on the numeric keypad. See Figure 40-2.

- **Minimum control panel setup, for a machine equipped with a position encoder is complete.**

   (e) Continue with Set Up Position Loss on page 45.

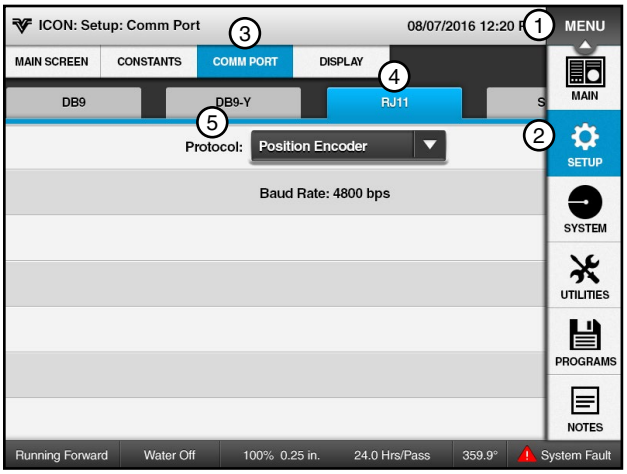


Figure 40-1
1. Menu
2. Setup
3. Comm Port
4. RJ11
5. RJ11 Protocol

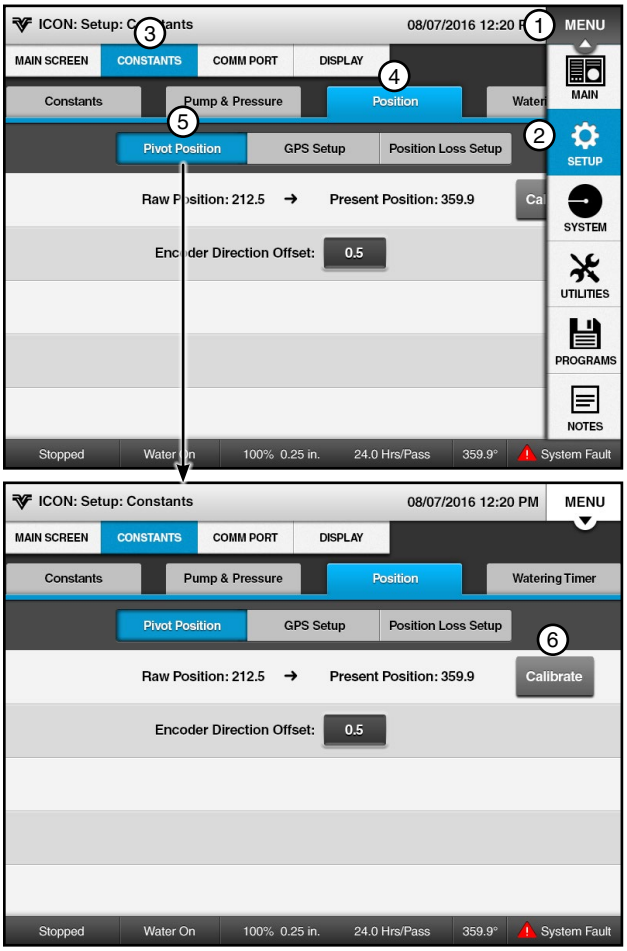


Figure 40-2
1. Menu
2. Setup
3. Constants
4. Position
5. Pivot Position
6. Calibrate

Minimum Control Panel Setup (Continued)

Set Up GPS Position

(Machines equipped with GPS Pivot Position)

To setup GPS pivot position, do the following:

- Obtain the last tower speed and pivot length information from the VChart report for this machine or measure the span length from pivot to last regular drive unit, excluding the overhang, and use the Estimated Drive Unit Speed table on page 48.
- Use a handheld GPS receiver to obtain the GPS coordinates for the Pivot Point position.
- If necessary, use the GPS Angular Conversion table on page 49 to convert the GPS coordinate values into decimals of degree.

1. Set the RJ11 Communications Port protocol:
   (a) Push **Menu, Setup, Comm Port** and **RJ11**.
   (b) Select the **RJ11 Protocol** field and depending on which GPS position option is installed on the machine, choose either **PLC** (GPS Position Tower Box) or **Valley GPS** (Valley GPS Antenna) from the list. See Figures 41-1 and 41-2.
   - **When PLC is chosen:**
     (i) Check the **GPS V2** check box to enable GPS position. See Figure 41-1.
     (ii) Enter the **PLC ID** for the GPS Position tower box.
     (iii) Continue with step 2 on page 43.
   - **When Valley GPS is chosen:**
     (i) **Ensure that any other machine that shares the same 480 VAC source, has either been running longer than 5 minutes or is powered off.**
     (ii) Refer to the Operation Section on page 54 and do the following:
       (a) Turn Water off.
       (b) Set the Dry % Timer to 0.0 (zero percent).
       (c) Push a Start button to start the machine, energize the safety circuit and the Valley GPS. The machine should not move.
     (iii) Push the **Valley GPS Device List** button. See Figure 41-2.
     (iv) Continue with step (v) on the next page.

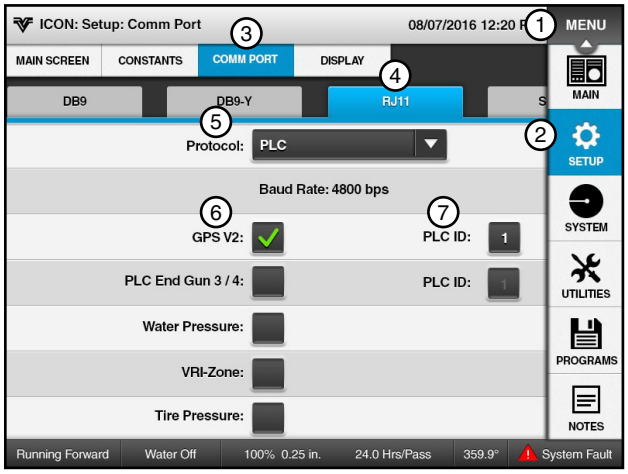


Figure 41-1
1. Menu
2. Setup
3. Comm Port
4. RJ11
5. RJ11 Protocol (PLC)
6. GPS V2
7. PLC ID

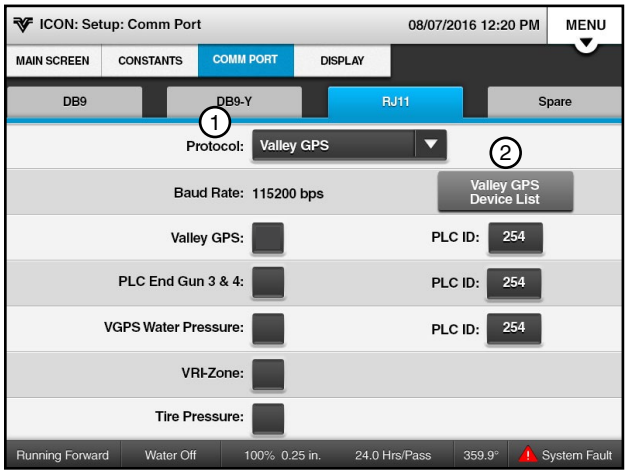


Figure 41-2
1. RJ11 Protocol (Valley GPS)
2. Valley GPS Device List

NOTE

- **Every time the machine is started, the Valley GPS goes through a startup cycle that lasts approximately one minute. The Valley GPS will not communicate with the control panel until the startup cycle has completed.**

Minimum Control Panel Setup (Continued)

Set Up GPS Position (Continued)

(v) Enter the Number of Devices Installed. See Figure 42-1.

When only one Valley GPS is installed, enter 1.

When other Valley GPS or VRI options are installed, enter the total number of devices, up to 254.

(vi) Push the **Discover Devices** button. The control panel attempts to locate the devices.

NOTE

- **The Discover Devices button must be pushed within four minutes of starting the machine.**
- **Device Discovery will only find devices that were powered up in the last five minutes. If the machine has been running longer than five minutes, stop the machine and restart it.**

Discovery of devices can typically take between three and six minutes.

(vii) After the devices have been discovered, note the PLC ID of the Valley GPS.

(viii) Close the Valley GPS Device List.

(ix) Check the **Valley GPS** check box to enable GPS position.

(x) Enter the PLC ID for Valley GPS.

(xi) Continue with step 2 on page 43.

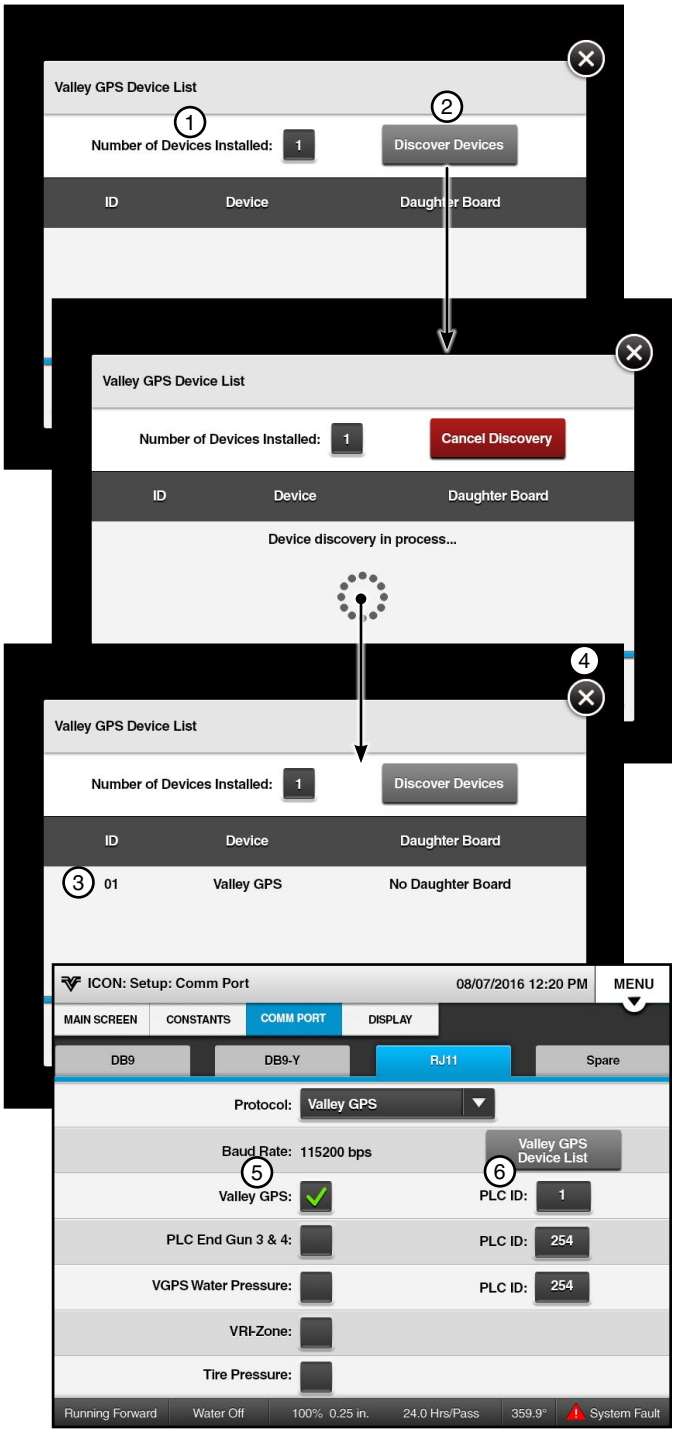


Figure 42-1
1. Enter Number of Devices
2. Push Discover Devices
3. Note PLC ID
4. Close Valley GPS Device List
5. Check Valley GPS
6. Enter PLC ID

Minimum Control Panel Setup (Continued)

Set Up GPS Position (Continued)

2. Go to the GPS Setup screen. See Figure 43-1.

   Push **Menu, Setup, Constants, Position** and **GPS Setup** to display the GPS Setup screen.

> **NOTE**
>
> - **Latitude and Longitude positions displayed on a handheld GPS receiver are usually displayed as North, South, East or West.**
> - **The direction displayed affects how the position is entered into the control panel.**
> - **If the position is shown as West or South the position MUST be entered as a Negative Degree.**
> - **In North America, latitude positions are always positive, and longitude positions are always negative.**

3. Set the Pivot Point GPS position:

   (a) Select the **Pivot Point GPS Latitude** field and enter the pivot point latitude on the numeric keypad.

   (b) Select the **Pivot Point GPS Longitude** field and enter the pivot point longitude on the numeric keypad.

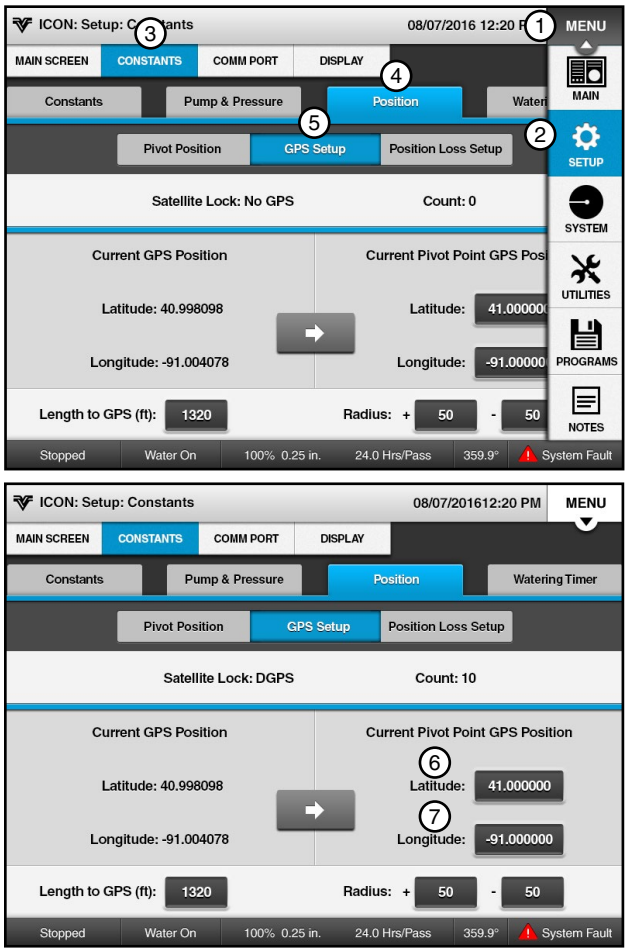


Figure 43-1

1. Menu
2. Setup
3. Constants
4. Position
5. GPS Setup
6. Pivot Point GPS Latitude
7. Pivot Point GPS Longitude

Minimum Control Panel Setup (Continued)

Set Up GPS Position (Continued)

4. Set the Distance to GPS (the distance from pivot point to GPS tower box) including the plus and minus tolerance. Refer to Figure 44-1.

   (a) Select the **Length to GPS (feet)** field and enter the length from the pivot point to the GPS tower box. Do not enter the pivot length. The default is 1320 ft (402.3 m), and the range is 10 to 6554 ft (3.0 to 1997.6 m).

   (b) Select the **Radius +** field and enter the Plus Tolerance for the length from pivot point to GPS tower box. The Default is 50 ft (15.2 m) and the range is 10 to 6554 ft (3.0 to 1997.6 m). A setting of 50 ft (15.2 m) or more is recommended to allow for variation in the GPS signal if Wide Area Application Services (WAAS) is unavailable.

   (c) Select the **Radius -** field and enter the Minus tolerance for the length from pivot point to GPS tower box. The Default is 50 ft (15.2 m) and the range is 10 to 6554 ft (3.0 to 1997.6 m). A setting of 50 ft (15.2 m) or more is recommended to allow for variation in the GPS signal if WAAS is unavailable.

   (d) Continue with Set Up Position Loss on the next page.

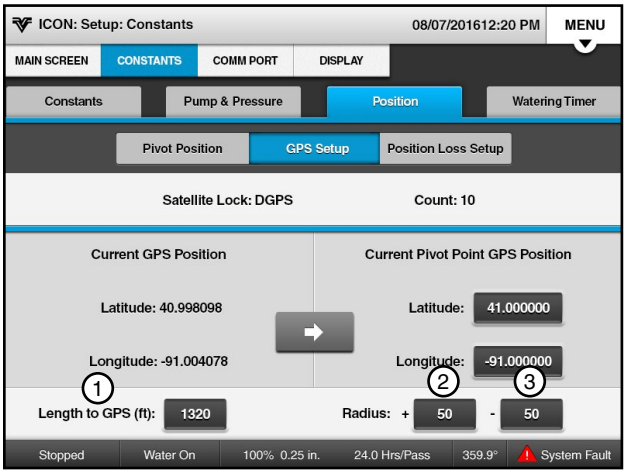


Figure 44-1
1. Length to GPS
2. Radius +
3. Radius -

Minimum Control Panel Setup (Continued)

Set Up Position Loss

In the event of Position Loss, three different position loss functions can be used independently, or with each other, to control the machine operation. To access these functions, push **Menu, Setup, Constants, Position** and **Position Loss Setup**.

- System Shutdown: When checked, shuts the system down if the position is lost for a specified period of time. The default setting is checked (enabled) with a 20-minute delay.
- Disable Endguns: When checked, disables the end guns if the position is lost for a specified period of time. The default setting is unchecked (disabled) with a 10-minute delay.
- Fallback Position: When checked, if the position is lost, the position is calculated using Runtime until the position is re-acquired. The default setting is checked (enabled) with Runtime.

System Shutdown

To set up a shutdown of the system, do the following:

1. Check the **System Shutdown** check box. See Figure 45-1.
2. Select the System Shutdown **Delay Time** field and enter the number of minutes (1 to 255) on the numeric keypad. The default is 20 minutes.

Disable Endguns

To set up the disabling of end guns, do the following:

1. Check the **Disable Endguns** check box. See Figure 45-1.
2. Select the Disable Endguns **Delay Time** field and enter the number of minutes (1 to 255) on the numeric keypad. The default is 10 minutes.

Runtime Fallback Position

To set up the fallback position, do the following:

1. Check the **Runtime Fallback Position** check box. See Figure 45-1.
2. Select the **LRDU Pivot Speed** field and enter the speed on the numeric keypad. The default is 15.56 ft/min.
3. Select the **Pivot Length** field and enter the length on the numeric keypad. The default is 1320 ft (402.3 m).

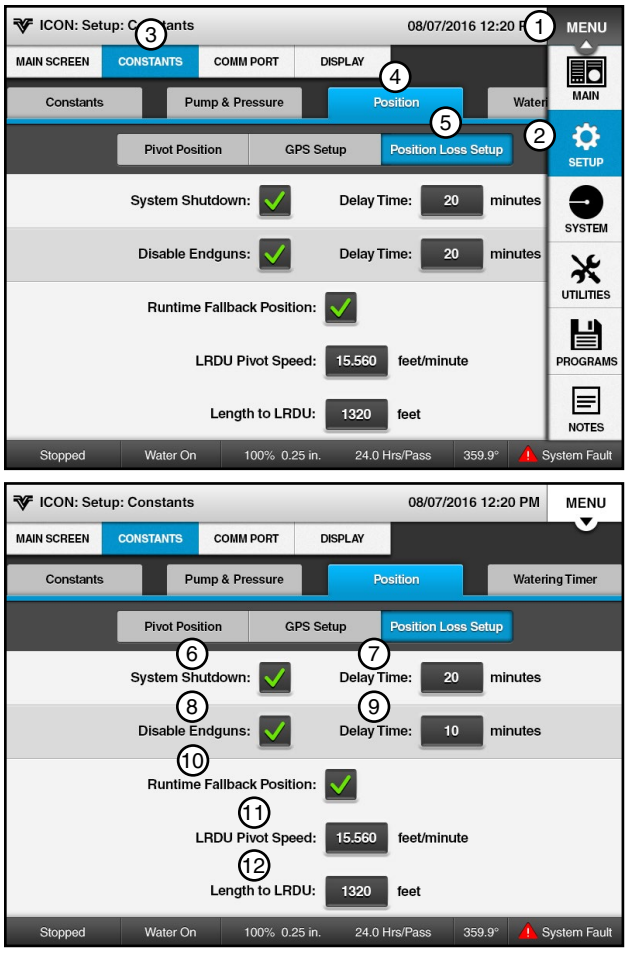


Figure 45-1

1. Menu
2. Setup
3. Constants
4. Position
5. Position Loss
6. System Shutdown
7. System Shutdown Delay
8. Disable End Guns
9. Disable End Guns Delay
10. Runtime Fallback Position
11. LRDU Pivot Speed
12. Length to LRDU

Minimum Control Panel Setup (Continued)

Test GPS Position

If the machine is equipped with GPS Position, do the following to verify that GPS Position is working.

1. Turn Water off, Set the Dry % Timer to 0.0 (zero percent), and push a **Start** button to start the machine, energize the safety circuit and the GPS pivot position tower box. The machine should not move.
2. Go to the Position screen. Push **Menu, Setup, Constants** and **Position**.
3. When GPS Position is working, the **GPS is Communicating** and the **GPS in Tolerance** lights will both be green indicating proper operation.
   - If the GPS is Communicating light is off (gray), there are no communications between the GPS antenna and the control panel, call your local Valley Dealer to diagnose the problem.
   - If the GPS in Tolerance light is off (gray) and/ or the Present Position value is flashing, verify that the Length to GPS, Radius +, and Radius - values are correct on the GPS Setup screen.
4. Set the Present Position of the pivot span in degrees.
   (a) Push **Calibrate**.
   (b) Enter the pivot span position in degrees and push **Enter**.
5. To view the GPS Setup screen push **GPS Setup**. See Figure 46-1.
   - Satellite Lock – verify that there is DGPS lock. If it's not continue waiting. Depending on location it can take 15 minutes or longer for the GPS Antenna to lock on to the satellite signal and obtain DGPS accuracy. When GPS Position is lost or not found, the word **NONE**, or **No GPS** is displayed in the Satellite Lock field.
   - Length to GPS, Radius + and Radius - verify values are correct.
   - If GPS position is not working, call your local Valley Dealer. If it is working, then continue with the next step.
6. Run the machine in either direction to verify that the position displayed on the Status screen GPS Longitude changes periodically as the machine moves.
   - If GPS position is not working, call your local Valley Dealer. If GPS position is working, the minimum control panel setup for a machine with GPS pivot position is complete.

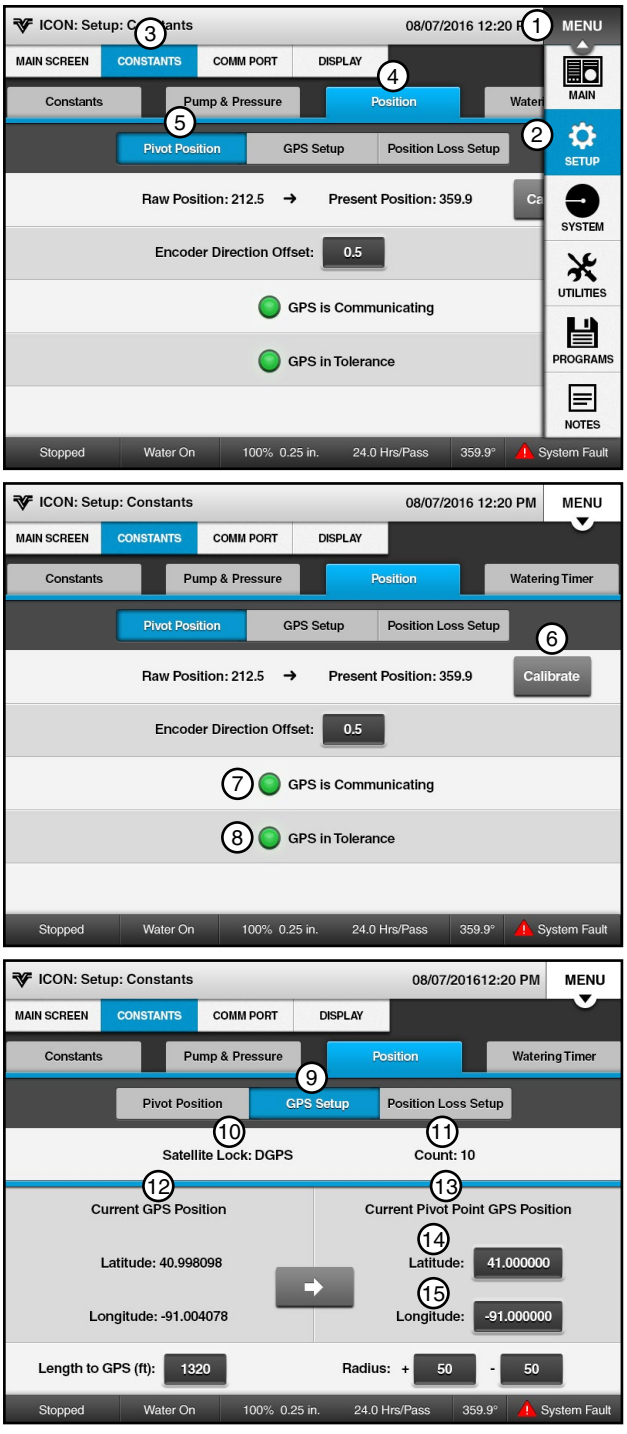


Figure 46-1

1. Menu
2. Setup
3. Constants
4. Position
5. Pivot Position
6. Calibrate
7. GPS is Communicating
8. GPS in Tolerance
9. GPS Setup
10. Satellite Lock
11. Count
12. Current GPS Position
13. Current Pivot Point GPS Position
14. Latitude
15. Longitude

Voltage

The Voltage constant calibrates the volt meter with the actual voltage coming into the control panel so that the voltage fluctuations can be monitored correctly.

The incoming voltage to the control panel must be measured with a meter by a qualified electrician or service person. This value is entered as the voltage constant.

The supply voltage should never exceed the limits shown in the Maximum Supply Voltage chart. Refer to Figure 47-1.

Nominal Supply Voltage	Maximum Supply Voltage
480 VAC @ 60Hz	505 VAC
415 VAC @ 50Hz	420 VAC
400 VAC @ 50Hz	420 VAC
380 VAC @ 50Hz	420 VAC
230 VAC @ 60Hz	253 VAC
220 VAC @ 50Hz	243 VAC

Figure 47-1 Maximum Supply Voltage

Low Voltage

The Low Voltage constant is used to set the low voltage limit. The low voltage limit factory default setting is 440 volts for use with a supply voltage of 480 VAC @ 60Hz. Recommended low voltage limits for other supply voltages are shown in the Recommended Low Voltage chart. Refer to Figure 47-2.

- If the voltage drops below the low voltage limit, a built-in timer keeps the machine running for up to 15 seconds to prevent nuisance shutdowns due to voltage fluctuations. If the low voltage condition still exists after 15 seconds, the machine will be shut down and the diagnostics screen will display a fault for machine power.
- If the voltage drops below half the low voltage limit for 3 seconds or more while the machine was waiting/running with water on or more than 1 second if running with water off, the machine will be shut down and the diagnostics screen will display a fault for machine power.

Nominal Supply Voltage	Recommended Low Voltage Setting
480 VAC @ 60Hz	440 VAC
415 VAC @ 50Hz	375 VAC
400 VAC @ 50Hz	365 VAC
380 VAC @ 50Hz	355 VAC
230 VAC @ 60Hz	220 VAC
220 VAC @ 50Hz	210 VAC

Figure 47-2 Recommended Low Voltage

⚠ CAUTION

- **DO NOT SET LOW VOLTAGE LOWER THAN THE RECOMMENDED LOW VOLTAGE LIMIT.**
- **LOW VOLTAGE WILL DAMAGE THE DRIVE MOTORS AND OTHER ELECTRICAL COMPONENTS. CORRECT THE PROBLEM BEFORE RESUMING OPERATION.**

Control Panel Setup

Estimated Drive Unit Speed Tables

Use these tables to estimate the Intermediate Drive Unit and End Drive Unit speed based on the drive unit motor output RPM, tire size, and machine voltage. Refer to Figure 48-1.

Estimated Drive Unit Travel Speed Feet/Minute (60 Hz)**

Motor Output 60 Hz	Tire Size: 10R X 22.5	11.2 X 24	11R X 22.5	11R X 24.5	14.9 X 24 Non Directional	14.9 X 24 or Turf	16.9 X 24 or Turf	18.4 X 26 or Turf	11.2 X 38 or Non Directional	12.4R X 38	Valley Revolution
	Feet/Minute										
30	5.91	6.11	6.33	6.33	6.95	7.28	7.74	8.17	8.34	8.46	6.96
34	6.70	6.92	7.18	7.18	7.88	8.25	8.77	9.26	9.45	9.59	7.89
37	7.29	7.53	7.81	7.81	8.57	8.98	9.55	10.08	10.28	10.44	8.58
43	8.48	8.75	9.08	9.08	9.96	10.43	11.09	11.71	11.95	12.13	9.97
56	11.04	11.40	11.82	11.82	12.98	13.59	14.45	15.26	15.56	15.79	12.99
68	13.40	13.84	14.36	14.36	15.76	16.50	17.54	18.53	18.90	19.18	15.77
86	16.95	17.50	18.16	18.16	19.93	20.87	22.19	23.43	23.90	24.26	19.95
100	19.71	20.35	21.12	21.12	23.17	24.26	25.80	27.24	27.79	28.21	23.19
136	26.81	27.68	28.72	28.72	31.52	33.00	35.09	37.05	37.80	38.36	31.54

Estimated Drive Unit Travel Speed Feet/Minute (50 Hz)**

Motor Output 50 Hz	Tire Size: 10R X 22.5	11.2 X 24	11R X 22.5	11R X 24.5	14.9 X 24 Non Directional	14.9 X 24 or Turf	16.9 X 24 or Turf	18.4 X 26 or Turf	11.2 X 38 or Non Directional	12.4R X 38	Valley Revolution
	Feet/Minute										
25	4.93	5.09	5.28	5.28	5.79	6.07	6.45	6.81	6.95	7.05	5.80
28	5.58	5.77	5.98	5.98	6.57	6.87	7.31	7.72	7.87	7.99	6.57
31	6.08	6.28	6.51	6.51	7.15	7.48	7.96	8.40	8.57	8.70	7.15
36	7.06	7.29	7.57	7.57	8.30	8.69	9.25	9.76	9.96	10.11	8.31
47	9.20	9.50	9.85	9.85	10.81	11.32	12.04	12.71	12.97	13.16	10.82
57	11.17	11.53	11.97	11.97	13.13	13.75	14.62	15.44	15.75	15.98	13.14
72	14.13	14.59	15.13	15.13	16.61	17.39	18.49	19.52	19.92	20.21	16.62
83	16.43	16.96	17.60	17.60	19.31	20.22	21.50	22.70	23.16	23.50	19.33
136	26.81	27.68	28.72	28.72	31.52	33.00	35.09	37.05	37.80	38.36	31.54

$$\text{Drive Unit Speed(ft/min)} = \frac{\text{(Tire rolling Circumference x Motor Speed(rpm))}}{\text{(Gearbox Reduction(52) x 12)}}$$

**These speeds are estimates only. Actual speeds will vary according to inflation pressure and field conditions. Machine speed should be measured after installation to determine the actual performance.

Figure 48-1 Estimated Drive Unit Speed Tables

GPS Angular Conversion Table

Use the GPS Angular Conversion table to convert the GPS angular degrees from minutes and seconds to decimal degrees when manually setting up the GPS coordinates in the control panel. Refer to Figure 49-1.

Minutes and Seconds into Decimals of a Degree

(Based on 1 second = 0.00027778 degrees)

Minutes into Decimals of a Degree						Seconds into Decimals of a Degree					
Min.	Deg.	Min.	Deg.	Min.	Deg.	Sec.	Deg.	Sec.	Deg.	Sec.	Deg.
1	0.0167	21	0.3500	41	0.6833	1	0.0003	21	0.0058	41	0.0114
2	0.0333	22	0.3667	42	0.7000	2	0.0006	22	0.0061	42	0.0117
3	0.0500	23	0.3833	43	0.7167	3	0.0008	23	0.0064	43	0.0119
4	0.0667	24	0.4000	44	0.7333	4	0.0011	24	0.0067	44	0.0122
5	0.0833	25	0.4167	45	0.7500	5	0.0014	25	0.0069	45	0.0125
6	0.1000	26	0.4333	46	0.7667	6	0.0017	26	0.0072	46	0.0128
7	0.1167	27	0.4500	47	0.7833	7	0.0019	27	0.0075	47	0.0131
8	0.1333	28	0.4667	48	0.8000	8	0.0022	28	0.0078	48	0.0133
9	0.1500	29	0.4833	49	0.8167	9	0.0025	29	0.0081	49	0.0136
10	0.1667	30	0.5000	50	0.8333	10	0.0028	30	0.0083	50	0.0139
11	0.1833	31	0.5167	51	0.8500	11	0.0031	31	0.0086	51	0.0142
12	0.2000	32	0.5333	52	0.8667	12	0.0033	32	0.0089	52	0.0144
13	0.2167	33	0.5500	53	0.8833	13	0.0036	33	0.0092	53	0.0147
14	0.2333	34	0.5667	54	0.9000	14	0.0039	34	0.0094	54	0.0150
15	0.2500	35	0.5833	55	0.9167	15	0.0042	35	0.0097	55	0.0153
16	0.2667	36	0.6000	56	0.9333	16	0.0044	36	0.0100	56	0.0156
17	0.2833	37	0.6167	57	0.9500	17	0.0047	37	0.0103	57	0.0158
18	0.3000	38	0.6333	58	0.9667	18	0.0050	38	0.0106	58	0.0161
19	0.3167	39	0.6500	59	0.9833	19	0.0053	39	0.0108	59	0.0164
20	0.3333	40	0.6667	60	1.0000	20	0.0056	40	0.0111	60	0.0167

Figure 49-1 GPS Angular Conversion Table

Angular Degree Examples

An angular degree in degrees, minutes, seconds will look like the following examples:

- **10° 11´ 37˝, reads as 10 degrees, 11 minutes, 37 seconds.**
  (a) Convert minutes and seconds to a decimal degree value using the table in Figure 49-1.
  11 minutes = 0.1833 degrees
  37 seconds = 0.0103 degrees
  (b) Add all decimal degree values together.
  10 degrees = 10.0000 degrees
  11 minutes = 0.1833 degrees
  37 seconds = 0.0103 degrees
  10˚ 11' 37" = 10.1936 degrees
- **12° 5.245´, read as 12 degrees, 5.245 minutes**.
  (a) Convert decimals of a minute to decimal degrees using the table in 49-1 and multiply the decimal of a minute by 0.0167.
  5 minutes = 0.0833 degrees
  0.245 minutes =
  0.245 × 0.0167 = 0.0041 degrees
  (b) Add all decimal degree values together.
  12 degrees = 12.0000 degrees
  5 minutes = 0.0833 degrees
  0.245 minutes = 0.0041 degrees
  12˚ 5.245' = 12.0874 degrees

Control Panel Setup

Constants Record

If desired, fill in the form below with the applicable constants for this machine.

RTU ID	
Stop In Slot Position	

Utilities/End Guns		
End Gun 1		
Angle Pair	Left Angle	Right Angle
1		
2		
3		
4		
5		
6		
7		
8		
9		

End Gun 2		
Angle Pair	Left Angle	Right Angle
1		
2		
3		
4		
5		
6		
7		
8		
9		

End Gun 3		
Angle Pair	Left Angle	Right Angle
1		
2		
3		
4		
5		
6		
7		
8		
9		

End Gun 4		
Angle Pair	Left Angle	Right Angle
1		
2		
3		
4		
5		
6		
7		
8		
9		

Setup/Main Screen	
Field	
Pivot Road Enable	
Pivot Road Angle	
Part Circle Enable	
Start Angle	
End Angle	
0° Offset Enable and Angle	

Constants Record (continued)

Setup/Constants	
System	
Minimum application	
Hours per revolution	
% Cycle Time	
Low Voltage	
Current Voltage	
Contactor Enable Delay	
Pump / Pressure	
Auto Restart	
Power	
Pressure	
Both	
Pump Type	
Engine Pump	
Electric Pump	
Low Pressure	
High Pressure	
Pressure Delays Setup	
Startup Pressure delay	
Operating Pressure Delay	
High Pressure Delay	
Watering Timer	
Watering Timer Enable	
Overwater	
Run Timer Shutdown Time	
Overwater Shutdown %	
Underwater	
5 Degree Run Timer Error Time	
Underwater Error %	

Cruise	
% Change of Speed	
Field Size	
Resolution	
Position	
Encoder Direction Offset	
GPS Pivot Point	
Latitude	
Latitude	
Length to GPS	
Radius +	
Radius -	
GPS Signal Loss	
System Shutdown Enable	
Delay Time	
Disable End guns Enable	
Delay Time	
Runtime Fallback Position Enable	
LRDU Pivot speed	
Length to LRDU	

Constants Record (continued)

Setup/Comm Port		
Comm Port	Protocol	Baud Rate
DB9		
DB9-Y		
RJ11		
Spare		

Protocol Constants	
VCP	
Baud Rate	
Flow Control	
High Speed	
Key Wait	
RTU ID	
VDC	
Baud Rate	
PLC	
GPS V2 Enable	
PLC ID	
End Guns 3 / 4 Enable	
PLC ID	
Water Pressure Enable	
Tire Pressure Enable	
VRI-Zone Enable	
Position Encoder	
Baud Rate	
VRI-iS	
Baud Rate	
Valley GPS	
Valley GPS Enable	
PLC ID	
End Guns 3 / 4 Enable	
PLC ID	
Water Pressure Enable	
PLC ID	
Tire Pressure Enable	
VRI-Zone Enable	

System/Data	
Flow Hours	
Flow Multiplier	
Low Flow Limit Enable	
Low Flow Limit	
Battery Backup	
Battery Backup Enable	
Keep Awake Time	

Utilities	
AR/AS	
Auto Reverse/Auto Stop Enable	
Delay	
Forward/Reverse Position Enable	
Change Direction to Forward	
Change Direction to Reverse	
Weather	
Current Weather	
Wind Shutdown Enable	
MPH/KPH	
Temp shutdown Enable	
Degrees	
Rain Shutdown Enable	
In / mm	
Weather Constants	
Temperature Coefficient	
Temperature Offset	
Rain Window	
Rain Coefficient	

Constants Record (continued)

Utilities (continued)	
Notice	
Notice Enable	
Shutdown Event Enable	
History Event Enable	
Warning event Enable	
Base ID	
Call Out Tries	
Comm Port	
Radio Setup	
Radio Hop Enable	
Number of Hops	
Radio Hop ID	
Radio Hop ID	
Radio Hop ID	
TPMS	
TPMS Constants	
TPMS Shutdown Enable	
Below Nominal Warning Pressure	
Below Nominal Shutdown Pressure	

Programs	
Daily OPS	
Daily OPS Enable	
Mode	
Daily OPS	
Load Management	
Days	
Start Time	
Stop time	
Minimum application	
Cycles	
Start$ Interval	
Start Time	
Restart in Days	
Start$ Interval Enable	
SIS Bypass	
Number of Times to Bypass SIS	
VRI	
VRI-S Enable	
VRI-Z Enable	
VRI-Z Constants	
Valve Resync Pressure	
Number of Sprinkler Banks	
Min Cycle Time	
Speed Optimization Enable	
VRI-iS Enable	
VRI-iS Constants	
Valve Resync Pressure	
Min Cycle Time	
Max Cycle Time	
Number of Sprinklers	
Last Sprinkler Position	
Sprinkler Spacing	
Speed Optimization Enable	

Operation

Before Running the Machine

- ALWAYS make sure that vehicles, other equipment, livestock, and people are clear of the machine before operating.
- Turn the control panel main disconnect switch to the on position. If the power is supplied by an engine driven generator, set generator to proper voltage/Hz. Do not exceed system specifications.

Run The Machine Wet (With Water)

1. Push the **Water** button on the Main Screen to turn the water on. Refer to Figure 54-1.
2. To set the water application, select either the **Depth** field or **Wet % Timer** field.
   - In the Depth field, set the water application depth by inches or millimeters.
   - In the Wet % Timer field, adjust the percent to obtain the desired water application depth.
   (a) Enter either the depth or percent timer setting.
   (b) Push **ENTER** to retain the value.
3. Do one of the following:
   - Push button to start the machine in the forward direction.
   - Push button to start the machine in the reverse direction.
   - Push to stop the machine.

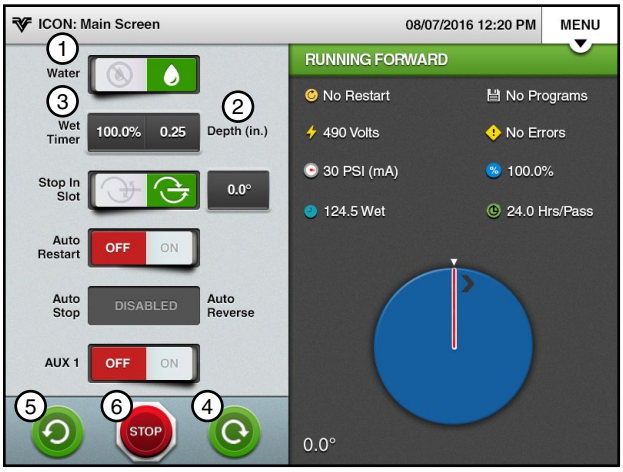


Figure 54-1
1. Water On
2. Depth
3. Wet % Timer
4. Start Forward
5. Start Reverse
6. Stop

Run The Machine Dry (Without Water)

1. Push the **Water** button on the Main Screen to turn the water off. Refer to Figure 54-2.
2. To set the speed of travel, select the Dry % Timer field.
   - In the Dry % Timer field, adjust the percent to obtain the desired speed of travel.
   (a) Enter the percent timer setting.
   (b) Push **ENTER** to retain the value.
3. Do one of the following:
   - Push button to start the machine in the forward direction.
   - Push button to start the machine in the reverse direction.
   - Push to stop the machine.

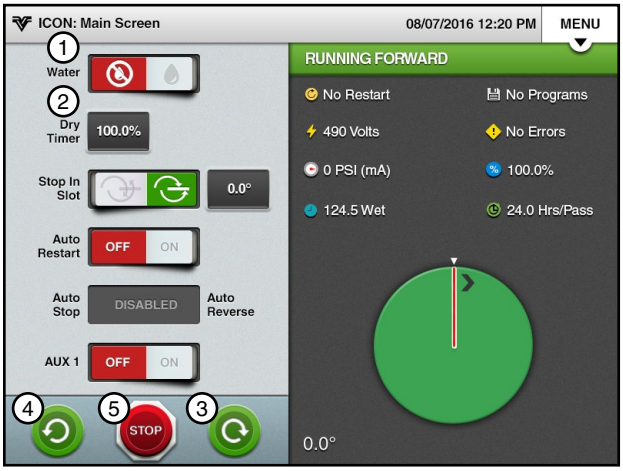


Figure 54-2
1. Water Off
2. Dry % Timer
3. Start Forward
4. Start Reverse
5. Stop

NOTE

- **The machine has a time delay that prevents it from restarting when you press a start button within five seconds after stopping the machine with water on.**

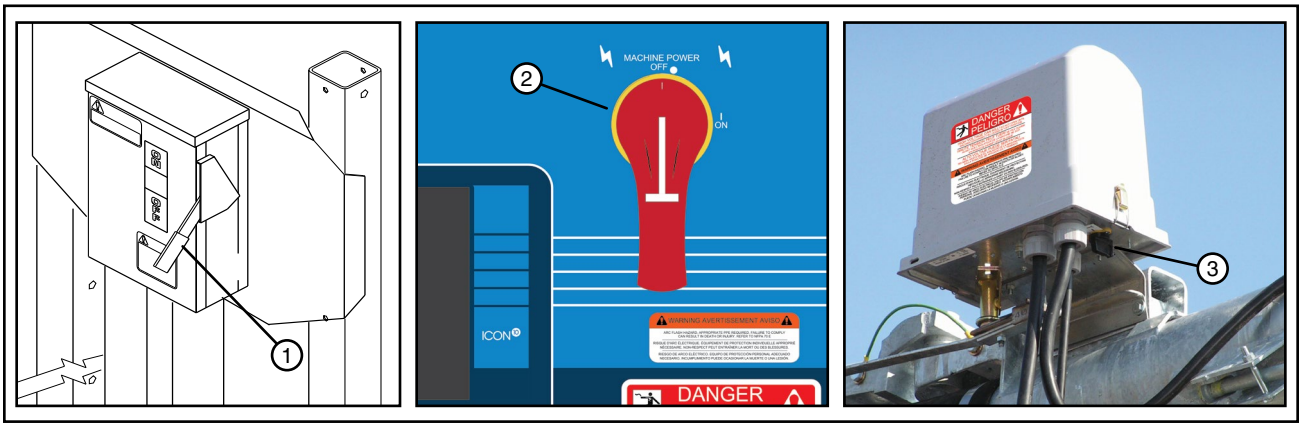
Stopping The Machine

Emergency Stopping

To stop the machine in an emergency situation, shut off any one of the following. See Figure 55-1.

- Main Service Disconnect Switch from public power to the control panel. (Item 1)
- Control Panel Main Disconnect Switch. (Item 2)
- Any Tower Box Disconnect Switch. (Item 3)

ICON10



ICON1

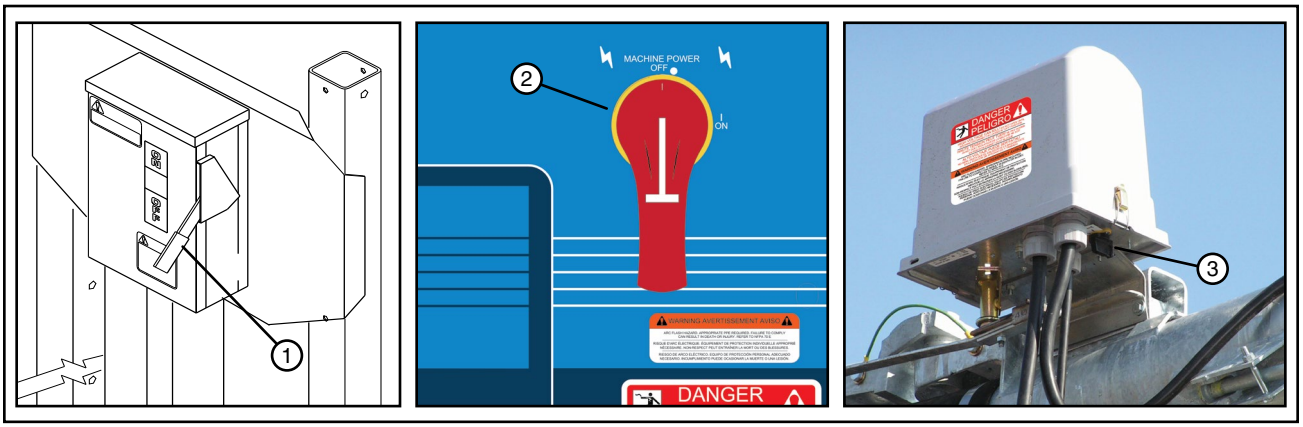


Figure 55-1
1. Main Service Disconnect Switch
2. Control Panel Main Disconnect Switch
3. Tower Box Disconnect Switch

Stopping The Machine (Continued)

Stopping Under Normal Conditions

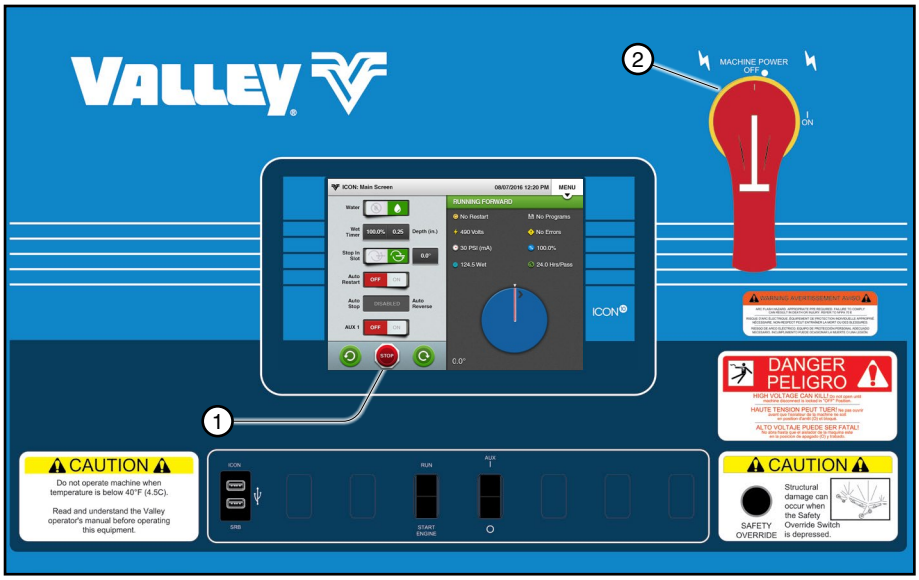
To stop the machine under normal conditions, refer to Figure 56-1 and do the following:

1. Push the Stop button.
2. Turn the Main Disconnect Switch to the off position.
3. Turn the pumping unit off (if not automatic).
4. If an engine generator set is used, move the Engine Run/Start switch to the Start position for the next start-up sequence.

⚠ WARNING

- **DO NOT SHUT THE MACHINE OFF BY SLOWLY IDLING DOWN THE ENGINE GENERATOR SET. THIS PRACTICE CAUSES LOW VOLTAGE AND WILL DAMAGE MACHINE COMPONENTS.**
- **ALWAYS STOP THE IRRIGATION MACHINE PRIOR TO SHUTTING DOWN THE ENGINE GENERATOR SET.**

ICON10



ICON1

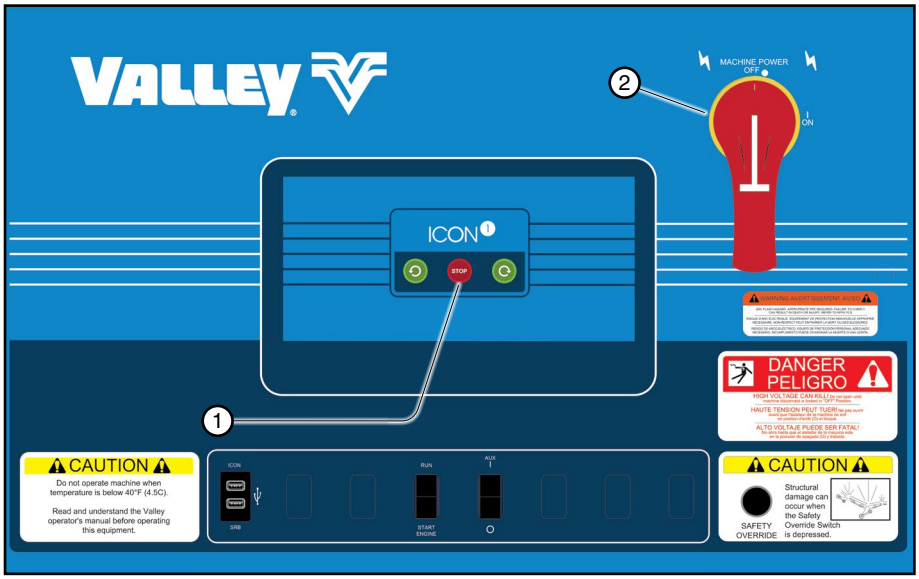


Figure 56-1
1. Stop Button
2. Control Panel Main Disconnect Switch

The Diagnostics section provides an overview of using the diagnostic features incorporated into the control panel. Diagnostics aid in identifying machine failures, troubleshooting and correcting problems.

System Stops and Faults

System Stops are recognized system or user commanded actions that cause the machine to shutdown. System Faults are failures that shut the machine down.

When a recognized fault or stop causes the machine to shut down, the Fault Notice icon is displayed on the pivot graphic and the item responsible for the shut down is displayed on the System Faults screen. See Figure 57-1.

The System Faults screen displays the current system stopped, system fault or no faults condition. The item causing the fault is shown at the bottom of the screen.

A list of all system stopped conditions and system faults are shown on the next page.

To view the current System Stop or System Fault do one of the following:

- Push **Menu, System, Diagnostics** and **System Faults**.
- Push the **Fault Notice** icon that appears on the pivot graphic.

Clearing Faults

The fault and fault notice icon are automatically cleared from the main screen the next time the machine runs successfully. To confirm press start forward or start reverse to see if fault condition has cleared.

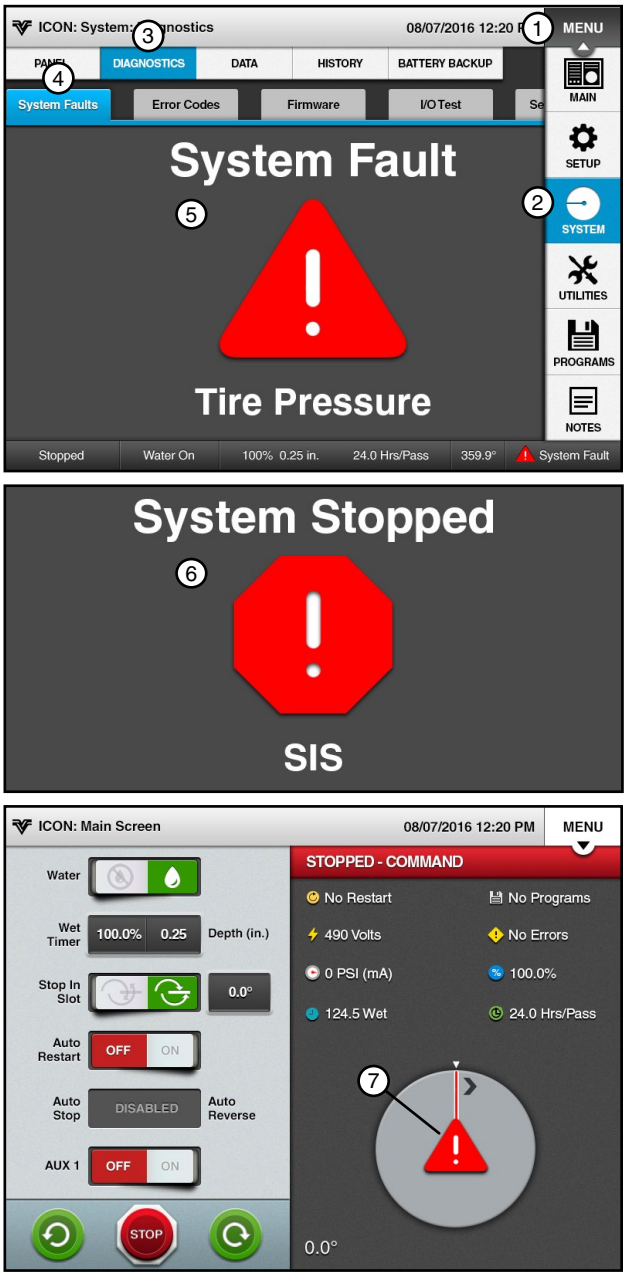


Figure 57-1

1. Menu
2. System
3. Diagnostics
4. System Faults
5. System Fault
6. System Stopped
7. Fault Icon

Diagnostics

System Stops and Faults (Continued)

The stops and faults that can be indicated on the System Fault screen are shown in Figures 58-1 and 59-1. Refer to System Stops and Faults on page 70 in the Troubleshooting section for possible causes and corrective actions.

System Stop Descriptions

System Stop	Description
Command	The machine was commanded to stop by pressing the STOP button.
Stop-In-Slot (SIS)	The machine was stopped by the Stop-In-Slot feature.
Daily Ops	The daily operations sequence was completed.
Program	A Step or Sector Program stopped the machine.
Auto-Stop	The Auto Stop boundary was reached.

Figure 58-1

System Stops and Faults (Continued)

System Fault Descriptions

System Fault	Description
System Power Lost	Machine Power is lost.
System Power Low	Machine power is too low.
System Safety	Machine safety is not sensed.
Low Pressure	Water Pressure is too low.
High Pressure	Water pressure is too high.
NVMEM	E01 error is active.
Forward/Reverse	Both the forward and reverse circuits are energized.
Operating Sector	The machine position is not within operating sector.
Wind	The wind speed is too high. Requires optional hardware.
Temperature	The temperature is too low. Requires optional hardware.
GPS Com	GPS is not communicating.
GPS Lock	The GPS signal is lost.
Flow	The flow rate is too low. Requires optional hardware.
Tire Pressure	A tire's pressure is too low Requires optional hardware.
Rain	The total rainfall is too high. Requires optional hardware.
Water Timer	The overwater shut down time has been exceeded.
Cut Cable	The span cable has been cut.
PCB Hardware	A PCB hardware issue has been detected.
12V Power	12V power has been lost.
Position Encoder Com	The position encoder is not communicating.
License	The protocol license is not valid.

Figure 59-1

Error Codes

System Errors

System Error Codes are failures that may or may not shut the machine down.

When an error occurs, information about the error, including the first time and date that the error occurred, last time and date that the error occurred, and total count of all times that the error occurred, is recorded. See Figure 60-1. A list of Error Codes are shown on the next page.

Error Notification

If one or more failures occur, the word Errors will display next to the Error icon in the status area of the Main Screen. Errors must be selected as a Main Screen status for it to appear on the Main Screen. See Figure 60-1.

Viewing Error Codes

To view the Error Codes refer to Figure 60-1 and do the following:

1. Push **Menu, System, Diagnostics, Error Codes** and **System**.
2. Push View All Errors or View Active Errors to display the Error Codes screen.

   For this example, push **View Active Errors** to view only the active errors.

   Viewing an error code will clear it from the number of errors shown next to the Error icon in the status area of the Main Screen.
3. To access the desired error code do one of the following.
   - Push the **Next** button to search forward through the error codes.
   - Push the **Previous** button to search backward through the error codes.

Resetting Error Count

4. To set the Error Count to 0 (zero), push **Reset Count**. See Figure 60-1.

   The error count is reset to zero, and the first and last error occurrences are set to the current time and date.

Figure 60-1

1. Error Icon
2. Menu
3. System
4. Diagnostics
5. Error Codes
6. System
7. View All Errors
8. View All Active Errors
9. Next
10. Previous
11. Error Count
12. Reset Count

Error Codes (Continued)

System Error Codes and Descriptions

A list of possible System Error Codes is shown in the table below. Refer to System Error Codes on page 73 in the Troubleshooting section for possible causes and corrective action.

Error Codes	Description
E01	NVMEM corrupted
E02	PCB hardware issue
E03	Software reset - This is logged when the software resets
E04	Power dropped below low voltage limit
E05	System safety lost
E06	Pressure too low after pressure delay
E07	Pressure (mV) sensor out of range high
E08	Pressure (mV) sensor out of range low
E09	Pressure (mA) sensor out of range high
E10	Pressure (mA) sensor out of range low
E11	Pressure switch active with pump off
E12	Valley GPS pressure sensor out of range high
E13	Valley GPS pressure sensor out of range low
E14	FWD/REV Sense shorted
E15	Underwater error
E16	VDC communication error, primary COM module
E17	VRI-iS sprinkler communication error
E18	GPS communications error - check GPS connection and power
E19	GPS signal loss - check for clear path above antenna
E20	DGPS signal loss - check for clear path above antenna
E21	Flow rate below low flow limit
E22	Pressure above high pressure limit
E23	PLC communications error
E24	Valve duty cycles re synced due to high pressure
E25	GPS coordinates out of range - check distance to GPS or for crosstalk
E26	Low tire pressure
E27	TPMS communications error
E28	VDC Error Report message received
E29	Valley GPS communication error, master OPMC
E30	Valley Error Report message received

Figure 61-1

Error Codes (Continued)

Comm Board Errors

Comm Board Error Codes are communications failures that may or may not shut the machine down.

The Comm Board errors screen shows up to six errors. When the maximum number of six errors exist in the control panel memory, any new error is added to the top of the screen and the oldest record is discarded.

There is no notification that the Comm Board error has occurred.

A list of Comm Board component IDs and possible error messages is shown on the next page. Refer to the Troubleshooting section for possible causes and corrective actions.

Viewing Error Codes

To view the Comm Board errors push **Menu**, **System**, **Diagnostics**, **Error Codes** and **Comm Board**. Refer to Figure 62-1.

A maximum of six errors are listed on the screen, with the newest error at the top.

Clearing Error Codes

Clearing error codes will clear all Comm Board errors.

To clear the Comm Board errors, push **Clear Errors** and then push **Clear**. Refer to Figure 62-1.

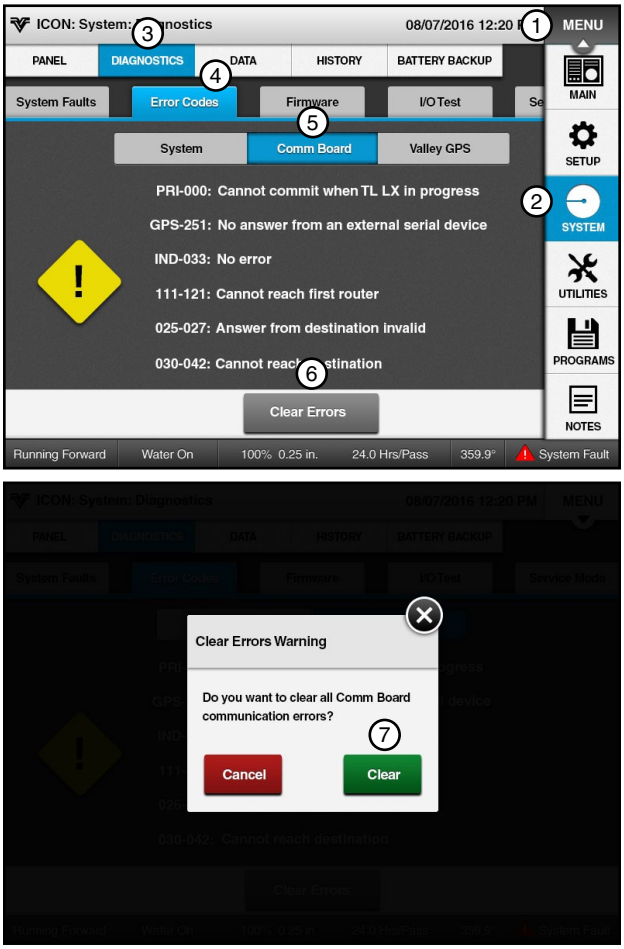


Figure 62-1

1. Menu
2. System
3. Diagnostics
4. Error Codes
5. Comm Board
6. Clear Errors
7. Clear

Error Codes (Continued)

Comm Board Component IDs / Error Messages

Shown below are the component IDs and descriptions along with the possible error messages.

ID	Description
PRI-000	Com Port in panel, Example: PRI-000 Error Message
ENC-250	Com board in Position Encoder, Example: ENC-250 Error Message
GPS-251	Com Board in GPS tower box, Example: GPS-251 Error Message
IND-XXX or XXX-XXX	Individual, Typically VRI-iS valve IDs. This can be an individual ID or a range of IDs followed by the error message. Example: Individual ID, IND-033 Error Message - or - Range of IDs, 111-121 Error Message

Error Messages
No Error
Invalid Request Length
Invalid Request Data
Invalid Request ID
Production Mode Not Activated
Serial Rx Buffer Full
CLTX Buffer Full
Cannot Commit When PLTX In Progress
No Answer From External Device Serial
Cannot Reach First Router
No Answer From Destination
Cannot Reach Destination
Answer From Destination Invalid

Figure 63-1

Error Codes (Continued)

Valley GPS Errors

Valley GPS Error Codes are communications failures that may or may not shut the machine down.

The Valley GPS Errors screen shows up to six errors. When the maximum number of six errors exist in the control panel memory, any new error is added to the top of the screen and the oldest record is discarded.

There is no notification that the Valley GPS Error has occurred.

A list of Valley GPS error IDs and descriptions is shown on the next page. Refer to the Troubleshooting section for possible causes and corrective actions.

Viewing Error Codes

To view the Valley GPS errors push **Menu**, **System**, **Diagnostics**, **Error Codes** and **Valley GPS**. Refer to Figure 64-1.

A maximum of six errors are listed on the screen, with the newest error at the top.

Clearing Error Codes

Clearing error codes will clear all Valley GPS errors.

To clear the errors, push **Clear Errors** and then push **Clear.** Refer to Figure 64-1.

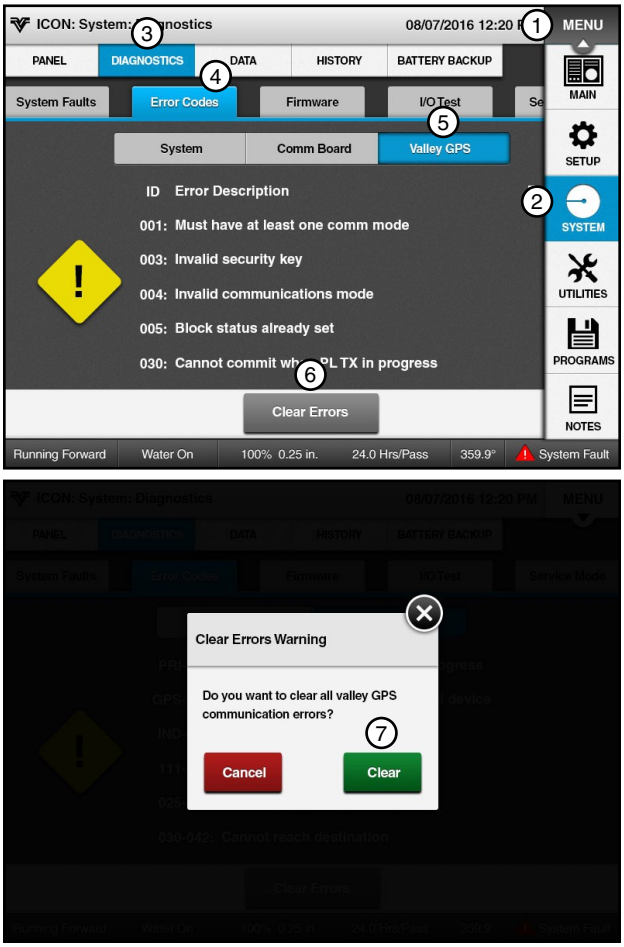


Figure 64-1

1. Menu
2. System
3. Diagnostics
4. Error Codes
5. Comm Board
6. Clear Errors
7. Clear

Error Codes (Continued)

Valley GPS Error IDs and Descriptions

ID	Description
000	No Error
001	No Comm Mode
003	Invalid Security Key
004	Invalid Communications Mode
005	Block Status Already Set
010	Invalid Request Length
011	Invalid Data Request
012	Invalid ID Request
013	Production Mode Not Activated
014	Record Noise After Packet Reception
015	No Device To Be Discovered In MAC List
016	No Device To Be Recovered In Routing Table
017	FLASH Error
018	FLASH Verification Error
021	Serial Rx Buffer Full
022	GPS Buffer Full
023	Tx Error
030	Cannot Commit When GPS message In Progress
031	No Answer From External Serial Device
033	Cannot Reach First Router
034	No Answer From Destination
035	Cannot Reach Destination
036	Answer From Destination Invalid
040	Invalid Request For Current Board ID
050	Invalid Page In EEPROM Access
051	EEPROM Write Error
052	External PLP Process Running
053	OS Task Running
082	Cannot Reach First Router
0C1	Cannot Reach PLC Destination
0FD	Boot Loader Flash Error
0FE	Not Supported
0FF	NACK
	Unknown error code

Figure 65-1

History

History provides a record of the 50 most recent machine operation status changes via the Standard and Advanced Screens. Refer to Figure 66-1.

The history record number appears at the top of the screen with the date and time of the record. Number 01 is the newest status change and number 50 is the oldest status change.

When the maximum number of 50 records exist in the control panel memory, any new status change is added as record number 01 and the oldest record is discarded.

Viewing Standard History

1. To view Standard History, push **Menu, System, History,** and **Standard**. See Figure 66-1.

   The Standard History Screen shows a snapshot of the Main Screen on the date and time the history record was created.

2. To access the desired history record do one of the following.
   - Push the **Next** button to search forward through the History Records.
   - Push the **Previous** button to search backward through the History Records.
   - Select the **History Record** field and choose the History Record from the drop-down list.

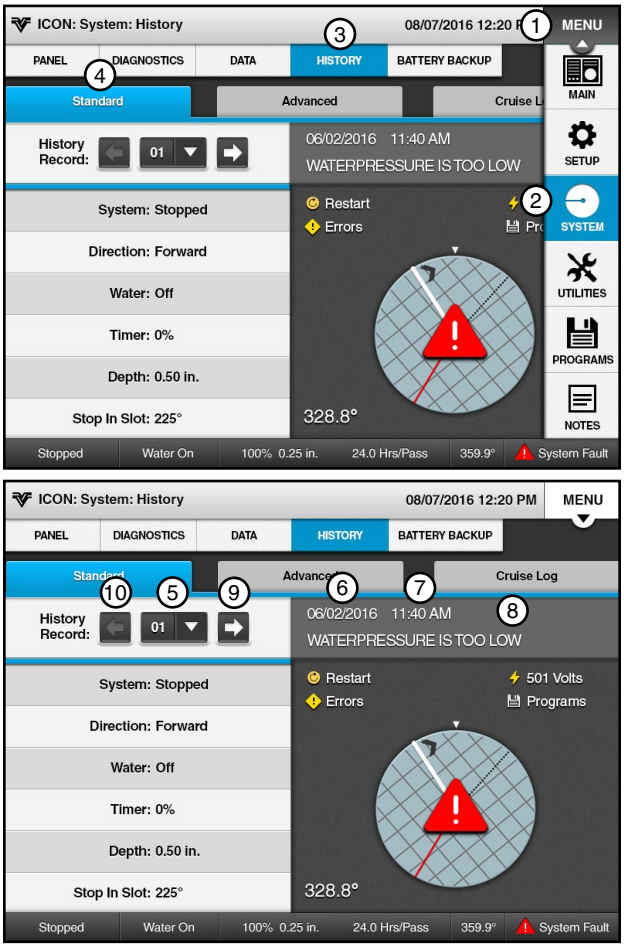


Figure 66-1

1. Menu
2. System
3. History
4. Standard
5. History Record
6. Date
7. Time
8. Logged History Record
9. Next
10. Previous

Viewing Advanced History

The Advanced History Screen displays a record of all statuses and error codes related to the history record. Refer to Figure 67-1.

View additional information including the event that triggered this history record.

A list of trigger events is shown on the next page.

1. To view Advanced History, push **Menu, System, History,** and **Advanced**. See Figure 67-1.
2. To access the desired history record do one of the following.
   - Push the **Next** button to search forward through the History Records.
   - Push the **Previous** button to search backward through the History Records.
   - Select the **History Record** field and choose the History Record from the drop-down menu.
3. Use the **Next Status** and **Previous Status** buttons to navigate through the Advanced History record.

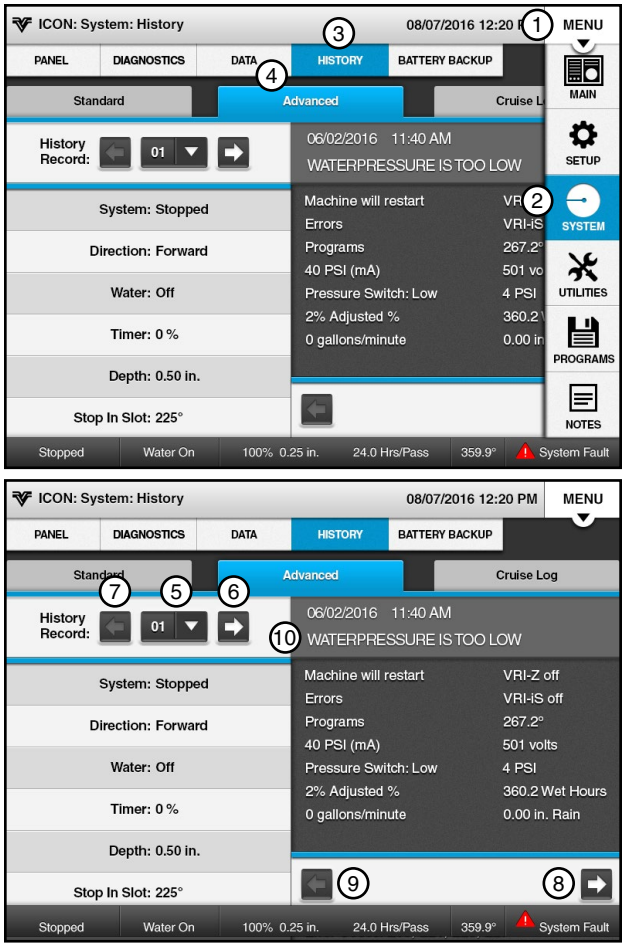


Figure 67-1

1. Menu
2. System
3. History
4. Advanced
5. History Record
6. Next
7. Previous
8. Next Status
9. Previous Status
10. Trigger Event

History

History Screen Events

The following is a list of events that trigger the creation of history records. The event appears on the history record when viewed on the Advanced History Screen.

Event
System_Run_Stop_Status change
System_Percent_Timer change
System went from no programs running to one or more step or sector programs running, or vice-versa
Log Event program command executed
Auto_Restart_Possible change
Daily_Ops_Restart_Possible change
Cycle_Repeat_Restart_Possible change
System_Direction change
System_Water On/Off change
SIS_Control On/Off change
SIS_Position change
Cruise_Control enabled/disabled change
VRI-S_Status active/inactive change
VRI-Z_Status active/inactive change
VRI-iS_Status active/inactive change
Aux1 In active/inactive change
Aux2 In active/inactive change
Aux1 Out On/Off change
Aux2 Out On/Off change
End Gun On/Off change
Wide Boundary #1 On/Off change
Wide Boundary #2 On/Off change
Wide Boundary #3 On/Off change
Spare pull-to-ground input active/inactive change
System crossed SIS_Position
Date changed (midnight)

System Faults
Stopped - System Power Lost Fault
Stopped - System Safety Fault
Stopped - Low Pressure Fault
Stopped - Command Fault
Stopped - SIS Fault
Stopped - NVMEM Fault
Stopped - For/Rev Fault
Stopped - Operating Sector Fault
Stopped - Wind Fault
Stopped - Temperature Fault
Stopped - Daily Ops Fault
Stopped - GPS Com Fault
Stopped - GPS Lock Fault
Stopped - Program Fault
Stopped - Auto-Stop Fault
Stopped - Flow Fault
Stopped - High Pressure Fault
Stopped - Tire Pressure Fault
Stopped - Rain Fault
Stopped - Water Timer Fault
Stopped - Cut Cable
Stopped - PCB Hardware Fault
Stopped - 12V Power Fault
Stopped - Position Encoder Com Fault
Stopped - System Power Low Fault
Stopped - License Fault

Figure 68-1

Cruise Log

The Cruise Log Screen records the Percent Timer adjusted setting every 5° from the start position, regardless of the resolution setting.

1. To view the Cruise Log, push **Menu, System, History, Cruise Log**. See Figure 69-1.
2. To access the desired history record do one of the following.
   - Push the **Next** button to search forward through the Cruise Log Records.
   - Push the **Previous** button to search backward through the Cruise Log Records.

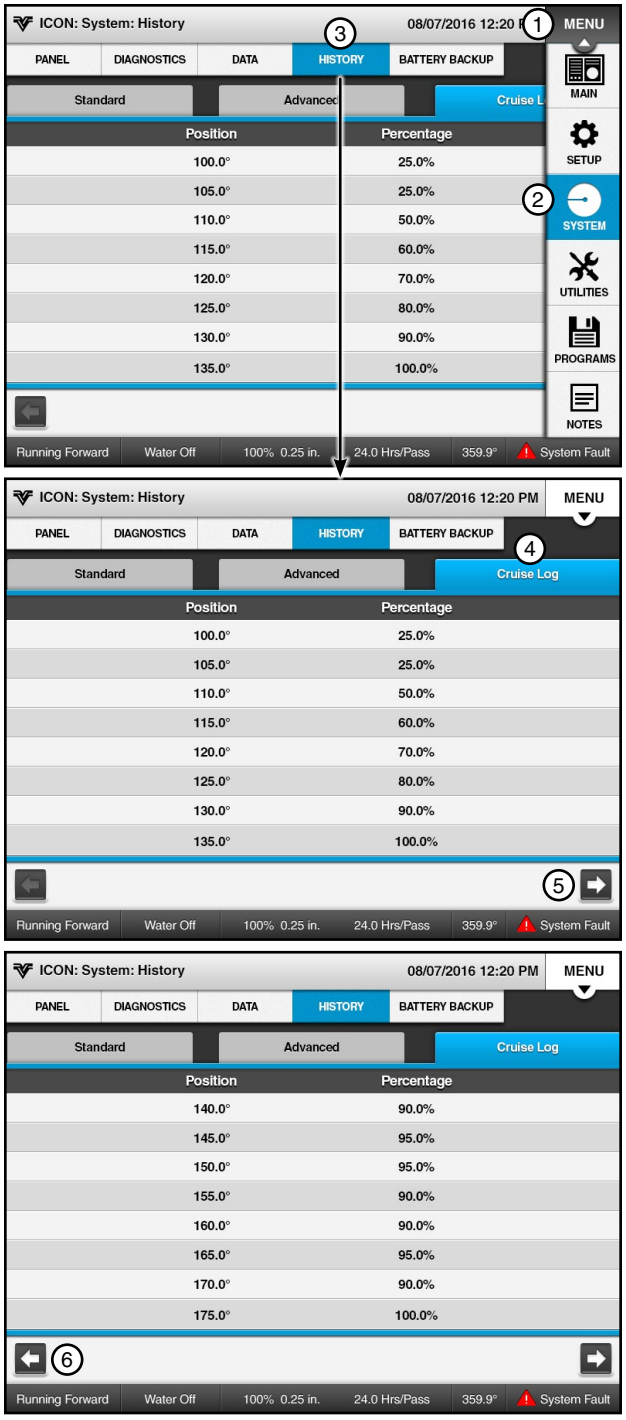


Figure 69-1
1. Menu
2. System
3. History
4. Cruise Log
5. Next
6. Previous

Troubleshooting

Use this Troubleshooting section with the machine owner's manual to diagnose and troubleshoot problems with the machine and/or control panel.

Always perform service or maintenance safely, use personal protection equipment when required, maintain a minimum working clearance around the control panel and other equipment, use fall protection when required, and always use at least the minimal lockout/tagout procedure when maintaining or servicing the machine. For more information refer to the Safety section.

⚠ WARNING

TO REDUCE THE POSSIBILITY OF SEVERE INJURY OR DEATH:

- **TROUBLESHOOTING OR REPAIRING ELECTRICAL PROBLEMS SHOULD ONLY BE PERFORMED BY A QUALIFIED VALLEY DEALER.**
- **ALWAYS CONTACT YOUR LOCAL VALLEY DEALER TO TROUBLESHOOT OR CORRECT ANY ELECTRICAL PROBLEMS ON OR ASSOCIATED WITH THE CONTROL PANEL OR MACHINE. NEVER ATTEMPT TO TROUBLESHOOT OR CORRECT ELECTRICAL PROBLEMS ON YOUR OWN.**
- **USE PERSONAL PROTECTION EQUIPMENT WHEN REQUIRED.**
- **MAINTAIN A MINIMUM WORKING DISTANCE AROUND THE CONTROL PANEL AND OTHER EQUIPMENT.**
- **USE FALL PROTECTION WHEN REQUIRED.**
- **BEFORE SERVICING OR PERFORMING MAINTENANCE ON THE MACHINE, ALWAYS SHUT OFF ALL ELECTRICAL POWER TO THE CONTROL PANEL AND MACHINE, THEN USE THE MINIMAL LOCKOUT/TAGOUT PROCEDURE ON THE SERVICE DISCONNECT AND CONTROL PANEL.**

System Stops and Faults

Listed in the table below and on the following pages are the possible system stops and faults with the description, possible causes, whether the machine will shutdown if the error occurs, and corrective action to take.

System Stop	Threshold	Shut Down	Corrective Action
Command • User commanded stop	The machine was intentionally commanded to stop by pushing the Stop button.	Yes	Normal operation - No corrective action needed.
Stop-In-Slot (SIS) • SIS position reached	The current machine position matches the Stop-In-Slot position while the machine was waiting/running.	Yes	Normal operation - No corrective action needed.
Daily Ops • Daily operation sequence completed	With the Daily Ops Control enabled and Daily Ops Mode selected, the system was started outside of the start/stop range of Daily Ops.	Yes	Normal operation - No corrective action needed. If desired, reprogram Daily Ops to run at a different time or disable Daily Ops.
Program • Program stop command	A stop command in a step or sector program shut down the machine.	Yes	Normal operation - No corrective action needed.
Auto-Stop • Auto-Stop boundary reached	The Auto Stop boundary was reached and shut down the machine.	Yes	Normal operation - No corrective action needed.

System Stops and Faults (Continued)

System Fault	Threshold	Shut Down	Corrective Action
System Power Lost • Machine power is lost	Voltage dropped below half the low voltage limit for 3 seconds or more while the machine was waiting/ running with water on or more than 1 second if running with water off.	Yes	Check Low Voltage Limit for correct value. Contact your Valley Dealer.
System Power Low • Machine power is too low	Voltage fell below the low voltage limit for 15 seconds or more while the machine was waiting/running.	Yes	Check power supply.
System Safety • Machine safety not sensed	Safety circuit was de-energized for more than 3 seconds.	Yes	Make sure a tower is not stuck. Check for flat tire on a tower. Check for wheel gearbox failure. Check End-Of-Field Stop for proper operation. Contact your Valley Dealer.
Low Pressure • Water pressure is too low	Water pressure fell below the Low Pressure Limit for more than the Operating Pressure Delay time while the machine was running with water on and after the Startup Pressure Delay has expired.	Yes	Make sure pump is on. Set Low Pressure Limit higher. Set Operating Pressure Delay for longer period of time. Contact your Valley Dealer.
High Pressure • Water pressure is too high	Water pressure remained above the High Pressure Limit for at least the High Pressure Shutdown Delay time.	Yes	Contact your Valley Dealer.
NVMEM • E01 error is active	E01 error is active, Memory Error, Backup Battery failure.	Yes	Contact your Valley Dealer.
Forward/Reverse • Both For/Rev circuits are energized	Both the forward and reverse circuits were on for more than 15 seconds while the machine was waiting/running.	Yes	Contact your Valley Dealer.
Operating Sector • Machine position is not within the operating sector	With AR/AS and For/Rev Position both enabled, the machine is waiting/running or was started outside of the Forward or Reverse Position angles.	Yes	Walk the machine back. Check the For/Rev Position angles. Contact your Valley Dealer.
Wind • Wind is too high	With Wind Shutdown enabled, the Wind Speed went above the Wind Speed Limit for more than 1 minute while the machine is running with water on. Requires optional equipment.	Yes	Normal operation - No corrective action needed.
Temperature • Temperature is too low	With the Temperature Shutdown enabled, the Current Temperature goes below the Low Temperature Limit while water is on. Requires optional equipment.	Yes	Restart the machine when the temperature rises above the limit.
Rain • Total rainfall is too high	With the Rain Shutdown enabled, the Total Rainfall for the Rain Window goes above the Rain Shutdown Limit while water is on. Requires optional equipment.	Yes	Turn Rain Shutdown Off, or restart the machine when the Rain Total is below the Rain Limit.

System Stops and Faults (Continued)

System Fault	Threshold	Shut Down	Corrective Action
Flow • Flow rate is too low	While the machine is running with water on, the Flow Rate falls below the Low Flow Limit after adequate water pressure has been achieved.	Yes	Contact your Valley Dealer.
Water Timer • Overwater shutdown time exceeded	With the Water Timer enabled, the time accumulated by the Overwater Timer is greater than the Overwater Shutdown time.	Yes	Contact your Valley Dealer.
Tire Pressure • A tire's pressure is too low	With Shutdown Pressure Control enabled, the Reported Tire Pressure of a tire is below the Nominal Tire Pressure for that tire's tower by at least the Shutdown Pressure Drop for two consecutive sensor readings. This is checked only on the reception of new tire pressure sensor data. Requires optional equipment.	Yes	View error E26 to determine which tower has a tire with low pressure. Check the tires on the tower for low pressure, and repair as needed. Contact your Valley Dealer.
GPS Com • GPS not communicating	With GPS Position and Shutdown On Position Loss enabled, while the machine is waiting/running there has been no GPS communications and the Shutdown On Position Loss Delay time has expired. Requires optional equipment.	Yes	Contact your Valley Dealer.
GPS Lock • GPS signal loss	With GPS Position and Shutdown On Position Loss enabled, while the machine is waiting/running the GPS Lock Status is None and the Shutdown On Position Loss Delay time has expired. Requires optional equipment.	Yes	Check for a clear path above the GPS antenna. Contact your Valley Dealer.
Cut Cable • Span cable has been cut	A cut cable was Detected when the machine was started.	Yes	Check span cable. Contact your Valley Dealer.
PCB Hardware • PCB hardware issue detected	PCB hardware issue detected while the machine is waiting/running.	Yes	Review Error E02 for which PCB hardware issue caused the fault. Contact your Valley Dealer.
12V Power • 12V power is lost	With Backup Battery enabled: • The battery backup supply voltage fell below 10 volts. or • The unit has been powered from the battery backup supply and the Battery Backup Time has expired. Requires optional equipment.	Yes	Battery backup should only be enabled if the optional battery is installed. Verify that the optional backup battery is good. Contact your Valley Dealer.
Position Encoder Com • Position encoder not communicating	With the Position Encoder option and Shutdown On Position Loss enabled, and while the machine is waiting/running the position encoder has not been communicating and the Shutdown On Position Loss Delay time has expired.	Yes	Contact your Valley Dealer.
License	The protocol license is not valid.	Yes	Normal shutdown the first time that a communications device talks to the control panel while the machine is running. Contact your Valley Dealer.

System Error Codes

Listed in the table below and on the following pages are the possible system errors with the description, threshold for the error to occur, whether the machine will shutdown if the error occurs and possible causes

Error	Description	Threshold	Shut Down	Possible Causes Corrective Actions
E01	NVMEM Corrupted.		Yes	Contact your Valley Dealer.
E02	PCB Hardware Issue #1	The cut cable relay digital input failed to become active after the relay was energized.	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #2	The cut cable relay digital input was active while the machine was waiting/ running.	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #3	The 5 volt regulator output is turned Off while the machine was waiting/ running.	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #4	The main supply input is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #5	The battery charging voltage is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #6	The battery charging voltage is out of range (Low).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #7	The switched 12V power output is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #8	The switched charging voltage is out of range (Low).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #9	The thermally fused 12V sensor power output is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #10	The thermally fused 12V sensor power output is out of range (Low).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #11	The thermally fused 12V daughter card power output is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #12	The thermally fused 12V daughter card power output is out of range (Low).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #13	The 5 volt regulator output is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #14	The 5 volt regulator output is out of range (Low).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #15	The thermally fused 5 volt sensor power output is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #16	The thermally fused 5 volt sensor power output is out of range (Low).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #17	The 3.3 volt regulator output is out of range (High).	Yes	Contact your Valley Dealer.
	PCB Hardware Issue #18	The 3.3 volt regulator output is out of range (Low).	Yes	Contact your Valley Dealer.
E03	Software Reset • Logged every time the software resets	When the software is power cycled or reset.	No	Normal operation when power is cycled.

System Error Codes (Continued)

Error	Description	Threshold	Shut Down	Possible Causes Corrective Actions
E04	Power Dropped Below Low Voltage Limit • This error is only logged if it is not already active.	When machine is waiting/ running, and voltage drops below Low Voltage Limit.	Yes - by System Power Low fault after 15 seconds.	Nuisance shutdowns can be caused by setting the Low Voltage Limit too high. Contact your Valley Dealer.
E05	System Safety Lost	When the machine is running and Safety In is de-energized.	Yes - by System Safety fault after 3 seconds.	The safety circuit is open due possibly to misaligned towers, guidance problems, over-watering timer timed out, or any other component in the safety circuit. Contact your Valley Dealer.
E06	Pressure Too Low After Pressure Delay • This error is only logged if it is not already active.	While running with water on and after Startup Pressure Delay expires Low water pressure is reported by any pressure sensor selected for the Running input.	Yes - by Low Pressure fault after operating pressure delay expires	Startup pressure delay time is too short. The pump, pressure transducer, or pressure switch may have failed. Low pressure limit set too close to operating pressure. Contact your Valley Dealer.
E07	Pressure (mV) Sensor Out of Range High • This error is only logged if it is not already active.	When (mV) pressure is greater then the calculated Max Sensor Pressure. The (mV) pressure sensor must be selected for the Stopped or Running input.	No	The pressure sensor has failed, calibration or setup is incorrect, or the Max pressure is set too low. Contact your Valley Dealer.
E08	Pressure (mV) Sensor Out of Range Low • This error is only logged if it is not already active.	When (mV) pressure is < -6 psi. The (mV) pressure sensor must be selected for the Stopped or Running input.	No	The pressure sensor has failed or is not installed. Contact your Valley Dealer.
E09	Pressure (mA) Sensor Out of Range High • This error is only logged if it is not already active.	When (mA) pressure is greater then the calculated Max Sensor Pressure. The (mA) pressure sensor must be selected for the Stopped or Running input.	No	The pressure sensor has failed, calibration or setup is incorrect, or the Max pressure is set too low. Contact your Valley Dealer.
E10	Pressure (mA) Sensor Out of Range Low • This error is only logged if it is not already active.	When (mA) pressure is < -6 psi. The (mA) pressure sensor must be selected for the Stopped or Running input.	No	The pressure sensor has failed or is not installed. Contact your Valley Dealer.
E11	Pressure Switch Active With Pump Off • This error is only logged if it is not already active.	When the Pump Safety Relay is Off for more than 5 minutes and the pressure switch is still on.	No	The pressure switch has failed, is stuck, or water is still in riser pipe possibly because of a plugged machine drain. Contact your Valley Dealer.

System Error Codes (Continued)

Error	Description	Threshold	Shut Down	Possible Causes Corrective Actions
E12	Valley GPS pressure sensor out of range high • This error is only logged if it is not already active.	When Valley GPS pressure is greater then the calculated Max Sensor Pressure. The Valley GPS pressure sensor must be selected for the Running input.	No	The pressure sensor has failed, calibration or setup is incorrect, or the Max pressure is set too low. Contact your Valley Dealer.
E13	Valley GPS pressure sensor out of range low • This error is only logged if it is not already active.	When Valley GPS pressure is < -6 psi. The Valley GPS pressure sensor must be selected for the Running input.	No	The pressure sensor has failed or is not installed. Contact your Valley Dealer.
E14	FWD/REV Sense Possible Short • The machine status will show running when AR/AS is Off even though the motor contactor is disabled. • The machine will stop if AR/AS is on and Auto Stop is selected. • If AR/AS is on and Auto Reverse is selected, the machine will alternate between forward and reverse direction control. • Since motor power is disabled until the direction has locked in, the machine will not move. • Error will not be logged again until one or both of the lines have been de-energized for a minimum of 1 second.	When both the forward and reverse run lines are energized. Logged after 2 seconds when AR/AS is enabled. Logged Immediately when AR/AS is disabled.	Yes - by FWD/REV Fault after 15 seconds if machine is waiting/ running regardless of AR/AS settings.	Contact your Valley Dealer.
E15	Underwater Error • This error is only logged if it is not already active. • Watering Timer must be enabled.	When the 5° Run Timer value is less than the Error Time value.	No	Contact your Valley Dealer.
E16	VDC Communication Error, Primary Communication Module	Each time a command message is sent with no reply message being received (VRI-iS or Encoder options only).	Yes - if Position Loss Shut Down is enabled.	Communications error to Comm Board. Contact your Valley Dealer.

Troubleshooting

System Error Codes (Continued)

Error	Description	Threshold	Shut Down	Possible Causes Corrective Actions
E17	VRI-iS Sprinkler Communication Error • The sprinkler ID and number of occurrences for this sprinkler are logged with the error.	Each time a sprinkler fails to respond to a Set Sprinkler command retry.	No	Communications error to VRI-iS valve. Contact your Valley Dealer.
E18	GPS Communication Error • The Satellite Count is logged with the error.	When a transition occurs from GPS communicating to GPS not communicating. GPS Position must be enabled.	Yes - if Shut Down System is selected.	When GPS option is powered by safety circuit, a loss of power will cause this error.
E19	GPS Signal Loss • The Satellite Count is logged with the error.	When the GPS Lock Status transitions from Standard to DGPS or None. GPS Position must be enabled.	Yes - if Shut Down System is selected.	Check for clear path above the GPS antenna.
E20	DGPS Signal Loss • The Satellite Count is logged with the error.	When the GPS Lock Status transitions from DGPS to Standard. GPS Position must be enabled.	No	Check for clear path above the GPS antenna.
E21	Flow Rate Below Low Flow Limit	After operating pressure has been achieved, while the Machine is running with water on, the flow rate fell below the low flow limit. Minimum flow rate must be enabled.	Yes - by Flow Fault.	Low Flow Limit may be set too high.
E22	Pressure Above High Pressure Limit • Error is logged every time the water pressure rises above the High Pressure Limit.	Every time the water pressure rises above the High Pressure Limit.	Yes - by High Pressure Fault after the High Pressure Shutdown Delay of 15 seconds.	Max pressure may be set too low. Contact your Valley Dealer.
E23	PLC Communication Error • The OPMC ID is logged with the error.	After 3 consecutive command messages are sent to an OPMC ID with no reply message being received.	No	Verify Correct PLC Channel and ID Settings.
E24	Valve Duty Cycles Re-Synced Due to High Pressure	When the water pressure exceeds the VRI Resync Pressure.	No	The machine water pressure is equal to the valve resync water pressure setting. The valve duty cycle is automatically re-syncronized. Verify that the valve resync pressure is not set too low.

System Error Codes (Continued)

Error	Description	Threshold	Shut Down	Possible Causes Corrective Actions
E25	GPS Coordinates Out of Range • The Satellite Count is logged with the error.	When GPS coordinates are out of range.	Yes, if Shut Down System is selected.	Verify that Distance to GPS, Radius + or Radius -,values are correct. Verify that pivot point coordinates are correct. Crosstalk from another GPS device on the same channel. Change GPS PLC to different channel to avoid crosstalk.
E26	Low Tire Pressure • The tower number is logged with the error. • The error is logged for only one tower at a time. • If the error is already logged on a tower, errors on a different tower will not be logged. • Correct the problem and clear the error log to view other occurrences.	When new data indicates a tire with pressure at or below the tire pressure warning value is on the indicated tower.	Yes - after 2 consecutive readings of pressure below Shutdown Pressure Drop if Shutdown Pressure is enabled.	At least one tire on the indicated tower has low pressure.
E27	TPMS Communications Error • The TPMS ID is logged with the error.	After 3 consecutive command messages are sent to an TPMS ID with no reply message being received.	No	Contact your Valley Dealer.
E28	VDC Error Report Message Received	When a Communication board error report message is received from the comm board.	No	An error report was generated in response to a command. View the Error Report in System/Diagnostics/Error Codes/Comm Board.

System Error Codes (Continued)

Error	Description	Threshold	Shut Down	Possible Causes Corrective Actions
E29	Valley GPS communication error, master OPMC	The SRB was unable to communicate to the master OPMC.	No	Contact your Valley Dealer.
E30	Valley GPS Error Report message received	When a communication Error Report message is recieved from the PLC.	No	An error report was generated in response to a command. View the Error Report in System/Diagnostics/Error Codes/Valley GPS.

Troubleshooting List

Listed in the table below and on the following page are various problems, with the descriptions and possible causes or corrective action to take.

Problem	Possible Cause or Corrective Action
Encoder position is not accurate	Pivot point binding
	J-tube overtightened or seized
	Pipe not secured to H-bracket
	Collector ring loose
	Direction Offset incorrect
	Contact your Valley Dealer
Pivot auto reverses randomly	Contact your Valley Dealer
Pivot auto stops randomly	Contact your Valley Dealer
Pivot breaks safety at barricade	Barricade too high on actuator arm
	Auto-Reverse/Auto-Stop disabled
	Auto-Reverse/Auto-Stop box not adjusted correctly
	Contact your Valley Dealer
Pressure sensor reading incorrect	Pressure sensor setup is not correct
	Calibrate sensor without water
	Check valve holding water in riser
	Ice against sensor
	Sensor plugged
	Pressure tube plugged or damaged
	Contact your Valley Dealer
No display	Disconnect switch Off
	No Power To Machine
	Contact your Valley Dealer
End gun does not shut off	End Gun angles not programmed correctly.
	"T" filter plugged
	Defective end gun hardware
	Direction offset incorrect; arc too small
	Contact your Valley Dealer
End gun does not turn on	End Gun angles not programmed correctly
	End Gun disabled
	Defective end gun hardware
	Contact your Valley Dealer
Screen cycles on and off	Erratic incoming power
	Low voltage
	Contact your Valley Dealer

Troubleshooting

Troubleshooting List (continued)

Problem	Possible Cause or Corrective Action
Pivot does not stop at stop-in-slot	Stop-In-Slot not turned on
	Stop-In-Slot position has been changed
	Machine must move at least 2° away from the Stop-In-Slot position before it can be stopped again by Stop-In-Slot
	Contact your Valley Dealer
Pivot won't auto restart	START$ program written incorrectly or missing.
	Restart criteria has not been met
	Off day in Daily Ops
	System fault other than power or pressure
	Contact your Valley Dealer
Pivot won't stop with Daily Ops	Start/stop times reversed
	Daily Ops not enabled
	A program other than Daily Ops starts machine
	The STOP$ Program must be set to stop
	Contact your Valley Dealer
Auto Restart does not work	Make sure a Start$ program is entered.
	System fault must be either power or pressure for restart to work
	Verify that Auto Restart is enabled and on
	Verify that Battery Backup is disabled if the backup battery is not present
	Contact your Valley Dealer

ICON10 / ICON1 User Interface

Default Reset

A Default Reset, resets the Electrically Erasable Programmable Read-Only Memory to factory default settings.

- Clears Notes.
- Resets Language to factory settings.
- Resets Main Screen Field, Status and controls to factory settings.

Executing a Default Reset

To execute a Default Reset, refer to Figure 81-1 and do the following:

1. Record all notes and user preferences that will need to be re-entered after the default reset.
2. Push **Menu**, **System**, **Diagnostics** and **Firmware**.
3. Push **ICON10 Default Reset**.
4. Push **Reset** to set the ICON10 interface back to factory defaults.

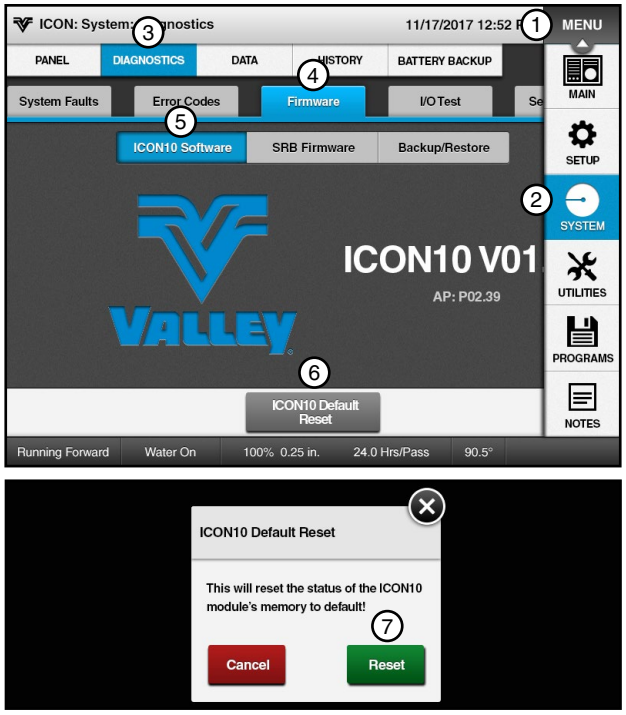


Figure 81-1

1. Menu
2. System
3. Diagnostics
4. Firmware
5. ICON10 Software
6. ICON10 Default Reset
7. Reset

Smart Relay Board

Default Reset

A Default Reset, resets the Electrically Erasable Programmable Read-Only Memory to factory default settings.

- Resets current status to factory settings.
- Resets all constants to factory settings.
- Resets all options to factory settings.
- Erases all current and stored programs.
- Clears Review History.
- Clears Error Log history.

Executing a Default Reset

To execute a Default Reset, refer to Figure 81-2 and do the following:

Record all options settings, constants settings, and programs that will need to be re-entered after the default reset.

1. Push **Menu**, **System**, **Diagnostics, Firmware,** and **SRB Firmware**.
2. Push **SRB Default Reset**.
3. Push **Reset** to set the Smart Relay Board to factory defaults.

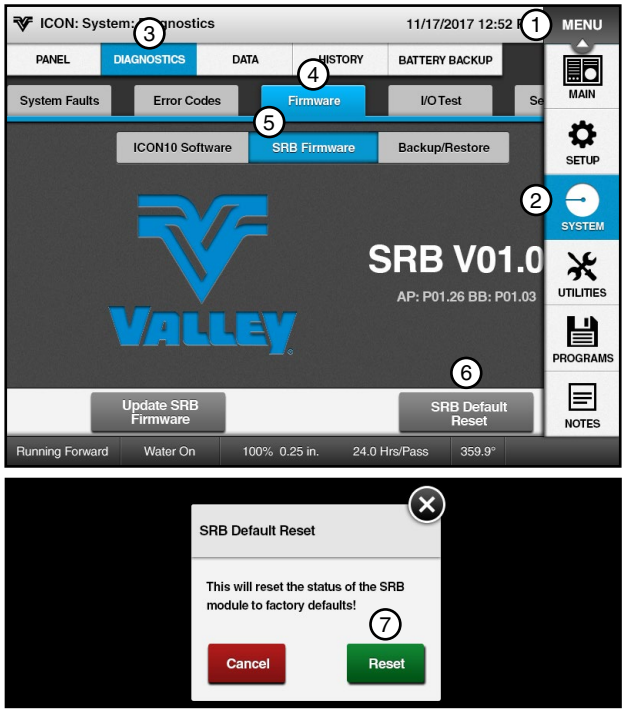


Figure 81-2

1. Menu
2. System
3. Diagnostics
4. Firmware
5. SRB Firmware
6. SRB Default Reset
7. Reset

Smart Relay Board

Update SRB Firmware

Updating SRB Firmware, uploads the most current version of firmware and preserves panel settings.

Executing SRB Firmware Update

Refer to Figure 82-1 and do the following:

1. Push **Menu**, **System**, **Diagnostics**, **Firmware,** and **SRB Firmware**.
2. Push **Update SRB Firmware**.
3. Push **Yes** to start the update process.
4. Insert USB flash drive into SRB port located on the front of the panel.
5. Push **Read USB**.
6. Select desired file from the files found.
7. Push **Program File** to update the firmware.
8. The control panel will automatically reboot after completion of the SRB Firmware Update.
9. After the SRB Firmware update completes, the USB flash drive can be removed.

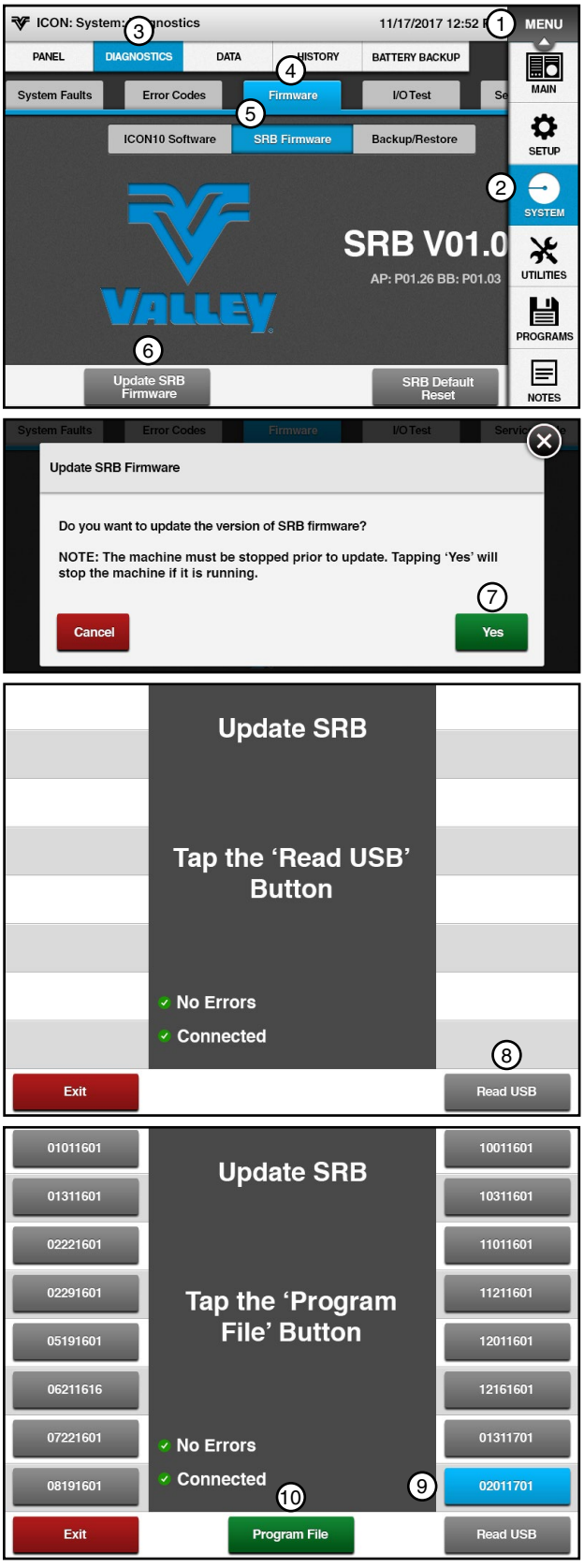


Figure 82-1

1. Menu
2. System
3. Diagnostics
4. Firmware
5. SRB Firmware
6. Update SRB Firmware
7. Yes
8. Read USB
9. Selected File
10. Program File

Smart Relay Board

Backup Panel Settings

The Backup / Restore screen, allows the user to create and restore panel settings to and from a USB flash drive. Each of the files create restore points to load at a later date.

- Saves current statuses.
- Saves all current constants.
- Saves all options.
- Saves all current and stored programs.
- Saves Review History.
- Saves Error Log history.

Creating a Backup File

To create a Backup File, refer to Figure 83-1 and do the following:

1. Push **Menu**, **System**, **Diagnostics, Firmware,** and **Backup / Restore**.
2. Insert USB flash drive into the SRB slot on the front of the control panel.
3. Push **Backup Panel Settings**.
4. Push **Yes** to create a backup file.
5. Push **Name File** to open the keyboard.
6. Enter the file name, The file name can be one to eight characters long.
7. Push **Enter** to create backup file.

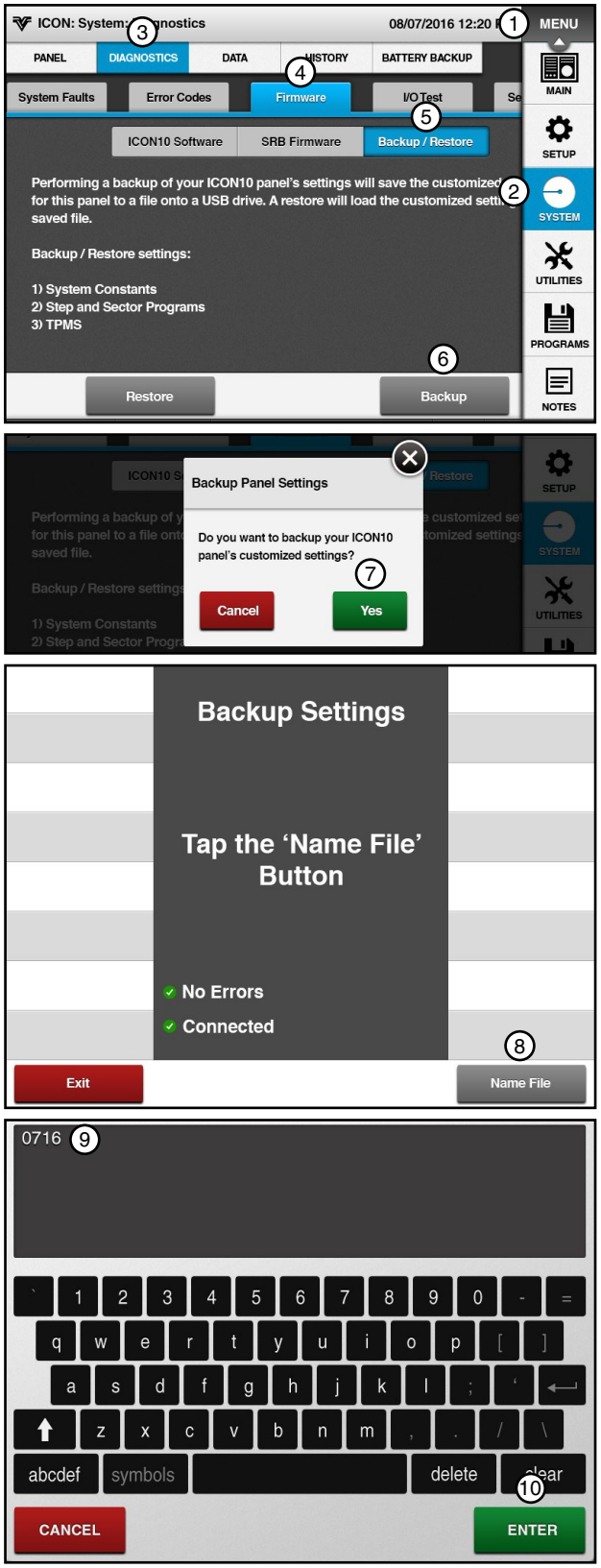


Figure 83-1

1. Menu
2. System
3. Diagnostics
4. Firmware
5. Backup / Restore
6. Backup Panel Settings
7. Yes
8. Name File
9. File Name
10. Enter

Smart Relay Board

Backup Panel Settings (continued)

8. The named backup file appears on the screen.
9. Push **Backup File** to save the backup file to the USB flash drive.
10. After the backup file is saved, the USB flash drive can be removed.

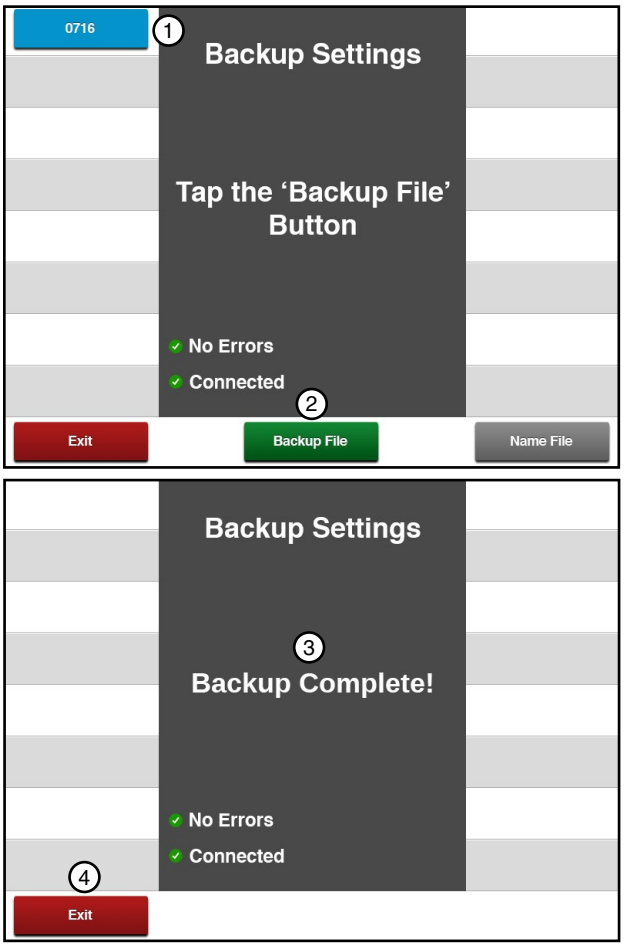


Figure 84-1
1. Select Backup File
2. Backup File
3. Backup Complete
4. Exit

Smart Relay Board

Restore Panel Settings

The Restore screen, allows the user to choose a file containing saved system constants, Step and Sector programs and TPMS. A restore will load the customized settings from a saved file.

- Restores all System Constants.
- Restores all Step and Sector Program settings.
- Restores all TPMS settings.

Restoring a Backup File

To restore a Backup File, refer to Figure 85-1 and do the following:

1. Insert USB flash drive into the SRB slot on the front of the control panel.
2. Push **Menu**, **System**, **Diagnostics** and **Backup/ Restore**.
3. Insert USB flash drive into front of panel.

   An error message may appear. Follow the screen prompts to clear the error.
4. Push **Read USB**.
5. Select file to be restored.
6. Push **Restore File** to restore selected file.
7. Panel will automatically restart to confirm successful completion of Restoration of Panel Settings.

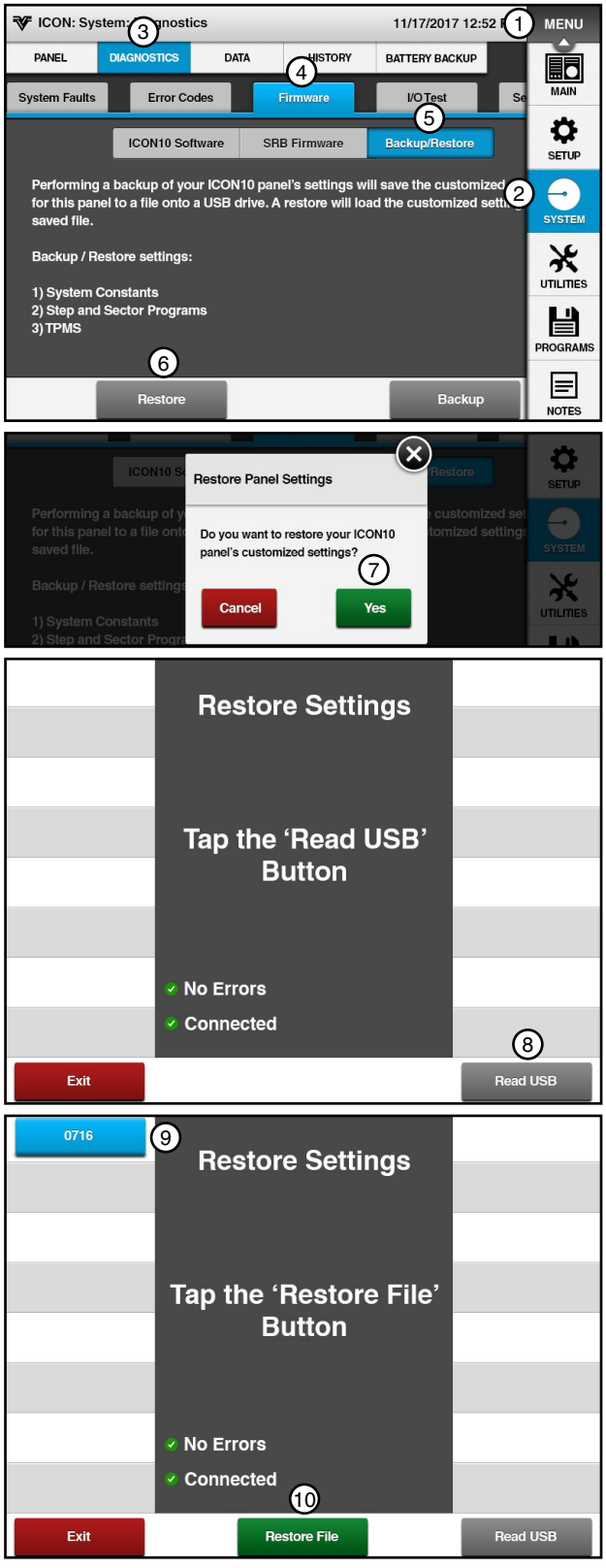


Figure 85-1

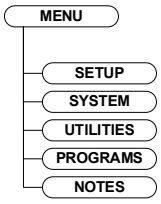
1. Menu
2. System
3. Diagnostics
4. Firmware
5. Backup / Restore
6. Restore
7. Yes
8. Name File
9. Selected File
10. Restore File

Navigation

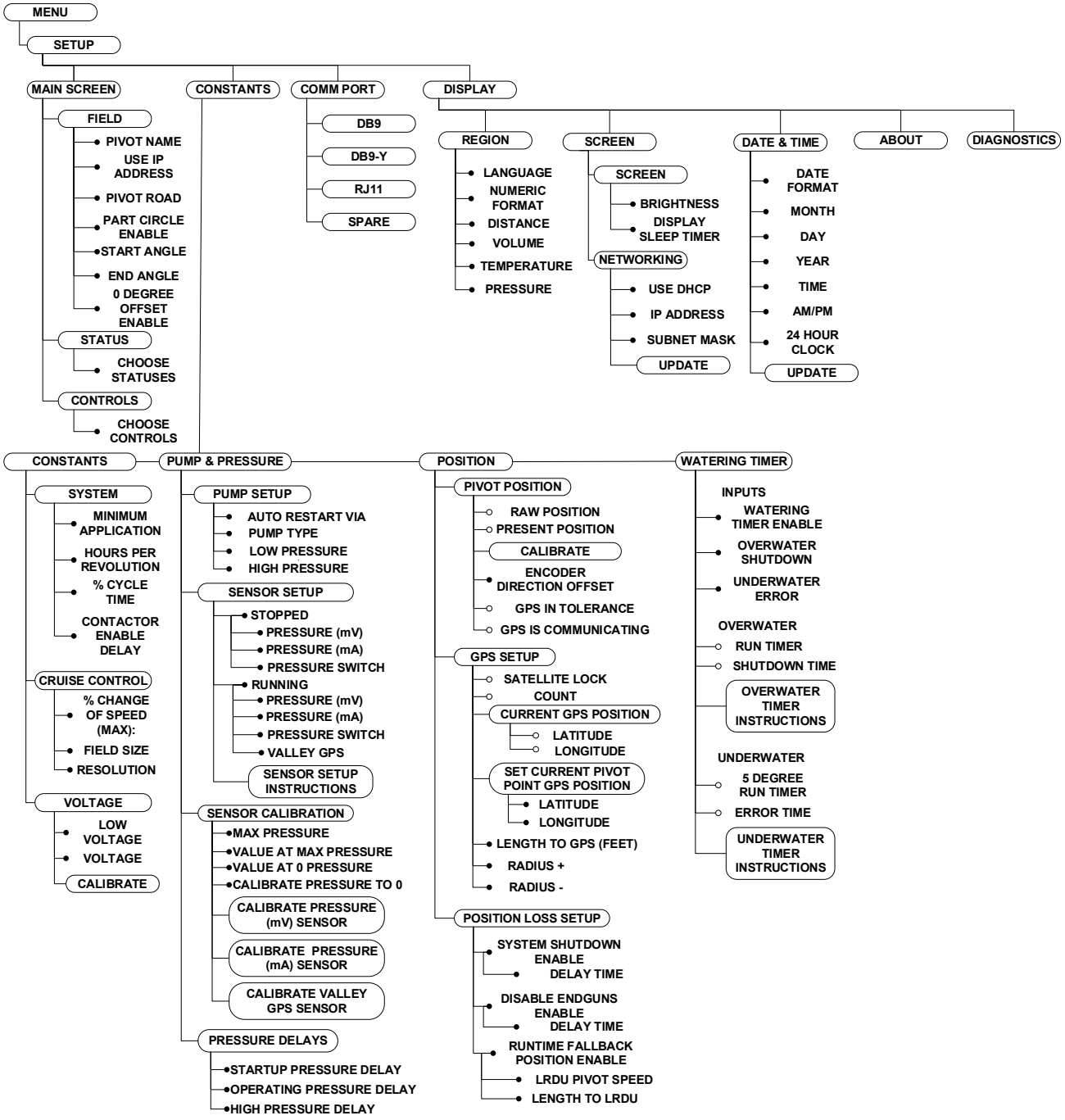
The following flowcharts are provided to help you navigate to settings, values, statuses, indicators and the advanced features, associated with the Menu, Setup, System, Utilities and Program buttons.

Key:	Rounded Rectangles indicate Buttons used for menu navigation.	BUTTON
	Closed Bullets indicate User Input Settings and Values.	BUTTON SETTING/ VALUE
	Open Bullets indicate View Only Status and Status Indicators.	BUTTON STATUS/ INDICATOR

Menu Button

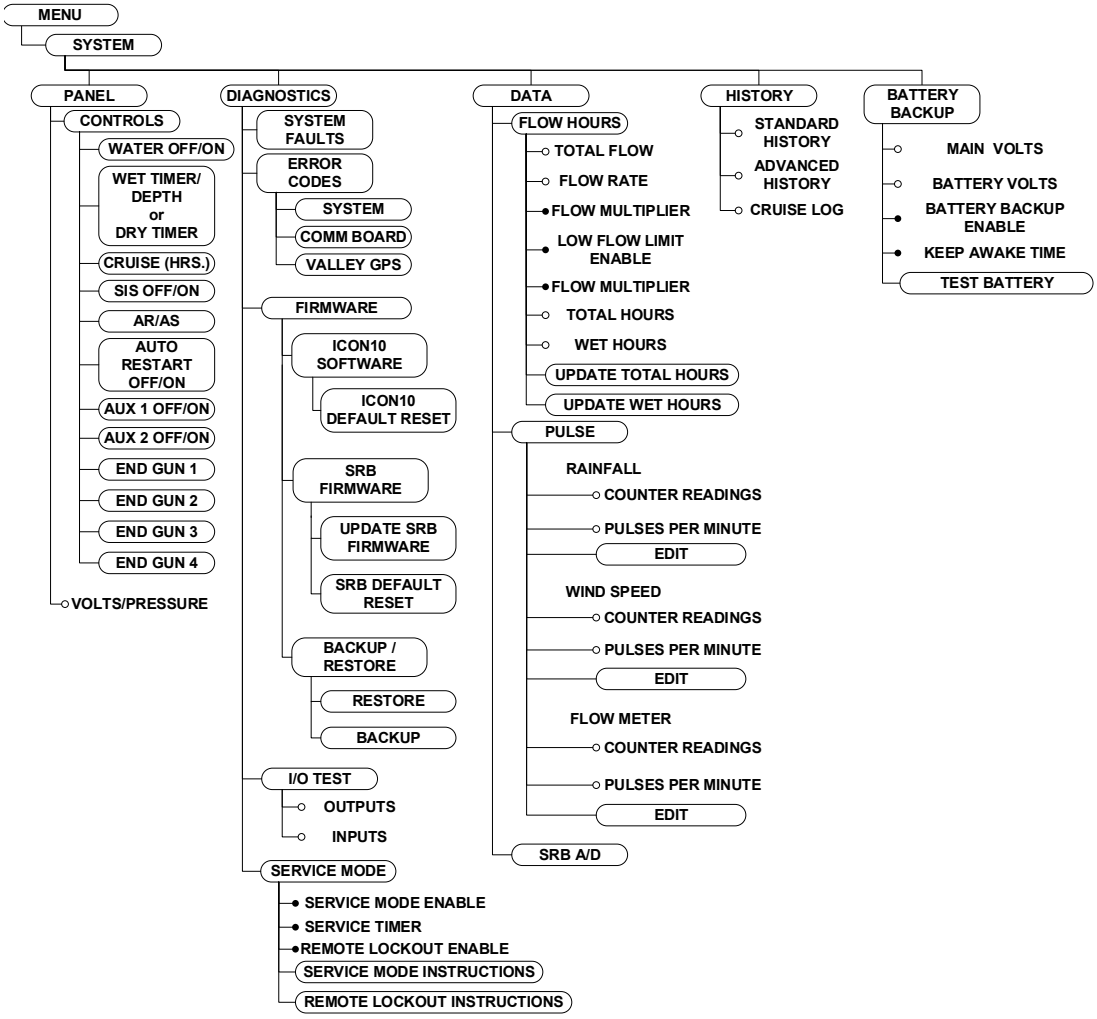


Setup Button

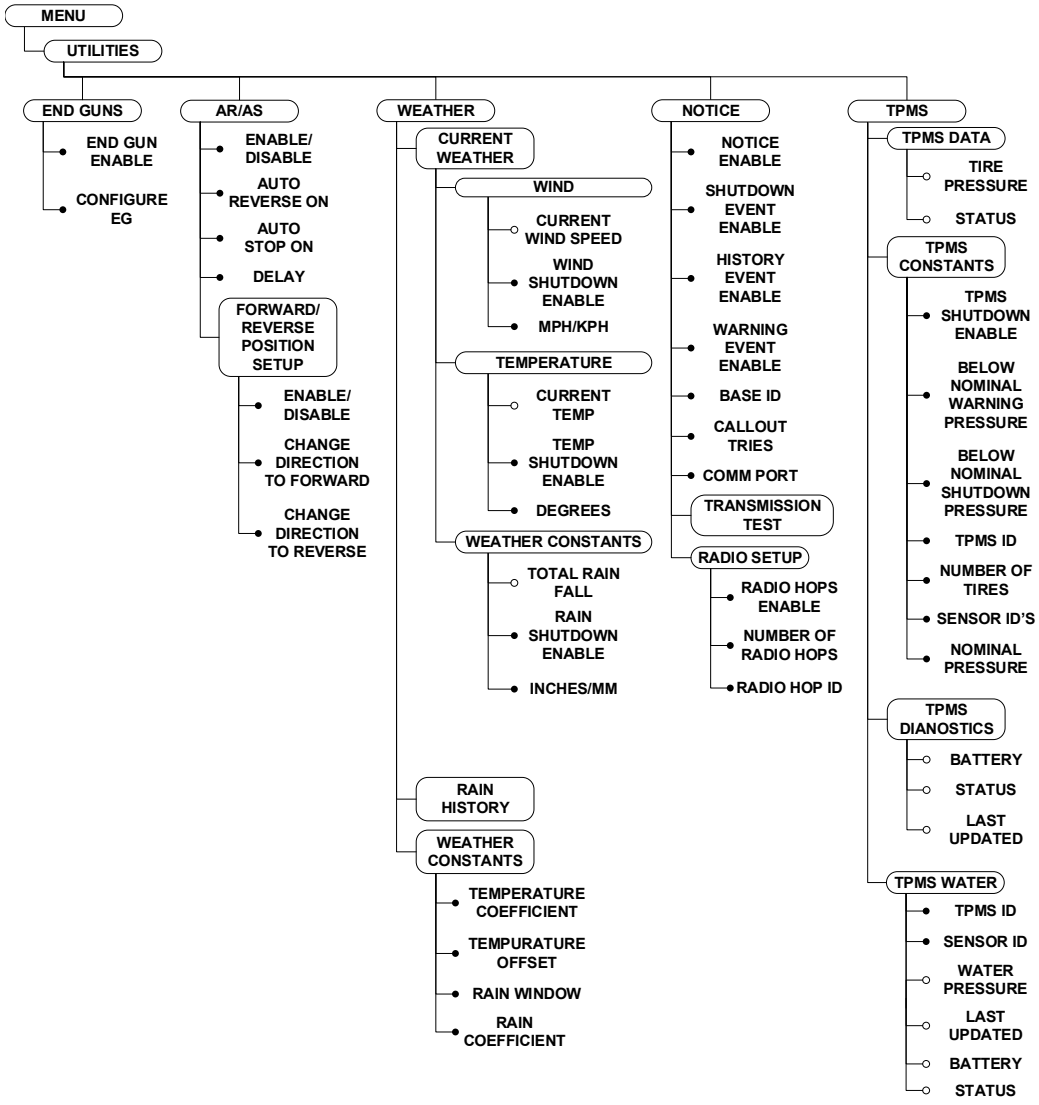


Navigation

System Button

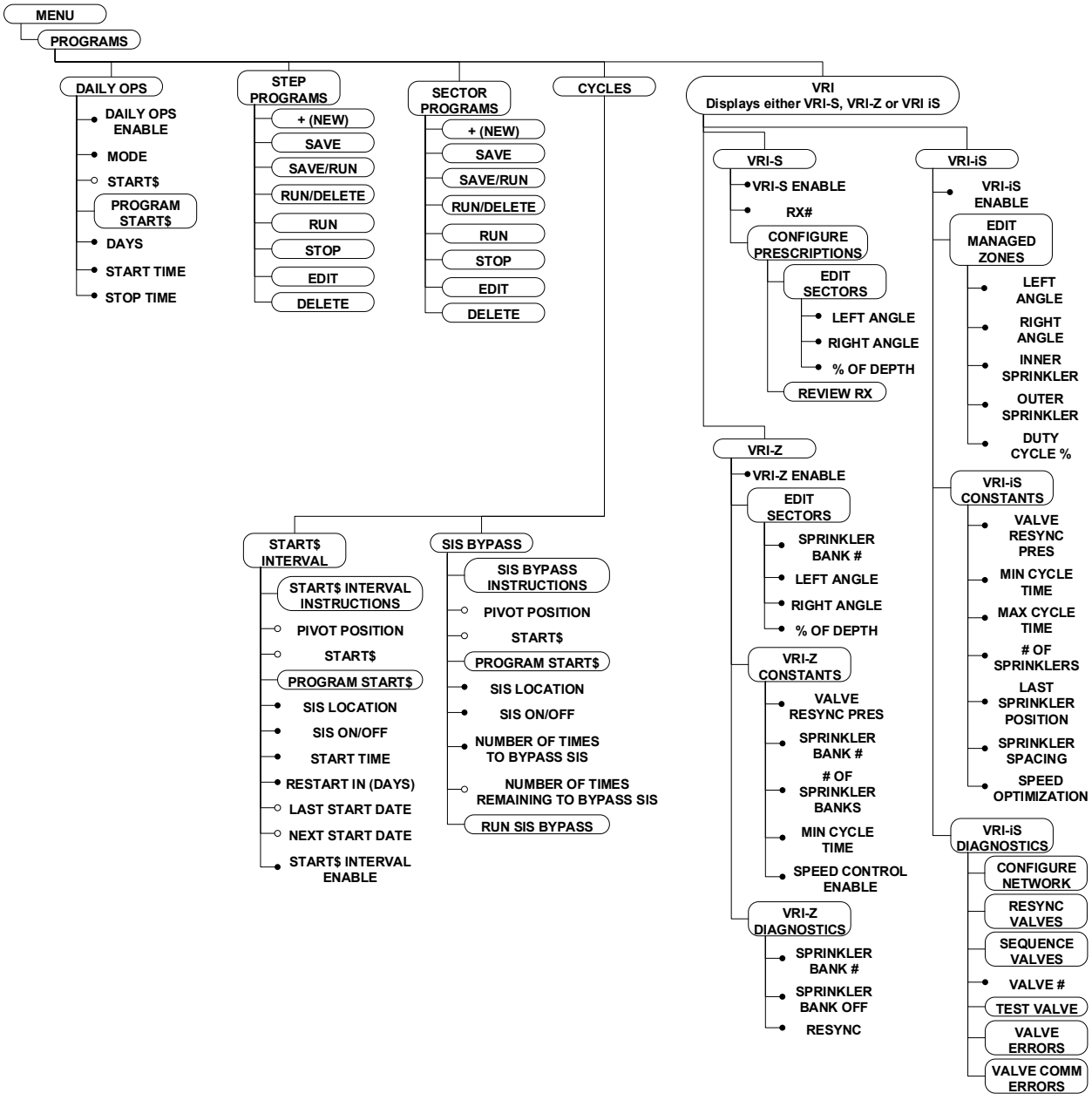


Utilities Button

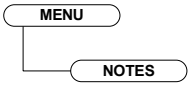


Navigation

Programs Button



Notes Button



Navigation