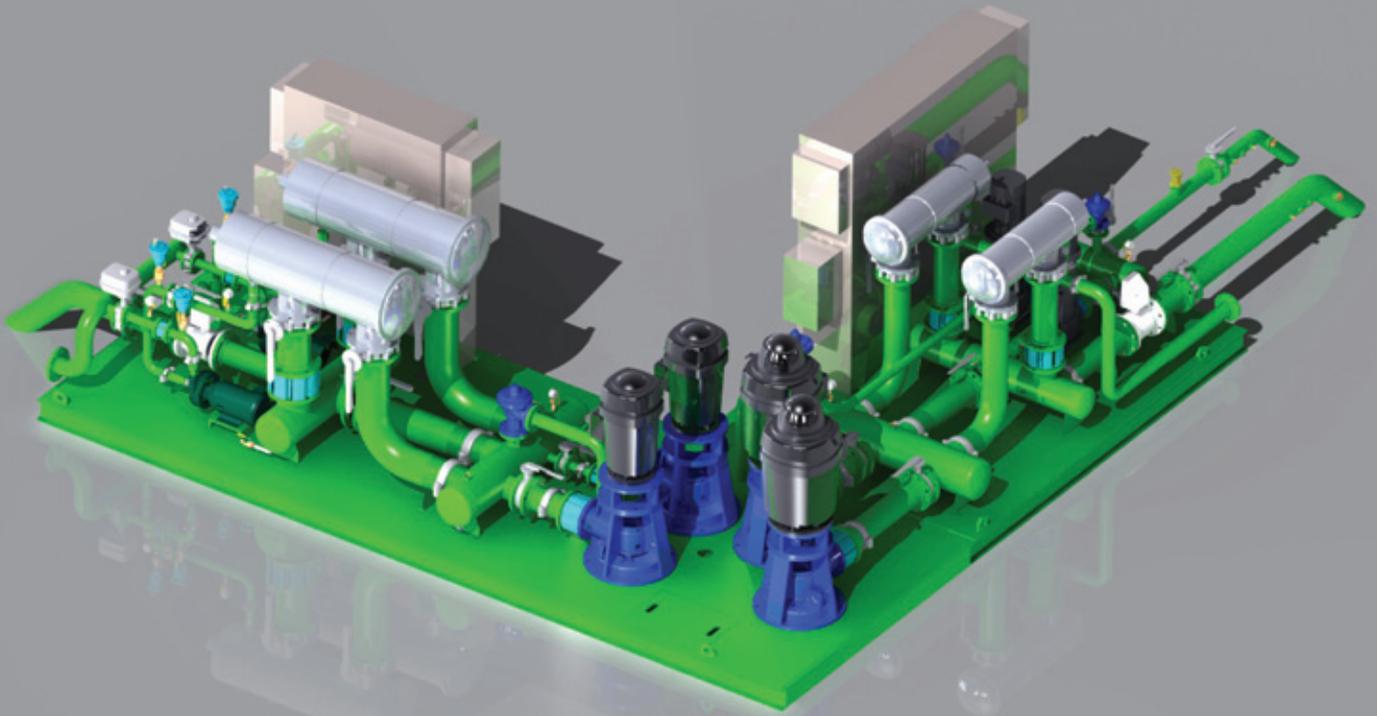




Pump Station Operator Training Checklist



Operator Training Checklist

The following outlines the Operator training required upon successful Start-Up of every Rain Bird Pump Station. The Authorized Service Provider (ASP) will provide the training and any necessary resources to the Operator(s). After the Operator(s) are trained, the ASP will return the signed and completed checklist portion to Rain Bird Services Corporation (RBSC) at dispatching@rainbird.com or fax to (520) 741-6168. **The signature is required to authorize and initiate the Pump Station Warranty.** The Operator will be supplied a paper and digital copy of the User Manual for reference.

The training will require 2 – 4 hours depending on the complexity of the pump station. The ASP will conduct training sequentially using this document as the curriculum and the User Manual as the reference.

Required Items

This Operator Training Checklist
Rain Bird Pump Station User Manual
Pump Curves
Approval Drawing
Electrical Schematic

Safety Message

Take note of the following important definitions for messages included throughout the user manual.

WARNING: An operating or maintenance procedure, practice, condition, statement, which if not strictly observed could result in injury to or death of personnel or long term health hazards.

CAUTION: An operating or maintenance procedure, practice, condition, statement, which if not strictly observed could result in damage to or destruction of equipment.

NOTE: An operating procedure, condition or statement, which is essential to highlight.

Training Tasks and Standards

Rain Bird's Pump Station Professional Customer Satisfaction Policy

ASP – Locate Rain Bird's Pump Station Professional Customer Satisfaction Policy in the User Manual for the Operator's reference.

Identify Mechanical Components and Functions

This basic identification training is designed to remove any confusion and misconceptions encountered in the field. For example, in legacy systems pressure was regulated using a Pressure Control Valve which is very similar to the Pressure Relief Valve utilized on Rain Bird Pump Stations. However, the PRV on Rain Bird's VFD Pump Station has a different purpose and function. Reference the User Manual Chapter 1 for part identification and explanation. This section requires 10 to 30 minutes for training.

ASP

1. Disable Pumps on the Touch Screen to prevent sudden activation while training on and around the skid.
2. Orient the Approval Drawing to the Pump Station and identify the location of each part on the drawing with the physical part on the station.
3. Review the purpose and operation of each component. Pay particular attention to the following items if installed.
 - a. Automatic Filtration
 - b. Inlet Strainer
 - c. Lake Level components
 - d. Fertigation equipment
 - e. Other customized equipment

Operator

1. Circle the components, listed in Chapter 1 of the User Manual, that are included on the Pump Station.
2. Annotate any additional custom parts in the blank spaces provided.
3. Correctly identify and describe the function and operation of each mechanical component on the Pump Station listed in Chapter 1.

Identify Electrical Components and Functions

The intent of the following training is to familiarize the Operator with the electrical equipment used to control the station as well as safety considerations. The Operator may be required to reset Circuit Breakers, identify a damaged part and perform regular visual inspections. Reference the User Manual Chapter 2 for part identification. This section requires 10 to 30 minutes for training.

WARNING: Only trained and qualified personnel in accordance with OSHA regulations may break the plane of (reach into) an energized electrical panel.

ASP

1. Identify the wall mounted electric service disconnect switch from the secondary side of the power transformer and the Pump Station's Control Panel Disconnect Switch.
2. Demonstrate the proper method to de-energize the Pump Station's Electric Control Panel by first disabling all pumps, opening the Disconnect Switch on the Pump Station Electric Control Panel then opening the wall mounted service disconnect switch.
3. With a de-energized Electric Control Panel, identify each electrical component. Review its purpose and operation.
4. Identify and demonstrate resetting each Circuit Breaker.
5. Demonstrate the proper method to secure and reenergize the Electric Control Panel.

Operator

1. Correctly de-energize the Electric Control Panel.
2. Correctly identify and explain each electrical component.
3. Trip and reset at least one Circuit Breaker.
4. Secure and reenergize the Electric Control Panel.
- 5.

Touch Screen Introduction

Reference the User Manual Chapter 3 for details. This section requires 20 to 40 minutes for training.

ASP

1. Provide Level 1 and 2 Login Codes.
2. Instruct the Operator to Login Level 2.
3. Navigate to and explain each of the displays listed under Basic Navigation in Chapter 3. The Operator will utilize these displays when inspecting or adjusting the Pump Station.
4. Review the Pump Status Buttons and explain each condition.

Operator

1. Correctly enter the Level 2 Login Code.
2. Navigate to the correct Touch Screen display in order to remedy each of the following hypothetical situations:
 - a. The mainline pressure is too high. The PRESET parameter needs to be reduced.
 - b. The pump does not start when the discharge pressure drops significantly below the PRESET. The start parameters need to be adjusted.
 - c. The Pressure Maintenance Pump cycles too often due to a leaky system. The PM start parameters need to be adjusted.
 - d. During a regular inspection the discharge pressure and flow rate need to be observed.
 - e. Pump #1 needs to be temporarily disabled for troubleshooting.
3. Correctly explain each Pump Status Button condition.
4. Enable and Disable a pump.

Parameter Definition and Adjustments

ASP – Guide the Operator through the Parameter Definition chart in Chapter 3.4.

Operator – Record each parameter value from the Touch Screen on the Parameter Definition chart for future reference.

Normal Pump Station Operations

This section is an overview of regular procedures an Operator must be familiar with. Do not proceed to the next section until the Operator fully understands the procedure and safety considerations. The training below requires 20 to 40 minutes.

Alarm Reset Procedures

ASP

1. Locate the Alarm Reset Procedures in Chapter 4.1 of the User Manual.
2. Instruct the Operator to navigate to the ALARM display.
3. Explain the layout and difference between active and historical alarms.
4. Explain the 2.5 second alarm RESET button. Alarms will not reset if the alarm condition continues to exist.

Manual VFD Operations

ASP

1. Instruct the Operator to navigate to the MANUAL MODE display.
2. Review all applicable WARNING, CAUTION and NOTE messages in Chapter 4.2.
3. Review the Manual VFD Operations procedure outlined in the User Manual.
4. Ensure the Operator understands that every enabled pump other than the selected ADJUSTABLE PUMP will start at 100%.

Operator

1. Acknowledge all applicable WARNING, CAUTION and NOTE messages in the User Manual.
2. Identify a VFD driven pump. Executing the procedure in the User Manual, manually start the pump and ramp to 50% speed. Incrementally increase the speed until the desired discharge pressure is reached.
3. Disable the pump and return station to automatic operation.

Start-Up Procedures

ASP

1. Review the Empty Pipe Start-Up Procedures in Chapter 4.3.1 of the User Manual.
2. Ensure the Operator is familiar with the increased hazard of filling an empty pipe due to potentially high fluid velocity, water hammer and pressure surging.
3. Review the Full Pipe – depressurized Start-Up Procedures in Chapter 4.3.2.
4. Disable all pumps and open a small irrigation zone and allow the pressure to drop to below 50% of the PRESET parameter to simulate a full but depressurized mainline.

Operator

1. Review the Full Pipe- depressurized Start-Up Procedure.
2. Demonstrate the Manual Technique Start-Up Procedure to return the discharge pressure to the PRESET pressure. This is the preferred method to recover from a fault or inadvertent pump shutdown during irrigation.

Emergency PLC Bypass Operations

Due to acts of nature, lightning strikes or other situations, the PLC, Touch Screen or VFD may become damaged and rendered inoperable. In order to save expensive turf investments it may be necessary to bypass the damaged PLC or VFD to continue irrigating. There are many techniques however Rain Bird recommends the following for simplicity and safety. Automatic pressure control and electronic safeties are not available during PLC Bypass Operations. Circuit breaker protection will still be operational.

ASP

1. Review the Main Pump Curve in Appendix A to illustrate:
 - a. Pressure produced by a pump increases dramatically at low flow rates.
 - b. Increasing flow demand will reduce the pressure produced by a pump.
 - c. Identify the Best Efficiency Point (BEP) of each pump
2. Review all applicable WARNING, CAUTION and NOTE messages in Chapter 4.4.
3. Review and discuss the procedure and any additional safety considerations applicable to this site.

The Operator shall be able to demonstrate a working knowledge about safety considerations and the technique outlined in Chapter 4.4 of the User Manual. Executing the Emergency PLC Bypass procedure is optional at the discretion of the Owner. The intent is to provide awareness not only of the risks associated with this procedure but the ability to safely execute irrigation with manual control if it becomes necessary.

Lake Level Operations

If lake level sensors are installed and operational conduct the following training so the Operator will be able to identify the type and locations of Lake Level sensors installed on the station and distinguish the difference between the sensors and a Low Level Safety Switch if installed.

ASP

1. Identify the type and location of Lake Level sensors.
2. Instruct the Operator to navigate to the LAKE LEVEL display.
3. Review the applicable parameters using the Parameter Definition in Chapter 3.4 and Lake Level Operations in Chapter 4.5 of the User Manual.
4. If the Ultrasonic Sensor is used, identify the location of The Probe Setup Instructions in the Appendix of the User Manual.

Filter Control Operations

If an Automatic Filtration System is installed and operational, conduct the following training so the Operator will be able to configure the display as necessary.

ASP

1. Instruct the Operator to navigate to the FILTER display.
2. Review the function of each parameter and button using the Parameter Definition chart in Chapter 3.4 and the Filter Control Operations section in Chapter 4.6.

Station Maintenance Tasks

This section requires 30 to 45 minutes for training. This Pump Station, consistent with all machines, requires preventative maintenance to enhance reliability and extend service life. Rain Bird recommends employing our extensive ASP network to perform semiannual service and regular inspections. As a minimum for warranty assurance, the Owner will ensure the procedures outlined in the Preventative Maintenance Schedule are completed including the Powder Coat Touch-Up and Winterization Procedures when necessary.

Pump Station maintenance tasks should be accomplished by a trained Authorized Service Provider (ASP) due to inherent danger from high voltage, high pressure and rotating equipment as well as required specialized skills. Contact Rain Bird GSP to schedule service. See the available Rain Bird Preventative Maintenance Plans for extended service.

Preventative Maintenance Schedule

ASP

1. Review the Preventative Maintenance Schedule outlined in Chapter 5.1 of the User Manual.
2. Explain the importance of not storing equipment and supplies on the skid or piping.
3. Explain the importance of regular visual inspections and keeping the station clean and dry.

PRV Adjustment Procedure

If a PRV is installed, perform the following training.

ASP

1. Review all applicable WARNING, CAUTION and NOTE messages in Chapter 5.2.
2. Discuss the safety role of the PRV and briefly discuss its operation.
3. Show the position of each valve for proper operation.

The Operator should be familiar with the function of the PRV and the normal sound it makes when it flushes. Executing the PRV Adjustment Procedure is optional and at the discretion of the Operator.

Powder Coating Touch-Up Procedure

ASP

1. Locate the procedure in Chapter 5.3 for the Operator to reference.
2. Discuss the importance of timely repairs to any damaged areas of the protective powder coat layer. Failure to perform this procedure when necessary will reduce the life of the Pump Station.

Winterization Procedures

ASP

1. Refer to Rain Bird's Pump Station Professional Customer Satisfaction Policy. Discuss the importance of winterizing a station as freeze damage is not covered by the warranty.
2. Locate the procedure in Chapter 5.4 for the Operator to reference.
3. Briefly discuss the concept of removing all water from the entire station especially the Pressure Transducer, Heat Exchanger, PRV and each Pump.

Global Service Plan (GSP) Support Instructions

ASP – Locate the instructions in Chapter 5.5 for the Operator to reference.

Communication Tasks

If Central Control / Pump Station Communications are installed and operational, perform the following training. No more than 20 minutes are required to provide an overview.

ASP

1. Identify the type and location of modems and communication cables.
2. Verify the Operator has a working knowledge of the relationship between the Pump Station's Touch Screen, communication equipment, Pump Manager, Smart Pump and the Central Control irrigation scheduling.

Basic Troubleshooting

This section requires 20 to 30 minutes for training. Discuss the key troubleshooting concepts from Chapter 6.0 in the User Manual. The intent is for the Operator to be able to navigate to the ALARM display, interpret the problem, perform accurate corrective action steps and return the system to normal automatic operation. If unable to resolve the issue, the Operator accurately documents the symptoms and provides Rain Bird GSP all necessary information for further troubleshooting or repair.

ASP

1. Locate Chapter 6 for the Operator to reference.
2. Review all applicable WARNING, CAUTION and NOTE messages.
3. Review and discuss the key concepts.
4. Identify the Parameter Adjustment Worksheet in Chapter 6.0.2 as well as the Parameter Definition chart in Chapter 3.4 where all initial parameter values were recorded.
5. Choose any two Troubleshooting Procedures and review the steps.

Administration

Please review and complete the Rain Bird Operator Training Checklist below. The Operator's signature is required to authorize and initiate the Pump Station Warranty. List any unanswered questions or comments for improvement on the back of the checklist and return only the checklist/notes portion to Rain Bird Services Corporation by fax or email at dispatching@rainbird.com or (520) 741-6168.

Rain Bird Operator Training Checklist

	Min Time	Max Time
<input type="checkbox"/> Identify Mechanical Components and Functions	10 minutes	30 minutes
<input type="checkbox"/> Identify Electrical Components and Functions	10 minutes	30 minutes
<input type="checkbox"/> Touch Screen Introduction	20 minutes	40 minutes
<input type="checkbox"/> Login Codes		
<input type="checkbox"/> Basic Navigation		
<input type="checkbox"/> Pump Status Buttons		
<input type="checkbox"/> Parameter Definition and Adjustments		
<input type="checkbox"/> Normal Pump Station Operations	30 minutes	45 minutes
<input type="checkbox"/> Alarm Reset Procedures		
<input type="checkbox"/> Manual VFD Operations		
<input type="checkbox"/> Start-Up Procedures		
<input type="checkbox"/> Emergency PLC Bypass Operations		
<input type="checkbox"/> Lake Level Operations		
<input type="checkbox"/> Filter Control Operations		
<input type="checkbox"/> Station Maintenance Tasks	30 minutes	45 minutes
<input type="checkbox"/> Preventative Maintenance Schedule		
<input type="checkbox"/> PRV Adjustment Procedure		
<input type="checkbox"/> Powder Coating Touch-Up Procedure		
<input type="checkbox"/> Winterization Procedure		
<input type="checkbox"/> Communication Tasks	0 minutes	20 minutes
<input type="checkbox"/> Basic Troubleshooting	20 minutes	30 minutes

I have received the training outlined above and now obtain adequate knowledge and understanding to operate this Pump Station safely.

I have NOT received the training outlined above due to: _____

I accept responsibility for the Pump Station and release the ASP from:

Job Name: _____ Pump Station SN: _____

Owner/Operator: _____ Date: _____

ASP: _____ Date: _____

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