

Irrigation System Maintenance Check Sheet



Maintenance Description	Frequency			Other
	Weekly	Monthly	Annually	
Central Control Systems				
Database Back-up	Back-up current program and map databases.		Back-up all historical log and weather data files.	Contact GSP for back-up on Rain Bird servers.
Programming	Fine tune program water budgets and station runtimes to account for micro-climates, seasonal, and daily changes.			Follow weather station maintenance schedules to ensure accurate ET data when operating automatically.
Station Data Accuracy	Update station data tables to match hardware changes in the field.			Verify that all sprinkler, precipitation and default run time data is accurate.
CPU Housekeeping	Reboot computer every 1-2 weeks.	Delete temp files, and perform scan disk and defragmentation utilities. Remove any unused programs.	Remove dust from CPU tower. (Don't use shop compressor. Use air duster cans. Stay clear of microprocessor)	Keep serial cables and components labeled for ease of troubleshooting.
Battery Back-up			Run battery runtime test to ensure long lasting operation. Replace batteries as needed	Install smart application shutdown software for batteries that are so equipped.
Earth Ground Testing			Check earth ground resistance during dry periods. Use clamp on tester. (< 5 Ohms)	Physically check all connections. Enhance grounding as needed.
Central Grounding Grid			Check wire splice connections. Repair as needed.	Clean valve box of debris.
Rain Bird Global Service Plan (GSP)			Renew Rain Bird GSP subscription, or check status and verify expiration date.	Ensures factory support, hardware warranty, and up to date software to take advantage of latest features.
Sprinklers				
Operation	Visually inspect operation on 6 holes per week. Clear clogged nozzles, and replace non-working sprinklers or components.			Maintain spare parts inventory.
Leveling			Level heads that have settled over time.	
Locating & Trimming				Continually locate and Trim around sprinklers throughout the growing season.
Pressure Testing			Pressure test a percentage of sprinklers across the golf course.	
Replacements		Check and replace any damaged sprinklers.		Check after aerification
Rotation Testing		Check rotation and proper ARC adjustments.		Check during spring start-up in climates that winterize.
Troubleshooting				See "Rotor Troubleshooting Guide D37420A" for further details.
Irrigation Field Audit				Every 3 – 5 years Conduct water distribution audit of the same 6 areas (2 greens, 2 tees and 2 fairways) to verify rotor performance and compare individual year test results.

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Valves				
Combo Vacuum / Air Release Valves			Open, close and flush to verify proper operation. (Spring, after start-up)	
Electric Valves	Visually inspect operation on 6 holes per week.		Check pressure regulators for proper settings and operation.	Maintain spare parts inventory.
Mainline Gate Valves			Exercise valves twice per year to reduce seizing. (spring / fall)	Do not lock valves open: Fully open, then turn one revolution toward closed position to prevent valve stem from being "locked".
Lateral Isolation Valves			Exercise valves twice per year to reduce seizing. (spring / fall)	Do not lock valves open: Follow guidelines above for Mainline Gate Valves
Drain Valves			Exercise valves twice per year to reduce seizing. (spring / fall)	Do not lock valves open: Follow guidelines above for Mainline Gate Valves
Quick Coupling Valves				
Maintenance			Inspect hose and hose end fittings and replace/repair as needed.	Continually: Locate and trim around QCV valves throughout the growing season.
Valve Boxes				
Maintenance		Inspect and replace any damaged valve box lids.	Level boxes that have settled over time.	Continually: Locate and Trim around boxes during the growing season.
Wire Splice Boxes				
Inspection		Inspect and replace any damaged valve box lids.	Verify proper splice connections. Repair as needed.	Use approved Rain Bird DB connectors for waterproofing.
Label Wires			Label incoming and outgoing maxi cable legs, and record proper Milliamp draw for decoder systems.	
Cleaning			Clean out dirt and debris caused by wash-ins, animals, and insects.	
Satellite Controllers				
Earth Ground testing			Check earth ground resistance during dry periods. Use Clamp on tester. (< 10 Ohms)	Physically check all connections. Enhance grounding as needed.
Physical Inspection	Inspect for damage. Check for component corrosion (circuit/terminal boards, ribbon cables, and connectors).	Clear debris from the pedestal base so doors shut and seal properly, and moisture is not "wicked" inside.		Keep lids locked for protection. Check latches, and gaskets for seal.
Infestations	Inspect for insect, reptile, and rodent infestation	Maintain insecticides, and rodenticides to reduce infestation.		Keep satellites clean and free from rodent nests, droppings, and debris.
Link Satellites			Inspect antenna, and cable connections.	Check LINK Diagnostics. Use radio scanner to troubleshoot non responding controllers.
Programming			Establish standalone back-up programs in case Central Com fails.	
Winter Programs (Northern Climates)	Run short programs to activate solenoids and verify proper operation and communication.			Keep satellites powered on during winter to minimize condensation, and corrosion.

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Decoder Systems				
Decoder System Field Interface Devices - MAXI Decoder Interface (MDI) - Large Decoder Interface (LDI) - Small Decoder Interface (SDI)			Maintain spare fuse inventory. Contact Rain Bird GSP for fuse specifications.	Daily: Check communication to field decoders for proper feedback. (See "Decoder System Manual" for further information)
Decoder diagnostics	Verify proper Milliamp current draw on each wire path. Run decoder diagnostic ON/OFF test to determine decoder or solenoid failures. (Perform tests after electrical storms)			(See "Decoder System Manual" for further troubleshooting information)
Solenoids	Observe system current draw during programmed irrigation. High current that exceeds decoder interface capacity can result in intermittent communication to field decoders and zeros in "Course Log".		Perform solenoid health checks by activating stations and monitoring wire path current. Individual solenoids should draw between 20-40 mAs during operation. Higher drawing solenoids should be checked for proper resistance (20-60 ohms).	Tip: Use the historical Decoder Current Graph log to identify and verify areas or stations that may be causing high current on the system during operation.
Earth Ground testing (LSP-1 locations)			Check earth ground resistance at sample of 10 ground rods during dry periods. Use 3-point Biddle type tester. (< 50 Ohms)	Physically check all connections. Enhance grounding as needed.
Installation / Maintenance & Troubleshooting				See "Decoder System Manual" for further information.
IC System™				
Integrated Control Interface (ICI)	Daily: Check the ICI Current Graph to inspect system health.		Maintain spare power fuse inventory. (1.5 amp (1/4 x 1 1/4) Slo-blo fuse).	Requires clean power. Power ICI with APC Smart-UPS Series UPS
ICI Communication Status				Daily: Check front cover LED. Solid green indicates communication to driver boards.
ICI CPU & Driver Board	CPU board LED blinks during ICM operation, programming, operation, and diagnostic testing.			Daily: Check driver board data LED. Intermittent flicker if communicating to ICM(s). Wire path LED should be solid red.
ICI Diagnostics	Verify proper Milliamp current draw on each wire path.			During installation, check current draw to verify proper field wire splices.
ICM Diagnostics	Run the "Voltage Measurement" test of internal ICM voltages to indicate field issues. < 20 volts will cause intermittent operation.		Run "QUICK CHECK" test during spring start-up to verify failures and also physical operation of ICM(s) in the field.	Daily: Run a "System Poll" test to check for proper ICM response. (See "IC System Operation and Troubleshooting Guide" for further information)
Earth Ground testing – Integrated Control Surge Device (ICSD)			Check earth ground resistance during dry periods. Use 3-point Fall of Potential tester with optional shielding wire disconnected (< 50 ohms)	Physically check all connections. Enhance grounding as needed.
Installation / Maintenance & Troubleshooting			See "IC System Installation Guide"	See "IC System Operation and Troubleshooting Guide"

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Weather Station (WS-Pro / Pro2)				
Tower & Structure			Check for structural integrity, level, and plumb.	Concrete pad may heave in frost prone climates.
Battery				Note: Replace when voltage drops below 11V. Check charging circuit.
Internal Humidity / Enclosure Gasket	Check internal humidity of station. If above 35%, install 2 new desiccant packs.		Every 2 years: Check enclosure gasket for seal or damage. Replace as needed.	Every 5 Years: Replace internal humidity chip. Remove enclosure cover for 10 minutes, compare to outside humidity, and replace if >10% off.
Rain Gauge	Check funnel and bucket for debris.		Field calibrate for accuracy. (spring)	
Solar Panel	Check for debris covering solar panel. Keep snow/ice off panel during winter months.		Clean with mild soapy water.	Note: Mount panel south facing. Output voltage typically 10 Watts at 18VDC.
Solar Radiation Sensor (Pyranometer)		Check level. Clean debris from sensor with soft camel hair brush. Keep drain hole at sensor clear.		Every 2 Years: Recalibrate solar radiation sensor.
Temperature / Relative Humidity Sensor		Every 3 months: Clean radiation shield by removing, clean paper filter on RH sensor in distilled water only.	Check calibration of RH sensor probe. Readings tend to drift above 100% over time. Replace if necessary.	Note: Make sure sprinklers do not throw water / spray into this sensor.
Wind Speed Sensor (Anemometer) Wind Direction Sensor (Wind Vane)	Inspect sensor for physical damage.	Visual / Audio inspection at low wind speeds. Verify that cup assembly and wind vane rotate freely without grinding noise.	Replace wind speed bearings annually in high wind environments, and bi-annually in low wind environments.	Every 2 Years if needed: Replace direction potentiometer.
Cabling - sensors / power / communication			Check splices on phone and direct connect stations.	Every 4-5 years: Check for cracking/deterioration. Replace as needed.
Earth Ground Testing			Check earth ground resistance during dry periods. (< 10 Ohms)	Physically check all connections. Enhance grounding as needed.
Weather Station (WSPRO-LT)				
Battery			Every 2 years: Replace internal 0.8 amp hour battery in northern climates, or remove and store indoors for winter.	Note: Replace when voltage drops below 10 VDC. Install optional 7 amp hour external battery pack for extended use.
Rain Gauge	Check funnel and bucket for debris.		Field calibrate: (100 ml within 5 minutes should equal 20 tips).	Replace every 3- 5 years
Solar Panel	Check for debris covering solar panel. Keep snow/ice off panel during winter months.		Clean with mild soapy water.	Note: Mount panel south facing. Output voltage typically 5 watts at 17VDC.
Solar Radiation Sensor (Pyranometer)		Check for debris on sensor, clean with soft camel hair brush.		Replace every 3-5 years
Temperature / Relative Humidity Sensor			Replace every 18-24 months. Constant Max or Min value indicates sensor failure.	Note: Make sure sprinklers do not throw water / spray into this sensor.
Wind Speed Sensor (Anemometer) Wind Direction Sensor (Wind Vane)	Inspect sensors for physical damage.	Check that sensors spin freely.		Replace when units fail.
Cabling - sensors / power / communication			Check splices on phone and direct connect stations.	
Radio Communication			Check line of site for foliage growth and obstructions that may reduce signal strength.	
Earth Ground Testing			Check earth ground resistance during dry periods. (< 10 Ohms)	Physically check all connections. Enhance grounding as needed.

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FREEDOM & LINK Systems				
FREEDOM Radio Battery				Note: Deep cycle to extend battery life. Remove from charger when complete.
Antenna, Cables, and Connections		Visually inspect antenna and mount for damage especially after high winds and storms.	Check connections to ensure waterproofing. Apply waterproof mastic tapes as needed.	
Grounding			Check earth ground resistance during dry periods. Use clamp on tester. (< 5 Ohms)	Check antenna mast and Polyphaser surge arrestor ground wire connections.
Rain Watch				
Rain Can	Check for debris covering funnel opening, and bee and insect infestation inside rain can.			Cover the drain outlet holes in can with screen to reduce infestation.
Tipping Bucket	Verify free movement of mechanism, and proper switch closure. If not operating check pulse decoder operation.			Check stability of attached magnet to tipping bucket. Re-adhere with epoxy to secure if necessary.
Pulse Decoder				Check operation by touching rain can input leads to trigger a tip in the incremental rain counter.
Spring Start-up				
Communication Test	Verify proper communication between computer and field interface devices (MIM, LDI, SDI, and MDI), communication to all satellites, decoders, and/or ICMs. This ensures that sprinkler and valve testing can be initiated directly after the slow fill procedure.			
Open Air Release Valves	Open all air release valves to help evacuate air before filling the lines.			
Open Drain Valves	Open drain valves to help evacuate air.			
Open Quick Coupling Valves	Open quick coupling valves to help evacuate air.			
Slow Fill	Slowly fill irrigation system (over a 1-2 day period depending on system design, compressor sizing, and point of connection) to alleviate any undue stress on pipes. Do not exceed over 100 -150 GPM. Make sure to close drain valves and quick coupling valves overnight. Filling an irrigation system too quickly will cause damage to PVC piping, fittings and sprinkler heads. If it is a booster pump station, consider filling the system with "city pressure" typically 50-75 PSI. With pump stations with VFD, consider operating the pump manually with VFD at a slow speed that will produce 50 -75 PSI. Activate all sprinkler heads until the air is out of the system.			
Fall Winterization				
Communication Test	Verify proper communication between computer and field interface devices (MIM, LDI, SDI, and MDI), communication to all satellites, decoders, and/or ICMs.			
Sprinkler and Valve Station Testing	Verify proper operation of all valves and sprinklers to ensure that water is evacuated from the entire system during winterization.			
Draining Lines	Open all drain valves a few days before blowing out the system. Drain valves that empty to atmosphere such as ponds, creeks etc, are good places to push most of the water out of the system before the sprinkler heads are activated. Drain valves should be left in the closed position after the system is blown out. Quick coupler valves are also good places to push water out of the system.			
Air Release Valves	Keep combo vacuum / air release valves open to help siphon water out during the draining process. Close air release valves before compressing the system.			
Pressure Regulation	Regulate the compressor to 50 PSI. Excessive air pressure can cause damage to the irrigation system due to air and water pockets in the piping network. Monitor the pressure in the system in the field with a pressure gauge mounted to a Quick Coupler Valve key. This device can be installed in any QCV throughout the golf course to monitor the system pressure. Irrigation systems should be winterized at 50PSI maximum. This method will give an accurate reading of the PSI in the system.			
Sprinkler Activation	Activate sprinkler heads through Handheld Radio Operation, Field Satellite Controllers or the Central Control System until water is evacuated. Operate all sprinklers at least two cycles for approximately two minutes each. The water settles in the low spots between cycles. Adjust GPM setting of Central Control to air compressor size. It is not recommended to operate gear drive rotors completely dry. Blow rotors out until they are "misting".			
Quick Coupling Valves	Open quick coupling valves at higher elevations to help siphon water out during the draining process.			

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Pump Station				
Visual Inspection	Visit the pump station weekly to check for any leaks or abnormalities and to verify proper operation.		Check condition of the bladder expansion tank if so equipped. A tank that is in poor condition can explode under pressure causing serious injury.	
Alarm Check				Daily: Check alarm history.
High Pressure Relief Valve (HPRV)			Verify the setting for the HPRV. (after spring start-up in northern climates)	
Annual Logs			Record annual station flow totals, and pump hourly usage totals. (fall)	
Fertigation Equipment	Inspect tanks for leaks. Check hose condition and connections.			
Filter Maintenance	Check Pressure differential, and back flush settings.	Grease shafts on ABS.	Clean wye strainers, basket strainers, and pressure wash stainless steel screen filters.	
Lake Screen			Check for debris build-up and clean if necessary. (spring)	
Foot Valves			Inspect foot valve and flappers for proper seal.	
Main Pumps			Check packings and oil reservoir. (spring)	
Motor Diagnostics & Maintenance		Check oil level.	Change oil in Hollow Shaft motors and grease motors per manufacturer recommendations.	Note: Diagnostic tests can be done to determine reduced motor efficiency. (Megging, Amperage tests)
Panel Temperature				Note: Temperature should remain below 90 degrees.
Pressure Maintenance Pump	Check # of starts per hour. (6 / hour or less)			
Pump Service			Schedule a professional pump service at least once per year in the fall or spring.	See "Pump Station Preventative Maintenance Report" for further maintenance checks.
Winterization			In Northern Climates: Drain all water in the pumps, piping, valves and the heat exchanger if so equipped. Protect the pressure transducer from freezing. Use RV antifreeze on top of diaphragm type pressure control valves and high pressure relief valves.	See "Pump_Station_Manual_E1071_GOT1000" for further details.
Transfer Pump			Check and service in fall or spring.	
Earth Ground Testing			Check earth ground resistance of select ground rods during dry periods. (< 10 Ohms)	Physically check all connections. Enhance grounding as needed.
Wet well Inspection			Clean and Inspect wet well for debris that could damage pump impellers or pass through to the piping network. (spring)	