Rain Quad - 80 Twin Alternating Series Water Conditioner

Installation, Operation and Maintenance Manual

Rain Quad 80 Twin Alternating Conditioner

Table of Contents

⚠ WARNING

THINK SAFETY FIRST

Read this Manual BEFORE using this equipment.

Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.

Keep this Manual for future reference.

⚠ WARNING

You are required to consult the local building and plumbing codes prior to installation. If the information in this manual is not consistent with local building or plumbing codes, the local codes should be followed. Inquire with governing authorities for additional local requirements.

⚠ WARNING

Need for Periodic Inspection/Maintenance: This product must be tested periodically in compliance with local codes, but at least once per year or more as service conditions warrant. All products must be retested once maintenance has been performed. Corrosive water conditions, and/or unauthorized adjustments or repair could render the product ineffective for the service intended. Regular checking and cleaning of the product's internal components helps assure maximum life and proper product function.

NOTICE

HYDROCARBONS SUCH AS KEROSENE, BENZENE, GASOLINE, ETC., MAY DAMAGE PRODUCTS THAT CONTAIN O-RINGS OR PLASTIC COMPONENTS. EXPOSURE TO SUCH HYDROCARBONS MAY CAUSE THE PRODUCTS TO LEAK. DO NOT USE THE PRODUCT(S) CONTAINED IN THIS DOCUMENT ON WATER SUPPLIES THAT CONTAIN HYDROCARBONS SUCH AS KEROSENE, BENZENE, GASOLINE, ETC.

Rain Water Conditioning of Las Vegas

(702) 257-PURE (7873)

System Specification Table

A. Models Chart

MODEL NO.	CAPACITY (MAX.)	PIPE SIZE (IN.)	MINERAL TANK			BRINE TANK		FLOW RATE & PRESSURE			SHIP WT. (LBS.)
			TANK SIZE	RESIN FT^3	GRAVEL (LBS.)	TANK SIZE	SALT FILL	SERVICE (GPM)	DROP (PSI)	BKW (GPM)	
M2058-W100T	30,000	1	9 x 48	1	15	18 x 40	400	13-19	15-25	2.2	230
M2059-W100T	45,000	1	10 x 54	1.5	20	18 x 40	400	14-21	15-25	2.7	290
M2060-W100T	60,000	1	12 x 52	2	30	18 x 40	400	15-21	15-25	2.7	420
M2063-W100T	75,000	1	13 x 54	2.5	45	18 x 40	400	15-21	15-25	4.2	460
M2066-W100T	90,000	1	14 x 65	3	60	18 x 40	400	17-22	15-25	5.3	500
M2069-W100T	120,000	1	16 x 65	4	80	18 x 40	400	17-24	15-25	7.5	650
M2070-W100T	150,000	1.25” x 1.5”	18 x 65	5	100	24 x 41	600	18-25	15-25	10	890
M2072-W100T	210,000	1.25” x 1.5”	21 x 62	7	100	24 x 50	800	20-27	15-25	12	1160

Safety Information

This water conditioner's control valve conforms to UL/CE Standards. Generic valves were tested and certified for compliance as verified by the agency listing.

- Please review the entire Installation and Operation Manual before installing the water conditioning system.
- As with all plumbing projects, it is recommended that a trained professional water treatment dealer install the water conditioning system. Please follow all local plumbing codes for installing this water conditioning system.
- This system will not make microbiologically unsafe water safe. Water that is unsafe must be treated separately from this conditioner.
- This water conditioning system is to be used only for potable water.
- Inspect the water conditioning system for carrier shortage or shipping damage before beginning installation.
- Use only lead-free solder and flux, as required by federal and state codes, when installing soldered copper plumbing.
- Use caution when installing soldered metal piping near the water conditioning system. Heat can adversely affect the plastic control valve and bypass valve.
- All plastic connections should be hand tightened. Teflon® tape may be used on connections that do not use an O-ring seal. Do not use pipe dope type sealants on the valve body. **Do not use pliers or pipe wrenches.**
- Use only the power transformer supplied with this water conditioning system.
- All electrical connections must be completed according to local codes.
- The power outlet must be grounded.
- Install an appropriate grounding strap across the inlet and outlet piping of the water conditioning system to ensure that a proper ground is maintained.
- To disconnect power, unplug the AC adapter from its power source.
- Observe drain line requirements.
- **Operating ambient temperature: 40° to 110°F (5° to 43°C).**
- **Operating water temperature: 40° to 110°F (5° to 43°C).**
- **Operating water pressure range : 25 to 120 psi (1.7 to 8.27bar).**
- Keep the media tank in the upright position. Do not turn upside down or drop. Turning the tank upside down or laying the tank on its side can cause media to enter the valve.
- Use only regenerants designed for water conditioning. Do not use ice melting salt, block salt or rock salt.
  During cold weather it is recommended that the installer warm the valve to room temperature before operating.
  Teflon® is a trademark of E.I. duPont de Nemours.
- Do not use petroleum-based lubricants such as Vaseline, oils or hydrocarbon-based lubricants. Use only 100% silicone lubricants.
- Do not support the weight of the system on the control valve fittings, plumbing, or the bypass.
- Do not allow this water conditioning system to freeze. Damage from freezing will void this water conditioning system's warranty.

⚠ WARNING

General Warnings

- The control valve, fittings and/or bypass are designed to accommodate minor plumbing misalignments but are not designed to support the weight of a system or the plumbing.
- **HYDROCARBONS SUCH AS KEROSENE, BENZENE, GASOLINE, ETC., MAY DAMAGE PRODUCTS THAT CONTAIN O-RINGS OR PLASTIC COMPONENTS. EXPOSURE TO SUCH HYDROCARBONS MAY CAUSE THE PRODUCTS TO LEAK. DO NOT USE THE PRODUCT(S) CONTAINED IN THIS DOCUMENT ON WATER SUPPLIES THAT CONTAIN HYDROCARBONS SUCH AS KEROSENE, BENZENE, GASOLINE, ETC.**
- **THIS WATER METER SHOULD NOT BE USED AS THE PRIMARY MONITORING DEVICE FOR CRITICAL OR HEALTH EFFECT APPLICATIONS.**
- Do not use Vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicone lubricant may be used on black o-rings but is not necessary.
- The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic wrench. If necessary a pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place a screwdriver in the slots on caps and/or tap with a hammer.
- Do not use pipe dope or other sealants on threads. Use Teflon tape on the threaded inlet, outlet and drain fittings. Teflon tape is not necessary on the nut connection or caps because of o-ring seals.
- After completing any valve maintenance involving the drive assembly or the drive cap assembly and pistons unplug power source jack from the printed circuit board (black wire) and plug back in or press and hold NEXT and REGEN buttons for 3 seconds. This resets the electronics and establishes the service piston position. The display should flash all wording, then flash the software version and then reset the valve to the service position.
- All plumbing should be done in accordance with local plumbing codes. The pipe size for the drain line should be a minimum of ½". Backwash flow rates in excess of 7 gpm (26.5 lpm) or length in excess of 20' (6.1m) require ¾" drain line.
- Solder joints near the drain must be done prior to connecting the drain line flow control fitting. Leave at least 6" between the drain line control fitting and solder joints when soldering pipes that are connected on the drain line control fitting. Failure to do this could cause interior damage to the drain line flow control fitting.
- When assembling the installation fitting package (inlet and outlet), connect the fitting to the plumbing system first and then attach the nut, split ring and o-ring. Heat from soldering or solvent cements may damage the nut, split ring or o-ring. Solder joints should be cool and solvent cements should be set before installing the nut, split ring and o-ring. Avoid getting primer and solvent cement on any part of the o-rings, split rings, bypass valve or control valve.

  All electrical connections must be connected according to local codes. (Be certain the outlet is uninterrupted.)

- Install grounding strap on metal pipes.

⚠ WARNING

General Warnings (continued)

- This glass filled Noryl[1] (or equivalent) fully automatic control valve is designed as the primary control center to direct and regulate all cycles of a water softener or filter.
- The control valve is compatible with a variety of regenerants and resin cleaners. The control valve is capable of routing the flow of water in the necessary paths to regenerate or backwash water treatment systems. The injector regulates the flow of brine or other regenerants. The control valve regulates the flow rates for backwashing, rinsing, and the replenishing of treated water into a regenerant tank, when applicable.
- Control valve installation is made easy because the distributor tube can be cut ½" above to ½" below the top of tank thread. The distributor tube is held in place by an o-ring seal and the control valve also has a bayonet lock feature for upper distributor baskets.
- The power adapter comes with a 15 foot power cord and is designed for use with the control valve. The power adapter is for dry location use only. The control valve remembers all settings until the battery power is depleted if the power goes out.
- After the battery power is depleted, the only item that needs to be reset is the time of day; other values are permanently stored in the nonvolatile memory. The control valve battery is not rechargeable but is replaceable.
- No user serviceable parts are on the PC board, the motor or the power adapter. The means of disconnection from the main power supply is by unplugging the power adapter from the wall.

Pre-Installation Considerations

A. Water Pressure

A minimum of 25 pounds of water pressure is required for regeneration valve to operate effectively.

B. Electrical Facilities

A continuous 115 volt, 60 Hertz current supply is required. Make certain the current supply is always hot and cannot be turned off with another switch.

C. Existing Plumbing

Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced. If piping is clogged with iron, a separate iron filter unit should be installed ahead of the water softener.

D. Location Of Softener And Drain

The softener should be located close to a drain.

E. Bypass Valves

Always provide for the installation of a bypass valve.

F. Valve to Tank Installation Instructions

1. Spin the valve onto the tank, ensuring the threads are not cross-threaded.

NOTICE

The main control valve and tank adaptor have right-hand threads, or clockwise, to install

2. Rotate the valve freely without using force until it comes to a stop (this position is considered zero).
3. Rotate the valve clockwise from zero, between ¼ turn and ½ turn to fully tighten. No tools are needed. Hand tight is enough. Overtightening may cause valve or tank damage.

NOTICE

If lubricant is required, a silicone compound is strongly recommended. Dow Corning® Silicone Compound (available from Watts), is recommended for best possible results. Dow Corning® 7 Release Compound is used in the manufacture of this control valve. The use of other types of lubricants may attack the control's plastic or rubber components. Petroleum-based lubricants can cause swelling in rubber parts, including O-rings and seals.

[1]Noryl is a trademark of Sabic.

Pre-Installation Considerations (continued)

G. Pre Installation and Loading of Media

Systems that are 13" in diameter and larger are not loaded with media. These systems must be loaded with media before placing into service. To load a system follow the below steps.

1. Cap the top open end of the distributor tube with tape and plastic sheeting to keep foreign debris from entering the distributor tube. This cap must be secure and not come off during media loading.
2. Place the distributor tube, screen end down, into the mineral tank and center it in the bottom. The top of the distributor tube should be flush with the top of the tank. If 4" x 2.5" tank bushings are used, the distributor tube should be flush with the top of the tank bushing.
3. Make sure the plastic and tape cap is secure to the top of the distributor tube, place a funnel on the top of the tank and load first the gravel (if different sizes of gravel are used load the largest gravel first, then the smaller gravel) then the resin media into the tank. The cap must not come off of the distributor tube during the loading of the media.
4. Remove the plastic cap from the distributor tube. DO NOT PULL UP ON THE DISTRIBUTOR TUBE when removing the cap. The distributor tube top must remain flush with the top of the tank.
5. Clean any media from the threads and top of the mineral tank.
6. Lubricate the O-rings on the bottom of the control valve (distributor pilot O-ring and top of tank O-ring). Use non-petroleum based silicone lubricant only.
7. Place the control valve on top of the tank. When doing this step, seat the top of the distributor tube inside the centered O-ring sealed port on the bottom of the valve first then press the valve down until the tank threads come in contact with the valve threads. This ensures that the distributor tube is properly seated into the bottom of the control valve. Thread the valve on to the tank clockwise. Be careful not to cross thread the valve or over tighten it. A hand tight snug fit is appropriate for the control valve torque. A wrench is not necessary. Do not use thread sealant or PTFE tape on the valve base threads.
8. The system is now ready for installation. Follow the Installation Section in the Installation, Operation and Maintenance Manual.

⚠ WARNING

Do not exceed water pressure of 120 psi (8.2 bar). Do not exceed 110°F (43.3°C). Do not subject unit to freezing conditions.

General Installation Instructions

1. Turn off water heater(s).
2. Turn off the main water supply to the home and open an inside faucet (cold and hot) to relieve any pressure within the plumbing system.
3. Place the system in the desired installation location. Make sure that the location is level and sturdy enough to support the weight of the system once it is in operation.
4. Place the bypass valve in the bypass position.
5. Connect the cold water supply to the inlet of the water conditioning system. While constructing the supply line, install a master supply valve (user supplied) in the supply line and close it.
6. Connect the feed water line to the home to the outlet of the system.
7. Plumb the drain line to an appropriate drain abiding by all local, city, and state codes. Use a 3/4" drain line for backwash flow rates of 7 gpm or for drain lines of 7 gpm and less that exceed 20' in length. Use a 1" drain line for backwash flow rates of 10 gpm and 12 gpm.
8. Connect the brine tank to the water softener control valve brine inlet port using the factory supplied fittings and tubing. Add enough water to the brine tank so that water covers the top of the air check. DO NOT ADD SALT AT THIS TIME.
9. Open the user supplied feed water valve. Check for leaks and repair as needed.
10. Allow the inside hot and cold faucet to remain open until all air has been purged from the plumbing system. Then close the faucet.
11. Locate Manual Regeneration Options in this manual to see the steps to initiate an Immediate Manual Regeneration. Once you have read that section place the system in backwash and unplug the system from its electrical outlet once it has cycled into the backwash position. This will stall the unit in backwash so all air can be purged from one of the tanks.
12. Adjust the user supplied feed water valve to 1/4 open and place the bypass valve into the service position.
13. Air will come out of the drain line until the backwashing tank is completely purged of air. Then water will flow to drain. Allow water to flow to drain for 15 minutes or until the water to drain is clear of resin color throw.
14. Plug the system back into the electrical outlet and manually cycle it through the remaining regeneration steps until it arrives in the service position.
15. Repeat installation steps 11, 12, 13, and 14 of the General Installation Instructions to purge the air from the second tank.
16. Check for leaks and repair as needed.
17. Installation is now complete and the system is ready for programming and one cycle of brine tank refill so that the correct amount of water is in the brine tank for the first regeneration cycle. The brine tank refill must be done after programming the system.

Rain Quad - 80 System Programming

Quad - Quick Programming Guide

A quick programming guide has been listed below for convenience specifically for the W100T series water softening systems. For other programming requirements not listed in the Quick Programming Guide, please see the detailed programming section of this manual.

CHART 1: User Display Screens

From Home screen press Next until Time of Day appears. Press and Hold Down for 5 seconds	Set Hours
Press Next	Set Minutes
Press Next	To Exit

CHART 2: OEM Set Up Screens

Press and Hold Next and Down for 5 seconds	Set to SOFTENING
Press Next	Set to dn
Press Next	Set to PoSt
Press Next	Set backwash length
Press Next	Set brine draw length
Press Next	Set 2nd backwash length
Press Next	Set rapid rinse length
Press Next	Set lbs of salt
Press Next	Set tank capacity (1000 grains)
Press Next	Set regen gallon capacity to "AUTo"
Press Next	Set type to "on 0"
Press Next	Set relay to "rELAY off"
Press Next	To Exit

CHART 3: Installer Display Settings

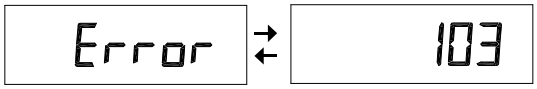
Press and Hold Next and Up for 5 seconds	Set hardness grains per gallon
Press Next	Set preferred regeneration day override
Press Next	On 0 will appear
Press Next	To Exit

NOTICE

The electronics in the Quad 80 control valve are used across a wide variety of control valves and applications, including backwashing filters. All programming for the electronics has been included in this manual for reference however the valve must be programmed for Twin Alternating Softening Applications when called for during valve programming.

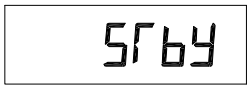
Regeneration and Error Screens

Regen Screen
Displays the time remaining in the current cycle. Pressing REGEN advances to the next cycle.



Error Screen
Alternated flashing Err and error code every 3 seconds. Clear by disconnecting the power supply at the PC board and reconnecting, or press NEXT and REGEN simultaneously for 3 seconds.

In Alternator Systems when a unit is waiting to initiate the first cycle step of regeneration, "REGEN Pndg" is displayed.



"STbY" is displayed in Alternator Systems when a valve is in Standby state.

"REGEN Pndg RINSE FILL" is displayed whenever a zero-capacity tank has transferred to an off-line state and is currently waiting to initiate the second portion of a regeneration cycle. Viewed only when Delayed Rinse and Fill is set to ON.

Button Operation and Function

NEXT — Scrolls to the next display.

REGEN — Pressing once and releasing will schedule a regeneration at the preset delayed regeneration time.
Pressing again and releasing will cancel the regeneration.
Pressing and holding for 3 seconds will initiate an immediate regeneration
Pressing while in regeneration will advance to the next cycle.
Pressing in the program levels will go backwards to the previous screen

△ ▽ — Changes variable being displayed.

▽ NEXT △ REGEN — Key sequence to lock and unlock program settings.

NEXT REGEN — Holding for 3 seconds initiates a control reset. The software version is displayed and the piston returns to the home/service position, resynchronizing the valve.

REGEN △ — Used with valve type 1.0Γ, holding for at least 3 seconds causes a switch in the tank in Service without cycling the regeneration valve. After tank switch, days remaining and capacity remaining status is retained for each tank until the next regeneration.

Regeneration Cycles and Times

	Range		
Cycle	Softening	Filtering Regen	Filtering Backwash
Backwash	1-120 minutes	1-120 minutes	1-120 min.
Regenerant Draw/Slow Rinse (UP or DN)	1-180 minutes	1-180 minutes	NA
Fast Rinse	1-120 minutes	1-120 minutes	1-120 min.
Regenerant Refill	0.1-200.0 lbs.	1-99.0 GAL	NA
Regenerant Refill 2.0 or 1.5 set to MIN (softening only)	0.1-99.0 minutes	0.1-99.0 minutes	NA
Service	1-480 minutes	NA	NA

If 1.5 or 2.0 is selected in Step 2CS, cycles can be set to "oFF".

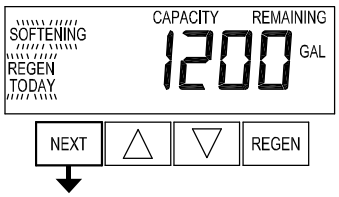
The user can initiate manual regeneration. The user has the option to request the manual regeneration at the delayed regeneration time or to have the regeneration occur immediately:

1. Pressing and releasing the REGEN button. " REGEN TODAY" will flash on the display and the regeneration will occur at the delayed regeneration time. The user can cancel the request by pressing and releasing the REGEN button.
2. Pressing and holding the REGEN button for approximately 3 seconds will immediately start the regeneration. The user cannot cancel this request, except by resetting the control by pressing NEXT and REGEN simultaneously for 3 seconds.

User Displays

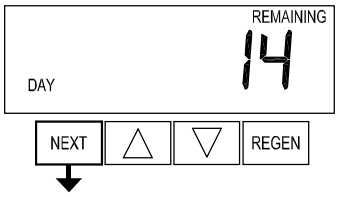
General Operation

When the system is operating, one of five displays may be shown. Pressing NEXT will alternate between the displays shown below.



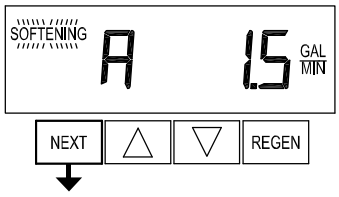
User 1

Typical user display. Shows volume remaining to regeneration. This screen will not be viewed if the control is set for time-clock operation.



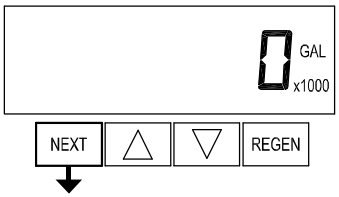
User 2

Displays number of days to next regeneration.



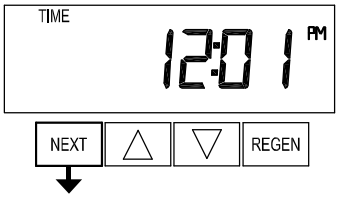
User 3

Flow Rate.
Displays present flow rate.
Not viewed (along with SOFTENING or FILTERING Icon) if ALT A or ALT b is set in CONFIGURATION 4 and the valve is currently in Standby. When 1.0 Γ is set in CONFIGURATION 1, the display will indicate the tank currently in Service (“A” or “b”) in the leftmost digit.



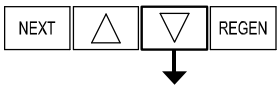
User 4

Displays total volume in gallons since last reset. If a meter is not used this display will be shown but 0 will be displayed.
PRESS ▼ FOR 3 SECONDS TO RESET TO 0.



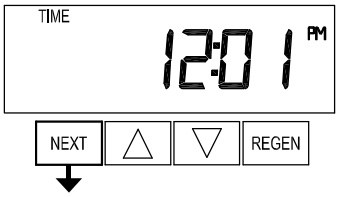
User 5

Shows current time.



Setting Time of Day

Push NEXT until time of day screen is displayed. Press and hold ▼ until SET TIME is displayed and the hour flashes once. Press ▲ or ▼ until the correct hour is displayed.



Then press NEXT. The minutes will flash. Press ▲ or ▼ until the correct minute is displayed.

Press NEXT to return to the User Displays. Time of day should only need to be set after power outages lasting more than 8 hours, if the battery has been depleted and a power outage occurs, or when daylight saving time begins or ends. If a power outage lasting more than 8 hours occurs, the time of day will flash on and off which indicates the time of day should be reset. If a power outage lasts less than 8 hours and the time of day flashes on and off, the time of day should be reset and the battery replaced.