

Rayne Evolution Residential Drinking Water System (100-120V)

with LINX[®] Technology

and Dial-a-Taste[®] Mineral Level Control

(Rev. B, February 14, 2011; Software 20.063)

Owner's Manual



Table of Contents

Section 1	Safety Precautions
Section 2	Overview of System System Features Specification
Section 3	Installation
Section 4	Operation Selecting Feed Water TDS Level Pre-Conditioning Procedure System Operation Dial-A-Taste® Mineral Level Control Indicator Lights
Section 5	Maintenance LINX 100 TDS, LINX 100 Sediment, and LINX 100 Cartridges/Filters Drain Blockage
Section 6	Troubleshooting Potential Problems and Remedies



Tested and Certified by WQA against NSF/ANSI Standard 53 in model Evolution Drinking Water System for the reduction of nitrate/nitrite.



Section 1. Safety Precautions

- The product should be installed, serviced and maintained by an Authorized Dealer to assure that they comply with state and local laws and regulations as well as providing optimum performance. Massachusetts requires a licensed plumber to install the product according to plumbing code 248-CMR of the Commonwealth of Massachusetts. A Supplement to the Owner's Manual for Installation and Maintenance is available for qualified technicians.
- Read and follow all instructions carefully before using the drinking water system.
- DO NOT open the cell lids or outer enclosure when the system is powered. There is a risk of electrical shock.
- If the detachable power cord is damaged it must be replaced.
- Install systems upright (not on their side). Use with cold feed water ONLY (33-100°F; 1-40°C).
- DO NOT use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the systems.
- The systems are designed to operate with supply water pressure in the range of 20-100 psi (130-690 kPa). If the pressure exceeds 100 psi (690 kPa), a pressure regulator must be installed.
- These systems are not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the systems by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the systems.
- Grounding Instructions: These systems must be properly grounded. In the event of a malfunction, grounding will reduce the risk of electric shock. These systems are equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is installed and grounded in accordance with all local codes and ordinances.

Warning: Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician if you are in doubt whether the systems are properly grounded. Do not modify the plug provided with the systems. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician.

Section 2. Overview of the System

The drinking water system employs an ion exchange process that uses electricity rather than chemicals for operation. LINX technology used to create this drinking water system does not release chemicals to the environment and it conserves water compared to other drinking water systems that provide similar water quality.

LINX technology provides several important benefits:

- High flow rates: up to 1.0 gpm.
- Wastes 90% less water than reverse osmosis drinking water systems under typical usage conditions.
- The Dial-a-Taste control allows adjustment of product water mineral level for optimum taste.

The system include:

- One LINX 100 Sediment pre-filter (nominal 5 micron) to reduce particles and cloudiness
- Two LINX 100 TDS cartridges to reduce nitrate/nitrite contaminants for healthier water and other total dissolved solids (TDS) for better taste
- One LINX 100 or 110 Carbon post-filter (GAC) to further improve taste.

Specification:

Feed Water Quality:	Potable water with maximum TDS of 1000 ppm, <20 grains of hardness (340 ppm hardness as CaCO ₃), pH 4 – 10; microbiologically safe
Feed Water Pressure:	20-100 psi (130-690 kPa)
Feed Water and Operating Temperature:	33-100°F (1-40°C)
Operation Mode:	Parallel LINX cell deionization; water available from the tank
Regeneration:	34 minutes (17 minutes each cell)
TDS Rejection* (Maximum Dial):	≥85% TDS reduction
System Water Output Flow Rate:	0-600 ppm TDS feed: 0.5 gpm at ≥40 psi 600-800 ppm: 0.25 gpm (see Replacement Parts list for flow restrictor) 800-1000 ppm: 0.15 gpm (see Replacement Parts list for flow restrictor)
Water Output Volume per Cycle:	0-400 ppm TDS feed: 3.0 gallons per 34 minute regeneration cycle 400-1000 ppm TDS feed: 1.5 gallons per 34 minute regeneration cycle
Rated Capacity**:	3 gallons/cycle
Rated Life***:	650 gallons for LINX 100 Sediment and LINX 100 or 110 Carbon filters 1300 gallons for two (2) LINX 100 TDS cartridges
Warranted Water Output per Day:	≤25 gallons (if product exceeds 25 gallons per day on average, the warranty is no longer valid)
Water Recovery:	0-400 ppm TDS feed: 70%; 401-1000 ppm TDS feed: 55%
Operating Voltage, Current:	100-120 Vac, 50/60 Hz, 6 A
Outside Dimensions:	19.1 in (deep) x 8.2 in (wide) x 14.3 in (high)

*TDS reduction was tested and verified at an independent laboratory: Pace Analytical Services, Inc.

**Each unique model designation shall not claim a capacity or service life greater than the least reduction capacity or service life that has been verified through testing to NSF/ANSI 53.

***The rated life of LINX 100 cartridges and filters is based on extensive testing by the manufacturer.

The Residential Drinking Water System conforms to NSF/ANSI 53 for nitrate/nitrite reduction as verified and substantiated by test data.

Section 3. Installation

The system should be installed and serviced by an Authorized Dealer to assure that they comply with state and local laws and regulations, and to provide optimum performance.

If a system is to be disconnected for any reason, **FIRST** ensure that the feed water is turned off and the faucet is opened to depressurize it (open the faucet until water stops flowing). Then **DISCONNECT THE POWER** to the systems by detaching the power cord at the rear.



Figure 1: Connections for feed, drain, tank, and product water

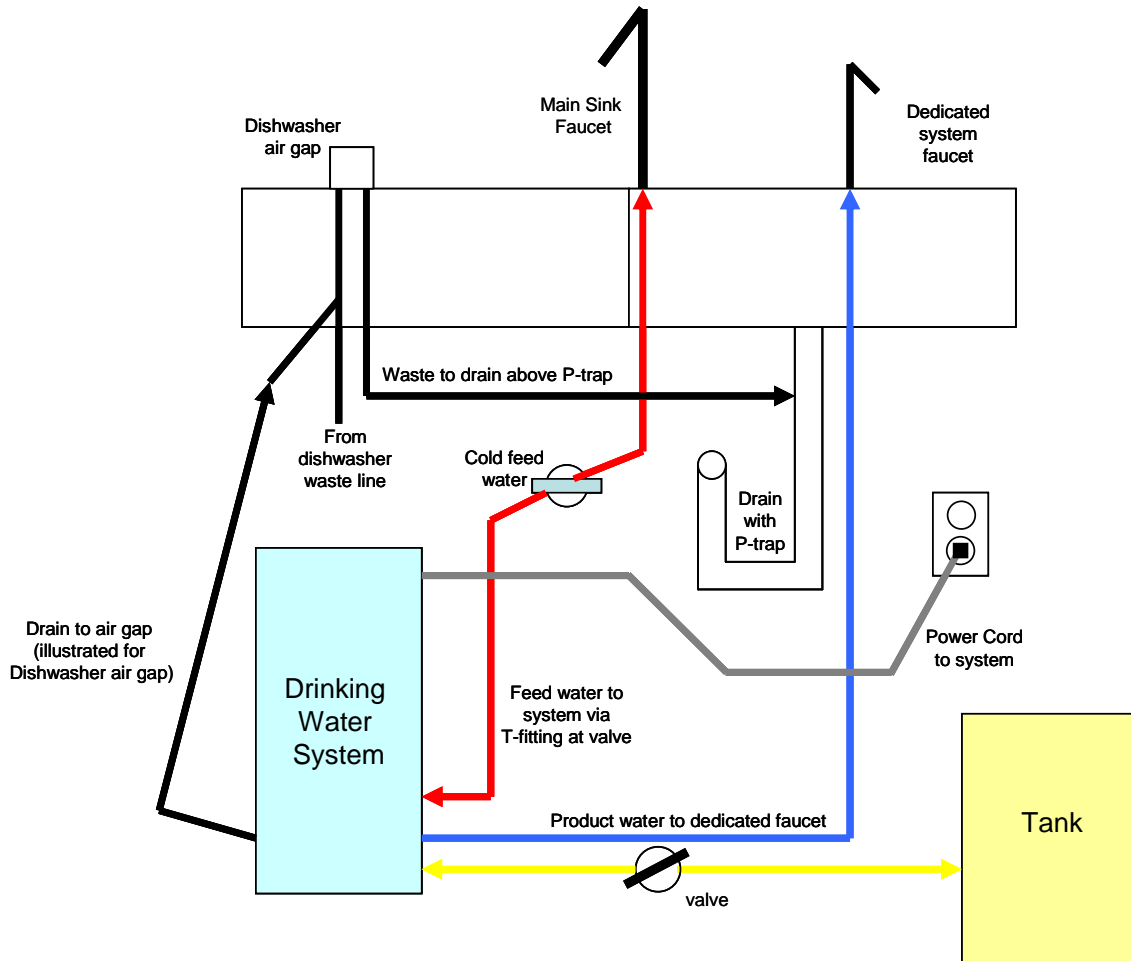
The new hose-sets supplied with the system are to be used rather than reusing old hose sets (if replacing another system, do not use the old hose-sets). The LINX 100 TDS, LINX 100 Sediment and LINX 100 or 110 Carbon cartridges/filters are installed during installation, and occasionally replaced, by an Authorized Dealer.

Plumbing connections (as seen from the back of the system, Figure 1) connect as follows:

- Feed water (cold water only) to the left connector (red)
- Drain line (to the air gap, then the drain) is connected to the second-from left connector (black)
- Tank to the second-from right connector (yellow)
- Dedicated faucet is connected to the right connector (blue)

A diagram illustrating plumbing connections is shown on the following page. Feed water is provided from the cold water supply under the sink via a T-fitting on the cold water valve. Do not use a saddle valve with puncturing needle because it will not provide sufficient flow. Your Authorized Dealer will supply the faucet and tank. The plumbing diagram shows installation with a dishwasher air gap. Actual installation will vary depending on local plumbing codes.

Drinking Water System Installation Diagram



Section 4. Operation

The system operations are automatic. It employs two flow sensors to measure and control product and waste water volumes and to indicate when it is time to replace filters and/or cartridges. **The user only has to open and close the faucet to operate the systems.** The two blue lid covers on top must be properly engaged to allow operation. Be certain that the corresponding lid covers are in the correct positions (Figure 2). There is a FRONT lid cover and a BACK lid cover labeled on top of each lid. Install the two lids as shown so that the labels read properly from the front of the system.

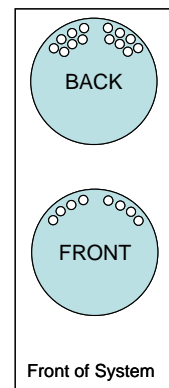


Figure 2

Selecting Feed Water TDS Level

The system must be set to your incoming feed water quality. Two settings are available: a first level for 0-400 ppm, and a second level for 401-1000 ppm TDS feed waters. The factory setting is for ≤ 400 ppm TDS feed water which provides 3 gallons of drinking water prior to regeneration, yielding 70% water recovery. Selecting the 401-1000 ppm TDS feed level provides 1.5 gallons of drinking water with 55% recovery. Your Authorized Dealer will determine the TDS of your feed water as part of the installation.

Additionally, when operating on 600-800 ppm feed water TDS, the 0.5 gpm flow restrictor is replaced with a 0.25 gpm restrictor by your Dealer (see Replacement Parts List). For feed water of 800-1000 ppm a 0.15 gpm flow restrictor is used.

Conditioning LINX 100 TDS, LINX 100 Sediment, and LINX 100 or 110 Carbon Cartridges/Filters

After installation, the system automatically undergoes a 90 minute pre-conditioning stage prior to use. The faucet must be closed during this procedure. This conditioning procedure must also be initiated whenever new LINX 100 TDS cartridges are installed. Following the pre-conditioning stage, drain up to 5 gallons of water from the unit (running for up to approximately 10 minutes) to remove any carbon “fines” from the new carbon post-filter.

System Operation

The two LINX 100 TDS cartridges operate in parallel during normal service - after a 34 minute regeneration. The tank provides water during regeneration. After regeneration, every 30 minutes for two hours, a “clicking” noise will be heard for 20 seconds during which time the LINX 140 system is cleaning its valves.

Note: While drinking water is always available, the systems are designed for intermittent, not continuous, use. To obtain the specified $\geq 85\%$ TDS reduction, the systems must be configured as described in the Specification section. To maintain the 3 year Warranty, the average daily usage must be < 25 gallons.

Indicator Lights

Beneath the Dial-a-Taste control knob is a green light indicating that the unit is powered and functioning. The four other indicator lights, labeled A, B, C and D (see image below) are used to indicate system status as shown in the following table. When the system is producing water, blue lights A and C flash. A single red flashing light indicates that regeneration of cell 1 or 2 is in progress. The indicator lights also signal when the blue safety lid covers are not installed correctly and when service is required (see the table below for the lights observed in each case). For the two “alarms” at the bottom of the table, repowering will reset the system; if the alarm re-occurs, call your Authorized Dealer.



Dial-a-Taste® Mineral Level Control

The mineral level of the product water can be changed by turning the Dial-a-Taste control at the front of the unit. Turning the dial clockwise increases mineral content. As the dial is turned, the LEDs will light-up for several seconds to indicate the mineral level selected. None of the four LEDs will light-up when the dial is set to the full clockwise position indicating that the highest mineral content is selected (~70% TDS reduction). One LED means the second highest mineral level, two LEDs mean the middle level, three LEDs mean the second lowest level, and all four LEDs mean the lowest mineral level is selected ($> 85\%$ TDS reduction, full counter-clockwise dial position). After the dial has been set, the LEDs indicating mineral level will turn off and resume their normal display. The tank must be emptied and refilled to observe the change.

Indicator Status Table

System Status	Indicator A (Blue)	Indicator B (Red)	Indicator C (Blue)	Indicator D (Red)
Both LINX Cells Providing TDS Reduction	Blinking	Off	Blinking	Off
Cell 1 Regenerating	Off	Blinking	Off	Off
Cell 2 Regenerating	Off	Off	Off	Blinking
Conditioning LINX 100 TDS Cartridges (90 min)	All 4 lights blink in sequence (left-to-right-to-left)			
LINX Carbon and Sediment Filter Life End	Off	Solid	Off	Off
LINX 100 TDS Cartridge Life End	Off	Off	Solid	Off
Blue Lid Covers Not in Position*	Off	Blinking	Blinking	Blinking
Drain Line/Valve Blocked Alarm	Blinking	Blinking	Blinking	Blinking
External Leak Alarm**	Blinking	Blinking	Off	Blinking
No Power to LINX Cells (poor TDS reduction)	Blinking	Off	Blinking	Blinking

*To operate the system both lid covers must be correctly installed (repowering will not do it).

** to turn off the leak sensor buzzer, unplug the LINX system

Section 5. Maintenance

LINX 100 TDS Cartridges, LINX 100 Sediment Filters, and LINX 100 or 110 Carbon Filters

The system includes three types of replaceable components:

- Two LINX 100 TDS cartridges
- One LINX 100 Sediment filter (nominal 5 micron)
- One LINX 100 or 110 Carbon filter (GAC).

The indicator lights let you know it is time to call for service (see Indicator Status Table in the previous section). The LINX 100 Sediment and LINX 100 or 110 Carbon filters need replacement at 650 gallons, while the LINX 100 TDS cartridges require replacement at 1300 gallons. The front lights will indicate when it is time for replacement of these components (see the Indicator Status table above). Some reduction in water flow rate may be noticed near the end of filter and cartridge life. Contact your Authorized Dealer for service and replacement of cartridges and filters.

Drain Blockage Alarm

When treating hard water, scale may accumulate in the drain valves or drain line causing a plugged drain line. If a drain plug is detected, the system will shut-down and all four indicator lights (blue and red) will blink in unison. If this occurs, reset the system by repowering it. This is done by detaching and reattaching the power cord at the rear of the system. If the alarm occurs again, contact your Authorized Dealer for maintenance.

Section 6: Troubleshooting

Observation	Causes/Remedies
No Water Flow No Green Power Light (under dial)	<ul style="list-style-type: none"> • No power; unit not plugged into required 100-120V outlet. • Fuse blown (6 A slow blow fuse). <p><i>Remedy – Replace fuse</i></p>

	<ul style="list-style-type: none"> Electronics failure. <p><i>Remedy – Call your Authorized Dealer</i></p>
Four blue and red Indicator Lights Flash Right-Left-Right	<ul style="list-style-type: none"> The system is conditioning the LINX 100 TDS cartridges; this process takes 90 minutes.
Clicking noise for 20 sec, 30 minutes apart, for 2 hrs	<ul style="list-style-type: none"> The LINX system is cleaning its valves after the regeneration step – this is normal behavior
No or Low Product Water Flow (Green light on; no indicator lights are flashing when faucet is opened)	<ul style="list-style-type: none"> Faucet is mounted 13 ft or more above the system <p><i>Remedy – install the system at <13 ft below faucet</i></p> <ul style="list-style-type: none"> Tubing connections are incorrect Insufficient feed water pressure (<20 psi). <p><i>Remedy – Call your Authorized Dealer to install a booster pump</i></p>
No Product Water Flow Indicator lights B, C and D flashing	<ul style="list-style-type: none"> Lid safety switch(es) not triggered <p><i>Remedy – Assure that both lid covers (blue) are in the proper place (see section 3.1)</i></p>
No Product Water Flow Indicator lights A, B, C and D flashing	<ul style="list-style-type: none"> Clogged drain line (drain valve(s) or tubing) <p><i>Remedy – If occurs again after re-powering, call Authorized Dealer</i></p>
No Product Water Flow Indicator lights A, B and D flashing	<ul style="list-style-type: none"> External leak detected <p><i>Remedy – Turn off the feed water and call Authorized Dealer</i></p>
No Product Water Flow Indicator lights A, C and D flashing	<ul style="list-style-type: none"> No power to LINX cells (no TDS reduction) <p><i>Remedy – If occurs again after re-powering, call Authorized Dealer</i></p>
Light other than power light continuously on	<ul style="list-style-type: none"> LINX 100 Sediment filter, LINX Carbon filter, or LINX 100 TDS cartridges have surpassed their usage volume limits <p><i>Remedy – Call your Authorized Dealer to replace cartridges and/or filters</i></p>
Objectionable Taste or Odor	<ul style="list-style-type: none"> LINX Carbon filter missing or exhausted. <p><i>Remedy – Call your Authorized Dealer to replace the carbon filter</i></p>
Poor TDS reduction	<ul style="list-style-type: none"> Dial-a-Taste knob set to high mineral level (rotated clockwise). Missing or damaged bottom LINX 100 TDS cartridge o-ring Excessive flow rate for feed TDS (wrong flow restrictor used) LINX 100 TDS cartridges need replacement.
Leak Out Top of Cell Lid	<ul style="list-style-type: none"> LINX 100 TDS cartridge not completely inserted. <p><i>Remedy – Twist lids clockwise until they stop (main rib points front-back)</i></p> <ul style="list-style-type: none"> Top cap o-rings not sufficiently seated in grooves <p><i>Remedy – Press o-rings into grooves or replace them</i></p>
Rapid Clicking Noise (Indicator lights moving back and forth)	<ul style="list-style-type: none"> The system is cleaning its valves by rapidly opening and closing them. The process takes one minute to complete and occurs every 130 gallons of water production.

Contact your Local Authorized Dealer for service and replacement components

Replacement Parts List:

Part	Part Number
LINX 100 TDS Cartridges	08-00033-A
LINX 100 Sediment Filters	28-000509
LINX 110 Carbon Filters	28-000530
0.25 gpm Flow Restrictor set	07-000122
0.15 gpm Flow Restrictor set	07-000123
Filter Housing o-ring	28-000507
LINX 100 TDS Cartridge top o-ring	28-00037-A
LINX 100 TDS Cartridge bottom o-ring	28-00025-A
LINX cell lid drivers	19-000001
Front Enclosure	07-000008
Front Lid Cover	07-000012
Back Lid Cover	07-000013
Drain Valve Body, Left (from rear)	28-000309
Drain Valve Body, Right (from rear)	28-000310
LED PCB	19-000610
Power cord	19-000006

The Evolution Drinking Water System is manufactured by:

Pionetics Corporation
151H Old County Road
San Carlos, CA 94070 USA
(650) 551-0250
www.LINXwater.com



Rayne Corporation
4635 Rufner Street
San Diego, CA 92111
1-888-357-2963
www.raynewater.com



WARRANTY REGISTRATION CARD INSTRUCTIONS

1. Complete the information requested on the reverse side of this form.
2. Cut along the dotted line below to separate the registration card from the customer's copy of the warranty. Retain the top half for your records.
3. **Dealer MUST** enter data from this card on the online Warranty Registration page below to ensure warranty coverage:

http://linxwater.com/warranty_registration/form.php

4. The customer is to retain the bottom portion for their records.



Limited Lifetime Warranty

LINX 140 and LINX 140T Drinking Water Systems (Rayne Evolution Drinking Water Systems) with LINX® Technology

Customer's Copy

Rayne Corporation warrants to the original purchaser that the LINX 140 and LINX 140T Drinking Water Systems (Rayne Evolution Drinking Water Systems) with LINX Technology specified by the model and serial number will be free from defects in material and workmanship from the date of purchase for the following period:

- Lifetime for the system excluding the components below.
- The LINX 100 TDS Cartridges are warranted for one year from date of purchase. If the required pre-filter conditions to the LINX 100 Cartridges are not followed, the LINX 100 Cartridges will not be warranted.
- The power supply and electrodes will be warranted for a period of 3 years.
- This warranty does not cover the LINX 100 Disposable Sediment and LINX 110 Carbon Filters whose life depends on feed water conditions.

THIS WARRANTY IS EFFECTIVE TO ORIGINAL PURCHASER ONLY AS LONG AS THE DRINKING WATER SYSTEM REMAINS AT THE ORIGINAL INSTALLATION SITE OR IS MOVED BY AN AUTHORIZED REPRESENTATIVE.

No sales representative, distributor, dealer or other person is authorized to make any other warranty on behalf of Rayne Corporation. Upon expiration of the applicable warranty periods, Rayne shall have no further liability related to the products to which the periods apply, except with respect to warranty claims asserted during the appropriate warranty period.

This warranty does not cover damage during installation or damage resulting from freezing, mishandling, improper installation, water pressure in excess of 100 pounds per square inch, or ambient temperatures in excess of 100° F. Labor charges incurred in connection with the repair and/or replacement of parts, other than repairs done at Rayne Corporation's factory, are expressly excluded from this warranty. All transportation and freight costs in connection with the repair and/or replacement of parts are expressly excluded from this warranty. This warranty does not cover failures or defects that are the result of misuse, mishandling, misapplication, neglect, abuse, alteration of the product, or repair performed by anyone other than Rayne Corporation or a Rayne authorized agent, or where the unit has not been installed in compliance with local plumbing codes and ordinances. The Rayne Evolution Drinking Water Systems are designed for intermittent, not continuous, use. To obtain the specified performance, daily usage must be 25 gallons/day or less.

All warranties are subject to requirements set forth in the owner's manual. Upon receipt of any defective product specified above Rayne Corporation will, at its option, repair or replace the product at its expense provided the original purchaser of that product has followed the procedure for obtaining warranty performance set forth below. The product so repaired or used as replacement will be shipped to the purchaser at the purchaser's cost.

PURCHASER'S REMEDIES FOR DEFECTS OR FAILURES, TO THE EXTENT PERMITTED BY APPLICABLE LAW, ARE LIMITED TO THE REMEDY PROVIDED BY THIS WARRANTY, TO THE EXTENT ENFORCEABLE UNDER APPLICABLE LAW. Rayne Corporation shall in no event be liable for consequential, incidental or special damages arising out of the use of, or inability to use, the product.

This warranty gives you specific legal rights; you may also have other rights which vary from state to state.

As soon as the purchaser discovers any defect or failure, the purchaser must within the period of the applicable warranty, notify Rayne Corporation of that defect. Rayne Corporation will assign a return authorization number and the purchaser must then return the defective part or item, with all transportation charges prepaid, to Rayne Corporation with the return authorization number for reference.

Warranty performance information may be obtained by writing to: **Rayne Corporation, 4635 Ruffner Street, San Diego, CA 92111**



4635 Ruffner Street
San Diego, CA 92111

RAYNE WARRANTY REGISTRATION CARD

ATTENTION DEALER: USE THIS CARD to record the required information. Then, **GO ONLINE** to complete the warranty registration within 30 days of installation to ensure proper warranty coverage.

Customer Name _____ Phone _____

Address of Installation _____ e-mail _____

City _____ State _____ Zip Code _____

Rayne Dealer _____

City _____ State _____ Zip Code _____

Model <input type="checkbox"/> LINX 140-120V <input type="checkbox"/> LINX 140T-120V <input type="checkbox"/> LINX Cooler Module-120V	Unit Serial Number:
Front Cartridge Serial #:	Back Cartridge Serial #:

Purchase Date:
____/____/____

FEED WATER DATA *Installer must complete and leave with customer.*

TDS Level _____ ppm	Hardness _____ grains/gal	pH Level pH _____	Water Flow _____ gal/min	Water Pressure _____ psi
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PRODUCT WATER DATA

TDS Level _____ ppm	Hardness _____ grains/gal	pH Level pH _____	Water Flow _____ gal/min	Water Pressure _____ psi
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CUSTOMER INFORMATION

DEALER: Complete this form and GIVE THIS BOTTOM PORTION TO THE CUSTOMER along with a copy of their purchase agreement.

Rayne Dealer _____

Address _____

City _____ State _____ Zip Code _____

Phone Number _____

Model <input type="checkbox"/> LINX 140-120V <input type="checkbox"/> LINX 140T-120V <input type="checkbox"/> LINX Cooler Module-120V	Unit Serial Number:
Front Cartridge Serial #:	Back Cartridge Serial #:

Purchase Date:
____/____/____

FEED WATER DATA *Installer must complete and leave with customer.*

TDS Level _____ ppm	Hardness _____ grains/gal	pH Level pH _____	Water Flow _____ gal/min	Water Pressure _____ psi
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PRODUCT WATER DATA

TDS Level _____ ppm	Hardness _____ grains/gal	pH Level pH _____	Water Flow _____ gal/min	Water Pressure _____ psi
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THANK YOU FOR CHOOSING RAYNE® FOR GREAT TASTE – LESS WASTE