

NANOpure[®] Infinity Base Unit

OPERATING MANUAL

AND PARTS LIST

Series 896

Model #	Voltage
D8963	100
D8961	120
D8962-33	230

Table of Contents

- Safety Information 4
 - Alert Signals 4
 - Warnings 4
- Introduction 6
- Specifications 7
 - Dimensions and Clearance Requirements 7
 - Feedwater Requirements 7
 - Product Water 7
 - Electrical Requirements 8
 - Environmental Conditions 8
 - Declaration of Conformity 8
- Unpackaging and Installation 9
 - Unpackaging 9
 - Choosing a Site 9
 - Tubing Adapter Installation 10
 - Remote Dispenser Housing 11
 - Installing the Remote Dispenser Housing on Bench Mounted Units 11
 - Installing the Remote Dispenser Housing on Wall Mounted Units 12
 - Installing the Remote Dispenser Housing in Remote Locations 13
 - Other Accessories 14
 - Bench Mounting 14
 - Wall Mounting 15
 - Water Connections 16
 - Feed Water Connection 16
- Controls 17
 - Main Power Switch 17
 - Control Panel 17
 - Switches 18
- Initial Operation 19
 - Initial Sanitization 19
 - Cartridge Installation and Rinse Up 21
- Normal Operation 24
 - Remote Dispenser Operation 25
 - Use of Standby Mode 25
 - Selecting the Set Point 26
 - Resetting the Sanitization Timer 27
 - Reading Purity of Product Water and Feed Water With Optional Inlet Cell Accessory 27
- Installing the Optional Float or Pressure Switch 29
- Installing the Optional Inlet Cell 30
- Optional N.I.S.T. Calibration Module 32
- Maintenance and Servicing 34
 - System Sanitization and Cartridge Replacement 34
 - General Cleaning Instructions 35
 - 0.2 Micron Filter Replacement 36
 - Fuse Replacement 36

Shutdown 37
Problem Solving 38
Replacement Parts 40
Ordering Procedures 42
Two Year Limited Warranty 43

Safety Information

Alert Signals



Warning

Warnings alert you to a possibility of personal injury.



Caution

Cautions alert you to a possibility of damage to the equipment.



Note

Notes alert you to pertinent facts and conditions.

Your Barnstead|Thermolyne NANOpure Infinity Base Unit has been designed with function, reliability, and safety in mind. It is your responsibility to install it in conformance with local electrical codes. This manual contains important safety information. You must carefully read and understand the contents of this manual prior to the use of this equipment. For safe operation, please pay attention to the alert indicators throughout the manual.

Water purification technology employs one or more of the following: chemicals, electrical devices, mercury vapor lamps, steam and heated vessels. Care should be taken when installing, operating or servicing Barnstead products. The specific safety notes pertinent to this Barnstead product are listed below.

Warnings

To avoid electrical shock, always:

1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.
2. Do not locate the NANOpure Infinity Base Unit directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.
3. Replace fuses with those of the same type and rating.
4. Disconnect from the power supply prior to maintenance and servicing.

To avoid personal injury:

1. Do not use in the presence of flammable or combustible materials; fire or explosion may result. This device contains components which may ignite such materials.
2. This device is to be used with water feeds only. Sanitizing/cleaning agents must be used in compliance with instructions in this manual. Failure to comply with the above could result in explosion and personal injury.
3. Avoid splashing disinfecting solutions on clothing or skin.
4. Ensure all piping connections are tight to avoid chemical leakage.
5. Ensure adequate ventilation.
6. Carefully follow manufacturer's safety instructions on labels of chemical containers and material safety data sheets.
7. Depressurize system prior to disengaging the cartridge hold-down bracket.
8. Refer servicing to qualified personnel.
9. Avoid contact of strong oxidizing agents, such as nitric acid, with ion exchange cartridges. An explosion may result.

Introduction

Congratulations on your purchase of a Barnstead|Thermolyne NANOpure Infinity Base Unit. The unit is a water purification system designed to provide high resistivity, reagent grade water that exceeds ASTM Type I, CAP and NCCLS Type I standards. It uses a four-stage deionization process combined with a 0.2 micron filter to polish suitable feed water (potable tap, distilled, deionized, or reverse osmosis) to produce water with a resistivity of up to 18.3 megohm-cm. Water resistivity is continuously monitored by a resistivity cell and displayed on a digital display.

The NANOpure Infinity Base Unit can be easily upgraded to incorporate a UV (ultraviolet) system for organic determinant analysis, a UF (ultrafilter) system for such demanding applications as cell and tissue culture, in vitro fertilization and Monoclonal antibody production or a UV/UF (ultraviolet and ultrafilter) system for biological research requiring water free of virtually all contamination. The electronics can be verified and calibrated utilizing the N.I.S.T. Traceable Calibration module. See accessory ordering information (page 41).

Please read the instructions carefully to ensure that you receive maximum benefit from the NANOpure Infinity Base Unit. Also, be sure to fill out and return the enclosed warranty registration card. We would like to receive the information requested, and it will help us assure you of proper warranty coverage.

General Usage

Do not use this product for anything other than its intended usage.

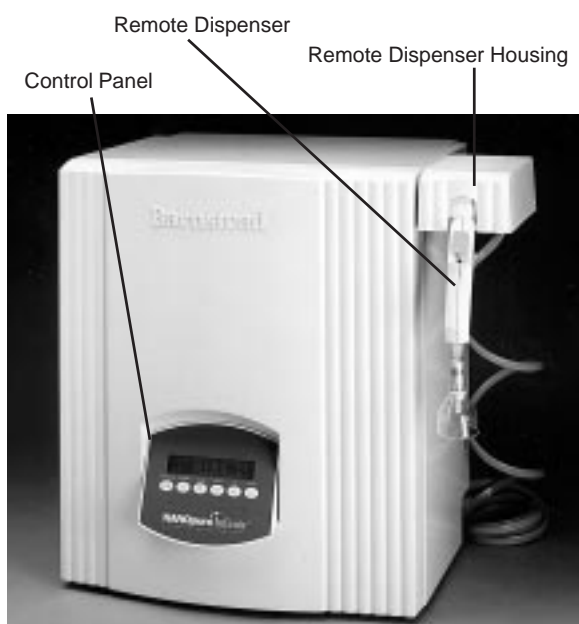


Figure 1 NANOpure Infinity Base Unit Front

Specifications

Dimensions and Clearance Requirements

Dimensions (include remote dispenser housing mounted to unit)

Wall mounted models

Width	20"	(50.8 cm)
Depth	17-1/2"	(44.5 cm)
Height	34-7/8"	(88.6 cm).

Bench mounted models

Width	25"	(63.5 cm)
Depth	17-1/2"	(44.5 cm)
Height	22-5/8"	(57.5 cm)

Dimensions (remote dispenser housing mounted away from unit)

Wall and Bench mounted models

Width	20"	(50.8 cm)
Depth	17-1/2"	(44.5 cm)
Height	22-5/8"	(57.5 cm)

Clearances

Sides - 6" (15 cm) minimum for servicing.

Above - 3" (7.6 cm) minimum for removal of the outer case.

Front - 20" (50.8 cm) minimum for opening the front door.

Cartridge replacement is easily accomplished by opening the front door.

Feed Water Requirements

Types ¹	Tap (Potable), RO, DI, distilled.
TOC	Less than 1.0 ppm.
Turbidity	1.0 N.T.U. maximum.
Pressure Range	Gravity feed to 100 psig (7kg/cm ²) maximum.
Temperature Range	4.4°C - 48.8°C (40-120°F)

Product Water

Water Quality

Resistivity	ASTM, CAP and NCCLS Type I
TOC	Less than 3.0 ppb

Flow Rate

1.5 lpm maximum at minimum inlet feed water pressure of 30 PSIG at 60 HZ and with a new final filter.

¹Suitability as qualified by laboratory analysis.

SPECIFICATIONS

Electrical Requirements

The NANOpure Infinity Base Unit is equipped with a power cord to be plugged into an electrical outlet of the appropriate voltage.

Voltage and Frequency (Nominal)

Model D8963	100 VAC, 50-60 Hz	85-110 VAC, 47-63 Hz, 1 phase
Model D8961	120 VAC, 50-60 Hz	98-127 VAC, 47-63 Hz, 1 phase
Model D8962-33	230 VAC, 50-60 Hz	220-253 VAC, 47-63 Hz, 1 phase

Environmental Conditions

Operating: 4°C - 49°C; 20% to 80% relative humidity, non-condensing. Installation Category II (over-voltage) in accordance with IEC 664. Pollution Degree 2 in accordance with IEC 664. Altitude limit: 3,500 meters.

Storage: -25°C to 65°C; 10% to 85% relative humidity.

Declaration of Conformity (-33 models only)

Barnstead|Thermolyne hereby declares under its sole responsibility that this product conforms with the technical requirements of the following standards:

EMC: EN 50081-1 Generic Emission Standard; EN 50082-1 Generic Immunity Standard;

Safety: IEC 1010-1-92 Safety requirements for electrical equipment for measurement, control, and laboratory use; Part I: General Requirements per the provisions of the Electromagnetic Compatibility Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, and per the provisions of the Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC.

The authorized representative located within the European Community is:

European Manager
Barnstead|Thermolyne
Saarbrückener Str. 248
D-38116 Braunschweig
Germany

Copies of the Declaration of Conformity are available upon request.

Unpackaging and Installation



Caution

Wall composition, condition and construction, as well as fastener type, must be considered when mounting this unit. The mounting surface and fasteners selected must be capable of supporting a minimum of 275 lbs. Inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If you are unsure of mounting surface composition, condition and construction or correct fasteners, consult your building maintenance group or contractor.



Warning

Do not locate the NANOpure Infinity Base Unit directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.

Do not use in the presence of flammable or combustible materials; fire or explosion may result. The device contains components which may ignite such materials.



Note

The outlet of a gravity feed storage reservoir must be above or at the same level as the inlet of the NANOpure Infinity Base Unit.

Unpackaging

1. Remove the unit from its shipping container. Remove all contents carefully. **Ensure that the feed tubing, sanitization cartridge, remote dispenser housing and its two brackets, wall bracket, accessory parts bag and power cord are removed from the packaging materials before discarding.** Put the NANOpure Infinity Base Unit on a bench.

Choosing a Site

The NANOpure Infinity Base Unit system features a pivoting control panel display and a dispenser which allow the system to be mounted almost anywhere within the laboratory. Use wall bracket for wall mounted systems as a template to drill mounting holes. (The NANOpure Infinity Base Unit does not include screws and fasteners for mounting.) Allow a minimum of 6 inches (15 cm) clearance on all sides of the unit for servicing, 3 inches (7.6 cm) on top for outer case removal and 20 inches (50.8 cm) in front for opening the door.

Tubing Adapter Installation

The following instructions will apply when you need to attach a piece of tubing to your NANOpure Infinity Base Unit during installation, unless otherwise noted in the installation instructions. To make tubing connections:

1. Completely disassemble the fitting. Refer to Figure 2 to familiarize yourself with the names of the component parts.
2. Make sure the tubing is cut off reasonably square and that no plastic burrs or ridges are present.
3. Place the grab ring and backup ring in the hex nut in the order and orientation shown in Figure 2. Thread the nut into the adapter. **DO NOT** use the o-ring at this time.
4. Push the tubing through the nut until it bottoms out in the adapter.
5. Remove the adapter nut and tubing. Place the o-ring over the tubing. Be careful not to push the backup ring or grab ring further back on the tubing when installing the o-ring.
6. Install the hex nut on the adapter and hand tighten.

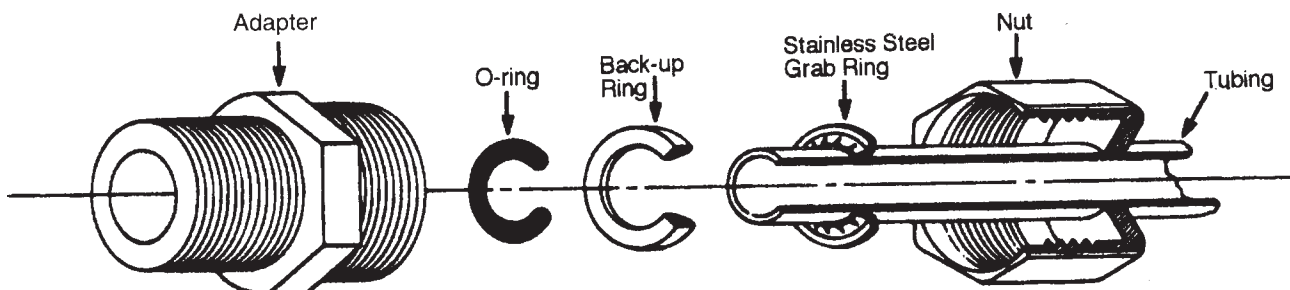


Figure 2 Typical Polypropylene Tubing Adapter Installation

Remote Dispenser Housing

The Infinity unit comes complete with a remote dispenser allowing you to deliver water up to eight feet (2.4 meters) away from the unit. Install the remote dispenser housing on the bottom right of the unit if wall mounting or top right side of the unit if bench mounting. The dispenser can also be remotely installed up to six feet (1.8 meters) from the right hand side of the unit. An accessory parts bag shipped with the unit contains seven hole plugs, six screws (three flat head, three pan head) and one nut. You will also need to find two small brackets packed separately in the Infinity box.

Installing the Remote Dispenser Housing on Bench Mounted Units

1. Remove the locking screw located on the right hand side of the Infinity unit between the rails.
2. Line up the two slots on the left side of the remote dispenser housing with the top of the two rails on the Infinity unit. Slide the remote dispenser housing down onto the rails.
3. Replace the locking screw to secure the remote dispenser housing.

Installing the Remote Dispenser Housing on Wall Mounted Units

If you are installing the remote dispenser housing on a wall mounted unit, remove the two rails and locking screw on the right side of the Infinity unit. Replace the screws with hole plugs provided. Retain the two rails for possible future use.

Prior to installing the NANOpure Infinity Base Unit on a wall, lay the unit on its back to attach the remote dispenser housing.

1. Remove two screws from the back of the remote dispenser housing. Keep them. You will use them later.
2. Place the L-shaped bracket to the left and back sides of the remote dispenser housing. Replace the two screws (1/2" x 8/32" pan head) removed in step 1 into the back of the housing to attach the bracket (See Figure 3, A).
3. Place one flat head screw (1/2" x 8/32") into the left side bottom of the L-shaped bracket. Secure it with the nut supplied. (See Figure 3, B)
4. Attach the remaining bracket with the two pan head screws(1/2" x 8/32") to the bottom right side of the Infinity unit with the short legs pointing to the right. (See Figure 3, C).
5. Locate the remote dispenser housing/ L-shaped bracket assembled in step 2 and the two remaining flat head screws. Line up the two holes in the bracket mounted on the bottom of the Infinity unit with the two holes in the remote dispenser housing/L-shaped bracket. Secure with the two flat head screws. (See Figure 3, D).
6. Screw in the remaining pan head screw through the remote dispenser housing with the bracket in the hole on the far right of the unit, where they line up.

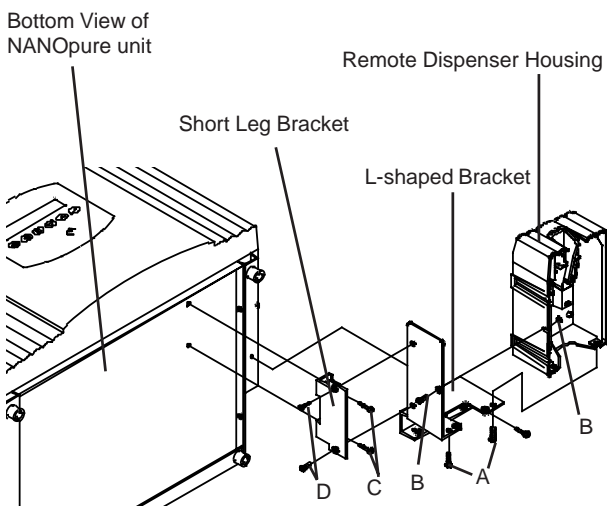


Figure 3 Remote Dispenser Housing Installation

Installing the Remote Dispenser Housing in Remote Locations

If you are installing the remote dispenser housing in a remote location away from the Infinity unit, remove the two rails and locking screw on the right side of the unit. Replace the screws with hole plugs provided. Retain the two rails for possible future use.

The remote dispenser housing can be installed up to six feet (1.8 meters) away from the unit.

1. Remove the two screws from the back of the remote dispenser housing. Keep them. You will use them later.
2. Lay the remote dispenser housing on its top. Place the L-shaped bracket to the right and back sides of the remote dispenser housing. Replace the two screws (1/2" x 8/32" pan head) removed in step 1 into the back of the housing to attach the bracket (See Figure 4, A).
3. Place one flat head screw (1/2" x 8/32") into the left side bottom of the L-shaped bracket. Secure it with the nut supplied. (See Figure 4, B).
4. Locate the short leg bracket and two flat head screws (1/2" x 8/32"). Line up the two holes on the short legs with the two holes on the remote dispenser housing. The long leg should point up. Screw in the two flat head screws to attach the bracket. (See Figure 4, C).
5. Put two screws (customer supplied) in the wall 3-1/2 inches apart on a straight horizontal line. Do not put the screws all of the way into the wall. The space between the bottom of the head on the screw and the wall should be 1/8-inch.

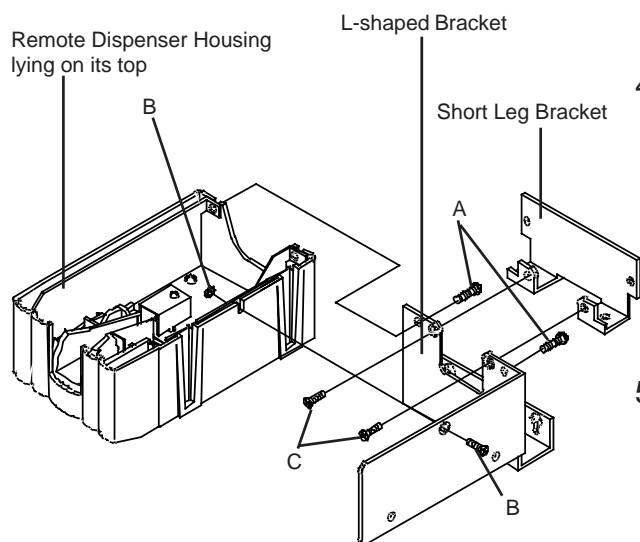


Figure 4 Remote Dispenser Housing Installation in Remote Locations

6. Line up the key hole slots on the remote dispenser housing with the two screws in the wall. Slide the remote dispenser housing down onto the screws.
7. Put two more screws (customer supplied) into the two remaining holes in the remote dispenser housing to secure the remote dispenser housing bracket to the wall.
8. Install two hole plugs into the two holes in the side of the bracket.

Lock the dispenser into its housing by placing the tubing end of the dispenser into the U-shaped groove in the housing and pushing it toward the back of the unit. You know it is locked when you hear a click. After the remote dispenser is fully inserted into the pivoting holder you must rotate down.

To remove the dispenser from its housing, lift/rotate up and pull the dispenser straight out.

Other accessories

Optional accessories for this unit include an inlet cell, float switch, low pressure switch and N.I.S.T. Traceable Calibration Module. Installation procedures for these accessories are explained in later sections of this manual. It is best to install these accessories prior to mounting the NANOpure Infinity Base Unit.

Bench Mounting

1. Place NANOpure Infinity Base Unit on a bench top that is accessible to water and electricity and that is convenient to your work area, noting clearance requirements.

**Warning**

Do not locate the NANOpure Infinity Base Unit directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.

Do not use in the presence of flammable or combustible materials; fire or explosion may result. The device contains components which may ignite such materials.

**Note**

The outlet of a gravity feed storage reservoir must be above or at the same level as the inlet of the NANOpure Infinity Base Unit.

**Caution**

Wall composition, condition and construction, as well as fastener type, must be considered when mounting this unit. The mounting surface and fasteners selected must be capable of supporting a minimum of 275 lbs. Inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If you are unsure of mounting surface composition, condition and construction or correct fasteners, consult your building maintenance group or contractor.

**Note**

Prior to installing the NANOpure Infinity Base Unit on the wall, ensure that the remote dispenser housing and/or other accessories such as the Inlet Cell are installed. See the appropriate section of this manual for installation of accessories.

Wall Mounting

Install the NANOpure Infinity on a wall in a convenient location that is accessible to water and electricity.

1. Locate the wall bracket packed separately from the unit.
2. Using the wall bracket as a template, locate and drill the mounting holes in the wall. A minimum of four (customer-supplied) fasteners will be required — two on the top and two on the bottom.
3. Attach the wall bracket to the wall using the customer-supplied fasteners.
4. Remove the locking screws on each side of the wall bracket.
5. Pull the two locking slides on each side of the wall bracket out as far as they will go.
6. Hang the Infinity unit on the wall bracket by sliding the mounting pins into the wall bracket slots.
7. Push the locking slides on each side of the wall bracket in as far as they will go.
8. Replace the locking screws.

Water Connections

Feed Water Connection

1. Locate the length of 3/8" O.D. tubing provided with a quick disconnect insert on one end and a 3/8" O.D. X 1/4" NPT tubing adapter on the other.
2. Install the tubing adapter onto your incoming water line. We recommend a customer supplied shut off valve be installed in your feed water line. Do not connect the feed water to your NANOpure Infinity Base Unit. You will connect this during the initial sanitization procedure.

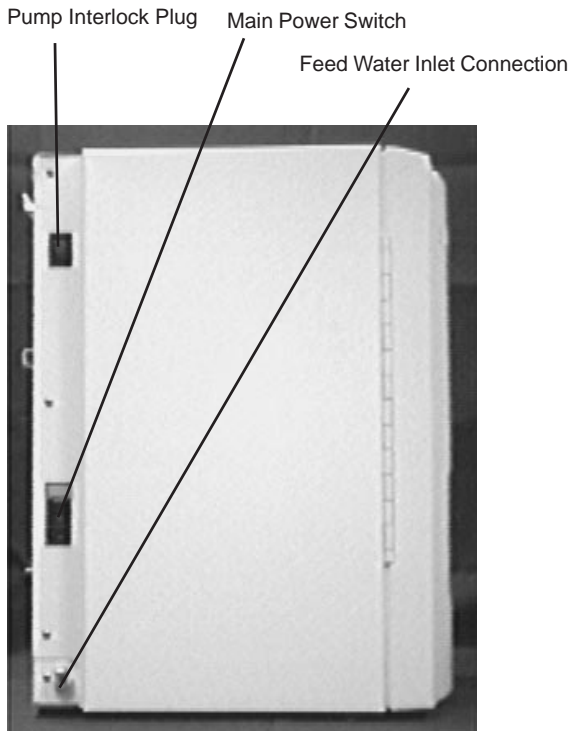


Figure 5 Feed Water Connection (Left Side with Front of Unit Facing You)

Controls

Familiarize yourself with the controls prior to proceeding. More detailed information is available on pages 25-28.

Main Power Switch

The main power switch on the NANOpure Infinity Base Unit is located on the lower left side of the unit (as you face the front of the unit), directly above the power cord receptacle.

Control Panel

The NANOpure Infinity Base Unit is controlled through a panel which incorporates six switches to control its functions: START/STOP, STANDBY, MODE, DOWN, UP and ENTER. This control panel utilizes a digital display to show system information and the purity of the product water. It will also show purity of feed water when an optional inlet cell is utilized.

Two hidden LEDs illuminate to inform you it is time to sanitize the unit (SAN) or replace the UV lamp (UV) in UV models. The SAN light illuminates after approximately six months of use. The UV light illuminates after approximately three months of use in models which utilize a UV lamp.

The control panel can be adjusted to the angle you need for viewing the digital display.

To adjust the angle of the control panel:

1. Open the front door. Inside the door are two rectangular openings which show two screws held in place by two wing nuts, one in each opening.

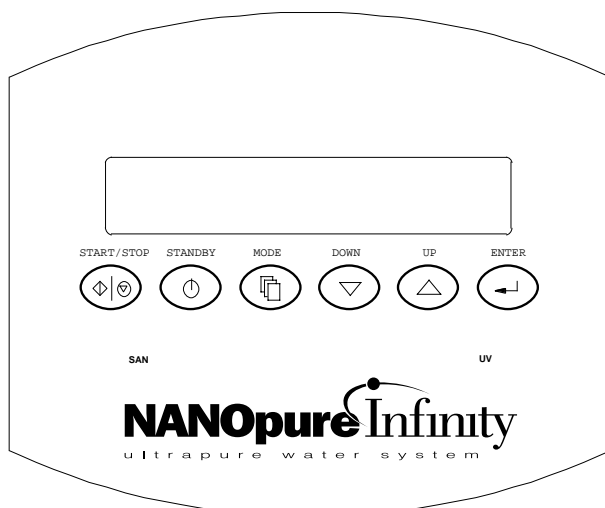


Figure 6 NANOpure Infinity Base Unit Controls

2. Turn the wing nuts to the left to unlock and loosen them. The control panel will now pivot top to bottom in its opening. Reposition the control panel to your desired viewing position.
3. Lock the control panel in place by turning the wing nuts to the right until they are hand-tightened.

Switches

When the main power switch (on the lower left side of the unit) is on, the six switches on the control panel function as follows:

START/STOP allows you to turn unit on or off.

STANDBY allows you to put the unit into standby, recirculating water for 10 minutes every hour. When in standby, the display shows "Standby Mode" during periods of inactivity. During the 10-minute recirculation, the display reads "Recirculation."

MODE allows you to change from purity reading to maintenance prompts and activities.

DOWN and UP allow you to scroll between different commands and values.

ENTER allows you to activate a certain mode.



Warning

Avoid splashing disinfecting solutions on clothing or skin.

Ensure all piping connections are tight to avoid leakage.

Ensure adequate ventilation.

Carefully follow manufacturer's safety instructions and material safety data sheets.

This device is to be used with water feeds only.

Sanitizing/cleaning agents must be used in compliance with instructions in this manual. Failure to comply with the above could result in explosion and personal injury.

Use a properly grounded electrical outlet of correct voltage and current handling capacity.



Note

The top cartridge nipple is the one with the right-angle turn and one flange. The bottom cartridge nipple extends straight out from the cartridge.

The flange on the top cartridge nipple should be able to slide down the keyway wall behind the sheet metal.



Caution

Make sure the cartridge hold-down bracket is in place.

Initial Operation

Initial sanitization

Your NANOpure Infinity Base Unit has been shipped with a sanitization cartridge (Catalog No. D50258) that you will install. Three empty cartridges have been installed in the unit, allowing you to sanitize your NANOpure Infinity Base Unit prior to using it for the first time. To sanitize your NANOpure Infinity Base Unit:

1. Open the front door. Disengage the cartridge hold-down bracket by pulling it out and up. Remove the D50258 sanitization cartridge from its bag. Wet the cartridge o-rings with water. Install the D50258 sanitization cartridge in the empty cartridge position (#4). Press the top cartridge nipple into the upper socket until it bottoms out. Then, lower the cartridge inserting the bottom cartridge nipple into the lower socket until it is firmly seated. Replace the cartridge hold-down bracket. Close the front door.
2. Attach the feed water line (from step 2 Feed Water Connection, see Figure 5) to the unit by snapping the quick disconnect coupling into the quick disconnect body in the lower left side of the unit.
3. Plug the power cord into the unit's power entry module and plug into a live outlet. Place the main power switch to the "I" (on) position. Place a suitable container under the remote dispenser. Depress the trigger to open the remote dispenser. The remote dispenser can be locked by depressing the button on its right side while depressing the trigger.



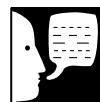
Note

To disrupt the flow of water to the NANOpure Infinity Base Unit, press the stainless steel thumb pad on the quick disconnect fitting. The insert with the valve is easily removed. To resupply the Infinity unit with water, Attach the feed water line (from step 2 Feed Water Connection) to the unit by snapping the quick disconnect coupling into the quick disconnect body in the lower left back of the unit.



Note

Product purity during sanitization will be very low. Do not pay close attention to these readings or below set point indication during the sanitization procedure.



Note

The cartridges will still contain water when removed. Place the cartridges upside down in a sink, bucket or other waterproof container to drain them after removal.



Warning

Depressurize system prior to disengaging the cartridge hold-down bracket.

4. Push the START/STOP switch to start.
5. Run water to drain for 30 seconds, close the dispenser by depressing the handle. Depressing the handle will unlock the button and close the dispenser.
6. Recirculate the water for 30 minutes.
7. After 30 minutes, reset the sanitization timer according to the instructions on page 27 and then press START/STOP switch to turn the unit off. Remove the feed water line. Turn the main power switch to "O" position.
8. Open the remote dispenser, lock it open and point it down a drain or into a suitable container. **Depressurize the unit until you are no longer getting water out of the remote dispenser.**
9. Open the front door. Disengage the cartridge hold-down bracket. Remove all of the cartridges by pulling first up and then out. Drain the water from the three empty cartridges and keep them for future use. Throw away the sanitization cartridge.
10. Proceed to Cartridge Installation and Rinse Up.



Note

The NANOpure Infinity Base Unit cartridges must be installed in the proper order.

If you have just sanitized your NANOpure Infinity Base Unit, retain the empty cartridges shipped with your unit for use during future sanitization procedures. Discard the used D50258 sanitization cartridge.

The top cartridge nipple is the one with the right-angle turn and one flange. The bottom cartridge nipple extends straight out from the cartridge.

The flange on the top cartridge nipple should be able to slide down the keyway wall behind the sheet metal.

Cartridge position by number

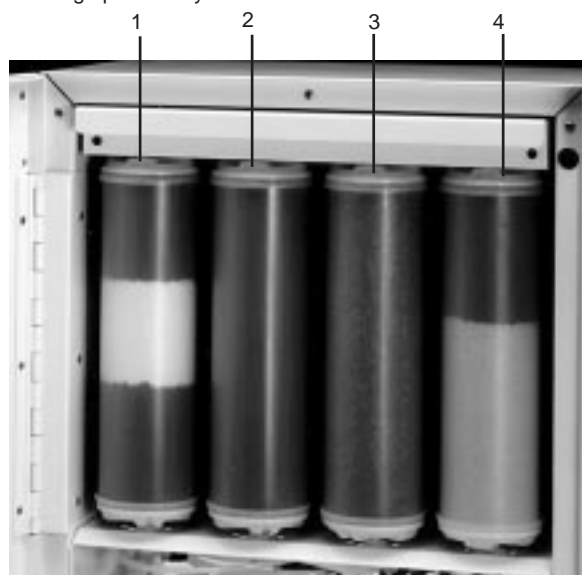


Figure 7 Proper Cartridge Order

Cartridge Installation and Rinse Up

1. Open the front door.
2. The cartridges will be installed according to the charts below. Position 1 is the farthest left, position 2 the next one to the right, position 3 the next one to the right and position 4 farthest right. (See Figure 7). Proceed to step 3.

Type 1 Cartridge Kit Tap/DI Feed #D50256

Position	Type	Catalog#
1	Pretreatment	D50251
2	Ultrapure	D50253
3	Ultrapure	D50253
4	Ultrapure	D50253

ORGANICfree Cartridge Kit Tap/DI Feed #D50254

Position	Type	Catalog#
1	Pretreatment	D50251
2	Ultrapure	D50253
3	Ultrapure	D50253
4	ORGANICfree	D50252

Type 1 Cartridge Kit R/O or Distilled Feed #D50257

Position	Type	Catalog#
1	Pretreatment	D50250
2	Ultrapure	D50253
3	Ultrapure	D50253
4	Ultrapure	D50253

ORGANICfree Cartridge Kit R/O or Distilled Feed #D50255

Position	Type	Catalog#
1	Pretreatment	D50250
2	Ultrapure	D50253
3	Ultrapure	D50253
4	ORGANICfree	D50252



Note

Ensure both o-rings of the cartridge are down inside the connector before moving onto the next cartridge installation.



Caution

Make sure the cartridge hold-down bracket is in place.



Caution

Do not allow the NANOpure Infinity Base Unit to operate unless water is available to the unit.

3. Remove the protective bag and wet the o-rings with water on both cartridge nipples.
4. Install the appropriate cartridge in cartridge position #1 by pressing the top cartridge nipple into the upper socket until it bottoms out.
5. Lower the cartridge and insert the bottom cartridge nipple into the lower socket until it is firmly seated.
6. Repeat steps 3 - 5 with the remaining cartridges in your kit, placing them in the next three positions from left to right according to the Cartridge Kits charts on page 21. *Do not install the 0.2 micron filter and bell assembly at this time.*
7. Replace the cartridge hold-down bracket.
8. Close the front door.
9. Reattach the feed water line to the unit by snapping the quick disconnect coupling into the quick disconnect body in the lower left back of the unit.
10. Turn the unit on by turning the main power switch to the "I" (on) position.
11. Point the outlet of the remote dispenser down a drain or into a suitable container. Depress the draw-off trigger and lock it open.
12. Press the START/STOP switch to start.

**Note**

For more demanding applications where low TOC water is required, a rinse of 15-20 liters through the cartridges and filter may be necessary.

**Caution**

Do not overtighten the 0.2 micron filter assembly onto the Luer fitting or use excessive force in seating it. The filter and/or Luer fitting can be damaged by overtightening or excessive force.

13. Run product water to drain for 5 minutes through the remote dispenser. Close the remote dispenser and let the water recirculate until the resistivity reaches your desired purity level. (See note on this page).
14. Remove a new 0.2 micron filter and bell assembly from its bag and insert it into the Luer fitting on the remote dispenser. Gently turn it clockwise until it is fully seated in the Luer fitting.
15. Remove the protective cap from the filter bell. Open the remote dispenser and flush 1-2 liters of water through the 0.2 micron filter. The product water is now ready for use. (See note on this page).

Normal Operation



Note

On initial start-up, the purity meter may display "Prod. MΩ-cm". This is caused by air in the cell and should be replaced by a resistivity reading almost immediately. If the dots aren't replaced by a value after one minute, refer to the **Problem Solving** section for this manual.

1. Turn the system power on by depressing the main power switch to the I position.
2. Press the START/STOP switch on the control panel.
3. The system greeting lights indicate which module, if any, is installed on the base unit. This greeting is one of the following: "NANOPURE", "NANOPURE UV", "NANOPURE UF", or "NANOPURE UV/UF". Your base unit can be upgraded to include any of the three modules: UV module (Catalog No. D8974), UF module (D8984) or UV/UF module (D8994).

While the system greeting is displayed for approximately five seconds, the unit checks for the presence of an inlet cell.

4. The system electronics will check its calibration. (All units have been factory calibrated.) If calibration is OK the display will show "Calibration OK." After this it will show "Prod. MΩ-cm". Then the display will read "Prod. 10 (±0.2) MΩ-cm." This is a reading of the calibration reference value.
5. The display will then begin reading resistivity of the product water. Initially it will read "Prod. MΩ-cm" until the air is bled from the system.
6. Allow the water's resistivity to rise to the desired purity before drawing off water.
7. The system should be left on or in standby during the work day. (See Use of Standby mode.)

Remote Dispenser Operation

Lock the dispenser into its housing by placing the tubing end of the dispenser into the U-shaped groove in the housing and pushing it toward the back of the unit until it stops and then pull down. You know it is locked when you hear a click.

To operate:

1. Remove the protective cap from the filter bell.
2. Depress the draw-off trigger.
3. When draw off is complete, release the draw-off trigger and replace the protective cap on the filter bell.
4. For unattended operation, depress the button on right side of the dispenser at the same time as the trigger is depressed.
5. To unlock the draw-off trigger and stop dispensing water, press the draw-off trigger.

To remove the dispenser from its housing, pull it up and out. See page 14 for additional information.



Note

Do not turn off the NANOpure Infinity Base Unit during non-work hours. Doing so will allow bacterial growth and other contamination of the water in the system. As a result, the system will require a lengthy rinse-up period at the beginning of the work day to achieve high-quality product water. We recommend using the Standby Mode.

Use of Standby Mode

At the end of the work day, press the Standby switch on the front of the NANOpure Infinity Base Unit to place the unit in Standby mode for the night. Press the STANDBY switch and the display will read "Standby Mode" for 50 minutes and then go into a 10-minute recirculation mode. While the pump is energized, the display will read "Recirculation."

Selecting the Set Point

The NANOpure Infinity Base Unit electronics include a user programmable set point which alerts you when water quality falls below the programmed set point. The set point is user selectable from 0-18 M Ω -cm. The display will alternate actual resistivity measurements with a “Below Setpoint” message when the measurement is below the set point.

The set point indication is set at the factory at 10 M Ω -cm.

You must start this procedure from the off (stop) position.

1. Press and hold the ENTER switch.
2. Press the START/STOP switch.
3. Release switches.
4. The display will read “Setpt. 10 M Ω -cm”.
5. To adjust the value, press the UP or DOWN arrow until your desired value is displayed and press ENTER.

If the resistivity of the product water falls below the set point value, the display will read the resistivity value for approximately seven seconds and a “Below Setpoint” display for approximately three seconds. Once the resistivity value rises above the set point, the unit will only read resistivity.

Resetting the Sanitization Timer

1. While the NANOpure Infinity is operating, press the MODE switch.
2. The display will read “Reset SAN Timer”
3. Press the ENTER switch to reset the Sanitization Timer.
4. The display will read “Enter to Reset”
5. Press the ENTER switch again and the timer will be reset. This will reset the sanitization timer for six months.



Note

Press the ENTER button at any step and the unit will go to resistivity of the product water. Pressing the UP and DOWN switches allows scrolling between the various purity of product water and feed water displays.

Reading Purity of Product Water and Feed Water With Optional Inlet Cell Accessory

1. Turn the system power on by depressing the main power switch to the I position.
2. Press the START/STOP switch on the control panel.
3. The display will show the type of system for approximately five seconds.
4. The system electronics will check its calibration. All units have been factory calibrated. If calibration is OK the display will show “Calibration OK.” After this it will show “Prod. MΩ-cm”. Then the display will read “PROD. 10 (±0.2) MΩ-cm.” This is a reading of the calibration reference value.

NORMAL OPERATION

5. The display will then begin reading resistivity of the product water. Initially it will read "Prod. MΩ-cm" until the air is bled from the system.
6. Press the DOWN switch to:
 - Display conductivity of product water
 - Display Total Dissolved Solids of product water
 - Display temperature of product water
7. If no inlet cell is used, the reading will return to the resistivity of the product water. If an inlet cell is attached, it will read the following:
 - Display resistivity of inlet water
 - Display conductivity of inlet water
 - Display Total Dissolved Solids of inlet water
 - Display temperature of inlet water
 - Display resistivity of product water

Installing Float or Pressure Switch



Warning

Disconnect from the power supply prior to maintenance and servicing.

Accessories D8964 (float switch) and D2706 (pressure switch) are designed to protect the NANOpure Infinity Base Unit pump by alerting the NANOpure Infinity Base Unit of an inadequate feed water condition so that the pump can be shut down. If an inadequate feed water condition exists and the NANOpure Infinity Base Unit pump is shut down due to this condition, the display will read “Check Inlet.” Use the following instructions for installation.

1. Disconnect the unit from the electrical power.
2. If using D8964 float switch, follow the installation instructions included with the float switch for installation into a tank.
3. If using D2706 low pressure switch, install the PVC tee (supplied with D2706) in incoming water line. Screw the switch into the top of the tee, then connect the inlet tubing to the NANOpure Infinity Base Unit with the remaining opening.
4. Route the cable from the float or low pressure switch to the top left of the NANOpure Infinity Base Unit.
5. Remove the jumper plug from the back, left, upper portion of the unit and save for future use.
6. Plug the cable into the jumper plug outlet.
7. Reconnect the electrical power.

Installing the Inlet Cell

The NANOpure Infinity Base Unit system offers, as an optional feature, the ability to monitor the resistivity of the NANOpure Infinity Base Unit inlet water.

To install the inlet cell:

1. Disconnect inlet water and electrical service to unit. Open Remote Dispenser to depressurize unit.
2. Open the front door.
3. Remove the screws holding the Infinity unit's case in place. As the unit faces you, there are three screws in the left side near the back, three in the right side near the back and five in front, two on each side and one above the cartridge hold-down bracket. Remove the jumper plug, Float Switch or Pressure Switch Cable from the back, left, upper portion of the unit.
4. Remove the remote dispenser from its housing.
5. Lift up to remove the outer case.
6. Remove the electric section cover directly behind the cartridges.
7. The inlet cell well is located in the lower front left of the unit. (see Figure 8).



Figure 8 Inlet Cell Installation and Location

8. Remove the 1/2-inch plug located in the front of the cell well.
9. Install the inlet cell by turning the clear plastic bushing clockwise. Do not turn the black snap cap. Hand-tighten the bushing. Do not use a wrench. Overtightening may damage the seal.
10. Thread the inlet cell cable through the large hole in the lower left of the unit and back into the unit through another large hole in the upper left of the same side of the unit.
11. Connect the white plastic cell connector to position P3 on the resistivity circuit board (PC896X2) located on the inside back wall of the unit. The flat part of the connector should face upward.
12. Replace the electric section cover.
13. Replace the outer case. Replace the screws you removed to take off the case. Reattach the jumper plug, Float Switch or Pressure Switch you removed earlier.
14. Reconnect feed water.

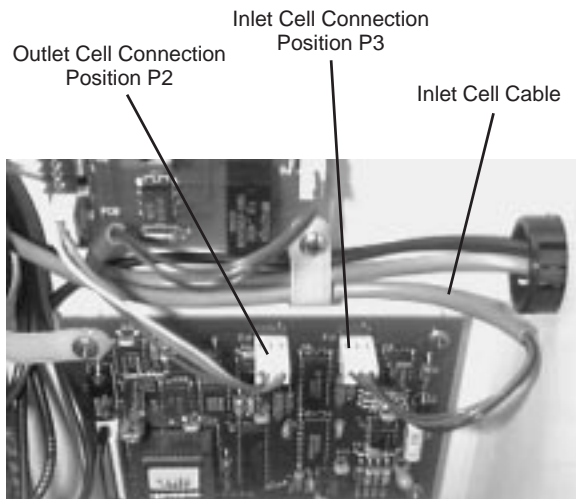


Figure 9 Inlet Cell Cable Connection to Circuit Board

N.I.S.T. Calibration Module

Performing an Electronic Calibration Using the Optional N.I.S.T. Calibration Module

If you purchased the optional N.I.S.T. calibration module (Catalog No. E896X5) you can perform a calibration of the NANOpure Infinity purity sensing electronics traceable to N.I.S.T. standards.

1. Disconnect electrical service to the unit. Open the remote dispenser to depressurize the unit.
2. Open the front door.
3. Remove the screws that hold the Infinity unit's outer case in place. As you face the unit, there are three screws in the left side near the back, three in the right side near the back and five in the front, two on each side and one above the cartridge hold-down bracket. Remove the jumper plug or float/pressure switch from the back, left, upper portion of the unit.
4. Remove the remote dispenser from its housing.
5. Lift and remove the outer case.
6. Remove the electric section cover directly behind the cartridges.
7. Locate the outlet cell connection on the circuit board (see figure 9) and remove the outlet cell connection.

8. Connect the N.I.S.T. calibration module to the connection point (J2), "To Outlet Cell" on the calibration board (PC896X3A).
9. Replace the electric section cover removed in step 6.
10. Plug the unit into a live outlet and turn the unit on by depressing the main power switch.
11. Press and hold the DOWN switch on the controls.
12. Press the START/STOP switch.
13. Release switches.
14. The display will show "Calibrate?", press ENTER.
15. Display will read "Calibrating". When the calibration is complete the display will show "Calibration Done".
16. Turn the main power switch to the "O" (off) position. Unplug the unit.
17. Remove the calibration module and reconnect the cell.
18. Replace the outer case. Replace the screws you removed earlier. Reattach the jumper plug or float/pressure switch you removed earlier.



Note

The calibration module can be returned to Barnstead|Thermolyne for recertification. Please contact Barnstead|Thermolyne for instructions.

Maintenance and Servicing



Note

The Sanitization Timer will illuminate after six months, reminding you to sanitize the unit. Complete the system sanitization procedure and reset the sanitization lamp/indicator by going through the Reset Sanitization Timer procedure on page 27.



Warning

Disconnect from the power supply prior to maintenance and servicing.



Note

The cartridges will still contain a cartridge bed of water when removed. Therefore, you will want to have a sink, bucket or other waterproof container available to place them in after removal.



Warning

Depressurize system completely prior to lifting cartridge hold-down bracket and removing cartridges.

System Sanitization and Cartridge Replacement

The frequency with which you will need to clean your unit and replace your cartridges is dependent on your feed water's characteristics, your purity requirements and your usage. Sanitize your NANOpure Infinity Base Unit and replace the cartridges when the product water purity drops below acceptable levels of resistivity, when organic levels become too high, or if a new 0.2 micron filter clogs rapidly after installation even though the cartridges were thoroughly rinsed before the 0.2 micron filter was installed. To sanitize the NANOpure Infinity Base Unit, the purification cartridges must be replaced with a sanitization cartridge and the three empty cartridges supplied with your unit. The simple-to-use sanitization cartridge is available from BarnsteadThermolyne (Catalog Number D50258). This is used in addition to the empty cartridges included with this unit to effect a complete sanitization.

1. Disconnect electrical service to the unit.
2. Remove the feed water line by depressing stainless steel thumb pad.
3. **Depressurize system by opening the remote dispenser.**
4. Open the front door.
5. Be aware that the exhausted cartridge will contain a cartridge bed of excess water, you will want to have a container available to place it in after removal.
6. Disengage the cartridge hold-down bracket.



Note

The flange on the top cartridge nipple should be able to slide down the keyway wall behind the sheet metal.

7. Remove the exhausted cartridge in the right-hand (#4) position by pulling it first up and then out.
8. Remove a D50258 sanitization cartridge from its packaging. Press the top cartridge nipple of the D50258 sanitization cartridge into the upper socket in the right-hand (4) position until it bottoms out.
9. Lower the cartridge and insert the bottom cartridge nipple into the lower socket until it is firmly seated.
10. Install the three empty cartridges supplied with your NANOpure Infinity Base Unit in positions 1, 2 & 3.
11. Reposition the cartridge hold-down bracket.
12. Close the front door. Remove the 0.2 micron filter and bell assembly.
13. Sanitize, install new cartridges and rinse according to the instructions for **Initial Sanitization and Cartridge Installation** in the **Initial Operation** section.

General Cleaning Instructions

Disconnect electrical service to the unit.

Wipe exterior surfaces with lightly dampened cloth containing mild soap solution.



Caution

Do not overtighten the 0.2 micron filter assembly onto the Luer fitting or use excessive force in seating it. The filter and/or Luer fitting can be damaged by overtightening or excessive force.



Note

If a newly installed 0.2 micron filter clogs rapidly after installation, the NANOpure Infinity Base Unit may need to be sanitized to remove bacterial contaminants. See **System Sanitization**.



Warning

Replace fuses with those of the same type and rating.

0.2 Micron Filter Replacement

Replace the 0.2 micron final filter whenever any of the following conditions occur: every 30 days, the product water flow rate is reduced or bacteria break through. The 0.2 micron filter is shipped assembled with a bell. To replace the 0.2 micron filter assembly:

1. Remove the old 0.2 micron filter assembly by turning it counterclockwise until it is free from the Luer fitting.
2. Remove the new 0.2 micron filter assembly from its bag and insert it into the Luer fitting. Gently turn it clockwise until it is fully seated in the Luer fitting.
3. Rinse 1-2 liters of water through the filter to drain prior to using the product water.

Fuse Replacement

1. Turn off the NANOpure Infinity Base Unit and disconnect it from the power supply by removing the power cord directly below the main power switch. Locate the fuse drawer above the power cord receptacle.
2. Pull out the fuse drawer located in the power entry module.
3. Remove old fuses and replace with fuses of the same type and rating. (See Parts Listing.)
4. Replace fuse drawer.

5. Reattach the power cord and reconnect the unit to the power supply.
6. Operate normally.

Shutdown

If the NANOpure Infinity Base Unit is to be shut down for an extended period of time, the unit should be completely drained and the cartridges removed to prevent the growth of bacteria.

If the system has remained inactive and full of water for more than 96 hours, the unit should be drained, sanitized and new cartridges installed prior to use.

Problem Solving

Problem	Possible Causes	Solutions
NANOpure Infinity completely inactive (pump not operating, control panel not active).	No electrical power to NANOpure Infinity. Main fuse blown.	Ensure NANOpure Infinity power cord is connected to a live power source and completely plugged into electrical outlet as well as power entry module on the unit. Power on/off switch in the I (on) position. Replace the main fuse as indicated in the "Fuse Replacement" section (page 36).
Reduced or no product flow from the Remote Dispenser.	0.2 micron filter clogged.	Replace final filter as indicated in the "0.2 Micron Filter Replacement" section of the manual (page 36).
Display reads "Check Inlet" and pump does not run.	Pump protector (in reservoir), feed water line pressure switch or jumper plug not connected to pump interlock. Insufficient feed water pressure or volume to satisfy the NANOpure Infinity Base Unit.	Connect the pump protector, jumper plug or pressure switch cord to the receptacle located on the upper left hand section of the NANOpure Infinity. Open feed water line shut off, connect feed water line to NANOpure Infinity Base Unit and ensure sufficient pressure (line pressure must exceed 5 psig (0.35 kg/cm ²), or sufficient water level in the feed water reservoir).
Display reads "Error 1".	PC board communication error. System electronics failure.	Power down NANOpure Infinity (turn off) and restart the unit. Replace the resistivity meter printed circuit board.
Display reads "Error 2".	Air in system. Bad cell connection.	Run more water through the NANOpure Infinity to purge the air from the unit. Check the connection of the cell as it attaches to the circuit board.
Display reads "Error 3".	Meter microprocessor has reset during operation. System electronics failure.	Power down NANOpure Infinity (turn off) and restart the unit. Replace the resistivity meter printed circuit board.
Display reads "Error 4".	Meter out of calibration.	Perform calibration procedure utilizing the optional N.I.S.T. calibration module.

Problem	Possible Cause	Solutions
<p>Display reads "Prod. M - cm" for more than 10 seconds.</p>	<p>Air in cell.</p> <p>Bad cell connection.</p>	<p>If you just started your NANOpure Infinity, wait one minute to see if it corrects itself.</p> <p>Check the connection of the cell as it attaches to the circuit board.</p>
<p>Recirculated water will not rinse up to desired purity level.</p>	<p>Exhausted cartridges.</p> <p>Cartridges out of order.</p>	<p>Replace all cartridges as indicated in the "Cartridge Replacement" section (page 35) of this manual.</p> <p>Install the cartridges in the proper order as indicated in the chart located in the manual.</p>
<p>Short cartridge life.</p>	<p>Cartridges being used are beyond expiration date.</p> <p>Poor quality feed water.</p>	<p>Check the expiration date. Cartridges begin to lose capacity after being stored two years from the date of manufacture. Replace the cartridges with unexpired ones.</p> <p>If a Barnstead ROpure is the feed water source, check that the membrane is functioning properly.</p> <p>If a Barnstead Still is the feed water source, ensure that the distillate temperature to the NANOpure Infinity does not exceed 49°C (120°F).</p> <p>If tap water is the feed water source, check the quality of the water. In some cases the quality of the water will change with the seasons. Changing the source (city water to well water, or well water to city water) will result in a water quality change.</p> <p>If feed water is from a central water purification system, verify water quality and proper functioning of the system.</p>

Replacement Parts

Recommended Spares

Consumables

Consumable parts are those required to support the day-to-day operation of this equipment. **Barnstead|Thermolyne** establishes two types of consumables; those items that must periodically be replaced to maintain performance (filters, resin cartridges, etc.) and other items of limited life (indicator lights, fuses, etc.) that you can expect to replace on a more or less random basis. Where practical, **Barnstead|Thermolyne** recommends the frequency of replacement, or provides information on life expectancy from which you may calculate a replacement interval compatible with your usage pattern.

The replacement of consumable parts is discussed in the Maintenance and Servicing section to assist you in accomplishing your own service.

Consumables may be ordered separately and in some cases, as an expendables kit. Check with your **Barnstead|Thermolyne** representative for additional information on the expendables kit.

Description	Catalog No.	Recommended Quantity
Type 1 Cartridge Kit Tap/DI Feed	D50256	1
ORGANICfree Cartridge Kit Tap/DI Feed	D50254	1
Type 1 Cartridge Kit R/O or Distilled Feed	D50257	1
ORGANICfree Cartridge Kit R/O or Distilled Feed	D50255	1
Remote Dispenser Final Filter	FL703X2	2
Mains Fuse, 120 Volt - Type T Time Lag, 3.0 Amp, 250 Volt	04455	2
Mains Fuse, 230 Volt - Type T Time Lag, 2.0 Amp, 250 Volt	5120-0025	2
Teflon® Tape, Roll	06078	1
Main Transformer Fuse, 120 Volt - Type T Time-Lag, 1.0 Amp, 250 Volt	5120-0016	1
Main Transformer Fuse, 230 Volt - Type T Time-Lag, 0.5 Amp, 250 Volt	FZX35	1
Sanitization Cartridge	D50258	1

General Maintenance Parts

General maintenance parts are defined as laboratory level repair parts which do not require great expertise or special tools for installation. **Barnstead|Thermolyne** recommends that you stock the general maintenance parts as an aid to ensuring the continued operation of this equipment.

Description	Catalog No.	Recommended Quantity
Quick Disconnect Inlet Valve		
Body 1/4" NPT	CUX11	1
Insert 3/8" tube	CUX9	1
Check Valve	PMX136	1

Safety Stock

For critical applications where performance with minimum downtime is required, **Barnstead|Thermolyne** recommends that you maintain a local stock of those parts listed in the General Maintenance Parts and Safety Stock sections.

Description	Catalog No.	Recommended Quantity
Display	ME896X2	1
Main PC Board	PC896X5	1
Recirculation Pump & Motor, 100 & 120 Volt	PU896X1	1
Recirculation Pump & Motor, 240 Volt	PU896X2	1
Pressure Regulator	02280	1
Resistivity Cell	E896X4	1
Power Supply PC Board	PC759X4A	1
Calibration PC Board	PC896X3A	1
Resistivity Meter PC Board	PC896X2	1

Optional Accessory Ordering Information

Description	Catalog No.
UV Module	D8974
UF Module, 10,000 MWCO	D8984
Inlet Cell Bushing	BR550X3
Cell "O" Ring	GSX29
UV/UF Module	D8994
N.I.S.T. Calibration Module	E896X5
Inlet Cell	E896X3
Low-Pressure Switch	D2706
Float Switch	D8964

Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the **Barnstead|Thermolyne** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 319-556-2241 or 800-553-0039.

Prior to returning any materials to **Barnstead|Thermolyne Corp.**, please contact our Customer Service Department for a "Return Goods Authorization" number (RGA). Material returned without a RGA number will be refused.

Two Year Limited Warranty

Barnstead|Thermolyne Corporation warrants that if a product manufactured by **Barnstead|Thermolyne** and sold within the continental United States or Canada proves to be defective in material or construction, **Barnstead|Thermolyne** will provide you, without charge, for a period of ninety (90) days, the labor, and a period of two (2) years, the parts, necessary to remedy any such defect. Outside the continental United States and Canada, the warranty provides, for two (2) years, the parts necessary to remedy any such defect. The warranty period shall commence either six (6) months following the date the product is sold by **Barnstead|Thermolyne** or on the date it is purchased by the original retail consumer, whichever date occurs first.

All warranty inspections and repairs must be performed by and parts obtained from an authorized **Barnstead|Thermolyne** dealer or **Barnstead|Thermolyne** (at its own discretion). Heating elements, however, because of their susceptibility to overheating and contamination, must be returned to our factory, and if, upon inspection, it is concluded that failure is not due to excessive high temperature or contamination, warranty replacement will be provided by **Barnstead|Thermolyne**. The name of the authorized **Barnstead|Thermolyne** dealer nearest you may be obtained by calling 1-800-446-6060 or writing to:

Barnstead|Thermolyne

P.O. Box 797

2555 Kerper Boulevard

Dubuque, IA 52004-0797

USA

FAX: (319) 589-0516

E-Mail: mkt@barnsteadthermolyne.com

Barnstead|Thermolyne's sole obligation with respect to its product shall be to repair or replace the product. Under no circumstances shall it be liable for incidental or consequential damage.

THE WARRANTY STATED HEREIN IS THE SOLE WARRANTY APPLICABLE TO **Barnstead|Thermolyne** PRODUCTS. **Barnstead|Thermolyne** EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE.

Barnstead | Thermolyne a subsidiary of
SYBRON
INTERNATIONAL

2555 Kerper Blvd.
P.O. Box 797
Dubuque, IA 52004-0797 USA
PHONE: 319-556-2241 • 800-553-0039
FAX: 319-589-0516
E-Mail: mkt@barnsteadthermolyne.com

