

Nanopure™ Analytical Ultrapure Water System

Series 1367

Operating Manual and Parts List LT1367X1 Rev. 0



Models covered in this manual	
Model number	Voltage
D11901 (7143)	100V - 240V

MANUAL NUMBER LT1367X1 (7007143)

0	--	6/9/10	Transfer to Marietta (was LT1367X1 3/4/10)	ccs
REV	ECR/ECN	DATE	DESCRIPTION	By



Important Read this instruction manual. Failure to read, understand and follow the instructions in this manual may result in damage to the unit, injury to operating personnel, and poor equipment performance. ▲

Caution All internal adjustments and maintenance must be performed by qualified service personnel. ▲

Material in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. Thermo Fisher Scientific makes no representations or warranties with respect to this manual. In no event shall Thermo be held liable for any damages, direct or incidental, arising out of or related to the use of this manual.

©2010 Thermo Fisher Scientific. All rights reserved.



Important operating and/or maintenance instructions. Read the accompanying text carefully.



Potential electrical hazards. Only qualified persons should perform procedures associated with this symbol.



Equipment being maintained or serviced must be turned off and locked off to prevent possible injury.



Hot surface(s) present which may cause burns to unprotected skin, or to materials which may be damaged by elevated temperatures.



Marking of electrical and electronic equipment, which applies to electrical and electronic equipment falling under the Directive 2002/96/EC (WEEE) and the equipment that has been put on the market after 13 August 2005.



This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. It is marked with the WEEE symbol. Thermo Fisher Scientific has contracted with one or more recycling/disposal companies in each EU Member State European Country, and this product should be disposed of or recycled through them. Further information on Thermo's compliance with this directive, the recyclers in your country and information on Thermo products will be available at www.thermofisher.com.

- ✓ Always use the proper protective equipment (clothing, gloves, goggles, etc.)
- ✓ Always dissipate extreme cold or heat and wear protective clothing.
- ✓ Always follow good hygiene practices.
- ✓ Each individual is responsible for his or her own safety.

Do You Need Information or Assistance on Thermo Scientific Products?

If you do, please contact us 8:00 a.m. to 6:00 p.m. (Eastern Time) at:

1-740-373-4763

1-800-438-4851

1-877-213-8051

<http://www.thermoscientific.com>

service.led.marietta@thermofisher.com

Direct

Toll Free, U.S. and Canada

FAX

Internet Worldwide Web Home Page

Service E-Mail Address

Our **Sales Support** staff can provide information on pricing and give you quotations. We can take your order and provide delivery information on major equipment items or make arrangements to have your local sales representative contact you. Our products are listed on the Internet and we can be contacted through our Internet home page.

Our **Service Support** staff can supply technical information about proper setup, operation or troubleshooting of your equipment. We can fill your needs for spare or replacement parts or provide you with on-site service. We can also provide you with a quotation on our Extended Warranty for your Thermo Scientific products.

Whatever Thermo Scientific products you need or use, we will be happy to discuss your applications. If you are experiencing technical problems, working together, we will help you locate the problem and, chances are, correct it yourself...over the telephone without a service call.

When more extensive service is necessary, we will assist you with direct factory trained technicians or a qualified service organization for on-the-spot repair. If your service need is covered by the warranty, we will arrange for the unit to be repaired at our expense and to your satisfaction.

Regardless of your needs, our professional telephone technicians are available to assist you Monday through Friday from 8:00 a.m. to 6:00 p.m. Eastern Time. Please contact us by telephone or fax. If you wish to write, our mailing address is:

Thermo Fisher Scientific
401 Millcreek Road, Box 649
Marietta, OH 45750

International customers, please contact your local Thermo Scientific distributor.

Table of Contents

Section 1	Safety Information	1-1
Section 2	Introduction	2-1
	General Usage	2-1
Section 3	General Specifications	3-1
Section 4	Unpacking	4-1
Section 5	Installation	5-1
	Wall Mounting	5-2
	Bench Mounting	5-2
	Other Accessories	5-2
	Install Control Panel in a Remote Location	5-3
	Water Connections	5-5
	Atmospheric Drain Connection	5-6
	Feed Water Connection	5-6
	Tubing Installation	5-6
	Electrical Connections	5-7
Section 6	Controls	6-1
	Control Panel	6-1
	Main Power Switch	6-1
	Switches	6-2
Section 7	Initial Operation	7-1
	Cartridge Pack Installation	7-1
	Initial Rinse	7-2
	System Cleaning Procedure	7-3
Section 8	Normal Operation	8-1
	Automatic Dispensing	8-2
	Dispensing Water	8-2

Section 9	User Settings	9-1
	Setting the Displayed Language	9-1
	Adjusting Display Brightness	9-1
	Setting the Date and Time	9-2
	Setting the Call Constant	9-3
	Selecting the Set Point	9-4
	Use of Standby Mode	9-4
	Setting Volumetric Dispensing	9-5
	Resetting the Cleaning Timer	9-5
	Setting Timed Dispensing	9-6
	Performing a System Flush	9-6
	Auto Standby	9-7
	Temperature Compensation	9-7
	Changing Purity Units	9-7
	Unit Under Counter	9-8
Section 10	Accessories	10-1
	Feedwater Float or Pressure Switch	10-1
	Dispense Overflow Cutoff Float	10-2
	Electronic Calibration w/ Optional Cal. Mod.	10-3
	Remote Volumetric Dispenser	10-4
Section 11	Computer/Printer Set-Up	11-1
	Connect/Communicate through RS-232 Port	11-1
	Hyperterminal	11-1
	Procomm	11-2
	Connecting and Starting the Printer	11-3
Section 12	Maintenance and Servicing	12-1
	Cell Cleaning	12-1
	System Cleaning	12-2
	Cartridge Pack Replacement	12-4
	System Depressurization	12-4
	0.2 Micron Filter Replacement	12-5
	Shutdown	12-6
	Fuse Replacement	12-6
Section 13	Troubleshooting	13-1
Section 14	Replacement Parts	14-1
	Ordering Procedures	14-3
	Flow Chart	14-4
	Wiring Diagram	14-5

Section 1 **Safety Information**

Your Thermo Scientific Nanopure™ Analytical Ultrapure Water System has been designed with function, reliability, and safety in mind. It is the user's responsibility to install it in conformance with local electrical codes. This manual contains important operating and safety information. The user must carefully read and understand the contents of this manual prior to the use of this equipment. For safe operation, pay attention to Notes, Cautions, and Warnings 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 Thermo Scientific products. The specific safety notes pertinent to this 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 mount your Nanopure Analytical 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. 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 cleaning 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 removing the cartridge pack.
8. Refer servicing to qualified personnel.
9. A full cartridge pack may weigh about 20 lbs.

Section 2 Introduction

Congratulations on your purchase of a Thermo Scientific Nanopure Analytical ultrapure water system. This water purification system is designed to provide high resistivity, reagent grade water that exceeds ASTM Type I, ISO 3696 and CLSI-CLRW Type I standards. It uses a four-stage deionization process combined with a 0.2 micron filter to polish suitable feed water (distilled, deionized, or reverse osmosis) of up to 18.2 megohm-cm. Water resistivity is continuously monitored by a resistivity cell and displayed on a digital display.

The electronics can be verified and calibrated utilizing a N.I.S.T. Traceable Calibration module. See accessory ordering information.

Please read the instructions carefully to ensure that you receive maximum benefit from the Nanopure Analytical. Also, please fill out and return the enclosed warranty registration card as it will help us assure you of proper warranty coverage.

General Usage

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

Section 3 General Specifications

Dimensions

13.5" W x 19.5" H x 17.0" D (34.3 x 49.5 x 43.2 cm)

Clearance Requirements

Sides 9" (22.9 cm) minimum for servicing.

Above 3" (7.6 cm) minimum for removal of the top cover.

Front 4.75" (12.1 cm) minimum for opening the front door.

Feed Water Requirements

Types RO, DI, distilled.

TOC Less than 1.0 ppm.

Turbidity 1.0 N.T.U. maximum.

Pressure Range Gravity feed to 20 psig (1.38bar, 1.41 kg/cm²) max.

Temperature Range 4°C - 40°C (40-104°F)

TDS (CaCO₃) < 70 ppm

Silica < 1 ppm

Silt < 5% SDI

Product Water

Water Quality

Resistivity > 18.2 mΩ-cm Pyrogen

TOC 5-10 ppb

Bacteria < 0.01 CFU/ml

Flow Rate

Up to 2 L/min maximum at minimum inlet feed water pressure 10 PSIG with a new final filter.

Volumetric Dispense

Accuracy: ± 5%

Repeatability: ± 3%

Electrical Requirements

The Nanopure Analytical is equipped with 2 power cords to be plugged into an electrical outlet of the appropriate voltage.

U.K. customers use cord, CRX100 and fuses for 240V installation.

Model D11901100-240 VAC, 100 watts, 47-63 Hz, 1 phase

Environmental Conditions

Operating:4°C - 40°C; 20% to 80% RH, 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 (RH).

Declaration of Conformity

We hereby declare under our sole responsibility that this product conforms with the technical requirements of the following standards:

EMC:

EN 61000-3-2 Limits for Harmonic Current Emissions

EN 61000-3-3 Limits for Voltage Fluctuations and Flicker

EN 61326-1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part I: General Requirements

Safety:

EN 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use; Part I: General Requirements

per the provisions of the Electromagnetic Compatibility Directive 2004/108/EC, and per the provisions of the Low Voltage Directive 2006/95/EC.

Copies of the Declaration of Conformity are available upon request.

Section 4 Unpacking

1. Remove the unit from its shipping container. Remove all contents carefully. **Ensure that the feed and drain tubing, cleaning cartridge, wall bracket, accessory parts bag and power cords (see list below) are removed from the packaging materials before discarding.** Put the Nanopure Analytical on a bench.

Cleaning CartridgeCMX25
Wall Bracket (Unit)BC1190X12
Wall Bracket (Remote Display)BC1190X10

Accessory Parts Bag includes:

Feed Water Tube, 3/8" O.D.TU1119X7
Drain Tube, 1/4" O.D.TU1190X12
Display CableWHX20
Blank DisplayDL1190X18
Plug AdapterCEX42

Power Cords

Also required for installation:

* Customer Supplied Fasteners to mount unit and remote display.

Section 5 Installation

The Nanopure Analytical features a removable control panel display which allows the system to be mounted almost anywhere within the laboratory. Use the wall bracket for wall mounted systems as a template to drill mounting holes. (The Nanopure Analytical does not include screws and fasteners for mounting.) Please refer to the “General Specifications” section for clearance requirements.

Note The outlet of a gravity feed storage reservoir must be above or at the same level as the inlet of the Nanopure Analytical. ▲

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 150 lbs.(68kg). 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 Analytical directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.

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

Other Accessories

Optional accessories for this unit include a float switch, low pressure switch, N.I.S.T. Traceable Calibration Module, standard remote dispenser, Accudispense volumetric remote dispenser, dispense overflow cutoff float and printer. If you purchased a float switch or low pressure switch, refer to the Accessories section of this manual. If you purchased a standard or Accudispense volumetric remote dispenser, refer to their respective operator's manuals for installation instructions.

Bench Mounting

1. Place the Nanopure Analytical on a bench top that is accessible to pretreated water, electricity and an atmospherically vented drain.

Wall Mounting

Install the Nanopure Analytical on a wall in a convenient location that is accessible to water, an atmospherically vented drain 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 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.

Note Please refer to the “General Specifications” section for clearance requirements. ▲

Wall Mounting (continued)

Warning Do not locate the Nanopure Analytical directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located. ▲

Note The outlet of a gravity feed storage reservoir must be above or at the same level as the inlet of the Nanopure Analytical. ▲

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 150 lbs.(68kg). 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. ▲

Install Control Panel in a Remote Location

For your convenience, the control panel can be removed from the unit and mounted at a convenient location within 10 ft. (3.1 m.) of the unit. To remove the control panel from the unit:

1. Turn the unit OFF and disconnect it from the power supply.
2. Slide the control panel upward about 1/4" (.64 cm) to 3/8" (.95 cm) - (just enough to clear connector on top cover), pull forward, and remove. (The control panel fits tightly in the unit so it may be difficult to remove.)

Note The removable control panel was not designed to be repeatedly removed from the unit, therefore, you may experience difficulty when attempting to remove it. It is therefore recommended that the control panel be permanently mounted in a remote location or remain intact with the unit. ▲

3. Replace the control panel with the blank panel provided with the unit to protect the electrical connector.

Note The blank protective cover on the rear side panel display connector should remain in place when the display is not remotely located.

Install Control Panel in Remote Loc. (cont.)

4. Using the wall bracket as a template, locate and drill the mounting holes in the wall. A minimum of two (customer-supplied) fasteners will be required. Attach the wall bracket to the wall using the customer-supplied fasteners.
5. Locate the 25-pin connector on the back top right of the unit. Remove the protective black cover and store it for future use if the control panel is returned to the top cover.
6. Locate the 10 ft. (3.1 m.) 25 pin M-F cable included with the unit; attach the female end to the 25 pin connector on the back top right of the unit, and the other end to the connector on the bottom of the control panel.
7. Tighten the cable screws on each end to secure the cable to the unit and control panel.
8. The control panel may now be mounted on the wall.

Caution Repeated removal and replacement of the control panel from the top cover may eventually cause it to become damaged.

Note A bracket is available that will allow you to mount the control panel on the bench. If bench mounting is desired, order bracket AY1367X2.

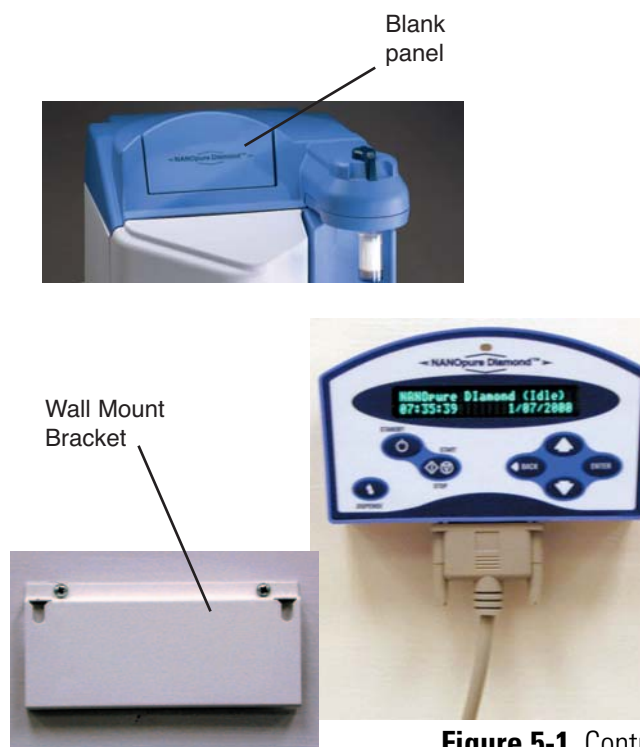


Figure 5-1. Control Panel Wall Mounting

Water Connections

Caution Do not connect feed water until directed to do so during “Initial Cleaning.” ▲

Note To prevent leaking, push the tubing into the atmospheric drain connection until it bottoms out. ▲

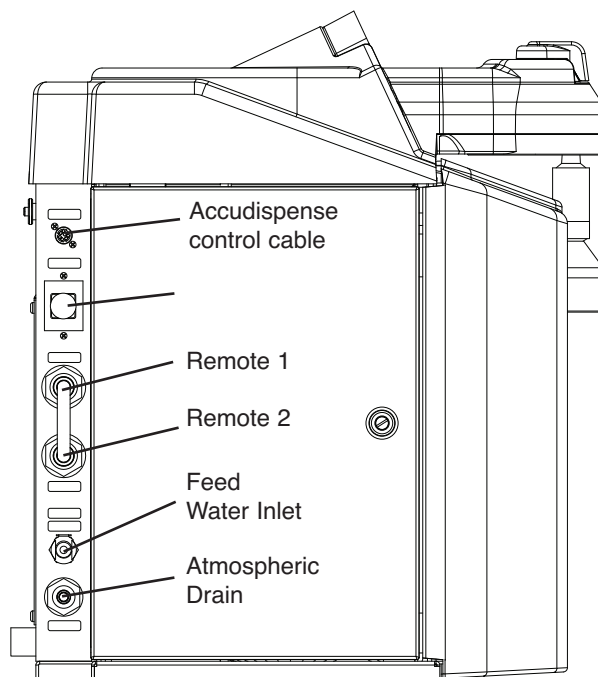


Figure 5-2. Water Connections - Left Side of Unit

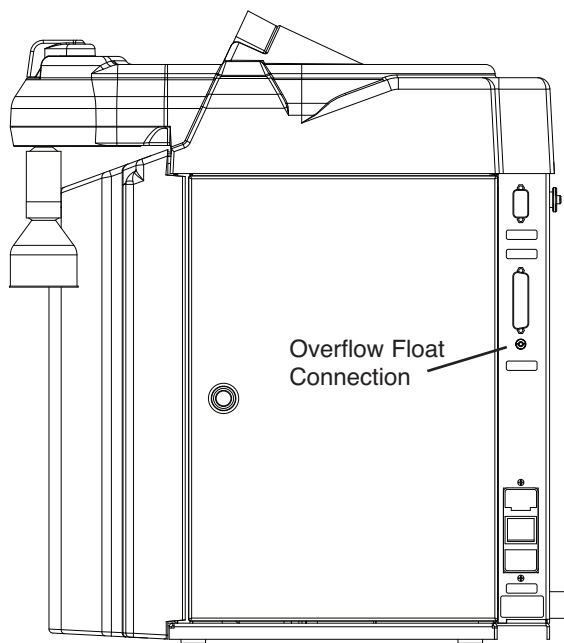


Figure 5-3. Water Connections - Right Side of Unit

Feed Water Connection

1. Locate the length of 3/8" O.D. tubing provided with the unit with a quick disconnect insert on one end and a 3/8" (.95 cm) O.D. X 1/4" (.64 cm) 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 Analytical. You will connect the feedwater during the "Initial Cleaning" procedure explained later in this manual. Note: The cartridge pack must be installed before connecting water line.
3. If a pressure switch is to be used, see the "Installing a Float or Pressure Switch" section for more information.

Atmospheric Drain Connection

When the Nanopure Analytical flushes its membrane, the water used is sent to drain through this connection. To install:

1. Locate the drain water tubing. This is the 1/4" (.64 cm) O.D. tubing that is approximately 6 ft. (1.9 m.) long. The atmospheric drain fitting is located on the lower left side of the Nanopure Analytical.
2. Route the other end of the drain water tubing to an atmospherically vented drain and make a connection. Ensure there are no kinks in the tubing and that it proceeds on a downward plane. Proceed to "Initial Operation."

Tubing Installation

To make tubing connections (refer to Figures 5-4 and 5-5):

1. Make sure the tubing is cut off reasonably square and that no plastic burrs or ridges are present.
2. *Mark from end of tube the length of insertion.

<u>Tube size</u>	<u>Insertion length</u>
1/4 O.D.	1.75 cm (11/16")
3/8 O.D.	1.9 cm (3/4")

3. Wet the tube end with water and insert tube straight into fitting until it bottoms out on interior shoulder and insertion mark is no longer visible.
4. To remove tubing, push collet toward fitting body and pull on tubing. To reuse fitting, begin assembly at Step 1.

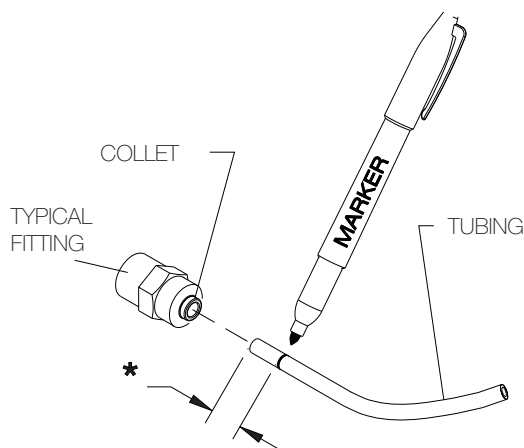


Figure 5-4. Mark Tubing Insertion Length

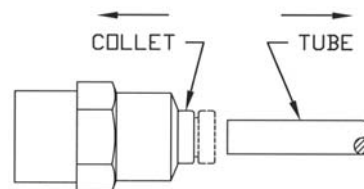


Figure 5-5. Push Collet Back to Remove

Electrical Connections

The Nanopure comes with a 120V power cord with (2) 1.6 amp fuses and 240V power cords with (2) 0.63 amp fuses.

The Nanopure is not shipped with fuses installed in the fuse draw of the power module. Before connecting the power cord to the power module, install the proper fuses in the fuse holder. Refer to Figure 5-6.

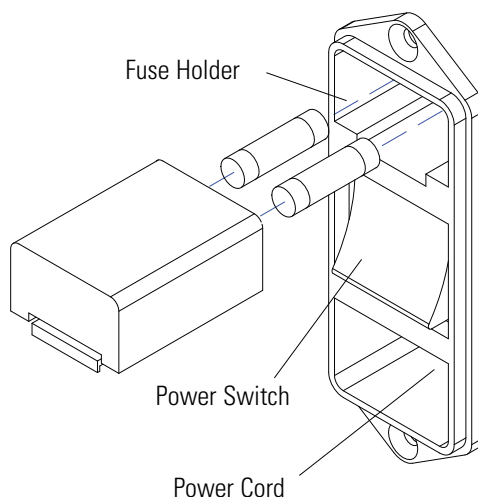


Figure 5-6. Electrical Connections

Section 6 Controls

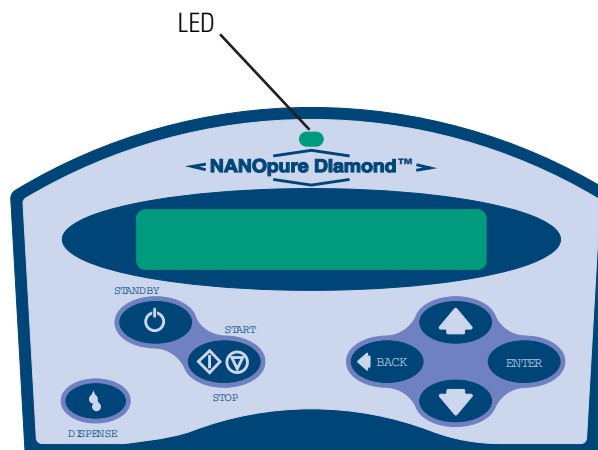


Figure 6-1. Control Panel

Main Power Switch

The main power switch on the Nanopure Analytical is located on the lower back right side of the unit (as you face the front of the unit), directly above the power cord receptacle.

Control Panel

The Nanopure Analytical is controlled through a panel which incorporates switches to control its functions: START/STOP, STANDBY, DISPENSE, DOWN, UP, ENTER and BACK. This control panel utilizes a digital display to show system information and the purity of the product water. The intensity (brightness) of the display may be adjusted according to user preference. See “Adjusting Display Brightness” in “User Settings” of this manual.

A single LED located on the top of the control panel will illuminate to inform you of the system status as follows:

- LED is not illuminated: System is OFF or in (Idle) mode.
- Solid Green LED: System is recirculating and operating normally.
- Blinking Green LED: System is in Standby mode.
- Red LED: System is alerting user to an operational error or maintenance issue.

Control Panel (continued)

The control panel can be removed from the unit and remotely mounted. Please refer to “Installing the Control Panel in a Remote Location” in the “Installation” section of this manual for more information about how to remove the control panel from the unit.

Note The removable control panel was not designed to be repeatedly removed from the unit, therefore, you may experience difficulty when attempting to remove it. It is therefore recommended that the control panel be permanently mounted in a remote location or remain intact with the unit. ▲

Switches

When the main power switch (on the lower back right side of the unit as you face the unit) is ON, the switches on the control panel function as follows:

START/STOP allows you to alternate the unit between the normal (recirculation) mode; when the display is showing purity, and the (Idle) mode.

STANDBY allows you to put the unit into standby, recirculating water for 10 minutes/hour. The display will read “Standby” during periods of inactivity and “Recirculating” and the time remaining during the 10 minute recirculation.

DISPENSE allows you automatically deliver water from the unit. Please refer to “Automatic Dispensing” in the “User Settings” section of this manual for information.

UP and DOWN arrows allow you to scroll between menu options/items and values.

BACK allows you to return to the previous menu option/item. Please note that use of the BACK switch from a selection screen will return you to the previous menu option/item while maintaining the selection’s value upon entry.

ENTER allows you to activate a selected menu option/item and also functions as “Yes” whenever an option with a question mark appears.

DISPENSE KNOB when the unit is in the recirculation mode, push to the right to deliver water continuously until pushed back to the middle. Push to the left to deliver water manually until button is released.

Note The unit **MUST** be in the normal recirculating mode (when the display is showing purity) in order to dispense water. ▲

Section 7 Initial Operation

Cartridge packs will come bagged with four manifold connection caps.

Part	Application
Diamond Kit Organic Free R/O & Distilled Feed	
D50280	Ultra-Low Organics, Type 1 Water, Reverse Osmosis or Distilled Water Feed
Diamond Kit Organic Free Deionized Feed	
D50281	Ultra-Low Organics, Type 1 Water, Deionized Water Feed
Diamond Kit Type 1 R/O & Distilled Feed	
D50282	Low Organics, Type 1 Water, Reverse Osmosis or Distilled Water Feed
Diamond Kit Type 1 Deionized Feed	
D50283	Low Organics, Type 1 Water, DI Water Feed

Each cartridge pack includes one 0.2 micron absolute final filter.

Cartridge Pack Installation

Warning Depressurize system prior to removing cartridge pack. ▲

1. Open front (left side) door. Turn the cartridge pack so the caps are facing you. Remove the caps.
2. Verify that each of the four posts on the cartridge pack has an o-ring.
3. Lift unit manifold upwards, insert cartridge pack and align the pack so that it mates with the unit manifold.
4. Lower unit manifold until it is flush with the top of the cartridge pack.



Figure 7-1. Cartridge Pack Installation

Cartridge Pack Install (continued)

5. Hand-tighten wing head screws securely.
6. Close door.

Note Do not install the 0.2 micron filter and bell assembly at this time. ▲

Caution Do not allow the Nanopure Analytical to operate unless water is available to the unit. ▲

Initial Rinse

1. Attach 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.
2. Attach an atmospheric drain line [1/4" (0.64 cm)] tubing by pushing into the quick connect fitting on the lower left back of unit. See layout connection under the "Water Connections" section.
3. Check to ensure the dispense knob is in the OFF (middle) position.
4. Select the appropriate power cord, remove and install the two fuses into the fuse draw in the power entry module. U.K. customers use cord CRX100 and fuses for 240V installation.

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

5. Connect/attach to proper electrical outlet and the unit.
6. Turn the unit on by turning the main power switch to the "I" (ON) position.
7. The system greeting will display the type of unit you own. This greeting is "Base."
8. The system electronics will initialize and check its calibration. All units have been factory calibrated. If calibration is Ok, the display will show "Calibration (passed)." The display will next read "Self Test (in progress) Self Test. Passed." Finally, the display will read "10 (±0.2) MΩ-cm." This is a reading of the calibration reference value.
9. From the (Idle) mode, when the display reads, "Nanopure (Idle) xx:xx:xx xx/xx/xx," press ENTER to run an air purge.

Initial Rinse (continued)

10. Unit will display, “Air Purge?” Press ENTER.
11. Upon completion of the air purge, complete the “System Cleaning Procedure.”

Caution Never dispense water without first installing hose barb provided in parts bag or final filter supplied with cartridge pack. ▲

System Cleaning Procedure

Your Nanopure Analytical has been shipped with a cleaning syringe (Cat. No. CMX25). When the system is new or whenever a new cartridge pack is installed, the system should be cleaned. It is best to perform cleaning procedures when the system or water is not required. The entire cleaning procedure will take approximately 3.5 hours to complete. Clean your Nanopure as follows:

1. (If you have installed an Accudispense volumetric remote dispenser, place it in Manual Mode.) From the (Idle) display, press the UP or DOWN arrow until display reads, “Clean Unit?”
2. Press ENTER.
3. Unit display will ask if you have “Disconnected Inlet Water (NO).”
4. Disconnect feed water supply at the quick-disconnect inlet valve on left side of unit.
5. Press the UP or DOWN ARROW to select (YES) and then press ENTER. Display will now read, “Injected Cleaner (NO).”
6. Open front (left side door) to expose cartridge pack. Remove solution syringe from wrapper.
7. Remove luer cap on system injection port, located on the right side of the cartridge pack manifold by turning counterclockwise.
8. Remove syringe luer cap and attach syringe to the system luer fitting.



Figure 7-2. Injecting Cleaning Solution

System Cleaning Procedure (cont.)

9. Slowly inject solution into system and remove syringe. Avoid injecting air into the system.
10. Replace luer cap on injection port and close door.
11. Press the UP or DOWN arrow to select (YES) and then press ENTER. Display will now read, "Reconnected Water (NO)."
12. Attach feed water supply removed in Step 4.

Warning Avoid splashing cleaning solution 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 to be used with water feeds only.

Cleaning agents must be used in compliance with instructions in this manual. Failure to comply could result in explosion and personal injury. ▲

Note After cleaning is complete, the cleaning timer will need to be reset (refer to Resetting the Cleaning Timer) for another six month timing sequence. ▲

13. Press the UP or DOWN arrow to select (YES) and press ENTER. Display will now read, "Unit Cleaning."
14. Unit may now be left unattended until display reads, "Cleaning Complete: Press ENTER."
15. After cleaning is complete the unit will return to the (Idle) mode.
16. Press the START/STOP switch to return the unit to the normal recirculation mode.
17. Remove the new 0.2 micron filter and bell assembly (Figure 7-3) from the bag and insert it into the dispenser arm manifold. Gently turn it clockwise until it is fully seated.

System Cleaning Procedure (cont.)

18. Remove the protective cap from the filter bell. Turn the dispense knob to the left or right and flush 1-2 liters of water through the 0.2 micron filter. The product water is now ready for use.

Note For more demanding applications where low TOC water is required, a rinse of 15-20 liters through the cartridges and 0.2 micron filter may be necessary. ▲

Caution Never dispense water without first installing hose barb provided in parts bag or final filter supplied with cartridge pack. ▲

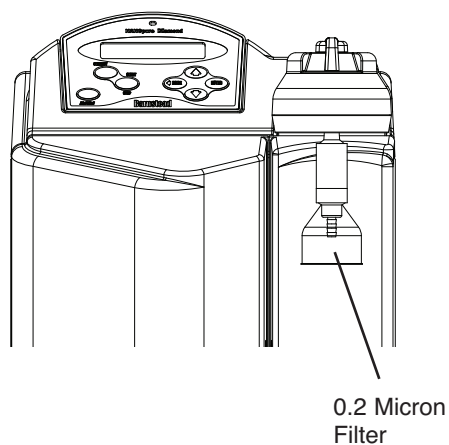


Figure 7-3. Installing 0.2 Micron Filter

Section 8 Normal Operation

1. Turn the system power ON by depressing the main power switch to the “I” position.
2. The system greeting display indicates the type of unit you own. This greeting is “Base.”
3. The system electronics will initialize and check its calibration. All units have been factory calibrated. If calibration is Ok, the display will show “Calibration (passed).” The display will next read “Self Test (in progress) Self Test. Passed.” Finally, the display will read “10 (± 0.2) M Ω -cm.” This is a reading of the calibration reference value.
4. From an (Idle) display, press the START/STOP switch on the control panel to enter the normal recirculating mode. The unit’s pump will begin to run.
5. The display will then begin reading resistivity of the product water. Initially it will read “... M Ω -cm” until the air is bled from the system.

Note On initial start-up, the purity meter may display “...M Ω -cm or uS/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 Troubleshooting section of this manual. ▲

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.”)

Note Do not turn off the Nanopure Analytical 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 rinse-up period at the beginning of the work day to achieve high quality product water. We recommend using the Standby Mode. ▲

Note From the normal recirculating mode when the display is showing purity, press ENTER to show the current temperature. The temperature will display for about 5 seconds before returning to the normal recirculating mode. ▲

Dispensing Water

Use the dispense knob for manual dispensing or, use the “Dispense” switch for volumetric or timed dispensing. See “User Settings.”

Automatic Dispensing

This feature (Factory set to “OFF.”) is accessible only from the normal recirculating mode when the display is showing purity.

1. Place a container under the dispenser.
2. Press DISPENSE. **Water will start dispensing immediately!** Display will read, “xx.MΩ-cm xx Liters Remaining” or “xx.MΩ-cm xx Seconds Remaining,” or “AUTO DISPENSE <OFF>” depending on which dispensing method was last chosen in the auto dispense menu.

Note Press any switch except ENTER to stop dispensing. Display will read, “Auto Dispense Interrupted by User.” ▲

Note If the Nanopure “Auto Dispense” feature is set to (TIME), a connected Accudispense accessory (if applicable) will not automatically dispense. ▲

Section 9 User Settings

Adjusting Display Brightness

1. From the (Idle) mode, when the display reads, “Nanopure (Idle) xx:xx:xx xx/xx/xx,” press the UP or DOWN arrow until display reads, “Advanced Menu?”
2. Press ENTER.
3. Press ENTER to proceed through the options until “Set Display Brightness” is displayed.
4. Press the UP or DOWN arrow to choose “Yes.”
5. Press ENTER.
6. Press the UP or DOWN arrow until the desired value (100%, 75%, 50% or 25%) is displayed.
7. Press ENTER.
8. Press BACK until you return to the (Idle) display.

Setting the Displayed Language

1. From the (Idle) mode, when display reads, “Nanopure (Idle) xx:xx:xx xx/xx/xx,” press the BACK switch until the display reads “LANGUAGE.”
2. The currently selected language is displayed on line 2 of the display.
3. Press the UP or DOWN arrow to select the language desired.
4. Press ENTER.

Setting the Date and Time

1. From the (Idle) mode, when the display reads, “Nanopure (Idle) xx:xx:xx xx/xx/xx,” press the UP or DOWN arrow until display reads, “Advanced Menu?”
2. Press ENTER.
3. Press ENTER when the unit displays “Printer Attached?”
4. When prompted with “Date Format” press the UP or DOWN arrow to show the date format desired. Press ENTER to select the desired format and continue.
5. When prompted with “Set Date,” press the UP or DOWN arrow to choose “Yes,” then press ENTER.
6. Press the UP or DOWN arrow until you reach the desired month. Press ENTER.
7. Press the UP or DOWN arrow until you reach the desired day. Press ENTER.
8. Press the UP or DOWN arrow until you reach the desired year. Press ENTER.
9. When prompted with “Set Time” press the UP or DOWN arrow to choose “Yes,” then press ENTER. This is to set the time of day.
10. Press the UP or DOWN arrow until you reach the desired hour value. Press ENTER.
11. Press the UP or DOWN arrow until you reach the desired minute value. Press ENTER.
12. Press BACK twice to return to the (Idle) mode.

Note Time values are displayed in 24 hr. military time. For example; 6:00p.m. = 18:00:00 = hr./min./sec.) ▲

Setting the Cell Constant

The actual temperature and cell constants are attached to the cell cable internal to the Nanopure unit. This data helps ensure that the purity displayed is as accurate as possible. The only time the user would need to enter this data is if the cell or main board is being replaced and/or updated.

1. Shut power OFF to the unit and disconnect the power cord.
2. Unlatch and open the right side door.
3. Find and copy down the two cell constants attached to the gray cable, leaving the electronics board mounted on the inside of the right side door.
4. Close and latch the right side door.
5. Reconnect the power cord and turn unit ON.
6. From the (Idle) mode, when the display reads, "Nanopure (Idle) xx:xx:xx xx/xx/xx," press the UP or DOWN arrow until the display reads, "Advanced Menu."
7. Press ENTER.
8. Proceed through the options by pressing ENTER until "Set Cell Constant" is displayed.
9. Press the UP or DOWN arrow to select "Yes."
10. Press ENTER.
11. Note that the digits are entered from left to right.
12. Press the UP or DOWN arrow to change the "blinking" digit. Once the digit is correct, press ENTER to advance to the next digit.
13. After all digits have been entered, line 2 of the display will read, "(NO) Finished."
14. If the cell constants displayed on line 1 of the display are correct, press the UP or DOWN arrow to select "Yes."
15. Press ENTER.
16. Press BACK twice to return to the (Idle) mode.

Use of Standby Mode

At the end of the work day, place the Nanopure Analytical in Standby mode for the night. To place the unit in Standby mode:

1. From the (Idle) mode, when display reads, “Nanopure (Idle) xx:xx:xx xx/xx/xx,” press STANDBY.

—OR—

2. From the xx.x MΩ-cm or x.xx uS/cm operational display, Press STANDBY.

After STANDBY is pressed, the display will read “Standby” and the green LED will slowly blink. For 10 minutes of every hour while the pump is energized, the display will read “Standby (Recirculating) xx minutes.” Press START/STOP to return to the recirculating mode.

Note When in Standby mode, press START/STOP to continue normal operation. ▲

Note Refer to Auto Standby section to have the unit automatically enter Standby Mode each day at a predetermined time chosen by the user. ▲

Note If you have installed an Accudispense volumetric remote dispenser, its “Purity Above Setpoint” LED will slowly blink when the water system is in Standby Mode. ▲

Selecting the Set Point

The Nanopure Analytical 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 1-18 MΩ-cm (factory set at 10 MΩ-cm.).

1. From the (Idle) mode, when display reads, “Nanopure (Idle) xx:xx:xx xx/xx/xx,” press the UP or DOWN arrow until display reads, “Advanced Menu?”
2. Press ENTER.
3. Proceed through the options by pressing ENTER until “Adjust Set Point” is displayed.
4. Press the UP or DOWN arrow to choose “Yes.”
5. Press ENTER.
6. Press the UP or DOWN arrow until the desired value is displayed.
7. Press ENTER.

Selecting the Set Point (continued)

8. Press BACK to return to the (Idle) mode.

The second line of the display will show a “Below Set point” message once every 8 to 10 seconds when the measurement is below the set point. (The set point indication is set at the factory at 10 MΩ-cm.)

Resetting the Cleaning Timer

1. From the (Idle) mode, when the display reads, “Nanopure (Idle) xx:xx:xx xx/xx/xx,” press the UP or DOWN arrow until the display reads, “Reset Timers?”
2. Press ENTER.
3. Display will read, “Reset Cleaning Timer” and show on the right side of the second line when the user will start receiving “Clean Unit” reminders.
4. Press the UP or DOWN arrow to select “Yes.”
5. Press ENTER and the timer will be reset. This will reset the cleaning timer for approximately six months calendar time.

Setting Volumetric Dispensing

Note Volumetric dispensing is based upon total fluid volume entering the Nanopure Analytical. Point of drawoff accuracy will be compromised if you are dispensing water volumetrically while simultaneously drawing water manually through the remote dispenser accessory. ▲

Note Once Volumetric or Timed Dispensing values are set, they will remain in memory until changed by the user. To turn the dispense method OFF, select “OFF” in the “Dispense Method” menu. ▲

1. From the normal recirculating mode, when the display is showing purity, press the UP or DOWN arrow until the display reads, “Auto Dispense Menu?”
2. Press ENTER.
3. Display will read, “Dispense Method.” Press the UP or DOWN arrow to select VOLUMETRIC.
4. Press ENTER. Display will read, “Unit Volume Setting: xx Liters.”
5. Press the UP or DOWN arrow to set the desired volume value. Press ENTER.

Setting Volumetric Dispensing (cont.)

UP arrow: +0.25 up to 1 L, then 5 L, then incremental by 5 L.

DOWN arrow: Decrement by 1 L until 1 L, then by 0.25 L.

Maximum: 60 L

Minimum: 0.25 L

Setting Timed Dispensing

1. From the normal recirculating mode, when the display is showing purity, press the UP or DOWN arrow until the display reads, "Auto Dispense Menu?"
2. Press ENTER.
3. Display will read, "Dispense Method." Press the UP or DOWN arrow to select TIME.
4. Press ENTER. Display will read, "Time Setting: xx Minutes."
5. Press the UP or DOWN arrows to set the desired time value. Press ENTER.

UP arrow: +1 up to 5 min., then increments by 5 minutes

DOWN arrow: Decrement by 1 minute

Maximum: 40 minutes

Minimum: 1 minute

Performing a System Flush

1. From the normal recirculating mode, when the display is showing purity, press the UP or DOWN arrow until the display reads, "System Flush?" Press ENTER.
2. Press the UP or DOWN arrow to select "Short Flush?" or "Extended Flush?" Press ENTER.
3. Display will read, "System Flushing: (xxx) Seconds or (xxx) Minutes Remaining."

Note Press the STOP/STOP switch to cancel the flush. ▲

Changing Purity Units

The units are factory-set to “mΩ-cm.”

1. From the normal recirculating mode, when the display is showing purity, press the Up or DOWN arrow until display will reads, “Change Units?” Press ENTER.
2. Press the UP or DOWN arrow to select “MΩ-cm” or “uS/cm” Press ENTER.
3. Press BACK to return to the normal recirculating mode.

Note Purity displayed will have an asterisk (*) the the left of the reading (* xx.x MΩ-cm or * x.xx uS/cm) to inform the user that uncompensated purity is being displayed. ▲

Temperature Compensation

Temperature Compensation is factory-set to “ON”.

1. From the normal recirculating mode, when the display is showing purity, press the Up or DOWN arrow until the display reads, “Temperature Compensation?” Press ENTER.
2. Press the UP or DOWN arrow to select “OFF” or “ON” Press ENTER.
3. Press BACK to return to the normal recirculating mode.

Auto Standby

Auto Standby is factory-set to “NO”.

This option allows for a convenient method for the user to ensure that the Nanopure Analytical unit will be placed in Standby at a predetermined time each day. This is especially convenient to ensure the unit is placed in Standby during weekends.

1. From the “Nanopure (Idle) xx:xx:xx xx/xx/xx” press the UP or DOWN arrow until display reads, “Advanced Menu.”
2. Press ENTER.
3. Press ENTER to proceed through the options until “AUTO STANDBY START” is displayed.

Auto Standby (continued)

4. Press the UP or DOWN arrow to choose “YES.”
5. Press ENTER.
6. Press the UP or DOWN arrow until the desired time is displayed for the unit to automatically enter Standby.
7. Press ENTER.
8. Press BACK until you return to the (Idle) display.

Note If set to “YES”, unit will automatically enter Standby Mode only once per day. If the unit mode is later changed from Standby, the unit will not again automatically enter Standby until the preset Auto Standby time is again reached. ▲

Unit Under Counter

Unit Under Counter (auto dispense lock-out) is factory-set to “NO”.

This option will lock out any type of automatic dispense out of the unit (Accudispense accessory D13661 will still operate normally.) This will prevent accidental dispensing from the unit if it is located under a counter or similar area such that the unit dispenser is not in sight of the user but the display is (i.e. remote mounted display.)

Note When “UNIT UNDER COUNTER” is set to “YES,” Auto Dispense will not be available from the main unit dispenser. ▲

1. From the “Nanopure (Idle) xx:xx:xx xx/xx/xx”, press the UP or DOWN arrow until display reads, “Advanced Menu.”
2. Press ENTER.
3. Press ENTER to proceed through the options until “UNIT UNDER COUNTER” is displayed.
4. Press the UP or DOWN arrow to choose “YES.”
5. Press ENTER.
6. Press BACK until you return to the (Idle) display.

Section 10 Accessories

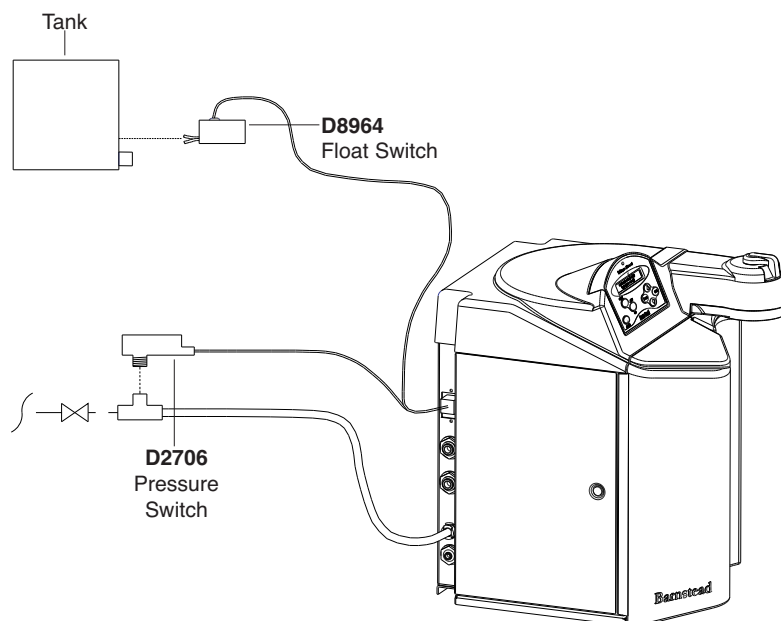


Figure 8-1. Feedwater Float/ Pressure Switch

Feedwater Float or Pressure Switch

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

1. Disconnect the unit from the electrical power.
2. If using the D8964 float switch, follow the installation instructions included with the float switch for installation into a tank.
3. If using the D2706 low pressure switch, install the PVC tee (supplied with D2706) in the incoming water line. Screw the switch into the top of the tee, then connect the inlet tubing of the Nanopure Analytical into the remaining opening of the PVC tee.
4. Route the cable from the float or low pressure switch to the top left of the Nanopure Analytical.

Feedwater Float or Pressure Sw. (cont.)

5. Remove the jumper plug from the back, upper left portion of the unit and save for future use.
6. Plug the cable into the jumper plug outlet.
7. Reconnect the electrical power.

Dispense Overflow Cutoff Float

Accessory AY1367X1 (overflow float with 6 ft [2.83 meter] cable) is designed as a user option to ensure automatic dispensers (time or volumetric) do not overflow carboy-style containers. This accessory can be especially helpful if the actual volume of a container is unknown. It can also protect against overflows if the entered/stored volume of a previous container has not been changed and is set for a volume greater than the carboy being filled. Finally, the accessory can be useful for automatic time dispenses as it is usually difficult to ensure the set time will equal a specific volume of water.

1. Prior to initialing an automatic dispense (time or volumetric), plug AY1367X1 into connector on back right side of Nanopure. See Figure 10-2.

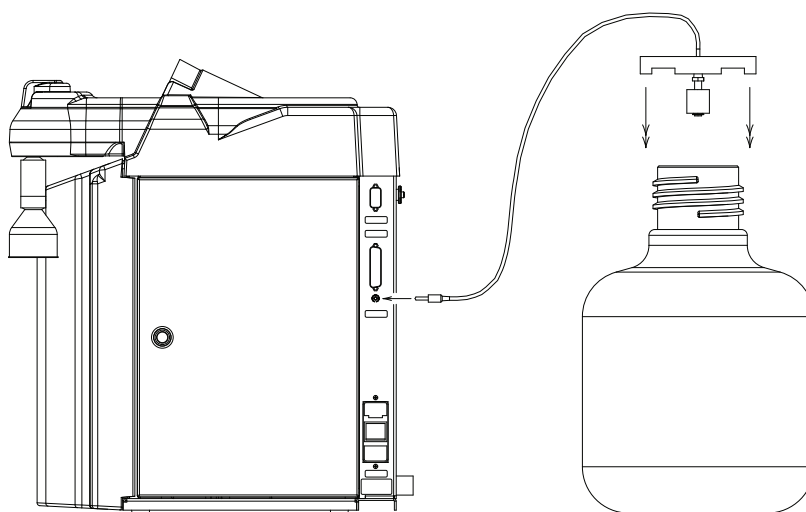


Figure 10-2. Dispense Overflow Cutoff Float

2. Position carboy to be filled and place float assembly on open neck of carboy. Position float assembly such that it will not interfere with product water stream being dispensed into carboy.

Dispense Overflow Cutoff Float (cont.)

3. Initiate Auto Dispense as described in the “Automatic Dispensing” section of this manual. If during the auto dispense, the float is lifted by the rising water, the auto dispense will immediately be stopped and an error message will be displayed momentarily.

Caution This accessory is not intended for use with small containers as its weight could cause small, lightweight containers to tip over. ▲

Note If an auto dispense is stopped by the AY1367X1, the Nanopure will change modes to normal recirculation. ▲

Electronic Calibration w/ Optional Cal. Mod.

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

1. Disconnect power cord from the unit.
2. Unlatch and open the right door. Remove the 2 screws and remove the cover plate over the PC boards.
3. Locate the outlet cell connection on the circuit board and remove the outlet cell connection at J2.
4. Connect the N.I.S.T. calibration module to the connection point (J2), “To Outlet Cell” on the calibration board (PC1190X2).
5. Close and latch door.
6. Reconnect the power cord and turn the unit on by depressing the main power switch.
7. From the (Idle) mode, Press the UP or DOWN arrow until the display reads, “N.I.S.T. Calibrate?” Press ENTER.
8. Display will show “Calibration Module Installed?” Press the UP or DOWN arrow to select (YES).
9. Press ENTER.

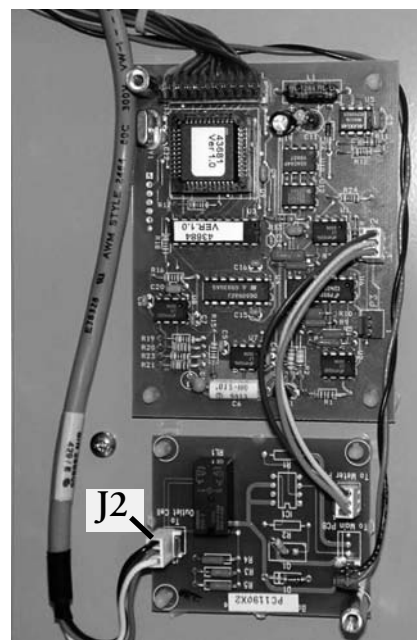


Figure 10-3. PC Board

Electronic Cal. w/ Opti. Cal. Mod. (cont.)

10. Display will read “Calibration (In Progress).” When the calibration is complete the display will read “Calibration (passed/failed) for 4 seconds and then return to the”N.I.S.T. Calibrate?” display.

Note Calibration (in progress) may take up to two minutes to complete. ▲

11. Press BACK to return to the (Idle) mode.
12. Turn the main power switch to the OFF “O” position. Unplug the unit.
13. Remove the calibration module and reconnect the cell.
14. Reattach the cover plate and close and latch the door.
15. Reconnect the power cord.

The calibration procedure is complete.

Remote Volumetric Dispenser

Refer to the Operating Instructions for your manual or Accudispense volumetric remote dispenser (LT1366X11).

Section 11 Computer/Printer Set-Up

Connect/Communicate through RS-232 Port

Hyperterminal

Note Due to character set differences, hyperterminal may display the Ω symbol as ê. Also, the ° symbol may be displayed as ø. ▲

The procedure for the connection of the Nanopure to a computer and communication through the RS-232 port, using the hyperterminal, follows.

1. Connect the 9 pin serial cable (part no. WHX18) from the Nanopure RS-232 port to COM2: port or (COM1: port) on back of computer.
2. From the (Idle) display, press the UP or DOWN arrow until display reads, "Advanced Menu."
3. Press ENTER.
4. From the "Printer Attached" display, press the Up or DOWN arrow for (NO).
5. Press ENTER.
6. Now, during the normal Recirculation mode, date, time, purity and temperature readings will be sent to the computer once per minute.
7. Run your Microsoft Windows program. Open Hyperterminal (located in the accessories directory), give your setting a name and choose a symbol.
8. In the "Connect Using:" box, select "direct to" COM2: or (COM1:) as port (depending on your computer), and click OK.
9. Using the selection boxes in the next screen, configure the options as 9600 baud, 8-bit, No parity, 1 stop bit, Flow Control: None.
10. To receive data to a file, select Transfer and capture text. Accepting default will put the file which you name in the c:/windows directory called capture.txt and the file will be an ASCII text file.
11. You should see the data on the computer screen.

Hyperterminal (continued)

12. When you are finished storing data from the Nanopure, save your file. You can exit Hyperterminal or set up a new experiment.
13. Hyperterminal data can be manipulated and graphed in Excel® software.

Procomm

The procedure for the connection of the Nanopure to a computer and communication through the RS-232 port, using Procomm, follows.

1. Connect the 9 pin serial cable from the Nanopure RS-232 port to COM2: port or (COM1: port) on back of computer.
2. From the (Idle) display, press the UP or DOWN arrow until the display reads, "Advanced Menu."
3. Press ENTER.
4. From the "Printer Attached" display. Press the Up or DOWN arrow for (NO).
5. Press ENTER.
6. The unit will now, during the normal Recirculation mode send a purity and temperature reading to the computer once per minute.
7. Open DOS window and change directory to procomm directory.
8. Open procomm executable.
9. Press ALT-F10 for configuration screen.
10. Enter into Line Settings screen by typing ALT-P.
11. Type in 11 <Enter>, sets parameters as 9600, 8, N, 1.
12. Type in 21 <Enter>, sets to COM2: or (Type in 20 <Enter>, sets to COM1:), depending on your computer.
13. Type in 24 <Enter>, saves settings.
14. Type ESC to exit setup menu.
15. Procomm is now ready to accept input from the Nanopure.

Procomm (continued)

16. To begin downloading a file, Type ALT-F1, and give the file an appropriate name when prompted. The optional printer (part no. AY1137X1) provides a paper tape record for future reference. During normal Recirculation, the printer prints date, time, purity and temperature readings once every minute.

Connecting and Starting the Printer

1. Make sure the printer and Nanopure are turned OFF.
2. Connect the Nanopure to the printer via the RS232 port. Use the tan printer cable included with the Epson printer. Plug the printer power cord into an electrical outlet.
3. Turn the Nanopure ON.
4. Turn the printer ON.
5. From the (Idle) display, press the UP or DOWN arrow until display reads, "Advanced Menu."
6. Press ENTER.
7. From the "Printer Attached" display, press the Up or DOWN arrow for (YES).
8. Press ENTER.
9. Press BACK twice to return to the (Idle) mode.
10. During normal Recirculation mode, a purity and temperature reading will be printed once every 12 minutes.

Printer Set-Up

Located on the front of the printer (AY1137X1), this switch turns power to the printer ON and OFF. The POWER light will illuminate when the printer is ON.

For additional setup and operation, refer to the instruction manual included with the printer.

Section 12 Maintenance and Servicing

Disconnect electrical service to the unit. Wipe exterior surfaces with lightly dampened cloth containing mild soap solution.

Cell Cleaning

Warning Avoid splashing detergent or acid on clothing or skin. ▲

- Ensure all piping connections are tight to avoid chemical leakage
- Carefully follow manufacturer's safety instructions on labels of chemical containers and material safety data sheets.

Caution Feed water must be disconnected and the system must be depressurized before performing the cell cleaning procedure. ▲

1. Disconnect inlet water and depressurize. See "System Depressurization" section.
2. Turn unit OFF. Open right side door and remove PC board cover.
3. Disconnect cable from J2 and snip plastic cable tie located on the inside top of unit.
4. Unscrew and remove the cell by turning the gray bushing counterclockwise. Carefully remove O-ring to clean the cell.
5. Wash the cell in a mild detergent solution or a 10% inorganic acid solution (follow acid manufacturers recommended handling procedure). This may be done in an ultrasonic cleaner or with a soft brush.
6. Thoroughly rinse the cell in deionized or distilled water following the detergent or acid cleaning.
7. After cleaning, check the o-ring; replace if necessary.
8. Reinstall the cell into the cell well and hand-tighten.
9. Reroute the cable and reconnect to J2 on circuit board.

Cell Cleaning (continued)

10. Replace PC board cover and close door.
11. Reconnect water and turn unit ON.

System Cleaning

Note The cleaning timer will display after six months, reminding you to clean the unit. Complete the system cleaning procedure and reset the cleaning timer according to the “Resetting the Cleaning Timer” section in this manual. ▲

Warning Disconnect from the power supply prior to maintenance and servicing. ▲

Warning Refer servicing to qualified personnel. ▲

Warning Avoid splashing cleaning solution 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 to be used with water feeds only.

Cleaning agents must be used in compliance with instructions in this manual. Failure to comply could result in explosion and personal injury. ▲

It is best to perform cleaning procedures early in the afternoon. After cleaning is complete (approximately 3.5 hours), place the unit into its normal (recirculation) mode to allow the system to recirculate overnight after cleaning.

1. (If you have installed an Accudispense volumetric remote dispenser, place it in Manual mode.) From the (Idle) mode, press the UP or DOWN arrow until the display reads, “Clean Unit?”
2. Press ENTER.
3. Display will prompt, “Disconnected Inlet Water (NO).”
4. Disconnect feed water supply at the quick-disconnect inlet valve.

System Cleaning (continued)

5. Press the UP or DOWN ARROW to select (YES) and then press ENTER. Display will now prompt, “Injected Cleaner (NO)?”
6. Remove solution syringe from wrapper.
7. Open front (left side) door. Remove luer cap on system injection port, located on the right side of the cartridge pack manifold by turning counterclockwise.
8. Remove the syringe luer cap and attach the syringe to the system luer fitting.
9. Slowly inject the solution into the system and remove syringe. Avoid injecting air into system.
10. Replace luer cap on injection port. Close door.
11. Press the UP or DOWN arrow to select (YES) and then press ENTER. Display will now read, “Reconnected Water (NO).”
12. Attach feed water supply removed in Step 4.
13. Press the UP or DOWN arrow to select (YES) and press ENTER. Display will now read, “Unit Cleaning.”
14. Unit may now be left unattended until the display reads, “Cleaning Complete: Press ENTER.”
15. After cleaning is complete and the user presses “ENTER”, the unit will return to the (Idle) mode.
16. Press the START/STOP switch to return the unit to the normal recirculating mode.

System Depressurization

This should be done prior to removing a cartridge pack. The unit needs to be plugged in and operating to correctly perform this depressurization step.

Important Disconnect inlet water from the left back of unit.

1. From the (Idle) display, press ENTER.
2. From “Air Purge?” press the UP arrow.
3. From “Depressurize” press the UP arrow to select (YES).
4. Press ENTER. Display will show “System Flushing” and the time remaining as the system depressurizes.

Cartridge Pack Replacement

The frequency with which you will need to clean your unit and replace your cartridge pack is dependent on your feed water’s characteristics, your purity requirements and your usage. Clean your Nanopure Analytical and replace the cartridge pack 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 cartridge pack was thoroughly rinsed before the 0.2 micron filter was installed. The simple-to-use cleaning syringe is available (Catalog Number CMX25). This is used to effect a complete cleaning.

Warning Depressurize system prior to removing cartridge pack.

Warning A full cartridge pack may weigh about 20 lbs. (9 kg).



Figure 12-1. Cartridge Pack Replacement

Cartridge Pack Replacement (cont.)

1. Remove the feed water line by depressing the stainless steel thumb pad.
2. Depressurize the system according to “System Depressurization” under the “Maintenance and Servicing” section.
3. Shut power OFF to the unit and disconnect the electrical service to the unit.
4. Open the front (left side) door.
5. Loosen the wing head screws on the cartridge manifold.
6. Remove the exhausted cartridge pack by lifting the unit manifold and pulling the cartridge pack out.
7. Install new cartridge pack, rinse and clean according to the instructions in the “Initial Operation” section.

0.2 Micron Filter Replacement

Replace the 0.2 micron final filter whenever any of the following conditions occur: the product water flow rate is reduced or bacteria break through.

Caution Do not overtighten the 0.2 micron filter or use excessive force in seating it. Filter can be damaged by overtightening or excessive force. ▲

Note If a newly installed 0.2 micron filter clogs rapidly after installation, the Nanopure Analytical may need to be cleaned to remove bacterial contaminants. See “System Cleaning.” ▲

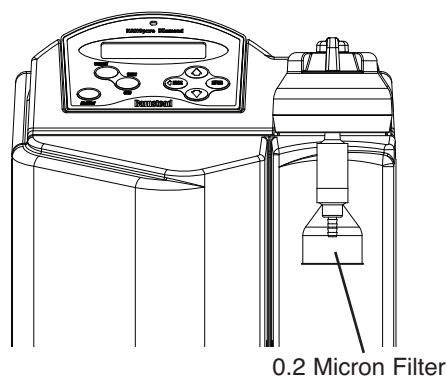


Figure 12-2. Replacing 0.2 Micron Final Filter

0.2 Micron Filter Replacement (cont.)

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 dispense arm manifold.
2. Remove the new 0.2 micron filter assembly from the bag and insert it into the dispense arm manifold. Gently turn it clockwise until it is fully seated.
3. Remove the protective cap from the filter bell.
4. Rinse 1-2 liters of water through the filter to drain prior to using the product water.

Fuse Replacement

1. Turn off the Nanopure Analytical and disconnect it from the power supply by removing the power cord directly below the main power switch on right side of unit. 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 "Replacement Parts."
4. Replace fuse drawer.
5. Reattach the power cord.
6. Operate normally.

Warning Replace fuses with those of the same type and rating. ▲

Shutdown

If the Nanopure Analytical is to be shut down for an extended period of time, the unit should be completely drained and the cartridge pack 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, cleaned and new cartridge pack installed prior to use.

Section 13 Troubleshooting

Problem	Possible Causes	Solutions
Nanopure completely inactive (pump and display not operating)	No electrical power to Nanopure.	Ensure Nanopure power cord is connected to a live power source and completely plugged into electrical outlet as well as power entry module on the unit. Make sure on/off switch is in the "I" (on) position.
	Main fuse(s) blown.	Replace the main fuse(s) as indicated in "Fuse Replacement."
	Power supply fuse blown	Contact Technical Services concerning power supply fuse replacement.
Reduced or no product flow from the dispense arm or remote dispenser (if attached).	0.2 micron filter clogged.	Replace final filter as indicated in "0.2 Micron Filter Replacement" section.
	Feed water not connected.	Reconnect feed water.
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.	Connect the pump protector, jumper plug or pressure switch cord to the receptacle located on the upper left hand section of the Nanopure.
	Insufficient feed water pressure or volume to satisfy the Nanopure.	Open feed water line shut off, connect feed water line to Nanopure and ensure sufficient pressure or sufficient water level in the feed water reservoir).
Display reads, "...MΩ-cm" for more than 10 seconds.	Air in cell.	If you just started your Nanopure, wait 1 minute to see if it corrects itself.
	Bad cell connection.	Check connection of the cell as it attaches to the circuit board.
Recirculated water will not rinse up to desired purity level.	Exhausted cartridge pack.	Replace cartridge pack as indicated in "Cartridge Pack Replacement."
Short cartridge pack life.	Cartridge pack is beyond expiration date.	Check the expiration date. Cartridge packs begin to lose capacity after being stored for 2 years from the date of manufacture. Replace the cartridge pack with an unexpired one.

Section 13
Troubleshooting

Problem	Possible Causes	Solutions
	Poor quality feed water.	If a ROpure is the feed water source, check that the membrane is functioning properly.
		If a Still is the feed water source, ensure that the distillate temperature to the NANOpure does not exceed 40°C (104°F).
		If feed water is from a central water purification system, verify water quality and proper functioning of the system. See "General Specifications."
Purity display continuously "OVERRANGE."	Air in system.	Dispense more water through the Nanopure to purge air from the unit.
	Bad cell connection.	Check the connection of the cell as it attaches to the meter circuit board mounted on the inside of the right door.
		If you have a N.I.S.T. module, perform a N.I.S.T. calibration.
	Incorrect N.I.S.T. calibration offset.	If you do not have a N.I.S.T. module, perform the calibration function WITHOUT the calibration module (as if you had it; answer (YES) to prompt. The display will read "Calibration (failed)" but this will clear any incorrect offset to zero.
Display reads, "Overpressure Error."	0.2 micron filter clogged.	Replace final filter as indicated in "0.2 Micron Filter Replacement."
Display reads, "Meter Board Problem."	PC board communication error.	Turn the Nanopure OFF (I/O Switch) and restart the unit.
	System electronics failure.	Replace the resistivity meter board mounted on the inside of the right door.
Water is leaking between the manifold and the cartridge pack.	Wing head screws are not tight enough.	Tighten wing head screws on unit manifold.
	New cartridge pack: o-ring missing from post (each of the 4 posts must contain an o-ring.)	Disconnect inlet water and depressurize system. Next, disconnect the manifold and verify/replace missing o-ring. Reinstall cartridge pack as indicated in "Cartridge Pack Replacement."
Water is leaking at atmospheric drain connection	Tubing not fully inserted.	Insert tubing into connection until it bottoms out.

Section 14 Replacement Parts

Consumables

Consumable parts are those required to support the day-to-day operation of this equipment. We establish 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, we recommend 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 Technical Services representative for additional information on the expendables kit.

Description	Catalog No.	Recommended Quantity
Diamond Kit Organic Free R/O & Distilled Feed	D50280	1
Diamond Kit Organic Free Deionized Feed	D50281	1
Final Filter	D3750	2
Main Fuse, 120 Volt - Slow Blow, 1.6 Amp, 250V	FZX47	2
Main Fuse, 230 Volt - Type T Time Lag, 0.63 Amp, 250V	FZX54	2
PTFE Tape, Roll	06078	1
Transformer Fuse, Type F Fast-Acting, 3.15 Amp, 250V	AZ9027	1
Cleaning Solution	CMX25	2

General Maintenance Parts

General maintenance parts are defined as laboratory level repair parts which do not require great expertise or special tools for installation. We recommend 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	CUX11	1
Quick Disconnect Insert 3/8" tube	CUX9	1
Cartridge Pack O-Rings	GSX68	4

Safety Stock

For critical applications where performance with minimum downtime is required, we recommend 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	SW1190X2	1
External Display Cable (remote display use)	WHX20	1
Main PC Board	PC1190X4	
Recirculation Pump & Motor	PU1190X1	1
Pressure Regulator	PM1190X1	1
Resistivity Cell	E896X4	1
Power Supply PC Board	TNX116	1
Calibration PC Board	PC1190X2	1
Resistivity Meter PC Board	PC896X2	1
Check Valve	PMX214	1
Flow Sensor	ME1190X1	1
Flush Solenoid	RY1190X3	1
Cartridge Pack Manifold	BK1190X3	1
Dispenser Manifold W/Solenoid	BK1367X1	1
Dispense Switch	SW1190X1	1
Cell O-ring	GSX29	1

Optional Accessory Ordering Information

Description	Catalog No.
N.I.S.T. Calibration Module	E896X5
Low-Pressure Switch	D2706
Float Switch	D8964
Remote Dispenser (Manual)	D11981
Accudispense Volumetric Remote Dispenser	D13661
Serial Cable for Communication with Computer	WHX18
Printer (120-240 VAC system)	AY1137X1
Printer Replacement Paper Roll	AY669X4
Dispense Overflow Cutoff Float	AY1367X1
Bench Top Display Holder	AY1367X2

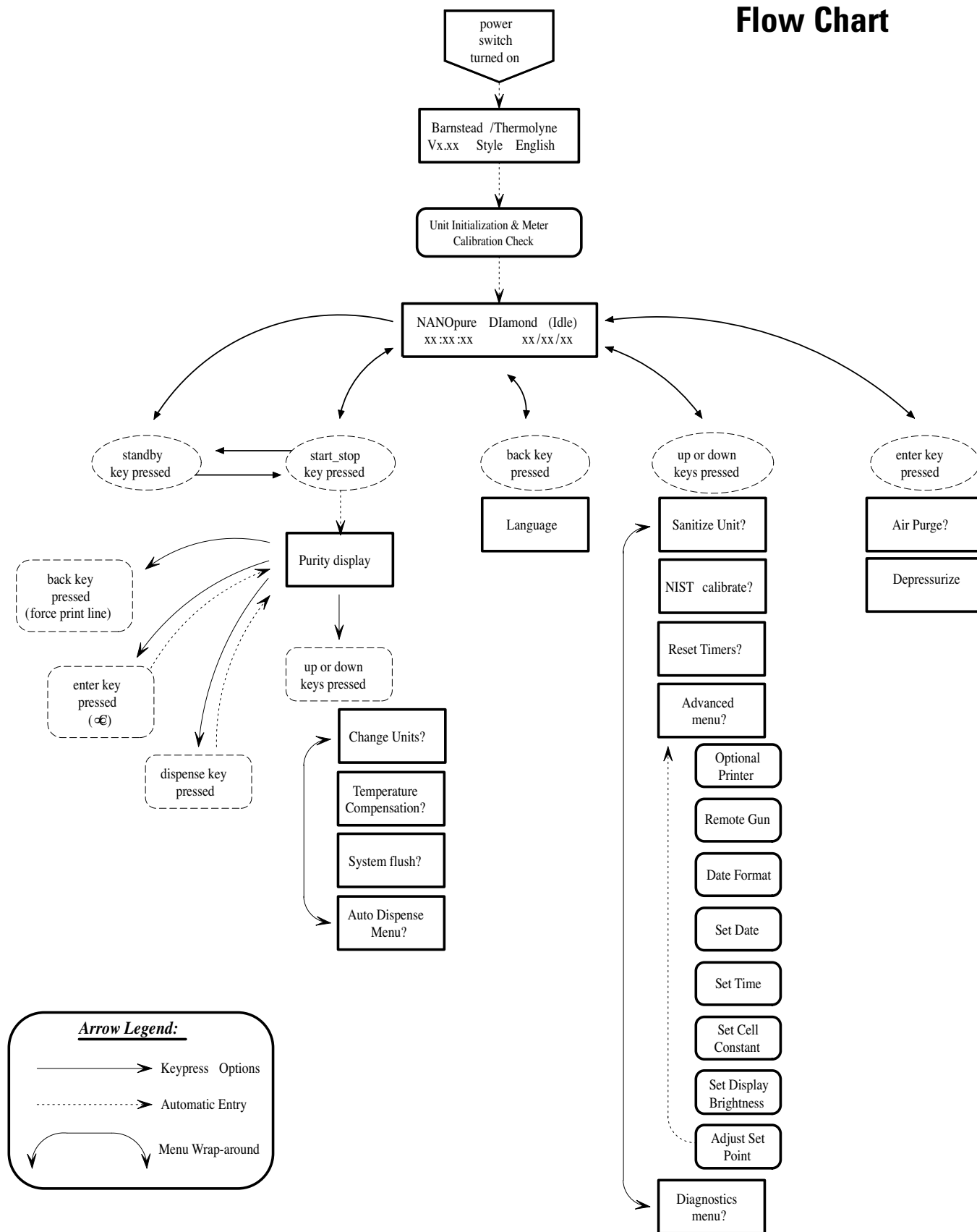
Ordering Procedures

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 Thermo Scientific dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed, check first with your dealer. If the dealer cannot process your request, then contact our Technical Services Department.

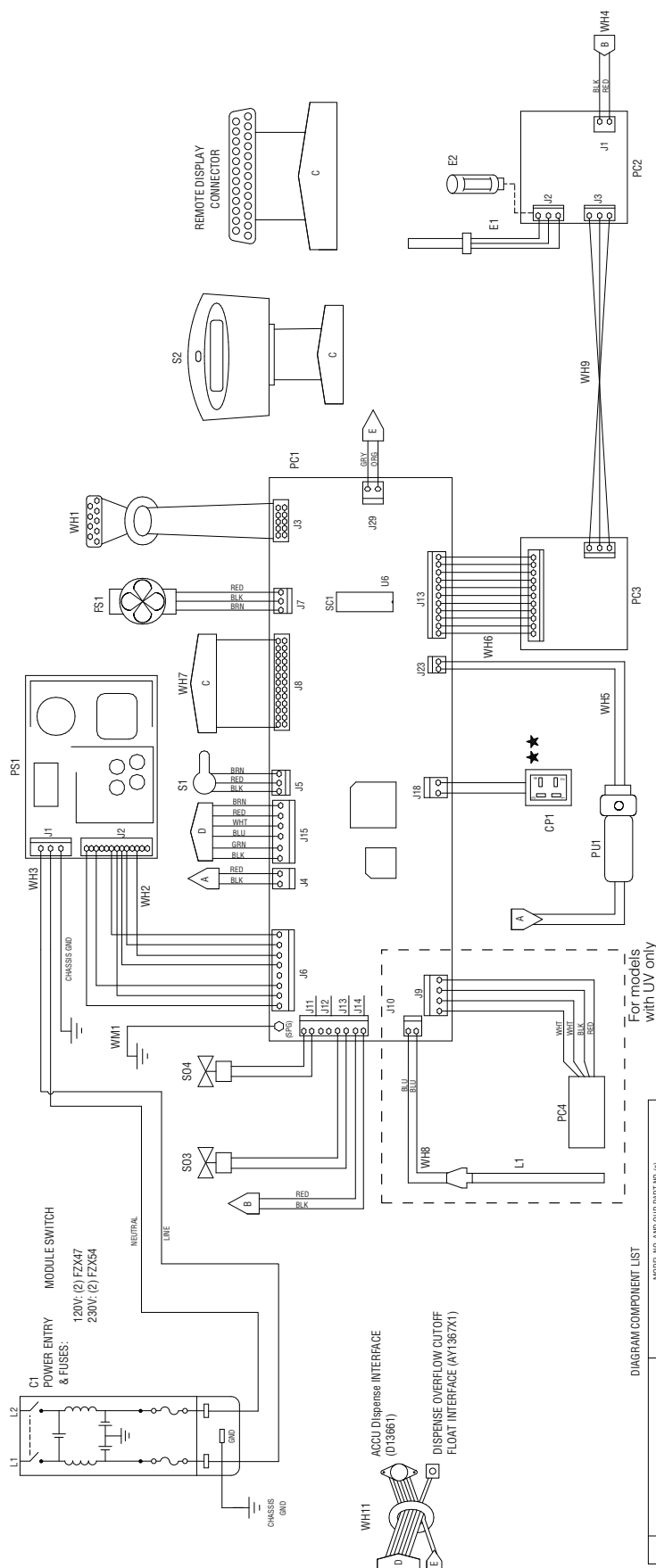
Prior to returning any materials, contact our Technical Services Department for a "Return Materials Authorization" number (RMA). Material returned without an RMA number will be refused.

Flow Chart



Operational Overview

Wiring Diagram



★★ CONNECTION POINT FOR ANY ONE OF THE FOLLOWING:

- JUMPER PLUG (04247)

- PRESSURE SWITCH (02706)

- FLOAT SWITCH (08564)

NOTE: PINS 2 AND 3 ON CP1 ARE CONNECTED WHEN "INLET GOOD"

For models
with UV only

DIAGRAM COMPONENT LIST

REF. NO.	DESCRIPTION	MODEL NO. AND OUR PART NO. (S)
C1	POWER ENTRY MODULE	D11911 D11921 D11931
CP1	PUMP INTERLOCK	CEX183 CEX183
E1	CONDUCTIVITY CELL	CEB902 CEB902
FS1	FLOW SENSOR	EB800A EB800A
L1	UV LAMP	ME1190X1 ME1190X1
PC1	UV LAMP TUBE BOARD (RED)	LMX13 LMX13
PC2	METER BOARD	PC1190X1 PC1190X1
PC3	BALLAST	PC2802 PC2802
PC4	POWER SUPPLY	SC1191X1 SC1191X1
PS1	DISPENSE SWITCH	TMX116 TMX116
S1	DISPENSE SOLENOID	SW1190X1 SW1190X1
S2	3-WAY DIVERTER SOLENOID	RY302 RY302
S3	AC POWER HARNESS	WH1190X1 WH1190X1
WH1	DC POWER HARNESS	WH1190X1 WH1190X1
WH2	PRESSURE SW HARNESS	WH1190X1 WH1190X1
WH3	METER BOARD HARNESS	WH1190X1 WH1190X1
WH4	DISPLAY HARNESS	WH1190X1 WH1190X1
WH5	ACCESSORY INTERFACE HARNESS	WH1190X1 WH1190X1
WH6	GROUND WIRE	WH1190X1 WH1190X1

Thermo Scientific
401 Millcreek Road
Marietta, Ohio 45750
United States

www.thermofisher.com

ThermoFisher
S C I E N T I F I C