

Barnstead Dlamond TII™ Storage Reservoir

OPERATION MANUAL AND PARTS LIST

30 L Storage Reservoirs

D14061

D14062

D14063

D14064

60 L Storage Reservoirs

D14071

D14072

D14073

D14074

LT1406X3 • 1/6/10

Serial Number _____

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Safety Information



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 Thermo Scientific Barnstead Dlamond TII Storage Reservoir has been designed with function, reliability, and safety in mind. It is your responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert boxes throughout the manual.

This manual contains important operating and safety information. You must carefully read and understand the contents of this manual prior to using this equipment.

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.

Warnings

To avoid electrical shock:

Do not locate the Dlamond TII Storage
Reservoir directly over unprotected equipment
that requires electrical service. Routine maintenance of this unit may involve water spillage
and subsequent electrical shock hazard if improperly located.

To avoid personal injury:

- Ensure all piping connections are tight to avoid leakage of chemicals.
- 2. Ensure adequate ventilation when using chemicals for cleaning.
- Follow carefully the manufactures' safety instructions on labels of chemical containers and Material Safety Data Sheets (M.S.D.S).
- 4. Refer servicing to qualified personnel.

Introduction

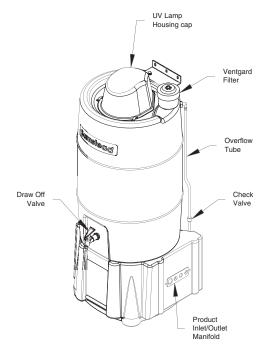
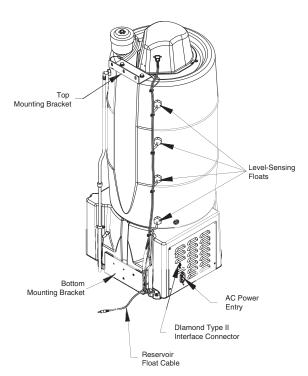


Figure 1: Dlamond TII Storage Reservoir Front View (60L)



Dlamond TII. This manual contains the information you will need to install, operate and maintain this storage reservoir. It is designed for direct connection to Barnstead's Dlamond TII System.

Congratulations on your purchase of a Thermo Scientific Barnstead Dlamond TII Storage Reservoir for your

Introduction

Please read the instructions carefully to ensure that you receive maximum benefit from your Dlamond TII Storage Reservoir. Please fill out and return the enclosed warranty registration card, assuring you of proper warranty coverage. Should you have questions after reading the entire manual, contact your laboratory supply dealer or Customer Service at 1-866-984-3766.

General Usage

This product is to be used for storing Type II product water. Sanitization/cleaning agents must be used in compliance with instructions in this manual. Do not use this product for anything other than its intended usage. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Figure 2: Dlamond TII Storage Reservoir Rear View (60L)

Specifications

Reservoir Dimensions

30L Storage Reservoir

D14061, D14062, D14063, D14064: 16.3" W x 17.4" D x 31.1" H (41.4 x 44.1 x 79.0 cm)

Operating Weight: 110 lbs. (49.9 kg)

60L Storage Reservoir

D14071, D14072, D14073, D14074: 16.3" W x 17.4" D x 41.0" H (41.4 x 44.1 x 104.1 cm)

Operating Weight: 180 lbs. (81.6 kg)

Environmental Conditions

Operating: 17°C - 27°C; 20% - 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: 2,000 meters.

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

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 -

EMC Requirements; Part 1: General Requirements

Safety: EN61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and

Laboratory use; Part I: General Requirements

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:

Thermo Fisher Scientific Electrothermal House Unit 12A Purdeys Industrial Estate Purdeys Way Rochford, Essex SS4 1ND United Kingdom

Tel: +44(0)1702 303350

Copies of the Declaration of Conformity are available upon request.

Installation



Caution

Unpack the storage reservoir shipping box carefully.



Note

There will be no tubing other than the overflow tubing assembly included. Feed and product tubing is included with the Dlamond TII.

Unpacking

- Remove all protective inserts from the shipping box.
- 2. If the reservoir is equipped with a distribution pump option, unpack the distribution loop tubing coil (TU1406X1).
- 3. If the reservoir is equipped with a UV lamp option, unpack the UV lamp (LMX31).
- 4. Remove the accessory bag from the shipping carton. This will include the following items.
 - For all models: Operation manual, interface cable, wall bracket
 - For all models except D14061 and D14071: American cordset and European cordset.
 - For models D14061, D14062, D14071 and D14072: 1/2" male NPT x 1/4" female NPT adapter.
 - For models D14063, D14064, D14073 and D14074: (2) plumbing tees, flow restrictor, 1/4" NPT pipe nipple, 1/2" NPT and 1/2" tube adapter, and 1/4" NPT x 1/2" tube adapter.
- 5. Remove the storage reservoir from the shipping box and place on a bench.



Warning

Do not locate the Dlamond TII Storage Reservoir 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.

Choosing a Site

The storage reservoir must be properly oriented in relationship to the Dlamond TII to provide for fully automatic operation. The storage reservoir should be located no more than 6 feet and no less than 8 inches from the Dlamond TII. The storage reservoir must be mounted so that the reservoir outlet is at the same level or higher than the inlet of the Dlamond TII. Also, if the storage reservoir is to be used as a source water to a NANOpure Dlamond or other water system and no distribution pump is used, the reservoir outlet must be at the same level or higher than the inlet to the NANOpure Dlamond or other water system. Allow a minimum of 8 inches (20.3 cm) clearance on sides and 15 inches (38.1 cm) clearance above the unit for servicing. See Figure 3 for a typical system setup. If the storage reservoir has the distribution pump or UV lamp options, locate within 6.0 feet (15.2 cm) of an electrical outlet.

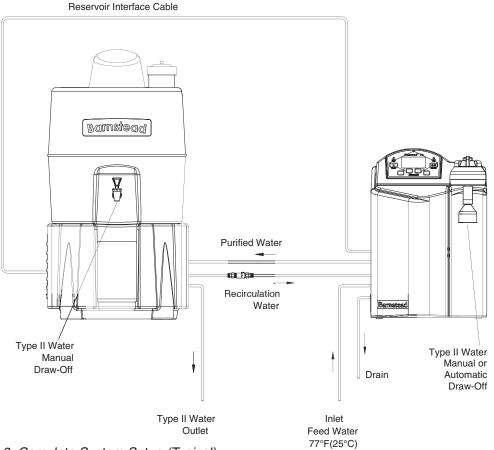
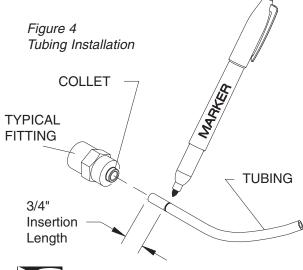


Figure 3: Complete System Setup (Typical)

INSTALLATION





Note

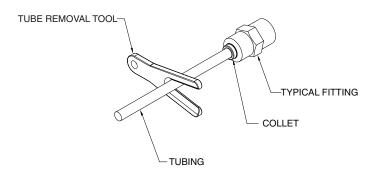
For easier insertion, wet the end of the tubing with water.



Note

Figure 4 and 5 will be used at the connection to the atmospheric drain.

Figure 5 Tubing Removal



Water Connection Details

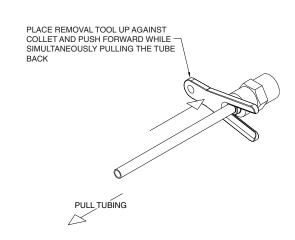
Push-to-Connect Fitting Tubing Installation (Refer to Fig. 4)

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

- Make sure the tubing is cut off reasonably square and that no plastic burrs or ridges are present.
- 2. Mark from end of tube an insertion length of 3/4".
- 3. Wet the tube end with water and insert the tube straight into the fitting until it bottoms out on the interior shoulder and the insertion mark is no longer visible.

Push-to-Connect Fitting Tubing Removal (Refer to Fig. 5)

1. Using the tool provided (AYX23), push the collet toward the body while pulling on the tubing to release the tube.





Caution

Do not use a wrench to tighten connections made with tubing adapters. Watertight connections can be made by hand.

Tubing Adapter Fittings

- 1. Completely disassemble the fitting. Refer to Figure 6 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.
- Place the grab ring and backup ring in the hex nut in the order and orientation shown in Figure 6. Thread the nut onto 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.
- 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.

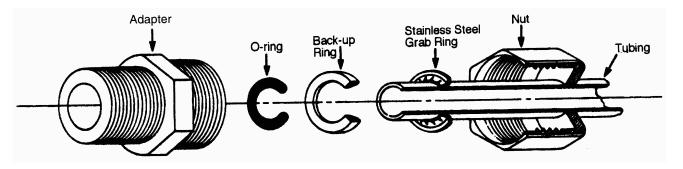


Figure 6: Typical Polypropylene Tubing Adapter Installation

INSTALLATION



Note

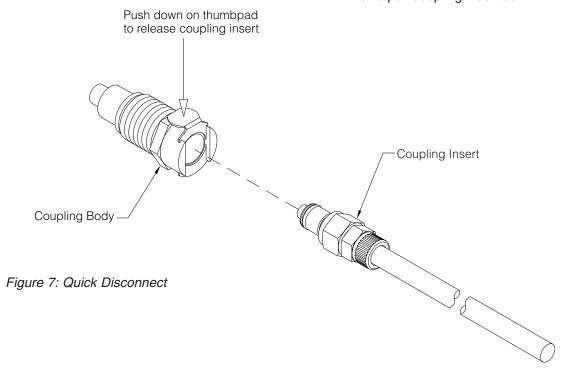
The quick disconnect fittings contain valves and if not properly inserted water will not flow.

Quick Disconnect Fittings

These fittings are found in the tubing that connects the "TO UNIT" reservoir outlet to the "FROM TANK" system inlet. (See Fig. 7)

To insert the inlet tubing:

- 1. Press on the metal thumbpad on the coupling body to ensure the fitting is open.
- 2. Wet the o-ring on the coupling insert and push into the coupling body until you hear a click. Gently pull on the tubing to ensure it is secure.
- 3. To remove, press the metal thumbpad to release and pull coupling insert out.





Note

The outlet of a gravity feed storage reservoir must be above or at the same level as the inlet of the Dlamond TII or other water system.



Warning

Do not locate the Dlamond TII Storage Reservoir 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.



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 200 lbs. (91 kg). 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.

Bench Mounting

If a 30L reservoir is to be located on a bench, no mounting brackets are necessary. Simply set the reservoir on the bench. If a 60L reservoir is to be located on a bench, the top mounting bracket must be securely attached, using customer-supplied fasteners, to a rigid structure for stability.

Wall Mounting
Install the Dlamond TII Storage Reservoir on a wall in a convenient location that is accessible to an atmospherically vented drain.

- Locate the lower wall bracket packed separately from the unit.
- Using the lower wall bracket as a template, locate and drill the mounting holes in the wall. Use a minimum of four customer-supplied fasteners for the bottom bracket.
- 3. Set reservoir on lower bracket.
- 4. Fasten top mounting bracket (shipped attached) to the wall using a minimum of two customersupplied fasteners.



Note

See Figure 3 for complete system setup.

/	`	\
REMOTE DISPLAY		
TANK INTERFACE	\bigcirc	
RS232		
GENERAL I/O	\bigcirc	
TANK FLOATS	0	
ACCU. DISPENSE	\bigcirc	
CARBOY FLOAT	0	
NIST CAL MODULE	\bigcirc	
PUMP INTERLOCK	\bigcirc	
REMOTE 1		REMOTE 2
FROM TANK	M TANK TO TANK	
		\bigcirc
DRAIN FEEDWATER INLET		
100 PSI MAX		
	1	20°F MAX

Figure 8: Water and Electrical Connections on Dlamond TII

Operation Connections

Whether mounted on a bench or wall, the front of your Dlamond TII Storage Reservoir should now be facing you.

- Two electrical cables are required to connect the water system to the storage reservoir. The first is hardwired to the reservoir and attaches to the "Tank Floats" connection on the Dlamond TII. The other cable is reversible and connects between the mini-din (circular) connector on the left side of the reservoir base and the "Tank Interface" connection on the Dlamond TII.
- 2. Two tubes are included with the Dlamond TII to connect the water system to the storage reservoir. They connect from the "TO UNIT" and "FROM UNIT" connections on the reservoir manifold to the "FROM TANK" and "TO TANK" connections on the system manifold. See Figure 8. IMPORTANT: The tube with the integral quick disconnect must be connected between the "TO UNIT" and "FROM TANK" ports.
- If an optional UV lamp or distribution pump has been purchased, determine which power cord you need and attach the power cord to the power entry module and the wall outlet.
- 4. If a distribution pump has not been purchased, the 1/2" NPT port in the product inlet/outlet manifold (See Figure 1) labeled "LOOP OUT" can be used as a gravity feed outlet. Use the included 1/2" NPT x 1/4" NPT adapter to connect to the NANOpure Dlamond inlet tubing, or use the customer-supplied fittings and tubing to connect this outlet to the unit to be fed. Make sure the reservoir outlet is at the same level or above the inlet of the unit being fed.

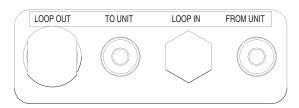


Figure 9: Water Connections on Reservoir

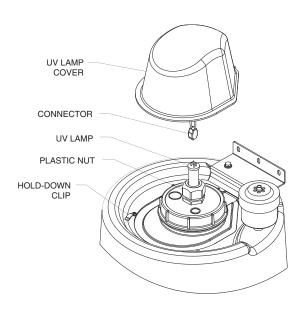


Figure 10: UV Lamp Installation

Ventgard® Installation

Unscrew the cap on the Ventgard assembly and remove gasket, remove Ventgard filter from wrapper, insert into cap, replace gasket and hand tighten cap.

Following Ventgard installation, the "Reservoir Vent Timer" must be reset on the Dlamond TII. See the Dlamond TII manual to reset the "Reservoir Vent Timer."

Overflow Tubing

Route the storage reservoir overflow tubing to an atmospherically vented drain. VERY IMPORTANT: For correct operation, the overflow tubing must run downhill along its entire length. There can be no uphill sections or kinks in the tubing.

Optional UV Lamp Installation Locate the UV lamp housing cover at the top of the

Locate the UV lamp housing cover at the top of the Dlamond TII reservoir. See Figure 10. Install the UV lamp as follows:

- 1. Disconnect the power cord from the unit.
- Remove the UV lamp housing cover on top of the reservoir by rotating the two hold-down clips.
 The UV lamp will be installed vertically.
- 3. Remove the UV lamp from its packaging. DO NOT TOUCH THE GLASS PORTION OF THE LAMP! It is recommended that lint-free gloves be worn when handling the lamp. The glass portion must be free of fingerprints, perspiration, etc. Even a light coating of perspiration will reduce the effectiveness of the lamp. If the glass portion of the lamp is touched, clean it with a damp, lint-free cloth and use isopropyl alcohol as required.
- 4. Loosen the plastic nut on the reservoir cap just until the UV lamp will slide through. Take care not to drop the lamp through the fitting as this can result in damage to the lamp. Insert the lamp through the nut *slowly* until it bottoms out in the fitting. The top of the lamp should be approximately flush with the top of the nut.

INSTALLATION



Caution

To prevent damage to the UV lamp, hand tighten the nut only. Do not overtighten.

- Hand tighten the nut until snug and connect the UV lamp to the connector inside the UV lamp housing cover. Replace the cover. Make sure to rotate the plastic hold-down clips back over the cover flange.
- 6. As a factory default, the UV lamp will be on for 10 minutes per day to control bacterial growth. To change this setting, use the Dlamond TII menu screen. Press "Menu" - Use arrows to select "Reservoir Options" - use arrows to select "UV Lamp Timer" - adjust setting using the arrow keys, and press "OK" to accept.

Optional Distribution Pump

An optional distribution pump is located in the storage reservoir base. The system allows the user to transport Type II water to remote locations. It automatically maintains a 40 psi (2.7 bar) pressure and will distribute 4.5 liters per minute at 40 psi. The pump will adjust its output to meet changing water demand. 50 feet of tubing and adapters are provided for the distribution loop.

- To connect distribution pump to water system:
 - Attach tubing to Fast & Tite® fitting on Dlamond TII Storage Reservoir. See Figure 8 for connection details.
 - 2. Route tubing appropriately and place supplied Fast & Tite tee fitting at desired draw-off location. Attach customer supplied fittings and tubing to the NPT threads on the tee fitting, and route to system to be fed. It is recommended that a shut-off valve be placed in the tubing between the tee fitting and system to be fed to prevent bleach water from entering the fed unit during a sanitization cycle.
 - Continue distribution loop back to storage reservoir and connect to the flow restrictor and then to the "LOOP IN" port. See Figure 11.



Note

It is suggested that PTFE tape be applied to the NPT threads to ensure a tight seal.

^{*} Fast & Tite is a registered trademark of D & G Plastics Co.

The distribution pump operation is controlled through the Dlamond TII menu screen. Press "Menu," use arrows to select "Reservoir Options," use arrows to select "Dist. Pump," and select "ON" or "OFF". When "ON" is selected, the distribution pump will operate continuously whenever the Dlamond TII is left in RUN or STANDBY modes, and will automatically turn off when the Dlamond TII is placed in IDI F mode.

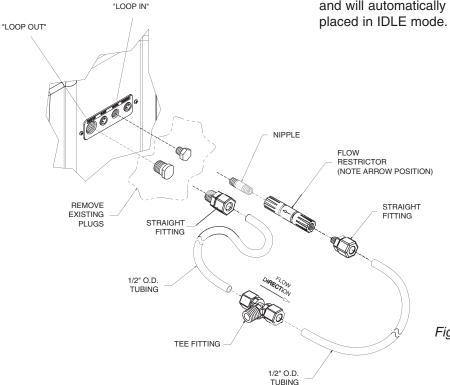
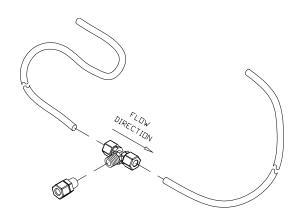
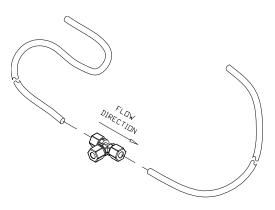


Figure 11: Distribution Loop Connections



CONNECTION TO NANOPURE



CONNECTION TO GLASSWARE WASHER / DISTRIBUTION

Maintenance and Servicing



Warning

Avoid splashing disinfecting solutions on clothing or skin. Ensure all piping connections are tight to avoid leakage of chemicals. Ensure adequate ventilation. Follow carefully the manufacturer's safety instructions on labels of disinfectant containers and Material Safety Data Sheets (M.S.D.S.)

General Cleaning Instructions

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

Reservoir Sanitization

The frequency of cleaning depends on the rate and amount of contamination or build-up in the reservoir. The sanitization procedure is automated and can be accessed through the menus on the Dlamond TII display. See the "System Sanitization Procedure" in the Dlamond TII Operation Manual.

Ventgard® Filter Replacement

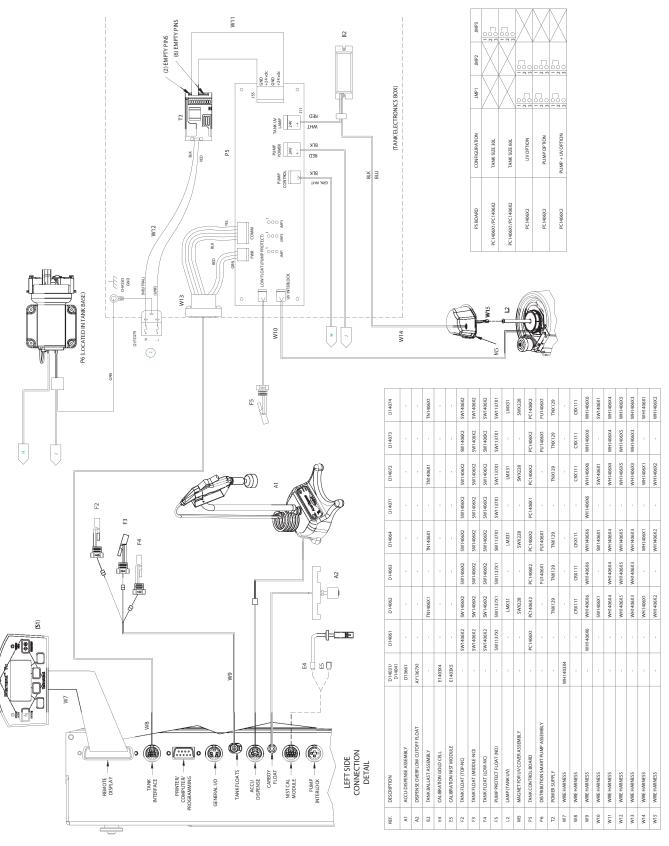
The Ventgard filter assembly should be replaced every 6 months or after 1,000 gallons have been drawn from the storage reservoir. A Ventgard filter assembly may be stored in a cool, dry place almost indefinitely, provided the plastic bag has not been opened. Refer to Ventgard Installation for replacement instructions.

Draining the Reservoir

It will be necessary to drain the reservoir to complete some procedures or for general maintenance and cleaning. To drain the reservoir, follow these steps:

- 1. Disconnect the quick disconnect fitting in the "TO UNIT-FROM TANK" tube. See Figure 7.
- 2. Remove the tubing from the "FROM TANK" connection on the system manifold.
- Route the removed tubing end to a suitable drain.
- 4. Reconnect the quick disconnect fitting.
- This procedure can be expedited by manually drawing water from the draw off valve on the front of the reservoir.

Wiring Diagram



Parts List

Consumables

25001 Ventgard filter element LMX31 Reservoir UV Lamp

General Maintenance Parts

PMX134 Draw-off Valve

PMX88 Tee Fitting for Distribution Loop PMX101 Flow Restrictor for Distribution Loop

TU1406X1 1/2" OD Tubing for Distribution Loop (50 ft. length)

PMX305 Overflow Check Valve

SW1137X1 Bottom Float (Used only in bottom position)
SW1406X2 Upper Float (Used in top three positions)

CRX111 Reservoir Interface Cable

WH1406X6 Float Cable

CUX9 Quick Disconnect Coupling Insert
CUX11 Quick Disconnect Coupling Body
FZX79 Fuse, Power Entry (2 required)

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 **Thermo Scientific** 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 866-984-3766.

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

One Year Limited Warranty

This Thermo Scientific product is warranted to be free of defects in materials and workmanship for one (1) year from the first to occur of (i) the date the product is sold by the manufacturer or (ii) the date the product is purchased by the original retail customer (the "Commencement Date"). Except as expressly stated above, the MANUFACTURER MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF DESIGN, MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

An authorized representative of the manufacturer must perform all warranty inspections. In the event of a defect covered by the warranty, we shall, as our sole obligation and exclusive remedy, provide free replacement parts to remedy the defective product. In addition, for products sold within the continental United States or Canada, the manufacturer shall provide free labor to repair the products with the replacement parts, but only for a period of ninety (90) days from the Commencement Date.

The warranty provided hereunder shall be null and void and without further force or effect if there is any (i) repair made to the product by a party other than the manufacturer or its duly authorized service representative, (ii) misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, modification or alteration of the product by any customer or third party or (iii) use of replacement parts that are obtained from a party who is not an authorized dealer of Thermo Scientific products.

Heating elements, because of their susceptibility to overheating and contamination, must be returned to the factory and if, upon inspection, it is concluded that failure is due to factors other than excessive high temperature or contamination, the manufacturer will provide warranty replacement. As a condition to the return of any product, or any constituent part thereof, to the factory, it shall be sent prepaid and a prior written authorization from the manufacturer assigning a Return Materials Number to the product or part shall be obtained.

IN NO EVENT SHALL THE MANUFACTURER BE LIABLE TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY DAMAGES RESULTING FROM LOSS OF USE OR PROFITS, ANTICIPATED OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR PERFORMANCE OF ANY PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), ANY THEORY OF STRICT LIABILITY OR REGULATORY ACTION.

For the name of the authorized Thermo Scientific product dealer nearest you or any additional information, contact us: 308 Ridgefield Court, Ashville, NC, 28806 USA

Phone: 1-866-984-3766 Fax: 1-828-665-4071 Web: www.thermo.com