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Water Cooler

826A

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Manual Version 1.00

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Revision History

Date	*Version Number*	*Document Changes*
07/06/2015	1.0	Initial Draft

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1 Introduction

The 826A Water Cooler is intended to be used as a simple liquid coolant circulator, with Aurora Scientific 800 Series apparatus. The Water Cooler incorporates a brushless DC pump to circulate the water through an aluminum radiator to exchange heat with the air.

2 Quick Start Guide

Setting up an 826A Water Cooler is a simple procedure. This Quick Start Guide will guide you through the process.

2.1 Attaching the Liquid Coolant Lines

Two lengths of tubing, both six feet in length have been supplied to attach the 826A Water Cooler to an Aurora Scientific 800-Series Test System. The Tubing has been pre-fitted with the required fittings to easily connect to the test system. The connection to the circulator uses a threaded compression fitting or a "hose" screw. It does not matter which side the supply and return are connected to the test system. To attach the hoses to the circulator, slide on the hose screws over the end of the hoses before mating the hose to the back of the circulator. Once the hoses have been firmly pressed on, tighten up the hose screws, to secure the connection (see Figure 1).

Figure 1: Attaching Hoses to Circulator

2.2 Filling the Liquid Reservoir

WARNING: FILL RESERVOIR ONLY WITH COOLANT OR DISTILLED WATER! TAP WATER WILL CORRODE THE ALUMINUM RADIATOR IN THE UNIT AND CAUSE SEVERE LEAKAGE AND DAMAGE.

Ensure all tubing connections have been completed before attempting to fill the unit. Place the 826A unit so that it is the highest point in the cooling loop, (above the Test System and tubing). Open the reservoir cap on the top of the unit. Use a coin or large flathead screwdriver to remove the reservoir cap. A small funnel has been included with the liquid coolant to minimize spills. Slowly, pour some of the coolant liquid into the reservoir and carefully fill up to the top (See Figure 2).

Figure 2: Filling Coolant Reservoir

NOTE: Be careful not to overfill the reservoir, since any overflow from the reservoir will drain directly into the 826A case. You should fill the reservoir to approximately 1.5cm (1/2") from the top of the reservoir. If you should overfill the reservoir, screw the cap back on, place a towel under the liquid circulator and tilt the unit from left to right to drain the liquid from the case. Under no circumstances should you turn the 826A upside down to drain overflow liquid from the case since this will damage the fan due to the liquid draining through the fan. .

Once the reservoir has been filled, switch on the 825A to allow the pump to fill the rest of the system and tubing with coolant. When the system begins running for the first time the fluid inside the reservoir will begin to drain. As this happens continue to fill the reservoir with distilled water until the draining has stopped. Once full, replace the cap and unplug the power adapter from the system until ready for use.

If the fluid refuses to flow through the system immediately when power is connected, it is likely that the pump is still dry. In this case you may attempt to prime the pump by slightly tilting the unit back and forth to encourage the liquid to flow. Once the pump has begun to circulate, you may replace the circulation hoses to the test system.

2.3 Positioning the Unit

Positioning the coolant circulator correctly is essential to its proper operation. Firstly the unit should be positioned a reasonable distance away from the actual test system as vibration from the pump and fan will make mechanical measurements noisy. If the test system is mounted on a vibration isolation table, DO NOT locate the coolant circulator on it as this will cause vibration noise to appear in the data.

Since the head pressure generated by the pump is small, the 826A Water Cooler should be mounted slightly above or at about the same height as the test system. Take care to mount the unit within ±0.5m of the height of the 800-series apparatus or the circulator will have trouble driving coolant through the entire loop.

2.4 Module Operation

Once all of the connections have been made and the coolant reservoir filled, the 826A is ready for use. The coolant circulator does not have a power switch, as it draws its power from a tap on the rear of the 825A. Circulation is therefore turned on by switching the 825A on or off. Once the unit has been plugged in the fan speed can be set with the two position switch located on the back panel of the coolant circulator. The low setting is in general sufficient to be used with all ASI 800 Series test systems for most temperature settings of the 825A. Aurora Scientific recommends switching the fan setting to high when operating at either extremes of the TEC controller's range.

The Module is equipped with dry break fittings to avoid any spillage of coolant in the event that the unit must be moved.

3 Maintenance

To prevent air from getting into the system and causing problems with coolant flow, the user should periodically check the coolant level in the reservoir to verify that it is full (approximately 1.5cm or ½" from the top) and top up as necessary.

Aurora Scientific recommends replacing the coolant annually to keep your system operating optimally.

If you run out of coolant, distilled water can be used to top up the system. DO NOT use ordinary tap water, as this will corrode the aluminum radiator inside the unit. Additional bottles of coolant can be ordered from Aurora Scientific in the event that the coolant supplied with the system runs out.

4 Performance Guarantee, Technical Support, Warranty and Repair Information

Aurora Scientific is dedicated to providing you with products that allow you to meet your research goals. For this reason we offer a performance guarantee, technical support and a new product warranty. Our performance guarantee ensures you purchase the correct instrument for your research. Technical assistance is always free and will be available for the life of your product. If you do have a problem with a product then please know that all Aurora Scientific products are covered by a three-year warranty covering both parts and labour. If you need to return a product to us for repair then consult the final section of this chapter for returns information.

4.1 Performance Guarantee

Our performance guarantee states: if for any reason a new product does not meet your research needs then you can return it to Aurora Scientific for exchange or a full refund. The performance guarantee only applies to new products and must be exercised within 60 days of receipt of the instrument.

4.2 Technical Support

Technical assistance is always free and will be available for the life of your product. Please don't hesitate to contact us if you have any technical support issues. Contact us by telephone, email, fax, or regular mail.

4.3 Technical Support Contact Information and Return Shipping Addresses

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4.4 Warranty

Products manufactured by Aurora Scientific Inc. are guaranteed to the original purchaser for a period of three (3) years. Under this warranty, the liability of Aurora Scientific is limited to servicing, adjusting and replacing any defective parts that are of Aurora Scientific manufacture. Aurora Scientific is not liable to the customer for consequential or other damages, labour losses or expenses in connection with or by reason of the use or inability to use the products manufactured by Aurora Scientific.

Guarantee of parts and components not manufactured by Aurora Scientific shall be the same as the guarantee extended by the manufacturer of such components or parts. Where possible such parts returned to Aurora Scientific will be sent to the manufacturer for credit or replacement. Ultimate disposition of these items will depend upon the manufacturer's decision.

All shortages must be reported within ten (10) days after receipt of shipment.

Except where deviations are specified in literature describing particular products, the limited warranty above is applicable to all Aurora Scientific products, provided the products are returned to Aurora Scientific and are demonstrated to the satisfaction of Aurora Scientific to be defective.

Transportation costs of all products returned to Aurora Scientific must be borne by the customer and products must be returned to Aurora Scientific within three years after delivery to the original purchaser. Aurora Scientific cannot assume responsibility for repairs or changes not authorized by Aurora Scientific or damage resulting from abnormal or misuse or lack of proper maintenance.

Repair or service work not covered under the limited warranty will be billed at current service rates.

NO EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES WHETHER FOR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, OR OTHERWISE OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE WHICH ARE MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, SHALL APPLY TO PRODUCTS SOLD BY AURORA SCIENTIFIC INC, AND NO WAIVER, ALTERATION OR MODIFICATION OF THE FOREGOING CONDITIONS

SHALL BE VALID UNLESS MADE IN WRITING AND SIGNED BY AN EXECUTIVE OFFICER OF AURORA SCIENTIFIC INC.

4.5 Returning Products to Aurora Scientific for Repair

There are a few simple steps that must be completed before returning your product to Aurora Scientific.

1. Obtain a Return Material Authorization number (RMA#).

Contact our technical support department to obtain a RMA #. We require the serial number of the product along with your contact information, i.e. your name, institution, phone number and email address.

2. Package your instrument.

Use the original packaging materials if available. If you do not have original packaging then ensure that the product is wrapped in bubble pack and placed in a sturdy corrugated cardboard box. If you are returning a force transducer please place the transducer head in the plastic protective box and then wrap the plastic box in bubble pack and place it in a small cardboard box which can then be placed in the larger box along with the electronics. For force transducer repairs we require both the transducer head and the control electronics. Please don't send the power cord. When returning a muscle lever system wrap the motor in bubble pack and place it along with the lever arm in a small cardboard box and then place that box in the larger shipping container along with the controller. For muscle lever repairs we require the motor, lever arm, motor cable and control electronics. Please don't send the power cord.

3. Prepare Customs documents.

Canadian Clients: no customs documents are required, skip to step 4.

European Clients: no customs documents are required, skip to step 4 and ship to Aurora Scientific Europe.

Asia, Australia and New Zealand Clients: no customs documents are required, skip to step 4 and ship to Aurora Scientific Asia.

USA and Rest of the World Clients: You must include a Commercial Invoice (CI) with the shipment. Please click this link to download a blank CI.

You can also prepare the commercial invoice yourself instead of using the downloadable form. Print the document on your company's letterhead and include the following information: Date, Shipper's Name, Address and Phone Number (your company information), Consignee's Name, Address and Phone Number (Aurora Scientific Inc. is the Consignee), Country of Origin of Goods (this will be Canada if you purchased the instrument from Aurora Scientific or USA if your product was purchased from Cambridge Technology), Conditions of Sale (include the following statement: GOODS RETURNING TO FACTORY FOR REPAIR, TEMPORARY IMPORT), Number of Packages (normally 1), Description of Goods (e.g. Model 300B Muscle Lever System, Serial Number 1111), Quantity of Each Item (normally 1) and Value for Customs Purposes (the original purchase price of the instrument).

Place three (3) copies of your CI in an envelope and mark the outside CUSTOMS PAPERS ENCLOSED. Attach the envelope to the outside of the box.

4. Choose a shipper and prepare the waybill.

European Clients: ship your instrument to Aurora Scientific Europe in Dublin, Ireland.

Asia, Australia and New Zealand Clients: ship your instrument to Aurora Scientific Asia in Hong Kong.

Canadian, USA and all other Clients: ship your instrument to Aurora Scientific in Ontario, Canada.

You may ship your instrument back to us via the courier of your choice or via parcel post. If possible we prefer that you ship via FedEx. You are responsible for both the shipping and brokerage charges so please mark the waybill accordingly. Please don't ship freight collect. Shipments sent freight collect will be received but you will be invoiced for the shipping charges when your instrument is returned.

5. Prepare and send a purchase order.

After we receive the instrument we will evaluate it and contact you with the estimated repair cost. We require a purchase order before we can repair and return your instrument. Please fax or email us the purchase order at your earliest convenience.

5 Specifications

Water Pump

Spherical Motor:	Electronically commutated with brushless DC design.
Voltage Range:	8 to 13.2 VDC
Max System Pressure:	22 PSI
Head Pressure:	390 m/bar @ 12 VDC
Maximum Flow:	350 L/h (1.54 US Gal/min) @ 12VDC

Fan

Voltage:	12 VDC
Current:	0.3A
Speed:	1800 RPM
Air Flow:	74.4 CFM
Pressure:	3.2 mm water

Electrical

Power Requirements:	12 VDC, 1.25A max. (Powered from power tap on 825A)