

# Model 1828

Forma Laminar Airflow Workstation Class 100  
Operating and Maintenance Manual 7021845 Rev. 6



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*A printed copy of the operating manual is available from Technical Services.*

**MANUAL NUMBER 7021845**

6	29120	9/25/12	Added note for online warranty registration	ccs
5	27575	7/28/11	Clarified pre-filter description	ccs
4	--	1/25/11	Corrected 760073 description in parts list	ccs
3	25439/HD-1597	3/27/09	Added UL required info	ccs
2	24234/SI-9779	9/20/07	Replaced second outlet 460022 with 460024	ccs
1	23871/SI-9779	3/26/07	Replaced black 460022 outlet (low volume) with white 460024	ccs
0	23198/HD-1479	4/11/06	New 1828 and 1829 schematics, new bulbs (1828-release 3, 1829-release 2)	ccs
<b>REV</b>	<b>ECR/ECN</b>	<b>DATE</b>	<b>DESCRIPTION</b>	<b>By</b>



**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. ▲

**Warning** Lamps, thermometers and thermoregulators contain mercury. Do not put in trash. Recycle or dispose as hazardous waste. ▲

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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.



Potential biological hazards. Proper protective equipment and procedures must be used when following instructions associated with this symbol. Reference O.S.H.A. Regulation 1910-1030.



Skin damage and/or eye injury can result from the light produced by ultraviolet light sources installed in this equipment. Never work in this unit with the ultraviolet light in operation.



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](http://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.

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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.

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# Section 1 Introduction

The horizontal laminar flow clean cabinet provides a particulate-free work environment for the performance of sterile and/or dust sensitive procedures. The unit is recommended for use in sterile apparatus assembly, media preparation sterility testing, sterile filling and related industrial and biomedical procedure.

The cabinet provides product protection only. The operator/technician is exposed to any particulate, aerosol or gas released from the work procedures. Therefore, procedures involving viable agents, work involving drugs, or chemicals that produce a toxic, allergic or carcinogenic response in humans should not be performed within this unit.

The operator/technician is responsible for decontamination if hazardous material is spilled on or in the unit.

Consult an institutional bio-safety officer or an industrial hygienist before beginning any procedure that might endanger the operator or contaminate the environment. This unit is to be used as described in this manual and for its intended purpose only.





## Section 2 Installation and Start-Up

Before putting the unit into operation, remove the cardboard shipping block from the back of the blower. Remove the prefilter and the prefilter grille to gain access for its removal.

### Install the Feet

The packing list includes eight white rubber “stick-on” feet. Install these feet before placing the unit in its final location.

### Location and Leveling

Locate the cabinet on a level surface in an area of minimum ambient temperature change. The cabinet should be placed away from personnel traffic, air-conditioning or heating ductwork, and/or laboratory windows and doors. Proper cabinet location is essential as drafts can disrupt critical airflow characteristics and allow room contaminants to enter or escape the cabinet work area.

Place the cabinet on an existing table or counter. The depth of the table or table must be at least 36 inches to accommodate the unit.

**Warning** The cabinet weighs approximately 475 lbs. Use proper equipment when moving this unit. ▲

Allow a 4” minimum clearance between the top of the cabinet and the laboratory ceiling to ensure an adequate air supply to the blower.

Place a bubble-type level on the work surface and ensure the cabinet is level.

### Optional Stand

If the optional stand is to be used, adjust the leg levelers to obtain the correct height (30”-36”) for the work surface. Make sure all four levelers are in full contact with the floor.

## **Power Connection**

Connect the power cord to a grounded dedicated power source. Refer to the electrical data plate mounted on the unit, or the electrical schematic, for exact electrical specifications.

The power cord is the mains disconnect. Make sure the power outlet is accessible at all times.

## **General Recommendations**

- Keep the activity in the room to a minimum when the cabinet is in use.
- Keep all laboratory doors closed to prevent drafts that will disturb critical airflow characteristics.
- Segregate clean and dirty materials.
- Do not place anything on the intake grille.
- The operator should work at a normal pace, avoiding rapid arm movements.
- Practice good aseptic technique to ensure safe use of the cabinet.
- To increase the life of the HEPA filters, check the pre-filters regularly and replace them as necessary. See Section 5.

## **Cabinet Wipe-down**

Before operating the cabinet, allow the unit to run for about 30 minutes. Then turn the blowers off and wipe the entire interior surface with a laboratory detergent/disinfectant to remove any remaining surface dirt.

## **Start-Up Procedure**

1. Turn the cabinet lights on.
2. Check the intake grille to ensure that it is not blocked.
3. Turn on the blower on and allow the unit to warm up for 15 minutes before use.
4. Wash your hands and lower arms with germicidal detergent.
5. Disinfect the entire work area.
6. Place everything needed in the cabinet.

## **Cabinet Shutdown**

1. Surface decontaminate all surfaces with the appropriate disinfectant and enclose all equipment that has been in direct contact with the bedding.
2. Allow the cabinet to run for at least five minutes with no activity to allow time for all airborne contaminants to be purged from the work area.
3. Remove all equipment.
4. Wipe down all interior surfaces with the appropriate disinfectant to the work being performed.

**Caution** Before using a cleaning or decontamination procedure not recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment. ▲



## Section 3 Operation

Control and indicating devices are described below.

### Blower Switch

The blower switch controls the power to the blower motor.

### Light Switch

The light switch controls power to the fluorescent lamps in the work area or the optional ultra-violet lamp.

### Static Pressure Gauge (In. W.G.)

The optional static pressure gauge measures the air pressure differential across the filters, providing an indication of filter “loading”. As the filters become dirty, the resistance to air passage increases, and the reading on the static pressure gauge increases accordingly. When the reading increases by 50%, check the cabinet airflow with a thermoanemometer. The filters should be replaced if they are shown to be inefficient due to loading.

**Note** Static pressure gauge should not be used as a direct measure of airflow. ▲

### Blower Speed Control

**Note** The blower speed is set at the factory and should only be changed by a qualified technician. ▲

The blower speed control is located beside the blower switch on the control panel. The speed control is used to adjust the air velocity from the blower motor. A clockwise turn of the adjustment screw increases the air velocity.

### Ultra-Violet Light (optional)

**Warning** Potential eye damage may result from viewing the light produced by ultraviolet light sources installed in this equipment. Never work in this unit with the ultraviolet light operating. ▲

Cabinets may be equipped with an ultra-violet germicidal light as optional equipment. These lamps lose their effectiveness over a period of time and should be replaced about every 6 months. A single 115V (1A maximum) electrical outlet for connecting the optional ultra-violet light is located beside the Reset button.



## Section 4 Testing Procedures

The Air Velocity Profile Test follows.

**Note** A drop in line voltage will cause a corresponding drop in airflow. Check the voltage to the unit before airflow measurement. If low voltage is a problem, this must be corrected in the building system. ▲

Airflow measurements should be taken by using a thermoanometer mounted on a support stand. The measurements should be taken following a lateral pattern six inches inside the front opening and six inches from the solid cabinet surfaces with six inch centers. These readings should fall in the range of 70-110 LFPM (linear feet per minute) with an average of about 90 LFPM.

If the airflow readings do not average about 90 LFPM, adjust the blower speed control to attain this value. As the filters load with particulate, airflow will begin to drop. If adjustment of the speed control cannot compensate for the filter loading (the control is turned up to full and at least 80 LFPM cannot be obtained), then the filters must be changed.

A list of certification companies is included on the Thermo website, or call the Technical Services department. See Page iv for telephone numbers or addresses.



**LAMINAR AIR WORK STATION TEST REPORT FORM**

MODEL (S): 1828, 1829

S/N: \_\_\_\_\_ TRANSFER TO S/N: \_\_\_\_\_

HEPA FILTER LEAK TEST: Aerosol penetration shall not exceed 0.01% [ ] Yes

Filter scanned by: \_\_\_\_\_ Repairs made by: \_\_\_\_\_ # of holes \_\_\_\_\_  
 Supply filter size: 30 x 72 x 6  
 Manufacturer: DONALDSON Resistance (s): \_\_\_\_\_ @ \_\_\_\_\_ CFM or LFM  
 or \_\_\_\_\_

**GROUND CONTINUITY RESISTANCE:**

(0.1 ohms max.) Cabinet: \_\_\_\_\_ Ohms Receptacle: \_\_\_\_\_ Ohms

**GROUND LEAKAGE TEST:**

(500 ma max.)

	<u>Cabinet</u>	<u>Receptacles</u>
Normal, neutral open, switches on	_____	_____
Reverse, neutral open, switches on	_____	_____
Normal, neutral closed, switches on	_____	_____
Reverse, neutral closed, switches on	_____	_____

POLARITY: Meets N.E.C. [ ] Yes [ ] N/A

TEST VOLTAGE: 120 or 220 (circle one) FLA: \_\_\_\_\_

VELOCITY PROFILE: 6.0 Inches from cage sides with successive points 11.7 inches apart.  
 6.0 Inches from cage top or bottom with successive points 8.25 inches apart.  
 6.0 Inches from protective grille on a parallel plane


TOTAL SUM \_\_\_\_\_ ÷ 18 = Average air flow velocity \_\_\_\_\_ LFPM.

ACCEPTABLE AIR FLOW RANGE: 85 - 95 in linear feet per minute.

TESTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

(LAW1828; Rev. 4, 03/31/98 - Form Approval BA # 4-3-98)

## Section 5 Routine Maintenance

Routine maintenance procedures follow.

### Check Static Pressure Gauge “Zero”

In order to provide an accurate reading, the indicating needle of the static pressure gauge should be precisely at zero when the cabinet is completely shut off. If the cabinet is connected to a central exhaust system, the exhaust system must also be shut off.

Upon initial start-up or after the HEPA filter has been replaced, the static pressure gauge should read (or be set to) zero when the cabinet is not operating. When the cabinet is restarted and proper airflow balance has been achieved, the gauge reading should be recorded. This reading will serve as a baseline of subsequent filter loading. If the reading increases by approximately 50%, the airflow balance should be checked again.

### Replace the Pre-filter

The pre-filter is used to extend the effective life of the HEPA filter. The pre-filter should be replaced three times a year, depending upon environmental conditions. The pre-filter is located at the air intake duct at the top of the unit.

It is not necessary to decontaminate the cabinet before replacing the pre-filter. Do not turn the cabinet off. Allow it to run during the replacement procedure.

1. Remove the pre-filter by lifting it straight up.
2. Install a new pre-filter.

### Replace the Fluorescent Light Bulb

1. Turn the cabinet power off and disconnect it from the power source.
2. Remove the pre-filter and grille from the top of the unit.
3. Remove the tie wrap securing the line cord to the control panel from the rear interior wall of the blower compartment.
4. Remove the screws securing the control panel and slide the control panel out.
5. Grasp the fluorescent light bulb on the right end by the socket and gently push to the left and pull out to remove the lamp.
6. Replace with a new bulb.



## Section 6 Service

**Warning** Before any service work is performed on the cabinet, decontaminate the unit! ▲

**Warning** De-energize all potential sources of energy to this unit and lockout/tagout their controls. (O.S.H.A. Regulation, Section 1910-147.) ▲

### Replacing the Supply HEPA Filter

1. Remove the pre-filter and the plastic egg crate grille.
2. Remove the 8 screws securing the blower motor assembly and remove the tie wrap on the back wall. Remove the blower motor.
3. Remove the screws securing the motor mount assembly and lift the entire assembly out of the unit.
4. Carefully remove the wooden drive wedges holding the HEPA filter in place and lift the filter out of the top of the unit.
5. With a vacuum cleaner, vacuum the entire filter seating surfaces.
6. Slide the replacement filter in place and verify that the gasket seal is evenly distributed.
7. Set the longer wedge back into the cabinet with the straight side against the back of the filter. Next set the shorter drive wedge into position with its straight side facing the back of the hood. Drive the wedge a little at a time on each side until the filter is sealed. The neoprene gasket seal should be compressed at least 50%.

## Replacing the Blower and/or Motor

**Note** Access to the blower is through the pre-filter grille. ▲

1. Loosen the set bolt on the blower shaft wheel from inside the left side of the scroll (as viewed from the back).
2. Remove the 3 bolts and washers securing the motor to the scroll on the right side of the blower assembly.
3. Disconnect the green ground wire.
4. Disconnect the wiring at the junction box. Note the wiring configuration.
5. Remove the blower motor, and replace it with the new motor. Align the blower wheel, and tighten.
6. Connect the wiring in the same configuration as the old blower motor.
7. Replace the pre-filter grille and pre-filter.

## Replacing the Blower Speed Control

1. Remove the pre-filter grille and prefilter. Locate the blower speed control mounted on the front (right side).
2. Locate the blower speed control mounted on the side of the blower chamber below the power switch.
3. Remove the nut from the blower speed adjustment control.
4. Unsolder the wiring to the control. Note the wiring configuration.
5. Remove the speed control potentiometer.
6. Install the new blower speed control by reversing the above procedure.
7. Replace the pre-filter and the pre-filter grille.

## Section 7 Troubleshooting

The following is a guide to troubleshooting the safety cabinet system.

**Warning** Before any service work is performed on the cabinet, decontaminate the unit! ▲

**Problem:** Air flow in the cabinet work area and through the exhaust filter is inadequate.

**Possible Causes:**

Unit not plugged in.

Blower motor overheated due to low electrical voltage. Step up voltage or increase the speed control.

Blower motor or speed control is defective. Replace the speed control.

If the static pressure gauge reading has increased approximately 50% from its initial readings, the filter has likely loaded with dirt and the speed control must be adjusted. If proper airflow cannot be reached by adjusting the speed control, decontaminate the cabinet and replace all HEPA filters.

**Problem:** Static pressure gauge does not work.

**Possible Causes:**

Verify that the hose is tightly attached to a high pressure port of the gauge and to the cabinet (front top right of the service box). If properly tightened, the static pressure gauge is likely defective and should be replaced.

**Problem:** Noisy fan or motor operation.

**Possible Causes:**

Debris in the blower housing. Remove the access panel and inspect motor and blower assembly. Remove any debris.

Overheated speed control due to excessive heat load in the work area. Determine and decrease source of the heat load.

Defective speed control. Replace the speed control.

Motor failure or motor out of balance. Balance or replace the motor.

**Problem:** Fluorescent lights are not working.

**Possible Causes:**

Plug and socket at the ends are improperly connected. Check to see that the lamp pins contact both sockets.

Lamp improperly grounded. Have a qualified electrician trace the source of the bad ground and correct it.

Defective or burned-out lamp. Replace the fluorescent tube.

Ballast failure. Replace the defective ballast.

## Section 8 Specifications

Model 1828 - 6' Benchtop

Interior Dimensions .70.5"W x 28.4"H x 19.1" F-B  
.....(179.1cm x 72.1cm x 48.5cm)

Exterior Dimensions .73.2"W x 54.1"H x 34.0" F-B  
.....(74.9cm x 160cm x 130.8cm)

Electrical .....115V, 60Hz, 12.0 FLA

Shipping Weight .....530 lbs. (240kg)

The workstation is designed to be electrically safe in the following environmental conditions:

- Indoors
- Altitude: Up to 2,000 meters
- Temperature: 5°C to 43°C
- Humidity: 80% RH at or below 31°C, decreasing linearly to 50% RH at 40°C
- Mains Supply Fluctuations:  $\pm 10\%$  of nominal.
- Installation Category II <sup>1</sup>
- Pollution Degree 2 <sup>2</sup>
- Class of Equipment I

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<sup>1</sup> Installation category (overvoltage category) defines the level of transient overvoltage which the instrument is designed to withstand safely. It depends on the nature of the electricity supply and its overvoltage protection means. For example, in CAT II which is the category used for instruments in installations supplied from a supply comparable to public mains such as hospital and research laboratories and most industrial laboratories, the expected transient overvoltage is 2500V for a 230V supply and 1500V for a 120V supply.

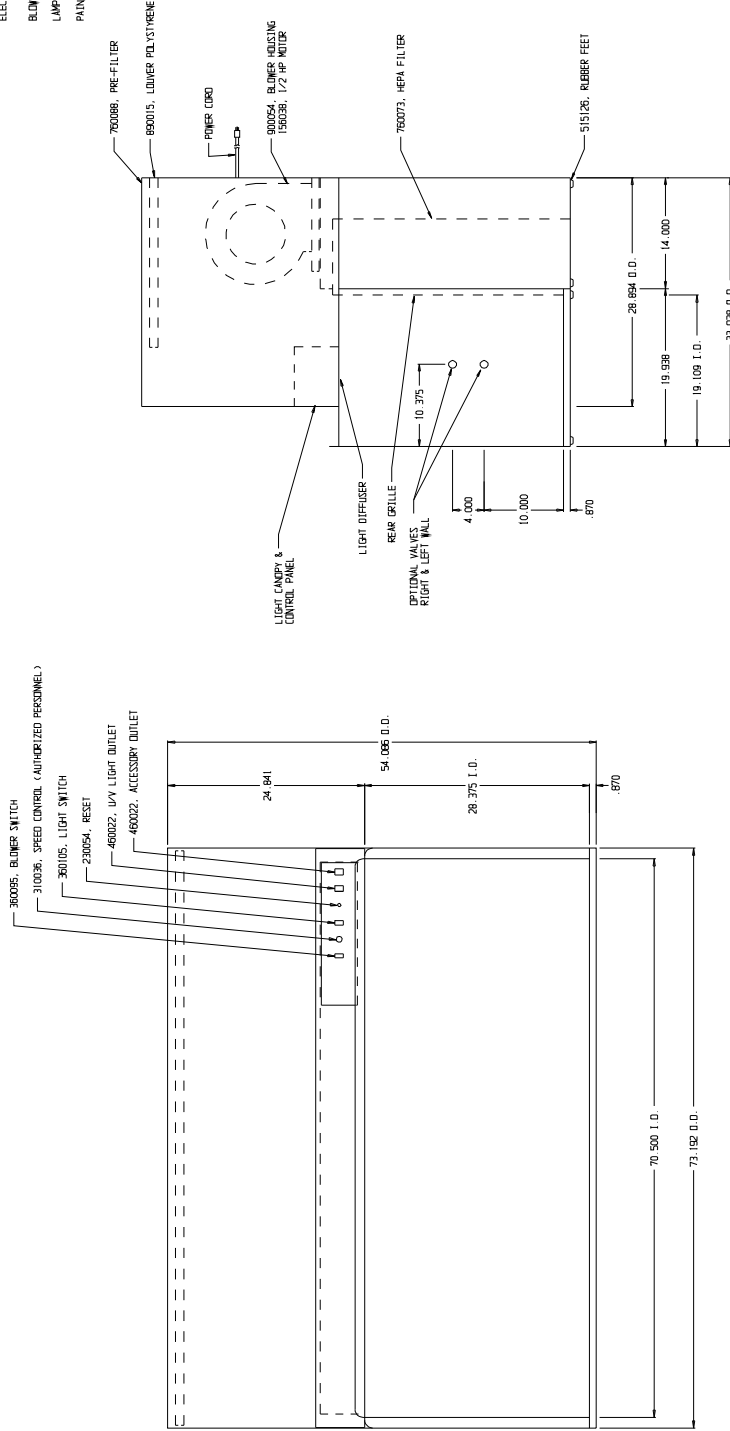
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<sup>2</sup> Pollution degree describes the amount of conductive pollution present in the operating environment. Pollution degree 2 assumes that normally only non-conductive pollution such as dust occurs with the exception of occasional conductivity caused by condensation.



**SPECIFICATIONS**

MODEL: 1628 LAMINAR FLOW WORK STATION  
 INTERIOR: 16 GA. 44 STN. STL. & 16 GA. CRS  
 EXTERIOR: 16 CRS  
 ELECTRICAL: 120V, 1PH, 2W, 60HZ, 105FLA  
 (EXCLUDES 2AMP CONVENIENCE RECEPTACLE)  
 BLOWER: 1/2HP BLOWER MOTOR  
 LAMPS: TWO (2) 40W FLUORESCENT  
 PAINT: ANTIQUE WHITE WITH SLATE BLUE TRIM



7	31-8002	02-21-02	16B	VALVES	PAINT COLOR CHANGE TO WHITE		
6	40-1328	02-16-01	16M	16G	16A	NOTED CONFORMANCE RECEIPT, AS 2AMP	
5	40-1328	06-02-00	16L	16G	16A	NOTED TO P.L.A. EXCLUDES RECEPTACLE	
4	40-500	12-07-99	16B	16G	16A	16D	LOCATE & TAP TO DISP. SOURCE
3	40-500	12-07-99	16B	16G	16A	16D	LOCATE & TAP TO DISP. SOURCE
2	40-500	12-07-99	16B	16G	16A	16D	LOCATE & TAP TO DISP. SOURCE
1	40-500	12-07-99	16B	16G	16A	16D	LOCATE & TAP TO DISP. SOURCE
CUSTOMER: 1628 LAMINAR FLOW WORK STATION JOB TITLE: ASSEMBLER PART NUMBER: 1628-00-00 HOODS: DRAWING NUMBER: 1628-00-00							

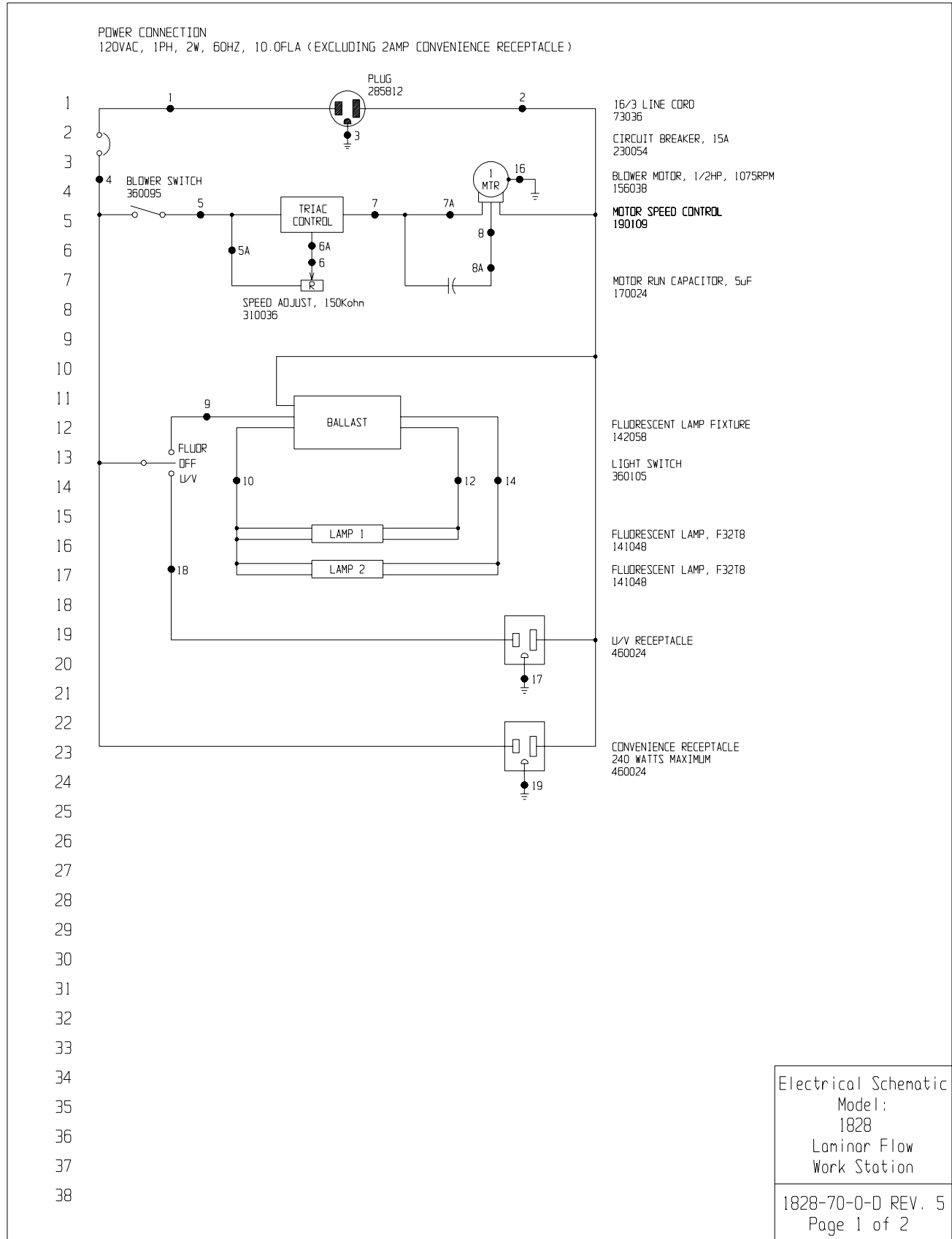
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## Section 9 Parts List

### Model 1828

Qty	Stock #	Description
2	141048	Lamp, Fluorescent (F32T8)
1	142058	Lamp Fixture (F32T8)
1	170024	Motor Capacitor, 5 MFD, 370V
1	190109	Triac Motor Speed Control
1	156038	Blower Motor, 1/2 HP
1	230054	Circuit Breaker 15 Amp
1	285812	Plug, Hospital Grade, 20A, 3-Wire
12ft	73036	16/3 Line Cord
2	460024	Outlet, 3W, Snap-in
1	760073	Supply Filter, HEPA, 30 x 72 x 6
1	760088	Pre-filter, 21.4 x 36.3 x 1





Electrical Schematic  
Model:  
1828  
Laminar Flow  
Work Station

1828-70-0-0 REV. 5  
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**Section 10**  
Electrical Schematics

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WIRE REFERENCE CHART

<u>WIRE NO.</u>	<u>GAUGE</u>	<u>COLOR</u>
1	16	BLACK
2	16	WHITE
3	16	GREEN
4	16	BROWN
5	16	BLACK
5A	16	BLACK
6	20	ORANGE
6A	16	ORANGE
7	16	RED
7A	16	BLACK
8	16	BROWN
8A	16	RED
9	16	BLACK
10	18	RED
11	--	--
12	18	BLUE
13	--	--
14	18	BLUE
15	--	--
16	16	GREEN
17	16	GREEN
18	16	YELLOW
19	16	GREEN

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION IS NOT TO BE DISCLOSED TO OTHERS FOR ANY PURPOSE NOR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THERMO FISHER SCIENTIFIC		MODEL/PART NAME: 1828 LAMINAR FLOW WORK STATION		Electrical Schematic Model: 1828 Laminar Flow Work Station
DWG TITLE: ELECTRICAL SCHEMATIC		DATE: 04-07-86 SCALE: N/A		
MATERIAL:		DRAWING NUMBER 1828-70-0		
PAINT COLOR: TOLERANCE UNLESS OTHERWISE SPECIFIED ANGLES: DECIMAL: .XX+/- .XXX+/-		SIZE D		
<b>ThermoFisher</b> <b>SCIENTIFIC</b> BDX 649, MARJETTA, OHIO 45750		1828-70-0-D REV. 5 Page 2 of 2		

## THERMO FISHER SCIENTIFIC LAMINAR FLOW EQUIPMENT WARRANTY USA

The Warranty Period starts two weeks from the date your equipment is shipped from our facility. This allows shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner.

During the first thirty-six (36) months, component parts proven to be non-conforming in material or workmanship will be repaired or replaced at Thermo's expense, including labor. Installation, calibration and certification is not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this warranty.

Replacement or repair of component parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any component or equipment. At Thermo's option, all non-conforming parts must be returned to Thermo postage paid and replacement parts are shipped FOB destination.

**THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL, OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY.**  
Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages to lost profits or loss of products.

Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

If equipment service is required, please call your Technical Services Department at 1-800-438-4851 (USA and Canada) or 1-740-373-4763. We're ready to answer your questions on equipment warranty, operation, maintenance, service, and special applications. Outside the USA, contract your local distributor for warranty information.



Rev. 5 4/09

## **THERMO FISHER SCIENTIFIC LAMINAR FLOW EQUIPMENT WARRANTY INTERNATIONAL**

The Warranty Period starts two months from the date your equipment is shipped from our facility. This allows shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner.

During the first thirty six (36) months, component parts proven to be non-conforming in material or workmanship will be repaired or replaced at Thermo's expense, excepting labor. Installation, calibration and certification is not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this warranty.

Replacement or repair of component parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any component or equipment. At Thermo's option, all non-conforming parts must be returned to Thermo postage paid and replacement parts are shipped FOB destination.

**THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL, OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY.** Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages to lost profits or loss of products.

Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

If equipment service is required, please call your Technical Services Department at 1-800-438-4851 (USA or Canada) or 1-740-373-4763. We're ready to answer your questions on equipment warranty, operation, maintenance, service, and special applications. Outside the USA, contract your local distributor for warranty information.



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# Locating a Certification Company

Biological safety cabinet certification consists of a series of tests designed to verify that the cabinet is performing within operating parameters established by the manufacturer.

To assure that a biological safety cabinet is operating as intended, each cabinet should be field-tested at the time of installation and at least annually thereafter. Cabinets should be re-certified whenever HEPA filters are changed, internal maintenance is performed, or is relocated.

Three industry-related organizations maintain lists of companies and individuals who are active in the certification industry. You may contact these organizations at the addresses listed below.

NSF International (NSF) and International Air Filtration Certifiers Association (IAFCA) sponsor certifier accreditation programs. Accredited certifiers have demonstrated proficiency at testing biological safety cabinets by successfully completing written and/or practical examinations.

Biohazard Cabinet Field Certifier Program  
NSF International  
PO Box 130140  
789 N. Dixboro Rd  
Ann Arbor, MI 48113-0140  
Telephone (734) 769-8010 Or (800) NSF-MARK  
Fax (734) 769-0109  
<http://www.nsf.org/Certified/Biohazard-Certifier>

IAFCA  
PO Box 12155  
Columbus, OH 43212  
Telephone (888) 679-1904  
Fax (614) 486-1108  
<http://www.iafca.com/certifier.html>

The Controlled Environment Testing Association (CETA) is a trade association devoted to promoting and developing quality assurance within the controlled environment testing industry. A list of active members is available by contacting the organization.

Controlled Environment Testing Association  
1500 Sunday Drive  
Suite 102  
Raleigh, NC 27607  
Telephone (919) 787-5181  
Fax (919) 787-4916  
[http://www.cetainternational.org/members/corp\\_indiv.htm](http://www.cetainternational.org/members/corp_indiv.htm)

For your convenience we have included a partial list of agencies that perform certification on our website. If you do not find someone listed in your area, please contact Thermo's Technical Services department for additional references.





Thermo Fisher Scientific  
Controlled Environment Equipment  
401 Millcreek Road  
Marietta, Ohio 45750  
United States

[www.thermofisher.com](http://www.thermofisher.com)