

OPERATOR'S MANUAL

AniGARD®

Animal Transfer Station



MODELS:

AG303 / AG403 / AG503 / AG303-INT / AG403-INT / AG503-INT

Welcome to Baker

Thank you for choosing to join the growing number of people who are achieving excellence in science and clinical care through clean air, containment, and incubation solutions from Baker. As a fixture in laboratories and clinical settings around the world, Baker takes special pride in helping people just like you to create optimal environments for their work, while providing a safe and comfortable user experience.

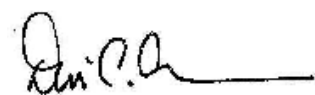
At Baker, nothing is more important to us than the trust you place in our solutions to help you achieve your goals. Whether you are involved with basic scientific research, drug discovery, or patient care, Baker has a proven record of delivering high-performing equipment through an uncompromising commitment to safety, testing, quality, and craftsmanship. Additionally, as a Maine-based family owned business in operation for more than 60 years, you can rest assured that Baker will be there for you throughout the life cycle of your new equipment.

Baker is a pioneer in the field of biological safety, and our reputation is built on taking no shortcuts and making no compromises when it comes to user safety. We are the only manufacturer to routinely subject our own equipment to extensive microbiological aerosol testing in the most challenging conditions – above and beyond what the average user would ever encounter. However, the adequacy of any equipment for user safety in a specific application should always be evaluated. This risk assessment should be performed by an industrial hygienist, safety officer, or other qualified person representing the purchasing organization. Remember that you, the owner and user, are ultimately responsible and that you use this equipment at your own risk.

I recommend that you keep a copy of this manual, along with the factory test report (if applicable), near your new equipment for convenient reference by operators and qualified maintenance personnel. If you have any questions about the use or care of your Baker equipment, please do not hesitate to contact our Technical Service Department for assistance at (800) 992-2537 (+1 207 324-8773 outside the United States) or techsupport@bakerco.com.

Thank you for placing your trust in Baker.

Sincerely,

A handwritten signature in black ink, appearing to read 'David Eagleson', followed by a horizontal line.

David Eagleson
President
The Baker Company, Inc.

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Function of the AniGARD® e3

The AniGARD® e3 is an animal transfer station providing product protection and allergen reduction. Product protection is provided by HEPA filtered supply air delivered to the work area. This animal transfer station vents back to the room.

In operation, the AniGARD® delivers HEPA filtered, unidirectional down flow air to the work area. Most of the HEPA filtered air passes through an air diffuser; flows down into the work area and splits at the work surface level entering the border perforations. Some of the HEPA filtered air is diverted down behind the viewscreens creating downward high velocity momentum air curtains. Concurrently, intake room air is pulled inward through the access openings where it merges with the down flow air entering the work surface perforation and is pulled into the drain pan below. The air is then drawn through a pre-filter below the work surface, and into the inlet of the blower located in the base of the animal transfer station. All of the air is forced up the animal transfer station vertical duct where it is then discharged into an internal plenum. The air from within the internal plenum has two possible flow paths. Some of the air is recirculated back to the work area through the supply HEPA filter and diffuser while the remaining air is discharged through the exhaust HEPA filter exiting the top of the animal transfer station. (See Figure 1)

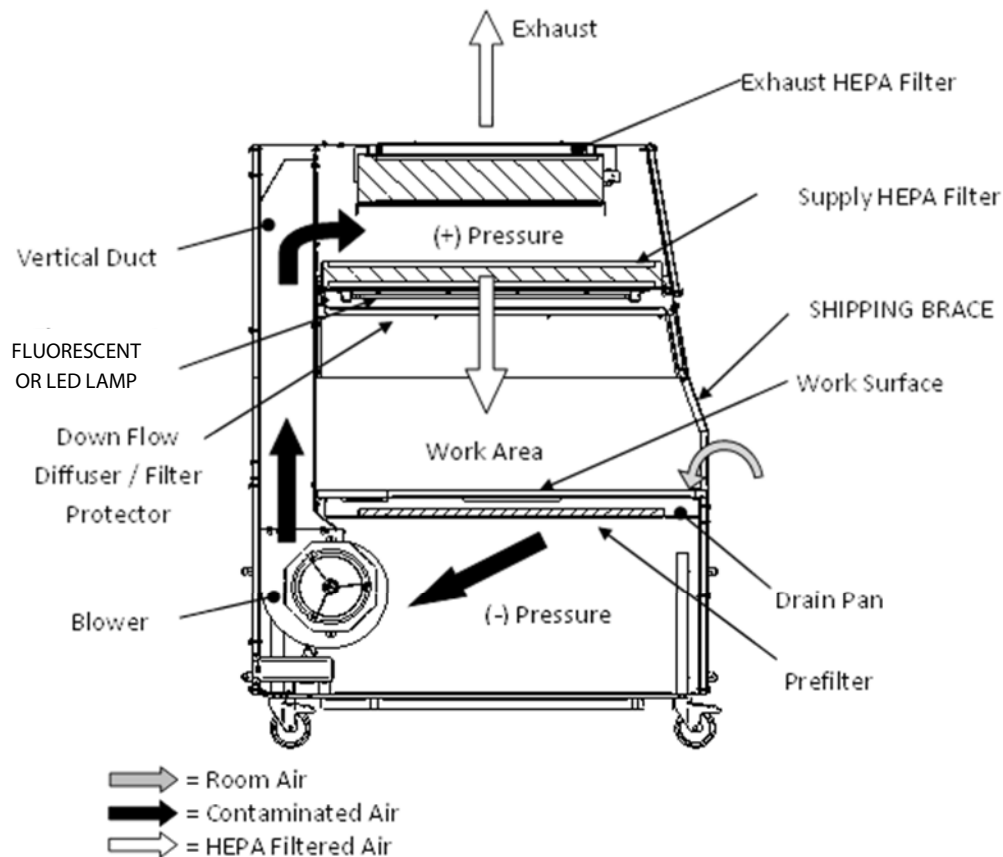


Figure 1- Cabinet Airflow Pattern

Cabinet Design

Figure 2 below shows the standard construction and components of the cabinet.

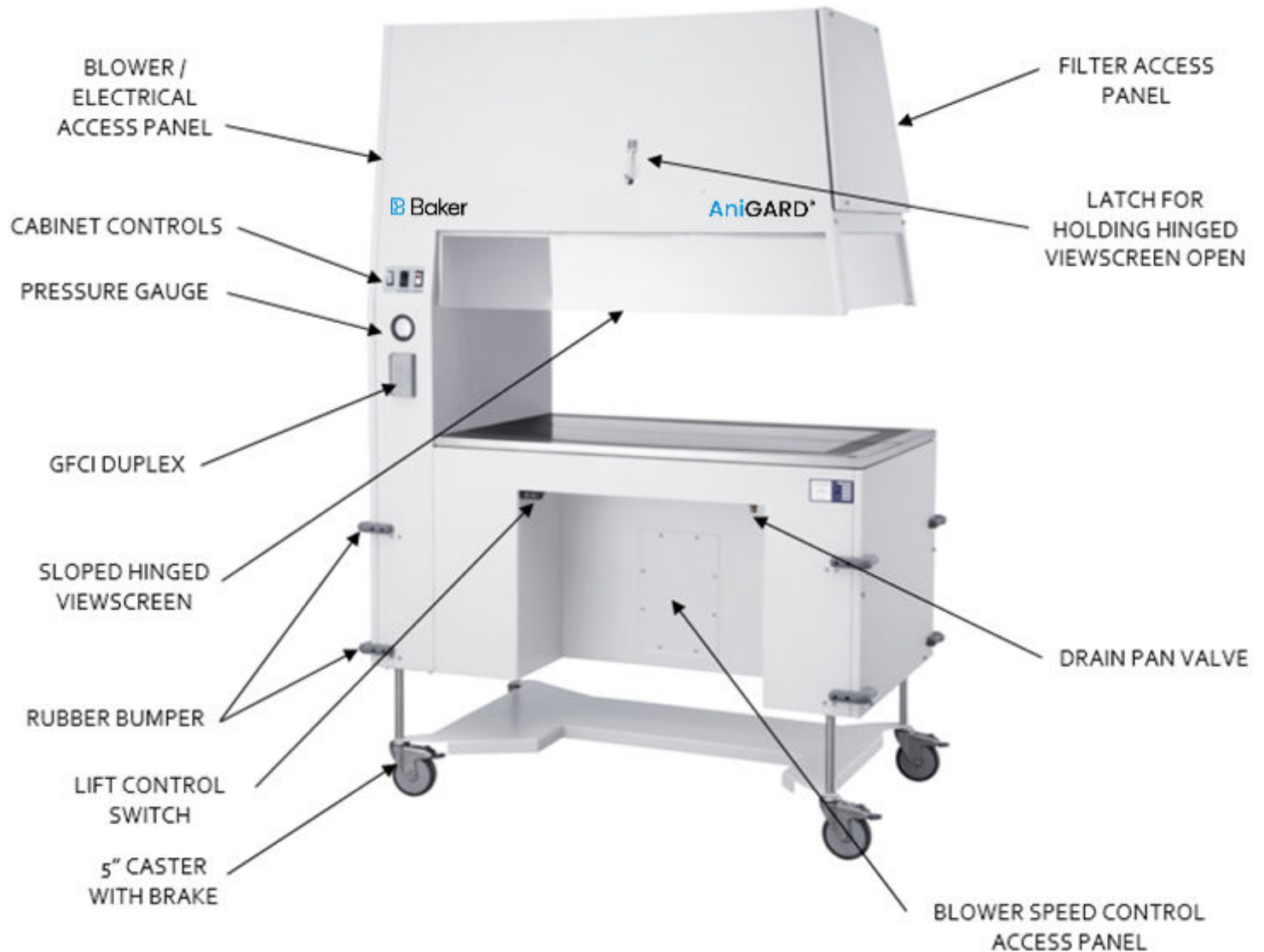


Figure 2- Cabinet Design

Regulatory Compliance

Standards

This Baker product has been designed, manufactured and tested to comply with the following regulatory standards **where applicable**. Unless stated otherwise, the most recent edition of these standards has been applied.

Electrical, Mechanical, Fire and Personal Safety:

Electrical Equipment for Measurement, Control and Laboratory Use, General Requirements

US: UL61010-1

CANADA: CAN/CSA C22.2 No. 61010-1

INTERNATIONAL: Low Voltage Directive 2006/95/EC; EN61010-1

Safety for Laboratory Hoods and Cabinets

US: UL 1805

ANSI/ASHRAE 110-1995: Method of Testing Performance of Laboratory Fume Hoods

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

1791 Tullie Circle, NE, Atlanta, GA, 30329

www.ashrae.org.

Electromagnetic Compatibility:

Electrical Equipment for Measurement, Control and Laboratory Use, EMC Requirements

INTERNATIONAL: Directive on Electro Magnetic Compatibility, EMC Directive 2014/30/EU; EN61326-1

Hazardous Waste Abatement:

Directive on Restriction of Hazardous Substances, RoHS Directive, 2011/65/EU; EN50581

Directive on Waste Electrical and Electronic Equipment, WEEE Directive, 2012/19/EU

Biological Safety:

US: Biosafety Cabinet Certification; NSF/ANSI 49

INTERNATIONAL: Biotechnology – Performance criteria for microbiological safety cabinets; EN 12469

Industry Guideline References:

IENT-RP-CC002.3: Unidirectional Flow Clean-Air Devices, Institute of Environmental Sciences and Technology, 2340 S. Arlington Heights Road, Suite 100, Arlington Heights, IL 60005-4516, USA, www.ient.org

Cautionary Notes

Hazards may still exist, especially if the cabinet is not installed, operated and maintained in accordance with the instructions in this manual and the service manual.

This cabinet may be affected by high levels of electromagnetic radiation from other electronic devices that are being used in close proximity or connected to the same facility power system.

This cabinet may cause radio interference or affect the operation of other equipment in close proximity. Mitigation measures such as relocation, re-orientation, or shielding may be required.

Standard Features

Casters

The animal transfer station comes with 5in [127mm] diameter casters with brakes.

Controls

There are rocker style switches to control power to the animal transfer station, fluorescent lights and the motor/blower. See the **Controls** section in this manual for more detail.

Drain Pan

The drain pan is constructed of stainless steel. Drainage is provided by a ball valve.

Filters

HEPA Filter

CAUTION

HEPA filter media is very delicate and should never be touched.
Only qualified technicians should replace HEPA filters.

The High Efficiency Particulate Air (HEPA) filters consist of a continuous sheet of glass fibers pleated and mounted in a rigid frame. Both the supply and exhaust filters inside the cabinet are scan-tested HEPA filters. They are 99.99% effective on removal of the most penetrating particle size (mpps) (0.3 micron). Each filter is leak checked after installation in the cabinet and prior to shipment. HEPA filters are not intended to filter gasses or vapors. Since this cabinet is partially recirculating, there could be gaseous buildup to the point of equilibrium if gasses or vapors are used. Misuse of chemicals, Bunsen burners, or a heavy dust load will shorten the filter's life.

Pre-Filter

This pre-filter catches larger particles such as cage bedding and animal hair that might damage or overload the HEPA filter. It is made of flame retardant, porous polyester foam and is located beneath the work area. It is removable for cleaning purposes.

IMPORTANT

This pre-filter should be inspected and cleaned regularly by using a HEPA vacuum, washing with a mild detergent or autoclaved. The interval for cleaning will vary with the application.

Lift System

The cabinet has an electric motor driven hydraulic lift system. The control switch, located in the upper left hand corner of the sitting area, is used for setting the work surface to a comfortable operator working elevation. The control switch has up and down indicator arrows.

Lighting

The work area is illuminated to provide a typical average light intensity of 100 foot-candles [1076 lux] at the work surface. This animal transfer station features solid-state electronic ballasts for the visible lighting. These ballasts increase reliability, efficiency and service life with lower heat output.

Motor/Blower

The motor and blower are built as a single assembly and balanced to minimize vibration. The motor control automatically compensates for an increase in pressure drop across the filters without reducing the total air flow rate by more than 10%. The air flow capacity of the animal transfer station is measured by the ability to provide a nearly constant volume of air as the filter resistance to airflow increases.

Motor Speed Control

The StediFLOW™ speed controller compensates for normal fluctuations in line voltage and is programmed to maintain relatively consistent airflow when the cabinet filters load. This helps to maintain correct airflow in the animal transfer station.

Outlet

The animal transfer station has one outlet on the vertical plenum for powering instruments inside the work area. See the Operation section for more details regarding outlet configurations.

Pressure Plenum

Plenum design directs air across, then through the supply filter improving downflow air uniformity, extending filter life and reducing noise. The plenum provides an evenly distributed filter clamping force assuring secure and sealed filters.

Pressure Monitor

The animal transfer station has an analog pressure gauge which displays the negative operating pressure.

Retractable Cord Reel

The animal transfer station is equipped with a 25 foot retractable cord reel with a NEMA 5-15 plug.

Viewscreen

The animal transfer station has three viewscreens that are constructed of scratch resistant acrylic. The two side viewscreens are hinged and the end viewscreen is fixed. The hinged viewscreens may be opened to allow for placing of large items in the work area but must be lowered prior to performing procedures within the work area to maintain proper operation of the cabinet.

Work Surface

The two-piece work surface is constructed of stainless steel. This surface is finished to reduce light reflection. Either half can be flipped onto the other half of the work surface or removed to gain access to the drain pan and pre-filter.

IMPORTANT

Before removing both work surfaces make sure to take note of the orientation of the perforated pattern on the work surfaces and keep that same orientation when you reinstall them.

Working Access Opening Height

The standard access opening is 14 inches [356 mm].

Optional Features

Folding Table

The table is 14in x 12in x 1 ³/₈in [356 mm x 305 mm x 35 mm] with a top made of stainless steel and supports made of powder coated carbon steel. The table can be folded up when not in use.

Heavy Duty Casters

The caster wheels are 6in diameter x 2in wide [152 mm diameter x 51 mm] and are provided with brakes. They are mounted on a special lift base. These casters are less prone to getting stuck in floor grating and will stand up to rough use. This option adds 3 ¹/₂in [89 mm] to the height of the animal transfer station.

Light Sensor

The light sensor option automatically turns off the animal transfer station fluorescent lighting when the background area lighting is below a set level.

Magnifier in the Viewscreen

The optional magnifier is mounted to the primary working side viewscreen and provides magnification for reading tags and labels.

Proper Animal Transfer Station Use

IMPORTANT

- This animal transfer station provides product protection only.
- Hazardous materials should never be used with this animal transfer station.
- Explosive or flammable substances should never be used in this animal transfer station. Biological, chemical, radiological, or other hazardous substances should never be used in this animal transfer station.
- An animal transfer station is a valuable supplement to, but not a replacement for, good laboratory technique and safe practice.
- If the operator does not operate the animal transfer station correctly, it may not provide adequate protection. To ensure product protection the workstation must be operated per the manufacturer's instructions.

Baker animal transfer stations are designed for continuous operation. It is recommended that the blower be left on at all times to provide isolation and keep the interior work area clean and free of particulates.

Reference sources are *National Sanitation Foundation Standard 49 Annex E*, and *The Biosafety in Microbiological and Biomedical Laboratories* (BMBL) 5th edition published by the U.S. Department of Health & Human Services as HHS Publication No. (CDC) 21-1112'.

The facility industrial hygienist, pharmacist or biosafety officer shall ensure that:

The animal transfer station is appropriate for all operations and procedures to be performed.

All operators are thoroughly trained and competent regarding animal transfer station operation and all procedures they are required to perform.

The animal transfer station operation, procedures, and operators are monitored at regular intervals to ensure that safety is maintained.

Controls

The operator controls and indicators are arranged on the vertical end wall plenum of the animal transfer station. There are rocker switches for animal transfer station power, fluorescent light and blower. [Reference Figure 3]

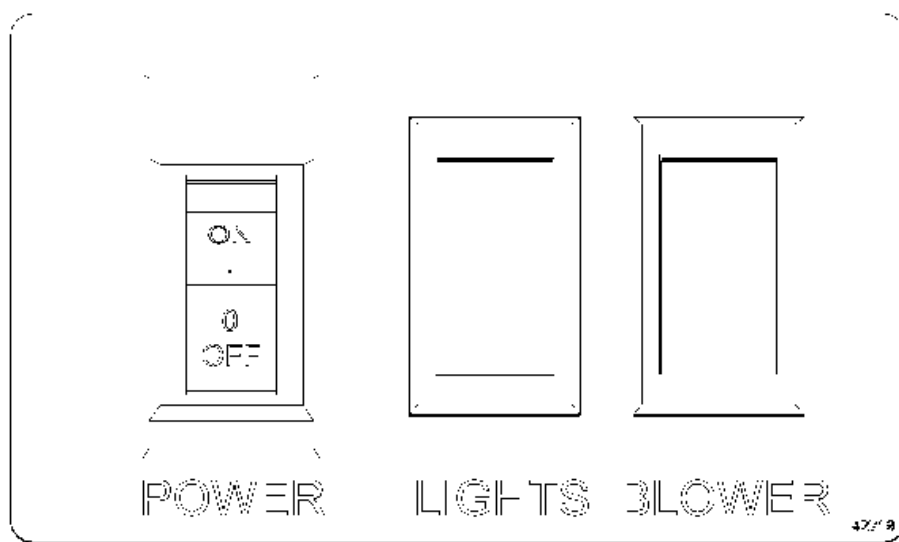
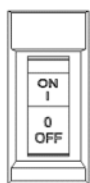


Figure 3- Operator Controls



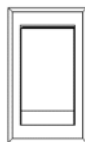
POWER

Animal Transfer Station Power On/Off – This rocker switch controls power to all electrical components in the animal transfer station. The switch is illuminated when power is supplied to the animal transfer station.



LIGHTS

Fluorescent or LED Light On/Off – This rocker switch controls the fluorescent lighting. The switch is illuminated when the light is on.



BLOWER

Blower On/Off – This rocker switch controls the operation of the blower. The switch is illuminated when the blower is on.

Powered hydraulic lift Up/Down- This pushbutton switch controls the operation of the hydraulic lift. Pressing the UP pushbutton raises the lift. Pressing the DOWN pushbutton lowers the lift. [Reference Figure 4.]

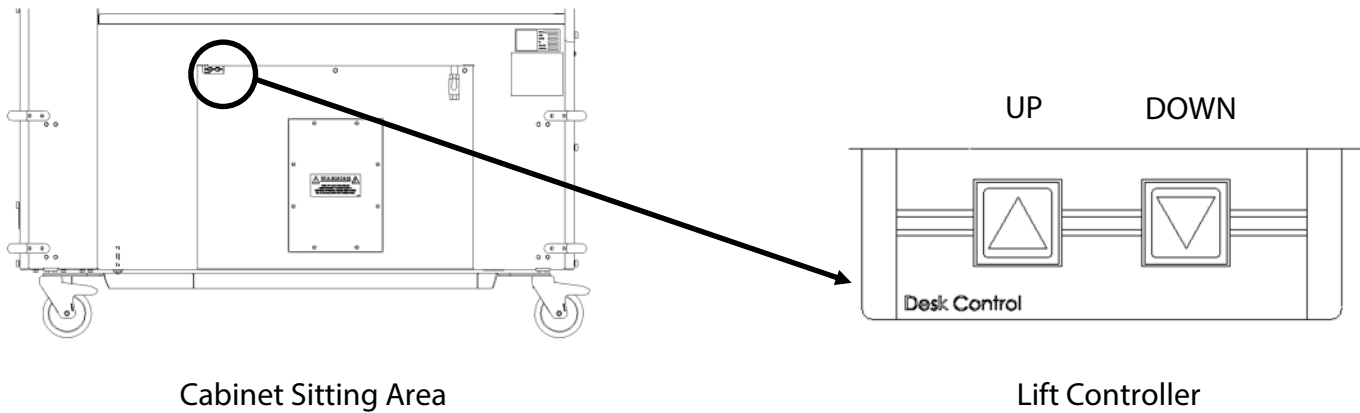


Figure 4- Powered Hydraulic Lift Controls

Operation

Animal Transfer Station Power

The main power to the unit can be switched On/Off using the circuit breaker/rocker switch on the front control panel. The switch is illuminated when the power is on. If the circuit breaker has tripped, the switch will not be illuminated and the rocker will be in between the on and off positions. The cause of the power trip should be identified and corrected. The circuit breaker/switch can then be reset by switching it to the off position and then to the on position.

Fluorescent or LED Light

The fluorescent or LED lighting is designed to provide a typical average light intensity of 100 foot-candles (1076 lux) at the work surface.

Blower

The motor control/motor/blower system is designed to deliver relatively uniform, vertical flow of HEPA filtered air to the work area at an average velocity of 100 FPM (.51 m/s) providing a better than ISO Class 5 work environment. The motor and blower are built as a single assembly and balanced to minimize vibration. The blower motor control is designed to automatically compensate for an increase in pressure drop across

the filters without reducing total air flow rate by more than 10%. The motor control also compensates for normal variations in power to the cabinet.

If the Motor/Blower has been running, as in normal operation, and is then turned off, a minimum delay of one minute is recommended before restarting the Motor/Blower.

Outlet

There is an accessory outlet located on the vertical end plenum that can be used to power equipment in the work area. The circuit powering the outlet is protected by a self-resetting circuit breaker which helps protect the primary unit controls from inadvertent overloads of the outlet. The circuit breaker rating is 3A, 7A, or 2A maximum for the 115V, International and Australian units respectively.

For 115V AC/60Hz cabinets the outlets are also protected by a Ground Fault Circuit Interrupter (GFCI). If the GFCI is tripped by the presence of an unsafe condition a red indicator on the GFCI will be on and the reset button on the front of the GFCI will be extended. Once the fault condition is corrected press the [RESET] button to reconnect power to the outlets. There is also a [TEST] button on the front of the device. The manufacturer recommends that the GFCI device be tested monthly to assure safe operation.

Powered Hydraulic Lift

The powered hydraulic lift is provided with a pushbutton switch control which is used to raise and/or lower the cabinet position to the desired ergonomic height. The approximate maximum travel is 12in but may have been custom programmed to have lower and/or upper stop positions that restrict allowable travel. The lift has an operational duty cycle of 1 minute on and 9 minutes off. If this duty cycle requirement is not observed, overheating of the motor or controller may occur. There is internal thermal protection for these components. If the lift becomes unresponsive, allow it to cool for 10 minutes and then retry adjusting the lift. The animal transfer station should always be positioned at its lowest height when the unit is moved to minimize the possibility of damaging the lift cylinders or overturning the unit.

Retractable Cord Reel

The retractable cord reel is typically installed internally on the lower part of the plenum end of the animal transfer station. Alternatively, it may be located on the top of the cabinet on the plenum end. The cord can be extended approximately 25 feet. The reel has a built in latching mechanism that allows the cord to be positioned at various lengths. The manufacturer recommends, however, that the cord be fully extended when in use to avoid excessive heating in the cord reel assembly.

Light Sensor (Option)

The light sensor option automatically turns off the animal transfer station fluorescent lighting when the background area lighting is below a set level. The light sensor is factory set at approximately 18 foot-candles [194 lux]. The light switch must be in the on position for this option to function correctly. This option includes a switch to override the light sensor if the ambient light conditions do not meet the minimum requirements. This switch is located on the top of the unit next to the sensor. When the sensor is overridden the lights must be manually turned on/off using the light switch.

Start-up Procedure

The operator should read and understand the controls and operation section of this manual prior to performing this procedure.

1. If the animal transfer station has not been left running continuously, turn on the blower. An indicator light located on the switch will illuminate when the switch is on and the running blower will make an audible sound
2. With the viewscreens lowered, check the reading on the analog pressure gauge; the displayed value should remain consistent with the recorded value in the most recent certification report. A significant change in pressure should be cause for investigation. This device is not intended to be used for airflow set-point verification.
3. Turn on the fluorescent light. The indicator light on the switch will illuminate along with the interior work area.
4. Check to determine that the drain valve is in the closed position.
5. Using the electric powered hydraulic lift system, change the work surface elevation to a comfortable height. Hold down the up or down arrow on the lift controls (located in the upper left corner of the sitting area) until the desired work surface elevation is reached.
6. Wipe down all interior surfaces of the animal transfer station work area with an appropriate surface disinfectant.

IMPORTANT

Some disinfectants, such as bleach or iodine, may corrode or stain the steel surfaces. Good practice is to thoroughly clean the surface afterward with a detergent, rinse with sterile water and wipe completely dry to prevent corrosion.

7. Disinfect all materials prior to placing them on the solid section of the work surface inside the animal transfer station. This may require raising the viewscreens. Blocking the perforated grilles must be avoided. Everything required, and only what is required, should be placed in the animal transfer station before beginning work so that nothing passes in or out through the air barrier until the procedure is completed. Implements should be arranged in the animal transfer station's work area in logical order so that clean and dirty materials are segregated, preferably on opposite sides of the work area. If wipes or absorbent towels are used on the work surface, be sure to keep them away from the grilles.
8. After equipment is placed inside the animal transfer station, close any open hinged viewscreens. This is important to maintain proper airflow.
9. Before using, allow a minimum of three minutes with the animal transfer station operating in its normal safe configuration to purge any contaminants or suspended particulates.

Working in the Animal Transfer Station

This section contains some suggested basic work practices that should be observed when using a biosafety cabinet. It is not intended to be a comprehensive list for all applications. A good reference source is *The Biosafety in Microbiological and Biomedical Laboratories (BMBL)* 5th edition published by the U.S. Department of Health & Human Services as HHS Publication No. (CDC) 21-1112 advisory document for safe work practices.

The operator's hands and arms should be washed thoroughly with germicidal soap both before and after working in the animal transfer station. It is recommended that long-sleeved gowns or lab coats with tight-fitting cuffs and sterile gloves are worn, to minimize the shedding of skin, or related contaminants, into the work area and to protect hands, arms and clothing from contamination.

Avoid using floor-type pipette discard canisters. It is important that used pipettes be discarded into a tray or other suitable container inside the animal transfer station. This reduces unnecessary movement in and out of the work area. Because of the restricted access, pipetting within the animal transfer station will require the use of pipetting aids.

Work should be performed using slow movements, and the number of movements should be limited as much as possible. All materials required should be placed in the animal transfer station prior to starting a procedure to reduce the need for the operator to move arms in and out of the animal transfer station through the air barrier.

Room airflow can significantly affect animal transfer station operation. Opening and closing doors in the laboratory can cause air disturbances which might interfere with animal transfer station airflow. This kind of

activity should be kept to a minimum while the animal transfer station is in use. Personnel should avoid walking by the animal transfer station while it is in use. The location of facility air diffusers and personal fans can have an adverse effect on animal transfer station safety.

Use good aseptic techniques.

When a procedure has been completed, all equipment that has been in contact with the research agent should be enclosed and the entire work surface decontaminated. Trays of discarded pipettes, glassware, etc. should be covered. The animal transfer station should then be allowed to run for a minimum of three minutes, with no activity, so that the airborne contaminants will be purged from the work area. Once this has been done remove all equipment from the animal transfer station.

WARNING

Never use the animal transfer station to store supplies or laboratory equipment.

After removing all materials, culture apparatus, etc. from the animal transfer station, decontamination of the interior surfaces should be repeated. Check the work area carefully for spilled or splashed liquids that might support bacterial growth.

It is recommended that the animal transfer station be left running continuously to ensure containment and cleanliness.

Using Ancillary Equipment

The more equipment and material that is placed in the animal transfer station, the greater the possibility of disrupted airflow. The resulting turbulence can alter the designed airflow and reduce the effectiveness of the animal transfer station. When equipment which rotates, vibrates or heats is used, be sure to place it at the closed end of the work area if possible. This will help minimize the turbulence at the access opening.

Reacting to Spills

Even when good work practices are used, occasional spills may occur. All spills should be dealt with immediately to prevent contamination and to avoid any damage to the stainless steel surfaces. It is recommended that the operator, in coordination with the facility safety professional, have a written plan available in case of an accidental exposure or spill. The safety plan should include all of the emergency procedures to be followed in the event of an accident. All employees who use the animal transfer station should be familiar with the safety plan.

Cleaning and Disinfecting Stainless Steel

IMPORTANT

After cleaning and disinfection, all surfaces should be rinsed with sterile water and wiped completely dry.

Simple Cleaning

IMPORTANT

Do not use steel wool or steel pads when cleaning stainless steel.

Dirt deposits on stainless steel (dust, dirt and finger marks) can usually be removed using warm water, with or without detergent. If this does not remove the deposits, a mild, non-abrasive household cleaner can be used with warm water and bristle brushes, sponges or clean cloths.

Iron rust discoloration can be treated by rubbing the surface with a solution of 15% to 20% by volume of nitric acid in water and letting it stand for one to two minutes to loosen the rust. The proper safety equipment should always be used when handling acids.

Disinfection

The purpose of disinfection is to destroy any organisms that could pose a potential health hazard or compromise the integrity of the experiment. To ensure an organism is killed it is important to use a disinfectant in the proper concentration that is known to be effective for the specific organism. Standard disinfectants include: iodophor-detergent, ethanol, phenol and other alcohols. Hypochlorite (chlorine bleach) can also be used in dilute concentrations. Caution should be used, as hypochlorite can cause pitting and/or cracking of stainless steel if it is either too concentrated or not completely removed from the surface in a timely manner. Allow an appropriate time to lapse for deactivation purposes (ref. *BMBL* 5th Edition) depending on the type of disinfection agent used. Follow up with a sterile water rinse and wipe completely dry to protect the stainless steel surface.

Disinfect the work area and work surface before and after every procedure.

Disinfect surfaces of all equipment used.

Remove all items from the inside of the cabinet.

Place all items that may have come in contact with the agent(s), such as used pipettes, in a plastic bag or other suitable container.

Disinfect the entire inside surface of the animal transfer station.

For additional information on cleaning and disinfecting stainless steel, please refer to: "Decontamination, Sterilization, Disinfection, and Antisepsis," Vesley, Donald and Lauer, James L., *Laboratory Safety Principles and Practices*, 2nd edition, 1995, Fleming, D.O., Richardson, J.H., Tulis, J.J. and Vesley, D., editors, ASM Press, Washington, D.C., pp. 219-237; and *Biosafety Reference Manual*, 2nd edition, 1995, Heinsohn, P.A., Jacobs, R.R. and Concoby, B.A., editors, AIHA Publications, pp.101-110.

Cleaning Spills

CAUTION

It must be assumed that the drain pan is contaminated.

Spills on the work surface should be first cleaned and disinfected. Spills that fall through the perforated grilles in the work surface should be cleaned up and all waste put in an appropriate disposal container inside the work area. The remainder can be removed through the drain valve in the drain pan after proper decontamination of the work area. To clean the drain pan under the work surface, lift the work surface sections and completely surface decontaminate the work surface including the underside and worksurface supports and prefilters, then remove all decontaminated items from the work area. Removing these parts provides unobstructed access to the drain pan for easy cleaning. The drain valve must be closed when cleaning of the drain pan is completed. Before reinstalling the work surface sections, disinfect all surfaces.



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This manual includes information for proper biosafety cabinet operation.

We recommend that the manual be kept near the cabinet for ready reference.