TERRA UNIVERSAL.COM
Critical Environment Solutions

*Quick-Start Operating Guide* *Document No.1800-89*

# ValuLine Horizontal Laminar Flow Station



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### Proprietary Notice

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### Safety Notice

A thorough familiarity with all operating guidelines is essential to safe operation of the product. Failure to observe safety precautions could result in poor performance, damage to the system or other property, or serious bodily injury or death.

The following symbols are intended to call your attention to two levels of hazard involved in operation:

CAUTION — **Cautions are used when failure to observe instructions could result in significant damage to equipment.**

WARNING — **Warnings are used when failure to observe instructions or precautions could result in injury or death.**

The information presented here is subject to change without notice.

## 1.0 Introduction

This manual provides information on installing and operating your Terra ValuLine Horizontal Laminar Flow Station (HLF).

By studying this document carefully, you can be assured of a long, efficient service life from your system.

**Related Manuals – Available for download from www.TerraUniversal.com:**
- Horizontal Laminar Flow Station (Doc. No. 1800-46)

## 2.0 Description

Terra Universal's ValuLine Horizontal Laminar Flow Station provides a particle-free environment for work with bio/pharmaceutical samples, medical devices, semiconductor components, and other sensitive materials. Along with the option of a powder-coated or stainless steal construction, Terra's ValuLine HLF has a dissipative PVC sash that tilts down for protection during operation.

The workstation's rear-mounted fan/filter unit (FFU) incorporates a 3-speed, direct-drive electric motor that delivers a constant flow of HEPA-filtered air to wash away contaminants. Variable speed control allows adjustable speed settings up to 100+ feet/minute and balances the unit with dual fans.

In conjunction with the system's prefilters, the HEPA filter removes 99.99% of all particles 0.3 microns and larger from the air stream. Each 2' x 4' fan filter unit provides 650 CFM of filtered air @ 90 FPM, with tests showing that this air exceeds Federal Standard 209E for a Class 100 environment. For more stringent requirements, ULPA-filtered units are available that remove all particles over 0.12 microns in size with 99.999% efficiency.

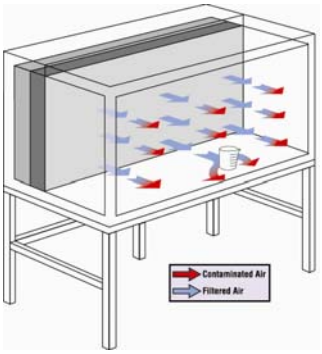
**CAUTION: This work station is designed for particle-sensitive applications and does not protect operators against hazardous fumes, vapors, or aerosols. See Terra's exhaust purification systems for operations involving hazardous fumes.**

## Description (cont'd)

### Features:

#### Static Dissipative PVC Tilt-Up Sash

Terra's Static-Dissipative PVC Tilt-Up Sash provides its operator with an adjustable access area. Friction hinges attached to the panels ensure a durable seal and minimal effort needed for panel adjustments. This feature allows you to control the force of the laminar flow to accommodate your application: stronger flows ensure optimal cleanliness; and weaker flows reduce turbulence that might disturb small parts.




Made of clear static-dissipative PVC, the Tilt-Up Sash features a surface resistance value of about $10^7$ ohms/square. This characteristic helps eliminate not only static charges that can damage sensitive components, but also the particles that static charges attract. As a result, users will find that the sliding shield remains clean – inside and out.

#### IonBar™ (Optional)

An optional component for Terra's ValuLine Horizontal Laminar Flow Stations, Terra's IonBar™ ionizes air molecules in the air output for enhanced static/particle control. Installed on the underside of the air filters, The IonBar™ sports a teardrop design to minimize disturbance of the laminar flow.

## 3.0 Installation

The ValuLine Horizontal Laminar Flow Station ships fully assembled, standard. However, it may ship in two parts at the customer's request or due to a custom order.

If the unit requires assembly upon receipt, or if you must disassemble and re-assemble it to accommodate doorway clearances, use this procedure:

**Items you will need:**

- Heavy-lift device (recommended).
- 100" of vertical clearance between assembly area and location of use.
- 110 VAC, 60 Hz or 220VAC 50/60Hz grounded power receptacle, as ordered.

1. Uncrate your Horizontal Laminar Flow Station, checking to make sure that it has no visible damage incurred during shipment. If damage is found, contact the freight company to file a damage claim immediately.
2. Mount the frame onto the provided maneuvering casters.
3. Remove the rear panel for easier mounting of the main housing.
4. Using a heavy-lifting device to lift the housing assembly above the frame. Adjust the frame so that it lines up with the main housing's attachment points (studs that are sticking out on top of the frame).
5. Carefully lower the main housing onto the frame, ensuring that all attachment points are properly aligned before joining the two parts.
6. Maneuver the assembly into its final operational location, ensuring that it is on a flat and level surface. Once situated in-place, remove the maneuvering casters and rest the frame upon the ground. Make sure that the unit is installed within reach of an appropriate power outlet.


NOTE

**The maneuvering casters, if included with your system, are to be used for INSTALLATION ONLY. Please remove the casters from the unit once you have moved it into its final position. Retain the casters for any future relocation needs.**

7. Plug the unit in. The unit is now ready for use.

## 4.0 Operation

The control panel, including a magnahelic gauge, a light, HI/LOW switch and an ON/OFF integrated linear speed control, is mounted above the work area. Rotate the speed control clockwise to turn the blowers on (continue clockwise rotation reduces the blower speed). Pushing the upper portion of the light rocker switch yields HI level illumination and the lower portion yields LOW level illumination. Centering the switch turns the lights off.

Select the blower air speed you require for the operation you are performing. The adjustable multi-speed, direct drive blower(s) allows you to adjust the face velocity to meet your requirements. After this adjustment note the reading of the magnahelic gauge. As the filter loads this reading will increase, indicating the need for a filter change

For enhanced air-stream control, this station features return air ducts along the front and side edges of the work area. These ducts enhance system efficiency by reducing backwash, the most common source of turbulence in a laminar flow system.

**To operate the system,**

1. Plug in the power cord to a grounded 115VAC/60Hz or 230VAC/50Hz receptacle.
2. Press the FFU Power Switch to turn on both FFUs. Use the left and right FFU speed controls to adjust the speed of each FFU.
3. Press the Light Power Switch to activate the hood's light.


**Note:** The Fan speed is adjustable. Initially, when the fan speed is set to 50% the fan(s) will operate at 100 FPM. As backpressure builds and the filter begins to clog there will be an increase in the water pressure as well as an increase in the percentile needed to maintain airflow of 100FPM. This is an indicator that it may be time to replace the filter.

## 5.0 Maintenance

Terra Universal's ValuLine Horizontal Laminar Flow Station is designed for low-maintenance. With one set of user-serviceable parts, the Terra WorkStation only requires periodic cleaning to preserve its like-new condition.

| | Cleaning Instructions |
|---|---|
| DO | - Use water, ordinary soap and/or mild liquid detergent.<br>- Rinse the surfaces of your HLF with a cloth dampened with clean water if a cleaning agent is employed.<br>- Use a cloth to apply any cleaning solutions. If a stubborn stain presents itself, a soft-bristled brush may be used with extreme care. |
| DO NOT | - Use liquids containing abrasives to clean the surfaces of the HLF.<br>- Use wax or other coatings on Electro-Static Dissipative work surfaces, as they may modify the dissipative properties of the laminate.<br>- Use hard brushes or intense scrubbing actions to clean the workstation surface.<br>- Apply liquid directly to the surface of the blower hood. Instead, apply cleaning agent to a cloth before using. |

### Filter Replacement

#### When to Replace

Terra's HEPA filters will continue to provide adequate throughput while operating with 0.0-1.0 inches WC of differential pressure, as displayed on the unit's Magnehelic backpressure gauge. Once this pressure reaches 1.5 (inches WC), the air blowers will begin to deliver less-than-optimal airflow into the unit, resulting in loss of laminar flow and increasing the risk of contamination. The presence of a high differential pressure can also increase the rate of wear to the blower's motors, leading to failure of the unit. To keep your unit operating at its peak efficiency, replace the air filters whenever the differential pressure reaches 1.5 inches WC.

#### How to Replace

The HEPA/ULPA filters on the HLF Stations are attached to the blower units. To replace the filters, the blower units must be removed from the HLF Station.


CAUTION

**Unplug the unit prior to conducting any maintenance service to it.**

**Items you will need:**
- Forklift (recommended)
- Phillips Screwdriver.
- Work table/bench.


WARNING

- **Exercise caution when removing HLF blower units.**
- **The use of multiple people to perform this task is advised.**
- **Unplug the HLF Station from its power receptacle before performing any service.**
- **Do not perform any maintenance service to the unit if its maneuvering casters are attached.**

## How to Replace (cont'd)

**To change the main HEPA (or ULPA) Fan Filter Unit (FFU):**

1. Remove the back panel in the following manner:

    a. Observe the eight caps located on the upper back panel. These sealing caps cover the bolts that secure the panel.
    b. Remove these caps by lightly tapping them inward, using a philips-head screwdriver (or a similar tool) and a small hammer, so that they fall into the unit. The eight bolts that secure the upper back panel will then be exposed.

    c. Using a 3/8" nutdriver or socket wrench, remove the back panel by removing the eight bolts securing it.

2. Remove the HEPA (or ULPA) FFU, which is secured by four hinged metal clamps, in the following manner:

    a. Loosen the knobs securing the four hinged metal clamps to the filter.

    b. Pull back the four hinged metal clamps holding the filter.

    c. The unit is now free to be removed and replaced.

3. After installing a new HEPA (or ULPA) FFU, (see ordering table on next page) push the four hinged metal clamps back in place, tighten the knobs to secure the filter, rebolt the back panel in place, and use new caps to seal the bolt-holes. (Replacement caps are shipped with each unit — call if you require additional caps.)

**To change the fluorescent light bulbs:**

1. Remove the plastic light diffusers from the bottom side of the lighting assembly by lifting them up and pulling them downward at an angle to clear the lighting assembly.

2. Remove and replace bulbs as necessary.

**Cleaning the Horizontal Laminar Flow Station**

Cleaning of the unit may be done with a non-contaminating cloth dampened in lukewarm water. Use a mild detergent or disinfectant, if necessary.

## Replacement Parts

| Type | Filter Size | Catalog # |
|---|---|---|
| HEPA | 2' x 2' | 6601-27 |
| | 2' x 3' | 6601-26 |
| | 2' x 4' | 6601-25 |
| ULPA | 2' x 2' | 6601-30 |
| | 2' x 3' | 6601-29 |
| | 2' x 4' | 6601-28 |

## 7.0 Warranty

**Products Manufactured by Terra:** Terra Universal, Inc., warrants products that it manufactures to be free from defects for a period of 12 months for parts and 90 days for labor, commencing from the date of shipment. Terra's sole responsibility is to repair or replace, at its option, any part of the product that proves defective or malfunctioning during this time limit. In some cases, components incorporated in Terra Universal products are covered by additional warranties from component manufacturers; obtain specific information from Terra sales representatives. This warranty is void if the equipment is abused or modified by the customer, is operated outside Terra's operating instructions or specifications, or is used in any application other than that for which it is specified. This warranty does not include routine maintenance or service procedures, breakage of quartz baths after 60 days, shipping damage, nor damage from misuse, intentional or unintentional abuse, neglect, natural disasters, or acts of God.

**Products Manufactured by Others:** Terra Universal, Inc., warrants that, to the best of its ability, Terra's representations of products that are manufactured by others reflect the manufacturer's representations, subject to change without notice. Sole warranty for these products is the original manufacturer's warranty that is passed forward to the purchaser and constitutes the customer's sole remedy for these products. Detailed warranties for distributed products are available through Terra sales representatives.

**Freight Shortage or Damage:** Upon receipt of any equipment from Terra Universal, Inc., customer shall immediately unpack and inspect for damage or shortage. The customer shall not accept a damaged package or a short shipment until the carrier makes a "damage or shortage" notation on both the carrier's and customer's copy of the freight bill or delivery receipt. Service title passes when the shipment is loaded, so customer is responsible for filing and collecting a freight claim. Any replacement products must be ordered and paid for separately. For Terra's "Policy and Procedures for Returning Goods," see Terra's Internet site: www.TerraUniversal.com.

Generally, customers can improve the chance of collecting on a freight claim by following these procedures: 1) formally requesting that the carrier inspect the shipment immediately upon suspecting damage or shortage to verify condition; 2) notifying the carrier upon discovery of concealed damage and requesting an inspection within 15 days of receipt, both in person or phone and following up via mail; 3) keeping the shipment as intact as possible, including retaining original packaging materials and keeping the product as close to the original receiving location as possible; 4) holding salvage for disposition by the carrier.

**All Claims:** Terra Universal expressly disclaims all other warranties, expressed or implied or implied by statute, including the warranties of merchantability or fitness for intended use. Terra Universal is not responsible for consequential or incidental damages arising out of the purchase or use of the products supplied by Terra Universal. Terra Universal is not liable for damage to facilities, other equipment, products, property or personnel of others, or of their agents, suppliers, or affiliated parties, which is caused or alleged to have been caused by products supplied by Terra Universal. In any event or series of events, Terra Universal's total liability for any and all damages whatsoever is limited to the lesser of the actual damages or the original invoice cost of the items alleged to have caused the damage. The customer's sole and exclusive remedy for any cause of action whatsoever is repair or replacement of the non-conforming products or refund of the actual purchase price, at the sole option of Terra Universal. All claims must be made in writing within 90 days of the date the product was shipped. Any claims not made within this time limit shall be deemed waived by the customer. Terra Universal is not responsible for any additional costs of repair caused by poor packaging or in-shipment damage during return.

**Warranty Returns:** All warranty returns must be authorized in advance by Terra Universal and approved under an RMA. Unless approved in advance for good reason, all returns must be in original condition, including all manuals, and must be packaged in original packaging materials. All returned goods are to be shipped to Terra Universal, freight prepaid at customer's expense. See Terra's "Policy and Procedure for Returned Goods."

***Thank you for ordering from***
***Terra Universal!!***