# Table of Contents

Proprietary Notice ................................................................................................................................... 3

## Section 1.0 – Description

Description .............................................................................................................................................. 3
Frame ...................................................................................................................................................... 3
Fan Filter Units ........................................................................................................................................ 4
Light Panels ............................................................................................................................................. 5
Blank Ceiling Panels ............................................................................................................................... 5
Softwall Panels & Strip Shields ............................................................................................................... 5
Casters .................................................................................................................................................... 6

## Section 2.0 – Installation

Site Preparation ....................................................................................................................................... 6
Required Installation Equipment .............................................................................................................. 6
Components List ..................................................................................................................................... 7
Cleanroom Frame Components .............................................................................................................. 8
Ceiling Components ................................................................................................................................ 8
Support Bar Components ......................................................................................................................... 9
Curtain Panel Components ..................................................................................................................... 9
Frame Assembly ................................................................................................................................... 10
Seismic Anchoring ................................................................................................................................. 12
Joists and Divider Installation ................................................................................................................ 13
Use of the Spacer .................................................................................................................................. 16
Support Bar Installation (For Cleanrooms from 10 ft. to 12 ft.) .............................................................. 17
Installing 2 Support Bars (For Rooms Bigger Than 12 ft.) ..................................................................... 19
Installing the Ceiling Modules ................................................................................................................ 20
Curtain Panel Installation ....................................................................................................................... 21

## Section 3.0 – Electrical Wiring

Installing the Power Supply Unit (PSU) ................................................................................................. 25
Fan Filter Unit Hard Wiring .................................................................................................................... 26

## Section 4.0 – Operation & Maintenance

Filter Replacement ................................................................................................................................. 27
Cleanroom Maintenance ....................................................................................................................... 30

## Section 5.0 – Warranty

Warranty Information ............................................................................................................................. 31

## Section 6.0 – Spare Parts & Accessories

Spare Parts & Accessories .................................................................................................................... 32
**1.0 Description**

Terra Universal’s Softwall Modular Cleanrooms provide an economical, versatile solution to clean manufacturing requirements in many industries. Portable, expandable, and easy to assemble/disassemble, this system features ceiling HEPA fan filter units that direct a continuous flow of particle-free air through the enclosure. It is completely free standing and requires no external bracing.

**Frame**

This system consists of a steel support frame, ceiling mounted filtration and illumination system, flexible side panels and a variety of other access options. The softwall cleanroom support frame is fabricated of interlocking 2.5” powder-coated square steel or stainless steel uprights, cross sections, and ceiling members.

Ceiling members are connected to steel T-bars, forming the 2’ X 4’ bays that support filters and lights. Corner reinforcement gussets ensure a rigid structure. Optional heavy-duty casters allow easy repositioning after installation. Standard height is seven feet measured from filter face to floor (8’ 3” overall), allowing installation below a standard nine foot ceiling. Custom ceiling heights up to ten feet are available. System includes a control panel for operation of fan filter units, lights, and other selected options.
Fan Filter Units

Fan Filter Units direct a vertical laminar flow of filtered air downward through the enclosed cleanroom area.

Each includes a 650 CFM impeller blower (rated at 90 FPM with filter load) mounted in an aluminum housing with a plenum design that ensures ample air velocity across the entire face of the filter. A HEPA (high efficiency particulate air) filter installed inside the housing is rated 99.99% efficient at 0.3µm particles. The filtration medium consists of micro porous polyurethane mini-pleats held in place by strong, rigid plastic separators that keep the medium from nesting. This design channels airflow with optimal efficiency to reduce resistance. The filter is sealed into the sturdy powder-coated steel frame with a fire-retardant, non-outgassing adhesive. On an optional basis, an ULPA (ultra-low penetration air) filter, rated 99.9995% efficient at 0.12µm particles, may be substituted for the HEPA filter. Power to the Fan Filter Units is controlled by a master ON/OFF switch located on the cleanroom control panel. All 120VAC units and 220VAC, 60Hz units are UL listed. CE-marked models are available for 220VAC, 50Hz operations.

Model: Terra Universal WhisperFlow Fan Filter Unit

Recommended Fan Filter Configurations (based on ceiling height of 8 feet or less)

<table>
<thead>
<tr>
<th>Nominal Dimensions</th>
<th>No. of Ceiling Bays</th>
<th>No. of Filter Modules to meet Fed Std 209 Class Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>8’ x 8’</td>
<td>8</td>
<td>5 - 8, 4 - 8, 3 - 6, 2 - 3, 1 - 2</td>
</tr>
<tr>
<td>8’ x 12’</td>
<td>12</td>
<td>7 - 12, 6 - 12, 5 - 5, 4 - 6, 3 - 3, 2 - 2</td>
</tr>
<tr>
<td>8’ x 16’</td>
<td>16</td>
<td>10 - 16, 8 - 16, 6 - 6, 4 - 4, 3 - 3, 2 - 2, 1 - 1</td>
</tr>
<tr>
<td>12’ x 12’</td>
<td>18</td>
<td>11 - 17, 9 - 13, 7 - 7, 6 - 6, 5 - 5, 4 - 4, 3 - 3</td>
</tr>
<tr>
<td>12’ x 16’</td>
<td>24</td>
<td>14 - 24, 12 - 22, 10 - 10, 8 - 8, 6 - 6, 4 - 4, 3 - 3, 2 - 2</td>
</tr>
<tr>
<td>16’ x 16’</td>
<td>32</td>
<td>19 - 32, 16 - 24, 13 - 13, 10 - 10, 8 - 8, 6 - 6, 4 - 4, 3 - 3</td>
</tr>
<tr>
<td>20’ x 20’</td>
<td>50</td>
<td>30 - 50, 25 - 50, 20 - 20, 15 - 15, 10 - 10, 8 - 8, 6 - 6, 4 - 4, 3 - 3</td>
</tr>
</tbody>
</table>

If your order included UL documentation (Cat. # 6600-33), your cleanroom will include labels indicating the use of UL-listed components on one of the triangular gussets (see photo to the right).
Light Panels

Each light panel is externally mounted to ensure effective illumination of the work area without interfering with the controlled air stream. Each module is controlled by a master switch mounted on the main Cleanroom Control Panel.

Cat. # 3800-41B

Power Requirements
USA: 115VAC/60Hz, 1.50A Each
International: 277VAC/50Hz, 0.65A Each

Blank Ceiling Panels

All remaining ceiling grids are covered with blank panels, which can be removed to allow installation of additional fan filter units or illuminator modules. Panels are made of white polypropylene, acrylic or steel depending on customer selection. All ceiling modules rest against the ceiling grid frame to form a tight seal along the perimeters.

Softwall Panels & Strip Shields

Softwall panels are fabricated of heavy-duty, blur-free 40 mil, vinyl or polyurethane—double the industry standard—ensuring enhanced tear resistance and eliminating the need for unsightly sewn sash weights. Strip shields, made of 60-mil material, come standard in 8” widths, with 2” overlap, for easy entrance or exiting. Polyurethane shields are 12” W, 40 mil thick.

Panels and strips are available in three materials, in either clear or frosted appearance.

- Cleanroom-Grade Vinyl is fire retardant and low outgassing
- Static-Dissipative Vinyl is manufactured with permanent built in static inhibitors that unlike topical treatments, will not wear off.
- Non-outgassing panels are made from inherently static-dissipative polyurethane that provides permanent, humidity-independent ESD protection for sensitive manufacturing conditions. Polyurethane contains no plasticizer, making it virtually non-outgassing.

Note: Softwall panels are notched to ensure a snug fit at all corners. In standard installations, panels are supplied in lengths of four feet. Where two panels meet, the panels overlap by 6”. To prevent personnel from parting panels at these seams, order optional panel seaming, Dual-Lock Velcro, magnetic closures or attachment clips below.

<table>
<thead>
<tr>
<th>Panel Options</th>
<th>Cat. #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual – Lock Velcro Strips</td>
<td>6704-05</td>
</tr>
<tr>
<td>Flexible Magnet Strip Self-Closures</td>
<td>6704-06</td>
</tr>
<tr>
<td>Snap – Tite™ Clips</td>
<td>6704-07</td>
</tr>
<tr>
<td>Curtain Seaming</td>
<td>6600-65</td>
</tr>
</tbody>
</table>
Casters

Stainless steel swivel casters feature nonshedding polyurethane wheels. Capacity: 300 lbs. each. Order one per vertical post. Casters raise the frame 7.125”. If casters are ordered, the frame will be made shorter to keep the floor to filter face dimension to specification. Order one per vertical post.

Cat. # 6704-08

Caution: Casters are intended to allow movement only on smooth floors and require that personnel support each cleanroom upright during motion.

2.0 Installation

Unpack all system components and check for damaged. Any damage should be reported to the shipping company immediately.

Site Preparation

A. Site preparation requirements should be observed for any installation performed by Terra Universal technicians.

B. Customer facility area where the cleanroom is to be installed must afford a minimum clearance of one foot (including fixtures ducts and pipes) on all sides and at least two feet clearance between FFU inlet and ceiling.

C. Customers must provide permanent electrical connection from supply panel to Terra Cleanroom electrical junction boxes (one power line per junction box) in conformance with local electrical code, as well as any vacuum, air, H20, sprinkler, or nitrogen connections required for the cleanroom.

D. Customers must give advance notice of dates and times for Terra personnel to perform the installation. Short notice may result in higher fees for travel and accommodations.

E. Customers are to provide utilities, installation power and removal of any packing material.

F. Because installation requires unpacking and assembling components, customers are to ensure an adequate staging area for parts and equipment adjacent to the assembly area, clear and ready for work.

G. Customers are to inform Terra Universal in advance of any requirements for security, escorts, special training, badges, work hours, parking areas or special identification and how to obtain all such required permissions and related items.

Required Installation Equipment

A. Handling cleanroom shipping crates, which generally measure over 300” long and weigh well over 1,000 pounds, requires at least one forklift. If crates must be moved through narrow aisles or entrances, two forklifts or pallet jacks are recommended, one to support each end.

B. Unloading crates from the truck is much easier if you have a truck-high loading dock. Without such a dock, you will need at least one forklift and a support to brace one end while the forklift is positioned beneath the center of each crate. Several men are required to unload individual components from the crates.

C. You’ll need heavy rubber hammers, good portable drills/screwdrivers, measure tapes (to make sure everything’s square) and six to ten 11” locking C-Clamps used to hold beams in place as you insert fasteners. Another tool that will be needed is an 8” – 12” shaft extension for the screwdriver bits (to drive screws in narrow gaps between parts).
Components List
The list includes the basic cleanroom components. Quantities vary based on the specifications of each particular unit.

Electrical Service Equipment:
- Power Supply Unit to turn on fan filter units and light panels.
- Power Strip (can hook up to 6 lights and 6 fan filter units modules)
- 115 or 230 VAC yellow power cables (normally connected to FFUs and lights before shipping).
- 4-Pin Adapter Cable (to connect the fan filter unit to the power strip)
- 3-Pin Adapter Cable (to connect the light panel to the power strip)

<table>
<thead>
<tr>
<th>PICTURE</th>
<th>USED FOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frame</td>
<td>Black (3/8)&quot; X (1/2) Allen Screw Socket Set Cone Point</td>
</tr>
<tr>
<td></td>
<td>Grip Track and Trimming</td>
<td>Screw # 12 X (3/4)&quot; Phillip Pan Self Drilling</td>
</tr>
<tr>
<td></td>
<td>Support Bar &amp; Joists</td>
<td>Screw # 12 X (3/4)&quot; Self-Tapping Sheet Metal Screw</td>
</tr>
<tr>
<td></td>
<td>Bit for Trim Strip</td>
<td>Drill Bit, Phillip Power</td>
</tr>
<tr>
<td></td>
<td>Bit for Joist</td>
<td>Drill Bit, 5/16&quot; Magnetic</td>
</tr>
<tr>
<td></td>
<td>Used for Black 3 / 8 Allen Screw</td>
<td>Allen Hex Key</td>
</tr>
<tr>
<td></td>
<td>Ceiling Panels (1-Sided)</td>
<td>Clip 1-Arm Ceiling (If requested)</td>
</tr>
<tr>
<td></td>
<td>Ceiling Panels (2-Sided)</td>
<td>Clip 2-Arm Ceiling (If requested)</td>
</tr>
</tbody>
</table>
Cleanroom Frame Components

- Corner Post
- Center Post
- Corner Power Post

Ceiling Components

- Divider
- Spacer
- Ceiling Panel
- Black Clip
Support Bar Components

- Support Bar with 2 Flat Bars (for rooms from 10 ft to 12 ft)
- Support Bar Bracket (for rooms over 12 ft)
- 2 Support Bars with 2 Flat Bars (for rooms over 12 ft)
- Support Bar with 0 Flat Bars (refer to specific cleanroom drawings for quantity)

Curtain Panel Components

- Flex-Track
- Curtain Strips
- Curtain Panels
- Top Trimming
Frame Assembly

**Installation Note:** Before beginning installation of the support frame, familiarize yourself with the placement of the frame members.

⚠️ **IMPORTANT SAFETY NOTICE**

Terra Universal Cleanrooms are not designed to support more weight than the blower modules and lighting fixtures originally installed. In particular, the ceiling grid beams are not load bearing and will not support personnel or other additional loads. Placing added weight on the ceiling grid may result in serious damage to the cleanroom and its occupants.

Safety notices supplied by Terra Universal must be affixed at appropriate places on each side of the cleanroom grid.

Prior to shipping, all frame and ceiling members are stamped and then labeled at each end. Refer to the appendix for detailed information on how your cleanroom is numbered.

Before you start assembly, it is mandatory that the floor is level to assure the completed room will fit properly and be rectangular. Failure to level the floor may result in the inability to complete the assembly of the room or the insertion of the blowers, lights or ceiling. For vertical alignment, measure with the leveler before assembly.
Also, verify that the overall dimensions match the drawing.
Seismic Anchoring

Because most Softwall Cleanroom models have custom configurations, the number of screws required for seismic anchoring will vary based on the size of the cleanroom. Each post on the frame has a foot with four pre-drilled holes. Be sure to adhere to local seismic codes when anchoring the cleanroom. Terra recommends drilling 6" deep and placing a 3/8" Kwik Bolt TZ (not included) anchor for a minimum embedment of 3-5/8" in each of the foot's holes. This is an example, but local seismic codes may vary.

**EXAMPLE DIAGRAM**

![Diagram showing Seismic Anchoring for Softwall Modular Cleanroom](image-url)
Joist and Divider Installation

STEP 1

SIDE JOIST

JOISTS ARE BOWED TO COMPENSATE FOR THE WEIGHT OF ALL THE FFUS, LIGHTS, PDMS, AND OTHER CEILING ACCESSORIES

NOTE: ONLY SIDE JOISTS HAVE EXTRA FASTENING HOLES

STEP 2

TOP VIEW

DO NOT DRILL HOLE INTO THE FRAME USING THE FIRST HOLES ON THE SIDE JOIST AND ATTACH THE SIDE JOIST TO THE FRAME

MAKE SURE THE SIDE WITH MULTIPLE HOLES IS ON THE OUTSIDE OF THE FRAME

STEP 3

CLAMP THE SIDE JOIST TO THE FRAME TO SCREW IT ON

USE SELF TAPPING SHEET METAL SCREWS TO DRILL A HOLE AND ATTACH THE SIDE JOIST TO THE FRAME

REMOVE THE CLAMPS AFTER SCREWING THE SIDE JOIST TO THE FRAME
Installation and Operating Guide

ValuLine Softwall Modular Cleanroom

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STEP 4

CENTER JOIST

NOTE: CENTER JOISTS DO NOT HAVE HOLES ALONG THE LONG EDGE

STEP 5

ENSURE THE CENTER JOISTS ARE NEXT TO THE DIVIDERS AND FLUSHED WITH IT
STEP 6

REPEAT STEPS 4-6 TO COMPLETE THE INSTALLATION OF THE CENTER JOISTS AND OUTER DIVIDERS

USE SELF TAPPING SHEET METAL SCREWS TO DRILL A HOLE AND ATTACH THE JOIST TO THE FRAME AFTER IT IS PROPERLY SPACED WITH THE DIVIDERS PREVIOUSLY INSTALLED

INSERT THE BLACK CLIP TO THE CENTER JOIST AND DIVIDER AFTER THE CENTER JOIST IS ATTACHED TO THE FRAME

SCREW ON BOTH ENDS

REFER STEP 3 FOR THIS SIDE JOIST
Use of the Spacer

**STEP 1**

- **USE THE SPACING TOOL TO PROPERLY SPACE BLACK CLIPS FOR DIVIDER PLACEMENT**

- **ATTACH THE BLACK CLIP ON THE JOIST AT THE END OF THE SPACER**

**STEP 2**

- **MAKE SURE THE SPACER IS TOUCHING THE BLACK CLIP**

- **MOVE THE SPACER TO THE NEXT JOIST AND REPEAT STEP 1 AND PROCEED TO ADD THE DIVIDER**
STEP 3
Recheck the frame to ensure that the structure is square.

Support Bar Installation (For Cleanrooms from 10 ft. to 12 ft.)
STEP 2

TOP VIEW

STEP 3

USE SELF TAPPING SHEET METAL SCREWS TO DRILL A HOLE AND ATTACH SUPPORT BAR TO THE JOIST

MAKE SURE THE SCREW GOES THROUGH THE JOIST AND SCREWS ONTO THE SUPPORT BAR.
Installing 2 Support Bars (For Rooms Bigger Than 12 ft.)

**STEP 1**

**TOP VIEW**

**STEP 2**

USE SELF TAPPING SHEET METAL SCREWS TO DRILL A HOLE AND ATTACH THE SUPPORT BARS TO THE JOIST
Installing the Ceiling Modules

Refer to the drawing to determine where to place ceiling components.

If provided, secure down with Terra-provided Cleanroom Ceiling Clips. Use the 1-Arm Clip for joists with only one adjacent ceiling panel and use the 2-Arm Clip for joists with two adjacent ceiling panels. See Figures 1 thru 4.

**NOTE: REFER TO THE ELECTRICAL SECTION OF THE MANUAL FOR WIRING DETAILS**

Figure 1: 1-Arm Ceiling Clip

Figure 2: 2-Arm Ceiling Clip
Curtain Panel Installation

Refer to the drawing to determine how many Flex-tracks go on each side.

**STEP 1**

![Diagram of curtain panel installation showing Flex-tracks and LED light placement.](image)

Figure 3: 1-Arm Ceiling Clip holds down a ceiling panel with a FFU installed on the opposite side of the joist.

Figure 4: 2-Arm Ceiling Clip simultaneously holds down two ceiling panels.
Using the holes on the flex-track, use self-tapping sheet metal screws to drill a hole on the frame to attach the flex-track to the frame.

STEP 2

Hook the curtain panel onto the flex-track.

STEP 3
REFER TO THE DRAWING TO DETERMINE WHERE TO PLACE THE REMAINING CURTAIN PANELS

STEP 4
STEP 5

REFER TO THE DRAWING TO DETERMINE HOW MUCH THE TOP TRIMMINGS ARE OVERLAPPED

STEP 6

USING THE HOLES ON THE TOP TRIMMING, USE SELF TAPPING SHEET METAL SCREWS TO DRILL A HOLE THROUGH THE CURTAIN PANEL AND THE FRAME TO ATTACH THE TOP TRIMMING
3.0 Electrical Wiring

**Installing the Power Supply Unit (PSU)**

**Note:** Each PSU has a maximum capacity of (3) FFUs and two (2) light fixtures

The PSU typically arrives preinstalled in the appropriate vertical frame member. Verify that the main power switch is off and the PSU is disconnected from the power source until the installation of the cleanroom is complete.

A. The wiring conduit can be found emerging from the top of the frame member where the PSU is mounted. Uncoil the conduit.

B. Install the provided female NEMA connector at the end of the conduit.

C. Recoil the conduit and complete any remaining frame and ceiling installation steps before proceeding to the final wiring.

D. Connect the provided power strip to the conduit and place the power strip on one of the blank ceiling panels.

E. Use the provided 3- and 4-pin adapter cables to connect all of the ceiling components to the power strip.

F. Turn on the power switch on the multi-outlet power strip (no power should be supplied at this point).

If the cleanroom was specified with more than three (3) FFUs, a second Power Supply Unit is required and should be included in the cleanroom order. The second PSU should be installed in a similar manner to the primary PSU.

A. Locate the precut knock-out hole for the secondary PSU, typically right next to the primary PSU. On top of this same vertical frame member, a second predrilled hole can be found where the conduit will emerge above the ceiling.

B. Use a mallet and punch to open the knock-out in the steel frame. Feed the secondary PSU conduit through the knock-out hole and the second hole in the top of the frame.

C. After the entire length of conduit has been inserted, mount the PSU to the frame using the provided self-tapping screws.

D. Refer to the previous instructions for installation of the power strip and connection to the ceiling components.
**Fan Filter Unit Hard Wiring**

**WARNING:** Disconnect the unit from the electrical power source before attempting any service.

To preserve the UL listing of Terra Fan Filter Units, Terra must configure them for hard-wiring. Cords are dressed to simplify this operation, which typically does not require an electrician.

1. Remove the blue prefilter, which rests on top of the fan filter unit (Figure 6).

2. Unscrew metal top panel of the electrical housing (Figure 7) to expose wiring junction (Figure 8).

3. Install cord grip as shown (Figures 9, 10) into appropriate opening.

4. Thread the AC power chord through the cord grip and connect to wire port as shown (Figure 11). Match the colors of the wiring, as indicated on the charts below. Tighten retaining screws to fasten wires.

5. Tighten cord grip to secure AC power chord.

6. Replace the metal panel on top of the electrical housing.

7. Replace the blue prefilter.

---

**120V FFU Wiring**

<table>
<thead>
<tr>
<th>Cable Wire</th>
<th>White</th>
<th>Black</th>
<th>Red</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Neutral</td>
<td>Line</td>
<td>None (cut)</td>
<td>Ground</td>
</tr>
<tr>
<td>FFU Connector</td>
<td>White</td>
<td>Black</td>
<td>None</td>
<td>Green</td>
</tr>
</tbody>
</table>

**220V FFU Wiring**

<table>
<thead>
<tr>
<th>Cable Wire</th>
<th>White</th>
<th>Black</th>
<th>Red</th>
<th>Green</th>
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</thead>
<tbody>
<tr>
<td>Function</td>
<td>None (cut)</td>
<td>Neutral</td>
<td>Line</td>
<td>Ground</td>
</tr>
<tr>
<td>FFU Connector</td>
<td>None</td>
<td>Black</td>
<td>Red</td>
<td>Green</td>
</tr>
</tbody>
</table>
4.0 Operation and Maintenance

Operation of the Modular Cleanroom is controlled by an on/off switch for lights and push buttons for the fan filter units, located near the access door. The Modular Cleanroom typically requires minimal maintenance. The filters provide effective operation for years under typical operating conditions. In fact, filter efficiency increases as the filter captures more and more particles. The filter does not require replacement until the backpressure it generates increases to the point that the system can no longer provide an adequate airflow velocity to maintain required particle counts. To monitor this condition, periodic testing with a particle counter and air velocity meter is recommended.

Filter Replacement

To replace the filter, disconnect system power and remove the fan filter unit from the top of the structure. Then position it to come through the 2' x 4' opening and into the cleanroom. See chart below for ordering information. Detailed replacement instructions on the next page.

**WARNING:** Never attempt to service or replace the filter without first disconnecting system power to the fan filter unit.

### Terra Universal FFU Filter

<table>
<thead>
<tr>
<th>Type</th>
<th>Filter Size</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEPA</td>
<td>2 X 2</td>
<td>6601-27</td>
</tr>
<tr>
<td></td>
<td>2 X 3</td>
<td>6601-26</td>
</tr>
<tr>
<td></td>
<td>2 X 4</td>
<td>6601-25</td>
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<tr>
<td>ULPA</td>
<td>2 X 2</td>
<td>6601-30</td>
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<tr>
<td></td>
<td>2 X 3</td>
<td>6601-29</td>
</tr>
<tr>
<td></td>
<td>2 X 4</td>
<td>6601-28</td>
</tr>
</tbody>
</table>

Removal and Replacement of the HEPA/ULPA Filter (Standard Unit)

**Warning:** Disconnect the unit from the electrical power source before attempting any service.

**Warning:** The Standard Filter is protected with an expanded metal face screen. This is never to be used to handle the filter. It is only for protection against an accidental touch of the filter. Handle filter only by the frame.
Tools Required: Phillips Head Driver

**Step 1:** Disconnect yellow power cable and remove unit from ceiling (see next page for recommended procedure).

**Step 2:** Remove the 10 screws holding the HEPA/ULPA filter to the lid assembly.

**Step 3:** Lift the lid assembly off the HEPA/ULPA filter (see figure below). Discard the used filter as per applicable regulations.

**Step 4:** Carefully attach the new filter, being sure not to touch or otherwise damage the filter face.

**Step 5:** Lift out the old pre-filter and drop in the new one.

**Step 6:** Position the unit back in the ceiling grid and reconnect the unit to its power supply.

**Note:** Before replacing with a new HEPA/ULPA filter, carefully inspect the new filter for any visible damage.
Removing the Fan/Filter Unit

**WARNING**

Disconnect the unit from the electrical power source before attempting any service.

1. Disconnect the fan/filter unit from the power strip and roll up the power cord.

2. Attach double stick tape to all four sides of a polypropylene panel, as shown at right.

3. Place the polypropylene panel over the filter screen, making sure that it only adheres to the screen without overlapping the edges.

4. Push one side of the FFU up, rotate it 90° and lower it through the ceiling grid.

5. After replacing the filter, reverse these steps to reinstall the fan/filter unit in the ceiling grid.

---

Figure 1  
Figure 2  
Figure 3  
Figure 4  
Figure 5  
Figure 6
Useful Tools

Wipes

Wipes are used more frequently than any other cleaning product or tool. Selection of wipes should be based on intended usage. When selecting wipes you should consider things such as particle-shedding properties, chemical residue of the wiper content, static properties, absorbency and size. When using wipes, wipe in one direction from top to bottom or left to right. Use only slight overlapping strokes. Remove surface spots with commercial cleaner and woven polyester wipes.

WARNING: Always check chemical compatibility before cleaning plastic surfaces. Although vinyl and polyurethane withstand exposure to a wide range of common cleaning agents, repeated exposure to strong chemicals can cause damage.

Vacuums

There are a variety of different Vacuums available for your cleanroom. Selection of a vacuum will depend heavily on the application and the type of cleanroom you have. With all different types of sizes and filtration systems, select the one you feel would best suit the cleaning needs of your room. Refer to the Parts & Accessories section. For more information log on to our website at Terrauniversal.com

Mini-Environment Cleaning Kits

The ITW Texwipe Mini Environment Cleaning Kits are ideal for cleaning corners and difficult-to-reach locations inside the cleanroom. The kits include a cleaning tool (18” and 24” handles, 1 polyester foam pad, and 6 mop covers), one production bag of dry and pre-wetted wipers and an informational brochure with instructions on how to clean your equipment.

Designed to facilitate cleaning, the mop head has a low, flat profile with rounded corners and is autoclaveable. The swivel joint allows the user to reach inaccessible areas and replaceable foam pad ensures that the mop cover conforms to the surfaces that are being cleaned. The polyester knit fabrics used for the wipers and mop covers will not contaminate isolator surfaces when used in cleaning and disinfection operations.
5.0 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. This limited warranty covers parts and labor, but not transportation and insurance charges. 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. Repairs may be completed by 3rd party service agents approved by Terra Universal. Terra Universal reserves the rights to limit this warranty based on a service agent's travel, working hours, the site's entry restrictions and unobstructed access to serviceable components of the product. 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.”

Terra Universal Warranty Policy: https://www.terrauniversal.com/warranty/

Thank you for ordering from Terra Universal!
6.0 Spare Parts & Accessories

For replacement parts and accessories for your cleanroom order at TerraUniversal.com or Call 714-578-6000

Filter Replacement

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEPA</td>
<td>2 X 2</td>
<td>6601-27</td>
</tr>
<tr>
<td></td>
<td>2 X 3</td>
<td>6601-26</td>
</tr>
<tr>
<td></td>
<td>2 X 4</td>
<td>6601-25</td>
</tr>
<tr>
<td>ULPA</td>
<td>2 X 2</td>
<td>6601-30</td>
</tr>
<tr>
<td></td>
<td>2 X 3</td>
<td>6601-29</td>
</tr>
<tr>
<td></td>
<td>2 X 4</td>
<td>6601-28</td>
</tr>
</tbody>
</table>

Cleanroom and Laboratory Wipers

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Qty</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton Wiper</td>
<td>9” x 9”</td>
<td>150/bag</td>
<td>5605-07</td>
</tr>
<tr>
<td>Cotton Wiper</td>
<td>12” 12”</td>
<td>75/bag</td>
<td>5605-02</td>
</tr>
</tbody>
</table>

White twill-patterned wiper, made of 100% long-staple cotton is tightly woven for strength and durability, while also clean and absorbent. Fabric is bias-cut and cross section of 120x60 threads per square inch. The woven twill pattern makes this wiper ideal for cleaning, polishing and burnishing magnetic disk media surfaces. Ideal in high heat applications, and absorbing aqueous and organic solvent spills. Suitable for Class 1000 and higher cleanrooms.

Laundered Polyester Wipers

<table>
<thead>
<tr>
<th>Size</th>
<th>Standard 209E</th>
<th>Qty</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>9” x 9”</td>
<td>Class 1</td>
<td>150/bag</td>
<td>5605-00</td>
</tr>
<tr>
<td>12” 12”</td>
<td>Class 10</td>
<td>75/bag</td>
<td>5605-08</td>
</tr>
</tbody>
</table>

Laundered wipers are ideal for critical environments where ultra-low particle/fiber generation and absorbent capacity is important. Soft yet durable construction cleans surfaces without scratching.
**Caster**

<table>
<thead>
<tr>
<th>Type</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>6” Locking Caster</td>
<td>6704-08</td>
</tr>
</tbody>
</table>

This 6” locking stainless steel swivel casters feature nonshedding polyurethane wheels. Capacity: 300 lbs. each. Order one per vertical post. Casters raise the frame 7.125”. If casters are ordered, the frame will be made shorter to keep the floor to filter face dimension to specification.

**MicroVac Portable Cleanroom Vacuum Cleaner**

<table>
<thead>
<tr>
<th>Type</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 Vac/60Hz</td>
<td>5100-00</td>
</tr>
<tr>
<td>220 Vac/50 Hz</td>
<td>5100-00-220</td>
</tr>
</tbody>
</table>

The MicroVac™ is a portable vacuum cleaner suitable for use in cleanroom environments. It incorporates a four-stage filter system to remove particles and dust from the air before returning the air to the workplace. The small size, light weight, and flexible attachments of this cleaner make it ideal for cleaning tight corners and delicate equipment that a larger cleaner just can’t reach!

**HEPA-Filtered Vacuum Cleaner**

<table>
<thead>
<tr>
<th>Type</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 Vac/60Hz</td>
<td>1001-00</td>
</tr>
</tbody>
</table>

This HEPA-Filtered Vacuum Cleaner combines the power and capacity for heavy-duty operation with a lightweight, compact design that makes it as convenient as it is effective. The unit’s HEPA (High Efficiency Particulate Air) filter removes 99.999% of all particles 0.3µm or larger, exceeding federal standards and accepted HEPA filtration levels.

**ULPA Filtration Vacuum Cleaner**

<table>
<thead>
<tr>
<th>Type</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 Vac/60Hz</td>
<td>1764-00</td>
</tr>
<tr>
<td>220 Vac/50 Hz</td>
<td>1764-00-220</td>
</tr>
</tbody>
</table>

This Cleanroom Vacuum Cleaner is used for cleaning the workplace or picking up spills of hazardous dust and particles. Its unique four-stage filter system removes particles 0.12 microns in size at 99.99995% efficiency, before returning the air to the workplace.
Light Panel

<table>
<thead>
<tr>
<th>Type</th>
<th>TUI Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>120-277V Vac/60Hz</td>
<td>3800-41B</td>
</tr>
</tbody>
</table>

Black Cord Adapter Power Cord

For connection of light or fan filter unit to the power strip

TUI # 6601-13 (Fan/Filter Units)  
TUI # 6601-14 (LED Lights)