



## IMPORTANT SAFETY INSTRUCTIONS READ AND SAVE THESE INSTRUCTIONS

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	 WARNING	<p><b>Warnings are used when failure to observe instructions or precautions could result in injury or death.</b></p>
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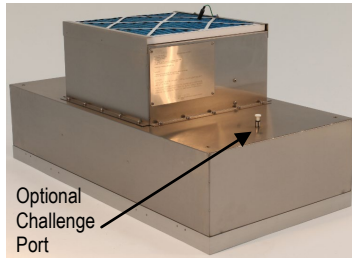
### 1.0 Introduction

This manual documents installation and operation of Terra Universal's Room-Side Replaceable (RSR) Explosion-Proof WhisperFlow™ Fan/Filter Unit (FFU). The FFU provides uniform, laminar flow, HEPA-filtered air to the area below the mounted unit.

### 2.0 Operation

The unit consists of a ¼-HP, explosion-proof motor driving a forward-curved centrifugal blower. Air is drawn into the unit through a pleated pre-filter and in turn to an insulated chamber where it is then directed to an exit HEPA filter with a built-in diffuser.

The unit can also be equipped with a 3/8"-diameter challenge port, shown in photo to the right. Take differential pressure measurements to monitor filter performance, and insert aerosols for leak-test certification. Port is capped when not in use.



### 3.0 Installation

The RSR WhisperFlow FFU is designed to allow filter replacement from the inside of the cleanroom, without breaching the seal. A gel-sealed filter can be separated from the fan module for replacement. The fan module stays in place on top of a standard 2'x4' clean room ceiling grid and includes a threaded fixture at each corner to accommodate four eye-bolts (not provided) that can be used to assist in positioning the unit.

All metal components are grounded. A grounding wire is clipped to metal hardware on the filter screen as well as the metal threads running through the pre-filter mesh. Make certain that these wires are in place before final installation.



**WARNING:**  
To reduce the risk of fire, electric shock, or injury to persons, do not use this fan with any solid-state speed control device, and observe the following:

- Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- Before servicing or cleaning unit, or replacing a filter, switch power OFF at the service panel and lock the service disconnecting means to prevent power from being accidentally switched on. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
- When the removal/disconnection of either filter is required due to service or component replacement, they are to be remounted as previously installed.
- Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction. All metal components must be properly grounded.
- When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.

### 4.0 Start up



**WARNING:**  
Keep unit disconnected from power supply during inspection

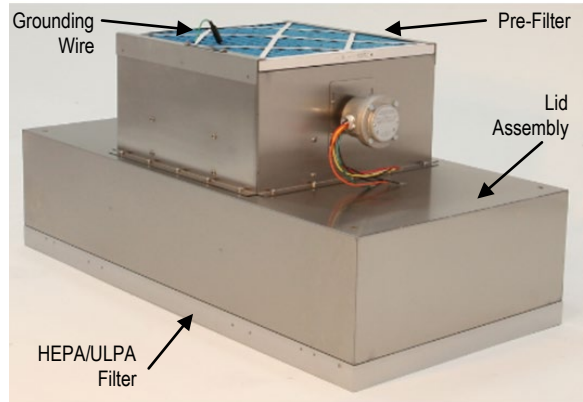
Prior to providing power to the unit, check that no damage has occurred during shipping. This can be accomplished via a visual check to make sure there are no visible dents or penetrations. If the unit is intact, unclip the grounding wire and remove the pre-filter. Manually rotate the fan wheel to make sure it is not in contact with any stationary parts and that there are no visible loose screws or bolts obstructing the wheel's rotation. Once visual inspection is completed, have a professional perform the installation who is familiar with Class I, Groups C & D and Class II, Groups F & G hazardous location requirements. **NOTE:** Remember to replace the filter-screen and pre-filter grounding wires. After installation, with power applied, the fan will rotate, and filtered air will exit the HEPA filter.

### 5.0 Cleaning and Maintenance



**WARNING:**  
Disconnect from power supply before servicing unit or replacing filters. When servicing or replacing either filter, the new filter is to be installed in the same manner as the filter it replaces.

The scheduled maintenance of the unit depends on the installed location and consists of cleaning or changing the pre-filter and the HEPA filter. It is recommended that the pre-filter be inspected and cleaned every three months or sooner depending on the cleanliness of the external environment. The HEPA filter cannot be cleaned and must be replaced when the laminar flow rate falls below 70 feet/min.



Explosion-proof FFU to be installed with wiring embedded in filled rigid conduit.

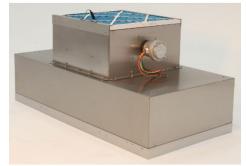
### 5.1 Replacing the RSR Filters

The RSR filter is designed so that the HEPA or ULPA filter can be replaced from inside the cleanroom without breaching the controlled environment. The filter assembly is detached from the fan module, which stays in place in the ceiling grid. Follow these instructions to replace the filter.

First, you must remove the outer screen covering the filter that is held in place with friction catches (Photo 1). This screen protects the filter from damage and enhances airflow uniformity. While gently pulling on the screen to disengage the catches, detach the grounding wire clip as shown in Photo 2. The clip is attached to a steel rivet holding one of the catches in place.



Photo 1: Friction catches hold the screen to the fan module housing.



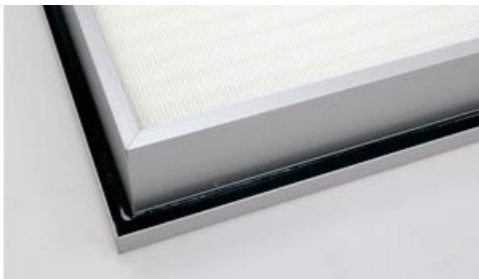
**Photo 2:** Remove grounding clip from the steel rivet post on the back side of the outer filter screen.

Next, remove the anodized aluminum face grille by rotating the metal tabs that help hold the grille in place and provide grounding (see Photo 3). The tabs fit tightly and will scrap across the anodized layer, exposing the metal beneath; this is critical for successful grounding as the anodized layer is non-conductive.



**Photo 3:** Filter-face grille's metal tabs.

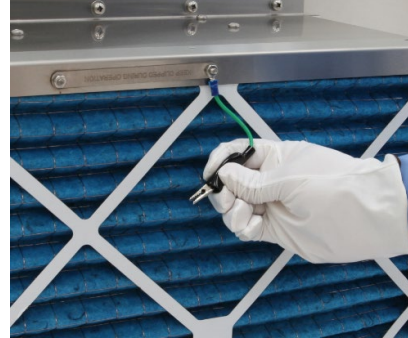
Gently let the used filter drop down, and set aside. The filter assembly is surrounded by a channel containing gel seal. Wipe any residual gel from the knife-edge of the fan module still in the ceiling to prepare for the replacement filter. Position your new filter carefully before pushing into place; the knife-edge of the fan module should be centered in the channel (equal amounts of gel on both sides). Photo 4 shows the gel-filled channel of the RSR filter.



**Photo 4:** Gel-filled channel of RSR filter.

Replace the face grille and rotate the metal tabs so that they cover the frame. Check to be sure that the tabs are in direct contact with areas of the frame where the anodized layer has been scraped off. This is important for grounding. Reattach the grounding clip to the rivet on the outer screen, and then re-engage the friction catches.

To replace or clean the pre-filter located at the top of the fan module, qualified personnel will need access to the ceiling grid. Un-clip the grounding wire and slide the filter out of the two tracks holding it in place. When finished, put the filter back in place and make certain that the grounding wire is clipped to metal threads running through the filter mesh.



**Photo 5:** Clipping the grounding wire to metal threads in the pre-filter.

## 6.0 Specifications

Dimensions:	23.625"W x 47.625"L x 20.2"H (600 mm x 1210 mm x 513 mm)
Housing:	Stainless steel
HEPA Filter:	99.99% efficient on removal of particles 0.3 microns and larger
Pre-Filter:	20" x 20" x 1" - 30% efficient ASHRAE rated
Blower:	Forward-curved centrifugal type factory balanced. Entire motor/blower assembly is removable from top of housing for service
Motor:	1/4 HP Direct drive, Explosion-proof, 1 Phase
Electrical:	Motor wiring should only be connected to an appropriate control unit. All wiring should be housed by UL-listed rigid conduit
Power Cord:	None supplied
Face Grille:	Perforated anodized aluminum
Noise Level:	50 dBA (measured at 30" from filter face)
Weight:	76 lbs. (35.5 kg) shipping weight
Support:	Threaded screw receptacles provided for insertion of optional eyebolts
Power Options:	1/4 HP motor with voltage of 115/1/60Hz, 208-230/1/60Hz

**Power Specifications:** for 2 ft. x 4 ft. HEPA, 115VAC (Model No. 6601-24HE)

Full Load Amps	6.8
Watts	190

### Specification Notes:

- All FFU data is based on a standalone unit using 1" prefilter and clean filters.
- Data will vary depending on filter media and configurations with other products/systems, such as ductwork or hoods.

## 7.0 Warranty

See last section.



## Quick-Start Operating Guide Filter/Fan Unit

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### Limited 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.

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**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](http://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.

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**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!*