IMPORTANT SAFETY INSTRUCTIONS
READ AND SAVE THESE INSTRUCTIONS

Proprietary Notice
This manual pertains to proprietary devices manufactured by Terra Universal, Inc. Neither this document nor any portion of it may be reproduced in any way without prior written permission from Terra Universal.

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.

Terra Universal makes no warranties applying to information contained in this manual or its suitability for any implied or inferred purpose. Terra Universal shall not be held liable for any errors this manual contains or for any damages that result from its use.

The information presented here is subject to change without notice.

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:

A) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.

B) 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.

C) When the removal/disconnection of either filter is required due to service or component replacement, they are to be remounted as previously installed.

D) 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.

E) 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.

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.
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.

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.

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: ¼ 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

7.0 Warranty
See last section.
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.

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!