TERRA UNIVERSAL.COM
Critical Environment Solutions

Set-up and Operating Guide *Document No. 1800-44*

Ionizing Blow-Off Gun

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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:

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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 Description

Terra Universal's Ionizing Blow-Off Gun emits a balanced stream of positive and negative ions to safely neutralize static charges on surfaces sensitive to electro-static discharge. At the press of a pushbutton trigger, it releases these ions into a burst of gas (either clean air or nitrogen) to ensure effective dispersal up to 24" away.

Because it operates at low voltage (24VAC), it is safe to operate and generates minimal RFI/EMI. Its lightweight, ergonomic body is comfortable to hold, and the pushbutton trigger operates without hyperextending the operator's wrist.

All materials are chosen for cleanliness and durability. The titanium emitters can be replaced in a matter of minutes. Particle generation during operation is negligible as long as the gun is connected to a filtered gas source. It includes a 0.4 micron in-line filter and a power supply (120 or 220VAC).

Figure 1: Cleanroom Ionizing Blow-Off Gun (Cat. # 2005-55)

NOTE — **Terra recommends the use of clean, dry nitrogen with this gun. If unfiltered air is used, the inlet line should be filtered to extend the life of the titanium emitter and prevent product contamination.**

2.0 Installation

CAUTION

The Ionizing Blow-Off Gun may be safely operated at inlet pressure up to 40 psi (30 psi recommended for working distances up to 18" from target surface). Do NOT attempt to operate with inlet pressure set above 65 psi.

Before operation, carefully unpack the Ionizing Blow-Off Gun and verify that all components are included: an Ionizing Blow-Off Gun with hanging bracket, an 8' gas tube (1/4" dia.), a 0.4 micron filter capsule, a coiled low-voltage power cable (extends to 8' long) and a 24VAC power transformer.

1. Starting at the base of the gun, insert one end of the gas tubing into the quick connect fitting and connect the low-voltage cable to the telephone jack connector.

Figure 2: Gas and power connections at the base of the ionizing gun

Figure 3: Assembled in-line filter capsule (notice the blue arrow indicating direction of gas flow)

2. Thread the two provided gas fittings onto the in-line filter capsule (Teflon tape has been pre-applied to the male threads). Connect the gas tubing to the fitting indicated by the gas flow arrow on the filter capsule.

3. Using a separate length of ¼" gas tubing (not included), insert one end of the gas tubing into the open fitting on the filter capsule and connect the other end to a gas source (clean, dry air or filtered nitrogen) regulated between 15 and 30 psi (see **Section 5: Performance** for optimal pressure setting at your operating distance).

4. Connect the free end of the low-voltage cable to the power transformer and plug it into an appropriate power outlet (120 VAC or 220 VAC).

CAUTION

Do not block access to the power transformer or gas source. These connections serve as the main disconnect for the system in the event of an emergency.

Figure 4: 120V power transformer with low-voltage phone cable connection on the bottom

Figure 5: Nozzle LED lights glow when unit is operational

5. Once these connections are made, the LEDs at the tip of the gun will emit a steady glow and the Ionizing Blow-Off Gun is ready for operation. Simply aim the gun and squeeze the trigger to direct a balanced flow of ions at the target surface.

Multiple Gun Configurations

A single power transformer provides ample power to drive up to 20 Ionizing Blow-Off Guns. For multiple gun operation, use standard telephone jack splitters (not provided) to connect the guns to the power transformer.

3.0 Maintenance

WARNING **Disconnect the unit from both the power supply and gas supply before servicing.**

The Ionizing Blow-Off Gun requires little maintenance beyond occasional cleaning. As long as it is operated with filtered air or nitrogen, the titanium emitters should last for the life of the gun.

Cleaning the Emitters

If deposits are observed on the tips,

1. Disconnect the gun from system power and gas supply.

2. Use a cleanroom-appropriate swab moistened with a cleaning solution of 50% isopropyl alcohol and 50% de-ionized water to remove deposits or other contaminants from the emitter points.

Replacing the Emitters

If deposits cannot be removed, or if the tips appear worn or bent, the Ionizing Blow-Off Gun may not discharge surfaces with optimal efficiency. In this case, replace the tips, using either needle-nosed pliers or a pencil eraser. Tips can be removed and inserted simply by applying mild pressure; no twisting is necessary.

Figure 6: Use a pencil eraser to push the emitters out of the nozzle

Replacing the In-Line Filter Capsule

If the Ionizing Blow-Off Gun exhibits diminished air flow at a constant inlet pressure, then the in-line capsule filter is probably clogged and requires replacement.

To replace the filter,

1. Disconnect the power and gas supplies.
2. The filter is attached to the gas line with quick-connect pressure fittings; simply push in the orange rings and pull the gas lines out of the capsule fittings.
3. Apply Teflon tape to the male threads of the new filter capsule and screw on the provided gas fittings.
4. Insert the gas lines into the new filter capsule, using the gas flow arrow on the filter as a guide.
5. Reconnect the power and gas supplies.

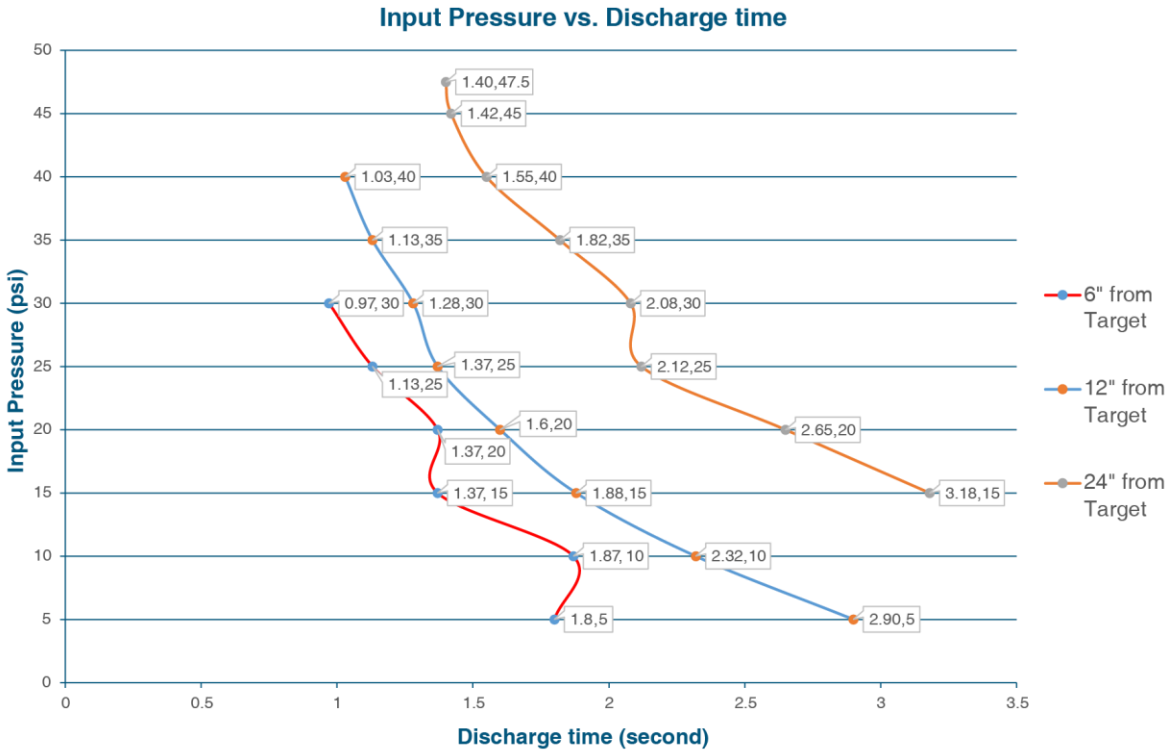
4.0 Specifications

Dimensions	
Gun	7.5" x 1.125" thick
Gas Tubing	8' x 0.25" diameter
Low Voltage Cable	8'
Weight	6.4 oz. (Gun only); 11.1 oz. (Gun with kit)
Construction	
Exterior	PVC
Emitters	Titanium
Gas Tubing	Polyurethane
Power Ratings	
System Power	24 VAC
Input Power (Wall Transformer)	120/220VAC, 50/60Hz
Current Draw	6.3 mA

Replacement Parts	
Product	**Catalog #**
Filter Capsule - 0.4 µm retention	2005-53
Filter Capsule - 0.04 µm retention	2005-52
120VAC Power Transformer	2005-09A
220VAC Power Transformer	2005-09A-220
Replacement Titanium Emitters	2005-45

Ionizing Blow-Off Gun Specifications Table	
Environmental Conditions	
Use (Indoor/Outdoor)	Indoor Use Only
Altitude	Up to 2,000 m
Operating Temperature	5°C to 40°C
Maximum Room Relative Humidity	80% @ 31°C (50% @ 40°C)
Allowable Voltage Fluctuation	±10%
Equipment Ratings	
Voltage Rating	120/220VAC
Frequency Rating	50/60Hz
Power Rating	1A
List of Input Connections	¼" gas tube fitting Telephone cable connector (low voltage)
List of Output Connections	Telephone cable connector (wall transformer)
Maximum Gas Inlet Pressure	65 psi
Equipment Installation	
Assembly	See Section 2: Installation (Page 3)
Protective Earthing (Grounding)	N/A
Utility Requirements	Compressed Nitrogen or Clean Dry Air
Equipment Operation	
Operating Controls	Trigger operated
Disconnect Device	Wall transformer; see warning on Page 3
Accessory Connections	None
Safety Symbols	N/A
Service and Maintenance	User serviceable; see Section 3: Maintenance (Page 4)
Replacement Parts	See Section 4: Specifications (Page 6)
Cleaning/Decontamination	See Section 3: Maintenance (Page 4)
Poisonous/Hazardous Gas	N/A; no hazardous gases
Flammable Liquids	N/A; no flammable liquids

5.0 Performance



Reading the Pressure vs. Discharge Time Chart

At each of the three test distances (6", 12", and 24" from the target surface), you can observe an optimal input pressure setting, which corresponds with the lowest discharge time.

Raising the pressure higher than this point results in an increase in the discharge time (the curve swings to the right) because higher pressure drives the ions at the target with too much force, causing uneven dispersal and compromising discharge effectiveness. Lowering the pressure below this point results in too little force; the ions require longer to reach the target and many disperse before discharging the surface.

6.0 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.

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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
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