

# 3M

## 980/980E Ionized Air Gun Instruction Manual



# Index

Section	Page
1. General Description .....	3
2. Performance .....	3
3. Power Requirements .....	3
4. Air Supply Requirements.....	3
5. Installation .....	4
6. Assembling the Components .....	5
7. Operation .....	6
8. Maintenance.....	7
9. Specifications.....	11

## 1.0 General Description

The 3M™ 980/980E Ionized Air Gun provides efficient static charge neutralization by effectively removing particle contamination even on the most static-sensitive products. The 3M 980 Ionized Air Gun operates from AC120 V power, and the 3M 980E Ionized Air Gun from AC 230 V power. **All references to model 980 throughout this instruction pamphlet pertain to both of the models, unless otherwise noted.**

Patented technology ensures constantly balanced ionization for consistent control of surface charges. The 980 never needs adjustment and requires very little maintenance.

Compact and lightweight, the console for the 980 can be mounted anywhere on the workstation for easy access. It connects to any supply of clean, dry air or nitrogen, and an internal disposable filter collects particles from the air supply. The electrical feed from the console to the gun is incorporated into the light, flexible air hose. The gun itself is very lightweight and ergonomically designed for long-term user comfort and efficient operation. The console, gun, and air hose are all static-dissipative and ESD-safe. An extremely low EMI level minimizes any chance that the 980 might interfere with other electronic equipment or operations.

## 2.0 Performance

The 980 reduces a static charge of +/- 1000 V to +/- 100 V in less than 1 second at a distance of 6 inches (15 cm) and 30 psi (2 bars) inlet pressure when tested in accordance with the ESD Association ionization standard ANSI/ESD-S3.1, and IEC standard 61340-5-1, Figure A.5.14 Balance variance is within +/- 30 volts of zero at a distance of 6 inches (15 cm).

## 3.0 Power Requirements

The 980 console requires AC 24 V power, which is provided by the wall transformer supplied with the unit. An AC 120 V transformer is supplied with the model 980, and AC 230 V unit is supplied with the 980E Ionized Air Gun.

## 4.0 Air Supply Requirements

For maximized operation, the 980 should be supplied with clean, dry air, or nitrogen. The air delivery system should utilize a refrigerated dryer or equivalent water removal system to achieve an upper limit of 550 ppm water vapor at 35° F dew point. To prevent particulate from entering the air gun console, a 2 micron coalescing filter or better should be used upstream.

A compressed air prefilter can be installed at the inlet to the air gun console, such as a Finite filter Grade 10 or equivalent. Usage of such a filter prevents gross

amounts of water, particulate, or aerosols from entering the air gun console.

**Please note that the failure to use clean, dry air or nitrogen (as defined in this section) may result in damage to the 3M™ 980 Ionized Air Gun that will not be covered by warranty.**

## 5.0 Installation

Choose a location convenient to the work area and to the air supply. The console takes up very little space and is adaptable to a variety of permanent or non-permanent installations. To minimize bends in the air gun hose, orient the console so that the open end that accepts the filtered air hose to the hand unit points toward the work area, and the male connector points toward the air supply. See Figure 1.

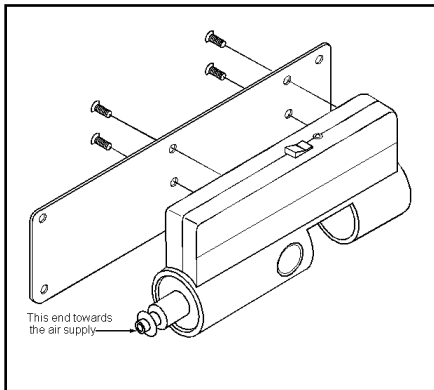


Fig. 1

## 5.1 Mounting the Console

Prior to mounting, plug one end of the supplied 10 foot (3 m) RJ-11 cable into the jack on the back of the console. Lay the cable inside the groove inside the console. Mount the console using the instructions below.

## 5.2 Permanent Mounting

- Attach the supplied mounting plate to the threaded holes on the back of the console, using the supplied screws. See Figure 1.
- Attach the plate to a flat surface, such as a wall or back of a workbench, using suitable screws and fasteners. When mounting to a hollow wall, be sure to use adequate screws and wall anchors to ensure stability of installation.

## 5.3 Non-permanent Mounting

Use 3M™ Dual Lock fastener strips or pads to attach the console to a flat surface.

## 5.4 Mounting onto an air supply

When an air supply is close to the work area and fitted with a U.S.-standard industrial interchange quick coupling, you can attach the console to the air supply fitting directly using the female quick coupler provided with the console. If a U.S.-standard industrial interchange quick change is not available on the air supply, be sure to use a suitable interconnect between the air supply and the console, including a prefilter as defined in Section 4.0.

## 6.0 Assembling the Components

### **CAUTION!**

Protect the hose from sharp objects, abrasion, and high temperatures. Do not pull or pinch the hose while assembling the components.

**6.1** Insert the larger end of the filter cartridge into the fitting at the end of the flexible air hose. Push the filter gently until it is firmly seated and the metal Filter Release Tab pops out, locking the filter into place. See Figure 2.

**6.2** Connect the hose and filter to the console. First, push the Filter Release Button (Figure 3) in all the way. Then, push the fitting containing the filter all the way into the opening in the console until it latches with a click. The fitting fits only in the correct orientation. The small plastic fitting on the end of the filter must align with the metal guide coupling in the console. You may have to wiggle the filter slightly while inserting it. See Figure 3.

**6.3** Connect the male (air inlet) fitting on the console to the air supply. The console is designed for a U.S.-standard, industrial interchange quick coupling. You can attach the console directly to the air supply using the female quick coupler provided with the console, or attach it using a hose (not supplied) or some other

interconnect. In both cases, use a prefilter as defined in 4.0.

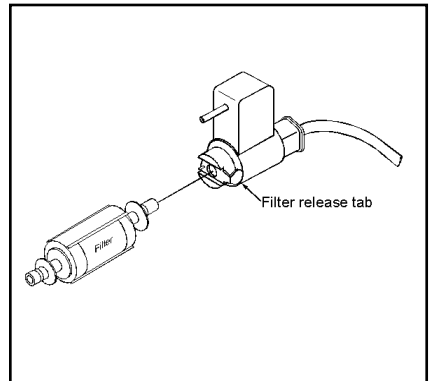


Fig. 2

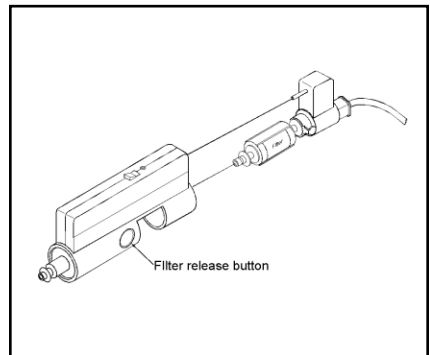


Fig. 3

**6.4** If you have purchased the optional foot switch, plug its cable into the jack on top of the console (next to the power switch).

## 7.0 Operation

### **WARNING!**

The 3M™ 980/980E Ionized Air Gun is NOT for use in hazardous environments where the possibility of explosion exists.

- 7.1 Make sure the Power Switch on the top of the console is in the OFF position. Insert the end of the 10 foot (3 m) RJ-11 cable into the output jack on the supplied wall transformer. Insert the wall transformer into a properly grounded AC 120V (for 3M 980 Ionized Air Gun) or AC 230V (for 3M 980E Ionized Air Gun) receptacle. Use only the correct transformer, as use of an incorrect wall transformer may result in damage to the unit. Refer to Section 3.0 for additional information.
- 7.2 Secure the power cord so that it cannot accidentally pull the console and gun off the workbench.
- 7.3 For safety and the most efficient ionization, set the pressure regulator on your air or nitrogen supply between 20-65 psi (1.4 - 4.5 bars). Discharge times vary depending on air pressure.

#### **Note:**

*Pressures of 30-40 psi (2.0-2.8 bars) are commonly used for decontaminating surfaces. Please refer to the pertinent regulations concerning maximum air*

*pressure on hand-held air blow devices in order to determine a safe operating pressure.*

### **WARNING!**

Use of this equipment with air pressure above 65 psi (4.5 bars) is NOT recommended.

The unit is rated at 65 psi (4.5 bars) inlet pressure, at temperatures up to 75° F (24° C), and the rating decreases at higher temperatures. When using high pressures, consider the ambient room temperature as well as heat from surrounding equipment.

- 7.4 Verify that neither the gun trigger nor the foot pedal is depressed. Turn the power switch on the console to ON. The green LED on the console should illuminate.
- 7.5 Hold the gun approximately 6 inches (15 cm) from the surface you want to discharge and blow off. Aim the gun and press the trigger to blow ionized air. The green LED on the back of the gun lights up while you press the trigger, indicating that the gun is ionizing. Typically, static electricity on a surface will be discharged within one second. Release the trigger when the surface is assumed to be clean.
- 7.6 When the optional foot switch is installed, you can use either the foot switch or the handhold trigger.

**7.7** If the gun is not in use, it is recommended that the Power Switch on the console be turned off. This will avoid unintentional operation of the gun. The included S-hook may be used to hang the gun out of the way but still within reach.

## 8.0 Maintenance

The 3M™ 980/980E Ionized Air Gun requires very little maintenance. Occasional cleaning of the case and emitter points, and periodic replacement of the air filter are all that is required. Always be sure to protect all components from liquids and corrosive chemicals. Carefully follow these maintenance instructions.

### CAUTION!

Always disconnect power and air supplies before cleaning or replacing components.

## 8.1 Cleaning the Components

- 8.11 Using a cloth moistened with isopropyl alcohol, wipe the exterior surfaces of the console and gun to remove any dirt or dust that may have collected.
- 8.12 Using a swab moistened with isopropyl alcohol, gently clean the emitter points on the gun. Extremely dirty emitter points will increase the time needed to discharge static.

## 8.2 Replacing the Air Filter

3M recommends changing the filter every three months or when it begins to look dirty. Replacement filters are available from 3M; see Table 1.

- 8.21 Hold down the filter release button on the side of the console.
- 8.22 Remove the hose and filter from the console by pulling the textured rubber plug where the hose emerges from the console. Rocking the plug back and forth can help loosen the filter. Do not pull the hose itself. Remove the filter from the hose fitting by depressing the metal release tab on the fitting and pulling the filter.
- 8.23 To install the new filter, follow the directions described previously under Sec. 6.0.

## 8.3 Replacing the Emitter Points

The emitter points, built into the plastic tip of the gun, usually last the life of the unit. However, the tip should be replaced if it is broken, or if the points are bent, broken, otherwise damaged, or if you are unable to remove dirt by cleaning the points with isopropyl alcohol. A replacement tip containing a pair of emitter points is available from 3M; see Table 1.

- 8.31 Insert the tip of a screwdriver into the slot on the gun barrel. See Figure 4.
- 8.32 Using the screwdriver as a lever, loosen the old clip, grasp it between your thumb and forefinger, and detach it from the gun. The emitter points are very sharp; touch only the plastic lip, and handle it carefully. To avoid damaging the points, do not touch them with hard objects such as a screwdriver.
- 8.33 To insert the new emitter points, hold the gun with the barrel pointing up.
- 8.34 Grasp the new clip between your thumb and forefinger, and align it so the curved edges match the curve of the inside of the gun barrel.
- 8.35 Align the blunt prongs of the emitters with the holes in the barrel and set the clip into place.

- 8.36 Press the clip all the way in using the tip of a screwdriver. It should fit snugly between the raised rim of the barrel and the raised rim of the air nozzle. If the clip overlaps the air nozzle, it is installed backward.

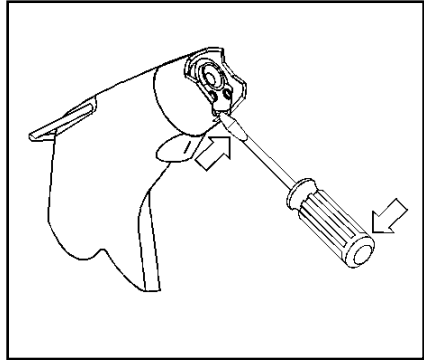


Fig. 4

## 8.4 Replacement & Optional Parts

Table 1 lists the replacement parts and optional parts available for the 3M™ 980/980E Ionized Air Gun.

Part	Part #	Status
120 Volt AC Wall Transformer	960X/980X	Replacement
230 Volt AC Wall Transformer	980E-X	Replacement
Air Filter 3-Pack	980-F	Replacement
Mounting Stand	980-G	Optional
Plastic Gun Tip	980-T	Replacement
Foot Switch	980-S	Optional

Table 1: Replacement and optional parts



## 8.5 Testing for Proper Operation

8.51 To make sure that your ionizing air gun is working properly, check the balance and discharge levels. The performance of the unit should be measured periodically using a charged plate monitor, such as the 3M™ 711 Charge Analyzer or the 3M™ 713 Handheld Ionizer Tester.

8.52 Calibration should be performed in accordance with the ESD Association ionization standard ANSI/ESD-S3.1, or the IEC standard 61340-5-1, Figure A.5.14. At a line pressure of 30 psi (2 bars), discharge of +/- 1000 volts to +/- 100 volts should require less than 1 second at a distance of 6 inches (15 cm) and balance should be within +/- 30 volts of zero.

## 9.0 Specifications for 3M™ 980/980E Ionized Air Gun

### 9.1 General

Audible Noise	73dBA @ 1 meter, 30 psi (2 bars) pressure to air gun
Conducted EMI	29 dBμ, average level, from 100 kHz-1.1MHZ
Ozone	<0.005 ppm (24 hour accumulation)
Certifications	UL and C-UL for 980 CE for 980E

### 9.2 Hand Unit

Construction	Static-dissipative polycarbonate
Ion Emission	Steady-state DC
Emitter Points	Tungsten alloy
Ion Indicator	Green LED
Air Hose	7' (2.1m) length, 3/8" (0.96 cm) outside diameter of static-dissipative polyurethane
Gun Hanger	#302 stainless steel
Dimensions	8.0" L x 3.0" W x 1.0" D (20.3 cm L x 7.6 cm W x 2.5 cm D )
Weight	12.0 oz. (341 g) with 7' (2.1 m) air hose

# Specifications for 3M™ 980/980E Ionized Air Gun

## 9.3 Console

Construction	Static-dissipative polycarbonate
Input Power	AC 24 V, <10 Watts, powered from wall transformer
Power Indicator	Green LED
Air/Gas Input	20-65 PSI (1.4 - 4.5 bars), clean dry air or nitrogen
	<b>For safety purposes, this unit has been tested at 1.5 times these air pressures.</b>
Air/Gas Connection	1/4" (0.64 cm) male US-industrial interchange quick disconnect and 1/4" (0.64 cm) NPT female coupler
Air Filter	99.9% efficient, 0.1 micron or larger
Mounting	Metal mounting plate attaches to back of the unit
Dimensions	8.5" L x 3.0" W x 1.6" D (21.6 cm L x 7.6 cm W x 4.1 cm D)
Weight	11.5 oz (326 g)

## 9.4 Wall Transformer

Input Power	980: AC 120 V (960X/980X) 50/60 Hz 32 watts 980: AC 230 V (980E-X) 50/60 Hz 32 watts
Output Power	AC 24 V, 1.0 amperes
Cabling	10' (3 m) cable with RJ-11 connectors
Dimensions	3.2" H x 2.6" W x 1.9" D (8.1 cm L x 6.6 cm W x 4.8 cm D)
Weight	16.0 oz (454 g)
Certifications	UL, C-UL (AC 120 V model), CE (AC 230 V model)

## Customer and Technical Service

Within the United States: Customer service and technical support can be obtained by calling the 3M Electronic Handling & Protection Division  
Customer Service Dept.: (800) 328-1368  
Technical Support Helpline: (512) 984-3200

Outside of the United States: For customer service and technical support, please contact your local representative of the 3M Electronic Handling & Protection Division.

## Warranty

### **Important Notice:**

Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

### **Warranty; Limited Remedy; Limited Liability.**

This product will be free from defects in material and manufacture as of the date of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any loss or damage arising from this 3M product, whether direct, indirect, special, incidental or consequential regardless of the legal theory asserted.**



### **Electronic Handling & Protection Division**

6801 River Place Blvd.  
Austin, TX 78726-9000  
(800) 328-1368  
[www.3m.com/ehpd](http://www.3m.com/ehpd)



*Recycled paper  
40% pre-consumer  
10% post-consumer*

Litho in U.S.A.  
© 3M IPC 2001  
34-7051-6999-2