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INSTRUCTIONS

Operation/Maintenance

PulseGun™ 8 (PG-8) Cleanroom Ionizing Air Gun



The PulseGun™ 8 (PG-8) Ionizing Air Gun is a sturdy yet compact and lightweight ionizing air gun especially designed for use in Class 10 and Class 100 Cleanroom environments.

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SECTION 1 Description

The PulseGun 8's focused air flow neutralizes static charges while it blows off dust and contamination particles from the surface of your products. Fast neutralizing times reduce down time and product rejection. A stainless steel hook located behind the air nozzle allows easy, convenient hanging and quick access. The easy-to-depress lever assures operator comfort.

Located within the PG-8 nozzle, a disposable 0.2 micron filter with over 50 cm² of effective filtration area eliminates the problem of particles in the air line. Depending on the PG-8's usage and the quality of the air, the filter generally lasts about 3 months.

The PG-8 incorporates two replaceable, tungsten electrodes enclosed within its removable air nozzle.

SECTION 2 Safety

Important! Do not use the PulseGun 8 with any power supply other than an AirFlow Controller (AFC-2). Damage to the PulseGun will result and all warranties shall be voided. Do not connect more than one PulseGun to one controller. The PulseGun 8 must be properly grounded to ensure safe and reliable operation.

The electric current available at an AFC-powered emitter electrode is approximately 25 microamps. This level of current is well below the industry safety standard limit of 3.5 milliamps r.m.s. (EN 60950, 5.1) for pluggable equipment. Accidentally touching an electrode will produce a mild tingle sensation.

SECTION 3 Features

- Sturdy, rugged construction
- Field-replaceable electrodes
- Ergonomically designed body
- Stainless steel hook for easy hanging and access

SECTION 4 Specifications

Weight:	14 oz. (400 grams) (includes cable)
Size:	1.25" (32 mm) diameter X 5.75" (146 mm) length
Material:	White Delrin with 1" I.D. stainless steel hook
Electrodes:	Field replaceable tungsten electrodes
Filter:	0.2 micron hollow fiber cellulose
HV Cable Length:	84" Long, HV cable with HV connectors
Air Hose Length:	90" (190 mm)
Air Hose Type:	1/4" O.D., 3/16" I.D., Polyurethane tube
Flex Hose Type:	1/2" I.D. PVC

SECTION 8 Replacement Parts

<u>Description</u>	<u>Part Number</u>
PG-8 PulseGun 8 Ionizing Blowoff Gun	4005150
PG-8 with Air Flow Controller (AFC-2) -115V, 60 Hz	5050871
PG-8 with Air Flow Controller (AFC-2) -230V, 50 Hz CE	5050877

SECTION 9 Warranty

SIMCO warrants its products to be free of defects in components, workmanship, or materials for a period of one year from date of purchase. This warranty does not apply to any physical or electrical damage caused by misuse, abuse or negligence (such as any modifications made to the unit or service work done by any other than SIMCO authorized technicians). Any unit with altered or removed serial number is ineligible for warranty.

All products returned must have an "RA" (Return Authorization) number regardless of warranty status. Call SIMCO for an assigned RA number.

SIMCO will not be liable for loss or damage due directly or indirectly to an occurrence or use for which the product is not designed or intended. In no event shall SIMCO be liable for incidental or consequential damages except where state laws override.

This warranty extends to the original purchaser and is not transferable. No person, agent, distributor, dealer or company is authorized to change, modify, or amend the terms of this warranty in any manner whatsoever.

Information in this document is subject to change without notice and does not represent a commitment on the part of SIMCO. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose other than the purchaser's personal use without written permission of SIMCO.

Electrode Inspection

The PG-8's electrodes are made of pure tungsten. The positive electrodes typically wear faster than the negative. The shape of the electrode allows it to wear evenly without diminishing the ion generation. Replace the electrode when the point reaches a length of 1/16" (1.6 mm) from the socket base or if the tip is unevenly worn. Always replace both electrodes at the same time to ensure optimum performance.

1. Turn the power to the AFC-2 OFF prior to any servicing or cleaning.
2. Inspect the electrodes for excessive wear or particle accumulation and make sure they are firmly seated.
3. Clean the electrodes every three months using a soft, short-hair brush or lint-free swab and dilute IPA.
4. Replace the 0.2 micron filter at least every three months, depending on frequency of use and the quality or type of air.
5. Replace the electrodes approximately once every 2 years, depending on frequency of usage.

NOTE: The PG-8 actuator valve and lever are self-contained and do not require lubrication.

Electrode Replacement

1. Turn power to the AFC-2 **OFF**.
2. Remove the nozzle from the PG-8 by holding the gun body with the nozzle pointing toward you and rotating the nozzle counterclockwise.
3. Pull each electrode straight out from its base using a small pair of needle-nose pliers. Do not squeeze the electrode too hard with the pliers, as splintering may occur.
4. Hold the new electrode at its base using a pair of small needle-nose pliers and carefully insert the blunt end into one of the socket bases.
5. Carefully hold the electrode at its milled end near the point and push the electrode down into the base until firmly seated.
6. Repeat steps 4 and 5 for the other electrode.
7. If the spring socket bases are damaged or loose inside the PulseGun base, discontinue use and return the unit to SIMCO.

Should any damage to the PG-8 occur, immediately discontinue use and return the defective unit to SIMCO for repair or replacement. See Section 9, *Warranty*.

Input Pressure:	5 to 100 PSI. (Tip pressure will not exceed 30 PSI if nozzle is dead-ended at maximum input pressure to meet OSHA requirements.)
Air Flow:	1 SCFM at 10 PSI 6 SCFM at 50 PSI 11 SCFM at 100 PSI
Input Voltage:	4 kV to 10 kV (current limited)
Typical Decay Time:	<2 sec from 1,000 V to 100 V @ 6" (152 mm) and 30 PSI

SECTION 5 Installation

Filter Installation

Since most companies perform a pre-cleanroom treatment of their equipment, and to ensure minimum particle contamination, the PG-8 is shipped without the 0.2 micron filter installed. SIMCO recommends that the filter be installed inside the cleanroom before use.

1. Remove the nozzle from the PG-8 by holding the gun body and rotating the nozzle counterclockwise.
2. Remove the 0.2 micron filter from its sealed bag. DO NOT touch the epoxied end of the filter, as contamination may occur.
3. Carefully insert the epoxied end of the filter into the gun body and turn slightly counterclockwise until the threads line up or click. This helps prevent cross-threading.
4. Hand-tighten the filter clockwise until firmly seated against the gun body. DO NOT use any tools to tighten the filter as damage to the filter or PulseGun may occur.
5. Fasten the nozzle onto the gun body and hand-tighten securely by rotating the nozzle clockwise.

Electrical Connections

1. Remove the knurled thumb-nut from the ground post located on the rear panel of the AFC power supply chassis (see Figure 1). **Do not** remove the starlock washer.
2. Place the ground wire ring-lug and the strain-relief lug from the PG-8 onto the ground post and thread the knurled thumb-nut onto the post.
3. Hand-tighten the knurled thumb-nut securely.
4. Insert one of the HV plugs from the PG-8 into the positive output connector located on the rear panel of the power supply and the other HV plug into the negative output connector. The PG-8 is not polarity sensitive.

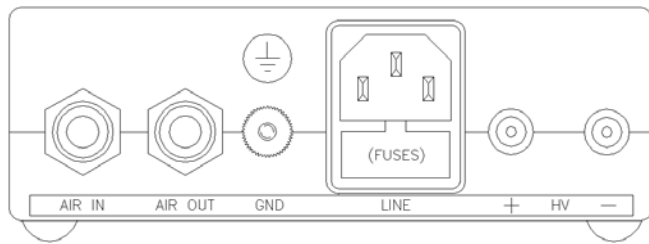


Figure 1 Power Supply Rear Panel

PulseGun Tubing and Fittings

The PulseGun 8 comes with an extra-long air supply tube for use in various applications. The following instructions describe how to shorten the tubing, attach the push-in fitting and remove the push-in fitting.

a. To shorten the length of air supply tubing:

- Measure the flexible tubing to the desired length, add 0.700" (17.8 mm) from the measurement and mark. (The added length fits inside the fitting).
- Cut the tubing straight across the mark (90°) using a single-edge razor blade. Do not use cutters as they tend to pinch the tubing.
- Discard the excess tubing.

b. To attach the push-in fitting:

- Carefully insert the tubing into the lock-ring in the small end of the fitting approximately 0.400" (10.16 mm).
- Exert a little pressure to insert the tubing completely into the fitting another 0.300" (7.62 mm). The lock-ring should firmly grip the tubing and not allow the tubing to pull out.

c. To remove the push-in fitting:

- Compress the lock-ring against the main body of the fitting using your thumb and index finger and, simultaneously, pull the tubing straight out from the fitting.

Air Line Connections

To connect the PulseGun 8 to the AFC-2 Controller, proceed as follows.

1. Insert the 1/4" diameter tubing from the PG-8 into the fitting marked AIR OUT on the AFC and push the tube in.
2. Connect the AFC-2 to clean dry compressed air using 1/4" diameter polyurethane or plastic tubing of a suitable pressure rating. The air supply is to be connected to the fitting marked AIR IN on the AFC-2. Pressure should not exceed 100 PSI.

SECTION 6 Operation

IMPORTANT! Do not use the PulseGun 8 with any power supply other than an AFC-2. Damage to the PulseGun will result and all warranties shall be voided. Do not connect more than one PulseGun to one controller.

The PulseGun 8 connects to an air line to provide an ionized air source for use in many different applications. By using a PG-8 with a power supply with an internal air flow switch, such as the AirFlow Controller, static neutralizing ions only emit when air flows through the PulseGun. The power supply controls the output voltages. The AFC-2 should be set in SS (Steady State) operating mode.

Connect the PulseGun 8 to a compressed air line with sufficient air pressure for the intended application. To ensure optimum static neutralization, an air pressure as low as 5 PSI (0.88 kg/cm) provides enough flow to completely neutralize static charges at close distances.

IMPORTANT! For most applications, SIMCO recommends an air pressure between 15 and 50 PSI (6.75 and 17.71 kg/cm). However, should an application require a greater air pressure, DO NOT exceed 100 PSI.

1. Turn the power to the AFC Controller **ON**.
2. Hold the tip of the PG-8 at least 6" (152.4 mm) away from the surface and press the actuator lever to blow ionized air.
3. Hang the PG-8 on its custom stainless steel hook when not in use to prevent accidental damage.

Calibration

The ion balance and pulse rate settings on the AFC-2 power supply are factory set before shipment and should be adequate for most applications. Before making any adjustments, make sure the electrodes of the PG-8 in use are clean and that the filter is new.

Simco recommends verifying operation for all ionizers every three months. Check with a Charge Plate Monitor (SIMCO Model EA-3).

Refer to the AFC-2 Owner's Manual for additional information and procedures regarding calibration.

SECTION 7 Maintenance

CAUTION!
Disconnect power from the PG-8 before performing any maintenance procedure, such as replacing electrodes.