Comco ESD Control ProCenter

CTR101-1

Abrasive blasting tends to cause electro-static charging of the target areas of the work piece, and charge fallout over other areas. The charging currents are at most a few nano-amperes but can produce very high voltages on small objects. For electronic circuit boards the charging currents are generally not a problem. If these currents cause high voltages to be built up and the resulting charged area sparks to other parts of the board, damage may, and probably will, occur.

The ESD Control model of the Comco ProCenter employs features that help reduce the danger of electro-static charge build up, sparking, and damage to the work pieces.

HOW IT WORKS:

The ESD Control ProCenter is equipped with a 48-emitter ionizer bar which uses a small amount of compressed air to produce a balanced, laminar sheet of air to carry static eliminating ions to the work area. The pressurized air is passed by an air knife under the ionizer emitters, flooding the work area with highly ionized air that quickly neutralizes surface charges. This ProCenter also contains facilities for nozzle and work piece grounding, and static dissipative floor panels.

> **The ionized air system is only effective with the ProCenter turned on and air flowing out of the air knife under the ionizer emitters. Never blast on sensitive parts when the unit is turned off. Do not blast inside the chamber without air flowing out of the air knife. Abrasive particles could migrate into the air passage slit of the air knife and clog it.**

The board edge-connector grounding bar (WS2023) should be used to ground all edge pins on boards that have edge connectors. This device is made of a conductive rubber material and connected through a 1-megohm resistor to a banana plug that should be plugged into one of the grounding receptacles located at the right rear corner of the work chamber area. It is recommended that as many connectors as possible on the target board be grounded.

The needle probe (WS2021) is used to pierce through the conformal coating to ground a target trace when the defect is known to be an open trace with no conductive path to ground. The abrasive blast can quickly charge an open section of trace to voltages high enough to break down the insulation and spark to other traces, or across the defect. The spark currents can be very high and cause damage. The ionized air can neutralize the field by depositing a lot of charge on the outside of the coating, but this still leaves a dangerously charged trace. The needle probe provides a solution in the special case where a batch of boards with this type of known defect must be repaired.

A grounded handpiece assembly (WS2030-2) with a conductive nozzle is provided with the ESD Control ProCenter. Always use the grounded handpiece and conductive nozzle. Some abrasives can build up an electrical static charge in the handpiece. Proper grounding of the nozzle and handpiece will reduce the charge on the abrasives and prevent an electro-static charge from being built up in the nozzle and operator and arcing to the target area of the work.

GUIDELINES FOR USING THE ESD CONTROL ProCenter:

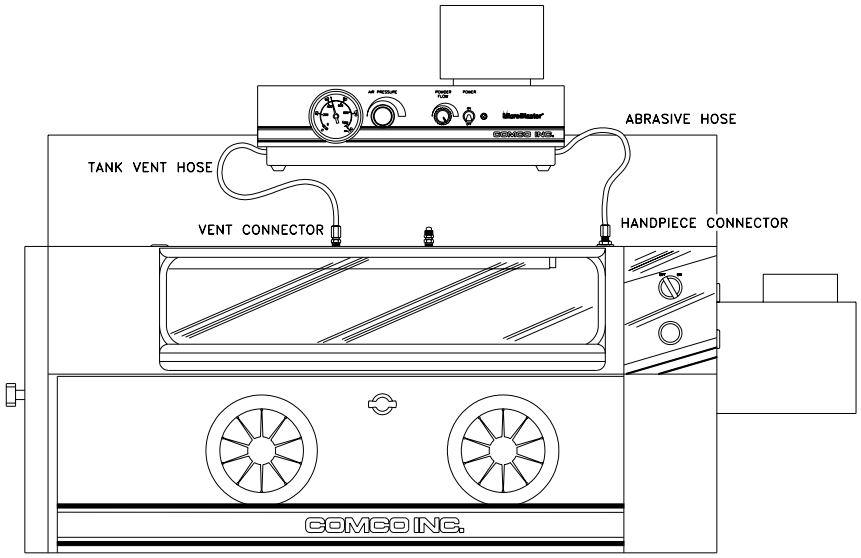
1. It is essential that the frame of the ProCenter be electrically grounded, either through well-grounded electrical conduit, or by heavy copper wire connecting the frame to a water pipe.
2. Always close the ProCenter loading door before blasting.
3. Always make sure air is flowing through the air knife before blasting.
4. Ground as many connectors on the board as possible.
5. If possible use an abrasive that produces low charging.
6. Always use a grounded handpiece and nozzle.
7. The use of operator grounding devices is recommended.
8. Observe good board handling procedures both in and out of the ProCenter.

MicroBlaster Abrasive Hose and Vent Hose Connections

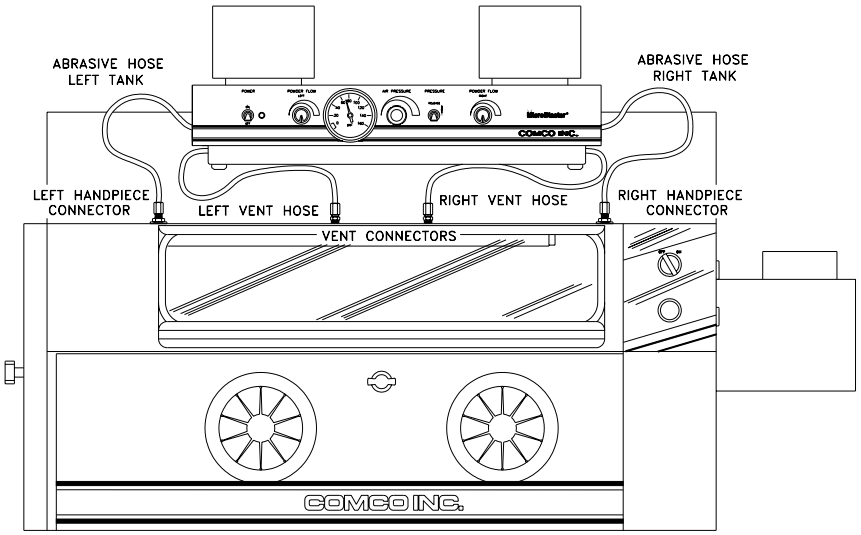
ESD Control ProCenters are equipped with ESD Control handpieces, which are installed in the ProCenter. MicroBlasters prepared for use with the ESD Control ProCenter are shipped without the standard handpieces and have their abrasive and vent hoses cut to proper length for installation. Refer to the following drawings for correct hose connections.

Note: When routing abrasive or vent hoses, avoid sharp bends to prevent excessive hose wear.

If you are connecting a MicroBlaster that has the standard handpiece(s) installed, remove the handpiece(s) and trim the hose lengths to form a 4-5" diameter loop exiting the fittings on the back of the blaster. Allow a smooth path to the connection points on the ProCenter.



Single Tank MicroBlaster



Dual Tank MicroBlaster

MAINTENANCE:

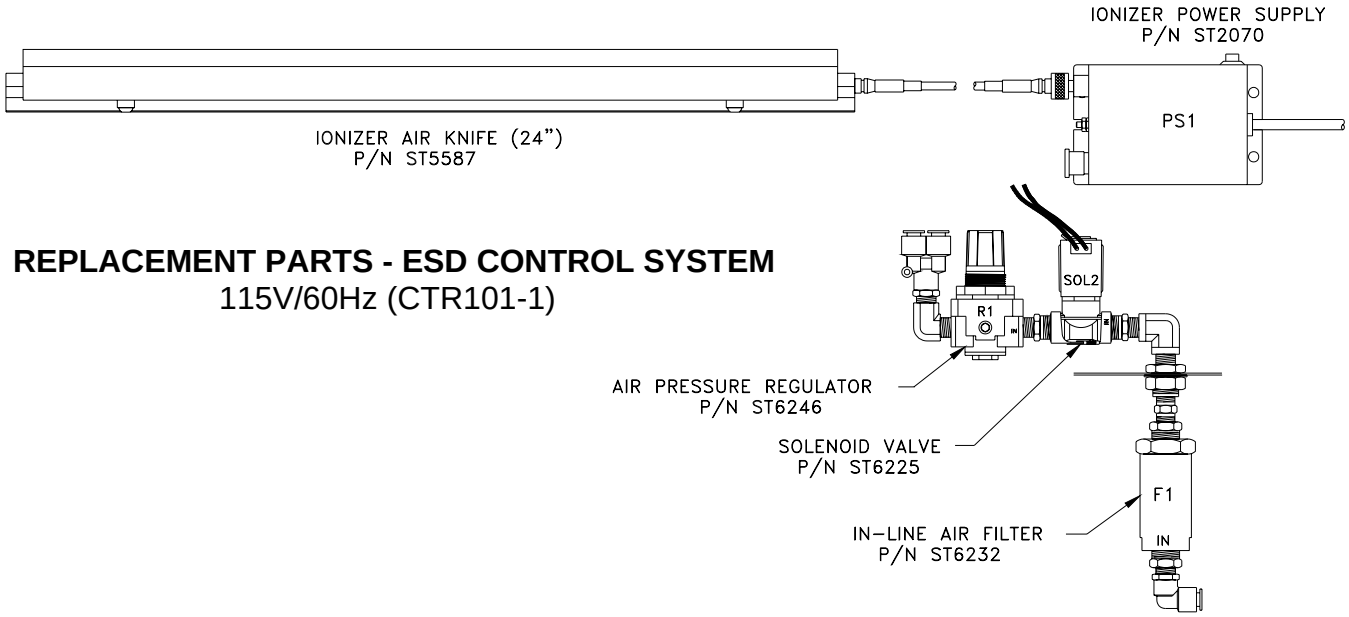
Some abrasives may cause contamination of the ionizer needles. They can be cleaned and sharpened by using a small stiff brush and eraser, (pencil or ink) to remove any beads of residue and sharpen the points. The emitters only work properly when they are clean and quite sharp. The emitters can be cleaned with the brush while the ionizer-air knife is installed in the unit. The ionizer-air knife assembly will have to be removed from the unit to sharpen the points. Always turn the unit off prior to cleaning the ionizer needles.

CAUTION: HIGH VOLTAGE HAZARD!

The transformer, which supplies the ionizer bars, supplies 7000 volts at power frequency. The current is limited to 0.005 amperes but it poses a shock and arcing hazard. The ionizer needles themselves are NOT directly connected to this voltage and pose no shock hazard. Do not work on the high voltage cables or connectors with the ProCenter connected to the AC power.

The Ionizer Air Knife's airflow is adjusted at the factory and should not require any further adjustment. The airflow should be adjusted to achieve a light, even flow of air over the work area inside the work chamber. If the dust collection motor is unplugged during checking of the airflow, a better feel of the airflow can be obtained. If adjustment is required, the regulator is located behind the electrical compartment access panel on the right hand side.

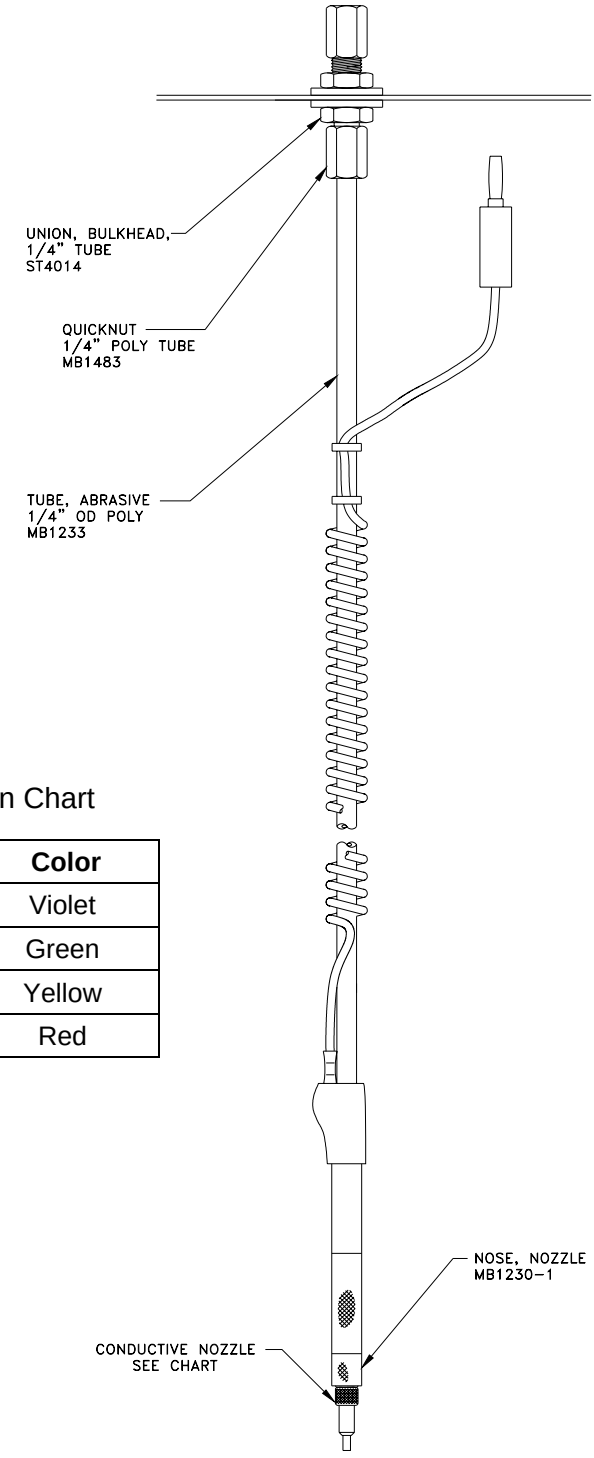
If the air is not flowing properly, look for other possible causes. If the air passage slit becomes clogged with abrasive, momentarily turning up the airflow with the regulator may clear the particles. Be sure to return the regulator to its proper setting. If the air knife needs to be disassembled for cleaning, the complete air knife and ionizer bar assembly will need to be removed from the unit. The air knife consists of 2 half's and a shim between them. The air knife can be disassembled by removing the 12 socket head screws. After the air passage areas have been thoroughly cleaned. Replace the shim between the 2 half's and install the 12 screws. Retighten the screws to 7.5 ft/lbs. Tighten bolts in a sequence starting from one end and work towards the opposite end.



REPLACEMENT PARTS - ESD CONTROL SYSTEM

115V/60Hz (CTR101-1)

HANDPIECE ASSEMBLY – ESD CONTROL
WS2030-2



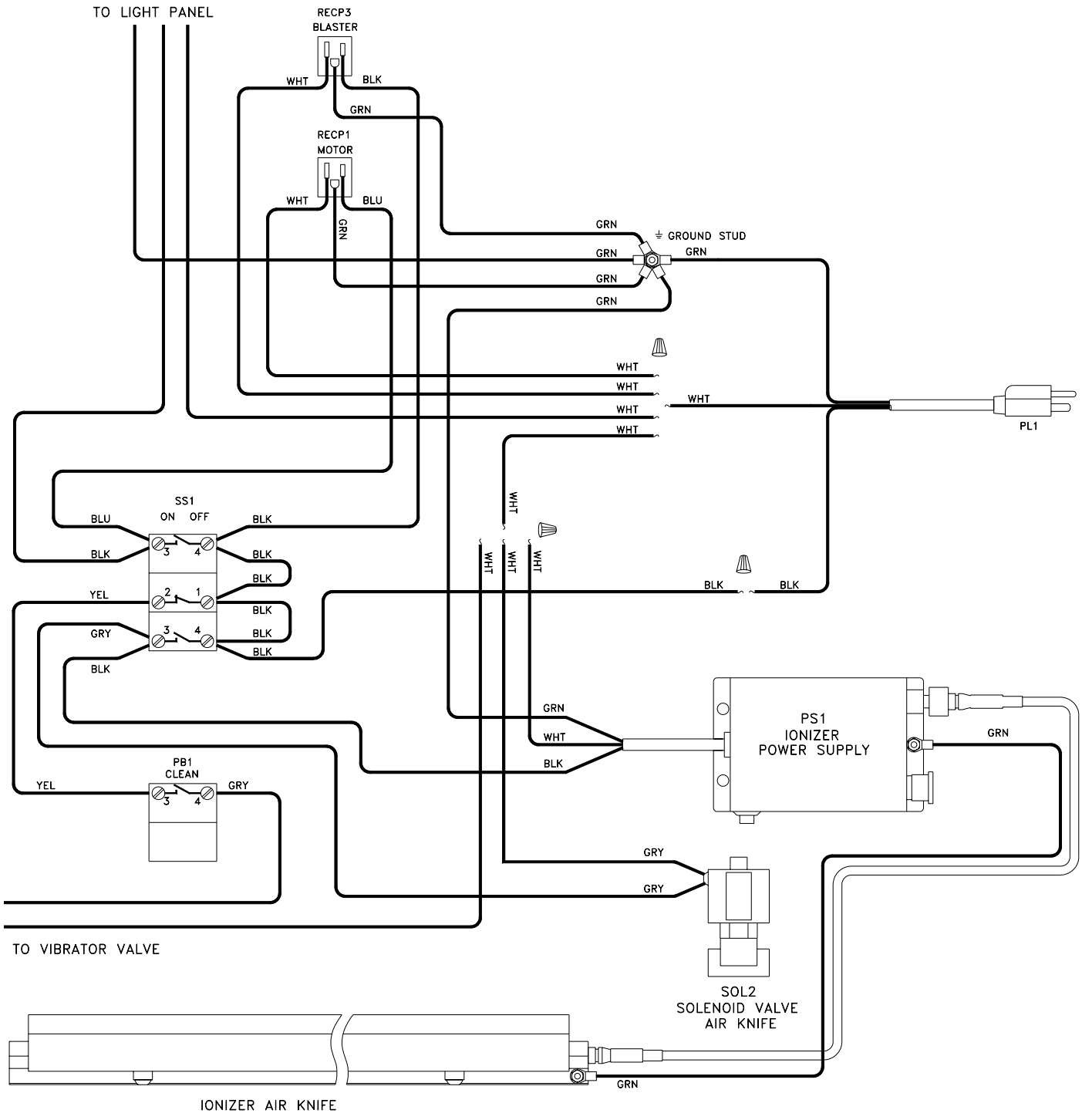
Hi/Performance Conductive Nozzle Selection Chart

Part Number	Nozzle Opening (ID)	Color
MB1520-24C	.018”	Violet
MB1520-11C	.030”	Green
MB1520-29C	.046”	Yellow
MB1520-39C	.060”	Red

For Complete ESD Handpiece Assembly (as shown). Order Part No. WS2030-2

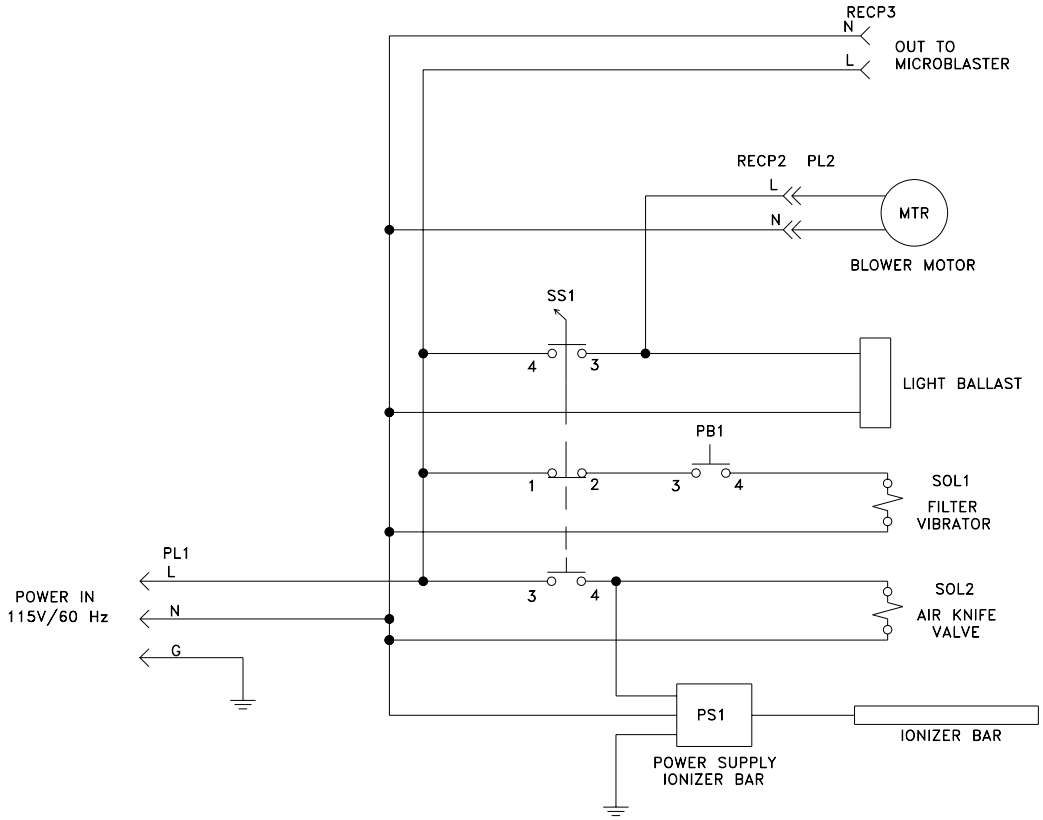
ELECTRICAL WIRING DIAGRAM ESD CONTROL SYSTEM

115V/60 Hz (CTR101-1)



ELECTRICAL SCHEMATIC DIAGRAM ESD CONTROL SYSTEM

115V/60 Hz (CTR101-1)



PNEUMATIC DIAGRAM ESD CONTROL SYSTEM