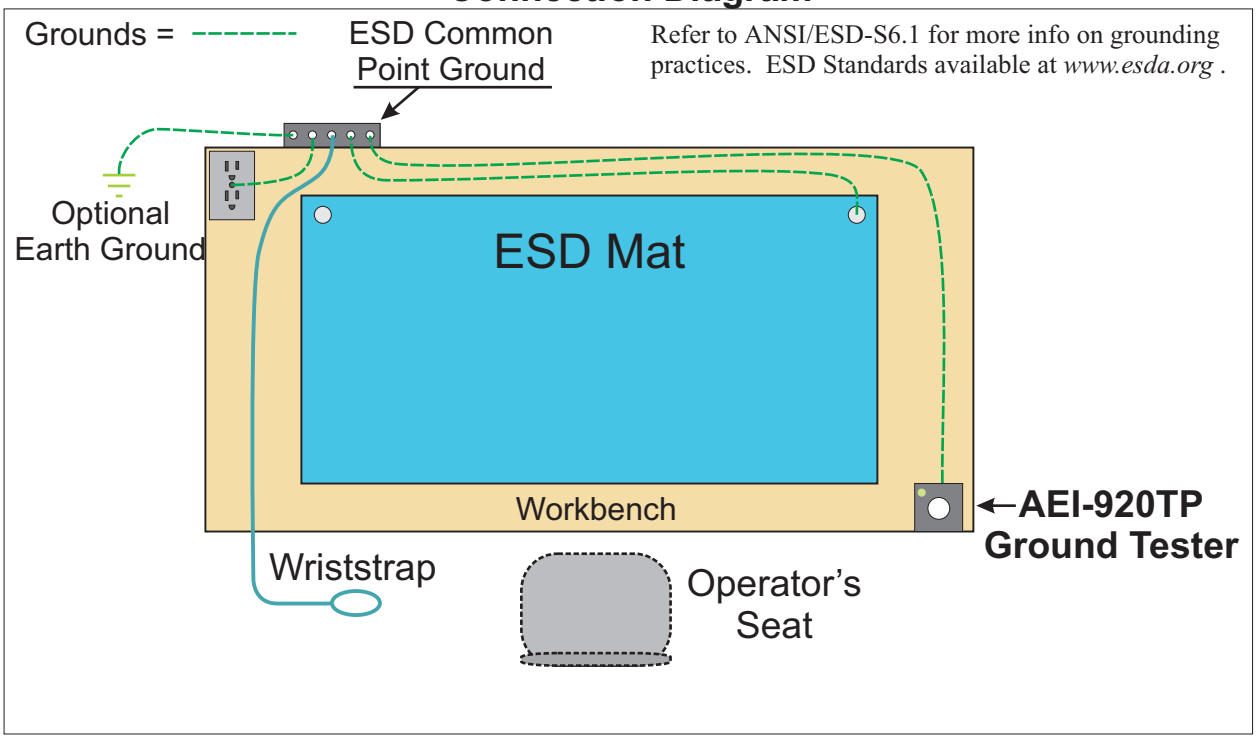
ARATRON II ELECTRONICS, INC.

Installation and Test Procedures for the AEI-920TP Ground Tester

1. Mount the AEI-920TP in a convenient place on the workbench.
2. Connect the AEI-920TP ground wire to the ESD Common Point Ground.
3. Plug a wrist strap into the ESD Common Point Ground and put it on. When you turn the AEI-920TP on and touch the Touch Pad, the OPERATOR LED should turn green. If it doesn't, touch the wrist strap to the common point ground. If the OPERATOR LED turns green, then the wrist strap was not making good contact with the OPERATOR.

Note: Skin contact resistance varies a lot. While moist skin is a fairly good conductor, dry skin is an insulator. People with dry skin may need to use an appropriate moisturizer under the wrist strap and on the finger tips that touch the tester contact pad.

Connection Diagram



Testing the operation of the AEI-920TP:
The green LED should light when you press on the unit. It should light if you touch the wrist strap contact to the tester pad. A more direct test is to take the tester ground wire and touch it to the pad. If that doesn't cause the LED to light, then the unit may be defective.

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Electrical Environments and Continuous ESD Monitors.

Continuous ESD monitors like the AEI-ST/DT series and the AEI-920xD series operate by sensing fairly high impedance loads in the form of wriststraps and body capacitance on the operator connections and high resistance matting on the bench ports. Relatively small signals are used and sensed to detect the operators on the wriststraps and the bench mat grounding. Both of these things make them sensitive to the electrical environment that they are used in. Other equipment with similar characteristics like audio and measurement systems have the same problems.

The purpose of ESD monitors and matting is to drain off electrical charges **slowly** to eliminate damaging potentials. Low impedances like a direct ground connection let the current get too high when discharge occurs and that is what can cause ESD damage. High impedances allow only small currents that don't cause ESD damage.

The worst offenders are electrical motors. Many electrical motors generate electrical noise that cannot be filtered because the signal levels are too high. Motors like these probably should not be included in an "ESD Safe" environment in the first place. The signal levels can be so high as to cause an ESD event all by themselves. Note that this noise can come through the air or be conducted through the power lines themselves. Conducted noise can be reduced by filtering the power lines. Electrical noise induced through the air can only be reduced by moving the noise source away from the affected equipment.

Fluorescent lamps can be a significant source of electrical noise also. They radiate noise as the tubes turn on and off. The electrical ballasts radiate magnetic signals that are difficult to filter.

Continuous ESD monitors should be used in a relatively benign electrical environment. That also applies to the equipment being assembled. If your electrical equipment is causing alarms in your ESD monitors, then you should question whether that equipment should be there. Clean, noise-free power and good ground systems are requirements for the ESD monitors as well as the equipment that is being assembled.

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