

ELECTRICAL INSTALLATION PROCEDURES

For Custom Grid Assemblies & Power Generators



Note: Factory trained or suitably qualified personnel must perform this installation.

General:

Figure 1 shows the general recommended arrangement of the Power Generator, Input Power and Safety Door Switch in relation to the grid assembly within the plenum.

The solid state power generator produces a high-voltage (HV) direct current, which is carried to the smaller HV grid by the red wire. The generator also produces a high-frequency (HF) alternating current, which is carried to the HF screen grid by the black wire. The power generator is supplied with a red 9' (2.8m) output cable with a potted male plug. Ring terminals, supplied loose, are used for field installation for the interconnection of output power to the grids. Also provided is a black HF and green ground cable of similar length. The electrical contractor must provide input power wiring and conduit.

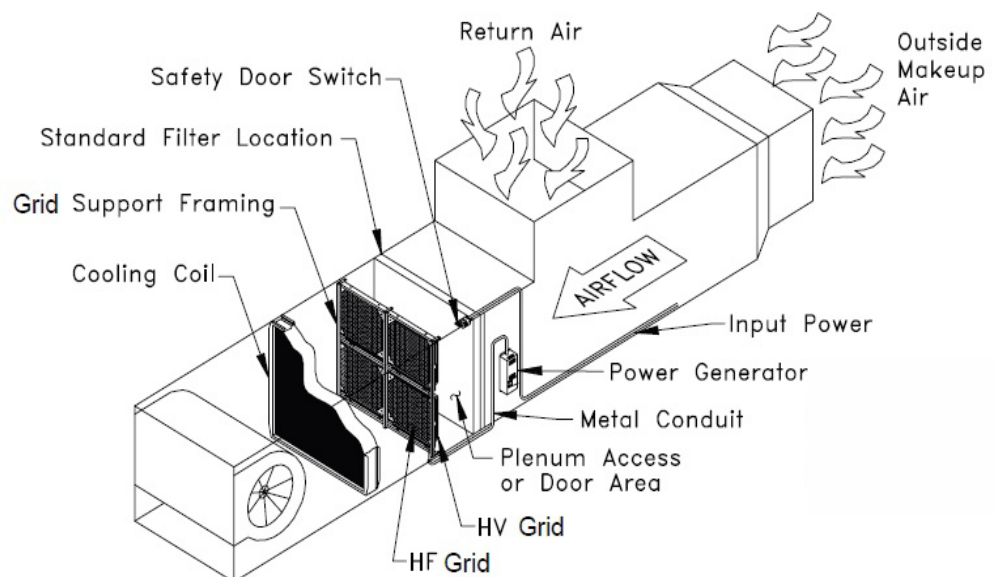


Figure: 1 typical installation

Mounting the Power Generator:

As shown in Figure: 1, 2 & 6, the power generator must be mounted as close to the grids as possible. (No further away than 9' (2.8m) wire length.)

Note: Mounting the power generator more than 9' (2.8m) from the grids voids the warranty.

If mounting within 9' (2.8m) of the grids creates an observation problem, an optional Remote Indicator Lamp Unit is available for observation at a suitable location. In those instances where the customer has a building management system, CosaTron can also provide an optional system that provides dry contacts, which will interface with it.

The power generator can be mounted on the exterior or interior plenum wall using the cabinet mounting flanges located at the top and bottom of the generator enclosure.

To ensure proper air circulation through the power generator louvers, a minimum 6" (15.2 cm) clearance must be maintained at the top and bottom, a 3" (7.6 cm) clearance on each side of the power generator to assure proper air flow for cooling between solid objects or another generator. **(On air units exposed to weather conditions outside of the building, the power generator must be mounted in a weatherproof, waterproof enclosure or mounted in the air stream in the air handler before the cooling coils, call CosaTron for an optional enclosure or high hat type enclosure when necessary.)**

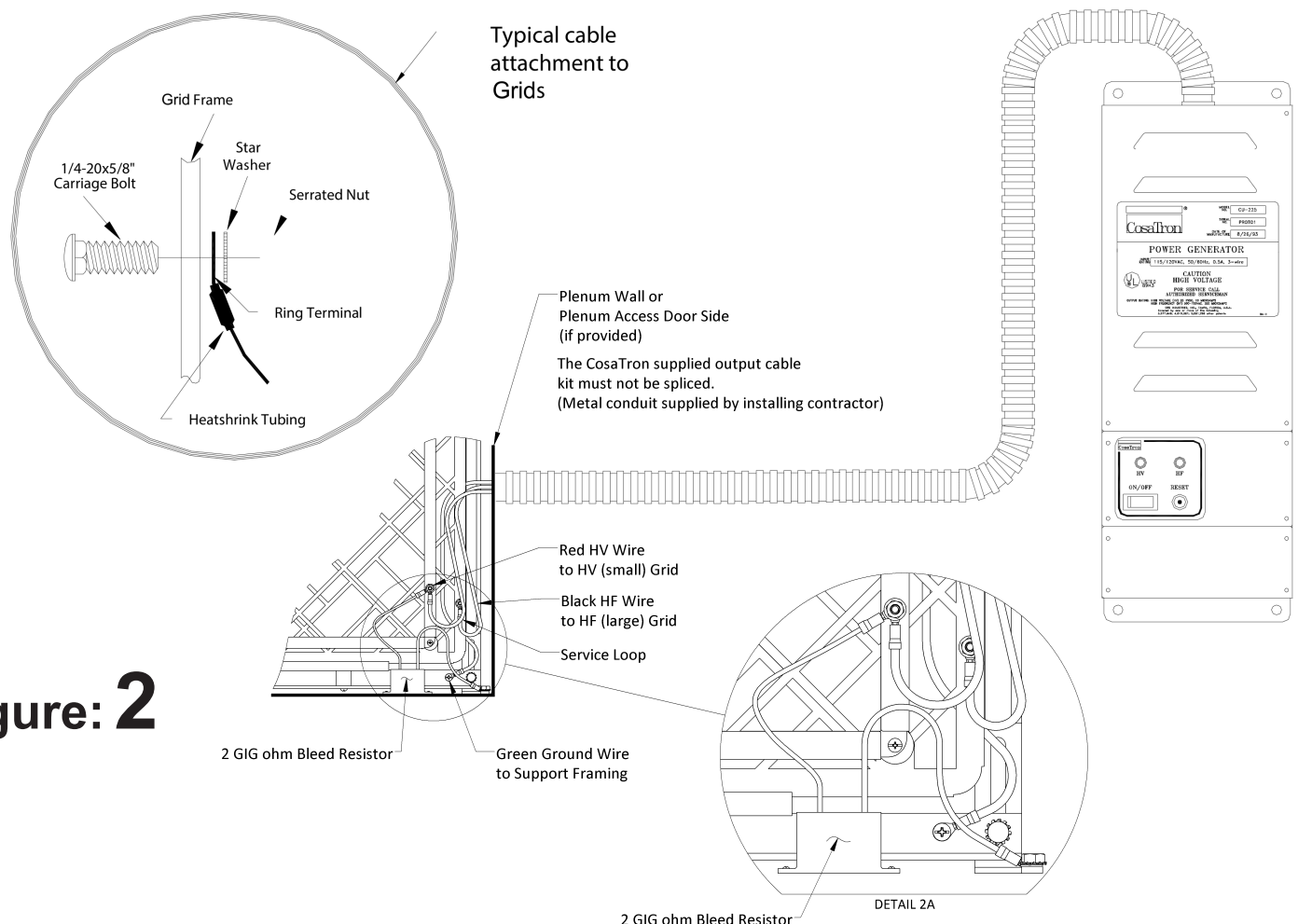
The power generator is factory set to operate on 110/120 VAC 50/60 Hz single phase, 2 amp, 3 wire input power. Input power should be brought through metal conduit to an existing knockout on the input power compartment of the generator enclosure. It **must** also be wired through the safety door switch(es) (see CRS-SDSA). Connection is made to the power generator by removing the cover plate labeled "Connect Input Power Here", then wire input power leads to power generator leads with wire nuts (See Figure 6, 6B).

⚠ Caution: This equipment must be electrically (earthed) grounded.

Wiring the Power Generator to the Custom Grid Assemblies:

A cable kit (2 1/4-20 X 5/8" carriage bolts, 2 1/4-20 washer nuts, 4 lock washers, 2 ring connectors, 1 #10 fork connector, 1 red heatshrink tube and 1 black heatshrink tube) is supplied for interconnection of output power of the power generator, to the grid assembly.

Figure: 2



The power generator is equipped with a knockout and a conduit clamp on the top of the power generator for interconnection of output power to the grid assemblies through metal conduit supplied by the installing contractor.

⚠ Caution: The plenum assembly should be electrically (earthed) grounded.

Run metal conduit no closer than 3" (7.6 cm) from the HV grid assembly. The conduit should be burr free so that the cables are not nicked as it is pulled. Feed the three (red, black and green) wires through the conduit to the inside of the plenum. Lead wires should be cut to a length which provides sufficient service loop allowance for partial removal of the grid(s) for servicing—approximately 12-18" (30.5 cm to 45.7 cm) longer than that required to reach grid(s).

Excessive lead length or coiled wire may cause stray induction and adversely effect generator output. (See Figure 2 for illustration.)

After cutting wires to the desired length, strip approximately ½" (1.3 cm) of insulation off the wire. Slide the ¼" (.6 cm) dia X 1¼" (3.2 cm) heatshrink tubing (provided) over the wire. Carefully and firmly crimp the ring connectors (provided) on to the HV (red) and HF (black) wire. Carefully crimp the # 10 fork connector on the ground (green) wire.

⚠ Caution: Make certain a proper mechanical as well as an electrical connection is established.

Slide heatshrink tubing over crimped portion of ring connectors. Heat with a lighter, match or candle being careful not to burn insulation. Inside the plenum, connect the red HV wire to the HV braid or screen (small) grid, the black HF wire to the HF screen (large) grid and the green ground wire to the grid support framing (See Figure 2 and PUB2035).

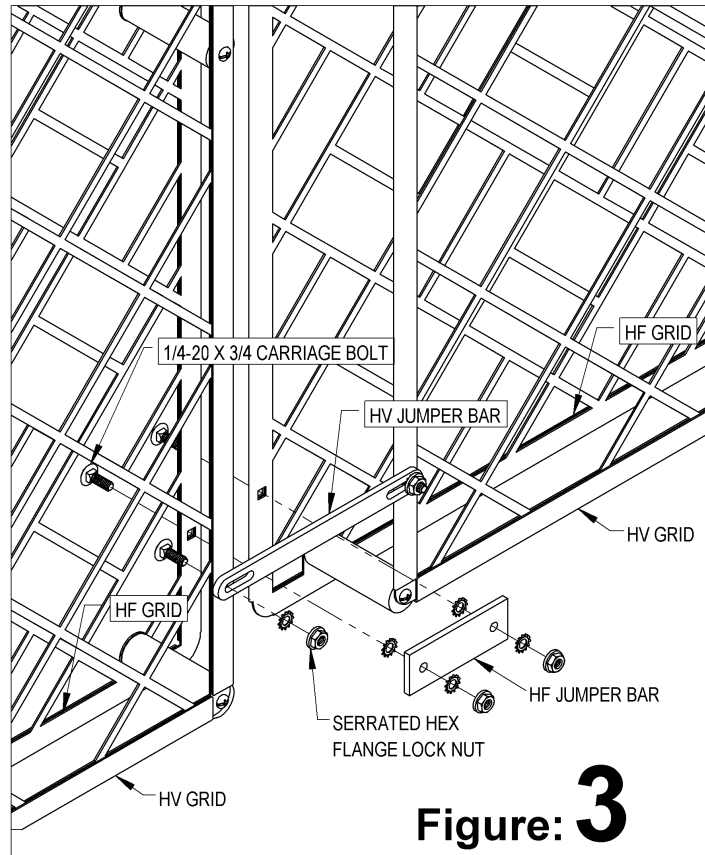
Note: Do not splice either the black HF or the red HV cable, as this will void the warranty.

⚠ Caution: If the air entering the grids is above 85% relative humidity, non-hardening silicone grease should be applied to the connections to prevent corrosion.

Install 2-gig ohm bleed resistor kit(s) (See Figure 2 & 6). Connect ¼" ring connector to the HV (smaller) grid with ¼-20 carriage bolt, lock washer and lock nut provided in the kit. Mount 2-gig ohm bleed resistor and grounding wire, as shown in Detail 2A of Figure 2 & Detail 6A of Figure 6, with self-drilling screws provided.

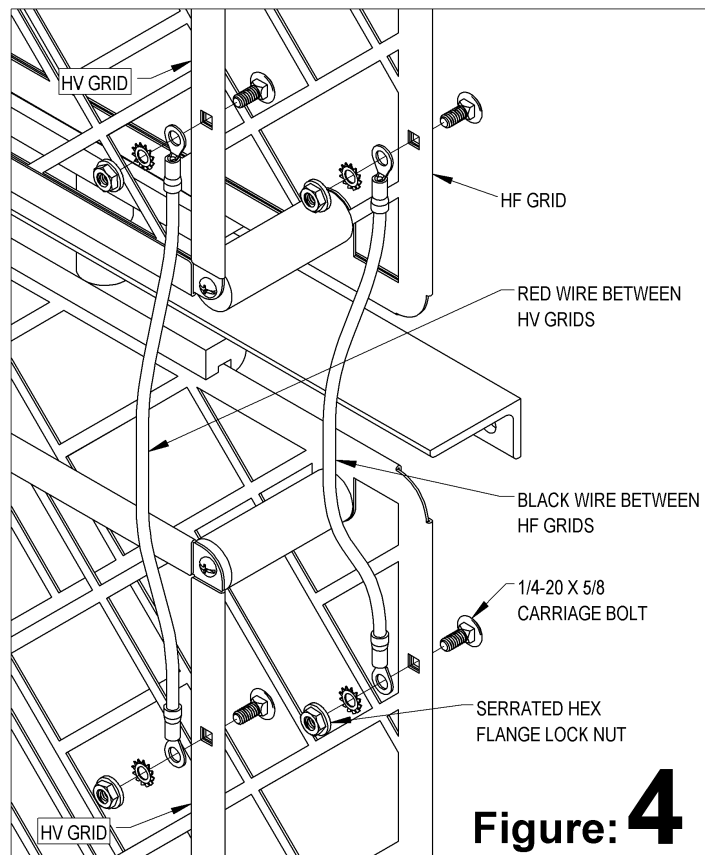
The electrical connection between grids, side-to-side and top-to-bottom, are made using the prepunched holes located 4" (10.2 cm) from the corner of the grid frames. Using the 1/4-20 carriage bolts, lock nuts, and washers provided, attach as follows:

Side-to-side: Aluminum electrical/mechanical connecting bars are provided for connecting adjacent grids side-to-side. Two sizes are included; the shorter bar provides electrical/mechanical connection between adjacent HF (large) screen grids at the pre-punched holes. The longer bar provides electrical/mechanical connection between the adjacent HV braid (smaller) grids and is attached as shown in Figure 3.



Top-to-bottom: For grid assemblies two or more high-connect the HV (small) braid grids with the red HV jumper wire. At the same time, connect the HF (larger) screen grids with the black HF jumper wire as shown in Figure 4.

⚠ CAUTION: More than one generator will be supplied for plenums when cross section area exceeds the power generator capacity. Special instructions related to wiring will be provided with the submittal drawings and the shipping documents.



Mounting the Safety Door Switch:

The safety door switch is an essential part of CosaTron it is designed for the safe operation of the system. One Safety Door switch is located inside each plenum access door (See Figure 5) and is wired into the line voltage circuit, using #14 or larger wire, to interrupt input power to the power generator when access doors are opened.

Note: Any other plenum access within the immediate vicinity of the grids must be similarly equipped. A minimum 3" (7.6 cm) clearance must be maintained between the smaller HV grid and 1" (2.5 cm) from the larger HF grid and the safety door switch housing. This will help prevent any malfunction of the CosaTron system.

In the USA, the switch must be an enclosed, carry-off, snap-action type, SPST, No., with minimum 2.0 amps per generator, 125-vac rating UL approved. The special support bracket provided is designed so that the switch can only

be activated by the properly positioned, special plunger, provided as part of the safety door switch assembly. See Safety Door Switch Data sheet (CRSSDSA) for additional information.

Note: Do Not use normally closed (N/C) on safety door switch.

Note: When plenum cross section area exceeds the power generator capacity, more than one power generator is required. When CosaTron systems are installed in separate plenums, one generator is required for each plenum. When more than one generator is required per grid assembly, refer to the CosaTron multiple system-wiring diagrams in the submittal package and shipping papers for grid jumper locations and generator wiring.

Note: The 2-gig ohm resistor provides a means for the capacitance voltage on the HV, braid grid to dissipate once power to the generator is removed. Generator power is typically removed when the plenum door is opened and plenum safety door switch opens or the power is turned off at the generator. The resistor should be mounted on the plenum floor or wall, not the grids. Three #8 X 3/4" hex head self-drilling sheetmetal screws are supplied, 2 for mounting the 2-gig ohm resistor (See Figure 2, 2A and Figure 6, 6A) and one for attaching to a grounded surface.

Note: Connect the 2-gig ohm bleed resistor to the HV grid that the power generator is connected to.

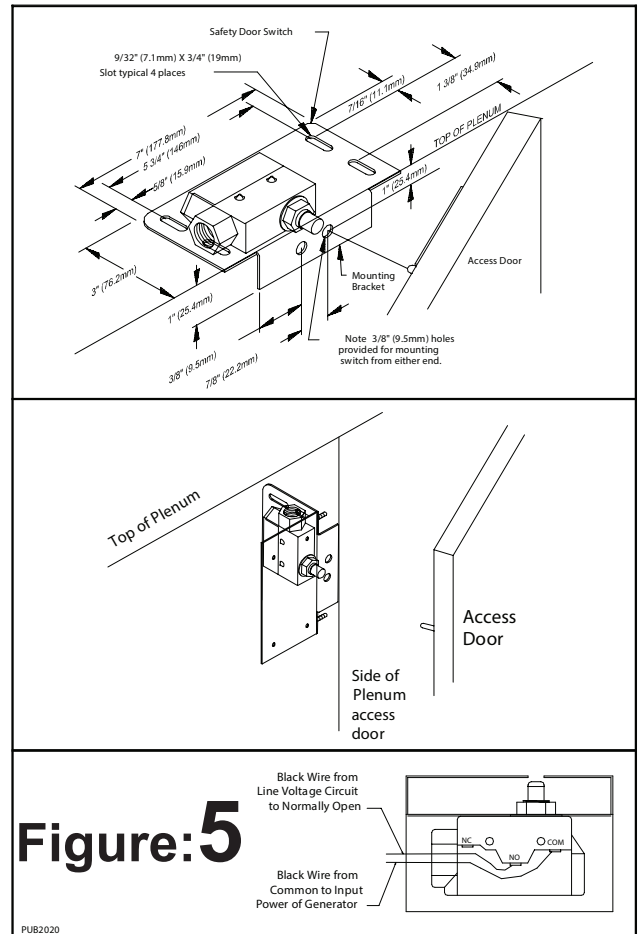
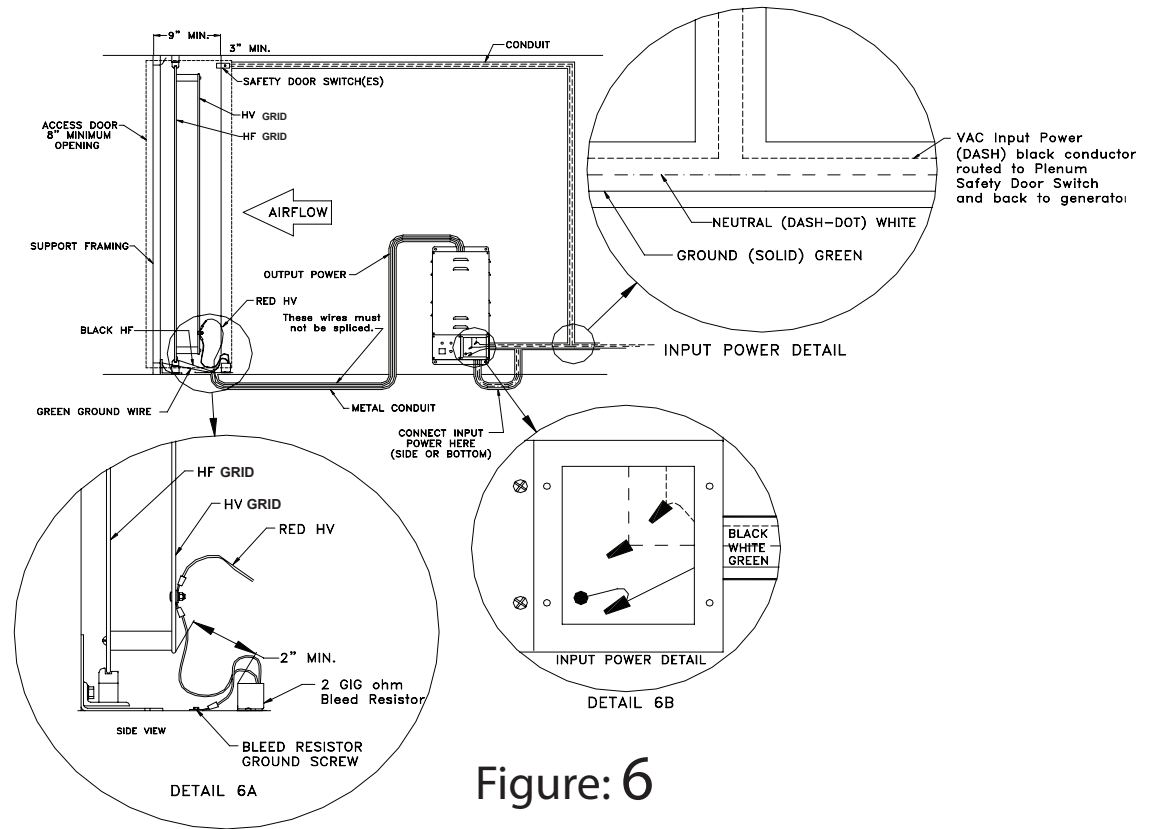


Figure:5

PUB2020



For more information
www.cosatron.com/start-up/



CosaTron
 40 Odell School Rd, Suite 1
 Concord, NC 28027
 704.785.8145 t
sales@cosatron.com