

HOTCOAT[®]

POWDER COATING SYSTEM

Item #71860

100KV POWDER COATING SYSTEM INSTRUCTIONS



The **HOTCOAT 100KV POWDER COATING SYSTEM** draws on Eastwood’s 25 years of experience in the DIY powder coating market to provide a high performance powder coating system for your small business or home shop. This system is multi-coat capable to give your projects the ultimate in appearance and durability.

High-Voltage Corona Charge design utilizes state of the art electronic circuitry to deliver precisely adjustable voltage and amperage up to a full 100,000 Volts and 100 µA of consistent charge. The Hopper fed Powder Coating Gun features a unique, integral LED light to illuminate your workpiece and ensure you can see when full coverage is achieved. Hand fatigue is reduced by an ergonomic Trigger. Included accessories enable multiple Emitter configurations to achieve the best powder spray pattern for your projects. Adjustment of Fluidizing, Gun, and Dosing Air flow to further optimize powder delivery is possible on the Control Unit.

Included 2 lbs. stainless-steel Hopper offers enough powder capacity for small production runs. Additional Hoppers and Powder Feed Hoses can be purchased to have dedicated primer/color/clear setups. Optionally available high-capacity 5 lbs. Hopper can be purchased separately for oversized projects and high volume production runs.

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INCLUDES

- (1) HotCoat 100kV Powder Coating Gun Assembly with 16' [4.9m] Cable and LED Light [A]
- (1) Emitter Retaining Cap [B]
- (1) Powder Feed Hose Coupler [C]
- (1) Standard Emitter (includes 18mm Deflector, installed) [D]
- (1) Fan Pattern Emitter [E]
- (2) 16mm Deflector [F]
- (2) 18mm Deflector [G]
- (2) 22mm Deflector [H]
- (1) 2 lbs. Powder Hopper with Lid [J]
- (1) Hopper Base [K]
- (1) Powder Fluidizing Tube [L]
- (1) Hopper Discharge Hose Fitting [M]
- (1) Grounded Powder Feed Hose 13' [4.9m] [N]
- (1) Air Tubing, 12' [3.7m] [O]
- (1) Part Grounding Lead & Clip 20' [6m] [P]
- (1) Control Unit True Earth Ground Lead 10' [3m] [Q]
- (1) Power and Flow Control Unit [R]
- (1) Grounded Power Cord 6' [1.8m] [S]



SPECIFICATIONS

Power Requirement:	110-120 VAC, 50/60 Hz, 20 Watts
Air Supply Requirement:	6 cfm @ 50 psi [85 L/min @ 3.4 bar]
Air Input Connection:	1/4" FNPT
Voltage Output:	Variable from 0 KVDC to 99 KVDC
Amperage Output:	Variable from 16 µA to 99 µA
Hopper Capacity:	2 lbs.
Control Unit Dimensions (W x D x H):	13.25" x 12.00" x 5.75" [337 x 305 x 146mm]
LED Light Output:	100 Lumen

SAFETY INFORMATION

READ AND UNDERSTAND ALL INSTRUCTIONS AND PRECAUTIONS BEFORE PROCEEDING.

Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. Keep these product instructions for future reference. The following explanations are displayed in this manual, on the labeling, and all other information provided with this product:

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

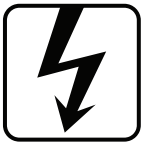
WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.



DANGER HIGH VOLTAGE!

- The Control Unit and the Gun are sealed units and contain no user serviceable parts!
- Contact with the Emitter when the Trigger is depressed will result in an unpleasant shock!
- If you have a medical condition or pacemaker check with your doctor before using.



WARNING SHOCK HAZARD!

- **NEVER BYPASS THE GROUND CONNECTIONS!**
- **DO NOT** attempt to use the Powder Coating system without secure grounding! Complete grounding is necessary for proper operation of the powder coating system and prevents shock.
- Follow all instructions in the **GROUND CONNECTIONS** section.
- **DO NOT** install, change or interact with an Emitter on the Gun unless the Control Unit is switched OFF and disconnected from the power supply.
- When applying powder to the part, **DO NOT** allow the Emitter to come in contact with the part or other grounded objects.
- **DO NOT** step on, kink, or pull the wires or hoses. Before using the Gun inspect the condition of all wires and connections.
- **DO NOT** touch or hold the part while applying powder coating.
- **NEVER** operate or store the HotCoat 100kV Powder Coating System in damp or wet conditions.
- Plug into a min. 15-amp, grounded circuit. If using an extension cord, it must be 14 AWG or greater, grounded and no longer than 25'.



WARNING HEALTH AND INJURY HAZARDS!

- Dust and fine particles are dispensed in use which can contain hazardous or toxic substances. Breathing this dust can cause respiratory health problems. Always use NIOSH approved respiratory protection while using this powder coating.
- Pressurized air discharge can eject powder particles, dirt and debris at high velocity. Always wear ANSI approved eye protection when powder coating.



WARNING FLAMMABILITY HAZARD!

- Powder coating powder poses a fire and explosion hazard when suspended in air. Keep away from ignition sources such as sparks and open flames! Never smoke when powder coating.
- **DO NOT** vacuum powder coating powder unless the vacuum is equipped with an explosion-proof motor.
- **DO NOT** touch Emitter to object being coated! This will create a spark which may ignite the powder coating powder cloud.



⚠ WARNING BURN HAZARD!

- Curing parts requires heating them to 400°F [204°C] in an oven chamber. **DO NOT** touch heated parts and oven surfaces or severe burns will result.
- Be cautious while loading and unloading parts from an oven. Always wear protective, heat-resistant gloves and verify the heating elements are off before interacting with the oven or parts to avoid burns.
- Allow sufficient time for parts to cool before interacting with them to avoid burns.



⚠ CAUTION BURSTING HAZARD!

- **DO NOT** exceed 50 psi [3.4 bar] of inlet air pressure to the Control Unit. Permanent equipment damage and/or bursting could occur and cause personal injury.



⚠ CAUTION INJURY HAZARD!

- Improperly supported parts may shift or suddenly drop when powder coating. Properly support large parts and wear closed toe shoes when powder coating. The use of safety toe shoes is recommended.
- Powder coating can inundate the work area with powder dust. This will create slippery surfaces. Always be sure-footed and well balanced when powder coating. Wear appropriate footwear to increase grip.



⚠ CAUTION EYE INJURY HAZARD!

- The LED light is extremely bright and can cause temporary blindness. **DO NOT** allow the LED light to project directly into eyes. Keep out of reach of children.



⚠ NOTICE STATIC CHARGE BUILDUP!

- To protect the user, the backside of the Powder Gun handle is integrated with the grounding system. Always operate the Powder Gun with a bare hand to avoid static electricity charge buildup in the body of the user.



⚠ NOTICE

- For intended use only.
- Only powder coat in well ventilated areas.
- Be sure that all items being powder coated can withstand temperatures of 400°F [204°C] or greater.
- Only use an oven dedicated to powder coat curing. **DO NOT** use an oven that will be used to bake food or other unrelated items.
- Inspect components for damage before use. Do not use if damaged.
- Unplug/disconnect from electrical power when not in use.

REQUIRED ITEMS

Before you begin using the HotCoat 100kV Powder Coating System make sure you have the following items (not included):

- A dedicated oven large enough to accommodate the parts to be powder coated and cured*.
- For curing larger parts that do not fit in an oven, an Infrared Curing Lamp can be used*.

⚠ CAUTION

DO NOT use an oven used for food preparation!

- A sufficient air supply source for the system. An air compressor capable of providing a steady minimum 6 cfm @ 50 psi [85 L/min @ 3.4 bar] is required*. The air supply must be dry, and the use of a moisture trap or desiccant system is strongly recommended*.
- A properly grounded 110-120 VAC, 50/60 Hz, circuit breaker protected outlet. The plug on the Powder Cord is a NEMA 5-15P and should be used with a NEMA 5-15R receptacle. If unsure about your electrical setup contact a licensed electrician.
 - If using an extension cord is required, we recommend using our Heavy Duty Extension Cord for optimal performance: Eastwood item #31739 25ft Heavy Duty 110V Extension Cord.

⚠ CAUTION

Unit must be grounded to work properly and safely. Follow all instructions in GROUND CONNECTIONS.

- A clean, safe, well-lit, well-ventilated work area.

⚠ CAUTION

DO NOT cure powder coated parts in an enclosed living space.

- A dust mask or respirator to wear while handling and applying powder*.
- Disposable vinyl or nitrile gloves to handle powder and cleaned parts.
- A pair of goggles to provide eye protection during powder coating and Gun cleaning operations*.

***See back cover for Eastwood supplied options available**

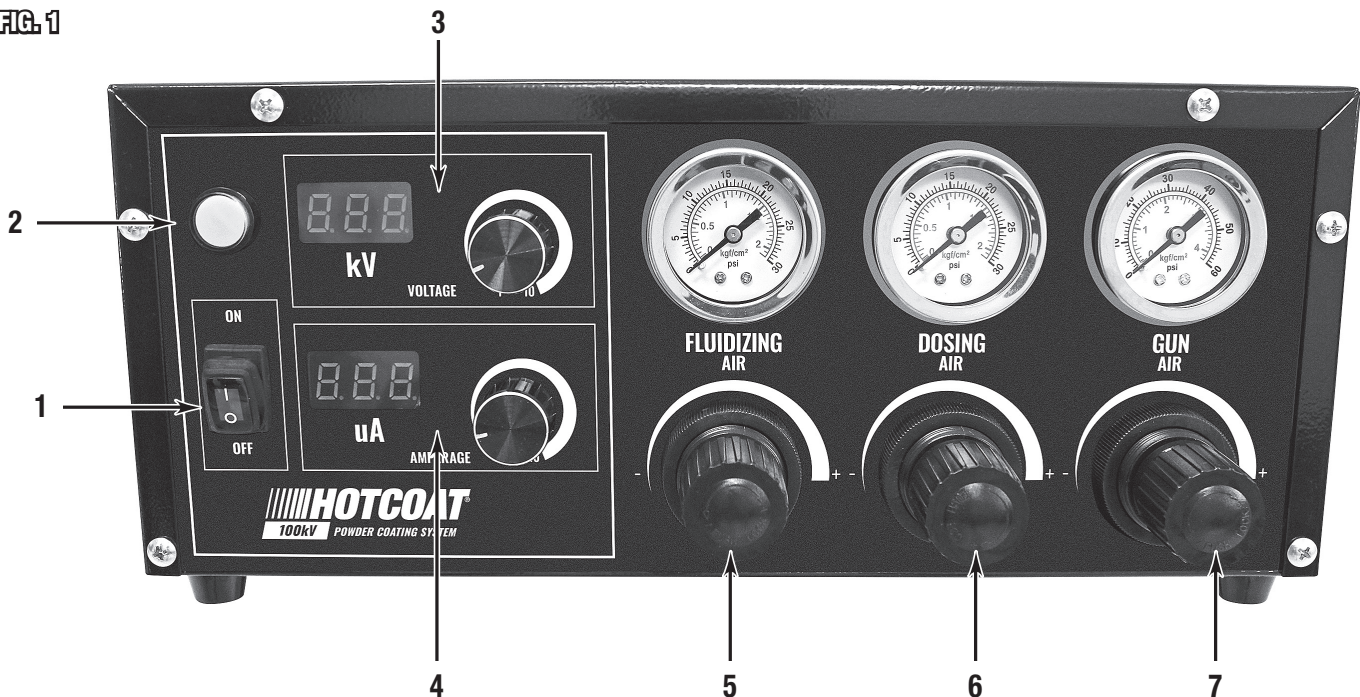
CONTROL UNIT AND COMPONENT IDENTIFICATION

CONTROL UNIT FRONT PANEL (FIG 1)

1. **ON/OFF Switch.** Controls power to the internal circuitry.
2. **Output Indicator.** Illuminates green when the Powder Coating Gun is triggered.
3. **kV Output Display and Control Knob.** Set output voltage level with the Knob. The display will show the actual output in kilovolts (kV, 1 kV = 1000 Volts) while powder coating.
4. **μA Output Display and Control Knob.** Set output amperage level with the Knob. The display will show the actual output in microamps (μA, 1 μA = 0.000001 Amps) while powder coating.
5. **Fluidizing Air Pressure Gauge and Regulator.*** Utilize to regulate the air pressure of the constant, Fluidizing Air flow to a Hopper with dedicated fluidizing port, such as the optionally available high-capacity 5 lbs. Hopper. Pull Knob outward to unlock, adjust clockwise to increase pressure and counterclockwise to decrease. Push in to lock.
6. **Dosing Air Pressure Gauge and Regulator.*** Utilize to regulate the Trigger-controlled Dosing Air pressure to the optionally available high-capacity 5 lbs. Hopper. This will inject clean air to the powder stream and assist it in reaching deep recesses, but without increasing powder volume which could create heavy areas and runs. Pull Knob outward to unlock, adjust clockwise to increase pressure and counterclockwise to decrease. Push in to lock. Note that the Dosing Air Regulator is plumbed in series with the Gun Air Regulator, therefore the Dosing Air pressure will always be limited by the Gun Air pressure.
7. **Gun Air Pressure Gauge and Regulator.** Utilize to regulate the Trigger-controlled air pressure to the Hopper/Gun. Pull Knob outward to unlock, adjust clockwise to increase pressure and counterclockwise to decrease. Push in to lock.

*These functions are unused with the included 2 lbs. Hopper. Reference the optionally available high-capacity 5 lbs. Hopper's instruction manual for additional tips on setup and use of these functions.

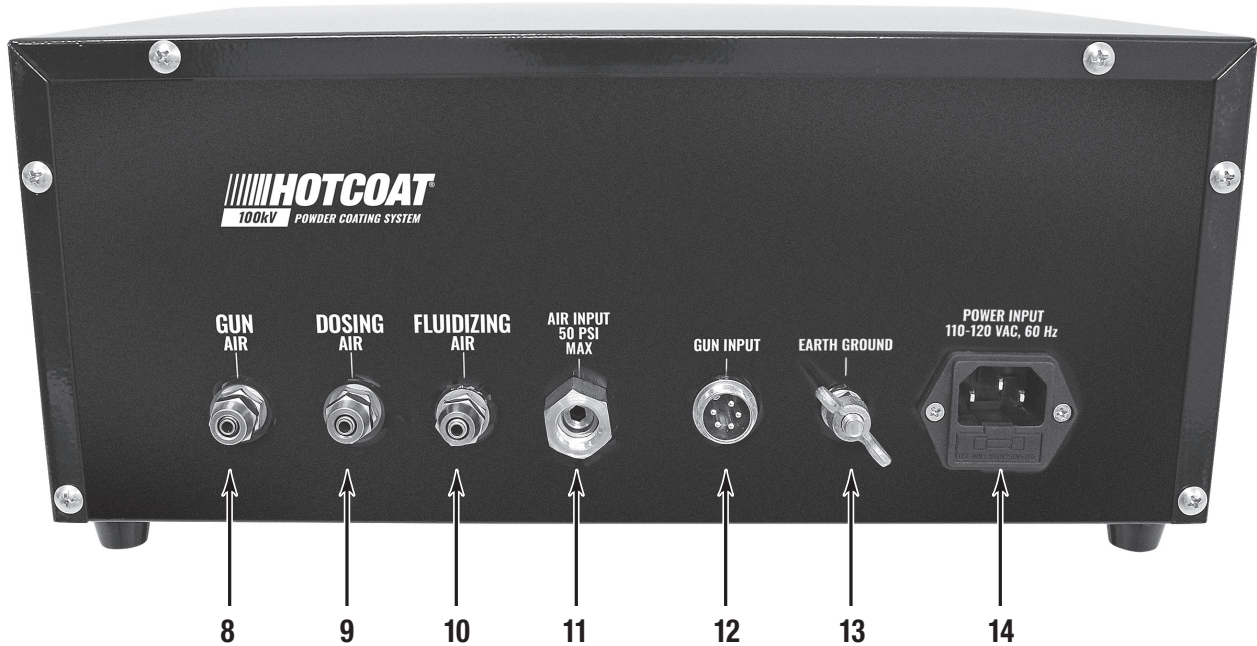
FIG. 1



CONTROL UNIT REAR PANEL (FIG 2)

- 8. Gun Air Output
- 9. Dosing Air Output
- 10. Fluidizing Air Output
- 11. Air Input
- 12. Gun Connector
- 13. Ground Post
- 14. Power Input Receptacle with Integral Fuse

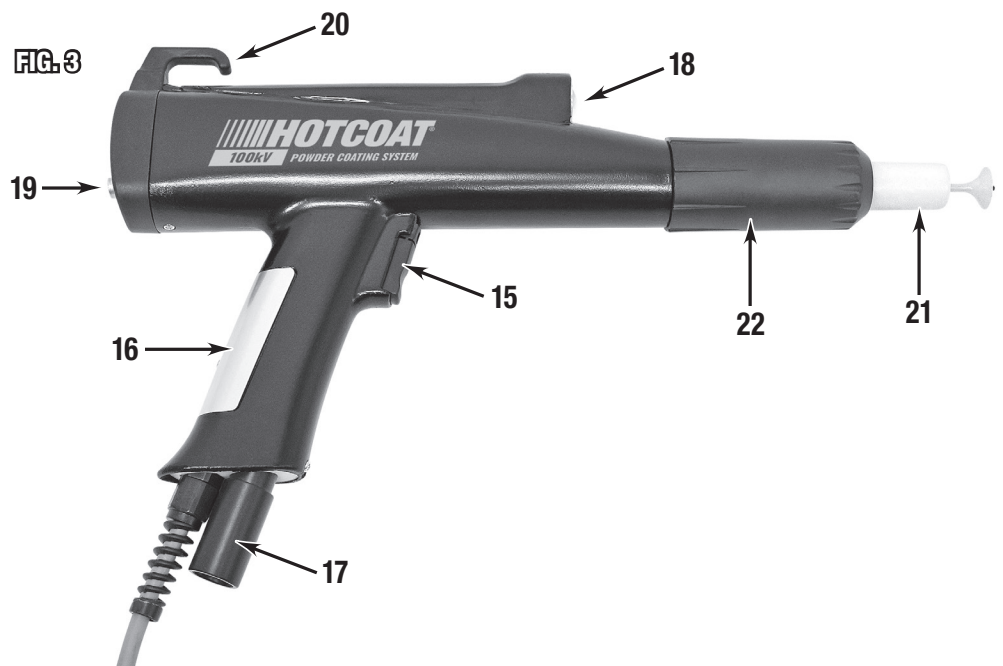
FIG. 2



POWDER COATING GUN (FIG 3)

- 15. Trigger
- 16. Grounded Backstrap
- 17. Powder Feed Coupler Connector
- 18. LED Light
- 19. LED Light Toggle Button
- 20. Hang Hook
- 21. Emitter
- 22. Emitter Retaining Cap

FIG. 3



SYSTEM READY FOR USE (FIG 4)

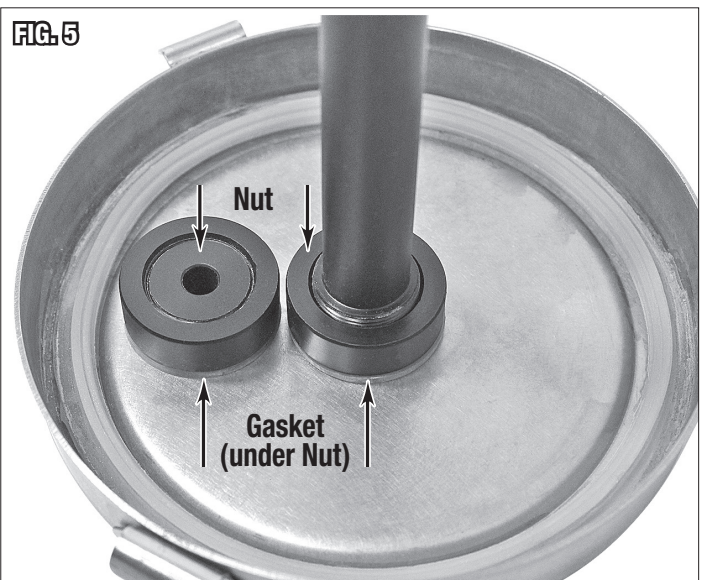
FIG. 4



SET UP

2 LBS. HOPPER LID ASSEMBLY

- Remove the nut and gasket from the Powder Fluidizing Tube [L]. Insert the threaded stem into the center hole of the 2 lbs. Hopper Lid (FIG 5). Install the gasket and fasten the nut to the bottom side of the Lid. Hand tighten the nut securely.
- Remove nut and gasket from the Hopper Discharge Hose Fitting [M]. Insert the threaded stem into the offset hole of the Hopper Lid (FIG 5). Install the gasket and fasten the nut to the bottom side of the Lid. Hand tighten the nut securely.
- The assembled Hopper can be placed in the Hopper Base [K] for stability (FIG 4).

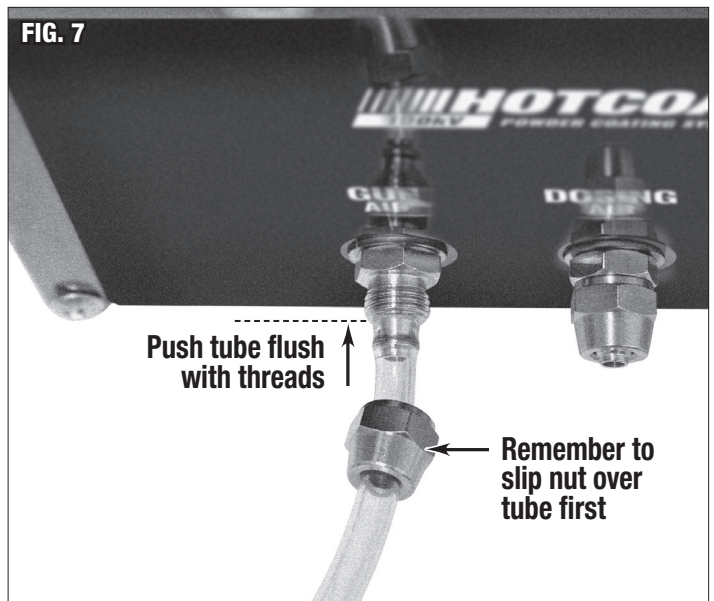
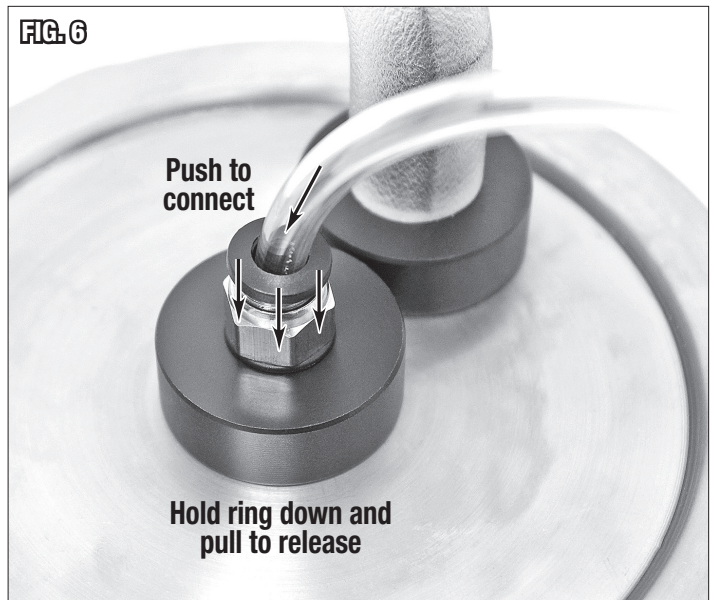


POWDER FEED HOSE

- The Grounded Powder Feed Hose 13' [4.9m] [N] connects to the Hopper to supply powder to the Gun.
- Firmly press one end of the Hose over the Discharge Hose Fitting [M] on the Hopper (FIG 4).
NOTE: A hose clamp may be used here, but the fitment is intended to be tight enough hose clamps are unnecessary.

AIR FEED TUBE

- Cut approximately 3' of tube from the Air Tubing, 12' [3.7m] [O]. The tube needs to be long enough to reach your Hopper location. Use a sharp tool, such as cutting pliers or a razor blade, to make a clean and square cut. Bad cuts may not seal correctly.
- Push one end into the Push-to-Connect fitting of the Powder Fluidizing Tube [L]. When seated the tube should be locked in place and not pull out. If removal is needed, hold down on the plastic ring to unlock the tube before pulling outward (FIG 6).
- The opposite end connects to the Gun Air Output [8] at the back panel of the Control Unit (FIG 2). Remove the conical compression nut from the fitting. Slip it over the tube and ensure the conical portion will still be facing the fitting (FIG 7).
- Force the tube over the fitting until it meets the threads (FIG 7). The fitment will be tight. Heat or hand soap to lubricate can be used to ease installation. Once installed, thread the compression nut back on and tighten to fully secure the tube. Verify secure installation by tugging the tube.



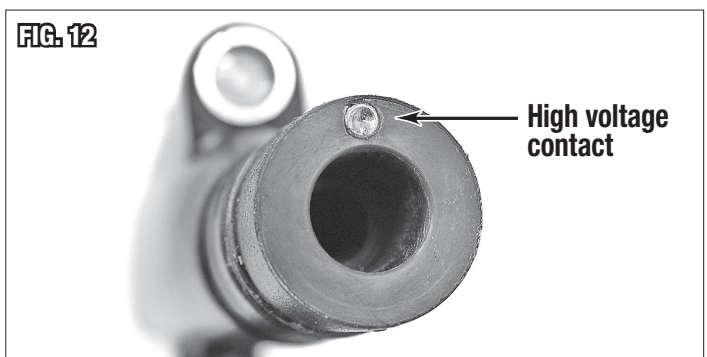
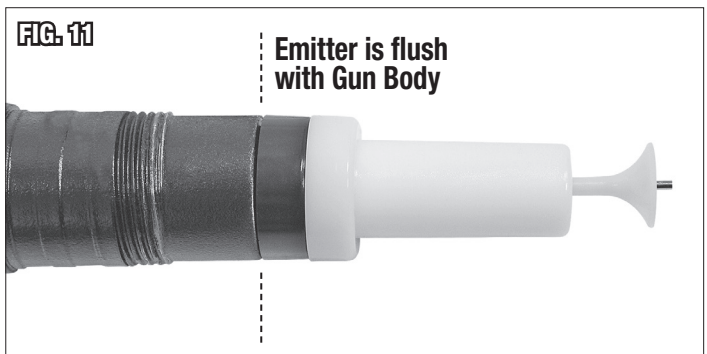
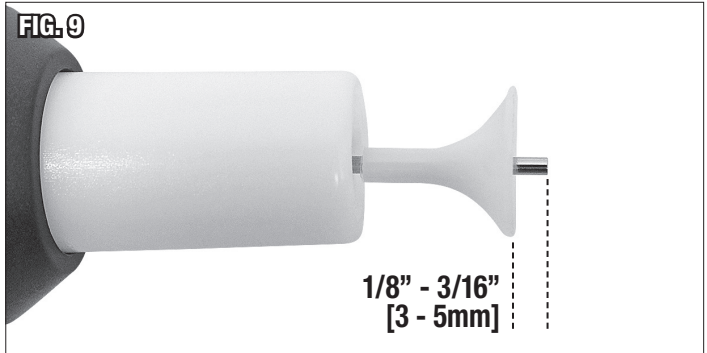
POWDER COATING GUN

- Connect the Powder Coating Gun Cable to the Gun Connector [12] at the rear of the Control Unit (FIG 2) and fasten the security lock.
- Thread the Powder Feed Hose Coupler [C] into the bottom of the Powder Coating Gun (FIG 4). Firmly press the other end of the Grounded Powder Feed Hose [N] over the Powder Feed Hose Coupler [C].
NOTE: A hose clamp may be used here, but the fitment is intended to be tight enough hose clamps are unnecessary.
- The Gun ships disassembled without an Emitter or Retaining Cap installed. Select your desired Emitter configuration:
 - **STANDARD EMITTER:** The Standard Emitter (includes 18mm Deflector, installed) [D] can be used without a deflector installed (FIG 8) to serve as a general purpose, powder dispersal nozzle for everyday use.
 - **DEFLECTORS:** The Standard Emitter can be used with any of the three (16mm [F], 18mm [G], 22mm [H]) sizes installed over the end of it. These will provide enhanced coating ability when faced with tight areas such as inside tubing, between railing or spokes, inside lips. The Deflectors create a soft, round spray pattern, with the larger the Deflectors making a larger pattern. Position the Deflector with the flared end outward and 1/8" - 3/16" [3 - 5mm] inset from the Emitter tip (FIG 9).
 - **FAN PATTERN EMITTER:** This Emitter creates a large, long and narrow, concentrated fan shaped pattern for quick, even powder dispersal over large expanses (FIG 10).

⚠ WARNING SHOCK HAZARD!

DO NOT install, change or interact with an Emitter on the Gun unless the Control Unit is switched OFF and disconnected from the power supply.

- Seat the selected Emitter in the end of the Gun Body (FIG 11). Thread the Emitter Retaining Cap [B] over it to hold the Emitter on.
NOTE: The black, carbon ring at the rear of each Emitter must be in full contact with the high voltage contact at the end of the Gun Body (FIG 12).



INPUT AIR SUPPLY

- The rear of the Control Unit has a 1/4" FNPT fitting for installation of a quick-connect or permanent air connection to your system. Utilization of PTFE tape or similar on the threads is recommended to reduce air leakage.
- Before connecting, regulate the input air pressure to 50 psi [3.4 bar] max.

NOTE: The HotCoat 100kV Powder Coating System requires an air compressor capable of 6 cfm @ 50 psi [85 L/min @ 3.4 bar] minimum. The air must be moisture and oil free. A good quality filter/regulator such as a #31633 Eastwood Air CFS Filter/Regulator is strongly recommended for the best results.

⚠ CAUTION BURSTING HAZARD!

DO NOT exceed 50 psi [3.4 bar] of inlet air pressure to the Control Unit. Permanent equipment damage and/or bursting could occur and cause personal injury.

INPUT POWER CONNECTION

- Connect the Grounded Power Cord 6' [1.8m] **[S]** to the Power Input Receptacle with Integral Fuse **[14]** at the rear of the Control Unit (**FIG 2**). Plug the opposite end into a properly grounded 110-120 VAC, 50/60 Hz, circuit breaker protected NEMA 5-15R receptacle. If unsure about your electrical setup contact a licensed electrician.

GROUND CONNECTIONS

⚠ WARNING SHOCK HAZARD!

NEVER BYPASS THE GROUND CONNECTIONS!

DO NOT attempt to use the Powder Coating system without secure grounding! Complete grounding is necessary for proper operation of the powder coating system and prevents shock.

- Thorough and quality grounding is imperative for both powder adhesion and electrical shock safety. All grounds described below should be connected to the Ground Post **[13]** located at the rear of the Control Unit (**FIG 2**).
 - **PART GROUNDING:** The Part Grounding Lead & Clip 20' [6m] **[P]** ring terminal end must be installed to the Ground Post **[13]**. The Clip end should be connected directly to the part, ideally, or nearby such as on the hanger or rack. This is necessary to complete the powder charging circuit.
 - **TRUE EARTH GROUND:** Connecting your Control Unit directly to a properly installed grounding rod is strongly recommended for optimal performance. Included is a Control Unit True Earth Ground Lead 10' [3m] **[Q]** with a ring terminal end to get you started. Crimp an extension on to this wire as needed for your location. Use of a professionally installed, UL listed, copper bonded ground rod (commonly available at home improvement stores) and copper wiring is ideal. Contact a licensed electrician for advice on achieving a true earth ground.
 - **HOPPER GROUNDING:** While the included 2 lbs. Hopper does not have a grounding wire installed, larger Hoppers often times do. If a Hopper ground is included, such as with our optionally available 5 lbs. Hopper, connect it to the Ground Post **[13]**. Grounding the Hopper can prevent static charge buildup and possible electrical shock.

QUICK START GUIDE

▲ NOTICE

- Read and understand all previous content and warnings before attempting to powder coat with the HotCoat 100kV Powder Coating System.
- This guide is deliberately brief to get you started. If you need more detailed guidance and information about the HotCoat 100kV Powder Coating System, continue reading at PREPARATION.

- Familiarize yourself with the HotCoat 100kV Powder Coating System and set up as shown in (FIGS 1, 2, 3, 4). Follow all steps in SET UP to ensure correct configuration before proceeding.
- The part being powder coated must be clean, bare metal. Clean thoroughly with a can of Eastwood PRE-Painting Prep (#10041Z or #11949Z) or acetone prior to powder coating.
IMPORTANT NOTE: If the part is a casting, see the additional guidance for preparing castings in PREPPING PARTS FOR POWDER COATING.
- Attach the Ground Clip directly to your prepared part. Grounding is critical to the powder coating process.
- Fill the Hopper to a minimum depth of 1" [25mm] of powder. Avoid filling more than halfway.
- Plug in and power ON the Control Unit. Dial the Gun Air Regulator to around 20 psi [1.4 bar] while air is flowing (Gun must be triggered).
Increase or decrease Gun Air pressure for sufficient powder flow to quickly coat the part.
- If first coat, set voltage to 70 kV and amperage to 50 μ A (Gun must be triggered to show live read outs on displays).
 - For additional coats: Set voltage to 50 kV and amperage to 40 μ A.
- You are now ready to powder coat. Maintain a minimum Emitter-to-part distance of 8" [200mm] to reduce back ionization. Start with recesses and interior areas first.
- Coat until full coverage is achieved. Use the LED Light to inspect.
- Place the powder coated part in an oven preheated to the powder manufacturer's recommended curing temperature.
- Cure the part according to the powder manufacturer's recommendations.
- After curing, verify the oven has turned off. The part should be allowed to naturally cool to ambient air temperature.
- Allow ample time for the part to cool before handling it. Once the part has cooled it is ready to be put back into service.

PREPARATION

GROUNDING THE PART

- Ideally, the Ground Clip should be attached directly to the part for best results. However, it may be clipped to a nearby screw, bolt, wire hanging hook, bare oven rack, etc. which has good electrical continuity to the part. Keep in mind more connections between the part and the Ground Clip increase the chance of poor grounding and failure of the powder to "stick".

Without an adequately grounded system, the charged powder will not be drawn to the surface of the part and will float past. Carefully review the prior **GROUND CONNECTIONS** section.

▲ NOTICE

- The contact surfaces of the Ground Clip must always be kept clean and free of accumulated debris and sprayed powder. Never reuse hanging hooks, as cured powder accumulation can act as an insulator, preventing grounding.
- To protect the user, the backside of the Powder Gun handle is integrated with the grounding system. Always operate the Powder Gun with a bare hand to avoid static charge buildup in the body of the user.

CONTROL UNIT SETTINGS

SETTING OUTPUT VOLTAGE AND AMPERAGE

The Voltage and Amperage Output are indicated and controlled by the **kV Output Display and Control Knob [3]** and **µA Output Display and Control Knob [4]** on the front panel of the Control Unit (**FIG 1**). The voltage output range is approximately 0 - 99 kV and the amperage output range is 16 - 99 µA. Note that the live readouts will only be displayed while the Gun is triggered.

- For first coats or large, flat objects set voltage to 70 kV and amperage to 50 µA.
- If powder coat is not adhering to the part, increase voltage by 5 kV intervals without changing amperage.
- For additional coats: Turn voltage down to 50 kV and amperage to 40 µA. If struggling with adhesion, gradually reduce amperage until the powder begins to stick.
- Maintain a minimum Emitter-to-part distance of 8" [200mm] to reduce back ionization.

IMPORTANT NOTE: If powder is not adhering on additional coats and "pock marks" are visible along with powder being blown off the part, the part is experiencing the "Faraday-Cage Effect" or back ionization. Should this occur, stop all work and blow off clinging powder. Place in oven at 400°F [204°C] for 5 minutes to dissipate static charge. Remove and allow to cool to room temperature before reapplying powder.

▲ NOTICE

To minimize "Faraday-Cage Effect" and back ionization, hold Gun a minimum of 8" [200mm] from the part. Adjust air pressure to get a large volume of powder expelling from the nozzle and coat recessed areas first. If powder flow is insufficient, you will saturate the part with negative ions and create back ionization issues. More powder flow also results in better coverage.

FILLING THE 2 LBS. HOPPER

▲ NOTICE

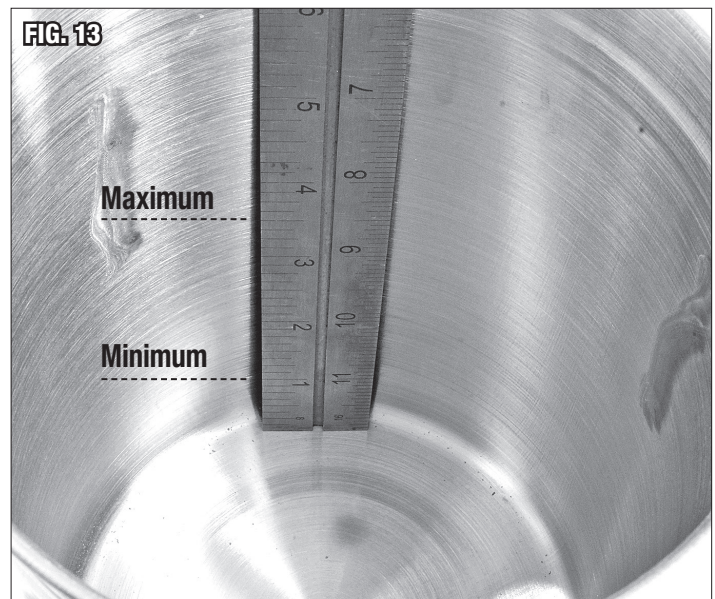
Handle powder with the same considerations as handling liquid paint. Use clean, disposable gloves when handling powder to avoid contamination. Keep powder containers tightly closed and in a dry, room temperature environment as excessive humidity and heat will contaminate the powder.

- Unlatch and remove the Lid from the Hopper.
- Use a funnel, or a clean sheet of lint-free paper rolled into a conical shape, to pour the powder into the Hopper.
- Fill a minimum depth of 1" [25mm] of powder in the Hopper (**FIG 13**). Avoid filling more than halfway.

GUN AIR PRESSURE SETTINGS

The Gun Air Pressure Regulator controls the flow speed and amount of powder being pushed from the 2 lbs. Hopper to the Gun. All items to be powder coated will benefit from an optimal setting where the amount of powder is delivered to the surface is maximized and wasted powder that blows by is minimized.

- Initially set the Gun Air pressure to 20 psi [1.4 bar]. Generally, it should never be necessary to set the Gun Air pressure any higher than 50 psi [3.4 bar].
- Depress the Gun Trigger and observe powder flow onto and around an object to be coated.
 - If excess powder blows by the part and is wasted, lower the Gun Air pressure to decrease flow slightly.
 - If the powder being applied to a surface has a thin, sparse appearance, raise the Gun Air pressure to increase flow slightly.
 - This is a standard but necessary "Trial-and-Error" process that may require several attempts to fine tune and will vary with each type of powder and part surface configuration. Note that most tubular and round objects will, by nature, produce more powder waste than a flatter, larger object will.
- Keep in mind that powder coating powders vary widely in specific density. Dense powders may require slightly more air pressure than less dense powders.



PREPPING PARTS FOR POWDER COATING

IMPORTANT NOTES:

- As with normal refinishing, powder can only be applied to clean, bare metal surfaces and the resulting finish will only be as good as the prep that goes into the metal underneath it.
- Properly clean the part to be coated by removing all traces of old paint, rust, grease, oil, etc. Impurities left on a metal surface will prevent proper powder coat adhesion and even subtle imperfections that may look ok at first can reveal themselves in coming years.
- Porous cast iron, die cast, cast aluminum and magnesium parts trap contaminants that when heated will outgas and cause porosity problems when the powder is cured. All cast parts should be pre-baked at 450°F [232°C] for an hour or more to burn out or “outgas” any oils or other impurities that are embedded in the surface prior to applying powder coat. Failure to do so will result in bubbles under the cured powder finish and poor adhesion.

⚠ NOTICE

Die-cast metal varies widely in formulation, many of which can be difficult to powder coat and, in some cases, may even melt at powder coating cure temperatures. Some aluminum and magnesium alloys can be weakened by exposure to the cure temperatures. Check with part manufacturer if unsure. Also, avoid coating metal items that are soldered together as the solder may fail after exposure to cure temperatures. Lastly, do not forget to return the oven to the power manufacturer’s recommended setting before curing!

- All parts must be degreased with Eastwood PRE-Painting Prep #10041, #11949Z or acetone just before applying powder. Wipe the part repeatedly until no further contaminants come off on a clean white rag. Let the part cool to room temperature before applying the powder.

POWDER COATING PROCESS

⚠ DANGER HIGH VOLTAGE!

- Contact with the Emitter when the Trigger is depressed will result in an unpleasant shock!
- If you have a medical condition or pacemaker check with your doctor before using.

⚠ WARNING SHOCK HAZARD!

- NEVER BYPASS THE GROUND CONNECTIONS!
- DO NOT attempt to use the Powder Coating system without secure grounding! Complete grounding is necessary for proper operation of the powder coating system and prevents shock.
- Follow all instructions in the GROUND CONNECTIONS section.
- DO NOT install, change or interact with an Emitter on the Gun unless the Control Unit is switched OFF and disconnected from the power supply.
- When applying powder to the part, DO NOT allow the Emitter to come in contact with the part or other grounded objects.
- DO NOT step on, kink, or pull the wires or hoses. Before using the Gun inspect the condition of all wires and connections.
- DO NOT touch or hold the part while applying powder coating.
- NEVER operate or store the HotCoat 100kV Powder Coating System in damp or wet conditions.

⚠ WARNING HEALTH AND INJURY HAZARDS!

- Dust and fine particles are dispensed in use which can contain hazardous or toxic substances. Breathing this dust can cause respiratory health problems. Always use NIOSH approved respiratory protection while using this powder coating.
- Pressurized air discharge can eject powder particles, dirt and debris at high velocity. Always wear ANSI approved eye protection when powder coating.

⚠ WARNING FLAMMABILITY HAZARD!

- Powder coating powder poses a fire and explosion hazard when suspended in air. Keep away from ignition sources such as sparks and open flames! Never smoke when powder coating.
- DO NOT touch Emitter to object being coated! This will create a spark which may ignite the powder coating powder cloud.

⚠ NOTICE STATIC CHARGE BUILDUP

- To protect the user, the backside of the Powder Gun handle is integrated with the grounding system. Always operate the Powder Gun with a bare hand to avoid static electricity charge buildup in the body of the user.

APPLYING POWDER COAT

If all the previous steps have been meticulously completed, you are ready to apply powder for phenomenal results.

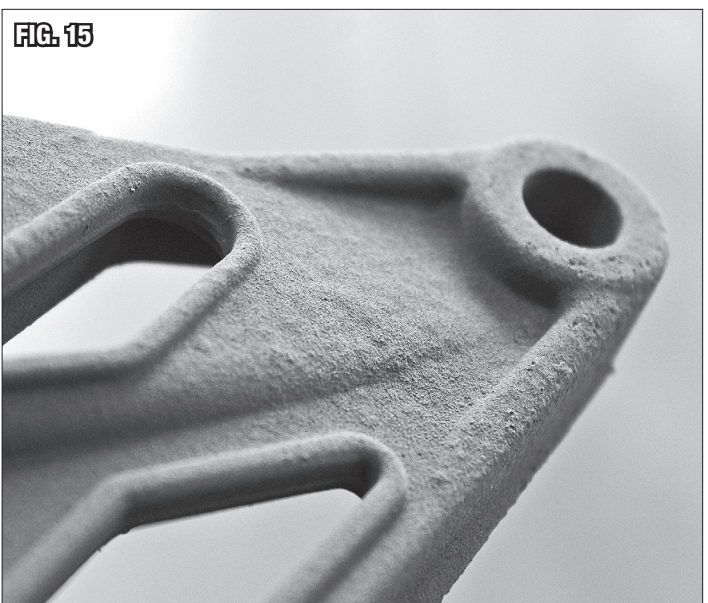
- Depressing the Trigger energizes the Emitter and releases powder flow. The powder received a charge as if flows by the Emitter Rod. Releasing the Trigger cuts power to the Emitter and stops powder flow.
- Powder is difficult to apply in deeply recessed areas, such as interior corners, complex intersections of tubing, and spokes. Apply powder to these troublesome areas first to reduce the chance of powder adhesion being impeded by the Faraday-Cage Effect. Tips for trouble spots:
 - Try repositioning the part to allow gravity to assist coverage in corners and reposition the Gun.
 - Don't point and shoot the Gun directly at the problem area. Instead, try "sneaking up on it" by holding the Gun perpendicular and allowing powder to be attracted from the side. This can work particularly well with a booth fan drawing the powder flow in.
 - Hold Gun a minimum of 8" [200mm] from the part. Adjust air pressure to get a large volume of powder expelling from the nozzle and coat recessed areas first. If powder flow is insufficient, you will saturate the part with negative ions and create back ionization issues. More powder flow also results in better coverage.
 - Apply the Trigger in short bursts "pulsing" it. In some cases, when the previous methods have failed, short bursts of the trigger with the nozzle 1 - 2" [25 - 50mm] from the part can help. The goal is to forcibly direct powder into the trouble area. Keep in mind that as powder cures it will "flow" to a limited extent and may even out small spots of light coverage.

- When covering large expanses, move the Gun in slightly different angles and in a circular motion to ensure that all areas of the part are covered.
- The coated surface will have a fuzzy, dull opaque coating of powder (**FIG 14**). Make sure all areas of the part are coated evenly. Bare metal should no longer be seen through the powder on the surface.
NOTE: It is evident that excessive powder is applied when the powder particles begin to stand on end like hair and clump (**FIG 15**). If this occurs, stop applying powder and with light air pressure blow off some of the excess powder.
- If the part is bumped and some of the powder is brushed off, it is usually best to blow all the powder off with compressed air and start over. This is particularly important for the translucent colors which easily show blemishes.
- Inspect the coated part with the integral LED Light to be sure no areas of bare metal show through. Apply additional powder to the area if necessary.
- The transfer of the static electrical charge becomes less efficient as powder builds up on the Emitter. This occurs most frequently with heavy metallic content powders.

⚠ WARNING SHOCK HAZARD!

DO NOT install, change or interact with an Emitter on the Gun unless the Control Unit is switched OFF and disconnected from the power supply.

- To remove powder build-up from the Emitter, wipe accumulated powder off the Emitter with a dry cloth.
- After the part is properly coated, remove the Ground Clip. If a bare spot exists where the Ground Clip was connected, it can be relocated to another area and a small amount of powder can be applied to cover that spot.



CURING POWDER COAT

⚠ WARNING BURN HAZARD!

- Curing parts requires heating them to 400°F [204°C] in an oven chamber. **DO NOT** touch heated parts and oven surfaces or severe burns will result.
- Be cautious while loading and unloading parts from an oven. Always wear protective, heat-resistant gloves and verify the heating elements are off before interacting with the oven or parts to avoid burns.
- Allow sufficient time for parts to cool before interacting with them to avoid burns.

⚠ NOTICE

- The leading cause of a failed powder coating job is improper curing temperature and too short of a cure time. It is critically important to have an oven set at and able to maintain an accurate curing temperature. Too low of an oven temperature will result in incomplete curing of the powder while too high can cause discoloration and cracking of a powder finish. Too short of a cure time results in an incomplete cure while longer time in the oven will not cause a problem. If in doubt, leave it in the oven for a longer period of time.

To help maximize durability and produce a smooth coating, the part must be brought up to the cure temperature quickly and allowed to stay at that temperature for the specified cure time. To properly cure powders and achieve full chemical, heat, chip and abrasion resistance, along with the smoothest possible finish, follow the steps below:

- Preheat the oven to the powder manufacturer's recommended curing temperature.
- Place the powder coated part in the preheated oven.
- Cure the part according to the powder manufacturer's recommendations.
- After curing, verify the oven has turned off. The part should be allowed to naturally cool to ambient air temperature. Open the Oven Door for ventilation or remove and place the part in a location safe for cooling. Allow ample time for the part to cool before handling it.
- Once the part has cooled it is ready to be put back into service.
- If applying multiple coats, allow the part to cool down to around ambient temperature before continuing below.

TECH TIP: Most powders inherently have a slight "orange peel" texture especially with polyester based powder formulations (the surface condition and preparation will affect smoothness). Cured powder may be "cut and buffed" just like liquid coatings to achieve a glass-smooth finish. Cutting and buffing is not recommended on metallic powders unless a clear coat is applied over top.

Powder coating is an extremely durable, flexible coating that will withstand repeated bending and sharp impacts without chipping or flaking. However, care needs to be exercised when bolting powder coated components in place. To avoid chipping, use steel or nylon washers under nut and bolt heads. Remove all traces of high temp masking materials and plugs from previously masked machined areas or threads.

APPLYING MULTIPLE COATS

Typically, one coat of powder is all that is needed. However, some metallic or "chrome" type finishes need to be top coated with a clear or translucent finish to protect the metallic coatings from oxidation and dulling over time. Refer to individual powder specifications for guidance. Unique appearances can result by mixing powders. Professional finishes are possible by utilizing epoxy powder as a base, applying a color, then a clear powder as you would with a liquid coating.

For additional coats: Set voltage to 50 kV and amperage to 40 μ A. Keep a minimum Gun offset of 8" [200mm] and a large volume of powder flow.

- Once the first cure is complete, allow the part to cool without touching the surface.
- After cooling, support or hook the part in the spray booth or work area again.
- If changing the powder being applied, clean the Gun, Powder Feed Hose and Hopper with clean, dry compressed air before adding the next powder. See further description below in **CLEAN UP**.
- Attach the Ground Clip directly to a bare metal area on your part. This can be done by threading in an old bolt into an existing hole, or simply scraping the powder from an inconspicuous area, and attaching the Clip. **DO NOT** attempt to attach the Ground Clip to a previously powder coated surface as it acts as an insulator and will not provide a good ground.
- Apply the second coat in the same manner as the first, following the guidance in **APPLYING POWDER COAT**.
- Cure the second coat in the oven, following the same guidance as in **CURING POWDER COAT** again.

APPLYING MULTIPLE COATS TO PRE-HEATED PART “HOT FLOCKING”

Alternatively, powders can be applied to hot surfaces using a technique known in the industry as “Hot-Flocking”. Doing this causes the powder to “Flow-Out” immediately after landing on the hot surface. To use this technique:

- Pre-heat the part in an oven set temporarily to 50°F [28°C] above cure temp. This may take 10 - 40 minutes depending on size. The time that a part needs to be preheated varies with size and density. Heavy, cast parts will require more time. Thinner, lighter pieces require less time.
- After pre-heating, be sure to lower oven to the proper cure temperature, remove part from oven and immediately apply powder. The powder will melt and “flow” upon contact.
- Exercise care to avoid drips and runs. It can be easy to apply excess powder when hot flocking.
- Place coated part back into pre-heated oven set at cure temp for an additional 20 minutes to complete the cure.

NOTE: This method of “Hot Flocking” may be used on many non-conductive materials such as wood, ceramics, glass and more if it will withstand exposure to 400°F+ [205°C+] temperatures without harm.

CLEAN UP

⚠ WARNING SHOCK HAZARD!

DO NOT install, change or interact with an Emitter on the Gun unless the Control Unit is switched OFF and disconnected from the power supply.

⚠ WARNING FLAMMABILITY HAZARD!

- Powder coating powder poses a fire and explosion hazard when suspended in air. Keep away from ignition sources such as sparks and open flames! Never smoke when powder coating.
- DO NOT vacuum powder coating powder unless the vacuum is equipped with an explosion-proof motor.

⚠ WARNING RESPIRATORY HAZARD!

Dust and fine particles are dispensed in use which can contain hazardous or toxic substances. Breathing this dust can cause respiratory health problems. Always use NIOSH approved respiratory protection while using this powder coating.

⚠ NOTICE STATIC CHARGE BUILDUP

- DO NOT use solvents when cleaning your HotCoat 100kV Powder Coating System. The Gun and components are intended to be cleaned with compressed air only.
- Failure to clean the Gun, Hopper, and Powder Feed Hose adequately between color changes may result in mixing of the colors, resulting in an unexpected cured appearance.
- Avoid using more than 90 PSI [6 bar] of air pressure to clean components. Damage could be incurred with careless, excessive application of air pressure.

POWDER COATING GUN

- Verify the unit has been switched **OFF** and disconnected from power.
- With gloves on, disconnect the Powder Feed Hose from the Gun.
- Unthread and remove the Emitter Retaining Cap, Emitter from the Gun. Set aside in a safe location.
- Using a blow gun, carefully blow air into the bore at the end of the Gun Body to blow out powder.
- Direct blow gun through the powder inlet at the underside of the Gun handle. Switch between these two locations until all powder is blown out of the Gun Body (**FIG 16**).
- Blow off any remaining powder from the outside of the Gun Body.
- Carefully, blow off all powder residue from the Emitter before reinstalling it to the Gun Body.
- Blow off all powder from the Emitter Retainer and rethread it onto the Gun.

NOTE: Recycling powder is not recommended because any debris will result in a rough surface and a compromised finish. Contaminated powder can be safely disposed of in the trash.



2 LBS. HOPPER AND POWDER FEED HOSE

- With gloves on, gently pull the Powder Feed Hose from the fitting on the Hopper.
- Using a blow gun, blow out all powder from the Powder Feed Hose.
- Unlatch the Hopper Lid and carefully pour out any remaining powder from the Hopper. Place any unused powder in the original container.
- Using a blow gun, blow out remaining powder left in the corners and crevices of the Hopper.

NOTE: To minimize repeated cleanings, extra Powder Feed Hoses and Hoppers may be purchased from Eastwood to dedicate for specific colors.

STORAGE

- Before putting the unit into storage, clean it of powder build up as described in **CLEAN UP** above. If stubborn powder exists, cleaning brushes can be used to dislodge it.
- Store the unit only in a dry, safe location and preferably covered with plastic sheeting for additional protection.

TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
Powder Does Not "Stick" to Surface of Part	Poor Grounding	<p>The most common cause of failure of powder to stick to a part is poor grounding. There must be a complete and reliable ground path between the Ground Clip and the part to be coated. Any dirt, surface rust, or other insulating agent between the Ground Clip, hanging wire, hook or rack MUST be eliminated before continuing.</p> <p>To verify ground:</p> <ol style="list-style-type: none"> 1. Unplug Control Unit from power source. 2. Use an electrical multimeter set to the audible "buzz" or sound position and check for continuity between the Ground Post at the rear of the Control Unit and the part to be powder coated. A self-powered test light may also be used. 3. Correct the cause of poor ground and re-test.
Powder is Being Repelled from Surface of Part or Bare Areas are Appearing on Surfaces Where Powder Previously Attached	A Repelling Charge Has Built Up on the Part, Known in the Industry as the "Faraday-Cage Effect"	<p>Stop all work and blow off clinging powder. Place in oven at 400°F [204°C] for 5 - 10 minutes to dissipate static charge. Remove and allow to cool to room temperature before reapplying powder.</p> <p><u>If first coat:</u> Set voltage to 70 kV and amperage to 50 µA.</p> <p><u>If additional coat:</u> Set voltage to 50 kV and amperage to 40 µA.</p> <p>Hold Gun a minimum of 8" [200mm] from the part. Adjust air pressure to get a large volume of powder expelling from the nozzle and coat recessed areas first.</p> <p>If powder flow is insufficient, you will saturate the part with negative ions and create back ionization issues. More powder flow also results in better coverage.</p>
	Air Pressure Supply to Gun is Set Too High	Reduce the Gun Air pressure setting on the Control Unit. Furnish a clean, dry, steady regulated air supply from a suitable compressor. Eastwood has an array of compressor and regulator choices available.
Powder Finish has Pits, Holes, Pockmarks or Bubbles	Surface of Part is Contaminated	<p>Part may be wet sanded with 400 grit abrasive paper to level out pits. Apply second coat of powder. Verify part is cleaned thoroughly with Eastwood PRE-Painting Prep or acetone to remove all traces of contamination.</p> <p>Remove powder coating and clean with Eastwood PRE-Painting Prep or acetone to remove all traces of contamination before reapplying powder coat.</p>
	Moisture or Other Contamination in Air Supply	Check for moisture or contamination in air line and Powder Gun Air inlet. Replace air supply hose and eliminate source of moisture or contamination with a coalescing filter/moisture separator and disposable inline Filter.
Powder Finish Over a Casting has Pits or Bubbles	Impurities in Pores of Casting	<p>Porous cast iron, die cast, cast aluminum, and magnesium parts trap contaminants that, when heated, will outgas and cause bubbles as the powder is cured.</p> <ol style="list-style-type: none"> 1. Powder finish must be removed from part. 2. The part then must be thoroughly cleaned with Eastwood PRE-Painting Prep or acetone to remove all traces of contamination. The part then must be preheated and baked at a temperature 50°F [28°C] higher than the powder cure temperature. This may take 10 - 40 minutes depending on size. The time that a part needs to be preheated varies with size and density. Heavy, cast parts will require more time. Thinner, lighter pieces require less time. 3. Once the part has cooled, use Eastwood PRE-Painting Prep or acetone to remove the newly exposed contaminants. Wipe the part repeatedly until no further contaminants come off on a clean white rag. 4. Let the part cool to room temperature before re-applying the powder. <p>NOTE: Die-cast metal and solders vary widely in formulation, many of which can be difficult to powder coat and, in some cases may even melt at powder coating cure temperatures.</p>

TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
Powder Finish has "Orange Peel" Texture	Insufficient Coating, Over-Temperature Curing, or Excessive Powder Build-Up at Application	<p>Cure only according to the powder coat manufacturer's guidance with a calibrated oven.</p> <p>It is evident that excessive powder is applied when the powder particles begin to stand on end like hair. If this occurs, stop applying powder and with light air pressure blow off some of the excess powder.</p> <p>NOTE: Most powders inherently have a slight "orange peel" texture especially with polyester based powder formulations (the surface condition and preparation will affect smoothness). Cured powder may be "cut and buffed" just like liquid coatings to achieve a glass-smooth finish. Cutting and buffing is not recommended on metallic powders unless a clear is applied over top.</p>
Uneven Spray Pattern or Clumping of Powder	Moisture in Powder	<p>Moisture in the powder can occur from moisture in air supply or exposing the powder to extremely humid conditions.</p> <p>Check for moisture in air line and Control Unit air inlet. Replace air supply hose and eliminate source of moisture or contamination with a coalescing filter/moisture separator and disposable inline filter.</p>
	Air Pressure Supply to Gun is Too Low	Increase Gun Air Pressure setting on Control Unit. Furnish a clean, dry, steady regulated air supply from a suitable compressor. Eastwood has an array of compressor and regulator choices available.
	Powder Was Exposed to Excessive Heat During Storage and has Partially Cured in the Container	A kitchen flour sifter may work to break up clumps. If this is unsuccessful, the powder must be discarded.
	Level of Powder in Hopper is Too Low	Fill the Hopper to a minimum depth of 1" [25mm] of powder. Avoid filling more than halfway.
Powder Finish Flakes Off in Use	Improper Preparation of Part	Generally, a powder coating fails because of improper prep where impurities, contaminants or traces of a previous coating prevent good adhesion.
Powder Finish Chips in Use	Powder Coat Under-Cured	<p>Chipping or cracking will occur as a result of under curing. The chemical reaction that takes place at the cure temperature is not finished and results in a weak film.</p> <p>Part may be cleaned and re-exposed to cure temperature which may complete the cure. However, it is advisable that the powder film be completely stripped before a proper prep is done and powder coat is re-applied.</p>

ADDITIONAL ITEMS

SAFETY ITEMS

- #43090 Safety Goggles
- #31575 Rockwood Valved Dust Mask (10-Pack)
- #21294 Welding Gloves

SPARE/REPLACEMENT ITEMS

- #54308 Grounded Powder Feed Hose 13' [4.9m]
- #54313 2 lbs. Powder Hopper with Lid, Base
- #71846 Powder Feed Hose Coupler
- #71854 Air Tubing, 12' [3.7m]
- #71855 Standard Emitter (includes 18mm Deflector, installed)
- #71856 Fan Pattern Emitter
- #71857 16mm Deflector (2 Pack)
- #71858 18mm Deflector (2 Pack)
- #71859 22mm Deflector (2 Pack)

PART PREPARATION

- #10041Z Eastwood PRE-Painting Prep Aerosol 12 oz
- #11949Z Eastwood Low VOC Pre Paint Prep Aerosol 12 oz
- #10288Z High-Temp Lab Metal Filler
- #58041 High-Temp Silicone Caps and Plugs
- #16315 High Temperature Polyester Masking Tape 1/8" x 72 yd
- #16316 High Temperature Polyester Masking Tape 1/4" x 72 yd
- #16317 High Temperature Polyester Masking Tape 1/2" x 72 yd
- #16318 High Temperature Polyester Masking Tape 3/4" x 72 yd
- #16319 High Temperature Polyester Masking Tape 1" x 72 yd
- #16321 High Temperature Polyester Masking Tape 2" x 72 yd
- #16315 High Temperature Fiberglass Masking Tape 1/2" x 36 yd
- #16315 High Temperature Fiberglass Masking Tape 1" x 36 yd
- #32054 Fine Line High Temperature Masking Tape 1/8" x 72 yd
- #32055 Fine Line High Temperature Masking Tape 1/4" x 72 yd
- #43045 0.041" Stainless Steel Safety Wire, 1lb. Spool

SPRAYING AND CURING

- #15556 Paint and Powder Coating Stand
- #70016 Benchtop Powder Coating Booth
- #33276 4X4X6 Powder Coating Booth
- #68076 Benchtop Powder Coating Oven
- #68139 Oven Thermometer
- #33273 4X4X6 Powder Coating Oven
- #10170 InfraRed Powder Curing Lamp, 1800 Watts
- #10680A Infrared Curing Lamp 6000, 6000 Watts

AIR SYSTEM COMPONENTS

- #31521 Rockwood Air Coupler Set
- #15862 Eastwood Powder Coating Polish
- #31633 Eastwood Air CFS Filter/Regulator
- #31635 Eastwood Inline Air Filters (2 Pack)
- #34570 Desiccant Snake

Visit eastwood.com for complete info and pricing.

If you have any questions about the use of this product, please contact

The Eastwood Technical Assistance Service Department: 800.343.9353 >> email: tech@eastwood.com

PDF version of this manual is available at eastwood.com

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