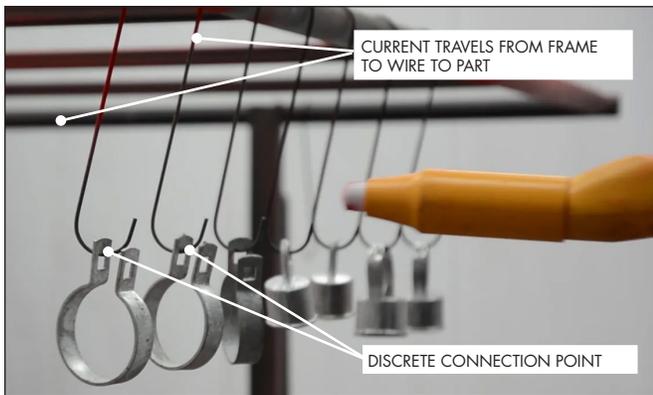# POWDER COATING OPERATION

POWER COATING OPERATION

1. WORK AREA PREPARATION

Powder coating involves spraying using pressurized air, so work area should be cleared to avoid over-spray (drop sheet, etc., if needed).

Work area must have generous ventilation.

CURRENT TRAVELS FROM FRAME TO WIRE TO PART
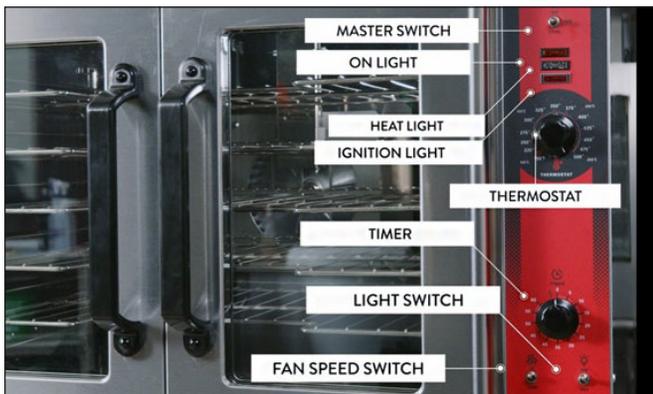
DISCRETE CONNECTION POINT

2. PREPARE TARGET OBJECT

A) Object to be powder coated must be electro-conductive and free of dust, oils, or coatings of any kind. Cleaning the object with blasting can often be beneficial.

B) Rough surfaces are poor candidates for coating.

C) Identify the point at which the object will be connected to electricity. This contact point will NOT be coated — it must remain bare metal — choose carefully.

MASTER SWITCH
ON LIGHT
HEAT LIGHT
IGNITION LIGHT
THERMOSTAT
TIMER
LIGHT SWITCH
FAN SPEED SWITCH

3. PRE-HEAT INDUSTRIAL OVEN

A) Arrange oven racks to accommodate object.

B) Turn on oven using MASTER SWITCH.

C) Set oven temperature to 300–500 degrees F using the THERMOSTAT. There is an upper oven and a lower oven. Each has separate temperature control.

4. WEAR PROTECTIVE GEAR

A) Respirator when powder spraying.

B) Nitrile, latex, or vinyl gloves when handling the powder and sprayed objects.

C) Eye protection.

D) Respirator when checking curing.

Make sure the protective gear you use has been disinfected. The drawers marked "Eye Protection" and "Breathing Protection" hold disinfected gear.

5. SET UP OBJECT TO BE COATED

A) Place or hang the cleaned object to be coated.

B) If the object has grooves or recesses, position the object so that gravity assists the powder mist to fall into the grooves or recesses.
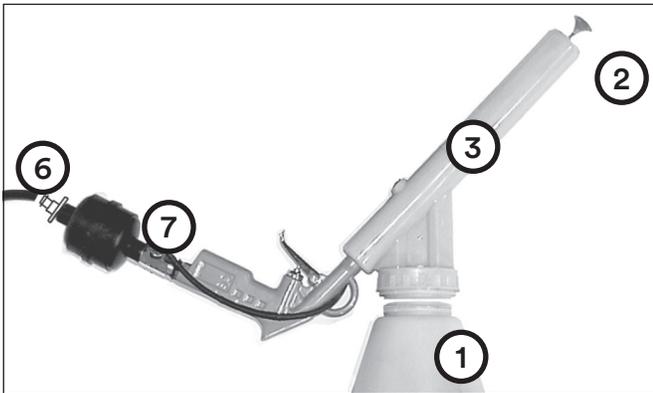
6. SET UP SPRAY SYSTEM

A) Connect system box to 110V outlet.

B) Unscrew the Powder Cup (1) from the Spray Gun and fill with up to two inches of coating powder of the desired color following these steps:

    1) Turn the Cup open side up, and place on a clean piece of paper.

    2) Put on a pair of disposal vinyl gloves and a dust mask.

    3) Open the powder coating container, and using a funnel, pour the powder into the Powder Cup.

    4) Turn the Spray Gun upside down and screw the Cup back into the Spray Gun.

    5) Reseal powder container.

C) Screw in the desired Scatter Tip (2) to the Conductor Pole (3).

D) Securely attach the Ground Clip (4) to the metal object being coated. Clip to an area which is not being coated. This connection is absolutely necessary to draw the electrically charged powder particles to the metal object.

E) Press the Control Box Power Switch (5) to the ON (I) position.

F) Connect air supply to quick release on Spray Gun (6) and adjust air pressure regulator to between 10 and 30 PSI pressure. Minor pressure changes can be made with the Pressure Reducer Valve (7).

7. TEST GUN

A) Press the Spray Gun Trigger (8) and Foot Switch (9) at the same time and test the spray pattern on a piece of scrap metal. The Trigger controls the air and powder flow. The Foot Switch controls the electrical charge. If the pattern is too small or too large, change the Scatter Tip size (refer to CHANGE SCATTER TIP section of this document).

The spray pattern can also be adjusted using the Regulating Screw (10): loosen to expand the pattern, tighten to reduce the pattern size.

8. SPRAY TARGET OBJECT

A) Pressing the Spray Gun Trigger and Foot Switch at the same time, coat the target object with powder.

B) When coating, keep the Spray Gun approximately eight inches from the target object.

C) Spray the object from different angles to guarantee that all areas are coated. When completed, the object should be completely coated with a dull, opaque coat of powder.

9. POST-SPRAYING PROCEDURE

When finished spraying:

A) Remove foot from the Foot Switch.

B) Press the Control Box Power Switch OFF.

WARNING: The Spray Gun is still electrically charged. Discharge any residual electricity by bringing the Scatter Tip in contact to the ground clip before touching the Scatter Tip or you may experience electric shock.
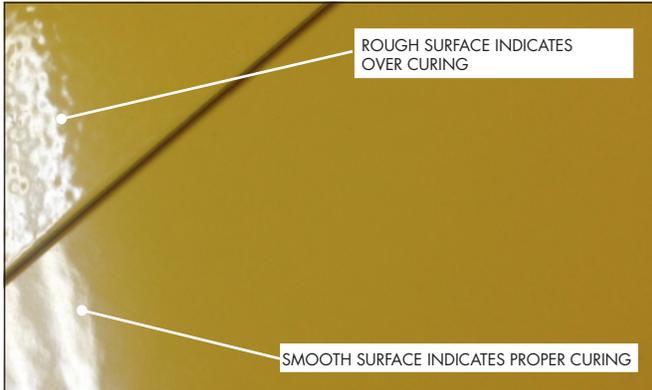
C) Wipe the Scatter Tip off with a clean cloth.

D) Unplug the Power Cord from the electrical outlet.

10. LOAD OBJECT INTO OVEN

A) Place an activated charcoal respirator over your mouth and nose.

WARNING: The fumes produced during curing are hazardous. Do not breath without resirator. Avoid skin exposure.

B) With the oven preheated to the desired temperature (300 to 500 degrees F), place the object on the oven rack or hang from top rack and close oven door.

POWDER COATING OPERATION

ROUGH SURFACE INDICATES OVER CURING

SMOOTH SURFACE INDICATES PROPER CURING

11. MONITOR CURING

Typical curing time is 15 minutes. Check the coating Powder coating container for recommended curing time and temperature.

If the object is large, curing may take more time.

The powder coating should melt to a smooth, gloss finish all over the object.

Check the curing object frequently to prevent over-curing which can cause roughness to the surface.

12. UNLOAD OVEN

When cured, switch the oven off and open the oven door slightly to allow the object to cool gradually before removing. **If the object is allowed to cool too rapidly, a dull finish may result.**

13. CLEAN-UP

A) Sweep and vacuum work area.

B) Return equipment and tools to designated location in PLAB.

C) After oven is fully cooled, remove any coating material from rack and/or oven bed with appropriate solvent.

14. CHANGING SCATTER TIPS

A) Remove Scatter Tip by rotating counter-clockwise.

B) Install Scatter Tip by rotating clockwise.

Be careful not to damage Scatter Tips.

PROCESS TIPS

- To remove an orange peel effect after curing, wet-sand the object with 400 grit sandpaper, dry, and repeat the coating process. Over-powder coating can cause the orange peel effect.
- Polish with traditional paint polishes.
- Lightly buff with a loose wheel and white rouge compound to remove imperfections.
- Thoroughly clean the Powder Cup before changing to a different powder.

- Some powders are made from polyester, others are polyurethane. Mixing both can cause pitting of the coated object.
- If the powder starts to buildup in one place, blow off with light air pressure. Moisture in the air can cause powder buildup.
- Poor disbursement can be caused by low air pressure.
- Cup should have at least one inch of powder during coating.
- Automotive paint remover removes a **cured coating.**