POWDER BUY THE POUND®

Your Complete Source for Powder Coating Supplies

Powder Coating Gun Controler

Operator Manual

for models

ES01 & ES02

Including Complete System Options
with VectorWave™ TECHNOLOGY

SpectraCoat™

P S S

— Warning —

This system generates HIGH VOLTAGE. Read and understand the directions in this manual before using the system. Electrical shock can occur if improperly used.

READ THIS MANUAL!

Powder Coating Training is available from PowderBuyThePound.

These classes will help you to understand and operate your new *SpectraCoat*™ powder coating system or the operation of most professional powder coating systems.

Call the office @ 615-776-7600 and ask to schedule your training today!

Our Powder Coating Classes Teach:

- ☐ Powder types
- ☐ Powder curing
- ☐ Powder application
- ☐ Applying second and multiple coats
- ☐ Heat flocking, or shooting warm/hot
- ☐ Surface and part preparation and pretreatment
- ☐ Chemical stripping
- ☐ Degreasing
- ☐ Out-gassing
- ☐ Iron phosphate cleansing and conversion coatings
- ☐ Acetone, denatured alcohol

Hands on Instruction includes:

- ☐ Powder coating controllers (settings and use)
- ☐ Media blasting (ie: sand blasting)
- ☐ Pressure hoppers
- ☐ Fluidizing hoppers
- ☐ Cleaning and ongoing maintenance of your equipment

Learn to avoid and correct:

- ☐ Back ionization
- ☐ Contamination
- ☐ Out gassing

2-Day Class:

Includes in-depth instruction and hands-on experience
SKU210801

4-Day Class:

Two additional days of creative lab and personalized, hands-on training
SKU2148

1.0
Specifications:

Item	*Description*
Input Power	**Auto Switching 110-120 / 220-240 VAC**
Watts	**50 watts at maximum gun output**
Gun Output	**0-100 Kv — 0-150µA**
Air Pressure	**Maximum input air pressure 80 psi**
Fuse	**2A**

1.1
SpectraCoat™ Systems

Congratulations on purchasing a *SpectraCoat™* Powder Coating Gun Controller! Engineered for professional results with package options accessible to the beginner who wants professional results from his powder coating gun and for the industry professional who wants quality equipment with quick color change features and an affordable price.

Unpacking your *Spectracoat*™ System:

Carefully open the box and unpack the contents. Lay out the parts for counting and inspection. With the checklist provided, confirm the complete shipment of the system you ordered.

The following pages list precisely what is included with each of the *SpectraCoat*™ ES 01 and the *SpectraCoat*™ ES02 systems.

ES01-WC

- ES01 Control unit with Wave Board

- ES01-ES02 Manual
- Manual Gun VIII
- Connectivity Pack
  - ☐ 110v Power Cable
  - ☐ Green Ground Cable, 15 ft
  - ☐ Quick connect adapter
  - ☐ Outer nut
  - ☐ Round spray electrode
  - ☐ Fan spray electrode
- Hoses – 15' Red ¼ inch air line
- Pressure Hopper - ½ LB

ES01-WP/ES01-WH

- ES01 Control unit with Wave Board

- ES01-ES02 Manual
- Manual Gun VIII
- Connectivity Pack
  - ☐ 110v Power Cable
  - ☐ Green Ground Cable, 15 ft
  - ☐ Quick connect adapter
  - ☐ Outer nut
  - ☐ Round spray electrode
  - ☐ Fan spray electrode
- 12 ft of 12mm grounded powder tube
- Hoses
  - ☐ Red ¼ inch air line, 5'
- Pressure Hopper, 1½ LB

ES02-WC

- ES02 Control unit with Wave Board

- ES01-ES02 Manual
- Manual Gun VIII
- Connectivity Pack
  - ☐ 110v Power Cable
  - ☐ Green Ground Cable, 15 ft
  - ☐ Quick connect adapter
  - ☐ Outer nut
  - ☐ Round spray electrode
  - ☐ Fan spray electrode
- Hoses
  - ☐ 15' Red ¼ inch air line
- Pressure Hopper, ½ LB

ES02-WP

- ES02 Control unit with Wave Board

- ES01-ES02 Manual
- Manual Gun VIII
- Connectivity Pack
  - 110v Power Cable
  - Green Ground Cable, 15 ft
  - Quick connect adapter
  - Outer nut
  - Round spray electrode
  - Fan spray electrode
- 12mm Grounded Powder Tube, 12 ft
- Hoses
  15' Red, ¼ inch air line
- Pressure Hopper, 1½ LB
  - "T" quick connector
  - 5' of Blue ¼ inch hose
  - Regulator with quick connectors

ES02-WF

- ES02 Control unit with Wave Board

- ES01-ES02 Manual
- Manual Gun VIII
- Connectivity Pack
  - ☐ 110v Power Cable
  - ☐ Green Ground Cable, 15 ft
  - ☐ Quick connect adapter
  - ☐ Outer nut
  - ☐ Round spray electrode
  - ☐ Fan spray electrode
- 12mm Grounded Powder Tube, 12 ft
- Hoses
  - ☐ 5' Red ¼ inch air line
  - ☐ 5' Clear ¼ inch air line
- Powder Pump
- Fluidizing Kit
  - ☐ "T" quick connector
  - ☐ 5' of Blue ¼ inch hose
  - ☐ Regulator with quick connectors
- Gray Fluidizing Bucket Hopper, 2 LB

1.5

Electrical Safety:

- This system must be properly grounded for safe operation. Do not remove or bypass the ground plug. This system must be plugged into an AC power source with a proper earth ground. This is necessary for the safe operation of the unit and to prevent electrical shock.
- Operate this powder coating system in a clean and dry work area.
- While spraying, or doing other trigger down KV and Air Solenoid tests, and/or experiments, avoid touching the electrode tip of the gun. Doing so can cause a static shock which could be painful.
- During the coating operation, always maintain a minimum distance of at least (4") between the gun and the part being coated.

VERY IMPORTANT!

Never touch the tip of the gun to a part being coated or any other metal part grounded or not. Touching the electrode tip of the gun to any metal part to see if it sparks may void your warranty. Spark suppression is built into the control unit and gun to minimize the possibility of static sparking.

Evidence of spark testing in returned repair work voids owner's warranty!

(NO SPARK TESTING ALOWED)

1.6

General Safety:

- Do not operate the *SpectraCoat*™ ES System near an open flame. Powder coating dust can be combustible given the right circumstances. Back Ionization Sparks in a dense enough powder can cause the powder to ignite.
- This system utilizes compressed air. Always use proper eye, ear, and skin protection while operating.
- Operate the SpectraCoat™ ES system in a clean, well ventilated area or booth with adequate air filtration.
- Always use a respirator, particle filter mask, or a vapor mask while operating any powder coating spray system.
- The gun handle is the point where the operator is grounded. Always hold the gun handle with your bare hand. DO NOT wear a glove on the hand that is holding the gun unless you know you are grounded to the system through another means, such as a ground strap or conductive glove.



VERY IMPORTANT!

Keep your unit free from extremes of moisture and dust. Clean dry compressed air is required in powder coating.

Cleaning dirty or seized regulators and solenoids is not covered under warranty and evidence of moisture, extreme dusty environments or dirty compressed air source voids owner's warranty!

(CLEAN DRY COMPRESSED AIR AND OPERATING ENVIRONMENT ARE REQUIRED)

1.7
Voltage

Input Voltage Selection and Fuse Replacement:

Always unplug the unit from the AC power source before changing the fuse.

Auto Switching Input Voltage Power Supply:

Each Spectracoat system is equipped with an auto switching power supply that can be used with either 110V or 220V without having to make any changes for international customers. You may need to supply the correct power cable or adapter to use in your country.

The actual input range is 100-240VAC. This power supply provides the control board with stable power and consistent voltage output, with improved Faraday area coverage performance on second and third coats over older technology.

It is very important that the AC power source for the *SpectraCoat*™ ES is properly grounded to the building's electrical service. Check the electrical wall service for the powder coating gun controller and make sure the ground is engaged. This common ground is separate from the green earth ground wire that is provided for connection to the back of the unit.

Fuse Replacement:

The fuse is located in the Fuse Drawer of the power entry module.

- ☐ Remove the AC power cord.
- ☐ Insert the tip of a small flat screw driver into the slot at the top of the fuse drawer in the power entry module.
- ☐ With a gentle prying motion pull out the Fuse Drawer.
- ☐ If blown, replace with a new 2 Amp fuse. A blown fuse commonly looks clouded or has a dark spot. If you see these symptoms the fuse should be replaced. You can also test for resistance. Good fuses will have zero resistance (closed or short circuit). A blown fuse will give no resistance reading (open circuit).

1.8

Shop Air

What You Need To Know

Air delivery is an important part of a powder coating operation. The wrong air pressure or filtration system may result in poor spray performance and ultimately will damage your powder coating equipment

Consistent Air Pressure!

The *SpectraCoat*™ systems work best if they are driven by shop air systems that maintain regulated air pressures of at least 50 up to 80 PSI and 5 CFM per ES control head. This ensures that there is enough air volume to properly fluidize the powder in the hopper(s) and run steady supply air to all of the other pressure lines.

If you are running more than one *SpectraCoat*™ or any of the ES control heads together in contractor packs, on the same airline, then make sure your shop air system is showing 60 to 80 PSI and 5 CFM constant at the Air Input on the back panel of *each* control unit in series or each stand alone unit.

Example:
Two ES control units will run well at 60 to 80 PSI and 10 CFM. Three ES control units will run well at 60 to 80 PSI and 15 CFM.

Use clean dry air only!

Moisture in the shop supplied air will reduce the static charge to the powder and cause moisture/solvent popping or pin holes in the cured film.

The ES control unit uses industrial regulators that do not show CFM. The regulators show active PSI usage with the trigger engaged.

Having sufficient and consistent air pressure is required for ensuring air volume to properly fluidize/condition powder in a hopper(s) while running steady supply air to the other pressure lines in your system.

The supply air used with all of the *SpectraCoat*™ systems must be clean. It must be free of oil and moisture. It is very important that you have an air drying system in line between your air compressor and any *SpectraCoat*™ system.

Air pressure over 80 PSI can press hard enough against the industrial strength springs in the regulators to open them slightly. This will make a hissing sound. If this happens, turn down your shop air pressure supply feeding the control unit. You can monitor the shop air input fitting with a PSI and CFM Regulator/Monitor installed in the shop air line input on the back panel of the ES02.

1.9

How it works

Magic!

As with all corona charged powder coating systems, the *SpectraCoat*™ Gun Systems, and the parts to be coated must be properly grounded. This is essential to the operation of a corona generating electro-static powder coating system and to the quality of the finished coating.

As powder passes through the electro-static corona field emitted from the electrode tip of the gun, the powder particles become energized with a negative electrical charge. Parts that are properly grounded attract the negative ions, drawing them to ground. The charged powder particles within about 4 to 6 inches magnetically attract and adhere to the part.

Without proper grounding, the magnetic field is weak and does not attract and hold powder.

The thing in your shop that has the best ground will attract ionized powder the most.

Make sure it is your part!

Industry standards for powder coating mandate that resistance for an open ground drain be measured at less than 1 Mega Ohm. This is the path for the electrical charge to flow away from the surface of the part, in effect draining the ions as fast as they transfer to the substrate.

While spraying and charging powder, even a well grounded part can eventually fill up with electrostatic negative ions like a bath tub full of water. This negative ion charge pooling is stored in the part. There are also areas of the part where magnetic fields overlap, called a Faraday Cage. These situations create force-field type repulsion of charged powder particles. The resulting coatings will be poor, showing uneven coverage or rejecting powder adhesion.

Always have the best possible ground!

Not all workshops operate in the same environmental conditions. Local grounding conditions will change without notice as a result of the water table rising and falling. Know your area and be aware of surrounding weather conditions.


Important Grounding Note:

The included green grounding wire runs from the ground lug on the back of your control unit to an 8’ copper earth ground rod

NOT to the part being sprayed!

Your part will need a separate grounding wire running from it to the 8’ Grounding Rod. A 12 gauge or larger stranded grounding wire is a REQUIRED minimum for powder coating safety.


2.0

Setup the *SpectraCoat*™ ES01

Before you start operating the SpectraCoat™ ES01, take a minute to examine the front and back panels. Familiarize yourself with the controls, fittings and the Gun.

Front Panel

- (1) Feed air regulator
- (2) Feed air guage
- (3) Voltage (KV) adjustment knob, adjusts the level of kilovolt output at the gun electrode tip
- (4) Gun voltage (KV) and current (Amps) output indicator - active when the trigger is pulled on the gun
- (5) Main power switch and power on indicator
- (6) Faraday *VectorWave*™ activation switch (optional)

Back Panel

- (7) Spray gun cable connector
- (8) Serial number
- (9) Ground lug with wing nut
- (10) 110 volt input
- (11) ¼" hose (red)*
- (12) Supply air fitting (⅜") . Use no more than 80 PSI
- (13) 2 amp glass fuse

*Special note: regulators indicate controlled pressure only when the trigger is pulled. Dial them down before you start spraying to avoid wasting powder

ES01 General Setup:

Connect the AC power source last, after all other connections have been made.

- Unscrew the gray nose cone from the gun and insert the desired white electrode nozzle into the gun. Round tip nozzle is recommended for beginners. Reinstall the nose cone until snug.
- Insert and twist the gun cable end to the gun cable connector on the back panel.
- Unscrew and remove the wing nut from the ground lug (leave the hex nut, and confirm that it remains tight for proper grounding). Put the open eye of the green ground cable onto the ground lug. Tighten only finger tight - No wrench needed.
- Install your shop air disconnect into the threaded end of the quick connect adapter.
- Insert the tube end of the quick connect adapter into the main air fitting on the back of your control unit.

Configuration:

ES01-C & WC

- Insert one end of the red ¼" pressure hopper hose into the ¼" connector labelled "feed" on the back of the control unit.
- Insert the other end of the 15' red ¼"air line into the ¼" elbow fitting on the ½lb powder hopper.
- Attach the white barb on the .5lb powder hopper cup lid to the black powder in barb at the base of the gun handle with the short ½" X 3" powder hose jumper.
- Insert the 1/4" tube end of the ES01 quick connect adapter into the main air fitting on the back of your ES01 control unit.
- After completing all of the above steps, connect your AC power cord.

ES01-P & WP

- Insert the red ¼" hopper pressure hose into the ¼" hopper feed fitting on the back of the control unit.
- Insert the other end of the 15' red ¼"air line into the ¼" elbow fitting on the 1½lb powder hopper.
- Attach the white elbow barb on the 1½lb powder hopper cup lid to the black powder barb at the base of the gun handle using the ½" grounded powder hose.
- After completing all of the above steps, connect your AC power cord.

See the video setup of the ES01 and ES02 on

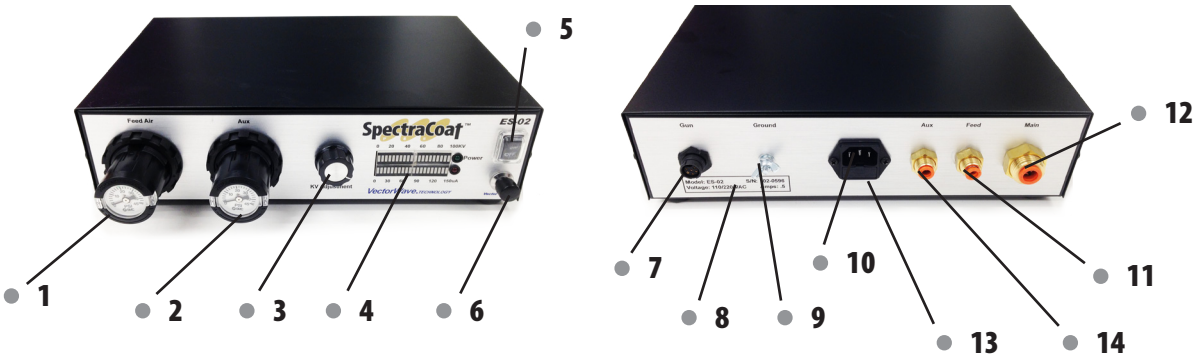
YouTube

YouTube.com/user/powdercoat101

3.0

Setup the *SpectraCoat*™ ES02

Before you start operating the SpectraCoat™ ES02, take a minute to examine the front and back panels. Familiarize yourself with the controls, fittings and the Gun.



Front Panel

- (1) Feed air regulator and guage
- (2) Auxiliary air regulator and guage
- (3) Voltage (KV) adjustment knob, adjusts the level of kilovolt output at the gun electrode tip
- (4) Gun voltage (KV) and current (amps) output indicator - active when the trigger is pulled on the gun
- (5) Main power switch and power on indicator
- (6) Faraday *VectorWave*™ activation switch (optional)

Back Panel

- (7) Spray gun cable connector
- (8) Serial number
- (9) Ground lug with wing nut
- (10) 110 volt input
- (11) ¼" hose (red)
- (12) Supply air fitting (⅜") . Use no more than 80 PSI
- (13) 2 amp glass fuse
- (14) ¼" hose (clear)

*Special note: regulators indicate controlled pressure only when the trigger is pulled. Dial them down before you start spraying to avoid wasting powder

ES02 General Setup:

Connect the AC power source last, after all other connections have been made.

- Unscrew the gray nose cone from the gun and insert the desired white electrode nozzle into the gun. Round tip nozzle is recommended for beginners. Reinstall the nose cone until snug.
- Insert and twist the gun cable end to the gun cable connector on the back panel.
- Unscrew and remove the wing nut from the ground lug (leave the hex nut, and confirm that it remains tight for proper grounding). Put the open eye of the green ground cable onto the ground lug. Tighten only finger tight - No wrench needed.
- Install your shop air disconnect into the threaded end of the quick connect adapter.
- Insert the tube end of the quick connect adapter into the main air fitting on the back of your control unit.

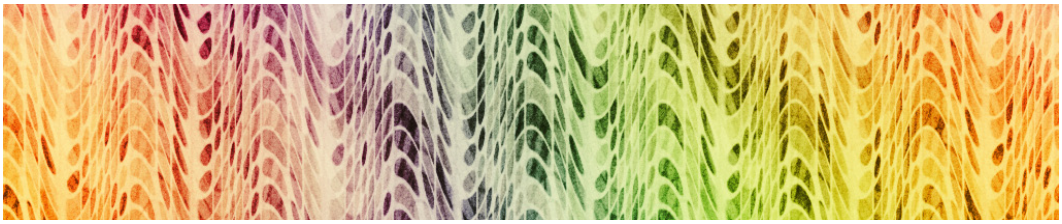
Configuration:

ES02-P & WP, ES02-C &WC

- Insert the ¼" red hose into the ¼" feed pressure fitting on the back panel. Insert the other end of the same ¼" red hose into the ¼" hose fitting on the cup hopper lid.
- Insert one end of the ¼"black or clear auxiliary air hose into the ¼" auxiliary air fitting on the back of the ES02. Connect the other end of the same hose to the chrome ¼" rinse air nipple on the bottom of the gun handle.
- Connect the powder hopper to the black barb at the base of the gun handle using the ½" powder hose. [For **ES02-P & WP** models, use the 12' of ½" grounded powder hose to connect to the 1.5 LB pressure hopper lid.]
- After completing all of the above steps, connect your AC power cord.
- Squeeze the trigger to set the PSI on the aux regulator at 4 to 5 PSI, and the feed regulator at 8 to 10 PSI

ES02-F & WF

- Connect one end of the ½" grounded powder feed hose to the ½" barb fitting on the front of the venturi pump.
- Insert the other end of the ¼" black or clear auxiliary air hose into the ¼" dosage air fitting on the top front of the powder pump.
- Insert one end of the ¼" red hopper feed hose into the ¼" feed air fitting on the back (top) of the powder pump. The powder pump sits on (top) the *SpectraCoat*™ constant fluidizing hopper.
- Connect one end of the ½" grounded powder hose to the black ½" nozzle barb on the front of the powder pump atop the *SpectraCoat*™ constant fluidizing hopper.
- Squeeze the trigger to set the PSI on the feed air regulator at 8 to 10 PSI. *Note for Starting out: Your Feed Air should be about twice the pressure of your aux/dose air PSI.*



Powder Buy The Pound
VectorWave™ TECHNOLOGY

(Available on the *SpectraCoat*™ ES-01, ES-02, and ES-03 systems only)

With the optional Faraday *VectorWave*™ feature engaged you could easily coat those previously challenging recessed, concave, inside angles, outside corners, and other areas that would normally present a Faraday cage effect.

With our optional *VectorWave*™ feature engaged and the gun trigger pulled, you will see the Red and Green LED meter bridge cycle/sweep back and forth within your selected KV range. You can control the KV range that the unit cycles/sweeps through, by adjusting the KV Knob.

Below is an example of normal and favorable operating settings.

Always start with a higher KV setting, such as 80 KV. This allows you to drop 20 KV each time you return to apply multiple coats.

For the second coat, set the KV knob at 40-60 KV then press the *VectorWave*™ button. If you are planning a third coat then leave the *VectorWave*™ off until it is time to apply the third or final coat.

Before applying the third coat, set the KV knob at somewhere between 20-40KV. If this is your final coat then turn on the *SpectraCoat*™ systems *VectorWave*™ *TECHNOLOGY*™.

Example ~ First coat 80 KV, 2nd coat 60 KV, 3rd coat 40 KV, 4th coat 20 KV

These procedures are anticipated starting points for the operation of all semi-pro and commercial *SpectraCoat*™ systems.

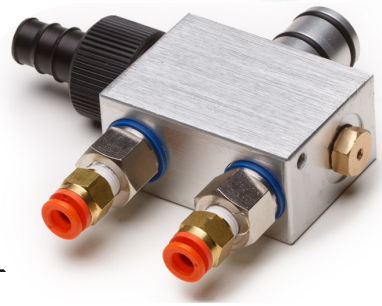
Color Change and Cleaning

Color changing and cleaning are pretty much the same operation. It is always a good idea to keep the SpectraCoat™ gun clean between jobs, as with other systems.

Do yourself a favor and clean the system when you are done for the day/night.

Any powder left in the hopper, feed lines, or gun can be very difficult to clean out later or forgotten altogether. This can potentially create frustrating contamination issues. For this procedure, you will need an air nozzle on a shop airline to blow any residual powder from the system hoses and nozle. An air pressure level of 80-100PSI is recommended for the cleaning process.

Wiping system parts with Micro Fiber Towels and Denatured Alcohol is also a very good idea. The Alcohol in the Micro Fiber Towel helps lift out very small particles that cannot be removed by air alone. **Only use clean, lint free microfiber towels!**



6.0

Warranty & Repair Info

When you decide your system is not functioning properly and you need help or want to send in a tool for testing, warranty, or repair, please follow these simple steps to expedite your service.

1. Before sending your coating system, call our technical department for assistance! Many repairs can be made with replacement parts right in your shop, and some require additional tools and training available only at PowderBuyThePound.

Dirty Regulators and Solenoids are not covered under this warranty. We can replace regulators and solenoids that have been damaged.

2. After determining that a system or part needs to be repaired by our trained technicians, we will assign an RMA number to each item to be sent to us. Please complete an information sheet provided with your RMA number and pack it in a box along with adequate protective packaging and your item for repair. Keep a copy of this information for your records.

- ☐ Name of the purchaser for this product (name used in the original invoice is required for warranty service!)
- ☐ Return shipping address
- ☐ Contact phone AND e-mail address
- ☐ Serial number of the product and/or original invoice number
- ☐ Note any circumstances or problems surrounding your device:, such as:
  - controller is leaking air;
  - gun spits powder;
  - system was caught in a flood;

Standard shop rates apply for non-warranty repair labor and parts.

Shipping of warranty items to PowderBuyThePound is paid by the customer, and return shipping to the customer will be paid by PowderBuyThePound.

Gun system warranties extend 1 year from the original owners purchase date on invoice. The warranty is not transferable to new owners. Models included are ES01, ES02, ES03, and the related accessories included with these systems.

Oven frames, walls, floors, ceilings, door seal, hinges, door latches, building hardware, heating elements, wiring, control panel including control box internal parts and switches, are warranted for 6 months from delivery date on the original owners shipping invoice.

An extended warranty is available at the time of purchase. Please inquire with our sales team regarding the purchase of extended warranty products.

RELIABLE ACCESSORIES & REPLACEMENT PARTS,
OVENS, BOOTHS, STARTUP PACKAGES
& HANDS-ON TRAINING
are all available
through our website at

PowderBuyThePound.com

See you there!

POWDER BUY THE POUND®

2011 Johnson Industrial Blvd. Nolensville, TN 37135

Phone 615-776-7600
Fax 615-776-2963

PowderBuyThePound.com

Please read and understand this manual thoroughly before attempting to operate

SpectraCoat™ ES Powder Coating Systems and accessories.

Due to ongoing research, development, and quality control, SpectraCoat™ Systems specifications, design parameters, and operations training are subject to change at the manufacturer's sole discretion.

This book in no way claims to contain all information available regarding powder coating technology, equipment and practice, but represent a standard of instruction for most powder coating operators.