CASWELL Inc

PROFESSIONAL GOLD PLATING INSTRUCTIONS

BRUSH PLATING

3 Amp Constant Current Rectifier
Constant current/voltage power control - Only $95.00
This new system has the latest technology for small plating and anodizing operations. Several of our plating systems use small amounts of current, and if plating parts with only a few square inches, this can sometimes be a real problem to obtain accurate current outputs from larger machines.
The system will operate comfortably at 1/10 of an amp.

To operate:
For constant amperage control:

1. Adjust the voltage knob to the maximum clockwise position
2. Switch the power ON
3. Adjust the amps knob to the desired output voltage
4. Connect the plating tank to the unit

For constant voltage control

1. Adjust the amperage knob to the maximum clockwise position.
2. Adjust the voltage knob to the minimum anti-clockwise position.
3. Switch the power ON.
4. Connect the plating tank to the unit
5. Adjust the voltage knob to the desired amperage requirement

For restricted current protection:

1. Switch the power ON.
2. Adjust amperage knob to the maximum anti-clockwise position.
3. Adjust voltage knob to the desired voltage position.
4. Connect to the plating tank
5. Adjust the amperage knob clockwise to set the output current at the desired level for restricted current protection.

In the event of a short circuit, at the output, the current will limit at the value set by the current controls, however the unit should be turned off and the short circuit removed before continuing use.
Specification:

- Input voltage: 110 ac 50/60Hz
- Line Regulation: CV < 0.01% +1mV
- Load Regulation: CV< 0.01%+3mV(<3A)
- Ripple & Noise: CV<0.5mVr.m.s (1<3a)
- Protection: constant current and short circuit protection
- Voltage Indication Accuracy: 1%+2 digits
- Current Indication Accuracy: 2%+ 2 digits
- Environment: 0-40 deg C
-

Unlike competitors 'pulse platers', this machine is infinitely variable to allow the user to alter current or voltage to suit a variety of plating techniques and solutions. So, immersion and brush plating can be done with this system.
Fastgold is a 24-carat hardened gold, designed particularly for the aggressive environment that car emblems are subjected to. It is cyanide free and has the advantage of coming in liquid form, which can be gelled using the gelling powder included in the kit.
The nickel substrate exposed once the chrome stripper is used, does not need to be activated to use Fastgold, saving a step over competitive systems.
The Flash Copper solution is ideal for plating over old pot metal emblems, where pitting or corrosion has eroded the nickel base and exposed the pot metal. After applying Flash Copper to the pot metal, nickel can be applied prior to gold plating.
Copy Chrome may also be applied over a nickel base, to give it that 'bluer' chrome appearance.
Black Krome™, applied over a nickel base, will give that 'smoked chrome' appearance that is so popular today.

- 1 x 3 amp Constant Current Power Supply 110volt input
- 1 x wand kit comprising:
  - 2 x 4 feet connecting wires (red & black)
  - 3 Banana plugs (2 red, 1 black)
  - 1 alligator clip (black)
  - 3 Stainless Brush Plating wands & bandages
- 1 Copper Brush Plating Wand & bandage
- 1 x 4oz 24-carat Fastgold (plates approx 2-3 sq ft)
- 1 x 4oz Gelling Powder
- 1 x 8 oz PNP Nickel Plating solution
- 1 x 8oz PNP Flash Copper Plating solution
- 1 x 8oz PNP Copy Chrome Plating solution
- 1 x 8oz Black Krome™ Plating solution
- 1 x 8oz Chrome Stripper

Silver wands are used for:- silver, gold, nickel, Copy Chrome. Brass wand is used for:- Brass. Copper wand is used for:- Copper
Set voltage @:-Brass, Nickel, Copy Chrome = 4.5 to 6 volts. Copper, 1-5 to 3 volts. Silver 3/4 to 1.5 volts

Making up your brush plating wands.
Clean off the metal blade with some steel wool, then wrap a cotton bud around it. Cover with the bandage supplied, wrapping the entire metal area carefully, ensuring NO METAL is showing. Secure with a rubber band. The wand should now look like a huge Q-Tip. Affix the banana plugs etc to their respectively colored wires, and the power supply connectors to the other ends. Plug the red plug into the end of the wand. The end of the wand may need crimping to tighten it to the plug. Use a pair of pliers to squash the tube gently onto the plug. Occasionally, oxides will build up on the plating wand blade. These should be removed with a wire brush or emery paper.

Surface preparation
All surfaces must be highly polished and thoroughly cleaned, with no corrosion. This can best be achieved by buffing and polishing.

Brush Plating Procedure
Pour a small quantity of plating solution into an eggcup sized plastic container. (The actual lid of the plating solution will do). Firstly, dip the clean wand into the entire bottle. Hold onto the bottle, otherwise it WILL tip over. Let the solution thoroughly soak into the bandage. This should take about 30 seconds.

Proceed to brush plate the area to be treated, using soft strokes, (somewhat like stroking a cat). Do not stop in any one place, otherwise 'burning' will occur. You should plate at about 1 sq. inch per minute. After a few seconds, you will find that the plating is no longer proceeding as quickly. This is because all of the metal has been used up from the solution contained on the wand. Dip the wand in the smaller amount of solution (in the eggcup), and NOT in the main bottle. Harmful oxides build up during brush plating, and repeated dipping of the contaminated wand will spoil many of the solutions. You may repeatedly dip your wand into the smaller amount of solution.

If the plating has black streaks, speed up the wand action and press down harder. A few more passes over the blackened area will clean it up. This is especially prevalent with silver plating. To improve the finish of a repair to a silver plate, we recommend a final clean/polish of the entire surface of the part with SILVERSMITH or SILVERPLATER solution.

Technical Tip. Place the solutions (in a glass container) in a microwave, and heat on high for approx 30 seconds before plating, to attain approx 110 deg f.. At the same time, place the part to be plated into hot water. When warm, proceed with plating. The additional heat will dramatically improve plating speed.

Gold Emblem Plating The system must be applied to a nickel or buffed copper plate surface.

To plate emblems requires a two step process:-

1. **Stripping. Removing the existing chrome.**

Attach a plating wand to the NEGATIVE side of your power supply. You can clip the alligator clip inside the end of the wand, ensuring electrical contact with the metal. Press the positive terminal plug to the work piece.
Make up a stripping solution of 1 level spoonful of CASWELL ANODIZE & CHROME STRIPPER, to 9 spoonfuls of water, in a plastic container.
Pour a small quantity of the stripping solution into a plastic cup. Use only this liquid, and the original solution will stay fresh.
Saturate the wand with the stripping solution.
Stroke the wand slowly & gently over the work piece. The wand's cotton will turn yellow as the chrome comes off.
The work piece will change color slightly as the chrome is removed.
To ensure all the chrome is off, apply fresh cotton and bandage to the wand, then dip in fresh solution and lightly repeat the process. If no yellow appears on the wand, then the part is successfully stripped. Rinse the part in fresh water.
To remove chrome faster, you may attach the wand to a 12 volt power supply, rather than use the PlugNPlate adapter.

Plating. Applying the gold plate.
Attach a plating wand to the red plug on the Power Supply
Pour a small quantity of Gold solution into a plastic cup. Use only this liquid, and the original solution will stay fresh.
Saturate the wand with Gold solution. Stroke the wand slowly & gently over the work piece.
Initially you may increase the wand speed slightly, then, as the gold color forms, slow the speed down to build up a thicker layer of gold.
The gold will become visible after 30 -60 seconds for 1-2 square inches of treated area.
Repeat the gold application to increase the gold's durability. Finally, wash with detergent, and rinse with water.
You may polish the metal with a proprietary metal polish. We recommend Collinite Metal Wax, as this has a very mild abrasive in it, which cleans off brush plating smut marks and at the same time waxes and protects the plate. Use sparingly on silver and gold plate.

Additional tips for Brush Plating Always check that the bandages are in good condition. Worn areas may allow the wand to touch the work piece, causing a short circuit and burning the work piece.
The gold wand bandage will become soiled with a green substance after plating. The degree of this will depend on plating action and time.
Dark spots or streaks that occur during the gold plating may be from brushing too slowly.
Remove and wash all bandages after use. Dispose of cotton buds.
Plate only articles that are in good condition. Gold plate will NOT cover imperfections, such as scratches and pits.
Plating larger objects can be more difficult than small ones. Practice your technique on the smaller objects first.
Some objects may actually be covered with a type of chrome paint or lacquer. Test the piece first by checking that it is conductive, using a multi-meter.
Trying to match existing gold supplied by another company is difficult as shades vary.
An application of a lacquer, or polyurethane, over a plated item will increase its wear, reduce water spotting and enhance the gold's color.

BRUSH PLATING WITH COPY CHROME

Copy Chrome is a nickel alloy, harder than nickel and with a blue tint like chrome. It should be plated directly to the metal, and does not need an underlying layer of nickel plate like a normal chrome plate. Because of its extra hardness, it is important to ensure the part is highly polished prior to plating, as this finish is harder to buff than nickel.

BLACK KROME

Apply as Copy Chrome instructions

DIP PLATING PROCEDURE

Sometimes it is much easier to simply dip the part into the solution to plate it, especially if it is small with lots of detail. The PlugNPlate power supply and plating wand can easily be used for this procedure.
Pour all of the plating liquid into a small wide necked container, such as a glass.
Place the plating wand into the solution and clip it to the side of the glass with a clothes peg.
Attach the work-piece to the negative alligator clip and suspend the part into the solution.

The degree of plating will depend on several factors:

1. **The amount of anode** (plating wand) immersed in ratio to the size of the part. The larger the part, the more surface area of the wand should be immersed. (Too much wand will make the plating appear smutty or dark).

2. **The distance of the anode from the work-piece.** Being too close will cause similar problems to #1.

3. **The temperature of the solution.** Generally, the warmer they are, the better they plate, and the less current you need.

4. **The duration of plating time.** This will depend on which plating kit you are using. Gold should only be plated until the color is right. Copper should be plated until the thickness is adequate, especially if you are using it to build up an area. Nickel and Copy Chrome should be plated for at least 5 minutes. Silver, being a soft metal, should be treated somewhat like gold, but make sure you have enough plating on the part to enable it to withstand polishing etc.

5. **Silver will often plate a dark smutty color.** This will polish off, but you can reduce this by plating with a very small amount of the wand immersed, or by using the Copy Cad PlugNPlate power supply. A final treatment using a sparing amount of Collinite Metal wax will also clean the smut and leave a wax protective film, which will reduce tarnishing.

Silver PlugNPlate kits are supplied with a 1.5 volt power supply and a spare banana plug. Replace the red alligator clip with the banana plug for brush plating.
With silver and gold Plug N Plate systems, you may substitute the wand for a small piece of silver or gold. This will enhance the life of the solution. (Do NOT use plated items as the anode, they MUST be made of solid silver or gold.)

COPY CAD & DIP SILVER PLATING

1.5v DC @ 300ma)
Most parts requiring plating with COPY CAD are usually small, so this special power pack is designed to provide enough power to plate up to 15 sq. inches of surface area. The unit also delivers a low voltage and is ideal for plating small silver parts. This lower voltage virtually eliminates the 'smut' on silver plating.

The requirement for Copy Cad plating is 25ma per square inch.