

Chrome Edition User's Guide

Specially Designed to Gold Plate Chrome Items;
It's as easy as 1...2...3

1. Strip the existing chrome



2. Activate the nickel surface



3. Plate with brilliant 24K Gold



Welcome

Congratulations on purchasing your Universal Plater *Chrome Edition* bench-top plating system. The Chrome Edition is a specially designed version of the Universal Plater that includes a simple chrome stripping process. Once the chrome is removed from an item you normally will have a perfect nickel surface ready to be gold plated.

Gold plating onto a chrome item such as automotive emblems, trim accent, plumbing fixtures, tools, household items or almost any chrome plated item is among the simplest gold plating operations you can perform. There is rarely any need to deal with pre-finishing, polishing or plating with an under-plate.

With the Universal Plater *Chrome Edition*, setting up and performing high quality gold plating onto virtually any chrome plated item is as simple as 1... 2... 3... and you're done! You've converted an ordinary chrome item into a beautiful gold item plated with real 24K gold.

As with the standard Universal Plater, you can also perform the same variety of other brush plating functions that are just not feasible with other plating systems. The Universal Plater *Chrome Edition* was designed to meet exacting specifications to allow professional gold plating results with an affordable, self-contained, easy-to-use system.

First;

You should read the safety section of this manual and become familiar with the Safety Data Sheets.

Second;

We recommend that you read this manual to learn about the features and components of the Universal Plater Chrome Edition. After you have familiarized yourself with the plating process using your new system, you should decide on some practice items similar to your intended application. Once you see how simple bench-top brush plating is, you can begin your work.

Table of Contents

Page

Welcome

First	2
Second	2

Safety

Personal Protection	5
Handling Chemicals	5
Chemical Storage	5
Electrical Hazard	6
Storage of Chemicals When Not in Use	6
"SDS" Safety Data Sheets	6

Included in the Universal Plater Chrome Edition

Items Included	7
----------------	---

Set-up the Universal Plater Chrome Edition

Setup, Connect to Power, Power On, Mode, Voltage	8
Amperage, Solutions, Bits, Preparing Sleeves	9
Pen Plating Tips	10

Surface Preparation and Cleaning

Non - chrome plated items

Surface Preparation and Cleaning	10
----------------------------------	----

Chrome Stripping

Exposing the underlying Nickel

Why Remove the chrome?	11
Mode Switch	11

Application Table

Application Table	12
-------------------	----

What you need to know before Starting

Is the Surface on the Item Ready for Plating	13
Where Should You Set Up for Plating	13

Which Handle/Solutions Should I be using	13
Making Electrical Contact	13
How to start the brush plating process	13
How long should I preform each step	13
How Long Should I Plate my Item	14
Did the plating adhere to my item	14
Plate onto a chrome plated Item	
Chrome Stripping	14
Surface activation & Plating	14
Basic Process of Gold Plating onto a Nickel Surface	
Step 1- Electro-Plating	15
Step 2- Surface Activation	15
Step 3- Gold Plate	15
Plating onto a non - chrome plated item	
What handles/solutions should I use	16
Fine Select Plating with Pen Gold	
How to use the Fine and Medium Tips	16
Is the Surface on the Item Ready for Plating	17
Where Should You Set Up for Plating	17
How to Make Electrical Contact with the Item Being Plated	17
How to do Fine Select Plating	17
Where to Set Your Voltage	18
How Long Should I Plate my Item	18
Did the Gold Adhere to my Item	18
Limited Warranty	19

Safety

The person using the Universal Plater Chrome Edition should read this safety section completely before beginning operation with the kit. The user should review and understand the Safety Data Sheets (SDS) for all the products being used prior to using the Universal Plater Chrome Edition bench-top plating system. The “SDS” information should be kept in a location that will make them readily accessible in the event of accidental exposure or spillage of the product.

Using your Universal Plater Chrome Edition safely depends on following a few simple safety rules. While we have taken extensive measures to protect the user, there are several common sense rules that are important to follow in using your Universal Plater Chrome Edition plating system.

Personal Protection

The first safety consideration is the use of proper personal protection equipment such as a face shield, safety goggles or safety glasses. Whichever you choose, it is imperative that the solution is prevented from getting into the eyes. Should this happen, the eyes should be flushed with water and medical attention received as indicated on the Safety Data Sheet for the product that caused the exposure. We recommend the use of rubber or latex gloves to prevent contact of the solutions with the skin. It is also advisable to use chemical resistant sleeves and an apron to protect clothing since it is possible that some of the solutions can damage clothing. Certain processes such as chrome stripping, electro-cleaning, activation, and some plating operations can produce corrosive vapors that may irritate the eyes, nose, throat and skin. Use of the Universal Plater Chrome Edition should be done in a well-ventilated area. The use of a fan to disperse vapors can reduce the risk of excessive exposure to corrosive vapors.

Handling Chemicals

The chemicals you will be using with your Universal Plater Chrome Edition plating system are serious electroplating solutions that if improperly handled could provide a significant risk to personal health and safety. The solutions are either corrosive or harmful if ingested or in some cases, both. Improper use of the solutions provided with your Universal Plater Chrome Edition could lead to serious injury or death. Any of the solutions provided could be harmful or fatal if swallowed in sufficient quantities or could cause serious chemical burns to exposed skin if not washed after exposure. These solutions are intended to be used by responsible, trained adults. The person using the Universal Plater Chrome Edition should read and understand this safety section before beginning operation of the Universal Plater Chrome Edition. This Safety section includes the appendixes containing the Safety Data Sheets, (SDS) for the chemicals that are provided with the system. These sheets will inform you of important aspects of the chemicals that you will be using.

Chemical Storage

The chemicals provided with your Universal Plater Chrome Edition plating system and the rinse water generated by using the Universal Plater Chrome Edition must be properly stored in a secure, cool location that is not accessible to children or other un-authorized persons. Never store any of these solutions in un-marked containers or in any container that could lead to improper use or disposal of the solutions or rinse water. The rinse water produced by the plating operation is a hazardous material and must be collected, stored and disposed of in accordance with all local, state and federal laws. If you are

unsure of the applicable laws you can check with the local water reclamation district (sanitary sewer district), local or state environmental health and/or the U.S. Environmental Protection Agency.

Electrical Hazard

In the event of failure of the Universal Plater Chrome Edition power supply to operate as indicated in this manual, call Gold Plating Services for recommendations on how to proceed. Do not open the power supply or control console, there are not any user serviceable components inside. Opening the unit can revoke the warranty.

Make sure your Universal Plater Chrome Edition power supply is connected to a safe, properly wired supply outlet. If the Universal Plater Chrome Edition is going to be used near fixed plumbing, we recommend that the outlet be “Ground Fault Protected”. The plating voltages are normally very low, usually less than 5 Volts direct current. However, the wall adaptor is connected to the supply outlet which can expose the user to dangerous voltage if the unit is connected or handled improperly.

Storage of Chemicals When Not in Use

One of the most beneficial features of the Universal Plater Chrome Edition is the ease in which it can be put away for short or long term storage when not in use. If you expect to use your Universal Plater Chrome Edition within the next week or two. You should make sure the lids on the solution beakers cells are tight. For longer term storage of un-contaminated solutions, we recommend that you return the solutions to their original containers and seal tightly.

Safety Data Sheets

The Safety Data Sheets, (SDS), for the solutions provided with your system are supplied as an appendix to this manual. If you order other chemical products, be sure to ask for the appropriate SDS. You should keep the SDS information for the chemicals you use in a location that is readily accessible to the user of the *Universal Plater - Chrome Edition*.

Copies of our Safety Data Sheets (SDS) are available online at www.goldplating.com

The Universal Plater Chrome Edition



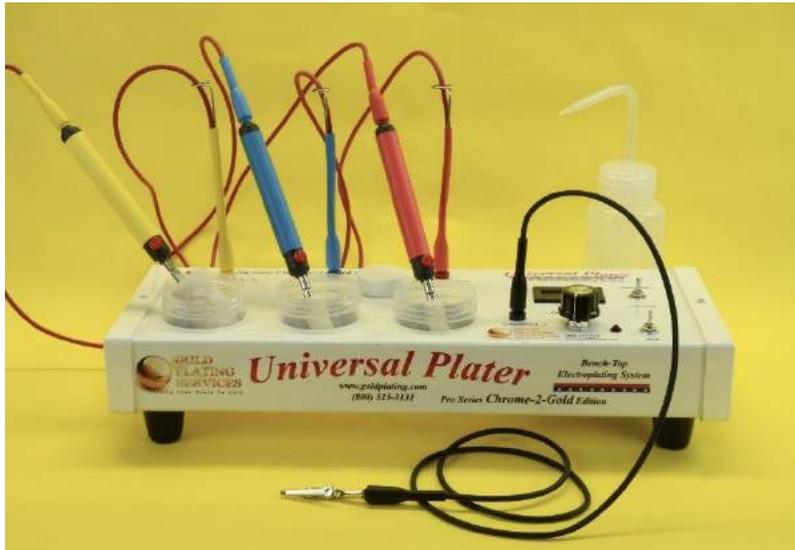
Items Included

- | | |
|---|--|
| (1) 12 volt/10 Ampere Power Supply | (3) 1/8" Sleeves and Zip Ties |
| (3) Combination Handles with Leads
(Yellow, Blue, Red) | (10) 1/4" Wooly sleeves for stripping and activation |
| (1) Black Lead with Alligator Clip | (1) Fine Select Working Beaker – 1 oz |
| (3) Stainless Steel 1/8" to 1/4" Conversion Bits | (1) 8 oz 24K Brush Gold Solution (Liquid or Gel) |
| (1) Nickel 1/8" to 1/4" Conversion Bit | (1) 16 oz Surface Activator Solution |
| (1) Stainless Steel 1/8" Bit | (1) 16 oz Chrome Stripping Solution |
| (3) Medium Tips & 3 Ultra Fine Tips | (1) 16 oz Wood's Nickel Strike Solution |
| (6) 1/4" Sleeves and Zip Ties | (4) Solution Working Beakers – 4 oz |

***IMPORTANT:** The International version of the Universal Plater Chrome Edition does NOT include Chrome Stripping Solution or Wood's Nickel Strike. These two solutions must ship by ground transportation only. Therefore, we cannot ship these solutions to any destination requiring air transport.

- (1) 4 oz bottle of Nickel Concentrate is included, will make 1 liter of Wood's Nickel Strike Solution when mixed correctly.

The Chrome Stripping Solution and Wood's Nickel Strike can be easily and inexpensively produced by most users from common components that can be purchased almost anywhere. We can provide you with the details and instructions on what components are required and how to make these solutions. You can then acquire the components for these solutions locally and we will give you full instructions on making them. If you have any questions please contact us via email or phone.



Set-up the Universal Plater Chrome Edition

With normal brush plating, the handle holding the plating solution and the solution have a positive (+) electrical charge relative to the item being plated. The item being plated is electrically connected to the control console with the common lead. When properly connected and the power is in the “ON” position, and the MODE switch is in “Normal Plating” all three of the output ports will provide a positive (+) electrical charge. The voltage for the middle and right ports will be indicated on the Output Meter. The voltage for the left port will be automatically set for chrome stripping or electro-cleaning.

1. **Setup** - Plug the combination handles and leads into the matching color coded (+) ports on the top of the console. Then plug the black common lead with an alligator clip into the black (-) output port located on the Right side of the console.

Note: You may NOT need to use all three handles and all solutions every time you plate. This will vary depending on the process you are performing. See the Section: “Application Table” on page 13 for more details for which solutions you should use.

2. **Connect to Power** - Plug the AC wall adaptor into a suitable outlet and insert the other end into the DC connector located on the back of the Universal Chrome Plating Console. The Wall Adaptor will accept AC input voltage from 100-240 VAC, 50-60 Hz.



3. **Power On** - Turn on the power switch and check to see that the red power indicator light is on and the meter display is illuminated.

4. **Mode** - Set the mode switch near the output meter to “Chrome Stripping” to remove existing chrome or “Normal Plating” for all other plating operations

Note: When you are in chrome stripping mode the yellow LED light on the left side of machine will be on. Light will be off in normal plating mode.



5. **Voltage** - The voltage setting will vary depending on which step you are completing. The voltage is automatic for the left handle (yellow) which is used for chrome stripping and electro – cleaning it is a (+) 12 volts when in normal plating mode and (-) 12 volts when in chrome stripping mode. This will not reflect on the meter. Surface activating (Blue or Green on older models) and plating port (red) require different voltages. These ports are set with an adjustable voltage from 0-12. They will reflect on the meter. See the Application Table for more details on the voltage recommendations: See page 12.

When plating you may need to adjust the voltage according to the item being plated and the solution being used. Keep the following items in mind.

- The voltage will drop once you start the plating process which is normal.
- Adjust the initial voltage according to your item. Typical activation voltage is 7 – 9 volts and plating voltage is usually voltage is 2.7 - 3 volts.
- Too high of plating voltage setting can cause the deposit to be dark brown and dull.
- Too low of voltage plating will cause the deposit to plate slowly.
- It is also **important** to keep the application sleeve or pen plating tip moving over the work during plating. **Stopping can “burn” the gold.**
- “**Burning**” is the commonly used term for a dark or dull gold deposit caused by too high plating voltage. If this happens, you can easily polish it out with a little baking soda mixed with water using a soft rag.

6. Amperage - The amperage will automatically vary depending on which step you are completing. There are several things that will effect this. From the material of the item, solution being used, and how hard the sleeve is being pushed against the surface to name a few. The main purpose of the amperage reading on this machine is to ensure that you have a good electrical connection. The Yellow Chrome/Electro- clean port will not show amperage on the meter, only the activation and plating ports will. If you do not see an amperage reading when performing the activation or plating step you may want to check your connect to your piece with the common black lead and alligator clip.

7. Solutions - Dispense the solution(s) you will be using into the working beaker(s). For chrome stripping, electro-cleaner, and activation solutions you should only fill the working beaker about ½” full of each solution. For fine select plating the solution should only be about ¼ inch deep. Having too much solution in the working beaker can cause you to waste the solution. The solutions tend to dry out more quickly in the working beakers, you should only dispense the amount of solution you will need. You can return un-contaminated solution to the supply container for longer term storage. See *Storage of Chemicals* section on page 6.

The normal levels for the working beakers is about ½” Brush Gold Liquid and ¼” Pen Gold Solution

Normal Levels for the Chrome Stripper, Electro-Clean and All Surface Activator Solutions are 1” to 1-1/2” or about half full.



*****We suggest the following placements for your solutions.**

Electro-Clean Solution or
Chrome Stripping Solution
(Yellow Handle)

– Surface Activator or
Wood’s Nickel Strike
(Blue Handle)

Plating Solution such as
Gold, Nickel, Silver etc.
(Red Handle)

Note: Older versions may be colored Green for the Activation port.

8. Bits - You should have received (3) 1/8” to 1/4” Stainless Steel Conversion Bits, (1) Nickel 1/8” to 1/4” Conversion Bits and (1) 1/8” Bit. The Conversion bits are what you will use on most plating processes. The 1/8” bit is used for a finer detail brush plating application. The nickel bit is to be used with the Wood’s Nickel Strike Solution.

9. Preparing Sleeves - You will need to pre-soak your working sleeves depending on the solution will be used in. **(Make sure you do not use the same sleeve in more than one solution. This will contaminate the solution and will not function properly or may cause you to waste a large amount of the solution.)** Before the sleeve/solution will be conductive, the working solution must have soaked through the sleeve to the stainless steel bit. **Make sure a new sleeve has been thoroughly soaked with distilled water before installing onto the stainless steel bit.** Pre-soaking the sleeve with distilled water is normally done by working the water into the sleeve by squeezing with your fingers while pouring distilled water over the sleeve. Pre-soaking will reduce the amount of time it takes for the solution to soak through a new dry sleeve. Wooly sleeves are a two-part sleeve with a liner and outer sleeve. Both the liner and outer sleeve need to be completely soaked with the solution before use. After the sleeves have been used for the first time it is not necessary to pre-soak again. The sleeves can be re-used sleeve for the same solution until they wear out.

10. Pen Plating Tips -The first time the felt pen plating tips are used, they need to soak in the pen plating solution in the small working beaker for at least 10 minutes prior to use. This will allow the solution time to soak up the tip and make contact with the handle. Once you have used a tip, you should pull it from the handle and allow it to dry out. (**You could store the tips in a small zip lock bag but not required**) Once a tip has been used it will soak up the solution and be ready to use almost immediately upon contact with the solution.

Note: It is not necessary to rinse tips after use.

11. Slide the bits into the pre-soaked sleeves and **zip tie sleeve securely.**

12. Install the bit into the application handle. Only about an inch of the bit will fit into the handle. Twist the red tightening screw snug; do not over tighten. Then place the end of the bit with the soaked sleeve into the working beaker with the solution.



Surface Preparation and Cleaning *For non-chrome plated items*

There are two very important rules for preparation of work in any electroplating operation. The first is pre-finishing. Pre-finishing involves preparation of the surface prior to the plating process. The pre-finishing process determines the degree of quality of the finished plate.

If a high polish is desired in the finished plate, then the surface must be polished to a high polish at this time. If a textured finish is what you want then now is the time to apply the texture you are looking for using some abrasive method such as light sanding, scotch bright pads etc

The second rule for preparation of work to be plated is to insure that once the surface has been polished to the desired luster and quality of finish, the surface is made accessible to the plating process solutions. **The surface must be absolutely clean, completely free from grease, oil, dirt, and free from significant oxides or any other surface film.** This crucially important step can be a little tricky because many of the methods of polishing can actually leave trace deposits that can seriously affect one or more of the plating processes. We recommend cleaning the part with hot and soapy water to remove most residue. Then follow with electro-cleaning. Electro cleaning is performed using the chrome stripping handle and solution in the “normal plating mode.” Electro cleaning will help to ensure that the surface “wets out” as noted below.

Before plating begins, the surface should again be carefully inspected to make sure rinse water sheets off the surface evenly without any areas where the water beads up. If the water beads up in any area; then the part must be electro-cleaned again. Electro-cleaning is an excellent final cleaning step that will help the surface to wet out.

Note: You should see a slight foaming/gassing when electro-cleaning, this is normal.

Chrome Stripping

Exposing the underlying nickel

Why remove the chrome? When gold plating a chrome plated item the first step is to remove the existing chrome. There is a reason that chrome plated surfaces seem to always be bright and shiny and never corrode. This is because when exposed to air, metallic chromium almost instantly oxidizes forming an extremely thin layer of chrome oxide. Chrome oxide is very inert, meaning that when the thin layer of chrome oxide forms it becomes a “protective” coating which prevents further oxidation or corrosion of the underlying chromium. This works well to keep a chrome plated item like a car emblem, bumper, or wheel looking great for years. However, the protective layer of oxide that protects the chrome also prevents other metals, like gold, from adhering when they are plated onto it. While there are methods that simultaneously chemically “reduce” the chrome oxide and replace it with a less reactive metal, effectively plating onto the underlying metallic chromium. These methods are technically challenging and do not generally provide good results in most cases. Removal of the existing chromium and plating onto the underlying nickel plate is usually considered to be the best practice.

Mode Switch – for chrome stripping it will be necessary to switch the MODE switch to “Chrome Stripping” The Yellow LED on the left side of the machine should be on. When the MODE switch is in the Chrome Stripping position, the polarity is reversed on the left handle, the other output ports are turned off and the only function you can perform is chrome stripping. The Meter will reflect a voltage reading but will not be active in the two right ports. The voltage and current levels on the active, chrome stripping port is pre-set and cannot be changed.

Amperage - The Amperage for chrome stripping will not be reflected on the meter. If you have gone through the chrome stripping step and are now trying to activate the item to plate and the meter is not showing an amperage you may want to keep a few things in mind.

- Make sure the black lead is connected to your item with good electrical connection.
- Does your item have a clear finish over the chrome surface? If there is a clear finish there will be no electrical connection and the amperage meter will reflect 0. If the item has a clear finish it needs to be removed before the chrome can be removed. Once you have removed the clear coat go through the chrome stripping step again. Once the chrome has been removed and you move on to the activation step you should now see an amperage reading when performing this step.

We have included a Quick Start Guide and a sample chrome item for you to test out the steps prior to going onto other work. If you no longer have the quick start guide, we have included the same information in the following detailed steps. **We highly suggest gold plating a sample item that is similar to work you want to perform. This will give you a better idea of what to expect.**

Application Table

Following is a table that shows a few possible uses for each of the three application stations and the recommended voltages for each process. Remember that plating is a craft where each project requires some adjustment to generally defined standard procedures. This table is provided as a sample guide, if you have difficulty obtaining desired results you should call Gold Plating Services technical support for suggestions.

~Voltage indicated is set prior to sleeve making contact with work surface.

Application	Handle	Solution	Voltage~	Note
24K gold on stainless steel	Yellow	Electro-cleaner	7 volts	If required - see cleaning sec.
	Bue	Wood's nickel strike	5-7 volts	Cover area to be plated
	Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness
24K gold on brass or bronze	Yellow	Electro-Cleaner	7 volts	If required - see cleaning sec.
	Bue	Surface Activator	5-7 volts	Cover area to be plated
	Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness
24K gold on nickel surface	Yellow	Electro-Cleaner	7 volts	If required - see cleaning section
	<i>Note: This would be any chrome plated</i> Bue	Surface Activator	5-7 volts	Cover area to be plated
	<i>item with the chrome removed.*</i> Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness
Restoring old gold plating	Yellow	Usually not required - See surface preparation & cleaning section		
	Bue	Surface Activator	5-7 volts	Cover area to be plated
	Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness
Fine select gold plating on coins	Yellow	Usually not required - See surface preparation & cleaning section		
	Bue	Usually not required – Make sure surface is freshly polished		
	Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness
24K gold plating on silver surface	Yellow	Not normally required – Make sure silver is freshly polished		
	Bue	Surface Activator	5-7 volts	Cover area to be plated
	Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness
Gold plating most electrical contacts	Yellow	Usually not required - See surface preparation & cleaning section		
	Bue	Usually not required – Make sure surface is freshly polished		
	Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness
Gold plating pewter with copper and nickel under-plate	Yellow	Bright Copper	12 volts	Plate until bright
	Green	Bright Nickel	5-7 volts	Cover area to be plated
	Red	24K Brush Gold	2.7 - 3 volts	Plate to desired thickness

What you need to know before start brush plating

Is the Surface on the Item Ready for Plating?

The surface to be plated should be clean and free of grease dirt or other material that could prevent adhesion of the gold. If the parts are dirty or corroded after normal cleaning, the surface should be polished or cleaned to expose the clean, bare metal.

Note: Most clean bright surfaces can be plated without additional activation or pretreatment, however, some surfaces require special pretreatment or activation. These surfaces include stainless steel, chromium and old nickel finishes. Most copper alloy surfaces need to be shiny and bright and may benefit from activation or underplate. Some surfaces such as aluminum or zinc cannot be plated with this system without extensive under plating and or additional pretreatment that might not be able to be performed with this system. If you are having trouble plating onto a particular finish you should call Gold Plating Services' technical support for information on how to handle your specific case.

Where Should You Set Up for Plating?

When you are setting up to plate you may want to find an area that is comfortable with sufficient light. Most people like to have some local ventilation although there are not extensive fumes or vapors produced.

How to Make Electrical Contact with the Item Being Plated.

You need to make electrical contact with the area you want to plate by attaching the alligator clip from the black common lead.

In the picture, we have clipped the pendant with the alligator clip from our black common lead. We will be brush plate this pendant with the 24K Brush Plating Gold Solution.

Note: If the area under the alligator clip is to be gold plated. You will need to reposition the clip in another spot during plating. A good technic is to move it about 3- 4 times in different locations on the item being plated during the plating process. This will allow a more even deposit of gold.



In some instances, there may be items or areas that you want to plate that you will not be able to attach the alligator clip to it. The item/area will not plate if it does not have the proper (-) electrical connection. In these situations a probe is used to make this connection in most of these circumstances. You will want to connect the alligator clip to the probe. Then use the probe to touch the surface area of the item being plated.

Note: On some items, for example: PC Boards and switch boards, you may be able to touch a different area to give the required (-) electrical connection.

- This kit does not include a probe. They can be purchased online at our website or by calling our customer service department.



How to Start the Brush Plating Process.

Apply the solutions by lightly rubbing the solution soaked sleeve over the surface in small circular motion with light pressure, until desired finish is reached. Between applying different solutions make sure that you rinse your piece in distilled water before applying your next solution. Failure to do this step could result in contaminating your solutions.

When applying gold don't stop moving the sleeve or let it rest in one spot; this can cause the gold to form a dull brown deposit. We call this burning. It is easy to fix burned gold but it is better if you don't have to. "Burning" is the commonly used term for a dark or dull deposit caused by too high plating voltage or by stopping your sleeve. If this happens, you can easily polish it out with a little baking soda mixed with water using a soft rag.

How Long Do I need to Preform each step?

Each step will very depending on the voltage settings and the size of the item. A good starting point for the electro - clean step is to plate 10 seconds for every square inch of surface. If an item that is 1" x 3" then it would need to be preformed for at least 30 seconds. Rinse the item to make sure it has wet out (no water breaks). If there are no water breaks then you

are ready to move on to the activation step. If the item shows water breaks that redo the electro cleaning step until there is no water breaks.

The activation step doesn't require as much time as the electro- cleaning step. A good starting point is 5 seconds for every square inch of surface. It is very important that you do not let the item dry out between the activation and plating steps. This can cause the item to not plate correctly. If it does dry out, the activation step needs to be performed again on the item before plating.

Review the application table and the section "Basic Process of Gold Plating onto a Nickel Surface" on page 15 for helpful tips.

How Long Should I Plate the Item?

When the gold becomes opaque it is approximately 3 micro-inches thick. After that point it is impossible to determine the thickness visually. To insure the most uniform thickness of around 10-12 micro-inches you should plate about 3 to 4 times as long as it took for the original opaque deposit.

Example: Plating a Quarter

Opaque 3 micro-inches thick = 10-15 seconds
Opaque 10-12 micro- inches thick = 30-50 seconds

Note: The time it takes for the gold plating to appear opaque on an item being plated is determined by several different factors including the size, the material it is made of, the voltage used to plate, and the saturation of the sleeve.

Did the Plating Adhere to my Item?

When finished, rinse off your piece so that no plating solution is left on it. Then dry with a paper towel or soft cloth. Once the item is dry you can check to see if the plating adhered to the surface by simply placing a piece of scotch tape on the surface and quickly pulling it off. If no plating came off with the tape, you have good adhesion.

If the plating came off onto the tape it did not adhere to the item correctly. You will want to buff off the item with a hand cloth or buffing wheel. Then, carefully review/repeat the steps to make sure it adheres the next time. If you have any questions about this, please feel free to call our Technical Support Line.

We suggest that you practice on items similar to the work you want to perform to get the feel of the plating process. If you have special questions or applications you aren't sure of feel free to call our toll free technical support line (801) 546-6200, or e-mail Info@goldplating.com .

Plate onto a Chrome Plated Item

1. **Chrome Stripping.** The Universal Plater Chrome Edition utilizes our very simple and fast method of electrochemically stripping the existing chrome without affecting the underlying nickel plate. To perform this "chrome stripping" you simply set up the left most plating station with chrome stripping solution in the working beaker and the handle set up with a properly soaked Wooly sleeve. The item being stripped is connected to the Common lead. Move soaked sleeve attached to the Yellow handle over the work using light pressure. The solution will become noticeable more yellow as the chrome is dissolved from the surface into the solution. After the chrome stripping is complete and you have confirmed that ALL the chrome has been removed you should rinse the part and move on to the next step.

Note: You do not need to polish the nickel surface after removing the chrome.

- 2 & 3. **Surface Activation & Plating the Surface.** After the chrome has been removed and the surface has been rinsed with distilled water, you have a nickel surface that is ready to be activated and plated. Now you should follow the procedures shown below as a guide for activation and plating: See "**Basic Process of Gold Plating onto a Nickel Surface**".

The procedures for all non-chrome plated items are outlined on the following pages.

Basic Process of Gold Plating onto a Nickel Surface

The following steps we will explain how to successfully gold plate onto a nickel surface. At this point you should have followed the chrome stripping/surface preparation and cleaning steps. Your item should have the desired quality and luster you want in the completed look. The piece should be cleaned so that the item is free of grease, oil and dirt. You can see a real time video of the following demonstration at

<https://www.youtube.com/watch?v=iktSfq0LDMw>

Step 1- Electro - Clean (YELLOW Handle)

Any polishing or cleaning should be done prior to electro-cleaning. The first step is to prepare the item for the pretreatment and plating process. The purpose of the electro-clean step is to make your the surface wet out. If you were to take water and pour it over your item before performing electro-plating the water would bead up like water would on a waxed car. After performing the electro-cleaning step, using the chrome stripping solution and handle in the normal plating mode, pour water over your item again. If the water sheets off the item evenly with no water breaks or beading up you have successfully completed the electro-clean step. If there is an area that still beads up, redo the electro cleaning process in that area again before moving to step 2-Surface Activation. Once sufficiently electro-cleaned the item should stay wet and have no areas with water breaks or beading.



***Chrome Stripping Solution works the same as our electro-cleaner solution when in normal plating mode.**

- * Make sure to rinse your item with distilled water between each step.
- * There will be a slight gassing or foaming going on when performing this step, this is normal.
- * A good starting point is to electro - clean for 10 seconds per square inch of surface. It may require longer if it doesn't wet out.

Step 2- Surface Activate (Blue Handle)

The way a lot of people like to think of the surface activation step is similar to using primer or an etch. Although it does not etch it, it will remove any oxide or material that would effect the adhesion. If you were to skip the activation step this could effect your item in different ways during the plating process. One being the plating may go more slowly and two being that it may effect the adhesion. You want to make sure that whatever you are plating will adhere to the item.



- * Make sure to rinse your item with distilled water between each step.
- * There will be a slight gassing or foaming going on when performing this step, this is normal.
- * A good starting point is to activate for 5 seconds per square inch of surface.
- * Do not let the item dry out between the activation and plating step. If it the item to be plated dries out before plating, re-perform the activation step again before plating to insure the item plates correctly.

Step 3- Gold Plate (Nickel, Copper, Rhodium, or Rose Gold Plate) (Red Handle)

Before you plate your item check the suggested voltage range. For this item set the voltage to 4.3. As you gold plate this piece using the brush plating sleeve over the stainless steel bit we gently move the sleeve in a constant circular motion to avoid burning the gold. For the time it takes the item to appear opaque you will continue to plate about 3x as long so that you reach the desired thickness you like to achieve.

***Once you have completed the plating step rinse your item off with distilled water.**

***If burning occurs you can easily polish it up using baking soda and water in a paste form. Use a soft rag and gently rub until desired finish.**



Plating onto a Non-Chrome Surface

After you have pre-finished and washed your part you will need to decide on the plating procedure to use. Our rule of thumb is not to include any more steps than is necessary to achieve the desired result.

For example, if you are planning on gold plating new, clean coins you could choose a process that involves electro-cleaning, activation and gold plating. However, it is very possible that you could simply gold plate directly onto the new coin without any other pre-treatment. It is important to avoid touching the surface you will be plating since skin oil can show in the gold plating or reduce adhesion.

We suggest you do some trials to determine the simplest process you can use to get the results you want. How many of the handles and which solutions you will be using depends on the plating process you will be doing.

What Handles/Solutions Should I be Using?

Before setting up your Universal Plater Chrome Edition you need to decide on how you plan to plate your work. For many gold plating projects, you will only need to set up the gold plating handle. For other projects you will also want to set up an activation handle or a handle for other plating solutions. Reminder that the yellow or far left port will be a constant 12 volts and is used for the Chrome Stripping solution and Electro - Clean Solution. The middle and right port will have an adjustable voltage and are identical in their operation, the color of handle you use for any function is a matter of choice. Our recommendation on which handle to use for a specific function is probably a good place to start. In time, you may develop preferences based on the work you do.

Example: If you are going to perform fine select 24K gold plating onto new silver or nickel alloy coins then you will only need to use one of the application handles and it is likely that the only solution you will need is the 24K Pen Plating gold solution. We normally recommend using the RED handle for the gold plating application.

If your application requires that you plate the surface with a series of copper, nickel and 24K gold then you will need to set up all three application handles with the plating solutions and adjust the voltage for each of the solutions as your plating progresses.

A very common setup uses a pre-treatment process including electro-cleaning and surface activation followed by plating. Make sure to rinse thoroughly with distilled water between processes.

In this case we would recommend that the yellow handle be used for electro-cleaning with the electro-cleaner solution being placed in the solution beaker immediately in front of that handle. The surface activator solution would be placed in the beaker in front of the blue handle. The plating solution will be placed in the solution beaker in front of the red handle.

Note: The small solution beaker is used for fine select plating. (Usually for pen gold.)

Electro-Clean Solution or
Chrome Stripping Solution
(Yellow Handle)

– Surface Activator or
Wood's Nickel Strike
(Blue Handle)

Plating Solution such as
Gold, Nickel, Silver etc.
(Red Handle)

Fine Select Plating with Pen Gold

Using the Fine Select Plating tips will enable you to provide very detailed select plating. Gold Plating Services' select plating solutions must have extremely high metallic content. The high metal content also requires a higher concentration of the brighteners. In order to make sure that all of the components stay in solution, it is important to have the container warm (90 - 100 ° F or 38° C) prior to dispensing into the working beaker. Shake the warm solution and then dispense about ¼" of solution into the working beaker as indicated above.

How to Use the Fine and Medium Tips

The fine select felt tips come in two sizes, fine and medium. Begin by inserting the tip you want to use into the end of the application handle. The tip will fit tight and should push in about ¼".



After the tip is inserted into the application handle the tip must soak in the pen plating gold solution until it is completely soaked through, normally 5-10 minutes for the first time used. Set the application handle into the Gold solution working beaker.

When you are plating the area, don't apply too much pressure on the tip. Some people like to feel like they are rubbing the gold on. Think of using the tip to control the "puddle" of gold solution and continuously move the tip in circular motion over the area you want plated. When you are working up to an edge where you want the plating to stop, you can tip the work so the edge or line you are working to is higher than the tip, then it is very easy to control the puddle

Is the Surface on the Item Ready for Plating?

The surface to be plated should be clean and free of grease, dirt, or other material that could prevent adhesion of the gold. If the parts are dirty or corroded after normal cleaning, the surface should be polished or cleaned to expose the clean substrate.

Note: Most clean bright surfaces can be plated without additional activation or pretreatment, however, some surfaces require special pretreatment or activation. These surfaces include stainless steel, chromium and old nickel finishes. Most copper alloy surfaces need to be shiny and bright and may benefit from activation or underplate. Some surfaces such as aluminum or zinc cannot be plated with this system without extensive under plating and or additional pretreatment that might not be able to be performed with this system. If you are having trouble plating onto a particular finish you should call Gold Plating Services' technical support for information on how to handle your specific case.

Where Should You Set Up for Plating.

When you are setting up to plate you want to find an area that is comfortable with sufficient light. Most people like to have some local ventilation although there are not extensive fumes or vapors produced.

How to Make Electrical Contact with the Item Being Plated.

You need to make electrical contact with the area you want to plate by attaching the alligator clip from the black common lead.

In the picture, we have clipped the pendant with the alligator clip from our black common lead. We will be brush plate this pendant with the 24K Brush Plating Gold Solution.



Note: If the area under the alligator clip is to be gold plated. You will need to reposition the clip in another spot during plating. A good technic is to move it about 3- 4 times in different locations on the item being plated during the plating process. This will allow a more even deposit of gold.

In some instances, there may be items or areas that you want to plate that you will not be able to attach the alligator clip to it. The item/area will not plate if it does not have the proper (-) electrical connection. In your kit you will have received a probe to use in most of these circumstances. You will want to connect the alligator clip to the probe as shown in the picture. Then use the probe to touch the surface area of the item being plated.

Note: On some items, for example: PC Boards and Switch boards, you may be able to touch a different area to give the required (-) electrical connection.



How to do Fine Select Plating.

When you pull the application handle out of the working beaker for use, let the excess solution drip off back into the working beaker. There is a lot of gold in that solution – **Don't waste it!**

The fine tip will plate extremely high resolution such as the head of a quarter or a single finger on a printed circuit board as shown here. See picture to the right. With the quarter we are "grounding" the part by holding the quarter in the alligator clip on the common lead.

For small areas such as a single finger of a printed circuit board, we have a stainless steel probe to be used to ground the surface to be plated.



Where to Set Your Voltage

The part you are going to selectively plate should be perfectly clean and polished to the brightness and luster you want in the final finish. For gold, you should adjust the initial voltage between **3.5 to 4.5 volts**.

The higher the voltage, the faster the gold will go on, however, with the voltage set higher in conjunction with the highly concentrated solution and small current area it is possible to burn the parts if you stop moving the tip over the part or if you apply excessive pressure.

With a little bit of practice, you will soon learn the best voltage setting for your project. You should plate with as high of voltage as possible without burning. That point is determined by the size and shape of the part, how much you move the tip during plating and the temperature.

Note: If you “burn” the gold, it will have a dark brown, dull appearance. Don’t worry; it is easy to fix with a little baking soda (sodium bicarbonate) powder mixed with water into a paste. Brush the burned gold lightly with a toothbrush or soft cloth and the dark appearance will polish to a bright gold finish and then back the voltage down a little.

How Long Should I Plate my Item?

When the gold just becomes opaque, the thickness is around 3 to 5 micro-inches. For a typical gold plate you should apply 4 to 5 times that much. With practice and a methodical approach, it is easy to apply reasonably consistent plating with adequate thickness.

Example: Plating the Head of a Quarter
Opaque 3 micro-inches thick = 10 -15 Seconds
Opaque 10-12 micro-inches thick = 30-50 Seconds

Note: The time it takes for the gold plating to appear opaque on an item being plated is determined by several different factors including the size, the material it is made of, the voltage used to plate, and the saturation of the sleeve.

Note: With fine select plating you use the 24K Pen Gold Solution which has a higher concentrated amount of gold. So the gold will almost instantly appear opaque.

Did the Gold Adhere to the Item?

When finished rinse off your gold piece so that no plating solution is left on it. Once the item is dried you can check to see if the gold adhered to the item by simply placing a piece of scotch tape on the gold and pulling it off. If no gold came off with the tape it has adhered to the item.

If the gold came off onto the tape it did not adhere to the item correctly. You will want to buff off the item with a hand cloth or buffing wheel. Then, carefully review/repeat the steps to make sure it adheres the next time. If you have any questions, please feel free to call our Technical Support Line.

Universal Plater Chrome Edition

Limited Warranty

Gold Plating Services Inc., (Seller), warrants the Universal Plater Chrome Edition internal components and external AC Wall Adaptor to be free from defects in material and workmanship for a period of one, (1), year from the date of purchase. If the internal components or the AC Wall Adaptor should prove defective in the material or workmanship Gold Plating Services, at its sole discretion, will repair or replace the defective item. Service under this warranty can only be obtained by receiving a warranty return authorization and then delivering or shipping the equipment with all shipping or delivery charges prepaid to:

Gold Plating Services
378 North Main #112
Layton, UT 84041

This warranty does not apply to the application handle, leads, power connectors, application bits, application sleeves or accessory components. This warranty does not apply to corrosion or shell damage caused by user failure to clean as required. This warranty does not apply to damage caused by accident, misuse, abuse, or neglect.

Gold Plating Services makes no express warranties, including any warranty of merchantability or fitness. This warranty expressly excludes all incidental and consequential damages. (Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitations or exclusions may not apply to you.) This warranty gives you specific rights and you may have other rights that vary from jurisdiction to jurisdiction.

Warning: The individual user should take care to determine prior to use whether this device is suitable, adequate and safe for the use intended. Since individual applications are subject to great variation, the manufacturer makes no representation or warranty as to the suitability or fitness of this equipment for any specific application except as explicitly described in the written material provided by Gold Plating Services Inc.



Universal Plater Chrome Edition Warranty Revised 03/18