"Turning Your World To Gold"

TRAINING MANUAL

GOLD PLATING SERVICES INC. 67 E. 200 N. KAYSVILLE. UTAH. 84037 I 800 515-3131

INTRODUCTION

GOLD, GOLD, GOLD. 24 Karat gold has long been recognized as a symbol of beauty, status, power, and prosperity. It has long been noted for it's resistance to corrosion and degradation by the elements of nature. It is therefore a natural choice for the plating of automobile trim, bathroom fixtures, motorcycle accessories, and many other items that can be plated. For several years auto dealers and specialty shops have offered the option of providing gold plated decals, accessory pieces and trim items to their customers. The gold plating option of the past has always been very labor intensive and time consuming. The old process required the removal of trim items, accessories, or decals and then sending them to an electroplating plant that did gold plating by the dipping method. This method requires immersing the items to be plated in a gold plating solution. This process usually took several weeks and removed control from the dealership. It was also very costly. The same process was required for any other item that needed plating.

Gold plating is not a new technology, it has been done for years. However recent technological advances in other areas produced an alternative gold plating method that solved the inherent draw backs of the traditional dipping process. The aerospace and electronics industry has had a persistent and increasing need to be able to apply high quality 24 karat gold plating to items in the field. This need caused the technology of on-site brush plating to be developed. It has now been expanded into the automobile industry, home interior decorating, and many other areas. This new process uses chemicals and equipment specifically designed for the application of 24 karat gold to vehicle decals, trim items, accessories, golf clubs, guns, motorcycles, bathroom fixtures, etc. while these items are still on a vehicle, in a house, in a store, or showroom. (hence on-site gold plating. New or used automobile, truck, van dealers, contractors, home interior decorators, and other specialty

shops can now offer on-site 24 karat gold plating as an option for all their customers. The on-site process takes just minutes instead of days or weeks. It can be done better, for a fraction of the cost and time. This makes it a more affordable and viable option for vehicle, home, or motorcycle purchasers and a source of significant additional profit for the dealer, specialty shop, or those using the plating in the home improvement area.

The possibilities of what can be done with portable on-site gold plating are wide open.

A BRIEF HISTORY OF ELECTROPLATING

Electroplating, or electro-deposition, is a process that dates back to the 19th century. It is based on the scientific principal that when metals are dissolved in a solution they become metallic ions with a positive (+) electrical charge. When a suitable material, with a negative charge (-), is brought into contact with the solution, the metallic ions migrate to the item to be plated (opposite charges attack). When the metallic ions come in contact with the negative surface they become complete again and turn back into the metal, thus forming a coating of the metal. The thickness of the metal coating is a function of the metallic ion concentration, the electrical current supplied, and the amount of time the process is allowed to continue.

THE TECHNOLOGY OF BRUSH PLATING

When electroplating is done in a tank, using the traditional dipping method, the item to be plated is immersed in the solution containing the metallic ions. One or more electrical anodes are placed into the solution. The item to be plated is then given a negative electrical charge (-) and the anode(s) are given a positive charge (+). With the proper placement of the anode(s) and the proper voltage the metal coating is deposited evenly.

Brush plating is chemically the same process as the dipping or tank plating process, producing the same type of metal coating. the difference lies in the fact that instead of immersing the object to be plated into the

solution containing the metallic ions, the solution is held on the anode bit with a specially designed anode sleeve. The item to be plated is given the needed electrical charge and the positively charged (+) solution is brought to the surface to be plated. In brush plating the technician can control the thickness of the metal coating plate by making more or fewer passes in a given area of the surface. The metal deposits in a lattice structure that is determined by the molecular properties of the metal. The technician can watch the process develop and easily control the thickness and quality of the deposit.

THE ON-SITE PLATING SYSTEM

The on-site plating system was developed with the plater in mind. When portable plating came on the scene several years ago, the process was bulky, awkward, time consuming, and difficult to use. As we became involved in the portable plating process we slowly made changes and modifications to the system. Finally your system evolved into the machine we have today. We did not start out to sell these systems to the general public, only to improve the system for our platers. We feel that our gold plating system is the best portable system on the market and we are proud to back our system with a **limited lifetime warranty**.

SAFETY AND ON-SITE PLATING

The on-site brush plating process is a safe and clean process when the proper procedures are followed. There are four basic solutions used in portable plating. They are:
Chrome stripper • Nickel activator • Gold solution • Nickel plate

Later in this manual is a detailed MSDS (material safety data sheet) for each of these solutions. Please read and understand the MSDS sheets for each solution. Any person that is actually doing the plating should go through the instructions in this manual, review the training video, and follow all guidelines, procedures, and instructions as outlined in each section of the manual and video.

PERSONAL PROTECTION

Technician safety and comfort are crucial in producing professional results. The solutions required for gold plating are intended to be used by trained personnel who have read and understand the warnings and precautions indicated on the MSDS sheets for the solutions to be used. These precautions can be easily practiced with the proper knowledge of the solutions and through the use of the personal protection items included with your system. **These personal protection items and their use includes the wearing of the solution proof latex gloves and safety glasses at all times when handling the solutions or waste materials generated by the plating process.** Some people may choose to wear the protective body apron included with your system. A respirator may be worn while stripping or plating in areas or in conditions that don't allow for sufficient ventilation.

HANDLING AND DISPOSAL OF WASTE MATERIALS

The on-site brush plating process does generate some hazardous waste that must be collected and disposed of properly. This is generally a simple procedure that includes the following steps.

1. Register with the State and Federal EPA as a small generator of hazardous waste (under 220 lbs. of waste produced in a month). This normally involves filing one form with your state, and they will, in turn, register you with the Regional Office of the Federal EPA. The small generator status will make you exempt from federal reporting.

2. Find a hazardous waste disposal company or service in your area. The phone book or State EPA is a good source for these services.

3. Collect and store all waste materials you produce. Collection is easy with the drip pan provided with your system. Transfer to an EPA approved 5 gallon container for the storage until taken to or picked up by the waste disposal company or service.

IMPORTANT NOTICE

It is important to note that the steps, for handling and disposal of waste materials, described, are general in nature and are only meant to give you an outline of procedures to handle and dispose of the hazardous waste you will generate. It is your responsibility to check with local, state, and federal agencies for the specific requirements for the handling and disposal of the waste you produce in the community and state that you will use your on-site plating system in.

THE MAIN COMPONENTS OF THE ON-SITE GOLD PLATING MACHINE

The on-site gold plating machine and the complete plating system was developed using the results of thousands of hours spent applying 24 karat gold plating in the field. The country's most experienced technicians and designers were actively involved in the development of the machine and the refinement of the complete on-site brush plating process. Many of the features of the machine and process are unique and give you the advantage of the simplest, easiest to use, and most compact system on the market.

THE MULTI OUTPUT POWER SOURCE

At the heart of the on-site system is the power source. The processes of stripping, activation, electro cleaning, plating with nickel, and plating with gold all involve various voltages, currents, and polarity changes. The dual power source has been specifically hardwired with these changing needs anticipated. There is generally no need for the technician to make polarity changes, (except as explained in the stainless steel section). Therefore the chance of making mistakes using the wrong polarity have been eliminated. **THIS HAS MADE THE MACHINE AND SYSTEM THE MOST SIMPLE TO USE AND THE MOST TROUBLE FREE POSSIBLE.**

SOLUTION TUBS

The four solution tubs (or beakers) are arranged on the roller cart directly in front of the power source where the technician will have easy access to the needed solutions. Each comes clearly marked and has a lid for solution storage between jobs.

WANDS

There are two types of wands available for the on-site plating system user. You have either received the type "D" friction fit or the type "E" handle which holds the bit with a plastic thumbscrew. The use of each wand is very simple however there are a few points that are peculiar to each.

If your machine was supplied with the type "D" wand, the leads are coiled. When inserting the bit into the wand, avoid using excessive force. Insert the bit into the wand end and push gently until there is moderate resistance while holding the bit in your fingers. Placing the end of the bit on a hard surface and pushing the wand to force the bit deep into the wand end will result in difficulty in removing the bit. When you are ready to remove the bit, a slight twisting motion will help loosen it. The wand will "break in" in a short time and slipping the bits in and out will be smooth and easy.

If your machine was supplied with the type "E" handles, there will be a small white plastic screw near the bit end. It is never necessary to loosen or tighten the screw very much. One quarter of a turn is all you should need to move the screw. Turning the screw out too much can cause the screw to fall out of the hole and over tightening can strip the threads. Just tighten or loosen the screw enough to hold or release the bit.

In time there may be some corrosion in the hole that receives the bit. Keeping your handles clean will reduce the corrosion. If corrosion develops and reduces the conductivity between the bit and the wand, you can restore the surface by rolling up medium grit sandpaper or emery cloth and twisting it into the hole, polishing the inside. A drop or two of WD40 will also help. The leads will also wear out in time after which you can replace them by using the replacement leads available from Gold Plating Services. We suggest having an extra set of leads with each machine as a back up. We also have available lead extensions. These extension leads just plug right together with the existing lead and add approximately 4 feet to your reach.

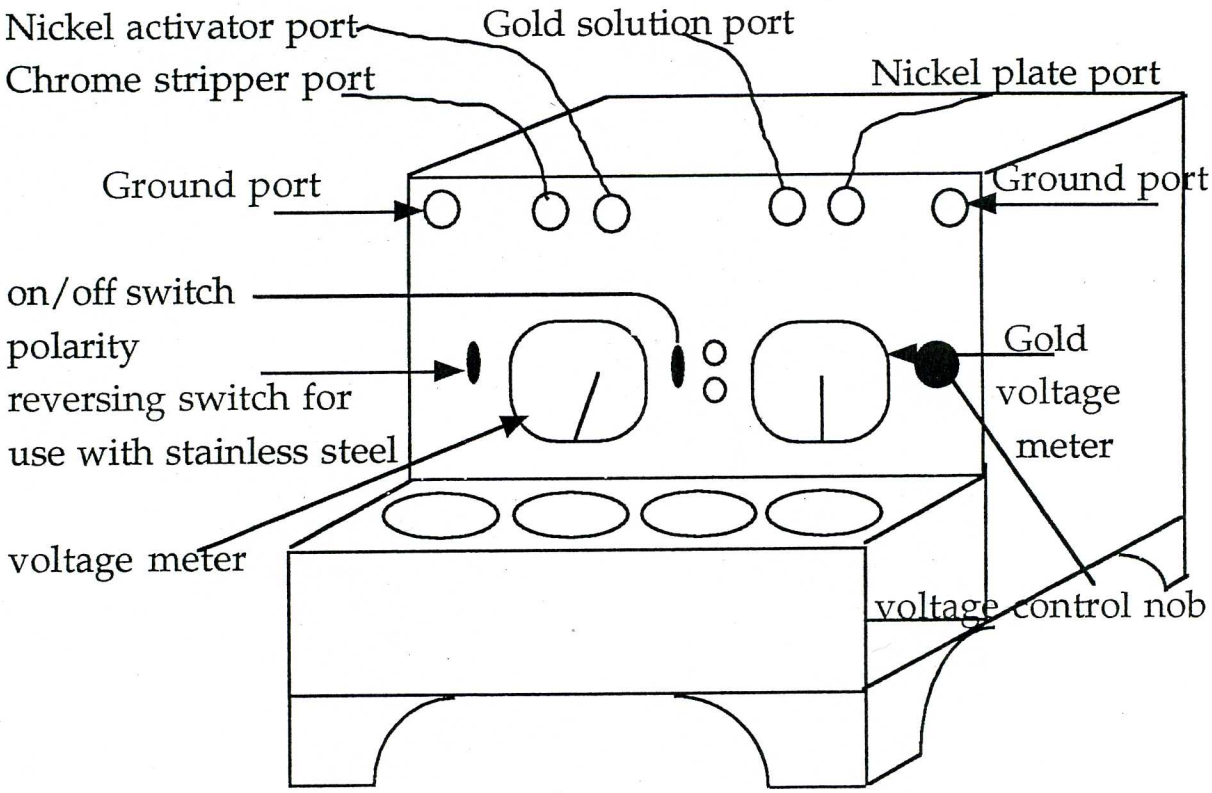
STAINLESS STEEL BITS (ANODES)

Stainless steel bits (anodes) are supplied with the gold plating system. These are 1/4" bits and should be used with each step of the plating process. 1 bit should be used for each step. There are woolly sleeves and cotton sleeves supplied with the system. Use the woolly sleeves for stripping, activating and nickel plating. The cotton sleeves are used for the gold solution. Once used store the bit and sleeve as a unit in the beaker with the corresponding solution. ie.. gold bit/sleeve in gold solution, stripper bit/sleeve in stripper etc. When you have completed you plating job and are ready to put your machine away, simply pull the bit with the sleeve out of the end of the application wand, drop it into it's beaker and replace the lid. After all the bits with their sleeves have been stored in their solution beakers it is a good idea to remove the beakers from the beaker holder, and wipe down the beaker area. this will keep your machine looking its best all the time.

EQUIPMENT TRAY AND CADDIE

The equipment tray is situated directly behind the technician's seat. It will hold supplies needed during the plating process. There is sufficient room to hold backup items such as extra bits, anode sleeves, gloves, your rinse bottle, vinyl tape, safety glasses, drain aprons, vinyl body protection apron, more solutions, and the training manual. Everything you need to do a complete and professional plating job is at your finger tips.

BASIC MACHINE LAYOUT



Every machine comes clearly labeled to insure that the correct procedure can be followed easily and correctly. Each solution beaker is also clearly labeled to insure proper placement and use with the machine.

THE GOLD PLATING PROCESS

SETTING UP THE MACHINE

When your system arrives, the machine is essentially ready to begin plating. First, review all the safety and operational portions of this manual. Watch the training video. Prepare the machine by slipping the round end of the bit (anode) into each bit sleeve. Remember the thin cotton sleeve is for the gold and the woolly sleeves are for stripping, activating, and nickel plating. Small rubber bands are supplied with the bits and sleeves in a 16 oz beaker in the equipment caddie. Be sure to use a rubber band on the upper end of the woolly sleeve to insure a tight fit on the bit. The first time you use a new sleeve you need to soak it in the solution for 15 - 20 minutes before using it to let it get completely wet. You may or may not wish to prepare a bit and sleeve for the nickel plate wand at this time as you will only use it when you are going to plate stainless steel.

YOU WILL NOW NEED TO PUT ON THE PROPER PERSONAL PROTECTION, SAFETY GLASSES AND RUBBER GLOVES.

Take the beaker labeled chrome stripper from the machine. Remove the lid and pour about 1" - 2" of the Chrome stripper into the beaker. Place a bit with appropriate sleeve into the beaker. Be sure to use the rubber band for a tight fit. Replace the lid and place the prepared beaker back into the hole on the solution tray marked chrome stripper. Remove the beaker marked nickel activator and follow the same steps as with chrome stripper but using nickel activator. Remove the beaker marked gold solution and follow the same process as before, making sure to use the gold sleeve. The final beaker marked nickel plate may or may not be prepared at this time as you will only use the nickel plate when you are working with stainless steel.

WHERE TO DO YOUR PLATING

You can plate virtually anywhere you want as long as you have access to power. You will want to carry an extension cord with you, that will handle the power requirements of your plating system. (up to 200 watts) The best locations have good lighting, are relatively level, and should be protected from the wind, as the wind can blow the solutions from the plastic drip apron.

PLACING THE CATCH BASIN

Decide on a method for each item you are going to be working on. Try to minimize the number of times you will have to move your equipment. If working on emblems where one is above the other, be sure to do the top emblem first to avoid dripping any solutions on the finished item.

To use the catch basin: 1st remove the drain plugs from the drain pan. Place one end of the plastic drip apron running through the long slot in the grounding tray or between the beaker holder and the inside of the drain pan. Place the drain pan under the work you are going to do and tape the other end of the drip apron directly under the item to be plated. If done properly this will allow all of the waste solutions rinsed off the work to flow down the drip apron and into the drip pan.

MASKING THE CAR

All of the solutions used in your gold plating system have been designed NOT TO DAMAGE NEW VEHICLE PAINT. There are some plastics that may be bleached in the process. (like the antenna bezel and grill on Honda Products). If there are any questions about any surface you should tape it off so no solutions will come in contact with the area in question. If in doubt mask. Any aluminum trim pieces should also be

avoided. A NOTE OF CAUTION: Paint that is five (5) years old or older may discolor. Avoid getting the solution on older paint or paint not applied by the original manufacturer.

GOLD PLATING CHROME ITEMS

The system will gold plate most factory chrome, brass, silver, or stainless steel items. The procedure for chrome is as follows:

1st: Set drip pan and apron as described.

2nd: Put on all personal safety items; glasses, gloves, apron, etc.

3rd: Set up the machine as described.

4th: Begin working on one emblem. Most emblems on a vehicle are a single piece that is completely plated with nickel and then chrome. Many emblems are painted between the letters or parts of the emblem and the entire chrome surface is electrically conductive, even though the emblem may be two words or two parts.

5th: Place the grounding clip in an inconspicuous spot on the corner or side of the emblem being careful to avoid scratching the emblem. If you can't clip the grounding clip to the emblem you can just hold it against the chrome surface. This works just as well as clipping it on. After a little practice the technician will learn the best place to hold the clip.

6th: Remove the chrome. To do this just sit on the machine facing the item to be plated. With one hand, pick up the chrome stripper wand and dip it in the chrome stripper solution. Let the excess drain into the beaker for a few seconds. With the grounding clip either clipped in place or held in place, slowly rub the saturated sleeve in circular motions on the item you are stripping. Whenever possible hold the bit and sleeve lower than the handle to prevent excess solution from running down the bit and onto the wand and your hand.

7th: If the piece you are working is chrome, the solution and sleeve will

turn a bright yellow color. Don't panic! This means that the stripping is working. Bubbles and fumes are also usually present throughout this step. The fumes may make you cough if inhaled so try to avoid them.

8th: As you work the chrome, the color of the item will change to a different color (a little more brown/yellow). This means the chrome is gone.

NOT REMOVING ALL THE CHROME IS PROBABLY THE MOST COMMON MISTAKE MADE BY INEXPERIENCED TECHNICIANS. Do not be afraid to strip the chrome. It is very important that you go over the entire piece thoroughly until all the chrome is removed. If you are in doubt, do it again, you won't over strip a piece of work.

9th: Replace the wand to its beaker.

10th: Rinse thoroughly with water, but don't over do it, remember you will have to dispose of every drop of waste you produce.

ACTIVATE THE NICKEL

To activate the nickel surface follow the procedure as explained in the stripping process. Use the activator wand and solution. There won't be much activity except some bubbles around the sleeve. Make sure the grounding clip is in place. It is important to activate the entire surface. Just make sure the entire surface is wet. Don't spend very much time in one spot. Rinse thoroughly with water and quickly move on to the gold plating step as the nickel surface is susceptible to oxidation now. The activator voltage meter is the one on the right looking down and there should be some deflection of the meter during activation.

GOLD PLATING THE ITEMS THAT HAD CHROME

Holding the grounding clip against the work, pick up the gold wand. Place a small amount of the gold solution on the end of the gold sleeve. Plate the item with small circular motions, rotating the wand in your

fingers. When the end of the wand turns white or light gray, it means that there is no gold left on your wand. Dip the sleeve into the gold solution to maintain adequate gold on the sleeve. As you see the gold develop, move to another area until the entire surface that has been activated is covered with a thin layer of gold. Then plate each area until you cover the entire item to the desired thickness. Each pass will deposit 6 to 8 micro inches of gold. A thickness of 25 to 35 micron inches will give excellent beauty and wear. This thickness requires 4 or 5 passes of the wand. Rinse thoroughly with water.

FINISHING THE JOB

After finishing at each location on the car, remove the plastic apron carefully so that the solution on the plastic doesn't flip on you or your clothes. Using a paper towel wipe away any remaining rinse water from the emblem and surrounding surface area. Make sure you wipe the emblem dry so water spots will not form. A very fine polish, jeweler cloth, or a cotton cloth (like a diaper) help give the gold that finished look.

CLEAN UP AND STORAGE

When finished with the job clean up your machine. Drop the bits into their respective beakers. Wipe any excess solution from the machine, wand handles, and the plastic drip apron. Replace plugs in drain pan and wipe of grounding tray. You are ready to go to the next job site.

PLATING NON-CHROME ITEMS

When plating brass, copper, and silver you just need to follow the steps described for chrome only you will not need to use the chrome strippers

as these items do not contain chrome. Just activate, rinse, gold plate, and then rinse. A REMINDER: The present surface condition of the object will not be changed by the gold plating process. If the surface is dull or scratched, the finished gold will be dull or scratched. The best results are achieved with items that are in good condition.

PROCEDURE FOR PLATING STAINLESS STEEL ITEMS

If you determine that the surface you are plating is stainless steel you can achieve an excellent gold plated finish by following a few additional steps to insure that the gold finish applied will last as long as a nickel plated surface.

1. Apply a metal polish, (such as Ultra Metal Polish, by Gold Plating Services), to the entire surface you are going to plate. Clean according to directions.

2. Clean the surface prepared in step one with a degreaser, (like Simple Green), to remove any grease or residue from the metal polish. Then use Gold Plating Services Metal Prep as the final preparation of the surface before giong to step 3.

3. Change the polarity by placing the polarity reversing switch in the "Electro-Clean" or down position. This switch is located to the left of the activator meter. This will give the chrome stripping wand a positive charge.

4. Electro clean the stainless steel surface with the chrome stripper solution, just as if you were stripping chrome. (Make sure the polarity reversing switch is in the down position.)

5. Rinse completely with water.

6. Activate the stainless steel with the nickel activator just as you would any nickel surface. (see Activating the Nickel section)

7. Rinse completely with water. (Optional)

8. Use the Nickel Plate Solution and Wand and liberally plate the entire surface with the nickel plate. The thicker the nickel plate the better the gold will look. Take your time with this step.

9. Rinse completely with water. (Optional)

10. Activate the entire surface with nickel activator. Use plenty of activator solution to insure complete activation.

11. Rinse completely with water.
12. Gold plate, (see Gold Plating Emblems that had chrome)

NOTE

If you are doing a large stainless steel area or surface, divide the surface you are working on into sections with a maximum area of 6-8 square inches when doing steps 6 - 12. This will keep the area you are working on with the nickel, activator, and gold solutions from drying out in between steps. This will assure the quality of the finish and bond of the plating process.

REMEMBER

Change the polarity switch to the up position after you have completed the stainless steel plating project. This will insure that the polarity is set properly for the next chrome, nickel, or metal plating surface you work on.