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# SUPER-STRIP™ for STEEL INSTRUCTIONS & EQUIPMENT

**READ FULL INSTRUCTIONS CAREFULLY BEFORE USING - READ - UNDERSTAND - FOLLOW POINTS BELOW**

- 1) For **MILD STEEL PARTS ONLY**. Will etch or destroy high carbon, case hardened or alloyed-steel parts. (ie: most hammers/triggers)
- 2) **POWER SOURCE**: 6 to 9 Volt D.C. with minimum continuous output of 90 to 100 Amps per square foot of metal being stripped. (Any other voltage or amperage will damage parts.)
- 3) **CHECK PARTS EVERY 5-TO-10 MINUTES**. Do not leave unattended.

4) **MOST EFFICIENT OPERATING TEMP**: 65°-80° F. Maximum temp: 100° F. Above 100° F. causes pitting or etching.

5) **DO NOT OVERLOAD TANK**. Overloading increases time-to-strip, and probability of heating-up of solution which causes pitting.

6) **REMOVE SLUDGE FROM TANK**. See how, Page 3, Step 7 of instructions on Mixing, Using & Storage of Super-Strip. Sludge raises temperature; slows down stripping; contributes to pitting.

By  
**Ralph Walker**

and the Crew at Brownells, Inc.

*(Note: It's disconcerting that a process as simple as Super-Strip takes instructions this long to explain. Bear with us - and read them all the way through - it's an excellent stripping system, and we want to be sure it works correctly for you from the very start.)*

The complete and total removal of nickel plating from a gun part or a complete gun is becoming one of the major problems encountered by a gunsmith who does metal refinishing. Leaving just a trace of the previous nickel plating will prevent adhesion of new plating or can make a rebluing job a total and dismal failure.

In recent years the problem has been compounded by the use of various types of electroless nickel plating. These can actually be an alloy, or combination of alloys, much harder and more difficult to remove than the older and more common "Electroplated" nickel. To make matters worse, some manufacturers put on chrome plating for cosmetic purposes which is extremely difficult to completely remove. Additionally, cadmium plating is often used to give a "brushed effect", and this is as difficult to remove as is chrome plating.

Therefore, the ideal situation for the metal refinisher is a method or a solution that will strip and remove all of the above types of plating, including the older ones that used a copper plate undercoat. It should be completely free of any cyanide or cyanide solution, yet work quickly and with no dangerous fumes. And, the solution should not pit the stripped base metal surface once the plating is removed.

Brownell's Super-Strip meets all of these requirements and is the most technically advanced and trouble-free stripping system available. When used correctly, it will completely remove all forms of electrolytic or electroless deposited nickel, chrome, cadmium, zinc and copper plating from steel or iron, including parts made from one of the powdered metal processes. (Caution: Any Aluminum, Stainless Steel, or High Carbon Content Steel parts will be destroyed!)

The Super-Strip process actually dissolves the old plating and leaves the base metal surfaces 100% free of any trace of old plating. The surface can then be replated either by the electro or electroless process, or reblued.

### CAUTION:

You cannot strip **Stainless Steel** pieces (the nickel and/or chromium content which makes Stainless Steel rust resistant is dissolved with Super-Strip); or pieces made from **High Carbon Steel** or are **Case Hardened** (the carbon content is also dissolved by Super-Strip); or pieces made from **Zinc Alloys** (like many low-priced handguns or their components, because zinc is dissolved). All **Lead, Tin or Silverbearing Solders and Alloys** will be attacked by Super-Strip once the plating covering them is dissolved. Watch these parts carefully! Take them out of the Super-Strip as soon as all plating is removed and rinse immediately to prevent erosion damage to solder joints.

## HOW SUPER-STRIP WORKS

Basically, Super-Strip is the reverse of electro plating, that is, electricity is used to remove plating rather than to put it on. In operation, the gun or part to be shipped becomes the anode and attaches to the positive terminal. An iron bar or steel plate becomes the cathode and is attached to the negative terminal. Both parts are immersed in the Super-Strip solution and a D.C. current is applied.

As the current flows from positive to negative, the solution is activated; it both strips and breaks down the plating that is to be removed. The plating comes off in the form of minute particles and enters the solution but is not deposited upon the iron or steel cathode. Instead, the plating particles settle to the bottom of the solution as sludge and the solution continues working until all of the plating is totally removed from the surface of the base metal.

## TANKS AND POWER SUPPLY

**STRIPPING TANK** - Virtually any container - glass, plastic, iron or steel can be used. Do not use stainless steel, galvanized steel or chrome, cadmium or zinc-bearing metal tanks as they will be attacked by the solution. The inside surface of the tank should not be painted as some paints will contaminate the solution.

**CLEANING TANKS** - A Hot Cleaning Tank for a Dirco-Clean 909 cleaning bath and a Cold Cleaning Tank for a TCE Cleaner Degreaser cleaning bath are required, and are discussed later in these instructions. Also, a Flowing Water Tank is required, and can easily be made from a shallow plastic dishpan. Place level in an old sink to permit uniform overflow over all sides, with fresh water brought into the tank from a hose placed in the bottom. If you are using the Brownells Electroless Nickel Plating System, you can use the same Flowing Water Tank, however, be sure to rinse thoroughly before and after use to avoid contaminating future plating projects.

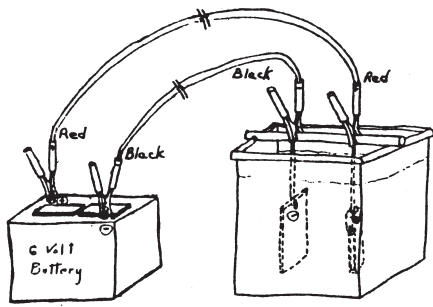
**ELECTRICAL SOURCE** - A heavy-duty, 6 volt, 90-100 amp. battery is recommended; however, any 6-9 volt D.C. electrical source that can supply a minimum continuous output of 90-100 amps per square foot of metal to be stripped is acceptable.

The simplest and least expensive choice is a 6 volt, 100 amp. automobile or tractor battery.

Under normal use you will be able to run 3 or 4 batches of gun parts through the stripping cycle before the battery will need recharging. A standard battery charger, or a trickle charger, can be used to bring the battery back up to full power. Be sure to follow the directions provided with the charger when recharging the battery.

**ELECTRICAL CONNECTIONS** - Any good copper wire (**not aluminum**) will transfer the current from the battery to the part to be stripped, and to the cathode. Since the diameter of the wire limits the amperage, a simple solution is to use a good set of heavy duty, flexible, copper wire "jumper cables".

The battery, trickle charger and jumper cables can be purchased at most auto parts supply houses, Western Auto, Coast-to-Coast, or similar stores.



We have included a drawing of a typical tank setup, using a plastic waste basket for the stripping tank. To support the pieces in the solutions, we placed a wood dowel across the tank (either 1/2" or 5/8" is fine). Since the stripping solution will dissolve copper wire (used in the jumper cables), the work must be hung from iron or steel wire hooks. We made hooks from 5/32" drill rod to be sure not to restrict the amount of current flow through the rods to the part. (Wire coat hangers can be used; just clean thoroughly to bare metal. However, we found they cut amperage, so went to the larger diameter drill rod.) Fashion the hooks to support the work as required, and make the top end to fit snugly over the dowel you are using. You will need two sets of hooks - one for the part to be stripped, and the other to hang the iron or steel cathode that will be used. Clamp the jumper cable across both the dowel and the hook for a firm, non-slip connection.

The cathode can be any piece of iron or steel, but it MUST have a clean, bare surface, and it must have a surface area equal to - or greater than - the surface area of the part to be stripped. Remember that total surface area consists of front, rear, ends, outside, inside, etc.

**AGITATION** - An occasional stirring of the solution will assist in stripping, but constant stirring should not be done as it does not permit the stripped plating particles to settle to the bottom of the tank where they "get out of the way" of the action between the chemicals and the surface being stripped. The stirring paddle can be a nylon spoon or an unpainted, bare wood scrap.

**STORAGE** - As the stripping solution may be reused until depleted, the Super-Strip solution must be stored in air-tight jugs. (See details for removing sludge on Page 3, Step 7 of instructions on Mixing, Using & Storage before storing.) Milk or soft drink jugs, lab jugs, or glass jugs are all ideal.

## SAFETY

Every effort possible has been taken to make this process as safe as possible. Common sense must be applied when using any chemical process. **READ THE WARNINGS ON THE CONTAINERS.** An exhaust fan is essential and must be used to draw the fumes away from the work area. Note: A small amount of free hydrogen is released in the process of using Super-Strip and should not be inhaled. Be sure, too, to use the exhaust fan when mixing Super-Strip as it is a dry powder and you do not want to breathe in any dust while mixing. Always have a door or window partially open for fresh air intake.

As in plating or bluing, the operator must wear long-sleeved clothing, a filter mask, a full face shield, a neoprene work apron and neoprene gloves.

## PROCEDURES FOR USING SUPER-STRIP

### TECHNICAL INFORMATION ON MIXING & USING HOT CLEANING BATH FOR SUPER STRIP

(1) Determine the size tank you wish to use and the volume of solution it will conveniently hold in gallons.

#### TO MIX ONE GALLON HOT CLEANING SOLUTION:

- Mix 8-oz. by weight (approximately 1 cup by volume) of Brownells Dirco-Clean 909 per gallon of clean water.
- Heat to 180° F. and stabilize temperature.
- Suspend parts in the cleaning bath for 10-15 minutes.

If you already have a nickel plating setup, the same tank and cleaner can be used. However, be sure the cleaner is in good condition and the tank is clean. The same hot cleaner tank from your bluing setup can also be used but you must change the solution mix to this ratio, not the milder cleaning ratio used for cleaning prior to bluing.

### TECHNICAL INFORMATION ON TCE CLEANER DEGREASER CLEANING BATH

(1) Determine that the tank you wish to use is large enough to conveniently hold the parts. This tank should be metal (such as stainless steel or black iron) porcelain, fiberglass or pyrex. Do not use plastic or galvanized steel. The TCE Cleaner Degreaser is used full strength at room temperature in a well-ventilated room.

The TCE Cleaner Degreaser can be the same solution that is used as a pre-cleaner in nickel plating, but it must be clean since it is used here as the final cleaning step.

Do not use petroleum base solutions like gasoline, kerosene, mineral spirits, or gun cleaners as these may leave a residue which can prevent the Super-Strip from working properly.

### TECHNICAL INFORMATION ON MIXING, USING & STORAGE OF SUPER-STRIP ON STEEL PARTS

(1) The Super-Strip tank, stirring paddle and any measuring containers should be thoroughly washed with clean, fresh water prior to each use. This removes dust and any other contamination that can ruin the solution. **DO NOT SKIP THIS STEP!**

(2) Always precisely measure the water and weigh out the powder. Guessing results in a solution too weak or too strong. Keep measuring containers separate from others to avoid any possible contamination.

(3) **Super-Strip operates at room temperature (65° - 80° F.)** It must never go over 100° F. during operation for it will cause pitting of the base metal. If the solution is too cold because of your shop temperature, set your stripping tank in a larger container of hot water to bring the solution within the 65° - 80° F. range. If the solution is too hot, set the tank in a container of ice water to drop the solution into the required operating range. Monitor both the warming and cooling of your bath carefully with a clean laboratory or reliable candy thermometer (glass - not stainless steel; be careful of breakage!) to avoid overshooting temperature correction!

(4) Within the correct temperature operating range (65° - 80° F.), Super-Strip will completely strip a part in an average of 20 minutes to 1 hour. When the solution is new the time will be faster than when removed and its thickness, the actual stripping time may be as short as 5 minutes or as long as 2-3 hours. Once Super-Strip has completely removed all the plating, it simply stops working. And, as long as the base metal does not contain any nickel, chromium, or carbon there will be absolutely no after effects. If a part does contain one of these items, then the Super-Strip will continue working on the parts base metal and a severely etched surface (or worse) will result. **DO NOT** leave any part in the solution for a long period of time without checking it every 5-15 minutes. However, the base metal will not be affected until the nickel is removed. If the parts are a standard gun steel or a mild steel with a low carbon content, then it is not necessary to time the parts nor be concerned about area of coverage. These parts could be left in the solution for a long period of time with no effect on the base metal. The only disadvantage is that the battery will run down and need to be recharged.

If the type of steel in the base metal is not known or if time is essential, simply remove the part from the Super-Strip periodically (about every 5 minutes) and examine. Be sure to inspect the part thoroughly not only to ensure that every speck of plating (inside and out) is removed, but also that no sign of etching of any exposed base metal has begun. If not, return the part to the solution for additional time (as required) to completely strip the plating. It is a good idea to break the electrical connection during inspection to prevent possible electrical shock. This can be easily accomplished by removing either one of the connections from the battery itself.

Should the base metal show any sign of etching, the stripping process should be stopped immediately and the part thoroughly rinsed in the flowing water tank. If additional stripping is required, then you will need to use either Brownells No. 778 Stripper (for parts plated with Brownells Electroless Nickel) or Brownells No. 1082 Stripper (for any other nickel plated parts including electro-plated nickel parts). **DO NOT** put any part back in the Super-Strip solution if it shows any sign of etching as it can be completely destroyed by the Super-Strip solution.

(5) One gallon of Super-Strip solution at room temperature will strip about six .45 Colt Automatic pistols. Of course, this is only an average as the type of plating and the method of original application of the plating will vary the actual number of guns that can be done.

(6) The Super-Strip mixture is exactly four (4) pounds of Super-Strip powder added to one gallon of room temperature water. Using this ratio, any amount of solution can be mixed.

#### TO MIX ONE GALLON OF SUPER-STRIP SOLUTION: (Follow the directions exactly in the order given.)

- First, measure 1 gallon (128 oz.) of clean, fresh water into the stripping tank.
- Slowly add 4 lbs. of Super-Strip, stirring constantly.
- When the powder is dissolved and mixing is complete, the solution will be a bright blue-purple color. (Changing the con-

centration by increasing the quantity of Super-Strip will not increase performance nor shorten stripping time. However, a weaker solution, such as 3 lbs. of Super-Strip per gallon of water, will decrease efficiency and lengthen stripping time.

**Note:** Because you add 4 pounds of powder to one gallon of water you'll end up with more than 1 gallon of mixed solution, so have sufficient number of containers on hand to hold it all. As a rough estimate, figure 1½ gallons for each 1 gallon of water and 4 lbs. of powder that are mixed.

(7) When finished stripping, cover the Super-Strip solution and let it sit for several hours so the sludge will settle to the bottom of the tank. Then carefully pour the clear part of the Super-Strip mixture into clean gallon containers and put the lids on tightly. The color of the once-used solution will vary from bright blue to a very light blue to almost a white, translucent color. This is normal and the solution will still be effective. Discard the sludge remaining in the stripping tank for it is actually stripped plating particles and will decrease the efficiency of the Super-Strip solution and must not be left in the tank. Clean the tank with soap and water and rinse thoroughly. The system is now ready for the next job.

(8) The shelf life of dry, unmixed Super-Strip is well in excess of one year. It must be kept in a sealed container in a relatively moisture-free atmosphere. If moisture gets into the container, Super-Strip will solidify into a cake; just break up the chunks and dissolve them for the stripping solution will still work.

## RECHARGING SUPER-STRIP

Brownells Super-Strip can be recharged **once**. This will provide your existing solution with the capacity to strip an additional 2 to 3 complete .45 Colt Automatics before the solution **must** be discarded. When recharging, you must keep in mind that when you mixed the original solution, you began with 1-gallon of water plus 4 lbs of powder which yielded a solution of about 1½ gallons. When recharging, you must recharge the entire solution originally mixed, and for the sake of these instructions, we will call this "1 gallon +" as the measurements are based on adding a weighted amount of powder to the original solution as it was mixed. If you are using more than 1 gallon + of stripping solution in your tank, be sure to multiply the number of "original batches" you mixed by the amount of weight powder per 1 gallon + required to recharge.

**TO RECHARGE ONE GALLON OF SUPER-STRIP:** (Follow the directions exactly in the order given.)

- Pour the 1 gallon + of Super-Strip mixture back into the stripping tank. (You must remove the sludge before recharging - See Page 3, Step 7 of instructions on Mixing, Using & Storage.)
- Slowly** add 1 pound of Super-Strip powder to the existing 1 gallon + of Super-Strip, stirring constantly.
- Once the new powder is thoroughly dissolved and mixing is complete, the recharged Super-Strip solution is ready for use.
- Recharging will work only **once**, additional attempts at recharging **WILL NOT WORK**. Simply discard the old solution and mix a new batch. Make sure the tank is thoroughly cleaned and all traces of old plating sludge are removed.

## STRIPPING OPERATION STEPS FOR STEEL PARTS

### *Review Warnings in Box at Top of Page 1*

It is important to remember that in all forms of metal finishing or stripping, the cleaning steps are of utmost importance. They should not be eliminated for any reason. Any foreign material left on the old plated surface will always, with no exceptions, decrease the efficiency of the system.

Disassemble the gun completely. Make sure all pins, springs, and internal parts are removed. Then separate the parts to be stripped from those that will not require stripping.

(1) **HOT CLEANER BATH** - Submerge the part in the tank for 10-15 minutes with operating temperature at 180° F. Agitate occasionally to ensure good surface cleaning.

(2) **FLOWING WATER TANK** - Submerge the part for five (5) seconds and agitate to flush cleaning solution from the surface of the part.

(3) **TCE CLEANER DEGREASER** - Submerge the part in TCE Cleaner Degreaser to thoroughly clean the part. This will remove any possible remaining dirt or oils, especially some of the newer synthetic lubricants. Scrub the parts with a clean, stiff brush and use cotton swabs to thoroughly clean all surfaces including holes, crevices, etc. An ultrasonic cleaner, if available, is very helpful and eliminates the hand scrubbing. Two minutes in the ultrasonic cleaner should be sufficient to clean most parts. Of course, if the parts are extra dirty, leave them in the tank until clean. Once clean, take the parts out of the TCE Cleaner Degreaser and set on a clean paper or shop cloth to dry.

(4) **FLOWING WATER TANK** - Submerge the part for five (5) seconds and agitate to flush dust or foreign matter from the newly cleaned surfaces.

(5) **STRIPPING TANK** - Connect the black end of the battery jumper cable to the negative terminal on the battery. Using a piece of 5/32" drill rod (or similar) connect the other end of the black cable to the steel plate or iron bar that is to be the cathode. Submerge the plate or bar into the stripping solution. Connect the red end of the cable to a piece of 5/32" drill rod (or similar) which has been connected to the part to be stripped. Submerge the part in the tank and, using the nylon or wooden spoon, check to be sure that the part and plate are not touching each other. (Note: A new solution has a deep blue color so you will not be able to see if they are touching.) Connect the other end of the red cable to the positive terminal on the battery. This completes the circuit and you should see a slight bit of gassing around the part that's being stripped. Be sure that both the anode (the part to be stripped) and the cathode (the steel plate or iron bar) are fully submerged in the solution. Remember that the total surface area of the cathode must be equal to, or greater than, the anode or part that is to be stripped.

Once the part has been in the solution for a minimum of 5 minutes it can be removed for inspection. First, remove the positive (red) connection from the battery to be sure that the part does not short out by touching the cathode. If the part is not fully stripped, place it back in the tank and reconnect the red end of the cable to the battery. Allow a minimum of 5 minutes between inspections. (See page 2, Step 4 for warnings.) When the part is completely stripped remove it from the stripping solution.

(6) **FLOWING WATER TANK** - Submerge the part for 30 seconds and agitate to flush all stripping solution from the part. Remove the part from the tank and allow to dry, or use compressed air for faster drying.

(7) **INSPECTION** - Check the part over carefully to be sure that all surfaces and recesses have been fully stripped. The part can now be either replated or blued. If either process is to be done within the next few hours no further steps are necessary. However, if refinishing is to be done at a later date, then use Brownells Rust Preventive No. 2™ or Brownells Hold™ to protect the newly cleaned and stripped surfaces. Remember that rust can form very quickly on these bare and super-clean surfaces.

## SPECIAL NOTES

The time to completely strip a part is variable and depends not only on the type of plating, thickness, etc., but also on the electrical connections and how well the battery is charged.

Throughout these instructions we have talked repeatedly about doing a "part" (singular). However, nothing prevents you from stripping several parts (plural) at a time except the size of the iron bar or steel plate used as the cathode, (the surface must be equal to or larger than the surface of the part(s) being stripped); and the electrical requirement of 90-100 amps continuous output, minimum, per square foot of surface of the item(s) being stripped. With ingenuity, you can make a hanging system that will support several part(s) in the bath, all with good electrical connections, and all stripping properly.

If the Super-Strip solution is being saved for later use, it must be allowed to sit for several hours so the sludge will settle to the bottom. Carefully pour the clear part of the Super-Strip solution into clean gallon containers and put the lids on tightly. If you skipped this step before storing the solution, **DO NOT** try to separate the solution and the sludge after they have been stored. Some of the chemicals vital to the stripping process can settle out during storage, and would be lost from the solution if you simply poured off the clear liquid now.

Often the solution can still be salvaged for future use if you: 1) Pour the entire solution, sludge and all, into your tank and mix thoroughly. 2) Be sure the solution is within the 65°-80° F. operating range. If not, adjust as outlined above. 3) Mix thoroughly again. When everything is completely back in suspension, proceed as outlined on Page 3, Step 7 of instructions in Mixing, Using & Storage. The solution should work for you on your next stripping job. If it doesn't, it will have to be replaced.

When an iron tank is used to hold the Super-Strip solution, the tank itself can be used as the cathode. Be sure the tank is clean and that there is a place for a good solid electrical connection for the jumper cable. Also, check to see that the wire and the connection from the battery is insulated from, and not in contact with, the positive terminal wire or the part that is being stripped. The wire or drill rod holding the part must be insulated from the side of the tank, and the part when submerged in the solution cannot touch any portion of the tank. The easiest way to do this is to slide a section of old garden hose or other plastic/rubber tubing over the shank of the hook (being sure not to interfere with the metal-to-metal contact of the hook and the part being stripped).

The solution will work best when the cathode (steel plate or iron bar) and the anode (part to be stripped) are at minimum distance from each other, but any contact of the two will stop activity and

result in a short circuit. Always check to be sure that the cathode, anode, and all connecting wires are not touching each other.

The parts that are being stripped will appear to bubble or "gas" after a minute or more in the stripping solution. The amount of "gassing" will vary depending on the type of plating and the proximity of the anode to the cathode. The bubbling that causes the gassing is actually free hydrogen that is being released and it is part of the stripping action. Caution: Do **not** breathe the free hydrogen that is released. Use adequate ventilation.

Jar of Vinegar: Keep a wide mouth jar of vinegar close to your Bluing Solution Tank to neutralize salts splashes on your skin. Immediately flood affected area with vinegar. Read and memorize warnings on container of Oxynate No. 7™ and throughout these instructions.

## REMOVING COPPER UNDERCOAT

Some nickel plated guns are copper flashed prior to plating and, while you can still use Brownells Super-Strip, an extra step is required. As the nickel and then the copper flashing is stripped from the part, the copper forms copper sulfate. This appears as a black film over the metal surface and is readily seen when the part is removed from the stripping solution.

The copper sulfate film can be easily removed from the base metal by immersing the part in a solution of 50% water and 50% Hydrochloric (Muriatic) Acid. No current is used in this step. Simply

hang the part in the acid bath. (Note: Hydrochloric Acid must be at least 31% pure concentrate; the Muriatic Acid equivalent is 18° Baumé. Either acid can be used as they are both exactly the same chemically: HCl. Do not use "swimming pool" acid; it is far too weak.) To mix the Acid Bath, measure equal quantities of distilled water (in one container). Pour the water into the tank **first**. (An ideal tank is a plastic waste basket the same size as the one used for the stripping tank.) Then, add the equal amount of Acid to the water. (Never add water to acid; serious and harmful chemical eruptions can occur.)

Suspend the part in the acid solution, using the same hook as used in the stripping tank. Once the part has been in the acid solution for 10-15 minutes, remove it and brush or wipe the copper sulfate from the surface. Repeat the acid immersion procedure until the black film is completely removed. After the film has been completely removed, rinse the part for 10-15 seconds in the flowing water tank.

It is absolutely necessary to apply a coating of protective oil such as Brownells Rust Preventive #2™ after parts are treated with the 50% acid solution as they will come out of the rinse tank super-clean and can begin rusting within minutes. Do not leave the parts in the acid solution any longer than is necessary as it can pit the surface if left in for a prolonged period. The 50% Hydrochloric Acid solution can be stored indefinitely if placed in a plastic or glass container with a tight seal.

# SUPER-STRIP for STEEL TROUBLE SHOOTING CHART

Probable Cause	MALFUNCTION	Remedy	Probable Cause	MALFUNCTION	Remedy
Newly Mixed Solution	<b>SOLUTION DOES NOT STRIP</b>	Wait 2-3 minutes, there is a normal delay before activating begins with fresh mixed solution.	Weak Battery	<b>SOLUTION STRIPS SLOWLY (continued)</b>	Recharge battery to full strength for minimum stripping time.
Poor Electrical Connection		Check all contacts to be sure electrical current can flow from battery to parts and back properly.	<b>ETCHING &amp; PITTING OF METAL</b>		Amperage must be 90 to 100 amps minimum continuous output per sq. ft. of metal being stripped. Lower amperage will only cause solution to heat up; not strip. Use correct power source.
Battery is Dead		Battery should be recharged to full strength, daily, after each use. Use a hydrometer if in question.	Improper Amperage		
Depleted Solution with		4 to 6 handguns can be stripped before solution is depleted and needs to be recharged. Solution can be recharged only <b>once</b> .	Sludge Left in Tank		Causes temp. to rise rapidly in tank; interferes current flow preventing stripping. Remove per instructions for "Storage"; Step 7 Page 3.
Partially Used Solution	<b>SOLUTION STRIPS SLOWLY</b>	Allow more time. Also, depends on type of plate: chrome or heavy layer of electro-nickel will take longer.	Overheating		Operating temp. is 65-80° F. Control by chilling bath. Correct improper power source; remove sludge. Do not overload tank with parts if temperature reaches 100° F. until lowered.
Parts Not Properly Cleaned		Both hot cleaner bath and TCE Cleaner Degreaser steps are required to get part totally clean and degreased before stripping.	Metals other than Mild Steel		Any other metal can be damage or destroyed. Carefully review "CAUTION"; Page 1 for metals that cannot be stripped without damaging them.

## FLOW CHART

