

OPERATING INFORMATION FOR THE GOLD BUG^{®*}

POWER REQUIREMENTS:	110, 220 V. AC
MAXIMUM OUTPUT CURRENT:	25 A. DC
OPTIMUM OUTPUT VOLTAGE:	2.5 - 4.0 V., 6.0 V. Max
OPERATING TEMPERATURE:	125°F max solution temperature Room temperature is normal
APPLICABLE SOLUTIONS:	—Drag-out solutions of gold, silver, rhodium, platinum and palladium plating baths. —Cyanide based gold and silver —Gold strike —Cyanide based gold strippers —D/O of gold strippers (both of these will require reduction of oxidizer which will be explained later) —Others which can not be enumerated here
OPERATING PH:	1-14 possible (at pH below 2 certain precautions must be taken). 3.5-9.5 optimum
DIMENSIONS OF COLLECTION CANISTER	15" long 5½" O.D.

INSTALLATION PROCEDURE

Place power supply in close proximity to tank containing solution to be recovered and 110 V. outlet. Plug it in.

Attach reinforced hose (supplied) to hose barb on pump and hose barb on collection canister.

Plug cables from collection canister to cables from power supply. (There can be no reverse polarity as plugs can go only one way).

Plug pump into outlet on right side of power supply.

INSTALLATION PROCEDURE (Cont'd.)

Now, holding pump in one hand, gently lower the canister into the solution, slipping the pump over the lip of the tank and fasten pump to flange with a c-clamp or bolt. Make sure that the pump intake is immersed in solution at least 3 inches and at most 6 inches.

Turn on power supply. This will also activate the pump. In most applications a current of between 10 and 20 amps at between 2 and 3 volts is indicated. For particularly concentrated solutions, or drag-outs with very high input, a current of 25 amps is allowable. Reduce voltage by adding appropriate conducting salts, such as DiPotassium Phosphate, TriSodium Phosphate, or Potassium Citrate.

The unit should run uninterrupted until all precious metal is removed or in the case of drag-out installations, continuously. When current is not on, the canister should normally be removed from the solution.

PROCEDURE FOR REMOVING CATHODE FROM UNIT

After switching power off, remove collection canister from tank by pulling up cables attached to unit and removing hose from hose barb on canister.

Drain any solution from unit.

Rotate connector on peripheral electrode in a counter-clockwise direction until cable is no longer attached.

Unscrew wing nuts from protruding studs and remove end-plate anode assembly.

Over plastic tray, carefully remove Macro-matrix™ cathode from unit.

PROCEDURE FOR RECOVERING GOLD

Break Macro-matrix™ cathode into pieces of about 6 square inches and immerse these pieces into a solution made up of sulphuric acid, nitric acid, and water, in equal volumes, about one gallon of each.

Sporadically stir and let react as you add more pieces until reaction is complete. (Be sure to do this under a hood as nitric oxide fumes are present.)

Decant solution and add water to precipitate in order to wash it.

Decant again and add acetone or alcohol to precipitate for water displacement.

Decant the acetone or alcohol and empty precipitate onto a pyrex dish.

Ignite to dry and let burn until it goes out by itself.

You now have an unrefined quantity of gold typically 90-95% pure. This can be sampled and weighed.

Alternatively you may very simply melt and flux the pieces of the cathode if you have or obtain a small melting furnace or you can view the melt at your refiner. Sample the bar and fire assay the sample to have a precise record of the amount of precious metal you have recovered.

A rough estimate is able to be obtained by simply weighing the cathode before and after. This will be somewhat imprecise because the Gold Bug® will recover all metals in solution, not just the precious metals.

PROCEDURE FOR REASSEMBLY WITH NEW CATHODE

Place Macro-matrix™ cartridge into cylinder, making sure that pan heads of nylon screws attaching copper clip fit neatly into groove on end of cylinder.

CAREFULLY replace end-plate-anode assembly back on cylinder, making certain not to rub against cartridge with anode, so that studs from cylinder line up with slots on end-plate and hole lines up with threaded stud from copper clip on cartridge.

Press together until tight.

Replace wing nuts.

Replace cable connector on peripheral electrode by rotating it in a clockwise direction until gently snug. (Too much torque will strip threads on copper clip.)

Reinstall in tank.

TROUBLE SHOOTING

PROBLEM	POSSIBLE REMEDY
Voltage exceeds 5 V. while amperage is below 15 A. Gold content is still recoverable (i.e. 720ppm)	<ul style="list-style-type: none">—Add conducting salts to increase solution conductivity.—Check anode to see if it is dirty, and clean without use of abrasive.—Check cables for any sign of dissolution particularly at the points of connection with the canister. Check with a circuit continuity tester, on most volt meters.—If problem persists, new anode is required, (precious metal coating on titanium anode has dissolved away leaving polarized anode).
Amperage has risen substantially, voltage has dropped below 2V.	<ul style="list-style-type: none">—This indicates a short circuit. A dead short will cause the circuit breaker to blow. Solve this problem by replacing the Macro-matrix™ cathode.
Cathode is spongy blue color with no metal after electrolysis.	<ul style="list-style-type: none">—This will only occur when unit is left in certain solutions without current passing through it, or in an active stripper. Replace cathode and correct problem, i.e. deactivate stripper and/or increase current.—If processing a stripper, "kill" the stripper following the enclosed procedure.—Check polarity of plating cell. Anode (centerpole) + cathode (perimeter pole) ——Increase amperage to plate out at a faster rate.

TROUBLE SHOOTING (Cont'd.)

PROBLEM	POSSIBLE REMEDY
Pump doesn't work	—Check circuit breaker on side of rectifier. Make sure pump is plugged in. —Check for knots in tubing between pump and plating cell. —Check for blockage of the pump inlet.
Rectifier shows no volts or amps	—Check circuit breaker.
When current adjustment is turned up metal removed is slower than normal. (i.e. poor current efficiency)	—Check for gassing if bubbles of hydrogen are coming out of plating cell, add conducting salts. Clean anodes or replace if pitted. —Check pump flow rate 9 GPM.

GOLD STRIPPER PROCEDURE

The Gold Bug® will remove gold from cyanide based gold stripping solutions most effectively if the following procedure is used:

1. Determine the volume of stripper and add two pounds of paraformaldehyde or dextrose (sugar) for every 50 gallons of solution.
2. After mixing for five minutes, test to see if the solution is still actively stripping by immersing a gold plated part with a known thickness of gold plating and making sure the gold is not being attacked.
3. If solution is still stripping at all, add more paraformaldehyde until all stripping action has subsided.
4. When it has been determined that all stripping action has ceased, immerse the Gold Bug® into the solution and turn on immediately.
5. Adjust current to between 15 and 25 amps.

CAUTION: ALWAYS USE GLOVES AND A DUST MASK WHEN HANDLING PARAFORMALDEHYDE. ALWAYS ADD IT SLOWLY WITH MIXING. ALLOW 20% OF SOLUTION VOLUME AS EXTRA TANKAGE TO PREVENT SPILLS.

FOR FURTHER INFORMATION CONTACT US AT:

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