



Electrolytic Gold Plating Line 18" x 12"

(PART No: 500-101)

Instruction Manual

IMPORTANT

ELECTRICAL SAFETY NOTICE

CONNECTIONS TO MAINS ELECTRICAL SUPPLY

This equipment is designed to safety class 1.

Before connecting this equipment to the mains electricity supply, examine the information on the apparatus rating label.

Ensure that the mains supply is single phase alternating current (ac) of the stated frequency (Hz), with neutral nominally at earth potential.

Check that the supply voltage is in the range stated on the rating label.

The equipment rating label states the value of the fuse fitted to the apparatus itself. Ensure that the plug or outlet circuit is fitted with an appropriate fuse of higher value.

WARNING : THIS APPARATUS MUST BE EARTHED

The wires in the mains lead are coloured in accordance with the following code:

Green/Yellow	-	Earth	(E)
Blue	-	Neutral	(N)
Brown	-	Live	(L)

Connect the wires to a non-reversible 3 pin plug as follows:

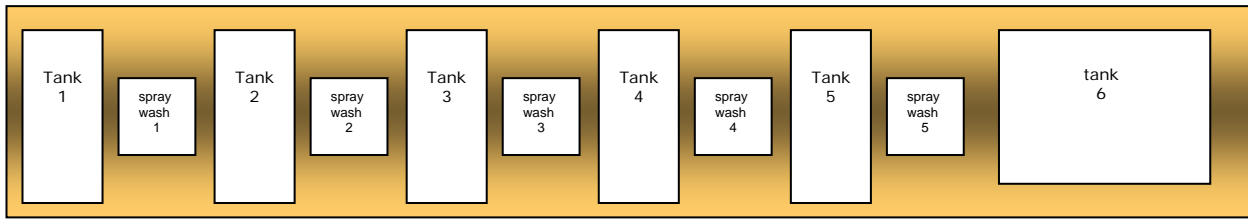
Green/Yellow wire to terminal marked :	E (earth)	or
	G (ground)	or
	Coloured Green	or
	Coloured Green/Yellow	or

Blue wire to terminal marked :	N (neutral)	or
	Common	or
	Coloured Blue	or

Brown wire to terminal marked :	L (live)	or
	Phase	or
	Coloured Brown	

LIVE PARTS SHOULD NEVER BE EXPOSED UNLESS THE EQUIPMENT HAS BEEN SWITCHED OFF AND ISOLATED FROM THE MAINS ELECTRICITY SUPPLY.

Plating Line Layout



TANK 1 COPPER CLEANER EC50001 (Part No: 500-136 = 25 litres)

Operating Temperature: 40°C

Immersion Time: 2½ minutes

Chemical Makeup:

Half fill the tank with de-ionised water (5 litres) then add 2.5 litres of copper cleaner (EC50001) while stirring. Finally top-up to working level with de-ionised water.

BATH MAINTENANCE:

Top-up losses due to evaporation and drag-out with mixture of 125ml of copper cleaner mixed with 875ml of de-ionised water.

When solution turns a blue colour – **CHANGE IT !**

TANK 2 COPPER MICROETCH EC50002 (Part No: 500-137)

Operating Temperature: 25-30°C

Immersion Time: 1½ minutes

Chemical Makeup:

Add 7 Litres of de-ionised water to the tank. Carefully add 200ml of 98% Sulphuric Acid while stirring, then slowly add 1.2 kilos of copper micro-etch powder while stirring until it is all dissolved. Finally top up with de-ionised water to working level.

BATH MAINTENANCE:

Top-up losses with de-ionised water.

When solution turns a blue colour – **CHANGE IT !**

TANK 3 CATALYST EC50003 (Part No: 500-138)

Operating Temperature: 40-50°C

Immersion Time: 2 minutes

Chemical Makeup:

Half fill the tank with de-ionised water (5 litres), then add 5 litres of Catalyst EC50003 to make 10 litres. Finally top up with de-ionised water to working level.

Filtration: Always ensure the filter pump is turned on while the liquid is heating up and during operation. Filter should be 5 micron wound polypropylene.

BATH MAINTENANCE:

Add 15mls of catalyst EC50003 after processing 1 square metre of surface area. At the same time add 2 ml. of rinse aid EC50010 (Part No: 500-139) to allow for drag-out, along with de-ionised water.

PLEASE NOTE THE BATH SHOULD BE REPLACED AFTER PROCESSING 55 SQUARE METRES OF SURFACE AREA.

TANK 4 RINSE AID EC50010 (Part No: 500-139)

Operating Temperature: Room Temperature

Immersion Time: 30 seconds

Chemical Makeup:

Add 200 ml of Rinse Aid EC50010 (Part 500-139) to the tank and then fill the tank with de-ionised water to the working level.

BATH MAINTENANCE:

By throughput. Top-up losses with 2% rinse aid and de-ionised water.

Change every 2 months.

TANK 5 ELECTROLESS / IMMERSION NICKEL EC 50011 (Part No: 500-140)

Operating Temperature: 80- 90°C

Immersion Time: 15 minutes for 3 microns.

Chemical Makeup:

Pour 3.5 Litres of LP initial additive EC50001 (part number 500-140) into the tank and make-up to working level with de-ionised water.

Filtration:

Always ensure the filter pump is turned on while the liquid is heating up and during operation. Filter should be 5 micron wound polypropylene.

BATH MAINTENANCE and REPLENISHMENT:-

After processing each 18" x 12" panel add

80ml of EC50012 (part number 500-142) LP

Base Solution and 80ml of EC50013 (part number 500-143) LP Reducer Solution) making sure that the base solution is added first.

NB1. The pH of the solution should be checked from time to time, to ensure that it is between 4.8 – 5.3 (optimum 5.0). To raise the pH use 50% V/V ammonia solution (0.880 S.G.) and to lower it use 10% V/V Sulphuric acid solution.

NB2. It is very important not to allow the nickel to deposit out of the solution onto the tank walls or in the filter pump. For this reason if the tank is not to be used for a few days empty the solution into a polythene container and seal it. Then flush the tank and filter pump thoroughly with de-ionised water.

TANK 6 ELECTROLYTIC GOLD ECF60 (Part No: 500-141)

Operating Temperature: 40- 60°C

Plating Current & Time:

Plating at 0.3A/dm² - gives 1 micron of gold after 5.25 minutes. i.e. for 18" x 12" double sided panel, current would be 9 amps for 5.25 minutes for 1 micron of gold.

Chemical Makeup:

Pour the 15 litres of gold plating solution ECF60 (500-141) into the tank and then pour in the 10 litres of ECF60 (500-141) into the tank to make 25 litres.

If the bath needs more solution, this should be done by adding 60 ml. of EC3656 Gold Replenisher concentrate (part number 500-144) and then 940 ml of de-ionised water to make 1 litre additional solution.

BATH MAINTENANCE and REPLENISHMENT:-

After plating one 18" x 12" panel for 10.5 minutes at 0.3A/dm², you should add 116 ml of EC3656 (500-144) Gold replenisher concentrate which is equivalent to 11.6 grams of gold. For a thinner coating of gold – this would be pro-rata i.e. for 1 micron thickness you would add 58 ml. of EC3656 which would be equivalent to 5.8 grams of gold.

NB: It is also necessary to maintain the sulphite level between 25 - 50 g/ litres of solution. For this reason please send us a 100 ml sample every 2-3 months depending on bath usage.

IMPORTANT NOTES

Finally unless states otherwise top up losses due to drag-out and evaporation with de-ionised water when tanks are operating.

Always keep the lids on.

Also ensure oscillating frame is on in all chemical tanks, and ensure you spray wash for 30 seconds after each process, moving the board up and down between the spray bars to ensure the boards is thoroughly rinsed.

GOLD PLATING PROCESS CHART

TANK 1:

COPPER CLEANER EC50001 (PART No: 500-136)

Temperature: 40°C Time: 2½ minutes



SPRAY WASH – 30 seconds



TANK 2:

COPPER MICRO-ETCH EC50002 (PART No: 500-137)

Temperature: 25°C - 30°C Time: 1½ minutes



SPRAY WASH – 30 seconds



TANK 3:

CATALYST EC50003 (PART No: 500-138)

Temperature: 40°C - 50°C Time: 2 minutes



SPRAY WASH – 30 seconds



TANK 4:

RINSE AID EC50010 (PART No: 500-139)

Temperature: Room Temp Time: 30 seconds



SPRAY WASH – 30 seconds



TANK 5:

ELECTROLESS / IMMERSION NICKEL EC50011 (PART No: 500-140)

Temperature: 80°C – 90°C Time: 15 minutes for 3 microns



SPRAY WASH – 30 seconds



TANK 6:

ELECTROLYTIC GOLD ECF60 (PART No: 500-141)

Temperature: 40°C – 60°C

Plating Time: 5¼ minutes for 1 micron gold



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