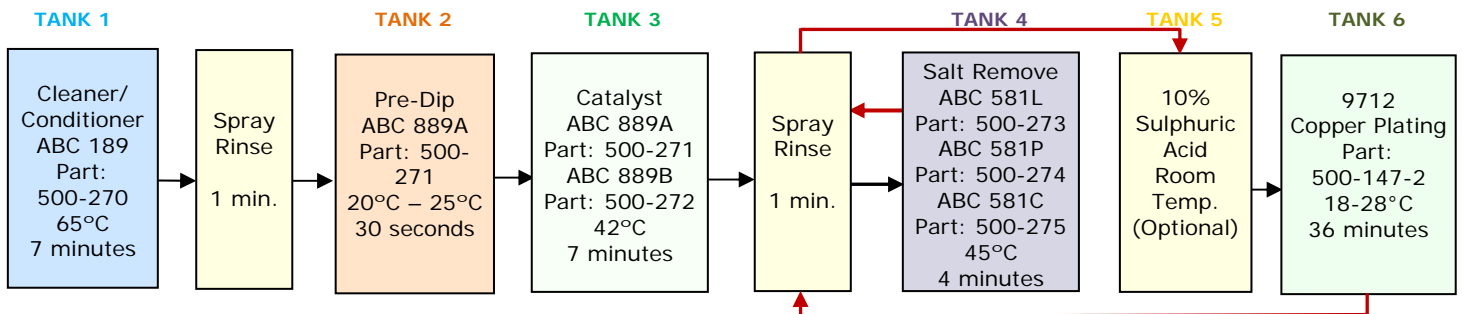


## Chemical Charge

The ABC chemicals supplied with the unit should be made up in the tanks as follows with Tank 1 being the first tank on the left hand side with the unit facing you.



### Tank 1. CLEANER / CONDITIONER: ABC 189 (part: 500-270)

Add 150ml ABC189 to 4850 ml of de-ionised water to make 5 Litres

### Tank 2. PREDIP : ABC 889A (part 500-271)

Use as supplied

### Tank 3. CATALYST: ABC 889A (part 500-271 & ABC 889B (part 500-272)

Add half of the contents of ABC 889A to the tank, then add 250 ml of the ABC 889B and top up to 10mm from top of the tank with the rest of the ABC 889A.

### Tank 4. SALT REMOVER: ABC 581L (part 500-273), ABC 581P (part 500-274) & ABC 581C (part 500-275)

Put 2 litres of de-ionised water into the tank. Add 2.15 Litres of ABC 581L followed by 500ml of ABC 581P and then 50ml of ABC 581C. Top up to working level with de-ionised water.

**N.B. Always ensure that chemicals are mixed in this order.**

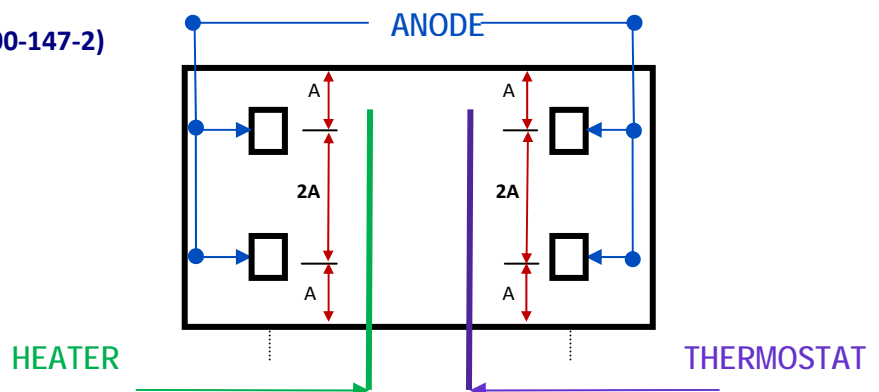
### Tank 5. 10% SULPHURIC ACID (96-98%):

Please note this bath is optional. (See ABC Copper Plating Process Sequence – page 8 of full instruction manual) Also we do not supply the Sulphuric Acid, but leave you to buy it locally if necessary.

### Tank 6. COPPER PLATING: ABC 9712 (part 400-147-2)

Use as supplied

**N.B. When putting left hand anodes in bath be careful not to damage the white heater rod.**



a) For a new installation or if the anodes need changing, always make sure the tank is empty before placing the anodes in position. Also make sure Anode Bags are fitted and securely tied in place.

b) Fill the tank with the ABC 9712 Copper Basis Solution so that when the plating line board holder is fixed to the bar across the tank the liquid level is 10mm below the round stainless steel board holder legs, add the sodium chloride supplied in the test tube to the solution. Place plastic balls provided on top of solution until surface is fully covered (These prevent splashing and evaporation).

1) Press the SET UP switch and set the current meter to 16 amps.

2) Set the timer to 95 minutes.

3) Reset the amp hour counter by holding the RESET switch down until the meter reads 0000

4) Place a 12"x10" (305x254mm) double-sided copper clad board in the board holder and put the board into the solution.

5) Switch on the oscillator and pump buttons.

6) Press the Run switch.

7) When the timer has reached 0 go into SET UP again and then press RUN. This will ensure the solution has been properly electrolysed and at the end of the second cycle the amp hours should read about 50.

For the PL904 systems use 18"x12" (457x305mm) double-sided board and set the current meter to 28 amps, then repeat steps 3-8. Amp hours should read about 95.

**N.B.1. In both cases scrub clean the copper surfaces before placing the board in the tank.**

**N.B.2. Always press the pause button before removing from, or placing the board into the solution.**

8) After solution has been electrolysed add 190ml of ABC 6900 brightener additive for PL903S and 380ml Brightener for PL904S, with the air pumps on to allow it to be thoroughly mixed into the solution. Go into 'Set Up' again and use the same settings but set the timer to 30 minutes and repeat 4 - 7 above.

9) Finally reset the AMP hour counter to 0000

**YOUR SYSTEM IS NOW READY FOR USE.**

## **BATH MAINTENANCE AND REPLENISHMENT**

This is done on a m<sup>2</sup> basis of PC boards processed as follows:

### **1. CLEANER / CONDITIONER**

After processing 2.5m<sup>2</sup> of boards add 15 ml of ABC 189.— For best results it is recommended to make-up a fresh bath every 3 months. Operating temperature 60° - 70°C option 65°C

### **2. PREDIP**

Top up losses due to Drag-out and evaporation with ABC889A

After processing 25m<sup>2</sup> of board - change the solution.

### **3. CATALYST**

After processing 2.5m<sup>2</sup> boards – add 25 ml of ABC 889B. Solution should be changed after processing 60m<sup>2</sup> of boards.

**N.B.** Always place a blank piece of board in the tank and start the oscillation in order to ensure solution agitation during heat up time. Operating temperature: 38°C – 44°C **N.B. NEVER EXCEED 50°C**

### **4. SALT REMOVER**

After processing 2.5m<sup>2</sup> boards add: 215 ml of ABC 581L + 50 ml of ABC 581P + 5 ml of ABC 581C

Solution should be changed after processing 100m<sup>2</sup> boards. Operating temperature 40°C – 50°C optimum 45°C

### **5. ABC 9712 COPPER PLATING TANK**

#### **Replenishment Procedure.**

After every 100 amp hours, add 30ml of ABC CB6900 Brightener. (500-146-2). Then reset the amp hour meter to Zero.

Copper plating bath should occasionally be emptied into its original supply container through a funnel with a coffee filter or similar placed in the funnel. If copper plating seriously deteriorates despite additions of Brightener and filtration as above, bath should be renewed or anodes/anode bags may need replacing.

**N.B. Owing to product improvement, the ABC 972 Leveller and Brightener has been replaced by :-**

**1 litre of ABC 6900 Brightener (part number 500-146-2). If you still have old chemistry – use as normal**

The brightener can be used as an exact replacement and should be added at the rate of 30ml after every 100 amp hours.

If however your boards appear dull or grainy at the edges, then add 15ml of the ABC6900 before plating the next board. However still add the 30ml when 100 amp hours is displayed.

**N.B. In all the baths any loss of liquid due to evaporation should be topped up using de-ionised water.**

**Except the Catalyst Tank which should be a mix 60% ABC889A Pre-dip (500-271)**

**with 40% de-ionised water.**

**(IMPORTANT: Remember to mix pre-dip and de-ionised water before adding to tank).**

Finally, please note the Starter Kit (part 500-159-2) now contains enough chemicals to replenish 10m<sup>2</sup> of boards.

GENERAL FAULT FINDING COPPER PLATING				
FAULTS	CAUSE	CORRECTION	ADDITION	
			MIN	MAX
Roughness	Suspended Particles	Filter and/or dummy 12"x10" panel at 1amp/dm <sup>2</sup> for 1 hour		
Burning	Lack of Brightener	Add 6900 Brightener	15ml	35ml
	Low Temperature	Check Temperature	20°C	30°C
	Poor Agitation	Make sure oscillation is taking place		
	Poor Air Bubble pattern	Make sure you have good bubble pattern Check no pipes blocked or air pumps are faulty		
	Current too High	Check it is 3 amps / dm <sup>2</sup>		
Dullness on all copper areas	Lack of Brightener	Add 6900 Brightener	15ml	35ml
Bright on outside edges of board. Dull in the Middle.	Too much Brightener	Plate large blank at 3 amps / dm <sup>3</sup> for 3 – 4 hours. Repeat if board is not bright all over		
Bright in the middle of the Board dull at edges.	Lack of Brightener High temperature	Add 6900 Brightener Check temperature – should be between 25°C – 30°C	15ml	35ml
Faults not corrected by above procedure	Organic Contamination	Change solution. Store contaminated solution in its original container and send 100mls of it back for analysis.		
Crazing Effect or Patchy Appearance	Chloride level too low	Add Conc. Hydrochloric Acid reagent grade 36% or laboratory grade Sodium Chloride	3ml 1 gram	4ml 2 grams
Current Error light on when Power supply is in Run Mode or Voltage high (clips at 3.5 volts) and set current starts to decrease	Poor contact	Check anode hooks are in proper contact by sliding anodes backwards and forwards on anode rails and remove any copper deposits around anode hooks		
	Anode Polarisation	Check anodes still have an even black oxide layer over their surface. If they no longer have black layer or are a grey to whitish colour they have become polarised. If so remove and scrub thoroughly clean with water and detergent. Rinse and put back in bags and then return to bath Plate large panel at 1.0 amp / dm <sup>2</sup> for 120 minutes If anodes have a black oxide layer over their surface and problem persists, remove the anode bags and thoroughly wash in hot soapy water. If problem still persists change the bags.		
	Anodes badly worn.	Replace anodes.		

**WARNING: NEVER ALLOW ANY SOLUTION TO GO BELOW 0°C**

If you have any problems, please contact our Technical Services Department telephone: 01223 893900