HitecPlate2030 and Hitec3040

Translation of the original instructions

Table of Content

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General

HitecPlate2030 and the HitecPlate3040 are a universal series of electroplating equipment for the chemical or electrochemical deposition of metals and are used for production of printed circuit boards in vertical technology for prototype and small batch production.

The HitecPlate2030 and HitecPlte3040 were designed specifically for the needs of direct metallization and have tanks for the processing steps of cleaning, pre-dip, activating, accelerating (intensifying) and copper plating. In addition, the machines have an additional tank, that you do not need for our PTH-system but possibly for other chemical systems.

We offer the machine by default as HitecPlate2030 for panel sizes of 210 x 300mm² with one galvanic tank and as HitecPlate3040 for a panel size of 300 x 400 mm² with one galvanic tank.

Two treatment tanks are equipped with Titanium heaters and thermostatically controlled. The plating tank has an integrated air injection. The cathode rods are driven by a push rod with a DC gear motor. The stroke speed can be continuously adjusted.

Each plating tank is associated with one continuously variable rectifier. For each tank a voltmeter and an ammeter provide information about the electrical ratings. Since the rinsing process is of particular significance, the machine is equipped with a rinsing tank behind each treatment bath. These can be cleaned through an overflow with an rinse water treatment plant AquaPur.

The process baths used are based on the proven technology of palladium (direct metallization using palladium as a catalyst).

Technical Data

	HitecPlate2030	**HitecPlate3040**
Function	Plating through hole (PTH), copper galvanic	Plating through hole (PTH), copper galvanic
Board size [mm]	200x300 (max. 250x350 possible)	300 x 400 (max. 350x450 possible)
Electrical connection	230 V AC, 50-60Hz	230 V AC, 50-60Hz
Power consumption [W]	1500	2000
Volume treatment tanks [l]	10	20
Volume galvanic tank [l]	30	60
Weight [kg]	130	200
Height [mm]	1365	1250
Working height [mm]	1000	900
Total depth [mm]	750	867
Total Width [mm]	1810	1520
Water inlet spout [mm]	16mm	25 mm
Water inlet spray tank spout [mm]	16mm	16 mm
Water outlet spout [mm]	30mm	30 mm

Technical changes reserved

Benefits of machine

- Modular construction
- Compact design
- Easy operation, easy handling
- Clean work flow
- Uniform deposition of copper on the surface and the drill hole
- Automatic rinse water exchange possible

Construction of machine (basic module)

- Machine frame completely made from PVC
- 5 treatment basin
- electroplating tanks
- separate rinsing section for every process step
- Automatic rinse water exchange possible
- anode frame
- Drain valve and cover for each basin
- Air injection for copper bath
- Agitation on all tanks, infinitely adjustable
- 2 Titanium heater
- main switch
- Electronic rectifier, current or voltage constant mode

Available accessories and optional changes:

- Safety tray
- exhaust hood
- Vibration motor
- Set of Anodes
- chemicals
- PCB holder
- Filters for galvanic baths
- Ion exchange equipment for rinsing
- Change the size of the pool according to the required working surface

Optional extensions processes:

- Because of the modular structure the following additional processes can be integrated into the equipment:
- Tinning (subtractive technology)
- Desmear, Blackening
- Immersion Tin
- Organic protective layer (OSP)
- Electroless nickel / gold or
- Stripper negative resist

Declaration of Conformity

EG-Konformitätserklärung/Declaration of Conformity

Hersteller / Supplier:
Bevollmächtigte Person für die Zusammenstellung der technischen Unterlagen:
Person in charge
Produkt: Durchkontaktierungsanlage HitecPlate2030 and HitecPlate3040

Hiermit erklären wir, dass die oben beschriebenen Maschinen allen einschlägigen Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

Die oben genannte Maschine erfüllt die Anforderungen der nachfolgend genannten Richtlinien und Normen:

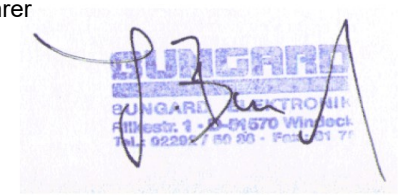
We hereby declare that the machines described above complies with all relevant provisions of the Machinery Directive 2006/42/EC.
The above machine meets the requirements of the following guidelines and standards:

- **Maschinenrichtlinie 2006/42/EG / Machinery Directive 2006/42/EC**
- **EMV-Richtlinie 2014/30/EG / EMC Directive 2014/10830EC**
- **Niederspannungsrichtlinie 2014/35/EG / Low Voltage Directive 2014/35/EC**

- **DIN EN 60204-1** Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen / Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- **DIN EN ISO 14121-1** Sicherheit von Maschinen - Risikobeurteilung - Teil 1: Leitsätze / Safety of machinery - Risk assessment - Part 1: Principles
- **DIN EN ISO 12100-1** Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze, Risikobeurteilung und Risikominderung / Safety of machinery - Basic concepts, risk assessment and risk reduction
- **DIN EN 55014-1 2012-05** Elektromagnetische Verträglichkeit, Anforderungen an Haushaltsgeräte, Elektrowerkzeuge und ähnliche Elektrogeräte, Teil 1: Störaussendung / Electromagnetic compatibility Requirements for household appliances, electric tools and similar electrical appliances Part 1: Emission
- **DIN EN 55014-2-2009-06** Elektromagnetische Verträglichkeit - Anforderungen an Haushaltgeräte, Elektro-werkzeuge und ähnliche Geräte - Teil 2: Störfestigkeit - / Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity
- **Niederspannungsrichtlinie / Low Voltage Directive 2014/35/EG**
- **Maschinenrichtlinie / Machinery Directive 2006/42/EG/37/EG**

Windeck, 10.1.2022

Geschäftsführer



Intended Use of Machine

The system is designed for through-hole plating of printed circuit boards. All other applications require our written consent or happen on full risk of the user.

The Bungard GmbH & Co. KG accepts no liability for damages incurred in non-authorised use or application of the machine.

Safety regulation

General

Please read the following instructions carefully and pay particular attention to information on operating safety and set up.

Keep these instructions at a safe place. It contains information which also refer for later maintenance and cleaning.

Observe the instructions and the safety regulations for the chemicals used.

The machines are not designed to be embedded or interconnected with other machines or systems. They may only be used in specially equipped rooms and be operated only by qualified staff. Children and pets are to be kept away!

Transport

Only use suitable lifting and transport equipment such as forklifts or pallet lifts. Secure the machine against sliding / tilting.

Place of installation

The machine must be standing level and around the machine there has to be sufficient space for operation and maintenance work (approx 1m on all sides). To prevent the penetration of chemicals into the ground, set up the machine either in a room with solid, waterproof and chemical resistant floor (no tiles nor concrete!) or in a chemical resistant waterproof collection tray which can take the whole filling volume (safety tray available as an option).

Do not place the unit in a location near heat sources such as radiators, hot air ducts, furnace and the like.

Electricity

The machine is made from certified parts according to standard practice for electrical safety. This does not relieve the user of his duty of care when handling electrically powered devices.

Connect the device only to the designated power supply as indicated in this manual or on the machine plate.

The yellow-red main switch disconnects the machine from the power supply. We presuppose that the safety fuses of the circuit and the residual current circuit are provided by the building's power supply.

After completion of work, the main switch should always be turned off.

Before all maintenance work on the machine (filling, emptying, cleaning, etc.) turn off machine and pull the plug.

The chemicals used in the machines often have a high electrical conductivity. Any contact of the liquid with live parts therefore constitutes a serious threat to electrical safety. In such a case, the machine must be immediately disconnected from the mains and the defect must be eliminated immediately and professionally. This applies correspondingly with leaked or spilled chemicals.

To avoid the risk of electric shock, do not remove the casing or open the back. There are no user serviceable parts inside. Leave servicing to the experts! Keep this unit out of the rain and away from moisture.

Pay attention to the warning signs on the machine. If you are not going to use the unit for some time, remove the plug from the socket.

Water connection

After work or prolonged interruption, close the cock valve of the building's water supply to prevent water damage from a possible leak in the hose.

Chemicals:

Before Setup please check whether the materials of the machine possess sufficient resistance against the chemicals used. Chemicals supplied by us are suitable.

Please contact use, if you use non-standard chemicals. Mix the chemicals outside the machine. Use a suitable container to prepare the chemicals.

Temperature

Switch on machine only when tanks are filled! The heater must always be sufficiently covered with liquid! Uncovered heaters can cause damage of machine!

The electronic thermostat is protected against breakage and short circuit of the cable to the thermal sensor. This does not relieve the operator from the obligation, to monitor the temperature of the liquid. Exothermic chemical reactions may under certain circumstances, which we cannot influence, cause overheating of the chemical. The maximum operating temperature of the machine is 45 °C with the PVC-tanks and 70 °C with the PP-tanks.

If the chemicals are prepared by dissolving salts or mixing liquids, do that in any event outside of the machine! Observe the safety instructions of the chemical supplier.

If you want to use liquids which may react exothermic, take additional measures to prevent overheating. This also applies when adding 98% sulphuric acid into the galvanic bath. Pay heed to the separate chemical setup instructions!

Before draining the tanks, let the heater cool down for approx. 10 min, so the heaters will not get damaged.

Personal safety regulations

The following safety precautions should always be observed when handling chemicals (etching agent, acids, lye, etc.):

a) Wear goggles and protective gloves for all work. When handling 98% sulphuric acid wear face protection and protection clothing

b) If necessary only work under an extractor hood or at least in well ventilated rooms.

c) Avoid contact with skin, eyes and mucous membranes at all costs.

d) Take off clothing soaked in caustic substances immediately.

e) Rinse splashes on skin immediately with copious amounts of water.

f) In the event of accidents or feeling unwell, always consult a doctor.

g) Observe the safety instructions of the manufacturer or the supplier.

Take off the lids of the bathes only with the bath movement switched off. If not danger of crushing hazard.

Exhaust

An exhaust of air in the area above the machine body is recommended with regard to possible etching fumes. The need for extraction will depend on the liquid used.

Environmental protection

Dispose used etchant according to your local regulations. Pay heed to the material safety data sheet (MSDS) of your chemicals.

Rinsing water

The legislation generally prohibits to exceed certain maximum concentrations and quantities of copper (and other heavy metals) in the waste water (usually 0.5 mg copper / liter of water). After plating the boards should not be rinsed under running water and do not dispose used rinsing water into the sewer! Operate the rinsing water only either in a closed loop rinse or treat the rinse water with a ion exchanger. If you do not have an in-house water treatment for the rinse water, we recommend the waste water treatment plant **AquaPur** for this task.

Using a ion exchanger for water treatment has two advantages: on the one hand you save water costs and even more important, you make sure that only water without salts or chlorides reach the galvanic process.

Neutralization of the rinsing water or even the etchant can and should be left to a specialist!

Maintenance

When cleaning observe the manufacturer's recommendations. Avoid water from entering the control unit through openings; do not splash the machine with water.

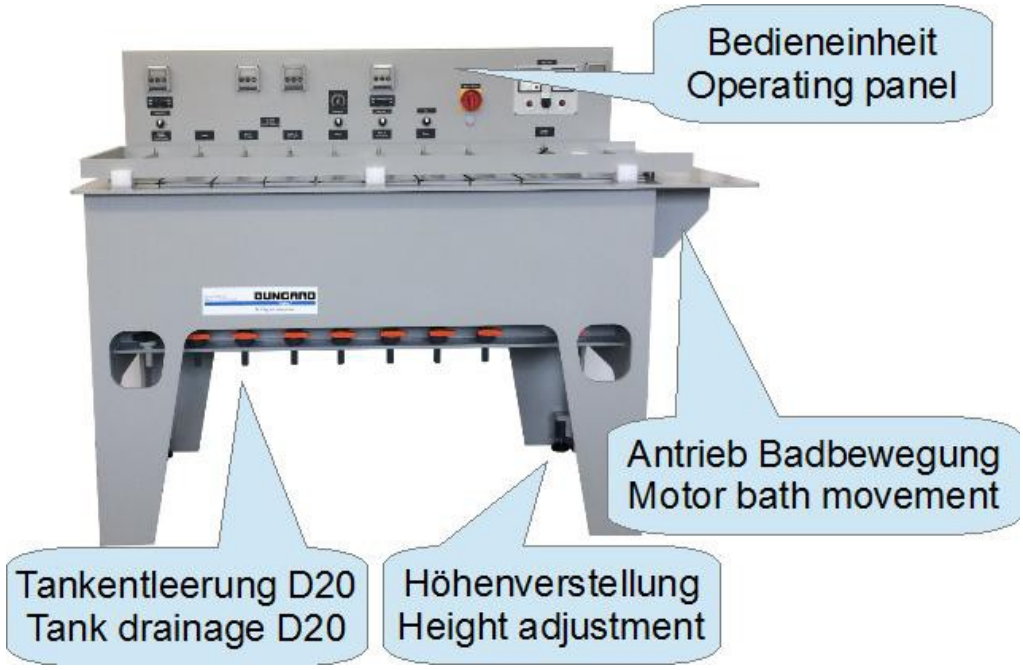
When cleaning the appliance, follow the manufacturer's recommendations.

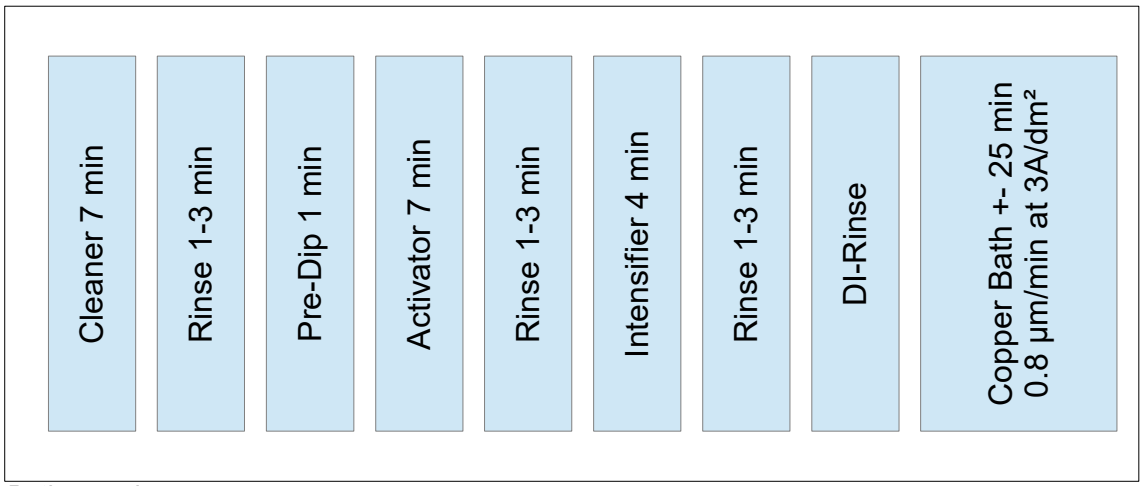
Care must be taken to ensure that neither liquids nor other foreign bodies can penetrate through the housing openings into the interior of the appliance; Do not splash the unit with water.

The device may only be serviced by qualified personnel. The user should never try to do more for the maintenance of his device than he can do according to the manual. He should always consult a specialist for maintenance work outside his authority.

Close the drain cock from each tank before filling.

Equipment





Bath overview

The machine is designed for through hole plating of PCBs . It has 5 treatment tanks, 1 galvanic tank, 3 rinsing tanks and a multi purpose tank

Control panel

- Main switch
- 2 pc. temperature controller with switch
- Conveyor with low voltage D.C.-gear motor, speed adjusting and switch
- Switch for air injection
- Switch and potentiometers for the rectifier(s)
- Fuses

Start the machine by turning on the main switch. Each heating element is equipped with a separate switch.

Heating

Use the heating elements only when the tanks are filled with solution. Using the heater without liquid will cause irreversible damage!

Control the level daily. If a tank with heating element is not used, fill the tank with water.

Three tanks are equipped with PTFE coated and thermostat controlled heating elements,

The heating element is not protected against overheating. For protection devices please contact us.

Thermostats:

The thermostat was adjusted at the final inspection in the factory.

It is therefore sufficient to control the thermostat behaviour at any temperature setting by setting the set point value below or above the displayed actual value and controlling the lighting or extinguishing of the LED. You can adjust the set point temperature by pressing the **set** button 2 times on the thermostat display and then using the **arrow keys** to change the value. Then press **Set** again - the display shows the word "Set". After a few seconds, the actual temperature appears again).

Copper bath

The copper bath is provided with an anode frame and air injection.

Chemistry, anodes, anode holders, anode bags and plate holders are not included. Please order separately.

Timer

Press MIN and Sec button at the same time to reset timer to zero.

Press MIN button to advance minute digits. Press and hold MIN button for speed setting.

Press SEC button to advance second digits. Press and hold SEC button for speed setting.

After time setting is ready, press STRART/STOP once and timer will start to count down.

Battery replacement: Follow the arrow direction to open the battery, insert a new 1,5V “AAA” battery as indicated by the polarity symbols marked and close battery cover.

Fuses

At the left of the machine at the power socket, there is a 10A automatic breaker.

Setup

Examine the machine on any apparent transport damage and in that case immediately contact us and the freight forwarder.

Please set up machine in a well ventilated area, equipped with the necessary water and power supply.

Use the adjustable feet at the base to level the machine.

In addition to delivery you need for setup the following parts:

1 set of anodes with holders and bags

1 or more PCB holder.

1 Chemicals set for initial filling

On site will be fabric-reinforced hose with hose clamps required for water supply and drain.

Power supply:

The connection must be made to 230V 50 Hz. The nominal current host is max. 7A. We recommend using a residual current circuit breaker.

Water supply:

The water connection is made at the spout D13 mm which is located at the front right. Please use a fabric reinforced hose and secure it with a hose clamp.

The system works in an overflow process, which means that the water supplied flows back via the overflow of the tank.

Between bath 3 activator and bath 4 intensifier is a combined static / spray rinse. On the right side there is an additional connection nozzle D16 for the spray rinse. The spray rinse is operated by foot switch.

Very important: Bad 3 activator is sensitive to water! Always close the lid of bath 3 before you operate the spray rinse next to it!

Drain:

The tanks are drained without pressure through a 30mm spout which is also located at the right of the machine.

Observe the regulatory requirements when discharging the drain water.

We recommend to connect the drain with a waste water treatment, which pumps back rinsing water to the HitecPlate. This not only avoids waste water problems, you also save water costs and ensure that only salt-free rinse water can return to the HitecPlate. The Bungard AquaPur-Plus is perfect for this task

Test:

To ensure that the facility was not damaged in transit, we recommend that you run it first only with water.

Please proceed as follows:

1. Fill each treatment tanks with 10 liters of water, but the galvanic tank with 30 liters of water.

2. Turn on the system with the main switch.

3. Check now the heating of all tanks by using the corresponding function switch. ***When heating up, an orange dot appears on the display of the thermostat.*** Upon reaching the desired temperature, the light goes off.

Set the temperature of the tanks at the thermostats as follows:

Bath 1 Cleaner / Conditioner 65 ° C and Bad 4 Salt Remove 45 ° C

The remaining tanks operate at room temperature.

4. Let the the machine now run for 2-3 hours with heating switched on and then turn it off at the main switch.

5. The next day, check the tanks for possible leaks. If everything is okay, you can drain the water now through the respective drain cocks. Please remove residual water inside the containers with a clean, lint-free cloth. Do not forget to close the drain valves again

Please note: The rinsing tanks with recirculation function are connected to each other. When you empty one tank, you create a vacuum in the other tanks. This will empty all rinsing tanks at the same time automatically. If this is not desired, open the small bleed screw on one of the tanks. This suppresses the vacuum.

Operating

Important Information

We count the tanks from left to right starting with 1st Bath. The 8th tank of the machine serves as a reserve tank. It has no heating, but can be used e.g. for the chemical tinning or a DI-Rinse. Wait before using your equipment please, until all the tanks are heated to proper temperature. Before removing or inserting a board, always turn off the bath movement. When rinsing, it is important that all parts of the PCB holder which came into contact with chemicals, are cleaned thoroughly, so that no chemicals pollute the next bath.

We generally recommend to mix chemicals outside of machine. If you do not use the machine directly close the tanks with their lids.

Chemicals Set-up:

For the chemical set up a separate instruction is available!! Please contact us, if this instruction is missing. There are 2 amendments at the end of this instruction showing the setup of chemicals and the bath sequence.

All bathes should be filled up to about 75 mm below the top of the tank. If that level lowers (e.g. due to evaporation) you can fill the Activator bath with ready made catalyst solution -never with water - but all other bathes with deionised water. Refer to the Plating System Step documentation for details.

The sequence of bathes is:

Bath 1: Cleaner Conditioner

Heating tank 1 with a temperature range of up to 70 ° C is assigned to this tank.

Rinse 1 with circulation function.

Bath 2: Pre-Dip First use the pre-dip solution for cleaning of tank 3. Fill in the pre-dip solution into tank 3 overnight and after that re-use it to fill tank 2:

Recommendation: Fill in the pre-dip solution first to clean the walls of bath 3. After a few hours drain the pre-dip from bath 3 and fill it into bath 2. If necessary, complete with DS400. Do not rinse between Pre-Dip and Activator, so there is no rinse tank between these baths.

Bath 3: Catalyst

To stir the bath, always use a very clean glass or plastic rod that you rinse in bath 2 - never in water.

Rinse 2 with circulation function.

Bath 4: Intensifier

Rinse 3 with circulation function.

Bath 5: spare bath

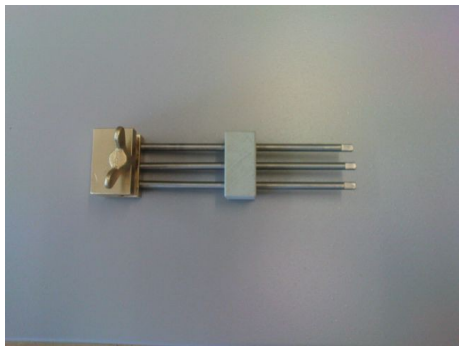
This spare bath can be used e.g. for our electroless tin plating (SUR-Tin) at room temperature or as DI-Rinse. If not in use, please fill the tank with plain water to avoid deformation of the PVC walls.

Bath 6: Copper plating

Fix both anodes to the anode holders, use anode bags to cover anodes and use the strings to form a knot so that the bags are kept in place.

Make up the copper bath as per the appending Bath Set up instructions. The chemicals for bath 6 must be mixed outside of machine, because of possible exothermic reactions.

Anode preparation:



Clean a double-sided board measuring 200 x 300 mm ²(300 x 400 mm² Hitec3040) very thoroughly, for example with a brushing machine. If no brush machine is available, use z. B. a plaster Ling or very fine sandpaper. Fasten the board in the board holder:

The standard version of the holder has three bottom flattened rods made of titanium. The pcb is in clamped between the three rods, two of the "finger" on the one side and the middle finger on the other side.

The contact block at the top of the holder please set centrally on the rod of the movement bar and fix it with the clamping screw. Now, turn on the agitation and the air circulation.

After switching on the rectifier adjust the current to 1 A / dm². With the board 200 x 300 mm² we have 6 dm² x 2 sides x 1A / dm = 12A (respectively 24 A for 300 x 400mm² at the Hitec3040)

Set the timer to 60 minutes and start the countdown.

The whole process takes 3 hours, so you need to set the timer 3 times to 60 minutes.

It is normal, when the surface of the sample board shows wavy or streaked unevenness after this "activation"!

After the third cycle, add the correct amount of brightener as described in the chemistry manual to the bath. Switch on air injection when doing that.

Finally electroplate the sample plate once with 1 A / dm for 30 minutes.

Rinsing technique

The HitecPlate is equipped with a rinsing tank after each treatment bath. The rinsing water must be treated to remove pollutants. Observe the local regulations. Connected to a water treatment machine such as e.g. The AquaPur a continuous flow of purified water is pumped into the rinsing tanks and contaminated water is returned to the ion exchanger.

During each rinsing step, it is important to clean the bars of the board holder as well, since otherwise contaminants can get into the other bath.

Do not leave the board in the rinsing tanks longer than necessary.

After each rinse, it is helpful to tap the board briefly against the side of the tanks to remove the water from the holes. At the same time this ensures a good contact of the chemistry with the inner walls of the drilled holes.

Very important: Bad 3 activator is sensitive to water! Always close the lid of bath 3 before you operate the sink next to it!

Rectifier:

The rectifier has a separate on / off switch. Current and voltage are preset manually by potentiometer and read out by analogue current and voltage displays.

The rectifier offers constant current and constant voltage supply.

For use with our chemistry we only need constant current supply.

For that reason adjust the voltage (unloaded) to approx. 2 V.

Then adjust current according to PCB surface in use. Standard working current setting is 3 A/dm².

Through Hole Plating process sequence:

Use base material with 18 micron copper layer and cut it on the sides and bottom with 10 mm oversize and at the top 30 mm oversize to (maximum format 210 x 300 mm for 2030 or 300 x 400mm² up to 350 x 450mm² with the Hitec3040).).

Using your CCD you first drill the necessary holes in the board. Note that the holes must be min. 0.05mm larger than the desired final diameter.

Clean the board thoroughly, preferably with a professional wet-brushing machine. In a pinch, it also does very fine sandpaper or a "Scotch Brite". The copper surface must be metallic bright and shiny.

Place the PCB now into the holder, hang the bracket on the frame crossbar on the first bath and tighten it with the screw.

Now, turn on the bath movement. According to the accompanying flow chart, the board will go through the individual baths. An "R" in the flowchart means a rinsing stage.

Important: Do not rinse the board between bath 2 and 3!!

The setting for the current in the galvanic copper bath is calculated based on the board size and a nominal current density of **3 A / dm²**: With a board of 200 x 300 mm the area per side is 6 dm², the total resulting current is:

2 sides x 6 dm / side x 3 A / dm = 36 A

With a board size of 300 x 400 respectively:

2 sides x 12 dm²/side x 3 A/dm² = 72 A

Before mounting the board into the copper bath already switch on the air injection and the rectifier, and then adjust the current. When the board enters the copper bath, the voltage should be already on to protect the catalysed surface. The board must never remain without current supply in the bath.

Start the bath movement and set the timer to the desired plating time.

Every minute about 0.8 microns copper is added to the board at 3 A / dm² current density.

To reach the nominal thickness of 17 microns, you have to plate around 25 minutes. When plating time of 25 minutes is over, you hear a signal from the timer. Press the Start / Stop button, the signal will mute and the last set time reappears.

Now remove the board and rinse thoroughly for 1-2 minutes, then clean with a paper towel and dry it with hot air. This will prevent oxidation of the copper. Alternatively you can run the board through the brushing machine again.

The plate is now ready for further processing: laminating, exposing, developing, etching, stripping, tinning.

Cleaning and maintenance

The unit is made of PVC. Remove drops of chemicals immediately with a cloth. For very resistant dirt (for example baked on residues) use sulphuric acid for tanks 1,4 and 6. rinse with tab water.

Use diluted hydrochloric acid for tanks 2 and 3. After cleaning the tank 3 remove all cloth fuzzles and rinse the tank walls and ground with DS400. You can use this “rinsing liquid” for Bath number 2. Do not use solvents!

The heaters may be operated only when completely filled tanks.

Overheating of the radiator) can lead to a thermal destruction (fire hazard) of the heater. Therefore, please check the level daily. The liquid level should not be lower than approx. 60 mm from the top.

The convection must not be disturbed by mud or mounting hardware (scab formation/encrustation). Remove deposits on the heater surface at sufficient intervals.

Periodically, the function of the thermostats should be checked using a thermometer.

After emptying tanks do not forget to close the ball valves.

Compensate evaporation:

Bath2 Predip and bath 3 activator: compensate evaporation losses with with DS400 .

All other baths: compensate evaporation losses with distilled water.

If the system is not used for a long time, it may happen that the anodes must be reactivated. Please take out anodes with the bags from the holder. Clean the anode bags with water and remove impurities of the anode itself with a wire brush. Wear protective clothing. Then enter the anodes again and proceed activating anodes as described in section **activation.**

From time to time it may be necessary to check the connection from anode to anode holder and from anode holder to the anode frame. Ensure good mechanical and electrical contact.

Make sure that the temperature never falls in your work and storage space below 0 °

Operating panel:

The rectifiers are maintenance free with the exception of the fan. An annual, preventive inspection is advantageous. This includes:

Inspection and cleaning of the fan

Inspection of electrical connections

Clean the contact surfaces of the DC connections

Note: It is forbidden to constructive interference of any kind to carry into the device.

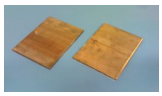
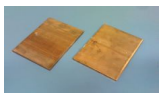
Disposal:

Disposal of the chemicals must be agreed with the chemical dealer.

The machine has been produced mainly from recyclable materials and is to be disposed of in a proper and thus environmentally friendly disposal in case of later scrapping.

Spare part list

Artikel	**Deutsch**	**English**	
6000	Auffangwanne für HitecPlate2030	Catching Tray for HitecPlate2030	
6000	Auffangwanne für HitecPlate3040	Catching Tray for HitecPlate3040	
691019	Anodensack f.HitecPlate2030 (Stück)	Anode bag for HitecPlate2030 (1 piece)	

691037	Anodensack f.HitecPlate3040 (Stück)	Anode bag for HitecPlate3040 (1 piece)	
691020	Satz Anoden, -halter + -säcke f.HitecPlate2030	Anodes assembly set for HitecPlate2030 1 set = 2 pcs	
691033	Satz Anoden, -halter + -säcke f.HitecPlate3040	Anodes assembly set for HitecPlate3040 1 set = 2 pcs	
691021	Anwendung: HitecPlate2030 Material: PP, Titan, Messing	Application: HitecPlate2030 Material: PP, Titanium, Brass	
691025	Satz Anoden f. HitecPlate2030	Set of anodes for HitecPlate2030	
691036	Satz Anoden f. HitecPlate3040	Set of anodes for HitecPlate3040	
691034	Digitaler Timer für HitecPlate2030/3040	digital countdown timer for HitecPlate2030/3040	
691035	Anodenhalter für HitecPlate2030/3040	Anode holder for HitecPlate2030/3040	
6000	Heizkörper 400 W HitecPlate2030 Standard	Heating Element 400 W HitecPlate2030 Standard	
6000	Heizkörper 800 W HitecPlate3040Standard	Heating Element 800 W HitecPlate3040 Standard	
6000	Thermostat 0-50°C	Thermostat 0-50°C	
6000	Thermostat 20 – 90°C	Thermostat 20 – 90°C	
6000	Gleichstromversorgung 24 V	DC Power Supply 24 V	
6000	Gleichrichter Bedieneinheit analog	Rectifier Front panel	
6000	PP-Kugelhahn d20	PP-ball valve d20	
6000	Gleichrichter 6V/40 A, ohne Anzeigen	Rectifier 40A/6V without displays	
6000	Analoge Anzeigeinstrumente Volt/ Ampere	Analogue Display Volt/ Ampere	
6000	Anodenrahmen 2030	Anode frame 2030	
6000	Anodenrahmen 3040	Anode frame 3040	
6000	Lufteinblasung HitecPlate2030/3040 PVC-Rohr	Air injection HitecPlate2030/3040 PVC tube	
6000	Motor für Bewegung 24 V für DK (Schnecken-getriebemotor)	DC motor 24 V for HitecPlate2030/3040	
6000	Vibrationseinrichtung für HitecPlate Bewegung-sapparat Wechselstrom Arbeitsmoment 0,39 cm/kg Maschine wird ca. 30cm breiter Doppelschub-stange, bürstenloser Bewegungsmotor und fed-ernd gelagertes Gestänge	Vibration support for HitecPlate special bath movement Machine gets approx. 30 cm wider, double arm movement, brushless motor, spring mounted rod	
6000	Anwendung: HitecPlate Material: PP, Makrolon; Kopf: Messing Wafergröße: 3“ oder 4“ Varianten: - Besonderheiten: einfache Handhabung, Vollkon-takt der Wafer durch Kupferdraht.	Application: HitecPlate Material: PP, Makrolon Head: Brass Wafer size: 3“ or 4“ Variations: - ; Particular feature: Easy handling, fully contact of the wafer by copper wire	
6000	Absaughaube HitecPlate2030 aus PVC-Glas, Anschlussstutzen d 125 mm, ohne Ventilator 1 mtr. Absaugschlauch	Suction hood HitecPlate2030, made from PVC-glass connection socket 125 mm without ventilator; 1 m suction tube	

6000	Absaughaube HitecPlate3040 aus PVC-Glas, Anschlussstutzen d 125 mm, ohne Ventilator 1 mtr. Absaugschlauch	Suction hood HitecPlate3040, made from PVC-glass connection socket 125 mm without ventilator; 1 m suction tube	

Guarantee

All machines are submitted before distribution to examination on function and continuous operation firmness. On the machine we grant a work warranty of 12 months to our customers starting from purchase date on accuracy in material and processing. We warrant at our choice by exchange of incorrect parts or by repair of the machine in our house. Old parts change into our possession.

Disclaimer of Warranty

Bungard GmbH & Co. KG reserves the right to change or enhance its machines or machine specifications according to its judgement, if necessary. Bungard cannot be held responsible to implement aforesaid changes into machines sold already.

Bungard products and services are liable to the current prices and conditions, which are subject to change.

The instructions and definitions in this document are also subject to change and mark no assurance on the part of Bungard.

This manual contains informations of the HitecPlate2030 and Hitec3040 and is the translated English version.

Please regard the “Sales terms and delivery conditions”. These are available after fulfilment of the contract. We don't furnish a guarantee or warranty in cause of damages at material or hurts of people because of

Incorrect use of the machine

Wrong setup, installing and operating of the machine or incapable service

Use of the machine with defective safety equipment

Non-observance of the service manual in regard to transport, stocking, setup, installation and service of the machine

Unlicensed modifications at the machine

Incorrect or incomplete repairs

Destructive force effect at the machine in cause of foreign objects or external use of force

Use of non-original spare parts

normal wear parts.

We cannot accept subsequent claims from damage or destruction of work pieces worked on in the machine, because we have no knowledge or control over the operating conditions at your site. This is valid in a general manner also for requirements from damage to articles, buildings and persons as well as the environment.

We do not warrant that the function of the machine will meet the customer's requirements or that the operation of the machine will to this regard be error free.

In no event will we be liable to the customer for any incidental, consequential, or indirect damages of any kind, including loss of profit and prosecution for environmental pollution, even if we could have been aware of the possibility of such damages.

All information was arranged with great care. We reserve ourselves however mistake and technical changes without previous announcement.

Running the machine in corroding, humid, dusty, extremely hot or explosive atmosphere happens at the operator's own risk and responsibility.

We explicitly exclude any warranty for damages resulting from running the machine in in corroding, humid, dusty, extremely hot or explosive atmosphere.

Copyright

Amendment 1: Bath Setup

Bath	**Quantity**		**Replenish**	**Unit**
Product	**for 10 L (H23)**	**for 20 L (H34)**	**for 10 m²**	**content**
	Hitec 2030	**Hitec 3040**		
Bath 1				
DI Water	9.7 L	19.4 L		
DS270	0.3 L	0.6 L	30 ml	500 ml*
Bath2				
DS400	10 L	20 L	2 L	20 L*, 5 L
Bath 3				
DS400	9.5 L	19.0 L	2 L	see above
DS500	0.5 L	1 L	50 ml	500 ml*, 250 ml
Bath 4				
DI Water	4.6 L	9.2 L		
DS650 L	4.3 L	8.6 L	430 ml	5 L*
DS650 P	1.0 L	2.0 L	100 ml	5 L*
DS650C	0.1 L	0.2 L	10 ml	500 ml*
Bath 5	**for 30 L**	**For 1x 60 L**		
CU 400 D ready made solution 2020	30.0 L	60.0 L		30 L*
CU 400 A	120ml	240 ml	1L / 8000 Ah	1 L*, 5 L
DI Water	fill up to 30 L if needed	Fill up to 1 x 60 L if needed		

- = content of one Starter Set for Compacta 30

Exothermic reactions are possible when mixing chemicals! Mix in a suitable container outside of the machine. Do not give water on acid! Always give the acid to the water! Wear protective clothing! Mix slowly

Please double check the bath size of your machine. Divergent tank sizes possible!

DI water is not part of delivery and need to be obtained locally !

Amendment 2: Process Flow

Step	Process	Time	Temp. °C	Remarks
1	DS270	7 min	65-70	Cleaner Conditioner
R	Static Rinse 1	1 -3 min		
2	DS400	1 min	20-25	Pre-Dip
	No rinse!			
3	DS500	7 min	20-25	Activator
R	Static Rinse 2	1 -3 min		
4	DS650	4 min	45	Intensifier
R	Static Rinse 3	1 -3 min		
5	CU 400	23 min	20-25	18 µm Cu plating, 0.8µm/min, 3A/dm²
R	Static Rinse 3	1 -3 min	R	Static Rinse 1