TS100/TA125G

Wave – Solder Bath

Hirt Apparatebau UG
Wilhelm- Jerger- Straße 22
78078 Niedereschach
Phone: +49 7728 6447-0 Fax: +49 7728 6447-28

3. März 2016

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1. Safety

1.1 General safety instructions

	Read the manual carefully and follow the safety instructions in this section before undertaking any actions, such as transport, storage, connection, implementation etc.
	Because devices, equipment and machines operate with a power supply and store energy either internally or externally, the instructions in this section are relevant for all users and personnel. The safety instructions for all additional devices and components must also be followed.
	Adhere to the regulations governing the prevention of accidents with laser beams.
	Adhere to the regulations governing the prevention of accidents with gantry robots.
	All work on the machine must be carried out by qualified and authorized personnel. Setup work must be done by **one** person working alone, **never by two or more** people at the same time.
	Beware of hot surfaces.
	Wear safety gloves.
	Wear safety glasses.
	Irritant. Avoid skin contact.
	Health risk. Solder fumes and flux.
	Environmental hazard. Waste solder, flux and thinners are hazardous waste and should be disposed of appropriately.
	Alcohol-based flux is highly flammable.

1.1.1 Transport and storage

The machine must be transported in an upright position with the transport aids in place.
The machine must be transported in the original packaging (pallet, etc.) to the destination site. This also applies when moving or returning the machine.
Ensure that the machine is in an upright position during transport, taking its centre of gravity into account. Even slight changes in position can cause the machine to tilt over, particularly with machines with built-in gantry robots, which have a high centre of gravity.
Also ensure that the machine is positioned securely during storage.
Always adhere to the machine's temperature and humidity specifications during transport and storage.

1.1.2 Installation

The machine is designed for use in ventilated areas.
When installing, follow the specifications governing position and the use of fastening points or adjustable feet.
If there is any formation of condensation (dew) during the installation process, an acclimatization period of at least 2 hours is required before any further action is taken.
The machine should never be installed or operated in a damp environment. Ensure that no liquids come in contact with the machine.
The machine should not be installed close to heat sources.
Ensure that ventilation openings are not blocked and that air is circulating freely through the machine and its components.

1.1.3 Connection

The socket for the electric installation must be easily accessible and located near the machine.
Always ensure that the protective conductor connection to the machine is in place.
Operate only intended consumer loads from the machine's power supply.
Check to ensure that all media lines are properly connected. Always check to ensure that any process/reaction gases produced are extracted from the process chamber.
Keep connection lines as short as possible and ensure that they are laid correctly. Avoid creating trip, crush, shear and other hazards in the connection lines.
All connection work must be carried out by qualified and authorized personnel.

1.1.4 Operation

To meet the requirements for CE marking, soldering systems must be connected to an extraction system for toxic fumes. Customers who have not ordered an extraction system must connect their own extraction system to the machine.
Work on the machine in Normal and Setup modes must be carried out by authorized and qualified personnel trained for the task at hand. **Setup work on the machine must be done by 1 person working alone, never by 2 or more people at the same time**. This applies also to general operation of the machine.
Always ensure that no liquids, foreign objects or blockages get into the system.
Never tamper with the machine's safety equipment.

1.2 Safety instructions for soldering

Caution: The solder bath is designed to be operated with nitrogen gas. It should not be operated WITHOUT GAS.
Working without gas will reduce the quality of soldering (bridges, ridging, drop formation etc.) and may damage the pump unit. The guarantee for the soldering module is void if operated without gas.

1.3 Heat-up phase

The solder bath must always be enclosed in the housing to ensure that it is not freely accessible.
To prevent eruptions during the heat-up phase, heating around the melting point is at a lower output.

The machine may only be operated when all safety features are in place:
- Guard doors closed
- Emergency stop circuit is connected to the emergency stop button

The machine is equipped with doors that stop it when opened.
Caution: The solder bath pan and the area around it remain hot.

In the event of danger to persons, hit the **emergency stop button** or turn off the master switch. The emergency stop button disconnects the power supply. Unlocking the emergency stop button does not reconnect it.

Working with hot solder produces hazardous fumes. To meet the requirements for CE marking, soldering systems must be connected to an extraction system. Customers who have not ordered an extraction system must connect their own extraction system to the machine. The relevant laws and regulations apply.

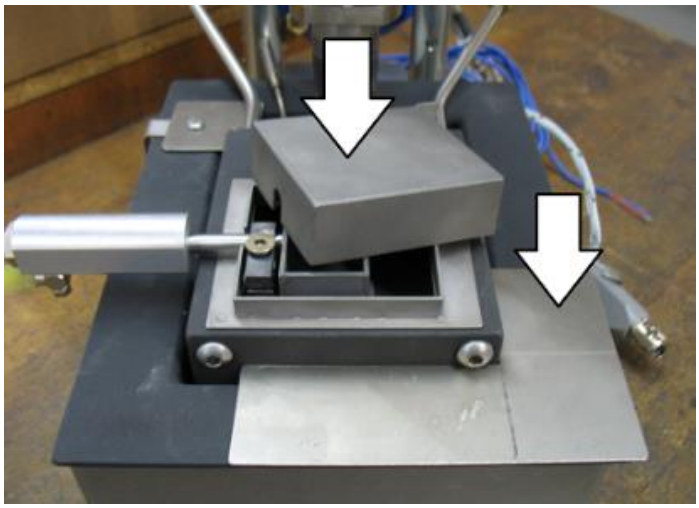
When cleaning with liquids, **always** unplug the heater at the mains. The same applies when lifting or moving the pan.

The solder pans must be protected against water.

Caution: When working with the hot solder bath, always wear insulated protective gloves. Always wear protective clothing and eyewear.

2. General information

Because eruptions are possible in unfavourable conditions, always ensure that the soldering bath is covered with the cover plate during the heat-up phase. For gas solder baths, the gas hood is generally sufficient as a cover.



Do not puncture the solder surface while it is still rigid during the melting process.

The temperature sensor must be positioned correctly (the tip should extend as far as possible into the solder bath).

The wave solder bath should always be filled to the brim (solder level must always be higher than the base of the splash insert). If the solder level drops too far, there is a risk of overheating and oxidization in the pump housing.

Any pneumatic lines to be laid in the vicinity of the solder bath must be shielded against heat.

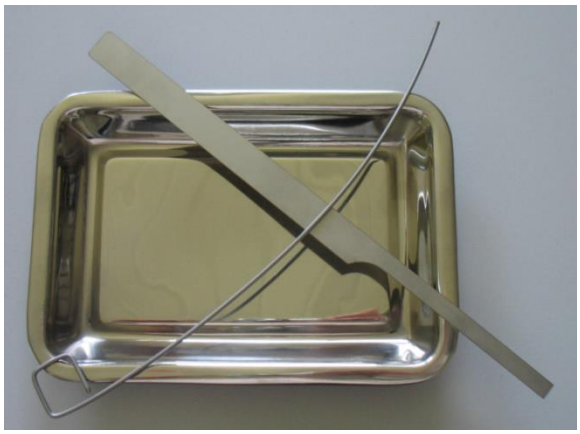
Any fire hazard posed by the wave solder bath at the installation site must be assessed.
All safety precautions applicable at the installation site must be observed.

Harmful vapours are produced during the soldering process.

Please note that all relevant and applicable laws must be observed.

3. Servicing and maintenance

For maintenance work such as oxide cleaning in the hot pan, use only titanium or V2A metal strips.
If you use other materials, the solder may be contaminated by alloying constituents deposited in the solder.



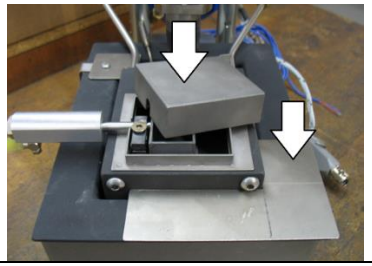
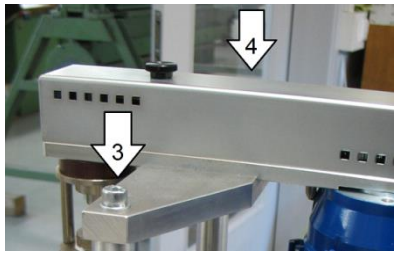
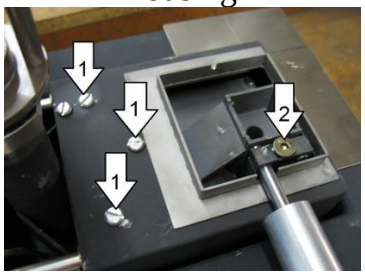
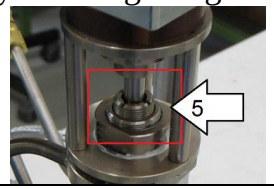
(Included in delivery)

The mechanical and pneumatic equipment in this wave solder bath is virtually maintenance free.

However, oxide formation in the area of the solder surface and the pump cannot be completely avoided.
The level of oxide formation depends on the solder, the temperature and the speed of the wave pump.
The oxide cleaning interval, including a description of the work to be done, can be found in the maintenance table.

Caution: When working with the hot solder bath, always wear insulated protective gloves. Always wear protective clothing and eyewear.

4. TA 125 service schedule

Interval	Part/Location	Description
Weekly	Clean oxide from bath surface 	Wear safety glasses and gloves. Use a pair of pliers to take down the 2 marked covers and place them on a fireproof surface. Clear the surface of oxide and dirt with the V2A metal strips.
Approx. every 3 - 4 weeks 	Clean oxide from turbine with pump housing  <u>Caution:</u> Nozzle must be placed up to stop wall during assembly.	Loosen screw (2), cut wire and remove nozzle, then unscrew the 3 screws (1) and remove the cover by pulling it up. Unscrew both M8 Allen screws (3/4) from the cross bearer and lift the entire pump and motor out. Continue working on a fireproof surface. Now remove the spring washer with the cover disc from the pump tube. Then tap lightly with a wooden grip until the oxide has fallen out the bottom (*figure 2*).
Approx. every 6 weeks	Clean oxide from pan and temperature sensor	Clear all internal bath surfaces and the temperature sensor of oxide with a V2A-metal strip. The pump drive and gas cover must be removed to do this (*figure 1*).
When the turbine shaft is sluggish or you hear grating noises 	Clean oxide from the pump housing, above the turbine and where the turbine shaft meets the housing.	<u>For all other details, see the operating instructions for:</u> **"Maintenance work on a TS100 pump drive"** After reassembling using these steps in reverse order, you can use the hollow bolt (5) to adjust the graphite bearing if there is too much play in the shaft.

5. Maintenance work


Figure.1

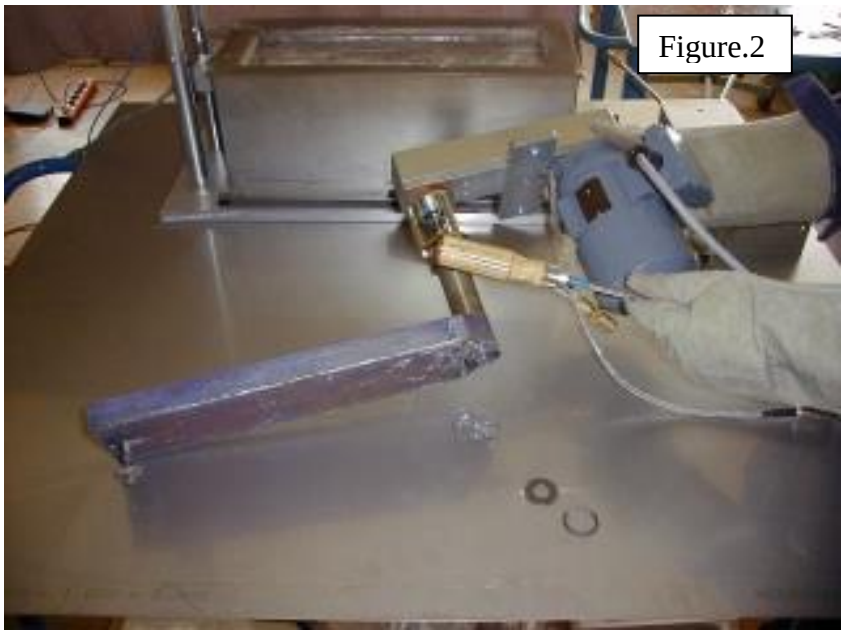


Figure.2


Figure.3


Figure.4

6. Bill of materials

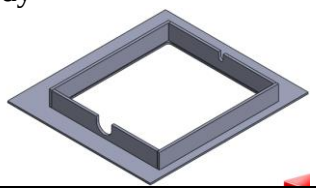
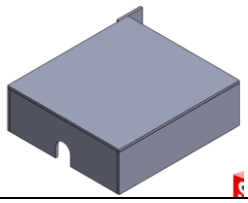
Item.:	Description:	ID-Part Drawing Order Number:	Qty.
1	**Solder pan** on base plate	TA125G 2000W	1
1.1	Temperature sensor	10.006.017	1
1.2	Ceramic frame radiator	10.006.018	1
1.3	Slag tray / 100 x 200 x 15	10.006.020	1
1.4	Cleaning wire / 2mm	10.006.021	1
1.5	Cleaning plate / 1,5mm	10.006.022	1
1.6	Pan bath	10.006.015	1
2	**Pump drive / TS 100**		1
2.1	Drive motor	IEC Normmotor / SKG 56-4B	1
2.2	Distributor housing	10.007.552	1
2.3	Pulley (drive side)	10.005.022	1
2.4	Pulley (turbine side)	10.000.117	1
2.5	Rotation sensor 	10.006.025	1
2.6	Drive belt	F-0 460x10	1
2.7	Turbine 212 (coated)	10.005.026	1
2.8	Ball bearing (for turbine shaft)	3/13	2
2.9	Tensioner (+ pin and bearing)	2/12 (+ 623-2Z)	1
2.10	Tension spring	01419	1
2.11	Graphite bearing inside	10.006.009	1
2.12	Hollow bolt	10.004.435	1
2.13	Cover disc	10.005.239	1
2.14	Spring washer	10.006.016	1
2.15	Gassing hood	10.007.581	1
2.16	Gassing tubes	10.006.031	2
2.17	Connection plug 	10.006.048	2
2.18	Connection plug + flow retardation 	10.006.049	1
2.19	Coupling socket with hose clip 	10.006.050	3

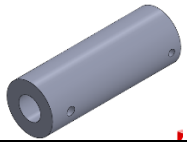
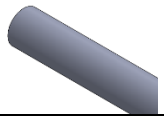
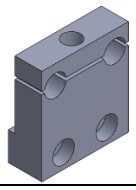
Item.:	Description:	ID-Part Drawing Order Number:	Qty.
2.20	Clinder head screw with slot for splash insert/clamping claw (stainless steel)	ISO 1207 M5x8 (DIN 84)	6
2.21	Flat head screw with slot (stainless steel) for gas hood	ISO 1580 M5x8 (DIN 85)	3
2.22	Screws for gas tubes	M8x10 ISO 7380	2
3			
3.1	Digital flow switch 50L 	10.006.026	1
3.2	Precision pressure regulator	MS6-LRP-1/4-D4-A8 (FESTO)	1
3.3	Precision manometer	M (FESTO)	
4	**Cut-in valve** 	10.006.029	1

Item.:	Description:	ID-Part Drawing Order Number:	Qty.

Example for Soldering input / Soldering tools

5	Replacement parts		
5.1	Splash insert	x	-

6	**Hood**		
6.1	Hood base body 	x	-
6.2	Hood cover 	x	-

7			
7.1	Blow-off tank 	x	-
7.2	Blow-off nozzle 	x	-
7.3	Clamping piece 	x	-
7.4	¼" plug Bore Ø beim Bestellen immer angeben	x	-
7.5	Splash insert complete (but without clamping piece (*item 7.3*))	x	-
7.6	Thermal decouple	x	-

7. EC Declaration of Incorporation

The manufacturer: **Hirt** Apparatebau (UG)
Wilhelm-Jerger-Straße 22
D-78078 Niedereschach
Phone: +49 7728-6447-0

hereby declares that the following product:

Product name:	Solder bath
Type designation:	TS 100/TA125G
Serial number:	----
Year of manufacture:	----

meets the following essential requirements of the **Machinery Directive (2006/42/EC)**:
Annex I, Articles 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.3, 1.3.4 and 1.5.1.

The partly completed machinery is also in conformity with all provisions of the **Electrical Equipment (2006/95/EC)** and **Electromagnetic Compatibility (89/336/EEC)** directives.

The following harmonised norms were applied:

DIN EN ISO 12100	Safety of machinery – General principles for design - Risk assessment and risk reduction
DIN EN 60204-1	Safety of machinery – Electrical equipment of machines, Part 1: General requirements

The partly completed machinery must not be put into operation until it has been established that the machine into which the partly completed machinery is to be installed is in compliance with Machinery Directive 2006/42/EC.

The manufacturer undertakes to provide by electronic transfer the documentation specific to the partly completed machinery required by national authorities if requested for good reason to do so.
The specific technical documentation defined in Annex VII, Part B has been created.
Name of Documentation Manager: Tanja Class
Address of Documentation Manager: See manufacturer's address

Niedereschach,

Joachim Hirt, Manager Director

Date	Signatory and signatory details	Signature