Fine Pitch SMD/ Flip Chip
Placement and Bonding Equipment System

FINEPLACER

THE FINEPLACER TECHNICAL MANUAL

Heating Plates FA 4C, 5C, 6C, 7C PC controlled

DATE: __.__.____ FINETECH GmbH & Co. KG to S/N: _____
Berlin, Germany

CONTENTS

1. Hints For Using This Manual

Please read the safety instructions first before operating the FINEPLACER and the accessory parts.

- Have a look at the pictures before reading the operating instructions to familiarize yourself with the FINEPLACER. Start with the basic machine and do the same with each module belonging to your special system configuration.
- Read the operating instructions.
- Read the maintenance instructions.
- On the next page you will find the most important points for avoiding problems.
- In case of defects, and before dismantling anything, contact your dealer or the manufacturer.
- Perform the same procedure for all other optional module-concerned parts attached after part A.

2. Operating Instructions

2.1 Setting Up the Equipment

- Connect the cables of the Heating Plate with the corresponding socket at the rear of the Heating Module Control Box (see fig. 1).
- The Placer Control Box must be installed, connected to the PC and to the Control Box of the Heating Plate Module. Connect the Heating Plate Module Control Box with the Placer Control Box via patch cable (FINETECH Module Interface Bus, see fig. 1).
- Clamp the heating plate into the clamps of the positioning table of the FINEPLACER. Adjust the correct working height by spacers (see sketch) or use a Positioning Table with height adjustable tracks (option).
- All gas connections must be made and turned on.
- Install and start the PC-program WinFlipChip.

- The Heating Plate is warmed up to standby temperature after the Control Box is switched on. All process parameters can be set now on the PC (see software description).
- The Heating Plate is now ready to use.

2.2 Option Vacuum Holder

A substrate placed on the surface of the working area of Heating Plate will be held by means of custom specified vacuum holes or grooves, if the vacuum is switched on (see fig. 3, 6, 8):

Note:
Please switch vacuum off if not needed.

2.3 Internal air cooling

The Heating Plate Module has an integrated gas cooling to control the temperature of the Heating. Depending on the specific process it is possible to use compressed air or inert gas like N2, see point 2.4. The actuation point to switch on or off the gas flow is controlled automatically by the software. Don't mind the noise of streaming gas.

2.4 Overheat Shutdown

If the heating supply power is greater than 70% of max. heating power for more than 3 min or the temperature of Heating Plate is greater than 420°C, the heating will be automatically switched off (red „ERROR"-LED blinking on the Control Box) to prevent damages or fire hazards. Causes therefore could be:

- Defects of the halogen bulbs
- Defects of thermo fuse
- Defects of thermocouple
- Defects of switching circuit

In case of that failure, switch power OFF and after some seconds press ON again. If the failure persists, shut down the system, and contact authorized service personnel.

Note:
In case of sensor break (not in case of sensor short-circuit) the heating will be shut down automatically. In that case do not continue the work. Turn off the module and contact authorized service personnel.

If the Heating Plate is not in use; please switch it off.

2.5 Option Inert Gas Atmosphere

The heating plate FA 6 has two separate gas fittings at the rear panel of the Control Box as a standard. One to maintain the vacuum and the other to supply the gas cooling. To avoid air contact between the substrate and component during the bonding process it is possible with this to choose optional inert gas or compressed air for cooling purpose.

In case of using FA 4 or FA 5 it is only possible to maintain the vacuum and the cooling together with compressed air or alternatively with inert gas.

To keep a defined and clean gas atmosphere around the working area it is recommended to install a protecting gas chamber which can be placed on the surface of the Heating Plate. This option (FA .. IF) is available for all Heating Plates. In that case the gas chamber will be provided by a separate gas source via a flow meter to control the gas stream.

3. Safety Instruction

First follow the general safety instructions, see A-part of the Basic Machine which is combined with the Heating Plate.

- The system must be operated only by trained staff. Maintenance and repair should be carried out only by trained and authorized personnel, familiar with the relevant hazards.
- To prevent an inadmissible heating of other objects, the Heating Plate must be operated only in fixed position, clamped into the Positioning Table of the FINEPLACER.. Danger of fire or burn.
- Do not operate the Heating Plate without supervision. If the module is not needed, please turn it off.
- Before switching on the module ensure that the supply voltage corresponds to the technical specification. Only use mains cables with protective earth .
- The Heating Plate may warm up to max. 420°C. Don't touch it with your fingers but use only suitable tools.
- If the module is so heavily damaged and/or shows unusual malfunctions withdraw the module
- Before opening the device disconnect it from the voltage source.
- In case of a blown fuse the cause must be determined and the failure has to be fixed before restarting the work. Use only fuses of the same type and current rating. Extra fuses can be found with the standard spare parts

4. Technical Data

Heating Plate Module	FA 4C
Working area	2" x 2 ", 50 x 50 mm
Supply voltage	100...110 V / 50...60 Hz
	230 V / 50...60 Hz
Power consumption	max. 440 VA
Maximum output power	24 V AC / 400 W, short-term
Maximum environ temperature	35 C
Maximum temperature	400 C
Temperature increase rate	6° K/s
Steadiness temperature	± 1 % of the final temperature > 180°C
at measuring point	± 2 % of the final temperature < 180°C
Fuse of the Control Box:	
100 V, 110 V	10 A T
230 V	6.3 A T
Temperature fuses	2 x 100 °C / 10 A
Integrated cooling	compressed air
	5.5...7 bar/50 Nl/min
Vacuum holder (option)	compressed air
	5.5...7 bar/50 Nl/min
Inert gas supply (option)	e.g. N_2
	5.5...7 bar/0...10 Nl/min

Heating Plate Module	FA 5C
Working area	4" x 4 ", 100 x 100 mm
Supply voltage	100...110 V / 50...60 Hz
	230 V / 50...60 Hz
Power consumption	max. 1300 VA
Maximum output power	24 V AC / 1200 W, short-term
Maximum environ temperature	35 C
Maximum temperature	400 C
Temperature increase rate	3° K/s
Steadiness temperature	± 2 % of the final temperature > 180°C
at measuring point	
Fuse of the Control Box:	
100 V, 110 V	15 A T

230 V	6.3 A T
Temperature fuses	8 x 100 °C / 10 A
Integrated cooling	compressed air 5.5...7 bar/80 Nl/min
Vacuum holder (option)	compressed air 5.5...7 bar/50 Nl/min
Inert gas supply (option)	e.g. N2 5.5...7 bar/0...10 Nl/min

Heating Plate Module	**FA 6C**
Working area	0.8" x 0.8 ", 20 mm x 20 mm
Supply voltage	100...110 V / 50...60 Hz 230 V / 50...60 Hz
Power consumption	max. 290 VA
Maximum output power	24 V AC / 250 W, short-term
Maximum environ temperature	35 C
Maximum temperature	400 C
Temperature increase rate	20 K/s
Steadiness temperature at measuring point	± 2 % of the final temperature > 180°C
Fuse of the Control Box:	
100 V, 110 V	10 A T
230 V	6.3 A T
Temperature fuses	2 x 100 °C / 10 A
Integrated cooling	compressed air 5.5...7 bar/80 Nl/min
Vacuum holder (option)	compressed air 5.5...7 bar/50 Nl/min
Inert gas supply (option)	e.g. N2 5.5...7 bar/0...10 Nl/min

Heating Plate Module	**FA 7C**
Working area	2" x 2", 50 x 50 mm
Supply voltage	100...110 V / 50...60 Hz 230 V / 50...60 Hz

Power consumption	max. 1040 VA
Maximum output power	24 V AC / 1000 W, short-term
Maximum environ temperature	35 C
Maximum temperature	400 C
Temperature increase rate	20 K/s
Steadiness temperature	± 1 % of the final temperature > 180°C
at measuring point	± 2 % of the final temperature < 180°C
Fuse of the Control Box:	
100 V, 110 V	10 A T
230 V	6.3 A T
Integrated cooling	compressed air
	5.5...7 bar/80 Nl/min
Vacuum holder (option)	compressed air
	5.5...7 bar/50 Nl/min
	or
	external vacuum supply –800mbar/20 Nl/min
Inert gas supply (option)	e.g. N2
	5.5...7 bar/0...10 Nl/min

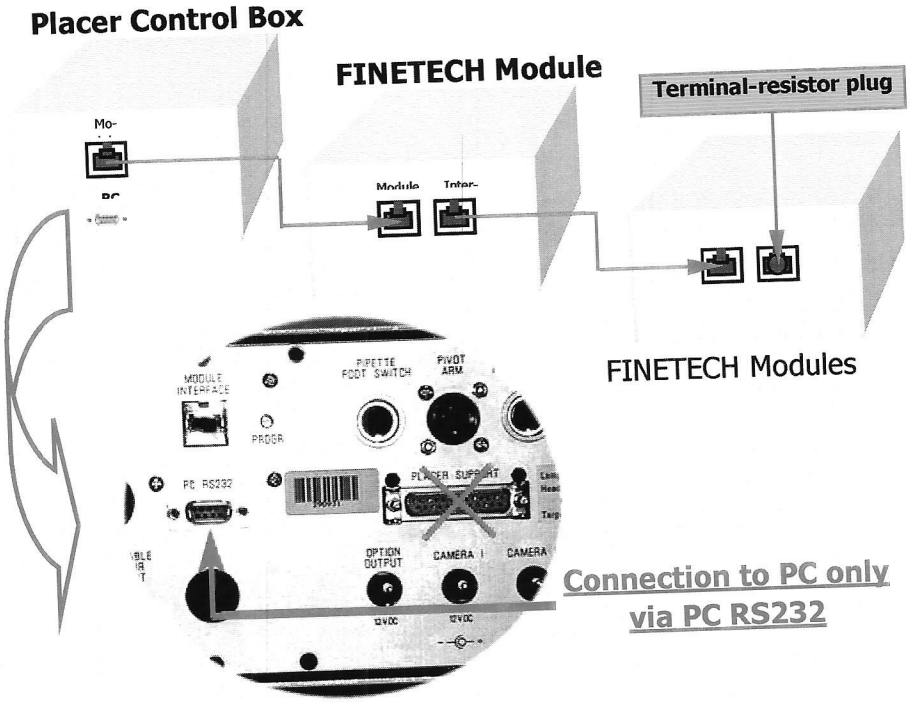


Fig. 1: Interconnection between Placer Control Box and FINETECH Modules

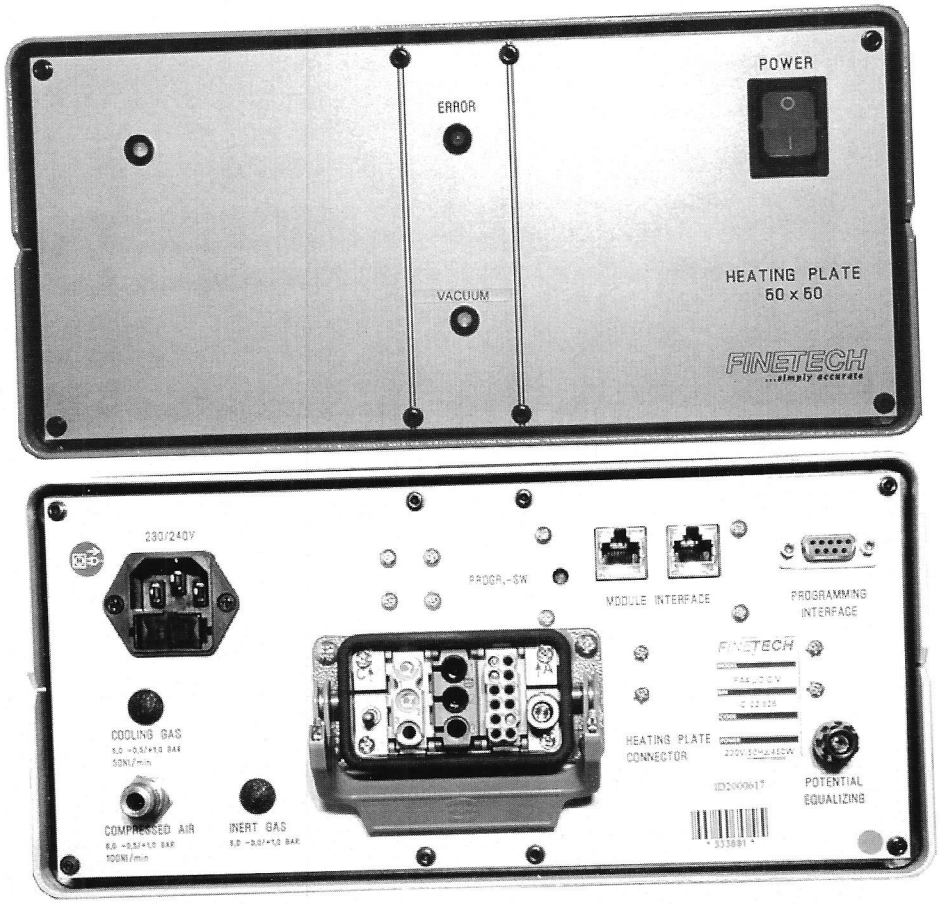


Fig. 2: Control Box FA4, front and rear panel

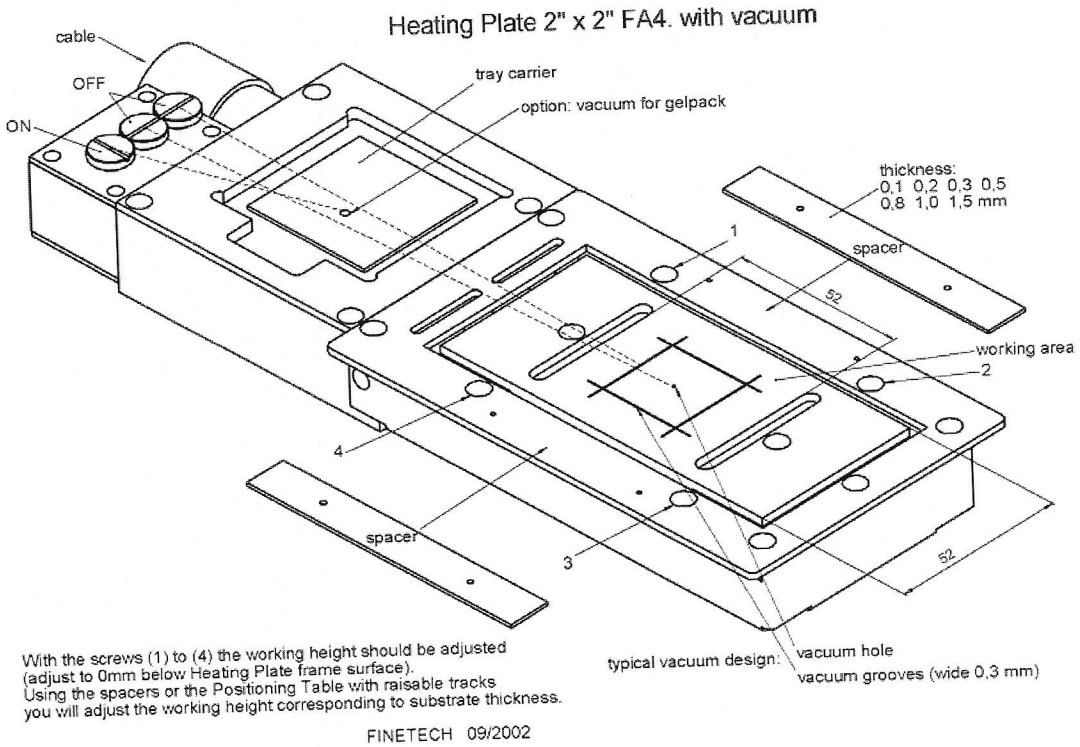
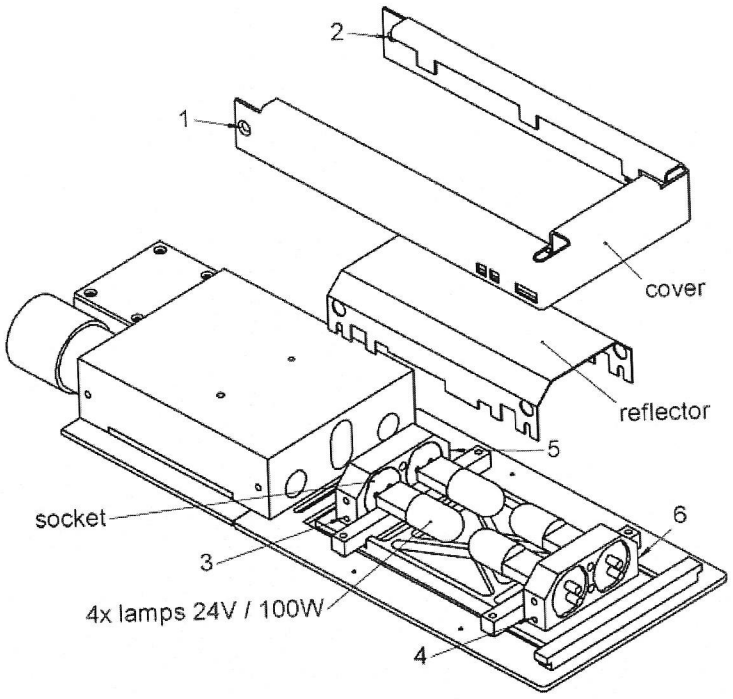


Fig. 3: Heating Plate FA 4, with optional vacuum holder

Heating Plate 2" x 2" FA4.
change of lamp



1. loosen the screws (1) and (2)
2. remove cover
3. loosen screws (3) to (6)
4. remove reflector
5. change lamp

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Fig. 4: Change of the halogen bulbs, Heating Plate FA 4

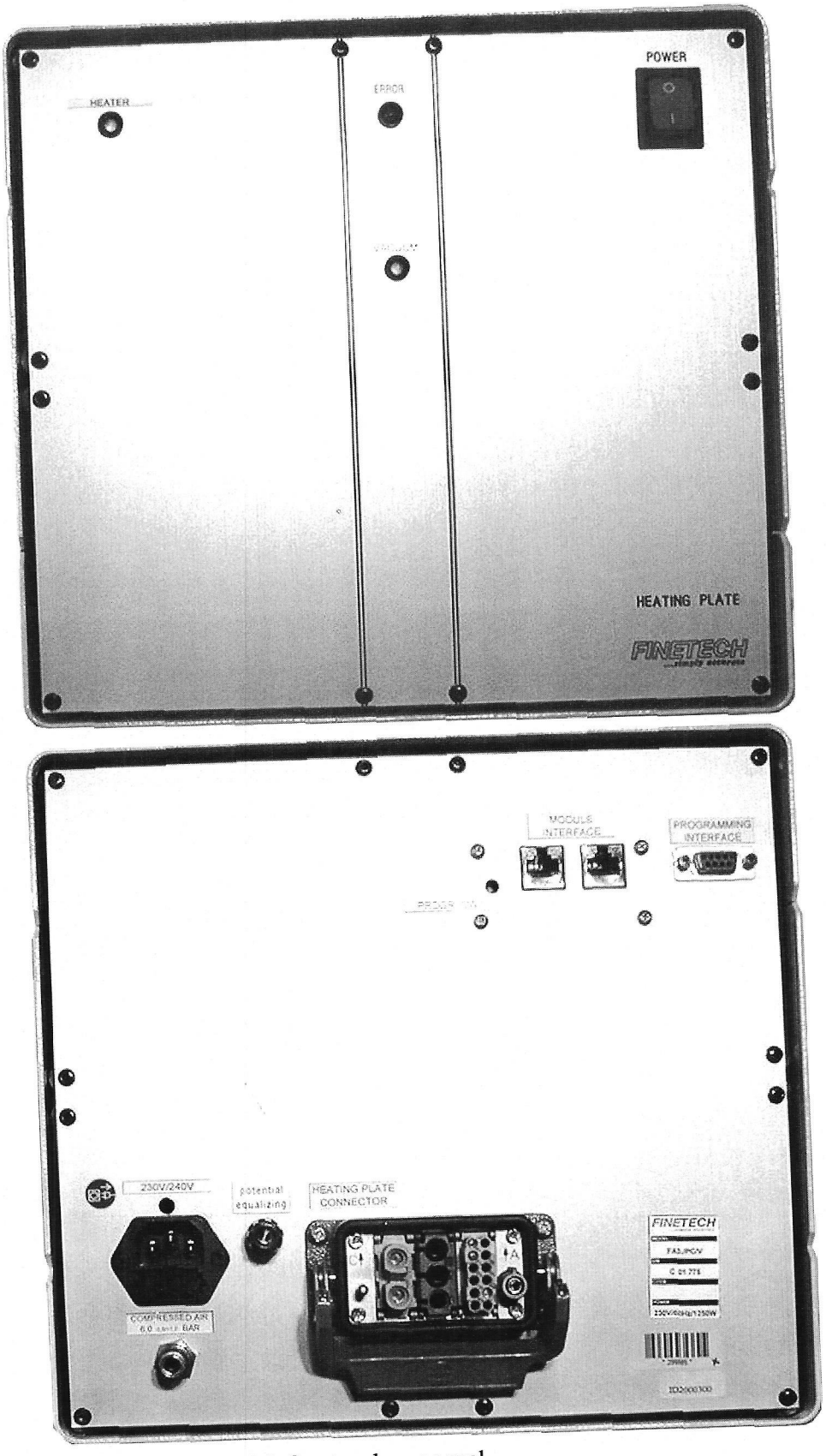


Fig. 5: Control Box FA5, front and rear panel

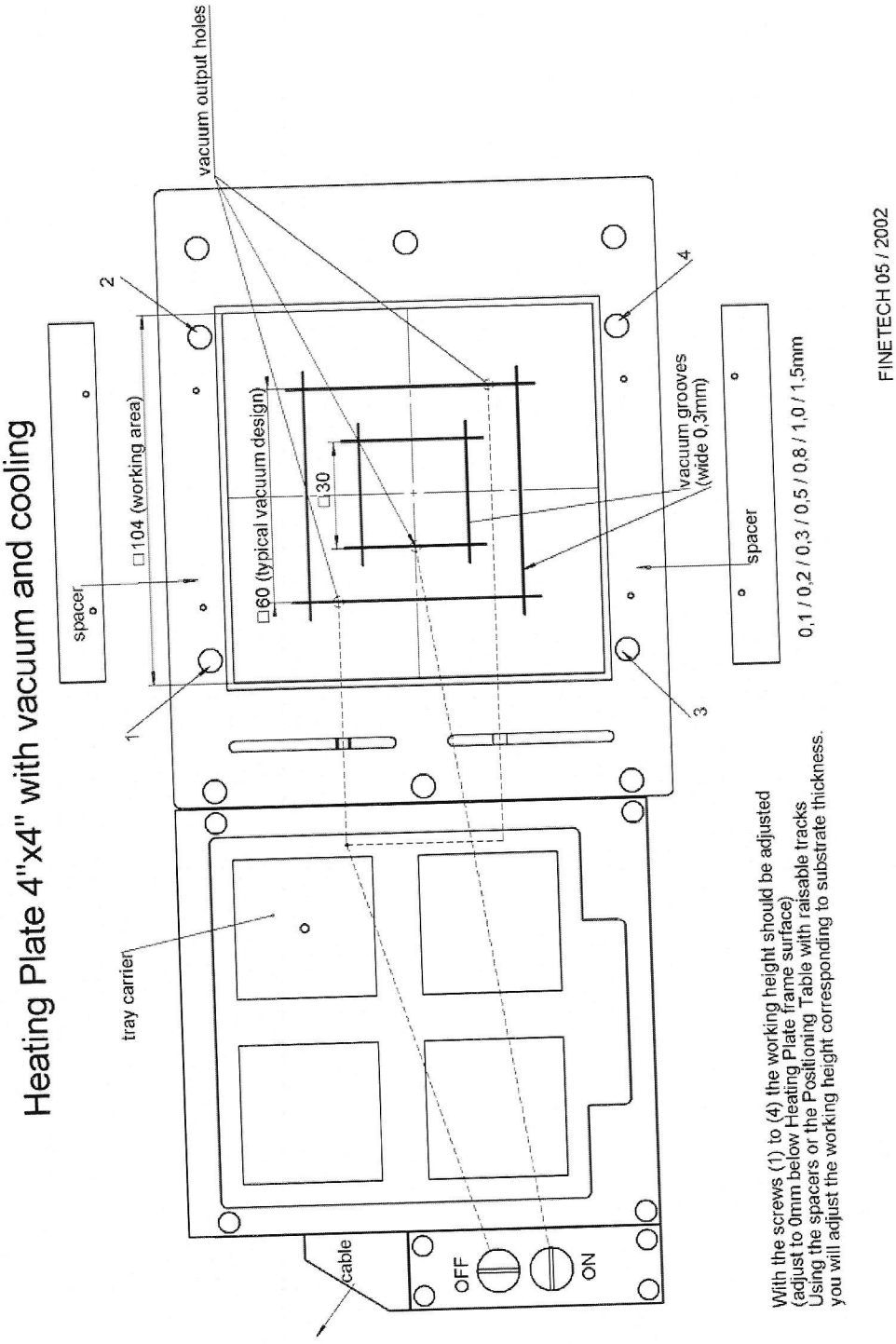


Fig. 6: Heating Plate FA 5, with optional vacuum holder

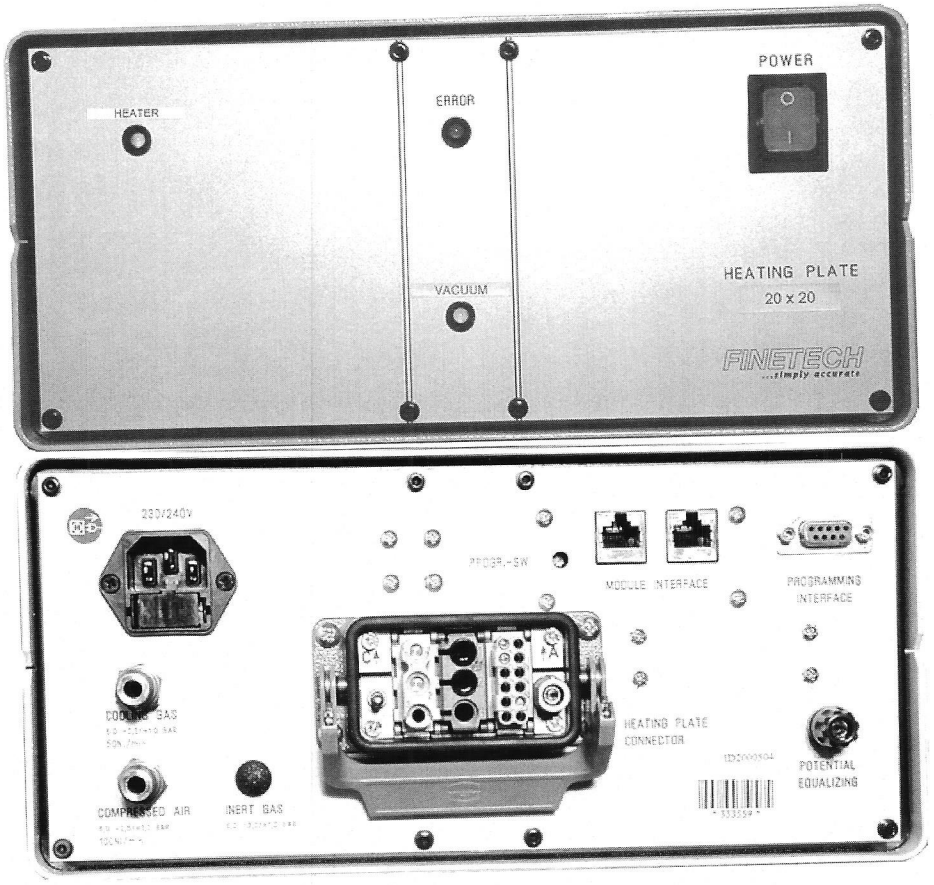


Fig. 7: Control Box FA 6, front and rear panel

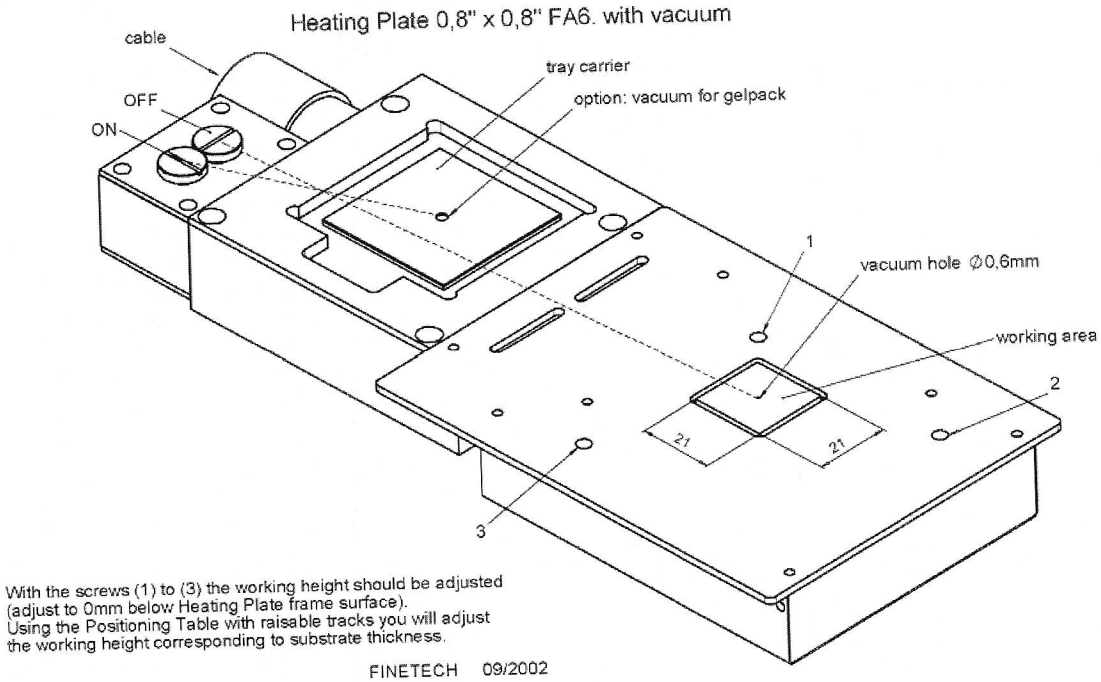
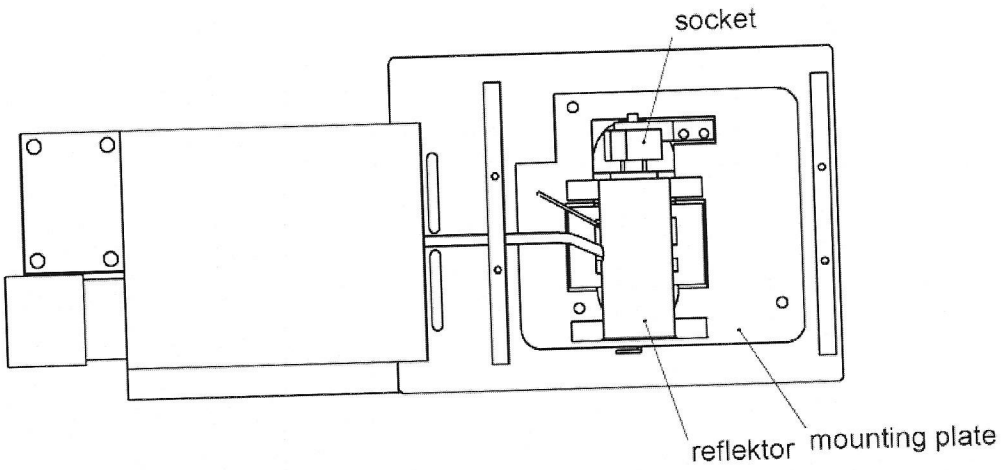


Fig. 8: Heating Plate FA 6, with optional vacuum holder

Heating Plate 0,8" x 0,8" FA6.
change of lamp (spare part #076)



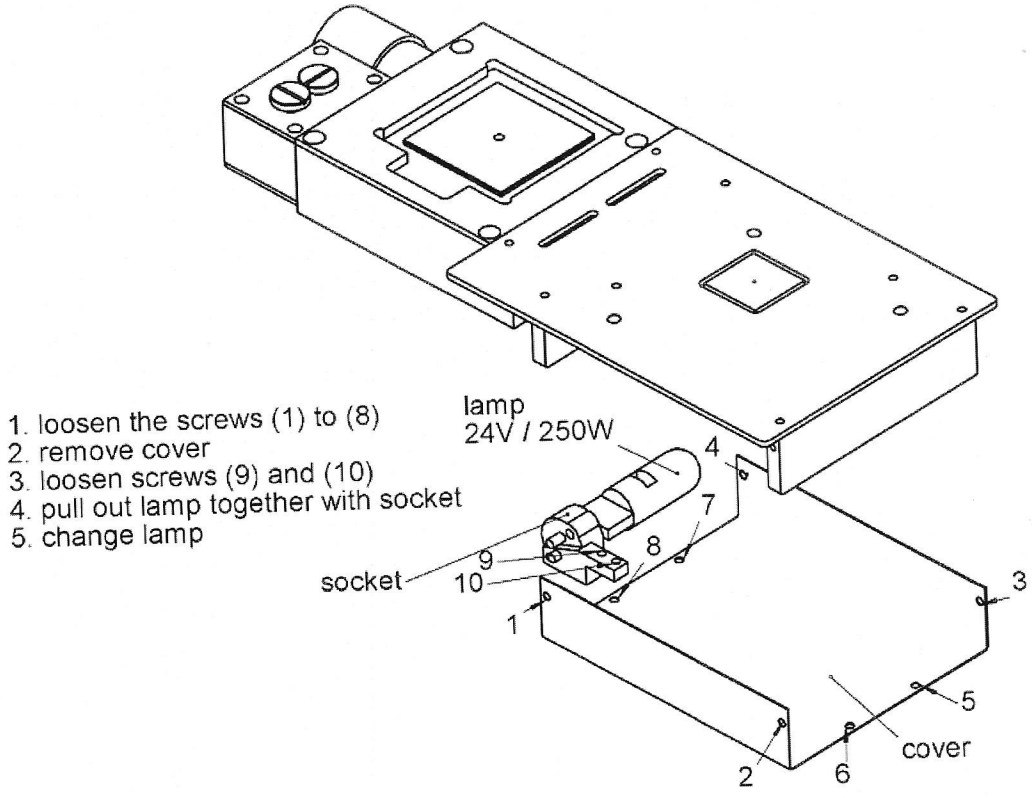


Fig. 9: Change of the halogen bulb, Heating Plate FA 6

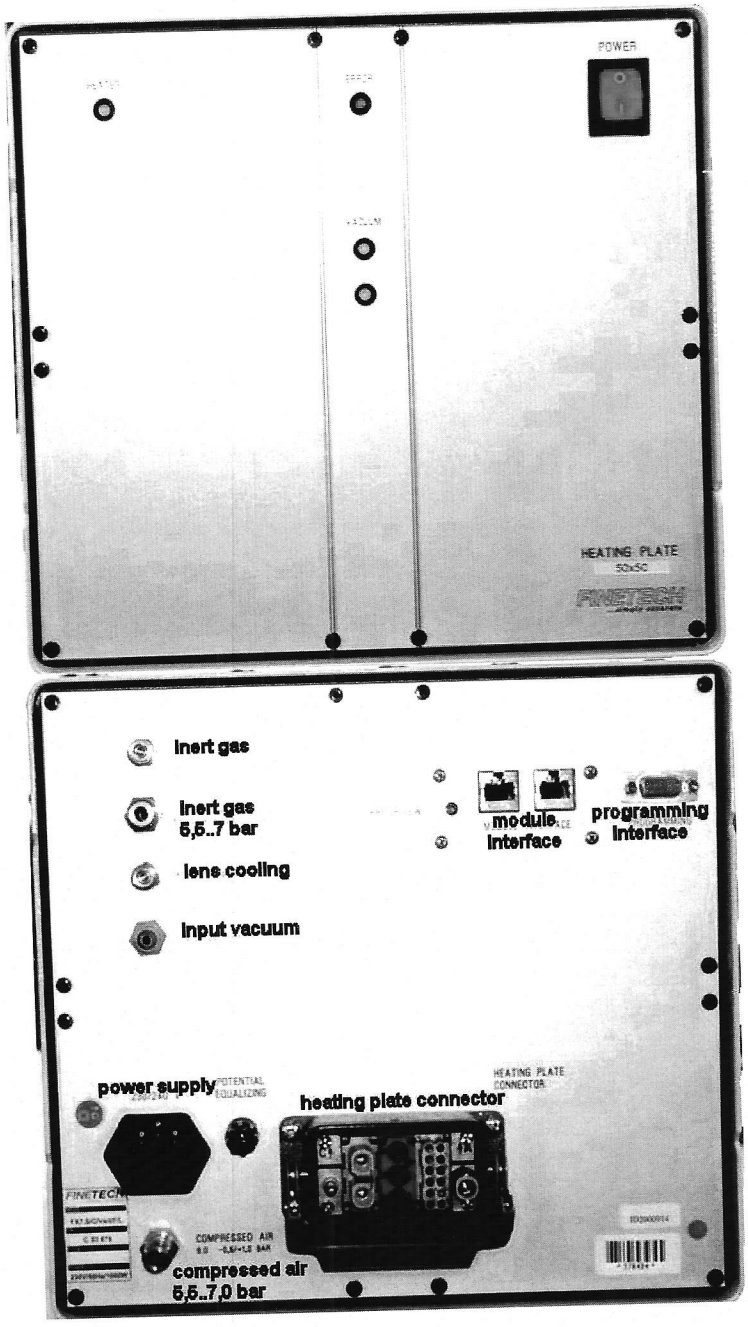
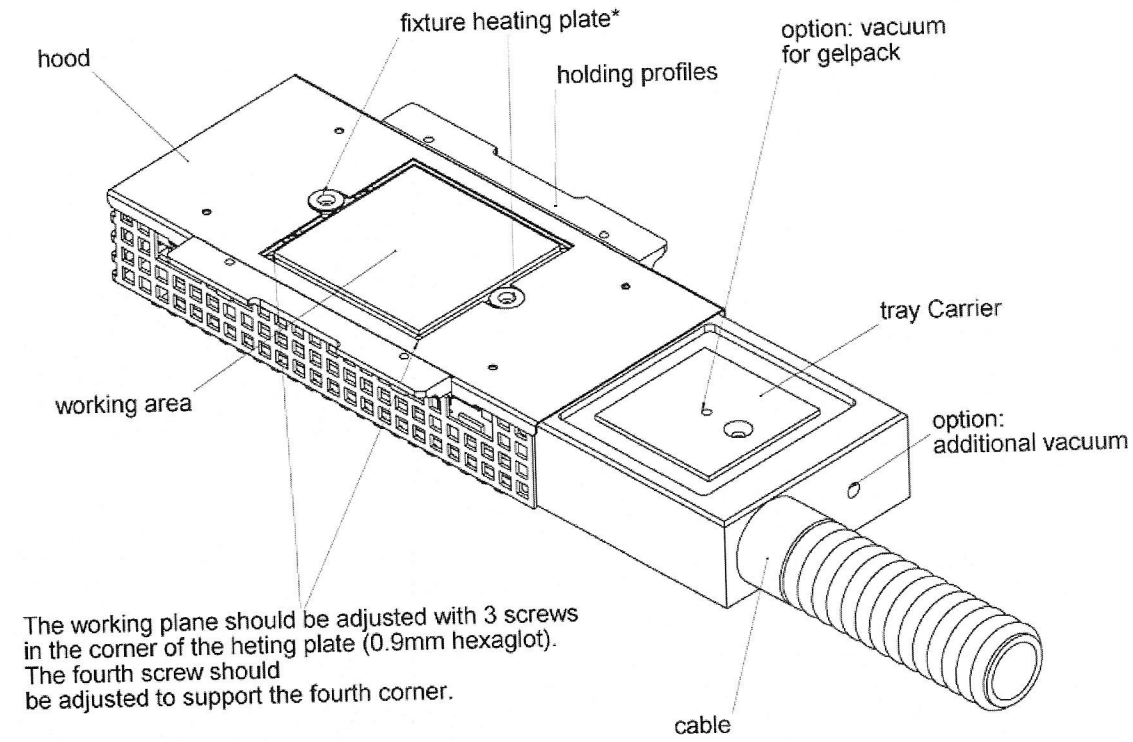


Fig 10:Control Box FA7C, front and rear panel



* pre-adjusted by Finetech.
Should be operated by trained personnel only

Fig 11: Heating Plate FA7C with vacuum holder for gel pack and additional vacuum

Heating Plate FA 7C
Change of lamp

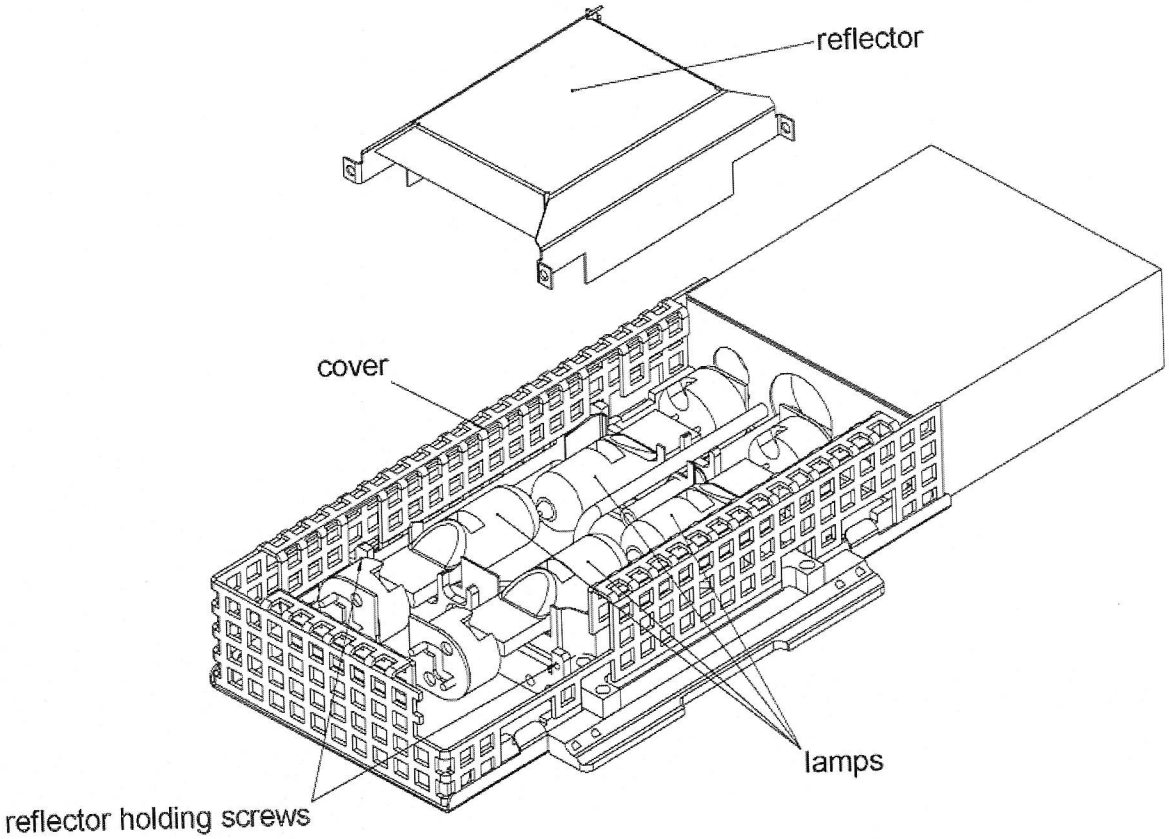


Fig.11: To change a lamp:

1. loosen the reflector holding screws
2. remove reflector
3. change lamp