

Weller®



WHA 3000V Hot Air Station

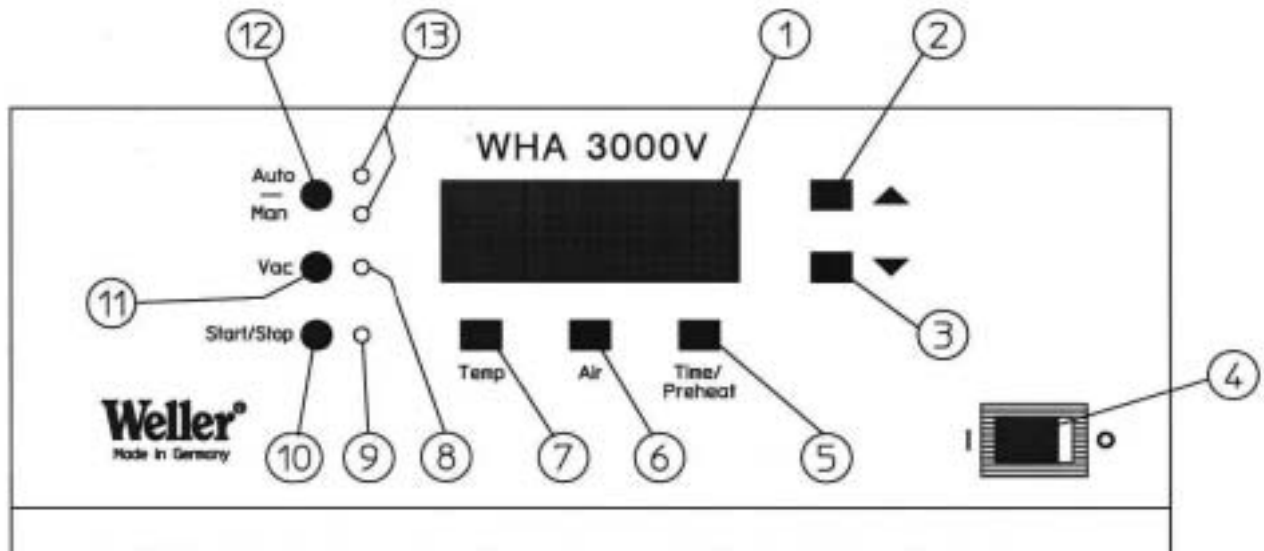
Operating Instructions

Version 1.1

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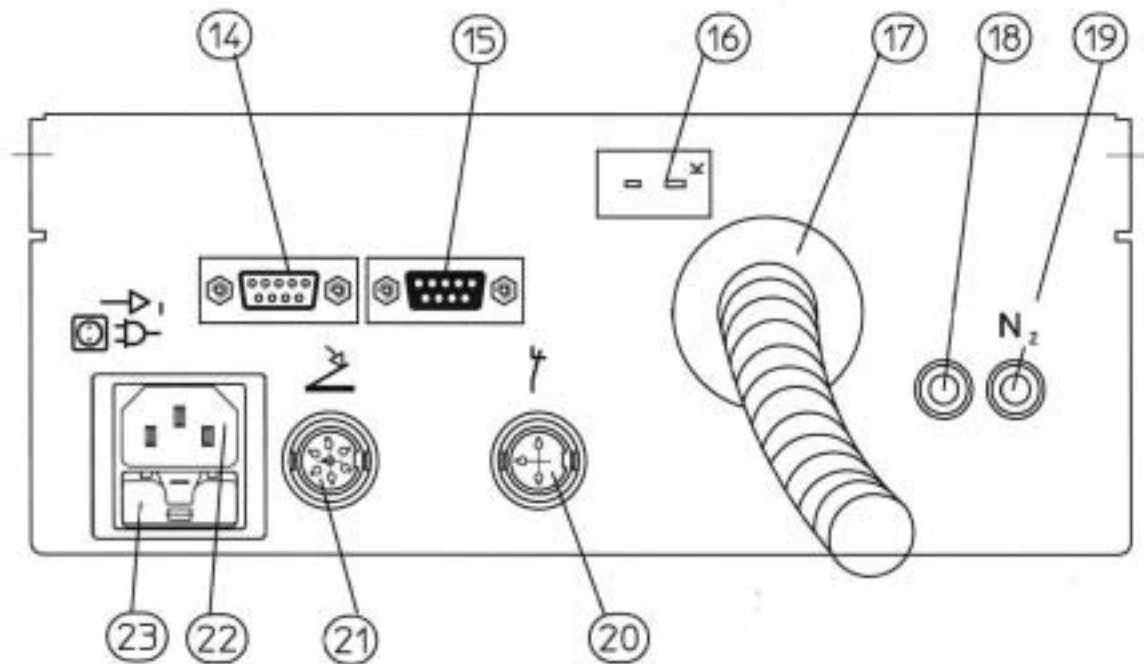
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Operating Instructions WHA3000V



Front view WHA3000V

- 1 LCD display
- 2 "UP" button
- 3 "DOWN" button
- 4 Mains switch
- 5 "TIME"/"PREHEAT" button (time specification auto. mode / preheating temperature)
- 6 "AIR" button (air volume)
- 7 "TEMP" button (hot air temperature)
- 8 LED display, vacuum
- 9 LED display START / STOP
- 10 "START / STOP" button
- 11 "VAC" button (activate vacuum)
- 12 "AUTO" – "MAN" button (changeover from automatic – manual operating mode)
- 13 LED display AUTO-MAN operating mode



Rear view WHA3000V

- 14 Connection WHP 3000 (bottom heater) interface RS232
- 15 PC interface RS232
- 16 Connection for external sensor (thermocouple type K)
- 17 Connecting hose for handpiece
- 18 Compressed air connection 400 – 600kPa
- 19 Nitrogen connection N₂ 400 – 600kPa
- 20 Switching holder connection
- 21 Connection for manual control panel; foot switch
- 22 Mains connection
- 23 Mains fuse

Thank you for placing your trust in our company by purchasing the **Weller Hot Air Station WHA 3000V**. Production was based on stringent quality requirements which guarantee the perfect operation of the device and allow you to achieve optimum soldering results. Please read these Operating Instructions carefully and the attached **safety instructions** prior to initial operation.

1. Description

The Hot Air Station WHA 3000V is designed for complex repair work on circuit boards with fine pitch components. A well designed tool concept makes top process security possible with user-friendly handling and technically mature detailed solutions. And an extensive range of unit accessories widens the possibilities for use of this repair station.

The hot air temperature of the handpiece can be adjusted within the range 50°C – 550°C. Through an external compressed air supply (or nitrogen N2 as an option), an adjustable air volume in the range from 10 l/min – 50 l/min is created. The hot air temperature and air volume are controlled digitally.

The vacuum required to raise the component is integrated in the nozzle system and can be activated according to the selected operating mode.

Two operating modes are available. The manual operating mode (**MAN**) allows hand-guided work with a set hot air temperature and air volume. Hot air and vacuum can be activated by means of the foot switch, the manual operating panel or directly at the control unit.

The automatic operating mode (**AUTO**) contains the program execution of a three-stage temperature-time profile, also in conjunction with the bottom heating WHP 3000 available as an accessory.

The parameters for hot air temperature, air volume, temperature of bottom heater and vacuum function can be adjusted individually and can be saved as a parameter set for the special application.

The repair station can also be supplemented with PCB-holder WBH 3000S tuned to the system for x-y alignment and a stand with z-axis guidance for the hot air handpiece.

Technical data

Dimensions (W x L x H)	: 240 (9.44) X 270 (10.63) X 101 (3,97) mm (inches)
Mains/line voltage	: 230 V (120 V) AC
Power input	: 475 W
Air volume	: 5 – 50 l/min.
Temperature range	: 50°C – 550°C
Accuracy	: + - 30°C (+ - 54°F)
Vacuum	: 0.6 bar
Compressed air connection	: 400 - 600 kPa
Main fusing	: 230 V / T3,15 A (120 V / T6,3 A)
Protection class	: 1 (control unit and handpiece hard grounded)

2. Commissioning

Place the handpiece with mounted hot air nozzle in the safety rest AKT 30. (Without the safety rest the unit cannot be operated.)

For operation of the WHA 3000V, clean, dry compressed air or, alternatively, nitrogen N₂ is required. The compressed air connections (18, 19) are on the rear side of the unit. For connection of the compressed air supply, a compressed air hose with an outside diameter of 6 mm, which is suitable for operating pressure, is required.

The nitrogen connection (19) serves to generate hot air.

The compressed air connection (18) serves to generate vacuum by means of a compressed air converter.

If a separate nitrogen supply is not used, the compressed air connections (18) and (19) can be linked to the Y-connector and supplied with normal compressed air.

Insert feed for safety rest in socket (20). Check that the mains voltage matches the specification on the nameplate. If the mains voltage is correct, connect the control unit to the mains. When the unit is switched on, the unit name "**WHA 3000**" appears briefly as well as the software "**Version**". Following this, the electronics system switches automatically into basic setting (manual operating mode).

2.1 Manual operating mode

Shown in display (1)

	TEMP	AIR	PREHEAT
	350 °C	25 l	OFF

Factory setting

↑
Nozzle
temp.
in °C

↑
Air
throughput
in l/min

↑
Preheating
nozzle
ON/OFF

In manual operating mode, the parameters for nozzle temperature, air throughput and cutting in/out of nozzle preheating can be determined.

Selection of parameters by pressing button:

- **TEMP** (7) : Nozzle temperature in °C
- **AIR** (6) : Air throughput in l/min
- **TIME/ PREHEAT** (5) : Switching **ON/OFF** nozzle preheating (standby) at 200°C with 5 l/min

Following selection, the setting values can be altered with the buttons **UP** (2) or **DOWN** (3). If the buttons are held in, you can fast scroll through the values.

The hot air and nozzle vacuum can be activated as follows:

Directly at the control unit: hot air button **START/STOP** (10), vacuum button **VAC** (11)

or with the optional accessories:

2-stage foot switch (21): hot air stage 1, vacuum stage 2
(hot air and vacuum are only active when pressed in)

Manual control panel (21): hot air button **AIR**, vacuum button **VAC**

When the handpiece is placed in the safety rest, hot air is switched off by an integrated contact. If the nozzle preheating (PREHEAT ON) is activated, the unit switches to standby mode with reduced temperature and air flow rate.

2.2 Automatic operating mode

The automatic operating mode contains the sequence of a three-stage temperature-time profile.

The temperature-time profile can be extended by connecting an optional bottom heater (WHP 3000). When the WHP 3000 is connected via the RS232 interface (14), the bottom heater is integrated in the temperature-time profile.

The temperature profile comprises the following three stages:

Preheating phase system	stage 1 (is ended with an acoustic signal)
Preheating phase component	stage 2
Reflow process (soldering)	stage 3

The soldering process is usually started with the hot air nozzle raised. An acoustic signal sounds at the end of stage 1, following which the nozzle above the component should be moved into soldering position.

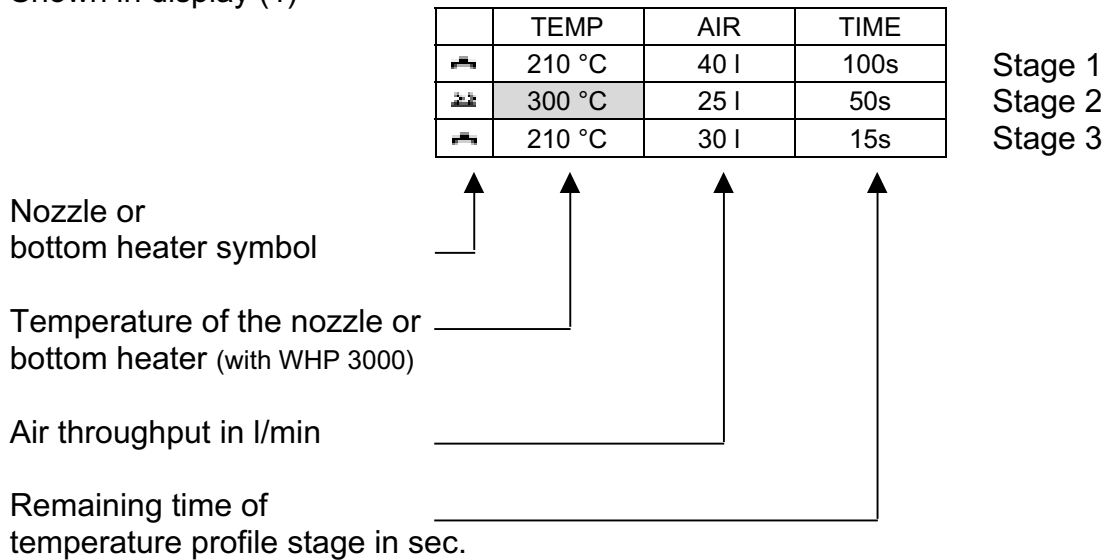
To define a customer-specific temperature-time profile, the following presetting must be made at control unit WHA 3000P.

Settings stage1 – stage3

Nozzle temperature	50°C – 550°C
Temperature of bottom heater	50°C – 400°C (optional with WHP 3000)
Air throughput	5 l/min – 50 l/min
Time of program stage	0 sec. – 999 sec.

By actuating the **AUTO/MAN** button, automatic operating mode can be selected. The LEDs (13) signal the respective operating status.

Shown in display (1)



2.3 Setting temperature profile

Selection of parameters by pressing button:

- **TEMP (7):** Press 1 X: nozzle temperature in 1st stage
 Press 2 X: temperature of bottom heater in 1st stage
(only with WHP 3000)
 ↓ Stage 1-3

In each case, the symbol for nozzle or bottom heater indicates which temperature value is in the display.

- **AIR (6):** Press 1 X: air throughput in l/min in the 1st stage
 ↓ Stage 1-3

- **TIME/ PREHEAT (5):** Press 1 X: remaining time in the 1st stage
 ↓ Stage 1-3

The active value in each case is marked in the display and can be altered with the UP / DOWN (2) / (3) buttons. If the buttons are held in, you can fast scroll through the values.

2.4 Starting program execution

The soldering process, and thus execution of the 3-stage temperature-time profile, is started:

Directly at the control unit: **START/STOP** button (10), **LED** (9) lights up

or with the optional accessories:

2-stage foot switch (21): **START/STOP** corresponds to stage 1 of the foot switch
(hot air and vacuum are only active when pressed in)

Manual control panel (21): **START/STOP** with the **AIR** button

The display (1) shows nozzle temperature, air throughput and the remaining time. The active program step in each case is marked in the display.

When the handpiece is placed in the safety rest, program execution is interrupted and the hot air is switched off by an integrated contact. If the nozzle preheating (PREHEAT ON) is activated, the unit switches to standby mode with reduced temperature and air flow rate.

2.5 Control of the vacuum function

Activation of the nozzle vacuum for raising the SMD components is by pressing the **VAC** button (11). **LED** (8) lights up.

If the **VAC** button (11) is pressed before the start of a desoldering process, the vacuum integrated in the nozzle is activated automatically at the end of the process. The vacuum function can also be switched on and off at any time during the soldering process. If the vacuum is started manually when soldering is in progress, the automatic activation at the end of the process is omitted.

With the optional accessories, the nozzle vacuum can be activated by means of:

2-stage foot switch (21): Vacuum corresponds to stage 2 of the foot switch

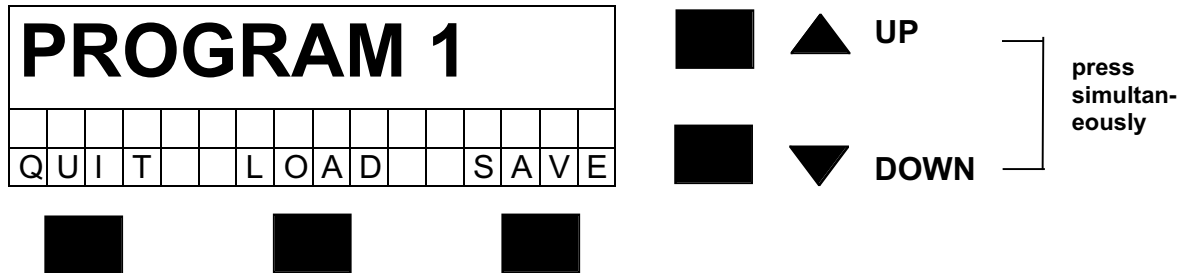
Manual control panel (21): Vacuum with the **VAC** button

Note: For reasons of safety, if the nozzle temperature is above 250°C the vacuum is switched off automatically after 90 sec.

2.6 Saving and loading temperature-time profiles

A total of 10 temperature-time profiles can be saved. The 10 program positions are provided with a standard profile ex works.

Press **UP/DOWN** buttons (2)/(3) simultaneously until the following menu appears in the display (1):



With the **UP/DOWN** buttons (2)/(3), program positions 1 –10 can be selected.

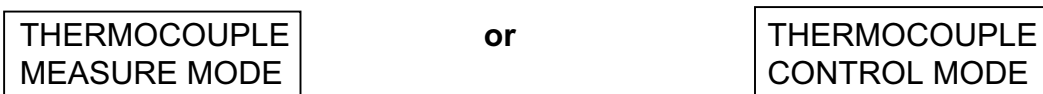
Press the **LOAD** button (6) to load the selected program.
The display changes to automatic mode and shows the selected parameters.

If a temperature-time profile was created, it can be saved by pressing the **SAVE** button (5) in the selected program position.

By pressing the **QUIT** button (7), this menu can be exited again without making any changes.

3. External sensor

When using an external sensor (jacket thermocouple of type K), two different operating modes are available. By pressing the button "**TIME**" / "**PREHEAT**" (5) when switching on the unit (4), you can toggle between the operating modes "**MEASURE MODE**" and "**CONTROL MODE**". The following appears briefly in the display (1):




Both operating modes only become active once the external sensor (16) has been connected.

3.1 External sensor with measuring function "MEASURE MODE" (set ex works)

In this operating mode, the external sensor only has a measuring function. The temperature of the external sensor is shown in the display (1). The temperature control regulates the setpoint value for the nozzle temperature.

External sensor active in "MEASURE MODE"



	TEMP ❖	AIR	PREHEAT
	250 °C	25 l	OFF


3.2 TEACH IN procedure

During the sequence of an automatic temperature-time profile, it is possible to continue switching the process stages 1-3 manually by pressing the button "TIME" / "PREHEAT" (5). If the external sensor is suitably positioned on the assembly or component, its temperature can be monitored during the entire process sequence and can be continued to be switched when the desired specified temperatures (stage 1-3) have been reached. The times determined in this manner are shown after the soldering or desoldering process in the display (1) and can be saved.

3.3 External sensor with control function "CONTROL MODE"

The temperature of the external sensor is controlled in this operating mode. The external sensor records the actual value (control variable) for the temperature control. The setting for the setpoint value at the unit must therefore be adapted to the measured temperature (actual value) of the external sensor. The actual value of the external sensor is shown in the display (1).

External sensor active in "CONTROL MODE"



	TEMP ❖	AIR	PREHEAT
	250 °C	25 l	OFF

A basic prerequisite for faultless application is correct contact of the sensor on the assembly or component.

4. Lock function (interlock)

By inserting / removing a coding plug at the socket (21), the unit can be locked. The currently set solder parameters can no longer be altered. The unit can now only be operated via the **START/STOP** (10) and **VAC** (11) buttons.

5. Interface RS232

With additional software, all of the unit's functions can be operated via the RS232 interface (15).

6. Operating guidelines

The hot air nozzle is designed so that the vacuum plate is seated flatly on the component. The vacuum plate also has a heat transfer function. If the vacuum is switched on, the component can be raised after the solder has melted. When doing this, it is important to preheat the vacuum plate to operating temperature prior to desoldering. As an alternative to the vacuum plate, an elastic suction insert can be used.

Nozzle change

Caution: Risk of injury through burning! When the unit is switched off, or after removal of the hot air nozzle, these parts are still hot for a certain period

The hot air nozzles are secured by a clamping screw to the heating element. Release the clamping screw to change the nozzle and withdraw the hot air nozzle with the nozzle exchange tool.

Use of nitrogen

The use of nitrogen N₂ reduces oxidation and the flux is active for a longer period. Nitrogen is available in steel cylinders at regular trade outlets. The cylinder must be equipped with a pressure reducer 0 – 10 bar.

Caution!: Ensure adequate room ventilation when using nitrogen.

7. Fault messages

Fault	Description	Correction
ERROR 75	Offset input incorrect during heating element change	Repeat procedure
ERROR 76	Heating element defective	Change heating element
ERROR 110	WHP 3000 housing temperature exceeded	Allow time to cool
REMOTE	Input blocked (only PC operation possible)	Operation with PC
LOCKED	WHA locked (Lock function)	Unlock WHA
TOOL STAND	Rest or tripod not connected	Connect socket (20)

8. Accessories

For nozzle range, see p. 14

0053119099	External sensor, type K Ø 0.5 mm
0058736780	Manual control panel
0058757770	Foot switch
0051504899	Multiple rest for hot air nozzles
0053119199	Interface cable
0053316299	WBH 3000 PCB holder
0053316399	WBH 3000S PCB holder with tripod WHA 3000
0053338699	WHP 3000 Bottom heater

9. Scope of delivery

Control unit with handpiece

Safety rest

Nozzle exchange tool

Coding plug

Y-connector

Compressed air hose

Small tools

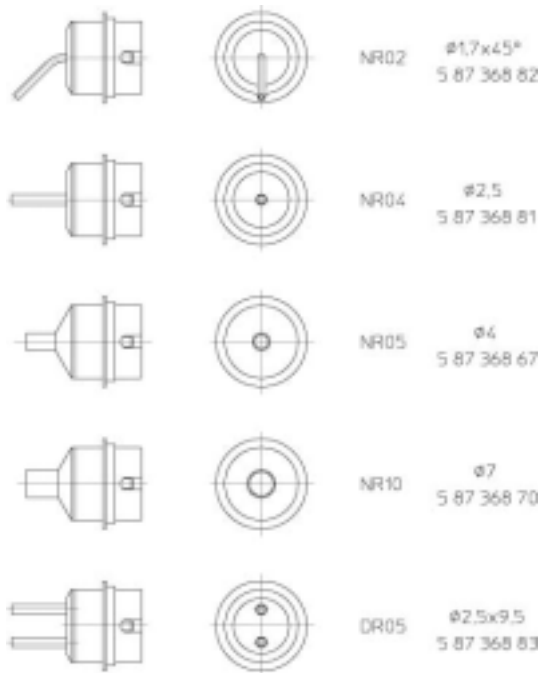
Hot air nozzle

Mains power cable

CD Operating Instructions and Safety Instructions

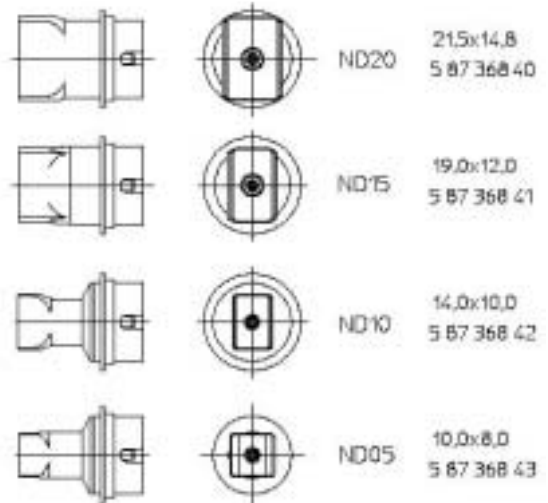
10. Hot Air Nozzles

Round Nozzles

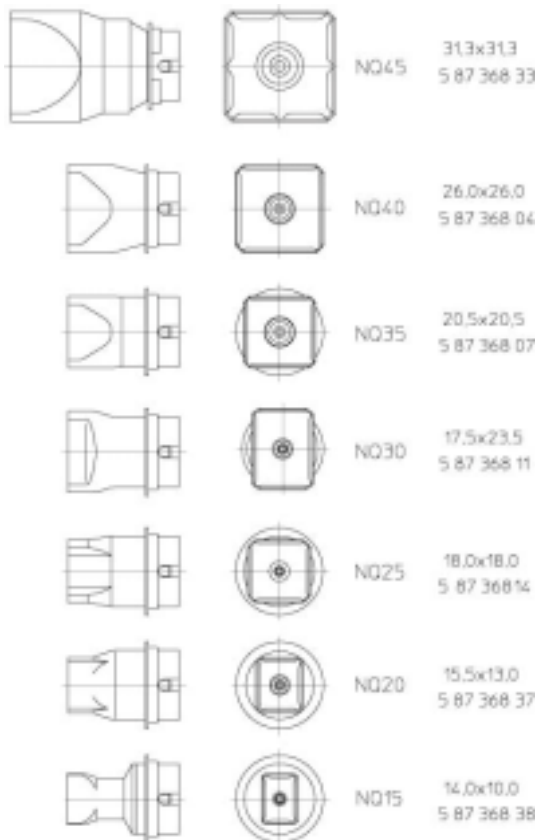


409R04-05

Hot air nozzles 2-sides heated (Type ND)



Hot air nozzles 4-sides heated (Type NQ)



409R04-A-2

Measuring nozzle 005 87 368 75



005 87 368 39 NQT Hot air nozzle 22,0 x 22,0 mm
 005 87 368 41 NQT10 Hot air nozzle 14,8 x 14,8 mm
 005 87 368 42 NQT25 Hot air nozzle 18,0 x 18,0 mm
 005 87 368 43 NQT Hot air nozzle 16,0 x 16,0 mm