



DEN-ON INSTRUMENTS CO., LTD.



# RD-500V

2019

*All-IN-ONE Advanced Technology SMT Rework Station  
Compatible For The Rework Of All Different Types Of SMT Components  
Compact & Stable, Designed for 7d/24h Shifts*

## SMT REWORK SYSTEM

# RD-500SV

2019



**ESD  
SAFE**

# Multi -Functional Profiles - Easy Editing

## Managing and Editing Your Profiles Easily

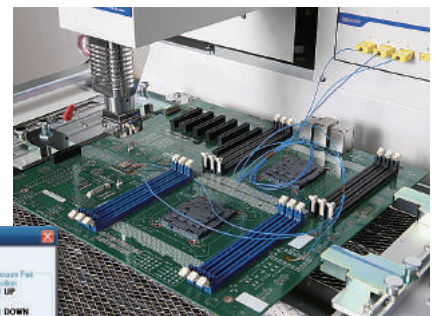
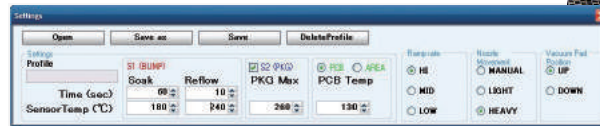
You can control the temperature from the basic 5 zones up to a maximum of 30 zones, in whichever way you want. This way you can freely produce a very detailed temperature curve.

In addition to this temperature management , you can easily edit the equipment's mechanical operations per zone, ie. heater, pickup tube height settings , audible alarms, etc...

	Preheat	Ramp1	Soak	Ramp2	Reflow	ADD	ADD	ADD
▶ Time sec	67	45	60	41	10	3	5	20
Temp Top °C	130	250	190	340	270	0	0	270
Temp Btm °C	200	280	280	430	450	450	450	450
Temp Area °C	450	450	450	450	450	450	450	450
Position Nozzle	-1.3	-1.3	-1.3	-1.2	-5.0	80.0	80.0	-5.0
Engage Nozzle	Invalid	Invalid	Invalid	Invalid	LIGHT	LIGHT	LIGHT	LIGHT
Posi Vacuum Pad	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN
Activate Suction	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF

## Three-Point Auto-Profiling

Create a profile automatically by targeting preset values for the following, solder paste, device surface, and circuit board surface. With this feature all of the heaters during the "learning mode" will be regulated automatically to achieve the desired preset values.

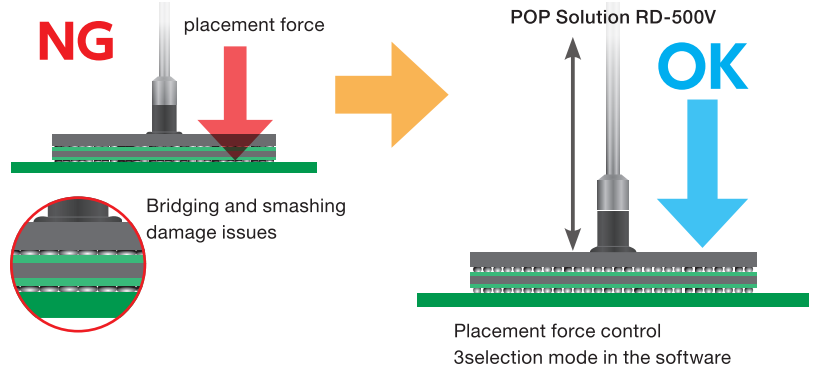


## One click advanced settings are supported in Easy Selection mode

Components like QFN, QFP and others have a movement phenomena that occasionally occurs due to flux activation which could cause misalignment or skewing of the part during this stage of the heating cycle.

These variations in position make it necessary to add a certain amount downward pressure or force to the components. Also in order to perform operations of multiple steps for the removal of certain components like POP it becomes necessary to repeat the movement of the Z axis. In the advanced settings mode it is possible to configure these movements per zone.

### Ex: Issue with POP



## Managing the equipment through the Login Mode

Engineer mode: Create or modify a profile  
 Operator mode: Performs tasks created by the engineer  
 \*Engineer Mode and Operator Mode Can Be Setup With Password Protection

**RD-500V • RD-500SV**  
**Advanced SMT Rework Station**

# Wide support to industrial large-scale and small-scale circuit boards, including 01005 components



**RD-500V**

Maximum PCB size 500 mm x 700 mm



**RD-500SV**

Maximum PCB size 400 mm x 420 mm

✳️ **RD-500VL** is available for larger boards solutions

## A strong support for the rework of < 01005 devices

The soldering of delicate parts is a very difficult procedure, limited to specific workers.

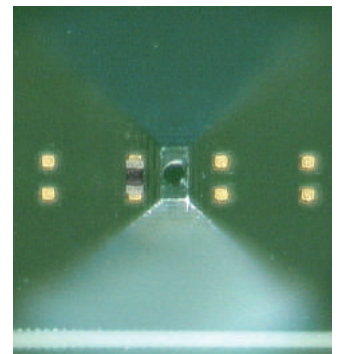
It is also necessary to suppress the effects of heat on the surrounding areas.

We have made the solution of such problems possible with the application of this equipment.

We have determined that using conductive heating method more efficient through the heat-conduction system, and that it also allows for an operation with optimal suppression of the effects of heat on surrounding components.

We have also developed nozzles for the smallest of components, and the results of its inspection showed that when detaching a target component, we have successfully managed to keep the temperature in an area 1 mm around said component below lead free melting points.

This has allowed for the reworking of a targeted area without compromising the soldering of nearby components.



### ✳️ **Two Mega Pixels Full HD Camera with a 19 Inch LCD Display For Easy Visual Alignment**

By using a high-vision camera with 2mega pixels and capacity for a 120x zoom, you will be able to clearly identify patterns and the alignment of its components, as well as the smallest components.

It is also possible to have an HD output if you choose to connect it to an HD monitor.

\* Compatible with the options at the time of order

### ✳️ **Ten Times improved Sampling Accuracy Temperature Control**

The RD-500V/SV samples the data in very small intervals of 0.1 sec, allowing for a very accurate temperature control.

### ✳️ **Built in high power, high response heaters**

It is equipped with powerful 1000W heaters on both the top and bottom, and the area heater has six 600W IR heaters, which build up heat very quickly.

Each heater can operate at high output rates and respond quickly, so that the desired temperature is reached immediately.

Moreover, it only requires retaining warmth when executing a profile, which allows for a reduction of energy usage when in stand-by mode.

### ✳️ **Two Pressure sensors**

When installing or detaching a component, the height reading changes with the thickness of the component itself. When the pickup tube makes contact with the device it will automatically calculate the height and the pressure will automatically be used from a selected rate in the software.

### ✳️ **Non-Contact Cleaning -Auto High Sensing Control**

There is a risk that when cleaning a site that adjacent components or lands can be damaged by conventional solder iron and wick cleaning, this is very dependent on the skill of the individual personnel performing the cleaning.

In order to solve this problem, the optional cleaning nozzle can be used together with the side-view camera to remove the solder without any contact, and to assist in later installations.

### ✳️ **Control of the Z-axis**

For controlling of the subtle changes in height of the part to the nozzle during heating, the system uses a lead screw with programmable motors to insure that the height and pressure stay at a constant and saves automatically any changes during the process.

Adding further to the value input through the software, the height value of a sensible manual operation is numerically converted and automatically saved.

### ✳️ **Machine Matching Capability**

It is possible to share and transfer profile data between multiple machines with the same configuration and under similar conditions.

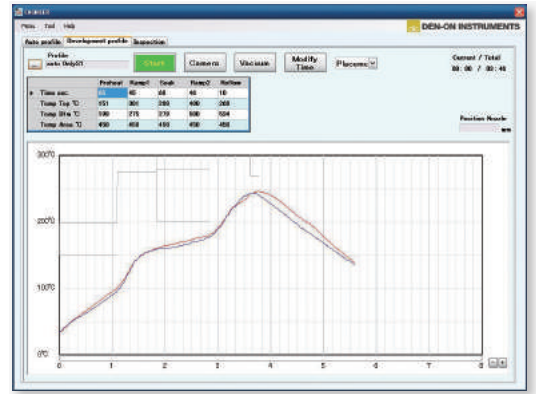
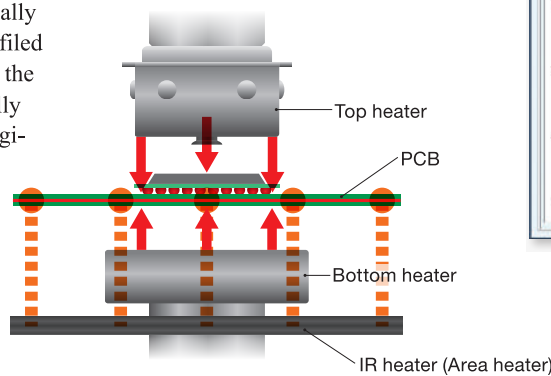
### ✳️ **On the fly profile programming**

Allow to modify the profile time within a zone, while the profile is running.

This is time saving for the engineer to help create the most accurate profile on the fly.

# High Performance Three Point Heating

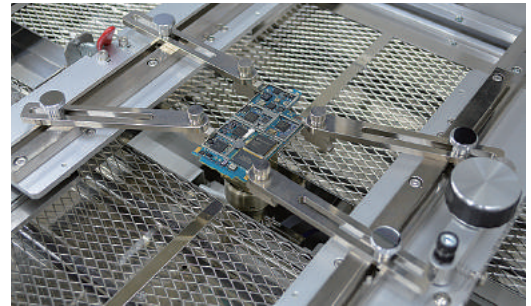
This device is equipped with a time saving function called Auto-Profiling which assist the user in creating profiles in easy manner. It is initiated in the software which controls the functions of three independent heaters on the machine. The three heaters which are two localized hot gas heaters, and a area array IR heater are controlled through thermocouples strategically located on the PCB being profiled which gathers the data during the heating cycle and automatically process the profile that the engineer has created.



## From large to small-scale a versatile circuit board holder

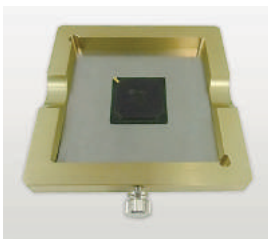
Using its slide-clamp system, it can freely adjust the insert point, and hold a very reliable grip while avoiding other components such as connectors and sockets.

Moreover, you can use additional clamp holders to stabilize thick and heavy circuit boards and perform any operation.

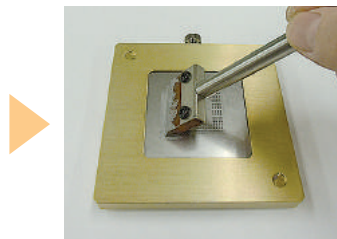


## Easy Operating, CPS - Component Print Station, and AFD - Auto Flux Dipping

Using the enclosed solder printing tool, you can print solder paste directly into any device's solder ball. (Since it's configured for a multitude of applications, it is possible to operate with many components by simply changing the component's metal mask) Furthermore, the solder's release property changes for every user. Since the device always picks it up with a different, specific speed, it is possible to achieve satisfactory results with each use.



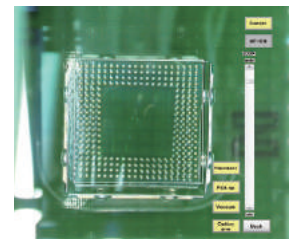
Align with the metal mask's component external line, insert the device, and cover.



Turn the solder printing tool inside out and print the cream solder on the device.



Place the CPS or AFD on the optic arm, press start and it will automatically pick the part from the tool, this automation prevents any smearing of the paste or the flux.



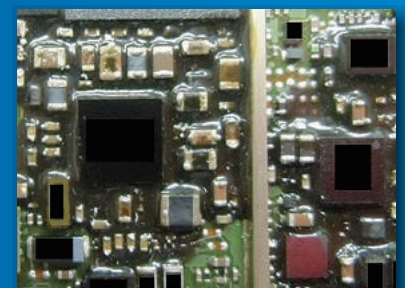
Display on a high-vision screen and align the PCB and the device.

## Flexible support also for components with underfill

In recent years, the demand for smartphones and tablets has been growing steadily, and an application of underfill is the natural step to take. Rework operations in those components coated with underfill are time-consuming, if compared to the usual SMT components.

The most important part in a series of operations is removing the component while applying heat to it. In the removal process, the device's adsorption is eclipsed by the viscosity of the underfill. Therefore the removal becomes a challenge, and it is necessary to use an instrument such as tweezers and perform it with a rapid hand movement.

Using the RD-500V's Underfill Mode, everything from the heating to the position of the head parts is adjusted automatically. Therefore the device performs every operation automatically, except the removal of parts.



# Safety Features

RD-500V has unique safety features, it will run safely and simple.

## Initial check feature

When you supply the equipment with power, you can check all the drive sensors, heating functions and the current status of the air supplies. In case some problem occurs, the software displays an error message and the device's operation will be suspended.

## Air flow sensor

If the air supply is cut off then the operation of the device will automatically stop.

## Heater overload sensors

Each of the Hot Air Heaters has a Thermo-protector attached to the outside of the unit. It is there to sense if heater goes into an out of control overheat condition. If this happens, then the Thermo-protector would sense the heat from the outside of the heater and cut off the power going into the heater then the machine will stop automatically.

## Anti-malfunction Sensor

If for some reason the heating exceeds a specified limit, the equipment will stop operating automatically.

## Top heater unit has separate detection function

When the top heater descends, in case there is an increase in pressure above specified limits, the heater arm will be detached and the descent will be halted.

## Optic components running on low power

The optics mechanical arm operates on very low torque which can be stopped on the touch of a finger, therefore it is safe to touch it even when the equipment is being operated.

## Security Check

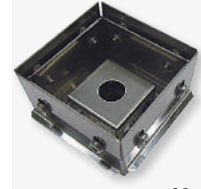
Since everything is password-protected by the Login Mode, there is no risk of changing a profile's configurations or deleting a profile by mistake. Furthermore, since the scope of the program's possible usage is limited by the Login Mode, you can perform your work without complications.

# Standard Nozzle



Nozzle without Adjustable Walls

Part #	Size in mm (Inside Dimension)
BNZ-07	7x7
BNZ-09	9x9
BNZ-13	13x13
BNZ-15	15x15



Nozzle with Adjustable Walls

Part #	Size in mm (Inside Dimension)
BNZ-18	18x18
BNZ-20	20x20
BNZ-22	22x22
BNZ-24	24x24
BNZ-26	26x26
BNZ-28	28x28
BNZ-30	30x30
BNZ-32	32x32
BNZ-35	35x35
BNZ-37	37x37
BNZ-39	39x39
BNZ-44	44x44
BNZ-49	49x49
BNZ-52	52x52

# Accessories

- Controller (PC-500V)
- LCD Display
- Two bottom heater nozzle (large and small)
- Pick-up suction pad
- Thermo Couple K-Type (5Pieces)
- BP-500 Solder printing jig (Less stencil)
- Squeegee

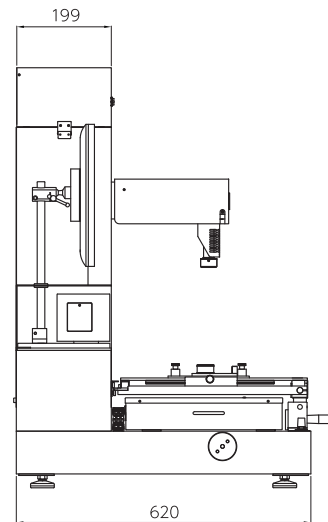
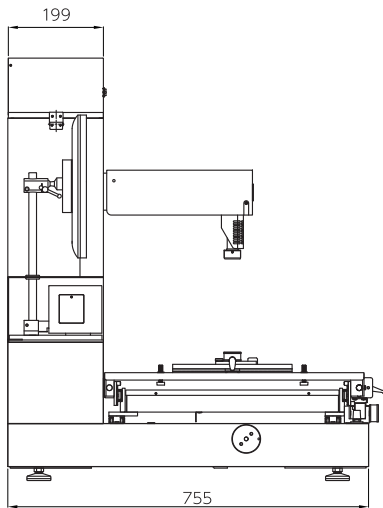
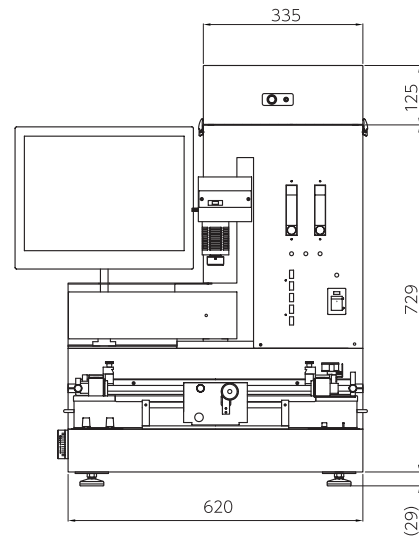
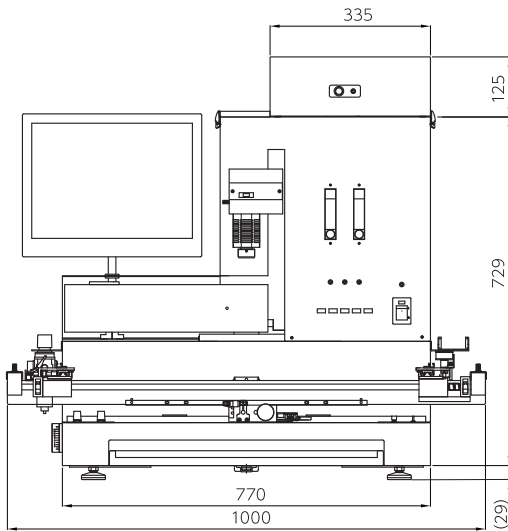
# Options

Multi Parts Holder	Odd size/shape PCB Holder	One Touch Universal XY Board Support	Passive Components Tip Nozzle(01005)	Contactless Site Cleaning Nozzle	Stencils
Reball Kit	Dipping Jig	Side View Camera	01005 Feeder	Non Contact IR Sensor	Maintenance software

**All-IN-ONE High Performance Rework Station**  
**Capable of Reworking 01005 components on Flex Circuits to**  
**Heavy thick 50 Layer Probe Cards**

**RD-500V**

**RD-500SV**



500 x 700 mm(28" x20")	Maximum board size	400 x 420 mm(16" x17")
01005(0402 mm) or more '1	Device size range	01005(0402 mm) or more '1
±0.015 mm	Placement Accuracy	±0.015 mm
AC200-240V 5.6kW	Electrical Requirement	AC200-240V 4.0kW
1000 W	Top Hot Air Heater	1000 W
1000 W	Bottom Hot Air Heater	1000 W
600 W x 6 IR 3600W	Area Heater	500 W x 4 IR 2000W
0 to 650°C	Temp setting range	0 to 650°C
Dedicated controller(PC-500Va)	Operating System	Dedicated controller(PC-500Va)
19 inches LCD	Monitor	17 inches LCD
770W x 755D x 883H mm (30.31"W x 30.518"D x 34.76"H)	External dimensions	620W x 620D x 883H mm (24.4"W x 24.4"D x 34.76"H)
100 kg (220.46 LBs)	Machine Weight	70 kg (154.32 LBs)
0.6 MPa 110 L/min (90 PSIG)	Air Requirements	0.6 MPa 110 L/min (90 PSIG)

\*1: Custom nozzles are available



**DEN-ON INSTRUMENTS CO., LTD.**

1-26-10, SEKIMACHI HIGASHI, NERIMA-KU, TOKYO 177-0052, JAPAN  
 TEL.[81]-3-3929-6000 FAX.[81]-3-3929-7441  
 Email: rework@denondic.co.jp

[www.denondic.co.jp](http://www.denondic.co.jp)