



Pulsed Solder HotBar Category

Company Profile

Shenzhen Jiemai Precision Automation Co., Ltd. was formed from 2003. It is a service provider integrating research and development, manufacturing, and sales on customized machine of pulse soldering & hot pressing, hot melting, normal pressing, and bonding for 3C electronic products such as Bluetooth headsets, cell phones, smart watches, tablets and so on.

After nearly 20 years of development, the company has cultivated a group of experienced and innovative senior engineers, and has a pre-sales, in-sales, and after-sales service team with excellent business quality, willing to provide you with Professional technology consultation, technical support, training, and other services.

Shenzhen Jiemai Precision Automation Co., Ltd. always adheres to the product concept of high reliability, high quality, and high performance, and continues to reduce costs and improve production quality and efficiency for customers!

Pulsed solder hot pressing process introduction

Pulse hot pressure welding is also called Haba welding, and it is also called HotBar machine in the industry. The working principle is to load a certain pulse voltage in the hot press head, hot press hair hot, and the connected object will heat up, when the temperature rises to the melting point of the solder (that is, after rising to the preset temperature).

Generally speaking, the welding appearance is easy to appear inconsistent and uneven when using the soldering iron for welding. The

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pulse hot press is different from the constant temperature soldering iron, the pulse hot press can reach the desired temperature at the moment of power. And once the welding head is not voltage at both ends, the room temperature can be reached instantly.

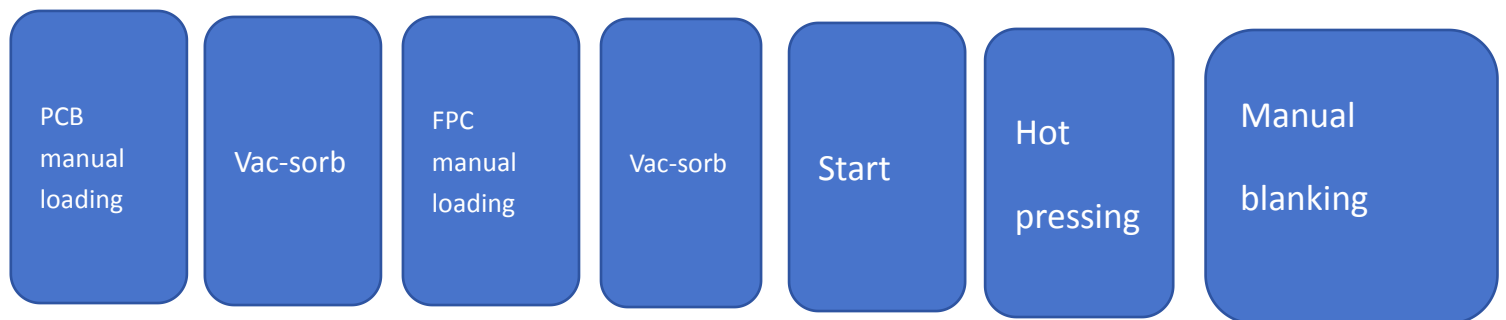
And the welding head is flat, so the appearance of the welded out is flat and consistent, and there is rarely bad welding. The tin between the connected objects is melted and connected together, which is widely used in high-density FPC/FFC and PCB/LCD crimping and touch screen production process and equipment.




There are two main ways of tinning PCB pads

1. First print the solder paste on the solder pad of the circuit board (PCB), melt the solder paste and weld it on the circuit board in advance after the welding furnace, then place the solder on the circuit board already printed with the solder paste, and then use the heat of the hot indenter to melt the solder and connect the two electronic components that need to be connected.



2.The solder pad on the circuit board is not pre-tin or not good pre-tin, directly through the solder paste point on the solder pad or wire to be connected, FPC, etc., and then directly welding through the hot press head, because the heat of the hot press head is directly acting on the solder paste, the solder paste is instantaneously heated, need to use anti-splash solder paste to meet the requirements.



Hot Bar Pulse Machines Comparison			
Description	M-1220P Online Automatic Hot Bar Pressure Welding Machine	M-1224P Single-track Automatic Hot Bar Pressure Welding Machine	M-760P Fully Automated Testing Hot Bar Pressure Welding Machine
Picture			
Size (L*W*H mm)	1400*1250*1800	2000*1400*1800	5525*1500*1900 (不含三色灯高度)
Weight(kg)	About 1080	About 2000	About 2500
Use for	Used for FPC soldering process of 3C electronic products	Used for FPC soldering process of 3C electronic products	Suitable for LED light panels, testing, soldering flux, pressure welding
Hot head material	Titanium alloy Molybdenum alloy	Titanium alloy Molybdenum alloy	Titanium alloy
Hot head size	customization	customization	L150*W3mm (customization)
Flatness of hot pressing head water	≤0.005mm	≤0.005mm	≤0.05mm
Operation mode of hot head	Servo motor	Servo motor	X-axis servo motor+module Z-axis SMC cylinder
Flatness adjustment of hot pressing head water	Add steel balls between two components and fix them with screws for adjustment.	Add steel balls between two components and fix them with screws for adjustment.	Add steel balls between two components and fix them with screws for adjustment.
Thermocouple model number	K type	K type	K type
Number of hot head	2	4	6
Number of CCD	2	4	6



counterpoint lenses			
Number of visual inspection shots	2	1	4
Fixture fixing mode	Multiple positioning columns with magnets	Multiple positioning columns with magnets	Multiple positioning columns with magnets
Fixture operation mode	Rail type assembly line	Rail type assembly line	Rail type assembly line
Load jig quantity	5	7	9
Handling of defective products	Manipulator gripping	Manipulator gripping	Manipulator gripping
Running pipeline track spacing	70-200mm	70-200mm	70-200mm
Work platform size	200*80 mm	200*80 mm	1050mm*290 mm (可订做)
material	Imported aluminum alloy+surface oxidation treatment	Imported aluminum alloy+surface oxidation treatment	Imported aluminum alloy+surface oxidation treatment
Upper-layer platform driver mode	Assembly line	Assembly line	servo motor+screw cylinder
The underlying platform driver mode	-	Assembly line	Motor+chain+guide rail
Platform fixing system	Automatic assembly line+blocking cylinder	Automatic assembly line+blocking cylinder 缸	Servo motor+cylinder
LED light board positioning mode	Top fixed installation+mechanical elastic positioning block	Top fixed installation+mechanical elastic positioning block	Top fixed installation+mechanical elastic positioning block
Loading table	Automatic assembly line material receiving	Automatic assembly line material receiving	Servo motor+screw rod lifting






Loading method	Automatic assembly line material receiving	Automatic assembly line material receiving	Servo module+cylinder handling
LED empty board test	-	-	Servo screw cylinder positioning, cylinder driving needle plate testing
Point flux operation mode	X. Z-axis+dispensing controller	X. Z-axis+piezoelectric valve	X. Z-axis+dispensing controller
FPC feeding mode	-	-	FPC Manual placement
Welding completion test	Visual AOI	Visual AOI	Cylinder driven needle plate test
Blanking table	-	-	Servo motor+screw rod lifting
Cutting method	Automatic cutting on the assembly line	Automatic cutting on the assembly line	Servo module+cylinder handling
Heating method	Pulse heating method	Pulse heating method	Pulse heating method
pressure control	Pressure control stroke	Pressure control stroke	Precision pressure regulating valve
Pressure indication	KG/N	KG/N	Digital pressure gauge, unit: Mpa
Welding pressure setting	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa
Pressure range (measured)	1 - 10Kg	0.5 - 10Kg	5 - 50Kg
Heating up setting	9 segments can be set	2 segments can be set	9 segments can be set
Temperature controller accuracy	$\leq \pm 3.0^{\circ}\text{C}$	$\leq \pm 3.0^{\circ}\text{C}$	$\leq \pm 5^{\circ}\text{C}$
Starting temperature setting	Room temperature - 499.0°C	Room temperature - 499.0°C	20.0°C - 500.0°C
working temperature	Room temperature-499.0°C	Room temperature - 499.0°C	20.0°C - 500.0°C



Separation temperature setting	Room temperature - 499.0°C	Room temperature - 499.0°C	20.0°C - 500.0°C
Hot pressing time	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 2 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature
Retention time	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 2 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature
Hot pressing accuracy	X: ± 20 um; Y: ± 25 um	X: ± 20 um; Y: ± 25 um	X: ± 20 um; Y: ± 25 um
Crimping depth	Z-axis servo adjustable	Z-axis servo adjustable	Z-axis servo adjustable
Equipment safety self-locking function	Yes	Yes	Yes
Equipment fault self check function	Yes	Yes	Yes
Two hand activation function	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes
Prevention measures	Yes	Yes	Yes
Work indicator light	Yes	Yes	Yes
Leakage protection function	Yes	Yes	Yes
Over temperature protection function	Yes	Yes	Yes



When there is no air pressure supply, there is no downward pressure on the pressure head.	Yes	Yes	Yes
Pressure parameter alarm function	Yes	Yes	Yes
The equipment has no production parameter alarm function.	Yes	Yes	Yes
Emergency stop switch	Yes	Yes	Yes

Description	M-121P Desktop single platform Hotbar pulse machine	M-131P Desktop dual platform Hotbar pulse machine	M-232P Dual station Hotbar pulse machine
Picture			
Size (L*W*H mm)	670* 400*750	480*530*600	860* 835*1550
Weight(kg)	约 100kg	约 100kg	约 200kg
Use for	Use for FPC to PCB/FPC and FFC to PCB hot pressing	Use for FPC to PCB/FPC and FFC to PCB hot pressing	Use for FPC to PCB/FPC and FFC to PCB hot pressing
Hot pressing head material	Titanium alloy material	Titanium alloy material	Titanium alloy material
Hot head size	Max L60*W3mm (customization)	Max L60*W3mm (customization)	L100*W3mm (customization)
Product platform size	Max L500*W500mm (customization)	Max L500*W500mm (customization)	L200*W150mm (customization)
Levelness of hot pressing head	≤0.05mm	≤50um	≤0.05mm
Hot press head operation mode	SMC cylinder	Servo motor+cylinder	SMC cylinder
Levelness adjustment method of hot press head	Add steel balls between two components and fix them with screws for adjustment.	Add steel balls between two components and fix them with screws for adjustment.	Add steel balls between two components and fix them with screws for adjustment.
Thermocouple model	K type	K type	K type
Number of hot pressing heads	1 pcs	1pcs	2 pcs
Product Workbench	Customized specialized molds	Customized specialized molds	universal or specialized molds
Product platform vacuum hole diameter	φ 1mm	φ 1mm	φ 0.1mm



Platform working mode	Cylinder driven platform movement	Left and right cylinder drive	Adopting imported cylinder and guide rail drive to improve stability
Platform mold material	Bakelite (can be modified with aluminum alloy and treated)	Bakelite (can be modified with aluminum alloy and treated)	Imported hard magnesium aluminum
Transformer	1500W	1500W	3000W
Mold flatness	≤0.05mm	≤100um	≤0.05mm
Adjustment mode of the adjustment table	Micrometer adjustment	Micrometer adjustment	Micrometer adjustment
Heating method	Pulse heating method	Pulse heating method	Pulse heating method
Pressure control	Precision pressure regulating valve control	Precision pressure regulating valve control	Precision pressure regulating valve control
Number of heating sections	9 segments can be set	9 segments can be set	9 segments can be set
Temperature controller accuracy	≤±5.0℃	≤±5.0℃	≤±5.0℃
Starting temperature setting	Room temperature - 500.0℃	1.0℃ - 500.0℃	Room temperature - 499.0℃
Working temperature setting	Room temperature - 500.0℃	1.0℃ - 500.0℃	Room temperature - 499.0℃
Separation temperature setting	Room temperature - 500.0℃	1.0℃ - 500.0℃	Room temperature - 499.0℃
Hot pressing time	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature
Retention time	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature
Pressure range (measured)	2 - 30Kg	2 - 30Kg	2 - 30Kg
Pressure	Digital explicit barometer	Digital explicit barometer	Digital explicit barometer






indication	Unit: Mpa	Unit: Mpa	Unit: Mpa
Vacuum device	Vacuum generator	Vacuum generator	Vacuum generator
Hot pressing accuracy	X: $\pm 55\mu\text{m}$; Y: $\pm 75\mu\text{m}$	X: $\pm 55\mu\text{m}$; Y: $\pm 75\mu\text{m}$	X: $\pm 55\mu\text{m}$; Y: $\pm 75\mu\text{m}$
Crimping depth	Adjustable floating joint	Adjustable floating joint	Adjustable floating joint
Welding pressure	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa
Alignment system/method	2 sets of CCD alignment	2 sets of CCD alignment	4 sets of CCD alignment
Light source system	2 way 25MA	2 way 25MA	2 way 25MA white LED light
CCD	Colorful	Colorful	Colorful
CCD minimum center distance	5mm	5mm	5mm
Lens	2x 150 focal length	2x 150 focal length	2x 150 focal length
CCD direction adjustment stroke	X:100mm Y:30mm Z:8mm	X:100mm Y:30mm Z:8mm	X:100mm Y:30mm Z:8mm
Monitor specifications and quantity	7 " CRT display 2 pcs	7 " CRT display 2 pcs	12 " CRT display (1/2 or 1/4 video splitter)
Winding method	Automatic operation	Automatic operation	Automatic operation
Applicable auxiliary material width	5 - 15 mm (common 10)	5 - 15 mm (common 10)	5 - 15 mm (common 10)
Roll length	Can be set 1-99 mm	Can be set 1-99 mm	Can be set 1-99 mm
Number of winding times	Can be set 1-99 times	Can be set 1-99 times	Can be set 1-99 times
The device safety self-locking function.	Yes	Yes	Yes
The device fault self check function	Yes	Yes	Yes
Two hand activation function	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes



Prevention measures	Yes	Yes	Yes
Work indicator light	Yes	Yes	Yes
Leakage protection function	Yes	Yes	Yes
Over temperature protection function	Yes	Yes	Yes
When there is no air pressure supply, there is no downward pressure on the pressure head.	Yes	Yes	Yes
Pressure parameter alarm function.	Yes	Yes	Yes
The equipment has no production parameter alarm function.	Yes	Yes	Yes
Belt shortage alarm	Yes	Yes	Yes
Emergency stop switch	Yes	Yes	Yes



Description	M-302P Double Station platform Hot bar pulse machine	M-527P Four Axis Forward and Out of the Hot Bar Pulse Machine	M-535P Double Station Y Forward and Out of Hot Bar Pulse Machine
Picture			
Size (L*W*H mm)	700* 700*1500	1400*1500*1800	750*860*1650
Weight(kg)	About 200kg	About 260kg	About 300kg
Used for	Used for FPC to PCB/FPC and FFC to PCB hot pressing	Used for FPC soldering process of 3C electronic products	Used for Hot pressing wire from FPC to PCB to PCB
Hot head material	Titanium alloy material	Titanium alloy material	Molybdenum alloy material
Hot pressing head size	L80*W3mm (customization)	L100*W3mm (customization)	Max L30*W3mm (customization)
Product platform size	L280*W220mm (customization)	L200*W150mm (customization)	Max L120*W120mm (customization)
Levelness of hot pressing head	≤0.08mm	≤0.05mm	≤50um
Hot press head operation mode	Cylinder	SMC cylinder	Z-axis servo motor + lead screw, X-axis servo motor + lead screw
Levelness adjustment method of hot press head	Add steel balls between two components and fix them with screws for adjustment.	Add steel balls between two components and fix them with screws for adjustment.	Add steel balls between two components and fix them with screws for adjustment.






Thermocouple model	K type	K type	K type
Number of hot pressing heads	2 pcs	1 pcs	2 pcs
Product Workbench	Universal/positioning block positioning device	Universal or specialized fixtures	Customized special molds
Product platform vacuum hole diameter	Φ 0.1mm	Φ 0.1mm	Φ 0.1mm
Platform working mode	Double station fixed platform	Forward or backward	Servo motor+lead screw forward and out
Platform mold material	Bakelite (can be modified with aluminum alloy and treated)	Private server motor anti-static Teflon	Bakelite (can be converted to other materials)
Transformer	3000W	4000W	1500W
Mold flatness	≤0.05mm	≤0.05mm	≤0.01mm
Platform adjustment mode	Micrometer adjustment	Micrometer adjustment	Micrometer adjustment
Heating method	Pulse heating method	Pulse heating method	Pulse heating method
Pressure control	precision regulating valve	precision regulating valve	precision regulating valve control+pressure sensor
Number of heating sections	9 segments can be set	9 segments can be set	9 segments can be set
Temperature controller accuracy	≤±5.0℃	≤±5.0℃	≤±5.0℃
Starting temperature setting	Room temperature - 490.0℃	Room temperature - 499.0℃	30.0℃ - 500.0℃
Working temperature setting	Room temperature - 490.0℃	Room temperature - 499.0℃	30.0℃ - 500.0℃
Separation temperature	Room temperature - 490.0℃	Room temperature - 499.0℃	30.0℃ - 500.0℃



setting			
Hot pressing time	Sections 1 to 9 can be set separately for time and temperature	Sections 1 to 9 can be set separately for time and temperature	Sections 1 to 9 can be set separately for time and temperature
Retention time	Sections 1 to 9 can be set separately for time and temperature	Sections 1 to 9 can be set separately for time and temperature	Sections 1 to 9 can be set separately for time and temperature
Pressure range (measured)	2 - 30Kg	1 - 10Kg	3 - 30Kg
Pressure indication	Digital display pressure gauge, unit: Mpa	Digital display pressure gauge, unit: Mpa	Digital display pressure gauge, unit: Mpa
Vacuum device	vacuum generator	vacuum generator	vacuum generator
Hot pressing accuracy	X: $\pm 55\mu\text{m}$; Y: $\pm 75\mu\text{m}$	X: $\pm 55\mu\text{m}$; Y: $\pm 75\mu\text{m}$	X: $\pm 55\mu\text{m}$; Y: $\pm 75\mu\text{m}$
Crimping depth	floating joint adjustable	floating joint adjustable	floating joint adjustable
Welding pressure	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa
Alignment system/method	4 sets of CCD upper alignment	4 sets of CCD manual alignment	4 sets of CCD manual alignment
Light source system	2-way 25MA white LED light	2-way 25MA white LED light	2-way 25MA white LED light
CCD	color	color	color
CCD minimum center distance	5mm	5mm	5mm
Lens	2 倍 150 焦距	2 倍 150 焦距	2 倍 150 焦距
CCD direction adjustment stroke	X:100mm Y:30mm Z:8mm	X:100mm Y:30mm Z:8mm	X:100mm Y:30mm Z:8mm
Monitor specifications and quantity	12 " CRT display (1/2 or 1/4video splitter)	12 " CRT display 1 pcs	12 " CRT display 1pcs
Winding mode	automatic operation	DC motor drive automatic operation	DC motor drive automatic operation
Applicable auxiliary material width	5 - 15 mm (conventional 10)	5 - 15mm(conventional 10)	5 - 15mm (conventional 10)
Roll length	Can be set to 1-99 mm	Can be set to 1-99 mm	Can be set to 1-99 mm



Number of winding times	Can be set 1-99 times	Can be set 1-99 times	Can be set 1-99 times
Equipment safety self-locking function	Yes	Yes	Yes
Equipment fault self check function	Yes	Yes	Yes
Two hand activation function	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes
Prevention measures	Yes	Yes	Yes
Work indicator light	Yes	Yes	Yes
Leakage protection function	Yes	Yes	Yes
Over temperature protection function	Yes	Yes	Yes
When there is no air pressure supply, there is no downward pressure on the pressure head.	Yes	Yes	Yes
Pressure parameter alarm function	Yes	Yes	Yes
The equipment has no production parameter alarm function	Yes	Yes	Yes
Belt shortage alarm	Yes	Yes	Yes
Belt shortage alarm	Yes	Yes	Yes

Description	M-201P Pulse Hot Press Machine	M-232P-HIV Double Station Pressure Head Servo Pulse Hot Press Machine	M-135P Desktop Automatic Up and Down loading ULC Pressure Welding Machine
Picture			
Size (L*W*H mm)	680*600*1400	860*1100*1850	1400*1500*1800
Weight (KG)	About 180kg	About 300kg	About 280kg
Use for	Used for electronic wire to PCB board welding	Used for FPC to PCB/FPC and FFC to PCB hot pressing	Used for fixture cycle assembly line FPC, wire to PCB pressure welding
Hot head material	Titanium alloy material	Titanium alloy material	Titanium alloy material
Size of hot press head	Max L60*W300mm	Max L50*W300mm	Max L60*W300mm
Product platform size	Max L500*W500mm	Max L500*W500mm	Max L500*W500mm
Hot melt column levelness	≤0.05mm	≤0.05mm	≤50um
Product fixture type	Customized specialized fixtures	Customized specialized fixtures	Customized specialized fixtures
Platform mold material	Bakelite (can be modified with aluminum alloy and treated)	Imported synthetic stone or imported hard magnesium aluminum	Aluminum plate/stainless steel /bakelite/synthetic stone/Teflon
Product fixation	Universal/positioning block positioning device	Universal/positioning block positioning device	Universal/positioning block positioning device



Operation mode of hot pressing head	SMC cylinder (movable in the X-direction of the pressure head, with a distance of 80mm)	Servo motor + lead rail + cylinder	Servo motor, X-axis servo motor, can set multiple positions
Levelness adjustment mode of hot melt column	Add steel ball between two components, screw fixed adjustment	Add steel ball between two components, screw fixed adjustment	Add steel ball between two components, screw fixed adjustment
Thermocouple model number	K type	K type	K type
Number of hot head	1 pcs	1 pcs	2 pcs
Platform operating mode	Fixed (3-axis micrometer moving table)	Fixed (3-axis micrometer moving table)	Y-axis servo motor, capable of setting multiple positions
Platform driven mode	Servo motor and cylinder	Servo motor and cylinder	Servo motor and cylinder
Product platform vacuum hole diameter	Φ 1mm	Φ 1mm	Φ 1mm
Transformer power	1500W	4000W	1000W
Table X, Y, Z, θ adjustment mode	Micrometer adjustment	Micrometer adjustment	Micrometer adjustment
Hot melt real-time pressure feedback display	Touch screen display	Touch screen display	Touch screen display
Pressure control	Precision pressure regulating valve control	Precision pressure regulating valve control	Servo motor control
Working environment	- 20 - 80℃	- 20 - 80℃	- 20 - 80℃



Service life	More than 1 million times of full scale	More than 1 million times of full scale	More than 1 million times of full scale
Heating method	Pulse heating	Pulse heating	Pulse heating
Bottom mould heating method	Constant temperature heating	Constant temperature heating	Constant temperature heating
Pressure control	Precision pressure regulating valve	Precision pressure regulating valve	Servo motor control
Pressure display	Digital pressure gauge, unit:Mpa	Digital pressure gauge, unit:Mpa	Digital pressure gauge, unit:Mpa
Vacuum generation mode	Vacuum generator	Vacuum generator	Vacuum generator
Welding pressure	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa	0.1 - 0.5 Mpa
Number of heating sections	9 segments can be set	9 segments can be set	9 segments can be set
Temperature controller accuracy	$\leq \pm 5.0^{\circ}\text{C}$	$\leq \pm 5.0^{\circ}\text{C}$	$\leq \pm 5.0^{\circ}\text{C}$
Starting temperature setting	Room temperature - 499.0°C	Room temperature - 499.0°C	Room temperature - 499.0°C
Working temperature	Room temperature - 499.0°C	Room temperature - 499.0°C	Room temperature - 499.0°C
Separation temperature setting	Room temperature - 499.0°C	Room temperature - 499.0°C	Room temperature - 499.0°C
Hot pressing time	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature
Retention time	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature	Sections 1 to 9 can be individually set for time and temperature
Pressure range	2 - 30Kg	2 - 30Kg	0.5 - 5Kg



(measured)			
Vacuum device flow rate	Equipment comes with a vacuum generator	Equipment comes with a vacuum generator	Equipment comes with a vacuum generator
Crimping depth	Adjustable floating joint Adjustable floating joint.	Adjustable floating joint Adjustable floating joint.	Adjustable floating joint Adjustable floating joint.
Single hot pressing period	-	-	4 - 8s
Load the maximum weight of the fixture	-	-	<5kg
Alignment system/mode	-	Alignment on 2 groups CCDS	-
Light Source system	-	2 groups 25MA white LED lights	-
CCD	-	black and white	-
CCD minimum center distance	-	5mm	-
Lens	-	2x 150 focal length	-
CCD direction adjustment stroke	-	X:100mm Y:30mm	-
Monitor specifications and quantity	-	10 "CRT monitor 1	-
Equipment fault self check function	Yes	Yes	Yes
Two hand activation function	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes



Prevention measures	Yes	Yes	Yes
Work indicator light	Yes	Yes	Yes
Leakage protection function	Yes	Yes	Yes
Over temperature protection function	Yes	Yes	Yes
When there is no air pressure supply, there is no downward pressure on the pressure head.	Yes	Yes	Yes
Pressure parameter alarm function	Yes	Yes	Yes
The equipment has no production parameter alarm function	Yes	Yes	Yes
Belt shortage alarm	Yes	Yes	Yes
Emergency stop switch	Yes	Yes	Yes