

Ammseries

spot welding systems

amm 10
amm 20

The best way to prepare **multilayer books** !



These machines have been designed to provide an easy preparation of multi-layer PCBs and offer an alternative to the mechanical system of joining the layers with rivets but also to other systems.

With AMM10 and AMM20, the **coupling of the inner-layers and pre-preg** is obtained by carrying out multiple **solder joints** along the two edges of the package by means of heated bits that operate at a variable pressure according to the number of internal layers, favouring the localized reaction of the pre-preg.



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These machines have been designed and realized to make easier the preparation of printed circuit board multilayers.

Both Amm10 and Amm20 give a real and effective alternative to old mechanical system of joining layers with rivets but also to other systems used since now.

Functioning principles of Amm machines, consist in coupling the inner layers and pre-preg by carrying out multiple solder joints along the two edges of the book by means of heated bits which operate at a variable pressure according to the number of internal layers, favouring the localized reaction of the pre-preg.



Advantages of spot welding on the registration process

Compared to other registration systems, **spot welding present few advantages:**

- **INCREASED PRESS CAPACITY:** It is possible to introduce in the press an high number of books. In other systems, such as for example, fixture pin method, the number of books that can be inserted in the press is conditioned by pin length. In spot welding, on the contrary, the limit is only given by the heat transfer speed, by the number of layers and by the type of pre-preg.
- **NO MECHANICAL STRAIN:** Welded books are not subject to mechanical strain. This avoids the possibility that, during the lamination process, separation panels between books, are damaged like it happens using rivets.
- **EXTREMELY CLEAN:** Spot welding, is a very clean registration process. For instance, it does not have the inconvenience of gaps around the pins which allow pre-preg resin to melt through holes.
- **IDEAL BOOK THICKNESS:** Spot welding assures an optimum thickness of book thanks to the heated bits positioning method.
- **EASY MANIPOLATION OF BOOKS:** Soldering joints makes the book rigid, stable, light and very easy to handle for following lamination process.

AMM series and DAL 10



Both machines can be supplied together with semi-automatic layers dispenser **DAL 10**.

This equipment has been designed and realized to facilitate a correct superimposition of the different circuit layers and pre-preg sheets on the registration machines (AMM10 and AMM20).

The functioning is very simple: DAL 10 is constituted by drawers which store the layers used during the assembly process.

A simple programming allows the operator to set the correct drawers' opening sequence in order to have the material ready for the positioning phase in the succession required.



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The AMM20 is similar to the AMM10, but, unlike it, it has the two loading table coming out of the same side of the machine. This features makes the AMM20 more ergonomic since the operator does not need to move from the left to the right side of the machine, and, in addition to this, the two sliding trays no longer get into the machine manually, but by means of a pneumatic piston. Two further operations have been mechanized: the extraction of the soldered circuit and the adjustment of the distance between the soldering tips' holding bars. A smaller footprint represents the last advantage, compared with the AMM10, of which it keeps all the characteristics.



Technical features

Amm 10

Maximum board dimensions	800x610 mm
Maximum board thickness	7 mm
Typical work cycle	30 sec
Set-up time on timer	360 sec
St-up time for new job	<2 min
Diameter of fixing points	Ø 5 mm
Power consumption	4 kW
Voltage	400V 3~
Compressed air consumption	30 l/min
Maximum pressure for air supply	0.6-0.7 Mpa
Weight	430 Kg
Dimensions	2x1x1.3 m
Working area	3.8x2 m
Working surfaces in aluminium alloy	
CE Approved	



Technical features

Amm 20

Soldered steel structure and fiber-glass reinforced plastic cover	
Aluminium tables	
Table movement driven by pneumatic cylinder featuring a safety circuit	
Adjustment of tips' distance by means of d.c. gearmotors	
Circuit extraction system using a pneumatic extractor with end-of-the cycle automatic switch	
Layers package blocked by pressing table driver by a piston with adjustable pressure	
Electrovalves and sensors driven by PLC	
Number of soldering points (each side)	8
Maximum circuit dimension	762x610 mm
Minimum inner dimension	300x250 mm
Maximum soldering thickness	7 mm
Cycle time for a six layers circuit, it usually depends on the number of layers and their thickness	30 sec
Maximum soldering tips' temperature: stainless steel tips	400°C
Maximum soldering tips' temperature: teflon-covered tips	260°C
Number of pre-set temperature and cycle time sets	5
Supply voltage (triphase)	400 Volts
Power supply	<5 kW
Compressed air supply pressure	0.6-0.7 Mpa
Air consumption	<30 NI/min
CE Approved	

Data and machine states displayed and set on LCD panel featuring a touch screen connected to PLC for diagnosis making

Registration system with two cylindrical adjustable pins (in addition to the anti-inversion one) whose diameter is on the client's specification, or the American system with four olive-shaped pins of 4.76 mm thickness



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R O B O T I C S

Robotics division

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Piergiacomì Sud through its division "Piergiacomì Robotics" manufactures capital equipment for PCB and assembling industries. The range: punching and drilling machines for film, inner layers, multilayer and single side PCB; spot welding machines for multilayer board registration; inner layers and double side PCB inspection systems; PCB warping reduction machine; x-ray inspection systems for electronic



circuits. To know more on other Piergiacomì's business lines: "Piergiacomì quality handtools" (manual handtools for electronics) and Piergiacomì Technology (instruments and equipment for the medical field), please visit the website: www.piergiacomì.com

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