

ESTIMATION SPECIFICATIONS

ORIGIN Capacitor Type Projection Welding Machine

MODEL LA-3000

With Optical Alignment

1. Specification Sheet
2. Layout of f Full Automatic Welding Machine
3. External View, Welding Machine
4. External View, Power Supply Unit
5. Lower Collet Assembly Drawing

Sign to Acknowledge Receipt with Date:		
Correction(s)	<input type="checkbox"/> Corrected	<input type="checkbox"/> Not Corrected

You are requested to return one of the duplicate
after signing to acknowledge receipt thereof.

Specification sheet for LA-3000

With optical alignment

3FA-26D
3K15-2026
3D2-4V5F
3C-42N0

1. Customer :

2 Model Designation : Origin Condenser Type Projection Welder
Model: Type LA-3000

3. Applications Classified: Optical device welding

4. Outline of Equipment

This system is for hermetic sealing between LD header and cap automatically in N2 atmosphere. LD headers and Caps are on each sub tray. Operator sets those through the pass box and pushes the start button. After that, System moves automatically as follows,

- 1) Sub tray is conveyed from pass box to Y-axis robot table.
- 2) LD header is attached to lower electrode and Cap is attached to upper electrode.
- 3) LD header and Cap are welded.
- 4) Finished work is conveyed to LD header tray.
- 5) After all works on the tray are finished, sub tray is conveyed to pass box.

Electrode part has electric die set for optical alignment and Vidicon system. Optical alignment is done automatically by visual inspection system.

The power supply of the system separates from welding system.

			CHECKED	CHECKED	CHECKED	ISSUED
REV.	DATE	REVIEWED				

5. Requirements for Work-piece

Item	Contents	
Work	LD header	ϕ 5.6
	Cap	Ball lens or Aspherical lens
Tray and work quantity One lot	LD header	200pcs/1Tray one cycle /2 trays
	Cap	200pcs/Tray one cycle/2 trays
Tray system	Supplied to pass box by operator	

6. Quality of sealing

In the specification of the weld quality, any trouble which originates in the workpiece is excluded.

(1) Yield

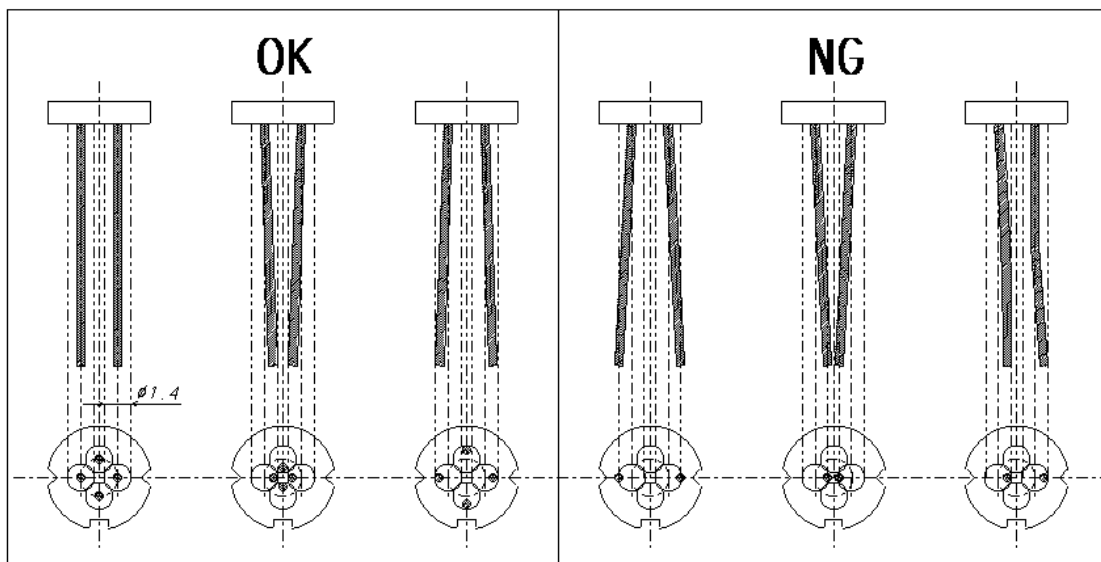
99.8% or better

CAUTION!

This device is equipped with the header lead reforming mechanism. However, there are the header lead that cannot be corrected depending on the shape of the lead. The figure below shows the shape of the header lead which can be retouched.

OK : The lead which is straight from the root, and whose end point of the lead is in the circle of ϕ 1.4 based on the center of the each lead.

NG : The lead whose end point of the lead is not in the circle of ϕ 1.4 based on the center of the each lead. Or, the lead that has a curve and a bend.



(2) Hermeticity

He leak rate: Less than $1 \times 10^{-9} \text{Pa.m}^3 / \text{sec}$

(3) Welding accuracy

◇ In case of optical alignment: within $\pm 20 \mu\text{m}$

Accuracy condition: Comparing with the center of the laser beam and the center of the lens of cap. The optic axis inclination of LD chip against the header bottom surface shall not be considered.

◇ In case of non-optical alignment: within $\pm 10 \mu\text{m}$

Accuracy condition: Comparing with center of the header and the cap against the outer dimension.

7. Tact time

Without the offset: 30sec/pc

With the offset: 35sec/pc

As additional time, there is 34sec for exchanging 1lot (400pcs) of tray except first supply of tray. (LD header side: 17sec Cap side: 17sec)

8. Power supply

Item	Input	Capacity
Input power	Single phase AC 220V 50/60Hz	5.5kVA
Compressed air supply	0.5 ~ 0.7MPa	100NL /min Max.
N2 gas supply	0.4MPa	100NL /min Max.

9. Configuration and Dimensions

Item	Dimensions (L x W x H)	Weight
Welding system	1600 x 1150 x 2100	1200kg
Power supply	470 x 670 x 1110	60kg
Visual monitoring system	600 x 700 x 1710	50kg

10. Specification of welding Unit

Item	Specification
Pressurizing system	Vertical press type by compressed air
Electrode pressure	Pressure: 539~1470N (at 0.6MPa)
	Voltage threshold: 392~1176N (at 0.6MPa)
Electrode stroke	1 st step: 140mm 2 nd step: 5mm Total: 145mm
Shape of Electrode	Die set special electrode
Welding trance	3type with gear shift

11. Specification of Electric circuit unit

Item	Specification
Rated Input	Single phase 220V 1.5kVA
Rated out put	761J
Charging rate	1.5sec / 450V
Charging voltage regulation	50~475V
Rectification	Single phase full-wave rectification
Polarity selection	Available (by change bar)
Cooling system	Air cooling
Charging control monitor circuit	Finishing Charging detector

12. Specification of Condenser Unit

Item	Specification
Energy capacity	761J
Capacitance	6750 μ F (1bank)

13. System Configuration

Item	Specification
Drive method	Ball screw by Stepping motor
Alignment method	Manual By XY button at outside of dry box
	Auto Operation by visual inspection system
Alignment repetition accuracy	$\pm 4 \mu$ m (including accuracy of X/Y table)
Alignment range	X/Y $\pm 200 \mu$ m
Max. Stage movement range	X/Y ± 1.0 mm
Monitoring	Vidicon system
Optical part adjustment	XYZ stage
Monitor reference of optical alignment	15Inch Liquid crystal monitor

14. Dry box and dew point

Item	Specification
Material	Body: SUS
	Window : anti-static acrylic acid resin
Glove for maintenance	Front and rear
Tool box	One part
Dew point	- 45 degrees C or less (When N2 gas, whose dew point is – 76 degrees C at the supply port, is continuously supplied.)
Flow meter	2pcs
Dew point meter	Sensor : Michel -20°C~-80°C
Sensor	Door for maintenance, glove insertion

15. Automatic operation process

Operator sets trays of LD header on the sub-tray in the left side pass box and sets cap trays on the sub-tray in the right side pass box. After that, the sequence of automation proceed as follows,

- (1) Opening the doors of inside of LD header and cap pass box, tray is loaded on Y-axis in the dry box by Tray-hand.
- (2) The first of LD header and cap on the tray are picked up by its work-hand (LD header hand, Cap hand) with vacuum, and transferred to welding position.
- (3) LD header-hand picks up finished work from the lower electrode (the first piece; only supplying of the header) and supplies another LD header to the lower electrode. Cap-hand supplies a cap to the upper electrode, LD header and Cap are clamped by a clamber of electrode.
- (4) Then LD header-hand goes back to the tray and puts back the finished work. After that, LD header-hand picks up next LD header. Cap-hand goes back to the tray and picks up next cap.
- (5) After Work-hand left the alignment part, work is aligned.
- (6) After finishing of alignment, the upper electrode moves down and welds the work.
- (7) Repeat the above (1) through (5) until all works on the tray are completed.
- (8) In case all works are picked up, sub-tray on the Y-axis goes back to Tray-hand position.
- (9) The door of inside of pass box opens. Tray-Hand conveys tray into pass box.

16. Operation panel and control

- (1) Touch panel is provided with necessary switches for operation and control.
- (2) In case emergency or warning occurs, message comes up on the touch panel.
- (3) The parts are used Origin's standard.
- (4) Color of Indication lamps and lamp switches are Origin's standard.
- (5) Charging voltage meter expresses number by digital.
- (6) Counters are following three kinds and located in the touch panel.
 - ① Total production number
 - ② Usage times of upper electrode (with preset)
 - ③ Usage times of lower electrode (with preset)

17. Safety measures

- (1) Stages are located in the dry box of welding system. Dry box has door switch and glove detection sensor. Power supply has outer plates as safety cover.
- (2) Emergency switch shaped a red mushroom is located at the front of welding system.
- (3) System has sensor of air pressure. When the air pressure comes to lower than setting number, system alarms and stops.

Air pressure valves, except pressure for welding, are double solenoid types. So movements of system stop as it is at the time of power failure or drop of the primary air pressure. Then movements keep conditions after recovery.

However, in case primary air pressure drops down to some level, cylinder on the way of moving up moves down for its weight and it moves up after pressure recovery.

18. Remarks

(1) Provisions by customer

- ① Sample work for confirmation of work handling more than 2000sets
 ② Sample work for confirmation of optical alignment more than 1000sets

(2) Accessories and spare parts

Accessories

Items	Q'ty
Vidicon Camera model:C2471-03 (made by Hamamatsu Hotonics)	1set
Dew point meter Sensor: -20 degrees C to -80 degrees C	1pc
Welding current monitor	1pc
Center gauge	1set
Standard tool	1set
Operation manual	2copies

Spare parts (In addition to the build-in parts to the system)

Items	Q'ty
Upper collet electrode	2pcs
Lower electrode	2pcs
Header clasper	2sets
Lead guide	2pcs
Contact probe	12pcs
Adsorption nozzle	3kinds 1pc each
Glove for dry box (8" size)	2pc

※The spare parts mentioned above are the consumption parts, therefore, these parts are not subject to the warranty service.

※Life span of spare parts mentioned above depends on how many times they are used. Mentioned quantity is not enough for one year and there are no parts that should be replaced within one year except those mentioned above.

19. Coloring

Munsell color 5Y7/1

20. Installation, Wiring and Piping

In this specification, neither any wiring works and piping works between your facility and this system, nor a foundation works of customer's facility for the installation of this system are included.

21. Warranty

Warranty period of this system is either of following periods reached earlier under the condition that the customer maintains the system in accordance with maintenance & cleaning procedures described in the manual.

- a) 1 year after system acceptance by the customer.
- b) 4,000 hours after system acceptance by the customer.

Malfunction and/or damages happened under normal operation, which is not the case of the user's responsibility, is covered by warranty and required replacement part is supplied at free of charge during the above mentioned warranty period, however, any expenses for adjustment work and/or replacement work shall be borne by the customer.

In regard to consumption parts, maintenance parts and/or kind of light bulbs included in the spare parts shall be exception of this warranty service.