

# SPECIFICATION

ORIGIN Capacitor Type Projection Welding Machine

## MODEL LA-2000

With Optical Alignment

1. Specification Sheet
2. External View
3. Layout

Sign to Acknowledge Receipt with Date:

Correction(s)	<input type="checkbox"/> Corrected <input type="checkbox"/> Not Corrected

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**Origin Electric Co.,Ltd.**

## Specification sheet

3SA-36D
3K15-36
3D2-1V5N
3C-42N0

ESPEC No. 4567

Origin Electric Co.,Ltd.

Welding Machine Dept

**1. Customer :**

**2 Model Designation :** Origin Condenser Type Projection Welder

**Model:** LA-2000

**3. Applications Classified:** Optical device welding

**4. Outline of Equipment**

This system is for hermetic sealing between LD header and cap in N2 atmosphere.

This system is composed by the main body of welder and the image monitoring system.

Electrode part is mainly composed of an electric die set for optical alignment and a Vidicon system. Optical alignment is done automatically by visual inspection system.

After operator's setting the header to the lower electrode, setting the cap to the upper collet electrode and pushing the start button, System welds LD header and Cap after the optical alignment automatically.

**5. Requirements for Work-piece**

Item	Contents	
<b>Work</b>	<b>LD header</b>	$\phi$ 5.6
	<b>Cap</b>	Ball lens or aspherical lens

Though this system can correspond to the workpiece of plural kinds (outside dimension of the header and the cap, pin array, etc), the system needs the peculiar parts of each kind.

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REV.	DATE	REVIEWED				

**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

**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**

Less than 20sec/pc (This tact time does not contain the supplying and the collection time of the workpiece)

**8. Power supply**

Item	Input	Capacity
Input power	Single phase AC200/220V	4.5 kVA
Compressed air supply	0.5~0.7MPa	30NL/min Max.
N2 gas supply	0.4MPa	50NL/min Max.

**9. Configuration and Dimensions**

Item	Dimensions (W x D x H)	Weight
Welding system	Approx. 1500 x 1140 x 1900	Approx. 650
Visual monitoring system	600 x 700 x 1710	Approx. 50

**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 <sup>st</sup> step: 97mm 2 <sup>nd</sup> step: 6mm Total: 103mm
Shape of Electrode	Die set special electrode
Welding trance	With gear shift (20, 30, 40, 60T)

**11. Specification of Electric circuit unit ( built-in )**

Item	Specification
Rated Input	Single phase 200/220V 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
Starting system	Pushing button switch
Charging control monitor circuit	Finishing Charging detector

**12. Specification of Condenser Unit ( built-in )**

Item	Specification
Energy capacity	761J
Capacitance	6750 $\mu$ F (1bank)

**13. Specification of alignment system**

Item	Specification
Drive method	Ball screw by Stepping mo
Alignment method	Operation by visual inspection system
Movement repeat accuracy	$\pm 4 \mu\text{m}$ (including accuracy of X-Y table )
Alignment range	X-Y $\pm 200 \mu\text{m}$
Max. Stage movement range	X-Y $\pm 1.0\text{mm}$
Monitoring	Vidicon system
Optical part adjustment	X-Y-Z stage
Monitor reference of optical alignment	15Inch Liquid crystal monitor

**14. Dry box and dew point**

Item	Specification
Material	Body: SUS
	Front window : Tempered glass
	Maintenance window : Anti-static acrylic acid resin
Glove for maintenance	8" one pair
Passing box	1 pc
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	1 pc
Dew point meter	Sensor : –20 degrees C to – 80 degrees C

## 15. Operation process

After operator's setting the header to the lower electrode, setting the cap to the upper collet electrode and pushing the start button, the system starts to operate automatically as follows.

- 1) The vacuum sensor detects the presence of the header.
- 2) The collet type clasper fixes the header.
- 3) The upper electrode descends.
- 4) Probe for LD drive rises and it comes in contact with the header lead.
- 5) The fiber lamp lights and the image processing system recognizes the center location coordinates of the lens of cap.
- 6) The fiber lamp is turned off and power supply of the LD drive is turned on.
- 7) The laser beam lights and the image processing system recognizes the center location coordinates of the beam.
- 8) The header (laser beam) is moved so that the center location of the laser beam may in the same position as the center of lens.
- 9) The header (laser beam) is moved to the offset position when the operation of the offset of the laser beam is set by initialization.
- 10) After the power supply of the LD drive is turned off and the probe is descended, the system welds the header and the lens cap.
- 11) The system operates in the same processes as described in item 5) through 7) when the positional measurement after the welding is set by initialization.
- 12) The upper electrode rises and the header is unclamped. (The operator takes out the final product of the bottom electrode. )

**16. Remarks**

- 1) Provisions by customer  
     Sample work for confirmation of optical alignment                      more than 100sets
- 2) Accessories and spare parts  
     Accessories

Items	Q'ty
Vidicon camera	1 set
Optical component for observation	1 set
Image processor	1 set
PC and monitor	1 set
Fiber lamp	1 set
Power supply for LD drive	1 set
Welding current monitor	1 pc
Dew point meter Sensor: -20 degrees C to -80 degrees C	1 pc
Center gauge	1 set
Standard tool	1 set
Operation manual	2 copies

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

Items	Q'ty
Upper collet electrode	1 pc
Lower electrode	1 pc
Header clamper	1 set
Lead guide	2 pcs
Contact probe	8 pcs
Glove for dry box (8" size)	1 pair

※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.

**17. Coloring**

Munsell color 5Y7/1

**18. 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.

**19. 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.