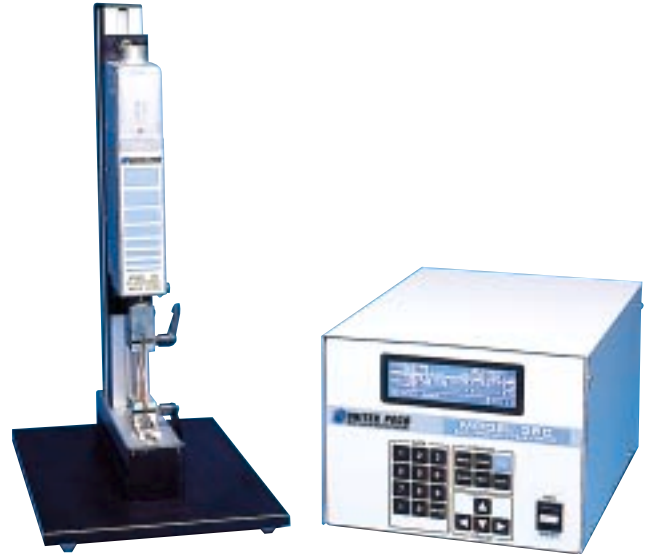


## SERIES 300

### HIGH PRECISION WELD HEAD SYSTEM WITH FORCE AND DISPLACEMENT CONTROL

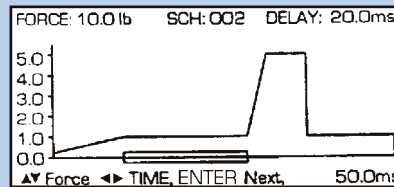
#### FAST RESPONSE AND CONTROL

The Unitek Peco Series 300 electromagnetic weld head system (U.S. Patent #5386092, #5225647) is comprised of a linear magnetic force actuator and a microprocessor-based electronic control, providing a precisely controlled weld force profile for miniature parts welding. Weld-to-Displacement and programmable follow-up force features ensure welding consistency and virtually no splash when welding difficult materials such as copper, molybdenum, and tungsten; cross wire welds using hardened materials up to .090 inches (2.3 mm) in diameter are no longer a welding problem using the Series 300. The Series 300 can interface with direct current, inverter, and stored energy power supply technologies.

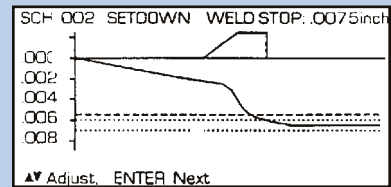


Follow-up force is programmable and responds in milliseconds, preventing loss of molten material during the weld and controlling part embrittlement. The user can easily program the electrode up-stop position, the search position just above the parts, the static weld force that squeezes the parts together, and the follow-up force that creates the consistent weld quality. Additionally, the rate of electrode approach, weld force application, squeeze, follow-up delay, follow-up, and hold periods are all user programmable.

By showing actual displacement (set-down) with .0001 inch (2.5µm) resolution, the graphical screen allows the user to “fine tune” the weld time, follow-up force, and weld energy relationships between the Series 300 and the external welding power supply. The built-in displacement monitoring feature can be used to optimize the weld and isolate potential quality problems. The user can elect to program up to 128 different weld force profiles using a graphical or numerical interface.



Program Mode – Weld Force Profile



Run Mode – Actual Weld Displacement

#### Features

- **Electronic control and traceability of all weld head functions**
- **Weld-to-displacement**
- **Programmable follow-up force**
- **I/O ports for automation applications**

#### Benefits

- **Ensures repeatable weld head schedules that can be electronically dictated and documented for GMP, TQC, and ISO 9001.**
- **Ensures consistent weld nugget size by controlling the amount of material collapse or set-down; excellent diagnostic tool for monitoring welding process.**
- **Ensures consistent weld quality by preventing molten metal from escaping from the weld joint. Superior to pneumatic or spring weld force systems.**
- **Remote displacement or weld force profile schedule selection for simple automated applications via RS232/ RS485 communications.**

# SERIES 300 WELD HEAD SYSTEM SPECIFICATIONS

## ELECTRONIC CONTROL – MODEL 350

|                                     |  |
|-------------------------------------|--|
| <b>Line Voltage (Input)</b>         | 100, 115, 208, or 230 VAC, $\pm 13\%$ , 50/60 Hz, single phase   |
| <b>Input Circuit Rating</b>         | 100 to 115 VAC: 15A; 208 to 230 VAC: 8A  |
| <b>Operating Temperature Range</b>  | 0 to 40°C  |
| <b>Weld Force</b>                   | 2 to 20 lbs. (0.9 to 9.1 Kg) (9 to 89 N)   |
| <b>Follow-up Weld Force</b>         | 2 to 50 lbs. (0.9 to 22.7 Kg) (9 to 222 N)   |
| <b>Squeeze Period</b>               | 1 to 999 msec  |
| <b>Weld Period</b>                  | 0.1 to 99.9 msec   |
| <b>Delay Period</b>                 | 0.1 to 99.9 msec   |
| <b>Follow-Up Force Period</b>       | 1.0 to 9.9 msec  |
| <b>Up-Stop Position Inches (mm)</b> | .006 to .999 (0.3 to 25.4)   |
| <b>Search Position Inches (mm)</b>  | .005 to .998 (0.2 to 25.3)   |
| <b>Graphical Weld Display</b>       | Graphical display of programmed weld force profile and actual displacement.  |
| <b>Weld Force Profiles</b>          | The user can write/save 128 different weld force profiles. Schedules 1 through 127 can be protected. Schedule 0 is used as a scratchpad for schedule development.                                    |
| <b>Object Detection</b>             | Detects the presence of objects located directly in the electrode path between the up-stop position and the search position and will automatically bring the electrode back to the up-stop position. |
| <b>Run/Dress Mode</b>               | Provides adjustable electrode force to easily clean electrodes and then automatically re-calibrates the absolute position of the closed electrode tips.  |

## PHYSICAL CHARACTERISTICS

|   |  |
|---|--|
| <b>Dimensions H x W x D Inches (cm)</b> | 8.5 x 10.5 x 15.1 (21.6 x 26.7 x 38.4) |
| <b>Weight – Lbs. (Kg)</b>               | 45 (20.4)                              |

## ELECTRONIC CONTROL

|                             |  |
|-----------------------------|--|
| <b>Control Signal Input</b> | Provides control for the following remote control signals: Emergency Stop, Weld Inhibit, and Remote Schedule Selection. Use dry relay contacts, optocouplers, or 5 VDC logic levels. |
| <b>Foot Switch</b>          | Provides process initiation using a 2-Level Foot Switch. For automated installations, use dry relays contacts, optocouplers, or 5 VDC logic levels.                                  |

## OUTPUT SIGNALS

|                              |   |
|------------------------------|---|
| <b>Control Signal Output</b> | 5 VDC logic, 35 ma (Max) sink or source. Designed for selecting weld schedules on Unitek Peco power supplies. |
| <b>Solid State Relays</b>    | 2 user programmable Solid State Relays: AC – 24/115 VAC @ 15VA; DC-24 VDC @ 15VA.                             |
| <b>Weld Fire Switch</b>      | Solid state relay output for initiating the power supply weld current.  |
| <b>RS485/RS232 Data</b>      | Transmit weld displacement data to a user provided serial data logging device.                                |

## WELD HEAD – MODEL 301 and MODEL 302

|  |   |
|--|---|
| <b>Stroke (Maximum) Inches (mm)</b>        | .999 (25.4)   |
| <b>Force (Maximum) Lbs. (Kg)</b>           | 50 (22.7)   |
| <b>Force (Weld) Lbs. (Kg)</b>              | 2 to 20 (0.9 to 9.1)  |
| <b>Force Rating (continuous) Lbs. (Kg)</b> | 7.1 (3.2)   |
| <b>Force Linearity</b>                     | $\pm 5\%$ of setting or $\pm 0.3$ lb (136 gm)   |
| <b>Force Repeatability</b>                 | $\pm 0.1$ lb (45 gm)  |
| <b>Force Response Time</b>                 | Assuming no shaft movement, the rise time going from 0 lbs force to a step input force of 50 lbs (22.7 Kg) is 1 msec maximum. |
| <b>Slew Rate (Maximum)</b>                 | 30 in/sec (76.2 cm/sec.)  |
| <b>Operating Temperature (Maximum)</b>     | 93° C   |

## PHYSICAL CHARACTERISTICS

|   |                                |
|---|--------------------------------|
| <b>Dimensions L x W x D Inches (cm)</b> | 14 x 2 x 4 (35.6 x 5.1 x 10.2) |
| <b>Weight: Lbs (Kg)</b>                 | 13 (5.9)                       |

# ORDERING INFORMATION

## ORDERING INFORMATION

| MODEL     | DESCRIPTION   |
|-----------|---|
| 301H/xxxV | Includes Model 350 electronic head control and Model 301H in-line weld head. Specify line voltage of 100V, 115V, 208V, or 230V when ordering. |
| 302H/xxxV | Includes Model 350 electronic head control and Model 302H offset weld head. Specify line voltage of 100V, 115V, 208V, or 230V when ordering.  |

## REQUIRED ACCESSORIES

|       |   |
|-------|---|
| MK301 | Bench mounting kit for 301H system, includes stand, lower quick-change holder, head adapter plate, and one set of 2/0 AWG weld cables. Accepts 1/8 inch, 1/4 inch, 6mm, and 3mm electrodes. |
| MK302 | Bench mounting kit for 302H system, includes stand, offset bottom electrode holder, head adapter plate, and one set of 2/0 AWG weld cables. Accepts .125 inch diameter electrodes.          |
| FS2L  | Two level footswitch used to initiate welding process.  |

## Your Local Representative

### ESEN ELEKTRONİK MÜHENDİSLİK DAN.SAN.VE TİC.LTD.ŞTİ.

Yaylagül Sk. 8/4, Aşağı Ayrıncı 06540 ANKARA - TÜRKİYE  
Tel: +90 (312) 468 8114 Faks: +90 (312) 468 8115  
<http://www.esenel.com> [eposta@esenel.com](mailto:eposta@esenel.com)

Specifications subject to change without notice.

Copyright© 2002 Unitek Miyachi Corporation. The material contained herein cannot be reproduced or used in any other way without the express written permission of Unitek Miyachi Corporation. All rights reserved.



A UNITEK MIYACHI INTERNATIONAL COMPANY

**Corporate Office:** 1820 S. Myrtle Ave. • P.O. Box 5033 • Monrovia, CA 91017-7133 USA  
**Tel: (626) 303-5676 • FAX: (626) 358-8048 • E-Mail: info@unitekequipment.com**  
Internet <http://www.unitekequipment.com>

**EASTERN (USA) Sales Office:**  
21 Cummings Park,  
Suite 252  
Woburn, MA 01801  
**Tel: (781) 935-0442**  
**FAX: (781) 935-1485**  
E-Mail: [eastsales@unitekequipment.com](mailto:eastsales@unitekequipment.com)

**NORTH ASIA Sales Office:**  
Unit D, 20/F, Infotech Centre  
21 Hung To Road  
Kwun Tong, Hong Kong  
**Tel: +852 2833-6998**  
**FAX: +852 2833-6672**  
E-Mail: [asiapacific@unitekequipment.com](mailto:asiapacific@unitekequipment.com)

**UNITEK EAPRO:**  
Schootense Dreef 21  
NL-5708 HZ Helmond  
The Netherlands  
**Tel: +31 492-54-22-25**  
**FAX: +31 492-53-62-22**  
E-Mail: [info@unitekeapro.com](mailto:info@unitekeapro.com)

**PECO WELDING SYSTEMS GmbH**  
Lindberghstrasse 1  
D-82178 Puchheim  
Germany  
**Tel: +49-89 83 94 03 79**  
**FAX: +49-89 83 94 03 68**

ISO 9001 Certified Company