

Orbital Welding System

Micro Weld Heads

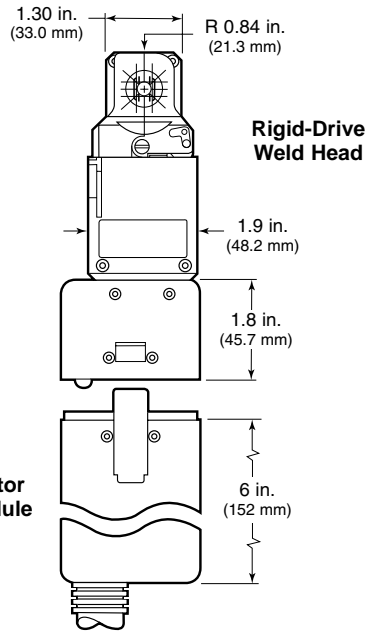
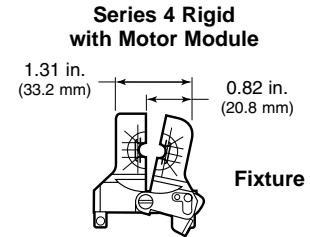
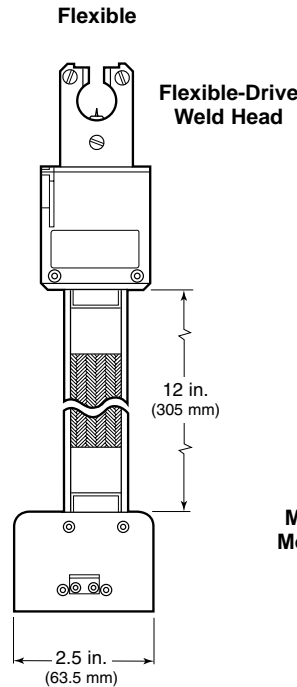
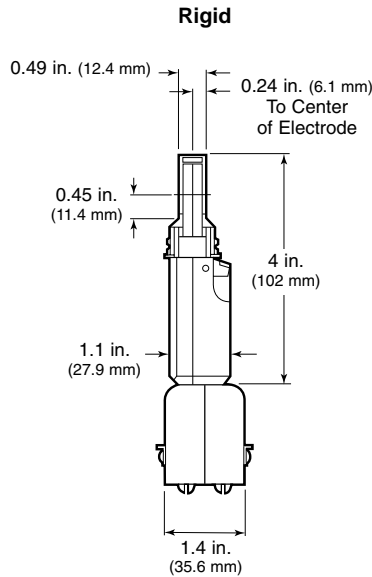


Series 4 and 8

- Available for outside diameters ranging from 1/16 to 1/2 in. and 2 to 12 mm
- Features a compact size for easy access to confined welding areas
- Weld head includes arc gap gauge, centering gauge, micro fixture tool, tool package, and tungsten electrodes

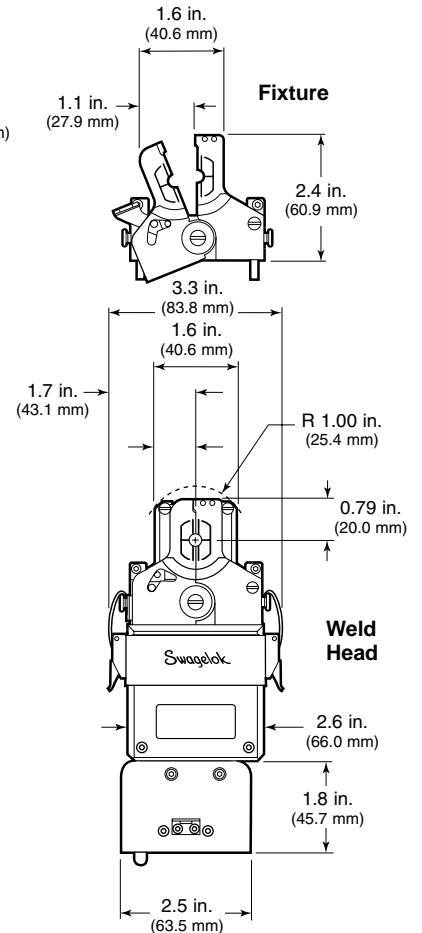
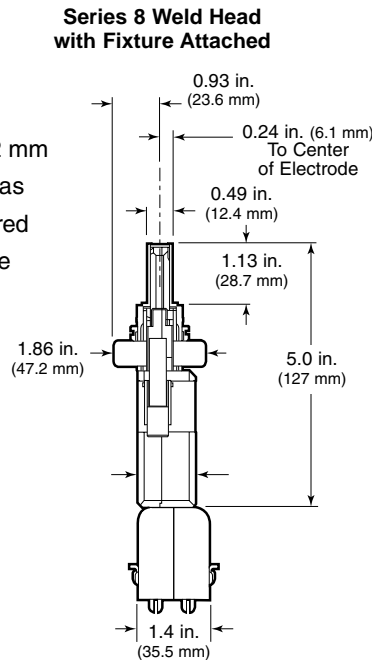
Series 4 Weld Head

- For outside weld joint diameters of 1/16 to 1/4 in. and 2 to 6 mm
- Miniature design permits access to confined welding areas
- Rigid- or flexible-drive weld head for ultimate versatility
- Optical speed control—no tachometer or calibration required
- Improved productivity from the ability to set up one fixture while welding with another fixture



Series 8 Weld Head

- For outside diameter weld joints of 1/8 to 1/2 and 3 to 12 mm
- Miniature design permits access to confined welding areas
- Optical speed control—no tachometer or calibration required
- Improved productivity from the ability to set up one fixture while welding with another fixture



Technical Data

| OD Capacity | Weld Head Series | Minimum Axial Clearance in. (mm) | Minimum Radial Clearance in. (mm) | Maximum Average Weld Current | Maximum Welds per Hour |
|-------------------------------|------------------|----------------------------------|-----------------------------------|------------------------------|------------------------|
| 1/16 to 1/4 in.; 2 to 6 mm | 4 | 0.490 (12.4) | 0.84 (21.3) | 30 A | 10 to 12 ^① |
| 1/8 to 1/2 in.; 3 to 12 mm | 8 | | 1.00 (25.4) | 38 A | 12 ^② |

① Based on welding 1/4 × 0.035 in. 316L tubing.

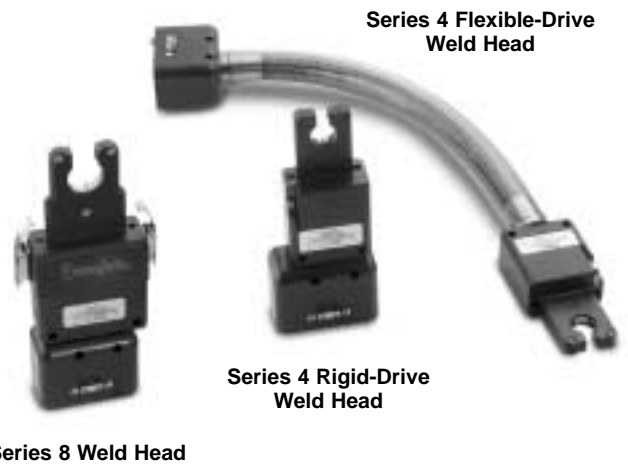
② Based on welding 1/2 × 0.049 in. 316L tubing.

Ordering Information and Dimensions

Swagelok® Series 4 and Series 8 micro weld heads are shipped with an arc gap gauge, centering gauge, tool package, fixture tool, assorted electrode packages, and user's manual.

Micro Weld Head

| Series | Description | Ordering Number |
|--------|--------------------------|-----------------|
| 4 | Rigid-Drive Weld Head | SWS-4MRH-B |
| | Flexible-Drive Weld Head | SWS-4MFH-B |
| 8 | Rigid-Drive Weld Head | SWS-8MRH-B |



Motor Module

- Only one motor module is necessary to operate either series weld head model.
- Has polarized power connectors to ensure proper weld head/power supply connections

| Description | Ordering Number |
|--------------|-----------------|
| Motor Module | SWS-M-MTR-B |



Motor Module

Micro Weld Head Fixture

- Front-load scissor action provides access to confined areas for close-coupled welding
- Cantilever design fixture collets compensate for tube outside diameter variations of ± 0.005 in. (0.13 mm)
- Laser-inscription on the fixtures assists user with parts orientation
- Split-base design provides component alignment adjustment



Series 4
Fixture

Series 8
Fixture

| Nominal Outside Diameter, in. | Ordering Number |
|-------------------------------|-----------------|
| Series 4 Weld Head | |
| 1/16 | SWS-4MFB-01 |
| 1/8 | SWS-4MFB-02 |
| 3/16 | SWS-4MFB-03 |
| 1/4 | SWS-4MFB-04 |
| Series 8 Weld Head | |
| 1/8 | SWS-8MFA-02 |
| 1/4 | SWS-8MFA-04 |
| 3/8 | SWS-8MFA-06 |
| 1/2 | SWS-8MFA-08 |

| Nominal Outside Diameter, mm | Ordering Number |
|------------------------------|-----------------|
| Series 4 Weld Head | |
| 2 | SWS-4MFB-2MM |
| 3 | SWS-4MFB-3MM |
| 4 | SWS-4MFB-4MM |
| 6 | SWS-4MFB-6MM |
| Series 8 Weld Head | |
| 5 | SWS-8MFA-5MM |
| 6 | SWS-8MFA-6MM |
| 8 | SWS-8MFA-8MM |
| 9 | SWS-8MFA-9MM |
| 10 | SWS-8MFA-10MM |
| 11 | SWS-8MFA-11MM |
| 12 | SWS-8MFA-12MM |

Accessories

Arc Gap Gauges

Swagelok arc gap gauges position the electrode precisely in the rotor for repeatable welds. The easy-to-use gauge helps eliminate errors associated with sight and feeler gauge adjustments. One arc gap gauge comes with the weld head.



| Series | Ordering Number |
|--------|-----------------|
| 4 | CWS-4MAG |
| 8 | CWS-8MAG |

Centering Gauges

The micro weld head centering gauge ensures accurate centering of weld components in the micro fixture. One centering gauge comes with the weld head.



| Series | Ordering Number |
|--------|-----------------|
| 4 | CWS-4MCG |
| 8 | CWS-8MCG |

Micro Fixture Tool

This tool engages the fixture latch for easy opening and closing of the micro weld head fixture. One micro fixture tool comes with the weld head.



| Description | Ordering Number |
|--------------------|-----------------|
| Micro Fixture Tool | CWS-MFP-FIXTL |

Cooling Plates

Swagelok cooling plates quickly absorb heat away from the micro weld head fixture and components after welding.



| Series | Ordering Number |
|--------|-----------------|
| 4 | CWS-4MCP |
| 8 | CWS-8MCP |

Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Bench Mounting Brackets

Swagelok bench mounting brackets attach rigid- or flexible-micro weld heads to a work bench. The Series 4 bracket features a quick-release mechanism for convenient operation.



| Series | Ordering Number |
|--------|-----------------|
| 4 | CWS-4MBB |
| 8 | CWS-8MBB |

Weld Head Extension Cables

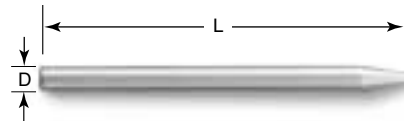
Swagelok weld head extension cables, in combination with the standard motor module, provide weld head operation up to 50 ft (15.2 m) away from the power supply. Cables are available in lengths of 12.5 and 37.5 ft (3.8 and 11.4 m).



| Extension Cable, ft (m) | Ordering Number |
|-------------------------|-------------------|
| 12.5 (3.8) | SWS-WHEC-B-12.5FT |
| 37.5 (11.4) | SWS-WHEC-B-37.5FT |

Tungsten Electrodes

Swagelok electrodes, available in packages of ten, provide consistent, repeatable welds. Electrodes consist of 2 % ceriated tungsten, axially ground to rigid specifications.



| Nominal Outside Diameter in. (mm) | Diameter (D) in. (mm) | Length (L) in. (mm) | Ordering Number |
|--------------------------------------|--------------------------|------------------------|------------------|
| Series 4 Weld Head | | | |
| 1/16, 1/8, and 3/16 (2, 3, and 4) | 0.040 (1.0) | 0.405 (10.3) | CWS-C.040-.405-P |
| 1/4 (6) | | 0.325 (8.26) | CWS-C.040-.325-P |
| Series 8 Weld Head | | | |
| 1/8 (3, 5) | 0.040 (1.0) | 0.450 (11.4) | CWS-C.040-.450-P |
| 1/4 (6, 8, 9) | | 0.405 (10.3) | CWS-C.040-.405-P |
| 3/8 (10, 11) | | 0.325 (8.26) | CWS-C.040-.325-P |
| 1/2 (12) | | 0.281 (7.14) | CWS-C.040-.281-P |

NOTE: Spare parts for weld heads and fixtures are available through your independent Swagelok sales and service representative.

Caution: Do not mix or interchange parts with those of other manufacturers.