

# Orbital Welding System

## Micro Weld Heads



### Series 4 and Series 8

- Available for tube 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

## Features

- 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

## Series 4

- For weld joint outside diameters of 1/16 to 1/4 in. and 2 to 6 mm
- Rigid- or flexible-drive weld head for ultimate versatility

## Series 8

- For weld joint outside diameters of 1/8 to 1/2 in. and 3 to 12 mm

## Technical Data

Weld Joint Nominal Outside Diameter	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 <sup>①</sup>
1/8 to 1/2 in.; 3 to 12 mm	8		1.00 (25.4)	38 A	12 <sup>②</sup>

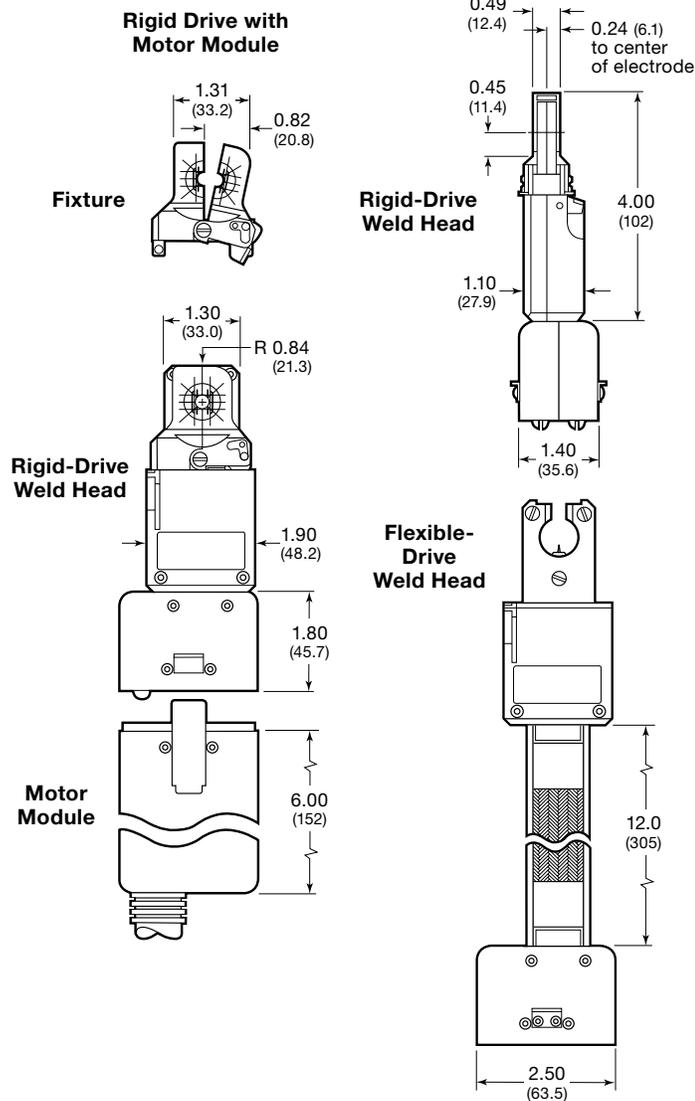
① Based on welding 1/4 × 0.035 in. 316L tubing.

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

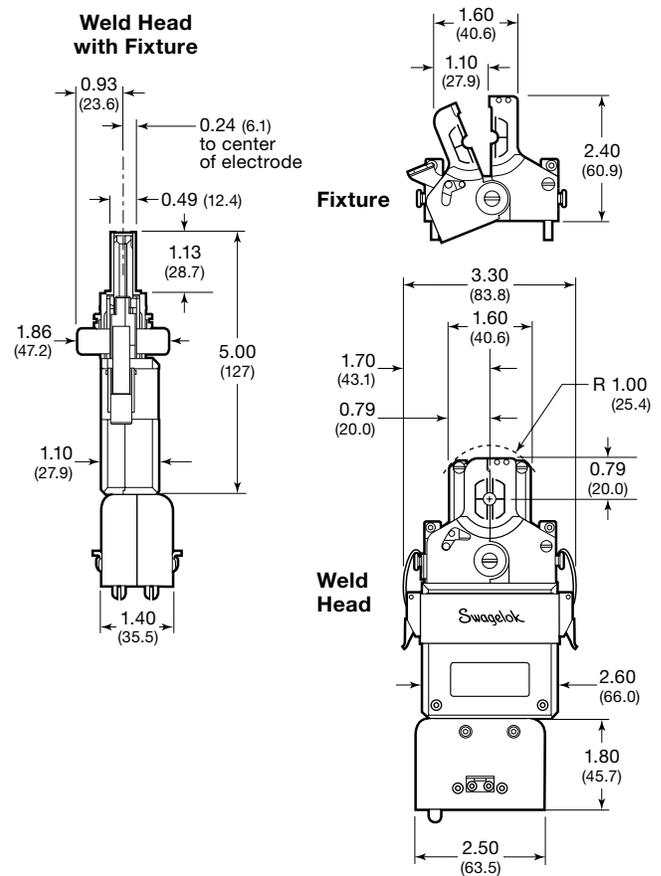
## Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

### Series 4



### Series 8

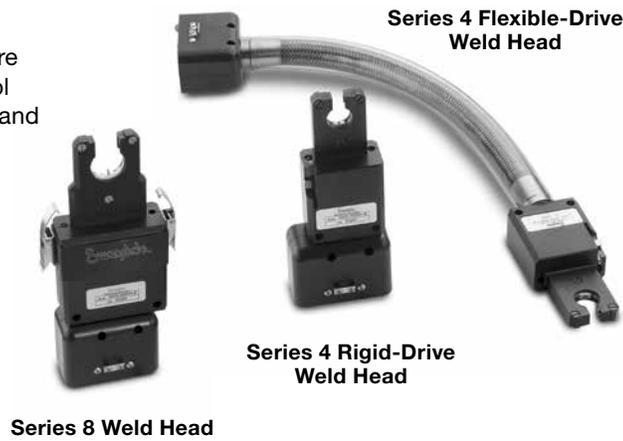


## Ordering Information

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 Heads

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



### Motor Modules

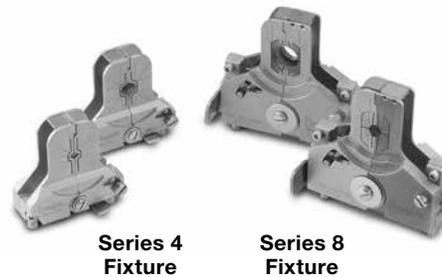
- Only one motor module is necessary to operate either series weld head model.
- Has polarized power connectors to ensure proper weld head/power supply connections

Description	Ordering Number
Motor module	SWS-M-MTR-B



### Micro Weld Head Fixtures

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



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

Weld Joint Nominal Outside Diameter mm	Ordering Number
<b>Series 4 Weld Head</b>	
2	SWS-4MFB-2MM
3	SWS-4MFB-3MM
4	SWS-4MFB-4MM
6	SWS-4MFB-6MM
<b>Series 8 Weld Head</b>	
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.

#### ⚠ WARNING

Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.

### 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 of 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).



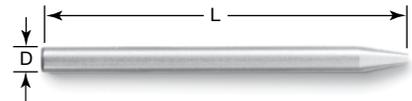
Extension Cable, ft (m)	Ordering Number
12.5 (3.8)	SWS-WHEC-B-12.5FT
37.5 (11.4)	SWS-WHEC-B-37.5FT

### Tungsten Electrodes

Swagelok electrodes, available in packages of ten, provide consistent, repeatable welds.

Electrodes consist of

2 % ceriated tungsten, axially ground to rigid specifications.



Weld Joint Nominal Outside Diameter		Electrode Diameter (D) in. (mm)	Electrode Length (L) in. (mm)	Ordering Number
in.	mm			
<b>Series 4 Weld Head</b>				
1/16, 1/8, 3/16	2, 3, 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
<b>Series 8 Weld Head</b>				
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

### Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit [swagelok.com](http://swagelok.com) or contact your authorized Swagelok representative.