

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 ^①
1/8 to 1/2 in.; 3 to 12 mm	8		1.00 (25.4)	38 A	12 ^②

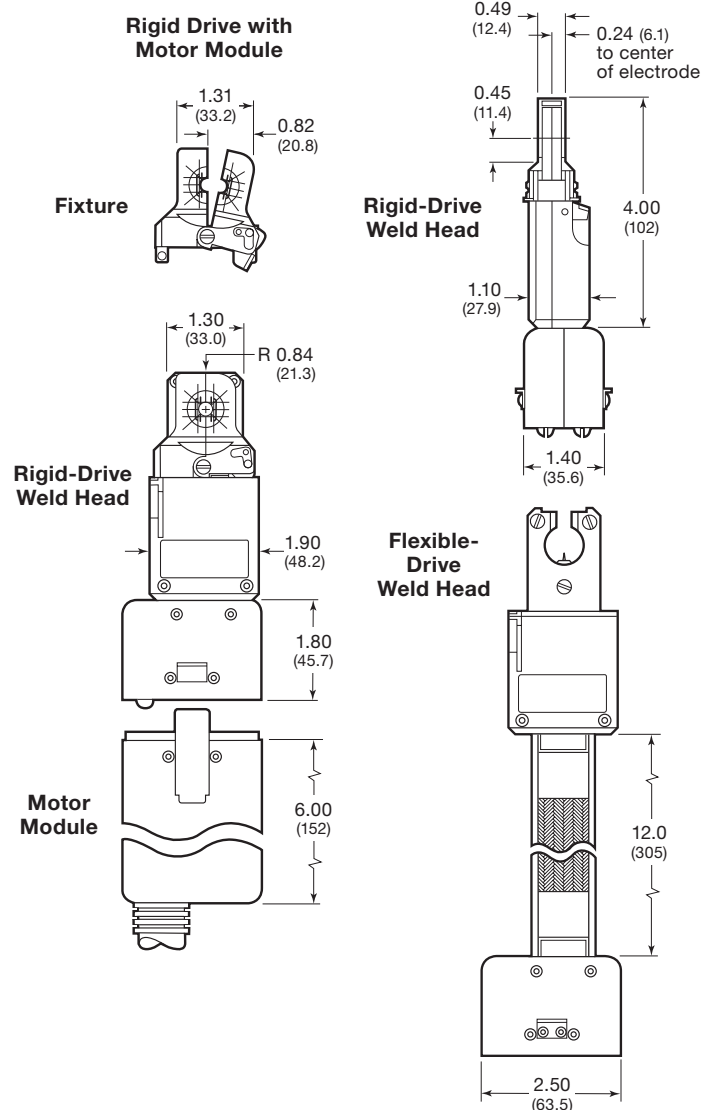
① Based on welding 1/4 × 0.035 in. 316L tubing.

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

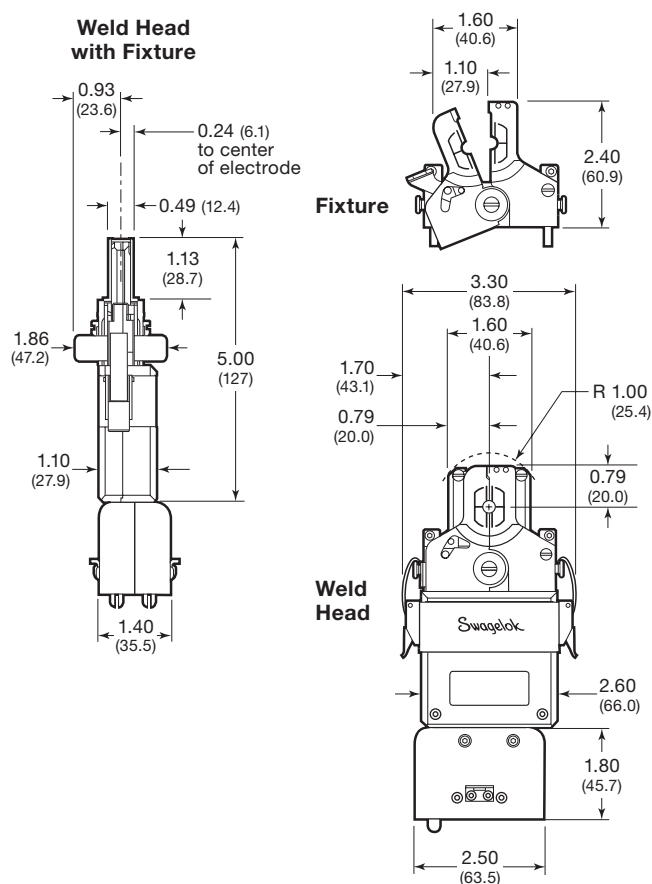
Dimensions

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

Series 8 Weld Head

Series 4 Flexible-Drive Weld Head

Series 4 Rigid-Drive Weld Head

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-D

Motor Module

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 ± 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

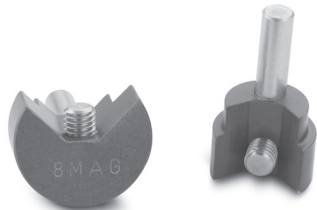
Weld Joint Nominal Outside Diameter in.	Ordering Number
Series 4 Weld Head	
1/16	SWS-4MFB-01
1/8	SWS-4MFB-02
3/16	SWS-4MFB-03
1/4	SWS-4MFB-04
Series 8 Weld Head	
1/8	SWS-8MFA-02
1/4	SWS-8MFA-04
3/8	SWS-8MFA-06
1/2	SWS-8MFA-08

Weld Joint 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 weld 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			
Series 4 Weld Head				
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
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

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.