

Orbital Welding System

Weld Head, Fixture Blocks,
Side Plates, Plenum, and Collets



Series 20

- Is available for outside diameters ranging from 1/2 to 2 in. and 12 to 52 mm
- Provides higher output capabilities
- Offers versatility for use in a variety of industries

Series 20 Weld Head

- Is for outside weld joint diameters of 1/2 to 2 in. and 12 to 52 mm
- Offers optical speed control—no tachometer or calibration required
- Has polarized power connectors to ensure proper weld head/power supply connection
- Provides higher output capabilities:
 - Increased performance
 - Heavier-wall tubing or pipe applications.

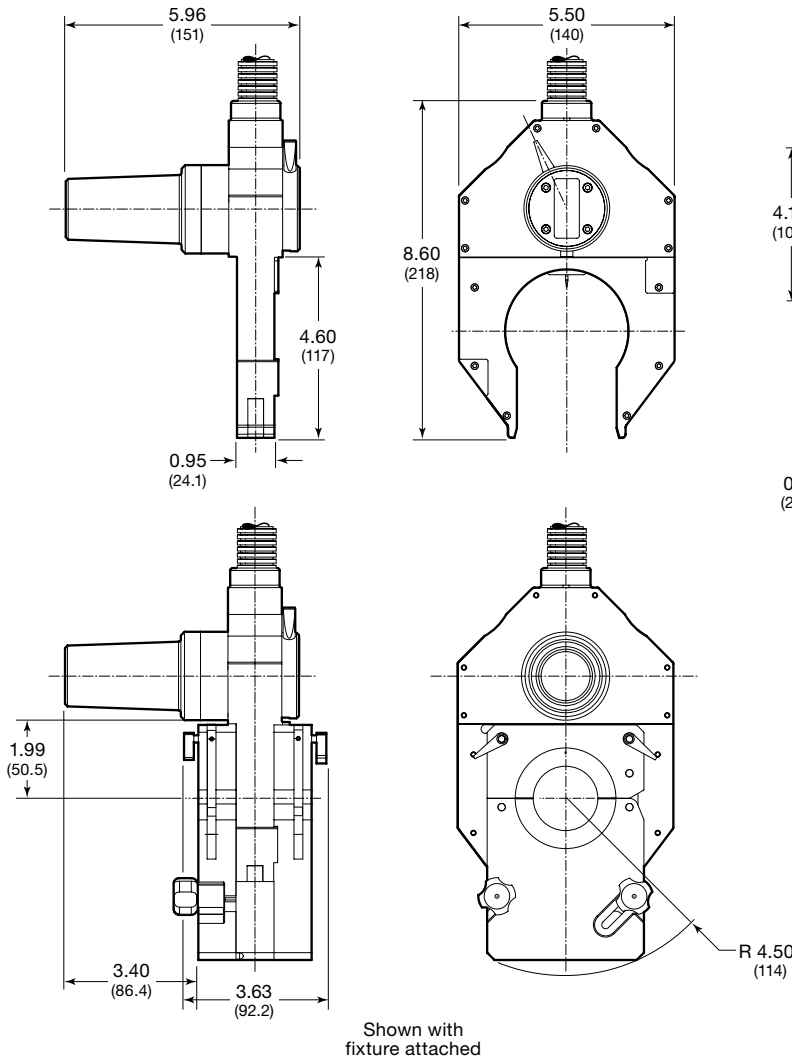
Series 20 Fixture Blocks, Side Plates, and Plenum

- Are for outside diameter weld joints of 1/2 to 2 in. and 12 to 52 mm
- Offer improved productivity from the ability to set up one fixture while welding with another fixture
- Modular design provides multiple fixture combinations.
- Fixture block includes centering gauge.

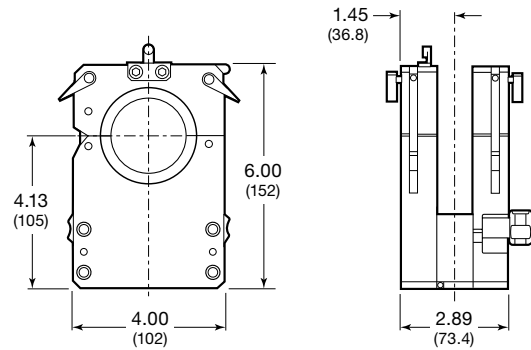
Ordering Information and Dimensions

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

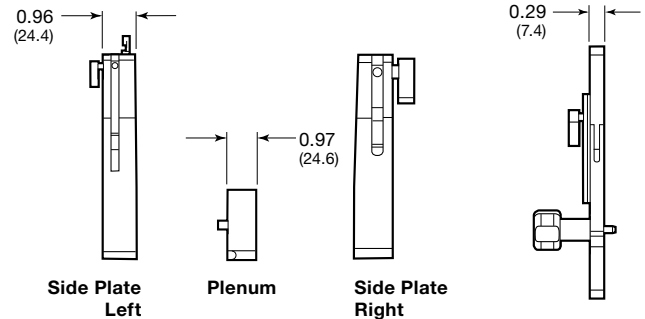
Weld Head



Fixture Block



Fixture Side Plates and Plenum



Description	Cable Length ft (m)	Ordering Number
Weld head (includes arc gap gauge, tool package, and tungsten electrodes)	15 (4.6)	SWS-20H-D-15
	35 (10.7)	SWS-20H-D-35
	50 (15.2)	SWS-20H-D-50

Cables attach directly to the Swagelok® M200 power supply. For Swagelok M100 and earlier power supply models, an adapter is required.

Ordering number: **SWS-M100-WH-ADPTR**



Description	Ordering Number
Fixture block	SWS-20TFB-A
Fixture side plate—left	SWS-20TSPL-A
Fixture side plate—right	SWS-20TSPR-A
Thin fixture side plate—left	SWS-20FSP1L
Thin fixture side plate—right	SWS-20FSP1R
Plenum	SWS-20BPLEN

Tube Collets

- Are removable to allow for easy size changes
- Hold components rigidly during welding
- Unique universal collet design holds components with a ± 0.005 in. (0.13 mm) tube outside diameter variation

Ordering Information

Two collet halves are required per side plate.

Tube Collets



Collet Size in.	Collet Half Ordering Number
1/2	CWS-20UCI-08
3/4	CWS-20UCI-12
1	CWS-20UCI-16
1 1/4	CWS-20UCI-20
1 1/2	CWS-20UCI-24
2	CWS-20UCI-32

Collet Size mm	Collet Half Ordering Number
12	CWS-20UCI-12MM
18	CWS-20UCI-18MM
20	CWS-20UCI-20MM
22	CWS-20UCI-22MM
25	CWS-20UCI-25MM
28	CWS-20UCI-28MM
35	CWS-20UCI-35MM
52	CWS-20UCI-52MM

Thin Collets

For use with thin side plates only.



Collet Size in.	Collet Half Ordering Number
1/2	SWS-20UCI-08TN
3/4	SWS-20UCI-12TN
1	SWS-20UCI-16TN
1 1/4	SWS-20UCI-20TN
1 1/2	SWS-20UCI-24TN
2	SWS-20UCI-32TN

Collet Size mm	Collet Half Ordering Number
12	SWS-20UCI-12MMTN
18	SWS-20UCI-18MMTN
20	SWS-20UCI-20MMTN
22	SWS-20UCI-22MMTN
25	SWS-20UCI-25MMTN
28	SWS-20UCI-28MMTN
35	SWS-20UCI-35MMTN
52	SWS-20UCI-52MMTN

Pipe Collets^①



Collet Size in.	Collet Half Ordering Number
1/4	CWS-20UCI-04P
1/2	CWS-20UCI-08P
3/4	CWS-20UCI-12P
1	CWS-20UCI-16P
1 1/4	CWS-20UCI-20P
1 1/2	CWS-20UCI-24P

Collet Size mm	Collet Half Ordering Number
10.2	CWS-20UCI-10.2MMP
13.5	CWS-20UCI-13.5MMP
17.2	CWS-20UCI-17.2MMP
21.3	CWS-20UCI-21.3MMP
26.9	CWS-20UCI-26.9MMP
33.7	CWS-20UCI-33.7MMP
42.4	CWS-20UCI-42.4MMP
48.3	CWS-20UCI-48.3MMP

^① For JIS pipe sizes, add **J** to the ordering number.

Example: CWS-20UCI-04PJ

TB7 Fitting Collets

Reduces minimum required tangent length to 0.75 in. (19.0 mm). For use with thin side plates only.



Collet Size in.	Collet Half Ordering Number
1/2	SWS-20UCI-08TN-TB7
5/8	SWS-20UCI-10TN-TB7
3/4	SWS-20UCI-12TN-TB7
7/8	SWS-20UCI-14TN-TB7
1	SWS-20UCI-16TN-TB7

Collet Size mm	Collet Half Ordering Number
12	SWS-20UCI-12MMTN-TB7
16	SWS-20UCI-16MMTN-TB7
18	SWS-20UCI-18MMTN-TB7
25	SWS-20UCI-25MMTN-TB7

Ferrule Mandrels

- Position and hold short tangent sanitary (Swagelok TS series) ferrules on-center in the weld fixture.
- Are for 1/2 to 2 in. fittings with ferrules 0.5 in. (12 mm) in overall length.



Ordering Information

Select an ordering number.^①

Ferrule Size in.	Ordering Number
1/2 and 3/4	SWS-32MANDREL-812
1 and 1 1/2	SWS-32MANDREL-1624
2	SWS-32MANDREL-32

Description	Ordering Number
Mandrel collet	SWS-20UCI-MC

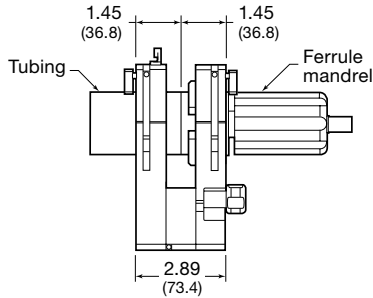
^① Ferrule mandrels must be used with fixture block **SWS-20TFB-A** or with fixture side plate **SWS-20TSPL-A** or **SWS-20TSR-A**. Special collets are required to hold the mandrel in the fixture. Two collet halves are required.

Examples of Fixture Side Plate Combinations and Configurations That Can Be Welded

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

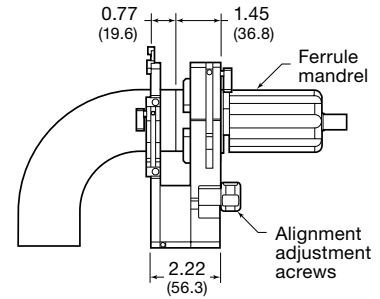
Tube to Short Sanitary Ferrule

Standard fixture block **SWS-20TFB-A** with **SWS-32MANDREL**



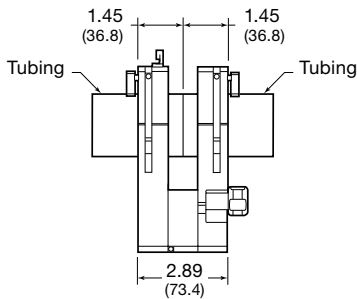
Short Sanitary Ferrules and Standard Tangent Elbow

Standard side plate **SWS-20TSPR-A** and thin side plate **SWS-20FSP1L** using **SWS-32MANDREL**



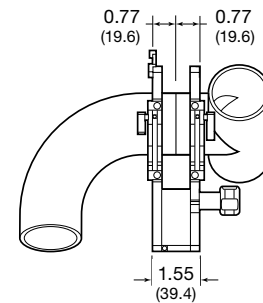
Tube to Tube

Standard fixture block **SWS-20TFB-A**



Standard Tangent Elbow to Standard Tangent Tee

Thin side plate fixture block **SWS-20FSP1L** and **SWS-20FSP1R**



Options and Accessories

Weld Head Extension Cables

Swagelok weld head extension cables enable weld head operation away from the M200 power supply, up to a total cable length of 200 ft (61 m).

See the Swagelok *Series 20 Weld Head User's Manual*, MS-13-205, for information on weld head performance with optional weld head extension cables.



Extension Cable ft (m)	Ordering Number
35 (10.7)	SWS-WHEC-D-35
50 (15.2)	SWS-WHEC-D-50

Weld Head Adapter Cable

The weld head adapter cable allows connection from earlier Swagelok 20H-C model weld heads to the Swagelok M200 power supply.



Ordering number: **SWS-M200-WH-ADPTR**

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.

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

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			
1/2, 5/8, 3/4, 7/8	12, 14, 16, 18, 20, 22	0.062 (1.5)	1.630 (41.1)	CWS-C.062-1.630-P
1, 1 1/8, 1 1/4	23, 25, 28		1.380 (35.1)	CWS-C.062-1.380-P
1 1/2	35		1.105 (28.1)	CWS-C.062-1.105-P
1 3/4, 2	40, 52		0.855 (21.7)	CWS-C.062-.855-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.