

# 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.

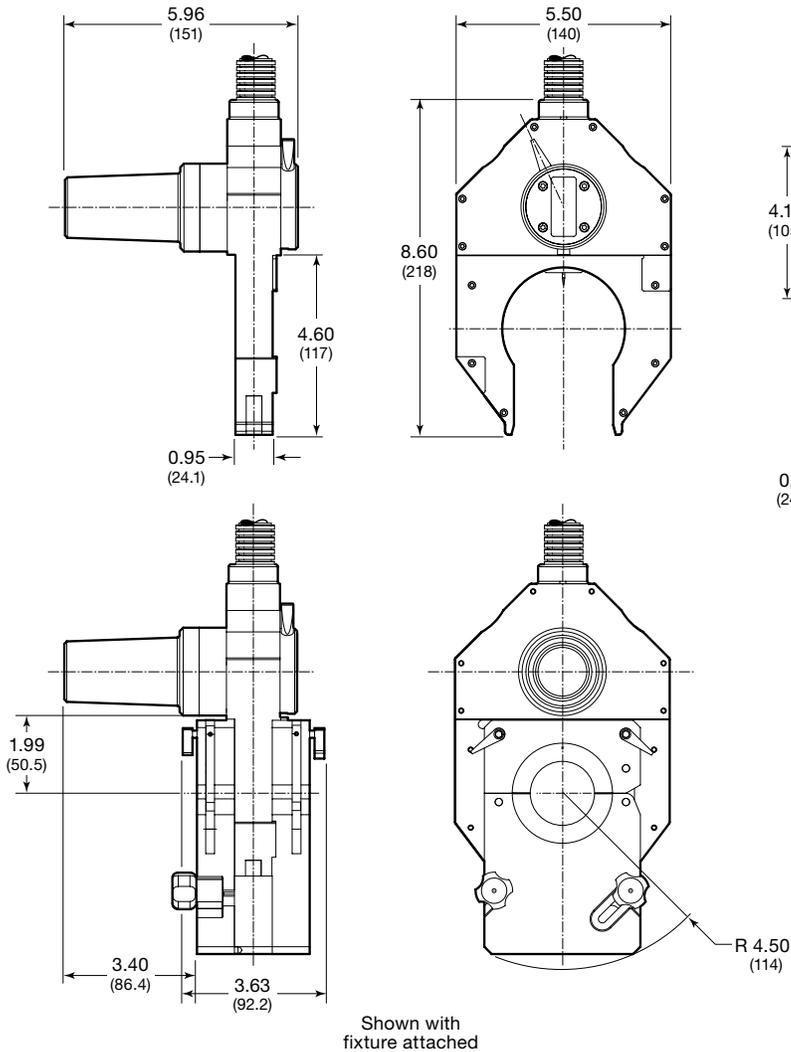
### Series 20 Fixture Blocks, Side Plates, and Plenum

- 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.

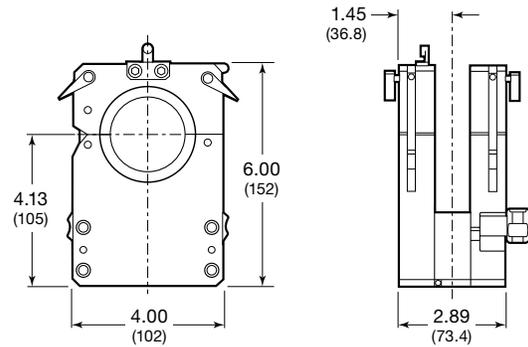
### Ordering Information and Dimensions

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

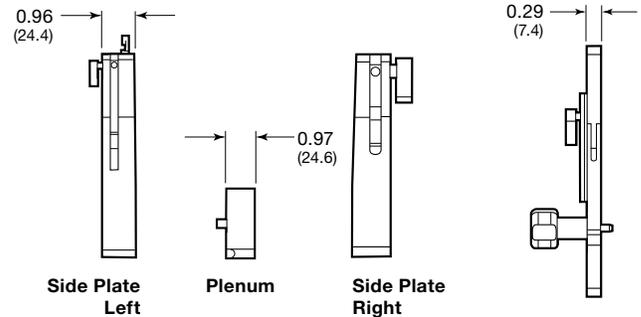
#### Weld Head



#### 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  $\pm 0.005$  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<sup>①</sup>



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

<sup>①</sup> 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 cm).  
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.<sup>①</sup>

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

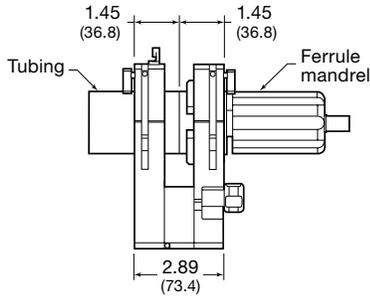
<sup>①</sup> Ferrule mandrels must be used with fixture block **SWS-20TFB-A** or with fixture side plate **SWS-20TSPL-A** or **SWS-20TSR-A**. Special collets are required to hold the mandrel in the fixture. Two collet halves are required.

## 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.

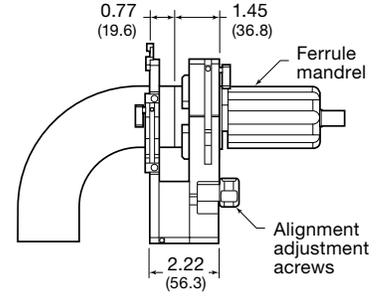
### Tube to Short Sanitary Ferrule

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



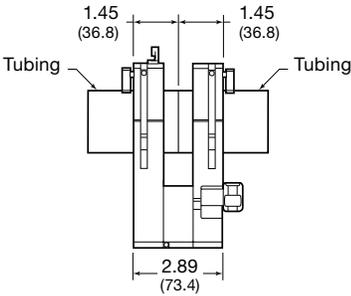
### Short Sanitary Ferrules and Standard Tangent Elbow

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



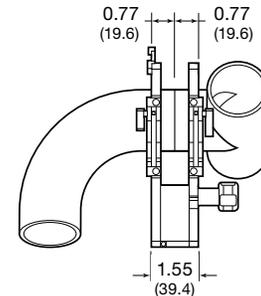
### Tube to Tube

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

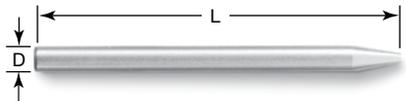
When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

**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](http://swagelok.com) or contact your authorized Swagelok representative.