

TECHNICAL STANDARDS & SAFETY AUTHORITY  
345 CARLINGVIEW DRIVE  
TORONTO ON M9W 6N9

**Date:** July 21, 2021  
**Account #:** 35231  
**Journal #:** 78297

**Attn:** TSSA

**Re:** Application for Design Registration

The design, as detailed in your, 0D20616.5ADD1 - SWAGELOK, for a Fitting is accepted for registration as follows:

**Registered To:** SWAGELOK COMPANY                      **CRN:** 0D20616.51

**Drawing #:** SCOPE OF REGISTRATION

This design was registered based on a technical review performed by the province of initial registration in accordance with the Association of Chief Inspectors policy on reciprocal recognition of design review.

**Reviewer's Notes:**

As required by CSA B51 4.2.1, this registration expires on 15-Aug-2028. This CRN is valid until the expiry date as long as the Manufacturer maintains a valid quality control program verified by an acceptable third-party agency until that date. Should the certification of the quality control program lapse before the expiry date, this registration shall become void. Any additional conditions of registration stated in TSSA CRN# 0D20616.5ADD1 registration shall apply to BC registration.

Contact me if you have any questions. The invoice for registration will be forwarded under separate cover.

Janina Mihailescu

janina.mihailescu@technicalsaftybc.ca  
Design Administration

**cc:**



Technical Standards and Safety Authority  
345 Carlingview Drive  
Toronto, Ontario M9W 6N9  
www.tssa.org

Show facsimile of manufacturer's logo or trademark, as it will appear on the fitting, in the space below



### STATUTORY DECLARATION Registration of Fittings

I, Joel Feldman, Vice President of Engineering  
(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of Swagelok Company  
(Name of Manufacturer)

Located at 29500 Solon Road, Solon, Ohio 44139 USA (440) 248-4600 (440) 349-5970  
(Plant Address) (Telephone No.) (Fax No.)

do solemnly declare that the fittings listed hereunder, which are subject to the *Technical Standards and Safety Act*, Boilers and Pressure Vessels Regulation, comply with all of the requirements of ASME B31.3 for unlisted components  
(Title of recognized North American Standard)

which specifies the dimensions, materials of construction, pressure/temperature ratings, identification marking the fittings and service;

or are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with \_\_\_\_\_ as supported by the attached data which identifies the dimensions, material of construction, pressure/temperature ratings and the basis for such ratings, the marking of the fitting for identification and service.

I further declare that the manufacture of these fittings is controlled by a quality system meeting the requirements of ISO 9001:2015 which has been verified by the following authority, BSI

The items covered by this declaration, for which I seek registration, are category D. Hose type fittings. In support of this application, the following information and/or test data are attached as follows:  
ISO 9001:2015 Certificate, Attachment A, Attachment B, Catalog Information and other Support Documents  
(drawings, calculations, test reports, etc.)

Declared before me at \_\_\_\_\_ in the \_\_\_\_\_ of \_\_\_\_\_  
the \_\_\_\_\_ day of \_\_\_\_\_ AD 20\_\_\_\_\_.

Commissioner for Oaths:

**Unable to get a notary signature  
or seal due to COVID-19 situation**  
(Printed name)  
\_\_\_\_\_  
(Signature)

DocuSigned by:  
  
2/18/2021 | 7:27 AM EST  
C87CBBEFD3F14B7  
(Signature of Declarer)

#### FOR OFFICE USE ONLY

To the best of my knowledge and belief, the application meets the requirements of the *Technical Standards and Safety Act*, Boilers and Pressure Vessels Regulation, and CSA Standard B51 and is accepted for registration in Category D.

CRN: 0D20616.5ADD1

Registered by: LILIANA CONSTANTINESCU

Dated: MARCH 17, 2021



This Document has been digitally signed. The stamp size has been optimized for 11 x 17 documents

Technical Standards and Safety Authority | Boilers and Pressure Vessels Safety Program  
**REGISTERED**  
C.R.N.: 0D20616.5ADD1  
Signed:   
Date: March 17, 2021.

NOTE: This registration expires on: **AUGUST 15, 2028**

\*Information provided in this application is releasable under the Freedom of Information and Privacy Protection Act and may be disclosed upon request. FOR SCOPE OF REGISTRATION SEE THE STAMPED ATTACHMENT A AND B



## Attachment B: Scope of Registration for Swagelok FJ Series Hose Assemblies (Category D)

### Product Scope

The table below represents the scope of Swagelok FJ series hose assemblies covered by this submission for CRN approval. These hose assemblies are assembled by Hose Master LLC and at the Swagelok Company locations in Solon, Ohio and have been evaluated in accordance with ASME B31.3 and ISO 10380. The referenced product catalog(s) do not represent the full scope of the submission but rather detail some of the most common options.

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### Summary Table

Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose-  <b>1/4"</b>	Core 316/316L SS (ASTM A240)  Braid 304 SS or 316L SS (ASTM A478)  Weld Collar 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)  End Connections 316/316L SS (ASTM A479)	Swagelok Tube Fitting [TA TM SL SM]	1/8" - 1/2" 3mm - 12mm	1600	1184	ASME B31.3 ISO 10380
		Female and Male VCR Metal Gasket Face seal Fitting [RF RM]	1/8" - 1/2"	1600	1184	
		Male High Flow VCR Metal Gasket Face seal Fitting [HRM]	1/4"	1600	1184	
		Female and Male VCO O-ring Face seal Fitting [VF VM]	1/8" - 1/2"	1600 (1)	1328 @550°F (1)	
		Female 37° JIC and male 37° JIC with female swivel nut [AN AS]	1/8" - 1/2"	1600	1184	
		Female and male NPT Tapered Pipe Fitting [PM PF]	1/8" - 1/2"	1600 (2)	1424 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	1/8" - 1/2"	1600 (2)	1424 @450°F (2)	
		Tube Butt Welds [TB MTB]	1/8" - 1/2" 6mm - 12mm	1600	1184	
		Female ISO/BSP Parallel Threads (ISO 228) [FS]	1/4" - 1/2"	1600	1472 @400°F (1)	
		Male UN/UNF (SAE J1926) Stud End [ST]	1/8" - 1/2"	1600 (1)	1472 @400°F (1)	

- (1) Temperature and/or pressure ratings are determined by gasket or O-ring materials. Refer to Swagelok catalog MS-01-147 for ratings.
- (2) Temperature and/or pressure ratings are determined by pipe thread sealant type. Refer to Swagelok catalog MS-01-91 for ratings.



Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose- 3/8"	<u>Core</u> 316/316L SS (ASTM A240)  <u>Braid</u> 304 SS or 316L SS (ASTM A478)  <u>Weld Collar</u> 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)  <u>End Connections</u> 316/316L SS (ASTM A479)	Swagelok Tube Fitting [TA TM SL SM]	1/4" - 3/4" 6mm - 18mm	1470	1088	ASME B31.3 ISO 10380
		Female and Male VCR Metal Gasket Face seal Fitting [RF RM]	1/4" - 3/4"	1470	1088	
		Female and Male VCO O-ring Face seal Fitting [VF VM]	1/4" - 3/4"	1470 (1)	1220 @550°F (1)	
		Female 37° JIC and male 37° JIC with female swivel nut [AN AS]	1/4" - 3/4"	1470	1088	
		Female and male NPT Tapered Pipe Fitting [PM PF]	1/4" - 3/4"	1470 (2)	1308 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	1/4" - 3/4"	1470 (2)	1308 @450°F (2)	
		Tube Butt Welds [TB MTB]	1/4" - 3/4" 6mm - 18mm	1470	1088	
		Female ISO/BSP Parallel Threads (ISO 228) [FS]	1/4" - 1/2"	1470	1352 @400°F (1)	
		Male UN/UNF (SAE J1926) Stud End [ST]	1/4" - 3/4"	1470 (1)	1352 @400°F (1)	

- (1) Temperature and/or pressure ratings are determined by gasket or O-ring materials. Refer to Swagelok catalog MS-01-147 for ratings.
- (2) Temperature and/or pressure ratings are determined by pipe thread sealant type. Refer to Swagelok catalog MS-01-91 for ratings.

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Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose- 1/2"	Core 316/316L SS (ASTM A240)	Swagelok Tube Fitting [TA TM SL SM]	3/8" - 1" 10mm - 25mm	1110	821	ASME B31.3 ISO 10380
		Female and Male VCR Metal Gasket Face seal Fitting [RF RM]	3/8" - 1"	1110	821	
	Braid 304 SS or 316L SS (ASTM A478)	Female and Male VCO O-ring Face seal Fitting [VF VM]	3/8" - 1"	1110 (1)	921 @550°F (1)	
		Female 37° JIC and male 37° JIC with female swivel nut [AN AS]	3/8" - 1"	1110	821	
	Weld Collar 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)	Female and male NPT Tapered Pipe Fitting [PM PF]	3/8" - 1"	1110 (2)	988 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	3/8" - 1"	1110 (2)	988 @450°F (2)	
	End Connections 316/316L SS (ASTM A479)	Tube Butt Welds [TB MTB]	3/8" - 1" 10mm - 25mm	1110	821	
		Female ISO/BSP Parallel Threads (ISO 228) [FS]	3/8"-1/2"	1110	1021 @400°F (1)	
Male UN/UNF (SAE J1926) Stud End [ST]		3/8" - 1"	1110 (1)	1021 @400°F (1)		

- (1) Temperature and/or pressure ratings are determined by gasket or O-ring materials. Refer to Swagelok catalog MS-01-147 for ratings.
- (2) Temperature and/or pressure ratings are determined by pipe thread sealant type. Refer to Swagelok catalog MS-01-91 for ratings.

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Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose-  <b>3/4"</b>	<u>Core</u> 316/316L SS (ASTM A240)  <u>Braid</u> 304 SS or 316L SS (ASTM A478)  <u>Weld Collar</u> 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)  <u>End Connections</u> 316/316L SS (ASTM A479)	Swagelok Tube Fitting <b>[TA TM SL SM]</b>	1/2" - 1 1/4" 12mm - 32mm	860	636	ASME B31.3 ISO 10380
		Female and Male VCR Metal Gasket Face seal Fitting <b>[RF RM]</b>	1/2" - 1"	860	636	
		Female and Male VCO O-ring Face seal Fitting <b>[VF VM]</b>	1/2" - 1"	860 (1)	714 @550°F (1)	
		Female 37° JIC and male 37° JIC with female swivel nut <b>[AN AS]</b>	1/2" - 1"	860	636	
		Female and male NPT Tapered Pipe Fitting <b>[PM PF]</b>	1/2" - 1 1/4"	860 (2)	765 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads <b>[MT FT]</b>	1/2" - 1 1/4"	860 (2)	765 @450°F (2)	
		Tube Butt Welds <b>[TB MTB]</b>	1/2" - 1" 12mm - 25mm	860	636	
		Female ISO/BSP Parallel Threads (ISO 228) <b>[FS]</b>	1/2"	860	791 @400°F (1)	
		Male UN/UNF (SAE J1926) Stud End <b>[ST]</b>	1/2" - 1 1/4"	860 (1)	791 @400°F (1)	

- (1) Temperature and/or pressure ratings are determined by gasket or O-ring materials. Refer to Swagelok catalog MS-01-147 for ratings.
- (2) Temperature and/or pressure ratings are determined by pipe thread sealant type. Refer to Swagelok catalog MS-01-91 for ratings.

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Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose- 1"	Core 316/316L SS (ASTM A240)	Swagelok Tube Fitting [TA TM SL SM]	3/4" - 1 1/2" 18mm - 38mm	680	503	ASME B31.3 ISO 10380
		Female and Male VCR Metal Gasket Face seal Fitting [RF RM]	3/4" - 1"	680	503	
	Braid 304 SS or 316L SS (ASTM A478)	Female and Male VCO O-ring Face seal Fitting [VF VM]	3/4" - 1"	680 (1)	564 @550°F (1)	
		Female 37° JIC and male 37° JIC with female swivel nut [AN AS]	3/4" - 1"	680	503	
	Weld Collar 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)	Female and male NPT Tapered Pipe Fitting [PM PF]	3/4" - 1 1/2"	680 (2)	605 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	3/4" - 1 1/2"	680 (2)	605 @450°F (2)	
	End Connections 316/316L SS (ASTM A479)	Tube Butt Welds [TB MTB]	3/4" - 1" 18mm - 25mm	680	503	
		Male UN/UNF (SAE J1926) Stud End [ST]	3/4" - 1 1/2"	680 (1)	626 @400°F (1)	

- (1) Temperature and/or pressure ratings are determined by gasket or O-ring materials. Refer to Swagelok catalog MS-01-147 for ratings.
- (2) Temperature and/or pressure ratings are determined by pipe thread sealant type. Refer to Swagelok catalog MS-01-91 for ratings.

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Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose- 1 1/4"	<u>Core</u> 316/316L SS (ASTM A240)  <u>Braid</u> 304 SS or 316L SS (ASTM A478)  <u>Weld Collar</u> 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)  <u>End Connections</u> 316/316L SS (ASTM A479)	Swagelok Tube Fitting [TA TM SL SM]	1" - 2" 25mm - 50mm	680	503	ASME B31.3 ISO 10380
		Female and Male VCR Metal Gasket Face seal Fitting [RF RM]	1"	680	503	
		Female and Male VCO O-ring Face seal Fitting [VF VM]	1"	680 (1)	564 @550°F (1)	
		Female 37° JIC and male 37° JIC with female swivel nut [AN AS]	1"	680	503	
		Female and male NPT Tapered Pipe Fitting [PM PF]	1" - 2"	680 (2)	605 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	1" - 2"	680 (2)	605 @450°F (2)	
		Tube Butt Welds [TB MTB]	1" 25mm	680	503	
		Male UN/UNF (SAE J1926) Stud End [ST]	1" - 2"	680 (1)	626 @400°F (1)	

- (1) Temperature and/or pressure ratings are determined by gasket or O-ring materials. Refer to Swagelok catalog MS-01-147 for ratings.
- (2) Temperature and/or pressure ratings are determined by pipe thread sealant type. Refer to Swagelok catalog MS-01-91 for ratings.

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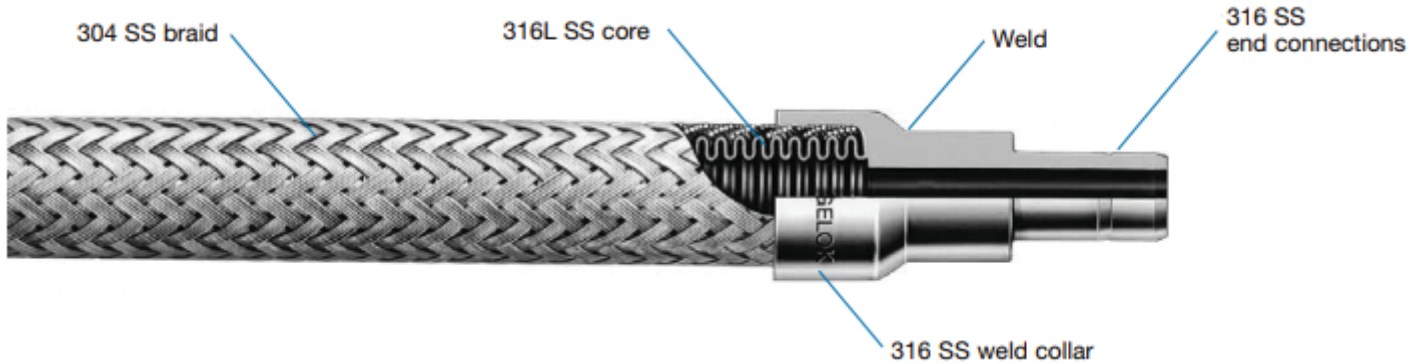
Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose-  1 1/2"	<u>Core</u> 316/316L SS (ASTM A240)  <u>Braid</u> 304 SS or 316L SS (ASTM A478)  <u>Weld Collar</u> 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)	Swagelok Tube Fitting [TA TM SL SM]	1 1/4" - 2" 32mm - 50mm	520	385	ASME B31.3 ISO 10380
		Female and male NPT Tapered Pipe Fitting [PM PF]	1 1/4" - 2"	520 (2)	463 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	1 1/4" - 2"	520 (2)	463 @450°F (2)	
		Male UN/UNF (SAE J1926) Stud End [ST]	1 1/4" - 2"	520 (1)	478 @400°F (1)	
FJ Series Metal Hose-  2"	<u>End Connections</u> 316/316L SS (ASTM A479)	Swagelok Tube Fitting [TA TM SL SM]	1 1/2" - 2" 38mm - 50mm	450	333	
		Female and male NPT Tapered Pipe Fitting [PM PF]	1 1/2" - 2"	450 (2)	401 @450°F (2)	
		Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	1 1/2" - 2"	450 (2)	401 @450°F (2)	
		Male UN/UNF (SAE J1926) Stud End [ST]	1 1/2" - 2"	450 (1)	414 @400°F (1)	

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- (2) Temperature and/or pressure ratings are determined by pipe thread sealant type. Refer to Swagelok catalog MS-01-91 for ratings.

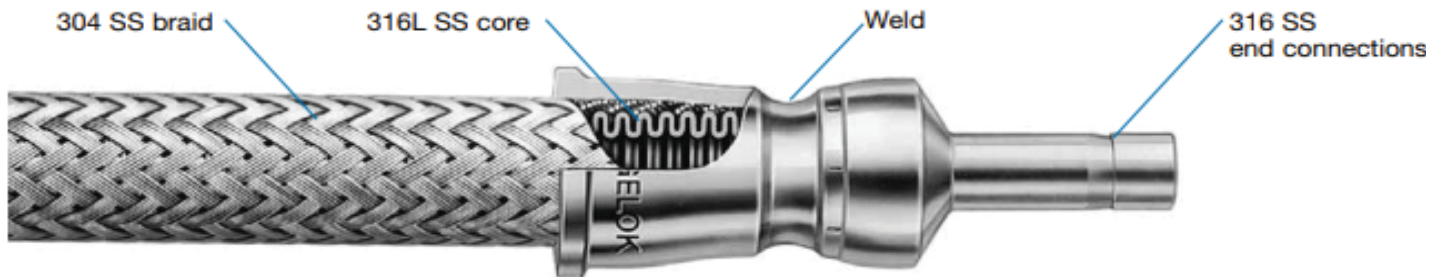
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**Product Illustration**

**Swagelok FJ Series Manual Weld Assembly (1/4" and larger)**



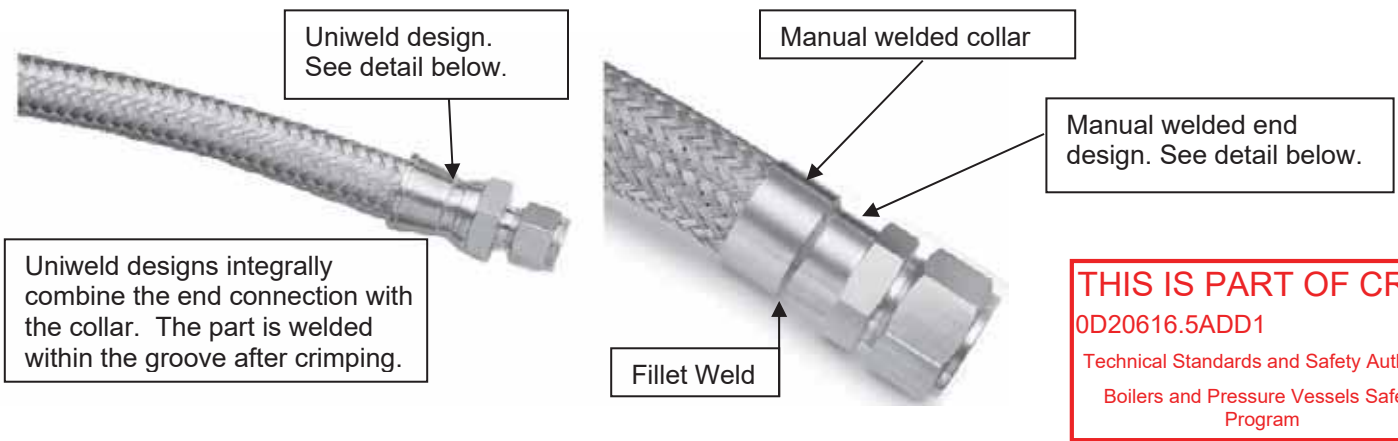
**Swagelok FJ Series Automatic Weld Assembly (1/2" and under)**



**Configuration Example:**

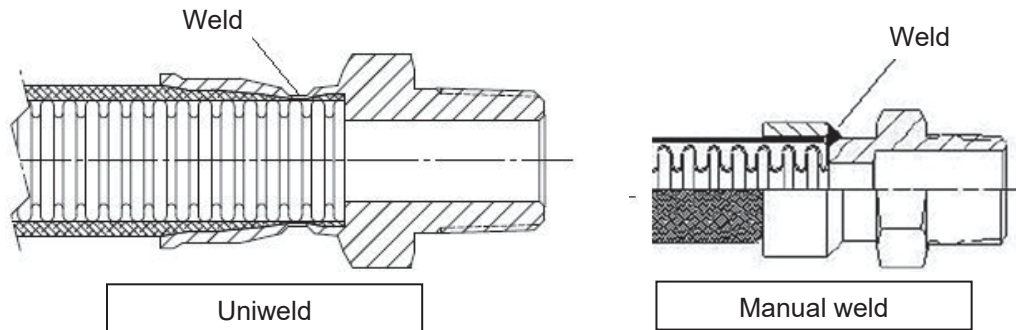
FJ hoses are available in two styles with many end types, end sizes, and possible overall lengths. There are two ways the hose end connections are attached to the tube and braid depending on the size of the hose:

- Gas Tungsten Arc Weld (GTAW) Uniweld with Integral Weld Collar (1/2" and under)
- Manual Weld with Manual Weld Collar (1/4" and larger)



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## Weld Detail:



## Product Options:

Additional options that do not affect pressure and/or temperature ratings may be made available within the scope of this approval. Examples of these would include the following:

### Braid Options

- 316L SS

### Cover Options

- Armor guard - Interlocking, flexible 302 stainless steel.
- Fire jacket - Woven fiberglass coated with specially compounded aerospace-grade silicone rubber.
- Thermosleeve - Braided fiberglass with saturated synthetic material coating.

### Tag and Marking Options

- Mat tag - Polyester tag with customer-specified text
- Lanyard tag - Stainless steel tag with customer-specified text
- Clamp tag - Stainless steel tag with customer-specified text

Additional options that may affect pressure and/or temperature ratings may be made available within the scope of this approval. Examples of these would include the following:

### End Connection Seals or Sealant Options

- VCO - O-rings
- VCR - Gasket
- Pipe Thread ends - thread sealant

## Quality System

The Swagelok Company quality system complies with the requirements of ISO 9001:2015. The Swagelok Company maintains BSI Certificate of Registration Number FM 01729, which applies to all locations listed on the Certificate. The Swagelok FJ series hose assemblies are manufactured at Hose Master LLC and at the Swagelok Company locations in Solon, Ohio.

## References

The below product catalog does not represent the full scope of the registration but rather details some of the most common options.

- Hose Assemblies, Bulk Hose, and End Connections Product Catalog MS-01-180

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## Attachment A. Swagelok Manufacturing Locations

This document lists the Swagelok locations where end item or component level manufacturing activities take place.

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Swagelok Company 29500 Solon Road Solon, Ohio 44139 USA	Swagelok Company (Falon 1) 348 Bishop Road Highland Heights, Ohio 44143 USA
Swagelok Company (Highland) 318 Bishop Road Highland Heights, Ohio 44143 USA	Swagelok Company (Falon 2) 358 Bishop Road Highland Heights, Ohio 44143 USA
Swagelok Company (OFC) 29495 F.A. Lennon Drive Solon, Ohio 44139 USA	Swagelok Company (HPF) 6050 Cochran Road Solon, Ohio 44139 USA
Swagelok Company (Atlantic) 26651 Curtiss Wright Parkway Willoughby Hills, Ohio 44092 USA	Swagelok Company (Snow Metal) 6060 Cochran Road Solon, Ohio 44139 USA
Swagelok Company (Micro) 26653 Curtiss Wright Parkway Willoughby Hills, Ohio 44092 USA	Swagelok Company (Alfred) 29500 Ambina Drive Solon, Ohio 44139
Swagelok Hose Services Company (SHSC) 29900 Solon Industrial Parkway Solon, Ohio 44139	Swagelok Company (Strongsville) 15400 Foltz Road Strongsville, Ohio 44119
Swagelok (China) Fluid System Technologies Ltd. Changshu Export Process Zone Changshu Economic Development Zone Changshu, Jiangshu 215513 China	Swagelok Limited Ballafletcher Road Tromode IM4 4RA Isle of Man