

FORM FOR THE REGISTRATION OF FITTING DESIGNS

NEW BRUNSWICK
NUNAVUT

NOVA SCOTIA
YUKON

PRINCE EDWARD ISLAND
NORTHWEST TERRITORIES

NEWFOUNDLAND AND LABRADOR

MANUFACTURERS NAME: <u>Swagelok Company</u>	
MANUFACTURERS ADDRESS: <u>29500 Solon Road, Solon, Ohio 44139 USA</u>	
PLANT LOCATIONS: <u>Headquarters: 29500 Solon Road, Solon, Ohio 44139 USA (See Attachment A)</u>	
<p>CATEGORY OF FITTINGS TO BE REGISTERED. CIRCLE ONE CATEGORY ONLY</p> <p>A Pipe fittings, including couplings, tees, elbows, Ys, plugs, unions, pipe caps, or reducers B Flanges: all flanges C Valves: all line valves <input checked="" type="radio"/> D Expansion joints, flexible connections, and hose assemblies: all types E Strainers, filters, separators, and steam traps F Measuring devices, including pressure gauges, level gauges, sight glasses, levels, or pressure transmitters G Certified capacity-rated pressure relief devices acceptable as primary over pressure protection on boilers, pressure vessels, piping and fusible plugs H Pressure retaining components that do not fall into one of the above categories N Nuclear components: Class 1 <input type="checkbox"/> Class 2 <input type="checkbox"/> Class 3 <input type="checkbox"/> (Meeting AECB or ASME requirements)</p>	<p>TITLE OF THE STANDARD OF CONSTRUCTION</p> <p>ASME B31.3 for unlisted components</p>
<p>SHOW MANUFACTURERS NAME, TRADEMARK, OR LOGO AS IT WILL APPEAR ON THE PRODUCT</p> <p style="text-align: center; font-size: 2em;"><i>Swagelok</i></p>	<p>TYPE OF CONSTRUCTION</p> <p>FORGED <input type="checkbox"/> WELDED <input type="checkbox"/> WROUGHT <input type="checkbox"/> CAST <input type="checkbox"/> OTHER <input checked="" type="checkbox"/> DESCRIBE OTHER: wire, strip, bar</p>
<p>LIST OF SUPPORTING DOCUMENTATION AND IDENTIFICATION OF THE ACTUAL ITEMS TO BE REGISTERED:</p> <p>ISO 9001:2015 Certificate, Attachment A, Attachment B, Catalog Information and other Support Documents</p>	

DECLARATION:

I Joel Feldman, Vice President, Engineering (see note 3) employed by Swagelok Company and being the person having full authority and responsibility for the quality of the end product do solemnly declare that the information contained in this form is true and to the best of my knowledge represents the product for which registration is sought. The dimensions, materials of construction, pressure temperature ratings, and identification markings are in accordance with the herein named standards. I further declare that the manufacture of these fittings is regulated by a Quality Control Program which extends to each plant where fabrication occurs in whole or in part and has been verified by BSI as being suitable for that purpose and I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath.

Signature of Declarer: *Joel Feldman* 2/10/2021 | 7:27 AM EST

Declared before me at Unable to get a notary signature or seal due to COVID-19 situation THIS SPACE FOR THE OFFICIAL SEAL

This _____ day of _____ AD
 Commissioner of Oaths
 or Notary Public: (sign) _____
 (Affix Official seal to the right)

This space for Regulatory Authority use
 This registration must be revalidated after ten (10) years from the date of acceptance.

CRN: OD20616.5Add1
 FID#: 1214

Notes:
 1. All fittings shall be registered in the name of the Manufacturer.
 2. Each category shall be supported with two Statutory Declaration forms and one copy of supporting documentation.
 3. The declaration shall be made by the person having full authority and responsibility for the quality of the end product.
 4. Quality control programs shall be resubmitted for validation at a maximum interval of five (5) years.

New Brunswick
 DEPT OF JUSTICE PUBLIC SAFETY
 BOILER & PRESSURE VESSEL ACT

REGISTRATION ONLY
 CRN OD20616.57Add1
[Signature]
 CHIEF BOILER INSPECTOR
 DATE 6/25/21

- BLRs PVs
 FITTINGS NUCLEAR COMPONENTS



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- 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]	1/8" - 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)		

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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 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- 3/4"	<u>Core</u> 316/316L SS (ASTM A240)	Swagelok Tube Fitting [TA TM SL SM]	1/2" - 1 1/4" 12mm - 32mm	860	636	ASME B31.3 ISO 10380
		Female and Male VCR Metal Gasket Face seal Fitting [RF RM]	1/2" - 1"	860	636	
		Female and Male VCO O-ring Face seal Fitting [VF VM]	1/2" - 1"	860 (1)	714 @550°F (1)	
	<u>Braid</u> 304 SS or 316L SS (ASTM A478)	Female 37° JIC and male 37° JIC with female swivel nut [AN AS]	1/2" - 1"	860	636	
		Female and male NPT Tapered Pipe Fitting [PM PF]	1/2" - 1 1/4"	860 (2)	765 @450°F (2)	
	<u>Weld Collar</u> 304/304L SS (ASTM A269) or 316/316L SS (ASTM A269)	Female and male ISO/BSP Tapered (ISO 7) Pipe Threads [MT FT]	1/2" - 1 1/4"	860 (2)	765 @450°F (2)	
		Tube Butt Welds [TB MTB]	1/2" - 1" 12mm - 25mm	860	636	
	<u>End Connections</u> 316/316L SS (ASTM A479)	Female ISO/BSP Parallel Threads (ISO 228) [FS]	1/2"	860	791 @400°F (1)	
		Male UN/UNF (SAE J1926) Stud End [ST]	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)	

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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 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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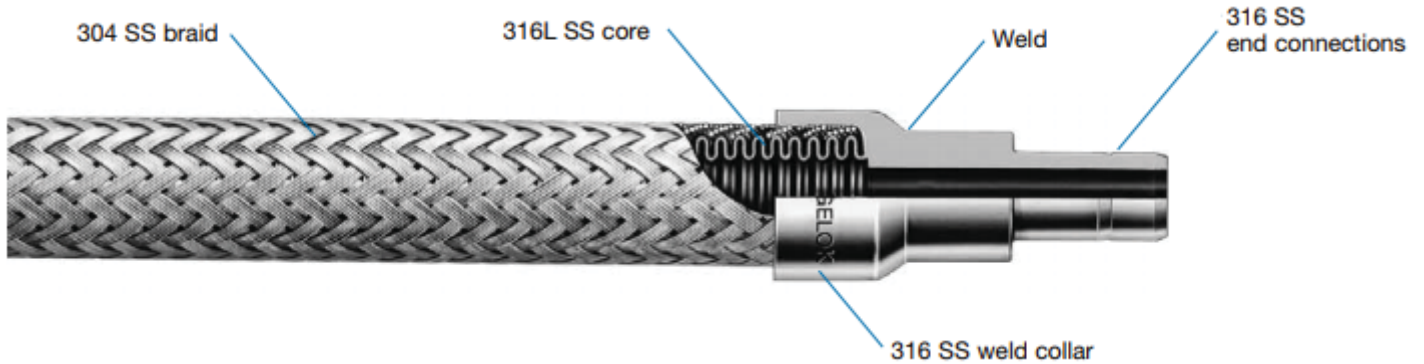
Product Series and Size (in)	Pressure Retaining Material (Standard)	Port Connections	Port Connection Sizes	Maximum Working Pressure (psig)		Design Code of Construction
				At Min Temp (-325°F to 100°F)	At Max Temp (800°F)	
FJ Series Metal Hose- 1 1/2"	<u>Core</u> 316/316L SS (ASTM A240) <u>Braid</u> 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.

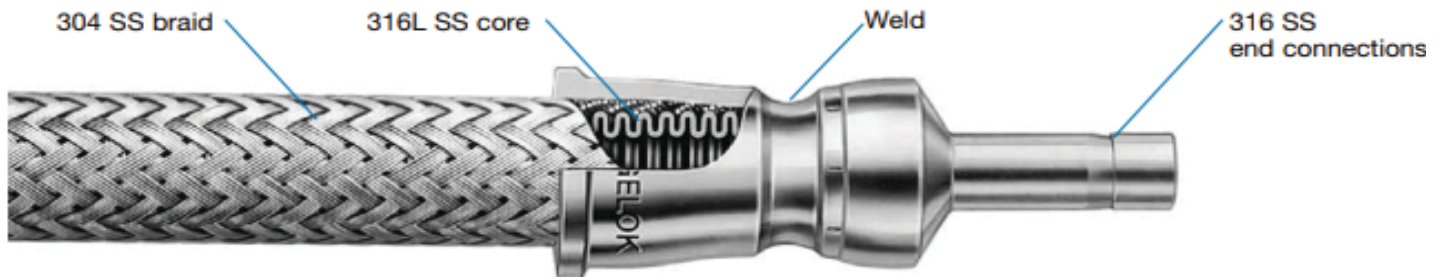
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Product Illustration

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



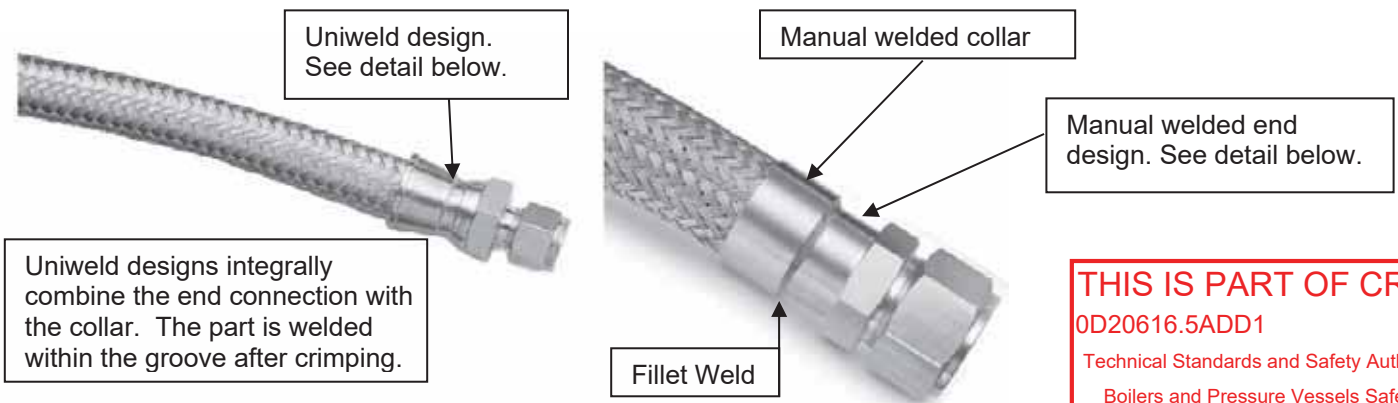
Swagelok FJ Series Automatic Weld Assembly (1/2" and under)



Configuration Example:

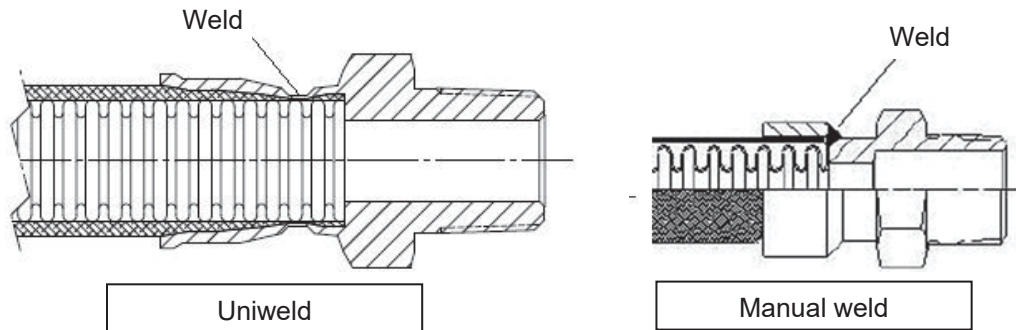
FJ hoses are available in two styles with many end types, end sizes, and possible overall lengths. There are two ways the hose end connections are attached to the tube and braid depending on the size of the hose:

- 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