

REGISTRATION OF A PRESSURE FITTING DESIGN

05-May-23

TSSA
345 Carlingview Drive
Toronto, Ontario
M9W 6N9**Attention: Tanya Francis****File Number: 13617 [0 F]****Re: Manufacturer: Swagelok Company**
Item: FX Series Hose Assemblies
Catalog or Drawing: Per Swagelok Scope of Registration (Attachment B - June 9, 2022)

TSASK Codes and Standards Compliance has registered the design listed above in accordance with The Boiler and Pressure Vessel Act and Regulations and CSA B51. The Canadian Registration Number (CRN) is:

OC20522.53 Expiry Date: July 11, 2028

Please note that every fitting shall be constructed in strict accordance with the registered design.

Fitting registrations are required to be resubmitted for validation after ten (10) years from the registration date in accordance with CSA B51, Clause 4.2.1.

Should you require anything further, please do not hesitate to contact the Codes and Standards Compliance Office at your convenience.

Yours truly,

Athan Syrgiannis, P.Eng.
Codes and Standards Compliance**Remarks:**

A valid quality control program must be maintained at the production facilities for the fitting registration to remain valid until the expiry date.

See Attachment A for list of manufacturing locations and Attachment B for Scope of Registration.

Previously registered in Saskatchewan through CSA.

Statutory Declaration (Registration of Fittings)

TSK-1008

I. Declaration Information

I, Joel Feldman,
Vice President, Engineering
(company title, e.g. vice president, plant manager, chief engineer)
(must be in a position of authority in the manufacturing plant where the fitting is produced)

In this space, show facsimile of
manufacturer's logo or trademark as it will
appear on the fitting.

Swagelok

of: Swagelok Company
(name of manufacturer)

located at: Headquarters: 29500 Solon Road Solon, Ohio 44139 USA
(Plant Address – Apt/Street) (City, Prov) (Postal Code)

do solemnly declare that the fittings listed hereinunder, which are subject to the **Saskatchewan Boiler and Pressure Vessel Safety Act** (check one)

- ☒ Comply with the requirements of ASME B31.3 and ISO 10380 which specifies the dimensions,
(title of recognized North American Standard)
Materials of construction, pressure / temperature ratings and identification marking of the fittings, 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, materials of construction, pressure / temperature ratings and the basis
for such ratings, and the marking of the fittings for identification.

I further declare that the manufacturer of these fittings is controlled by a quality control program which has been
verified by the following authority, BSI as being suitable for the manufacturer
of these fittings to the stated standard. The fittings covered by this declaration, for which I seek registration, are
Category D. Hose

In support of this application, the following information, calculations and / or test data are attached:

ISO 9001:2015 Certificate, Attachment A, Attachment B, Catalog Information and other Support Documents

II. Declaration

DECLARED before me at SOLON In the STATE of OHIO
this 31 day of JANUARY, 2023
JEFFREY C TRUMBULL
(print name) (Signature)
[Signature]
(Signature of Commissioner of Oaths)



JEFFREY C. TRUMBULL
Notary Public
State of Ohio
Recorded in Lake County
Certificate # 2020-RE-813693

III. Office Use Only

To the best of my knowledge and belief, the application meets the requirements of the **Boiler and Pressure Vessel Safety Act** and
CSA B51, Clause 4.2, and is accepted for registration in Category _____



**Technical
Safety Authority
of Saskatchewan**

Registration No. 0C20522.53
File No. 13617
Registered
Date: May 5, 2023
Expiry Date: July 11, 2028

Codes & Standards Compliance Office

(Date Registered – MM DD YYYY)
(For the Administrator / Chief Inspector)

(Expiry Date – MM DD YYYY)

Attachment A. Swagelok Manufacturing Locations

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

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

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

Product Scope

The table below represents the scope of Swagelok FX series hose assemblies covered by this submission for CRN approval. These hose assemblies have been evaluated in accordance with ASME B31.3 and ISO 10380. The referenced product catalogues do not represent the full scope of the submission but rather detail some of the most common options.

Summary Table

Product Series	Pressure Retaining Material	End Connection & Sizes	Nom. Hose Size (in.)	Maximum Working Pressure in (Psig)		Design Code of Construction
				@ Min. Temp.	@ Max. Temp.	
FX Series Metal Hose	Core: 316L SS (ASTM A240) Braid: 321 SS (ASTM A580) Or 316L SS (ASTM A240) Weld Collar: 304 SS (ASTM A269) End Connections: Strain-Hardened 316 SS (ASTM A479)	Tube Fitting 1/4" – 1/2", 4-10 mm [TA, TM, SL, SM]	1/4	6000 @ -325°F	4236 @ 1000°F	ASME B31.3, ISO 10380
		NPT Female 1/8" – 1/4" [PF] NPT Male 1/8" – 1/2" [PM] Female VCO Fitting 1/4" Male ISO/BSP Tapered threads (ISO 7) 1/4" – 1/2" [MT] Female ISO/BSP Tapered Threads (ISO 7) 1/4" [FT]		6000 @ -60°F	5640 @ 400°F	
		Male Swivel Nut VCR 1/4" [RM] Female VCR Fitting 1/4" [RF]		5500 @ -325°F	3883 @ 1000°F	
		Tube Fitting 12mm [TM]		5365 @ -325°F	3787 @ 1000°F	
		NPT Female 3/8" [PF]		5300 @ -60°F	4982 @ 400°F	
		Tube Butt Weld 1/4" [TB]		5100 @ -325°F	3600 @ 1000°F	
		NPT Female 1/2" [PF]		4900 @ -60°F	4606 @ 400°F	
		Tube Butt Weld 1/2" [TB]		3700 @ -325°F	2612 @ 1000°F	
		Male Swivel Nut VCR 1/2" [RM] Female VCR Fitting 1/2" [RF]		3000 @ -325°F	2118 @ 1000°F	



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[Codes & Standards Compliance Office](#)

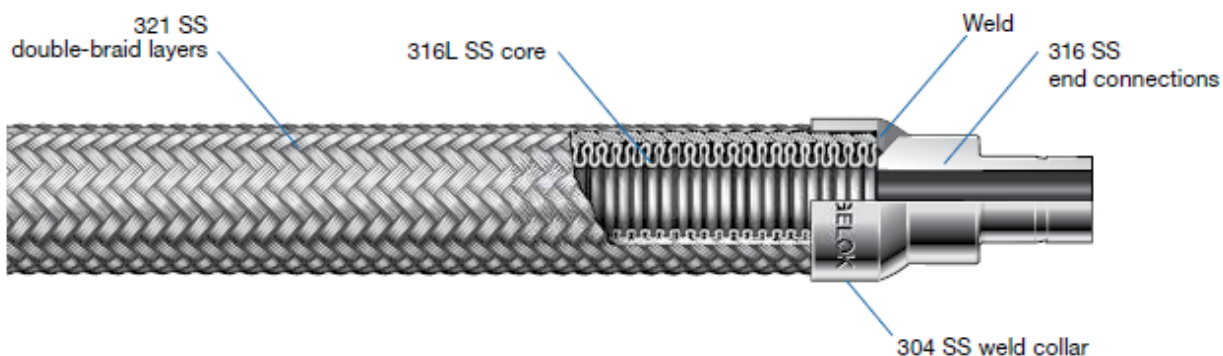
Product Series	Pressure Retaining Material	End Connection & Sizes	Nom. Hose Size (in.)	Maximum Working Pressure in (Psig)		Design Code of Construction
				@ Min. Temp.	@ Max. Temp.	
FX Series Metal Hose	Core: 316L SS (ASTM A240) Braid: 321 SS (ASTM A580) or 316L SS (ASTM A240) Weld Collar: 304 SS (ASTM A269) End Connections: Strain-Hardened 316 SS (ASTM A479)	Tube Fitting 1/4" – 1/2", 4-12 mm [TA, TM, SL, SM] Female VCO Fitting 1/2" [VF] Male Swivel Nut VCR 1/4" [RM] Female VCR Fitting 1/4" [RF]	3/8	5000 @ -325°F	3530 @ 1000°F	ASME B31.3, ISO 10380
		NPT Female 1/4" – 1/4" [PF] NPT Male 1/4" – 1/2" [PM] Male ISO/BSP Tapered threads (ISO 7) 1/4" – 3/8" [MT]		5000 @ -60°F	4700 @ 400°F	
		NPT Female 1/2" [PF]		4900 @ -60°F	4606 @ 400°F	
		Tube Butt Weld 1/2" [TB]		3700 @ -325°F	2612 @ 1000°F	
		Tube Butt Weld 3/8" [TB]		3300 @ -325°F	2329 @ 1000°F	
		Male Swivel Nut VCR 1/2" [RM] Female VCR Fitting 1/2" [RF]		3000 @ -325°F	2118 @ 1000°F	
		Tube Fitting 1/4" – 3/4", 6-18 mm [TA, TM, SL, SM] Male Swivel Nut VCR 1/4" [RM] Female VCR Fitting 1/4" [RF] Female VCO Fitting 1/2" [VF]	1/2	4500 @ -325°F	3177 @ 1000°F	
		NPT Female 3/8-1/2" [PF] NPT Male 1/4" – 3/4" [PM] Female VCO Fitting 1/4" Male ISO/BSP Tapered threads (ISO 7) 3/8" – 1/2" [MT] Female ISO/BSP Tapered Threads (ISO 7) 1/2" [FT]		4500 @ -60°F	4230 @ 400°F	
		NPT Female 1" [PF]		4400 @ -60°F	4092 @ 400°F	
		Tube Butt Weld 1/2" [TB]		3700 @ -325°F	2612 @ 1000°F	
		Male Swivel Nut VCR 1/2" [RM] Female VCR Fitting 1/2" [RF]		3000 @ -325°F	2118 @ 1000°F	
		Male Swivel Nut VCR 3/4" [RM] Female VCR Fitting 3/4" [RF]		2800 @ -325°F	1976 @ 1000°F	

Product Series	Pressure Retaining Material	End Connection & Sizes	Nom. Hose Size (in.)	Maximum Working Pressure in (Psig)		Design Code of Construction
				@ Min. Temp.	@ Max. Temp.	
FX Series Metal Hose	Core: 316L SS (ASTM A240) Braid: 321 SS (ASTM A580) Or 316L SS (ASTM A240) Weld Collar: 304 SS (ASTM A269) End Connections: Strain-Hardened 316 SS (ASTM A479)	Tube Fitting 1/2" – 1", 12-20 mm [TA, TM, SL, SM] Female VCO Fitting 1/2" – 3/4" [VF]	3/4	3600 @ -325°F	2541 @ 1000°F	
		NPT Female 1/2"-3/4" [PF] NPT Male 1/2" – 1" [PM] Female VCO Fitting 1/4" Male ISO/BSP Tapered threads (ISO 7) 1/2"-1" [MT] Female ISO/BSP Tapered Threads (ISO 7) 3/4"-1" [FT]		3600 @ -60°F	3384 @ 400°F	
		Male Swivel Nut VCR 1/2" [RM] Female VCR Fitting 1/2"-1" [RF]		3000 @ -325°F	2118 @ 1000°F	
		Male Swivel Nut VCR 5/8"-3/4" [RM] Female VCR Fitting 3/4" [RF]		2800 @ -325°F	1976 @ 1000°F	
		Tube Butt Weld 3/4"-1" [TB]		2400 @ -325°F	1694 @ 1000°F	
		Tube Fitting 1/2" – 1-1/4", 16-28 mm [TA, TM, SL, SM] Male Swivel Nut VCR 1" [RM] Female VCR Fitting 1" [RF] Female VCO Fitting 1" [VF]	1	3000 @ -325°F	2118 @ 1000°F	
		NPT Female 1" [PF] NPT Male 1/2" – 1" [PM] Female VCO Fitting 1/4" Male ISO/BSP Tapered threads (ISO 7) 1" [MT] Female ISO/BSP Tapered Threads (ISO 7) 1" [FT]		3000 @ -60°F	2820 @ 400°F	
		Male Swivel Nut VCR 3/4" [RM] Female VCR Fitting 3/4" [RF]		2800 @ -325°F	1976 @ 1000°F	
		Tube Butt Weld 3/4"-1" [TB]		2400 @ -325°F	1694 @ 1000°F	

Product Series	Pressure Retaining Material	End Connection & Sizes	Nominal Hose Size (in.)	Maximum Working Pressure in (Psig)		Design Code of Construction
				@ Min. Temp.	@ Max. Temp.	
FX Series Metal Hose	Core: 316L SS (ASTM A240) Braid: 321 SS (ASTM A580) or 316L SS (ASTM A240) Weld Collar: 304 SS (ASTM A269) End Connections: Strain-Hardened 316 SS (ASTM A479)	Tube Fitting 1-1/4" – 1-1/2", 28-32 mm [TA, TM, SL, SM]	1-1/4	2600 @ -325°F	1835 @ 1000°F	ASME B31.3, ISO 10380
		NPT Female 1-1/4" [PF] NPT Male 1" – 1-1/4" [PM] Male ISO/BSP Tapered threads (ISO 7) 1-1/4" [MT]		2600 @ -60°F	2444 @ 400°F	
		Tube Butt Weld 1-1/4" [TB]		2400 @ -325°F	1694 @ 1000°F	
		Tube Fitting 1-1/2", 38 mm [TA, TM, SL, SM] Tube Butt Weld 1-1/2" [TB]	1-1/2	2200 @ -325°F	1553 @ 1000°F	
		NPT Female 1-1/2" [PF] NPT Male 1" – 1-1/2" [PM] Male ISO/BSP Tapered threads (ISO 7) 1-1/2" - 2" [MT]		2200 @ -60°F	2068 @ 400°F	
		Tube Fitting 2" [TA, SL] Tube Butt Weld 2" [TB]	2	1675 @ -325°F	1182 @ 1000°F	
		NPT Male 1-1/2" – 2" [PM] Male ISO/BSP Tapered threads (ISO 7) 2" [MT]		1675 @ -60°F	1574 @ 400°F	

Product Illustration

All end connections are welded onto the hose using weld collars.



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

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 FX series hose assemblies are manufactured at Hose Master and at Swagelok Company location in Solon, Ohio.

References

The 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