

FORM FOR THE REGISTRATION OF FITTING DESIGNS

NEW BRUNSWICK NOVA SCOTIA PRINCE EDWARD ISLAND NEWFOUNDLAND AND LABRADOR
 NUNAVUT YUKON NORTHWEST TERRITORIES

MANUFACTURERS NAME: Swagelok Company	
MANUFACTURERS ADDRESS: 29500 Solon Road, Solon, Ohio 44139 USA	
PLANT LOCATIONS: Headquarters: 29500 Solon Road, Solon, Ohio 44139 USA (See Attachment A)	
<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 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>Rubber Products Manufacturers (ARPM) Hose Handbook</p>
<p>SHOW MANUFACTURERS NAME, TRADEMARK, OR LOGO AS IT WILL APPEAR ON THE PRODUCT</p> <p style="font-size: 2em; text-align: center;">Swagelok</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: PFA Core</p>

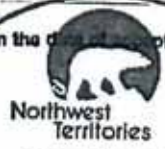
LIST OF SUPPORTING DOCUMENTATION AND IDENTIFICATION OF THE ACTUAL ITEMS TO BE REGISTERED:

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

DECLARATION:

I, Joel Feldman, Vice President, Engineering (see note 2) 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: [Signature]
 Declared before me at Swagelok Inc a notary signature on THIS SPACE FOR THE
 This day of seal due to COVID-19 situation OFFICIAL SEAL
 Commissioner of Oaths
 or Notary Public: (sign) - September 22, 2020
 (Affix Official seal to the right)

<p>This space for Regulatory Authority use</p> <p>This registration must be revalidated after ten (10) years from the date of acceptance.</p> <p>CRN: <u>0D22747.5</u></p> <p>FID#: <u>16014</u></p> <p>Crimped UT series PFA hose assemblies.</p> <p>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. CRN expires Oct.16th, 2030 - DG</p>	<p>163.00</p>  <p>REGISTERED UNDER THE AUTHORITY OF THE BOILER AND PRESSURE VESSEL ACT. C.R.N. <u>0D22747.5</u> SIGNED <u>[Signature]</u> DATE <u>Nov 13 2020</u></p>
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Attachment B: Scope of Registration for Crimped Swagelok UT series PFA Hose Assemblies (Category D)

This document represents the scope of the Swagelok Coreflex UT series hose and crimped assemblies covered by this submission for CRN approval. These products have been evaluated in accordance with the Association for Rubber Products Manufacturers (ARPM) Hose Handbook. U-Series hose assemblies have 2 possibilities for crimp collars; current standard and “Megafang” designs. Please see tables 1 and 2 below, and the “Configurations” section for description of differences between the two designs.

Summary Table

Table 1 – Current Crimped Design						
UT series Hose Size	Maximum Pressure (psig)			Pressure Retaining Material	End Connections and Sizes	Design Code of Construction
	At Minimum Temp. (-65°F)	Room temperature (0° – 100°F)	At Maximum Temp. (400°F)			
1/2"	200	300	160	<p>Core Smooth bore PFA</p> <p>Braid 302 SS Braid Reinforcement</p> <p>Cover Silicone cover</p> <p>End Connections 316 SS</p> <p>Crimp on Collar 300 series SS</p>	<p>Swagelok Tube Fitting [SL, SM] 1/8" – 2" (3-50mm)</p> <p>Male & Female NPT Tapered Pipe Fitting [PM, PF] 1/8" – 2"</p> <p>Male & Female ISO/BSP Tapered (ISO 7) Pipe Threads [MT, FT] 1/4" – 1"</p> <p>Male 37° JIC & Female 37° JIC with female swivel nut [AN, AS] 1/4" – 2"</p> <p>Tube Butt Welds [TB] 1/2" – 1"</p> <p>Female and Male VCO O-ring Face seal Fitting [VF, VM] 1/8" - 2"</p>	Association for Rubber Products Manufacturers (ARPM) Hose Handbook
3/4"	115	300	180		<p>Female and Male VCR Metal Gasket Face seal Fitting [RF, RM] 1/8" – 2"</p> <p>Female ISO/BSP Parallel Threads (ISO 228) [FS] 1/4" – 1"</p>	
1"	250	250	175			



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 0D22747.5
 Technical Standards and Safety Authority
 Boilers and Pressure Vessels Safety
 Program

Table 2 –“Megafang” Design

UT series Hose Size	Maximum Pressure (psig)			Pressure Retaining Material	End Connections and Sizes	Design Code of Construction
	At Minimum Temp. (-65°F)	Room temperature (0° – 100°F)	At Maximum Temp. (400°F)			
1/2"	200	300	160	Core Smooth bore PFA Braid 302 SS Braid Reinforcement Cover Silicone cover End Connections 316 SS Crimp on Collar 300 series SS	Swagelok Tube Fitting [SL, SM] 1/8" – 2" (3-50mm) Male & Female NPT Tapered Pipe Fitting [PM, PF] 1/8" – 2"	Association for Rubber Products Manufacturers (ARPM) Hose Handbook
3/4"	115	300	195		Male & Female ISO/BSP Tapered (ISO 7) Pipe Threads [MT, FT] 1/4" – 1"	
1"	250	250	175		Male 37° JIC & Female 37° JIC with female swivel nut [AN, AS] 1/4" – 2"	
1 1/2"	200	200	200		Tube Butt Welds [TB] 1/2" – 1"	
2"	150	150	150		Female and Male VCO O-ring Face seal Fitting [VF, VM] 1/8" - 2"	
					Female and Male VCR Metal Gasket Face seal Fitting [RF, RM] 1/8" – 2"	
				Female ISO/BSP Parallel Threads (ISO 228) [FS] 1/4" – 1"		

Product Description

The Swagelok UT series is standard Swagelok virgin PFA-lined hose with a silicone reinforcement layer, 302 Stainless Steel reinforcement, and a silicone cover. All UT series hoses undergo production testing in accordance with ASTM D380 “Test Methods for Rubber Hose” (version current to hose production date).

Configurations

All end connection inserts are crimped onto the hose using crimp collars. The U-Series hose crimp collars have two designs: the standard crimp collar available in 1/2", 3/4" and 1" sizes, and an upgraded design named "Megafang" which has shown more robust performance (1/2", 3/4" and 1" sizes noted in Table 2 to be widely available in 2021). Assemblies for both crimp collar designs noted above follow the same method of assembly and materials of construction. See photos below for visual differences between standard crimp collars and Megafang crimp collars.



Figure 1 - Standard Crimp Collar



Figure 2 - Megafang Crimp Collar



Product Options:

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

Cover Options

- Armor guard - Interlocking, flexible 302 stainless steel.
- Fire jacket - Woven fiberglass coated with specially compounded aerospace-grade silicone rubber
- Spiral guard - Helical HDPE plastic

Tag and Marking Options

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

End Connection Seals or Sealants Options

- VCO – O-rings
- 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.

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.

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