

UNIFORM STATUTORY DECLARATION 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 align="center">CATEGORY OF FITTINGS TO BE REGISTERED. CIRCLE ONE CATEGORY ONLY</p> <p><input checked="" type="radio"/> A Pipe fittings, including couplings, tees, elbows, Ys, plugs, unions, pipe caps, or reducers</p> <p><input type="radio"/> B Flanges: all flanges</p> <p><input type="radio"/> C Valves: all line valves</p> <p><input type="radio"/> D Expansion joints, flexible connections, and hose assemblies: all types</p> <p><input type="radio"/> E Strainers, filters, separators, and steam traps</p> <p><input type="radio"/> F Measuring devices, including pressure gauges, level gauges, sight glasses, levels, or pressure transmitters</p> <p><input type="radio"/> G Certified capacity-rated pressure relief devices acceptable as primary over pressure protection on boilers, pressure vessels, piping and fusible plugs</p> <p><input type="radio"/> H Pressure retaining components that do not fall into one of the above categories</p> <p><input type="radio"/> 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 align="center">TITLE OF THE STANDARD OF CONSTRUCTION</p> <p>ASME B31.1 for unlisted components, ASME B31.3 for unlisted components</p> |
| SHOW MANUFACTURERS NAME, TRADEMARK, OR LOGO AS IT WILL APPEAR ON THE PRODUCT | |
| Swagelok | |
| <p align="center">TYPE OF CONSTRUCTION</p> <p>FORGED <input checked="" type="checkbox"/> WELDED <input type="checkbox"/> WROUGHT <input checked="" type="checkbox"/> CAST <input type="checkbox"/> OTHER <input type="checkbox"/> DESCRIBE OTHER:</p> | |
| <p align="center">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: [Signature]
 Declared before me at Solon, Ohio
 This 10th day of Nov AD 2019
 Commissioner of Oaths or Notary Public: (sign) [Signature]
 (Affix Official seal to the right)



USE THIS SPACE FOR THE
OFFICIAL SEAL

New Brunswick
Nouveau Brunswick

DEPT. OF JUSTICE PUBLIC SAFETY
BOILER & PRESSURE VESSEL ACT

REGISTRATION ONLY
CRN OA 22161.57

[Signature]
CHIEF BOILER INSPECTOR
DATE 2/28/20

BLRs PVs

FITTINGS NUCLEAR COMPONENTS

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

CRN: OA 22161.5
 FID#: 1214
YCO O-RING FACE SEAL FITTINGS

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 FEB. 10, 2030-DIG.

Attachment B: Scope of Registration for VCO O-Ring Face Seal Fittings (Category A)

This document represents the scope of Swagelok's VCO O-Ring Gasket Face Seal Fittings covered by this submission for CRN approval in compliance with the requirements of ASME B31.1-2018 "Power Piping" as unlisted components per Section 104.7.2 and ASME B31.3-2018 "Process Piping" as unlisted components per Section 304.7.2.



Summary Table

| Product Series (Size) | Pressure Retaining Materials | Pressure Retaining Components | End Connections and Sizes | Maximum Rated Pressure (psig) | | Design Code of Construction |
|-----------------------|---|----------------------------------|----------------------------------|-------------------------------|------------------------------------|---|
| | | | | At 100°F | At Max Temp* | |
| -2 VCO (1/8") | 316 SS (ASTM A479, ASTM A276) for straight fittings and glands F316 SS (ASTM A182) for shaped fittings | Gland, Body | Tube Socket Weld 1/8" | 12,600 | 8,120 @ 550°F | ASME B31.1 (Unlisted Components) and ASME B31.3 (Unlisted Components) |
| -4 VCO (1/4") | | | Gland, Body | Tube Socket Weld 1/4" | 6,800 | |
| | | Reducing Tube Socket Weld 1/8" | | 12,600 | 8,120 @ 550°F | |
| | | Male Tube Weld 1/8", 1/4" | | 11,200 | 7,220 @ 550°F | |
| | | Automatic Tube Weld 1/4" | | 5,100 | 2,700 @ 550°F | |
| | | Swagelok Tube Fitting 1/8", 1/4" | | 10,900-10,200 | 8,120 @ 550°F | |
| | | Male SAE/MS 7/16-20, 9/16-18 | | 4,500 | 4,500 @ 400°F | |
| | | Male NPT 1/8", 1/4" | | 10,000-8,000 | 6,900-5,520 @ 450°F with sealant | |
| | | Female NPT 1/8", 1/4" | | 8,400-6,600 | 5,790-4,550 @ 450°F with sealant | |
| -6 VCO (3/8") | | Gland, Body | Tube Socket Weld 3/8" | 8,100 | 5,220 @ 550°F | |
| -8 VCO (1/2") | 316 SS (ASTM A479, ASTM A276) for straight fittings and glands | Gland, Body | Tube Socket Weld 1/2" | 3,000 | 1,935 @ 550°F | |
| | | | Reducing Tube Socket Weld 1/4" | 10,700 | 6,900 @ 550°F | |
| | | | Male Tube Weld 1/4", 3/8", 1/2" | 11,100-7,500 | 7,160-4,830 @ 550°F | |
| | | | Automatic Tube Weld 3/8", 1/2" | 3,500-3,300 | 1,850-1,750 @ 550°F | |
| | | | Swagelok Tube Fitting 3/8", 1/2" | 7,500-6,700 | 6,600-4,830 @ 550°F | |
| | | | Male NPT 3/8", 1/2" | 10,000-7,800 | 6,900-5,310 @ 450°F with sealant | |
| | | | Female NPT 3/8", 1/2" | 6,600-4,900 | 4,450-3,380 @ 450°F with sealant | |
| | F316 SS (ASTM A182) for shaped fittings | Body | Male NPT 3/8", 1/2" | 7,800 - 7,700 @ 100°F | 5,380 - 5,310 @ 450°F with sealant | |
| | | | Swagelok Tube Fitting 3/8", 1/2" | 7,500 - 6,700 @ 100°F | 6,600 - 4,830 @ 550°F | |
| | | | Male SAE/MS 9/16-18, 3/4-16 | 3,600 | 3,600 @ 400°F | |

Swagelok

Canadian Registration Number Submittal
 Category A: Swagelok VCO® O-Ring Face Seal Fittings

Date: January 20, 2020
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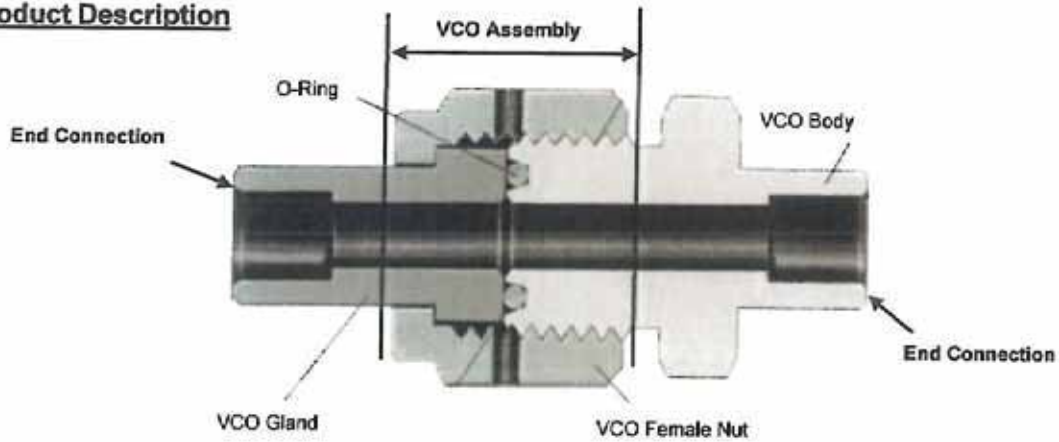
Summary Table (cont'd)

| Product Series (Size) | Pressure Retaining Materials | Pressure Retaining Components | End Connections and Sizes | Maximum Rated Pressure (psig) | | Design Code of Construction |
|-----------------------|--|-------------------------------|----------------------------|-------------------------------|----------------------------|---|
| | | | | At 100°F | At Max Temp* | |
| -12 VCO (3/4") | 316 SS (ASTM A479, ASTM A276) for straight fittings and glands | Gland, Body | Tube Socket Weld 3/4" | 3,700 | 2,385 @ 550°F | ASME B31.1 (Unlisted Components) and ASME B31.3 (Unlisted Components) |
| | | | Automatic Tube Weld 3/4" | 2,200 | 1,160 @ 550°F | |
| | | | Swagelok Tube Fitting 3/4" | 5,800 | 5,100 @ 550°F | |
| | | | Male NPT 3/4" | 7,300 | 6,420 @ 450°F with sealant | |
| | | | Female NPT 3/4" | 4,600 | 3,170 @ 450°F with sealant | |
| | | | Male SAE/MS 1-1/16-12 | 3,800 | 3,800 @ 400°F | |
| | F316 SS (ASTM A182) for shaped fittings | Body | Male NPT 3/4" | 5,800 | 5,030 @ 450°F with sealant | |
| | | | Swagelok Tube Fitting 3/4" | 5,800 | 5,100 @ 550°F | |
| | | | Male SAE/MS 1-1/16-12 | 2,900 | 2,900 @ 400°F | |
| -16 VCO (1") | 316 SS (ASTM A479, ASTM A276) for straight fittings and glands | Gland, Body | Tube Socket Weld 1" | 3,000 | 1,935 @ 550°F | |
| | | | Automatic Tube Weld 1" | 2,200 | 1,160 @ 550°F | |
| | | | Swagelok Tube Fitting 1" | 4,700 | 4,130 @ 550°F | |
| | | | Male SAE/MS 1-5/16-12 | 2,900 | 2,900 @ 400°F | |
| | | | Male NPT 1" | 4,700 | 3,150 @ 450°F with sealant | |
| | | | Female NPT 1" | 4,400 | 3,030 @ 450°F with sealant | |
| | F316 SS (ASTM A182) for shaped fittings | Body | Male NPT 1" | 4,700 | 3,150 @ 450°F with sealant | |
| | | | Swagelok Tube Fitting 1" | 4,700 | 4,130 @ 550°F | |
| | | | Male SAE/MS 1-5/16-12 | 2,300 | 2,300 @ 400°F | |




* Maximum temperature of the VCO based on Perfluoroelastomer o-ring material



Product Description



Body Configurations

| | |
|---------------|---|
| VCO Straights |  |
| VCO Tees |  |
| VCO Elbows |  |

Product Options

Some of the product options listed below affect the pressure-temperature ratings shown in the Summary Table above, but in all cases the ratings are less than those shown in the above table.

- O-ring Material Options
 - Fluorocarbon FKM
 - Buna N
 - PTFE
 - Perfluoroelastomer
 - Ethylene propylene
- VCO Blind Nuts
- Pressure Bearing Component Material Options (allowable variations of 316 material) that may affect high temperature rating
 - 316L
 - 316LV (VAR)
 - 316LVV (VIMVAR)



Additional options and non-pressure boundary alterations that do not affect pressure-temperature ratings may be made available within the scope of this approval. Examples of these options are:

- VCO Blind Bodies
- Protective Caps
- Caps and Plugs with Lanyards
- Flow Restrictors
- "Bore-through" fitting through holes

Quality System

The Swagelok Company quality system complies with the requirements of ISO 9001:2015. 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.

- VCO O-Ring Face Seal Fittings Product Catalog MS-01-28, Rev I



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 |

THIS IS PART OF
GRN 0A22161.5
 Technical Standards & Safety Authority
 Boilers & Pressure Vessels
 Safety Program