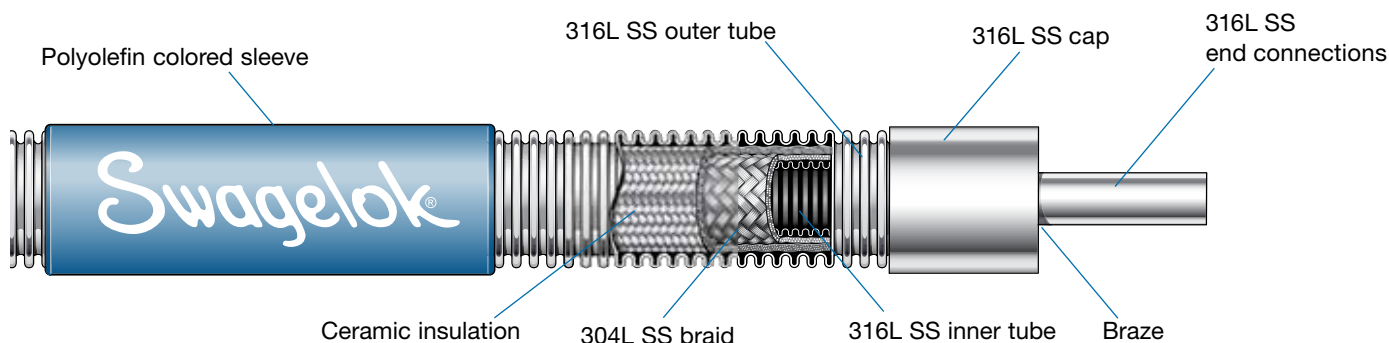


FV Series Vacuum-Insulated Metal Hose

Features

- Vacuum layer provides excellent insulation to extreme media temperatures.
- Proprietary design provides two levels of insulating performance in a compact package.
- Vacuum-only insulation can be augmented with multi-layer insulation to also address radiant heat transfer.
- Proprietary manufacturing process does not require the vacuum port, eliminating the primary source of vacuum degradation.
- Fully annealed condition eases hose routing through form-fit-and-stay capability.
- Available in sizes 1/2, 3/4, and 1 in.
- Custom lengths available to meet specific needs.
- 316L stainless steel wetted surfaces are suitable for liquids and gaseous media.
- Wetted braze material meets AMS 4777 (Nickel alloy).
- Colored polyolefin sleeves allow for color-coding process lines.



Note: Radiant barrier not shown.

Technical Data

Nominal Hose Size in. (mm)	Insulation Level	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)		Temperature Range °F (°C)	Working Pressure 10 ⁻⁹ torr to ... psig (bar)	Minimum Burst Pressure at 70°F (20°C) psig (bar)	Bulk Hose Weight lb/ft (kg/m)
				Static	Dynamic ^①				
1/2 (12.7)	Vacuum	0.47 (11.9)	1.27 (32.3)	5.00 (12.7)	—	-425 to 1000 (-253 to 537)	600 (41.3)	2400 (165)	0.45 (0.67)
	Vacuum & Radiant barrier		1.62 (41.2)	6.15 (15.6)	—				0.66 (0.98)
3/4 (19.0)	Vacuum	0.79 (20.1)	1.62 (41.2)	6.15 (15.6)	—		490 (33.7)	1960 (135)	0.80 (1.19)
	Vacuum & Radiant barrier		2.38 (60.5)	9.41 (23.9)	—				1.13 (1.68)
1 (25.4)	Vacuum	0.98 (25.0)	1.95 (49.5)	7.62 (19.4)	—		400 (27.5)	1600 (110)	1.02 (1.52)
	Vacuum & Radiant barrier		2.38 (60.5)	9.41 (23.9)	—				1.25 (1.86)

① Annealed product is not rated for highly dynamic applications.

Pressure-Temperature Ratings

Ratings are based on ASME Code for Pressure Piping, B31.3 Process Piping.

Nominal Hose Size, in.	1/2	3/4	1
Temperature °F (°C)	Working Pressure Vacuum to ... psig (bar)		
-425 (-253) to 300 (148)	600 (41.3)	490 (33.7)	400 (27.5)
400 (204)	567 (39.0)	463 (31.9)	378 (26.0)
500 (260)	531 (36.5)	434 (29.9)	354 (24.3)
600 (315)	502 (34.5)	410 (28.2)	335 (23.0)
700 (371)	484 (33.3)	395 (27.2)	323 (22.2)
800 (426)	466 (32.1)	381 (26.2)	311 (21.4)
900 (482)	427 (29.4)	348 (23.9)	284 (19.5)
1000 (537)	280 (19.2)	228 (15.7)	186 (12.8)

FV Series Vacuum-Insulated Metal Hose

Testing

Every Swagelok FV series hose assembly is thermally tested to confirm thermal performance and leak tightness.

Cleaning and Packaging

Swagelok FV series hose assemblies are cleaned in accordance with Swagelok *Standard Cleaning and Packaging* (SC-10) catalog, [MS-06-62](#). Each hose is bagged or sleeved individually and boxed.

⚠ Do not subject flexible metal hose to pressure surges, shock, or pulsations, where the peak pressure is greater than 50 % of the working pressure rating.

Ordering Information

Custom Hose Assemblies

Build a hose assembly ordering number by combining the designators in the sequence shown below.

Typical Ordering Number

1 2 3 4 4 5 6 7 8 5 6 7 8
 SS - FV 8 TN8 TN8 - 36 - QB1 - T or 90 CM - QB1 - T
in. cm

1 Material

End Connections

SS = 316L stainless steel

2 Hose

FV = FV series metal hose

3 Nominal Hose Size, in.

8 = 1/2
 12 = 3/4
 16 = 1

4 End Connections

See *End Connection Designator* column in table below.

5 Overall Length

Inches or centimeters, in whole numbers. Include **CM** as shown for centimeter lengths.

Minimum length is 18 in. (46 cm).
 Maximum length is 720 in. (1820 cm).

Hoses 50 in. and less have a tolerance of ± 1.5 in. Hoses longer than 50 in. have a tolerance of $\pm 3\%$.

Ordered length is unpressurized. When pressurized, hose can stretch up to approximately 5%.

6 Sleeve Color

Standard

QB = Blue
 QR = Red

Optional

QK = Black
 QW = White

7 Insulation Level

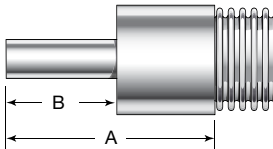
1 = Vacuum
 2 = Vacuum & Radiant barrier

8 Options

T = Lanyard Tag
 T2 = Two lanyard tags

End Connections

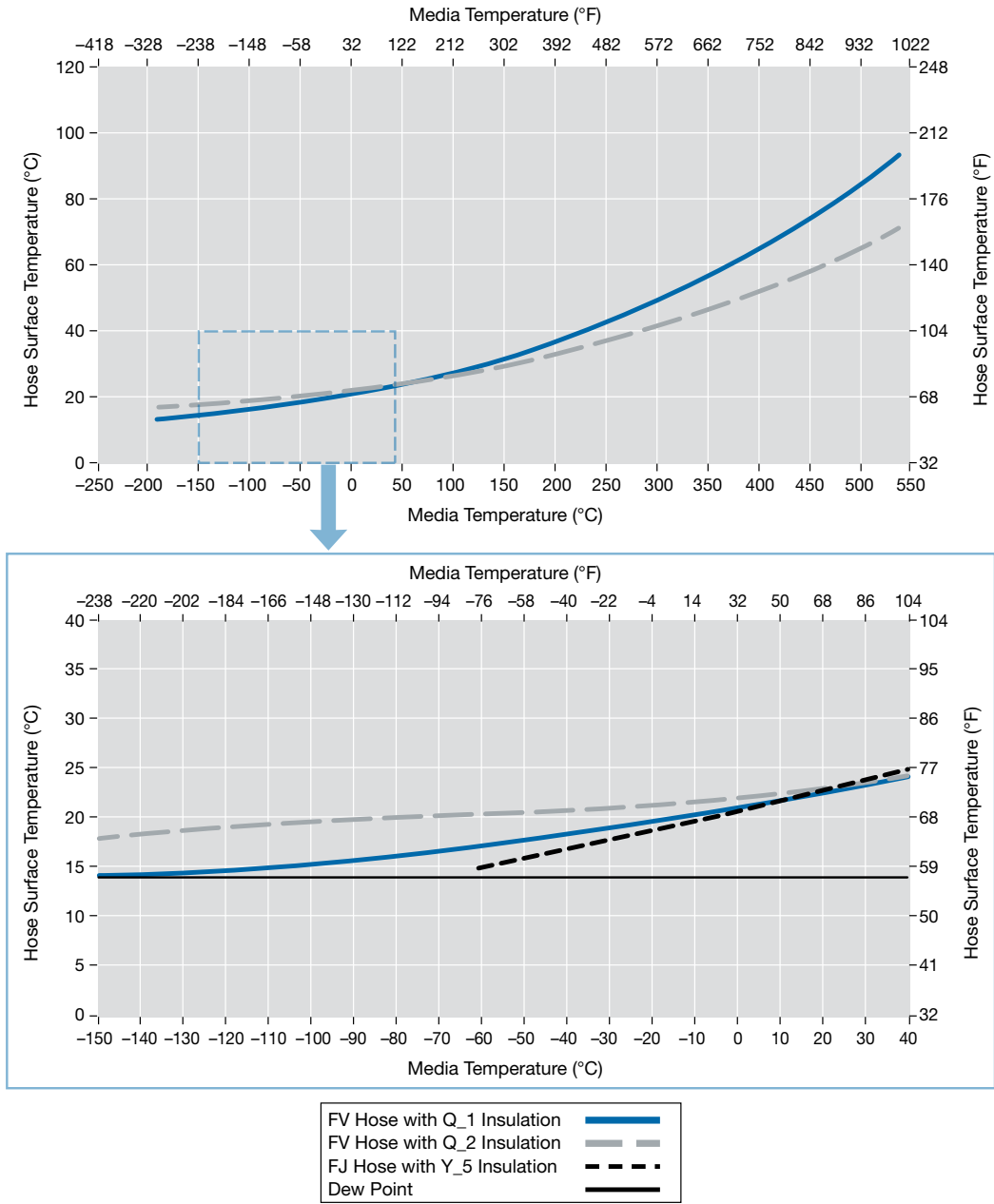
Tube Stubs, Annealed



Hose Size in.	Wall Thickness, in.	End Connection Designator	Dimensions, in. (mm)			
			Maximum A	Minimum to Maximum Tube Stub Length B	Minimum Inside Diameter	Maximum Outside Dimension
1/2	0.035	TN8	3.26 (82.8)	1.25 (31.8) to 2.25 (57.2)	0.41 (10.4)	1.71 (43.4)
3/4	0.049	TN12	3.26 (82.8)	1.25 (31.8) to 2.25 (57.2)	0.63 (16.0)	2.51 (63.8)
1	0.065	TN16	3.51 (89.2)	1.50 (38.1) to 2.50 (63.5)	0.85 (21.6)	2.51 (63.8)

FV Series Vacuum-Insulated Metal Hose

Estimated Hose Surface versus Media Temperature on 3/4 in. FV Series Hose



Test conditions for example plots

- Ambient air temperature: 23°C (73°F)
- Relative humidity: 55%
- Air flow: isolated in a chamber with minimal air flow
- Media pressure: 8 psig (0.55 bar)
- Media flow rate: 24 l/min
- Media type: liquid
- Plot information applicable to hose live length.

Insulation Option Definition

Q_1 insulation is a vacuum design resistant to internal convective and conductive heat transfer.

Q_2 insulation adds a radiant barrier to the vacuum design, adding resistance to radiant heat transfer and additional conductive resistance.

See page 115 for considerations on insulated hoses.

For more information, contact your authorized Swagelok sales and service center.