

Versilon™ Metal Hoses

Stainless Steel Metal Hose MSS4/CF04 (304 Series) MSS6/CF16 (306 Series)

Saint-Gobain Performance Plastics' Versilon MSS4/CF04 and MSS6/CF16 hoses are made with high quality 304 or 316L stainless steel. These extremely flexible hoses handle high pressures and feature machined fittings that are double-pass TIG welded to the hose.

Versilon MSS4/CF04 and MSS6/CF16 series stainless steel metal hose assemblies feature an annular corrugated inner metal hose and a 304 stainless steel braid reinforcement. This construction allows for the transfer of fluids at a wide range of temperatures and pressures.

Features and Benefits

- Wide temperature range: -460°F (-273°C) to +1500°F (+816°C)
- High quality and excellent workmanship to meet the rigorous demands of extreme service
- Machined bar stock end fittings; designed to mate with hose for proper weld techniques
- Double-pass welding (TIG)
- Custom fabrication available to meet customer specifications
- More corrugations per foot for greater flexibility
- Low force to bend; easier to install and disconnect
- Extended flex life
- Compensates for misalignment, facilitates movements/thermal expansion
- Braid coverage engineered to contain the inner core under pressure and reduce possibility of squirm
- Absorbs vibration and deadens noise in rigid systems
- Vacuum tight
- Handles high pressures and full vacuum
- Corrosion resistant
- Non-aging/non-flammable

Typical Applications

- Steam lines (high pressure applications over +450°F/+232°C)
- Cryogenic transfer
- Conveying lines (cryogenic fluids, chemical transfer of liquids, gases and vapors)

Metal Hose Specifications

Part Number	Inside Diameter		Outside Diameter		Maximum Operating Pressure		Maximum Test Pressure		Minimum Burst Pressure		Static Bend Radius		Dynamic Bend Radius		Weight	
	(in)	(mm)	(in)	(mm)	(psi)	(MPa)	(psi)	(MPa)	(psi)	(Mpa)	(in)	(mm)	(in)	(mm)	(lb/ft)	(kg/m)
4MDS6	1/4	6.4	0.62	15.8	3,850	26.54	4,875	33.61	13,000	89.63	3.00	76.2	6.00	152.4	0.30	0.45
6CF04/CF16	3/8	9.5	0.70	17.8	1,375	9.48	2,175	15.00	5,800	39.99	1.15	29.2	6.00	152.4	0.23	0.34
8CF04/CF16	1/2	12.7	0.80	20.3	1,000	6.89	2,063	14.22	5,500	37.92	1.75	44.5	5.00	127.0	0.24	0.36
12CF04/CF16	3/4	19.1	1.15	29.2	725	5.00	1,088	7.50	3,500	24.13	2.10	53.3	7.00	177.8	0.36	0.54
16CF04/CF16	1	25.4	1.49	37.9	580	4.00	870	6.00	2,400	16.55	2.50	63.5	7.70	195.6	0.44	0.65
20CF16	1-1/4	31.8	1.80	45.7	580	4.00	870	6.00	2,320	16.00	3.10	78.7	9.00	228.6	0.68	1.01
24MSS4	1-1/2	38.1	2.26	57.4	560	3.86	1,120	7.72	2,240	15.44	3.50	88.9	10.50	266.7	1.80	2.68
24CF16	1-1/2	38.1	2.10	53.3	435	3.00	870	6.00	1,740	12.00	4.75	120.7	9.50	241.3	1.09	1.62
32MSS4	2	50.8	2.72	69.1	525	3.62	1,050	7.24	2,100	14.48	4.50	114.3	12.00	304.8	2.37	3.53
32CF16	2	50.8	2.70	68.6	500	3.45	1,000	6.89	2,000	13.79	6.00	152.4	11.50	292.1	1.55	2.31
40MSS4/MSS6	2-1/2	63.5	3.50	88.9	380	2.62	760	5.24	1,520	10.48	5.00	127.0	13.00	330.2	2.70	4.02
48MSS4	3	76.2	4.00	101.6	285	1.97	570	3.93	1,140	7.86	7.50	190.5	16.00	406.4	2.87	4.27
48CF16	3	76.2	3.90	99.1	350	2.41	750	5.17	1,400	9.65	8.00	203.2	16.00	406.4	2.70	4.02
64MSS4	4	101.6	5.00	127.0	250	1.72	375	2.59	1,000	6.89	10.00	254.0	20.00	508.0	4.00	5.95
64MSS6	4	101.6	5.10	129.5	250	1.72	550	3.79	1,100	7.58	9.00	228.6	20.00	508.0	3.90	5.80
80MSS4/MSS6	5	127.0	6.25	158.8	225	1.55	450	3.10	900	6.21	12.00	304.8	24.00	609.6	6.66	9.91
96MSS4/MSS6	6	152.4	7.30	185.4	200	1.38	400	2.76	800	5.52	15.00	381.0	30.00	762.0	7.80	11.61
128MSS4/MSS6	8	203.2	9.45	240.0	185	1.28	370	2.55	740	5.10	20.00	508.0	40.00	1,016.0	10.80	16.07

⚠ Important: **Pressure Range** 185 psig to 3850 psig operating pressure, depending on inside diameter and operating temperature. Operating pressures based on 4:1 safety factor; operating pressure X4 = rated minimum burst pressure at 70°F (21°C).
Product Designation Codes MDS6 - 316 stainless steel double braided inner core, MSS6 - 316 stainless steel single braided inner core, MSS4 - 304 stainless steel single braided inner core, CF16 - 316 stainless steel single braided inner core, CF04 - 304 stainless steel single braided inner core.
 All braid reinforcement is 304 stainless steel.
 Consult factory for availability of larger sizes and inner cores of other alloys.
 Metal hose is rated for full vacuum.

Construction

Inner Metal Hose:	Annular corrugated close pitch hose Profile: parallel corrugations, omega shape close pitch Made from butt-welded tubing
Reinforcement:	304 stainless steel braid Basket weave full coverage pattern
Maximum Service Temperature:	MSS6 / CF16: +1500°F (+816°C) MSS4 / CF04: +850°F (+454°C)

Fitting Options

- Any style, using butt weld construction (TIG method)
- NPT, FNPT, flange, J.I.C., compression, union, vacuum, sanitary, O-ring, BSP, metric and DIN

Common Media

- Steam
- Liquified gas

Specifying the Proper Metal Hose

A number of factors should be taken into consideration when specifying 316L/304 Stainless Steel Metal Hose.

Material to be transferred

- Select 316L or 304 stainless steel inner core, depending on the type of medium.

Corrosion potential

- The corrosive nature of both the medium to be conveyed and the outside environment should be taken into account; the corrosive effects of many chemicals can be accelerated by higher temperatures.
- If the material to be transferred is gaseous, flow rates should be specified, especially if velocity is to approach or exceed 180 feet per second.
- Are the fittings to be of the same alloy material?

Inside diameter (ID) of hose

Relationship of pressure rating, temperature and type of service

- Operating pressures listed in the specifications chart reflect a rating based on one braid reinforcement and a minimum safety ratio of 4:1, burst pressure to rated operation pressure.
- Ratings are based on operating at ambient temperature – 70°F (21°C). If your application exceeds this temperature, consult the accompanying temperature correction chart to calculate the adjusted pressure rating at your particular operation temperature.

Maximum service temperature

- MSS6 / CF16: +1500°F (+815°C)
- MSS4 / CF04: +850°F (+454°C)

Temperature Correction Factor

As the service temperature increases, the maximum pressure a hose assembly can withstand decreases.

Use the factors given in the accompanying chart to approximate the safe working pressure at elevated temperatures; this figure will enable you to determine the optimum assembly for your application.

Example

Is 1" 304 Stainless Steel Metal Hose (product designation CF04) suitable for 200 PSIG @ 700°F?

Given:

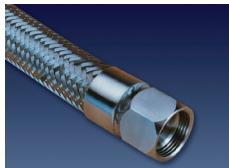
- Maximum operating temperature: 700°F
- Maximum operating pressure: 200 PSIG
- Computations:
 - Check specifications chart for minimum rated burst pressure for 1" CF04 = 2400
 - Check temperature correction factors chart for correction factor for 1" CF04 at 700°F = .70
 - Rated burst pressure: 2400 x .70 = 1680 PSIG (rated burst pressure at 700°F)
 - Safe operating pressure: 1680/4 = 420 PSIG (using 4:1 safety factor)
- Result
 - 1" CF04 is rated at 420 PSIG maximum allowable working pressure (MAWP,) well in excess of the 200 PSIG of the example operating environment.

Temperature Correction Factors	
Temp.°F (°C)	Temp. Correction Number
70 (21)	1.00
150 (66)	.97
200 (93)	.94
250 (121)	.92
300 (149)	.88
350 (177)	.86
400 (204)	.84
450 (232)	.82
500 (260)	.80
600 (316)	.75
700 (371)	.70
800 (427)	.66
900 (482)	.62
1000 (538)	.60
1100 (593)	.58
1200 (649)	.55
1300 (704)	.50
1400 (760)	.44
1500 (816)	.40

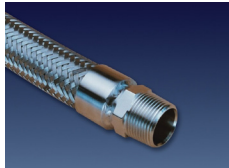
Metal Hose Fitting Options

Many different types of fittings can be attached to metal hose. Saint-Gobain's Versilon stainless steel fittings are typically fully machined from bar stock and are engineered for a tight fit that allows for proper weld penetration and long service life.

Some of the more popular fitting styles are shown below. However, due to the versatility of the welded hose construction, many types of fittings can be welded to meet your needs. Consult the factory for availability and fitting dimensions.



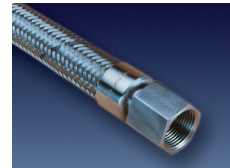
**J.I.C. Female Swivel
Style 02**
Machined 37° and 45°
seat with J.I.C.
swivel nut



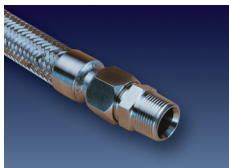
**Male NPT
Style 03**
Pipe thread-with
integral hex



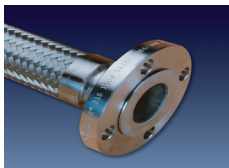
**Male Pipe, Plain
Style 04**
Pipe thread-Sch 40
standard weight



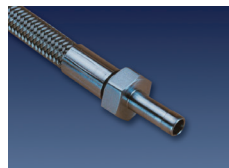
**Female NPT
Style 06**
Pipe thread-hex
style supplied
standard through 1"
Style 05
Female NPT round with
wrench flats



**J.I.C. Adapter Union Male
Style 08
Style 07**
Consult factory for female
adapter union



**Flange Retainer,
Lap-Joint Style
Style 12**
Lap-joint forged flange per
ASTM specifications
Schedule 10 Type "C"
stub ends & 150# epoxy
coated carbon steel lap-
joint flanges standard.
Consult factory for optional
stainless steel flanges and
alternative stub end
types/schedules



**Plain Pipe End / Tube End
Style 01**
Pipe end (Sch 40) or
heavy weight (Sch 80)
Style 41
Plain end specified by O.D.
and wall thickness

Also available:

Sanitary Clamp Style 10 / Style 11: 316L mini (11) or full size clamp style (10). 45° and 90° elbow also available

Female Cam and Groove (Swivel) Style 16: 316 stainless steel with or without locking arms

Male Cam and Groove Style 17: 316 stainless steel

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