Polyhose®

TOFLE

An Indo - Japan Joint Venture

METAL HOSE & ASSEMBLIES

INDEX

About us

Established in 2016 with the keen vision of establishing Polyhose India Pvt. Ltd. as a one-stop solution for all energy conveyance needs, Polyhose Tofle Pvt. Ltd. is a Joint Venture with the Japanese company Tofle Co. Ltd., which is the world's leading manufacturer of Stainless-Steel Hoses and Bellows with 50+ years' experience in manufacturing of metal hoses. The Factory houses state-of-the-art and latest machinery imported from Europe. Set up on a sprawling 20 Acre land. Our vision is to be the world's leading manufacturers and exporters of Stainless-Steel Hoses and Bellows. The factory manufactures Metal Hoses from ¼" to 12" in diameter.

CERTIFICATION

TÜV NORD

CERTIFICATE

Quality management system
welding manufacturer
according to Directive 2014/68/EU, Annex I, point 3.1

Certificate no.: 07/203/1409/HZ/4380/22

Name and address of manufacturer: POLYHOSE TOFLE PVT. LTD.
1/160, No: 25 Kannivakkam, Village, Guduvanchery
Chengalpet (Tk), Kancheepuram Dist-602303
Tamilnadu, India

This is to certify that the manufacturer applies a quality management system with relation to the welding technology. The manufacturer has demonstrated that the welding requirements for the manufacturing of pressure equipment are fulfilled.

Verified: According to Directive 2014/68/EU, Annex I, point 3.1

Audit report no.: 812 059 7646, SAP No. 812 084 2558

Scope: Stainless Steel Flexible Corrugated Hoses and Hose Assemblies with or without Braid, Size Range: ¼" to 10" ID (DN 6 to DN 250) in acc. With DIN EN ISO 10380:2013-02

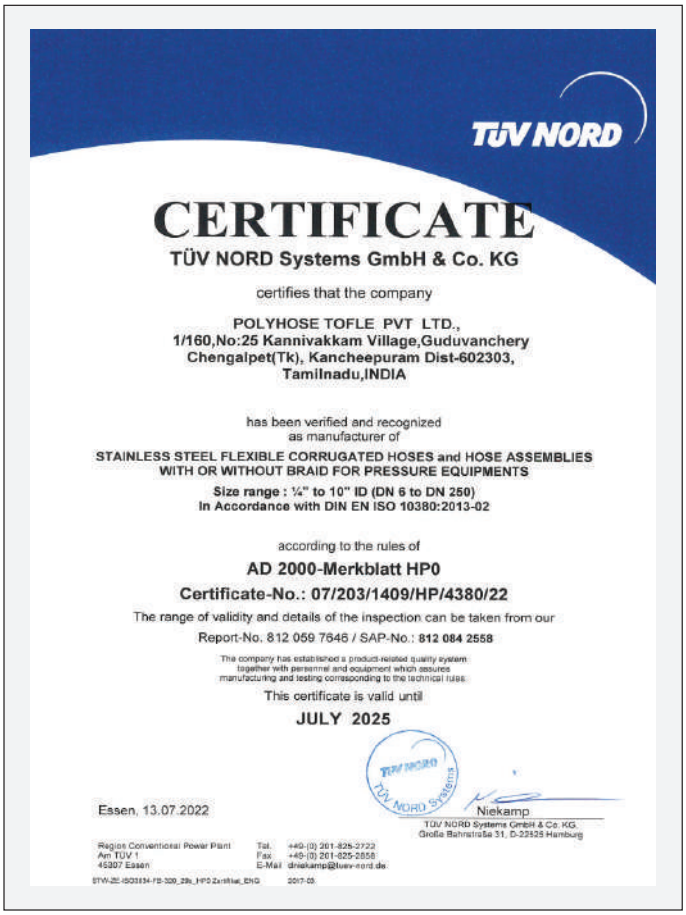
This certificate is valid until: July 2025

Essen, 13.07.2022

Niekamp
TÜV NORD Systems GmbH & Co. KG
Große Bahnstraße 31, D-22525 Hamburg

Profit Center: Conventional Power Plant
Am TÜV 1
45307 Essen

Phone +49-(0) 201-825-2722
Fax +49-(0) 201-825-2858
E-Mail dniekamp@tuev-nord.de



TÜV NORD

CERTIFICATE

TÜV NORD Systems GmbH & Co. KG

certifies that the company

POLYHOSE TOFLE PVT LTD.,
1/160,No:25 Kannivakkam Village,Guduvanchery
Chengalpet(Tk), Kancheepuram Dist-602303,
Tamilnadu,INDIA

has been verified and recognized
as manufacturer of

STAINLESS STEEL FLEXIBLE CORRUGATED HOSES and HOSE ASSEMBLIES
WITH OR WITHOUT BRAID FOR PRESSURE EQUIPMENTS
Size range : ¼" to 10" ID (DN 6 to DN 250)
In Accordance with DIN EN ISO 10380:2013-02

according to the rules of
AD 2000-Merkblatt HP0

Certificate-No.: 07/203/1409/HP/4380/22

The range of validity and details of the inspection can be taken from our
Report-No. 812 059 7646 / SAP-No.: 812 084 2558

The company has established a product-related quality system together with personnel and equipment which assures manufacturing and testing corresponding to the technical rules.

This certificate is valid until
JULY 2025

Essen, 13.07.2022

Niekamp
TÜV NORD Systems GmbH & Co. KG
Große Bahnstraße 31, D-22525 Hamburg

Region Conventional Power Plant
Am TÜV 1
45307 Essen

Tel. +49-(0) 201-825-2722
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E-Mail dniekamp@tuev-nord.de

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited
certifies that

POLYHOSE TOFLE PVT. LTD.
1/160, Kannivakkam Village, Guduvancheri,
Chengalpatu (TK), Kancheepuram - 603 202, Tamilnadu, INDIA

has implemented Quality Management System
in accordance with ISO 9001:2015
for the scope of

Manufacture of SS flexible hose, SS braids and metal hose assemblies.

The certificate is valid from 2021-08-13 until 2024-08-12
Subject to successful completion of annual periodic audits
The present status of this Certificate can be obtained on www.tuvsud.com/en-in
Further clarifications regarding the scope of the certificate may be obtained by consulting the certification body

Certificate Registration No. 99 100 18838
Date of initial certification: 2018-08-13
Issue Date: 2021-07-28 Rev. 00

Rahul Kale
Head of Certification Body
of TÜV SÜD South Asia Private Limited, Mumbai
Member of TÜV SÜD Group

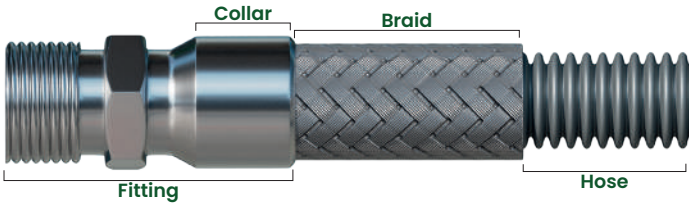
TÜV SÜD South Asia Pvt. Ltd. ● TÜV SÜD House ● Saki Naka ● Andheri (East) ● Mumbai – 400072 ● Maharashtra ● India

1.1 ANNULAR CORRUGATED HOSE

Metal Hose

Hoses can be used to convey most kinds of fluids, gases and liquids, chemicals, etc., and can function to absorb reciprocating motion, thermal expansion, vibration, and misalignment.

Actually for in High temperature or pressure, while remaining flexible.



Types:
Corrugated Hose & Stripwound Hose

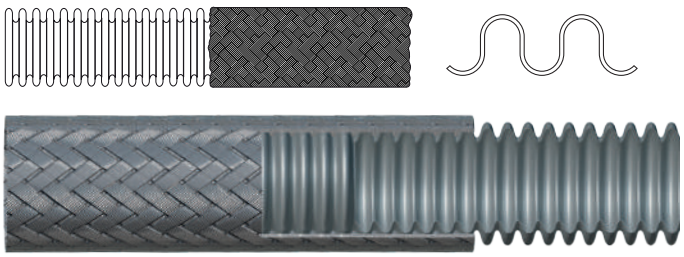
Corrugated Hose:

Types of Profile: Annular & Helical

Annular:
Hose is formed from tubing into individual parallel corrugations

Helical:
Hose is also formed from tubing, but into a continuous spiral corrugation.

Annularly Corrugated Hose:

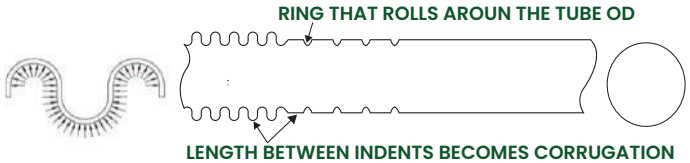


Mechanical Forming

Size: 1/4" to 4"

Material: SS304, SS316L & SS321

A Longitudinal Weld Tube is fed into the corrugator, a ring rolls around it, creating slight indentations at regular intervals. The ring has a smooth radius to minimize stress concentrations. The intervals will become valleys between the corrugations

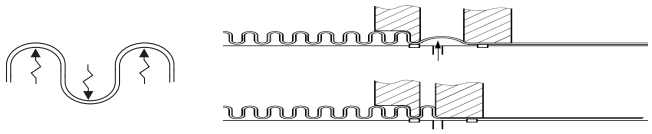


Hydro Forming

Size: 1.1/4" to 12"

Material: SS304, SS316L & SS321

In hydro forming, the force used to push the metal outward to form the corrugation is generated by water. The water pressure from inside the tube pushes the metal into a die on the outside of the tube which gives the bump its shape. Hydro forming may be used to form the corrugations individually, or in a group of several humps all at once in a multi-station form



Braid:

Wire Dia: From 0.3mm to 0.7mm

Braiding Material : SS304L & SS316L

Braid Coverage: 90 to 95%

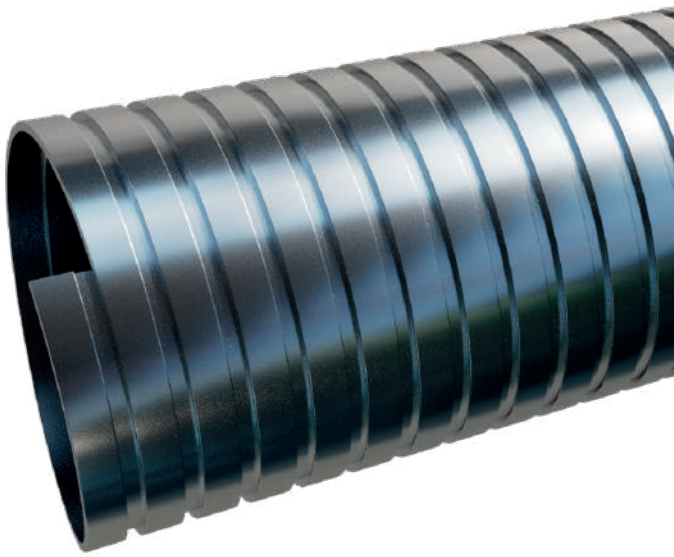
Temp Range: -200°C to 550°C (Applicable for hose)

Wall Thickness:
From-0.15mm to 0.7mm (Applicable for hose)

Safety Factor: 4:1

Temp Range: -600°C to 550°C

1.2 STRIPWOUND HOSE:



Stripwound Metal Hose is a flexible metal hose that is ideal for the transfer of abrasive materials. Although it is not gas tight, like corrugated hose, it is durable and an excellent choice for use as a guard, an open-ended exhaust hose, and for the transfer of dry bulk materials.

It is also used in some water & wastewater treatment applications. One of the main benefits of stripwound hose is its ability to not contaminate the transferred product with any residue.

Material: SS304

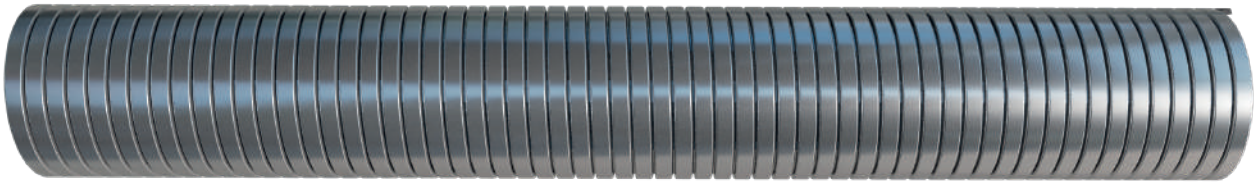
End Fitting: As per customer requirement.

Double Interlock

Strip is formed with legs that interlock to form a tighter, more rugged construction.

Features & Benefits:

Extremely flexible. Ideally suited for conveying dry, bulk materials, for open-end gas exhaust, and as a protective cover.

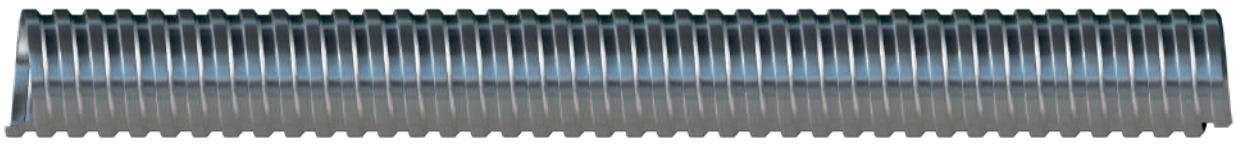


Squarelock

The strip is formed into square shapes that are locked together.

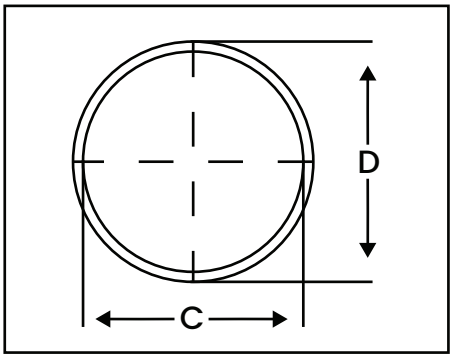
Features & Benefits:

Extremely flexible. Primarily used as a protective covering for wires, fiberoptic cables, and other hoses.

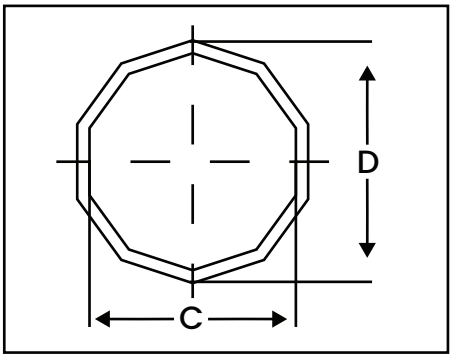


Profile

CIRCULAR CROSS SECTION



POLYGONAL CROSS SECTION



1.3 PRODUCT NOMENCLATURE (Annular Hose)

R	006	MFM	X	R	1	0	K

Grade of Tube:
R - SS 304
G - SS 316L
B - SS 321
W - Loose Braid without tube (med.weight)
OW-Loose Braid without tube (high weight)

ID of Tube:
6.3mm ID DN 6 - 006
6.3mm ID DN 8 - 008 and so on...

Manufacturing Series:
MFM - Mechanical Forming Medium Flexibility
MFM (S) - Mechanical Forming Medium Flexibility Special
MFM - Mechanical Forming High Flexibility
HFH - Heavy Duty Hose
HFM - Hydro Forming Medium Flexibility
HFM - Hydro Forming Heavy Duty

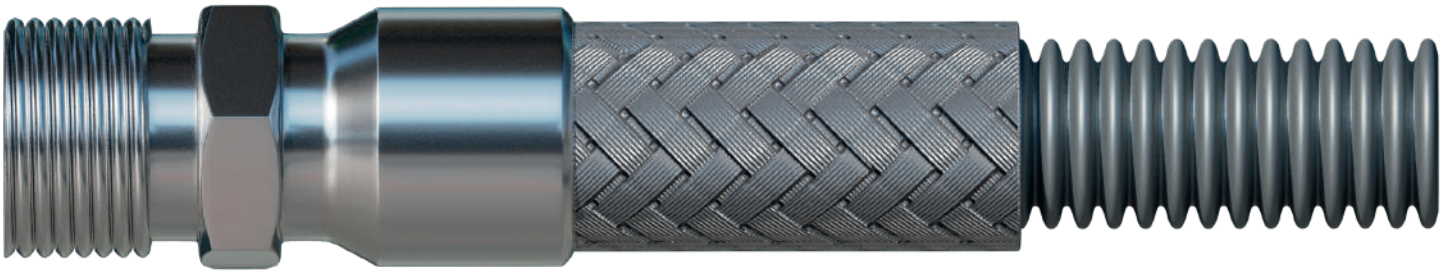
Number of Weld:
X-None

Grade of Braid:
R - SS 304L
G - SS 316L
B - SS 321
0 - None

Number of Braid:
0 - No Braids
1 - 1 Braid
2 - 2 Braids
3 - 3 Braids

Version:
0 - Standard
1 - Special Wire

Length of Hose:
K - 15m
Q - 25m
P - 20m
T - 50m
Z - Random



1.4 PH 2000 SERIES - MFM

Structure : Annular Corrugated Mechanical formed flexible metal hoses produced from longitudinally welded tubes with or without braiding

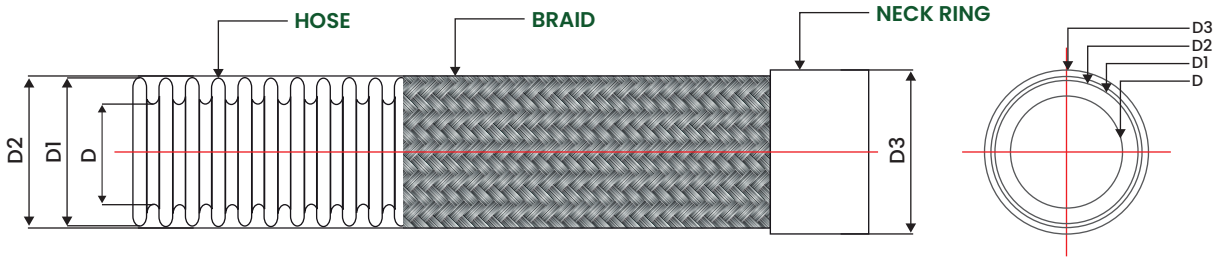
Characteristics : Light Weight / Medium Flexibility

Standards : EN ISO 10380

Hose Material : Stainless Steel AISI 304, AISI 321, AISI 316L

Braiding Material : Stainless Steel AISI 304L and AISI 316L

Suitable fittings types : Threaded end, Flange end, Pipe end, etc. as per customer specifications



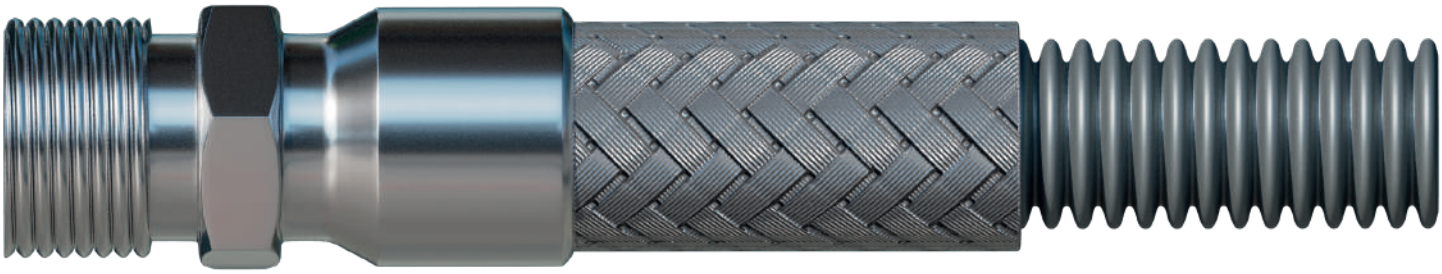
METRIC SYSTEM

DN	ITEM CODE	BRAIDS	BRAID CONSTRUCTION (NO OF CARRIERS X NO OF STRANDS X WIRE DIAMETER)	BRAID	ID	OD	WP	BP	BR/r		W
				COVERAGE	(D)	(D1 & D2)	(Max) @20°C	(Min) @20°C	DYNAMIC	STATIC	WEIGHT
				%	mm	mm	bar	bar	mm	mm	kg/m
1/4"	R006MFMX00T	0	24 X 4 X 0.3	94	6.30	9.60	5	--	--	--	0.07
	R006MFMXR1T	1			6.30	10.80	120	480	110.00	25.00	0.15
	R006MFMXR2T	2			6.30	12.00	180	720	--	--	0.22
5/16"	R008MFMX00T	0	24 X 5 X 0.3	92	8.50	12.10	5	--	--	--	0.09
	R008MFMXR1T	1			8.50	13.60	112	448	130.00	32.00	0.18
	R008MFMXR2T	2			8.50	14.80	168	672	--	--	0.27
3/8"	R010MFMX00T	0	24 X 6 X 0.3	92	10.00	14.10	5	--	--	--	0.10
	R010MFMXR1T	1			10.00	15.70	97	388	150.00	38.00	0.22
	R010MFMXR2T	2			10.00	16.90	145.5	582	--	--	0.34
1/2"	R012MFMX00T	0	24 X 7 X 0.3	92	12.10	16.70	4.5	--	--	--	0.11
	R012MFMXR1T	1			12.10	18.20	75	300	165.00	45.00	0.25
	R012MFMXR2T	2			12.10	19.40	112.5	450	--	--	0.39

5/8"	R016MFMX00T	0	36 X 7 X 0.3	96	16.60	21.90	4.5	--	--	--	0.18
	R016MFMXR1T	1			16.60	23.50	60	240	195.00	58.00	0.38
	R016MFMXR2T	2			16.60	24.70	90	360	--	--	0.57
3/4"	R020MFMX00T	0	36 X 9 X 0.3	94	20.20	26.70	3	--	--	--	0.27
	R020MFMXR1T	1			20.20	28.20	60	240	225.00	70.00	0.53
	R020MFMXR2T	2			20.20	29.40	90	360	--	--	0.78
1"	R025MFMX00T	0	36 X 10 X 0.3	96	25.30	32.30	3	--	--	--	0.36
	R025MFMXR1T	1			25.30	33.80	50	200	260.00	85.00	0.62
	R025MFMXR2T	2			25.30	35.00	75	300	--	--	0.88
1 1/4"	R032MFMX00P	0	48 X 8 X 0.4	94	33.60	41.20	3	--	--	--	0.54
	R032MFMXR1P	1			33.60	43.00	46	184	300.00	105.00	1.04
	R032MFMXR2P	2			33.60	44.60	69	276	--	--	1.55
1 1/2"	R040MFMX00P	0	48 X 9 X 0.4	92	40.00	49.50	2	--	--	--	0.70
	R040MFMXR1P	1			40.00	51.30	42	168	340.00	130.00	1.28
	R040MFMXR2P	2			40.00	52.90	63	252	--	--	1.86
2"	R050MFMX00P	0	48 X 10 X 0.4	96	50.40	60.70	2	--	--	--	0.88
	R050MFMXR1P	1			50.40	62.60	32	128	390.00	160.00	1.51
	R050MFMXR2P	2			50.40	64.20	48	192	--	--	2.14

Note:

1. Test pressure is 1.5 times of working pressure @ 20°c
2. **This information is for guidance only, we reserve the right to alter or amend specifications as deemed necessary.**
3. General tolerance is applicable.



1.8 PH 2400 SERIES - HFM

Structure : Annular Corrugated Hydroformed flexible metal hoses produced from longitudinally welded tubes with or without braiding

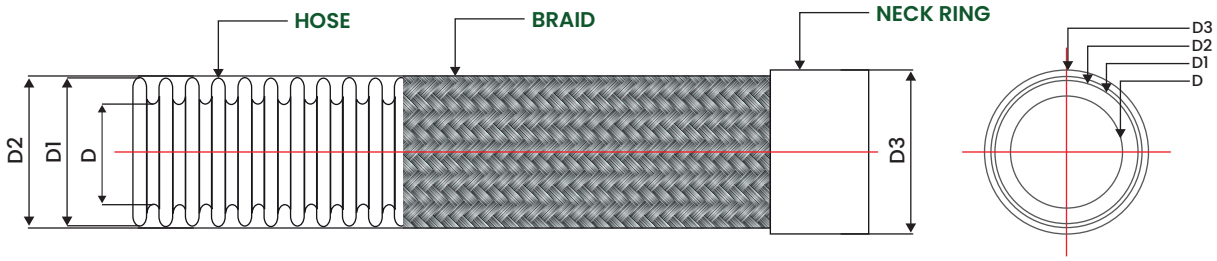
Characteristics : Light Weight / Medium Flexibility

Standards : EN ISO 10380

Hose Material : Stainless Steel AISI 304, AISI 321, AISI 316L

Braiding Material : Stainless Steel AISI 304L and AISI 316L

Suitable fittings types : Threaded end, Flange end, Pipe end, etc. as per customer specifications



METRIC SYSTEM

DN	ITEM CODE	BRAIDS	BRAID CONSTRUCTION (NO OF CARRIERS X NO OF STRANDS X WIRE DIAMETER)	BRAID COVERAGE	ID (D)	OD (D1 & D2)	WP (Max) @20°C	BP (Min) @20°C	BR/r DYNAMIC	BR/r STATIC	WEIGHT
				%	mm	mm	bar	bar	mm	mm	kg/m
1 1/4"	R032HFMX00P	0	48 X 8 X 0.4	92	31.60	43.20	1.2	--	--	--	0.38
	R032HFMXR1P	1			31.60	44.80	30	120	300	105	0.88
	R032HFMXR2P	2			31.60	46.40	45	180	--	--	1.38
1 1/2"	R040HFMX00P	0	48 X 9 X 0.4	92	40.30	51.50	1.2	--	--	--	0.49
	R040HFMXR1P	1			40.30	53.10	30	120	340	130	1.05
	R040HFMXR2P	2			40.30	54.70	45	180	--	--	1.61
2"	R050HFMX00P	0	48 X 10 X 0.4	96	49.50	62.70	1	--	--	--	0.65
	R050HFMXR1P	1			49.50	64.30	24	96	390	160	1.27
	R050HFMXR2P	2			49.50	65.90	36	144	--	--	1.88
2 1/2"	R065HFMX00P	0	72 X 7 X 0.5	94	64.80	78.30	0.8	--	--	--	0.85
	R065HFMXR1P	1			64.80	80.30	22	88	460	200	1.88
	R065HFMXR2P	2			64.80	82.30	33	132	--	--	2.91

3"	R080HFMX00P	0	72 X 8 X 0.5	96	79.80	96.50	0.7	--	--	--	1.15
	R080HFMXR1P	1			79.80	98.50	18	72	660	240	2.35
	R080HFMXR2P	2			79.80	100.50	27	108	--	--	3.54
4"	R100HFMX00P	0	72 X 10 X 0.5	94	99.80	116.20	0.55	--	--	--	1.42
	R100HFMXR1P	1			99.80	118.20	16	64	750	290	2.89
	R100HFMXR2P	2			99.80	120.20	24	96	--	--	4.36
5"	R125HFMX00Z	0	72 X 10 X 0.6	92	130.00	154.00	0.4	--	--	--	2.90
	R125HFMXR1Z	1			130.00	157.50	14	56	1000	350	5.13
	R125HFMXR2Z	2			130.00	159.90	21	84	--	--	7.44
6"	R150HFMX00Z	0	72 X 11 X 0.6	90	154.00	180.50	0.3	--	--	--	3.42
	R150HFMXR1Z	1			154.00	182.50	10	40	1250	400	5.91
	R150HFMXR2Z	2			154.00	184.90	15	60	--	--	8.40
8"	R200HFMX00Z	0	96 X 9 X 0.67	90	204.00	233.40	0.3	--	--	--	5.60
	R200HFMXR1Z	1			204.00	236.00	8	32	1600	520	8.64
	R200HFMXR2Z	2			204.00	238.68	12	48	--	--	11.69
10"	R250HFMX00Z	0	96 X 12 X 0.7	90	254.00	282.00	0.2	--	--	--	8.31
	R250HFMXR1Z	1			254.00	285.00	7.5	30	2000	620	13.97
	R250HFMXR2Z	2			254.00	287.80	11.25	45	--	--	19.62
12"	R300HFMX00Z	0	96 X 14 X 0.7	94	312.00	348.00	0.2	--	--	--	10.80
	R300HFMXR1Z	1			312.00	352.00	6	24	2400	725	18.20
	R300HFMXR2Z	2			312.00	354.80	9	36	--	--	25.60

Note:

1. Test pressure is 1.5 times of working pressure @ 20°c
2. **This information is for guidance only, we reserve the right to alter or amend specifications as deemed necessary.**
3. General tolerance is applicable.

1.10 PH 2600 ABRASION RESISTANT

- Material Available in SS304L & SS316L
- Clean and oil-free
- Soft texture allows for easy trimming and quicker hose assembly fabrication
- Engineered for optimal hose coverage

Abrasion Resistant Tubular Braid for Series PH 2000, PH 2100 & PH2200 Hose

METRIC SYSTEM

DN	ITEM CODE	BRAIDS	BRAID CONSTRUCTION (NO OF CARRIERS X NO OF STRANDS X WIRE DIAMETER)	BRAID COVERAGE	ID	OD	W
					(D)	(D1 & D2)	WEIGHT
				%	mm	mm	kg/m
1/4"	W006000XR10Z	1	24 X 4 X 0.3	94	9.60	10.80	0.08
5/16"	W008000XR10Z	1	24 X 5 X 0.3	92	12.10	13.60	0.09
3/8"	W010000XR10Z	1	24 X 6 X 0.3	92	14.10	15.70	0.12
1/2"	W012000XR10Z	1	24 X 7 X 0.3	92	16.70	18.20	0.14
5/8"	W016000XR10Z	1	36 X 7 X 0.3	96	21.90	23.50	0.19
3/4"	W020000XR10Z	1	36 X 9 X 0.3	94	26.70	28.20	0.26
1"	W025000XR10Z	1	36 X 10 X 0.3	96	32.30	33.80	0.26
1.1/4"	W032000XR10Z	1	48 X 8 X 0.4	94	41.20	43.00	0.50
1.1/2"	W040000XR10Z	1	48 X 9 X 0.4	92	49.50	51.30	0.58
2"	W050000XR10Z	1	48 X 10 X 0.4	96	60.70	62.60	0.63

1.11 PH 2700 ABRASION RESISTANT

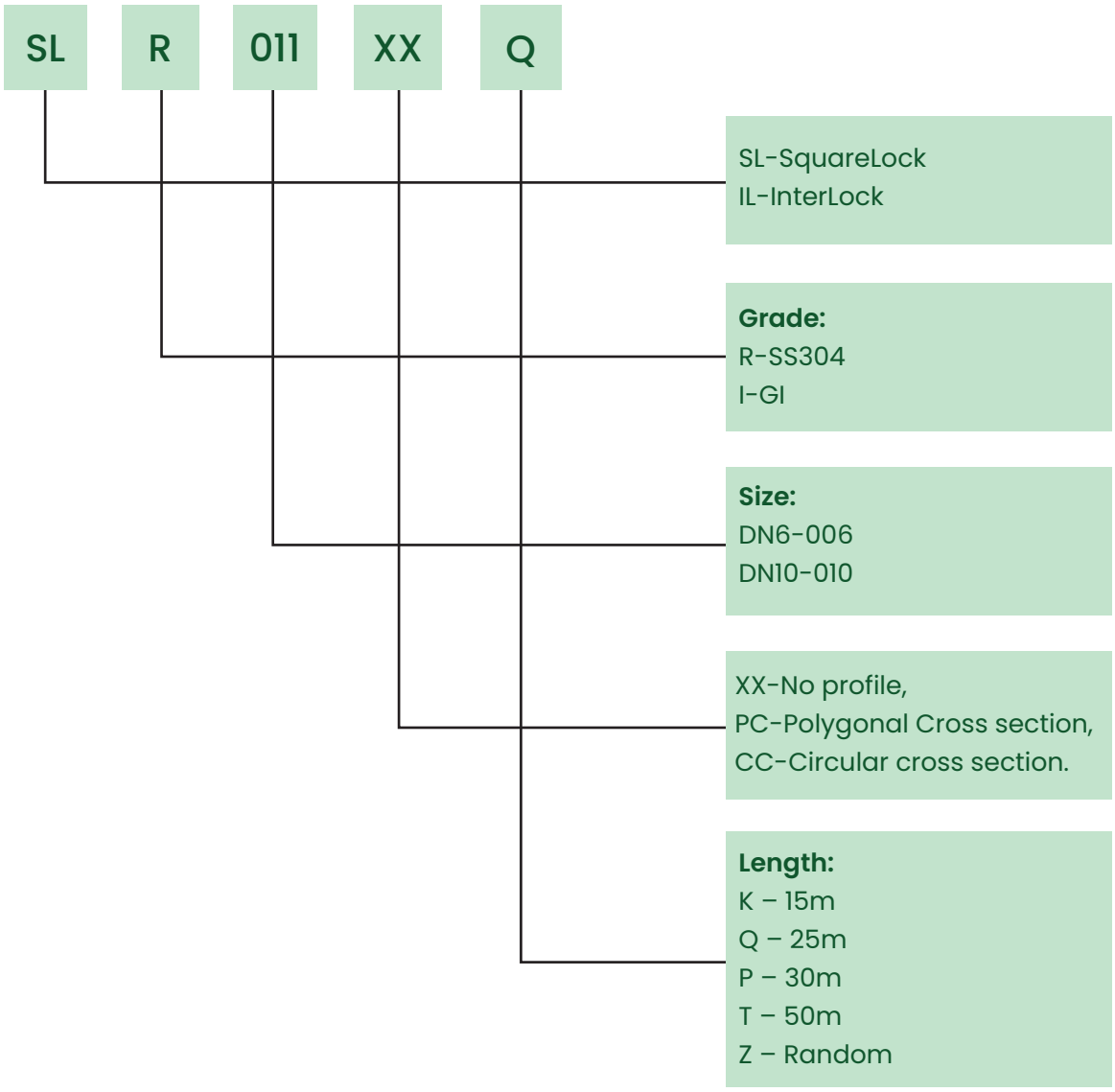
- Material Available in SS304L & SS316L
- Clean and oil-free
- Soft texture allows for easy trimming and quicker hose assembly fabrication
- Engineered for optimal hose coverage

Abrasion Resistant Tubular Braid for Series PH2300 Hose

METRIC SYSTEM

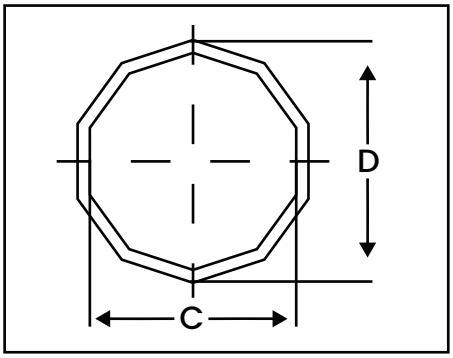
DN	ITEM CODE	BRAIDS	BRAID CONSTRUCTION (NO OF CARRIERS X NO OF STRANDS X WIRE DIAMETER)	BRAID COVERAGE	ID	OD	W
					(D)	(D1 & D2)	WEIGHT
				%	mm	mm	kg/m
1/4"	OW006000XR10Z	1	24 X 5 X 0.35	98	10.10	12.20	0.13
5/16"	OW008000XR10Z	1	24 X 6 X 0.35	98	12.20	14.50	0.14
3/8"	OW010000XR10Z	1	24 X 8 X 0.35	98	16.20	18.00	0.21
1/2"	OW012000XR10Z	1	24 X 9 X 0.35	94	21.10	22.90	0.23
3/4"	OW020000XR10Z	1	36 X 9 X 0.35	95	30.70	32.50	0.32
1"	OW025000XR10Z	1	36 X 10 X 0.35	98	38.50	40.30	0.37
1.1/4"	OW032000XR10Z	1	48 X 9 X 0.4	95	45.00	46.60	0.56
1.1/2"	OW040000XR10Z	1	48 X 10 X 0.4	95	55.00	56.60	0.62
2"	OW050000XR10Z	1	48 X 10 X 0.5	95	65.00	67.00	1.00
2.1/2"	OW065000XR10Z	1	72 X 8 X 0.5	94	83.00	85.00	1.17
3"	OW080000XR10Z	1	72 X 9 X 0.5	96	97.50	100.00	1.30
4"	OW100000XR10Z	1	72 X 11 X 0.5	96	120.00	122.50	1.59
5"	OW125000XR10Z	1	72 X 11 X 0.7	93	154.00	157.00	3.12
6"	OW150000XR10Z	1	72 X 12 X 0.7	90	180.00	183.00	3.40
8"	OW200000XR10Z	1	96 X 9 X 0.7	90	233.40	237.00	4.05
10"	OW250000XR10Z	1	96 X 12 X 0.7	90	284.00	287.00	5.66

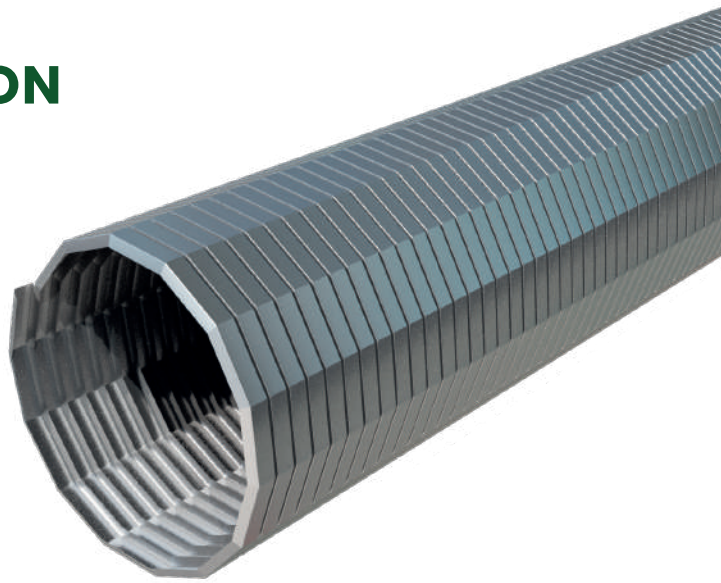
1.12 PRODUCT NOMENCLATURE (Stripwound Hose)



DOUBLE INTERLOCK

1.13 TECHNICAL SPECIFICATION FOR DOUBLE INTERLOCK



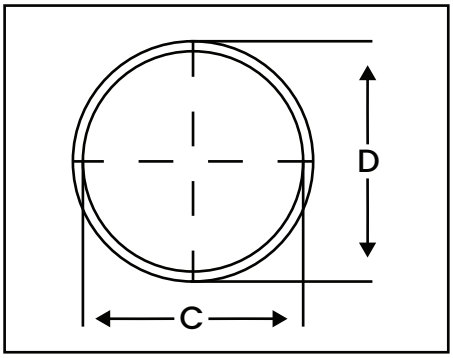


POLYGONAL CROSS SECTION

INTERLOCK - UNPACKED									
NOMINAL SIZE		ID		OD		WEIGHT ±10%		MIN BEND RAD +10%	
INCH	MM	MM	INCH	MM	INCH	KG/M	LBS	MM	INCH
1.1/2"	38	38	1.50	42	1.654	0.900	0.604	180	7.087
	40	40	1.57	44	1.732	1.090	0.731	200	7.874
1.3/4"	45	45	1.77	49	1.929	1.220	0.819	225	8.858
	46	46	1.81	50	1.969	1.260	0.845	230	9.055
2	51	51	2.01	55	2.165	1.430	0.960	250	9.843
	52	52	2.05	56	2.205	1.490	1.000	260	10.236
2.1/4"	57	57	2.24	61	2.402	1.640	1.100	275	10.827
	60	60	2.36	64.5	2.539	1.750	1.174	300	11.811
2.1/2"	65	65	2.56	67.5	2.657	1.910	1.282	325	12.795
	70	70	2.76	74.5	2.933	2.070	1.389	350	13.780
3"	76	76	2.99	80.5	3.169	2.230	1.496	375	14.764
	80	80	3.15	84.5	3.327	2.390	1.604	400	15.748
	85	85	3.35	89.5	3.524	2.550	1.711	425	16.732
	87	87	3.43	91.5	3.602	2.610	1.751	435	17.126
3.1/2"	90	90	3.54	94.5	3.720	2.700	1.812	450	17.717
4"	101	101	3.98	105.5	4.154	3.000	2.013	500	19.685
	110	110	4.33	114.5	4.508	3.480	2.335	550	21.654
	115	115	4.53	119.5	4.705	3.720	2.496	575	22.638
	120	120	4.72	124.5	4.902	3.960	2.657	600	23.622
	130	130	5.12	134.5	5.295	4.320	2.899	650	25.591
	140	140	5.51	144.5	5.689	4.500	3.020	700	27.559
6"	150	150	6	154.5	6.083	4.700	3.154	750	29.528

DOUBLE INTERLOCK

1.14 TECHNICAL SPECIFICATION FOR DOUBLE INTERLOCK



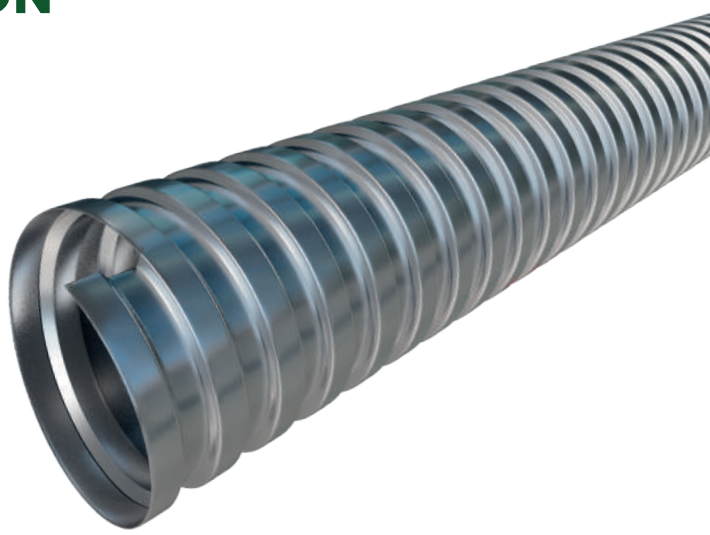
CIRCULAR CROSS SECTION

INTERLOCK - UNPACKED									
NOMINAL SIZE		ID		OD		WEIGHT		MIN BEND RAD +10%	
INCH	MM	MM	INCH	MM	INCH	KG/M	LBS	MM	INCH
3/8"	9	9	0.35	12	0.472	0.145	0.097	45	1.772
	10	10	0.39	13	0.512	0.160	0.107	50	1.969
	11	11	0.43	14	0.551	0.190	0.127	55	2.165
	12	12	0.47	15	0.591	0.213	0.143	65	2.559
1/2"	13	13	0.51	16	0.630	0.230	0.154	70	2.756
	14	14	0.55	17	0.669	0.248	0.166	75	2.953
	15	15	0.59	18	0.709	0.265	0.178	80	3.150
5/8"	16	16	0.63	19	0.748	0.283	0.190	82	3.228
	17	17	0.67	20	0.787	0.301	0.202	85	3.346
	18	18	0.71	21	0.827	0.319	0.214	90	3.543
	18	18	0.71	22	0.866	0.335	0.225	90	3.543
3/4"	19	19	0.75	23	0.906	0.350	0.235	95	3.740
	20	20	0.79	24	0.945	0.370	0.248	100	3.937
	21	21	0.83	25	0.984	0.390	0.262	105	4.134
	22	22	0.87	26	1.024	0.400	0.268	110	4.331
	23	23	0.91	27	1.063	0.420	0.282	115	4.528
	24	24	0.94	28	1.102	0.440	0.295	120	4.724
1"	25	25	0.98	29	1.142	0.460	0.309	125	4.921
	26	26	1.02	30	1.181	0.480	0.322	130	5.118
	27	27	1.06	31	1.220	0.500	0.336	135	5.315
1.1/8"	28	28	1.10	32	1.260	0.520	0.349	140	5.512
	29	29	1.14	33	1.299	0.540	0.362	145	5.709
1.1/4"	32	32	1.26	35.0	1.378	0.580	0.389	160	6.299
1.1/2"	40	40	1.57	43.5	1.713	0.690	0.463	180	7.087
1.3/4"	45	45	1.77	48.5	1.909	0.800	0.537	190	7.480

2"	50	50	1.97	53.5	2.106	1.450	0.973	205	8.071
2.3/16"	55	55	2.17	59.5	2.343	1.600	1.074	225	8.858
2.3/8"	60	60	2.36	64.0	2.520	1.740	1.168	234	9.213
2.1/2"	65	65	2.56	69.0	2.717	1.890	1.268	245	9.646
2.5/8"	70	70	2.76	74.0	2.913	2.030	1.362	273	10.748
3"	75	75	2.95	79.0	3.110	2.180	1.463	293	11.535
3.5/16"	80	80	3.15	84.0	3.307	2.320	1.557	312	12.283
3.3/8"	85	85	3.35	89.0	3.504	2.450	1.644	330	12.992
4"	100	100	3.94	105.0	4.134	2.900	1.946	390	15.354
4.3/8"	110	110	4.33	115.0	4.528	3.090	2.073	430	16.929
4.3/4"	120	120	4.72	125.0	4.921	3.480	2.335	468	18.425
5"	125	125	4.92	130.0	5.118	3.630	2.436	490	19.291
5.1/4"	130	130	5.12	135.0	5.315	4.790	3.214	620	24.409
5.5/8"	140	140	5.51	145.0	5.709	5.250	3.523	665	26.181
6"	150	150	5.91	155.0	6.102	5.550	3.724	715	28.150
7.1/2"	190	190	7.48	195.0	7.677	7.000	4.697	905	35.630
8"	200	200	7.9	205.0	8.071	7.400	4.965	950	37.402
9.1/2"	240	240	9.45	245.0	9.646	8.850	5.938	1150	45.276
12"	300	300	11.8	305.0	12.008	11.050	7.415	1440	56.693

1.15 TECHNICAL SPECIFICATION FOR SQUARE LOCK

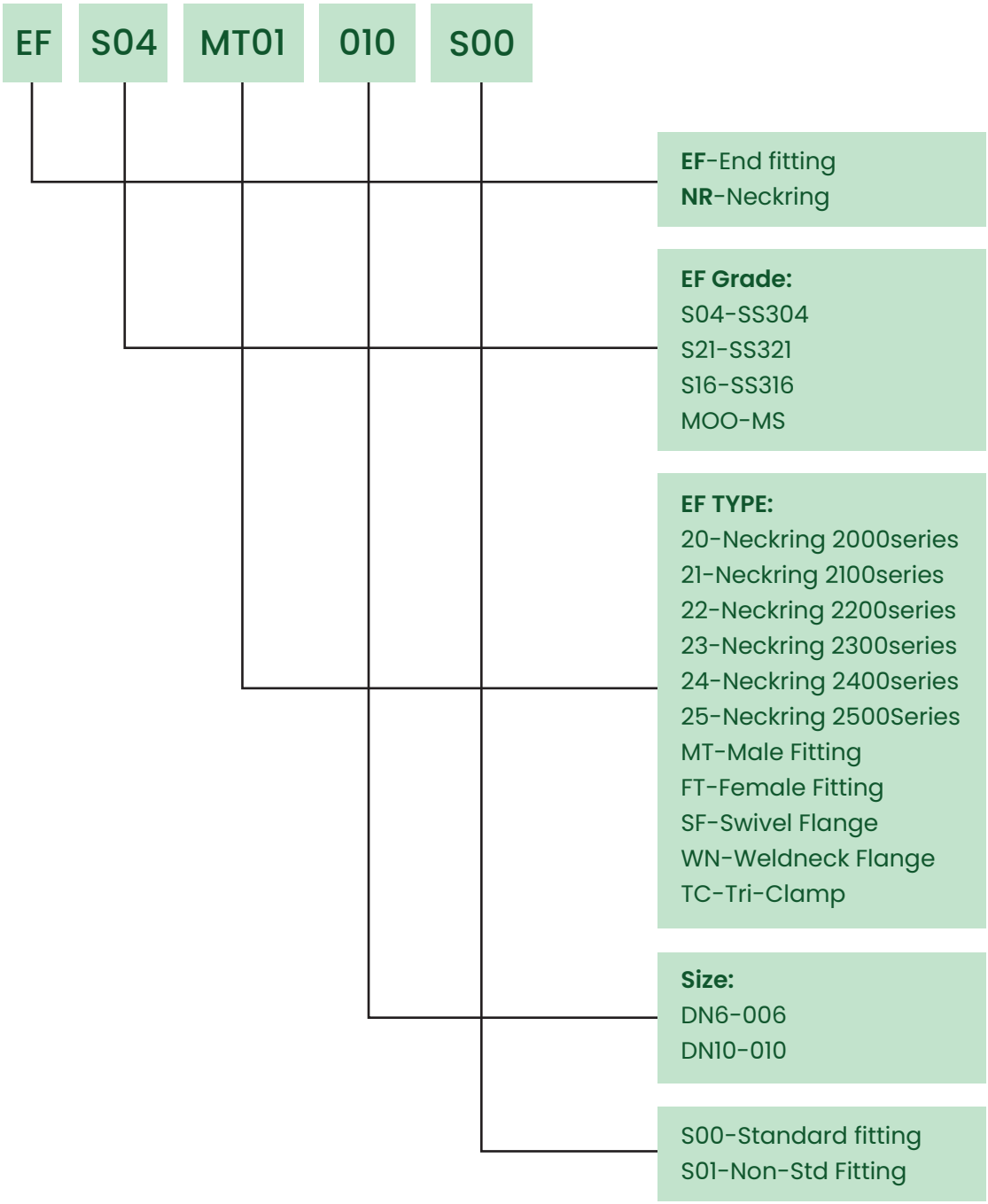
ROUND CROSS SECTION



SQUAELOCK - UNPACKED									
NOMINAL SIZE		ID		OD		WEIGHT ±10%		MIN BEND RAD +10%	
INCH	MM	MM	INCH	MM	INCH	KG/M	LBS	MM	INCH
3/8"	8	8.73	0.34	11.51	0.453	0.1	0.067	22	0.866
	9	9.53	0.38	12.70	0.500	0.11	0.074	25	0.984
	11	11.11	0.44	14.29	0.563	0.12	0.081	31	1.220
1/2"	12	12.7	0.50	15.88	0.625	0.125	0.084	32	1.260
	14	14.29	0.56	17.46	0.687	0.140	0.094	35	1.378
	15	15.88	0.63	19.05	0.750	0.150	0.101	37	1.457
3/4"	19	19.05	0.75	24.61	0.969	0.215	0.144	40	1.575
	22	22.23	0.88	25.4	1.000	0.280	0.188	48	1.890
1"	25	25.40	1.00	28.58	1.125	0.292	0.196	60	2.362

END FITTINGS

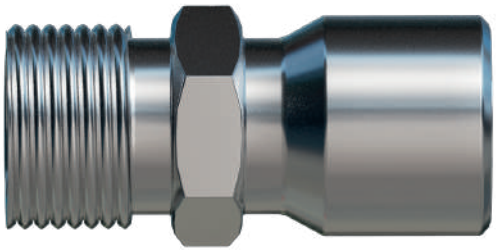
2.1 PRODUCT NOMENCLATURE (End Fitting)



Note: Thread can be use as per customer requirement.

2.2 END FITTING

Weldmale



Material : SS 304 / SS 316L /CS

Thread : BSP-01, BSPT-02, NPT-03, NPSM-04, GasPitch-05, M22 X1.5-06

SIZE	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"
L(IN)	1.04	1.04	1.20	1.310	1.390	1.610	1.690	1.730	1.97	1.97

Weld Neck Flange / Fixed Flange

Material : SS 304 / SS 316L /CS

Flange : ANSI, DIN, JIS, TABLE FLANGE & as per customer req

Class : #150-01, #300-02

SIZE	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	4"	5"	6"	8"	10"	12"
L(IN)-#150	1.81	2	2.12	2.19	2.38	2.44	2.69	2.69	2.94	3.44	3.44	3.94	3.94	4.44
L(IN)-#300	2	2.19	2.38	2.5	2.63	2.69	2.94	3.06	3.32	3.82	3.82	4.32	4.56	5.06

Swivel Flange

Material : SS 304 / SS 316L / CS

Flange : ANSI, DIN, JIS, TABLE FLANGE & as per customer req

Class : #150-01, #300-02

SIZE	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	4"	5"	6"	8"	10"	12"
L(IN)-#150	0.38	0.44	0.5	0.56	0.62	0.69	0.81	0.88	0.88	0.88	0.94	1.06	1.12	1.19
L(IN)-#300	0.5	0.56	0.62	0.69	0.75	0.81	0.94	1.06	1.19	1.31	1.38	1.56	1.81	1.94

Hex Nut / Female

Material : SS 304 / SS 316L / CS

Thread : BSP, BSPT, NPT, NPSM

Thread : BSP-01, BSPT-02, NPT-03, NPSM-04, GasPitch-05, M22 X1.5-06

SIZE	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	3"
L(IN)	0.669	0.709	0.787	0.866	0.945	1.024	1.102	1.181	1.378
AF(IN)	0.748	0.866	1.063	1.260	1.496	1.969	2.165	2.559	3.858

TC -Clamp

Material : SS 304 / SS 316L /CS

SIZE	1/2"	3/4"	1"	1.1/2"	2"	2.1/2"	3"	4"	6"	8"
A(IN)	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.5	1.5
B(IN)	0.370	0.620	0.870	1.370	1.870	2.370	2.870	3.834	5.782	7.760
C(IN)	0.5	0.75	1	1.5	2	2.5	3	4	6	8

ASSEMBLED HOSE

3.1 CORRUGATED METAL HOSE
(DESIGNING AN ASSEMBLY)

Analyzing an Application

S.T.A.M.P.E.D.

To properly design a metal hose assembly for a particular application, the following design parameters must be determined. To help remember them, they have been arranged to form the acronym "S.T.A.M.P.E.D."

SIZE

The diameter of the connections in which the assembly will be installed is needed to provide a proper fit. This information is required.

TEMPERATURE

As the temperature to which the assembly is exposed (internally and externally) increases, the strength of the assembly's components decreases. Also, the coldest temperature to which the hose will be exposed can affect the assembly procedure and/or fitting materials. If you do not provide this information, it will be assumed that the temperatures are 70°F.

APPLICATION

This refers to the configuration in which the assembly is installed. This includes both the dimensions of the assembly as well as the details of any movement that the assembly will experience. This information is necessary to calculate assembly length and required flexibility.

MEDIA

Identify all chemicals to which the assembly will be exposed, both internally and externally. This is important since you must be sure that the assembly's components are chemically compatible with the media going through the hose as well as the environment in which the hose is installed. If no media is given, it will be assumed that both the media and the external environment are compatible with all of the available materials for each component.

PRESSURE

Identify the internal pressure to which the assembly will be exposed. Also, determine if the pressure is constant or if there are cycles or spikes. This information is important to determine if the assembly is strong enough for the application. If no pressure is given it will be assumed that the pressure is low and there are no pressure surges or spikes.

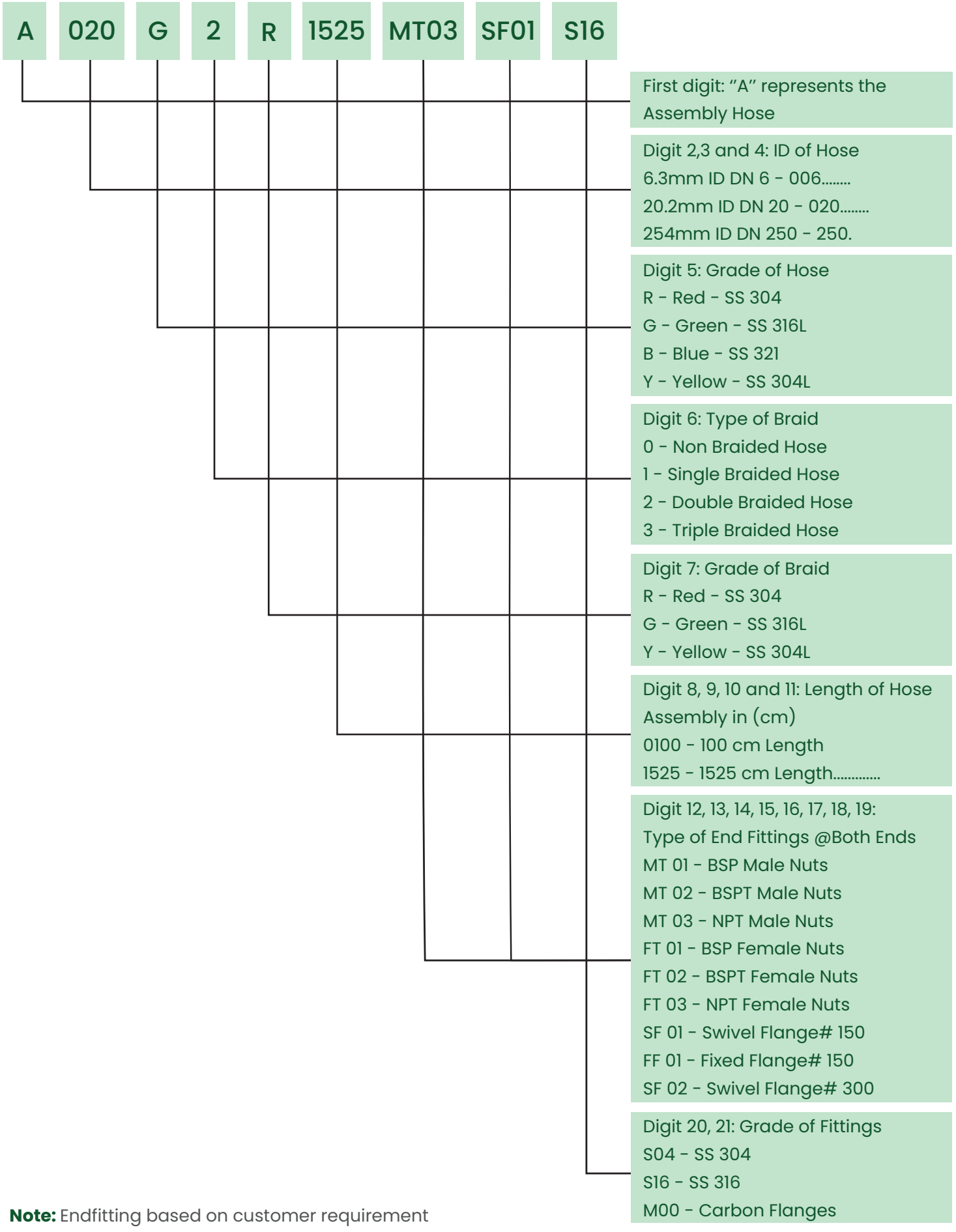
END FITTINGS

Identify the necessary end fittings. This is required since fittings for the assembly must be chosen to properly fit the mating connections.

DYNAMICS

Identify the velocity at which the media will flow through the assembly. Since a corrugated metal hose does not have a smooth interior, rapid media flow can set up a resonant frequency that will cause the hose to vibrate and prematurely fail. If no velocity is given, it will be assumed that the velocity is not fast enough to affect the assembly's performance.

3.2 PRODUCT NOMENCLATURE (Assembled Hose)



Note: Endfitting based on customer requirement

3.3 PUMP CONNECTOR

This Pump Connector is used to absorb noise and vibration on a piping system, and help to avoid piping stress.

Type:
1. Flexible Flange Pump Connector
2. Threaded Pump Connector

12.1 Flexible Flange Pump Connector

Features:

Hose Material	:	SS304 , SS316L & SS321
Hose Series	:	2300 HFH
Braid Material	:	SS304 & SS316L
Type of Braid	:	Single Braid
Size	:	DN 50 to DN 300
End Fitting	:	Fixed Flange
End Fitting Material	:	MS
End Fitting Dim	:	As per B16.5 #150
Length	:	As per customer requirement
Application	:	Heavy Duty
Packing	:	Individual box with Weight Balancing Stiffener #300, #600 Flange
Optional	:	Double Braid, Swivel Flange

HOSE ID (INCH)	PART NO	*OAL (INCH)	*LIVE LENGTH (INCH)	*FITTING LENGTH (EACH END)	WORKING PRESSURE @70°F PSI
2"	PC-050-FF	9"	5.3/4"	5/8"	537
2.1/2"	PC-065-FF	9"	5.3/4"	5/8"	493
3"	PC-080-FF	9"	5.3/4"	5/8"	392
4"	PC-100-FF	9"	5.3/4"	5/8"	290
5"	PC-125-FF	11"	7.1/2"	3/4"	232
6"	PC-150-FF	11"	7.1/2"	3/4"	174
8"	PC-200-FF	12"	8"	1"	131
10"	PC-250-FF	13"	9"	1"	102
12"	PC-300-FF	14"	10"	1"	

12.2 Threaded Pump Connector

Features:

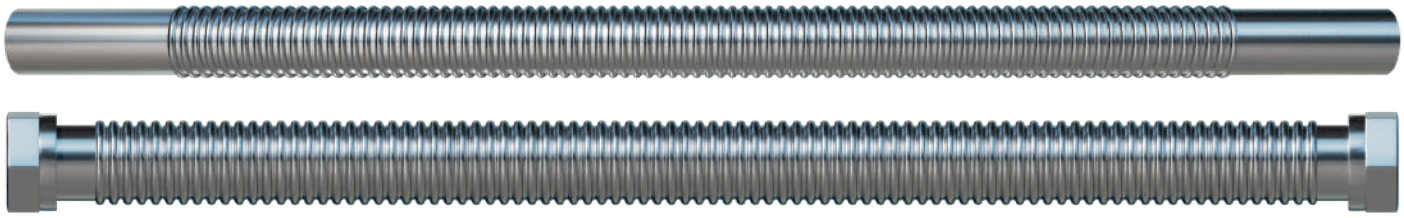
Hose Material	:	SS304 , SS316L & SS321
Hose Series	:	2200 MFH
Braid Material	:	SS304 & SS316L
Type of Braid	:	Single Braid
Size	:	DN 12 to DN 50
End Fitting	:	Threaded male connector
End Fitting Material	:	MS
Length	:	As per Customer requirement
Application	:	low-pressure utility applications.
Optional	:	SS FItting, Hex Nut arrangement, Double Braid

HOSE ID (INCH)	PART NO	*OAL (INCH)	*LIVE LENGTH (INCH)	*FITTING LENGTH (EACH END)	WORKING PRESSURE @70°F PSI
1/2"	PC-012-MM	6.1/2"	2.1/4"	1.1/2"	1087.7
3/4"	PC-020-MM	7"	2.1/4"	1.1/2"	870
1"	PC-025-MM	8"	3"	1.3/4"	725
1.1/4"	PC-032-MM	8.1/2"	3"	2"	667
1.1/2"	PC-040-MM	9"	3.1/2"	2"	609
2"	PC-050-MM	10.1/2"	4.1/2"	2.1/4"	464
2.1/2"	PC-065-MM	12"	5.1/2"	2.1/2"	435
3"	PC-080-MM	14"	6.1/2"	3"	362.5
4"	PC-100-MM	16"	7"	3.1/2"	275.5

Note: As per customer requirement

3.4 NON-WELDED HOSE ASSEMBLY

Hose : PH 2300 Series HFH / PH 2000 Series MFM
End Fitting : Threaded Type (NPT, BSPT,BSPP)
EF Material : CS & SS



SIZE	HOSE ID (INCH)	HOSE OD (INCH)	L (INCH)	OAL
1/4"	0.24	0.4	1.97	*
5/16"	0.30	0.48	1.97	*
3/8"	0.43	0.64	1.97	*
1/2"	0.57	0.83	1.97	*
3/4"	0.81	1.21	1.97	*
1"	1.08	1.52	1.97	*

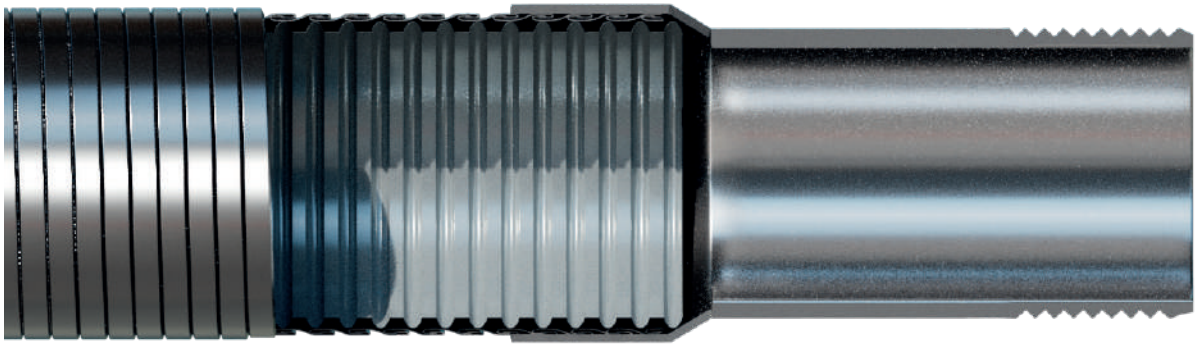
SIZE	HOSE ID (MM)	HOSE OD (MM)	L (MM)	OAL
1/4"	6.10	10.16	50	*
5/16"	7.62	12.19	50	*
3/8"	10.92	16.26	50	*
1/2"	14.48	21.08	50	*
3/4"	20.57	30.73	50	*
1"	27.43	38.61	50	*

Note: *Based on customer requirement

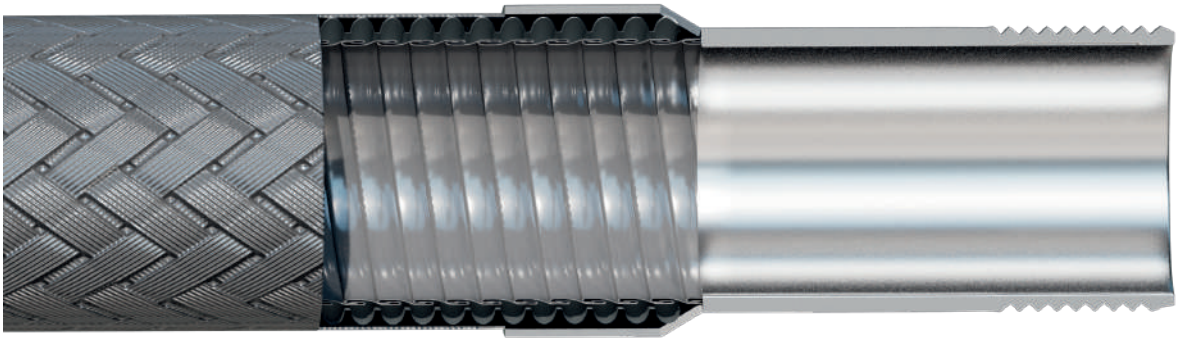
SPECIAL HOSE

4.1 ARMOR & LINER

ARMOR



LINER



4.2 PCSCH(TPV)

Corrugated Braided Hose consist of PH 2000 SERIES-HFH hose & single outer braid with outer jacket of ThermoPlastic Vulcanizates (TPV). End Fitting as per customer requirement.

Extruded TPV Hose Features:

Hose Material : PH 2000 SERIES-MFM Hose
Braid Material : SS304
Jacket material : ThermoPlastic Vulcanizates(TPV)
Operating Temp : -76°F to 275°F

Figure 1 - Extruded Hose Dimensions

SIZE	HOSE ID (INCH)	BRAIDED HOSE OD (INCH)	EXTRUSION THICKNESS (INCH)	MAWP (PSIG)@ 70°F	MIN STATIC BEND RADIUS (INCH)	MIN DYNAMIC BEND RADIUS (INCH)
1/4"	0.25	0.43	0.019- 0.027	1740	0.98	4.33
5/16"	0.34	0.54	0.019- 0.027	1624	1.26	5.12
3/8"	0.39	0.62	0.019- 0.027	1407	1.5	5.91
1/2"	0.48	0.72	0.019- 0.027	1088	1.77	6.50
5/8"	0.65	0.93	0.019- 0.027	870	2.28	7.68
3/4"	0.8	1.11	0.039- 0.047	870	2.76	8.86
1"	1	1.33	0.039- 0.047	725	3.35	10.24
1.1/4"	1.32	1.69	0.051- 0.059	667	4.13	11.81
1.1/2"	1.58	2.02	0.051- 0.059	609	5.12	13.39
2"	1.98	2.47	0.051- 0.059	464	6.3	15.35

SIZE	HOSE ID (MM)	BRAIDED HOSE OD (MM)	EXTRUSION THICKNESS (INCH)	MAWP (BAR) @ 20°C	MIN STATIC BEND RADIUS (MM)	MIN DYNAMIC BEND RADIUS (MM)
1/4"	6.35	10.92	0.5-0.7	120	25	110
5/16"	8.64	13.72	0.5-0.7	112	32	130
3/8"	9.91	15.75	0.5-0.7	97	38	150
1/2"	12.19	18.29	0.5-0.7	75	45	165.00
5/8"	16.51	23.62	0.5-0.7	60	58	195.00
3/4"	20.32	28.19	1-1.2	60	70	225.00
1"	25.4	33.78	1-1.2	50	85	260
1.1/4"	33.53	42.93	1.3-1.5	46	105	300
1.1/2"	40.13	51.31	1.3-1.5	42	130	340
2"	50.29	62.74	1.3-1.5	32	160	390

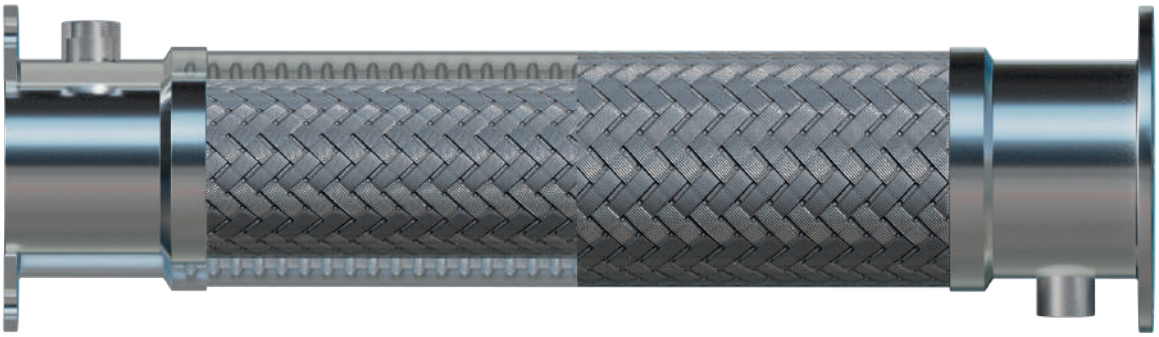
Note: Extrusion thickness can be modified as per customer requirement.

4.3 JACKETED HOSE

- Keep cryogenic liquids cold
- Increase flow of viscous media
- Safety containment

A Jacketed Hose Assembly is a hose within a hose. Both inner and outer hoses act independently as separate pressure carriers. Vacuum Jacketed Hose Assemblies are typically found in cryogenic applications because of their insulation properties. Steam Jacketed Hose Assemblies are utilized when the media is viscous and steam is used to help reduce viscosity and increase flow.

Jacketed Hoses are also used in applications where containment of the media is critical in case of rupture of the inner hose.



4.4 LANCE HOSE

- Large size range available
- Customized to meet critical application requirements
- Cleaned and capped for commercial oxygen service

Critical applications such as supplying commercial oxygen require expertise of an experienced metal hose manufacturer. Polyhose Tofle Oxygen Lance Hose is fabricated to meet this critical application when specified. Our fabrication department can customize the hose assembly, available in sizes through 16", to include a liner (to reduce turbulence resulting from high velocity), reinforced ends, casing or special end fittings. Each hose assembly is cleaned and capped for commercial oxygen service.

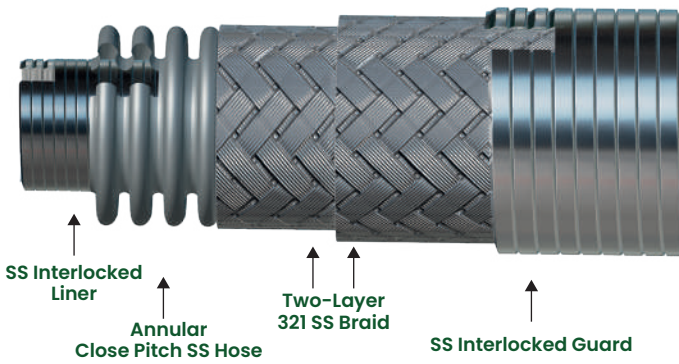
Types of Lance Hose Assemblies

1. Oxygen Lance Hose Assembly
2. Water Lance Hose Assembly

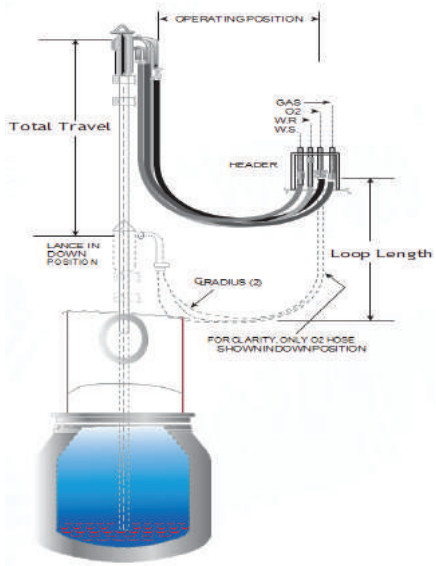
Available Size of Lance Hose Assemblies

1. 4" to 10"- Oxygen Lance Hose Assembly
2. 4" to 10"- Water Lance Hose Assembly

Construction



Oxygen Hose Installation



4.5 SOLAR HOSE

Solar Hose is a flexible metal tube stainless steel material covered by High Temp Resistance EDPM Insulation designed for connecting solar heating systems.

Corrugated pliable tubes in AISI 304 thickness 0.3mm preinsulated with:

- EDPM closed cell structure insulation coating and covered.
- Films providing high protection from UV rays and mechanical wear.
- Special formulation of flexible expanded polyurethane that makes the tube suitable for continuous operative temperature up to 150°C. The thermal insulation is covered by an aluminium layer that is in turn covered by a film providing high protection from UV rays and mechanical wears.

Solar Single Sunset

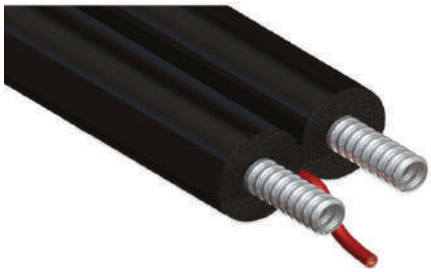
Solar single sunset are composed by PCSSH in AISI 304, thick-0.3mm with EDPM closed cell structure insulation coating and covered with mechanical wear and UV protective film.

Solar Single Sunset hoses are available with or without the electric cable.

Available Size : DN 12, DN16, DN20 & DN25
Steel Thickness : 0.3mm
Application : Heating Systems & Solar Systems

SIZE	CONNECTION THREAD	SS THICK		*LENGTH	
		MM	INCH	M	FT
DN 12	1/2"	0.3	0.012	25	82
		0.3	0.012	50	164
DN 16	3/4"	0.3	0.012	25	82
		0.3	0.012	50	164
DN 20	1"	0.3	0.012	25	82
		0.3	0.012	50	164
DN 25	1.1/4"	0.3	0.012	25	82
		0.3	0.012	50	164

Solar Double Sunset



Solar Double Sunsets are composed by PCSSH in AISI 304, thick-0.3mm with EDPM closed cell structure insulation coating and covered with mechanical wear and UV protective film.

Solar Double Sunset hoses are coupled and can be separated easily. This tube can be hand-bended to make easier the laying of the line, both inside and outside the buildings.

Available Size : DN 12, DN16, DN20 & DN25
Steel Thickness : 0.3mm
Application : Heating System & Solar system

SIZE	CONNECTION THREAD	SS THICK		*LENGTH	
		MM	INCH	M	FT
DN 12	1/2"	0.3	0.012	15	49.2
		0.3	0.012	25	82
		0.3	0.012	50	164
DN 16	3/4"	0.3	0.012	15	49.2
		0.3	0.012	25	82
		0.3	0.012	50	164
DN 20	1"	0.3	0.012	15	49.2
		0.3	0.012	25	82
		0.3	0.012	50	164
DN 25	1.1/4"	0.3	0.012	15	49.2
		0.3	0.012	25	82
		0.3	0.012	50	164

Solar Single Press

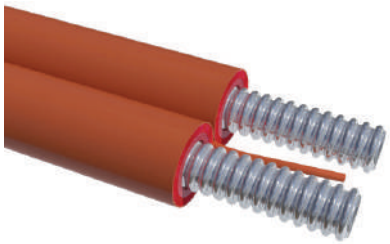
Solar Single Presses are composed by PCSSH in AISI 304, thickness 0.3mm with red roof color low thickness thermal insulation in expanded polyurethane and covered with mechanical wear and UV protective film.

Solar Single Presses are available without the electric cable.

Available Size : DN16 & DN20
Steel Thickness : 0.3mm
Application : High Working Temp

SIZE	CONNECTION THREAD	SS THICK		*LENGTH	
		MM	INCH	M	FT
DN 16	3/4"	0.3	0.012	25	82
		0.3	0.012	50	164
		0.3	0.012	100	328
DN 20	1"	0.3	0.012	25	82
		0.3	0.012	50	164
		0.3	0.012	100	328

Solar Double Press



Solar Double Presses are composed by PCSSH in AISI 304, thickness 0.3mm with red roof color low thickness thermal insulation in expanded polyurethane and covered with mechanical ware and UV protective film.

Solar Double Presses are coupled and can be separated easily. This tube can be hand-bended to make easier the laying of the line both inside and outside the buildings.

Available Size : DN16 & DN20
Steel Thickness : 0.3mm
Application : High Working Temp

SIZE	CONNECTION THREAD	SS THICK		*LENGTH	
		MM	INCH	M	FT
DN 16	3/4"	0.3	0.012	25	82
		0.3	0.012	50	164
		0.3	0.012	100	328
DN 20	1"	0.3	0.012	25	82
		0.3	0.012	50	164
		0.3	0.012	100	328

Solar Thin Power-Mono

Solar Thin Power-Mono Hoses are composed by CSST tube in AISI 304, thickness 0.3mm, preinsulated with a special formulation of flexible expanded polyurethane that makes the tube suitable for continuous operative temperature up to 150°C

Available Size : DN16 & DN20
Steel Thickness : 0.3mm

Note: Length as per customer requirement

SIZE	CONNECTION THREAD	SS THICK		*LENGTH	
		MM	INCH	M	FT
DN 16	3/4"	0.3	0.012	25	82
		0.3	0.012	50	164
		0.3	0.012	100	328
		0.3	0.012	150	492
		0.3	0.012	200	656
DN 20	1"	0.3	0.012	25	82
		0.3	0.012	50	164
		0.3	0.012	100	328
		0.3	0.012	150	492
		0.3	0.012	200	656

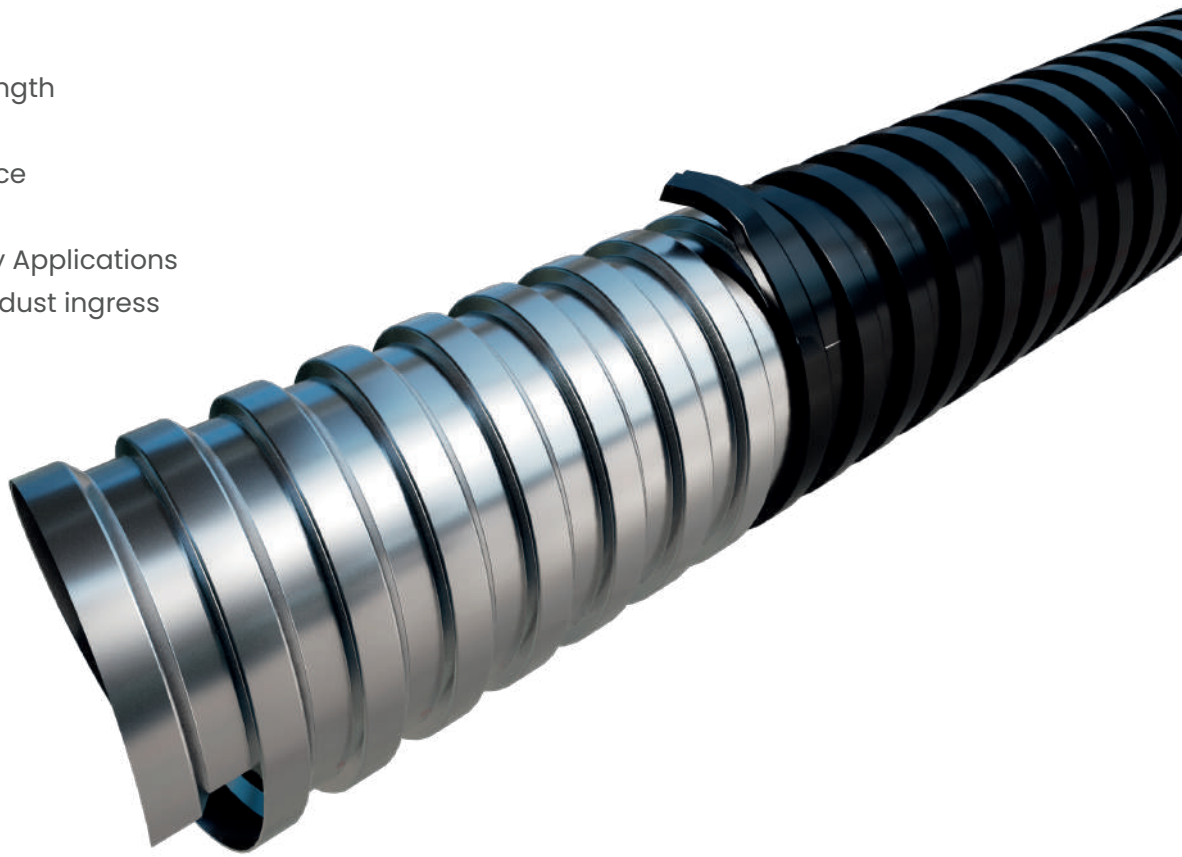
4.6 FLEXIBLE METALIC ELECTRICAL CONDUIT

Conduit:

Construction : SS 304/GS, Helicaly wound, flexible conduit with PVC coating
Application : General factory Wiring & Connections to machine
Temp : -15°C to 70°C
Size : 3/8" to 1"

Key Features:

- High Compression Strength
- High Pull-Off Strength
- High Abrasion Resistance
- High Impact Strength
- Suitable for Heavy-Duty Applications
- Reduce risk of water or dust ingress



NOMINAL SIZE		ID		SQUARELOCK-OD		PVC THICK	
INCH	MM	MM	INCH	MM	INCH	MM	INCH
3/8"	8	8.73	0.34	11.51	0.453	0.3-0.5	0.012-0.020
	9	9.53	0.38	12.70	0.500	0.3-0.5	0.012-0.020
	11	11.11	0.44	14.29	0.563	0.3-0.5	0.012-0.020
1/2"	12	12.7	0.50	15.88	0.625	0.3-0.5	0.012-0.020
	14	14.29	0.56	17.46	0.687	0.3-0.5	0.012-0.020
	15	15.88	0.63	19.05	0.750	0.3-0.5	0.012-0.020
3/4"	19	19.05	0.75	24.61	0.969	0.3-0.5	0.012-0.020
	22	22.23	0.88	25.4	1.000	0.3-0.5	0.012-0.020
1"	25	25.40	1.00	28.58	1.125	0.3-0.5	0.012-0.020

5.1 ISO 10380 & TESTING

ISO

ISO or International Standards Organization was created to establish worldwide standards for industry. They are responsible for the formulation of standards regarding quality assurance of specific products. The ISO 10380 standard was developed to help define the industry requirements for design, manufacture and testing of corrugated metal hoses and hose assemblies. The following is a summary of the various sections covered in this standard.

Materials

ISO 10380 specification lists the more popular materials used in the manufacture of corrugated metal hoses, braids, ferrules, and end fittings. Two of the most common materials used for corrugated metal hoses are austenitic stainless steel and copper-based alloys.

The specification is very clear that the material used in manufacturing the corrugated metal hose shall be selected on the basis of their suitability for forming or welding and for the application conditions under which they will operate. Materials other than those listed above may be selected by agreement between the manufacturer and the user.

Critical Dimensions

Details and requirements specified in this section include hose diameter, bend radii and overall length tolerances. It is common for manufacturers to list their nominal hose diameter in published literature. ISO 10380 lists the requirement that the actual hose inside diameter will be at least 98% of the nominal hose size. The bend radius covered in the specification includes nominal static and nominal dynamic bend radius. Dynamic bend radius is used in cycle life fatigue testing. Overall length tolerances listed in the ISO 10380 are -1% to +3%.

Design

Pressure

The specification lists the maximum permissible pressure ratings to be used in testing performed in accordance with ISO 10380.

Elevated Temperatures

Pressure reduction for elevated temperature conditions is critical in applying the proper metal hose for an application. This specification provides for a method of determining the maximum service we pressure for a metal hose assembly under these conditions.

Low Temperatures

The materials listed in the specification, with the exception of carbon steel, do not need to be derated in low temperature applications down to -392°F or -200°C. Carbon steel material used for end fittings may be used to a minimum temperature of -68°F or -20°C.

Cycle Life

Corrugated metal hose bend radius and minimum acceptable cycle life design requirements are outlined. Values and test criteria for meeting static and dynamic bend radii are also listed.

Construction

Hose

Manufacturing and corrugation designs are addressed by the ISO 10380 specification. Seamless or longitudinally-welded tube may be corrugated into annular or helical corrugation designs. Details of methods for joining or segmenting metal hose are also listed.

Braid

ISO 10380 specifications are broad for the design of the braid.

Methods of Assembly

Many different methods of fitting attachment and unacceptable weld characteristics are outlined by the ISO 10380 specification. The use of protective covers is also addressed.

Testing

General Tests

Bend, fatigue, and burst test requirements are defined by ISO 10380. Polyhose Tofle performs each of these tests when designing or qualifying our products. The fatigue test is widely recognized in the metal hose industry as a standard for cycle life testing. While ISO 10380 lists the average number of cycles of 50,000 at their specified pressure ratings, Polyhose Tofle performs testing at our published maximum working pressure.

Production Tests

Several types of non-destructive testing are addressed by the specification. These include pressure proof test by hydraulic pressure or pneumatic pressure and leakage test by pneumatic or vacuum testing. Cleaning and marking of metal hose assemblies is outlined.

5.2 TESTING

1. Non-Destructive Testing: Evaluate the properties of a material, component, structure or system without causing any damage.

2. Destructive Testing: A test method conducted to find the exact point of failure of materials, components, or machines. During the process, the tested item undergoes stress that eventually deforms or destroys the material.

Non-Destructive Testing:

1. Dye Penetrant

Dye penetrant testing is available for both leak and weld bead inspection, in accordance with Polyhose Tofle procedures or to customer-specified standards.

2. Hydrostatic Testing

While the standard test is designed to detect leaks, hydrostatic testing is designed to test the assembly's strength. Testing of an assembly to its full permissible test pressure can be economically and accurately accomplished by filling the assembly with liquid while concurrently evacuating all air. The assembly is then hydrostatically pressurized using high pressure pumps and the test pressure is maintained for a predetermined period of time.

3. Pneumatic Test

Every corrugated hose assembly is leak tested prior to shipment. Standard testing consists of pressurizing the assembly with air and then submerging the entire assembly under water. This method is reliable and sufficient for the majority of applications.

Destructive Testing:

1. Burst Test

Normally, hydraulic pressure is slowly increased until failure occurs. Based on the burst test results, a safety factor is applied. This establishes the ultimate pressure rating.

2. Cycle Test

Purpose: To find fatigue life of Braided Hose
Testing Frequency – As per ISO 10380
Sizes of Testing : DN 6 to DN 300

6 PHTO PACKING METHOD

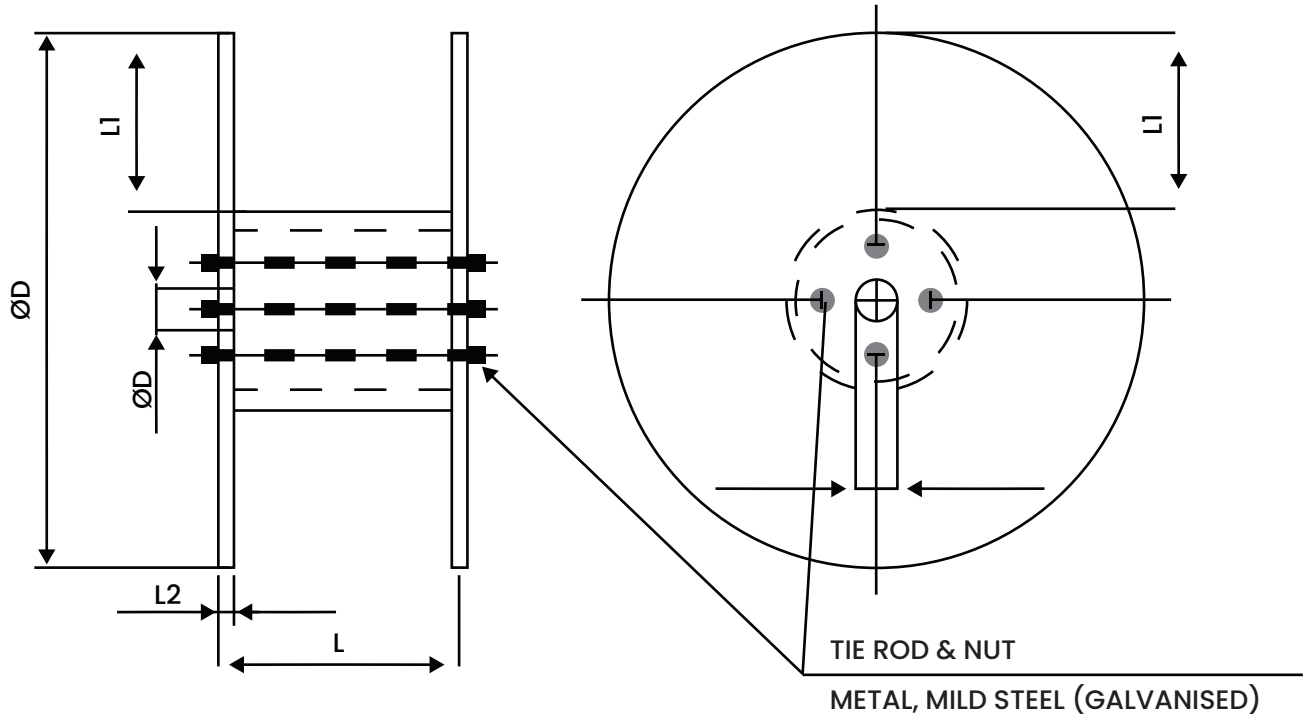
Step 1 - Bundles wrapped with bubble sheets.

Step 2 - Bundles wrapped with PV Woven fabric.

Step 3 - Only braids can be packed in boxes and loaded in container.

Step 4 - Container loading for bulk hose will be planed according to ordered sizes.

PACKING METHOD-REEL TYPE



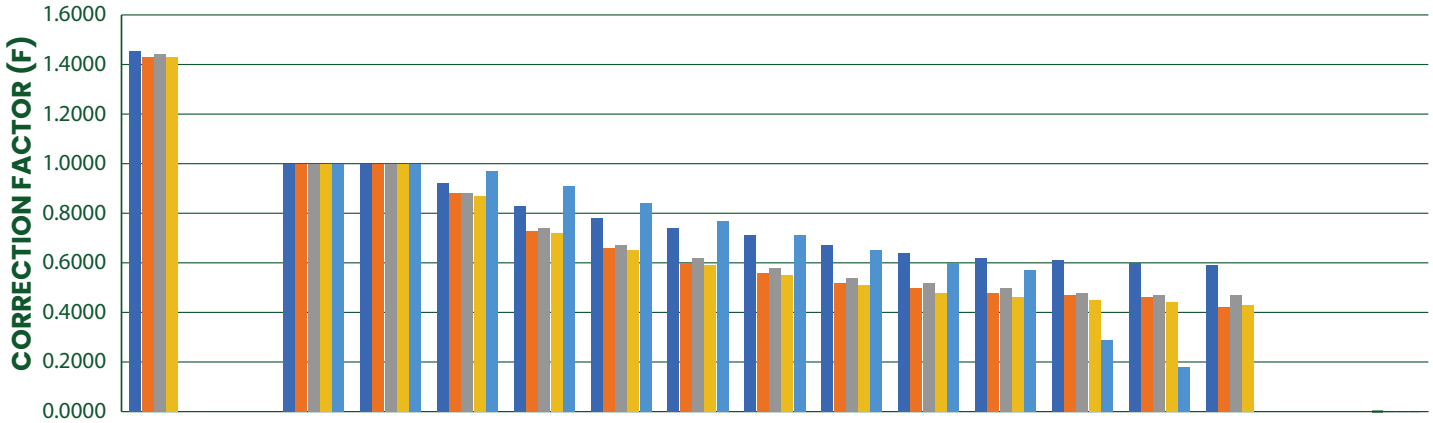
WOODEN REEL CAPACITY		
HOSE SIZE	DRUM TYPE	CAPACITY IN METER
1/4"	INC 1	300
	INC 2	1300
5/16"	INC 1	250
	INC 2	750
3/8"	INC 1	150
	INC 2	700
1/2"	INC 1	150
	INC 2	500
5/8"	INC 2	300
	INC 3	750
3/4"	INC 2	200
	MASTER	650
1"	INC 2	150
	MASTER	600
1.1/4"	INC 3	150
	MASTER	300
1.1/2"	INC 3	120
	MASTER	250
2"	INC 3	75
	MASTER	180

TYPE	OD(INCH)	ID(INCH)	L(INCH)
INC 1	21.7	10.43	13.8
INC 2	27.6	9.45	22
INC 3	39.4	13.78	22.4
MASTER	43.3	18.11	32.7

Note: Packing can be customised as per customer requirement.

7.1 TEMPERATURE CORRECTION FACTOR(F)

When hoses are required to work at higher temperatures, the working pressure given in the table should be multiplied by the correction factor. This will determine the pressure rating of the hoses for higher temperatures.



	TEMP.RANGE(°C)		(-200 to -20)	20	50	100	150	200	250	300	350	400	450	500	550	600	650
SERIES 1	1.4541	0	1	1	0.92	0.83	0.78	0.74	0.71	0.67	0.64	0.62	0.61	0.6	0.59	0	0
SERIES 2	1.4301	0	1	1	0.88	0.73	0.66	0.6	0.56	0.52	0.5	0.48	0.47	0.46	0.42	0	0
SERIES 3	1.4404	0	1	1	0.88	0.74	0.67	0.62	0.58	0.54	0.52	0.5	0.48	0.47	0.47	0	0
SERIES 4	1.4306	0	1	1	0.87	0.72	0.65	0.59	0.55	0.51	0.48	0.46	0.45	0.44	0.43	0	0
SERIES 5	0..0000	0	1	1	0.97	0.91	0.84	0.77	0.71	0.65	0.6	0.57	0.29	0.18	0	0	0

TEMP. RANGE(°C)

TEMP RANGE(°C)	1.4541	1.4301	1.4404	1.4306	CARBON STEEL
	SS 321	SS 304	SS 316L	SS 304L	
-200 TO -20	1	1	1	1	1
20	1	1	1	1	1
50	0.92	0.88	0.88	0.87	0.97
100	0.83	0.73	0.74	0.72	0.91
150	0.78	0.66	0.67	0.65	0.84
200	0.74	0.6	0.62	0.59	0.77
250	0.71	0.56	0.58	0.55	0.71
300	0.67	0.52	0.54	0.51	0.65
350	0.64	0.5	0.52	0.48	0.6
400	0.62	0.48	0.5	0.46	0.57
450	0.67	0.47	0.48	0.45	0.29
500	0.6	0.46	0.47	0.44	0.18
550	0.59	0.42	0.47	0.43	--
600	--	--	--	--	--
650	--	--	--	--	--

7.2 CORROSION RESISTANCE

	SS304L	SS316L	SS321
Acetic acid			
5 % to 20 % agitatdd or aerated	A	A	A
50 %, 20 °C	A	A	A
50 % to 80%, boiling	C	B	C
80%,20°C	A	A	A
100%,20°C	A	A	A
100 %, boiling	C	B	C
Acetic anhydride	A	A	A
Acetone, boiling	A	A	A
Acetyl chloride, boiling	B	B	B
Acetylene	A	A	A
Acid Salt Mixture	A	A	A
Air	A	A	A
Aluminium acetate, saturated	A	A	A
Aluminium hydroxide, saturated	A	A	A
Aluminium sulfate			
5%	A	A	A
10% ,20°C	A	A	A
10% ,boiling	B	A	B
Saturated, 20°C	A	A	A
Saturated, boiling	B	A	B
Aluminium potassium sulfate(alum)			
2% to 1%, 20°C	A	A	A
10% , boiling	B	A	B
Saturated	C	B	C
Amyl acetate, concentrate	A	A	A
Amyl chloride	A	A	A

	SS304L	SS316L	SS321
Ammonia (anhydrous)			
All concentrations	A	A	A
Hot Gas	C	C	C
Ammonium chloride			
1%	A	A	A
10%	A	A	A
28%	B	A	B
50%	B	A	B
Ammonium bromide	B	A	B
Ammonium bicarbonate, hot	A	A	A
Ammonium carbonate, 1%& 5%	A	A	A
Ammonia liquor			
20°C	A	A	A
Boiling	A	A	A
Ammonium monophosphate	A	A	A
Ammonium oxalate 5%	A	A	A
Ammonium perchlorate 10% boiling	A	A	A
Ammonium sulfite, 20° boiling	A	A	A
Aniline			
3%	A	A	A
Concentrated Crude	A	A	A
Argon (refrigerated liquid)	A	A	A
Barium carbonate	A	A	A
Barium chloride, 5% saturated	A	A	A
Barium hydroxide, acqeous solution, hot	A	A	A
Barium nitrate, Aqueous solution hot	A	A	A
Barium sulfate	A	A	A

	SS304L	SS316L	SS321
Barium sulfide, saturated solution	A	A	A
Benzene(Benzol) 20°C or hot	A	A	A
Benzoic Acid	A	A	A
Bitumen	A	A	A
Butane			
-50°C	A	A	A
20°C	A	A	A
Butyl Acid 5%	A	A	A
Auqeous solution, dilution of 0.964g/l	A	A	A
Calcium carbonate	A	A	A
Calcium chlorate, dilute solution	A	A	A
Calcium chlorite, dilute or concentrate solution	B	A	B
Calcium hypochlorite, 2%	B	A	B
Calcium hydroxide 10% to 20%	A	A	A
Calcium sulfate, saturated	A	A	A
Carbonated Water	A	A	A
Carbonic acid, saturated solution	A	A	A
Carbon dioxide			
Dry	A	A	A
Moist	A	A	A
Carbon disulfite	A	A	A
Carbon tetrachloride			
CP	A	A	A
Dry CP	A	A	A
Commercial +1% water	C	C	C
Cellulose	A	A	A
Chloracetic acid	C	C	C

Note: A-Recommended, B-Partially resist, C-Not Recommended

7.2 CORROSION RESISTANCE

	SS304L	SS316L	SS321
Chlorine Gas			
Dry	C	C	C
Moist	C	C	C
Chlorinated Water, saturated	A	A	A
Chloroform	A	A	A
Chromium (VI) Acid (Chromic Acid)			
5% CP	A	A	A
10%	C	B	C
Chromium plating bath	A	A	A
Chloroethane (Ethyl chloride)	A	A	A
Citric Acid			
5% still	A	A	A
15% still, 20°C	A	A	A
15% boiling	B	A	B
Copper (II) acetate, saturated solution	A	A	A
Copper (II) cyanide, saturated solution	A	A	A
Creosote (coal tar)	A	A	A
Creosote Oil	A	A	A
Cyanogen Gas	A	A	A
Developing Solution	A	A	A
Diethyl ether	A	A	A
Disodium tetraborate (Borax), 5%	A	A	A
Distillery Wort	A	A	A
Dyewood Liquor	A	A	A
Ethylene glycol	A	A	A
Ethanol (Ethyl Alcohol 20°C & boiling)	A	A	A
Ethyl acetate, concentrated solution	A	A	A
Ethylene chloride	A	A	A

	SS304L	SS316L	SS321
Oxalic Acid	C	C	C
5%, 10% 20°C	C	C	C
10% boiling	A	A	A
25%, 50% boiling	A	A	A
Paraffin Hot	C	B	C
Petrol	A	A	A
Petroleum Ether	A	A	A
Phenol			
Picric Acid	A	A	A
Potassium bromide	B	A	B
Pottasium hypochlorite	A	A	A
Potassium permanganate, 5%	C	C	C
Potassium sulfite (salt)	A	A	A
Propane	C	C	C
-50°C			
20°C	B	A	B
Pyrogallol (Pyrogallic Acid)	B	A	B
Quinine bisulfate, Dry			
Quinine sulfate, Dry	C	B	C
Resin			
Sea Water	B	A	B
Silver bromide	C	C	C
Silver nitrate	C	C	C
Soap			
Sodium acetate, moist	A	A	A
Sodium carbonate			
5%, 66°C	A	A	A
5%,50% boiling	A	A	A

	SS304L	SS316L	SS321
10%	A	A	A
Kerosene	A	A	A
Lactic Acid			
1%, 20°C	A	A	A
1%, boiling	A	A	A
5%, 20°C	A	A	A
5%, boiling	B	A	B
10%, 20°C	B	A	B
10%, boiling	C	B	C
Lead diacetate (Lead acetate) 5%	A	A	A
Linseed Oil	A	A	A
Magnesium chloride			
1% quiescent, 20°C	A	A	A
1% Quiescent, Hot	C	B	C
5% Quiescent, 20°C	A	A	A
5% Quiescent, Hot	C	B	C
Malic Acid	B	A	B
Mash	A	A	A
Mercury	A	A	A
Methane (refrigerated liquid)	A	A	A
Methanol (Methyl Alcohol) boiling	C	B	C
Mixed Acids, 53% H_2SO_4	A	A	A
Molasses	A	A	A
Mustard	A	A	A
Nephtha			
Crude	A	A	A
Pure	A	A	A
Naphthalene Sulfonic Acid	A	A	A

Note: A-Recommended, B-Partially resist, C-Not Recommended

7.2 CORROSION RESISTANCE

	SS304L	SS316L	SS321
Nickel chloride solution	A	A	A
Nickel sulfate	A	A	A
Nitre Cake	B	A	B
Nitric Acid			
5%, 50%, 70% boiling	A	A	A
65%, 20°C	A	A	A
65%, boiling	B	B	B
Concentrated, 20°C	A	A	A
Concentrated, boiling	C	C	C
Fuming concentrated, 43°C	A	A	A
Fuming concentrated, boiling	C	C	C
Nitrogen refrigerated liquid	A	A	A
Nitrous Acid, 5%	A	A	A
Oil, Crude	A	A	A
Oil vegetable, mineral	A	A	A
Oleic Acid	A	A	A
Orthoboric Acid			
5% Solution, 20°C	A	A	A
5% Solution, boiling	A	A	A
Saturated solution, 20°C	A	A	A
Saturated solution, boiling	A	A	A
Orthophosphoric Acid			
1%, 20°C	A	A	A
1%, boiling	A	A	A
1% 3, 1bar, 140°C	A	A	A
5% Quiescent or agitated	A	A	A
5% Aerated	A	A	A
10% Quiescent	C	A	C

	SS304L	SS316L	SS321
10% Agitated or aerated	C	B	C
10%, 50% boiling	A	A	A
80%, 20°C	C	C	C
80%, 110°C	C	C	C
85%, boiling	C	C	C
Oxalic Acid			
5%, 10% 20°C	A	A	A
10%, boiling	C	C	C
25%, 50% boiling	C	C	C
Oxygen (refrigerated liquid)	A	A	A
Paraffin Hot	A	A	A
Petrol	A	A	A
Petroleum Ether	A	A	A
Phenol	A	A	A
Picric Acid	A	A	A
Potassium bromide	B	A	B
Potassium carbonate			
1% 20°C	A	A	A
Hot	A	A	A
Potassium chlorate saturated at 100°C	A	A	A
Potassium chlorate			
1%, Quiescent	A	A	A
1%, Agitated or aerated	A	A	A
5%, Quiescent	A	A	A
5%, Agitated or aerated	A	A	A
5%, boiling	A	A	A
Potassium chromium sulfate			
5%	A	A	A

	SS304L	SS316L	SS321
Dilution of 1.6g/l	C	C	C
Potassium cyanide	A	A	A
Potassium dichromate			
25%, 20°C	A	A	A
25%, boiling	A	A	A
Potassium hexacyanoferrate(III)			
5%, 25%, 20°C	A	A	A
25%, boiling	A	A	A
Potassium hexacyanoferrate(II)			
5%	A	A	A
Potassium hydrogen oxalate			
5%	A	A	A
27%	A	A	A
50%	B	A	B
Pottasium hypochlorite	B	B	B
Pottasium nitrate			
1%,5% still or agitated	A	A	A
1%,5% Aerated	A	A	A
50%, 20°C	A	A	A
50%, boiling	A	A	A
Molten	A	A	A
Potassium permanganate, 5%	A	A	A
Potassium sulfate			
1%, 5% still or agitated	A	A	A
1%, 5% Aerated, 20°C	A	A	A
Hot	A	A	A
Potassium sulfite (salt)	A	A	A

Note: A-Recommended, B-Partially resist, C-Not Recommended

7.2 CORROSION RESISTANCE

	SS304L	SS316L	SS321
Propane			
-50°C	A	A	A
20°C	A	A	A
Pyrogallol (Pyrogallic Acid)	A	A	A
Quinine bisulfate, Dry	B	A	B
Quinine sulfate, Dry	A	A	A
Resin	A	A	A
Sea Water	B	C	B
Silver bromide	B	A	B
Silver nitrate	A	A	A
Soap	A	A	A
Sodium acetate, Moist	A	A	A
Sodium carbonate			
5%, 66°C	A	A	A
5%,50% boiling	A	A	A
Molten	C	C	C
Sodium chloride			
5% still	A	A	A
20% aerated	A	A	A
Saturated, 20°C	A	A	A
Saturated, boiling	B	A	B
Sodium cyanide	A	A	A
Sodium fluoride, 5% solution	B	A	B
Sodium bicarbonate			
All Concentrations, 20°C	A	A	A
5% still, 66°C	A	A	A
Sodium hydrogen sulfate			
Solution	A	A	A

	SS304L	SS316L	SS321
Saturated solution	C	C	C
Sodium hydroxide	A	A	A
Sodium hypochlorite	C	C	C
Sodium nitrate	A	A	A
Sodium perchlorate, 10%	A	A	A
Sodium phosphate	A	A	A
Sodium sulfate			
5% still	A	A	A
All concentrations	A	A	A
Disodium sulfate, saturated	B	A	B
Sodium sulfite			
5%	A	A	A
10%	A	A	A
Sodium thiosulfate			
Saturated solution	A	A	A
Acid mixing bath(hypo)	A	A	A
25% solution	A	A	A
Sodium thiosulfite			
Steam	A	A	A
Stearic Acid	A	A	A
Strontium hydroxide	A	A	A
Strontium nitrate solution	A	A	A
Sulfur			
Moist	B	A	B
Molten	A	A	A
Sulfur chloride, Dry	C	C	C
Sulfur dioxide, Gas			
Moist	B	A	B

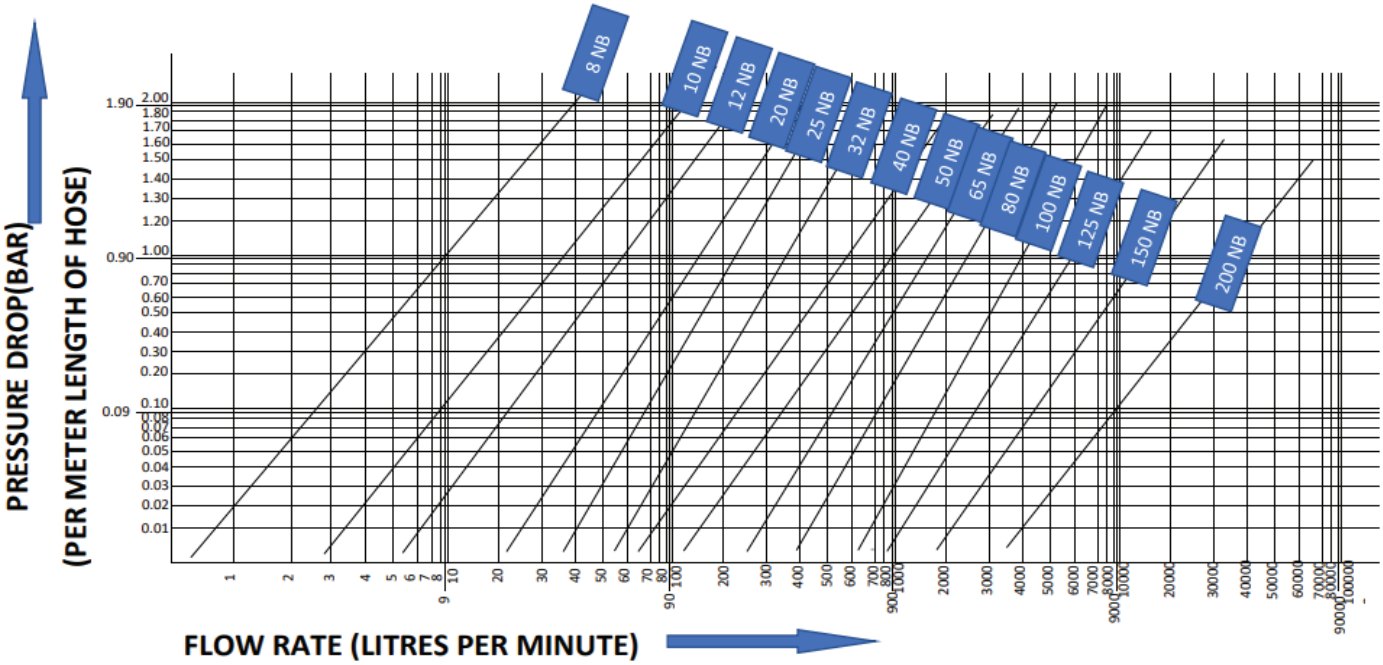
	SS304L	SS316L	SS321
Dry	A	A	A
Sulfuric Acid			
5%,10%	C	B	C
50%	C	C	C
Tannic Acid			
20°C	A	A	A
66°C	A	A	A
Tanning Liquor	A	A	A
Tar	A	A	A
Trichloroacetic Acid	C	C	C
Trichloroethylene			
Dry	A	A	A
Moist	C	C	C
Trichloroacetic Acid	C	C	C
Varnish	A	A	A
Vegetable juice	A	A	A
Vinegar fumes	B	A	B
Vinegar, still agitated or aerated	A	A	A
Water, potable	A	A	A
Whisky	A	A	A
Wine, all phases of processing & storing	A	A	A
Yeast	A	A	A
Zinc chloride			
5% still	A	A	A
20°C boiling	B	B	B
Zinc cyanide, Moist	A	A	A
Zinc nitrate, solution	A	A	A
Zinc sulfate, 4%	A	A	A

Note: A-Recommended, B-Partially resist, C-Not Recommended

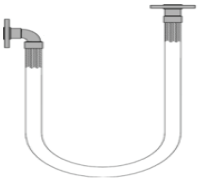
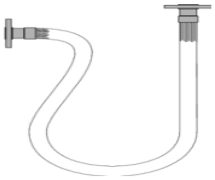
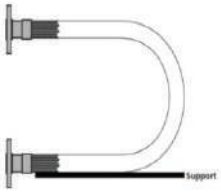
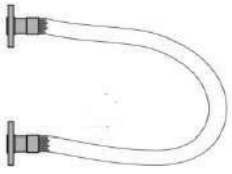
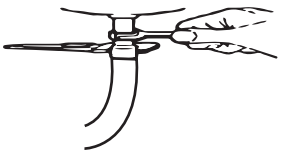
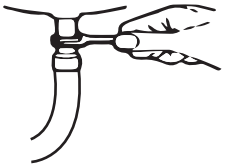
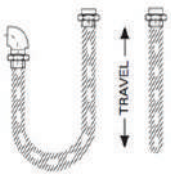
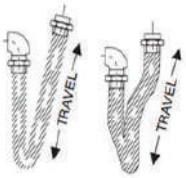
7.3 PRESSURE DROP CHART

Pressure drop mainly depends on temperatures, surface conditions, and hose configurations. Commonly, when the temperature rises, pressure drop will increase.

Chart Indicating the Approximate Pressure Drop Per Meter Length in Corrugated Hose Corresponding to Flow Rate of Water in Litres Per Minute



7.4 INSTALLATION CONDITION

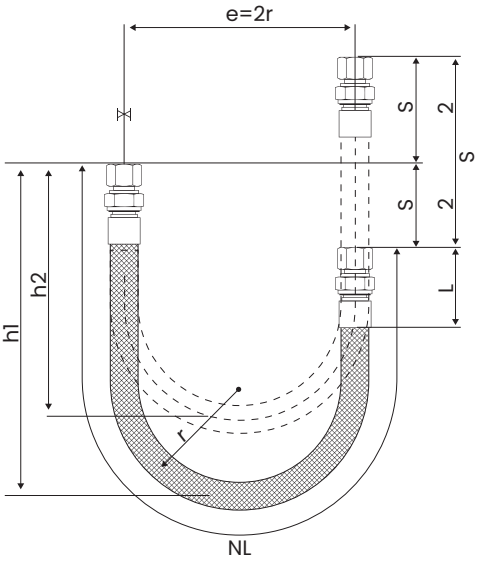
	Do	Don't
Maintain Bend Radius		
Provide Support		
Use Double Wrench Avoid Twisting		
Not Allow Hose Movement in Multiple Direction		

7.5 FIND OUT NOMINAL LENGTH OF HOSE

1.Vertically 180° Bend & Vertical Movement

NL-4r +(S/2)+ 2L

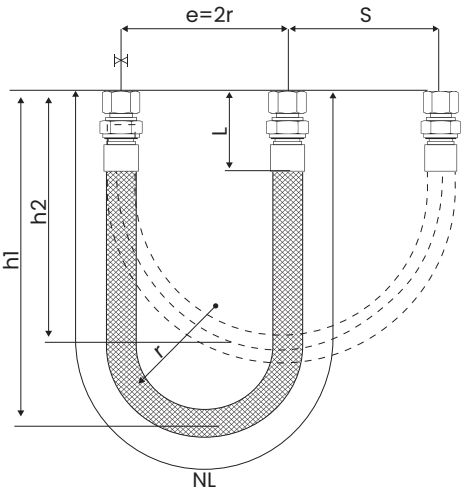
Here
r-Bending radius-mm
e-installation distance-mm
l-length of the connection fitting-mm
h1-max.height of 180°bend
h1-min.height of 180°bend
s-elevation-mm
NL-nominal length-mm



2.Vertically 180° Bend & Horizontal Movement

NL=4r+ 1.57 s+ 2L

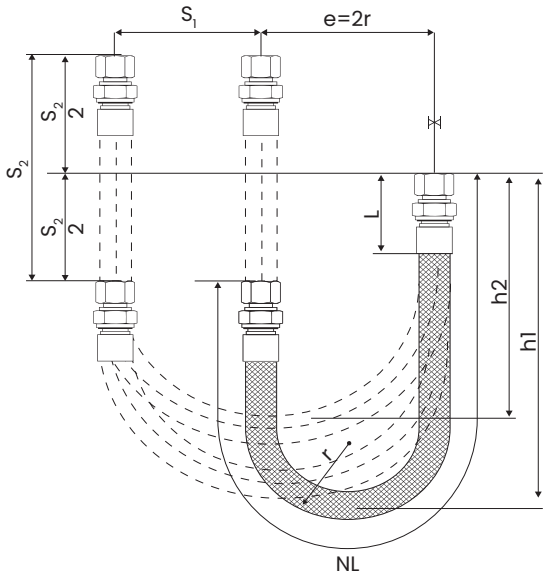
Here
r-Bending radius-mm
e-installation distance-mm
l-length of the connection fitting-mm
h1-max.height of 180°bend
h1-min.height of 180°bend
s-elevation-mm
NL-nominal length-mm



3.Horizontally 180° Bend & Horizontal Movement

NL=4r +1.57 S_1 +(S_2/2) +2L

Here
r-Bending radius-mm
e-installation distance-mm
l-length of the connection fitting-mm
h1-max.height of 180°bend
h1-min.height of 180°bend
s-elevation-mm
NL-nominal length-mm



7.6 FLOW VELOCITY

When to use Liners Liquid or Gas applications conveying media at high velocity should use an interlock liner in the hose assembly. This liner will decrease the turbulence caused by the high velocity and reduce the vibration that will occur. A liner is recommended if the velocity is greater than the following:

Conversion Formulas

DEFINITIONS	FEET PER SECOND (FT./SEC.)
gph: gallons per hour	(gph ÷ ID2) x 0.0068
gpm: gallons per minute	(gpm ÷ ID2) x 0.4083
cfh: cubic feet per hour	(cfh ÷ ID2) x 0.0509
cfm: cubic feet per minute	(cfm ÷ ID2) x 3.0558
cfs: cubic feet per second	(cfs ÷ ID2) x 183.35

MEDIA	HOSE ALIGNMENT	MAXIMUM VELOCITY NO LINER (FT./SEC.)
Liquid	Straight	70
Liquid	45° bend	55
Liquid	90° bend	35
Gas	Straight	140
Gas	45° bend	110
Gas	90° bend	70

7.7 LIVE HOSE LENGTH BENDING TABLE

CENTERLINE BEND RADIUS IN INCHES	MINIMUM LIVE LENGTH		
	45°	90°	180°
1	1	2	4
2	2	3.1/2	7
3	2.1/2	5	10
4	3.1/2	6.1/2	13
5	4	8	16
6	5	10	20
7	5.1/2	11	22
8	6.1/2	13	26
9	7.1/2	14.1/2	29
10	8	16	32
11	9	18	36
12	10	19 1/2	39
13	10 1/2	21	42
14	11 1/2	22 1/2	45
15	12	24	48
16	13	26	52
17	13 1/2	27	54
18	14 1/2	29	58

CENTERLINE BEND RADIUS IN INCHES	MINIMUM LIVE LENGTH		
	45°	90°	180°
19	15 1/2	30 1/2	61
20	16	32	64
25	20	40	80
30	24	48	95
34	27	54	108
50	40	80	160
55	45	90	180
60	49	97	194
65	53	105	210
70	56	112	224
80	65	130	260
90	73	145	290
100	80	160	320
120	95	190	380
140	112	225	450
160	128	255	510
180	143	285	570
200	160	320	640

Note: Based on hose size, bend radius may vary.

8.1 TERMINOLOGY

Abrasion
External damage to a hose assembly caused by it being rubbed on a foreign object.

Ambient or Atmospheric Conditions
The surrounding conditions, such as temperature, pressure and corrosion, to which a hose assembly is exposed.

Angular Deflection
The displacement that occurs when an assembly is bent into a single curve, expressed as an angle.

Anchor
A restraint applied to a pipeline to control its motion caused by thermal growth.

Annular
Refers to the convolutions on a hose that are a series of complete circles or rings located at right angles to the longitudinal axis of the hose (sometimes referred to as "bellows").

Application
The service conditions that determine how a metal hose assembly will be used.

Armor Guard Or Casing
Flexible interlocked or squarelocked tubing placed over the entire length of a hose or in short lengths at the end of a metal hose, to protect it from physical damage and to limit the bending radius.

Attachment
The method of fixing end fittings to flexible metal hose–welding, brazing, soldering, swaging or mechanical.

Axial Movement
Compression or elongation of the hose along its longitudinal axis.

Basket Weave
A braid pattern in which the strands of wire alternately cross over and under two braid bands (two over – two under).

Beamed Braid
Braid construction where the strands of wire in each carrier are parallel.

Bend Radius
The radius of a bend measured to the hose centerline.

Braid
A flexible wire sheath surrounding a metal hose that prevents the hose from elongation due to internal pressure. Braid is composed of a number of wires wrapped helically around the hose while at the same time going under and over each other in a basket weave fashion.

Braid Angle
The acute angle formed by the braid strands and the axis of the hose.

Braid Sleeve, Braid Band or Ferrule
A ring made from tube or metal strip placed over the ends of a braided hose to contain the braid wires for attachment of fittings.

Braid Wear
Motion between the braid and corrugated hose which normally causes wear on the outside diameter of the corrugation and the inside diameter of the braid.

Braided Braid
In this braid, the strands of wire on each carrier of the braiding machine are braided together, and then braided in normal fashion. Hence the term braided braid.

Brazing
A process of joining metals using a non-ferrous filler metal with a melting point that is lower than the "parent metals" to be joined.

Butt Weld
A process in which the edges or ends of metal sections are butted together and joined by welding.

Controlled Flexing
Controlled flexing occurs when the hose is being flexed regularly, as in connections to moving components.
Examples:
Platen presses, thermal growth in pipe work.

Convolution/Corrugation
The annular or helical flexing member in corrugated or stripwound hose.

Corrosion
The chemical or electro-chemical attack of a media upon a hose assembly.

Cycle Life
The number of cycles completed by an assembly before failure.

Cycle-Motion
The movement from normal to extreme position and return.

Developed Length/Overall Length
The length of a hose, plus fittings required to meet the conditions of a specific application.

Diamond Weave
A braid pattern in which the strands alternately cross over one and under one of the strands (one over – one under). Also known as plain weave.

Dye Penetrant Inspection or Test
A method for detecting surface irregularities, such as cracks, voids, porosity, etc. The surface to be checked is coated with a red dye that will penetrate existing defects.

Dye is removed from surface and a white developer is applied. If there is a defect in the surface being checked, the red dye remaining in it causes the white developer to be stained, thereby locating the defective area.

Displacement
The amount of motion applied to a hose defined as inches for parallel offset and degrees for radial misalignment.

Erosion
The wearing away of the inside or outside convolutions of a hose caused by the flow of the media conveyed, such as wet steam, abrasive particles, etc.

Exposed Length
The amount of active (exposed) hose in an assembly. Does not include the length of fittings and ferrules.

Fatigue
Failure of the metal structure associated with, or due to, the flexing of metal hose or bellows.

Fitting/Coupling
A loose term applied to the nipple, flange, union, etc., attached to the end of a metal hose.

Flow Rate
Pertains to a volume of media being conveyed in a given time period. E.g., cubic feet per hour, pounds per second, gallons per minute, etc.

Frequency
The rate of vibration or flexure of a hose in a given time period. E.g., cycles per second (CPS), cycles per minute (CPM), cycles per day (CPD), etc.

Helical
Used to describe a type of corrugated hose having one continuous convolution resembling a screw thread.

Helical Wire Armor/Spring Guard
To provide additional protection against abrasion. Metal hoses can be supplied with an external round or oval section wire spiral.

Inside Diameter (I.D.)
The diameter inside the hose corrugation.

Interlocked/Squarelocked Hose
Formed from profiled strip and wound into flexible metal tubing with no subsequent welding, brazing, or soldering. May be made pressure-tight by winding in strands of packing.

Lap Weld (LW)
Type of weld in which the ends or edges of the metal overlap each other and are welded together.

Lateral Offset
The perpendicular distance between parallel fitting axes of an assembly.

Liner
Flexible sleeve used to line the inside diameter of hose when conveying a high-velocity media, also prevents erosion.

Live Length
The amount of active (flexible) length of hose in an assembly. Does not include the length of fittings and ferrules.

Loop Installation
The assembly is installed in a loop or "U" shape and is most often used when frequent and/or large amounts of motion are involved.

Medium, Media
The substance(s) being conveyed through a system.

Nominal Diameter
Indicates the approximate inside diameter.

Offset-Lateral, Parallel
The distance that the ends of a hose assembly are displaced in relation to each other as a result of connecting two misaligned terminations in a system, or intermittent flexure required in a hose application.

Operating Conditions
The pressure, temperature, motion, and environment to which a hose assembly is subjected.

Outside Diameter (O.D.)
The external diameter of a metal hose, measured at the top of the corrugation or braiding.

Percent of Braid Coverage
The percent of the surface area of a hose that is covered by braid.

Pitch
The distance between the two peaks of adjacent corrugations or convolutions.

Ply, Plies
The number of individual thicknesses of metal used in the construction of a wall of the convoluted hose.

Pressure
Usually expressed in pounds per square inch (psi).

Pressure, Burst
Failure of the hose where the braid fails in tensile, or the hose ruptures, or both, due to the internal pressure applied.

Pressure, Deformation
The pressure at which the convolutions of a hose become permanently deformed.

Pressure, Maximum Allowable Working
The maximum pressure at which a hose or hose assembly is designed to be used.

Pressure, Pulsating
A rapid change in pressure above and below the normal base pressure, usually associated with reciprocating type pumps. This pulsating pressure can cause excessive wear between the braid and the tops of the hose convolutions.

Pressure, Shock
A sudden increase of pressure in a hydraulic or pneumatic system which produces a shock wave. This shock can cause severe permanent deformation of the hose corrugations, as well as rapid failure due to metal fatigue.

Pressure, Static
A non-changing, constant pressure.

Pressure, Working
The pressure, usually internal but sometimes external, imposed on a hose during operating conditions.

Safety Factor
The relationship of working pressure to burst pressure.

Strand(S)
Individual groups of wires in a braid. Each group is supplied from a separate carrier in the braiding machine.

Stress Corrosion
A form of corrosion in stainless steel normally associated with chlorides.

TIG Weld/GTAW
The gas tungsten arc welding process sometimes referred to as a "shielded arc" or "heliarc."

Traveling Loop
A general classification of bending wherein the hose is installed in a U-shaped configuration.

Traveling Loop, Class A Loop
An application wherein the radius remains constant and one end of the hose moves parallel to the other end.

Traveling Loop, Class B Loop
A condition wherein a hose is installed in a U-shaped configuration and the ends move perpendicular to each other so as to enlarge or decrease the width of the loop.

Torque (Torsion)
A force that produces, or tends to produce, rotation of or torsion about the longitudinal axis of a hose assembly while the other end is fixed.

Vacuum
Negative pressure or suction.

Velocity
The speed at which the medium flows through the hose.

Velocity Resonance
The vibration of convolutions due to the buffeting of a high velocity gas or liquid flow.

Vibration
Low-amplitude motion occurring at high frequency.

Welding
The process of localized joining of two or more metallic components by means of heating their surfaces to a state of fusion, or by fusion with the use of additional filler material.

Polyhose® TOFLE

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