Flexible metal hose

technical data

HEBEI QIANLI RUBBER PRODUCTS CO., LTD.

Company profile



HEBEI QIANLI RUBBER PRODUCTS CO., LTD. has been dedicating to develop and manufacture flexible metal hoses with consistently high quality since its foundation in 1999. Over the past years, the quantities of sale are increasing linear upward trend year by year both at home and abroad. we are constantly improving the quality and after-sale services and create a win-win treatment with our each customer.

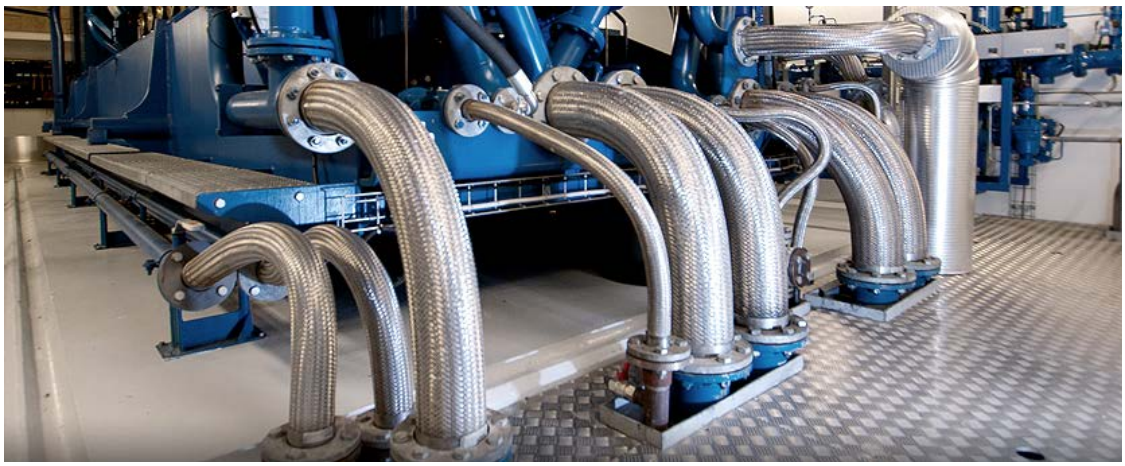
HEBEI QIANLI RUBBER PRODUCTS CO., LTD is a professional manufacturer of flexible metal hoses. Flexible metal hoses come in stainless steel 304, 321, 316L. They are fabricated in annual or helical profiles with standard or closer pitches for various flexibility requirements.

Our motto is always giving customers more than they expect which is deeply engraved in our people's hearts. The quality of our products is the direct reflection of our company and our team.

Products introduction

Metal flexible hose used for conveying all kinds of medium is a kind of flexible element made up of stainless steel ripple hose consisting of outer braided layer, one or multilayer wire or steel belt net, with joints or flange at both ends. Its characteristic is: corrosion-resistance, high temperature resistance, low temperature resistance, light weight, small volume, and good flexibility.

Metal flexible hose is widely used in the fields of petroleum, chemical industry, aerospace, metallurgy, electricity, gas, building, mechanical, construction, iron and steel, paper making, fabric, medicine, food and vessels for conveying water, steam, oil, chemicals, etc.



kerwin@hebeiqianli.com • www.flexible-hose.org

High Pressure Flexible Hose

Inner tube: stainless steel 321.

Reinforcement: 1 or 2 stainless steel 304 braided layers.

Working pressure: 200-3250 psi.

Working temperature: from -280 °C to 420 °C.

High pressure flexible hose technical data

Braid layers	I.D	O.D	Min. bend radius		Pressure ratings at 20 °C		Weight/foot
			Static	Dynamic	WP.	BP.	lbs.
	inch	inch	inch	inch	psi	psi	
1	1/4	0.51	2.25	4.5	2500	10000	0.19
2		0.56	3	6	3250	13000	0.3
1	3/8	0.67	3	6	2625	10500	0.31
2		0.73	4	8	3250	13000	0.51
1	1/2	0.83	4.5	7.5	2000	8000	0.39
2		0.89	6	10	3200	12800	0.63
1	3/4	1.16	6	9	1525	6100	0.59
2		1.26	8	12	2625	10500	0.96
1	1	1.43	6.75	10.5	1375	5500	0.73
2		1.54	9	14	2050	8200	1.1
1	1-1/4	1.87	4.5	13.5	1125	4500	1.32
2		1.98	6	18	1800	7200	2.02
1	1-1/2	2.19	5.25	16.5	1025	4100	1.56
2		2.25	7	22	1750	7000	2.55
1	2	2.65	6.75	18	850	3400	1.93
2		2.78	9	24	1325	5300	3.14
1	2-1/2	3.42	7.5	19.5	625	2500	2.72
2		3.53	10	26	1125	4500	4.23
1	3	3.98	11.25	24	563	2250	3.2
2		4.09	15	32	1000	4000	4.72
1	4	4.92	15	30	363	1450	3.79
2		5.03	20	40	625	2500	5.48
1	6	7.12	22.5	45	275	1100	7.01
2		7.26	30	60	413	1650	9.57
1	8	9.34	30	60	200	800	11.38
2		9.56	40	80	300	1200	15.45

Note: The data are based on 20 °C. Pressure will decrease as the ambient temperature increases.

Medium Pressure Flexible Hose

Inner tube: stainless steel 321, 316L.

Reinforcement: 1 or 2 stainless steel 304 or 321 braided layers.

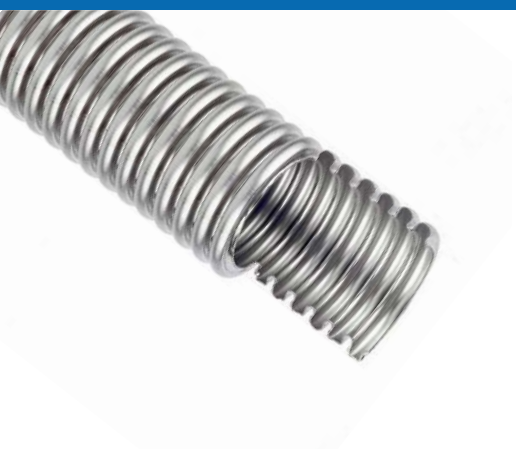
Working pressure: 15-3190 psi.

Working temperature: from -280 °C to 420 °C.

Medium pressure flexible hose technical data

Braided layer	I.D	O.D	Min. bend radius		WP.	BP.
	inch	inch	Static	Dynamic	psi	psi
			inch	inch		
0	1/4	0.4	0.63	4.3	145	—
1		0.45	1	4.3	2420	9680
2		0.5	1	4.3	3190	12760
0	3/8	0.59	0.87	6	80	—
1		0.64	1.5	6	1450	5800
2		0.69	1.5	6	2580	10320
0	1/2	0.77	0.94	6.5	80	—
1		0.83	1.75	6.5	1075	4300
2		0.88	1.75	6.5	1500	6000
0	3/4	1.02	1.2	8	60	—
1		1.08	2.75	8	950	3800
2		1.14	2.75	8	1250	5000
0	1	1.33	1.7	8	60	—
1		1.41	3.5	8	725	2900
2		1.49	3.5	8	1110	4470
0	1-1/4	1.62	2.2	10	50	—
1		1.7	4.5	10	563	2252
2		1.78	4.5	10	825	3300
0	1-1/2	1.88	2.7	10	35	—
1		1.95	5	10	500	2000
2		2.05	5	10	800	3200
0	2	2.45	3.5	14	15	—
1		2.53	7.63	14	478	1912
2		2.61	7.63	14	638	2552
0	2-1/2	3.01	4.5	16	15	—
1		3.09	7.9	16	377	1508
2		3.18	7.9	16	667	2668
0	3	3.54	5.1	18	15	—
1		3.62	9	18	320	1280
2		3.7	9	18	580	2320

Super Flexible Braided Hose - annular



Inner tube: stainless steel 321, 316L.

Cover: annular stainless steel.

Working pressure: 15-1825 psi.

Working temperature: from -280 °C to 400 °C.

Super flexible hose - annular technical data

Braid layers	I.D	O.D	Min. bend radius		Pressure ratings at 20 °C		Weight/foot
			Static	Dynamic	WP.	BP.	lbs.
	inch	inch	inch	inch	psi	psi	
0	1/4	0.38	0.591	3.15	145	—	0.08
1		0.43	0.984	3.15	1825	7300	0.09
0	3/8	0.56	0.709	5.039	80	—	0.11
1		0.61	1.496	5.039	1350	5400	0.2
0	1/2	0.79	0.905	5.728	80	—	0.18
1		0.84	2.022	5.728	1200	4800	0.27
0	3/4	1.06	1.26	6.614	60	—	0.26
1		1.11	2.756	6.614	875	3500	0.27
0	1	1.27	1.575	7.48	60	—	0.35
1		1.34	3.346	7.48	900	3600	0.63
0	1-1/4	1.62	1.969	10.039	50	—	0.44
1		1.67	4.134	10.039	515	2060	0.68
2		1.72	4.134	10.039	800	3200	0.92
0	1-1/2	1.96	2.362	11.614	36	—	0.71
1		2.03	5.118	11.614	435	1740	1.09
2		2.1	5.118	11.614	800	3200	1.47
0	2	2.38	2.756	12.598	15	—	0.9
1		2.44	6.299	12.598	425	1700	1.36
2		2.5	6.299	12.598	600	2400	1.82

Super Flexible Hose - helical

Inner tube: stainless steel 321, 316L.

Cover: helical stainless steel.

Working pressure: 15-1825 psi.

Working temperature: from -280 °C to 400 °C.

Super flexible hose - helical technical data

Braid layers	I.D	O.D	Min. bend radius		Pressure ratings at 20 °C		Weight/foot
			Static	Dynamic	WP.	BP.	lbs.
	inch	inch	inch	inch	psi	psi	
0	1/4	0.38	—	—	145	—	0.06
1		0.43	1	2.75	1825	7300	0.07
0	3/8	0.57	—	—	80	—	0.08
1		0.62	1.5	4	1350	5400	0.17
0	1/2	0.67	—	—	80	—	0.1
1		0.72	1.8	4.3	1200	4800	0.2
0	3/4	1.07	—	—	60	—	0.21
1		1.12	2.8	4.9	875	3500	0.37
0	1	1.28	—	—	60	—	0.28
1		1.35	3.3	5.7	900	3600	0.57
0	1-1/4	1.63	—	—	50	—	0.34
1		1.68	4.1	8,9	515	2060	0.68
0	1-1/2	1.97	—	—	36	—	0.73
1		2.04	5.1	9.5	435	1740	1.11
0	2	2.39	—	—	15	—	0.91
1		2.45	6.3	9.8	425	1700	1.37

Flexible Stainless Helical Hose

Inner tube: stainless steel 304, 321, 316L.

Reinforcement: 1 or 2 braided layers made of stainless steel 304, 321 or 316L.

Working pressure: 50-3625 psi.

Working temperature: from -280 °C to 350 °C.

Flexible stainless helical hose technical data

Braid layers	I.D	O.D	Min. bend radius		Pressure ratings at 20 °C		Weight/foot
			Static	Dynamic	WP.	BP.	
	inch	inch	inch	inch	psi	psi	lbs.
0	1/4	0.44	4	6	140	—	0.08
1		0.49			2625	10500	0.17
2		0.54			3625	14500	0.26
0	3/8	0.6	2	4	100	—	0.12
1		0.66			1650	6600	0.23
2		0.72			2200	8800	0.35
0	1/2	0.73	3	5	75	—	0.16
1		0.78			1100	4600	0.26
2		0.84			1750	7000	0.37
0	3/4	1	4	6	50	—	0.24
1		1.05			800	3600	0.41
2		1.11			1250	4800	0.6
0	1	1.28	4.5	7	50	—	0.34
1		1.36			750	3000	0.6
2		1.44			1050	4200	0.89

Standard Flexible Stainless Steel Hose

Inner tube: stainless steel 304, 321, 316.

Reinforcement: stainless steel braided.

Working pressure: 14-2700 psi.

Working temperature: from -280 °C to 300 °C.

Standard flexible stainless steel hose - annular technical data

Braid layers	I.D	O.D	Min. bend radius	WP.	BP.	Weight /foot
	inch	inch	inch	psi	psi	lbs.
0	1/4	0.41	4.5	90	—	0.04
1		0.47		1800	7233	0.11
2		0.53		2700	9100	0.18
0	3/8	0.65	5	70	—	0.1
1		0.71		1558	6230	0.2
2		0.77		2336	9345	0.3
0	1/2	0.77	5.5	70	—	0.11
1		0.83		1186	4743	0.22
2		0.89		1779	7115	0.33
0	5/8	0.96	7	57	—	0.17
1		1.02		1205	4820	0.33
2		1.08		1808	7230	0.49
0	3/4	1.16	8	43	—	0.19
1		1.22		898	3591	0.37
2		1.28		1347	5387	0.55
0	1	1.47	9	43	—	0.26
1		1.53		718	2872	0.5
2		1.59		1077	4308	0.74
0	1-1/4	1.75	10	43	—	0.29
1		1.83		645	2581	0.61
2		1.91		968	3872	0.93
0	1-1/2	2.08	11	28	—	0.47
1		2.16		531	2125	0.85
2		2.24		797	3188	1.23
0	2	2.61	13	14	—	0.59
1		2.69		449	1797	1.11
2		2.77		674	2696	1.63

Note: Specifications in the table are tested at 20 °C.

Ultra Heavy Wall Braided Hose

Inner tube: stainless steel 321, 316L.

Reinforcement: stainless steel braided.

Working pressure: 1.8-4500 psi.

Working temperature: from -280 °C to 300 °C.

Ultra heavy wall braided hose specification technical data

Braid layers	I.D	O.D	Min. bend radius		Pressure ratings at 20 °C		Weight/ foot
			Static	Dynamic	WP.	BP.	
	inch	inch	inch	inch	psi	psi	lbs.
0	1/4	0.49	0.875	5.5	200	—	0.14
1		0.55	0.875	5.5	2660	10650	0.21
2		0.61	0.875	5.5	4500	18000	0.28
0	3/8	0.66	1.125	5.5	100	—	0.18
1		0.73	1.125	5.5	1610	6440	0.25
2		0.79	1.125	5.5	2435	9750	0.35
0	1/2	0.84	1.5	6	80	—	0.27
1		0.9	1.5	6	1310	5240	0.38
2		0.96	1.5	6	2355	9420	0.49
0	3/4	1.21	2.125	8	70	—	0.51
1		1.27	2.125	8	915	3660	0.67
2		1.33	2.125	8	1650	6600	0.84
0	1	1.53	2.75	9	43	—	0.75
1		1.59	2.75	9	645	2580	0.93
2		1.65	2.75	9	1165	4660	1.13
0	1-1/4	1.86	3.25	10.5	29	—	0.96
1		1.92	3.25	10.5	545	2180	1.2
2		1.98	3.25	10.5	980	3920	1.45
0	1-1/2	2.19	3.75	12	31	—	1.47
1		2.27	3.75	12	560	2240	1.85
2		2.35	3.75	12	1000	4000	2.2
0	2	2.83	5	15	17	—	1.97
1		2.91	5	15	450	1800	2.44
2		2.99	5	15	810	3240	2.9
0	2-1/2	3	7	14	6.5	—	1.42
1		3.12	7	14	570	2280	2.19
2		3.24	7	14	750	3000	2.96
0	3	3.57	8.25	17	4.5	—	1.82
1		3.69	8.25	17	450	1800	2.7
2		3.81	8.25	17	560	2240	3.58

Ultra Heavy Wall Braided Hose

Ultra heavy wall braided hose specification technical data							
Braid layers	I.D	O.D	Min. bend radius		Pressure ratings at 20 °C		Weight/ foot
			Static	Dynamic	WP.	BP.	
	inch	inch	inch	inch	psi	psi	lbs.
0	3-1/2	4.14	9.5	19	3	—	1.57
1		4.26	9.5	19	265	1060	2.43
2		4.38	9.5	19	265	1060	3.29
0	4	4.72	11	22	2	—	2.38
1		4.84	11	22	285	1140	3.34
2		4.96	11	22	375	1500	4.3
0	5	5.93	11	28	2.8	—	3.2
1		6.03	11	28	265	1060	4.5
2		6.13	11	28	265	1060	5.8
0	6	7	16.5	33	3.5	—	4.46
1		7.19	16.5	33	240	960	6.2
2		7.38	16.5	33	285	1140	7.94
0	8	9.06	21.5	43	2.7	—	5.85
1		9.31	21.5	43	217	868	9.39
2		9.56	21.5	43	270	1080	12.93
0	10	11.19	27	54	2.2	—	9.17
1		11.44	27	54	210	840	13.54
2		11.69	27	54	375	1500	17.91
0	12	13.25	32	64	1.8	—	10.93
1		13.5	32	64	200	800	16.94
2		13.75	32	64	360	1440	22.95

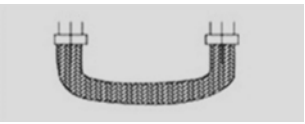
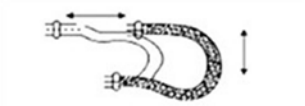
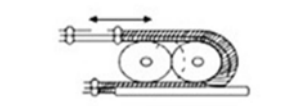
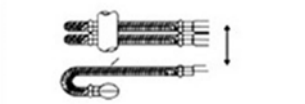
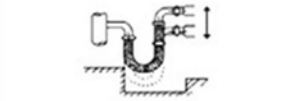
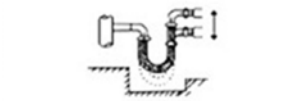
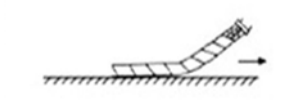
Corrugated hose process

Hydraulic forming process

Hydraulic forming is also known as the internal high pressure forming. It is the use of high pressure water to produce the corrugations in a metal hose core tube. The metal flexible hose adopted this process has the following features.

- Hydraulic forming minimizes residual stress to the base metal. Thus, the hose failure is minimized and the service life is significantly increased.
- Hydraulic forming method maintains a constant core tube wall thickness. And uniform wall thickness evenly promotes distribution of mechanical and residual strain during flexing.
- Hydraulic forming reduces work hardening of the tube material which makes the hose more flexible and greater yield strength.

Installation notice

✖ Wrong	○ Right	Notice
		Avoid excessive bending. The bending radius should be greater than the minimum bending radius, otherwise, the hose will be damaged.
		Not allowed to be less than the minimum bending radius, if necessary the hose should be installed with a rigid elbow.
		The direction of movement and the axis of the hose should be in the same plane to avoid the distortion stress.
		When the hose length is longer, the hose is easy to drop, and the pulley support should be installed.
		The direction of movement and the axis of the hose should be in the same plane to avoid the distortion stress.
		It should be installed with rigid elbow to avoid alternating stress and excessive bending.
		To avoid the generation of alternating stress and excessive bending, it need to install rigid elbow.
		When free bending installation, the hose should avoid the wall, ground and other objects friction.
		To avoid excessive bending, it should be installed with roller carrier.
		To avoid excessive bending, it should be installed with rigid elbow.
		If cannot avoid external mechanical stretching, it should be covered with a protective layer.

Material

Stainless steel 321, 304 and 316L are all common materials for flexible stainless steel hose. All of them belong to austenitic chromium nickel alloys. However, there are small differences in their properties.

321 is a stabilized grade of stainless, for it is alloyed with titanium which has a stronger affinity for carbon than chromium does at extremely high temperatures. Type 321 is the premier choice for exhaust headers.

304 is the most common stainless steel. It is similar to 321 except that 321 has an addition of titanium. 321 is often replaced by 304 in a lot of applications, such as header construction. Compared with 321, 304 does not have high temperature fatigue resistance ability.

In contrast with 321 or 304, 316L has addition content – molybdenum, which provides protection from various forms of corrosion. 316L is strongly recommended for chloride environments because it has a higher resistance to pitting and crevice corrosion.

In a word, consider the practical application before determining the exact material.

Pressure

When choose the metal hose, you must know the working condition clearly. The metal hose must be strong enough to withstand the pressures which it will be applied for. Consult the technical data for the maximum working pressure. And you should also know that the pressure will be reduced for the following conditions.

Temperature - As temperature increases, the strength of the metal hose decreases. Also the coldest temperature will also decreases the strength of the metal hose. When it comes to these conditions, the maximum working pressure will decrease.

Dynamic - Pulsating, surge, or shock pressures will also decrease the metal hose working pressure. And the meal hose will be damaged by quick opening or closing valves, so when it comes to these conditions, the working pressure of metal hose should be considered over again.

Flexibility

Flexibility refers to the bending radius of metal hose. The smaller data of minimum bending radius, the greater flexibility of the metal hose. The bending radius for the application should be greater than the minimum bending radius. Increasing the installed radius of the metal hose will reduce fatigue on the corrugations, increasing assembly life. And you should also take the applications with vibration into consideration.

Fittings

Choose the most favorable end fittings and flanges. This is required since fittings for the assembly must be chosen to properly fit the hose and machine.

HEBEI QIANLI RUBBER PRODUCTS CO., LTD.

Add: West Side of Yafu Road, Jingxian County, Hengshui City, Hebei, China

Tel: +86-318-6668206

Fax: +86-318-6668207

E-mail: kerwin@hebeiqianli.com

Website: http://www.flexible-hose.org