

BOXER[®]

INDIA

Stainless Steel Flexible Hoses and Assemblies



The Big

B

**Better Quality
Better Price
Better Service**



BOXER INDIA is one of the fast growing company engaged in the manufacture of wide range of high quality **flexible hose assemblies, metal hoses, expansion joints/ bellows and Hydraulic fittings. Boxer India is an ISO 9001:2008 Certified Company**, which has a comprehensive Quality Management System in place with continuously improving quality objectives to assure the product meets or exceeds customer expectations and requirements.

Flexible metal hoses are generally selected where rubber or plastic hoses are not suitable. For example, permanent piping installations where flexibility is required, extreme high or low temperature applications and corrosive, combustible or toxic environments. A full range of metallic flexible hoses and hose assemblies are manufactured in austenitic steel are AISI 304,321,316 & 316L conforming to international quality standards. Stainless Steel Corrugated Metal hoses are suitable for a wide range of application in the steelmaking, chemical smelting, petrochemical, automotive, material handing and power generation industries and many more fields.

Corrugated hoses can be used either unreinforced or unbraided, or with wire braid reinforcement depending upon the pressure rating and application. All assemblies are 100% tested prior to dispatch by pneumatic /Hydrostatic test as per customer requirement/ specification.

The success of the flexible metallic hose assembly may be attributed to the fact that there is a hose suitable for almost every application. Boxer India manufacture and supply a comprehensive range of corrugated stainless steel hose projects covering a wide range of uses what ever the requirement of flexibility, media, environment, temperature or pressure.



Advantages of Flexible Metal Hose

1. Suitable for wide temperature range (-270 C to 600 C -).
2. Resistant to thermal expansion & contraction in the piping system.
3. Higher strength
4. Fire and moisture resistant.
5. Corrosion resistant, longer life.
6. High abrasion, penetration and damage resistant.
7. Flexible option for rigid piping in difficult locations

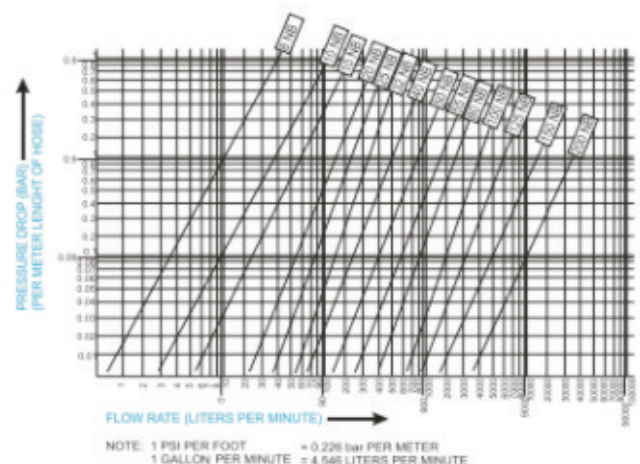
TAB E 1 TECHNICAL DATA								
NOMINAL BORE	MINIMUM BEND RADIUS		WITHOUT BRAID		SINGLE BRAID		DOUBLE BRAID	
	STATIC	FLEXING	Max. Working Pressure	Test Pressure	Max. Working Pressure	Test Pressure	Max. Working Pressure	Test Pressure
mm	mm	mm	Kg/cm2	Kg/cm2	Kg/cm2	Kg/cm2	Kg/cm2	Kg/cm2
6	25	100	4	6	100	150	160	240
10	40	150	4	6	90	135	144	216
12	50	200	3	4.5	80	120	128	192
16	50	200	3	4.5	70	105	112	168
20	70	200	2	3	64	96	102	153
25	90	200	2	3	50	75	80	120
32	110	250	1.5	2.3	40	60	64	96
40	130	250	1.5	2.3	30	45	48	72
50	175	350	1.0	1.5	28	42	44	66
65	200	410	1.0	1.5	24	36	38	57
80	205	450	1.0	1.5	18	27	28	42
100	230	560	0.8	1.2	16	24	26	39
125	280	660	0.6	0.9	12	18	20	30
150	320	815	0.6	0.9	10	15	16	24
200	435	1015	0.5	0.75	8	12	12	18

250 & ABOVE DETAILS ARE ON REQUEST

- Note :**
1. All above Technical Details are Subject to Change without notice.
 2. All Stainless Steel Corrugated Flexible Hoses Conforms to BS 6501 Part-1.
 3. Unless Specified braiding would be in high tensile stainless steel AISI 304 wire.
 4. The above Pressure ratings are for fluid at ambient temperature of 20°C
 5. Burst Pressure is 4 time the working pressure.

Pressure loss

When planning piping systems, the pressure loss of the medium is important, in addition to the hose pressure resistance and flexibility. At equal flow rates the pressure loss is higher in metal hose rather than rigid piping. This is caused by the corrugations. It can be assumed that the pressure loss in corrugated hoses is 100% higher than in new welded steel pipes and in strip wound or metal interlock hoses it is 20% higher. Therefore in the case of corrugated hoses an increase in diameter of 15% and a strip wound or metal interlock hoses 4% is sufficient to reduce the pressure loss to the same value as new steel pipe.



TEMPERATURE CORRECTION FACTOR

Where hoses are required to operate at temperatures above 20°C a correction factor must be multiplied by the stated working pressure given to the selected hose. The factors of stainless steel flexible hoses are given in the table alongside and the following example shows how calculations are made for hoses required to operate at elevated temperatures

EXAMPLE

A 40mm bore stainless steel hose is required to convey fluid at a working pressure of 15 bar and a temperature of 300°C. The Maximum Working Pressure at 20°C for single Braid is 34 bar. From the chart alongside, maximum working pressure at 300°C = $34 \times 0.50 = 17.0$ bar. The hose selected is therefore suitable for application.

Temperature Range		Correction Factor 'F',		
°C	°F	Material		
		1.4541 (SS 321)	1.4404 & 1.4306 (SS316L & SS304L)	Carbon Steel
> -200 ≤ -20	> -328 ≤ -4	1	1	-
> -20 ≤ 50	> -4 ≤ 122	1	1	1
> 50 ≤ 100	> 122 ≤ 212	0.96	0.94	0.91
> 100 ≤ 150	> 212 ≤ 302	0.92	0.90	0.83
> 150 ≤ 200	> 302 ≤ 392	0.88	0.86	0.74
> 200 ≤ 250	> 392 ≤ 482	0.84	0.82	0.66
> 250 ≤ 300	> 482 ≤ 572	0.80	0.78	0.59
> 300 ≤ 350	> 572 ≤ 662	0.76	0.74	0.54
> 350 ≤ 400	> 662 ≤ 752	0.72	0.70	0.52
> 400 ≤ 450	> 752 ≤ 842	0.66	0.66	-
> 450 ≤ 500	> 842 ≤ 932	0.60	0.60	-
> 500 ≤ 550	> 932 ≤ 1022	0.54	-	-
> 550 ≤ 600	> 1022 ≤ 1112	0.44	-	-
> 600 ≤ 650	> 1112 ≤ 1202	0.36	-	-

TESTING

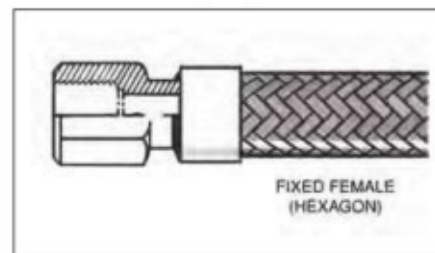
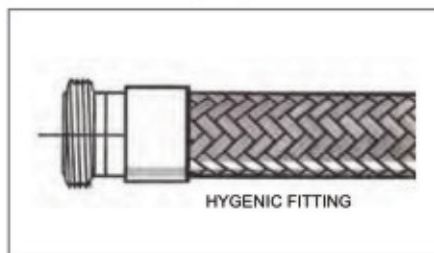
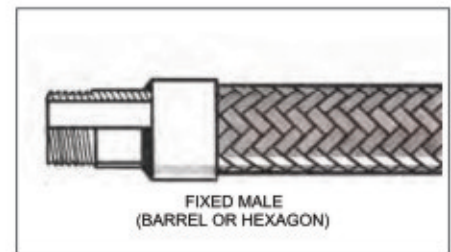
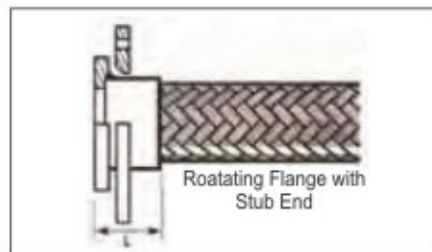
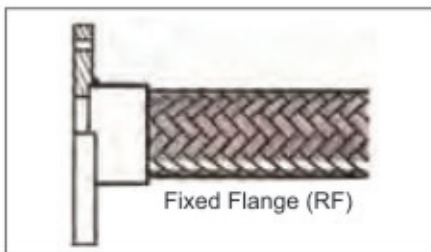
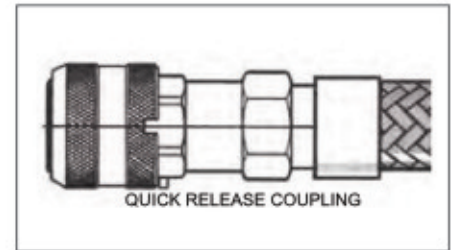
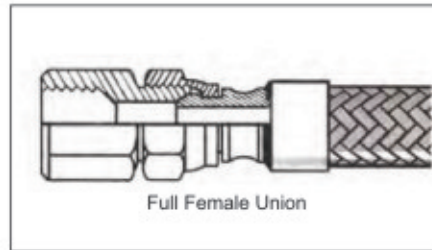
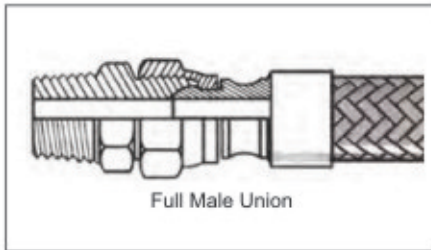
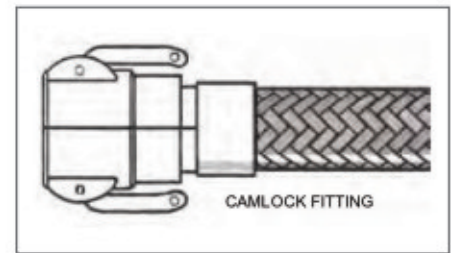
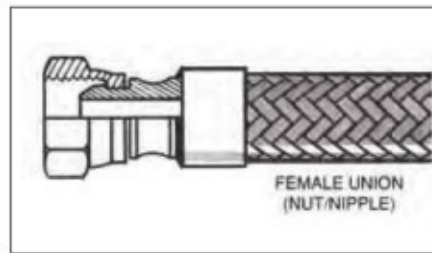
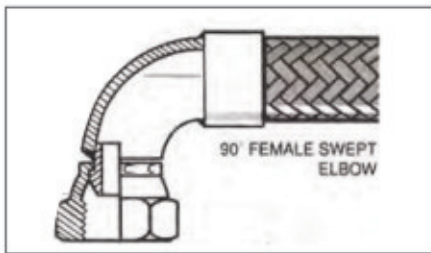
Standard Leak Testing

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.

Hydrostatic Testing

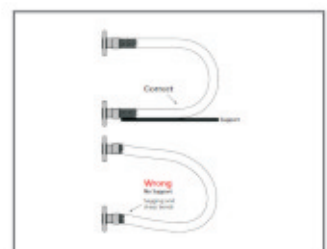
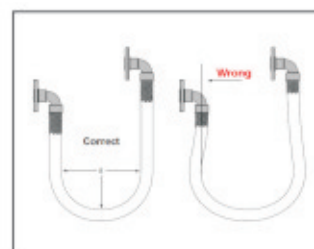
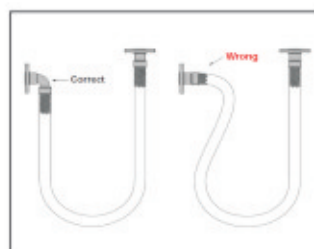
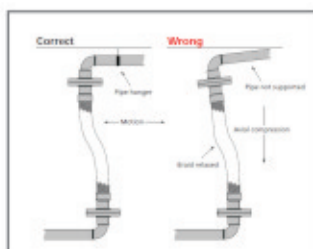
While the standard test is designed to detect leaks, hydrostatic testing is designed to test the assembly's strength. Testing of an assembly to its full permissible test pressure can be economically and accurately accomplished by filling the assembly with liquid while concurrently evacuating all air.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

STANDARD HOSE END FITTINGS



Installation, Use & Precautions

In order to obtain long life and satisfactory service from stainless steel hose it should be installed in the correct manner. The main cause of failure is fatigue in the convolutions and in order to minimise this hose should be installed as shown below. It should be remembered that all flexible hoses have a limited life and when they are used in applications where dangerous chemicals or hot or inflammable fluids are passing through them, they should be examined and re-tested at regular intervals. Many of our customers have found it advantageous, by means of planned maintenance, to replace hoses at regular intervals where used in arduous conditions



Application

- Refineries
- Power Plants
- Steel Plants
- Nuclear Installation
- Fertilizer Industry
- Pharmaceutical Industry
- Cryogenic Service
- Chemical Industry
- Boilers
- Paper Plants
- Lubrication Systems
- Automotive Industry
- Steam, Hot Water, Pneumatic Service
- Vacuum Systems
- Air Conditioning & Refrigeration
- Ports and ship Yard
- Defence Organization
- Piping
- Vibration Absorption
- Railways

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