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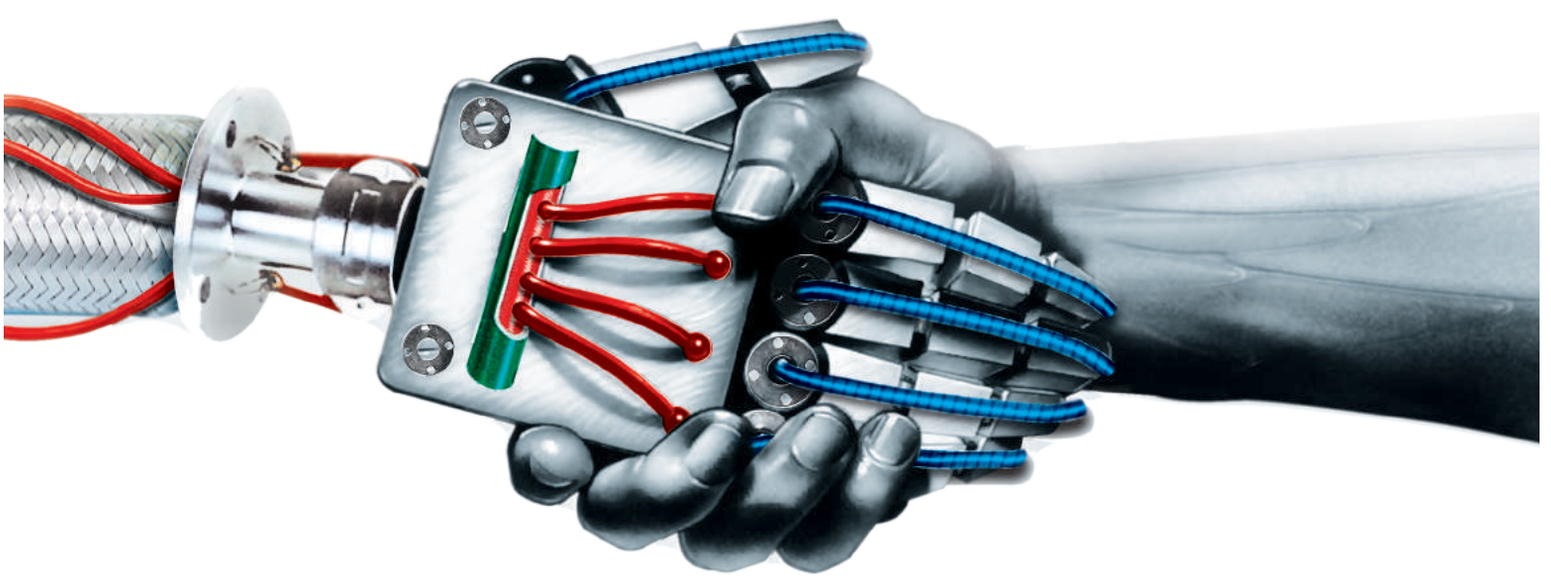


PRODUCT CATALOGUE

INDEX

METALLIC HOSE

CONVOFLEX STAINLESS STEEL HOSE

Specification : BS 6501 / ISO 10380

Construction :

Hose Material	:	304/ 304L / 316 / 316L / 321
Braid Material	:	Standard Braid Material is SS304
		Braid also available in SS316.
Tube	:	Heavy wall innercore for corrosive service.
		Butt welded Annular Corrugations, close - pitch tubing.
Size Range	:	6mm I.D. to 900mm I.D.
Temperature	:	- 200°C to 800°C for AISI 321 & 316
		- 200°C to 420°C for AISI 304 & 304L

Application :

This hose is suited for any application where working conditions demand one or a combination of any of the following: absolute leak proof, a high safety factor, extreme temperature, vibrations, high working pressure and corrosion resistance.

Applicable for cryogenic and chemical transfer, vacuum, super-heated steam, coolant lines, fuel and oil burner lines, petroleum, refrigerants, gases, poisonous media and food stuff.

Hose Specification Chart

Code	I.D. inches	I.D. mm	O.D. mm	Working Pressure kgf/cm^2	Test Pressure kgf/cm^2	Minimum bend radius mm
GSS 6	1/4	6	14	100	150	90
GSS 10	3/8	10	19	90	135	150
GSS 12	1/2	12	22	80	120	200
GSS 20	3/4	20	29	64	96	203
GSS 25	1	25	36	50	75	229
GSS 32	1 1/4	32	45	40	60	267
GSS 38	1 1/2	38	55	30	45	292
GSS 50	2	50	68	28	42	318
GSS 65	2 1/2	65	84	24	36	508
GSS 80	3	80	97	18	27	610
GSS 100	4	100	126	16	24	750
GSS 125	5	125	152	12	18	900
GSS 150	6	150	178	10	15	1050
GSS 200	8	200	225	8	12	1180
GSS 250	10	250	278	6	9	1250
GSS 300	12	300	330	5	7.5	1400

For static pipe work, the bend radius can be reduced considerably.

For extra high pressure, extra braid can be provided, consult our Technical Department.

For pressure drop estimates of corrugated metal hose, consult our Technical Department.

The above pressure ratings are for fluid at ambient temp. of 30°C.

Temperature :

As the operating temperature of a hose assembly increases, the maximum working pressure of the assembly decreases.

Below is a chart showing temperature correction factors for 'CONVOFLEX' Stainless Steel Metal Hose.

(°C)	Correction Factor	(°C)	Correction Factor
-200 to 50	1.00	400	0.67
100	0.94	450	0.64
150	0.88	500	0.61
200	0.84	550	0.60
250	0.79	600	0.58
300	0.76	700	0.56
350	0.71	800	0.54

How to use Temperature Correction Factor Chart ?

1. Determine the maximum operating temperature of the application.
2. Locate this temperature on the chart and read across the proper factor.
3. Multiply this factor times the maximum working pressure as determined from the Hose Specification Chart.
4. This answer is your maximum Safe Working Pressure at that Elevated Temperature.

STAINLESS STEEL HIGH PRESSURE CORRUGATED HOSE

Construction :

Hose Material : SS 316 Tube (Butt Welded) Annular Close Pitch Corrugations

Braid Material : SS 304

		Pressure (psig) at Ambient Temperature			Minimum Center-Line Bend Radius		
Nominal Hose I.D. (inches)		**Maximum Working (MWP)**	**Maximum Working (MTP)**	**Rated Burst (RBP)**	**Dynamic Flexing (Inches)**	**Static Bend (Inches)**	**Minimum Live Length for Normal Vibration (Inches)**
1/4	Double Wire Braid	5320	5320	21280	5	1	3 1/2
3/8		3925	3925	15700	5 1/2	1 1/8	4 1/4
1/2		3680	3680	14480	7 1/2	1 1/2	4 1/2
3/4		3555	3555	14220	8 1/2	2 3/4	5 3/4
1		2810	2810	11240	10	2 3/4	7
1 1/4		2500	2500	10000	11 1/2	3 3/4	7 1/4
1 1/2		2220	2220	8880	13	5	8
2		1680	1680	6720	15	6 3/4	9 1/2
3	Triple Wire Braid	1475	1475	5900	21	9	11
4		1225	1225	4900	27	11 1/2	12
5		1200	1200	4800	32	14	13
6		950	950	3800	37	17	14
8		875	875	3500	46	22	16
10		750	750	3000	56	26	18
12		525	525	2100	62	32	20

STAINLESS STEEL BIG BORE HOSE

Hose Material : SS 321 Butt Welded Tube Annular Close Pitch Corrugations
Braid Material : SS 304, SS316L & SS321

I.D. Inches	I.D. mm	O.D. mm	Working Pressure Kgf/cm²	Test Pressure Kgf/cm²	Min.bend radius mm
14	350	371	11	16	1676
16	400	422	8	12	1880
18	450	483	6	9	2083
20	500	533	5	7.5	2286
22	550	584	3.5	5.25	2489
24	600	635	3	4.5	2642
30	750	788	1.5	2.25	3251

CORRUGATED FLEXIBLE EXOTIC METAL HOSE

Construction :

Hose Material : Monel, Bronze,
Braid Material : Monel, Bronze SS 304, SS 316.
Size Range : From ¼ to 4 inches
Temperature : Monel upto 427° C.
Bronze upto 204° C.

Application :

Monel : Excellent Chemical Resistance to Dry Chlorine, Salt Water & Alkalies, Meets Requirements of Chlorine Institute.
Bronze : Designed to maintain pipeline material integrity & prevent galvanic corrosions.

Note : Hose available upon request in metals such as Hastelloy Titanium, Inconel 600 & 625
For Further Information please contact our technical department.

Advantages of Flexible Metallic Hose :

1. High physical strength.
2. Suitable for elevated temperature (800°C).
3. Fire resistant.
4. Good corrosion characteristics.
5. Long life
6. Resistance to penetration & damage.

HEAT AND COOLANT – TRACED HOSE

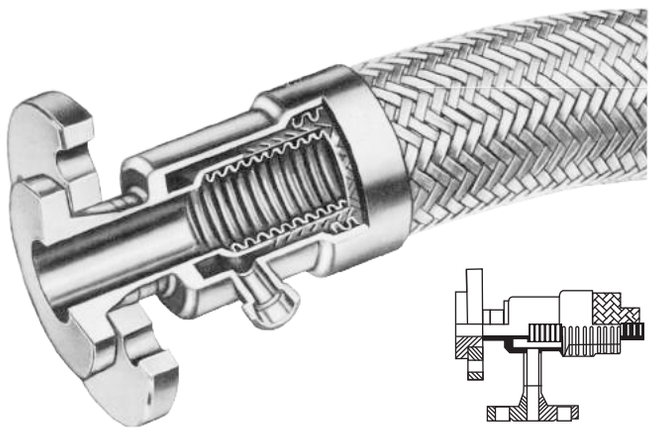
Material and Design :

For the Internal hose and Jacketed hose,
our stainless steel corrugated hose is used with
stainless steel braiding.

Core & Jacket
SS304/304L/316/316L/321

Braid Material
SS304/304L/316/316L

Operating Temperature
400°C max. (600° C is possible as a special design).



Application :

When ordinary insulation is not sufficient for certain applications or when specific minimum temperatures are needed to convey viscous substances, traced piping is generally used; this consists of two tubes, one inside the other, with various differences in cross-section.

One of the tubes, generally the inner one, carries the medium, and the other one carries a heating or cooling agent; sometimes it is the other way around. In other cases, the external tube is used as a safety measure.

Occasionally, such traced piping has to be flexible; for such applications we supply our Jacketed hose.

Its high flexibility makes this hose very suitable for angular and lateral (offset) movement. The Jacketed hose is pressure and vacuum proof due to the materials used for its manufacturing. It is resistant to temperature and corrosion. The large surface area of the corrugated section results in particularly high heat transfer efficiency, the hose combining the functions of a flexible conduit and a highly efficient heat exchanger in the simplest possible form.

The JAKCETED Hose is suitable for many different purposes.

As a heat-able element the hose is mainly used in the chemical , pharmaceutical, oil and civil engineering machinery industries to convey viscous or temperature – sensitive media, such as

Hose Specification :

Core (Internal Hose)	Jacket Tracer Conduit	Threaded Connection (Pipe Thread) inches
10	25	3/8
16	32	3/8
20	40	1/2
25	50	1/2
32	50	1/2
40	65	1/2
50	80	3/4
65	100	3/4
80	125	3/4
100	150	3/4
125	175	1
150	200	1
200	250	1

Bitumen	Polyester	Paraffin	Heavy fuel oil	Dimethyl terephtalate (DMT)
Fats	Mercury	Tar	Naphthalene	Synthetic resin
Naphthol	Sulphur	Chlorophenol	Explosive (TNT)	Organic liquefied materials
Phenol	Fatty acids	Chocolate	Thermosetting Plastic	Phthalic acid, waxes and others

The heating agents used are hot water, steam, heat transfer oils or other heat transfer agents.

For cooling, water is the most common agent.

End Connection :

As a connection for the heating or cooling medium, one weld-neck flange or union is provided at each hose end of the tracer conduit, the two connections being offset by 180° in relation to one another.

ELECTRICALLY HEATED CONVOLUTED CORE HOSE

Fluoropolymer Core (to 204° C)

Stainless Steel Core Hose (to 329° C)

Electrically Heated Convoluted Core Hose products are custom engineered to your specific application requirements and equipment.

Hydraulically and electrically complete, each hose is designed for fast, easy installation. Cores (convoluted fluoropolymer and stainless steel) are designed to meet all requirements while offering improved flexibility on large diameter and bulk transfer products. Hoses can be operated in continuous movement conditions.

The heating element is a nickel alloy wire that is spiral wound to extremely close tolerances providing optimum temperature uniformity throughout the heated length.

Applications for this product include :

Product transfer (hot melt adhesives, urethanes, oils, fats. chemicals and wax) Viscosity control (asphalt, tar, fats, oil, wax, chemicals)

Features of this product include:

- Ready to use
- Constant power density and self-limiting heating elements
- Reinforced with stainless steel braid
- Electrical insulation is:
  Fiberglass reinforced, silicone rubber insulation
  Fiberglass/polyamide film
- 1/2" reinforced fiberglass thermal insulation
- External jacket is an abrasion resistant braided polyester sleeve (indoor) or a tough, extruded flame-retardant polyurethane (outdoor use).
- Power/control cable standard length is six (6) feet. Longer lengths are available.

PTFE CORRUGATED TRANSFER HOSE (GTC)

Construction:

Innercore of corrugated PTFE, externally reinforced with stainless steel wire braid.

Temperature :

(- 54° C) to 204° C

Specification :

Code	I.D. inches	I.D. mm	O.D. mm	Operating Pressure psi at Room Temp.	Min. bend radius mm
GTC 8	1/2	12.7	20.0	1000	25.4
GTC 12	3/4	19.05	27.7	1000	50.8
GTC 16	1	25.4	33.0	1000	76.2
GTC 20	1 1/4	31.75	39.6	1000	158.8
GTC 24	1 1/2	38.1	45.5	750	190.5
GTC 32	2	50.8	59.2	500	266.7
GTC 48	3	76.2	93.5	250	393.7
GTC 64	4	101.6	123.2	150	622.3

Application :

Corrugated transfer hose, is the most broadly applied general - purpose work hose found in hundreds of chemical transfer and food handling situations. Its present applications are as diverse as water purification systems, mercury transfer lines, and food processing equipment.

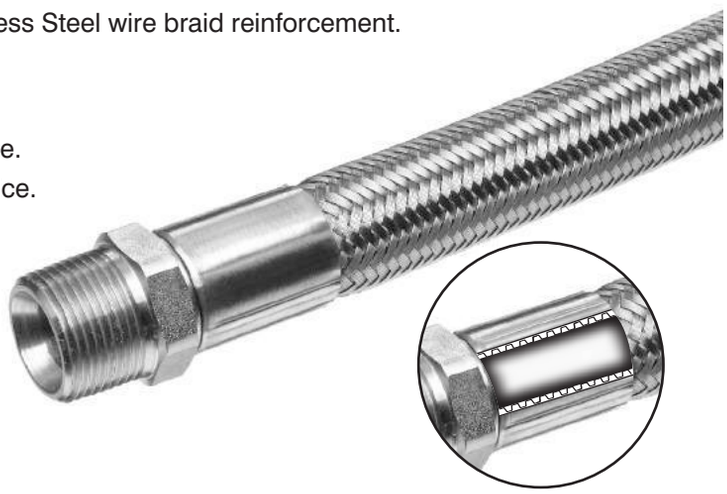
It has unusually high resistance to thermal cycling; therefore is used extensively in tire presses, laundry presses and other types of steam service where on-off operating cycles cause wide temperature fluctuations inside the hose.

Corrugated transfer hose is extraordinarily versatile hose, combining excellent flexibility with large size in both length and I.D. (See Specification Table). Present users rate this as the ideal bulk transfer hose for a wide range of caustics, chemicals and raw materials. Their applications include tank car and ship off loading, bulk handling, chemical and petrochemical transfer, pump connections and many others. This hose can also be used as a suction hose for unloading or transfer at negative pressure.

SMOOTH BORE – MEDIUM PRESSURE PTFE HOSE

Construction :

Smooth innercore of extruded white PTFE, with Stainless Steel wire braid reinforcement.



Temperature :

(-54°C) to 232°C (-65°F to 450°F) for continuous service.
(-73°C) to 260°C (-100°F to 500°F) for intermittent service.

Specification :

Code	I.D. inches	I.D. mm	O.D. mm	Operating Pressure psi at Room Temp.	Min. bend radius mm
GPT 3	$^{3}/_{16}$	4.76	7.70	3000	50.8
GPT 4	$^{1}/_{4}$	6.35	9.10	3000	50.8
GPT 5	$^{5}/_{16}$	7.93	10.50	3000	76.2
GPT 6	$^{3}/_{8}$	9.52	12.00	2500	101.6
GPT 8	$^{1}/_{2}$	12.70	15.20	2000	132.1
GPT 10	$^{5}/_{8}$	15.87	18.70	1500	165.1
GPT 12	$^{3}/_{4}$	19.05	22.10	1200	195.6
GPT 16	1	25.04	28.20	1000	228.6

Advantages of PTFE For Flexible Hose

PTFE is an ideal material for flexible hose, to which a wire over-braid is added for excellent pressure ratings. Such hose gives extremely long life because its inner core has out-standing resistance to steam, chemicals, solvents, heat pressure impulses, flexing, vibration and aging.

Flexible : PTFE hose will stand up under severe conditions of continuous flexing and vibration without failure from flex fatigue.

Chemical resistant : Inert PTFE creates a nearly “Universal” hose, capable of handling the broadest range of applications except the molten alkali metals such as sodium and potassium and fluorochemicals such as chlorine trifluoride, oxygen difluoride and fluorine gas.

Temperature resistant : Even handles 180°C steam alternating with cold water.

Non-stick : Hose is easily cleaned, to maintain batch purity when using one hose for several services.

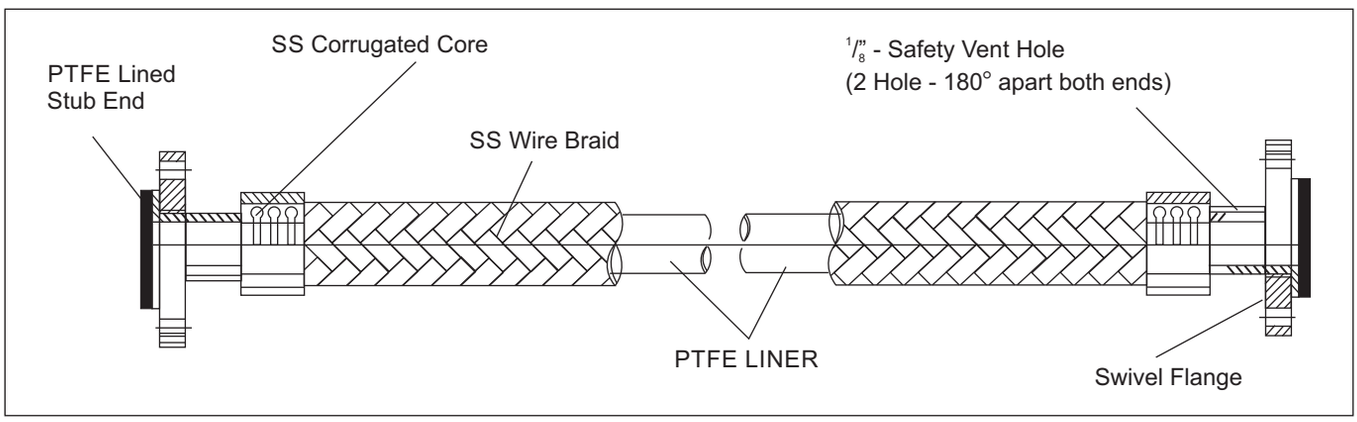
Low friction : Hose exhibits low pressure drop, which remains constant because no deposits accumulate on inside walls.

Moisture resistant : Ideal for pneumatic systems requiring low dew point.

Non-aging : Properties of hose do not change with age or exposure to weather.

End connection : Swaged, Crimped or Reusable type.

PTFE LINED HOSE (GTL)



All Wetted Parts Are PTFE

GAYTRI PTFE lined hose has the internal tube of PTFE inside the corrugated metallic hose.

The flange is assembled with the internal tube providing a liner inside and across the face of the flange. Chemical inertness is therefore maintained throughout the entire assembly.

GAYTRI PTFE lined hose assemblies permit full utilization of the wide operating extreme characteristics of PTFE and are rated for continuous service from (-70°C) to 240°C. These ratings can be exceeded for intermittent operations, depending on time and overall conditions.

ANTI-STATIC PTFE HOSE

Purpose :

Anti Static PTFE Hose is an essential requirement in applications where there is the risk of an electrostatic build up on the inside of the PTFE tube which may then discharge through the tube wall. Media passing through which create such a risk are fluids which have a Conductance of less than 10-7 S/m (Siemens per Meter), such as fuels, solvents, Freon's, and non polar organics which are being transferred at a medium to high flow velocity.

All twin or multi phase media, and any non-mixing, such as powder in air, or water droplets in steam, in gases or in oil, also colloidal fluids constitute a particular hazard for static charge generation, and always require grade AS.

If in any doubt, please contact our technical department.

Design :

AS grade has an anti static PTFE liner manufactured from FDA approved PTFE, and less than 2.5% of "high purity" Carbon Black material to FDA requirement 21 CFR 178.3297. The carbon is encapsulated by the PTFE and in normal, non abrasive applications will not come loose to contaminate any fluid passing through.

Specification :

When "AS" (Antistatic) grade hose is specified, then the hose supplied will be in accordance with the requirements of BS5958 Part 2, 1991 Clause 19.3, when tested in accordance with EN ISO 8031 Clause 3.1, which requires that the resistance between a plug inserted 25mm into the bore at the end of the hose assembly, and one of the metallic end fittings should be less than 10^{9} ohms.

NOTE : When in service, at least one end fitting must be connected to earth to permit dissipation of the static charge from the end fitting.

COMPOSITE / POLYPROPYLENE HOSE (GC)

FLEXIBLE, LIGHT WEIGHT, COMPOSITE HOSE

Application : Composite Hose can handle very wide range of Acids, Chemicals, Petroleum and Refined Oil Products, liquid cargo transfer from barge or ship.

Construction : Composite hoses are constructed from polypropylene, polyamide or polyester films & fabrics. Depending on the applications, outer cover could be of PVC coated polyester fabric, which is abrasive, weather & ozone resistant with galvanized steel, polypropylene coated steel & stainless steel 316 internal and galvanized steel, stainless steel external wire.

Temperature : (-40°C) to 100°C.

Specification : EN 13765 : 2010

Size : 1” to 12”

End Connection : All types of connections duly crimped as per customer requirement.

PTFE LINED COMPOSITE HOSE (GTC)

Application : Corrosive Chemicals / Alkalies.

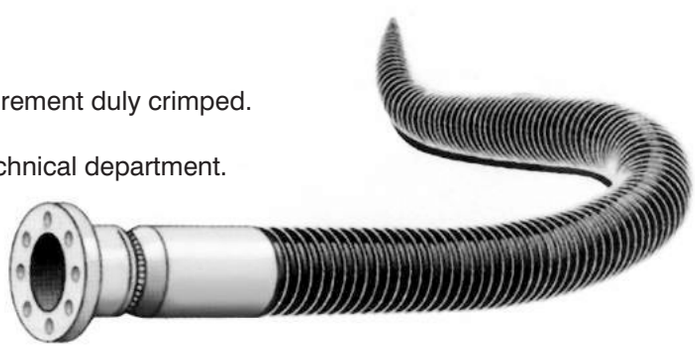
Construction : Same as Composite Hose – Inside Layer shall be PTFE lined.

Temperature : (-40°C) to 120°C. [Hoses upto 316°C can be offered]

Size : 1” to 12”

End Connection : As per customers requirement duly crimped.

For further Information please contact / consult our technical department.



PRESSURE (COMPOSITE / POLYPROPYLENE / PTFE LINED COMPOSITE HOSE)				
	Type 1	Type 2	Type 3	Type 4
Maximum working pressure (bar)	4	10	14	14
Proof pressure (bar)	6	15	21	21
Minimum burst pressure (bar)	16	40	56	56
Vacuum rating (bar)	0.5	0.9	0.9	0.9
Working temperature range (°C)	-20° to +60°	-30° to +80°	-30° to +80°	-30° to +150°

STEAM HOSE

Specification :

As per BS 5122 & IS 10655/ 83.

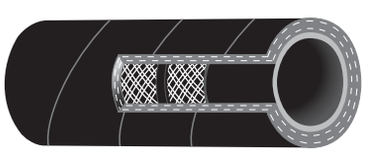
This hose can be supplied also as per BS 796 or BS 924 Type M.

Temperature Of Saturated Steam.

lbf/in²	Gauge Pressure			Temperature	
	kgf/cm²	Atm	Bar	°C	°F
25	1.76	1.70	1.73	130	267
30	2.11	2.04	2.07	134	274
35	2.46	2.38	2.42	138	281
40	2.81	2.72	2.76	141	287
45	3.16	3.06	3.11	144	292
50	3.52	3.40	3.45	148	298
60	4.22	4.08	4.14	153	307
70	4.92	4.76	4.83	158	316
80	5.62	5.44	5.52	162	324
90	6.32	6.12	6.21	166	330
100	7.03	6.80	6.90	170	338

lbf/in²	Gauge Pressure			Temperature	
	kgf/cm²	Atm	Bar	°C	°F
120	8.44	8.16	8.28	177	350
140	9.84	9.52	9.66	182	361
160	11.25	10.88	11.04	188	371
180	12.65	12.24	12.42	193	379
200	14.06	13.60	13.80	198	388
225	15.82	15.30	15.53	203	397
250	17.58	17.00	17.25	208	406
275	19.33	18.70	18.98	212	414
300	21.09	20.40	20.70	216	422
325	22.85	22.10	22.43	221	429
350	24.61	23.80	24.15	225	437

LOW TEMPERATURE STEAM HOSE (TYPE M)



Construction :

Tube	: Heat resistant lining.
Reinforcement	: Suitable textile reinforcement
Cover	: Heat & Abrasion resistant.
Temperature Range	: (-30°C) to 150°C
Steam Pressure	: 5.2 kgf/cm²
Hydraulic Test Pressure	: 25 kgf/cm²
Burst Pressure	: 50 kgf/cm²
End connection	: Swaged, Crimped or Reusable type.

I. D. inches	I. D. mm	O. D. mm	Min. bend radius mm
1/2	12.7	25	120
5/8	15.9	28	160
3/4	19.0	32	190
1	25.4	40	250
1 1/4	31.8	48	320
1 1/2	38.1	54	380
2	50.8	65	500
2 1/2	63.0	83	630
2 3/4	70.0	90	700

Electrical Continuity :

It can be supplied on a special request.

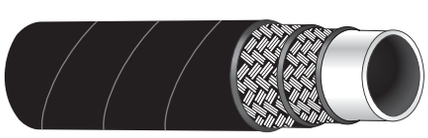
HIGH TEMPERATURE STEAM HOSE – TYPE I (SINGLE WIRE)

Single wire braided

Tube	: Made of heat resistant synthetic rubber
Reinforcement	: One Braid of HTS Wire.
Cover	: Synthetic rubber cover, oil, weather & abrasion resistant.
Temperature	: Upto 200°C
Steam Pressure	: 150 psi or 10 kgf/cm².
Electrical Continuity	**:** Yes
End connection	**:** Swaged, crimped or Reusable type.

I. D. inches	I. D. mm	O. D. mm	Min. bend radius mm
3/16	4.8	12.8	90
1/4	6.4	15.0	100
5/16	7.9	17.1	115
3/8	9.5	20.0	125
1/2	12.7	24.7	180
5/8	15.9	27.9	200
3/4	19.0	31.4	240
1	25.4	38.0	380
1 1/4	31.8	47.2	420
1 1/2	38.1	53.5	510
2	50.8	66.8	635

HIGH TEMPERATURE STEAM HOSE – TYPE II (DOUBLE WIRE)



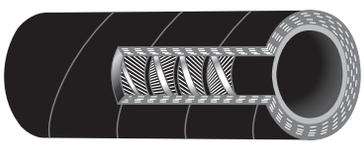
Double wire braided

Tube	: Made of heat resistant synthetic rubber.
Reinforcement	: Two Braid of HTS Wire.
Cover	: Synthetic rubber cover, oil, weather & abrasion resistant.
Temperature	: Upto 200°C
Steam Pressure	: 200 psi
Electrical Continuity	**:** Yes
End connection	**:** Swaged, crimped or Reusable type.

I. D. inches	I. D. mm	O. D. mm	Min. bend radius mm
3/16	4.8	14.8	90
1/4	6.4	17.0	100
5/16	7.9	19.1	115
3/8	9.5	22.0	125
½	12.7	26.7	180
5/8	15.9	29.9	200
3/4	19.0	33.4	240
1	25.4	40.0	380
1 1/4	31.8	50.0	420
1 ½	38.1	56.7	510
2	50.8	70.0	635

OIL SUCTION & DISCHARGE HOSE

LIGHT DUTY (ROAD AND RAIL TANKER HOSE)



Specification : BS 3492/ IS 10733

Construction :

Lining : Resistant to petroleum liquids.
Reinforcement : Cotton textile or synthetic material with G.I. embedded wire.
Cover : Resistant to weather abrasion and petroleum products.
Electrical continuity : By providing anti-static copper wire.
End connection : Normally flanged type or threaded nipple i.e. built in type / vulcanize / crimped / swaged.
Couplings : As per BS 2464 or Lug type or Camlock type Male or Female as per requirement.

I. D. mm	Working pressure 1A & 1B kgf/cm²	Min. bend radius 1A & 1B mm	Working pressure 2A & 2B kgf/cm²	Min. bend radius 2A & 2B mm
32	3.5	130	7.0	190
38	3.5	150	7.0	230
50	3.5	200	7.0	310
63	3.5	260	7.0	380
76	3.5	310	7.0	460
100	3.5	410	7.0	560

Application : Discharging of petrol and diesel oil from tank truck & between tank, trucks & trailers.
Suitable for pressure, vacuum and self discharge. Very low deformation when used for petrol.

Different types of construction in BS 3492

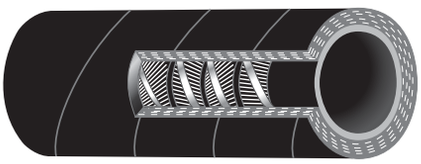
Type 1A :
Rough bore, light weight, maximum flexibility with internal and external wire reinforcement and corrugated outer cover.
Working pressure : 3.5 kgf/cm²
Bursting pressure : 14.0 kgf/cm²
Test pressure : 7.0 kgf/cm²

Type 2A :
Rough bore, medium weight, maximum flexibility with internal and external wire reinforcement and corrugated outer cover.
Working pressure : 7.0 kgf/cm²
Bursting pressure : 28.0 kgf/cm²
Test pressure : 14.0 kgf/cm²

Type 1B :
Smooth bore, light weight and maximum flexibility with fully embedded wire reinforcement and smooth or corrugated outer cover.
Working pressure : 3.5 kgf/cm²
Bursting pressure : 14.0 kgf/cm²
Test pressure : 7.0 kgf/cm²

Type 2B :
Smooth bore, medium weight and maximum flexibility with fully embedded wire reinforcement and smooth or corrugated outer cover.
Working pressure : 7.0 kgf/cm²
Bursting pressure : 28.0 kgf/cm²
Test pressure : 14.0 kgf/cm²

HEAVY DUTY (OIL CARGO HOSE)



I. D. inches	I. D. mm	Min. bend radius mm
2 1/2	63	520
3	76	600
4	102	800
6	152	1200
8	204	1600
10	254	2290
12	305	3050

Specification : BS 1435 or IS 8189

Construction :

Tube : Lining Resistant to petroleum products.

Reinforcement : Multiple plies of textile fabric with GI embedded wire.

Cover : Oil, weather & abrasion resistant.

	Working Pressure	Test Pressure
S. 7 - 0.7mpa	100 psi	150 psi.
S. 10 - 1.0 mpa	150 psi	225 psi
S. 15 - 1.5 mpa	220 psi	310 psi.

There are two types 1. Smooth Bore
2. Rough Bore.

Application :

Loading and discharging of petroleum products on ship with an aromatic content.

Features : Integrally embedded spiral designed for pressure or vacuum.

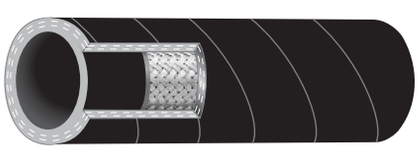
Above hose is suitable for petroleum and all other petroleum products with an aromatic content less than 50%.

For Electrical continuity a braided copper wire is provided.

End Connection :

Flanged type or threaded nipple duly vulcanized in hose or as per purchaser's requirement.

LIQUIFIED PETROLEUM GAS (LPG) HOSE



Specification : IS 9573 / 1980 or BS 4089, BS EN 1762 : 2003.

Construction :

Lining : Suitable rubber compound resistant to liquified petroleum gas.

Reinforcement : The reinforcement shall be of woven textile fabric or braided textile yarn, natural or synthetic or combination of both or braided with HTS wire.

Cover : The cover shall be of rubber compound resistant to abrasion, weather, ozone and petroleum fuel.

Sizes : The hoses are available from 8 mm to 75 mm.

End Connection : Flanged or threaded type.

Application :

This hose is suitable for use in LPG vapour phase and LPG/Air installations. This hose can also be put to wet use i.e., permanently filled with liquid and in the temperature range from 0°C to 40°C.

Test : Internal Hydraulic Burst Pressure 100 Kgf/cm^2

Electrical Continuity : Can be provided on a special request.

CHEMICAL HOSE

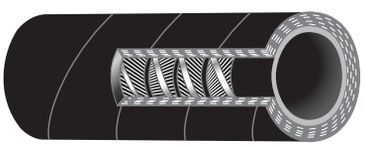
SUCTION AND DISCHARGE HOSE (GCS)

Specification : IS 7654 / 1975

Types :

Type I

Conveying diluted chemicals



Construction :

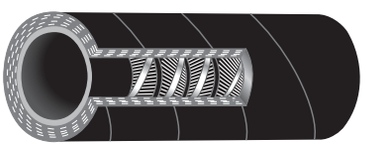
Tube : Natural Rubber.

Reinforcement: Multiple plies rubber impregnated strong woven fabric with helical steel wire, full-vacuum and discharge pressure, that vary according to size. Flexible construction keeps hose round when bent, reducing kinking and damaging.

Cover : Black outer rubber cover resists abrasion, sunlight and weather.

Type II

Conveying concentrated chemicals.



Tube : Hypalon

Reinforcement: Multiple plies rubber impregnated strong woven fabric with helical steel wire, full-vacuum and discharge pressure, that vary according to size. Flexible construction keeps hose round when bent, reducing kinking and damaging.

Cover : Hypalon resists abrasion, sunlight and weather.

Application :

For suction and discharge service handling many inorganic acids, except strong oxidizing agent. Withstands most salts and alkalies.

End Connection : Couplings must be selected for corrosion and pressure.

For special application, alternate construction can be supplied.
Tube : Nitrile, Neoprene, Butyl, SBR, EPDM, Thiokol.
Cover : Nitrile, Neoprene, Butyl, SBR, EPDM, Thiokol.

I.D. inches	I.D. mm	No. of plies	Working Pressure psi	Min. bend radius mm
3/4	20	4	150	160
1	25	4	150	200
1 1/4	32	4	150	250
1 3/8	35	4	150	280
1 1/2	38	4	100	300
1 3/4	45	4	100	360
2	50	4	100	400
2 1/2	63	4	100	500
2 3/4	70	4	100	560
3	75	4	100	600
3 1/2	88	4	100	700
4	100	4	100	800
4 1/2	113	5	100	900
5	125	5	100	1000
6	150	6	100	1200
8	200	6	100	1600

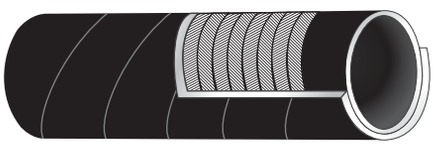
DELIVERY (ACID AND ALKALI HOSE) (GCD)

Specification : IS 7654 / 1987

Types :

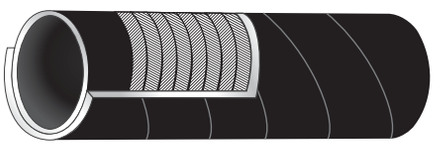
Type I

Conveying diluted chemicals



Type II

Conveying concentrated chemicals.



Construction :

Tube : Natural Rubber.

Reinforcement: Multiple plies rubber impregnated strong woven fabric or yarn braided.

Cover : Black outer rubber cover resists abrasion, sunlight and weather.

Ends : The ends of the hose in length shall be securely sealed with rubber, 1.5 mm in thickness to prevent liquids coming into contact with the fabric reinforcement.

Tube : Hypalon

Reinforcement: Multiple plies rubber impregnated strong woven fabric or yarn braided.

Cover : Hypalon resists abrasion, sunlight, weather and ozone.

Ends : The ends of the hose in length shall be securely sealed with rubber, 1.5 mm in thickness to prevent liquids coming into contact with the fabric reinforcement.

End Connection : Couplings must be selected for corrosion and pressure.

For special application alternate construction can be supplied.

Tube : Nitrile, Neoprene, Butyl, SBR, EPDM, Thiokol.

Cover : Nitrile, Neoprene, Butyl, SBR, EPDM, Thiokol.

I.D. inches	I.D. mm	No. of plies	Working Pressure psi
3/4	20	4	150
1	25	4	150
1 1/8	28	4	150
1 1/4	31	4	150
1 3/8	35	4	150
1 1/2	38	4	100
1 3/4	45	4	100
2	50	4	100
2 1/4	56	4	100
2 1/2	63	4	100
2 3/4	70	4	100
3	76	4	100
3 1/2	88	4	100
4	100	4	100
5	125	5	100
6	150	6	100

PHOSPHORIC ACID SUCTION & DISCHARGE HOSE (GPS)

Construction :

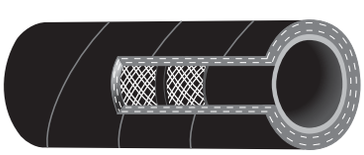
Tube	:	Lining resistant to phosphoric acid & gypsum.
Reinforcement	:	Several special high tensile textile fabric plies embedded with G.I. wire for suction & pressure loading, fitted with a rubber flange or with a rubber collar backing with steel flanges.
Cover	:	Heat, weather & abrasion resistant.
Maximum I.D.	:	300mm.
Temperature	:	150°C.
MBR	:	8 multiply by dia.

Application :

These hoses are very flexible allowing full flow. Abrasion & acid resistant available with or without wire reinforcement. Wire reinforcement type has coil of steel wire buried in hose to keep it from collapsing under full suction. Used in both suction & discharge hose. Flanged ends are drilled to bolt to companion flange using standard flat faced flanges. They provide a tight seal without a gasket since the flanges rotate freely. Alignment of bolt holes is easy, reducing installation time to minimum.

Working pressure : 3.5 kgf/cm² Type – I
: 5.0 kgf/cm² Type - II
: 10.0 kgf/cm² Type - III

CARBON FREE HOSE (GCF)



Construction :

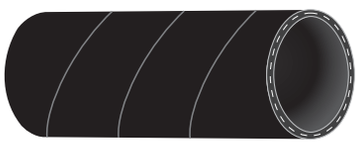
Lining	:	Carbon free made from synthetic rubber having white wall.
Reinforcement	:	Cotton textile fabric.
Cover	:	Abrasion, weather & heat resistant.
Temperature	:	Upto 150°C.
Working Pressure	:	10 Kgf/cm².

Carbon free hoses are available in red, blue or green colour for identification.

I. D. inches	I. D. mm	No. of Braids	No. of Plies	Min. bend radius mm
1/2	12.5	2	3	100
3/4	20.0	2	3	160
1	25.0	2	3	200
1 1/4	31.5	3	4	252
1 3/8	35.0	3	4	280
1 1/2	38.0	3	4	304
1 3/4	45.0	3	4	360
2	50.0	4	5	400
2 1/4	55.0	4	5	440
2 1/2	63.0	4	6	504
2 3/4	70.0	4	6	560
3	75.0	4	6	600
-	90.0	-	6	720

BREWERY & CREMERY HOSE (GBC)

FOOD, JUICE, MILK, DAIRY & CLEANING HOSE



Construction :

Tube	:	White smooth oil resistant synthetic rubber.
Reinforcement	:	Synthetic textile.
Cover	:	Blue, red or green oil resistant synthetic rubber.
Inside Diameter	:	Upto 300 mm.
Working Pressure	:	7 Kgf/cm².

Application :

Cleaning within food industry. It is used where hot water and cleaning solutions are necessary.

Transport of food : Vegetable oil, grease, beer, wine, milk, cream etc.

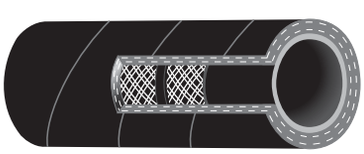
Tube	:	White smooth oil resistant synthetic rubber.
Reinforcement	:	Synthetic textile.
Spiral	:	Galvanized Steel.
Cover	:	Blue, red or green oil resistant rubber.
Inside Diameter	:	Upto 300 mm.
Working Pressure	:	7 Kgf/cm².
Vacuum	:	625 mm of Hg

Application :

Pressure and suction hose for vegetable oil, grease, beer, wine, milk, cream, juice etc.

Used as mainly tank truck hose.

CABLE / FURNACE COOLANT HOSE (GFC)



Construction :

Tube	: Synthetic Rubber.
Reinforcement	: Textile reinforcement.
Cover	: Cover can be provided with suitable material duly vulcanized or suitable yarn braiding is provided.
Temp. Range	: Upto 100°C.

This hose can be supplied in 3 types

1. Working Pressure 10 kgf/cm²
2. Working Pressure 15 kgf/cm².
3. Working Pressure 30 kgf/cm².

I. D. inches	I. D. mm	O. D. mm	Min. bend radius mm
1/2	12.5	23	110
3/4	19.0	32	170
1	25.4	38	225
1 1/4	31.5	45	285
1 3/8	35.0	48	315
1 1/2	38.0	53	345
1 3/4	45.0	58	405
2	50.0	63	450
2 1/4	55.0	75	495
2 1/2	63.0	83	565
2 3/4	70.0	90	630
3	76.0	96	685
-	90.0	110	800

Application :

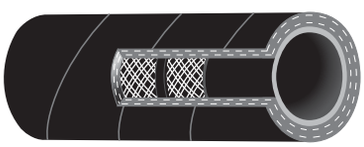
Used as Industrial Cooling hose for melting furnaces at steel works, glass works, foundries etc.

AIR, PNEUMATIC, ROCK DRILL HOSE

Specification :

IS : 446 / 1980 (Amalgamated revision of IS : 446 / 1968 covering both textile woven and braided construction) or IS 911.

IS 446/87 - TYPE I, II & III



Construction :

Air Hose, Pneumatic Hose	**Rock Drill Hose**
Lining: Rubber lining shall be free from porosity, air-blisters and any other visible defects.	Lining: Rubber lining shall be resistant to oil mist.
Reinforcement :	Shall be either woven fabric well rubberized on both sides or braided textile reinforcement with yarn, natural or synthetic or combination of both.
Cover :	The outer cover shall be of high tensile abrasion resistant compound.

Availability of Sizes & Reinforcement Recommendation

I. D. mm	Type I		Type II		Type III	
	Wov.	Br.	Wov.	Br.	Wov.	Br.
5.0	2 Ply	1 Br.	2 Ply	1 Br.	3 Ply	1 Br.
6.3	2	1	2	1	3	1
8.0	2	1	3	1	3	1
10.0	2	1	3	1	4	1
12.5	2	1	3	2	4	2
16.0	2	1	3	2	4	2
20.0	3	1	4	2	5	2
25.0	4	2	5	2	6	3
31.5	4	2	5	3	6	3
38.0	4	2	5	3	7	3
50.0	-	-	6	3	-	-

50 mm & above sizes in Type I, II, III are supplied as per request.

Types :

There are 3 types of hoses

TYPE I : Air hose for a working pressure 7 Kgf/cm^2.

TYPE II : Pneumatic Tool hose for a working pressure 10 Kgf/cm^2.

TYPE III : Rock Drill hose for a working pressure of 14 Kgf/cm^2

Test :

The hoses will undergo hydraulic test as per following :

Type I : Air Hose, Maximum burst pressure 28 Kgf/cm^2.

Type II : Pnuematic Hose : Maximum burst pressure 40 Kgf/cm^2.

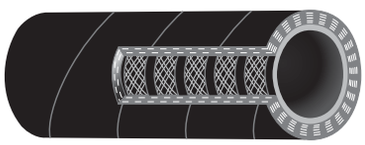
Type III : Rock Drill Hose : Maximum burst pressure of 56 Kgf/cm^2.

Application :

These hoses are used for various applications like general construction work, road building, tunneling, in construction jobs used with chipping, grinding and riveting appliances; in Service for tyre inflation, for rock drilling applications in mine, and quaries etc.

SAND / SHOT BLASTING & CEMENT GROUTING HOSE (GSC)

Specification : IS 6417 or IS 5137



Construction :

Tube	:	Highly abrasion resistant rubber
Reinforcement	:	Textile reinforcement.
Cover	:	Weather and abrasion resistant.
Electrical continuity	:	can be provided on request.

Different Types

Table :

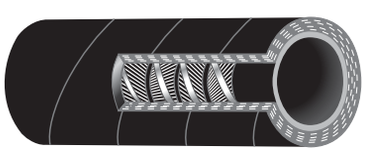
TYPE I : W.P.	7 Kgf/cm²	B.P. 35 Kgf/cm²
TYPE II: W.P.	10 Kgf/cm²	B.P. 50 Kgf/cm²
TYPE III: W.P.	14 Kgf/cm²	B.P. 70 Kgf/cm²

I. D. inches	I. D. mm	O. D. mm	Min. bend radius mm
3/4	19.0	40	170
1	25.4	46	200
1 1/4	31.5	55	230
1 1/2	38.0	60	285
2	50.0	73	450
2 1/2	63.0	87	570
3	76.0	98	700
4	102.0	125	920

Application :

For cleaning and blasting of castings, metal, stone and concrete surface.

SAND AND GRAVEL HOSE (GSG)



Construction :

Tube	:	Wear or abrasion resistant
Reinforcement	:	Cotton textile reinforcement, fully embedded G.I. steel wire.
Cover	:	Abrasion & weather resistant.

End Connection : Flanged type or as per Client's requirements.

I. D. Inches	I. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
2	51.0	100	150	450
2 1/2	63.0	100	150	560
3	76.0	75	110	690
3 1/2	90.0	75	110	810
4	100.0	75	110	900
5	125.0	75	110	1100
6	152.0	75	110	1500
8	204.0	75	110	1850
10	250.0	75	110	2250

Application :

Extraction and transport of abrasive materials such as Sand, Gravel, Rock, Sludge, Powder, etc.

WATER SUCTION HOSE

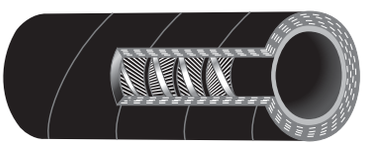
LIGHT DUTY

Specification :

Equivalent to IS 2482 of 1982 (Light) There are two types of Hoses in this specification

Type I - Smooth Bore.

Type II - Rough Bore (Semi – embedded)



Construction :

Type : I

Rubber Lining
One ply of rubber impregnated fabric
Spiral wire.
Rubber Filler.
Plies of rubber impregnated fabric & rubber cover.

Type : II

Semi-embedded internal wire.
Rubber Lining.
Rubber Filler.
Plies of rubber impregnated fabric & rubber cover.

Availability Of Sizes :

I. D. inches	I. D. mm	No. of Plies	Max. discharge pressure kgf/cm^2
1	25	3	2
1 1/4	32	3	2
1 1/2	38	3	2
1 3/4	45	3	1.5
2	50	4	1.5
2 1/4	56	4	1.5
2 1/2	63	4	1
3	75	5	1
3 1/2	88	6	1
4	100	6	1
5	125	6	1
6	150	6	1
8	200	6	1

Higher sizes can also be supplied but not covered under IS specifications.

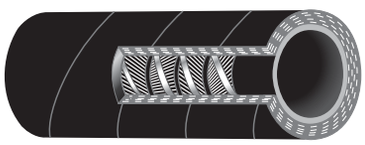
Application :

These hoses are used on Agricultural Pump Sets and other Water pumps.

PROJECT QUALITY DOUBLE ARMOURED - HEAVY DUTY

Specification :

EQUIVALENT TO IS-3549 of 1983.



Construction :

ROUGH BORE HOSE

Galvanized mild steel internal wire.
One ply of Rubber impregnated woven fabric.
Rubber Lining.
Plies of Rubberised cotton fabric.
Galvanized mild steel embedded wire.
Rubber Filler.
Plies of Rubber Impregnated Woven.
Cotton Fabric.
Rubber Cover.

SMOOTH BORE HOSE

Rubber Compound Lining.
Ply or plies of Rubberised textile fabric.
Galvanized mild steel embedded wire.
Rubber filler
Ply or plies or rubberised textile fabric
Embedded wire.
Rubber Cover.

End Connection : Flanged type or Threaded nipple, built in & vulcanized in hose.

Application :

These hoses are used on High Pressure Water Pumps required in various project like Irrigation, Coal Mines, Steel Plants, Railways Industries etc.

Availibility Of Sizes & Recommended Pressures :

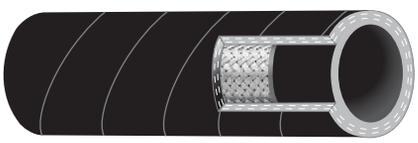
I. D. inches	I. D. mm	No. of plies	Discharge Pressure Kgf/cm^2	Vacuum Max. mm of Hg
2	50	3	7	-
2½	63	4	7	-
3	75	5	7	-
4	100	6	5	-
5	125	7	5	625
6	150	8	5	-
8	200	10	5	-
10	250	12	5	-
12	300	16	5	-

Above 75mm, hoses can be supplied in longer lengths but not covered under I.S. specifications.
These hoses are supplied with internal & external armour.

HIGH PRESSURE HYDRAULIC HOSE

SAE – 100 R1 / EN 853 1SN/ DIN 20022 1SN

Specification :
Conforming to Std. SAE – 100 R1



Construction :

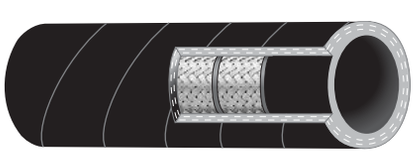
Tube : Seamless oil resistant.
Reinforcement : One braid of HTS Wire.
Cover : Oil, weather & abrasion resistant.
Temperature : (- 40°C) to 120°C.
End Connection : Swaged or Crimped or Reusable type.

I. D. Inches	I. D. mm	O. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
3/16	4.8	11.8	3000	6000	89
1/4	6.4	13.4	2750	5500	102
5/16	7.9	15.0	2500	5000	114
3/8	9.5	17.4	2250	4500	127
13/32	10.3	18.9	2250	4500	140
1/2	12.7	20.5	2000	4000	178
5/8	15.9	23.7	1500	3000	203
3/4	19.0	27.7	1250	2500	241
7/8	22.2	31.8	1125	2250	279
1	25.4	35.6	1000	2000	305
1 1/4	31.8	44.8	625	1250	419
1 1/2	38.1	50.6	500	1000	508
2	50.8	64.1	375	750	635

Application :
For high pressure hydraulic oils, fuel, lubricating oils, water and air.

SAE – 100 R2 / EN 853 2SN / DIN 20022 2SN

Specification :
Conforming to Std. SAE – 100 R2.



Construction :

Tube : Seamless oil resistant.
Reinforcement : Two braids of HTS wire.
Cover : Oil, weather & abrasion resistant.
Temperature : (-40°C) to 120°C.
End Connection : Swaged or Crimped or Reusable type

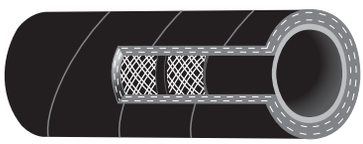
I. D. Inches	I. D. mm	O. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
3/16	4.8	14.1	5000	10000	89
1/4	6.4	15.7	5000	10000	102
5/16	7.9	17.3	4250	8500	114
3/8	9.5	19.7	4000	8000	127
1/2	12.7	23.1	3500	7000	178
5/8	15.9	26.3	2750	5500	203
3/4	19.0	30.2	2250	4500	241
7/8	22.2	33.4	2000	4000	279
1	25.4	38.9	2000	4000	305
1 1/4	31.8	49.6	1650	3250	419
1 1/2	38.1	56.5	1250	2500	508
2	50.8	68.6	1125	2250	635

Application :
For high pressure hydraulic oils, fuel, lubricating oils, water and air.

SAE – 100 R3

Specification :

Conforming to std. SAE – 100 R3 / EN 854 R 3



Construction :

Tube	:	Seamless oil resistant.
Reinforcement	:	Two braids of suitable textile yarn.
Cover	:	Oil & Weather resistant.
Temperature	:	(-40°C) to 90°C.
End Connection	:	Swaged or Crimped or Reusable type.

I. D. Inches	I. D. mm	O. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
3/16	4.8	12.7	1500	3000	76
1/4	6.4	14.3	1250	2500	76
5/16	7.9	17.5	1200	2400	102
3/8	9.5	19.0	1125	2250	102
1/2	12.7	23.8	1000	2000	127
5/8	15.9	27.0	875	1750	140
3/4	19.0	31.8	750	1500	152
1	25.4	38.1	565	1125	203
1 1/4	31.8	44.5	375	750	254
1 1/2	38.1	50.8	250	500	305

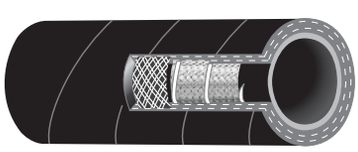
Application :

Hydraulic oil, fuel, lubricating oil, anti-freeze solutions and water.

SAE – 100 R4

Specification :

Conforming to std. SAE – 100 R4

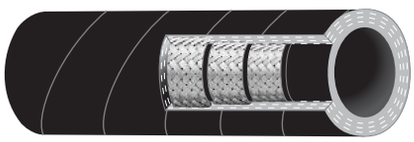


Construction :

Tube	:	Seamless oil resistant.
Reinforcement	:	Consisting of braided textile fibres with a suitable spiral of helical wire.
Cover	:	Synthetic rubber, Oil, Weather and Abrason Resistant.
Vacuum	:	25” Hg.
Temperature	:	(-40°C) to 110°C.
End Connection	:	Swaged or Crimped or Reusable type.

I. D. Inches	I. D. mm	O. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
3/4	19.0	34.9	300	600	127
1	25.4	41.3	250	500	152
1 1/4	31.8	50.8	200	400	203
1 1/2	38.1	57.2	150	300	254
2	50.8	69.9	100	200	305

TRIPLE WIRE BRAIDED HOSE



Construction :

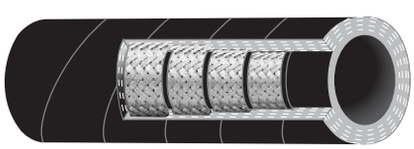
Tube : Seamless oil resistant.
Reinforcement : Three Braids of HTS wire.
Cover : Oil and weather resistant.
Temperature : (-40°C) to 100°C
End Connection : Swaged or Crimped or Reusable type.

Application :

For extra high pressure hydraulic oil, fuel, lubricating oil, water and air.

I. D. Inches	I. D. mm	O. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
3/16	4.8	16.1	6250	12500	127
1/4	6.4	17.9	6250	12500	127
5/16	7.9	20.2	5500	11000	140
3/8	9.5	22.5	5250	10500	152
1/2	12.7	25.8	4750	9500	203
5/8	15.9	29.5	4250	8500	254
3/4	19.0	34.0	3500	7000	280
1	25.4	41.5	3200	6400	330
1 1/4	31.8	50.8	2500	5000	432
1 1/2	38.1	57.5	2000	4000	533
2	50.8	70.7	2000	4000	673

FOUR PLY SPIRAL HOSE



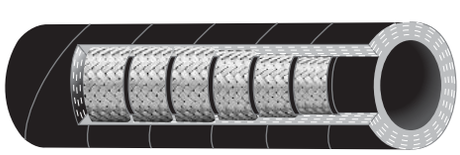
Specification :

Conforming to SAE 100 R12 / EN 856 R12

Hose construction consists of seamless rubber liner, four spirally wound steel wire ply reinforcement, wrapped in alternative directions and oil, weather and temperature resistant synthetic rubber cover.

I. D. Inches	I. D. mm	O. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
3/8	9.5	19.95	16000	24000	125
1/2	12.7	23.55	16000	24000	175
3/4	19.0	30.70	16000	24000	240
1	25.4	38.00	16000	24000	300
1 1/4	31.8	47.00	12000	18000	415
1 1/2	38.1	53.45	10000	15000	500
2	50.8	66.70	10000	15000	635

SIX PLY SPIRAL HOSE



Specification :

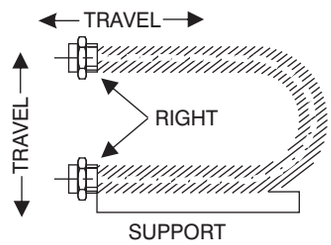
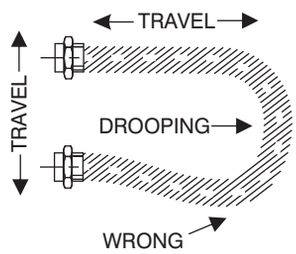
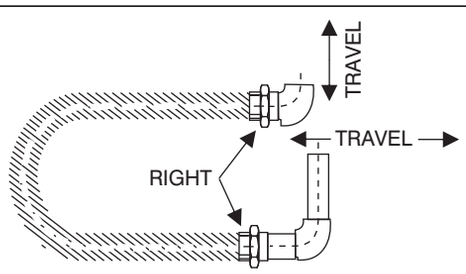
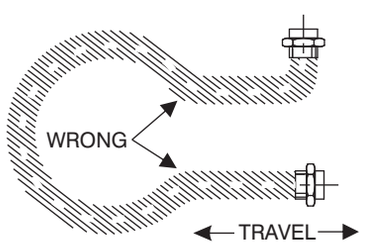
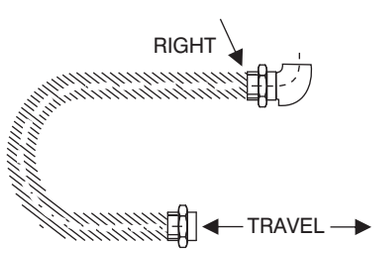
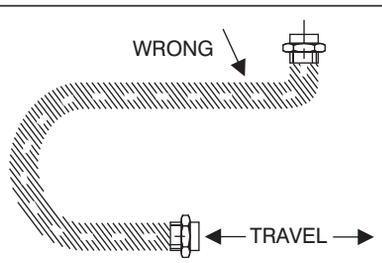
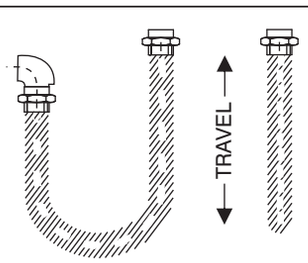
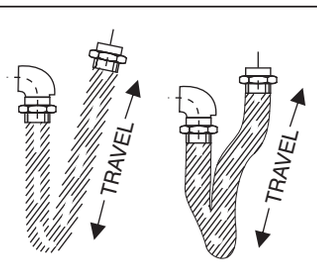
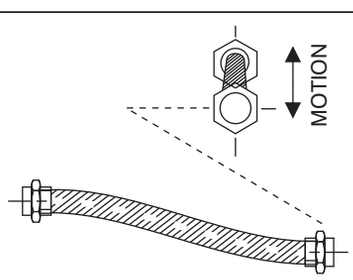
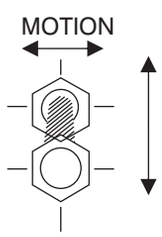
Conforming to SAE 100 R13 / EN 856 R13

Hose construction consist of a seamless synthetic rubber liner with six plies of spirally wound steel reinforcement conforming to the requirements.

I. D. Inches	I. D. mm	O. D. mm	Working pressure psi	Test pressure psi	Min. bend radius mm
1 1/4	31.8	48.35	5750	8625	610
1 1/2	38.1	56.35	5250	7875	710
2	50.8	71.45	5000	7500	915

INSTALLING FLEXIBLE METAL HOSE

To assure maximum service life, the following precaution should be adhered to when installing a flexible metal hose assembly.

CORRECT	INCORRECT
	
	
	
	
	

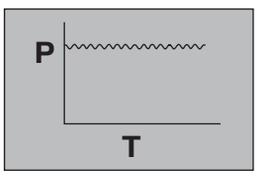
- Avoid Over bending
- Avoid Improper Handling
- Avoid Torque and Twisting.

MODES OF MOVEMENT & MOTION - FLEXIBLE HOSE

FLEXIBLE HOSES ARE USED FOR THE FOLLOWING MODES OF MOVEMENT.

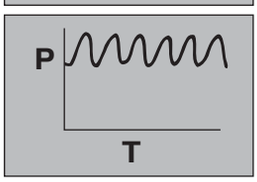
1. STATIC INSTALLATIONS : Where the Flexible hose is used to connect pipe work out of alignment and remain in static position.
2. OCCASIONAL FLEXING : When the hose is only required to flex occasionally, such as manual handling.
3. CONSTANT FLEXING : When the hose is required to flex continuously, usually on moving machinery.
4. VIBRATION : High frequency, Low amplitude movement, i.e. on a compressor.

PRESSURE - FOUR EFFECTS



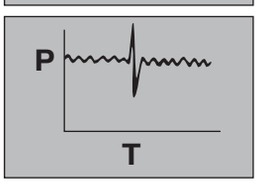
SYSTEM PRESSURE :

System pressure is the first factor considered in selecting a hose or wall thickness. Where significant pressure fluctuations are not present, a standard hose may be selected by choosing one rated at a pressure equal to or greater than your nominal operating pressure.



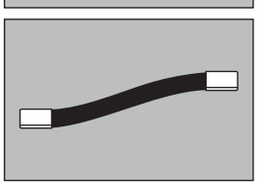
PULSATING PRESSURE :

Pulsating pressure is a continuous rippling pressure superimposed on the operating pressure. If the pulsations are significant it is proper to provide margin in selecting the rated pressure for a standard hose.



SURGE PRESSURE :

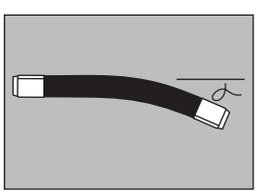
Surge pressure usually occurs during system start up, shut down and rapid valve closure. It is proper to consider the possibility of surge pressure and to provide adequate margin.



FLEXIBILITY :

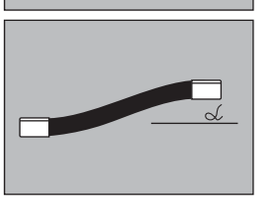
Logically, increasing pressure requires a heavier wall and braid tightens the braid grip increasing hose stiffness proportionately. As covered in the vibration section the tightening of the braid is valuable in controlling vulnerability by providing necessary damping.

HOSE MOTION – THREE TYPES



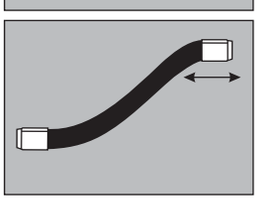
ANGULAR MOTION :

Occurs when one end of the hose is held fixed and the other is deflected in an arc.



OFFSET MOTION :

Occurs when one end of the hose is fixed and the other end is offset but remains parallel to the fixed end. Do not allow this motion to stretch the hose. Use a stress relief loop or equivalent to provide slack.



AXIAL MOTION :

Occurs when one end of the hose is held and the other end of the hose is deflected along the axis of the hose. This type of motion should only be applied to unbraided annular hose or to braided hose where a stress relief loop or offset is provided so that the motion is only locally axial and the hose is not stretched or compressed.

FIRE WATER FOAM HOSE REEL

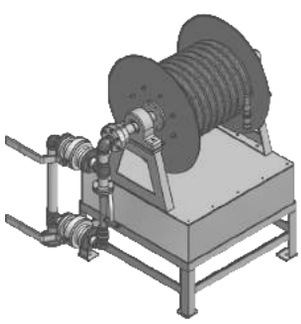
Water supply through the center of the hose reel. Oil resistant, antistatic rubber hose with working pressure 20 bar. Nozzle 200 LPM (95 GPM nozzle) foam eductor adjustable for 0 – 6% mixture of foam concentrate. 2" SST isolation valve.

Water inlet 2" BSP female thread. 1:3 gearing device with hand crank. Foam tank stainless steel AISI 316L. Design Temp. 0 to 35 Degree C. Hose Reel of galvanized steel. Waterways can be made of gunmetal / SS / Cupro- nickel, Titanium grade 2. Working pressure 3- 10 Bar. Color – RAL 3000 red.

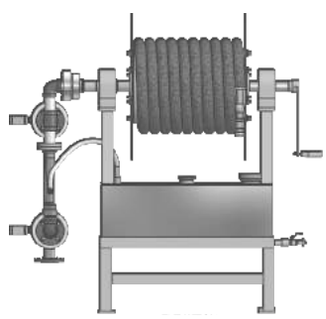
Option

Piping Cu 90/10 with Alubronze valve or Super Duplex Stainless Steel. Foam eductor – Alubronze Super Duplex Stainless Steel or Titanium.

For any other special material requirement, kindly contact our technical department.



ISOMETRIC VIEW



ELEVATION

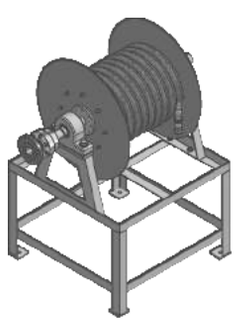
UTILITY HOSE REEL

Galvanized welded steel hose reel drum with single length non collapsible, non-kinkable hose. Externally coated with oil and abrasion resistant material to protect them from sunlight or mild dew damage with end connections.

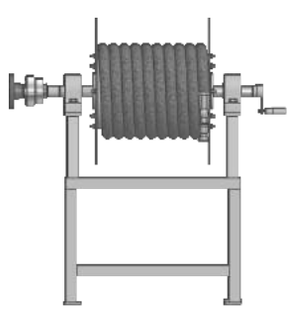
Hose reel assembly shall be mounted on a frame.

Nozzles made of chrome plated brass, 95 GPM capacity.

For Hose and Hose Reel Size or any other specific requirement, kindly contact our technical department.



ISOMETRIC VIEW



ELEVATION

HOSE SIZE & THREAD SIZE SELECTION CHART

FOR ALL TYPES OF HOSE

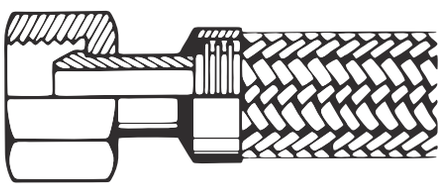
Hose Size inches	mm/ nw	Corresponding Thread				Stand Pipe		NPTF*	
		BSP inches	NPT inches	SAE inches	Metric	Pipe dia mm	Length mm	Thread inches	TPI
3/16	4	1/4	1/4	7/16 20 UNF	M 12 x 1.5 M 16 x 1.5	6 8	20 22	1/8 1/4	27 18
1/4	6	1/4	1/4	7/16 20 UNF 1/2 20 UNF 9/16 18 UNF 5/8 18 UNF	M 14 x 1.5 M 16 x 1.5 M 18 x 1.5	8 10 12	22 24 25	1/8 1/4 3/8	27 18 18
5/16	8	3/8	3/8	1/2 20 UNF 9/16 18 UNF 5/8 18 UNF	M 16 x 1.5 M 20 x 1.5	10 12	24 25	1/4 3/8	18 18
3/8	10	3/8 1/2	3/8 1/2	1/2 20 UNF 9/16 18 UNF 3/4 16 UNF 7/8 14 UNF	M 18 x 1.5 M 22 x 1.5	12 14 10	25 27 24	1/4 3/8 1/2	18 18 14
1/4	13	1/2	1/2	9/16 18 UNF 3/4 16 UNF 7/8 14 UNF 1 1/16 12 UNF	M 22 x 1.5 M 24 x 1.5 M 26 x 1.5	15 16 18 20	25 30 25 32	3/8 1/2 3/4	18 14 14
5/8	16	5/8 3/4	3/4	3/4 16 UNF 7/8 14 UNF 1 1/16 12 UNF	M 26 x 1.5	18 20	25 32	3/4	14
3/4	20	3/4 1	3/4 1	7/8 14 UNF 1 1/16 12 UNF 1 3/16 12 UNF 1 5/16 12 UNF	M 30 x 1.5 M 30 x 2.0 M 36 x 2.0	22 25	25 34	3/4 1	14 11 1/2
1	25	1 1 1/4	1 1 1/4	1 5/16 12 UNF 1 5/8 12 UNF	M 38 x 1.5 M 42 x 2.0	28 30	25 or 40 36 40	1	11 1/2
1 1/4	32	1 1/4 1 1/2	1 1/4 1 1/2	1 5/8 12 UNF 1 7/8 12 UNF	M 45 x 1.5 M 52 x 1.5	38 30 35	38 35 30	1 1/4	11 1/2
1 1/2	38	1 1/2 2	1 1/2 2	1 7/8 12 UNF 2 1/4 12 UNF 2 1/2 12 UNF	M 52 x 1.5 M 52 x 2.0	42 50	36 70	1 1/2 2	11 1/2 11 1/2
2	50	2 2 1/2	2 2 1/2	2 1/2 12 UNF	M 65 x 2.0	-	-	2	11 1/2
2 1/2	63	2 1/2 3	2 1/2 3	3 12 UNF	M 78 x 2.0	-	-	-	-
3	76	3	3	-	M 100 x 2.0	-	-	-	-

Note: The National Pipe Tapered Thread for fuels is a dryseal thread used for both male and female ends. The interference crest and root fit of the mating threads produces the seal. (This thread should not be confused with American Standard NPT thread which does not produce crest and root seal).

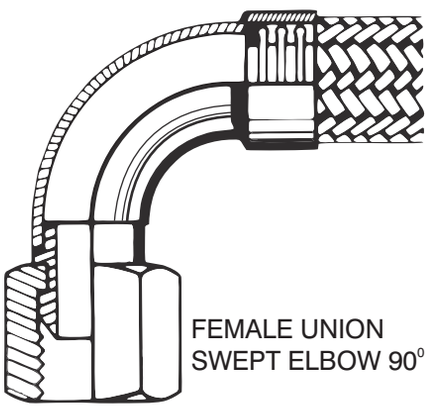
STANDARD END CONNECTIONS FOR 'CONVOFLEX' SS CORRUGATED FLEXIBLE METAL HOSE

FIXED MALE CONNECTOR

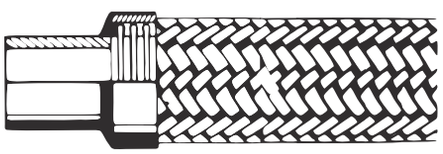
FIXED FEMALE CONNECTOR



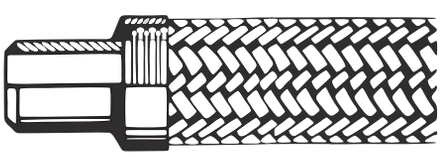
SWIVEL FEMALE UNION



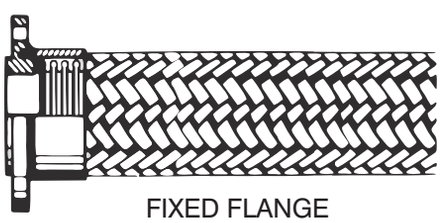
FEMALE UNION
SWEPT ELBOW 90^{0}



STAND PIPE

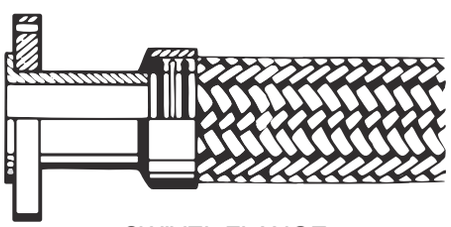


PIPE END

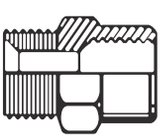


FIXED FLANGE

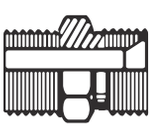
FIXED FLANGE ON PIPE END



SWIVEL FLANGE



MALE/FEMALE
THREADED ADAPTOR



MALE/FEMALE
THREADED ADAPTOR

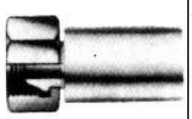
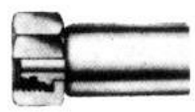
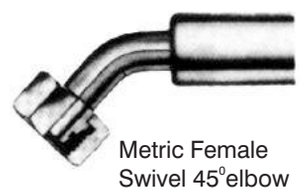
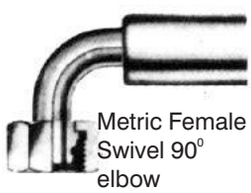
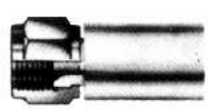
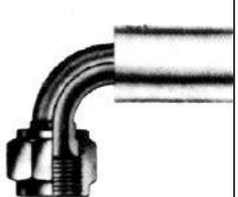
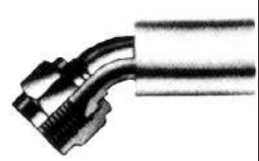
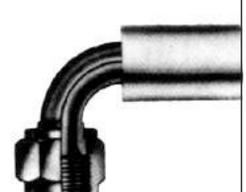
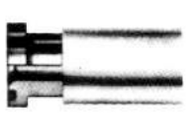
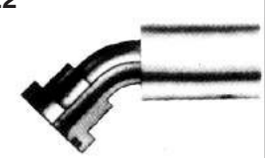
Material of End Connection: M. S. Carbon Steel, Brass, G. M., SS 304/304L/316/316L/321.

Type of End Connection : Threaded type (BSP, BSPT, NPT, NPTF, METRIC, SAE, JIC)

Flange : As per ASME, BS , ASA, DIN, Slipon, Weldneck, RTJ or as per Client's requirement.

Connections : Argon or Tig Welding or Brazed.

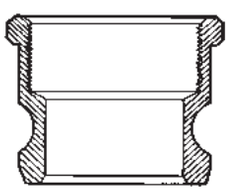
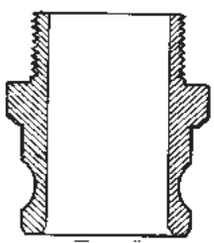
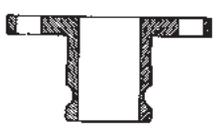
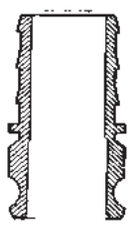
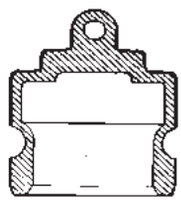
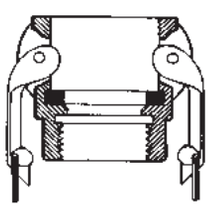
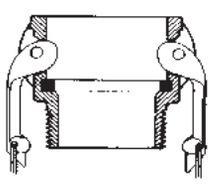
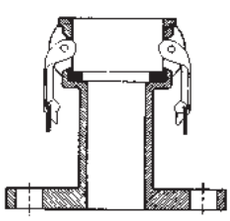
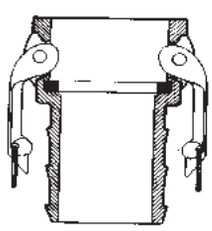
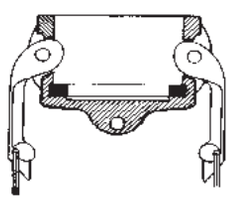
END FITTINGS FOR PTFE, HYDRAULIC & RUBBER HOSE

G1  Metric Female Swivel	**G2**  Metric Female Swivel 45°elbow	**G3**  Metric Female Swivel 90°elbow	**G4**  BSP Female Swivel
G5  BSP Female Swivel 45°elbow	**G6**  BSP Female Swivel 90°elbow	**G7**  Metric Female Swivel with 'O' ring	**G8**  Metric Female Swivel 45°elbow with 'O' ring
G9  Metric Female Swivel 90° elbow with 'O' ring	**G10**  Male BSP with 60°Flare	**G11**  Male with metric thread mating	**G12**  Male NPTF
G13  Male SAF with 45°taper	**G14**  Male JIC with 37°taper	**G15**  Female Swivel JIC	**G16**  Female Swivel JIC 45°elbow
G17  Female Swivel JIC 90°elbow	**G18**  Female Swivel SAE	**G19**  Female Swivel SAE 45°elbow	**G20**  Female Swivel SAE 90°elbow
G21  SAE split flange	**G22**  SAE split flange 45°	**G23**  SAE split flange 90°	**G24**  Stand pipe

CAMLOCK COUPLINGS (GCC)

Design Principle :

The principle behind the design of Camlock Coupling is simple. Pivot pins for coupler cam arms which lock into the adaptor groove are located so that when line pressure attempts to force the camlock coupler and adaptor apart, the bottom edge of the adaptor groove pushes with equal pressure against the under edge of the cam arms, increasing the locking action. When properly coupled, line pressure will not separate a camlock connection within recommended pressure limits.

ADAPTOR Female Thread GAFT 	**ADAPTOR Male Thread GAMT** 	**ADAPTOR Pipe Flange GAPF** 	**ADAPTOR Hose Shank GAHS** 	**ADAPTOR Dust Plug GADP** 
COUPLER Female Thread GCFT 	**COUPLER Male Thread GCMT** 	**COUPLER Pipe Flange GCPF** 	**COUPLER Hose Shank GCHS** 	**COUPLER Dust Cap GCDC** 

End Connection : Socket Weld, Hose thread, Pipe thread, Hose shank and Flanged.

Sizes : ½" to 6"

Working Pressure : Upto 500psi.

Temperature : The coupling can handle fluids from (-40°C) to 250°C with right selection of body material and Gasket.

Materials :

Body : (1) Available in Aluminium, Carbon Steel, Brass, SS304 & SS316, Polypropylene, super duplex SS, Aluminium Bronze, Inconel and other exotic material as per clients requirements

(2) Available in casting of carbon steel grade WCB or I.S. 1030, Gunmetal grade LG2C, Aluminium Bronze grade AB2C, SS 304 with c.f. 0.03 & SS316 with c. f. 0.08.

(3) Available with PTFE Lining

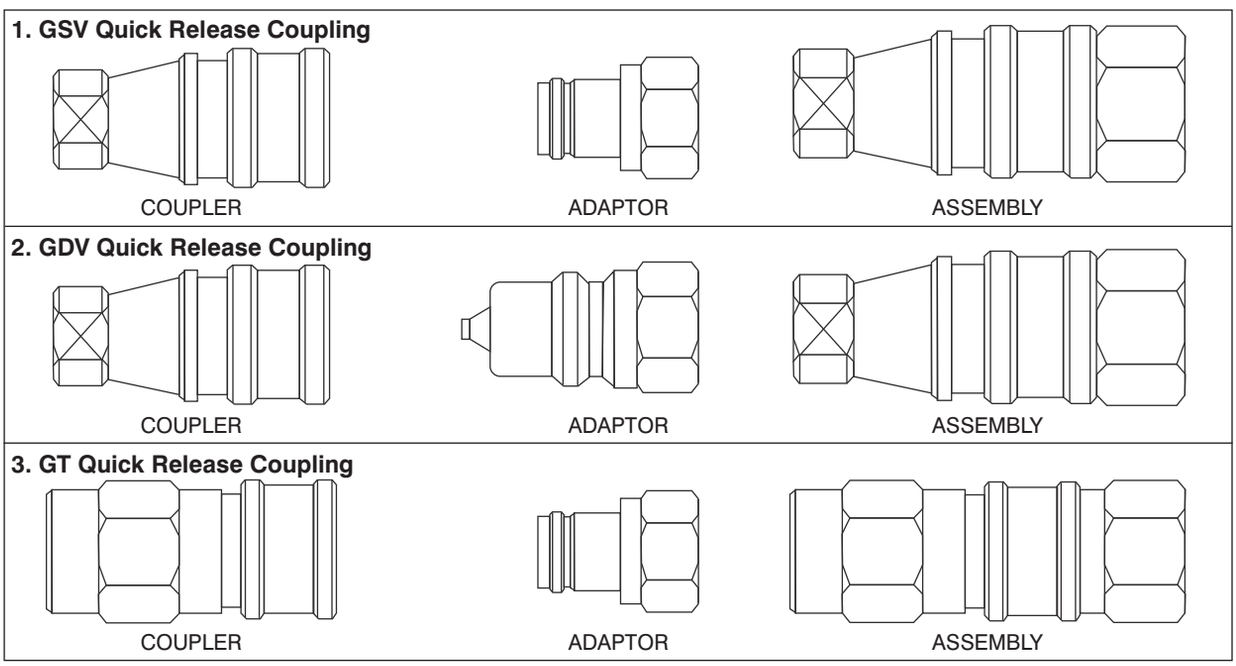
Cam Arms : Available in casting of SS304 (Cf8), Ss316 (CF8M), SS316L (CF3M) Gunmetal grade LG2C & Aluminium Bronze grade AB2C

Gasket : Available in Nitrile, Viton, Neoprene, Silicone, Hypalon, PTFE or as per client's requirement

Standard : Our Camlock Couplings comply to BS EN 14220 & applicable MIL specifications like MIL-C-27487.

QUICK RELEASE COUPLING (GQRC)

This works on simple 'Push & Pull Principle'. The adaptor when pushed into the coupler is securely held by the self locking arrangements resulting in a positive and leak proof connection. This action simultaneously opens the valve and fluid flow starts. To disconnect, pull back the sleeve of the coupler, the adaptor ejects out and the valve shuts off automatically. Valves are provided in GSV and GDV type.



Types :GSV : Quick coupling with self sealing valve at the coupler end and through type adaptor.
GDV : Quick coupling with self sealing valve at coupler & adaptor ends.
GT : Quick coupling through type.

End Connection : Socket weld, hose thread, hose shank, pipe thread and flanged.
Size : 1/8” to 2”
Pressure : Upto 15000 psi.
Temperature : (-25°C) to 250°C with right selection of body & material.

Advantages : Fast positive, Leak proof, instant connection, without tools, without threading or twisting, without strain, without sweat, hence time saving.

Materials :Body : Mild Steel, Carbon Steel duly hardened, Brass, Aluminium. SS304, SS316, SS316L & exotic metals.
Spring : Spring Steel, SS304, SS316, SS316L (Exotic Metal spring available on client’s request)
Ball : SS304, SS316, SS316L. (Exotic Metal balls available on client’s request)
Seal Material : Nitrile, Neoprene, Viton, Silicon, PTFE.
Standard : ISO 7241 Series A & Series B
ISO 16028 for High Pressure Coupling
High Pressure screw to connect coupling as per ISO 14540

Note - If required for High Pressure, High Temperature or corrosive services, we can also offer couplings in various exotic materials & seals like Inconel 625, Monel, Aluminium Bronze, etc. For more details please contact our technical department.

DRY DISCONNECT COUPLING

Couplings are designed and built to have resistance to the media transferred through them. Therefore, all Dry Disconnect Couplings are tailored to the requirements of each application, ensuring that all materials of the body and internal working parts are fully resistant.

Stainless Steel.
All wetted parts in Stainless Steel and Hastelloy.
Typical applications:
Chemical Industry
Pharmaceutical Industry
Waste Transfer

Brass / Gunmetal
All wetted parts Brass / Gunmetal and Stainless Steel.
Typical applications :
Marine refueling
Petrol handling
Tanker loading

Aluminium
All wetted parts in Aluminium and Stainless Steel.
Typical applications:
Military use
Petrol handling
Aviation fuel

PEEK / Hastelloy
All wetted parts in PEEK and Hastelloy.
Typical applications :
Hydrochloric acid

Hastelloy
All wetted parts in Hastelloy.
Typical applications:
Hydrochloric acid.

Other materials
Other materials on request.
For example Titan, PVDF and Duplex.

BREAK-AWAY COUPLING

Safety Break-away couplings are used to prevent pull away accidents, protect terminal and loading/unloading equipment and eliminated unwanted product release. The break-away couplings have a diverted breaking point which will break at a determined break-load where upon the internal valves will automatically close on both sides. This will in a longer time frame minimize down time, save money, equipment and the environment.

The Safety Break-away couplings are available as Industrial and Marine type.

Industrial Break-away

Typically installed into loading arm and hose assemblies,
where at least one side of the coupling is attached to a rig and fixed point.

Marine Break-away

Marine Safety Break-aways are designed to only release by inline pull and used between two strings of hose.

Size : 1” to 6” Higher Sizes available upon request
MOC : Brass, Stainless Steel & Aluminium.
(Also available in other metals upon request)

END CONNECTIONS

Figure 100

- These Hammer Unions are used in low pressure manifold lines and air, water, oil or gas applications.
- Available in both threaded and butt weld ends
- Metal to Metal Sealing surface

Figure 200

- These Hammer Unions are used in general service manifold lines and air, water, oil or gas applications
- Available in both threaded and butt weld ends
- Metal to metal sealing surface
- Available in butt weld schedules 40 and 80

Figure 400

- These Hammer Unions are used in manifold & line connections, pump suction and mud service
- Available in both threaded and butt weld ends
- 3" through 12" sizes have o-ring for primary seal
- Available in butt weld schedule 80

Figure 600

- These Hammer Unions are used in steam service, boiler connections, manifold and line connections for production, drilling and well servicing
- Available in bronze seating
- Will not rust in water services

Figure 1502

- These Hammer Unions are use in cementing, acidizing, choke and kill lines
- Replaceable lip type rubber seal
- Available in both threaded and butt weld ends

OTHER FITTINGS

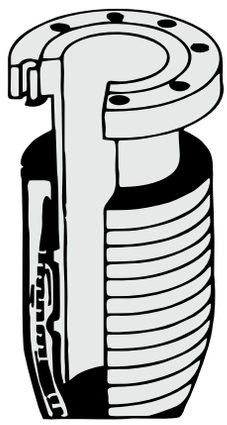
CLAW TYPE / CHICAGO TYPE COUPLING

Nozzle

Male

Female

BUILT IN FLANGES



SMS UNION

HAMMER UNION

Gaytri offers a comprehensive range of standard and sour gas Hammer Unions. Each union is thoroughly inspected to ensure long, dependable service in the most extreme conditions. Three lug nuts and self-locking ACME threads provide quick make-up and break-out.

Meet or exceed National Association of Corrosion Engineers Standard NACE MR-01-75 as and where applicable.

Manufactured from quality steel and other alloy meeting ASTM, UNS and/or AISI Standards.

The spherical surface male sub and angular surface female sub form a metal-to-metal seal. The ball and tangent provide a perfect seal.

Range from ½” to 12” with cold working pressures from 500 to 20,000 PSI.

Please Contact our Technical Department in case

- You have special materials and requirements.
- Details such as sizes and pressure / temperature rating are needed.

Hammer Unions are used in general service manifold lines and air, water, oil or gas applications.
Available in both threaded and but weld ends.
Metal to Metal Sealing surfaces.

EXPANSION JOINTS

METALLIC

Design

There are several different types of expansion joints. Each is designed to operate under a specific set of design conditions. Round and Rectangular Models are available

The information found in this catalogue provided by the **Expansion Joint Manufacturers Association.**

The following is a list of the basic types of expansion joints

SINGLE EXPANSION JOINT

DOUBLE EXPANSION JOINT

UNIVERSAL TIED EXPANSION JOINT

UNIVERSAL EXPANSION JOINT

SWING EXPANSION JOINT

HINGED EXPANSION JOINT

GIMBAL EXPANSION JOINT

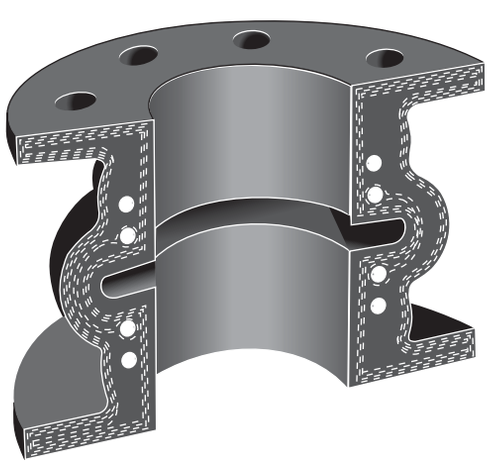
PRESSURE BALANCE EXPANSION JOINT

RUBBER EXPANSION JOINT

Types : • Spool type (single arch – double arch) • Spherical type • Wide arch type
• Concentric reducer type • Eccentric reducer type

Benefits :

Greater Resistance to Shock
Natural Recovery From Movement.
Both Axial and Lateral Deflection
No Flex-cracking with Age
No Electrolysis Problem
Better Insulation Against Vibration And Sound
No Gaskets Needed.
Requires Less Space
Lighter Weight
Easier to Install
Higher Working Pressures.
Longer Service Life
Require No Maintenance.
Protecting piping and equipment systems from Stress / Motion.



INSTALLATION INSTRUCTIONS

Metal Bellows Expansion Joints have been designed to absorb a specified amount of movement by flexing of the thin-gauge convolutions. If proper care is not taken during installation, it may reduce the cycle life and the pressure capacity of the expansion joints which could result in an early failure of the bellows elements or damage the piping system.

The following recommendations are included to avoid the most common errors that occur during installation. When in doubt about an installation procedure, contact the manufacturer for clarification before attempting to install the Expansion Joints.

DO'S	DONT'S
● Inspect for damage during shipment, i.e. dents, broken hardware, water marks on cartons, etc. ● Store in clean dry area where it will not be exposed to heavy traffic or damaging environment. ● Use only designated lifting lugs. ● Make the piping system fit the expansion joint. By stretching, compressing, or offsetting the joint to fit the piping, it may be overstressed when the system is in service. ● It is good practice to leave one flange loose until the expansion joint has been fitted into position. Make necessary adjustment of loose flange before welding. ● Install joint with arrow pointing in the direction of flow. ● Install single Van Stone liners pointing in the direction of flow. Be sure to install a gasket between the liner and Van Stone flange as well as between the mating flange and liner. ● With telescoping Van Stone liners, install the smallest I.D. liner pointing in the direction of flow. ● Remove all shipping devices after the installation is complete and before any pressure test of the fully installed system. ● Remove any foreign material that may have lodged between the convolutions. ● Refer to EJMA Standards for proper guide spacing and anchor recommendations.	● Do not drop or strike carton. ● Do not remove shipping bars until installation is complete. ● Do not remove any moisture-absorbing desiccant bags or protective coatings until ready for installation. ● Do not use hanger lugs as lifting lugs without approval of manufacturer. ● Do not use chains or any lifting device directly on the bellows or bellows cover. ● Do not allow weld splatter to hit unprotected bellows. Protect with wet chloride-free insulation. ● Do not use cleaning agents that contains chlorides. ● Do not use steel wool or wire brushes on bellows. ● Do not force-rotate one end of an expansion joint for alignment of bolt holes. Ordinary bellows are not capable of absorbing torque. ● Do not hydrostatic pressure test or evacuate the system before installation of all guides and anchors. ● Pipe hangers are not adequate guides. ● Do not exceed a pressure test of 1 ½ times the rated working pressure of the expansion joint. ● Do not use shipping bars to retain thrust if tested prior to installation.

The Manufacturer's warranty may be void if improper installation procedures have been used.

In keeping with a policy of continual improvements in design, we reserve the right to alter the specification of the product features without notice. The product detail in this brochure should only be used for the process suggested and under the condition specified. If under consideration for a potentially dangerous applications consult our Technical Department.

CHEMICAL RESISTANCE CHART

This chemical Resistance Chart is intended as a guide to the materials which may be appropriate for various conveyants. The indicated extend of resistance refers to the material such. This information is presented as a general guide only. It represents the effects of a given chemical on PTFE and various materials. It is not intended to establish absolute compatibility with GAYTRI Convoflex Metallic hose, PTFE hose product. In cases where the choice of material, is in any doubt whatever, we suggest that our technical department is called for advise.

Material Compatability K ey : 1. Excellent 2. Acceptable 3. Not Recommended 0. No Information, T est Before Using

Chemical	*PTFE*	*CS*	*SS 321 SS 304*	*SS 316*	*BRASS*
Acetaldehyde	1	1	1	1	1
Acetic Acid Glacial	1	0	2	2	0
Acetic Acid, 30%	1	3	2	2	3
Acetic Anhydride	1	3	2	2	3
Acetone Boiling	1	1	1	1	1
Acetylen*	1	0	1	1	2
Acrylonirile	1	1	1	1	0
Alum, Ammonium or Potassium	1	3	2	2	3
Aluminum Acetate	1	0	1	1	3
Aluminum Bromide	1	3	2	2	3
Aluminum Chloride	1	3	2	2	3
Aluminum Fluoride	1	3	2	2	3
Aluminum Hydroxide	1	1	1	1	1
Aluminum Nitrate	1	3	1	1	0
Aluminum Salts	1	0	2	2	0
Aluminum/Sulfate/Sulphate	1	3	2	2	3
Ammonia, Anhydrous	1	1	1	1	0
Ammonium Aqueous	1	0	1	1	3
Ammonium Carbonate	0	1	1	1	0
Ammonium Chloride	1	0	2	2	3
Aluminum Hydroxide	1	2	1	1	3
Ammonium Metaphosphate	1	1	1	1	0
Ammonium Nitrate Boiling	1	1	1	1	3
Ammonium Nitrite	0	0	1	1	0
Ammonium Persulfate	0	0	1	1	0
Ammonium Phosphate	1	3	2	1	0
Ammonium Sulfate/Sulphate	1	1	1	1	3
Ammonium Thiocynate	1	1	1	1	0
Amyl Acetate	1	3	1	1	1
Amyl Alcohol	1	1	1	1	1
Amyl Choride	1	0	1	1	0
Amyl Chloronapthalene	1	0	1	1	0
Amyl Naphthalene	1	0	1	1	0
Aniline	1	2	1	1	3
Aninile Dyes	1	3	1	1	0
Aniline Hydrocholoride	1	0	3	3	3
Animal Fats	1	1	1	1	0
Aqua Regia	1	0	3	3	0
Arsenic Acid	1	2	0	1	0
Askarel	0	1	1	1	1
Asphalt	1	1	1	1	2
Barium Carbonate	1	2	1	1	1
Barium Chloride 5% Saturated	1	3	1	1	2
Barium Hydroxide-Aqueous Sol. Hot	1	2	1	1	0
Barium Sulfate / Sulphate	1	3	1	1	2
Barium Sulfide/Sulphide	1	3	1	1	3
Beer	1	2	1	1	1
Beet Sugar Liquors	1	1	1	1	0
Benzene (Benzol)	1	1	1	1	1
Benzene Sulfonic Acid	0	3	0	2	0
Benzaldehyde	1	1	0	0	0
Benzene	1	1	1	1	1
Benzyl Alcohol	1	1	1	1	1

Chemical	*PTFE*	*CS*	*SS 321 SS 304*	*SS 316*	*BRASS*
Benzyle Benzoate	1	1	1	1	0
Benzyl Chloride	1	1	0	0	0
Bismuth Carbonate	1	1	1	1	0
Black Sulfate Liquor	1	1	1	1	0
Blast Furnace Gas	1	1	1	1	1
Borax	1	2	1	1	2
Bordeaux Mixture	1	0	1	1	0
Boric Acid	1	3	2	1	3
Bunker Oil	1	1	1	1	1
Butadine	1	0	1	1	1
Butane	1	1	1	1	1
Butter Oil	1	1	1	1	1
Butyric Acid	1	3	1	1	3
Butyl Acetate	1	0	1	1	0
Butyl Alcohol	1	0	0	0	1
Butyl Amine	0	1	1	1	1
Butyl Carbitol	1	1	1	1	1
Butyl Sterate	1	1	1	1	1
Butyl Mercaptan	1	0	1	1	0
Butyraldehyde	1	0	0	0	1
Calcium Acetate	1	1	1	1	1
Calcium Bisulfate	1	0	1	1	1
Calcium Bisulfite	1	0	1	1	1
Calcium Carbonate	1	1	1	1	0
Calcium Chlorate	1	0	0	0	1
Calcium Chloride	1	3	2	1	2
Calcium Hydroxide	1	3	3	1	2
Calcium Hypochloride 2%	1	0	3	2	3
Calcium Nitrate	1	1	1	1	1
Calcium Silicate	1	1	1	1	1
Calcium Sulfate / Sulphate	1	3	1	1	1
Calcium Sulfide	1	1	1	1	0
Cane Sugar Liquors	1	1	1	1	2
Carbonic Acid	1	3	1	1	3
Carbon Dioxide	1	1	1	1	1
Carbon Disulfide	0	2	1	1	2
Carbonic Acid	1	3	1	1	3
Carbon Monoxide	1	1	1	1	1
Carbon Tetrachloride	1	3	2	2	2
Castor Oil	1	1	1	1	1
Caustic Soda	1	2	1	1	3
Cellosolve, Acetate	1	1	1	1	0
Cellosolve, Butyl	1	1	1	1	0
Cellulube	1	1	1	1	1
Chlorine, Gaseous, Dry	1	2	3	3	2
Chlorine, Gaseous, Wet	1	3	3	3	3
Chlorine Trifluoride	0	3	0	0	0
Chloroacetic Acid	1	3	3	3	2
Chlorobenzene	1	1	1	1	1
Chlorobromomethane	1	1	1	1	1
Chloroform	1	1	1	1	1
Chlorobromomethane	1	1	1	1	1
Chlorotoluene	1	1	1	1	1

CHEMICAL RESISTANCE CHART

Material Compatability K ey : 1. Excellent 2. Acceptable 3. Not Recommended 0. No Information, T est Before Using

Chemical	PTFE	CS	SS 321 SS 304	SS 316	BRASS
Chromic Acid	1	3	3	2	3
Citric Acid	1	3	3	1	3
Cod Liver Oil	1	1	1	1	1
Coke Oven Gas	1	1	1	1	0
Copper Chloride	1	3	3	1	3
Copper Cyanide	1	0	1	1	3
Copper Sulfate / Sulphate	1	3	1	1	3
Corn Oil	1	1	1	1	1
Corn Syrup	1	1	1	1	0
Cottonseed Oil	1	1	1	1	1
Creosste	1	2	1	1	3
Cresol	1	2	1	1	0
Crude Wax	1	1	1	1	1
Cutting Oil	1	1	1	1	1
Cyclohexane	1	1	1	1	1
Cyclohexanone	1	0	1	1	0
Cymene	1	0	0	0	1
Decalin	1	0	0	0	1
Denatured Alcohol	1	1	1	1	1
Diacetone	1	1	1	1	1
Diacetone Alcohol	1	1	1	1	1
Dibenzyl Ether	1	1	1	1	1
Dibutyl Ether	1	1	1	1	1
Dibutyl Phthalate	1	1	1	1	1
Dibutyl Sebacate	1	0	0	0	1
Dichlorobenzene	1	0	1	1	1
Diesel Oil	1	1	1	1	1
Diethylamine	1	3	0	2	3
Diethyl Ether	1	1	1	1	1
Diethylene Glycol	1	1	1	1	1
Diethyl Phthalate	1	0	1	1	1
Diethyl Sebacate	1	0	1	1	1
Di-Isobutylene	0	0	1	1	1
Di-Isopropyl Ketone	1	0	1	1	1
Dimethyl Aniline	1	0	0	0	1
Dimethyl Formamide	0	1	1	1	0
Dimethyl Phthalate	1	0	0	0	1
Dioctyl Phthalate	1	1	1	1	1
Dioxane	1	1	1	1	1
Dipentene	1	1	1	1	1
Ethanolamine	1	1	1	1	1
Ethyl Acetate	1	1	1	1	1
Ethyl Acetoacetate	1	2	1	1	2
Ethyl Acrylate	1	2	1	1	1
Ethyl Alcohol 20% & Boiling	1	1	1	1	2
Ethyl Benzene	1	1	1	1	1
Ethyl Celloulose	1	1	1	1	1
Ethyl Chloride	1	2	1	1	2
Ethyl Ether	1	2	1	1	1
Ethyl Mercaptan	1	2	0	0	0
Ethyl Pentochlorobenzene	1	2	1	1	1
Ethyl Silicate	1	1	1	1	1
Ethylene Chloride	1	2	1	1	2
Ethylene Cholorohydrin	1	0	0	0	0
Ethylene Diamine	1	0	0	0	1
Ethylene Glycol	1	2	1	1	1
Fatty Acids	1	1	1	1	1
Ferric Chloride	1	2	1	1	2
Ferric Nitrate	1	0	0	0	0
Ferric Sulfate	1	0	0	0	1
Ferrous Chloride					

Chemical	PTFE	CS	SS 321 SS 304	SS 316	BRASS
Ferrous Nitrate	1	0	1	1	0
Ferrous Sulfate	1	3	1	1	2
Fluoroboric Acid	1	0	1	1	0
Formaldehyde	1	0	1	1	1
Formic Acid	1	3	2	1	2
Freon 12	2	3	1	1	0
Freon 114	2	3	1	1	0
Fuel Oil	1	2	2	2	1
Fumaric Acid	0	0	0	1	0
Furan Furfuran	1	1	1	1	1
Furfural	3	2	1	1	1
Gallic Acid	0	3	1	1	0
Gasoline	1	2	1	1	1
Glauber's Salt	1	1	1	1	0
Glucose	1	1	1	1	1
Glue	1	2	1	1	3
Glycerin	1	2	1	1	1
Glycols	1	1	1	1	1
Green Sulfate Liquor	1	1	1	1	0
n-Hexaldehyde	1	1	1	1	1
Hexane	1	1	1	1	1
Hexene	1	1	1	1	1
Hexyl Alcohol	1	1	1	1	2
Hydraulic Oil Petroleum	1	1	1	1	1
Hydrochloric Acid, 15%	1	3	3	3	3
Hydrochloric Acid, 37%	1	3	3	3	3
Hydrocarbon Acid	1	3	1	1	1
Hydrofluoric Acid, Concentrated	1	3	3	3	3
Hydrofluosilicic Acid	1	0	3	3	3
Hydrogen, Gaseous	1	1	1	1	1
Hydrogen Peroxide. 70%	1	3	2	1	3
Hydrogen Sulfide, Gaseous	1	3	2	1	3
Hydroquinone	0	0	1	1	0
Isobutyl alcohol	1	1	1	1	2
Iso Octane	1	1	1	1	1
Isopropyl Acetate	1	1	1	1	1
Isopropyl Alcohol	1	1	1	1	2
Isopropyl Ether	1	1	1	1	1
Kerosene	1	1	1	1	1
Lacquers	1	3	3	1	1
Lacquers Solvent	1	3	3	1	1
Lactic Acid	1	3	2	1	2
Lard	1	1	1	1	3
Lead Acetate	1	2	1	1	1
Lead Nitrate	0	1	1	1	0
Lime Bleach	0	3	2	1	0
Linoleic Acid	1	0	0	0	0
Linseed Oil	1	2	1	1	2
Lubricating Oils, Petroleum	1	1	1	1	1
Magnesium Chloride	1	3	2	1	2
Magnesium Hydroxide	1	1	1	1	1
Magnesium Sulfate	1	2	1	1	1
Malic Acid	1	2	2	1	0
Mercuric Chloride	1	3	1	1	3
Mercury	1	1	1	1	3
Mesityl Oxide	1	1	1	1	1
Methyl Acetate	1	1	1	1	1
Methyl Acrylate	0	1	1	1	1
Methyl Alcohol Methanol	1	3	3	2	2
Methyl Bromide	1	1	1	1	1
Methyl Butyl Ketone	1	1	1	1	1

CHEMICAL RESISTANCE CHART

Material Compatibility K ey : 1. Excellent 2.Acceptable 3.Not Recommended 0.No Information , T est Before Using

Chemical	PTFE	CS	SS 321 SS 304	SS 316	BRASS
Methyl Chloride	1	1	1	1	1
Methylene Chloride	1	1	1	1	1
Methyl Ethyl Keton(Mek)	1	1	1	1	1
Methyl Formate	1	1	1	1	1
Methyl Isobutyl Keton	1	1	1	1	1
Methyl	1	1	1	1	0
Methyl	1	1	1	1	1
Milk	1	3	1	1	3
Mineral Oil	1	1	1	1	1
Monochlorobenzene	1	1	1	1	1
Monothanolamine	0	1	1	1	1
Naphtha	1	2	2	1	1
Napthalene	1	0	0	1	0
Naphthenic Acid	1	0	0	1	0
Natural Gas	1	1	1	1	2
Nickel Acetate	1	1	1	1	1
Nickel Chloride	1	3	2	2	3
Nickel Sulfate Sulphate	1	0	2	1	3
Niter Cake	0	3	2	1	3
Nitric Acid, All Concentrations	1	3	2	2	0
Nitric Acid, Red Fuming	1	3	2	2	3
Nitrobenzene	1	1	1	1	1
Nitroethane	1	0	1	1	1
Nitrogen , Gaseous	1	1	1	1	1
Nitrogen Tetroxide	0	0	0	2	0
n-Octane	0	1	1	1	1
Octyl Alcohol	1	1	1	1	2
Oil, SAE	1	1	1	1	1
Oleic Acid	1	2	2	1	2
Olive Oil	1	2	2	1	2
Oxalic Acid	1	3	2	1	3
Oxygen, Gaseous	1	1	1	1	1
Ozone	1	1	1	1	1
Paint	1	0	1	1	1
Palmitic Acid	1	1	2	1	3
Peanut Oil	1	1	1	1	3
Perchloric Acid	1	0	2	1	1
Perchloroethylene	1	1	1	1	1
Petroleum	1	1	1	1	1
Phenol	1	3	1	1	3
Phorone	1	1	1	1	1
Picric Acid	1	3	1	1	3
Pinene	1	1	1	1	1
Pine Oil	1	1	1	1	0
Plating Solution, Chrome	1	0	3	3	0
Potassium Acetate	1	0	1	1	0
Potassium Chloride	1	3	2	1	3
Potassium Cyanide	1	2	1	1	3
Potassium Dichromate	1	0	1	1	0
Potassium Hydroxide,30%	1	3	1	1	3
Potassium Nitrate	1	3	1	1	2
Potassium Sulphate	1	2	1	1	2
Propane	1	1	1	1	1
Propyl Acetate	0	1	1	1	1
Propyl Alcohol	1	1	1	1	2
Pyridine , 50%	1	0	1	1	1
Red Oil	1	2	2	1	2
Salicylic Acid	0	0	1	1	0
Salt Water	1	2	1	1	3
Sewage	1	3	1	1	1
Silicone Greases	0	1	1	1	1

Chemical	PTFE	CS	SS 321 SS 304	SS 316	BRASS
Silicon Oils	0	1	1	1	1
Silver Nitrate	1	3	1	1	3
Skydrol 500 & 700	1	1	1	1	0
Soap Solutions	1	1	1	1	1
Soda Ash	0	1	1	1	2
Sodium Acetate	1	1	1	1	1
Sodium Bicarbonate	1	2	1	1	2
Sodium Bisulfite	1	1	1	1	0
Sodium Borate	1	1	1	1	0
Sodium Chloride	1	2	2	1	3
Sodium Cyanide	1	2	1	1	3
Sodium Hydroxide , 40%	1	2	1	1	3
Sodium Hypochlorite 5% still	1	3	3	2	3
Sodium Metaphosphate	1	3	1	1	3
Sodium Nitrate	1	1	1	1	0
Sodium Perborate	1	3	1	1	3
Sodium Peroxide	1	3	1	1	3
Sodium Phosphate	1	0	1	1	3
Sodium Thiosulphate	1	3	1	1	0
Soybean Oil	1	1	1	1	3
Stannic Chloride	1	3	0	0	3
Steam	1	0	2	1	2
Stearic Acid	1	3	2	1	3
Stoddard Solvent	1	2	1	1	1
Styrene	1	2	0	2	2
Sucrose Solution	1	1	1	1	0
Sulfur , 200°F	1	2	2	1	3
Sulfur Chloride	1	3	3	2	3
Sulfur Dioxide	1	2	1	1	1
Sulfur Trioxide	1	2	2	2	0
Sulfuric Acid ,10%	1	3	3	2	3
Sulfuric Acid , 98%	1	3	3	2	3
Sulfuric Acid, Fuming	1	2	0	1	3
Sulfurous Acid , 10%	1	3	2	1	3
Sulfurous Acid, 75%	1	3	3	2	3
Tannic Acid , 10%	1	3	1	1	0
Tar Bituminous	1	1	1	1	2
Tartaric Acid	1	0	2	2	0
Terpineol	1	0	0	0	0
Titanium Tetrachloride	0	1	2	2	3
Toluene	1	1	1	1	1
Toluene Disocyanate	0	0	0	0	0
Transformer Oil	1	1	1	1	1
Transmission Fluid Type A	1	1	1	1	1
Tributoxyethyl Phosphate	1	1	0	0	0
Tributyl Phosphate	1	1	0	0	0
Trichlorethylene	1	3	0	1	1
Tricresyl Phosphate	1	1	0	2	0
Tung Oil	1	1	1	1	1
Turpentine	1	0	1	1	2
Urea Solution , 50%	1	1	1	1	0
Varnish	0	2	1	1	2
Vegetable Oil	1	1	1	1	0
Versilube	1	1	1	1	1
Vinegar	1	3	2	1	3
Vinyl Chloride	1	2	1	1	3
Water	1	2	1	1	1
Whiskey, Wines	1	3	2	1	3
Xylene	1	2	2	2	0
Zine Acetate	1	1	1	1	1
Zine Chloride	1	3	2	1	3
Zine Sulfate / Sulphate	1	3	2	1	3

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