LIBRA FLEX®

THE EXPERIENCED PEOPLE

Since 1977

Manufacturer of Quality Flexible Hose

TEFLON HOSES

S.S. FLEXIBLE HOSES

HYDRAULIC RUBBER HOSES

ULTRA HIGH PRESSURE HOSES

FITTINGS

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Since 1977

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LIBRAFLEX®
THE EXPERIENCED PEOPLE

THE PEOPLE

To give you the best at reasonable price, EXPERIENCE counts. We along with our Experience Team have been Designing & Manufacturing Hose Assemblies since last three decades. At **Libraflex**, we do not limit our knowledge to Indian conditions, but always keep pace with developments abroad and International Trends.

We always know that you are the one who does not compromise with quality. Hence our offer shall always be a CHALLENGE ! QUALITY, PRICE SERVICE, everything.

So, when you need, come to the Right People. The experienced who know Hoses & Fittings, 'IN & OUT"

HOW TO ORDER

While ordering for Hose Assemblies please mention the following:

I.D. of Hose
W.P. of Hose
Length of Hose
End connection on both sides
Temperature
Quantity

A brief description of application or - If you have been able to identify our part nos. please mention your requirement as follows

A-04B-FITTING AT ONE END
(1/4" BSP Female)
B-04B-FITTING AT OTHER END
(1/4" BSP Male)
HP2-04-HOSE TYPE & SIZE
(6mm 2 wire)
1000 mm-LENGTH END TO END

THE PRODUCT

We just do not stop at the sale, but go a step further. Testing each Hose Assembly may satisfy you, but not us. We always make sure that it gives you a certain life. For that all our raw material purchases though made from renowned sources are periodically tested in approved Labs.

End connection designs are incorporated with latest development to ensure leak-proof performance till the Hose RUBBER life expires. Then for your satisfaction is the WARRANTY (Though we know nothing will come back)

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HOSES

All the Working Pressures mentioned are STATIC. PULSATING Pressures are 0.75 times 1kg./cm2 = 14.22 p.s.i.

HIGH PRESSURE RUBBER HOSES

HP1
(Confirming to Std. SAE-100 R1)

Tube: Synthetic oil resistant rubber

Reinforcement : 1 high tensile steel wire braid

Cover: Synthetic Rubber - abrasion, ozone and weather resistant

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

Working Temperature :
-40°c to + 120°c

Catalog No.	I.D. mm	Working Pressure Kg/cm²	Test Pressure Kg/cm²	Burst Pressure Kg/cm²	Minimum Bend Radius mm
HP1-04	6.4	257	386	712	102
HP1-05	7.9	235	352	704	114
HP1-06	9.5	211	316	632	127
HP1-08	12.7	187	280	560	178
HP1-10	15.9	140	210	420	203
HP1-12	19.0	117	176	352	241
HP1-16	25.4	93	140	280	305
HP1-20	31.8	59	88	176	419
HP1-24	38.1	47	70	140	508
HP1-32	50.8	35	52	104	635
HP1-40	63.5	25	50	100	762
HP1-48	76.2	20	40	80	762
HP1-64	101.6	10	20	40	1105

HIGH PRESSURE RUBBER HOSES

HP2
(Confirming to Std. SAE-100 R2)

Tube: Synthetic oil resistant rubber

Reinforcement: 2 high tensile steel wire braid.

Cover: Synthetic Rubber - abrasion, ozone and weather resistant

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

Working Temperature :
-40°c to + 120°c

HP2-04	6.4	470	700	1400	100
HP2-05	7.9	400	600	1200	115
HP2-06	9.5	375	562	1142	127
HP2-08	12.7	328	492	984	178
HP2-10	15.9	257	386	772	203
HP2-12	19.0	211	316	632	241
HP2-16	25.4	188	282	564	305
HP2-20	31.8	152	228	456	419
HP2-24	38.1	117	174	348	508
HP2-32	50.8	106	158	316	635
HP2-40	63.5	69	138	276	762
HP2-48	76.2	45	90	180	915
HP2-64	101.6	25	50	100	1105

MEDIUM PRESSURE RUBBER HOSES

HP3
(Confirming to Std. SAE-100 R3)

Tube: Synthetic oil resistant rubber

Reinforcement: 2 rayon braid.

Cover: Synthetic Rubber - abrasion, ozone and weather resistant

Application :
Medium Pressure Hydraulic oils, air and water.

Working Temperature :
-40°c to + 120°c

HP3-04	6.5	117	176	352	75
HP3-05	8.0	113	170	340	100
HP3-06	10.0	105	158	316	100
HP3-08	12.7	93	140	280	125
HP3-10	16.0	83	124	248	140
HP3-12	19.0	71	106	212	152
HP3-16	25.4	53	80	160	203
HP3-20	31.5	35	52	104	254
HP3-24	38.0	24	36	72	305
HP3-32	50.0	16	24	48	375

MEDIUM AND LOW PRESSURE RUBBER HOSES

HIGH PRESSURE RUBBER HOSES

HP5
(Confirming to Std. SAE-100 R5)

Single wire braid reinforcement separated by two textile braids impregnated with a Synthetic Rubber, compound against oils, weather and abrasion.

Application :
For hydraulics, water, hot oils heavy and light hydrocarbons.

Catalog No.	I.D. mm	Working Pressure Kg/cm^2	Test Pressure Kg/cm^2	Burst Pressure Kg/cm^2	Minimum Bend Radius mm
HP5-04	6.5	210	420	840	85
HP5-05	8.0	158	316	632	100
HP5-06	10.3	141	282	564	115
HP5-08	12.7	123	246	492	140
HP5-10	16.0	105	210	420	165
HP5-14	22.2	56	112	224	190
HP5-18	28.6	44	88	176	230
HP5-24	34.9	35	70	140	270

SAE 100 R6

HP-6

Tube: Specially compounded, oil -resistant, synthetic rubber(nitrile).
Reinforcement: 1 braid of high tenacity synthetic textile yarn.
Cover: Oil and abrasion resistant synthetic rubber (modified nitrile)- black.
Application: Low pressure hydraulic oil lines, heavy duty transmission oil, Anti freeze solutions.
Temperature Range : -40°c to + 100°c

HP6-04	6.4	28	56	112	76
HP6-05	7.9	28	56	112	76
HP6-06	9.5	28	56	112	76
HP6-08	12.7	28	56	112	102
HP6-10	15.9	24	48	97	127
HP6-12	19.0	21	42	83	152
HP6-16	25.4	14	28	56	177

LOW PRESSURE RUBBER HOSES

LP-8

Seamless oil resistant tube with outer wire braid suitable for oils, Grease, Petroleum gases air & water.

Application :
Low pressure hydraulic and fuel oils gasoline, air & water.

Temperature Range
-40°c to + 100°c

LP8-04	6.5	28	56	112	30
LP8-05	8.0	25	50	100	35
LP8-06	9.5	18	36	72	40
LP8-08	12.7	18	36	72	55
LP8-10	16.0	15	30	60	75
LP8-12	19.0	12	24	48	90

STEAM HOSES

STEAM HOSE (1 WIRE)

ST-1

Tube: Steam & Heat resistant EPDM rubber
Reinforcement: Single braid of high tensile brass coated steel wire.
Cover: EPDM - BLACK
Application: Steam at high temperature.
Temperature Range
upto + 195°c

Catalog No.	I.D. mm	Working Pressure Kg/cm²	Test Pressure Kg/cm²	Burst Pressure Kg/cm²	Minimum Bend Radius mm
ST1-04	6.4	10	20	100	102
ST1-05	7.9	10	20	100	114
ST1-06	9.5	10	20	100	127
ST1-08	12.7	10	20	100	178
ST1-10	15.9	10	20	100	203
ST1-12	19.0	10	20	100	241
ST1-16	25.4	10	20	100	305
ST1-20	31.8	10	20	100	419
ST1-24	38.1	10	20	100	508
ST1-32	50.8	10	20	100	635

STEAM HOSE (2 WIRE)

ST-2

Tube: Steam & Heat resistant EPDM rubber
Reinforcement: Two braids of high tensile brass coated steel wire.
Cover: EPDM - BLACK
Application: Steam at high temperature.
Temperature
upto + 232°c

ST2-04	6.4	17	34	170	102
ST2-05	7.9	17	34	170	114
ST2-06	9.5	17	34	170	127
ST2-08	12.7	17	34	170	178
ST2-10	15.5	17	34	170	203
ST2-12	19.0	17	34	170	241
ST2-16	25.4	17	34	170	305
ST2-20	31.8	17	34	170	419
ST2-24	38.1	17	34	170	508
HP6-32	50.8	17	34	170	635

Steam may be in the form of dry, wet, saturated or superheated. Handling steam efficiently and safely requires that the type of hose through which it passes be of a very high quality. The steam hoses shown above have the quality of being lightweight and tough, yet they are highly flexible in use.

These hoses can be put for use in various applications including heavy duty industrial uses like melting of substances such as glue and wax, thawing, steam transfer, plastic moulding, rubber moulding etc.)

A word of caution: Since steam can be extremely dangerous we recommend you not to alternate hoses between **steam and water.**

VERY HIGH PRESSURE RUBBER HOSES

FOUR SPIRAL - 4SP HOSE

4 SP
Tube: Oil resistant synthetic rubber
Reinforcement: Four high tensile steel wire spirals
Cover: Abrasion, ozone and hydrocarbon resistant synthetic rubber
Application: Very high pressure hydraulic lines, fuel oil, air & water
Temp : - 40°c to + 100°c

Catalog No.	I.D. mm	Working Pressure Kg/cm²	Test Pressure Kg/cm²	Burst Pressure Kg/cm²	Minimum Bend Radius mm
SP4-04	6.4	460	920	1840	150
SP4-06	9.5	453	906	1812	180
SP4-08	12.7	421	842	1684	230
SP4-10	15.9	351	702	1404	250
SP4-12	19.0	351	702	1404	300
SP4-16	25.4	281	562	1124	340

FOUR SPIRAL - 4SH HOSE

4 SH
Tube: Oil resistant synthetic rubber
Reinforcement: Four high tensile steel wire spirals
Cover: Abrasion, ozone and hydrocarbon resistant synthetic rubber
Application: Very high pressure hydraulic lines, fuel oil, air & water
Temp : - 40 °c to + 100°c

SH4-12	19.0	421	842	1684	280
SH4-16	25.4	386	772	1544	340
SH4-20	31.8	330	660	1320	460
SH4-24	38.1	295	590	1180	560
SH4-32	50.8	256	512	1024	700

SIX SPIRALS - R13 HOSE

R 13
Tube: Oil resistant synthetic rubber
Reinforcement: Six high tensile steel wire spirals
Cover: Abrasion, ozone and hydrocarbon resistant synthetic rubber
Application: Very high pressure hydraulic lines, fuel oil, air & water
Temp : - 40°c to + 100°c

R13-12	19.0	351	702	1404	241
R13-16	25.4	351	702	1404	305
R13-20	31.8	351	702	1404	419
R13-24	38.1	351	702	1404	508
R13-32	50.8	351	702	1404	635

THERMO PLASTIC HOSES

THERMOPLASTIC HIGH PRESSURE HOSE

TP-7 Confirming to SAE 100 R7

Tube: Thermoplastic techno polymer / polyamide
Reinforcement: Single braid of high tensile synthetic fibre.
Cover: Polyurethane
Temp : - 40°c to + 100°c

Catalog No.	I.D. mm	Working Pressure Kg/cm²	Test Pressure Kg/cm²	Burst Pressure Kg/cm²	Minimum Bend Radius mm
TP7-03	4.8	208	416	832	75
TP7-04	6.4	190	380	759	102
TP7-05	8.0	172	344	690	114
TP7-06	9.5	155	310	621	127
TP7-08	12.7	138	276	552	178
TP7-10	16.0	103	206	414	203
TP7-12	19.0	86	172	345	254
TP7-16	24.4	69	138	276	305

THERMOPLASTIC HIGH PRESSURE HOSE

TP-8 Confirming to SAE 100 R8
Tube: Thermoplastic techno polymer / polyamide.
Reinforcement: Double braid of high tensile synthetic fibre.
Cover: Polyurethane.
Temp : - 40°c to + 100°c

TP8-04	6.4	345	690	1379	102
TP8-05	8.0	293	586	1172	114
TP8-06	9.5	276	552	1103	127
TP8-08	12.7	241	482	966	178
TP8-10	16.0	190	380	759	203
TP8-12	19.0	155	310	621	240
TP8-16	24.4	138	276	552	305

The concept of reinforced thermoplastic construction offers outstanding performance. The special characteristics of Industrial thermoplastics are used to great advantage in the above flexible pressure hoses to achieve low weight, ease of handling, compactness, chemical and abrasion resistance etc.

The various advantages of thermoplastic hoses.

1. Excellent shelf life. Minimum 3 times than rubber hoses.
2. Slim and light weight for use, where space is a constraint.
3. UV and ozone resistance.
4. Suitable for many industrial gases, argon, nitrogen, carbondioxide, helium.
5. Suitable for mineral base hydraulic oil, fuel oil and phosphate esters.
6. Largely used in mining industries, offshore applications and air conditioning application, high pressure cleaning etc
7. Availability of pin pricked cover for gas applications.

Note: Hoses of high or intermediate range of pressure available on request.

TEFLON HOSES

HIGH PRESSURE PLAIN TEFLON HOSES

TF-7
Construction :

Smooth inner core of extruded TEFLON TUBE with 304 stainless steel wire braid reinforcement.

Application :
Diluted or concentrated acids, Caustics, hot lacquers, solvents, fuel, oils, oxidising agents, gases, foods, drugs, chemicals & Refrigeration.

Temp.- -73°c to + 260°c

Catalog No.	I.D. mm	Working Pressure Kg/cm²	Test Pressure Kg/cm²	Burst Pressure Kg/cm²	Minimum Bend Radius mm
TF7-04	6.3	211	422	844	70
TF7-05	8.0	186	372	744	100
TF7-06	9.5	176	352	704	133
TF7-08	12.7	141	282	564	165
TF7-10	16.0	123	246	492	200
TF7-12	19.0	105	210	420	275
TF7-16	25.4	70	140	280	400

Advantages of Teflon for Flexible Hose: Teflon is an ideal material for flexible hose, to which an over -braid is added for excellent pressure ratings such hose gives extremely long life because its innercore has out standing resistance to steam, chemicals, solvents, heat, pressure impulses, flexing, vibration, and aging.
Flexible: Hose of teflon will stand up under server conditions of continuous flexing and vibration without failure from flex fatigue
Chemical resistant: Inert Teflon 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 350°F 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 dew point.
Non-aging: Properties of hose do not change with age or exposure to weather.
End Connections: Swaged or crimped

TEFLON CONVOLUTED HOSES

TF12
Construction
Inner core of convoluted Teflon, externally reinforced with Teflon impregnated fiberglass and type 304 stainless steel wire braid.

Temperature Range:
-65°F to 400°F (-54°C to 204°C)

Catalog No.	I.D. mm	Working Pressure Kg/cm²	Test Pressure Kg/cm²	Burst Pressure Kg/cm²	Minimum Bend Radius mm
TF12-08	12.7	70	140	280	25
TF12-12	19.0	70	140	280	50
TF12-16	25.4	70	140	280	75
TF12-20	31.8	70	140	280	150
TF12-24	38.1	52	104	208	190
TF12-32	50.8	35	70	140	250
TF12-48	75.0	17	34	68	395
TF12-64	100.0	10	20	40	620

APPLICATION: Convoluted transfer hose, is the most broadly applied a general-purpose workhorse found in hundreds of chemical transfer and food handling situations. Its present locations are as diverse as water purification systems, mercury transfer lines, and food processing equipment-delivering better to mixing kettles or sausage and other processed meats to packaging machines. 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.
Convoluted transfer hose is an extraordinarily versatile hose, combing excellent flexibility with large size in both length and I. D.
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 others

ANNULAR CORRUGATED STAINLESS STEEL HOSES

STANDARD WEIGHT, sizes 6mm (1/4") through 200 mm (8") I.D.)

Annular corrugated stainless steel hose,
Close pitch, for conveying chemicals,
Gases, steam, etc.
Suitable for high pressures.

Temperature range :
From - 273° to + 800°c.

SS10

CONSTRUCTION

Hose & Braid Material - 304 / 316/ 316L/ 321
TUBE :Heavy wall innercore for corrosive service, butt welded annular corrugations, close pitch, tubing

Nominal bore		Minimum bend radius		Without Braid		Single Braid		Double Braid	
mm	Inch	Static mm	Flexing mm	Maximum Working Pressure Kg / cm²	Test Pressure Kg / cm²	Maximum working pressure Kg / cm²	Test Pressure Kg / cm²	Maximum Working Pressure Kg / cm²	Test Pressure Kg / cm²
6	1/4	45	100	4.0	6.0	100	150.0	150.0	225.0
10	3/8	50	150	4.0	6.0	90	135.0	135.0	203.0
12	1/2	65	200	3.0	4.5	80	120.0	120.0	180.0
20	3/4	70	203	2.0	3.0	64	96.0	96.0	144.0
25	1	104	229	2.0	3.0	50	75.0	75.0	113.0
32	1.1/4	117	267	1.5	2.3	40	60.0	60.0	90.0
40	1.1/2	152	292	1.5	2.3	30	45.0	45.0	68.0
50	2	160	318	1.0	1.5	28	42.0	42.0	63.0
65	2.1/2	175	508	1.0	1.5	24	36.0	36.0	54.0
75	3	231	610	1.0	1.5	18	27.0	27.0	41.0
100	4	250	750	0.8	1.2	16	24.0	24.0	36.0
125	5	318	900	0.6	0.9	12	18.0	18.0	27.0
150	6	353	1050	0.6	0.9	10	15.0	15.0	22.5
200	8	456	1118	0.5	0.75	8	12.0	12.0	18.0

Note : The Burst Pressure is 4 times the Maximum working pressure.

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 (when installed correctly)
6. Resistance to Penetration & damage.

JACKETED HOSE

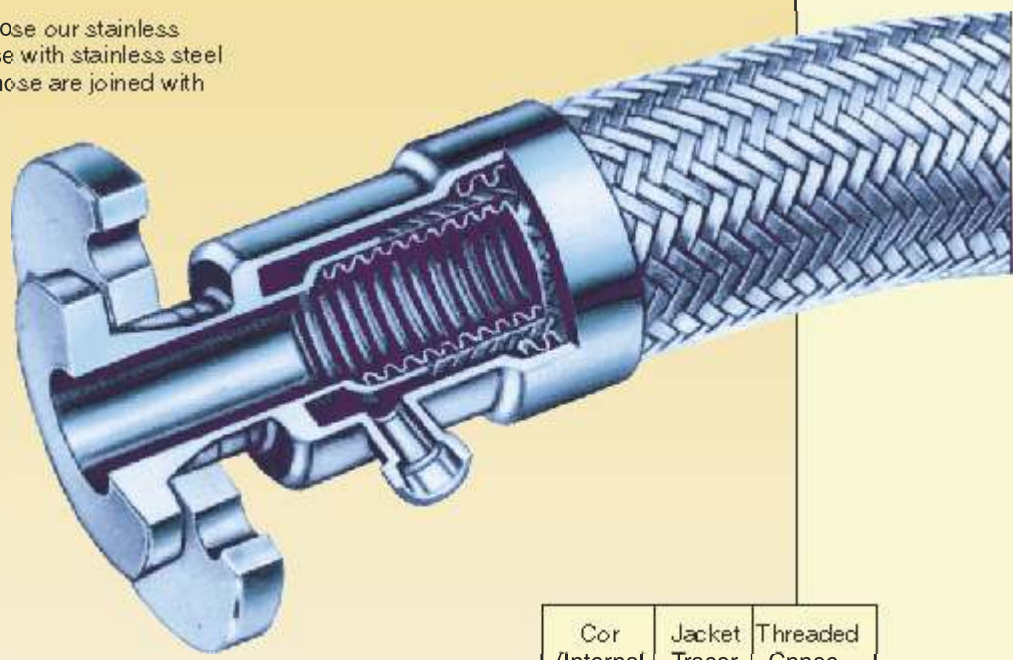
HEAT - AND COOLANT-TRACED HOSES

MATERIAL AND DESIGN:
For the Internal hose and the jacketed hose our stainless steel corrugated hose used, In each case with stainless steel Braiding. The internal and the jacketed hose are joined with pressure tight fit.

Core & Jacket-
SS 304/321/316L

Braid of Core & Jacket -
SS 304.

Operating temp. :
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. It is for such applications that we supply our **Jacketed** hose.

Its high flexibility makes this hose very suitable for angular and lateral (offset) movements. The Jacketed hose is pressure -and vacuum-proof and, due to the materials used in its manufacture, 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.

Cor (Internal Hose)	Jacket Tracer Conduit	Threaded Cnnec-tion (Pipe thread)
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

The JACKETED Hose is suitable for many different purposes.
As a heatable 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 -

bitumen	polyester	paraffin	heavy fuel oil	dimethylterephtalate (DMT)
fats	mercury	tar	naphthalene	synthetic resin
naphthol	sulphur	chlorophenol	explosive (TNT)	organic liquefied materials
phenol	fatty acids	chocolate	thermosetting plastics	Phthalic Acid waxes & others

As a Coolable element the JACKETED Hose is particularly popular in compressor and engine construction to cool air and waste gases.

The heating agents used are hot water, steam, heat transfer oils or other heat transfer agents; for cooling, water is the most usual agent.

End Connections : 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 one another.

INTERLOCK HOSES

Available in sizes from 1/2" ID to 8" ID, it is mostly used as a protective / conduit casing.
These are made with a packing so that filament of rubber, cotton, Asbestos or metals like copper can be fed into the interlock to make it pressure tight.

EXPANSION BELLOWS

Available in sizes from 14 mm to 400 mm inner dia in circular bellows. These can be in single or multiply range. These Bellows and expansion joints can be tailor made to meet Specific requirements of the customer & can have fixed flange, Plain welded pipes or floating flange as end fittings. These are mainly used for taking care of applications where You experience expansion, contraction & vibration problems.

INDUSTRIAL HOSES

PNEUMATIC TOOL HOSE

Exceeds IS : 446 Type 2

CONSTRUCTION

TUBE : Modified Nitrile Rubber. Black.

REINFORCEMENT :

- Single Braid of High Tenacity Synthetic Yarn OR Brass

COVER :

- Specially Compounded Highly Abrasion Resistant Rubber. Black.

Application :
Recommended for all types Pneumatic Tools in Industries, Compressed Air applications and Construction Industry.

Catalog No.	I.D. mm	Working Pressure Kg/cm^2	Test Pressure Kg/cm^2	Burst Pressure Kg/cm^2
IH1-04	6.3	14.0	28.0	56.0
IH1-05	8.0	14.0	28.0	56.0
IH1-06	10.0	14.0	28.0	56.0
IH1-08	12.5	14.0	28.0	56.0
IH1-12	20.0	14.0	28.0	56.0
IH1-16	25.0	14.0	28.0	56.0
IH1-20	31.5	14.0	28.0	56.0
IH1-24	38.0	14.0	28.0	56.0
IH1-32	50.0	14.0	28.0	56.0

Working Temperature :
$-30^{\circ}C$ to $+ 82^{\circ}C$

AIR / WATER HOSE

Exceed IS : 446 Type 1, 444 Type 2

CONSTRUCTION

TUBE : Modified Nitrile Rubber. Black

REINFORCEMENT : Single Braid of High Tenacity

- Synthetic Yarn.

COVER :

- Specially Compounded Highly Abrasion Resistant Rubber. Black.

IH2-08	12.5	12.0	24.0	36.0
IH2-12	20.0	12.0	24.0	36.0
IH2-16	25.0	12.0	24.0	36.0
IH2-20	31.5	12.0	24.0	36.0
IH2-24	38.0	12.0	24.0	36.0
IH2-32	50.0	12.0	24.0	36.0

Application :
Recommended for all Air and Water applications requiring maximum flexibility in Engineering Industry. Workshops, Shipyards, Irrigation etc.

Working Temperature :
$-30^{\circ}C$ to $+ 82^{\circ}C$

ROCK DRILL HOSE

Exceed IS : 446 Type 3

CONSTRUCTION

TUBE : Specially compounded Nitrile Rubber. Black.

REINFORCEMENT : Single Braid of High Tenacity Synthetic Yarn.

COVER :

- Specially Compounded Highly Abrasion Resistant Rubber. Black.

IH3-08	12.5	21.0	42.0	84.0
IH3-12	20.0	21.0	42.0	84.0
IH3-16	25.0	21.0	42.0	84.0

Application :
Recommended for heavy duty high pressure use on industrial, Construction & Pneumatic Mining applications requiring heavy duty hose with an oil resistant tube and abrasion resistant cover.

Working Temperature :
$-30^{\circ}c$ to $+ 82^{\circ}c$

INDUSTRIAL HOSES

WASH DOWN HOSE
Exceeds IS : 444 Type 3B

Catalog No.	I.D. mm	Working Pressure Kg/cm²	Test Pressure Kg/cm²	Burst Pressure Kg/cm²
IH4-06	10.0	28.0	56.0	112.0
IH4-08	12.5	28.0	56.0	112.0

CONSTRUCTION

TUBE : Modified Nitrile Rubber. Black.

REINFORCEMENT: Single Braid of High Tenacity Synthetic Yarn .

COVER : Modified Nitrile Rubber. Black.

Application :
Recommended for all Car Washing and Pressure Washer application in Garages, Service Stations and Industries.

Working Temperature :
-30°c to + 82°c

SUPER SPRAY HOSE
Exceed IS : 1677 Type 4

IH5-06	10.0	55.0	110.0	165.0
IH5-08	12.5	55.0	110.0	165.0

CONSTRUCTION

TUBE : Modified Nitrile Rubber. Black

REINFORCEMENT : Single Braid of High Tenacity Synthetic Yarn.

COVER : Modified Nitrile Rubber. Black.

Application :
Recommended for very high pressure spraying of water based pesticides & chemicals in Agriculture & Forestry. Oil resistant tube ensures longer life.

Working Temperature :
-30°c to + 82°c

CHEMICAL HOSE
Exceed IS : 7654 Type 1

IH6-12	19.0	10.0	20.0	40.0
IH6-16	25.4	10.0	20.0	40.0
IH6-20	31.5	10.0	20.0	40.0
IH6-24	38.0	10.0	20.0	40.0
IH6-32	50.0	10.0	20.0	40.0

CONSTRUCTION

TUBE : Specially compounded EPDM. Black.

REINFORCEMENT : High Tenacity Synthetic Yarn.

COVER : Specially Compounded EPDM. Black.

Application :
Recommended for conveying dilute chemicals e.g. Alum Liquor, Caustic Soda, Lime Solutions, Dilute Hydrochloric Acid Dilute Sulphuric Acid, Alcohol, Ethyl Alcohol. Butyl Alcohol, Isobutanol, etc.

Working Temperature :
-40°c to +100°c

INDUSTRIAL HOSES

CARBON FREE HOSE

CONSTRUCTION

TUBE : Modified Synthetic Rubber.

REINFORCEMENT : High Tenacity Synthetic Yarn

COVER : Specially Compounded Nitrile. Green/Black.

Application :
Recommended for specialised Furnace Coolant applications in Electrical Steel industry and other Non- Conductive applications. Engineered with specially developed carbon-free tube and cover, whereby meeting service requirements of low leakage current (Less than 20 micro amp at 6KV. DC)

Catalog No.	I.D. mm	Working Pressure Kg/cm^2	Test Pressure Kg/cm^2	Burst Pressure Kg/cm^2
IH7-08	12.7	17.0	34.0	69.0
IH7-12	19.8	17.0	34.0	69.0
IH7-16	26.2	17.0	34.0	69.0
IH7-20	32.4	17.0	34.0	69.0
IH7-24	39.2	17.0	34.0	69.0
IH7-32	51.8	14.0	28.0	56.0
IH7-40	63.5	14.0	28.0	56.0
IH7-48	76.2	14.0	28.0	56.0

Working Temperature :
-40^{0}c to + 100^{0}c

Welding Hose

Construction
Tube Black rubber / Plasticised Pvc
Reinforcement: Polyester yarn
Cover: Red or Blue Rubber / Red or Black Thermoplastic

Catalog No.	I.D mm	Working Pressure Kg/cm^2	Burst Pressure Kg/cm^2
IH8-05	8.0	15.0	55.0
IH8-06	10.0	15.0	55.0

Application:
Specialy designed for Oxy-acetylene welding and cutting equipment.
Temperature Range: -40^0 c to + 55^{0}c

Thunder Spring Hoses

Construction
Core: Modified Pvc
Reinforcement: Spiral wire
Cover: Transparent Pvc.
Temperature:- 540 to + 2040C

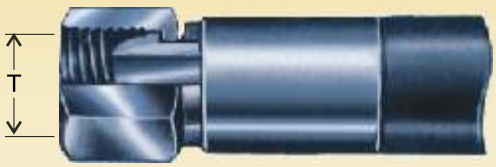
Application:
Non-toxic suitable for transfer of foods, Beverages, Injection moulding Machines, Petroleum based product and factory suction line

Working Temperature:
Maximum 60^0 c

Catalog No.	I.D mm	Working Pressure Kg/cm^2	Burst Pressure
IH9-05	8.0	8.0	15.0
IH9-06	9.0	8.0	15.0
IH9-08	12.0	5.0	13.0
IH9-10	15.0	4.0	12.0
IH9-12	19.0	4.0	10.0
IH9-16	25.0	3.0	9.0
IH9-20	32.0	3.0	8.0
IH9-24	38.0	3.0	8.0
IH9-32	50.0	3.0	8.0

END CONNECTIONS

FOR END CONNECTIONS NOT APPEARING IN THIS CATALOGUE, PLEASE SEND SKETCH, DRAWING OR SAMPLE



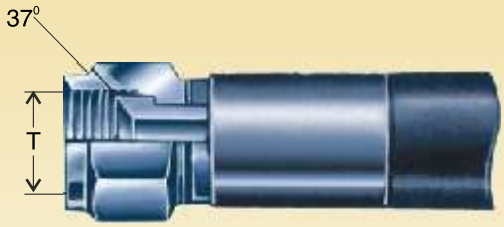
A
FEMALE SWIVEL

Part No.	Thread Size (T)	Part No.	Thread Size (T)
A-03B	1/8" BSP	A-03M	M12 x 1.5
A-04B	1/4" BSP	A-04M	M14 x 1.5
A-05B	3/8" BSP	A-05M	M16 x 1.5
A-06B	1/2" BSP	A-06M	M18 x 1.5
A-08B	5/8" BSP	A-08M	M22 x 1.5
A-10B	3/4" BSP	A-10M	M26 x 1.5
A-12B	1" BSP	A-12M	M30 x 1.5
A-16B	1-1/4" BSP	A-16M	M38 x 1.5
A-20B	1-1/2" BSP	A-20M	M45 x 1.5
A-24B	2" BSP	A-24M	M52 x 1.5

B
MALE THREAD

Part No.	Thead Size (T)	Part No.	Thead Size (T)
B-03B	1/8" BSP	B-03M	M12 x 1.5
B-04B	1/4" BSP	B-04M	M14 x 1.5
B-05B	3/8" BSP	B-05M	M16 x 1.5
B-06B	1/2" BSP	B-06M	M18 x 1.5
B-08B	5/8" BSP	B-08M	M22 x 1.5
B-10B	3/4" BSP	B-10M	M26 x 1.5
B-12B	1" BSP	B-12M	M30 x 1.5
B-16B	1-1/4" BSP	B-16M	M38 x 1.5
B-20B	1-1/2" BSP	B-20M	M45 x 1.5
B-24B	2" BSP	B-24M	M52 x 1.5
B-32B	2-1/2" BSP	B-32M	M65 x 2

END CONNECTIONS



C
FEMALE SWIVEL (JIC)

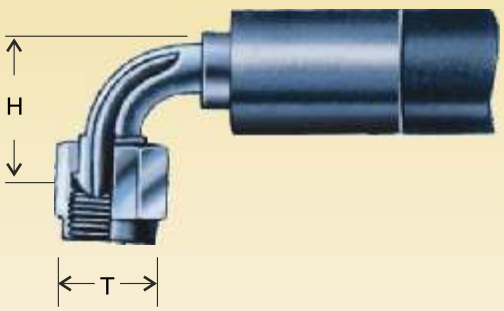
Part No.	Thread Size (T)
C-03	7/16" 20 UNF
C-04	1/2"-20 UNF
C-05	5/8"-18 UNF
C-06	3/4"-16 UNF
C-08	7/8" -14 UNF
C-10	1-1/16" -12 UNF
C-12	1-5/16" -12 UNF
C-16	1-5/8" -12 UNF
C-20	1-7/8"-12UNF
C-24	2-1/4" 12 UNF
C-32	2-1/2" -12 UNF

In case Female Seat angle is other than given in the drawing please specify

D
TAPER MALE THREAD

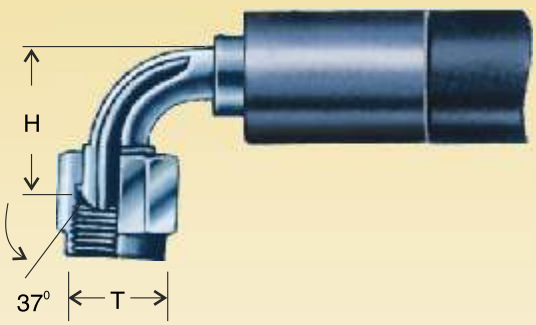
Part No.	Thead Size (T)
D-03	1/8" - NPTF
D-04	1/4" - NPTF
D-05	1/4" - NPTF
D-06	3/8" - NPTF
D-08	1/2" - NPTF
D-10	3/4" - NPTF
D-12	1" - NPTF
D-16	1-1/4" - NPTF
D-20	1-1/2" - NPTF

END CONNECTIONS



E
FEMALE SWIVEL (ELBOW)

Part No.	Thread Size (T)	Height (Short) (H) mm	Height (Long) (H) mm
E-03	1/8" BSP	11.0	-
E-04	1/4" BSP	12.0	27.0
E-05	3/8" BSP	15.0	32.0
E-06	1/2" BSP	16.5	36.0
E-08	5/8" BSP	18.0	40.5
E-10	3/4" BSP	22.0	50.0
E-12	1" BSP	26.0	59.0
E-16	1-1/4" BSP	30.0	66.0
E-20	1-1/2" BSP	32.0	66.0
E-24	2" BSP	35.0	86.0
E-32	2-1/2"BSP	48.0	100.0
METRIC THREADS CAN ALSO BE SUPPLIED			



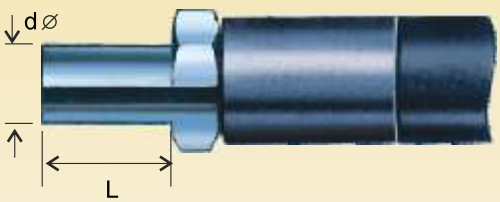
F
FEMALE SWIVEL JIC (ELBOW)

Part No.	Thead Size (T)	Height (H) mm	
F-04	7/16" - 20 UNF	18.5	In case Female angle is other than given in the drawing please specify
F-05	1/2" - 20 UNF	30.0	
F-06	9/16" - 18 UNF	30.0	
F-08	3/4" - 16 UNF	33.0	
F-10	7/8" - 14 UNF	41.0	
F-12	1-1/16" - 12 UNF	46.0	
F-16	1-5/16" - 12 UNF	55.0	
F-20	1-5/8" - 12 UNF	63.0	
F-04S	5/8" - 18 UNF	18.5	
F-06S	3/4" - 16 UNF	28.5	
F-08S	7/8" - 14 UNF	33.0	
F-10S	1-1/16" - 14 UNF	41.0	
F-12S	1-5/16" - 14 UNF	46.0	

END CONNECTIONS

G
FLANGE STRAIGHT

Part No.	Flange Size (D)	
G-08	30.0	0 Ring diameter etc. shall be corresponding , as per standards
G-12	38.1	
G-16	44.5	
G-20	50.8	
G-24	60.5	



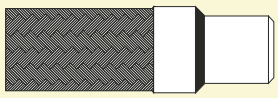
H
BEE-NIPPLE

Part No.	Pipe Dia 'D' ⌀		Length 'L'	
	S	L	S	L
H-03	6	8	20	22
H-04	8	10	22	24
H-05	10	12	24	25
H-06	12	14	25	27
H-08	15	16	25	30
H-10	18	20	25	32
H-12	22	25	25	34
H-16	28	30	25	36
H-20	35	38	30	38
H-24	42		36	
H-32	52		50	

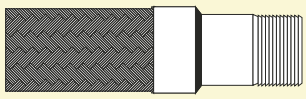
LIBRAFLEX®
THE EXPERIENCED PEOPLE

METAL HOSE FITTINGS
STANDARD EXCUTIONS
FOR ANNULAR CORRUGATED STAINLESS STEEL HOSE

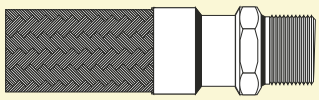
The fittings are available in steel, stainless steel or brass. Flange connections with fixed or floating flanges meet NEN, DIN, ANSI or other specifications. All fittings and flanges are attached by TIG welding. Non standard fittings can also be supplied.



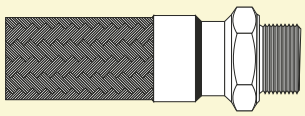
1. welding end



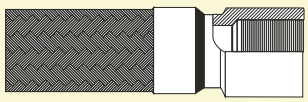
2. pipe nipple tapered male



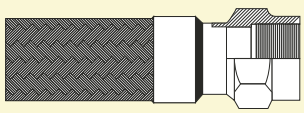
3. hexagon tapered male



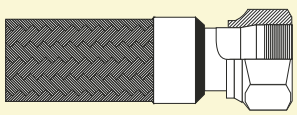
4. hexagon nipple straight male



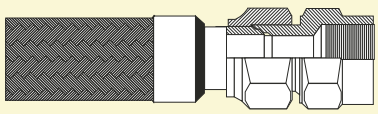
5. plain socket straight female



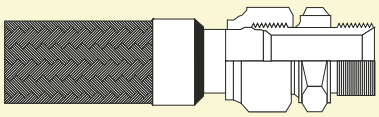
6. hexagon socket straight female



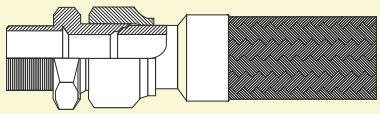
7. female swivel



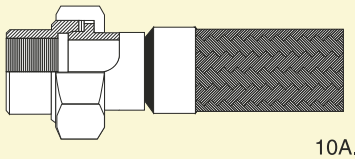
7A. hexagon union straight female



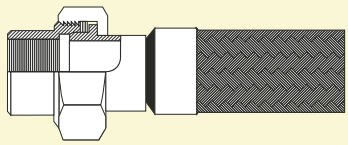
7B. hexagon union straight male



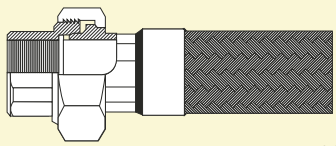
7C. hexagon union welding end



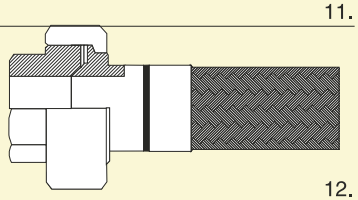
10A. hexagon union straight female



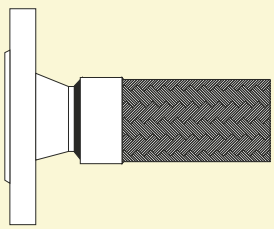
10B. stainless steel hexagon union straight female



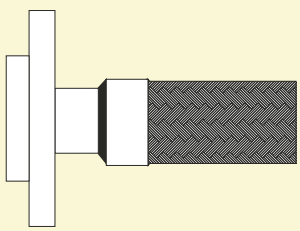
11. hexagon union GF 340 type straight female



12. hexagon union 3000 1bs heave duty type straight female

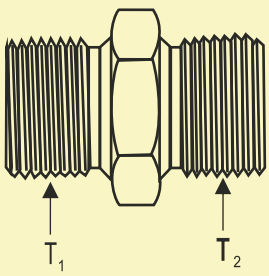
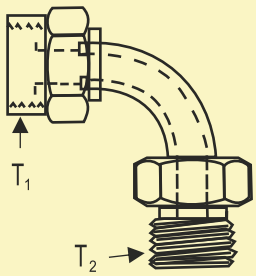
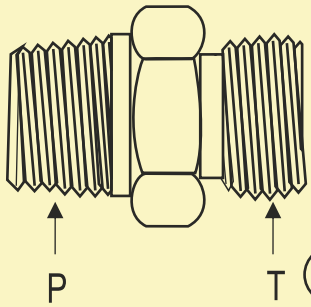
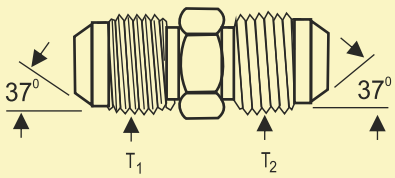
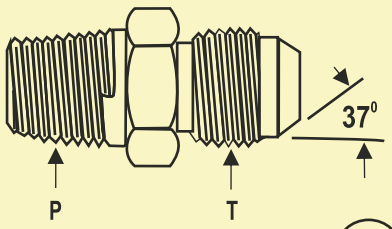
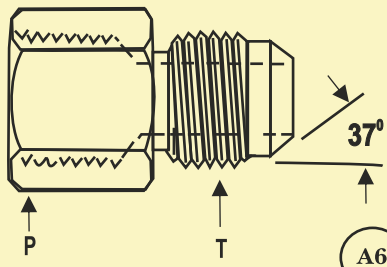
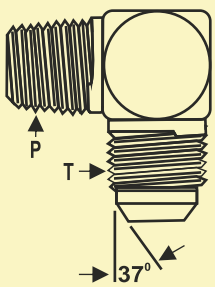
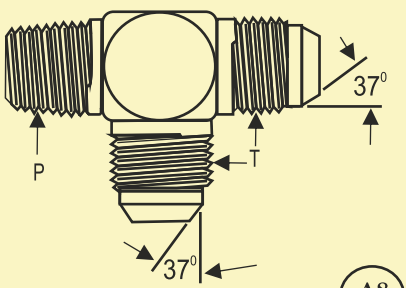
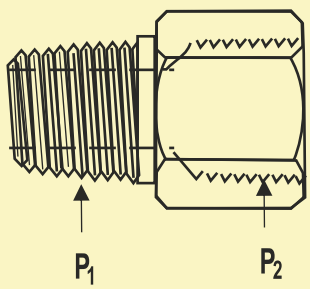
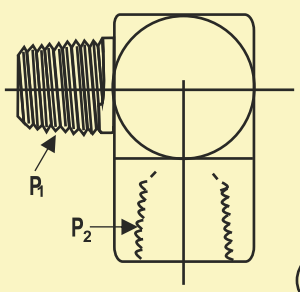
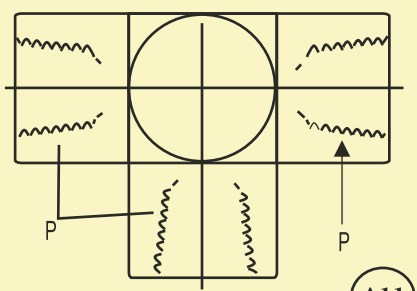
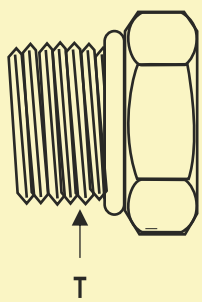


13. fixed flange



14. floating flange

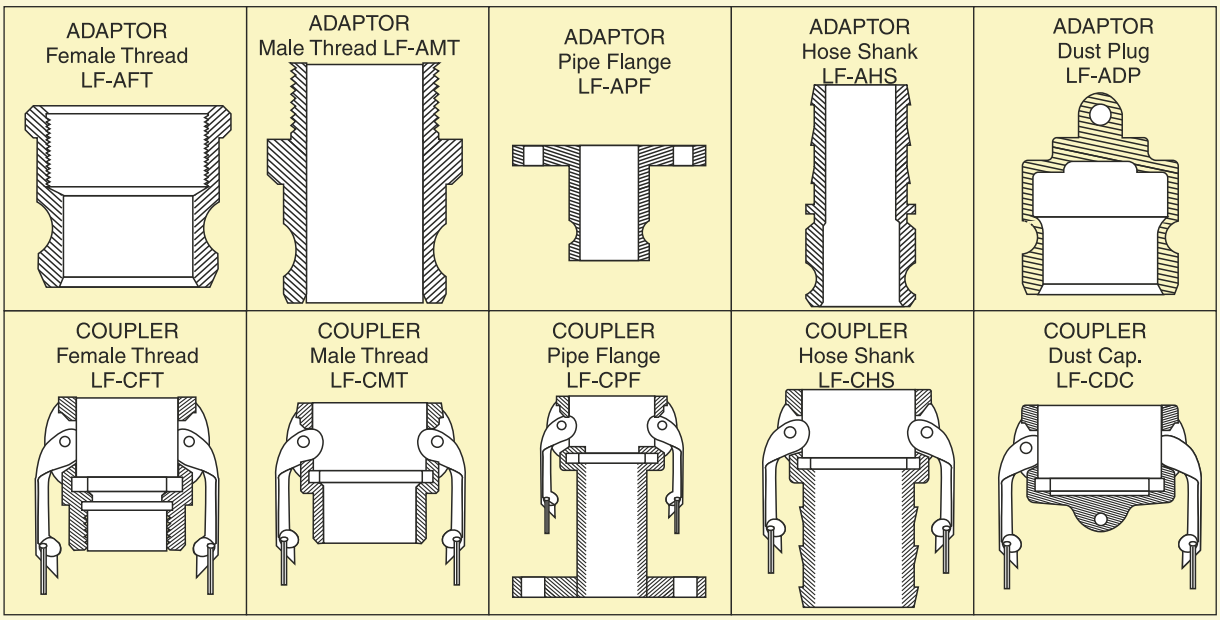
ADAPTORS

PARALLEL THD. CONNECTOR  A1	**ELBOW**  A2	**TAPER THD. CONNECTOR**  A3
MALE CONNECTOR (JIC)  A4	**TAPER THD. (JIC) CONNECTOR**  A5	**FEMALE THD. (JIC) CONNECTOR**  A6
MALE-ELBOW (JIC)  A7	**MALE-TEE (JIC)**  A8	**MALE/FEMALE CONNECTOR**  A9
MALE/FEMALE BELOW  A10	**FEMALE-TEE**  A11	**PLUG**  A12

Mention P&T Values While placing orders

CAMLOCK COUPLINGS

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 arm, increasing the locking action. When properly coupled, line pressure will not separate a camlock connection with recommended pressure limits.



END CONNECTIONS :
Socket Welding, Hose thread, Pipe thread, Hose shank and Flanged.
Size : Upto 8"

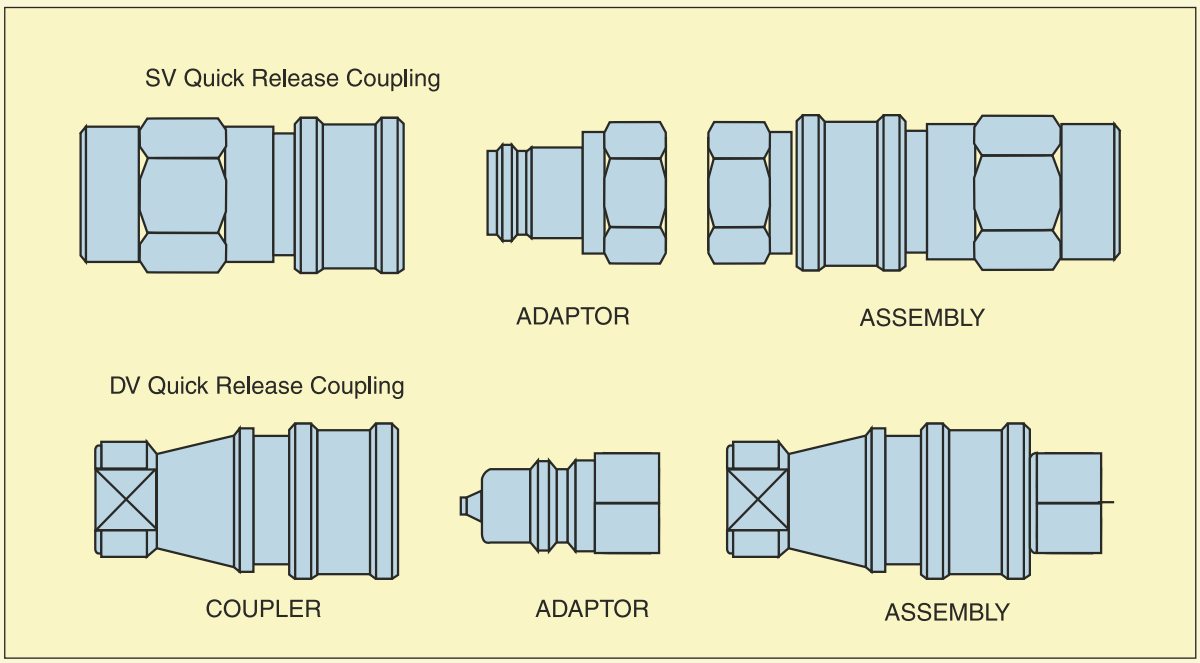
Working Pressure : Upto 500 psi.

TEMPERATURE :
The coupling can handle fluids -40^{0} C to 450^{0} C with right select in of body material and Gasket.

MATERIAL :
Body : Available in Mild Steel, Carbon steel, Brass, SS 304, & SS 316.
Gasket : Available in Nitrile, Viton, Neoprene, Silicone, Teflon.

QUICK RELEASE COUPLING

PRINCIPLE :
This works on simple 'Push & Pull Principle'. The adaptor when pushed into the coupler is securely held by the self locking arrangement resulting in 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 3 types
1. Single Valve QRC.
2. Double Valve QRC.
3. Through Type QRC.



END CONNECTIONS :
Socket Welding, Hose thread, Pipe thread, Hose shank and Flanged.

Size : 1/8" to 6"

Working Pressure : Upto 4000 psi.

TEMPERATURE : -25^{0} C to +370^{0} C with right selection of body & material

ADVANTAGES :
Fast positive, Leak proof connections, instant connection without tools, without threading or twisting, without strains, without sweat. Hence time saving.

MATERIAL :
Body : Mild Steel, Carbon Steel duly hardened, SS 304, 316, 316L and Brass
Spring : Spring steel, SS 304, 316, 316L.
Ball: SS 304, 316, 316L.
Seal Material : Nitrile, Neoprene, Viton, Silicone, Teflon.

CHEMICAL RESISTANCE DATA (CHART I)

Material Compatability Key: 1. Excellent 2. Acceptable 3. Not recommended 0. No. Information. Test before Using

Chemical	Teflon	CS	304SS	316SS	Brass	Effusion
Acetaldehyde	1	1	1	1	1	B
Acetic Acid, Glacial	1	0	2	2	0	
Acetic Acid, 30%	1	3	2	2	3	
Acetic Anhydride	1	3	2	2	3	
Acetone	1	1	1	1	1	
Acetylene	1	0	1	1	2	C
Acrylonitrile	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	0	1	1	1	
Aluminum Nitrate	1	3	1	1	0	
Aluminum Salts	1	0	2	2	0	
Aluminum Sulfate	1	3	3	2	3	
Ammonia Anhydrous	1	1	1	1	0	
Ammonia Aqueous	1	0	1	1	3	
Ammonium Carbonate	0	1	1	1	0	
Ammonium Chloride	1	0	2	2	3	
Ammonium Hydroxide	1	2	1	1	3	
Ammonium Metaphosphate	1	1	1	1	0	
Ammonium Nitrate	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	1	1	1	1	3	
Ammonium Thiocyarate	1	1	1	1	0	
Amyl Acetate	1	3	1	1	1	
Amyl Alcohol	1	1	1	1	1	
Amyl Chloride	1	0	1	1	0	
Amyl Chloronaphthalene	1	0	1	1	0	
Amyl Naphthalene	1	0	1	1	0	
Aniline	1	2	1	1	3	
Aniline Dyes	1	3	1	1	0	
Aniline Hydrochloride	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	1	3	1	1	2	
Barium Hydroxide	1	2	1	1	0	
Barium Sulfate	1	1	1	1	2	
Barium Sulfide	1	3	1	1	3	
Beer	1	2	1	1	1	
Beet Sugar Liquors	1	1	1	1	0	
Benzene	1	1	1	1	1	
Benzensulfonic Acid	0	3	0	2	0	
Benzaldehyde	1	1	0	0	0	
Benzine	1	1	1	1	1	B
Benzyl Alcohol	1	1	1	1	0	

Chemical	Teflon	CS	304SS	316SS	Brass	Effusion
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	C
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	
Butadiene	1	0	1	1	1	
Butane	1	1	1	1	1	C
Butter Oil	1	1	1	1	1	
Butyric Acid	1	3	1	1	2	
Butyl Acetate	1	2	1	1	1	
Butyl Alcohol	1	1	1	1	1	
Butyl Amine	0	1	1	1	1	
Butyl Carbitol	1	1	1	1	1	
Butyl Stearate	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	2	1	3	
Calcium Bisulfite	1	0	1	1	0	
Calcium Carbonate	1	1	1	1	1	
Calcium Chlorate	1	0	2	1	0	
Calcium Chloride	1	3	2	1	2	
Calcium Hydroxide	1	3	3	1	2	
Calcium Hypochlorite	1	0	3	2	3	
Calcium Nitrate	1	1	1	1	1	
Calcium Silicate	1	1	1	1	1	B
Calcium Sulfate	1	1	1	1	1	
Calcium Sulfide	1	1	1	1	0	
Cane Sugar Liquors	1	1	1	1	2	
Carbolic Acid	1	3	1	1	3	
Carbon Dioxide	1	1	1	1	1	A
Carbon Disulfide	0	2	1	1	2	
Carbonic Acid	1	3	1	1	3	
Carbon Monoxide	1	1	1	1	1	C
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	C
Chlorine Gaseous, Wet*	1	3	3	3	3	B
Chlorine Trifluroide	0	3	0	0	0	C
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	
O - Chloronaphthalene	1	1	1	1	1	
Chlorotoluene	1	1	1	1	1	

CHEMICAL RESISTANCE DATA (CHART I)

Material Compatability Key: 1. Excellent 2. Acceptable 3. Not recommended 0. No. Information. Test before Using

Chemical	Teflon	CS	304SS	316SS	Brass	Effusion
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	C
Copper Chloride	1	3	3	1	3	
Copper Cynaide	1	0	1	1	3	
Copper Sulfate	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	
Creosote	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	
Diobutyl 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	B
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	1	1	1	1	
Ethyl Acrylate	0	1	1	1	0	
Ethyl Alcohol	1	1	1	1	2	
Ethyl Benzene	1	1	1	1	1	
Ethyl Cellulose	1	1	1	1	1	
Ethyl Chloride	1	2	1	1	2	C
Ethyl Ether	1	2	1	1	1	
Ethyl Mercaptan	1	2	0	0	0	B
Ethyl Pentochloro-Benzene	1	2	1	1	1	
Ethyl Silicate	1	1	1	1	1	
Ethylene Chloride	1	2	1	1	2	
Ethylene Chlorohydrin	1	0	0	0	0	
Ethylene Diamine	1	0	0	0	1	
Ethylene Glycol	1	2	1	1	1	
Fatty Acids	1	0	1	1	0	
Ferric Chloride	1	3	3	3	3	
Ferric Nitrate	1	3	1	1	0	
Ferric Sulphate	1	3	1	1	3	
Ferrous Chloride	1	3	1	2	2	

Chemical	Teflon	CS	304SS	316SS	Brass	Effusion
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	A
Freon 114	2	3	1	1	0	A
Fuel Oil	1	2	2	2	1	
Fumaric Acid	0	0	1	1	0	
Furan Furfuran	1	1	1	1	1	
Furfural	1	2	1	1	1	
Gallic Acid	1	3	1	1	0	
Gasoline	1	2	1	1	1	
Glauber's Salt	0	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 Sulphate 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	
Hydroaulic Oil,Petroleum	1	1	1	1	1	
Hydrochloric Acid, 15%	1	3	3	3	3	B
Hydrochloric Acid,37%	1	3	3	3	3	B
Hydrocarbon Acid	1	3	1	1	3	C
Hydrofluoric Acid Concentrated	1	3	3	3	3	
Hydrofluosilicic Acid	1	0	3	3	3	
Hydrogen Gaseous	*	1	1	1	1	C
Hydrogen Peroxide, 70%	1	3	2	1	3	
Hydrogen Sulfide, Gaseous	1	3	2	1	3	C
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	
Lacquer Solvents	1	3	3	1	1	B
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	0	
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	1	1	1	1	2	
Methyl Bromide	1	1	1	1	1	B
Methyl Butyl Ketone	0	1	1	1	1	

CHEMICAL RESISTANCE DATA (CHART I)

Material Compatability Key: 1. Excellent 2. Acceptable 3. Not recommended 0. No. Information. Test before Using

Chemical	Teflon	CS	304SS	316SS	Brass	Effusion
Methyl Chloride	1	1	1	1	1	B
Methylene Chloride	1	1	1	1	1	
Methyl Ethyl Ketone (MEK)	1	1	1	1	1	
Methyl Formate	1	1	1	1	1	
Methyl Isobutyl Ketone	1	1	1	1	1	
Methyl Methacrylate	1	1	1	1	0	
Methyl Slicylate	1	1	1	1	1	
Milk	1	3	1	1	3	
Mineral Oil	1	1	1	1	1	
Monochlorobenzene	1	1	1	1	1	
Monoethanolamine	0	1	1	1	1	
Naphtha	1	2	1	1	1	
Naphthalene	1	0	1	1	0	
Naphthenic Acid	1	0	2	1	0	
Natural Gas	1	1	1	1	2	C
Nickel Acetate	1	1	1	1	1	
Nickel Chloride	1	3	2	2	3	
Nickel Sulfate	1	0	2	1	3	
Niter Cake	0	3	2	1	0	
Nitric Acid, All Concentrations	1	3	2	2	3	
Nitric Acid, Red Fuming	1	3	2	2	3	
Nitrobenzene	1	1	1	1	1	
Nitroethane	1	0	1	1	1	
Nitorgen, Gaseous	1	1	1	1	1	A
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	A
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	1	
Perchloric Acid	1	0	2	1	0	
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	2	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 Sulfate	1	2	1	1	2	
Propane	1	1	1	1	1	A
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	

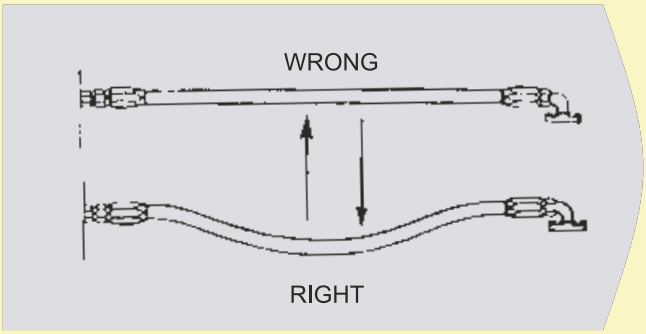
Chemical	Teflon	CS	304SS	316SS	Brass	Effusion
Silicone Oils	0	1	1	1	1	
Silver Nitrate	1	2	1	1	2	
Skydrol 500 & 7000	1	1	1	1	0	
Soap Solutions	1	1	1	1	1	
Soda Ash	0	1	1	1	2	
Sodium Acetate	1	1	1	1	1	
Sodium Bicarbonate	1	2	1	1	2	
Sodium Bisulfite	1	1	1	1	0	
Sodium Borate	1	1	1	1	0	
Sodium Chloride	1	2	2	1	3	
Sodium Cyanide	1	2	1	1	3	
Sodium Hydroxide, 40%	1	2	1	1	3	
Sodium Hypochlorite	1	3	3	2	3	
Sodium Metaphosphate	1	3	1	1	3	
Sodium Nitrate	1	1	2	2	2	
Sodium Perborate	1	3	1	1	3	
Sodium Peroxide	1	3	1	1	3	
Sodium Phosphate	1	0	1	1	3	
Sodium Thiosufate	1	3	1	1	3	
Soyabean Oil	1	1	1	1	0	
Stannic Chloride	1	3	0	0	3	
Steam	1	1	1	1	2	A
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	C
Sulfur Trioxide	1	2	2	2	0	B
Sulfuric Acid, 10%	1	3	3	2	3	
Sulfuric Acid, 98%	1	2	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	2	1	1	3	
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	
Trichlorothylene	1	3	0	1	1	
Trichresyl Phospate	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 Oils	1	1	1	1	0	
Versilube	1	1	1	1	1	
Vinegar	1	3	2	1	3	
Vinyl Chloride	1	2	1	1	3	C
Water	1	2	1	1	1	
Whiskey, Wines	1	3	2	1	3	
Xylene	1	2	2	2	0	
Zinc Acetate	1	1	1	1	1	
Zinc Chloride	1	3	2	1	3	
Zinc Sulfate	1	3	2	1	3	

CHEMICAL RESISTANCE CHART (II)

	EPOM	NEOPRENE	NITRILE	PTEE	POLYAMIDE	POLYESTER	POLYURETHANE
Acetaldehyde	A	D	D	B	B	B	D
Acetic Acid 10%	C	A	C	A	A	C	D
Acetic Acid 20%	A	A	C	A	B	C	D
Acetic Acid 30%	A	A	D	A	C	C	D
Acetic Acid 50%	C	D	D	A	C	C	D
Acetic Acid Glacial	B	D	D	A	D	D	D
Acetic Anhydride	B	B	D	A	D	C	D
Acetone	A	D	D	A	A	C	D
Acetylene	A	B	C	A	A	B	C
Acrylonitrile	D	D	D	A	A		D
Adpic Acid	A	A	A	A			A
Alums	A	A	A	A	C	D	D
Aluminium Chloride Solution	A	A	A	A	D	B	B
Aluminium Sulphate Solution	A	A	A	A	A	B	B
Ammonia Gas	D	D	D	D	D	D	D
Ammonia Liquid	D	D	D	D	D	D	D
Ammonium Carbonate	A	A	B	A	B	C	A
Ammonium Chloride	A	A	B	A	D	A	B
Ammonium Hydroxide	A	A	D	A	A	D	D
Ammonium Nitrate	A	A	A	A	B	C	A
Ammonium Sulphate	A	A	A	A	B	C	B
Amyl Acetate	D	A	D	A	B	A	D
Amyl Alcohol	A	A	C	A	B	D	D
Anhydrous Ammonia	D	D	D	D	D	D	D
Aniline	B	D	D	A	C	D	D
Animal Oils	B	B	C	A	A	B	D
Argon	A	D	A	A	A	A	A
ASTM Oil No.1	D	A	A	A	A	A	A
ASTM Oil No.2	D	B	A	A	A	A	B
ASTM Oil No.3	D	B	A	A	A	B	A
ASTM Ref. Fuel A	D	B	A	A	A	A	B
ASTM Ref. Fuel B	D	D	B	A	A	A	B
ASTM Ref. Fuel C	D	D	B	A	A	B	C
Asphalt	D	C	B	A	B	B	B
Avaition Gasoline	D	D	A	A		C	B
Barium Chloride	A	A	A	A	B	C	A
Barium Hydroxide	A	A	A	A	B	B	D
Benzaldehyde	B	D	D	A	A	B	D
Benzene	D	D	D	A	B	B	D
Benzyl Alcohol	C	C	D	A	B	C	D
Borax Solution	A	A	C	A	B	B	
Boric Acid	A	A	A	A	C	B	A
Bromine	D	D	D	B	D	D	D
Butane	D	A	A	A	B	A	D
Butonal	B	A	A	A	C	B	D
Butanone	A	D	D	A	B	A	D
Butyl Acetate	D	D	D	A	B	B	D
Calcium Chloride	A	A	A	A	B	A	A
Calcium Hydroxide	A	A	A	A	A	C	D
Calcium Hypochlorite, 6%	A	C	D	A	A	B	B
Carbon Bisuphide	A	C	B	A	B	B	C
Calcium Nitrate	A	A	A	A	A	A	D
Carbon Dioxide	B	B	A	A	B	A	D
Carbon Monoxide	A	A	A	A	A	A	A
Carbon Tetrachloride	D	C	D	A	D	D	D
Carbonic Acid	A	A	B	A	B	D	A
Caster Oil	B	A	A	A	B	B	B
Chlorine Gas, Dry	D	C	D	A	D	D	D
Chlorine Gas wet	D	D	D	B	D	D	D
Chloracetic Acid	B	A	D	A	C	D	D
Chlorobenzene	D	D	D	A	A	D	B
Chloroform	D	D	D	A	D	D	D
Chlorosulfonic Acid	D	D	D	A	D	D	D
Chromic Acid 10%	D	C	D	A	D	D	D
Choromic Acid 50%	D	D	D	A	D	D	D
Citric Acid Solution	A	A	A	A	B	B	A
Caol Oil	D	B	A	A	A	A	C
Copper Chloride Solution	A	A	A	A	D	A	B
Copper Sulhate Solution	A	A	A	A	B	B	C
Cresote	D	D	C	A	D	D	C
Cresol	D	D	D	A	D	D	D
Cyclohexane	D	D	B	A	B	A	B
Cyclohexanol	D	B	C	A	B	C	
Cyclohexanone	C	D	D	A	B	B	D
DDT Preparations	D	D	D	A	A		D
Diamminium Phosphate	A	A	A	A	B	C	D
Diethyl Ether	C	D	D	A			D
Dibutyl Phthalete	B	D	D	A	B	B	D
Diachloro Benzene	D	D	D	A	A	D	D
Dichloro Ethylene	D	D	D	A	C	D	C
Diesel Fuel	D	D	A	A	A	B	C
Diethyl Ether	D	D	D	A	B	B	A
Diethyl Sebacate	B	D	D	A		A	D
Dicotyl Phthalate	B	D	D	A	B	B	D
Ethanol	A	A	A	A	A	C	D
Ethyl Acetate	B	D	D	A	A	C	D
Ethyl Chloride	C	D	A	A	A	D	C
Ehtelene Chlorhydrin	B	B	D	A	D	D	D
Ethylene Dichloride	D	D	D	A	C	D	D
Ethylene Glycol	A	A	A	A	A	A	B
Ethylene Oxide	C	D	D	A	A	A	D
Fatty Acid Ester	D	B	A	A	A	B	D
Ferric Chloride	A	A	A	A	D	B	A
Ferric Nitrate	A	A	A	A	A	C	A
Ferric Sulphate	A	A	A	A	A	C	B
Ferric Chloride	A	A	A	A	A	A	B
Ferrous Sulphate	A	A	A	A	A	C	A
Fluorine	D	D	D	D	D	D	D
Formaldehyde	A	B	C	A	C	C	D
Formic Acid	A	A	D	A	D	D	D
Freon 12	C	C	C	A	A	A	C
Freon 22	D	A	D	A	A	D	D
freon 113	D	A	A	A	D	A	C
Freon 502	A	A	B	A	A		
Furfural	B	C	D	A	C	B	D
Furfural Alcohol	B	D	D	A	A	B	D
Gas, Coal	A	A	D		A	B	B
Gas, High Octane	D	D	A	A	A	A	C
Gasoline	D	D	B	A	A	A	A
Glycerine	A	A	A	A	A	A	D
Greases	D	D	A	A	A	A	A
Helium	A	A	A	A	A	A	A
Heptane	D	B	A	A	A	B	B
n-Hexane	D	A	A	A	B	A	B
Hydrazine	A	B	B	A	D	D	D
Hydraulic Fluid (Petroleum)	D	B	A	A	A	A	B
Hydrochloric Acid 10%	A	A	C	A	A	B	B
Hydrochloric Acid 20%	A	B	C	A	B	C	C
Hydrochloric Acid	A	B	C	A	D	D	D
Hydrofluoric Acid	C	B	D	A	C	D	D
Hydrogen Gas	A	A	A	A	A	A	A
Hydrogen Perroxide 20%	C	D	D	A	A	D	D
Hydrogen Sulphate, (Wet)	A	C	D	A	D	A	D
Iodine Pentafluoride	D	D	D	A			D
Iodoform	D	D					
Isobutyl Alcohol	A	A	B	A			D
Isooctane	D	B	A	B	A	A	A
Isopropyl Acetate	B	D	D	A	A	C	D
Isopropyl Alcohol	A	B	B	A	A	C	D
Isopropyl Ether	D	D	B	A			B
JP- 4 Fuel	D	D	A	A	C	A	C
Kerosene	D	C	B	A	A	A	B
Ketones	A	D	D	A	A	D	D
Lacquer Solvent	D	D	D	A	A	D	D
Lactic Acid	A	A	A	A	A	D	B
Lard	B	B	A	A	A	B	C
Lead Acetate	A	B	B	A	A		D
Lead Nitrate	A	A	A	A			
Lime Bleach	A	B	A	A			
Linoleic Acid	D	D	B	A			
Linseed Oil	C	B	A	A	A	B	B
Liquified Petroleum Gas	D	C	A	A	A	B	C
Lubricating Oils, Petroleum base	D	B	A	A	A	A	B
Magnesium Chloride (Aq)	A	A	A	A	A	B	A
Magnesium hydroxide (Aq)	A	A	B	A	B	C	D
Magnesium Sulphte (Aq)	A	A	A	A	A	B	D
Maleic Acid	B	D	D	A	C		D
Maleic Anhydride	D	D	D	A			
Mercuric Chloride (Aq)	A	B	A	A			
Methane	D	C	A	A	A	B	C
Methanol	A	B	A	A	A	C	D
Methyl Acetate	A	D	D	A	A	B	D
Methyl Acrylate	B	D	D	A	C		D
Methyl Bromide	D	D	B	A	A	D	D
Methyl Cellusolve	B	C	C	A			D
Methyl Chloride	C	D	D	A	A	D	D
Methyl Ethyl Ketone	A	D	D	A	A	B	D
Methlyisobutylketone (MIBK)	B	D	D	A	A	D	D
Methyl Methacrylate	D	D	D	A	C		D
Methylene Chloride	C	D	D	A	D	D	D
Mineral Oil	D	B	B	A	A	A	A
Monochlorobenzene	D	D	D	A	B	C	D
Naptha	D	D	B	A	A	A	C
Napthalene	D	D	D	A	A	C	B
Natural Gas	D	A	A	A	A	B	C
Neon Gas	A	A	A	A	A		A
Nickel Acetate (Aq)	A	B	B	A			D
Nickel Chloride (Aq)	A	A	A	A	D	D	D
Nikel Sulfate (Aq)	A	A	A	A	D	D	C
Nitric Acid (10%)	B	B	D	A	D	D	D
Nitric Acid (conc.)	D	D	D	A	D	D	D
Nitric Acid (Red Fuming)	D	D	D	A	D	D	D
Nitrobenzene	A	D	D	A	D	D	D
Nitroethane	B	C	D	A			D
Nitrogen	A	A	A	A	B	A	A
Nitrous Oxide	A	B	A	A	D		B
n-Ocetane	D	D	B	A	B	A	D
Ocetyl Alcohol	C	B	B	A	G	G	D
Oleci Acid	D	C	A	A	A	C	B
Oleum Spirit	D	D	B	A	A	B	C
Oxallic Acid	A	B	B	A	A	D	D
Oxygen	A	A	B	A	A	B	A
Ozone	A	C	D	A	D	B	A
Paint Thinner	D	D	D	A	B	G	G
Palmitic Acid	B	B	A	A	D	A	A
Perchloric Acid	B	B	D	A	D	D	D
Perchloroethylene	D	D	D	A	B	D	D
Petroleum	D	B	A	A	B	A	B
Phenol	D	D	D	A	D	D	D
Phosphate Esters, 72deg	A	D	D	A	A	A	D
Phosphoric Acid,40%	A	A	D	A	A	D	D
Picric Acid	C	C	D	A	C	D	D
Potassium Chloride	A	A	A	A	A	B	A
Potassium Cyanide	A	A	A	A	A	B	A
Potassium Dicromate (Aq)	A	A	A	A	B	B	B
Potassium Hydroxide (Aq) 50%	A	B	B	A	A	D	A
Potassium Nitrate	A	A	A	A	A	B	A
Potassium Sulphate	A	A	A	A	A	B	A
Propane	D	B	A	A	A	B	C
Propyl Alcohol	A	A	A	A	D		A
Propyl Nitrate	B	D	D	A			D
Propylene	D	D	D	A			D
Propylene Glycol 70 Deg F	A	C	A	A			B
Pydraul 50 E	B	D	D	A	A	A	D
Pydraul 312C	D	D	D	A	A	B	D
Resoricionl	B	D	D	A	D	D	D
SAE No. 10 Oil	D		A	A	A	A	A
Sea Water	A	A	A	A	A	A	D
Silicate Esters	D	A	B	A	B	C	A
Silicone Grease	A	A	A	A	A	A	A
Silicone Oil	A	A	A	A	B	B	A
Silver Nitrate	A	A	B	A	A		A
Skydol 500	A	D	D	A	A	B	D
Soap Solution	A	B	A	A	B	A	C
Soda Ash	A	A	A	A	B	B	B
Sodium Acetate (Aq)	A	B	B	A	B		D
Sodium Chloride (Aq)	A	A	A	A	A	A	A
Sodium Hydroxide (50%)	A	A	B	A	A	C	B
Sodium Hydrochloride (Aq)	B	B	B	A	A	B	D
Sodium Sulphide	A	A	A	A	A	B	A
Sodium Nitrate	A	B	A	A	B	B	B
Sodium Peroxide	A	B	B	A	D	B	D
Stannic Chloride (Aq)	A	C	A	A	D	B	B
Steam 212 Deg F	A	D	D	A	D	D	D
Stearic Acid	B	B	B	A	A	B	A
Styrene	D	D	D	A	A	D	D
Sulphur Chloride	D	D	D	A	D	C	C
Sulphur Dioxide	A	D	D	A	D	D	D
Sulfuric Acid (dil)	A	A	B	A	D	A	D
Sulfuric Acid (conc.l)	D	D	D	A	D	D	D
Tannic Acid	A	A	A	A	A	A	A
Tar, Bituminous	D	C	B	A	B	B	B
Tartaric Acid	C	B	A	A	A	B	A
Tertiary Butyl Alcohol	B	B	B	A			D
Tertiary Butyl Mercapton	D	D	D	A			D
Tetrachloroethylene	D	D	D	A	C		D
Tetra Hydrofuran (THF)	D	D	D	A	A	C	D
Toluene	D	D	D	A	A	C	D
Transformer Oil	D	B	A	A	B		B
Transmission Fluid, type A	D	B	A	A	B	B	B
Tributyl Phosphate	D	D	D	A	B	C	D
Trichracetic Acid	B	D	D	A	D	D	D
Trichloroephne	D	D	D	A	B	D	D
Trichloroethylene	D	D	D	A	B	D	D
Trisodium Phosphate	A	A	A	A	A	A	B
Tung Oil	D	A	A	A	B	B	C
Turpentine	D	D	A	A	A	B	D
Urea	A	A	A	A	A	B	B
Uric Acid				A	A	D	D
Vinegar	A	B	C	A	A	C	D
Vinyl Chloride	D	D	D	A			
Water (72 F)	A	A	A	A	A	A	A
Water (140 F)	A	A	A	A	A	B	D
Water (212 F)	A	D	D	A	D	D	D
Water Glycol Solution 72 F	A	A	A	A	A	A	C
Water Glycol Solution 125 F		A	A	A	A	B	D
Water Glycol Solution 180 F		A	A	A	A	D	D
Water, Soda	A		A	A	A	A	
White Oil	D	B	A	A			A
Wood Oil	D	B	A	A	B	B	C
Xylene	D	D	D	A	B	C	D
Zinc Chloride	A	A	A	A	B	C	B

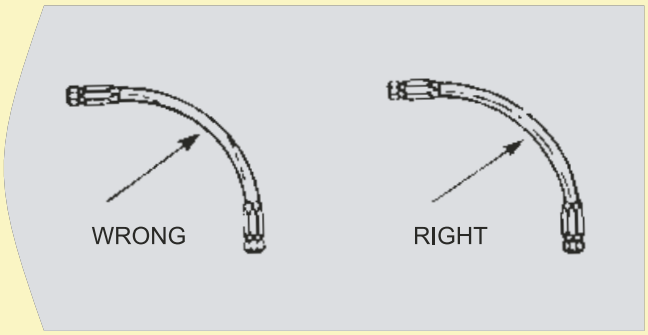
A- Exelleent, little or no swelling or softing B- Good, Swelling or is moderate C-Fair, conditional service may be expected D - cUnsatisfactory, not recommended

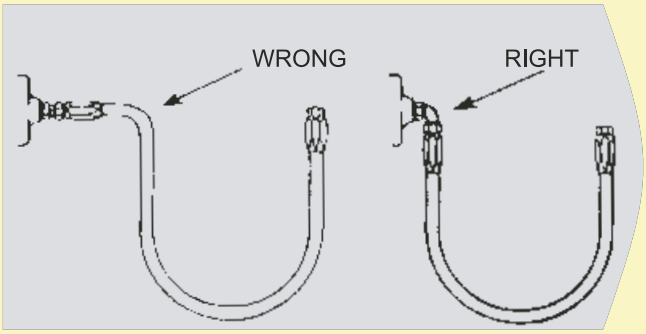
HOSE INSTALLATION



1. Provide slack or bend in the hose line to provide for changes in length that will occur when pressure is applied.

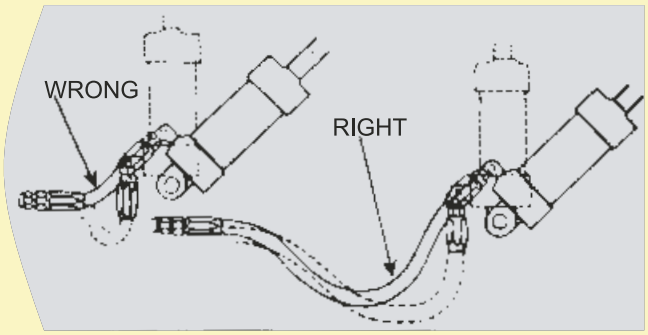
2. Observe linear stripe. The hose must not be twisted. High pressures applied to a twisted hose may cause failure or loosen the nut.





3. Relieve sharp bends, avoid strain or hose collapse and make cleaner installations by using elbows or other adaptor fittings. Provide as large a bend radius as possible. Never use less than recommended minimum bend radius specified for the hose.

4. Provide additional bend radius when lines are subject to flexing and remember that the metal and fittings are not flexible. Place line support clamps so as not to restrict hose flexing.



DEFINITION OF TERMS

PRESSURES

Maximum Working Pressure the maximum operating pressure to which a hose assembly should be subjected. It is normally computed at 25% of the design burst pressure.
Maximum Test pressure the Maximum pressure to which a hose should be subjected without harmful deformation. Normally computed at 150% of the working pressure.
Burst Pressure the Pressure at which the hose can be expected to fail. Computed based upon installations in a straight line at room temperature.
Shock and Pulsating Pressure where shock or repetetive pulsating pressures exist the maximum allowable pressure shall not exceed 50% of the normal working pressure.

Flow Velocity When the flow velocity exceeds 50 ft. / second liquid. 100 ft. /second gas,in unbraided hose; or 75 ft. / second liquid, 150 ft. / second gas in braided hose, an interlock liner should be used. The use of this liner will increase the service life of the assembly by reducing harmful resonance.

Pressure Drop As a standard simplification pressure drop through a corrugated metal hose could average three times that of steel pipe depending upon flow rate.

MOTIONS

Vibration the vibration normally encountered in industrial applications is shown here under. Discharge lines on pumps and compressors along with diesel engine exhaust are typical vibration applications.

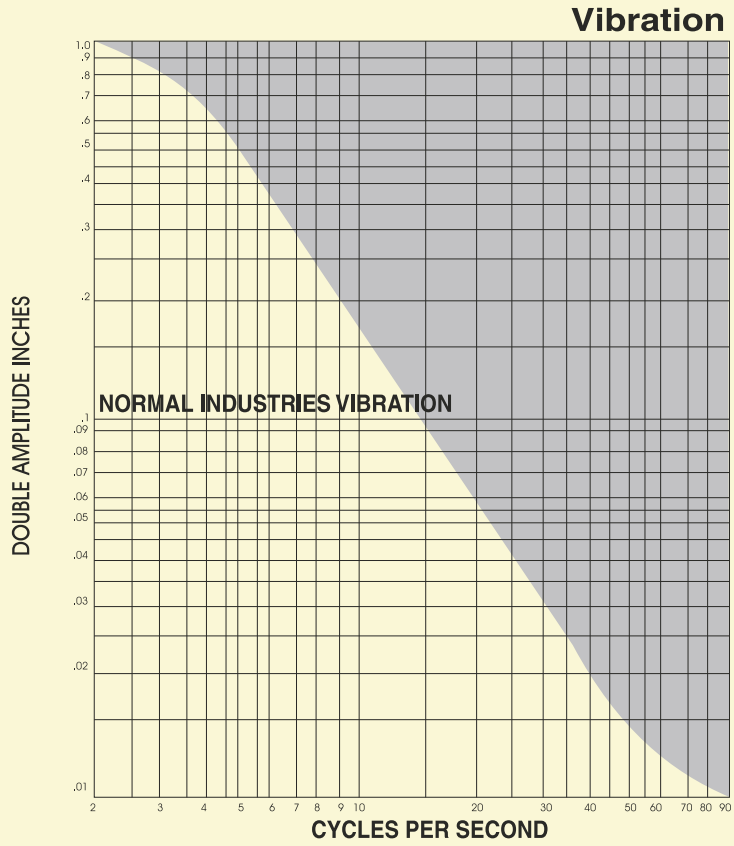
Random uncontrolled motion such as experienced by manual handing.

Continuous Flexing a controlled cyclical motion based on a constant amount of travel.

Intermittent Flexing *motion* that occurs either regularly or irregularly along a path of full travel.

VIBRATION

The vibration normally excountered in industrial application is shown in the unshaded area of the adjoining chart When specifying a hose assembly for use in vibration, the live length shall never be shorter than shown in the hose specification sheet of SS 10 under "Minimum exposed length for normal Vibration." If the expected vibration falls outside the unshaded area consult the factory.



Recommendations for getting the best service life

Will the hose last long or not? This clearly depends on how It's used. There are various limits for hose assemblies; at no point of time should these limits be crossed in order to get the Best service life.

Regular checks have to be performed on the hoses in use, on the line (i.e. on site inspection) these include checking the hose For leaks, blisters on the cover, kinks, cuts, abrasion etc. Besides this the following points have to be always met with.

Working pressure: The on line system pressure should not exceed the recommended working pressure mentioned for that particular hose. Pressure surges or peaks exceeding the recommended working pressure can take its toll on the hose.

Temperature: The hose should never be exposed to either Internal or external temperature exceeding the limits given in the catalogue.

Hose application: Right hose for the right application is the key for getting good service life. e. g. hydraulic hose should never be used for steam application as it is not suitable for the same & vice versa.

Size matters: Proper size selection (inside diameter should be correctly determined) is required, since smaller than Required size would cause heat generation which in turn can result in tube damage, drop in system pressure etc.

Minimum bend radius: Do not bend or flex hose to a radius beyond the specified parameter as it would put excessive stress on the internal reinforcement & greatly reduce the pressure resisting cap ability of the hose.

Fluid compatibility: The tube, reinforcement, cover & fitting Material must be compatible with the fluid if in doubt you may please Contact us for clarifications.

Hose length: Correct hose length must be determined taking into consideration the vibration, flexings, movements etc.

Note : Please follow the hose installation guidelines given in the catalogue while installing the hoses.

Hose shelf life

The shelf life of hose varies from product to product.

1. Teflon hoses have a non - Aging quality, the properties of teflon hose do not change with age or exposure to weather. So these hose can be stored for a longer period of time without any deterioration in quality.

2. Rubber hose on the other hand have limited shelf life which varies from 3- 5 years Depending on several factors like -
   (a)Temperature: Rubber hoses should be stored in a cool, dry Area where Temperature should never exceed+38 deg.
   (b) It should be protected from direct sunlight, rain and humidity& ozone
   (c) Rubber hoses should be stored in proper place where any Exposure of insects or rodents isn't there.
3. Stainless steel hoses can be stored for long time, the only Precaution to be taken is to check that they are Not over bent (should not be bent more than the recommended Bend radiuses while storing)

LIBRAFLEX®

THE EXPERIENCED PEOPLE

Inch/Millimeter Conversion Table

Inches		Millimeters	Inches		Millimeters	Inches		Millimeters
Fractions	Decimals	Decimals	Fractions	Decimals	Decimals	Fractions	Decimals	Decimals
1/64..	.016	.397	25/64..	.391	9.922	49/64..	.766	19.447
1/32.....	.031	.794	13/32.....	.406	10.319	25/32.....	.781	19.844
3/64..	.047	1.191	27/64..	.422	10.716	51/64..	.797	20.241
1/16.....	.063	1.588	7/16.....	.438	11.113	13/16.....	.813	20.638
5/64..	.078	1.984	29/64..	.453	11.509	53/64..	.828	21.034
3/32.....	.094	2.381	15/32.....	.469	11.906	27/32.....	.844	21.431
7/64..	.109	2.778	31/64..	.484	12.303	55/64..	.859	21.828
1/8.....	.125	3.175	1/2.....	.500	12.700	7/8.....	.875	22.255
9/64..	.141	3.572	33/64..	.516	13.097	57/64..	.891	22.622
5/32.....	.156	3.969	17/32.....	.531	13.494	29/32.....	.906	23.019
11/64..	.172	4.366	35/64..	.547	13.891	59/64..	.922	23.416
3/16.....	.188	4.763	9/16.....	.563	14.288	15/16.....	.938	23.813
13/64..	.203	5.159	37/64..	.578	14.684	61/64..	.953	24.209
7/32.....	.219	5.556	19/32.....	.594	15.081	31/32.....	.969	24.606
15/64..	.234	5.953	39/64..	.609	15.478	63/64..	.984	25.003
1/4.....	.250	6.350	5/8.....	.625	15.875	1.....	1.000	25.400
17/64..	.266	6.747	41/64..	.641	16.272		.	
9/32.....	.281	7.144	21/32.....	.656	16.669			
19/64..	.297	7.541	43/64..	.672	17.066			
5/16.....	.313	7.938	11/16.....	.688	17.463			
21/64..	.328	8.334	45/64..	.703	17.859			
11/32.....	.344	8.731	23/32.....	.719	18.256			
23/64..	.359	9.128	47/64..	.734	18.653			
3/8.....	.375	9.525	3/4.....	.750	19.050			

Pounds per Square Inch into Kilograms per Square Centimeter

	0	1	2	3	4	5	6	7	8	9
PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI
0	-	14.22	28.45	42.67	56.89	71.12	85.34	99.56	113.79	128.01
10	142.23	156.46	170.68	184.90	199.12	213.35	227.57	241.79	256.02	270.24
20	284.47	298.69	312.92	327.14	341.36	355.58	369.81	384.03	398.25	412.48
30	426.70	440.93	455.15	469.37	483.60	497.82	512.04	526.27	540.49	554.71
40	568.94	583.16	597.38	611.61	625.83	640.05	654.28	668.50	682.72	696.95
50	711.17	725.40	739.62	753.84	768.07	782.29	796.51	810.73	824.96	839.18
60	853.41	867.63	881.85	896.08	910.30	924.52	938.75	952.97	967.19	981.40
70	995.64	1009.90	1024.10	1038.30	1052.50	1066.80	1081.00	1095.20	1109.40	1123.60
80	1137.90	1152.10	1166.30	1180.50	1194.80	1209.00	1223.20	1237.40	1251.70	1265.90
90	1280.10	1294.30	1308.60	1322.80	1337.00	1351.20	1365.40	1379.70	1393.90	1408.10
100	1422.30	1436.60	1450.80	1465.00	1479.20	1493.50	1507.70	1521.90	1536.10	1550.40

Kilograme per Square Centimeter/Pounds per Square Inch

	0	1	2	3	4	5	6	7	8	9
PSI	Kg./cm^2	Kg./cm^2	Kg./cm^2	Kg./cm^2	Kg./cm^2	Kg./cm^2	Kg./cm^2	Kg./cm^{2}I	Kg./cm^2	Kg./cm^2
0	-	0.0703	0.1406	0.2109	0.2812	0.3515	0.4218	0.4921	0.5624	0.6327
10	0.7031	0.7734	0.8437	0.9140	0.9843	1.0546	1.1249	1.1952	1.2655	1.3358
20	1.4061	1.4764	1.5467	1.6170	1.6873	1.7576	1.8279	1.8982	1.9685	2.0388
30	2.1092	2.1795	2.2498	2.3201	2.3904	2.4607	2.5310	2.6013	2.6716	2.7419
40	2.8123	2.8826	2.9529	3.0232	3.0935	3.1638	3.2341	3.3044	3.3747	3.4450
50	3.5153	3.5856	3.6559	3.7262	3.7965	3.8668	3.9371	4.0074	4.0777	4.1480
60	4.2184	4.2887	4.3590	4.4293	4.4996	4.5699	4.6402	4.7105	4.7808	4.8511
70	4.9214	4.9917	5.0620	5.1323	5.2026	5.2729	5.3432	5.4135	5.4838	5.5541
80	5.6245	5.6948	5.7651	5.8354	5.9057	5.9760	6.0463	6.1166	6.1869	6.2572
90	6.3276	6.3979	6.4682	6.5385	6.6088	6.6791	6.7494	6.8197	6.8900	6.9603
100	7.0306	7.1009	7.1712	7.2415	7.3118	7.3821	7.4524	7.5227	7.5930	7.6633

NOTE: Coumns headed 0 thru 9 in both tables represent increment of figures listed in first column at left. Example: In covering from PSI to Kg/cm^2, 18 PSI= 1.2655 Kg/cm^2.