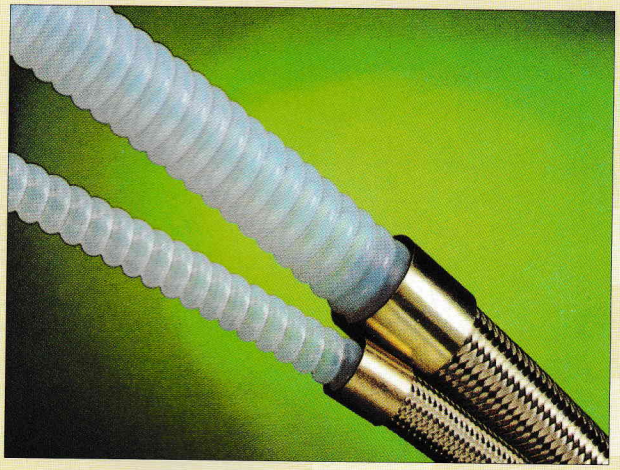
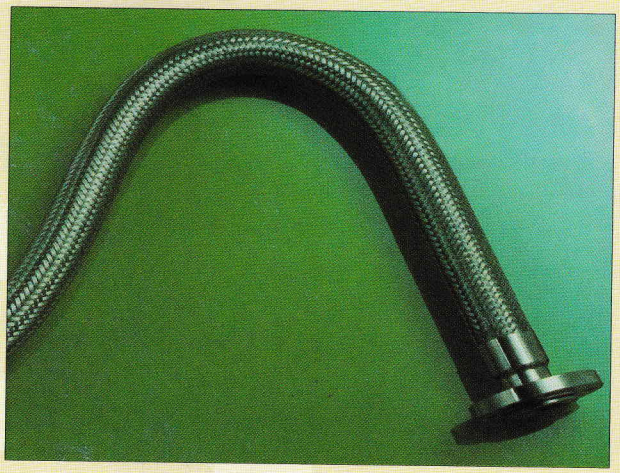
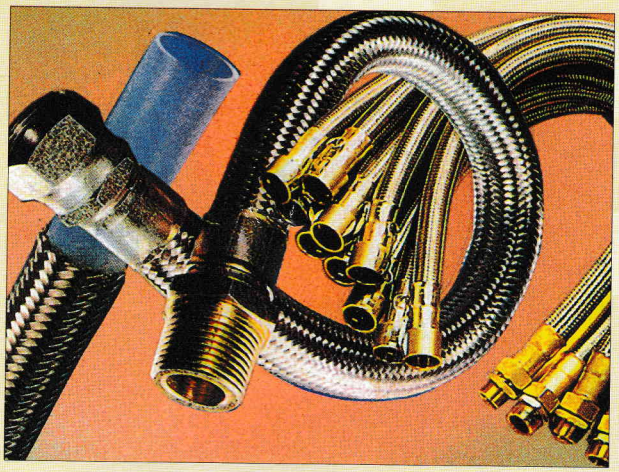
INSAP®

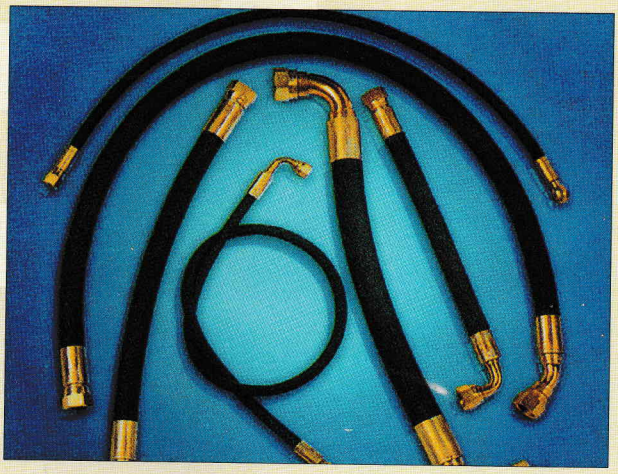
INSAPFLEX HOSE / HOSE ASSEMBLIES
Catalogue

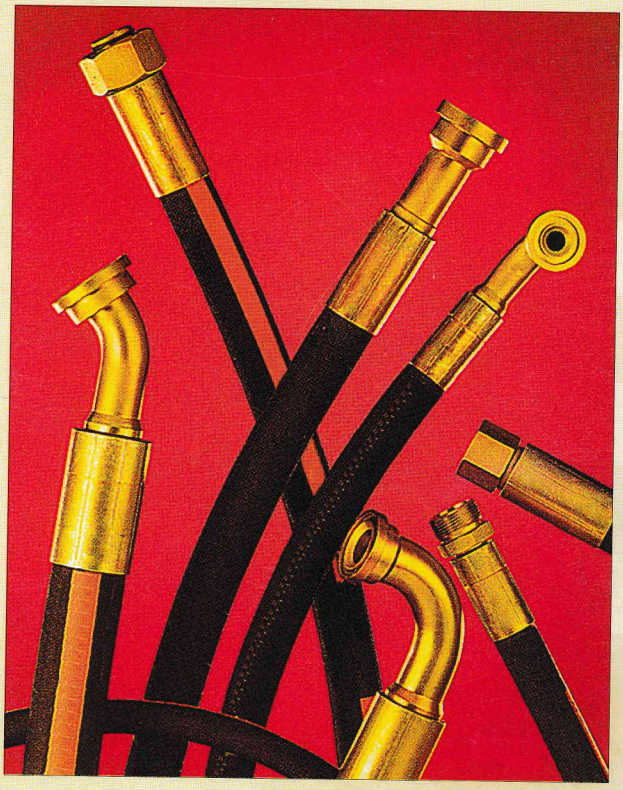
ISO 9001:2000











DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 00208-2003-AQ-MDR-RvA

This is to certify that
the Quality Management System
of

INSAP ENGINEERS PVT. LIMITED

at
19, Alappakkam Road, Maduravoyal, Chennai-602 102, INDIA

has been found to conform to the Quality Management System Standard:
ISO 9001:2000

This Certificate is valid for the following product or service ranges:

MANUFACTURE AND SUPPLY OF ALL TYPES OF RUBBER, PTEE TEFLON, THERMOPLASTIC, STAINLESS STEEL METAL CORRUGATED AND OTHER HOSE ASSEMBLIES AND ALL TYPES OF HYDRAULIC, PNEUMATIC FITTINGS

Original Certification date:
2001-04-24

Place and date:
New Delhi, 2003-06-10

This Certificate is valid until:
2006-05-23

for the Accredited Unit:
DNV CERTIFICATION B.V.,
THE NETHERLANDS

MGMT. SYS.
RvA C 024

Compliance to the Standard in respect to the indicated scope is verified by the DNV approved registered Team Leader:

T J Manohar
Lead Auditor

Krishnakumar N.R.
Management Representative

Lack of fulfillment of conditions as set out in the Appendix may render this Certificate invalid.

DNV 5023/1.1

DNV CERTIFICATION B.V. Haastrechtstraat 7, 3079 DC Rotterdam, The Netherlands, TEL.INT.:+31 102922 688, FAX:+31 10 4796 768.

INSAP – In tune with your quality requirements

What's common to rugged terrain vehicles, earth moving machinery, trucks, drilling rigs, compressors, hydraulic systems, road building machines, tractors, injection moulding machines and tyre curing presses? Chances are, they are all fitted with hose assemblies from India's largest assembler – INSAPFLEX.

The latest technology, state-of-the-art infrastructure and over three decades of experience in manufacturing a wide range of hose assemblies help us ensure that quality is a hallmark of every product that rolls out of our advanced plants. Our growing list of clients from the world over – Singapore, Dubai, Australia, Columbia and Russia, to name a few - stands testimony to this. At INSAP ENGINEERS PVT. LTD., our competitive edge is providing the best to our clients.

Be it PTFE Teflon, rubber hoses or stainless steel corrugated assemblies, Insapflex's range of hoses have found widespread acceptance in varied industries – hydraulics, chemical, cement, earth moving, mining, tyre and gas. Hose assemblies are also manufactured for high temperature and super high pressure applications. Every product is tested for proof pressure using sophisticated, imported Test Rigs from France/ USA to ensure that they are 100% leak-proof.

In a world that is changing a fast pace due to rapid changes in technology, as a society more and more we are losing sight of the people who contribute. But at INSAP, we recognise the skills of our workers, we respect the individual, we encourage them to take ownership of a problem and going "the extra mile" for a solution.

INSAPFLEX – In step with your needs

When you choose Insapflex for your hose assembly needs, you are assured of the finest business ethics and a sense of professionalism. Insapflex has been bestowed with ISO 9001:2000 – a reflection of its quality-conscious approach. Our plants have the capacity to manufacture over 1500 hose assemblies a day. Insapflex hose assemblies are manufactured using sophisticated CNC swaging machines from "FINN-POWER" - Finland. So when you place an order with us, you can be rest assured that it will be executed within 48 hours.

The following pages list our products and applications. Refer to them for more details on how you can use our products to your advantage. Separate End Fittings catalogue can be made available on request.

To contact: Just call us at: 044 - 25 34 15 47 – 25 34 59 98
Fax No: 91-44-25 34 06 55 **Mobile:** 0 98400 74038
Or
E-mail: insap@md3.vsnl.net.in. **Website:** www.insapflex.com

INSAPFLEX – SPIRAL

EN 856 / SAE 100 R-12

Application Very high pressure hydraulics

Construction

Tube Oil resistant synthetic rubber

Reinforcement 4 high tensile steel wire spirals

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +100°C continous
+121°C intermittent

Impulse Cycles Minimum 500,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
10	-6	3/8	9.5	17.2	20.1	4000	276	16000	1100	5.0	127
12	-8	1/2	12.7	20.7	23.6	4000	276	16000	1100	7.0	178
16	-10	5/8	15.9	24.6	27.2	4000	276	16000	1100	8.0	203
19	-12	3/4	19.0	27.65	30.5	4000	276	16000	1100	9.5	241
25	-16	1	25.4	34.9	37.8	4000	276	16000	1100	12.0	305
32	-20	1 1/4	31.8	43.9	46.8	3000	207	12000	825	16.5	419
38	-24	1 1/2	38.1	50.4	53.3	2500	172	10000	685	20.0	508
51	-32	2	50.8	63.65	66.5	2500	172	10000	685	25.0	635

INSAPFLEX – SPIRAL

EN 856 / SAE 100 R-13

Application Extremely high pressure hydraulics

Construction

Tube Oil resistant synthetic rubber

Reinforcement 4 or 6 high tensile steel wire spirals

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +100°C continuous
+ 121°C intermittent

Impulse Cycles Minimum 500,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
10	-6**	3/8	9.5	19.4	22.4	10000	690	40000	2760	6.0	152
12	*-8**	1/2	12.7	22.6	25.5	7500	517	30000	2070	8.0	200
19	*-12	3/4	19.0	29.0	31.9	5000	345	20000	1380	9.5	241
25	*-16	1	25.4	35.65	38.5	5000	345	20000	1380	12.0	305
32	-20	1 1/4	31.8	46.8	49.6	5000	345	20000	1380	16.5	419
38	-24	1 1/2	38.1	54.3	57.1	5000	345	20000	1380	20.0	508
51	-32	2	50.8	68.1	70.9	5000	345	20000	1380	25.0	635

* 4 spirals ** Not covered in SAE

INSAPFLEX – SPIRAL

EN 856 / SAE 100 R-15

Application Extremely high pressure, heavy duty, high impulse hydraulics

Construction

Tube Oil resistant synthetic rubber

Reinforcement 4 or 6 high tensile steel wire spirals

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +100°C continuous
+ 121°C intermittent

Impulse Cycles Minimum 500,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
19	-12	3/4	19.0	28.4	32.0	6000	414	24000	1655	10.5	267
25	-16	1	25.4	35.2	38.5	6000	414	24000	1655	13.0	330
32	-20	1 1/4	31.8	46.8	49.6	6000	414	24000	1655	17.5	445
38	-24	1 1/2	38.1	54.3	57.1	6000	414	24000	1655	21.0	533

• Exceeds DIN 20023 4SH & SAE100 R13 spec. particularly on impulse test & burst pressure • (3/4" & 1") - 4 high tensile steel spirals, (1 1/4" & 1 1/2") - 6 high tensile steel spirals

INSAP®

INSAPFLEX – SPIRALBLAST

WATERBLAST

Application Ultra high water blasting applications only *

Construction

Tube Oil resistant synthetic rubber

Reinforcement 4 high tensile steel wire spirals

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +100°C continuous
+121°C intermittent

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
10	-6	3/8	9.5	17.5	21.2	12000	828	30000	2070	6	152
12	-8	1/2	12.7	22.6	25.5	12000	828	30000	2070	8	200
12	-8	1/2	12.7	23.1	27.0	14500	1000	36000	2500	8	200
19	-12	3/4	19.0	28.4	32.0	12000	828	30000	2070	9.5	241

* Not recommended for hydraulic applications

INSAPFLEX – BRAIDED

EN 853 / 1SN / SAE R1-AT

Application High pressure hydraulic oils, air and water

Construction

Tube Synthetic oil resistant rubber

Reinforcement 1 high tensile steel wire braid

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +120°C

Impulse Cycles 150,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	11.1	13.4	3265	225	13060	900	3.9	100
8	-5	5/16	7.9	12.7	15.0	3120	215	12480	850	4.5	115
10	-6	3/8	9.5	15.1	17.4	2610	180	10440	720	5.1	130
12	-8	1/2	12.7	18.2	20.3	2320	160	9280	640	7.1	180
16	-10	5/8	15.9	21.4	23.7	1890	130	7560	520	7.9	200
19	-12	3/4	19.0	25.4	27.7	1525	105	6100	420	9.5	240
25	-16	1	25.4	33.3	35.6	1275	88	5100	352	11.8	300
32	-20	1 1/4	31.8	40.0	43.0	915	63	3660	252	16.5	420
38	-24	1 1/2	38.1	46.4	50.4	725	50	2900	200	19.7	500
51	-32	2	50.8	59.5	63.5	580	40	2320	160	24.8	630
*60	-38	2 3/8	60.3	69.0	75.0	362	25	1450	100	30.0	762
*64	-40	2 1/2	63.5	73.0	79.5	362	25	1450	100	30.0	762
*76	-48	3	76.2	86.4	94.4	290	20	1160	80	36.0	915
*90	-56	3 1/2	90.0	98.5	105.5	220	15	880	60	42.0	1067
*100	-64	4	101.6	110.0	117.0	145	10	580	40	43.5	1105

* Not under SAE/EN/DIN specifications

INSAPFLEX – BRAIDED

EN 853 / 2SN / SAE 100 R2-AT

Application High pressure hydraulic oils, air and water

Construction

Tube Synthetic oil resistant rubber

Reinforcement 2 high tensile steel wire braids

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +120°C

Impulse Cycles 200,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	12.7	15.1	5800	400	23200	1600	4.0	100
8	-5	5/16	7.9	14.3	16.7	5100	350	20400	1400	4.5	115
10	-6	3/8	9.5	16.7	19.1	4800	330	19200	1320	5.1	130
12	-8	1/2	12.7	19.8	22.2	4000	276	16000	1103	7.1	180
16	-10	5/8	15.9	23.0	25.4	3600	250	14400	1000	7.9	200
19	-12	3/4	19.0	27.0	29.4	3100	215	12400	860	9.4	240
25	-16	1	25.4	35.0	37.3	2400	165	9600	660	11.8	300
32	-20	1 1/4	31.8	44.5	48.3	1800	125	7200	500	16.5	420
38	-24	1 1/2	38.1	51.0	54.7	1300	90	5200	360	19.7	500
51	-32	2	50.8	63.5	67.4	1160	80	4640	320	24.8	630
*60	-38	2 3/8	60.3	71.5	75.8	1015	70	4060	280	30.0	762
*64	-40	2 1/2	63.5	76.2	82.5	1000	69	4000	276	30.0	762
*76	-48	3	76.2	89.4	96.0	650	45	2600	179	36.0	915
*90	-56	3 1/2	90.0	101.2	107.5	400	28	1600	110	42.0	1067
*100	-64	4	101.6	113.2	118.5	365	25	1460	101	43.5	1105

* Not under SAE/EN/DIN specifications

INSAPFLEX – BRAIDED

EN 854 / SAE 100 R-3

Application Medium pressure hydraulic oils, air and water

Construction

Tube Synthetic oil resistant rubber

Reinforcement 2 textile braids

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +120°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4		14.3	1250	86	5000	345	3.0	76
8	-5	5/16	7.9		17.5	1200	83	4800	331	4.0	102
10	-6	3/8	9.5		19.0	1125	78	4500	310	4.0	102
12	-8	1/2	12.7		23.8	1000	69	4000	276	5.0	127
16	-10	5/8	15.9		27.0	875	60	3500	241	5.5	140
19	-12	3/4	19.0		31.8	750	52	3000	207	6.0	152
25	-16	1	25.4		38.1	565	39	2250	155	8.0	203
32	-20	1 1/4	31.8		44.5	375	26	1500	103	10.0	254
*38	-24	1 1/2	38.1		50.8	250	17	1000	69	12.0	306
*51	-32	2	50.8		64.0	215	15	860	60	16.1	410

* Not under SAE specifications

INSAPFLEX – BRAIDED

EN 854 / SAE 100 R-6

Application Low pressure hydraulic oils, air and water

Construction

Tube Synthetic oil resistant rubber

Reinforcement 1 textile braid

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +120°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4		12.7	400	28	1600	110	2.5	64
8	-5	5/16	7.9		14.3	400	28	1600	110	3.0	76
10	-6	3/8	9.5		15.9	400	28	1600	110	3.0	76
12	-8	1/2	12.7		19.8	400	28	1600	110	4.0	102
16	-10	5/8	15.9		23.0	350	24	1400	97	5.0	127
19	-12	3/4	19.0		26.0	300	21	1200	83	6.0	152
*25	-16	1	25.4		32.5	190	13	760	52	9.1	230

* Not under SAE specifications

INSAPFLEX – MH-174

BCS 174-1992 UNDERGROUND MINING

Application Underground mining requiring very stringent safety standards like Longwall mining and roof support systems

Construction

Tube Synthetic oil resistant rubber

Reinforcement 2 high tensile steel wire braids

Cover Synthetic rubber - abrasion, ozone, weather and flame resistant

Temp. Range -40°C to +120°C

Impulse Cycles 100,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	12.7	17.0	6525	450	26100	1800	4.0	100
10	-6	3/8	9.5	17.0	21.1	5510	380	22040	1520	5.1	130
12	-8	1/2	12.7	21.1	26.4	5250	362	21000	1448	5.9	150
16	-10	5/8	15.9	24.5	29.8	4060	280	16240	1120	7.5	190
19	-12	3/4	19.0	28.3	33.7	4000	276	16000	1103	9.0	230
25	-16	1	25.4	35.3	40.7	3120	215	12480	860	11.8	300
32	-20	1 1/4	31.8	41.4	47.5	2495	172	9975	688	15.0	380
38	-24	1 1/2	38.1	48.0	54.1	2120	146	8470	584	17.7	450
51	-32	2	50.8	60.7	66.8	1625	112	6500	448	23.6	600

Conforms to British Coal 174-1992 specifications

INSAP®

INSAPFLEX – POWERFLEX

MORE POWER - MORE FLEXIBILITY

Application Rigorous and demanding critical application areas of earth movers

Construction

Tube Synthetic oil resistant rubber

Reinforcement 2 special high tensile steel wire braids

Cover Synthetic rubber – abrasion, ozone and weather resistant

Temp. Range -40°C to +120°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	11.5	13.2	5800	400	23200	1600	2.0	50
8	-5	5/16	7.9	13.8	15.4	5100	350	20400	1400	2.16	55
10	-6	3/8	9.5	15.8	17.4	4800	330	19200	1320	2.45	60
12	-8	1/2	12.7	18.2	19.9	4000	275	16000	1100	3.55	90
16	-10	5/8	15.9	21.9	23.5	4000	275	16000	1100	4.0	100
19	-12	3/4	19.0	27.0	30.1	4000	275	16000	1100	6.0	150
25	-16	1	25.4	35.0	38.2	3600	250	14400	1000	8.0	200

Special Characteristics: Very high pressure exceeding EN 853 2SN Extra high flexibility with half SAE/DIN bend radius Compact OD suited for better hose routing in tight areas

INSAPFLEX – MH-SUPER

EXCEEDS EN 853 / 2SN

Application High pressure hydraulic oils, air and water

Construction

Tube Synthetic oil resistant rubber

Reinforcement 2 high tensile steel wire braids

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +120°C

Impulse Cycles 200,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
10	-6	3/8	9.5	16.7	21.4	5080	350	20315	1400	5.1	130
12	-8	1/2	12.7	19.8	24.6	5005	345	20025	1380	5.9	150
16	-10	5/8	15.9	23.1	27.8	4350	300	17410	1200	7.5	190
19	-12	3/4	19.0	27.6	31.9	3845	265	15380	1060	9.0	230
25	-16	1	25.4	35.0	39.8	3045	210	12190	840	11.8	300
32	-20	1 1/4	31.8	44.5	50.8	2250	155	8995	620	15.0	380

INSAPFLEX – SUPERJACK

10000 PSI WORKING PRESSURE

Application Hydraulic jack application used in jacking systems

Construction

Tube Synthetic oil resistant rubber

Reinforcement 2 high tensile steel wire braids

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +50°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	12.7	14.8	10000	690	20000	1380	4.0	102
10	-6	3/8	9.5	16.7	18.8	10000	690	20000	1380	5.0	127

• Recommended for Static (Non-Impulse) pressure rating for hydraulic jacking applications only

INSAPFLEX – SLIMPAC

SAE 100 R-16

Application High pressure hydraulics
Construction
Tube Oil resistant synthetic rubber
Reinforcement 1 or 2 high tensile steel wire braids
Cover Synthetic rubber - abrasion, ozone and weather resistant
Temp. Range -40°C to +100°C continuous
Impulse Cycles Minimum 200,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	11.9	13.7	5000	345	20000	1380	2.00	51
8	-5	5/16	7.9	12.9	15.0	4250	293	17000	1172	2.25	57
10	-6	3/8	9.5	15.4	17.5	4000	276	16000	1103	2.50	64
12	-8	1/2	12.7	18.1	20.6	3500	241	14000	964	3.50	89
16	-10	5/8	15.9	22.1	24.1	2760	190	11000	760	4.00	102
19	-12	3/4	19.0	25.6	27.9	2250	155	9000	620	4.80	121
25	-16	1	25.4	32.4	34.6	2000	138	8000	552	6.00	152
32	-20	1 1/4	31.8	39.6	42.6	1625	112	6500	448	8.26	210

• Dimensions of R1AT or 1SN but smaller bend radius • Higher performances and lighter weight than R2 AT • Great compactness, reliability and very high flexibility

INSAPFLEX – TRI-K-FLEX

SAE 100 R-17

Application High pressure hydraulics
Construction
Tube Oil resistant synthetic rubber
Reinforcement 1 or 2 high tensile steel wire braids
Cover Synthetic rubber - abrasion, ozone and weather resistant
Temp. Range -40°C to +100°C continuous
Impulse Cycles Minimum 200,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	10.2	12.2	3045	210	12180	840	2.00	50
8	-5	5/16	7.9	11.7	13.9	3045	210	12180	840	2.16	55
10	-6	3/8	9.5	13.8	15.8	3045	210	12180	840	2.55	65
12	-8	1/2	12.7	16.4	20.1	3045	210	12180	840	3.54	90
16	-10	5/8	15.9	22.1	23.9	3045	210	12180	840	4.13	105
19	-12	3/4	19.0	25.6	27.7	3045	210	12180	840	4.91	125
25	-16	1	25.4	34.6	37.6	3045	210	12180	840	5.90	150

• Up to 3/8" - 1 wire braid, 1/2" & above 2 wire braids • Smaller exterior dimensions and significantly tighter bend radius than SAE 100 R1 & R2 hose

INSAPFLEX – SLIMLINE

EN 857 / 1-SC

Application High pressure hydraulics
Construction
Tube Oil resistant synthetic rubber
Reinforcement 1 high tensile steel wire braid
Cover Synthetic rubber - abrasion, ozone and weather resistant
Temp. Range -40°C to +100°C continuous
Impulse Cycles Minimum 1,50,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	10.2	13.0	3265	225	13060	900	2.95	75
8	-5	5/16	7.9	11.5	14.0	3119	215	12470	860	3.34	85
10	-6	3/8	9.5	13.6	16.4	2610	180	10440	720	3.54	90
12	-8	1/2	12.7	17.0	19.5	2320	160	9280	640	5.11	130
16	-10	5/8	15.9	20.4	22.5	1885	130	7540	520	5.90	150
19	-12	3/4	19.0	23.8	26.2	1525	105	6100	420	7.08	180
25	-16	1	25.4	31.3	34.0	1275	88	5100	352	9.04	230

• Extremely compact hose dimensions, extra high flexibility, extra small minimum bend radius, very low weight

INSAPFLEX – SLIMLINE

EN 857 / 2-SC

Application High pressure hydraulics

Construction

Tube Oil resistant synthetic rubber

Reinforcement 2 high tensile steel wire braids

Cover Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +100°C continuous

Impulse Cycles Minimum 200,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-4	1/4	6.4	11.2	13.6	5800	400	23200	1600	2.95	75
8	-5	5/16	7.9	12.7	15.2	5075	350	20300	1400	3.34	85
10	-6	3/8	9.5	15.0	17.4	4785	330	19140	1320	3.54	90
12	-8	1/2	12.7	18.3	20.9	3990	275	15960	1100	5.11	130
16	-10	5/8	15.9	21.4	24.0	3625	250	14500	1000	6.69	170
19	-12	3/4	19.0	25.5	27.7	3120	215	12480	860	7.36	200
25	-16	1	25.4	33.4	35.6	2395	165	9580	660	9.83	250

• Extremely compact hose dimensions, extra high flexibility, extra small minimum bend radius, very low weight

INSAPFLEX – BRAIDED

SAE 100 R5C / SAE 100 R5R

Application High pressure hydraulic oils, air and water

Construction

Tube Synthetic oil resistant rubber

Reinforcement 1 textile braid and
1 high tensile steel wire braid

Cover R5C: Oil and mildew resistant rubber impregnated cotton cover
R5R: Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +120°C

Impulse Cycles Upto 7/8 inch - 150,000
1 1/8 inch and above - 100,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-5	1/4	6.4		14.4	3000	207	12000	828	3.4	86
8	-6	5/16	7.9		17.2	2250	155	9000	621	4.0	102
10	-8	13/32	10.3		19.5	2000	138	8000	552	4.6	117
12	-10	1/2	12.7		23.4	1750	121	7000	483	5.5	140
16	-12	5/8	15.9		27.4	1500	103	6000	414	6.5	165
22	-16	7/8	22.2		31.4	800	55	3200	221	7.4	187
29	-20	1 1/8	28.7		38.1	625	43	2500	172	9.0	229
35	-24	1 3/8	34.9		44.5	500	34	2000	138	10.5	267
46	-32	1 13/16	46.0		57.1	350	24	1400	97	13.2	337
60	-38	2 3/8	60.3		73.0	350	24	1400	97	21.0	610

INSAPFLEX – HI-TEMPERATURE HOSE

SAE 100 R5C / SAE 100 R5R

Application High pressure hydraulic oils, air and water

Construction

Tube Synthetic oil resistant rubber

Reinforcement 1 textile braid and
1 high tensile steel wire braid

Cover R5C: Oil and mildew resistant rubber impregnated cotton cover
R5R: Synthetic rubber - abrasion, ozone and weather resistant

Temp. Range -40°C to +150°C

Impulse Cycles Upto 7/8 inch - 150,000
1 1/8 inch and above - 100,000

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
6	-5	1/4	6.4		14.4	3000	207	12000	828	3.4	86
8	-6	5/16	7.9		17.2	2250	155	9000	621	4.0	102
10	-8	13/32	10.3		19.5	2000	138	8000	552	4.6	117
12	-10	1/2	12.7		23.4	1750	121	7000	483	5.5	140
16	-12	5/8	15.9		27.4	1500	103	6000	414	6.5	165
22	-16	7/8	22.2		31.4	800	55	3200	221	7.4	187
29	-20	1 1/8	28.7		38.1	625	43	2500	172	9.0	229
35	-24	1 3/8	34.9		44.5	500	34	2000	138	10.5	267
46	-32	1 13/16	46.0		57.1	350	24	1400	97	13.2	337
60	-38	2 3/8	60.3		73.0	350	24	1400	97	21.0	610

INSAPFLEX – HI-TEMPERATURE HOSE 1-SN

Application	High Pressure Hydraulic Oils upto 150°C. Air upto 120°C.
Construction	
Tube	High Temperature Oil Resistant Synthetic Rubber
Reinforcement	1 High tensile steel wire braid
Cover	Synthetic rubber - Abrasion, Ozone and Weather resistant
Temp. Range	-40°c to +150°C Hydraulic Oil +120°C Hot air

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	Dash	I.D. Inch	I.D. mm	R.O.D. mm	O.D. mm	Psi	Bar	Psi	Bar	Inch	mm
6	-4	1/4	6.4	11.1	13.4	3250	224	13000	896	4.0	100
8	-5	5/16	7.9	12.7	15.0	3100	214	12400	856	4.5	115
10	-6	3/8	9.5	15.1	17.4	3000	207	12000	828	5.0	130
12	-8	1/2	12.7	18.2	20.3	2500	172	10000	688	7.0	180
16	-10	5/8	15.9	21.4	23.7	2000	138	8000	552	8.0	200
19	-12	3/4	19.0	25.4	27.7	1800	124	7200	496	9.5	240
25	-16	1	25.4	33.3	35.6	1300	90	5200	360	12.0	300
32	-20	1-1/4	31.8	40.0	43.0	900	62	3600	248	17	425

INSAPFLEX – HI-TEMPERATURE HOSE 2-SN

Application	High Pressure Hydraulic Oils upto 150°C. Air upto 120°C.
Construction	
Tube	High Temperature Oil Resistant Synthetic Rubber
Reinforcement	2 High tensile steel wire braid
Cover	Synthetic rubber - Abrasion, Ozone and Weather resistant
Temp. Range	-40°c to +150°C Hydraulic Oil. +120°C Hot air

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	Dash	I.D. Inch	I.D. mm	R.O.D. mm	O.D. mm	Psi	Bar	Psi	Bar	Inch	mm
6	-4	1/4	6.4	12.7	15.1	5800	400	23200	1600	4.0	100
8	-5	5/16	7.9	14.3	16.7	5000	350	20400	1400	4.5	115
10	-6	3/8	9.5	16.7	19.1	4800	330	19200	1320	5.0	130
12	-8	1/2	12.7	19.8	22.2	4000	276	16000	1103	7.0	180
16	-10	5/8	15.9	23.0	25.4	3600	250	14400	1000	8.0	200
19	-12	3/4	19.0	27.0	29.4	3100	215	12400	860	9.5	240
25	-16	1	25.4	35.0	37.3	2400	165	9600	660	12.0	300
32	-20	1-1/4	31.8	34.5	48.3	1800	125	7200	500	17	425

INSAPFLEX – AIR MASTER EXCEEDS IS:446:1980 - TYPE 3

Application	High pressure rock drill and pneumatic service in drilling, quarries, construction and general industry
Construction	
Tube	Heat and oil mist resistant rubber
Reinforcement	1 high tensile steel wire braid
Cover	Tough abrasion resistant yellow rubber
Temp. Range	-35°C to +100°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
32	-20	1 1/4	31.8	40.9	43.9	500	35	2400	165	16	419
38	-24	1 1/2	38.1	46.8	52.4	500	35	2000	140	20	508
51	-32	2	50.8	60.2	66.7	500	35	1500	105	25	635

INSAP®

INSAPFLEX – LPG HOSE

BS:4089:1989 - TYPE 1

Application Transfer of LPG in liquid or vapour form which is unvented between operations (permanently filled with liquid or vapour) including automotive

Construction

Tube Black smooth Nitrile rubber resistant to LPG

Reinforcement 1 high tensile steel wire braid

Cover Black synthetic rubber resistant to abrasion, weather and fire (pin-pricked)

Temp. Range -20°C to +45°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
10	-6	3/8	9.5		19.6	362	25	1450	100	4.72	120
12	-8	1/2	12.7		22.8	362	25	1450	100	5.90	150
16	-10	5/8	15.9		26.0	362	25	1450	100	7.08	185
19	-12	3/4	19.0		30.1	362	25	1450	100	8.86	225
25	-16	1	25.4		37.9	362	25	1450	100	11.80	300
32	-20	1 1/4	31.8		46.0	362	25	1450	100	14.95	380
38	-24	1 1/2	38.1		52.4	362	25	1450	100	17.70	450
51	-32	2	50.8		66.7	362	25	1450	100	23.60	600

INSAPFLEX – STEAM HOSE (1 Wire)

IS:10655:1999 - TYPE 2 / BS-5342

Application Steam at high temperature

Construction

Tube Steam and heat resistant EPDM rubber

Reinforcement 1 high tensile steel wire braid

Cover Synthetic rubber - heat, abrasion, ozone and weather resistant

Temp. Range Upto 184°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
10	-6	3/8	9.5		20.0	150	10	1500	100	5.0	127
12	-8	1/2	12.7		24.7	150	10	1500	100	7.0	178
16	-10	5/8	15.9		27.9	150	10	1500	100	8.0	200
19	-12	3/4	19.0		31.4	150	10	1500	100	9.5	240
25	-16	1	25.4		38.0	150	10	1500	100	12.0	300
32	-20	1 1/4	31.8		47.2	150	10	1500	100	16.5	400
38	-24	1 1/2	38.1		53.5	150	10	1500	100	20.0	500
51	-32	2	50.8		66.8	150	10	1500	100	25.0	635

INSAPFLEX – STEAM HOSE (2 Wire)

IS:10655:1999 - TYPE 3 / BS-5342

Application Steam at very high temperature

Construction

Tube Steam and heat resistant EPDM rubber

Reinforcement 2 high tensile steel wire braids

Cover Synthetic rubber - heat, abrasion, ozone and weather resistant

Temp. Range Upto 205°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
10	-6	3/8	9.5		22.0	232	16	2320	160	5.0	127
12	-8	1/2	12.7		26.7	232	16	2320	160	7.0	178
16	-10	5/8	15.9		29.9	232	16	2320	160	8.0	200
19	-12	3/4	19.0		33.4	232	16	2320	160	9.5	240
25	-16	1	25.4		40.0	232	16	2320	160	12.0	300
32	-20	1 1/4	31.8		50.0	232	16	2320	160	16.5	400
38	-24	1 1/2	38.1		56.7	232	16	2320	160	20.0	500
51	-32	2	50.8		70.0	232	16	2320	160	25.0	635

INSAPFLEX – PETROMASTER

EXCEEDS IS:2396:1988 - SOFTWALL

Application	Fuel dispensing hose
Construction	
Tube	Synthetic rubber, resistant to petrol and diesel fuels
Reinforcement	2 textile braids and copper wire
Cover	Synthetic rubber - abrasion, ozone and weather resistant
Temp. Range	-40°C to +55°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
19	-12	3/4	19.0		32	116	8	435	30	6	150
25	-16	1	25.4		38	116	8	435	30	8	200

INSAPFLEX – PETROMASTER

EXCEEDS BS:3395:1989 - TYPE 3C - HARDWALL

Application	Fuel dispensing hose
Construction	
Tube	Synthetic rubber, resistant to petrol and diesel fuels
Reinforcement	1 high tensile steel wire braid
Cover	Synthetic rubber - abrasion, ozone and weather resistant
Temp. Range	-40°C to +55°C

Hose Size						Maximum Working Pressure		Minimum Burst Pressure		Minimum Bend Radius	
DN	dash	I.D.		R.O.D.	O.D.						
		inch	mm	mm	mm	psi	bar	psi	bar	inch	mm
19	-12	3/4	19.0		32	116	8	435	30	6	150
25	-16	1	25.4		38	116	8	435	30	8	200

GLADIATOR

THE TOUGH ABRASION RESISTANT HOSE

Outer cover abrasion is one of the most common causes of standard hydraulic hose failure in harsh and abrasive environments such as earthmoving, mining, drilling and construction operations where there is constant direct friction or rubbing between hose to hose and hose to sharp metal components.

Partially effective plastic or nylon sleeves, spring guards, tubing or any other protection are generally used. The better and long lasting solution is to use INSAPFLEX Gladiator abrasion resistant cover hose. These hoses come with an added bonus – they are also greatly resistant to weather, ozone, oils and chemicals.

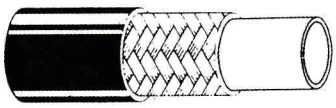
When tested in accordance with EN ISO 6945, abrasion testing up to exposure of the hose reinforcement, Gladiator hose has achieved and delivered exceptional performance – making it more than 300 times abrasion resistant than the standard rubber covers!

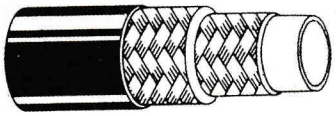
Gladiator hose therefore guarantees extra long lasting service life, lower maintenance and effective cost savings for the equipment users. It eliminates the need for expensive hose cover protections and reduces the total cost. So order our Gladiator hose now and save money on costly protections.

Please also consult our Customer Service Department for any further queries that you may have.

INSAP®

SPECIAL NON - CONDUCTIVE THERMOPLASTIC HOSES CONFORMING TO 'SAE' STANDARD.





TYPE **INC-7** **INC-8**

Construction:-

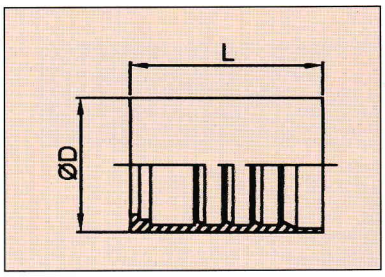
- Core..... Thermo plastic Techno Polymer / Polyomide
- Pressure Support..... 1 or 2 Braids High Tensile Synthetic Fibre
- Cover..... Polyurethane
- Colour..... Black
- Temp Range..... – 40°C to + 100°C

TECHNICAL SPECIFICATION : TYPE INC-7 MEETS SAE 100 R7 SPECIFICATION

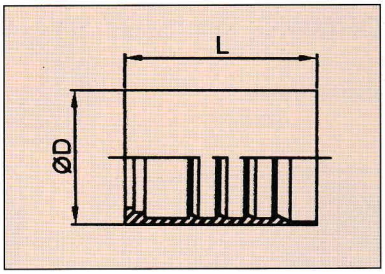
TYPE	I.D. (mm)	I.D. (inch)	O.D. (mm)	O.D. (inch)	W.P. (psi)	W.P. (bar)	MIN B.P. (psi)	MIN B.P. (bar)	MIN BEND RADIUS (mm)	MIN BEND RADIUS (inch)
INC-7 - 4	4.8	3/16	10.3	0.405	3000	208	12000	832	75	3.0
INC-7 - 6	6.4	1/4	12.7	0.500	2750	190	11000	759	102	4.0
INC-7 - 8	8	5/16	14.5	0.570	2500	172	10000	690	114	4.5
INC-7 - 10	9.5	3/8	16.0	0.630	2250	155	9000	621	127	5.0
INC-7 - 12	12.7	1/2	20.0	0.790	2000	138	8000	552	178	7.0
INC-7 - 16	16	5/8	23.7	0.935	1500	103	6000	414	203	8.0
INC-7 - 20	19	3/4	27.5	1.080	1250	86	5000	345	254	10.0
INC-7 - 25	25.4	1	33.3	1.310	1000	69	4000	276	305	12.0

TECHNICAL SPECIFICATION : TYPE INC-8 MEETS SAE 100 R8 SPECIFICATION

TYPE	I.D. (mm)	I.D. (inch)	O.D. (mm)	O.D. (inch)	W.P. (psi)	W.P. (bar)	MIN B.P. (psi)	MIN B.P. (bar)	MIN BEND RADIUS (mm)	MIN BEND RADIUS (inch)
INC-8 - 6	6.4	1/4	16.1	0.635	5000	345	20000	1379	102	4.0
INC-8 - 8	8	5/16	17.0	0.670	4250	293	17000	1172	114	4.5
INC-8 - 10	9.5	3/8	18.7	0.735	4000	276	16000	1103	127	5.0
INC-8 - 12	12.7	1/2	22.6	0.890	3500	241	14000	966	178	7.0
INC-8 - 16	16	5/8	26.3	1.035	2750	190	11000	759	203	8.0
INC-8 - 20	19	3/4	28.6	1.135	2250	155	9000	621	240	9.5
INC-8 - 25	25.4	1	36.2	1.425	2000	138	8000	552	305	12.0



NO-SKIVE FERRULE FOR
SAE 100 R1-AT / END 853 / 1SN HOSE



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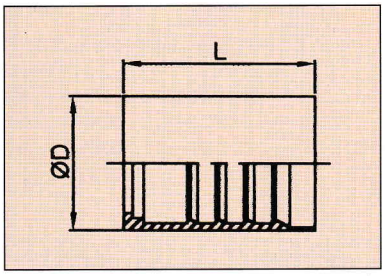

NO-SKIVE FERRULE FOR
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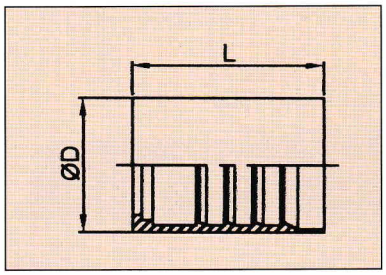
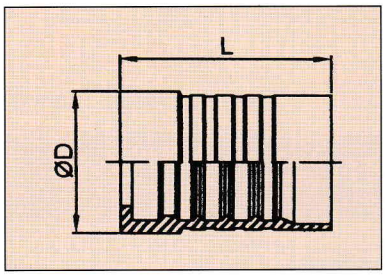
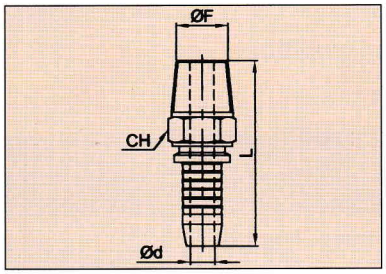


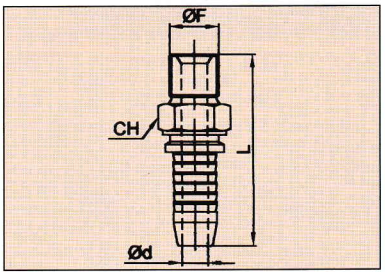
SKIVE FERRULE FOR
EN 856 / 4SP / 4SH HOSE



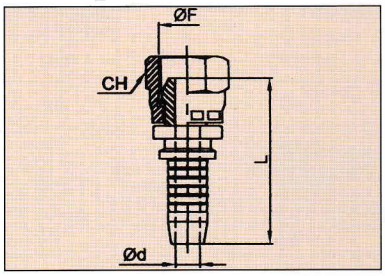
CRIMP FERRULE FOR
SAE 100 R13 HOSE



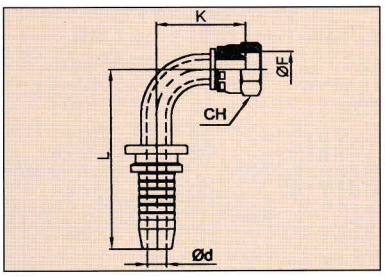
BSP MALE TAPERED
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



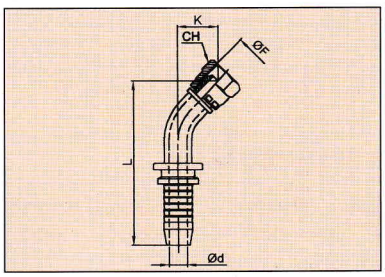
BSP MALE PARELLEL 60° CONE SEAT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



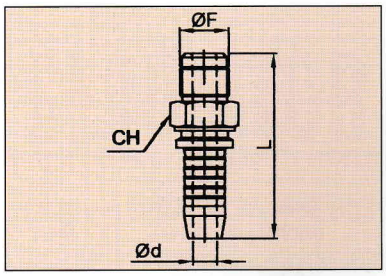
BSP FEMALE 60° CONE SEAT
CRIMPED BACK NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



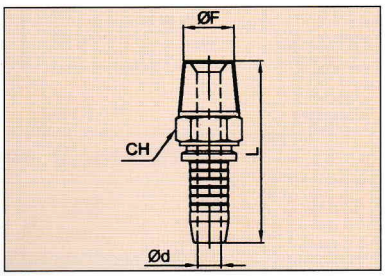
90° BSP FEMALE SWEPT ELBOW - 60° CONE SEAT
CRIMPED BACK NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



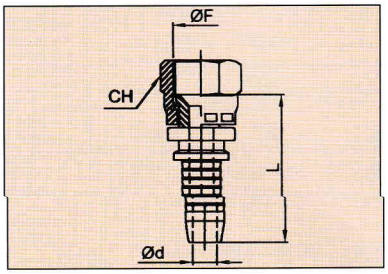
45° BSP FEMALE SWEPT ELBOW - 60° CONE SEAT
CRIMPED BACK NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



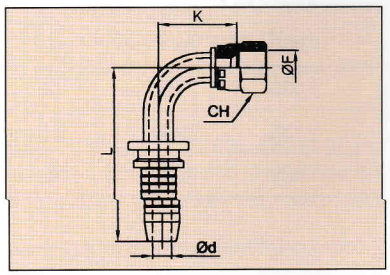
JIC MALE - 74° CONE SEAT SAE-J514
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN



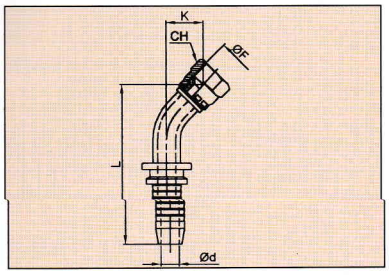
NPTF MALE - 60° CONE SEAT SAE-J516
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



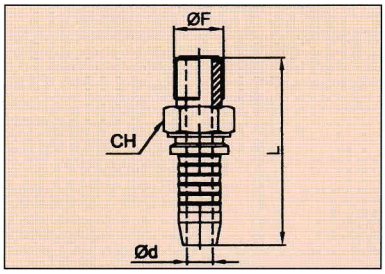
JIC FEMALE - 74° CONE SEAT SAE-J514
CRIMPED BACK NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



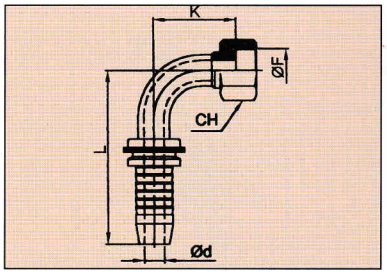
90° JIC FEMALE SWEPT ELBOW - 74° CONE SEAT
SAE-J514 CRIMPED - BACK NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



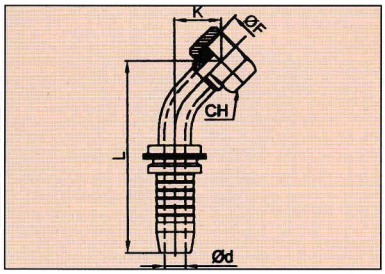
45° JIC FEMALE SWEPT ELBOW - 74° CONE SEAT
SAE-J514 CRIMPED - BACK NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



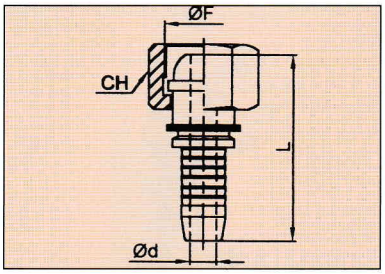
ORFS MALE SAE-J1453
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



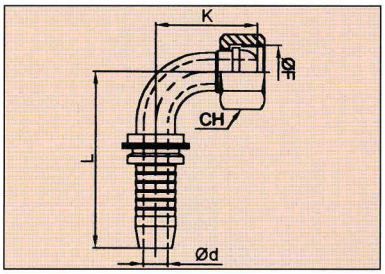
90° ORFS FEMALE SAE-J1453 (SLIP ON NUT)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



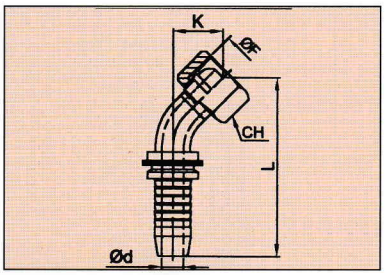
45° ORFS FEMALE SAE-J1453 (SLIP ON NUT)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



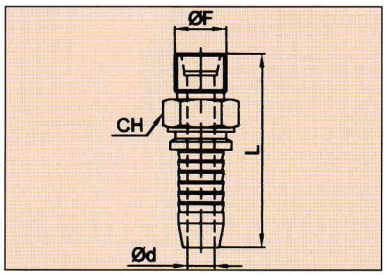
METRIC FEMALE 24° CONE DIN 3868 - DKL
(SLIP ON NUT)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



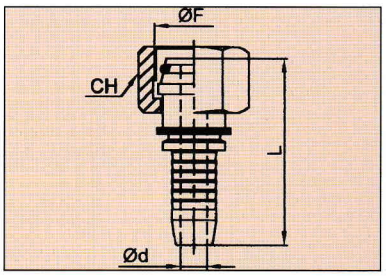
90° METRIC FEMALE SWEPT EELBOW 24° & 60°
CONE DIN 3868 - DKL (SLIP ON NUT)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



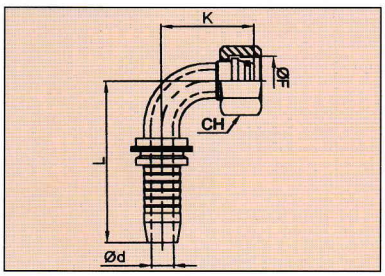
45° METRIC FEMALE SWEPT EELBOW 24° & 60°
CONE DIN 3868 - DKL (SLIP ON NUT)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



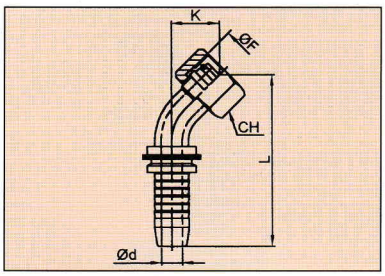
METRIC MALE 24° CONE SEAT L.T. -
DIN 3853 / 3861 SERIES 'L' DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



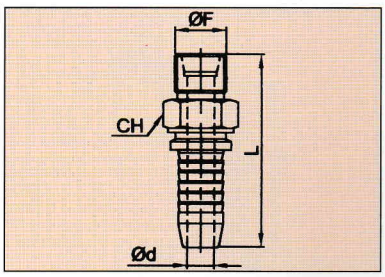
'O' RING METRIC FEMALE 24° CONE SEAT L.T. -
DIN 3865 SERIES 'L' DIN 2353 SLIP ON NUT (DKOL)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



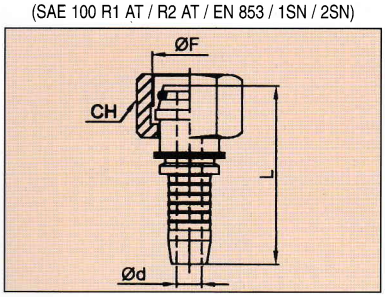
90° 'O' RING METRIC FEMALE SWEPT ELBOW 24°
CONE SEAT L.T. - DIN 3865 SERIES 'L' DIN 2353
SLIP ON NUT (DKOL)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



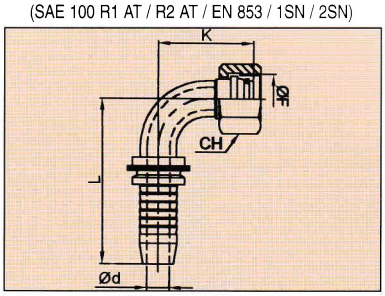
45° 'O' RING METRIC FEMALE SWEPT ELBOW 24°
CONE SEAT L.T. - DIN 3865 SERIES 'L' DIN 2353
SLIP ON NUT (DKOL)
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



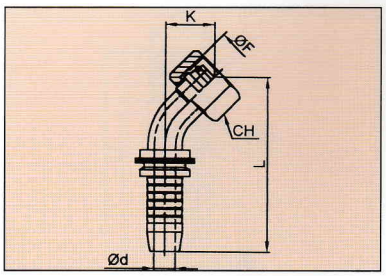
METRIC MALE 24° CONE SEAT H.T. - DIN 3853 /
3861 SERIES 'S' DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



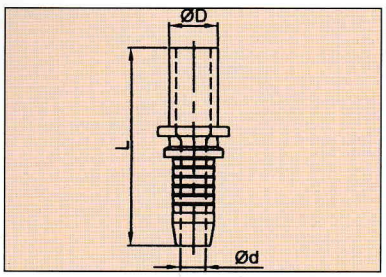
'O' RING METRIC FEMALE 24° CONE SEAT H.T. -
DIN 3865 SERIES 'S' DIN 2353 SLIP ON NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



90° 'O' RING METRIC FEMALE SWEPT ELBOW 24°
CONE SEAT H.T. - DIN 3865 SERIES 'S' DIN 2353
SLIP ON NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



45° 'O' RING METRIC FEMALE SWEPT ELBOW 24°
CONE SEAT H.T. - DIN 3865 SERIES 'S' DIN 2353
SLIP ON NUT
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



STRAIGHT METRIC STAND PIPE L.T. - DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)

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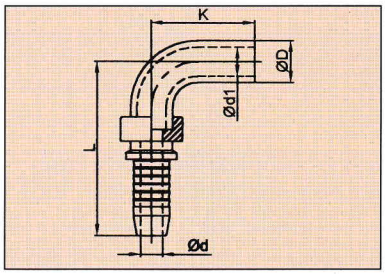
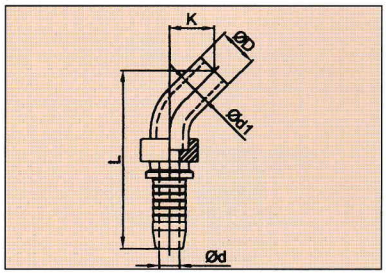
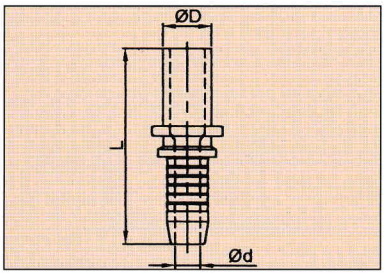


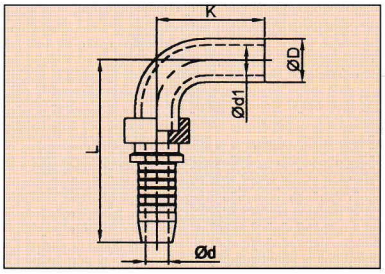
90° METRIC STAND PIPE L.T. - DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



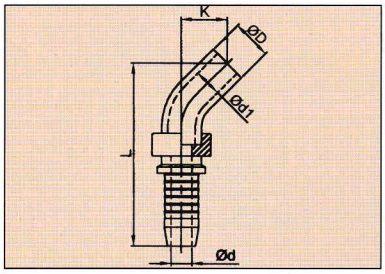
45° METRIC STAND PIPE L.T. - DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



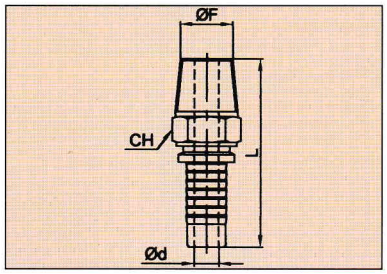
STRAIGHT METRIC STAND PIPE H.T. - DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



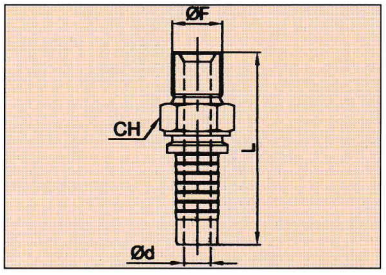
90° METRIC STAND PIPE H.T. - DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



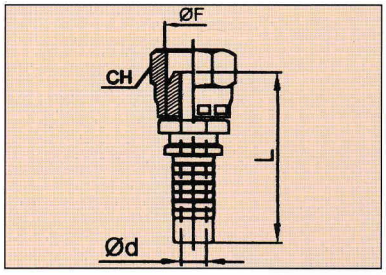
45° METRIC STAND PIPE H.T. - DIN 2353
(SAE 100 R1 AT / R2 AT / EN 853 / 1SN / 2SN)



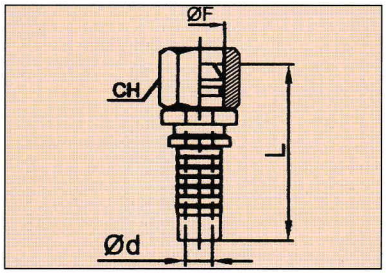
BSP MALE TAPERED
(EN 856 / 4SP / 4SH)



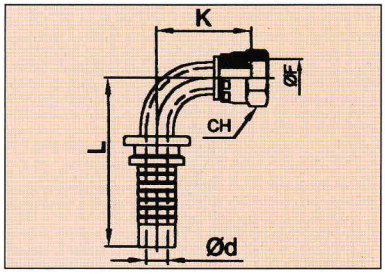
BSP MALE PARELLEL 60° CONE SEAT
(EN 856 / 4SP / 4SH)



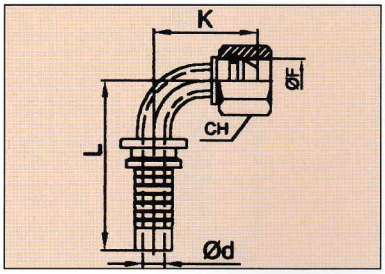
BSP FEMALE 60° CONE SEAT
CRIMPED BACK NUT
(EN 856 / 4SP / 4SH)



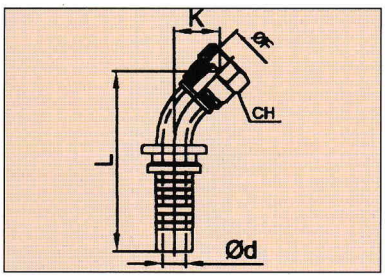
BSP FEMALE 60° CONE SEAT
THRUST - WIRE NUT
(EN 856 / 4SP / 4SH)



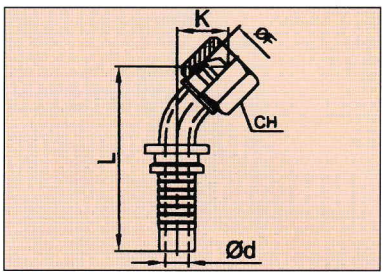
90° BSP FEMALE SWEPT ELBOW - 60° CONE SEAT
CRIMPED BACK NUT
(EN 856 / 4SP / 4SH)



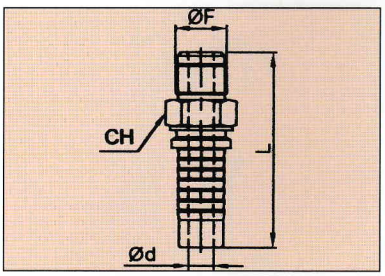
90° BSP FEMALE SWEPT ELBOW - 60° CONE SEAT
THRUST - WIRE NUT
(EN 856 / 4SP / 4SH)



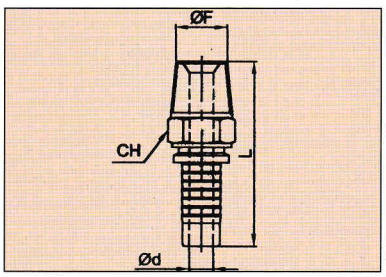
45° BSP FEMALE SWEPT ELBOW - 60° CONE SEAT
CRIMPED BACK NUT
(EN 856 / 4SP / 4SH)



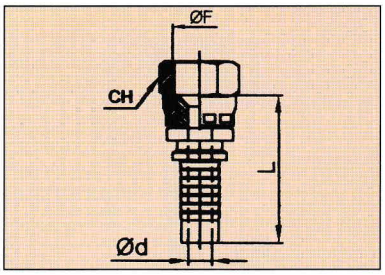
45° BSP FEMALE SWEPT ELBOW - 60° CONE SEAT
THRUST - WIRE NUT (EN 856 / 4SP / 4SH)



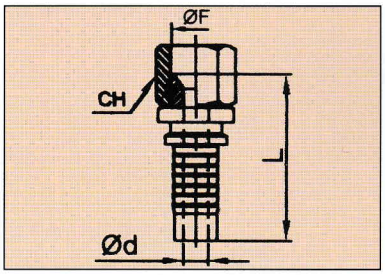
JIC MALE - 74° CONE SEAT SAE-J514
(EN 856 / 4SP / 4SH)



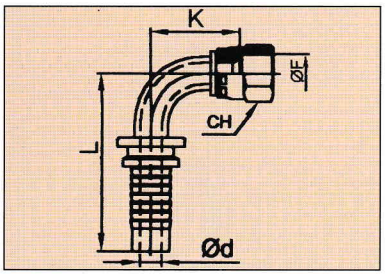
NPTF MALE - 60° CONE SEAT SAE-J516
(EN 856 / 4SP / 4SH)



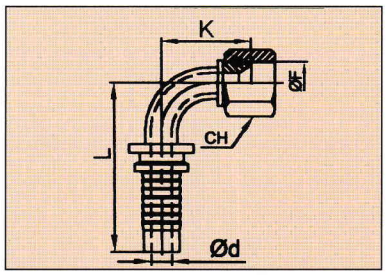
JIC MALE - 74° CONE SEAT SAE-J514
CRIMPED BACK NUT
(EN 856 / 4SP / 4SH)



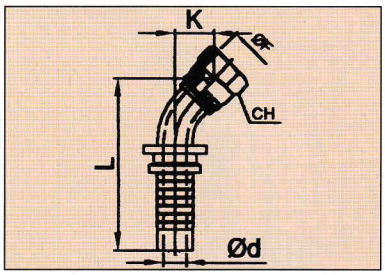
JIC MALE - 74° CONE SEAT SAE-J514
THRUST - WIRE NUT
(EN 856 / 4SP / 4SH)



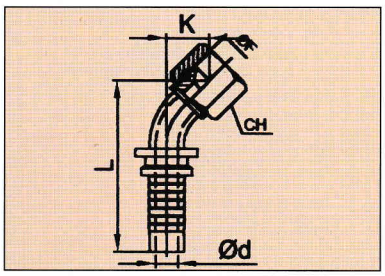
90° JIC FEMALE SWEPT ELBOW - 74° CONE SEAT
SAE-J514 CRIMPED BACK NUT
(EN 856 / 4SP / 4SH)



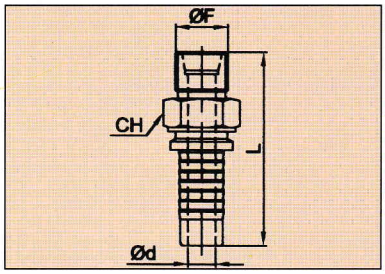
90° JIC FEMALE SWEPT ELBOW - 74° CONE SEAT
SAE-J514 THRUST - WIRE NUT
(EN 856 / 4SP / 4SH)



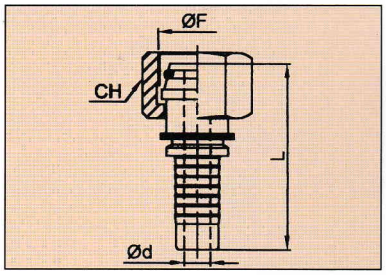
45° JIC FEMALE SWEPT ELBOW - 74° CONE SEAT
SAE-J514 CRIMPED BACK NUT
(EN 856 / 4SP / 4SH)



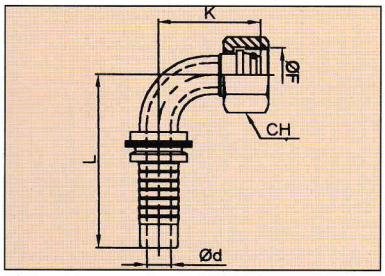
45° JIC FEMALE SWEPT ELBOW - 74° CONE SEAT
SAE-J514 THRUST - WIRE NUT
(EN 856 / 4SP / 4SH)



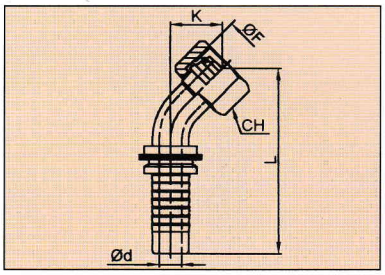
METRIC MALE 24° CONE SEAT H.T. -
DIN 3853 / 3861 SERIES 'S' DIN 2353
(EN 856 / 4SP / 4SH)



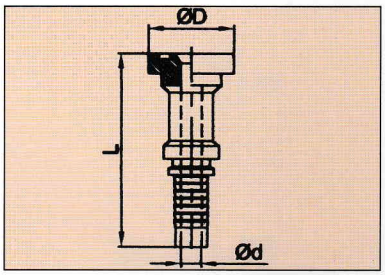
'O' RING METRIC FEMALE 24° CONE SEAT H.T. -
DIN 3865 SERIES 'S' DIN 2353 (SLIP ON NUT)
(EN 856 / 4SP / 4SH)



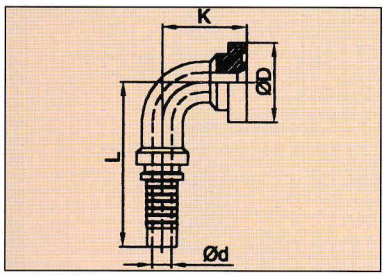
90° 'O' RING METRIC FEMALE SWEPT ELBOW 24°
CONE SEAT H.T. - DIN 3865 SERIES 'S' DIN 2353
(SLIP ON NUT) (EN 856 / 4SP / 4SH)



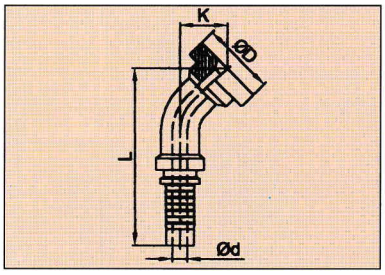
45° 'O' RING METRIC FEMALE SWEPT ELBOW 24°
CONE SEAT H.T. - DIN 3865 SERIES 'S' DIN 2353
(SLIP ON NUT) (EN 856 / 4SP / 4SH)



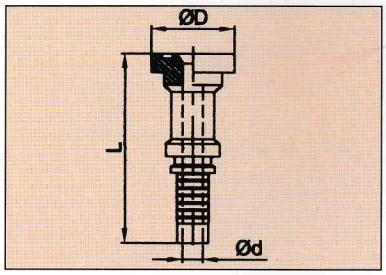
SAE - J518 STRAIGHT FLANGE 3000 PSI
(EN 856 / 4SP / 4SH)



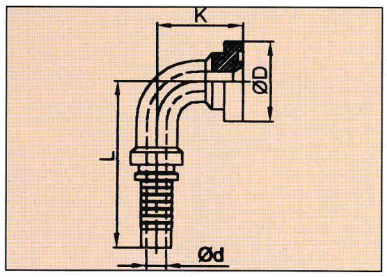
90° SAE - J518 FLANGE 3000 PSI
(EN 856 / 4SP / 4SH)



45° SAE - J518 FLANGE 3000 PSI
(EN 856 / 4SP / 4SH)

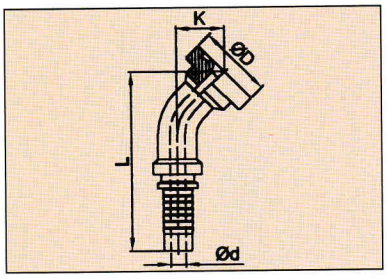


SAE - J518 STRAIGHT FLANGE 6000 PSI
(EN 856 / 4SP / 4SH)

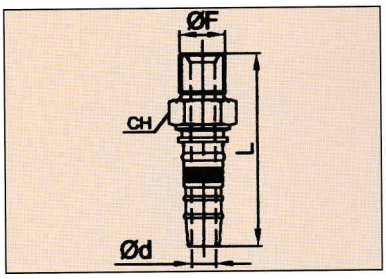


90° SAE - J518 FLANGE 6000 PSI
(EN 856 / 4SP / 4SH)

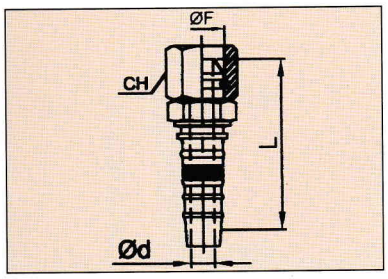
INSAPFLEX – HYDRAULIC HOSE END FITTINGS



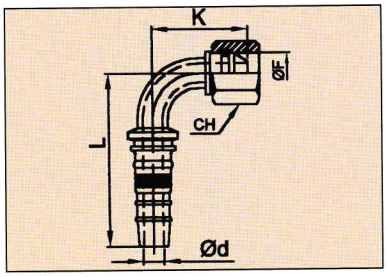
45° SAE - J518 FLANGE 6000 PSI
(EN 856 / 4SP / 4SH)



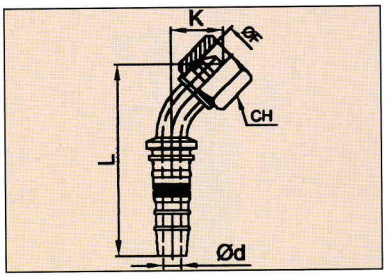
BSP MALE PARALLEL 60° CONE SEAT
(SAE 100 R13)



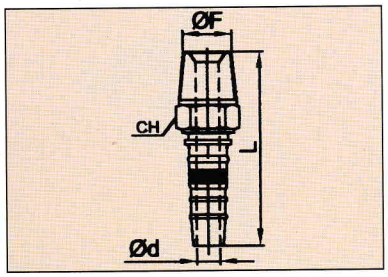
BSP FEMALE 60° CONE SEAT
(THRUST - WIRE NUT)
(SAE 100 R13)



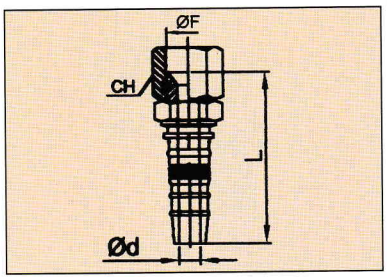
90° BSP FEMALE ELBOW 60° CONE SEAT
(THRUST - WIRE NUT)
(SAE 100 R13)



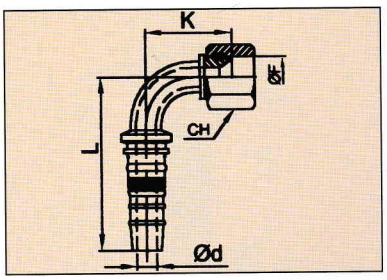
45° BSP FEMALE ELBOW 60° CONE SEAT
(THRUST - WIRE NUT)
(SAE 100 R13)



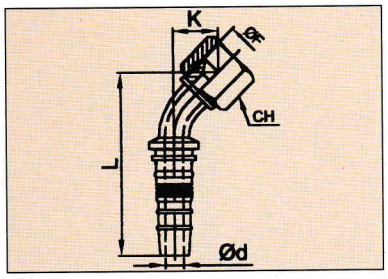
NPTF MALE 60° CONE SEAT - SAE-J516
(SAE 100 R13)



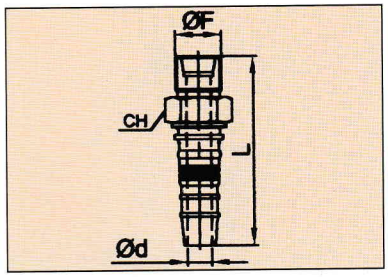
JIC FEMALE - 74° CONE SEAT SAE-J514
(THRUST - WIRE NUT)
(SAE 100 R13)



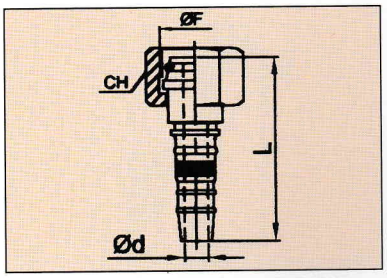
90° JIC FEMALE - 74° CONE SEAT SAE-J514
(THRUST - WIRE NUT)
(SAE 100 R13)



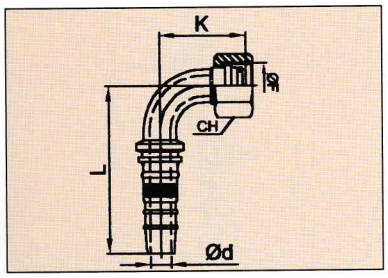
45° JIC FEMALE - 74° CONE SEAT SAE-J514
(THRUST - WIRE NUT)
(SAE 100 R13)



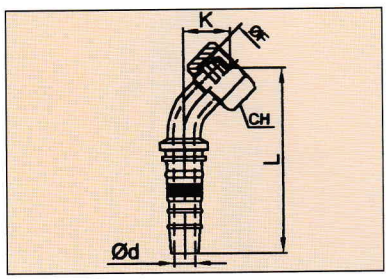
METRIC MALE 24° CONE SEAT H.T. -
DIN 3853 / 3861
SERIES 'S' DIN 2353 (SAE 100 R13)



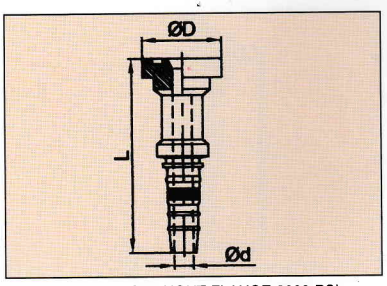
'O' RING METRIC FEMALE 24° CONE SEAT
H.T. - DIN 3865 SERIES 'S' DIN 2353
(SAE 100 R13)



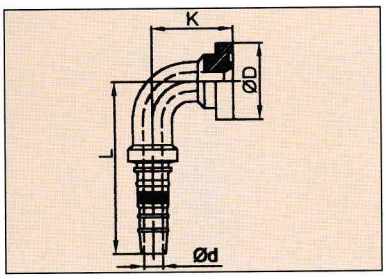
90° 'O' RING METRIC FEMALE ELBOW 24°
CONE SEAT H.T. - DIN 3865 SERIES 'S' DIN 2353
(SLIP ON NUT) (SAE 100 R13)



45° 'O' RING METRIC FEMALE ELBOW 24°
CONE SEAT H.T. - DIN 3865 SERIES 'S' DIN 2353
(SLIP ON NUT) (SAE 100 R13)

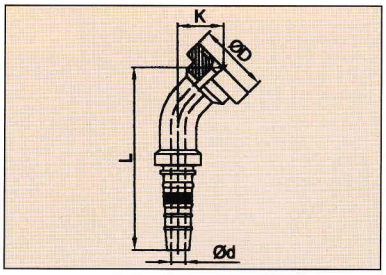


SAE - J518 STRAIGHT FLANGE 3000 PSI
(SAE 100 R13)

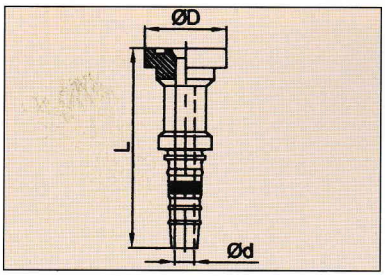


90° SAE - J518 FLANGE 3000 PSI
(SAE 100 R13)

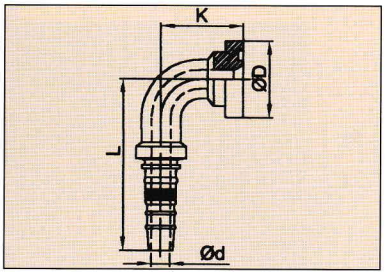
INSAPFLEX – HYDRAULIC HOSE END FITTINGS



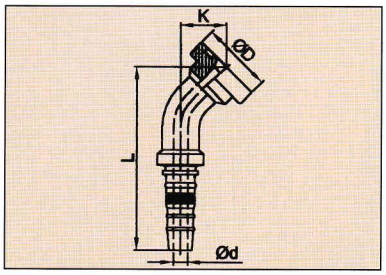
45° SAE - J518 FLANGE 3000 PSI
(SAE 100 R13)



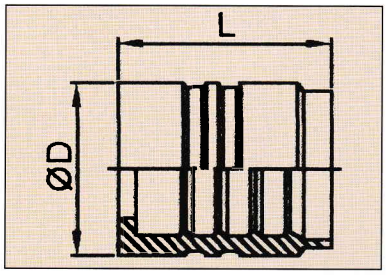
SAE - J518 STRAIGHT FLANGE 6000 PSI
(SAE 100 R13)



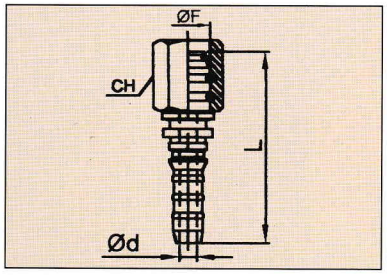
90° SAE - J518 FLANGE 6000 PSI
(SAE 100 R13)



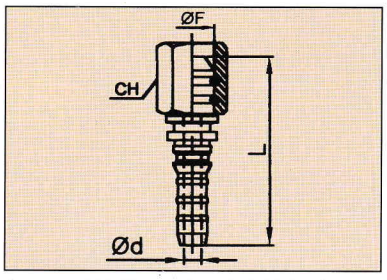
45° SAE - J518 FLANGE 6000 PSI
(SAE 100 R13)



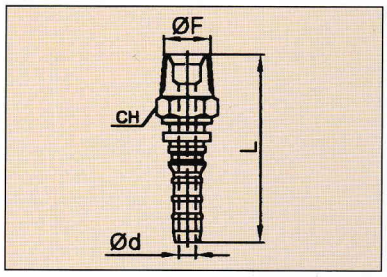
1/2" WATER BLAST FERRULE



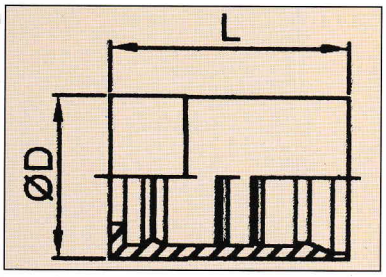
'O' RING METRIC FEMALE 24° CONE SEAT
H.T. - DIN 3865 SERIES 'S' DIN 2353 (SLIP ON NUT)
(WATER BLAST)



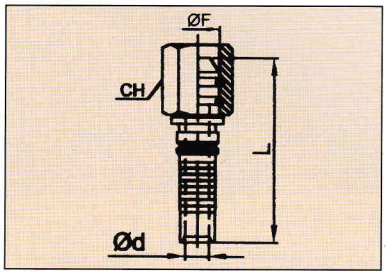
BSP FEMALE 60° CONE SEAT
(WATER BLAST) (TWO THRUST WIRE)



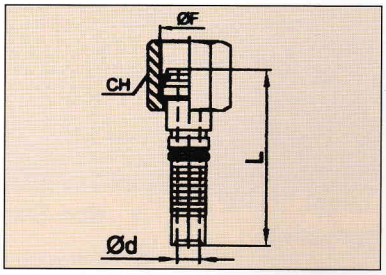
NPTF MALE (WATER BLAST)



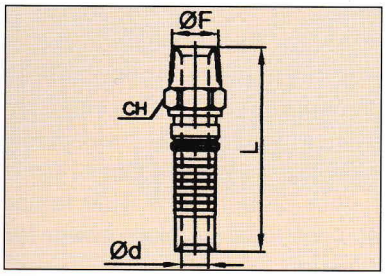
3/4" WATER BLAST FERRULE



BSP FEMALE 60° CONE SEAT
(WATER BLAST) (TWO THRUST WIRE)

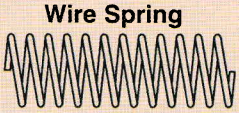


'O' RING METRIC FEMALE 24° CONE SEAT
H.T. - DIN 3865 SERIES 'S' DIN 2353 (SLIP ON NUT)
(WATER BLAST)



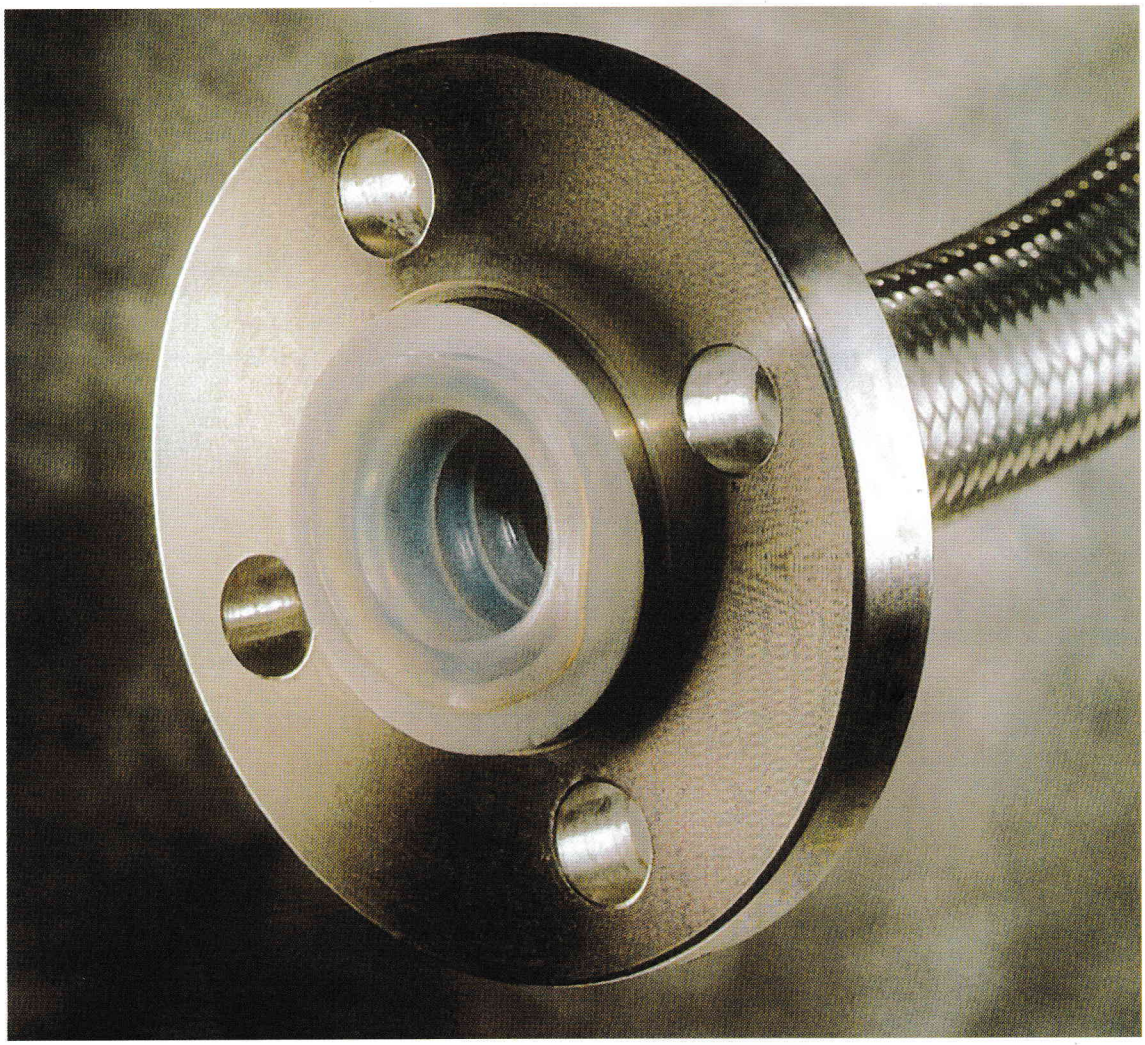
NPTF MALE (WATER BLAST)

INSAPFLEX – HOSE GUARDS

	Full Length	Partial Length	From End of Coupling		Full Length	Partial Length	From End of Coupling
Wire Spring 	☐	_____	_____	PVC Sleeve	☐	_____	_____
Flat Armor Spring	☐	_____	_____	Plastic Coil Sleeving	☐	_____	_____

INSAP®

PTFE - SMOOTH BORE & CONVOLUTED EASY - FLEX HOSE



What is PTFE?

PTFE (Poly Tetra Fluoro Ethylene) is an Engineering Plastic Resin in the Flourocarbon Group, discovered in 1938 by Scientist Dr. Roy Plunkett. PTFE is a high molecular weight resin displays outstanding resistance to wide variety of Chemicals. Combined with its superior Non-stick property and wide temperature range, PTFE Hoses are ideal problem solver for any aggressive application.

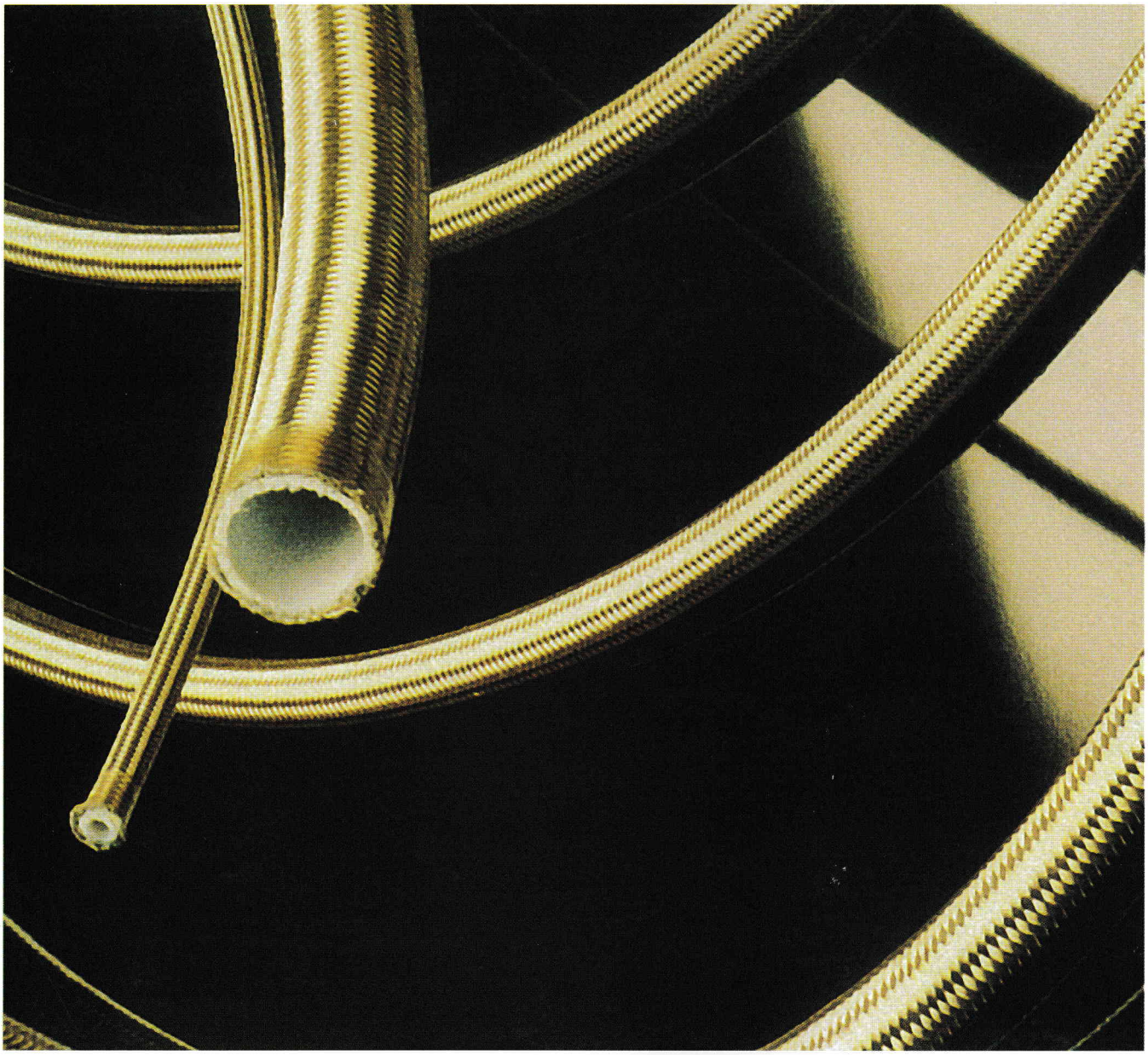
Why PTFE?

* Superior Flex Fatigue life
* Low Permeability
* Extremely low frictional property
* Pre-formable
* Solvent resistant
* Light Weight
* A wide operating temperature:- – 60°C to + 260° C
* Inertness to virtually all chemicals
* Resistance to weather / ageing (unaffected by UV light / resistant to Oxidation, Surface Fouling and discolouration.
* Non-flammable

The Properties of PTFE Hoses are :

1. Virtually resistant to all chemicals, except molten alkali metals or halogens at elevated temperatures.
2. Temperature Range:- – 60°C to + 260° C
3. Non-Sticking, easy to clean
4. Excellent Mechanical resistance for vibration and flexing
5. FDA Approved resin that guarantees food, cosmetics and pharmaceutical applications.
6. Non-Flammable
7. Non-ageing and excellent UV resistance
8. Chemically inert
9. Good di-electric property
10. Low coefficient of Friction ensuring very low pressure drop.

PTFE - SMOOTH BORE HOSE WITH SINGLE AISI-304 HIGH TENSILE WIRE BRAIDING CONFORMING TO PART NO: ITS-XX



INSAPFLEX PART No.	SIZE ID Inch	Internal Diameter		Outside Diameter		Max. Working Pressure	Min. Bursting Pressure	Min. Bend Radius
		Min. mm	Max. mm	Min. mm	Max. mm	Bar	Bar	M.M.
ITS - 06	1/4	5.97	6.48	8.13	9.14	175	700	76
ITS - 08	5/16	7.54	8.05	9.91	10.82	150	600	102
ITS - 10	3/8	9.00	9.50	11.18	12.19	135	540	127
ITS - 12	1/2	12.22	12.72	14.99	16.00	120	480	165
ITS - 16	5/8	14.86	15.47	17.78	19.05	100	400	197
ITS - 20	3/4	18.49	19.25	21.34	22.86	90	360	229
ITS - 25	1	24.82	25.83	27.69	29.46	65	260	305

PTFE - CONVOLUTED HOSE WITH SINGLE AISI-304 HIGH TENSILE WIRE BRAIDING CONFORMING TO PART NO: ITE-XX

INSAPFLEX PART No.	SIZE ID Inch	Internal Diameter		Outside Diameter		Max. Working Pressure	Min. Bursting Pressure	Min. Bend Radius
		Min. mm	Max. mm	Min. mm	Max. mm	Bar	Bar	MM
ITE - 10	3/8	9.14	9.91	14.73	15.75	120	480	30
ITE - 12	1/2	12.45	13.21	18.29	19.30	100	400	40
ITE - 16	5/8	15.37	16.38	21.59	22.61	80	320	50
ITE - 20	3/4	18.54	19.56	25.00	26.50	65	260	80
ITE - 25	1	24.89	26.16	32.13	33.66	45	180	100
ITE - 32	1.1/4	31.00	33.00	39.00	42.00	40	160	120
ITE - 40	1.1/2	37.50	40.50	46.99	49.20	35	140	140
ITE - 50	2	48.00	52.00	59.00	62.00	30	120	175
ITE - 80	3	74.00	78.00	92.00	95.00	20	80	380
ITE - 100	4	100.00	104.00	122.00	126.00	15	60	610

Types and Sizes :

1. INSAPFLEX - PTFE - Smooth Bore Hose with single or double outer wire braiding. Size Range: 1/4" ID to 1" ID
2. INSAPFLEX - PTFE - Convoluted Easy-Flex Hose with single or double outer wire braiding. Size Range: 3/8" ID to 4" ID
3. Working Pressure, Testing Pressure and Minimum Bend Radius confirmed above are at 20°C.

Range of Products :

★ PTFE Hose Assemblies can be supplied from 1/4" ID to 4" ID with any configuration of End Fittings / connections and also as per customer's requirement.

★ Fittings can be made out of low carbon steel or stainless steel
(SS-304, SS-304L, SS-316, SS-316L)

Testing:

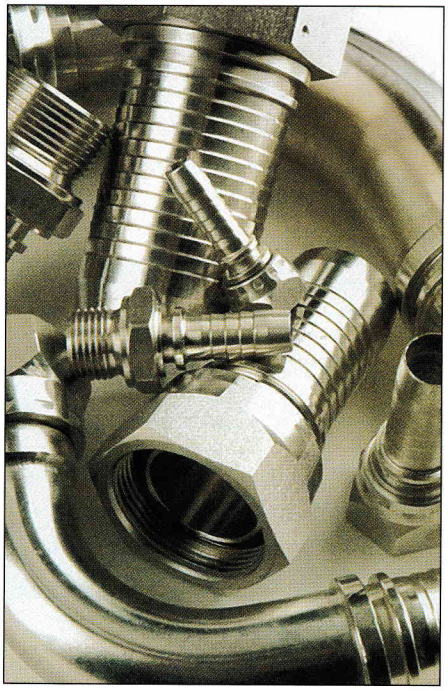
PTFE Hose Assemblies will be tested Hydrostaticaly only for 1.5 Times of the Maximum Working Pressure at the prevailing atmospheric condition. Higher the Testing will drastically reduce the life of the Hose Assembly. Hence not recommended.

INSAP®

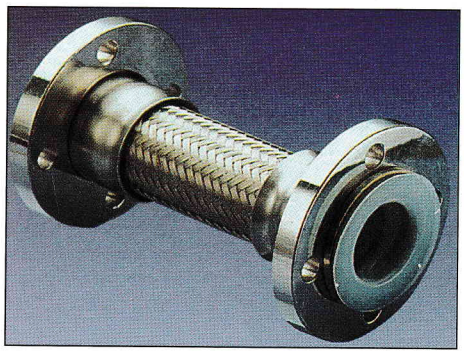
FITTINGS AND COLLARS

A wide range of fitting material includes Carbon Steel, SS-304 / 304L, SS-316 / 316L etc. Type of fittings includes wide range like Threaded Fittings (Male / Female Threaded), Camlock, Compresson, Buttweld, Tri-Clamp, SMS Coupling, Flanges etc.

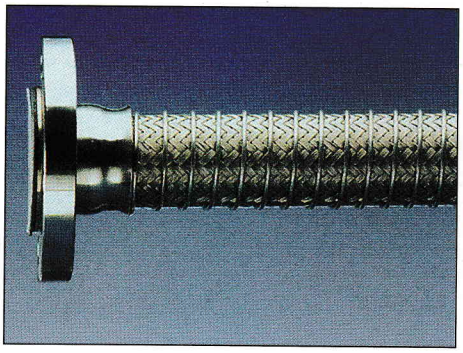
WE CAN ALSO SUPPLY FLANGED FITTINGS WITH PTFE TEFLON TAFTED STUB ENDS.



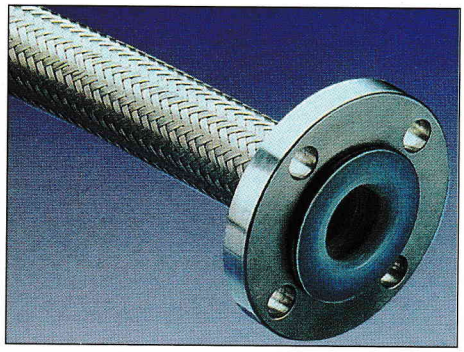
INSAPFLEX – PTFE TEFLON HOSE ASSEMBLIES



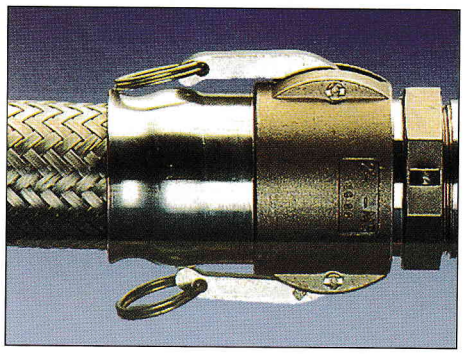
Coroflon - Hose Assembly



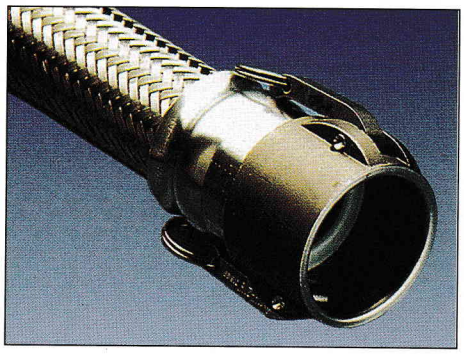
PC - Protection Coil



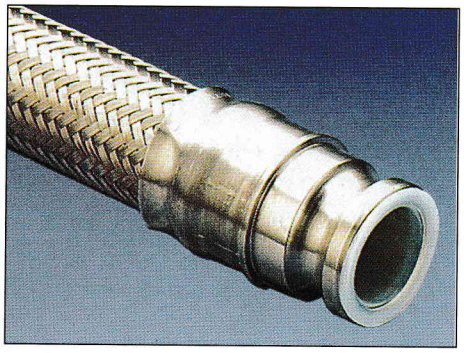
Standard Flange Fitting



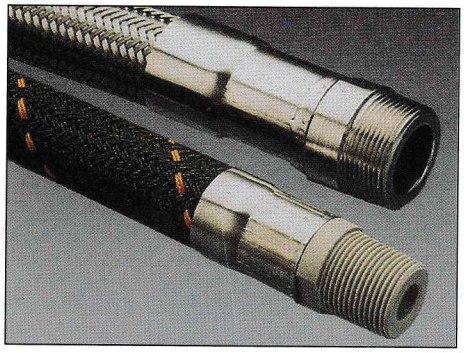
Cam - Action Joint



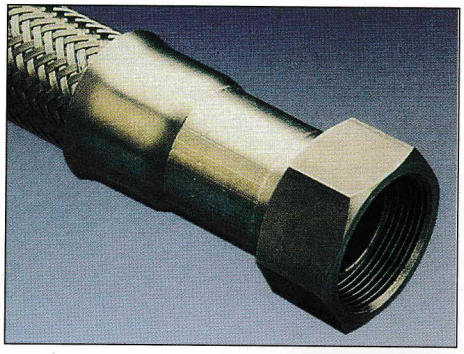
Cam - Action Coupler (Female Fitting)



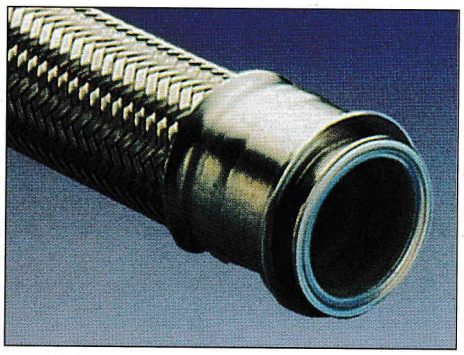
Cam - Action Adaptor (Male Fitting)



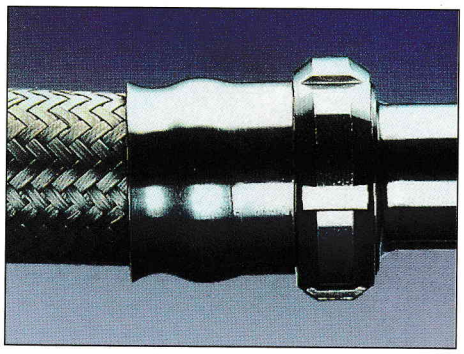
Male Fitting



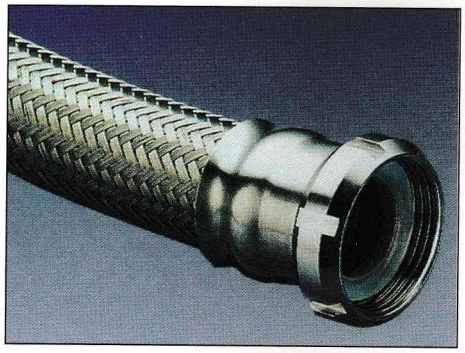
Female Union Fitting



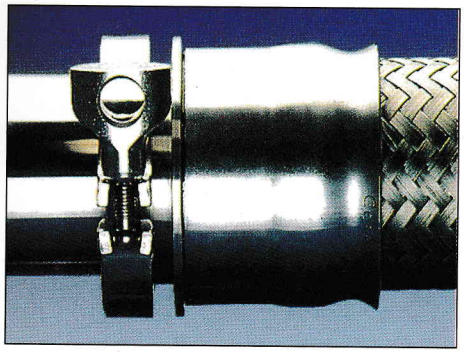
PTFE Lined Triclover Fitting



SMS - Joint



SMS - Female Fitting

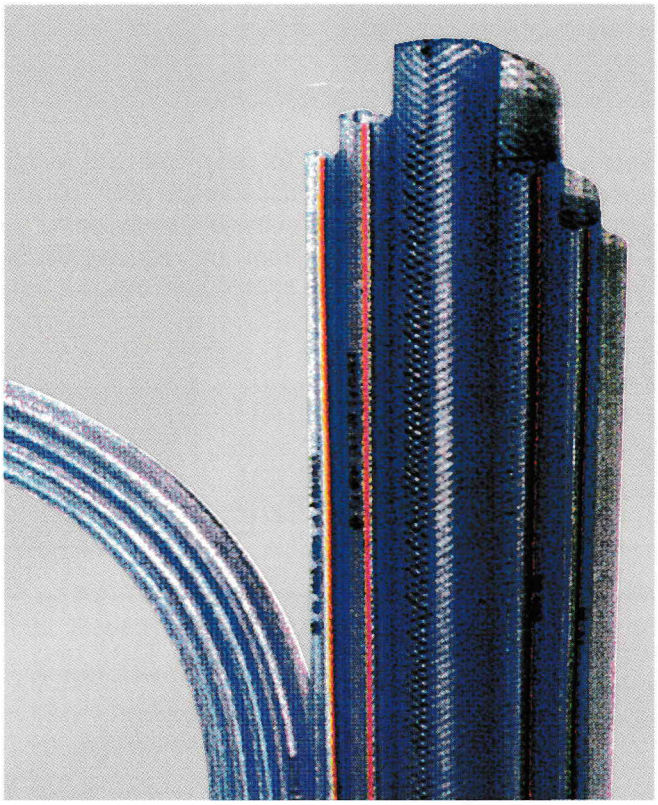


PTFE Lined Triclover Joint

PVC CLEAR TRANSPARENT FLEXIBLE HOSE

Use:

- Factory water supply and drainage equipment facilities
- Air and Water piping for industrial equipments
- Transfer of various fluids and pulverulent body
- Special Rock Drill hose available in regular and heavy duty type



Characteristics:

- This product is made by special method, and adhered perfectly as the inner surface and outer surface are fusion adhered with same material. Among others the cross weaving of polyester thread is designed to resist against the inner and outer pressure. Hose is made of transparent material and it is possible to see the transfer of materials.

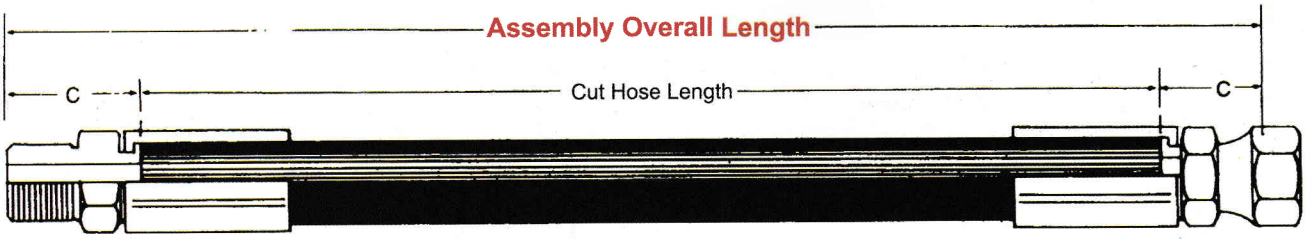
Specification

Hose Ref.	I.D. (mm)	Wall Thickness (mm)	W.P. kg/sq.cm	Std. Lengh mtr.
IC - 5	5	2.5	30	100 / 200
IC - 6	6	3	30	100 / 200
IC - 8	8	3	30	100 / 200
IC - 10	10	3.5	30	100 / 200
IC - 12	12	3.5	25	100 / 200
IC - 15	15	3.5	22	100 / 200
IC - 20	20	4	22	100 / 200
IC - 25	25	4.8	19	50 / 100
IC - 31	31	4.8	19	50 / 100
IC - 40	40	5	19	50 / 100
IC - 50	50	6	10	50 / 100

Note: Tolerance on I.D. & O.D. ± 5% Temp. Range:- – 10°C to + 70°C

ENGINEERING DATA ASSEMBLY LENGTH

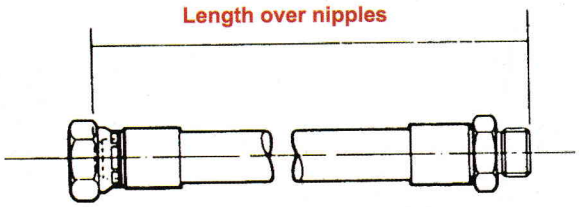
How To Determine Correct Assembly Length



For most assemblies, the correct assembly length may be determined by direct measurement of the equipment or a drawing. Minimum bend radii as shown in the hose specification tables should be observed.
Assemblies are measured to the end of the seal.

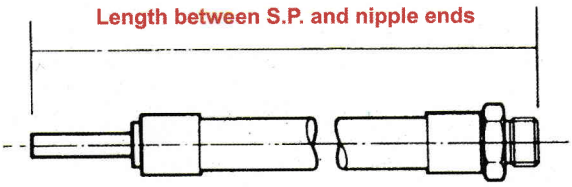
To determine the length of hose needed in making assemblies with permanent or reusable couplings, subtract Dimension "C" (Cut off factor) for each coupling from the required overall assembly length.

Length over nipples



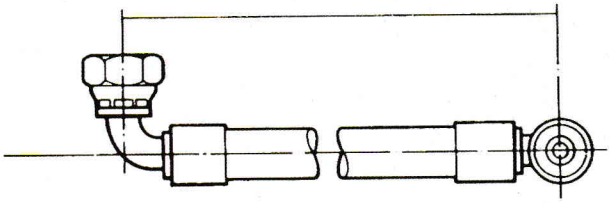
Swivel female and male union

Length between S.P. and nipple ends



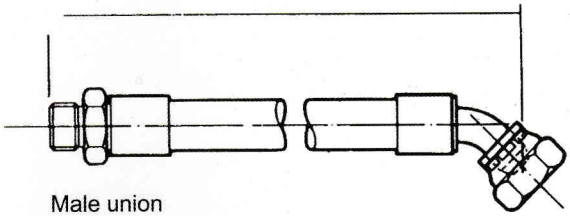
Straight standpipe Male union

Length between centre lines of angle and banjo



Swivel female 90° swept union Banjo coupling

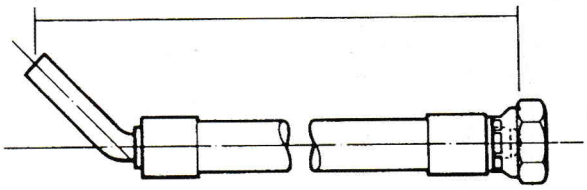
Length between male nipple and centre of female nipple



Male union

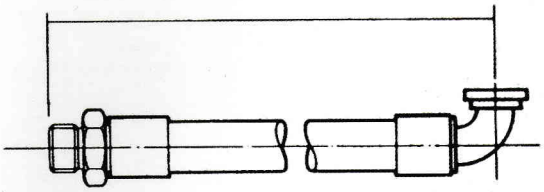
Swivel female 45° swept union

Length between centre line of S.P. and end of nipple



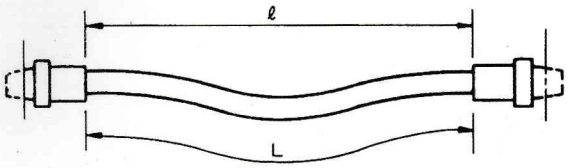
45° standpipe Swivel female union

Length between centre of angle and nipple end



Male union 90° SAE flange

Remember that hydraulic hose under pressure will elongate up to 2% of its length or contract up to 4% depending on pressure, type and size. Sufficient allowance should be made to permit such changes in length.



$L \geq l\,(1+0.04)$

ENGINEERING DATA ASSEMBLY LENGTH

Occasionally an assembly will be required similar to the sketches to the right. The following equations are helpful in determining the correct length.

FOR 180° TURN APPLICATIONS

#1 L = 2A + π R

#2 L = 2A + π R + T

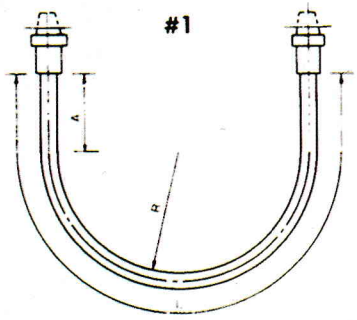
L = overall length of the hydraulic hose assembly, in mm or inches.

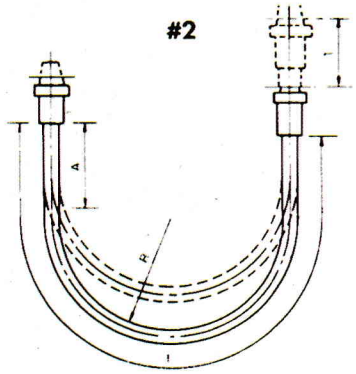
A = allowance for a minimum straight section of hydraulic hose at each end of the assembly, measured from the outer end of each coupling, in mm or inches. These two straight sections are necessary to prevent excessive stress concentrations directly back of the couplings. See table below.

R = bending radius of the hose, in mm or inches. See hose specifications tables.

T = amount of travel, in mm or inches.

Often right angle adapters provide a convenient means of avoiding too small a bend radius.





Hose I.D.	in	1/4	5/16	3/8	1/2	5/8	3/4	1	1.1/4	1.1/2	2
	mm	6.4	7.9	9.5	12.7	15.9	19	25	31.8	38.1	50.8
Min "A"	in	5	5	5	6	6	7	8	9	10	11
	m	127	127	127	152	152	178	203	229	254	279

Length Tolerance for Hydraulic Hose Assemblies and Specified Hose Lengths (As per SAE)

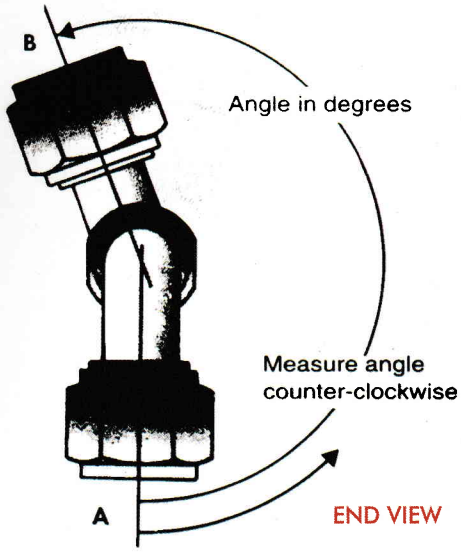
Length	Tolerance	
For lengths from 0 up to and including 12" (305 mm)	± 1/8"	± 3 mm
For lengths > 12" (305 mm) £ 18" (457 mm)	± 3/16"	± 5 mm
For lengths > 18" (457 mm) £ 36" (914 mm)	± 1/4"	± 6 mm
For lengths > 36" (914 mm) £ 48" (1219 mm)	± 3/8"	± 10 mm
For lengths > 48" (1219 mm) £ 72" (1830 mm)	± 1/2"	± 13 mm
For lengths > 72" (1830 mm)	± 1%	

Elbow angle and angle of Orientation — Tolerance ± 3

Angle Couplings

A - To measure angle of offset of a hose assembly, point one end of coupling "A" (the nearest) to a vertical position downward. The angle can then be measured from the centreline of this vertical coupling in an anticlockwise direction to the centreline of coupling "B" (the far coupling) (see illustration).

Relationships can then be expressed from 0° to 360°. If angle not given elbows are positioned at 0°.



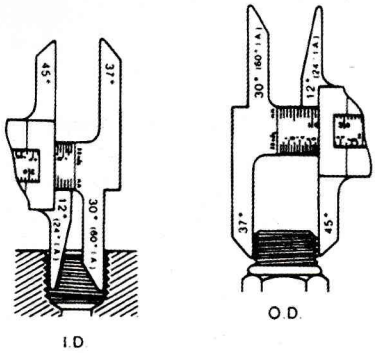
ENGINEERING DATA FITTING IDENTIFICATION

FITTING IDENTIFICATION

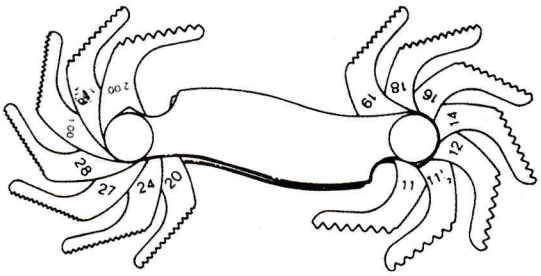
Measuring Threads and Seat Angles

Measuring Threads

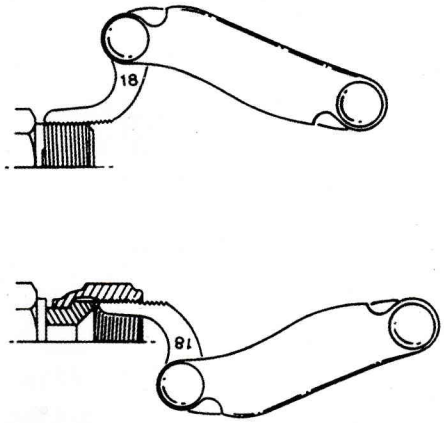
With the calliper measure the thread diameter at the largest point. (O.D. of male threads - I.D. of female threads).



Use a thread pitch gauge to determine the number of threads per inch or the distance between threads in metric connections. Place the gauge on the threads until the fit is snug. Match the measurement to the chart.

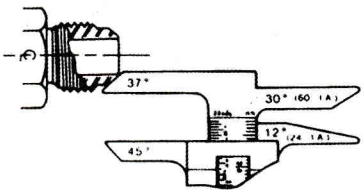


Thread Pitch Gauge



Measuring Seat Angles

When the centreline of the seat gauge extends parallel with the projected longitudinal axis of the coupling, then the angels of the gauge and seat match.



Compare the measurements taken to a coupling shown in coupling specification tables that appear in this catalogue.

FITTING IDENTIFICATION

DASH NUMBERS

Most fluid piping system sizes are measured by dash numbers. These are universally used abbreviations for the size of component expressed as the numerator of the fraction with the denominator always being 16. For example, a. -04 part is 4/16 or 1/4 inch. Dash numbers are usually nominal (in name only) and are abbreviations that make ordering of components easier.

There are few coupling systems used for hydraulic connections. They are identified as:

American, British, French, German, Japanese

This section lists the origin and coupling style.

Descriptions and dimensional data follows each coupling style.

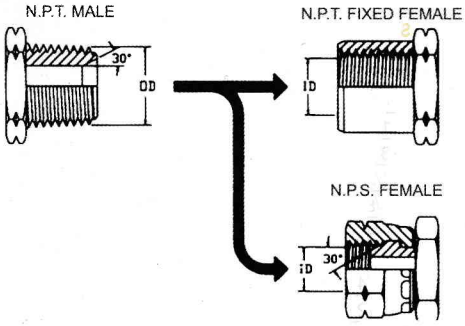
THREAD IDENTIFICATION

NPT Threads

N.P.T. THREAD SIZE Ins	MALE THREAD MINOR O.D. mm	Ins	FEMALE THREAD I.D. mm	Ins
1/8 - 27	9.9	.39	8.4	.33
1/4 - 18	13.2	.52	11.2	.44
3/8 - 18	16.6	.65	14.7	.58
1/2 - 14	20.6	.81	17.8	.70
3/4 - 14	26.0	1.02	23.4	.92
1 - 11.1/2	32.5	1.28	29.5	1.16
1.1/4 - 11.1/2	41.2	1.62	38.1	1.50
1.1/2 - 11.1/2	47.3	1.86	43.9	1.73
2 - 11.1/2	59.3	2.33	56.4	2.22
1.1/2 - 8	71.5	2.82	69.1	2.72
3 - 8	87.3	3.44	84.8	3.34

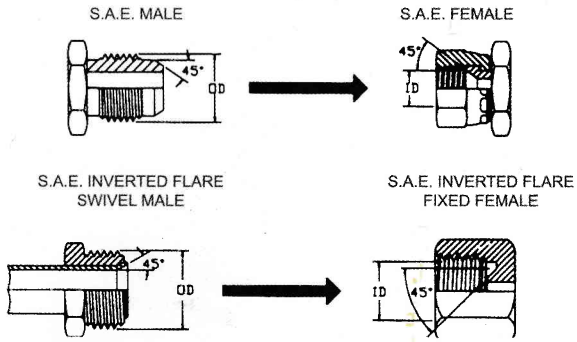
NPS Threads

N.P.S. THREAD SIZE Ins	FEMALE THREAD I.D. mm	Ins
1/8 - 27	8.6	.34
1/4 - 18	11.9	.47
3/4 - 18	15.0	.59
1/2 - 14	19.1	.75
3/4 - 14	24.6	.97
1 - 11.1/2	30.5	1.20
1.1/4 - 11.1/2	39.4	1.55
1.1/2 - 11.1/2	45.5	1.79
2 - 11.1/2	57.4	2.26
2.1/2 - 8	68.8	2.71
3 - 8	84.6	3.33



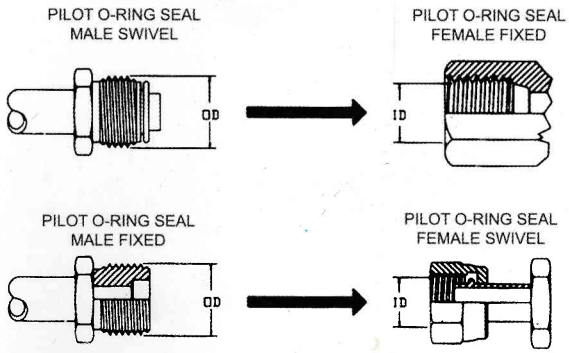
SAE 45⁰ / Inverted Flare

MALE THREAD O.D. & PITCH Ins	FEMALE THREAD I.D. mm	Ins	TUBE O.D. Ins
5/16 - 28	7.1	.28	1/8
3/8 - 24	8.4	.33	3/16
7/16 - 24	9.9	.39	1/4
1/2 - 20	11.4	.45	5/16
5/8 - 18	14.2	.56	3/8
11/16 - 18	16.0	.63	3/8 - 7/16
3/4 - 18	17.8	.70	1/2
7/8 - 18	20.6	.81	5/8
1.1/16 - 16	24.4	1.00	3/4



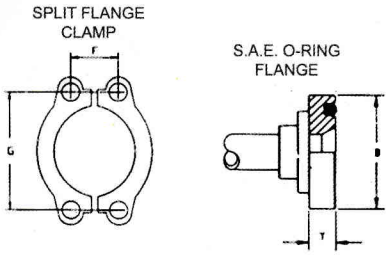
SAE 45⁰ / Flare / Pilot Seals

MALE THREAD O.D. & PITCH Ins	FEMALE THREAD I.D. mm	Ins	TUBE O.D. Ins
5/16 - 24	6.8	.27	1/8
3/8 - 24	8.4	.33	3/16
7/16 - 20	9.9	.39	1/4
1/2 - 20	11.4	.44	5/16
5/8 - 18	14.2	.56	3/8
11/16 - 18	16.0	.63	7/16
3/4 - 16	17.5	.69	1/2
7/8 - 14	20.6	.81	5/8
1.1/16 - 12	24.9	.98	3/4
1.1/4 - 12	30.0	1.18	7/8
1.3/8 - 12	33.3	1.31	1



Dimensions for SAE Code 61 and Code 62 Flanges

FLNG SIZE Ins	CODE 61 BØ mm	T mm	F mm	G mm	PORT THREAD UNC	mm	CODE 62 BØ mm	T mm	F mm	G mm	PORT THREAD UNC	mm
1/2	30.2	6.7	17.5	38.1	5/16 - 18	M8 x 1.25	31.7	7.7	18.2	40.5	5/16 - 8	M8 x 1.25
5/8	34.0	6.7	19.8	42.9	5/16 - 18	M8 X 1.25	-	-	-	-	-	-
3/4	38.1	6.7	22.2	47.6	3/8 - 16	M10 x 1.5	41.3	8.8	23.8	50.8	3/8 - 16	M10 x 1.25
1	44.5	8.0	26.2	52.4	3/8 - 16	M10 x 1.5	47.6	9.6	27.8	57.2	7/16 - 14	M12 x 1.75
1.1/4	50.8	8.0	30.2	58.7	7/16 - 14	M10 x 1.5	54.0	10.3	31.8	66.7	1/2 - 13	M14 x 2.0
1.1/2	60.3	8.0	35.7	69.8	1/2 - 13	M12 x 1.75	63.5	12.6	36.5	79.4	5/8 - 11	M16 x 2.0
2	71.4	9.5	42.9	77.8	1/2 - 13	M12 x 1.75	79.4	12.6	44.5	96.8	3/4 - 10	M20 x 2.5
2.1/2	84.1	9.5	50.8	88.9	1/2 - 13	M12 x 1.75	-	-	-	-	-	-
3	101.6	9.5	61.9	106.4	5/8 - 11	M16 x 20	-	-	-	-	-	-

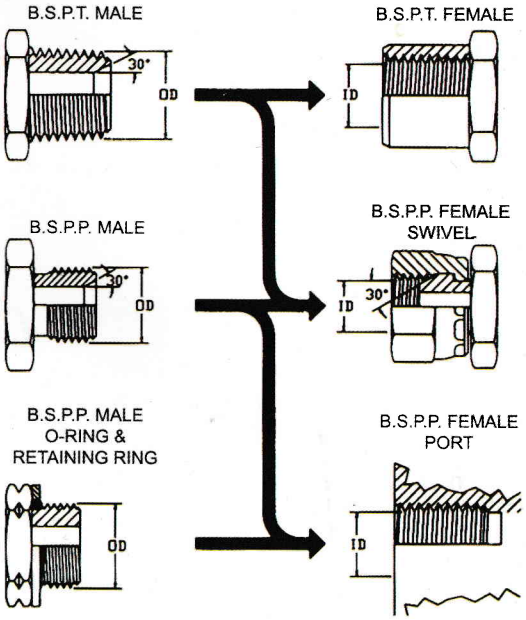


* 5/8 is not a true SAE standard. However, it is in the JIS standards and used by Komatsu and some American manufacturers.

THREAD IDENTIFICATION

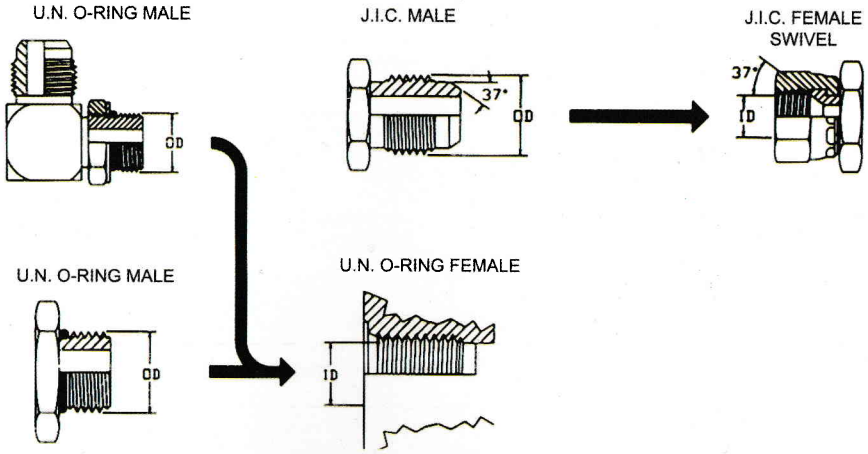
BSPT & BSPP Threads

B.S.P.T. & B.S.P.P. THREAD Ins	B.S.P.T. MALE MINOR O.D. mm	mm	B.S.P.P. MALE THREAD O.D. mm	mm	B.S.P.T. FEMALE THREAD I.D. mm	mm	B.S.P.P. FEMALE THREAD I.D. mm	mm
1/8 - 28	9.5	.37	9.6	.38	8.4	.33	8.6	.34
1/4 - 19	12.8	.50	13.0	.51	11.2	.44	11.9	.47
3/8 - 19	16.3	.64	16.5	.65	14.7	.59	15.2	.60
1/2 - 14	20.4	.80	20.8	.82	18.3	.72	19.1	.75
5/8 - 14	22.5	.89	22.8	.90	20.6	.81	20.8	.82
3/4 - 14	25.9	1.02	26.3	1.04	23.9	.94	24.6	.97
1 - 11	32.6	1.28	33.1	1.30	29.7	1.17	30.7	1.21
1.1/4 - 11	41.1	1.62	41.8	1.64	38.6	1.52	39.4	1.55
1.1/2 - 11	47.0	1.85	47.7	1.88	44.5	1.75	45.5	1.79
2 - 11	58.6	2.31	59.5	2.34	56.4	2.22	57.4	2.26
2.1/2 - 11	74.1	2.92	75.1	2.95	71.9	2.83	72.6	2.86
3 - 11	86.6	3.41	87.9	3.46	84.6	3.33	85.4	3.36



JIC & U.N. "O" RING Threads

MALE THREAD O.D. & PITCH Ins	FEMALE THREAD I.D. mm	Ins	TUBE O.D. Ins
5/16 - 24 UNF	6.9	.27	1/8
3/8 - 24 UNF	8.5	.33	3/16
7/16 - 20 UNF	9.9	.39	1/4
1/2 - 20 UNF	11.4	.45	5/16
9/16 - 18 UNF	13.0	.51	3/8
3/4 - 16 UNF	17.5	.69	1/2
7/8 - 14 UNF	20.3	.80	5/8
1.1/16 - 12 UN	24.9	.98	3/4
1.3/16 - 12 UN	28.2	1.11	7/8
1.5/16 - 12 UN	31.2	1.23	1
1.5/8 - 12 UN	39.1	1.54	1.1/4
1.7/8 - 12 UN	45.5	1.79	1.1/2
2.1/2 - 12 UN	61.5	2.42	2



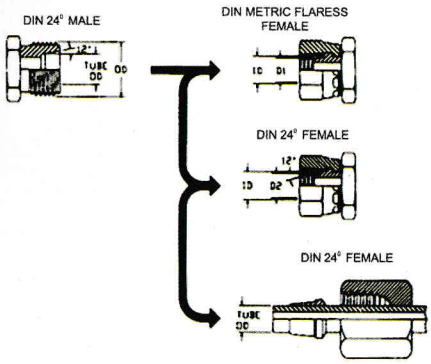
DKS, Heavy Series, DKO-S, Heavy Series, Metric - Tube, Nut & Ring, Heavy Series.

MALE THREAD O.D. & PITCH mm	TUBE O.D. mm	FEM THRD ID mm	D1 DIA mm	D2 DIA ins
M14 x 1.5	6	12.5	7.5	-
M16 x 1.5	8	14.5	9.5	8.2
M18 x 1.5	10	16.5	12.0	10.3
M20 x 1.5	12	18.5	14.0	12.3
M22 x 1.5	14	20.5	16.0	13.8
M24 x 1.5	16	22.5	18.0	15.8
M30 x 2.0	20	28	22.5	19.8
M36 x 2.0	25	34	27.5	24.8
M42 x 2.0	30	40	32.5	29.8
M52 x 2.0	38	50	40.5	37.9

DKL, Light Series, DKO-L, Light Series, Metric - Tube, Nut & Ring, Light Series.

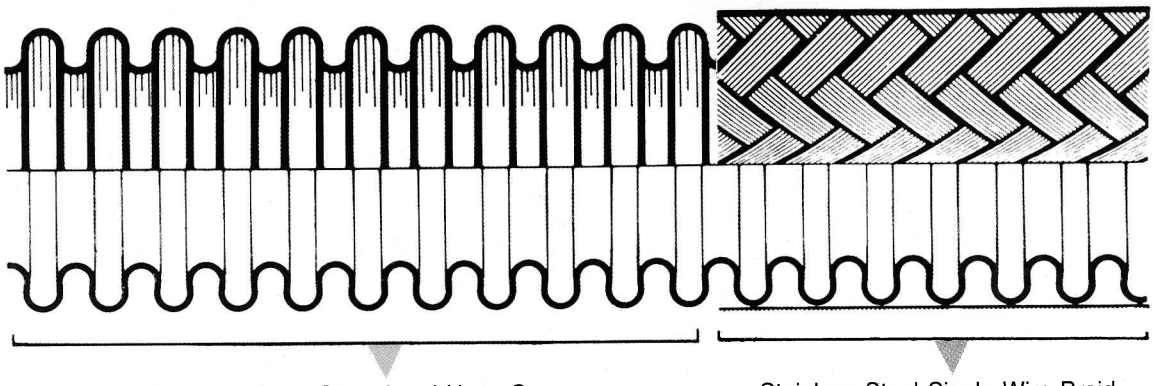
MALE THREAD O.D. & PITCH mm	TUBE O.D. mm	FEM THRD ID mm	D1 DIA mm
*M12 x 1.5	6	10.5	7.5
*M14 x 1.5	8	12.5	9.5
*M16 x 1.5	10	14.5	11.5
*M18 x 1.5	12	16.5	14.0
*M22 x 1.5	15	20.5	17.0
*M26 x 1.5	18	24.5	20.0
M30 x 2.0	22	28	24.0
M36 x 2.0	28	34	30.0
M45 x 2.0	35	43	37.5
M52 x 2.0	42	50	44.5

* These DKL Light Female Connections are the same as DKM Female.



STAINLESS STEEL CORRUGATED HOSE ASSEMBLIES

STAINLESS STEEL HOSE (SINGLE BRAID)



SPECIFICATION CHART (FOR 'B' TYPE HOSE) (SINGLE WIRE BRAIDED)							
SL.	SIZE INCH	NOMINAL ID IN MM	MAXIMUM OUTSIDE DIAMETER IN MM	PERMANENT BEND RADIUS IN MM	FLEXING BEND RADIUS IN MM	WORKING PRESSURE IN BAR	MAXIMUM TEST PRESSURE IN BAR
1	1/4"	8.00	13.90	45	100	125	188
2	3/8"	10.60	18.20	50	150	80	120
3	1/2"	12.50	19.00	65	200	80	120
4	5/8"	15.80	23.40	65	200	80	120
5	3/4"	19.30	28.30	70	203	67	101
6	1"	25.40	35.00	104	229	56	84
7	1.1/4"	32.00	44.50	117	267	46	69
8	1.1/2"	41.20	54.00	152	292	35	53
9	2"	51.50	64.10	160	318	33	50
10	2.1/2"	64.50	79.20	175	508	27	40
11	3"	75.70	93.20	231	610	24	36
12	4"	102	121.50	250	750	15	23
13	5"	125	154.00	318	900	12	18
14	6"	151	182.70	353	1050	10	15
15	8"	197.50	232.70	456	1180	8	12

APPLICATION : Diluted or concentrated acids, alkalies, liquid ammonia, nitrogen, hydraulic oil, steam, air, water. Suitable for high pressure and high temperature application.

CONSTRUCTION : Inner corrugation out of SS 321 / 316 / 316L and outer wire braiding out of SS 304.

WORKING PRESSURE : Working pressures given are for fluid temperatures upto 20°C. Burst pressures are generally four times working pressure.

TESTING : All hose assemblies are hydraulically tested before despatch. Test and Material Certificates will be supplied when specifically requested.

TEST PRESSURES : The maximum test pressures shown on the above chart must not be exceeded or distortion can occur to the convoluted form of the hose. Provided this measure is not exceeded, hoses are subjected to a test of one-and-a-half times the customers stated working pressure.

MINIMUM BEND RADII : Dimensions given are for flexing applications. For static conditions two-thirds of this dimension should be used.

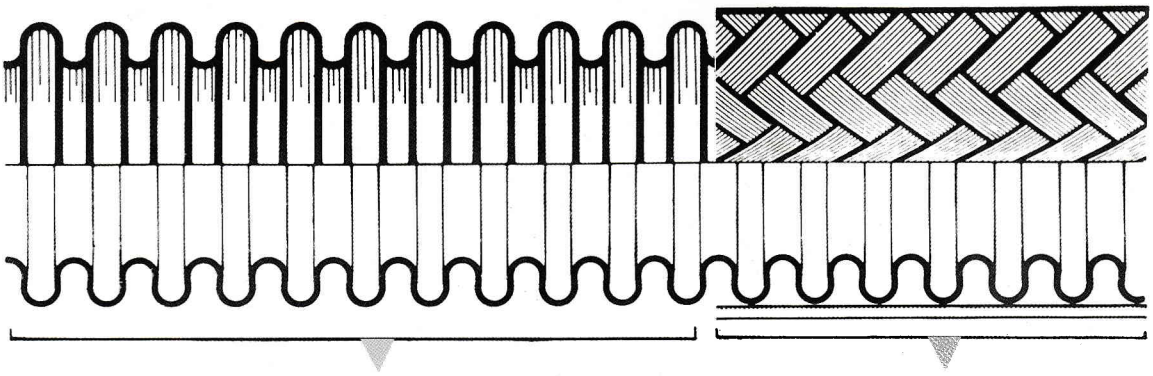
FITTINGS : A full range of flanges, screwed connectors, tube ends and almost any special fittings can be welded to this hose by argon arc process. Details of standard fittings on page 34.

TEMPERATURE RANGE : – 196°C to + 600°C.

DIMENSION ID / OD TOLERANCE : ± 1.0 mm

INSAP®

STAINLESS STEEL HOSE (DOUBLE BRAID)



SPECIFICATION CHART (FOR 'B' TYPE HOSE) (DOUBLE WIRE BRAIDED)

SL. NO.	SIZE		MAXIMUM OUTSIDE DIAMETER IN MM	PERMANENT BEND RADIUS IN MM	FLEXING BEND RADIUS IN MM	WORKING PRESSURE IN BAR	MAXIMUM TEST PRESSURE IN BAR
	INCH	MM					
1	1/4"	8	15.50	55	125	187	282
2	3/8"	10	20.00	60	175	120	180
3	1/2"	12	21.00	75	225	120	180
4	5/8"	15	25.00	75	225	120	180
5	3/4"	20	30.00	85	250	100	152
6	1"	25	37.00	120	275	84	126
7	1.1/4"	32	46.50	137	300	69	104
8	1.1/2"	40	56.00	172	325	53	80
9	2"	50	66.00	180	360	49	75
10	2.1/2"	65	82.00	200	533	41	60
11	3"	80	96.00	260	640	36	54
12	4"	100	124.00	280	780	23	34.5
13	5"	125	156.00	355	960	18	27
14	6"	150	186.00	390	1110	15	23
15	8"	200	235.50	491	1256	12	18

APPLICATION : Diluted or concentrated acids, alkalies, liquid ammonia, nitrogen, hydraulic oil, steam, air, water. Suitable for high pressure and high temperature application.

CONSTRUCTION : Inner corrugation out of SS 321 / 316 / 316L and outer wire braiding out of SS 304.

WORKING PRESSURE : Working pressures given are for fluid temperatures upto 20°C. Burst pressures are generally four times working pressure.

TESTING : All hose assemblies are hydraulically tested before despatch. Test and Material Certificates will be supplied when specifically requested.

TEST PRESSURES : The maximum test pressures shown on the above chart must not be exceeded or distortion can occur to the convoluted form of the hose. Provided this measure is not exceeded, hoses are subjected to a test of one-and-a-half times the customers stated working pressure.

MINIMUM BEND RADII : Dimensions given are for flexing applications. For static conditions two-thirds of this dimension should be used.

FITTINGS : A full range of flanges, screwed connectors, tube ends and almost any special fittings can be welded to this hose by argon arc process. Details of standard fittings on page 34.

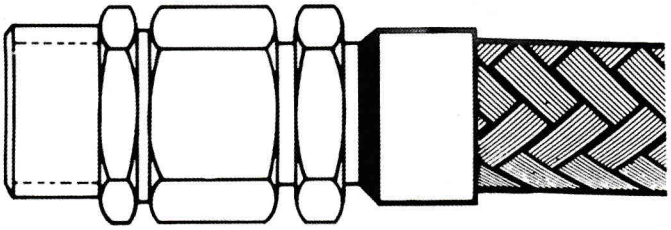
TEMPERATURE RANGE : – 196°C to + 600°C.

DIMENSION ID / OD TOLERANCE : ± 1.0 mm

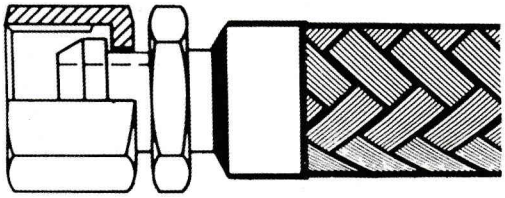
INSAP®

FITTINGS

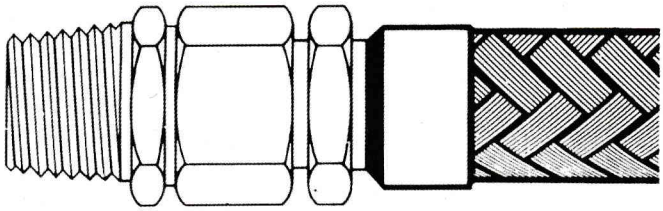
Manufactured from Mild Steel, Stainless Steel or Brass. Secured by argon welding or silver brazing depending upon hose type and service conditions. We can also manufacture to your special requirements.



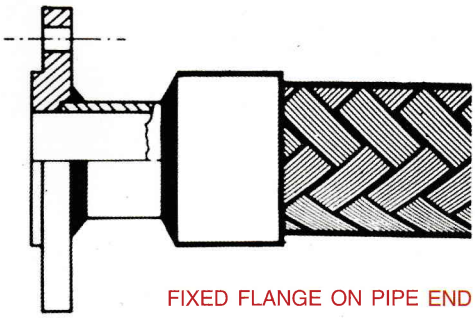
UNION WITH WELDABLE PIPE ADAPTER



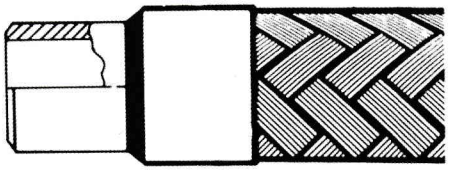
FEMALE UNION



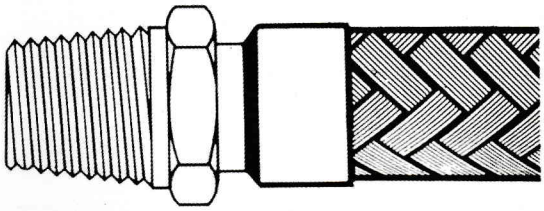
FEMALE UNION BSP/BSPT WITH ADAPTER



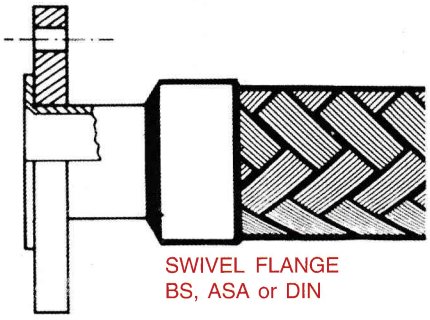
FIXED FLANGE ON PIPE END BS, ASA or DIN



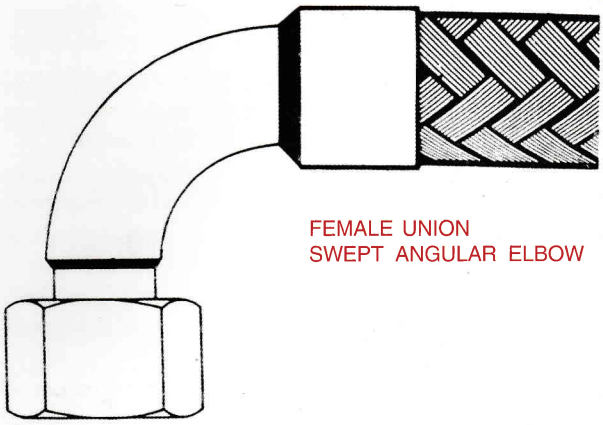
WELDABLE PIPE END



NPT/BSPT MALE



SWIVEL FLANGE BS, ASA or DIN



FEMALE UNION SWEPT ANGULAR ELBOW

Note: These Hose Assemblies can also be supplied with Camlock/Quick Connecting Couplings

ENGINEERING DATA
INSTRUCTIONS FOR SELECTION, INSTALLATION AND MOUNTING

The life time of metal hose will increase when proper instructions are followed.

1. **Select the proper hose type**
2. **Select the right fittings**
3. **Do not overbend the hose (check technical data)**
4. **Do not torque a corrugated metal hose**
5 **Avoid scratching over rough surfaces**
6. **Avoid exposure to weld or grinding splatters**

1. Hose selection

When you select a metal hose the following considerations should be made:

- Pressure capacity:
  The pressure capacity of metal hoses decreases at higher temperature.
- Temperature influence:
  Correct the working pressure with the appropriate temperature correction factors.
- Handling:
  Rough handling may require a heavier pressure class hose than the pressure capacity indicates.

2. Fitting selection

Whenever possible select at least one swivel fitting or a floating flange.
This avoids torsion problems during installation.

3. Overbending

Avoid overfbending, specially close to the fittings.
Install the hose in its most natural position, free of kinks and sharp bends

4. Torsion

Torsion can have dramatic consequences on the life of a corrugated metal hose. Torsion occurs when the movements are not in the same plane as the fittings.
Use two keys when fixing swivel nuts.

Note: Stripwound hose can absorb some torsion

5. Scratching

The braiding is the essential part of a hose assembly to withstand the internal pressure. A damaged braid diminishes the pressure capacity of the assembly and is detrimental to its function.

6. Splatters

Weld or grind splatters may lead to corrosion of the stainless steel parts. Use a heat proof shield (no plastic!) during welding or grinding in the proximity of metal hoses.

ENGINEERING DATA
VERTICAL LOOP FOR MAXIMUM VERTICAL TRAVEL

The illustration at the right show the proper method of installing hose in vertical loops. The formula and the table below will aid in determining the overall length of an assembly.

Formula : Overall length = B + ½π A + ½ S

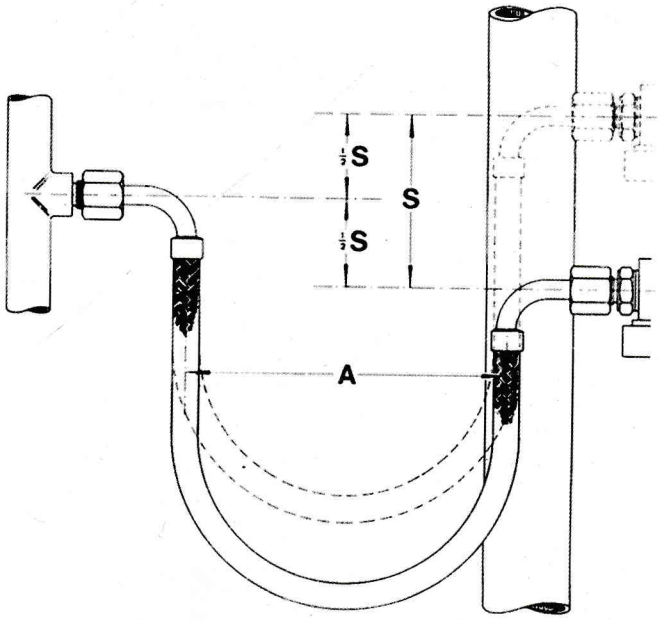
Example : Using 32 mm hose with fittings attached

A = 2 x 215 (2x "minimum c/l bend radius for flexing bend")

B = 460 (from table below)

S = desired movement 200 mm

Overall length = 460 + ½π x 430 + 100
Overall length = 1235.4 mm
or appr. 1240 mm.



VERTICAL LOOP FOR SHORT HORIZONTAL TRAVEL

The formula and the table below will aid in determining the overall length for an assembly when installed as illustrated in the drawing on the right.

Formula : Overall length = B + ½π (A + S) and

$$C = \frac{½\pi\ S + B + A}{2}$$

Example : Using 25 mm hose with fittings attached

A = 2 x 205 (2x "minimum c/l bend radius for flexing bend")

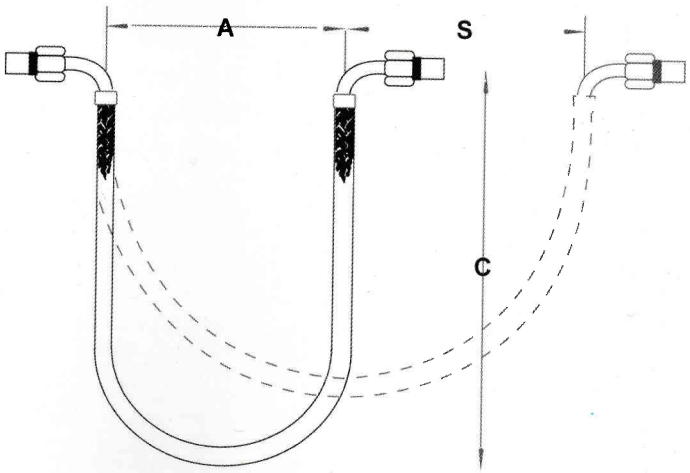
B = 410 (from table below)

S = desired movement 380 mm

Overall length = 410 + ½π (430 + 380)
Overall length = 1650.9 mm
or appr. 1650 mm.

$$C = \frac{½\pi\ x\ 380 + 410 + 410}{2}$$

C = 708.5 mm or approx. 710 mm



EXPLANATION OF FORMULA

A = Bend diameter (2 x "minimum c/l bend radius for flexing bend")

B = Factor including the length of fittings and allowance for straight sections of flexible tubing beyond each fitting.

S = Travel

TABLE FOR B

inside hose diameter	mm	6	10	13	19	25	32	38	50	65	75	90	100	125	150	200	250	300	350
	inch	1/4	3/8	1/2	3/4	1	1.1/4	1.1/2	2	2.1/2	3	3.1/2	4	5	6	8	10	12	14
B	mm	230	280	310	360	410	460	510	560	610	660	710	760	840	910	1020	1170	1320	1520

ENGINEERING DATA

HORIZONTAL LOOP FOR MAXIMUM HORIZONTAL TRAVEL

The illustration on the right is another example of a typical installation of hose in which the movement is horizontal. The purpose of the support is to prevent the hose from sagging and causing failure near the fittings.

Formula : Overall length = B + ½π A + ½ S

Example : Using 13 mm hose with fittings attached

A = 2 x 205 (2x "minimum c/l bend radius for flexing bend")

B = 310 (from table on page 37)

S = desired movement 550 mm

Overall length = 310 + ½π x 410 + ½.550
Overall length = 1229.0 mm
or appr. 1230 mm.

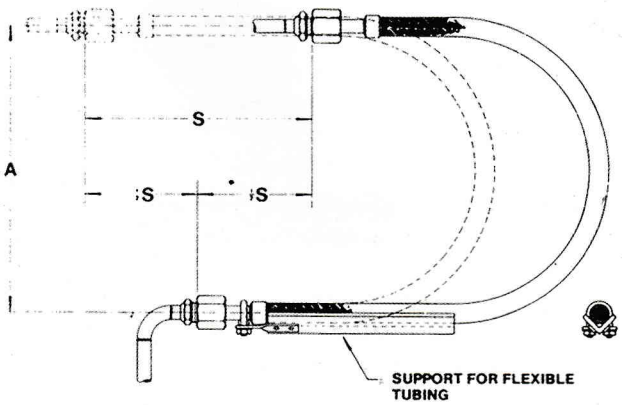


TABLE II

Temp. (°C)	Corr. Factor
– 200	1.0
– 150	1.0
– 100	1.0
– 50	1.0
0	1.0
20	1.0
50	0.95
100	0.83
150	0.75
200	0.69
250	0.65
300	0.61
350	0.58
400	0.56
450	0.54
500	0.53
550	0.52
600	0.34
650	0.19
700	0.10

TEMPERATURE CORRECTION FACTOR

The Recommended Maximum Working Pressure ratings given are at a temperature of 20°C. Where Hoses are required to operate at a temperature above 20°C, a correction factor should be applied to the specified working pressure of the selected Hose. The correction factors are given in Table II.

EXAMPLE

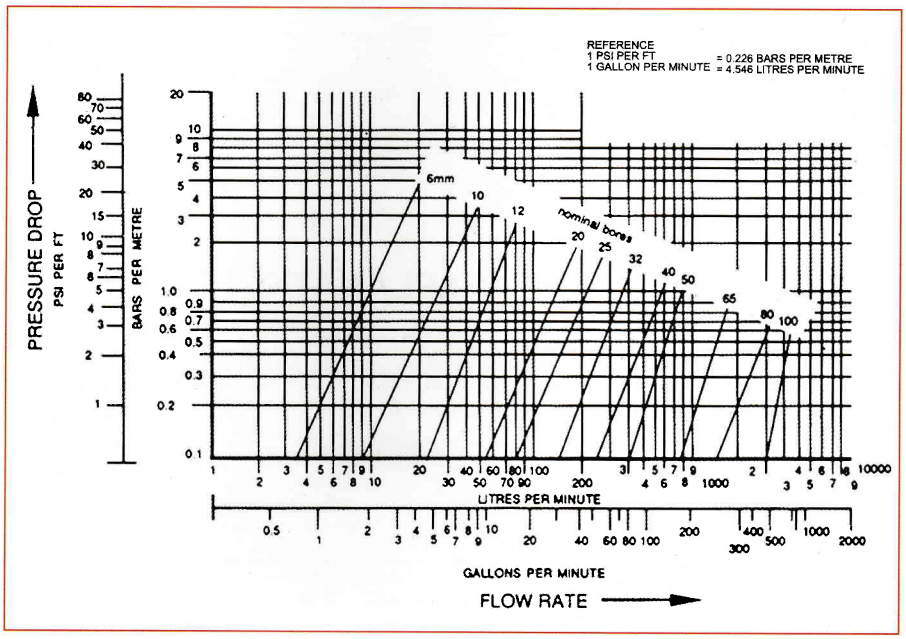
A 50 NB Hose is required for a temperature of 300°C and working pressure of 20 kg/cm². The specified pressure for 50 NB Single Braid Hose is 33 kg/cm². The correction factor at 300°C is 0.61.

Hence the working pressure permissible is 33x0.61 = 20.13 kg/cm². This is higher than the required pressure i.e. 20 kg/cm². Hence Single Braided Hose is recommended.

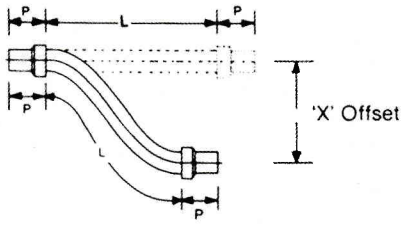
PRESSURE LOSS

As a rough estimate, it can be assumed that the pressure loss in Corrugated Hoses is 100% higher than in new welded steel pipes. In stripwound Hoses, it is 20% higher. This means that in the case of Corrugated Hoses an increase in diameter of 15%, and in the case of stripwound Hoses of only 4%, is sufficient to reduce the pressure loss to the value of the pressure loss in steel pipes.

Because of the nature of the bore of a Corrugated Hose, the pressure drops due to greater friction than that of a smooth bore pipe. The chart shows the approximate pressure drop for each size of Corrugated Hose related to a flow rate where water is the fluid. To utilize the chart, read off on the base line the flow rate required. Where a vertical line from the selected point on the base line intersects the nominal bore line, the pressure drop is shown on the vertical axiz, corresponding to the point of intersection.



CALCULATION OF MINIMUM HOSE LENGTH FOR FLEXING INSTALLATIONS



STATIC FLEXING
Minimum Overall Length = L (Static) + (2 x P)
P – Dimension of end fittings

INTERMITTENT FLEXING
Minimum Overall Length = L (Flexing) + (2 x P)
L – Dimension from chart below relative to Offset Motion 'X'
P – Dimension of end fittings

LENGTH 'L' mm (FREE HOSE LENGTH)													
NOMINAL BORE mm	STATIC	DIMENSIONS 'X' mm (OFFSET MOTION)											
	0	15	25	35	50	75	100	125	150	175	200	225	250
6	85	140	180	215									
10, 12	90	150	190	225	290								
20	95	170	220	255	310								
25	105	185	240	280	335	425							
32	110	205	260	305	365	450							
40	140	250	320	370	440	530	610						
50	170	300	380	440	520	630	730	800	870	940			
65	200	340	430	500	590	720	830	920	1000	1070	1130	1190	
80	215	380	500	580	680	820	940	1040	1140	1230	1310	1380	1450
100	230	405	525	610	720	875	1005	1120	1225	1325	1415	1490	1560
125	245	430	550	640	760	930	1070	1200	1310	1420	1520	1590	1670
150	280	510	650	760	910	1100	1270	1420	1560	1690	1800	1900	1990
200	320	560	710	830	990	1210	1400	1560	1720	1860	1990	2100	2210
250	360	620	780	900	1070	1320	1510	1690	1820	2010	2160	2290	2340

Material Specifications for Forged Components as per ASTM (Flanges, Fittings, & others)

	Chemical Composition									Physical Properties (Mandatory requirement)							
	C	Si	Mn	P Max	S Max	Ni	Cr	Mo	Tl.	Tensile Strength PSI(kg/mm²)	Yeild Strength PSI(kg/mm²)	Elong. %	Reduction of area %	Impact Values Min ibf (j)	Impact Values Average ibf (j)	Test Temp °F(°C)	BHN
A105	0.35 Max	0.35 Max	0.60 1.05	0.040	0.050	-	-	-	-	70000 (49.3)	36000 (25.35)	22	30	-	-	-	-
A350LF1	0.30 Max	0.15 0.30	1.35 Max	0.035	0.040	-	-	-	-	60000 to 85000 (42.25 to 5986)	30000 (21.13)	25	38	10(14)	13 (18)	.20(.28.9)	197 Max
A350 LF2	0.30 Max	0.15 0.30	1.35 Max	0.035	0.040	-	-	-	-	70000 to 95000 (49.3.to 66.9)	36000 (25.35)	22	30	12(16)	15(20)	.50 (.45.6)	197 Max
A350 LF3	0.20 Max	0.20 0.35	0.90 Max	0.035	0.040	3.25 3.75	-	-	-	70000 to 95000 (49.3 to 66.9)	37500 (26.4)	22	35	12 (16)	15 (20)	.150 (.101.1)	197 Max
A182 F1	0.28 Max	0.15 0.35	0.60 0.90	0.045	0.045	-	-	0.44 0.65	-	70000 (49.3)	40000 (28.17)	20	30	-	-	-	143 192
A 182 F12	0.10 0.20	0.10 0.60	0.30 0.80	0.040	0.040	-	0.80 1.25	0.44 0.65	-	70000 (49.3)	40000 (28.17)	20	30	-	-	-	143 207
A 182 F 11	0.10 0.20	0.50 1.00	0.30 0.80	0.040	0.040	-	1.00 1.50	0.44 0.65	-	70000 (49.3)	40000 (28.17)	20	30	-	-	-	143 207
A 182 F22	0.15 Max	0.50 Max	0.30 0.60	0.040	0.040	-	2.00 2.50	0.87 1.13	- -	75000 (52.8)	45000 (31.7)	20	30	-	-	-	156 207
A 182 F5	0.15 Max	0.50 Max	0.30 0.60	0.030	0.030	0.50 Max	4.0 6.0	0.44 0.65	-	70000 (49.3)	40000 (28.17)	20	35	-	-	-	143 217
A182 F304	0.08 Max	1.00 Max	2.00 Max	0.040	0.030	8.00 11.00	18.00 20.00	-	-	75000 (52.8)	30000 (21.13)	30	50	-	-	-	-
A182 F304 L	**0.035 Max**	1.00 Max	2.00 Max	0.040	0.030	8.00 13.00	18.00 20.00	-	-	70000 (49.3)	25000 (17.6)	30	50	-	-	-	-
A 182 F316	0.08 Max	1.00 Max	2.00 Max	0.040	0.030	10.00 14.00	16.00 18.00	2.00 3.00	-	75000 (52.8)	30000 (21.13)	30	50	-	-	-	-
A182 F316 L	0.035 Max	1.00 Max	2.00 Max	0.040	0.030	10.00 15.00	16.00 18.00	2.00 3.00	-	70000 (49.3)	25000 (17.60)	30	50	-	-	-	-
A182 F321	0.08 Max	1.00 Max	2.00 Max	0.040	0.030	9.00 12.00	17.00 Min	-	a	75000 (52.8)	30000 (21.13)	30	50	-	-	-	-
A182 F316 T1	0.08 Max	1.00 Max	2.00 Max	0.040	0.030	10.00 14.00	16.00 18.00	2.00 3.00	a	75000 (52.8)	30000 (21.13)	30	50	-	-	-	-

a) Grade F321, F316 Tl shall have Tl not less than 5 Times of C and not more than 0.70%

INSAP®

TECHNICAL DATA
CORROSION RESISTANCE REFERENCE TABLE

The following tables may be used only as a guide in the selection of the most suitable hose and fitting material when conveying a given medium. The listed media are in general considered to be pure, at room temperature and, unless otherwise specified, dry. A change in any one of these conditions may change the rating. No attempt has been made to account for variations in service conditions since these variables are too innumerable and complex.

RATING CODE:

A - Suitable (normal condition)

B - Limited Service

C - Unsuitable

Aditional information on service life, etc. is keyed to the following notes. The numbers appear as superscripts to the upper right of the rating as:
Acetaldehyde C^2 (bronze)

"Dry" can also be referred to as "anhydrous"

When there is a question on this reference table or you have unusual service conditions or media, contact us before ordering.

NOTES:
1. Susceptible to intergranular corrosion
2. May cause explosive reaction
3. Susceptible to stress corrosion cracking
4. Susceptible to pitting type corrosion
5. Discolors
6. Concentration over 50% and/or temperature over 95°C, refer to our engineering department.

	BRONZE	MONEL	CARBON STEEL	STAINLESS 304L/321	STAINLESS 316
Acetaldehyde	C^2	A	B	A	A
Acetanilide	B^3	B	B	B	B
Acetic acid	C	B	C	B^1	A^1
Acetic anhydride	B	B	C	B	B
Acetone	A	A	C	B	B
Acetophenone	A	A	A	B	B
Acetylene	C^2	A	A	A	A
Acrylates	B	B	B	B	B
Acrylic acid	B	B	C	B	B
Acrylonitrile	A^4	A	A	A	A
Alcohols	A^5	A	A^5	A	A
Alum	B	B	C	B	B
Alumina	A	A	A	A	A
Aluminum acetate	B	B	C	B	B
Aluminum chloride - dry	B^1	A	B	A	A
Aluminum chloride - moist	C	B	C^3	$C^{3.4}$	C^3
Aluminum fluoride	B	B	B	C	C
Aluminum hydroxide	B	B	B	A	A
Aluminum sulfate	C	B	C	$B^{1.3}$	A^3
Ammonia - dry	A	A	A	A	A
Ammonia - moist	C^3	C	C^3	A	A
Ammonium acetate	C	A	A	A	A
Ammonium bromide	C	B	C	C^4	C^4
Ammonium chloride - dry	C^4	A	B	A	A
Ammonium chloride - moist	C^4	B	C	$C^{3.4}$	C^3
Ammonium hydroxide 6	C^3	A	B	A	A
Ammonium nitrate	C^2	C^2	C^3	A	A
Ammonium sulfate	C	B	C	C^1	B
Amyl acetate	A	A	A	A	A
Amyl alcohol	A	A	A	A	A
Amyl chloride - dry	A	A	B	A	A
Amyl chloride - moist	C	B	C	$C^{3.4}$	C^3
Aniline	C^3	A	C	B	B
Aniline dyes	C^3	A	C	B	B
Asphalt	A	A	A	A	A
Atmosphere - industrial	A	A	C	B^4	A^4
Atmosphere - marine	A	A	C	B^4	B^4
Atmosphere - rural	A	A	C	A	A
Barium carbonate	B	B	B	B	B
Barium chloride - dry	B	A	A	A	A

	BRONZE	MONEL	CARBON STEEL	STAINLESS 304L/321	STAINLESS 316
Barium chloride - moist	B	B	B	$C^{3.4}$	C^3
Barium hydroxide	C	B	B	B	A
Barium sulfate	B	B	B	B	B
Barium sufide	C	C	C	B	B
Beer	A	A	C	A	A
Beet sugar syrups	A	A	B	A	A
Benzaldehyde	C	B	C	B	B
Benzene (Benzol)	A	A	A	A	A
Benzoic acid	A	B	C	A	A
Benzylamine	C^3	B	B	B	B
Benzyl chloride - dry	B	A	B	A	A
Benzyl chloride - moist	B	B	C	$C^{3.4}$	C^3
Black liquor, sulfate process	C	A	C	B	B
Bleaching powder - dry	B	A	C	A	A
Bleaching powder - moist	B^1	B	C	$C^{1.3.4}$	$C^{3.4}$
Borax	A	A	B	A	A
Bordeaux mixture	B	A	B	A	A
Boric acid	B	B	C	A	A
Boron trichloride - dry	B	B	A	B	B
Boron trichloride - moist	B	B	B	$C^{3.4}$	C^3
Boron trifluoride - dry	B	B	A	B	B
Brines	B	B	C	$C^{3.4}$	C^3
Bromic acid	C	C	C	C	C
Bromine - dry	A	A	C	B	B
Bromine - moist	B	B	C	C	C
Butadiene	A	A	A	A	A
Butane	A	A	A	A	A
Butanol (butyl alcohol)	A	A	A^5	A	A
Butyl phenols	B	A	B^5	B	B
Butylamine	C^3	A	A	A	A
Butyric acid	B	B	C	B	B
Cadmium chloride - moist	B	B	C	$C^{3.4}$	C^3
Cadmium chloride - dry	B	A	A	A	A
Cadmium sulfate	B	A	B	A	A
Calcium bisulfite	B	B	B	B^1	B
Calcium bromide	B	B	C	C^3	C^3
Calcium chloride - moist	B	B	C	$C^{3.4}$	C^3
Calcium chloride - dry	B	A	A	A	A
Calcium fluoride	B	B	C	C	C
Calcium hydroxide	B	B	C	B	B

TECHNICAL DATA

CORROSION RESISTANCE REFERENCE TABLE (continued)

	BRONZE	MONEL	CARBON STEEL	STAINLESS 304L/321	STAINLESS 316
Calcium hypochlorite - moist	C	B	C	C[3,4]	C[3,4]
Calcium hypochlorite - dry	B	A	B	A	A
Calcium nitrate	B	B	C[1]	B[1]	B
Calcium oxide	A	A	A	A	A
Cane sugar syrups	A	A	B	A	A
Carbolic acid (phenol)	B	B	C	B	A
Carbon dioxide - dry	A	A	A	A	A
Carbon dioxide - moist	C[4]	A	C	A	A
Carbonated beverages	B	A	C	A	A
Carbonated water	B[4]	A	C	A	A
Carbon disulfide	B	B	B	B	B
Carbon tetrachloride - dry	A	A	B	A	A
Carbon tetrachloride - moist	B	B	C	C[3,4]	C[4]
Castor oil	A	A	A	A	A
Chlorine - dry	A	A	B	A	A
Chlorine - moist	C	B	C	C[3,4]	C[3]
Chloroacetic acid	C	B	C	C[3,4]	C[3]
Chloric acid	C	C	C	C[3]	C[3]
Chlorine dioxide - dry	B	A	B	A	A
Chlorine dioxide - moist	C	B	C	C[3,4]	C[3]
Chloroform - dry	A	A	A	A	A
Chloroform - moist	B	B	C	C[3,4]	C[3]
Chromic acid	C	B	C[3]	C[1,4]	B
Chromic fluorides	C	B	C	C	C
Chromic hydroxide	B	B	B	B	B
Chromium sulfate	B	B	C	B	B
Cider	A	A	C	A	A
Citric acid	C	B	C	B	B
Coffee	A	A	C	A	A
Copper chloride - dry	A	A	B	A	A
Copper chloride - moist	B	B	C	C[3,4]	C[3]
Copper nitrate	C	C	C	A	A
Copper sulfate	C	B	C	B[1]	B
Corn oil	A	A	A	A	A
Cottonseed oil	A	A	A	A	A
Creosole	B	A	A	A	A
Crude oil	B	A	C	C[1]	B
Cyclohexane	B	B	B	B	B
DDT	B	B[4]	C	A	A
Dichloroethane - dry	A	A	A	A	A
Dichloroethane - moist	C	B	C	C[4]	C[4]
Dichloroethylene - dry	A	A	B	A	A
Dichloroethylene - moist	C	B	C	C[4]	C[4]
Dichlorophenol	B	B	C	B[3]	B[3]
Diisocyanate	B	A	B	A	A
Dimethyl sulfate	B	B	B	B	B
Epichlorohydrin - dry	B[4]	A	C[4]	A	A
Epichlorohydrin - moist	C[4]	B	C[4]	C[3,4]	C[3]
Ethane	A	A	A	A	A
Ethers	A	A	B	A	A
Ethyl acetate	A	B	B	B	B
Ethyl alcohol	A	A	A	A	A
Ethyl benzene	B[5]	B	B	B[3]	B
Ethyl chloride - dry	A	A	A	A	A
Ethyl chloride - moist	B	B	C	C[3,4]	C[3]
Ethylene	A	A	A	A	A
Ethylene chlorohydrin - dry	B	A	B	A	A
Ethylene chlorohydrin - moist	C	B	C	C[4]	C[4]
Ethylene diamine	C[3]	B	B	B	B
Ethylene glycol	A	A	A	A	A

	BRONZE	MONEL	CARBON STEEL	STAINLESS 304L/321	STAINLESS 316
Ethylene oxide	C[2]	B	B	A	A
Fatty acids	C	B	C	B[1,4]	A
Ferric chloride - dry	B	A	B	A	A
Ferric chloride - moist	C	B	C	C[1,3,4]	C[3,4]
Ferric nitrate	C	C	C	B	B
Ferric sulfate	C	C	C	B[1]	A
Ferrous chloride - dry	B	A	B	A	A
Ferrous chloride - moist	C	B	C	C[3,4]	C[3]
Ferrous sulfate	B	A	C	B[4]	B
Fluorine - dry	B	A	A	A	A
Fluorine - moist	C	B	C	C	C
Formaldehyde	A[5]	A[5]	B[5]	B	B
Formic acid	B	B	C	B[1]	A
Freon	A	A	A	A	A
Fruit juices	C	A	C	A	A
Fuel oil	B	A	C	A	A
Furfural	A	A	B	A	A
Gasoline	A	A	B	A	A
Gelatine	A	A	C	A	A
Glucose	A	A	B	A	A
Glue	B	A	C	A	A
Glutamic acid	C[4,5]	B	C	B[3,4]	B[3,4]
Glycerin (glycerol)	A	A	B[5]	A	A
Heptane	A	A	A	A	A
Hexachloroethane - dry	B	A	B	A	A
Hexachloroethane - moist	C	B	C	C[4]	C[4]
Hydrazine	C[3]	C	C	A	A
Hydrobromic acid	C	C	C	C[4]	C
Hydrocarbons, pure	A	A	A	A	A
Hydrochloric acid	C	B	C	C[4]	C[4]
Hydrocyanic acid	C	B	C[3]	C[1,3]	C[3]
Hydrofluoric acid	C	B	C	C[1,3]	C
Hydrofluorsilicic acid	C	B	C	C	C
Hydrogen	A	A	A	A	A
Hydrogen chloride - dry	A	A	B	A	A
Hydrogen chloride - moist	C	B	C	C[4]	C[4]
Hydrogen peroxide	C	C	C	B	B
Hydrogen sulfide - dry	A[5]	A	B	A	A
Hydrogen sulfide - moist	C[4,5]	B	C[3]	B[4]	A
Hydroquinone	B	B	B[5]	B	B
Kerosine (kerosene)	A	A	B	A	A
Lacquers	A	A	A	A	A
Lacquer solvents	A	A	A	A	A
Lactic acid	B	B	C	B[1,4]	B[1]
Lime	A	A	B	A	A
Lime - sulfur	C	B	C	B	B
Linseed oil	A	A	B	A	A
Lithium chloride - dry	B	A	B	A	A
Lithium chloride - moist	B	B	B	C[3,4]	C[3]
Lithium hydroxide	C	B	B	B	B
Magnesium chloride - dry	B	A	B	A	A
Magnesium chloride - moist	B	B	C	C[3,4]	C[3]
Magnesium hydroxide	A	A	A	A	A
Magnesium sulfate	A	A	B	B	A
Maleic acid	C	B	B	B[1]	B
Mercuric chloride - dry	B	A	B	A	A
Mercuric chloride - moist	C	B	C	C[3,4]	C[3]
Mercurous nitrate	C[3]	B[3]	B	B	B
Mercury	C	B[3]	B	B	B
Methyl alcohol	A	A	A	A	A

INSAP®

TECHNICAL DATA
CORROSION RESISTANCE REFERENCE TABLE (continued)

	BRONZE	MONEL	CARBON STEEL	STAINLESS 304L/321	STAINLESS 316
Methane	A	A	A	A	A
Methyl chloride - dry	A	A	A	A	A
Methyl chloride - moist	B	B	C	C[3,4]	C[3]
Methyl ethyl ketone	B	B	B	B	B
Milk	B	A	C	A	A
Mine water	C	B	C	B	B
Napthalene	B	B	A	A	A
Natural gas	A	A	A	A	A
Nickel chloride - dry	B	A	B	A	A
Nickel chloride - moist	C	B	C	C[3,4]	C[3]
Nitric acid	C	C	C	A	A
Nitrotoluene	B	B	B	B	B
Nitrogen	A	A	A	A	A
Oleic acid	B[5]	A	C	B[4]	B
Oleum (fuming H2SO4)	C	C	B[3]	B	B
Axalic acid	B	B	C	C[1]	B[1]
Oxygen	A	A	C	A	A
Palmitic acid	B	A	C	A	A
Parafin	A	A	B	A	A
Pentane	B	B	B	B	B
Phenol (carbolic acid)	B	B	C	B	A
Phosphoric acid	C	B	C	C[1]	B[1]
Phthalic acid	B	B	C	B[1]	B
Pitric acid	C	C	C	B	B
Potassium bromide	B	B	C	C	C
Potassium carbonate	B	A	B	A	A
Potassium chloride - dry	A	A	A	A	A
Potassium chloride - moist	B[3]	B	C	C[3,4]	C[3]
Potassium chromate	B	B	C	B	B
Potassium cyanide	C[4]	A	B	B	B
Potassium dichromate	C	A	C	A	A
Potassium fluoride	B	B	C	C	C
Potassium hydroxide	C[5]	A[3]	B[3]	B[3]	A
Potassium nitrate	B	B	B	B	A
Potassium permanganate	B	B	B	B	B
Potassium sulfate	B	B	C	B	B
Propane	A	A	A	A	A
Propylene	A	A	A	A	A
Propylene oxide	C	C	C	A	A
Propylene dichloride - dry	B	A	B	A	A
Propylene dichloride - moist	C	B	C	C[4]	C[4]
Pyridine	B[5]	B	B[5]	B	B
Pyrrolidine	C[3]	B	B	B	A
Quinine	B	B	C	B	B
Rosin	A[5]	A	C[5]	A	A
Sea water	B	B	C	C[3,4]	C[3]
Sewage	A	A	B	A	A
Silver salts	C	A	C	B	B
Silver nitrate	C	C	C[3]	B	A
Soap solutions	A	A	B	A	A
Sodium	C	A	A	A	A
Sodium acetate	B	B	B	B[4]	B
Sodium bicarbonate	B	A	C	A	A
Sodium bisulfate	B	B	C	B[1,4]	A
Sodium bisulfite	C[4]	B[4]	C	B	B
Sodium bromide	B	B	B	C	C
Sodium carbonate	B	A	B	A	A
Sodium chlorate - dry	B	A	A	A	A
Sodium chlorate - moist	B	B	C	C[3,4]	C[3]
Sodium chloride - dry	B	A	B	A	A

	BRONZE	MONEL	CARBON STEEL	STAINLESS 304L/321	STAINLESS 316
Sodium chloride - moist	B	B	C	C[3,4]	C[3]
Sodium chromate	A	A	B	A	A
Sodium citrate	C	B	B	B	B
Sodium cyanide	C[4]	B	B	B	B
Sodium dichromate	C	B	C	A	A
Sodium fluoride	B	A	B	C[4]	C
Sodium hydroxide 6	B[4]	A	B[3]	B[3]	B[3]
Sodium hypochlorite - dry	B	A	B	A	A
Sodium hypochlorite - moist	C	B	C	C[1,4]	C[4]
Sodium metasilicate	B	A	B	A	A
Sodium nitrate	B	A	B[3]	A	A
Sodium nitrite	B	B	B	B	B
Sodium peroxide	C	B	C	A	A
Sodium phosphate	B	A	C	A	A
Sodium silicate	A	A	B	A	A
Sodium sulfate	A	A	B	B[3]	B
Soldium sulfide	C	A	C	B[4]	B
Sodium sulfite	B	A	C	B	B
Sodium thiosulfate	C	A	C	B	B
Stannic chloride - dry	B	A	B	A	A
Stannic chloride - moist	C	B	C	C[3,4]	C[3]
Stannous chloride - dry	B	A	B	A	A
Stannous chloride - moist	C	B	C	C[3,4]	C[3]
Steam	A	A[3]	C	A	A
Stearic acid	B	B	C[5]	B	B
Strontium nitrate	B	B	C	B	B
Sulfate black liquor	C	B	B	B	B
Sulfate green liquor	C	B	B	B[3]	B
Sugar solutions	A	A	B	A	A
Sulfur - dry	C	A	B	A	A
Sulfur - molten	C	C	C	C	B
Sulfur chloride - dry	B	A	C	A	A
Sulfur chloride - moist	C	B	C	C[3,4]	C[3]
Sulfur dioxide - dry	B	B	C	C[1]	B
Sulfur dioxide - moist	C[4]	C	C	C[1]	B
Sulfur trioxide - dry	A	A	C	A	A
Sulfuric acid, 95-100%	B	B	B	A	A
Sulfuric acid, 80- 95%	B	B	C	B	B
Sulfuric acid, 40- 80%	C	C	C	C[1]	C[1]
Sulfuric acid, 40%	C	C	C	C[1]	C[1]
Sulfurous acid	B	B	C	C[1,4]	C[1,4]
Tail oil	C	B	B	B	B
Tannic acid	B	B	C[5]	B	B
Tar	A	A	B	A	A
Tartaric acid	C	B	C	B	B
Tetraphosphoric acid	C	C	C	B	B
Toluene	A	A	A	A	A
Trichloroacetic acid	C	B	C	C[3,4]	C[4]
Trichloroethane - dry	A	A	A	A	A
Trichloroethane - moist	C	B	C	C[4]	C[4]
Trichloroethylene - dry	A	A	A	A	A
Trichloroethylene - moist	C	B	C	C[4]	C[4]
Turpentine	A	A	B	A	A
Varnish	A	A	B	A	A
Vinegar	B	B	C	A	A
Water, potable	A	A	C	A	A
Xylene	B	A	B	A	A
Zinc chloride - dry	B	A	A	A	A
Zinc chloride - moist	C[4]	B	C	C[3,4]	C[3]
Zinc sulfate	B	B	C	B	A

INSAP®

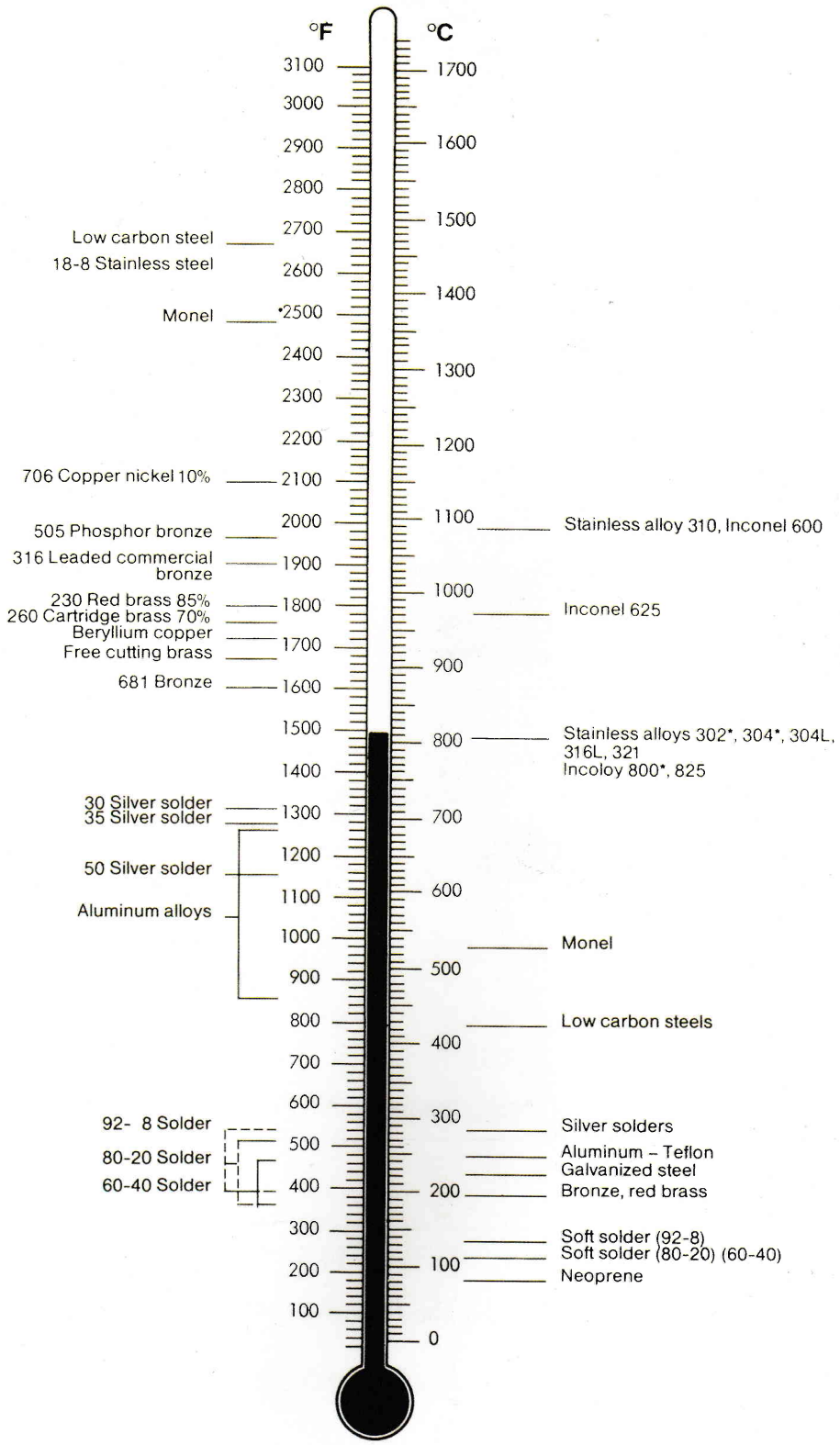
TECHNICAL DATA
TEMPERATURE CHART - METALS AND ALLOYS

MELTING POINT OR RANGE

Elements

Tungsten	3370°C – 6098°F
Molybdenum	2610°C – 4730°F
Columbium	2410°C – 4368°F
Chromium	1950°C – 3542°F
Iron	
Nickel	
Silicon	
Beryllium	
Manganese	
Copper	
Silver	
Calcium	
Aluminum	
Antimony	
Zinc	
Lead	
Cadminum	
Bismuth	
Tin	
Phosphorus	

Alloys



MAX. USABLE TEMPERATURE

*This alloys can become "sensitized" at temperatures 400°C - 750°C making them susceptible to intergranular corrosion. This is a problem only if application involves specific corrosive media. Consult INSAP representative.

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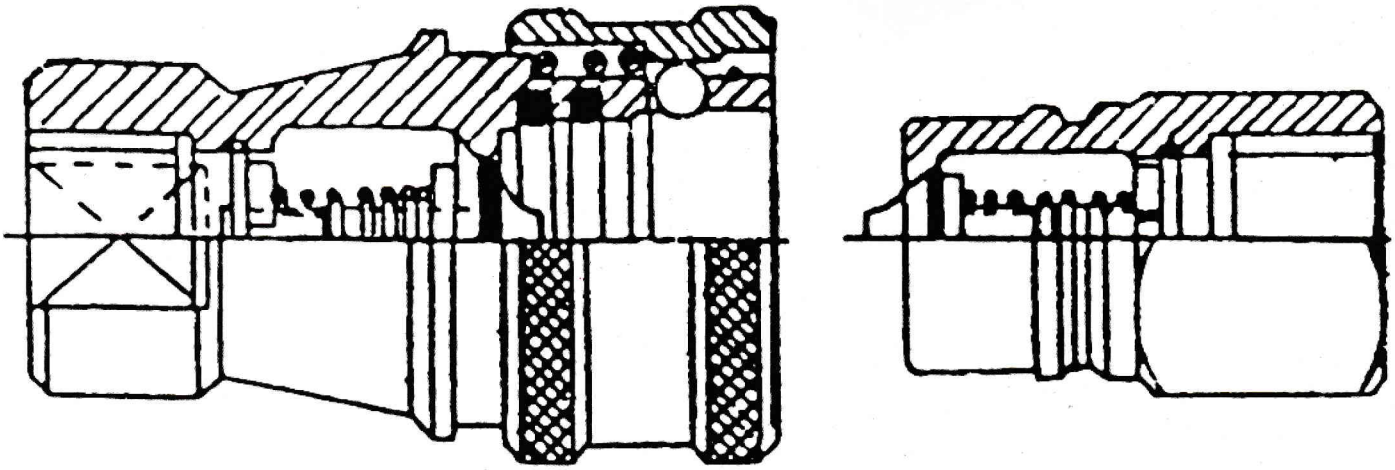
QUICK RELEASE COUPLING (QRC)



A. WHAT IS QUICK RELEASE COUPLING?

A coupling which can engage or disengage a system very quickly each coupling consist of COUPLER and ADAPTOR with or without NOn-Return Value (NRV) arrangements.

B. TYPES :

The Couplers & Adaptors are available in different configurations :

(i) With male or female threads (BSP, BSPT or NPT)

(ii) With hose shanks

C. TECHNICAL DATA

(i) Body Material :

a. Bar Stocks

Carbon Steel (chrome plated) / Brass / SS-304 / SS-316

(ii) Springs :

SS

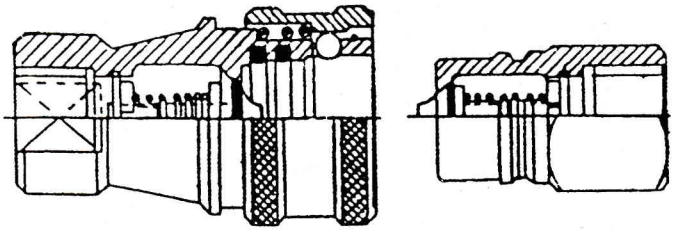
(iii) Sealings :

Nitrile / Viton / Neoprene / Silicon / Teflon / Hypalon

(iv) Sizes : From 1/8" to 2"

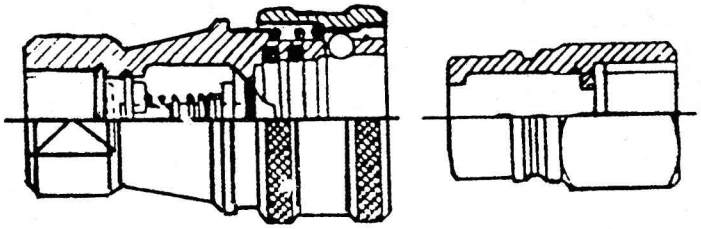
QUICK RELEASE COUPLINGS

D. TYPES WITH IDENTIFICATION PART NUMBERS.



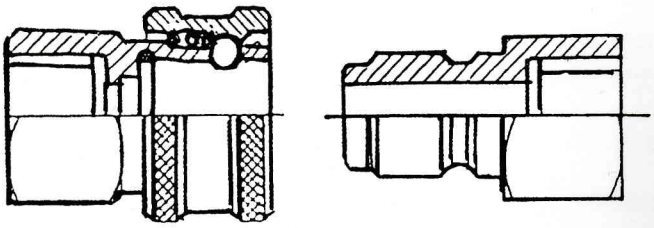
DOUBLE SHUT OFF TYPE QUICK RELEASE COUPLING. COUPLER AND ADAPTOR BOTH WITH NON-RETURN VALVES (NRV)
TYPE-IVV. (DSO-QRC)

SIZE (in)	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"
PART No.	IVV-2	IVV-6	IVV-10	IVV-12	IVV-20	IVV-25	IVV-32	IVV-40	IVV-50



SINGLE SHUT OFF TYPE QUICK RELEASE COUPLING. COUPLER WITH NON RETURN VALVE (NRV) ADAPTOR STRAIGHT THROUGH TYPE.
TYPE-IV. (SSO-QRC)

SIZE (in)	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"
PART No.	IV-2	IV-6	IV-10	IV-12	IV-20	IV-25	IV-32	IV-40	IV-50



STRAIGHT THROUGH TYPE QUICK RELEASE COUPLING. COUPLER AND ADAPTOR BOTH WITHOUT NON RETURN VALVES (NRV).
TYPE-IT (ST-QRC)

SIZE (in)	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"
PART No.	IT-2	IT-6	IT-10	IT-12	IT-20	IT-25	IT-32	IT-40	IT-50

E. METHOD OF ORDERING FOR INSAPFLEX QUICK RELEASE COUPLING (QRC)

Mention INSAP's part number for the required type of quick release coupling along with the required thread, body material, spring material and sealing material.

CAMLOCK COUPLINGS

A. WHAT IS CAMLOCK COUPLING?

A camlock is in fact, a means of quick engaging or disengaging a hose connection from a system requiring transfer of fluid or gas. It consists of a COUPLER with cam arms and a slip-in ADAPTOR.

In order to connect, the Arm of the coupler need to be lifted and the adaptor slipped into the coupler. The handles are then pressed down with normal hand pressure for a leak proof connection

B. TYPES :

The Couplers & Adaptors are available in different configurations :

(i) With male or female threads (BSP, BSPT or NPT)

(ii) With hose shanks

(iii) With flanges or weld ends.

N.B. : Dust plugs & caps are also available against specific order.

C. TECHNICAL DATA

1. BODY MATERIALS:

   a. BAR STOCKS
   Mild Steel / Brass / SS-304 / SS-316

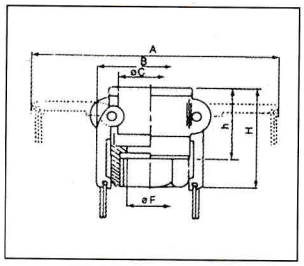
   b. CASTING
   Carbon Steel / Gun Metal / SS-304 / SS-316

2. SEALINGS :
   Nitrile / Viton / Neoprene / Silicon / Teflon / Hypalon

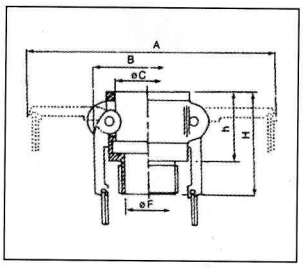
3. SIZES : From 3/4" to 4"
   Higher sizes on special orders.
   Types with identification part numbers

CAMLOCK COUPLINGS

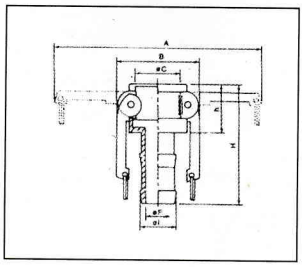
A. COUPLERS (ICC)



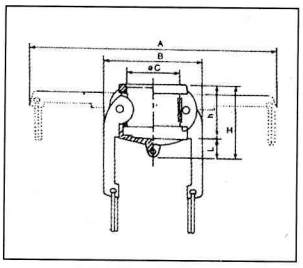
TYPE-ICC-F



TYPE-ICC-M



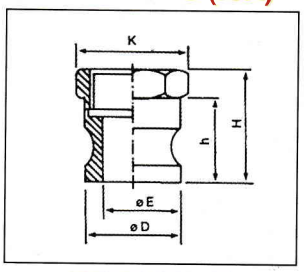
TYPE-ICC-HS



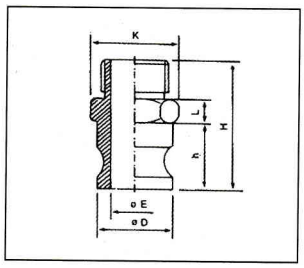
TYPE-ICC-DC

TYPE OF COUPLERS				
SIZES (in)	ICC-F	ICC-M	ICC-HS	ICC-DC
3/4"	ICC-F-20	ICC-M-20	ICC-HS-20	ICC-DC-20
1"	ICC-F-25	ICC-M-25	ICC-HS-25	ICC-DC-25
1-1/4"	ICC-F-32	ICC-M-32	ICC-HS-32	ICC-DC-32
1-1/2"	ICC-F-40	ICC-M-40	ICC-HS-40	ICC-DC-40
2"	ICC-F-50	ICC-M-50	ICC-HS-50	ICC-DC-50
2-1/2"	ICC-F-65	ICC-M-65	ICC-HS-65	ICC-DC-65
3"	ICC-F-80	ICC-M-80	ICC-HS-80	ICC-DC-80
4"	ICC-F-100	ICC-M-100	ICC-HS-100	ICC-DC-100

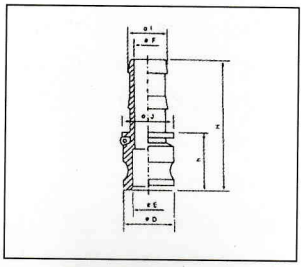
B. ADAPTORS (ICA)



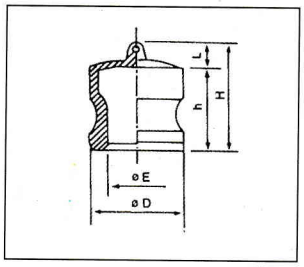
TYPE-ICA-F



TYPE-ICA-M



TYPE-ICA-HS

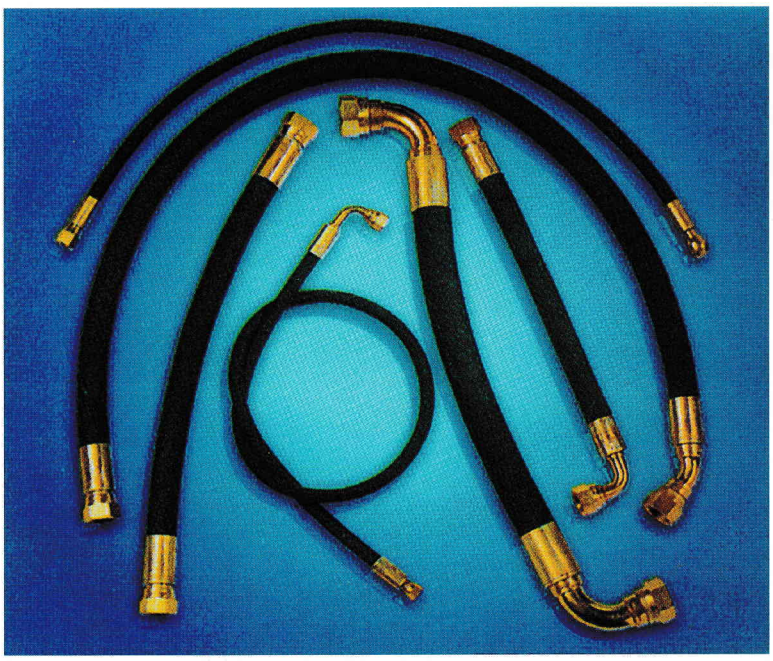


TYPE-ICA-DC

TYPE OF COUPLERS				
SIZES (in)	ICA-F	ICA-M	ICA-HS	ICA-DC
3/4"	ICA-F-20	ICA-M-20	ICA-HS-20	ICA-DC-20
1"	ICA-F-25	ICA-M-25	ICA-HS-25	ICA-DC-25
1-1/4"	ICA-F-32	ICA-M-32	ICA-HS-32	ICA-DC-32
1-1/2"	ICA-F-40	ICA-M-40	ICA-HS-40	ICA-DC-40
2"	ICA-F-50	ICA-M-50	ICA-HS-50	ICA-DC-50
2-1/2"	ICA-F-65	ICA-M-65	ICA-HS-65	ICA-DC-65
3"	ICA-F-80	ICA-M-80	ICA-HS-80	ICA-DC-80
4"	ICA-F-100	ICA-M-100	ICA-HS-100	ICA-DC-100

Method of ordering for INSAPFLEX CAMLOCK COUPLING :

Mention INSAP's part numbers for the required camlock coupling's Coupler & Adaptor along with the required thread, body material and sealing material.



Note : Other than the Hoses enumerated in this Catalogue we can also supply the following :

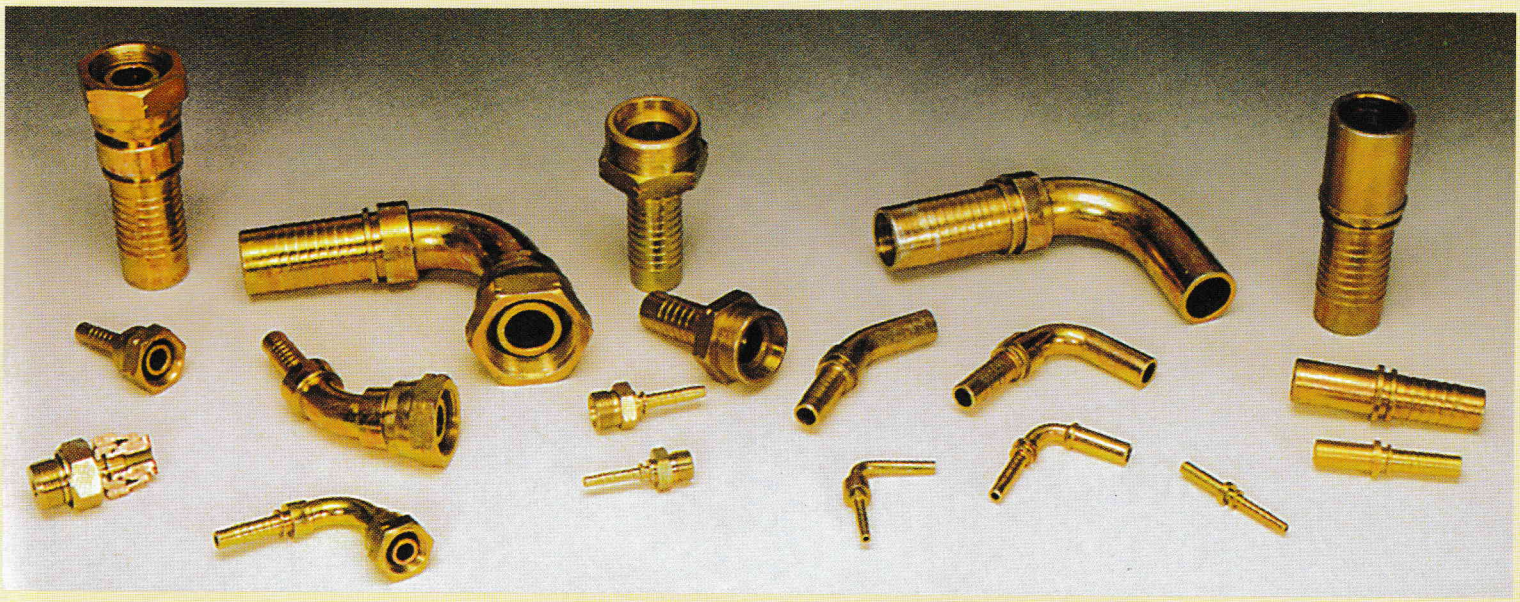
Rubber Hoses:

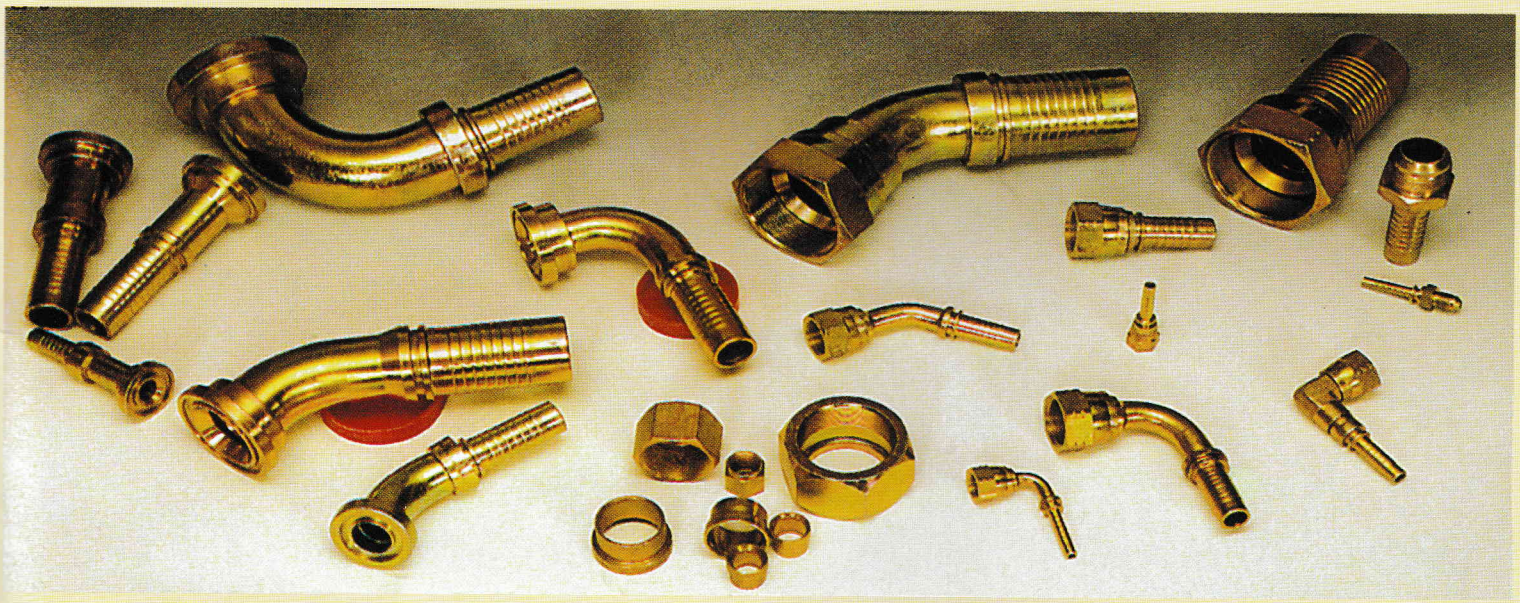
1. Water Hose conforming to IS 444:- Type I / Type II / Type III
2. Air Hose (Pneumatic Tool Hose) conforming to IS 446:- Type I / Type II / Type III
3. Welding Hose conforming to IS 447:- Type II
4. Hot Water Hose conforming to IS 5821
5. Water Suction and Delivery Hose (Heavy Duty) conforming to IS 3549
6. Water Suction Hose (Light Duty) conforming to IS 2482
7. Hose for Chemicals conforming to IS 7654:- Type I / Type II
8. Hose for fuel dispensing conforming to IS 2396 (Petrol Pump Hose)
9. Cement Grouting Hose conforming to IS 5137
10. Hose for Sand Blasting conforming to IS 5894:- Type I / Type II
11. Asbestos covered furnace coolant hose / cable coolant hose / heat resistant carbon free hose
12. Electrically Bonded Road and Rail Tanker Hose conforming to IS 10733:- Type 1B / Type 2B
13. Oil and Solvent Resistant Hose conforming to IS 635
14. Brewary and Food Hose conforming to BS 5118
15. Oil Suction and Discharge Hose conforming to IS 8189 (for Dock and Off shore operations)
16. Phospheric Acid Hose
17. C.N.G. Hose

Stainless Steel Hose Assemblies

1. Inter lock protected stainless steel hose assemblies
2. Jacketed type hose assemblies
3. Single / multi bend hose assemblies
4. Tanker unloading hose assemblies

Hose Couplings

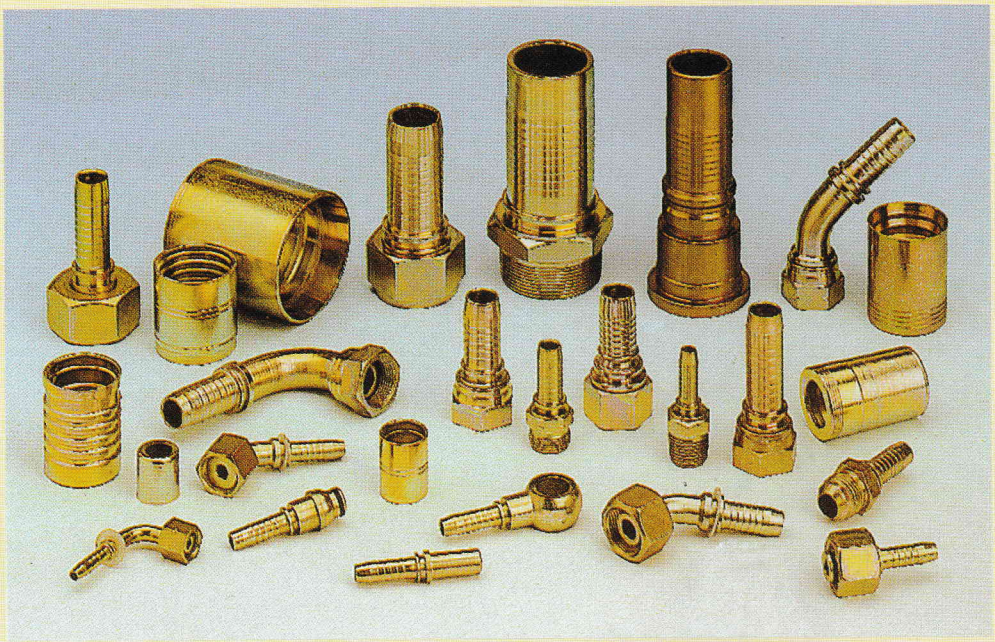


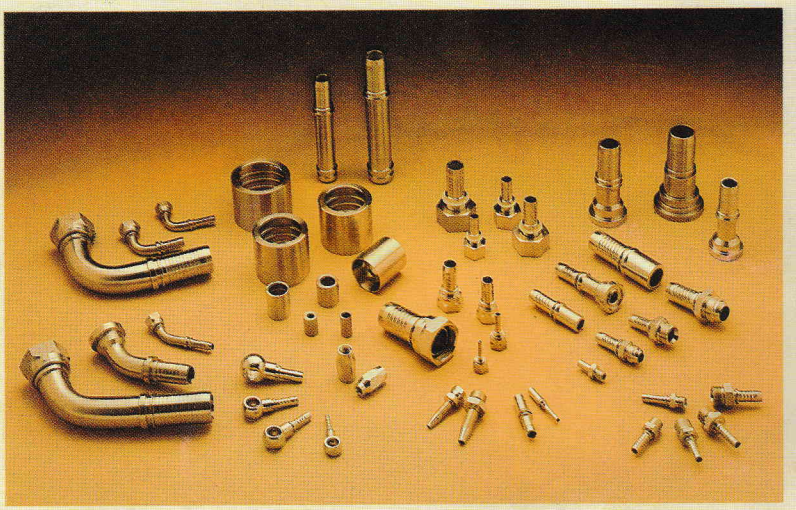


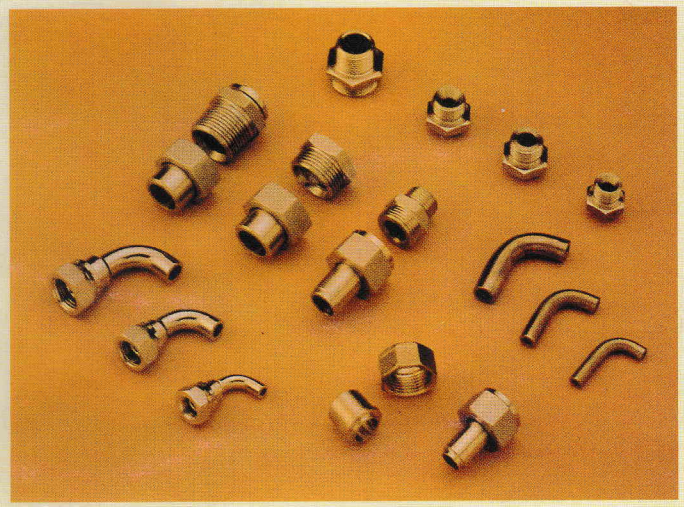
Note:- 'INSAP' reserves the right to make technical changes to the products without any notice.

November 2004

INSAPFLEX Hydraulic Fittings







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