CHALLENGE®

HOSES CATALOGUE

Introduction

This catalogue has been designed to provide a complete guide to our hydraulic hoses and offer useful technical data for the product range.

The hydraulic hoses shown in this catalogue are designed to meet or exceed DIN, SAE, and EN specifications, providing reliability in demanding service conditions of applications such as:

- Earth moving equipment.
- Tractors.
- Hydraulic cranes.
- Injection moulding presses.
- Fork lifts.
- Drilling equipment.
- Agricultural machines, etc.

Hydraulic hoses suitability

Hydraulic hoses suitable for hydraulic fluids on mineral oil and synthetic oil basis, for oil-water emulsions and water-glycol liquids, for vegetable and mineral oil based lubricants, cooling water, compressed air.

They are not suitable for phosphate ester based hydraulic fluids.

PLEASE NOTE: Bad storage can affect hose life. Service life of hose assemblies can be reduced by improper installation and by simultaneous operation conditions of maximum working pressure at maximum temperature and minimum bend radius.

Hose Selection

SELECTION CRITERIA

SIZE
Hose I.D.

TEMPERATURE
a) Fluid Temperature
b) Ambient Temperature

APPLICATION
a) Equipment Type
b) Working Pressure
c) Pressure Surges
d) Environmental Condition
e) Mechanical Loads
f) Hose construction
g) Abrasion

TYPE OF END FITTING

PRESSURE
a) Flow area change
b) Friction
c) Temperature of fluid
d) Length of assembly
e) ID of hose
f) Pressure drop

FLUID TO BE CONVEYED

Selection Criteria

SIZE
The Inside Diameter of the hose must be adequate to keep pressure loss to a minimum and avoid damage to the hose arising as a result of heat generation or excessive turbulence.
Hose Outside Diameter can be a critical factor when hose routing clamps are used or hoses are routed through bulkheads.
Check individual hose, specification tables for O.D.s

TEMPERATURE
Both fluid and ambient temperature must be considered while selecting a replacement assembly. The hose selected must be capable to withstand minimum and maximum temperature of the system. While selecting a hose for its maximum temperature care should be taken that temperature stated is not, an intermittent value.

APPLICATION
Determine where or how the replacement hose or assembly is to be used.

a) Equipment Type: Most often only a duplicate of the original hose will have to be made. Make sure all the requirements of the application are fulfilled.

b) Working Pressure: Check individual hose specification tables for working pressure. The working pressure or operating pressure is one fourth the hose minimum burst pressure.

c) Pressure Surges: In hydraulic systems, where pressure surges are severe, increase the safety factor when selecting the proper hose (safety factor working / burst = 1/5).
Conversely, in systems where pressure surges are slight or non existent, the normal safety factor must be chosen.

d) Environmental Conditions: Care must be taken to ensure that the hose and fittings are either compatible with or protected from the environment to which they are exposed. Environmental conditions including but not limited to ultraviolet light, heat, ozone, moisture, water, salt water, chemicals and air pollutants can cause degradation and premature failure and therefore must be considered.

e) Mechanical Load: External forces can significantly reduce hose life. Mechanical loads which must be considered include excessive flexing, twist, kinking, tensile or side loads, bend radius and vibration. Use of swivel type fittings or adaptors may be required to ensure no twist is put into the hose. Unusual applications may require special testing prior to hose selection.

f) Hose Construction: Various applications may require different hose construction.
For construction please check individual hose specifications.

g) Abrasion: While a hose is designed with a reasonable level of abrasion resistance, care must be taken to protect the hose from excessive abrasion which can result in erosion, snagging and cutting of the hose cover. Exposure of the reinforcement will significantly accelerate hose failure.

FLUID TO BE CONVEYED
Hose selection must assure compatibility of the hose tube, cover, reinforcement and fittings with the fluid use. For compatibility refer fluid compatibility chart page, no. 4 to 6

PRESSURE
The system pressure should not exceed the mentioned working pressures. Pressure spikes greater than the mentioned working pressure will shorten hose life. It is not recommended to use hoses on such applications.

Pressure Drop: When pressurised media is flowing through the hose, there is a certain amount of pressure difference between intake and outlet points, this pressure difference is known as Pressure Drop. This is due to gradual decrease in the pressure of the media along the length. This aspect shall be considered while designing a hose.

TYPE OF END FITTING
Care must be taken to ensure proper compatibility exists between the hose and the end fittings. Check individual end fitting specification table.

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Fluid Compatibility Chart

E: Excellent , G: Good, F: Fair, C: Not recommended

Fluid	Wire Spiralled	Wire Braided	Textile Braided	Thermoplastic polyester
STRAIGHT PETROLEUM-BASE				
Ambra Hitech 46	E	E	E	G
Aral Vitam 46, 68	E	G	G	G
Bechem Hydrostar Pm 46	E	E	E	-
Cassida Hf 46 shell	G	G	G	G
Castrol Hyspin Hdh 7000	E	E	E	-
Exxon Dexron 2 (Atf Fluid)	G	F	F	E
Mobil Delwac 13 10 10W20	G	E	E	G
Oso 32 Agip	E	E	E	G
Pentosin Chf 11 S (Atf Fluid)	G	F	F	-
Shell Tellus 46	E	E	E	E
Sint 2000 Agip	G	E	E	G
HIGHLY REFINED PETROLEUM-BASE				
Aeroshell Fluid 41	E	E	E	F
Castrol Aero Hf 585 B	G	E	E	C
Hydraunyc Oil Fh 51 Lti Mil H515	G	E	E	F
Hydraunyc Oil Fh 6 Lti Mil C635	G	E	E	F
Mobil Aero Hf Mil H5606	G	G	G	-
ESTER & PHOSPHATE ESTER OILS				
Andero l497	F	G	G	-
WATER EMULSION				
Houghton Hydravis Bc 84005 (60°C)	E	E	E	E
Water Glycole Emulsion (50%)	E	E	E	E
POLYGLYCOLE				
Mobil Glycole 30	E	E	E	G
POLYGLYCOL ESTER BLENDS				
Ssr Ultracoolant	E	G	G	G
BIOLOGICAL ESTER OILS				
Avia Sintofluid 32	G	E	E	G
Avia Sintofluid 46	E	E	E	G
Aviaticon Hy He	G	E	E	G
Castrol Biotech Alpin 22	E	E	E	-
Cosmolubric Hf 130	G	G	G	-
Dea Econa 46	G	E	E	E
Esso Hydraulikoel He 46	E	E	E	E
Fina Biohydran Se 46	G	G	G	G
Greensave N40 Quaker	G	G	G	G
Neste Biohydrauli Se 46	E	E	E	G
Omv Ms 46 (100°C)	G	G	G	G
Panolin HLP 46 (100°C)	G	E	E	E
Plantosyn 3268	F	G	G	G
Plontosin 3268 ECo	F	E	E	G
Quintolubric N822	G	G	G	-
Raisio Biosafe Se 46	G	G	G	-
Shell Naturelle Hfe 46	G	E	E	G
Teboil ECo 46	E	G	G	G
Texaco Hydra 46	E	E	E	G
Texaeo Sinstar Ht 68	G	E	E	G
BIOLOGICAL VEGETABLE OILS				
Binol Hydra P 1i 46	E	G	G	-
Bp Biohyd 46	G	E	E	-
Mobil Eal 224 H	G	E	E	G
Ukabiol Hv 46 Htg	G	E	E	G

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Fluid Compatibility Chart

E: Excellent , G: Good, F: Fair, C: Not recommended

Fluid	Wire Spiralled	Wire Braided	Textile Braided	Thermoplastic polyester
A Acetaldheide	F	F	F	-
Acetic acid, 10%	F	F	F	E
Acetic acid, 25% 100°C	F	F	F	G
Acetic acid glacial	F	F	F	G
Acetone	F	F	F	E
Air (80°C)	G	G	G	G
Air (100°C)	G	F	F	C
Air (150°C)	C	C	C	C
Ammonia, gaseous	G	E	E	C
Ammonia, liquid	F	G	G	C
Ammonium hydroxide, 10%	E	G	G	-
Ammonium hydroxide, conc.	E	F	F	-
Ammonium nitrate (aqueous solution)	G	G	G	G
Ammonium phosphate, mono-di-tri basic (aq. sol.)	E	E	E	G
Ammonium sulphate (aqueous solution)	E	E	E	G
Aniline	F	F	F	C
Aqua regia	F	F	F	-
ASTM oil n°1. 100°C	E	E	E	E
ASTM oil n°2, 100°C	G	E	E	E
ASTM oil n°3, l00°C	F	E	E	E
B Benzene	C	F	F	E
Boric acid 10% l00°C	E	E	E	E
Brake fluid (SAE J 1703d)	-	C	C	-
Butanol	E	E	E	E
C Calcium bicarbonate	E	E	E	-
Calcium hydroxide (aqueous suspension)	E	E	E	-
Carbonic anhydride	G	G	G	E
Chlorine	F	F	F	C
Chloroform	F	F	F	C
Citric acid, 33%	G	G	G	E
Crude oil	F	E	E	G
D Dibenzyl ether	C	C	C	-
Dibutyl phthalate (DBP)	C	F	F	E
Diesel fuel (70°C)	F	G	G	G
E Epichlorohydrin	C	C	C	C
Ethyl acetate	C	F	F	G
Ethyl alcool	E	E	E	E
Ethyl ether (70°C)	F	G	G	-
Ethylene	E	E	E	G
Ethylene glycol	E	E	E	E
Ethylene glycol, 100°C	G	E	E	G
F Formaldheyde	G	F	F	G
Formic ada, 23°C (saturated solution)	G	G	G	G
Formic acid, 75°C (saturated solution)	F	F	F	F
Fuel A (iso-octane)	G	E	E	E
Fuel B (70% iso-octane, 30% toluene)	F	G	E	E
Fuel C (50% iso-octane, 50% toluene)	C	F	G	E
G Glycerine	E	E	E	E
H Heptane	F	E	E	E
Hydraulic oils	*	*	*	*
Hydrochloric acid 10%	G	G	G	G
Hydrochloric acid , 37%	F	G	G	C
Hydrochloric acid, 37% 70°C	C	C	C	C
Hydrocyanic acid, 20%	F	F	F	-
Hydrogen sulphide	G	C	C	E
I Isobutyl alcohol	E	G	G	E
Isopropyl alcohol	E	G	G	E
Iso-octane	G	E	E	E

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Fluid Compatibility Chart

E: Excellent , G: Good, F: Fair, C: Not recommended

Fluid	Wire Spiralled	Wire Braided	Textile braided	Thermoplastic polyester
K Kerosene (aromatics 40% max)	F	G	E	-
L Lead free petrol	F	E	E	-
M Magnesium hydroxide (aqueous solution)	E	G	G	-
Mercury	E	E	E	E
Methanol	E	G	G	G
Methyl methacrylate	C	C	C	-
Methylethylketone (MEK)	F	C	C	E
N Nitric acid ,concentrated 65%	C	C	C	C
Nitric acid, diluted 10% 50°C	C	F	F	C
Nitric acid, fuming	C	C	F	C
Nitrogen	G	G	G	G
O Oleic acid	F	F	F	E
Oleum	F	G	G	C
Oxalic acid, 25% 80°	G	G	G	-
Oxygen (80°C)	G	F	F	E
P Paraffin	E	E	E	E
Pentane	F	E	E	E
Petrol	F	E	E	E
Petroleum, 150°C	C	C	C	-
Phenol	F	C	C	C
Phosphoric acid, 20%	F	G	G	-
Phosphoric acid, 60% 50°C	C	F	F	-
Phosphoric acid, 85%	C	F	F	-
phosphorous tri-chloride	C	C	C	-
Picric acid, 10% 100°C	F	F	F	-
Potassium chloride (aqueous solution)	E	E	E	-
Potassium hydroxide, 70°C (medium high conc.)	G	G	G	E
Potassium sulphate (aqueous solution)	E	E	E	-
S Sea water	E	E	E	E
Soaps (solution)	G	E	E	E
Soda	G	G	G	G
Sodium bicarbonate	E	E	E	G
Sodium chloride (aqueous solution)	E	E	E	E
Sodium hydroxide	G	F	F	E
Sodium hydroxide, 70°C (medium high conc.)	G	F	F	F
Sodium hypochloride (aqueous solution)	G	F	F	E
Sodium Silicate (aqueous solution)	E	E	E	-
Sodium sulphate (aqueous solution)	E	E	E	-
Sodium sulphide	E	E	E	-
Stearic acid	E	E	E	E
Sulphur	G	G	G	-
Sulphur dioxide	C	C	C	-
Sulphuric acid (hot concentrated 96%)	C	C	C	C
Sulphuric acid (diluted 20%).	C	C	C	E
Sulphuric anhydride	F	C	C	-
Slphurous acid	C	C	C	C
T Tannic acid	G	F	F	E
Tannin	E	E	E	E
Tartaric acid, 20%	G	E	E	-
Tetraethyl lead	G	G	G	-
Toluene	C	F	F	E
Turpentine	C	G	G	-
U Urea (aqueous solution)	E	E	E	-
V Vinyl acetate	E	E	E	-
Vinyl chloride	C	C	C	-
W Water	E	E	E	E
X xylene	C	F	F	G
Z Zinc chloride (aqueous solution)	E	E	E	E
Zinc sulphate (aqueous solution)	E	E	E	-

Determination of Nominal Diameter

Nomogram for determination of nominal diameter

The nomogram can be used as an aid to select the nominal diameters of hose and pipe assemblies.

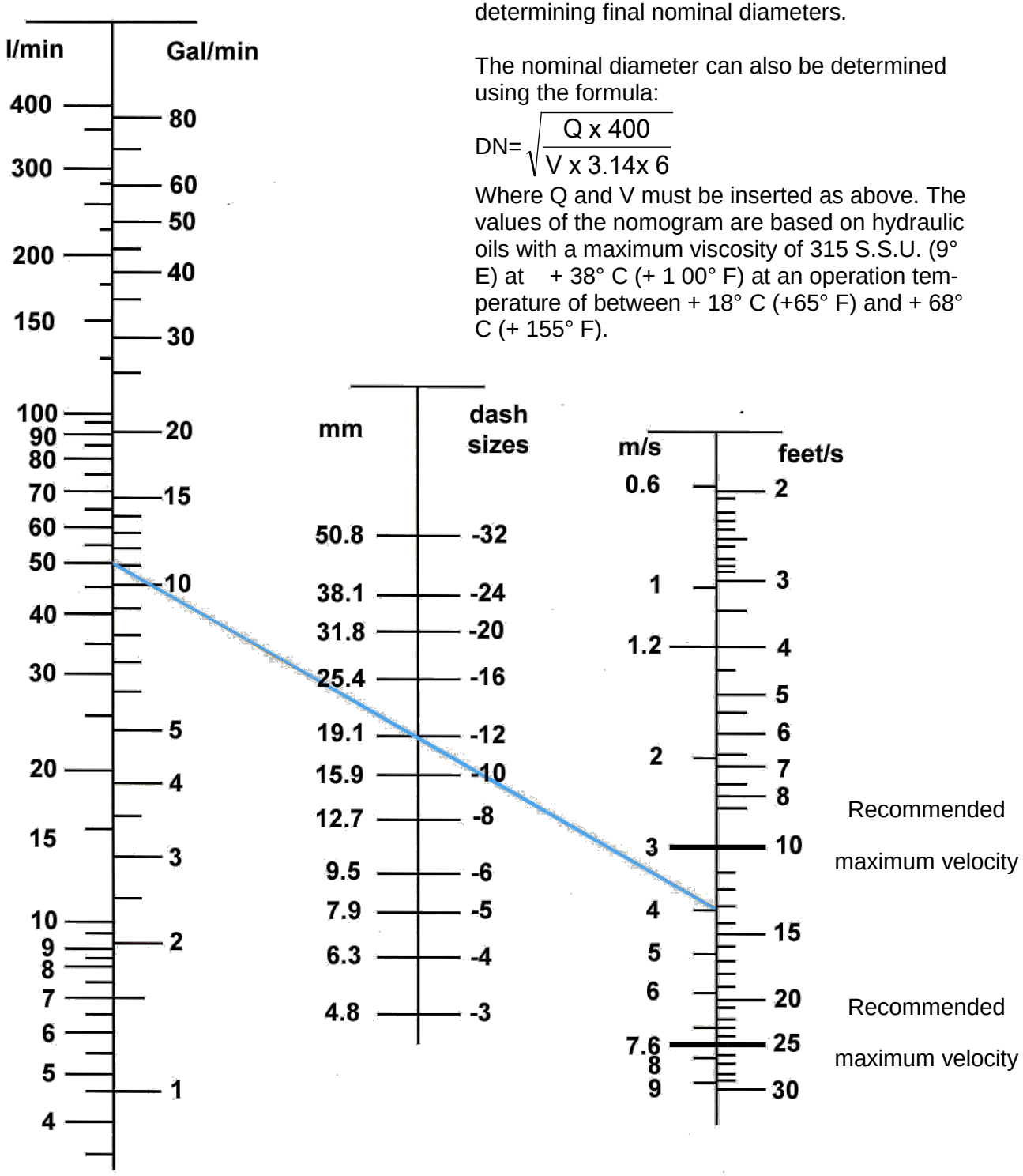
Example

Rate of flow Q=50 l/min (left-hand scale), chosen speed V=approx. 4m/sec. (right-hand scale). The point of intersection on the middle scale gives a nominal diameter of 19.1 mm. Other parameters of the installation, such as length of hose assemblies, number of valves, viscosity of the oil and maximum permissible pressure loss, must be taken into account when determining final nominal diameters.

The nominal diameter can also be determined using the formula:

$$DN=\sqrt{\frac{Q \times 400}{V \times 3.14 \times 6}}$$

Where Q and V must be inserted as above. The values of the nomogram are based on hydraulic oils with a maximum viscosity of 315 S.S.U. (9° E) at + 38° C (+ 1 00° F) at an operation temperature of between + 18° C (+65° F) and + 68° C (+ 155° F).



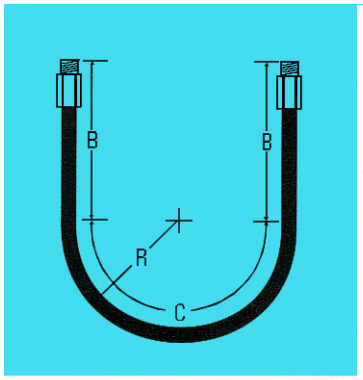
Calculation the Length of Hose Assemblies

Calculating the Hose Length

The Service life of hose assemblies can be increased by proper measurement and installation.

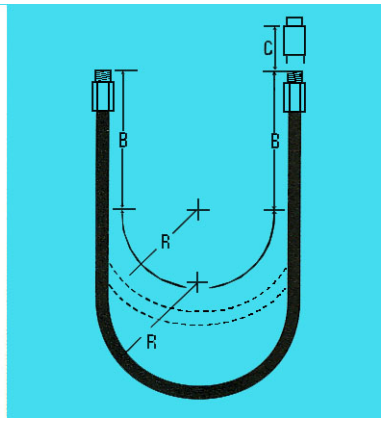
Please follow the following instructions:
Calculation of flexible hose assemblies

Overall length L = 2B + 3.14.R + C



R > minimum bend radius

Overall length L = 2B + 3.14.R + C



Additional length C should be allowed for if vertical movement takes place

The following table gives, depending on the hose diameter, the minimum length B that should be left behind of the end of the fittings of a hose assembly.

DN Ø	6	8	10	12	16	20	25	32	40
B (mm)	90	100	110	120	130	140	160	180	200

Longitudinal Tolerance of Installed Hose Assemblies (DIN 20066)

Length mm	Up to Ø25	Tolerances from Ø32 to Ø50
up to 630	+ 7mm - 3mm	+ 12mm - 4mm
630-1250	+ 12mm - 4mm	+ 20mm - 6mm
1250-2500	+ 20mm - 6mm	+25mm - 6 mm
2500-8000		+ 1.5% - 0.5%
over 8000		+ 3% - 1%

Hose Selection Table by Size & Max. Working Pressure

Pressure expressed in (BAR)

Hose Size inch	EN85 1SN	EN853 2SN	EN857 1SC	EN857 2SC	3WS	EN856 4SP	EN856 4SH	EN856 R12	EN856 R13	SAE R15	SAE R7	SAE R8	SAE R3	SAE R6
3/16	250	415			-		-	-	-	-	230	362	103	34
¼	225	400	225	400	-	450	-	-	-	-	200	362	86	28
5/16	215	350	215	350	-		-	-	-	-	190	350	83	28
3/8	180	330	180	330	-	445	-	276	-	-	175	287	78	28
½	160	275	160	275	470	415	-	276	-	-	150	250	69	28
5/8	130	250	130	250	-	350	420	276	-	-	125	200	60	24
¾	105	215	105	215	375	350	420	276	345	420	100	162	52	21
1	88	165	88	165	300	280	380	276	345	420	75	140	39	9
1¼	63	125	-	-	-	210	325	207	345	420	-	-	26	-
1½	50	90	-	-	-	185	290	172	345	420	-	-	-	-
2	40	78	-	-	-	175	250	172	345	-	-	-	-	-
2½	40	75	-	-	-	-	-	-	-	-	-	-	-	-
3	35	50	-	-	-	-	-	-	-	-	-	-	-	-

Pressure expressed in (PSI)

Hose Size inch	EN85 1SN	EN853 2SN	EN857 1SC	EN857 2SC	3WS	EN856 4SP	EN856 4SH	EN856 R12	EN856 R13	SAE R15	SAE R7	SAE R8	SAE R3	SAE R6
3/16	3625	6018	-	-	-	-	-	-	-	-	3335	5249	1494	493
¼	3263	5800	3263	5800	-	6525	-	-	-	-	2900	5249	1247	406
5/16	3118	5075	3118	5075	-	-	-	-	-	-	2755	5075	1204	406
3/8	2610	4785	2610	4785	-	6453	-	4002	-	-	2535	4162	1131	406
½	2320	3988	2320	3988	6815	6018	-	4002	-	-	2175	3625	1000	406
5/8	1885	3625	1885	3625	-	5075	6090	4002	-	-	1813	2900	870	348
¾	1523	3118	1523	3118	5438	5075	6090	4002	5000	6000	1450	2349	754	305
1	1276	2393	1276	2393	4350	4060	5510	4002	5000	6000	1088	2030	566	131
1¼	914	1813	-	-	-	3045	4713	3002	5000	6000	-	-	377	-
1½	725	1305	-	-	-	2683	4205	2494	5000	6000	-	-	-	-
2	580	1131	-	-	-	2538	3625	2494	5000	-	-	-	-	-
2½	580	1090	-	-	-	-	-	-	-	-	-	-	-	-
3	508	725	-	-	-	-	-	-	-	-	-	-	-	-

1SN – ONE WIRE BRAID HOSE

Medium Pressure Hydraulic Lines

REF. SPECIFICATION
EN 853 / 1SN
EXCEEDS SAE J517 100R1 TYPE AT
ISO 1436

CONSTRUCTION
Tube: oil resistant synthetic rubber.
Reinforcement: One high tensile steel wire braid.
Cover: abrasion and weather resistant synthetic rubber.

TEMPERATURE RANGE
Continuous service: – 40°C to + 100°C, Intermittent service: +125C°.
Air: Max. + 75°C. Water: Max. + 85°C

APPLICATION
Medium pressure service with high temperature petroleum base hydraulic fluids, hot oil, grease, lubricant and crude oils, air and water.
For air or gas application above 17 bar (250 psi) the cover should be pin-pricked.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
1SN-03	03	3/16	4.8	11.8	250	3625	1000	14500	90	0.18
1SN-04	04	¼	6.4	13.4	225	3263	900	13050	100	0.23
1SN-05	05	5/16	7.9	15.0	215	3118	850	12325	115	0.27
1SN-06	06	3/8	9.5	17.4	180	2610	720	10440	130	0.34
1SN-08	08	½	12.7	20.6	160	2320	640	9280	180	0.42
1SN-10	10	5/8	16.0	23.7	130	1885	520	7540	200	0.48
1SN-12	12	¾	19.0	27.7	105	1523	420	6090	240	0.60
1SN-16	16	1	25.4	35.6	88	1276	350	5075	300	0.90
1SN-20	20	1¼	31.8	43.5	63	914	250	3625	420	1.20
1SN-24	24	1½	38.1	50.6	50	725	200	2900	500	1.47
1SN-32	32	2	50.8	64.0	40	580	160	2320	630	1.97
1SN-40	40	2½	63.5	76.5	40	580	160	2320	760	2.60
1SN-48	48	3	72.6	88.5	35	508	140	2030	900	2.74

2SN – TWO WIRE BRAIDS HOSE

High Pressure Hydraulic Lines

REF. SPECIFICATION
EN 853 / 2SN
EXCEEDS SAE J517 100R2 TYPE AT
ISO 1436

CONSTRUCTION
Tube: oil resistant synthetic rubber.
Reinforcement: Two high tensile steel wire braids.
Cover: abrasion and weather resistant synthetic rubber.

TEMPERATURE RANGE
Continuous service: – 40°C to + 100°C, Intermittent service: +125C°.
Air: Max. + 75°C. Water: Max. + 85°C

Part Number	Hose dash size	Hose I.D		Hose O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
2SN-03	03	3/16	4.8	13.4	415	6018	1650	23925	90	0.29
2SN-04	04	¼	6.4	15.0	400	5800	1600	23200	100	0.40
2SN-05	05	5/16	7.9	16.6	350	5075	1400	20300	115	0.45
2SN-06	06	⅜	9.5	19.0	330	4785	1320	19140	130	0.56
2SN-08	08	½	12.7	22.2	275	3988	1110	15950	180	0.66
2SN-10	10	⅝	16.0	25.4	250	3625	1000	14500	205	0.79
2SN-12	12	¾	19.0	29.3	215	3118	850	12325	240	0.93
2SN-16	16	1	25.4	38.1	165	2393	650	9425	300	1.39
2SN-20	20	1¼	31.8	48.3	125	1813	500	7250	420	2.04
2SN-24	24	1½	38.1	54.6	90	1305	360	5220	500	2.27
2SN-32	32	2	50.8	67.0	78	1131	310	4500	630	2.87
2SN-40	40	2½	63.5	79.3	75	1090	300	4350	760	3.78
2SN-48	48	3	76.2	91.3	50	725	200	2900	900	4.00

4SP – FOUR WIRE SPIRALS HOSE

Very High Pressure Power Lines

REF. SPECIFICATION
EN 856 / 4SP
EXCEEDS SAE J517 100R9R
ISO 3862

CONSTRUCTION
Tube: oil resistant synthetic rubber.
Reinforcement:
Four layers of spiraled high tensile steel wire over fabric layer.
Cover: abrasion and weather resistant synthetic rubber.

TEMPERATURE RANGE
Continuous service: – 40°C to + 100°C, Intermittent service: +125C°.
Air: Max. + 75ºC. Water: Max. + 85ºC

APPLICATION
Very high-pressure and high-impulse service with petroleum base hydraulic fluids.
Designed for hydrostatic transmissions and other sever operating conditions.

Part Number	Hose dash size	Hose I.D		Hose O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
4SP-04	04	¼	6.4	17.7	450	6525	1800	26100	150	0.61
4SP-06	06	⅜	9.5	21.3	445	6453	1780	25810	180	0.85
4SP-08	08	½	12.7	24.4	415	6018	1660	24070	230	0.95
4SP-10	10	⅝	16.0	28.0	350	5075	1400	20300	250	1.14
4SP-12	12	¾	19.0	32.0	350	5075	1400	20300	300	1.49
4SP-16	16	1	25.4	39.2	280	4060	1120	16240	340	2.06
4SP-20	20	1¼	31.8	50.0	210	3045	840	12180	460	3.22
4SP-24	24	1½	38.1	57.0	185	2683	740	10730	560	3.74
4SP-32	32	2	50.8	69.8	175	2538	700	10150	660	4.50

4SH – FOUR WIRE SPIRALS HOSE

Very High Pressure Power Lines

REF. SPECIFICATION
EN 856 / 4SH
ISO 3862

CONSTRUCTION
Tube: oil resistant synthetic rubber.
Reinforcement:
Four layers of spiraled high tensile steel wire over fabric layer.
Cover: abrasion and weather resistant synthetic rubber.

TEMPERATURE RANGE
Continuous service: – 40°C to + 100°C, Intermittent service: +125C°.

APPLICATION
Very high-pressure and high-impulse service with petroleum base hydraulic fluids.
Designed for hydrostatic transmissions and other sever operating conditions

Part Number	Hose dash size	Hose I.D		Hose O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
4SH-10	10	⅝	16.0	28.5	420	6090	1680	24360	280	1.33
4SH-12	12	¾	19.0	32.2	420	6090	1680	24360	280	1.53
4SH-16	16	1	25.4	38.4	380	5510	1520	22040	340	2.14
4SH-20	20	1¼	31.8	45.2	325	4713	1300	18850	460	2.50
4SH-24	24	1½	38.1	53.5	290	4205	1160	16820	560	3.40
4SH-32	32	2	50.8	68.0	250	3625	1000	14500	700	4.70

R15 – FOUR OR SIX WIRE SPIRALS HOSE

Heavy Duty Power Lines

REF. SPECIFICATION
SAE 100 R15

CONSTRUCTION
Tube: oil resistant synthetic rubber.
Reinforcement:
Size 12 and 16: four layers of spiraled high tensile steel wire.
Size 20,24 and 32: six layers of spiraled high tensile steel wire
Cover: abrasion and weather resistant synthetic rubber.

TEMPERATURE RANGE
Continuous service: – 40°C to + 121°C.

APPLICATION
Ultra high pressure and high–impulse hydraulic applications.
Designed for heavy duty power lines, hydrostatic transmissions.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
R15-12	12	¾	19.0	36.1	420	6000	1655	24000	267	1.50
R15-16	16	1	25.4	42.9	420	6000	1655	24000	267	2.10
R15-20	20	1¼	31.8	51.5	420	6000	1655	24000	330	3.60
R15-24	24	1½	38.1	58.2	420	6000	1655	24000	445	5.10

R5 – ONE WIRE BRAID, ONE TEXTILE BRAID HOSE

Medium Pressure Lines

REF. SPECIFICATION
SAE J 517 100 R5
ISO 1307

CONSTRUCTION
Tube: oil resistant synthetic rubber.
Reinforcement: One textile braid, one high tensile steel wire braid .
Cover: Braided cotton impregnated with weather resistant synthetic rubber.

TEMPERATURE RANGE
Continuous service: – 40°C to + 100°C, intermittent +125°C.

APPLICATION
For medium pressure hydraulic oil lines, truck air brake and truck engine.
Suitable for carrying air, fuels, naphtha, gasoline and lubricants.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
R5-03	03	3/16	4.8	13.2	207	3002	828	12006	76	0.25
R5-04	04	1/4	6.4	14.8	207	3002	828	12006	86	0.28
R5-05	05	5/16	7.9	17.2	155	2248	620	8990	102	0.35
R5-06	06	13/32	10.3	19.5	138	2001	552	8004	117	0.41
R5-08	08	1/2	12.7	23.4	121	1755	484	7018	140	0.55
R5-10	10	5/8	15.9	27.4	103	1494	412	5974	165	0.69
R5-14	14	7/8	22.2	31.4	55	798	220	3190	187	0.76
R5-18	18	1 1/8	28.6	38.1	43	624	172	2494	229	0.97
R5-22	22	1 3/8	34.9	44.5	34	493	136	1972	267	1.10
R5-29	29	1 13/16	46.0	56.4	24	348	96	1392	337	1.32
R5-38	38	2 3/8	60.3	73.0	24	348	96	1392	610	2.00

EN – 854 R3 –TWO TEXTILE BRAIDS HOSE

REF. SPECIFICATION
EN 854 / TYPE R3
SAE J516 100 R3
ISO 4079

CONSTRUCTION
Tube: oil resistant synthetic rubber.
Reinforcement: 2 high tensile synthetic textile braids.
Cover: abrasion and weather resistant synthetic rubber.

TEMPERATURE RANGE
– 40°C to + 100°C for Air max. + 70°C intermittent +125°C.

APPLICATION
For hydraulic control lines, discharge under pressure of hydraulic fluids, suitable for carrying fuels, naphtha gasoline and lubricants.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
R3-03	03	3/16	4.8	12.7	103	1494	412	5974	80	0.15
R3-04	04	¼	6.4	14.3	86	1247	344	4988	80	0.18
R3-05	05	5/16	7.9	17.5	83	1204	332	4814	100	0.26
R3-06	06	⅜	9.5	19.1	78	1131	312	4524	100	0.30
R3-08	08	½	12.7	23.8	69	1000	276	4002	125	0.43
R3-10	10	⅝	15.9	27.0	60	870	240	3480	140	0.49
R3-12	12	¾	19.0	31.8	52	754	208	3016	150	0.69
R3-16	16	1	25.4	38.1	39	566	156	2262	205	0.84
R3-20	20	1¼	31.8	44.5	26	377	104	1508	255	0.98

R7F – THERMOPLASTIC HOSE TWO POLYESTER FIBER BRIADS

Medium – High Pressure

REF. SPECIFICATION
SAE J 517 - 100 R7
EN 855 R7
ISO 3949
DIN 24951

CONSTRUCTION
Tube: Hydraulic oils, air and water based fluids resistant polyester.
Reinforcement: High tensile two polyester fiber braids.
Cover: Oil, abrasion and weather resistant polyurethane.

TEMPERATURE RANGE
– 40°C to + 100°C. (For transfer of water based fluids and air max. + 65°C)

APPLICATION
Hose suitable for many hydraulic and pneumatic systems.
It is compatible with hydraulic oils, grease, fuel oils, mineral oils and most phosphate esters.
For water and water-based hydraulic fluids.
It is also suitable for many industrial gases, e.g. Heliox (max. 25% O2) Argon, Nitrogen, Carbon Dioxide, Helium and air.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
R7F-02	02	1/8	3.2	8.0	227	3292	908	13166	25	0.05
R7F-03	03	3/16	5.0	9.5	230	3335	920	13340	35	0.06
R7F-04	04	1/4	6.5	11.8	200	2900	800	11600	40	0.09
R7F-05	05	5/16	8.0	14.0	190	2755	760	11020	50	0.12
R7F-06	06	3/8	9.7	16.2	175	2538	700	10150	60	0.15
R7F-08	08	1/2	13.0	20.0	150	2175	600	8700	80	0.21
R7F-10	10	5/8	16.5	24.0	125	1813	500	7250	120	0.31
R7F-12	12	3/4	19.5	27.0	100	1450	400	5800	150	0.31
R7F-16	16	1	25.0	34.0	75	1088	300	4350	200	0.56

Also available in twin version. (3/8” + 1/2”)

R7S – THERMOPLASTIC HOSE TWO STEEL BRIADS WIRE

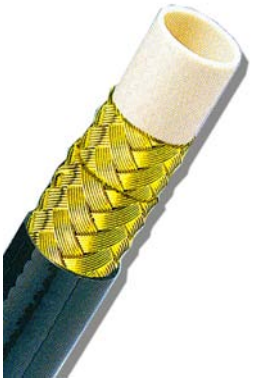
Very High Pressure

REF. SPECIFICATION
SAE J 517 - 100 R7
EN 855 R7
ISO 3949
DIN 24951

CONSTRUCTION
Tube: Hydraulic oils, air and water based fluids resistant polyester.
Reinforcement: High tensile two steel wire braids.
Cover: Oil, abrasion and weather resistant polyurethane.

TEMPERATURE RANGE
– 40°C to + 100°C. (For transfer of water based fluids and air max. + 65°C)

APPLICATION
Hose suitable for many hydraulic and pneumatic systems.
It is compatible with hydraulic oils, grease, fuel oils, mineral oils and most phosphate esters.
For water and water-based hydraulic fluids.
It is also suitable for many industrial gases, e.g. Heliox (max. 25% O2) Argon, Nitrogen, Carbon Dioxide, Helium and air.



Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
R7S-02	02	1/8	3.2	9.8	450	6525	1800	26100	30	0.19
R7S-03	03	5/16	5.0	11.3	390	5655	1560	22620	35	0.24
R7S-04	04	1/4	6.5	13.0	390	5655	1560	22620	40	0.28
R7S-05	05	5/16	8.0	15.0	330	4785	1320	19140	50	0.32
R7S-06	06	3/8	9.7	17.0	315	4568	1260	18270	60	0.43
R7S-08	08	1/2	13.0	20.0	275	3988	1100	15950	80	0.48
R7S-10	10	5/8	16.5	23.5	195	2828	780	11310	115	0.59
R7S-12	12	3/4	19.5	27.0	180	2610	720	10440	160	0.63
R7S-16	16	1	25.0	34.0	160	2320	640	9280	200	0.79

Also available in twin version. (3/8” + 1/2”)

R8 –THERMOPLASTIC HOSE TWO (ARAMIDIC) BRAIDS

Very High Pressure

REF. SPECIFICATION
SAE J 517, R8
EN 855 R8
ISO 3949

CONSTRUCTION
Tube: Hydraulic oils, air and water based fluids resistant polyester.
Reinforcement: Very high tensile 2 aramidic fiber braids.
Cover: Oil, abrasion and weather resistant polyurethane.

TEMPERATURE RANGE
– 40°C to + 100°C. (For transfer of water based fluids and air max. + 65°C)

APPLICATION
For air, water, mineral and/or synthetic oils discharge at very high pressure.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
R8-02	02	1/8	3.2	8.5	362	5249	1448	20996	30	0.06
R8-03	03	3/16	5.0	9.3	362	5249	1448	20996	35	0.07
R8-04	04	1/4	6.5	12.0	362	5249	1448	20996	50	0.09
R8-05	05	5/16	8.0	14.0	350	5075	1400	20300	60	0.12
R8-06	06	3/8	9.7	16.5	287	4162	1148	16646	80	0.14
R8-08	08	1/2	13.0	20.2	250	3625	1000	14500	95	0.19
R8-10	10	5/8	16.5	24.0	200	2900	800	11600	125	0.27
R8-12	12	3/4	19.5	28.0	162	2349	648	9396	150	0.29
R8-16	16	1	25.0	34.0	140	2030	560	8120	200	0.47

Also available in twin version.

AIR CONDITIONING HOSE

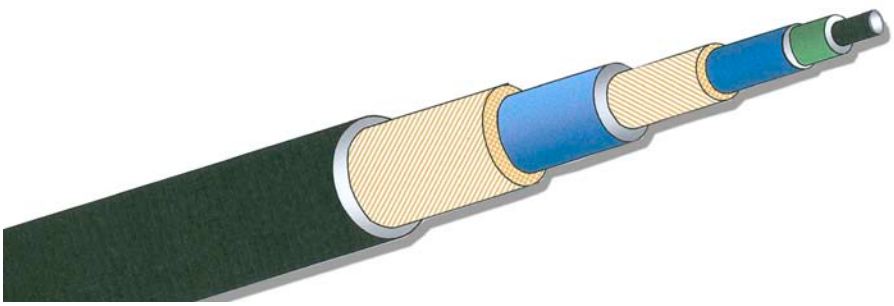
REF. SPECIFICATION
SAE J 2064
TYPE C CLASS II

CONSTRUCTION
Tube: synthetic rubber (CR) covered with nylon layer.
Reinforcement: Two polyester spirals.
Cover: weather, oil and abrasion resistant rubber (EPDM).

TEMPERATURE RANGE
– 30°C to + 125°C.

APPLICATION
Commercial lines carrying Freon R12 / R134 A.

Part Number	Inch	Hose mm		Hose O/D mm	Working Pressure		Burst Pressure		Min. Bend Radius
		Min.	Max.	Min.	Bar	Psi	Bar	Psi	mm
ACH-05	5/16	7.8	8.6	19.8	24	350	121	1750	102
ACH-06	13/32	10.2	11.1	23.8	24	350	121	1750	114
ACH-08	½	12.4	13.6	26.2	24	350	121	1750	127
ACH-10	⅝	15.6	16.8	29.4	17	250	86	1255	165



LK-20 – MEDIUM DUTY AIR HOSE

20 BAR

REF. SPECIFICATION
EN ISO 2398 TYPE 4

CONSTRUCTION
Tube: Oil mist resistant natural and synthetic rubber.
Reinforcement: High tensile synthetic textile.
Cover: Abrasion, ozone and weather resistant smooth natural and synthetic rubber.

TEMPERATURE RANGE
– 25°C to + 70°C

APPLICATION
Medium duty service for air and pneumatic tools, especially in mines, quarries and constructions.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
LK20-04	04	¼	6	14	20	290	64	928	60	0.172
LK20-05	05	5/16	8	15	20	290	64	928	80	0.174
LK20-06	06	⅜	10	18	20	290	64	928	100	0.242
LK20-08	08	½	13	23	20	290	64	928	125	0.389
LK20-10	10	⅝	16	26	20	290	64	928	160	0.456
LK20-12	12	¾	19	29	20	290	64	928	190	0.521
LK20-16	16	1	25	37	20	290	64	928	254	0.65

SKY-20 – MEDIUM DUTY AIR HOSE

20 BAR

REF. SPECIFICATION
EN ISO 2398 TYPE 4/5

CONSTRUCTION
Tube: Oil mist resistant natural and synthetic rubber.
Reinforcement: High tensile synthetic textile.
Cover: Abrasion, ozone and weather resistant synthetic rubber.

TEMPERATURE RANGE
– 25°C to + 70°C

APPLICATION
Medium duty service for air and pneumatic tools, especially in mines, quarries and constructions.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
SKY20-08	08	½	12.7	23	20	290	64	928	127	0.37
SKY20-10	10	⅝	16.0	26	20	290	64	928	160	0.43
SKY20-12	12	¾	19.0	30	20	290	64	928	190	0.53
SKY20-16	16	1	25.4	37	20	290	64	928	254	0.71
SKY20-20	20	1¼	32.0	45	20	290	64	928	320	1.01
SKY20-24	24	1½	38.1	52	20	290	64	928	380	1.29
SKY20-28	28	1¾	44.5	60	20	290	64	928	445	1.58
SKY20-32	32	2	51.0	65	20	290	64	928	510	1.66
SKY20-40	40	2½	63.5	80	20	290	64	928	635	2.45
SKY20-48	48	3	76.2	92	20	290	64	928	762	2.69
SKY20-64	64	4	101.6	118	20	290	64	928	1016	3.77

RF –TEXTILE BRAID OIL HOSE

REF. SPECIFICATION
DIN 73379 TYPE-B

CONSTRUCTION
Tube: Oil and fuel resistant synthetic nitrile black rubber.
Cover: One textile braid.

TEMPERATURE RANGE
– 40°C to + 85°C

APPLICATION
For delivery of transmission oil, fuel oil, automotive gasoline, etc.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
RF-03	03	3/16	5.0	9.0	10	145	30	435	50	0.05
RF-04	04	¼	6.5	11.0	10	145	30	435	60	0.08
RF-05	05	5/16	8.0	13.0	10	145	30	435	65	0.11
RF-06	06	⅜	9.5	14.5	10	145	30	435	70	0.12
RF-08	08	½	12.5	19.0	10	145	30	435	95	0.21
RF-10	10	⅝	16.0	23.0	10	145	30	435	-	0.30
RF-12	12	¾	19.0	27.0	10	145	30	435	-	0.40

RS – GALVANIZED WIRE BRAID OIL HOSE

REF. SPECIFICATION

CONSTRUCTION
Tube: Oil and fuel resistant synthetic NBR black rubber.
Cover: galvanized wire reinforcement.

TEMPERATURE RANGE
– 20°C to + 90°C

APPLICATION
For delivery of transmission oil, fuel oil, automotive gasoline, etc.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Kg/m
RS-04	04	¼	6.0	10	25	365	75	1088	30	0.16
RS-05	05	5/16	8.0	13	25	365	75	1088	40	0.23
RS-06	06	⅜	10.0	15	25	365	75	1088	50	0.28
RS-08	08	½	13.0	19	20	290	60	870	65	0.38
RS-10	10	⅝	16.0	22	20	290	60	870	80	0.46
RS-12	12	¾	19.0	25	15	218	45	653	95	0.57
RS-16	16	1	25.0	33	15	218	45	653	125	0.66

OSDH451 – OIL SUCTION & DISCHARGE HOSE

10 BAR

REF. SPECIFICATION
EN 1761 TYPE SD

CONSTRUCTION
Tube: Oil and petrol resistant, conductive synthetic nitrile black rubber.
Reinforcement: High tensile synthetic textile, steel wire helix and antistatic copper wire.
Cover: Oil, weather, ozone, abrasion and sea water resistant, special synthetic rubber.

TEMPERATURE RANGE
– 35°C to + 70°C

APPLICATION
For suction and discharge of petroleum products with aromatic content up to 50%.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	vacuum	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm		Kg/m
OSDH451-16	16	1	25.4	36	10	145	30	435	152	-0.93	0.74
OSDH451-20	20	1¼	32.0	43	10	145	30	435	192	-0.93	0.95
OSDH451-24	24	1½	38.1	49	10	145	30	435	228	-0.93	1.20
OSDH451-28	28	1¾	44.5	56	10	145	30	435	267	-0.93	1.42
OSDH451-32	32	2	50.8	63	10	145	30	435	306	-0.93	1.69
OSDH451-40	40	2½	63.5	76	10	145	30	435	381	-0.93	2.10
OSDH451-48	48	3	76.2	89	10	145	30	435	457	-0.93	2.68
OSDH451-64	56	3½	90.0	105	10	145	30	435	540	-0.93	3.61
OSDH451-64	64	4	101.6	117	10	145	30	435	610	-0.93	4.10
OSDH451-80	80	5	127.0	145	10	145	30	435	762	-0.93	6.10
OSDH451-96	96	6	152.4	170	10	145	30	435	915	-0.93	7.68

ABCSD-741
DRY BULK MATERIALS SUCTION & DISCHARGE HOSE
10 BAR

REF. SPECIFICATION
EN 1761 TYPE SD

CONSTRUCTION
Tube: Abrasion resistant, conductive natural rubber
Reinforcement: High tensile synthetic textile, steel wire helix and antistatic copper wire.
Cover: Abrasion, ozone and weather resistant pin-pricked special synthetic rubber.

TEMPERATURE RANGE
– 40°C to + 70°C

APPLICATION
For suction & discharge of dry bulk materials, sand, gravel, dry cement etc.

Part Number	Hose dash size	Hose I.D		HOSE O/D	Working Pressure		Burst Pressure		Min. Bend Radius	vacuum	Wight
		Inch	mm	mm	Bar	Psi	Bar	Psi	mm	Bar	Kg/m
ABCSD741-16	16	1	25.4	39.0	10	145	30	435	155	0.93	0.91
ABCSD741-20	20	1¼	32.0	45.0	10	145	30	435	190	0.93	1.08
ABCSD741-24	24	1½	38.0	52.0	10	145	30	435	230	0.93	1.43
ABCSD741-32	32	2	50.8	66.0	10	145	30	435	305	0.93	2.01
ABCSD741-40	40	2½	63.5	78.5	10	145	30	435	380	0.93	2.44
ABCSD741-48	48	3	76.2	92.0	10	145	30	435	460	0.93	3.13
ABCSD741-56	56	3½	90.0	107.0	10	145	30	435	540	0.93	3.82
ABCSD741-64	64	4	101.6	120.0	10	145	30	435	610	0.93	4.61
ABCSD741-80	80	5	127.0	149.0	10	145	30	435	765	0.93	6.86
ABCSD741-96	96	6	152.4	174.5	10	145	30	435	915	0.93	8.78
ABCSD741-128	128	8	203.2	229.0	10	145	30	435	1220	0.93	13.82
ABCSD741-160	160	10	254.0	281.0	10	145	30	435	1525	0.93	17.03

NON-TOXIC STEEL SPIRAL PVC HOSE

REF. SPECIFICATION
ISO 1307

CONSTRUCTION
Strong, very flexible and smooth non-toxic, transparent plasticized PVC.
Shock resistant galvanised spiral.
Crushing, abrasion and weather resistant, smooth outside.

TEMPERATURE RANGE
– 5°C to + 60°C

APPLICATION
For suction and delivery of water, mineral water, fruit juices, liquids etc. in shipyards, industries, buildings, agricultural and industrial machineries.

Part Number	Hose dash size	Hose I.D		Working Pressure		Burst Pressure		Min. Bend Radius	vacuum	Wight
		Inch	mm	Bar	Psi	Bar	Psi	mm	$m.H_2O$	Kg/m
NTSS - 10	-	-	10	10.0	145	21	305	20	8.5	0.16
NTSS - 12	-	-	12	10.0	145	21	305	25	8.5	0.18
NTSS - 14	-	-	14	8.0	145	18	260	30	8.5	0.20
NTSS - 16	-	-	16	1168.0	116	18	260	35	8.5	0.23
NTSS - 18	-	-	18	8.0	116	18	260	40	8.5	0.28
NTSS - 20	-	-	20	7.0	100	15	218	50	8.5	0.34
NTSS - 25	1	-	25	7.0	100	15	218	60	8.5	0.51
NTSS - 30	-	-	30	5.0	72	13	190	70	8.5	0.60
NTSS - 32	1¼	-	32	5.0	72	13	190	75	8.5	0.65
NTSS - 35	-	-	35	5.0	72	12	175	80	8.5	0.73
NTSS - 38	1½	-	38	5.0	58	12	175	90	8.5	0.80
NTSS - 40	-	-	40	4.5	58	9	130	95	8.5	0.87
NTSS - 45	-	-	45	4.5	58	9	130	105	7.0	1.10
NTSS - 51	2	-	51	4.5	58	9	130	125	7.0	1.20
NTSS - 60	-	-	60	4.0	58	7	102	135	7.0	1.80
NTSS - 63	2½	-	63	4.0	58	7	102	150	7.0	1.95
NTSS - 70	-	-	70	3.0	44	6	87	180	7.0	2.20
NTSS - 76	3	-	76	3.0	44	6	87	195	7.0	2.50
NTSS - 80	-	-	80	3.0	44	6	87	220	7.0	2.70
NTSS - 90	-	-	90	3.0	30	6	87	260	6.0	3.00
NTSS - 102	4	-	102	3.0	30	6	87	300	6.0	3.40