Balflex®

HOSE CATALOG 2021

European Technology

Established since 1963, **Balflex®** *is a European international group of companies dedicated to the design, production, assembly and distribution of all types of high-tech products for conduction of fluids, measuring of pressure and power transmission at very high quality level.*

57 years of know-how and expertise in this field, makes **Balflex®** *the first choice for the mining, agriculture, off-shore and construction industries.*

Today the **Balflex®** *Group covers worldwide users through our own company's production facilities, branches and net of certified distributors.*

Balflex® *valorizes the inside meaning of the words we use:* ***Excellence*** *the quality of being outstanding;* ***Innovation*** *the action or process of innovating;* ***Partnership*** *cooperation relationship between two or more people, having in mind a common goal;* ***Tradition*** *way of thinking or acting, inherited from previous generations.*

Balflex®

Quality

Quality is very important for us. We have fully equipped, modern laboratories and equipment, employing the industries most experienced personnel.

Balflex® has earned various certifications for our Management Systems and Products. This reliable and consistent approach has allowed us to achieve our ISO 9001:2015 certification. At **Balflex**® quality and service always comes first. We are dedicated to continue the development of new products with a strong emphasis on quality.

Member of:

Certified by:


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

BALFLEX PORTUGAL - Componentes Hidráulicos e Industriais, S.A.
Rua Bouça dos Estilhadouros 226/254, Zona Industrial Alto de Vilar, 4445-044, Alfena, Porto, Portugal

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Manufacture, assembly and distribution of hydraulic and industrial hoses, connectors and v-belts.

Place and date:
Barcelona, 02 October 2019

For the issuing office:
DNV GL – Business Assurance
Gran Via de les Corts Catalanes 130-136, nº. 5, 08038, Barcelona, Spain

Ana del Río Salgado
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

BALFLEX BRASIL LTDA
Rua Padre Cesari Leili, 1014, 83420-000, Quatro Barras, PR, Brazil

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Manufacture and distribution of hydraulic and industrial hoses of rubber and pvc, with braided and spiral reinforcement.

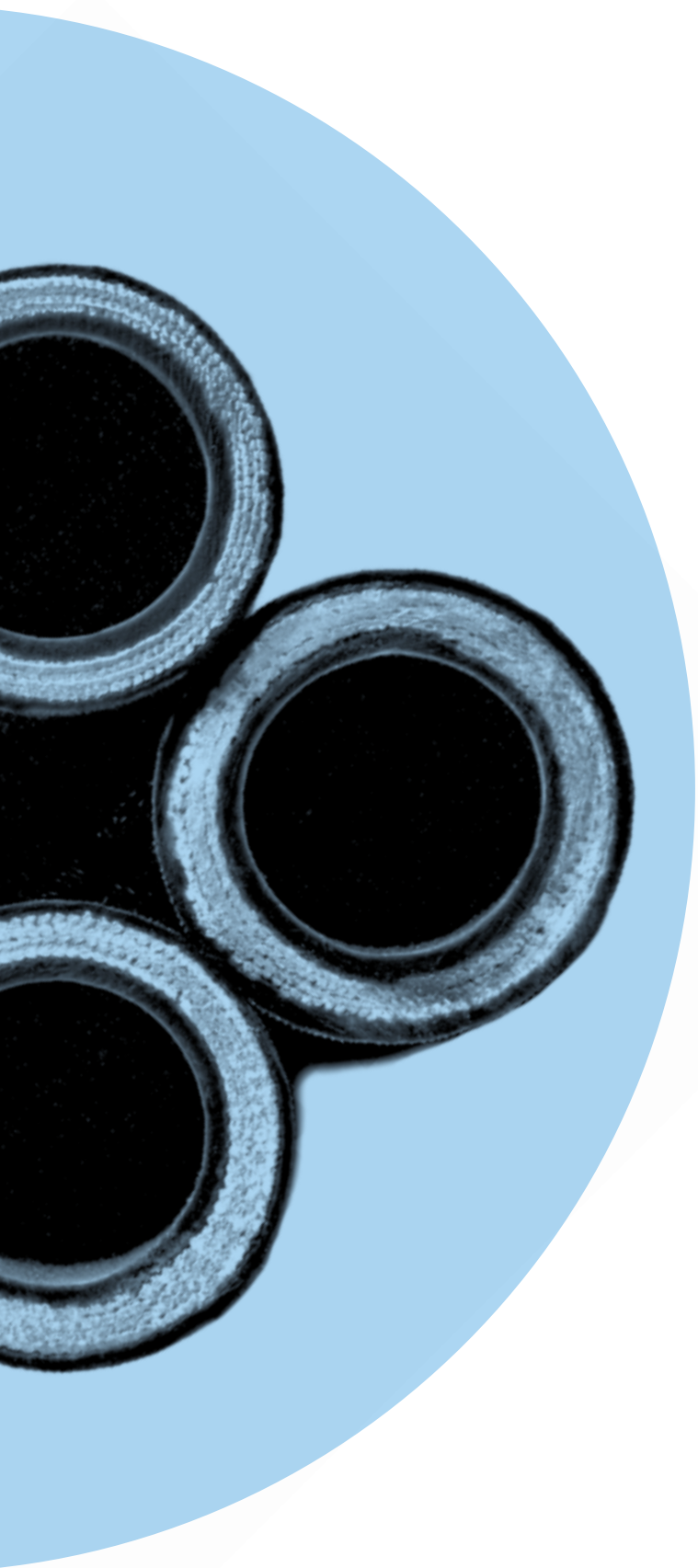
Fabricação e distribuição de mangueiras hidráulicas e industriais de composto de borracha e pvc, com reforço de trança e espiral.

Place and date:
São Paulo, 03 May 2019

For the issuing office:
DNV GL – Business Assurance
Av Alfredo Egydio de Souza Aranha, 100 - Bloco D- Pavdo - Vila Cruzeiro, 04726-170, São Paulo, SP, Brazil

Mauricio Venturin
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.



Index

Balflex®


SAE 100R3
TEXMASTER 3
FLEX
FUEL . AIR . GASOLINE

Textile Braid Hydraulic Hoses

Balflex®

Textile Braid Hydraulic Hoses

Balflex® *hydraulic textile braid hoses are produced to* Balflex® *specifications and according to ISO 4079, SAE J517 and EN 854 standards. They cover a wide variety of medium pressure applications, in rubber, textile reinforcement, for petroleum and water base hydraulic fluids.*

Balflex® *optimized the production of these hoses and their compatibility with a wide range of connectors, in order to assure the highest performance and the most extensive range of applications.*

General Guidelines

Balflex® hydraulic textile braid hoses are designed with a safety factor of 4:1 relating minimum burst pressure and recommended working pressure. Working pressure and nominal diameter are always branded on the hose.

Hydraulic hoses are designed for petroleum base hydraulic fluids applications with a temperature range of –40°C (-40°F) to +100°C (+212°F). Special rubber compounds and other lining materials allow to exceed these limits. Hydraulic hoses may also be used for water base hydraulic fluids if the working temperature does not exceed +70°C (+158°F). With the presence of air in the fluid working temperature should be reduced to +60°C (+140°F).

Selection, assembly and installation of hydraulic textile braid hoses should follow **Balflex®** recommendations and SAE J1273 and DIN 20066 standards. **Hydraulic hose assemblies should always be inspected and hydraulically tested before installation**. All hydraulics systems should be tested against leakage and malfunction in an appropriate area after any intervention.

Installations that do not comply with an adequate geometry of the hose assembly may reduce significantly the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose specifications may shorten the hose life drastically.

The failure of a hydraulic, textile braid hose assembly may be dangerous and expose people and property to irreversible damage. Among other occurrences that must be prevented are the high velocity and high temperature projections of hydraulic fluid, the projection of couplings and it's parts, the whipping of unrestrained hose, spillage of combustion of the fluid, electrical shocks through contact with electrical sources, immovability, fall or sudden movement of masses controlled by the hydraulic system.

Table 1: Rated working pressure at 20°C (+68°F) of Balflex® Hydraulic Textile Braid Hoses (MPa / PSI)

Balflex	Standard	3/16" -3 DN5	1/4" -4 DN6	5/16" -5 DN8	3/8" -6 DN10	1/2" -8 DN12	5/8" -10 DN16	3/4" -12 DN19	1" -16 DN25	1.1/4" -20 DN31	1.1/2" -24 DN38	2" -32 DN51	2.1/2" -40 DN63	3" -48 DN76	3.1/2" -56 DN90	4" -64 DN100
TEXMASTER 1	DIN EN 854 1TE / ISO 4079 / SAE J517 R6	3.4	2.8	2.8	2.8	2.8	2.4	2.1	1.7							
		500	410	410	410	410	350	310	250							
TEXMASTER 2	DIN EN 854 2TE / ISO 4079	8.0	7.5	6.8	6.3	5.8	5.5	4.5	4.0							
		1200	1100	990	920	850	730	660	580							
TEXMASTER 3	DIN EN 854 1TE / ISO 4079 / SAE J517 R3	16.0	14.5	13.0	11.0											
		2400	2200	1900	1600											
TEXMASTER 3	SAE J517 R3 / ISO 4079					7.0	6.1	5.2	3.9	2.6						
						1100	950	800	600	400						
TEXMASTER 3T	DIN EN 854 1TE / ISO 4079					9.3	8.0	7.0	5.5	4.5	4.0	3.3				
						1400	1200	1100	800	660	580	480				
MULTIPURPOSE		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
		300	300	300	300	300	300	300	300	300	300	300				
PUSH-ON			2.4	2.4	2.4	2.1	2.1	2.1	1.4							
			350	350	350	310	310	310	210							
TORNARE	SAE J517 R4							2.1	1.7	1.4	1.05	0.7	0.4	0.4	0.3	0.25
								310	250	210	160	110	60	60	50	40

Table 2: Pressure Conversion

bar	0,00134	0,0025	0,0339	0,069	0,098	**1,00**	1,01	10,0	100
PSI	0,0194	0,036	0,492	**1,001**	1,421	14,504	14,69	145,04	1450,38
MPa	-	-	0,003	0,007	0,0098	0,10	0,101	**1,00**	10,00
1 atm	0,001	0,0025	0,0335	0,068	0,097	0,987	**1**	9,87	98,69
m H20 (20°C)	0,014	0,026	0,346	0,704	**1**	10,207	10,34	102,074	3.4
in Hg (20°C)	0,0396	0,074	**1,001**	2,04	2,89	29,53	29,91	295,3	3.4
in H20 (20°C)	0,538	**1,005**	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
mm Hg (20°C)	**1,005**	1,88	25,43	51,75	73,51	750,06	759,81	7500,62	75006,17

Example: 1 MPa = 145,04 PSI ; 1MPa = 10,0bar

Table 3: Conversion Factors

Unit	Factor	Converted Unit
1 m (meter)	1000	mm (millimeter)
1 m (meter)	1,09362	yard
1 m (meter)	3,28084	foot
1 mm (millimeter)	0,001	m (meter)
1 mm (millimeter)	0,03937	Inch
1 inch	25,4	mm (millimeter)
1 inch	0,0254	m (meter)
1 foot	0,3048	m (meter)
1 yard	0,9144	m (meter)
F°	C° x 1,8 + 32	F° (Fahrenheit)
C°	(F° - 32): 1,8	C° (Celsius)

Example: : 1 m = 3,28084 feet ; 1 inch = 25,4mm
Example: : +100°C = +212°F

Fluid Compatibility and Resistance Chart for Balflex Textile Braid Hoses

🟢 Recommended 🟡 Recommended with Restrictions 🔴 Not Recommended

Acetic Acid	
Acetic Acid (30%)	🟡
Acetone	🔴
Acetylene	🟢
Ammonia, Gas (Hot)	🟡
Ammonia, Liquid	🟢
Ammoniumchloride	
Amyl Acetate	🔴
Aniline	🔴
Animal Oils	🟢
Benzol / Benzene	🔴
Butane	🟡
Butyl Acetate	🔴
Butyl Alcohol / Butanol	🟢
Calcium Chloride Solutions	
Carbon Dioxide	🟢
Carbon Disulfide	🔴
Carbonates	🟡
Caustic Soda	🟢
Chlorinated Solvents	🔴
Chlorine	🔴
Chloroform	🔴
Citric and Solutions	🟢
Compressed Air	🟢
Cyclohexane	🟡
Crude Petroleum Oil	🟢
Dioctyl Phthalate	
Diesel Fuel	🟢
Ethers	🟡
Ethyl Acetate	🔴
Ethyl Alcohol	🟢
Ethyl Chloride	🔴

Ethyl Glycol	🟢
Ethyleneoxide	🔴
Fluorine	🔴
Formaldehyde	🟢
Formaldehyde 40%	🟢
Fuel Oil	🟢
Gaseous Hydrogen	🟡
Gasoline	🟢
Glycerin / Glycerol	🟢
Glycol to 66°C	🟢
Hexane	🟢
Hydraulic Oil	🟢
Hydrochloric Acid 37%	🔴
Hydroger Peroxide (Dil.)	🟢
Hydroger Peroxide (Conc.)	🟡
Isocyanates	
Isopropil Alcohol	🟢
Kerosene	🟢
Liquid Oxygen	🔴
LPG	🟡
Lubricating Oils	🟢
Mercury	🟢
Methyl Alcohol / Methanol	🟢
Methyl Chloride (Cold)	🔴
Methyl Ethyl Khetone	🔴
Mineral Oils	🟢
Naphtha	🟢
Naphthalene	🔴
Natural Gas	🟢
Nitric Acid (Dil.)	🔴
Nitric Acid (Conc.)	🔴
Nitrobenzen	🔴

Oil of Turpentine	🟢
Oleic Acid	🔴
Oxalic Acid	🔴
Perchloroethylene	🔴
Phenol	🔴
Phosphoric Acid (10%)	🟢
Phosphoric Acid (70%)	🔴
Phosphate Ester Base Oil	🔴
Saturated Steam	🔴
Sea Water	🟢
Silicone Oils	🟢
Soap Solutions	🟡
Soda	🟢
Sodium Chloride Solutions	🟢
Sodium Hydroxide 20%	🟡
Sodium Hypochloryde 10%	🟡
Sulphur	🟢
Sulphur Dioxide	🔴
Sulphuric Acid up to 50%	🔴
Sulphuric Acid above 50%	🔴
Toluene	🔴
Trichloroethylene	🔴
Vegetable Greases	🟢
Water	🟢
Xylene	🔴

The following data is based on tests and believed to be reliable; however the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested. Note: All data based on 20°C/70°F unless otherwise noted.

TEXMASTER 1

DIN EN 854 1TE / SAE 100R6 – 10.1216.

Medium pressure, single textile braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
1TE-R6-03	10.1216.03	DN5	3/16"	-3	4,8	10,8	**3.4**	500	**13.8**	2000	51	0,13
1TE-R6-04	10.1216.04	DN6	1/4"	-4	6,3	12,4	**2.8**	410	**11.0**	1640	64	0,14
1TE-R6-05	10.1216.05	DN8	5/16"	-5	8,0	13,9	**2.8**	410	**11.0**	1640	76	0,18
1TE-R6-06	10.1216.06	DN10	3/8"	-6	9,5	15,4	**2.8**	410	**11.0**	1640	76	0,19
1TE-R6-08	10.1216.08	DN12	1/2"	-8	12,7	18,6	**2.8**	410	**11.0**	1640	102	0,27
1TE-R6-10	10.1216.10	DN16	5/8"	-10	16,0	22,9	**2.4**	350	**9.7**	1400	127	0,31
1TE-R6-12	10.1216.12	DN19	3/4"	-12	19,0	26,6	**2.1**	310	**8.3**	1240	152	0,43
1TE-R6-14	10.1216.14	DN22	7/8'	-14	22,0	31,3	**2.2**	320	**8.8**	1280	200	0,59
1TE-R6-16	10.1216.16	DN25	1"	-16	25,4	33,0	**1.7**	250	**6.8**	1000	203	0,59

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high resistance synthetic fiber braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber

SAFETY FACTOR: 4:1
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F); Max. temperature recommended for air: +50°C (+122°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules
APPLICATION: petroleum base hydraulic fluids

COVER: U.S. MSHA APPROVED
NOTES: Sizes -14 (DN 22) 7/8" and -16 (DN 25) 1" not included in the standards

BALFLEX TEXMASTER 1 SAE 100R6 / EXCEEDS DIN EN 854 - 1TE - DN5 - 3/16" - ISO 4079 - WP 3.4 MPa 500 PSI - Flame Resistant - MSHA IC-252/00

TEXMASTER 2

DIN EN 854 2TE – 10.1217.

Medium pressure, single textile braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	MPa	MPa	MPa	MIN BEND RAD mm	KG kg/m
2TE-03	10.1217.03	DN5	3/16"	-3	4,8	11,8	**8.0**	1200	**32.0**	4800	25	0,12
2TE-04	10.1217.04	DN6	1/4"	-4	6,3	13,4	**7.5**	1100	**30.0**	4400	40	0,14
2TE-05	10.1217.05	DN8	5/16"	-5	8,0	14,9	**6.8**	990	**27.2**	3960	50	0,18
2TE-06	10.1217.06	DN10	3/8"	-6	9,5	16,5	**6.3**	920	**25.2**	3680	60	0,19
2TE-08	10.1217.08	DN12	1/2"	-8	12,7	19,7	**5.8**	850	**23.2**	3400	70	0,27
2TE-10	10.1217.10	DN16	5/8"	-10	16,0	23,9	**5.0**	730	**20.0**	2920	90	0,31
2TE-12	10.1217.12	DN19	3/4"	-12	19,0	27,0	**4.5**	660	**18.0**	2640	110	0,43
2TE-16	10.1217.16	DN25	1"	-16	25,4	34,4	**4.0**	580	**16.0**	2320	150	0,59

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high resistance synthetic fiber braid

OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4: 1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F); Max. temperature recommended for air: +50°C (+122°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules
COVER: U.S. MSHA APPROVED

BALFLEX TEXMASTER 2 DIN EN 854 - 2TE - DN5 - 3/16" - ISO 4079 - WP 8 MPa 1200 PSI - Flame Resistant - MSHA IC-252/00

TEXMASTER 3

DIN EN 854 3TE / SAE 100R3 – 10.1220

Medium pressure, double textile braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R3-3TE-03	10.1220.03	DN5	3/16"	-3	4,8	12,8	**16.0**	2400	**64.0**	9600	40	0,13
R3-3TE-04	10.1220.04	DN6	1/4"	-4	6,3	14,4	**14.5**	2200	**58.0**	8800	45	0,18
R3-3TE-05	10.1220.05	DN8	5/16"	-5	8,0	16,9	**13.0**	1900	**52.0**	7600	55	0,25
R3-3TE-06	10.1220.06	DN10	3/8"	-6	9,5	18,5	**11.0**	1600	**44.0**	6400	70	0,28
R3-08	10.1220.08	DN12	1/2"	-8	12,7	23,8	**7.0**	1100	**28.0**	4400	125	0,44
R3-10	10.1220.10	DN16	5/8"	-10	16,0	27,0	**6.1**	950	**24.4**	3800	140	0,49
R3-12	10.1220.12	DN19	3/4"	-12	19,0	31,8	**5.2**	800	**20.8**	3200	150	0,70
R3-16	10.1220.16	DN25	1"	-16	25,4	38,1	**3.9**	600	**15.6**	2400	205	0,79
R3-20	10.1220.20	DN31	1.1/4"	-20	32,0	44,5	**2.6**	400	**10.4**	1600	250	0,88

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high resistance synthetic fiber braids

OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F); Max. temperature recommended for air: +50°C (+122°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules
COVER: U.S. MSHA APPROVED

BALFLEX TEXMASTER 3 SAE 100R3 - DN12 - 1/2" - ISO 4079 - WP 7 MPa 1100 PSI - Flame Resistant - MSHA IC-252/00

Balflex®

MULTIPURPOSE

2.0MPa / 300PSI (100% rubber hose) – 10.1215.

Oil, Fuel and Gasoline

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
MULTI-03	10.1215.03	3/16"	-3	4,8	11,0	**2,0**	300	**6,0**	1200	50	0,10
MULTI-04	10.1215.04	1/4"	-4	6,3	12,8	**2,0**	300	**6,0**	1200	60	0,16
MULTI-05	10.1215.05	5/16"	-5	8,0	14,9	**2,0**	300	**6,0**	1200	80	0,24
MULTI-06	10.1215.06	3/8"	-6	9,5	16,7	**2,0**	300	**6,0**	1200	100	0,29
MULTI-08	10.1215.08	1/2"	-8	12,7	21,0	**2,0**	300	**6,0**	1200	125	0,40
MULTI-10	10.1215.10	5/8"	-10	16,0	24,2	**2,0**	300	**6,0**	1200	160	0,50
MULTI-12	10.1215.12	3/4"	-12	19,0	28,0	**2,0**	300	**6,0**	1200	190	0,66
MULTI-16	10.1215.16	1"	-16	25,4	35,0	**2,0**	300	**6,0**	1200	254	0,90
MULTI-20	10.1215.20	1.1/4"	-20	32,0	42,8	**2,0**	300	**6,0**	1200	320	1,20
MULTI-24	10.1215.24	1.1/2"	-24	38,0	49,8	**2,0**	300	**6,0**	1200	380	1,42
MULTI-32	10.1215.32	2"	-32	50,8	62,2	**2,0**	300	**6,0**	1200	510	1,89

INNER TUBE: seamless oil, fuel and gasoline resistant synthetic rubber
REINFORCEMENT: 1 high resistance synthetic fiber braid
SAFETY FACTOR: 3:1

OUTER TUBE: black wrapped, weather and abrasion resistant synthetic rubber
APPLICATION: oil, fuel and gasoline

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F); Max. temperature recommended for air: +50°C (+122°F)

COVER: U.S. MSHA APPROVED
WARNING: this hose is not according to any particular standards,so should not be used in automotive applications

BALFLEX / MULTIPURPOSE OIL - FUEL - AIR - GASOLINE - DN5 - 3/16" - WP 2 MPa 300 PSI - Flame Resistant - MSHA IC-252/00

TORNARE 4

SAE 100R4 – 10.1219.

According to SAE J517 type SAE 100R4, suction & delivery hydraulic hose.

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R4-12	10.1219.12	3/4"	-12	19,0	34,9	**2.1**	310	**8.4**	1240	127	0,75
R4-16	10.1219.16	1"	-16	25,4	41,3	**1.7**	250	**6.8**	1000	152	0,93
R4-20	10.1219.20	1.1/4"	-20	31,8	50,8	**1.4**	210	**5.6**	840	203	1,25
R4-24	10.1219.24	1.1/2"	-24	38,1	57,2	**1.05**	160	**4.2**	640	254	1,54
R4-32	10.1219.32	2"	-32	50,8	69,9	**0.7**	110	**2.8**	440	305	2,00
R4-40	10.1219.40	2.1/2"	-40	63,5	82,6	**0.4**	60	**1.6**	240	356	2,50
R4-48	10.1219.48	3"	-48	76,2	95,3	**0.4**	60	**1.6**	240	457	3,20
R4-56	10.1219.56	3.1/2"	-56	88,9	108,0	**0.3**	50	**1.2**	200	533	4,03
R4-64	10.1219.64	4"	-64	101,6	121,0	**0.25**	40	**1.0**	160	610	5,04

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: textile braids and 2 high strength steel wire helix
SAFETY FACTOR: 4:1

OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
APPLICATION: suction, delivery, return & discharge of petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F); Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F); Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® multicrimp fittings serie BW23
COVER: U.S. MSHA approved

BALFLEX TORNARE 4 SAE 100R4 - DN19 - 3/4" - WP 2.1 MPa 310 PSI - Flame Resistant - MSHA IC-252/00

Steel Wire Braid Hydraulic Hoses

Balflex®

Steel Wire Braid Hydraulic Hoses

Balflex® hydraulic steel wire braid hoses are produced to Balflex® specifications and according to ISO 1436, ISO 11237, SAE J517 and EN 853 to EN 857 standards. They cover a wide variety of medium and high pressure applications, in rubber, steel reinforcement, for petroleum and water base hydraulic fluids.

Balflex® optimized the production of these hoses and their compatibility with a wide range of connectors, in order to assure the highest performance and the most extensive range of applications.

General Guidelines

Balflex® hydraulic steel wire braid hoses are designed with a safety factor of 4:1 relating minimum burst pressure and recommended working pressure (except 2-MAX hose which is 2.3:1). Working pressure and nominal diameter are always branded on the hose.

Hydraulic hoses are designed for petroleum base hydraulic fluids applications with a temperature range of –40°C (-40°F) to +100°C (+212°F). Special rubber compounds and other lining materials allow to exceed these limits. Hydraulic hoses may also be used for water base hydraulic fluids if the working temperature does not exceed +70°C (+158°F). With the presence of air in the fluid working temperature should be reduced to +60°C (+140°F).

Selection, assembly and installation of hydraulic steel wire braid hoses should follow **Balflex®** recommendations and SAE J1273 and DIN 20066 standards. **Hydraulic hose assemblies should always be inspected and hydraulically tested before installation.** All hydraulics systems should be tested against leakage and malfunction in an appropriate area after any intervention.

Installations that do not comply with an adequate geometry of the hose assembly may reduce significantly the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose specifications may shorten drastically the hose lifetime.

The failure of a hydraulic steel wire braid hose assembly may be dangerous and expose people and property to irreversible damage. Among other occurrences that must be prevented are the high velocity and high temperature projections of hydraulic fluid, the projection of couplings and it's parts, the whipping of unrestrained hose, spillage and combustion of the fluid, electrical shocks through contact with electrical sources, immovability, fall or sudden movement of masses controlled by the hydraulic system.

Table 1a: Rated working pressure at 20°C (+68°F) of Balflex® Hydraulic Steel Wire Braid Hoses (MPa / PSI)

Balflex	Standard	3/16" -3 DN5	1/4" -4 DN6	5/16" -5 DN8	3/8" -6 DN10	1/2" -8 DN12	5/8" -10 DN16	3/4" -12 DN19	1" -16 DN25	1.1/4" -20 DN31	1.1/2" -24 DN38	2" -32 DN51	2.1/2" -40 DN63	3" -48 DN76
FORZA UNO	DIN EN 853 1SN / ISO 1436 / SAE J517 R1AT	25.0	22.5	21.5	18.0	16.0	13.0	10.5	8.8	6.3	5.0	4.0	3.0	2.0
		3700	3300	3200	2700	2400	1900	1600	1300	920	730	580	440	290
FORZA DUE	DIN EN 853 2SN / ISO 1436 / SAE J517 R2AT	41.5	40.0	35.0	33.0	27.5	25.0	21.5	16.5	12.5	9.0	8.0	7.0	5.5
		6100	5800	5100	4800	4000	3700	3200	2400	1900	1400	1200	1100	800
BALPAC PREMIUM	DIN EN 857 2SC / ISO 11237 / SAE J517 R16		42.5	40.0	35.0	34.5	31.0	28.0	28.0					
			6200	5800	5100	5000	4500	4000	4000					
BALPAC 3000	DIN EN 857 1SC / ISO 11237 / SAE J517 R17		22.5	21.5	21.0	21.0								
			3300	3200	3000	3000								
BALPAC 3000	SAE J517 R17						21.0	21.0	21.0					
							3000	3000	3000					
BALPAC	DIN EN 857 1SC						13.0	10.5	8.8					
							1900	1600	1300					
2-MAX JACK			70.0		70.0	55.2								
			10000		10000	8100								
3-MAX					50.0	47.0	41.0	37.5	33.0					
					7300	6900	6100	5500	4800					

Table 1b: Rated working pressure at 20°C (+68°F) of Balflex® Hydraulic Hoses (MPa / PSI)

Balflex	type	3/16" -4	1/4" -5	5/16" -6	13/32" -8	1/2" -10	5/8" -12	7/8" -16	1.1/8" -20	1.3/8" -24	1.13/16" -32	23/" -40	3" -48
BRAKEMASTER	SAE J517 R5 / SAE J1402	20.7	20.7	15.5	13.8	12.1	10.3	5.5	4.3	3.4	2.4	2.4	1.4
		3002	3002	2248	2001	1755	1464	798	624	493	348	348	203

Table 2: Pressure Conversion

bar	0,00134	0,0025	0,0339	0,069	0,098	**1,00**	1,01	10,0	100
PSI	0,0194	0,036	0,492	**1,001**	1,421	14,504	14,69	145,04	1450,38
MPa	-	-	0,003	0,007	0,0098	0,10	0,101	**1,00**	10,00
1 atm	0,001	0,0025	0,0335	0,068	0,097	0,987	**1**	9,87	98,69
m H20 (20°C)	0,014	0,026	0,346	0,704	**1**	10,207	10,34	102,074	3.4
in Hg (20°C)	0,0396	0,074	**1,001**	2,04	2,89	29,53	29,91	295,3	3.4
in H20 (20°C)	0,538	**1,005**	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
mm Hg (20°C)	**1,005**	1,88	25,43	51,75	73,51	750,06	759,81	7500,62	75006,17

Example: 1 MPa = 145,04 PSI ; 1 MPa = 10,0 bar

Table 3: Conversion Factors

Unit	Factor	Converted Unit
1 m (meter)	1000	mm (millimeter)
1 m (meter)	1,09362	yard
1 m (meter)	3,28084	foot
1 mm (millimeter)	0,001	m (meter)
1 mm (millimeter)	0,03937	Inch
1 inch	25,4	mm (millimeter)
1 inch	0,0254	m (meter)
1 foot	0,3048	m (meter)
1 yard	0,9144	m (meter)
F°	C° x 1,8 + 32	F° (Fahrenheit)
C°	(F° - 32): 1,8	C° (Celsius)

Example: : 1 m = 3,28084 feet ; 1 inch = 25,4 mm
Example: : +100°C = +212°F

Fluid Compatibility and Resistance Chart for Balflex Steel Wire Braid Hydraulic Hoses

● Recommended ● Recommended with Restrictions ● Not Recommended

Acetic Acid	
Acetic Acid (30%)	●
Acetone	●
Acetylene	●
Ammonia, Gas (Hot)	●
Ammonia, Liquid	●
Ammoniumchloride	
Amyl Acetate	●
Aniline	●
Animal Oils	●
Benzol / Benzene	●
Butane	●
Butyl Acetate	●
Butyl Alcohol / Butanol	●
Calcium Chloride Solutions	
Carbon Dioxide	●
Carbon Disulfide	●
Carbonates	●
Caustic Soda	●
Chlorinated Solvents	●
Chlorine	●
Chloroform	●
Citric and Solutions	●
Compressed Air	●
Cyclohexane	●
Crude Petroleum Oil	●
Dioctyl Phthalate	
Diesel Fuel	●
Ethers	●
Ethyl Acetate	●
Ethyl Alcohol	●
Ethyl Chloride	●

Ethyl Glycol	●
Ethyleneoxide	●
Fluorine	●
Formaldehyde	●
Formaldehyde 40%	●
Fuel Oil	●
Gaseous Hydrogen	●
Gasoline	●
Glycerin / Glycerol	●
Glycol to 66°C	●
Hexane	●
Hydraulic Oil	●
Hydrochloric Acid 37%	●
Hydroger Peroxide (Dil.)	●
Hydroger Peroxide (Conc.)	●
Isocyanates	
Isopropil Alcohol	●
Kerosene	●
Liquid Oxygen	●
LPG	●
Lubricating Oils	●
Mercury	●
Methyl Alcohol / Methanol	●
Methyl Chloride (Cold)	●
Methyl Ethyl Khetone	●
Mineral Oils	●
Naphtha	●
Naphthalene	●
Natural Gas	●
Nitric Acid (Dil.)	●
Nitric Acid (Conc.)	●
Nitrobenzen	●

Oil of Turpentine	●
Oleic Acid	●
Oxalic Acid	●
Perchloroethylene	●
Phenol	●
Phosphoric Acid (10%)	●
Phosphoric Acid (70%)	●
Phosphate Ester Base Oil	●
Saturated Steam	●
Sea Water	●
Silicone Oils	●
Soap Solutions	●
Soda	●
Sodium Chloride Solutions	●
Sodium Hydroxide 20%	●
Sodium Hypochloryde 10%	●
Sulphur	●
Sulphur Dioxide	●
Sulphuric Acid up to 50%	●
Sulphuric Acid above 50%	●
Toluene	●
Trichloroethylene	●
Vegetable Greases	●
Water	●
Xylene	●

The following data is based on tests and believed to be reliable; however the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested. Note: All data based on 20°C/70°F unless otherwise noted.

Balflex®

FORZA UNO

DIN EN 853 1SN / SAE 100R1AT / ISO 1436 – 10.1002.

High pressure, single steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R1AT-03	10.1002.03	DN5	3/16"	-3	4,8	11,4	**25.0**	3700	**100.0**	14800	89	0,23
R1AT-04	10.1002.04	DN6	1/4"	-4	6,3	13,0	**22.5**	3300	**90.0**	13200	100	0,23
R1AT-05	10.1002.05	DN8	5/16"	-5	8,0	14,7	**21.5**	3200	**85.0**	12800	114	0,23
R1AT-06	10.1002.06	DN10	3/8"	-6	9,5	17,2	**18.0**	2700	**72.0**	10800	127	0,33
R1AT-08	10.1002.08	DN12	1/2"	-8	12,7	20,5	**16.0**	2400	**64.0**	9600	178	0,42
R1AT-10	10.1002.10	DN16	5/8"	-10	16,0	23,8	**13.0**	1900	**52.0**	7600	200	0,52
R1AT-12	10.1002.12	DN19	3/4"	-12	19,0	27,8	**10.5**	1600	**42.0**	6400	240	0,65
R1AT-16	10.1002.16	DN25	1"	-16	25,4	35,9	**8.8**	1300	**35.0**	5200	300	1,00
R1AT-20	10.1002.20	DN31	1.1/4"	-20	32,0	44,0	**6.3**	920	**25.0**	3680	419	1,30
R1AT-24	10.1002.24	DN38	1.1/2"	-24	38,0	50.8	**5.0**	730	**20.0**	2920	500	1,63
R1AT-32	10.1002.32	DN51	2"	-32	50,8	64,3	**4.0**	580	**16.0**	2320	630	2,00
R1AT-40	10.1002.40	DN63	2.1/2"	-40	63,5	75,0	**4.5**	650	**18.0**	2610	760	2,35
R1AT-48	10.1002.48	DN76	3 "	-48	76,2	88,0	**3.5**	510	**14.0**	2030	900	2,55

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules
Balflex® Multicrimp fittings serie BW23/ BF21/P23
AVAILABLE VERSIONS: Smooth cover (Shark Skin) / High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

COVER: U.S. MSHA APPROVED
NOTES: Sizes -40 (2.1/2") and - 48 (3") not included in the standards.
Balflex® hydraulic hose DIN EN 853 1SN / SAE 100R1AT has a very superior working and burst pressure compared with only SAE 100R1AT

BALFLEX / FORZA UNO 1SN - DN5 - DIN EN 853 / SAE 100R1AT / ISO 1436 - 3/16" - WP 25MPa 3700PSI - Flame Resistant - MSHA IC-252/00

FORZA DUE

DIN EN 853 2SN / SAE 100R2AT / ISO 1436 – 10.1004.

High pressure, double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R2AT-03	10.1004.03	DN5	3/16"	-3	4,8	13,4	**41.5**	6100	**165.0**	24400	89	0,32
R2AT-04	10.1004.04	DN6	1/4"	-4	6,3	14,7	**40.0**	5800	**160.0**	23200	100	0,38
R2AT-05	10.1004.05	DN8	5/16"	-5	8,0	16,5	**35.0**	5100	**140.0**	20400	114	0,45
R2AT-06	10.1004.06	DN10	3/8"	-6	9,5	18,7	**33.0**	4800	**132.0**	19200	127	0,53
R2AT-08	10.1004.08	DN12	1/2"	-8	12,7	21,9	**27.5**	4000	**110.0**	16000	178	0,65
R2AT-10	10.1004.10	DN16	5/8"	-10	16,0	25,3	**25.0**	3700	**100.0**	14800	200	0,76
R2AT-12	10.1004.12	DN19	3/4"	-12	19,0	29,3	**21.5**	3200	**86.0**	12800	240	1,00
R2AT-16	10.1004.16	DN25	1"	-16	25,4	37,9	**16.5**	2400	**65.0**	9600	300	1,48
R2AT-20	10.1004.20	DN31	1.1/4"	-20	32,0	47,5	**12.5**	1900	**50.0**	7600	419	2,14
R2AT-24	10.1004.24	DN38	1.1/2"	-24	38,0	54,6	**9.0**	1400	**36.0**	5600	500	2,55
R2AT-32	10.1004.32	DN51	2"	-32	50,8	67,4	**8.0**	1200	**32.0**	4800	630	3,30
R2AT-40	10.1004.40	DN63	2.1/2"	-40	63,5	78,0	**7.0**	1100	**28.0**	4400	760	3,96
R2AT-48	10.1004.48	DN76	3 "	-48	76,2	90,0	**5.5**	800	**22.0**	3200	900	4,96

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braids
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex®2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED
AVAILABLE VERSIONS: Smooth cover (Shark Skin) / High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

NOTES: : Size -48 (3") not included in the standards.
Balflex® hydraulic hose DIN EN 853 2SN / SAE 100R2AT has a very superior working and burst pressure compared with only SAE 100R2AT

BALFLEX FORZA DUE 2SN - DN5 - DIN EN 853 / SAE 100R2AT / ISO 1436 - 3/16" - WP 41.5MPa 6100PSI - Flame Resistant - MSHA IC-252/00

BALPAC 3000

DIN EN 857 1SC / SAE 100R17 / ISO 11237 – 10.1017.

High pressure, single or double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
1 Wire Braid												
R17-04	10.1017.04	DN6	1/4"	-4	6.3	12.5	**22.5**	3300	**90.0**	13200	51	0.22
R17-05	10.1017.05	DN8	5/16"	-5	8.0	13.8	**21.5**	3200	**86.0**	12800	60	0.27
R17-06	10.1017.06	DN10	3/8"	-6	9.5	16.2	**21.0**	3000	**84.0**	12000	64	0.34
R17-08	10.1017.08	DN12	1/2"	-8	12.7	19.4	**21.0**	3000	**84.0**	12000	89	0.42
2 Wire Braid												
R17-10	10.1017.10	DN16	5/8"	-10	15.9	24.2	**21.0**	3000	**84.0**	12000	102	0.51
R17-12	10.1017.12	DN19	3/4"	-12	19.0	28.2	**21.0**	3000	**84.0**	12000	122	0.63
R17-16	10.1017.16	DN25	1"	-16	25.4	35.6	**21.0**	3000	**84.0**	12000	152	1.00

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid on sizes 1/4", 5/16", 3/8" and 1/2" and 2 braids on sizes 5/8", 3/4" and 1"
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

AVAILABLE VERSIONS: Smooth cover (Shark Skin) / High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

BALFLEX / BALPAC - 3000 SAE 100R17 / DIN EN 857 - 1SC / ISO 11237 - DN6 - 1/4" - WP 22.5 MPa 3300 PSI - Flame Resistant - MSHA IC-252/00

BALPAC 3000

DIN EN 857 1SC / ISO 11237 – 10.1018.

High pressure, single steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
1SC-10	10.1018.10	DN16	5/8"	-10	15,9	22,6	**13.0**	1900	**52.0**	7600	200	0.73
1SC-12	10.1018.12	DN19	3/4"	-12	19,0	26,2	**10.5**	1600	**42.0**	6400	240	0.94
1SC-16	10.1018.16	DN25	1"	-16	25,4	33,6	**8.8**	1300	**35.2**	5200	300	1.49

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (- 40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

AVAILABLE VERSIONS: Smooth cover (Shark Skin) / High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

BALFLEX / BALPAC - 3000 DIN EN 857 - 1SC / ISO 11237 - DN16 - 5/8" - WP 13 MPa 1900 PSI - Flame Resistant - MSHA IC-252/00

BALPAC 4000

SAE 100R19 – 10.1020

High pressure, double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R19-04	10.1020.04	DN6	1/4"	-4	6,3	13,0	**28,0**	4000	**112,0**	16000	50	0,27
R19-06	10.1020.06	DN10	3/8"	-6	9,5	17,0	**28,0**	4000	**112,0**	16000	65	0,42
R19-08	10.1020.08	DN12	1/2"	-8	12,7	20,0	**28,0**	4000	**112,0**	16000	90	0,52
R19-10	10.1020.10	DN16	5/8"	-10	16,0	24,0	**28,0**	4000	**112,0**	16000	100	0,63
R19-12	10.1020.12	DN19	3/4"	-12	19,0	28,0	**28,0**	4000	**112,0**	16000	120	0,80

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

AVAILABLE VERSIONS: Smooth cover (Shark Skin) / High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

BALFLEX // BALPAC 4000 SAE 100R19 - DN6 - 1/4" - WP - 28 MPa 4000 PSI - Flame Resistant - MSHA IC-252/00 - DATE

BALPAC PREMIUM

DIN EN 857 2SC / SAE 100R16 / ISO 11237 – 10.1019.

High pressure, double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R16-04	10.1019.04	DN6	1/4"	-4	6,3	13,2	**42.5**	6200	**170**	24800	50	0,27
R16-05	10.1019.05	DN8	5/16"	-5	8,0	15,1	**40**	5800	**160**	23200	57	0,30
R16-06	10.1019.06	DN10	3/8"	-6	9,5	17,0	**35**	5100	**140**	20400	65	0,42
R16-08	10.1019.08	DN12	1/2"	-8	12,7	20,5	**34.5**	5000	**138**	20000	90	0,52
R16-10	10.1019.10	DN116	5/8"	-10	16,0	24,2	**28**	4000	**112**	16000	100	0,63
R16-12	10.1019.12	DN19	3/4"	-12	19,0	28,2	**28**	4000	**112**	16000	120	0,80
R16-16	10.1019.16	DN25	1"	-16	25,4	35,6	**21**	3000	**84**	12000	150	1,22

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

AVAILABLE VERSIONS: Smooth cover (Shark Skin) / High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)
NOTE: For sizes DN16(5/8"), DN19(3/4"), DN25(1"), consider Balflex Balpac Premium. Approved at 1 000 000 impulse cycles at 1.33% WP

BALFLEX // BALPAC - PREMIUM EXCEEDS DIN EN 857 - 2SC / SAE 100R16 / ISO 11237 - DN6 - 1/4" - WP 42.5 MPa 6200 PSI - Flame Resistant - MSHA IC-252/00

BALPAC IMPACTUS

Exceeds DIN EN 857 2SC / Exceeds SAE 100R16 – 10.1010

Extremely high pressure compact, double steel braid reinforced hydraulic hose
Balflex proprietary specification

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R16I-04	10.1010.04	DN6	1/4"	-4	6,3	13,4	**45**	6500	**180**	26000	50	0,27
R16I-05	10.1010.05	DN8	5/16"	-5	8,0	15,0	**42**	6100	**168**	24400	57	0,30
R16I-06	10.1010.06	DN10	3/8"	-6	9,5	17,2	**40**	5700	**160**	22800	65	0,42
R16I-08	10.1010.08	DN12	1/2"	-8	12,7	20,6	**35**	5100	**140**	20400	90	0,52
R16I-10	10.1010.10	DN16	5/8"	-10	16	23,9	**29**	4200	**116**	16800	100	0,63
R16I-12	10.1010.12	DN19	3/4"	-12	19	27,7	**28**	4100	**112**	16400	120	0,80
R16I-16	10.1010.16	DN25	1"	-16	25,4	35,4	**20**	2900	**80**	11600	150	1,22

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

AVAILABLE VERSIONS: Smooth cover (Shark Skin) / High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

BALFLEX // BALPAC - IMPACTUS 2SC-6K EXCEEDS DIN EN 857 - 2SC / EXCEEDS SAE 100R16 / ISO 11237 - DN6 - 1/4" - WP 45 MPa 6500 PSI - Flame Resistant - MSHA IC-252/00

FORZA LIFT

Lift and Elevator complying EN 81/2 - 10.1013

High pressure, single or double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
1 Wire Braid												
LIFT-12	10.1013.12	DN19	3/4"	-12	19,0	27,8	**5,0**	725	**40,0**	5800	240	0,65
LIFT-16	10.1013.16	DN25	1"	-16	25,4	35,9	**5,0**	725	**40,0**	5800	300	1,00
LIFT-20	10.1013.20	DN31	1.1/4"	-20	32,0	44,0	**5,0**	725	**40,0**	5800	419	1,30
2 Wires Braid												
LIFT-24	10.1013.24	DN38	1.1/2"	-24	38,0	54,6	**4,5**	650	**36,0**	5250	500	2,55
LIFT-32	10.1013.32	DN51	2"	-32	50,8	67,4	**4,0**	580	**32,0**	4650	630	3,30

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid on sizes 3/4", 1", 1.1/4" and 2 braids on sizes 1.1/2" and 2"

OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 8:1
TEMPERATURE RANGE: -40°C (-40°F)

APPLICATION: Hydraulic hose for Lift and Elevators
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23

COVER: U.S. MSHA APPROVED

BALFLEX // FORZA LIFT DN31 - EN 81/2 - 1.1/4" - WP - 5 MPa 725 PSI - Flame Resistant - MSHA IC-252/00

FORZA UNO - SHARK SKIN

DIN EN 853 1SN / SAE 100R1AT / ISO 1436 – 10.10S2.

High pressure, single steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R1AT-03-SC	10.10S2.03	DN5	3/16"	-3	4,8	11,4	**25.0**	3700	**100.0**	14800	89	0,23
R1AT-04-SC	10.10S2.04	DN6	1/4"	-4	6,3	13,0	**22.5**	3300	**90.0**	13200	100	0,23
R1AT-05-SC	10.10S2.05	DN8	5/16"	-5	8,0	14,7	**21.5**	3200	**85.0**	12800	114	0,23
R1AT-06-SC	10.10S2.06	DN10	3/8"	-6	9,5	17,2	**18.0**	2700	**72.0**	10800	127	0,33
R1AT-08-SC	10.10S2.08	DN12	1/2"	-8	12,7	20,5	**16.0**	2400	**64.0**	9600	178	0,42
R1AT-10-SC	10.10S2.10	DN16	5/8"	-10	16,0	23,8	**13.0**	1900	**52.0**	7600	200	0,52
R1AT-12-SC	10.10S2.12	DN19	3/4"	-12	19,0	27,8	**10.5**	1600	**42.0**	6400	240	0,65
R1AT-16-SC	10.10S2.16	DN25	1"	-16	25,4	35,9	**8.8**	1300	**35.0**	5200	300	1,00

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules
Balflex® Multicrimp fittings serie BW23/ BF21/P23
AVAILABLE VERSIONS: High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

COVER: U.S. MSHA APPROVED
NOTES: Sizes -40 (2.1/2") and - 48 (3") not included in the standards.
Balflex® hydraulic hose DIN EN 853 1SN / SAE 100R1AT has a very superior working and burst pressure compared with only SAE 100R1AT

BALFLEX FORZA UNO SHARK SKIN 1SN - DN6 - DIN EN 853 / SAE 100R1AT / ISO 1436 - 1/4" - WP 22.5 MPa 3300 PSI - Flame Resistant - MSHA IC-252/00

FORZA DUE - SHARK SKIN

DIN EN 853 2SN / SAE 100R2AT / ISO 1436 – 10.10S4.

High pressure, double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R2AT-03-SC	10.10S4.03	DN5	3/16"	-3	4,8	13,4	**41.5**	6100	**165.0**	24400	89	0,32
R2AT-04-SC	10.10S4.04	DN6	1/4"	-4	6,3	14,7	**40.0**	5800	**160.0**	23200	100	0,38
R2AT-05-SC	10.10S4.05	DN8	5/16"	-5	8,0	16,5	**35.0**	5100	**140.0**	20400	114	0,45
R2AT-06-SC	10.10S4.06	DN10	3/8"	-6	9,5	18,7	**33.0**	4800	**132.0**	19200	127	0,53
R2AT-08-SC	10.10S4.08	DN12	1/2"	-8	12,7	21,9	**27.5**	4000	**110.0**	16000	178	0,65
R2AT-10-SC	10.10S4.10	DN16	5/8"	-10	16,0	25,3	**25.0**	3700	**100.0**	14800	200	0,76
R2AT-12-SC	10.10S4.12	DN19	3/4"	-12	19,0	29,3	**21.5**	3200	**86.0**	12800	240	1,00
R2AT-16-SC	10.10S4.16	DN25	1"	-16	25,4	37,9	**16.5**	2400	**65.0**	9600	300	1,48

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braids
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex®2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED
AVAILABLE VERSIONS: High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

NOTES: : Size -48 (3") not included in the standards.
Balflex® hydraulic hose DIN EN 853 2SN / SAE 100R2AT has a very superior working and burst pressure compared with only SAE 100R2AT

BALFLEX FORZA DUE SHARK SKIN 2SN - DN16 - DIN EN 853 / SAE 100R2AT / ISO 1436 - 5/8" - WP 35 MPa 3700 PSI - Flame Resistant - MSHA IC-252/00

BALPAC 3000 - SHARK SKIN

DIN EN 857 1SC / SAE 100R17 / ISO 11237 – 10.1S17.

High pressure, single or double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
						1 Wire Braid						
R17-04-SC	10.1S17.04	DN6	1/4"	-4	6.3	12.5	**22.5**	3300	**90.0**	13200	51	0.22
R17-05-SC	10.1S17.05	DN8	5/16"	-5	8.0	13.8	**21.5**	3200	**86.0**	12800	60	0.27
R17-06-SC	10.1S17.06	DN10	3/8"	-6	9.5	16.2	**21.0**	3000	**84.0**	12000	64	0.34
R17-08-SC	10.1S17.08	DN12	1/2"	-8	12.7	19.4	**21.0**	3000	**84.0**	12000	89	0.42
						2 Wire Braid						
R17-10-SC	10.1S17.10	DN16	5/8"	-10	15.9	24.2	**21.0**	3000	**84.0**	12000	102	0.51
R17-12-SC	10.1S17.12	DN19	3/4"	-12	19.0	28.2	**21.0**	3000	**84.0**	12000	122	0.63
R17-16-SC	10.1S17.16	DN25	1"	-16	25.4	35.6	**21.0**	3000	**84.0**	12000	152	1.00

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid on sizes 1/4", 5/16", 3/8" and 1/2" and 2 braids on sizes 5/8", 3/4" and 1"
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber

SAFETY FACTOR: 4:1
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23

COVER: U.S. MSHA APPROVED
AVAILABLE VERSIONS: High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

BALFLEX / BALPAC - 3000 SAE 100R17 / DIN EN 857 - 1SC / ISO 11237 - DN6 - 1/4" - WP 22.5 MPa 3300 PSI - Flame Resistant - MSHA IC-252/00

BALPAC PREMIUM - SHARK SKIN

DIN EN 857 2SC / SAE 100R16 / ISO 11237 – 10.1S19.

High pressure, double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R16-04-SC	10.1S19.04	DN6	1/4"	-4	6,3	13,2	**42.5**	6200	**170**	24800	50	0,27
R16-05-SC	10.1S19.05	DN8	5/16"	-5	8,0	15,1	**40**	5800	**160**	23200	57	0,30
R16-06-SC	10.1S19.06	DN10	3/8"	-6	9,5	17,0	**35**	5100	**140**	20400	65	0,42
R16-08-SC	10.1S19.08	DN12	1/2"	-8	12,7	20,5	**34.5**	5000	**138**	20000	90	0,52
R16-10-SC	10.1S19.10	DN116	5/8"	-10	16,0	24,2	**28**	4000	**112**	16000	100	0,63
R16-12-SC	10.1S19.12	DN19	3/4"	-12	19,0	28,2	**28**	4000	**112**	16000	120	0,80
R16-16-SC	10.1S19.16	DN25	1"	-16	25,4	35,6	**21**	3000	**84**	12000	150	1,22

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

AVAILABLE VERSIONS: High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)
NOTE: For sizes DN16(5/8"), DN19(3/4"), DN25(1"), consider Balflex Balpac Premium. Approved at 1 000 000 impulse cycles at 1.33% WP

BALFLEX / BALPAC - PREMIUM EXCEEDS DIN EN 857 - 2SC / SAE 100R16 / ISO 11237 - DN6 - 1/4" - WP 42.5 MPa 6200 PSI - Flame Resistant - MSHA IC-252/00

BALPAC IMPACTUS - SHARK SKIN

Exceeds DIN EN 857 2SC / Exceeds SAE 100R16 – 10.1S10

Extremely high pressure compact, double steel braid reinforced hydraulic hose
Balflex proprietary specification

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R16I-04-SC	10.1S10.04	DN6	1/4"	-4	6,3	13,4	**45**	6500	**180**	26000	50	0,27
R16I-05-SC	10.1S10.05	DN8	5/16"	-5	8,0	15,0	**42**	6100	**168**	24400	57	0,30
R16I-06-SC	10.1S10.06	DN10	3/8"	-6	9,5	17,2	**40**	5700	**160**	22800	65	0,42
R16I-08-SC	10.1S10.08	DN12	1/2"	-8	12,7	20,6	**35**	5100	**140**	20400	90	0,52
R16I-10-SC	10.1S10.10	DN16	5/8"	-10	16	23,9	**29**	4200	**116**	16800	100	0,63
R16I-12-SC	10.1S10.12	DN19	3/4"	-12	19	27,7	**28**	4100	**112**	16400	120	0,80
R16I-16-SC	10.1S10.16	DN25	1"	-16	25,4	35,4	**20**	2900	**80**	11600	150	1,22

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber

SAFETY FACTOR: 4:1
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23

COVER: U.S. MSHA APPROVED
AVAILABLE VERSIONS: High Temperature (Tropic) / Low Temperature (Artic) / Tough Cover (Armourguard)

BALFLEX /// BALPAC - IMPACTUS 2SC-6K SHARK SKIN EXCEEDS DIN EN 857 - 2SC / EXCEEDS SAE 100R16 / ISO 11237 - DN6 - 1/4" - WP 45 MPa 6500 PSI - Flame Resistant - MSHA IC-252/00

Balflex®

BRAKEMASTER R5

SAE 100R5 / SAE J1402 AII – 10.1007.

High pressure hydraulic hose with steel and textile braids reinforcement with rubber impregnated textile cover

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R5-04	10.1007.04	3/16"	-4	4,8	13,2	**20.7**	3100	**82.8**	12400	76	0,19
R5-05	10.1007.05	1/4"	-5	6,3	14,8	**20.7**	3100	**82.8**	12400	86	0,27
R5-06	10.1007.06	5/16"	-6	8,0	17,2	**15.5**	2300	**62.0**	9200	102	0,29
R5-08	10.1007.08	13/32"	-8	10,4	19,5	**13.8**	2100	**55.2**	8400	117	0,36
R5-10	10.1007.10	1/2"	-10	12,7	23,4	**12.1**	1800	**48.3**	7200	140	0,45
R5-12	10.1007.12	5/8"	-12	16,0	27,4	**10.3**	1500	**41.4**	6100	165	0,56
R5-16	10.1007.16	7/8"	-16	22,2	31,4	**5.5**	800	**22.1**	3200	187	0,78
R5-20	10.1007.20	1.1/8"	-20	28,6	38,1	**4.3**	630	**17.2**	2520	229	1,06
R5-24	10.1007.24	1.3/8"	-24	34,9	44,5	**3.4**	500	**13.8**	2000	267	1,45
R5-32	10.1007.32	1.13/16"	-32	46,0	56,4	**2.4**	350	**9.7**	1400	337	1,70
R5-40	10.1007.40	2.3/8"	-40	60,3	73,0	**2.4**	350	**9.7**	1400	610	2,15
R5-48	10.1007.48	3"	-48	76,2	90,5	**1.4**	210	**5.5**	840	838	3,08

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high resistance synthetic textile braids with an intermediate high tensile steel wire braid
OUTER TUBE: impregnation of the outer textile braid with black, oil, weather and abrasion resistant synthetic rubber

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® Multicrimp fittings serie P25

AVAILABLE VERSIONS: High Temperature (Heatmaster) / Rubber Cover (Breakmaster R)

BALFLEX BRAKEMASTER SAE 100R5 / SAE J1402 AII - DOT - 3/16" - WP 20.7 MPa 3100 PSI

2 – MAX JACK

700 BAR JACK HOSE and 1/2" 8000PSI – 10.1029.

High pressure, double steel braid reinforced hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
JH-04	10.1029.04	1/4"	-4	6,3	14,7	**70.0**	10000	**160.0**	23200	100	0,38
JH-06	10.1029.06	3/8"	-6	9,5	18,7	**70.0**	10000	**140.0**	20000	127	0,53
JH-08	10.1029.08	1/2"	-8	12,7	21,9	**55.2**	8100	**110.4**	16200	178	0,65

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braids
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber

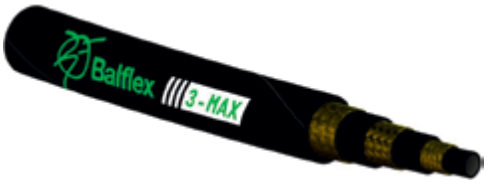
SAFETY FACTOR: 2.3:1 (1/4") and 2:1 (3/8" and 1/2")
APPLICATION: hydraulic jacks

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

BALFLEX 2 - MAX JACK DN6 - 1/4" - WP 70 MPa 10000 PSI - Flame Resistant - MSHA IC-252/00

3 – MAX



10.1005.

Very high pressure, triple steel braid reinforced hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
3M-06	10.1005.06	3/8"	-6	9,5	21.3	**50.0**	7300	**200.0**	29200	180	0,70
3M-08	10.1005.08	1/2"	-8	12,7	24.3	**47.0**	6900	**188.0**	27600	230	0,80
3M-10	10.1005.10	5/8"	-10	16,0	28.0	**41,0**	6100	**164,0**	24000	250	1,05
3M-12	10.1005.12	3/4"	-12	19,0	31.5	**37,5**	5500	**150,0**	22000	300	1,15
3M-16	10.1005.16	1"	-16	25,4	38.7	**33,0**	4800	**132,0**	19200	340	1,60

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 3 high tensile steel wire braids
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber

SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® 2-piece fittings serie 24 with 20 serie ferrules

BALFLEX 3 - MAX DN10 - 3/8" - WP 50 MPa 7250 PSI - DATE

FIRE SUPPRESSION

MEETS PERFORMANCE DIN DIN EN 853 1SN / SAE 100R1AT – 10.1011.

Medium pressure hose for fire suppression

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
FIRE-04	10.1011.04	1/4"	-4	6.3	13.0	**22.5**	3263	**90.0**	13050	100	0.23
FIRE-05	10.1011.05	5/16"	-5	8.0	14.7	**21.5**	3118	**85.0**	12325	114	0.23
FIRE-06	10.1011.06	3/8"	-6	9.5	17.2	**18.0**	2610	**72.0**	10440	127	0.33
FIRE-08	10.1011.08	1/2"	-8	12.7	20.5	**16.0**	2320	**64.0**	9280	178	0.42
FIRE-10	10.1011.10	5/8"	-10	16.0	23.8	**13.0**	1885	**52.0**	7540	200	0.52
FIRE-12	10.1011.12	3/4"	-12	19.0	27.8	**10.5**	1523	**42.0**	6090	240	0.65
FIRE-16	10.1011.16	1"	-16	25.4	35.9	**8.8**	1276	**35.0**	5075	300	1.00

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid

OUTER TUBE: red wrapped; oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1
APPLICATION: mining, forestry and firefighting equipment.

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® c2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED
AVAILABLE VERSIONS: Smooth Cover (Shark Skin)

BALFLEX / FIRE SUPPRESSION HOSE 1SN - DN6 - DIN EN 853 / SAE 100R1AT / ISO 1436 - 1/4" - WP 22.5 MPa 3300 PSI - Flame Resistant - MSHA IC-252/00

BALWASH MICROLINE

Balflex® Balwash MICROLINE 22.0MPa - 10.1WSK.04

High pressure, single wire braid, slim outer diameter for high flexibility, smooth cover hose

#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
10.1WSK.04	1/4"	-4	6,3	11,8	**22,0**	3200	**90.0**	12800	100	0,21

INNER TUBE: seamless hot water resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid

OUTER TUBE: black wrapped, oil, weather and abrasion resistant smooth pin-pricked synthetic rubber
SAFETY FACTOR: 4:1

APPLICATION: hobby and high pressure cleaning profissional equipments

TEMPERATURE RANGE: -60°C (-76°F) +70°C (+158°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23

BALFLEX / BALWASH MICROLINE DN6 - 1/4" - WP 22 MPa 3190 PSI - DATE

BALWASH 1W

Balflex® Balwash 155°C (+311°F) 1W 22.0MPa - 10.1W00

High pressure, single wire braid reinforced high temperature car wash hose

#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
10.1W00.04	1/4"	-4	6,3	13,0	**22,0**	3200	**90.0**	12800	100	0,23
10.1W00.05	5/16"	-5	8,0	14,7	**22,0**	3200	**85.0**	12800	114	0,28
10.1W00.06	3/8"	-6	9,5	17,2	**22,0**	3200	**72.0**	12800	127	0,33
10.1W00.08	1/2"	-8	12,7	20,5	**22,0**	3200	**64.0**	12800	178	0,42

INNER TUBE: seamless hot water resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid

OUTER TUBE: black wrapped, oil, weather and abrasion resistant wrapped pin-pricked synthetic rubber
SAFETY FACTOR: 4:1 in 1/4"; 3.9:1 in 5/16"; 3.3:1 in 3/8"; 2.9:1 in 1/2"

APPLICATION: high temperature and high pressure cleaning profissional equipments

TEMPERATURE RANGE: 0°C (+32°F) +155°C (+311°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23

BALWASH 2W

Balflex® Balwash 155°C (+311°F) 2W 40.0MPa - 10.2W00

High pressure, double wire braid reinforced high temperature car wash hose

#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
10.2W00.04	1/4"	-4	6,3	14,7	**40.0**	5800	**160.0**	23200	100	0,38
10.2W00.05	5/16"	-5	8,0	16,5	**40.0**	5800	**140.0**	23200	114	0,45
10.2W00.06	3/8"	-6	9,5	18,7	**40.0**	5800	**132.0**	23200	127	0,53
10.2W00.08	1/2"	-8	12,7	21,9	**40.0**	5800	**110.0**	23200	178	0,65

INNER TUBE: seamless hot water resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braids

OUTER TUBE: black wrapped, oil, weather and abrasion resistant wrapped pin-pricked synthetic rubber
SAFETY FACTOR: 4:1 in 1/4"; 3.9: 1 in 5/16"; 3.3:1 in 3/8"; 2.9:1 in 1/2"

APPLICATION: high temperature and high pressure cleaning profissional equipments

TEMPERATURE RANGE: 0°C (+32°F) +155°C (+311°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23

BALWASH 1W BLUE

Balflex® Balwash 155°C (+311°F) 1W 22.0MPa - 10.1W00.B

High pressure, single wire braid reinforced high temperature car wash hose

#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
10.1W00.04B	1/4"	-4	6,3	13,0	**22,0**	3200	**90.0**	12800	100	0,23
10.1W00.05B	5/16"	-5	8,0	14,7	**22,0**	3200	**85.0**	12800	114	0,28
10.1W00.06B	3/8"	-6	9,5	17,2	**22,0**	3200	**72.0**	12800	127	0,33
10.1W00.08B	1/2"	-8	12,7	20,5	**22,0**	3200	**64.0**	12800	178	0,42

INNER TUBE: seamless hot water resistant synthetic rubber
REINFORCEMENT: 1 high tensile steel wire braid

OUTER TUBE: blue, oil, weather and abrasion resistant wrapped pin-pricked synthetic rubber
SAFETY FACTOR: 4:1 in 1/4"; 3.9:1 in 5/16"; 3.3:1 in 3/8"; 2.9:1 in 1/2"

APPLICATION: high temperature and high pressure cleaning profissional equipments

TEMPERATURE RANGE: 0°C (+32°F) +155°C (+311°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23

BALWASH 2W BLUE

Balflex® Balwash 155°C (+311°F) 2W 40.0MPa - 10.2W00.B

High pressure, double wire braid reinforced high temperature car wash hose

#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
10.2W00.04B	1/4"	-4	6,3	14,7	**40.0**	5800	**160.0**	23200	100	0,38
10.2W00.05B	5/16"	-5	8,0	16,5	**40.0**	5800	**140.0**	23200	114	0,45
10.2W00.06B	3/8"	-6	9,5	18,7	**40.0**	5800	**132.0**	23200	127	0,53
10.2W00.08B	1/2"	-8	12,7	21,9	**40.0**	5800	**110.0**	23200	178	0,65

INNER TUBE: seamless hot water resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braids

OUTER TUBE: blue, oil, weather and abrasion resistant wrapped pin-pricked synthetic rubber
SAFETY FACTOR: 4:1 in 1/4"; 3.9:1 in 5/16"; 3.3:1 in 3/8"; 2.9:1 in 1/2"

APPLICATION: high temperature and high pressure cleaning profissional equipments
TEMPERATURE RANGE: 0°C (+32°F) +155°C (+311°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
AVAILABLE VERSIONS: Smooth cover (Shark Skin)

FLAT HDPE SPRING GUARD

HYDRAULIC AND INDUSTRIAL HOSE FLAT GUARD – 11.103.

Black Colour, High Density Polyethylene Protection Spring Guard

REFERENCE	#	ID mm	OD mm	mm	Pitch mm	Recommended usage range (OD of hose mm)
SG-09-15	11.103.09-15	12,0	9,6	1,2	9.0	9-13
SG-14-20	11.103.14-20	16,0	13,4	1,3	12.0	13-18
SG-18-24	11.103.18-24	20,0	16,0	2,0	16.0	16-22
SG-22-30	11.103.22-30	25,0	20,6	2,2	22.0	20-27
SG-30-38	11.103.30-38	32,0	27,0	2,5	22.0	27-36
SG-36-45	11.103.36-45	40,0	34,6	2,7	24.0	34-44
SG-44-65	11.103.44-65	50,0	43,0	3,5	30.0	43-45
SG-44-70	11.103.44-70	63,0	55,6	3,7	37.0	55-67
SG-65-78	11.103.65-78	75,0	66,2	4,4	42.0	66-80
SG-80-98	11.103.80-98	90,0	80,2	4,9	45.0	80-98
SG-96-116	11.103.96-116	100,0	99,0	5,5	50.0	99-115

RAW MATERIAL: high density polyethylene resistant to abrasion and UV rays

COLOR: black

TEMPERATURE RANGE: -20°C (-4°F) +95°C (-203°F)

APPLICATION: protection of external rubber layer of hydraulic and industrial hoses, against the early wearing due to abrasion

FLAT HDPE SPRING GUARD

HYDRAULIC AND INDUSTRIAL HOSE FLAT GUARD – 11.103.Y

Yellow colour, High Density Polyethylene Protection Spring Guard

REFERENCE	#	ID mm	OD mm	mm	Pitch mm	Recommended usage range (OD of hose mm)
SG-09-15Y	11.103.09-15Y	12,0	9,6	1,2	9.0	9-13
SG-14-20Y	11.103.14-20Y	16,0	13,4	1,3	12.0	13-18
SG-18-24Y	11.103.18-24Y	20,0	16,0	2,0	16.0	16-22
SG-22-30Y	11.103.22-30Y	25,0	20,6	2,2	22.0	20-27
SG-30-38Y	11.103.30-38Y	32,0	27,0	2,5	22.0	27-36
SG-36-45Y	11.103.36-45Y	40,0	34,6	2,7	24.0	34-44
SG-44-65Y	11.103.44-65Y	50,0	43,0	3,5	30.0	43-45
SG-44-70Y	11.103.44-70Y	63,0	55,6	3,7	37.0	55-67
SG-65-78Y	11.103.65-78Y	75,0	66,2	4,4	42.0	66-80
SG-80-98Y	11.103.80-98Y	90,0	80,2	4,9	45.0	80-98
SG-96-116Y	11.103.96-116Y	100,0	99,0	5,5	50.0	99-115

RAW MATERIAL: high density polyethylene resistant to abrasion and UV rays

COLOR: Yellow

TEMPERATURE RANGE: -20°C (-4°F) +95°C (-203°F)

APPLICATION: protection of external rubber layer of hydraulic and industrial hoses, against the early wearing due to abrasion

Balflex®

HOSESHIELD XT PROTECTIVE SLEEVE

Hydraulic and industrial hose protection sleeve – 11.400

Nylon black colour, US MSHA IC-252/02 approval.

REFERENCE	#	I.D. inch	flat width inch	thickness inch	length ft
HS-017	11.400.017	0.67	1.18	0.03	164
HS-020	11.400.020	0.79	1.42	0.03	164
HS-023	11.400.023	0.91	1.57	0.03	164
HS-025	11.400.025	0.98	1.69	0.03	164
HS-027	11.400.027	1.06	1.77	0.03	164
HS-031	11.400.031	1.22	2.05	0.03	164
HS-033	11.400.033	1.30	2.17	0.03	164
HS-036	11.400.036	1.42	2.36	0.03	164
HS-040	11.400.040	1.57	2.60	0.03	164
HS-044	11.400.044	1.73	2.91	0.03	164
HS-047	11.400.047	1.85	3.03	0.03	164
HS-053	11.400.053	2.09	3.39	0.03	164
HS-055	11.400.055	2.17	3.54	0.03	164
HS-060	11.400.060	2.36	3.86	0.03	164
HS-066	11.400.066	2.60	4.17	0.03	164
HS-073	11.400.073	2.87	4.65	0.03	164
HS-078	11.400.078	3.07	4.96	0.03	164
HS-085	11.400.085	3.35	5.35	0.03	164
HS-093	11.400.093	3.66	5.91	0.03	164
HS-112	11.400.112	4.41	7.01	0.03	164

CONSTRUCTION: 100% high tensile Nylon 6 Multifilament Yarn into a high tenacity braid

THICKNESS: 0.031 inch thick overlapping layers of synthetic Nylon 6 Yarn with 840 denier yarn

ABRASION RESISTANCE: according to ISO 6945, for more than 50 000 cycles
STRECHING BREAK: up to 33 to 43%
TEMPERATURE: -40ºC (-40ºF) / +120ºC (+248ºF)

Spiral Hydraulic Hoses

Balflex®

Spiral Hydraulic Hoses

Balflex® hydraulic Spiral hoses are produced to Balflex® specifications and according to ISO 3862, SAE J517 and EN 856 standards. They cover a wide variety of very high pressure applications, in rubber, steel spiral reinforcement, for petroleum and water base hydraulic fluids.

Balflex® optimized the production of these hoses and their compatibility with a wide range of connectors, in order to assure the highest performance and the most extensive range of applications.

General Guidelines

Balflex® hydraulic Spiral hoses are designed with a safety factor of 4:1 relating minimum burst pressure and recommended working pressure. Working pressure and nominal diameter are always branded on the hose.

Hydraulic hoses are designed for petroleum base hydraulic fluids applications with a temperature range of –40°C (-40°F) to +100°C (+212°F). Special rubber compounds and other lining materials allow to exceed these limits. Hydraulic hoses may also be used for water base hydraulic fluids if the working temperature does not exceed +70°C (+158°F). With the presence of air in the fluid working temperature should be reduced to +60°C (+140°F).

Selection, assembly and installation of hydraulic Spiral hoses should follow **Balflex®** recommendations and SAE J1273 and DIN 20066 standards. **Hydraulic hose assemblies should always be inspected and hydraulically tested before installation**. All hydraulics systems should be tested against leakage and malfunction in an appropriate area after any intervention.

Installations that do not comply with an adequate geometry of the hose assembly may reduce significantly the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose specifications may shorten drastically the hose lifetime.

The failure of a hydraulic Spiral hose assembly may be dangerous and expose people and property to irreversible damage. Among other occurrences that must be prevented are the high velocity and high temperature projections of hydraulic fluid, the projection of couplings and it's parts, the whipping of unrestrained hose, spillage and combustion of the fluid, electrical shocks through contact with electrical sources, immovability, fall or sudden movement of masses controlled by the hydraulic system.

Table 1: Rated working pressure at 20°C (+68°F) of Balflex® hydraulic Spiral hoses (MPa / PSI)

Balflex	Standard	1/4" -4 DN5	3/8" -6 DN6	1/2" -8 DN12	5/8" -10 DN16	3/4" -12 DN19	1" -16 DN25	1.1/4" -20 DN31	1.1/2" -24 DN38	2" -32 DN51
BALMASTER	DIN EN 856 R12 / ISO 3862 / SAE J517 R12		28.0	28.0	28.0	28.0	28.0	21.0	17.5	17.5
			4000	4000	4000	4000	4000	3100	2600	2600
BALMASTER	DIN EN 856 4SP / ISO 3862	45.0	44.5	41.5	35.0	38.0	32.0	21.0	21.0	17.5
		6600	6500	6100	5100	5600	4700	3100	3100	2600
POWERSPIR	DIN EN 856 4SH / ISO 3862					42.0	42.0	35.0	30.0	25.0
						6100	6100	5100	4400	3700
POWERSPIR	DIN EN 856 R13 / ISO 3862 / SAE J517 R13					42.0	42.0	35.0	35.0	35.0
						6100	6100	5100	4400	3700
POWERSPIR	ISO 3862 / SAE J517 R15		42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0
			6100	6100	6100	6100	6100	6100	6100	6100

Table 2: Pressure Conversion

bar	0,00134	0,0025	0,0339	0,069	0,098	**1,00**	1,01	10,0	100
PSI	0,0194	0,036	0,492	**1,001**	1,421	14,504	14,69	145,04	1450,38
MPa	-	-	0,003	0,007	0,0098	0,10	0,101	**1,00**	10,00
1 atm	0,001	0,0025	0,0335	0,068	0,097	0,987	**1**	9,87	98,69
m H20 (20°C)	0,014	0,026	0,346	0,704	**1**	10,207	10,34	102,074	3.4
in Hg (20°C)	0,0396	0,074	**1,001**	2,04	2,89	29,53	29,91	295,3	3.4
in H20 (20°C)	0,538	**1,005**	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
mm Hg (20°C)	**1,005**	1,88	25,43	51,75	73,51	750,06	759,81	7500,62	75006,17

Example: 1 MPa = 145,04 PSI ; 1 MPa = 10,0 bar

Table 3: Conversion Factors

Unit	Factor	Converted Unit
1 m (meter)	1000	mm (millimeter)
1 m (meter)	1,09362	yard
1 m (meter)	3,28084	foot
1 mm (millimeter)	0,001	m (meter)
1 mm (millimeter)	0,03937	Inch
1 inch	25,4	mm (millimeter)
1 inch	0,0254	m (meter)
1 foot	0,3048	m (meter)
1 yard	0,9144	m (meter)
F°	C° x 1,8 + 32	F° (Fahrenheit)
C°	(F° - 32): 1,8	C° (Celsius)

Example: : 1 m = 3,28084 feet ; 1 inch = 25,4 mm
Example: : +100°C = +212°F

Fluid Compatibility and Resistance Chart for Balflex Spiral Hydraulic Hoses

● Recommended ● Recommended with Restrictions ● Not Recommended

Acetic Acid	
Acetic Acid (30%)	●
Acetone	●
Acetylene	●
Ammonia, Gas (Hot)	●
Ammonia, Liquid	●
Ammoniumchloride	
Amyl Acetate	●
Aniline	●
Animal Oils	●
Benzol / Benzene	●
Butane	●
Butyl Acetate	●
Butyl Alcohol / Butanol	●
Calcium Chloride Solutions	
Carbon Dioxide	●
Carbon Disulfide	●
Carbonates	●
Caustic Soda	●
Chlorinated Solvents	●
Chlorine	●
Chloroform	●
Citric and Solutions	●
Compressed Air	●
Cyclohexane	●
Crude Petroleum Oil	●
Dioctyl Phthalate	
Diesel Fuel	●
Ethers	●
Ethyl Acetate	●
Ethyl Alcohol	●
Ethyl Chloride	●

Ethyl Glycol	●
Ethyleneoxide	●
Fluorine	●
Formaldehyde	●
Formaldehyde 40%	●
Fuel Oil	●
Gaseous Hydrogen	●
Gasoline	●
Glycerin / Glycerol	●
Glycol to 66°C	●
Hexane	●
Hydraulic Oil	●
Hydrochloric Acid 37%	●
Hydroger Peroxide (Dil.)	●
Hydroger Peroxide (Conc.)	●
Isocyanates	
Isopropil Alcohol	●
Kerosene	●
Liquid Oxygen	●
LPG	●
Lubricating Oils	●
Mercury	●
Methyl Alcohol / Methanol	●
Methyl Chloride (Cold)	●
Methyl Ethyl Khetone	●
Mineral Oils	●
Naphtha	●
Naphthalene	●
Natural Gas	●
Nitric Acid (Dil.)	●
Nitric Acid (Conc.)	●
Nitrobenzen	●

Oil of Turpentine	●
Oleic Acid	●
Oxalic Acid	●
Perchloroethylene	●
Phenol	●
Phosphoric Acid (10%)	●
Phosphoric Acid (70%)	●
Phosphate Ester Base Oil	●
Saturated Steam	●
Sea Water	●
Silicone Oils	●
Soap Solutions	●
Soda	●
Sodium Chloride Solutions	●
Sodium Hydroxide 20%	●
Sodium Hypochloryde 10%	●
Sulphur	●
Sulphur Dioxide	●
Sulphuric Acid up to 50%	●
Sulphuric Acid above 50%	●
Toluene	●
Trichloroethylene	●
Vegetable Greases	●
Water	●
Xylene	●

The following data is based on tests and believed to be reliable; however the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested. Note: All data based on 20°C/70°F unless otherwise noted.

Balflex®

BALMASTER BESTFLEX 4SP

DIN EN 856 4SP / ISO 3862 - 10.1008.-F

Very high pressure, extra flexible, four steel wire spirals reinforced hydraulic hose

REFERENCE	#	inch	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
4SP-04-F	10.1008.04F	DN6	1/4"	-4	6.5	17,4	**45,0**	6600	**180,0**	26400	150	0,70
4SP-06-F	10.1008.06F	DN10	3/8"	-6	9.6	19,9	**44,5**	6500	**178,0**	26000	180	0,80
4SP-08-F	10.1008.08F	DN12	1/2"	-8	12,9	22,8	**41,5**	6100	**166,0**	24400	230	1,15
4SP-10-F	10.1008.10F	DN16	5/8"	-10	16.0	26,4	**35,0**	5100	**140,0**	20400	250	1,26
4SP-12-F	10.1008.12F	DN19	3/4"	-12	19.2	30,6	**38,0**	5600	**152,0**	22400	300	1,44
4SP-16-F	10.1008.16F	DN25	1"	-16	25,6	37,7	**32,0**	4700	**128,0**	18800	340	2,15
4SP-20-F	10.1008.20F	DN31	1.1/4"	-20	32.1	48,6	**21,0**	3100	**84,0**	12400	460	2,75
4SP-24-F	10.1008.24F	DN38	1.1/2"	-24	38.3	55,0	**21,0**	3100	**84,0**	12400	560	3,35
4SP-32-F	10.1008.32F	DN51	2"	-32	51.0	68,1	**17,5**	2600	**70,0**	10400	660	4,60

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 4 spirals of high tensile steel wire
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® 2-piece fittings serie 23/24 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23
*On sizes – 6 (3/8") and - 8 (1/2") the Balflex® BALMASTER DIN EN 856 4SP and Balflex® POWERSPIR SAE 100R15 hoses are the same, and they are branded Balflex® POWERSPIR.

AVAILABLE VERSIONS: tough cover / Armourguard

BALFLEX BALMASTER BESTFLEX DIN EN 856 - 4SP - DN6 - 1/4" - ISO 3862 - WP 45 MPa 6600 PSI - Flame Resistant - MSHA IC-252/00

POWERSPIR BESTFLEX 4SH

DIN EN 856 4SH / ISO 3862 - 10.1009.-F

Very high pressure, extra flexible, four steel wire spirals reinforced hydraulic hose

REFERENCE	#	inch	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
4SH-12-R13/15-F	10.1009.12F	DN19	3/4"	-12	19.2	30,8	**42,0**	6100	**168,0**	24400	280	1,56
4SH-16-R13/15-F	10.1009.16F	DN25	1"	-16	25,6	37,6	**42,0**	6100	**168,0**	24000	340	2,09
4SH-20-F	10.1009.20F	DN31	1.1/4"	-20	32.1	44,5	**35,0**	5100	**140,0**	20400	460	2,57
4SH-24-F	10.1009.24F	DN38	1.1/2"	-24	38.3	51,7	**30,0**	4400	**120,0**	17600	560	3,44
4SH-32-F	10.1009.32F	DN51	2"	-32	51.0	66,0	**25,0**	3700	**100,0**	14800	700	4,90

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 4 spirals of very high tensile steel wire
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 24/26 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/JJ
AVAILABLE VERSIONS: tough cover / Armourguard

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

*On sizes – 12 (3/4") and – 16 (1") the Balflex® POWERSPIR DIN EN 856 4SH and SAE 100R13 and SAE 100R15 hoses are the same. The working pressure of Balflex® POWERSPIR DIN EN 856 4SH / SAE 100R13 / SAE 100R15 3/4"and 1"are higher than standard SAE 100R13.

BALMASTER BESTFLEX R12

SAE 100R12 / DIN EN 856 R12 / ISO 3862 - 10.1012.-F

Very high pressure, extra flexible, four steel wire spirals reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R12-06-F	10.1012.06F	DN10	3/8"	-6	9.6	19,6	**28,0**	4000	**112,0**	16000	120	0,80
R12-08-F	10.1012.08F	DN12	1/2"	-8	12,9	23,1	**28,0**	4000	**112,0**	16000	170	1,15
R12-10-F	10.1012.10F	DN16	5/8"	-10	16.0	27,0	**28,0**	4000	**112,0**	16000	190	1,26
R12-12-F	10.1012.12F	DN19	3/4"	-12	19.2	30,1	**28,0**	4000	**112,0**	16000	230	1,44
R12-16-F	10.1012.16F	DN25	1"	-16	25,6	37,3	**28,0**	4000	**112,0**	16000	290	2,15
R12-20-F	10.1012.20F	DN31	1.1/4"	-20	32.1	46,5	**21,0**	3100	**84,0**	12400	400	2,75
R12-24-F	10.1012.24F	DN38	1.1/2"	-24	38.3	53,0	**17,5**	2600	**70,0**	10400	480	3,35
R12-32-F	10.1012.32F	DN51	2"	-32	51.0	66,5	**17,5**	2600	**70,0**	10400	630	4,60

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 4 spirals of high tensile steel wire

OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® 2-piece fittings serie 23/24 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23
AVAILABLE VERSIONS: tough cover / Armourguard

BALFLEX BALMASTER BESTFLEX SAE 100R12 / DIN EN 856 - DN10 - 3/8" - ISO 3862 - WP 28 MPa 4000 PSI - Flame Resistant - MSHA IC-252/00

POWERSPIR BESTFLEX R13

SAE 100R13 / DIN EN 856 R13 / ISO 3862 – 10.1014.-F

Very high pressure, extra flexible, four or six steel wire spirals reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
4SH-12-R13/15-F	10.1009.12F	DN19	3/4"	-12	19.2	30,8	**42,0**	6100	**168,0**	24400	280	1,56
4SH-16-R13/15-F	10.1009.16F	DN25	1"	-16	25,6	37,6	**42,0**	6100	**168,0**	24000	340	2,09
R13-20-F	10.1014.20F	DN31	1.1/4"	-20	32.1	49,4	**35,0**	5100	**140,0**	20400	420	3,90
R13-24-F	10.1014.24F	DN38	1.1/2"	-24	38.3	56,9	**35,0**	5100	**140,0**	20400	500	4,96
R13-32-F	10.1014.32F	DN51	2"	-32	51.0	70,9	**35,0**	5100	**140,0**	20400	620	7,09

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 4 or 6 spirals of high tensile steel wire
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)
COUPLINGS: Balflex® 2-piece fittings serie 24/26 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/JJ

AVAILABLE VERSIONS: tough cover / Armourguard
NOTES: According to ISO 3862/EN 856 type R13/SAE J517 type R13, the Balflex® POWERSPIR SAE 100R13 hose is of 4 steel wire spirals on sizes –12 (3/4") and –16 (1") and of 6 steel wire spirals on sizes –20 (1.1/4"), –24 (1.1/2") and –32 (2").

*On sizes –12 (3/4") and –16 (1") the Balflex® POWERSPIR DIN EN 856 4SH and SAE 100R13 and SAE 100R15 hoses are the same. The working pressure of Balflex® POWERSPIR DIN EN 856 4SH SAE 100R13 3/4" and Balflex® POWERSPIR DIN EN 856 4SH SAE 100R13 1" are higher than standard SAE 100R13.

BALFLEX POWERSPIR BESTFLEX SAE 100R13 / DIN EN 856 / ISO 3862 - DN38 - 1.1/2" - WP 35 MPa 5000 PSI - MSHA IC-252/00

POWERSPIR BESTFLEX R15

SAE 100R15 / ISO 3862 – 10.1016.-F

Very high pressure, extra flexible, four or six steel wire spirals reinforced hydraulic hose

REFERENCE	#	inch	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R15-06-F	10.1016.06F	DN10	3/8"	-6	9,7	22,0	**42,0**	6100	**168,0**	24000	140	0,80
R15-08-F	10.1016.08F	DN12	1/2"	-8	12,9	25,2	**42,0**	6100	**168,0**	24000	190	1,15
R15-10-F	10.1016.10F	DN16	5/8"	-10	16,0	27,2	**42,0**	6100	**168,0**	24000	200	1,35
4SH-12-R13/15-F	10.1009.12F	DN19	3/4"	-12	19.2	31,5	**42,0**	6100	**168,0**	24000	224	1,56
4SH-16-R13/15-F	10.1009.16F	DN25	1"	-16	25,6	38,4	**42,0**	6100	**168,0**	24000	272	2,10
R15-20-F	10.1016.20F	DN31	1.1/4"	-20	32,1	50,2	**42,0**	6100	**168,0**	24000	400	3,65
R15-24-F	10.1016.24F	DN38	1.1/2"	-24	38,3	56,8	**42,0**	6100	**168,0**	24000	450	4,75
R15-32-F	10.1016.32F	DN51	2"	-32	51,0	71,5	**42,0**	6100	**168,0**	24000	650	6,62

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 4 or 6 spirals of high tensile steel wire
OUTER TUBE: black wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: 120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 24/26 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/JJ
AVAILABLE VERSIONS: tough cover / Armourguard

NOTE: On size –12 (3/4") and -16 (1") the Balflex® POWERSPIR DIN EN 856 4SH and SAE 100R13 and SAE 100R15 hoses are the same

High Temperature Hydraulic Hose

Balflex®

High Temperature Hydraulic Hose

Balflex® hydraulic high temperature hoses are produced to Balflex® specifications and according to ISO 1436, ISO 11237, SAE J517 and EN 853 to EN 857 standards. They cover a wide variety of medium pressure applications, in rubber, steel reinforcement, for petroleum and water base hydraulic fluids.

Balflex® optimized the production of these hoses and their compatibility with a wide range of connectors, in order to assure the highest performance and the most extensive range of applications.

General Guidelines

Balflex® hydraulic high temperature hoses are designed with a safety factor of 4:1 relating minimum burst pressure and recommended working pressure.. Working pressure and nominal diameter are always branded on the hose.

Hydraulic high temperature hoses are designed for petroleum base hydraulic fluids applications with a temperature range of –40°C (-40°F) to +150°C (+302°F) with intermittent service and –40°C (-40°F) to +135°C (+275°F) continuous service. Hydraulic hoses may also be used for water base hydraulic fluids if the working temperature does not exceed +120°C (+248°F). With the presence of air in the fluid working temperature should be reduced to +60°C (+140°F).

Selection, assembly and installation of hydraulic steel wire braid hoses should follow **Balflex®** recommendations and **SAE J1273** and **DIN 20066** standards. **Hydraulic hose assemblies should always be inspected and hydraulically tested before installation.** All hydraulics systems should be tested against leakage and malfunction in an appropriate area after any intervention.

Installations that do not comply with an adequate geometry of the hose assembly may reduce significantly the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose specifications may shorten drastically the hose lifetime.

The failure of a hydraulic steel wire braid hose assembly may be dangerous and expose people and property to irreversible damage. Among other occurrences that must be prevented are the high velocity and high temperature projections of hydraulic fluid, the projection of couplings and it's parts, the whipping of unrestrained hose, spillage and combustion of the fluid, electrical shocks through contact with electrical sources, immovability, fall or sudden movement of masses controlled by the hydraulic system.

Table 1a: Rated working pressure at 20˚C (+68˚F) of Balflex® hydraulic high temperature hoses (MPa / PSI)

Balflex	Standard	3/16" -3 DN5	1/4" -4 DN6	5/16" -5 DN8	3/8" -6 DN10	1/2" -8 DN12	5/8" -10 DN16	3/4" -12 DN19	1" -16 DN25	1.1/4" -20 DN31	1.1/2" -24 DN38	2" -32 DN51
FORZA UNO TROPIC	DIN EN 853 1SN / ISO 1436 / SAE J517 R1AT	25.0	22.5	21.5	18.0	16.0	13.0	10.5	8.8	6.3	5.0	4.0
		3700	3300	3200	2700	2400	1900	1600	1300	920	730	580
FORZA DUE TROPIC	DIN EN 853 2SN / ISO 1436 / SAE J517 R2AT	41.5	40.0	35.0	33.0	27.5	25.0	21.5	16.5	12.5	9.0	8.0
		6100	5800	5100	4800	4000	3700	3200	2400	1900	1400	1200
BALPAC PREMIUM TROPIC	DIN EN 857 2SC / ISO 11237 / SAE J517 R16		40.0	35.0	33.0	27.6	25.0	21.5	16.5			
			5800	5100	4800	4100	3700	3300	2400			

Table 1b: Rated working pressure at 20˚C (+68˚F) of Balflex® hydraulic high temperature hoses (MPa / PSI)

Balflex	type	3/16" -4	1/4" -5	5/16" -6	13/32" -8	1/2" -10	5/8" -12	7/8" -16	1.1/8" -20	1.3/8" -24	1.13/16" -32	23/" -40	3" -48
BRAKEMASTER	SAE J517 R5 / SAE J1402	20.7	20.7	15.5	13.8	12.1	10.3	5.5	4.3	3.4	2.4	2.4	1.4
		3002	3002	2248	2001	1755	1464	798	624	493	348	348	203

Table 2: Pressure Conversion

bar	0,00134	0,0025	0,0339	0,069	0,098	**1,00**	1,01	10,0	100
PSI	0,0194	0,036	0,492	**1,001**	1,421	14,504	14,69	145,04	1450,38
MPa	-	-	0,003	0,007	0,0098	0,10	0,101	**1,00**	10,00
1 atm	0,001	0,0025	0,0335	0,068	0,097	0,987	**1**	9,87	98,69
m H20 (20°C)	0,014	0,026	0,346	0,704	**1**	10,207	10,34	102,074	3.4
in Hg (20°C)	0,0396	0,074	**1,001**	2,04	2,89	29,53	29,91	295,3	3.4
in H20 (20°C)	0,538	**1,005**	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
mm Hg (20°C)	**1,005**	1,88	25,43	51,75	73,51	750,06	759,81	7500,62	75006,17

Example: 1 MPa = 145,04 PSI ; 1 MPa = 10,0 bar

Table 3: Conversion Factors

Unit	Factor	Converted Unit
1 m (meter)	1000	mm (millimeter)
1 m (meter)	1,09362	yard
1 m (meter)	3,28084	foot
1 mm (millimeter)	0,001	m (meter)
1 mm (millimeter)	0,03937	Inch
1 inch	25,4	mm (millimeter)
1 inch	0,0254	m (meter)
1 foot	0,3048	m (meter)
1 yard	0,9144	m (meter)
F°	C° x 1,8 + 32	F° (Fahrenheit)
C°	(F° - 32): 1,8	C° (Celsius)

Example: : 1 m = 3,28084 feet ; 1 inch = 25,4 mm
Example: : +100°C = +212°F

Fluid Compatibility and Resistance Chart for Balflex Steel Wire Braid Hydraulic Hoses

● Recommended ● Recommended with Restrictions ● Not Recommended

Acetic Acid	
Acetic Acid (30%)	●
Acetone	●
Acetylene	●
Ammonia, Gas (Hot)	●
Ammonia, Liquid	●
Ammoniumchloride	
Amyl Acetate	●
Aniline	●
Animal Oils	●
Benzol / Benzene	●
Butane	●
Butyl Acetate	●
Butyl Alcohol / Butanol	●
Calcium Chloride Solutions	
Carbon Dioxide	●
Carbon Disulfide	●
Carbonates	●
Caustic Soda	●
Chlorinated Solvents	●
Chlorine	●
Chloroform	●
Citric and Solutions	●
Compressed Air	●
Cyclohexane	●
Crude Petroleum Oil	●
Dioctyl Phthalate	
Diesel Fuel	●
Ethers	●
Ethyl Acetate	●
Ethyl Alcohol	●
Ethyl Chloride	●

Ethyl Glycol	●
Ethyleneoxide	●
Fluorine	●
Formaldehyde	●
Formaldehyde 40%	●
Fuel Oil	●
Gaseous Hydrogen	●
Gasoline	●
Glycerin / Glycerol	●
Glycol to 66°C	●
Hexane	●
Hydraulic Oil	●
Hydrochloric Acid 37%	●
Hydroger Peroxide (Dil.)	●
Hydroger Peroxide (Conc.)	●
Isocyanates	
Isopropil Alcohol	●
Kerosene	●
Liquid Oxygen	●
LPG	●
Lubricating Oils	●
Mercury	●
Methyl Alcohol / Methanol	●
Methyl Chloride (Cold)	●
Methyl Ethyl Khetone	●
Mineral Oils	●
Naphtha	●
Naphthalene	●
Natural Gas	●
Nitric Acid (Dil.)	●
Nitric Acid (Conc.)	●
Nitrobenzen	●

Oil of Turpentine	●
Oleic Acid	●
Oxalic Acid	●
Perchloroethylene	●
Phenol	●
Phosphoric Acid (10%)	●
Phosphoric Acid (70%)	●
Phosphate Ester Base Oil	●
Saturated Steam	●
Sea Water	●
Silicone Oils	●
Soap Solutions	●
Soda	●
Sodium Chloride Solutions	●
Sodium Hydroxide 20%	●
Sodium Hypochloryde 10%	●
Sulphur	●
Sulphur Dioxide	●
Sulphuric Acid up to 50%	●
Sulphuric Acid above 50%	●
Toluene	●
Trichloroethylene	●
Vegetable Greases	●
Water	●
Xylene	●

The following data is based on tests and believed to be reliable; however the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested. Note: All data based on 20°C/70°F unless otherwise noted.

Balflex®

FORZA UNO TROPIC

DIN EN 853 1SN / SAE 100R1AT / ISO 1436 – 10.1002.-HT

High pressure, high temperature, single steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R1AT-03-HT	10.1002.03HT	DN5	3/16"	-3	4,8	11,4	**25.0**	3700	**100.0**	14800	89	0,23
R1AT-04-HT	10.1002.04HT	DN6	1/4"	-4	6,3	13,0	**22.5**	3300	**90.0**	13200	100	0,23
R1AT-05-HT	10.1002.05HT	DN8	5/16"	-5	8,0	14,7	**21.5**	3200	**85.0**	12800	114	0,23
R1AT-06-HT	10.1002.06HT	DN10	3/8"	-6	9,5	17,2	**18.0**	2700	**72.0**	10800	127	0,33
R1AT-08-HT	10.1002.08HT	DN12	1/2"	-8	12,7	20,5	**16.0**	2400	**64.0**	9600	178	0,42
R1AT-10-HT	10.1002.10HT	DN16	5/8"	-10	16,0	23,8	**13.0**	1900	**52.0**	7600	200	0,52
R1AT-12-HT	10.1002.12HT	DN19	3/4"	-12	19,0	27,8	**10.5**	1600	**42.0**	6400	240	0,65
R1AT-16-HT	10.1002.16HT	DN25	1"	-16	25,4	35,9	**8.8**	1300	**35.0**	5200	300	1,00
R1AT-20-HT	10.1002.20HT	DN31	1.1/4"	-20	32,0	44,0	**6.3**	920	**25.0**	3680	419	1,30
R1AT-24-HT	10.1002.24HT	DN38	1.1/2"	-24	38,0	50.8	**5.0**	730	**20.0**	2920	500	1,63
R1AT-32-HT	10.1002.32HT	DN51	2"	-32	50,8	64,3	**4.0**	580	**16.0**	2320	630	2,00

INNER TUBE: seamless oil resistant synthetic rubber resistant to high temperature
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: blue wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: intermittent: -40°C (-40°F) +150°C (+302°F); continuous service: +125°C (+257°F) Max. temperature recommended for water base hydraulic fluids: +120°C (+248°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

NOTES: this hose is a high temperature hydraulic hose but cannot be used with phosphate-ester based oils, and cannot be used in aicrafts and compressors working with air at +60°C

FORZA DUE TROPIC

DIN EN 853 2SN / SAE 100R2AT / ISO 1436 – 10.1004.-HT

High pressure, high temperature, double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID	OD	MPa				MIN BEND RAD	KG
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R2AT-03-HT	10.1004.03HT	DN5	3/16"	-3	4,8	13,4	**41.5**	6100	**165.0**	24400	89	0,32
R2AT-04-HT	10.1004.04HT	DN6	1/4"	-4	6,3	14,7	**40.0**	5800	**160.0**	23200	100	0,38
R2AT-05-HT	10.1004.05HT	DN8	5/16"	-5	8,0	16,5	**35.0**	5100	**140.0**	20400	114	0,45
R2AT-06-HT	10.1004.06HT	DN10	3/8"	-6	9,5	18,7	**33.0**	4800	**132.0**	19200	127	0,53
R2AT-08-HT	10.1004.08HT	DN12	1/2"	-8	12,7	21,9	**27.5**	4000	**110.0**	16000	178	0,65
R2AT-10-HT	10.1004.10HT	DN16	5/8"	-10	16,0	25,3	**25.0**	3700	**100.0**	14800	200	0,76
R2AT-12-HT	10.1004.12HT	DN19	3/4"	-12	19,0	29,3	**21.5**	3200	**86.0**	12800	240	1,00
R2AT-16-HT	10.1004.16HT	DN25	1"	-16	25,4	37,9	**16.5**	2400	**65.0**	9600	300	1,48
R2AT-20-HT	10.1004.20HT	DN31	1.1/4"	-20	32,0	47,5	**12.5**	1900	**50.0**	7600	419	2,14
R2AT-24-HT	10.1004.24HT	DN38	1.1/2"	-24	38,0	54,6	**9.0**	1400	**36.0**	5600	500	2,55
R2AT-32-HT	10.1004.32HT	DN51	2"	-32	50,8	67,4	**8.0**	1200	**32.0**	4800	630	3,30

INNER TUBE: seamless oil resistant synthetic rubber resistant to high temperature
REINFORCEMENT: 2 high tensile steel wire braids
OUTER TUBE: blue wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: intermittent: -40°C (-40°F) +150°C (+302°F); continuous service: +125°C (+257°F) Max. temperature recommended for water base hydraulic fluids: +120°C (+248°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

NOTES: this hose is a high temperature hydraulic hose but cannot be used with phosphate-ester based oils, and cannot be used in aicrafts and compressors working with air at +60°C

BALFLEX /// FORZA DUE - TROPIC <150°C / 275°F> - 2SN - DN5 - DIN EN 853 / SAE 100R2AT / ISO 1436 - 3/16" - WP 41,5 MPa 6.020 PSI - MSHA IC-252/00

Balflex®

BALPAC PREMIUM TROPIC

DIN EN 857 2SC / SAE 100R16 / ISO 11237 – 10.1019.-HT

High pressure, high temperature, double steel braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R16-04-HT	10.1019.04HT	DN6	1/4"	-4	6,3	13,2	**40.0**	5800	**160.0**	23200	50	0,27
R16-05-HT	10.1019.05HT	DN8	5/16"	-5	8,0	15,1	**35.0**	5100	**140.0**	20400	57	0,30
R16-06-HT	10.1019.06HT	DN10	3/8"	-6	9,5	17,0	**33.0**	4800	**132.0**	19200	65	0,42
R16-08-HT	10.1019.08HT	DN12	1/2"	-8	12,7	20,5	**27.6**	4100	**110.4**	16400	90	0,52
R16-10-HT	10.1019.10HT	DN16	5/8"	-10	16,0	24,2	**25.0**	3700	**100.0**	14800	100	0,63
R16-12-HT	10.1019.12HT	DN19	3/4"	-12	19,0	28,2	**21.5**	3200	**86.0**	12800	120	0,80
R16-16-HT	10.1019.16HT	DN25	1"	-16	25,4	35,6	**16.5**	2400	**66.0**	9600	150	1,22

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: blue wrapped, oil, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F); Intermittent service: +120°C (+248°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules. Balflex® Multicrimp fittings serie BW23/BF21/P23
COVER: U.S. MSHA APPROVED

NOTES: this hose is a high temperature hydraulic hose but cannot be used with phosphate-ester based oils, and cannot be used in aicrafts and compressors working with air at +60°C

BRAKEMASTER R5R HEATMASTER

SAE 100R5R – 10.1006.-HT

High pressure, high temperature hydraulic hose with steel and textile braid reinforcement with blue pin-pricked rubber cover

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R5R-04-HT	10.1006.04HT	3/16"	-4	4,8	13,2	**20.7**	3100	**82.8**	12400	76	0,19
R5R-05-HT	10.1006.05HT	1/4"	-5	6,3	14,8	**20.7**	3100	**82.8**	12400	86	0,27
R5R-06-HT	10.1006.06HT	5/16"	-6	8,0	17,2	**15.5**	2300	**62.0**	9200	102	0,29
R5R-08-HT	10.1006.08HT	13/32"	-8	10,4	19,5	**13.8**	2100	**55.2**	8400	117	0,36
R5R-10-HT	10.1006.10HT	1/2"	-10	12,7	23,4	**12.1**	1800	**48.3**	7200	140	0,45
R5R-12-HT	10.1006.12HT	5/8"	-12	16,0	27,4	**10.3**	1500	**41.4**	6100	165	0,56
R5R-16-HT	10.1006.16HT	7/8"	-16	22,2	31,4	**5.5**	800	**22.1**	3200	187	0,78
R5R-20-HT	10.1006.20HT	1.1/8"	-20	28,6	38,1	**4.3**	630	**17.2**	2520	229	1,06
R5R-24-HT	10.1006.24HT	1.3/8"	-24	34,9	44,5	**3.4**	500	**13.8**	2000	267	1,45
R5R-32-HT	10.1006.32HT	1.13/16"	-32	46,0	56,4	**2.4**	350	**9.7**	1400	337	1,70
R5R-40-HT	10.1006.40HT	2.3/8"	-40	60,3	73,0	**2.4**	350	**9.7**	1400	610	2,15
R5R-48-HT	10.1006.48HT	3"	-48	76,2	90,5	**1.4**	210	**5.5**	840	838	3,08

INNER TUBE: seamless oil resistant synthetic rubber
REINFORCEMENT: 2 high resistance synthetic textile braids with an intermediate high tensile steel wire braid

OUTER TUBE: blue wrapped, pin-pricked, weather and abrasion resistant synthetic rubber
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids and hot air in compressors

TEMPERATURE RANGE: intermittent: -40°C (-40°F) +150°C (+302°F); continuous service +125°C (+257°F) Max. temperature recommended for water base hydraulic fluids: +70°C (+158°F) Max. temperature recommended for air: +60°C (+140°F)

COUPLINGS: Balflex® Multicrimp fittings serie P25
NOTES: this hose is a high temperature hydraulic hose but cannot be used with phosphate-ester based oils, and cannot be used in aicrafts and compressors working with air at +60°C

BALFLEX // BRAKEMASTER R - HEATMASTER SAE 100R5 / SAE J1402 All - DOT - 135°C / 275°F - 3/16" - WP 20.7 MPa 3100 PSI - MSHA IC-252/00

PTFE Hoses

Balflex®

PTFE Hoses

Balflex® Balflon hoses are produced to Balflex® specifications and according to SAE J517 R14 standards. They cover a wide variety of medium pressure applications, in PTFE, smooth and corrugated with stainless steel reinforcement, for petroleum and water base hydraulic fluids.

Balflex® optimized the production of these hoses and their compatibility with a wide range of connectors, in order to assure the highest performance and the most extensive range of applications.

General Guidelines

Balflex® Balflon hoses are designed with different safety factors relating minimum burst pressure and recommended working pressure.

Balflon hoses are designed for petroleum base hydraulic fluids applications with a temperature range of -70°C (-95°F) to +260°C (+500°F).

Selection, assembly and installation of thermoplastic hoses should follow **Balflex®** recommendations and **SAE J1273** and **DIN 20066** standards. **Balflon hose assemblies should always be inspected and hydraulically tested before installation.** All hydraulics systems should be tested against leakage and malfunction in an appropriate area after any intervention.

Installations that do not comply with an adequate geometry of the hose assembly may reduce significantly the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose specifications may shorten drastically the hose lifetime.

The failure of an Balflon hose assembly may be dangerous and expose people and property to irreversible damage. Among other occurrences that must be prevented are the high velocity and high temperature projections of hydraulic fluid, the projection of couplings and it's parts, the whipping of unrestrained hose, spillage of combustion of the fluid, electrical shocks through contact with electrical sources, immovability, fall or sudden movement of masses controlled by the hydraulic system.

Table 1a: Rated working pressure at 20˚C (+68˚F) of Balflex® Balflon hoses (MPa / PSI)

Balflex	Standard	1/8"	3/16"	1/4"	5/16"	3/8"	13/32"	1/2"	5/8"	3/4"	7/8"	1"	1.1/8"	1.1/4"	1.1/2"	2"
BALFLON R14	SAE 100R14	27.5	20.0	17.5	15.0	13.5	12.0	12.0	10.0	9.0	6.5	6.5	5.5			
		4000	2900	2600	2200	2000	1800	1800	1500	1400	950	950	800			
BALFLON HEAVY WALL DOUBLE BRAID			27.5	25.0	22.5	21.0		17.5	16.0	14.0		9.5				
			4000	3700	3300	3100		2600	2400	2100		1400				
BALFLON CONVOLUTED				16.0	13.5	12.0		11.0	8.0	7.0		5.0		4.5	4.0	3.6
				2400	2000	1800		1600	1200	1100		730		660	580	530

Table 2: Pressure Conversion

bar	0,00134	0,0025	0,0339	0,069	0,098	**1,00**	1,01	10,0	100
PSI	0,0194	0,036	0,492	**1,001**	1,421	14,504	14,69	145,04	1450,38
MPa	-	-	0,003	0,007	0,0098	0,10	0,101	**1,00**	10,00
1 atm	0,001	0,0025	0,0335	0,068	0,097	0,987	**1**	9,87	98,69
m H20 (20˚C)	0,014	0,026	0,346	0,704	**1**	10,207	10,34	102,074	3.4
in Hg (20˚C)	0,0396	0,074	**1,001**	2,04	2,89	29,53	29,91	295,3	3.4
in H20 (20˚C)	0,538	**1,005**	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
mm Hg (20˚C)	**1,005**	1,88	25,43	51,75	73,51	750,06	759,81	7500,62	75006,17

Example: 1 MPa = 145,04 PSI ; 1 MPa = 10,0 bar

Table 3: Conversion Factors

Unit	Factor	Converted Unit
1 m (meter)	1000	mm (millimeter)
1 m (meter)	1,09362	yard
1 m (meter)	3,28084	foot
1 mm (millimeter)	0,001	m (meter)
1 mm (millimeter)	0,03937	Inch
1 inch	25,4	mm (millimeter)
1 inch	0,0254	m (meter)
1 foot	0,3048	m (meter)
1 yard	0,9144	m (meter)
F°	C° x 1,8 + 32	F° (Fahrenheit)
C°	(F° - 32): 1,8	C° (Celsius)

Example: : 1 m = 3,28084 feet ; 1 inch = 25,4 mm
Example: : +100°C = +212°F

Fluid Compatibility and Resistance Chart for Balflex PTFE Hoses

● Recommended ● Recommended with Restrictions ● Not Recommended

Acetic Acid	●
Acetic Acid (30%)	●
Acetone	●
Acetylene	●
Ammonia, Gas (Hot)	
Ammonia, Liquid	
Ammoniumchloride	●
Amyl Acetate	●
Aniline	●
Animal Oils	
Benzol / Benzene	
Butane	●
Butyl Acetate	●
Butyl Alcohol / Butanol	●
Calcium Chloride Solutions	●
Carbon Dioxide	
Carbon Disulfide	
Carbonates	
Caustic Soda	●
Chlorinated Solvents	
Chlorine	
Chloroform	●
Citric and Solutions	●
Compressed Air	●
Cyclohexane	●
Crude Petroleum Oil	
Dioctyl Phthalate	
Diesel Fuel	●
Ethers	
Ethyl Acetate	●
Ethyl Alcohol	●
Ethyl Chloride	

Ethyl Glycol	●
Ethyleneoxide	
Fluorine	
Formaldehyde	●
Formaldehyde 40%	
Fuel Oil	●
Gaseous Hydrogen	
Gasoline	●
Glycerin / Glycerol	●
Glycol to 66°C	●
Hexane	
Hydraulic Oil	●
Hydrochloric Acid 37%	
Hydroger Peroxide (Dil.)	
Hydroger Peroxide (Conc.)	
Isocyanates	
Isopropil Alcohol	●
Kerosene	●
Liquid Oxygen	●
LPG	●
Lubricating Oils	●
Mercury	●
Methyl Alcohol / Methanol	
Methyl Chloride (Cold)	
Methyl Ethyl Khetone	●
Mineral Oils	●
Naphtha	●
Naphthalene	●
Natural Gas	●
Nitric Acid (Dil.)	●
Nitric Acid (Conc.)	●
Nitrobenzen	●

Oil of Turpentine	
Oleic Acid	●
Oxalic Acid	●
Perchloroethylene	●
Phenol	●
Phosphoric Acid (10%)	●
Phosphoric Acid (70%)	●
Phosphate Ester Base Oil	●
Saturated Steam	●
Sea Water	●
Silicone Oils	●
Soap Solutions	●
Soda	●
Sodium Chloride Solutions	●
Sodium Hydroxide 20%	●
Sodium Hypochloryde 10%	●
Sulphur	
Sulphur Dioxide	
Sulphuric Acid up to 50%	●
Sulphuric Acid above 50%	●
Toluene	●
Trichloroethylene	●
Vegetable Greases	●
Water	●
Xylene	●

The following data is based on tests and believed to be reliable; however the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested. Note: All data based on 20°C/70°F unless otherwise noted.

BALFLON SAE 100R14

SAE 100R14 - 10.2003. - European size

High pressure, standard wall, single steel wire reinforced hydraulic hose with smooth PTFE lining

REFERENCE	#	inch	DN	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R14-02-TB	10.2001.02	1/8"	-2	3,2	5,9	**27.5**	4000	**110.0**	16000	40	0,06
R14-03-TB	10.2003.03	3/16"	-3	4,8	7,4	**20,0**	2900	**80,0**	11600	50	0,08
R14-04-TB	10.2003.04	1/4"	-4	6,3	9,0	**17,5**	2600	**70,0**	10400	75	0,09
R14-05-TB	10.2003.05	5/16"	-5	8,0	10,8	**15,0**	2200	**60,0**	8800	100	0,14
R14-06-TB	10.2003.06	3/8"	-6	9,5	12,4	**13,5**	2000	**54,0**	8000	125	0,16
R14-08-TB	10.2003.08	1/2"	-8	12,7	15,7	**12,0**	1800	**48,0**	7200	165	0,21
R14-10-TB	10.2003.10	5/8"	-10	16,0	19,1	**10,0**	1500	**40,0**	6100	200	0,27
R14-12-TB	10.2003.12	3/4"	-12	19,0	22,2	**9,0**	1400	**36,0**	5600	280	0,37
R14-16-TB	10.2003.16	1"	-16	25,4	29,3	**6,5**	950	**26,0**	3800	400	0,49

INNER TUBE: seamless smooth polytetrafluorethylene (PTFE)
OUTER TUBE: 1 stainless steel wire braid
SAFETY FACTOR: 4:1

APPLICATION: water base, petroleum base or synthetic base hydraulic fluids, corrosive, food liquids and high temperature gases and liquids

TEMPERATURE RANGE: -70°C (-95°F) +260°C (+500°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

AVAILABLE VERSIONS: Black Conductive
NOTE: Operating temperatures in excess of +204°C with petroleum base hydraulic fluids can materially reduce the life of the hose.

BALFLON SAE 100R14

SAE 100R14 - 10.2000. - SAE Dash Size

High pressure, standard wall, single steel wire reinforced hydraulic hose with smooth PTFE lining

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R14-03	10.2001.03	1/8"	-3	3,2	5,9	**27.5**	4000	**110.0**	16000	40	0,07
R14-04	10.2000.04	3/16"	-4	4,8	7,4	**20,0**	2900	**80,0**	11600	50	0,08
R14-05	10.2000.05	1/4"	-5	6,3	9,0	**17,5**	2600	**70,0**	10400	75	0,09
R14-06	10.2000.06	5/16"	-6	8,0	10,8	**15,0**	2200	**60,0**	8800	100	0,14
R14-08	10.2000.08	13/32"	-8	10,3	13,3	**13,0**	1900	**54,0**	7600	130	0,17
R14-10	10.2000.10	1/2"	-10	12,7	15,7	**12.0**	1800	**48.0**	7200	165	0,21
R14-12	10.2000.12	5/8"	-12	16,0	19,1	**10,0**	1500	**40,0**	6100	200	0,27
R14-16	10.2000.16	7/8"	-16	22,0	25,6	**6,5**	950	**26,0**	3800	350	0,51
R14-20	10.2000.20	1.1/8"	-20	28,6	32,5	**5,5**	800	**22,0**	3200	450	0,53

INNER TUBE: seamless smooth polytetrafluorethylene (PTFE)
OUTER TUBE: 1 stainless steel wire braid
SAFETY FACTOR: 4: 1

APPLICATION: water base, petroleum base or synthetic base hydraulic fluids, corrosive, food liquids and high temperature gases and liquids

TEMPERATURE RANGE: -70°C (-95°F) +260°C (+500°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules.

AVAILABLE VERSIONS: Black Conductive
NOTE: Operating temperatures in excess of +204°C with petroleum base hydraulic fluids can materially reduce the life of the hose.

BALFLON HEAVY WALL DOUBLE BRAID

10.2002.

High pressure, heavy wall, double steel wire reinforced hydraulic hose with smooth PTFE lining

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa PSI		MPa	PSI	MIN BEND RAD mm	KG kg/m
R14-03-DB	10.2002.03	3/16"	-3	4,8	8,8	**27,5**	4000	**110,0**	16000	45	0,14
R14-04-DB	10.2002.04	1/4"	-4	6,3	10,4	**25,0**	3700	**100,0**	14800	50	0,17
R14-05-DB	10.2002.05	5/16"	-5	8,0	12,0	**22,5**	3300	**90,0**	13200	55	0,24
R14-06-DB	10.2002.06	3/8"	-6	9,5	13,7	**21,0**	3100	**84,0**	12400	70	0,26
R14-08-DB	10.2002.08	1/2"	-8	12,7	17,0	**17,5**	2600	**70,0**	10400	110	0,35
R14-10-DB	10.2002.10	5/8"	-10	16,0	20,5	**16,0**	2400	**64,0**	9600	150	0,50
R14-12-DB	10.2002.12	3/4"	-12	19,0	23,5	**14,0**	2100	**56,0**	8400	190	0,62
R14-16-DB	10.2002.16	1"	-16	25,4	30,8	**9,5**	1400	**38,0**	5600	270	0,77

INNER TUBE: seamless smooth polytetrafluorethylene (PTFE)
OUTER TUBE: 2 stainless steel wire braids
SAFETY FACTOR: 4:1

APPLICATION: water base, petroleum base or synthetic base hydraulic fluids, corrosive, food liquids and high temperature gases and liquids

TEMPERATURE RANGE: -70°C (-95°F) +260°C (+500°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules.

AVAILABLE VERSIONS: Black Conductive
NOTE: Operating temperatures in excess of +204°C with petroleum base hydraulic fluids can materially reduce the life of the hose

Balflex®

BALFLON CONVOLUTED (CORRUGATED)

10.2010.

High pressure, single Stainless Steel wire braid reinforced corrugated PTFE hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R14-04-CV	10.2010.04	1/4"	-4	6,5	11,5	**16,0**	2400	**64,0**	9600	20	0,10
R14-05-CV	10.2010.05	5/16"	-5	8,1	12,3	**13,5**	2000	**54,0**	8000	30	0,17
R14-06-CV	10.2010.06	3/8"	-6	9,7	15,6	**12,0**	1800	**48,0**	7200	30	0,20
R14-08-CV	10.2010.08	1/2"	-8	12,7	18,9	**11,0**	1600	**44,0**	6400	40	0,27
R14-10-CV	10.2010.10	5/8"	-10	16,0	22,2	**8,0**	1200	**32,0**	4800	50	0,33
R14-12-CV	10.2010.12	3/4"	-12	19,1	26,4	**7,0**	1100	**28,0**	4400	80	0,47
R14-16-CV	10.2010.16	1"	-16	25,4	33,0	**5,0**	730	**20,0**	2920	100	0,63
R14-20-CV	10.2010.20	1.1/4"	-20	32,0	40,5	**4,5**	660	**18,0**	2640	120	0,98
R14-24-CV	10.2010.24	1.1/2"	-24	39,0	47,0	**4,0**	580	**16,0**	2320	140	0,30
R14-32-CV	10.2010.32	2"	-32	51,0	61,2	**3,6**	530	**14,4**	2120	175	1,20

INNER TUBE: seamless corrugated polytetrafluorethylene (PTFE)
OUTER TUBE: 1 stainless steel wire braid
SAFETY FACTOR: 4:1

APPLICATION: water base, petroleum base or synthetic base hydraulic fluids, corrosive, food liquids and high temperature gases and liquids

TEMPERATURE RANGE: -70°C (-95°F) +260°C (+500°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules.

NOTE: Operating temperatures in excess of +204°C with petroleum base hydraulic fluids can materially reduce the life of the hose.

BALFLON CONVOLUTED (CORRUGATED) BLACK CONDUCTIVE

10.2010.B

High pressure, single Stainless Steel wire braid reinforced black conductive corrugated PTFE hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R14-04-CV-B	10.2010.04B	1/4"	-4	6,5	11,5	**16,0**	2400	**64,0**	9600	20	0,10
R14-05-CV-B	10.2010.05B	5/16"	-5	8,1	12,3	**13,5**	2000	**54,0**	8000	30	0,17
R14-06CV-B	10.2010.06B	3/8"	-6	9,7	15,6	**12,0**	1800	**48,0**	7200	30	0,20
R14-08CV-B	10.2010.08B	1/2"	-8	12,7	18,9	**11,0**	1600	**44,0**	6400	40	0,27
R14-10CV-B	10.2010.10B	5/8"	-10	16,0	22,2	**8,0**	1200	**32,0**	4800	50	0,33
R14-12CV-B	10.2010.12B	3/4"	-12	19,1	26,4	**7,0**	1100	**28,0**	4400	80	0,47
R14-16CV-B	10.2010.16B	1"	-16	25,4	33,0	**5,0**	730	**20,0**	2920	100	0,63
R14-20CV-B	10.2010.20B	1.1/4"	-20	32,0	40,5	**4,5**	660	**18,0**	2640	120	0,98
R14-24CV-B	10.2010.24B	1.1/2"	-24	39,0	47,0	**4,0**	580	**16,0**	2320	140	0,30
R14-32CV-B	10.2010.32B	2"	-32	51,0	61,2	**3,6**	530	**14,4**	2120	175	1,20

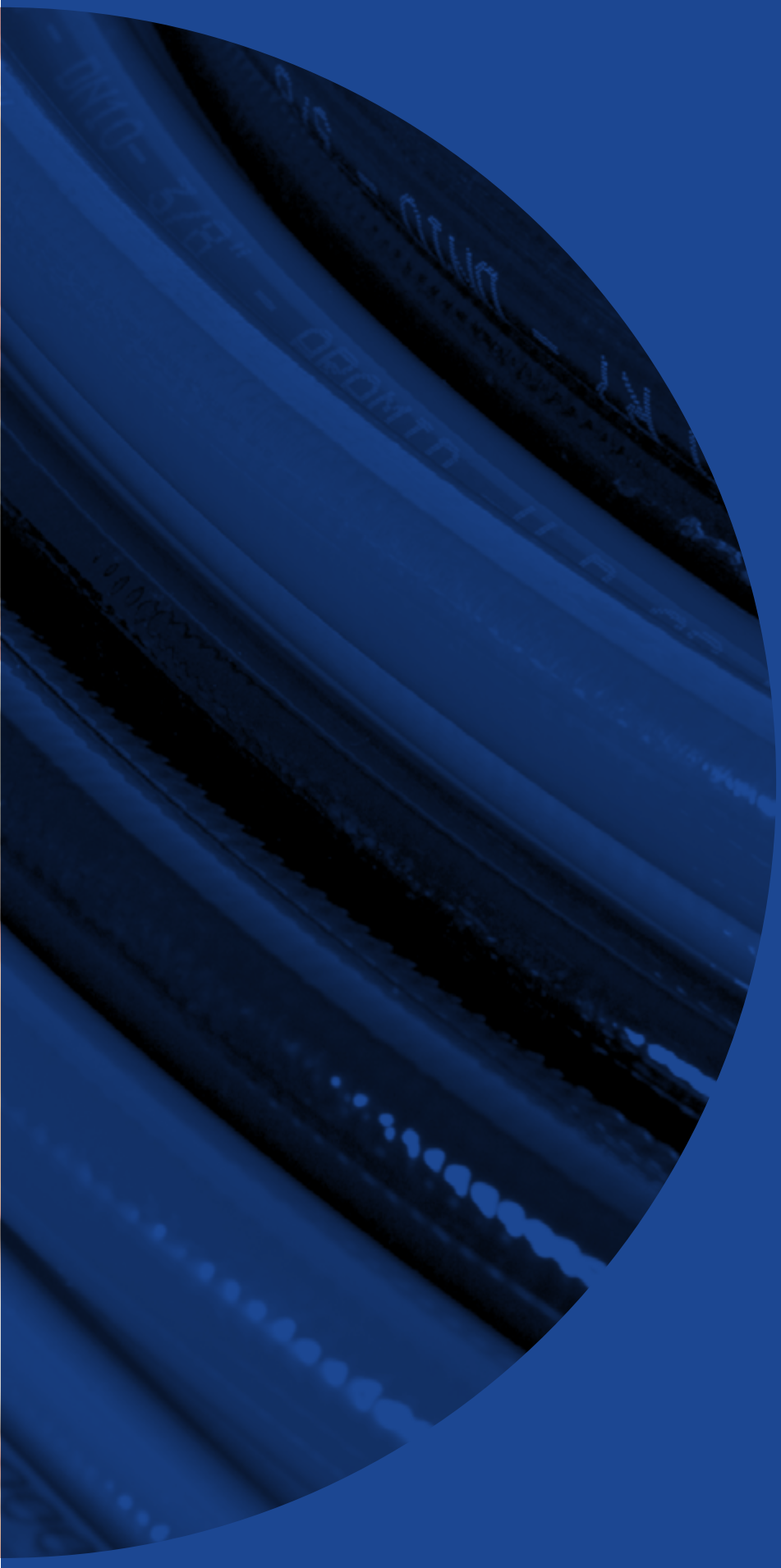
INNER TUBE: seamless black conductive corrugated polytetrafluorethylene (PTFE)
OUTER TUBE: 1 stainless steel wire braid
SAFETY FACTOR: 4:1

APPLICATION: water base, petroleum base or synthetic base hydraulic fluids, corrosive, food liquids and high temperature gases and liquids

TEMPERATURE RANGE: -70°C (-95°F) +260°C (+500°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules.

NOTE: Operating temperatures in excess of +204°C with petroleum base hydraulic fluids can materially reduce the life of the hose.

Thermoplastic Hoses



Balflex®

Thermoplastic Hoses

Balflex® Thermoplastic hoses are produced to Balflex® specifications and according to ISO 3949, SAE J517 and EN 855 standards. They cover a wide variety of medium to high pressure applications, in thermoplastic, textile and steel reinforcement, for petroleum and water base hydraulic fluids.

Balflex® optimized the production of these hoses and their compatibility with a wide range of connectors, in order to assure the highest performance and the most extensive range of applications.highest performance and the most extensive range of applications.

General Guidelines

Balflex® thermoplastic hoses are designed with different safety factors relating minimum burst pressure and recommended working pressure. Working pressure and nominal diameter are always branded on the hose.

Thermoplastic hoses are designed for petroleum base hydraulic fluids applications with a temperature range of –40°C (-40°F) to +100°C (+100°F). Thermoplastic hoses may also be used for water base hydraulic fluids if the working temperature does not exceed +65°C (+149°F).

Selection, assembly and installation of thermoplastic hoses should follow **Balflex®** recommendations and **SAE J1273** and **DIN 20066** standards. **Thermoplastic hose assemblies should always be inspected and hydraulically tested before installation.** All hydraulics systems should be tested against leakage and malfunction in an appropriate area after any intervention.

Installations that do not comply with an adequate geometry of the hose assembly may reduce significantly the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose specifications may shorten drastically the hose lifetime.

The failure of a thermoplastic hose assembly may be dangerous and expose people and property to irreversible damage. Among other occurrences that must be prevented are the high velocity and high temperature projections of hydraulic fluid, the projection of couplings and it's parts, the whipping of unrestrained hose, spillage of combustion of the fluid, electrical shocks through contact with electrical sources, immovability, fall or sudden movement of masses controlled by the hydraulic system.

Table 1a: Rated working pressure at 20˚C (+68˚F) of Balflex® Thermoplastic hoses (MPa / PSI)

Balflex	Standard	1/8" -2 DN3	53/16" -3 DN5	1/4" -4 DN6	5/16" -5 DN8	3/8" -6 DN10	1/2" -8 DN12	5/8" -10 DN16	3/4" -12 DN19	1" -16 DN25
ZETAFLEX ZETAFLEX TWIN ZETAFLEX NC ZETAFLEX NC TWIN	DIN EN 855 R7 / SAE 100R7 / ANSI A92.2	28.0	21.0	19.2	19.0	16.0	15.5	10.5	9.0	7.0
		4100	3100	2800	2800	2400	2300	1600	1400	1100
ZETAFLEX STEEL ZETAFLEX STEEL TWIN		35.0	30.0	27.5	24.0	22.0	17.5	14.0	11.5	10.0
		5100	4400	4000	3500	3200	2600	2100	1700	1500
OMEGALFEX PLUS OMEGAFLEX PLUS TWIN OMEGALFEX PLUS NC OMEGAFLEX PLUS NC TWIN	DIN EN 855 R8 / SAE 100R8		35.0	35.0	30.	28.0	24.5	20.0	16.5	14.0
			5100	5100	4300	4100	3600	2800	2300	2100
OMEGALFEX OMEGAFLEX TWIN OMEGAFLEX NC OMEGAFLEX NC TWIN	DIN EN 855 R8 / SAE 100R8		35.0	35.0	30.	28.0	24.5	20.0	16.5	14.0
			5100	5100	4300	4100	3600	2800	2300	2100
ZETAFLEX 3000 ZETAFLEX 3000 TWIN ZETAFLEX 3000 NC ZETAFLEX 3000 NC TWIN	SAE 100R18		21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
			3000	3000	3000	3000	3000	3000	3000	3000

Table 2: Pressure Conversion

bar	0,00134	0,0025	0,0339	0,069	0,098	**1,00**	1,01	10,0	100
PSI	0,0194	0,036	0,492	**1,001**	1,421	14,504	14,69	145,04	1450,38
MPa	-	-	0,003	0,007	0,0098	0,10	0,101	**1,00**	10,00
1 atm	0,001	0,0025	0,0335	0,068	0,097	0,987	**1**	9,87	98,69
m H20 (20˚C)	0,014	0,026	0,346	0,704	**1**	10,207	10,34	102,074	3.4
in Hg (20˚C)	0,0396	0,074	**1,001**	2,04	2,89	29,53	29,91	295,3	3.4
in H20 (20˚C)	0,538	**1,005**	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
mm Hg (20˚C)	**1,005**	1,88	25,43	51,75	73,51	750,06	759,81	7500,62	75006,17

Example: 1 MPa = 145,04 PSI ; 1 MPa = 10,0 bar

Table 3: Conversion Factors

Unit	Factor	Converted Unit
1 m (meter)	1000	mm (millimeter)
1 m (meter)	1,09362	yard
1 m (meter)	3,28084	foot
1 mm (millimeter)	0,001	m (meter)
1 mm (millimeter)	0,03937	Inch
1 inch	25,4	mm (millimeter)
1 inch	0,0254	m (meter)
1 foot	0,3048	m (meter)
1 yard	0,9144	m (meter)
F°	C° x 1,8 + 32	F° (Fahrenheit)
C°	(F° - 32): 1,8	C° (Celsius)

Example: : 1 m = 3,28084 feet ; 1 inch = 25,4 mm
Example: : +100°C = +212°F

Fluid Compatibility and Resistance Chart for Balflex Thermoplastic Hoses

🟢 Recommended 🟡 Recommended with Restrictions 🔴 Not Recommended

Acetic Acid	🟢
Acetic Acid (30%)	🟢
Acetone	🟢
Acetylene	🟢
Ammonia, Gas (Hot)	
Ammonia, Liquid	🟢
Ammoniumchloride	🔴
Amyl Acetate	
Aniline	🟡
Animal Oils	🟢
Benzol / Benzene	🟢
Butane	🟡
Butyl Acetate	
Butyl Alcohol / Butanol	
Calcium Chloride Solutions	🟢
Carbon Dioxide	
Carbon Disulfide	
Carbonates	
Caustic Soda	🟢
Chlorinated Solvents	
Chlorine	🔴
Chloroform	🔴
Citric and Solutions	🟢
Compressed Air	🟢
Cyclohexane	🟢
Crude Petroleum Oil	🟢
Dioctyl Phthalate	🟢
Diesel Fuel	🟢
Ethers	
Ethyl Acetate	
Ethyl Alcohol	🟡
Ethyl Chloride	

Ethyl Glycol	🟢
Ethyleneoxide	🟢
Fluorine	🔴
Formaldehyde	🟢
Formaldehyde 40%	🟡
Fuel Oil	🟢
Gaseous Hydrogen	🟢
Gasoline	
Glycerin / Glycerol	🟢
Glycol to 66°C	🟢
Hexane	🟢
Hydraulic Oil	🟢
Hydrochloric Acid 37%	🔴
Hydroger Peroxide (Dil.)	
Hydroger Peroxide (Conc.)	
Isocyanates	🟡
Isopropil Alcohol	
Kerosene	🟢
Liquid Oxygen	
LPG	
Lubricating Oils	🟢
Mercury	🟢
Methyl Alcohol / Methanol	🟡
Methyl Chloride (Cold)	🟢
Methyl Ethyl Khetone	🟢
Mineral Oils	🟢
Naphtha	🟢
Naphthalene	🟢
Natural Gas	🟢
Nitric Acid (Dil.)	🔴
Nitric Acid (Conc.)	🔴
Nitrobenzen	🟢

Oil of Turpentine	🟢
Oleic Acid	🟢
Oxalic Acid	🔴
Perchloroethylene	🟡
Phenol	🔴
Phosphoric Acid (10%)	
Phosphoric Acid (70%)	🔴
Phosphate Ester Base Oil	🔴
Saturated Steam	🔴
Sea Water	🟢
Silicone Oils	
Soap Solutions	🟢
Soda	🟢
Sodium Chloride Solutions	🟢
Sodium Hydroxide 20%	
Sodium Hypochloryde 10%	
Sulphur	🟢
Sulphur Dioxide	
Sulphuric Acid up to 50%	🟢
Sulphuric Acid above 50%	🟡
Toluene	🟢
Trichloroethylene	🟡
Vegetable Greases	
Water	🟢
Xylene	🟢

The following data is based on tests and believed to be reliable; however the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested. Note: All data based on 20°C/70°F unless otherwise noted.

Balflex®

ZETAFLEX

DIN EN 855 R7 / SAE 100R7 - 10.1030.

High pressure, synthetic polyester braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R7-02	10.1030.02	1/8"	-2	3,2	8,1	**28.0**	4100	**112.0**	16400	25	0,05
R7-03	10.1030.03	3/16"	-3	4,8	10,3	**21.0**	3100	**84.0**	12400	25	0,07
R7-04	10.1030.04	1/4"	-4	6,4	12,4	**19.2**	2800	**76.8**	11200	32	0,09
R7-05	10.1030.05	5/16"	-5	8,0	14,2	**19.0**	2800	**76.0**	11200	45	0,13
R7-06	10.1030.06	3/8"	-6	9,5	15,7	**16.0**	2400	**64.0**	9600	55	0,16
R7-08	10.1030.08	1/2"	-8	12,7	19,3	**15,5**	2300	**62,0**	9200	77	0,22
R7-10	10.1030.10	5/8"	-10	16,0	23,1	**10.5**	1600	**42.0**	6400	110	0,28
R7-12	10.1030.12	3/4"	-12	19,0	26,4	**9.0**	1400	**36.0**	5600	140	0,33
R7-16	10.1030.16	1"	-16	25,4	33,3	**7.0**	1100	**28.0**	4400	200	0,40

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 1 high tensile polyester braid

OUTER TUBE: black, oil and weather resistant polyurethane, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules
NOTE: Size -2 (1/8") not included in the standards.

BALFLEX ZETAFLEX - DIN EN 855 / SAE 100R7 / ISO 3949 - DN3 - 1/8" - WP 28 MPa / 4100 PSI

ZETAFLEX TWIN

DIN EN 855 R7 / SAE 100R7 / ISO 3949 - 10.1034.

High pressure, synthetic polyester braid reinforced thermoplastic hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R7-03-TB	10.1034.03	3/16"	-3	4,8	10,3	**21.0**	3100	**84.0**	12400	25	0,07
R7-04-TB	10.1034.04	1/4"	-4	6,4	12,4	**19.2**	2800	**76.8**	11200	32	0,09
R7-05-TB	10.1034.05	5/16"	-5	8,0	14,2	**19.0**	2800	**76.0**	11200	45	0,13
R7-06-TB	10.1034.06	3/8"	-6	9,5	15,7	**16.0**	2400	**64.0**	9600	55	0,16
R7-08-TB	10.1034.08	1/2"	-8	12,7	19,3	**15,5**	2300	**62,0**	9200	77	0,22
R7-10-TB	10.1034.10	5/8"	-10	16,0	23,1	**10.5**	1600	**42.0**	6400	110	0,28
R7-12-TB	10.1034.12	3/4"	-12	19,0	26,4	**9.0**	1400	**36.0**	5600	140	0,33
R7-16-TB	10.1034.16	1"	-16	25,4	33,3	**7.0**	1100	**28.0**	4400	200	0,40

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 1 high tensile polyester braid

OUTER TUBE: black, oil and weather resistant polyurethane, pin-pricked
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

BALFLEX ZETAFLEX - DIN EN 855 / SAE 100R7 / ISO 3949 - DN5 - 3/16" - WP 21 MPa / 3100 PSI

ZETAFLEX NON CONDUCTIVE

DIN EN 855 R7 / SAE 100R7 / ANSI A92.2 / ISO 3949 - 10.1030.L

High pressure, synthetic fiber braid reinforced thermoplastic Non Conductive hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R7-02LNC	10.1030.02L	1/8"	-2	3,2	8,1	**28.0**	4100	**112.0**	16400	25	0,05
R7-03LNC	10.1030.03L	3/16"	-3	4,8	10,3	**21.0**	3100	**84.0**	12400	25	0,07
R7-04LNC	10.1030.04L	1/4"	-4	6,4	12,4	**19.2**	2800	**76.8**	11200	32	0,09
R7-05LNC	10.1030.05L	5/16"	-5	8,0	14,2	**19.0**	2800	**76.0**	11200	45	0,13
R7-06LNC	10.1030.06L	3/8"	-6	9,5	15,7	**16.0**	2400	**64.0**	9600	55	0,16
R7-08LNC	10.1030.08L	1/2"	-8	12,7	19,3	**15,5**	2300	**62,0**	9200	77	0,22
R7-10LNC	10.1030.10L	5/8"	-10	16,0	23,1	**10.5**	1600	**42.0**	6400	110	0,28
R7-12LNC	10.1030.12L	3/4"	-12	19,0	26,4	**9.0**	1400	**36.0**	5600	140	0,33
R7-16LNC	10.1030.16L	1"	-16	25,4	33,3	**7.0**	1100	**28.0**	4400	200	0,40

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 1 high tensile polyester braid

OUTER TUBE: orange, oil and weather resistant polyurethane, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules
NOTE: Size -2 (1/8") not included in the standards.

BALFLEX ZETAFLEX - NON CONDUCTIVE - DIN EN 855 / SAE 100R7 - DN3 - 1/8" - WP 28 MPa / 4060 PSI - [ANSI A92.2 - WP 20.7 MPa / 3000 PSI]

ZETAFLEX NON CONDUCTIVE TWIN

DIN EN 855 R7 / SAE 100R7 / ANSI A92.2 / ISO 3949 - 10.1034.L

High pressure, synthetic fiber braid reinforced thermoplastic Non Conductive hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R7-03TNC	10.1034.03L	3/16"	-3	4,8	10,3	**21.0**	3100	**84.0**	12400	25	0,07
R7-04TNC	10.1034.04L	1/4"	-4	6,4	12,4	**19.2**	2800	**76.8**	11200	32	0,09
R7-05TNC	10.1034.05L	5/16"	-5	8,0	14,2	**19.0**	2800	**76.0**	11200	45	0,13
R7-06TNC	10.1034.06L	3/8"	-6	9,5	15,7	**16.0**	2400	**64.0**	9600	55	0,16
R7-08TNC	10.1034.08L	1/2"	-8	12,7	19,3	**15,5**	2300	**62,0**	9200	77	0,22
R7-10TNC	10.1034.10L	5/8"	-10	16,0	23,1	**10.5**	1600	**42.0**	6400	110	0,28
R7-12TNC	10.1034.12L	3/4"	-12	19,0	26,4	**9.0**	1400	**36.0**	5600	140	0,33
R7-16TNC	10.1034.16L	1"	-16	25,4	33,3	**7.0**	1100	**28.0**	4400	200	0,40

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile polyester braid

OUTER TUBE: orange, oil and weather resistant polyurethane, pin-pricked
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

BALFLEX ZETAFLEX - NON CONDUCTIVE - DIN EN 855 / SAE 100R7 / ISO 3949 - DN5 - 3/16" - WP 21 MPa / 3100 PSI - [ANSI A92.2 - WP 20.7 MPa / 3000 PSI]

Balflex®

ZETAFLEX STEEL

R7 SteelFlex - 10.1031.

High pressure, steel wire braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R7-02-S	10.1031.02	1/8"	-2	3,2	7,1	**35.0**	5100	**140.0**	20400	25	0,10
R7-03-S	10.1031.03	3/16"	-3	4,8	9,7	**30.0**	4400	**120.0**	17600	30	0,13
R7-04-S	10.1031.04	1/4"	-4	6,4	11,7	**27.5**	4000	**110.0**	16000	40	0,17
R7-05-S	10.1031.05	5/16"	-5	8,0	13,6	**24.0**	3500	**96.0**	14000	50	0,22
R7-06-S	10.1031.06	3/8"	-6	9,5	15,2	**22.0**	3200	**88.0**	12800	60	0,26
R7-08-S	10.1031.08	1/2"	-8	12,7	18,4	**17.5**	2600	**70.0**	10400	75	0,39
R7-10-S	10.1031.10	5/8"	-10	16,0	22,2	**14.0**	2100	**56.0**	8400	110	0,41
R7-12-S	10.1031.12	3/4"	-12	19,0	25,9	**11.5**	1700	**46.0**	6800	150	0,45
R7-16-S	10.1031.16	1"	-16	25,4	32,4	**10.0**	1500	**40.0**	6100	230	0,62

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile steel wire braid

OUTER TUBE: black, oil and weather resistant thermoplastic
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX ZETAFLEX - STEEL - EXCEEDS SAE 100R7 - DN3 - 1/8" - WP 35 MPa / 5100 PSI

ZETAFLEX STEEL TWIN

R7 SteelFlex TWIN – 10.1035.

High pressure, steel wire braid reinforced thermoplastic hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R7-03-ST	10.1035.03	3/16"	-3	4,8	9,7	**30.0**	4400	**120.0**	17600	30	0,13
R7-04-ST	10.1035.04	1/4"	-4	6,4	11,7	**27.5**	4000	**110.0**	16000	40	0,17
R7-05-ST	10.1035.05	5/16"	-5	8,0	13,6	**24.0**	3500	**96.0**	14000	50	0,22
R7-06-ST	10.1035.06	3/8"	-6	9,5	15,2	**22.0**	3200	**88.0**	12800	60	0,26
R7-08-ST	10.1035.08	1/2"	-8	12,7	18,4	**17.5**	2600	**70.0**	10400	75	0,39
R7-10-ST	10.1035.10	5/8"	-10	16,0	22,2	**14.0**	2100	**56.0**	8400	110	0,41
R7-12-ST	10.1035.12	3/4"	-12	19,0	25,9	**11.5**	1700	**46.0**	6800	150	0,45
R7-16-ST	10.1035.16	1"	-16	25,4	32,4	**10.0**	1500	**40.0**	6100	230	0,62

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile steel wire braid

OUTER TUBE: black, oil and weather resistant thermoplastic
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX ZETAFLEX - STEEL - EXCEEDS SAE 100R7 - DN5 - 3/16" - WP 30 MPa / 4400 PSI

OMEGAFLEX PLUS

DIN EN 855 R8 / SAE 100R8 / ISO 3949 - 10.1033.

High pressure, single aramid braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R8-03	10.1033.03	3/16"	-3	4,8	10,3	**35.0**	5100	**140.0**	20400	25	0,09
R8-04	10.1033.04	1/4"	-4	6,4	12,4	**35.0**	5100	**140.0**	20400	32	0,10
R8-05	10.1033.05	5/16"	-5	8,0	14,2	**30.0**	4300	**120.0**	17200	45	0,13
R8-06	10.1033.06	3/8"	-6	9,5	15,7	**28.0**	4100	**112.0**	16400	55	0,18
R8-08	10.1033.08	1/2"	-8	12,7	19,3	**24.5**	3600	**98.0**	14400	77	0,22
R8-10	10.1033.10	5/8"	-10	16,0	23,1	**20.0**	2800	**80.0**	11200	110	0,31
R8-12	10.1033.12	3/4"	-12	19,0	26,4	**16.5**	2300	**66.0**	9200	140	0,36
R8-16	10.1033.16	1"	-16	25,4	33,3	**14.0**	2100	**56.0**	8400	200	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile aramidic fiber braid

OUTER TUBE: black, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX OMEGAFLEX PLUS - DIN EN 855 / SAE 100R8 / ISO 3949 - DN5 - 3/16" - ARAMID - WP 35 MPa / 5100 PSI

OMEGAFLEX PLUS TWIN LINE

DIN EN 855 R8 / SAE 100R8 / ISO 3949 - 10.1136.

High pressure, single aramidic braid reinforced thermoplastic hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R8-03-TB	10.1136.03	3/16"	-3	4,8	10,3	**35.0**	5100	**140.0**	20400	25	0,09
R8-04-TB	10.1136.04	1/4"	-4	6,4	12,4	**35.0**	5100	**140.0**	20400	32	0,10
R8-05-TB	10.1136.05	5/16"	-5	8,0	14,2	**30.0**	4300	**120.0**	17200	45	0,13
R8-06-TB	10.1136.06	3/8"	-6	9,5	15,7	**28.0**	4100	**112.0**	16400	55	0,18
R8-08-TB	10.1136.08	1/2"	-8	12,7	19,3	**24.5**	3600	**98.0**	14400	77	0,22
R8-10-TB	10.1136.10	5/8"	-10	16,0	23,1	**20.0**	2800	**80.0**	11200	110	0,31
R8-12-TB	10.1136.12	3/4"	-12	19,0	26,4	**16.5**	2300	**66.0**	9200	140	0,36
R8-16-TB	10.1136.16	1"	-16	25,4	33,3	**14.0**	2100	**56.0**	8400	200	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile aramidic fiber braid

OUTER TUBE: black, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

BALFLEX OMEGAFLEX PLUS - DIN EN 855 / SAE 100R8 - DN6 - 1/4" - ARAMID - WP 35 MPa / 5100 PSI

OMEGALFLEX PLUS
(NON CONDUCTIVE)

DIN EN 855 R8 / SAE 100R8 / ISO 3949 - 10.1033.L

High pressure, single aramidic braid reinforced thermoplastic Non Conductive hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R8-03LNC	10.1033.03L	3/16"	-3	4,8	10,3	**35.0**	5100	**140.0**	20400	25	0,09
R8-04LNC	10.1033.04L	1/4"	-4	6,4	12,4	**35.0**	5100	**140.0**	20400	32	0,10
R8-05LNC	10.1033.05L	5/16"	-5	8,0	14,2	**30.0**	4300	**120.0**	17200	45	0,13
R8-06LNC	10.1033.06L	3/8"	-6	9,5	15,7	**28.0**	4100	**112.0**	16400	55	0,18
R8-08LNC	10.1033.08L	1/2"	-8	12,7	19,3	**24.5**	3600	**98.0**	14400	77	0,22
R8-10LNC	10.1033.10L	5/8"	-10	16,0	23,1	**20.0**	2800	**80.0**	11200	110	0,31
R8-12LNC	10.1033.12L	3/4"	-12	19,0	26,4	**16.5**	2300	**66.0**	9200	140	0,36
R8-16LNC	10.1033.16L	1"	-16	25,4	33,3	**14.0**	2100	**56.0**	8400	200	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile aramidic fiber braid

OUTER TUBE: orange, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX OMEGAFLEX PLUS - NON CONDUCTIVE - ANSI A92.2 - DIN EN 855 / SAE 100R8 / ISO 3949 - DN5 - 3/16" - ARAMID - WP 35 MPa / 5100 PSI

OMEGAFLEX PLUS TWIN
(NON CONDUCTIVE)

DIN EN 855 R8 / SAE 100R8 / ISO 3949 - 10.1136.L

High pressure, single aramidic braid reinforced thermoplastic Non Conductive hydraulic twin line hoses

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R8-03TNC	10.1136.03L	3/16"	-3	4,8	10,3	**35.0**	5100	**140.0**	20400	25	0,09
R8-04TNC	10.1136.04L	1/4"	-4	6,4	12,4	**35.0**	5100	**140.0**	20400	32	0,10
R8-05TNC	10.1136.05L	5/16"	-5	8,0	14,2	**30.0**	4300	**120.0**	17200	45	0,13
R8-06TNC	10.1136.06L	3/8"	-6	9,5	15,7	**28.0**	4100	**112.0**	16400	55	0,18
R8-08TNC	10.1136.08L	1/2"	-8	12,7	19,3	**24.5**	3600	**98.0**	14400	77	0,22
R8-10TNC	10.1136.10L	5/8"	-10	16,0	23,1	**20.0**	2800	**80.0**	11200	110	0,31
R8-12TNC	10.1136.12L	3/4"	-12	19,0	26,4	**16.5**	2300	**66.0**	9200	140	0,36
R8-16TNC	10.1136.16L	1"	-16	25,4	33,3	**14.0**	2100	**56.0**	8400	200	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile aramidic fiber braid

OUTER TUBE: orange, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX OMEGAFLEX PLUS - NON CONDUCTIVE - ANSI A92.2 - DIN EN 855 / SAE 100R8 / ISO 3949 - DN5 - 3/16" - ARAMID - WP 35 MPa / 5100 PSI

OMEGAFLEX

DIN EN 855 R8 / SAE 100R8 - 10.1032.

High pressure, double polyester braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R82P-03	10.1032.03	3/16"	-3	4,8	12,4	**35.0**	5100	**140.0**	20400	40	0,09
R82P-04	10.1032.04	1/4"	-4	6,4	16,1	**35.0**	5100	**140.0**	20400	45	0,10
R82P-05	10.1032.05	5/16"	-5	8,0	16,7	**29.0**	4300	**116.0**	17200	55	0,13
R82P-06	10.1032.06	3/8"	-6	9,5	18,5	**28.0**	4100	**112.0**	16400	65	0,18
R82P-08	10.1032.08	1/2"	-8	12,7	22,6	**24.5**	3600	**98.0**	14400	77	0,22
R82P-10	10.1032.10	5/8"	-10	16,0	25,6	**19.0**	2800	**76.0**	11200	100	0,31
R82P-12	10.1032.12	3/4"	-12	19,0	28,6	**15.5**	2300	**62.0**	9200	140	0,36
R82P-16	10.1032.16	1"	-16	25,4	35,8	**14.0**	2100	**56.0**	8400	200	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile polyester braids

OUTER TUBE: black, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX OMEGAFLEX - DIN EN 855 / SAE 100R8 - DN5 - 3/16" - POLYESTER - WP 35 MPa / 5100 PSI

OMEGAFLEX TWIN

DIN EN 855 R8 / SAE 100R8 - 10.1036.

High pressure, double polyester braid reinforced thermoplastic hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R82P-03LNC	10.1036.03	3/16"	-3	4,8	12,4	**35.0**	5100	**140.0**	20400	40	0,18
R82P-04LNC	10.1036.04	1/4"	-4	6,4	16,1	**35.0**	5100	**140.0**	20400	45	0,20
R82P-05LNC	10.1036.05	5/16"	-5	8,0	16,7	**29.0**	4300	**116.0**	17200	55	0,26
R82P-06LNC	10.1036.06	3/8"	-6	9,5	18,5	**28.0**	4100	**112.0**	16400	65	0,36
R82P-08LNC	10.1036.08	1/2"	-8	12,7	22,6	**24.5**	3600	**98.0**	14400	77	0,44
R82P-10LNC	10.1036.10	5/8"	-10	16,0	25,6	**19.0**	2800	**76.0**	11200	100	0,62
R82P-12LNC	10.1036.12	3/4"	-12	19,0	28,6	**15.5**	2300	**62.0**	9200	140	0,72
R82P-16LNC	10.1036.16	1"	-16	25,4	35,8	**14.0**	2100	**56.0**	8400	200	1,02

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile polyester braids

OUTER TUBE: black, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4: 1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX OMEGAFLEX - DIN EN 855 / SAE 100R8 - DN5 - 3/16" - POLYESTER - WP 35 MPa / 5100 PSI

OMEGAFLEX (NON CONDUCTIVE)

DIN EN 855 R8 / SAE 100R8 / ANSI A92.2 - 10.1032.L

High pressure, double polyester braid reinforced thermoplastic Non Conductive hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R82P-03-TB	10.1032.03L	3/16"	-3	4,8	12,4	**35.0**	5100	**140.0**	20400	40	0,09
R82P-04-TB	10.1032.04L	1/4"	-4	6,4	16,1	**35.0**	5100	**140.0**	20400	45	0,10
R82P-05-TB	10.1032.05L	5/16"	-5	8,0	16,7	**29.0**	4300	**116.0**	17200	55	0,13
R82P-06-TB	10.1032.06L	3/8"	-6	9,5	18,5	**28.0**	4100	**112.0**	16400	65	0,18
R82P-08-TB	10.1032.08L	1/2"	-8	12,7	22,6	**24.5**	3600	**98.0**	14400	77	0,22
R82P-10-TB	10.1032.10L	5/8"	-10	16,0	25,6	**19.0**	2800	**76.0**	11200	100	0,31
R82P-12-TB	10.1032.12L	3/4"	-12	19,0	28,6	**15.5**	2300	**62.0**	9200	140	0,36
R82P-16-TB	10.1032.16L	1"	-16	25,4	35,8	**14.0**	2100	**56.0**	8400	200	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile polyester braids

OUTER TUBE: orange, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX OMEGAFLEX - NON CONDUCTIVE - DIN EN 855 / SAE 100R8 - DN5 - 3/16" - POLYESTER - WP 35 MPa / 5100 PSI

OMEGAFLEX TWIN (NON CONDUCTIVE)

DIN EN 855 R8 / SAE 100R8 / ANSI A92.2 - 10.1036.L

High pressure, double polyester braid reinforced thermoplastic Non Conductive hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R82P-03TNC	10.1036.03L	3/16"	-3	4,8	12,4	**35.0**	5100	**140.0**	20400	40	0,18
R82P-04TNC	10.1036.04L	1/4"	-4	6,4	16,1	**35.0**	5100	**140.0**	20400	45	0,20
R82P-05TNC	10.1036.05L	5/16"	-5	8,0	16,7	**29.0**	4300	**116.0**	17200	55	0,26
R82P-06TNC	10.1036.06L	3/8"	-6	9,5	18,5	**28.0**	4100	**112.0**	16400	65	0,36
R82P-08TNC	10.1036.08L	1/2"	-8	12,7	22,6	**24.5**	3600	**98.0**	14400	77	0,44
R82P-10TNC	10.1036.10L	5/8"	-10	16,0	25,6	**19.0**	2800	**76.0**	11200	100	0,62
R82P-12TNC	10.1036.12L	3/4"	-12	19,0	28,6	**15.5**	2300	**62.0**	9200	140	0,72
R82P-16TNC	10.1036.16L	1"	-16	25,4	35,8	**14.0**	2100	**56.0**	8400	200	1,02

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile polyester braids

OUTER TUBE: orange, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1

APPLICATION: petroleum base hydraulic fluids
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

BALFLEX OMEGAFLEX - NON CONDUCTIVE - DIN EN 855 / SAE 100R8 - DN5 - 3/16" - POLYESTER - WP 35 MPa / 5100 PSI

ZETAFLEX 3000

SAE 100R18 - 10.1130.

High pressure, single or double polyester braid reinforced thermoplastic Isobaric hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R18-03	10.1130.03	3/16"	-3	4,8	10,3	**21,0**	3000	**84,0**	12000	30	0,09
R18-04	10.1130.04	1/4"	-4	6,4	12,4	**21,0**	3000	**84,0**	12000	45	0,10
R18-05	10.1130.05	5/16"	-5	8,0	14,2	**21,0**	3000	**84,0**	12000	50	0,13
R18-06	10.1130.06	3/8"	-6	9,5	16,6	**21,0**	3000	**84,0**	12000	75	0,18
R18-08	10.1130.08	1/2"	-8	12,7	22,5	**21,0**	3000	**84,0**	12000	90	0,22
R18-10	10.1130.10	5/8"	-10	16,0	25,4	**21,0**	3000	**84,0**	12000	120	0,31
R18-12	10.1130.12	3/4"	-12	19,0	31,5	**21,0**	3000	**84,0**	12000	150	0,36
R18-16	10.1130.16	1"	-16	25,4	39,6	**21,0**	3000	**84,0**	12000	250	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 1 or 2 high tensile synthetic fiber braid

OUTER TUBE: black, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX ZETAFLEX 3000 - SAE 100R18 - DN5 - 3/16" - WP 21 MPa / 3000 PSI

ZETAFLEX 3000 TWIN

SAE 100R18 - 10.1134.

High pressure, single or double polyester braid reinforced thermoplastic Isobaric hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R18-03-TB	10.1134.03	3/16"	-3	4,8	10,3	**21,0**	3000	**84,0**	12000	30	0,09
R18-04-TB	10.1134.04	1/4"	-4	6,4	12,4	**21,0**	3000	**84,0**	12000	45	0,10
R18-05-TB	10.1134.05	5/16"	-5	8,0	14,2	**21,0**	3000	**84,0**	12000	50	0,13
R18-06-TB	10.1134.06	3/8"	-6	9,5	16,6	**21,0**	3000	**84,0**	12000	75	0,18
R18-08-TB	10.1134.08	1/2"	-8	12,7	22,5	**21,0**	3000	**84,0**	12000	90	0,22
R18-10-TB	10.1134.10	5/8"	-10	16,0	25,4	**21,0**	3000	**84,0**	12000	120	0,31
R18-12-TB	10.1134.12	3/4"	-12	19,0	31,5	**21,0**	3000	**84,0**	12000	150	0,36
R18-16-TB	10.1134.16	1"	-16	25,4	39,6	**21,0**	3000	**84,0**	12000	250	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 1 or 2 high tensile synthetic fiber braid

OUTER TUBE: black, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX ZETAFLEX 3000 - SAE 100R18 - DN10 - 3/8" - WP 21 MPa / 3050 PSI - DATE

ZETAFLEX 3000 (NON CONDUCTIVE)

SAE 100R18 - 10.1130.L

High pressure, single or double polyester braid reinforced Non Conductive thermoplastic Isobaric hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R18-03NC	10.1130.03L	3/16"	-3	4,8	10,3	**21,0**	3000	**84,0**	12000	30	0,09
R18-04NC	10.1130.04L	1/4"	-4	6,4	12,4	**21,0**	3000	**84,0**	12000	45	0,10
R18-05NC	10.1130.05L	5/16"	-5	8,0	14,2	**21,0**	3000	**84,0**	12000	50	0,13
R18-06NC	10.1130.06L	3/8"	-6	9,5	16,6	**21,0**	3000	**84,0**	12000	75	0,18
R18-08NC	10.1130.08L	1/2"	-8	12,7	22,5	**21,0**	3000	**84,0**	12000	90	0,22
R18-10NC	10.1130.10L	5/8"	-10	16,0	25,4	**21,0**	3000	**84,0**	12000	120	0,31
R18-12NC	10.1130.12L	3/4"	-12	19,0	31,5	**21,0**	3000	**84,0**	12000	150	0,36
R18-16NC	10.1130.16L	1"	-16	25,4	39,6	**21,0**	3000	**84,0**	12000	250	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 1 or 2 high tensile synthetic fiber braid

OUTER TUBE: orange, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX ZETAFLEX 3000 - NON CONDUCTIVE - SAE 100R18 - DN5 - 3/16" - WP 21 MPa / 3000 PSI

ZETAFLEX 3000 TWIN
(NON CONDUCTIVE)

SAE 100R18 - 10.1134.L

High pressure, single or double polyester braid reinforced Non Conductive thermoplastic Isobaric hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
R18-03TNC	10.1134.03L	3/16"	-3	4,8	10,3	**21,0**	3000	**84,0**	12000	30	0,09
R18-04TNC	10.1134.04L	1/4"	-4	6,4	12,4	**21,0**	3000	**84,0**	12000	45	0,10
R18-05TNC	10.1134.05L	5/16"	-5	8,0	14,2	**21,0**	3000	**84,0**	12000	50	0,13
R18-06TNC	10.1134.06L	3/8"	-6	9,5	16,6	**21,0**	3000	**84,0**	12000	75	0,18
R18-08TNC	10.1134.08L	1/2"	-8	12,7	22,5	**21,0**	3000	**84,0**	12000	90	0,22
R18-10TNC	10.1134.10L	5/8"	-10	16,0	25,4	**21,0**	3000	**84,0**	12000	120	0,31
R18-12TNC	10.1134.12L	3/4"	-12	19,0	31,5	**21,0**	3000	**84,0**	12000	150	0,36
R18-16TNC	10.1134.16L	1"	-16	25,4	39,6	**21,0**	3000	**84,0**	12000	250	0,51

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 1 or 2 high tensile synthetic fiber braid

OUTER TUBE: orange, oil and weather resistant thermoplastic, pin-pricked
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX ZETAFLEX 3000 - NON CONDUCTIVE - SAE 100R18 - DN10 - 3/8" - WP 21 MPa / 3050 PSI - DATE

ULTRAFLEX

10.1038

High pressure, single aramidic braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
ULTRA-06	10.1038.06	3/8"	-6	9,5	16,0	**38.0**	5600	**152.0**	22400	80	0,18
ULTRA-08	10.1038.08	1/2"	-8	12,7	20,3	**34.5**	5100	**138.0**	20400	95	0,22

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile aramidic fiber braid

OUTER TUBE: black, oil and weather resistant thermoplastic
SAFETY FACTOR: 4:1
APPLICATION: petroleum base hydraulic fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) Max. temperature recommended for water base hydraulic fluids: +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX R9 ULTRAFLEX - EXCEEDS DIN EN 855 - DN10 - SAE100 R8 - 3/8" - WP 38.0 MPa / 5510 PSI - DATE

CNG

10.1037.

High Pressure, single aramidic fiber and single high tensile braid Compressed Natural Gas hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
CNG-04	10.1037.04	1/4"	-4	6,4	14,0	**69,0**	10100	**276,0**	40400	40	0,24
CNG-06	10.1037.06	3/8"	-6	9,5	18,0	**50,0**	7300	**200,0**	29200	60	0,26

INNER TUBE: internal core in polyamide
REINFORCEMENT: 2 high tensile steel braid and 1 aramidic fiber braid

OUTER TUBE: red color pin-pricked polyurethane
SAFETY FACTOR: 4:1

APPLICATION: CNG (compressed natural gas) dispenser at very high pressure
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX CNG - DN6 - 1/4" - ELECTRICAL CONDUCTIVE - WP 69 MPa / 10100 PSI

Balflex®

JETWASH MICROLINE LIGHT

12.160W.04

High pressure Thermoplastic Jet washing and lubrification hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
JETW-04	12.160W.04	1/4"	-4	6,4	12,5	**16,0**	2400	**64,0**	9600	100	0,10

INNER TUBE: polyethylene tube resistant to water, grease and oil
REINFORCEMENT: 2 high tensile polyester

OUTER TUBE: black PVC compound resistant to abrasion and weather
SAFETY FACTOR: 4:1

APPLICATION: hobby type jet washing and lubricators
TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX JETWASH MICRO LINE - DN6 - 1/4" - WP 16 MPa / 2320 PSI - DATE

JET CLEAN

10.1039.

High pressure, 2 aramidic braids reinforced thermoplastic sewer jet cleaning hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
JC-08	10.1039.08	1/2"	-8	12,7	22,5	**24,1**	3500	**60,3**	8750	100	0,21
JC-10	10.1039.10	5/8"	-10	16,0	25,6	**20,7**	3000	**51,8**	7500	115	0,35
JC-12	10.1039.12	3/4"	-12	19,0	29,2	**20,7**	3000	**51,8**	7500	125	0,48
JC-16	10.1039.16	1"	-16	25,4	37,5	**20,7**	3000	**51,8**	7500	160	0,58
JC-20	10.1039.20	1.1/4"	-20	31,8	46,5	**20,7**	3000	**51,8**	7500	250	0,65

INNER TUBE: internal core in polyester
REINFORCEMENT: 2 high tensile aramidic fiber braids

OUTER TUBE: orange polyurethane high abrasion resistance
SAFETY FACTOR: 2.5:1

APPLICATION: sewer cleaning with high pressure water
TEMPERATURE RANGE: -40°C (-40°F) +65°C (+149°F)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX JET CLEAN - DN12 - 1/2" - WP 24.1 MPa / 3500 PSI - DATE

PAINTSPRAY 1W

10.1040.

High pressure, one steel wire braid reinforced thermoplastic paintspray hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
PS1W-03	10.1040.03	3/16"	-3	4,8	9,7	**35,0**	5100	**140,0**	20400	30	0,13
PS1W-04	10.1040.04	1/4"	-4	6,4	11,7	**32,0**	4700	**128,0**	18800	40	0,17
PS1W-05	10.1040.05	5/16"	-5	8,0	13,6	**27,5**	4000	**110,0**	16000	50	0,22
PS1W-06	10.1040.06	3/8"	-6	9,5	15,2	**25,0**	3700	**100,0**	14800	60	0,26
PS1W-08	10.1040.08	1/2"	-8	12,7	18,4	**19,0**	2800	**76,0**	11200	75	0,39
PS1W-12	10.1040.12	3/4"	-12	19,0	25,7	**12,0**	1800	**48,0**	7200	150	0,45

INNER TUBE: internal core in polyamide
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: blue pin-pricked polyurethane high abrasion resistance

SAFETY FACTOR: 4:1
APPLICATION: high pressure airless spray systems, chemical resistance to solvents and agressive fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) max. temperature recommended for water base hydraulic fluids and air: +70°C (+158°C)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX PAINTSPRAY - 1W - STEEL - DN5 - 3/16" - WP 35 MPa / 5100 PSI

PAINTSPRAY 2W

10.1041.

High pressure, two steel wire braids reinforced thermoplastic paintspray hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
PS2W-04	10.1041.04	1/4"	-4	6,4	13,7	**45,0**	6600	**180,0**	26400	100	0,27
PS2W-05	10.1041.05	5/16"	-5	8,0	15,2	**40,0**	5800	**160,0**	23200	110	0,32
PS2W-06	10.1041.06	3/8"	-6	9,5	17,5	**38,0**	5600	**152,0**	22400	127	0,36
PS2W-08	10.1041.08	1/2"	-8	12,7	21,1	**30,0**	4400	**120,0**	17600	178	0,49
PS2W-12	10.1041.12	3/4"	-12	19,0	28,6	**16,0**	2400	**64,0**	9600	250	0,55

INNER TUBE: internal core in polyamide
REINFORCEMENT: 2 high tensile steel wire braids
OUTER TUBE: blue pin-pricked polyurethane high abrasion resistance

SAFETY FACTOR: 4:1
APPLICATION: high pressure airless spray systems, chemical resistance to solvents and agressive fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) max. temperature recommended for water base hydraulic fluids and air: +70°C (+158°C)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX PAINTSPRAY - 2W - STEEL - DN6 - 1/4" - WP 45 MPa / 6600 PSI

PAINTSPRAY

10.1042.

High pressure, one or two tensile aramidic braid reinforced thermoplastic paintspray hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
PS-03	10.1042.03	3/16"	-3	4,8	10,3	**35,0**	5100	**140,0**	20400	50	0,09
PS-04	10.1042.04	1/4"	-4	6,3	12,4	**35,0**	5100	**140,0**	20400	75	0,10
PS-06	10.1042.06	3/8"	-6	9,5	15,7	**30,0**	4400	**120,0**	17600	100	0,18
PS-08	10.1042.08	1/2"	-8	12,7	19,3	**24,5**	3600	**98,0**	14400	120	0,22

INNER TUBE: internal core in polyamide
REINFORCEMENT: 1 or 2 high tensile aramidic braid with antistatic polymeric braid
OUTER TUBE: blue pin-pricked polyurethane high abrasion resistance

SAFETY FACTOR: 4:1
APPLICATION: high pressure airless spray systems, chemical resistance to solvents and agressive fluids

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) max. temperature recommended for water base hydraulic fluids and air: +70°C (+158°C)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX PAINTSPRAY - DN5 - 3/16" - WP 35 MPa / 5100 PSI

BEVERAGE

10.1043.

High pressure, one synthetic fiber braid reinforced beverage dispensing hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
BEV1F-04	10.1043.04	1/4"	-4	6,3	12,2	**21,0**	3100	**84,0**	12400	35	0,05

INNER TUBE: thermoplastic elastomer food quality
REINFORCEMENT: 1 synthetic fiber braid

OUTER TUBE: grey color pin-pricked polyurethane
SAFETY FACTOR: 4:1

APPLICATION: designed specially for CO2 gas mixtures used in fixed and mobile beverages dispensing units. Special tube material with flavour free that eliminates contamination risks

TEMPERATURE RANGE: -40°C (-40°F) +80°C (+176°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX BEVERAGE DISPENSING - DN6 - 1/4" - WP 21 MPa / 3000 PSI - DATE

BEVERAGE

10.1044.

High pressure, one steel wire braid reinforced beverage dispensing hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
BEV1S-03	10.1044.03	3/16"	-3	4,8	9,7	**35,0**	5100	**140,0**	20400	40	0,07
BEV1S-04	10.1044.04	1/4"	-4	6,3	11,7	**32,0**	4700	**128,0**	18800	45	0,08

INNER TUBE: thermoplastic elastomer food quality
REINFORCEMENT: 1 steel wire braid

OUTER TUBE: grey color pin-pricked polyurethane
SAFETY FACTOR: 4:1

APPLICATION: designed specially for CO2 gas mixtures used in fixed and mobile beverages dispensing units. Special tube material with flavour free that eliminates contamination risks

TEMPERATURE RANGE: -40°C (-40°F) +80°C (+176°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX BEVERAGE DISPENSING - DN5 - 3/16" - WP 35 Mpa / 5000 PSI - DATE

BEVERAGE

10.1045.

High pressure, one aramidic fiber braid reinforced beverage dispensing hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa MPa	MPa PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
BEV1A-02	10.1045.02	1/8"	-2	3,2	8,1	**42,0**	6100	**168,0**	24400	25	0,05
BEV1A-03	10.1045.03	3/16"	-3	4,8	10,3	**35,0**	5100	**140,0**	20400	25	0,07
BEV1A-04	10.1045.04	1/4"	-4	6,3	12,4	**35,0**	5100	**140,0**	20400	32	0,09

INNER TUBE: thermoplastic elastomer food quality
REINFORCEMENT: 1 aramidic fiber braid

OUTER TUBE: grey color pin-pricked polyurethane
SAFETY FACTOR: 4:1

APPLICATION: designed specially for CO2 gas mixtures used in fixed and mobile beverages dispensing units. Special tube material with flavour free that eliminates contamination risks

TEMPERATURE RANGE: -40°C (-40°F) +80°C (+176°F)
COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX BEVERAGE DISPENSING - DN3 - 1/8" - WP 42 Mpa / 6000 PSI - DATE

SUPERJACK 2W

10.1046.

High pressure, double steel wire braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
SJ-04	10.1046.04	1/4"	-4	6,4	14,1	**70,0**	10000	**1750,0**	25000	100	0,29
SJ-06	10.1046.06	3/8"	-6	9,5	17,5	**70,0**	10000	**1500,0**	21750	150	0,42
SJ-08	10.1046.08	1/2"	-8	12,7	21,1	**50,0**	7250	**1250,0**	18125	200	0,68

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile steel wire braid
OUTER TUBE: orange, oil and weather resistant polyurethane

SAFETY FACTOR: 2.5:1 on 1/4" and 1/2"and 2.1:1 on 3/8" size
APPLICATION: high pressure hydraulic systems, hydraulic jacks, rescue equipments, safety equipments, earthmoving equipments and mining equipments.

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) max. temperature recommended for water base hydraulic fluids and air: +70°C (+158°C)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX SUPERJACK - DN6 - 1/4" - WP 70 MPa / 10000 PSI

SUPERJACK ARAMID

10.1146.

High pressure, one steel wire braid and one aramidic braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
SJ4-04	10.1146.04	1/4"	-4	6,4	14,1	**70,0**	10000	**2800,0**	40000	70	0,29
SJ4-06	10.1146.06	3/8"	-6	9,5	17,5	**70,0**	10000	**2800,0**	40000	100	0,42
SJ4-08	10.1146.08	1/2"	-8	12,7	22,4	**70,0**	10000	**2800,0**	40000	180	0,52

INNER TUBE: seamless oil resistant thermoplastic
REINFORCEMENT: 2 high tensile steel wire braid and 2 high tensile aramidic braid
OUTER TUBE: orange, oil and weather resistant polyurethane

SAFETY FACTOR: 4:1
APPLICATION: high pressure hydraulic systems, hydraulic jacks, rescue equipments, safety equipments, earthmoving equipments and mining equipments

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F) max. temperature recommended for water base hydraulic fluids and air: +70°C (+158°C)

COUPLINGS: Balflex® 2-piece fittings serie 23 with 20 serie ferrules

BALFLEX SUPERJACK - DN6 - 1/4" - WP 70 MPa / 10000 PSI

MINIBORE

10.1147.

High pressure, single aramidic braid thermoplastic hydraulic line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
MICRO-1	10.1147.03	1/8"	-	3,2	6,5	**25,0**	3700	**100,0**	14800	20	0,05

INNER TUBE: thermoplastic elastomer
REINFORCEMENT: 1 aramidic fiber braid

OUTER TUBE: black color polyurethane
SAFETY FACTOR: 4:1

APPLICATION: designed specially for very high pressure mini hydraulic lines. Automotive and truck's cab lifting systems

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F)
COUPLINGS: Balflex® 2-piece fittings serie 05

BALFLEX MINIBORE - 1/8" - WP 25 MPa / 3600 PSI

MICROTEST

05.HH01

High pressure, single aramidic braid thermoplastic hydraulic line hose

REFERENCE	#	inch	SAE Dash	ID mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG kg/m
MICRO-2	05.HH01	5/64"	-	2,0	5,0	**63,0**	9200	**189,0**	36800	20	0,06

INNER TUBE: thermoplastic elastomer
REINFORCEMENT: 1 aramidic fiber braid

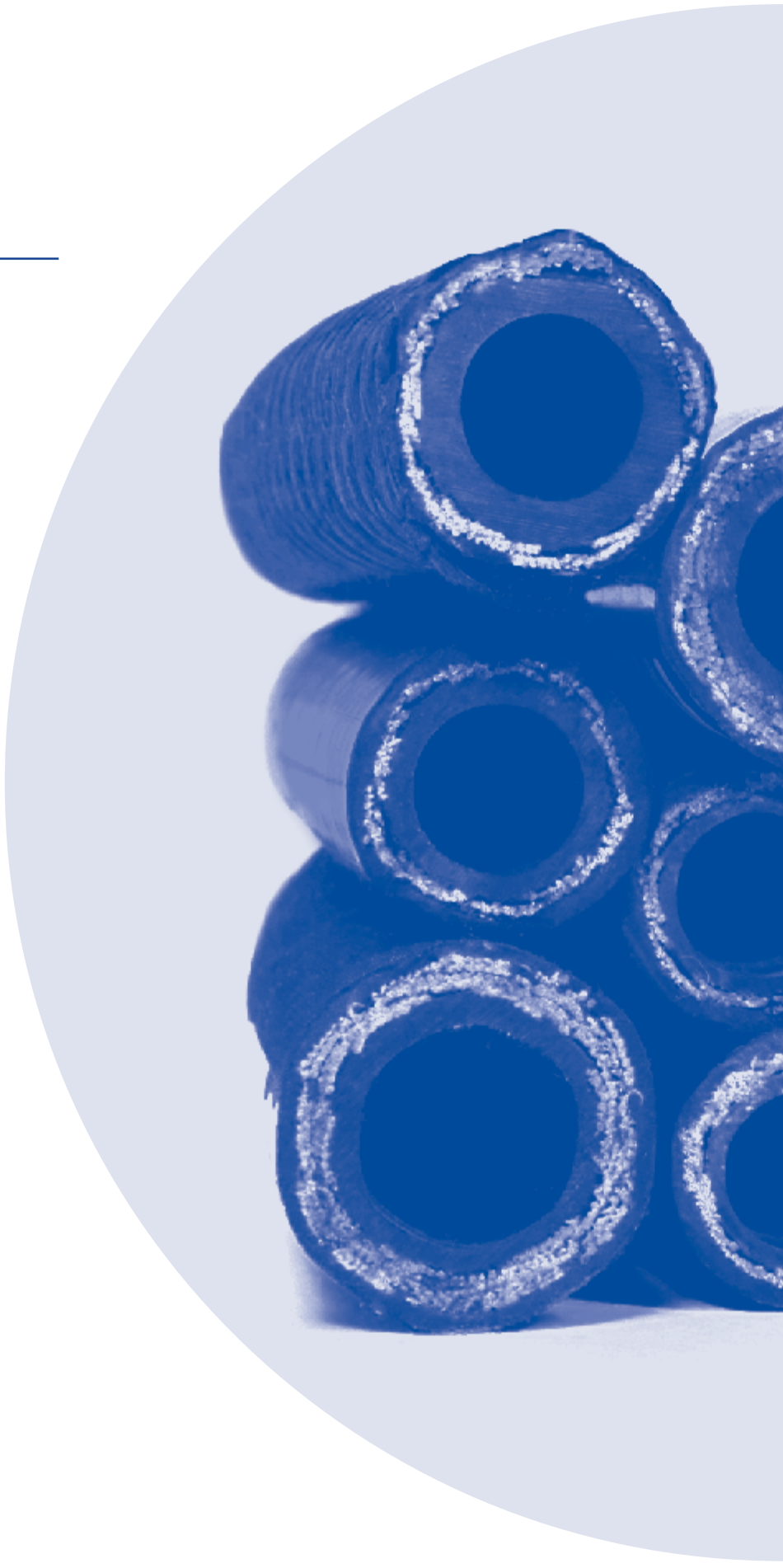
OUTER TUBE: black color polyurethane
SAFETY FACTOR: 3:1

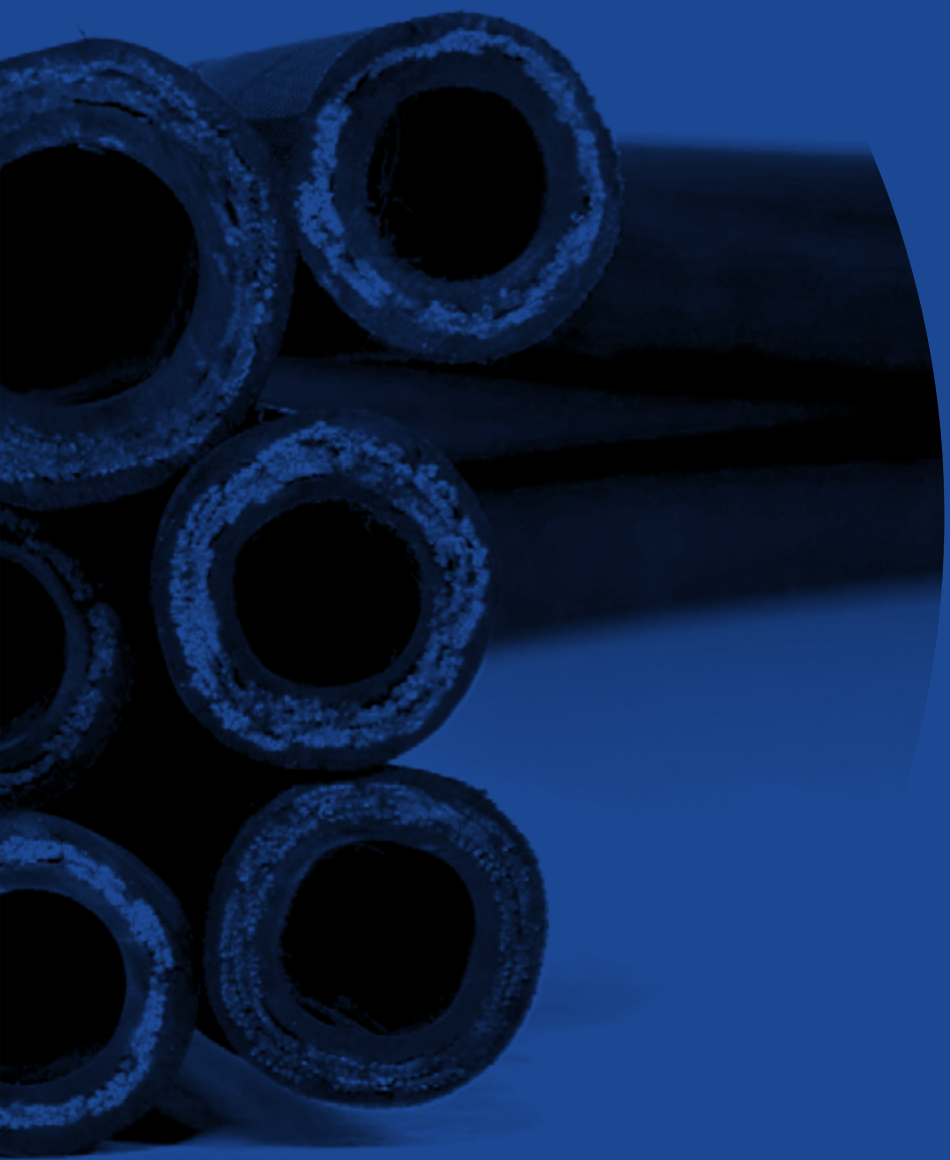
APPLICATION: designed specially for very high pressure mini hydraulic lines. Hydraulic lines pressure take-off

TEMPERATURE RANGE: -40°C (-40°F) +100°C (+212°F)
COUPLINGS: Balflex® 2-piece fittings serie 05

BALFLEX MICROTEST - 5/64" - WP 63 MPa / 9200 PSI

Appendix





Selection of hydraulic hoses

Working pressure

When selecting a hose it should be considered that it's working pressure should be higher than the maximum operating pressure of the system. For determination of the maximum operating pressure the system engineer should always consider possible pressure peaks during start up and inversion. Pressure peaks may be so short that they are only measurable with electronic devices. In suction applications, the capacity of the hose to withstand negative pressure is a decisive factor. Working pressures are given for working temperature of +20°C (+68°F). For increased temperatures a de-rating factor should be considered. The rated working pressures of Balflex® hydraulic hoses are summarized in table 1.

NOTE: Only an accurate knowledge of the pressure history of the service cycles of the equipment should lead to a sub-dimensioning of the hose by the engineer, bearing in mind the recommendations of SAE J 1927 standards.

Temperature

Excessive temperature is one of the main limitations of rubber and induces accelerated aging. Fluid temperature, either in motion or with the equipment stopped, should not exceed the maximum working temperature recommended for each hose. Likewise, surrounding temperature should be considered, specially when resulting from heat sources in the proximity of the hose assembly.

Air and Gaseous applications

Hose assemblies that are to be used in air and other gaseous applications shoud be pin-pricked, through the cover, prior to use.

These micro perforations allow gas that has permeated the inner tube of the hose to escape into the atmosphere. This prevents gases from accumulating and blistering the hose cover.

Fluid compatibility

Fluid compatibility with the hose and the coupling should be verified. Fluids that chemically attack the hose can lead to the contamination and obstruction of the hydraulic system and to premature failure of the hose. Handling gases requires special attention. As an orientation, the **Balflex®** Hydraulic Hose Fluid Compatibility Chart gives a classification of compatibility with some fluids. Consult **Balflex®** for compatibility of other fluids and rubber compounds. Whenever in doubt test before application.

Assembly geometry

Installation should guarantee that the minimum bend radius of the hose is respected and that bending occurs only in one plane. Hose length may suffer a variation between –4% and +2%, when submitted to pressure. The assembly length should provide enough margin for this change in length. Torsion and traction of the assembly must be avoided and protection and restrain of the assembly should be considered if there are obstacles to avoid. Mechanical loads acting on the assembly, including vibration, should be kept at a minimum. Free swivelling connectors should be used whenever torsion is present. Whenever hose failure may result in whipping (for example in gas applications) restraint through a steel cable to the connecting parts should be considered. When connecting a moving part, the free movement of the assembly without touching any surface should be assured. Positioning of the assembly should consider that risks of bodily injure and equipment damage through spillage or fluid ejection are minimized. Table 4 shows some correct and incorrect installation situations.

Permeability

All hoses present a certain degree of permeability, especially with gases and highly volatile liquids. The designer should consider the possibility that this permeability results in system or environment contamination.

Environmental compatibility

The hose and couplings compatibility with the working environment factors, as temperature, fire hazard, UV light, ozone, chemicals and electrical charges should be considered. External protection sleeves require an adequate assembly.

Dimensioning

Dimensioning of all components should guarantee that pressure loss is kept at a minimum, in order not to reduce power transmission and to avoid overheating or turbulence of the fluid that might lead to deterioration of the lining.

Electrical conductivity

To minimize the risk of Explosion or Eletrocution from electrical discharge through the assembly due to static electricity build up or non-conductivity. Whenever the hose is not unequivocally branded either non-conductive or anti-static, its electrical characteristics should always be considered as not controlled.

Abrasion

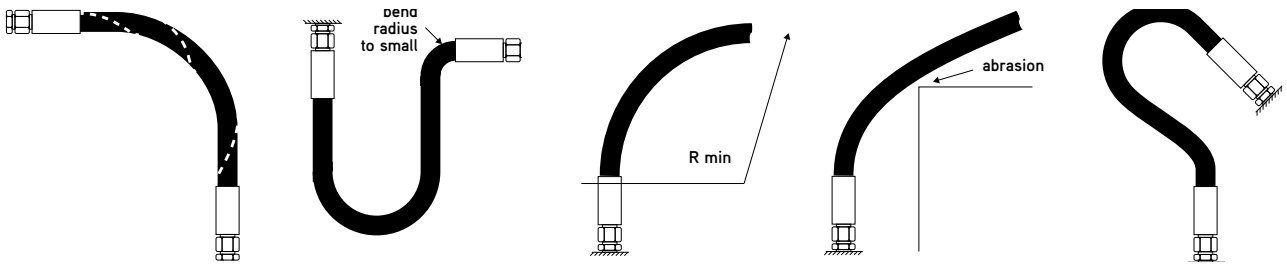
Accelerated external abrasion, through contact in motion or exposure to projected particles reduces drastically hose life and leads to premature failure through exposure of the reinforcement. For special applications Balflex® recommends hoses with special abrasion resistant rubber compounds or protection through adequate sleeves.

Couplings selection

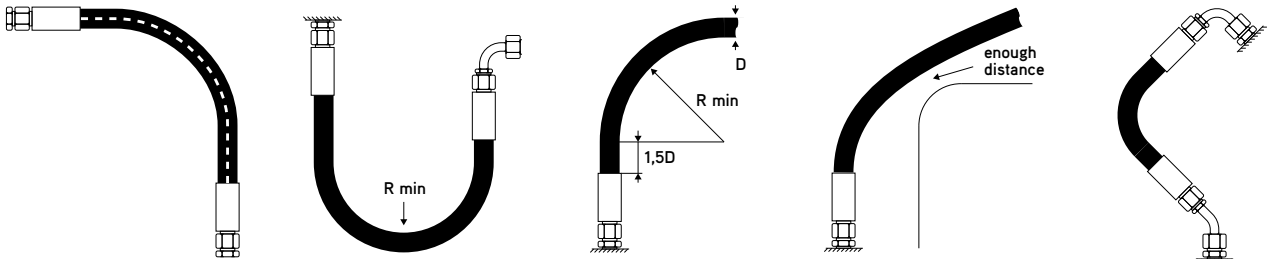
Couplings are a fundamental part of the geometry of hose assemblies. The compatibility of sealing and securement of the couplings to the system ports should be verified. The recommended coupling series for each hose should be used and the assembly instructions carefully followed. Inadequate couplings may damage the hose and lead to a premature failure.

Table 4: Examples of installation of hoses assemblies

Incorrect



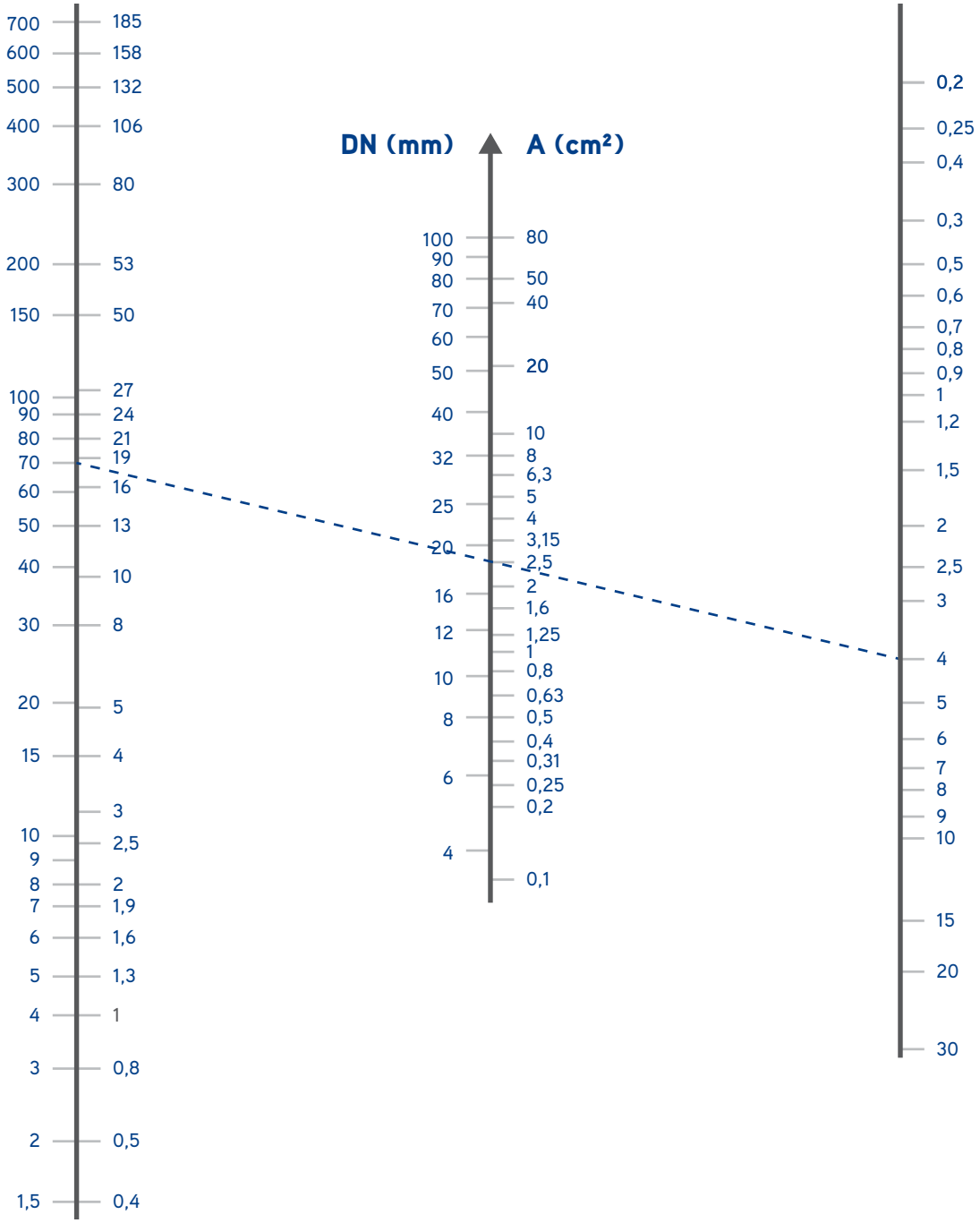
Correct



Balflex®

Hose Selection Chart

This graphic helps finding the Nominal Hose Diameter-DN (mm) or the Dash Size. Firstly, one must know the Flow Rate and Fluid Velocity values that are being used. These two pieces of information must be found in the outer graphic lines. Then by linking these two values with a straight line, one should obtain the Nominal Hose Diameter-DN (mm) or the Gauge Diameter-A (cm²). The example below shows that for a fluid velocity of 4 meters per second and a flow rate of 70 liters per minute or 19 gallons per minute, one should choose a hose with DN of 19mm it means 3/4" hose or a dash hose -12.



Storage

Recommendation for correct storage

Rubber is subject, by nature, to change in physical and chemical properties. These changes, which normally occur over the course of time, according to the kind of rubber used, can be accelerated by one particular factor or by a combination of these. Reinforcement materials are also adversely affected by unsuitable conditions of storage. The following recommendations give some precautions to be taken to ensure the minimum deterioration to stored articles.

Storage life

Storage time should be reduced to the minimum through programmed warehousing rotation. When it is not possible to avoid long term storage, it is necessary that the user, as indicated in ISO 8331, carries out a complete check of the hose before its use, according to the following criteria:

- maximum two years storage for assembly;
- maximum four years storage for hoses.

Temperature and humidity

The best temperature for the storage of rubber hoses varies from 10 to 25 degrees centigrade. Hoses should not be stored at temperature above 40°C or below 0°C. When the temperature is below -15°C it is necessary to take precautions when handling. Hoses should not be stored near sources of heat nor in conditions of high or low humidity. A humidity level of a maximum of 65% is recommended.

Light

Hoses must be stored in dark places, avoiding direct sun light or strong artificial light. Should store rooms have windows or glass openings, these must be screened with suitable filters.

Oxygen and ozone

Hoses should be protected from circulating air by suitable packing or by storing in air-tight containers. Ozone has a particularly aggressive action on all rubber products, the storage area must not contain any ozone producing devices such as high voltage electrical tension wires, electric motors or other devices which can provoke sparks or electric arcs.

Contact with other materials

Hoses should not come into contact with solvents, fuels, oils, greases, volatile chemical mixtures, acids, disinfectants or other organic liquids in general. Furthermore, direct contact with some metals (for example manganese, iron, copper and its alloys) and relative mixture exercise harmful effects on some types of rubber. Contact with PVC and creosote impregnated timber or fabrics should also be avoided.

Heat sources

The temperature limits given in point dedicated to temperature and humidity must be respected. When this is impossible, it is necessary to use a thermic shield at a distance not less than one meter.

Electric or magnetic field

Variation in electric or magnetic fields must be eliminated in storage facilities as these could provoke currents in metal coupling, heating them. Similar fields could be caused by high-tension cables or high frequency generators.

Storage conditions

Hoses must be stored in a relaxed condition free from tension, compression or other deformation and not in contact with any objects that could potentially pierce or cut the hose. It is preferable to store hoses on special shelves or on dry surfaces. Coiled hoses must be stored horizontally avoiding piling. When this is not possible the height of the piles must be such to avoid permanent deformation of hoses stored underneath. The inside diameter of the coil, during the storage, must be such as to not compromise the performances of the product. In particular, this diameter must not have a value less than those indicated by the manufacturer. It is advisable to avoid storing coiled hoses on poles or hooks. Furthermore it is advisable to store hoses to be delivered straight, horizontally, without bending.

Rodents and insects

Hoses must be protected from rodents and insects. When such a risk is probable adequate precautions must be taken.

Marking or packaged items

It is advisable that hoses are always easy to identify even if packed.

Exit from storage

Prior to delivery, hoses must be checked for integrity and must correspond to the required use. After long storage if couplings are not clipped, swaged or built-in, it is necessary to check that locking collars are tight.

Return to storage

Hoses that have been used must be free from all substances prior to storage. Particular attention must be paid when abrasive or similar substances have been conveyed. After cleaning, the hose must be checked for integrity.

Handling

Hoses must be moved with care avoiding knocks, dragging over abrasive surfaces and compression. Hoses must not be pulled violently when twisted or knotted. Heavy hoses, normally delivered in a straight line, must be laid on special supports for transport. Should wood supports be used these must not be treated with creosote or painted with substances which could damage the rubber.

Bending radius

Installation underneath the minimum bending radius reduces the life of the hose considerably. Moreover it is necessary to avoid bending at fitting ends.

Torsion

Hoses are not manufactured to work in torsion, except for specific purposes.

Test Recommendations for Hydraulic Hose and Hose Assemblies

Age	Recommendations
Up to 3 years	Use without further testing.
3 to 5 years	A pressure test at 1.5x the working pressure needs to be performed on all hoses.
5 to 8 years	Selected samples should be subjected to burst tests, cold bend tests, electrical tests and impulse tests. All hoses should be tested to 1.5x working pressure.
Over 8 years	These should be destroyed.

Test Recommendations for Thermoplastic Hose and Hose Assemblies

Age	Recommendations
Up to 3 years	Use without further testing.
5 to 8 years	A pressure test at 1.5x the working pressure needs to be performed on all hoses and selected samples should be burst tested.
8 to 12 years	Selected samples should be subjected to burst tests, cold bend tests, electrical tests and impulse tests
Over 12 years	These should be destroyed.

Troubleshooting

Problem	Possible Causes	Solutions
End connector blow-off from the end of the hose	- Hose and/or fitting may be unsuitable for the application or wrong match - Hose maybe too short, twisted or that the radius of the bend is lower than the minimum bending radius	- Replace fittings and/or hose with more suitable alternatives - Increase the hose length and make sure no twisting occurs during operation
	- The hose maybe crimped to the wrong swaging dimension	- Check the assembly is being performed correctly. Make sure the crimping diameter is correct
	- Hose maybe incorrectly assembled or crimped incorrectly	- Check assembly is being performed correctly
	- Skiving of the hose maybe required or the skiving may have been performed incorrectly	- Check the specifications of the hose fittings/hose and whether skiving is required. Also find a skiving diameter and length from the manufacturer
Hose bursts on the outer surface of a bend	- It is highly likely that the hose exceeded the minimum bend radius and therefore the reinforced inner braid or spiral layer has opened, causing a weak point in the hose structure	- Increase the length of the hose assembly, use 90˚ or 45˚ fittings to remove the tight bends or alternatively use a more compact hose with a lower minimum bending radiusor spiral layer has opened, causing a weak point in the hose structure
	- The pressure increased past the minimum burst pressure of the hose	- Replace the hose with one more suitable for the application or reduce the pressure within the system

Problem	Possible Causes	Solutions
Hose Liner deteriorates or swells, throughput is reduced, or leaks occur	- Hose liner is incompatible with the medium inside the hose	- Change the type of the hose to one more suitable for the medium within the hose
	- Temperature maybe outside the tolerance of the hose. This maybe the medium running through the hose or an environmental factor	- Change the type of hose to one more suitable for the temperature of the medium. If it is caused by the temperature of the surrounding environment, then a hose with a more temperature resistant cover maybe used
Hose has burst, and the wire reinforcement is rusted at the burst point	- Hose cover has been broken by trauma or abrasion	- Remove any routing issues that may cause trauma or abrasion. Possibly use a hose with a more resilient cover. Use some spiral wrap or other hose protection
	- Hose cover has been broken by extreme temperatures or chemical attack	- Choose a hose more suitable for the temperature and/or volatility of the medium
	- Hose cover has been broken by improper skiving of the hose	- Check that skiving is being performed correctly and to the right dimensions
	- Hose cover has been broken by gases trapped between the layers	- If gas is building up inside the cover, the hose may need to be perforated (pin-pricked). This lets the gas escape and prevents a pressure build up under the cover, which will eventually cause it to burst

Problem	Possible Causes	Solutions
Leaking occurs at the threaded connector	- Sealing surface or thread maybe affected by contamination	- Clean the connectors, and make sure no damage has occurred to the threads or the sealing cones
	- The connector may be loose, or conversely the connector may be over tightened	- Tighten the connectors or replace them as necessary
	- The O-ring or soft seal may have deteriorated	- Replace the seals if necessary
	- It may also be worthwhile to check that the sealing surfaces match. It could be possible that the threads match, but a sealing cone may not be present	- Change the adapters to a matching connection

Hydraulic Hose – General Safety Guidelines

Maintenance technicians, fabricators, end-users and installers need to be aware of the potential safety hazards when handling or even when in proximity to hydraulic hose assemblies. The following conditions can lead to personal injury and property damage:

1. …—Always use hose in well-ventilated areas; some fluids may permeate the hose cover and create fume and/or fire hazards.

2. Hydraulic systems typically operate at very high pressures. Any leak of pressurized fluid can penetrate the skin, causing severe tissue damage and burns. One good approach is to use guards or shields around the hose assembly to reduce the risk of injury.

3. Whipping – under high operating pressures, the hose and/or fitting can come loose or blow, causing the end of the hose to whip with great force. Again, the hose assembly should be shielded, guarded and, whenever possible, secured to avoid injury or damage from whipping.

4. Hydraulic fluids are flammable and can explode with a source of ignition. To avoid possible injury or property damage, care should be taken to eliminate ignition sources and to properly route the hose assembly to minimize the chance of combustion.

5. Most hose is conductive. Some applications require use of non-conductive hose to avoid electrocution.

6. When hydraulic hose assemblies fail, the equipment it powers will fail, too, sometimes abruptly and without warning. Never work directly beneath hydraulically powered booms, shovels or other large, heavy pieces of equipment.

7. When air or gaseous materials are being conveyed, the correct hose should be used. A pin-perforated cover may be required. Perforations in the cover will prevent permeated gases from accumulating and blistering the cover. Check with your supplier for the correct hose specification.

8. Extreme care should be used when operating hand-held hydraulic tools where the operator is in proximity to the hydraulic hose assembly. The following steps should be taken to avoid injury:

   a. Use strain relievers on each end of the hose to prevent kinking, excessive bending or stress on the hose at the coupling.

   b. Never use the hose assembly to pull or carry the tool.

   c. Exposed hose near the operator should be guarded in case hose assembly fails to prevent injury from high pressure or high temperature fluid.

   d. Operators should be protected with the required safety clothing for the job and fluids being used.

   e. The hose should be protected against any external damage.

9. Hose assemblies should be properly routed to avoid strain and the possibility of the hose bursting. Proper routing will also protect the assembly against flex fatigue, excessive heat or abrasion.

10. When selecting a hose style and assembly, check for hose compliance to all relevant government, industry, and safety standards or regulations.

High-Pressure Injection Hazards

High-pressure injection injuries (also known as grease gun injuries), are caused by the accidental injection of a foreign material, such as grease, oil, or solvent under pressure, through the skin and into the underlying tissue. This is analogous to medical techniques used to administer immunization shots without a needle.

A grease gun injury can cause serious delayed soft tissue damage and should be treated as a surgical emergency. Any person sustaining an injury of this sort should seek immediate medical attention, regardless of the appearance of the wound or its size.

Accidents involving injection injuries can occur when using any type of pressurized equipment. Two common cases in which petroleum products may be involved are accidents with pressurized grease guns or with hydraulic systems.

Pressurized grease guns are commonly used in service stations, garages and industrial plants. Typically, most service stations have grease guns operating at 500-1.000 kPa (90-150 psi) air pressure. Most modern industrial hydraulic systems operate in the range of 13 to 35 MPa (2,000 to 5,000 psi). A stream of oil ejected from a nozzle or leak under pressure of this magnitude has a velocity comparable to the muzzle velocity of a rifle bullet.

The most common sites of injury are the fingers or hand. However, any part of the body can be involved. With grease guns, especially, accidents usually occur when the injured person wipes the tip of the nozzle with his finger or the nozzle slips off the grease fitting while being held in place.

Grease may also be injected into the body from a leak in the grease line. In **hydraulic system accidents**, a leak in a hydraulic line can emit a high-velocity stream of oil and cause injury if it strikes a person. Workers are commonly injured when they try to stop the leak by covering it with their hand or finger.

Chemical irritation is not a major problem with most petroleum products because hydraulic oils and greases are generally non-irritating and low toxicity to skin. However, the resulting bacterial infection can be a problem because of the damaged tissue and circulation in the wound, even though it has been surgically opened and the foreign material removed. One of the dangers from this type of injury is that it is not recognized quickly by the injured person as being serious. Often the initial wound may be very small and essentially painless. The injured person may even continue working. However, in every case in which a person receives this type of injury, he or she should stop work and get immediate medical treatment.

The following are some basic rules that must be observed:

DON'T

- × Play around with or use a grease gun for practical jokes;
- × Touch the end of a grease gun;
- × Use any part of the body to test a grease gun for grease flow;
- × Use any part of the body to stop a leak in a hydraulic line.

DO

- Routinely check all hoses for wear and possible weak spots;
- Handle a grease gun with respect for its power;
- Take special care when starting up a new hydraulic system to be sure that every part of the system can withstand the operating pressure.

IN CASE OF A GREASE GUN ACCIDENT, SEEK IMMEDIATE MEDICAL TREATMENT. Identify the grease or oil involved in the accident. Contact the supplier or the manufacturer to obtain the product's Material Safety Data Sheet (MSDS) about possible toxicity if a physician or hospital needs more information.

Hydraulic Hose and Electrocution

Although it is a mercifully infrequent occurrence, workers have been burned or electrocuted when using metal-reinforced hoses on aerial bucket trucks near energized power lines. Hydraulic hose, fluid and power lines are a deadly combination. Electrical contact between two power line phases through a metal-reinforced hydraulic hose can generate sufficient heat to rupture the hose and cause a fire. In addition, an electrocution hazard can be created if a metal-reinforced hose on the boom of a truck contacts an energized power line and allows current to flow through the truck chassis. Either scenario can quickly result in serious injury or death.

OSHA standards require that all hydraulic tools used on or near energized power lines or equipment be supplied with non-conducting hoses with sufficient strength for normal operating pressures. NIOSH recommends that the following precautions be taken to control the hazards associated with hydraulic hoses used on aerial bucket trucks:

- Employers should not install metal-reinforced hydraulic hoses on any part of the boom, aerial bucket or hydraulic attachments of aerial bucket trucks used near energized power lines;
- Employers should remove any metal-reinforced hoses currently installed on any part of the boom, aerial bucket or hydraulic attachments of aerial bucket trucks used to work near energized power lines. Before work begins, employers should require a competent person to conduct an initial and daily job site survey and inspect all equipment to identify hazards and implement appropriate controls;
- Employers should stress the importance of adherence to established safe work procedures. These include covering energized power lines in the immediate work area with insulating hoses or blankets, or de-energizing and grounding the lines before work begins. Workers should test de-energized power lines to verify that they have actually been de-energized;
- Employers should provide all workers with task-specific training that shows how each step controls the identified hazard;
- Employers should install all hydraulic hoses used in aerial buckets so that the flow of hydraulic fluid can be stopped immediately by the worker in the bucket. This objective can be achieved by incorporating a control valve into the hydraulic system in the aerial bucket. Manufacturers should continue research into the development of hydraulic fluids that are non-flammable and non-conducting.
- Employers should encourage equipment and tool manufacturers to design an independent coupling system to prevent the use of unsuitable hydraulic hoses on booms, aerial buckets or aerial bucket attachments. Labelling or colour coding hoses may also help workers who service this equipment.

These Guidelines reflect common practice procedures to be held for a Safe use of Hydraulic Fluid Power.

In no event shall Balflex® have any liability whatsoever to any person for any special, punitive, incidental or consequential damages been caused by mishandling of Hydraulic Fluid Power systems.

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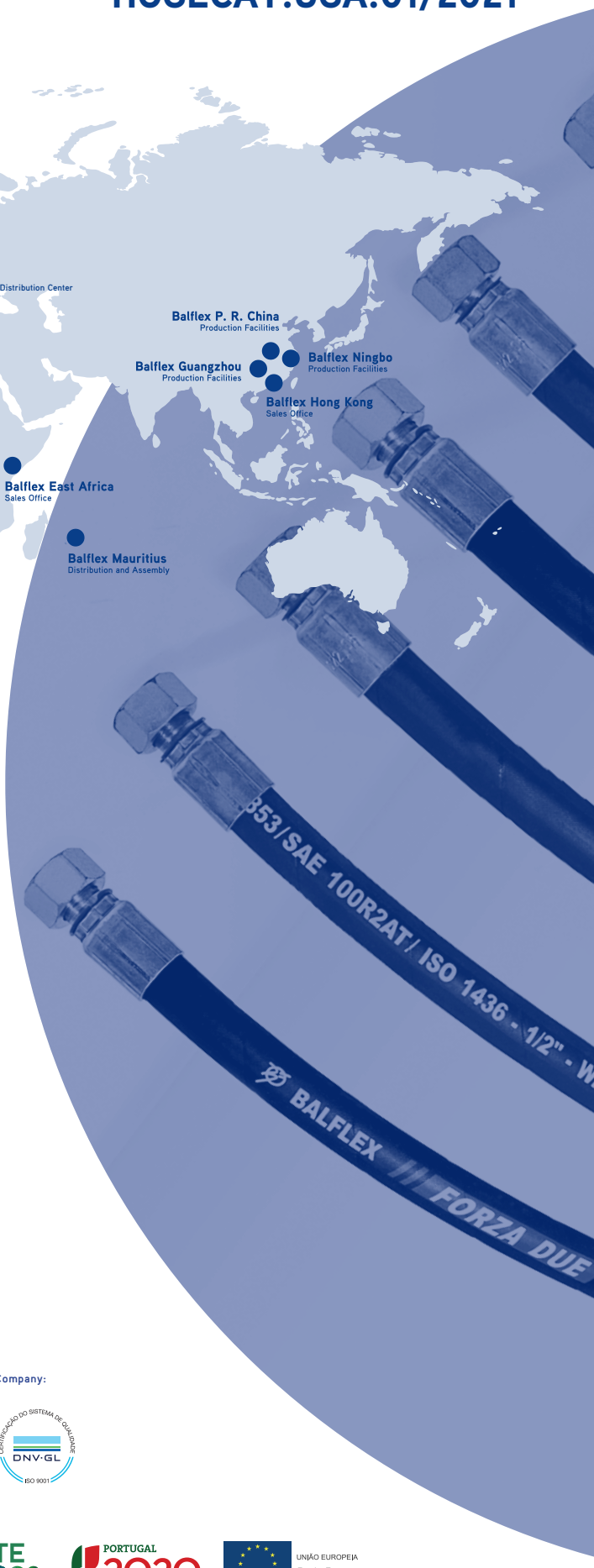

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