

Balflex[®]

High Temperature Hydraulic Hose



GESFLUID



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, for petroleum and water base hydraulic fluids. They are however not suitable for Hot Dry Air applications.

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 [W P] and nominal diameter [D N] are always branded on the hose.

High Temperature Hydraulic hoses are designed for petroleum base hydraulic fluids applications with a temperature range of -40°C (-40°F) to +135°C (+275°F). Attention must be taken with conveyance of dry hot air, as premature ageing may occur.

Selection, assembly and installation of hydraulic hoses should follow **Balflex®** recommendations and **SAE J1273** and **DIN 20066** standards.

Hydraulic hose assemblies should always be thoroughly inspected and hydraulically tested before installation. All hydraulics systems should be tested against leakage and malfunction in an appropriate area after any intervention.

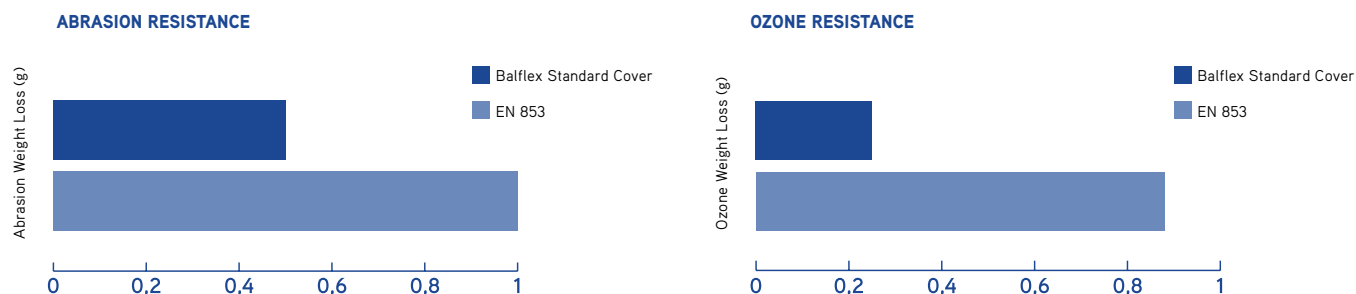
Installations that do not comply with an adequate layout geometry of the hose assembly may significantly reduce the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose and/or end fitting specifications may shorten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

The failure of a hydraulic steel wire braided 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 fittings and their parts, the whipping of unrestrained hose, spillage or combustion of the fluid, electrical shocks through contact with electrical sources, immovability, fall or sudden movement of masses controlled by the hydraulic system.



Balflex Hoses are manufactured with a tough outer cover that increases the resistance to environmental and external application damages and present the following main features:

- × Excellent abrasion resistant when tested according to modified ISO 6945 method, and according to ISO 20444 new abrasion test methods.
- × High level of resistance to cracking due to Ozone exposure, resulting in 4 times superior resistance than the relevant EN ISO 7326 requirement;



- × US MSHA Approved Cover (IC 252/00)

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

Balflex	Standard	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"
		-3	-4	-5	-6	-8	-10	-12	-16	-20	-24	-32
		DN5	DN6	DN8	DN10	DN12	DN16	DN19	DN25	DN31	DN38	DN51
FORZA UNO TROPIC	DIN EN 853 1SN / ISO 1436 / SAE J517 RIAT	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"	1/4"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	1.13/16"	23/32"	3"
		-4	-5	-6	-8	-10	-12	-16	-20	-24	-32	-40	-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 H₂O (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 H₂O (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		Ethyl Glycol	●	Oil of Turpentine	●
Acetic Acid (30%)	●	Ethyleneoxide	●	Oleic Acid	●
Acetone	●	Fluorine	●	Oxalic Acid	●
Acetylene	●	Formaldehyde	●	Perchloroethylene	●
Ammonia, Gas (Hot)	●	Formaldehyde 40%	●	Phenol	●
Ammonia, Liquid	●	Fuel Oil	●	Phosphoric Acid (10%)	●
Ammoniumchloride		Gaseous Hydrogen	●	Phosphoric Acid (70%)	●
Amyl Acetate	●	Gasoline	●	Phosphate Ester Base Oil	●
Aniline	●	Glycerin / Glycerol	●	Saturated Steam	●
Animal Oils	●	Glycol to 66°C	●	Sea Water	●
Benzol / Benzene	●	Hexane	●	Silicone Oils	●
Butane	●	Hydraulic Oil	●	Soap Solutions	●
Butyl Acetate	●	Hydrochloric Acid 37%	●	Soda	●
Butyl Alcohol / Butanol	●	Hydroger Peroxide (Dil.)	●	Sodium Chloride Solutions	●
Calcium Chloride Solutions		Hydroger Peroxide (Conc.)	●	Sodium Hydroxide 20%	●
Carbon Dioxide	●	Isocyanates		Sodium Hypochloride 10%	●
Carbon Disulfide	●	Isopropil Alcohol	●	Sulphur	●
Carbonates	●	Kerosene	●	Sulphur Dioxide	●
Caustic Soda	●	Liquid Oxygen	●	Sulphuric Acid up to 50%	●
Chlorinated Solvents	●	LPG	●	Sulphuric Acid above 50%	●
Chlorine	●	Lubricating Oils	●	Toluene	●
Chloroform	●	Mercury	●	Trichloroethylene	●
Citric and Solutions	●	Methyl Alcohol / Methanol	●	Vegetable Greases	●
Compressed Air	●	Methyl Chloride (Cold)	●	Water	●
Cyclohexane	●	Methyl Ethyl Khetone	●	Xylene	●
Crude Petroleum Oil	●	Mineral Oils	●		
Diocetyl Phthalate		Naphtha	●		
Diesel Fuel	●	Naphthalene	●		
Ethers	●	Natural Gas	●		
Ethyl Acetate	●	Nitric Acid (Dil.)	●		
Ethyl Alcohol	●	Nitric Acid (Conc.)	●		
Ethyl Chloride	●	Nitrobenzen	●		

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.



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 mm	OD mm	MPa	PSI	MPa	PSI	MIN BEND RAD mm	KG 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 aircrafts and compressors working with air at +60°C

BALFLEX // FORZA DUE - TROPIC -139°C / 275°F - 2SN - DN5 - DIN EN 853 / SAE 100R2AT / ISO 1436 - 3/16" - WP 41.5 MPa 6100 PSI - MSHA IC-252/00

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 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 aircrafts and compressors working with air at +60°C

BALFLEX // BALPAC - PREMIUM - TROPIC -130°C / 275°F- DIN EN 857 - 2SC / EXCEEDS SAE 100R16 / ISO 11237 - DN6 - 1/4" - WP 3000 PSI / 20 MPa - MSHA IC-253208



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	mm	mm	MPa	PSI	MPa	PSI	mm	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 aircrafts and compressors working with air at +60°C

BALFLEX / BRAKEMASTER R - HEATMASTER SAE 100R5 / SAE J1402 AIR - DOT - 130°C / 275°F - 3/16" - WP 20.7 MPa / 3100 PSI - MSHA IC-352400