Balflex®

Spiral Hydraulic Hoses

GESFLUID


BALFLEX
SAE 100R12/DIN EN 856 - DN25 - 1" - ISO 3862 - WP 350bar - Flame Resistant - MSHA IC - 252/00
POWERSPIR BESTFLEX
SAE 100R15/ISO 3862 - DN25 - 1" - WP 350bar - Flame Resistant - MSHA IC-252/00
BALFLEX
POWERSPIR BESTFLEX

Balflex®

Spiral Hydraulic Hoses

Balflex® hydraulic Steel Wire 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, 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 spiral wounded 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.

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). For conveyance of Hot Air working temperature should be reduced to a maximum of +60°C (+140°F).

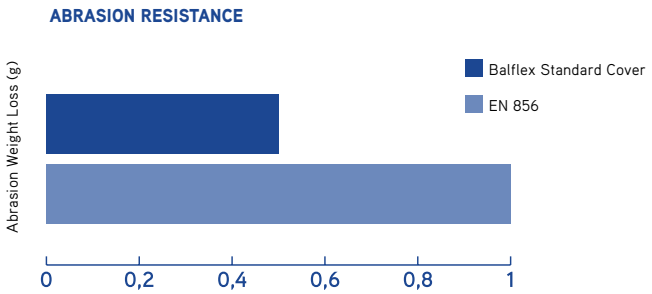
Selection, assembly and installation of hydraulic steel wire spiral wounded hoses should follow **Balflex®** recommendations and SAE J1273 and DIN 20066 standards. **Hydraulic hose assemblies should always be thoroughly inspected and hydraulically tested before installation.** All hydraulics systems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

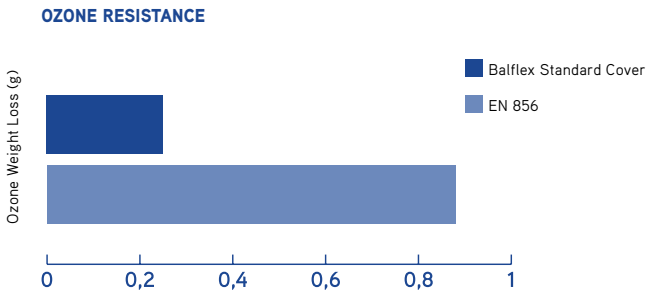
Installations that do not comply with an adequate layout geometry of the hose assembly may significantly reduce the lifetime of the hose. Likewise, the use of wrongly dimensioned hoses or application in a system where working characteristics exceed the hose and/or end fitting specifications may shorten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

The failure of a hydraulic steel wire spiral wounded 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 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

Balflex®

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.

Balflex®

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