

# Balflex®



HOSE  
CATALOG  
2019

# European Technology

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*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.*

*56 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.

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# Quality

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

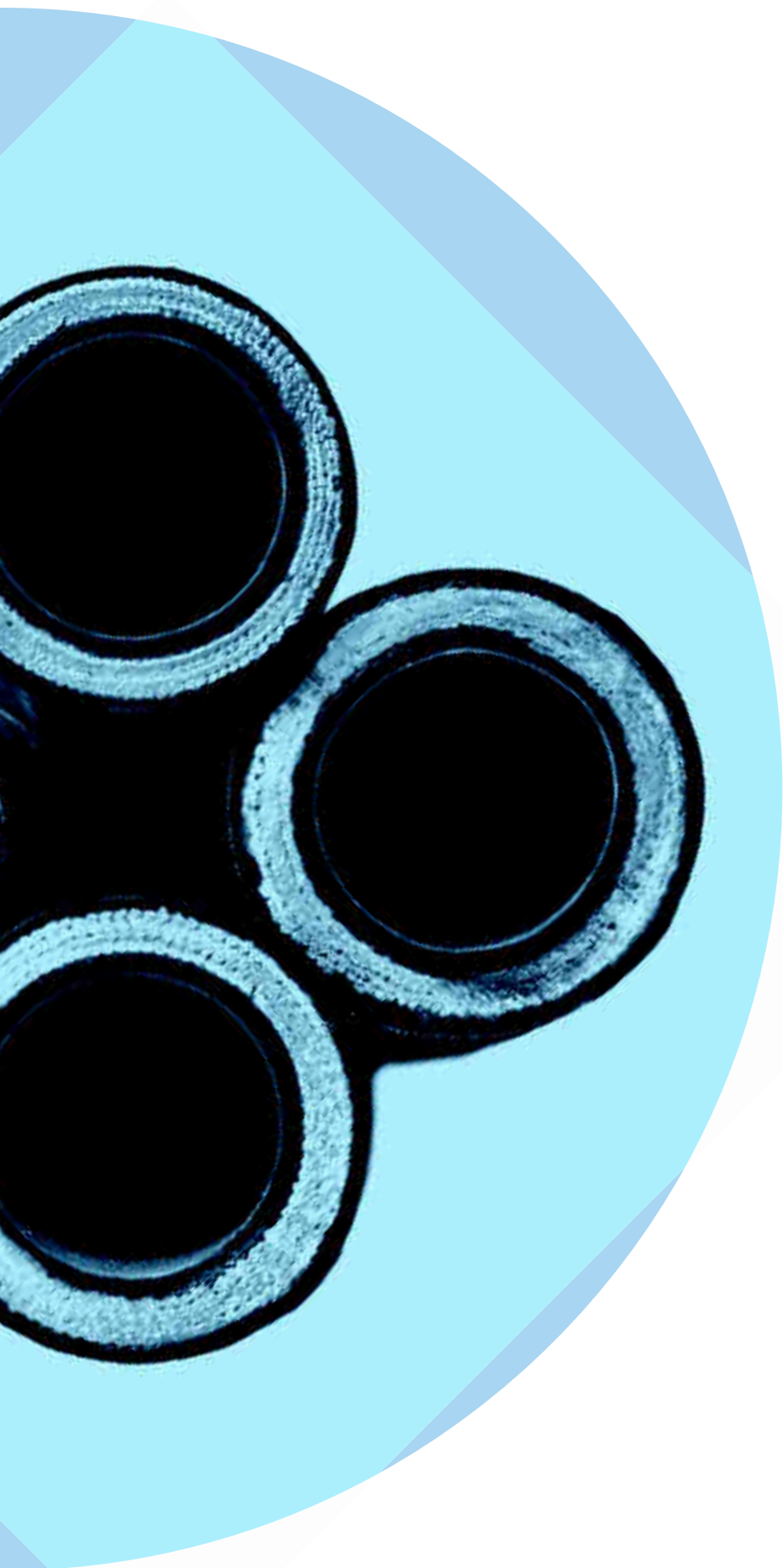
Balflex® has earned various certifications for our Management Systems and Products. This reliable and consistent approach has allowed us to achieve our ISO 9001:2015 certification. At Balflex® quality and service always comes first. We are dedicated to continue the development of new products with a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

## Member of:



## Certified by:







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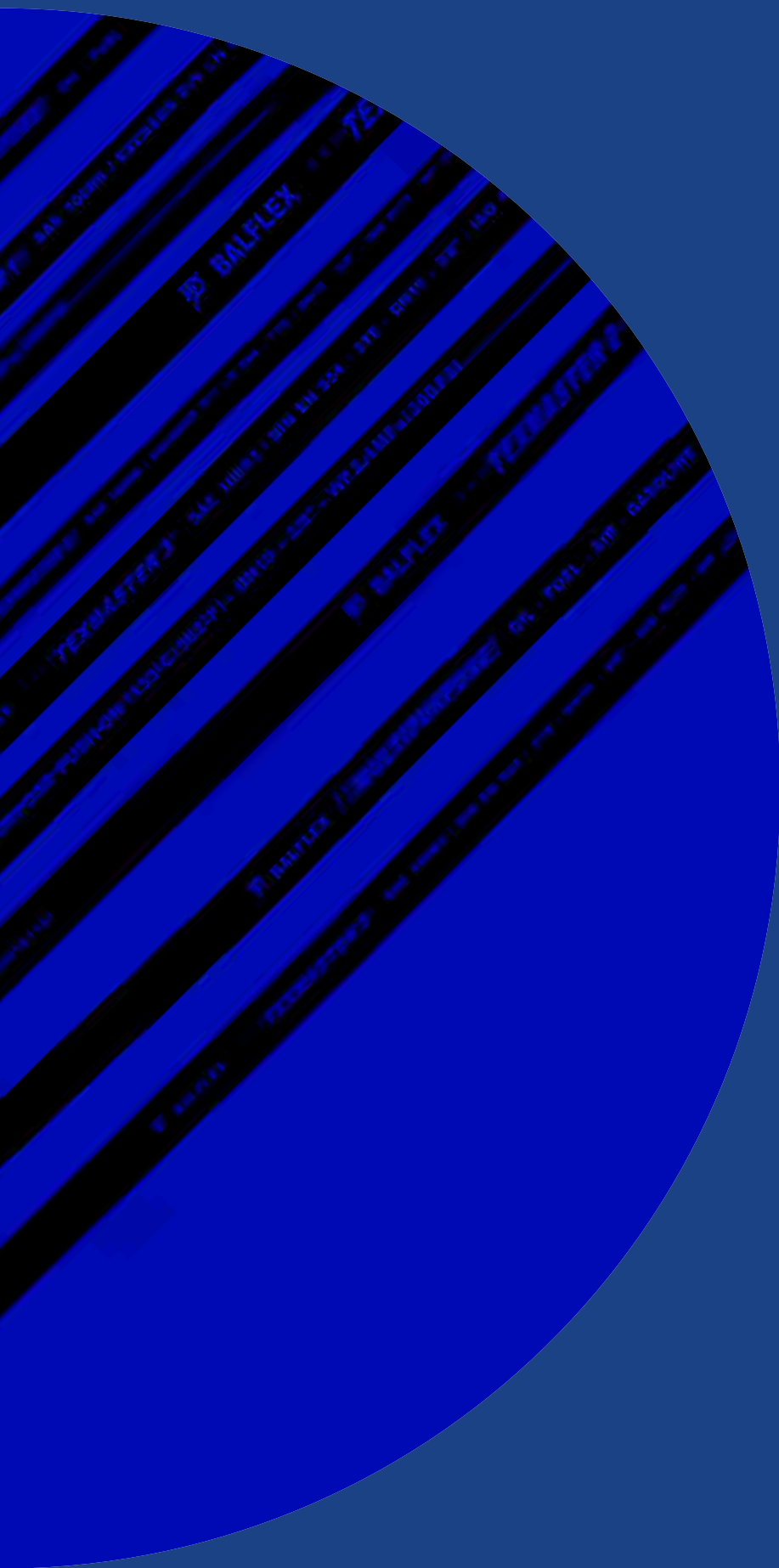




# Textile Braid Hydraulic Hoses

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## 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

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**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"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
		-3 DN5	-4 DN6	-5 DN8	-6 DN10	-8 DN12	-10 DN16	-12 DN19	-16 DN25	-20 DN31	-24 DN38	-32 DN51	-40 DN63	-48 DN76	-56 DN90	-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 3TE / ISO 4079 / SAE J517 R3	16.0	14.5	13.0	11.0	9.3	8.0	7.0	5.5	4.5	4.0	3.3				
		2400	2200	1900	1600	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**

<b>bar</b>	0,00134	0,0025	0,0339	0,069	0,098	<b>1,00</b>	1,01	10,0	100
<b>PSI</b>	0,0194	0,036	0,492	<b>1,001</b>	1,421	14,504	14,69	145,04	1450,38
<b>MPa</b>	-	-	0,003	0,007	0,0098	0,10	0,101	<b>1,00</b>	10,00
<b>1 atm</b>	0,001	0,0025	0,0335	0,068	0,097	0,987	<b>1</b>	9,87	98,69
<b>m H2O (20°C)</b>	0,014	0,026	0,346	0,704	<b>1</b>	10,207	10,34	102,074	3,4
<b>in Hg (20°C)</b>	0,0396	0,074	<b>1,001</b>	2,04	2,89	29,53	29,91	295,3	3,4
<b>in H2O (20°C)</b>	0,538	<b>1,005</b>	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
<b>mm Hg (20°C)</b>	<b>1,005</b>	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°	$C° \times 1,8 + 32$	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		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	●		
Diocyl 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.

# TEXMASTER 1



DIN EN 854 1TE / SAE 100R6 – 10.1216.

Medium pressure, single textile braid reinforced hydraulic hose

REFERENCE	#	DN	inch	SAE Dash	Cross-section		Pressure		Burst Pressure		MIN BEND RAD	KG
					mm	mm	MPa	PSI	MPa	PSI		
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:** 2 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 1.4 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	Cross-section		Pressure		Burst Pressure		MIN BEND RAD	KG
					mm	mm	MPa	MPa	MPa	MPa		
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:** 2 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				PSI		PSI		
					mm	mm	MPa		MPa		mm	kg/m
R3-03	10.1220.03	DN5	3/16"	-3	4,8	12,8	<b>16.0</b>	2400	<b>64.0</b>	9600	40	0,13
R3-04	10.1220.04	DN6	1/4"	-4	6,3	14,4	<b>14.5</b>	2200	<b>58.0</b>	8800	45	0,18
R3-05	10.1220.05	DN8	5/16"	-5	8,0	16,9	<b>13.0</b>	1900	<b>52.0</b>	7600	55	0,25
R3-06	10.1220.06	DN10	3/8"	-6	9,5	18,5	<b>11.0</b>	1600	<b>44.0</b>	6400	70	0,28
R3-08	10.1220.08	DN12	1/2"	-8	12,7	21,7	<b>9.3</b>	1400	<b>37.2</b>	5600	85	0,44
R3-10	10.1220.10	DN16	5/8"	-10	16,0	25,9	<b>8.0</b>	1200	<b>32.0</b>	4800	105	0,49
R3-12	10.1220.12	DN19	3/4"	-12	19,0	29,0	<b>7.0</b>	1100	<b>28.0</b>	4400	130	0,70
R3-16	10.1220.16	DN25	1"	-16	25,4	35,9	<b>5.5</b>	800	<b>22.0</b>	3200	150	0,79
R3-20	10.1220.20	DN31	1.1/4"	-20	32,0	42,3	<b>4.5</b>	660	<b>18.0</b>	2640	190	0,88
R3-24	10.1220.24	DN38	1.1/2"	-24	38,0	49,6	<b>4.0</b>	580	<b>16.0</b>	2320	240	1,17
R3-32	10.1220.32	DN51	2"	-32	50,8	62,3	<b>3.3</b>	480	<b>13.2</b>	1920	300	1,63

**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 / DIN EN 854 - 3TE - DN5 - 3/16" - ISO 4079 - WP <sup>18 MPa</sup> 2400 PSI - Flame Resistant - MSHA IC-252/00









# MULTIPURPOSE



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

Oil, Fuel and Gasoline

REFERENCE	#	inch	SAE Dash				PSI		PSI		
				mm	mm	MPa		MPa		mm	kg/m
MULTI-03	10.1215.03	3/16"	-3	4,8	11,0	<b>2,0</b>	300	<b>6,0</b>	1200	50	0,10
MULTI-04	10.1215.04	1/4"	-4	6,3	14,0	<b>2,0</b>	300	<b>6,0</b>	1200	60	0,16
MULTI-05	10.1215.05	5/16"	-5	8,0	17,0	<b>2,0</b>	300	<b>6,0</b>	1200	80	0,24
MULTI-06	10.1215.06	3/8"	-6	9,5	19,0	<b>2,0</b>	300	<b>6,0</b>	1200	100	0,29
MULTI-08	10.1215.08	1/2"	-8	12,7	21,0	<b>2,0</b>	300	<b>6,0</b>	1200	125	0,40
MULTI-10	10.1215.10	5/8"	-10	16,0	26,0	<b>2,0</b>	300	<b>6,0</b>	1200	160	0,50
MULTI-12	10.1215.12	3/4"	-12	19,0	29,0	<b>2,0</b>	300	<b>6,0</b>	1200	190	0,66
MULTI-16	10.1215.16	1"	-16	25,4	36,0	<b>2,0</b>	300	<b>6,0</b>	1200	254	0,90
MULTI-20	10.1215.20	1.1/4"	-20	32,0	42,0	<b>2,0</b>	300	<b>6,0</b>	1200	320	1,20
MULTI-24	10.1215.24	1.1/2"	-24	38,0	49,5	<b>2,0</b>	300	<b>6,0</b>	1200	380	1,42
MULTI-32	10.1215.32	2"	-32	50,8	62,2	<b>2,0</b>	300	<b>6,0</b>	1200	510	1,89

**INNER TUBE:** seamless oil, fuel and gasoline resistant synthetic rubber  
**REINFORCEMENT:** 2 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 2.0 MPa / 300 PSI - Flame Resistant - MSHA (C-252/00)



# TORNARE 4



## SAE 100R4 – 10.1219.

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

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

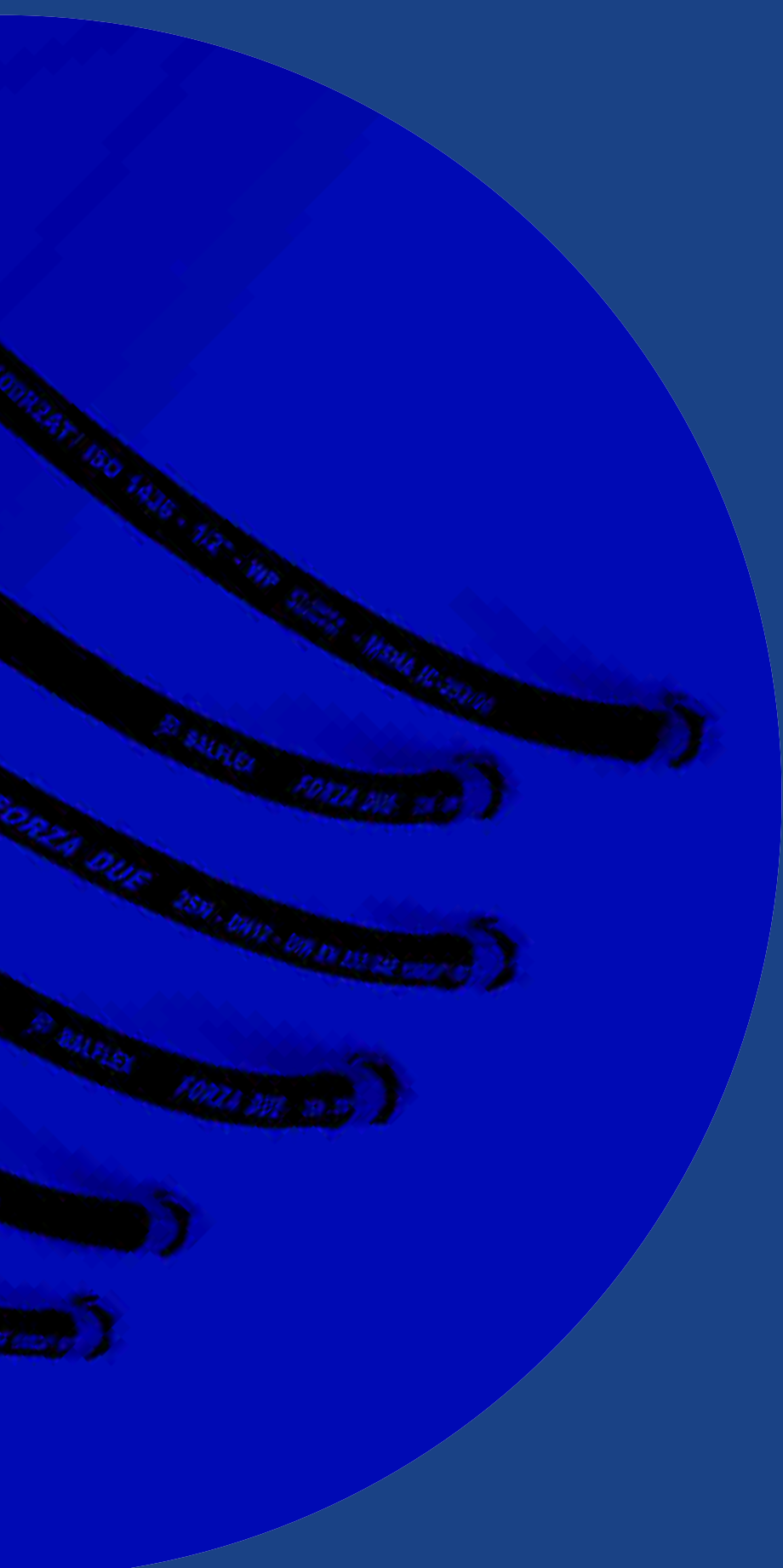
**COVER:** U.S. MSHA approved

**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

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## 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

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**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"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"
		-3	-4	-5	-6	-8	-10	-12	-16	-20	-24	-32	-40	-48
		DN5	DN6	DN8	DN10	DN12	DN16	DN19	DN25	DN31	DN38	DN51	DN63	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		40.0	35.0	33.0	27.5	25.0	21.5	16.5					
			5800	5100	4800	4100	3700	3200	2400					
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"	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**

<b>bar</b>	0,00134	0,0025	0,0339	0,069	0,098	<b>1,00</b>	1,01	10,0	100
<b>PSI</b>	0,0194	0,036	0,492	<b>1,001</b>	1,421	14,504	14,69	145,04	1450,38
<b>MPa</b>	-	-	0,003	0,007	0,0098	0,10	0,101	<b>1,00</b>	10,00
<b>1 atm</b>	0,001	0,0025	0,0335	0,068	0,097	0,987	<b>1</b>	9,87	98,69
<b>m H2O (20°C)</b>	0,014	0,026	0,346	0,704	<b>1</b>	10,207	10,34	102,074	3,4
<b>in Hg (20°C)</b>	0,0396	0,074	<b>1,001</b>	2,04	2,89	29,53	29,91	295,3	3,4
<b>in H2O (20°C)</b>	0,538	<b>1,005</b>	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
<b>mm Hg (20°C)</b>	<b>1,005</b>	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	●		
Diocyl 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 UNO



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

High pressure, single steel braid reinforced hydraulic hose

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

**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

**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 (Arctic) / 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 254MPa 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	Cross-section diagrams		Pressure		Burst Pressure		MIN BEND RAD	KG
					mm	mm	MPa	PSI	MPa	PSI		
R2AT-03	10.1004.03	DN5	3/16"	-3	4,8	13,4	<b>41.5</b>	6100	<b>165.0</b>	24400	89	0,32
R2AT-04	10.1004.04	DN6	1/4"	-4	6,3	14,7	<b>40.0</b>	5800	<b>160.0</b>	23200	100	0,38
R2AT-05	10.1004.05	DN8	5/16"	-5	8,0	16,5	<b>35.0</b>	5100	<b>140.0</b>	20400	114	0,45
R2AT-06	10.1004.06	DN10	3/8"	-6	9,5	18,7	<b>33.0</b>	4800	<b>132.0</b>	19200	127	0,53
R2AT-08	10.1004.08	DN12	1/2"	-8	12,7	21,9	<b>27.5</b>	4000	<b>110.0</b>	16000	178	0,65
R2AT-10	10.1004.10	DN16	5/8"	-10	16,0	25,3	<b>25.0</b>	3700	<b>100.0</b>	14800	200	0,76
R2AT-12	10.1004.12	DN19	3/4"	-12	19,0	29,3	<b>21.5</b>	3200	<b>86.0</b>	12800	240	1,00
R2AT-16	10.1004.16	DN25	1"	-16	25,4	37,9	<b>16.5</b>	2400	<b>65.0</b>	9600	300	1,48
R2AT-20	10.1004.20	DN31	1.1/4"	-20	32,0	47,5	<b>12.5</b>	1900	<b>50.0</b>	7600	419	2,14
R2AT-24	10.1004.24	DN38	1.1/2"	-24	38,0	54,6	<b>9.0</b>	1400	<b>36.0</b>	5600	500	2,55
R2AT-32	10.1004.32	DN51	2"	-32	50,8	67,4	<b>8.0</b>	1200	<b>32.0</b>	4800	630	3,30
R2AT-40	10.1004.40	DN63	2.1/2"	-40	63,5	78,0	<b>7.0</b>	1100	<b>28.0</b>	4400	760	3,96
R2AT-48	10.1004.48	DN76	3"	-48	76,2	90,0	<b>5.5</b>	800	<b>22.0</b>	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 (Arctic) / 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 <sup>41.5MPa</sup> 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
1 Wire Braid												
R17-04	10.1017.04	DN6	1/4"	-4	6.3	12.5	<b>22.5</b>	3300	<b>90.0</b>	13200	51	0.22
R17-05	10.1017.05	DN8	5/16"	-5	8.0	13.8	<b>21.5</b>	3200	<b>86.0</b>	12800	60	0.27
R17-06	10.1017.06	DN10	3/8"	-6	9.5	16.2	<b>21.0</b>	3000	<b>84.0</b>	12000	64	0.34
R17-08	10.1017.08	DN12	1/2"	-8	12.7	19.4	<b>21.0</b>	3000	<b>84.0</b>	12000	89	0.42
2 Wire Braid												
R17-10	10.1017.10	DN16	5/8"	-10	15.9	24.2	<b>21.0</b>	3000	<b>84.0</b>	12000	102	0.51
R17-12	10.1017.12	DN19	3/4"	-12	19.0	28.2	<b>21.0</b>	3000	<b>84.0</b>	12000	122	0.63
R17-16	10.1017.16	DN25	1"	-16	25.4	35.6	<b>21.0</b>	3000	<b>84.0</b>	12000	152	1.00

**INNER TUBE:** seamless oil resistant synthetic rubber  
**REINFORCEMENT:** 2 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 (Arctic) / 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
1SC-10	10.1018.10	DN16	5/8"	-10	15,9	22,6	<b>13.0</b>	1900	<b>52.0</b>	7600	200	0.73
1SC-12	10.1018.12	DN19	3/4"	-12	19,0	26,2	<b>10.5</b>	1600	<b>42.0</b>	6400	240	0.94
1SC-16	10.1018.16	DN25	1"	-16	25,4	33,6	<b>8.8</b>	1300	<b>35.2</b>	5200	300	1.49

**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 (Arctic) / 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R19-10	10.1020.04	DN6	1/4"	-4	6,3	13,0	<b>28,0</b>	4000	<b>112,0</b>	16000	50	0,27
R19-12	10.1020.06	DN10	3/8"	-6	9,5	17,0	<b>28,0</b>	4000	<b>112,0</b>	16000	65	0,42
R19-10	10.1020.08	DN12	1/2"	-8	12,7	20,0	<b>28,0</b>	4000	<b>112,0</b>	16000	90	0,52
R19-12	10.1020.10	DN16	5/8"	-10	16,0	24,0	<b>28,0</b>	4000	<b>112,0</b>	16000	100	0,63
R19-16	10.1020.12	DN19	3/4"	-12	19,0	28,0	<b>28,0</b>	4000	<b>112,0</b>	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 (Arctic) / Tough Cover (Armourguard)









# 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R16-04	10.1019.04	DN6	1/4"	-4	6,3	13,2	<b>42,5</b>	6200	<b>170</b>	24800	50	0,27
R16-05	10.1019.05	DN8	5/16"	-5	8,0	15,1	<b>40</b>	5800	<b>160</b>	23200	57	0,30
R16-06	10.1019.06	DN10	3/8"	-6	9,5	17,0	<b>35</b>	5100	<b>140</b>	20400	65	0,42
R16-08	10.1019.08	DN12	1/2"	-8	12,7	20,5	<b>31</b>	4500	<b>124</b>	18000	90	0,52
R16-10	10.1019.10	DN16	5/8"	-10	16,0	24,2	<b>28</b>	4000	<b>112</b>	16000	100	0,63
R16-12	10.1019.12	DN19	3/4"	-12	19,0	28,2	<b>28</b>	4000	<b>112</b>	16000	120	0,80
R16-16	10.1019.16	DN25	1"	-16	25,4	35,6	<b>21</b>	3000	<b>84</b>	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 (Arctic) / 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









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









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

**INNER TUBE:** seamless oil resistant synthetic rubber  
**REINFORCEMENT:** 2 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












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

**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

**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 <sup>22.5 MPa</sup> 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R2AT-03-SC	10.10S4.03	DN5	3/16"	-3	4,8	13,4	<b>41.5</b>	6100	<b>165.0</b>	24400	89	0,32
R2AT-04-SC	10.10S4.04	DN6	1/4"	-4	6,3	14,7	<b>40.0</b>	5800	<b>160.0</b>	23200	100	0,38
R2AT-05-SC	10.10S4.05	DN8	5/16"	-5	8,0	16,5	<b>35.0</b>	5100	<b>140.0</b>	20400	114	0,45
R2AT-06-SC	10.10S4.06	DN10	3/8"	-6	9,5	18,7	<b>33.0</b>	4800	<b>132.0</b>	19200	127	0,53
R2AT-08-SC	10.10S4.08	DN12	1/2"	-8	12,7	21,9	<b>27.5</b>	4000	<b>110.0</b>	16000	178	0,65
R2AT-10-SC	10.10S4.10	DN16	5/8"	-10	16,0	25,3	<b>25.0</b>	3700	<b>100.0</b>	14800	200	0,76
R2AT-12-SC	10.10S4.12	DN19	3/4"	-12	19,0	29,3	<b>21.5</b>	3200	<b>86.0</b>	12800	240	1,00
R2AT-16-SC	10.10S4.16	DN25	1"	-16	25,4	37,9	<b>16.5</b>	2400	<b>65.0</b>	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 <sup>35 MPa</sup> 5100 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	mm	mm	MPa	PSI	MPa	PSI	MIN BEND RAD	KG
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:** 2 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 (Armourgard)

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	mm	mm	MPa	PSI	MPa	PSI	MIN BEND RAD	KG
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	31	4500	124	18000	90	0.52
R16-10-SC	10.1S19.10	DN16	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 (Armourgard)  
**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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R16I-04-SC	10.1S10.04	DN6	1/4"	-4	6,3	13,4	<b>45</b>	6500	<b>180</b>	26000	50	0,27
R16I-05-SC	10.1S10.05	DN8	5/16"	-5	8,0	15,0	<b>42</b>	6100	<b>168</b>	24400	57	0,30
R16I-06-SC	10.1S10.06	DN10	3/8"	-6	9,5	17,2	<b>40</b>	5700	<b>160</b>	22800	65	0,42
R16I-08-SC	10.1S10.08	DN12	1/2"	-8	12,7	20,6	<b>35</b>	5100	<b>140</b>	20400	90	0,52
R16I-10-SC	10.1S10.10	DN16	5/8"	-10	16	23,9	<b>29</b>	4200	<b>116</b>	16800	100	0,63
R16I-12-SC	10.1S10.12	DN19	3/4"	-12	19	27,7	<b>28</b>	4100	<b>112</b>	16400	120	0,80
R16I-16-SC	10.1S10.16	DN25	1"	-16	25,4	35,4	<b>20</b>	2900	<b>80</b>	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)





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





## 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	Diagram		MPa		PSI		MIN BEND RAD		KG
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m	
JH-04	10.1029.04	1/4"	-4	6,3	14,7	<b>70.0</b>	10000	<b>160.0</b>	40000	100	0,38	
JH-06	10.1029.06	3/8"	-6	9,5	18,7	<b>70.0</b>	10000	<b>140.0</b>	40000	127	0,53	
JH-08	10.1029.08	1/2"	-8	12,7	21,9	<b>55.2</b>	8100	<b>110.4</b>	32400	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



## 3 – MAX



### 10.1005.

Very high pressure, triple steel braid reinforced hydraulic hose

REFERENCE	#	inch	SAE Dash	Diagram		MPa		PSI		MIN BEND RAD		KG
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m	
3M-06	10.1005.06	3/8"	-6	9,5	21,3	<b>50.0</b>	7300	<b>200.0</b>	29200	180	0,70	
3M-08	10.1005.08	1/2"	-8	12,7	24,3	<b>47.0</b>	6900	<b>188.0</b>	27600	230	0,80	
3M-10	10.1005.10	5/8"	-10	16,0	28,0	<b>41,0</b>	6100	<b>164,0</b>	24000	250	1,05	
3M-12	10.1005.12	3/4"	-12	19,0	31,5	<b>37,5</b>	5500	<b>150,0</b>	22000	300	1,15	
3M-16	10.1005.16	1"	-16	25,4	38,7	<b>33,0</b>	4800	<b>132,0</b>	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











# FIRE



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

Medium pressure hose for fire suppression

REFERENCE	#	inch	SAE Dash								
				mm	mm	MPa	PSI	MPa	PSI	mm	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:** 2 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











# 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								
			mm	mm	MPa	PSI	MPa	PSI	mm	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:** 2 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 professional 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





# BALWASH 1W



Balflex® Balwash 155°C (+311°F) 1W 22.0MPa - 10.1W00  
High pressure, single wire braid reinforced high temperature car wash hose

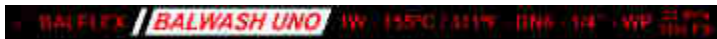
#	inch	SAE Dash	Cross-section diagrams		Pressure		Burst Pressure		Min Bend Rad		KG kg/m
			mm	mm	MPa	PSI	MPa	PSI	mm		
10.1W00.04	1/4"	-4	6,3	13,0	22,0	3200	90.0	12800	100	0,23	
10.1W00.05	5/16"	-5	8,0	14,7	22,0	3200	85.0	12800	114	0,28	
10.1W00.06	3/8"	-6	9,5	17,2	22,0	3200	72.0	12800	127	0,33	
10.1W00.08	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:** 2 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 professional 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	Cross-section diagrams		Pressure		Burst Pressure		Min Bend Rad		KG kg/m
			mm	mm	MPa	PSI	MPa	PSI	mm		
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 professional 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	Diagram		MPa		PSI		MIN BEND RAD		KG
			mm	mm	MPa	PSI	MPa	PSI	mm	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:** 2 high tensile steel wire braid

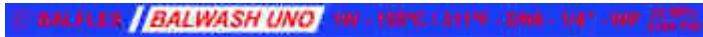
**OUTER TUBE:** blue, oil, weather and abrasion resistant wrapped pin-pricked synthetic rubber

**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 professional 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	Diagram		MPa		PSI		MIN BEND RAD		KG
			mm	mm	MPa	PSI	MPa	PSI	mm	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 professional 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	#	 mm	 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	#	 mm	 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

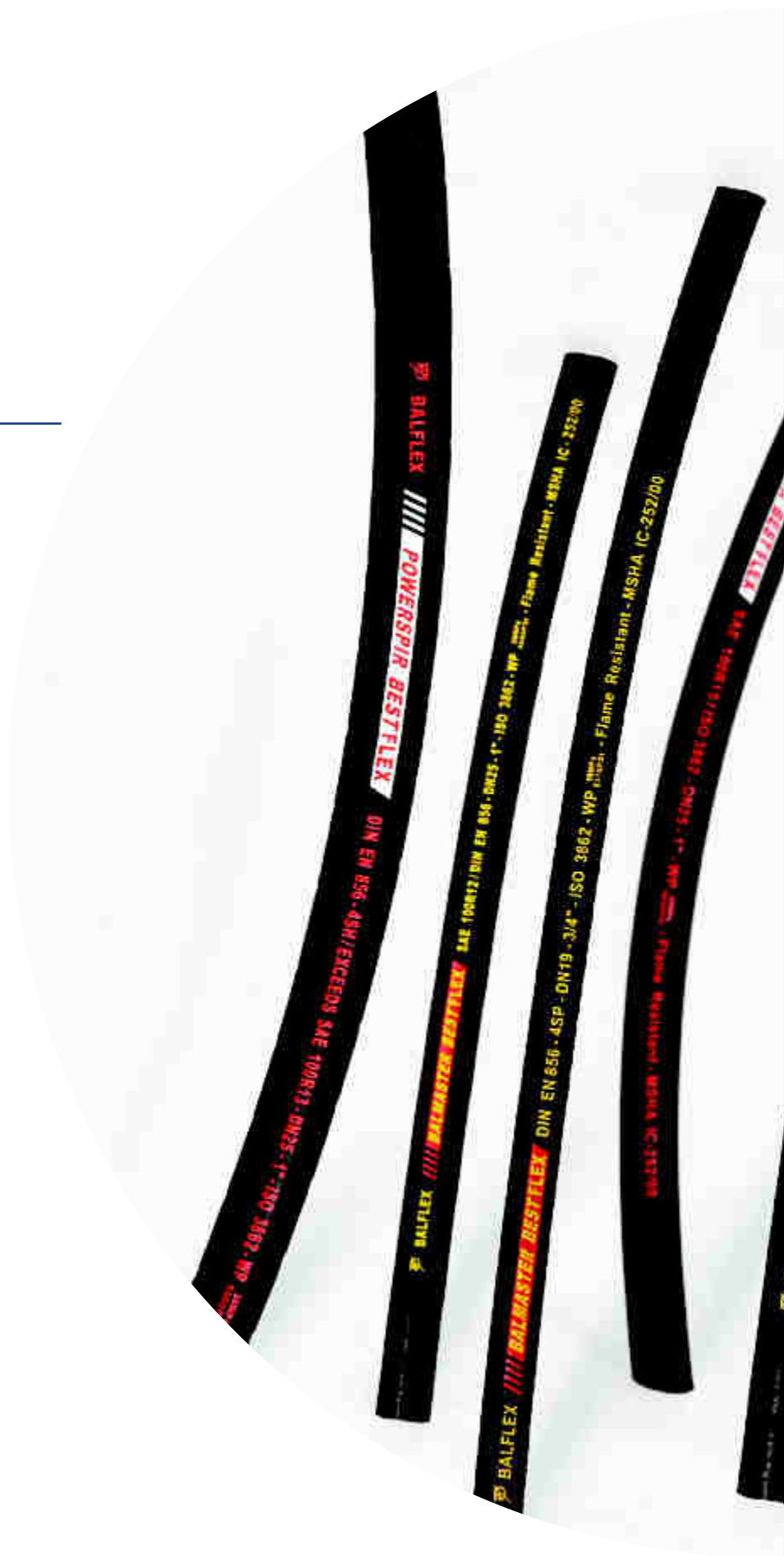
**COLOR:** Yellow

**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

# Spiral Hydraulic Hoses

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pag. 44 **BALMASTER  
BESTFLEX 4SP**

pag. 45 **POWERSPIR  
BESTFLEX 4SH**

pag. 46 **BALMASTER  
BESTFLEX R12**

pag. 46 **POWERSPIR  
BESTFLEX R13**

pag. 47 **POWERSPIR  
BESTFLEX R15**



## 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

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**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"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"
		-4 DN5	-6 DN6	-8 DN12	-10 DN16	-12 DN19	-16 DN25	-20 DN31	-24 DN38	-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**

<b>bar</b>	0,00134	0,0025	0,0339	0,069	0,098	<b>1,00</b>	1,01	10,0	100
<b>PSI</b>	0,0194	0,036	0,492	<b>1,001</b>	1,421	14,504	14,69	145,04	1450,38
<b>MPa</b>	-	-	0,003	0,007	0,0098	0,10	0,101	<b>1,00</b>	10,00
<b>1 atm</b>	0,001	0,0025	0,0335	0,068	0,097	0,987	<b>1</b>	9,87	98,69
<b>m H2O (20°C)</b>	0,014	0,026	0,346	0,704	<b>1</b>	10,207	10,34	102,074	3,4
<b>in Hg (20°C)</b>	0,0396	0,074	<b>1,001</b>	2,04	2,89	29,53	29,91	295,3	3,4
<b>in H2O (20°C)</b>	0,538	<b>1,005</b>	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
<b>mm Hg (20°C)</b>	<b>1,005</b>	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°	$C^{\circ} \times 1,8 + 32$	F° (Fahrenheit)
C°	$(F^{\circ} - 32) : 1,8$	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		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	●		
Diocyl 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.

# 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				MPa	PSI		MPa	PSI		mm		kg/m
					mm	mm	MPa			MIN BEND RAD						
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











# 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
4SH-12-R13/15-F	10.1009.12F	DN19	3/4"	-12	19,2	30,8	<b>42,0</b>	6100	<b>168,0</b>	24400	280	1,56
4SH-16-R13/15-F	10.1009.16F	DN25	1"	-16	25,6	37,6	<b>42,0</b>	6100	<b>168,0</b>	24000	340	2,09
4SH-20-F	10.1009.20F	DN31	1.1/4"	-20	32,1	44,5	<b>35,0</b>	5100	<b>140,0</b>	20400	460	2,57
4SH-24-F	10.1009.24F	DN38	1.1/2"	-24	38,3	51,7	<b>30,0</b>	4400	<b>120,0</b>	17600	560	3,44
4SH-32-F	10.1009.32F	DN51	2"	-32	51,0	66,0	<b>25,0</b>	3700	<b>100,0</b>	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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R12-06-F	10.1012.06F	DN10	3/8"	-6	9,6	19,6	<b>28,0</b>	4000	<b>112,0</b>	16000	120	0,80
R12-08-F	10.1012.08F	DN12	1/2"	-8	12,9	23,1	<b>28,0</b>	4000	<b>112,0</b>	16000	170	1,15
R12-10-F	10.1012.10F	DN16	5/8"	-10	16,0	27,0	<b>28,0</b>	4000	<b>112,0</b>	16000	190	1,26
R12-12-F	10.1012.12F	DN19	3/4"	-12	19,2	30,1	<b>28,0</b>	4000	<b>112,0</b>	16000	230	1,44
R12-16-F	10.1012.16F	DN25	1"	-16	25,6	37,3	<b>28,0</b>	4000	<b>112,0</b>	16000	290	2,15
R12-20-F	10.1012.20F	DN31	1.1/4"	-20	32,1	46,5	<b>21,0</b>	3100	<b>84,0</b>	12400	400	2,75
R12-24-F	10.1012.24F	DN38	1.1/2"	-24	38,3	53,0	<b>17,5</b>	2600	<b>70,0</b>	10400	480	3,35
R12-32-F	10.1012.32F	DN51	2"	-32	51,0	66,5	<b>17,5</b>	2600	<b>70,0</b>	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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
4SH-12-R13/15-F	10.1009.12F	DN19	3/4"	-12	19,2	30,8	<b>42,0</b>	6100	<b>168,0</b>	24400	280	1,56
4SH-16-R13/15-F	10.1009.16F	DN25	1"	-16	25,6	37,6	<b>42,0</b>	6100	<b>168,0</b>	24000	340	2,09
R13-20-F	10.1014.20F	DN31	1.1/4"	-20	32,1	49,4	<b>35,0</b>	5100	<b>140,0</b>	20400	420	3,90
R13-24-F	10.1014.24F	DN38	1.1/2"	-24	38,3	56,9	<b>35,0</b>	5100	<b>140,0</b>	20400	500	4,96
R13-32-F	10.1014.32F	DN51	2"	-32	51,0	70,9	<b>35,0</b>	5100	<b>140,0</b>	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 - DN19 - 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R15-06-F	10.1016.06F	DN10	3/8"	-6	9,7	22,0	<b>42,0</b>	6100	<b>168,0</b>	24000	140	0,80
R15-08-F	10.1016.08F	DN12	1/2"	-8	12,9	25,2	<b>42,0</b>	6100	<b>168,0</b>	24000	190	1,15
R15-10-F	10.1016.10F	DN16	5/8"	-10	16,0	27,2	<b>42,0</b>	6100	<b>168,0</b>	24000	200	1,35
4SH-12-R13/15-F	10.1009.12F	DN19	3/4"	-12	19,2	30,8	<b>42,0</b>	6100	<b>168,0</b>	24000	224	1,56
4SH-16-R13/15-F	10.1009.16F	DN25	1"	-16	25,6	37,6	<b>42,0</b>	6100	<b>168,0</b>	24000	272	2,10
R15-20-F	10.1016.20F	DN31	1.1/4"	-20	32,1	50,2	<b>42,0</b>	6100	<b>168,0</b>	24000	400	3,65
R15-24-F	10.1016.24F	DN38	1.1/2"	-24	38,3	56,8	<b>42,0</b>	6100	<b>168,0</b>	24000	450	4,75
R15-32-F	10.1016.32F	DN51	2"	-32	51,0	58,4	<b>42,0</b>	6100	<b>168,0</b>	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

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## 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

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**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  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+150^{\circ}\text{C}$  ( $+302^{\circ}\text{F}$ ) with intermittent service and  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+135^{\circ}\text{C}$  ( $+275^{\circ}\text{F}$ ) continuous service. Hydraulic hoses may also be used for water base hydraulic fluids if the working temperature does not exceed  $+120^{\circ}\text{C}$  ( $+248^{\circ}\text{F}$ ). With the presence of air in the fluid working temperature should be reduced to  $+60^{\circ}\text{C}$  ( $+140^{\circ}\text{F}$ ).

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"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"
		-3 DN5	-4 DN6	-5 DN8	-6 DN10	-8 DN12	-10 DN16	-12 DN19	-16 DN25	-20 DN31	-24 DN38	-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 PRE- MIUM 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**

<b>bar</b>	0,00134	0,0025	0,0339	0,069	0,098	<b>1,00</b>	1,01	10,0	100
<b>PSI</b>	0,0194	0,036	0,492	<b>1,001</b>	1,421	14,504	14,69	145,04	1450,38
<b>MPa</b>	-	-	0,003	0,007	0,0098	0,10	0,101	<b>1,00</b>	10,00
<b>1 atm</b>	0,001	0,0025	0,0335	0,068	0,097	0,987	<b>1</b>	9,87	98,69
<b>m H2O (20°C)</b>	0,014	0,026	0,346	0,704	<b>1</b>	10,207	10,34	102,074	3,4
<b>in Hg (20°C)</b>	0,0396	0,074	<b>1,001</b>	2,04	2,89	29,53	29,91	295,3	3,4
<b>in H2O (20°C)</b>	0,538	<b>1,005</b>	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
<b>mm Hg (20°C)</b>	<b>1,005</b>	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	●		
Diocyl 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 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								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R1AT-03-HT	10.1002.03HT	DN5	3/16"	-3	4,8	11,4	<b>25.0</b>	3700	<b>100.0</b>	14800	89	0,23
R1AT-04-HT	10.1002.04HT	DN6	1/4"	-4	6,3	13,0	<b>22.5</b>	3300	<b>90.0</b>	13200	100	0,23
R1AT-05-HT	10.1002.05HT	DN8	5/16"	-5	8,0	14,7	<b>21.5</b>	3200	<b>85.0</b>	12800	114	0,23
R1AT-06-HT	10.1002.06HT	DN10	3/8"	-6	9,5	17,2	<b>18.0</b>	2700	<b>72.0</b>	10800	127	0,33
R1AT-08-HT	10.1002.08HT	DN12	1/2"	-8	12,7	20,5	<b>16.0</b>	2400	<b>64.0</b>	9600	178	0,42
R1AT-10-HT	10.1002.10HT	DN16	5/8"	-10	16,0	23,8	<b>13.0</b>	1900	<b>52.0</b>	7600	200	0,52
R1AT-12-HT	10.1002.12HT	DN19	3/4"	-12	19,0	27,8	<b>10.5</b>	1600	<b>42.0</b>	6400	240	0,65
R1AT-16-HT	10.1002.16HT	DN25	1"	-16	25,4	35,9	<b>8.8</b>	1300	<b>35.0</b>	5200	300	1,00
R1AT-20-HT	10.1002.20HT	DN31	1.1/4"	-20	32,0	44,0	<b>6.3</b>	920	<b>25.0</b>	3680	419	1,30
R1AT-24-HT	10.1002.24HT	DN38	1.1/2"	-24	38,0	50,8	<b>5.0</b>	730	<b>20.0</b>	2920	500	1,63
R1AT-32-HT	10.1002.32HT	DN51	2"	-32	50,8	64,3	<b>4.0</b>	580	<b>16.0</b>	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 aircrafts and compressors working with air at +60°C

BALFLEX® FORZA UNO - TROPIC - 110°C (225°F) - 1SN - DN5 - DN EN 853 / SAE 100R1AT / ISO 1436 - 14" - 25 MPa (362.5 PSI) - 89 mm (3.5" Min Bend Rad) - MSHA AC-308204



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












# BALPAC PREMIUM TROPIC



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

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

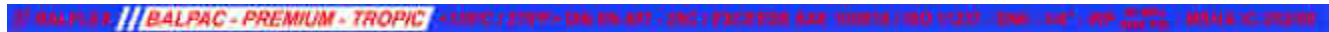
REFERENCE	#	DN	inch	SAE Dash								
					mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R16-04-HT	10.1019.04HT	DN6	1/4"	-4	6,3	13,2	<b>40.0</b>	5800	<b>160.0</b>	23200	50	0,27
R16-05-HT	10.1019.05HT	DN8	5/16"	-5	8,0	15,1	<b>35.0</b>	5100	<b>140.0</b>	20400	57	0,30
R16-06-HT	10.1019.06HT	DN10	3/8"	-6	9,5	17,0	<b>33.0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











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

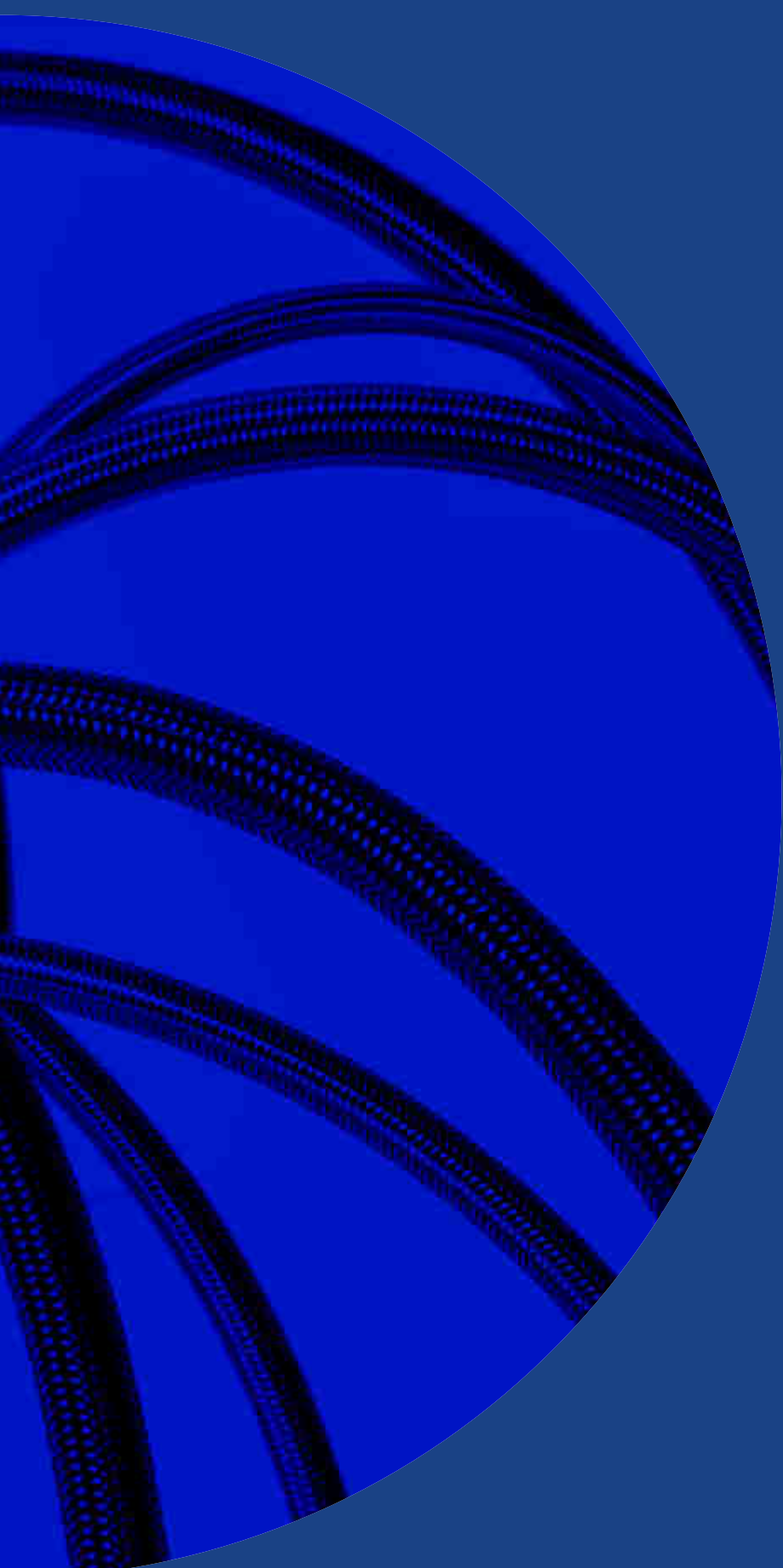
**NOTES:** this hose is a high temperature hydraulic hose but cannot be used with phosphate-ester based oils, and cannot be used in aircrafts and compressors working with air at +60°C

BALFLEX BRAKEMASTER R - HEATMASTER SAE 100R5R | SAE 11401 R6 - D01 - 150°C (+302°F) - 3/16" - MPa 20.7 - PSI 3100 - MIN BEND RAD 76

# PTFE Hoses

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- pag. 64 **BALFLON SAE 100R14**
- pag. 65 **BALFLON HEAVY WALL  
DOUBLE BRAID**
- pag. 66 **BALFLON CONVOLUTED  
(CORRUGATED)**
- pag. 67 **BALFLON CONVOLUTED  
(CORRUGATED) BLACK  
CONDUCTIVE**

## 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

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**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**

<b>bar</b>	0,00134	0,0025	0,0339	0,069	0,098	<b>1,00</b>	1,01	10,0	100
<b>PSI</b>	0,0194	0,036	0,492	<b>1,001</b>	1,421	14,504	14,69	145,04	1450,38
<b>MPa</b>	-	-	0,003	0,007	0,0098	0,10	0,101	<b>1,00</b>	10,00
<b>1 atm</b>	0,001	0,0025	0,0335	0,068	0,097	0,987	<b>1</b>	9,87	98,69
<b>m H2O (20°C)</b>	0,014	0,026	0,346	0,704	<b>1</b>	10,207	10,34	102,074	3,4
<b>in Hg (20°C)</b>	0,0396	0,074	<b>1,001</b>	2,04	2,89	29,53	29,91	295,3	3,4
<b>in H2O (20°C)</b>	0,538	<b>1,005</b>	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
<b>mm Hg (20°C)</b>	<b>1,005</b>	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°	$C^{\circ} \times 1,8 + 32$	F° (Fahrenheit)
C°	$(F^{\circ} - 32) : 1,8$	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	●	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	●		
Diocyl 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.



# 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	Diagram		MPa		PSI		MIN BEND RAD		KG
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m	
R14-02-TB	10.2001.02	1/8"	-2	3,2	5,9	<b>27,5</b>	4000	<b>110,0</b>	16000	25	0,06	
R14-03-TB	10.2003.03	3/16"	-3	4,8	7,4	<b>20,0</b>	2900	<b>80,0</b>	11600	35	0,08	
R14-04-TB	10.2003.04	1/4"	-4	6,3	9,0	<b>17,5</b>	2600	<b>70,0</b>	10400	45	0,09	
R14-05-TB	10.2003.05	5/16"	-5	8,0	10,8	<b>15,0</b>	2200	<b>60,0</b>	8800	50	0,14	
R14-06-TB	10.2003.06	3/8"	-6	9,5	12,4	<b>13,5</b>	2000	<b>54,0</b>	8000	55	0,16	
R14-08-TB	10.2003.08	1/2"	-8	12,7	15,7	<b>12,0</b>	1800	<b>48,0</b>	7200	70	0,21	
R14-10-TB	10.2003.10	5/8"	-10	16,0	19,1	<b>10,0</b>	1500	<b>40,0</b>	6100	130	0,27	
R14-12-TB	10.2003.12	3/4"	-12	19,0	22,2	<b>9,0</b>	1400	<b>36,0</b>	5600	190	0,37	
R14-16-TB	10.2003.16	1"	-16	25,4	29,3	<b>6,5</b>	950	<b>26,0</b>	3800	270	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	Diagram		MPa		PSI		MIN BEND RAD		KG
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m	
R14-03	10.2001.03	1/8"	-3	3,2	5,9	<b>27,5</b>	4000	<b>110,0</b>	16000	25	0,07	
R14-04	10.2000.04	3/16"	-4	4,8	7,4	<b>20,0</b>	2900	<b>80,0</b>	11600	35	0,08	
R14-05	10.2000.05	1/4"	-5	6,3	9,0	<b>17,5</b>	2600	<b>70,0</b>	10400	45	0,09	
R14-06	10.2000.06	5/16"	-6	8,0	10,8	<b>15,0</b>	2200	<b>60,0</b>	8800	50	0,14	
R14-08	10.2000.08	13/32"	-8	10,3	13,3	<b>13,0</b>	1900	<b>54,0</b>	7600	65	0,17	
R14-10	10.2000.10	1/2"	-10	12,7	15,7	<b>12,0</b>	1800	<b>48,0</b>	7200	70	0,21	
R14-12	10.2000.12	5/8"	-12	16,0	19,1	<b>10,0</b>	1500	<b>40,0</b>	6100	130	0,27	
R14-16	10.2000.16	7/8"	-16	22,0	25,6	<b>6,5</b>	950	<b>26,0</b>	3800	250	0,51	
R14-20	10.2000.20	1 1/8"	-20	28,6	32,5	<b>5,5</b>	800	<b>22,0</b>	3200	300	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	Cross-section diagrams		Pressure		Burst Pressure		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
R14-03-DB	10.2002.03	3/16"	-3	4,8	8,8	<b>27,5</b>	4000	<b>110,0</b>	16000	45	0,14
R14-04-DB	10.2002.04	1/4"	-4	6,3	10,4	<b>25,0</b>	3700	<b>100,0</b>	14800	50	0,17
R14-05-DB	10.2002.05	5/16"	-5	8,0	12,0	<b>22,5</b>	3300	<b>90,0</b>	13200	55	0,24
R14-06-DB	10.2002.06	3/8"	-6	9,5	13,7	<b>21,0</b>	3100	<b>84,0</b>	12400	70	0,26
R14-08-DB	10.2002.08	1/2"	-8	12,7	17,0	<b>17,5</b>	2600	<b>70,0</b>	10400	110	0,35
R14-10-DB	10.2002.10	5/8"	-10	16,0	20,5	<b>16,0</b>	2400	<b>64,0</b>	9600	150	0,50
R14-12-DB	10.2002.12	3/4"	-12	19,0	23,5	<b>14,0</b>	2100	<b>56,0</b>	8400	190	0,62
R14-16-DB	10.2002.16	1"	-16	25,4	30,8	<b>9,5</b>	1400	<b>38,0</b>	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

# BALFLON CONVOLUTED (CORRUGATED)



10.2010.

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

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

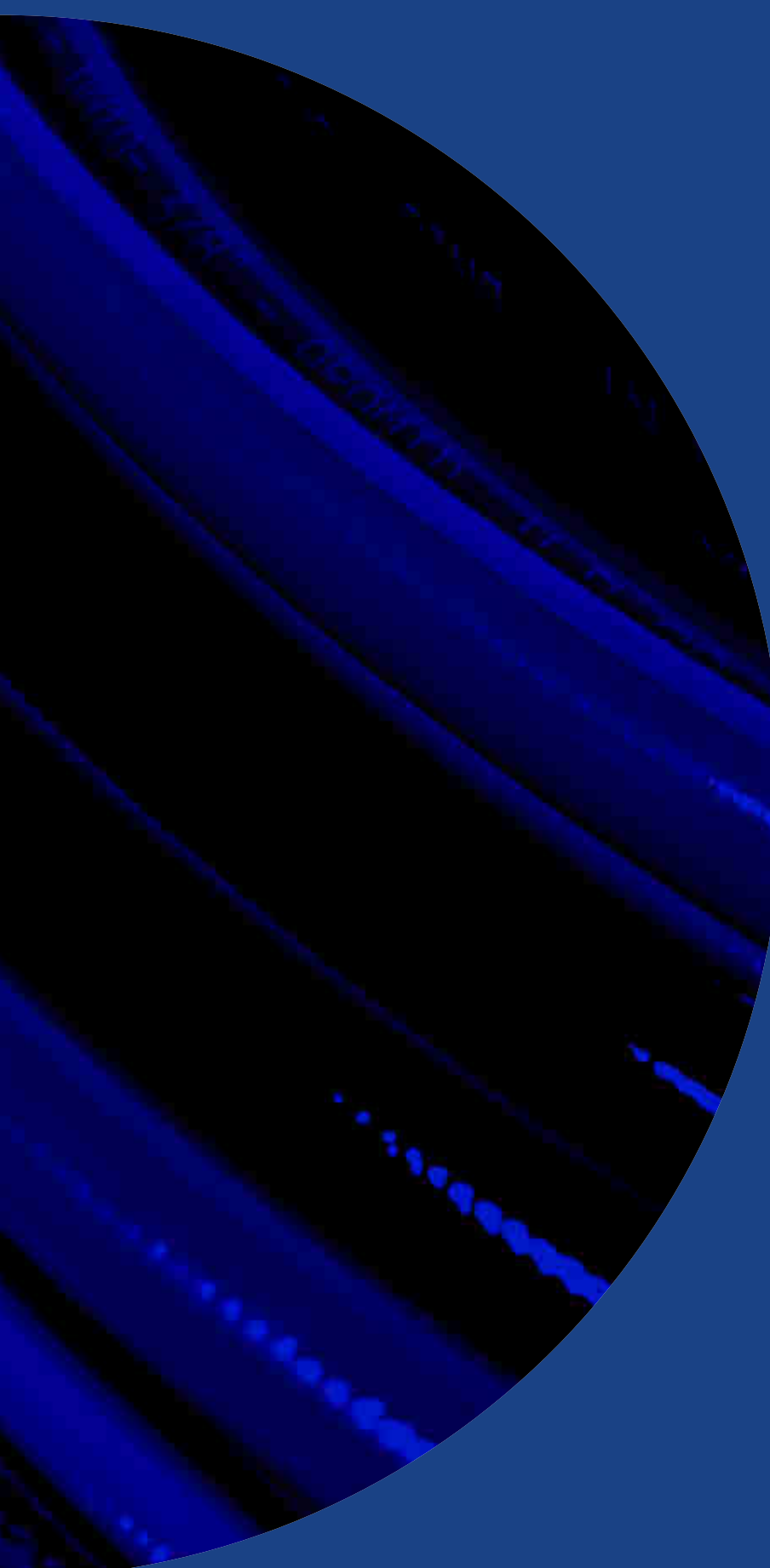
**COUPLINGS:** Balflex® 2-piece fittings serie 23 with 20 serie ferrules.

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

# Thermoplastic Hoses

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## 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.*

### General Guidelines

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**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  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+100^{\circ}\text{C}$  ( $+100^{\circ}\text{F}$ ). Thermoplastic hoses may also be used for water base hydraulic fluids if the working temperature does not exceed  $+65^{\circ}\text{C}$  ( $+149^{\circ}\text{F}$ ).

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"	53/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
		-2	-3	-4	-5	-6	-8	-10	-12	-16
		DN3	DN5	DN6	DN8	DN10	DN12	DN16	DN19	DN25
ZETAFLEX ZETAFLEX TWIN ZETAFLEX NC ZETAFLEX NC TWIN	DIN EN 855 R7 / SAE 100R7 / ANSI A92.2	28.0	21.0	19.0	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
OMEGAFLEX PLUS OMEGAFLEX PLUS TWIN OMEGAFLEX 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
OMEGAFLEX 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**

<b>bar</b>	0,00134	0,0025	0,0339	0,069	0,098	<b>1,00</b>	1,01	10,0	100
<b>PSI</b>	0,0194	0,036	0,492	<b>1,001</b>	1,421	14,504	14,69	145,04	1450,38
<b>MPa</b>	-	-	0,003	0,007	0,0098	0,10	0,101	<b>1,00</b>	10,00
<b>1 atm</b>	0,001	0,0025	0,0335	0,068	0,097	0,987	<b>1</b>	9,87	98,69
<b>m H2O (20°C)</b>	0,014	0,026	0,346	0,704	<b>1</b>	10,207	10,34	102,074	3,4
<b>in Hg (20°C)</b>	0,0396	0,074	<b>1,001</b>	2,04	2,89	29,53	29,91	295,3	3,4
<b>in H2O (20°C)</b>	0,538	<b>1,005</b>	13,623	27,73	39,38	401,86	407,09	4018,65	40186,47
<b>mm Hg (20°C)</b>	<b>1,005</b>	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°	$C^{\circ} \times 1,8 + 32$	F° (Fahrenheit)
C°	$(F^{\circ} - 32) : 1,8$	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	●	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	●		
Diocyl 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.

# ZETAFLEX



DIN EN 855 R7 / SAE 100R7 - 10.1030.

High pressure, synthetic polyester braid reinforced thermoplastic hydraulic hose

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

**INNER TUBE:** seamless oil resistant thermoplastic  
**REINFORCEMENT:** 2 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	Cross-section diagrams		Pressure		Burst Pressure		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
R7-03-TB	10.1034.03	3/16"	-3	4,8	10,3	<b>21.0</b>	3100	<b>84.0</b>	12400	25	0,07
R7-04-TB	10.1034.04	1/4"	-4	6,4	12,4	<b>19.0</b>	2800	<b>76.0</b>	11200	32	0,09
R7-05-TB	10.1034.05	5/16"	-5	8,0	14,2	<b>19.0</b>	2800	<b>76.0</b>	11200	45	0,13
R7-06-TB	10.1034.06	3/8"	-6	9,5	15,7	<b>16.0</b>	2400	<b>64.0</b>	9600	55	0,16
R7-08-TB	10.1034.08	1/2"	-8	12,7	19,3	<b>15,5</b>	2300	<b>62,0</b>	9200	77	0,22
R7-10-TB	10.1034.10	5/8"	-10	16,0	23,1	<b>10.5</b>	1600	<b>42.0</b>	6400	110	0,28
R7-12-TB	10.1034.12	3/4"	-12	19,0	26,4	<b>9.0</b>	1400	<b>36.0</b>	5600	140	0,33
R7-16-TB	10.1034.16	1"	-16	25,4	33,3	<b>7.0</b>	1100	<b>28.0</b>	4400	200	0,40

**INNER TUBE:** seamless oil resistant thermoplastic  
**REINFORCEMENT:** 2 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	Diagram		MPa		PSI		MIN BEND RAD		KG
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m	
R7-02LNC	10.1030.02L	1/8"	-2	3,2	8,1	<b>28.0</b>	4100	<b>112.0</b>	16400	25	0,05	
R7-03LNC	10.1030.03L	3/16"	-3	4,8	10,3	<b>21.0</b>	3100	<b>84.0</b>	12400	25	0,07	
R7-04LNC	10.1030.04L	1/4"	-4	6,4	12,4	<b>19.0</b>	2800	<b>76.0</b>	11200	32	0,09	
R7-05LNC	10.1030.05L	5/16"	-5	8,0	14,2	<b>19.0</b>	2800	<b>76.0</b>	11200	45	0,13	
R7-06LNC	10.1030.06L	3/8"	-6	9,5	15,7	<b>16.0</b>	2400	<b>64.0</b>	9600	55	0,16	
R7-08LNC	10.1030.08L	1/2"	-8	12,7	19,3	<b>15,5</b>	2300	<b>62,0</b>	9200	77	0,22	
R7-10LNC	10.1030.10L	5/8"	-10	16,0	23,1	<b>10.5</b>	1600	<b>42.0</b>	6400	110	0,28	
R7-12LNC	10.1030.12L	3/4"	-12	19,0	26,4	<b>9.0</b>	1400	<b>36.0</b>	5600	140	0,33	
R7-16LNC	10.1030.16L	1"	-16	25,4	33,3	<b>7.0</b>	1100	<b>28.0</b>	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

**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 / 4080 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	Diagram		MPa		PSI		MIN BEND RAD		KG
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m	
R7-03TNC	10.1034.03L	3/16"	-3	4,8	10,3	<b>21.0</b>	3100	<b>84.0</b>	12400	25	0,07	
R7-04TNC	10.1034.04L	1/4"	-4	6,4	12,4	<b>19.0</b>	2800	<b>76.0</b>	11200	32	0,09	
R7-05TNC	10.1034.05L	5/16"	-5	8,0	14,2	<b>19.0</b>	2800	<b>76.0</b>	11200	45	0,13	
R7-06TNC	10.1034.06L	3/8"	-6	9,5	15,7	<b>16.0</b>	2400	<b>64.0</b>	9600	55	0,16	
R7-08TNC	10.1034.08L	1/2"	-8	12,7	19,3	<b>15,5</b>	2300	<b>62,0</b>	9200	77	0,22	
R7-10TNC	10.1034.10L	5/8"	-10	16,0	23,1	<b>10.5</b>	1600	<b>42.0</b>	6400	110	0,28	
R7-12TNC	10.1034.12L	3/4"	-12	19,0	26,4	<b>9.0</b>	1400	<b>36.0</b>	5600	140	0,33	
R7-16TNC	10.1034.16L	1"	-16	25,4	33,3	<b>7.0</b>	1100	<b>28.0</b>	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]**

# ZETAFLEX STEEL



## R7 SteelFlex - 10.1031.

High pressure, steel wire braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash	Cross-section		Pressure		Burst		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
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	Cross-section		Pressure		Burst		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
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	Cross-section diagrams		Pressure		Burst pressure		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
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 aramid fiber braid

**OUTER TUBE:** black, oil and weather resistant thermoplastic, pin-pricked

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

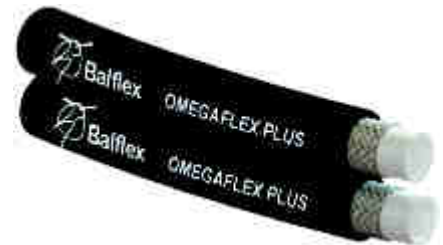
**TEMPERATURE RANGE:** -40°C (-40°F) +100°C (+212°F) Max. temperature

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 aramid braid reinforced thermoplastic hydraulic twin line hose

REFERENCE	#	inch	SAE Dash	Cross-section diagrams		Pressure		Burst pressure		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
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 aramid 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**






# OMEGAFLEX 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								
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R8-03LNC	10.1033.03L	3/16"	-3	4,8	10,3	<b>35.0</b>	5100	<b>140.0</b>	20400	25	0,09
R8-04LNC	10.1033.04L	1/4"	-4	6,4	12,4	<b>35.0</b>	5100	<b>140.0</b>	20400	32	0,10
R8-05LNC	10.1033.05L	5/16"	-5	8,0	14,2	<b>30.0</b>	4300	<b>120.0</b>	17200	45	0,13
R8-06LNC	10.1033.06L	3/8"	-6	9,5	15,7	<b>28.0</b>	4100	<b>112.0</b>	16400	55	0,18
R8-08LNC	10.1033.08L	1/2"	-8	12,7	19,3	<b>24.5</b>	3600	<b>98.0</b>	14400	77	0,22
R8-10LNC	10.1033.10L	5/8"	-10	16,0	23,1	<b>20.0</b>	2800	<b>80.0</b>	11200	110	0,31
R8-12LNC	10.1033.12L	3/4"	-12	19,0	26,4	<b>16.5</b>	2300	<b>66.0</b>	9200	140	0,36
R8-16LNC	10.1033.16L	1"	-16	25,4	33,3	<b>14.0</b>	2100	<b>56.0</b>	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								
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
R8-03TNC	10.1136.03L	3/16"	-3	4,8	10,3	<b>35.0</b>	5100	<b>140.0</b>	20400	25	0,09
R8-04TNC	10.1136.04L	1/4"	-4	6,4	12,4	<b>35.0</b>	5100	<b>140.0</b>	20400	32	0,10
R8-05TNC	10.1136.05L	5/16"	-5	8,0	14,2	<b>30.0</b>	4300	<b>120.0</b>	17200	45	0,13
R8-06TNC	10.1136.06L	3/8"	-6	9,5	15,7	<b>28.0</b>	4100	<b>112.0</b>	16400	55	0,18
R8-08TNC	10.1136.08L	1/2"	-8	12,7	19,3	<b>24.5</b>	3600	<b>98.0</b>	14400	77	0,22
R8-10TNC	10.1136.10L	5/8"	-10	16,0	23,1	<b>20.0</b>	2800	<b>80.0</b>	11200	110	0,31
R8-12TNC	10.1136.12L	3/4"	-12	19,0	26,4	<b>16.5</b>	2300	<b>66.0</b>	9200	140	0,36
R8-16TNC	10.1136.16L	1"	-16	25,4	33,3	<b>14.0</b>	2100	<b>56.0</b>	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	Cross-section diagrams		Pressure		Burst Pressure		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
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

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

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



# ZETAFLX 3000



## SAE 100R18 - 10.1130.

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

REFERENCE	#	inch	SAE Dash	Diagram		MPa		PSI		MIN BEND RAD mm	KG kg/m
				mm	mm	MPa	PSI	MPa	PSI		
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

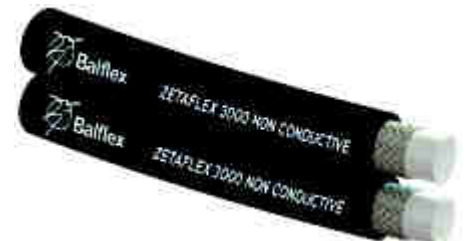
**OUTER TUBE:** black, oil and weather resistant thermoplastic, pin-pricked  
**SAFETY FACTOR:** 4:1  
**APPLICATION:** petroleum base hydraulic fluids

**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 ZETAFLX 3000 - SAE 100R18 - DN5 - 3/16" - WP 21 MPa / 3000 PSI**

# ZETAFLX 3000 TWIN



## SAE 100R18 - 10.1134.

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

REFERENCE	#	inch	SAE Dash	Diagram		MPa		PSI		MIN BEND RAD mm	KG kg/m
				mm	mm	MPa	PSI	MPa	PSI		
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 ZETAFLX 3000 - SAE 100R18 - DN10 - 3/8" - WP 21 MPa / 3050 PSI**

# ZETAFLEX 3000 (NON CONDUCTIVE)



## SAE 100R8 - 10.1130.L

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

REFERENCE	#	inch	SAE Dash								
				mm	mm	MPa	PSI	MPa	PSI	mm	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								
				mm	mm	MPa	PSI	MPa	PSI	mm	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**



# ULTRAFLEX



## 10.1038

High pressure, single aramidic braid reinforced thermoplastic hydraulic hose

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

# CNG



## 10.1037.

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

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

# JETWASH MICROLINE LIGHT



12.160W.04

High pressure Thermoplastic Jet washing and lubrication hose

REFERENCE	#	inch	SAE Dash	mm	mm	MPa	PSI	MPa	PSI	MIN BEND RAD	KG
JETW-04	12.160W.04	1/4"	-4	6,4	12,5	<b>16,0</b>	2400	<b>64,0</b>	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**

# JET CLEAN



10.1039.

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

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



# PAINTSPRAY 1W



10.1040.

High pressure, one steel wire braid reinforced thermoplastic paintspray hose

REFERENCE	#	inch	SAE Dash	Cross-section diagrams		MPa		PSI		MIN BEND RAD mm	KG kg/m
				mm	mm	MPa	PSI	MPa	PSI		
PS1W-03	10.1040.03	3/16"	-3	4,8	9,7	<b>35,0</b>	5100	<b>140,0</b>	20400	30	0,13
PS1W-04	10.1040.04	1/4"	-4	6,4	11,7	<b>32,0</b>	4700	<b>128,0</b>	18800	40	0,17
PS1W-05	10.1040.05	5/16"	-5	8,0	13,6	<b>27,5</b>	4000	<b>110,0</b>	16000	50	0,22
PS1W-06	10.1040.06	3/8"	-6	9,5	15,2	<b>25,0</b>	3700	<b>100,0</b>	14800	60	0,26
PS1W-08	10.1040.08	1/2"	-8	12,7	18,4	<b>19,0</b>	2800	<b>76,0</b>	11200	75	0,39
PS1W-12	10.1040.12	3/4"	-12	19,0	25,7	<b>12,0</b>	1800	<b>48,0</b>	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 aggressive 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	Cross-section diagrams		MPa		PSI		MIN BEND RAD mm	KG kg/m
				mm	mm	MPa	PSI	MPa	PSI		
PS2W-04	10.1041.04	1/4"	-4	6,4	13,7	<b>45,0</b>	6600	<b>180,0</b>	26400	100	0,27
PS2W-05	10.1041.05	5/16"	-5	8,0	15,2	<b>40,0</b>	5800	<b>160,0</b>	23200	110	0,32
PS2W-06	10.1041.06	3/8"	-6	9,5	17,5	<b>38,0</b>	5600	<b>152,0</b>	22400	127	0,36
PS2W-08	10.1041.08	1/2"	-8	12,7	21,1	<b>30,0</b>	4400	<b>120,0</b>	17600	178	0,49
PS2W-12	10.1041.12	3/4"	-12	19,0	28,6	<b>16,0</b>	2400	<b>64,0</b>	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 aggressive 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 aramid braid reinforced thermoplastic paintspray hose

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

**INNER TUBE:** internal core in polyamide  
**REINFORCEMENT:** 1 or 2 high tensile aramid 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 aggressive 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	Cross-section		Pressure		Burst Pressure		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
BEVIF-04	10.1043.04	1/4"	-4	6,3	12,2	<b>21,0</b>	3100	<b>84,0</b>	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**



# BEVERAGE



## 10.1044.

High pressure, one steel wire braid reinforced beverage dispensing hose

REFERENCE	#	inch	SAE Dash	mm		MPa		PSI		MIN BEND RAD	KG
				mm	mm	MPa	PSI	MPa	PSI		
BEVIS-03	10.1044.03	3/16"	-3	4,8	9,7	<b>35,0</b>	5100	<b>140,0</b>	20400	40	0,07
BEVIS-04	10.1044.04	1/4"	-4	6,3	11,7	<b>32,0</b>	4700	<b>128,0</b>	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**

# BEVERAGE



## 10.1045.

High pressure, one aramidic fiber braid reinforced beverage dispensing hose

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









# SUPERJACK 2W



10.1046.

High pressure, double steel wire braid reinforced thermoplastic hydraulic hose

REFERENCE	#	inch	SAE Dash								
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
SJ-04	10.1046.04	1/4"	-4	6,4	14,1	<b>70,0</b>	10000	<b>1750,0</b>	25000	100	0,29
SJ-06	10.1046.06	3/8"	-6	9,5	17,5	<b>70,0</b>	10000	<b>1500,0</b>	21750	150	0,42
SJ-08	10.1046.08	1/2"	-8	12,7	21,1	<b>50,0</b>	7250	<b>1250,0</b>	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								
				mm	mm	MPa	PSI	MPa	PSI	mm	kg/m
SJ4-04	10.1146.04	1/4"	-4	6,4	14,1	<b>70,0</b>	10000	<b>2800,0</b>	40000	70	0,29
SJ4-06	10.1146.06	3/8"	-6	9,5	17,5	<b>70,0</b>	10000	<b>2800,0</b>	40000	100	0,42
SJ4-08	10.1146.08	1/2"	-8	12,7	22,4	<b>70,0</b>	10000	<b>2800,0</b>	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 aramid fiber braid thermoplastic hydraulic line hose

REFERENCE	#	inch	SAE Dash	mm	mm	MPa	PSI	MPa	PSI	MIN BEND RAD	KG
MICRO-1	10.1147.03	1/8"	-	3,2	6,5	<b>25,0</b>	3700	<b>100,0</b>	14800	20	0,05

**INNER TUBE:** thermoplastic elastomer  
**REINFORCEMENT:** 1 aramid 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 aramid fiber braid thermoplastic hydraulic line hose

REFERENCE	#	inch	SAE Dash	mm	mm	MPa	PSI	MPa	PSI	MIN BEND RAD	KG
MICRO-2	05.HH01	5/64"	-	2,0	5,0	<b>63,0</b>	9200	<b>189,0</b>	36800	20	0,06

**INNER TUBE:** thermoplastic elastomer  
**REINFORCEMENT:** 1 aramid fiber braid

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

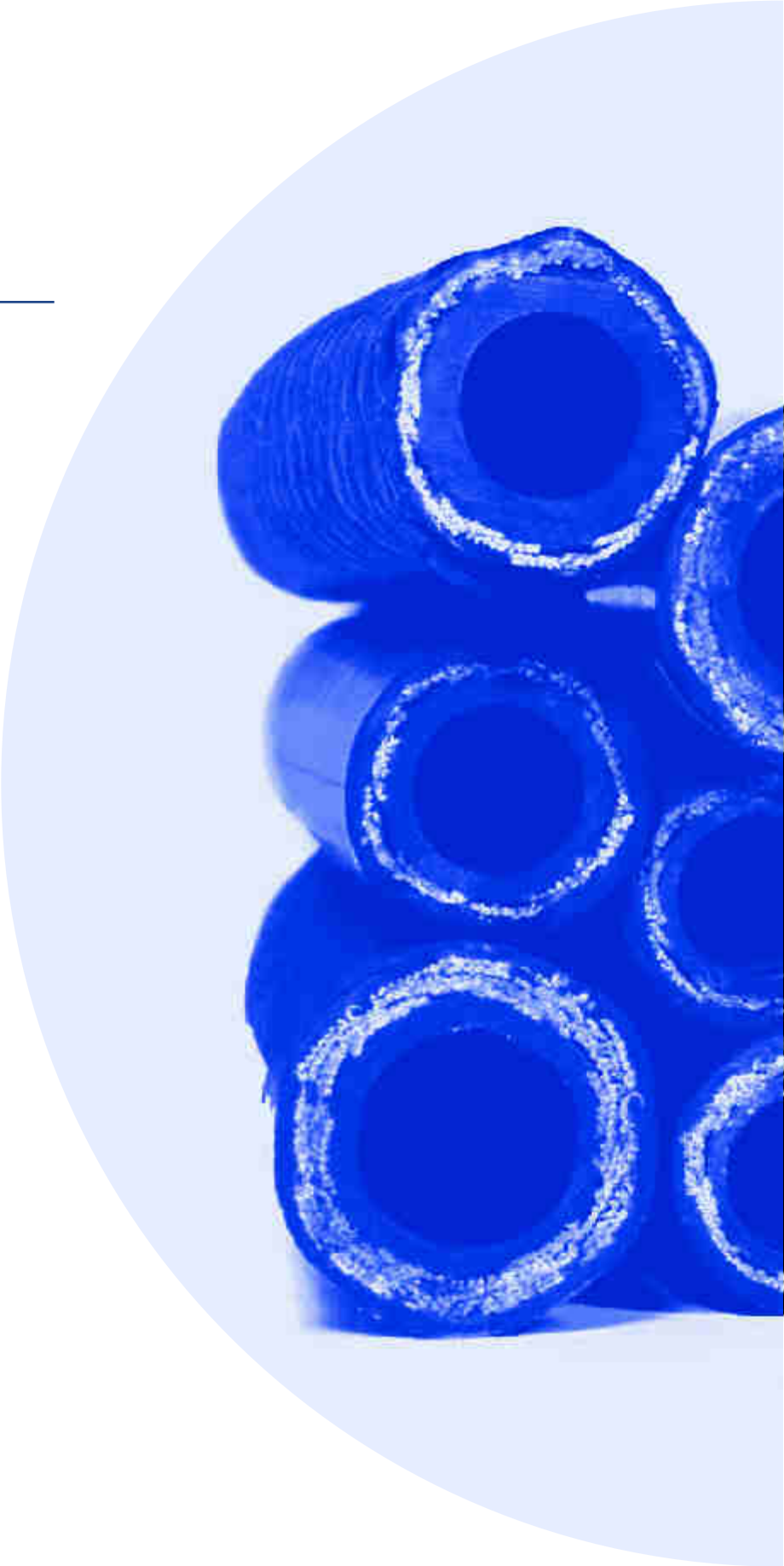
**APPLICATION:** designed specially for very high pressure mini hydraulic lines. Hydraulic lines pressure take-off

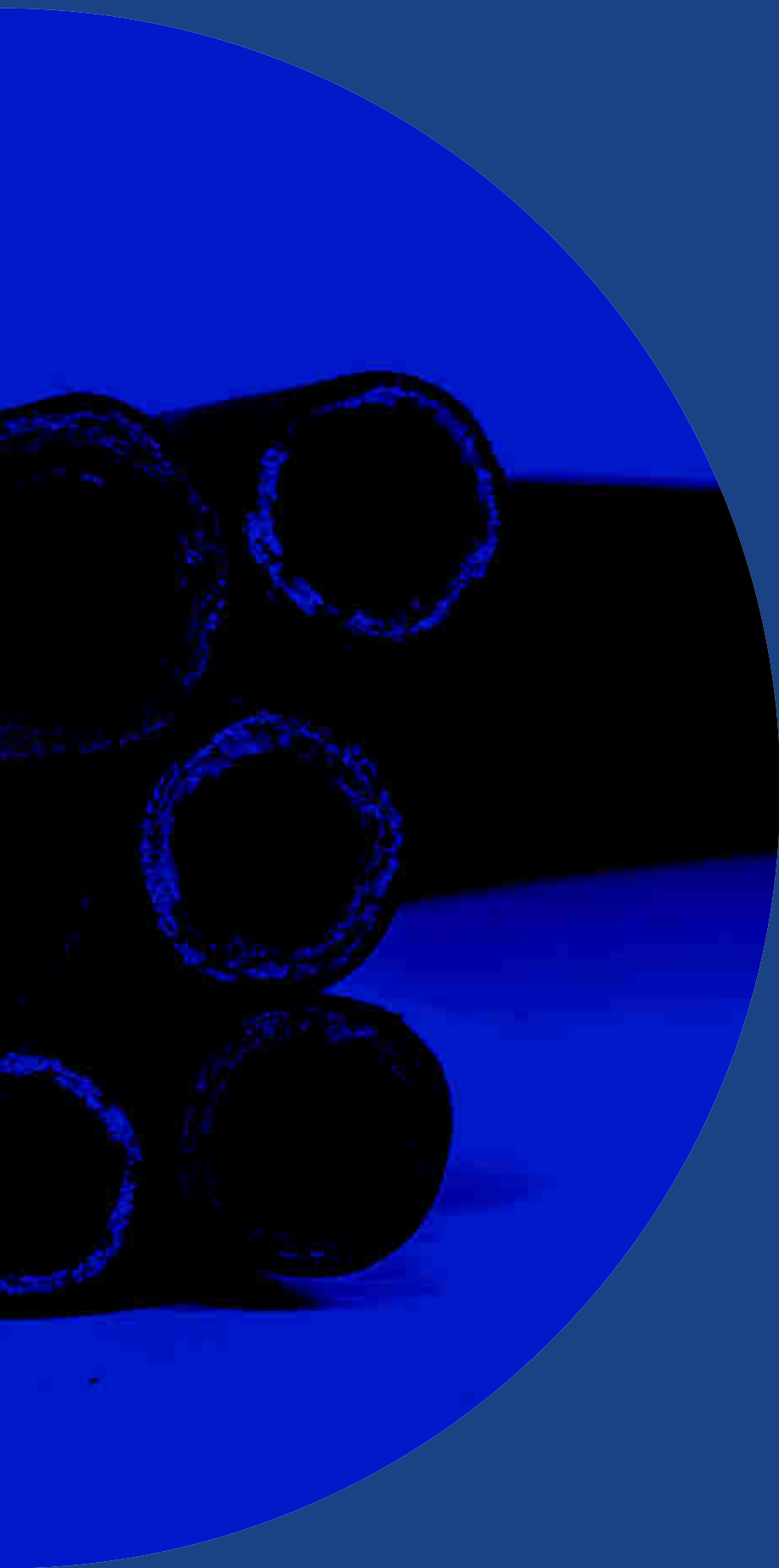
**TEMPERATURE RANGE:** -40°C (-40°F) +100°C (+212°F)  
**COUPLINGS:** Balflex® 2-piece fittings serie 05

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

# Appendix

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# Selection of hydraulic hoses

## Working pressure

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When selecting a hose it should be considered that its 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

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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

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Hose assemblies that are to be used in air and other gaseous applications should 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

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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

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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 restraint 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 injury and equipment damage through spillage or fluid ejection are minimized. Table 4 shows some correct and incorrect installation situations.

## Permeability

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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.

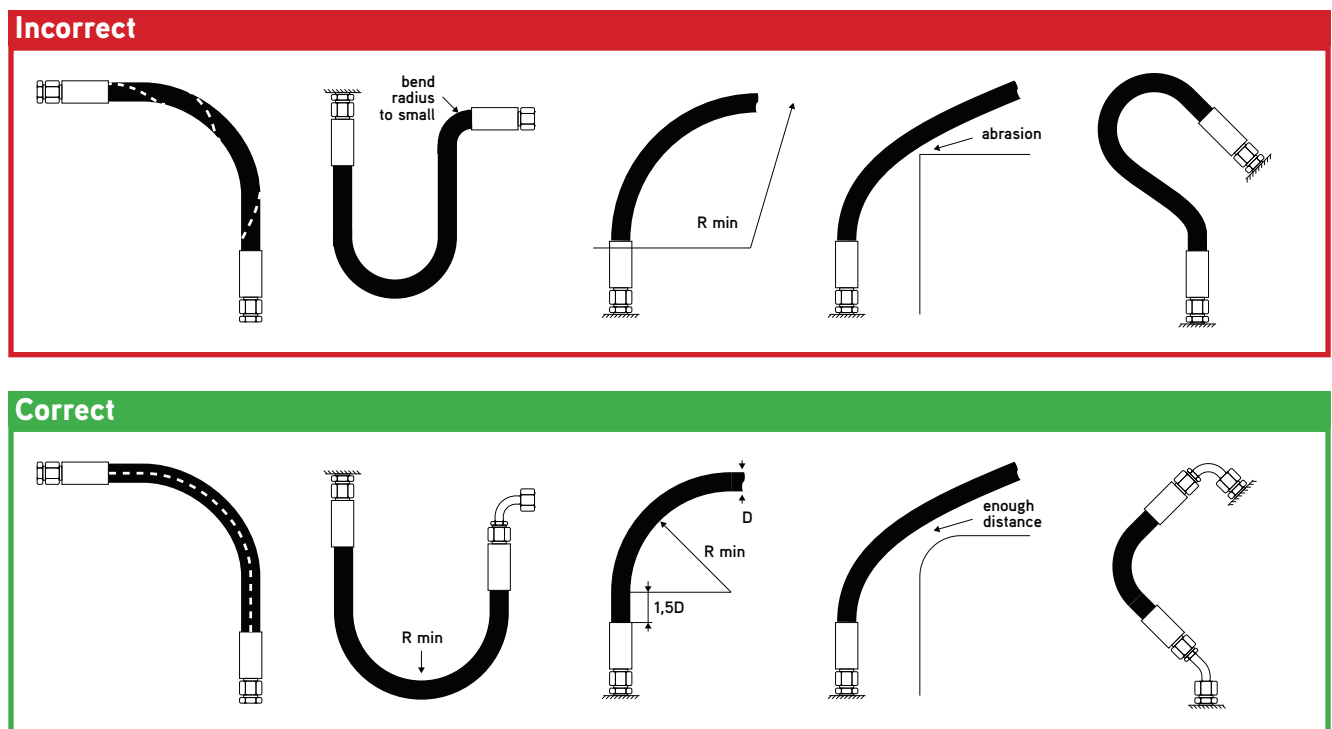
## Abrasion

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

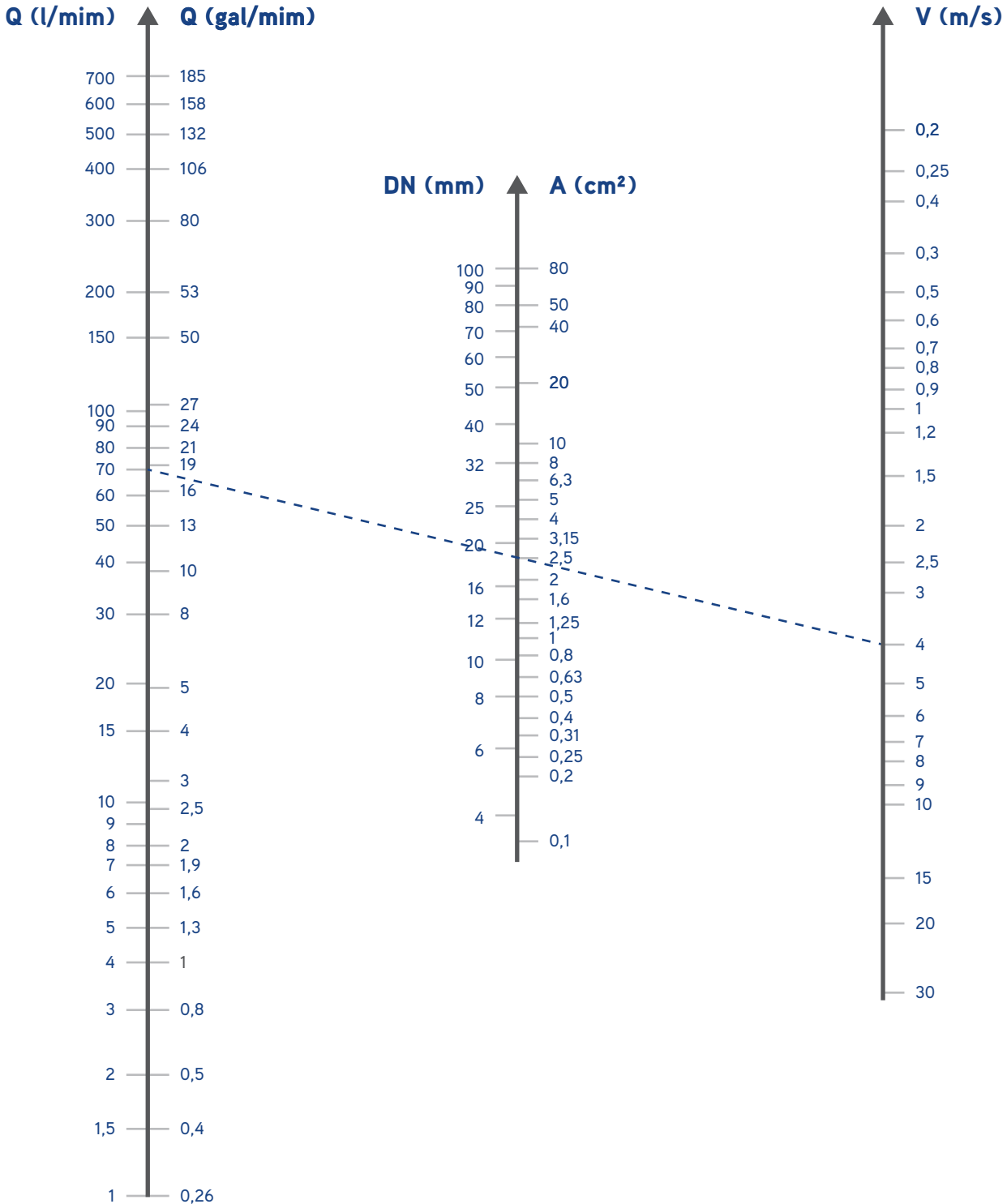
Couplings are a fundamental part of the geometry of hose assemblies. The compatibility of sealing and securement of the couplings to the system ports should be verified. The recommended coupling series for each hose should be used and the assembly instructions carefully followed. Inadequate couplings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

**Table 4: Examples of installation of hoses assemblies**



## 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 (cm<sup>2</sup>). 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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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

## Marking or packaged items

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

## Exit from storage

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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

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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

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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

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

## Torsion

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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	<ul style="list-style-type: none"> <li>- Hose and/or fitting may be unsuitable for the application or wrong match</li> <li>- Hose maybe too short, twisted or that the radius of the bend is lower than the minimum bending radius</li> </ul>	<ul style="list-style-type: none"> <li>- Replace fittings and/or hose with more suitable alternatives</li> <li>- Increase the hose length and make sure no twisting occurs during operation</li> </ul>
	<ul style="list-style-type: none"> <li>- The hose maybe crimped to the wrong swaging dimension</li> </ul>	<ul style="list-style-type: none"> <li>- Check the assembly is being performed correctly. Make sure the crimping diameter is correct</li> </ul>
	<ul style="list-style-type: none"> <li>- Hose maybe incorrectly assembled or crimped incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>- Check assembly is being performed correctly</li> </ul>
	<ul style="list-style-type: none"> <li>- Skiving of the hose maybe required or the skiving may have been performed incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>- Check the specifications of the hose fittings/hose and whether skiving is required. Also find a skiving diameter and length from the manufacturer</li> </ul>
Hose bursts on the outer surface of a bend	<ul style="list-style-type: none"> <li>- 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</li> </ul>	<ul style="list-style-type: none"> <li>- 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 radius or spiral layer has opened, causing a weak point in the hose structure</li> </ul>
	<ul style="list-style-type: none"> <li>- The pressure increased past the minimum burst pressure of the hose</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the hose with one more suitable for the application or reduce the pressure within the system</li> </ul>



<b>Problem</b>	<b>Possible Causes</b>	<b>Solutions</b>
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

<b>Problem</b>	<b>Possible Causes</b>	<b>Solutions</b>
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.**



## **PRODUCTS LIMITED WARRANTY**

The products sold by Balflex® are warranted to our customers to be free from defects in material and workmanship when shipment at Balflex® warehouses takes place.

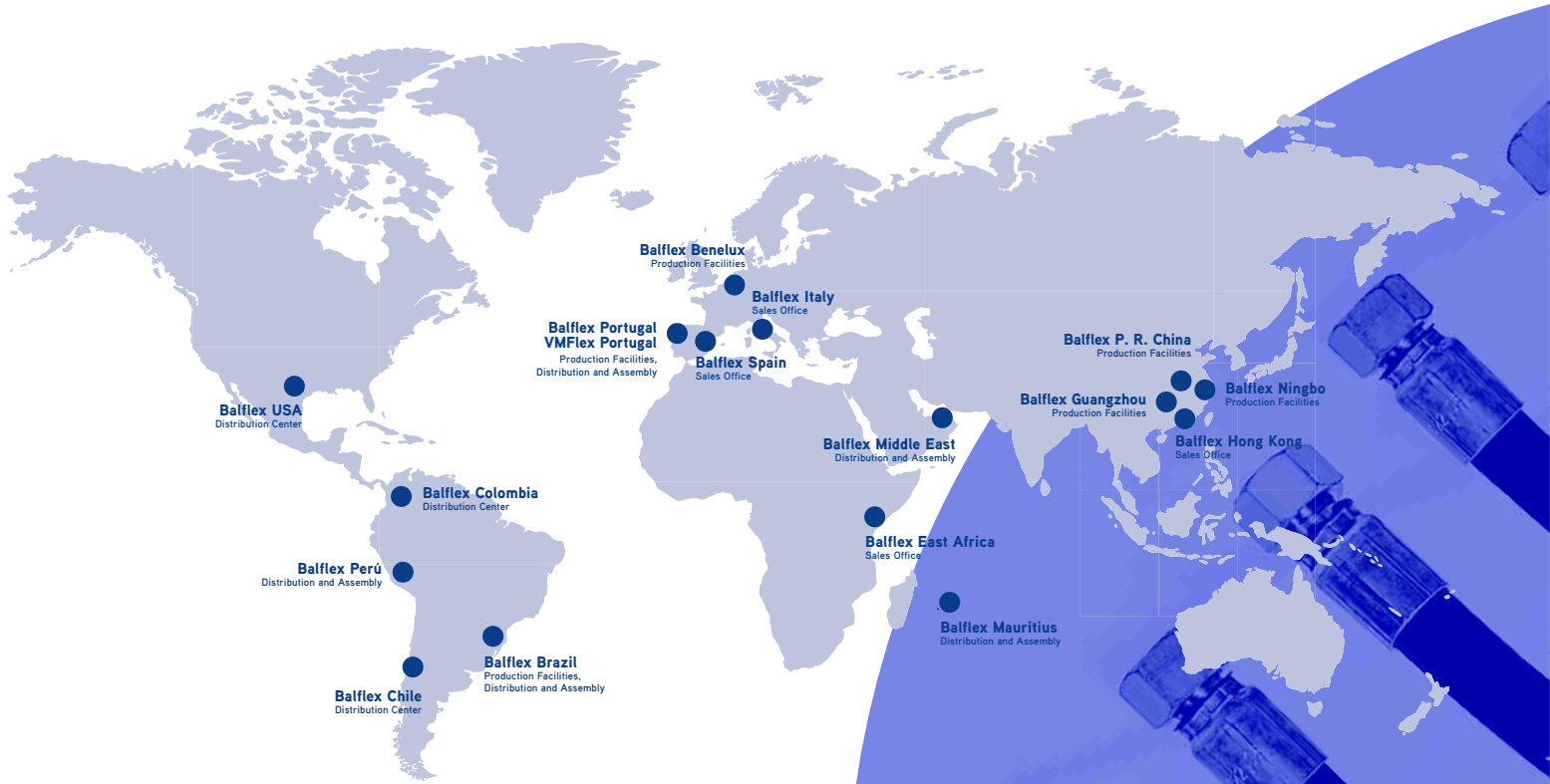
All warranty claims shall be made present in writing to Balflex®. Balflex® liability hereunder is limited to the purchase price of the merchandise proving to be defective or, at balflex sole discretion, to the replacement of such merchandise upon its authorized return to Balflex®.

This warranty is in lieu of and excludes all other warranties, or conditions expressed, implied, statutory or otherwise created under applicable law including, but not limited to the warranty of merchantability and the warranty of fitness for a particular purpose.

In addition, this warranty shall not apply and will be null and void to any products or portions thereof that have been subject to abuse, misuse, improper installation, maintenance or operation, electrical failure or abnormal conditions and to products that have been tampered with, altered, modified, repaired, reworked by anyone not approved by balflex or used in any other manner inconsistent with any Balflex® instructions or specifications. Balflex® disclaims any liability for any hose assemblies which have not been produced with in conformance with Balflex® assembly recommendations and parts.

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