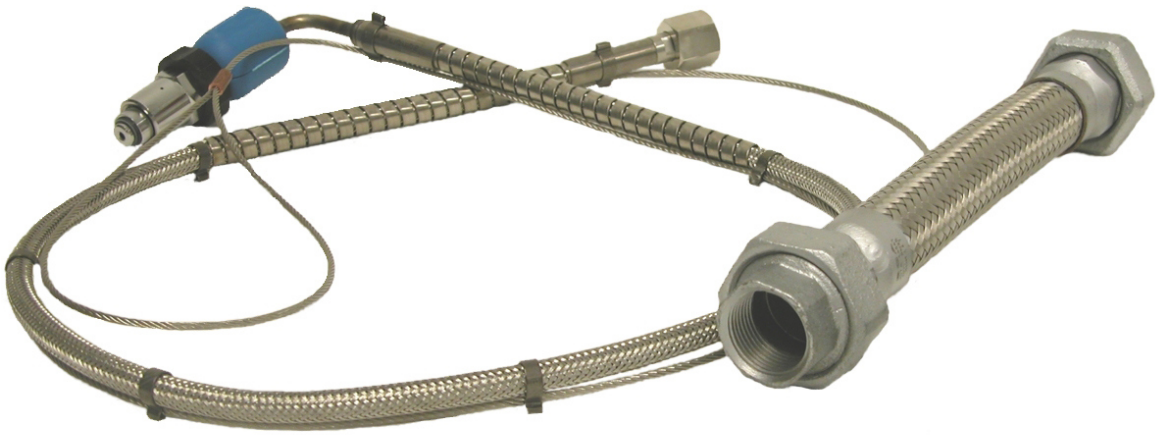
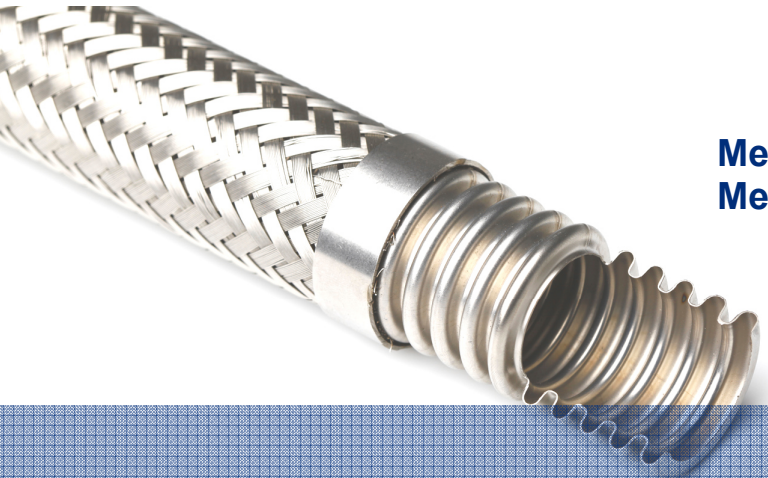
BOA® Group





Metal Hose and Metal Hose Assemblies Guide

- BOA Standard Program
- Standard fittings

Module 2

Metal Hose and Metal Hose Assemblies Guide

Modules:
1 Metal Hoses, General Information, Installation Instructions
2 BOA Standard Program Metal Hoses (bulk) and Assemblies
3 Annexe/ Standards / Corrosion

Summary Module 2

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BOA Standard Program

1 Metal Hoses (bulk)

BOA Metal hoses are manufactured as bulk products, in different production length according to DN. Depending on the type and accordingly the future application they are provided with a stainless steel braid. They serve as basis material (semi-finished) for the fabrication of standardized hose assemblies (section 2) or for the assembly of custom made products. Some DN / types of metal hoses are available from stock at short notice (see references in the standard product tables, preferred series). For certain types, a minimum purchase quantity is required.

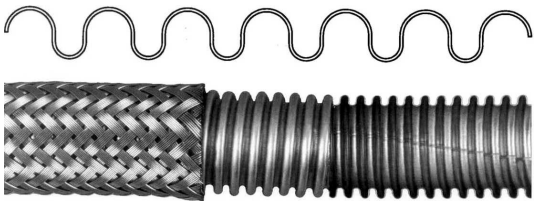
There are two different types of metal hose bulk products:

- **Corrugated Metal Hoses** (or all-metal hoses) (section 1.1): they are **absolutely tight** and are appropriate for high pressure and vacuum.
- **Strip wound Metal Hoses** (with or without sealing strips) (section 1.2): their **tightness being limited**, they are mostly used as protection hoses or ventilation/ suction hoses.

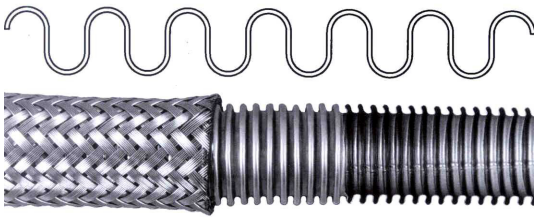
1.1 Corrugated Metal Hoses

The right choice of the metal hose type depends on the targeted use:

- helical corrugation (spiral)
- annular corrugation (parallel)

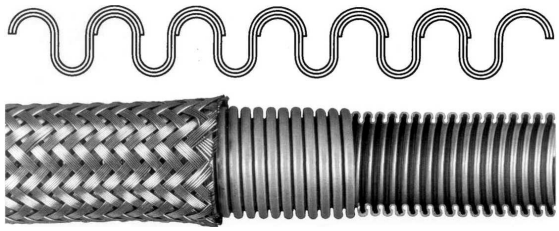


Corrugated metal hose (all-metal hose), helically corrugated



Corrugated metal hose (all-metal hose), annularly corrugated

1.1.1 BOA DUO®



BOA-DUO®

Helically corrugated stainless steel hose

Double-ply, helically corrugated hose, resistance welded at the crest, cold formed. Very flexible high pressure hose although double-plied construction. Excellent operating stability due to double-plied construction in the convolution flanks and triple-plied construction at the crest. Excellent vibration absorber.
Design and type approval in accordance with ISO-10380 standard.

Materials:
Corrugated hose: stainless steel 1.4571 (similar to AISI 316 Ti)
Braid: stainless steel 1.4301 (similar to AISI 304)

Special materials on demand

Reduction factors at heavy-duty conditions according to ISO 10380.

Application fields:
- all kinds of high pressure applications
- universal vibration absorber
- engine construction, pumps, compressors
- all kinds of pressure pipes for heavy-duty service with extreme working conditions

DN [mm]	Braid type [-]	Perm. working pressure at 20°C [bar]	Inside ∅ [mm]	Outside ∅ [mm]	∅ - Tolerance [mm]	Bend radius stat. [mm]	Bend radius dyn. [mm]	Weight ± [kg/m]	Production length [m]	BOA Item n° [-]
	0	8		8.7		20	75	0.10		M-0004867[1)]
5	A	200	5.2	9.9	±0.2	20	75	0.17	15-22	M-0018048[1)]
	B	270		11.1		20	120	0.25		M-0012953[1)]
	0	7.5		9.8		25	80	0.11		M-0004868[1)]
6	A	175	6.3	11.0	±0.2	25	80	0.18	15-22	M-0018826[1)]
	B	250		12.2		25	140	0.26		M-0017608
	0	6.5		12.4		32	100	0.19		M-0004870[1)]
8	A	150	8.2	13.6	±0.2	32	100	0.34	15-22	M-0023369[1)]
	B	200		14.8		32	165	0.48		M-0016848
	0	5.5		14.4		38	115	0.21		M-0004856
10	A	130	10.2	15.6	±0.2	38	115	0.36	15-22	M-0011068[1)]
	B	175		16.8		38	190	0.51		M-0026701
	0	5		17.3		45	125	0.28		M-0004857
12	A	110	12.2	18.5	±0.2	45	125	0.42	15-22	M-0007305[1)]
	B	160		19.7		45	210	0.56		M-0027722
	0	3.2		21.3		58	145	0.34		M-0004859[1)]
16	A	90	16.2	22.9	±0.2	58	145	0.61	15-22	M-0016792[1)]
	B	130		24.5		58	250	0.88		M-0029551
	0	2.5		26.7		70	170	0.58		M-0004861[1)]
20	A	80	20.2	28.3	±0.2	70	170	0.87	15-22	M-0016793[1)]
	B	110		29.9		70	285	1.19		M-0031842
	0	2		31.7		85	195	0.65		M-0004862[1)]
25	A	65	25.2	33.3	±0.2	85	195	1.10	15-22	M-0013189[1)]
	B	95		34.9		85	325	1.55		M-0026712
	C	135		36.5		130	325	1.99		
	0	1.6		41.1		105	300	1.03		M-0004865[1)]
32	A	50	32.3	42.7	±0.3	105	300	1.53	10-15	M-0016794[1)]
	B	80		44.3		105	380	1.94		M-0021686
	C	110		45.9		160	380	2.55		

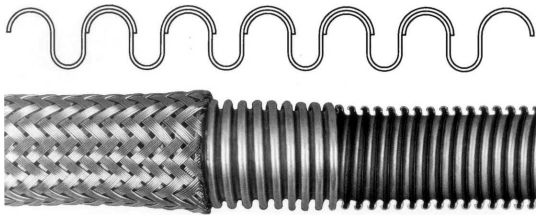
Continues on the next page

DN [mm]	Braid type [-]	Perm. working pressure at 20°C [bar]	Inside ∅ [mm]	Outside ∅ [mm]	∅ - Tolerance [mm]	Bend radius stat. [mm]	Bend radius dyn. [mm]	Weight ± [kg/m]	Production length [m]	BOA Item n° [-]
40	0	1.6	40.3	48.7	±0.3	130	340	1.20	10-15	M-0004866[1)]
	A	45		51.1		130	340	1.98		M-0020089[1)]
	B	65		52.3		130	430	2.25		M-0026022
	C	95		55.1		180	430	2.75		
50	0	1.5	50.3	61.4	±0.3	160	390	2.05	10-15	M-0004835[1)]
	A	35		63.4		160	390	3.10		M-0014434[1)]
	B	55		64.6		160	490	3.10		M-0025904
	C	80		67.4		260	490	4.16		
65	0	1.5	65.3	76.4	±0.3	200	460	2.45	10-15	M-0004869[1)]
	A	30		78.4		200	460	3.50		M-0017259[1)]
	B	40		81.2		200	580	3.97		M-0023622
	C	60		83.6		300	580	5.48		
80	0	1.5	80.4	93.2	±0.4	240	520	3.20	6-12	M-0004871[1)]
	A	25		96.4		240	520	4.69		M-0011921
	B	35		98.8		240	660	4.99		M-0026362
	C	50		101.2		470	660	6.18		
100	0	1.5	100.4	113.5	±0.4	290	600	3.90	6-12	M-0004827[1)]
	A	15		115.9		290	600	5.69		M-0029716
	B	30		120.7		290	750	7.27		M-0023624
	C	40		120.7		570	750	7.48		
125	0	1.5	126.0	141.0	±0.7	370	720	5.50	4-12	M-0003924*
	A	10		143.9		370	820	7.64		M-0026602*
	B	22		148.7		440	960	8.87		
	C	35		148.7		720	1050	10.87		
150	0	1.4	151.0	166.0	±0.7	470	880	6.56	4-12	M-0003925*
	A	7		168.4		470	1050	9.10		M-0026508*
	B	18		172.0		550	1320	10.88		M-0029125*
	C	25		173.2		840	1560	12.82		M-0021561*
200	0	1.4	201.0	216.0	±0.8	700	1200	8.60	4-12	M-0003927*
	A	6		220.8		700	1800	12.26		
	B	15		222.0		770	2000	16.50		M-0027989*
250	0	1.3	252.0	270.0	±1	860	1520	11.40	4-6	M-0004863*
	A	6		274.0		860	2280	16.10		
	B	14		278.0		1000	2500	20.80		
300	0	1.3	302.0	320.0	±1	1120	1870	13.60	4-5	M-0004864*
	A	4		324.0		1120	2800	19.10		
	B	12		326.0		1320	3250	24.70		

[1)] **Preferred series,** usually available at short term
* on request

Specifications subject to change without notice
15-07

1.1.2 BOA-SUPRA®



BOA-SUPRA®

Helically corrugated stainless steel hose

Single-ply, helically corrugated hose, resistance welded at the crest, cold formed. Highly flexible pressure pipe: increased operating stability due to double-ply construction at the crest (particularly at dynamic working conditions).
Design and type approval in accordance with ISO-10380 standard.
Reduction factors at heavy-duty conditions see ISO 10380.

Materials:
Corrugated hose: stainless steel 1.4571 (similar to AISI 316 Ti)
Braid: stainless steel 1.4301 (similar to AISI 304)
Special materials on demand

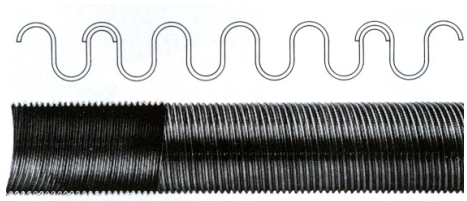
Application fields:
- Pressure pipe for most various applications
- wherever highest flexibility is demanded (e.g. big movements and/ or thermal dilatations in the system)
- gas hoses, safety gas hoses

DN	Braid type	Perm. working pressure at 20°C	Inside ∅	Outside ∅	∅ - Tolerance	Bend radius stat.	Bend radius dyn.	Weight ±	Prod. length	BOA item n°
[mm]	[-]	[bar]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg/m]	[m]	[-]
5	0 A	7.5 180	5.2	8.5 10.0	±0.2	20 20	75 75	0.08 0.16	15-22	M-0012832 [1] M-0018867 [1]
6	0 A	6.5 140	6.3	9.7 11.2	±0.2	25 25	80 80	0.09 0.18	15-22	M-0014752 [1] M-0014645 [1]
8	0 A	4.0 125	8.2	12.3 13.9	±0.2	32 32	100 100	0.14 0.28	15-22	M-0011574 [1] M-0012477 [1]
10	0 A	3.0 100	10.2	14.3 15.8	±0.2	38 38	115 115	0.16 0.31	15-22	M-0011575 M-0013695
12	0 A	2.5 80	12.2	17.1 18.5	±0.2	45 45	125 125	0.19 0.36	15-22	M-0005225 M-0008689
16	0 A	1.5 60	16.2	21.1 22.7	±0.2	58 58	145 145	0.23 0.43	15-22	M-0005227 M-0017459
20	0 A	1.0 45	20.2	26.4 28.0	±0.2	70 70	170 170	0.34 0.57	15-22	M-0007601 M-0017756
25	0 A	0.8 40	25.2	31.4 33.8	±0.2	85 85	195 195	0.40 0.85	15-22	M-0007593 M-0009106
32	0 A	0.5 30	32.3	40.5 42.7	±0.3	105 105	300 300	0.60 1.10	10-15	M-0007019 M-0007765
40	0 A	0.4 22	40.3	48.5 50.6	±0.3	130 130	340 340	0.70 1.28	10-15	M-0007020 M-0007733
50	0 A	0.3 20	50.3	60.4 63.0	±0.3	160 160	390 390	1.05 1.77	10-15	M-0004892 M-0006226
65	0 A	0.3 15	65.3	75.4 78.7	±0.3	200 200	460 460	1.25 2.05	10-15	M-0004893 M-0006917
80	0 A	0.3 12	80.4	94.2 97.7	±0.4	240 240	520 520	1.70 3.10	6-12	M-0007831 M-0008143
100	0 A	0.3 8	100.4	114.8 117.5	±0.4	290 290	600 600	2.20 3.70	6-12	M-0006448 M-0012539
125	0 A	0.3 7	125.4	142.3 145.5	±0.5	350 350	710 820	2.80 4.90	6-12	M-0023625 M-0026583
150	0 A	0.3 6	150.4	167.3 170.0	±0.5	420 420	860 1050	3.35 5.70	6-12	M-0017488 M-0018421
200	0 A	0.3 4	201.0	217.0 220.0	±0.6	630 630	1170 1800	4.40 7.40	6-12	M-0011706 M-0013199
250	0 A	0.3 3.2	252.0	269.0 277.0	±0.8	770 770	1480 2280	6.10 10.60	5-7	on request
300	0 A	0.3 3	302.0	319.0 327.0	±0.8	920 920	1800 2800	7.40 12.40	4-6	on request

[1] **Preferred series,** usually available at short term

Subject to change without notice 15-07

1.1.3 BOA VENTINOX HR



BOA VENTINOX HR

Chimney liner for low temperature heating installations, perfectly tight, welded

The **VENTINOX-HR** hose is a highly corrosion resistant, flexible chimney liner, perfectly appropriate for heating installations running under low temperature conditions. The VENTINOX-HR liner has the right characteristics for applications working at temperatures below the acid dew point. With a global index of 41* the material used is a high-alloy steel (frequently used stainless steels have a global index of less than 30). Thus the VENTINOX-HR is extremely resistant against different types of corrosion, particularly against pitting corrosion, the most common corrosion type present in low temperature heating installations. A higher percentage of chrome and molybdenum is responsible for such excellent physical performance.
It may be used at higher temperatures up to 450°C.
*The global index is an empirical value which states that the risk of pitting corrosion diminishes when its value is >30.
Global index (%Cr x 3,3 x %Mo + 30 x %N2).

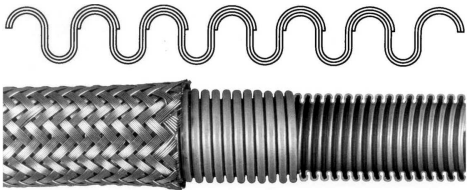
Material: corrugated hose stainless steel F29-M, AL 29-4C
Wall thickness: 0,2 mm

DN [mm]	Inner Ø [mm]	Outside Ø [mm]	min. static bend radius [mm]	Space Ø required by the liner rolled up for transport [mm]	Standard production length [m]	Weight [kg/m]	BOA item n° [-]
80	81	87	110	1700	50	0.730	M-0000744 [1)]
100	101	107	120	1700	50	0.910	M-0000745 [1)]
125	126	132	135	1900	50	1.130	M-0000746 [1)]
140	141	147	145	2000	50	1.260	M-0000748 [1)]
150	151	158	160	2100	50	1.330	M-0000749 [1)]
160	161	168	175	2100	50	1.370	M-0000750 [1)]
175	176	183	195	2200	40	1.470	M-0000752 [1)]
200	201	208	235	2400	40	1.680	M-0000754 [1)]
225	226	233	260	2400	40	1.820	M-0000756
250	251	258	285	2500	25	2.100	M-0000757
300	301	308	345	2600	25	2.700	M-0000759

[1)] **Preferred series,** usually available at short term

Specifications subject to change without notice
15-07

1.1.4 BOA-DUO® UHP



BOA-DUO® UHP (Ultra High Pressure)

Helically corrugated stainless steel hose

Double-ply, ultra high pressure, helically corrugates metal hose, resistance welded at the crest. Due to double-ply wall in the flank, and triple wall on the crest, highest operating reliability and highest flexibility are achieved.
BOA-DUO® UHP also has excellent properties for vibration absorption.
Design and type approval in accordance with ISO 10380 Standard.
Fourfold safety against bursting!

Materials:
Corrugated hose: stainless steel 1.4404 (similar to AISI 316L)
Braid: stainless steel 1.4301 (similar to AISI 304)

Derating factors at heavy-duty conditions see ISO 10380 Standard (or our "Technical Instructions for Metal Hoses and Metal Hose Assemblies").

Application fields:
- connecting lines for gas bottles
- filling installations for gas cylinders
- universal vibration absorber
- engine construction, pumps, compressors
- all kind of pressure pipes for heavy-duty service with extreme working conditions

Temperature range: - 196°C until max. 600°C

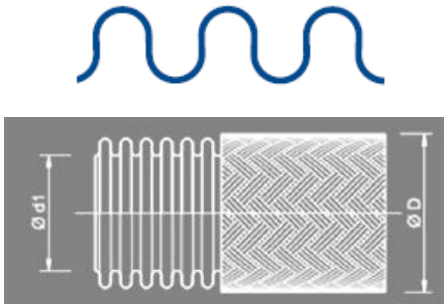
DN [mm]	Braid type [-]	Adm. working pressure at 20 °C [bar]	Inner ∅ [mm]	Outside ∅ [mm]	∅ tolerance [mm]	Bend radius static [mm]	Bend radius dynamic [mm]	Weight ± [kg/m]	Prod. length [m]	BOA item n° [-]
5	GS	395 530*	5.2	12.6	± 0.2	20	100	0.35	15-22	M-0040158
6	GS	350 460*	6.3	13.7	± 0.2	25	140	0.4	15-22	M-0038493

Preferred series, usually available at short term

* admissible operating pressure with triple safety against bursting for applications not needing ISO 10380 conformity.

Specifications subject to change without notice
15-07

1.1.5 BOA PARMECA®



PARMECA®

Annularly corrugated stainless steel hose

PARMECA® is a single-ply, mechanically shaped corrugated hose with normal corrugation, applicable under extreme conditions (-273 °C to 600°C), without natural aging, available without (0) or with one braid (A). The production method guarantees high leak tightness.
Design and type approval in accordance with EN ISO10380 standard.

Materials:

Corrugated hose: stainless steel 1.4404 (similar to AISI 316 L) or
Stainless steel 1.4541* (similar to AISI 321)
*except for DN6, 8 and 10)
Braid: stainless steel 1.4301 (similar to AISI 304)

Other materials on demand

Reduction factors at heavy-duty conditions see EN ISO 10380.

Application fields:

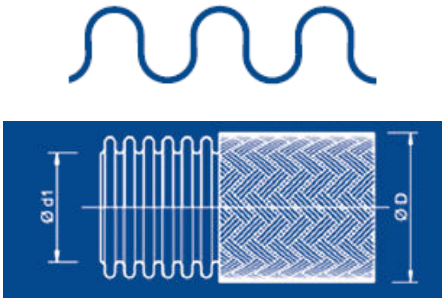
Transport of liquids and gases with high demands on reliability and service life, or as a tight mechanical protection, such as for petrochemical installations, exhaust applications, air conditioning, etc.

DN [mm]	Braid type [-]	∅ Inside [mm]	∅ Outside [mm]	∅ Toler-ance outside [mm]	Bend radius stat. Rs [mm]	Bend radius dyn. Rd [mm]	Admissible operating pressure 20°C [bar]	Burst pres-sure 20°C [bar]	BOA item n° Material: 1.4404 [-]	BOA item n° Material: 1.4541 [-]
6	0 A	6.4	9.8 11.4	± 0.4	9 25	- 110	36 158	>144 632	0000013826 0000013838	--
8	0 A	8.3	11.9 13.5[1)]	± 0.4	11 32	- 130	23 115	>92 460	0000013827 0000013839	--
10	0 A	10.3	14.5 16.1[1)]	± 0.4	14 38	- 150	16 85	>64 340	0000013828 0000013840	--
12	0 A	12.3	16.6 18.2[1)]	± 0.4	16 45	- 165	16 75	>34 300	0000013830 0000013841	0000013855 0000013861
15	0 A	15.3	19.5 21.1[1)]	± 0.4	18 58	- 195	10 56	>40 224	0000013831 0000013842	0000013856 0000013862
20	0 A	20.1	25.4 27.0[1)]	± 0.4	25 70	- 225	10 50	>40 200	0000013835 0000013844	0000013857 0000013863
25	0 A	24.9	30.8 32.4[1)]	± 0.4	30 85	- 260	6.6 38	>27 152	0000013837 0000013845	0000013859 0000013864

[1)] Reduced dimensions
Production length: 25/100m

Specifications subject to change without notice
15-07

1.1.6 BOA PARNOR®



PARNOR®

Annularly corrugated stainless steel hose

PARNOR® is a single-ply, hydraulically formed corrugated metal hose with normal corrugation, very performing, very suitable for extreme conditions (-273°C to 600°C), without natural aging, available without braiding (0), with (A) or 2 (B) braids of high compactness.
The fabrication method of PARNOR® guarantees an extremely high leak tightness product (max. on request $1x10^{-9}$ mb l / s).
Chemically resistant to a variety of highly corrosive products. Design and type testing according to EN ISO 10380.

Materials:
Corrugated hose: stainless steel 1.4404 (similar to AISI 316 L) or 1.4541* (similar to AISI 321)
*except for DN6, 8, 10, 125
Braid(s): stainless steel 1.4301 (similar to AISI 304)

Special materials on request.

Reduction factors at heavy-duty conditions see EN ISO 10380.

Application fields:
Transport of liquids and gases with very high demands on flexibility, reliability and service life, even under difficult operating conditions, such as cryogenic, petrochemical, nuclear technology, exhaust gases, refrigeration / air conditioning, food industry etc.

DN	Braid type	∅ Inside	∅ Outside	∅ Tolerance outside	Bend radius stat. Rs	Bend radius dyn. Rd	Max. allowable pressure 20°C	Burst pressure 20°C	BOA item n° Material: 1.4404	BOA item n° Material: 1.4541
[mm]	[-]	[mm]	[mm]	[mm]	[mm]		[bar]	[bar]	[-]	[-]
6	0	6.2	9.8	± 0,3	10	-	18	>72	0000013223	-
	A		11.4		23	110	140	560	0000013238	-
	B		13.0		25	140	145	580	0000013253	-
8[1)]	0	8.5	13.6	± 0,3	14	-	14	>56	0000013224	-
	A		15.2		28	130	115	460	0000013239	-
	B		16.8		32	130	121	484	-	-
10[1)]	0	10.4	16.2	± 0,3	16	-	10	>40	0000013225	-
	A		17.8		32	150	100	400	0000013240	-
	B		19.4		38	150	105	420	0000013254	-
12[1)]	0	12.4	18.6	± 0,4	24	-	12	>48	0000013226	0000013300
	A		20.2		39	165	80	320	0000013241	0000013313
	B		21.8		45	165	97	388	-	0000017100
15[1)]	0	15.4	22.5	± 0,4	29	-	7.5	>30	0000013227	0000013301
	A		24.1		50	195	63	252	0000013242	0000013314
	B		25.7		58	195	77	307	0000013255	-
20[1)]	0	20.3	28.3	± 0,4	35	-	4.3	>18	0000013228	0000013302
	A		29.9		60	225	50	200	0000013243	0000013315
	B		31.5		70	225	68	272	0000013256	0000019118

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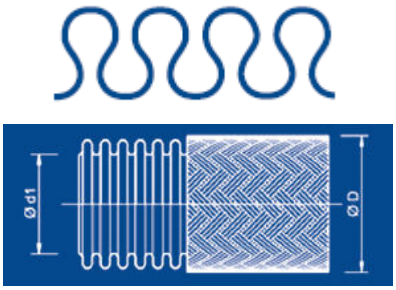
DN	Braid type	∅ Inside	∅ Outside	∅ Toler-ance outside	Bend radius stat. Rs	Bend radius dyn. Rd	Max. allowable pressure 20°C	Burst pressure 20°C	BOA item n° Material: 1.4404	BOA item n° Material: 1.4541
[mm]	[-]	[mm]	[mm]	[mm]	[mm]		[bar]	[bar]	[-]	[-]
25[1)]	0	25.4	34.8	± 0,4	42	-	3	>12	0000013229	0000013304
	A		36.4		73	260	40	160	0000013244	0000013317
	B		38.0		85	260	55	220	0000013257	0000013326
32[1)]	0	32.3	43.3	± 0,5	51	-	3.3	>14	0000013230	0000013306
	A		45.4		90	300	40	160	0000013245	0000013319
	B		47.4		105	300	55	220	0000013258	0000013327
40[1)]	0	40.2	52.4	± 0,5	61	-	2.2	>9	0000013231	0000013307
	A		54.4		115	340	32	128	0000013246	0000013320
	B		56.4		130	340	44	176	0000013259	0000013328
50[1)]	0	50,5	64.8	± 0,6	73	-	2.1	>9	0000013232	0000013308
	A		67.3		140	390	32	128	0000013247	0000013321
	B		69.8		160	390	45	180	0000013260	0000013329
65	0	64.9	80.9	± 0,7	89	-	1.3	>6	0000013233	0000013309
	A		83.4		175	460	25	100	0000013248	0000013322
	B		85.9		200	460	38	152	0000013261	0000013330
80[1)]	0	79.6	99.6	± 0,8	108	-	1.4	>6	0000013234	0000013310
	A		102.6		240	660	23	92	0000013249	0000013323
	B		105.6		240	660	38	152	0000013262	0000013331
100[1)]	0	101.5	126.5	± 0,8	126	-	0.5	>2	0000013235	0000013311
	A		129.5		290	750	15	60	0000013250	0000013324
	B		132.5		290	750	25	100	0000013263	0000013332
125	0	126	152.0	± 1,0	147	-	0.4	>2	0000013236	-
	A		155.0		340	1000	13	52	0000013251	-
	B								0000013264	-
150	0	149	174.0	± 1,0	169	-	0.3	>25	0000013237	0000013312
	A		177.0		390	1250	11	44	0000013252	0000013325
									0000013265	0000013333

[1)] very good life time resistance: 50.000 cycles – 5 times superior to the EN ISO 10380 standard

Specifications subject to change without notice
15-07

1.1.7 BOA PARRAP®



PARRAP®

Annularly corrugated stainless steel hose

PARRAP® is a single-ply, hydraulically formed corrugated hose with narrow corrugation, very performing, very suitable for extreme conditions (-273°C to 600°C), without natural aging, available without braiding (0), with one (A) or 2 (B) braids of high compactness.
The production method guarantees a high leak tightness product (max. upon request $1x10^{-9}$ mb l/s).
The performance of the dynamic operation is exceptional: 5 x higher fatigue strength than the requirements of EN ISO 10380 in a small bending radius (EN ISO 10380 improved by 25%).

Materials:
Corrugated hose: stainless steel 1.4404 (similar to AISI 316 L) or 1.4541* (similar to AISI 321)
*except for DN6, 8, 10, 125
Braid(s): stainless steel 1.4301 (similar to AISI 304)

Reduction factors at heavy-duty conditions see EN ISO 10380.

Application fields:
Transport of liquids and gases with very high demands on flexibility, reliability and service life, even under difficult operating conditions (dynamic, vibration, pressure, vacuum), e.g low temperature, vacuum, petrochemical, nuclear technology, instrumentation, exhaust systems, air conditioning ....

DN	Braid type	∅ Inside	∅ Outside	∅ Tolerance outside	Bend radius stat. Rs	Bend radius dyn. Rd	Max. allowable pressure 20°C	Burst pressure 20°C	BOA item n° **Material: 1.4404**	BOA item n° **Material: 1.4541**
[mm]	[-]	[mm]	[mm]	[mm]	[mm]		[bar]	[bar]	[-]	[-]
	0		9.8		9	-	18	> 72	0000013351	-
6	A	6.0	11.4	± 0.3	20	110	150	600	0000013366	-
	B		13.0		25	140	175	700		-
	0		13.6		12	-	9	> 36	0000013352	-
8[1)]	A	8.3	15.2	± 0.3	20	130	115	460	0000013367	-
	B		16.8		32	130	158	632		-
	0		16.2		14	-	6	> 24	0000013353	-
10[1)]	A	10.1	17.8	± 0.3	20	150	115	460	0000013368	-
	B		19.4		38	150	135	540		-
	0		18.6		21	-	6	> 24	0000013354	0000013461
12[1)]	A	12.0	20.2	± 0.4	25	124[2)]	80	320	0000013369	0000013473
	B		21.8		45	124[2)]	125	500	0000013381	
	0		22.5		26	-	3	> 12	0000013355	0000013463
15[1)]	A	15.0	24.1	± 0.4	32	146[2)]	63	252	0000013370	0000013475
	B		25.7		58	146[2)]	97	388	0000013382	
	0		28.3		32	-	2.2	> 9	0000013356	0000013464
20[1)]	A	19.9	29.9	± 0.4	38	169[2)]	55	220	0000013371	0000013476
	B		31.5		70	169[2)]	77	308	0000019235	
	0		34.8		37	-	1.8	> 8	0000013357	0000013465
25[1)]	A	24.9	36.4	± 0.4	45	195[2)]	40	160	0000013372	0000013477
	B		38.0		85	195[2)]	62	248	-	0000019733
	0		43.4		46	-	1.6	> 7	0000013358	0000013466
32[1)]	A	31.8	45.4	± 0.5	58	225[2)]	40	160	0000013373	0000013478
	B		47.4		105	225[2)]	58	232	0000013383	-
	0		52.4		55	-	1.2	> 5	0000013359	0000013467
40[1)]	A	39.6	54.4	± 0.5	70	255[2)]	32	128	0000013374	0000013479
	B		56.4		113	255[2)]	44	176	-	0000013485

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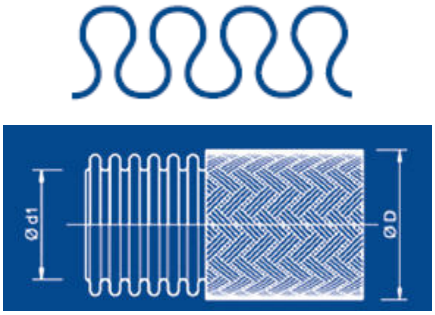
DN	Braid type	∅ Inside	∅ Outside	∅ Tolerance outside	Bend radius stat. Rs	Bend radius dyn. Rd	Max. allowable pressure 20°C	Burst pressure 20°C	BOA item n° **Material: 1.4404**	BOA item n° **Material: 1.4541**
[mm]	[-]	[mm]	[mm]	[mm]	[mm]		[bar]	[bar]	[-]	[-]
50[1)]	0	49.4	64.8	± 0.6	65	.	1.0	> 4	0000013360	0000013468
	A		67.3		85	293[2)]	32	128	0000013375	0000013480
	B		69.8		136	293[2)]	47	188	-	0000013486
65	0	64.0	80.9	± 0.7	80	-	0.5	> 2	0000013361	0000013469
	A		83.4		105	345[2)]	25	100	0000013376	0000013481
	B		85.9		171	345[2)]	41	164	0000019946	0000013487
80[1)]	0	78.7	99.6	± 0.8	97	-	0.7	> 3	0000013362	0000013470
	A		102.6		180	495[2)]	23	92	0000013377	0000013482
	B		105.6		224	495[2)]	40	160	0000013384	0000013488
100[1)]	0	101.0	126.5	± 0.8	113	-	0.4	> 2	0000013363	0000013471
	A		129.5		218	563[2)]	15	60	0000013378	0000013483
	B		132.5		276	563[2)]	27	108	0000013385	0000013489
125	0	125.2	152.0	± 1.0	132	-	0.25	> 1	0000013364	-
	A		155.0		255	1000	13	52	0000013379	-
	B								0000013386	-
150	0	148.2	174.0	± 1.0	152	-	0.2	> 1	0000013365	0000013472
	A		177.0		290	1250	11	44	0000013380	0000013484
	B								0000013387	

[1)] Very good lifetime resistance (50 000 Cycles - 5 times superior to the EN ISO 10380 Standard)
[2)] Reduced bending radius (EN ISO 10380 Standard Improved by 25%)

Specifications subject to change without notice
15-07

1.1.8 BOA HP/ THP/ XHP



BOA HP/ THP/ XHP

Stainless steel annularly corrugated metal hose

The **HP, THP and XHP** are high performance flexible stainless steel hoses, annularly corrugated, for use in high pressure applications.
The manufacturing process of the high pressure series, hydroformed, reinforced walls, with narrow corrugation, guarantees a product of high leak tightness (max. on demand $1x10^{-9}$ mb l/s).
Additional, the Omega shaped corrugation profile ensures an exceptionally good compromise flexibility/ high pressure resistance.
Design and type test in accordance with EN ISO 10380.

Materials:

Corrugated hose: stainless steel 1.4404 (similar to AISI 316 L) or stainless steel 1.4541 (similar to AISI 321)

Braid(s): stainless steel 1.4301 (similar to AISI 304) or 1.4306 (similar to AISI 304L)

Available:
HP: with 1 braid
THP: with 2 braids
XHP: with 3 braids.
Reduction factors at heavy-duty conditions see EN ISO 10380.

Application fields:

Transport of liquid or gaseous media, which make high demands on pressure resistance, flexibility and durability in harsh environments: transfer of industrial gases, steam engines, turbines, plate presses ...

DN	Type braid	Inner ∅ Di	outside ∅ Da	Tolerance outside- Ø	Bend radius stat. Rs	Bend radius dyn. Rd	max. adm. pressure 20°C	Burst pressure 20°C	BOA item n° Material: 1.4404	BOA item n° Material: 1.4541
[mm]	[-]	[mm]	[mm]	[mm]	[mm]		[bar]	[bar]	[-]	[-]
6	HP THP	5,9	11.4 13.0	± 0.3	25	110	180 255	720 1020	0000013518 0000013526	
10	HP THP	10.0	17.8 19.4	± 0.3	38	150	145 195	580 780	0000013519 0000013527	
12	HP THP	11.8	20.2 21.8	± 0.4	45	165	140 185	560 740	0000013520 0000013528	
20	HP THP	17.9	29.1 30.7	± 0.4	70	225	85 125	340 500	0000013521 0000013529	
25	HP THP	24.2	38.0 40.0	± 0.4	85	215 260	78 124	312 496	0000013522 0000013530	0000013549 0000013555
32	HP THP	30.7	46.5 49.0	± 0.5	105	300	65 115	260 460		0000013550 0000013556
40	HP THP	39.3	54.9 57.4	± 0.5	130	280 340	61 90	244 360	0000013523 0000013531	0000013551 *
50	HP THP	49.0	67.3 69.8	± 0.6	160	390	55 78	220 312	0000013524 0000013532	
65	HP THP	64.0	83.9 86.9	-0.3/+0.6	200	460	45 65	204 300	0000024928 0000024929	

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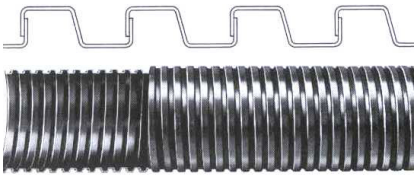
DN	Type braid	Inner ∅ Di	outside ∅ Da	Tolerance outside- Ø	Bend radius stat. Rs	Bend radius dyn. Rd	max. adm. pressure 20°C	Burst pressure 20°C	BOA item n° Material: 1.4404	BOA item n° Material: 1.4541
[mm]	[-]	[mm]	[mm]	[mm]	[mm]		[bar]	[bar]	[-]	[-]
80	HP THP	78.7	99.0 102.0	± 0.6	240	660	25 50	100 200	0000013525 0000013533	
100	HP THP	101.0	129.5 132.5	± 0.8	290	750	24 45	96 180		0000013552 0000013557
125	HP THP	124.0	155.0 158.0	± 1.0	350	1000	20 38	80 152		*
150	THP XHP	155.0	185.0 188.0	± 0.5	400	1250 1550	27 34	108 136	*	*
200	THP XHP	204.0	246.0 253.5	± 0.6	520	1600 2000	27 30	108 120		*

* on request

Specifications subject to change without notice
15-07

1.2 Strip wound Metal Hoses

1.2.1 BOA DE



BOA DE

Strip wound metal hose

Using metal hoses, electric cables, rubber and plastic hoses, copper pipes and other sensitive conductors become well protected against mechanical damages, welding splatters or chemical influences. While protecting rubber and plastic hoses, moreover they prevent them from stretching and bursting due to inner pressure or from buckling due to too sharp bending.

The protective metal hose **Type DE** is formed by a strip wound, S-profile metal strip; circular cross-section.

Type DE shows an excellent, robust construction, resistant against heavy mechanical movement. Excellent flexibility not hindering or only slightly the space within the conductor to be protected is moving. **Type DE is not tight, and therefore unsuited for pressure piping use.**

Application fields:
- protection of electrical cables, rubber and plastic hoses
- protection against buckling
- bend radius limiter
- suction installations
- pneumatic transport of light materials
  (e.g. suction or transport of wood shavings or textile fibres)

Material: Stainless steel 1.4301 (similar to AISI 304)
(other materials on demand)

DN / Designation [-]	Inner ∅ [mm]	Outside ∅ [mm]	Tolerance ± (i./o.) [mm]	Bend radius (min., without load) [mm]	BOA item n° [-]
DE 3 - 1.4301	3	4.8	0.2 ID/ 0.3 AD	15	M-0023092
DE 3.3 - 1.4301	3.3	5	0.2	15	M-0043349
DE 4.3 - 1.4301	4.3	6	0.2	15	M-0039172
DE 5.3 - 1.4301	5.3	7	0.2	17	M-0006512
DE 6 - 1.4301	6	8	0.2	19	M-0003810
DE 8 - 1.4301	8	10	0.2	22	M-0003204

Minimal order quantity (per dimension): **50 m**

Length measure
The hose or hose assembly length shall be measured in either mid-position or in the extended position depending on the purchaser's requirements and shall be the length as ordered with a tolerance of ±3% unless otherwise stated (definition EN ISO 15465). The compressed measure length is 10–15% shorter, the installation length corresponds to the mid-position between extended and compressed position.

1.2.2 BOA VS

BOA VS

Strip wound metal hose, sealed

The ventilation hose type **VS,** due to its heavy execution, is particularly recommended for constant movements and heavy duty use. It is equipped with fibreglass joints for applications up to approx. 400°C. Circular section. Not recommended for conveying liquids and gases!

Materials:
Standard: galvanized steel
Joints: fibreglass

Application fields:

- for constant movements and heavy duty service
- for air, all kinds of exhaust gases, smoke, dust, wood shavings, filings etc.
- for small overpressure up to $p_{working} \leq 0{,}5$ bar

Temperature range: up to approx. 400°C

Inner ∅ [mm]	Outside ∅ [mm]	∅ Tolerance ± [mm]	Minimal bend radius [mm]	Weight ± [kg/m]	Max. fabrication length [m]	BOA item n° [-]
25	29	0.3	105	0.43	50	M-0008858
30	34	0.4	110	0.525	40	M-0006822
40*	45	0.4	150	0.83	35	M-0008930*
50	56	0.5	200	1.16	15	M-0003664
65	72	0.6	270	1.95	15	M-0006808
80	87	0.6	300	2.4	12	M-0000850

Preferred series, usually available at short term
* minimal order quantity = 20 m; delivery term by agreement

For other Ø please inquire

Length measure
The hose or hose assembly length shall be measured in either mid-position or in the extended position depending on the purchaser's requirements and shall be the length as ordered with a tolerance of ±3% unless otherwise stated (definition EN ISO 15465). The compressed measure length is 10–15% shorter, the installation length corresponds to the mid-position between extended and compressed position.

Installation
The connection from hose to machine parts or rigid pipes is realized with brazed or riveted sockets using or not a reduction. For frequent hose mounting to and demounting from the piping, we supply springy, slit, brazed sockets with clamp device. For smaller nominal sizes, as connecting parts rubber sockets may be glued on.

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Specifications subject to change without notice
15-07

1.2.3 BOA PROTEX

BOA PROTEX

Strip wound metal hose

The protective hose **PROTEX** is a strip wound metal hose with double-strip profile, polygonal section, without gasket, limited tightness, therefore not recommended for conveying liquids and gases. Suitable for all-around movements, also in axial direction. Tolerates small torsion due to polygonal profile. Robust execution and resistant to vibration. Easy assembly.

Material: stainless steel. 1.4301 (similar to AISI 304)

Application fields:
- as exhaust gas, ventilation and suction hose
- for vibration and sound absorption in exhaust manifolds
- applicable for small underpressure, if a slight loss of air is tolerated
- as inliner for pressure hoses operating very high flow rates, to prevent important pressure loss and too high sound emission.

Temperature range: - 196°C up to max. 650°C

Inner ∅ [mm]	Outside ∅ [mm]	Tolerance ± [mm]	Weight [kg/m]	Bend radius static min. [mm]	Production length [m]	BOA item n° [-]
55.0	59.0	0.4	1.800	240	10	M-0039850
60.0	64.0	0.4	1.940	260	10	M-0039851
65.0	69.0	0.4	2.150	280	10	M-0039852
70.0	74.0	0.4	2.300	300	10	M-0039853
75.0	79.0	0.6	2.430	320	10	M-0039854
80.0	84.0	0.6	2.620	340	10	M-0039855
85.0	89.0	0.6	2.760	360	10	M-0039856
90.0	94.0	0.6	2.900	380	10	M-0039857
100.0	104.0	0.8	3.250	420	10	M-0039858
125.0	129.0	0.8	4.060	520	10	M-0039859
150.0	154.0	1.0	5.880	640	10	M-0039860
190.0	194.0	1.0	7.400	800	10	M-0039861

Preferred series, usually available at short term

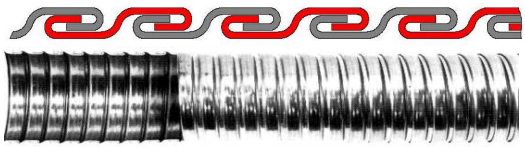
Other Ø upon inquiry

Length measure
The hose or hose assembly length shall be measured in either mid-position or in the extended position depending on the purchaser's requirements and shall be the length as ordered with a tolerance of ±3% unless otherwise stated (definition EN ISO 15465). The compressed measure length is 10–15% shorter, the installation length corresponds to the mid-position between extended and compressed position.

Installation
To allow free movement in all directions, the installation length corresponds to the middle value between stretched and compressed measure. To connect fittings, an appropriate thin-walled tube is pulled over the hose end, then riveted to the hose profile, and brazed or welded.

Specifications subject to change without notice

1.2.4 BOA C150



BOA C150

Strip wound metal hose

The protective hose **C150** is a strip wound metal hose with double-strip profile, circular section, without gasket, limited tightness, therefore not recommended for conveying liquids and gases. Suitable for all-around movements, also in axial direction. No torsion is tolerated. Robust execution and resistant to vibration. Easy assembly.

Material: stainless steel 1.4301 (similar to AISI 304.

Application fields:
- as exhaust gas, ventilation and suction hose
- for vibration and sound absorption in exhaust manifolds
- applicable for small underpressure, if a slight loss of air is tolerated
- as inliner for pressure hoses operating very high flow rates, to prevent important pressure loss and too high sound emission.

Temperature range: - 196°C up to max. 600°C

Inner ∅ [mm] [mm]	Outside ∅ [mm] [mm]	Tolerance ± [mm] [mm]	Weigth (stretched) [kg/m] [kg/m]	Bend radius static min. [mm] [mm]	Transverse pressure resistance min. [N] [N]	Tensile strength min. [N] [N]	BOA item n° [-] [-]
11	14	0.2	0.195	55	1415	900	M-0039841
13	16	0.2	0.230	70	1550	1100	M-0039842
14	17	0.2	0.248	75	1620	1200	M-0039843
17	20	0.2	0.301	85	1840	1500	M-0039844
25	29	0.3	0.500	125	3500	1975	M-0039845
32	36	0.4	0.640	160	3200	2250	M-0039846
40	44	0.4	0.790	180	3000	2450	M-0039847
48	52	0.4	0.922	200	2700	2700	M-0039848
50	54	0.5	0.960	205	2650	2750	M-0039849

Preferred series, usually available at short term

Other Ø on request

Length measure
The hose or hose assembly length shall be measured in either mid-position or in the extended position depending on the purchaser's requirements and shall be the length as ordered with a tolerance of ±3% unless otherwise stated (definition EN ISO 15465). The compressed measure length is 10–15% shorter, the installation length corresponds to the mid-position between extended and compressed position.

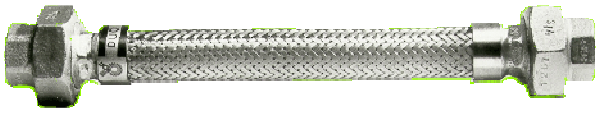
Installation
To allow free movement in all directions, the installation length corresponds to the middle value between stretched and compressed measure. To connect fittings, an appropriate thin-walled tube is pulled over the hose end, then riveted to the hose profile, and brazed or welded.

Specifications subject to change without notice
15-07

2 Metal Hose Assemblies

2.1 Vibration Absorbers

2.1.1 BOA JOTA/ KAPPA



BOA JOTA / KAPPA

Stainless steel vibration absorbers, with screws

Thanks to the double-ply corrugated metal hose BOA-DUO®, the vibration absorbers type JOTA and KAPPA are perfectly appropriate to absorb engine vibrations.

Materials:

Corrugated hose	stainless steel 1.4571, double-ply
Braid	stainless steel 1.4301
End rings	stainless steel 1.4301
Screws	malleable cast iron, flat sealing, (special version stainless steel)

Approval
up to DN25 p_{max}: 16 bar admissible
up to DN50 p_{max}: 5 bar admissible
approved flat gasket: KLINGERsil C-4400 / C-4400 L
(gaskets must be ordered separately)

Application fields:
JOTA: longer version, therefore suitable for bigger vibrations of lower frequency.
KAPPA: shorter version, therefore applicable when high-frequency vibrations occur.

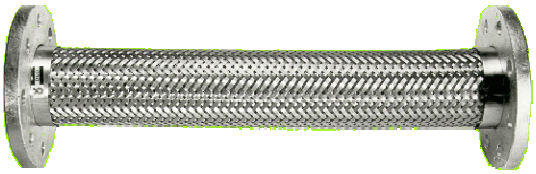
Max. operating temperature: 300°C with malleable cast iron screws
as special version: 450°C with stainless steel screws

Dimension DN [mm]	Outside ∅ [mm]	Thread Rp ["]	Nominal pressure PN [bar]	Type [-]	Nominal length L [mm]	BOA Item n° [-]	Weight [kg]
10	15.6	3/8	25	JOTA KAPPA	250 170	M-0001133 M-0001140	0.25 0.20
15	22.5	1/2	25	JOTA KAPPA	280 190	M-0001134 M-0001141	0.45 0.40
20	27.9	3/4	25	JOTA KAPPA	310 210	M-0001135 M-0001142	0.70 0.55
25	33.4	1	25	JOTA KAPPA	340 230	M-0001136 M-0001143	0.95 0.80
32	42.7	1 1/4	25	JOTA KAPPA	400 270	M-0001137 M-0002129	1.60 1.30
40	50.7	1 1/2	16	JOTA KAPPA	450 300	M-0001138 M-0001144	2.10 1.70
50	63.0	2	16	JOTA KAPPA	500 340	M-0001139 M-0001145	3.35 2.65

Preferred series, usually available at short term

Specifications subject to change without notice
15-07

2.1.2 BOA SIGMA/ OMEGA



BOA SIGMA / OMEGA

Stainless steel vibration absorbers, with loose flange fitting

Thanks to the double-ply corrugated metal hose BOA-DUO®, the vibration absorbers type SIGMA and OMEGA are perfectly appropriate to absorb engine vibrations.

Materials:

Corrugated hose	stainless steel 1.4571
Braid	stainless steel 1.4301
End rings	stainless steel 1.4301
Collar	stainless steel 1.4571
Loose flanges	Steel 37.2, drilled acc. to PN16, from DN 200 PN10 (special version stainless steel)

Application fields:
SIGMA: longer version, therefore suitable for bigger vibrations of lower frequency.
OMEGA: shorter version, therefore applicable when high-frequency vibrations occur.

max. operating temperature: 350°C with steel loose flanges
as special version: 450°C with stainless steel loose flanges

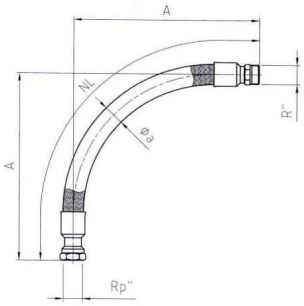
Dimension DN [mm]	Outside ∅ [mm]	Flange drilling PN [bar]	Nominal pressure PN [bar]	Type [-]	Nominal length L [mm]	BOA item n° [-]	Weight [kg]
40	50.7	16	16	SIGMA OMEGA	400 200	M-0001146 [1)] M-0001155 [1)]	4.3 4.0
50	63.0	16	16	SIGMA OMEGA	450 240	M-0001147 [1)] M-0001156 [1)]	6.1 5.5
65	78.0	16	16	SIGMA OMEGA	500 270	M-0001148 [1)] M-0001157 [1)]	7.8 7.0
80	95.5	16	16	SIGMA OMEGA	600 320	M-0001149 [1)] M-0001159 [1)]	9.8 8.5
100	115.6	16	15	SIGMA OMEGA	650 350	M-0001150 [1)] M-0001160 [1)]	11.7 9.5
125	146.0	16	10	SIGMA OMEGA	750 400	M-0001151 [1)] M-0001161 [1)]	17.1 14.0
150	171.5	16	6	SIGMA OMEGA	850 450	M-0001152 M-0001162	22.0 17.5
200	222.0	10	6	SIGMA OMEGA	1000 520	M-0001154 M-0001164	35.0 27.0
250	281.0	10	6	OMEGA	550	M-0001165	35.0

[1)] **Preferred series,** usually available at short term

Specifications subject to change without notice
15-07

2.2 Hose Assemblies for various Applications

2.2.1 BOA-DUO® ELBOW



BOA-DUO® Elbow

Stainless steel hose

Double-ply metal hose assembly made of stainless steel, with simple stainless steel braid, one side with hexagon threaded nipple according to ISO 7-1, the other end with female thread according to ISO 7-1, brazed.

Materials:
Corrugated hose: stainless steel 1.4571 (similar to 316Ti)
Braid: stainless steel 1.4301
Hex nipple brass
Socket brass

Max. working pressure: ϑ_{max} = 300°C

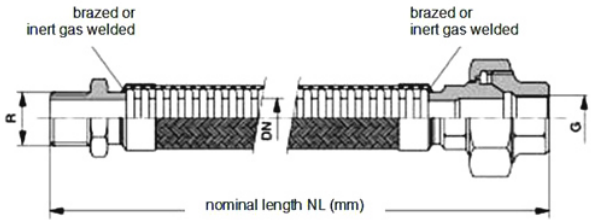
Application fields:
Recommended as flexible connections to heating and sanitary installations in civil defence buildings needing to be tight even in an emergency, i.e. they must be absolutely resistant against fire, shock, vibration and pressure.

DN [mm]	Thread Rp ["]	∅ Outside [mm]	Nominal pressure PN [bar]	Installation length A [mm]	Nominal length NL [mm]	BOA item n° [-]
10	3/8"	15.60	25			M-0001283
16	1/2"	22.90	25			M-0001284
20	3/4"	28.30	25			M-0001285
25	1"	33.30	25	400	650	M-0001286
32	1 1/4"	42.70	25			M-0001287
40	1 1/2"	51.10	16			M-0001288
50	2"	63.40	16			M-0001289

Preferred series: usually available at short term

Specifications subject to change without notice
15-07

2.2.2 BOA SP10



BOA SP10

Annularly corrugated metal hose assembly
DIN-DVGW certified and VdS approved

The annularly corrugated metal hose assembly **SP10** has a medium corrugation and a stainless steel braid. One side inert gas welded, malleable cast iron nipple with male thread according to ISO 7-1, the other side inert gas welded three-part, conical sealing malleable cast iron screw connection with female thread according to ISO 7-1, DIN-DVGW-certificate, VdS approved.
.

Application fields:
- gas applications
- heating, ventilation, air conditioning
- mechanical engineering
- hydraulic engineering

Materials:

Corrugated hose	stainless steel 1.4404
Braid	stainless steel 1.4301
Fittings	malleable cast iron (weldable)

Working conditions

Min. admissible temperature: $\vartheta_{max,\,adm.}$ = -20°C
Max. admissible temperature: $\vartheta_{max,\,adm.}$ = +300°C
Nominal pressure rate general: PN25

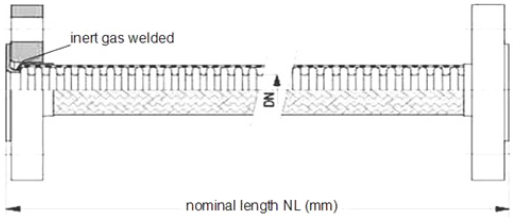
- For fluids, gases and steams: $p_{max,\,working.}$ = 25 bar until $\vartheta_{working} \leq 120°C$
  $p_{max,\,working.}$ = 20 bar at 120°C < $\vartheta_{working} \leq 300°C$
- for combustion gases: (acc. to DIN 3384) $p_{max,\,working}$ = PN5 bar at $\vartheta_{working}$ = 20°C

Dimension DN [mm]	Thread ["]	Nominal pressure PN [bar]	Nominal length NL [mm]	Weight [kg]	BOA AG item n° [-]
10	R 3/8" A Rp 3/8"	25	300 500 1000	0.20 0.26 0.41	M-0020354 M-0020355 M-0020356
12 (16)	R ½" A Rp ½"	25	300 500 1000	0.25 0.31 0.47	M-0020357 M-0020358 M-0020359
20	R ¾" A Rp ¾"	25	500 750 1000	0.55 0.67 0.79	M-0020360 M-0020361 M-0020362
25	R 1"A Rp 1"	25	500 750 1000	0.80 0.95 1.10	M-0020363 M-0020364 M-0020365
32	R 1¼" A Rp 1¼"	25	500 750 1000	1.30 1.52 1.75	M-0020366 M-0020367 M-0020368
40	R 1½" A Rp 1½"	25	500 750 1000	1.45 1.75 2.03	M-0020369 M-0020370 M-0020371
50	R 2" A R 2"	25	500 750 1000	2.40 2.90 3.35	M-0020372 M-0020373 M-0020374

Preferred series, usually available at short term

Specifications subject to change without notice
15-07

2.2.3 BOA SP20



BOA SP 20

Annularly corrugated metal hose assembly

DIN-DVGW certified and VdS approved
The annularly corrugated metal hose assembly **SP20** has a medium corrugation and a stainless steel braid. Both sides stainless steel collars, inert gas welded, with loose flange PN16 DIN EN 1092-1, made of steel St 37-2, DIN-DVGW certificate, VdS approved.

Materials:

Corrugated hose	stainless steel 1.4404
Braid	stainless steel 1.4301
Collar	stainless steel 1.4541
Loose flange	steel St 37-2

Application fields:
- gas applications
- heating, ventilation, air conditioning
- mechanical engineering
- hydraulic engineering

Admissible working temperature: 300°C
Admissible working pressure for gas applications according to DIN 3384 (PN16)

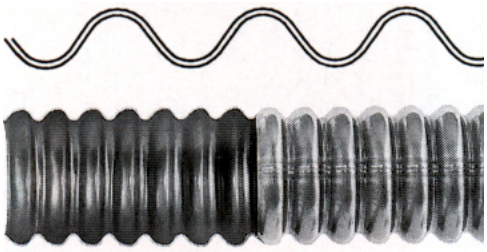
Dimension DN [mm]	Nominal pressure PN [bar]	Nominal length NL [mm]	Weight [kg]	Item n° BOA AG [-]
20	16	500	1.85	M-0020375
		750	2.00	M-0020376
		1000	2.10	M-0020377
25	16	500	1.70	M-0020378
		750	2.85	M-0020379
		1000	3.00	M-0020380
32	16	500	3.55	M-0020381
		750	3.80	M-0020382
		1000	4.00	M-0020383
40	16	600	4.20	M-0020384
		1000	4.60	M-0020385
		1500	5.25	M-0020386
50	16	600	5.40	M-0020387
		1000	6.10	M-0020389
		1500	7.05	M-0020390
65	16	750	7.20	M-0020391
		1000	7.80	M-0020392
		1500	8.95	M-0020393
80	16	750	9.00	M-0020394
		1000	9.90	M-0020395
		1500	11.70	M-0020396
100	16	750	9.95	M-0020397
		1000	11.15	M-0020398
		1500	13.50	M-0020399

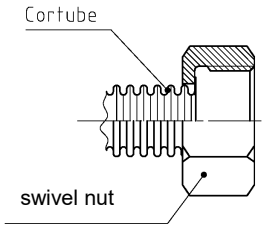
Preferred series, usually available at short term

Specifications subject to change without notice
15-07

2.4 Hose Assemblies for Water Applications

2.4.1 BOA CORTUBE T





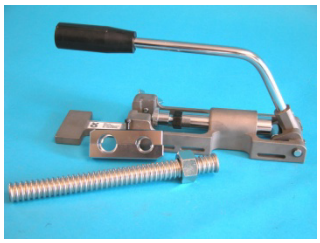
BOA CORTUBE T

Pliable corrugated tube

Pliable installation tube, light parallel corrugation. Available in production lengths up to 50 m. Using a compression tool (additionally available, item n° S-0004573) easy screw fittings, consisting of: corrugated tube and swivel nut.

Materials:

Pliable tube:	stainless steel 1.4301
Swivel nut:	brass nickel-plate
Gasket	Aramid fibre/NBR (max. permissible temperature: 180°C)



Compressing tool
item n° S-0004573

Dimension DN [mm]	Inner ∅ [mm]	Outside ∅ [mm]	Bend radius [mm]	Swivel nut [-]	Permissible operating pressure [bar]	Weight per meter [kg/m]	Item n° hose [-]	Item n° swivel nut [-]	Item n° gasket [-]
12	12.4	16.4	30	G 1/2"	10	0.12	M-0027675	M-0027689	M-0002324
16	16.2	20.2	30	G 3/4"	10	0.18	M-0027676	M-0027690	M-0002325

Delivery term:
- up to 100m available at short term
- from 100m on request

Minimal order quantity:
- pliable tube DN12: coil with 25 m
- pliable tube DN16: coil with 10 m
- swivel nut: 100 pcs
- gaskets: 100 pcs

Assembly
On request we assemble any length of Cortube T for you.
Price on demand.

Specifications subject to change without notice
15-07

3 BOA Standard Fittings

3.1 General

The advantage of metal hoses lies in the fact that most of the standard fittings can be soldered or welded onto the hose, becoming an absolutely tight, pressure and heat resistant, fully metallic connection. To protect the first corrugation directly adjacent to the connection from overheating, an end ring is placed. Hose end and braid are comprised by that ring and join tightly the connection. Metal hose assemblies are executed with a tolerance of –1% / + 3% of the nominal length NL (according to ISO 10380).

Dimensions and technical data of the various hose types may be taken from the respective technical data sheet.

Fittings are the interface between the hose and the pipe system. They are subject to the same operating conditions as the hose and must meet the following requirements:

- working conditions
- corrosion resistance (flow medium, material)
- specific, normative regulations for the application (e.g. gas)
- customer's specifications
- good aptitude for the chosen installation method

3.2 Standard Fittings

The diversity of possible fitting variants is almost endless, the choice of material almost indefinitely. Therefore, it is important to define a standard for fittings, so that the customer can benefit from short lead times in production. Of course, they must meet the requirements of the manufacturing processes.

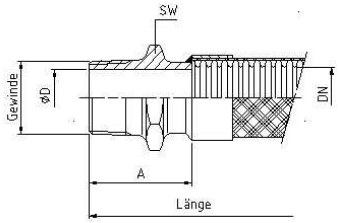
3.3 Customer specific Fittings

Nevertheless, our engineers are equipped with extensive know-how and sophisticated simulation tools to meet specific customer requirements. Advanced connection techniques guarantee optimal solutions.

3.4 Dimensional tables of Fittings

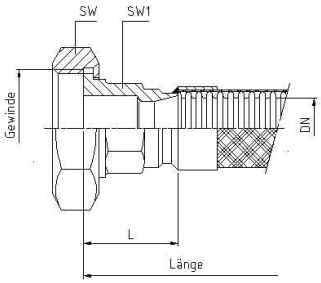
Max. permissible temperature: $\vartheta_{max, adm}$ = 300°C
Nominal pressure level in general: PN25
- For liquids, gases and vapours: $p_{max, operating}$ = 25 bar at $\vartheta_{operating} \leq$ 120°C
  $p_{max, operating}$ = 20 bar at 120°C < $\vartheta_{operating} \leq$ 300°C
- For combustible gases: (according to DIN 3384)** $p_{max, operating}$ = PN16 bar at $\vartheta_{operating}$ = 20°C depending on the nominal size (see tables)

Malleable cast iron/ steel fittings



BOA-Norm 16010 **hexagonal nipple with male thread R according to ISO 7-1**
material: steel St52.0 (DIN 1.0421) with anti-corrosion coating, welded

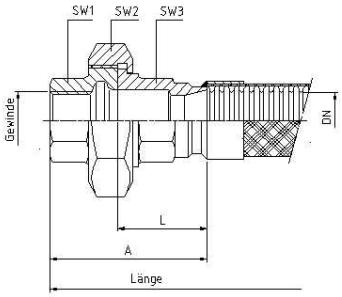
DN [mm]	6	8	10	12	16	20	25	32	40	50	
Thread R	1/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	
D [mm]	8	10	10	14	18	20	27	32	40,2	50	
A [mm]	25	30	30	35	35	36	40	42	46	52	
SW [mm]	12	14	22	22	22	32	41	50	55	70	
PN for gas** [bar]	16	16	16	16	16	16	16	4	4	4	



BOA-Norm 16030 **half screws, flat sealing**
insert part made of steel St37-2 (DIN 1.0037), swivel nut: malleable cast iron, galvanized, welded

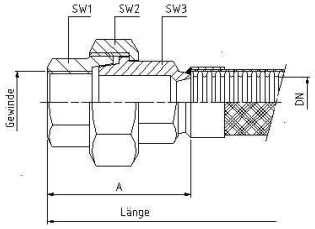
DN [mm]	10	16	20	25	32	40	50	
Thread G	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/4"	2 3/4"	
A [mm]	23	28	27	30	40	45	40	
SW [mm]	32	39	48	54	67	73	90	
SW1 [mm]	19	24	31	38	47	54	66	
PN for gas** [bar]	16	16	16	16	4	4	4	

BOA-Norm 16040 **complete screws, flat sealing, with female thread Rp**
according to ISO 7-1, insert part made of steeel St37-2,
swivel nut and screw part: malleable cast iron, galvanized, welded



DN [mm]	10	16	20	25	32	40	50	
Thread Rp	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	
A[1)] [mm]	46	53	55	61	75	81	82	[1)] Dimension without gasket
L [mm]	23	28	27	30	40	45	40	
SW1 [mm]	22	25	31	38	48	54	66	
SW2 [mm]	32	39	48	54	67	73	90	
SW3 [mm]	19	24	31	38	47	54	66	
PN for gas** [bar]	16	16	16	16	4	4	4	

BOA-Norm 16050 **complete screws, conical sealing, with female thread Rp**
according to ISO 7-1, made of malleable cast iron, galvanized, soldered



DN [mm]	8	10	16	20	25	32	40	50	
Thread Rp	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	
A [mm]	45	48	56	60	68	75	80	91	
SW1 [mm]	18	22	25	31	38	48	54	66	
SW2 [mm]	28	31	38	48	54	67	75	90	
SW3 [mm]	15	19	24	31	38	48	54	66	
PN for gas** [bar]	16	16	16	16	16	4	4	4	

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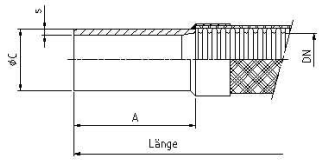
Steel socket, welded

BOA-Norm 16210 **weld end according to DIN 2448/ 1629**
material: steel St52.0, welded

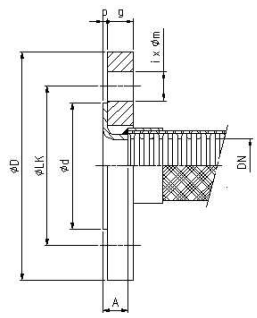


DN [mm]	**10**	**12**	**16**	**20**	**25**	**32**	**40**
A [mm]	50	50	50	50	50	55	55
C [mm]	13.5	17.2	21.3	25.0	30.0	38.0	48.3
s [mm]	1.8	2.3	2.6	2.3	2.9	3.0	4.0
PN [bar] (120°C)	150	150	150	110	110	110	50

DN [mm]	**50**	**65**	**80**	**100**	**125**	**150**
A [mm]	60	60	60	60	70	70
C [mm]	60.3	76.1	88.9	108	133	159
s [mm]	4.5	5.6	4.5	3.6	4.0	4.0
PN [bar] (120°C)	50	50	50	50	50	50

Flange connections, movable, welded

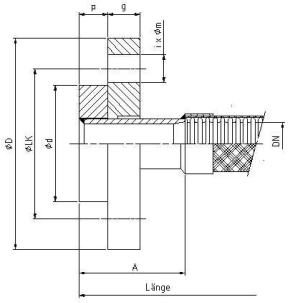
BOA-Norm 16235 **loose flange with collar** PN 10/16 (EN 1092-1)
collar stainless steel, flange made of steel St37-2, galvanized



DN [mm]	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**
D [mm]	95	105	115	140	150	165	185	200	220	250	285
g [mm]	10	12	12	14	14	16	16	18	18	18	20
LK [mm]	65	75	85	100	110	125	145	160	180	210	240
i [number]	4	4	4	4	4	4	4	8	8	8	8
m [mm]	14	14	14	18	18	18	18	18	18	18	22
d [mm]	45	58	68	78	88	102	122	138	158	188	212
A [mm]	8	10	12	14	16	18	18	20	20	20	27
p [mm]	3.0	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.5

Execution for pressure level PN6 on demand

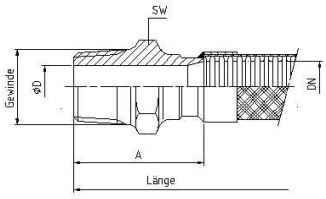
BOA-Norm 16237 **loose flange with socket and smooth collar** PN 25/40 (EN 1092-1)
(for DN15 until DN150: execution PN25 is equivalent to PN40)
socket: stainless steel, smooth collar: St37-2, flange: steel St37-2 galvanized



DN [mm]	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**
D [mm]	95	105	115	140	150	165	185	200	235	270	300
g [mm]	16	16	16	18	18	20	22	24	26	28	30
LK [mm]	65	75	85	100	110	125	145	160	190	220	250
i [number]	4	4	4	4	4	4	8	8	8	8	8
m [mm]	14	14	14	18	18	18	18	18	22	26	26
d [mm]	45	58	68	78	88	102	122	138	162	188	218
A [mm]	55	55	55	60	60	65	65	65	65	75	75
p [mm]	12	14	14	14	14	16	16	18	20	22	22

Stainless steel connections, welded

BOA-Norm 16013 **hexagonal nipple with male thread R according to ISO 7-1**



DN [mm]	**6**	**8**	**10**	**12**	**16**	**20**	**25**	**32**	**40**	**50**
Thread R	**1/8“**	**1/4“**	**3/8“**	**1/2“**	**1/2“**	**¾“**	**1“**	**1 1/4“**	**1 1/2“**	**2“**
A [mm]	25	30	30	35	35	40	45	50	50	60
D [mm]	6	8	10	12	16	20	25	32	40	50
SW [mm]	12	14	19	22	22	30	36	46	50	65
PN [bar]	100	100	100	100	100	100	100	64	64	64

from stock

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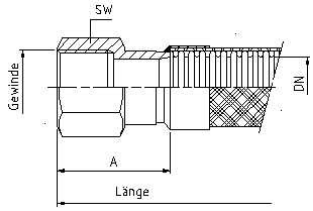
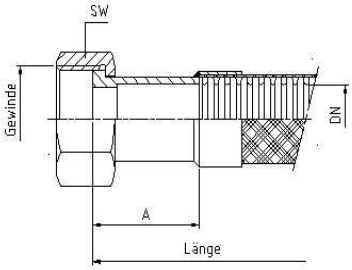


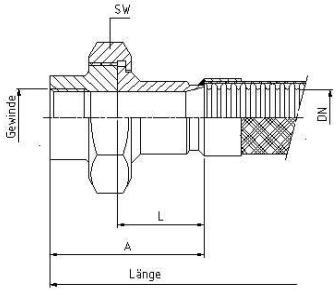
BOA-Norm 16023 **socket with female thread Rp according to ISO 7-1**

DN [mm]	**6**	**8**	**10**	**12**	**16**	**20**	**25**	**32**	**40**	**50**
Thread Rp	**1/8“**	**1/4“**	**3/8“**	**1/2“**	**1/2“**	**3/4“**	1“	1 1/4“	1 1/2“	2“
A [mm]	25	30	30	35	35	40	45	50	50	55
SW [mm]	17	19	22	27	27	32	41	50	55	70
PN [bar]	100	100	100	100	100	100	100	64	64	64



BOA-Norm 16333 **insert part with swivel nut,** insert and nut stainless steel
(swivel nut in brass, on demand)

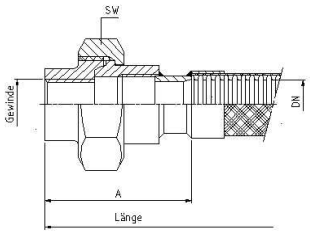
DN [mm]	**8**	**10**	**12**	**12**	**16**	**20**	**25**	**25**	**32**
Thread G	**3/8“**	**3/8“**	**1/2“**	**3/4“**	**3/4“**	1“	1 1/4“	1 1/2“	1 1/2“
A [mm]	13	13	13	16	13.5	19.5	19.5	22.5	22.5
SW [mm]	22	22	27	32	32	41	50	55	55
PN [bar]	100	100	100	100	100	100	100	100	64



BOA-Norm 16043 **complete screws, flat sealing, with female thread Rp according to ISO 7-1**

DN [mm]	**6**	**8**	**10**	**12**	**16**	**20**	**25**	**32**	**40**	**50**
Thread Rp	**1/8“**	**1/4“**	**3/8“**	**1/2“**	**1/2“**	**3/4“**	1“	1 1/4“	1 1/2“	2“
A [1)] [mm]	48	46	48	53	53	58	62	68	74	81
L [mm]	26	24	24	27	27	29	30	33	37	39
SW [mm]	27	27	32	41	41	50	55	70	75	85
PN [bar]	25	25	25	25	25	25	25	16	16	16

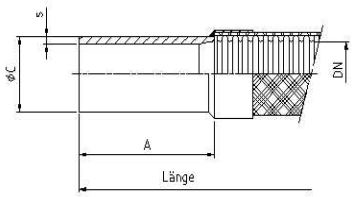
[1)] Dimension without gasket



BOA-Norm 16053 **complete screws, conical sealing, with female thread Rp according to ISO 7-1**

DN [mm]	**6**	**8**	**10**	**12**	**16**	**20**	**25**	**32**	**40**	**50**
Thread Rp	**1/8“**	**1/4“**	**3/8“**	**1/2“**	**1/2“**	**3/4“**	1“	1 1/4“	1 1/2“	2“
A [mm]	50	55	55	60	60	65	75	83	90	95
SW [mm]	27	27	32	41	41	50	55	70	75	85
PN [bar]	50	50	50	50	50	50	50	40	40	40

Socket, stainless steel, welded



BOA-Norm 16213 **weld end made of seamless or welded stainless steel tubes, for pressure purposes, according to EN 10216-5 or EN10217-7**
material: stainless steel DIN 1.4404 (AISI 316L) /
stainless steel DIN 1.4571 (AISI 316 Ti)

DN [mm]	**10**	**12**	**16**	**20**	**25**	**32**	**40**
A [mm]	50	50	50	50	50	55	55
C [mm]	13.5	17.2	21.3	25.0	30.0	38.0	48.3
s [mm]	1.6	2.3	2.6	2.5	2.5	3.0	4.05
PN [bar]	150	150	150	150	150	110	110

DN [mm]	**50**	**65**	**80**	**100**	**125**	**150**
A [mm]	60	60	60	60	70	70
C [mm]	60.3	76.1	88.9	108	133	159
s [mm]	4.5	4.5	4.05	4.0	4.0	4.5
PN [bar]	110	50	50	50	50	50

from stock

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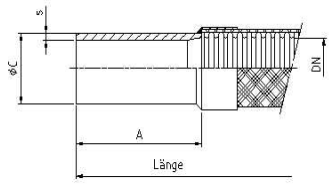
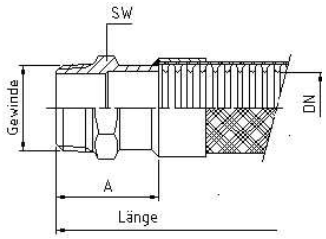
Precision socket, stainless steel, welded



BOA-Norm 16223 **precision socket made of seamless, cold-drawn stainless steel tubes, according to EN 10305-1,**
for olive type fitting according to DIN 3861/ series L,
material: stainless steel DIN 1.4571 (AISI 316 Ti)

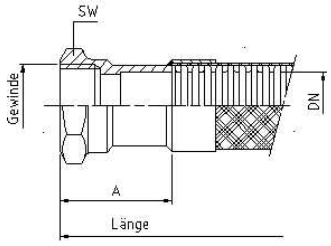
DN [mm]	**6**	**8**	**10**	**12**	**16**	**20**	**25**	**32**	**40**	
A [mm]	30	30	32	32	36	36	40	45	45	
C [mm]	8	10	12	15	18	22	28	35	42	
s [mm]	1.0	1.0	1.5	1.5	1.5	1.5	1.5	2.0	3.0	
PN [bar]	250	250	250	250	160	160	100	100	100	

Sanitary fittings, bronze, hard soldered, max. temperature 120°C



BOA-Norm 5004 **hexagonal nipple with male thread R according to ISO 7-1**

DN [mm]	**10**	**16**	**20**	**25**	**32**	**40**	**50**	
Thread R	**3/8"**	**1/2"**	**3/4"**	1"	**1 1/4"**	**1 1/2"**	2"	
A [mm]	26	24	31	36	43	51	65	
SW [mm]	14	19	27	32	40	49	60	
PN [bar]	25	25	25	16	16	16	16	



BOA-Norm 5005 **socket with female thread Rp according to ISO 7-1**

DN [mm]	10	16	20	25	32	40	50	
Thread Rp	**3/8"**	**1/2"**	**3/4"**	1"	**1 1/4"**	**1 1/2"**	2"	
A [mm]	25	28	35	40	52	51	66	
SW [mm]	20	25	30	37	46	55	60	
PN [bar]	25	25	25	16	16	16	16	

from stock

Other dimensions and materials on demand