



SPRING BAND CLAMPS

Self-tensioning sealing elements

MUBEA

SPRING BAND CLAMPS

SBC acc. to DIN 3021

The company Muhr und Bender KG (Mubea) as a manufacturer of spring band clamps strives to develop new application areas for clamps and to replace conventional Screw Clamp at existing connections. The product range of the spring band clamps is comprehensive. Constant research and development are aiming to improve the features of the spring band clamp and to match the customers' requirements.

Spring band clamps are self-tensioning sealing elements. They are made of tempered spring band steel offering a high level of flexibility and constantly adjusting to different characteristics of the joint. With nearly constant clamping force, spring band clamps ensure a consistent, leak-free sealing without damaging hose or spigot in the process. Due to the multitude of different assembly and locking variants, maximum application possibilities are available.

Advantages

- Temperature range from -40° until 200° C
- high-tensile, alloyed spring steel 51CrV4
- environment-friendly chrome(VI)-free coating
- leak-free sealing directly after the assembly process
- easy, safe and fast handling with special assembly tools

Applications

Alternative fuel systems	Fuel system lines
Recreation vehicle industry	Refrigeration, radiator, HVAC (heating, ventilating, various water line connections)
Agriculture	
Construction machinery	Liquid dispensing, cooling radiator, air conditioning, fuel
Industrial lift trucks	
Mechanical engineering	
Medical and chemical industry	Various connections for gaseous and liquid media
White goods, household appliances	Various water connections

SBC RANGE

1. Standard spring band clamp

This version is suitable for applications without structural space limitations. The standard version is also available as pre-opened variant with T-Clip (metal) or Handy-Clip (plastic). The pre-opened clamps reduce the assembly time during the assembly.

2. Space saver spring band clamp

The space saver spring band clamp has the same properties as the standard design, but is optimized for space limitations by the applied assembly ends. Like the standard version, the space saver version is also available as a pre-opened variant with Handy-Clip (plastic).

3. Space saver spring band clamp pre-opened with Handy-Clip

This version reduces the assembly time during the assembly process. It is unlocked by simply pulling it off with the finger and suitable for the pre-positioning by gluing at the hose.





MUBEA SBC-ASSORTMENT

Contains a selection of 8 serial fitted space saver spring band clamps with different nominal diameters and an assembly tool for a correct assembling. The original Mubea spring band clamp assortments are tailored to a vehicle manufacturer and are specifically designed for repair shops.

Application:

cooling-, heating- and fuel pipes

VAG-Space saver-SBC-Assortment

with original VAG (Volkswagen, Audi, Seat, Skoda) part no.

Content:

25 pcs.: DN 14, 12 mm wide, OE: N 906 867.01, Mubea: 1401204H
25 pcs.: DN 17, 12 mm wide, OE: N 907 702.01, Mubea: 1701204H
25 pcs.: DN 19, 12 mm wide, OE: N 909 264.01, Mubea: 1901204H
20 pcs.: DN 23, 12 mm wide, OE: N 906 869.01, Mubea: 2301203H
10 pcs.: DN 27, 12 mm wide, OE: N 906 870.01, Mubea: 2701203H
10 pcs.: DN 32, 12 mm wide, OE: N 906 871.01, Mubea: 3201203H
10 pcs.: DN 40, 12 mm wide, OE: N 906 872.01, Mubea: 4001203H
10 pcs.: DN 47, 12 mm wide, OE: N 906 265.01, Mubea: 4701203H
Assembly tool: GO292/0-E32-2

Opel-Space saver-SBC-Assortment

with original Opel part no.

Content:

25 pcs.: DN 14, 12 mm wide, OE: 90530642, Mubea: 1401204H
25 pcs.: DN 17, 12 mm wide, OE: 90572588, Mubea: 1701204H
25 pcs.: DN 19, 12 mm wide, OE: 90572589, Mubea: 1901204H
20 pcs.: DN 23, 12 mm wide, OE: 90572590, Mubea: 2301203H
10 pcs.: DN 27, 12 mm wide, OE: 90572594, Mubea: 2701203H
10 pcs.: DN 32, 12 mm wide, OE: 90572595, Mubea: 3201203H
10 pcs.: DN 40, 12 mm wide, OE: 90572596, Mubea: 4001203H
10 pcs.: DN 49, 12 mm wide, OE: 90572598, Mubea: 4901203H
Assembly tool: GO292/0-E32-2

Daimler-Space saver-SBC-Assortment

with original Daimler part no.

Content:

25 pcs.: DN 14, 12 mm wide, OE: A 140 995 04 05, Mubea: 1401204H
25 pcs.: DN 17, 12 mm wide, OE: A 203 995 01 05, Mubea: 1701204H
25 pcs.: DN 19, 12 mm wide, OE: A 140 995 05 05, Mubea: 1901204H
20 pcs.: DN 23, 12 mm wide, OE: A 230 995 00 05, Mubea: 2301203H
10 pcs.: DN 27, 12 mm wide, OE: A 140 995 06 05, Mubea: 2701203H
10 pcs.: DN 32, 12 mm wide, OE: A 230 995 02 05, Mubea: 3201203H
10 pcs.: DN 40, 12 mm wide, OE: A 203 995 09 05, Mubea: 4001203H
10 pcs.: DN 49, 12 mm wide, OE: A 170 995 00 05, Mubea: 4901203H
Assembly tool: GO292/0-E32-2

ASSEMBLY TOOLS



1. Assembly pliers

For assembly of the spring band clamp Mubea highly recommends the proper assembly tools. This prevents a deformation of the spring band clamp. There are manual and pneumatical tools available which can be used differently according to the application situation.

Pliers can be universally utilized for e.g. the high-volume production on the assembly line just as for assembly or removal of an individual spring band clamp.

2. Release tools

Release tools are used for the simple releasing of clipless spring band clamps, which are pre-positioned on hoses.



3. Pneumatic tools

They are used for the assembly of spring band clamps without effort and enable use in semi-automatic and fully automatic assembly lines.



4. Service tools

To use for the removal and re-assembly of spring band clamps in service.



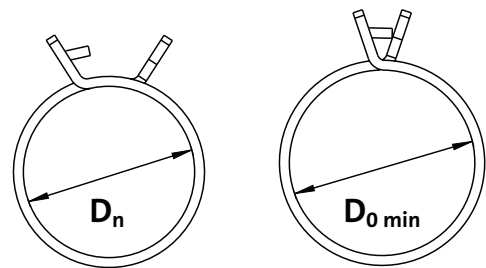
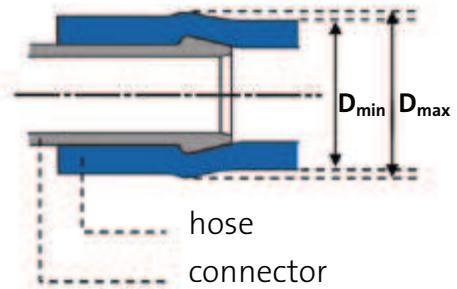
LAYOUT

of the convenient Spring band clamp

1. Push the hose onto the connector and measure D_{min} and D_{max} .
2. Based on the D_{min} value determine the nominal diameter (D_n) of the eligible clamp.
3. Compare the D_{max} value with the designated minimum diameter ($D_{0 min}$) of the opened clamp and select the appropriate one.

$$D_n = D_{min}$$

$$D_{0 min} \geq D_{max}$$



STANDARD SBC

Diameter in mm	Width in mm	Work space in mm
9,0	8,4	8,8 - 9,6
9,5	8,4	9,3 - 10,2
10,5	8,4	10,2 - 11,3
11,5	8,4	11,2 - 12,6
12,5	8,4	12,2 - 13,9
13,0	12	12,7 - 14,2
14,0	12	13,7 - 15,8
15,0	10	14,7 - 16,5
15,0	12	14,7 - 16,5
16,0	10	15,7 - 17,5
16,0	12	15,7 - 17,5
17,0	10	16,3 - 18,5
17,0	12	16,3 - 18,5
18,0	10	17,0 - 19,0
18,0	12	17,3 - 19,0
19,0	10	19,2 - 21,5
19,0	12	18,3 - 20,2
20,0	12	19,3 - 21,6
21,0	12	20,3 - 22,5
22,0	12	21,3 - 24,2
23,0	12	22,3 - 24,7
24,0	10	23,3 - 26,0
24,0	12	23,3 - 26,0
25,0	12	24,0 - 26,8
26,0	10	25,3 - 28,0
26,0	12	25,0 - 28,0
27,0	12	26,0 - 29,2


Diameter in mm	Width in mm	Work space in mm
28,0	12	27,0 - 30,2
29,0	12	28,0 - 31,5
30,0	12	29,0 - 32,5
32,0	12	31,0 - 34,5
34,0	12	33,0 - 36,4
35,0	12	34,0 - 38,0
36,0	12	35,0 - 39,0
38,0	12	37,0 - 41,5
40,0	12	39,0 - 42,5
41,0	12	39,5 - 43,5
42,0	12	40,5 - 44,5
43,0	12	41,5 - 45,5
44,0	12	42,5 - 46,5
46,0	12	44,5 - 48,5
47,0	12	45,5 - 50,0
49,0	12	47,5 - 52,0
50,0	12	48,5 - 53,0
51,0	12	49,5 - 54,0
53,0	12	51,5 - 55,8
55,0	12	53,5 - 58,0
60,0	12	58,5 - 64,0
65,0	12	63,5 - 70,0
70,0	12	68,5 - 73,0
75,0	12	73,5 - 78,0
80,0	12	78,5 - 84,0
85,0	12	83,5 - 89,0
90,0	12	88,5 - 94,0

SPACE SAVER SBC

Diameter in mm	Width in mm	Work space in mm
13,5	12	13,2 - 14,6
14,0	10	13,7 - 15,8
14,0	12	13,7 - 15,8
15,0	12	14,7 - 16,5
16,0	12	15,7 - 17,5
17,0	12	16,3 - 18,5
18,0	12	17,3 - 19,0
19,0	12	18,3 - 20,2
20,0	12	19,3 - 21,6
21,0	12	20,3 - 22,5
22,0	12	21,3 - 24,2
23,0	10	22,3 - 24,7
23,0	12	22,3 - 24,7
24,0	12	23,3 - 26,0
25,0	12	24,0 - 26,8
26,0	10	25,3 - 28,0
26,0	12	25,0 - 28,0
27,0	10	26,0 - 29,2
27,0	12	26,0 - 29,2
28,0	12	27,0 - 30,2
29,0	12	28,0 - 31,5
30,0	12	29,0 - 32,5
32,0	12	31,0 - 34,5
34,0	12	33,0 - 36,4
35,0	12	34,0 - 38,0
36,0	12	35,0 - 39,0
38,0	12	37,0 - 41,5
40,0	12	39,0 - 42,5
42,0	12	40,5 - 44,5
43,0	12	41,5 - 45,9
44,0	12	42,5 - 46,5
46,0	12	44,5 - 48,5
47,0	12	45,5 - 50,0
48,0	12	46,5 - 51,0
49,0	12	47,5 - 52,0
50,0	12	48,5 - 53,0
51,0	12	49,5 - 54,0
53,0	12	51,5 - 55,8
55,0	12	53,5 - 58,0
58,0	12	56,5 - 61,5
70,0	12	68,5 - 74,8

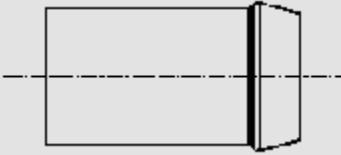
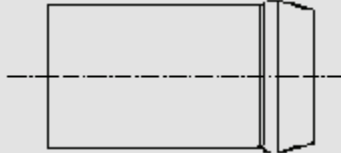
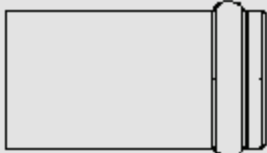

SPACE SAVER SBC WITH HANDY-CLIP

Diameter in mm	Width in mm	Work space in mm
13,5	12	13,2 - 14,0
14,0	10	13,7 - 15,2
14,0	12	13,7 - 15,2
15,0	12	14,7 - 15,9
16,0	12	15,7 - 16,9
17,0	12	16,3 - 17,9
18,0	12	17,3 - 18,4
19,0	12	18,3 - 19,6
20,0	12	19,3 - 21,0
21,0	12	20,3 - 21,9
22,0	12	21,3 - 23,6
23,0	10	22,3 - 24,1
23,0	12	22,3 - 24,1
24,0	12	23,3 - 25,4
25,0	12	24,0 - 26,2
26,0	10	25,0 - 27,4
26,0	12	25,0 - 27,4
27,0	10	26,0 - 28,6
27,0	12	26,0 - 28,6
28,0	12	27,0 - 29,6
29,0	12	28,0 - 30,9
30,0	12	29,0 - 31,9
32,0	12	31,0 - 33,9
34,0	12	33,0 - 35,8
35,0	12	34,0 - 37,4
36,0	12	35,0 - 38,4
38,0	12	37,0 - 40,9
40,0	12	39,0 - 41,9
42,0	12	40,5 - 43,9
43,0	12	41,5 - 45,3
44,0	12	42,5 - 45,9
46,0	12	44,5 - 47,9
47,0	12	45,5 - 49,4
48,0	12	46,5 - 50,4
49,0	12	47,5 - 51,4
50,0	12	48,5 - 52,4
51,0	12	49,5 - 53,4
53,0	12	51,5 - 55,2
55,0	12	53,5 - 57,4
58,0	12	56,5 - 60,9
70,0	12	68,5 - 74,2

 = divergent width (10 mm)

TECHNICAL DETAILS

Connecting piece forms from DIN 3021-3:

Shape	Sketch	Application
DIN 3021-3 Form A (Ideal form)		machined metal spigot and plastic injection molded spigot
DIN 3021-3 Form B		Plastic spigot
DIN 3021-3 Form C		Spigot form on pipelines
DIN 3021-3 Form D		Spigot for fuel systems

Hose/ Spigot connections always should be considered as a system, to ensure a 100 % functionality of the combination.

Further connecting piece forms are possible. They need to be adjusted in an individual case.

TECHNICAL DETAILS

Assignment SBC Hose/ Spigot acc. to DIN 3021-3:

Spring band clamp		Hose			Connecting piece					L _{min}		
Nominal diameter	Minimum function diameter	Inner diameter	Limit dimensions	Wall thickness	Outer diameter	Limit dimensions	Bulge diameter	Limit dimensions	f+1	x	C = 12	C = 15
d _n	d _f	d _i		p	d _s		d _w					
13	12,7	6,5			6,5		7,3					
14	13,7	8,0			8,0		9,0					
15	14,7	8,5			8,5		9,6					
16	15,7	9,5			9,5		10,7					
17	16,3	10			10		11,2					
18	17,3	11			11		12,3		4,0			
19	18,3	12			12		13,5					
20	19,3	13			13		14,6	0		0,15		
21	20,3	14			14	± 0,2	15,7	- 0,25				
22	21,3	15	- 0,5	3,5 ± 0,4	15		16,8					
23	22,3	16	- 1		16		18,0					
24	23,3	17			17		19,1					23
25	24,0	18			18		20,2					
26	25,0	19			19		21,3					
27	26,0	20			20		22,4					
28	27,0	21			21		23,5					
29	28,0	22			22		24,5					
30	29,0	23			23		25,5					

Excerpt of the DIN 3021-3

Because of the good compatibility with water, the use of EPDM is preferred for coolant & heating hoses.

Advantages of EPDM Hoses:

- high temperature resistance
- ozone resistance
- swelling resistance

Recommendation for hoses:

- Recommended "Shore A"-hardness: 60-70 Shore
- wall thickness between 2,5 mm and 5,0 mm
- wall thickness fluctuation between ± 0,3 mm and ± 0,5 mm

For thick-walled or lapped hoses the individual case needs to be reviewed.

The hose inner diameter should generally be in any circumstances smaller than the outer diameter of the spigot.

(Overlap ratio / limit dimensions see DIN 3021-3 excerpt)

Space Saver Spring Band Clamp

The Space Saver SBC (Spring Band Clamp) is a self adjusting sealing component which provides a nearly constant clamping force over a wide range of operating temperatures and pressures.

This nearly constant clamping force insures a leak proof joint over a wide range of operating conditions.

The Standard SBC can be installed with pliers. Mubea also offers installation tools specifically designed for the safe and efficient installation of the Standard SBC.



Establishing the Nominal Diameter

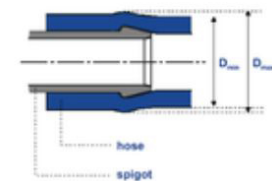
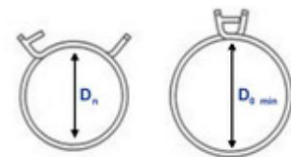
Install hose on fitting and measure D_{min} and D_{max} .

Based on the D_{min} value, you can establish the nominal diameter (D_n) of the correct clamp.

$$D_n = D_{min}$$

Compare the D_{max} value with the specified minimum diameter ($D_{o min}$) of the open clamp and select the appropriate clamp.

$$D_{o min} \geq D_{max}$$



Application

- Heating / Air conditioning and sanitary sector
- Computer cooling
- Water pumps
- Mobile homes (water and heating)
- Garden irrigation and pond systems
- Car repair
- Solar heating
- Farm equipment
- Household appliances
- Construction machinery
- Medical applications
- Food industry
- Temperature control units
- Combined heating and power stations
- Heat pumps

