

**Wuerth Industrial Services Malaysia**

# **W.TEC<sup>®</sup>FBS**

**Spring band clamps for industrial use**



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Products such as spring band clamps are an important part of our product range. They are used in a range of sectors and customers are impressed by both their technical advantages and their added value during installation. In addition to the various advantages, using spring band clamps results in a higher level of process reliability due to the secure and leak-free hose-support connection. This range is rounded off by competent and customer-specific support from our technical customer service department.

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We look forward to working with you and we value your loyalty.

**Martin Jauss**

Head of Marketing & IT

Würth Industrie Service GmbH & Co. KG



## Spring band clamps made simple

Hose-support connections are often fastened with fixed clamps, referred to as hose clamps. Irrespective of the design of the clamp, e.g. worm drive hose clamps for screwing or ear clamps for clamping, a fixed force is transferred to the hose. However, this force is changed by vibrations and temperature fluctuations. If the temperature decreases, the connection becomes looser and leaks; if the temperature increases, the connection becomes tighter and damages the hose.

**Spring band clamps, in contrast, are flexible and maintain a constant force, even under extreme temperature fluctuations. This does not cause leaks or damage to the hose-support connection.**

## Advantages of spring band clamps

### High flexibility

- Continuous adaptation to the changing properties of the hose and supports thanks to the use of tempered spring band steel

### Constant, even clamping force

- Constant, leak-free sealing between -40°C and 210°C without any damage to the hose-support connection

### Easy, quick and reliable assembly

- Assembly time reduced even further thanks to the use of spring band clamps with handy clip

### No maintenance required

- No subsequent re-tightening of the connection required

### Environmentally-friendly surface protection

- Chromate-free zinc flake coating with exceptional resistance to chemicals and corrosion – comparable to stainless steel

### Reusability

- Spring force does not diminish when used several times

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## Technical features

### Material

- High-strength, alloyed spring steel 51CrV4
- High level of protection against brittle fracture, especially at low temperatures

### Surface

- Zinc flake coating
- Multi-layered & environmentally friendly chromium (VI)-free coating
- Inorganic base coating containing zinc and organic top coat
- Complies with the guidelines of the German Automobile Act (RoHS-compliant)

### Corrosion resistance

- Exceptional resistance to corrosion, temperature (up to 210°C) and chemicals
- Guaranteed 720 hours of salt spray resistance in accordance with DIN EN ISO 9227

### Environment

- RoHS-compliant, chromium (VI)-free

### Temperature range

- -40°C to 210°C

### Pressure

- Depending on the hose-support combination, connections of up to a maximum of 11 bar can be fastened

### Standardisation

- DIN 3021: Hose clamps – Spring band clamps
- DIN 3021-1: Dimensions, marking, materials, types
- DIN 3021-2: Technical delivery conditions
- DIN 3021-3: Spring band clamp-hose-spigot

**Sample applications**

**Spring band clamp compared with a hose clamp and a one-ear clamp**



**Motorbike**



**Motorhomes/caravans**



**Toilets (aeroplane, ship, train)**



**Range summary**

**Standard spring band clamp – The standard design**

- DIN 3021, shape A
- Band widths: 8.4 mm; 10 mm; 12 mm
- Diameter: 9–90 mm



**Space-saving spring band clamp – For small available space**

- DIN 3021, shape B
- Band widths: 10 mm; 12 mm
- Diameter: 14–70 mm



**Space-saving spring band clamp with handy clip – For a fast assembly**

- DIN 3021, shape B
- Band widths: 10 mm; 12 mm
- Diameter: 14–70 mm



**SPRING BAND CLAMP STANDARD**



- **DIN:** 3021
- **Material:** Spring steel
- **Surface:** Zinc flake coating
- **ROHS-compliant:** Yes
- **Corrosion protection period:** 720 h
- **Form:** A

Nominal Ø	Width of band	Material thickness	Min./max. working range	Min. spring force	Art.-no.
9 mm	8.4 mm	0.7 mm	8.8-9.6 mm	80 N	<b>0549 901 9</b>
9.5 mm	8.4 mm	0.7 mm	9.3-10.2 mm	80 N	<b>0549 901 95</b>
10.5 mm	8.4 mm	0.8 mm	10.2-11.3 mm	100 N	<b>0549 901 105</b>
11.5 mm	8.4 mm	0.8 mm	11.2-12.6 mm	80 N	<b>0549 901 115</b>
12.5 mm	8.4 mm	0.8 mm	12.2-13.9 mm	80 N	<b>0549 901 125</b>
13 mm	12 mm	0.8 mm	12.7-14.2 mm	100 N	<b>0549 903 13</b>
14 mm	12 mm	0.8 mm	13.7-15.8 mm	100 N	<b>0549 903 14</b>
15 mm	10 mm	0.8 mm	14.7-16.5 mm	110 N	<b>0549 902 15</b>
15 mm	12 mm	0.8 mm	14.7-16.5 mm	130 N	<b>0549 903 15</b>
16 mm	10 mm	0.8 mm	15.7-17.5 mm	135 N	<b>0549 902 16</b>
16 mm	12 mm	0.8 mm	15.7-17.5 mm	160 N	<b>0549 903 16</b>
17 mm	10 mm	1 mm	16.3-18.5 mm	140 N	<b>0549 902 17</b>
17 mm	12 mm	0.8 mm	16.3-18.5 mm	160 N	<b>0549 903 17</b>
18 mm	10 mm	1 mm	17-19 mm	170 N	<b>0549 902 18</b>
18 mm	12 mm	0.8 mm	17.3-19 mm	200 N	<b>0549 903 18</b>
19 mm	10 mm	0.8 mm	19.2-21.5 mm	65 N	<b>0549 902 19</b>
19 mm	12 mm	1.3 mm	18.3-20.2 mm	300 N	<b>0549 903 19</b>
20 mm	12 mm	1.3 mm	19.3-21.6 mm	200 N	<b>0549 903 20</b>
21 mm	12 mm	1.3 mm	20.3-22.5 mm	200 N	<b>0549 903 21</b>
22 mm	12 mm	1.3 mm	21.3-24.2 mm	200 N	<b>0549 903 22</b>
23 mm	12 mm	1.3 mm	22.3-24.7 mm	320 N	<b>0549 903 23</b>
24 mm	10 mm	0.8 mm	23.3-26 mm	60 N	<b>0549 902 24</b>
24 mm	12 mm	1.3 mm	23.3-26 mm	230 N	<b>0549 903 24</b>
25 mm	12 mm	1.3 mm	24-26.8 mm	260 N	<b>0549 903 25</b>
26 mm	10 mm	1 mm	25.3-28 mm	90 N	<b>0549 902 26</b>
26 mm	12 mm	1.7 mm	25-28 mm	270 N	<b>0549 903 26</b>
27 mm	12 mm	1.7 mm	26-29.2 mm	280 N	<b>0549 903 27</b>
28 mm	12 mm	1.7 mm	27-30.2 mm	300 N	<b>0549 903 28</b>
29 mm	12 mm	1.7 mm	28-31.5 mm	300 N	<b>0549 903 29</b>
30 mm	12 mm	1.7 mm	29-32.5 mm	300 N	<b>0549 903 30</b>
32 mm	12 mm	1.7 mm	31-34.5 mm	300 N	<b>0549 903 32</b>
34 mm	12 mm	1.7 mm	33-36.4 mm	300 N	<b>0549 903 34</b>
35 mm	12 mm	1.7 mm	34-38 mm	300 N	<b>0549 903 35</b>
36 mm	12 mm	1.7 mm	35-39 mm	300 N	<b>0549 903 36</b>
38 mm	12 mm	1.7 mm	37-41.5 mm	300 N	<b>0549 903 38</b>
40 mm	12 mm	1.7 mm	39-42.5 mm	300 N	<b>0549 903 40</b>
41 mm	12 mm	2.1 mm	39.5-43.5 mm	370 N	<b>0549 903 41</b>
42 mm	12 mm	2.1 mm	40.5-44.5 mm	340 N	<b>0549 903 42</b>
43 mm	12 mm	2.1 mm	41.5-45.5 mm	340 N	<b>0549 903 43</b>
44 mm	12 mm	2.1 mm	42.5-46.5 mm	340 N	<b>0549 903 44</b>
46 mm	12 mm	2.1 mm	44.5-48.5 mm	350 N	<b>0549 903 46</b>
47 mm	12 mm	2.1 mm	45.5-50 mm	380 N	<b>0549 903 47</b>



Nominal Ø	Band width	Material thickness	Min./max. working range	Min. spring force	Item no.
49 mm	12 mm	2.1 mm	47.5-52 mm	410 N	<b>0549 903 49</b>
50 mm	12 mm	2.1 mm	48.5-53 mm	410 N	<b>0549 903 50</b>
51 mm	12 mm	2.1 mm	49.5-54 mm	410 N	<b>0549 903 51</b>
53 mm	12 mm	2.1 mm	51.5-55.8 mm	410 N	<b>0549 903 53</b>
55 mm	12 mm	2.1 mm	53.5-58 mm	430 N	<b>0549 903 55</b>
60 mm	12 mm	2.6 mm	58.5-64 mm	450 N	<b>0549 903 60</b>
65 mm	12 mm	2.6 mm	63.5-70 mm	370 N	<b>0549 903 65</b>
70 mm	12 mm	2.6 mm	68.5-73 mm	370 N	<b>0549 903 70</b>
75 mm	12 mm	2.6 mm	73.5-78 mm	330 N	<b>0549 903 75</b>
80 mm	12 mm	2.6 mm	78.5-84 mm	300 N	<b>0549 903 80</b>
85 mm	12 mm	2.6 mm	83.5-89 mm	300 N	<b>0549 903 85</b>
90 mm	12 mm	2.6 mm	88.5-94 mm	300 N	<b>0549 903 90</b>

**SPRING BAND CLAMP SPACE-SAVING**



- **DIN:** 3021
- **Material:** Spring steel
- **Surface:** Zinc flake coating
- **ROHS-compliant:** Yes
- **Corrosion protection period:** 720 h
- **Form:** B

Nominal Ø	Width of band	Material thickness	Min./max. working range	Min. spring force	Art.-no.
13.5 mm	12 mm	0.8 mm	13.2-14.6 mm	200 N	<b>0549 913 135</b>
14 mm	10 mm	0.8 mm	13.7-15.8 mm	100 N	<b>0549 912 14</b>
14 mm	12 mm	0.8 mm	13.7-15.8 mm	100 N	<b>0549 913 14</b>
14.5 mm	12 mm	0.8 mm	13.7-15.3 mm	200 N	<b>0549 913 145</b>
15 mm	12 mm	0.8 mm	14.7-16.5 mm	130 N	<b>0549 913 15</b>
16 mm	12 mm	0.8 mm	15.7-17.5 mm	160 N	<b>0549 913 16</b>
17 mm	12 mm	0.8 mm	16.3-18.5 mm	160 N	<b>0549 913 17</b>
18 mm	12 mm	0.8 mm	17.3-19 mm	200 N	<b>0549 913 18</b>
19 mm	12 mm	1.3 mm	18.3-20.2 mm	300 N	<b>0549 913 19</b>
20 mm	12 mm	1.3 mm	19.3-21.6 mm	200 N	<b>0549 913 20</b>
21 mm	12 mm	1.3 mm	20.3-22.5 mm	200 N	<b>0549 913 21</b>
22 mm	12 mm	1.3 mm	21.3-24.2 mm	200 N	<b>0549 913 22</b>
23 mm	10 mm	1.5 mm	22.3-24.7 mm	270 N	<b>0549 912 23</b>
23 mm	12 mm	1.3 mm	22.3-24.7 mm	320 N	<b>0549 913 23</b>
24 mm	12 mm	1.3 mm	23.3-26 mm	230 N	<b>0549 913 24</b>
25 mm	12 mm	1.3 mm	24-26.8 mm	260 N	<b>0549 913 25</b>
26 mm	10 mm	1.7 mm	25-28 mm	270 N	<b>0549 912 26</b>
26 mm	12 mm	1.7 mm	25-28 mm	270 N	<b>0549 913 26</b>
27 mm	10 mm	1.7 mm	26-29.2 mm	270 N	<b>0549 912 27</b>
27 mm	12 mm	1.7 mm	26-29.2 mm	280 N	<b>0549 913 27</b>
28 mm	12 mm	1.7 mm	27-30.2 mm	300 N	<b>0549 913 28</b>
29 mm	12 mm	1.7 mm	28-31.5 mm	300 N	<b>0549 913 29</b>
30 mm	12 mm	1.7 mm	29-32.5 mm	300 N	<b>0549 913 30</b>
32 mm	12 mm	1.7 mm	31-34.5 mm	300 N	<b>0549 913 32</b>
34 mm	12 mm	1.7 mm	33-36.4 mm	300 N	<b>0549 913 34</b>
35 mm	12 mm	1.7 mm	34-38 mm	300 N	<b>0549 913 35</b>
36 mm	12 mm	1.7 mm	35-39 mm	300 N	<b>0549 913 36</b>
38 mm	12 mm	1.7 mm	37-41.5 mm	300 N	<b>0549 913 38</b>
40 mm	12 mm	1.7 mm	39-42.5 mm	300 N	<b>0549 913 40</b>
42 mm	12 mm	2.1 mm	40.5-44.5 mm	340 N	<b>0549 913 42</b>
43 mm	12 mm	2.1 mm	41.5-45.9 mm	340 N	<b>0549 913 43</b>
44 mm	12 mm	2.1 mm	42.5-46.5 mm	340 N	<b>0549 913 44</b>
46 mm	12 mm	2.1 mm	44.5-48.5 mm	350 N	<b>0549 913 46</b>
47 mm	12 mm	2.1 mm	45.5-50 mm	380 N	<b>0549 913 47</b>
48 mm	12 mm	2.1 mm	46.5-51 mm	410 N	<b>0549 913 48</b>
49 mm	12 mm	2.1 mm	47.5-52 mm	410 N	<b>0549 913 49</b>
50 mm	12 mm	2.1 mm	48.5-53 mm	410 N	<b>0549 913 50</b>
51 mm	12 mm	2.1 mm	49.5-54 mm	410 N	<b>0549 913 51</b>
53 mm	12 mm	2.1 mm	51.5-55.8 mm	410 N	<b>0549 913 53</b>
55 mm	12 mm	2.1 mm	53.5-58 mm	430 N	<b>0549 913 55</b>
58 mm	12 mm	2.5 mm	56.5-61.5 mm	450 N	<b>0549 913 58</b>
70 mm	12 mm	2.5 mm	68.5-74.8 mm	370 N	<b>0549 913 70*</b>

**SPRING BAND CLAMP SPACE-SAVING DESIGN WITH HANDY CLIP**



- **DIN:** 3021
- **Material:** Spring steel
- **Surface:** Zinc flake coating
- **ROHS-compliant:** Yes
- **Corrosion protection period:** 720 h
- **Form:** B

Nominal Ø	Width of band	Material thickness	Min./max. working range	Min. spring force	Art.-no.
13.5 mm	12 mm	0.8 mm	13.2-14 mm	200 N	<b>0549 923 135</b>
14 mm	10 mm	0.8 mm	13.7-15.2 mm	100 N	<b>0549 922 14</b>
14 mm	12 mm	0.8 mm	13.7-15.2 mm	100 N	<b>0549 923 14</b>
15 mm	12 mm	0.8 mm	14.7-15.9 mm	130 N	<b>0549 923 15</b>
16 mm	12 mm	0.8 mm	15.7-16.9 mm	160 N	<b>0549 923 16</b>
17 mm	12 mm	0.8 mm	16.3-17.9 mm	160 N	<b>0549 923 17</b>
18 mm	12 mm	0.8 mm	17.3-18.4 mm	200 N	<b>0549 923 18</b>
19 mm	12 mm	1.3 mm	18.3-19.6 mm	300 N	<b>0549 923 19</b>
20 mm	12 mm	1.3 mm	19.3-21 mm	200 N	<b>0549 923 20</b>
21 mm	12 mm	1.3 mm	20.3-21.9 mm	200 N	<b>0549 923 21</b>
22 mm	12 mm	1.3 mm	21.3-23.6 mm	200 N	<b>0549 923 22</b>
23 mm	10 mm	1.5 mm	22.3-24.1 mm	270 N	<b>0549 922 23</b>
23 mm	12 mm	1.3 mm	22.3-24.1 mm	320 N	<b>0549 923 23</b>
24 mm	12 mm	1.3 mm	23.3-25.4 mm	230 N	<b>0549 923 24</b>
25 mm	12 mm	1.3 mm	24-26.2 mm	260 N	<b>0549 923 25</b>
26 mm	10 mm	1.7 mm	25-27.4 mm	270 N	<b>0549 922 26</b>
26 mm	12 mm	1.7 mm	25-27.4 mm	270 N	<b>0549 923 26</b>
27 mm	10 mm	1.7 mm	26-28.6 mm	270 N	<b>0549 922 27</b>
27 mm	12 mm	1.7 mm	26-28.6 mm	280 N	<b>0549 923 27</b>
28 mm	12 mm	1.7 mm	27-29.6 mm	300 N	<b>0549 923 28</b>
29 mm	12 mm	1.7 mm	28-30.9 mm	300 N	<b>0549 923 29</b>
30 mm	12 mm	1.7 mm	29-31.9 mm	300 N	<b>0549 923 30</b>
32 mm	12 mm	1.7 mm	31-33.9 mm	300 N	<b>0549 923 32</b>
34 mm	12 mm	1.7 mm	33-35.8 mm	300 N	<b>0549 923 34</b>
35 mm	12 mm	1.7 mm	34-37.4 mm	300 N	<b>0549 923 35</b>
36 mm	12 mm	1.7 mm	35-38.4 mm	300 N	<b>0549 923 36</b>
38 mm	12 mm	1.7 mm	37-40.9 mm	300 N	<b>0549 923 38</b>
40 mm	12 mm	1.7 mm	39-41.9 mm	300 N	<b>0549 923 40</b>
42 mm	12 mm	2.1 mm	40.5-43.9 mm	340 N	<b>0549 923 42</b>
43 mm	12 mm	2.1 mm	41.5-45.3 mm	340 N	<b>0549 923 43</b>
44 mm	12 mm	2.1 mm	42.5-45.9 mm	340 N	<b>0549 923 44</b>
46 mm	12 mm	2.1 mm	44.5-47.9 mm	350 N	<b>0549 923 46</b>
47 mm	12 mm	2.1 mm	45.5-49.4 mm	380 N	<b>0549 923 47</b>
48 mm	12 mm	2.1 mm	46.5-50.4 mm	410 N	<b>0549 923 48</b>
49 mm	12 mm	2.1 mm	47.5-51.4 mm	410 N	<b>0549 923 49</b>
50 mm	12 mm	2.1 mm	48.5-52.4 mm	410 N	<b>0549 923 50</b>
51 mm	12 mm	2.1 mm	49.5-53.4 mm	410 N	<b>0549 923 51</b>
53 mm	12 mm	2.1 mm	51.5-55.2 mm	410 N	<b>0549 923 53</b>
55 mm	12 mm	2.1 mm	53.5-57.4 mm	430 N	<b>0549 923 55</b>
58 mm	12 mm	2.5 mm	56.5-60.9 mm	450 N	<b>0549 923 58</b>
70 mm	12 mm	2.5 mm	68.5-74.2 mm	370 N	<b>0549 923 70*</b>

\*grey

**Analysis carried out to define the process costs**

In the following, we have carried out a process cost analysis regarding the assembly time of a hose clamp with worm gear drive according to DIN 3017-1 and a spring band clamp according to DIN 3021. On the basis of these times, different key figures were determined to compare the process costs and other factors of these two clamp types. For the hose clamp, the assembly time was not only measured by using a screwdriver, but also a cordless screwdriver. Compared to this, the assembly time of the spring band clamp was measured by using the space-saving variant Form B and the handy clip version. The table below shows the determined values which refer to the evaluations on the two following pages.

**Experience the benefits arising from the use of a spring band clamp.**

**Hose-spigot connection:**

- EPDM hose
- Brass spigot with bulge

Hose clamp with worm gear drive DIN 3017-1	Spring band clamp DIN 3021
<b>Analyzed items</b>	
<ul style="list-style-type: none"> <li>• Hose clamp <math>\varnothing</math> 25 - 40 mm W2</li> </ul>	<ul style="list-style-type: none"> <li>• Spring band clamp Form B <math>\varnothing</math> 32 mm</li> <li>• Spring band clamp Form B with handy clip <math>\varnothing</math> 32 mm</li> </ul>
<b>Used tool</b>	
<ul style="list-style-type: none"> <li>• Hexagon screwdriver</li> <li>• Cordless screwdriver</li> </ul>	<ul style="list-style-type: none"> <li>• Spring band clamp Assembly tool</li> </ul>
<b>Assembly time</b>	
Hose clamp with screwdriver <ul style="list-style-type: none"> <li>• 20.66 seconds (0.204€*)</li> </ul>	Spring band clamp Form B <ul style="list-style-type: none"> <li>• 11.91 seconds (0.117€*)</li> </ul>
Hose clamp with cordless screwdriver <ul style="list-style-type: none"> <li>• 18.50 seconds (0.1847€*)</li> </ul>	Spring band clamp Form B with handy clip <ul style="list-style-type: none"> <li>• 4.8 seconds (pre-glued at the hose) (0.046€*)</li> </ul>
<b>Remarks</b>	
<ul style="list-style-type: none"> <li>• Protruding end when using if you use hose clamps</li> <li>• No uniform positioning possible</li> <li>• Torque testing was neglected (8-10 more seconds)</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-gluing at the hose ensures a positioning accuracy and repeatability of 100%</li> </ul>

\* Costs according to industrial flat rate: 35€



**Evaluation Process cost analysis**

Hose clamp DIN 3017-1 with screwdriver	Spring band clamp Form B
<b>Assembly time per hose clamp</b>	<b>Assembly time per spring band clamp</b>
20.66 seconds	11.91 seconds
<b>Process costs per clamp</b>	<b>Process costs per spring band clamp</b>
0.204 €	0.117 €
<b>Clamps per hour</b>	<b>Spring band clamp per hour</b>
174 pieces	302 pieces
	<b>Process cost saving per spring band clamp</b>
	0.087 €
	<b>Process cost saving per 1,000 spring band clamp</b>
	87.00 €
	<b>Time saving</b>
	42 %
	<b>Increase in productivity</b>
	73 %
Hose clamp DIN 3017-1 with cordless screwdriver	Spring band clamp Form B
<b>Assembly time per hose clamp</b>	<b>Assembly time per spring band clamp</b>
18.5 seconds	11.91 seconds
<b>Process costs per hose clamp</b>	<b>Process costs per spring band clamp</b>
0.185 €	0.117 €
<b>Clamps per hour</b>	<b>Spring band clamp per hour</b>
195 pieces	302 pieces
	<b>Process cost saving per spring band clamp</b>
	0.0677 €
	<b>Process cost saving per 1,000 spring band clamp</b>
	67.70 €
	<b>Time saving</b>
	36 %
	<b>Increase in productivity</b>
	55 %

**Evaluation Process cost analysis**

<b>Hose clamp DIN 3017-1 with screwdriver</b>		<b>Spring band clamp with handy clip</b>	
<b>Assembly time per hose clamp</b>		<b>Assembly time per spring band clamp</b>	
20.66 seconds		4.8 seconds	
<b>Process costs per clamp</b>		<b>Process costs per spring band clamp</b>	
0.204 €		0.046 €	
<b>Clamps per hour</b>		<b>Spring band clamp per hour</b>	
174 pieces		750 pieces	
		<b>Process cost saving per spring band clamp</b>	
		0.158 €	
		<b>Process cost saving per 1,000 spring band clamp</b>	
		158.00 €	
		<b>Time saving</b>	
		77 %	
		<b>Increase in productivity</b>	
		330 %	
<b>Hose clamp DIN 3017-1 with cordless screwdriver</b>		<b>Spring band clamp with handy clip</b>	
<b>Assembly time per hose clamp</b>		<b>Assembly time per spring band clamp</b>	
18.5 seconds		4.8 seconds	
<b>Process costs per hose clamp</b>		<b>Process costs per spring band clamp</b>	
0.185 €		0.046 €	
<b>Clamps per hour</b>		<b>Spring band clamp per hour</b>	
195 pieces		750 pieces	
		<b>Process cost saving per spring band clamp</b>	
		0.139 €	
		<b>Process cost saving per 1,000 spring band clamp</b>	
		138.70 €	
		<b>Time saving</b>	
		74 %	
		<b>Increase in productivity</b>	
		285 %	

**Comparison of a spring band clamp DIN 3021 and a hose clamp DIN 3017-1**

DIN 3021 spring band clamp	DIN 3017-1 hose clamp
	
<ul style="list-style-type: none"> <li>• Constant clamping force immediately after installation</li> </ul>	<ul style="list-style-type: none"> <li>• Clamping force is not reliable during installation due to varied tightening torques</li> </ul>
<ul style="list-style-type: none"> <li>• Dynamic adaptation to different temperature and pressure conditions</li> </ul>	<ul style="list-style-type: none"> <li>• No dynamic adaptation to temperature and pressure ratios → Loss of clamping force/formation of cracks at the hose</li> </ul>
<ul style="list-style-type: none"> <li>• Optimal distribution of radial force</li> </ul>	<ul style="list-style-type: none"> <li>• Exerts more force on the hose at the connection → Formation of cracks</li> </ul>
<ul style="list-style-type: none"> <li>• Maintenance-free</li> </ul>	<ul style="list-style-type: none"> <li>• Must be re-tightened due to vibrations and other influences</li> </ul>
<ul style="list-style-type: none"> <li>• Spring band clamps are easy, quick and safe to install</li> </ul>	<ul style="list-style-type: none"> <li>• More complicated installation effort due to individual screwing/checking torque</li> </ul>
<ul style="list-style-type: none"> <li>• Secure assembly ends</li> </ul>	<ul style="list-style-type: none"> <li>• Increased risk of injury due to protruding line end</li> </ul>

**Advantages and disadvantages of different clamp variants**

Spring band clamps (DIN 3021)	
+ Highly flexible	- Linked to diameter
+ Simple installation, even on hard-to-reach connections	- Comparatively high demands on the hose-support system
+ Very even surface pressure (distribution of radial force)	
+ Adhesion to the hose possible in pre-opened condition	
+ Protects the hose	
+ Reusable	
+ Adapts to temperature and pressure fluctuations	

Hose clamps with worm gear drive (DIN 3017-1)	
+ Wide diameter range	- Rigid system
+ High hose pulling forces	- Maintenance-intensive
	- Risk of injury due to protruding band
	- High installation effort due to individual tightening/torque testing

One-ear clamps	
+ Corrosion-resistant base material	- Very rigid connection element
+ Small clamp width	- Possible hose damage
+ Low space requirements	- Time-consuming and expensive installation tool: torque and closing speed must be controlled
+ High hose pulling forces	- Risk of injury due to protruding band

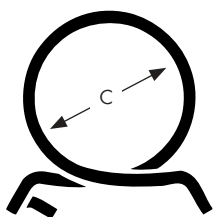


## FLEXIBLE SPRING BAND CLAMP PLIERS

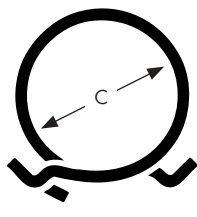
Pliers with Bowden cable and tensioning slide for hard-to-reach places in engine compartment



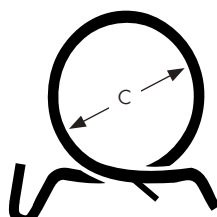
- The flexible actuating cable mechanism enables ideal working conditions even in extremely cramped spaces. The tensioning slide can also be guided to the desired position with just the Bowden cable.
- With the micro-lock, the spring band clamp can be gradually opened without over-expanding it in the process.
- The micro-lock holds the clamp in the open position without the application of force.
- The improved tensioning slide with its integrated tensioning spring keeps the slide and the pull cable pretensioned.
- The clamping holder at the handle end of the pliers fixes the Bowden cable in place and simplifies storage.



Standard clamp



Space-saving clamp



Locking clamp



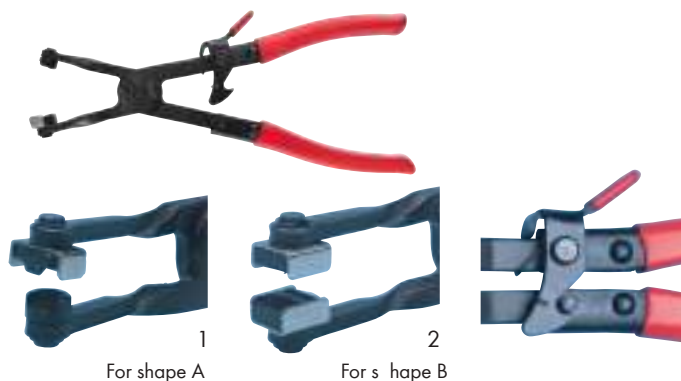
Micro-lock



Bowden cable length in mm	Clamp dia. C in mm	Clamp width B in mm	Art. No.	P. Qty.
600	18 - 54	12 + 15	0714 577 112	1
Spare parts set (tensioning slide, compl. Bowden cable, clamping nipple, spring, wire sleeve)			0714 577 113	1
Spare inner cable pull (720 mm long), clamping nipple			0714 577 114	1

## SPRING BAND CLAMP PLIERS

Pliers with expandable clamping jaws and locking mechanism



For shape A

For shape B

- Rotating clamping jaws enable universal alignment of the clamp for tight places.
- The locking mechanism holds the clamp in the open position without the application of force.
- Special safety jaws prevent the tensioned clamps from sliding out.
- Extra-long design for comfortable pretensioning of the clamp.
- Design in special steel and with PVC handle sleeves.

L in mm	B in mm	D in mm	Clamp design	Art. No.	P. Qty.
270	12+15	18-54	A	0714 577 111 <sup>1</sup>	1
270	12	18-54	B	0714 577 110 <sup>2</sup>	1





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## Spring band clamps for industrial use

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