UDC 621.886.123 DEUTSCHE NORMEN November 1978

Grooved Pins, Full Length Parallel-grooved with Chamfer

DIN 1473

Translation Fachtechnisches Übersetzungsinstitut Henry G. Freeman, Düsseldorf

Zylinderkerbstifte

Dimensions in mm

1 Definition and purpose

Grooved pins according to this Standard are positive or non-positive connecting elements. They are used as connecting pins, the pin being seated firmly in the acommodating hole, for which tolerance zone H11 is recommended.

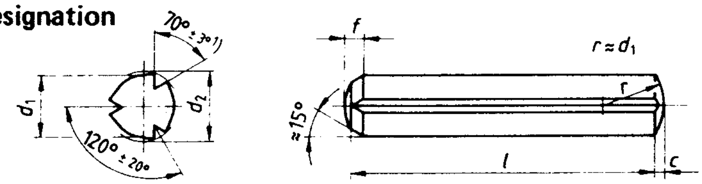
2 Other relevant Standards

DIN 267 Part 1 Bolts, screws, nuts and similar threaded and formed parts; technical conditions of delivery, general information

DIN 267 Part 5 Bolts, screws, nuts and similar threaded and formed parts; technical conditions of delivery, testing and acceptance

DIN 1651 Free cutting steels; technical conditions of delivery

3 Dimensions, designation



Designation of a grooved pin, full length parallel-grooved with chamfer, of nominal diameter d_1 = 5 mm and length l = 30 mm, made of 9 SMnPb 28 K (St):

Grooved pin 1473 – 5 x 30 – St

Table 1.

<table>
<tr><td>d1 Nominal dimension</td><td>0,8</td><td>1</td><td>1,2</td><td>1,5</td><td>2</td><td>2,5</td><td>3</td><td>4</td><td>5</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td><td>16</td><td>20</td><td>25</td></tr>
<tr><td>per. dev.</td><td colspan="7">h9</td><td colspan="10">h11</td></tr>
<tr><td>c ≈</td><td>0,1</td><td>0,12</td><td>0,16</td><td>0,2</td><td>0,25</td><td>0,3</td><td>0,4</td><td>0,5</td><td>0,6</td><td>0,8</td><td>1</td><td>1,2</td><td>1,6</td><td>1,6</td><td>2</td><td>2,5</td><td>3</td></tr>
<tr><td>f ≈</td><td>0,55</td><td>0,57</td><td>0,6</td><td>0,8</td><td>0,9</td><td>1,2</td><td>1,3</td><td>1,8</td><td>2</td><td>2,5</td><td>2,8</td><td>3,5</td><td>3,7</td><td>4</td><td>4,3</td><td>5,2</td><td>6</td></tr>
<tr><td>Shear force 2) double shear kN min.</td><td>0,45</td><td>0,70</td><td>1,00</td><td>1,60</td><td>2,85</td><td>4,25</td><td>6,15</td><td>10,6</td><td>16,5</td><td>22,8</td><td>40,5</td><td>63,2</td><td>91,0</td><td>124</td><td>156,8</td><td>236,5</td><td>370,1</td></tr>
<tr><td>l js15</td><td colspan="17">Diameter over groove edges d2 1)</td></tr>
<tr><td>4</td><td rowspan="4">0,83</td><td rowspan="5">1,05</td><td rowspan="6">1,25</td><td rowspan="8">1,60</td><td rowspan="10">2,15</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>6</td><td rowspan="8">2,65</td><td rowspan="10">3,20</td><td rowspan="14">4,25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>8</td><td rowspan="13">5,25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>10</td><td></td><td rowspan="16">6,30</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>12</td><td></td><td></td><td rowspan="17">8,30</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>16</td><td></td><td></td><td></td><td rowspan="18">10,35</td><td rowspan="18">12,35</td><td></td><td></td><td></td><td></td></tr>
<tr><td>20</td><td></td><td></td><td></td><td rowspan="17">14,35</td><td></td><td></td><td></td></tr>
<tr><td>25</td><td></td><td></td><td></td><td></td><td rowspan="16">16,40</td><td></td><td></td></tr>
<tr><td>30</td><td></td><td></td><td></td><td></td><td rowspan="15">20,50</td><td rowspan="15">25,50</td></tr>
<tr><td>35</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>40</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>45</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>50</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>55</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>60</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>65</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>70</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>75</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>80</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>90</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>100</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>110</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>120</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>per. dev. for d2</td><td colspan="5">+ 0,05
0</td><td colspan="7">± 0,05</td><td colspan="5">± 0,1</td></tr>
</table>

The normal commercial lengths lie between the stepped lines. Intermediate lengths are permissible but should be avoided if possible.

1) and 2) see page 2

Continued on pages 2 to 4
Explanations on page 4

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4 Weights

The weights given in Table 2 apply to grooved pins made from steel.

Table 2.

Nominal diameter d_1	0,8	1	1,2	1,5	2	2,5	3	4	5	6	8	10	12	14	16	20	25
l	Weight (7,85 kg/dm^3) kg/1000 pieces ≈																
4	0,016	0,025	0,036	0,056	0,099												
5	0,020	0,031	0,044	0,070	0,124												
6	0,024	0,037	0,053	0,083	0,148	0,231	0,333	0,592									
8	0,032	0,049	0,071	0,111	0,198	0,308	0,444	0,789	1,23								
10		0,062	0,089	0,139	0,247	0,385	0,555	0,986	1,54	2,22							
12			0,107	0,167	0,296	0,462	0,666	1,18	1,85	2,66	4,74						
16				0,222	0,395	0,616	0,888	1,58	2,46	3,55	6,32	9,87	14,2				
20				0,278	0,494	0,770	1,11	1,97	3,08	4,44	7,90	12,3	17,8	24,2			
25					0,618	0,965	1,39	2,46	3,85	5,55	9,80	15,9	22,2	30,2			
30					0,742	1,16	1,68	2,96	4,62	6,66	11,8	18,5	26,6	36,3	47,4	74,1	116
35							1,96	2,45	5,39	7,77	13,7	21,6	31,1	42,3	55,3	86,4	135
40							2,22	3,94	6,16	8,88	15,7	24,7	35,6	48,4	63,2	98,8	154
45								4,44	6,93	9,99	17,7	27,8	40,1	54,4	71,1	111	173
50								4,93	7,70	11,1	19,6	30,9	44,5	60,5	79,0	124	192
55								5,42	8,47	12,2	21,6	33,9	48,9	66,5	86,9	136	212
60								5,92	9,24	13,3	23,6	37,0	53,4	72,6	94,8	148	231
65										14,4	25,6	40,1	57,8	78,6	103	161	250
70										15,5	27,5	43,2	60,0	81,6	111	173	270
75										16,6	29,5	46,3	62,3	84,7	119	186	289
80										17,8	31,5	49,4	71,1	96,8	126	198	308
90											35,4	55,5	80,0	109	142	222	346
100											39,4	61,7	88,9	121	158	247	385
110												67,9	97,8	133	174	272	424
120												74,0	107	145	190	296	463

5 Material

St = 9 SMnPb 28 K according to DIN 1651

Other materials, for example 45 S 20 K (according to DIN 1651), X 12 CrMoS 17 (according to DIN 17 440), X 12 CrNiS 18 8 (according to DIN 17 440), AlCuMgPb F37 (according to DIN 1747 Part 1), CuZn38Pb 1.5 F41 (according to DIN 17 671 Part 1), as well as plastics or special heat treatments by agreement.

6 Finish

Surface: Normal finish bright, oiled

Other finishes by agreement, e.g. galvanic coatings according to DIN 267 Part 9 or phosphate coatings according to DIN 50 942.

7 Requirements

DIN 267 Part 1 applies for general requirements

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1) The groove angle 70° ± 3° and the diameter over the groove edges d_2 apply only to grooved pins made of 9 SMnPb 28 K (St).

2) A check should be made in each particular case to determine whether these shear forces can be fully taken into account according to the design parameters.

8 Testing

8.1 Testing of dimensional accuracy and finish

The provisions of DIN 267 Part 5 apply, as appropriate, for the testing of dimensional accuracy and finish.
For the main and subsidiary features, Table 3 applies; for the acceptable quality limit, Table 4 of this Standard applies.

Table 3. **Main and subsidiary features**

Main feature	Subsidiary feature
Nominal diameter d_1 Diameter over groove edges d_2	Nominal length l

Table 4. AQL **values**

Nature of feature	Acceptable quality limit AQL	
	for testing of features	for testing for faulty parts
Main feature	1,5	1,5
Subsidiary feature	2,5	2,5

8.2 Testing the mechanical characteristics and materials

The provisions of DIN 267 Part 5 apply, as appropriate, for testing the mechanical characteristics and materials.
A Standard is being prepared for the shear test.

9 Examples of application

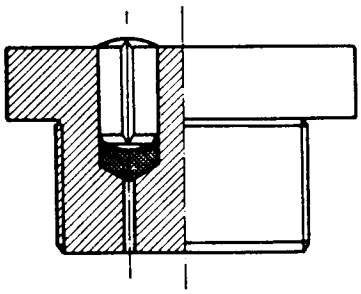

Figure 1. Use as locking pin in a nipple

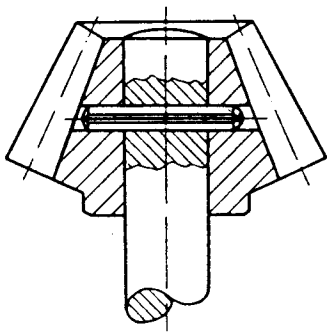

Figure 2. Use as radial pin for connecting a bevel wheel to a shaft

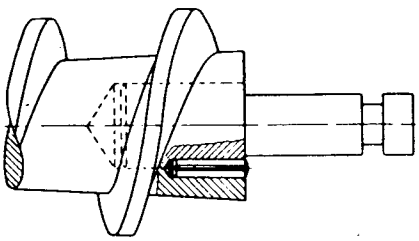

Figure 3. Use as round wedge for fastening a screw conveyor to a shaft end

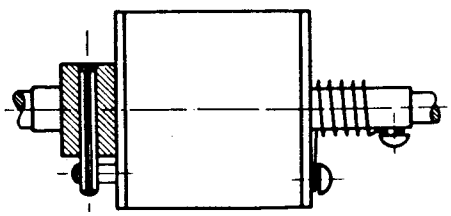

Figure 4. Use as tangent pin

Further Standards

DIN 1469 Grooved pins, half length grooved with gorge
DIN 1470 Grooved pins, full length parallel-grooved with pilot
DIN 1471 Grooved pins, full length taper-grooved
DIN 1472 Grooved pins, half length taper-grooved
DIN 1474 Grooved pins, half length reverse-grooved
DIN 1475 Grooved pins, third length centre-grooved
DIN 1476 Round head grooved pins
DIN 1477 Countersunk head grooved pins

Explanations

Compared with the September 1956 edition of DIN 1473, this subsequent edition contains the following amendments and additions:

a) The nominal diameter 13 mm has been deleted.

b) The series of lengths has been changed to some extent and brought into line with the internationally standard series of lengths for connecting elements.

c) The position and shape of the grooves has been specified.

d) Double shear forces have been adopted. A Standard for an appropriate shear test is being prepared.

e) Information on the material has been given. Instead of the previous strength category 6S, the material 9 SMnPb 28 K has been stipulated because the new strength categories according to DIN 267 Part 3 are not applicable to grooved pins. A reference has also been made to other materials, the use of which is subject to special agreement.

f) Technical conditions of delivery have been included and brought into line with DIN 267 Part 1 and Part 5.

g) The standard designation has been amended.

h) The content of the Standard has been revised editorially.