

Grooved Pins, Half Length Grooved with Gorge

**DIN**  
**1469**

Passkerbstifte mit Hals

**1 Definition and purpose**

Dimensions in mm

Grooved pins according to this Standard are positive or non-positive connecting elements. They are used for holding retaining rings, retaining washers, springs, etc., the grooved pin being seated firmly in the accommodating hole, for which tolerance zone H11 is recommended.

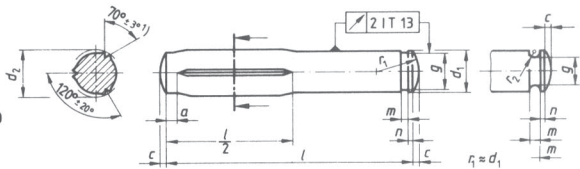
**2 Other relevant Standards** see page 2

**3 Dimensions, designation**

**Type A** with slot for retaining rings according to DIN 471 Part 1

**Type B** with slot for retaining washers according to DIN 6799

**Type C** with rounded slot



Designation of a grooved pin, half length grooved, with gorge Type A, of nominal diameter  $d_1 = 5$  mm and length  $l = 30$  mm, made of 9SMnPb 28 K (St):

Table 1. Grooved pin DIN 1469 – A5 x 30 – St

$d_1$	Nominal dimension per. dev.	2	2,5	3	4	5	6	8	10	12	14	16	20	25
$a$	$+ \frac{1}{0}$	0,7	1	1	1,5	1,5	2	2	2,5	2,5	2,5	2,5	3	3
$c$	$\approx$	0,25	0,3	0,4	0,5	0,6	0,8	1	1,2	1,6	1,6	2	2,5	3
Type A	$g$ h11	—	—	2,8	3,8	4,8	5,7	7,6	9,6	11,5	13,4	15,2	19	23,9
Type A	$m$ H13	—	—	0,5	0,5	0,7	0,8	0,9	1,1	1,1	1,1	1,1	1,3	1,3
Type B	$g$ h11	1,5	1,9	2,3	3,2	4	5	7	9	10	12	15	19	24
Type B	$m$	0,44	0,54	0,64	0,64	0,74	0,74	0,94	1,15	1,25	1,35	1,55	1,8	2,05
	per. dev.	$+ \frac{0,02}{0}$				$+ \frac{0,03}{0}$						$+ \frac{0,06}{0}$		
Type C	$g$	1	1,2	1,5	2,4	2,8	3,8	5	6,8	8,2	9,6	11	14	18
Type C	$m \pm 1/2 IT 14$	0,8	0,8	1	1,4	1,6	1,6	2	2,6	3	3	4	5	6
Type C	$r_2$	0,4	0,4	0,5	0,7	0,8	0,8	1	1,3	1,5	1,5	2	2,5	3
Type C	$n$	0,8	0,8	1	1,4	1,6	1,6	2	2,6	3	3	4	5	6
Shear force <sup>2)</sup> double shear	kN min.	2,85	4,25	6,15	10,6	16,5	22,8	40,5	63,2	91,0	124	156,8	236,5	370,1
$l$	js15	Diameter over groove edges $d_2$ 1)												
6														
8														
10														
12		2,15	2,65											
16				3,20										
20					4,25	5,25								
25							6,30							
30								8,30						
35									10,35	12,35				
40											14,35			
45												16,40		
50													20,50	
55														25,5
60														
65														
70														
75														
80														
90														
100														
110														
120														
140														
160														
	per. dev. for $d_2$	$+ \frac{0,05}{0}$					$\pm 0,05$						$\pm 0,1$	

General tolerances DIN 7168 – medium

1) and 2) see page 2

Continued on pages 2 to 4  
Explanations on page 4

**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
- DIN 7168 General tolerances (tolerances on dimensions without tolerance indication); linear and angular dimensions

**4 Weights**

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

Table 2.

Nominal diameter $d_1$	2	2,5	3	4	5	6	8	10	12	14	16	20	25
<i>l</i>	Weight (7.85 kg/dm <sup>3</sup> ) kg/1000 pieces ≈												
6	0,142	0,221	0,318										
8	0,190	0,299	0,429										
10	0,240	0,376	0,540	0,950	1,49	2,23							
12	0,289	0,453	0,651	1,15	1,80	2,67							
16	0,388	0,606	0,873	1,55	2,42	3,55	6,53	10,0	14,5				
20	0,487	0,761	1,09	1,95	3,04	4,43	7,89	12,5	18,0	24,0			
25	0,611	0,965	1,37	2,44	3,81	5,49	9,85	15,5	22,5	30,2			
30	0,735	1,15	1,64	2,94	4,57	6,55	11,8	18,6	26,9	36,5	49,7	79,8	128
35			1,91	3,43	5,33	7,22	13,8	21,7	31,5	42,5	56,7	92,0	147
40			2,20	3,92	6,12	8,90	15,8	24,8	36,0	48,5	63,8	104	166
45				4,42	6,88	10,0	17,7	27,9	40,5	54,5	71,7	116	185
50				4,91	7,65	11,1	19,7	31,0	45,0	60,6	80,0	128	204
55				5,40	8,42	12,2	21,7	34,1	49,5	66,6	87,6	141	223
60				5,90	9,19	13,3	23,6	37,2	54,0	72,7	95,6	153	242
65						14,4	25,6	40,3	58,5	78,8	103	165	262
70						15,5	27,6	43,3	63,0	84,8	111	178	281
75						17,2	29,6	46,4	67,5	90,8	119	191	301
80						18,9	31,6	49,5	72,0	96,9	127	203	320
90						35,5	55,7	81,0	109	143	228	358	
100						39,6	61,9	90,0	121	158	252	397	
110							68,1	99,0	133	174	277	435	
120							74,3	108	145	190	302	474	
140							86,5	126	169	222	351	551	
160							98,8	144	193	254	400	628	

1) The groove angle  $70^\circ \pm 3^\circ$  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.

## 5 Material

St = 9SMnPb 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

## 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 $d_1$	Nominal length $l$
Diameter over groove edges $d_2$	
Recess diameter and width	

Table 4. *AQL* values

Nature of feature	Acceptable quality limit <i>AQL</i>	
	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

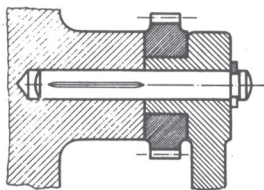


Figure 1. With slot for retaining washer according to DIN 6799 as spindle for lever with ratchet wheel

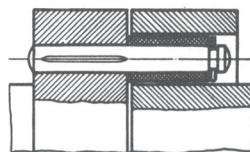


Figure 2. With slot for retaining ring according to DIN 471 Part 1 as load transfer pin of a disc clutch

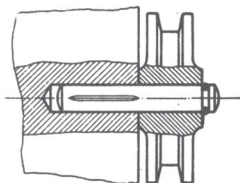


Figure 3. With rounded slot as shaft for pulley

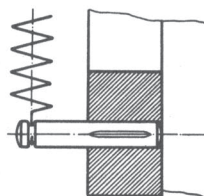


Figure 4. With rounded slot as pin for suspension of spring

### Further Standards

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 1473	Grooved pins, full length parallel-grooved with chamfer
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 1966 edition of DIN 1469, 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 2 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.
- j) The Standards DIN 471 on retaining rings and DIN 6799 on retaining washers are at present being revised. It is proposed when this is done to change the tolerance on the recess widths  $m$  and possibly also the nominal dimensions. It is intended to adopt these changes in DIN 1469 as soon as final decisions have been taken on the above Standards.