INTERNATIONAL STANDARD

ISO 13337

Second edition
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Spring-type straight pins — Slotted, light duty

Goupilles cylindriques creuses, dites goupilles élastiques — Série mince

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13337 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 10, *Product standards for fasteners*.

This second edition cancels and replaces the first edition (ISO 13337:1997), which has been technically revised.

Spring-type straight pins — Slotted, light duty

1 Scope

This International Standard specifies the characteristics of slotted spring-type straight pins, made of steel or of austenitic or martensitic stainless steel, light duty, with nominal diameter, d_1, from 2 mm to 50 mm inclusive.

NOTE The nominal diameters have been chosen in such a way that pins can be fitted one into the other or combined with pins, heavy duty, in accordance with ISO 8752.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3269, *Fasteners — Acceptance inspection*

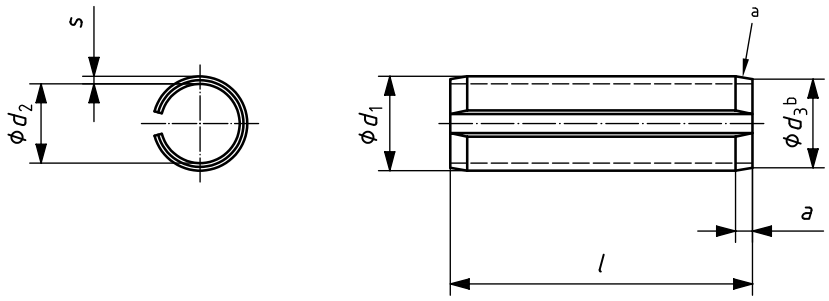
ISO 4042, *Fasteners — Electroplated coatings*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

ISO 8749, *Pins and grooved pins — Shear test*

3 Dimensions

See Figure 1 and Table 1.



a For slotted spring-type straight pins with a nominal diameter $d_1 \geqslant 10$ mm, a single chamfer configuration is optional at the discretion of the supplier.

b $d_3 < d_{1,\,nom}$.

NOTE For non-interlocking slotted spring-type straight pins (slot type N), see Clauses 5 and 6.

Figure 1 — Slotted spring-type straight pins, light duty

Table 1 — Dimensions

		nom.	**2**	**2,5**	**3**	**3,5**	**4**	**4,5**	**5**	**6**	**8**	**10**	**12**
d_1	before mounting	max.	2,4	2,9	3,5	4,0	4,6	5,1	5,6	6,7	8,8	10,8	12,8
		min.	2,3	2,8	3,3	3,8	4,4	4,9	5,4	6,4	8,5	10,5	12,5
d_2	before mounting [a]		1,9	2,3	2,7	3,1	3,4	3,9	4,4	4,9	7,0	8,5	10,5
a		max.	0,4	0,45	0,45	0,5	0,7	0,7	0,7	0,9	1,8	2,4	2,4
		min.	0,2	0,25	0,25	0,3	0,5	0,5	0,5	0,7	1,5	2,0	2,0
s			0,2	0,25	0,3	0,35	0,5	0,5	0,5	0,75	0,75	1,0	1,0
Minimum shear strength, double [b] kN			1,5	2,4	3,5	4,6	8	8,8	10,4	18	24	40	48
l [c]													
nom.	min.	max.											
4	3,75	4,25											
5	4,75	5,25											
6	5,75	6,25											
8	7,75	8,25											
10	9,75	10,25											
12	11,5	12,5											
14	13,5	14,5											
16	15,5	16,5											
18	17,5	18,5											
20	19,5	20,5											
22	21,5	22,5											
24	23,5	24,5											
26	25,5	26,5											
28	27,5	28,5											
30	29,5	30,5											
32	31,5	32,5											
35	34,5	35,5											
40	39,5	40,5											
45	44,5	45,5											
50	49,5	50,5											
55	54,25	55,75											
60	59,25	60,75											
65	64,25	65,75											
70	69,25	70,75											
75	74,25	75,75											
80	79,25	80,75											
85	84,25	85,75											
90	89,25	90,75											
95	94,25	95,75											
100	99,25	100,75											
120	119,25	120,75											
140	139,25	140,75											
160	159,25	160,75											
180	179,25	180,75											
200	199,25	200,75											

[a] For reference only.

[b] Applies to steel and martensitic corrosion resistant steel products only. For austenitic stainless pins, no double shear strength values are specified.

[c] For nominal lengths above 200 mm, steps of 20 mm.

Dimensions in millimetres

	13	**14**	**16**	**18**	**20**	**21**	**25**	**28**	**30**	**35**	**40**	**45**	**50**
	13,8	14,8	16,8	18,9	20,9	21,9	25,9	28,9	30,9	35,9	40,9	45,9	50,9
	13,5	14,5	16,5	18,5	20,5	21,5	25,5	28,5	30,5	35,5	40,5	45,5	50,5
	11	11,5	13,5	15,0	16,5	17,5	21,5	23,5	25,5	28,5	32,5	37,5	40,5
	2,4	2,4	2,4	2,4	2,4	2,4	3,4	3,4	3,4	3,6	4,6	4,6	4,6
	2,0	2,0	2,0	2,0	2,0	2,0	3,0	3,0	3,0	3,0	4,0	4,0	4,0
	1,2	1,5	1,5	1,7	2,0	2,0	2,0	2,5	2,5	3,5	4,0	4,0	5,0
	66	84	98	126	158	168	202	280	302	490	634	720	1 000

commercial

lengths

4 Application

The diameter of the hole into which the spring pin is to be inserted shall be equal to the nominal diameter, d_1, of the mating pin and to tolerance class H12.

When mounted in the smallest permitted hole, the slot shall not fully close.

5 Requirements and reference International Standards

See Table 2.

Table 2 — Requirements and reference International Standards

		Steel	Austenitic stainless steel	Martensitic stainless steel
		St	A	C
Material[a]		Steel (St) at the supplier's discretion, either: Plain carbon steel with C ⩾ 0,65 % Mn ⩾ 0,60 % (check analysis) Hardened and tempered to a Vickers hardness of 420 HV to 520 HV or austempered to a Vickers hardness of 500 HV to 560 HV. or Silicon manganese steel with C ⩾ 0,5 % Si ⩾ 1,5 % Mn ⩾ 0,7 % (check analysis) Hardened and tempered to a Vickers hardness of 420 HV to 560 HV. Hardness testing in accordance with ISO 6507-1.	Chemical composition limits (check analysis) % C ⩽ 0,15 Mn ⩽ 2,00 Si ⩽ 1,50 Cr 16 to 20 N 6 to 12 P ⩽ 0,045 S ⩽ 0,03 Mo ⩽ 0,8 Cold worked	C ⩾ 0,15 Mn ⩽ 1,00 Si ⩽ 1,00 Cr 11,5 to 14 Ni ⩽ 1,00 P ⩽ 0,04 S ⩽ 0,03 Hardened and tempered to a Vickers hardness of 440 HV to 560 HV Hardness testing in accordance with ISO 6507-1.
Slot	Normal case	Form and width of slot at the discretion of the supplier.		
	Type N	Non-interlocking pins with a form and/or width of slot which guarantees no interlocking may be supplied by special agreement between the customer and supplier.		
Surface finish		Plain, i.e. pins to be supplied in natural finish, treated with a protective lubricant, unless otherwise specified by agreement between the customer and the supplier. If pins are surface coated, appropriate plating or coating processes should be employed to avoid hydrogen embrittlement. Due to the risk of hydrogen embrittlement, pins should not be electroplated or phosphate-coated. If electroplating or phosphate coating is required for corrosion prevention, by agreement between the customer and the supplier, it is mandatory that the pins be baked immediately after plating to minimize the risk of hydrogen embrittlement; see also information on hydrogen embrittlement relief in ISO 4042. Nevertheless, freedom from hydrogen embrittlement is not absolutely guaranteed. All tolerances shall apply prior to the application of a plating or coating.	Plain, i. e. pins to be supplied in natural finish.	
Workmanship		Pins shall be free of irregularities or detrimental defects. No burrs shall appear on any part of the pin.		
Shear strength test		The test shall be in accordance with ISO 8749.		
Acceptability		The acceptance procedure is specified in ISO 3269.		

[a] For other materials, as agreed between the customer and supplier.

6 Designation

EXAMPLE 1 A slotted spring-type straight pin, light duty, with nominal diameter d_1 = 6 mm and nominal length l = 30 mm, made of steel (St), is designated as follows:

Spring pin ISO 13337-6 × 30-St

EXAMPLE 2 A non-interlocking slotted spring-type straight pin (N), light duty, with nominal diameter d_1 = 6 mm and nominal length l = 30 mm, made of martensitic stainless steel (C), is designated as follows:

Spring pin ISO 13337-6 × 30-N-C