
**Solid ball-nosed end mills with cylindrical
shanks made of carbide and ceramic
materials — Dimensions**

*Fraises hémisphériques deux tailles monobloc, à queue cylindrique, en
carbures métalliques et en céramique — Dimensions*

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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 15917 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with cutting edges made of hard cutting materials*.

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Solid ball-nosed end mills with cylindrical shanks made of carbide and ceramic materials — Dimensions

1 Scope

This International Standard specifies types and dimensions of solid ball-nose end mills, with cylindrical shanks, made of carbide and ceramic materials in accordance with ISO 513.

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 286-2, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 513, *Classification and application of hard cutting materials for metal removal with defined cutting edges — Designation of the main groups and groups of application*

3 Types of solid ball-nosed end mills

Solid ball-nosed end mills are divided into two types:

- Type 1: Solid ball-nosed end mills, short according to Figure 1 and Table 1;
- Type 2: Solid ball-nosed end mills, long according to Figure 2 and Table 2.

NOTE Both types of ball-nosed end mills can be designed with or without a recess. The diameter of the neck recess (diameter of recess) d_3 is shown in Figures 1 and 2.

4 Dimensions

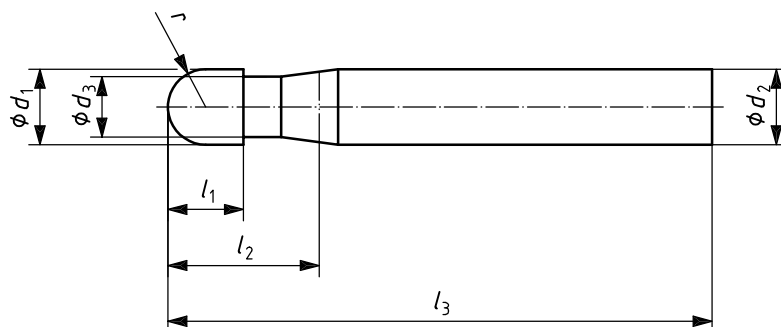


Figure 1 — Type 1: Ball-nosed end mills, short

Table 1 — Type 1: Ball-nosed end mills, short

Dimensions in millimetres

Cutting diameter d_1^b	Radius $r = d_1/2^b$	Length of cut l_1 Minimum	Useable length l_2^a Minimum	Diameter of recess d_3^d	Overall length l_3 $+2$ 0	Shank diameter d_2^c h6
0,2	Blank column	0,2	0,4	Blank column	38,0	3,0
0,3		0,3	0,6			
0,4		0,4	0,8			
0,5		0,5	1,0			
0,6		0,6	1,2			
0,8		0,8	1,6			
1,0		1,0	2,0			
1,2		1,2	2,4			
1,4		1,4	2,8			
1,5		1,5	3,0			
1,6		1,6	3,2			
1,8		1,8	3,6			
2,0		2,0	4,0			
2,5		2,5	5,0			
3,0		3,0	6,0			
3,5		3,5	7,0			
4,0		4,0	8,0			
4,5		4,5	9,0			
5,0		5,0	10,0			
5,5		5,5	11,0			
6,0	6,0	12,0				
7,0	7,0	14,0				
8,0	8,0	16,0				
9,0	9,0	18,0				
10,0	10,0	20,0				
11,0	11,0	22,0				
12,0	12,0	24,0				
13,0	13,0	26,0				
14,0	14,0	28,0				
16,0	16,0	32,0				
18,0	18,0	36,0				
20,0	20,0	40,0				
					57,0	6,0
					63,0	8,0
					72,0	10,0
					83,0	12,0
						14,0
					92,0	16,0
						18,0
					104,0	20,0

^a l_2 is taken as the length extended in parallel to the axis from the top of the end mill to the intersection of cutting diameter d_1 with a recess taper part.

^b Tolerance is at the manufacturer's option.

^c Tolerances on d_2 according to ISO 286-2.

^d Dimension is at the manufacturer's option.

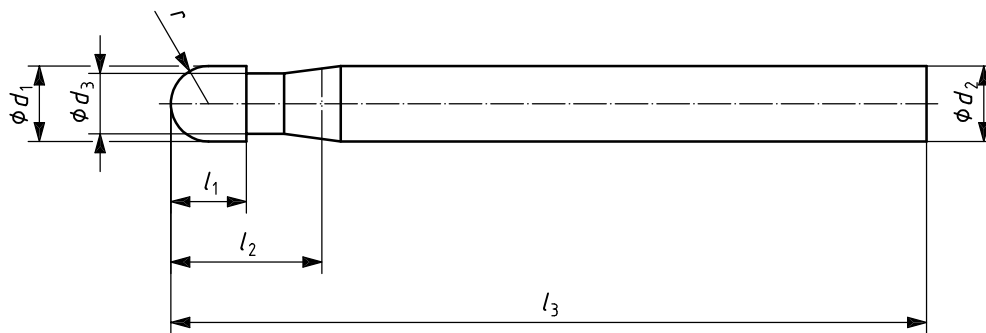


Figure 2 — Type 2: Ball-nosed end mills, long

Table 2 — Type 2: Ball-nosed end mills, long

Dimensions in millimetres

Cutting diameter d_1^b	Radius $r = d_1/2^b$	Length of cut l_1 Minimum	Useable length l_2^a Minimum	Diameter of recess d_3^d	Overall length l_3 +2 0	Shank diameter d_2^c h6
0,2	Blank column	0,2	0,4	Blank column	50,0	3,0
0,3		0,3	0,6			
0,4		0,4	0,8			
0,5		0,5	1,0			
0,6		0,6	1,2			
0,8		0,8	1,6			
1,0		1,0	2,0		60,0	4,0
1,2		1,2	2,4			
1,4		1,4	2,8			
1,5		1,5	3,0			
1,6		1,6	3,2			
1,8		1,8	3,6			
2,0		2,0	4,0		80,0	6,0
2,5		2,5	5,0			
3,0		3,0	6,0			
3,5		3,5	7,0			
4,0		4,0	8,0			
4,5		4,5	9,0			
5,0		5,0	10,0		100,0	8,0
5,5		5,5	11,0			
6,0	6,0	12,0				
7,0	7,0	14,0	10,0			
8,0	8,0	16,0				
8,0	8,0	16,0				
9,0	9,0	18,0	120,0	12,0		
10,0	10,0	20,0				
10,0	10,0	20,0				
11,0	11,0	22,0		14,0		
12,0	12,0	24,0				
13,0	13,0	26,0	140,0	16,0		
14,0	14,0	28,0				
13,0	13,0	26,0				
14,0	14,0	28,0				
16,0	16,0	32,0	160,0	18,0		
18,0	18,0	36,0				
18,0	18,0	36,0				
20,0	20,0	40,0		20,0		

^a l_2 is taken as the length extended in parallel to the axis from the top of the end mill to the intersection of cutting diameter d_1 with a recess taper part.

^b Tolerance is at the manufacturer's option.

^c Tolerances on d_2 according to ISO 286-2.

^d Dimension is at the manufacturer's option.

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