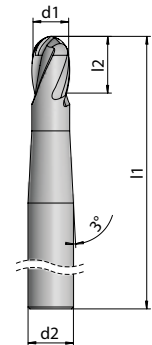
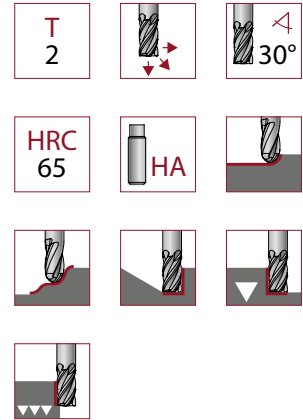


# BALL END MILLS

## HPC | K 1111

Short version   Neck angle 3°				
Article no.	d1	d2	l1	l2
11110301	3	6	72	5
11110401	4	6	75	6
11110501	5	6	75	8
11110601	6	8	80	9
11110801	8	10	100	12
11111001	10	12	100	15
11111201	12	16	120	18
11111601	16	20	140	24

Long version   Neck angle 3°				
Article no.	d1	d2	l1	l2
11110300	3	6	98	5
11110400	4	6	98	6
11110500	5	6	98	8
11110600	6	8	118	9
11110800	8	10	128	12
11111000	10	12	128	15
11111200	12	16	152	18
11111600	16	20	178	24



Ball track milling	$a_p \times a_e = 0,3d \times 0,3d$
Copy milling	$a_p \times a_e = 0,65d \times 1d$



Cutting data for short version		Ball track	Copy	
Material	N/mm <sup>2</sup>	v <sub>c</sub> m/min		
<b>P</b>	Gen. structural/ case hard. steels 1.0037   1.0570   1.0503   1.7131	< 800	170	120
	Tool/ tempering steels 1.2367   1.2379   1.7225	< 1100	130	90
	Alloyed/ cold work steels 1.2312   1.2767   1.3505   1.7707	< 1400	90	80
<b>K</b>	Cast iron GG25   GG40   GGG40	< 450	160–230	100–160
	Spherical cast iron GGG50   GGG60   GGG70	< 650	100–150	80–130
<b>H</b>	Hardened steel HRC 45–50	–	250	200
	Hardened steel HRC 51–58	–	210	180
	Hardened steel HRC 59–65	–	190	130

	Ball track	Copy
d1	fz mm	
4	0,060	0,025
5	0,065	0,035
6	0,070	0,040
8	0,080	0,045
10	0,085	0,050