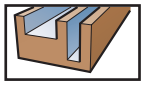
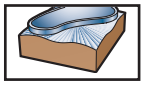
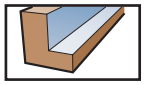
The evolution of CoroMill® Plura continues

Our program of CoroMill ® Plura solid carbide endmills includes tool shapes for most operations, in diameters ranging from .016 to .984 inch (.4 to 25 mm).

The range of CoroMill® Plura solid carbide tooling allows the best possible selection for productivity in die and mold making, aerospace manufacturing and general purpose milling.

Following the introduction of GC1610 grade for applications in hard workpieces and the general grades GC1620 and GC1630, Coromant continued the evolution of the Plura family with another grade, GC1640.
GC1640 is a grade with a Coromant unique PVD TiCN-coating and a new, very tough substrate based on the Pluratech technology.
With the GC1640 grade, the CoroMill Plura system provides the perfect solution for demanding operations like machining under unstable conditions.

Choosing your CoroMill® Plura endmill

Step 1: Select the Plura grade for your workpiece material

ISO H : Choose grade GC1610
for semi-finishing to finishing operations in hot work steel ≥ 43 HRC and cold work steel ≥ 52 HRC.
Choose grade GC1620
for roughing operations.

ISO P M K S H : Choose grade GC1620
for semi-finishing to finishing operations demanding wear resistance, especially in dry machining. This grade also performs well when machining stainless steels wet.

ISO P M K N S : Choose grade GC1630
for roughing to semi-finishing operations demanding edge line toughness. This grade also works well in machining of very soft and smearing steels.

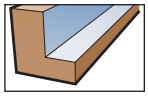
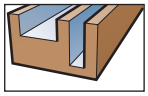
ISO P M K : Choose grade GC1640
for roughing operations where toughness is important or where stability demands a tough grade.

GC1610, GC1620	Dry	Wet
Finishing	GC1610	X
Semi finishing		
Roughing	GC1620	

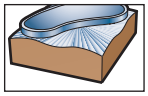
GC1620, GC1630, GC1640	Dry	Wet
Finishing	GC1620	
Semi finishing		GC1630
Roughing		GC1640

Step 2: Classify your machining operation

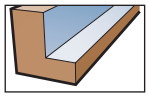
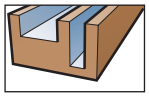
Linear milling, slotting or grooving

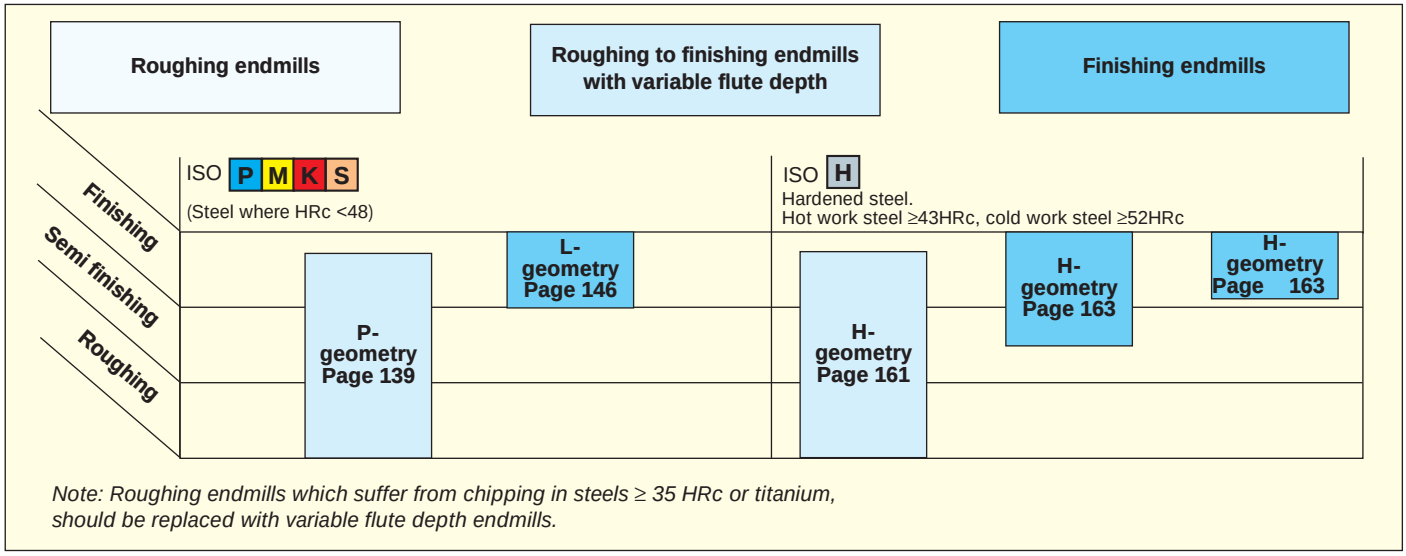
Profiling or contour milling



Step 3: Select your CoroMill® Plura endmill

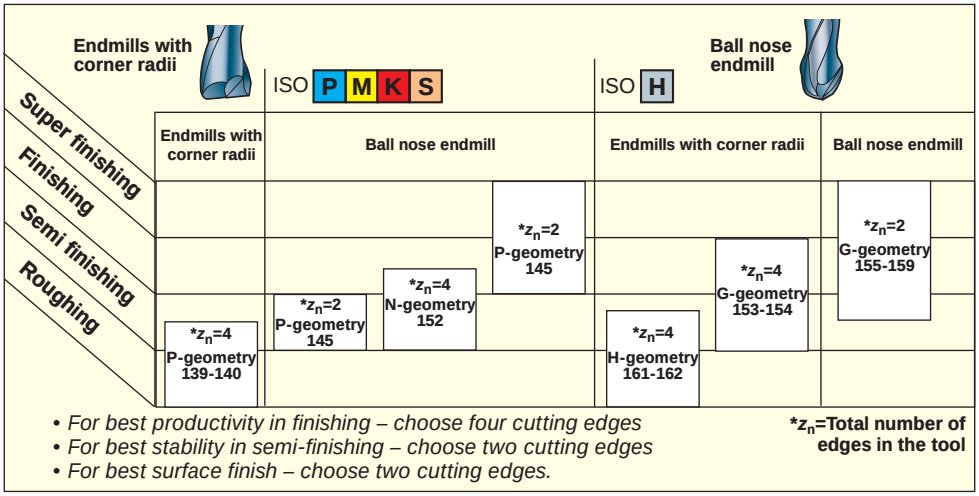



For linear milling, slotting or grooving (inch sizes)



Note: Roughing endmills which suffer from chipping in steels ≥ 35 HRc or titanium, should be replaced with variable flute depth endmills.

For profiling or contouring



- *For best productivity in finishing – choose four cutting edges*
- *For best stability in semi-finishing – choose two cutting edges*
- *For best surface finish – choose two cutting edges.*

$*z_n$=Total number of edges in the tool

Keyway slotting

For this particular operation, some specific guidance can be given in addition to the general recommendations for milling of straight surfaces and grooving.

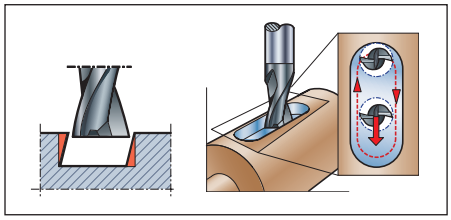
Due to the direction of the cutting forces and the tendency of the tool to bend, a slot milled in a single step will not have a perfectly square form.

The best accuracy and productivity will be achieved if the operation employs an undersized endmill, and is divided into two steps:

1. key slot milling – roughing of the full slot.
2. side milling – finishing all around the slot with conventional milling, to create true square corners.

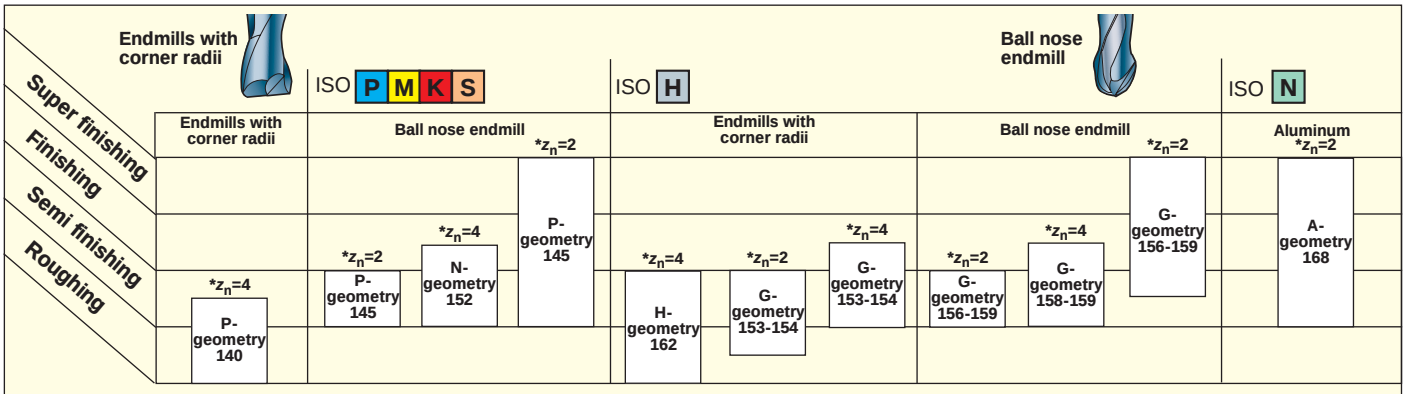
Chamfering tools

Tools for 30°, 45° chamfering and 0.5–6 mm radius are available, in grade GC1620 for all workpiece materials. See page 160.



Key slot milling in two steps.

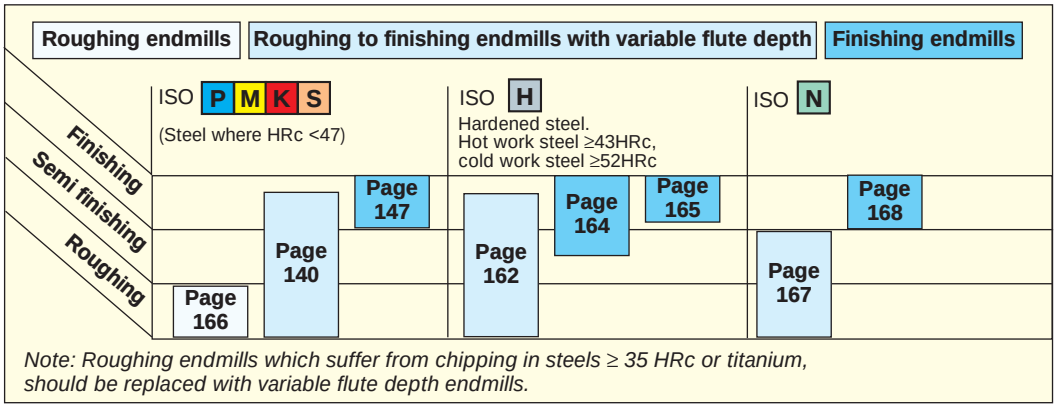
For profiling (metric sizes)



- *For best productivity in finishing – choose four cutting edges*
- *For best stability in semi-finishing – choose two cutting edges*
- *For best surface finish – choose two cutting edges.*

$*z_n$=Total number of edges in the tool

For straight surfaces and grooving (metric sizes)



Note: Roughing endmills which suffer from chipping in steels ≥ 35 HRc or titanium, should be replaced with variable flute depth endmills.

Engineered solutions

When our standard tools do not match your needs you can depend on Sandvik Coromant's experience in engineered tool solutions to provide the answer.

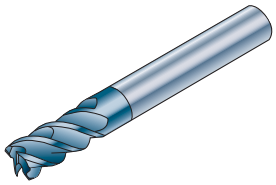
Define the endmill you require and we will design it for you to your own specified dimensions. Forward your enquiry to us and we will supply a quotation including delivery time, price, and a design drawing.

High performance roughing/finishing endmill

Inch sizes

Hardness up to 48HRc

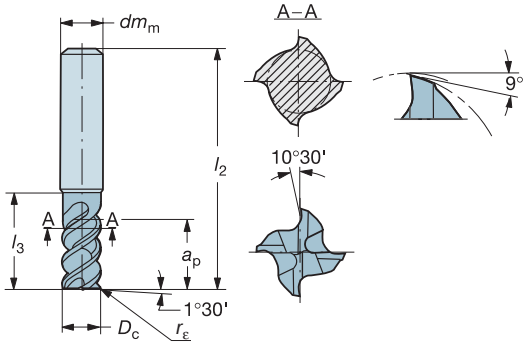
Variable flute depth



Material:

P M K N S

Helix angle: ~50°
Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	z_n	D_c inch	Ordering code	l_2	l_3	Max a_p [1]	dm_m	Radius r_ε	Grade 1620	Grade 1630
Cylindrical				Up to 48HRc γ_0 = 10.5°							
		3	.187	**RA216.23-1250AAK09P**	3.000	.750	.562	.250	.015	☆	
		3	.187	**1250BAK09P**	3.000	.750	.562	.250	.031	☆	
		4	.250	**RA216.24-1650AAK12P**	3.000	–	.750	.250	.015	☆	
		4	.250	**1650BAK12P**	3.000	–	.750	.250	.031	☆	
		4	.312	**2050AAK15P**	3.500	1.250	.937	.375	.015	☆	
		4	.312	**2050BAK15P**	3.500	1.250	.937	.375	.031	☆	
		4	.375	**2450AAK18P**	3.500	–	1.125	.375	.015	☆	
		4	.375	**2450BAK18P**	3.500	–	1.125	.375	.031	☆	
		4	.500	**3250BAK24P**	4.000	–	1.500	.500	.031	☆	
		4	.500	**3250DAK24P**	4.000	–	1.500	.500	.062	☆	
		4	.625	**4050DAK30P**	4.500	–	1.875	.625	.062	☆	
		4	.750	**4850DAK36P**	5.000	–	2.250	.750	.062	☆	
		3	.187	**RA216.23-1250AAK06P**	3.000	0.5	.375	.250	.015		☆
		4	.250	**RA216.24-1650AAK08P**	3.000	–	.500	.250	.015		☆
		4	.312	**2050AAK10P**	3.500	0.75	.625	.375	.015		☆
		4	.375	**2450AAK12P**	3.500	–	.750	.375	.015		☆
		4	.500	**3250BAK16P**	4.000	–	1.000	.500	.031		☆
		4	.625	**4050BAK20P**	4.500	–	1.250	.625	.031		☆
		4	.750	**4850BAK24P**	5.000	–	1.500	.750	.031		☆

[1] Maximum cutting edge length.

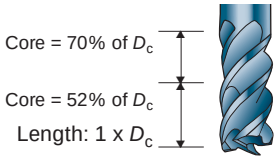
Ordering example: 10 pieces RA216.23-1250AAK09P 1620

ISO-P, M, K, N, S

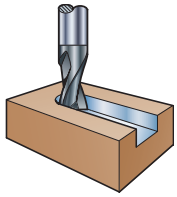
For roughing to finishing in steel <48HRc, stainless steel, cast iron, HRSA and titanium.

- This tool features two different flute depths.
- This tool has a differential pitch to improve stability in roughing applications.
- Always use the shortest possible cutting edge length and tool protrusion.
- For higher productivity in Finishing applications we recommend an endmill with more edges

Geometry with variable flute depth

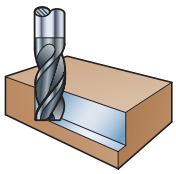


Slotting



$a_p \leq 1 \times D_c$

Edging



$a_p > 1 \times D_c$

$a_e \leq 0.3 \times D_c$

- Roughing in all materials
- Slotting and edging operations

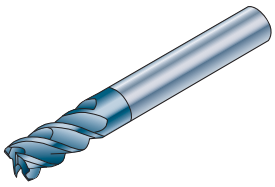
Vc Cutting data, see page 171-172.

Roughing endmill

Metric sizes

Variable flute depth tools

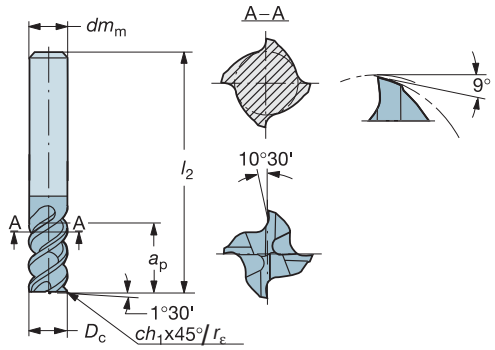
Hardness ≤48HRc



Material:

P M K S

Helix angle: ~50°
Tolerances: D_c — h10
dm_m — h6



l_1 = programming length

Shank type	Front type	z_n	D_c mm	D_c inch	Ordering code	l_2	Max a_p [1]	dm_m	ch_1	Radius r_ε	Grade 1620	Grade 1630	Grade 1640
Weldon					**Short**								
		4	6	(.236)	**R216.24-06050CBC13P**	57	13	6	–	1	☆	☆	
		4	8	(.315)	**08050EBC19P**	63	19	8	–	2	☆	☆	
		4	10	(.394)	**10050EBC22P**	72	22	10	–	2	☆	☆	
		4	12	(.472)	**12050GBC26P**	83	26	12	–	3	☆	☆	
		4	14	(.551)	**14050GBC26P**	83	26	14	–	3	☆	☆	
		4	16	(.630)	**16050IBC32P**	92	32	16	–	4	☆	☆	
		4	20	(.787)	**20050IBC38P**	104	38	20	–	4	☆	☆	
		4	6	(.236)	**R216.34-06050-BC13P**	57	13	6	0.12	–	☆	☆	☆
		4	8	(.315)	**08050-BC19P**	63	19	8	0.12	–	☆	☆	☆
		4	10	(.394)	**10050-BC22P**	72	22	10	0.12	–	☆	☆	☆
		4	12	(.472)	**12050-BC26P**	83	26	12	0.12	–	☆	☆	☆
		4	14	(.551)	**14050-BC26P**	83	26	14	0.12	–	☆	☆	☆
		4	16	(.630)	**16050-BC32P**	92	32	16	0.12	–	☆	☆	☆
		4	20	(.787)	**20050-BC38P**	104	38	20	0.12	–	☆	☆	☆
Cylindrical					**Long**								
		3	4	(.157)	**R216.33-04050-AK11P**	57	11	6	0.12	–	☆	☆	
		3	5	(.197)	**05050-AK13P**	57	13	6	0.12	–	☆	☆	
		4	6	(.236)	**R216.34-06050-AK13P**	65	13	6	0.12	–	☆	☆	
		4	8	(.315)	**08050-AK19P**	80	19	8	0.12	–	☆	☆	
		4	10	(.394)	**10050-AK22P**	100	22	10	0.12	–	☆	☆	
		4	12	(.472)	**12050-AK26P**	100	26	12	0.12	–	☆	☆	
		4	14	(.551)	**14050-AK26P**	104	26	14	0.15	–	☆	☆	
		4	16	(.630)	**16050-AK32P**	115	32	16	0.15	–	☆	☆	
		4	20	(.787)	**20050-AK38P**	125	38	20	0.15	–	☆	☆	
		3	4	(.157)	**R216.23-04050CAK11P**	57	11	6	–	1	☆	☆	
		3	5	(.197)	**05050CAK13P**	57	13	6	–	1	☆	☆	
		4	6	(.236)	**R216.24-06050CAK13P**	65	13	6	–	1	☆	☆	
		4	8	(.315)	**08050EAK19P**	80	19	8	–	2	☆	☆	
		4	10	(.394)	**10050EAK22P**	100	22	10	–	2	☆	☆	
		4	12	(.472)	**12050GAK26P**	100	26	12	–	3	☆	☆	
		4	14	(.551)	**14050GAK26P**	104	26	14	–	3	☆	☆	
		4	16	(.630)	**16050IAK32P**	115	32	16	–	4	☆	☆	
		4	20	(.787)	**20050IAK38P**	125	38	20	–	4	☆	☆	

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.24-06050CBC13P 1630

Variable flute depth, ≤48HRc, ISO-P, M, K, S

For roughing to finishing in steel ≤48HRc, stainless steel, cast iron, HRSA and titanium

- Generally this tool should be your first choice
- Always use the shortest possible tool protrusion.
- This tool has a differential pitch to improve stability in roughing applications.
- If you experience problems with excessive axial forces try an endmill with 4 cutting edges and 30° helix.
- If the chip room is not large enough try an endmill with 3 cutting edges and 45° helix, (In weak materials and large a_p an endmill with 4 cutting edges and 45° helix might work).
- For higher productivity in finishing applications we recommend an endmill with more edges.

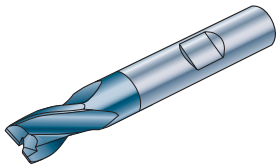
V_c Cutting data, see pages 171-172.

Slotting endmill

Metric sizes

Key slot

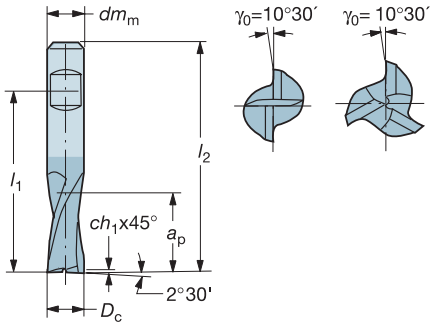
Hardness <48HRc



Material: P M K

Helix angle: ~30°

Tolerances: D_c — h10/e8; dm_m — h6



l_1 = programming length

Shank type	Front type	Ordering code	D_c mm	inch	l_1	l_2	Max a_p[1]	dm_m	ch_1	Tol. D_c	Grade 1630
Weldon	z_n = 2	R216.12-02030-BS30P	2.0	(.079)	32	50	3	6	0.10	e8	☆
		02530-BS30P	2.5	(.098)	32	50	3	6	0.10	e8	☆
		02830-BS40P	2.8	(.110)	32	50	4	6	0.10	h10	☆
		03030-BS04P	3.0	(.118)	32	50	4	6	0.10	e8	☆
		03530-BS04P	3.5	(.138)	32	50	4	6	0.10	e8	☆
		03830-BS05P	3.8	(.150)	36	54	5	6	0.10	h10	☆
		04030-BS05P	4.0	(.157)	36	54	5	6	0.10	e8	☆
		04830-BS06P	4.8	(.190)	36	54	6	6	0.15	h10	☆
		05030-BS06P	5.0	(.194)	36	54	6	6	0.15	e8	☆
		05830-BS07P	5.75	(.226)	36	54	7	6	0.15	h10	☆
		06030-BS07P	6.0	(.236)	36	54	7	6	0.15	e8	☆
		06830-BS08P	6.75	(.265)	40	58	8	8	0.15	h10	☆
		07030-BS08P	7.0	(.275)	40	58	8	8	0.15	e8	☆
		07830-BS09P	7.75	(.305)	40	58	9	8	0.15	h10	☆
		08030-BS09P	8.0	(.315)	40	58	9	8	0.15	e8	☆
		09030-BS10P	9.0	(.354)	46	66	10	10	0.15	e8	☆
		09730-BS11P	9.7	(.382)	46	66	11	10	0.15	h10	☆
		10030-BS11P	10.0	(.394)	46	66	11	10	0.25	e8	☆
		11730-BS12P	11.7	(.461)	50.5	73	12	12	0.25	h10	☆
		12030-BS12P	12.0	(.472)	50.5	73	12	12	0.25	e8	☆
		13730-BS14P	13.7	(.540)	52.5	75	14	14	0.25	h10	☆
		14030-BS14P	14.0	(.551)	52.5	75	14	14	0.25	e8	☆
		15730-BS16P	15.7	(.618)	58	82	16	16	0.25	h10	☆
		16030-BS16P	16.0	(.630)	58	82	16	16	0.25	e8	☆
		17730-BS18P	17.7	(.697)	60	84	18	18	0.25	h10	☆
		18030-BS18P	18.0	(.709)	60	84	18	18	0.25	e8	☆
		19730-BS20P	19.7	(.775)	67	92	20	20	0.25	h10	☆
		20030-BS20P	20.0	(.787)	67	92	20	20	0.35	e8	☆
	z_n = 3	R216.13-01830-BS30P	1.8	(.071)	32	50	3	6	0.10	h10	☆
		02030-BS30P	2.0	(.079)	32	50	3	6	0.10	e8	☆
		02830-BS40P	2.8	(.110)	32	50	4	6	0.10	h10	☆
		03030-BS04P	3.0	(.118)	32	50	4	6	0.10	e8	☆
		03830-BS05P	3.8	(.150)	36	54	5	6	0.10	h10	☆
		04030-BS05P	4.0	(.157)	36	54	5	6	0.10	e8	☆
		04830-BS06P	4.8	(.190)	36	54	6	6	0.15	h10	☆
		05030-BS06P	5.0	(.194)	36	54	6	6	0.15	e8	☆
		05830-BS07P	5.75	(.226)	36	54	7	6	0.15	h10	☆
		06030-BS07P	6.0	(.236)	36	54	7	6	0.15	e8	☆
		06830-BS08P	6.75	(.265)	40	58	8	8	0.15	h10	☆
		07030-BS08P	7.0	(.275)	40	58	8	8	0.15	e8	☆
		07830-BS09P	7.75	(.305)	40	58	9	8	0.15	h10	☆
		08030-BS09P	8.0	(.315)	40	58	9	8	0.15	e8	☆
		09030-BS10P	9.0	(.354)	46	66	10	10	0.25	e8	☆
		09730-BS11P	9.7	(.382)	46	66	11	10	0.25	h10	☆
		10030-BS11P	10.0	(.394)	46	66	11	10	0.25	e8	☆
		11730-BS12P	11.7	(.461)	50.5	73	12	12	0.25	h10	☆
		12030-BS12P	12.0	(.472)	50.5	73	12	12	0.25	e8	☆
		13730-BS14P	13.7	(.540)	52.5	75	14	14	0.25	h10	☆
		14030-BS14P	14.0	(.551)	52.5	75	14	14	0.25	e8	☆
		15730-BS16P	15.7	(.618)	58	82	16	16	0.25	h10	☆
		16030-BS16P	16.0	(.630)	58	82	16	16	0.25	e8	☆
		17730-BS18P	17.7	(.697)	60	84	18	18	0.25	h10	☆
		18030-BS18P	18.0	(.709)	60	84	18	18	0.25	e8	☆
		19730-BS20P	19.7	(.775)	67	92	20	20	0.25	h10	☆
		20030-BS20P	20.0	(.787)	67	92	20	20	0.35	e8	☆

[1] Maximum cutting edge length.

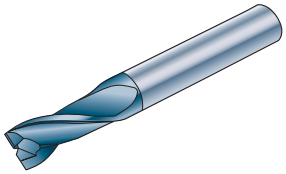
Ordering example: 10 pieces R216.12-02030-BS30P 1630

Cutting data, see page 171.

General purpose endmill

Metric sizes

Hardness <48HRc

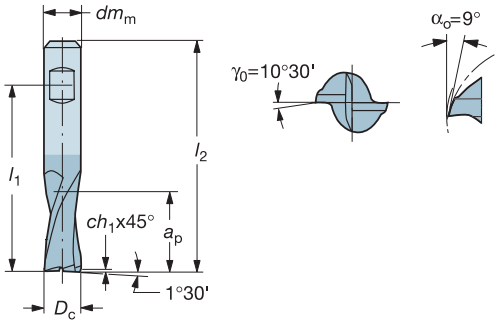


Material:

P M K S

Helix angle: ~30°

Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	Ordering code	D_c mm	inch	Dimensions, mm l_1	l_2	Max a_p[1]	dm_m	ch_1	Grade 1630
Cylindrical	z_n = 2	R216.32-01030-AC30P	1	(.039)	–	57	3	6	–	☆
		01530-AC30P	1.5	(.059)	–	57	3	6	–	☆
		02030-AC60P	2	(.079)	–	57	6	6	–	☆
		02530-AC70P	2.5	(.098)	–	57	7	6	–	☆
		03030-AC07P	3	(.118)	–	57	7	6	–	☆
		03530-AC07P	3.5	(.138)	–	57	7	6	–	☆
		04030-AC08P	4	(.157)	–	57	8	6	–	☆
		04530-AC08P	4.5	(.177)	–	57	8	6	–	☆
		05030-AC10P	5	(.194)	–	57	10	6	–	☆
		06030-AC10P	6	(.236)	–	57	10	6	–	☆
		07030-AC13P	7	(.275)	–	63	13	8	–	☆
		08030-AC16P	8	(.315)	–	63	16	8	–	☆
		09030-AC16P	9	(.354)	–	72	16	10	–	☆
		10030-AC19P	10	(.394)	–	72	19	10	0.12	☆
		11030-AC22P	11	(.433)	–	83	22	12	0.12	☆
		12030-AC22P	12	(.472)	–	83	22	12	0.12	☆
		14030-AC22P	14	(.551)	–	83	22	14	0.15	☆
		16030-AC26P	16	(.630)	–	92	26	16	0.15	☆
		18030-AC26P	18	(.709)	–	92	26	18	0.15	☆
		20030-AC32P	20	(.787)	–	104	32	20	0.15	☆
Weldon	z_n = 2	R216.32-10030-BC19P	10	(.394)	52	72	19	10	0.12	☆
		12030-BC22P	12	(.472)	60.5	83	22	12	0.12	☆
		16030-BC26P	16	(.630)	68	92	26	16	0.15	☆
		18030-BC26P	18	(.709)	68	92	26	18	0.15	☆
		20030-BC32P	20	(.787)	79	104	32	20	0.15	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.32-01030-AC30P 1630

2-30°, ISO-P, M, K, S

For steel <48HRc, stainless steel, cast iron, HRSA and titanium

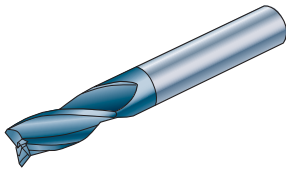
- The problem solver–but bear in mind that with two cutting edges you can never achieve the highest metal removal rates.
- Moving from three to two cutting edges will not usually improve stability.
- In most applications, the shorter tool with two cutting edges for keyway slotting will work better.
- For higher productivity try an endmill with three cutting edges and 45° helix.

v_c Cutting data, see page 171.

General purpose endmill

Metric sizes

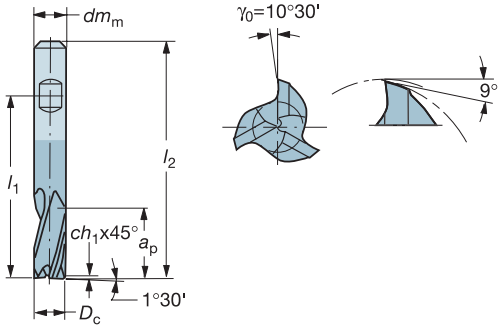
Hardness <48HRc



Material:

P M K S

Helix angle: ~30°
Tolerances: D_c — h10
dm_m — h6



l_1 = programming length

Shank type	Front type	Ordering code	D_c mm	inch	l_1	l_2	Max a_p[1]	dm_m	ch_1	Grade 1630
Cylindrical	z_n = 3	**R216.33-01030-AC30P**	1	(.039)	–	57	3	6	–	☆
		01530-AC30P	1.5	(.059)	–	57	3	6	–	☆
		02030-AC60P	2	(.079)	–	57	6	6	–	☆
		02530-AC70P	2.5	(.098)	–	57	7	6	–	☆
		03030-AC07P	3	(.118)	–	57	7	6	–	☆
		03530-AC07P	3.5	(.138)	–	57	7	6	–	☆
		04030-AC08P	4	(.157)	–	57	8	6	–	☆
		04530-AC08P	4.5	(.177)	–	57	8	6	–	☆
		05030-AC10P	5	(.194)	–	57	10	6	–	☆
		05530-AC10P	5.5	(.216)	–	57	10	6	–	☆
		06030-AC10P	6	(.236)	–	57	10	6	–	☆
		06530-AC13P	6.5	(.256)	–	63	13	8	–	☆
		07030-AC13P	7	(.275)	–	63	13	8	–	☆
		07530-AC16P	7.5	(.295)	–	63	16	8	–	☆
		08030-AC16P	8	(.315)	–	63	16	8	–	☆
		09030-AC16P	9	(.354)	–	72	16	10	0.12	☆
		10030-AC19P	10	(.394)	–	72	19	10	0.12	☆
		11030-AC22P	11	(.433)	–	83	22	12	0.12	☆
		12030-AC22P	12	(.472)	–	83	22	12	0.12	☆
		13030-AC22P	13	(.511)	–	83	22	14	0.15	☆
		14030-AC22P	14	(.551)	–	83	22	14	0.15	☆
		15030-AC26P	15	(.590)	–	92	26	16	0.15	☆
		16030-AC26P	16	(.630)	–	92	26	16	0.15	☆
		18030-AC26P	18	(.709)	–	92	26	18	0.15	☆
		20030-AC32P	20	(.787)	–	104	32	20	0.15	☆
Weldon	z_n = 3	**R216.33-06030-BC10P**	6	(.236)	39	57	10	6	–	☆
		08030-BC16P	8	(.315)	45	63	16	8	–	☆
		09030-BC16P	9	(.354)	45	72	16	10	0.12	☆
		10030-BC19P	10	(.394)	52	72	19	10	0.12	☆
		12030-BC22P	12	(.472)	60.5	83	22	12	0.15	☆
		14030-BC22P	14	(.551)	60.5	83	22	14	0.15	☆
		16030-BC26P	16	(.630)	68	92	26	16	0.15	☆
		18030-BC26P	18	(.709)	68	92	26	18	0.15	☆
		20030-BC32P	20	(.787)	79	104	32	20	0.15	☆
		Extra long								
Cylindrical	z_n = 3	**R216.33-01030-AK40P**	1	(.039)	–	57	4	6	–	☆
		01530-AK60P	1.5	(.059)	–	57	6	6	–	☆
		02030-AK80P	2	(.079)	–	57	8	6	–	☆
		03030-AK12P	3	(.118)	–	57	12	6	–	☆
		04030-AK14P	4	(.157)	–	57	14	6	–	☆
		05030-AK16P	5	(.194)	–	50	16	6	–	☆
		06030-AK22P	6	(.236)	–	65	22	6	–	☆
		08030-AK28P	8	(.315)	–	80	28	8	–	☆
		10030-AK32P	10	(.394)	–	100	32	10	0.12	☆
		12030-AK38P	12	(.472)	–	100	38	12	0.12	☆
		16030-AK50P	16	(.630)	–	115	50	16	0.15	☆
		20030-AK50P	20	(.787)	–	125	50	20	0.15	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.33-01030-AC30P 1630

3-30°, ISO-P, M, K, S

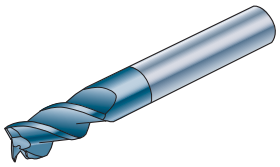
For steel <48HRc, stainless steel, cast iron, HRSA and titanium.

- In most applications the shorter tool with three cutting edges for keyway slotting will work better.
- For higher productivity try a tool with four cutting edges and 30° helix.
- In most applications you will gain better stability with an endmill with three cutting edges and 45° helix.
- When you have problems with this endmill try an endmill with two cutting edges.

General purpose endmill

Metric sizes

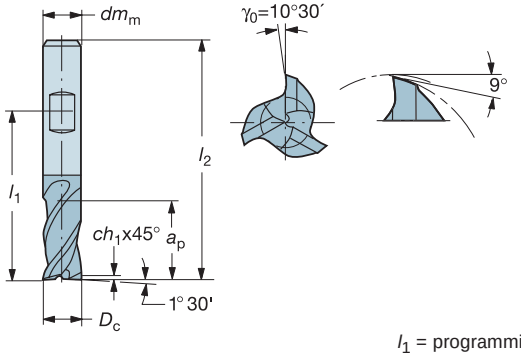
Hardness <48HRc



Material: P M K S

Helix angle: ~45°

Tolerances: D_c — h10, dm_m — h6



l_1 = programming length

Shank type	Front type	Ordering code	D_c mm	D_c inch	Dimensions, mm l_1	l_2	Max a_p[1]	dm_m	ch_1	Grade 1620	Grade 1630
Cylindrical	z_n = 3	R216.33-02045-AC60P	2	(.079)	–	57	6	6	–	☆	☆
		03045-AC07P	3	(.118)	–	57	7	6	–	☆	☆
		04045-AC08P	4	(.157)	–	57	8	6	–	☆	☆
		05045-AC10P	5	(.194)	–	57	10	6	–	☆	☆
		06045-AC10P	6	(.236)	–	57	10	6	–	☆	☆
		07045-AC13P	7	(.275)	–	63	13	8	–	☆	☆
		08045-AC16P	8	(.315)	–	63	16	8	–	☆	☆
		09045-AC16P	9	(.354)	–	72	16	10	0.12	☆	☆
		10045-AC19P	10	(.394)	–	72	19	10	0.12	☆	☆
		12045-AC22P	12	(.472)	–	83	22	12	0.12	☆	☆
		14045-AC22P	14	(.551)	–	83	22	14	0.15	☆	☆
		16045-AC26P	16	(.630)	–	92	26	16	0.15	☆	☆
		18045-AC26P	18	(.709)	–	92	26	18	0.15	☆	☆
		20045-AC32P	20	(.787)	–	104	32	20	0.15	☆	☆
Weldon	z_n = 3	R216.33-06045-BC10P	6	(.236)	39	57	10	6	–		☆
		08045-BC16P	8	(.315)	45	63	16	8	–		☆
		09045-BC16P	9	(.354)	52	72	16	10	0.12		☆
		10045-BC19P	10	(.394)	52	72	19	10	0.12		☆
		12045-BC22P	12	(.472)	60.5	83	22	12	0.12		☆
		14045-BC22P	14	(.551)	60.5	83	22	14	0.15		☆
		16045-BC26P	16	(.630)	68	92	26	16	0.15		☆
		18045-BC26P	18	(.709)	68	92	26	18	0.15		☆
		20045-BC32P	20	(.787)	79	104	32	20	0.15		☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.33-02045-AC60P 1620

3-45°, ISO-P, M, K, S

For steel <48HRc, stainless steel, cast iron, HRSA and titanium. A very good tool in most applications!

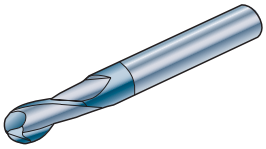
- In many applications the shorter tool with three cutting edges for keyway slotting will work better.
- If you experience problems with excessive axial forces try an endmill with three cutting edges and 30° helix.
- If the chip room is not large enough try an endmill with two cutting edges and 30° helix.

v_c Cutting data, see page 171.

High performance ball nose endmill

Inch and metric sizes

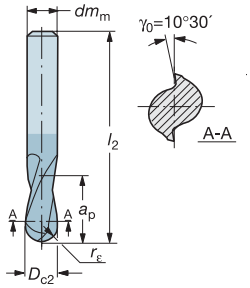
Hardness up to 48 HRc



Material:

P M K N S

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6



Shank type	Front type	D_{c2} mm	D_{c2} inch	Ordering code	r_ε±0.01	l_2	l_3	Max a_p[1]	dm_m	Grade 1620
Cylindrical				**Short**						
	z_n = 2		.062	RA216.42- 0430-AS08P	.031	2.000	.250	.125	.250	☆
			.093	0630-AS12P	.046	2.000	.250	.187	.250	☆
			.125	0830-AS04P	.062	2.000	.375	.250	.250	☆
			.156	1030-AS05P	.078	2.000	.500	.312	.250	☆
			.187	1230-AS06P	.093	2.000	.500	.375	.250	☆
			.250	1630-AS08P	.125	2.000	–	.500	.250	☆
			.312	2030-AS10P	.156	2.500	.750	.625	.375	☆
			.375	2430-AS12P	.187	2.500	–	.750	.375	☆
			.500	3230-AS16P	.250	3.000	–	1.000	.500	☆
				Long						
	z_n = 2		.062	RA216.42- 0430-AK08P	.031	3.000	.250	.125	.250	☆
			.093	0630-AK12P	.046	3.000	.375	.187	.250	☆
			.125	0830-AK04P	.062	3.000	.500	.250	.250	☆
			.156	1030-AK05P	.078	3.000	.625	.312	.250	☆
			.187	1230-AK06P	.093	3.000	.750	.375	.250	☆
			.250	1630-AK08P	.125	3.000	–	.500	.250	☆
			.312	2030-AK10P	.156	3.500	1.250	.625	.375	☆
			.375	2430-AK12P	.187	3.500	–	.750	.375	☆
			.500	3230-AK16P	.250	4.000	–	1.000	.500	☆
				Short						
	z_n = 2	1	*(.039)*	R216.42- 01030-AC30P	0.5	57	–	3	6	☆
		1.5	*(.059)*	01530-AC30P	0.75	57	–	3	6	☆
		2	*(.079)*	02030-AC60P	1.0	57	–	6	6	☆
		2.5	*(.098)*	02530-AC70P	1.25	57	–	7	6	☆
		3	*(.118)*	03030-AC07P	1.5	57	–	7	6	☆
		4	*(.157)*	04030-AC08P	2.0	57	–	8	6	☆
		5	*(.194)*	05030-AC10P	2.5	57	–	10	6	☆
		6	*(.236)*	06030-AC10P	3.0	57	–	10	6	☆
		7	*(.275)*	07030-AC13P	3.5	63	–	13	8	☆
		8	*(.315)*	08030-AC16P	4.0	63	–	16	8	☆
		9	*(.354)*	09030-AC16P	4.5	72	–	16	10	☆
		10	*(.394)*	10030-AC19P	5.0	72	–	19	10	☆
		12	*(.472)*	12030-AC22P	6.0	83	–	22	12	☆
		14	*(.551)*	14030-AC22P	7.0	83	–	22	14	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA216.42-0430-AS08P 1620

Ball nose, <48HRc, ISO-P, M, K, N, S

For profiling applications in steel <48HRc, stainless steel, cast iron, HRSA and titanium

- Always use the shortest possible tool protrusion.
- In roughing applications where you need large chip room and good stability use a tool with two cutting edges.
- In semi-finishing applications and general applications, use a tool with four cutting edges for best productivity.
- In finishing/super-finishing applications use a tool with two cutting edges.

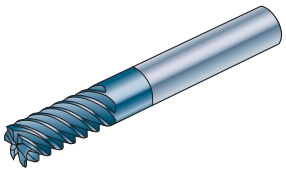
v_c Cutting data, see page 171.

High performance finishing endmill

Inch sizes

Non center cutting

Hardness up to 48HRc

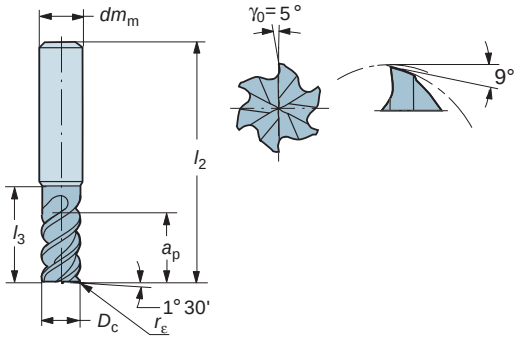


Material:

P M K N S

Helix angle: ~50°

Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	D_c Inch	Ordering code	l_2	l_3	Max a_p[1]	dm_m	Radius r_ε	Grade 1620
Cylindrical			Long						
	4	.062	RA215.24- 0450AAK13L	3.000	.250	.200	.250	.015	☆
	4	.093	0650AAK18L	3.000	.375	.286	.250	.015	☆
	4	.093	0650BAK18L	3.000	.375	.286	.250	.031	☆
	4	.125	0850AAK06L	3.000	.500	.375	.250	.015	☆
	4	.125	0850BAK06L	3.000	.500	.375	.250	.031	☆
	4	.156	1050AAK08L	3.000	.625	.500	.250	.015	☆
	4	.156	1050BAK08L	3.000	.625	.500	.250	.031	☆
	6	.187	RA215.26- 1250AAK09L	3.000	.750	.571	.250	.015	☆
	6	.187	1250BAK09L	3.000	.750	.571	.250	.031	☆
	6	.250	1650AAK12L	3.000	–	.750	.250	.015	☆
	6	.250	1650BAK12L	3.000	–	.750	.250	.031	☆
	6	.312	2050AAK15L	3.500	1.250	1.000	.375	.015	☆
	6	.312	2050BAK15L	3.500	1.250	1.000	.375	.031	☆
	6	.375	2450BAK18L	3.500	–	1.125	.375	.031	☆
	6	.375	2450DAK18L	3.500	–	1.125	.375	.062	☆
	6	.500	3250BAK24L	4.000	–	1.500	.500	.031	☆
	6	.500	3250DAK24L	4.000	–	1.500	.500	.062	☆
	6	.625	4050DAK30L	4.500	–	1.875	.625	.062	☆
	6	.625	4050HAK30L	4.500	–	1.875	.625	.125	☆
	8	.750	RA215.28- 4850DAK36L	5.000	–	2.250	.750	.062	☆
	8	.750	4850HAK36L	5.000	–	2.250	.750	.125	☆
			Extra long						
	6	.250	RA215.26- 1650BAL18L	4.000	–	1.125	.250	.031	☆
	6	.312	2050BAL23L	4.500	1.750	1.400	.375	.031	☆
	6	.375	2450DAL27L	4.500	–	1.666	.375	.062	☆
	6	.500	3250DAL36L	5.000	–	2.250	.500	.062	☆
	6	.625	4050HAL45L	5.500	–	2.800	.625	.125	☆
	8	.750	RA215.28- 4850HAL54L	6.000	–	3.375	.750	.125	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA215.24-0450AAK13L 1620

For finishing applications in steel <48HRc, stainless steel, cast iron, HRSA and titanium.

- If the chip room is not large enough try an endmill with four cutting edges.

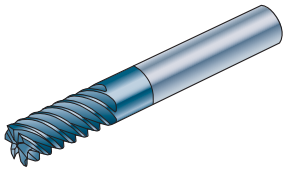
v_c Cutting data, see page 171.

Finishing endmill

Metric sizes

Non center cutting

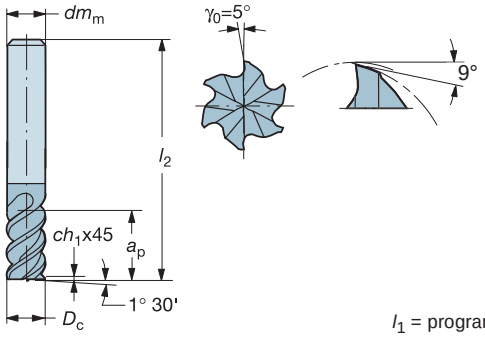
Hardness <48HRc



Material:

P M K S

Helix angle: ~60°
Tolerances: D_c — h10
dm_m — h6



l_1 = programming length

Shank type	Front type	z_n	D_c mm	inch	Ordering code	Dimensions, mm l_2	Max a_p[1]	dm_m	ch_1	Grade 1620
Cylindrical		6	6	(.236)	R215.36- 06060-AC13L	57	13	6	0.12	☆
		6	8	(.315)	08060-AC19L	63	19	8	0.12	☆
		6	10	(.394)	10060-AC22L	72	22	10	0.12	☆
		6	12	(.472)	12060-AC26L	83	26	12	0.12	☆
		6	14	(.551)	14060-AC26L	83	26	14	0.15	☆
		6	16	(.630)	16060-AC32L	92	32	16	0.15	☆
		6	18	(.709)	18060-AC32L	92	32	18	0.15	☆
		6	20	(.787)	20060-AC38L	104	38	20	0.15	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R215.36-06060-AC13L 1620

6-60°, ISO-P, M, K, S

For finishing applications in steel <48HRc, stainless steel, cast iron. HRSA and titanium.

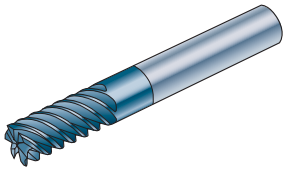
- In most applications you will gain better stability with an endmill with six cutting edges and 50° helix, bottom of this page.
- If the chip room is not large enough try an endmill with four cutting edges and 50° helix.

Finishing endmill

Metric sizes

Non center cutting

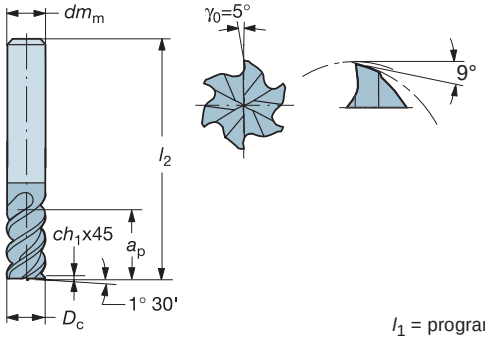
Hardness <48HRc



Material:

P M K S

Helix angle: ~50°
Tolerances: D_c — h10
dm_m — h6



l_1 = programming length

Shank type	Front type	z_n	D_c mm	inch	Ordering code	Dimensions, mm l_2	Max a_p[1]	dm_m	ch_1	Grade 1620
Cylindrical		4	3	(.118)	R215.34- 03050-AC08L	57	8	6	0.12	☆
		4	4	(.157)	R215.34- 04050-AC11L	57	11	6	0.12	☆
		5	5	(.194)	R215.35- 05050-AC13L	57	13	6	0.12	☆
		6	6	(.236)	R215.36- 06050-AC13L	57	13	6	0.12	☆
		6	8	(.315)	R215.36- 08050-AC19L	63	19	8	0.12	☆
		6	10	(.394)	R215.36- 10050-AC22L	72	22	10	0.12	☆
		6	12	(.472)	R215.36- 12050-AC26L	83	26	12	0.12	☆
		6	16	(.630)	R215.36- 16050-AC32L	92	32	16	0.19	☆
		8	25	(.984)	R215.38- 20050-AC38L	104	38	20	0.19	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R215.34-03050-AC08L 1620

New tool, 50°, ISO-P, M, K, S

For finishing applications in steel <48HRc, stainless steel, cast iron. HRSA and titanium.

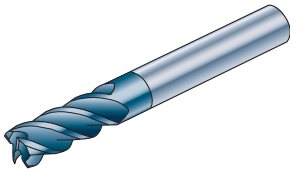
- In most applications you will gain better stability with an endmill with four cutting edges and 50° helix.
- If the chip room is not large enough try an endmill with four cutting edges and 50° helix.

v_c Cutting data, see page 171.

General purpose endmill

Metric sizes

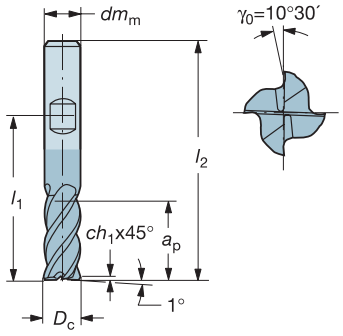
Hardness <48HRc

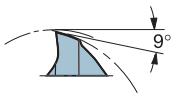


Material:

P M K S

Helix angle: ~45°
Tolerances: D_c — h10
dm_m — h6





l_1 = programming length

Shank type	Front type	z_n	D_c mm	*inch*	Ordering code	l_1	l_2	Max a_p[1]	dm_m	ch_1	Grade 1620	Grade 1630
Cylindrical		4	2	*(.079)*	**R216.34-02045-AC70N**	–	57	7	6	–	☆	☆
		4	3	*(.118)*	**03045-AC08N**	–	57	8	6	–	☆	☆
		4	4	*(.157)*	**04045-AC11N**	–	57	11	6	–	☆	☆
		4	5	*(.194)*	**05045-AC13N**	–	57	13	6	–	☆	☆
		4	6	*(.236)*	**06045-AC13N**	–	57	13	6	–	☆	☆
		4	8	*(.315)*	**08045-AC19N**	–	63	19	8	–	☆	☆
		4	10	*(.394)*	**10045-AC22N**	–	72	22	10	0.12	☆	☆
		4	12	*(.472)*	**12045-AC26N**	–	83	26	12	0.12	☆	☆
		4	14	*(.551)*	**14045-AC26N**	–	83	26	14	0.15	☆	☆
		4	16	*(.630)*	**16045-AC32N**	–	92	32	16	0.15	☆	☆
		5	18	*(.709)*	**R216.35-18045-AC32N**	–	92	32	18	0.15	☆	☆
		5	20	*(.787)*	**R216.35-20045-AC38N**	–	104	38	20	0.15	☆	☆
Weldon		4	6	*(.236)*	**R216.34-06045-BC13N**	39	57	13	6	–	☆	
		4	8	*(.315)*	**08045-BC19N**	45	63	19	8	–	☆	
		4	10	*(.394)*	**10045-BC22N**	52	72	22	10	0.12	☆	
		4	12	*(.472)*	**12045-BC26N**	60.5	83	26	12	0.12	☆	
		4	14	*(.551)*	**14045-BC26N**	60.5	83	26	14	0.15	☆	
		4	16	*(.630)*	**16045-BC32N**	68	92	32	16	0.15	☆	
		5	20	*(.787)*	**R216.35-20045-BC38N**	79	104	38	20	0.15	☆	
Cylindrical					Extra long							
		4	6	*(.236)*	**R216.34-06045-AK22N**	47	65	22	6	0.12	☆	
		4	8	*(.315)*	**08045-AK28N**	62	80	28	8	0.12	☆	
		4	10	*(.394)*	**10045-AK32N**	80	100	32	10	0.12	☆	
		4	12	*(.472)*	**12045-AK40N**	77.5	100	40	12	0.12	☆	
		4	14	*(.551)*	**14045-AK50N**	81.5	104	50	14	0.15	☆	
		5	16	*(.630)*	**R216.35-16045-AK50N**	91	115	50	16	0.15	☆	
		5	20	*(.787)*	**R216.35-20045-AK55N**	100	125	55	20	0.15	☆	
		6	20	*(.787)*	**R216.36-20045-AK75N**	120	145	75	20	0.15	☆	
		8	25	*(.984)*	**R216.38-25045-AK90N**	121	153	90	25	0.15	☆	

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.34-02045-AC70N 1620

4-45°, ISO-P, M, K, S

For steel <48HRc, stainless steel, cast iron, HRSA and titanium

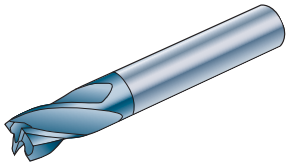
- Always use the shortest possible tool protrusion.
- For higher productivity try a tool with six cutting edges and 50° helix.
- In some applications you will gain better stability with an endmill with four cutting edges and 50° helix.
- If the chip room is not large enough try an endmill with three cutting edges and 45° helix.

v_c Cutting data, see page 171.

General purpose endmill

Metric sizes

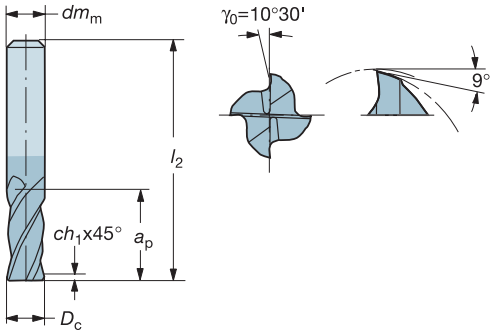
Hardness <48HRc



Material:

P M K S

Helix angle: ~30°
Tolerances: D_c — h10
dm_m — h6



l_1 = programming length

Shank type	Front type	Ordering code	D_c mm	inch	l_2	Max a_p[1]	dm_m	ch_1	Grade 1620	Grade 1630
Cylindrical	z_n = 4	**Short**								
		R216.34-02030-AS40N	2	(.079)	50	4	6	–	☆	☆
		03030-AS05N	3	(.118)	50	5	6	–	☆	☆
		04030-AS08N	4	(.157)	54	8	6	–	☆	☆
		05030-AS09N	5	(.194)	54	9	6	–	☆	☆
		06030-AS10N	6	(.236)	54	10	6	–	☆	☆
		07030-AS11N	7	(.275)	58	11	8	–	☆	☆
		08030-AS12N	8	(.315)	58	12	8	–	☆	☆
		10030-AS14N	10	(.394)	66	14	10	0.12	☆	☆
		12030-AS16N	12	(.472)	73	16	12	0.12	☆	☆
		14030-AS18N	14	(.551)	75	18	14	0.15	☆	☆
		16030-AS22N	16	(.630)	82	22	16	0.15	☆	☆
		18030-AS24N	18	(.709)	84	24	18	0.15	☆	☆
		20030-AS26N	20	(.787)	92	26	20	0.15	☆	☆
		Long								
		R216.34-02030-AC70N	2	(.079)	57	7	6	–	☆	☆
		03030-AC08N	3	(.118)	57	8	6	–	☆	☆
		03530-AC10N	3.5	(.138)	57	10	6	–	☆	☆
		04030-AC11N	4	(.157)	57	11	6	–	☆	☆
		04530-AC11N	4.5	(.177)	57	11	6	–	☆	☆
		05030-AC13N	5	(.194)	57	13	6	–	☆	☆
		05530-AC13N	5.5	(.216)	57	13	6	–	☆	☆
		06030-AC13N	6	(.236)	57	13	6	–	☆	☆
		06530-AC16N	6.5	(.256)	63	16	8	–	☆	☆
		07030-AC16N	7	(.275)	63	16	8	–	☆	☆
		08030-AC19N	8	(.315)	63	19	8	–	☆	☆
		09030-AC19N	9	(.354)	72	19	10	–	☆	☆
		10030-AC22N	10	(.394)	72	22	10	0.12	☆	☆
		12030-AC26N	12	(.472)	83	26	12	0.12	☆	☆
		14030-AC26N	14	(.551)	83	26	14	0.15	☆	☆
		16030-AC32N	16	(.630)	92	32	16	0.15	☆	☆
		18030-AC32N	18	(.709)	92	32	18	0.15	☆	☆
		20030-AC38N	20	(.787)	104	38	20	0.15	☆	☆

[1] Maximum cutting edge length.

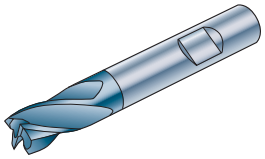
Ordering example: 10 pieces R216.34-02030-AS40N 1620

Cutting data, see page 171.

General purpose endmill

Metric sizes

Hardness <48HRc

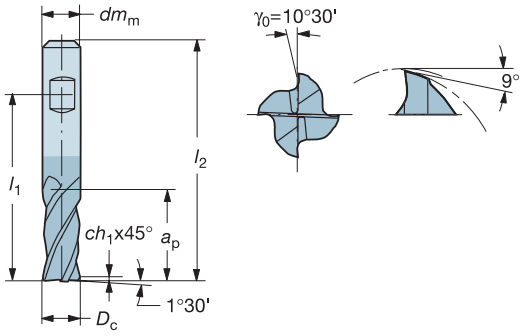


Material:

P M K S

Helix angle: ~30°

Tolerances: D_c — h10
dm_m — h6



l_1 = programming length

Shank type	Front type	Ordering code	D_c mm	inch		Dimensions, mm l_1	l_2	Max a_p[1]	dm_m	ch_1	Grade 1630
Weldon	z_n = 4	Short									
		R216.34- 06030-BS10N	6	(.236)		36	54	10	6	–	☆
		08030-BS12N	8	(.315)		40	58	12	8	–	☆
		10030-BS14N	10	(.394)		46	66	14	10	0.12	☆
		12030-BS16N	12	(.472)		50.5	73	16	12	0.12	☆
		14030-BS18N	14	(.551)		52.5	75	18	14	0.15	☆
		16030-BS22N	16	(.630)		58	82	22	16	0.15	☆
		18030-BS24N	18	(.709)		60	84	24	18	0.15	☆
		20030-BS26N	20	(.787)		67	92	26	20	0.15	☆
		Long									
		R216.34- 06030-BC13N	6	(.236)		39	57	13	6	–	☆
		08030-BC19N	8	(.315)		45	63	19	8	–	☆
		10030-BC22N	10	(.394)		52	72	22	10	0.12	☆
		12030-BC26N	12	(.472)		60.5	83	26	12	0.12	☆
		14030-BC26N	14	(.551)		60.5	83	26	14	0.15	☆
		16030-BC32N	16	(.630)		68	92	32	16	0.15	☆
		18030-BC32N	18	(.709)		68	92	32	18	0.15	☆
		20030-BC38N	20	(.787)		79	104	38	20	0.15	☆
		25030-BC45N	25	(.984)		89	121	45	25	0.15	☆

[1] Maximum cutting edge length.

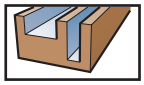
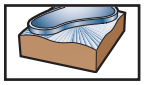
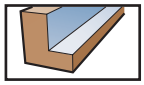
Ordering example: 10 pieces R216.34-06030-BS10N 1630

4-30°, ISO-P, M, K, S

For steel <48HRc, stainless steel, cast iron, HRSA and titanium

- Always use the shortest possible tool protrusion.
- For higher productivity try a tool with six cutting edges and 50° helix.
- In some applications you will gain better stability with an endmill with four cutting edges and 50° helix.
- If the chip room is not large enough try an endmill with three cutting edges and 45° helix.

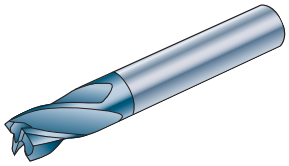
v_c Cutting data, see page 171.

Endmills for Turn-Milling

Metric sizes

Hardness <48HRc

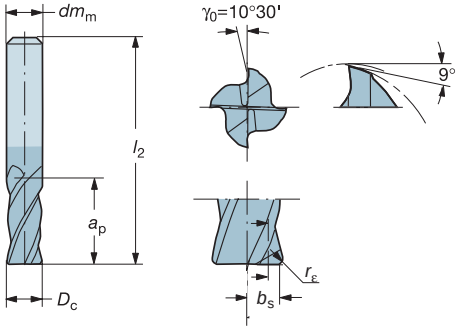


Material:

P M K N S H

Helix angle: ~30°

Tolerances: D_c — h10
dm_m — h6



l_1 = programming length

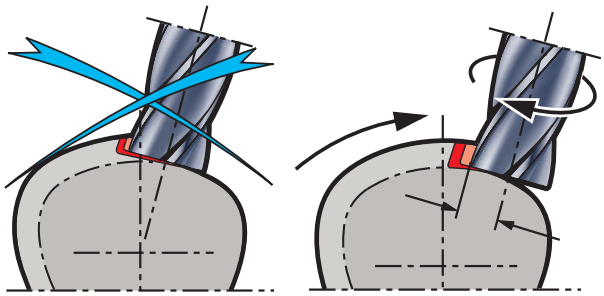
Shank type	Front type	Ordering code			Dimensions, mm					Grade
		D_c mm	inch		l_2	Max a_p[1]	dm_m	r_ε	b_s	1620
Cylindrical	z_n = 4	6	(.236)	**R216.T4-06030BAS10N**	54	10	6	0.5	2.5	☆
		8	(.315)	**R216.T4-08030BAS12N**	58	12	8	0.5	3.5	☆
		10	(.394)	**R216.T4-10030CAS14N**	66	14	10	1.0	4.0	☆
		12	(.472)	**R216.T4-12030CAS16N**	73	16	12	1.0	5.0	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.T4-06030-BAS10N 1620

Turn-Milling, ISO P, M, K, N, S, H

- A specialized CoroMill Plura endmill with a cutting geometry designed for use in Turn-Mill operations.
- Two of the four cutting edges cut in both radial and axial directions, while the remaining two cut mainly in the radial direction.
- For best performance, the endmill's axis of rotation should ***not*** align exactly with the workpiece's central axis. Instead the endmill should be offset, and sit further around in the workpiece's rotational cycle.

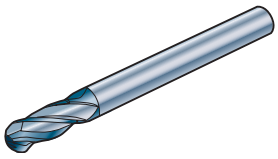


v_c Cutting data, see page 171.

Ball nose endmill

Inch and metric sizes

Hardness <48 HRc



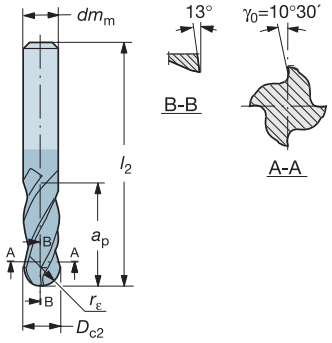
Material:

P M K S

Helix angle: ~30°

Tolerances: D_{c2} — h9
dm_m — h6

Long



Shank type	Front type	Ordering code		Dimensions, inch/mm					Grade
		D_{c2} mm *inch*		r_ε±0,01	l_2	l_3	Max a_p[1]	dm_m	1620
Cylindrical			Long						
	z_n = 4	.062	RA216.44- 0430-AK08N	.031	3.000	.250	.125	.250	☆
		.093	0630-AK12N	.046	3.000	.375	.187	.250	☆
		.125	0830-AK04N	.062	3.000	.500	.250	.250	☆
		.156	1030-AK05N	.078	3.000	.625	.312	.250	☆
		.187	1230-AK06N	.093	3.000	.750	.375	.250	☆
		.250	1630-AK08N	.125	3.000	–	.500	.250	☆
		.312	2030-AK10N	.156	3.500	1.250	.625	.375	☆
		.375	2430-AK12N	.187	3.500	–	.750	.375	☆
		.500	3230-AK16N	.250	4.000	–	1.000	.500	☆
	z_n = 4	3 *(.118)*	R216.44- 03030-AK08N	1.5	80	–	8	6	☆
		4 *(.157)*	04030-AK11N	2.0	80	–	11	6	☆
		5 *(.194)*	05030-AK13N	2.5	80	–	13	6	☆
		6 *(.236)*	06030-AK13N	3.0	80	–	13	6	☆
		7 *(.275)*	07030-AK16N	3.5	100	–	16	8	☆
		8 *(.315)*	08030-AK19N	4.0	100	–	19	8	☆
		9 *(.354)*	09030-AK19N	4.5	100	–	19	10	☆
		10 *(.394)*	10030-AK22N	5.0	100	–	22	10	☆
		12 *(.472)*	12030-AK26N	6.0	100	–	26	12	☆
		16 *(.630)*	16030-AK32N	8.0	100	–	32	16	☆
		20 *(.787)*	20030-AK38N	10.0	125	–	38	20	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA216.44-0430-AK08N 1620

Ball nose, <48HRc, ISO-P, M, K, S

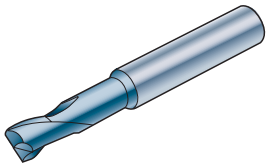
For profiling applications in steel <48HRc, stainless steel, cast iron, HRSA and titanium

- Always use the shortest possible tool protrusion.
- In roughing applications where you need large chip room and good stability use a tool with two cutting edges.
- In semi-finishing applications and general applications, use a tool with four cutting edges for best productivity.
- In finishing/super-finishing applications use a tool with two cutting edges.

Cutting data, see page 171.

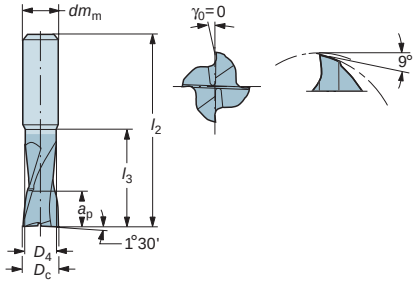
High performance corner radius endmill

Inch sizes Hardness from 43HRc to 58HRc



Material: P K H

Helix angle: ~30°
Tolerances: D_c — h9
dm_m — h6



Shank type	Front type	z_n	D_c inch	Ordering code	r_ε±.0004	l_2	l_3	D_4	Max a_p[1]	dm_m	1610
Cylindrical		4	.125	RA216.24- 0830BAK02G	.031	3.000	.750	.120	.125	.250	☆
		4	.156	1030BAK02G	.031	3.000	.750	.150	.125	.250	☆
		4	.187	1230DAK03G	.062	3.000	.750	.182	.187	.250	☆
		4	.250	1630DAK04G	.062	3.000	1.000	.242	.250	.250	☆
		4	.375	2430DAK06G	.062	3.500	1.250	.365	.375	.375	☆
		4	.375	2430HAK06G	.125	3.500	1.250	.365	.375	.375	☆
		4	.500	3230HAK08G	.125	4.000	1.500	.485	.500	.500	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA216.24-0830BAK02G 1610

Semifinishing, ISO-H

For semifinishing applications in warm work steels ≥ 43 HRc.

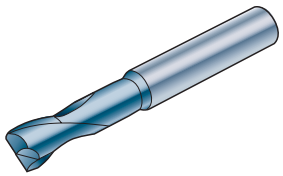
For semifinishing applications in cold work steels ≥ 52 HRc.

• For highest productivity in semifinishing applications.

Corner radius endmill

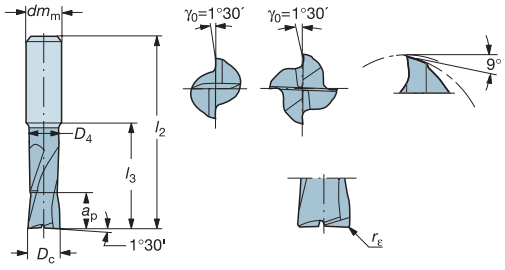
Metric sizes

Hardness 43≤HRc≤63



Material: P H

Helix angle: ~30°
Tolerances: D_c — h9
dm_m — h6



Shank type	Front type	z_n	D_c mm	*inch*	Ordering code	r_ε±0,01	l_2	D_4	Max a_p[1]	dm_m	l_3	1610
Cylindrical					Normal							
		2	2	(.079)	R216.22-02030AAI20G	0.2	57	–	2	6	20	☆
		2	3	(.118)	03030BAI03G	0.5	57	–	3	6	–	☆
		2	4	(.157)	04030BAI04G	0.5	57	–	4	6	–	☆
		2	5	(.194)	05030BAI05G	0.5	57	4.7	5	6	20	☆
		2	6	(.236)	06030CAI06G	1	57	5.7	6	6	21	☆
		2	8	(.315)	08030CAI08G	1	63	7.7	8	8	27	☆
		2	10	(.394)	10030DAI10G	1.5	72	9.7	10	10	32	☆
		2	12	(.472)	12030DAI12G	1.5	83	11.7	12	12	36	☆
		4	6	(.236)	R216.24-06030CAI06G	1	57	5.7	6	6	21	☆
		4	8	(.315)	08030CAI08G	1	63	7.7	8	8	27	☆
		4	10	(.394)	10030DAI10G	1.5	72	9.7	10	10	32	☆
		4	12	(.472)	12030DAI12G	1.5	83	11.7	12	12	36	☆
		4	16	(.630)	16030EAI16G	2	92	15.5	16	16	42	☆
					Long							
		2	2	(.079)	R216.22-02030AAJ20G	0.2	72	1.9	2	6	20	☆
		2	3	(.118)	03030AAJ03G	0.3	72	2.9	3	6	20	☆
		4	4	(.157)	R216.24-04030AAJ04G	0.4	72	3.8	4	6	20	☆
		4	5	(.194)	05030BAJ05G	0.5	72	4.7	5	6	20	☆
		4	6	(.236)	06030BAJ06G	0.5	72	5.7	6	6	24	☆
		4	8	(.315)	08030BAJ08G	0.5	80	7.7	8	8	29	☆
		4	8	(.315)	08030CAJ08G	1	80	7.7	8	8	29	☆
		4	8	(.315)	08030DAJ08G	1.5	80	7.7	8	8	29	☆
		4	10	(.394)	10030BAJ10G	0.5	100	9.7	10	10	35	☆
		4	10	(.394)	10030CAJ10G	1	100	9.7	10	10	35	☆
		4	12	(.472)	12030BAJ12G	0.5	100	11.7	12	12	36	☆
		4	12	(.472)	12030CAJ12G	1	100	11.7	12	12	36	☆
		4	12	(.472)	12030EAJ12G	2	100	11.7	12	12	36	☆

[1] Maximum cutting edge length.

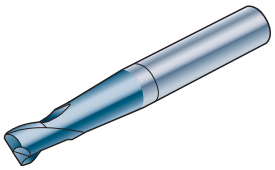
Ordering example: 10 pieces R216.22-02030AAI20G 1610

v_c Cutting data, see page 170.

Corner radius endmill

Metric sizes

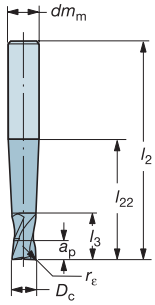
Hardness 43≤HRc≤63

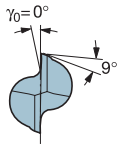


Material: P H

Helix angle: 30°

Tolerances: D_c — h9, dm_m — h6





Shank type	Front type	Ordering code	D_c mm	D_c inch	r_ε±0,01	l_2	Max a_p[1]	dm_m	l_3	l_{22}	Grade 1610
Cylindrical	z_n = 2	Extra long									
		R216.22-03030BAP03G	3	(.118)	0.5	80	3	6	4	38.4	☆
		04030BAP04G	4	(.157)	0.5	90	4	8	5	50.8	☆
		06030BAP06G	6	(.236)	0.5	100	6	10	7	52.8	☆
	z_n = 4	R216.24-06030CAP06G	6	(.236)	1	100	6	10	7	52.8	☆
		08030CAP08G	8	(.315)	1	100	8	12	10	53	☆
		10030CAP10G	10	(.394)	1	125	10	14	12	57.8	☆
		10030GAP10G	10	(.394)	3	125	10	14	12	57.8	☆
		12030CAP12G	12	(.472)	1	140	12	16	14	59.8	☆
		12030GAP12G	12	(.472)	3	140	12	16	14	59.8	☆
		16030CAP16G	16	(.630)	1	150	16	20	18	63.9	☆
		16030GAP16G	16	(.630)	3	150	16	20	18	63.9	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.22-03030BAP03G 1610

Semi-finishing, ISO-P, H

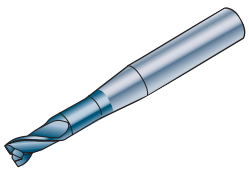
For finishing applications in warm work steels ≥ 43HRc.
For finishing applications in cold work steels ≥52HRc.

- For highest productivity in semi-finishing applications.
- Always use the shortest possible tool protrusion.
- When stability allows, use an endmill with four cutting edges.

General purpose endmill

Metric sizes

Hardness <63HRc

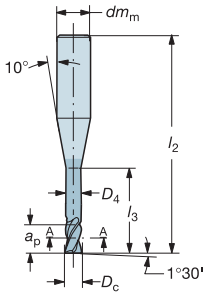


Material: P M K N S H

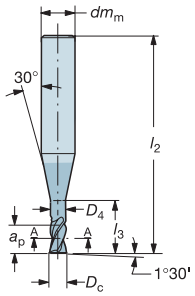
Helix angle: ~30°

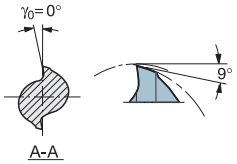
Tolerances: D_c — h10, dm_m — h6

10 x D_c



2.5-5 x D_c





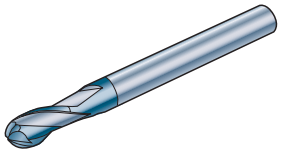
Shank type	Front type	Ordering code	D_c mm	D_c inch	l_2	l_3	Max a_p[1]	D_4	dm_m	Grade 1620
Cylindrical	z_n = 2	2.5 x D_c								
		R216.32-00430-AE04G	0.4	(.016)	54	1	0.4	0.60	6	☆
		00530-AE05G	0.5	(.020)	54	1.2	0.5	0.60	6	☆
		00630-AE06G	0.6	(.024)	54	1,5	0.6	0.60	6	☆
		00830-AE08G	0.8	(.031)	54	2	0.8	0.60	6	☆
		01030-AE10G	1.0	(.039)	54	2.5	1.0	0.60	6	☆
		5 x D_c								
		R216.32-00530-AI05G	0.5	(.020)	57	2.5	0.5	0.60	6	☆
		00630-AI06G	0.6	(.024)	57	3	0.6	0.60	6	☆
		00830-AI08G	0.8	(.031)	57	4	0.8	0.60	6	☆
		01030-AI10G	1.0	(.039)	57	5	1.0	0.60	6	☆
		10 x D_c								
		R216.32-00530-AJ05G	0.5	(.020)	57	5	0.5	0.60	6	☆
		00630-AJ06G	0.6	(.024)	57	6	0.6	0.60	6	☆
		00830-AJ08G	0.8	(.031)	57	8	0.8	0.60	6	☆
		01030-AJ10G	1.0	(.039)	57	10	1.0	0.60	6	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.32-00430-AE04G 1620

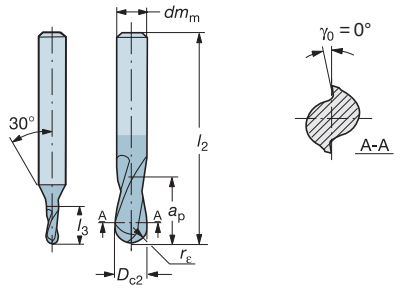
Cutting data, see pages 170-171.

High performance ball nose endmill
Inch sizes
Hardness from 43 HRc to 63 HRc



Material: P K H

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6

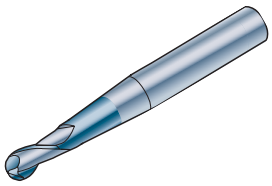


Shank type	Front type	D_{c2} inch	Ordering code	r_ε ±.0004	l_2	l_3	Max a_p[1]	dm_m	Grade 1610
Cylindrical	z_n = 2		Long, up to 63 HRc						
		.062	RA216.42- 0430-AK08G	.031	3.000	.250	.125	.250	☆
		.093	0630-AK12G	.046	3.000	.375	.187	.250	☆
		.125	0830-AK04G	.062	3.000	.500	.250	.250	☆
		.156	1030-AK05G	.078	3.000	.625	.312	.250	☆
		.187	1230-AK06G	.093	3.000	.750	.375	.250	☆
		.250	1630-AK08G	.125	3.000	–	.500	.250	☆
		.312	2030-AK10G	.156	3.500	1.250	.625	.375	☆
		.375	2430-AK12G	.187	3.500	–	.750	.375	☆
		.500	3230-AK16G	.250	4.000	–	1.000	.500	☆

[1] Maximum cutting edge length.

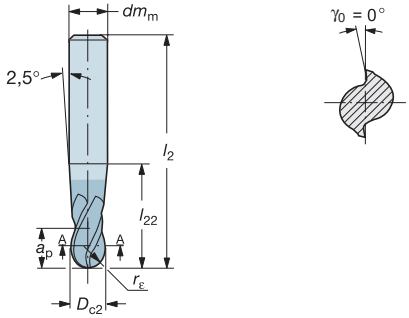
Ordering example: 10 pieces RA216.42-0430-AK08G 1610

High performance ball nose endmill
Inch sizes
Hardness from 43HRc to 58 HR_C



Material: P K H

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6



Shank type	Front type	D_{c2} inch	Ordering code	r_ε ±0.01	l_2	l_{22}	Max a_p[1]	dm_m	Grade 1620
Cylindrical	z_n = 2		Extra long						
		.063	RA216.42- 0430-AL04G	.031	4.000	2.226	.063	.250	☆
		.094	0630-AL06G	.047	4.000	1.907	.094	.250	☆
		.125	0830-AL03G	.063	4.000	1.598	.125	.250	☆
		.156	1030-AL04G	.078	4.000	1.289	.156	.250	☆
		.187	1230-AL05G	.094	4.000	.976	.188	.250	☆
		.250	1630-AL06G	.125	4.500	1.783	.250	.375	☆
		.312	2030-AL08G	.156	5.000	2.590	.313	.500	☆
		.375	2430-AL09G	.188	5.000	1.973	.375	.500	☆
		.500	3230-AL12G	.250	5.500	2.159	.500	.625	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA216.42-0430-AL04G 1620

Ballnose, ISO-H

For profiling applications in warm work steels ≥ 43 HRc.

For profiling applications in cold work steels ≥ 52 HRc.

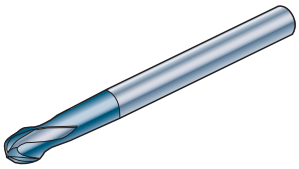
- Always use the shortest possible tool protrusion.
- When working along steep walls, the spherical design ballnose will have shorter contact length. See pages 156 and 159.

v_c Cutting data, see pages 170-171.

High performance ball nose endmill

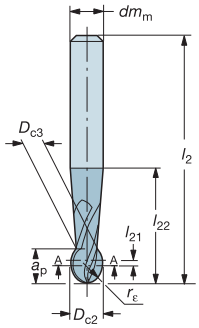
Inch sizes

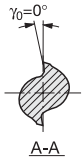
Spherical design
Hardness from 43 HRc to 63 HRc



Material: P K H

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6 (D_{c2}≤10~h5)





Shank type	Front type	Ordering code	D_{c2} Inch		Dimensions, inch							Grade
					r_ε +.0004	l_2	Max a_p[1]	dm_m	l_{21}	l_{22}	D_{c3}	1610
Cylindrical	z_n = 2		.062	RA216.62- 0430-AK04G	.031	3.000	.062	.250	–	.125	.046	☆
			.093	0630-AK06G	.046	3.000	.093	.250	–	.187	.078	☆
			.125	0830-AK02G	.062	3.000	.125	.250	–	.250	.109	☆
			.156	1030-AK02G	.078	3.000	.156	.250	–	.312	.140	☆
			.187	1230-AK03G	.093	3.000	.187	.250	–	.375	.156	☆
			.250	1630-AK04G	.125	3.000	.250	.250	–	.500	.203	☆
			.312	2030-AK07G	.156	3.500	.437	.375	.125	.625	.250	☆
			.375	2430-AK08G	.187	3.500	.500	.375	.125	.750	.343	☆
			.500	3230-AK10G	.250	4.000	.625	.500	.125	1.000	.406	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA216.62-0430-AK04G 1610

Ballnose, ISO-H

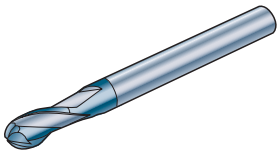
For profiling applications in warm work steels ≥ 43 HRc.
For profiling applications in cold work steels ≥ 52 HRc.

- The spherical design ballnose reduces contact length along steep walls.
- Always use the shortest possible tool protrusion.
- In semi-finishing/finishing applications better productivity is possible with a ballnose with four cutting edges.
- For better stability use tools with shorter tool protrusion.

Ball nose endmill

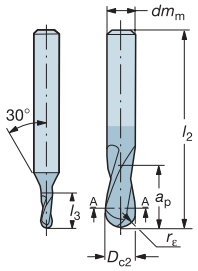
Metric sizes

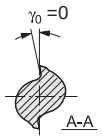
Hardness 43≤HRc≤63



Material: P H

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6





Shank type	Front type	Ordering code	D_{c2} mm	inch		Dimensions, mm					Grade	
						r_ε±0,01	l_2	l_3	Max a_p[1]	dm_m	1610	1620
Cylindrical	z_n = 2		1	(.039)	R216.42-01030-AC15G	0.5	57	2.8	1.5	6	☆	
			2	(.079)	02030-AC30G	1	57	9	3	6	☆	
			3	(.118)	03030-AC04G	1.5	57	–	4	6	☆	
			4	(.157)	04030-AC05G	2	57	14	5	6	☆	
			5	(.194)	05030-AC06G	2.5	57	15	6	6	☆	
			6	(.236)	06030-AC10G	3	57	–	10	6	☆	
			8	(.315)	08030-AC16G	4	63	–	16	8	☆	
			10	(.394)	10030-AC19G	5	72	–	19	10	☆	
			12	(.472)	12030-AC22G	6	83	–	22	12	☆	
			1	(.039)	R216.42-01030-AK15G	0.50	57	3	1.5	6	☆	☆
			1.5	(.059)	01530-AK20G	0.75	57	4	2	6	☆	
			2	(.079)	02030-AK30G	1.0	57	6	3	6	☆	☆
			2.5	(.098)	02530-AK30G	1.25	57	6	3	6	☆	
			3	(.118)	03030-AK04G	1.5	57	7	4	6	☆	☆
			4	(.157)	04030-AK05G	2.0	80	8	5	6	☆	☆
			5	(.194)	05030-AK06G	2.5	80	10	6	6	☆	☆
			6	(.236)	06030-AK10G	3.0	80	–	10	6	☆	☆
			8	(.315)	08030-AK16G	4.0	100	–	16	8	☆	☆
			10	(.394)	10030-AK19G	5.0	100	–	19	10	☆	☆
			12	(.472)	12030-AK22G	6.0	100	–	22	12	☆	☆
			16	(.630)	16030-AK32G	8.0	125	–	32	16	☆	☆

[1] Maximum cutting edge length.

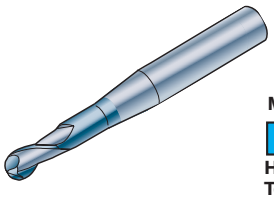
Ordering example: 10 pieces R216.42-01030-AC15G 1610

V_c Cutting data, see pages 170-171.

Ball nose endmill

Metric sizes

Hardness <63 HRc

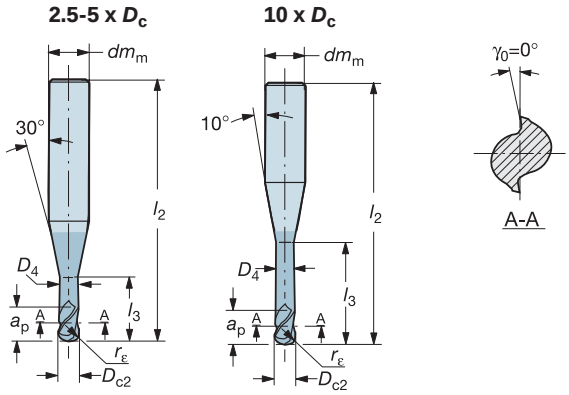


Material:

P M K N S H

Helix angle: ~30°

Tolerances: D_{c2} — h9
dm_m — h6



Shank type	Front type	D_{c2} mm	D_{c2} *inch*	Ordering code	r_ε±0,01	l_2	l_3	Max a_p[1]	D_4	dm_m	Grade 1620
Cylindrical	z_n = 2			2.5 x D_c							
		0.4	*(.016)*	**R216.42-00430-AE04G**	0.2	54	1	0.4	0.36	6	☆
		0.5	*(.020)*	**00530-AE05G**	0.25	54	1.2	0.5	0.46	6	☆
		0.6	*(.024)*	**00630-AE06G**	0.3	54	1.5	0.6	0.56	6	☆
		0.8	*(.031)*	**00830-AE08G**	0.4	54	2	0.8	0.76	6	☆
		1.0	*(.039)*	**01030-AE10G**	0.5	54	2.5	1.0	0.96	6	☆
				5 x D_c							
		0.5	*(.020)*	**R216.42-00530-AO05G**	0.25	57	2.5	0.5	0.46	6	☆
		0.6	*(.024)*	**00630-AO06G**	0.3	57	3	0.6	0.56	6	☆
		0.8	*(.031)*	**00830-AO08G**	0.4	57	4	0.8	0.76	6	☆
		1.0	*(.039)*	**01030-AO10G**	0.5	57	5	1.0	0.96	6	☆
				10 x D_c							
		0.5	*(.020)*	**R216.42-00530-AJ05G**	0.25	57	5	0.5	0.46	6	☆
		0.6	*(.024)*	**00630-AJ06G**	0.3	57	6	0.6	0.56	6	☆
		0.8	*(.031)*	**00830-AJ08G**	0.4	57	8	0.8	0.76	6	☆
		1.0	*(.039)*	**01030-AJ10G**	0.5	57	10	1,0	0.96	6	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.42-00430-AE04G 1620

Mini ball nose, ISO-P, M, K, N, S, H

For steel <63HRc, stainless steel, cast iron, HRSA and titanium, aluminum and hardened steel

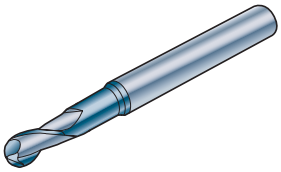
- For all applications where D_{c2}<1 mm is needed.
- Always use the shortest possible tool protrusion.

v_c Cutting data, see page 171.

Ball nose endmill

Metric sizes

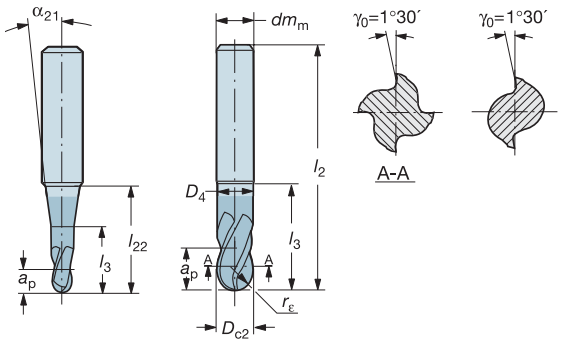
Hardness 43≤HRc≤63



Material: P H

Helix angle: ~30°

Tolerances: D_{c2} — h9
dm_m — h6 (D_{c2}≤8~h5)



Shank type	Front type	Ordering code			Dimensions, mm								Grade			
		D_{c2} mm	inch		r_ε ±0,01	l_2	D_4	Max a_p[1]	dm_m	l_3	l_{22}	α_{21}	1610	1620		
Cylindrical	 z_n = 2	1	(.039)	**R216.42-01030-AI10G**	0.5	57	–	1	6	2	20	4°	☆	☆		
		1.5	(.059)	**01530-AI15G**	0.75	57	–	1.5	6	3	20	4°	☆	☆		
		2	(.079)	**02030-AI20G**	1	57	–	2	6	4	20	4°	☆	☆		
		2.5	(.098)	**02530-AI25G**	1.25	57	–	2.5	6	4	20	4°	☆	☆		
		3	(.118)	**03030-AI03G**	1.5	57	–	3	6	5	20	4°	☆	☆		
		4	(.157)	**04030-AI04G**	2	57	–	4	6	6	20	4°	☆	☆		
		5	(.194)	**05030-AI05G**	2.5	57	4.7	5	6	20	–	4°	☆	☆		
		6	(.236)	**06030-AI06G**	3	57	5.7	6	6	21	–	4°	☆	☆		
		8	(.315)	**08030-AI08G**	4	63	7.7	8	8	27	–	4°	☆	☆		
		10	(.394)	**10030-AI10G**	5	72	9.7	10	10	32	–	4°	☆	☆		
		12	(.472)	**12030-AI12G**	6	83	11.7	12	12	36	–	4°	☆	☆		
				Extra long												
		1	(.039)	**R216.42-01030-AP10G**	0.5	80	36.5	1	6	2	36.5	2°30’	☆	☆		
		2	(.079)	**02030-AP20G**	1	80	40	2	6	3	40	2°30’	☆	☆		
		3	(.118)	**03030-AP03G**	1.5	80	38.5	3	6	4	38.5	2°30’	☆	☆		
		4	(.157)	**04030-AP04G**	2	90	51	4	8	5	51	2°30’	☆	☆		
		5	(.194)	**05030-AP05G**	2.5	100	40.5	5	8	6	40.5	2°30’	☆	☆		
		6	(.236)	**06030-AP06G**	3	100	53	6	10	7	53	2°30’	☆	☆		
		8	(.315)	**08030-AP08G**	4	100	53	8	12	10	53	2°30’	☆	☆		
		10	(.394)	**10030-AP10G**	5	125	58	10	14	12	58	2°30’	☆	☆		
		12	(.472)	**12030-AP12G**	6	140	60	12	16	14	60	2°30’	☆	☆		
	 z_n = 4	6	(.236)	**R216.44-06030-AI06G**	3	57	5.7	6	6	20	5.7	4°	☆			
		8	(.315)	**08030-AI08G**	4	63	7.7	8	8	26	7.7	4°	☆			
		10	(.394)	**10030-AI10G**	5	72	9.7	10	10	30	9.7	4°	☆			
		12	(.472)	**12030-AI12G**	6	83	11.7	12	12	36	11.7	4°	☆			
		16	(.630)	**16030-AI16G**	8	92	15.5	16	16	42	15.7	4°	☆			

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.42-01030-AI10G 1610

Ball nose, ISO-P, H

For profiling applications in warm work steels ≥ 43 HRc.
For profiling applications in cold work steels≥52HRc.

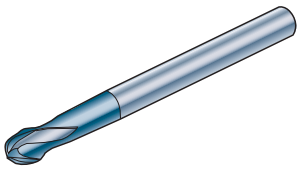
- Always use the shortest possible tool protrusion.
- First choice is G-geometry.
- When the workpiece material is very short chipping it is possible to achieve better productivity with the H-geometry.
- In semi-finishing/finishing applications better productivity is possible with a ballnose with four cutting edges.
- When working along steep walls the spherical design ballnose will have shorter contact length.
- For better stability use a tool with shorter tool protrusion.

Cutting data, see pages 170-171.

Ball nose endmill

Metric sizes

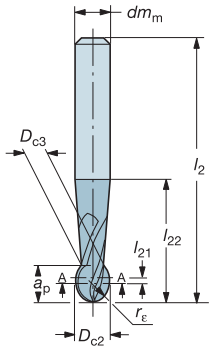
Spherical design
Hardness 43≤HRc≤63

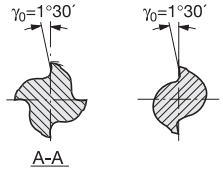


Material:

P H

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6 (D_{c2}≤10~h5)





Shank type	Front type	D_{c2} mm	inch	Ordering code	r_ε ±0,01	l_2	Max a_p 1)	dm_m	l_{21}	l_{22}	D_{c3}	Grade 1610
Cylindrical	z_n = 2	1	(.039)	**R216.62-01030-AO20G**	0.5	75	2	6	1.5	20	–	☆
		2	(.079)	**02030-AO30G**	1	75	3	6	1.5	20	1.7	☆
		3	(.118)	**03030-AO04G**	1.5	80	4	6	1.5	30	2.5	☆
		4	(.157)	**04030-AO05G**	2	80	5	6	1.5	30	3.3	☆
		5	(.194)	**05030-AO07G**	2.5	80	7	6	2	43	4.1	☆
		6	(.236)	**06030-AO07G**	3	100	7	6	2	30	4.7	☆
		8	(.315)	**08030-AO09G**	4	100	9	8	3	36	6.5	☆
		10	(.394)	**10030-AO11G**	5	100	11	10	3	43	8.2	☆
		12	(.472)	**12030-AO13G**	6	100	13	12	3	52	9.8	☆
		16	(.630)	**16030-AO15G**	8	150	15	16	3	61	13.4	☆
	z_n = 4	5	(.194)	**R216.64-05030-AO07G**	2.5	80	7	6	2	43	4.1	☆
		6	(.236)	**06030-AO07G**	3	100	7	6	2	30	4.7	☆
		8	(.315)	**08030-AO09G**	4	100	9	8	3	36	6.5	☆
		10	(.394)	**10030-AO11G**	5	100	11	10	3	43	8.2	☆
		12	(.472)	**12030-AO13G**	6	100	13	12	3	52	9.8	☆
		16	(.630)	**16030-AO15G**	8	150	15	16	3	61	13.4	☆

1) Maximum cutting edge length.

Ordering example: 10 pieces R216.62-01030-AO20G 1610

Ballnose, ISO-P, H

For profiling applications in warm work steels ≥ 43 HRc.
For profiling applications in cold work steels≥52HRc.

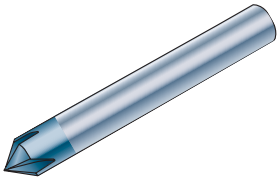
- Always use the shortest possible tool protrusion.
- When the workpiece material is very short chipping it is possible to achieve better productivity with the H-geometry.
- In semi-finishing/finishing applications better productivity is possible with a ball nose with four cutting edges.
- For better stability use tools with shorter tool protrusion.
- When better accessibility is needed.

v_c Cutting data, see page 170.

Chamfering endmill

Metric sizes

Hardness <63HRc

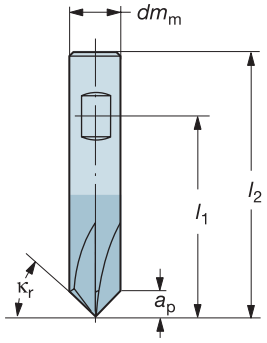


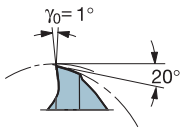
Material:

P M K N S H

Helix angle: 0

Tolerances: D_c — h10
dm_m — h6





Shank type	Front type	z_n	D_c mm	Ordering code	K_r	l_1	l_2	Max a_p[1]	dm_m	Grade 1620
Cylindrical		4	–	**R215.94-01500-AC74G**	60°	–	100	7.35	10	☆
		4	–	**R215.84-01000-AC25G**	45°	–	57	2.5	6	☆
		4	–	**R215.84-01500-AC43G**	45°	–	100	4.25	10	☆
		5	–	**R215.85-02000-AC30G**	45°	–	80	3	8	☆
		6	–	**R215.86-03000-AC05G**	45°	–	83	4.5	12	☆
Weldon		4	–	**R215.94-01500-BC74G**	60°	80	100	7.35	10	☆
		4	–	**R215.84-01500-BC43G**	45°	80	100	4.25	10	☆
		6	–	**R215.86-03000-BC05G**	45°	60.5	83	4.5	12	☆

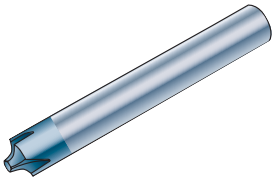
[1] Maximum cutting edge length.

Ordering example: 10 pieces R215.94-01500-AC74G 1620

Chamfering radius endmill

Metric sizes

Hardness <63HRc

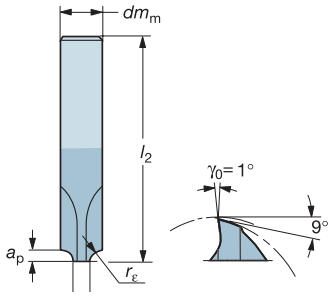


Material:

P M K N S H

Helix angle: 0

Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	z_n	D_c mm	*inch*	Ordering code	r_ε	l_2	Max a_p[1]	dm_m	Grade 1620
Cylindrical		3	4	*(.157)*	**R215.03-04000BAC01G**	0.5	57	0.5	6	☆
		3	4	*(.157)*	**R215.03-04000CAC01G**	0.75	57	0.75	6	☆
		4	4	*(.157)*	**R215.04-04000CAC01G**	1	63	1.0	8	☆
		4	4	*(.157)*	**R215.04-04000DAC02G**	1.5	63	1.5	8	☆
		4	5	*(.194)*	**R215.04-05000EAC02G**	2	72	2.0	10	☆
		4	5	*(.194)*	**R215.04-05000FAC03G**	2.5	72	2.5	10	☆
		4	5	*(.194)*	**R215.04-05000GAC03G**	3	83	3.0	12	☆
		4	6	*(.236)*	**R215.04-06000IAC04G**	4	83	4.0	14	☆
		4	6	*(.236)*	**R215.04-06000KAC05G**	5	92	5.0	16	☆
		4	8	*(.315)*	**R215.04-08000MAC06G**	6	104	6.0	20	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R215.03-04000BAC01G 1620

Chamfering, ISO-P, M, K, N, S, H

Endmill designed for chamfering

- For 30° and 45° chamfer.
- For 0.5-6 mm radius.

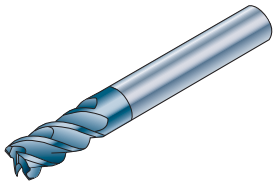
v_c Cutting data, see page 171.

High performance roughing/finishing endmill

Inch sizes

Hardness 43HRc to 63HRc

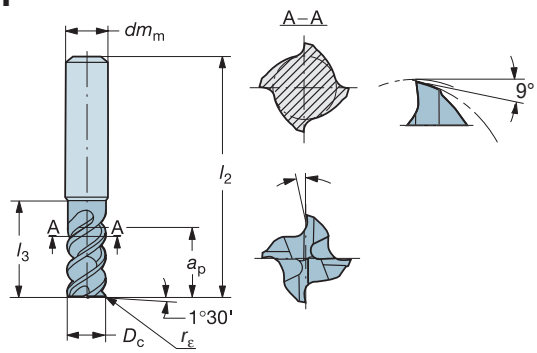
Variable flute depth



Material:

H

Helix angle: ~50°
Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	z_n	D_c inch	Ordering code	l_2	l_3	Max a_p[1]	dm_m	Radius r_ε	Grade 1620
Cylindrical		3	.187	**RA216.23-1250AAK06H**	3.000	.750	.375	.250	.015	☆
		3	.187	**1250BAK06H**	3.000	.750	.375	.250	.031	☆
		4	.250	**RA216.24-1650AAK08H**	3.000	–	.500	.250	.015	☆
		4	.250	**1650BAK08H**	3.000	–	.500	.250	.031	☆
		4	.312	**2050AAK10H**	3.500	1.250	.625	.375	.015	☆
		4	.312	**2050BAK10H**	3.500	1.250	.625	.375	.031	☆
		4	.375	**2450AAK12H**	3.500	–	.750	.375	.015	☆
		4	.375	**2450BAK12H**	3.500	–	.750	.375	.031	☆
		4	.500	**3250BAK16H**	4.000	–	1.000	.500	.031	☆
		4	.500	**3250DAK16H**	4.000	–	1.000	.500	.062	☆
		4	.625	**4050DAK20H**	4.500	–	1.250	.625	.062	☆
		4	.750	**4850DAK24H**	5.000	–	1.500	.750	.062	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA216.23-1250AAK06H 1620

ISO-H

For warm work steels ≥ 43 HRc.

For cold work steels ≥ 52 HRc.

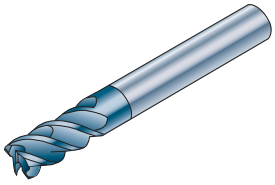
- If you experience problems with this endmill we recommend reducing the engagement, as hardened steels are very demanding.
- For higher productivity when finishing, we recommend an endmill with more edges.

v_c Cutting data, see page 171.

Roughing endmill

Metric sizes

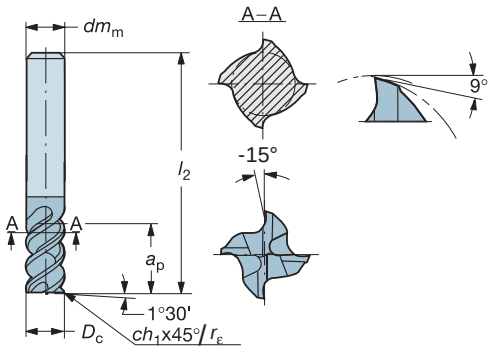
Variable flute depth tools
Hardness 43HRc to 63HRc



Material:

P H

Helix angle: ~50°
Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	z_n	D_c mm	D_c inch	Ordering code	l_2	Max a_p[1]	dm_m	ch_1	Radius r_ε	Grade 1620
Cylindrical					γ_0 = –15°						
		3	2	(.079)	**R216.23-02050BAK70H**	57	7	6	–	0.5	☆
		3	3	(.118)	**03050BAK08H**	57	8	6	–	0.5	☆
		3	4	(.157)	**04050CAK11H**	57	11	6	–	1	☆
		3	5	(.197)	**05050CAK13H**	57	13	6	–	1	☆
		4	6	(.236)	**R216.24-06050CAK13H**	65	13	6	–	1	☆
		4	8	(.315)	**08050EAK19H**	80	19	8	–	2	☆
		4	10	(.394)	**10050EAK22H**	100	22	10	–	2	☆
		4	12	(.472)	**12050GAK26H**	100	26	12	–	3	☆
		4	14	(.551)	**14050GAK26H**	104	26	14	–	3	☆
		4	16	(.630)	**16050IAK32H**	115	32	16	–	4	☆
		4	20	(.787)	**20050IAK38H**	125	38	20	–	4	☆
		3	2	(.079)	**R216.33-02050-AK70H**	57	7	6	0.12	–	☆
		3	3	(.118)	**03050-AK08H**	57	8	6	0.12	–	☆
		3	4	(.157)	**04050-AK11H**	57	11	6	0.12	–	☆
		3	5	(.197)	**05050-AK13H**	57	13	6	0.12	–	☆
		4	6	(.236)	**R216.34-06050-AK13H**	65	13	6	0.12	–	☆
		4	8	(.315)	**08050-AK19H**	80	19	8	0.12	–	☆
		4	10	(.394)	**10050-AK22H**	100	22	10	0.12	–	☆
		4	12	(.472)	**12050-AK26H**	100	26	12	0.12	–	☆
		4	14	(.551)	**14050-AK26H**	104	26	14	0.15	–	☆
		4	16	(.630)	**16050-AK32H**	115	32	16	0.15	–	☆
		4	20	(.787)	**20050-AK38H**	125	38	20	0.15	–	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.23-02050BAK70H 1620

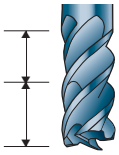
Variable flute depth, ISO-P, H

For warm work steels ≥43HRc.
For cold work steels ≥52HRc.

- If you experience problems with this endmill we recommend you reduce the engagement since hardened steels are very demanding.
- For higher productivity when finishing, we recommend an endmill with more edges.

Core: 85% of D_c

Core: 50% of D_c
Length: 1 x D_c



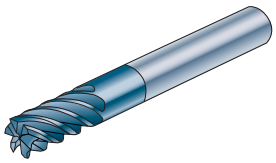
v_c Cutting data, see page 171.

High performance finishing endmill

Inch sizes

Non center cutting

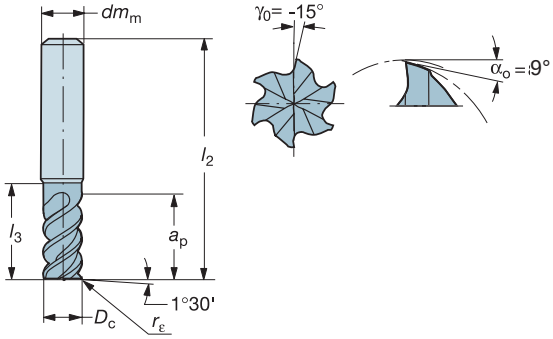
Hardness from 43HRc to 63HRc



Material:

P H

Helix angle: ~50°
Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	z_n	D_c inch	Ordering code	l_2	l_3	Max a_p[1]	dm_m	Radius r_ε	Grade 1610
Cylindrical				With radius						
		4	.125	**RA215.24-0850AAK04H**	3.000	.500	.250	.250	.015	☆
		6	.187	**RA215.26-1250AAK06H**	3.000	.750	.375	.250	.015	☆
		6	.250	**1650AAK08H**	3.000	–	.500	.250	.015	☆
		6	.375	**2450BAK12H**	3.500	–	.750	.375	.031	☆
		6	.500	**3250BAK16H**	4.000	–	1.000	.500	.031	☆
		6	.625	**4050DAK20H**	4.500	–	1.250	.625	.062	☆
		8	.750	**RA215.28-4850DAK24H**	5.000	–	1.500	.750	.062	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA215.24-0850-AAK04H 1610

For finishing applications in warm work steels ≥ 43 HRc.
For finishing applications in cold work steels ≥ 52 HRc.

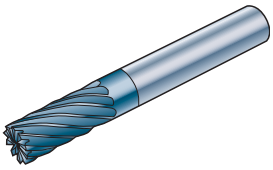
- For higher productivity when working with very small a_e, try the "Multiflute", bottom of page.
- If the chip room is not large enough try an endmill with four cutting edges.

High performance finishing endmill

Inch sizes

Non center cutting

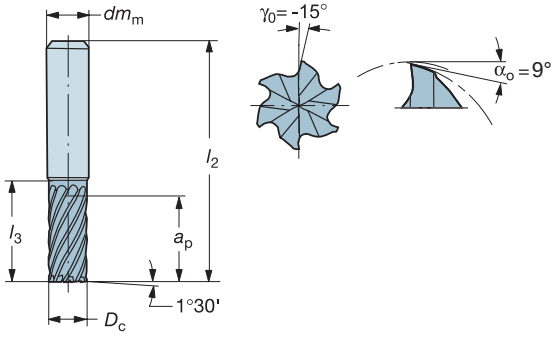
Hardness from 43HRc to 63HRc



Material:

P H

Helix angle: ~30°
Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	z_n	D_c inch	Ordering code	l_2	l_3	Max a_p[1]	dm_m	ch_1	Grade 1610
Cylindrical		6	.250	**RA215.36-1630-AK08H**	2.000	–	.500	.250	.015	☆
		10	.375	**RA215.3A-2430-AK12H**	2.500	–	.750	.375	.015	☆
		12	.500	**RA215.3C-3230-AK16H**	3.000	–	1.000	.500	.015	☆
		16	.625	**RA215.3G-4030-AK20H**	3.500	–	1.250	.625	.015	☆
		16	.750	**RA215.3G-4830-AK24H**	4.000	–	1.500	.750	.015	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces RA215.36-1630-AS08H 1610

For finishing applications in warm work steels ≥ 43 HRc.

For finishing applications in cold work steels ≥ 52 HRc.

- For highest productivity when working with very small ae. If the chip room is not large enough try an endmill with six cutting edges and 50° helix.

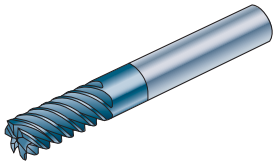
v_c Cutting data, see page 170.

Finishing endmill

Metric sizes

Non center cutting

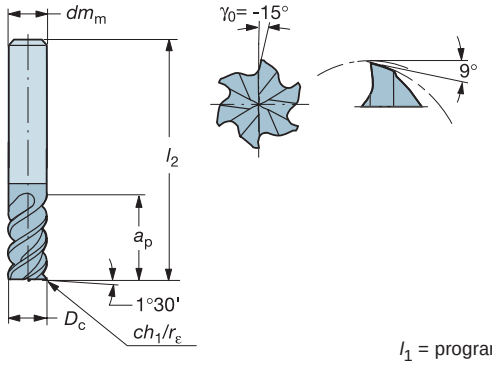
Hardness 43≤HRc≤63



Material: P H

Helix angle: ~50°

Tolerances: D_c — h10, dm_m — h6



l_1 = programming length

Shank type	Front type	z_n	D_c mm	*inch*	Ordering code	l_2	Max a_p[1)]	dm_m	ch_1	Radius r_ε	Grade 1610
Cylindrical		4	3	*(.118)*	**R215.34-03050-AC08H**	57	8	6	0.07	–	☆
		4	4	*(.157)*	**04050-AC11H**	57	11	6	0.07	–	☆
		6	6	*(.236)*	**R215.36-06050-AC13H**	57	13	6	0.12	–	☆
		6	8	*(.315)*	**08050-AC19H**	63	19	8	0.12	–	☆
		6	10	*(.394)*	**10050-AC22H**	72	22	10	0.20	–	☆
		6	12	*(.472)*	**12050-AC26H**	83	26	12	0.20	–	☆
		6	16	*(.630)*	**16050-AC32H**	92	32	16	0.20	–	☆
		8	20	*(.787)*	**R215.38-20050-AC38H**	104	38	20	0.30	–	☆
		4	3	*(.118)*	**R215.24-03050BAC08H**	57	8	6	–	0.5	☆
		4	4	*(.157)*	**04050BAC11H**	57	11	6	–	0.5	☆
		6	6	*(.236)*	**R215.26-06050BAC13H**	57	13	6	–	0.5	☆
		6	8	*(.315)*	**08050BAC19H**	63	19	8	–	0.5	☆
		6	10	*(.394)*	**10050CAC22H**	72	22	10	–	1.0	☆
		6	10	*(.394)*	**10050DAC22H**	72	22	10	–	1.5	☆
		6	10	*(.394)*	**10050EAC22H**	72	22	10	–	2.0	☆
		6	12	*(.472)*	**12050CAC26H**	83	26	12	–	1.0	☆
		6	16	*(.630)*	**16050DAC32H**	92	32	16	–	1.5	☆
		8	20	*(.787)*	**R215.28-20050DAC38H**	104	38	20	–	1.5	☆

[1)] Maximum cutting edge length.

Ordering example: 10 pieces R215.34-03050-AC08H 1610

6-50°H, ISO-P, H

For finishing applications in warm work steels ≥ 43 HRc.
For finishing applications in cold work steels≥52HRc.

- For higher productivity when working with very small a_e, try the multiflute.
- If the chip room is not large enough try an endmill with four cutting edges and 50° helix.

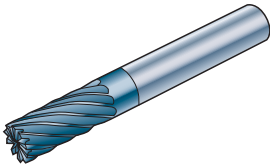
v_c Cutting data, see page 170.

Finishing endmill

Metric sizes

Non center cutting

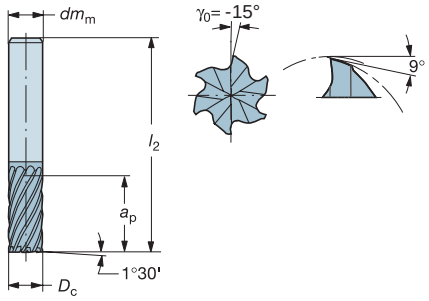
Hardness 43≤HRc≤63



Material:

H

Helix angle: ~30°
Tolerances: D_c — h10
dm_m — h6

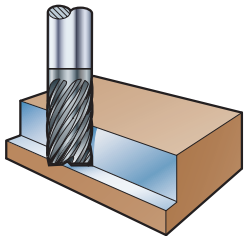


Shank type	Front type	z_n	D_c mm	D_c inch	Ordering code	Dimensions, mm l_2	Max a_p 1)	dm_m	Grade 1610
Cylindrical		6	5	(.194)	**R215.36-05030-AC13H**	57	13	6	☆
		6	6	(.236)	**R215.36-06030-AC13H**	57	13	6	☆
		8	8	(.315)	**R215.38-08030-AC19H**	63	19	8	☆
		10	10	(.394)	**R215.3A-10030-AC22H**	72	22	10	☆
		12	12	(.472)	**R215.3C-12030-AC26H**	83	26	12	☆
		14	14	(.551)	**R215.3E-14030-AC26H**	83	26	14	☆
		16	16	(.630)	**R215.3G-16030-AC32H**	92	32	16	☆
		16	20	(.787)	**R215.3G-20030-AC38H**	104	38	20	☆

1) Maximum cutting edge length.

Ordering example: 10 pieces R215.36-05030-AC13H 1610

Best surface in hardened steel



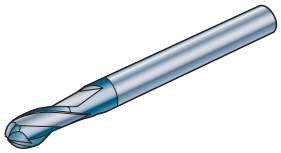
Tool: R215.3A-10030-AC22H
Grade: 1610
Material: Tool steel 56 HRC
Cutting depths: a_p = 20 mm, a_e = 0.3 mm

	Test 1
Speed v_c, m/min	100
Feed/tooth f_z, m/tooth	0.025
Feed v_f, mm/min	804
Method	Climb milling
Surface finish R_a, µm	0.13
Tool life, min	85

Ball nose endmill

Metric sizes

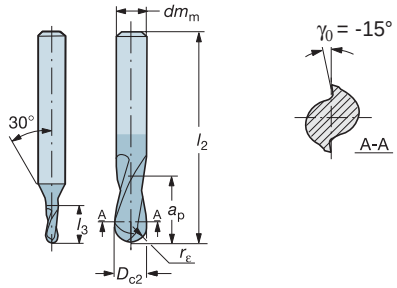
Hardness 43≤HRc≤63



Material:

P H

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6



Shank type	Front type	D_{c2} mm	D_{c2} inch	Ordering code	Dimensions, mm r_ε±0,01	l_2	l_3	Max a_p 1)	dm_m	Grade 1610
Cylindrical	z_n = 2	1	(.039)	**R216.42-01030-AK15H**	0.5	57	3	1.5	6	☆
		1.5	(.059)	**01530-AK20H**	0.75	57	4	2	6	☆
		2	(.079)	**02030-AK25H**	1.0	57	6	2.5	6	☆
		2.5	(.098)	**02530-AK30H**	1.25	57	6	3	6	☆
		3	(.118)	**03030-AK04H**	1.5	57	7	4	6	☆
		4	(.157)	**04030-AK05H**	2.0	80	8	5	6	☆
		5	(.194)	**05030-AK06H**	2.5	80	10	6	6	☆
		6	(.236)	**06030-AK07H**	3.0	80	–	7	6	☆
		8	(.315)	**08030-AK09H**	4.0	100	–	9	8	☆
		10	(.394)	**10030-AK11H**	5.0	100	–	11	10	☆
		12	(.472)	**12030-AK12H**	6.0	100	–	12	12	☆

1) Maximum cutting edge length.

Ordering example: 10 pieces R216.42-01030-AK15H 1610

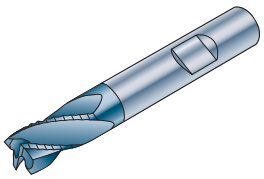
Vc Cutting data, see page 170.

Roughing endmill

Metric sizes

Kordell

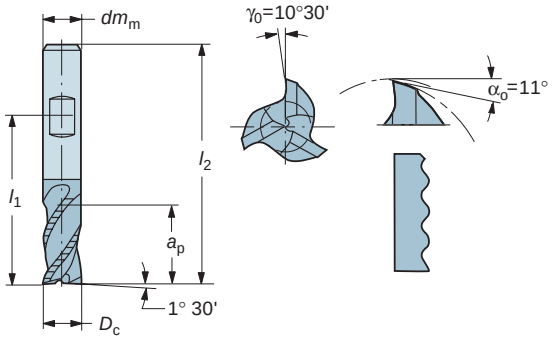
Hardness <28HRc



Material: P M K

Helix angle: ~30°, 40°

Tolerances: D_c — h14, dm_m — h6



Shank type	Front type	Ordering code	D_c mm	D_c inch	l_1	l_2	Max a_p [1]	dm_m	Grade 1640
Weldon	z_n = 3	Short							
		R216.33-06030-BS07K	6	(.236)	36	54	7	6	☆
		08030-BS09K	8	(.315)	40	58	9	8	☆
		10030-BS11K	10	(.394)	46	66	11	10	☆
		12030-BS12K	12	(.472)	50.5	73	12	12	☆
		14030-BS14K	14	(.551)	52.5	75	14	14	☆
		16030-BS16K	16	(.630)	58	82	16	16	☆
		18030-BS18K	18	(.709)	60	84	18	18	☆
		20030-BS20K	20	(.787)	67	92	20	20	☆
	z_n = 4	Long							
		R216.34-06040-BC13K	6	(.236)	39	57	13	6	☆
		08040-BC19K	8	(.315)	45	63	19	8	☆
		10040-BC22K	10	(.394)	52	72	22	10	☆
		12040-BC26K	12	(.472)	60.5	83	26	12	☆
		14040-BC26K	14	(.551)	60.5	83	26	14	☆
		16040-BC32K	16	(.630)	68	92	32	16	☆
		18040-BC32K	18	(.709)	68	92	32	18	☆
		20040-BC38K	20	(.787)	79	104	38	20	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.33-06030-BS07K 1640

Kordell, ISO-P, M, K

Primarily for roughing in steel <28HRc, stainless and cast iron.

- For materials >28HRc we recommend our endmill with variable flute depth.
- If you experience problems with these endmills, primarily chipping, we recommend our endmill with variable flute depth.

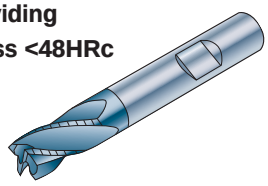
v_c Cutting data, see page 172.

Roughing endmill

Metric sizes

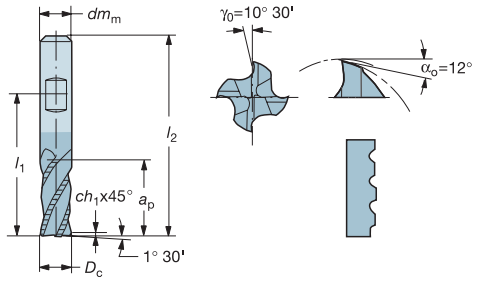
Chip dividing

Hardness <48HRc



Material: S Titanium

Helix angle: ~30°
Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	z_n	D_c mm	*inch*	Ordering code	l_1	l_2	Max a_p[1]	dm_m	ch_1	Grade 1620
Weldon		4	6	*(.236)*	**R216.34-06030-BC13B**	39	57	13	6	–	☆
		4	8	*(.315)*	**08030-BC19B**	45	63	19	8	–	☆
		4	10	*(.394)*	**10030-BC22B**	52	72	22	10	0.12	☆
		4	12	*(.472)*	**12030-BC26B**	60.5	83	26	12	0.12	☆
		4	14	*(.551)*	**14030-BC26B**	60.5	83	26	14	0.15	☆
		4	16	*(.630)*	**16030-BC32B**	68	92	32	16	0.15	☆
		4	18	*(.709)*	**18030-BC32B**	68	92	32	18	0.15	☆
		4	20	*(.787)*	**20030-BC38B**	79	104	38	20	0.15	☆
		5	25	*(.984)*	**R216.35-25030-BC45B**	93	125	45	25	0.15	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.34-06030-BC13B 1620

Chip dividing, ISO-S

Primarily for roughing in titanium <48HRc.

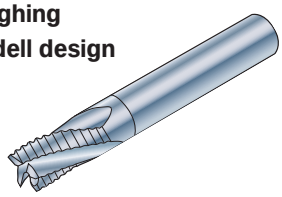
- The design shows the best improvement at large axial depth of cut.
- If you experience chipping with this tool then the toughness demands in your application are too high for this geometry and we would recommend using the endmill with variable flute depth.

High performance aluminum endmill

Metric sizes

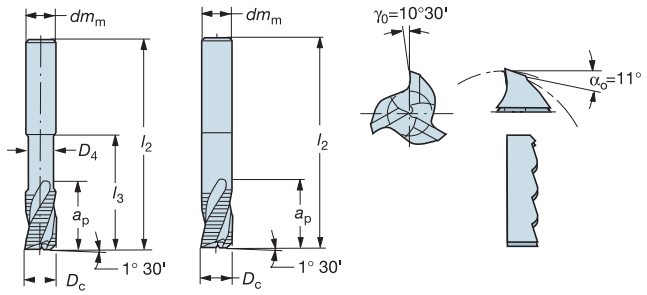
Roughing

Kordell design



Material: N

Helix angle: ~40°
Tolerances: D_c — h14
dm_m — h6



Shank type	Front type	D_c mm	Ordering code	l_2	Max a_p[1]	dm_m	l_3	D_4	Grade H10F
Cylindrical	z_n = 3		Long						
		6	**R216.33- 06040-AC13U**	57	13	6	–	–	☆
		8	**08040-AC19U**	63	19	8	–	–	☆
		10	**10040-AC22U**	72	22	10	–	–	☆
		12	**12040-AC26U**	83	26	12	–	–	☆
		14	**14040-AC26U**	83	26	14	–	–	☆
		16	**16040-AC32U**	92	32	16	–	–	☆
		18	**18040-AC32U**	92	32	18	–	–	☆
		20	**20040-AC38U**	104	38	20	–	–	☆
			Extra long						
		6	**R216.33- 06040-AJ10U**	63	10	8	24	5.6	☆
		8	**08040-AJ12U**	72	12	10	29	7.5	☆
		10	**10040-AJ14U**	83	14	12	35	9.3	☆
		12	**12040-AJ16U**	100	16	12	50	11.5	☆
		16	**16040-AJ20U**	115	20	16	63	15.5	☆
		20	**20040-AJ20U**	125	20	20	70	19.5	☆
		25	**25040-AJ25U**	135	25	25	75	24.0	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.33-06040-AC13U H10F

Aluminum, Kordell, ISO-N

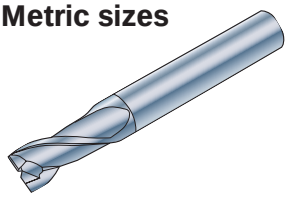
FIRST CHOICE for roughing of Aluminum.

- Kordell-geometry for reduced cutting forces and improved chip-evacuation.
- Always use the shortest possible tool protrusion.
- When the rough finish produced by Kordell-geometry is not acceptable try the straight cutting edge.
- For Aluminum with a higher Si.-content a coated Kordell endmill could be more productive, see page 166.

v_c Cutting data, see page 171.

High performance aluminum endmill

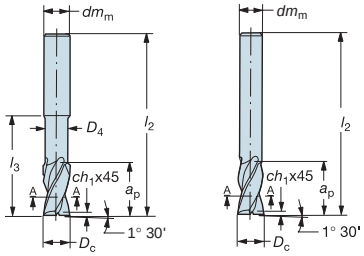
Metric sizes



Material:

N

Helix angle: ~30°, ~25°, ~25°
Tolerances: D_c — h10
dm_m — h6



Shank type	Front type	Ordering code	D_c mm	(inch)	l_2	Max a_p[1]	dm_m	D_4	l_3	ch_1	Grade H10F
Cylindrical	z_n = 2										
		Normal									
		R216.32- 02030-AC60A	2	(.079)	57	6	6	–	–	–	☆
		03030-AC07A	3	(.118)	57	7	6	–	–	–	☆
		04030-AC08A	4	(.157)	57	8	6	–	–	–	☆
		05030-AC10A	5	(.197)	57	10	6	–	–	–	☆
		06030-AC10A	6	(.236)	57	10	6	–	–	–	☆
		08030-AC16A	8	(.315)	63	16	8	–	–	–	☆
		10030-AC19A	10	(.394)	72	19	10	–	–	0.12	☆
		12030-AC22A	12	(.472)	83	22	12	–	–	0.12	☆
		Long									
		R216.32- 02025-AK80A	2	(.079)	57	8	6	–	10	–	☆
		03025-AK12A	3	(.118)	57	12	6	–	15	–	☆
		04025-AK14A	4	(.157)	57	14	6	–	18	–	☆
		05025-AK16A	5	(.197)	57	16	6	–	–	–	☆
		06025-AK22A	6	(.236)	65	22	6	–	–	–	☆
		08025-AK28A	8	(.315)	80	28	8	–	–	–	☆
		10025-AK32A	10	(.394)	90	32	10	–	–	0.12	☆
		12025-AK38A	12	(.472)	100	38	12	–	–	0.12	☆
		Extra long									
		R216.32- 02025-AP30A	2	(.079)	57	3	6	1.9	6	–	☆
		03025-AP04A	3	(.118)	57	4	6	2.9	7	–	☆
		04025-AP06A	4	(.157)	57	6	6	3.8	10	–	☆
		05025-AP08A	5	(.197)	57	8	6	4.8	16	–	☆
		06025-AP10A	6	(.236)	65	10	6	5.7	28	–	☆
		08025-AP12A	8	(.315)	80	12	8	7.7	35	–	☆
		10025-AP14A	10	(.394)	90	14	10	9.7	45	0.12	☆
		12025-AP16A	12	(.472)	100	16	12	11.7	50	0.12	☆
		16025-AP20A	16	(.630)	115	20	16	15.5	63	0.15	☆
		20025-AP20A	20	(.787)	125	20	20	19.5	70	0.15	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.32-02030-AC60A H10F

Aluminum, General, ISO-N

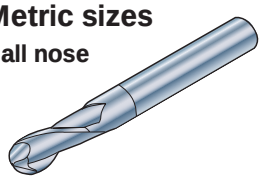
For general machining/finishing of Aluminum.

- Always use the shortest possible tool protrusion.
- For roughing try the Kordell cutters.
- For Aluminum with a higher Si.-content a coated endmill could be more productive.

High performance aluminum endmill

Metric sizes

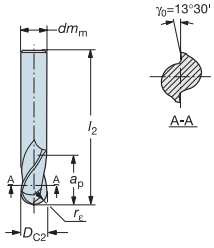
Ball nose



Material:

N

Helix angle: ~30°
Tolerances: D_{c2} — h9
dm_m — h6

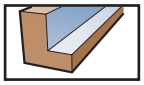
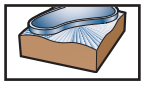
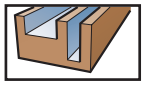


Shank type	Front type	Ordering code	D_{c2} mm	r_ε±0.01	l_2	Max a_p[1]	dm_m	Grade H10F
Cylindrical	z_n = 2							
		R216.42- 02030-AK60A	2	1	57	6	6	☆
		03030-AK07A	3	1.5	80	7	6	☆
		04030-AK08A	4	2	80	8	6	☆
		05030-AK10A	5	2.5	80	10	6	☆
		06030-AK10A	6	3	80	10	6	☆
		08030-AK16A	8	4	100	16	8	☆
		10030-AK19A	10	5	100	19	10	☆
		12030-AK22A	12	6	100	22	12	☆
		16030-AK26A	16	8	100	26	16	☆

[1] Maximum cutting edge length.

Ordering example: 10 pieces R216.42-02030-AK60A H10F

v_c Cutting data, see page 171.

Code key for solid carbide endmills

Metric tools

R	2	1	5	.	3	A	-	1	0	0	3	0	-	A	C	2	2	H
1		3		4			5		6			7		8	9	10	11	12	13

Inch tools

R	A	2	1	5	.	3	A	-	1	0	3	0	A	A	C	2	2	H
1	2		3		4		5		6			7		8	9	10	11	12	13

1 Direction of rotation

R	Right hand
L	Left hand

2 System of measurement

A	Inch version

3 Type of tool

21	Endmill

4 Drilling function

5	Non drilling
6	Drilling

5 Basic design of endmill

0	Concave chamfer endmill
1	Square form with/without corner chamfer, tight tolerance at D_c
2	Square form with corner radius
3	Square form with or without corner chamfer
4	Full radius (ball nose) form (6 or less teeth)
5	Conical full radius (ball nose) form (6 or less teeth)
6	Full radius (ball nose) with spherical form
7	Conical straight form
8	45° chamfer endmill
9	30° chamfer endmill
T	Turn-mill endmill

6 Number of teeth

1 - 9	1 to 9 teeth
A -Z	10 to 32 teeth

7 Cutting diameter

Metric tools

Cutting diameter D_c or D_3 in 1/10 mm.
Example: **100** = 10.0 mm

Inch Tools

Cutting diameter D_c or D_3 in 1/64 inch.
Example: **10** = 5/32 inch

8 Helix angle

Degree of helix rounded to nearest 5 degree

9 Corner radius

Metric tools

–	No radius	C	1.0 mm
A	<0.5 mm	D	1.5 mm
B	0.5 mm	E	2.0 mm
		F	2.5 mm
		Etc.	Etc.

Inch tools

–	No radius	D	1/16 inch
A	1/64 inch	E	5/64 inch
B	1/32 inch	F	3/32 inch
C	3/64 mm	Etc.	Etc.

10 Shank type

A	Cylindrical
B	Weldon

11 Length of shank

S	Short shank length	**E**	Short l_2 and l_3 or l_{22}
C	Long shank length	**I**	Medium l_2 medium l_3 or l_{22}
K	Shank length > "C"	**J**	Medium l_2, long l_3 or l_{22}
L	Shank length > "K"	**O**	Long l_2, medium l_3 or l_{22}
X	Shank length > "L"	**P**	Long l_2, long l_3 or l_{22}

12 Max. cutting depth, a_p

Metric tools

Cutting length in mm
If D_c or D_{c2} < 3mm in 1/10 mm
Example: **07** = 7 mm for D_c 6 mm
70 = 7 mm for D_c 2,5 mm

Inch tools

Cutting length in 1/16 inch
If D_c or D_{c2} < 1/8 in 1/64 inch
Example: **09** = 9/16 inch for D_c 3/16 inch

13 Geometry type

	Cutting edge	TW % of D_c or D_3	Rake angle γ°		Cutting edge	TW % of D_c or D_3	γ°
K	Kordell	50–60	9°–12°	**N**	Straight	56–65	9°–12°
B	Chip breaker	60	4°–7°	**L**	Straight	66–75	4°–12°
U	Kordell	<50	9°–12°	**G**	Straight	50–75	–3°–3°
A	Straight	<45	12°–15°	**H**	Straight	>75	<–3°
P	Straight	45–55	9°–12°				

TW = Core diameter

Cutting data recommendations

Vibrations will affect the quality of the surface texture and will also have a negative effect on tool life and machining time. The fundamental action to take when vibrations occur is to reduce the cutting forces.

High security demands in HSM

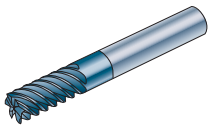
The machine tools used for HSM must be safely guarded, as splinters or parts of damaged tools might cause accidents. High speed machinery has to be “bullet proof”.

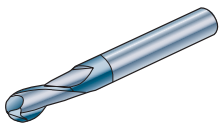
Dry milling extends tool life

CoroMill Plura endmills are developed to withstand constant, high cutting speeds and temperatures. Their performance regarding tool life and reliability is, in most cases, much better suited to a dry environment. Tool life improvements of more than 40 % are not unusual.

CoroMill® Plura

GC1610

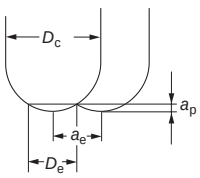


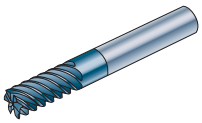


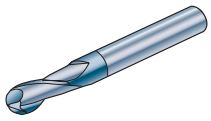
			$a_e < .1 \times D_c$ $a_p < .5 \times D_c$		$a_e < .05 \times D_c$ $a_p < 1 \times D_c$		$a_e < .1 \times D_c$ $a_p < .1 \times D_c$		$a_e < .01 \times D_c$ $a_p < .01 \times D_c$	
ISO	**HB**	**HRC**	v_e m/min	v_c feet/min	v_e m/min	v_c feet/min	v_e m/min	v_c feet/min	v_e m/min	v_c feet/min
P	**400**		170	560	200	660	320	1050	815	2650
	450		150	490	180	590	280	920	715	2350
K	**200**		265	870	300	980	510	1650	1300	4250
	250		220	720	255	840	420	1400	1070	3500
H		**48**	130	430	170	560	270	890	680	2250
		52	120	390	155	510	210	690	600	1950
		55	105	340	110	360	200	660	425	1400
		58	75	250	90	300	145	480	370	1200
		60	65	210	80	260	130	430	320	1050
		62	60	200	65	210	100	330	265	850

CoroMill® Plura

GC1610







Metric

$$n = \frac{v_e \times 1000}{\pi \times D_e} \quad \text{(rpm)}$$

$$v_f = n \times f_z \times z \quad \text{(mm/min)}$$

$$D_e = 2 \times \sqrt{a_p \times (D_c - a_p)} \quad \text{(mm)}$$

Inch

$$n = \frac{v_c \times 12}{\pi \times D_e} \quad \text{(rpm)}$$

$$v_f = n \times f_z \times z \quad \text{(inch/min)}$$

$$D_e = 2 \times \sqrt{a_p \times (D_c - a_p)} \quad \text{(inch)}$$

				$a_e < .1 \times D_c$ $a_p < .1 \times D_c$		$a_e < .01 \times D_c$ $a_p < .01 \times D_c$	
D_c mm	D_c inch	f_z mm/tooth	f_z inch/tooth	f_z mm/tooth	f_z inch/tooth	f_z mm/tooth	f_z inch/tooth
1	.039	–	–	0.015	.0006	0.040	.0016
2	.079	–	–	0.035	.0014	0.055	.0022
3	.118	0.040	.0016	0.050	.0020	0.070	.0028
3.175	.125 (1/8”)	0.041	.0016	0.055	.0022	0.072	.0028
4	.157	0.045	.0018	0.080	.0031	0.080	.0031
4.76	.188 (3/16”)	0.037	.0015	0.088	.0034	0.088	.0034
5	.197	0.035	.0014	0.090	.0035	0.090	.0035
6	.236	0.030	.0012	0.100	.0039	0.100	.0039
6.35	.250 (1/4”)	0.034	.0014	0.103	.0040	0.103	.0040
8	.315	0.055	.0022	0.115	.0045	0.115	.0045
9.525	.375 (3/8”)	0.066	.0026	0.123	.0048	0.123	.0048
10	.394	0.070	.0028	0.125	.0049	0.125	.0049
12	.472	0.075	.0030	0.140	.0055	0.140	.0055
12.7	.500 (1/2”)	0.078	.0031	0.144	.0056	0.144	.0056
15.875	.625 (5/8”)	0.090	.0035	–	–	–	–
16	.630	0.090	.0035	0.160	.0063	0.160	.0063
19.05	.750 (3/4”)	0.098	.0038	–	–	–	–

For more specific cutting data ask for our new version of CD PluraGuide.

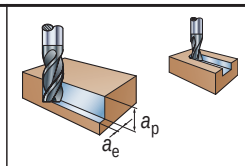
The software should be installed in a PC, minimum Windows 3.1.

(C-2948:036)

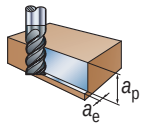
Cutting data recommendations

CoroMill® Plura

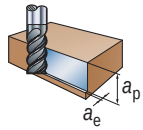
GC1620
GC1630
H10F



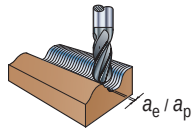
$a_p \times a_e > D_c$



$a_p \times a_e < D_c$



$a_e \leq 0.05 \times D_c$

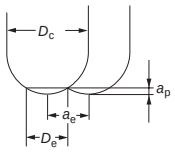


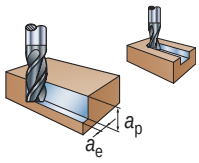
$a_e \leq 0.05 \times D_c$
$a_p \leq 0,05 \times D_c$

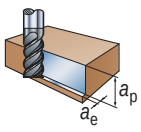
ISO	CMC	HB	HRC	v_e m/min	v_e feet/min	v_e m/min	v_e feet/min	v_e m/min	v_e feet/min	v_e m/min	v_e feet/min
P	01.1	125		155	510	200	660	375	1230	690	2260
	01.2	150		135	440	185	610	340	1120	630	2070
	01.4	200		120	390	140	460	255	840	470	1540
	02.2	250		100	330	130	430	245	800	450	1480
	02.2	300		90	300	120	390	220	720	410	1350
	03.22	400		75	250	95	310	180	590	335	1100
	03.22	450		65	210	85	280	160	520	300	980
M	05.11	200		60	200	90	300	165	540	300	980
	05.21	200		60	200	75	250	145	480	270	890
	05.51	230		45	150	55	180	110	360	200	660
K	07.1	150		135	440	180	590	330	1080	610	2000
	09.2	200		100	330	130	430	240	790	440	1440
	08.1	180		85	280	110	360	210	690	385	1260
N	30.22	90		1000	3280	1100	3610	1250	4100	1300	4270
S	20.22	350		25	80	35	110	60	200	115	380
	23.22	350		45	150	60	200	115	380	215	710
H	04.1	50		55	180	80	260	GC1610			
		55		-	-	55	180				
		60		-	-	40	130				

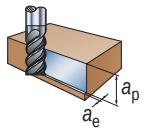
CoroMill® Plura

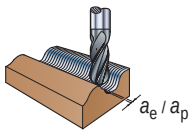
GC1620
GC1630
H10F











Metric

$$n = \frac{v_e \times 1000}{\pi \times D_e} \quad \text{(rpm)}$$

$$v_f = n \times f_z \times z \quad \text{(mm/min)}$$

$$D_e = 2 \times \sqrt{a_p \times (D_c - a_p)} \quad \text{(mm)}$$

Inch

$$n = \frac{v_c \times 12}{\pi \times D_e} \quad \text{(rpm)}$$

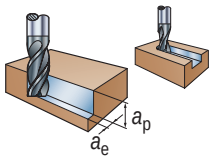
$$v_f = n \times f_z \times z \quad \text{(inch/min)}$$

$$D_e = 2 \times \sqrt{a_p \times (D_c - a_p)} \quad \text{(inch)}$$

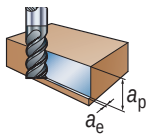
D_c mm	D_c inch	f_z mm/tooth	f_z inch/tooth	f_z mm/tooth	f_z inch/tooth	f_z mm/tooth	f_z inch/tooth	f_z mm/tooth	f_z inch/tooth
0.5	.020	*Plura Guide*							
1	.039	0.002	0.0001	0.002	0.0001	0.013	0.0005	0.023	0.0009
2	.079	0.004	0.0002	0.003	0.0001	0.032	0.0013	0.056	0.0022
3	.118	0.006	0.0002	0.007	0.0003	0.039	0.0015	0.07	0.0028
3.175	.125 (1/8")	0.006	0.0003	0.008	0.0003	0.040	0.0016	0.072	0.0028
4	.157	0.008	0.0003	0.014	0.0006	0.045	0.0018	0.08	0.0031
4.76	.188 (3/16")	0.010	0.0004	0.019	0.0008	0.046	0.0018	0.078	0.0031
5	.197	0.011	0.0004	0.021	0.0008	0.046	0.0018	0.078	0.0031
6	.236	0.014	0.0006	0.03	0.0012	0.055	0.0022	0.099	0.0039
6.35	.250 (1/4")	0.015	0.0006	0.031	0.0012	0.056	0.0022	0.102	0.0040
8	.315	0.020	0.0008	0.033	0.0013	0.063	0.0025	0.114	0.0045
9.525	.375 (3/8")	0.025	0.0010	0.050	0.0020	0.069	0.0027	0.124	0.0049
10	.394	0.027	0.0011	0.055	0.0022	0.071	0.0028	0.127	0.0050
12	.472	0.036	0.0014	0.071	0.0028	0.077	0.0030	0.139	0.0055
12.7	.500 (1/2")	0.039	0.0015	0.074	0.0029	0.079	0.0031	0.143	0.0056
15.875	.625 (5/8")	0.054	0.0021	0.089	0.0035	0.089	0.0035	0.160	0.0063
16	.630	0.055	0.0022	0.09	0.0035	0.089	0.0035	0.161	0.0063
19.05	.750 (3/4")	0.073	0.0029	0.105	0.0041	0.097	0.0038	0.175	0.0069
20	.787	0.078	0.0031	0.11	0.0043	0.1	0.0039	0.18	0.0071
25	.787	0.11	0.0043	0.11	0.0043	0.11	0.0043	—	—

Speed recommendations

CoroMill® Fura
GC1640



$a_p \times a_e \leq D_c$

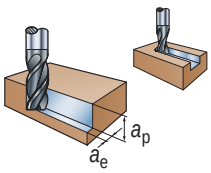


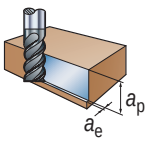
$a_p \times a_e < 0{,}5 \times D_c$

ISO	CMC	HB	v_c feet/min	v_e m/min	v_c feet/min	v_e m/min
P	01.1	125	475	145	525	160
	01.2	150	445	135	475	145
	01.4	200	330	100	360	110
	02.2	250	280	85	310	95
	02.2	300	260	80	280	85
	03.22	350	245	75	260	80
M	05.11	200	215	65	230	70
	05.21	200	165	50	180	55
	05.51	230	115	35	130	40
K	07.1	150	425	130	450	140
	09.2	200	345	105	375	115
	08.1	250	230	70	245	75
S	20.22	350	60	25	80	25
	23.22	350	130	40	150	45

Feed recommendations

CoroMill® Fura
GC1640





D_c inch	D_c mm	f_z inch/tooth	f_z mm/tooth	f_z inch/tooth	f_z mm/tooth
.236	6	.0005	0.013	.0007	0.019
.250 (¼")	6.35	.0005	0.013	.0009	0.022
.315	8	.0006	0.016	.0014	0.035
.375 (⅜")	9.525	.0009	0.023	.0016	0.041
.394	10	.0010	0.025	.0017	0.043
.472	12	.0012	0.031	.0022	0.055
.500 (½")	12.7	.0014	0.035	.0023	0.057
.625 (⅝")	15.875	.0020	0.052	.0027	0.068
.630	16	.0021	0.053	.0027	0.069
.750 (¾")	19.05	.0026	0.065	.0032	0.081
.787	20	.0027	0.069	.0033	0.085

Inch

$$n = \frac{v_c \times 12}{\pi \times D_c} \quad \text{(rpm)}$$

$$v_f = n \times f_z \times z_n \quad \text{(inch/min)}$$

Metric

$$n = \frac{v_e \times 1000}{\pi \times D_c} \quad \text{(rpm)}$$

$$v_f = n \times f_z \times z_n \quad \text{(mm/min)}$$