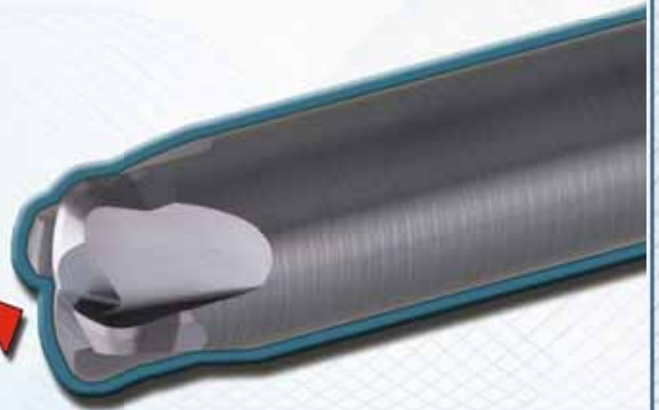




Hybrid High  
Feed Geometry



## FEED•ROUNDS™

### **Series 45A...RA 4-Flute Hi-Feed Endmills**

Ingersoll's series 45A...RA solid carbide Hi-Feed Endmill utilizes a special hybrid geometry cutting edge configuration that allows greatly increased feed rates. The resultant cutting forces are directed axially towards the spindle. This results in exceptional stability and enables machining at high feeds.

#### Features and Benefits

- 4 flutes for blistering feedrates
- An optimal solution for roughing operations
- Covers a wide range of applications, including slotting, pocketing, helical interpolation and 3D contouring
- Useful for machining materials such as hardened steel up to 65 HRC, P20, H13, cast iron, stainless steel, titanium and high alloy temperature alloys.

Tool Diameter Range: 0.250" – 0.500"

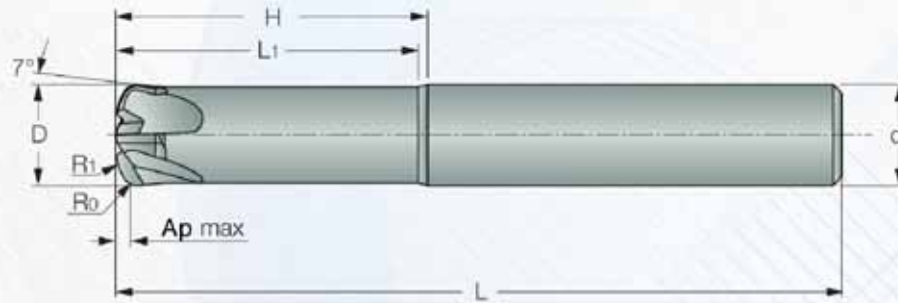
Number of Flutes: 4

Overall Length Range: 2.25" – 3.25"

Corner: 0.039" – 0.079"

Grade: IN2005

**Series 45A...RA**  
**4-Flute Hi-Feed Endmills**



Part Number	(D) Diameter	(Z) Flutes	Radius	(L) Overall	(Ap) Cut Length	Shank	(d) Shank Dia.
45A-2500R6RA03	0.250	4	0.039	2.25	0.012	C	0.250
45A-3100R7RA05	0.312	4	0.051	2.50	0.016	C	0.312
45A-3700R8RA06	0.375	4	0.063	2.85	0.020	C	0.375
45A-5000S4RA07	0.500	4	0.079	3.25	0.024	C	0.500

# FEED•ROUNDS™

Machining Recommendations

## RECOMMENDED SPEEDS

ISO	Material	Condition	Brinell	Hardness	SPEED (inch/min)		
				No.	V min	V max	
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	125	1	850	925
		>= 0.25 %C	Annealed	190	2	650	750
		< 0.55 %C	Quenched and tempered	250	3	525	725
		>= 0.55 %C	Annealed	220	4	525	725
			Quenched and tempered	300	5	450	600
	Low alloy steel and cast steel (less than 5% all element)	Annealed		200	6	525	600
				275	7	400	600
		Quenched and tempered		300	8	425	600
				350	9	450	600
	High alloyed steel, cast steel and tool steel.	Annealed	200	10	425	600	
		Quenched and tempered	325	11	225	400	
M	Stainless steel and cast steel	ferritic/martens.	200	12	250	525	
		martensitic	240	13	200	500	
		austenitic	180	14	200	400	
K	Cast iron nodular (GGG)	ferritic/pearlitic	180	15	275	850	
		pearlitic	260	16	425	800	
	Grey cast iron (GG)	ferritic	160	17	500	925	
		pearlitic	250	18	300	925	
	Malleable cast iron	ferritic	130	19	500	925	
		pearlitic	230	20	475	800	
N	Aluminum-wrought alloy	Not cureable	60	21	2650	2755	
		cured	100	22	2400	2755	
	Aluminum-cast, alloyed	<=12% Si	Not cureable	75	23	2625	2755
		cured	90	24	2400	2755	
	Copper alloys	>12% Si	High temp.	130	25	1050	1125
		>1% Pb	Free cutting	110	26	1325	1425
			Brass	90	27	1325	1425
			Electrolitic copper	100	28	890	1000
	Non metallic	Duroplastics, fiber plastics		29	0	0	
		hard rubber		30	0	0	
S	High temp. alloys	Fe based	Annealed	200	31	70	125
			Cured	280	32	70	100
	Super alloys	Ni or Co based	Annealed	250	33	70	100
			Cured	350	34	70	100
		Cast	320	35	100	225	
	Titanium			36	100	225	
	Ti alloys	Alpha+beta alloys cured		37	100	225	
H	Hardened steel	Hardened	55 HRC	38	100	175	
		Hardened	60 HRC	39	100	125	
	Chilled cast iron	Cast	400	40	200	275	
	Cast iron	Hardened	55 HRC	41	100	175	