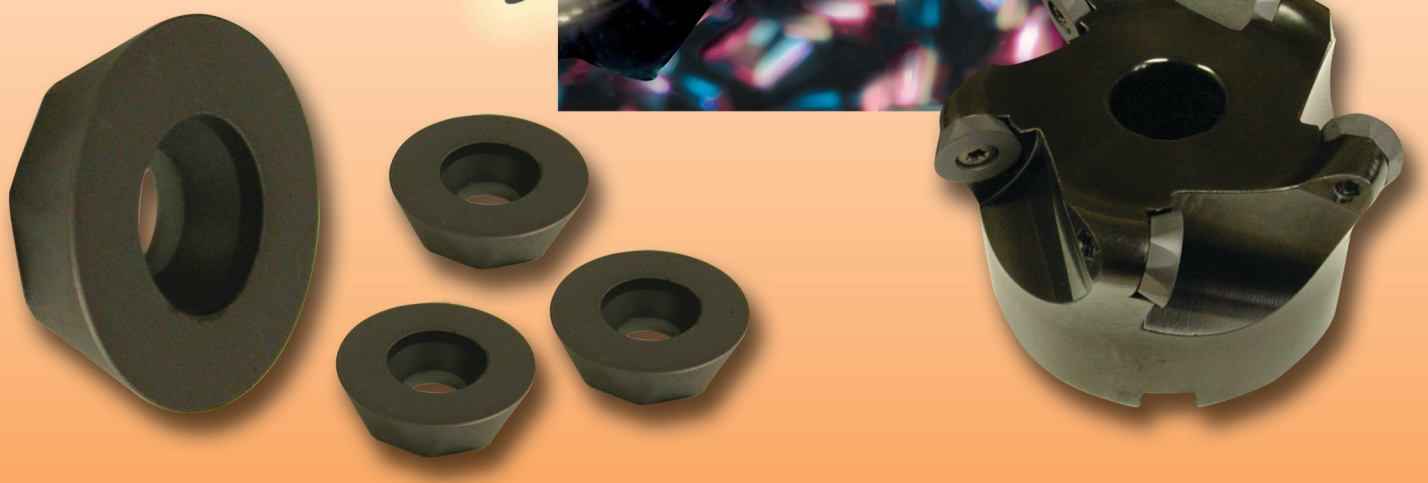
RTC Rani infoTECH™

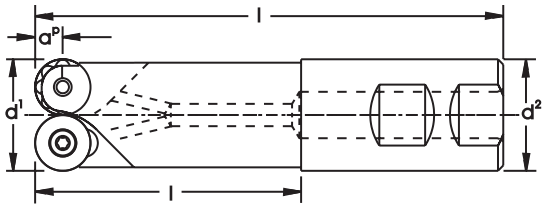
RT36V ... FOR MILLING OF DIES AND MOLDS

- Tool is applied in 3D milling applications for roughing to semi-finishing, using larger stepover than ballnose tools
- High ramping angles useful for circular interpolating bores and cavities
- Strong insert design will withstand abuse

- Precision ground inserts let you acheive good finishes
- Cutters manufactured using prehardened steel makes for extremely close toleances to reduce runout, thereby increasing tool life and improving part finishes
- Capable of plunge and run operations
- Regular and extended length end mills with coolant through the tool
- Round inserts let you acheive very high feed rates
- Top clamps may be added at an additional charge

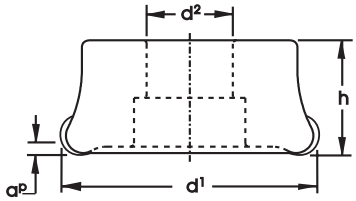


RT36V End and Face Mills



DESIGNATION	DIMENSIONS						INSERT	SPARE PARTS	
	d^1	d^2	l	l^1	Max a^p	Flutes		Insert Screw	Wrench
RT36VE-075-075-RE3C	.750	.750	4.03	2.00	.187	2	RSDCX-32	CE72843	214.80.011
RT36VE-075-075-RE3-LC	.750	.750	5.03	3.00	.187	2			
RT36VE-100-100-RE4C	1.000	1.000	3.53	1.25	.250	2	RSECX-43	CE72843	214.80.012
RT36VE-100-100-RE4-LC	1.000	1.000	4.78	2.50	.250	2			
RT36VE-100-100-RE4-XLC	1.000	1.000	6.78	4.50	.250	2			
RT36VE-125-125-RE5C	1.250	1.250	5.28	3.00	.312	2	RECX-53	CE72843	214.80.076
RT36VE-125-125-RE5-LC	1.250	1.250	7.28	5.00	.312	2			
RT36VE-150-150-RE6C	1.500	1.500	6.19	3.91	.375	2	RECX-63	CE72843	214.80.076
RT36VE-150-150-RE6-LC	1.500	1.500	8.18	5.90	.375	2			

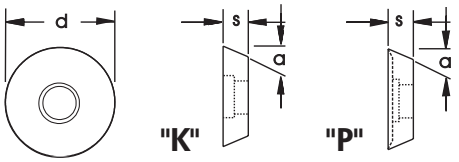
REMEMBER TO USE COPASLIP® ANTI-SEIZE COMPOUND ON ALL INSERT SCREWS.



DESIGNATION	DIMENSIONS					INSERT	SPARE PARTS	
	d^1	d^2	h	Max. a^p	Flutes		Insert Screw	Wrench
RT36VF-200-075-RE4	2.000	.750	1.50	.250	4	RSECX-43	CE73382	214.80.012
RT36VF-200-075-RE5	2.000	.750	1.50	.312	3	RECX-53	CE73921	214.80.076
RT36VF-250-100-RE5	2.500	1.000	2.00	.312	4			
RT36VF-300-100-RE5	3.000	1.000	2.00	.312	5			

REMEMBER TO USE COPASLIP® ANTI-SEIZE COMPOUND ON ALL INSERT SCREWS.

RT36V Inserts and Grades



DESIGNATION	d	s	r	a	RECX- ... Coated SLK	Coated SLX	Coated SLP	Uncoated SP25	Uncoated SK35
Geometry: K = K-Land Edge									
RSDCX-32-K	0.375	0.125	0.187	23°		●		●	
RSECX-43-K	0.500	0.188	0.250	23°	●	●		●	●
RECX-53-K	0.625	0.188	0.312	23°		●	●	●	●
RECX-63-K	0.750	0.188	0.375	23°	●	●	●	●	●
Geometry: P = Dish Face									
RSDCX-32-P	0.375	0.125	0.187	23°	●				●
RSECX-43-P	0.500	0.188	0.250	23°					●
RECX-53-P	0.625	0.188	0.312	23°	●	●			●
RECX-63-P	0.750	0.188	0.375	23°	●	●	●		●

Grades

SLK **(C1-C2 / P40-P25, M30-M20, K40-K20)**

- PVD AlTiN coated grade, high speed range, and excellent wear resistance, medium shock resistance. Semi roughing to finishing applications. Excellent choice for hi-temp, 300 Series stainless and cast iron.

SLX **(C5-C6 / P40-P15)**

- PVD AlTiN Coated, general purpose milling of ferrous materials at high speeds. Excellent impact and wear resistant. Used in roughing to finishing of steels.

SLP **(C5-C6 / P30-P20, M20-M10)**

- PVD TiN coated roughing to general purpose milling very tough grade used in roughing steel and stainless steel.

SP25 **(C5-C6 / P25)**

- Uncoated grade used in general milling of steel and stainless steel.

SK35 **(C2 / K20)**

- Uncoated grade used in machining aluminum alloys and titanium based materials.

Technical Considerations

- When plunging to depths over .150", use peck cycle with full withdrawl to break and evacuate chips.
- When plunging with end mills, do not exceed .010" feed per tooth. Ramping is preferred when using shell mills. Ramp angle with shell mills should be less than 5 degrees
- Be sure to use the feed rate compensation multipliers in speed and feed section in order to obtain highest level of production and tool life.
- Use the shortest tool for your application. Use of ìStubbyî type end mill holders is recommended.
- To obtain maximum tool life, machine without coolant whenever possible (except hi temp materials). Air blast is the best for removing chips.
- Cutter engagement of Ω" to æ" of diameter is recommended.
- Always use an anti-seize compound on screws when changing inserts.
- Change screws after every 10 insert changes, and cutter bodies should be thoroughly inspected after every 100 insert changes.

RT36V Cutting Data

CUTTING DATA FOR RT36 END & FACE MILLS						Coated			Uncoated	
ISO 513	MILLING CUTTER / MATERIAL					SLK	SLX	SLP	SP25	SK35
P	Cutter	Max. a_p	Carbide Insert			Feed fz inches per tooth [2]				
	RT36VE/VF	.187	RSDCX 32			---	.003 - .008	.003 - .008	.003 - .008	---
	RT36VE/VF	.250	RSECX 43			---	.003 - .010	.003 - .010	.003 - .010	---
	RT36VE/VF	.312	RECX 53			---	.003 - .012	.003 - .012	.003 - .012	---
	RT36VE/VF	.375	RECX 63			---	.003 - .015	.003 - .015	.003 - .015	---
	Work Material		Condition	Hardness HB	Mat. Gr.	Cutting Speeds in SFPM				
	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	---	800 - 1350	700 - 1000	350 - 700	---
		≥ 0.25% C	annealed	190	2	---	800 - 1350	700 - 1000	350 - 700	---
		< 0.55% C	heat-treated	250	3	---	700 - 1100	630 - 950	330 - 675	---
		≥ 0.55% C	annealed	220	4	---	800 - 1350	700 - 1000	350 - 700	---
			heat-treated	300	5	---	700 - 1100	630 - 950	330 - 675	---
	Low alloy steel and cast steel		annealed	200	6	---	800 - 1350	700 - 1000	350 - 700	---
			heat-treated	275	7	---	700 - 1100	630 - 950	330 - 675	---
			heat-treated	300	8	---	650 - 1000	620 - 900	300 - 650	---
			heat-treated	350	9	---	600 - 950	580 - 580	300 - 650	---
	High alloy steel, cast steel & tool steel		annealed	200	10	---	800 - 1150	700 - 950	350 - 650	---
			heat-treated	325	11	---	700 -1000	650 - 900	300 - 600	---
M	Cutter	Max. a_p	Carbide Insert			Feed fz as inches per tooth [2]				
	RT36VE/VF	.187	RSDCX 32			---	.003 - .005	.003 - .005	.003 - .005	.003 - .005
	RT36VE/VF	.250	RSECX 43			---	.003 - .008	.003 - .008	.003 - .008	.003 - .008
	RT36VE/VF	.312	RECX 53			---	.003 - .010	.003 - .010	.003 - .010	.003 - .010
	RT36VE/VF	.375	RECX 63			---	.003 - .010	.003 - .010	.003 - .010	.003 - .010
	Work Material		Condition	Hardness HB	Mat. Gr.	Cutting Speeds in SFPM				
	400 series Stainless & cast steel		ferrit./mart.	200	12	---	850 - 1200	560 - 900	265 - 535	---
			martensitic	240	13	---	580 - 950	540 - 850	245 - 500	---
	300 series Stainless & cast steel		austenitic	180	14	800 - 1100	---	---	---	400 - 600

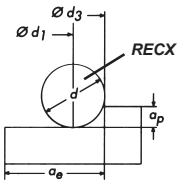
CUTTING DATA FOR RT36 END & FACE MILLS						Coated	Uncoated
ISO 513	MILLING CUTTER / MATERIAL					SLK	SK35
K	Cutter	Max. a_p	Carbide Insert			Feed fz inches per tooth [2]	
	RT36VE/VF	.187	RSDCX 32			.003 - .008	.003 - .008
	RT36VE/VF	.250	RSECX 43			.003 - .010	.003 - .010
	RT36VE/VF	.312	RECX 53			.003 - .012	.003 - .012
	RT36VE/VF	.375	RECX 63			.003 - .015	.003 - .015
	Work Material		Condition	Hardness HB	Mat. Gr.	Cutting Speeds in SFPM	
	Grey cast iron		ferrit./pearl.	180	15	550 - 1000	230 - 465
			pearlitic	260	16	500 - 900	230 - 465
	Nodular cast iron		ferritic	160	17	500 - 1000	230 - 465
			pearlitic	250	18	450 - 850	230 - 465
	Malleable cast iron		ferritic	130	19	550 - 1100	250 - 500
			pearlitic	230	20	500 - 900	230 - 465
N	Cutter	Max. a_p	Carbide Insert			Feed fz inches per tooth [2]	
	RT36VE/VF	.187	RSDCX 32			---	.003 - .015
	RT36VE/VF	.250	RSECX 43				.003 - .015
	RT36VE/VF	.312	RECX 53			---	.003 - .018
	RT36VE/VF	.375	RECX 63			---	.003 - .020
	Work Material		Condition	Hardness HB	Mat. Gr.	Cutting Speeds in SFPM	
	Cast aluminium alloys	≤ 12% Si	age-hardened	75	23	---	1600 - 4000
			age-hardened	90	24	---	1200 - 3800
		> 12% Si	heat resistant	130	25	---	1100 - 2800
	Copper & copper alloys		Red Brass, brass	90	27	---	600 - 1000
			Bronze	100	28	---	600 - 1000
S	Cutter	Max. a_p	Carbide Insert			Feed fz inches per tooth [2]	
	RT36VE/VF	.187	RSDCX 32			.0015 - .003	.0015 - .003
	RT36VE/VF	.250	RSECX 43			.002 - .004	.002 - .004
	RT36VE/VF	.312	RECX 53			.002 - .004	.002 - .004
	RT36VE/VF	.375	RECX 63			.002 - .005	.002 - .005
	Work Material		Condition	Hardness HB	Mat. Gr.	Cutting Speeds in SFPM	
	High-temperature alloys Ni- or Co- based		age-hardened	280	32	50 - 110	50 - 100
			annealed	250	33	70 - 150	50 - 110
			age-hardened	350	34	50 - 110	50 - 100
	Titanium alloys		age-hardened	310	37	105 - 190	80 - 120

FOR USE WITH RECX INSERTS

[1] The feeds per tooth f_z are valid for face milling with width of cut $a_e \geq 40\%$ of the cutter diameter and max. depth of cut a_p.
For smaller widths and depths of cut, the figures in the tables should be converted using correction factors tables below. (d = diameter of insert, d_1 = cutter diameter).

f_z factors for ratio $a_e : d_1$				
Depth of cut a_p	$a_e : d_1$ 5%	10%	20%	≥40%
5% of d	9	6.3	4.3	3.2
10% of d	6.3	4.3	3.2	2.2
20% of d	4.3	3.2	2.2	1.6
40% of d	3.2	2.2	1.6	1.1

SFPM factors for various f_z factors	
f_z factor	$a_e : d_1$ SFPM factor
9	1.6
6.3	1.5
4.3	1.4
3.2	1.3
2.2	1.2
1.6	1.1
1.1	1



Legend:
ac - width of cut **Od1** - effective cutter diameter
d - insert diameter **ap** - depth of cut
Od3 - nominal cutter diameter

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