Carmex
Precision Tools Ltd.

New

CR-SUPERCUT Roughers

Metric 2016 - 17

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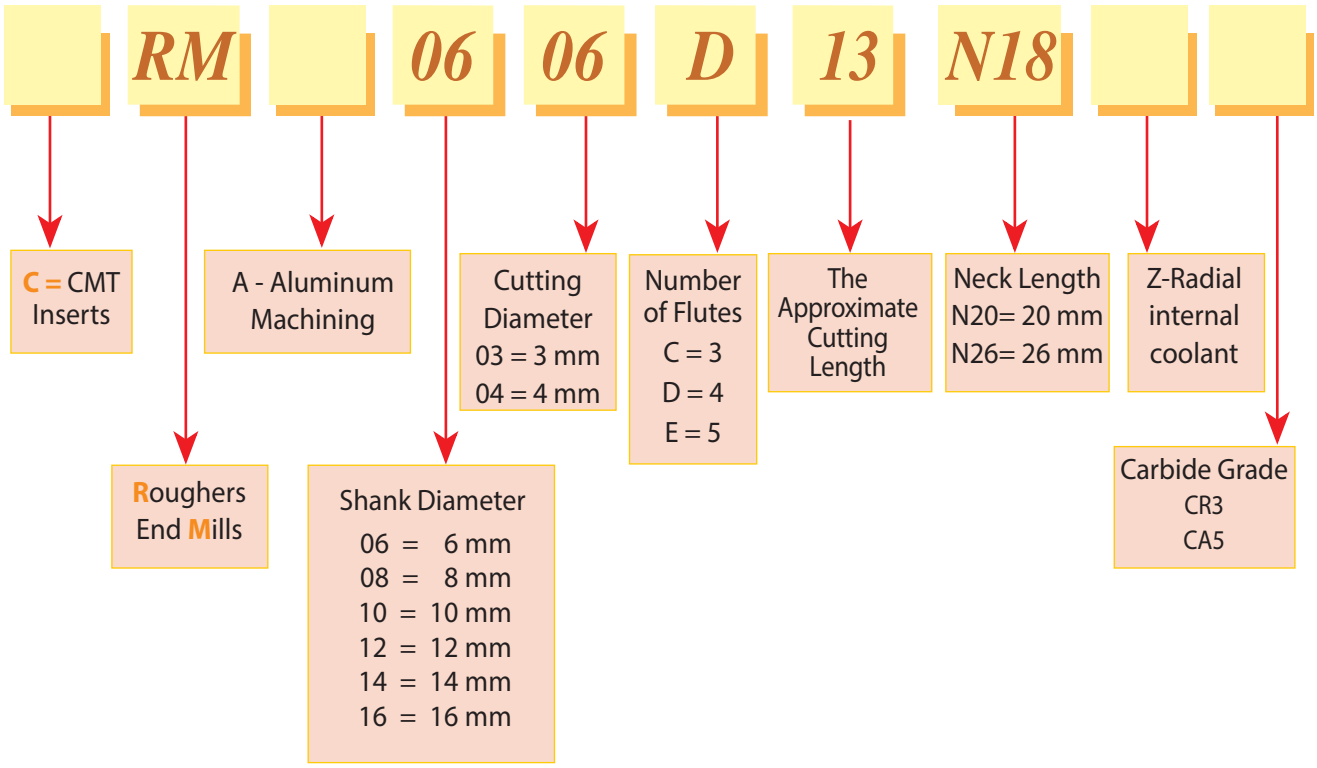


CR-Supercut Roughers

Carmex solid carbide Roughers are new innovative high performance end mills. Specifically designed for high volume machining applications.

Multi-flute, semi-finish profile and center cutting.

Provides high metal removal rates in Slotting, Shouldering and Helical Plunging operations.

Features

- High Performance Cutting (HPC)
- Innovative roughing geometry produces smaller chips
- Low cutting forces
- Extremely high material removal rate
- Reinforced corner chamfer, promotes additional strength for longer tool life
- Designed to machine difficult and abrasive materials

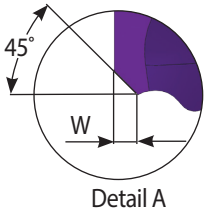
Carbide Grade: CR3

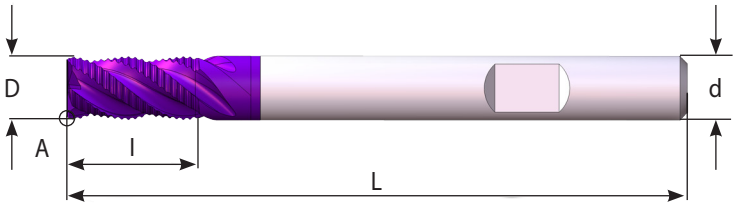
Ultra-Fine carbide grade with high hardness and toughness provides high cutting edge stability and wear resistance.

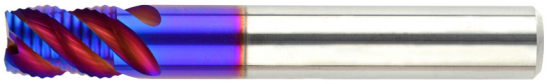
A **New Generation** of PVD Coating for High-Performance Cutting Applications.

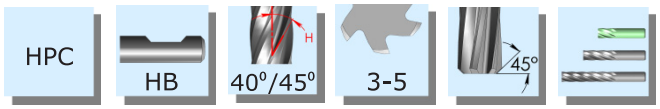
Solid Carbide Roughers

Short Design







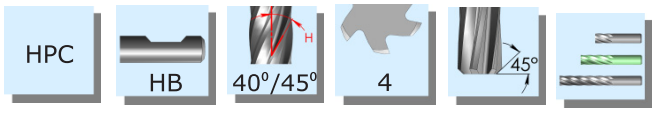


P	M	K	N	S	H
●	●	●	○	●	≤56 HRc

Ordering Code	d	D	W	No. of Flutes	l	L
RM 0603 C05	6	3	0.2	3	5	58
RM 0604 C09	6	4	0.3	3	9	58
RM 0605 D10	6	5	0.3	4	10	58
RM 0606 D10	6	6	0.3	4	10	58
RM 0808 D12	8	8	0.3	4	12	64
RM 1010 D14	10	10	0.3	4	14	73
RM 1212 D16	12	12	0.4	4	16	84
RM 1616 E27	16	16	0.5	5	27	105

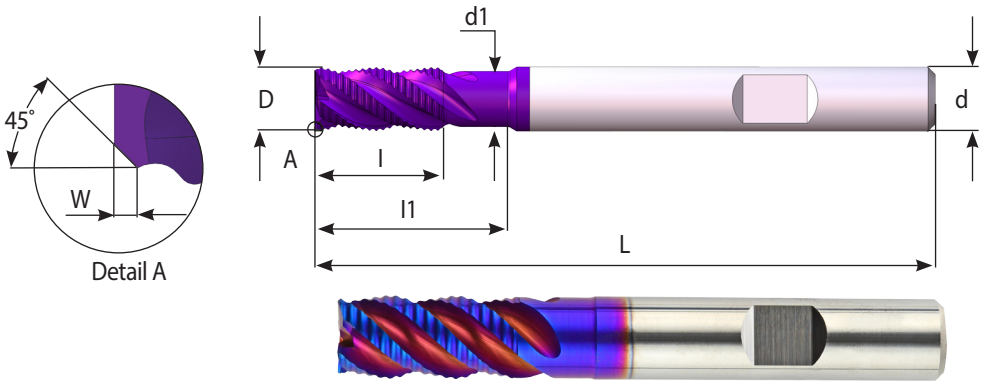
● First choice ○ Alternative

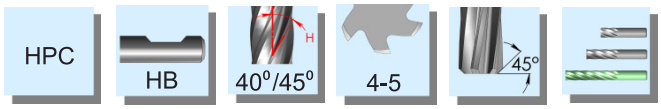
Long Design



Ordering Code	d	D	W	No. of Flutes	l	L
RM 0606 D16	6	6	0.3	4	16	58
RM 0807 D16	8	7	0.3	4	16	64
RM 0808 D18	8	8	0.3	4	18	64
RM 1010 D22	10	10	0.3	4	22	73
RM 1212 D26	12	12	0.4	4	26	84

Solid Carbide Roughers with Neck





P	M	K	N	S	H
●	●	●	○	●	≤56 HRc

Ordering Code	d	D	l	l1	d1	W	No. of Flutes	L
RM 0606 D13 N18	6	6	13	18	5.8	0.3	4	58
RM 0808 D17 N24	8	8	17	24	7.7	0.3	4	64
RM 1010 D21 N30	10	10	21	30	9.7	0.3	4	73
RM 1212 D25 N36	12	12	25	36	11.6	0.4	4	84
RM 1616 E33 N48	16	16	33	48	15.5	0.5	5	105

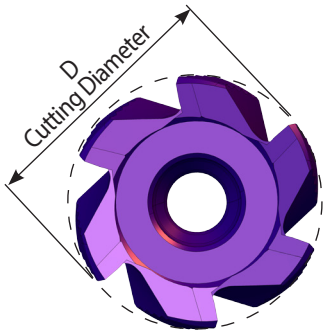
● First choice ○ Alternative

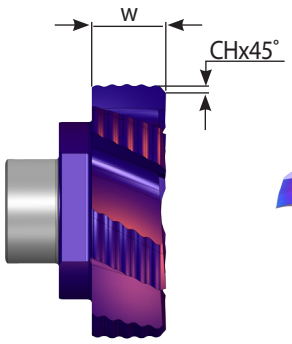
CMT Roughers

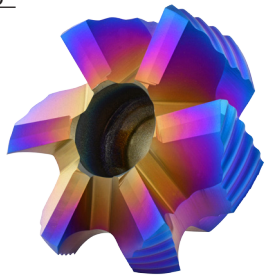
Indexable CMT roughers for excellent performance

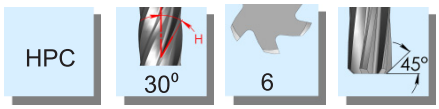
- Solid and accurate clamping method enables full repeatability
- Working at high machining parameters
- Modular system using the standard CMT tool holders with various shank options
- Enables machining with large overhang

Carbide Grade: CR3









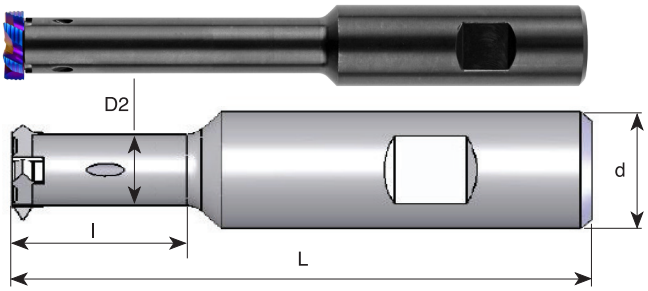
P	M	K	N	S	H
●	●	●	○	●	≤56 HRc

Insert Type	Ordering Code	D	No. of Flutes	W	CH
S20	**CRM160 F W50**	16.0	6	5.0	0.4
S20	**CRM170 F W50**	17.0	6	5.0	0.4
S20	**CRM200 F W50**	20.0	6	5.0	0.4

● First choice ○ Alternative

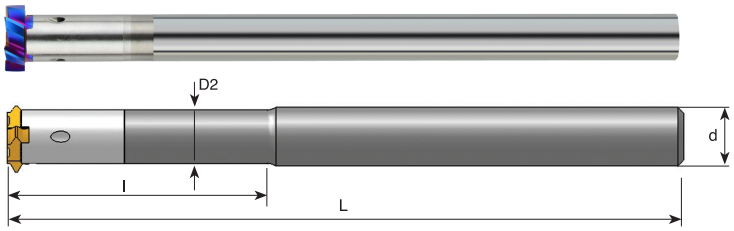
The CMT Roughers should be used with all the toolholders shown on page 6

Steel Toolholders With internal coolant



Ordering Code	Insert Type	d	D2	l	L	Insert Screw	Torx Key
SRC 1618 H	S20	16	13.8	48	100	S16	K16
SRC 2018 H	S20	20	13.8	32	100	S16	K16
SRC 2018 J	S20	20	13.8	48	110	S16	K16
SRC 2018 L	S20	20	13.8	74	140	S16	K16

Carbide Shank Toolholder With internal coolant



Ordering Code	Insert type	d	D2	l	L	Insert Screw	Torx Key
CRC 1218 P	S20	12	12.0	-	170	S16	K16

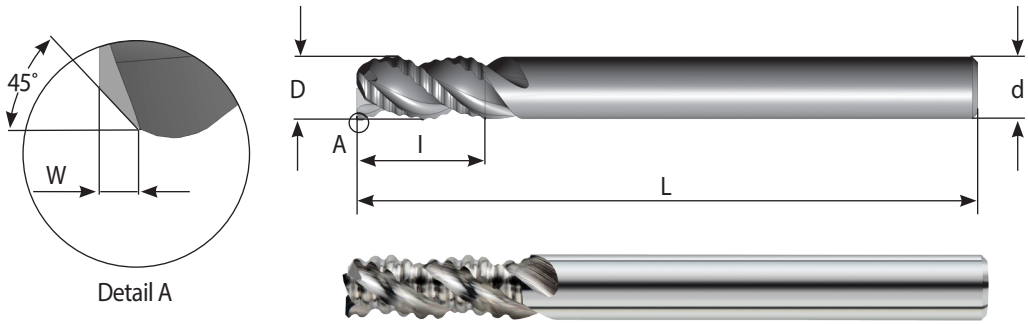
Solid Carbide Roughers- Aluminum Machining

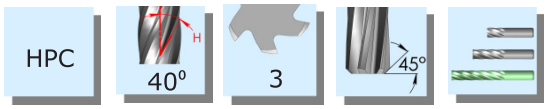
Features

- High Performance Cutting (HPC)
- Optimal flute geometry delivers maximum metal removal rates and better chip evacuation
- Low cutting forces
- Reinforced corner chamfer, promotes additional strength for longer tool life
- Uncoated smooth polished surface finish

Carbide Grade: CA5

Ultra-Fine carbide grade with high hardness and toughness provides high cutting edge stability and wear resistance.





P	M	K	N	S	H
	○	○	●	○	

Ordering Code	d	D	W	No. of Flutes	l	L
RMA 0604 C08	6	4	0.3	3	8	57
RMA 0606 C16	6	6	0.3	3	16	57
RMA 0808 C19	8	8	0.3	3	19	63
RMA 1010 C22	10	10	0.3	3	22	72
RMA 1212 C26	12	12	0.4	3	26	83

● First choice ○ Alternative

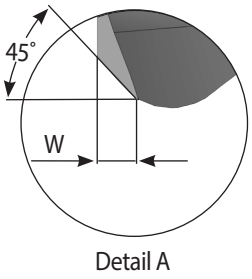
Solid Carbide Roughers - Aluminum Machining

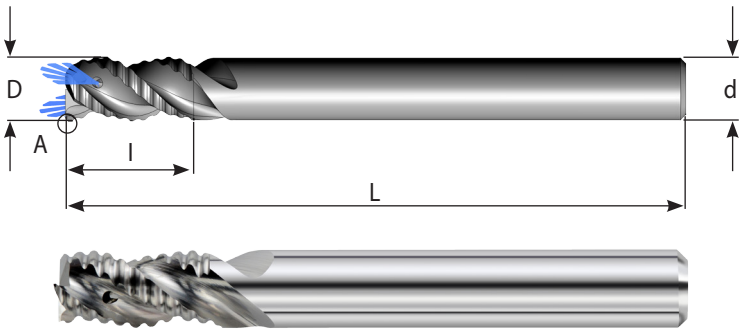
with internal coolant through the flutes

Features

- High Performance Cutting (HPC)
- The coolant washes the chip out

Carbide Grade: CA5

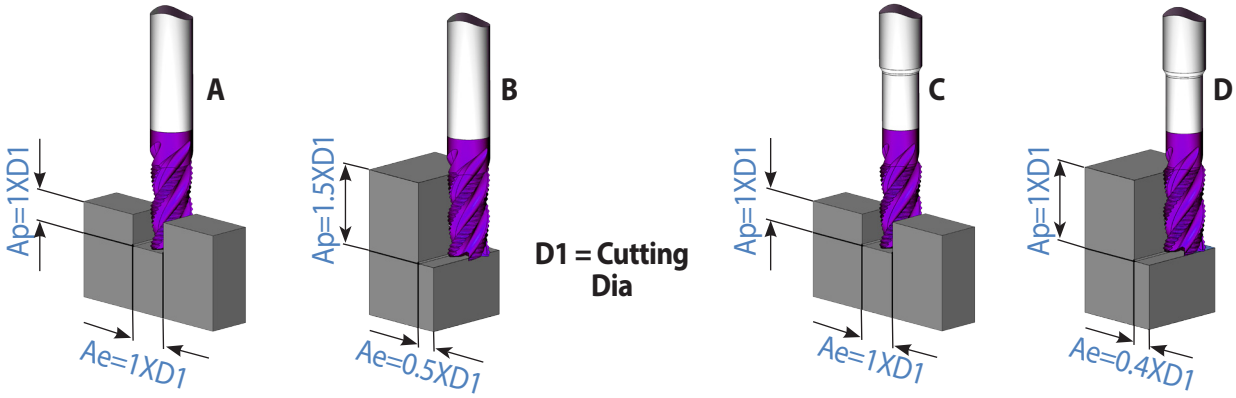




P	M	K	N	S	H
	○	○	●	○	

Ordering Code	d	D	W	No. of Flutes	l	L
RMA 0606 C16 Z	6	6	0.3	3	16	58
RMA 0808 C19 Z	8	8	0.3	3	19	64
RMA 1010 C22 Z	10	10	0.3	3	22	73
RMA 1212 C26 Z	12	12	0.4	3	26	84

Cutting Conditions (solid end-mills and CMT)



Roughers

Roughers with Neck

Cutting Data

For hard or tough materials reduce the Ap by 20%-30%

Roughers with neck (C, D) can be used with same feed and speed as below.

ISO Standard	Materials Class	Vc [m/min]	Fz [mm/tooth] Cutting Diameter			
			Ø3- Ø4	Ø5- Ø6	Ø7- Ø10	Ø12- Ø20
P	Low & Medium Carbon Steels <0.55%C	A: 120-180 B: 140-200	A: 0.012-0.02 B: 0.018-0.024	A: 0.025-0.03 B: 0.03-0.036	A: 0.035-0.05 B: 0.048-0.06	A: 0.055-0.08 B: 0.072-0.096
	High Carbon Steels ≥0.55%C	A: 110-160 B: 140-180	A: 0.01-0.015 B: 0.015-0.02	A: 0.015-0.02 B: 0.025-0.03	A: 0.03-0.04 B: 0.035-0.045	A:0.04-0.055 B: 0.06-0.08
	Alloy Steels, Treated Steels	A: 100-140 B: 130-160	A: 0.009-0.012 B: 0.009-0.012	A: 0.015-0.018 B: 0.015-0.018	A: 0.024-0.03 B: 0.024-0.03	A: 0.036-0.048 B: 0.036-0.048
M	Stainless Steel-Free Cutting	A: 100-140 B: 130-150	A: 0.009-0.012 B: 0.012-0.016	A: 0.015-0.018 B: 0.02- 0.024	A: 0.024-0.03 B: 0.032-0.04	A: 0.036-0.048 B: 0.048-0.064
	Stainless Steel-Austenitic	A: 70-100 B: 90-130	A: 0.008-0.011 B: 0.01-0.016	A: 0.01-0.015 B: 0.015- 0.024	A: 0.02-0.025 B: 0.03-0.04	A: 0.03-0.04 B: 0.045-0.06
	Cast Steels	A: 120-160 B: 140-180	A: 0.009-0.012 B: 0.012-0.016	A: 0.015-0.018 B: 0.02- 0.024	A: 0.024-0.03 B: 0.032-0.04	A: 0.036-0.048 B: 0.048-0.064
K	Cast Iron	A: 100-160 B: 140-180	A: 0.012-0.02 B: 0.018-0.024	A: 0.025-0.03 B: 0.03-0.036	A: 0.035-0.05 B: 0.048-0.06	A: 0.055-0.08 B: 0.072-0.096
N	Aluminum ≤12%Si, Copper	A: 180-250 B: 200-300	A: 0.015-0.025 B: 0.018-0.03	A: 0.03-0.04 B: 0.035-0.045	A: 0.04-0.06 B: 0.045-0.065	A: 0.06-0.09 B: 0.065-0.095
	Aluminum >12%Si	A: 100-200 B: 130-250	A: 0.01-0.02 B: 0.01-0.02	A: 0.025-0.035 B: 0.03-0.04	A: 0.035-0.055 B: 0.04-0.05	A: 0.055-0.08 B: 0.05-0.09
	Synthetics, Duroplastics, Thermoplastics	A: 180-250 B: 200-300	A: 0.015-0.025 B: 0.018-0.03	A: 0.03-0.04 B: 0.035-0.045	A: 0.04-0.06 B: 0.045-0.065	A: 0.06-0.09 B: 0.065-0.095
S	Nickel alloys, Titanium alloys	A: 50-70 B: 60-80	A: 0.012-0.016 B: 0.012-0.016	A: 0.02-0.024 B: 0.02-0.024	A: 0.032-0.04 B: 0.032-0.04	A: 0.048-0.064 B: 0.048-0.064
H	Hardened Steel 45-50 HRc	A: 50-70 B: 60-80	A: 0.01-0.02 B: 0.018-0.024	A: 0.02-0.025 B: 0.025-0.03	A: 0.03-0.04 B: 0.04-0.05	A: 0.04-0.06 B: 0.06-0.08
	Hardened Steel 51-56 HRc	A: 40-60 B: 50-70	A: 0.01-0.015 B: 0.015-0.02	A: 0.015-0.025 B: 0.02-0.025	A: 0.02-0.035 B: 0.025-0.04	A: 0.03-0.055 B: 0.035-0.065

Carmex
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CARMEX CR-Roughers 09/2016 - Metric

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