SUMITOMO

CARBIDE - CBN - DIAMOND

Global Support, Global Solutions.

Excellent wear resistance / Excellent toughness

SUMIDIA DA1000

Rev. 9

High performance, high precision, high efficiency machining of all aluminum alloy

New

Alnex ANX Series blade now available!

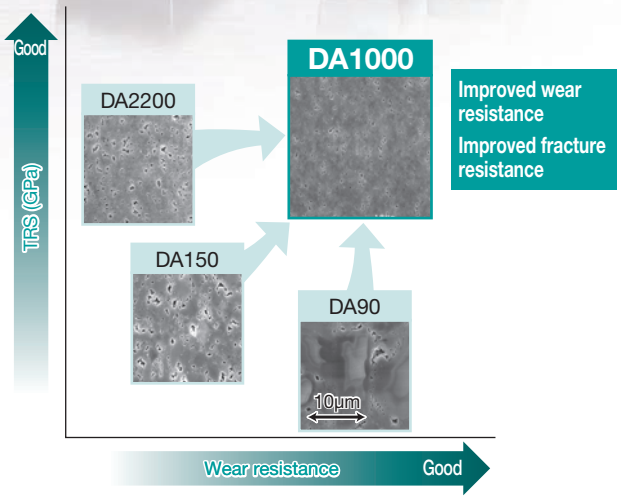
Excellent wear resistance / Excellent toughness

SUMIDIA DA1000

Ultra-high-density sintered ultra-fine grain diamond

- Significantly improved surface roughness on machined surfaces
- Excellent wear resistance and strength
- High-performance, high-precision, high-efficiency machining of all aluminum and non-ferrous alloys

■ Position of DA1000



●Aluminum Alloy

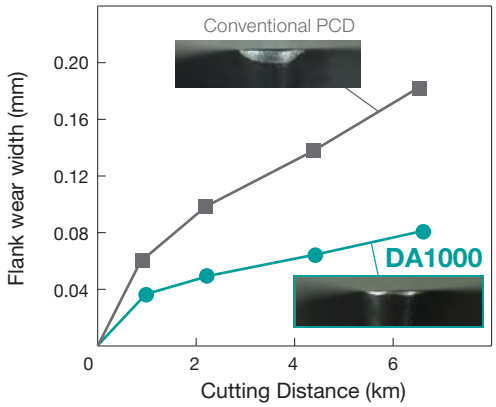
Machinability	Work materials	Turning		Milling	Example Parts
		Roughing	Finishing		
Good ↓ Difficult	Sintered Aluminum	DA1000 / DA2200 / DA150			Piston Liner
	Die Cast Aluminum (ADC12)				Transmission case, Oil pan, Cylinder block, Aluminum wheel, HDD
	Low Silicon (AC2B-T6, AC4C-T6)				Cylinder head
	High Silicon				Cylinder block

●Non-aluminum Alloy

Machinability	Work materials	Turning		Milling	Example Parts
		Roughing	Finishing		
Good ↓ Difficult	Non-ferrous Powdered Metal	DA1000 / DA2200			Bush
	Gunmetal Carbon				Connecting rod
	Cemented Carbide	DA90	NPD10		Punches, Dies, Rolls
	Fe Combined		DA90	DA150	Cylinder block, Bearing cap

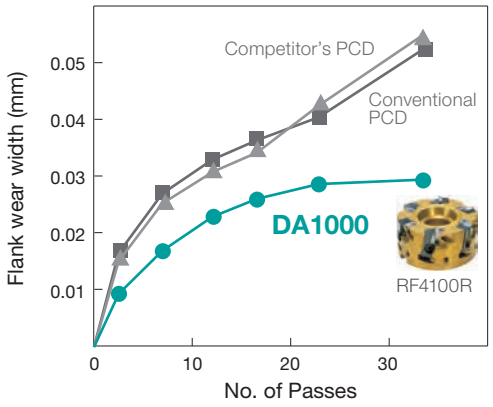
Performance

●Wear Resistance (Turning)



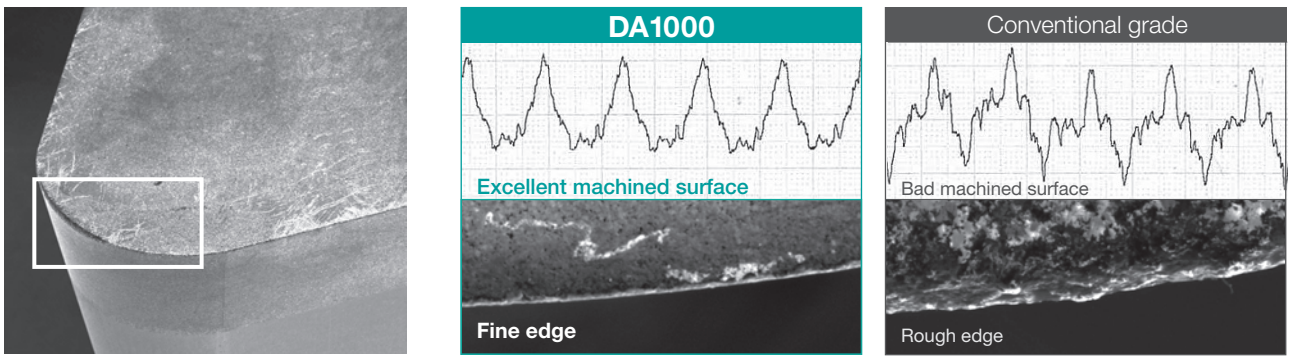
Work material: 17% Si-Al alloy Tool: NF-TPGN160304
Cutting conditions: v_c=800m/min f=0.12mm/rev a_p=0.50mm Wet

●Wear Resistance (Milling)



Work material: ADC12 (12% Si-Al Alloy) Tool: NF-SNEW1204ADFR
Cutting conditions: v_c=2,000m/min f=0.15mm/rev a_p=3.00mm Wet

●Comparison of Surface Roughness of Cutting Edge



Work material: 17% Si-Al alloy Tool: NF-TPGW160308 Cutting conditions: v_c=1,000m/min f=0.15mm/rev a_p=0.20mm Wet

SUMIDIA Grade List

Grades	DA1000	DA2200	DA150	DA90
Diamond Grain Size (μm)	to 0.5	0.5	5	to 50
Hardness HK (GPa)	50 to 60	45 to 55	50 to 60	50 to 65
TRS (GPa)	2.60	2.45	1.95	1.10

Recommended Cutting Conditions (Turning)

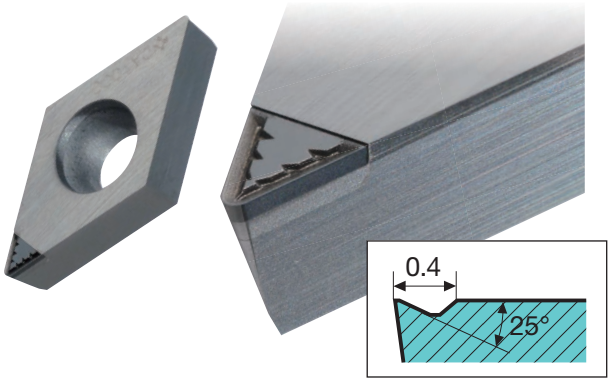
Cutting Process	Work materials	Grades	Cutting conditions		
			Cutting speed V_c (m/min)	Feed rate f (mm/rev)	Depth of cut a_p (mm)
Continuous Cutting General Cutting Interrupted Cutting	Aluminum Alloy	DA1000	to 3,000	to 0.2	to 3.0
	Copper Alloy	DA1000	to 1,000	to 0.2	to 3.0
	Reinforced Plastics	DA1000	to 1,000	to 0.4	to 2.0
	Wood or Organic Materials	DA1000	to 4,000	to 0.4	-
	Carbon	DA1000	100 to 600	1.0	to 2.0
	Carbide	DA1000	10 to 30	to 0.2	to 0.5

For milling, refer to our brochures and Product Guides for each product.

Chipbreaker

SUMIDIA PCD Inserts BREAK MASTER
LD Type for Finishing

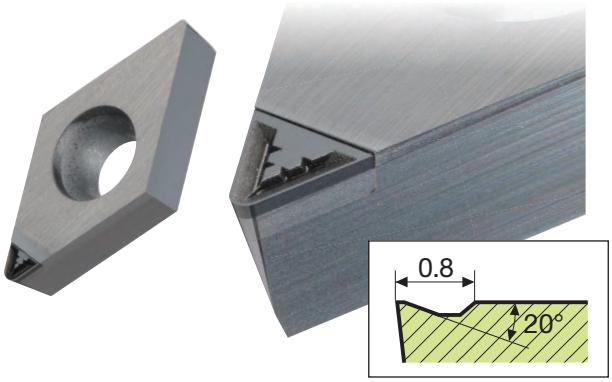
Achieves excellent chip control in finishing



Chipbreaker Cross-Section

SUMIDIA PCD Inserts BREAK MASTER
GD Type for Medium Finishing

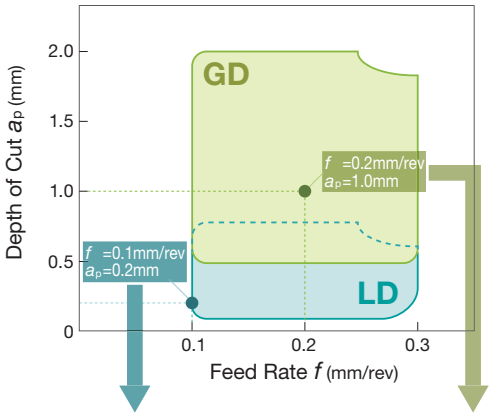
Achieves excellent chip control in medium finishing



Chipbreaker Cross-Section

Application Range

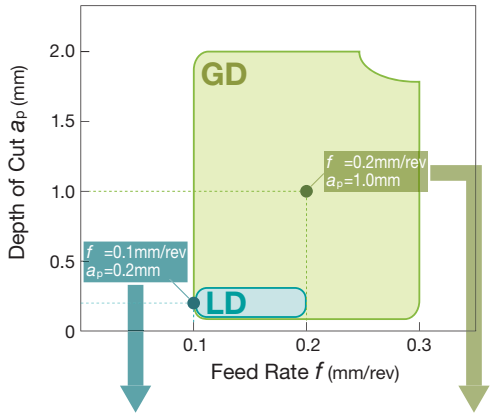
●Wrought Aluminum Alloy (A6061)



Work material: A6061
Insert: NF-DCMT11T304N-LD
Cutting conditions: v_c=400m/min
f=0.1mm/rev a_p=0.2mm

Work material: A6061
Insert: NF-DCMT11T304N-GD
Cutting conditions: v_c=400m/min
f=0.2mm/rev a_p=1.0mm

●Cast Aluminum Alloy (ADC12)



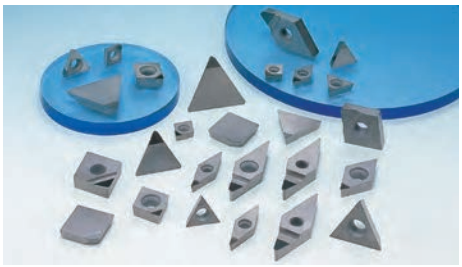
Work material: ADC12
Insert: NF-DCMT11T304N-LD
Cutting conditions: v_c=400m/min
f=0.1mm/rev a_p=0.2mm

Work material: ADC12
Insert: NF-DCMT11T304N-GD
Cutting conditions: v_c=400m/min
f=0.2mm/rev a_p=1.0mm

Recommended Cutting Conditions (LD Type/GD Type)

Work Materials	Chipbreaker	Grades	Cutting Conditions (Min.-**Optimum**-Max.)		
			Cutting speed V_c (m/min)	Feed rate f (mm/rev)	Depth of cut a_p (mm)
Wrought Aluminum Alloy	LD type	DA1000	100 - **1,000** - 3,000	0.1 - **0.15** - 0.3	0.1 - **0.3** - 0.8
	GD type	DA1000	100 - **1,000** - 3,000	0.1 - **0.15** - 0.3	0.5 - **1.0** - 2.0
Cast Aluminum Alloy	LD type	DA1000	100 - **1,000** - 3,000	0.1 - **0.15** - 0.2	0.1 - **0.2** - 0.3
	GD type	DA1000	100 - **1,000** - 3,000	0.1 - **0.15** - 0.3	0.1 - **1.0** - 2.0

■ Product lineup Usable with a wide variety of tools as well as those below.



NF Type Inserts

Abundant lineup from turning tools through milling tools
Optimum design and improved mass production techniques realise lower cost
Provides excellent chip control with BREAK MASTER LD/GD type

Standard Type Inserts

High precision and long tool life
Regrinding possible
Precision ground cutting edge, like NF Type inserts

SUMIDIA Multi-Functional Tool **SGW** Series

Provides excellent chip control in traversing and grooving of aluminum alloy
Solves chip control problems and dramatically improves work efficiency
Excellent for high-efficiency machining of long workpieces

High-speed, High-efficiency Cutter ALNEX **ANX** Series

Screw-fastening structure and simple fine adjustment mechanism drastically reduce runout adjustment time
Blade-through coolant chip breaking improves chip breaking performance
Lightweight aluminum alloy body used
Realises blade diameter of ø125mm/22 teeth for a total weight of 1.3kg or less

High-efficiency Cutter **HF** Series

Achieves high-efficiency milling of over V_f=20,000mm/min thanks to its multi-edge design
Employs a unique blade design to achieve machining without burrs
Wedge clamp with anti-scattering mechanism ensures safety and operability

High-speed Cutter **RF** Series

High-performance, lightweight cutter using special aluminum alloy
Usable for both roughing with carbide grade H1 and finishing with DA1000 etc.
External setting gauge is used for easy tool presetting (runout 10 μm)
Achieves surface roughness of Rz 0.8μm or less with wiper insert

Small-diameter Cutter **SRF** Series

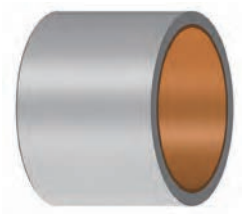
Optimal for use with small machine tools (BT30 class)
Effective length of 5mm for use from roughing to finishing
Screw-fastening structure and simple fine adjustment mechanism achieve runout precision

Application Examples (Turning)

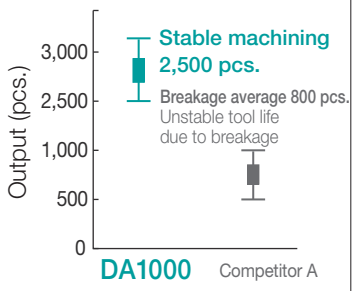
Copper Alloy Bush Boring

Suppresses worsening surface roughness without breakage
Stable performance for 2,500 workpieces, with preset increased approx. 3 times

Tool Life Determinant: 3.2S



Cutting length: 73m/pcs.

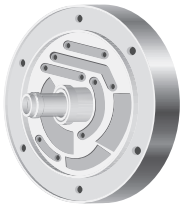


Tool: NF-TPGN160308
Cutting conditions: v_c=300m/min f=0.07mm/rev
a_p=0.08mm Wet

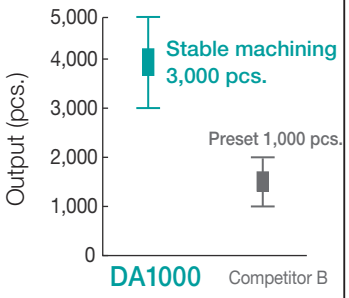
ADC12 Oil Pump Cover Turning

Excellent wear resistance suppresses burrs
Stable machining of 3,000 pcs. achieved, reducing tool costs to 1/3

Tool Life Determinant: Burrs



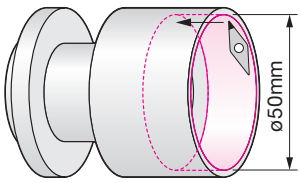
Cutting length: 62m/pcs.



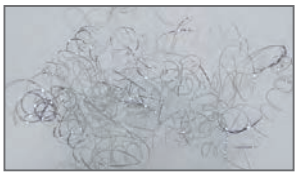
Tool: NF-CNMX120408
Cutting conditions: v_c=1,400m/min f=0.3mm/rev
a_p=0.2mm Wet

A6061 Internal Boring of Machine Component (BREAK MASTER LD Type)

Provides good chip control in internal boring of wrought material



BREAK MASTER LD Type

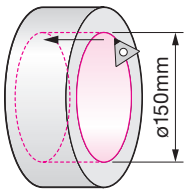


Without Chipbreaker

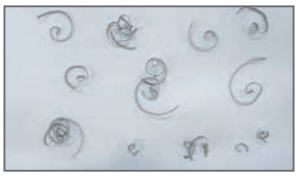
Tool: NF-VCMT110302N-LD Cutting conditions: v_c=200m/min f=0.2mm/rev a_p=0.1mm Wet

ADC12 Internal Boring of Transmission Component (BREAK MASTER GD Type)

Breaks chips into fine pieces in internal boring of cast material



BREAK MASTER GD Type

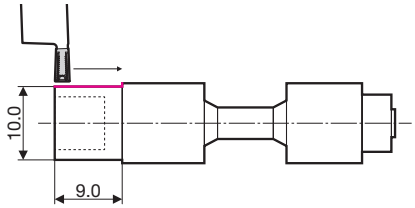


Without Chipbreaker

Tool: NF-TPMT110304N-GD Cutting conditions: v_c=400m/min f=0.23mm/rev a_p=1.20mm Wet

A6061 External Turning of Valve (SGW Type + BREAK MASTER LD Type)

Provides good chip control in external machining of wrought material



BREAK MASTER LD Type

Without Chipbreaker

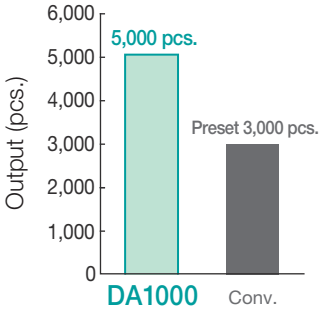
Tool: KGV R2004-LD Cutting conditions: v_c=250m/min f=0.1mm/rev a_p=0.5mm Wet

Application Examples (Milling)

ADC 12 Cylinder Block Top Face Machining (RF Type)

Machining of 5,000 workpieces without breaking, with preset increased approx. 1.6 times

Tool Life Determinant: Burrs

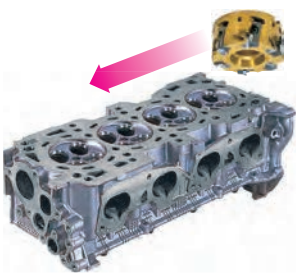


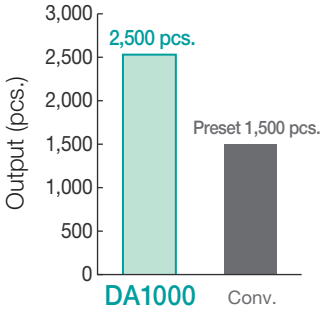
Tool: NF-SNEW1204ADFR
Cutting conditions: v_c=2,800m/min f=0.14mm/rev
a_p=2.00mm Wet

AC2C Cylinder Head Top Face Machining (RF Type)

Stable machining of 2,500 pcs. achieved without breakage, extending tool life and contributing to reduced costs

Tool Life Determinant: Burrs

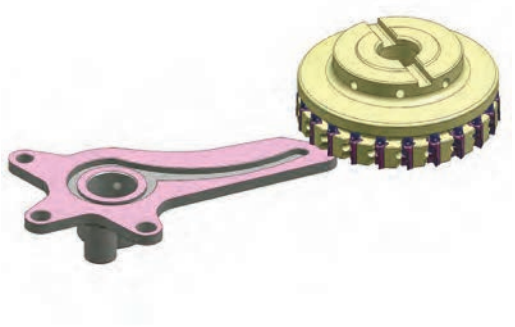




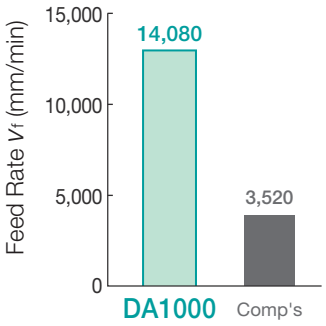
Tool: NF-SNEW1204ADFR
Cutting conditions: v_c=1,500m/min f=0.2mm/rev
a_p=3.0mm Wet

ADC12 Automotive Parts Machining (ALNEX ANX Series)

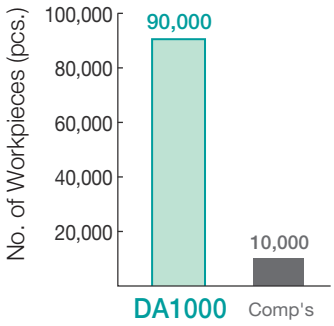
Achieves 4 times the efficiency and 9 times the tool life



Efficiency



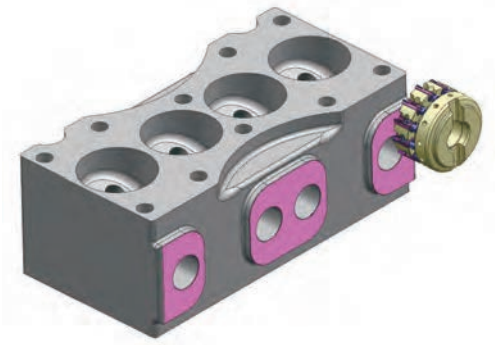
Tool life



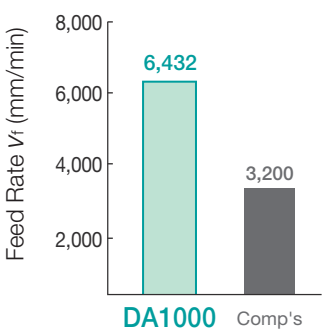
Machine: Vertical Machining Centre BT30 Blade: ANB1600R-G
Tool: ANXA 16125R22 (ø125, 22-flute, aluminum alloy body *Total weight with arbor 1.75kg)
Cutting conditions: v_c=3,142m/min v_f=14,080m/min a_p=0.8mm Wet

ADC12 Cylinder Head Machining (ALNEX ANX Series)

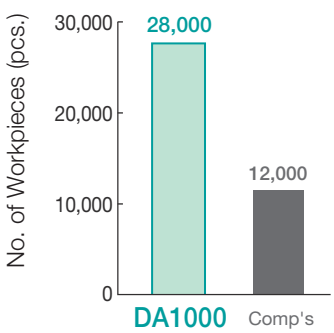
Achieves 2 times the efficiency and 2.3 times the tool life



Efficiency

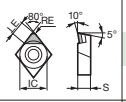
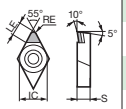
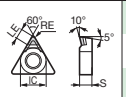
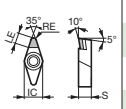


Tool life

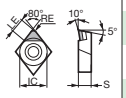
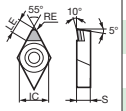
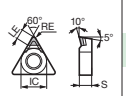
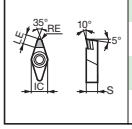


Machine: Vertical Machining Centre HSK63 Blade: ANB1600R-G
Tool: ANXS 16063RS12 (ø63, 12-flute, steel body)
Cutting conditions: v_c=1,583m/min v_f=16,432m/min a_p=0.5mm Wet

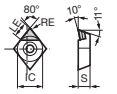
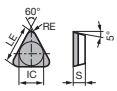
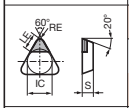
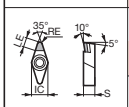
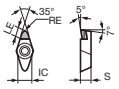
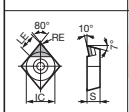
■ Negative/Positive Reground Inserts

Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Nose Radius RE
	**CNMX 120402**	●	5.7	12.7	4.76	5.16	0.2
	120404	●	5.7				0.4
	120408	●	5.6				0.8
	**DNMX 150402**	●	6.4	12.7	4.76	5.16	0.2
	150404	●	6.2				0.4
	150408	●	5.8				0.8
	150412	●	5.4				1.2
	**TNMX 160402**	●	3.7	9.525	4.76	3.81	0.2
	160404	●	3.6				0.4
	160408	●	3.3				0.8
	**VNMX 160402**	●	6.9	9.525	4.76	3.81	0.2
	160404	●	6.4				0.4
	160408	●	5.6				0.8
	160412	●	4.7				1.2

■ Negative/Positive NF Type Inserts

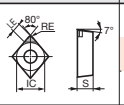
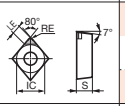
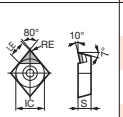
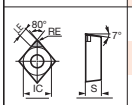
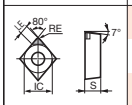
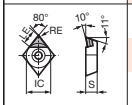
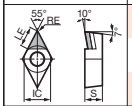
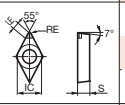
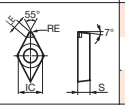
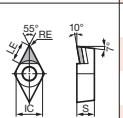
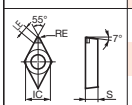
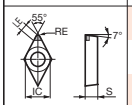
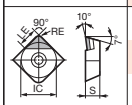
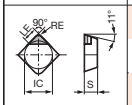
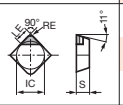
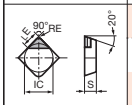
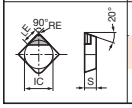
Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Nose Radius RE
	**NF-CNMX 120402**	●	5.7	12.7	4.76	5.16	0.2
	120404	●	5.7				0.4
	120408	●	5.6				0.8
	120412	●	5.4				1.2
	**NF-DNMX 150402**	●	6.4	12.7	4.76	5.16	0.2
	150404	●	6.2				0.4
	150408	●	5.8				0.8
	150412	●	5.4				1.2
	**NF-TNMX 160402**	●	3.7	9.525	4.76	3.81	0.2
	160404	●	3.6				0.4
	160408	●	3.3				0.8
	**NF-VNMX 160402**	●	6.9	9.525	4.76	3.81	0.2
	160404	●	6.4				0.4
	160408	●	5.6				0.8
	160412	●	4.7				1.2

■ Positive Reground Inserts

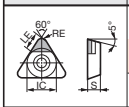
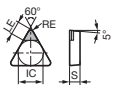
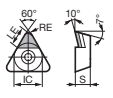
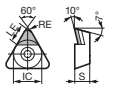
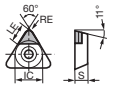
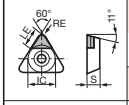
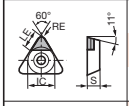
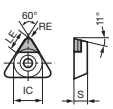
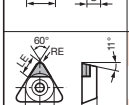
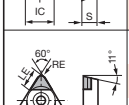
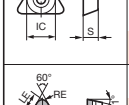
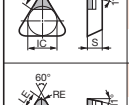
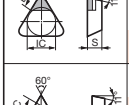
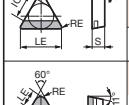
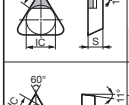
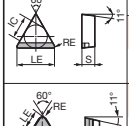
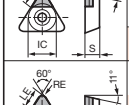
Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Nose Radius RE
	**CPMT 080202**	●	4.2	7.94	2.38	3.4	0.2
	080204	●	4.2				0.4
	080208	●	4.1				0.8
	**RPGW 0803M0**	●	-	8	3.18	3.3	-
	**TBGN 060102B**	●	6.5	3.97	1.59	-	0.2
	060104B	●	6.2				0.4
	**TEGN 160304**	●	3.7	9.55	3.18	-	0.4
	**VCMT 160408**	●	5.8	9.525	4.76	4.4	0.8
	160412	●	4.9				1.2
	VCMT 160412-WF	●	4.9	9.525	4.76	4.4	1.2
	**VCMT 220520**	●	5.0	12.7	5.56	5.5	2.0
	220530	●	5.0				3.0
	**NF-CCMT 060201**	●	2.8	6.35	2.38	2.8	0.1
	060202	●	2.8				0.2
	060204	●	2.8				0.4

●mark: Standard Stock Item

■ Positive NF Type Inserts

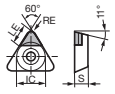
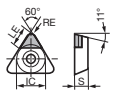
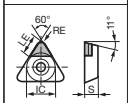
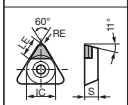
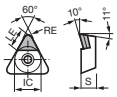
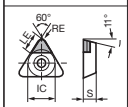
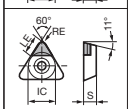
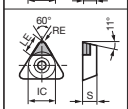
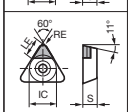
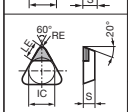
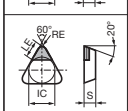
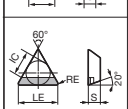
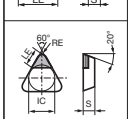
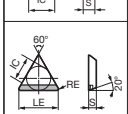
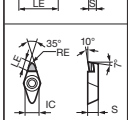
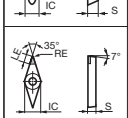
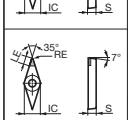
Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Nose Radius RE
	**NF-CCMT 060202N-LD**	●	2.9	6.35	2.38	2.8	0.2
	060204N-LD	●	2.9				0.4
	**NF-CCMT 060202N-GD**	●	2.9	6.35	2.38	2.8	0.2
	060204N-GD	●	2.9				0.4
	**NF-CCMT 09T301**	●	2.8	9.525	3.97	4.4	0.1
	09T302	●	2.8				0.2
	09T304	●	2.8				0.4
	09T308	●	2.7				0.8
	**NF-CCMT 09T302N-LD**	●	2.9	9.525	3.97	4.4	0.2
	09T304N-LD	●	2.9				0.4
	09T308N-LD	●	2.8				0.8
	**NF-CCMT 09T302N-GD**	●	2.9	9.525	3.97	4.4	0.2
	09T304N-GD	●	2.9				0.4
	09T308N-GD	●	2.8				0.8
	**NF-CPMT 090302**	●	2.8	9.525	3.18	4.4	0.2
	090304	●	2.8				0.4
	090308	●	2.7				0.8
	**NF-DCMT 070201**	●	3.0	6.35	2.38	2.8	0.1
	070202	●	3.0				0.2
	070204	●	2.8				0.4
	**NF-DCMT 070202N-LD**	●	3.1	6.35	2.38	2.8	0.2
	070204N-LD	●	2.9				0.4
	**NF-DCMT 070202N-GD**	●	3.1	6.35	2.38	2.8	0.2
	070204N-GD	●	2.9				0.4
	**NF-DCMT 11T301**	●	3.0	9.525	3.97	4.4	0.1
	11T302	●	3.0				0.2
	11T304	●	2.8				0.4
	11T308	●	2.4				0.8
	**NF-DCMT 11T302N-LD**	●	3.1	9.525	3.97	4.4	0.2
	11T304N-LD	●	2.9				0.4
	11T308N-LD	●	2.5				0.8
	**NF-DCMT 11T302N-GD**	●	3.1	9.525	3.97	4.4	0.2
	11T304N-GD	●	2.9				0.4
	11T308N-GD	●	2.5				0.8
	**NF-SCMT 070201**	●	3.0	7.94	2.38	3.4	0.1
	070202	●	3.0				0.2
	070204	●	3.0				0.4
	**NF-SPGN 090304**	●	4.8	9.525	3.18	-	0.4
	090308	●	4.8				0.8
	**NF-SPGN 120304**	●	4.8	12.7	3.18	-	0.4
	120308	●	4.8				0.8
	**NF-SEGN 090302**	●	4.8	9.525	3.18	-	0.2
	**NF-SEGN 120302**	●	4.8	12.7	3.18	-	0.2

■ Positive NF Type Inserts

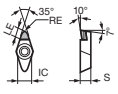
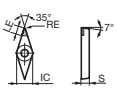
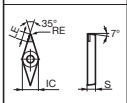
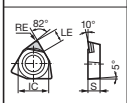
Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Nose Radius RE
	**NF-TBGW 060102**	●	2.3	3.97	1.59	2.2	0.2
	060104	●	2.2				0.4
	**NF-TBGN 060102**	●	2.1	3.97	1.59	-	0.2
	060104	●	2.0				0.4
	**NF-TCMT 090202**	●	2.9	5.56	2.38	2.5	0.2
	090204	●	2.8				0.4
	**NF-TCMT 110201**	●	3.0	6.35	2.38	2.8	0.1
	110202	●	2.9				0.2
	110204	●	2.8				0.4
	**NF-TPGW 080201**	●	3.1	4.76	2.38	2.4	0.1
	080202	●	3.0				0.2
	080204	●	2.9				0.4
	**NF-TPGW 090202**	●	3.1	5.56	2.38	2.8	0.2
	090204	●	2.9				0.4
	**NF-TPGW 110201**	●	3.1	6.35	2.38	2.8	0.1
	110202	●	3.0				0.2
	110204	●	2.9				0.4
	**NF-TPGW 110301**	●	3.1	6.35	3.18	3.4	0.1
	110302	●	3.0				0.2
	110304	●	2.9				0.4
	110308	●	2.7				0.8
	**NF-TPGW 160302**	●	3.1	9.525	3.18	4.4	0.2
	160304	●	2.9				0.4
	160308	●	2.7				0.8
	**NF-TPGW 160401**	●	3.1	9.525	4.76	4.4	0.1
	160402	●	3.0				0.2
	160404	●	2.9				0.4
	160408	●	2.7				0.8
	**NF-TPGN 090202**	●	3.1	5.56	2.38	-	0.2
	090204	●	3.0				0.4
	090208	●	2.9				0.8
	**NF-TPGN 110302**	●	3.0	6.35	3.18	-	0.2
	110304	●	2.9				0.4
	110308	●	2.7				0.8
	**NF-TPGN 110304P**	●	10.4	6.35	3.18	-	0.4
	110308P	●	9.8				0.8
	**NF-TPGN 160302**	●	3.0	9.525	3.18	-	0.2
	160304	●	2.9				0.4
	160308	●	2.7				0.8
	**NF-TPGN 160304P**	●	15.9	9.525	3.18	-	0.4
	**NF-TPMT 080202N-LD**	●	2.9	4.76	2.38	2.4	0.2
	080204N-LD	●	2.8				0.4
	**NF-TPMT 080202N-GD**	●	2.9	4.76	2.38	2.4	0.2
	080204N-GD	●	2.8				0.4

●mark: Standard Stock Item

Positive NF Type Inserts

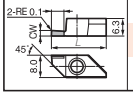
Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Nose Radius RE
	NF-TPMT 090202N-LD	●	3.1	5.56	2.38	2.8	0.2
	090204N-LD	●	2.9				0.4
	NF-TPMT 090202N-GD	●	3.1	5.56	2.38	2.8	0.2
	090204N-GD	●	2.9				0.4
	NF-TPMT 110202N-LD	●	3.1	6.35	2.38	3.4	0.2
	110204N-LD	●	2.9				0.4
	NF-TPMT 110202N-GD	●	3.1	6.35	2.38	3.4	0.2
	110204N-GD	●	2.9				0.4
	NF-TPMT 110301	●	3.1	6.35	3.18	3.4	0.1
	110302	●	3.0				0.2
	110304	●	2.9				0.4
	110308	●	2.7				0.8
	NF-TPMT 110302N-LD	●	3.1	6.35	3.18	3.4	0.2
	110304N-LD	●	2.9				0.4
	110308N-LD	●	2.7				0.8
	NF-TPMT 110302N-GD	●	3.1	6.35	3.18	3.4	0.2
	110304N-GD	●	2.9				0.4
	110308N-GD	●	2.7				0.8
	NF-TPMT 160402N-LD	●	3.1	9.525	4.76	4.4	0.2
	160404N-LD	●	2.9				0.4
	160408N-LD	●	2.7				0.8
	NF-TPMT 160402N-GD	●	3.1	9.525	4.76	4.4	0.2
	160404N-GD	●	2.9				0.4
	160408N-GD	●	2.7				0.8
	NF-TEGN 110202	●	3.1	6.35	2.38	-	0.2
	110204	●	2.9				0.4
	NF-TEGN 110302	●	3.1	6.35	3.18	-	0.2
	110304	●	2.9				0.4
	110308	●	2.7				0.8
	NF-TEGN 110304P	●	10.4	6.35	3.18	-	0.4
	110308P	●	9.8				0.8
	NF-TEGN 160302	●	3.0	9.525	3.18	-	0.2
	160304	●	2.9				0.4
	NF-TEGN 160304P	●	15.9	9.525	3.18	-	0.4
	NF-VCMT 110301	●	3.5	6.35	3.18	2.8	0.1
	110302	●	3.4				0.2
	110304	●	3.0				0.4
	NF-VCMT 110302N-LD	●	3.8	6.35	3.18	2.8	0.2
	110304N-LD	●	3.4				0.4
	NF-VCMT 110302N-GD	●	3.8	6.35	3.18	2.8	0.2
	110304N-GD	●	3.4				0.4

Positive NF Type Inserts

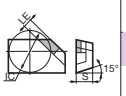
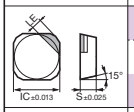
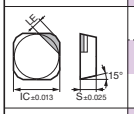
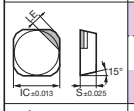
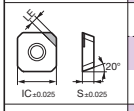
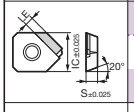
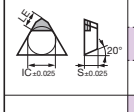
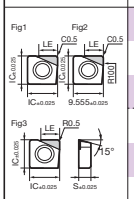
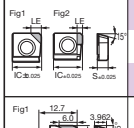
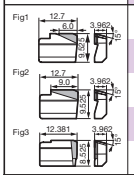
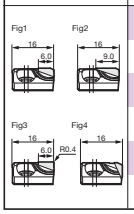
Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Nose Radius RE
	NF-VCMT 160404	●	6.5	9.525	4.76	4.4	0.4
	160408	●	5.6				0.8
	160412	●	4.6				1.2
	NF-VCMT 160404N-LD	●	6.5	9.525	4.76	4.4	0.2
	160408N-LD	●	5.6				0.4
	160412N-LD	●	4.8				0.8
	NF-VCMT 160404N-GD	●	6.5	9.525	4.76	4.4	0.2
	160408N-GD	●	5.6				0.4
	160412N-GD	●	4.8				0.8
	NF-WBMT 060101L	●	1.8	3.97	1.59	2.2	0.1
	060102L	●	1.8				0.2
	060104L	●	1.7				0.4

●mark: Standard Stock Item

■ Inserts for Multi-functional Tools

Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Cutting Width CW	Thickness S	Hole Dia.	Applicable Holder
	**KGV R2004-LD**	●	4.0	2.0	19.7	4.4	SGW Series
	R2504-LD	●	4.0	2.5	19.7	4.4	
	R2506-LD	●	5.5	2.5	21.2	4.4	

■ Milling Inserts

Shape	Cat. No.	Stock	Dimensions (mm)				
			Cutting Edge Length LE	Inscribed Circle IC	Thickness S	Hole Dia.	Applicable Holder
	**APW 4R**	●	2.0	12.7	3.18	-	APG Series
	**NF-SDC 42R**	●	3.0	12.7	3.18	-	APG Series
	**SDC 42R**	●	3.0	12.7	3.18	-	APG Series
	**NF-SDKN 42M**	●	3.0	12.7	3.18	-	FPG Series FPE Series
	**NF-SECW 13T3AGTN-N**	●	2.1	13.4	3.97	4.4	WGC Series
	**NF-XEEW 13T3AGFR-W**	●	2.5	13.4	3.97	4.4	WGC Series
	**NF-TEEN 22R**	●	4.9	6.35	3.18	-	CHG Series
	NF-TEEN 32R	●	4.9	9.525	3.18	-	CHE Series
	NF-TEEN 43R	●	4.8	12.7	4.76	-	
	**NF-SNEW 09T3ADTR** Fig1	●	6.0	9.525	3.96	4.4	SRF Series
	09T3ADTR-U Fig2	●					
	09T3ADTR-R Fig3	●					
	**NF-SNEW 1204ADFR** Fig1	●	4.7	12.7	4.76	5.5	RF Series
	120404ADFR-H Fig1	●	4.5				
	1204ADFR-W Fig2	●	2.3				
	**NF-LDEN 12T3ZDFR-L** Fig1	●	6.0	-	3.962	-	HF Series
	12T3ZDFR-G Fig1	●	6.0				
	12T3ZDFR-H Fig1	●	6.0				
	12T3ZDFR-GX Fig2	●	9.0				
	12T3ZDFR-W Fig3	●	-				
	**ANB 1600R-L** New Fig1	●	6.0	-	-	-	ANX Series
	1600R-G New Fig1	●	6.0				
	1600R-H New Fig1	●	6.0				
	1600R-GX New Fig2	●	9.0				
	1604R New Fig3	●	6.0				
	1600R-W New Fig4	●	-				

●mark: Standard Stock Item

< SAFETY NOTES >

- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.
- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

Sumitomo Electric Industries, Ltd.

Hardmetal Division

Global Marketing Department : 1-1-1, Koyakita, Itami, Hyogo 664-0016, Japan

Tel: +81-72-772-4535 Fax: +81-72-771-0088

https://www.sumitool.com/global

R8(2019.6)Ⅸ 0710 SN/AK