SUMITOMO

CARBIDE - CBN - DIAMOND

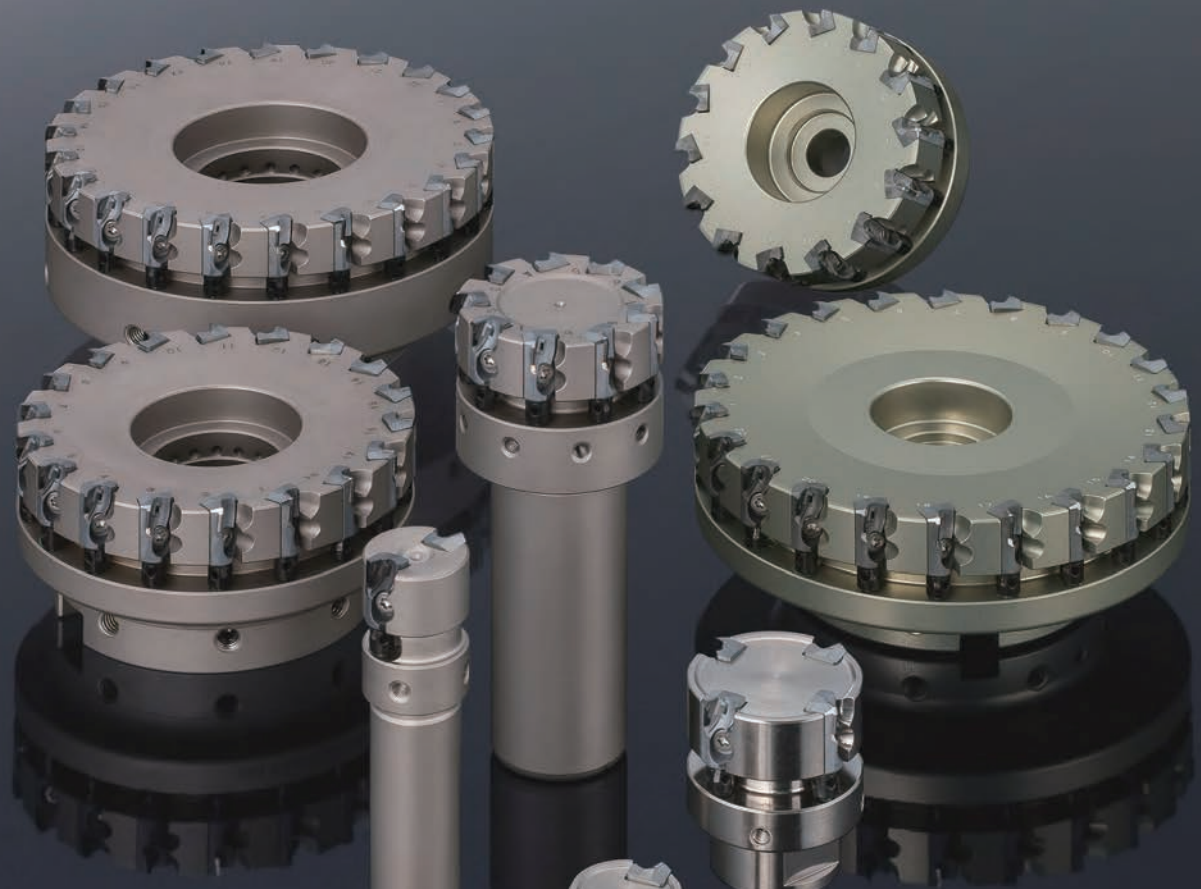
Global Support, Global Solutions.

High-Efficiency PCD Milling Cutter for Aluminum Alloy

ALNEX ANX series

Rev.3

Ultra-High-Efficiency Machining
Excellent Chip Control



New Introducing the new
CVD Single Crystal Diamond Wiper Blade WS Type, realizing burr-free mirror finishing

New PCD grade
ideal for combined milling of aluminum alloy and cast iron
SUMIDIA DA90 Lineup

Through-Blade Coolant

P M K N S H

SUMITOMO ELECTRIC GROUP

■ Features

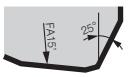
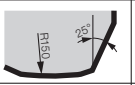
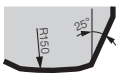
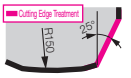
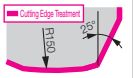
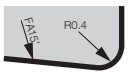
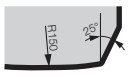
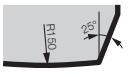
- **Drastically Reduced Runout Adjustment Time**
  Simple screw-fastening structure enables fine adjustments to be made easily
- **Through-Blade Coolant**
  Ensures coolant supply to the cutting edge and breaks chips
- **Lightweight Aluminum Alloy Body**
  Utilises aluminum alloy to achieve a total weight of less than 1.3kg for a ø125mm cutter with 22 teeth

■ Product Range

Type	Cat. No.	Body Material	Max. Diameter (mm)									
			ø25	ø30	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell	ANXA 16000R Inch	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXA 16000RS	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXS 16000R Inch	Steel						6 8 12	6 10 14	8 12 18	10 14 22	
	ANXS 16000RS	Steel				4 6	4 6 9	6 8 12	6 10 14	8 12 18	10 14 22	
Shank	ANXS 16000E	Steel	2	3 4	3 4	4 6	4 6 9					
Modular	ANXS 16000M	Steel	2	3 4	3 4	4 6						

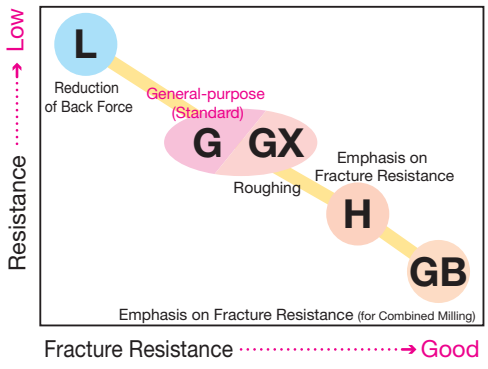
Number in ● shows the number of teeth (expanded items are shown in red with white borders) Inch Inch Bore

■ Blade Selection Guide

Work Material	N								
Applications	Finishing/Light Cutting	General-purpose	Roughing		Combined Milling *1	Corner Radius Milling	Corner Radius Milling	Finishing	Burr-free / Mirror Finishing
Features	Low Cutting Force	Standard	Long Edge	High Strength	High Strength	Corner Radius 0.4	Corner Radius 0.8	Wiper	Wiper
Type	L	G	GX	H	GB	-	-	W	WS
Cutting Edge Shape									
Edge Length (*2)	6.0mm	6.0mm	9.0mm	6.0mm	6.0mm	6.0mm	6.0mm	2.0mm	–

*1 Machining of components combining aluminum alloy and cast iron

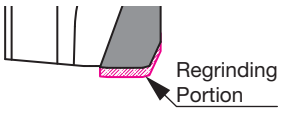
■ Blade Selection Reference

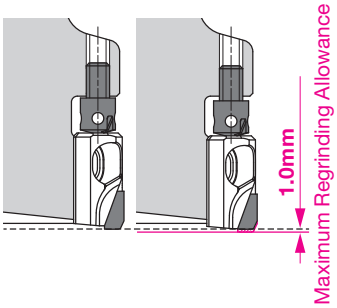


*2 Edge length

● **Regrinding possible up to 1.0mm. Reduced running costs**

Assuming 0.2mm of regrinding each time, an edge can be used up to 6 times.
(Peripheral edge cannot be reground.)



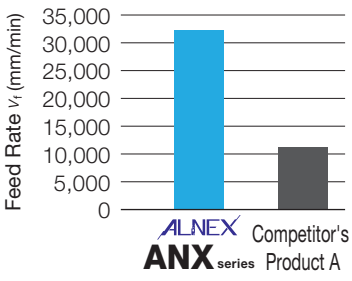


■ High-speed/High-efficiency Cutting

Realises ultra-high-efficiency machining with v_f = 30,000mm/min

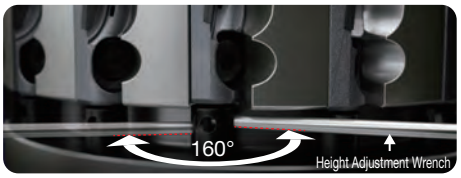
Cutter diameter ø100mm comparison

	Spindle Speed min^{-1}	Number of Teeth	Feed Rate v_f (mm/min)
ALNEX ANX series	18,000	18	32,400
Competitor's Product A	9,500	12	11,400



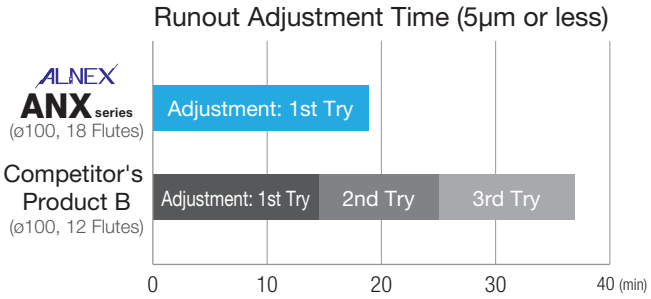
■ Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body (reduces deformation due to tightening)



Adjustment is easy thanks to the large movable range of the height adjustment wrench.

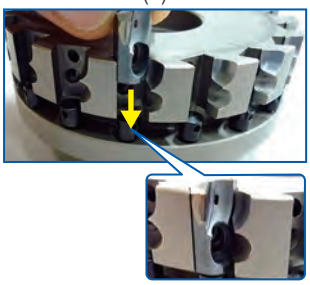
* We recommend keeping cutting edge height variation during runout adjustment to within 5μm.



Completed on 1st Try, Adjustment Time Reduced

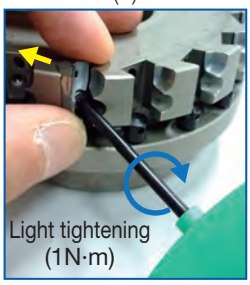
■ Blade Mounting/Runout Adjustment

(1)



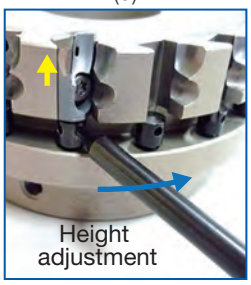
(1) Slide the blade into the cutter teeth groove.

(2)



(2) Lightly tighten the cap screw while pressing the blade against the restraining face. (1N·m)

(3)



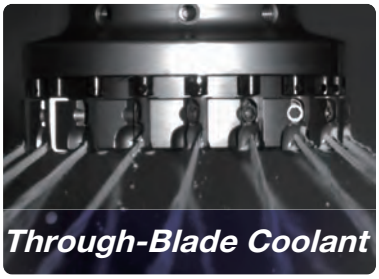
(3) Adjust the blade to the required height by using the dedicated wrench to turn the height adjustment screw.

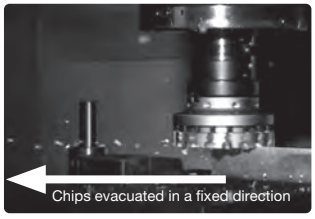
(4)

(4) Perform final tightening of the cap screw. (2N·m)

■ Chip Control

Through-Blade Coolant Chip Breaking





Controls the chips' scatter direction.

The chip pocket catches the chips and suppresses damage to the body.

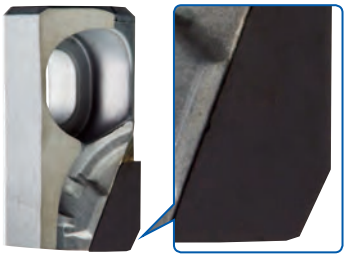
ALNEX ANX series

Competitor's Product C

Work Material: ADC12, Cutting Conditions: v_c = 2,500m/min f_z = 0.05mm/t a_p = 0.5mm Wet

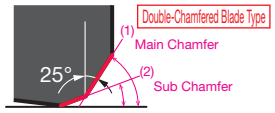
■ Burr Control

Reduces burrs by using a double-chamfered cutting edge

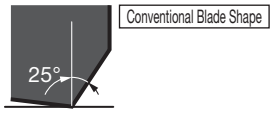


Drastically reduces burrs by preventing plastic deformation that causes burrs.

Work Material: A6061 Sheet Metal
Cutting Conditions: v_c = 3,142m/min
f_z = 0.1mm/t
a_p = 0.5mm Dry



ALNEX ANX series



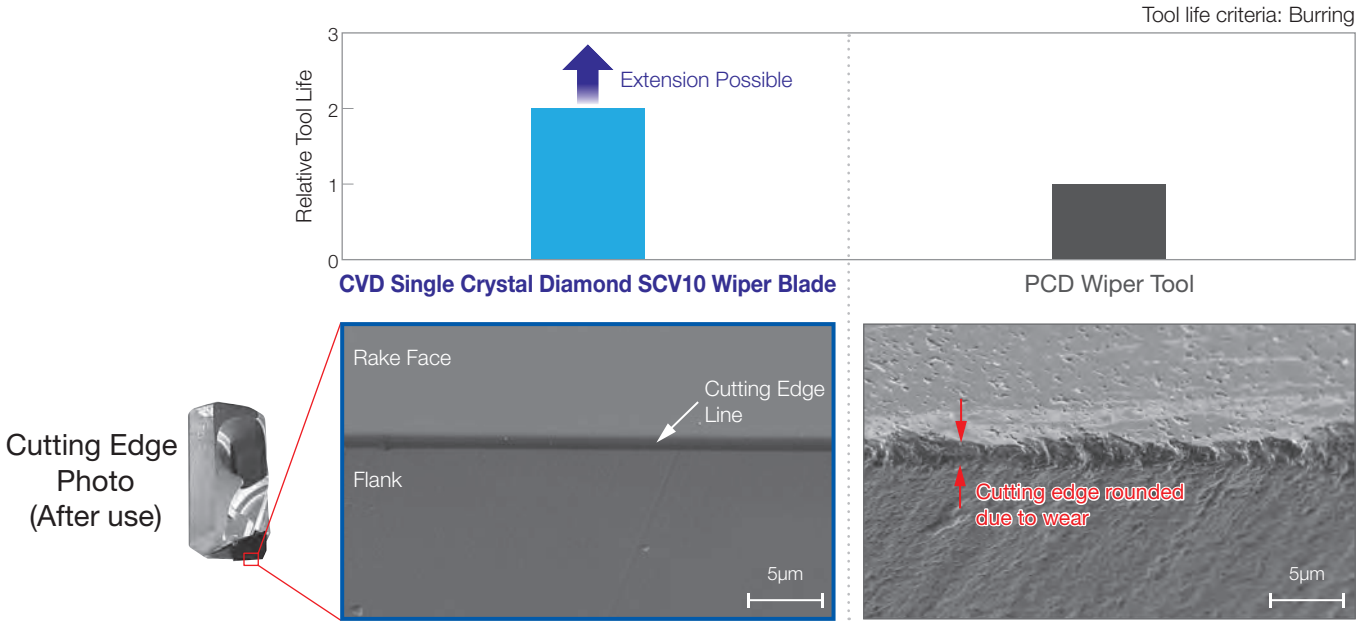
Conventional Tool

New CVD Single Crystal Diamond SCV10 Wiper Blade

- Wiper blade adopts high-strength single-crystal diamond using Sumitomo Electric Hardmetal's vapour phase synthesis technology
- Sharp cutting edge realises burr-free, mirror finish surface quality in aluminum alloy machining
- Superior wear resistance maintains cutting edge sharpness for a long time, reducing total tool costs

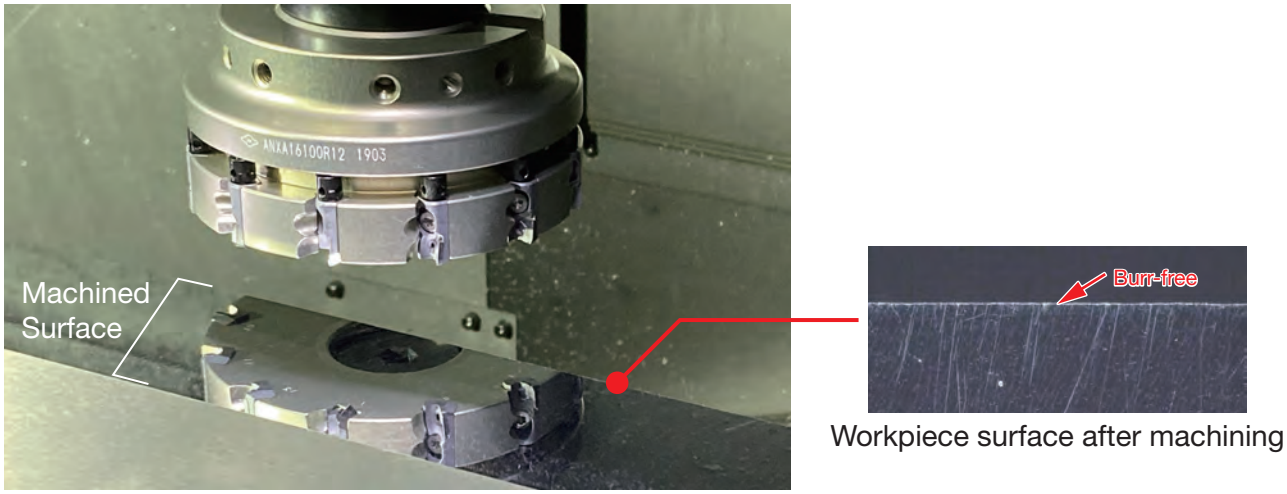
■ Burr-free

Sharp cutting edge and excellent wear resistance suppress burrs over the long term



■ Mirror Finishing

Sharp cutting edge achieves mirror finish with cutting alone



Polycrystalline Diamond SUMIDIA DA1000/ New DA90

Through the ideal combination of diamond particle size and binder, SUMIDIA DA1000/DA90 possess various features and is suitable for all kinds of applications such as machining of aluminum alloy and cemented carbide.

■ Grades, Features and Applications

Grade	Features	Applications	Content (%)	Average grain size of diamond particles (μm)	Hardness HK (GPa)	TRS (GPa)
DA1000	High-density sintered grade made of ultra-fine grain diamond that exhibits excellent wear and fracture resistance as well as edge sharpness.	· Machining of High-Silicon Aluminum Alloy · Rough, Interrupt and Finish Machining of Aluminum Alloy. · Woodcraft or Wooden Board Cutting/Facing · General Finishing of Non-Ferrous Metals	90 to 95	Up to 0.5	50 to 60	≈ 2.60
DA90	Contains coarser diamond particles than other grades, giving it good wear resistance suitable for the machining of carbides and high-silicon aluminum. Shows the highest diamond content for excellent wear resistance.	· Machining of High-Silicon Aluminum Alloy · Machining of Aluminum Composite (MMC) · Green or Semi-Sintered Cemented Carbide & Ceramic Roughing · Machining of Sintered Ceramic/ Stone/Rock	90 to 95	Up to 50	50 to 65	≈ 1.10

■ Grade Application

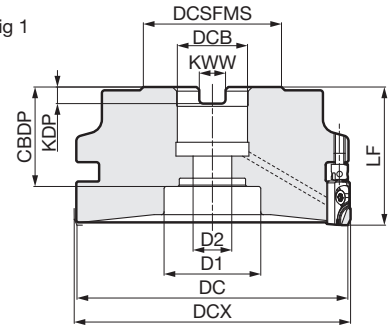
	Work Material	Applicable Grade	Example Parts
Aluminum	Sintered Aluminum, Wrought Aluminum Alloy	DA1000	Piston Liners, Machine Parts, etc.
	Alloys for Die Casting		Transmission Case, Oil Pan, Cylinder Block
	Alloys for Casting Low Si (≤12%)		Cylinder Head
	Alloys for Casting High Si (>12%)		Cylinder Block
Non-aluminum	Non-Ferrous Sintered Alloy	DA1000	Bush
	Gunmetal, Carbon		Connecting Rod
	Fe Combined	DA90	Cylinder Block, Bearing Cap

ANXA 16000R(S) type

Rake Angle		
	Radial	+5°
	Axial	+5°

3mm 90° N Non-ferrous Metal

Fig 1



Body (Aluminum Alloy)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXA 16080RS06**	●	**78**	80	50	50	**27**	12.4	7	34	35	14	6	0.5	1
	ANXA 16080RS10	●	**78**	80	50	50	**27**	12.4	7	34	35	14	10	0.5	1
	ANXA 16080RS14	●	**78**	80	50	50	**27**	12.4	7	34	35	14	14	0.5	1
	ANXA 16100RS08	●	**98**	100	50	50	**27**	12.4	7	34	35	14	8	0.8	1
	ANXA 16100RS12	●	**98**	100	50	50	**27**	12.4	7	34	35	14	12	0.8	1
	ANXA 16100RS18	●	**98**	100	50	50	**27**	12.4	7	34	35	14	18	0.9	1
	ANXA 16125RS10	●	**123**	125	50	50	**27**	12.4	7	34	35	14	10	1.2	1
	ANXA 16125RS14	●	**123**	125	50	50	**27**	12.4	7	34	35	14	14	1.2	1
	ANXA 16125RS22	●	**123**	125	50	50	**27**	12.4	7	34	35	14	22	1.3	1
	ANXA 16160RS12	●	**158**	160	80	63	**40**	16.4	9	35	52	29	12	2.6	1
	ANXA 16160RS20	●	**158**	160	80	63	**40**	16.4	9	35	52	29	20	2.6	1
	ANXA 16160RS28	●	**158**	160	80	63	**40**	16.4	9	35	52	29	28	2.6	1
Inch	**ANXA 16080R06**	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	6	0.5	1
	ANXA 16080R10	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	10	0.5	1
	ANXA 16080R14	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	14	0.5	1
	ANXA 16100R08	●	**98**	100	50	50	**25.4**	9.5	6	34	35	14	8	0.8	1
	ANXA 16100R12	●	**98**	100	50	50	**25.4**	9.5	6	34	35	14	12	0.9	1
	ANXA 16100R18	●	**98**	100	50	50	**25.4**	9.5	6	34	35	14	18	0.9	1
	ANXA 16125R10	●	**123**	125	50	50	**25.4**	9.5	6	34	35	14	10	1.2	1
	ANXA 16125R14	●	**123**	125	50	50	**25.4**	9.5	6	34	35	14	14	1.2	1
	ANXA 16125R22	●	**123**	125	50	50	**25.4**	9.5	6	34	35	14	22	1.3	1
	ANXA 16160R12	●	**158**	160	80	63	**38.1**	15.9	10	42.5	55	30	12	2.3	1
	ANXA 16160R20	●	**158**	160	80	63	**38.1**	15.9	10	42.5	55	30	20	2.4	1
	ANXA 16160R28	●	**158**	160	80	63	**38.1**	15.9	10	42.5	55	30	28	2.6	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).
All aluminum alloy cutter bodies from (DCX) ø80 to ø125 have similar bore diameter (DCB) (metric ø27/inch ø25.4).

Identification Code

ANX A 16 100 R S 18

ANX	A	16	100	R	S	18
Series	Aluminum Alloy Body	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Number of Teeth

● mark: Standard stocked item

ANXA 16000R(S) type New

Blades

Dimensions (mm)

Grade Classification		SUMIDIA		CVD Single-crystal Diamond
Applications	High-speed/Light	N	KN	N
	General-purpose	N	KN	
	Roughing	N	KN	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Flat Shape	Applications	Fig
ANB 1600R-L	●		—	6.0	—	Linear	Low Resistance	1
ANB 1600R-G	●		—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	6.0	—	Arc-Shaped	Combined Milling*	1
ANB 1600R-H	●	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	●		—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	○	—	—	Arc-Shaped	Wiper	5

Fig 1

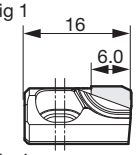


Fig 2

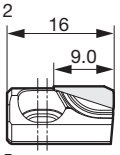


Fig 3

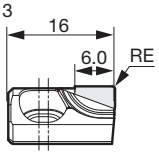
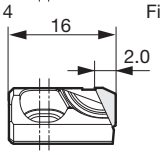
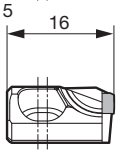


Fig 4



Wiper Blade

Fig 5



Wiper Blade

* Cast Iron/Aluminum Alloy

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
For combined milling of cast iron/aluminum alloy, we recommend DA90.

Maximum Allowable Spindle Speed

Cat. No.	n max (min^{-1})
ANXA 16080RS06	20,000
ANXA 16080RS10	20,000
ANXA 16080RS14	20,000
ANXA 16100RS08	18,000
ANXA 16100RS12	18,000
ANXA 16100RS18	18,000
ANXA 16125RS10	16,000
ANXA 16125RS14	16,000
ANXA 16125RS22	16,000
ANXA 16160RS12	14,000
ANXA 16160RS20	14,000
ANXA 16160RS28	14,000
ANXA 16080R06	20,000
ANXA 16080R10	20,000
ANXA 16080R14	20,000
ANXA 16100R08	18,000
ANXA 16100R12	18,000
ANXA 16100R18	18,000
ANXA 16125R10	16,000
ANXA 16125R14	16,000
ANXA 16125R22	16,000
ANXA 16160R12	14,000
ANXA 16160R20	14,000
ANXA 16160R28	14,000

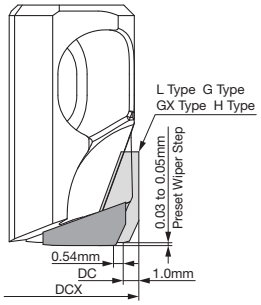
Spare Parts

Applicable Cutter	Clamp Screw	N·m	Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	N·m
ANXA 16080R(S)○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH1235-D33	50
ANXA 16100R(S)○○							
ANXA 16125R(S)○○							
ANXA 16160R(S)○○						BXH2036-D50	200

N·m Recommended Tightening Torque (N·m)

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF Type and High-efficiency Cutter HF Type.

Wiper Blade Step Amount



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

When using the wiper blade, in order to maintain balance, be sure to use a cutter with an even number of cutting edges and place the wiper blades at opposite positions.

● mark: Standard stocked item ● mark: Standard stocked item (expanded item) ○ mark: Stock or planned stock (to be sold as of Jan. 2022)

ANXS 16000R(S) type

Rake Angle	Radial	+5°
	Axial	+5°

3mm 90° N Non-ferrous Metal

Fig 1

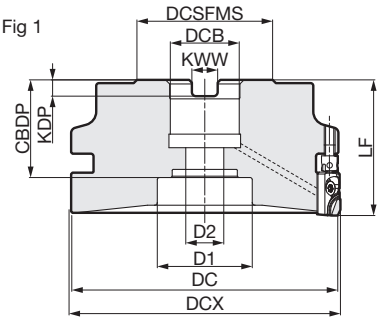
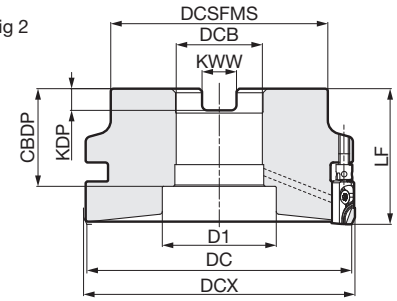


Fig 2



Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16040RS04**	●	**38**	40	38.5	40	**16**	8.4	5.6	26	14	9	4	0.3	1
	ANXS 16040RS06	●	**38**	40	38.5	40	**16**	8.4	5.6	26	14	9	6	0.3	1
	ANXS 16050RS04	●	**48**	50	48.5	40	**22**	10.4	6.3	26	18	11	4	0.4	1
	ANXS 16050RS06	●	**48**	50	48.5	40	**22**	10.4	6.3	26	18	11	6	0.4	1
	ANXS 16050RS09	●	**48**	50	48.5	40	**22**	10.4	6.3	26	18	11	9	0.5	1
	ANXS 16063RS06	●	**61**	63	50	40	**22**	10.4	6.3	26	18	11	6	0.7	1
	ANXS 16063RS08	●	**61**	63	50	40	**22**	10.4	6.3	26	18	11	8	0.7	1
	ANXS 16063RS12	●	**61**	63	50	40	**22**	10.4	6.3	26	18	11	12	0.7	1
	ANXS 16080RS06	●	**78**	80	50	50	**27**	12.4	7	34	35	14	6	1.2	1
	ANXS 16080RS10	●	**78**	80	50	50	**27**	12.4	7	34	35	14	10	1.2	1
	ANXS 16080RS14	●	**78**	80	50	50	**27**	12.4	7	34	35	14	14	1.2	1
	ANXS 16100RS08	●	**98**	100	80	50	**32**	14.4	8	32	46	—	8	1.9	2
	ANXS 16100RS12	●	**98**	100	80	50	**32**	14.4	8	32	46	—	12	2.0	2
	ANXS 16100RS18	●	**98**	100	80	50	**32**	14.4	8	32	46	—	18	2.0	2
	ANXS 16125RS10	●	**123**	125	80	63	**40**	16.4	9	35	52	—	10	3.8	2
	ANXS 16125RS14	●	**123**	125	80	63	**40**	16.4	9	35	52	—	14	3.9	2
	ANXS 16125RS22	●	**123**	125	80	63	**40**	16.4	9	35	52	—	22	3.9	2
Inch	**ANXS 16063R06**	●	**61**	63	50	50	**25.4**	9.5	6	31	20	14	6	0.9	1
	ANXS 16063R08	●	**61**	63	50	50	**25.4**	9.5	6	31	20	14	8	0.9	1
	ANXS 16063R12	●	**61**	63	50	50	**25.4**	9.5	6	31	20	14	12	0.9	1
	ANXS 16080R06	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	6	1.2	1
	ANXS 16080R10	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	10	1.2	1
	ANXS 16080R14	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	14	1.2	1
	ANXS 16100R08	●	**98**	100	80	50	**31.75**	12.7	8	36	42	—	8	1.9	2
	ANXS 16100R12	●	**98**	100	80	50	**31.75**	12.7	8	36	42	—	12	2.0	2
	ANXS 16100R18	●	**98**	100	80	50	**31.75**	12.7	8	36	42	—	18	2.0	2
	ANXS 16125R10	●	**123**	125	80	63	**38.1**	15.9	10	42.5	52	—	10	3.9	2
	ANXS 16125R14	●	**123**	125	80	63	**38.1**	15.9	10	42.5	52	—	14	3.9	2
	ANXS 16125R22	●	**123**	125	80	63	**38.1**	15.9	10	42.5	52	—	22	3.9	2

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).

Identification Code

ANX S 16 100 R S 18

ANX	S	16	100	R	S	18
Series	Steel Body	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Number of Teeth

● mark: Standard stocked item

ANXS 16000R(S) type New

Blades

Dimensions (mm)

Grade Classification		SUMIDIA		CVD Single-crystal Diamond
Applications	High-speed/Light	N	KN	N
	General-purpose	N	KN	
	Roughing	N	KN	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Flat Shape	Applications	Fig
ANB 1600R-L	●		—	6.0	—	Linear	Low Resistance	1
ANB 1600R-G	●		—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	6.0	—	Arc-Shaped	Combined Milling*	1
ANB 1600R-H	●	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	●		—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	○	—	—	Arc-Shaped	Wiper	5

Fig 1

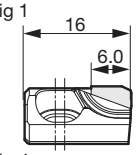


Fig 2

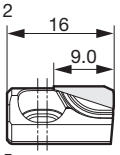


Fig 3

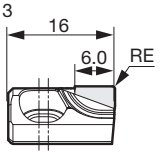
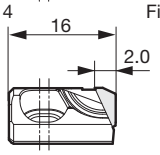
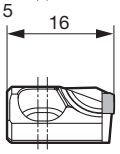


Fig 4



Wiper Blade

Fig 5



Wiper Blade

* Cast Iron/Aluminum Alloy

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
For combined milling of cast iron/aluminum alloy, we recommend DA90.

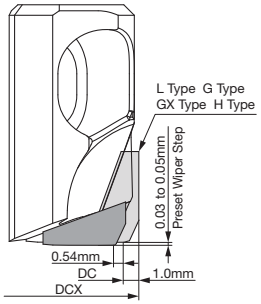
Spare Parts

Applicable Cutter	Clamp Screw	N·m	Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	N·m
ANXS 16040RS○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH0825-D13	15
ANXS 16050RS○○						BXH1030-D16	25
ANXS 16063RS○○							
ANXS 16080RS○○						BXH1235-D33	50
ANXS 16100RS○○						BXH1635-D40	100
ANXS 16125RS○○						BXH2036-D50	200
ANXS 16063R○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH1235-D18	40
ANXS 16080R○○						BXH1235-D33	50
ANXS 16100R○○						BXH1635-D40	100
ANXS 16125R○○						BXH2036-D50	200

N·m Recommended Tightening Torque (N·m)

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF Type and High-efficiency Cutter HF Type.

Wiper Blade Step Amount



Maximum Allowable Spindle Speed

Cat. No.	n max (min^{-1})
ANXS 16040RS04	25,000
ANXS 16040RS06	25,000
ANXS 16050RS04	25,000
ANXS 16050RS06	25,000
ANXS 16050RS09	25,000
ANXS 16063RS06	25,000
ANXS 16063RS08	22,000
ANXS 16063RS12	22,000
ANXS 16080RS06	20,000
ANXS 16080RS10	20,000
ANXS 16080RS14	20,000
ANXS 16100RS08	18,000
ANXS 16100RS12	18,000
ANXS 16100RS18	18,000
ANXS 16125RS10	16,000
ANXS 16125RS14	16,000
ANXS 16125RS22	16,000
ANXS 16063R06	22,000
ANXS 16063R08	22,000
ANXS 16063R12	22,000
ANXS 16080R06	20,000
ANXS 16080R10	20,000
ANXS 16080R14	20,000
ANXS 16100R08	18,000
ANXS 16100R12	18,000
ANXS 16100R18	18,000
ANXS 16125R10	16,000
ANXS 16125R14	16,000
ANXS 16125R22	16,000

⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

When using the wiper blade, in order to maintain balance, be sure to use a cutter with an even number of cutting edges and place the wiper blades at opposite positions.

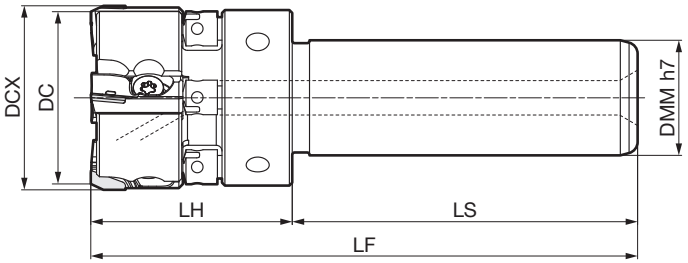
● mark: Standard stocked item ● mark: Standard stocked item (expanded item) ○ mark: Stock or planned stock (to be sold as of Jan. 2022)

ANXS 16000E type

Rake Angle		
	Radial	-2 to 0°
	Axial	+5°

3mm 90°

Fig 1



Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16025E02**	●	**23**	25	20	35	60	95	2	0.2	1
	ANXS 16030E03	●	**28**	30	20	35	60	95	3	0.3	1
	ANXS 16030E04	●	**28**	30	20	35	60	95	4	0.3	1
	ANXS 16032E03	●	**30**	32	20	35	60	95	3	0.3	1
	ANXS 16032E04	●	**30**	32	20	35	60	95	4	0.3	1
	ANXS 16040E04	●	**38**	40	20	40	60	100	4	0.4	1
	ANXS 16040E06	●	**38**	40	20	40	60	100	6	0.5	1
	ANXS 16050E04	●	**48**	50	32	40	80	120	4	1.0	1
	ANXS 16050E06	●	**48**	50	32	40	80	120	6	1.0	1
	ANXS 16050E09	●	**48**	50	32	40	80	120	9	1.0	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Identification Code

ANX S 16 032 E 04

ANX	S	16	032	E	04
Series	Steel Body	Blade Size	Cutter Dia.	Shank Type	Number of Teeth

● mark: Standard stocked item

ANXS 16000E type New

Blades

Dimensions (mm)

Grade Classification		SUMIDIA		CVD Single-crystal Diamond
Applications	High-speed/Light	N	KN	N
	General-purpose	N	KN	
	Roughing	N	KN	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Flat Shape	Applications	Fig
ANB 1600R-L	●		—	6.0	—	Linear	Low Resistance	1
ANB 1600R-G	●		—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	6.0	—	Arc-Shaped	Combined Milling*	1
ANB 1600R-H	●	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	●		—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	○	—	—	Arc-Shaped	Wiper	5

Fig 1

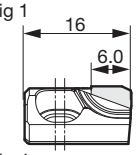


Fig 2

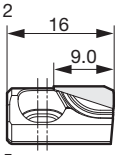


Fig 3

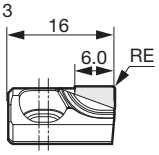
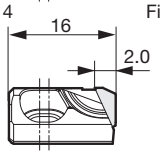
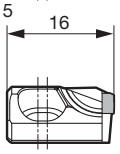


Fig 4



Wiper Blade

Fig 5



Wiper Blade

* Cast Iron/Aluminum Alloy

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
For combined milling of cast iron/aluminum alloy, we recommend DA90.

Maximum Allowable Spindle Speed

Cat. No.	n max (min^{-1})
ANXS 16025E02	10,000
ANXS 16030E03	10,000
ANXS 16030E04	10,000
ANXS 16032E03	10,000
ANXS 16032E04	10,000
ANXS 16040E04	10,000
ANXS 16040E06	10,000
ANXS 16050E04	10,000
ANXS 16050E06	10,000
ANXS 16050E09	10,000

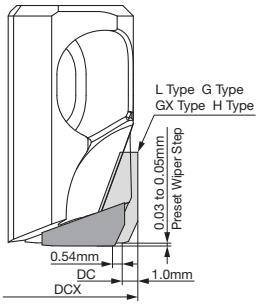
Spare Parts

Clamp Screw		Wrench	Adjustment Screw	Adjustment Wrench
				
BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT

N·m Recommended Tightening Torque (N·m)

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF Type and High-efficiency Cutter HF Type.

Wiper Blade Step Amount



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

When using the wiper blade, in order to maintain balance, be sure to use a cutter with an even number of cutting edges and place the wiper blades at opposite positions.

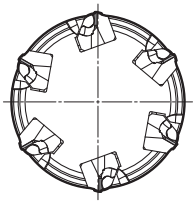
● mark: Standard stocked item ● mark: Standard stocked item (expanded item) ○ mark: Stock or planned stock (to be sold as of Jan. 2022)

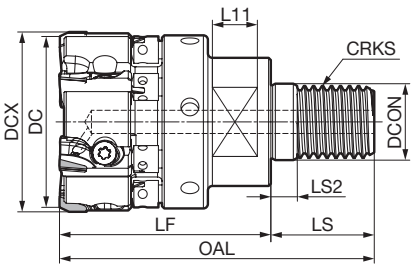
ANXS 16000M type

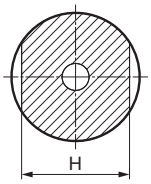
Rake Angle		
	Radial	-2 to 0°
	Axial	+5°

3mm 90°

N Non-ferrous Metal







Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Neck LF2	Shank Length LS	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16025M12Z02**	●	**23**	25	12.5	**M12**	61	40	5	21	10	19	2	0.1	1
	ANXS 16030M16Z03	●	**28**	30	17.0	**M16**	70	47	5	23	10	24	3	0.2	1
	ANXS 16030M16Z04	●	**28**	30	17.0	**M16**	70	47	5	23	10	24	4	0.2	1
	ANXS 16032M16Z03	●	**30**	32	17.0	**M16**	70	47	5	23	10	24	3	0.3	1
	ANXS 16032M16Z04	●	**30**	32	17.0	**M16**	70	47	5	23	10	24	4	0.3	1
	ANXS 16040M16Z04	●	**38**	40	17.0	**M16**	70	47	5	23	10	24	4	0.4	1
	ANXS 16040M16Z06	●	**38**	40	17.0	**M16**	70	47	5	23	10	24	6	0.4	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Identification Code

ANX S 16 032 M16 Z03

ANX	S	16	032	M16	Z03
Series	Steel Body	Blade Size	Cutter Dia.	Screw Size	Number of Teeth

● mark: Standard stocked item

ANXS 16000M type New

Blades

Dimensions (mm)

Grade Classification		SUMIDIA		CVD Single-crystal Diamond
Applications	High-speed/Light	N	KN	N
	General-purpose	N	KN	
	Roughing	N	KN	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Flat Shape	Applications	Fig
ANB 1600R-L	●		—	6.0	—	Linear	Low Resistance	1
ANB 1600R-G	●		—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	6.0	—	Arc-Shaped	Combined Milling*	1
ANB 1600R-H	●	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	●		—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	○	—	—	Arc-Shaped	Wiper	5

Fig 1

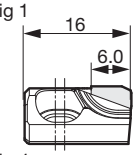


Fig 2

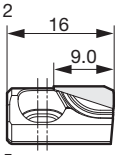


Fig 3

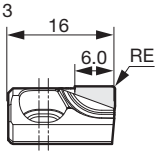
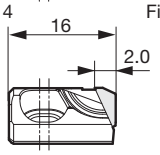
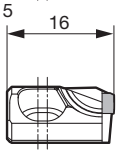


Fig 4



Wiper Blade

Fig 5



Wiper Blade

* Cast Iron/Aluminum Alloy

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
For combined milling of cast iron/aluminum alloy, we recommend DA90.

Maximum Allowable Spindle Speed

Cat. No.	n max (min^{-1})
ANXS 16025M12Z02	10,000
ANXS 16030M16Z03	10,000
ANXS 16030M16Z04	10,000
ANXS 16032M16Z03	10,000
ANXS 16032M16Z04	10,000
ANXS 16040M16Z04	10,000
ANXS 16040M16Z06	10,000

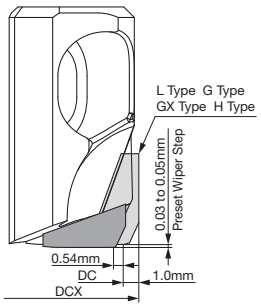
Spare Parts

Clamp Screw		Wrench	Adjustment Screw	Adjustment Wrench
				
BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT

N·m Recommended Tightening Torque (N·m)

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF Type and High-efficiency Cutter HF Type.

Wiper Blade Step Amount



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

When using the wiper blade, in order to maintain balance, be sure to use a cutter with an even number of cutting edges and place the wiper blades at opposite positions.

● mark: Standard stocked item ● mark: Standard stocked item (expanded item) ○ mark: Stock or planned stock (to be sold as of Jan. 2022)

Application Example

Aluminum Alloy ADC12 Engine Component		Sumitomo	Comp's
Vertical Machining Centre HSK63A	Tool	ANXS16063RS12	PCD Cutter
	Grade	DA1000	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	63	63
	Number of Teeth	12	6
	v_c (m/min)	1,583	1,583
	v_f (mm/min)	6,432	3,216
	f_z (mm/t)	0.067	0.067
	a_p (mm)	1	1
	a_e (mm)	—	—
	Coolant	Wet (External Coolant Supply)	Wet (External Coolant Supply)
	Results	Doubled machining efficiency with increased number of teeth Tool life extended 2.3x, burrs reduced	

Aluminum Alloy ADC12 Engine Component		Sumitomo	—
Vertical Machining Centre BT50	Tool	ANXS16050E09	—
	Grade	DA1000	—
	Chipbreaker	R0.4	—
	Cutter Dia. (mm)	50	—
	Number of Teeth	9	—
	v_c (m/min)	942	—
	v_f (mm/min)	2,700	—
	f_z (mm/t)	0.05	—
	a_p (mm)	1	—
	a_e (mm)	—	—
	Coolant	Wet (Internal Coolant Supply)	—
	Results	Usable with milling chucks and hydro chucks	

Aluminum Alloy ADC12 Case		Sumitomo	Comp's
Vertical Machining Centre HSK63A	Tool	ANXS16063RS12	PCD Cutter
	Grade	DA1000	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	63	63
	Number of Teeth	12	8
	v_c (m/min)	1,979	1,979
	v_f (mm/min)	10,000	8,000
	f_z (mm/t)	0.083	0.1
	a_p (mm)	2	2
	a_e (mm)	—	—
	Coolant	Wet (Internal Coolant Supply)	Wet (Internal Coolant Supply)
	Results	Machining efficiency increased 1.25x with increased number of teeth Tool life extended 3.6x with reduced load per feed	

Aluminum Alloy ADC12 Case		Sumitomo	Comp's
Vertical Machining Centre BT30	Tool	ANXA16080R14	PCD Cutter
	Grade	DA1000	—
	Chipbreaker	L	—
	Cutter Dia. (mm)	80	80
	Number of Teeth	14	8
	v_c (m/min)	2,513	2,513
	v_f (mm/min)	2,500	2,500
	f_z (mm/t)	0.018	0.031
	a_p (mm)	Roughing 2.0/Finishing 0.2	Roughing 2.0/Finishing 0.2
	a_e (mm)	—	—
	Coolant	Wet (Internal Coolant Supply)	Wet (Internal Coolant Supply)
	Results	Improved flatness, burrs reduced Drastically reduced runout adjustment time	

Aluminum Alloy ADC12 Automotive Component		Sumitomo	Comp's
Vertical Machining Centre BT30	Tool	ANXA16125R22	PCD Cutter
	Grade	DA1000	—
	Chipbreaker	H	—
	Cutter Dia. (mm)	125	125
	Number of Teeth	22	6
	v_c (m/min)	3,142	3,142
	v_f (mm/min)	14,080	3,520
	f_z (mm/t)	0.08	0.073
	a_p (mm)	0.8	0.8
	a_e (mm)	—	—
	Coolant	Wet (Internal Coolant Supply)	Wet (External Coolant Supply)
	Results	Machining efficiency improved 4x, tool life extended 11x, non-cutting time reduced with lighter body	

Aluminum Alloy ADC12 Automotive Component		Sumitomo	Comp's
Vertical Machining Centre BT30	Tool	ANXA16125R22	Carbide Cutter
	Grade	DA1000	Carbide
	Chipbreaker	G	—
	Cutter Dia. (mm)	125	125
	Number of Teeth	22	6
	v_c (m/min)	3,534	1,000
	v_f (mm/min)	Roughing 5,000/Finishing 10,000	1,200
	f_z (mm/t)	Roughing 0.025/Finishing 0.05	0.08
	a_p (mm)	Roughing 3.0/Finishing 0.5	Roughing 3.0/Finishing 0.5
	a_e (mm)	—	—
	Coolant	Wet (External Coolant Supply)	Wet (External Coolant Supply)
	Results	Machining efficiency increased 6x with increased number of teeth Tool life extended 10x	

Aluminum Alloy ADC12 Automotive Component		Sumitomo	Comp's
Vertical Machining Centre BT30	Tool	ANXS16025E02	Brazed
	Grade	DA1000	PCD
	Chipbreaker	R0.4	—
	Cutter Dia. (mm)	25	25
	Number of Teeth	2	2
	v_c (m/min)	471	471
	v_f (mm/min)	900	900
	f_z (mm/t)	0.075	0.075
	a_p (mm)	0.3 to 1.5	0.3 to 1.5
	a_e (mm)	7 to 10	7 to 10
	Coolant	Wet (Internal Coolant Supply)	Wet (External Coolant Supply)
	Results	Fine chips with internal coolant supply Economic with indexable blade	

CFRP Aerospace Jig		Sumitomo	—
Vertical Machining Centre BT50	Tool	ANXS16080R10	—
	Grade	DA1000	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	80	—
	Number of Teeth	5	—
	v_c (m/min)	565	—
	v_f (mm/min)	3,000	—
	f_z (mm/t)	0.27	—
	a_p (mm)	1.55	—
	a_e (mm)	—	—
	Coolant	Dry	—
	Results	Good machined surface quality	

Aluminum Alloy ADC12 Automotive Component		Sumitomo	—
Vertical Machining Centre BT30	Tool	ANXA16160RS12	—
	Grade	DA1000	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	160	—
	Number of Teeth	12	—
	v_c (m/min)	3,014	—
	v_f (mm/min)	10,000	—
	f_z (mm/t)	0.14	—
	a_p (mm)	0.2	—
	a_e (mm)	—	—
	Coolant	Wet (Internal Coolant Supply)	—
	Results	Good machine surface accuracy Fine chips	

ADC12/FC250 Combined milling of engine components		Sumitomo	Comp's
Horizontal M/C HSK100	Tool	ANXA16250R20*	PCD Cutter
	Grade	DA90	—
	Chipbreaker	GB	—
	Cutter Dia. (mm)	250	250
	Number of Teeth	20	24
	v_c (m/min)	785	785
	v_f (mm/min)	1,000	1,200
	f_z (mm/t)	0.05	0.05
	a_p (mm)	0.2	0.2
	a_e (mm)	—	—
	Coolant	Wet (Internal Coolant Supply)	Wet (Internal Coolant Supply)
	Results	3x tool life, burrs reduced Good machined surface quality	

* Made-to-Order Product

ADC12/FCD450 Combined milling of engine components	Sumitomo	Conventional Tool
Tool	ANXA16125RS22	ANXA16125RS22
Grade	DA90	DA1000
Chipbreaker	GB	H
Cutter Dia. (mm)	125	125
Number of Teeth	22	22
v_c (m/min)	353	353
v_f (mm/min)	4,372	4,372
f_z (mm/t)	0.13	0.13
a_p (mm)	0.15	0.15
a_e (mm)	—	—
Coolant	Wet (Internal Coolant Supply)	Wet (Internal Coolant Supply)
Results	1.7x tool life Good machined surface quality	

Sumitomo Electric Cutting Tools Official Apps for iOS/Android

Cutting calculation App

SumiTool Calculator

Download on the App Store

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Grade & chipbreaker comparison App

SumiTool Converter

Download on the App Store

GET IT ON Google Play

< 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

https://www.sumitool.com/global

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