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YG-1 PRODUCTS!!
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COMPOSITE MATERIALS

TOOL SOLUTIONS FOR INDUSTRIES

YG-1 CO., LTD.

YG-1 USA
730 Corporate Woods Parkway, Vernon Hills, IL 60061 U.S.A.
Phone : 800-765-8665
Technical Assistance : 888-868-5988
www.yg1usa.com

HEAD OFFICE
211, Sewolcheon-ro, Bupyeong-gu, Incheon, South Korea
Phone : +82-32-526-0909
E-mail : yg1@yg1.kr
www.yg1.kr

Note The new address above has currently been updated to the new Korean postal standard valid since 2014.
Notice that the physical Head Office location did NOT change.

YouTube
Search 'YG-1' on social media outlets

YG1CM18041001

Tool specifications are subject to change without prior notice.

ООО «АТМ Групп»

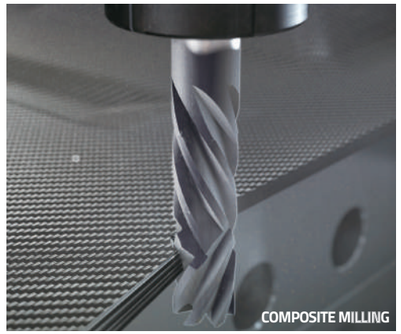
141006, Московская область,
г. Мытищи, Волковское шоссе,
вл. 5А, строение 1

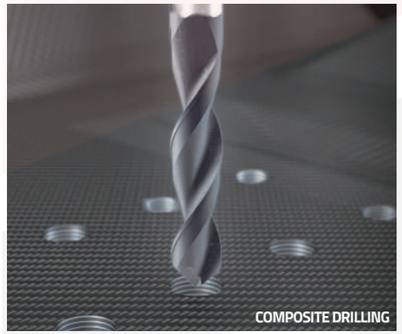
Тел.: +7 (498) 505-00-55

E-mail: **info@atmt.ru**

Сайт: **www.atmt.ru**

YG-1 AND THE COMPOSITES INDUSTRY


COMPOSITE MILLING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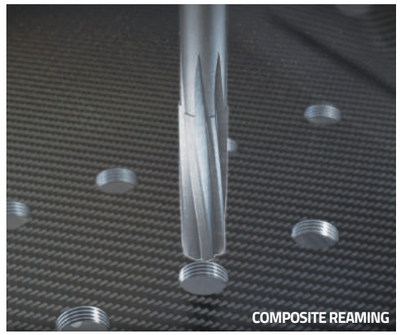
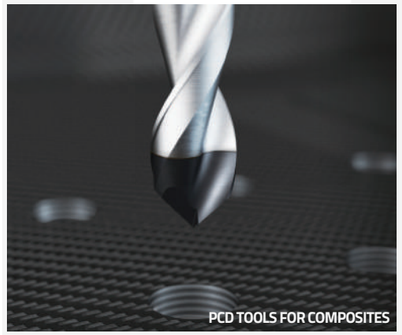

COMPOSITE REAMING


PCD TOOLS FOR COMPOSITES

Each industry in manufacturing presents multiple challenges. And, Aerospace manufacturing industry today is no stranger to these challenges,- working with materials (Carbon, Glass, Kevlar, …Fiber Reinforced Plastics) in multiple applications, including primary structures such as airframes, engine and non-structural parts. Titanium in structural frame and working components, Inconel in parts located in the 'hot' zones of the engine, and aluminum in airframe and other critical and non-critical components.
YG-1, working with Aerospace OEM's, machine tool builders, Tier 1, 2 and 3 for composite (CFRP) parts have developed 'best in class' products, processes and relationships that drive success.
These relationships built over time, are designed to bring you the most cost-effective and secure solutions available today.

YG-1, as a global leader in the manufacture and application of cutting tools, brings you these innovations worldwide in the form of superior tooling, expert support and world class delivery.

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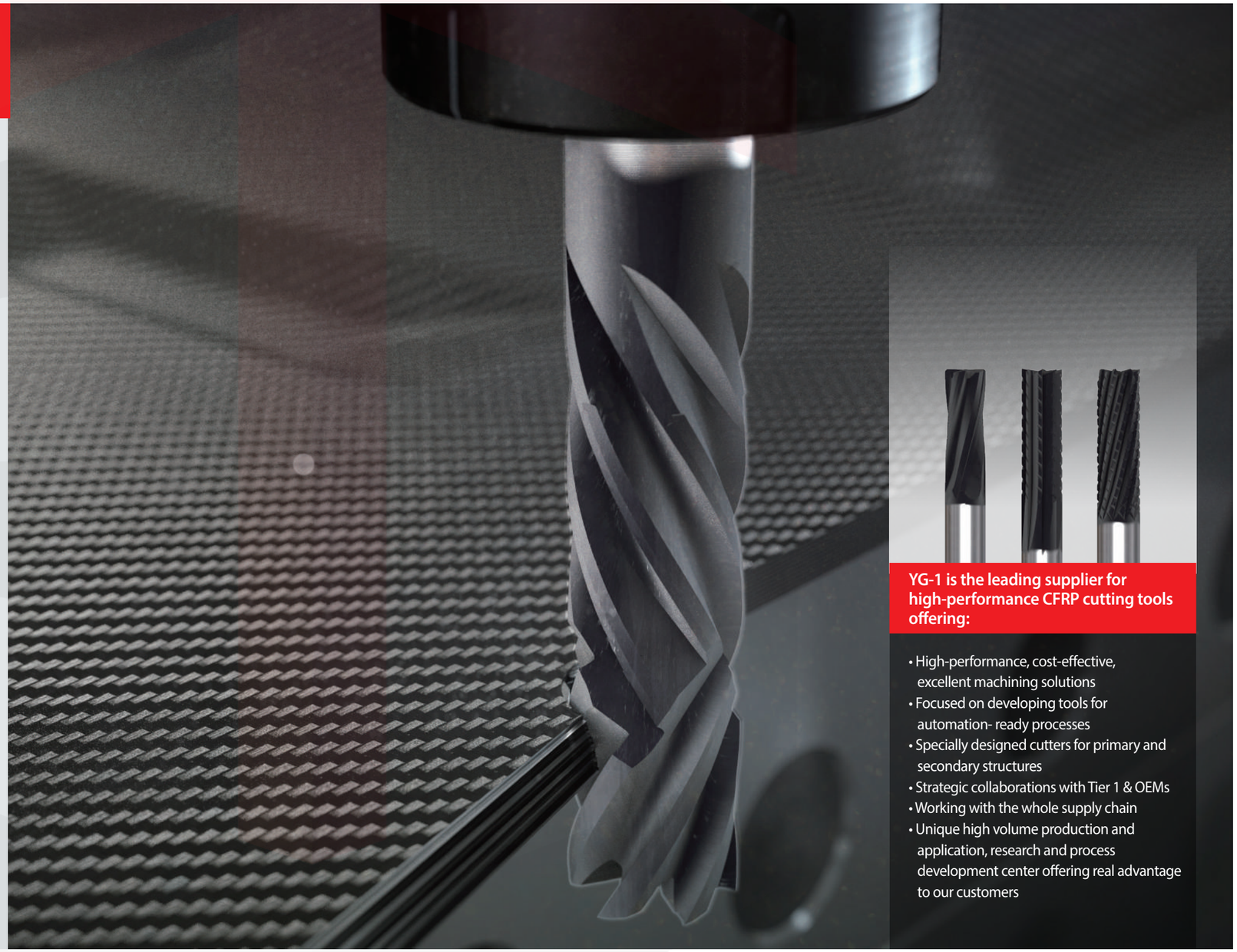
YG-1 TOOLS AND THE COMPOSITES INDUSTRY

DIAMOND-COATED MICRO GRAIN SOLID CARBIDE END-MILLS FOR COMPOSITE MATERIALS

There has been a rapid growth in the use of composite materials in many engineering applications, such as aerospace, automotive, power generation and sport industries. This is due to their special properties, like high specific rigidity, strength, and their low density. Because of their anisotropic character, machining composite materials is significantly different from machining metals and alloys in terms of chip formation, cutting forces and heat generation. Difficulties in the machining of fiber reinforced polymer composite laminates have been summarized as delamination phenomena, due to local dynamic loading caused by different stiffness of the fiber and matrix. Pulled out and crushed fibers causing fuzzing; heat build-up during cutting of FRP composites are also considered a serious problem, because the matrix material has a low thermal conductivity compared with metals and many inorganic materials. Cutting tools damaged by abrasive fibers round the cutting edges prematurely during machining. In addition, the difference in hardness between the fiber and the matrix may lead to edge chipping of the tool. Also, the tool may become jammed by melted matrix material.

YG-1 has a deep expertise in application knowledge and manufacture of composite cutting tools. The Company was founded in 1981 by Mr. Hokeun Song (YG-1's Chairman) in South Korea and since then, we have grown to become a leading cutting tools manufacturer with a global service and sales presence. The focus of our Composites business division is to deliver the commercial benefits of cutting tools to customers through innovative solutions that enhance productivity, shorten cycle time and decrease machining cost.

YG-1 developed a wide and innovative range of Composite cutting tools dedicated to drill composites and stacked materials including aluminum, titanium and many hard metals involved in structural or non-structural parts assembly. Also, many types of end mills and routers are now available for different types and sizes of composite parts including market standards as well as specially designed tools for special applications.



YG-1 is the leading supplier for high-performance CFRP cutting tools offering:

- High-performance, cost-effective, excellent machining solutions
- Focused on developing tools for automation- ready processes
- Specially designed cutters for primary and secondary structures
- Strategic collaborations with Tier 1 & OEMs
- Working with the whole supply chain
- Unique high volume production and application, research and process development center offering real advantage to our customers

AEROSPACE

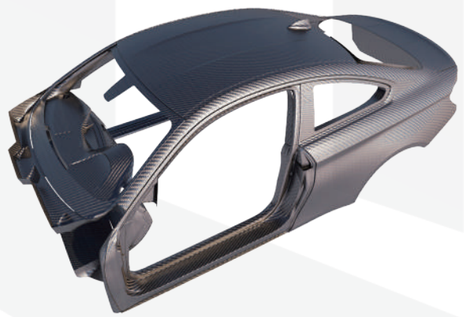
YG-1 AND THE AEROSPACE COMPOSITES:
AN INNOVATION STORY

Aerospace industry is using composite materials (Carbon, Glass, Kevlar, … Fiber Reinforced Plastics) in multiple applications, including primary structures such as airframes and many engine and non-structural parts. The reason is that composite materials are builders, Tier 1, 2 and 3 for composite (CFRP) parts manufacturing.
YG-1 has now the best in class engineering and innovation team focusing on how to machine composites either for drilling CFRP or CFRP / Metals stacks and milling, trimming and cutting them. YG-1 is proud to present to the whole Aerospace community the deep knowledge and experience and looking forward to be the best partner in machining and assembling aerospace CFRP parts and packages.

AUTOMOTIVE

YG-1 AUTOMOTIVE APPLICATION

The main advantages composite materials offer the automotive applications are: cost reduction, weight reduction and recyclability. Composites offer many structural and weight advantages over traditional steel and injection molded automotive parts. The use of composite materials in vehicles has become extremely popular, if not necessary in producing vehicles that can withstand the speed they are pushed to. Additionally, the automotive industry currently sees carbon fiber composites as the wave of the future when producing cars that are Eco-friendly. Composite materials have been proven to withstand some pretty intense heat and speed, as proven in our aerospace technology.
YG-1 Composite technical experts work with you to address these tough challenges, and to create and refine industry-leading solutions of the highest production rate with focus on efficiency and quality.



POWER GENERATION

YG-1 FOR POWER GENERATION

Carbon fiber reinforced polymers has proven already to be an enabling technology for wind mills and turbine manufacturers. All companies embraced CFRP technology years ago, using it in select structural parts of their blades and taking advantage of the lighter weight blades throughout the turbine system. Lighter blades require less robust turbine and tower components, so the cascading cost savings justify the additional cost of carbon.

As the demand for renewable wind energy will continue to increase in the coming years, there is a real incentive to build considerably larger wind turbines in order to improve the overall energy capture efficiency. CFRP will play a major role in facilitating longer and bigger turbine blades. As the use of advanced composites continues to grow - YG-1's major research effort is focusing on machining tools for structural and non structural wind mill parts increases.

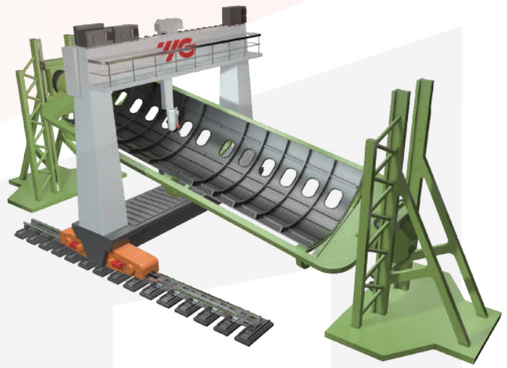
SPORTS

YG-1, A SPORT DEDICATED COMPANY

The sports sector was one of the first to use composite materials, and is a significant consumer of carbon fibers. One of the major growth markets for advanced composites over the past several years has been the sporting goods industry. The sporting goods/recreation composites segment, along with most other segments is predicted to show positive growth in the near future. This growth trend is expected to continue for several years. Advances in materials and processes have reduced consumer prices for the recreational composites, while providing improved performance for the athlete. The properties of these new materials are expected to result in improved ergonomics, energy savings, increased flexibility and more robust equipment, which in the end will result in enhanced productivity. Composite materials are one such alternative that has excellent material properties.

CNC GANTRIES

With thousands of machines installed worldwide, 3, 4 and 5-axis CNC milling and machining centers are designed to deliver high performance.
Their rigid structure and monobloc frame help achieve exceptional accuracy when machining composite parts and structures. They provide a high accuracy in terms of machining tolerance either for drilling, or, for parts profiling. Their main advantage is the ability to fixate and machine large and deep parts which solve the issues for Aerospace assemblies.



ROBOT END-EFFECTORS

Robots are ideal for easy automation.
High performance, low investment cost, and most of all the adaptability of robots make them the perfect choice for efficient automation solution. Control software developed especially for robotics significantly improves the already high repeat and positioning accuracy of robots. Most new robots come with End-Effectors, a drilling unit including drill changer and automated loading and unloading of the component, as well as a very high positioning accuracy.

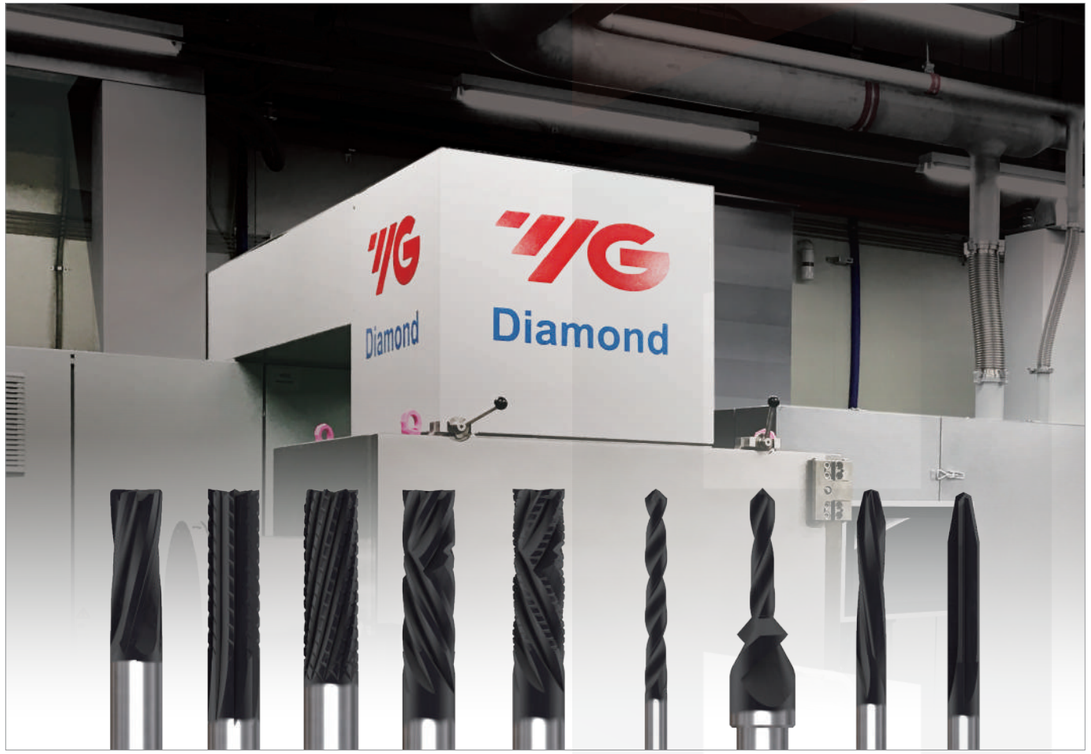
AUTOMATED DRILLING UNITS

A perfect solution between CNC and hand machining processes. ADU units have all the torque and thrust needed to drill and ream in Composites and hard metals. The optional indexer allows clamping also in areas with restricted access. The Rapid Advance feature increases productivity and saves on lubrication as the cutter can be fast forwarded to the part, and run down time is shortened significantly.
ChipLet® can be added as an optional feature for efficient chip breakage and chip collection.

HAND HELD

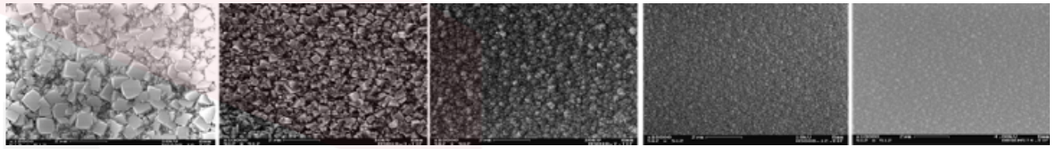
A broad range of pneumatic assembly tools are designed to give the highest possible level of productivity on assembly lines. Suited to manual drilling of holes, countersinks and counterbores, the hand drills reduce the risk of delamination and often do not require the use of a backing structure or back drilling. Dust free drilling is also possible and suitable for health and safety for production. It all adds up to maximum operator comfort and the highest individual productivity.

The use of composite materials in the Aerospace, Automotive, Energy and many other industries becoming the main driver for cutting tool business growth and the source for tool life demand. YG-1 CFRP cutting tools are mostly CVD coated, which offers great process, cost saving and time reduction - driven by faster cutting conditions and extended tool life.



YG-1 Special CVD coating facility	
Process	YG-1 Special CVD Coating technology (enhanced hot-filament)
Tool types	Round shank tools, micro tools, inserts, special tools, forming / drawing dies, saw blades
Machining	Drilling, Milling, Grinding, Threading, Gear cutting, Turning, Punching, Forming

Standard Techniques

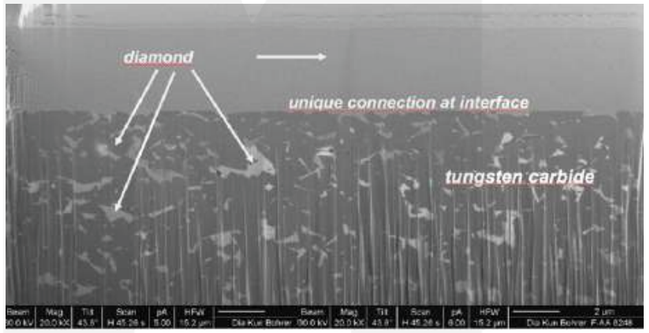


MICRO → **ULTRANANO**

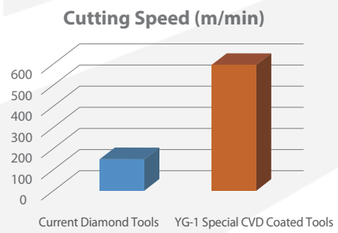
· **For validated tungsten carbide** · **Depending on tool geometry**

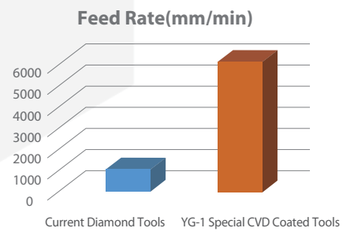
The HIGHEST ADHESION DUE TO YG-1 SPECIAL CVD COATING TECHNOLOGY

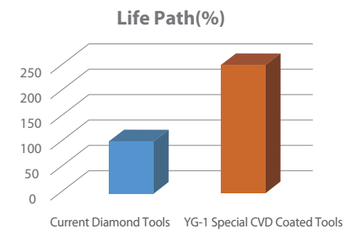
YG-1 Special CVD Coating and PRE-TREATMENT ALLOW DEEP GROWTH
INTO THE INTERFACE WHICH DRIVES THE COMPACT AND TIGHT LAYER BONDING



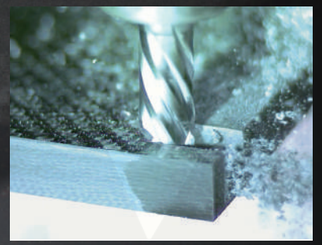
HIGHER & IMPROVED CUTTING CONDITIONS DUE TO YG-1 SPECIAL CVD COATING TECHNOLOGY



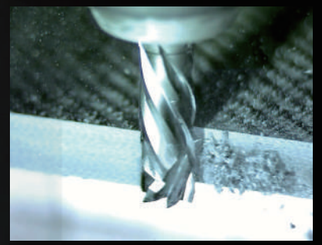




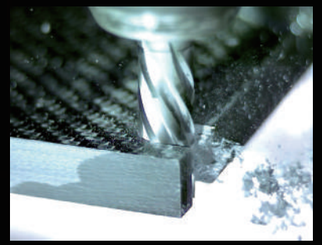
As a world leader of high quality End Mills manufacturing, cutting technology has always been the top priority of our research. YG-1 CFRP end mills (Routers) design and quality often determines the efficiency and quality of the machining process. Using the best-in-class carbide in the market, our tools are specifically designed and optimized for high efficiency in machining of CFRP parts and structures, speeding-up machining. We offer different geometries to cover all CFRP machining applications with highly innovative coating developed as a unique added value to enhance tool life and parts quality.
YG-1 composite routers variety is a result of CFRP expert team designing, manufacturing and testing all the best selected geometries to satisfy all market applications with the best global support on site.



Slotting



Side cutting



Full cutting

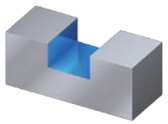
END MILLS

Diamond Coated Chip Breaker Routers

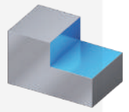
Features

- The unique flute structure provides good surface finish, longer tool life and requires less cutting force
- Reduces delamination and uncut fibers
- Roughing and finishing processes
- Multiple flute end mills
- Diamond coating with excellent abrasion resistance
- Fine nick type

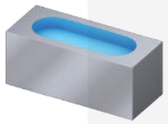
Application



Slotting



Side Milling

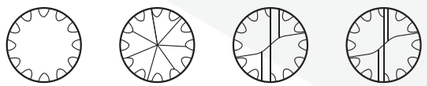


Plunging, Pocketing

Geometries

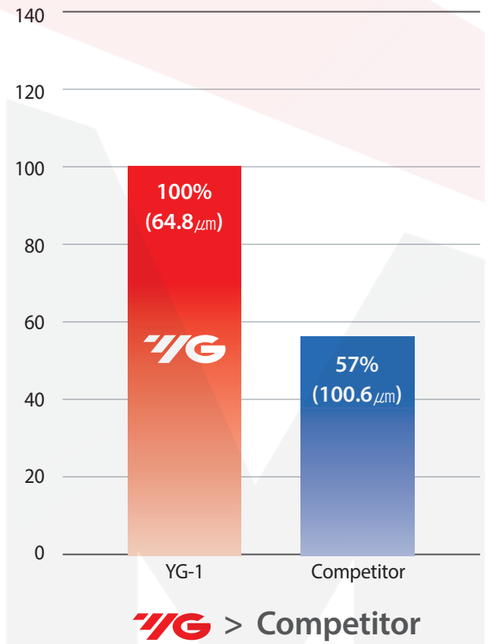
- The unique flute structure provides good surface finish, longer tool life, and requires less cutting force
- Multiple Flutes and Fine Nick reduce delamination and uncut fibers

End Teeth Type



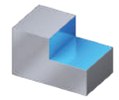
Type 1 No End Cut | Type 2 Burr End | Type 3 End Mill End | Type 4 Drill End

Ø10mm, CFRP – Trimming



YG > Competitor

Cutting Condition

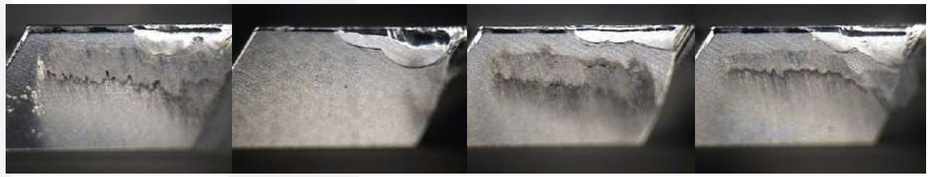


Tool	YG-1
Work Material	CFRP (T700 12K)
RPM	8,000 rev/min
Feed	2,000 mm/min
Milling Depth	Axial : 15 mm Radial : 5 mm
Operation	Side Milling
Coolant	Air Blow
Machine	Machining Center
Holder	BT40

Cutting Edges

Total Milling Length = 32m

YG



Competitor

· Phone : +82-32-526-0909, www.yg1.kr, E-mail : yg1@yg1.kr | · Phone : +1-800-765-8665, www.yg1usa.com

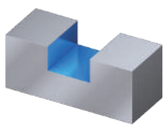
· Phone : +82-32-526-0909, www.yg1.kr, E-mail : yg1@yg1.kr | · Phone : +1-800-765-8665, www.yg1usa.com

Diamond Coated Compression Routers

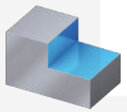
Features

- The unique flute structure provides good surface finish, longer tool life and requires less cutting force
- Reduces delamination and fibers pullout
- Roughing and finishing processes
- Multiple flute end mills
- Diamond coating with excellent abrasion resistance

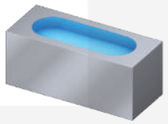
Application



Slotting



Side Milling



Plunging, Pocketing

CFRP Panel

- Material : T700 12K (Size : 400x300x14mm)
- Material : T300 (Size : 400x300x14mm)

Cutting Conditions

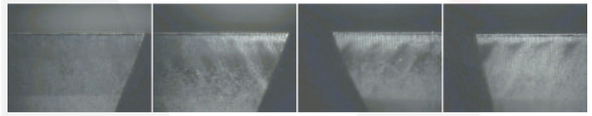
MATERIAL (CFRP) THICKNESS	OPERATION	SPINDLE SPEED	TABLE FEED	DEPTH OF CUT
0.5 - 0.75"	**Side Milling (Profiling)**	4500 RPM	40 IPM	HALF OF TOOL DIAMETER
0.5 - 0.75"	**SLOTTING**	3500 RPM	30 IPM	Dual Helix's crossing point in CFRP THICKNESS
0.5 - 0.75"	**Trimming**	3500 RPM	30 IPM	

YG-1 New design Test Result (Side Milling Evaluation)

Diameter	LOC	OAL	Flute No.	Helix	Coating
0.5″	1″	3″	6	30	CVD

MATERIAL (CFRP) THICKNESS	OPERATION	SPINDLE SPEED	TABLE FEED	DEPTH OF CUT
0.5 - 0.75"	**SIDE MILLING**	4500 RPM	40 IPM	HALF OF TOOL DIAMETER

1. Tooling pictures after Side Milling testing



2. CFRP Panel pictures

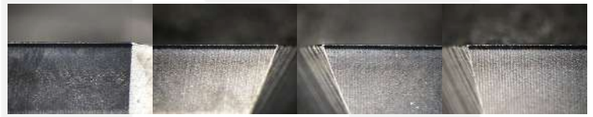
- Smooth surface finish
- No edge breakout on Side Milling part

YG-1 New design Test Result (Trimming Evaluation)

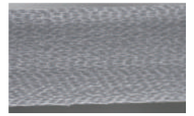
Diameter	LOC	OAL	Flute No.	Helix	Coating
0.5″	1″	3″	6	30	CVD

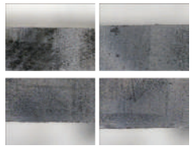
MATERIAL (CFRP) THICKNESS	OPERATION	SPINDLE SPEED	TABLE FEED	DEPTH OF CUT
0.5 - 0.75"	**Trimming**	3500 RPM	30 IPM	Full

1. Tooling pictures after Trimming cutting testing



2. CFRP Panel pictures





- No edge breakout on trimmed part

YG-1 New design Test Result (Slotting Evaluation)

Diameter	LOC	OAL	Flute No.	Helix	Coating
0.5″	1″	3″	6	30	CVD

MATERIAL (CFRP) THICKNESS	OPERATION	SPINDLE SPEED	TABLE FEED	DEPTH OF CUT
0.5 - 0.75"	**SLOTTING**	3500 RPM	30 IPM	0.295"

1. Tooling pictures after Slotting testing

COMPOSITE MILLING TOOLS INDEX

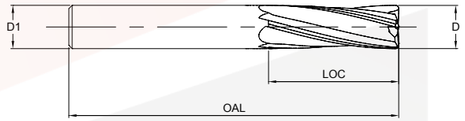
◎ : Excellent ○: Good

INCH METRIC	MODEL	NO. OF FLUTES	HELIX ANGLE	DESCRIPTION	SIZE		PAGE	Working Material				Application				Machine Type	
					INCH	METRIC		CFRP	GFRP	Kevlar	HoneyComb	Roughing	Slotting	Full Cutting	Finishing	Gantry	Robot
URT5P1AA URT5P2AA		4 Flute	15°	Solid Carbide, CFRP Routers with Low Spiral Flute and CVD Coating for Graphite, Plastics, Bakelite and wood	1/8 ~ 1/2	3.0 ~ 12.0	20	◎	◎			◎	◎	◎	○	◎	◎
URT5P1AB URT5P2AB		4-8 Flute	0°	Solid Carbide, CFRP Routers with Chip Breaker Straight Flutes and CVD Coating for CFRP roughing and one shot operation (Type 1-No End Cut)	1/8 ~ 1/2	3.0 ~ 12.0	21	◎	◎			◎	◎	◎	○	◎	◎
URT5P1AC URT5P2AC		4-8 Flute	0°	Solid Carbide, CFRP Routers with Chip Breaker Straight Flutes and CVD Coating for CFRP roughing and one shot operation (Type 2-Burr End)	1/8 ~ 1/2	3.0 ~ 12.0	21	◎	◎			◎	◎	◎	○	◎	◎
URT5P1AD URT5P2AD		4-8 Flute	0°	Solid Carbide, CFRP Routers with Chip Breaker Straight Flutes and CVD Coating for CFRP roughing and one shot operation (Type 3-End Mill End)	1/8 ~ 1/2	3.0 ~ 12.0	21	◎	◎			◎	◎	◎	○	◎	◎
URT5P1AE URT5P2AE		4-8 Flute	0°	Solid Carbide, CFRP Routers with Chip Breaker Straight Flutes and CVD Coating for CFRP roughing and one shot operation (Type 4-Drill End)	1/8 ~ 1/2	3.0 ~ 12.0	21	◎	◎			◎	◎	◎	○	◎	◎
URT5P1AF URT5P2AF		Multi Flute	15°	Solid carbide, CFRP Routers with Chip Breaker Helical Flutes and CVD Coating for CFRP roughing and one shot operation (Type 1-No End Cut)	1/8 ~ 1/2	3.0 ~ 12.0	22	◎	◎			◎	◎	◎		◎	◎
URT5P1AG URT5P2AG		Multi Flute	15°	Solid carbide, CFRP Routers with Chip Breaker Helical Flutes and CVD Coating for CFRP roughing and one shot operation (Type 2-Burr End)	1/8 ~ 1/2	3.0 ~ 12.0	22	◎	◎			◎	◎	◎		◎	◎
URT5P1AH URT5P2AH		Multi Flute	15°	Solid carbide, CFRP Routers with Chip Breaker Helical Flutes and CVD Coating for CFRP roughing and one shot operation (Type 3-End Mill End)	1/8 ~ 1/2	3.0 ~ 12.0	22	◎	◎			◎	◎	◎		◎	◎
URT5P1AI URT5P2AI		Multi Flute	15°	Solid carbide, CFRP Routers with Chip Breaker Helical Flutes and CVD Coating for CFRP roughing and one shot operation (Type 4-Drill End)	1/8 ~ 1/2	3.0 ~ 12.0	22	◎	◎			◎	◎	◎		◎	◎
URT5P1AN URT5P2AN		6 Flute	30° /30°	Solid Carbide, CFRP Compression Routers with CVD Coating for CFRP	1/4 ~1/2	6.0 ~ 12.0	23	◎	◎			◎	◎	◎	◎	◎	◎
URT5P1AO URT5P2AO		6 Flute	30° /30°	Solid Carbide, CFRP Compression Routers with chip breakers and CVD coating for CFRP	1/4 ~1/2	6.0 ~ 12.0	23	◎	◎			◎	◎	◎		◎	◎
URT5P1AP URT5P2AP		8 Flute	15°	Solid Carbide, CFRP Finishing Routers with CVD Coating for CFRP	1/4 ~1/2	6.0 ~ 12.0	24	◎	◎			○	○	○	◎	◎	◎
URT5A1AJ URT5A2AJ		Multi Flute	-	Solid Carbide, Fiberglass Routers For GFRP roughing and one shot operation (Type 1-No End Cut)	1/8 ~ 1/2	3.0 ~ 12.0	25	◎	◎			◎	◎	◎	○	◎	◎
URT5A1AK URT5A2AK		Multi Flute	-	Solid Carbide, Fiberglass Routers For GFRP roughing and one shot operation (Type 2-Burr End)	1/8 ~ 1/2	3.0 ~ 12.0	25	◎	◎			◎	◎	◎	○	◎	◎
URT5A1AL URT5A2AL		Multi Flute	-	Solid Carbide, Fiberglass Routers For GFRP roughing and one shot operation (Type 3-End Mill End)	1/8 ~ 1/2	3.0 ~ 12.0	25	◎	◎			◎	◎	◎	○	◎	◎
URT5A1AM URT5A2AM		Multi Flute	-	Solid Carbide, Fiberglass Routers For GFRP roughing and one shot operation (Type 4-Drill End)	1/8 ~ 1/2	3.0 ~ 12.0	25	◎	◎			◎	◎	◎	○	◎	◎
URT5A1AQ URT5A2AQ		2 Flute	-	Solid Carbide, Kevlar Routers for Kevlar composites	1/4 ~1/2	6.0 ~ 12.0	26			◎		◎	◎	◎		◎	◎
URT5A1AR URT5A2AR		Multi Flute	-	Solid Carbide, Honeycomb Routers for honeycomb core	1/4 ~1/2	6.0 ~ 12.0	27				◎	◎	◎	◎	◎	◎	◎

INCH **URT5P1AA** SERIES
METRIC **URT5P2AA** SERIES

SOLID CARBIDE, CFRP ROUTERS WITH LOW SPIRAL FLUTES

High performance machining of CFRP, Graphite, Wood, Bakelite and Plastics
YG-1 special CVD coating for extended tool life and better abrasion resistance



MG HM | DIA | 4 | 15° | PLAIN | C | GF | GANTRY | ROBOT | P. 60

INCH SIZES

(Unit : inch)

EDP	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D		D1	LOC	OAL	
	Fractional	Decimal				
URT5P1AA0125	1/8	.1250	1/8	1/2	3	4
URT5P1AA0250	1/4	.2500	1/4	1	3	4
URT5P1AA0375	3/8	.3750	3/8	1	3	4
URT5P1AA0500	1/2	.5000	1/2	1-1/2	4	4

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D	D1	LOC	OAL	
URT5P2AA0300	3	3	9	50	4
URT5P2AA0600	6	6	18	65	4
URT5P2AA0800	8	8	24	70	4
URT5P2AA1000	10	10	30	80	4
URT5P2AA1200	12	12	36	100	4

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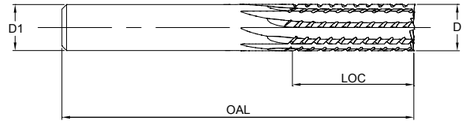
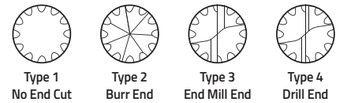
INCH **URT5P1AB, URT5P1AC, URT5P1AD, URT5P1AE** SERIES
METRIC **URT5P2AB, URT5P2AC, URT5P2AD, URT5P2AE** SERIES

SOLID CARBIDE, CFRP ROUTERS WITH CHIP BREAKER STRAIGHT FLUTES

High performance machining of CFRP, can be used as rougher or finisher
YG-1 special CVD coating for extended tool life and better abrasion resistance



MG HM | DIA | 4-8 | PLAIN | C | GF | GANTRY | ROBOT | P. 60



INCH SIZES

(Unit : inch)

EDP				Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
TYPE 1	TYPE 2	TYPE 3	TYPE 4	D		D1	LOC	OAL	
				Fractional	Decimal				
URT5P1AB0125	**URT5P1AC0125**	**URT5P1AD0125**	**URT5P1AE0125**	1/8	.1250	1/8	1/2	3	4
URT5P1AB0250	**URT5P1AC0250**	**URT5P1AD0250**	**URT5P1AE0250**	1/4	.2500	1/4	1	3	6
URT5P1AB0375	**URT5P1AC0375**	**URT5P1AD0375**	**URT5P1AE0375**	3/8	.3750	3/8	1	3	8
URT5P1AB0500	**URT5P1AC0500**	**URT5P1AD0500**	**URT5P1AE0500**	1/2	.5000	1/2	1-1/2	4	8

METRIC SIZES

(Unit : mm)

EDP				Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
TYPE 1	TYPE 2	TYPE 3	TYPE 4	D	D1	LOC	OAL	
URT5P2AB0300	**URT5P2AC0300**	**URT5P2AD0300**	**URT5P2AE0300**	3	3	9	50	4
URT5P2AB0600	**URT5P2AC0600**	**URT5P2AD0600**	**URT5P2AE0600**	6	6	18	65	6
URT5P2AB0800	**URT5P2AC0800**	**URT5P2AD0800**	**URT5P2AE0800**	8	8	24	70	8
URT5P2AB1000	**URT5P2AC1000**	**URT5P2AD1000**	**URT5P2AE1000**	10	10	30	80	8
URT5P2AB1200	**URT5P2AC1200**	**URT5P2AD1200**	**URT5P2AE1200**	12	12	36	100	8

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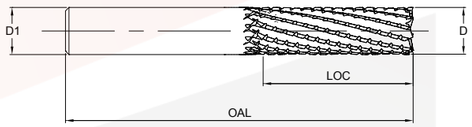
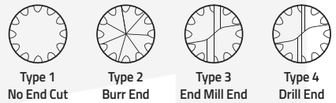
INCH URT5P1AF, URT5P1AG, URT5P1AH, URT5P1AI SERIES
METRIC URT5P2AF, URT5P2AG, URT5P2AH, URT5P2AI SERIES

SOLID CARBIDE, CFRP ROUTERS WITH CHIP BREAKER HELICAL FLUTES

High performance machining of CFRP, can be used as rougher or finisher
YG-1 special CVD coating for extended tool life and better abrasion resistance



MG HM | DIA | MULTI | 15º | PLAIN | C | GF | GANTRY | ROBOT | P. 60



INCH SIZES

(Unit : inch)

EDP				Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
TYPE 1	TYPE 2	TYPE 3	TYPE 4	D		D1	LOC	OAL	
				Fractional	Decimal				
URT5P1AF0125	URT5P1AG0125	URT5P1AH0125	URT5P1AI0125	1/8	.1250	1/8	1/2	3	Multi Flute
URT5P1AF0250	URT5P1AG0250	URT5P1AH0250	URT5P1AI0250	1/4	.2500	1/4	1	3	Multi Flute
URT5P1AF0375	URT5P1AG0375	URT5P1AH0375	URT5P1AI0375	3/8	.3750	3/8	1	3	Multi Flute
URT5P1AF0500	URT5P1AG0500	URT5P1AH0500	URT5P1AI0500	1/2	.5000	1/2	1-1/2	4	Multi Flute

METRIC SIZES

(Unit : mm)

EDP				Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
TYPE 1	TYPE 2	TYPE 3	TYPE 4	D	D1	LOC	OAL	
URT5P2AF0300	URT5P2AG0300	URT5P2AH0300	URT5P2AI0300	3	3	9	50	Multi Flute
URT5P2AF0600	URT5P2AG0600	URT5P2AH0600	URT5P2AI0600	6	6	18	65	Multi Flute
URT5P2AF0800	URT5P2AG0800	URT5P2AH0800	URT5P2AI0800	8	8	24	70	Multi Flute
URT5P2AF1000	URT5P2AG1000	URT5P2AH1000	URT5P2AI1000	10	10	30	80	Multi Flute
URT5P2AF1200	URT5P2AG1200	URT5P2AH1200	URT5P2AI1200	12	12	36	100	Multi Flute

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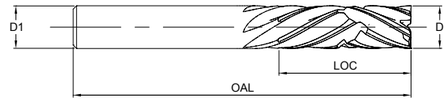
SOLID CARBIDE, CFRP COMPRESSION ROUTERS WITH / WITHOUT CHIP BREAKERS

CFRP & GFRP compression routers for delamination-free cut
YG-1 special CVD coating for extended tool life and better abrasion resistance

▶ TYPE 1
(without chipbreakers)

▶ TYPE 2
(with chipbreakers)



MG HM | DIA | 6 | 30º/30º | PLAIN | C | GF | GANTRY | ROBOT | P. 60

INCH SIZES

(Unit : inch)

EDP		Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
Type 1 (without Chipbreakers)	Type 2 (with Chipbreakers)	D		D1	LOC	OAL	
		Fractional	Decimal				
URT5P1AN0250	URT5P1AO0250	1/4	.2500	1/4	1	3	6
URT5P1AN0375	URT5P1AO0375	3/8	.3750	3/8	1	3	6
URT5P1AN0500	URT5P1AO0500	1/2	.5000	1/2	1-1/2	4	6

METRIC SIZES

(Unit : mm)

EDP		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
Type 1 (without Chipbreakers)	Type 2 (with Chipbreakers)	D	D1	LOC	OAL	
URT5P2AN0600	URT5P2AO0600	6	6	18	65	6
URT5P2AN0800	URT5P2AO0800	8	8	24	70	6
URT5P2AN1000	URT5P2AO1000	10	10	30	80	6
URT5P2AN1200	URT5P2AO1200	12	12	36	100	6

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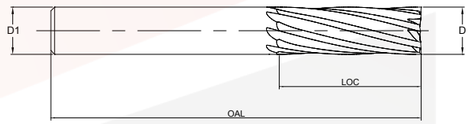
INCH **URT5P1AP** SERIES
METRIC **URT5P2AP** SERIES

SOLID CARBIDE, CFRP FINISHING ROUTERS

CFRP & GFRP finishing routers for smooth surface
YG-1 special CVD coating for extended tool life and better abrasion resistance



MG HM | DIA | 8 | 15° | PLAIN | C | GF | GANTRY | ROBOT P. 60

INCH SIZES

(Unit : inch)

EDP	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D		D1	LOC	OAL	
	Fractional	Decimal				
URT5P1AP0250	1/4	.2500	1/4	1	3	8
URT5P1AP0375	3/8	.3750	3/8	1	3	8
URT5P1AP0500	1/2	.5000	1/2	1-1/2	4	8

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D	D1	LOC	OAL	
URT5P2AP0600	6	6	18	65	8
URT5P2AP0800	8	8	24	70	8
URT5P2AP1000	10	10	30	80	8
URT5P2AP1200	12	12	36	100	8

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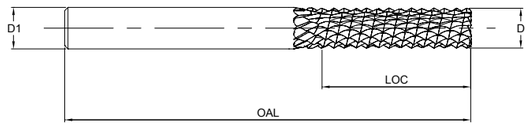
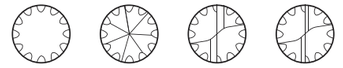
INCH **URT5A1AJ, URT5A1AK, URT5A1AL, URT5A1AM** SERIES
METRIC **URT5A2AJ, URT5A2AK, URT5A2AL, URT5A2AM** SERIES

SOLID CARBIDE, FIBERGLASS ROUTERS

CFRP & GFRP specially designed routers
YG-1 special CVD coating and other coatings available for extended tool life and better abrasion resistance



MG HM | MULTI | PLAIN | C | GF | GANTRY | ROBOT P. 60



INCH SIZES

(Unit : inch)

EDP				Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
TYPE 1	TYPE 2	TYPE 3	TYPE 4	D		D1	LOC	OAL	
				Fractional	Decimal				
URT5A1AJ0125	**URT5A1AK0125**	**URT5A1AL0125**	**URT5A1AM0125**	1/8	.1250	1/8	1/2	3	Multi Flute
URT5A1AJ0250	**URT5A1AK0250**	**URT5A1AL0250**	**URT5A1AM0250**	1/4	.2500	1/4	1	3	Multi Flute
URT5A1AJ0375	**URT5A1AK0375**	**URT5A1AL0375**	**URT5A1AM0375**	3/8	.3750	3/8	1	3	Multi Flute
URT5A1AJ0500	**URT5A1AK0500**	**URT5A1AL0500**	**URT5A1AM0500**	1/2	.5000	1/2	1-1/2	4	Multi Flute

METRIC SIZES

(Unit : mm)

EDP				Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
TYPE 1	TYPE 2	TYPE 3	TYPE 4	D	D1	LOC	OAL	
URT5A2AJ0300	**URT5A2AK0300**	**URT5A2AL0300**	**URT5A2AM0300**	3	3	9	50	Multi Flute
URT5A2AJ0600	**URT5A2AK0600**	**URT5A2AL0600**	**URT5A2AM0600**	6	6	18	65	Multi Flute
URT5A2AJ0800	**URT5A2AK0800**	**URT5A2AL0800**	**URT5A2AM0800**	8	8	24	70	Multi Flute
URT5A2AJ1000	**URT5A2AK1000**	**URT5A2AL1000**	**URT5A2AM1000**	10	10	30	80	Multi Flute
URT5A2AJ1200	**URT5A2AK1200**	**URT5A2AL1200**	**URT5A2AM1200**	12	12	36	100	Multi Flute

▶ CVD Diamond Coating and other coatings are available on Customer Request
▶ Available as made to order

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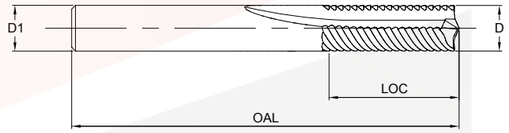
INCH **URT5A1AQ** SERIES
METRIC **URT5A2AQ** SERIES

SOLID CARBIDE, KEVLAR ROUTERS

KFRP routers with Scissor action to minimize fiber pullout and delamination
YG-1 special design for plunging with free delamination



MG HM | 2 | PLAIN | Kv | GANTRY | ROBOT P. 60

INCH SIZES

(Unit : inch)

EDP	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D		D1	LOC	OAL	
	Fractional	Decimal				
URT5A1AQ0250	1/4	.2500	1/4	1	3	2
URT5A1AQ0375	3/8	.3750	3/8	1	3	2
URT5A1AQ0500	1/2	.5000	1/2	1-1/2	4	2

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D	D1	LOC	OAL	
URT5A2AQ0600	6	6	18	65	2
URT5A2AQ0800	8	8	24	70	2
URT5A2AQ1000	10	10	30	80	2
URT5A2AQ1200	12	12	36	100	2

▶ CVD Diamond Coating and other coatings are available on Customer Request
▶ Available as made to order

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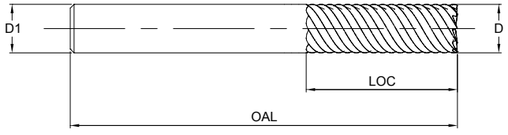
INCH **URT5A1AR** SERIES
METRIC **URT5A2AR** SERIES

SOLID CARBIDE, HONEYCOMB ROUTERS

Solid Carbide Routers designed for honeycomb core sizing and flatness
YG-1 special CVD coating and other coatings available for extended tool life and better abrasion resistance



MG HM | MULTI | PLAIN | HC | GANTRY | ROBOT P. 60

INCH SIZES

(Unit : inch)

EDP	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D		D1	LOC	OAL	
	Fractional	Decimal				
URT5A1AR0250	1/4	.2500	1/4	1	3	Multi Flute
URT5A1AR0375	3/8	.3750	3/8	1	3	Multi Flute
URT5A1AR0500	1/2	.5000	1/2	1-1/2	4	Multi Flute

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D	D1	LOC	OAL	
URT5P2AP0600	6	6	18	65	Multi Flute
URT5P2AP0800	8	8	24	70	Multi Flute
URT5P2AP1000	10	10	30	80	Multi Flute
URT5P2AP1200	12	12	36	100	Multi Flute

▶ CVD Diamond Coating and other coatings are available on Customer Request
▶ Available as made to order

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Drilling composite parts and structures is a unique challenge - requiring different considerations and approaches. YG-1 tech team is available to help overcome all composite holemaking issues by identifying and selecting the right tool for the right application.
YG-1 CFRP drills for Composites are specifically designed with innovative point geometry specifically dedicated to CFRP characteristics. The double angle point combined with guidance margins and open flutes will allow the tool to drill the hole without any jamming due to dust or pressure overload.
YG-1 CVD coating increases the abrasion resistance from the fibrous materials and extend the tool life by a minimum factor of 5 to 10.

DRILLS

COMPOSITE DRILLING TOOLS INDEX

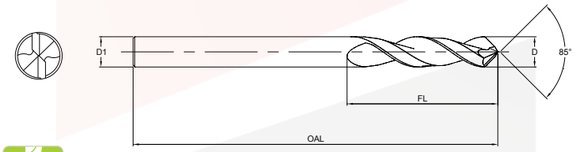
◎ : Excellent ○: Good

INCH METRIC	MODEL	DESCRIPTION	SIZE		PAGE	Working Material				Machine Type			
			INCH	METRIC		CFRP	CFRP/AL	CFRP/Ti	GFRP	ADU	Gantry	Robot	Hand-Held
UDR5P1AA UDR5P2AA		Solid Carbide, Drills with CVD coating for CFRP	1/8 ~ 3/4	3.0 ~ 20.0	32	◎			◎		◎	◎	
UDR5A1AB UDR5A2AB		Solid Carbide, Drills for CFRP / AL	1/8 ~ 3/4	3.0 ~ 20.0	33		◎		◎		◎	◎	
UDR5A1AC UDR5A2AC		Solid Carbide, Drills for CFRP / Ti	1/8 ~ 3/4	3.0 ~ 20.0	34			◎	◎		◎	◎	
UDC5P1AA UDC5P2AA		Solid Carbide, Drills / Countersinks with CVD coating for CFRP	5/32 ~ 5/8	4.0 ~ 16.0	35	◎			◎		◎	◎	
UDC5A1AB UDC5A2AB		Solid Carbide, Drills / Countersinks for CFRP / AL	5/32 ~ 5/8	4.0 ~ 16.0	36		◎		◎		◎	◎	
UDC5A1AC UDC5A2AC		Solid Carbide, Drills / Countersinks for CFRP / Ti	5/32 ~ 5/8	4.0 ~ 16.0	37			◎	◎		◎	◎	
UPD5P1AA UPD5P2AA		Solid Carbide, Powerfeed Drills with CVD coating for CFRP	3/16 ~ 5/8	4.0 ~ 16.0	38	◎			◎	◎			
UPD5A1AB UPD5A2AB		Solid Carbide, Powerfeed Drills for CFRP/ AL	3/16 ~ 5/8	4.0 ~ 16.0	39		◎		◎	◎			
UPD5A1AC UPD5A2AC		Solid Carbide, Powerfeed Drills for CFRP / Ti	3/16 ~ 5/8	4.0 ~ 16.0	40			◎	◎	◎			
UDM5A1AA UDM5A2AA		Solid Carbide, Hand Drill Reamers for CFRP and Stacks with Pilot holes	1/8 ~ 1/2	3.0 ~ 12.0	41	◎	◎	◎	◎				◎
UDM5P1AB UDM5P2AB		Solid Carbide, Hand Drill Reamers with CVD coating for CFRP - Straight Flutes	1/8 ~ 1/2	3.0 ~ 12.0	42	◎			◎				◎
UDM5P1AC UDM5P2AC		Solid Carbide, Hand Drill Reamers with CVD coating for CFRP - Helical Flutes	1/8 ~ 1/2	3.0 ~ 12.0	43	◎			◎				◎

INCH **UDR5P1AA** SERIES
METRIC **UDR5P2AA** SERIES

SOLID CARBIDE, DRILLS FOR CFRP

A combination of perfect carbide choice with innovative design and adapted CVD coating
make YG-1 CFRP drills a good choice for Composite drilling



MG HM | DIA | 85° | PLAIN | C | GF | GANTRY | ROBOT

P. 60

INCH / METRIC SIZES

EDP No. (INCH)	EDP No. (METRIC)	Drill Diameter				Shank Diameter	Flute Length	Overall Length	No. of Flutes
		D (Inch)			D (mm)	D1 (mm)	FL (mm)	OAL (mm)	
		Fractional	Wire Gage	Decimal					
-	UDR5P2AA0300	-	-	-	3.00	6	28	66	2
UDR5P1AA0125	-	1/8	-	.1250	3.18	6	28	66	2
UDR5P1AA0129	-	-	#30	.1285	3.26	6	28	66	2
UDR5P1AA0156	-	5/32	-	.1562	3.97	6	36	74	2
-	UDR5P2AA0400	-	-	-	4.00	6	36	74	2
UDR5P1AA0159	-	-	#21	.1590	4.04	6	36	74	2
UDR5P1AA0188	-	3/16	-	.1875	4.76	6	36	74	2
UDR5P1AA0189	-	-	#12	.1890	4.80	6	44	82	2
UDR5P1AA0191	-	-	#11	.1910	4.85	6	44	82	2
-	UDR5P2AA0500	-	-	-	5.00	6	44	82	2
UDR5P1AA0201	-	-	#7	.2010	5.11	6	44	82	2
UDR5P1AA0203	-	13/64	-	.2031	5.16	6	44	82	2
UDR5P1AA0219	-	7/32	-	.2188	5.56	6	44	82	2
UDR5P1AA0234	-	15/64	-	.2344	5.95	6	44	82	2
-	UDR5P2AA0600	-	-	-	6.00	6	44	82	2
UDR5P1AA0250	-	1/4	-	.2500	6.35	8	53	91	2
UDR5P1AA0313	-	5/16	-	.3125	7.94	8	53	91	2
-	UDR5P2AA0800	-	-	-	8.00	8	53	91	2
UDR5P1AA0375	-	3/8	-	.3750	9.53	10	61	103	2
-	UDR5P2AA1000	-	-	-	10.00	10	61	103	2
UDR5P1AA0438	-	7/16	-	.4375	11.11	12	71	118	2
-	UDR5P2AA1200	-	-	-	12.00	12	71	118	2
UDR5P1AA0500	-	1/2	-	.5000	12.70	14	77	124	2
-	UDR5P2AA1400	-	-	-	14.00	14	77	124	2
UDR5P1AA0563	-	9/16	-	.5625	14.29	16	83	133	2
UDR5P1AA0625	-	5/8	-	.6250	15.88	16	83	133	2
-	UDR5P2AA1600	-	-	-	16.00	16	83	133	2
UDR5P1AA0688	-	11/16	-	.6875	17.46	18	93	143	2
UDR5P1AA0750	-	3/4	-	.7500	19.05	20	101	153	2
-	UDR5P2AA2000	-	-	-	20.00	20	101	153	2

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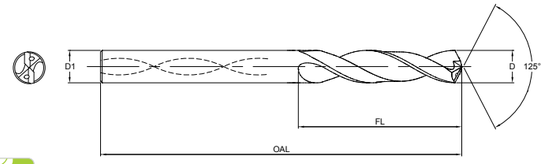
INCH **UDR5A1AB** SERIES
METRIC **UDR5A2AB** SERIES

SOLID CARBIDE, DRILLS FOR CFRP / AL

Special geometry for dry or MQL drilling of CFRP / AL stacks
YG-1 special CVD coating and other coatings available for extended tool life and better abrasion resistance



MG HM | 125° | PLAIN | C A | GF | GANTRY | ROBOT

P. 60

INCH / METRIC SIZES

EDP No. (INCH)	EDP No. (METRIC)	Drill Diameter				Shank Diameter	Flute Length	Overall Length	No. of Flutes
		D (Inch)			D (mm)	D1 (mm)	FL (mm)	OAL (mm)	
		Fractional	Wire Gage	Decimal					
-	UDR5A2AB0300	-	-	-	3.00	6	28	66	2
UDR5A1AB0125	-	1/8	-	.1250	3.18	6	28	66	2
UDR5A1AB0129	-	-	#30	.1285	3.26	6	28	66	2
UDR5A1AB0156	-	5/32	-	.1562	3.97	6	36	74	2
-	UDR5A2AB0400	-	-	-	4.00	6	36	74	2
UDR5A1AB0159	-	-	#21	.1590	4.04	6	36	74	2
UDR5A1AB0188	-	3/16	-	.1875	4.76	6	36	74	2
UDR5A1AB0189	-	-	#12	.1890	4.80	6	44	82	2
UDR5A1AB0191	-	-	#11	.1910	4.85	6	44	82	2
-	UDR5A2AB0500	-	-	-	5.00	6	44	82	2
UDR5A1AB0201	-	-	#7	.2010	5.11	6	44	82	2
UDR5A1AB0203	-	13/64	-	.2031	5.16	6	44	82	2
UDR5A1AB0219	-	7/32	-	.2188	5.56	6	44	82	2
UDR5A1AB0234	-	15/64	-	.2344	5.95	6	44	82	2
-	UDR5A2AB0600	-	-	-	6.00	6	44	82	2
UDR5A1AB0250	-	1/4	-	.2500	6.35	8	53	91	2
UDR5A1AB0313	-	5/16	-	.3125	7.94	8	53	91	2
	UDR5A2AB0800	-	-	-	8.00	8	53	91	2
UDR5A1AB0375	-	3/8	-	.3750	9.53	10	61	103	2
-	UDR5A2AB1000	-	-	-	10.00	10	61	103	2
UDR5A1AB0438	-	7/16	-	.4375	11.11	12	71	118	2
-	UDR5A2AB1200	-	-	-	12.00	12	71	118	2
UDR5A1AB0500	-	1/2	-	.5000	12.70	14	77	124	2
-	UDR5A2AB1400	-	-	-	14.00	14	77	124	2
UDR5A1AB0563	-	9/16	-	.5625	14.29	16	83	133	2
UDR5A1AB0625	-	5/8	-	.6250	15.88	16	83	133	2
-	UDR5A2AB1600	-	-	-	16.00	16	83	133	2
UDR5A1AB0688	-	11/16	-	.6875	17.46	18	93	143	2
UDR5A1AB0750	-	3/4	-	.7500	19.05	20	101	153	2
-	UDR5A2AB2000	-	-	-	20.00	20	101	153	2

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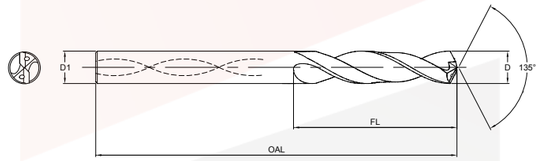
Excellent choice of Carbide with minimum micro-grain size made to handle all heat release from the hard metal
YG-1 special CVD coating and other coatings available for extended tool life and better abrasion resistance



MG HM | 135° | PLAIN | C T | GF | GANTRY | ROBOT

P. 60

INCH / METRIC SIZES

EDP No. (INCH)	EDP No. (METRIC)	Drill Diameter D (Inch) Fractional	Wire Gage	Decimal	D (mm)	Shank Diameter D1 (mm)	Flute Length FL (mm)	Overall Length OAL (mm)	No. of Flutes
-	**UDR5A2AC0300**	-	-	-	3.00	6	28	66	2
UDR5A1AC0125	-	1/8	-	.1250	3.18	6	28	66	2
UDR5A1AC0129	-	-	#30	.1285	3.26	6	28	66	2
UDR5A1AC0156	-	5/32	-	.1562	3.97	6	36	74	2
-	**UDR5A2AC0400**	-	-	-	4.00	6	36	74	2
UDR5A1AC0159	-	-	#21	.1590	4.04	6	36	74	2
UDR5A1AC0188	-	3/16	-	.1875	4.76	6	36	74	2
UDR5A1AC0189	-	-	#12	.1890	4.80	6	44	82	2
UDR5A1AC0191	-	-	#11	.1910	4.85	6	44	82	2
-	**UDR5A2AC0500**	-	-	-	5.00	6	44	82	2
UDR5A1AC0201	-	-	#7	.2010	5.11	6	44	82	2
UDR5A1AC0203	-	13/64	-	.2031	5.16	6	44	82	2
UDR5A1AC0219	-	7/32	-	.2188	5.56	6	44	82	2
UDR5A1AC0234	-	15/64	-	.2344	5.95	6	44	82	2
-	**UDR5A2AC0600**	-	-	-	6.00	6	44	82	2
UDR5A1AC0250	-	1/4	-	.2500	6.35	8	53	91	2
UDR5A1AC0313	-	5/16	-	.3125	7.94	8	53	91	2
	UDR5A2AC0800	-	-	-	8.00	8	53	91	2
UDR5A1AC0375	-	3/8	-	.3750	9.53	10	61	103	2
-	**UDR5A2AC1000**	-	-	-	10.00	10	61	103	2
UDR5A1AC0438	-	7/16	-	.4375	11.11	12	71	118	2
-	**UDR5A2AC1200**	-	-	-	12.00	12	71	118	2
UDR5A1AC0500	-	1/2	-	.5000	12.70	14	77	124	2
-	**UDR5A2AC1400**	-	-	-	14.00	14	77	124	2
UDR5A1AC0563	-	9/16	-	.5625	14.29	16	83	133	2
UDR5A1AC0625	-	5/8	-	.6250	15.88	16	83	133	2
-	**UDR5A2AC1600**	-	-	-	16.00	16	83	133	2
UDR5A1AC0688	-	11/16	-	.6875	17.46	18	93	143	2
UDR5A1AC0750	-	3/4	-	.7500	19.05	20	101	153	2
-	**UDR5A2AC2000**	-	-	-	20.00	20	101	153	2

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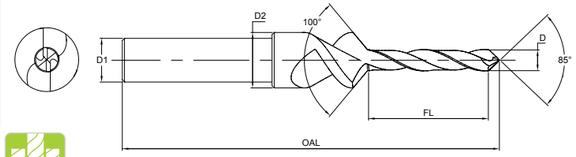
Optimized for drilling CFRP with excellent performance
Special geometry for superior performance and delamination-free drilling
YG-1 special CVD coating for extended tool life and better abrasion resistance
h6 shank tolerance for high precision tool holders



MG HM | DIA | 85° | PLAIN | C | GF | GANTRY | ROBOT

P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D Fractional	Wire Gage	Decimal	C'Sink Diameter D2	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
UDC5P1AA0156	5/32	-	.1562	7/16	3/8	1	3-1/2	2
UDC5P1AA0188	3/16	-	.1875	1/2	3/8	1	3-1/2	2
UDC5P1AA0191	-	#11	.1910	1/2	3/8	1	3-1/2	2
UDC5P1AA0250	1/4	-	.2500	9/16	3/8	1	3-1/2	2
UDC5P1AA0313	5/16	-	.3125	11/16	1/2	1	3-1/2	2
UDC5P1AA0375	3/8	-	.3750	3/4	1/2	1	3-1/2	2
UDC5P1AA0438	7/16	-	.4375	7/8	5/8	1-1/2	4	2
UDC5P1AA0500	1/2	-	.5000	7/8	5/8	1-1/2	4	2
UDC5P1AA0563	9/16	-	.5625	1	5/8	1-1/2	4	2
UDC5P1AA0625	5/8	-	.6250	1	5/8	1-1/2	4	2

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D	C'Sink Diameter D2	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
UDC5P2AA0400	4	12	10	25	90	2
UDC5P2AA0600	6	14	10	25	90	2
UDC5P2AA0800	8	16	12	25	90	2
UDC5P2AA1000	10	20	12	25	90	2
UDC5P2AA1200	12	20	16	40	100	2
UDC5P2AA1400	14	25	16	40	100	2
UDC5P2AA1600	16	25	16	40	100	2

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Special geometry for superior performance, delamination-free drilling and burrless operation
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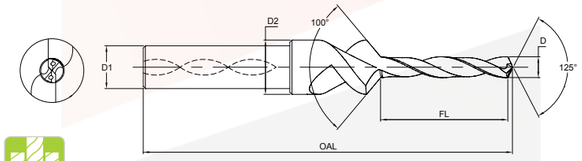
h6 shank tolerance for high precision tool holders



MG HM | 125° | PLAIN | C A | GF | GANTRY | ROBOT

P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter			C'Sink Diameter	Shank Diameter	Flute Length	Overall Length	No. of Flutes
	D			D2	D1	FL	OAL	
	Fractional	Wire Gage	Decimal					
UDC5A1AB0156	5/32	-	.1562	7/16	3/8	1	3-1/2	2
UDC5A1AB0188	3/16	-	.1875	1/2	3/8	1	3-1/2	2
UDC5A1AB0191	-	#11	.1910	1/2	3/8	1	3-1/2	2
UDC5A1AB0250	1/4	-	.2500	9/16	3/8	1	3-1/2	2
UDC5A1AB0313	5/16	-	.3125	11/16	1/2	1	3-1/2	2
UDC5A1AB0375	3/8	-	.3750	3/4	1/2	1	3-1/2	2
UDC5A1AB0438	7/16	-	.4375	7/8	5/8	1-1/2	4	2
UDC5A1AB0500	1/2	-	.5000	7/8	5/8	1-1/2	4	2
UDC5A1AB0563	9/16	-	.5625	1	5/8	1-1/2	4	2
UDC5A1AB0625	5/8	-	.6250	1	5/8	1-1/2	4	2

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter	C'Sink Diameter	Shank Diameter	Flute Length	Overall Length	No. of Flutes
	D	D2	D1	FL	OAL	
UDC5A2AB0400	4	12	10	25	90	2
UDC5A2AB0600	6	14	10	25	90	2
UDC5A2AB0800	8	16	12	25	90	2
UDC5A2AB1000	10	20	12	25	90	2
UDC5A2AB1200	12	20	16	40	100	2
UDC5A2AB1400	14	25	16	40	100	2
UDC5A2AB1600	16	25	16	40	100	2

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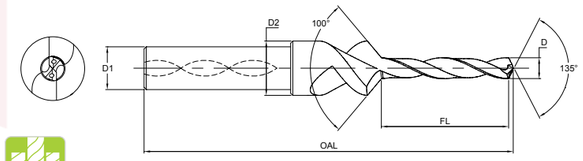
h6 shank tolerance for high precision tool holders



MG HM | 135° | PLAIN | C T | GF | GANTRY | ROBOT

P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter			C'Sink Diameter	Shank Diameter	Flute Length	Overall Length	No. of Flutes
	D			D2	D1	FL	OAL	
	Fractional	Wire Gage	Decimal					
UDC5A1AC0156	5/32	-	.1562	7/16	3/8	1	3-1/2	2
UDC5A1AC0188	3/16	-	.1875	1/2	3/8	1	3-1/2	2
UDC5A1AC0191	-	#11	.1910	1/2	3/8	1	3-1/2	2
UDC5A1AC0250	1/4	-	.2500	9/16	3/8	1	3-1/2	2
UDC5A1AC0313	5/16	-	.3125	11/16	1/2	1	3-1/2	2
UDC5A1AC0375	3/8	-	.3750	3/4	1/2	1	3-1/2	2
UDC5A1AC0438	7/16	-	.4375	7/8	5/8	1-1/2	4	2
UDC5A1AC0500	1/2	-	.5000	7/8	5/8	1-1/2	4	2
UDC5A1AC0563	9/16	-	.5625	1	5/8	1-1/2	4	2
UDC5A1AC0625	5/8	-	.6250	1	5/8	1-1/2	4	2

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter	C'Sink Diameter	Shank Diameter	Flute Length	Overall Length	No. of Flutes
	D	D2	D1	FL	OAL	
UDC5A2AC0400	4	12	10	25	90	2
UDC5A2AC0600	6	14	10	25	90	2
UDC5A2AC0800	8	16	12	25	90	2
UDC5A2AC1000	10	20	12	25	90	2
UDC5A2AC1200	12	20	16	40	100	2
UDC5A2AC1400	14	25	16	40	100	2
UDC5A2AC1600	16	25	16	40	100	2

▶ CVD Diamond Coating and other coatings are available on Customer Request
▶ Available as made to order

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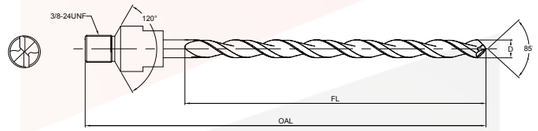
INCH **UPD5P1AA** SERIES
METRIC **UPD5P2AA** SERIES

SOLID CARBIDE, POWERFEED DRILLS FOR CFRP

Optimized for drilling CFRP with excellent performance
Special geometry for superior performance and delamination-free drilling
YG-1 special CVD coating for extended tool life and better abrasion resistance



MG HM | DIA | 85° | C | GF | POWER FEED | P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D		Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Decimal			
UPD5P1AA0188	3/16	.1875	2	6	2
UPD5P1AA0250	1/4	.2500	2	6	2
UPD5P1AA0313	5/16	.3125	2	6	2
UPD5P1AA0375	3/8	.3750	2	6	2
UPD5P1AA0438	7/16	.4375	2	6	2
UPD5P1AA0500	1/2	.5000	2	6	2
UPD5P1AA0563	9/16	.5625	2	6	2
UPD5P1AA0625	5/8	.6250	2	6	2

METRIC SIZES

(Unit : mm)

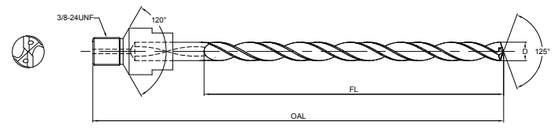
EDP	Drill Diameter D	Flute Length FL	Overall Length OAL	No. of Flutes
UPD5P2AA0400	4	50	150	2
UPD5P2AA0500	5	50	150	2
UPD5P2AA0600	6	50	150	2
UPD5P2AA0800	8	50	150	2
UPD5P2AA1000	10	50	150	2
UPD5P2AA1200	12	50	150	2
UPD5P2AA1400	14	50	150	2
UPD5P2AA1600	16	50	150	2

▶ Available as made to order

INCH **UPD5A1AB** SERIES
METRIC **UPD5A2AB** SERIES

SOLID CARBIDE, POWERFEED DRILLS FOR CFRP / AL

Optimized for drilling composite/AL stacks with excellent performance
Special geometry for superior performance, delamination-free drilling and burrless operation
YG-1 special CVD coating and other coatings available for extended tool life and better abrasion resistance



MG HM | 125° | C A | GF | POWER FEED | P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D		Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Decimal			
UPD5A1AB0188	3/16	.1875	2	6	2
UPD5A1AB0250	1/4	.2500	2	6	2
UPD5A1AB0313	5/16	.3125	2	6	2
UPD5A1AB0375	3/8	.3750	2	6	2
UPD5A1AB0438	7/16	.4375	2	6	2
UPD5A1AB0500	1/2	.5000	2	6	2
UPD5A1AB0563	9/16	.5625	2	6	2
UPD5A1AB0625	5/8	.6250	2	6	2

METRIC SIZES

(Unit : mm)

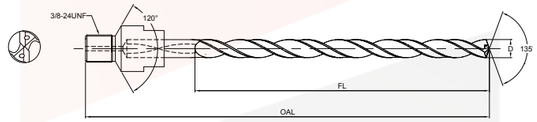
EDP	Drill Diameter D	Flute Length FL	Overall Length OAL	No. of Flutes
UPD5A2AB0400	4	50	150	2
UPD5A2AB0600	6	50	150	2
UPD5A2AB0800	8	50	150	2
UPD5A2AB1000	10	50	150	2
UPD5A2AB1200	12	50	150	2
UPD5A2AB1400	14	50	150	2
UPD5A2AB1600	16	50	150	2

▶ CVD Diamond Coating and other coatings are available on Customer Request
▶ Available as made to order

INCH **UPD5A1AC** SERIES
METRIC **UPD5A2AC** SERIES

SOLID CARBIDE, POWERFEED DRILLS FOR CFRP / Ti

Optimized for drilling composite/Ti stacks with excellent performance
Special geometry for superior performance, delamination-free drilling and burrless operation
YG-1 special CVD coating and other coatings available for extended tool life and better abrasion resistance



MG HM | 135° | C T | GF | POWER FEED P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D		Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Decimal			
UPD5A1AC0188	3/16	.1875	2	6	2
UPD5A1AC0250	1/4	.2500	2	6	2
UPD5A1AC0313	5/16	.3125	2	6	2
UPD5A1AC0375	3/8	.3750	2	6	2
UPD5A1AC0438	7/16	.4375	2	6	2
UPD5A1AC0500	1/2	.5000	2	6	2
UPD5A1AC0563	9/16	.5625	2	6	2
UPD5A1AC0625	5/8	.6250	2	6	2

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D	Flute Length FL	Overall Length OAL	No. of Flutes
UPD5A2AC0400	4	50	150	2
UPD5A2AC0600	6	50	150	2
UPD5A2AC0800	8	50	150	2
UPD5A2AC1000	10	50	150	2
UPD5A2AC1200	12	50	150	2
UPD5A2AC1400	14	50	150	2
UPD5A2AC1600	16	50	150	2

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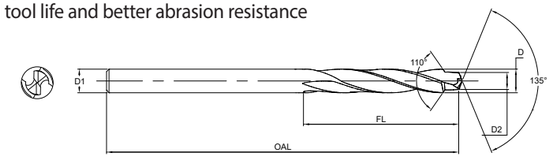
INCH **UDM5A1AA** SERIES
METRIC **UDM5A2AA** SERIES

SOLID CARBIDE, HAND DRILL REAMERS FOR CFRP AND STACKS WITH PILOT HOLES

Optimized for drilling composite/metal stacks with pre-drilled pilot holes
Special geometry for superior performance, delamination-free drilling and burrless operation
YG-1 special CVD coating and other coatings available for extended tool life and better abrasion resistance



MG HM | 135° | PLAIN | C | C A | C T | GF | HAND HELD P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D (Inch)			Pilot Diameter D2	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Wire Gage	Decimal					
UDM5A1AA0125	1/8	-	.1250	.0980	1/8	1	4	2
UDM5A1AA0129	-	#30	.1285	.0980	.1285	1	4	2
UDM5A1AA0156	5/32	-	.1562	.1285	5/32	1	4	2
UDM5A1AA0188	3/16	-	.1875	.1590	3/16	1	4	2
UDM5A1AA0189	-	#12	.1890	.1590	.1890	1-1/2	4	2
UDM5A1AA0191	-	#11	.1910	.1590	.1910	1-1/2	4	2
UDM5A1AA0250	1/4	-	.2500	.1935	1/4	1-1/2	6	2
UDM5A1AA0313	5/16	-	.3125	.2500	5/16	2	6	2
UDM5A1AA0375	3/8	-	.3750	.3125	3/8	2	6	2
UDM5A1AA0438	7/16	-	.4375	.3750	7/16	2	6	2
UDM5A1AA0500	1/2	-	.5000	.4375	1/2	2	6	2

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D (mm)	Pilot Diameter D2	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
UDM5A2AA0300	3	2.4	3	25	100	2
UDM5A2AA0400	4	3.2	4	25	100	2
UDM5A2AA0600	6	4.8	6	40	150	2
UDM5A2AA0800	8	6.4	8	50	150	2
UDM5A2AA1000	10	8.0	10	50	150	2
UDM5A2AA1200	12	9.6	12	50	150	2

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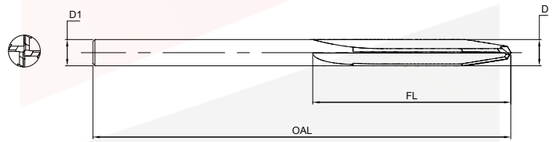
INCH **UDM5P1AB** SERIES
METRIC **UDM5P2AB** SERIES

SOLID CARBIDE, HAND DRILL REAMERS - STRAIGHT FLUTES

Drill Ream process in one shot suitable for hand-held tools
Low pressure when feeding with the tool
h6 shank tolerance for high precision tool holders
YG-1 special CVD coating for extended tool life and better abrasion resistance



MG HM | DIA | 118° | PLAIN | C | GF | HAND HELD P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D		Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Decimal				
UDM5P1AB0125	1/8	-	1/8	1-1/2	4	4
UDM5P1AB0129	-	#30	.1285	1-1/2	4	4
UDM5P1AB0156	5/32	-	5/32	1-1/2	4	4
UDM5P1AB0188	3/16	-	3/16	1-1/2	4	4
UDM5P1AB0189	-	#12	.1890	1-1/2	4	4
UDM5P1AB0191	-	#11	.1910	1-1/2	4	4
UDM5P1AB0250	1/4	-	1/4	1-1/2	6	4
UDM5P1AB0313	5/16	-	5/16	2	6	4
UDM5P1AB0375	3/8	-	3/8	2	6	4
UDM5P1AB0438	7/16	-	7/16	2	6	4
UDM5P1AB0500	1/2	-	1/2	2	6	4

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
UDM5P2AB0300	3	3	40	100	4
UDM5P2AB0400	4	4	40	100	4
UDM5P2AB0600	6	6	40	150	4
UDM5P2AB0800	8	8	50	150	4
UDM5P2AB1000	10	10	50	150	4
UDM5P2AB1200	12	12	50	150	4

▶ Available as made to order

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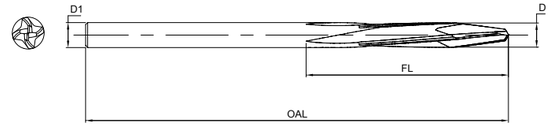
INCH **UDM5P1AC** SERIES
METRIC **UDM5P2AC** SERIES

SOLID CARBIDE, HAND DRILL REAMERS - HELICAL FLUTES

Drill Ream process in one shot suitable for hand-held tools
Low pressure when feeding with the tool
h6 shank tolerance for high precision tool holders
YG-1 special CVD coating for extended tool life and better abrasion resistance



MG HM | DIA | 118° | PLAIN | C | GF | HAND HELD P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D		Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Decimal				
UDM5P1AC0125	1/8	-	1/8	1-1/2	4	4
UDM5P1AC0129	-	#30	.1285	1-1/2	4	4
UDM5P1AC0156	5/32	-	5/32	1-1/2	4	4
UDM5P1AC0188	3/16	-	3/16	1-1/2	4	4
UDM5P1AC0189	-	#12	.1890	1-1/2	4	4
UDM5P1AC0191	-	#11	.1910	1-1/2	4	4
UDM5P1AC0250	1/4	-	1/4	1-1/2	6	4
UDM5P1AC0313	5/16	-	5/16	2	6	4
UDM5P1AC0375	3/8	-	3/8	2	6	4
UDM5P1AC0438	7/16	-	7/16	2	6	4
UDM5P1AC0500	1/2	-	1/2	2	6	4

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
UDM5P2AC0300	3	3	40	100	4
UDM5P2AC0400	4	4	40	100	4
UDM5P2AC0600	6	6	40	150	4
UDM5P2AC0800	8	8	50	150	4
UDM5P2AC1000	10	10	50	150	4
UDM5P2AC1200	12	12	50	150	4

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REAMERS

COMPOSITE REAMING TOOLS INDEX

INCH METRIC	MODEL	DESCRIPTION	SIZE		PAGE
			INCH	METRIC	
URM5A1AA URM5A2AA		Solid Carbide, NC Machine Reamers - Straight Flutes	1/4 ~ 1"	6.0 ~ 25.0	**46**
URM5A1AB URM5A2AB		Solid Carbide, NC Machine Reamers - Helical Flutes	1/4 ~ 1"	6.0 ~ 25.0	**47**

◎ : Excellent ○: Good

INCH METRIC	Working Material				Machine Type			
	CFRP	CFRP/AL	CFRP/Ti	GFRP	ADU	Gantry	Robot	Hand-Held
URM5A1AA URM5A2AA	◎	◎	◎	◎		◎	◎	
URM5A1AB URM5A2AB	◎	◎	◎	◎		◎	◎	

INCH **URM5A1AA** SERIES
METRIC **URM5A2AA** SERIES

CARBIDE, NC MACHINE REAMERS - STRAIGHT FLUTES

· Material – Up to Ø1/2"(12.0mm) : Solid Carbide
– Over Ø1/2"(12.0mm) : carbide head brazed
· Straight Flutes, Right Hand Cut
· Unequal Flute Spacing
· O.D Tolerance DIN 1420 for H7
· Shank DIN 6535-HA

MG HM | H7 | 45° | C | C A | C T | GF | GANTRY | ROBOT | P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D		Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Decimal				
URM5A1AA0250	1/4	.2500	1/4	1	3	6
URM5A1AA0313	5/16	.3125	5/16	1-1/8	3-1/4	6
URM5A1AA0375	3/8	.3750	3/8	1-1/4	3-1/2	6
URM5A1AA0438	7/16	.4375	7/16	1-1/2	4	6
URM5A1AA0500	1/2	.5000	1/2	1-1/2	4	8
URM5A1AA0625	5/8	.6250	5/8	1-1/2	5	8
URM5A1AA0750	3/4	.7500	3/4	2	6	8
URM5A1AA0875	7/8	.8750	7/8	2	6	8
URM5A1AA1000	1	1.0000	1	2	6	8

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
URM5A2AA0600	6	6	26	93	6
URM5A2AA0800	8	8	33	117	6
URM5A2AA1000	10	10	38	133	6
URM5A2AA1200	12	12	44	151	6
URM5A2AA1400	14	16	47	160	8
URM5A2AA1600	16	16	52	170	8
URM5A2AA1800	18	20	56	182	8
URM5A2AA2000	20	20	60	195	8
URM5A2AA2500	25	25	75	200	8

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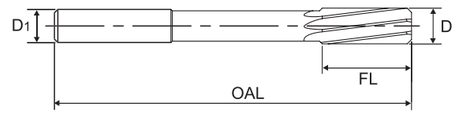
INCH **URM5A1AB** SERIES
METRIC **URM5A2AB** SERIES

CARBIDE, NC MACHINE REAMERS - HELICAL FLUTES

· Material – Up to Ø1/2"(12.0mm) : Solid Carbide
– Over Ø1/2"(12.0mm) : carbide head brazed
· Left Spiral Flutes, Right Hand Cut
· Unequal Flute Spacing
· O.D Tolerance DIN 1420 for H7
· Shank DIN 6535-HA



MG HM | H7 | LH7° | 45° | C | C A | C T | GF | GANTRY | ROBOT | P. 60

INCH SIZES

(Unit : inch)

EDP	Drill Diameter D		Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
	Fractional	Decimal				
URM5A1AB0250	1/4	.2500	1/4	1	3	6
URM5A1AB0313	5/16	.3125	5/16	1-1/8	3-1/4	6
URM5A1AB0375	3/8	.3750	3/8	1-1/4	3-1/2	6
URM5A1AB0438	7/16	.4375	7/16	1-1/2	4	6
URM5A1AB0500	1/2	.5000	1/2	1-1/2	4	8
URM5A1AB0625	5/8	.6250	5/8	1-1/2	5	8
URM5A1AB0750	3/4	.7500	3/4	2	6	8
URM5A1AB0875	7/8	.8750	7/8	2	6	8
URM5A1AB1000	1	1.0000	1	2	6	8

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D	Shank Diameter D1	Flute Length FL	Overall Length OAL	No. of Flutes
URM5A2AB0600	6	6	26	93	6
URM5A2AB0800	8	8	33	117	6
URM5A2AB1000	10	10	38	133	6
URM5A2AB1200	12	12	44	151	6
URM5A2AB1400	14	16	47	160	8
URM5A2AB1600	16	16	52	170	8
URM5A2AB1800	18	20	56	182	8
URM5A2AB2000	20	20	60	195	8
URM5A2AB2500	25	25	75	200	8

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YG-1 PCD Series for CFRP and stacks offer cutters designed for drilling, countersinking and milling operations. It covers the complete range of cutting tools commonly used within Aerospace, Automotive, Energy and Sporting Goods industries.
YG-1 PCD products range covers brazed and tipped PCD blades on Solid Carbide bodies which allow a major benefit for resharpening options, and therefore, a considerable cost saving.

PCD TOOLS

COMPOSITE PCD TOOLS INDEX

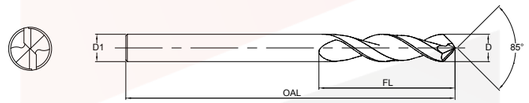
◎ : Excellent ○: Good

INCH	METRIC	MODEL	DESCRIPTION	SIZE		PAGE	Working material				Machine Type			
				INCH	METRIC		CFRP	CFRP/Al	CFRP/Ti	GFRP	ADU	Gantry	Robot	Hand-Held
FDRPA1AD	FDRPA2AD		PCD Drills for CFRP	1/8 ~ 3/4	3.0 ~ 10.0	52	◎	○	○	◎		◎	◎	
FDCPA1AD	FDCPA2AD		PCD Drills / Countersinks	1/8 ~ 3/4	3.0 ~ 10.0	53	◎	○	○	◎		◎	◎	
FBNPA1AA	FBNPA2AA		PCD Ball Nose End Mills	1/8 ~ 3/4	3.0 ~ 20.0	54	◎			◎		◎	◎	
FEMPA1AA	FEMPA2AA		PCD Straight End Mills	1/8 ~ 3/4	3.0 ~ 20.0	55	◎			◎		◎	◎	
FEMPA1AB	FEMPA2AB		PCD Multiflute End Mills	3/16 ~ 5/8	4.0 ~ 16.0	56	◎			◎		◎	◎	
FCSPA1AA(100°) FCSPA1AB(130°)	FCSPA2AA(100°) FCSPA2AB(130°)		PCD Countersinks, 2 flute - Intergral 100° and 130° Angle, Integral pilot threaded shank	3/8 ~ 1-1/4	10.0 ~ 25.0	57	◎			◎				◎
FCSPA1AC(100°) FCSPA1AD(130°)	FCSPA2AC(100°) FCSPA2AD(130°)		PCD Countersinks, 2 flute - Interchangeable 100° and 130° Angle, Interchangeable pilot threaded shank	3/8 ~ 1-1/4	10.0 ~ 21.0	58	◎			◎				◎
FCSPA1AE(100°) FCSPA1AF(130°)	FCSPA2AE(100°) FCSPA2AF(130°)		PCD Countersinks, 3 flute - Interchangeable 100° and 130° Angle, Interchangeable pilot threaded shank	1/2 ~ 1-1/4	10.0 ~ 21.0	59	◎			◎				◎

INCH **FDRPA1AD** SERIES
METRIC **FDRPA2AD** SERIES

PCD DRILLS FOR CFRP

Especially manufactured for the high demands needed by modern CFRP and CFRP/Stacks/AL/TI. The Full Nib drill allows the transition from a sandwich to a full nib tip, opening the door to a wider range of diamond geometries that do not exist in a sandwich diamond. 8 or 4 facet drills, destined to be the leader in hole-making for the aerospace industry.



INCH SIZES

(Unit : inch)

EDP	Mill Diameter D			Shank Diameter D1	Flute Length FL	Overall Length OAL
	Fractional	Wire Gage	Decimal			
FDRPA1AD0125	1/8	-	.1250	1/8	1	3
FDRPA1AD0129	-	#30	.1285	.1285	1	3
FDRPA1AD0156	5/32	-	.1562	5/32	1	3
FDRPA1AD0159	-	#21	.1590	.1590	1	3
FDRPA1AD0188	3/16	-	.1875	3/16	1	3
FDRPA1AD0189	-	#12	.1890	.1890	1	3
FDRPA1AD0191	-	#11	.1910	.1910	1	3
FDRPA1AD0250	1/4	-	.2500	1/4	1	3
FDRPA1AD0251	-	-	.2510	.2510	1	3
FDRPA1AD0313	5/16	-	.3125	5/16	1	3
FDRPA1AD0375	3/8	-	.3750	3/8	1	3
FDRPA1AD0438	7/16	-	.4375	7/16	1	3
FDRPA1AD0500	1/2	-	.5000	1/2	1	3
FDRPA1AD0625	5/8	-	.6250	5/8	1	3
FDRPA1AD0750	3/4	-	.7500	3/4	1	3

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter D	Shank Diameter D1	Flute Length FL	Overall Length OAL
FDRPA2AD0300	3	6	25	65
FDRPA2AD0400	4	6	25	65
FDRPA2AD0476	4.76	6	25	65
FDRPA2AD0500	5	6.35	30	70
FDRPA2AD0600	6	6.35	30	70
FDRPA2AD0635	6.35	6.35	30	70
FDRPA2AD0650	6.5	8	35	76
FDRPA2AD0700	7	8	35	76
FDRPA2AD0794	7.94	8	35	76
FDRPA2AD0800	8	10	40	89
FDRPA2AD0900	9	10	40	89
FDRPA2AD1000	10	12	45	100

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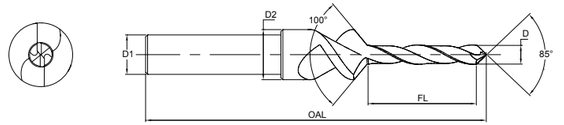
INCH **FDCPA1AD** SERIES
METRIC **FDCPA2AD** SERIES

PCD DRILLS / COUNTERSINKS

Take advantage of drilling and countersinking in one pass with the Full Nib drill or the Wafer drill. The use of one tool drilling and countersinking saves costs, such as the need to use a drill and countersink separately, and reduces the amount of measuring and accurate machine set-up. Also reduces the amount of tools needed for replacement, which impacts directly on production line costs.



INCH SIZES

(Unit : inch)

EDP	Drill Diameter D			C'Sink Diameter D2	Shank Diameter D1	Flute Length FL	Overall Length OAL
	Fractional	Wire Gage	Decimal				
FDCPA1AD0125	1/8	-	.1250	3/8	.1250	1	3
FDCPA1AD0129	-	#30	.1285	3/8	.1285	1	3
FDCPA1AD0156	5/32	-	.1562	3/8	5/32	1	3
FDCPA1AD0159	-	#21	.1590	3/8	.1590	1	3
FDCPA1AD0188	3/16	-	.1875	3/8	3/16	1	3
FDCPA1AD0189	-	#12	.1890	3/8	.1890	1	3
FDCPA1AD0191	-	#11	.1910	3/8	.1910	1	3
FDCPA1AD0250	1/4	-	.2500	1/2	1/4	1	3
FDCPA1AD0251	-	-	.2510	1/2	.2510	1	3
FDCPA1AD0313	5/16	-	.3125	1/2	5/16	1	3
FDCPA1AD0375	3/8	-	.3750	3/4	3/8	1	3
FDCPA1AD0438	7/16	-	.4375	3/4	7/16	1	3
FDCPA1AD0500	1/2	-	.5000	3/4	1/2	1	3
FDCPA1AD0563	9/16	-	.5625	3/4	9/16	1	3
FDCPA1AD0625	5/8	-	.6250	3/4	5/8	1	3
FDCPA1AD0750	3/4	-	.7500	1	3/4	1	3

METRIC SIZES

(Unit : mm)

EDP	Drill Diameter D	C'Sink Diameter D2	Shank Diameter D1	Flute Length FL	Overall Length OAL
FDCPA2AD0300	3	10	6	25	65
FDCPA2AD0400	4	10	6	25	65
FDCPA2AD0476	4.76	10	6	25	65
FDCPA2AD0500	5	10	6.35	30	70
FDCPA2AD0600	6	10	6.35	30	70
FDCPA2AD0635	6.35	10	6.35	30	70
FDCPA2AD0650	6.5	12	8	35	76
FDCPA2AD0700	7	12	8	35	76
FDCPA2AD0794	7.94	12	8	35	76
FDCPA2AD0800	8	12	10	40	89
FDCPA2AD0900	9	12	10	40	89
FDCPA2AD1000	10	20	12	45	100

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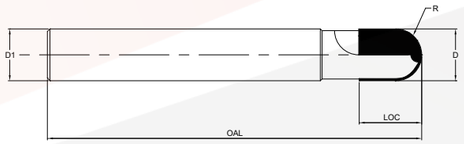
INCH **FBNPA1AA** SERIES
METRIC **FBNPA2AA** SERIES

PCD BALL NOSE END MILLS

Ball Nose End Mill, solid carbide body with diamond tip. Designed for use on all non-ferrous materials including Graphite, CFRP, Aluminum, Bronze, Copper, Ceramics, and Magnesium. Used to produce radiuses in the bottom of slots or pockets for added strength. Also used to create compound curves for molds.



PCD 1-2 PLAIN C GF GANTRY ROBOT

INCH SIZES

(Unit : inch)

EDP	Mill Diameter D		Radius	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	Fractional	Decimal	R	D1	LOC	OAL	
FBNPA1AA0125	1/8	.1250	1/16	1/8	1/4	1-1/2	1
FBNPA1AA0188	3/16	.1875	3/32	3/16	5/16	2	1
FBNPA1AA0250	1/4	.2500	1/8	1/4	3/8	2	2
FBNPA1AA0375	3/8	.3750	3/16	3/8	1/2	2-1/2	2
FBNPA1AA0500	1/2	.5000	1/4	1/2	5/8	3	2
FBNPA1AA0625	5/8	.6250	5/16	5/8	7/8	3-1/4	2
FBNPA1AA0750	3/4	.7500	3/8	3/4	1	4	2

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter D	Radius R	Shank Diameter D1	Length of Cut LOC	Overall Length OAL	No. of Flutes
FBNPA2AA0300	3	1.5	3	6	60	1
FBNPA2AA0400	4	2	4	6	60	1
FBNPA2AA0500	5	2.5	5	8	60	2
FBNPA2AA0600	6	3	6	10	75	2
FBNPA2AA0800	8	4	8	10	75	2
FBNPA2AA1000	10	5	10	15	75	2
FBNPA2AA1200	12	6	12	15	75	2
FBNPA2AA1600	16	8	16	20	100	2
FBNPA2AA2000	20	10	20	25	100	2

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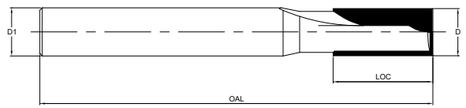
INCH **FEMPA1AA** SERIES
METRIC **FEMPA2AA** SERIES

PCD STRAIGHT END MILLS

1-2 Flute Standard PCD Flat End Mills
Brazed Diamond blades with center cutting point designed for intricate milling tasks, precisely.



PCD 1-2 PLAIN C GF GANTRY ROBOT

INCH SIZES

(Unit : inch)

EDP	Mill Diameter D		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	Fractional	Decimal	D1	LOC	OAL	
FEMPA1AA0125	1/8	.1250	1/8	1/4	2	1
FEMPA1AA0188	3/16	.1875	3/16	5/16	2	1
FEMPA1AA0250	1/4	.2500	1/4	3/8	2	2
FEMPA1AA0375	3/8	.3750	3/8	1/2	2-1/2	2
FEMPA1AA0500	1/2	.5000	1/2	5/8	3	2
FEMPA1AA0625	5/8	.6250	5/8	7/8	3-1/4	2
FEMPA1AA0750	3/4	.7500	3/4	1	4	2

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter D	Shank Diameter D1	Length of Cut LOC	Overall Length OAL	No. of Flutes
FEMPA2AA0300	3	3	6	60	1
FEMPA2AA0400	4	4	6	60	1
FEMPA2AA0500	5	5	8	60	1
FEMPA2AA0600	6	6	10	75	2
FEMPA2AA0800	8	8	10	75	2
FEMPA2AA1000	10	10	15	75	2
FEMPA2AA1200	12	12	15	75	2
FEMPA2AA1600	16	16	20	100	2
FEMPA2AA2000	20	20	25	100	2

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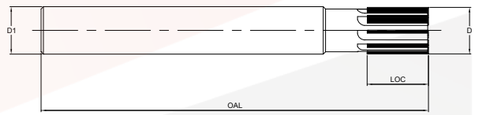
INCH **FEMPA1AB** SERIES
METRIC **FEMPA2AB**SERIES

PCD MULTIFLUTE END MILLS

More flutes allow a higher feed rate, because there is less material removed per flute. More flutes and more cutting edges increases the tool stability providing better quality work surface, reduce working time, lower your cost and decrease the noise made by the tool.



PCD 3-9 PLAIN C GF GANTRY ROBOT

INCH SIZES

(Unit : inch)

EDP	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D		D1	LOC	OAL	
	Fractional	Decimal				
FEMPA1AB0188	3/16	.1875	1/4	3/16	2-3/8	3
FEMPA1AB0250	5/16	.3125	7/16	5/16	2-3/8	3
FEMPA1AB0375	3/8	.3750	1/2	3/8	2-1/2	3
FEMPA1ABA375	3/8	.3750	1/2	3/8	3	5
FEMPA1AB0500	1/2	.5000	1/2	1/2	3	3
FEMPA1ABA500	1/2	.5000	1/2	1/2	3	5
FEMPA1ABB500	1/2	.5000	1/2	1/2	3	7
FEMPA1ABC500	1/2	.5000	1/2	1/2	3	9
FEMPA1AB0625	5/8	.6250	5/8	5/8	3-1/8	3
FEMPA1ABA625	5/8	.6250	5/8	5/8	3-1/8	5
FEMPA1ABB625	5/8	.6250	5/8	5/8	3-1/8	7
FEMPA1ABC625	5/8	.6250	5/8	5/8	3-1/8	9

METRIC SIZES

(Unit : mm)

EDP	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flutes
	D	D1	LOC	OAL	
FEMPA2AB0400	4	4	6	50	3
FEMPA2AB0600	6	6	6	60	3
FEMPA2AB0800	8	8	11	61	3
FEMPA2AB080A	8	8	10	75	3
FEMPA2AB1000	10	10	13	63	3
FEMPA2AB100A	10	10	13	63	5
FEMPA2AB1200	12	12	13	75	3
FEMPA2AB120A	12	12	13	75	5
FEMPA2AB120B	12	12	13	75	7
FEMPA2AB120C	12	12	13	75	9
FEMPA2AB1600	16	16	16	79	3
FEMPA2AB160A	16	16	16	79	5
FEMPA2AB160B	16	16	16	79	7
FEMPA2AB160C	16	16	16	79	9

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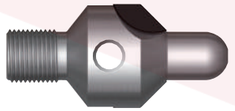
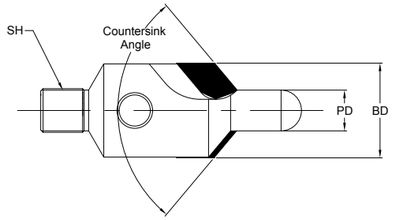
INCH **FCSPA1AA, FCSPA2AA** SERIES
METRIC **FCSPA2AA, FCSPA2AB** SERIES

PCD COUNTERSINKS, 2 FLUTE - INTERGRAL

The integral pilot guides the countersink to the center of the hole, preventing chatter and run out. All of the countersinks are available in all sizes, with two flutes and cutting angles as needed.





PCD 2 C GF HAND HELD (MICRO-STOP)

INCH SIZES

(Unit : inch)

EDP		Body Diameter	Pilot Diameter	Shank Thread	No. of Flutes
100° C'Sink Angle	130° C'Sink Angle	BD	PD	SH	
FCSPA1AA0375	**FCSPA2AA0375**	3/8	.125	1/4-28	2
FCSPA1AAA375	**FCSPA2AAA375**	3/8	.128	1/4-28	2
FCSPA1AA0438	**FCSPA2AA0438**	7/16	.156	1/4-28	2
FCSPA1AAA438	**FCSPA2AAA438**	7/16	.187	1/4-28	2
FCSPA1AA0500	**FCSPA2AA0500**	1/2	.125	1/4-28	2
FCSPA1AAA500	**FCSPA2AAA500**	1/2	187	1/4-28	2
FCSPA1AAB500	**FCSPA2AAB500**	1/2	.236	1/4-28	2
FCSPA1AA0625	**FCSPA2AA0625**	5/8	.191	1/4-28	2
FCSPA1AAA625	**FCSPA2AAA625**	5/8	.250	1/4-28	2
FCSPA1AA0750	**FCSPA2AA0750**	3/4	.312	3/8-24	2
FCSPA1AA0875	**FCSPA2AA0875**	7/8	.312	3/8-24	2
FCSPA1AA1000	**FCSPA2AA1000**	1	.312	7/16-20	2
FCSPA1AA1250	**FCSPA2AA1250**	1-1/4	.312	7/16-20	2

METRIC SIZES

(Unit : mm)

EDP		Body Diameter	Pilot Diameter	Shank Thread	No. of Flutes
100° C'Sink Angle	130° C'Sink Angle	BD	PD	SH	
FCSPA2AA1000	**FCSPA2AB1000**	10	3	M6 x 1.0	2
FCSPA2AA1200	**FCSPA2AB1200**	12	3	M6 x 1.0	2
FCSPA2AA1400	**FCSPA2AB1400**	14	3	M8 x 1.0	2
FCSPA2AA1700	**FCSPA2AB1700**	17	4	M8 x 1.0	2
FCSPA2AA1900	**FCSPA2AB1900**	19	6	M8 x 1.0	2
FCSPA2AA2200	**FCSPA2AB2200**	22	8	M8 x 1.0	2
FCSPA2AA2500	**FCSPA2AB2500**	25	8	M8 x 1.0	2

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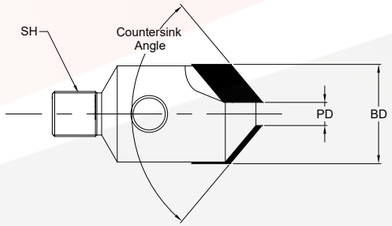
INCH **FCSPA1AC, FCSPA1AD** SERIES
METRIC **FCSPA2AC, FCSPA2AD** SERIES

PCD COUNTERSINKS, 2 FLUTE - INTERCHANGEABLE

The Interchangeable pilot countersink is ideal for cutting the same diameter chamfer with the same countersink but with different diameter pilots. Damaged pilots can be replaced at fraction of the cost, resuting in significant savings. Countersinks are available in all sizes with two flutes and cutting angles as needed.



PCD 2 | C | GF | HAND HELD (MICRO-STOP)

INCH SIZES

(Unit : inch)

EDP		Body Diameter	Pilot Diameter	Shank Thread	No. of Flutes
100° C'Sink Angle	130° C'Sink Angle	BD	PD	SH	
FCSPA1AC0375	**FCSPA1AD0375**	3/8	.125	1/4-28	2
FCSPA1AC0500	**FCSPA1AD0500**	1/2	.125	1/4-28	2
FCSPA1AC0625	**FCSPA1AD0625**	5/8	.125	1/4-28	2
FCSPA1AC0750	**FCSPA1AD0750**	3/4	.188	7/16-20	2
FCSPA1AC0875	**FCSPA1AD0875**	7/8	.188	7/16-20	2
FCSPA1AC1000	**FCSPA1AD1000**	1	.188	7/16-20	2
FCSPA1AC1250	**FCSPA1AD1250**	1-1/4	.188	7/16-20	2

METRIC SIZES

(Unit : mm)

EDP		Body Diameter	Pilot Diameter	Shank Thread	No. of Flutes
100° C'Sink Angle	130° C'Sink Angle	BD	PD	SH	
FCSPA2AC1000	**FCSPA2AD1000**	10	2.5	M6 x 1.0	2
FCSPA2AC1200	**FCSPA2AD1200**	12	3	M6 x 1.0	2
FCSPA2AC1400	**FCSPA2AD1400**	14	3	M6 x 1.0	2
FCSPA2AC1700	**FCSPA2AD1700**	17	3	M8 x 1.0	2
FCSPA2AC1900	**FCSPA2AD1900**	19	4	M8 x 1.0	2
FCSPA2AC2100	**FCSPA2AD2100**	21	4	M8 x 1.0	2

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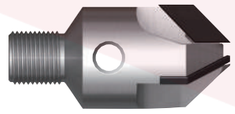
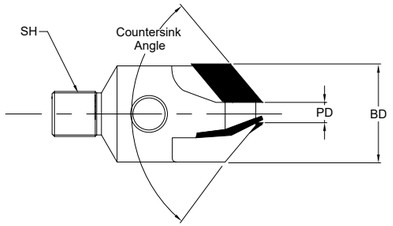
INCH **FCSPA1AE, FCSPA1AF** SERIES
METRIC **FCSPA2AE, FCSPA2AF** SERIES

PCD COUNTERSINKS, 3 FLUTE - INTERCHANGEABLE

The Interchangeable pilot countersink is ideal for cutting the same diameter chamfer with the same countersink but with different diameter pilots. Damaged pilots can be replaced at fraction of the cost, resuting in significant savings. Countersinks are available in all sizes with three flutes and cutting angles as needed.





PCD 3 | C | GF | HAND HELD (MICRO-STOP)

INCH SIZES

(Unit : inch)

EDP		Body Diameter	Pilot Diameter	Shank Thread	No. of Flutes
100° C'Sink Angle	130° C'Sink Angle	BD	PD	SH	
FCSPA1AE0500	**FCSPA1AF0500**	1/2	.125	1/4-28	3
FCSPA1AE0625	**FCSPA1AF0625**	5/8	.125	1/4-28	3
FCSPA1AE0750	**FCSPA1AF0750**	3/4	.188	7/16-20	3
FCSPA1AE0875	**FCSPA1AF0875**	7/8	.188	7/16-20	3
FCSPA1AE1000	**FCSPA1AF1000**	1	.188	7/16-20	3
FCSPA1AE1250	**FCSPA1AF1250**	1-1/4	.188	7/16-20	3

METRIC SIZES

(Unit : mm)

EDP		Body Diameter	Pilot Diameter	Shank Thread	No. of Flutes
100° C'Sink Angle	130° C'Sink Angle	BD	PD	SH	
FCSPA2AE1000	**FCSPA2AF1000**	10	2.5	M6 x 1.0	3
FCSPA2AE1200	**FCSPA2AF1200**	12	3	M6 x 1.0	3
FCSPA2AE1400	**FCSPA2AF1400**	14	3	M6 x 1.0	3
FCSPA2AE1700	**FCSPA2AF1700**	17	3	M8 x 1.0	3
FCSPA2AE1900	**FCSPA2AF1900**	19	4	M8 x 1.0	3
FCSPA2AE2100	**FCSPA2AF2100**	21	4	M8 x 1.0	3

· Phone : +82-32-526-0909, www.yg1.kr, E-mail : yg1@yg1.kr | · Phone : +1-800-765-8665, www.yg1usa.com

CUTTING CONDITIONS LIST

MILLING

WORK MATERIAL	OPERATION	Tool Diameter in(mm)											
		1/8" (3.175mm)			1/4" (6.35mm)			3/8" (9.53mm)			1/2" (12.7mm)		
		RPM	FEED (IPM)	FEED (mm/min.)	RPM	FEED (IPM)	FEED (mm/min.)	RPM	FEED (IPM)	FEED (mm/min.)	RPM	FEED (IPM)	FEED (mm/min.)
CFRP	SLOTTING	12000	30	762	6000	30	762	4500	30	762	4000	30	762
	SIDE MILLING (PROFILING)	15000	50	1270	8000	45	1143	5000	45	1143	4000	40	1016
GFRP	SLOTTING	10000	25	635	5000	25	635	4000	25	635	3500	25	635
	SIDE MILLING (PROFILING)	12000	35	889	7000	35	889	5500	35	889	4500	35	889
HONEY COMB	SLOTTING	25000	100	2540	20000	100	2540	18000	100	2540	15000	400	10160
	SIDE MILLING (PROFILING)	25000	100	2540	25000	100	2540	25000	100	2540	25000	400	10160

DRILLING

WORK MATERIAL	SPEED (SFM)	Tool Diameter (inch)			SPEED (m/min.)	Tool Diameter (mm)		
		1/4-3/8	3/8-1/2	1/2-1.00		6.35 -9.525	9.525-12.7	12.7-25.4
		FEED (IPR)				FEED (mm/rev.)		
CFRP, GFRP	300 - 400	.006 - .008	.008 - .015	.015 - .025	91.4 - 121.9	.1524 - .2032	.2032 - .381	.381 - 0.635
CFRP/AL	300 - 400	.006 - .008	.008 - .015	.015 - .025	91.4 - 121.9	.1524 - .2032	.2032 - .381	.381 - 0.635
CFRP/Ti	30 - 70	.006 - .010	.010 - .015	.015 - .020	9.1 - 21.3	.1524 - .254	.1524 - .381	.381 - 0.508

REAMERS

WORK MATERIAL	SPEED (SFM)	Tool Diameter (inch)			SPEED (m/min.)	Tool Diameter (mm)		
		1/4-3/8	3/8-1/2	1/2-1.00		6.35 -9.525	9.525-12.7	12.7-25.4
		FEED (IPR)				FEED (mm/rev.)		
CFRP, GFRP	300 - 400	.006 - .008	.008 - .015	.015 - .025	91.4 - 121.9	.1524 - .2032	.2032 - .381	.381 - 0.635
CFRP/AL	300 - 400	.006 - .008	.008 - .015	.015 - .025	91.4 - 121.9	.1524 - .2032	.2032 - .381	.381 - 0.635
CFRP/Ti	30 - 70	.006 - .010	.010 - .015	.015 - .020	9.1 - 21.3	.1524 - .254	.1524 - .381	.381 - 0.508

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ICON GUIDE LIST

ICON	Contents
MG HM	Micro Grain Carbide
PCD	Polycrystalline Diamond
DIA	Diamond Coating
85° 118° 125° 135°	Point Angle
2 3 4 6 8 1-2 4-8 3-9 MULTI	Number of Flutes
PLAIN	Type of Shank
15° 30°/30° LH7°	Helix Angle
45°	Chamfer Angle
H7	O.D. Tolerance of Reamer (DIN 1420 for H7)
	Internal Coolant Holes

ICON	Contents
	Cutting Condition
C C	CFRP (Carbon Fiber Reinforced Platics)
GF GF	GFRP (Glass Fiber Reinforced Plastics)
Kv	KFRP (Kelvar Fiber Reinforced Plastics)
C A	CFRP / Aluminum Stacks
C T	CFRP / Titanium Stacks
HC	Honeycomb
GANTRY	CNC Gantry
ROBOT	Robot End-Effectors
HAND HELD / HAND HELD (MICRO-STOP)	Hand Held / Hand Held(Micro-Stop)
Type1 Type2 Type3 Type4	Type of End Teeth

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YG-1 Group has two major cross-business research centers that serve all global composite machining activities, thus optimizing synergies between them. These research centers maintain and develop the highest level of skills and key technologies for the YG-1 Group. Their size and multi-disciplinary focus facilitate effective interaction with the industry world, early notice of scientific advances, and the recruiting of talents. YG-1 has also more development units around the world, facilitating research into new products, which are more closely tailored to customer needs and market requirements.

SONGDO R&D CENTER

Developing unique technologies i in order to create YG-1's nnovative cutting tools.
The ultimate target of research and development is our customers' needs.
The Songdo R&D Center is constantly developing new technologies or YG-1 with the vision: 'Creative Thinking and Innovation'. It focuses on expansion in conversion research through energetic inter-department communication. With the constant innovation and accumulated experience, YG-1 has become one of the biggest round tool suppliers.

Songdo, Incheon(South Korea)

CHARLOTTE TECH CENTER

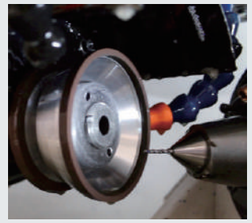
YG-1 Co. Ltd. has opened its' YG-1 America Technical Center in Charlotte, North Carolina, to serve as an engineering, R&D and technical solutions hub for North and South America. The Technical Center plays a major role in developing technical innovation and attracting more customers, connecting them not only in American but also in European markets. The center's main missions include - research and development of special tooling solutions for the aerospace, power generation and medical sectors; technical assistance; product management, education and promotion; customer relations and management. Its first objective is developing aerospace and power generation products before promoting other technologies and processes. The center is also home to YGU (YG-1 University), which trains and educates distributors and sellers concerning the company's products and application solutions.

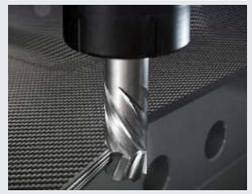
Charlotte, NC(United States)

DESIGN, SIMULATE, PRODUCE AND TEST IN THE INDUSTRY'S MOST ADVANCED FACILITY

INTRODUCING THE ULTIMATE SOLUTION IN TOOL–MAKING TECHNOLOGY

The YG-1 Technical Center is your one-stop center for all your tool making needs.
With state-of-the art manufacturing assets, including: Twenty-five 5-axis CNC stations, 25 high-performance grinding and milling machines plus 10 flexible programing testing modules, the YG-1 Tech Center gives you a turnkey solution to tool design, testing and manufacturing.





DESIGN

- Advanced CAD/CAM assisted application simulation to assure precise design integrity
- On-site R & D specialists for advanced high-production solutions
- Expertise in aerospace, automotive, power generation and general engineering

SIMULATE

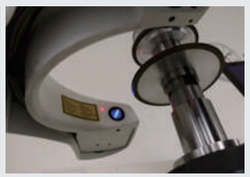
- Computer aided simulation to assure cost-effective manufacturing
- Machining solutions for hard metals and composites in aerospace applications
- Three-dimensional simulation provides predictable performance data consistently

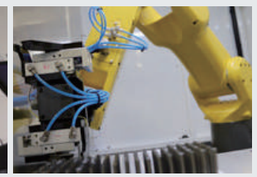
TEST

- Threshold testing in extreme applications for reliable performance
- Laser-assisted measuring for high tolerance reliability
- Prototype testing in actual conditions to assure best cost per piece

PRODUCE

- Twenty-five 5-axis CNC grinding machines for rapid production
- World-class sub-micron carbide blanks to assure increased tool life
- Latest generation in PVD and CVD coatings for enhanced wear resistance and edge protection





OUR PROMISE - THE BEST SOLUTION IN LESS TIME, WITH LESS EXPENSE

WE BUILT OUR REPUTATION ON ONE SIMPLE PRINCIPLE - SATISFYING EACH CUSTOMER WE SERVE

"For all our automation requirements, YG-1 tools have helped us increase both our quality and our throughput."

- Site Manager, International Aircraft Manufacturer -

• • •

"We are drilling our second ship set with new robots and it's performing great!"

- Automation Engineer, Major Aerospace Manufacturer -

PUT US TO THE TEST

With over 30 years of tooling experience for some of the world's most successful companies, YG-1 can handle your most demanding design, testing and manufacturing needs. And now, with our state-of-the-art Charlotte Technical Center - you have a place that can do it all. So when you're looking for the best solution at the most efficient cost, come to YG-1. Call us at +1 980 318 5348 or contact our distributor partners to discuss your machining solution needs.

BRING US YOUR DESIGN CONCEPTS, YOUR SMALL BATCH RUNS, AND YOUR FULL-BLOWN PRODUCTION NEEDS

COLLABORATION IS KEY

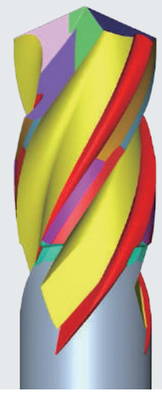
From your first design concepts, to prototyping, to final tooling, YG-1 will work with you at every turn. It's this partnership that keeps our customers on the cutting edge with the most cost-effective tooling solutions in the industry. For group training, collaboration with our designers and engineers, the Tech Center features an expansive training room with a live demonstration area.

VALUE–PERFORMANCE ENGINEERING

- Engineered for reliability and consistency in performance
- Complete understanding of demands and requirements
- Optimized for the most cost-effective solution
- Best cost-per-part value

DESIGNED TO ACCOMMODATE YOUR NEEDS

- Capabilities for small-batch production
- Ready access to world-class engineering
- Complete re-sharpening services
- Fast turnaround for one-of-a-kind tools and solutions



MEMO

HIGH QUALITY PRODUCTS and ON TIME DELIVERY for WORLD-WIDE CUSTOMERS

Since 1982, YG-1 has been committed to Quality, Innovation and unique customer experience.
Our performance and experience has granted YG-1 the Global impression of one of the leading manufacturers of high quality cutting tool solutions. This Global footprint expands over 75 countries, with international logistic centers, pledging to our customers to give the best service available today - and tomorrow.

EUROPE

BELGIUM, FINLAND, ITALY, PORTUGAL, SLOVENIA, THE NETHERLANDS
CROATIA, FRANCE, LITHUANIA, ROMANIA, SPAIN, TURKEY
CZECH REPUBLIC, GERMANY, NORWAY, RUSSIA, SWEDEN, UNITED KINGDOM
DENMARK, HUNGARY, POLAND, SERBIA, SWITZERLAND

ASIA PACIFIC

AUSTRALIA, INDONESIA, KINGDOM OF SAUDI ARABIA, SINGAPORE, UNITED ARAB EMIRATES
CHINA, IRAN, MALAYSIA, SOUTH KOREA, VIETNAM
HONG KONG, ISRAEL, PAKISTAN, TAIWAN
INDIA, JAPAN, PHILIPPINES, THAILAND

AMERICAS

BRAZIL, CANADA, COLOMBIA, MEXICO, UNITED STATES

AFRICA

EGYPT, SOUTH AFRICA

YG-1 CO., LTD.

* For more information on sales network, Please contact the head office as below;

YG-1 HEAD OFFICE
211, Sewolcheon-ro, Bupyeong-gu, Incheon, South Korea
Phone : +82-32-526-0909
E-mail : yg1@yg1.kr
www.yg1.kr

YG-1 USA
730 Corporate Woods Parkway, Vernon Hills, IL 60061 U.S.A.
Phone : 800-765-8665
Technical Assistance : 888-868-5988
www.yg1usa.com