



SPECIAL END MILLS / DRILLS FROM UNION TOOL

Shape your 'Desire' 'Quickly'.



 UNION TOOL CO.

# CONCEPT

Shape your **'Desire' 'Quickly'**.

We manufacture 'Special Tools' over and above our standard items in our catalogue with a **2 weeks manufacturing lead time** to meet customers' request.

Proven Technology resulting from **60 years of experience**

All **made in Japan**

Proprietary **in-house facility**

**Super high precision** from our brand new factory and facilities

**Mass production technology** which meets customers' requirements

**High performance coatings** for a wide choice of work materials

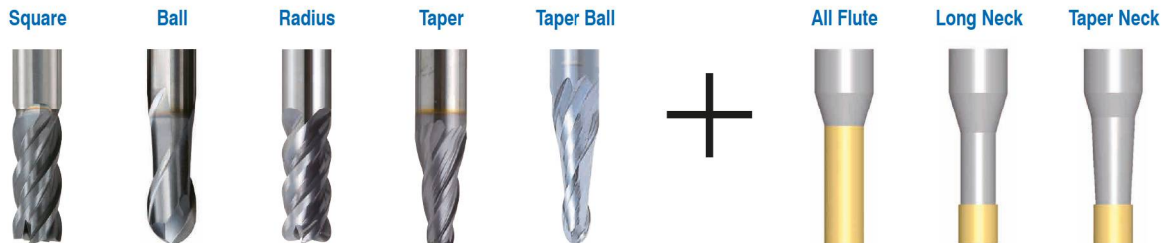


\*In case of a repeat order and depending on the requested shape, we may be obliged to exceed two weeks.



## Choices available for standard shapes

### Shape



### Sizes and Options

Tool Type	Shape	Min Dia.	Max Dia.	Number of Flutes	Options				
					Sharp Corner	Variable Pitch	Variable helix	Back Taper	Thinning
Solid End Mills	Square	∅ 0.1	∅ 12	1~6	○	○	○	—	—
	Ball	R0.03	R6	1~4	—	○	○	○	—
	Radius	∅ 0.2 X CR0.05	∅ 12 X CR4	2~6	—	○	○	○	—
CBN Tool	Ball	R0.05	R1	2	—	—	—	○	—
	Radius	∅ 0.1 X CR0.02	∅ 2 X CR0.5	2	—	—	—	○	—
Solid Drills	Drills	∅ 0.1	3	2	—	—	—	—	X Thinning

\*CBN tools have manufacturing lead-times of more than 2 weeks.

\*Variable Pitch and helix are available from 3 flutes.

\*Please feel free to ask our sales department for other sizes.

### Coatings

Coatings		Hardness (Hv)	Heat Resistance	Toughness	Lubricant Efficiency	Application
Ceramics based	HMG COAT	3700 ~ 4200	☆	○	◎	Hardened Steels from 50 to 70 HRC
	HARD MAX	3500 ~ 4000	☆	○	◎	Hardened Steels from 40 to 65 HRC
	UT COAT	3000 ~ 3500	◎	◎	☆	for Copper / Raw Material / up to 55 HRC
	CrN COAT	2000 ~ 2200	○	◎	☆	for Copper
	UTS COAT	3000 ~ 3500	◎	◎	☆	for Stainless Steels
DLC	DLC COAT	4000 ~ 6000	△	△	☆	for Aluminum / Plastics
Diamond	DIA COAT	9000 approximately	△	△	◎	for Graphite
	UDC COAT	9000 approximately	△	△	◎	for Cemented Carbide

## Case studies for non standard shapes

### How can we help you?

Extend tool life, test trials for new materials, complicated shapes, high precision, improve surface roughness, shorten cycle time,,,

We meet your expectations by **designing tools according to your requirements!**

### Case 1 : Barrel End Mills



<Application>: Highly Efficient Finishing for 5 axis machining

What is a barrel end mill?

The end mill is used mainly in 5-axis machining, having a barrel R at the outer peripheral edge.

Standard ball end mills



Larger  $a_p$

Barrel end mills

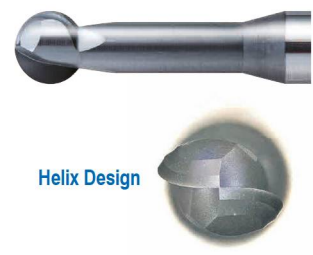
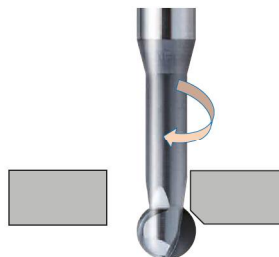


Reduces the cycle time significantly for finishing  
>>> Longer tool life

Improves the surface roughness  
>>> Less polishing process

### Case 2 : Spherical Ball

<Application>: Eliminate burring

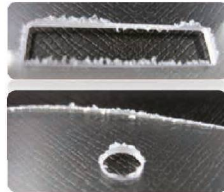


Helix Design

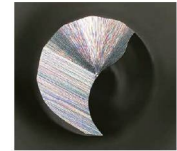
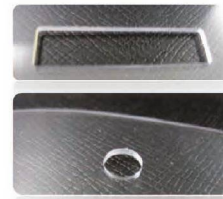
## Case studies for non standard shapes

### Case 3 : 1 Flute Square for Aluminum / Plastics

<Application>  
Less Burring

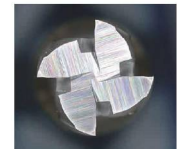
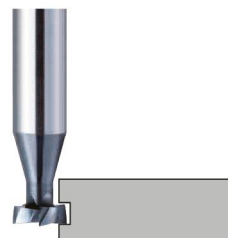


2 Flutes > 1 Flute



### Case 4 : T Slot Cutter

<Application>: Side Slotting



### Case 5 : 12 Flute Radius

<Application>: Highly Efficient and Longer Tool Life on hardened materials



### Case 6 : Diamond Coated Diamond Cut Router

<Application>: for CFRP / GFRP



### Case 7 : **Micro** Long Drill (30xD)

<Application>: Deep hole drilling



This is an example of a production application. Please feel free to contact us since numerous shapes are available.

FAX

この用紙をコピーしてお使いください。

宛先：ユニオンツール株式会社 \_\_\_\_\_ 行き

## ユニオンツール特殊品 仕様検討書及び見積り依頼書

※口部をレ印でチェック願います。

貴社名		ご依頼日	年 月 日
お名前		部署名	
住所	〒	E-mail	
TEL		FAX	

工具素材	超硬 <input type="checkbox"/>	CBN <input type="checkbox"/>			
先端形状	スクエア <input type="checkbox"/>	ボール <input type="checkbox"/>	ラジアス <input type="checkbox"/>	ドリル <input type="checkbox"/>	その他 <input type="checkbox"/>
外周形状	ストレート <input type="checkbox"/>	テーパ <input type="checkbox"/>	その他 <input type="checkbox"/>		
首形状	全刃長 <input type="checkbox"/>	ロングネック <input type="checkbox"/>	テーパネック <input type="checkbox"/>	その他 <input type="checkbox"/>	

項目	呼び寸法	下公差	上公差	公差UT一任
外径				<input type="checkbox"/>
半径R(ボール)				<input type="checkbox"/>
コーナR(ラジアス)				<input type="checkbox"/>

刃長		【要求形状図示】			
シャンク径		仕様項目の補足確認用として、ご要望工具形状の図示にご協力をお願いいたします。 特記事項、および特別ご要望事項について、こちらにてご指示ください。			
全長					
有効長(ロングネック)					
首下長(テーパネック)					
外周刃テーパ半角					
首部テーパ半角					
ねじれ角					
ねじれ方向	右 <input type="checkbox"/> 左 <input type="checkbox"/> 直刃 <input type="checkbox"/>				
刃数					
先端角					
コーティング	ノンコート <input type="checkbox"/>	HMGCOAT <input type="checkbox"/>	HARDMAX <input type="checkbox"/>	UTCOAT <input type="checkbox"/>	UTSCOAT <input type="checkbox"/>
	CRN <input type="checkbox"/>	DLC <input type="checkbox"/>	DIA <input type="checkbox"/>	UDC <input type="checkbox"/>	
その他オプション	ピン角 <input type="checkbox"/>	不等分割 <input type="checkbox"/>	不等リード <input type="checkbox"/>	外周BT <input type="checkbox"/>	シンニング <input type="checkbox"/>

見積本数	10 <input type="checkbox"/>	20 <input type="checkbox"/>	30 <input type="checkbox"/>	50 <input type="checkbox"/>	100 <input type="checkbox"/>	【            】本
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※初回ご評価用小ロットの試作品価格は、弊社営業へお問い合わせください。

被削材			被削材硬度		
ご要求事項	耐折損向上 <input type="checkbox"/>	耐摩耗性向上 <input type="checkbox"/>	面粗さ改善 <input type="checkbox"/>	加工精度改善 <input type="checkbox"/>	加工能率改善 <input type="checkbox"/>
具体的数値					

※お近くの弊社営業拠点もしくは、販売店様へFAX・メール等で送付ください。

## 【個人情報の取り扱いについて】

当社では、本人の同意を得ることなく個人情報を第三者に提供することはありません。  
この依頼書にご記載いただいた情報は今後の営業活動、情報配信(展示会案内状送付等)に使用させていただきます。

**FAX**

Please photocopy this special tool request form for each request for special end mills.

TO : UNION TOOL \_\_\_\_\_

**UNION TOOL Special Tool Request Form**

*Please check <input checked="" type="checkbox"/> .		Requested Date	/ /
Company		Department	
Person In Charge		E-mail	
Address			
TEL		FAX	

Tool Material	Tungsten Carbide <input type="checkbox"/>	CBN <input type="checkbox"/>			
Tip Shape	Square <input type="checkbox"/>	Ball <input type="checkbox"/>	Radius <input type="checkbox"/>	Drill <input type="checkbox"/>	Others <input type="checkbox"/>
Peripheral Shape	Straight <input type="checkbox"/>	Taper <input type="checkbox"/>	Others <input type="checkbox"/>		
Neck Shape	All Flute <input type="checkbox"/>	Long Neck <input type="checkbox"/>	Taper Neck <input type="checkbox"/>	Others <input type="checkbox"/>	

Specifications	Nominal Value	- Tolerance	+ Tolerance	Follow UT
Outside Diameter				<input type="checkbox"/>
Radius of Ball Nose				<input type="checkbox"/>
Corner Radius				<input type="checkbox"/>

Length of Cut		【 Drawing 】			
Shank Diameter		Please insert the requested drawing here in order to ensure that the specifications are correct. Please insert the drawing here when your requirements are different with regard to the standard shape.			
Overall Length					
Effective Length					
Neck Length					
Half Included Angle					
Neck Taper Angle					
Helix Angle					
Helix Direction	Right/Left/No Helix <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
Number of Flutes					
Point Angle					
Coating	Non-coating <input type="checkbox"/>	HMG <input type="checkbox"/>	HARDMAX <input type="checkbox"/>	UTCOAT <input type="checkbox"/>	UTSCOAT <input type="checkbox"/>
	GRN <input type="checkbox"/>	DLC <input type="checkbox"/>	DIA <input type="checkbox"/>	UDC <input type="checkbox"/>	
Options	Sharp Corner <input type="checkbox"/>	Variable Pitch <input type="checkbox"/>	Variable Helix <input type="checkbox"/>	Back Taper <input type="checkbox"/>	Thinning <input type="checkbox"/>

MOQ	10 <input type="checkbox"/>	20 <input type="checkbox"/>	30 <input type="checkbox"/>	50 <input type="checkbox"/>	100 <input type="checkbox"/>	{ } pcs
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※Please contact us for the pricing of small quantities for tool qualification purposes.

Work Material			Hardness		
Requirement	Tool Breakage <input type="checkbox"/>	Tool Wear <input type="checkbox"/>	Surface Roughness <input type="checkbox"/>	Milling Accuracy <input type="checkbox"/>	Cycle Time <input type="checkbox"/>
Detailed Value					

※Please e-mail or fax to our nearest branch or our distributor.

[Deal with personal information]

Your personal information will not be provided to third parties without your agreement.  
All information contained in this request form may be used by our in-house sales department for future sales activities such as exhibition invitations, etc.





## Advisory for Safe Use of UNIMAX Tungsten Carbide End Mills

Correct application and operation is strongly advised to avoid clogging, abrasion, etc, that could cause serious accidents or injuries. Ignition or sparks generated during milling could lead to fire or extreme damage to the work piece. End Mills are made with very sharp cutting edges and must be handled with extra care.

- \* Never touch the cutting edge with your bare hands, as this could cause serious injury. Special caution is required when opening the package.
- \* Dropping the tool could cause breakage or flying debris, leading to serious injury.
- \* During milling, unexpected impact or shock on the tool could cause breakage or flying debris. Ensure to use protective items such as safety glasses and a face guard.
- \* For best results, fine parameter adjustment may be required, depending on the materials; milling shape and strategy; machine rigidity and spindle capability.
- \* Use a machine that has high rigidity and generates a low level of vibration.
- \* Do not use flammable cutting oils.

### Advisory for regrinding UNIMAX Tungsten Carbide End Mills

- \* Never regrind the tool without wearing safety glasses and a face guard.



#### U.S. UNION TOOL, INC.

(U.S. HEADQUARTERS)

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Fax: 86-769-8884-8296

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Tel: 65-6846-9309 Fax: 65-6846-0197

#### UNION TOOL (THAILAND) CO., LTD.

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Samutprakarn 10570 THAILAND

Tel: 66-2-130-0908 Fax: 66-2-130-0909



 **0120-60-2620**

AM9:00~PM4:30

<http://www.uniontool.co.jp>

Price & Specifications are subject to change without notice.

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