

## Types of Cuts and Recommended Applications

Following are general guidelines for selecting the correct bur based upon material being machined.

### Single (Standard)



A general-purpose right hand flute style is recommended when rapid stock removal and good workpiece finish are the parameters.

### Fine



A general-purpose right hand flute style designed for producing higher quality finishes, when removing less stock, with more operator control.

### Shear



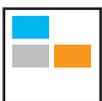
A right hand flute style bur is recommended for rapid stock removal on softer, non-ferrous and non-metallic materials.

### Double (Alternate Diamond Grind)



M.A. Ford® Carbide Burs are available in a Standard Alternate Diamond (Double Cut) and Fine Alternate Diamond style. An alternate diamond grind has left hand fluting added to standard or fine cut fluting. This additional fluting helps break up chips when working steel weldments or other materials that can produce small or sliver-type chips. A slight left hand cutting action typically provides the operator more control of the bur and grinder.

### Optional Diamond Grind Available Upon Request



Diamond grind is left hand fluting added to single or fine cut burs. Like an alternate diamond grind, a diamond grind will also break up bothersome chips into an almost granular powder. More precise deburring is possible because of a more balanced left and right hand cutting action. The most rapid penetration achieved with a carbide bur is with diamond grind. A diamond grind will, however, reduce tool life. Recommended for ferrous and stainless steel materials.

Bur Application Chart				
Material	Type of Cut			
	Single	Double	Fine	Shear
Steel, Carbon & Alloys	x	x		
Steel, Nickel Chrome	x	x		
Steel, Stainless	x	x	x	
Steel, Weldments	x	x		
Cast Iron	x			
Titanium	x	x		
Steel, 40-60 Rc	x	x	x	
Wood				x
Aluminum	x	x		x
Brass, Bronze, Copper	x	x		
Carbon	x			
Fiberglass	x			
Hard Rubber	x			x
Magnesium				x
Masonite	x			x
Plastics	x			x
Zinc				x

All burs available with coating.

See page 485 for our coating options.

**Contact M.A. Ford® at  
800-553-8024 / 563-391-6220  
for all your application questions.**

**Specify type of cut when ordering.**

**Order by Tool No. / EDP or SCTI No.**

**SCTI No. - D Double Cut**

**SCTI No. - F Fine Cut**

**Example:**

**SA-41.....Single Cut**

**SA-41-D.....Double Cut**

**SA-41-F.....Fine Cut**

Bur Troubleshooting Chart																			
Problem	Possible Solution																		
	Excessive Force	Heat From Rubbing Shank	Dull Tool	Improper Location In Collet	Bad Grinder Bearings	Bent Shank	Unstable Control of Process	Use Coarser Bur	Working in Soft Material	Use Anti-Stick Agent	Faster RPM	Slower RPM	Lighter Cuts	Switch to Fine Cut	Don't Use Double Grind	Faster Feed	Slower Feed	Cutting Abrasive Materials	Lacking Rigid Setup
Broken Braze	x	x	x																
Chatter No Control				x	x	x	x												x
Plugged Flutes								x	x	x	x	x	x						
Excessive Vibration				x	x	x	x			x	x				x	x			x
Poor Finish				x	x	x	x			x	x		x	x	x				x
Poor Life		x		x	x	x	x			x	x			x	x	x	x	x	x

Bur Fluting Chart Number of Flutes-zn (±10%)				
Tool Diameter		Single Cut	Fine Cut	Shear Cut
Inch	mm			
1/16	1.6	10	12	
5/64	2.0	10	12	
3/32	2.4	12	16	
1/8	3.0	12	20	
5/32	4.0	14	24	
3/16	4.8	15	24	
1/4	6.0	16	25	
5/16	8.0	18	30	
3/8	9.5	20	30	6
7/16	11.0	22	30	
1/2	12.7	24	35	8*
5/8	16.0	26	40	8**
3/4	19.0	30	40	
1	25.0	35	45	

Double (Alternate Diamond) Grind left hand fluting 40% of right hand fluting.

Diamond Grind left hand fluting 80% of right hand fluting.

\*except SL-4NF and SL-4NFM 6 flutes

\*\*except SD-6NF, SD-6NFM, SE-6NF, SE-6NFM, SF-6NF and SF-6NFM 10 flutes

Operating Parameters			
Bur Tool Diameter		vc	
		1,500 SFM	3,000 SFM
		460 m/min.	920 m/min.
Inch	mm	RPM (n)	
1/8	3.0	45,000	90,000
1/4	6.0	23,000	45,000
3/8	9.5	15,000	30,000
1/2	12.7	11,000	22,000
3/4	19.0	7,500	15,000
1	25.0	5,500	10,000

### Speeds and Feeds

Carbide burs should typically be operated between 1,500 and 3,000 SFM (460-920 m/min.). For burs ranging in size from 3/16" (4.8mm) to 3/8" (9.5mm) diameter, a 30,000 RPM (n) grinder is recommended. A 22,000 RPM (n) grinder will work effectively with burs ranging in size from 1/4" (6mm) to 1/2" (12.7mm) in diameter. Solid carbide burs that are 1/8" (3mm) diameter or less, can typically be run at speeds up to 75,000 RPM (n). However, these are general speed recommendations that may need to be adjusted.

For application questions, call **800-553-8024**.

### Safety Note

Always wear the appropriate personal protective equipment such as safety glasses and protective clothing when using solid carbide or HSS cutting tools. Machines should be fully guarded. Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

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