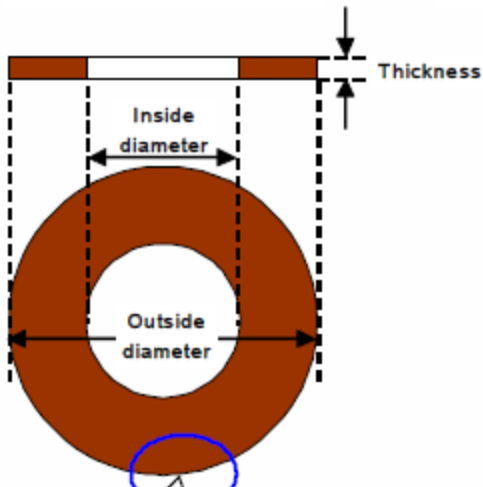


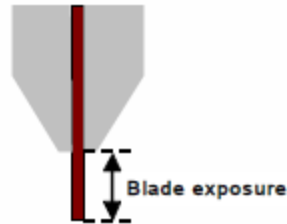
Overall structure

The following are the names of a blade's structural elements. Of particular importance are grit, bond, and chip pockets: the “three major elements,” each absolutely essential to blade structure and function.

Overall blade structure



When placed on flange



**Major elements
of blade structure**

Grit

Performs the fracturing/cutting

Bond

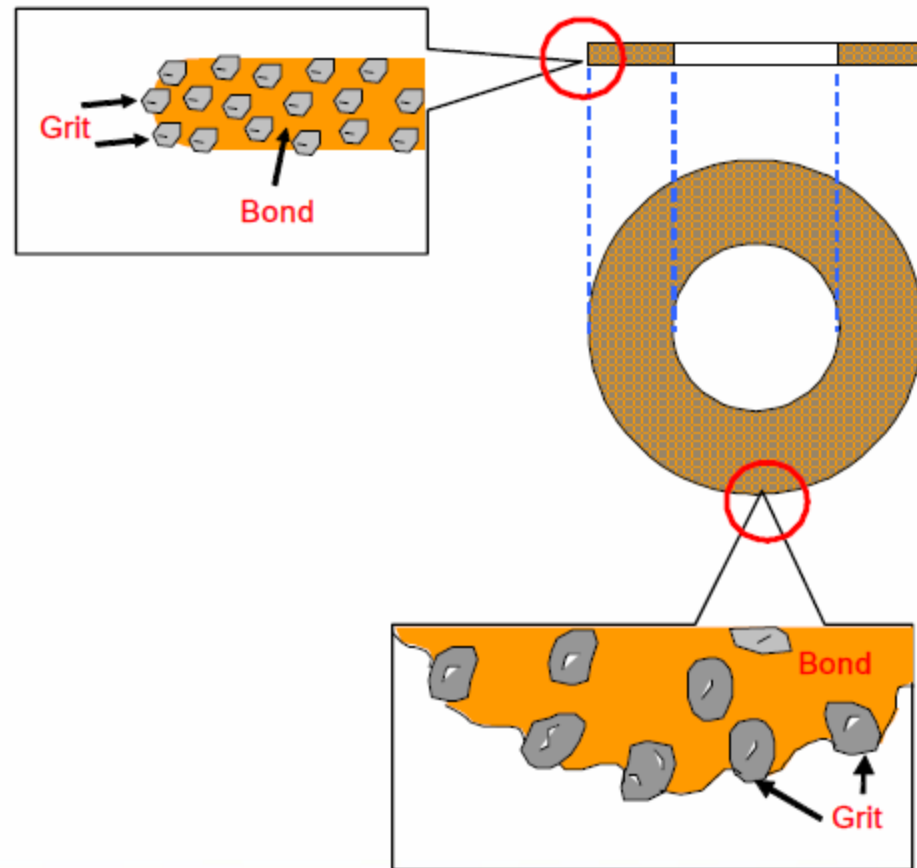
Holds the grit

Chip pockets

Whisk away particles and aid cooling

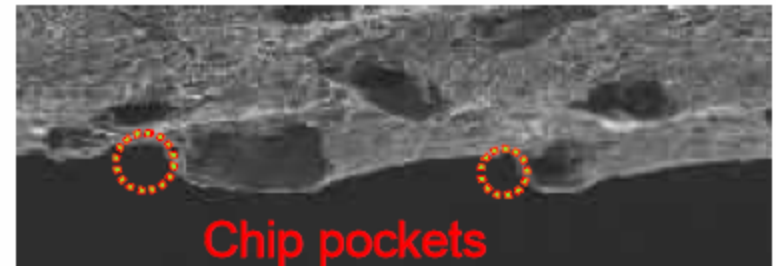
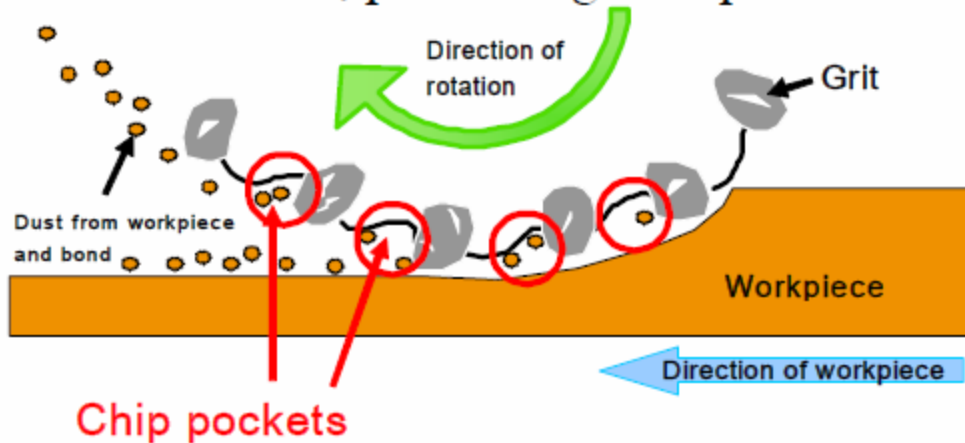
Elements of blade structure and their purpose

A blade is composed primarily of **grit** and **bond**. The grit is what actually performs the processing. The bond's role is to hold the grit in place.



Chip pockets

Chip pockets are absolutely necessary for the blade to function. Without them, processing is impossible.



The effect of chip pockets

1. Whisking away particles

They hold the material for an instant, then eject it away from the blade.

2. Bringing in coolant water

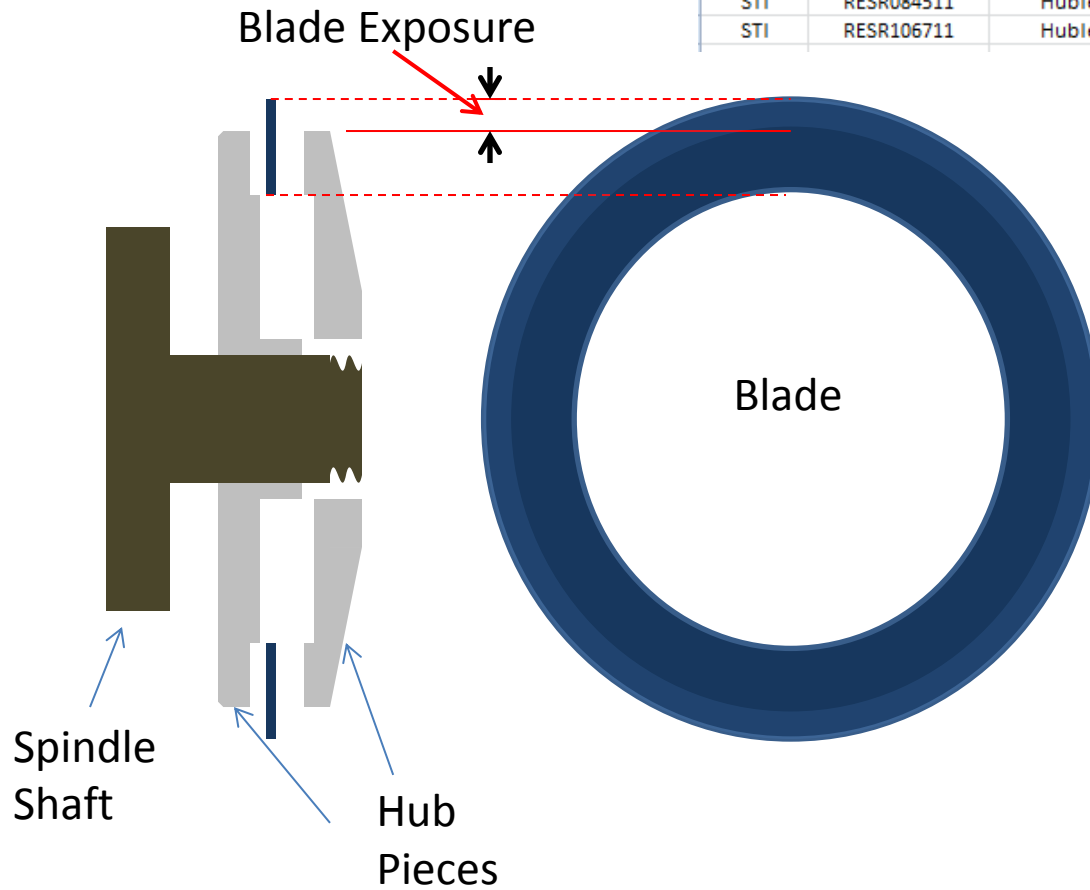
At the same time, the pockets bring coolant water in to cool the processing point.



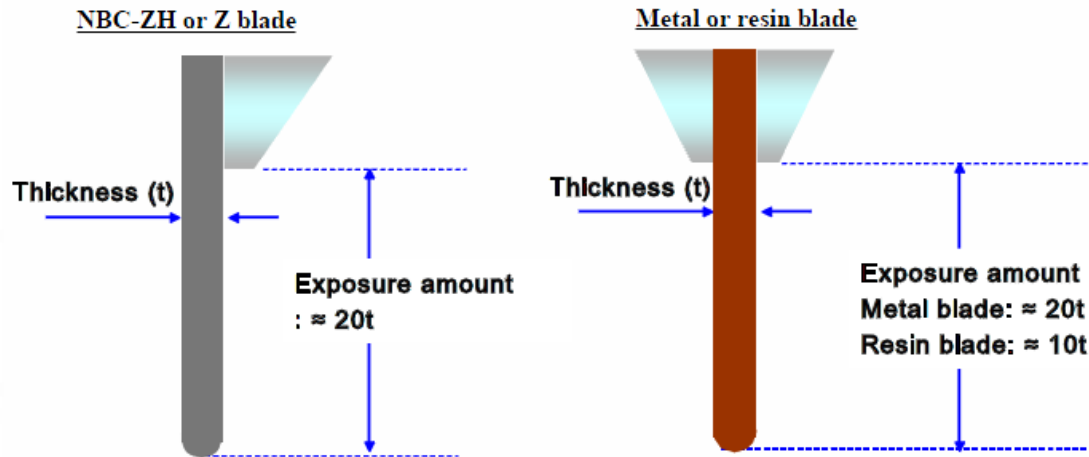
Blade Type and Part for Blades Available in WCAM

Material to Cut	Number						Microns
		Number	Blade Mtrl	Blade Part Number	Blade Mtrl	Thickness	Diamond Size
GaAs	1,2,3						
Gallium Phosphide	2,3	1	Metal Diamond	FSN1100211	Metal Diamond	17	2
Gerrmanium	2,3	2	Metal Diamond	FSN1600511	Metal Diamond	44	5
Indium Phosphide	2,3	3	Metal Diamond	FSN1900511	Metal Diamond	82	5
Lithium Niobate	2,3						
Silicon	2,3						
Silicon on Insulator on Silicon	2,3						Microns
		Number	Blade Mtrl	Blade Part Number	Blade Mtrl	Thickness	Diamond Size
Alumina	6,7	4	Resin	RESR032511	Resin	76.2	25
Glass	7	5	Resin	RESR082511	Resin	203.2	25
Quartz	4,5,6	6	Resin	RESR084511	Resin	203.2	45
Sapphire	6,7	7	Resin	RESR106711	Resin	254	67

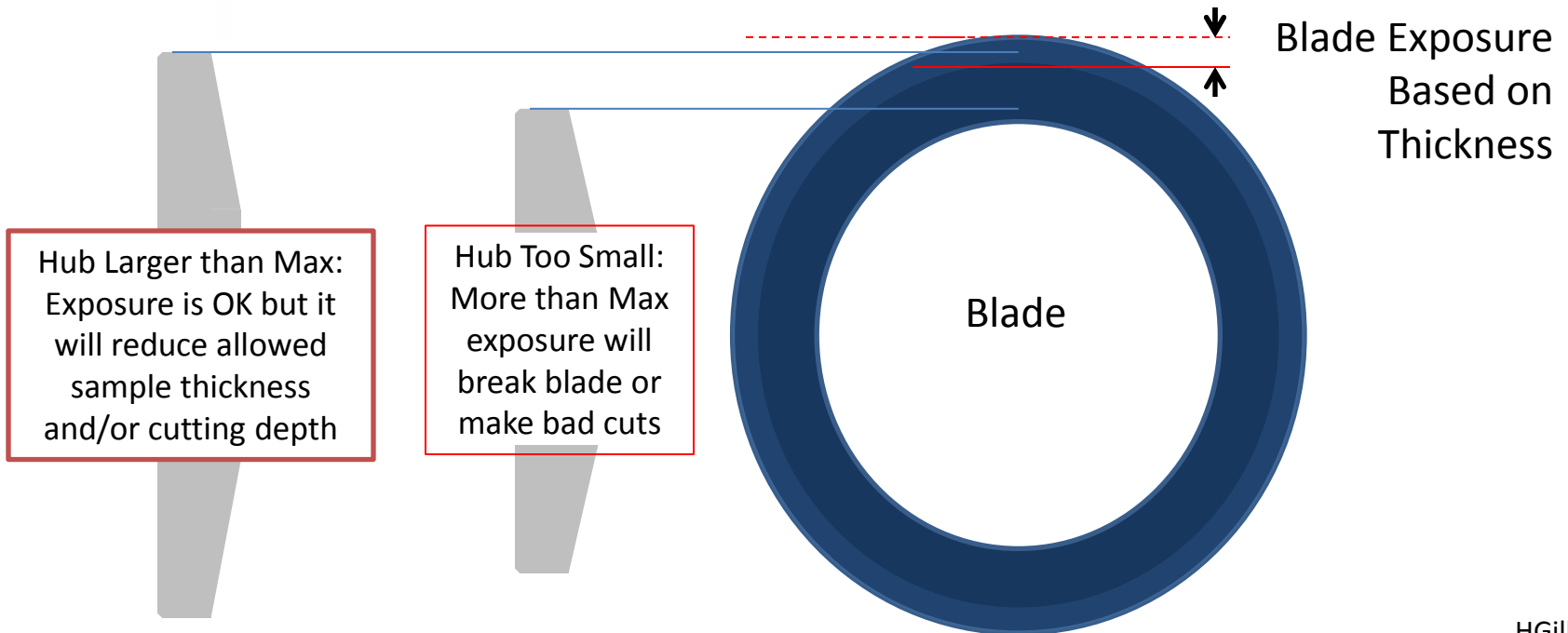
HGILLES	Flanges	ID	OD inches				
3/14/2013	(for STI Blades)	F2	2.127				
		F3	2.107				
		F4	2.057				
				Due to	HUBS	Not Allowed	
				Thickness	F2	F3	F4
				Microns	Microns	Microns	Microns
Vendor	Blade Part Number	Blade Type	Blade Mtrl	Max Exp	EXP BLD	EXP BLD	EXP BLD
STI	FSN1100211	Hubless	Metal Diamond	425	762.1	1016.1	1651.1
STI	FSN1600511	Hubless	Metal Diamond	1100	762.1	1016.1	1651.1
STI	FSN1900511	Hubless	Metal Diamond	2050	762.1	1016.1	1651.1
STI	RESR032511	Hubless	Resin	762	762.1	1016.1	1651.1
STI	RESR082511	Hubless	Resin	2032	762.1	1016.1	1651.1
STI	RESR084511	Hubless	Resin	2032	762.1	1016.1	1651.1
STI	RESR106711	Hubless	Resin	2540	762.1	1016.1	1651.1



Relationship of blade thickness to blade exposure and cut depth



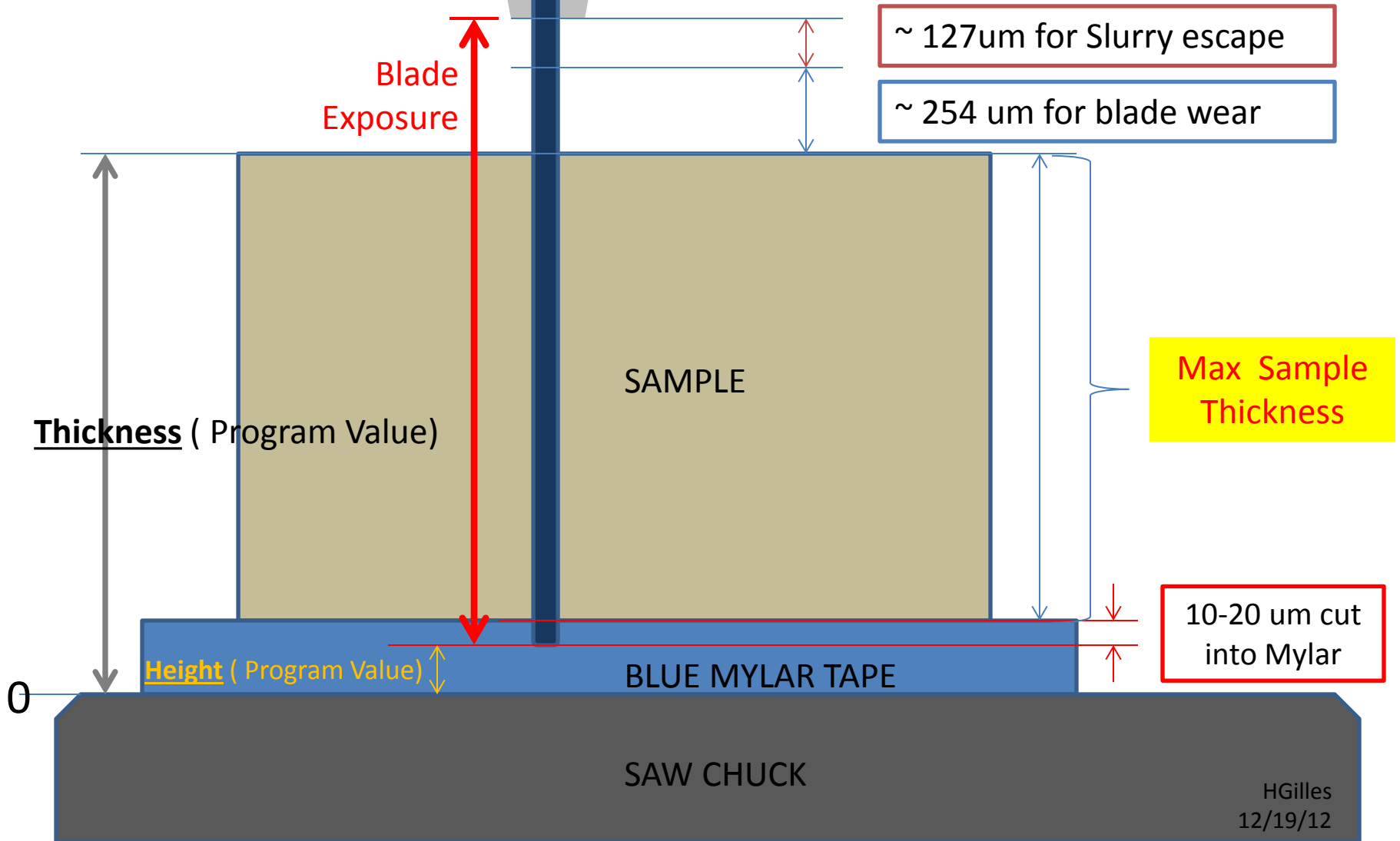
The above data are approximations and rules of thumb.



MAXIMUM Sample Thickness

$$\text{Max} = \text{Exposure} - (127+254+20) \text{ um}$$

so MAX Sample = $\text{Exp} - 401 \text{ um}$



WCAM Blade and Hub Combinations

Part #	Max Mylar Cut	Slurry	Wear	Min Buffer	Max Sample Thickness		
					F2	F3	F4
					Microns	Microns	Microns
FSN1100211	10	127	254	381	371.1	625.1	1260.1
FSN1600511	20	127	254	381	361.1	615.1	1250.1
FSN1900511	20	127	254	381	361.1	615.1	1250.1
RESR032511	20	127	254	381	361.1	615.1	1250.1
RESR082511	20	127	254	381	361.1	615.1	1250.1
RESR084511	20	127	254	381	361.1	615.1	1250.1
RESR106711	20	127	254	381	361.1	615.1	1250.1

HGILLES 3/14/2013		Flanges (for STI Blades)		ID	OD inches	OD um	OD mm							
		F2	2.127	54025.8	54.0258									
		F3	2.107	53517.8	53.5178									
		F4	2.057	52247.8	52.2478									
										Due to	HUBS	Not Allowed		
										Thickness	F2	F3	F4	
										Microns	Microns	Microns	Microns	
Vendor	Blade Part Number	Blade Type	Blade Mtrl	Thickness Series	Thickness	Diamond Size	Hubless Size	OD	ID	Exp mult	Max Exp	EXP BLD	EXP BLD	EXP BLD
STI	FSN1100211	Hubless	Metal Diamond	110	17	2	11	55.55	40	25	425	762.1	1016.1	1651.1
STI	FSN1600511	Hubless	Metal Diamond	160	44	5	11	55.55	40	25	1100	762.1	1016.1	1651.1
STI	FSN1900511	Hubless	Metal Diamond	190	82	5	11	55.55	40	25	2050	762.1	1016.1	1651.1
STI	RESR032511	Hubless	Resin	76.2	76.2	25	11	55.55	40	10	762	762.1	1016.1	1651.1
STI	RESR082511	Hubless	Resin	203.2	203.2	25	11	55.55	40	10	2032	762.1	1016.1	1651.1
STI	RESR084511	Hubless	Resin	203.2	203.2	45	11	55.55	40	10	2032	762.1	1016.1	1651.1
STI	RESR106711	Hubless	Resin	254	254	67	11	55.55	40	10	2540	762.1	1016.1	1651.1