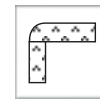




Plastic



Plastic



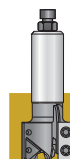
Corian



Aluminum



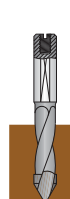
Sawing



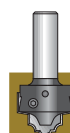
CNC



Cutting



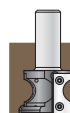
Drilling



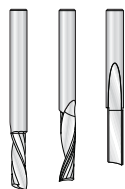
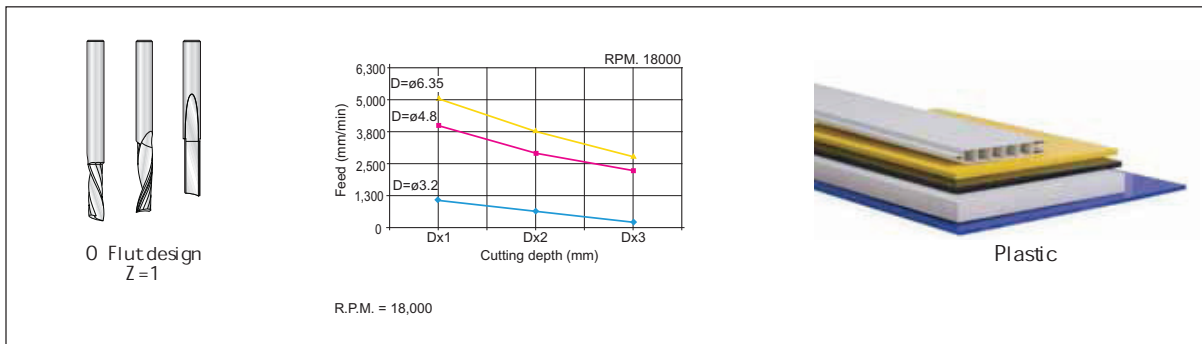
Routing



Plastic, Corian, Aluminum

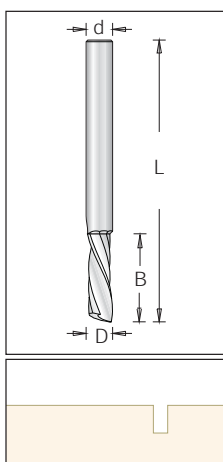


Custom Tooling



0 Flut design
Z=1

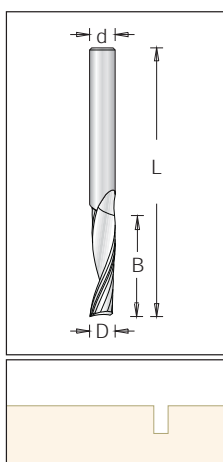
Single spiral "0" flute, down shear angle, mirror finish



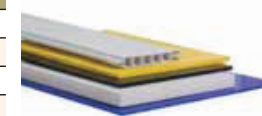
D	B	Code No.	L	ød
3.0	11.0	185 411 z	50	3.0
3.2	12.7	185 411 0	50	3.2
4.0	13.0	185 412 z	50	4.0
4.75	16.0	185 423 0	50	4.75
5.0	18.0	185 413 z	60	5.0
6.0	20.0	185 414 3	60	6.0
6.35	19.0	185 431 4	63	6.35

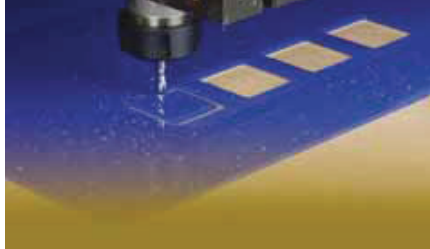


single spiral 0 flut up shear angle Mirror finish



D	B	Code No.	L	ød
3.0	11.0	185 511 z	50	3.0
3.2	12.7	185 511 0	50	3.2
4.0	13.0	185 512 z	50	4
4.75	16.0	185 523 0	50	4.75
5.0	18.0	185 513 z	60	5.0
6.0	20.0	185 514 3	60	6.0
6.35	25.4	185 532 4	63	6.35





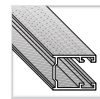
Plastic



Plastic



Corian



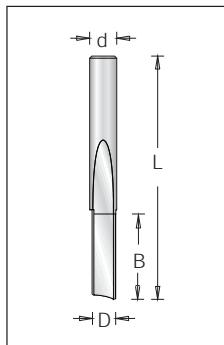
Aluminum



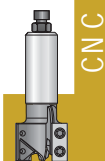
Sawing



single straight flut

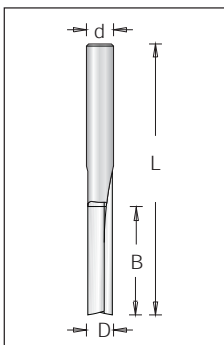


D	B	Code No.	L	ød
3.18	12.75	185 022 4	50	6.35
4.76	16.0	185 010 4	50	6.35
6.35	19.05	185 030 4	50	6.35
6.35	25.4	185 032 4	65	6.35
6.35	25.4	L185 032 4	90	6.35



CNC

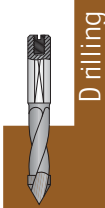
double straight flut



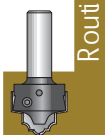
D	B	Code No.	L	ød
3.15	12.7	187 010 4	50	6.35
4.75	16.0	187 022 4	50	6.35
6.35	25.4	187 032 4	64	6.35
9.5	25.4	187 040 6	64	9.5
12.7	25.4	187 050 8	77	12.7



Cutting

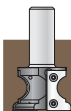


Drilling

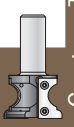
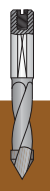
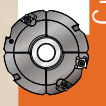
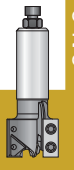


Routing

Plastic, Corian, Aluminum



Custom Tooling



Engraving system

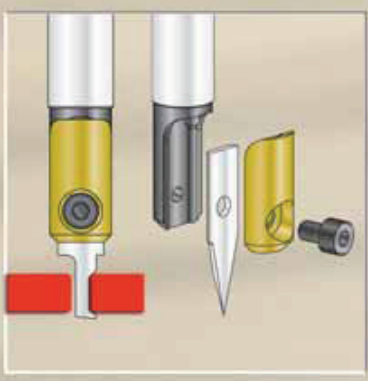
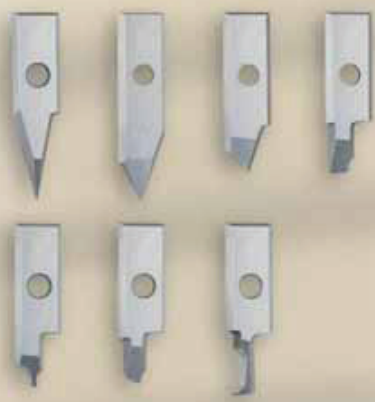
The Engraving Insert System features one tool body with 40 unique insert knives designed for a variety of applications Straight cut, core box , round corner, V grooves and cutting + chamfering

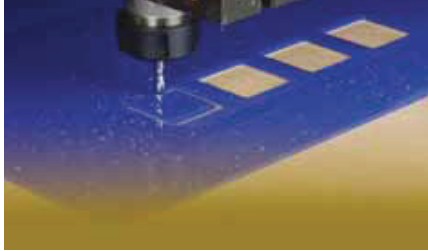
Industrial quality insert knives ensure clean cuts and a longer life time than the standard solid router bits.

This engraving system was engineered to quickly interchange inserts while mounted in CNC machines to eliminate setup-time and to maintain consistent cutting accuracy.

Balanced design to minimize vibration and to provide superior cutting results

Ideal for cutting laminated materials, veneers, MD F, plastics, wood and solid surfaces

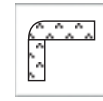




Plastic



Plastic



Corian



Aluminum



Sawing

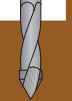


CNC

Cutting



Drilling

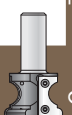


Routing

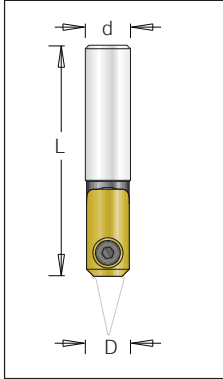


Plastic, Corian, Aluminum

Custom Tooling



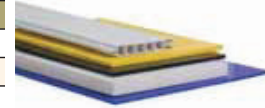
Engraving system



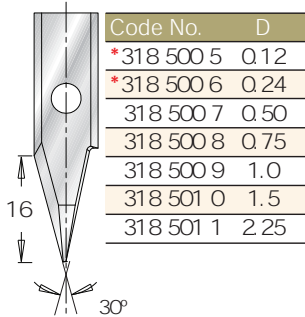
Code No.	D	L	ød
G185 3x0 5	12	65	8
G185 3x0 9	12	65	12



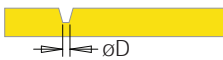
Allen screw
#193 807 0
M4x6



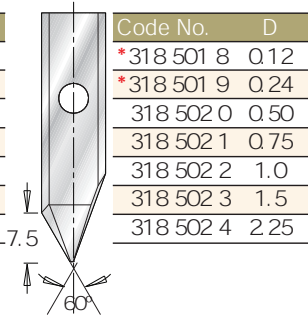
V-G roove 30°
Engraving
Insert Knives



Code No.	D
*318 500 5	0.12
*318 500 6	0.24
*318 500 7	0.50
318 500 8	0.75
318 500 9	1.0
318 501 0	1.5
318 501 1	2.25



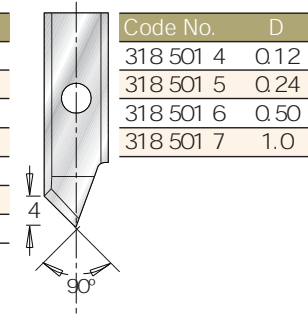
V-G roove 60°
Engraving
Insert Knives



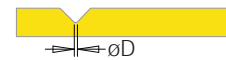
Code No.	D
*318 501 8	0.12
*318 501 9	0.24
318 502 0	0.50
318 502 1	0.75
318 502 2	1.0
318 502 3	1.5
318 502 4	2.25



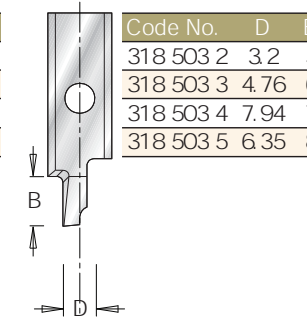
V-G roove 90°
Engraving
Insert Knives



Code No.	D
318 501 4	0.12
318 501 5	0.24
318 501 6	0.50
318 501 7	1.0



Straight
Engraving
Insert Knives

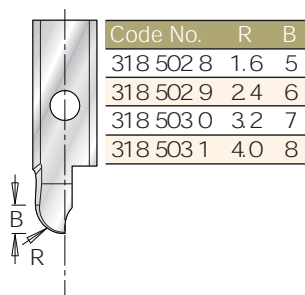


Code No.	D	B
318 503 2	3.2	5
318 503 3	4.76	6
318 503 4	7.94	7
318 503 5	6.35	8



* Only for use with controllable feed rate machines

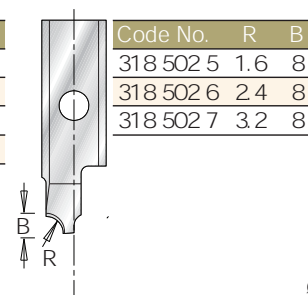
Core box
Engraving
Insert Knives



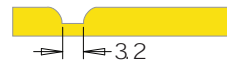
Code No.	R	B
318 502 8	1.6	5
318 502 9	2.4	6
318 503 0	3.2	7
318 503 1	4.0	8



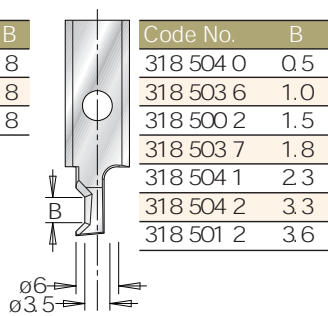
Comerround
Engraving
Insert Knives



Code No.	R	B
318 502 5	1.6	8
318 502 6	2.4	8
318 502 7	3.2	8



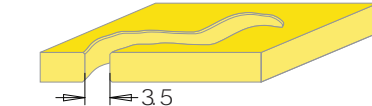
Cutting and chamfering
Engraving
Insert Knives

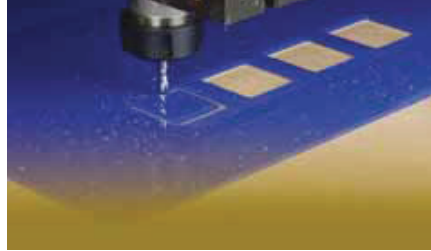


Code No.	B
318 504 0	0.5
318 503 6	1.0
318 500 2	1.5
318 503 7	1.8
318 504 1	2.3
318 504 2	3.3
318 501 2	3.6

Code No.	B
318 504 3	4.3
318 501 3	4.6
*318 500 3	5.0
*318 504 4	5.5
*318 503 8	6.3
*318 503 9	8.3

* Only for Chamfer operation.

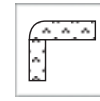




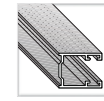
Plastic



Plastic



Corian



Aluminum



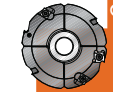
Sawing



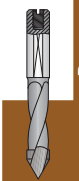
CNC



Cutting



Drilling

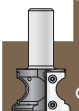


Routing



Plastic, Corian, Aluminum

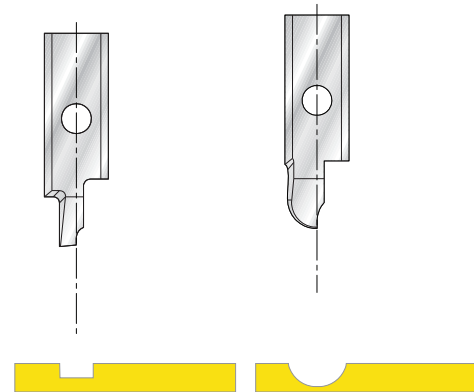
Custom Tooling



Engraving system feed rates

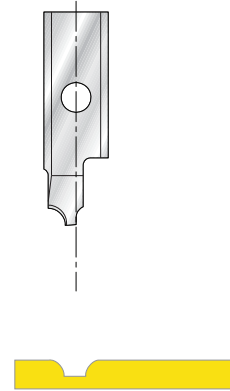
Straight and core box max feed Vars RPM (cutting depth 1D) mm/min

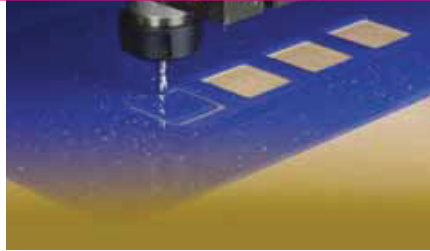
head diameter (mm)	3.2	4.76	6.35	7.93
rotation speed (RPM)	Recomended free rate (mm/min)			
6000	600	780	900	1080
7000	700	910	1050	1260
8000	800	1040	1200	1440
9000	900	1170	1350	1620
10000	1000	1300	1500	1800
11000	1100	1430	1650	1980
12000	1200	1560	1800	2160
13000	1300	1690	1950	2340
14000	1400	1820	2100	2520
15000	1500	1950	2250	2700
16000	1600	2080	2400	2880
17000	1700	2210	2550	3060
18000	1800	2340	2700	3240
19000	1900	2470	2850	3420
20000	2000	2600	3000	3600
21000	2100	2730	3150	3780
22000	2200	2860	3300	3960
23000	2300	2990	3450	4140
24000	2400	3120	3600	4320
25000	2500	3250	3750	4500
26000	2600	3380	3900	4680
27000	2700	3510	4050	4860
28000	2800	3640	4200	5040



Round corner reccomended feed Vars RPM mm/min

Knife radius (mm)	1.6	2.4	3.2
rotation speed (RPM)	Recomended free rate (mm/min)		
6000	1500	1320	1200
7000	1750	1540	1400
8000	2000	1760	1600
9000	2250	1980	1800
10000	2500	2200	2000
11000	2750	2420	2200
12000	3000	2640	2400
13000	3250	2860	2600
14000	3500	3080	2800
15000	3750	3300	3000
16000	4000	3520	3200
17000	4250	3740	3400
18000	4500	3960	3600
19000	4750	4180	3800
20000	5000	4400	4000
21000	5250	4620	4200
22000	5500	4840	4400
23000	5750	5060	4600
24000	6000	5280	4800
25000	6250	5500	5000
26000	6500	5720	5200
27000	6750	5940	5400
28000	7000	6160	5600

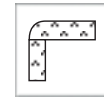




Plastic



Plastic



Corian



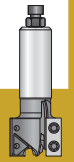
Aluminum



Sawing



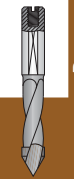
CNC



Cutting



Drilling

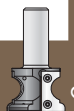


Routing



Plastic, Corian, Aluminum

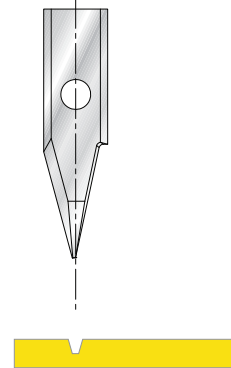
Custom Tooling



V- groove Routing recommended max feed vars RPM (inch/min)

head diameter (D) mm	0.1	0.25	0.5	0.75	1	1.5	2.25
rotation speed (RPM)	Max. feed rate mm/min						
6000	480	1200	2400	3600			
7000	560	1400	2800				
8000	640	1600	3200				
9000	720	1800	3600				
10000	800	2000	4000				
11000	880	2200					
12000	960	2400					
13000	1040	2600					
14000	1120	2800					
15000	1200	3000					
16000	1280	3200					
17000	1360	3400					
18000	1440	3600					
19000	1520	3800					
20000	1600						
21000	1680						
22000	1760						
23000	1840						
24000	1920						
25000	2000						
26000	2080						
27000	2160						
28000	2240						

NO LIMIT



sizing and chamfering recommended feed Vars RPM mm/min

Sizing and chamfering

Material thickness (mm)	2	3	4.6	5.6
rotation speed (RPM)	Recomended feed rate (mm/min)			
6000	1500	1320	1200	1080
7000	1750	1540	1400	1260
8000	2000	1760	1600	1440
9000	2250	1980	1800	1620
10000	2500	2200	2000	1800
11000	2750	2420	2200	1980
12000	3000	2640	2400	2160
13000	3250	2860	2600	2340
14000	3500	3080	2800	2520
15000	3750	3300	3000	2700
16000	4000	3520	3200	2880
17000	4250	3740	3400	3060
18000	4500	3960	3600	3240
19000	4750	4180	3800	3420
20000	5000	4400	4000	3600
21000	5250	4620	4200	3780
22000	5500	4840	4400	3960
23000	5750	5060	4600	4140
24000	6000	5280	4800	4320
25000	6250	5500	5000	4500
26000	6500	5720	5200	4680
27000	6750	5940	5400	4860
28000	7000	6160	5600	5040

Chamfering only

	6	7.2	8
6000	1500	1320	1200
7000	1750	1540	1400
8000	2000	1760	1600
9000	2250	1980	1800
10000	2500	2200	2000
11000	2750	2420	2200
12000	3000	2640	2400
13000	3250	2860	2600
14000	3500	3080	2800
15000	3750	3300	3000
16000	4000	3520	3200
17000	4250	3740	3400
18000	4500	3960	3600
19000	4750	4180	3800
20000	5000	4400	4000
21000	5250	4620	4200
22000	5500	4840	4400
23000	5750	5060	4600
24000	6000	5280	4800
25000	6250	5500	5000
26000	6500	5720	5200
27000	6750	5940	5400
28000	7000	6160	5600

