

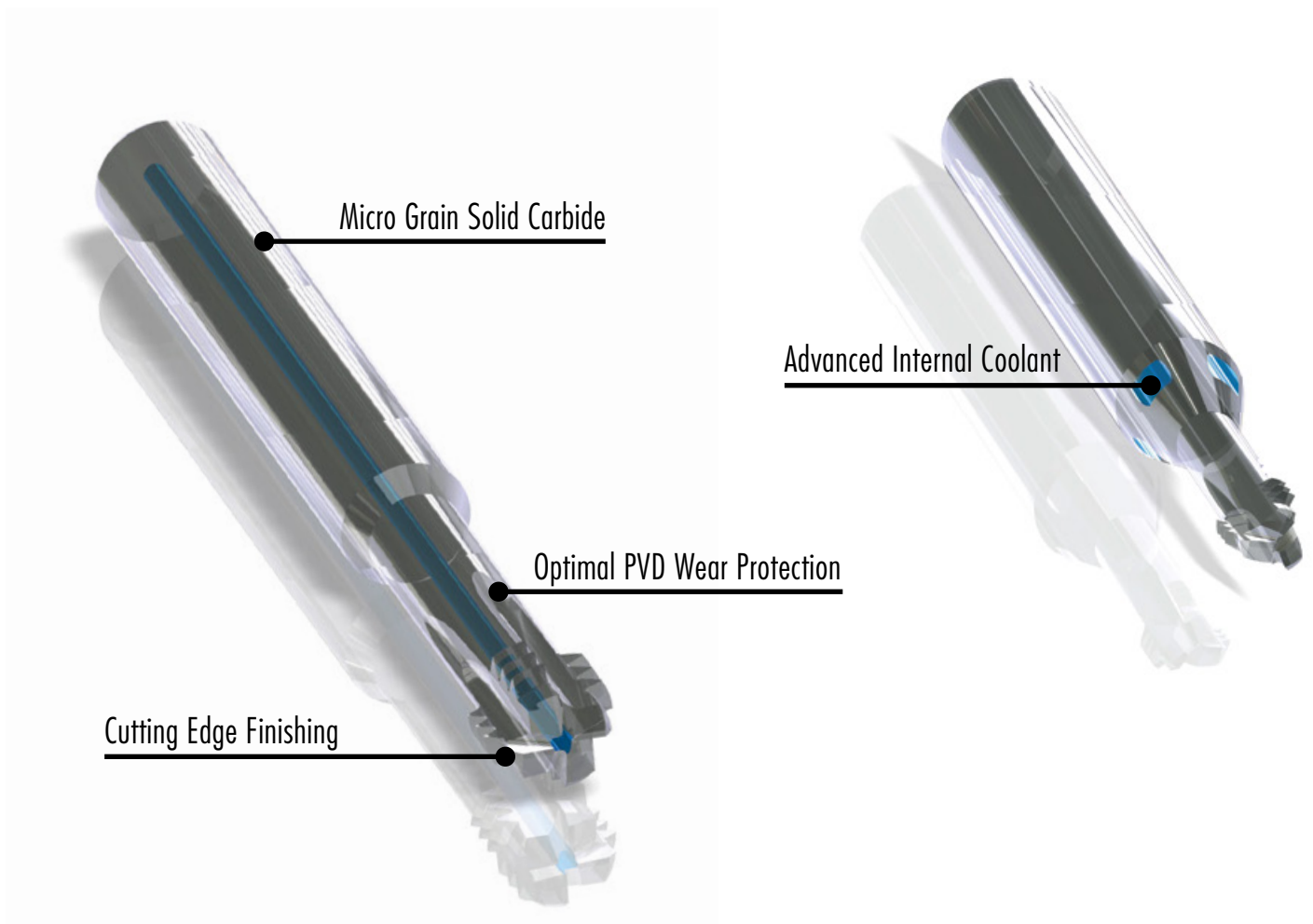
# ZBGF



**THREADING**  
**TECHNOLOGY**

EN-ID-1015

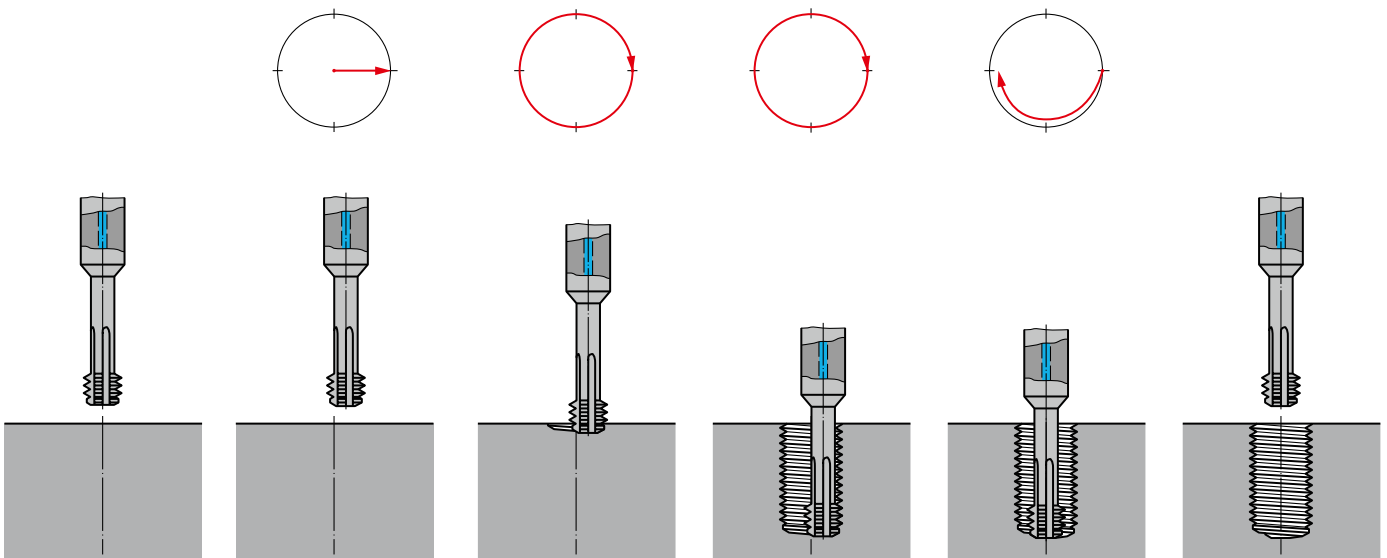
# Circular Thread Milling *EVOLVED*

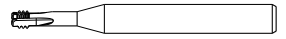


## Thread Milling Cycle

- Left rotation (counterclockwise)
- Threading up to  $3 \times D_1$  possible
- Use internal coolant for best chip evacuation (min 20 bar)

YouTube





# ZBGF

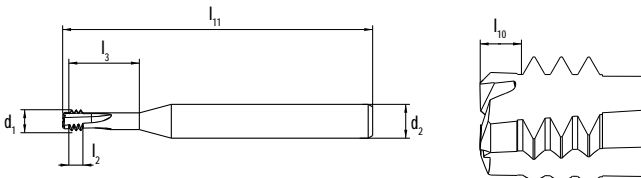
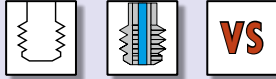
ZBGF6065VS

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Ø D <sub>1</sub> M	P mm	d <sub>1</sub> mm	l <sub>11</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	d <sub>2</sub> h6 mm	l <sub>10</sub> mm	
3	0.50	2.43	55	1.5	7.5	4	0.75	3
4	0.70	3.05	55	2.1	10.1	6	1.05	3
5	0.80	4.08	55	2.4	12.4	6	1.20	3
6	1.00	4.50	64	3.0	15.0	6	1.50	4
8	1.25	5.95	64	3.8	19.8	6	1.88	4
10	1.50	7.95	74	4.5	24.5	8	2.25	4
12	1.75	9.95	80	5.3	29.3	10	2.63	4
16	2.00	11.95	92	6.0	38.0	12	3.00	4

ID

181605  
181606  
181607  
181608  
181609  
181610  
181611  
181612

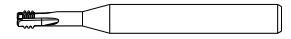
Ø D <sub>1</sub> M	P mm	d <sub>1</sub> mm	l <sub>11</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	d <sub>2</sub> h6 mm	l <sub>10</sub> mm	
3	0.50	2.43	55	1.5	10.5	4	0.75	3
4	0.70	3.05	55	2.1	14.1	6	1.05	3
5	0.80	4.08	55	2.4	17.4	6	1.20	3
6	1.00	4.50	72	3.0	21.0	6	1.50	4
8	1.25	5.95	72	3.8	27.8	6	1.88	4
10	1.50	7.95	90	4.5	34.5	8	2.25	4
12	1.75	9.95	102	5.3	41.3	10	2.63	4
16	2.00	11.95	115	6.0	54.0	12	3.00	4

ID

181613  
181614  
181615  
181616  
181617  
181618  
181619  
181620



# UNF ANSI B1.1

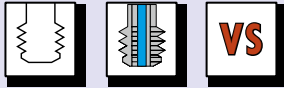


MM

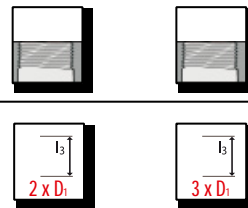
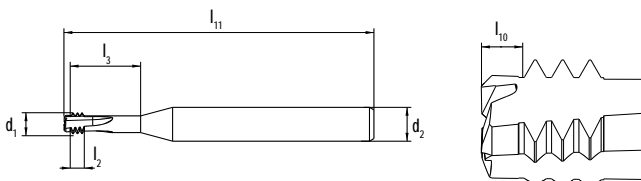
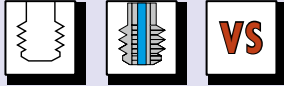


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$\varnothing D_1$ UNF	P TPI	$d_1$ mm	$l_{11}$ mm	$l_2$ mm	$l_3$ mm	$d_2$ h6 mm	$l_{10}$ mm	ID
4	48	2.23	55	1.6	7.3	4	0.79	3
8	36	3.10	55	2.1	10.5	6	1.06	3
10	32	3.91	55	2.4	12.1	6	1.19	3
1/4	28	4.80	64	2.7	15.5	6	1.36	4
5/16	24	5.95	64	3.2	19.1	6	1.59	4
3/8	24	7.10	74	3.2	22.3	8	1.59	4
7/16	20	7.95	74	3.8	26.1	8	1.91	4
1/2	20	9.95	80	3.8	29.3	10	1.91	4
5/8	18	11.95	92	4.2	36.0	12	2.12	4

$\varnothing D_1$ UNF	P TPI	$d_1$ mm	$l_{11}$ mm	$l_2$ mm	$l_3$ mm	$d_2$ h6 mm	$l_{10}$ mm	ID
4	48	2.23	55	1.6	10.2	4	0.79	3
8	36	3.10	55	2.1	14.7	6	1.06	3
10	32	3.91	55	2.4	16.9	6	1.19	3
1/4	28	4.80	72	2.7	21.8	6	1.36	4
5/16	24	5.95	72	3.2	27.0	6	1.59	4
3/8	24	7.10	90	3.2	31.8	8	1.59	4
7/16	20	7.95	90	3.8	37.2	8	1.91	4
1/2	20	9.95	102	3.8	42.0	10	1.91	4
5/8	18	11.95	115	4.2	51.9	12	2.12	4

# Cutting Speeds and Feed Rates

Material groups	Material designation	Hardness (HB)	Tensile strength Rm (N/mm <sup>2</sup> )	Vc (m/min)		Feed rate fz (mm/tooth)	SFM (Surface feet/min)		Feed rate fz (inch/tooth)
				Coated			Coated		
Steels	11 Free-cutting steels	< 200	< 700	50 – 100	0.020 – 0.060	164 – 328	0.0007 – 0.0023		
	12 Structural / cementation steels	< 200	< 700	50 – 100	0.010 – 0.050	164 – 328	0.0003 – 0.0019		
	13 Carbon steels	< 300	< 1000	50 – 100	0.010 – 0.050	164 – 328	0.0003 – 0.0019		
	14 Alloy steels <850 N/mm <sup>2</sup>	< 250	< 850	50 – 100	0.010 – 0.050	164 – 328	0.0003 – 0.0019		
Stainless Steels	15 Alloy steels hard. / temp. >850 - <1150 N/mm <sup>2</sup>	> 250	> 850	40 – 80	0.010 – 0.050	131 – 262	0.0003 – 0.0019		
	16 High tensile alloy steels <55 HRC	> 250	> 850	30 – 60	0.008 – 0.040	98 – 197	0.0003 – 0.0015		
Cast Iron	21 Free machining stainless steels	< 250	< 850	40 – 80	0.010 – 0.040	131 – 262	0.0003 – 0.0015		
	22 Austenitic stainless steels	< 250	< 850	30 – 50	0.010 – 0.040	98 – 164	0.0003 – 0.0015		
	23 Ferritic and martensitic <850 N/mm <sup>2</sup>	< 250	< 850	30 – 60	0.010 – 0.040	98 – 197	0.0003 – 0.0015		
	24 Ferritic and martens. >850 - <1150 N/mm <sup>2</sup>	> 250	> 850	30 – 50	0.010 – 0.030	98 – 164	0.0003 – 0.0011		
Titanium	31 Cast iron	< 250	< 850	70 – 140	0.010 – 0.050	230 – 459	0.0003 – 0.0019		
	32 Spheroidal graphite + malleable cast iron	< 250	< 850	50 – 100	0.010 – 0.050	164 – 328	0.0003 – 0.0019		
Nickel	41 Pure titanium	< 250	< 850	30 – 50	0.010 – 0.040	98 – 164	0.0003 – 0.0015		
	42 Titanium alloys	> 250	> 850	30 – 50	0.010 – 0.040	98 – 164	0.0003 – 0.0015		
	51 Nickel alloys 1 <850 N/mm <sup>2</sup>	< 250	< 850	40 – 60	0.010 – 0.030	131 – 197	0.0003 – 0.0011		
Copper	52 Nickel alloys 2 >850 - <1150 N/mm <sup>2</sup>	> 250	> 850	30 – 50	0.010 – 0.030	98 – 164	0.0003 – 0.0011		
	53 Nickel alloys 3 >1150 - ≤1600 N/mm <sup>2</sup>	> 340	> 1150	30 – 50	0.005 – 0.030	98 – 164	0.0002 – 0.0011		
	62 Short chip brass, phosphor bronze, gun metal	< 200	< 700	100 – 200	0.010 – 0.050	328 – 656	0.0003 – 0.0019		
Aluminium Magnesium	63 Long chip brass	< 200	< 700	100 – 200	0.010 – 0.050	328 – 656	0.0003 – 0.0019		
	71 Al unalloyed	< 100	< 350	100 – 200	0.010 – 0.050	328 – 656	0.0003 – 0.0019		
	72 Al alloyed Si < 1.5 %	< 150	< 500	100 – 200	0.010 – 0.050	328 – 656	0.0003 – 0.0019		
Plastic Compounds	73 Al alloyed Si > 1.5 % - < 10 %	< 120	< 400	100 – 200	0.010 – 0.050	328 – 656	0.0003 – 0.0019		
	74 Al alloyed Si > 10 %, Mg-Alloys	< 120	< 400	70 – 140	0.010 – 0.050	230 – 459	0.0003 – 0.0019		
	81 Thermoplastics	.	.	80 – 180	0.050 – 0.100	262 – 590	0.0019 – 0.0039		
Precious Metals	82 Duroplastics	.	.	80 – 180	0.020 – 0.080	262 – 590	0.0007 – 0.0031		
	83 Glass fibre reinforced plastics	.	.	50 – 150	0.020 – 0.100	164 – 492	0.0007 – 0.0039		
	91 Yellow gold	.	.	80 – 120	0.020 – 0.080	262 – 394	0.0007 – 0.0031		
	92 Red gold	.	.	50 – 100	0.010 – 0.050	164 – 328	0.0003 – 0.0019		
	93 White gold	.	.	40 – 80	0.010 – 0.040	131 – 262	0.0003 – 0.0015		
	94 Silver	.	.	50 – 100	0.010 – 0.050	164 – 328	0.0003 – 0.0019		